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FCC Record Volume 38, No. 4, Pages 2902 to 3933, April 12 – April 21, 2023



FEDERAL COMMUNICATIONS COMMISSION

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Federal Communications Commission Record

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PUBLIC NOTICE

Federal Communications Commission
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DA 23-296
April 12, 2023

OFFICE OF INTERNATIONAL AFFAIRS SEEKS COMMENT ON RECOMMENDATIONS APPROVED BY THE WORLD RADIOCOMMUNICATION CONFERENCE ADVISORY COMMITTEE

IB Docket No. 16-185

On April 11, 2023 the World Radiocommunication Conference Advisory Committee (WRC-23 Advisory Committee) approved and provided for Commission consideration of its draft recommendations on issues that will be considered by the 2023 World Radiocommunication Conference (WRC-23).

Based upon an initial review of the draft recommendations forwarded to the Commission, the Office of International Affairs, in coordination with other Commission Bureaus and Offices, tentatively concludes that we can generally support most of the content found in attachment in the WRC-23 Advisory Committee draft recommendation. We seek comment on the draft recommendation provided by the WRC-23 Advisory Committee (Attachment A). In addition, we seek comment on the National Telecommunications and Information Administration (NTIA) draft proposals in Attachment B.

The comments provided by interested parties will assist the FCC in its upcoming consultations with the U.S. Department of State and NTIA in the development of U.S. positions for WRC-23. The proposed recommendations that are attached to this Public Notice may evolve in the course of interagency discussions as we approach WRC-23 and, therefore, do not constitute any final U.S. Government positions on any issue.

The deadline for comments on the proposed recommendations is **April 21, 2023**. It is necessary that all comments be received by **April 21, 2023**, in order to allow sufficient time to finalize the U.S. position before commencement of regional WRC-23 preparatory meetings. All comments are to reference **IB Docket No. 16-185** and to specific recommendations by WAC document number.

Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments on or before **April 21, 2023**. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: http://apps.fcc.gov/ecfs/.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
    - Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
    - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.U.S.
    - Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, N.E., Washington DC 20554
- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.[1]
- During the time the Commission's building is closed to the general public and until further notice, if more than one docket or rulemaking number appears in the caption of a proceeding, paper filers need not submit two additional copies for each additional docket or rulemaking number; an original and one copy are sufficient.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at 202-418-0530 (voice), 1-888-835-5322 (tty).

In addition, one copy of each pleading must be sent to: Dante Ibarra, Designated Federal Official, Global Strategy and Negotiation Division, Office of International Affairs, 45 L Street, N.E., Washington, D.C. 20554; email: WRC-23@fcc.gov.

The complete texts of these recommendations are available by accessing the FCC's WRC-23 web site at: www.fcc.gov/wrc-23. Filings and comments are also available for public inspection and copying during regular business hours at the FCC Reference Information Center, Portals II, 45 L Street, N.E., Washington, D.C. 20554.

For further information, please contact Dante Ibarra at (202) 418-0610 or by email at: WRC-23@fcc.gov.

-FCC–

[1] *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, 35 FCC Rcd 2788 (2020).

ATTACHMENT (A)

WAC-23/071 (04.11.2023)

UNITED STATES OF AMERICA

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.7: *to consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation in accordance with Resolution **428 (WRC-19)** for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands;*

Aviation VHF radios operating within the frequency band 117.975 - 137 MHz are the primary means to control of aircraft and provide both Air Traffic Control (ATC) and Aeronautical Operational Control (AOC) messages for all manned aircraft globally. All manned aircraft are equipped with a minimum of 1 VHF voice radio, with many aircraft types having multiple radios capable of both voice and data. Due to the systems primary role in air traffic management, it is heavily used in regions with high air traffic such as the United States and Europe.

The use of low-Earth orbiting satellites for VHF aeronautical safety and regularity of flight messages between the pilot and controller have a potential to augment, but not replace, coverage of existing terrestrial VHF communications facilities. Several proposals currently being studied would provide complementary service to oceanic and remote regions that already exists for global navigation satellite systems and satellite based surveillance systems. These implementations would all use existing on-board aircraft VHF radios without any needed modification. However, due to existing VHF frequency congestion, options for new regional or national satellite frequency assignments would be severely limited and require harmonization with existing terrestrial assignments.

In the United States, there is significant utilization by terrestrial VHF systems within the frequency band 117.975 - 137 MHz, which already requires a substantial licensing management process to ensure operations are minimally affected by the frequency congestion. Additionally, the standard voice ATC communications have been recently augmented with a national ATC datalink system which has significantly improved air traffic safety and efficiency. The system, known as the FAA Datacomm Program, utilizes data messages for ATC and AOC functions to aircraft in the air and on the ground, and has been quickly adopted by almost all commercial aircraft operators given the benefits it brings to industry. Similar systems are also being implemented in Europe and Asia.

Current terrestrial voice and datalink networks in the US provide coverage over the entire United States up to at least 40,000 ft altitude, including up to 250+ nautical miles from the national coastline as aircraft transition from oceanic to terrestrial US control. While new VHF SATCOM systems would provide little benefit over the mainland USA, and are likely to be unfeasible in those areas given the extensive frequency congestion, providing extended VHF coverage over oceanic areas would enable significant performance benefits for those aircraft that do not have more advanced communications means such as L-band SATCOM.

In-band coexistence between the AM(R)S and AMS(R)S should be ensured through No. 9.11A coordination through ITU-R and operational frequency planning and coordination in ICAO. The coordination arrangement in the ITU-R Radio Regulations should allow administrations to participate in

planning a new AMS(R)S service without impacting administrations that are not participating or have not yet decided to use a new AMS(R)S service. Selection of an adequate coordination threshold using ICAO planning criteria for aviation systems could permit some areas to develop new AMS(R)S communications services without impacting AM(R)S communications services in other areas. It is important to ensure the entire existing AM(R)S designated operational coverage of over 250 nautical miles is protected from harmful interference, noting that some stations may not be registered in the master international frequency register (MIFR).

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD USA/AI 1.7/1

75.2-137.175 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
117.975-137	AERONAUTICAL MOBILE (R) AERONAUTICAL MOBILE-SATELLITE (R) ADD 5.A17 ADD 5.B17 5.111 5.200 5.201 5.202	

Reasons: Adds an AMS(R)S allocation to the 117.975-137 MHz band.

ADD **USA/AI 1.7/2**

5.A17 In the frequency band 117.975-137 MHz, the use of the aeronautical mobile-satellite (R) service is limited to non-geostationary-satellite systems and is subject to coordination under No. 9.11A. Stations in the aeronautical mobile-satellite (R) service operating in the 117.975-137 MHz frequency band shall not cause harmful interference to, nor claim protection from stations in the aeronautical mobile (R) service. The use of this band by the aeronautical mobile-satellite (R) service shall be limited to systems that operate and are planned in accordance with recognized international aeronautical standards. (WRC-23)

Reasons: To ensure the current and future AM(R)S systems are not constrained.

ADD **USA/AI 1.7/3**

5.B17 In the frequency band 136-137 MHz, space stations operating in the aeronautical mobile-satellite (R) service should ensure that their maximum level of their emissions above 137 MHz does not exceed a pfd of −166.6 dB(W/(m² · 14 kHz)). (WRC-23)

Reasons: To ensure the protection of the incumbent services above 137 MHz.

APPENDIX 5 (REV. WRC-23)

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

ADD USA/AI 1.7/4

Table 5-1 (*continued*) (REV. WRC-23)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/ condition	Calculation method	Remarks
No. 9.14 non-GSO	A non-GSO space station in the AMS(R)S in primary basis with the primary terrestrial AM(R)S stations	117.975 – 137 MHz	-148.0 dBW/(W/(m² · 4 kHz)) to be applied within 470 km of a country's border. This level is for coordination between ICAO systems operating in the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service.	Power flux density of an AMS(R)S space station on the Earth's surface	to ensure that the entire AM(R)S Designated Operational Coverage (RR No. 45.1.1) is protected.

Reasons: Adding No. 9.14 (a subset of No. 9.11A) coordination threshold to Appendix 5 of Radio Regulations to ensure protections of the AM(R)S Designated Operational Coverage of 250 Nautical miles used by existing terrestrial VHF service providers (which is approximately equivalent to 470 km).

SUP USA/AI 1.7/5

RESOLUTION 428 (WRC-19)

Studies on a possible new allocation to the aeronautical mobile-satellite (R) service within the frequency band 117.975-137 MHz in order to support aeronautical VHF communications in the Earth-to-space and space-to-Earth directions

Reason: Work on agenda item has been completed.

UNITED STATES OF AMERICA
I. PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.9: *to review Appendix **27** of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU-R studies, in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service and ensure coexistence of current HF systems alongside modernized HF systems, in accordance with Resolution **429 (WRC-19)**.*

BACKGROUND INFORMATION:
Aeronautical mobile (R) service (AM(R)S) frequency bands in the range 2 850 – 22 000 kHz are used for long-distance aeronautical communications in remote and oceanic areas. These aeronautical High Frequency (HF) channels are used for Air Traffic Control (ATC) communications to aircraft for most oceanic areas and are mandated as a minimum equipment needed for an aircraft to enter these areas by many international Civil Aviation USAities.
The last substantive review of Appendix **27** of the ITU Radio Regulations was performed in 1982. Aviation is considering new technologies to significantly improve capacity, connectivity, and quality of service for aviation HF data and voice. This includes a means to digitally combine non-contiguous HF channels together to effectively form a wideband HF system for greater aircraft connectivity and function. However, it is essential any new HF technology does not constrain or interfere with the existing regional aeronautical HF networks.

APPENDIX 27 (REV.WRC-19)*

Frequency allotment Plan for the aeronautical mobile (R) service and related information

PART I – General provisions

Section II – Technical and operational principles used for the establishment of the Plan of allotment of frequencies in the aeronautical mobile (R) service

A – Channel characteristics and utilization

II. 2 FREQUENCIES ALLOTTED

ADD USA/AI 1.9/1

27/18A Individual contiguous or non-contiguous channels complying with the provisions of the present Plan[1] may be aggregated to provide wideband communication.

Reason: Provides a provision in Appendix 27 that allows individual HF channels to be aggregated.

ADD USA/AI 1.9/2

27/18A.1 In particular the provisions related to the protection (Part I, Section II B), to power limits (Nos. **27**/60 and **27**/61), to class of emissions (No. **27**/58), to out-of-band spectrum mask (No. **27**/74), to assigned frequency (No. **27**/75), and to channel spacing (No. **27**/11).

Reason: Ensures the mechanism for the individual HF channels to be aggregated maintains compatibility with the existing aeronautical HF systems.

C – Classes of emission and power

III. 1 CLASSES OF EMISSION

MOD USA/AI 1.9/3

A. 27/57 **1.1 Telephony – amplitude modulation:**

–double sideband	A3E*
–single sideband, full carrier	H3E*

* A3E and H3E to be used only on 3 023 kHz and 5 680 kHz.

–single sideband, suppressed carrier J3E, J2E, J7E, J9E

Reason: Allows for new signal modulation types.

MOD USA/AI 1.9/4

B. 1.2 Telegraphy ~~(including automatic~~and data transmission~~)~~

Reason: Update title to reflect the use of data.

MOD USA/AI 1.9/5

1. 27/58 1.2.1 Amplitude modulation:

– telegraphy without the use of a modulating audio frequency (by on-off keying) A1A, A1B**
– telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies or by the on-off keying of the modulated emission and including selective calling, single sideband, full carrier H2B
– multichannel voice frequency telegraphy, single sideband, suppressed carrier J7~~B~~A
~~other transmissions such as automatic data transmission, single sideband, suppressed carrier JXX~~
– telegraphy or data transmissions using any other single sideband, suppressed carrier modulation, under the condition that the reference frequency of the concerned transmission corresponds to the list of carrier (reference) frequencies (No. **27**/18) and its occupied bandwidth does not exceed the upper limit of J3E emissions (No. **27**/12), i.e. 2 800 Hz for each individual channel J2B, J2D, J7B, J7D, J9B, J9D

Reason: Allows for new signal modulation types while maintaining the necessary conditions to be compatibility with existing aeronautical HF systems.

IV. 2 POWER

MOD USA/AI 1.9/6

27/60 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the Table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values.

** A1A, A1B and F1B are permitted provided they do not cause harmful interference to the classes of emission H2B, J3E, J2E, J7E, J9E, J7A~~B~~, J2B, J2D, J7B, J7D, J9B, and J9D ~~and JXX~~. In addition, AlA, A1B and FlB emissions shall be in accordance with the provisions in Nos. **27**/70 to **27**/74 and care should be taken to place these emissions at or near the centre of the channel. However, a modulating audio frequency is permitted with single sideband transmitters, where the carrier is suppressed in accordance with No. **27**/69.

Class of emission	Stations	Maximum peak envelope power
H2B, J3E, J7AB, ~~JXX,~~ A3E*, H3E* (100% modulation)	Aeronautical stations Aircraft stations	6 kW 400 W
J2E, J7E, J9E, J2B, J2D, J7B, J7D, J9B, J9D	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1A, A1B, F1B	Aeronautical stations Aircraft stations	1.5 kW 100 W

* A3E and H3E to be used only on 3 023 kHz and 5 680 kHz.

Reason: Updates the new modulation types to the appropriate peak envelope power levels.

SUP USA/AI 1.9/7

RESOLUTION 429 (WRC-19)

Consideration of regulatory provisions for updating Appendix 27 of the Radio Regulations in support of aeronautical HF modernization

Reason: Work on agenda item has been completed.

Modifications to No. 5.394

Some IWG-1 members expressed support to update the international table of frequency allocations with regard to No. **5.394** revising the frequency band 2300-2390 MHz with 2360-2395 MHz as shown in NTIA's March 15, 2023 proposal on Agenda Item 8 to be aligned with the US table of allocations in footnote **US276**. The appropriate regulatory mechanism should be discussed further by NTIA and FCC in reconciliation.

IWG-1 Consideration of Document IWG-1_064_NTIA Letter to FCC_WRC-23 proposals_1.11_7 topic C (03.14.23)

At its 17th meeting on March 22, 2023, IWG-1 considered Document IWG-1/064 with respect to WRC-23 Agenda Item 1.11 Issue A and Issue B. IWG-1 reports that it has no objections to NTIA/RCS proposals for Agenda Item I.11 Issue A and Issue B.

IWG-1 Consideration of Document IWG-1_060 WRC-23 AI 2 (AI 2.1 & 2.10)

At its 17th meeting on March 22, 2023, IWG-1 considered Document IWG-1/060 concerning Agenda Items 2.1 (spectrum allocations to the radiolocation service on a co-primary basis in the frequency band 231.5-275 GHz) and 2.10 (improving the utilization of the VHF maritime frequencies in Appendix **18**) of the Preliminary Agenda for the 2027 World Radiocommunication Conference. IWG-1 reports that it has no views on these agenda items.

WRC-23 Agenda Item 1.1

IWG-2 members were not able to reach consensus on a proposal for WRC-23 agenda item 1.1 and, therefore, forwards two views on how the FCC should handle this matter.

View A is supported by Boeing and Lockheed Martin.

View B is supported by AT&T, CTIA, GSMA, Nokia, Samsung, T-Mobile, and Verizon.

VIEW A

WRC-23 AGENDA ITEM 1.1

VIEW A

View A supports the NTIA proposal in WAC-23/050 that the U.S. propose to WRC-23 to modify RR No. **5.441B** to specify a more relaxed PFD limit and modify Resolution **223 (Rev.WRC-19)** to remove *resolves* 5 that identifies countries for which the PFD limit in RR No. **5.441B** would not apply. The reason is that a more relaxed PFD limit should be uniformly applied to all administrations. Having a PFD limit applying to the IMT stations of some countries, but not of others, creates an inconsistent regulatory application. Proposing a PFD limit to apply to others to protect services of the United States, while simultaneously indicating that it does not apply to the IMT stations of the United States towards stations of other administrations, would be contradictory. Adding the United States to the IMT identification in RR No. **5.441B** for the band 4800-4990 MHz is out of scope as the agenda item is limited to addressing protection measures for aeronautical and maritime systems. An IMT identification for the band 4800-4990 MHz is also inconsistent with U.S. domestic decisions that have not made the entire band available for an IMT service and therefore does not take into account domestic policy. Importantly, adding the United States' name to *resolves* 5 so as to exempt it from application of the PFD levels would be contrary to the efforts of the United States over the past three years to maintain protection for AMS and MMS in international airspace and waters.

VIEW B

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

[Note: The following revisions are made on top of the RCS Proposal contained in IWG-2_048_RCS_AI1_1_AI1_2.docx.]

Agenda item 1.1: *to consider, based on the results of the ITU-R studies, possible measures to address, in the frequency band 4 800-4 990 MHz, protection of stations of the aeronautical and maritime mobile services located in international airspace and waters from other stations located within national territories, and to review the pfd criteria in No.* ***5.441B*** *in accordance with Resolution* ***223 (Rev.WRC-19)****;*

Mobile broadband plays a crucial and fundamental role in providing access to information for businesses and consumers worldwide. Mobile broadband users are also demanding higher data rates and are increasingly using mobile devices to access audio-visual content. The mobile industry continues to drive technological innovations in order to meet these evolving user demands. In 2020, the first year of the pandemic, the number of Internet users grew by 10.2 per cent, the largest increase in a decade, driven by developing countries where Internet use went up 13.3 per cent. According to ITU estimates, the number of active mobile-cellular telephone subscriptions per 100 inhabitants continues to grow strongly, reaching 110 subscriptions per 100 inhabitants, including a record number of mobile subscriptions with broadband capacity (3G or better).[2] Ninety-five percent of the world's population lives within reach of a mobile broadband service, and the relatively small difference in the number of subscriptions between developed and developing countries demonstrates that connectivity is a priority among people in countries at all levels of development.[3]

The evolution of International Mobile Telecommunications (IMT), which provides wireless telecommunication services on a worldwide scale, has contributed to global economic and social development. IMT systems are now being evolved to provide applications such as enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications. The demand for mobile wireless broadband applications such as IMT continues to grow dramatically as does the need for access to radio spectrum to support that growth.[4]

World Radiocommunication Conference 2015 (WRC-15) adopted No. **5.441B** which provides some countries with an identification for International Mobile Telecommunications (IMT) in the frequency band 4 800-4 990 MHz, or portions thereof, under certain conditions including the establishment of a power-flux density (pfd) limit to protect other mobile services. Technical studies to review this limit were conducted during the WRC-19 cycle; however, consensus was not reached. Discussions at WRC-19 resulted in a modification of No. **5.441B** to include additional countries in the footnote, and to further review the pfd limits at WRC-23. Resolution **223** includes ~~was revised to include~~ specific provisions to ensure the protection of current and planned systems of services

[2] https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf

[3] https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf

[4] Ericsson predicts that total mobile traffic is expected to increase by a factor of five over the next six years, reaching 164 exabytes per month by the end of 2025. Ericsson reports that today, smartphones generate about 95% of total mobile data traffic, and that by 2025, 5G networks will carry about half of the world's mobile data traffic. *See* Ericsson, Mobility Report at 20 (2020), https://www.ericsson.com/49da93/assets/local/mobility-report/documents/2020/june2020-ericsson-mobility-report.pdf. Cisco estimates that, by 2022, 22% of global internet traffic will come from mobile networks, up from 12% in 2017. *See* Cisco Systems Inc., Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2017-2022 White Paper (2019), https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-738429.html.

allocated to the band, including those relating to aircraft stations, fixed-service stations, and other ground-based stations of the mobile service operating in portions of the 4 800 – 4 990 MHz band through the following *resolves*:

3 that in the frequency bands 4 800-4 825 MHz and 4 835-4 950 MHz, in order to identify potentially affected administrations when applying the procedure for seeking agreement under No. ***9.21*** *by IMT stations in relation to aircraft stations, a coordination distance from an IMT station to the border of another country equal to 300 km (for land path)/450 km (for sea path) applies;*

4 that in the frequency band 4 800-4 990 MHz, in order to identify potentially affected administrations when applying the procedure for seeking agreement under No. ***9.21*** *by IMT stations in relation to fixed-service stations or other ground-based stations of the mobile service, a coordination distance from an IMT station to the border of another country equal to 70 km applies;*

In addition, WRC-19 decided that the pfd limits, which are subject to review at WRC-23, do not apply in certain countries through the following *resolves*:

5 that the power flux-density (pfd) limits in No. ***5.441B****, which is subject to review at WRC-23, shall not apply to the following countries: Armenia, Brazil, Cambodia, China, Russian Federation, Kazakhstan, Lao P.D.R., Uzbekistan, South Africa, Viet Nam and Zimbabwe.*

Some administrations heavily utilize portions of the 4.8-4.99 GHz frequency band for fixed and mobile (including aeronautical) applications. ~~Many different systems are currently operating in this band, having had to migrate from lower bands in the past. One example is small UAS datalinks that were migrated to this band. In the United States, the 4 940–4 990 MHz band has been the focus of action to expand access, including various opportunities for commercial mobile service operations.~~

V. PROPOSAL:

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD USA/1.1/1

4 800-5 250 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
4 800-4 990	FIXED MOBILE 5.440A 5.441A MOD 5.441B 5.442 Radio astronomy 5.149 5.339 5.443	

Reasons: See the modifications for No. **5.441B** below.

MOD USA/1.1/2

5.441B In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, the United States of America, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4 800-4 990 MHz, or portions thereof, is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed in the band 4 800-4 990 MHz, ~~−155~~134 dB(W/(m^2 · 1 MHz)) produced up to ~~19~~ 30 ~~k~~m above sea level and, in the band 4 800-4 950 MHz, −138 dB(W/(m^2 · 1 MHz)) produced from 30 m up to 19 km above sea level, at ~~20~~ 22 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. ~~This pfd criterion is subject to review at WRC-23.~~ Resolution 223 (Rev.WRC-~~19~~23) applies. ~~This identification shall be effective after WRC-19.~~ (WRC-~~19~~23)

Reasons: The new pfd values in the modified 5.441B at 22 km from the coast are sufficient for the protection of AMS and MMS stations. There are two proposals for pfd in this footnote to accommodate the different receiver characteristics of AMS and MMS as well as the frequency bands these services are allowed to operate in. The new pfd values will raise the operational emissions of an IMT station by 17-21 dB relative to the current level allowing greater flexibility for the IMT operators while still maintaining protection for the AMS/MMS stations. The distance from the coast is changed to 22km to be more closely aligned with the edge of territorial sea as commonly recognized and provides additional propagation loss/higher emission level for an IMT station. ~~Resolution **223** reference is updated to reflect modifications at WRC-23, if any. The "subject to review" and "effective after WRC-19" sentences are obsolete once WRC-23 takes place and can be deleted.~~

MOD USA/1.1/3

VI. RESOLUTION 223 (REV.WRC-~~19~~23)

Additional frequency bands identified for International Mobile Telecommunications

The World Radiocommunication Conference (~~Sharm el Sheikh~~Dubai, ~~UAE~~, 202~~3~~~~19~~),

considering

a) that International Mobile Telecommunications (IMT), including IMT-2000, IMT-Advanced and IMT-2020, is the ITU vision of global mobile access;

b) that IMT systems provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

c) that IMT provides access to a wide range of telecommunication services supported by fixed telecommunication networks (e.g. public switched telephone network (PSTN)/integrated services digital network (ISDN), high bit rate Internet access), and to other services which are specific to mobile users;

d) that the technical characteristics of IMT are specified in ITU Radiocommunication Sector (ITU-R) and ITU Telecommunication Standardization Sector (ITU-T) Recommendations, including Recommendations ITU-R M.1457 and ITU-R M.2012, which contain the detailed specifications of the terrestrial radio interfaces of IMT;

e) that the evolution of IMT is being studied within ITU-R;

f) that the review of IMT-2000 spectrum requirements at WRC-2000 concentrated on the frequency bands below 3 GHz;

g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000, in No. **5.388** and under the provisions of Resolution **212 (Rev.WRC-19)**;

h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for broadband multimedia capability;

i) that the frequency bands identified for IMT are currently used by mobile systems or applications of other radiocommunication services;

j) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000, and that Recommendation ITU-R M.1645 addresses the evolution of the IMT systems and maps out their future development;

k) that harmonized worldwide frequency bands for IMT are desirable in order to achieve global roaming and the benefits of economies of scale;

l) that the frequency bands 1 710-1 885 MHz, 2 500-2 690 MHz and 3 300-3 400 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;

m) that the frequency band 2 300-2 400 MHz is allocated to the mobile service on a co-primary basis in the three ITU Regions;

n) that the frequency band 2 300-2 400 MHz, or portions thereof, is used extensively in a number of administrations by other services including the aeronautical mobile service (AMS)

for telemetry in accordance with the relevant provisions in the Radio Regulations;

o) that IMT has already been deployed or is being considered for deployment in some countries in the frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz and equipment is readily available;

p) that the frequency bands 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, or parts thereof, are identified for use by administrations wishing to implement IMT;

q) that technological advancement and user needs will promote innovation and accelerate the delivery of advanced communication applications to consumers;

r) that changes in technology may lead to the further development of communication applications, including IMT;

s) that timely availability of spectrum is important to support future applications;

t) that IMT systems are envisaged to provide increased peak data rates and capacity that may require a larger bandwidth;

u) that ITU-R studies forecasted that additional spectrum may be required to support the future services of IMT and to accommodate future user requirements and network deployments;

v) that the frequency band 1 427-1 429 MHz is allocated to the mobile, except aeronautical mobile, service in all three Regions on a primary basis;

w) that the frequency band 1 429-1 525 MHz is allocated to the mobile service in Regions 2 and 3 and to the mobile, except aeronautical mobile, service in Region 1 on a primary basis;

x) that the frequency band 1 518-1 559 MHz is allocated in all three Regions to the mobile- satellite service (MSS) on a primary basis[5];

y) that WRC-15 identified the frequency band 1 427-1 518 MHz for use by administrations wishing to implement terrestrial IMT systems;

z) that there is a need to ensure the continued operations of the MSS in the frequency band 1 518-1 525 MHz;

aa) that appropriate technical measures to facilitate adjacent frequency band compatibility between the MSS in the frequency band 1 518-1 525 MHz and IMT in the frequency band 1 492-1 518 MHz need to be studied;

ab) Report ITU-R RA.2332, on compatibility and sharing studies between the radio astronomy service and IMT systems in the frequency bands 608-614 MHz, 1 330-1 400 MHz, 1 400-1 427 MHz, 1 610.6-1 613.8 MHz, 1 660-1 670 MHz, 2 690-2 700 MHz, 4 800-4 990 MHz and 4 990-5 000 MHz;

ac) that WRC-15 and this conference identified the frequency band 3 300-3 400 MHz for use by administrations wishing to implement terrestrial IMT systems in Nos. **5.429B**, **5.429D** and **5.429F**;

ad) that the frequency band 3 300-3 400 MHz is allocated worldwide on a primary basis to the radiolocation service;

ae) that a number of administrations use the frequency band 3 300-3 400 MHz, or portions thereof, which is allocated to the fixed and mobile services on a primary basis in No.

[5] See Table **21-4** for applicable pfd limits.

5.429;

af) that the frequency band 4 800-4 990 MHz is allocated worldwide to the mobile and fixed services on a primary basis;

ag) that WRC-15 and this conference identified the frequency band 4 800-4 990 MHz for use by administrations wishing to implement terrestrial IMT systems in countries listed in Nos. **5.441A** and **5.441B**;

ah) that appropriate technical measures may be considered by administrations at a national level to facilitate adjacent frequency band compatibility between radio astronomy receivers in the frequency band 4 990-5 000 MHz and IMT systems in the frequency band 4 800-4 990 MHz,

emphasizing

a) that flexibility must be afforded to administrations:

- to determine, at a national level, how much spectrum to make available for IMT from within the identified frequency bands;
- to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;
- to have the ability for the identified frequency bands to be used by all services having allocations in those frequency bands;
- to determine the timing of availability and use of the frequency bands identified for IMT, in order to meet particular user demand and other national considerations;

b) that the particular needs of developing countries must be met;

c) that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 in order to meet the needs of developing countries,

noting

a) Resolutions **224 (Rev.WRC-19)** and **225 (Rev.WRC-12)**, which also relate to IMT;

b) that the sharing implications between services sharing the frequency bands identified for IMT in No. **5.384A**, as relevant, will need further study in ITU-R;

c) that studies regarding the availability of the frequency band 2 300-2 400 MHz for IMT are being conducted in many countries, the results of which could have implications for the use of those frequency bands in those countries;

d) that, due to differing requirements, not all administrations may need all of the IMT frequency bands identified at WRC-07, or, due to the usage by and investment in existing services, may not be able to implement IMT in all of those frequency bands;

e) that the spectrum for IMT identified by WRC-07 may not completely satisfy the expected requirements of some administrations;

f) that currently operating mobile communication systems may evolve to IMT in their existing frequency bands;

g) that services such as the fixed service, the mobile service (second-generation systems), the space operation service, the space research service and the AMS are in operation or planned in the frequency band 1 710-1 885 MHz, or portions thereof;

h) that in the frequency band 2 300-2 400 MHz, or portions thereof, there are services such as the fixed, mobile, amateur and radiolocation services which are currently in operation

or planned to be in operation in the future;

i) that services such as the broadcasting-satellite service (BSS), the BSS (sound), the MSS (in Region 3) and the fixed service (including multipoint distribution/communication systems) are in operation or planned in the frequency band 2 500-2 690 MHz, or portions thereof;

j) that the identification of several frequency bands for IMT allows administrations to choose the best frequency band or parts thereof for their circumstances;

k) that further study of the technical and operational measures regarding adjacent frequency band compatibility between IMT systems operating below 3 400 MHz and fixed-satellite service earth stations operating above 3 400 MHz may be required;

l) that ITU-R has identified additional work to address further developments in IMT;

m) that the IMT terrestrial radio interfaces as defined in Recommendations ITU-R M.1457 and ITU-R M.2012 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;

n) that the identification of a frequency band for IMT does not establish priority in the Radio Regulations and does not preclude the use of the frequency band for any application of the services to which it is allocated;

o) that the provisions of Nos. **5.317A**, **5.384A**, **5.388**, **5.429B**, **5.429D**, **5.429F**, **5.441A** and **5.441B** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT, based on national requirements,

recognizing

that for some administrations the only way of implementing IMT would be spectrum refarming, requiring significant financial investment,

resolves

1 to invite administrations planning to implement IMT to make available, based on user demand and other national considerations, additional frequency bands or portions of the frequency bands above 1 GHz identified in Nos. **5.341B**, **5.384A**, **5.429B**, **5.429D**, **5.429F**, **5.441A** and **5.441B** for the terrestrial component of IMT; due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT, taking into account the services to which the frequency band is currently allocated;

2 to acknowledge that the differences in the texts of Nos. **5.341B**, **5.384A** and **5.388** do not confer differences in regulatory status;

3 that in the frequency bands 4 800-4 825 MHz and 4 835-4 950 MHz, in order to identify potentially affected administrations when applying the procedure for seeking agreement under No. **9.21** by IMT stations in relation to aircraft stations, a coordination distance from an IMT station to the border of another country equal to 300 km (for land path)/450 km (for sea path) applies;

4 that in the frequency band 4 800-4 990 MHz, in order to identify potentially affected administrations when applying the procedure for seeking agreement under No. **9.21** by IMT stations in relation to fixed-service stations or other ground-based stations of the mobile service, a coordination distance from an IMT station to the border of another country equal to 70 km applies;

[Note: The following text (Resolves 5), proposed for deletion in the RCS proposal, has been maintained.]

5 that the power flux-density (pfd) limits in No. **5.441B**, which is subject to review at WRC- 23, shall not apply to the following countries: Armenia, Brazil, Cambodia, China, Russian Federation, Kazakhstan, Lao P.D.R., the United States of America, Uzbekistan, South Africa, Viet Nam and Zimbabwe,

invites the ITU Radiocommunication Sector

1 to conduct compatibility studies in order to provide technical measures to ensure coexistence between the MSS in the frequency band 1 518-1 525 MHz and IMT in the frequency band 1 492-1 518 MHz, including guidance on the implementation of frequency arrangements for IMT deployment in the frequency band 1 427-1 518 MHz, taking into account the results of these studies;

~~2 to study the technical and regulatory conditions for the protection of stations of the AMS and the maritime mobile service (MMS) located in international airspace or waters (i.e. outside national territories) and operated in the frequency band 4 800-4 990 MHz;~~

~~3~~2 to continue providing guidance to ensure that IMT can meet the telecommunication needs of developing countries and rural areas;

4~~3~~ to include the results of the studies mentioned in *invites the ITU Radiocommunication Sector* above in one or more ITU-R Recommendations and Reports, as appropriate,

~~*invites the 2023 World Radiocommunication Conference*~~

~~to consider, based on the results of the studies referred to in *invites the ITU Radiocommunication Sector* above, possible measures to address, in the frequency band 4 800-4 990 MHz, protection of stations of the AMS and MSS located in international airspace and waters from other stations located within national territories and to review the pfd criteria in No. **5.441B**.~~

Reasons: ~~With the more relaxed pfd values in the modified 5.441B at 22 km from the coast, *resolves* 5 can be deleted to provide a more consistent regulatory condition to all administrations. The other m~~Modifications to the Resolution **223** are consequential after the agenda item 1.1 is satisfied at WRC-23.

_____

WRC-23 Agenda Item 1.2

IWG-2 members were not able to reach consensus on a proposal for WRC-23 agenda item 1.2 with respect to the 10-10.5 GHz band and, therefore, forwards two views on how the FCC should handle this matter.

View A is supported by ARRL, Boeing, Lockheed Martin, and Maxar.

View B is supported by AT&T, CTIA, GSMA, Nokia, Samsung, T-Mobile, and Verizon

VIEW A

WRC-23 AGENDA ITEM 1.2 (10-10.5 GHZ)

VIEW A

View A supports the NTIA proposal in WAC-23/050 that the U.S. adopt a proposal for no change to the Table of Frequency Allocations under WRC-23 Agenda Item 1.2 for the 10-10.5 GHz band. The reason is that ITU-R sharing studies show that IMT and radiolocation coexistence is not possible in the same or nearby geographical areas requiring very large separation distances and as such IMT deployments in one country would impact radiolocation in other countries. Additionally, ITU-R sharing studies show large exceedances of the protection criteria towards EESS (active) in the frequency band 10-10.4 GHz and without any mitigation technique to achieve sharing and compatibility. Without a clear and effective mechanism in place to protect radiolocation and EESS (active) of one country from mobile/IMT operations of another, there is no basis for the U.S. to pursue a 10-10.5 GHz regional mobile co-primary allocation or regional IMT identification and should not drive international policy to support mobile/IMT deployments in the band.

VIEW B

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

[Note for WAC: Provided as a revision to the CITEL PCC.II DIAP contained in GT-CMR23-2022-40-037r4.]

Agenda item 1.2: *to consider identification of the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **245 (WRC-19)**;*

BACKGROUND
Source: GT/CMR-23/doc. 029/22 rev.1

Mobile broadband plays a crucial and fundamental role in providing access to information for businesses and consumers worldwide. Mobile broadband users are also demanding higher data rates and are increasingly using mobile devices to access audio-visual content. The mobile industry continues to drive technological innovations in order to meet these evolving user demands.

The evolution of International Mobile Telecommunications (IMT), which provides wireless telecommunication services on a worldwide scale, has contributed to global economic and social development. IMT systems are now being evolved to provide applications such as enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications.

In November 2015, ITU-R approved Recommendation ITU-R M.2083 "Framework and overall objectives of the future development of IMT for 2020", which highlights three key usage scenarios for IMT-2020: enhanced mobile broadband, massive machine type communications, and ultra-reliable and low latency communications. The success of these usage scenarios, in both developed and developing countries, will rely on both spectrum availability for the terrestrial IMT-2020 systems and the support of high capacity backhaul capabilities (including fiber, wireless, satellite and microwave solutions). Recognizing the need to consider additional mid-band spectrum in the range 3 300 MHz to 10.5 GHz to support the terrestrial component of IMT, WRC-19 approved WRC-23 agenda item 1.2. ITU-R, standards development organizations, and industry continue to progress the work on the development of IMT-2020.

Beyond the results of both WRC-15 and WRC-19, the challenge for the future is now to focus efforts on the frequency range 3 300 MHz to 10.5 GHz. This is a great opportunity to meet the technical and spectral needs for the future development of IMT-2020 systems, better known as 5G.

WRC-23 agenda item 1.2 (Resolution 245 (WRC-19)) calls for sharing and compatibility studies, with a view to ensuring the protection of services to which the frequency band is allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, on services in adjacent bands, for the frequency bands:

– 3 300-3 400 MHz and 3 600-3 800 MHz and (Region 2);

– 3 300-3 400 MHz (amend footnote in Region 1);
– 7 025-7 125 MHz (globally);
– 6 425-7 025 MHz (Region 1);
– 10.0-10.5 GHz (Region 2).

PROPOSALS
Source: GT/CMR-23/doc. 029/22 rev.1

MOD DIAP/AI1.2(10GHz)/1
Support: [B, DOM, EQA, PRU, URG], USA

10-10.7 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
10-10.4 EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	**10-10.4** EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MOBILE ADD 5.A12D ADD 5.A12E Amateur 5.474D 5.479 MOD 5.480	**10-10.4** EARTH EXPLORATION SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479
10.4-10.45 **FIXED** **MOBILE** **RADIOLOCATION** **Amateur**	**10.4-10.45** **RADIOLOCATION** **MOBILE** ADD 5.A12D ADD 5.A12E **Amateur** MOD 5.480	**10.4-10.45** **FIXED** **MOBILE** **RADIOLOCATION** **Amateur**
10.45-10.5 RADIOLOCATION Amateur Amateur-satellite 5.481	**10.45-10.5** RADIOLOCATION MOBILE ADD 5.A12D ADD 5.A12E Amateur Amateur-satellite MOD 5.481	**10.45-10.5** RADIOLOCATION Amateur Amateur-satellite 5.481

Reasons: The identification of sufficient frequency spectrum for IMT is essential to be able to address digitalization (e.g., sustainable smart cities, industries) and reduce the digital divide in the Americas.

[Note for WAC: Comment: Given the Dominican Republic wasn't previously included in 5.480 (no FS allocation), this proposal to add DR in the two sections below should come under AI8 at WRC-23 given WRC-23 1.2 addresses the mobile service.]

MOD DIAP/AI1.2(10GHz)/2
Support: B, [DOM]~~]~~, EQA, PRU, URG, USA

5.480 *Additional allocation:* in Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, [Dominican Republic], El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, the overseas countries and territories within the Kingdom of the Netherlands in Region 2, Peru, ~~and~~ Uruguay and Venezuela, the frequency band 10-10.45 GHz is also allocated to the fixed ~~and mobile~~ service~~s~~ on a primary basis. ~~In Colombia, Costa Rica, Mexico and Venezuela, the frequency band 10-10.45 GHz is also allocated to the fixed service on a primary basis~~. (WRC-23~~19~~)

Reasons: The identification of sufficient frequency spectrum for IMT is essential to be able to address digitalization (e.g., sustainable smart cities, industries) and reduce the digital divide in the Americas. With the allocation to the mobile service in 10-10.5 GHz in Region 2, this footnote needs to be modified.

MOD DIAP/AI1.2(10GHz)/3
Support: B, [DOM], EQA, PRU, URG, USA

5.481 *Additional allocation:* in Algeria, Germany, Angola, ~~Brazil,~~ China, Côte d'Ivoire, Egypt, ~~El Salvador, Ecuador,~~ Spain, ~~Guatemala,~~ Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, ~~Paraguay, Peru,~~ the Dem. People's Rep. of Korea, Romania~~,~~ and Tunisia ~~and Uruguay~~, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Brazil, Costa Rica, [Dominican Republic], El Salvador, Ecuador, Guatemala, Paraguay, Peru and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed service on a primary basis. (WRC-23~~19~~)

Reasons: The identification of sufficient frequency spectrum for IMT is essential to be able to address digitalization (e.g., sustainable smart cities, industries) and reduce the digital divide in the Americas. With the allocation to the mobile service in 10-10.5 GHz in Region 2, this footnote needs to be modified.

ADD DIAP/AI1.2(10GHz)/4
Support: USA

5.A12D In Region 2, stations in the mobile service in the frequency band 10-10.5 GHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service, subject to agreement obtained under No. **9.21**. This does not apply for mobile stations in the band 10-10.5 GHz in Brazil, El Salvador, Ecuador, Guatemala, Paraguay, Peru and Uruguay, and in the frequency band 10-10.45 GHz in Argentina, Chile, Cuba, and Honduras.

Reasons: To provide protection of radiolocation service operations operating in neighbouring administrations in countries that are adding a primary mobile service allocation.

ADD DIAP/AI1.2(10GHz)/5~~4~~
Support: B, DOM, EQA, PRU, URG, USA

5.A12E In Region 2, the frequency band 10-10.5 GHz, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). ~~The frequency band 10-10.5 GHz is identified for use by administrations in Region 2 wishing to implement the terrestrial component of International Mobile Telecommunications (IMT).~~ This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution **A12E (WRC-23)** applies.

Reasons: The identification of sufficient frequency spectrum for IMT is essential to be able to address digitalization (e.g., sustainable smart cities, industries) and reduce the digital divide in the Americas.

ADD DIAP/AI1.2(10GHz)/65
Support: [B, DOM, EQA, PRU, URG], USA

RESOLUTION A12 10GHZ (WRC-23)

Terrestrial component of International Mobile Telecommunications in the frequency band 10-10.5 GHz

~~Studies on frequency-related matters for the terrestrial component of International Mobile Telecommunications identification in the frequency band 10.0-10.5 GHz~~

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that International Mobile Telecommunications (IMT), including IMT-2000, IMT-Advanced and IMT-2020, is intended to provide telecommunication services on a worldwide scale, regardless of location and type of network or terminal;

b) that adequate and timely availability of spectrum and supporting regulatory provisions are essential to realize the objectives in Recommendation ITU-R M.2083;

c) that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;

d) that IMT systems are now being evolved to provide diverse usage scenarios and applications such as enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications,

recognizing

a) that timely availability of wide and contiguous blocks of spectrum is important to support the development of IMT;

b) that the frequency band 10.6-10.68 GHz is allocated on a primary basis to both active and passive services with specific conditions outlined in Resolution **751 (WRC-07)**, based on the conclusion of studies contained in Report ITU-R RS.2096, that allow for sharing with EESS (passive);

c) that the frequency band 10.68-10.7 GHz is globally allocated to passive services and No. **5.340** applies;

resolves

1 that administrations wishing to implement IMT consider use of the band 10 – 10.5 GHz identified for IMT in No.**5A12E** and the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT, taking into account the latest relevant ITU-R Recommendations;

2 that administrations shall apply the following conditions for the frequency band 10 – 10.5 GHz:

2.1 take practical measures to ensure the transmitting antennas of outdoor base stations are normally pointing below the horizon, when deploying IMT base stations within the frequency band 10-10.5 GHz; the mechanical pointing needs to be at or below the horizon;
2.2 that, for the purposes of protecting the Earth exploration-satellite service (EESS) (passive), the unwanted emission level per IMT base station shall not exceed -43 dBW in the frequency band 10.6-10.7 GHz;
2.3 that, for the purposes of protecting the Earth exploration-satellite service (EESS) (passive), the unwanted emission level per IMT user equipment shall not exceed -41 dBW in the frequency band 10.6-10.7 GHz;

invites the ITU Radiocommunication Sector
1 to develop harmonized frequency arrangements to facilitate IMT deployment in the frequency bands 10-10.5 GHz;
2 to continue providing guidance to ensure that IMT can meet the telecommunication needs of the developing countries;

instructs the Director of the Radiocommunication Bureau
to bring this Resolution to the attention of relevant international organizations.

Reasons: The identification of sufficient frequency spectrum for IMT is essential to be able to address digitalization (e.g., sustainable smart cities, industries) and reduce the digital divide in the Americas. ~~Once studies progress in WP5D and the Resolution is developed within CPM Text, a detailed proposal will be submitted.~~Out-of-band emissions are provided based on IMT baseline assumptions using the full array antenna model.

[Note: View B proponents support proposal 7 to only be submitted if USA proposals are reconciled on all frequency bands considered under this agenda item.]

SUP DIAP/AI1.2(10GHz)/67
Support: [B, DOM, EQA, PRU, URG,] USA

RESOLUTION 245 (WRC-19)

Studies on frequency-related matters for the terrestrial component of International Mobile Telecommunications identification in the frequency bands 3 300-3 400 MHz, 3 600-3 800 MHz, 6 425-7 025 MHz, 7 025-7 125 MHz and 10.0-10.5 GHz

Reasons: Consequential action.

Agenda Item 10 proposal for IMT

IWG-2 members were not able to reach consensus on an Agenda Item 10 proposal for IMT and, therefore, forwards three views on how the FCC should handle this matter.

View A is supported by AT&T, CTIA, Nokia, Qualcomm, T-Mobile, and Verizon.

View B is supported by Amazon, Aviation Spectrum Resources Inc., Boeing, EchoStar, GPSIA, Intelsat, Lockheed Martin, Maxar Technologies Inc, OneWeb, Planet Labs PBC, SES Americom, and SpaceX.

View C is supported by Apple and Samsung.

VIEW A

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10: *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention and Resolution* ***804 (Rev. WRC-19)****;*

BACKGROUND:

The vision for 6G – referred to within the ITU as IMT-2030 – is starting to emerge as foundational technology research for the next generation of wireless innovations has commenced. 6G will take advantage of the combined potential of communications, artificial intelligence (AI), and integrated sensing to further improve system resiliency and enable a more energy-efficient network architecture that generates less harmful gas emissions as well as a device ecosystem with a smaller carbon footprint. There are three main driving forces behind the need for this next generation of wireless technologies: (i) harnessing core technology advancements (in wireless and adjacent areas like semiconductors and materials science); (ii) meeting societal sustainability needs (e.g., economic growth, digital literacy, and green initiatives); and (iii) addressing new requirements for next-level experiences that 5G cannot meet.

6G will comprise of both evolutionary and revolutionary wireless advances and will use a mix of low-, mid- and high-band spectrum. Technologies introduced in 5G Advanced will serve as the evolutionary foundation for 6G fixed and mobile broadband services with much greater capacity and throughput, and lower latency. 6G will provide a major leap in performance and efficiency by enabling more pervasive connectivity, higher reliability and robustness.

Contiguous spectrum bandwidths larger than those currently available in the lower mid-band range (below 7 GHz) are necessary to address traffic growth in mobile networks, meet 6G sensing requirements, and allow for more cost-effective RF circuit design to enable new use cases with greater economic impact. As such, the most suitable frequency bands for the development of new generation radio technologies for 6G are in the 7.125 -15.35 GHz frequency range. This range is a natural extension of the lower mid-band frequency range; the lower part of the range combines the wide-area coverage of sub-6 GHz bands with the extreme capacity of the millimeter wave bands in a cost-effective manner. 6G radio technology in the 7.125 -15.35 GHz frequency range would allow mobile network operators to complement their existing 5G sites, currently operating in the lower mid-band frequency range, and provide wide-area coverage of their networks with a significant increase in capacity.

There is growing momentum around 6G development and policy planning at the international and regional levels. Federal Communications Commission (FCC) Chairwoman Jessica Rosenworcel has acknowledged the importance of wireless policy to our economic and national security interests, and has addressed the need to plan for the next generation in wireless technology in this frequency range, which can support wider coverage and faster speeds.[6] The FCC has open proceedings evaluating the 12.2-12.7

[6] Remarks of Chairwoman Jessica Rosenworcel, "New Frontier of Partnerships", Mobile World Congress, Barcelona, Spain (March 1, 2022).

GHz band as well as the 12.7-13.25 GHz band.[7] Further, initiatives like Next G Alliance, which is comprised of industry, academia, and government, is diligently working on the development of the next generation of wireless technology seeking to advance U.S. leadership and competitiveness in this space. As the responsible group for International Mobile Telecommunications (IMT) matters, ITU-R Working Party 5D commenced work in 2021 to define IMT towards 2030 and beyond by initiating the work on an IMT-2030 Vision. The new ITU-R Recommendation containing detailed standards is expected to be completed by 2030, while the technology proposals are expected to be contributed to the ITU in early 2029. Administrations are invited to support a new WRC-27 agenda item, to be considered under WRC-23 agenda item 10, with the goal of identifying additional frequency bands in the 7.125-15.35 GHz for the terrestrial component of IMT. It is important to recognize that the incumbent services in the range 7.125-15.35 GHz provide important systems for public safety, aviation and other uses, and such operations should be protected. Sharing and compatibility studies are required to ensure the introduction of IMT into any band while protecting those incumbent operations in the same band or adjacent, as appropriate, and not unduly constrained.

The specific proposals for this WRC-27 agenda item are provided below:

PROPOSALS:

ADD USA/10/1

DRAFT NEW RESOLUTION [USA-10-2027] (WRC-23)

Agenda for the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and that a final agenda shall be established by the Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

[7] *See generally Expanding Flexible Use of the 12.2-12.7 GHz Band*, Notice of Proposed Rulemaking, FCC 21-13, WT Docket No. 20-433 (2021); *Expanding Use of the 12.7-13.23 GHz Band for Mobile Broadband or Other Expanded Use*, Notice of Inquiry, FCC 22-80, GN Docket No. 22-352 (2022).

resolves
to recommend to the Council that a world radiocommunication conference be held in 2027 for a maximum period of four weeks, with the following agenda:
1 on the basis of proposals from administrations, taking account of the results of WRC-23 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:
…
1.[X] to consider identification of frequency bands within the 7.125 – 15.35 GHz frequency range for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **[AI 10 IMT-2030 SPECTRUM] (WRC-23)**;
…

resolves further
to activate the Conference Preparatory Meeting,

invites the ITU Council
to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau
to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-27,

instructs the Secretary-General
to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for studies in the 7.125 – 15.35 GHz frequency range for the purpose of identifying frequency bands for the next generation of mobile technologies – IMT-2030.

ADD USA/10/2

DRAFT NEW RESOLUTION [AI 10 IMT-2030 SPECTRUM] (WRC-23)

Studies on the identification of additional frequency bands for the terrestrial component of IMT between 7.125 and 15.35 GHz

The World Radiocommunication Conference (Dubai, 2023),
considering
a) that International Mobile Telecommunications (IMT) is intended to provide telecommunication services on a worldwide scale, regardless of location and type of network or terminal;
b) that IMT systems have contributed to global economic and social development in support of a digital economy and society;
c) that IMT systems are now being evolved to provide diverse usage scenarios such as immersive communications, integrated sensing, integrated artificial intelligence and computing;
d) that ultra-low latency, very high bit-rate, and high sensing resolution applications of IMT will require larger contiguous blocks of spectrum (e.g. 500 MHz) for use by administrations wishing to implement IMT currently not available in existing mid-band frequency bands;

e) that frequency bands in the 7.125 – 15.35 GHz frequency range are suitable to meet the 6G requirements for wide-area coverage, high capacity, low latency, and sensing;
f) that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;
g) that adequate and timely availability of spectrum and corresponding regulatory provisions are essential to support the future development of IMT-2030;
h) that harmonized worldwide frequency bands and harmonized frequency arrangements for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale;
i) that a need exists to protect existing services and to allow for their continued development when considering frequency bands for possible additional allocations to any service;
j) that the 8 025-8 400 MHz band hosts an EESS allocation globally on a co-primary basis with MetSat, FSS, fixed, and mobile allocations for important public safety as well as scientific Earth imaging;

k) that the frequency band 8 750–8 850 MHz is allocated to the aeronautical radionavigation service, and used extensively for airborne Doppler radar and ground mapping radar to determine ground speed, drift and distance travelled, as well as ground mapping, and must operate with an appropriate level of protection;.
l) that the frequency band 9 000 – 9 200 MHz is allocated to the radiolocation and aeronautical radionavigation services on a primary basis, and used for precision approach radar and airport surveillance detection equipment that must operate with an appropriate level of protection;
m) that the frequency band 9 300 – 9 500 MHz is allocated to the radionavigation service on a primary basis and the aeronautical radionavigation service in **5.475** is used by airborne weather radars that must operate with an appropriate level of protection;
n) the No. 5490 of the Radio Regulations indicates that in the band 12.2-12.7 GHz existing and future terrestrial radiocommunications services shall not cause harmful interference to the space services operating in conformity with the broadcasting-satellite Plan for Region 2 contained in Appendix 30;
o) that the frequency band 13.25-13.4 GHz is allocated to the aeronautical radionavigation service for Doppler navigation aids that must operate with an appropriate level of protection,

noting

a) that Resolution ITU-R 65 addresses the principles for the process of development of IMT for 2020 and beyond;
b) that IMT encompasses IMT-2000, IMT-Advanced and IMT-2020 collectively, as described in Resolution ITU-R 56-2 and the ITU is actively studying the development of IMT-2030;
c) that Question ITU-R 77-8/5 considers the needs of developing countries in the development and implementation of IMT;
d) that Question ITU-R 229/5 seeks to address the further development of IMT;
e) that Question ITU-R 262/5 addresses the study of usage of IMT systems for specific applications;
j) that Report ITU-R M.2370 analyses trends impacting future IMT traffic growth beyond the year 2020 and estimates global traffic demand for the period 2020 to 2030;
l) Report ITU-R M.2516, on future technology trends of terrestrial International Mobile Telecommunications systems towards 2030 and beyond,

recognizing

a) that there is a lead time between the allocation of frequency bands by world radiocommunication conferences and the deployment of systems in those bands, and that timely availability of wide and contiguous blocks of spectrum is therefore important to support the development of IMT;
b) that in order to ensure the future development of IMT it is important to ensure the timely identification of additional spectrum;
c) that any identification of frequency bands for IMT should ensure the protection of incumbent services in the same or adjacent frequency bands, as appropriate, and the evolving needs of these services;
d) that frequency bands in this range allocated to passive services on an exclusive basis are not suitable for an allocation to the mobile service;

resolves to invite the ITU Radiocommunication Sector
1 to study the technical and operational characteristics of the terrestrial component of IMT in the frequency range listed in *resolves to invite the ITU Radiocommunication Sector* 2, taking into account:
- the evolving spectrum needs to meet emerging demand for IMT;
- the evolution of IMT through advances in technology and spectrally efficient techniques;
- the deployment scenarios envisaged for IMT systems and the related requirements of combined wider area coverage, higher capacity and larger bandwidths;
- the needs of developing countries;
- the timeframe in which spectrum would be needed;

2 to conduct the appropriate sharing and compatibility studies[8], with a view to ensuring the protection of services with a primary allocation, without imposing additional regulatory or technical constraints on those services, in the frequency range of 7.125 – 15.35 GHz [9],

resolves
1 to invite the first session of the Conference Preparatory Meeting for WRC-27 to define the date by which technical and operational characteristics needed for sharing and compatibility studies are to be available to ensure that studies referred to in *resolves to invite the ITU Radiocommunication Sector 2* can be completed in time for consideration at WRC-27;
2 to invite WRC-27 to consider, based on the results of the above studies, additional spectrum allocations to the mobile service on a primary basis and to consider identification of frequency bands for the terrestrial component of IMT; the frequency bands to be considered being limited to part or all of the frequency band listed in *resolves to invite the ITU Radiocommunication Sector* 2,

invites administrations
to participate actively in these studies by submitting contributions to ITU-R.

Reasons: To provide for studies in the 7.125 – 15.35 GHz frequency range for the purpose of identifying frequency bands for the next generation of mobile technologies – IMT-2030.

[8] Including studies with respect to primary services in the adjacent bands, as appropriate.

[9] Consideration of the 10.68 – 10.7 GHz band is excluded from this range (5.340).

ATTACHMENT

PROPOSAL FOR ADDITIONAL AGENDA ITEM FOR [IDENTIFICATION OF FREQUENCY BANDS FOR IMT]

Subject: Proposed future WRC-2027 agenda item to consider identification of the frequency bands within the 7.125 – 15.35 GHz frequency range for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **[AI 10 IMT-2030 SPECTRUM] (WRC-23)**;

Origin: United States of America

Proposal: To conduct studies to identify frequency bands between 7.125 – 15.35 GHz frequency range for use by IMT, seeking regional and global harmonization.

Background/reason*:*
New wireless technologies and applications are driving an increase in demand for access to IMT spectrum. IMT-2030 technology will further increase this demand, particularly for large, contiguous spectrum bandwidths that are necessary to implement new use case scenarios and address traffic growth in mobile networks. To address the needs for envisioned IMT-2030 networks, spectrum in the 7.125 – 15.35 GHz frequency range could facilitate the 2030 capacity-demanding use cases for both wider area coverage and higher capacity.

Radiocommunication services concerned*:* Mobile Service, Fixed Service, Fixed Satellite Service, Mobile Satellite Service, EESS, Radio Astronomy and other services

Indication of possible difficulties*:* The proposed bands are used by other services

Previous/ongoing studies on the issue*:*
Related studies have been already commenced in ITU-R WP 5D.

Studies to be carried out by: ITU-R WP 5D	*with the participation of:* Administrations and Sector members of the ITU-R

ITU-R Study Groups concerned*:* SG4, SG5 and SG7

ITU resource implications, including financial implications (refer to CV126)*:* This proposed agenda item will be studied within the normal ITU-R procedures and planned budget. As the responsible group on IMT studies, ITU-R WP 5D usually conducts meetings three times a year which last at least 6 days each.

Common regional proposal*:* Yes/No	***Multicountry proposal:*** Yes/No *Number of countries:*

Remarks

VIEW B

View B: Create a Preliminary WRC-31 agenda item to address IMT-2030 (See Doc. IWG-2/069 (22.03.2023) for an annotated/redline version of this proposal vs View A)

View B takes the position that an agenda item to look to reallocate spectrum from myriad incumbent services to use for IMT-2030 is not suitable for WRC-27's agenda. There are several reasons for this, not the least of which is the fact, per the View A draft proposal that "[t]he new ITU-R Recommendation containing detailed standards is expected to be completed by 2030, while technology proposals are expected to be contributed to the ITU in early 2029." There will be no reliable characteristics and criteria for IMT-2030 to study ahead of WRC-27 (and perhaps not even ahead of WRC-31). In addition, the proponents of View A have stated that they intend to use this agenda item to gain an understanding of the primary services and applications that are currently using the dozens of allocations worldwide that exist within the very broad intended range of study (7.125-15.35 GHz). The proponents of View A have rejected the calls from incumbent service operators to include IMT-2030 spectrum requirements as a core element of their studies (in defiance of ITU-R/WRC traditions), and have rejected a commitment to ensure the protection of incumbent primary services on a co-frequency/co-coverage basis or to protect their growth and evolution. Finally, the View A proponents have rejected all attempts to understand how the many gigahertz of IMT-available spectrum identified at WRC-19 and previous conferences – much of which is not yet in use in most of the world – is insufficient to meet the still-developing IMT-2030 requirements, or would be revisited if this new, mega-identification exercise were to move forward.

The View B proponents believe that the objectives of the IMT-2030 interests in learning about the use and planned growth of incumbent services in their broad frequency range of choice could (and perhaps should) be achieved solely within the ordinary business of the ITU-R through liaison statements, rather than with a WRC agenda item. The breadth of inquiry raises questions – not addressed at all by View A proponents – of consistency with the language and principles of Resolution **804 (Rev.WRC-19)**.

Nevertheless, the View B proponents recognize the national importance of IMT-2030 development, and offer a compromise approach. Instead of a premature WRC-27 agenda item, the View B proponents propose to convert the View A draft proposal to a preliminary agenda item for WRC-31 in the same tentative frequency range. Studies would be initiated in the ITU-R on both the spectrum requirements for IMT-2030 and the characteristics/parameters, along with gathering the information IMT-2030 proponents seek on incumbent services. Proper recognition of incumbent commercial and civil services is provided, but there are federal services to be added if this moves forward. WRC-27 would, if there is progress, decide on a tailored agenda item for WRC-31 looking to identify additional bands that may be needed for IMT-2030 based on the results of sharing and compatibility studies conducted in the traditional ITU-R manner.

This approach provides both the mechanism for progress on eventual implementation of IMT-2030 in the next decade, and assurance that incumbent service providing numerous critical and commercially vital services would continue to be able to operate and grow.

Finally, the View B proponents strongly oppose the proposal in View C to extend the range of study under View A from 15.3 GHz on the upper end, to 19.7 GHz. That would bring in many additional sharing/compatibility issues, and further threaten the U.S. satellite industry.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10: *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention and Resolution* ***804 (Rev. WRC-19)****;*

BACKGROUND:

The vision for 6G – referred to within the ITU as IMT-2030 – is starting to emerge as foundational technology research for the next generation of wireless innovations has commenced. There are three main driving forces behind the need for this next generation of wireless technologies: (i) harnessing core technology advancements (in wireless and adjacent areas like semiconductors and materials science); (ii) meeting societal sustainability needs (e.g., economic growth, digital literacy, and green initiatives); and (iii) addressing new requirements for next-level experiences that 5G cannot meet. 6G, as currently envisioned in ongoing ITU-R studies, would comprise of both evolutionary and revolutionary wireless advances and will use a mix of low-, mid- and high-band spectrum. Technologies introduced in 5G Advanced will serve as the evolutionary foundation for 6G fixed and mobile broadband services with much greater capacity and throughput, and lower latency. 6G would provide a major leap in performance and efficiency by enabling more pervasive connectivity, higher reliability and robustness.

Contiguous spectrum bandwidths larger than those currently available in the lower mid-band range (below 7 GHz) are currently viewed as necessary to address traffic growth in mobile networks, meet 6G sensing requirements, and allow for more cost-effective RF circuit design to enable new use cases with greater economic impact. As such, the most suitable frequency bands for the development of new generation radio technologies for 6G are in the 7.125 -15.35 GHz frequency range. This range is a natural extension of the lower mid-band frequency range; the lower part of the range combines the wide-area coverage of sub-6 GHz bands with the extreme capacity of the millimeter wave bands in a cost-effective manner. 6G radio technology in the 7.125-15.35 GHz frequency range would allow mobile network operators to complement their existing 5G sites, currently operating in the lower mid-band frequency range, and provide wide-area coverage of their networks with a significant increase in capacity.

There is growing momentum around 6G development and policy planning at the international and regional levels. Federal Communications Commission (FCC) Chairwoman Jessica Rosenworcel has acknowledged the importance of wireless policy to our economic and national security interests, and has addressed the need to plan for the next generation in wireless technology in this frequency range, which can support wider coverage and faster speeds.[10] The FCC has an open proceeding evaluating the 12.2-12.7 GHz band, and has opened a notice of inquiry regarding the 12.7-13.25 GHz band.[11] Further, initiatives like Next G Alliance, which is comprised of industry, academia, and government, is diligently working on the development of the next generation of wireless technology seeking to advance U.S. leadership and competitiveness in this space.

[10] Remarks of Chairwoman Jessica Rosenworcel, "New Frontier of Partnerships", Mobile World Congress, Barcelona, Spain (March 1, 2022).

[11] *See generally Expanding Flexible Use of the 12.2-12.7 GHz Band*, Notice of Proposed Rulemaking, FCC 21-13, WT Docket No. 20-433 (2021); *Expanding Use of the 12.7-13.23 GHz Band for Mobile Broadband or Other Expanded Use*, Notice of Inquiry, FCC 22-80, GN Docket No. 22-352 (2022).

As the responsible group for International Mobile Telecommunications (IMT) matters, ITU-R Working Party 5D commenced work in 2021 to define IMT towards 2030 and beyond by initiating the work on an IMT-2030 Vision. The new ITU-R Recommendation containing detailed standards is expected to be completed by 2030, while the technology proposals are expected to be contributed to the ITU in early 2029.

The frequency bands in the 7.125-15.35 GHz range are and have been heavily used for a plethora of existing services, both active and passive, that will be providing valuable services worldwide well beyond 2030. These services include the earth exploration-satellite service (EESS), the fixed-satellite service (both unplanned GSO and non-GSO, and those subject to Appendix **30B** that are particularly relied upon by developing nations); the broadcasting-satellite service; multiple types of terrestrial and aeronautical radar systems; radiolocation service; space research service; and [add radioastronomy and other federal-side uses here]. Eventual sharing and compatibility studies on the suitability of particular bands in this range for IMT-2030 use will have to ensure the protection of services to which the frequency bands are allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, and also, as appropriate, on services in adjacent bands.

Administrations are invited to support a preliminary agenda item for WRC-31, to be considered under WRC-23 agenda item 10, with the goal of setting forth a path for consideration by WRC-31 of additional frequency bands in the 7.125-15.35 GHz range for the terrestrial component of IMT. It is important to recognize that the incumbent services in the range 7.125-15.35 GHz provide important systems for public safety, aviation and other uses, and such operations should be protected. Sharing and compatibility studies are required to ensure the introduction of IMT into any band while protecting those incumbent operations in the same band or adjacent, as appropriate, and not unduly constrained.

The specific proposals for this WRC-31 preliminary agenda item are provided below:

PROPOSALS:

ADD USA/10/1

DRAFT NEW RESOLUTION [USA-10-2027] (WRC-23)

Preliminary Agenda for the 2031 World Radiocommunication Conference*

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for WRC-27 should be established four to six years in advance;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences (WRCs) and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

* The appearance of square brackets around certain frequency bands in this Resolution is understood to mean that WRC-27 will consider and review the inclusion of these frequency bands with square brackets and decide, as appropriate.

resolves to give the view

that the following items should be included in the preliminary agenda for WRC-31:

1 to take appropriate action in respect of those urgent issues that were specifically requested by WRC-27;

2 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-27, to consider and take appropriate action in respect of the following items:

…

2.x to consider identification of certain frequency bands within the [7.125 -15.35] GHz frequency range for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **[AI 10 IMT-2030 SPECTRUM] (WRC-23)**;

3 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with *further resolves* of Resolution **27 (Rev.WRC-19)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in *resolves* of that Resolution;

4 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the conference;

5 in accordance with Resolution **95 (Rev.WRC-19)**, to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

6 to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the ITU Convention;

7 to identify those items requiring urgent action by the radiocommunication study groups;

8 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

9 to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution **26 (Rev.WRC-19)**;

10 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the ITU Convention;

10.1 on the activities of the Radiocommunication Sector since WRC-27;

10.2 on any difficulties or inconsistencies encountered in the application of the Radio Regulations[1]; and

[1] This agenda sub-item is strictly limited to the Report of the Director on any difficulties or inconsistencies encountered in the application of the Radio Regulations and the comments from administrations. Administrations are invited to inform the Director of the Radiocommunication Bureau of any difficulties or inconsistencies encountered in the Radio Regulations.

10.3 on action in response to Resolution **80 (Rev.WRC-07)**;

11 to recommend to the ITU Council items for inclusion in the agenda for the next world radiocommunication conference, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the ITU Convention and Resolution **804 (Rev.WRC-19)**,

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-31, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting (CPM) and to prepare a report to WRC-31;

2 to submit a draft Report on any difficulties or inconsistencies encountered in the application of the Radio Regulations as referred in agenda item 10.2 to the second session of CPM and to submit the final Report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for the initiation of studies in the 7.125 -15.35 GHz frequency range for the purpose of identifying frequency bands for the next generation of mobile technologies – IMT-2030 – at WRC-31.

ADD USA/10/2

DRAFT NEW RESOLUTION [AI 10 IMT- 2030 SPECTRUM] (WRC-23)

Studies looking to the possible identification by WRC-31 of additional frequency bands for the terrestrial component of IMT-2030 between [7.125 and 15.35 GHz][*]

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that International Mobile Telecommunications (IMT) is intended to provide telecommunication services on a worldwide scale, regardless of location and type of network or terminal;

b) that IMT systems have contributed to global economic and social development in support of a digital economy and society;

c) that IMT systems are now being evolved to provide diverse usage scenarios such as immersive communications, integrated sensing, integrated artificial intelligence and computing;

[*] The appearance of square brackets around certain frequency bands in this Resolution is understood to mean that WRC-27 will consider and review the inclusion of these frequency bands with square brackets and decide, as appropriate. Only the frequency range in the title is in brackets, but the understanding is that this range throughout this Resolution is in square brackets.

d) that ultra-low latency, very high bit-rate, and high sensing resolution applications of IMT will require larger contiguous blocks of spectrum (e.g. 500 MHz) for use by administrations wishing to implement IMT currently not available in existing mid-band frequency bands;
e) that frequency bands in the 7.125 – 15.35 GHz frequency range are physically suitable to meet the 6G requirements for wide-area coverage, high capacity, low latency, and sensing;
f) that there is longstanding, heavy, and widespread use (including planned future use) of the frequency bands in the 7.125 – 15.35 GHz range in many countries for a variety of primary services including earth exploration-satellite, fixed-satellite (both unplanned and under Appendix **30B**, and both GSO and non-GSO), mobile-satellite, meteorological-satellite, and broadcasting-satellite services; space research service; land, maritime, and aeronautical radiolocation and radionavigation services; fixed and broadcasting services; and radio astronomy service;
g) that the aeronautical radiolocation and radionavigation services and airborne weather radars are safety service systems used by aviation that ensure the safe operation of aircraft and must operate with an appropriate level of protection to comply with the safety and regularity of flight;
h) that adequate and timely availability of spectrum and corresponding regulatory provisions are essential to support the future development of IMT-2030;
i) that a new ITU-R Recommendation containing detailed standards for IMT-2030 is expected to be completed by 2030, while the technology proposals are expected to be contributed to the ITU in early 2029;
j) that harmonized worldwide frequency bands and harmonized frequency arrangements for IMT-2030, where possible, are highly desirable in order to achieve global roaming and the benefits of economies of scale;
k) the need to protect existing services when considering frequency bands for possible additional allocations to any services,

noting

a) that Resolution ITU-R 65 addresses the principles for the process of development of IMT for 2020 and beyond;
b) that IMT encompasses IMT-2000, IMT-Advanced and IMT-2020 collectively, as described in Resolution ITU-R 56-2 and the ITU is actively studying the development of IMT-2030;
c) that Question ITU-R 77-8/5 considers the needs of developing countries in the development and implementation of IMT;
d) that Question ITU-R 229/5 seeks to address the further development of IMT;
e) that Question ITU-R 262/5 addresses the study of usage of IMT systems for specific applications;
f) that Report ITU-R M.2370 analyses trends impacting future IMT traffic growth beyond the year 2020 and estimates global traffic demand for the period 2020 to 2030;
g) Report ITU-R M.2516, on future technology trends of terrestrial International Mobile Telecommunications systems towards 2030 and beyond;
h) that No. **5.490** of the Radio Regulations indicates that in the band 12.2-12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in conformity with the BSS Plan for Region 2 contained in Appendix **30**,

recognizing

a) that there is a lead time between the allocation of frequency bands by world radiocommunication conferences and the deployment of systems in those bands, and that timely availability of wide and contiguous blocks of spectrum is therefore important to support the development of IMT-2030;
b) that WRC-19 allocated or identified several gigahertz of spectrum for IMT use around the world, and that very few administrations have implemented or begun using the spectrum made available at WRC-19;
c) that, taking into due account *recognizings a)* and *b)* above, in order to ensure the future development of IMT-2030 it is important to ensure the timely identification of additional spectrum;

d) that the 8 025-8 400 MHz band hosts an EESS allocation globally on a co-primary basis with MetSat, FSS, fixed, and mobile allocations for important defense and intelligence as well as scientific Earth imaging and new in-space servicing, assembly, and manufacturing applications;

e) that the frequency band 8 500-10 500 MHz is allocated globally on a primary basis to the Radiolocation service and used for scanning, tracking, search and rescue, imaging, and surveillance;

f) that the frequency band 8 750–8 850 MHz is allocated to the aeronautical radionavigation service, and used extensively for airborne Doppler radar and ground mapping radar to determine ground speed, drift and distance travelled, as well as ground mapping, and because this is an aviation safety service, such use must operate with an appropriate level of protection to comply with the safety and regularity of flight.

g) that the frequency band 9 000 – 9 200 MHz is allocated to the radiolocation and aeronautical radionavigation services on a primary basis, and used for precision approach radar and airport surveillance detection equipment, and because the aeronautical radionavigation service is a safety service, it must operate with an appropriate level of protection to comply with the safety and regularity of flight;

h) that the frequency band 9 300 – 9 500 MHz is allocated to the radionavigation service on a primary basis and the aeronautical radionavigation service; and is used by airborne weather radars, and because this is an aviation safety service, such use must operate with an appropriate level of protection to comply with the safety and regularity of flight;

i) that the fixed-satellite service primary allocations in the 10, 11/12, and 14 GHz bands are heavily used around the world for ubiquitously-deployed very small aperture terminals;

j) that the frequency band 12.2-12.7 GHz is the Appendix **30** planned BSS downlink band that is used in Region 2 to provide direct-to-home video services to millions of consumers;

k) that the frequency band 12.75-13.25 GHz is currently allocated on a primary basis to the fixed, fixed-satellite (FSS) (Earth-to-space) and mobile services, and on a secondary basis to the space research (deep space) (space-to-Earth) service globally;

l) that the frequency band 12.75-13.25 GHz is used by the geostationary-satellite (GSO) FSS in accordance with the provisions of Appendix **30B** (No. **5.441**) and there are many existing GSO FSS satellite networks operating in this frequency band;

m) that the frequency band 13.25-13.4 GHz is allocated to the aeronautical radionavigation service for Doppler navigation aids, and such use requires protections as a potentially impacted adjacent frequency band used for public and aviation safety;

n) that, given the importance and breadth of use of spectrum in the 7.125-15.35 GHz range and adjacent bands by many different services worldwide as noted in *considerings f)* and *g)* above, any identification of frequency bands for IMT-2030 or other IMT use on a co-frequency or adjacent-band basis in the same geographical area needs to await the results of detailed sharing and compatibility studies that ensure the protection of the existing services and the absence of additional technical or regulatory constraints on those services, and the evolving needs and growth of these services;

o) that any identification of frequency bands for IMT-2030 in bands adjacent to the bands in *recognizings e), f),g) and m)* should consider in-band protection and adjacent band compatibility of services to ensure the safety and regularity of flight;

p) that frequency bands in this range allocated to passive services on an exclusive basis and the aeronautical radionavigation service are not suitable for an allocation to the mobile service;

q) that Resolution **804 (Rev.WRC-19)** includes as a principle for establishing WRC agendas a condition that "resources associated with the subject are kept within a range which is manageable for Member States and Sector Members, BR and ITU-R study groups and CPM,"

resolves to invite the ITU Radiocommunication Sector

1 to study and develop, in time for consideration in studies under *resolves to invite the ITU Radiocommunication Sector 2* for WRC-31, the technical and operational characteristics of the terrestrial component of IMT-2030 in the frequency range listed in *resolves to invite the ITU Radiocommunication Sector* 2, taking into account:

- the evolving spectrum needs to meet emerging demand for IMT-2030;

- the evolution of IMT-2030 through advances in technology and spectrally efficient techniques;
- the deployment scenarios envisaged for IMT-2030 systems and the related spectrum requirements and requirements of combined wider area coverage, higher capacity and larger bandwidths;
- the needs of developing countries;
- whether, and if so to what extent, spectrum needs identified in these studies can be achieved using spectrum identified for IMT use at WRC-19 and earlier WRCs; if not, whether spectrum previously identified for IMT use can be made available for reallocation or redesignation for other uses;
- the technical and operational characteristics of, as well as the protection criteria for, services already allocated on a primary basis in the bands under study;
- the timeframe in which spectrum would be needed;

2 to conduct and complete in time for WRC-31, taking into due account the results of studies under *resolves to invite the ITU Radiocommunication Sector* 1 above, the appropriate sharing and compatibility studies[12] to ensure the protection of services to which the frequency bands are allocated on a primary basis, without imposing additional regulatory or technical constraints on those services, for the frequency bands in the range of 7.125 - 15.35 GHz [13],

invites the 2031 World Radiocommunication Conference

to consider, based solely on the results of the above studies, possible allocations to the mobile service on a primary basis and to consider identification of frequency bands for the terrestrial component of IMT-2030, the frequency bands to be considered being limited to part or all of the frequency band listed in *resolves to invite the ITU Radiocommunication Sector* 2,

invites administrations

to participate actively in these studies by submitting contributions to ITU-R.

Reasons: To provide for studies in the 7.125-15.35 GHz frequency range for the purpose of identifying frequency bands for the next generation of mobile technologies – IMT-2030 – at WRC-31.

[12] Including studies with respect to primary services in the adjacent bands, as appropriate.

[13] The following frequency bands are excluded from this range: 8.750-8.850 GHz and 9.0-9.2 GHz allocated to Aeronautical Radionavigation, 9.3-9.5 GHz allocated to Radionavigation, and per No. 5.340 the band 10.68 – 10.7 GHz.

ATTACHMENT

PROPOSAL FOR PRELIMINARY WRC-31 AGENDA ITEM FOR STUDIES LOOKING TO THE POSSIBLE IDENTIFICATION BY WRC-31 OF ADDITIONAL FREQUENCY BANDS FOR THE TERRESTRIAL COMPONENT OF IMT-2030 BETWEEN 7.125 AND 15.35 GHZ

Subject: Proposed preliminary WRC-31 agenda item to consider possible identification of the frequency bands within the 7.125-15.35 GHz frequency range for International Mobile Telecommunications (IMT-2030), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **[AI 10 IMT-2030 SPECTRUM] (WRC-23)**;

Origin: United States of America

Proposal: To conduct studies to identify frequency bands between 7.125-15.35 GHz frequency range for use by IMT, seeking regional and global harmonization.

Background/reason*:*
New wireless technologies and applications are driving an increase in demand for access to IMT spectrum. IMT-2030 technology is being developed to further increase this demand, particularly for large, contiguous spectrum bandwidths that are necessary to implement new use case scenarios and address traffic growth in mobile networks. To address the needs for envisioned IMT-2030 networks, spectrum in the 7.125-15.35 GHz frequency range could facilitate the 2030 capacity-demanding use cases for both wider area coverage and higher capacity.

Radiocommunication services concerned*:* Mobile Service, Fixed Service, Fixed Satellite Service, Mobile Satellite Service, EESS, Radio Astronomy and other services

Indication of possible difficulties*:* The proposed bands are used by other services

Previous/ongoing studies on the issue*:*
Related studies have been already commenced in ITU-R WP 5D.

Studies to be carried out by: ITU-R WP 5D/Possible JTG (after IMT-2030 characteristics are developed within WP 5D)	*with the participation of:* Study Groups and working parties addressing services with primary allocations in the frequency range under consideration, Administrations and Sector members of the ITU-R

ITU-R Study Groups concerned*:* SG4, SG5, SG6, and SG7

ITU resource implications, including financial implications (refer to CV126)*:* This proposed agenda item may be able to be studied within the normal ITU-R procedures and planned budget, depending on the extent of the frequency bands within the range that are ultimately considered for IMT-2030 use. As the responsible group on IMT-2030 studies, ITU-R WP 5D usually conducts meetings three times a year which last at least 6 days each.

Common regional proposal*:* Yes/No ***Multicountry proposal:*** Yes/No
Number of countries:

Remarks

VIEW C

View C: Create a WRC-27 agenda item to address spectrum for IMT

Given that some IWG-2 offline participants raised concerns with the wide frequency band included in the View A proposal for a future IMT agenda item, View C proposes to narrow that range significantly. In addition, the US should be prepared to propose that the scope of any agreed studies include bands adjacent to the primary frequencies of interest and that a Joint Task Group be established to conduct the studies since incumbent services within several Study Groups will need to be represented.

As a result of discussion within IWG-2, the supporters of View C can further limit the range shown in the View C proposal to the bands 10.7-15.35 GHz and 18.1-19.7 GHz.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10: *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention and Resolution* ***804 (Rev. WRC-19)****;*

BACKGROUND:

The vision for 6G – referred to within the ITU as IMT-2030 – is starting to emerge as foundational technology research for the next generation of wireless innovations has commenced. 6G will take advantage of the combined potential of communications, artificial intelligence (AI), and integrated sensing to further improve system resiliency and enable a more energy-efficient network architecture that generates less harmful gas emissions as well as a device ecosystem with a smaller carbon footprint. There are three main driving forces behind the need for this next generation of wireless technologies: (i) harnessing core technology advancements (in wireless and adjacent areas like semiconductors and materials science); (ii) meeting societal sustainability needs (e.g., economic growth, digital literacy, and green initiatives); and (iii) addressing new requirements for next-level experiences that 5G cannot meet.

6G will comprise of both evolutionary and revolutionary wireless advances and will use a mix of low-, mid- and high-band spectrum. Technologies introduced in 5G Advanced will serve as the evolutionary foundation for 6G fixed and mobile broadband services with much greater capacity and throughput, and lower latency. 6G will provide a major leap in performance and efficiency by enabling more pervasive connectivity, higher reliability and robustness.

Ultra Wide Band (UWB) has been deployed in various industrial applications for RTLS (Real-Time Location System) and asset tracking in years past based on early standards and technology. Based on evolution of these technologies and standards, products and services enabling digital keys for entry and access to vehicles, homes and buildings have been brought to market. Furthermore services enabling mobile payment and public transport are in active preparation with a wealth of additional services being identified and prepared in domains such as as smart cities and mobility, smart buildings and industrial, smart retail and smart homes

Due to the existing regulation, UWB can only have very small transmission power and hence the UWB products use 7.7-9.3 GHz where there currently is no significant interference from other systems. If 7.7-9.3 GHz is included in the IMT spectrum, the strong transmission power of the IMT system using the same frequency band would cause significant interference to the UWB devices and cause unrecoverable damages to the existing customers of UWB services.

Contiguous spectrum bandwidths larger than those currently available in the lower mid-band range (below 7 GHz) are necessary to address traffic growth in mobile networks, meet 6G sensing requirements, and allow for more cost-effective RF circuit design to enable new use cases with greater economic impact. As such, the most suitable frequency bands for the development of new generation radio technologies for 6G are in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range. This range is a natural extension of the lower mid-band frequency range; the lower part of the range combines the wide-area coverage of sub-6 GHz bands with the extreme capacity of the millimeter wave bands in a cost-effective manner. 6G radio technology in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range would allow mobile network operators to complement their existing 5G sites, currently operating in the lower mid-band frequency range, and provide wide-area coverage of their networks with a significant increase in capacity.

There is growing momentum around 6G development and policy planning at the international and

regional levels. Federal Communications Commission (FCC) Chairwoman Jessica Rosenworcel has acknowledged the importance of wireless policy to our economic and national security interests, and has addressed the need to plan for the next generation in wireless technology in this frequency range, which can support wider coverage and faster speeds.[14] The FCC has open proceedings evaluating the 12.2-12.7 GHz band as well as the 12.7-13.25 GHz band.[15] Further, initiatives like Next G Alliance, which is comprised of industry, academia, and government, is diligently working on the development of the next generation of wireless technology seeking to advance U.S. leadership and competitiveness in this space. As the responsible group for International Mobile Telecommunications (IMT) matters, ITU-R Working Party 5D commenced work in 2021 to define IMT towards 2030 and beyond by initiating the work on an IMT-2030 Vision. The new ITU-R Recommendation containing detailed standards is expected to be completed by 2030, while the technology proposals are expected to be contributed to the ITU in early 2029.

Administrations are invited to support a new WRC-27 agenda item, to be considered under WRC-23 agenda item 10, with the goal of identifying additional frequency bands in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz for the terrestrial component of IMT. It is important to recognize that the incumbent services in the range 7.125 - 7.7 GHz and 9.3 - 19.7 GHz provide important systems for public safety, aviation and other uses, and such operations should be protected. Sharing and compatibility studies are required to ensure the introduction of IMT into any band while protecting those incumbent operations in the same band or adjacent, as appropriate, and not unduly constrained.

The specific proposals for this WRC-27 agenda item are provided below:

PROPOSALS:

ADD USA/10/1

DRAFT NEW RESOLUTION [USA-10-2027] (WRC-23)

Agenda for the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and that a final agenda shall be established by the Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

[14] Remarks of Chairwoman Jessica Rosenworcel, "New Frontier of Partnerships", Mobile World Congress, Barcelona, Spain (March 1, 2022).

[15] *See generally Expanding Flexible Use of the 12.2-12.7 GHz Band*, Notice of Proposed Rulemaking, FCC 21-13, WT Docket No. 20-433 (2021); *Expanding Use of the 12.7-13.23 GHz Band for Mobile Broadband or Other Expanded Use*, Notice of Inquiry, FCC 22-80, GN Docket No. 22-352 (2022).

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a world radiocommunication conference be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-23 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:

…

1.[X] to consider identification of frequency bands within the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **[AI 10 IMT-2030 SPECTRUM] (WRC-23)**;

…

resolves further

to activate the Conference Preparatory Meeting,

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-27,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for studies in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range for the purpose of identifying frequency bands for the next generation of mobile technologies – IMT-2030.

ADD USA/10/2

DRAFT NEW RESOLUTION [AI 10 IMT- 2030 SPECTRUM] (WRC-23)

Studies on the identification of additional frequency bands for the terrestrial component of IMT between 7.125 - 7.7 GHz and 9.3 - 19.7 GHz

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that International Mobile Telecommunications (IMT) is intended to provide telecommunication services on a worldwide scale, regardless of location and type of network or terminal;
b) that IMT systems have contributed to global economic and social development in support of a digital economy and society;
c) that IMT systems are now being evolved to provide diverse usage scenarios such as immersive communications, integrated sensing, integrated artificial intelligence and computing;
d) that ultra-low latency, very high bit-rate, and high sensing resolution applications of IMT will require larger contiguous blocks of spectrum (e.g. 500 MHz) for use by administrations wishing to implement IMT currently not available in existing mid-band frequency bands;
e) that frequency bands in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range are suitable to meet the 6G requirements for wide-area coverage, high capacity, low latency, and sensing;
f) that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;
g) that adequate and timely availability of spectrum and corresponding regulatory provisions are essential to support the future development of IMT-2030;
h) that harmonized worldwide frequency bands and harmonized frequency arrangements for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale;
i) that a need exists to protect existing services and to allow for their continued development when considering frequency bands for possible additional allocations to any service;
j) that the 8 025-8 400 MHz band hosts an EESS allocation globally on a co-primary basis with MetSat, FSS, fixed, and mobile allocations for important public safety as well as scientific Earth imaging;
k) that the frequency band 8 750–8 850 MHz is allocated to the aeronautical radionavigation service, and used extensively for airborne Doppler radar and ground mapping radar to determine ground speed, drift and distance travelled, as well as ground mapping, and must operate with an appropriate level of protection;.
l) that the frequency band 9 000 – 9 200 MHz is allocated to the radiolocation and aeronautical radionavigation services on a primary basis, and used for precision approach radar and airport surveillance detection equipment that must operate with an appropriate level of protection;
m) that the frequency band 9 300 – 9 500 MHz is allocated to the radionavigation service on a primary basis and the aeronautical radionavigation service in **5.475** is used by airborne weather radars that must operate with an appropriate level of protection;
n) the No. 5490 of the Radio Regulations indicates that in the band 12.2-12.7 GHz existing and future terrestrial radiocommunications services shall not cause harmful interference to the space services operating in conformity with the broadcasting-satellite Plan for Region 2 contained in Appendix 30;
o) that the frequency band 13.25-13.4 GHz is allocated to the aeronautical radionavigation service for Doppler navigation aids that must operate with an appropriate level of protection,

noting

a) that Resolution ITU-R 65 addresses the principles for the process of development of IMT for 2020 and beyond;
b) that IMT encompasses IMT-2000, IMT-Advanced and IMT-2020 collectively, as described in Resolution ITU-R 56-2 and the ITU is actively studying the development of IMT-2030;
c) that Question ITU-R 77-8/5 considers the needs of developing countries in the development and implementation of IMT;
d) that Question ITU-R 229/5 seeks to address the further development of IMT;
e) that Question ITU-R 262/5 addresses the study of usage of IMT systems for specific applications;
f) that Report ITU-R M.2370 analyses trends impacting future IMT traffic growth beyond the year 2020 and estimates global traffic demand for the period 2020 to 2030;
g) Report ITU-R M.2516, on future technology trends of terrestrial International Mobile Telecommunications systems towards 2030 and beyond,

recognizing

a) that there is a lead time between the allocation of frequency bands by world radiocommunication conferences and the deployment of systems in those bands, and that timely availability of wide and contiguous blocks of spectrum is therefore important to support the development of IMT;
b) that in order to ensure the future development of IMT it is important to ensure the timely identification of additional spectrum;
c) that any identification of frequency bands for IMT should ensure the protection of incumbent services in the same or adjacent frequency bands, as appropriate, and the evolving needs of these services;
d) that frequency bands in this range allocated to passive services on an exclusive basis are not suitable for an allocation to the mobile service;

resolves to invite the ITU Radiocommunication Sector
1 to study the technical and operational characteristics of the terrestrial component of IMT in the frequency range listed in *resolves to invite the ITU Radiocommunication Sector* 2, taking into account:
- the evolving spectrum needs to meet emerging demand for IMT;
- the evolution of IMT through advances in technology and spectrally efficient techniques;
- the deployment scenarios envisaged for IMT systems and the related requirements of combined wider area coverage, higher capacity and larger bandwidths;
- the needs of developing countries;
- the timeframe in which spectrum would be needed;

2 to conduct the appropriate sharing and compatibility studies[16], with a view to ensuring the protection of services with a primary allocation, without imposing additional regulatory or technical constraints on those services, in the frequency range of 7.125 - 7.7 GHz and 9.3 - 19.7 GHz[17],
resolves
1 to invite the first session of the Conference Preparatory Meeting for WRC-27 to define the date by which technical and operational characteristics needed for sharing and compatibility studies are to be available to ensure that studies referred to in *resolves to invite the ITU Radiocommunication Sector 2* can be completed in time for consideration at WRC-27;
2 to invite WRC-27 to consider, based on the results of the above studies, additional spectrum allocations to the mobile service on a primary basis and to consider identification of frequency bands for the terrestrial component of IMT; the frequency bands to be considered being limited to part or all of the frequency band listed in *resolves to invite the ITU Radiocommunication Sector* 2,
invites administrations
to participate actively in these studies by submitting contributions to ITU-R.

Reasons: To provide for studies in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range for the purpose of identifying frequency bands for the next generation of mobile technologies – IMT-2030.

[16] Including studies with respect to primary services in the adjacent bands, as appropriate.

[17] Consideration of the 10.68 – 10.7 GHz band is excluded from this range (5.340).

ATTACHMENT

PROPOSAL FOR ADDITIONAL AGENDA ITEM FOR [IDENTIFICATION OF FREQUENCY BANDS FOR IMT]

Subject: Proposed future WRC-2027 agenda item to consider identification of the frequency bands within the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range for International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution **[AI 10 IMT-2030 SPECTRUM] (WRC-23)**;

Origin: United States of America

Proposal: To conduct studies to identify frequency bands between 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range for use by IMT, seeking regional and global harmonization.

***Background/reason**:*
New wireless technologies and applications are driving an increase in demand for access to IMT spectrum. IMT-2030 technology will further increase this demand, particularly for large, contiguous spectrum bandwidths that are necessary to implement new use case scenarios and address traffic growth in mobile networks. To address the needs for envisioned IMT-2030 networks, spectrum in the 7.125 - 7.7 GHz and 9.3 - 19.7 GHz frequency range could facilitate the 2030 capacity-demanding use cases for both wider area coverage and higher capacity.

***Radiocommunication services concerned**:* Mobile Service, Fixed Service, Fixed Satellite Service, Mobile Satellite Service, EESS, Radio Astronomy and other services

***Indication of possible difficulties**:* The proposed bands are used by other services

***Previous/ongoing studies on the issue**:*
Related studies have been already commenced in ITU-R WP 5D.

Studies to be carried out by: ITU-R WP 5D	*with the participation of:* Administrations and Sector members of the ITU-R

***ITU-R Study Groups concerned**:* SG4, SG5 and SG7

***ITU resource implications, including financial implications (refer to CV126)**:* This proposed agenda item will be studied within the normal ITU-R procedures and planned budget. As the responsible group on IMT studies, ITU-R WP 5D usually conducts meetings three times a year which last at least 6 days each.

***Common regional proposal**:* Yes/No	***Multicountry proposal:*** Yes/No *Number of countries:*

Remarks

WRC-23 Agenda Item 10/WRC-27 Preliminary Agenda Item 2.9

IWG-2 members were not able to reach consensus on a proposal for WRC-23 Agenda Item 10/WRC-27 preliminary agenda item 2.9 and, therefore, forwards two views on how the FCC should handle this matter.

View A is supported by Aviation Spectrum Resources Inc., Boeing, GPSIA, and Lockheed Martin.

View B is supported by AT&T, CTIA, Nokia, Samsung, T-Mobile, and Verizon.

VIEW A

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10: *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,*

Draft Proposal to Exclude Preliminary Item 2.9 from the WRC-27 Agenda

Discontinuation of consideration of possible additional spectrum allocations to the mobile service in the frequency band 1 300-1 350 MHz in accordance with Resolution 250 (WRC-19)

Background:

At WRC-19, a preliminary agenda item (*resolves* 2.9) for WRC-27 was included in Resolution **812 (WRC-19)** for consideration of possible additional spectrum allocations for the mobile service in the frequency band 1 300-1 350 MHz in accordance with Resolution **250 (WRC-19)**. In Annex 1 to the Report of CPM23-2 to WRC-23, there is a statement that "[n]o draft CPM text has been developed on this WRC-27 preliminary agenda item."

The United States was a signatory to the CITEL IAP that proposed consideration of the 1 300-1 350 MHz band for inclusion on the agenda of WRC-23, and accepted the proposal's relegation to the preliminary agenda for WRC-27. After further consideration, the United States no longer supports inclusion of preliminary agenda item 2.9 on the agenda for WRC-27.

The main concern here is the impact that a mobile allocation in 1 300-1 350 MHz would inevitably have on adjacent-band radionavigation-satellite service (RNSS) systems operating immediately below 1 300 MHz. The 1215-1300 MHz band is allocated on a primary basis to the RNSS and other compatible primary services, including the earth exploration-satellite service (active) (EESS (active)). The U.S. Global Positioning System operates in the lower portion of the band; the Russian GLONASS system operates in the middle portion of the band; and the European Galileo system operates in the upper portion of the band (from 1260-1300 MHz). Together, the three RNSS systems are part of the Global Navigation Satellite System (GNSS), and millions of receivers including the capability to receive the low-power signals from all three RNSS systems are deployed worldwide today.

The 1300-1350 MHz band was studied for possible use by mobile broadband under WRC-15 Agenda item 1.1, and was rejected by consensus as a potential candidate for mobile broadband use. The ITU-R has reported that studies show that "if a higher-power, continuous-in-time signal in the same frequency band, or an adjacent band, is broadcast near an RNSS receiver, it could desensitize the RNSS receiver to the degree that the RNSS receiver is unable to extract the RNSS signal from space. As a result, frequency ranges near those used for the RNSS should not be identified for IMT." CPM Report for WRC-15, at Section 1/1.1/4.1.2.1 (emphasis added).Under WRC-15 agenda item 1.1, the ITU-R conducted studies on the compatibility with radars that operate in the 1 300-1 350 MHz band and all studies showed that co-frequency sharing with radars and the mobile services that were being considered under WRC-15 agenda item 1.1 in the same geographical area is not feasible. There is no expectation that studies under this preliminary agenda item if adopted for WRC-27 would have any different result.

The United States and CITEL had affirmative no-change proposals under WRC-15 AI 1.1 for the 1215-1300 MHz band for protection, inter alia, of RNSS, and WRC-15 itself concluded early in the conference "that no changes are required to the Radio Regulations as far as agenda item 1.1 is concerned for the frequency bands . . . 1215-1300 MHz [and] 1300-1350 MHz . . . ." Doc. WRC15/227.
The United States' proposal to discontinue consideration of preliminary WRC-27 agenda item 2.9 follows:
Proposals

SUP USA/10 (No 1 300-1 350 MHz Studies)/1

RESOLUTION 812 (WRC-19)

Preliminary agenda for the 2027 World Radiocommunication Conference

Reasons: This Resolution must be suppressed, as WRC-23 will create a new Resolution that will include the agenda for WRC-27, and the United States proposes that *resolves* 2.9 from Resolution **812 (WRC-19)** not be on that agenda.

SUP USA/10 (No 1 300-1 350 MHz Studies)/2

RESOLUTION 250 (WRC-19)

Studies on possible allocations to the land mobile service (excluding International Mobile Telecommunications) in the frequency band 1 300-1 350 MHz for use by administrations for the future development of terrestrial mobile-service applications

Reasons: Consequential to non-inclusion of *resolves* 2.9 from the preliminary WRC-27 agenda on the WRC-27 agenda adopted by WRC-23.

VIEW B

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10: *to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)*

Background

The importance of broadband connectivity was brought into sharp focus with COVID-19. The pandemic accelerated the uptake of broadband and the adoption of digital services by individuals and businesses, the digitalization of governmental services and spread of e-commerce.[18] In order to provide greater connectivity to all users and facilitate innovation in mobile communication applications, it is crucial to ensure that sufficient access to spectrum is available in a timely manner. As proposed by CITEL to WRC-19 for further study, the frequency band 1300 – 1350 MHz has the potential to provide additional spectrum access with desirable propagation characteristics for mobile communication applications.

In the U.S., the Bipartisan Budget Act of 2015 contained a Spectrum Pipeline Act section that directed the FCC, in coordination with Assistant Secretary, to identify minimum of 30 MHz spectrum below 3 GHz for auction by July 1, 2024. To that end, the Spectrum Efficient National Surveillance Radar (SENSR) program has been assessing the frequency band 1300 -1350 MHz for the feasibility of making the band available for reallocation for shared federal and non-federal use.

Mobile communication applications support a wide variety of economic activities, such as agriculture, education, healthcare, and industrial uses. It is important to continue to provide adequate spectrum in a variety of frequency bands to support different capabilities (e.g. coverage, capacity) for many different use cases. WRC-27 preliminary agenda item 2.7 remains of upmost importance and should be included in the WRC-27 agenda.

Proposals

SUP USA/10 (1300 Mobile)/1

[18] https://www.itu.int/hub/publication/s-pol-broadband-26-2022/

RESOLUTION 812 (WRC-19)

Preliminary agenda for the 2027 World Radiocommunication Conference

Reasons: This Resolution must be suppressed, as WRC-23 will create a new Resolution that will include the agenda for WRC-27.

ADD USA/10 (1300 Mobile)/2

RESOLUTION [A10] (WRC-23)

Agenda for the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference (WRC) should be established four to six years in advance and that a final agenda shall be established by the ITU Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

1.x to consider possible additional spectrum allocations to the mobile service in the frequency band 1 300-1 350 MHz to facilitate the future development of mobile-service applications, in accordance with Resolution **250 (WRC-23)**;

. . .

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting (CPM) and to prepare a report to WRC-27;

2 to submit a draft report on any difficulties or inconsistencies encountered in the application of the Radio Regulations referred in agenda item 9.2 to the second session of the CPM and to submit the final report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reason: To provide greater connectivity to all users and facilitate innovation in mobile communication applications, it is crucial to ensure that sufficient access to spectrum is available in a timely manner. This proposal considers possible allocations to land mobile service in the 1 300 – 1 350 MHz to provide additional spectrum access for mobile communication applications.

MOD USA/10 (1300 Mobile)/3

RESOLUTION 250 (WRC-19)

Studies on possible allocations to the land mobile service ~~(excluding International Mobile Telecommunications)~~ in the frequency band 1 300-1 350 MHz for use by administrations for the future development of terrestrial mobile-service applications

The World Radiocommunication Conference (Dubai, 2023~~Sharm el Sheikh, 2019~~),

considering

a) that mobile connectivity contributes to global economic and social development;

b) that demand has been increasing steadily for mobile communication services throughout the world;

c) that mobile services play a large and increasing role in connecting users to the Internet;

d) that technological advancement and user needs will promote innovation and accelerate the further development of communication applications;

e) that timely availability of spectrum is important to support future applications;

f) that all studies leading up to WRC-15 between radars and International Mobile Telecommunications (IMT) in the frequency range 1 300-1 350 MHz concluded, based on the parameters provided at that time, that within the same geographical area co-frequency operation of mobile-broadband systems and radar was not feasible;

g) that there is widespread usage of this frequency range in some countries for radar;

h) that WRC-15 noted that in countries where the frequency band is not fully used by these systems, studies were undertaken in the ITU Radiocommunication Sector that showed sharing may be feasible in those countries, subject to various mitigation and coordination measures, however no conclusions were drawn as to their applicability, complexity, practicability or achievability;

i) that some administrations are considering the feasibility of spectrum refarming/relocating some services operating in portions of the frequency band 1 300-1 350 MHz for the land mobile service (LMS), which requires a significant investment;

j) that advanced spectrum sharing techniques are under development that could facilitate additional utilization of spectrum by a number of different services in operation;
k) the need to protect existing services when considering frequency bands for possible additional allocations to any service,

recognizing

a) that the frequency band 1 300-1 350 MHz is allocated to the radiolocation service, the aeronautical radionavigation service and the radionavigation-satellite service (RNSS) on a primary basis;
b) that the RNSS (space-to-Earth) (space-to-space) is allocated, among others, on a primary basis in the adjacent frequency band 1 240-1 300 MHz;
c) that No. **5.149** calls for administrations to take all practicable steps to protect the radio astronomy service from harmful interference in the frequency band 1 330-1 400 MHz, which includes spectral lines of importance for current astronomical investigations,

resolves to invite the ITU Radiocommunication Sector

1 to develop technical and operational characteristics of LMS systems in the frequency band 1 300-1 350 MHz;
2 to conduct sharing and compatibility studies to ensure protection of those services to which the frequency band is allocated on a primary basis, and adjacent frequency bands as appropriate, taking into account *considering f),* for the frequency band 1 300-1 350 MHz;
3 to complete these studies by WRC-27,

invites the 2027 World Radiocommunication Conference

to consider, on the basis of the studies conducted under *resolves to invite the ITU Radiocommunication Sector* above, possible allocations to the LMS.

ATTACHMENT
PROPOSAL FOR FUTURE AGENDA ITEM FOR WRC-27

Subject: Proposed Future WRC Agenda Item for WRC-2027 to consider, based on the results of studies, possible allocations to the land mobile service in the frequency band 1 300-1 350 MHz
Origin: United States of America

Proposal: to consider possible allocations to the land mobile service to facilitate the future development of mobile communication applications, in accordance with Resolution **250 (WRC-23)**

Background/reason:
In order to provide greater connectivity to all users and facilitate innovation in mobile communication applications, it is crucial to ensure that sufficient access to spectrum is available in a timely manner. This proposal considers possible allocations to land mobile service in the 1 300 – 1 350 MHz to provide additional spectrum access for mobile communication applications.

Radiocommunication services concerned:
Aeronautical Radionavigation, Radiolocation, Radionavigation-Satellite

Indication of possible difficulties: None foreseen

Previous/ongoing studies on the issue: Previous studies have focused on specific applications of the mobile service.

Studies to be carried out by: ITU-R Working Party 5A	*with the participation of:* Working Party 5B and Working Party 4C

ITU-R Study Groups concerned: SG5 and SG4

ITU resource implications, including financial implications (refer to CV126): Minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Remarks

Preliminary Agenda for WRC-27

Assigned to IWG-2

With respect to the items assigned to IWG-2 regarding the Preliminary agenda for WRC-27, IWG-2 provides the following feedback:

Preliminary agenda for WRC-27 listed in Resolution 812 (WRC-19)	**IWG Views/Proposals**
2.4 the introduction of power flux-density (pfd) and equivalent isotropically radiated power (e.i.r.p.) limits in Article **21** for the frequency bands 71-76 GHz and 81-86 GHz in accordance with Resolution **775 (WRC-19)**;	IWG-2 members have been participating in IWG-3 discussions working to merge WRC-27 preliminary agenda items 2.4 and 2.5.
2.9 to consider possible additional spectrum allocations to the mobile service in the frequency band 1 300-1 350 MHz to facilitate the future development of mobile-service applications, in accordance with Resolution **250 (WRC-19)**;	IWG-2 members were not able to reach consensus on a proposal for WRC-23 Agenda Item 10/WRC-27 preliminary agenda item 2.9 and, therefore, forwards two views on how the FCC should handle this matter. See Document WAC-23-079.
2.12 to consider the use of existing International Mobile Telecommunications (IMT) identifications in the frequency range 694-960 MHz, by consideration of the possible removal of the limitation regarding aeronautical mobile in IMT for the use of IMT user equipment by non-safety applications, where appropriate, in accordance with Resolution **251 (WRC-19)**;	IWG-2 noted the preliminary agenda item 2.12 originated by a CEPT proposal and believes further consideration should occur in the USA WRC delegation process once other regional proposals are considered.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12

Agenda Item 1.12: *to conduct, and complete in time for WRC 23, studies for a possible new secondary allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, including in adjacent bands, in accordance with Resolution **656 (Rev.WRC-19)**;*

Background:

This agenda item seeks a new secondary allocation to the Earth exploration-satellite service (EESS) (active) for spaceborne radar sounders within a range of frequencies around 45 MHz while taking into account the protection of incumbent services including those in adjacent bands. Studies to support this agenda item have been developed in PDN Report ITU-R RS.[SPACEBORNE VHF RADAR SOUNDER]. Specifically, this Report contains the results of compatibility studies, based on the proposed EESS (active) radar characteristics provided in Recommendation ITU-R RS.2042 and the characteristics of the incumbent services as provided by the responsible Working Parties.

The sharing studies focused on sharing and compatibility of the spaceborne VHF radar sounder under investigation with respect to the incumbent services, both within its 40-50 MHz occupied BW as well as in adjacent bands. The results only considered interference from a single radar sounder and did not take into account aggregate interference effects from multiple sounders. The results indicate that in both static and dynamic study scenarios analysed, the operation of VHF radar sounder will exceed the interference protection criteria of the incumbent services.

Summary of studies for the most representative sharing scenarios

Victim scenario description	Maximum received interference power P_r (dBW)	Maximum IEL (dB)	Percentage of time of IPC exceedance assuming transmission $D_{op} \times 100\%$ = 10.79% of the time)	considerations
FIXED (rural)	-117.66	24.62		There were occurrences of interference where the incumbent IPC was exceeded.
MOBILE (-10 dB IPC) (rural)	-116.75	26.29	0.0739	There were occurrences of interference.

BROADCASTING (DRM) (rural)	-112.14	39.88	0.1381	There were occurrences of interference where the incumbent IPC was exceeded.
Space research (rural)	-140.71	17.13	0.0113	There were occurrences of interference where the incumbent IPC was exceeded.
Radiolocation (rural)	-108.32	28.56	0.0866	There were occurrences of interference where the incumbent IPC was exceeded.
Oceanographic radar (rural)	-142.87	13.08	0.0226	There were occurrences of interference where the incumbent IPC was exceeded.
WPR, Rec. ITU-R M.1226-0, (0°, 0°) (rural)	-56.08	68.35	0.0809	Due to the limited deployment of WPR in this band, cases of harmful interference may be addressed via case-by-case coordination between concerned administrations
AMATEUR (rural)	-149.07	-3.27	0	There were occurrences of interference where the incumbent IPC was exceeded.

Proposal:

NOC USA/1.12/1

ARTICLES

Reason: In order to ensure the protection of incumbent services in the 40 – 50 MHz frequency range, as well as in adjacent bands, no change is proposed.

NOC USA/1.12/2

APPENDICES

Reason: Sharing and compatibility studies have not demonstrated incumbent services could be protected from potential harmful interference from the operation of spaceborne radar sounders in the frequency band 40-50 MHz.

SUP USA/1.12/3

RESOLUTION 656 (REV.WRC-19)

Possible secondary allocation to the Earth exploration-satellite service (active) for spaceborne radar sounders in the range of frequencies around 45 MHz

Reason: Consequential action.

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WRC-23 Agenda Item 1.13

IWG-3 members were not able to reach consensus on a proposal for WRC-23 agenda item (AI) 1.13 and, therefore, it forwards two views on how the FCC could handle this matter.

View A is supported by CTIA

View B is supported by Lockheed Martin

VIEW A

IWG-3/069- AI 1.13 (CTIA)

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.13

Agenda Item 1.13: *to consider a possible upgrade of the allocation of the frequency band 14.8-15.35 GHz to the space research service, in accordance with Resolution **661 (WRC-19)**;*

Background:

Resolution **661 (WRC-19)** invites ITU-R to investigate and identify all relevant scenarios that need to be considered in assessment of a possible upgrade to the allocation to the space research service to primary status in the frequency band 14.8-15.35 GHz, and to conduct and complete such studies in time for WRC-23 so as to determine any associated technical and regulatory conditions to ensure protection of the current use and future development of the existing primary services.

The frequency band 14.8-15.35 GHz is currently allocated on a primary basis to the FS and the MS, and on a secondary basis to the SRS. The purpose of this agenda item is to explore the feasibility of establishing a regulatory framework to provide for the operation of SRS systems in this frequency band on a primary basis, consistent with not causing harmful interference to nor constraining the operation of systems operating in other primary services in the frequency band. Based on the results of studies, cases of interference to incumbent fixed and mobile (including aeronautical mobile) services was found. In addition, reverse studies were conducted to evaluate the impact of incumbent terrestrial systems on SRS earth station and space station receivers, and it was shown there would be an impact. In addition, in the adjacent band, compatibility of SRS and RAS operations was not established by studies without significant OoB suppression. Based on the studies conducted, six methods were developed for the draft CPM text.

Proposal:

NOC USA/1.13/1

ARTICLES

Reason: In order to ensure the protection of incumbent services, the existing SRS allocation should remain secondary.

NOC USA/1.13/2

APPENDICES

Reason: In order to ensure the protection of incumbent services, the existing SRS allocation should remain secondary.

SUP USA/1.13/3

RESOLUTION 661 **(**WRC-19**)**

Examination of a possible upgrade to primary status of the secondary allocation to the space research service in the frequency band 14.8-15.35 GHz

Reason: Consequential action.

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VIEW B

IWG-3_088_AI1.13 (03.20.2023)
Author: S. Kotler (Lockheed Martin)

WRC-23 AGENDA ITEM 1.13 (14.8-15.35 GHZ)

VIEW B

View B supports that the U.S. adopt a proposal for WRC-23 to upgrade the Space Research Service allocation in the frequency band 14.8-15.35 GHz for space-to-space to primary while retaining Space Research Service as secondary for space-to-Earth and Earth-to-space directions. The U.S. Table of Frequency Allocations already has a Federal primary Space Research Service spectrum allocation in the 14.8-15.35 GHz band that can be used for space-to-space, space-to-Earth, or Earth-to-space operations, a primary Federal Mobile and secondary Federal fixed allocation in the frequency band 14.8-15.1365 GHz, and primary Federal Fixed and secondary Federal Mobile allocations in the frequency band 15.1365-15.35 GHz. However, while the U.S. Table of Frequency Allocations does permit per footnote US310 limited non-federal use of the space research service in a portion of the band on a secondary basis, the U.S. Table of Frequency Allocations have no non-federal fixed or mobile spectrum allocations in the 14.8-15.35 GHz band. ITU-R studies showed that Space Research Service (space-to-space) for Earth orbiting satellites can meet the protection levels of incumbent fixed and mobile services based on pfd limits in Recommendations ITU-R SA.510 and able to maintain margin above the SRS protection criteria in the current environment. The Space Frequency Coordination Group in its Recommendation SFCG 32-2R4 included the frequency band 14.5-15.35 GHz for Lunar Relay to Lunar Relay Cross Link. Upgrading the Space Research Service (space-to-space) allocation in the frequency band 14.8-15.35 GHz to Primary should provide greater regulatory certainties for long term investments by space and other industries.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.13

Agenda Item 1.13: *to consider a possible upgrade of the allocation of the frequency band 14.8-15.35 GHz to the space research service, in accordance with Resolution **661 (WRC-19)**;*

Background:

Resolution **661 (WRC-19)** invites ITU-R to investigate and identify all relevant scenarios that need to be considered in assessment of a possible upgrade to the allocation to the space research service to primary status in the frequency band 14.8-15.35 GHz, and to conduct and complete such studies in time for WRC-23 so as to determine any associated technical and regulatory conditions to ensure protection of the current use and future development of the existing primary services.

The frequency band 14.8-15.35 GHz is currently allocated on a primary basis to the FS and the MS, and on a secondary basis to the SRS. The purpose of this agenda item is to explore the feasibility of establishing a regulatory framework to provide for the operation of SRS systems in this frequency band on a primary basis, consistent with not causing harmful interference to nor constrain the operation of systems operating in other primary services in the frequency band. Studies involving SRS operation in the space-to-space direction showed protection levels of incumbent services are met based on pfd limits in Recommendation ITU-R SA.510 between SRS (space-to-space) and the fixed and mobile services in the frequency band 14.8-15.35 GHz. The scenarios involving beyond Earth-orbiting/lunar region crosslinks under a space research service space-to-space primary allocation provide further separation distance with incumbent fixed and mobile services on the Earth.

Proposals:

MOD USA/1.13/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

14.5-15.4 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14.8-15.35	FIXED MOBILE SPACE RESEARCH (space-to-space) Space research (Earth-to-space) (space-to-Earth) 5.339	

Reasons: Modifications to Article 5 to upgrade Space Research (space-to-space) while retaining Space Research (Earth-to-space) and Space Research (space-to-Earth) as secondary only.

MOD USA/1.13/2

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section V – Limits of power flux-density from space stations

TABLE **21-4** (*continued*) (Rev.WRC-~~19~~23)

Frequency band	Service*	Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
…	…	…	…	…	…
14.8-15.35 GHz	Space research (space-to-space)	–124	–124 + 0.5(δ – 5)	–114	1 MHz
…	…	…	…	…	…

Reason: Modifications to Table 21-4 to include PFD limits to protect the fixed and mobile services from Space Research (space-to-space) transmissions.

SUP USA/1.13/3

RESOLUTION 661 (WRC-19)

Examination of a possible upgrade to primary status of the secondary allocation to the space research service in the frequency band 14.8-15.35 GHz

Reason: Consequential action.

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UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.14

Agenda Item 1.14: *to review and consider possible adjustments of the existing or possible new primary frequency allocations to EESS (passive) in the frequency range 231.5-252 GHz, to ensure alignment with more up-to-date remote-sensing observation requirements, in accordance with Resolution **662 (WRC-19)**;*

Background:

The objective of WRC-23 agenda item 1.14 is to review and consider possible adjustment of the existing or possible new primary frequency allocations to the Earth exploration-satellite service (EESS) (passive) in the frequency range 231.5-252 GHz to ensure alignment with more up-to-date remote sensing observation requirements without unduly constraining the operation of other primary services currently allocated in this frequency range. Resolution **662 (WRC-19)** resolves to study modifications to EESS (passive) allocations and invites WRC-23 to consider adjusting existing allocations or adding possible new allocations, as appropriate, to the EESS (passive) in the frequency range 231.5-252 GHz. Modifications to other allocations in this frequency range are out of scope of this agenda item.

EESS (passive) microwave sensing in this rangre mainly includes Ice Cloud Measurements and atmosphere gases measurement. The Ice Cloud Imager (ICI) instrument which is a conical scanning millimeter/sub-millimeter wave radiometer, performs measurements cloud ice water paths and cirrus clouds operating in two symmetric spectral bands of 239.2-242.2 GHz and 244.2-247.2 GHz. The Microwave Limb Sounder (MLS) instrument continuously observes thermal emission from utilizing spectrometers of numerous channels within the frequency band 231.5-252 GHz to measure the chemical processes and compounds within Earth's atmosphere.

Compatibility studies show that, in the frequency band 239.2-242.2 GHz, the sharing between the conical scanning passive sensors (like ICI) and systems of fixed service (FS)/mobile service (MS) is not feasible (a negative margin of – 34 dB). Studies also show that limb sounding passive sensors are compatible with systems of FS/MS in the whole frequency range 231.5-252 GHz. Further, the sharing between the fixed-satellite service (FSS) (GSO, space-to-Earth) and EESS (passive) is feasible within the whole frequency range 232-240 GHz.

For the radiolocation service, no sharing and compatibility studies are performed as there are no technical characteristics for radiolocation service in the frequency band 238-248 GHz in ITU-R Recommendation or Reports. For the radionavigation and radionavigation-satellite service, no sharing and compatibility studies are performed as there are no technical characteristics available for radionavigation and radionavigation satellite services in the frequency band 238-240 GHz in ITU-R Recommendation or Reports.
It should be noted that sharing and compatibility studies were performed with the fixed and mobile service in the 235 – 238 GHz band, and such use was found to be compatible (positive interference margin of > 14 dB). As any changes (suppression or addition) of terrestrial services are out of scope of

Resolution **662 (WRC-19)**, a future competent Conference may consider the results of these studies called for under Resolution **731 (WRC-19)**[19].

Proposal:

MOD USA/1.14/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

[19] From **Resolution 731 (WRC-19):**

resolves

to invite a future competent world radiocommunication conference to consider the results of ITU-R studies referred to in invites the ITU Radiocommunication Sector below with a view to taking the necessary action, as appropriate, in order to accommodate the emerging requirements of active services, taking into account the requirements of the passive services, in frequency bands above 71 GHz,

urges administrations

to note the possibility of changes to Article **5** to accommodate emerging requirements for active services, as indicated in this Resolution, and to take this into account in the development of national policies and regulations,

invites the ITU Radiocommunication Sector

1 to continue its studies to determine if and under what conditions sharing is possible between active and passive services in the frequency bands above 71 GHz, such as, but not limited to, 100-102 GHz, 116-122.25 GHz, 148.5-151.5 GHz, 174.8-191.8 GHz, 226-231.5 GHz and 235-238 GHz;

200-248 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
232-235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
235-238	EARTH EXPLORATION-SATELLITE (passive) ADD 5.B114 FIXED-SATELLITE (space-to-Earth) SPACE RESEARCH (passive) 5.563A 5.563B	
238-~~240~~239.2	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	
~~238~~239.2-240	EARTH EXPLORATION-SATELLITE (passive) ADD 5.B114 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	
240-241	EARTH EXPLORATION-SATELLITE (passive) ADD 5.B114 FIXED MOBILE RADIOLOCATION	
241-~~248~~242.2	EARTH EXPLORATION-SATELLITE (passive) ADD 5.B114 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite ~~5.138~~ 5.149	
241~~2~~2.2-~~248~~244.2	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	
24~~4~~4.2~~1~~-24~~7~~7.2~~8~~	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	

247.21-248	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite ~~5.138~~ 5.149

Reason: Based on ITU-R studies performed, these modifications provide 6 GHz of additional spectrum to the Earth exploration-satellite service (passive) while not constraining incumbent fixed and mobile service operations.

ADD USA/1.14/2

5.B114 The use of the frequency band 235-238 and 239.2-242.2 GHz by the Earth exploration-satellite service (passive) is limited to the operation of limb sounding passive sensors. In the frequency band 239.2-242.2 GHz, stations in the Earth exploration-satellite (passive) service shall not claim protection from stations of the fixed and mobile services. (WRC-23)

Reason: In order to ensure the protection of incumbent terrestrial services and not constrain their future development, these EESS (passive) operations are limited to limb sounding and not claiming protection.

SUP USA/1.14/3

RESOLUTION 662 (WRC-19)

Review of frequency allocations for the Earth exploration-satellite service (passive) in the frequency range 231.5-252 GHz and consideration of possible adjustment according to observation requirements of passive microwave sensors

Reason: Consequential action.

WRC-23 Agenda Item 1.15

IWG-3 members were not able to reach consensus on a proposal for WRC-23 agenda item (AI) 1.15 and, therefore, it forwards two views on how the FCC could handle this matter.

VIEW A

Author: CTIA

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.15

Agenda Item 1.15: *to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution **172 (WRC-19)**;*

Background:

WRC-23 agenda item 1.15 calls for studies on the possible operation of aeronautical and maritime earth stations in motion (A-ESIM and M-ESIM) communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space). The use of the 12.75-13.25 GHz frequency band by geostationary-satellite networks in the fixed-satellite service is subject to RR Appendix **30B**, which contains a worldwide fixed-satellite service allotment Plan and assignments in the List and has its own regulatory procedures and technical criteria. The 12.75-13.25 GHz is also allocated globally to the fixed and mobile service on a primary basis.

ITU-R studies were conducted to consider the protection of stations operating in the terrestrial services from a possible new application of the fixed satellite service (FSS) ESIM operations. These studies include significant deficiencies such that it is impossible to conclude that protection of the current and planned systems of incumbent terrestrial services is ensured. The studies narrowly consider a single latitude of 51° N for operations of the terrestrial services, which combined with the satellite spacing and spot beam satellite coverage example, downwardly skews the number of visible GSO satellites and by association, the number of possible A-ESIM interference sources. Further decreasing this underestimation, the deployment density of A-ESIM is downwardly skewed by assuming the aircraft will be uniformly distributed across the satellite receive beam coverage and that the visible area of the terrestrial station will only marginally intersect with the satellite footprint at a ratio of approximately 1 to 8. Comparing to other frequency bands used for ESIMs (e.g. 29 GHz), at 12.75 GHz the path loss the interfering signal goes through is 6 dB less and therefore the range of its harmful impact on terrestrial increases accordingly. As seen in other ITU-R studies (e.g. WRC-19 agenda item 1.5 and WRC-23 agenda item 1.16), the case of airports and taxi/take off/landing is the limiting case which means the uniform distribution of ESIMs through the beam is not valid. The combination of these assumptions vastly underestimates the interference potential into terrestrial services. By way of comparison, these assumptions are inconsistent with studies conducted with other incumbent services under this Agenda item, like the aeronautical radionavigation service, which models the real-world behavior of the aircraft these A-ESIM seek to serve. For these reasons, the sharing studies have failed to demonstrate that protection is ensured for the current and planned systems of incumbent terrestrial services.

In the United States, the Federal Communications Commission (FCC) has opened a Notice of Inquiry (NOI) exploring how to expand the use of 550 megahertz of mid-band spectrum between 12.7 – 13.25 GHz for mobile broadband use as well as considerations on how to facilitate the international harmonization of the band. As noted in the Inquiry, “Mid-band spectrum in the 12.7 GHz frequency range combines favorable propagation characteristics and considerable capacity and opportunity for channel

reuse, as well as superior building penetration and reduced clutter loss as compared to high-band spectrum."

Proposal:

NOC USA/1.15/1

ARTICLES

Reason: In order to ensure the protection of incumbent terrestrial services and harmonize the 12.75-13.25 GHz band for mobile broadband operations.

NOC USA/1.15/2

APPENDICES

Reason: In order to ensure the protection of incumbent terrestrial services and harmonize the 12.75-13.25 GHz band for mobile broadband operations.

SUP USA/1.15/3

RESOLUTION 172 (WRC-19)

Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)

Reason: Consequential action.

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VIEW B

IWG-3/67R2
Author: Intelsat, SES

Agenda Item 1.15 *to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution 172 (WRC-19)*

BACKGROUND

The demand for on the move connectivity services provided by earth stations on aircraft and vessels continues to grow as the importance and access to internet-based applications for the aviation and maritime industry as well as for their passengers increases. Given this reality, WRC-19 adopted agenda item 1.15 for WRC-23 to study the operation of earth stations on aircraft and vessels communicating with geostationary-satellite (GSO) fixed-satellite service (FSS) space stations and potential sharing and compatibility issues with incumbent services in the 12.75-13.25 GHz frequency band and primary services in adjacent bands. The use of the 12.75-13.25 GHz band by GSO FSS (Earth-to-space) is subject to Appendix **30B**.

Previous WRCs have adopted technical and regulatory provisions to allow aeronautical and maritime terminals to communicate with GSO FSS networks in other frequency bands:

1. Resolution **902 (WRC-03)** addresses the use of earth stations on board vessels communicating with GSO FSS networks in the bands 5925-6425 MHz and 14-14.5 GHz (RR No. **5.457A**);

2. Resolution **156 (WRC-15)** addresses the use of earth stations in motion (ESIM) communicating with GSO FSS networks in the 19.7-20.2 GHz and 29.5-30.0 GHz bands (RR No. **5.527A**);

3. Resolution **169 (WRC-19)** addresses the use of ESIMs communicating with GSO FSS networks n the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz (RR No. **5.517A**).

According to the result of the studies being conducted in ITU-R regarding agenda item 1.15, this proposal supports Method B, contained in the CPM Report, to deal with agenda item 1.15, which consists of establishing a new regulatory framework and setting new operating requirements for earth stations on aircraft and vessels in the frequency band 12.75–13.25 GHz (Earth-to-space). The results of the ITU-R studies needed to protect other services allocated in this frequency bands under, as well as the services to the adjacent bands in accordance with Resolution 172 (WRC-19).

These studies included protection of allotments to AP30B Plan, geostationary FSS systems operating under Appendix 30B in the List, non-geostationary FSS systems, earth exploration-satellite services, aeronautical radionavigation services, and the fixed and mobile terrestrial services. The ITU WP expert groups provided the technical parameters and protection criteria for their respective service. The technical and regulatory criteria contained in Method B of the CPM Report was developed in collaboration with these expert ITU-R Working Parties, including WP4A, WP5A, WP5B and WP5C, WP7C as required.

ARTICLE 5

Frequency allocations

Section IV – Frequency band allocation table

(See No. 2.1)

MOD USA/1.15/1

11.7-13.4 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
12.75-13.25	FIXED FIXED-SATELLITE (Earth-to-space) 5.441 ADD 5.A115 MOBILE Space research (outer space) (space-to-Earth)	

ADD USA/1.15/2

5.A115 Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service operating in the frequency band 12.75-13.25 GHz (Earth-to-space) shall be subject to the application of Resolution **[A115] (WRC-23)**. (WRC-23)

ADD USA/1.15/3

DRAFT NEW RESOLUTION [115] (WRC-23)

Use of the frequency band 12.75-13.25 GHz by earth stations in motion on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that WARC Orb-88 established an Allotment Plan for the use of the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz;

b) that WRC-07 revised the regulatory regime governing the use of the frequency bands referred to in *considering a)* above;

c) that the objective of providing broadband mobile satellite communications may also be met by allowing earth stations in motion (ESIMs), on aircraft (A-ESIMs) and vessels (M-ESIMs), to communicate with the geostationary space stations of a fixed-satellite network in the frequency bands 12.75-13.25 GHz (Earth-to-space) and the associated downlink frequency bands of that satellite;
d) that the frequency band 12.75-13.25 GHz is currently allocated on a primary basis to the fixed-satellite service (FSS) (Earth-to-space), fixed and mobile services and on a secondary basis to the space research (deep space) (space-to-Earth) service;
e) that the operation of services to which the frequency band 12.75-13.25 GHz is allocated and those in adjacent bands needs to be protected from A-ESIM and M-ESIM;
f) that the frequency band 12.75-13.25 GHz (Earth-to-space) is used by the geostationary-satellite orbit (GSO) FSS in accordance with the provisions of Appendix **30B** (RR No. **5.441**) and that there are many existing GSO FSS satellite networks operating in this frequency band;
g) that the objective of the procedures in Appendix **30B** is to guarantee, for all countries, equitable access to the GSO in the frequency bands of the FSS covered by this Appendix;
h) that appropriate regulatory and interference-management mechanisms, including necessary mitigation measures and associated techniques are required for the operation of A-ESIM and M-ESIM in the frequency band 12.75-13.25 GHz (Earth-to-space) to protect other space and terrestrial services in this frequency band as well as services in adjacent frequency bands and without adversely affecting those services and their future development, taking into account the provisions of Appendix **30B** (see also *resolves further* 1 to 5 on responsibilities);
i) that, in Appendix **30B**, the frequency bands in the space-to-Earth direction corresponding to the frequency band 12.75-13.25 GHz (Earth-to-space) are 10.7-10.95 GHz and 11.2-11.45 GHz, which may be used by A-ESIM and M-ESIM, subject to not claiming protection from other services and applications of the FSS and other radiocommunication services to which the frequency band is allocated;
j) that there is no publicly available information on coordination agreements reached among administrations regarding GSO FSS satellite networks except whether coordination has been completed, which is provided to, and published by the Radiocommunication Bureau (BR);
k) that the operation of A-ESIMs and M-ESIMs requires the establishment of one or more gateway earth station facilities in one or several countries that are within the service area of the associated satellite network and that are authorized by the administration of the territory where such earth stations are located,

considering further

a) that A-ESIMs and M-ESIMs operating within the agreed service area of the satellite networks with which they communicate may provide service within the territories under the jurisdiction of multiple administrations;
b) that the operation of ESIMs within the territory under the jurisdiction of administrations/countries mentioned in *considering further a)* above is subject to obtaining authorization from those administrations;
c) that the frequency band 12.75-13.25 GHz is used by a variety of different systems and these existing services and their future development need to be protected, without any undue constraints, from the operation GSO ESIMs,
d) there is not specific regulatory procedure for the coordination on GSO ESIMs relative to terrestrial stations for these services;
e) that the operation of A-ESIM and M-ESIM shall comply with provision RR No. **5.340**;

f) that when the Appendix **30B** GSO FSS satellite network with which A-ESIMs and M-ESIMs communicate transmits in the frequency bands 10.7-10.95 GHz and 11.2-11.45 GHz, it shall operate under the levels that were coordinated and included in the List, and these Appendix **30B** satellite transmissions will not change to accommodate A-ESIMs and M-ESIMs;

g) that the operation of A-ESIMs and M-ESIMs in the frequency bands 10.7-10.95 GHz and 11.2-11.45 GHz shall not adversely affect the allotments in the Plan nor the assignments in the List,

recognizing

a) that Article 44 of the ITU Constitution contains the basic principles for the use of the radio-frequency spectrum and the GSO and other satellite orbits, taking into account the needs of developing countries;
b) that administrations intending to authorize A-ESIMs and M-ESIMs, when establishing national licensing rules, may consider adopting other interference management procedures and/or mitigation measures than those contained in this Resolution;
c) that, pursuant to the relevant paragraph in Appendix **30B**, the operation of ESIM in the frequency band 12.75-13.25 GHz is within the service area of the Appendix **30B** network for which explicit agreement has been obtained;
c bis) that § 6.16 of Article 6 of Appendix **30B** provides the opportunity to any administration at any time to request that its territory be excluded from the service area of any assignment governed by Appendix **30B**;
d) that the operation of an A-ESIM or M-ESIM communicating with a space station of a given satellite network inter alia requires that earth station is within the coordinated and agreed service area of that satellite, under the relevant provisions of Appendix **30B**;
e) that, based on the available information in the Bureau's database in May 2022, there is no contiguous regional or worldwide coordinated and agreed service area for any satellite using Appendix **30B** frequency band 12.75-13.25 GHz recorded in the Master International Frequency Register (MIFR);
f) that, in order for A-ESIM and M-ESIM to operate in the frequency band 12.75-13.25 GHz (Earth-to-space) of Appendix **30B** in the most efficient and operationally viable manner, having a contiguous regional or worldwide coordinated and agreed service area is an important issue to be taken into account;
g) that the administration authorizing ESIMs on the territory under its jurisdiction has the right to require that the ESIMs referred to above only use those assignments associated with GSO FSS networks which have been successfully coordinated, notified, brought into use and recorded in the MIFR with a favourable finding under § 8.11 of Article 8 of the Appendix **30B**, except those arising from the application of § 6.25 of Appendix **30B**;
h) that WRC-19 adopted Resolution **170 (WRC-19)**, which provides the procedure to enhance equitable access to frequency bands under Appendix **30B** by developing countries;
i) that the protection of current usage and future development of Appendix **30B** in the frequency band 12.75-13.25 GHz (Earth-to-space) is fundamental;
j) that the availability of the methodology to examine conformity to the power flux-density (pfd) limit as contained in Annex 2 to this Resolution is a fundamental and crucial element;
k) that there is need to establish regulatory, technical and recording procedures for the usage of these type of ESIMs that may differ from the current FSS Appendix **30B** Plan and List recording procedures;
l) that successful compliance with this Resolution does not oblige any administration to authorize/license earth stations on aircraft and vessels communicating with geostationary space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space) to operate within the territory under its jurisdiction (see *resolves* 7);

recognizing further
a) that under *resolves* 1.1.3 of this Resolution frequency assignments to ESIMs need to be notified to the BR;
b) that, for the operation of ESIMs, notification of any frequency assignment under Annex 1 of this Resolution shall only be made by one single administration;

c) that, an administration authorizing the operation of ESIMs within the territory under its jurisdiction may modify/withdraw that authorization at any time,

resolves

1 that, for any earth station on aircraft and vessels communicating with a GSO FSS space station within the frequency band 12.75-13.25 GHz (Earth-to-space), or parts thereof, the following conditions shall apply:

1.1 with respect to space services in the frequency band 12.75-13.25 GHz and adjacent bands, A-ESIM and M-ESIM shall comply with the following conditions:

1.1.1 the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by A-ESIM and M-ESIM shall not result in any changes or restrictions to the allotment in the Plan, assignments in the List of Appendix **30B**, and those recorded in the MIFR including the assignments arising from the implementation of Resolution **170 (WRC-19)**;

1.1.2 with respect to satellite networks or systems of other administrations, the characteristics of A-ESIM and M-ESIM shall remain within the envelope of typical characteristics of notified earth stations associated with the satellite networks with which these earth stations communicate, as published by the Bureau and included in relevant International Frequency Information Circular (BR IFIC), and Annex 1 applies;

1.1.2*bis* the use of A-ESIM and M-ESIM shall not cause any interference to Appendix **30B** allotments, assignments received by the Bureau under Article 6 either in process or yet to be processed, assignments in the List, assignments notified under Article 8 of that Appendix, and assignments recorded in the MIFR as well as submission under Appendix **30B** beyond that specified in relevant Annexes to that Appendix;

1.1.3 for the implementation of *resolves* 1.1.1, 1.1.2 and 1.1.2bis above, the notifying administration for the GSO FSS network with which the above-mentioned earth stations communicate shall follow the procedure in Annex 1 of this Resolution, together with the commitment that the operation shall be in conformity with the Radio Regulations, including this Resolution;

1.1.4 upon receipt of the notification information referred to in *resolves* 1.1.3 above, the BR shall process the submission in accordance with Annex 1 of this Resolution;

1.1.5 for the protection of non-GSO FSS systems operating in the frequency band 12.75-13.25 GHz, the above-mentioned earth stations communicating with GSO FSS networks referred to above shall comply with the provisions contained in Annex 3 of this Resolution;

1.1.6 the notifying administration of the GSO FSS network with which the above-mentioned earth stations communicate shall ensure that the operation of these earth stations complies with the coordination agreements for the frequency assignments of the earth station of this GSO FSS satellite network of Appendix **30B** obtained under the relevant provisions of that Appendix;

1.2 with respect to the protection of terrestrial services to which the frequency band 12.75-13.25 GHz is allocated and that operate in accordance with the Radio Regulations, A-ESIM and M-ESIM shall comply with the following conditions:

1.2.1 transmitting A-ESIM and M-ESIM in the frequency band 12.75-13.25 GHz (Earth-to-space) shall not cause unacceptable interference to terrestrial services to which this frequency band is allocated and that operate in accordance with the Radio Regulations, and Annex 2 to this Resolution shall apply;

1.2.2 the receiving part of the above-mentioned earth stations in their associated frequency band shall not claim protection from terrestrial services to which this frequency band is allocated and that operate in accordance with the Radio Regulations;

1.2.3 the provisions in this Resolution, including Annex 2, set the conditions for the purpose of protecting terrestrial services from unacceptable interference from earth stations on aircraft and vessels in neighbouring countries in the frequency band 12.75-13.25 GHz; however, the requirement to not cause unacceptable interference to terrestrial services to which the frequency band is allocated and that operate in accordance with the Radio Regulations remains valid, irrespective of compliance with that Annex (see *resolves* 7);

1.2.4 for the application of Part II of Annex 2 as referred to in *resolves* 1.2.1 above, the BR shall examine the characteristics of earth stations on board aircraft with respect to the conformity with the pfd limits on the Earth's surface specified in Part II of Annex 2, and publish the results of such examination in the BR IFIC;

1.2.5 the compliance with the pfd mask mentioned above does not release the notifying administration of the A-ESIM and M-ESIM with respect to discharging its responsibility that such earth stations shall not cause unacceptable interference and any interrelated receiving part shall not claim protection from the terrestrial stations;

1.2.6 should administrations authorizing A-ESIM agree to pfd levels higher than the limits contained in Part II of Annex 2 within the territory under its jurisdiction, such agreement shall in no way affect other countries that are not party to that agreement;

1.3 with respect to the aeronautical radionavigation systems operating in the frequency band 13.25-13.4 GHz, A-ESIM and M-ESIM communicating with GSO FSS networks shall not cause unacceptable interference to nor claim protection from the aeronautical radionavigation service (ARNS) operating in accordance with the Radio Regulations in the 13.25-13.40 GHz band;

2 that only frequency assignments of Appendix **30B** recorded in the List can be used as supporting assignments by A-ESIMs and M-ESIMs communicating with GSO networks in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space), if those assignments are recorded in the MIFR with favourable finding under § 8.11 of Article 8 of Appendix **30B**;

3 that operation of A-ESIM and M-ESIM communicating with GSO space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space) shall be within the coordinated and notified service area of the GSO FSS network with which the earth stations communicate;

4 that, for the implementation of *resolves* 3 above, the notifying administration for the GSO FSS network with which the A-ESIM and M-ESIM communicate shall ensure that necessary arrangements and switching facilities are built into the above-mentioned earth stations to cease emissions once approaching the territory under the jurisdiction of those administrations which either are not within the notified and coordinated service area of the subject space station or have not authorized the operation over their territories;

5 that any course of action taken under this Resolution has no impact on the original date of receipt of the frequency assignments of the GSO FSS satellite network with which earth stations on aircraft and vessels communicate, or on the coordination requirements of that satellite network;

6 that A-ESIM and M-ESIM shall not be used or relied upon for safety-of-life applications;

7 that the operation of A-ESIM and M-ESIM within territorial waters and/or airspace under the jurisdiction of an administration shall be carried out only if a licence according to No. **18.1** of the Radio Regulations/authorization of that administration is obtained;

8 that gateway earth station facilities for A-ESIM and M-ESIM shall be within the service area of the satellite network associated to that gateway;

8bis that the operation of ESIM at sea is subject to the application of decisions of previous WRCs, in particular WRC 19, and past practices of the Bureau;

9 that, in the case unacceptable interference caused by A-ESIM and/or M-ESIM is reported:

9.1 the notifying administration of the GSO FSS network with which the ESIM communicates, assisted by the authorizing administration on the territory under the jurisdiction where the earth station operates, to the extent of the ability of the latter administration, shall undertake an investigation on the

matter and provide the required information to the administration reporting unacceptable interference on the operation of those earth stations;
9.2 the notifying administration of the GSO FSS network with which the ESIMs communicate shall take the required action to eliminate or reduce interference to an acceptable level;
10 that the administration responsible for the GSO FSS satellite supporting assignment with which earth stations on aircraft and vessels communicate shall ensure:
10.1 that for the operation of A-ESIM and M-ESIM, techniques are employed to maintain pointing accuracy with the associated GSO FSS satellite, without inadvertently tracking adjacent GSO satellites;
10.2 that all necessary measures shall be taken so that earth stations on aircraft and vessels are subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCMC) or equivalent facility in order to comply with the provisions in this Resolution, and are capable of receiving and acting upon at least "enable transmission" and "disable transmission" commands from the NCMC or equivalent facility;
10.3 that measures, when required, are to be taken to limit transmission of the A-ESIM and/or M-ESIM on the territory, including territorial waters and territorial airspace, under the jurisdiction of the authorizing administration of the operation of the above-mentioned earth stations;
10.4 that a permanent point of contact shall be designated and provided by the notifying administration of the GSO FSS network for the purpose of tracing any suspected cases of unacceptable interference from earth stations on aircraft and vessels and to immediately respond to requests from the focal point of the authorizing administration,

resolves further

1 that frequency assignments in the frequency band 12.75-13.25 GHz (Earth-to-space) by A-ESIM and M-ESIM communicating with geostationary space stations in the FSS shall be notified by the notifying administration of the satellite network with which the ESIM communicates;
2 that the notifying administration of the satellite network shall ensure that ESIMs operate only in the territory under the jurisdiction of an administration from which an authorization has been obtained, taking into account *recognizing further c)* above;
3 that, for the implementation of *resolves further* 2 above, the notifying administration of the satellite network with which ESIMs communicate shall ensure that ESIMs are designed and operate so as to cease transmission in the territory of any administration from which authorization has not been obtained;
4 that, for the implementation of *resolves further* 1 above, the notifying administration responsible for the operation of A-ESIM and M-ESIM shall also be responsible for observing and complying with all relevant regulatory and administrative provisions applicable to the operation of the above-mentioned ESIMs as included in this Resolution and those contained in the Radio Regulations;
5 that the authorization for an ESIM to operate in the territory under the jurisdiction of an administration shall in no way release the notifying administration of the satellite network with which the ESIM communicates from the obligation to comply with the provisions included in this Resolution and those contained in the Radio Regulations,

instructs the Director of the Radiocommunication Bureau

1 to take all necessary actions to facilitate the implementation of this Resolution, together with providing any assistance for the resolution of interference, when required;
2 to report to future world radiocommunication conferences any difficulties or inconsistencies encountered in the implementation of this Resolution, including whether or not the responsibilities relating to the operation of A-ESIMs and M-ESIMs have been properly addressed;

invites administrations

to collaborate for the implementation of this Resolution, in particular for resolving interference, if any,

instructs the Secretary-General

1 to bring this Resolution to the attention of the Council with a view to consider if cost recovery should be applied to ESIM;

2 to bring this Resolution to the attention of the Secretary-General of the International Maritime Organization and of the Secretary General of the International Civil Aviation Organization.

ANNEX 1 TO DRAFT NEW RESOLUTION [A115] (WRC-23)

PART I

Procedure to be followed by the administrations and the Bureau for submission of the earth stations on board aircraft and vessels operating in the frequency band 12.75-13.25 GHz (Earth-to-space) and for the protection of allotments in the Plan, assignments in the Appendix 30B List and those submitted under Articles 6 and 7 of Appendix 30B as well as under Resolution 170 (WRC-19)

Section A – Procedure for entering assignments to earth stations on board aircraft and vessels in the Appendix 30B ESIM List[1]

1 When an administration or one acting on behalf of a group of named administrations intends to use one or more Appendix **30B** assignments already included in the List in support of the operation of A-ESIMs and M-ESIMs in the frequency band 12.75-13.25 GHz, it shall send to the Bureau, not earlier than 8 years but preferably not later than 2 years before the operation of A-ESIMs and M-ESIMs, the information specified in Appendix **4**[2].

An assignment in the Appendix **30B** ESIM List shall lapse if it is not brought into use within 8 years after the date of receipt by the Bureau of the relevant complete information specified above. A proposed assignment not included in the Appendix **30B** ESIM List within 8 years after the date of receipt by the Bureau of the relevant complete information shall also lapse.

1*bis* If the information received by the Bureau under § 1 is found to be incomplete, the Bureau shall immediately seek any clarification required and information not provided from the administration concerned.

[1] The List of assignments for earth station in motion (ESIM) in the frequency band 12.75-13.25 GHz in Appendix **30B**.

[2] Submissions may include only the frequency band 12.75-13.0 GHz or 13.0-13.25 GHz.

2 Upon receipt of a complete notice under § 1, the Bureau shall examine it with respect to its conformity with:

a) the Table of Frequency Allocations and the other provisions[3] of the Radio Regulations, except those provisions relating to conformity with the FSS Plan and the coordination procedures;

b) Annex 3 to Appendix **30B**;

c) the on-axis e.i.r.p. density and off-axis e.i.r.p. density of the supporting Appendix **30B** assignment(s);

d) the service area of the supporting Appendix **30B** assignment(s) in respect of explicit agreements of those administrations whose territories are included in the service area[4];

e) the frequency band of the supporting Appendix **30B** assignment(s) in the List in the frequency band 12.75-13.25 GHz.

3 When the examination with respect to § 2 leads to an unfavourable finding, the relevant part of the notice shall be returned to the notifying administration with an indication of the appropriate action.

4 When the examination with respect to § 2 leads to a favourable finding, the Bureau shall use the method of Annex 4 to Appendix **30B** to determine administrations whose:

a) allotments in the Plan; or

b) assignments which appear in the List; or

c) assignments which the Bureau has previously examined under § 6.5 of Article 6 of Appendix **30B** after receiving complete information in accordance with § 6.1 of that Article,

are considered as being affected and receiving more interference than that produced by the supporting Appendix **30B** assignment(s).

5 The Bureau shall publish, in a Special Section of its BR IFIC, the complete information received under § 1, together with the names of the affected administrations, the corresponding allotments in the Plan, assignments in the List and assignments for which the Bureau has previously received complete information in accordance with § 6.1 of Article 6 of Appendix **30B** and which it has examined under § 6.5 of that Article.

5*bis* The Bureau shall immediately inform the administration proposing the assignment, drawing its attention to the information contained in the relevant BR IFIC and the requirement to seek and obtain the agreement of those affected administrations.

6 The Bureau shall also inform each administration listed in the Special Section of the BR IFIC published under § 5, drawing its attention to the information it contains.

7 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the BR IFIC referred to in § 5 shall be deemed to have not agreed to the proposed assignment in respect of its allotment in the Plan, conversion of an allotment into an assignment for national coverage, Article 7 request transferred to Article 6, submission in accordance with Resolution **170 (WRC-19)**, assignments in the List of Appendix **30B**, and those recorded in the MIFR, according to the case for which absence of reply/comments shall construe their disagreement to the request for coordination. This time-limit shall be extended for an administration that has requested the assistance of the Bureau by up to thirty days following the date on which the Bureau communicated the result of its action. In respect of its frequency assignments under

[3] The "other provisions" shall be identified and included in the Rules of Procedure.

[4] The service area may be reduced by excluding certain countries for which explicit agreement was obtained.

Article 6 of Appendix **30B** other than those mentioned above, the same course of action outlined in § 6.10 of that Article shall apply.

8 Unless coordination is no longer required, the administration responsible for the notice published under § 5 shall seek and obtain the explicit agreement of the relevant affected administrations contained in the Special Section published under § 5 in respect of allotment in the Plan, conversion of an allotment into an assignment for national coverage, Article 7 request transferred to Article 6, submission in accordance with Resolution **170 (WRC-19)**, assignments in the List of Appendix **30B**, and those recorded in the MIFR, as appropriate. In this specific case of explicit agreement, any request for the assistance of the Bureau shall not change it to implicit/tacit agreement.

9 If agreements have been reached in accordance with §§ 7 and 8 with administrations published under § 5, the administration responsible for the notice published under § 5 may request the Bureau to have the assignment entered into the Appendix **30B** ESIM List, indicating the final characteristics of the notice[5] together with the names of the administrations with which agreement has been reached.

9*bis* In submitting such information, noting the requirement of § 1 of Section B, the administration may also request the Bureau to examine the submission in respect of notification under Section B.

9*ter* If the information received by the Bureau under §§ 9 and 9*bis* is found to be incomplete, the Bureau shall immediately seek any clarification required and information not provided from the administration concerned. The Bureau may also provide additional information in order to assist the notifying administration in complying with requirements under §§ 10, 12 and 13.

10 Upon receipt of a complete notice under § 9, the Bureau shall examine each assignment in the notice with respect to its conformity with:

a) the Table of Frequency Allocations and the other provisions[6] of the Radio Regulations, except those provisions relating to conformity with the FSS Plan and the procedures for obtaining coordination;

b) Annex 3 to Appendix **30B**;

c) the service area published under § 5;

d) the on-axis e.i.r.p. density and off-axis e.i.r.p. density of the assignments published under § 5, and

e) frequency band of the assignments published under § 5.

11 When the examination with respect to § 10 of an assignment received under § 9 leads to an unfavourable finding, the notice shall be returned to the notifying administration with an indication that subsequent resubmission under § 9 will be considered with a new date of receipt.

12 When the examination with respect to § 10 of an assignment received under § 9 leads to a favourable finding, the Bureau shall use the method of Annex 4 to examine if there is any administration and the corresponding:

a) allotment in the Plan;

b) assignment which appears in the List at the date of receipt of the examined notice submitted under § 1;

c) assignments which the Bureau has previously examined under § 6.5 of Article 6 of Appendix **30B** after receiving complete information in accordance with § 6.1 of that Article at the date of receipt of the examined notice submitted under § 1[7],

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[5] Submissions may include only the frequency band 12.75-13.0 GHz or 13.0-13.25 GHz.

[6] The “other provisions” shall be identified and included in the Rules of Procedure.

[7] Similar course of action as prescribed in footnote 7*bis* of § 6.21 of Article 6 of Appendix **30B** applies.

considered as being affected and receiving more interference than that produced by the supporting Appendix **30B** assignment(s) and whose agreement has not been provided under § 9.

13 The Bureau shall determine if the cumulative interference is caused to an allotment in the Plan or an assignment in the List or an assignment for which the Bureau has received complete information in accordance with Article 6 of Appendix **30B** before the date of receipt of the complete notice under § 9. The cumulative interference shall be calculated based on Appendix 1 to Annex 4 of Appendix **30B**, taking into account assignments in the Appendix **30B** ESIM List together with assignments submitted under § 9. The cumulative interference is considered as being caused when the overall aggregate $(C/I)_{aggregate}$ value is less than that resulting from the supporting Appendix **30B** assignment(s) with a tolerance of 0.25 dB (inclusive of the 0.05 dB computational precision), except for an allotment in the Plan, an assignment stemming from the conversion of an allotment into an assignment without modification, or when the modification is within the envelope characteristics of the initial allotment, as well as assignments relating to application of Article 7 of Appendix **30B** for which the 0.05 dB computational precision is applicable.

14 In the event of a favourable finding under §§ 12 and 13, the Bureau shall enter the proposed assignment in the Appendix **30B** ESIM List and publish in a Special Section of its BR IFIC the characteristics of the assignment received under § 9, together with the names of administrations with which the provisions of this procedure have been successfully applied.

15 When the examination under § 12 or § 13 leads to an unfavourable finding with respect to allotments in the Plan, conversion of an allotment into an assignment for national coverage, Article 7 request transferred to Article 6, or submission in accordance with Resolution **170 (WRC-19)**, the Bureau shall return the notice to the notifying administration. In this case, the notifying administration undertakes not to bring into use the frequency assignments until the finding with respect to allotments in the Plan, conversion of an allotment into an assignment for national coverage, Article 7 request transferred to Article 6, or submission in accordance with Resolution **170 (WRC-19)**, is favourable. The Bureau, in returning the notice to the notifying administration, shall indicate that the subsequent resubmission under § 9 will be considered with a new date of receipt.

15*bis* When the examination under § 12 or § 13 leads to a favourable finding with respect to allotments in the Plan, conversion of an allotment into an assignment for national coverage, Article 7 request transferred to Article 6, submission in accordance with Resolution **170 (WRC-19)**, but an unfavourable finding with respect to others, and if the notifying administration insists that the proposed assignment be included in the Appendix **30B** ESIM List, the Bureau shall enter the assignment provisionally in the Appendix **30B** ESIM List with an indication of those administrations whose assignments were the basis of the unfavourable finding. To this effect, the notifying administration shall include a signed commitment, indicating that use of an assignment provisionally recorded in the Appendix **30B** ESIM List shall not cause unacceptable interference to, nor claim protection from, those assignments for which agreement still needs to be obtained. The entry in the Appendix **30B** ESIM List shall be changed from provisional to definitive only if the Bureau is informed that all required agreements have been obtained.

15*ter* Should the assignments that were the basis of the unfavourable finding not be brought into use within the period specified in § 6.1 of Article 6 of Appendix **30B** or within the extension period under § 6.31*bis* Article 6 of Appendix **30B**, then the status of the assignment in the Appendix **30B** ESIM List shall be reviewed accordingly.

16 Should unacceptable interference be caused by an assignment entered in the Appendix **30B** ESIM List under § 15*bis* to any assignment in the List which was the basis of the disagreement, the notifying administration of the assignment entered in the Appendix **30B** ESIM List under § 15*bis* shall, upon receipt of advice thereof, immediately eliminate this unacceptable interference.

17 For the examinations referred to in Part I and Part II, the Bureau shall generate a set of uplink grid points inside the service area of the relevant assignments to A-ESIMs and M-ESIMs, assuming that A-ESIMs and M-ESIMs are located at these uplink grid points.

Section B – Procedure for notification and recording in the Master Register of assignments to earth stations on board aircraft and vessels dealt with under this Resolution

1 Any assignment for which the relevant procedure of Section A and Part II of this Annex has been successfully applied shall be notified to the Bureau using the relevant characteristics listed in Appendix **4**, not earlier than three years before the assignments are brought into use.

2 If the first notice referred to in § 1 has not been received by the Bureau within the required period mentioned in § 1 of Section A, the assignments in the Appendix **30B** ESIM List shall be cancelled by the Bureau after having informed the administration at least three months before the expiry of this period.

3 Notices not containing those characteristics specified in Appendix **4** as mandatory or required shall be returned with comments to help the notifying administration to complete and resubmit them, unless the information not provided is immediately forthcoming in response to an inquiry by the Bureau.

4 Complete notices shall be marked by the Bureau with their date of receipt and shall be examined in the date order of their receipt. Following receipt of a complete notice, the Bureau shall, as soon as possible after the date of entry of the corresponding assignment into the Appendix **30B** ESIM List or within not more than two months if the corresponding assignment has already been entered into the Appendix **30B** ESIM List, publish its contents, with any diagrams and maps and the date of receipt, in the BR IFIC, which shall constitute the acknowledgement to the notifying administration of receipt of its notice. When the Bureau is not in a position to comply with the time-limit referred to above, it shall periodically so inform the administrations, giving the reasons thereof.

5 The Bureau shall not postpone the formulation of a finding on a complete notice unless it lacks sufficient data to reach a conclusion thereon.

6 Each notice shall be examined:

6.1 with respect to its conformity with the Table of Frequency Allocations and the other provisions[8] of these Regulations, except those provisions relating to conformity with the FSS Plan and the procedures for obtaining coordination, which are the subject of the following subparagraph;

6.2 with respect to its conformity with the FSS Plan, the procedures for obtaining coordination and the associated provisions[9].

7 When the examination with respect to § 6.1 leads to a favourable finding, the assignment shall be examined further with respect to § 6.2; otherwise, the notice shall be returned with an indication of the appropriate action.

8 When the examination with respect to § 6.2 leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action.

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[8] The "other provisions" shall be identified and included in the Rules of Procedure.

[9] When an administration notifies any assignment with characteristics different from those entered in the Appendix **30B** ESIM List through successful application of the relevant procedure of Section A and Part II of this Annex, the Bureau shall undertake calculation to determine if the proposed new characteristics increase the interference level caused to other allotments in the Plan, assignments in the List, an assignment for which the Bureau has received complete information in accordance with § 6.1 of Article 6 of Appendix **30B** before the date of receipt of this notification, assignments in the Appendix **30B** ESIM List and an assignment for which the Bureau has received complete information in accordance with § 1 of Section A before the date of receipt of this notification. The increase of the interference due to characteristics different from those entered in the Appendix **30B** ESIM List will be checked by comparing the *C*/*I* ratios of these other allotments and assignments, which result from the use of the proposed new characteristics of the subject assignment on the one hand, and those obtained with the characteristics of the subject assignment in the Appendix **30B** ESIM List, on the other hand. This *C*/*I* calculation is performed under the same technical assumptions and conditions.

9 In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of this Resolution, include an indication of the finding reflecting the status of the assignment. This information shall also be published in the BR IFIC.

10 A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix **4**, shall be examined by the Bureau under § 6.1 and § 6.2, as appropriate. Any changes to the characteristics of an assignment that has been recorded and confirmed as having been brought into use shall be brought into use within eight years from the date of the notification of the modification. Any changes to the characteristics of an assignment that has been recorded but not yet brought into use shall be brought into use within the period provided for in § 1 of Section A.

11 In applying the provisions of this Section, any resubmitted notice which is received by the Bureau more than six months after the date on which the original notice was returned by the Bureau shall be considered to be a new notice.

12 All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use no later than the end of the period provided for in § 1 of Section A. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment, it shall, no later than 15 days before the end of the regulatory period established under § 1 of Section A, send a reminder requesting confirmation that the assignment has been brought into use within the regulatory period. If the Bureau does not receive that confirmation within 30 days following the period provided under § 1 of Section A, it shall cancel the entry in the Master Register and the corresponding assignment in the Appendix **30B** ESIM List.

13 When the Bureau has received confirmation that the assignment in the Appendix **30B** ESIM List has been brought into use, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC.

14 Wherever the use of a frequency assignment in the Appendix **30B** ESIM List is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When that assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC. The date on which the assignment is brought back into use shall be no later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled from the Master Register and the Appendix **30B** ESIM List.

15 If the supporting Appendix **30B** assignment(s) is cancelled from the List, the corresponding ESIM assignment shall also be cancelled from the Appendix **30B** ESIM List and the Master Register, as appropriate.

PART II

Procedure to be followed by the administrations and the Bureau for examination and protection of one ESIM with respect to the other ESIMs

1 In the publication of the Special Section referred to in § 5 of Section A, the Bureau shall also include the names of the affected administrations, the corresponding assignments in the Appendix **30B** ESIM List and assignments for which the Bureau has previously received complete information in accordance with § 1 of Section A and which it has examined under § 4 of Section A, as appropriate.

2 In determining administrations whose assignments in the Appendix **30B** ESIM List or assignments for which the Bureau has previously received complete information in accordance with § 1 of Section A and which it has examined under § 4 of Section A are considered as being affected, the Bureau shall apply the principle of Annex 4 to Appendix **30B** and the following criteria:

a) orbital spacing as specified in paragraph 1.2 of Annex 4;

b) Earth-to-space single-entry carrier-to-interference as specified in paragraph 2.1 of Annex 4 or Earth-to-space single-entry carrier-to-interference (*C*/*I*) derived from the supporting Appendix **30B** assignment(s), whichever is the lowest;

c) the Earth-to-space pfd as specified in paragraph 2.2 of Annex 4.

3 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the BR IFIC referred to in § 5 of Section A shall be deemed to have agreed to the proposed assignment. This time-limit shall be extended for an administration that has requested the assistance of the Bureau by up to thirty days following the date on which the Bureau communicated the result of its action.

4 Unless coordination is no longer required, taking into account the final characteristics of the notice in § 9 of Section A, should harmful interference be caused by an assignment included in Appendix **30B** ESIM List to any assignment in Appendix **30B** ESIM List identified in § 1 for which agreement has not been obtained, the notifying administration shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

ANNEX 2 TO DRAFT NEW RESOLUTION [A115] (WRC-23)

Provisions for earth stations on aircraft and vessels to protect terrestrial services in the frequency band 12.75-13.25 GHz

The parts below contain provisions to ensure that A-ESIMs and M-ESIMs do not cause unacceptable interference in neighbouring countries to terrestrial service operations when earth stations operate in frequency bands overlapping with those used at any time by terrestrial services to which the frequency band 12.75-13.25 GHz is allocated and operating in accordance with the Radio Regulations (see also *resolves* 1.2 of this Resolution).

PART I

Earth stations on vessels

1 The notifying administration of the GSO FSS network with which an M-ESIM communicates shall ensure compliance of the M-ESIM operating within the frequency band 12.75-13.25 GHz, or parts thereof, with both of the following conditions for the protection of terrestrial services to which the frequency band is allocated within a coastal State:

1.1 The minimum distance from the low-water mark as officially recognized by the coastal State beyond which an M-ESIM can operate without the prior agreement of any administration is 133 km in the frequency band 12.75-13.25 GHz. Any transmissions from an M-ESIM within the minimum distance shall be subject to the prior agreement of the coastal State concerned.

1.2 The maximum earth station on vessel e.i.r.p. spectral density towards the horizon shall be limited to 12.5 dB(W/MHz). Transmissions from an M-ESIM with higher e.i.r.p. spectral density levels towards the territory of any coastal State shall be subject to the prior agreement of the coastal State concerned.

PART II

Earth stations on aircraft

2 The notifying administration of the GSO FSS satellite network with which an A-ESIM communicates shall ensure compliance of the A-ESIM operating within the frequency band 12.75-13.25 GHz, or parts thereof, with all of the following conditions for the protection of terrestrial services to which the frequency band is allocated:

PFD MASK

1 When within line-of-sight of the territory of an administration, and above an altitude of 3 km, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single A-ESIM shall not exceed:

$$pfd(\theta) = -112 \quad (dB(W/(m^2 \cdot 14\ MHz))) \quad for \quad \theta \leq 5°$$

$$pfd(\theta) = -117 + \theta \quad (dB(W/(m^2 \cdot 14\ MHz))) \quad for \quad 5 < \theta \leq 40°$$

$$pfd(\theta) = -77 \quad (dB(W/(m^2 \cdot 14\ MHz)) \quad for \quad 40 < \theta \leq 90°$$

where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).

2 When within line-of-sight of the territory of an administration, and up to an altitude of 3 km, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single A-ESIM shall not exceed:

$$pfd(\theta) = -123.5 \quad dB(W/(m^2 \cdot MHz)) \quad for \quad \theta \leq 5°$$

$$pfd(\theta) = -128.5 + \theta \quad dB(W/(m^2 \cdot MHz)) \quad for \quad 5 < \theta \leq 40°$$

$$pfd(\theta) = -88.5 \quad dB(W/(m^2 \cdot MHz)) \quad for \quad 40 < \theta \leq 90°$$

where θ is the angle of arrival of the radio frequency wave (degrees above the horizon).

ANNEX 3 TO DRAFT NEW RESOLUTION [A115] (WRC-23)

Provisions for earth stations on aircraft and vessels to protect non-GSO FSS in the frequency band 12.75-13.25 GHz

1 In order to protect the non-GSO FSS systems referred to in *resolves* 1.1.5 of this Resolution in the frequency band 12.75-13.25 GHz, ESIMs shall comply with the following operational limitations[20]:

a) the on-axis e.i.r.p. density emitted by an ESIM in a GSO network in the frequency band 12.75-13.25 GHz which operates with an antenna maximum gain lower than 38.5 dBi, is not to exceed 49 dB(W/1 MHz);

b) the on-axis e.i.r.p. density emitted by an ESIM in a GSO network in the frequency band 12.75-13.25 GHz which operates with an antenna maximum gain equal to or greater than 38.5 dBi but lower than 45 dBi, is not to exceed 54 dB(W/1 MHz);

c) the on-axis e.i.r.p. density emitted by an ESIM in a GSO network in the frequency band 12.75-13.25 GHz which operates with an antenna maximum gain equal to or greater than 45 dBi, is not to exceed 57.5 dB(W/1 MHz);

d) the level of e.i.r.p. density emitted by an ESIM in a GSO network in the frequency band 12.75-13.25 GHz is not to exceed the following values for any off-axis angle □ which is 3° or more off the main-lobe axis of an ESIM antenna and outside 3° of the GSO arc:

Off-axis angle	*Maximum e.i.r.p. density*
3□ □ □ □ 31.6°	37 − 25 log□ dB(W/40 kHz)
31.6□ □ □ □ 180□	−0.5 dB(W/40 kHz)

ANNEX 4 TO DRAFT NEW RESOLUTION [A115] (WRC-23)

Methodology with respect to the examination of compliance of A-ESIM with pfd limits in Part II of Annex 2

Note: further modifications to this Annex maybe necessary depending on the outcome of Res 169 discussion

1 Overview of the methodology

An A-ESIM can operate at different locations defined by latitude, longitude and altitude. This methodology determines the maximum allowable off-axis e.i.r.p. spectral density ("**EIRP$_C$**") for an A-ESIM transmitter communicating with a GSO FSS satellite and still ensure compliance with the pfd limits

[20] Compliance of these limitations will not be examined by the Bureau.

included in Part II of Annex 2 to Resolution [A115] to protect terrestrial services, for a defined set of altitude ranges. The methodology derives the **EIRP$_C$** taking into account the relevant loss and attenuation in the geometry considered.

The methodology then compares the computed **EIRP$_C$** with the Reference A-ESIM off-axis e.i.r.p. towards the ground ("**EIRP$_R$**") under which the A-ESIM operates. The **EIRP$_R$** of the GSO satellite network is calculated from the data included in the Appendix 4 Notification information of GSO satellite network with which the ESIM communicates and on the ESIM characteristics, as applicable. For the emission in each group of a GSO satellite system, **EIRP$_R$** can be calculated by using the Appendix **4** data for that system as well as other input parameters that shall be provided by the notifying administration for that system.

The operations of A-ESIM may be evaluated over a number of predefined altitude ranges in order to establish a number of **EIRP$_C$** levels. Each altitude range would have its own **EIRP$_C$** such that, all other assumptions being equal, higher altitude A-ESIM operation would allow for a higher **EIRP$_C$**, since the distance between the A-ESIM and the chosen location on the ground is larger and so are the applicable losses and attenuations.
An examination by the Bureau should apply this methodology for each altitude range, to determine whether the A-ESIM operating under a given GSO satellite network would comply with the pfd limits included in Part II of Annex 2 to Resolution [A115] to protect terrestrial services.

2 Parameters and geometry

Considering a hypothetical GSO satellite network, Table 1 below describes the emissions that are examined and that are included in one Group associated to A-ESIM transmitting in the 12.75-13.25 GHz band. Tables 2 and 3 provide additional parameters.

TABLE 1

Example of a Group of applicable A-ESIM emissions (with reference to relevant RR Appendix 4 data fields)

Emission n.	C7a Designation of emission	$BW_{emission}$ MHz	C8a2 Maximum power density dB(W/Hz)
1	6M00G7W--	6.0	-66.0
2	6M00G7W--	6.0	-61.0
3	6M00G7W--	6.0	-56.0

TABLE 2

Additional example assumptions

ID	Parameter	Notation	Value	Unit
1	Frequency assignment	f	13	GHz
2	Reference bandwidth of pfd mask	BW_{Ref}	14.0	MHz
3	GSO satellite longitude	GSO_{lon}	13.0	deg E
4[1)]	GSO service area latitude bounds	GSO_srv_{Lat}	(23.55, 63.55)	deg N

ID	Parameter	Notation	Value	Unit
5[1)]	GSO service area longitude bounds	GSO_srv_{Lon}	(-9.72, 30.28)	deg E
6	A-ESIM antenna peak gain	G_{max}	36	dBi
7	A-ESIM antenna gain pattern	-	As per Recommendation ITU-R S.580 (see C.10.d.5.a.1)	

TABLE 3

Additional assumptions defined in the methodology

ID	Parameter	Notation	Value	Unit
8[1)]	Polarisation loss	L_{Pol}	0.0	
9[2)]	Atmospheric attenuation	L_{atm}	Computed with Rec. ITU-R P.676	dB
10	Angle of arrival of the incident wave on the Earth's surface	δ	Specified by the pre-established sets of PFD limits, variable from 0° to 90°	deg
11	Minimum examination altitude	H_{min}	0.01	km
12	Maximum examination altitude	H_{max}	15.0	km
13	Examination altitude spacing	H_{step}	1.0	km
14	Fuselage attenuation	L_f	Computed with Rep. ITU-R M.2221 (Table 4), other ITU-R Reports or Recommendation or based upon modelling results using numerical methods or a measurement campaign	dB

Notes:

1) No additional loss figure for polarization discrimination is considered in element 8 because both isolation factor Att and Fuselage Attenuation factor are considering angles so far off the defined Main Beam axis that the antenna's polarization could not be maintained, and the polarization discrimination factor would be unknown or may be captured by other factors.

The fourth spacing is Table 7 below is slightly adjusted to 2.99 km in order set integer value of 3 km altitude.

FIGURE 1

Geometry for the examination of compliance for two different ESIM altitudes

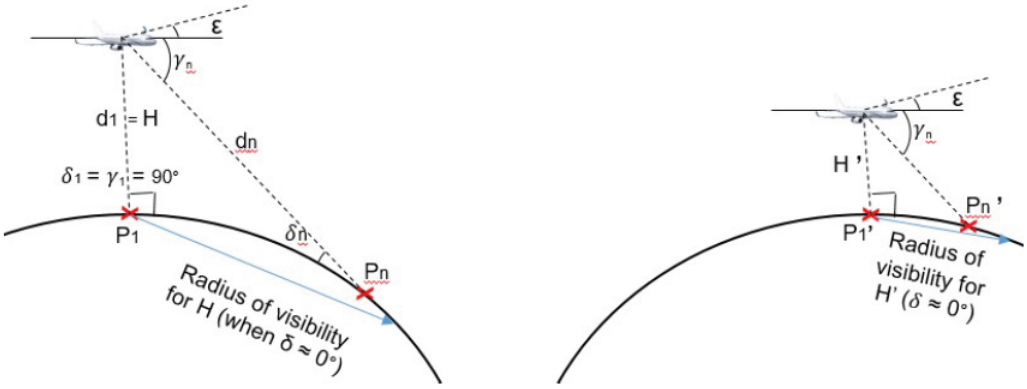


FIGURE 2

A-ESIM Main Beam Gain points at satellite

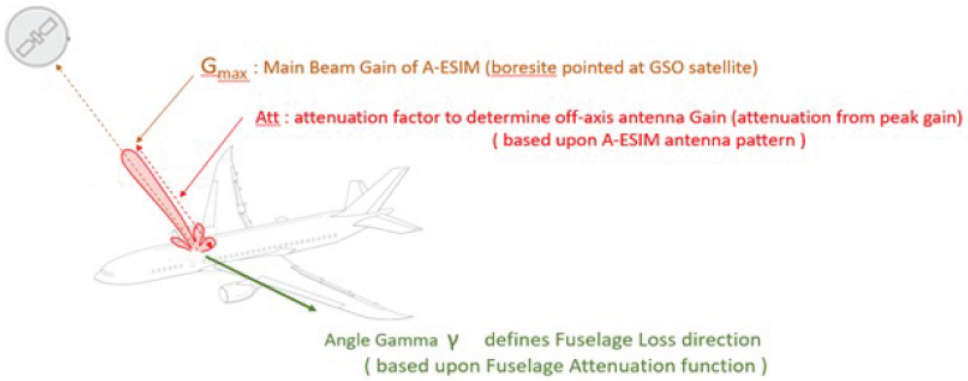


TABLE 4

Fuselage Attenuation Model

$L_{fuse}(\gamma) = 3.5 + 0.25 \cdot \gamma$	dB	for	$0° \leq \gamma \leq 10°$
$L_{fuse}(\gamma) = -2 + 0.79 \cdot \gamma$	dB	for	$10° < \gamma \leq 34°$
$L_{fuse}(\gamma) = 3.75 + 0.625 \cdot \gamma$	dB	for	$34° < \gamma \leq 50°$
$L_{fuse}(\gamma) = 35$	dB	for	$50° < \gamma \leq 90°$

Notes:

- This example fuselage attenuation model from on Rep. ITU-R M.2221-0.

Tables 5A and 5B are taken from Part II of Annex 2 of Resolution **[A115]**. The reference bandwidth for the sets of pfd limits included in Table 5A and 5B are 1 MHz and 14 MHz, respectively.

pfd(θ) = −112	(dB(W/(m^2 · 14 MHz)))	for	θ ≤ 5°
pfd(θ) = −117 + θ	(dB(W/(m^2 · 14 MHz)))	for	5 < θ ≤ 40°
pfd(θ) = −77	(dB(W/(m^2 · 14 MHz))	for	40 < θ ≤ 90°

where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).

2 When within line-of-sight of the territory of an administration, and up to an altitude of 3 km, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single A-ESIM shall not exceed:

pfd(θ) = −123.5	dB(W/(m^2 · MHz))	for	θ ≤ 5°
pfd(θ) = −128.5 + θ	dB(W/(m^2 · MHz))	for	5 < θ ≤ 40°
pfd(θ) = −88.5	dB(W/(m^2 · MHz))	for	40 < θ ≤ 90°

where θ is the angle of arrival of the radio frequency wave (degrees above the horizon).

TABLE 5A

Required conformance pfd mask for altitudes up to 3 km

pfd(θ) = −123.5	dB(W/(m^2 · MHz))	for	θ ≤ 5°
pfd(θ) = −128.5 + θ	dB(W/(m^2 · MHz))	for	5 < θ ≤ 40°
pfd(θ) = −88.5	dB(W/(m^2 · MHz))	for	40 < θ ≤ 90°

TABLE 5B

Required conformance pfd mask for altitudes above 3 km

pfd(θ) = −112	(dB(W/(m^2 · 14 MHz)))	for	θ ≤ 5°
pfd(θ) = −117 + θ	(dB(W/(m^2 · 14 MHz)))	for	5 < θ ≤ 40°
pfd(θ) = −77	(dB(W/(m^2 · 14 MHz))	for	40 < θ ≤ 90°

3 Step-by-step algorithm

This section includes a step-to-step description of how the examination methodology would be implemented.

START

i) For each of the emissions included in the Group under consideration, compute the reference e.i.r.p. ($EIRP_R$, dB(W)) as:

$$EIRP_R = G_{Max} - G_{Isol_{Max}} + P_{Max} + 10\log_{10}(BW) \quad (1)$$

where:

G_{max} is the A-ESIM antenna peak gain in dBi

G_{Isol_Max} is the maximum achievable gain isolation of the A-ESIM antenna towards the ground in dB, taking into account the pointing of the A-ESIM towards the GSO satellite within the GSO network service area

P_{max} is the maximum power density at the A-ESIM antenna flange in dB(W/Hz).

BW in Hz is:

BW_{Ref} if $BW_{emission} > BW_{Ref}$

$BW_{emission}$ if $BW_{emission} < BW_{Ref}$ii) For each aircraft altitude, it is necessary to generate as many δ_n angles (angle of arrival of the incident wave) as required in order to test the full compliance with the applicable set of pfd limits. The N angles δ_n must be comprised between 0° and 90° and have a resolution compatible with the granularity of the pre-established pfd limits. Each of the angles δ_n will correspond to as many N points on the ground.

iii) For each altitude $H_j = H_{min}, H_{min} + H_{step}, \ldots, H_{max}$, compute $EIRP_{C_j}$ using the following algorithm:

a) set the altitude of the *A_ESIM* to H_j

b) compute the angle below the horizon $\gamma_{j,n}$ as seen from the A-ESIM for each of the N angles δ_n generated in ii. using the following equation:

$$\gamma_{j,n} = \arccos\left(\frac{R_e \cdot \cos(\delta_n)}{(R_e + H_j)}\right) \quad (2)$$

where R_e is the mean earth radius.

c) Compute the distance $D_{j,n}$, in km, for $n = 1, \ldots, N$ between the A-ESIM and the tested point on the ground:

$$D_{j,n} = \sqrt{R_e^2 + (R_e + H_j)^2 - 2\,R_e\,(R_e + H_j)\cos(\gamma_n - \delta_n)} \quad (3)$$

d) Compute the fuselage attenuation $L_{f\,j,n}$ (dB) with $i = 1, \ldots, N$ applicable to each of the of the angles $\gamma_{j,n}$ computed in b). above.

e) Compute the gaseous absorption $L_{atm_j,n}$ (dB) with $i = 1, \ldots, N$ applicable to each of the distances $D_{j,n}$ computed in c) above, using the applicable sections of Recommendation ITU-R P.676.

f) Compute the maximum $EIRP_{C_j,n}$ (dB(W/BW_{Ref})) that is the maximum e.i.r.p. that can be radiated by the A-ESIM at altitude H_j towards each of the angles $\gamma_{j,n}$ and still be compliant with the pfd limits indicated in Table 5, as per the following equation:

$$EIRP_{C\ j,n}(\delta_n, \gamma_n) = pfd(\delta_n) + 10\log_{10}\left(4\pi(D_{j,n} \cdot 1000)^2\right) + L_{f\ j,n} + L_{atm\ j,n} \quad (4)$$

g) Compute the minimum $EIRP_{C_j}$ across all values calculated at the previous step, $EIRP_{C_j} = \text{Min}\ (EIRP_{C_j,n}\ (\delta_n, \gamma_n))$.. The output of this step is the maximum $EIRP_{C_j}$ that can be safely radiated by the A-ESIM to ensure it complies with the PFD limits indicated in Table 5A or 5B, as applicable, with respect to all angles δ_n at the altitude H_j. There will be one $EIRP_{C_j}$ for each of the H_j altitudes considered.

The output of step g) is summarised in Table 7 below:

TABLE 7

Computed $EIRP_{C_j}$ values

H_j (km)	$EIRP_{C_j}$ dB(W/BW$_{Ref}$)
0.01	*TBD*
1.0	*TBD*
2.0	*TBD*
3.0	*TBD*
4.0	*TBD*
5.0	*TBD*
6.0	*TBD*
7.0	*TBD*
8.0	*TBD*
9.0	*TBD*
10.0	*TBD*
11.0	*TBD*
12.0	*TBD*
13.0	*TBD*
14.0	*TBD*
15.0	*TBD*

Note:

This methodology computes the e.i.r.p. backwards, upwards from the ground, starting with the power flux-density (pfd, either the one specified in Table 5A or 5B, depending on the altitude H_j, as applicable) and:

- converting it to an effective received power at the ground;
- translating back to the aircraft location based upon the slant distance and subtracting propagation losses based upon distance;
- computing and subtracting atmospheric losses based upon distance;
- computing and subtracting fuselage attenuation losses based upon the angle below the aircraft local horizon.

All to allow the A-ESIM operator to operate in compliance with an effective on-axis boresight isotropic radiated power (e.i.r.p.) that would ensure it complies with the pfd mask at the airborne A-ESIM altitude and location considered.

iii) For each of the groups, check whether there is at least one j) for which $EIRP_{C_j} > EIRP_R$. The results of this check are illustrated in Table 8 below.

TABLE 8

Comparison between $EIRP_{C_j}$ and $EIRP_R$

Group n.	C7a Designation of emission	$EIRP_R$ dB(W/BW$_{Ref}$)	Lowest altitude H_j (km) for which $EIRP_{C_j} > EIRP_R$
1	6M00G7W--	TBD	TBD
2	6M00G7W--	TBD	TBD
3	6M00G7W--	TBD	TBD

For the emissions included in the Group under examination which pass the test detailed in iv. above, the results of the Bureau's examination for that Group is ***favorable****, after removing emissions that have failed the examination*, otherwise it is ***unfavorable***.

v) The Bureau should publish:

a) The finding (favorable or unfavorable) for the examined Group of the GSO system examined; and

b) the information included in Table 8, along with the comment: The operation of A-ESIM with the Emission **XXX** (Emission Code) under examination shall be possible below the altitude of **YYY** km (minimum altitude for favourable finding of that emission) referred to in Table 8 only if the appropriate mitigation techniques are used to ensure that the power flux-density produced on Earth's surface respect the limits indicated in Part II of Annex 3 to Resolution **169 (WRC-19)** on territories where those limits apply.

Note:

- *As part of standard procedure, the Bureau would publish the emissions with unfavorable finding in BR IFIC Part III-S, which concerns frequency assignments that are returned to the responsible administration.*

SUP USA/1.15/4

RESOLUTION 172 (WRC-19)

Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space)

Reasons: Consequential deletion.

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.16

*1.16 to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO FSS earth stations in motion, while ensuring due protection of existing services in those frequency bands, in accordance with Resolution **173 (WRC-19)**;*

Background

ESIMs (earth stations in motion) under WRC-23 Agenda Item 1.16 are earth stations that communicate with non-geostationary (non-GSO) space stations in the fixed-satellite service (FSS) in the bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (all space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (all Earth-to-space), while operating on moving platforms. As a result, they are treated differently as they can introduce a different interference environment from earth stations which are of specific or typical fixed type operating within the fixed-satellite service.

In accordance with *resolves* 3 of Resolution **173 (WRC-19)**, sharing and compatibility studies considered only aeronautical and maritime ESIMs (land ESIMs were not studied), taking into account the need to ensure the protection of , and not impose undue constraints on, services allocated in the frequency bands.
.

ESIMs communicating with non-GSO space stations in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) can be used to provide broadband communications to mobile platforms. The interference environment resulting from the operation of non-GSO aeronautical and maritime ESIMs has been studied in the ITU-R, and the following proposals reflect the technical, operational and regulatory provisions necessary to ensure the cross-border protection of incumbent services, including terrestrial services, from the operation of aeronautical and maritime ESIMs with non-GSO space stations in these frequency bands.

Proposals:

USA/1.16/1 MOD

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

15.4-18.4 GHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td colspan="3">…</td></tr>
<tr><td rowspan="2">17.7-18.1
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.484A 5.517A
ADD 5.A116
(Earth-to-space) 5.516
MOBILE</td><td>17.7-17.8
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.517 5.517A
ADD 5.A116
(Earth-to-space) 5.516
BROADCASTING-SATELLITE
Mobile
5.515</td><td rowspan="2">17.7-18.1
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.484A 5.517A
ADD 5.A116
(Earth-to-space) 5.516
MOBILE</td></tr>
<tr><td>17.8-18.1
FIXED
FIXED-SATELLITE
(space-to-Earth) 5.484A 5.517A
ADD 5.A116
(Earth-to-space) 5.516
MOBILE
5.519</td></tr>
<tr><td>18.1-18.4</td><td colspan="2">FIXED
FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A ADD 5.A116
(Earth-to-space) 5.520
MOBILE
5.519 5.521</td></tr>
</table>

MOD

18.4-22 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.4-18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A ADD 5.A116 MOBILE	
…		
18.8-19.3	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A ADD 5.A116 MOBILE	
…		
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A ADD 5.A116 Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A ADD 5.A116 MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A ADD 5.A116 Mobile-satellite (space-to-Earth) 5.524
20.1-20.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A ADD 5.A116 MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	
…		

Reasons: To modify the Table of Frequency Allocations in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz to add a footnote concerning the use of FSS space-to-Earth frequency bands for non-GSO space stations communicating with aeronautical and maritime ESIM.

USA/1.16/2 MOD

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
…		
27.5-28.5	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 ADD 5.A116 MOBILE 5.538 5.540	

28.5-29.1	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 ADD 5.A116 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
…		
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 ADD 5.A116 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 ADD 5.A116 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.525 5.526 5.527 5.529 5.540	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 ADD 5.A116 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542

Reasons: To modify the Table of Frequency Allocations in the frequency bands 27.5-29.1 GHz and 29.5-29.9 GHz to add a footnote concerning the use of aeronautical and maritime ESIM communicating with non-GSO FSS space stations.

USA/1.16/3 MOD

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 ADD 5.A116 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	

Reasons: To modify the Table of Frequency Allocations in the frequency band and 29.9-30 GHz to add a footnote concerning the use of aeronautical and maritime ESIM communicating with non-GSO FSS space stations.

USA/1.16/4 ADD

5.A116 The operation of earth stations in motion communicating with non-geostationary fixed-satellite service space stations in the bands 17.7-18.6 GHz (space-to-Earth), 18.8-19.3 GHz (space-to-Earth) and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz (Earth-to-space) and 29.5-30 GHz (Earth-to-space) shall be subject to Resolution **[A116] (WRC-23)**.

Reasons: To add a new footnote enabling the use of aeronautical and maritime ESIM in the mentioned FSS bands communicating with non-GSO space stations subject to new WRC-23 draft Resolution **[A116] (WRC-23)**.

USA/1.16/5 ADD

RESOLUTION [A116] (WRC-23)

Use of the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that there is a need for global broadband mobile satellite communications, and that some of this need could be met by allowing earth stations in motion (ESIMs) to communicate with space stations of non-geostationary satellite orbit (non-GSO) fixed-satellite service (FSS) systems operating in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (all space-to-Earth) and 27.5-29.1 GHz and 29.5-30.0 GHz (all Earth-to-space);

b) that the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (all space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (all Earth-to-space) are allocated to space services; the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, and 27.5-29.1 GHz are allocated to terrestrial services on a primary basis worldwide; in the countries identified in No. **5.524** of the Radio Regulations, the band 19.7-20.2 GHz is allocated to the fixed and mobile services on a primary basis; and, in the countries identified in No. **5.542** of the Radio Regulations, the band 29.5-30 GHz is allocated to the fixed and mobile services on a secondary basis;

c) that the frequency bands in *considering* b) are used by a variety of different systems and these existing services and their future development need to be protected, without any undue constraints, from the operation of non-GSO ESIMs;

d) there is no specific regulatory procedure for the coordination of non-GSO ESIMs relative to terrestrial stations for these services;

e) that the frequency band 18.6-18.8 GHz is allocated to earth exploration-satellite service (EESS) (passive) and the space research service (SRS) (passive) and that these services need to be protected from operation of non-GSO FSS space-to-Earth links towards ESIMs;

f) that the ITU Radiocommunication Sector (ITU-R) has studied the technical and operational requirements for aeronautical and maritime earth stations in motion communicating with non-GSO FSS systems in the frequency bands 17.3-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz (all space-to-Earth), and 27-29.1 GHz and 29.5-30 GHz (all Earth-to-space);

g) that appropriate regulatory and interference-management mechanisms, including necessary mitigation measures, are required for the operation of non-GSO ESIMs to protect other space and terrestrial services that are allocated on a primary basis in the Radio Regulations in the frequency bands mentioned in *considering a)*,

considering further

a) that administrations intending to authorize non-GSO ESIMs, when establishing national licensing rules, may consider adopting other interference management procedures and/or mitigation measures than those contained in this Resolution as long as the provisions in Annex 1 are unchanged in cross-border applications;

b) that it is important to identify the responsibilities of the entities involved in the operation of aeronautical and maritime non-GSO ESIMs;

c) that aeronautical and maritime ESIMs operating within the service area of the FSS systems with which they communicate may provide service within the territories under the jurisdiction of multiple administrations/countries;

d) that the operation of an ESIM within the territory under the jurisdiction of administration/countries mentioned in *considering further a)* above is subject to obtaining authorization from that administration/country;

e) that this Resolution does not establish any technical or regulatory provisions for the operation and use of land ESIMs communicating with non-GSO FSS space stations; and any authorization of land ESIMs remains strictly a national matter in the frequency bands subject to this resolution;

recognizing

a) that the administration authorizing non-GSO ESIMs on the territory under its jurisdiction has the right to require that non-GSO ESIMs referred to above only use those assignments associated with non-GSO FSS systems which have been successfully coordinated, notified, brought into use and recorded in the MIFR with a favourable finding under Articles **9** and **11**, including Nos. **11.31**, **11.32** or **11.32A**, where applicable;

b) that for cases of incomplete coordination under No. **9.7B** of the non-GSO FSS system with which non-GSO ESIMs communicate, the operation of non-GSO ESIMs in the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz (space-to-Earth) needs to be in accordance with the provisions of No. **11.42** with respect to any recorded frequency assignment which was the basis of the unfavourable finding under No. **11.38**;

c) that No. **22.2** applies for the protection of geostationary-satellite networks in the fixed-satellite service (GSO FSS) and the broadcasting-satellite service (GSO BSS) operating in the frequency band 17.7-17.8 GHz from unacceptable interference caused by non-GSO ESIMs;

d) that under the provisions of No. **22.2**, non-GSO ESIMs in the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz, shall not claim protection from GSO FSS and GSO BSS networks operating in accordance with these Regulations, and non-GSO ESIMs in the frequency bands 27.5-28.6 GHz and 29.5-30 GHz shall not cause unacceptable interference to GSO FSS and GSO BSS networks operating in accordance with these Regulations. No. **5.43A** does not apply in these cases;

e) that any course of action taken under this Resolution has no impact on the original date of receipt of the frequency assignments of the non-GSO FSS satellite system with which non-GSO ESIMs communicate or on the coordination requirements of that satellite system;

f) that successful compliance with this Resolution does not oblige any administration to authorize/license any non-GSO ESIM to operate within the territory under its jurisdiction (*see resolves* 3);

g) that a non-GSO FSS system operating in the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-28.6 GHz and 29.5-30 GHz (Earth-to-space) in compliance with the epfd limits referred to in Nos. **22.5C**, **22.5D** and **22.5F** is considered as having fulfilled its obligations under No. **22.2** with respect to any geostationary-satellite network;

h) that the use of the frequency bands 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) by GSO FSS networks is subject to Nos. **9.12A** and **9.13**, and No. **22.2** does not apply;

i) that for the use of the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30.0 GHz (Earth-to-space) by non-geostationary fixed-satellite service systems, including those operating ESIMs, No. **9.12** applies,

recognizing further

a) that under *resolves* 1.1.3 of this Resolution, frequency assignments to ESIMs need to be notified to the Radiocommunication Bureau;

b) that for the operation of ESIMs, notification of any frequency assignment under Article **11** of the Radio Regulations shall only be made by one single administration;

c) that, an administration authorizing the operation of ESIMs within the territory under its jurisdiction may modify/withdraw that authorization at any time;

resolves

1 that, for any aeronautical and/or maritime ESIMs communicating with non-GSO FSS space stations referred to in this Resolution within the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space), or parts thereof, the following conditions shall apply:

1.1 with respect to space services in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz (all space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (all Earth-to-space), and in their adjacent band 18.6-18.8 GHz, non-GSO ESIMs shall comply with the following conditions:

1.1.1 with respect to satellite networks or systems of other administrations, non-GSO ESIMs' characteristics shall remain within the envelope characteristics of typical earth stations associated with the non-GSO FSS system with which these ESIMs communicate;

1.1.1.1 for the implementation of *resolves* 1.1.1 above, the notifying administration for the non-GSO FSS system with which the non-GSO ESIMs communicate shall, in accordance with this Resolution, send to the Radiocommunication Bureau (BR) the relevant Appendix **4** notification information related to the characteristics of the non-GSO ESIMs intended to communicate with that non-GSO FSS system, together with the commitment that the operation shall be in conformity with the Radio Regulations, including this Resolution;

1.1.1.2 upon receipt of the notification information referred to in *resolves* 1.1.1.1 above, the Bureau shall examine it with respect to the provisions referred to in *resolves* 1.1.1 above, including the commitment referred to in *resolves* 1.1.1.1 above, and publish the result of such examination in the International Frequency Information Circular (BR IFIC);

1.1.2 the notifying administration of the non-GSO FSS system with which the ESIMs communicate shall ensure that the operation of ESIMs complies with the coordination agreements obtained for the frequency assignments of the typical earth station of this non-GSO FSS system obtained under the provisions of Article **9** of the Radio Regulations, taking into account *recognizing b)* above;

1.1.2bis notifying administrations of the non-GSO FSS system with which the ESIMs communicate shall ensure that non-GSO ESIMs comply with the epfd limits referred to in Nos. **22.5C**, **22.5D** and **22.5F** for the protection of GSO FSS networks operating in the frequency bands 17.8-18.6 GHz, 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz and 29.5-30 GHz (Earth-to-space);

1.1.3 non-GSO ESIMs shall not claim protection from broadcasting-satellite service feeder-link earth stations operating in accordance with the Radio Regulations in the frequency band 17.7-18.4 GHz;

1.1.4 with respect to EESS (passive) operating in the frequency band 18.6-18.8 GHz, certain non-GSO FSS system with an orbital apogee of less than 20 000 km operating in the frequency bands 18.3-18.6 GHz and 18.8-19.1 GHz with which aeronautical and/or maritime ESIMs communicate and for which the complete notification information has been received by the Radiocommunication Bureau after 1 January 2025 shall comply with the provisions indicated in Annex 3 to this Resolution;

1.1.4.1 for the implementation of *resolves* 1.1.4 above, the notifying administration for the non-GSO FSS system with which the non-GSO ESIMs communicate shall send to the BR the relevant Appendix **4** notification information including the commitment that the operation shall be in conformity with *resolves* 1.1.4,

1.2 with respect to terrestrial services in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz, 27.5-29.1 GHz, and 29.5-30 GHz non-GSO ESIMs shall comply with the following conditions:

1.2.1 receiving non-GSO ESIMs in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz (*see* No. **5.524**) shall not claim protection from terrestrial services to which the frequency bands are allocated and that operate in accordance with the Radio Regulations;

1.2.2 transmitting non-GSO ESIMs in the frequency band 27.5-29.1 GHz shall not cause unacceptable interference to terrestrial services to which the frequency band is allocated and that operate in accordance with the Radio Regulations, and Annex 1 to this Resolution shall apply;

1.2.3 transmitting non-GSO ESIMs in the frequency band 29.5-30.0 GHz shall not adversely affect the operations of terrestrial services to which this frequency band is

allocated and that operate in accordance with the Radio Regulations, and limits in Annex 1 to this Resolution shall apply with respect to administrations mentioned in No. **5.542**;

1.2.4 the provisions in this Resolution, including Annex 1, set the conditions for the purpose of protecting terrestrial services from unacceptable interference from aeronautical and maritime non-GSO ESIM in neighbouring countries in accordance with the provisions included in *resolves* 1.2.2 above; however, the requirement not to cause unacceptable interference to, or claim protection from, terrestrial services to which the frequency band is allocated and operating in accordance with the Radio Regulations remains valid (see *resolves* 6);

1.2.5 the Bureau shall examine, in accordance with the provisions included in *resolves* 1.2.2 above and with the methodology in Annex 2, the characteristics of aeronautical non-GSO ESIM with respect to the conformity with the power flux-density limits specified in Part 2 of Annex 1 to this Resolution and publish the results of such examination in the BR IFIC;

2 that non-GSO ESIMs shall not be used or relied upon for safety-of-life applications;

3 that the operation of non-GSO ESIMs within the territory, including territorial waters and airspace of an administration, shall be carried out only if authorized by that administration;

4 that the notifying administrations of those non-GSO FSS systems with which non-GSO ESIMs in the frequency bands in *considering a)* above are intended to operate shall submit a commitment to the Bureau to immediately act to eliminate unacceptable interference or reduce interference to an acceptable level upon receiving a report of unacceptable interference (*see resolves 5*);

5 that the notifying administration of the non-GSO FSS system with which non-GSO ESIMs communicate shall ensure:

5.1 that all necessary measures are taken so that non-GSO ESIMs are subject to permanent monitoring and control by a network control and monitoring centre (NCMC) or equivalent facility in order to comply with the provisions in this Resolution, and are capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC or equivalent facility;

5.2 that measures, when required, are taken to limit the operation of non-GSO ESIMs in the territory, including territorial waters and territorial airspace, under the jurisdiction of the administrations authorizing non-GSO ESIMs;

5.3 that a permanent point of contact shall be designated and provided by the notifying administration of the non-GSO FSS satellite systems with which the above-mentioned non-GSO ESIMs communicate for the purpose of tracing any suspected cases of unacceptable interference from non-GSO ESIMs and to immediately respond to requests from the focal point of the authorizing administration;

6 that in case of unacceptable interference caused by any type of non-GSO ESIM(s):

6.1 the administration of the country in which the non-GSO ESIM(s) is authorized shall cooperate with an investigation on the matter and provide any required information on the operation of the ESIM(s) and a point of contact to provide such information;

6.2 the administration of the country in which the non-GSO ESIM(s) is authorized and the notifying administration of the non-GSO FSS system with which the aeronautical and maritime non-GSO ESIM(s) communicates shall, jointly or individually, as the case may be and to the extent of ability of the former

administration, upon receipt of a report of unacceptable interference, take required actions to eliminate or reduce unacceptable interference to an acceptable level;

7 that the application of this Resolution does not provide regulatory status to non-GSO ESIMs different from that derived from the non-GSO FSS system with which they communicate, taking into account the provisions referred to in this Resolution (see *recognizing b)* above);

resolves further

1 that frequency assignments to non-GSO ESIMs shall be notified by the notifying administration of the satellite system in the fixed-satellite service with which ESIMs communicate;

2 that, the notifying administration of the satellite system shall ensure that non-GSO ESIMs operate only in the territory under the jurisdiction of any administration/country from which an authorization has been obtained, taking into account *recognizing further* c) above;

3 that for the implementation of *resolves further* 2 above, the notifying administration of the non-GSO FSS system with which the non-GSO ESIMs communicate shall ensure that the ESIMs are designed and operated so as to cease transmission over the territory of any administration/country from which authorization has not been obtained;

4 that the authorization to non-GSO ESIMs to operate in the territory under the jurisdiction of an administration shall in no way release the notifying administration of the satellite system with which the non-GSO ESIMs communicate from the obligation to comply with the provisions included in this Resolution and those contained in the Radio Regulations;

5 that, should an administration authorizing aeronautical non-GSO ESIMs agree to pfd levels higher than the limits contained in Part 2 of Annex 1 to this Resolution within the territory under its jurisdiction, such agreement shall not affect other countries that are not party to that agreement,

instructs the Director of the Radiocommunication Bureau

1 to take all necessary actions to facilitate the implementation of this Resolution, together with providing any assistance for the resolution of interference, when required;

2 to report to future world radiocommunication conferences any difficulties or inconsistencies encountered in the implementation of this Resolution, including whether or not the responsibilities relating to the operation of aeronautical and maritime non-GSO ESIM have been properly addressed;

3 not to examine, under No. **11.31**, the conformity of non-GSO FSS systems with the provisions of *resolves* 1.1.4 of this Resolution;

invites administrations

to collaborate for the implementation of this Resolution, in particular for resolving interference, if any,

instructs the Secretary-General

to bring this Resolution to the attention of the Secretary-General of the International Maritime Organization and of the Secretary General of the International Civil Aviation Organization.

ANNEX 1 TO DRAFT NEW RESOLUTION [A116] (WRC-23)

Provisions for maritime and aeronautical non-GSO ESIMs to protect terrestrial services operating in the frequency band 27.5-29.1 GHz, and for the frequency band 29.5-30.0 GHz on the territories of administrations mentioned in No. 5.542 (see No. 5.542)

The parts below contain provisions to ensure that maritime and aeronautical non-GSO ESIMs do not cause unacceptable interference in neighbouring countries to terrestrial service operations when non-GSO ESIMs operate in frequencies overlapping with those used by terrestrial services at any time to which the frequency band 27.5-29.1 GHz is allocated and that operate in accordance with the Radio Regulations. The provisions in the parts below could also be used as guidance to prevent the operation of the non-GSO ESIMs in the frequency band 29.5-30 GHz from adversely impacting the secondary terrestrial services operating pursuant to No. **5.542** of the Radio Regulations.

PART 1: MARITIME NON-GSO ESIMS

1 The notifying administration of the non-GSO FSS system with which a maritime non-GSO ESIMs communicate shall ensure compliance of the maritime non-GSO ESIMs operating within the frequency band 27.5-29.1 GHz or parts thereof, with both of the following conditions for the protection of terrestrial services to which the frequency band is allocated within a coastal State:

1.1 The minimum distance from the low-water mark as officially recognized by the coastal State beyond which maritime non-GSO ESIMs can operate without the prior agreement of any administration is 70 km. Any transmissions from maritime ESIM within the minimum distance shall be subject to the prior agreement of the coastal State(s) concerned.

1.2 The maximum maritime non-GSO ESIM e.i.r.p. spectral density towards the territory of any coastal State will be limited to 12.98 dBW in a reference bandwidth of 1 MHz or 24.44 dBW in a reference bandwidth of 14 MHz. Transmissions from maritime non-GSO ESIMs with higher e.i.r.p. spectral density levels towards the territory of any coastal state shall be subject to the prior agreement of the coastal State(s) concerned.

PART 2: AERONAUTICAL NON-GSO ESIMS

2 The notifying administration of the non-GSO FSS satellite system with which aeronautical ESIMs communicate shall ensure compliance of the aeronautical ESIMs operating within the frequency bands 27.5-29.1 GHz, or parts thereof, with all of the following conditions for the protection of terrestrial services to which the frequency band is allocated:

2.1 When within line-of-sight of the territory of an administration, and above an altitude of 3 km, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single aeronautical non-GSO ESIMs shall not exceed:

$$\begin{aligned}
&pfd(\theta) = -124.7 && (dB(W/(m^2 \cdot 14\ MHz))) && \text{for} && 0° \le \theta \le 0.01°\\
&pfd(\theta) = -120.9 + 1.9 \cdot \log\theta && (dB(W/(m^2 \cdot 14\ MHz))) && \text{for} && 0.01° < \theta \le 0.3°\\
&pfd(\theta) = -116.2 + 11 \cdot \log\theta && (dB(W/(m^2 \cdot 14\ MHz))) && \text{for} && 0.3° < \theta \le 1°\\
&pfd(\theta) = -116.2 + 18 \cdot \log\theta && (dB(W/(m^2 \cdot 14\ MHz))) && \text{for} && 1° < \theta \le 2°\\
&pfd(\theta) = -117.9 + 23.7 \cdot \log\theta && (dB(W/(m^2 \cdot 14\ MHz))) && \text{for} && 2° < \theta \le 8°\\
&pfd(\theta) = -96.5 && (dB(W/(m^2 \cdot 14\ MHz))) && \text{for} && 8° < \theta \le 90.0°
\end{aligned}$$

where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).

2.2 When within line-of-sight of the territory of an administration, and up to an altitude of 3 km, the maximum pfd produced at the surface of the Earth on the territory of an administration by emissions from a single aeronautical ESIM shall not exceed:

$$\begin{aligned}
&pfd(\theta) = -136.2 && (dB(W/(m^2 \cdot 1\ MHz))) && \text{for} && 0° \le \theta \le 0.01°\\
&pfd(\theta) = -132.4 + 1.9 \cdot \log\theta && (dB(W/(m^2 \cdot 1\ MHz))) && \text{for} && 0.01° < \theta \le 0.3°\\
&pfd(\theta) = -127.7 + 11 \cdot \log\theta && (dB(W/(m^2 \cdot 1\ MHz))) && \text{for} && 0.3° < \theta \le 1°\\
&pfd(\theta) = -127.7 + 18 \cdot \log\theta && (dB(W/(m^2 \cdot 1\ MHz))) && \text{for} && 1° < \theta \le 12.4°\\
&pfd(\theta) = -108 && (dB(W/(m^2 \cdot 1\ MHz))) && \text{for} && 12.4° < \theta \le 90°
\end{aligned}$$

where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).

2.3 Aeronautical ESIMs operating in the 27.5-29.5 GHz band, or parts thereof, within the territory of an administration that has authorized fixed-service and/or mobile-service operation in the same frequency bands shall not transmit in these frequency bands without prior agreement of that administration (see also *resolves* 3 of this Resolution).

2.4 The maximum power in the out-of-band domain should be attenuated below the maximum output power of the aeronautical ESIM transmitter as described in Annex 5 to Recommendation ITU-R SM.1541.

ANNEX 2 TO DRAFT NEW RESOLUTION [A116] (WRC-23)

Methodology with respect to the examination referred to in *resolves 1.2.* 2

VII. 1 OVERVIEW OF THE METHODOLOGY

Aeronautical earth station in motion (A-ESIMs) can operate over time at different locations defined by latitude, longitude and altitude. This methodology determines the maximum allowable off-axis e.i.r.p. spectral density ("$EIRP_C$") for an A-ESIM transmitter communicating with a non-GSO FSS satellite that would ensure compliance with a set of pre-established power flux-density (pfd) limits defined on the Earth's surface. This methodology derives the $EIRP_C$ considering the relevant loss and attenuation in the geometry considered, among other things.

The methodology then compares the computed $EIRP_C$ with the reference off-axis e.i.r.p. towards the ground ("$EIRP_R$") of the A-ESIM. For each emission in each group of a non-GSO satellite system, $EIRP_R$ can be calculated by using the Appendix **4** data for that system as well as other input parameters that shall be provided by the notifying administration for that system.

Specifically, for each emission in the ITU non-GSO satellite system associated with a to-be-defined non-GSO A-ESIM class of station, the $EIRP_R$ is the algebraic summation (in logarithmic terms) of the maximum power at the antenna flange (item C.8.a.1 of Appendix **4**), the peak gain of the A-ESIM antenna (item C.10.d.3 of Appendix **4**), the maximum achievable off-axis gain isolation towards the ground of the A-ESIM antenna and a parameter that would compensate for any difference between the emission bandwidth and the reference bandwidth of the pre-established set of pfd limits.

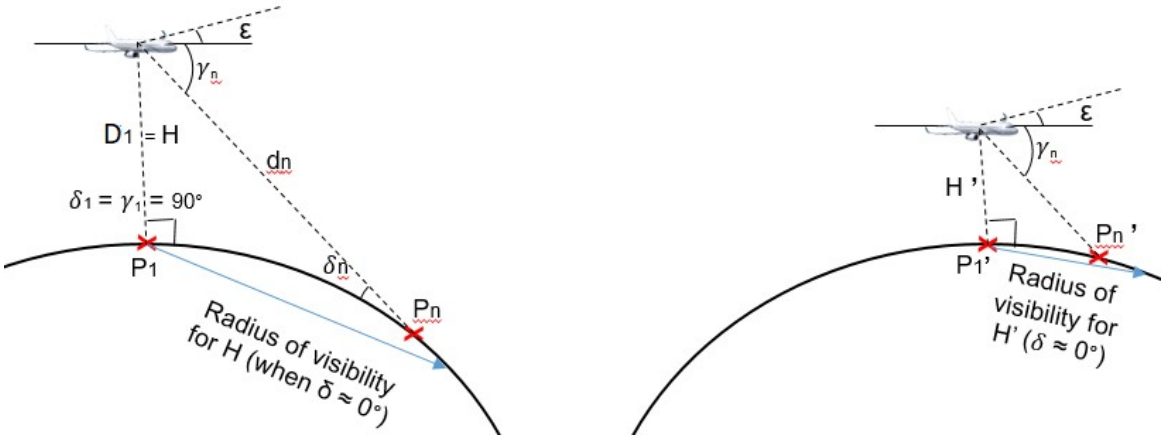
The operations of A-ESIMs shall be evaluated over multiple predefined altitude ranges in order to establish as many $EIRP_C$ levels for comparison with $EIRP_R$. This comparison is at the basis of the methodology and examination that are described more in detail in the following section. An examination by the Bureau would apply this methodology for each altitude range, to determine whether the A-ESIMs operating under a given ITU non-GSO satellite network would comply with the PFD limits defined on the Earth's surface to protect terrestrial services.

VIII. 2 PARAMETERS AND GEOMETRY

Figure A.2.1 provides a description of the geometry considered under this methodology. The figure shows A-ESIMs flying at two different altitudes and also some of the parameters used for the calculation. The model is agnostic to non-GSO ESIMs geographical locations on Earth and assumes a spherical Earth model with a fixed radius for the calculation.

FIGURE A2-1

Geometry for the examination of compliance for two different A-ESIM altitudes



The notifying administration for the non-GSO FSS network with which A-ESIMs communicates shall send to the Bureau the relevant characteristics of A-ESIMs intended to communicate with that non-GSO FSS network. All the parameters required by the Bureau to carry out the examination process are listed and briefly described in Table A2-1. Additional considerations are further elaborated in section 3.

TABLE A2-1

Relevant parameters for pfd compliance examination

Parameter	Symbol	Type of parameter	Observation
Aeronautical non-GSO ESIM altitude	H	Established by the methodology as: H_{min}= 0.01 km, H_{max}=15 km	The altitudes at which the examination is carried out range from H_{min} to H_{max} at the following altitudes: H_{min}, 1.01 km, 2.01 km, 3.00 km, 3.01 km, 4.01 km… H_{max}
Angle of arrival of the incident wave on the Earth's surface	δ	Specified by the pre-established set(s) of pfd limits, variable from 0° to 90°	pre-established set(s) of pfd should cover incident angles from 0° to 90°
Angle below the horizontal plane of the ESIM corresponding to the angle of arrival δ under examination	γ	Calculated from the geometry	This angle is calculated considering the non-GSO ESIM's altitude H_j examined and angle of arrival δ under examination (see Fig. A.2.1)
Distance between the ESIM and the point on the ground under examination	D	Calculated from the geometry	This distance is a function of the A-ESIM's altitude and the angles δ and γ
Frequency	f	Provided by the Appendix 4 data	To evaluate the propagation loss either at the center frequency or at the upper and lower limits of the frequency range
Atmospheric loss	L_{atm}	Calculated and established by the methodology	Based on Recommendation ITU-R P.676
Fuselage attenuation	L_f	Report ITU-R M.2221-0 or other ITU-R Reports or Recommendations	The attenuation depends on the angle γ below the horizontal plane of the non-GSO ESIM. The value(s) could come from ITU-R Reports and/or Recommendations, such as Report ITU-R M.2221. Note, the model contained in Report ITU-R M.2221-0 might require updating and/or clarifications.
A-ESIM antenna peak gain and off-axis gain pattern	G_{max}, $G(\theta)$	Taken from the Appendix **4** data (items C.10.d.3 and C.10.d.5.a.1, respectively) of the non-GSO system under examination	The A-ESIM antenna gain is used to compute $EIRP_R$
Emission bandwidth	$BW_{Emission}$	Taken from the Appendix **4** data (as part of item C.7.a) of the non-GSO system under examination	These two bandwidths shall be compared and a correcting factor needs to be included in the computation of $EIRP_R$ in case $BW_{Emission} < BW_{Ref}$
Reference bandwidth	BW_{Ref}	Taken from the set(s) of pre-established pfd limits	

Effective isotropic radiated power required for compliance with the pfd limits in a reference bandwidth	$EIRP_C$	$EIRP_C$ is the result of the calculation; it depends on the ESIM altitude and the angle of arrival (δ) of the incident wave on the Earth's surface	For each of the altitudes H_j, the e.i.r.p. for compliance is calculated for the different incident angles (δ) considered to cover all the range of the pfd limits to be established by WRC-23. This leads to a number of values of $EIRP_C$ associated to a given altitude H_j; for each altitude H_j, the lowest e.i.r.p. value is the one to be retained and compared with $EIRP_R$ (see section 3)

Note: No additional loss figure for polarisation discrimination is considered because it is likely captured in the calculation of fuselage attenuation.

IX. 3 CALCULATION PROCEDURE

This section includes a step-to-step description of how the examination methodology would be implemented for a given group associated to the class of earth station for non-GSO A-ESIMs in a non-GSO satellite system.

START

Calculate *$EIRP_R$*

i) For each of the emissions included in the Group under consideration, compute the Reference EIRP ($EIRP_R$, dB(W)) as:

$$EIRP_R = G_{Max} - G_{Isol_{Max}} + P_{Max} + 10\log_{10}(BW) \quad (1)$$

where:

G_{max} is the A-ESIM antenna peak gain in dBi

G_{Isol_Max} is the maximum achievable gain isolation of the A-ESIM antenna towards the ground in dB when operating in the examined non-GSO system

P_{max} is the maximum power density at the A-ESIM antenna flange in dB(W/Hz).

BW in Hz is:

BW_{Ref} if $BW_{emission} > BW_{Ref}$

$BW_{emission}$ if $BW_{emission} < BW_{Ref}$

Calculate *$EIRP_C$*

ii) For each aircraft altitude, it is necessary to generate as many δ_n angles (angle of arrival of the incident wave) as required in order to test the full compliance with the set(s) of pre-established pfd limits. The N angles δ_n shall be comprised between 0° and 90° and have a resolution compatible with the granularity of the pre-established pfd limits. Each of the angles δ_n will correspond to as many N points on the ground.

iii) For each altitude $H_j = H_{min}, \ldots, H_{max}$, compute $EIRP_{C_j}$ using the following algorithm

a) Set the altitude of the A_ESIM to H_j

b) Compute the angle below the horizon $\gamma_{j,n}$ as seen from the A-ESIM for each of the N angles δ_n generated in ii) using the following equation:

$$\gamma_{j,n} = \arccos\left(\frac{R_e \cdot \cos(\delta_n)}{(R_e + H_j)}\right) \quad (2)$$

where R_e is the mean Earth radius.

c) Compute the distance $D_{j,n}$, in km, for n= 1, …, N between the A-ESIMs and the tested point on the ground:

$$D_{j,n} = \sqrt{R_e^2 + (R_e + H_j)^2 - 2\,R_e\,(R_e + H_j)\cos(\gamma_n - \delta_n)} \quad (3)$$

d) Compute the fuselage attenuation $L_{fj,n}$ (dB) applicable to each of the N points on the ground as a function of the angles $\gamma_{j,n}$ computed in *b)* above

e) Compute the atmospheric loss $L_{atm_j,n}$ (dB) applicable to each of the distances $D_{j,n}$ computed in *c)* above

f) Compute the $EIRP_{C_j,n}$ (dB(W/BW$_{Ref}$)), that is the maximum e.i.r.p. that can be radiated in the pfd mask's reference bandwidth by the A-ESIM towards each of the N points to be compliant with the set(s) of pre-established pfd limits, as per the following equation:

$$EIRP_{C\ j,n}(\delta_n, \gamma_n) = pfd(\delta_n) + 10\log_{10}\left(4\pi(D_{j,n} \cdot 1000)^2\right) + L_{f\ j,n} + L_{atm\ j,n} \quad (4)$$

g) Compute the minimum $EIRP_{C_j}$ across all values calculated at the previous step, $EIRP_{C_j}$ = Min ($EIRP_{C_j,n}$ (δ_n, γ_n)). The output of this last step is the maximum $EIRP_C$ that can be radiated by the A-ESIM to ensure it complies with the set(s) of pre-established pfd limits with respect to all angles δ_n at the altitude H_j. There will be one $EIRP_{C_j}$ for each of the H_j altitudes considered.

The output of step iii) is summarised in Table A2-2 below:

TABLE A2-2

Computed $EIRP_{C_j}$ values

j	H_j	$EIRP_{C_j,n}$ (δ_n, γ_n) dB(W/BW$_{Ref}$)				$EIRP_{C_j}$
-	(km)	δ = 0°	δ = 0.01°	…	δ = 90°	dB(W/BW$_{Ref}$)
1	H_{min}	xxx	xxx	xxx	xxx	XXX
2	…	yyy	yyy	yyy	yyy	YYY

…	…	…	…	…	…	…
j_{max}	H_{max}	zzz	zzz	zzz	zzz	ZZZ

Compare $EIRP_C$ and $EIRP_R$, and produce an examination finding

iv) For each of the emissions, check whether $EIRP_{C_j} > EIRP_R$. The results of this check are illustrated in Table A2-3 below.

TABLE A2-3

Comparison between $EIRP_{C_j}$ and $EIRP_R$

Group ID	Emission n.	$EIRP_R$ dB(W)	Is there at least one altitude H_j for which $EIRP_{C_j} > EIRP_R$?	Smallest H_j for which $EIRP_{C_j} > EIRP_R$ (km)
X	1	XXX	Yes/No	AAA
Y	2	YYY	Yes/No	BBB
…	…	…	…	…
Z	N	ZZZ	Yes/No	CCC

v) For the emissions included in the Group under examination which pass the test detailed in iv) above, the results of the Bureau's examination for that Group is ***favorable*** (after removing emissions that have failed the examination), otherwise it is ***unfavorable***.

vi) The Bureau shall publish:

– The finding (favorable or unfavorable) for each Group of the non-GSO system examined;

– Table A2-3, that is the output of step iii) of the algorithm.

Note: As part of standard procedure, the Bureau would publish the emissions with unfavourable findings in BR IFIC Part III-S, which concerns frequency assignments that are returned to the responsible administration.

X.

ANNEX 3 TO DRAFT NEW RESOLUTION [A116] (WRC-23)

Provisions for non-GSO FSS systems[21] transmitting to aeronautical and/or maritime ESIMs operating in or over an ocean in the frequency bands 18.3-18.6 GHz and 18.8-19.1 GHz with respect to EESS (passive) operating in the frequency band 18.6-18.8 GHz (in accordance with *resolves* 1.1.4)

Any non-GSO fixed satellite space station operating in the frequency bands 18.3-18.6 GHz and 18.8-19.1 GHz with with (i) an orbit apogee less than 20 000 km (ii) communicating with an aeronautical or maritime ESIM over the ocean, and (iii) for which complete notification information has been received by the Radiocommunication Bureau after 1 January 2025, shall not exceed an unwanted emission power flux-density produced at the surface of the ocean in the 18.6-18.8 GHz band, based on the following piecewise equation:

for $N \geq 10$*:*	$pfd = min(-77 - 10 * \log(S), -110)$	dB(W/(m² · 200 MHz))
for $N < 10$*:*	$pfd = min(-67 - 10 * \log(S) - 10 * \log(N), -110)$	dB(W/(m² · 200 MHz))

where S is the non-GSO fixed satellite space station 3 dB beam footprint area on the ground expressed in km² and N is the maximum number of co-frequency beams generated by the non-GSO fixed satellite system within a 10 000 000 km^2 square on the Earth;

[21] These provisions do not apply to non-GSO systems using orbits with an apogee less than 2000 km that employ a frequency reuse factor of at least three

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APPENDIX 4 (REV.WRC-19)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

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ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-19)

Footnotes to Tables A, B, C and D

MOD

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
***												
A.20	**COMPLIANCE WITH *resolves* 1.1.4 OF RESOLUTION 169 (WRC-19)**										**A.20**	
A.20.a	a commitment that the ESIM operation would be in conformity with the Radio Regulations and Resolution 169 (WRC-19) Required only for the notification of earth stations in motion submitted in accordance with Resolution 169 (WRC-19)				+						A.20.a	
A.21	**COMPLIANCE WITH *resolves* 1.2.6 OF RESOLUTION 169 (WRC-19)**										**A.21**	
A.21.a	a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the GSO FSS network with which ESIMs communicate shall follow the procedures in *resolves* 4 of Resolution 169 (WRC-19) Required only for the notification of earth stations in motion submitted in accordance with Resolution 169 (WRC-19)				+						A.21.a	
A.22	**COMPLIANCE WITH *resolves* 7 OF RESOLUTION 169 (WRC-19)**										**A.22**	
A.22.a	a commitment that aeronautical ESIMs would be in conformity with the pfd limits on the Earth's surface specified in Part II of Annex 3 to Resolution 169 (WRC-19) Required only for the notification of earth stations in motion submitted in accordance with Resolution 169 (WRC-19)				+						A.22.a	
A.23	**COMPLIANCE WITH RESOLUTION 35 (WRC-19)**										**A.23**	
A.23.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					O					A.23.a	
A.24	**COMPLIANCE WITH NOTIFICATION OF A NON-GSO SHORT DURATION MISSION**										**A.24**	

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Items in Appendix	A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification of a non-geostationary-satellite network (including space operation functions under Article 2A	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.24.a	a commitment by the administration that, in the case that unacceptable interference caused by a non-GSO satellite network or system identified as short-duration mission in accordance with Resolution 32 (WRC-19) is not resolved, the administration shall undertake steps to eliminate the interference or reduce it to an acceptable level Required only for notification					+					A.24a	
A.25	COMPLIANCE WITH *resolves* 1.1.1.1 OF RESOLUTION [A116] (WRC-23)		A.25	-								
A.25.a	a commitment that the ESIM operation would be in conformity with the Radio Regulations and Resolution [A116] (WRC-23) Required only for the notification of earth stations in motion submitted in accordance with Resolution [A116] (WRC-23)					+					A.25.a	
A.26	COMPLIANCE WITH *resolves* 1.1.4 OF RESOLUTION [A116] (WRC-23)		A.26									
A.26.a	a commitment that the ESIM operation would be in conformity with the *resolves* 1.1.4 of Resolution [A116] (WRC-23) Required only for the notification of earth stations in motion submitted in accordance with Resolution [A116] (WRC-23)					+					A.26.a	
A.267	COMPLIANCE WITH *resolves* 4 OF RESOLUTION [A116] (WRC-23)		A.27	-								
A.247.a	a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the GSO FSS network with which ESIMs communicate shall follow the procedures in *resolves* 5 of Resolution [A1116] (WRC-23) Required only for the notification of earth stations in motion submitted in accordance with Resolution [A116] (WRC-23)					+					A.27.a	
A.278	COMPLIANCE WITH *resolves* 1.2.2 OF RESOLUTION [AH116] (WRC-23)		A.28	-								

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Coordination request for a non-geostationary-satellite network (including space operation functions under Article 2A	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.278.a	a commitment that aeronautical ESIMs would be in conformity with the pfd limits on the Earth's surface specified in Part II of Annex 1 to Resolution [A116] (WRC-23) Required only for the notification of earth stations in motion submitted in accordance with Resolution [A116] (WRC-23)					I+					A.28.a	

Reasons: Consequential

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RESOLUTION 173 (WRC-19)

Use of the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service

Reasons: Consequential

WRC-23 Agenda Item 1.17

IWG-3 members were not able to reach consensus on a proposal for WRC-23 agenda item (AI) 1.17, and, therefore, it forwards views on how the FCC could handle this matter. The key outstanding difference is on the protection of incumbent systems.

VIEW A

Addresses *resolves 3 d)*, Annex 4 b) and Annex 4 f) of Document IWG-3/85r2 (23.03.23).

Resolves 3 d)

This View addresses *resolves 3 d)* and Annex 4 b) of Document IWG-3 085 which did not reach consensus agreement in IWG-3. The matter concerns protection of non-GSO MSS feeder links (non-GSO MSS FLs) operating in the bands 19.3-19.7 GHz (space-to-Earth) and 29.1-29.5 GHz (Earth-to-space) from proposed ISL user space stations.

Concerning the 19.3-19.7 MSS feeder link (space-to-Earth) band, the opposition's contention that existing coordination agreements between operators/administrations that have already agreed to power levels that protect the gateway earth station and should be retained does not address the specific concerns related to non-GSO MSS FLs operating in the frequency band 19.3-19.7 GHz, and the potential interference from new ISS user space stations intended to operate with existing FSS networks.

Coordination agreements to protect non-GSO MSS FLs operating in the 19.3-19.7 MHz band may exist. However, the details of such agreements are confidential and not subject to review by the BR or other parties. Moreover, limits that might be agreed in private coordinate agreements do not contemplate ISL user space stations. Further, ISL proponents are advocating a "no-coordination" approach to new ISL user space station deployment. Effectively, ISL proponents advocate a "do nothing" approach to protection. Consequently, a power flux-density limit is needed to protect existing and future non-GSO MSS FL deployments in the 19.3-19.7 GHz band. The limit of -148 dB(W/(m^2 · MHz)) in *resolves 3 d)* of Document [85…] is derived from ITU-R studies submitted by the United States to ITU-R WP 4a, and provides an approach that ensures protection of non-GSO MSS FL gateways. This result confirms Iridium's contention that new ISL space stations cannot be considered "just another FSS terminal user – like a VSAT fixed on the Earth." Rather, ISL space stations represent a new type of space station with new interference mechanisms and geometries, and new requirements to protect non-GSO MSS FL frequencies.

Concerning the opposition's preferred construction for protecting non-GSO MSS FLs in the 19.3-19.7 GHz band, given here:

c) a GSO or non-GSO space station communicating with a non-GSO space station in the frequency band 19.3-19.7 GHz, or part thereof, shall not produce a power flux-density that exceeds −148 dB(W/(m^2 · MHz)) on the surface of the Earth towards non-GSO mobile satellite gateway stations. [These limits may be exceeded on the territory of any country whose administration has so agreed;]

The language highlighted in yellow is unnecessary and not something enforceable through the Radio Regulations. Problematically, the yellow highlighted text implies that an Administration that has deployed non-GSO MSS FL Earth stations can forego the above protection requirement. The goal should be to protect the use of the 19.3-19.7 GHz bands for current and future non-GSO MSS FL use, not just to protect individual stations within certain administrations. In addition, by retaining the ISL proponents yellow highlighted text, it is not clear whether other provisions applicable to the 19.3-19.7 GHz band could then be exceeded (e.g. limits defined to protect terrestrial operations) as the text would create regulatory ambiguity. Finally, it is not clear how the transmissions from inter-satellite links could be controlled to the specificity of individual country territories in order to meet varying technical requirements. Thus, the yellow highlighted text should be removed from [Doc. 085] and the remainder of the text – including the pfd limit – retained as written.

Annex 4 b)

Regarding the uplink band (29.1-29.5 GHz), the difference between the -70 and -62 dBW/Hz power spectral density limits is related to apportioning the interference budget under ITU-R Rec. S.1323. Iridium attributes interference to new ISL space stations separately from regular FSS user stations (for example, a VSAT), because it believes the interference mechanisms, geometries, and ISL operations cannot be considered as the same as "regular" FSS traffic.

For example, a non-GSO MSS FL receive beam could overlap and be exposed to operations within a number of spot beams of the FSS service providers' satellite(s), and the frequency assignments within these spot beams that reuse the 29.1-29.5 GHz frequency band. The level of exposure, and those potential interference, would be traffic-dependent. To account for this potential aggregate interference from FSS service provider satellite operations falling within non-GSO MSS FL receive beams, all flavors of traffic should be analyzed to derive protection criteria. However, ISL proponent studies only model non-GSO ISL user space station traffic and but ignored the presence of existing FSS space station traffic as a potential interference source. Converesly, ITU-R studies presented by Iridium have apportioned the interference budget and protection criteria for MSS FL between new non-GSO ISL user space stations and existing FSS traffic (VSATs, ESIM, etc.). According to these ITU-R studies, the required power density limit is determined to be -70 dBW/Hz.

To ensure proper protection of non-GSO MSS FL, based on the ITU-R studies it is clear that the protection levels for MSS feeder links in the frequency bands 19.3-19.7 GHz and 29.1-29.5 GHz should not exceed -148 dB(W/(m2 · MHz)) and a power spectral density of -70 dBW/Hz, respectively. Further, ISL proponents do not provide any evidence to support the claim that the proposed protection levels are overly restrictive for ISL operation, and therefore, the recommended protection levels should be adopted.

Annex 4 f)

The document also includes provision f) in Annex 4 that addresses how to protect incumbent NGSO (Earth-to-space) systems from interference of small antennas with high input power levels. The View A Provision f) of Annex 4 has been in the draft CPM text since May of 2022. This is the only piece of Annex 4 that provides protection from high sidelobe levels of small antennas in the 27.5-29.1 GHz and 29.5-30 GHz frequency bands.

View A should be retained, as the impact of the View B mask to the incumbent service has not been studied. The new proposed provision f) would increase the allowable sidelobe EIRP levels by as high as 7.15 dB, as shown in Figure 1 below.

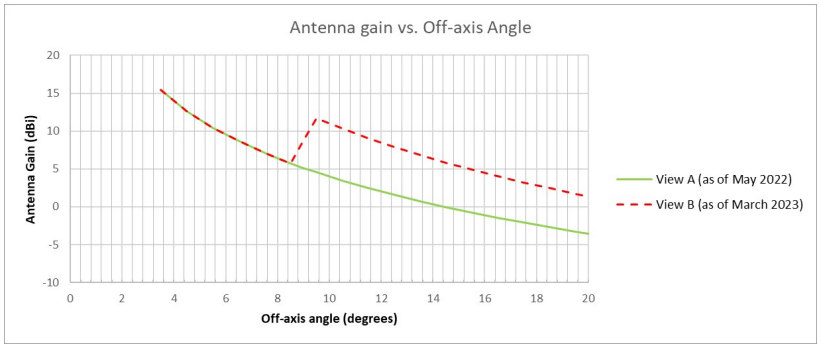


Figure 1: View A antenna mask vs. View B antenna mask

Provision f) of Annex 4 should be retained in its original form (without any square brackets), as follows:

f) For off-axis angles greater than 3.5 degrees, the off-axis e.i.r.p. emissions of any non-GSO space station transmitting in the 27.5-29.1 GHz and 29.5-30 GHz bands to communicate with a non-GSO ISS system with a minimum operational altitude higher than 2 000 km shall not exceed the envelope generated by the combination of an input power spectral density at the antenna flange of −62 dBW/Hz coupled with

the off-axis gain derived from 29-25 log(□) dBi for angles between 3.5 degrees and 20 degrees.

The EIRP envelope generated by provision f) combines input power and antenna gain. View B proponents may utilize antennas that do not meet 29-25 log (□) dBi provided the input power is reduced to still meet the EIRP envelope of provision f). Increased sidelobe levels increase the probability of interference into incumbent systems.

View B – Protection of non-geostationary FSS feeder-links and use of tiered off-axis power limits

The United States should not propose overly restrictive limits in the frequency bands 19.3-19.7 GHz and 29.1-29.5 GHz to protect FSS feeder links for non-GSO mobile-satellite service systems. In preparation of studies conducted under WRC-23 agenda item 1.17, concerns were expressed in the use of some assumptions that resulted in more constraining limits associated with View A. The differences in values were never resolved within the United States, however the View B proponents request the following be considered:

Retain the text in the parenthetical in DRAFT NEW RESOLUTION [USA/A117-B2], *resolves* 3 *c*)

- The -148 dBW/m^/MHz level was derived using an approach that includes an additional 10% sub-apportionment of the protection criteria, which is inconsistent with Recommendation ITU-R S.1323. Recommendation ITU-R S.1323 only prescribes apportionment on per-system basis and does not include any further apportionments in its methodology
- This provision is written to apply a pfd limit on the surface of the Earth towards a non-GSO mobile satellite gateway stations, however this would require knowledge of the locations of every non-GSO MSS satellite gateway earth station. Gateway locations are not readily known, however this would be known as a result of coordination of normal downlink FSS space-to-Earth operations.
- If the parenthetical reference were to be removed and only the pfd limit remains as a mandated provision, it would overly constrain current operators/Administrations that already have coordination agreements in place at higher levels. Since ISS is not subject to coordination in this proposal, an operator/Administration already protecting a gateway earth station would have no recourse but to meet this new limit to operate satellite-to-satellite links.

Support a maximum power spectral density -62 dBW/Hz in provision *b*) of Annex 4 to DRAFT NEW RESOLUTION [USA/A117-B2]

- Similar to the above argument, the -70 dBW/Hz was derived using an approach that includes an additional 10% sub-apportionment of the protection criteria, which is inconsistent with Recommendation ITU-R S.1323.
- The sub-apportionment factor of 10% is not an approved methodology in any ITU-R Recommendations and has no basis.

Create tiered off-axis power limits in provision *f)* of Annex 4 to DRAFT NEW RESOLUTION [USA/A117-B2]

The United States should not propose overly restrictive off-axis power limits in the frequency bands 27.5-29.1 and 29.5-30.0 GHz. For Ka-band ISL user space stations, a deployable mesh antenna is best suited to reduce size, weight, and power and launch volume. Its support structure, however, includes regularly spaced attachment points that increase the sidelobes, for off-axis angles in the range of 10-20 degrees, above what is expected for a similar metal dish reflector. Ka-band ISL users discovered this issue very recently when receiving initial supplier antenna patterns.

- View A's off-axis power limits are unworkable, as drafted. In turn, the View B proponents propose alternate tiered off-axis power limits, as follows, to address the increased sidelobes while protecting primary services:
    - *For off-axis angles greater than 3.5 degrees, the off-axis e.i.r.p. emissions of any non-GSO space station transmitting in the 27.5-29.1 GHz and 29.5-30 GHz bands to communicate with a non-GSO ISS system with a minimum operational altitude higher*

than 2 000 km shall not exceed the envelope generated by the combination of an input power spectral density at the antenna flange of −62 dBW/Hz coupled with the off-axis gain derived from [29-25 log(φ) dBi for angles between 3.5 and 8.5 degrees, -44.82 + 5.95(φ) for angles between 8.5 and 9.5 degrees, and 43-32log(φ) for angles between 9.5 and 20 degrees.]

- View B would continue to protect primary services. In the IWG-3 process, NGSO fixed satellite service and terrestrial service interests expressed concern.
    - *NGSO fixed-satellite service.* OneWeb had raised concerns about the small off-axis angles. View B leaves untouched all off-axis angle limits below 8.5 degrees. Further, the relevant previous studies showed significant margin available that would ensure further protection here.
    - *Terrestrial services.* CTIA had raised possible concern that changing provision f) could have a ripple effect on terrestrial services and the associated PFD limits. That is not the case. The proposed off-axis mask changes do not affect terrestrial services because none of the Ka-band ISL user sidelobes radiate the Earth's surface. For example, for a user terminal operating within the cone of coverage at an altitude of 325 km, the minimum angle between the boresight of the user terminal and the Earth is 35.84 degrees. Because the View A mask only extends to 20 degrees, none of the increased sidelobe power will illuminate the Earth. This minimum angle increases at higher altitudes. The Ka-band ISL user would have to operate significantly outside the cone of coverage (which is impermissible under the U.S. proposal) for Earth surface radiation to occur.
- Keeping View B is necessary. Potential Ka-band ISL users are a limited number of Earth exploration-satellite service, space research service, and space operation service interests. Agenda item 1.17 is useless if such parties cannot make use of the new Ka-band ISL allocations when protections are available for existing primary services. Further, potential Ka-band ISL users were not involved in the discussions over a year ago when two non-user space station interests agreed to the View A off-axis angle power limits.

View B is supported by: SES/O3b, the Boeing Company, Planet.

Authors: *IWG-3 AI 1.17 Offline*

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.17

Agenda Item 1.17: to determine and carry out, on the basis of ITU-R studies in accordance with Resolution **773 (WRC-19)**, the appropriate regulatory actions for the provision of inter-satellite links in specific frequency bands, or portions thereof, by adding an inter-satellite service allocation where appropriate.
Resolution **773 (WRC-2019)**: *Study of technical and operational issues and regulatory provisions for satellite-to-satellite links in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz*

Background Information: There is an increasing need for space station operations in low-Earth orbit for scientific, academic, and commercial purposes. These stations vary in size from as large as the International Space Station to as small as single unit cubesats[22] and have wide ranging data requirements. Users of these systems meet requirements to move data from space to Earth, or other satellite terminal locations in an efficient manner.
This agenda item addresses using satellite-to-satellite links under a new inter-satellite service allocation for relaying data obtained from space science, Earth science, human exploration missions, and industrial and medical activities in space to and from the Earth using a GSO or a non-GSO FSS service provider space station that is operating at an orbital altitude greater than that of the non-GSO user space station generating the data.
Users of satellite-to-satellite links and their host satellite service providers will need to fully protect the current and future incumbent services in bands that may become available for satellite-to-satellite links. To this end, the ITU-R has conducted sharing and compatibility studies to assess the feasibility of introducing satellite-to-satellite links in many of the frequency bands called out in Resolution **773 (WRC-19)**. In addition, the ITU-R conducted a spectrum needs analysis to determine the estimated spectrum required for future space science, Earth science and human exploration missions through the year 2040.
Based on the above studies, the United States of America proposes that use of satellite-to-satellite links for space science, space operation, Earth science, human exploration missions, and industrial and medical activities in space be recognized in the Radio Regulations within the inter-satellite service (ISS) in the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz with transmissions limited to the same direction of transmission (e.g., Earth-to-space direction or space-to-Earth direction) of the GSO or non-GSO service providers' space station.
Further, non-GSO user space stations using satellite-to-satellite links shall only transmit and receive within the cone of coverage[23] of the associated GSO or non-GSO service provider space stations. Non-GSO user space stations will always operate at an orbital altitude that is lower than the orbital altitude of the network or system with which it is communicating. The non-GSO user would operate inter-satellite

[22] A single unit cubesat has dimensions of 10x10x10 centimeters and typical mass less than 2 kilograms.

[23] The cone of coverage is the conical volume of space defined by a cone whose apex is at the service provider space station and whose base does not extend beyond the edge of the notified service area of the individual service provider space station.

links in a manner that would replicate the operations of other users of the service provider network or system. Other user space stations, e.g., a space science satellite, would include ISS frequencies and operate under a contract with the FSS network or system operator providing the inter-satellite service.
In addition to adding a new ISS allocation to Article 5 of the Radio Regulations, the United States of America proposes a new WRC-23 Resolution that provides satellite-to-satellite link operating conditions and regulatory provisions to ensure protection of incumbent services' operations.
Further, the United States of America proposes no change to the Radio Regulations for the frequency band 11.7-12.7 GHz due to lack of sufficient ITU-R studies necessary to ensure the protection of incumbent services while supporting satellite-to-satellite link operations in this frequency range.
Finally, as a consequence of the proposals described above, the United States of America proposes suppression of Resolution 773 (WRC-19).

Proposals:

NOC USA/AI1.17/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

11.7-13.4 GHz

Reasons: Limited ITU-R studies were done in accordance with Resolution **773 (WRC-19)** supporting only satellite-to-satellite link operations in the downlink direction in the frequency range 11.7-12.7 GHz with no corresponding uplink direction spectrum.

MOD USA/AI1.17/2

15.4-18.4 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.1-18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Earth-to-space) 5.520 INTER-SATELLITE ADD 5.A117 MOBILE 5.519 5.521	

ADD USA/AI1.17/3

5.A117 The use of the inter-satellite service is limited to communications between fixed-satellite service space stations and non-geostationary systems operating with frequency assignments in the space

research, space operation and/or Earth exploration-satellite services, or for transmissions of data originating from industrial and medical activities in space. Such use shall be in accordance with Resolution **[USA/A117-B2] (WRC-23)** and is not subject to No. **9.11A**. No. **4.10** does not apply. (WRC-23)

MOD USA/AI**1**.17/4

18.4-22 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.4-18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A INTER-SATELLITE ADD 5.A117 MOBILE	
…		
18.8-19.3	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A INTER-SATELLITE ADD 5.A117 MOBILE	
19.3-19.7	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E INTER-SATELLITE ADD 5.A117 MOBILE	
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A INTER-SATELLITE ADD 5.A117 Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A INTER-SATELLITE ADD 5.A117 MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A INTER-SATELLITE ADD 5.A117 Mobile-satellite (space-to-Earth) 5.524
20.1-20.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A INTER-SATELLITE ADD 5.A117 MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	

MOD USA/AI1.17/5

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
27.5-28.5	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 INTER-SATELLITE ADD 5.A117 MOBILE 5.538 5.540	
28.5-29.1	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 INTER-SATELLITE ADD 5.A117 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
29.1-29.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A INTER-SATELLITE ADD 5.A117 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 INTER-SATELLITE ADD 5.A117 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 INTER-SATELLITE ADD 5.A117 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.525 5.526 5.527 5.529 5.540	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 INTER-SATELLITE ADD 5.A117 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542

MOD USA/AI1.17/6

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 INTER-SATELLITE ADD 5.A117 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	

MOD USA/AI1.17/7

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section V – Limits of power flux-density from space stations

TABLE **21-4** (REV.WRC-23)

Frequency band	Service*	Limit in dB(W/m²) for angles of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
...					
17.7-19.3 GHz [7, 8]	Fixed-satellite (space-to-Earth) Inter-satellite Meteorological-satellite (space-to-Earth)	**0°-5°** -115 [14, 15] or $-115 - X$ [13]	**5°-25°** $-115 + 0.5(\delta - 5)$ [14, 15] or $-115 - X + ((10 + X)/20)(\delta - 5)$ [13]	**25°-90°** -105 [14, 15] or -105 [13]	1 MHz
17.7-19.3 GHz [7, 8]	Fixed-satellite (space-to-Earth) Inter-satellite	**0°-3°** -120 [16]	**3°-12°** $-120 + (8/9)(\delta - 3)$ [16]	**12°-25°** $-112 + (7/13)(\delta - 12)$ [16]	-105 [16]	1 MHz
19.3-19.7 GHz	Fixed-satellite (space-to-Earth) Inter-satellite	**0°-3°** -120 [16]	**3°-12°** $-120 + (8/9)(\delta - 3)$ [16]	**12°-25°** $-112 + (7/13)(\delta - 12)$ [16]	-105 [16]	1 MHz
...						

MOD USA/AI1.17/8

APPENDIX 4 (REV.WRC-23)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-12)

[2] The Radiocommunication Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the BR IFIC (Space Services). (WRC-12)

MOD

TABLE A

GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION (Rev.WRC-23)

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 22, or of Appendix 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.19.b	a commitment in accordance with *resolves* 1.5 of Resolution **156 (WRC-15)** that the administration responsible for the use of the assignment shall implement *resolves* 1.4 of Resolution **156 (WRC-15)** Required only for geostationary-satellite networks operating in the fixed-satellite service in the frequency bands 19.7-20.2 GHz and 29.5-30.0 GHz communicating with transmitting earth stations in motion				+						A.19.b	
A.20	**COMPLIANCE WITH *resolves* 1.1.4 OF RESOLUTION 169 (WRC-19)**										**A.20**	
A.20.a	a commitment that the ESIM operation would be in conformity with the Radio Regulations and Resolution **169 (WRC-19)** Required only for the notification of earth stations in motion submitted in accordance with Resolution **169 (WRC-19)**				+						A.20.a	
A.21	**COMPLIANCE WITH *resolves* 1.2.6 OF RESOLUTION 169 (WRC-19)**										**A.21**	
A.21.a	a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the GSO FSS network with which ESIMs communicate shall follow the procedures in *resolves* 4 of Resolution **169 (WRC-19)** Required only for the notification of earth stations in motion submitted in accordance with Resolution **169 (WRC-19)**				+						A.21.a	
A.22	**COMPLIANCE WITH *resolves* 7 OF RESOLUTION 169 (WRC-19)**										**A.22**	
A.22.a	a commitment that aeronautical ESIMs would be in conformity with the pfd limits on the Earth's surface specified in Part II of Annex 3 to Resolution **169 (WRC-19)** Required only for the notification of earth stations in motion submitted in accordance with Resolution **169 (WRC-19)**				+						A.22.a	
A.22*bis*	**COMPLIANCE WITH *resolves further* 2 OF RESOLUTION [USA/A117-B2] (WRC-23)**										**A.22*bis***	
A.22*bis*.a	a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the non-GSO transmitting space station in frequency bands 27.5-29.1 and 29.5-30 GHz which communicate to a GSO FSS network or non-GSO FSS system, and in frequency band 29.1-29.5 GHz which communicate to a GSO FSS network, shall follow the procedures in *resolves further* 2 of Resolution **[USA/A117-B2] (WRC-23)** Required only for the notification of non-GSO space stations submitted in accordance with Resolution **[USA/A117-B2] (WRC-23)**				±	±					A.22*bis*.a	
A.22*ter*	**COMPLIANCE WITH *resolves* 5 OF RESOLUTION [A117-B2] (WRC-23)**										**A.22*ter***	
A.22*ter*.a	a commitment by the notifying administration for a non-GSO FSS system with an orbital apogee of less than 20 000 km communicating with lower orbiting non-GSO space stations in the frequency bands 18.3-18.6 GHz and 18.8-19.1 GHz that the pfd shall be in conformity with the pfd limits on the Earth's surface specified in Annex 3 to Resolution **[USA/A117-B2] (WRC-23)** Required only for the notification of non-GSO space stations submitted in accordance with Resolution **[USA/A117-B2] (WRC-23)**					±					A.22*ter*.a	

Items in Appendix	A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including associated feeder links under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder links) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 9)	Items in Appendix	Radio astronomy
A.23	**COMPLIANCE WITH RESOLUTION 35 (WRC-19)**										**A.23**	
A.23.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					**O**					A.23.a	
A.24	**COMPLIANCE WITH NOTIFICATION OF A NON-GSO SHORT DURATION MISSION**										**A.24**	
A.24.a	a commitment by the administration that, in the case that unacceptable interference caused by a non-GSO satellite network or system identified as short-duration mission in accordance with Resolution **32 (WRC-19)** is not resolved, the administration shall undertake steps to eliminate the interference or reduce it to an acceptable level Required only for notification					+					A.24.a	
A.25	**INCLUSION OF INTER-SATELLITE SERVICE OPERATIONS**										**A.25**	
A.25.a	the calculated worst-case off-axis angle between the main lobe of the space station transmitting in the frequency bands 27.5-30 GHz, or parts thereof, and the Earth's surface		X		X	X					A.25.a	
A.25.b	An indicator for non-GSO systems receiving in the frequency bands 27.5-28.6 GHz and 29.5-30.0 GHz showing the commitment that the equivalent power flux-density produced at any point in the geostationary-satellite orbit by emissions from all combined operations of inter-satellite and typical earth station transmissions shall not exceed the limits given in Table **22-2**		X		X	X					A.25.b	
A.25.c.1	The minimum absolute sub-satellite point latitude under which a non-GSO system transmitting in the frequency bands 27.5-28.6 GHz and 29.5-30 GHz is not transmitting		X		X	X					A.25.c.1	
A.25.c.2	The minimum absolute sub-satellite point latitude under which a non-GSO system receiving in the frequency bands 27.5-28.6 GHz and 29.5-30 GHz is not receiving		X		X	X					A.25.c.2	

Reasons: Six new Appendix 4 data elements are added to provide indicators for inter-satellite link operating in accordance with Resolution [USA/A117-B2] (WRC-23)

ADD USA/AI1.17/9

DRAFT NEW RESOLUTION [USA/A117-B2] (WRC-23)

Use of the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz by the inter-satellite service

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that there is growing interest for utilizing satellite-to-satellite links for a variety of applications;

b) that the inter-satellite service (ISS) is defined as a radiocommunication service providing links between artificial satellites;

c) that the ITU Radiocommunication Sector (ITU-R) has carried out sharing and compatibility studies between incumbent services in the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz and adjacent bands and satellite-to-satellite transmissions in the fixed-satellite service (FSS);

d) that these studies were based on certain principles including limited directionality, use of power control and antenna steering capabilities and compliance with applicable epfd and off-axis e.i.r.p. limits;

e) that the frequency bands 18.1-18.6, 18.8-20.2 GHz (space-to-Earth) and 27.5-30 GHz (Earth-to-space) are also allocated to terrestrial and space services used by a variety of different systems, and these existing services and their future development need to be protected, without the imposition of undue constraints, from the operation of ISS links,

recognizing

a) that any course of action taken under this Resolution with respect to ISS links has no impact on the coordination requirements with other services which are otherwise subject to coordination, regardless of date of receipt;

b) that any course of action taken under this Resolution has no impact on the original date of receipt of the frequency assignments of the geostationary-satellite orbit (GSO) FSS satellite network or the non-GSO FSS system with which non-GSO space stations communicate or on the coordination requirements of that satellite network,

recognizing further

that in accordance with Section 6 of the Rules of Procedure associated with No. **11.32**, whenever a network is composed of GSO and non-GSO space stations, the related assignments shall not be considered as being subject to the coordination procedure under Section II of Article **9**,

resolves

1 that, for a non-GSO space station subject to this Resolution communicating with a GSO or non-GSO space station using ISS links within the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, or parts thereof, the following conditions shall apply:

a) the non-GSO space station transmitting in the frequency bands 27.5-30 GHz and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof, shall only operate inter-satellite links when its apogee altitude[1] is lower than the minimum operational altitude[2] of the GSO or non-GSO space station it communicates with and when the off-nadir angle between this GSO or non-GSO space station and the non-GSO space station it communicates with is less than or equal to θ_{Max} (as defined in Annex 1 to this Resolution);

[1] See item A.4.b.4.d of Appendix **4**.

[2] See item A.4.b.4.f of Appendix **4**.

b) the GSO or non-GSO space station receiving in the frequency bands 27.5-30 GHz and transmitting in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof, shall only operate inter-satellite links when its minimum operational altitude is higher than the apogee altitude of the non-GSO space station with which it communicates;

c) that frequency assignments in the inter-satellite service operating on GSO or non-GSO space stations receiving in the frequency bands 27.5-30 GHz and transmitting in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof, shall also have assignments which are in the fixed-satellite service;

d) the non-GSO ISS space station transmitting in the frequency 27.5-30 GHz and receiving in the frequency bands 18.1-18.6 and 18.8-20.2 GHz, or parts thereof, shall remain within the envelope of the characteristics of ground-based earth stations of the GSO or non-GSO space station with which it communicates;

2 that non-GSO space stations subject to this Resolution receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof, shall not claim protection from FSS and mobile-satellite service (MSS) networks and systems as well as terrestrial services operating in conformity with the Radio Regulations;

3 that GSO and non-GSO space stations subject to this Resolution:

a) receiving in the frequency band 27.5-30 GHz from non-GSO space stations shall not claim protection for inter-satellite links from FSS and MSS networks and systems as well as terrestrial services operating in conformity with the Radio Regulations;

b) shall comply with the provisions contained in Article **21** in the frequency band 18.1-18.6 GHz and 18.8-19.7 GHz to protect terrestrial services;

c) a GSO or non-GSO space station communicating with a non-GSO space station in the frequency band 19.3-19.7 GHz, or part thereof, shall not produce a power flux-density on the surface of the Earth towards a non-GSO mobile satellite gateway station that exceeds -148 dB(W/(m^2 · MHz)). [These limits may be exceeded on the territory of any country whose administration has so agreed;]

4 that non-GSO space stations transmitting in the frequency bands 27.5-30 GHz, or part thereof:

a) shall not produce a power flux-density at any point in the GSO arc greater than the power flux-density produced by earth stations associated with the satellite network/system with which they communicate as determined in Annex 5 to this Resolution;

b) shall not cause unacceptable interference to or otherwise impose constraints on operation or development of the non-GSO FSS service and protect non-GSO FSS space stations by complying with the provisions contained in Annex 4 to this Resolution;

c) when transmitting in the frequency band 29.1-29.5 GHz, shall limit communications to GSO FSS space stations, and shall not cause unacceptable interference to or otherwise impose constraints on the operation or development of feeder link operating in the FSS to serve non-GSO mobile-satellite service systems operating in the band 29.1-29.5 GHz; the conditions in Annex 4 b) shall apply;

d) for application of the provisions contained in Annex 4, the BR shall examine the characteristics of non-GSO space stations transmitting under the ISS allocation with respect to

the conformity of the total e.i.r.p. and e.i.r.p. spectral density limits as specified and publish the results of such examination in the BR IFIC;

e) shall comply with the provisions contained in Annex 2 to this Resolution for protection of terrestrial services in the frequency band 27.5-29.5 GHz;

f) for application of the provisions contained in Annex 2, the BR shall examine the characteristics of non-GSO space stations transmitting under the ISS allocation with respect to the conformity of the power flux-density (pfd) limits on the Earth's surface as specified and publish the results of such examination in the BR IFIC;

5 that, with respect to the Earth exploration-satellite service (EESS) (passive) operating in the frequency band 18.6-18.8 GHz, any non-GSO FSS system with an orbital apogee of less than 20 000 km communicating with lower orbiting non-GSO space stations in the frequency bands 18.3-18.6 GHz and 18.8-19.1 GHz and for which the complete notification information has been received by the Radiocommunication Bureau (BR) after 1 January 2025 shall comply with the provisions indicated in Annex 3 to this Resolution;

resolves further

1 that, subject to this Resolution:

a) the notifying administration of the non-GSO system choosing to operate ISS links and receiving in the frequency bands 27.5-28.6 GHz and 29.5-30.0 GHz shall indicate to the BR the commitment that the equivalent power flux-density produced at any point in the geostationary-satellite orbit by emissions from all combined operations of ISS links and typical earth station transmissions shall not exceed the limits given in Table **22-2**;

b) the notifying administration of the non-GSO space station/stations transmitting in the frequency bands 27.5-30.0 GHz towards a GSO network and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall send to the BR the relevant Appendix **4** (advance publication) information containing the characteristics of the non-GSO space station/stations and the associated name of the notified GSO network(s) with which it intends to communicate;

c) the notifying administration of the non-GSO space station/stations transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30.0 GHz bands towards a non-GSO system and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall send to the BR the relevant Appendix **4** (advance publication) information containing the characteristics of the non-GSO space station/stations and the associated name of the notified non-GSO system(s) with which it intends to communicate;

d) the notifying administration of the GSO FSS network or non-GSO FSS system receiving in the frequency bands 27.5-30 GHz, or portions thereof, with which non-GSO transmitting space stations communicate shall follow the procedures in *resolves further* 3;

e) the notifying administration for the non-GSO transmitting space station receiving in the frequency bands 27.5-30 GHz which communicates to a GSO FSS network or non-GSO FSS system shall send to the BR a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the non-GSO transmitting space station which communicates to a GSO FSS network or non-GSO FSS system shall follow the procedures in *resolves further* 2;

2 that in case of unacceptable interference caused by a non-GSO space station transmitting in the frequency bands 27.5-30.0 GHz:

a) the notifying administration for the non-GSO space station transmitting in the frequency bands 27.5-30.0 GHz shall cooperate with an investigation on the matter and provide, to the extent of its ability, any required information on the operation of the transmitting space station and a point of contact to provide such information;

b) the notifying administration for the non-GSO space station transmitting in the frequency bands 27.5-30.0 GHz and the notifying administration of the GSO or non-GSO network or system with which the non-GSO transmitting space station communicates shall, jointly or individually, as the case may be, upon receipt of a report of unacceptable interference, take a required action to eliminate or reduce interference to an acceptable level;

3 that the administration responsible for the GSO or non-GSO network or system with which the non-GSO transmitting space station communicates shall ensure that:

a) for the operation of non-GSO space stations transmitting in the ISS in the frequency bands 27.5-30.0 GHz, techniques are employed to maintain pointing accuracy with the associated space station, without inadvertently tracking adjacent GSO satellites or non-associated non-GSO satellites;

b) all necessary measures are taken so that non-GSO transmitting space stations in the frequency bands 27.5-30.0 GHz in the ISS are subject to permanent monitoring and control by a network control and monitoring centre (NCMC) or equivalent facility in order to comply with the provisions in this Resolution, and are capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC or equivalent facility;

c) a permanent point of contact is provided for the purpose of tracing any suspected cases of unacceptable interference from non-GSO transmitting space stations in the frequency bands 27.5-30.0 GHz in the ISS and to immediately respond to requests from the focal point;

4 that, upon receipt of the information in *resolves further* 1*a)* to 1*e)*, the BR shall examine that information with respect to the existing regulatory provisions, as well as any conditions prescribed in this Resolution, and publish the result of such examination in the International Frequency Information Circular (BR IFIC),

instructs the Director of the Radiocommunication Bureau

1 to take all necessary actions to facilitate the implementation of this Resolution, together with providing any assistance for the resolution of interference, if and when required;

2 to report to future world radiocommunication conferences any difficulties or inconsistencies encountered in the implementation of this Resolution;

3 that, upon examination of the information submitted by the notifying administration under *resolves further* 1*b)* or 1*c)*, if no recorded ISS frequency assignments for the relevant frequency bands can be identified for the GSO FSS network or non-GSO FSS system with which the notifying administration’s non-GSO space station intends to communicate, the BR shall return the information to the notifying administration with an unfavourable finding;

4 to use the methodology given in Appendix 1 to Annex 2 of this Resolution when assessing compliance with the pfd limits in Annex 2;

5 not to examine, under No. **11.31**, the conformity of non-GSO FSS systems with the provisions of *resolves* 5 of this Resolution.

ANNEX 1 TO DRAFT NEW RESOLUTION [USA/A117-B2] (WRC-23)

Determination of the off-nadir angle

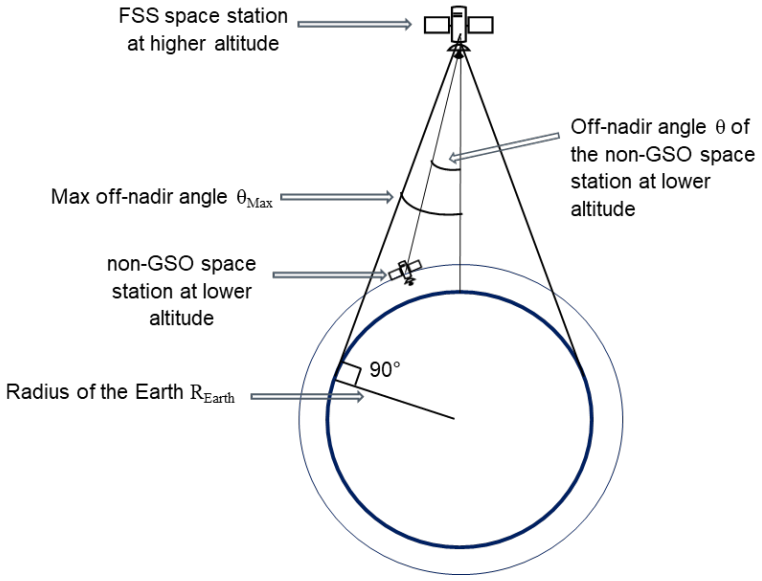
1 a non-GSO space station transmitting in the frequency bands 27.5-30 GHz) and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall only communicate with a GSO or non-GSO FSS space station when the off-nadir angle between this GSO or non-GSO FSS space station and the non-GSO space station with which it communicates is equal to or smaller than:

$$\theta_{Max} = \sin^{-1}\left(\frac{R_{Earth}}{R_{Earth} + Alt_{Higher_FSS}}\right)$$

where:

R_{Earth} = 6 378 km

Alt_{Higher_FSS} = altitude of the GSO or non-GSO space station at higher orbital altitude in km.



2 In case the notified service area of the GSO or non-GSO FSS network/system at higher orbital altitude is not global, the maximum off-nadir angle θ_{Max} will vary at each azimuth according to the notified service area and there will be a specific maximum off-nadir angle associated to each azimuth based on the position in space of the FSS network/system at higher orbital altitude and the geographic coordinates (latitude, longitude) of the border of the notified service area at each azimuth, which are extracted from the Graphical Interference Management System (GIMS) database container that was submitted to the BR when notifying a specific non-global service area.

$$\theta_{Max} = \cos^{-1}\left(\frac{\left(R_{Earth} + Alt_{FSS_SS}\right)^2 + dist^2 - R_{Earth}^2}{2\times\left(R_{Earth} + Alt_{FSS_SS}\right)\times dist}\right)$$

with:

$$dist = \sqrt{\left(X_E - X_S\right)^2 + \left(Y_E - Y_S\right)^2 + \left(Z_E - Z_S\right)^2}$$

$$X_E = R_{Earth}\times\cos\left(lat_{sab}(\varphi)\right)\times\cos\left(lon_{sab}(\varphi)\right)$$

$$Y_E = R_{Earth}\times\cos\left(lat_{sab}(\varphi)\right)\times\sin\left(lon_{sab}(\varphi)\right)$$

$$Z_E = R_{Earth}\times\sin\left(lat_{sab}(\varphi)\right)$$

$$X_S = \left(R_{Earth} + Alt_{FSS_SS}\right)\times\cos\left(lat_{SS}\right)\times\cos\left(lon_{SS}\right)$$

$$Y_S = \left(R_{Earth} + Alt_{FSS_SS}\right)\times\cos\left(lat_{SS}\right)\times\sin\left(lon_{SS}\right)$$

$$Z_S = \left(R_{Earth} + Alt_{FSS_SS}\right)\times\sin\left(lat_{SS}\right)$$

where:

$lat_{sab}(\varphi)$ = latitude of the service area border for the azimuth φ

$lon_{sab}(\varphi)$ = longitude of the service area border for the azimuth φ

lat_{SS} = latitude of the sub-satellite point of the GSO/non-GSO space station

lon_{SS} = longitude of the sub-satellite point of the GSO/non-GSO space station.

ANNEX 2 TO DRAFT NEW RESOLUTION [USA/A117-B2] (WRC-23)

Provisions for non-GSO space stations transmitting in the frequency bands 27.5-30.0 GHz to protect terrestrial services in the frequency band 27.5-29.5 GHz

The maximum pfd produced at the surface of the Earth by emissions from a non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.1-29.5 GHz shall not exceed:

$pfd(\theta) = -136.2$ $(dB(W/(m^2 \cdot 1\ MHz)))$ for $0° \leq \theta \leq 0.01°$

$pfd(\theta) = -132.4 + 1.9 \cdot \log(\theta)(dB(W/(m^2 \cdot 1\ MHz)))$ for $0.01° < \theta \leq 0.3°$

$pfd(\theta) = -127.7 + 11 \cdot \log(\theta)(dB(W/(m^2 \cdot 1\ MHz)))$ for $0.3° < \theta \leq 1°$

$pfd(\theta) = -127.7 + 18 \cdot \log(\theta)(dB(W/(m^2 \cdot 1\ MHz)))$ for $1° < \theta \leq 2°$

$pfd(\theta) = -129.4 + 23.7 \cdot \log(\theta)(dB(W/(m^2 \cdot 1\ MHz)))$ for $2° < \theta \leq 8°$

$pfd(\theta) = -108$ $(dB(W/(m^2 \cdot 1\ MHz)))$ for $8° < \theta \leq 90.0°$

where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).

APPENDIX

To check the compliance of the non-GSO emissions with the PFD mask described in Annex 2, the following procedures shall be followed.

1) Note: a is the orbital altitude (km) of the non-GSO system identified in *resolves further 1c)* or in *resolves further 1b)*, PSD is the power spectral density in 1 MHz, and compute the off-axis gain pattern Gtx(φ), with φ being the off-axis angle in the direction of the terrestrial receiver. Assume the Earth is a sphere whose radius, Re, is 6378 km.

2) Compute the angle, as seen from the non-GSO system transmitting in frequency range 27.5-29.5 GHz (the user space station), between the centre of the Earth and the GSO network or non-GSO systems receiving in the frequency range 27.5-29.5 GHz (the service provider space station) assuming that the user is at the edge of the cone of coverage with the formula:

$$\delta = \arcsin\left(\frac{R_e}{R_e + a}\right)$$

3) Sweep angle of arrival to the terrestrial station, θ from 0 to 90 degrees in 0.1 degree increments.

4) Compute satellite angle $\gamma = \arcsin\left(\frac{\sin(90+\theta)}{R_e+a} * R_e\right)$

5) Compute off-axis angle $\varphi = 180 - \delta - \gamma$

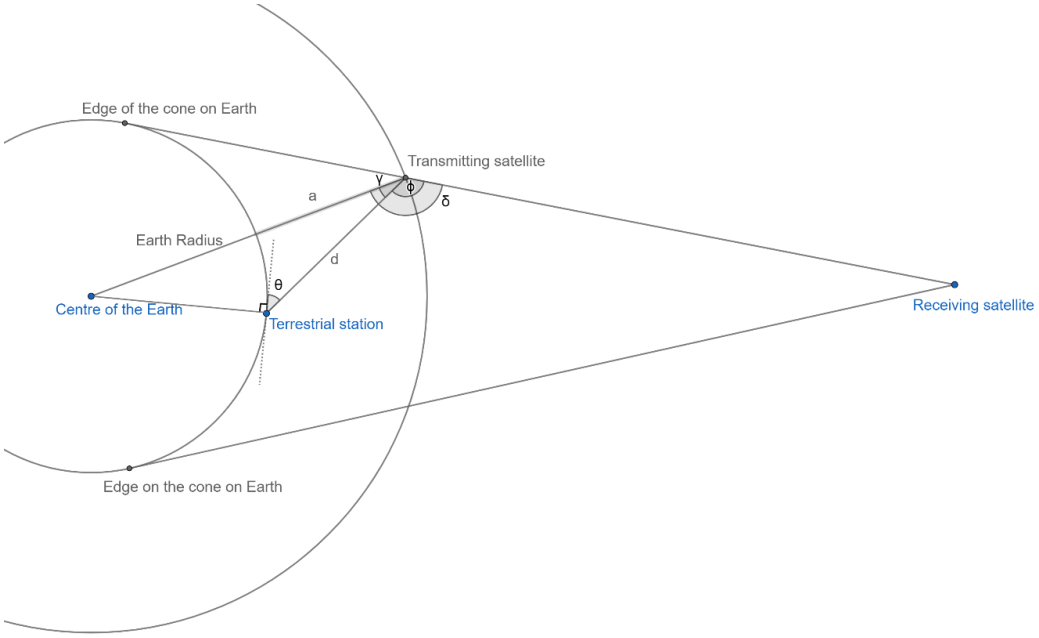
6) Compute the gain Gtx in dBi towards the Earth point for each of the angles from step 5, using the user space station transmit antenna pattern.

7) Compute slant Range $d = (R_e + a)\frac{\sin(90-\gamma-\theta)}{\sin(90+\theta)}$

8) Compute the atmospheric attenuation A_{atm} in dB, for the corresponding angle of arrival, θ using ITU-R Recommendation P.676-13 with the mean global standard atmosphere from ITU-R Recommendation P.835-6.

9) Compute the PFD on the ground as:

$$PFD = PSD + Gtx(\varphi) - A_{atm}(\theta) - 10 \times \log_{10}(4\pi\, d^2)$$



ANNEX 3 TO DRAFT NEW RESOLUTION [USA/A117-B2] (WRC-23)

Provisions for non-GSO space stations[24] transmitting in the frequency bands 18.1-18.6 GHz and 18.8-19.3 GHz towards non-GSO space stations to protect EESS (passive) in the frequency band 18.6-18.8 GHz (see *resolves* 5)

Non-GSO fixed-satellite space stations operating with an orbit apogee less than 20 000 km in the frequency bands 18.1-18.6 GHz and 18.8-19.3 GHz when communicating with a non-GSO space station as described in *resolves* 1*a)* shall not exceed a power flux-density produced at the surface of the oceans across the 200 MHz of the 18.6-18.8 GHz band, of −118 dB(W/(m^2 · 200 MHz)).

[24] These provisions do not apply to non-GSO systems using orbits with an apogee less than 2000 km that employ a frequency reuse factor of at least three.

ANNEX 4 TO DRAFT NEW RESOLUTION [USA/A117-B2] (WRC-23)

Provisions for non-GSO space stations transmitting in the frequency band 27.5-30.0 GHz to protect non-GSO space stations

The following conditions for non-GSO space stations transmitting in the frequency band 27.5-30.0 GHz to protect non-GSO space stations shall apply:

a) Any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz to communicate with a GSO ISS network shall not exceed the following on-axis e.i.r.p. spectral density limits:

– for non-GSO space station transmit on-axis antenna gains greater than 40.6 dBi: −17.5 dBW/Hz;

– for non-GSO space station transmit on-axis antenna gains less than 40.6 dBi: −17.5 − (40.6 − X) dBW/Hz

where X is the on-axis gain of the non-GSO space station antenna in dBi.

b) To protect FSS feeder links to non-GSO mobile-satellite service systems the following conditions for non-GSO space stations and systems transmitting in the frequency band 29.1-29.5 GHz shall apply:

– emissions from any non-GSO space station communicating with a GSO network shall not exceed a maximum power spectral density of –70dBW/ −62 dBW/Hz at the input of the antenna of the non-GSO space station;

– any non-GSO space station communicating with a GSO network shall have a minimum antenna diameter of 0.3 m whose gain shall not exceed the gain envelope of Recommendation ITU-R S.580-6;

– non-GSO space stations communicating with a GSO network shall only operate in orbits with inclination between 80 and 100 degrees;

– non-GSO systems communicating with a GSO network shall not contain more than 100 satellites.

c) Non-GSO space stations transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz shall not operate at orbital altitudes between 900 km and 1290 km.

d) Any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz to communicate with a non-GSO FSS system with a minimum operational altitude higher than 2 000 km shall not exceed an on-axis e.i.r.p. spectral density of −20 dBW/Hz and the total e.i.r.p. shall not exceed:

Transmitting non-GSO space station operational altitude (km)	Maximum total e.i.r.p. (dBW)
< 450	63
450 to < 600	61

600 to < 750	58
750 to 900	55
> 1290	N/A

e) Any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz to communicate with a non-GSO FSS system with a minimum operational altitude lower than 2 000 km shall not exceed an on-axis e.i.r.p. spectral density of −30 dBW/Hz and the total e.i.r.p. shall not exceed:

Transmitting non-GSO space station operational altitude (km)	Maximum total e.i.r.p. (dBW)
< 450	60
450 to < 600	58
600 to < 750	55
750 to 900	53
> 1290	N/A

f) [View A: For off-axis angles greater than 3.5 degrees, the off-axis e.i.r.p. emissions of any non-GSO space station transmitting in the 27.5-29.1 GHz and 29.5-30 GHz bands to communicate with a non-GSO ISS system with a minimum operational altitude higher than 2 000 km shall not exceed the envelope generated by the combination of an input power spectral density at the antenna flange of −62 dBW/Hz coupled with the off-axis gain derived from 29-25 log(φ) dBi for angles between 3.5 degrees and 20 degrees.

View B: For off-axis angles greater than 3.5 degrees, the off-axis e.i.r.p. emissions of any non-GSO space station transmitting in the 27.5-29.1 GHz and 29.5-30 GHz bands to communicate with a non-GSO ISS system with a minimum operational altitude higher than 2 000 km shall not exceed the envelope generated by the combination of an input power spectral density at the antenna flange of −62 dBW/Hz coupled with the off-axis gain derived from [29-25 log(φ) dBi for angles between 3.5 and 8.5 degrees, -44.82 + 5.95(φ) for angles between 8.5 and 9.5 degrees, and 43-32log(φ) for angles between 9.5 and 20 degrees.]

ANNEX 5 TO DRAFT NEW RESOLUTION [USA/A117-B2] (WRC-23)

Provisions for non-GSO space stations transmitting in the frequency band 27.5-30.0 GHz bands to protect GSO space stations

1) In the frequency bands 27.5-30 GHz, when a non-GSO system as identified in *resolves further* 1*b)* identifies an associated GSO network, as described in *resolves further* 1*b)*, to operate inter-satellite links, the BR shall perform the examination in Appendix 1 to this Annex.

2) The notifying administration of the GSO network identified in 1) above shall commit that the non-GSO space stations with which it communicates will respect all bilateral coordination agreements that have already been signed, noting the provisions from *resolves further* 1*d)*, 1*e)*, 2 and 3.

3) In the frequency band 28.6-29.1 GHz, when a non-GSO system as identified in *resolves further* 1*c)* identifies an associated non-GSO system, as described in *resolves further* 1*c)*, to operate inter-satellite links, the BR shall perform the examination in Appendix 2 to this Annex.

4) The notifying administration of the receiving non-GSO network identified in 3) above shall commit that the transmitting non-GSO space stations with which it communicates will respect all bilateral coordination agreements that have already been signed, noting the provisions from *resolves further* 1*d)*, 1*e)*, 2 and 3.

5) In the frequency bands 27.5-28.6 and 29.5-30 GHz, the pfd on the geostationary arc produced by a non-geostationary-satellite system as mentioned in *resolves further* 1*c)* shall never exceed -163 dBW/m²/40 kHz. A computation methodology is provided in Appendix 3 to this Annex.

APPENDIX 1

The aim of this Appendix is to provide a method to be used by the BR to assess whether the emissions from a non-GSO space station operating inter-satellite links with a GSO space station are within the envelope of the typical Earth stations of the GSO network.

Step 1: For each beam in the Earth-to-space direction of the receiving GSO network notification, compute the maximum e.i.r.p. produced in one hertz, noted EIRPSD.

Step 2: Compute the reduction in free space loss at the altitude of the user using:

$$\Delta FSL = 20\log_{10}\left(\frac{GSO_{alt}}{GSO_{alt} - NGSO_{alt}}\right)$$

Where $NGSO_{alt}$ is the altitude of the transmitting non-GSO system space stations, and GSO_{alt}=35786 km. It should be noted that if several altitudes are included in the notification, each altitude shall be tested.

Step 3: Compute the reduced e.i.r.p. spectral density as $EIRPSD_{reduced} = EIRPSD - \Delta FSL$

Step 4: For all beams in the non-GSO system notification with a class station XY, compute the maximum e.i.r.p. in one hertz, noted $EIRPSD_{ngso}$.

Step 5: Frequency assignments to non-GSO systems shall receive a favorable finding with respect to Annex 5 if, for all beams, $EIRPSD_{ngso}$ does not exceed the $EIRPSD_{reduced}$ quantity, computed at the same altitude, otherwise the assignments shall receive an unfavorable finding.

APPENDIX 2

The aim of this Appendix is to provide a method to be used by the BR to assess whether the emissions from a non-GSO space station operating inter-satellite links with a non-GSO space station are within the envelope of the typical Earth stations of the non-GSO system.

Step 1: For each beam in the Earth-to-space direction of the receiving non-GSO system notification, compute the maximum e.i.r.p. produced in one hertz, noted EIRPSD.

Step 2: Compute the reduction in free space loss at the altitude of the user using:

$$\Delta FSL = 20\log_{10}\left(\frac{GSO_{alt}}{GSO_{alt} - NGSO_{alt}}\right)$$

Where $NGSO_{alt}$ is the altitude of the transmitting non-GSO system space stations, and GSO_{alt}=35786 km. It should be noted that if several altitudes are included in the notification, each altitude shall be tested.

Step 3: Compute the reduced e.i.r.p. spectral density as $EIRPSD_{reduced} = EIRPSD - \Delta FSL$

Step 4: For all beams in the non-GSO system notification with a class station XY, compute the maximum e.i.r.p. in one hertz, noted $EIRPSD_{ngso}$.

Step 5: Frequency assignments to non-GSO systems shall receive a favorable finding with respect to Annex 5 if, for all beams, $EIRPSD_{ngso}$ does not exceed the $EIRPSD_{reduced}$ quantity, computed at the same altitude, otherwise the assignments shall receive an unfavorable finding.

APPENDIX 3

To check the compliance of the non-GSO emissions with the pfd limit given in Annex 5, *5)*, the following procedure shall be followed.

Step 1: For each of the positions for the user, the service provider, and a virtual GSO victim as described below:

Station	Parameter	Value
Transmitting non-GSO system as identified in *resolves further 1c)*	Latitude	Range [A.25.c.1, inclination of the orbit] °
	Longitude	0°
	Altitude	station altitude km
Receiving non-GSO system, as	Latitude	Range [A.25.c.2,

Station	Parameter	Value
described in *resolves further 1c)*		inclination of the orbit] °
	Longitude	0°
	Altitude	station altitude km
Virtual GSO victim	Latitude	0°
	Longitude	0°
	Altitude	35786 km

Step 2: Assume that the user points towards the service provider, compute the off-axis angle towards the virtual GSO victim

Step 3: Using the off-axis angle from step 2, and the antenna parameters of the user, compute the off axis gain Gtx of the user towards the virtual GSO victim

Step 4: Compute the distance d from the user to the service provider in meters

Step 5: Compute the PFD produced at the virtual GSO victim by:

$$PFD = PSD + Gtx - 10 \times \log_{10}(4\pi d^2)$$

where PSD is the power spectral density of the user.

Step 6: Frequency assignments to non-GSO systems shall receive a favorable finding with respect to Annex 5, *5)* if all PFD values are below the threshold given in Annex 5, *5)*.

Reasons: Proposal to have a check whether the emissions are within the envelope of typical ESs of the service provider. In the epfd band, a pfd limit is provided to ensure GSO protection.

SUP USA/AI1.17/10

RESOLUTION 773 (WRC-19)

Study of technical and operational issues and regulatory provisions for satellite-to-satellite links in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz

Reasons: Adoption by WRC-23 of the aforementioned proposals satisfies the agenda item and therefore Resolution **773 (WRC-19)** is no longer needed.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 9, Topic 9.1 a)

Agenda Item 9, topic 9.1 a): *In accordance with Resolution **657 (Rev.WRC-19**), review the results of studies relating to the technical and operational characteristics, spectrum requirements and appropriate radio service designations for space weather sensors with a view to describing appropriate recognition and protection in the Radio Regulations without placing additional constraints on incumbent services;*

Background:

Space weather refers to the physical processes occurring in the space environment that ultimately affects human activities on Earth and in space. Space weather is influenced by the solar wind and the interplanetary magnetic field (IMF) carried by the solar wind plasma. These disturbances can result in a hazardous radiation environment for satellites and humans at high altitudes, ionospheric disturbances, geomagnetic field variations, and the aurora. These effects can in turn impact a number of services and infrastructure located on the Earth's surface, airborne, or in Earth orbit. These disturbances are measured by sensors at various frequencies. Further, disturbances in the ionosphere and atmosphere have important impacts on radio communication, satellite navigation systems and heat the atmosphere which increases the atmospheric drag experienced by LEO satellites, including the International Space Station and earth exploration satellite service systems. Radionavigation-satellite service (RNSS) signals, which are used for a growing number of precision positioning, navigation, and timing applications, as well as for sounding the atmosphere using radio-occultation, are affected by space weather as they propagate through the ionosphere.

In response to Resolution **657 (Rev.WRC-19)**, the ITU-R has undertaken the study of the technical and operational characteristics and spectrum requirements of active and receive-only spectrum-reliant space weather sensor systems. Resolution **657 (Rev.WRC-19)** also invited the ITU-R to conduct studies with the objective of determining the appropriate radio service or services that would apply to space weather sensors. The ITU-R conducted a review of existing radiocommunications services as potential candidates under which space weather sensors can operate.

Receive-only space weather sensors enable observations through the detection of signals from natural origin as well as receiving signals of opportunity from other radiocommunication services (e.g. radionavigation-satellite service (RNSS)). All receive-only space weather observations should be operated in the same radiocommunication service, in order to allow for a consistent framework for the protection of these applications. Thus, the appropriate radiocommunication service for the receive-only usage of space weather sensors needs to have a suitable definition which can cover all of these different types of sensors and observation methodologies. While the radio astronomy service (RAS) could be an appropriate radiocommunication service for sensors observing signals from cosmic origin, its definition does not cover the observations of signals of opportunity. On the other hand, the definition of the meteorological aids service (MetAids) may be able to accommodate all space weather sensors.

Active space sensors generally emit radio pulses which are then mainly reflected by the ionosphere back to the same sensor system. The reflection in the high atmospheric layers depends on the applied frequency of the radio pulse, where the reflected signal provides information on the physical characteristics of these

layers which are important for characterising impacts on RNSS and HF signals in general. Active sensor systems could also be included under the MetAids.

It should be noted that frequency selection for the sensor systems is dependent upon the scientific parameters being measured and their associated physics and includes frequency bands from 0.01 MHz to 80 GHz (see latest version of Report ITU-R RS.2456).

Resolution **657 (Rev.WRC-19)** asks for necessary sharing studies with incumbent systems operating in frequency bands used by space weather sensors. No sharing or compatibility studies were undertaken by the ITU-R.

Proposal:

NOC USA/9.1A/1

ARTICLES

Reason: Changes to the Radio Regulations are outside the scope of Agenda Item 9.1.

NOC USA/9.1A/2

APPENDICES

Reason: Changes to the Radio Regulations are outside the scope of Agenda Item 9.1.

SUP USA/9.1A/3

RESOLUTION 657 (REV.WRC-19)

Protection of radio spectrum-reliant space weather sensors used for global prediction and warnings

Reason: While the current version of Resolution 657 lacks specificity on the application radio service, candidate frequency bands, and regulatory provisions for continued studies, it is also associated with a preliminary agenda item for WRC-27. Action here is consistent with action being taken under the preliminary agenda item.

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WRC-23 Agenda Item 10

Future Agenda Item proposal to review and update

IWG-3 members were not able to reach consensus on a draft U.S. proposal for WRC-23 Agenda Item 10, Item 2.2 from the Preliminary agenda for the 2027 World Radio Conference, which was to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary space stations in the fixed-satellite service, in accordance with Resolution 176 (WRC-19);

This document provides two views on the appropriate regulatory changes the FCC should consider. View A is document IWG-3/073R1 submitted by SES based on Resolution 812 (WRC-19), item 2.2 and proponents who wish to include non-geostationary space stations in the fixed-satellite service in the FAI proposal. View B is based on comments received to document IWG-3/073R1 from CTIA.

View A is supported by: SES, Amazon, Intelsat and Mangata Networks

View B is supported by: CTIA

VIEW A

View A: Adopt an agenda item to study and develop technical, operational and regulatory measures, facilitating the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service

Agenda Item 10, FAI

Reference: IWG-3/073R1(20.03.23)

Supported by SES, Amazon, Intelsat and Mangata Networks

View A recommends that the U.S. adopt a proposal to support a 2027 World Radio Conference agenda item, which is to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary space stations in the fixed-satellite service.

Proponents of View A believes that there has been great progress with the regulatory solution developed from the outcome at WRC-19 for earth station in motion communicating with GSOs and the pending regulatory solution for earth stations in motion communication with NGSOs, and the adoption of Item 2.2 from the Preliminary agenda for the 2027 World Radio Conference, Resolution 812 (WRC-19), will reap great benefits. This will be not only allow for more advances in technology but also greater ability to utilize the understanding to date of compatibility of earth station in motion communication with FSS space stations and incumbent services.

For the reasons stated above, the organizations and companies listed above urge FCC to adopt the attached draft proposal for a WRC-23 Agenda Item 10 proposal for a future agenda item.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

Use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service

Background

Resolution 176 (WRC-19) calls for studies on the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service.

The ITU-R has addressed aeronautical and maritime earth stations in motion (ESIM) operating with GSO FSS satellites at several previous WRCs, which have adopted technical and regulatory regimes to allow such operations. In the Radio Regulations, Resolution 902 (WRC-03), and relevant parts of Resolutions 156 (WRC-15) and 169 (WRC-19) define technical and regulatory rules to allow GSO FSS networks to communicate with ESIM to provide broadband communications.

With the advances made in satellite manufacturing and earth station technology, ESIMs have already become more widespread and very practical for communications on the move. Consequently, the utilization of Ku and Ka-band frequency spectrum for providing ESIM connectivity is growing exponentially to meet user demands, which may lead to scarcity in spectral resources in these bands.

Advances and enhancements in antenna and terminal technology have enabled the usage of the 50/40 GHz frequency bands for GSO FSS networks, and therefore it is prudent to study the sharing of compatibility under a new resolution.

ADD USA/10(Q/V FSS)/1

DRAFT NEW RESOLUTION [AI 10] (WRC-23)

Agenda for the 2027 world radiocommunication conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference (WRC) should be established four to six years in advance and that a final agenda shall be established by the ITU Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-23 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

2 to review and update regulatory provisions for the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service;

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting (CPM) and to prepare a report to WRC-27;

2 to submit a draft report on any difficulties or inconsistencies encountered in the application of the Radio Regulations referred in agenda item 9.2 to the second session of the CPM and to submit the final report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for studies, consideration of item 2.2 from Preliminary WRC-27 agenda for the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service.

MOD USA/10(Q/V FSS)/2

RESOLUTION [Q V FSS] (WRC-27)

Use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion Communicating with geostationary and non-geostationary space stations in the fixed-satellite service

The World Radiocommunication Conference (~~Sharm el Sheikh~~Dubai, ~~2019~~2023),

considering

a) that the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) are globally allocated on a primary basis to the fixed-satellite service (FSS);

b) that there is an increasing need for mobile communications, including global broadband satellite services, and that some of this need can be met by allowing aeronautical and maritime earth stations in motion (ESIMs) to communicate with FSS space stations operating in the frequency bands 37.5-40.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space);

c) that in the FSS, there are geostationary-satellite (GSO) and non-geostationary networks operating and/or planned for near-term operation in the frequency bands allocated to the FSS in the frequency range 37.5-51.4 GHz;

d) that some administrations have already deployed, and plan to expand their use of, ESIMs with operational and future GSO FSS networks;

e) that GSO and non-GSO FSS networks in the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-
42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) are required to be coordinated and notified in accordance with the provisions of Articles 9 and 11;

f) that the frequency bands 37.5-39.5 GHz, 40.5-42.5 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz are also allocated to several other services on a primary basis, the allocated services are used by a variety of different systems in many administrations, and these existing services and their future development should be protected without undue constraints;
g) the need to encourage the development and implementation of new technologies in the FSS at frequencies above 30 GHz,

recognizing

a) ~~a)~~ that Article 21 contains power flux-density (pfd) limits for GSO FSS;
~~a)~~b) that Article 22 contains equivalent power flux-density (EPFD) limits for non-GSO

b) that advances in technology, including the use of tracking techniques, allow ESIMs to operate within the characteristics of fixed earth stations of the FSS;

c) that WRC-15 adopted No. 5.527A and Resolution 156 (WRC-15) related to ESIMs;

d) that ESIMs addressed by this Resolution are not to be used for safety-of-life applications;

e) that the frequency bands 40.5-42 GHz (space-to-Earth) in Region 2, 47.5-47.9 GHz (space-to-Earth) in Region 1, 48.2-48.54 GHz (space-to-Earth) in Region 1, 49.44-50.2 GHz (space-to-Earth) in Region 1 and 48.2-50.2 GHz (Earth-to-space) in Region 2 are identified for use by high-density applications in the FSS (No. 5.516B);

f) that the frequency bands 37-40 GHz, 40.5-43.5 GHz are available for high-density applications in the fixed service (No. 5.547);

g) that the pfd in the frequency band 42.5-43.5 GHz produced by any GSO space station in the FSS (space-to-Earth) or the broadcasting-satellite service (BSS) operating in the frequency band 42-42.5 GHz shall not exceed, at the site of any radio astronomy station, the values listed in No. 5.551I;

h) that the allocation of the spectrum for the FSS in the frequency bands 42.5-43.5 GHz and 47.2-50.2 GHz for Earth-to-space transmission is greater than that in the frequency band 37.5-39.5 GHz for space-to-Earth transmission in order to accommodate feeder links to broadcasting satellites, and administrations are urged to take all practicable steps to reserve the frequency band 47.2-49.2 GHz for feeder links for the BSS operating in the frequency band 40.5-42.5 GHz (No. 5.552);

i) that the allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high-altitude platform stations, and the use of the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is subject to the provisions of Resolution 122 (Rev.WRC-19) (No. 5.552A);

j) that the use of the frequency bands 47.5-47.9 GHz, 48.2-48.54 GHz and 49.44-50.2 GHz by the FSS (space-to-Earth) is limited to GSO satellites (No. 5.554A);

k) that the pfd in the frequency band 48.94-49.04 GHz produced by any GSO space station in the FSS (space-to-Earth) operating in the frequency bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed 151.8 dB(W/m2) in any 500 kHz band at the site of any radio astronomy station (No. 5.555B);

l) that, in the frequency bands 49.7-50.2 GHz, 50.4-50.9 GHz and 51.4-52.6 GHz, Resolution 750 (Rev.WRC-19) applies, and Nos. 5.338A, 5.340 and 5.340.1 apply among other provisions of the Radio Regulations;

m) that the fixed and mobile services are allocated on a primary basis in the frequency bands 37.5-42.5 GHz and 47.2-50.2 GHz on a global basis;

n) that the frequency band 37.5-38 GHz is allocated to the space research service (SRS) (deep space) in the space-to-Earth direction and the frequency band 40.0-40.5 GHz is allocated to the SRS and the Earth exploration-satellite service (EESS) in the Earth-to-space direction on a primary basis;

o) that the frequency bands 37.5-40.5 GHz and 38-39.5 GHz are also allocated to the EESS in the space-to-Earth direction on a secondary basis;

p) that the frequency band 50.2-50.4 GHz is allocated on a primary basis to the EESS (passive) and SRS (passive), which need to be adequately protected;

q) that all allocated services in these frequency bands should be taken into account,

resolves to invite the ITU Radiocommunication Sector

1 to study the technical and operational characteristics of aeronautical and maritime ESIMs that plan to operate within GSO and non-GSO FSS allocations in the frequency bands 37.5-39.5 GHz, 40.5-42.5 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz;

2 to study sharing and compatibility between aeronautical and maritime ESIMs operating With GSO and non-GSO FSS networks in the frequency bands 37.5-39.5 GHz, 40.5-42.5 GHz, 47.2-50.2 GHz* and 50.4-51.4 GHz* and current and planned stations of existing services allocated in these frequency bands and, where appropriate, in adjacent frequency bands, in order to ensure protection of, and not impose undue constraints on, those services;

3 to develop, for different types of ESIM, technical conditions and regulatory provisions for their operation, taking into account the results of the studies above,

invites the 2027 World Radiocommunication Conference

to consider the results of the above studies and take necessary actions, as appropriate, provided that the results of the studies referred to in resolves to invite the ITU Radiocommunication Sector are complete and agreed by the radiocommunication study groups.

Reason: Perform sharing and compatibility for a new FSS allocation in Q and V bands while also ensuring the protection of primary allocations for incumbent services.

* For the frequency bands 47.2-50.2 GHz and 50.4-51.4 GHz, sharing and compatibility studies for aeronautical ESIM should take into account all necessary steps to protect the terrestrial services to which the frequency band is allocated to.

ATTACHMENT

PROPOSAL FOR FUTURE AGENDA ITEM FOR [XXX]

Subject: to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 40.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary space stations in the fixed-satellite service, in accordance with Resolution **[QV FSS] (WRC-23)**;
Origin: United States of America

Proposal*:* to enable the establishment of spectrum allocation and associated regulatory provisions to support in specific frequency bands, geostationary and non-geostationary space stations in the fixed-satellite service **[QV FSS] (WRC-23)**;

Background/reason:
To provide a means for recognizing in the Radio aeronautical and maritime earth stations in motion communicating with geostationary space stations in the fixed-satellite service in specific frequency ranges in accordance with Resolution **[QV FSS] (WRC-23)**;

Radiocommunication services concerned:
Fixed-satellite service, Fixed Service, Mobile Service, Space Research Service, Land Mobile, Broadcasting, Broadcasting-Satellite

Indication of possible difficulties: None foreseen

Previous/ongoing studies on the issue: Q/V band studies for FSS services for services such as gateways.

Studies to be carried out by: ITU-R ITU-R WP 4A as responsible group	*with the participation of:* Other relevant WPs, Administrations, Sector Members

ITU-R Study Groups concerned: SG 4, SG 5, and SG 7

ITU resource implications, including financial implications (refer to CV126): Minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Remarks

VIEW B

View B: Adopt an agenda item to study and develop technical, operational and regulatory measures, facilitating the use of the frequency bands 40-42 GHz (space-to-Earth), 48.2-50.2 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service

Agenda Item 10, FAI

Reference: CTIA comments received to IWG-3/073R1(20.03.23)

Supported by CTIA

View B

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Introduction

This proposal calls for studies on the use of the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service. These bands are proposed as they are consistent with the FCC's Memorandum Opinion and Order[25] which established "core" satellite bands for more extensive end-user terminals. In that record, satellite operators argued that transmitting end-user terminals will not be able to share spectrum with UMFUS systems that are widely deployed[26].

The ITU-R has addressed aeronautical and maritime earth stations in motion (ESIM) operating with GSO FSS satellites at several previous WRCs, which have adopted technical and regulatory regimes to allow such operations. In the Radio Regulations, Resolution 902 (WRC-03), and relevant parts of Resolutions 156 (WRC-15) and 169 (WRC-19) define technical and regulatory rules to allow GSO FSS networks to communicate with ESIM to provide broadband communications.

With the advances made in satellite manufacturing and earth station technology, ESIMs have already become more widespread and very practical for communications on the move. Consequently, the utilization of Ku and Ka-band frequency spectrum for providing ESIM connectivity is growing exponentially to meet user demands, which may lead to scarcity in spectral resources in these bands.

Advances and enhancements in antenna and terminal technology have enabled the usage of the 50/40 GHz frequency bands for GSO FSS networks, and therefore it is prudent to study the sharing of compatibility under a new resolution.

[25] https://www.fcc.gov/document/fcc-takes-next-steps-facilitating-spectrum-frontiers-spectrum

[26] See para 188.

ATTACHMENT

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

Preliminary WRC-27 agenda item 2.2

2.2 to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service, in accordance with Resolution 176.

MOD USA/10(Q/V FSS)/1

RESOLUTION 176 (WRC-19)

Use of the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service

Reasons: As this is from the Preliminary WRC-27 Agenda Items, Resolution must be suppressed, as WRC-23 will create a new Resolution that will be included on the agenda for WRC-27.

RESOLUTION [Q V FSS] (WRC-27)

**Use of the frequency bands
40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space)
by aeronautical and maritime earth stations in motion,
Communicating with geostationary and non-geostationary space stations
in the fixed-satellite service**

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) are globally allocated on a primary basis to the fixed-satellite service (FSS);

b) that there is an increasing need for mobile communications, including global broadband satellite services, and that some of this need can be met by allowing aeronautical and maritime earth stations in motion (ESIMs) to communicate with FSS space stations operating in the frequency bands 40.-42. GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space);

c) that in the FSS, there are geostationary-satellite (GSO) and non-geostationary networks operating and/or planned for near-term operation in the frequency bands allocated to the FSS in the frequency range 37.5-51.4 GHz;

d) that GSO and non-GSO FSS networks in the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) are required to be coordinated and notified in accordance with the provisions of Articles 9 and 11;

e) that the frequency bands 40-42 GHz and 48.2-50.2 GHz are also allocated to several other services on a primary basis, the allocated services are used by a variety of different systems in many administrations, and these existing services and their future development should be protected without undue constraints;

recognizing

~~b)~~c) that Article 21 contains power flux-density (pfd) limits for GSO FSS;
~~c)~~d) that Article 22 contains equivalent power flux-density (EPFD) limits for non-GSO
~~d)~~c) that 21.16.4 notes that the Article 21 limits on NGSO FSS operations were developed for systems operating with 99 or fewer satellites and that further studies are necessary to develop applicable limits on systems operating with 100 or more satellites;

d) that ESIMs addressed by this Resolution are not to be used for safety-of-life applications;

e) that the frequency bands 40-40.5 GHz (space-to-Earth) in all Regions, 40.5-42 GHz (space-to-Earth) in Region 2, 48.2-48.54 GHz (space-to-Earth) in Region 1, 49.44-50.2 GHz (space-to-Earth) in Region 1 and 48.2-50.2 GHz (Earth-to-space) in Region 2 are identified for use by high-density applications in the FSS (No. 5.516B);

f) that the frequency bands 40.5-43.5 GHz are available for high-density applications in the fixed service (No. 5.547);

g) that the 37-43.5 GHz band is identified for use of the terrestrial component of International Mobile Telecommunications (No. 5.550B).

h) that the allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is designated for use by high-altitude platform stations, and the use of the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is subject to the provisions of Resolution 122 (Rev.WRC-19) (No. 5.552A);

i) that the use of the frequency bands 47.5-47.9 GHz, 48.2-48.54 GHz and 49.44-50.2 GHz by the FSS (space-to-Earth) is limited to GSO satellites (No. 5.554A);

k) that the pfd in the frequency band 48.94-49.04 GHz produced by any GSO space station in the FSS (space-to-Earth) operating in the frequency bands 48.2-48.54 GHz and 49.44-50.2 GHz shall not exceed 151.8 dB(W/m2) in any 500 kHz band at the site of any radio astronomy station (No. 5.555B);

l) that, in the frequency bands 49.7-50.2 GHz, 50.4-50.9 GHz and 51.4-52.6 GHz, Resolution 750 (Rev.WRC-19) applies, and Nos. 5.338A, 5.340 and 5.340.1 apply among other provisions of the Radio Regulations;

m) that the fixed and mobile services are allocated on a primary basis in the frequency bands 37.5-42.5 GHz and 47.2-50.2 GHz on a global basis;

n) that the frequency band 40.0-40.5 GHz is allocated to the SRS and the Earth exploration-satellite service (EESS) in the Earth-to-space direction on a primary basis;

o) that the frequency bands 37.5-40.5 GHz are also allocated to the EESS in the space-to-Earth direction on a secondary basis;

p) that the frequency band 50.2-50.4 GHz is allocated on a primary basis to the EESS (passive) and SRS (passive), which need to be adequately protected;

q) that all allocated services in these frequency bands shouldbe protected,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-23 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

1.x to consider, based on the results of ITU-R studies, possible measures to address, the use of the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service Resolution **[A10-QV FSS] (Rev.WRC-23)**;

resolves further

to activate the Conference Preparatory Meeting,

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-27,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide from studies, possible regulatory measures for use of the 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary and non-geostationary space stations in the fixed-satellite service

resolves to invite the ITU Radiocommunication Sector

1 to study the spectrum needs and technical and operational characteristics of aeronautical and maritime ESIMs that plan to operate within GSO and non-GSO FSS allocations in the frequency bands 40-42 GHz and 48.2-50.2 GHz;

2 to study sharing and compatibility between aeronautical and maritime ESIMs operating With GSO and non-GSO FSS networks in the frequency bands 40-42 GHz and 48.2-50.2 GHz and current and planned stations of existing services allocated in these frequency bands and, where appropriate, in adjacent frequency bands, in order to ensure protection of, and not impose undue constraints on, those services;

3 to study updates for the Article 21 provisions applicable to NGSO FSS systems operating more than 100 satellites while ensuring the protection of terrestrial services (see **21.16.4**);

4 to develop, for aeronautical and maritime ESIMs, technical conditions and regulatory provisions for their operation, taking into account the results of the studies above,

invites the 2027 World Radiocommunication Conference

to consider the results of the above studies and take necessary actions, as appropriate, provided that the results of the studies referred to in resolves to invite the ITU Radiocommunication Sector are complete and agreed by the radiocommunication study groups.

Reason: Perform sharing and compatibility for a new FSS allocation in Q and V bands while also ensuring the protection of primary allocations for incumbent services.

ATTACHMENT

PROPOSAL FOR FUTURE AGENDA ITEM FOR [XXX]

Subject: to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) by aeronautical and maritime earth stations in motion communicating with geostationary space stations in the fixed-satellite service, in accordance with Resolution **[QV FSS] (WRC-23)**;
Origin: United States of America

Proposal: to enable the establishment of spectrum allocation and associated regulatory provisions to support in specific frequency bands, geostationary and non-geostationary space stations in the fixed-satellite service **[QV FSS] (WRC-23)**;

Background/reason:

To provide a means for recognizing in the Radio aeronautical and maritime earth stations in motion communicating with geostationary space stations in the fixed-satellite service in specific frequency ranges in accordance with Resolution **[QV FSS] (WRC-23)**;

Radiocommunication services concerned:
Fixed-satellite service, Fixed Service, Mobile Service, IMT, Space Research Service, Land Mobile, Broadcasting, Broadcasting-Satellite

Indication of possible difficulties: None foreseen

Previous/ongoing studies on the issue:

Studies to be carried out by: ITU-R ITU-R WP 4A as responsible group	*with the participation of:* Other relevant WPs, Administrations, Sector Members

ITU-R Study Groups concerned: SG 4, SG 5, and SG 7

ITU resource implications, including financial implications (refer to CV126): Minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Remarks

Additional IWG-3 views on WRC-27 Preliminary Agenda Items

With respect to preliminary agenda items in Resolution **812 (WRC-19)** addressing satellite issues where IWG-3 does not have a proposal, IWG-3 provides the following views:

- IWG-3 considers its previously approved 51.4-52.4 GHz proposal for an additional FSS allocation (contained in Document IWG-3/49r1/Document WAC/62) as a priority as compared to preliminary agenda item 2.3 in Resolution **812 (WRC-19)**.

- IWG-3 does not consider preliminary agenda item 2.7 in Resolution **812 (WRC-19)** a priority for WRC-27's agenda.

For reference, here are the preliminary agenda items referenced above:

2.3 to consider the allocation of all or part of the frequency band [43.5-45.5 GHz] to the fixed satellite service, in accordance with Resolution **177 (WRC-19)**;

2.7 to consider the development of regulatory provisions for non-geostationary fixed satellite system feeder links in the frequency bands 71-76 GHz (space-to-Earth and proposed new Earth-to-space) and 81-86 GHz (Earth-to-space), in accordance with Resolution **178 (WRC-19)**;

WRC-23 Agenda Item 10 – Future Agenda Items 2.4/2.5

IWG-3 members were not able to reach consensus on a proposal for WRC-23 agenda item (AI) 10 which are on the preliminary agenda for WRC-27 under 2.4 and 2.5, and, therefore, it forwards two views on how the FCC could handle this matter. The key outstanding difference is whether the studies should be focused on all incumbent terrestrial services (View A) or limited to fixed services (View B).

VIEW A

View A is supported by: CTIA

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

Preliminary WRC-27 agenda items 2.4 and 2.5

The preliminary agenda for WRC-27 contains two preliminary agenda items (2.4 and 2.5) that propose to study the conditions of the use of the 71-76 GHz and 81-86 GHz bands by satellite services, and how to ensure the protection of incumbent in-band terrestrial service operations and adjacent passive services. This proposal combines the elements of Resolution **775** (WRC-19) and Resolution **776** (WRC-19) into a single future agenda item.

2.4 to consider the introduction of ~~power flux-density (pfd) and equivalent isotropically radiated power (e.i.r.p.)~~ limits on satellite services in Article **21**, and conditions to ensure compatibility with passive services, for the use of the frequency bands 71-76 GHz and 81-86 GHz in accordance with Resolution **775 (WRC-19)**;

~~2.5 the conditions for the use of the frequency bands 71-76 GHz and 81-86 GHz by stations in the satellite services to ensure compatibility with passive services in accordance with Resolution 776 (WRC-19);~~

MOD USA/10/1

RESOLUTION 775 (REV. WRC-23~~19~~)

Sharing and compatibility between ~~stations in the fixed service and~~ satellite services and other incumbent services in, and adjacent to, the frequency bands 71-76 GHz and 81-86 GHz

The World Radiocommunication Conference (~~Sharm el Sheikh~~Dubai, 2023~~19~~),

considering

a) that WRC-2000 made a number of different allocation changes to the frequency bands 71-76 GHz and 81-86 GHz based on the requirements known at the time;

b) that the frequency bands 71-76 GHz and 81-86 GHz are allocated on a primary basis, among other services, to the fixed and mobile services globally;

c) that the frequency band 71-76 GHz is also allocated to the fixed-satellite service (FSS) (space-to-Earth) and the mobile-satellite service (MSS) (space-to-Earth) and the frequency band 74-76 GHz is allocated to the broadcasting-satellite service;

d) that the frequency band 81-86 GHz is also allocated to the FSS and MSS (Earth-to-space);

e) that the frequency bands 76-77.5 GHz, 79-81 GHz and 81-86 GHz are allocated to the radio astronomy service (RAS) on a primary basis;

f) that the frequency band 86-92 GHz is allocated to the Earth exploration-satellite service (EESS) (passive), the space research service (SRS) (passive) and the RAS, and that No. **5.340** applies in this frequency band;

g~~e~~) that sharing conditions between the terrestrial~~fixed~~ services and satellite services in the frequency bands 71-76 GHz and 81-86 GHz could not be fully developed at WRC-2000 due to lack of available information on these services at the time;

h~~f~~) that now, nearly 20 years on, there have been a number of significant technology advances and changes in network requirements in the fixed and mobile services, and the frequency bands 71-76 GHz and 81-86 GHz have become strategically important frequency bands for high-capacity fixed-service links, including backhaul for future mobile networks;

i) that compatibility conditions between satellite services in the frequency bands 71-76 GHz and 81-86 GHz and passive services in the frequency bands and in adjacent frequency bands could not be fully developed at WRC-2000 due to lack of available information on satellite services at the time;

j~~g~~) that WRC-12 already addressed sharing and compatibility issues between the fixed service and passive services in the frequency bands 71-76 GHz and 81-86 GHz and relevant adjacent frequency bands,

k) that Resolution **750 (Rev.WRC-19)** contains no provisions to protect the EESS (passive) in the frequency band 86-92 GHz from emissions of the space services in the frequency band 81-86 GHz;

l) that Resolution **739 (Rev.WRC-19)** contains no provisions to protect the RAS in adjacent frequency bands from emissions of the space services in the frequency bands 71-76 GHz and 81-86 GHz,

recognizing

~~*a)* that there is now much more information available in the ITU Radiocommunication Sector (ITU-R) on the characteristics and deployment of fixed service systems;~~

a~~b~~) that there are an increasing number of satellite filings in the frequency bands 71-76 GHz and 81-86 GHz;

b~~e~~) that Article **21** and other provisions of the Radio Regulations currently do not contain the necessary technical and regulatory provisions to protect the ~~fixed~~ terrestrial service use in the frequency bands 71-76 GHz and 81-86 GHz;

c~~d~~) that Resolution **750 (Rev.WRC-19)** already contains necessary provisions to protect passive services in the frequency bands and adjacent frequency bands from emissions of the fixed service in the frequency bands 71-76 GHz and 81-86 GHz, and there is no intention to change these provisions;

d~~e~~) that there is no intention to change the existing allocations or status of those allocations in Article **5** of the Radio Regulations for the frequency bands 71-76 GHz and 81-86 GHz,

e) that the use of mitigation techniques could be studied as a possible solution for satellite services in the frequency band 81-86 GHz to meet the protection requirements of EESS (passive) and the SRS (passive) services in the frequency band 86-92 GHz;

f) that Recommendation ITU-R RS.2017 provides the interference criteria for satellite passive remote sensing in the band 86-92 GHz;

resolves to invite the ITU Radiocommunication Sector

1 to conduct, as a matter of urgency and in time for WRC-27, the appropriate studies to determine ~~power flux-density and equivalent isotropically radiated power~~ limits in Article **21** for satellite services to protect the current and planned terrestrial~~fixed~~ service~~s~~ in the frequency bands 71-76 GHz and 81-86 GHz ~~without unduly constraining satellite systems~~,

~~1~~2 to conduct the appropriate studies to determine the technical conditions for satellite services in the frequency band 81-86 GHz in order to protect the EESS (passive) and the SRS (passive) in the frequency band 86-92 GHz and the RAS in the frequency bands mentioned in considering e) and f) without unduly constraining satellite systems,

invites the 2027 World Radiocommunication Conference

to consider the results of studies and take necessary action,

invites administrations

to participate actively in the studies by submitting contributions to ITU-R.

Reason: Modifications are proposed to combine the studies called for in Resolutions 775 and 776, as well as recognition of other incumbent services.

SUP USA/10/2

RESOLUTION 776 (WRC-19)

Conditions for the use of the frequency bands 71-76 GHz and 81-86 GHz by stations in the satellite services to ensure compatibility with passive services

Reason: Consequential action. The studies called for under Resolution 776 and now included in Resolution 775, as modified.

ATTACHMENT

PROPOSAL FOR FUTURE AGENDA ITEM FOR [XXX]

Subject: to consider the introduction of limits on satellite services in Article **21**, and conditions to ensure compatibility with passive services, for the use of the frequency bands 71-76 GHz and 81-86 GHz in accordance with Resolution **775 (WRC-19)**;

Origin: Preliminary WRC-27 agenda items 2.4 and 2.5, as revised by the United States of America.

Proposal: to consider the introduction of limits on satellite services in Article **21**, and conditions to ensure compatibility with passive services, for the use of the frequency bands 71-76 GHz and 81-86 GHz in accordance with Resolution **775 (WRC-19)**;

Background/reason:
As interest in using the 70/80 GHz bands grows, it is necessary to establish the appropriate provisions to ensure the protection of terrestrial operations, as well as adjacent band passive services.

Radiocommunication services concerned:
Fixed-satellite service, Fixed Service, Mobile Service, Mobile-satellite Service, Broadcasting Service, Broadcasting-Satellite Service, Radio Astronomy, Earth-Exploration Satellite Service (passive), Space Research Service (passive).

Indication of possible difficulties: None foreseen

Previous/ongoing studies on the issue:

Studies to be carried out by: ITU-R ITU-R WP 4A as responsible group	*with the participation of:* Other concerned WPs, Administrations, Sector Members

ITU-R Study Groups concerned: SG 3, SG4, SG 5, SG 6and SG 7

ITU resource implications, including financial implications (refer to CV126): Minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Remarks

VIEW B

View B is supported by: SpaceX

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

Preliminary WRC-27 agenda items 2.4 and 2.5

The preliminary agenda for WRC-27 contains two preliminary agenda items (2.4 and 2.5) that propose to study the conditions of the use of the 71-76 GHz and 81-86 GHz bands by satellite services, and how to ensure ~~the protection~~sharing ~~of~~ between satellite services and ~~incumbent~~ in-band ~~terrestrial~~ fixed service operations and compatibility between satellite services and adjacent passive services. This proposal combines the elements of Resolution **775** (WRC-19) and Resolution **776** (WRC-19) into a single future agenda item.

2.4 to consider sharing between ~~the introduction of power flux-density (pfd) and equivalent isotropically radiated power (e.i.r.p.) limits on~~ satellite services and fixed service ~~in Article **21**~~, in the ~~and conditions to ensure compatibility with passive services, for the~~ use of ~~the~~ frequency bands 71-76 GHz and 81-86 GHz and compatibility between satellite services and adjacent passive services in accordance with Resolution **775 (WRC-19)**;

~~2.5 the conditions for the use of the frequency bands 71-76 GHz and 81-86 GHz by stations in the satellite services to ensure compatibility with passive services in accordance with Resolution **776 (WRC-19)**;~~

MOD USA/10/1

RESOLUTION 775 (REV. WRC-23~~19~~)

Sharing ~~and compatibility~~ between ~~stations in the fixed service and~~ satellite services and the fixed service~~other incumbent services~~ in~~, and adjacent to,~~ the frequency bands 71-76 GHz and 81-86 GHz and compatibility between satellite services and adjacent passive services

The World Radiocommunication Conference (~~Sharm el Sheikh~~Dubai, 2023~~19~~),

considering

a) that WRC-2000 made a number of different allocation changes to the frequency bands 71-76 GHz and 81-86 GHz based on the requirements known at the time;

b) that the frequency bands 71-76 GHz and 81-86 GHz are allocated on a primary basis, among other services, to the fixed and mobile services globally;

c) that the frequency band 71-76 GHz is also allocated to the fixed-satellite service (FSS) (space-to-Earth) and the mobile-satellite service (MSS) (space-to-Earth) on a primary basis and the frequency band 74-76 GHz is allocated to the broadcasting-satellite service (BSS), and that **No. 5.561** affords FSS and BSS protection in the 74-76 GHz frequency band;

d) that the frequency band 81-86 GHz is also allocated to the FSS and MSS (Earth-to-space) on a primary basis;

e) that the frequency bands 76-77.5 GHz, 79-81 GHz and 81-86 GHz are allocated to the radio astronomy service (RAS) on a primary basis;

f) that the frequency band 86-92 GHz is allocated to the Earth exploration-satellite service (EESS) (passive), the space research service (SRS) (passive) and the RAS, and that No. **5.340** applies in this frequency band;

g~~e~~) that sharing conditions between the fixed services and satellite services in the frequency bands 71-76 GHz and 81-86 GHz could not be fully developed at WRC-2000 due to lack of available information on these services at the time;

h~~f~~) that now, nearly 20 years on, there have been a number of significant technology advances and changes in network requirements in the co-primary fixed and satellite services, and the frequency bands 71-76 GHz and 81-86 GHz have become strategically important frequency bands for high-capacity ~~fixed service~~ links for both services, including for satellite earth stations and backhaul for future mobile networks;

i) that compatibility conditions between satellite services in the frequency bands 71-76 GHz and 81-86 GHz and passive services in the frequency bands and in adjacent frequency bands could not be fully developed at WRC-2000 due to lack of available information on satellite services at the time;

j~~g~~) that WRC-12 already addressed sharing and compatibility issues between the fixed service and passive services in the frequency bands 71-76 GHz and 81-86 GHz and relevant adjacent frequency bands,

k) that Resolution **750 (Rev.WRC-19)** contains no provisions to protect the EESS (passive) in the frequency band 86-92 GHz from emissions of the space services in the frequency band 81-86 GHz;

l) that Radio Astronomy is primary in the 81-86 GHz bands and that Resolution **739 (Rev.WRC-19)** contains no provisions to protect the RAS in adjacent frequency bands from emissions of the space services in the frequency bands 71-76 GHz and 81-86 GHz,

recognizing

a) that there is now much more information available in the ITU Radiocommunication Sector (ITU-R) on the characteristics and deployment of fixed-service systems;

a~~b~~) that there are an increasing number of satellite filings in the frequency bands 71-76 GHz and 81-86 GHz;

b~~c~~) that Article **21** and other provisions of the Radio Regulations currently do not contain the necessary technical and regulatory provisions to protect the ~~fixed~~fixed-~~terrestrial~~ service use in the frequency bands 71-76 GHz and 81-86 GHz;

c~~d~~) that Resolution **750 (Rev.WRC-19)** already contains necessary provisions to protect passive services in the frequency bands and adjacent frequency bands from emissions of the fixed service in the frequency bands 71-76 GHz and 81-86 GHz, and there is no intention to change these provisions;

d~~e~~) that there is no intention to change the existing allocations or status of those allocations in Article **5** of the Radio Regulations for the frequency bands 71-76 GHz and 81-86 GHz,

e) that the use of mitigation techniques could be studied as a possible solution for satellite services in the frequency band 81-86 GHz to meet the protection requirements of EESS (passive) and the SRS (passive) services in the frequency band 86-92 GHz;
f) that Recommendation ITU-R RS.2017 provides the interference criteria for satellite passive remote sensing in the band 86-92 GHz;

resolves to invite the ITU Radiocommunication Sector

3 to conduct, as a matter of urgency and in time for WRC-27, the appropriate studies to determine sharing conditions between ~~power flux-density and equivalent isotropically radiated power limits in Article 21 for~~ satellite services and the fixed to ~~protect the current and planned terrestrialfixed~~ service~~s~~ in the frequency bands 71-76 GHz and 81-86 GHz,

~~2~~4 to conduct the appropriate studies to determine the technical conditions for satellite services in the frequency band 81-86 GHz in order to protect the EESS (passive) and the SRS (passive) in the frequency band 86-92 GHz and the RAS in the frequency bands mentioned in considering e) and f)

invites the 2027 World Radiocommunication Conference

to consider the results of studies and take necessary action,

invites administrations

to participate actively in the studies by submitting contributions to ITU-R.

Reason: Modifications are proposed to combine the studies called for in Resolutions 775 and 776, as well as recognition of other incumbent services.

SUP USA/10/2

RESOLUTION 776 (WRC-19)

Conditions for the use of the frequency bands 71-76 GHz and 81-86 GHz by stations in the satellite services to ensure compatibility with passive services

Reason: Consequential action. The studies called for under Resolution 776 and now included in Resolution 775, as modified.

ATTACHMENT

PROPOSAL FOR FUTURE AGENDA ITEM FOR [XXX]

Subject: to consider sharing between~~the introduction of limits on~~ satellite services and the fixed service in the ~~in Article **21**, and conditions to ensure compatibility with passive services, for the use of the~~ frequency bands 71-76 GHz and 81-86 GHz and compatibility between satellite services and adjacent passive services in accordance with Resolution **775 (WRC-19)**;

Origin: Preliminary WRC-27 agenda items 2.4 and 2.5, as revised by the United States of America.

Proposal: to consider sharing between~~the introduction of limits on~~ satellite services and the fixed service in~~in Article **21**, and conditions to ensure compatibility with passive services, for the use of~~ the frequency bands 71-76 GHz and 81-86 GHz and compatibility between satellite services and adjacent passive service in accordance with Resolution **775 (WRC-19)**;

Background/reason:
As interest in using the 70/80 GHz bands grows, it is necessary to establish the appropriate provisions to ensure sharing between satellite services and fixed service and compatibility between satellite services and adjacent passive services~~the protection of terrestrial operations, as well as adjacent band passive services~~.

Radiocommunication services concerned:
Fixed-satellite service, Fixed Service, ~~Mobile Service~~, Mobile-satellite Service, Broadcasting Service, Broadcasting-Satellite Service, Radio Astronomy, Earth-Exploration Satellite Service (passive), Space Research Service (passive).

Indication of possible difficulties: None foreseen

Previous/ongoing studies on the issue:

Studies to be carried out by: ITU-R ITU-R WP 4A as responsible group	*with the participation of:* Other concerned WPs, Administrations, Sector Members

ITU-R Study Groups concerned: SG 3, SG4, SG 5, SG 6and SG 7

ITU resource implications, including financial implications (refer to CV126): Minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Remarks

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

Preliminary WRC-27 agenda item 2.6

The preliminary agenda for WRC-27 contains preliminary agenda item 2.6 that considers the development of regulatory provisions for appropriate recognition of space weather sensors and their protection in the Radio Regulations, taking into account the results of ITU Radiocommunication Sector studies reported to WRC-23 under agenda item 9.1 and its corresponding Resolution **657 (Rev.WRC-19)**.

The United States recognizes that space weather observations from ground-based and space-based systems are becoming more and more important, in particular for the detection of solar activity events that can harmfully affect national economies, human welfare, and national security. Some of the sensors, both ground-based and space-based, make precise measurements that may be vulnerable to interference and noise from systems emitting radio signals with frequencies and associated bandwidths at or adjacent to those used by the sensors. However, Resolution **657 (Rev.WRC-19)** lacks specificity on frequency bands and applicable radio services to support addressing this important topic. The United States also recognizes that additional studies related to space weather sensors can be supported through the development of ITU-R Reports and Recommendations without Resolution **657 (Rev.WRC-19)**. For example, the ITU-R has developed/is developing the following documents related to this topic:

- Report RS.2456 “Space weather sensor systems using radio spectrum”
- Report RS.2489 “Technical and operational characteristics of ground-based passive sensors operating in the 51-58 GHz frequency range.”
- Working Document towards a New Report on “Spectrum use and applicable radio service designations for receive only space weather sensors that provide data used for predictions and warnings.”
- Working Document towards a New Report on “Interference criteria for receive-only space weather sensors”
- Working Document towards a New Report on “Spectrum requirements and applicable radio service designations for active space weather sensors that provide data critical for predictions and warnings”

In addition, the United States may wish to advocate for a new ITU-R Resolution at RA-23 to recognize the use of space weather sensors and establish an ITU database where administrations can share the location and frequency of operations. As the interest and the importance of data from space weather monitoring systems is growing, the United States supports further discussions on the appropriate regulatory recognition of these systems.

Without the minimum elements needed for regulatory studies in a modification of Resolution **657 (Rev.WRC-19)**, it could be suppressed.

Proposals

SUP USA/10/1

RESOLUTION 657 (REV.WRC-19)

Protection of radio spectrum-reliant space weather sensors used for global prediction and warnings

Reason: Resolution **657 (Rev.WRC-19)** currently lacks specificity for continued studies with respect to identifying the application radio service, candidate frequency bands, and studies towards regulatory provisions. Future considerations on this topic could be aided by improved focus on the type of sensor (ground-based or space-based), candidate frequency band(s), and applicable radio service when considering any possible regulatory action and/or consideration of a future agenda item.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.

Introduction

WRC-19 agenda item 10 recommends to Council items to include in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible items for future conferences, under Article 7 of the Convention.

In this proposal the United States affirms its support for including agenda item 2.8 of Resolution 812 (WRC-19) on the agenda for the 2017World Radiocommunication Conference, for the frequency bands placed in square brackets by WRC-19.

Background

Resolution 812 (WRC-19), agenda item 2.8 provides:

> 2.8 to study the technical and operational matters, and regulatory provisions, for space-to-space links in the frequency bands [1 525-1 544 MHz], [1 545-1 559 MHz], [1 610-1 645.5 MHz], [1 646.5-1 660.5 MHz] and [2 483.5-2 500 MHz] among non-geostationary and geostationary satellites operating in the mobile-satellite service, in accordance with Resolution 249 (WRC-19);

Proposal

The United States proposes to include Preliminary agenda Item 2.8 on the agenda for the 2017 World Radiocommunication Conference in accordance with the attached revised resolution.

ADD USA/AI[AA]/1

RESOLUTION 249 (rev. WRC-23)

Study of technical and operational issues and regulatory provisions for space-to-space transmissions in the Earth-to-space direction in the frequency bands ┤1 610-1 645.5 and 1 646.5-1 660.5 MHz├ and the space-to-Earth direction in the frequency bands ┤1 525-1 544 MHz├, ┤1 545-1 559 MHz├, ┤1 613.8-1 626.5 MHz├ and ┤2 483.5-2 500 MHz├ among non-geostationary and geostationary satellites operating in the mobile-satellite service*

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

a) that the definition of mobile-satellite service (MSS) in No. **1.25** includes communication between space stations;

b) that the definition of inter-satellite service (ISS) in No. **1.22** includes only links between space stations, and that the term *inter-satellite link* in this resolution is taken to mean radiocommunication service link between artificial satellites;

c) that many non-geostationary-satellite orbit (non-GSO) satellites operate with limited and non-real-time connectivity to earth stations;

d) that space-to-space communication between such non-GSO satellites and geostationary satellite orbit (GSO) MSS satellites would enhance the security and efficiency of operations;

e) that MSS satellites operating in the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz can support these types of operation;

f) that using the frequency bands 1 610-1 645.5 MHz and 1 646.5-1 660.5 MHz allocated to the MSS (Earth-to-space) for transmissions in the Earth-to-space direction from non-GSO MSS space stations towards MSS space stations operating at higher orbital altitudes, including GSO, may increase spectral efficiency in these frequency bands;

g) that using the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 613.8-1 626.5 MHz and 2 483.5-2 500 MHz allocated to the MSS (space-to-Earth) for transmissions in the space-to-Earth direction from MSS space stations operating at higher orbital altitudes, including GSO, towards non-GSO MSS satellites, may increase spectral efficiency in these frequency bands;

h) that all MSS allocations in the above frequency bands include a space-to-Earth or Earth-to-space direction indicator, but do not include a space-to-space direction indicator;

i) that the ITU Radiocommunication Sector (ITU-R) has begun preliminary studies on the technical and operational issues associated with the operation of space-to-space links between non-GSO MSS satellites and GSO MSS satellites in the above frequency bands, but no studies have been conducted on the technical and operational issues associated with the operation of space-to-space links between non-GSO MSS satellites and non-GSO MSS satellites in the above frequency bands;

j) that it is technically feasible for a lower orbital altitude non-GSO space station to transmit data to and receive data from a higher orbital altitude non-GSO or GSO space station when passing within the satellite antenna coverage beam that is directed towards the Earth;

k) that several satellite systems have been relying on satellite-to-satellite communication in existing satellite frequency bands under No. **4.4**, and such reliance on No. **4.4** does not provide a sound basis for

continued development of such systems nor the confidence in commercial viability and availability of the service to the end users;

l) that there is growing interest for utilizing space-to-space satellite links for a variety of applications;

m) that a precedent for space-to-space links sharing with Earth-to-space and space-to-Earth exists for the space operation, Earth exploration-satellite and space research services in the frequency bands 2 025-2 110 MHz and 2 200-2 290 MHz through the inclusion of a space-to-space allocation,

recognizing

a) that it is necessary to study the impact on other services, as well as Earth-to-space and space-to-Earth operation within the MSS , of the operation of inter-satellite links in the above frequency bands, taking into account applicable footnotes to the Table of Frequency Allocations, to ensure compatibility with all primary allocated services in these frequency bands and the adjacent frequency bands and avoid harmful interference;

b) that there should be no additional regulatory or technical constraints imposed on primary services to which the frequency band and adjacent frequency bands are currently allocated;

c) that it is necessary to study whether space-to-Earth direction transmissions from space stations at higher orbital altitudes, including GSO, can be successfully received by lower orbital altitude non-GSO satellites, without imposing any additional constraints on all allocated services in these frequency bands;

d) that the sharing scenarios may vary widely because of the wide variety of orbital characteristics of the non-GSO MSS space stations;

e) that out-of-band emissions, signals due to antenna pattern sidelobes, reflections from receiving space stations and in-band unintentional radiation due to Doppler shifts may impact services operating in the same and adjacent or nearby frequency bands;

f) that currently the only option for MSS space stations in the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646-1 660.5 MHz and 2 483.5-2 500 MHz needing to communicate with other orbital space stations is to operate under No. **4.4**, without recognition and on a non-harmful interference/non-protected basis in frequency bands allocated to another space service,

recognizing further

a) that the use of frequency bands by the MSS in the frequency range 1-3 GHz is subject to existing Resolutions, coordination requirements and country footnotes taking into account, in particular, the protection of safety services and aeronautical mobile-satellite (R) services, and of the Global Maritime Distress and Safety System;

b) that the fixed and mobile services are allocated on a primary basis in the frequency band 2 483.5-2 500 MHz on a global basis and that the fixed service is also allocated on a primary basis in the frequency band 1 525-1 530 MHz in Regions 1 and 3;

c) that the radionavigation-satellite service is allocated on a primary basis in the frequency band 1 559-1 610 MHz for both space-to-Earth and space-to-space use;

noting

a) that section 3.1.3.2 of the Director's Report to this conference highlights that the Radiocommunication Bureau has received an increased number of Advance Publication Information (API) submissions for non-GSO networks in frequency bands which are not allocated by Article **5** for the type of service foreseen, including satellite network filings for inter-satellite applications in frequency bands allocated only in the Earth-to-space or space-to-Earth directions;

b) that the Director's Report concludes that, in view of recent technical developments and the increasing number of submissions of inter-satellite links in frequency bands not allocated to the ISS or to a space service in the space-to-space direction, this conference may wish to consider means to give recognition to these uses based on the conditions derived from studies by ITU-R Working Parties 4A and 4C in order to avoid interfering with existing systems operating in the same frequency bands,

resolves to invite the ITU Radiocommunication Sector

1 to study the technical and operational characteristics of different types of non-GSO MSS space stations that operate or plan to operate space-to-space links with GSO MSS networks in the following frequency bands:

a) Earth-to-space direction in the frequency bands ~~[~~1 626.5-1 645 5 MHz and 1 646.5- 1 660.5 MHz~~]~~; and

b) space-to-Earth direction in the frequency bands ~~[~~1 525-1 544 MHz and 1 545-1 559 MHz~~]~~;

2 to study the technical and operational characteristics of different types of non-GSO MSS space stations that operate or plan to operate space-to-space links with non-GSO and GSO MSS networks in the following frequency bands:

a) Earth-to-space direction in the frequency band ~~[~~1 610-1 626.5 MHz~~]~~; and

b) space-to-Earth direction in the frequency bands ~~[~~1 613.8-1 626.5 MHz and 2 483.5-2 500 MHz~~]~~;

3 to study sharing and compatibility between space-to-space links in the cases described in *resolves to invite the ITU Radiocommunication Sector* 1 and 2 and

– current and planned stations of the MSS ;

– other existing services allocated in the same frequency bands; and

– other existing services allocated in adjacent frequency bands,

in order to ensure protection of, and not impose undue constraints on, other MSS operations and other services allocated in those frequency bands and in adjacent frequency bands, taking into account *recognizing further a)* to *c)*;

4 to develop technical conditions and regulatory provisions for the operation of space-to-space links in these frequency bands, including new or revised MSS allocations or the addition of ISS allocations, on a secondary basis, while ensuring the protection of, and without imposing additional constraints on, other MSS operations or services allocated in those and adjacent frequency bands, taking into account the results of the studies called for in *resolves to invite the ITU Radiocommunication Sector* 1, 2, and 3 above;

5 to complete these studies by WRC-27,

invites administrations

to participate in the studies by submitting contributions to ITU-R,

invites the 2027 World Radiocommunication Conference

to consider the results of the above studies and take necessary regulatory actions, as appropriate

View of IWG-3 on NTIA/RCS Proposal for Agenda Item 10

At its 21th meeting on March 21, 2023, IWG-3 considered the NTIA/RCS proposal in Document IWG-3/87 to add a WRC-27 agenda item for the study of satellite-to-satellite links in certain frequency bands allocated to the mobile-satellite service. IWG-3 notes that its 21st meeting approved Document IWG-3/59 seeking to add the same WRC-27 agenda item,

IWG-3 did not develop a view on the satellite-to-satellite link proposal in Document IWG-3/87. However, members did express their consent to leave the reconciliation of the proposals in Documents IWG-3/59 and IWG-3/87 to the FCC-NTIA WRC proposal reconciliation process. Further, a member highlighted the following items in Document IWG-3/87 for consideration by the FCC:

- *considering d)* of proposed Resolution 249: whether the term "instrument data" should be generalized to "data;"
- proponent operators of MSS systems that may host space-to-space links contemplate these operations on a secondary basis; in Document IWG-3/87, NTIA/RCS contemplate primary operations.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

Study of technical and operational issues and regulatory provisions for adding inter-satellite service allocation in the frequency bands 3 700-4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) for non-GSO user space stations operating at lower orbital altitudes, in communication with GSO satellites in the fixed-satellite service

Background

The development of satellite data relay applications using the satellite services has shown tremendous progress in the last 4 years, and initial market analysis shows no indication of slowing down in the near future. Commercial satellite operators are underway with designing and testing these data relay systems which will be beneficial to many end users, who operate low earth orbiting (LEO) satellites with limitations on the capability of getting the data to a earth station in a timely manner, to ensure that the data remains valuable. As a part of the satellite data relay landscape, C-band offers unique opportunity in contact time and coverage with the LEO user space station. One application is for urgent/real-time tasking of data relay services to the end user.

This proposal seeks to study the sharing and compatibility of adding inter-satellite service allocation in the frequency bands 3 700-4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) for non-GSO user space stations operating at lower orbital altitudes, in communication with GSO satellites in the fixed-satellite service.

IWG-3 was able to reach consensus on a single view which allows for the US to consider adoption of this future agenda item.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

ADD USA/10 (CBAND_ISS)/1

DRAFT NEW RESOLUTION [AI 10] (WRC-23)

Agenda for the 2027 world radiocommunication conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference (WRC) should be established four to six years in advance and that a final agenda shall be established by the ITU Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-23 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

2 to consider, based on the results of ITU-R studies, possible measures to address, adding an inter-satellite service allocation in the frequency bands 3 700 - 4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) for non-GSO space stations operating at lower orbital altitudes, in communication with GSO satellites in the fixed-satellite service Resolution **[CBAND_ISS] (Rev.WRC-23)**;

resolves further

to activate the Conference Preparatory Meeting,

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-27,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for studies, possible regulatory measures for an inter-satellite service allocation in the frequency bands 3 700 - 4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) for non-GSO space stations operating at lower orbital altitudes, in communication with GSO satellites in the fixed-satellite service;

ADD USA/10 (CBAND_ISS)/2

RESOLUTION [AI10 ISL] (WRC-23)

Study of technical and operational issues and regulatory provisions for adding inter-satellite service allocation in the frequency bands 3 700-4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) for non-GSO user space stations operating at lower orbital altitudes, in communication with GSO satellites in the fixed-satellite service

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that many non-geostationary-satellite orbit (non-GSO) satellites operate with limited and non-real-time connectivity to earth stations;

b) that space-to-space communication between such non-GSO satellites and geostationary satellite orbit FSS satellites would enhance the efficiency of operations and that the effective re-use of some frequency bands allocated to the FSS for transmissions between space stations may increase spectral efficiency in those frequency bands;

c) that the frequency bands 3 700-4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) allocated to the FSS are used for links between earth stations and space stations;

d) that there is growing interest for utilizing satellite-to-satellite links for a variety of applications and that there have been expressions of interest by some administrations in using the frequency bands 3 700-4 200 MHz and 5 925-6 425 MHz for inter-satellite service transmissions between space stations in those frequency bands;

e) that it is technically feasible for a lower orbital altitude non-GSO space station to transmit data to and receive data from a higher orbital altitude GSO space station when passing within the satellite antenna coverage beam that is directed towards the Earth;

f) that sharing and compatibility studies were performed between satellite-to-satellite links intending to operate between space stations in the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz and current and planned stations of the FSS and other existing services allocated in same frequency bands and adjacent frequency bands, including passive services, with a view to ensuring protection of the primary services,

recognizing

a) that it is necessary to study the impact to primary services, taking into account applicable footnotes to the Table of Frequency Allocations, through sharing and compatibility studies, the protection of primary allocated services in the frequency bands 3 700-4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) and adjacent bands;

b) that there should be no additional regulatory or technical constraints imposed on incumbent services to which the frequency band and adjacent frequency bands are currently allocated;

c) that it is necessary to study whether space-to-Earth direction transmissions from GSO space stations can be successfully received by lower orbital altitude non-GSO satellites, without imposing any additional constraints on all allocated services in these frequency bands;

d) that the sharing scenarios may vary because of the wide variety of orbital characteristics of the non-GSO FSS space stations;

e) that out-of-band emissions, signals due to antenna pattern sidelobes, reflections from receiving space stations and in-band unintentional radiation due to Doppler shifts may impact services operating in the same and adjacent or nearby frequency bands;

recognizing further

a) that the use of frequency bands by the FSS in the frequency ranges 3 700-4 200 MHz and 5 925-6 425 MHz is subject to existing Resolutions, coordination requirements and country footnotes taking into account, in particular, the protection of primary incumbent services;

b) that the 3700 – 4200 MHz band is allocated to the Fixed and Mobile service on a primary basis in Regions 2 and 3,

c)* that in Region 1, the 3700 – 4200 MHz band is allocated to the fixed service on a primary basis, [the 3700 – 3800 MHz band is allocated to the mobile service on a primary basis]

d) that the 3700 – 3800 MHz band is identified in Region 2 via No. 5.IMT;

e) that any future use of ISS in the 3700 – 4200 MHz band shall not claim protection from terrestrial services operating in accordance with the Radio Regulations;

f) that the FSS, fixed and mobile services are allocated globally on a co-primary basis in the frequency band 5 925- 6 425 MHz;

g) that the use of the frequency bands 3 700-4 200 MHz and 5 925-6 425 MHz by the non-GSO FSS is subject to the application of the provisions 22.5C and 22.5D;

g) that the frequency bands 5 925-6 425 MHz may be used for the FSS (Earth-to-space) for the provision of earth stations located on board vessels subject to No. **5.457A** and **5.457B;**

i) that the use of the frequency bands 5 925-6 425 MHz by aeronautical mobile telemetry is subject to the application of the provisions of No. **5.457C**,

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*This Region 1 allocation for FS/MS is pending the WRC-23 outcome, and this recognizing further should be revised or removed based on the conclusion of AI 1.2/1.3

resolves to invite the ITU Radiocommunication Sector

1 to study the technical and operational characteristics of different types of non-GSO space stations that operate or plan to operate space-to-space links with GSO FSS networks in the following frequency bands:

a) Earth-to-space direction in the frequency bands 5 925-6 425 MHz, for transmissions from non-GSO user space stations operating at lower orbital altitudes in communication with GSO service provider space stations in the fixed-satellite service; and

b) space-to-Earth direction in the frequency bands 3 700-4 200 MHz, for transmissions from FSS GSO service provider space stations, towards non-GSO user space stations;

2 to study sharing and compatibility between inter-satellite service space-to-space links in the cases described in *resolves to invite the ITU Radiocommunication Sector* 1 and

– current and planned stations of the FSS;

– other existing services allocated in the same frequency bands; and

– other existing services allocated in adjacent frequency bands,

in order to ensure protection of, and not impose undue constraints on, other services allocated in those frequency bands and in adjacent frequency bands, taking into account *recognizing further a)* to i*)*;

3 to develop technical conditions and regulatory provisions for the operation of ISS links in these frequency bands, taking into account the results of the studies called for in *resolves to invite the ITU Radiocommunication Sector* 1 and 2 above;

4 to complete these studies by WRC-27,

invites administrations

to participate in the studies by submitting contributions to ITU-R,

invites the 2027 World Radiocommunication Conference

to consider the results of the above studies and take necessary regulatory actions, as appropriate

ATTACHMENT

PROPOSAL FOR FUTURE AGENDA ITEM FOR [CBAND_ISS]

Subject: Proposed WRC-2027 future agenda item to consider, based on the results of ITU-R studies, a primary ISS spectrum allocation and associated regulatory provisions an inter-satellite service allocation in the frequency bands 3 700 - 4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) for non-GSO space stations operating at lower orbital altitudes, in communication with GSO satellites in the fixed-satellite service Resolution **[CBAND_ISS] (WRC-23)**;

Origin: United States of America

Proposal*:* to enable the establishment of a primary spectrum allocation and associated regulatory provisions to support in the frequency bands 3 700 - 4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space), intersatellite links; in accordance with Resolution **[CBAND_ISS] (WRC-23);**

Background/reason:
Satellite data relay services continue to be a growing market for satellite operators and C-band can offer near real time, urgent request tasking as part of the larger system of satellite data relays in higher frequency bands. To provide a means for recognizing in the Radio Regulations transmissions for an intersatellite links allocation in the frequency bands 3 700 - 4 200 MHz (space-to-Earth) and 5 925-6 425 MHz (Earth-to-space) in accordance with Resolution **[CBAND_ISS] (WRC-23)**;

Radiocommunication services concerned:
Inter satellite service, Fixed-satellite service, Fixed Service, Mobile Service

Indication of possible difficulties: None foreseen

Previous/ongoing studies on the issue: Studies have been initiated in Working Party 4A during the 2019-2023 ITU-R Study Cycle on space-to-space satellite links in Ku and Ka band.

Studies to be carried out by: ITU-R Study Group 4 WP4A	*with the participation of:* SGs 5 WP5A, 5B, 5C, 5D

ITU-R Study Groups concerned: SG 4, and SG 5

ITU resource implications, including financial implications (refer to CV126): Minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Remarks

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

The attached document was progressed in IWG-3, including through several offlines, but IWG-3 ran out of time to conclude on discussions (or develop views) on the draft proposal contained herein. The proposal, which seeks to study additional frequency bands for mobile satellite service operations, would benefit from further development in subsequent discussions in the U.S. CITEL/WRC preparatory processes.

The following WAC members present during the 03/21/2023 IWG-3 meeting AT&T, Boeing, CTIA, GSMA, Intelsat, Microsoft, Motorola Solutions, Inc., NCTA, Planet, T-Mobile, and Verizon expressed concerns with the current draft version of the document due to the candidate frequency bands, necessity to develop appropriate recognition of incumbent uses and/or other topics. This item is being sent to the WAC on a non-consensus basis.

Author: Iridium
Echostar

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention.

Introduction

This is a proposal for a new agenda item for WRC-27 to direct the ITU-R to begin studies of potential frequency bands for new mobile-satellite service allocations with a view to WRC-30 adopting new allocations and attendant regulatory mechanisms.

Background/Discussion

The demand for mobile satellite applications is rapidly increasing, and estimates show that this demand will continue to grow in the future. However, there is a persistent spectrum shortfall in the lower bands, which is crowding the available spectrum and limiting the growth of MSS. This shortfall can only be addressed by allocating more MSS spectrum to accommodate future MSS requirements.

There are several demand drivers for MSS, including the increased demand for mobility in satellite services (evidenced by recent WRC actions to increasing mobility in the fixed-satellite service), the need for more capacity to expand services (existing and new), and the sorely needed coverage of underserved and remote areas. The bandwidth required to accommodate evolving technologies such as IoT, DTD, and broadband applications, as well as emergency and disaster response, also highlights the need for additional MSS spectrum.

The emergence of Direct-to-Device integration of MSS capability into existing cellular chipsets will drive significant demand growth. Moreover, satellite IoT continues to experience significant growth, reflecting the evolution of the IoT ecosystem. In addition, there is an opportunity to extend 5G/IMT capabilities to rural and other underserved communities, which can only be achieved by ensuring adequate MSS spectrum is available.

The most recent MSS allocations were made in 1995, and since then, MSS systems have significantly developed, particularly in the area of always-on broadband data communications. It is therefore essential to examine frequency bands for possible new MSS allocations.

Notably, the ongoing efforts of the 3GPP to develop NTN standards demonstrate the importance of MSS in meeting the increasing demand for mobile satellite applications. Additionally, the Federal Communications Commission's through its recent draft NPRM In the Matter of Single Network Future: Supplemental Coverage GN Docket No. 23-65 acknowledges the role of MSS assets in addressing the coverage gaps and capacity constraints faced by existing terrestrial networks.

Allocating more MSS spectrum is necessary to address the increasing demand for mobile satellite applications (and satellite mobility generally), a persistent MSS spectrum shortfall, and crowding in lower bands. MSS can provide coverage to underserved and remote areas, support evolving technologies, and facilitate the integration of satellite and terrestrial networks. Therefore, it is essential to examine frequency bands for possible new MSS allocations, taking into account evolving technology, the ongoing efforts of the 3GPP and the FCC's recognition of the importance of MSS in meeting the coverage and capacity requirements of future networks.

Proposal

The United States proposes to consider, based on the results of sharing and compatibility studies, and the protection of existing services, new allocations to the MSS in the following frequency bands:

Frequency band/Range	Transmission Direction	Notes
1427-1432 MHz	TBD	
2010-2025 MHz	Space-to-Earth	Add for R1 and R3
[2120-2160 MHz]	Earth-to-Space	Add R1 and R3, upgrade R2
2160-2170 MHz	Earth-to-Space	Add for R1 and R3
[3.8-4.2 GHz]	Space-to-Earth	
[5.925-6.425 GHz]	Earth-to-space	
[7.25-7.75 GHz]	Space-to-Earth	
[7.9-8.4 GHz]	Earth-to-Space]	

Preliminary agenda for the 2027 World Radiocommunication Conference

ADD USA/10 (MSS SPECT)/1

RESOLUTION [A10 MSS.SPECT] (WRC-23)

Additional Frequency Allocations to The Mobile-Satellite Service in the Frequency Bands 1427-1432 MHz, 2010-2025 MHz (Regions 1 and 3), 2120-2160 MHz, 2160-2170 MHz (Regions 1 and 3) and 3.8-4.2 GHz, 5.925-6.425 GHz, 7.25-7.75 GHz, 7.9-8.4 GHz

Agenda for the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that ITU-R has studied the spectrum requirements for the satellite component of International Mobile Telecommunications (IMT) for the period 2010-2020, and the results are contained in Report ITU-R M.2077;

b) that the results in Report ITU-R M.2077 indicate a shortfall of spectrum available for the satellite component of IMT in the Earth-to-space direction of between 19 MHz and 90 MHz by the year 2020;

c) that the results in Report ITU-R M.2077 indicate a shortfall of spectrum available for the satellite component of IMT in the space-to-Earth direction of between 144 MHz and 257 MHz by the year 2020;

d) that ITU-R has also studied the spectrum requirements for MSS broadband applications by the year 2020, and the results are contained in Report ITU-R M.2218;

e) that the results in Report ITU-R M.2218 indicate a shortfall of spectrum for MSS broadband applications of between 240 MHz and 335 MHz by the year 2020 in both the space to-Earth and Earth-to-space directions,

f) that MSS systems which are not part of the satellite component of IMT also require additional spectrum,

recognizing

a) that mobile-satellite systems deployed over the past three decades have been maturing, developing new technologies and growing their traffic to the point of reaching spectrum congestion, making it difficult to sustain their existing services on long term basis;

b) that mobile satellite systems implementing various applications, including broadband applications, to the communities in remote and underserved areas require additional spectrum;

c) that there is a natural migration of technology to develop smart phones with the capability of accessing mobile satellite systems, resulting in unexpected growth in new traffic demand;

d) that no new allocations have been made for the mobile-satellite service to provide general mobile satellite services since WRC-95, and therefore the shortfall of spectrum for Mobile satellite applications still needs to be addressed,

e) that the frequency ranges 1427-1432 MHz, 2010-2025 MHz (Regions 1 and 3), 2120-2160 MHz, 2160-2170 MHz (Regions 1 and 3) and 3.8-4.2 GHz, 5.925-6.425 GHz, 7.25-7.75 GHz, 7.9-8.4 GHz include allocations to other services;

resolves to invite the ITU Radiocommunication Sector

1 to complete, for WRC-27, t studies of possible bands for new allocations to the mobile-satellite service in the Earth-to-space and space-to-Earth directions, taking into account sharing, compatibility, and protection of existing allocations in the referenced bands.

invites the 2027 World Radiocommunication Conference

to determine, on the basis of the studies conducted under *resolves to invite the ITU Radiocommunication Sector* above, appropriate allocations to the MSS and associated regulatory actions while ensuring the protection of existing primary services in the identified frequency bands, without unnecessarily hindering their future development,

invites administrations

to participate in the studies by submitting contributions to the ITU-R.

WRC-23 Agenda Item 10

Future Agenda Item proposal to review and update

IWG-3 members were not able to reach consensus on a draft U.S. proposal for WRC-23 Agenda Item 10 that seeks to review and update regulatory provisions for protection of GSO networks from non GSO systems in the parts of 14/11 GHz and 30/20 GHz frequency bands in which Article **22** epfd limits apply. This document provides two views on this matter.

View A is supported by: Amazon, SpaceX and Mangata Networks

Consistent with Plenipot Resolution **219 (Bucharest, 2022),** View A recommends that the U.S. adopt a proposal to support a future WRC agenda item that would review and update regulatory provisions for sharing between non GSO systems and GSO networks in the portions of 14/11 GHz and 30/20 GHz frequency bands in which Article **22** epfd limits apply under WRC-23 Agenda Item 10.

View B is supported by: Echostar, Intelsat and Viasat

View B proponents do not support a FAI to review the long standing EPFD limits in the 14/11 GHz and 30/20 GHz frequency bands to protect GSO networks in Article **22** of the RR.

VIEW A

View A:

Agenda Item 10, FAI

Reference: IWG-4/039 (13.12.2022)

Supported by Amazon, SpaceX

View A recommends that the U.S. adopt a proposal to support a future WRC agenda item that would review and update regulatory provisions for sharing between non GSO systems and GSO networks in the portions of 14/11 GHz and 30/20 GHz frequency bands in which Article **22** epfd limits apply. Non-geostationary-satellite ("non-GSO") systems in the Ka- and Ku-bands have developed into a critically important tool for connectivity across the globe. Article **22** of the Radio Regulations (RR) and Resolution 76 (Rev. WRC-15) contains provisions that aim, in principle, to ensure the compatibility of non-GSO FSS operations with GSO networks in the 14/11 GHz and 30/20 GHz frequency bands. The Article **22** epfd limits were developed nearly 25 years ago during the WRC-97 and WRC-2000 study cycles. NGSO systems and GSO networks today are vastly different in design and operational capabilities than the systems that were considered when developing the Article 22 epfd limits nearly twenty-five years ago.

The Article 22 epfd limits in the 14/11 GHz and 30/20 GHz are spectrally inefficient and create numerous regulatory issues for administrations as demonstrated under work lead by the US under WRC-19 AI 1.6. The output of these studies demonstrating the inefficiency of the EPFD framework included in ITU-R Report S.2462-0 (07/2019). The outcome of WRC-19 AI 1.16 was an entirely new EPFD framework included in No. **22.5L** and No. **22.5M** of the radio regulations. Equally important, the epfd limits were developed without taking into account long-term GSO protection criteria, and thereby overestimating GSO protections. Considering the fact that the ITU framework does not result in spectrally efficient operation of modern satellite networks in the assumptions that led to the aggregate epfd limits to protect GSO networks, and from there, to the derivation of the single-entry limits, it is clear that the time has come to revisit the values of those limits. The goal is to achieve a more efficient and rational balancing of the equities between GSO and non-GSO operations while respecting the regulatory regime.

View A is consistent with Plenipot Resolution **219 (Bucharest, 2022)**, which recognizes the need to review technologies used in GSO networks and calls for ITU-R studies "on the issue of the increasing use of radio-frequency spectrum and associated orbit resources in non-GSO orbits and the long-term sustainability of these resources, as well as on equitable access to, and rational and compatible use of, the GSO and non-GSO orbit and spectrum resources."

The organizations and companies listed above urge FCC to adopt the attached draft proposal for WRC-23 Agenda Item 10 proposal for a future agenda item that aims .

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution 804 (Rev.WRC-19)

WRC-27 agenda item to review and update regulatory provisions for sharing between non-GSO systems and GSO networks in the portions of 14/11 GHz and 30/20 GHz frequency bands in which No. 22 epfd limits apply

Background

Non-geostationary-satellite ("non-GSO") systems in the Ka- and Ku-bands have developed into a critically important tool for connectivity across the globe. They are capable of providing high speed, low latency broadband connectivity worldwide, including to locations where access to the internet was previously unreliable, or entirely unavailable. Publicly available data shows that non-GSO fixed-satellite service ("FSS") systems serve well over one million users worldwide as of 2022 and are projected to serve at least tens of millions of users by 2030, resulting in enormous benefits to the global community. These unprecedented developments have dramatically changed the paradigm in satellite telecommunications.

NGSO systems rely entirely on shared spectrum to provide service, and efficient use of shared spectrum resources is one of the ITU pillars. To realize the full benefits and potential of non-GSO FSS systems, the ITU must ensure equitable access to co-frequency spectrum resources for non-GSO systems and GSO networks while also increasing the efficiency of intra-service spectrum sharing through careful consideration of the ITU's regulatory provisions.

Article **22** of the Radio Regulations (RR) and Resolution 76 (Rev. WRC-15) contains provisions that aim, in principle, to ensure the compatibility of non-GSO FSS operations with GSO networks in the 14/11 GHz and 30/20 GHz frequency bands. Among these provisions are the uplink and downlink equivalent power flux-density (epfd↑ and epfd↓) limits developed in 1997 and 2000. Yet NGSO systems and GSO networks today are vastly different in design and operational capabilities than the systems that were considered when developing the Article 22 epfd limits nearly twenty-five years ago. Satellite technology and our knowledge about how NGSO systems and GSO networks operate in practice has advanced significantly since that time. Technological progress in radio communication enables satellite systems such as smaller spot beams, adaptive modulation, and frequency re-use allow satellite systems to utilize spectrum efficiently and in a manner that is more robust to interference then satellite systems from two decades ago. This is true for fixed-satellite service whether operating in the geostationary or non-geostationary orbits.

The Article 22 epfd limits in the 14/11 GHz and 30/20 GHz are spectrally inefficient as demonstrated during the work under WRC-19 AI 1.6 and included in ITU-R Report S.2462-0 (07/2019). Equally important, the epfd limits were developed without taking into account long-term GSO protection criteria,

and thereby overestimating long-term GSO protections. The EPFD limits were developed by considering an short-term aggregate protection criteria contained in *Recommends 3.1* of Recommendation ITU-R S.1323, i.e. 10% decrease in unavailability, derived using anomalous assumptions, and then subdividing these limits by a presumed notional 3.5 operational non-GSO systems. Consequently, because the sharing and regulatory provisions of Article 22 in the portions of 14/11 GHz and 30/20 GHz frequency bands in which epfd limits have been demonstrated to be inefficient and present clear issues with the lack of consideration of long-term protection thresholds limits, it is urgent and necessary to review and update them.

This creates multifold inefficiencies. The current Article 22 provisions allow for a particular aggregate set of non-GSO satellites to exceed the aggregate epfd limits even though it passes the GSO protection criteria outlined in Recommendation ITU-R S.1323 when applied against each reference GSO link. Likewise, scenarios can arise in which a particular non-GSO system will meet a particular epfd limit mask but will not pass the sharing criteria outlined in Recommendation ITU-R S.1323. Notably, these issues were identified and addressed in WRC-19 for the Q/V bands, leading to a new and more efficient sharing framework for those bands and the entry into force of Resolutions 770 and 769.

In addition to the spectrum inefficiency that results from the methodology used to derive the aggregate epfd limits in the Ka- and Ku-bands, long-term epfd limits for non-GSO system protection of GSO networks have the potential to be overly conservative and therefore overly protective. Recommendation ITU-R S.1323, the basis for the aggregate epfd limits developed in 1997 and 2000, does not contain any long-term protection threshold (Methodology A). The following scenario demonstrates the overly conservative and therefore overly protective nature of these limits. Based on the apportionment of the allowable error performance degradations to the FSS hypothetical digital paths arising from time invariant interference for systems below 30 GHz, ITU-R S.1432-1 calculates an -12.2 dB I/N, corresponding to 6% increase in ΔT/T. Figures 1-3 below show the Article 22 epfd limits in the Ka- and Ku-band translated into I/N by using a noise temperature of 195 K and using a reference frequency of 17.8 GHz, 19.7 GHz and 10.7 GHz, respectively. All I/N curves, corresponding to the epfd limits for different diameter GSO receive antennas, have I/N well below -12.2 dB I/N at long-term percentages of time.

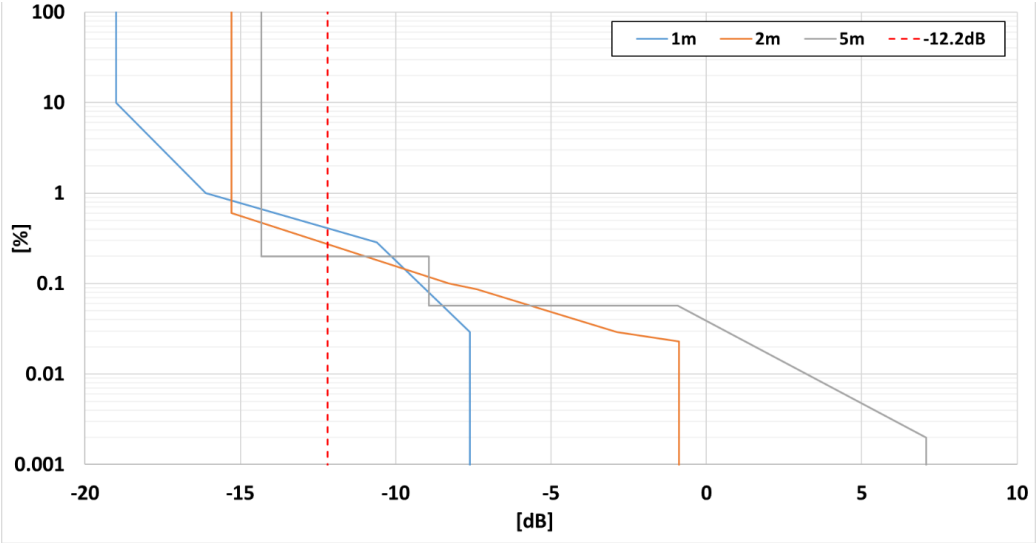


Figure 1: EPFD limits in the Ka band (17.8- 18.6 GHz) translated into I/N curves by assuming a noise temperature of 195 K

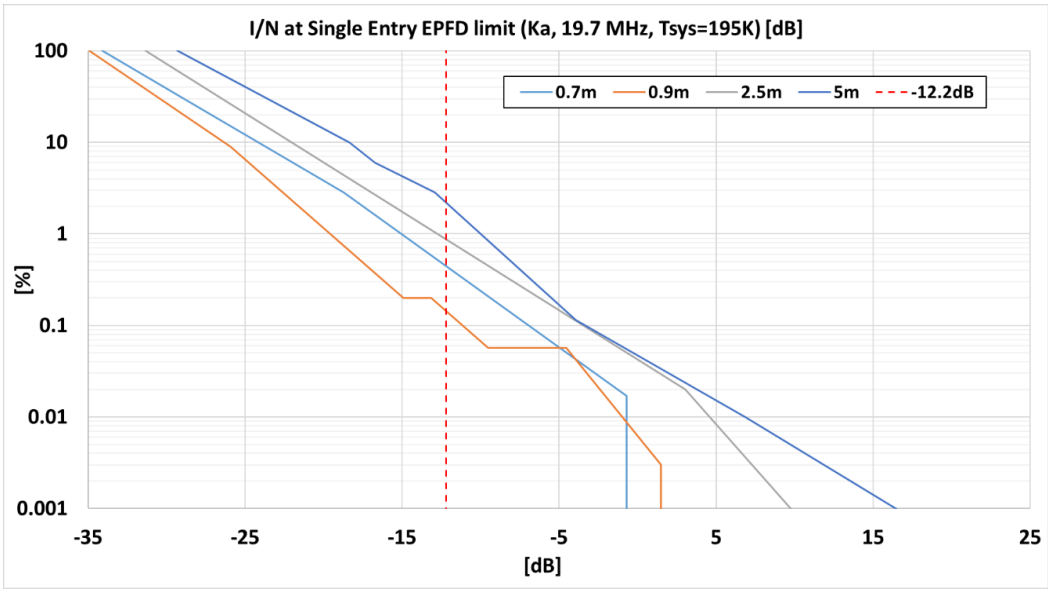


Figure 2: EPFD limits in the Ka band (19.7-20.2 GHz) translated into I/N curves by assuming a noise temperature of 195 K

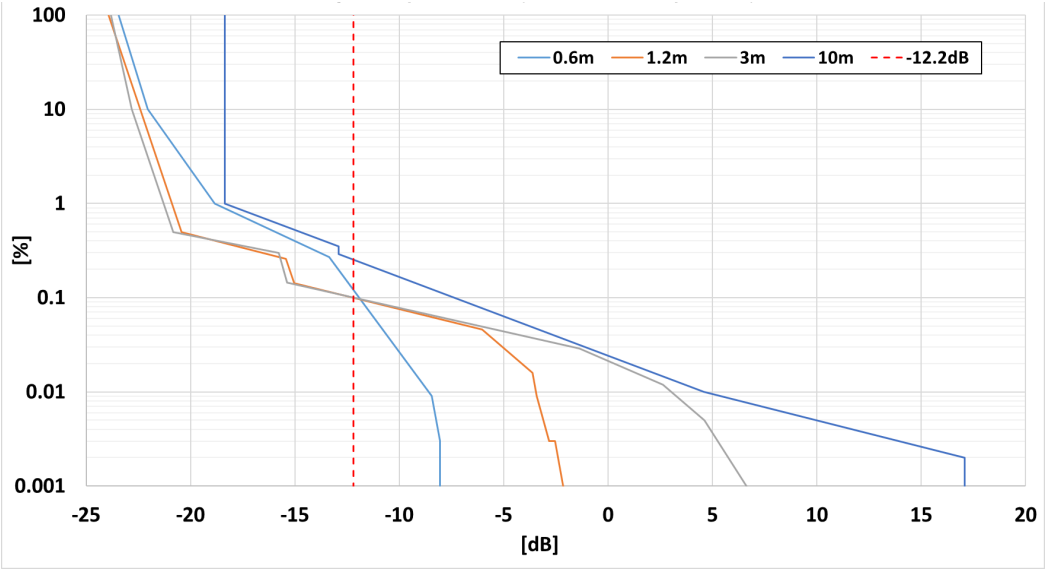


Figure 3: EPFD limits in the Ku band translated into I/N curves by assuming a noise temperature of 195 K

In short, the Article 22 epfd limits were derived in a manner that has resulted in spectrum inefficiencies. Equally important, the long-term epfd limits were developed without taking into account long-term GSO protection criteria, thereby overestimating long-term GSO protection criteria. Consequently, because the sharing and regulatory provisions of Article 22 in the portions of 14/11 GHz and 30/20 GHz frequency bands in which epfd limits apply are known to be inefficient and present clear issues with long-term epfd limits, it is urgent and necessary to review and update them. Considering the fact that the ITU framework does not result in spectrally efficient operation of modern satellite networks in the assumptions that led to the aggregate epfd limits to protect GSO networks, and from there, to the derivation of the single-entry

limits, it is clear that the time has come to revisit the values of those limits. The goal is to achieve a more efficient and rational balancing of the equities between GSO and non-GSO operations while respecting the regulatory regime.

Such an examination would be consistent with new Plenipot Resolution **219 (Bucharest, 2022)**, which recognizes the need to review technologies used in GSO networks and the increased number of satellites in non-GSO systems, "with a view to addressing them, if necessary, in the Radio Regulations in in the processing of frequency assignments by the [BR]."[27] The same resolution calls for ITU-R studies "on the issue of the increasing use of radio-frequency spectrum and associated orbit resources in non-GSO orbits and the long-term sustainability of these resources, as well as on equitable access to, and rational and compatible use of, the GSO and non-GSO orbit and spectrum resources."

In the proposals below, the United States seeks to start the review process contemplated by PP-22 and improve the ability of non-GSO FSS systems to use the Ku-band and Ka-band frequencies subject to No. **22** epfd limits (including the aggregate limits in Resolution 76 (Rev.WRC-15). The United States recognizes that this effort will overlap to some degree with the consideration of revisions to Resolution 76 (Rev.WRC-15) to consider the establishment of a consultation process for assuring conformity with and rectifying potential exceedances of the aggregate epfd limits in that resolution and No. 22.5K and proposes to include those discussions as part of the work under this proposed Agenda Item.

[27] The new PP-22 resolution (Resolution 219 (Bucharest, 2022)) goes on to call for ITU-R studies "on the issue of the increasing use of radio-frequency spectrum and associated orbit resources in non-GSO orbits and the long-term sustainability of these resources, as well as on equitable access to, and rational and compatible use of, the GSO and non-GSO orbit and spectrum resources," and to bring the matter to "the subsequent" WRC for consideration and necessary action.

ADD USA/10/1

DRAFT NEW RESOLUTION [USA-10-2027] (WRC-23)

Agenda for the 2027 world radiocommunication conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference (WRC) should be established four to six years in advance and that a final agenda shall be established by the ITU Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-23 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

2 to review and update regulatory provisions for sharing between non GSO systems and GSO networks in the portions of 14/11 GHz and 30/20 GHz frequency bands in which No. **22** epfd limits apply;

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting (CPM) and to prepare a report to WRC-27;

2 to submit a draft report on any difficulties or inconsistencies encountered in the application of the Radio Regulations referred in agenda item 9.2 to the second session of the CPM and to submit the final report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for urgent studies in the Ku and Ka-band frequency range to review and revise, as appropriate the epfd limits applicable to non-GSO FSS systems and associated regulatory provisions.

ADD USA/10/2

Draft New Resolution [EPFD REVISION] (WRC-23)
Review and update regulatory provisions for sharing between non-GSO systems and GSO networks in the portions of 10.7-14.5 GHz, 17.3-20.2 GHz and 27.5-30 GHz frequency bands in which Article 22 and Resolution 76 (Rev. WRC-15) epfd limits apply

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that systems based on the use of new technologies associated with both geostationary-satellite orbit (GSO) networks and non-geostationary-satellite orbit (non-GSO) constellations are capable of providing high-capacity and low-cost means of communication even to the most isolated regions of the world;

b) that GSO and non-GSO satellite orbits and associated spectrum are valuable resources and equitable access to these resources should be protected for the benefit of all countries in the world;

c) the need to encourage the development and implementation of both GSO and non-GSO technologies at frequencies at 14/11 GHz and 30/20 GHz

d) the need to ensure equitable access to co-frequency spectrum resources for non-GSO FSS systems and GSO networks while increasing the efficiency of intra-service spectrum sharing;

e) that No. **22** of the Radio Regulations contains provisions that aim, in principle, to ensure compatibility between non-GSO FSS operations and GSO networks for the 14/11 GHz and 30/20 GHz frequency bands. Among these provisions are the uplink, downlink and inter-satellite equivalent power flux-density (epfd↑, epfd↓, and $epfd_{is}$) limits; and

f) that Resolution 219 of the ITU Plenipotentiary meeting of 2022 instructs the relevant ITU Radiocommunication Sector (ITU-R) study groups to perform studies on the issue of the increasing use of radio-frequency spectrum and associated orbit resources in non-GSO orbits, as well as on equitable access to, and rational and compatible use of, the GSO and non-GSO orbit and spectrum resources, consistent with the objectives of Article 44 of the Constitution;

g) that non-GSO FSS systems would benefit from an updated review and specification of measures required to protect GSO FSS and BSS satellite networks under No. **22.2**;

recognizing

a) that the Article **22** and Resolution **76 (Rev.WRC-15)** equivalent power flux-density (epfd) limits apply to non-GSO FSS systems in in the portions of the 14/11 GHz and 30/20 GHz frequency bands in which Article **22** epfd limits apply to protect GSO FSS and BSS satellite networks from non-GSO FSS satellite systems;

b) that non-GSO FSS systems and GSO FSS networks are vastly different today than the systems that were considered in developing No. **22** epfd limits in 1997 and 2000, and the knowledge about how these systems operate in practice has advanced significantly since then;

c) that Recommendation ITU-R S.1323 provides information on operational requirements and protection criteria that may be used in sharing studies;

d) that Article **22** and Resolution **76 (Rev.WRC-15)** limits were derived taking into account only a short-term protection criterion;

e) that Recommendation ITU-R S.2131 recommends a long-term protection criterion for satellite systems utilizing adaptive coding and modulation (ACM) that was not taken into account during the development of epfd limits by WRC-2000;

f) that the epfd limits applicable to 14/11 GHz and 30/20 GHz non-GSO FSS systems overestimate the amount of long-term protection required by GSO FSS and BSS networks, and this unnecessarily constrains non-GSO systems without providing any protection benefit to GSO networks;

g) that the generic GSO links developed and used in the derivation of epfd limits for WRC-97 do not reflect adequately modern GSO networks and related technology and, therefore, should be updated for the benefit of the GSO community;

h) that the issues linked to *recognizing d)*, in view of *recognizing e)*, were identified and addressed in WRC-19 for the Q/V bands, leading to an alternative and more efficient sharing framework for those bands and the development of provisions No. **22.5L** and No. **22.5M**;

recognizing further

that the Article **22** power flux-density (epfd) limits for to non-GSO FSS systems operating in portions of the 14/11 GHz and 30/20 GHz frequency bands were designed solely to protect GSO FSS and BSS satellite networks, as Article **21** limits apply for terrestrial services;

noting

a) that WRC-23 initiated consideration, under Agenda item 7, Topic J, of possible revisions to Resolution **76 (Rev.WRC-15)** to study or consider development of a consultation procedure to ensure that the aggregate epfd limits in the Resolution are not exceeded;

b) that, taking into account *recognizing g)* above and Resolutions **769 (WRC-19)** and **770 (WRC-19)**, [WRC-23 deferred] finalization of a consultation procedure for aggregate epfd compliance until WRC-27, and in would be appropriate for ITU-R studies to address that procedure in conjunction with the results of the studies call for in *resolves to invite ITU-R* below;

resolves to invite ITU-R

1 to conduct, and complete in time for WRC-23, studies aimed at reviewing and updating the regulatory provisions for spectrum sharing between non-GSO FSS systems and GSO networks in the portions of the 10.7-14.5 GHz, 17.3-20.2 GHz and 27.5-30 GHz frequency bands in which Article **22** and Resolution **76 (Rev.WRC-15)** epfd limits apply; and

2 to identify, within the context of *resolves 1*, a sharing framework that ensures that administrations operating a non-GSO FSS system fulfill their obligations under No. **22.**2 of the Radio Regulations while ensuring equitable and efficient spectrum sharing between non GSO FSS systems and GSO FSS networks, taking into account the developments by WRC-19 of No. 22.5 L and No. 22.5M considered in *Recognizing h)*;

3 to complete, with reference to *notings a*) and *b*) above, the development of a consultation procedure and process for use by non-GSO FSS systems in the frequency bands listed in Recognizing a);

invites the 2027 World Radiocommunication Conference
to consider the results of the above studies and take necessary regulatory actions, as appropriate;

Reasons: To provide for urgent studies in the Ku- and Ka-band frequency range to review and revise, as appropriate the epfd limits applicable to non-GSO FSS systems and associated regulatory provisions.

ATTACHMENT

PROPOSAL FOR ADDITIONAL AGENDA ITEM FOR [REVIEW AND UPDATE REGULATORY PROVISIONS FOR SHARING BETWEEN NON-GSO SYSTEMS AND GSO NETWORKS IN THE PORTIONS OF 10.7-14.5 GHZ, 17.3-20.2 GHZ AND 27.5-30 GHZ FREQUENCY BANDS IN WHICH ARTICLE 22 AND RESOLUTION 76 (REV. WRC-15) EPFD LIMITS APPLY]

Subject: Proposed future WRC-2027 agenda item to [review and update regulatory provisions for sharing between non-GSO systems and GSO networks in the portions of 10.7-14.5 GHz, 17.3-20.2 GHz and 27.5-30 GHz frequency bands in which Article 22 and Resolution 76 (Rev. WRC-15) epfd limits apply];

Origin: United States of America

Proposal: [To review and update regulatory provisions for sharing between non GSO systems and GSO networks in the portions of 14/11 GHz and 30/20 GHz frequency bands in which No. 22 epfd limits apply.]

***Background/reason**: [NGSO and GSO networks today are vastly different in design and operational capabilities than the systems that were considered when developing the Article 22 epfd limits nearly twenty-five years ago. The Article 22 epfd limits in the 14/11 GHz and 30/20 GHz are spectrally inefficient as demonstrated during the work under WRC-19 AI 1.6. Equally important, the epfd limits were developed without taking into account long term GSO protection criteria, and thereby overestimating long term GSO protections. Consequently, because the sharing and regulatory provisions of Article 22 in the portions of 14/11 GHz and 30/20 GHz frequency bands in which epfd limits have been demonstrated to be inefficient and present clear issues with the lack of consideration of long-term protection thresholds limits, it is urgent and necessary to review and update them.]*

***Radiocommunication services concerned**:* [Fixed Satellite Service, Mobile Satellite Service, BSS, EESS, Radio Astronomy and other services]

***Indication of possible difficulties**:* [ ]

***Previous/ongoing studies on the issue**:* [ ]

Studies to be carried out by: [WP4A]	*with the participation of:* Administrations and Sector members of the ITU-R

***ITU-R Study Groups concerned**: [SG4]*

***ITU resource implications, including financial implications (refer to CV126)**:* This proposed agenda item will be studied within the normal ITU-R procedures and planned budget.

***Common regional proposal**:* Yes/No	***Multicountry proposal:*** Yes/No *Number of countries:*

Remarks

VIEW B

View B

No WRC-27 Agenda Item to study Article 22 EPFD Limits

The United States should not propose a WRC-27 Agenda Item (AI) to review the Ku and Ka-band EPFD limits in Article 22 or Resolution 76 of the Radio Regulations that governs the co-existence of non-geostationary (NGSO) satellite systems with geostationary (GSO) satellite networks.

There are nine main reasons not to adopt that proposal:

1. Article 22 is a long established and clear method for sharing spectrum between Ku and Ka band GSO and NGSO networks.

2. Billions of dollars have been invested in existing and planned Ku and Ka band GSO-based networks and services in reliance on the existing EPFD framework specified in Article 22.

3. New and innovative Ku and Ka band GSO networks and services (including those to be deployed in the next few years) currently are being developed in reliance on Article 22.

4. The Article 22 framework does not "overprotect" Ku and Ka band GSO networks from NGSO interference. To the contrary, the FCC has found that the Article 22 provisions that constrain NGSO interference "were not developed with the most advanced modern GSO networks in mind."[28]

5. Exceedances of permitted levels of NGSO interference that occur on a short-term basis are a particular concern because of the disruptive impact of such interference on GSO services (*e.g.*, potential to degrade service or even disrupt a video call, real-time news or sports event, or critical communications link) and the time needed to recover from such disruptions.

6. The main problems that exist today with the EPFD provisions in Article 22 lie *in how they are applied*, including:

    - Unaddressed abuses reflected by splitting a single NGSO system into multiple ITU filings to evade the requirements of Article 22;[29]

    - Unresolved failures of the ITU software to identify geometric alignments where NGSO interference in excess of that permitted by Article 22 can be shown to exist;[30] and

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[28] *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters,* 32 FCC Rcd 7809, ¶ 35 (2017).

[29] *See* Letter from GSO Operators to Marlene H. Dortch, FCC, File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105 (Call Sign S3069) (Oct. 14, 2022); *see also* Space Exploration Holdings, LLC, *Request for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System*, Order and Authorization, File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105, FCC-22-91¶¶ 31, 32, 34 (Dec. 1, 2022) conditioned the Starlink Gen2 license on obtaining a favorable or qualified favorable finding from the ITU Radiocommunication Bureau "that explicitly indicates the ITU has considered the joint effect of SpaceX's multiple ITU filings."

- Unaddressed efforts of certain NGSO systems to "game" the system, by manipulating their EPFD inputs in a way that does not reflect reality, in an effort to mask the true level of NGSO interference in excess of that permitted by Article 22.[31]

7. The framework developed for the "greenfield" that is the Q/V band is vastly different than the EPFD framework applicable to the Ku or Ka bands, where GSO satellites have been operating for decades and provide a wide range of services, including new broadband mobility services and direct to consumer services.

8. For these reasons, and as the ITU Plenipotentiary recently recognized in Resolution 219,[32] it is urgent to address (i) these types of issues associated with NGSO systems at the study group level before even considering reopening Article 22, as well as (ii) the impact of the continued and expanded launch and operation of a large number of NGSO satellites:

- It instructed the Radiocommunication Assembly to perform the necessary studies through relevant ITU "study groups on the issue of increasing use of radio-frequency spectrum and associated orbit resources in non-GSO orbits and the long-term sustainability of these resources, as well as equitable access to, and rational and compatible use of, the GSO and non-GSO orbit and spectrum resources, consistent with the objectives of Article 44 of the Constitution."

- The Plenipotentiary further instructed that these issues should be reported on by the Radiocommunication Bureau to WRC-23 and that Member States act at the national level "when authorizing non-GSO systems, to take all necessary actions to avoid unacceptable interference to GSO and other non-GSO systems as well as other radio services, of other administrations and to ensure efficient use of radio-frequency spectrum and associated orbits."

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[30] ITU-R contribution, Document 4A/833-E (7 September 2022), Viasat, Inc., *Proposal for Addressing Non-Detection of EPFD Exceedances Due to Reliance on Only a Worst-Case Geometry Evaluation*, demonstrating that NGSO systems which have received favorable EPFD findings by the ITU Radiocommunication Bureau under the current process have been shown to exceed the Radio Regulations Article 22 EPFD↓ limits with other geometries. Peak exceedances range from 3 - 8 dB; incorporated into Working Party 4A Chairman's Report, Document 856, Report on the meeting of the Working Party 4A (Geneva, 14-22 September, 2022), Annex 7, *Working document towards a preliminary draft revision of Recommendation ITU-R S.1503 - Functional description to be used in developing software tools for determining conformity of non-geostationary orbit fixed-satellite service systems or networks with limits contained in Article 22 of the Radio Regulations.*

[31] *See* Letter from Pantelis Michalopoulos, Counsel to DISH Network Corporation, to Marlene H. Dortch, FCC, IBFS File Nos. SAT-LOA-20200526-00055 and SAT-AMD-20210818-00105 (Call Sign S3069) (March 6, 2023) demonstrating that "SpaceX based its new power level calculations on an incorrect and non-compliant exclusion zone for the protection of geostationary ("GSO") satellites in an attempt to manufacture a showing of compliance with the International Telecommunication Union's ("ITU's") power limits."

[32] *See* International Telecommunication Union, Final Acts of the Plenipotentiary Conference, Resolution 219 (Bucharest, 2022), titled "Sustainability of the radio-frequency spectrum and associated satellite orbit resources used by space services", https://www.itu.int/pub/S-CONF-ACTF-2022.

9. Article 22 ensures the efficient use of the GSO/NGSO shared Ku and Ka band frequencies. Namely: (i) NGSO systems can and do freely operate across a wide swath of orbits around the world without adversely affecting use of the GSO orbit, (ii) GSO networks are by definition constrained to operating in the limited orbital region above the equator, and (iii) NGSO interference into the numerous GSO networks operating above the equator is kept to permitted levels.

For these reasons, we strongly urge the Commission to reject the proposal contained in WAC IWG-3 Document 80.

WRC-23 Agenda Item 10

Future Agenda Item proposal to review and update

IWG-3 members were not able to reach consensus on a draft U.S. proposal for WRC-23 Agenda Item 10 for a WRC-27 agenda item to study spectrum for communication operations on the lunar surface. IWG-3 considered a NTIA proposal on this topic contained in Document IWG-3/87.

IWG-3 provides a View A and View B.

View A is supported by: CTIA

View B is supported by: Lockheed Martin

VIEW A

IWG-3/091_10 Lunar RCS (15.03.23)
Author: CTIA

Note to WAC: Redlines proposed on the RCS document contained in DocumentIWG-3/87. View A members offer modifications to this proposal which offers a more manageable study than that previously considered in the WAC to establish a regulatory framework for lunar operations.

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution **804 (Rev.WRC-19)**

BACKGROUND INFORMATION:

The Artemis Accords[33] lay out a shared vision for principles, established in the Outer Space Treaty of 1967, for cooperation in the civil exploration and use of the Moon, Mars, comets and asteroids for peaceful purposes. The United States led in part by its space agency, NASA, and space agencies from other ITU Member States, are preparing for a return of human and robotic explorers to the Moon while developing spacecraft, surface vehicles, exploration mission plans toward achieving a sustainable and robust presence on the Moon in the next decade.

In addition to the traditional means of space-to-Earth and Earth-to-space communication links, direct communications between landers, rovers, extravehicular activity (EVA) astronauts conducting sortie missions and experiments is crucial to enable effective scientific activities and consideration of the health of the crew in the lunar environment. Initial surveys of available technologies has indicated that a network based on the 3GPP standard can be capable of servicing the reference mission concept of operation involving many user groups over a widespread surface area with high data throughput requirements. However, considering the unique topology of the Moon's surface, shielded zone of the Moon considerations, unique science opportunities in radio astronomy, and remote sensing in the lunar region/surface, careful consideration and spectrum sharing/compatibility studies are required to determine the suitable bands to support the envisioned lunar surface network using the 3GPP standard or other standards. This proposal would also establish an international regulatory framework for use of spectrum on the moon, which falls outside the three Regions described in Section I of Article 5.

PROPOSAL:

The United States proposes an agenda item for WRC-27 to study the establishment of a new Radio Regulations Article pertaining to telecommunications use ~~the feasibility and compatibility of a new~~

[33] As of July 2022 the Artemis Accords were signed by the governments of: Australia, Bahrain, Brazil, Canada, Colombia, France, Israel, Italy, Japan, the Republic of Korea, Luxembourg, Mexico, New Zealand, Poland, Romania, Saudi Arabia, Singapore, Ukraine, the United Arab Emirates, the United Kingdom, and the United States.

allocation to the space research service (space-to-space) for point-to-multipoint networks located on the lunar surface between a base station and EVA/rovers up to a 50 km radius. The frequency ranges of interest are: 390-450 MHz, 2 400-2 700 MHz, 3 3500-3 800 MHz (3GPP n78), 5 150-5925 MHz, and 2425.25-2958.35 GMHz (3GPP n257/n258).

Proposals

ADD USA/4253A27/1

DRAFT NEW RESOLUTION [USA-A2027]

Agenda for the 2027 world radiocommunication conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference (WRC) should be established four to six years in advance and that a final agenda shall be established by the ITU Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

[…]

1.X to consider, in accordance with Resolution [**USA-B2027] (WRC-23),** ~~conduct studies on~~the development of a regulatory framework for, and the spectrum needs of, ~~and regulatory measures for possible new allocations to the space research service (space-to-space) to support point-to-multipoint~~ systems on the lunar surface in the frequency bands 390-450 MHz, 2 400-2 700 MHz, 3 35~~00~~-3 800 MHz, 5 150-5 925 MHz, and 2~~45~~.25-2~~9.58.35~~ GHz ~~in accordance with Resolution [**USA-B2027] (WRC-23)**~~;

[…]

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-23, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting (CPM) and to prepare a report to WRC-23;

2 to submit a draft report on any difficulties or inconsistencies encountered in the application of the Radio Regulations referred in agenda item 9.2 to the second session of the CPM and to submit the final report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To create an agenda item for WRC-27 to study the establishment of a regulatory framework ~~the feasibility and compatibility of a new allocation to the space research service (space-to-space)~~ for ~~point-to-multipoint~~ networks located on the lunar surface in certain frequency bands.

ADD USA/4253A27/2

DRAFT NEW RESOLUTION [USA-B2027]

Studies on the establishment of an international spectrum management regulatory framework in support of the ~~frequency-related matters, including possible additional allocations to the space research service (space-to-space), for~~ future development of ~~point-to-multipoint~~ communications networks on the lunar surface

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that there is increased interest ~~by space research service operators from multiple Member States~~ to conduct scientific experiments and exploration activities in the vicinity of the Moon, including on its surface;

b) that point-to-multipoint communication technology is well-developed and widely deployed on the Earth using industry standards to ensure compatibility with other services;

c) that the definition of *radiocommunication service* contained in RR No. **1.19** limits the definitions of the *fixed* and *mobiles* service to apply only to *terrestrial radiocommunication*;

d) that the average distance between the Earth and the Moon is 382 500 km and, therefore, within the 2×10^6 km range provided in RR No. **1.177** to define deep space;

e) that ~~point-to-multipoint~~ systems that would operate on the lunar surface would require an operating range of no more than approximately 50 km;

~~*f)* that point-to-multipoint systems on the lunar surface could operate in the space research service (space-to-space);~~

fg) that the lunar surface has unique atmospheric, soil, and topography conditions;

gh) that the benefits of scientific discovery and space exploration are of a global nature,

noting

Section V of Article **22** regarding protection of radio astronomy in the shielded zone of the Moon,

noting further

that the Artemis accords which promote safe, sustainable, and responsible space exploration have been signed by ITU Member States from all three Regions,

recognizing

a) the Radio Regulations do not current provide a regulatory framework for use of spectrum

in the lunar environment

b) that the use of ~~studies of sharing and compatibility between point-to-multipoint~~ systems operating ~~under the space research service (space-to-space)~~ on the lunar surface would need to take into account ~~any other~~ allocated services in the same or, as appropriate, adjacent bands,

~~a)~~c) modifications to Article 5 are outside the scope of this Resolution,

resolves to invite the ITU Radiocommunication Sector

1 ~~1~~ to study the establishment of a regulatory framework for the use of ~~spectrum needs of the space research service limited to point-to-multipoint~~ systems which may operate on the lunar surface;

~~1~~2 to study the spectrum needs, and the technical and operational characteristics for those systems in *resolves 1* that may operate in the frequency bands 390-450 MHz, 2 400-2 700 , 3 3500-3 800 MHz, 5 150-5925 MHz, and 245.25-29.58.35 GHz;

~~2 to study the propagation considerations for point-to-multipoint systems operating in the frequency ranges in *resolves to invite the ITU Radiocommunication Sector* 1 on the lunar surface;~~

~~3 to~~ to perform ~~study~~ sharing and compatibility studies between the systems as identified in *resolves to invite the ITU Radiocommunication Sector* 1 and 2 and other services allocated to and, as appropriate, in adjacent bands;

4 to complete these studies in time for~~by~~ WRC-27,

invites administrations

to participate in the studies by submitting contributions to ITU-R,

invites the 2027 World Radiocommunication Conference

to consider the results of the above studies and take necessary regulatory actions, excluding any new allocations or changes to the existing allocations in Article **5** ~~as appropriate~~, to provide a regulatory framework ~~additional allocations to the space research service (space-to-space)~~ for the purpose~~s~~ of facilitating ~~point-to-multipoint~~ systems operating on the lunar surface.

Reasons: To provide a Resolution supporting the agenda item.

ATTACHMENT

DRAFT PROPOSAL FOR AGENDA ITEM

Subject: Propose a WRC-27 agenda item to study a regulatory framework for~~possible allocation to SRS (s-s)~~ for lunar surface EVA/Rover comm, within 50 km radius of a lunar ~~base~~ ground station.

Origin: United States of America

Proposal: to consider, in accordance with Resolution **[USA-B2027] (WRC-23),** the development of a regulatory framework for, and the spectrum needs of, systems on the lunar surface in the frequency bands 390-450 MHz, 2 400-2 700 MHz, 3 300-3 800 MHz, 5 150-5 925 MHz, and 24.25-29.5 GHz;~~to add to the Table of Frequency Allocations a new primary allocation of Space Research Service in the space-to-space direction in the frequency ranges, in accordance with **Resolution [USA-B2027] (WRC-23).**~~

Background/reason:

The Artemis Accords lays out a shared vision for principles, grounded in the Outer Space Treaty of 1967, for cooperation in the civil exploration and use of the Moon, Mars, Comets and Asteroids for peaceful purposes. NASA and numerous space agencies around the world, as partners in the Artemis missions, are preparing for a return of human to the Moon while developing spacecraft, surface vehicles, exploration mission plans toward achieving a sustainable and robust presence on the Moon in the next decade. In addition to the tradition means of space-to-Earth and Earth-to-space communication links, direct communications between landers, rovers, extravehicular activity (EVA) astronauts conducting sortie missions and experiments is crucial to enable effective scientific activities consideration the health of the crew in the lunar environment. Initial survey of available technologies has indicated that a network based on 3GPP standard can be capable of servicing reference mission concept of operation involving many user groups over a widespread surface area with high data throughput requirements. However, considering the potential unique topology of the Moon surface, shielded zone of the Moon considerations, unique science opportunities in radio astronomy and remote sensing in the lunar region/surface, careful consideration and spectrum sharing/compatibility studies are required to determine the suitable spectrum bands to support the envisioned 3GPP standard based lunar surface network.

This future conference agenda item proposes to study the compatibility of a new SRS (space-to-space) allocation for a ~~point to multipoint~~ network between a lunar ground~~base~~ station and EVA/rovers up to 50 km radius. The frequency ranges of interests are: 390-450 MHz, 2 400-2 700 , 3 3~~5~~00-3 800 MHz, 5 150-5925 MHz, and 2~~45~~.25-29.5~~8.35~~ GHz.

Radiocommunication services concerned: radiodetermination-satellite service, radionavigation-satellite service, radio astronomy service, active and passive remote sensing systems, space operation and space research services.

Indication of possible difficulties: none foreseen

Previous/ongoing studies on the issue: none

Studies to be carried out by: WP 7B	***with the participation of:*** WPs 4C, 7C, 7D

ITU-R Study Groups concerned: SG 7

ITU resource implications, including financial implications (refer to CV126): minimal

Common regional proposal: TBD	***Multi-country proposal:*** No ***Number of countries:***

Remarks

VIEW B

IWG-3/090 (03.21.23)
Author: S. Kotler (Lockheed Martin)

WRC-23 AGENDA ITEM 10 (Lunar Communications)

VIEW B

View B supports that the NTIA proposal in document IWG-3/087 be reconciled with the proposal contained in document WAC-67 to recommend that the U.S. propose to WRC-23 for a WRC-27 agenda item related to studying the feasibility and compatibility of current and potentially new spectrum allocations in specific frequency bands using the existing regulatory framework to support radiocommunications between and with stations on the lunar surface, cislunar orbit, and Earth.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 4

Agenda Item 4: *in accordance with Resolution **95 (Rev.WRC-19)**, to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;*

Background: Resolution **160 (WRC-15)** "Facilitating access to broadband applications delivered by high-altitude platform stations" invited the ITU-R to study additional spectrum needs for gateway and fixed terminal links for HAPS to provide broadband connectivity in the fixed service under WRC-19 agenda item 1.14. WRC-19 decided to identify several fixed service bands (taking into account No. **4.23**) for HAPS operation along with associated Resolutions providing protections for the incumbent services. The work under Resolution **160 (WRC-15)** was completed at WRC-19, and the Resolution was inadvertently not suppressed by WRC-19. The proposal below corrects that oversight by abrogating Resolution **160 (WRC-15)**.

Proposal:

SUP USA/4/1

RESOLUTION 160 (WRC-15)

Facilitating access to broadband applications delivered by high-altitude platform stations

Reasons: The work proposed under Resolution **160 (WRC-15)** is complete. ITU-R activities under WRC-19 agenda item 1.14 completed the studies and associated regulatory actions.

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Comments of IWG-4 on NTIA/RCS Proposals to SUP Resolutions 75 (Rev.WRC-12) and 161 (WRC-15) under Agenda Item 4

At its 19th meeting on March 21, 2023, IWG-4 considered the NTIA/RCS proposals to suppress Resolutions **75 (Rev.WRC-12)** and **161 (WRC-15)** under WRC-23 Agenda Item 4 (Doc. WAC/109 and IWG-4/059, pp. 3 and 5). IWG-4 reports that it was not in a position to formulate a view or views on these proposals for the WAC.

WRC-23 Agenda Item 7

Topic A - *Tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS*

IWG-4 members were not able to reach consensus on a draft U.S. proposal for WRC-23 Agenda Item 7, Topic A (tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS). This document provides two views on the appropriate regulatory changes the FCC should support.

View A, which begins on page 3 of this document, is supported by: Amazon, SES, Mangata Networks, Boeing, AST Science

View B, which begins on page 18 of this document, is supported by: OneWeb and SpaceX

VIEW A

View A:

Agenda Item 7, Topic A (Tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS)

Reference: IWG-4/049r3 (21.03.2023)

Supported by Amazon, SES, Mangata Networks, Boeing, AST Science

This proposal seeks to address the orbital tolerance issue without imposing hard limits on variations in altitude or inclination that non-GSO satellites deployed may have and still be considered to be operating on a notified orbital plane in their associated frequency assignments. After three years of study in the ITU-R, there has been no agreement or even common understanding on what values for potential limits on altitude and inclination variances are appropriate, so there is no confidence that any limit adopted would allow appropriate operational flexibility; protect recorded systems and satellites from excess interference; and not impose additional protection obligations on other non-GSO systems.
Instead, the proposal in View A, which aligns with Method A4 in the CPM Report for WRC-23, has the following features:

- To be considered brought into use, brought back into use, continuing in use, or deployed for purposes of the milestone procedure in Resolution 35 (WRC-19), a non-GSO satellite must not cause a change in the interference/protection environment as compared with a satellite operating at the notified altitude and/or inclination levels.
- Small changes (i.e., below trigger levels in the new resolution) require only a commitment of no interference environment change; changes above trigger levels require a modification of the notification information and a BR determination of impact on the interference environment. Satellites that negatively impact the interference environment or require more protection/accommodation are not considered BIU, BBIU, continuing in use, or deployed for milestone purposes under Res. 35. No. 13.6 remains an option for the BR to address egregious cases (e.g., going from LEO to MEO).
- Only satellites in Res. 35 bnads and services are subject to the new resolution, with the exeption that satellites in highly-elliptical orbits (as described in considering b) of the new resolution, are not subject to the procedure because of the impact that maintaining tight tolerances has on satellite lifetimes.

The attached proposal strikes the proper balance between assuring reasonable alignment between deployed satellites' altitude/inclination and the MIFR, while also allowing operators reasonable flexibility to adjust their satellites' orbits to respond to operational and environmental matters without negatively iompacting the interference environment.
The organizations and companies listed above urge FCC to adopt the attached draft proposal for WRC-23 Agenda Item 7, Topic A.

IWG-4/049R3 (2023.21.03)
Author: A. Epshteyn (Amazon)
H. Barvar (Amazon)

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary satellite orbit;*
Resolution **86 (Rev.WRC-07)** – *Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference*

Topic A - *Tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS*

BACKGROUND INFORMATION:

WRC-19 invited the ITU-R to study "as a matter of urgency, tolerances for certain orbital characteristics of non-GSO space stations of the fixed-satellite, mobile-satellite or broadcasting satellite services to account for potential differences between the notified and deployed orbital characteristics for the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane."[34]
The objective of this proposal would be to determine the allowable differences between the values recorded in the Master International Frequency Register (MIFR) for the specified orbital characteristics of non-GSO space stations operating on notified frequency assignments and those representative of the actual deployment of these non-GSO space stations. The concept of tolerances arises from the obligations stipulated in the Radio Regulations (RR):

– to deploy at least one satellite on a notified orbital plane for a successful completion of the bringing into use (BIU) or bringing back into use (BBIU) of frequency assignments to a fixed-satellite service (FSS), broadcasting-satellite service (BSS) or mobile-satellite service (MSS) non-GSO satellite network or system irrespective of the frequency bands (see RR No. **11.44C** and RR No. **11.49**.2);

– to deploy satellites on a notified orbital plane to satisfy the milestones stipulated in Resolution **35 (WRC-19)** for some services in some bands, and

[34] See WRC-19 Document CMR19/571 (10th Plenary Minutes), Section 10.5, paragraph 2.

– to operate frequency assignments in accordance with the notified required characteristics as specified in RR Appendix **4**.

It should be noted that WRC-19 also adopted RR No. **11.44C** and associated sub-footnotes, which indicate that the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to RR Appendix **4** (i.e., inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane). The same four orbital characteristics are also reflected in RR Nos. **11.49.2** through **11.49.5**, and a noting of Resolution **35 (WRC-19)** relating to the milestones for the deployment of non-GSO satellite in some frequency bands and for some services.

Proposals:

MOD **USA/7A/1**

11.44C A frequency assignment to a space station in a non-geostationary-satellite orbit network or system in the fixed-satellite service, the mobile-satellite service or the broadcasting-satellite service shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been deployed and maintained on one of the notified orbital plane(s)MOD[27] of the non-geostationary satellite network or system for a continuous period of 90 days, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau within 30 days from the end of the 90-day period[25, 28, 29]. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently. (WRC-~~19~~23)

MOD

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[27] **MOD11.44C.1** and **MOD11.44D.1** For the purposes of No. **11.44C** or No. **11.44D**, the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.~~5.e~~4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For frequency assignments to some non-geostationary-satellite systems in specific frequency bands and services, Resolution **[B7(A)] (WRC-23)** shall apply. (WRC-~~19~~23)

Reasons: To incorporate a mandatory reference to a new WRC Resolution addressing allowable deviations on elements of a notified orbital plane, and to correct an erroneous reference to Appendix **4**.

MOD **USA/7A/2**

11.44D A frequency assignment to a space station in a non-geostationary satellite orbit network or system with "Earth" as the reference body, other than a frequency assignment to which No. **11.44C** applies, shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been

deployed on one of the notified orbital plane(s)MOD [27] of the non-geostationary satellite network or system, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau as soon as possible, but not later than 30 days after the end of the period referred to in No. **11.44**.[25, 29] On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently. (WRC-~~19~~23)

Reasons: Consequential to the modification of Nos. **11.44C** and **11.44C.1** under Proposal USA/7A/1 above.

MOD USA/7A/3

11.49 Wherever the use of a recorded frequency assignment to a space station of a satellite network or to all space stations of a non-geostationary-satellite system is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall, subject to the provisions of Nos. **11.49.1**, **11.49.2**, **11.49.3** or **11.49.4**, as applicable, so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available as soon as possible on the ITU website and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use[32, 33, 34, 35, MOD36] shall be not later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. Ninety days before the end of the period of suspension, the Bureau shall send a reminder to the notifying administration. If the Bureau does not receive the declaration of the commencement of the bringing back into use period within thirty days following the limit date of the period of suspension established in accordance with this provision, it shall cancel the entry in the Master Register. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-~~19~~23)

MOD USA/7A/4

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[36] **MOD11.49.5** For the purposes of Nos. **11.49.2** and **11.49.3**, the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.~~5.c~~4.1 (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For frequency assignments to some non-geostationary-satellite systems in specific frequency bands and services, Resolution **[B7(A)] (WRC-23)** shall apply. (WRC-~~19~~23)

Reasons: To incorporate a mandatory reference to a new WRC Resolution addressing allowable deviations on elements of a notified orbital plane, and to correct an erroneous reference to Appendix **4**.

ADD USA/7A/5

DRAFT NEW RESOLUTION [B7(A)] (WRC-23)

An approach to orbital tolerances for the implementation and use of frequency assignments to space stations in a non-geostationary-satellite system in specific bands and services

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that filings for frequency assignments to circular-orbit non-geostationary-satellite (non-GSO) systems composed of hundreds to thousands of non-GSO satellites have been received by ITU since 2011, in particular in frequency bands allocated to the fixed-satellite service (FSS) or the mobile-satellite service (MSS);

b) that non-GSO systems using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° are typically composed of only a few satellites and the number of such systems notified represents only a small fraction of the number of notified non-GSO systems;

c) that under Nos. **11.44C.1**, **11.44D.1**, **11.49.2** and **11.49.3**, the term "notified orbital plane" means an orbital plane of the non-GSO system, as provided to the Radiocommunication Bureau (Bureau) in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**;

d) that design considerations, availability of launch vehicles to support multiple satellite launches, the need to ensure safe flight operations between satellites in the same and other systems, and other factors can lead to notifying administrations needing to operate some space stations in orbital planes with some nominal variance from the notified orbital planes for the non-GSO systems referred to in *considering a)*;

e) that significant discrepancies between the operational orbital plane(s) of a non-GSO system and the notified orbital plane(s) for those systems as recorded in the Master International Frequency Register (Master Register) could negatively impact the efficient use of the orbit/spectrum resource in any frequency band used by non-GSO systems, including non-GSO systems not subject to this Resolution;

f) that minor discrepancies between the operational orbital plane(s) of a non-GSO system and the notified orbital plane(s) for those systems as recorded in the Master Register may not negatively impact the efficient use of the orbit/spectrum resource in any frequency band used by non-GSO systems, including non-GSO systems not subject to this Resolution;

g) that the determination whether an orbital plane of a non-GSO system has characteristics that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4** as provided to the Bureau in the most recent notification information for the system's frequency assignments is not always straightforward, and can depend on factors that are specific to the non-GSO system in question;

h) that it is important, for consideration of instances where a non-GSO system operates with orbital planes that are at variance with the system's notified orbital planes, that there is a mechanism developed for determining that such at-variance operation does not now and will not in the future result in the space stations of the non-GSO system causing more interference or claiming a higher need for protection than would have been the case if the operational orbital planes matched perfectly with the notified orbital planes for the system;

i) that for purposes of maximizing the efficient use of the orbit/spectrum resource for all non-GSO systems, whether or not they are in the same frequency band or service, it is important for there to be a listing maintained by the Bureau, and periodically updated by filing administrations, of all satellites in a subject non-GSO system that are operating in orbital planes that are at variance with Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4** of any of the system's notified orbital planes, as provided to the Bureau in the most recent notification information for the system's frequency assignments;

j) that notwithstanding *considerings g)*, *h)*, and *i)* above, there will be instances where the Bureau can determine without a methodology that an orbital plane of a non-geostationary-satellite system has characteristics that do not correspond to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4** as provided to the Bureau in the most recent notification information for the system's frequency assignments;

k) that, in addressing the subject of orbital tolerances, there is a need to seek a balance between the prevention of spectrum/orbit warehousing, providing accurate information regarding the operational orbital planes used by non-GSO systems to assist the proper functioning of coordination mechanisms, and the operational requirements related to the safe deployment and operation of a non-GSO system;

l) that satellites using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° have significant orbital precession rates and consequently, restrictive orbital keeping requirements, and correction of orbit parameters may lead to a reduction of such satellites' lifetime and to frequent replacement;

m) that adherence to a transparent approach to the question of orbital tolerances is desirable, as this reduces uncertainty with respect to the deployment of non-GSO systems,

recognizing

a) that the bringing into use of frequency assignments to non-GSO systems is addressed in Article **11**;

b) that any regulatory mechanism for management of frequency assignments to non-GSO systems in the Master Register should not impose an unnecessary burden;

c) that the core characteristics of notified orbital planes in a non-GSO system are among the notified required characteristics as specified in Appendix **4** (specifically provision A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i);

d) that Resolution **35 (WRC-19)** addresses variances between the actual number of satellites in notified orbital planes and the notified number of satellites for each orbital plane, whereas this Resolution is addressing the subject of variances of deployed versus notified orbital characteristics ;

e) that No. **13.6** is applicable to non-GSO systems with frequency assignments in the frequency bands and services to which this Resolution applies;

f) that No. **11.49** addresses the suspension of recorded frequency assignments to a space station of a satellite network or to space stations of a non-GSO system,

recognizing further

that this Resolution relates to those aspects of non-GSO systems to which *resolves* 1 applies with regard to the notified required characteristics as specified in Appendix **4**, and the conformity of the notified required characteristics of the non-GSO systems, other than those referred to in *recognizing c)* above and Nos. **11.44C.1**, **11.44D.1**, **11.49.2** and **11.49.3** is outside the scope of this Resolution,

noting

that for the purpose of this Resolution:

– the term "frequency assignments" is understood to refer to frequency assignments to a space station of a non-GSO system;

– the term "notified orbital plane" means an orbital plane of the non-GSO system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that possesses the general characteristics of items:

  • A.4.b.4.a, the angle of inclination of the orbital plane of the space station;

  • A.4.b.4.d, the altitude of the apogee of the space station;

  • A.4.b.4.e, the altitude of the perigee of the space station; and

  • A.4.b.4.i, the argument of the perigee of the orbit of the space station (only for orbits whose altitudes of the apogee and perigee are different)

  in Table A of Annex 2 to Appendix **4**;

resolves

1 that this Resolution applies to frequency assignments to non-GSO systems, other than non-GSO systems using the orbits described in *considering* b) above, in the frequency bands and for the services listed in the Table below:

TABLE

Frequency bands and services for application of the orbital tolerance approach

Frequency bands (GHz)	Space radiocommunication services		
	Region 1	Region 2	Region 3

Frequency bands (GHz)	Space radiocommunication services		
	Region 1	Region 2	Region 3
10.70-11.70	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	
11.70-12.50	FIXED-SATELLITE (space-to-Earth)		
12.50-12.70	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	BROADCASTING-SATELLITE FIXED-SATELLITE (space-to-Earth)
12.70-12.75	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	BROADCASTING-SATELLITE FIXED-SATELLITE (space-to-Earth)
12.75-13.25	FIXED-SATELLITE (Earth-to-space)		
13.75-14.50	FIXED-SATELLITE (Earth-to-space)		
17.30-17.70	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	None	FIXED-SATELLITE (Earth-to-space)
17.70-17.80	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)
17.80-18.10	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)		
18.10-19.30	FIXED-SATELLITE (space-to-Earth)		
19.30-19.60	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)		
19.60-19.70	FIXED-SATELLITE (space-to-Earth) (Earth-to-space)		
19.70-20.10	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
20.10-20.20	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)		
27.00-27.50		FIXED-SATELLITE (Earth-to-space)	
27.50-29.50	FIXED-SATELLITE (Earth-to-space)		
29.50-29.90	FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)
29.90-30.00	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)		
37.50-38.00	FIXED-SATELLITE (space-to-Earth)		
38.00-39.50	FIXED-SATELLITE (space-to-Earth)		

Frequency bands (GHz)	Space radiocommunication services		
	Region 1	Region 2	Region 3
39.50-40.50	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)		
40.50-42.50	FIXED-SATELLITE (space-to-Earth) BROADCASTING-SATELLITE		
47.20-50.20	FIXED-SATELLITE (Earth-to-space)		
50.40-51.40	FIXED-SATELLITE (Earth-to-space)		

2 that, for frequency assignments to which *resolves* 1 applies, and for which information concerning the bringing into use or bringing back into use of the frequency assignments is provided to the Bureau on or after 1 January 2025, the notifying administration shall communicate to the Bureau the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution no later than 30 days after the end of the regulatory period specified in No. **11.44** or No. **11.49**, as applicable, or 30 days after the end of the bringing/bringing back into use period in No. **11.44C** or No. **11.49.2**, as applicable, whichever comes later;

3 that, for frequency assignments to which *resolves* 1 applies, and that were brought into use or brought back into use prior to 1 January 2025, the notifying administration shall communicate to the Bureau the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution no later than 1 April 2025;

4 that, for frequency assignments to which *resolves* 1 applies, and that retain the remark to the Master Register entry that was added under *resolves* 5b) of Resolution **35 (WRC-19)**, the notifying administration shall communicate to the BR the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution at the same time the notifying administration communicates to the BR the required information under *resolves* 7 or 8, as applicable, from Resolution **35 (WRC-19)**;

5 that, for frequency assignments to which *resolves* 1 applies, the notifying administration shall communicate to the Bureau the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution three years after the date of submission in accordance with *resolves* 2 or 3 above, or if applicable, three years after the date of submission of the information required under *resolves* 7c) or 8c) from Resolution **35 (WRC-19)** as required under *resolves* 4 of this Resolution, and continue doing so on the anniversary date of submission every three years thereafter;

6 that, upon receipt of the required deployment information submitted in accordance with *resolves* 2, 3 or 4 above, the Bureau shall promptly make this information available "as received" on the ITU website;

7 that, if the information provided in any Annex 1 submission under *resolves* 2, 3, 4 or5 above shows a change in the altitude of the apogee or perigee of the space station of more than 3%, or a change of more than 1 degree in the angle of inclination of the orbital plane of the space station from the notified orbital plane(s) provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments, the notifying administration shall also submit to the BR, no later than 90 days after the deadline for the Annex 1 submission under *resolves* 2, 3, or 4 above, modifications to the

characteristics of the notified or recorded frequency assignments reflecting the revised parameters;

8 that, upon receipt of the modifications to the characteristics of the notified or recorded frequency assignments as referred to in *resolves* 6:

a) the BR shall promptly make this information available "as received" on the ITU website;

b) the BR, for the purpose of No. **11.43B**, shall retain the original dates of entry of the frequency assignments in the Master Register if:

i) BR reaches a favorable finding under No. **11.31**; and

ii) the modifications are limited to changes in the altitude of the apogee of the space station (Appendix **4** data item A.4.b.4.d), the altitude of the perigee of the space station (Appendix **4** data item A.4.b.4.e), and the angle of inclination of the orbital plane of the space station (Appendix **4** data item A.4.b.4.a), along with changes associated with not causing more interference or requiring more protection than the characteristics provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available); and

iii) the notifying administration provides a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments (see Appendix **4** data item A.25.a);

c) the BR shall publish the information provided and its findings in the BR IFIC;

9 that BR shall, no later than 45 days before any deadline for submission by a notifying administration under *resolves* 2, 3, 4, 5 or 6, send a reminder to the notifying administration to provide the information required;

10 that, if a notifying administration fails to communicate the information required under *resolves* 2, 3, 4, 5 or 6, as appropriate, the BR shall promptly send to the notifying administration a reminder asking the administration to provide the required information within 30 days from the date of this reminder from the BR;

11 that, if a notifying administration fails to provide information after the reminder sent under *resolves* 9, the BR shall send to the notifying administration a second reminder asking it to provide the required information within 15 days from the date of the second reminder;

12 that, if a notifying administration fails to provide the required information under *resolves* 2, 3, 4, 5 or 6, as appropriate, following the reminders under *resolves10* and 11, the Bureau shall:

a) inform the RRB, at the RRB's next scheduled meeting, that the Bureau intends to discontinue taking the entry in the Master Register into account when conducting its examinations;

b) in the absence of a determination by the RRB to reject or postpone the course of action outlined in *resolves* 12*a)* at the first RRB meeting after the Bureau provides

the information in *resolves* 12*a)*, no longer consider the frequency assignments under subsequent examinations under Nos. 9.36, 11.32 or 11.32A, and inform administrations having frequency assignments subject to Sub-Section IA of Article 9 that those assignments shall not cause harmful interference to, nor claim protection from, other frequency assignments recorded in the Master Register with a favourable finding under No. 11.31;

13 that the suspension of the use of frequency assignments in accordance with No. 11.49 at any point prior to a reporting deadline as specified in *resolves* 2, 3, 4 or 5 of this Resolution, as applicable, shall not alter or reduce the requirements associated with any reporting obligations as stated in this Resolution;

14 that, if information provided by a notifying administration under *resolves* 4 of this Resolution results in any satellites not retaining their original dates of entry in the Master Register after application of *resolves* 8 of this Resolution, such satellites shall not be included in the total number of satellites deployed as part of the system during any relevant milestone period;

15 that nothing in this Resolution, including *resolves* 6 above, shall be considered to limit or constrain the Bureau from implementing or following the procedure set forth in No. 13.6 of the Radio Regulations upon receipt of any Annex 1 submission under *resolves* 2, 3 or 4 above, or at any other time, with respect to the bringing into use, bringing back into use, or continuation in use of frequency assignments to non-GSO space stations in accordance with the notified required characteristics of a notified orbital plane as specified in Appendix **4**,

instructs the Radiocommunication Bureau

1 to take the necessary actions to implement this Resolution;

2 to report any difficulties it encounters in the implementation of this Resolution to WRC-27,

invites ITU-R

to continue studies with a view to identifying a methodology or methodologies for determining whether specific changes to a notified orbital plane will cause more interference or require more protection than the characteristics provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments.

ANNEX 1 TO DRAFT NEW RESOLUTION [B7(A)] (WRC-23)

Information to be submitted about the deployed space stations

A Satellite system information

1) Name of the satellite system

2) Name of the notifying administration

3) Country symbol

4) Reference to the advance publication information or the request for coordination, or the notification information, if available

5) Total number of space stations deployed into each notified orbital plane of the satellite system with the capability of transmitting or receiving the frequency assignments

6) Orbital plane number indicated in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments into which each space station is deployed.

B Space station characteristics for each space station deployed

1) Name of the space station

2) Orbital plane number with which the space station is associated

3) Altitude of the apogee of the space station and angle of inclination of the orbital plane of the space station If there is no variance from the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) in either altitude of the apogee or angle of inclination of the orbital plane in all space stations covered by the submission, the notifying administration may indicate "No Variance" in its response here, and skip the remaining steps below.

4) For each space station operating in an orbital plane with an altitude of the apogee/perigee or angle of inclination at variance from the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available), by an amount less than or equal to a threshold in *resolves 7* of this Resolution, a detailed explanation of why there is a change in the orbital characteristics of the space station

5) For each space station operating in an orbital plane with an altitude of the apogee/perigee or angle of inclination at variance from the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) by an amount greater than a threshold level in *resolves* 7 of this Resolution, a detailed explanation of why there is a change in the orbital characteristics of the space station and a technical showing to support a determination that the variance does not result in any increased interference or protection requirements as compared to those requirements for operation without the variance.

C Commitment of non-interference/non-protection

By providing a submission under Annex 1 to this Resolution, the notifying administration commits that the operation of its notified frequency assignments using the orbital characteristics of the submission that are at variance with the notified orbital plane(s) will not cause more interference or require more protection than the characteristics provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments to the non-geostationary-satellite system.

Reasons: To provide a mechanism to ensure that deviations in key orbital parameters from what is notified and/or recorded in the MIFR are transparent, reasonably up to date, and cause no change in the interference environment in which the non-GSO system operates.

MOD USA/7A/6

APPENDIX 4 (REV.WRC-19)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-12)

Footnotes to Tables A, B, C and

MOD

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section III	Notification or coordination of a geostationary-satellite network (including	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Annexes 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
***												
A.23	COMPLIANCE WITH RESOLUTION 35 (WRC-19)										A.23	
A.23.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					O					A.23.a	
***												
A.25	COMPLIANCE WITH RESOLUTION [B7(A)] (WRC-23)										A.25	
A.25.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					O					A.25.a	

Reasons: Consequential

VIEW B

View B: Agenda Item 7, Topic A (Tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS)

SpaceX and OneWeb support a proposal under Topic A for Agenda item 7 based on Method A2 of the CPM text. Under this proposal, a fixed altitude tolerance of 100 km and inclination tolerance of 3 degrees would be applied to all NGSO systems. The tolerance would provide an envelope within which the United States could continue to license and manage its NGSO systems.

The FCC has licensed SpaceX to operate satellites with an orbital tolerance of 50 km below their filed altitude and up to 70 km above their filed altitude, with the current partial grant allowing 55 km above their filed altitude for specific orbital shells. Kepler was allowed 100 km tolerance, i.e. between 500 and 600 km. A 100 km tolerance, while meeting the needs of currently operational US-licensed systems, will give the FCC further flexibility to license multiple systems within similar altitudes without requiring one of the NGSO systems to operate outside of its ITU filing, with the dire consequences associated with that. The spirit of this work on orbital tolerances is not to overregulate and to guarantee the needed flexibility.

There are multiple reasons that an operator may require flexibility in altitude tolerance, such as to maintain a separation between its own orbital planes to minimize the potential for collisions amongst its own fleet, as well as to manage the effect of atmospheric drag and solar activity on space stations.

A single percentage, as compared to the fixed tolerance proposed herein, has the disadvantage of affording a restrictive tolerance for LEOs, and a very relaxed tolerance for MEOs and other systems in higher orbits. This biased approach is not justified on technical grounds.

There can be multiple ITU filings at a single GSO orbital location. One satellite operator having an ITU filing, notified and brought into use at 101 W with any station keeping tolerance, does not prevent any other operator or administration from filing precisely at 101 W. The same situation applies for NGSO systems – one system being filed in a orbital range does not prevent others. On the contrary, a very restrictive tolerance, e.g. 20-30 km, may actually result in single system blocking that volume of space, which is exactly the opposite of what this work on tolerances should achieve.

For GSO systems, flexibility is required in ITU filing tolerance to allow multiple systems to be accommodated at a single GSO orbital location. At 101 W, for example, the FCC has authorized multiple satellites: an SES satellite, a Ligado MSS satellite, and several DIRECTV satellites. It is not possible to enable all of them to operate at 101 W and to still overlap (much less be wholly within as being considered for NGSO systems!) their ITU filed station keeping box (generally +/- 0.1 degrees under Article 22, or 101 W +/- 0.1 degrees). Luckily, the DIRECTV satellites are subject to a more flexible ITU filing tolerance regime and thus can be operated outside of the other's ITU filed station keeping boxes. Because Appendix 30, which the DIRECTV satellites operate under, has a cluster concept for Region 2 which allows the satellites to be centered within +/- 0.2 degrees of 101 W! That ITU flexibility enabled the collocation of all those GSO satellites.

Similar to the GSO case, to accommodate multiple NGSO systems over time, the United States will need flexibility in the allowed ITU filed tolerance. It is difficult to predict today what flexibility the United States may require in the future. A tighter tolerance, or highly restrictive process associated with even the tolerances the FCC allows it operators to deploy today, will prevent new entrants, undermine the US space industry and hamstring the ability of the United States to manage its NGSO systems in the future. 100 km is considered to be a perfect compromise that ensures flexibility while preventing abuse of the rules, e.g. for BIU purposes.

IWG-4/Document 52r1
Date: March 20, 2023
Prepared by: SpaceX / OneWeb

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC-07) to facilitate rational, efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit.*

Topic 7A: Orbital tolerances for non-GSO systems

BACKGROUND: Resolution **86 (Rev.WRC-07)** invites future Conferences to consider any proposals which deal with deficiencies and improvements in the relevant procedures of the Radio Regulations for frequency assignments pertaining to space services which have either been identified by the Radio Regulations Board and included in the Rules of Procedure or by administrations or the BR. Future Conferences should ensure that these procedures and the related Appendices of the Radio Regulations reflect the latest technologies.

Issue A of Agenda item 7 at WRC-19 considered bringing into use (BIU) of frequency assignments to all non-GSO systems, as well as a milestone-based approach for the deployment of non-GSO systems in specific frequency bands and services. When deciding upon this issue, adopting a new milestone-based approach for the deployment of non-GSO satellite systems in Resolution 35 (WRC-19), WRC-19 invited ITU-R to study, "as a matter of urgency, tolerances for certain orbital characteristics of non-GSO space stations of the fixed-satellite, mobile-satellite or broadcasting-satellite services to account for potential differences between the notified and deployed orbital characteristics for the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space-station and the argument of the perigee of the orbital plane."

This Topic A for WRC-23 looks to advance the work on defining appropriate ITU-level orbital tolerances for non-GSO systems. The responsibility to determine orbital tolerances should ultimately lie with National Administrations, while the ITU Radiocommunication Bureau needs orbital tolerance data to verify compliance with BIU / BBIU and Resolution 35.

The following proposal, based on Method A2 of the draft CPM report, recognizes the complexity behind the determination of orbital tolerances for non-GSO systems, which involves taking into account numerous factors, including atmospheric drag, solar activity, the need to ensure safe flight of non-GSO satellites to minimize the potential for orbital debris and the need to accommodate multiple systems. It is difficult to design an equation that could determine appropriate orbital tolerances for every non-GSO system. The role of the ITU is to define an upper bound for what constitutes operating within an ITU filing. Administrations then have the flexibility within this ITU upper bound to apply requirements as needed to accommodate multiple systems and to determine and verify orbital tolerance of individual non-GSO systems. As the non-GSO FSS industry is in nascent stages, administrations need flexibility to be able to operate their systems within their ITU filings, and to reach agreements, outside of the Radio Regulations which only deal with radio frequency interference, with other administrations regarding the physical co-existence of multiple non-GSO systems. Overly restrictive ITU

tolerances will prohibit administrations from accommodating multiple systems within similar orbital altitude ranges. As more experience is gained with non-GSO system operation, the ITU upper-bound tolerances may be adjusted in the future.

Proposal:

ARTICLE 11

Notification and recording of frequency assignments[1, 2, 3, 4, 5, 6, 7] (WRC-19)

Section II − Examination of notices and recording of frequency assignments in the Master Register

USA/7A/1

MOD

11.44C A frequency assignment to a space station in a non-geostationary-satellite orbit network or system in the fixed-satellite service, the mobile-satellite service or the broadcasting-satellite service shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been deployed and maintained on one of the notified orbital plane(s)[MOD 27] of the non-geostationary satellite network or system for a continuous period of 90 days, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau within 30 days from the end of the 90-day period[25, 28, 29]. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently. (WRC-~~19~~23)

Reasons: To add reference to a modified footnote.

USA/7A/2

MOD

[27] **11.44C.1** and **11.44D.1** For the purposes of No. **11.44C** or No. **11.44D**, the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.5.c (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For the purposes of No. **11.44C**, Resolution **[A7(A)-NGSO-FSS-BSS-MSS-Tolerance] (WRC-23)** also applies for space stations of a non-GSO FSS, BSS or MSS system. (WRC-~~19~~23)

Reasons: To add reference to a new Resolution to address orbital tolerances for certain non-GSO systems for the purposes of bringing into use.

USA/7A/3

MOD

11.49 Wherever the use of a recorded frequency assignment to a space station of a satellite network or to all space stations of a non-geostationary-satellite system is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall, subject to the provisions of Nos. **11.49.1**, **11.49.2**, **11.49.3** or **11.49.4**, as applicable, so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available as soon as possible on the ITU website and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use[32, 33, 34, 35, MOD 36] shall be not later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. Ninety days before the end of the period of suspension, the Bureau shall send a reminder to the notifying administration. If the Bureau does not receive the declaration of the commencement of the bringing back into use period within thirty days following the limit date of the period of suspension established in accordance with this provision, it shall cancel the entry in the Master Register. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-19)

Reasons: To add reference to a modified footnote.

USA/7A/4

MOD

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[36] **11.49.5** For the purposes of Nos. **11.49.2** and **11.49.3**, the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.5.c (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For the purposes of No. **11.49.2**, Resolution **[A7(A)-NGSO-FSS-BSS-MSS-Tolerance] (WRC-23)** also applies for space stations of a non-GSO FSS, BSS or MSS system. (WRC-~~19~~23)

Reasons: To add reference to a new Resolution to address orbital tolerances for certain non-GSO systems for bringing back into use.

Section III – Maintenance of the recording of frequency assignments to non-geostationary-satellite systems in the Master Register (WRC-19)

USA/7A/5

MOD

11.51 For frequency assignments to some non-geostationary-satellite systems in specific frequency bands and services, Resolution **35 (WRC-19)** and Resolution **[A7(A)-NGSO-FSS-BSS-MSS-Tolerance] (WRC-23)** for space stations of a non-GSO FSS, BSS or MSS system shall apply. (WRC-~~19~~23)

Reasons: To add reference to a new Resolution to address orbital tolerances for certain non-GSO systems in the context of milestones.

USA/7A/6

ADD

DRAFT NEW RESOLUTION [A7(A)-NGSO-FSS-BSS-MSS-TOLERANCE-OPTION A] (WRC-23)

Tolerances for certain orbital characteristics of space stations deployed as part of non-GSO FSS, BSS or MSS systems

The World Radiocommunication Conference (Dubai, 2023),

considering

that WRC-19 invited ITU-R to study, as a matter of urgency, tolerances for certain orbital characteristics of the non-geostationary-satellite orbit (non-GSO) space stations of the fixed-satellite service (FSS), the broadcasting-satellite service (BSS) and the mobile-satellite service (MSS) to account for the potential differences between the notified and deployed orbital characteristics for the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane,

noting

that, for the purposes of this Resolution, tolerances refer to the maximum variations allowed between the value notified and/or recorded for the orbital characteristics referred to in the

considering above and those associated with the actual deployment of satellites of the non-GSO FSS, BSS or MSS under consideration,

recognizing

a) that the use of frequency assignments to non-GSO FSS, BSS and MSS are subject to the regulatory and operational limits stipulated in the Radio Regulations;

b) that Nos. **11.44C**, **11.49.2** and **11.51** require the deployment of satellites on notified orbital planes;

c) that there are legitimate reasons for a satellite operating at a tolerance from its associated ITU filing, such as maintaining separation between satellites in the same system to minimize the risk of collisions, or with satellites in another satellite system;

d) that determination of orbital tolerances for a non-GSO system is a complex exercise which should take into account several factors;

e) that the orbital tolerance in this Resolution defines the maximum orbital tolerance acceptable for a non-GSO system to be considered as operating within its notified orbital characteristics and does not preclude coordination requests or notification filings under Articles 9 and 11 of the Radio Regulations for other non-GSO systems at the same altitude and tolerance;

f) that administrations and their operators may stablish separate operational arrangements regarding coexistence of the physical orbits of satellite systems and networks, including satellites in geostationary satellite orbits and non-GSO, and that such arrangements are not addressed by the ITU Radio Regulations which deal with avoidance of harmful interference due to radio frequency usage,

resolves

1 that for space stations deployed as part of a non-GSO FSS, BSS or MSS system with an eccentricity[1] less than 0.5 with frequency assignments in the frequency bands and services listed in the Table in Resolution 35 (WRC-19), *resolves* 1;

a) the maximum variation $\Delta alt_{Observed}$ allowed for the altitude, shall not exceed $\Delta alt_{Allowed}$ (see the Annex);

b) the maximum variation Δi allowed for the inclination shall not exceed 3 degrees (see the Annex)

2 that, for systems brought into use after 16 December 2023, if all the space stations referred to in a submission to the Bureau under Nos. **11.44C** or **11.49.2** for a non-GSO FSS, BSS or MSS satellite system exceed the tolerances referred to in *resolves* 1, this submission shall not be considered as compliant with Nos. **11.44C** or **11.49.2** accordingly;

3 that, after 1 January 2025, if any of the space stations referred to in a submission to the Bureau under No. **11.51** for satellite non-GSO FSS, BSS or MSS systems exceed the tolerances referred to in *resolves* 1 for any period of more than 180 consecutive days, that space station shall not be considered in the count of the satellites deployed provided under No. **11.51**;

4 that, notwithstanding the tolerances referred to in *resolves 1*, any space station deployed as part of a non-GSO FSS, BSS or MSS system at altitude and with an inclination other than the notified altitude or the notified inclination, shall not cause more interference nor require more protection than if the space station was deployed at the notified altitude and the notified inclination,

[1] The eccentricity is = (a - b) / (a + b), where a is the length of the semi-major axis of the elliptical orbit and b is the length of the semi-minor axis of the orbit.

instructs the Radiocommunication Bureau

to take the necessary actions to implement this Resolution.

ANNEX TO DRAFT NEW RESOLUTION [A7(A)-NGSO-FSS-BSS-MSS-TOLERANCE-OPTION A] (WRC-23)

Determination of the variation for the altitude and the inclination

1 The variation $\Delta alt/alt_n$ observed for the altitude of a non-GSO satellite is equal to:

$$\Delta alt_{Observed} = |alt_d - alt_n| \text{ in kilometres}$$

where:

alt_d: is the observed altitude in kilometres of the deployed satellite at the perigee

alt_n: is the altitude of the perigee in kilometres of the associated notified non-GSO system.

2 The allowed variation $\Delta alt_{Allowed}$ for the altitude of a non-GSO satellite is equal to:

$$\Delta alt_{Allowed} = 100 \text{ kilometres}$$

3 The variation Δi observed for the inclination of a non-GSO satellite is equal to:

$$\Delta i = i_d - i_n \quad \text{in degrees}$$

where:

i_d is the observed inclination in degrees of the deployed satellite

i_n is the inclination in degree of the associated notified non-GSO system.

Reasons: to add a new Resolution identifying to which non-GSO systems orbital tolerances are applied, and to specify those tolerances.

View of IWG-4 on NTIA/RCS Proposal for Agenda Item 7, Topic B

At its 17th meeting on February 16, 2023, IWG-4 endorsed the NTIA/RCS proposal for WRC-23 Agenda Item 7, Topic B (Doc. WAC/107 and IWG-4/045, pp. 20-21) without change.

View of IWG-4 on NTIA/RCS Proposal for Agenda Item 7, Topic C

At its 19th meeting on March 21, 2023, IWG-4 endorsed the NTIA/RCS proposal for WRC-23 Agenda Item 7, Topic C (Doc. WAC/108 and IWG-4/056, pp. 41-43) without change.

United States of America

draft proposals for the work of the Conference

Agenda item 7:*to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution* ***86 (Rev.WRC-07)****, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

7(D2) Topic D2 – New RR Appendix 4 parameters for Recommendation ITU-R S.1503 updates

Background Information: WRC-23 agenda item 7 Topic D2 addresses modification of RR Appendix **4** data items to support implementation of agreed revisions to Recommendation ITU-R S.1503-3.

ITU-R has been working on changes to Recommendation ITU-R S.1503-3 titled "Functional description to be used in developing software tools for determining conformity of non-geostationary-satellite orbit fixed-satellite service systems or networks with limits contained in Article **22** of the Radio Regulations." Some of the agreed changes require additional or modified RR Appendix **4** data items in order to be implemented in practice. Therefore, it was proposed to develop draft CPM text to cover these changes, assuming a revision to Recommendation ITU-R S.1503-3 is adopted by Study Group 4.

Note: ITU-R discussions on revisions to Recommendation ITU-R S.1503-3 will continue at the July 2023 meeting of ITU-R Working Party 4A. There have been no agreements on which elements will be submitted to SG4 as part of updates to Recommendation ITU-R S.1503-3. These discussions could lead to additions or deletion to the Appendix ***4*** *data items included in the proposal below.*

Proposal:

APPENDIX 4 (REV.WRC-19)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-12)

Footnotes to Tables A, B, C and D

[2] The Radiocommunication Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the BR IFIC (Space Services). (WRC-12)

MOD USA/7D2/1

TABLE A

GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION (Rev.WRC-~~19~~23)

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network under Article 9A (space operation functions: under Article 9A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including feeder links) under Appendix 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder links) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 4 and 6)	Items in Appendix	Radio astronomy
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14	**FOR STATIONS OPERATING IN A FREQUENCY BAND SUBJECT TO Nos. 22.5C, 22.5D, 22.5F OR 22.5L: SPECTRUM MASKS**										**A.14**	
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14.b.6	the mask pattern defined in terms of the power in the reference bandwidth as a function of latitude and the off-axis angle between the non-geostationary earth station boresight line and the line from the non-geostationary earth station to a point on the GSO arc<u>or as a function of latitude, the non-geostationary earth station pointing angles (azimuth, elevation) and the difference in longitude between the non-geostationary earth station and a point on the geostationary arc</u>					X					A.14.b.6	
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14.c.4	the type of mask, among one of the following types: (Earth-based exclusion zone angle, difference in longitude, latitude) ~~(satellite based exclusion zone angle, difference in longitude, latitude)~~ or (satellite azimuth, satellite elevation, latitude)					X					A.14.c.4	
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14.d	**For each set of non-geostationary-satellite system operating parameters** to be provided, if A.4.b.6*bis* indicates the use of an extended set of operating parameters *Note* – There could be different sets of parameters at different frequency bands, but only one set of operating parameters for any frequency band used by the non-geostationary-satellite system										A.14.d	
…	…	…	…	…	…	…	…	…	…	…	…	…
<u>A.14.d.x1</u>	<u>the minimum angle in degrees at the surface of the Earth between the lines to any two active non-GSO satellites. Mandatory if the value is non-zero.</u>					<u>±</u>					<u>A.14.d.x1</u>	
<u>A.14.d.x2</u>	<u>the minimum angle in degrees at the non-GSO satellite between the lines to any two active non-GSO Earth stations. Mandatory if the value is non-zero.</u>					<u>±</u>					<u>A.14.d.x2</u>	
<u>A.14.d.x3</u>	<u>the maximum number of non-geostationary earth stations tracked co-frequency by a non-geostationary satellite. If the maximum number of earth stations tracked at the satellite is not provided, the number of earth stations created for the EPFD(up) run will be used.</u>					<u>±</u>					<u>A.14.d.x3</u>	
<u>A.14.d.x4</u>	<u>The non-GSO satellite selection method, specified as highest epfd, track duration or alpha table</u>	…	…	…	…	<u>X</u>	…	…	…	…	<u>A.14.d.x4</u>	…
<u>A.14.d.x5</u>	<u>The likelihood of a non-geostationary satellite having an alpha angle in degrees that is less than or equal to a set of given value defined for a range of latitudes, where the alpha angle is the minimum topocentric angle between the line to a non-GSO satellite and the line to any point on the visible geostationary arc. Mandatory if the non-GSO satellite selection method (A.14.d.x4) is alpha table.</u>					<u>±</u>					<u>A.14.d.x5</u>	

Reasons: To modify and add certain Appendix 4 data items to support implementation of agreed revisions to Recommendation ITU-R S.1503-3.

3177

United States of America

DRAFT Proposals for the work of the conference

Agenda item 7:*to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution* ***86 (Rev.WRC-07)****, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

7(D3) Topic D3 - BR reminders for BIU and BBIU

Background Information: WRC-23 agenda item 7 Topic D3 addresses the establishment of reminders for confirming the bringing into use (or bringing back into use) of a satellite network or system under RR Nos. **11.44B**, **11.44C**, **11.49** (**11.49.1** and **11.49.2**), RR Appendices **30**/**30A** § 5.2.10 (20*bis* and 24*bis*) and RR Appendix **30B** § 8.17 (14*ter*).

To assist administrations in managing their ITU satellite system filings under the Radio Regulations, WRCs, RRB and the Radiocommunication Bureau (BR) have, over time, included in the RR or Rules of Procedures reminders for most of the provisions with strict time-limits for submission of mandatory information. Indeed, an unfortunate oversight in the application of the RR, e.g. missing a deadline for providing information, may jeopardize a satellite system project.

These reminders exist for most key provisions of the RR, under Nos. **9.47** or **9.62** (acknowledgement of receipt of a request for coordination or absence of reply or decisions on a coordination request), or Nos. **11.44** and **11.49** (bringing into use or bringing back into use of frequency assignments) or No. **11.47** (provisionally recorded assignments), but also under No. **13.6**, all footnotes referring to the payments under Decision 482, and under many similar other occurrences in the Appendices **30**/**30A** and **30B**, and numerous resolutions, as e.g. Resolution **35 (WRC-19)**.

One critical time-limit however does not yet include a formal BR reminder. This is the confirmation of bringing into use or bringing back into use of frequency assignments under RR Nos. **11.44B**, **11.44C**, **11.49** (**11.49.1** and **11.49.2**), RR Appendices **30**/**30A** § 5.2.10 (20*bis* and 24*bis*) and RR Appendix **30B** § 8.17 (14*ter*) where the notifying administration shall inform the Bureau within 30 days of the end of the 90-day period after the bringing into use or bringing back into use that a space station in the geostationary-satellite or non-geostationary-orbit having the capability to transmit or receive on that assigned frequency, has been deployed and maintained at the notified orbital position or one of the notified orbital planes, as appropriate, for a continuous period of 90 days.

The BR, as an internal practice, has been sending a message recalling the 90-day obligation under RR Nos. **11.44B** or **11.44C** to administrations informing them of their satellite system bringing into use. For the BR practice to be fully suitable, the message should be sent sufficiently early to the notifying administration to ensure a proper response within the regulatory time-frame, e.g. as soon as the date of receipt of the bringing or bringing back into use information. The dispatch of this message, depending on the resources of the BR, for some cases, has occurred almost at the end of the 120-day period which provides little flexibility to the notifying administration to respond to the BR message on time.

Proposal:

ARTICLE 11

Notification and recording of frequency assignments[1, 2, 3, 4, 5, 6, 7] (WRC-19)

Section II − Examination of notices and recording of frequency assignments in the Master Register

MOD USA/7D3/1

11.44B A frequency assignment to a space station in the geostationary-satellite orbit shall be considered as having been brought into use when a space station in the geostationary-satellite orbit with the capability of transmitting or receiving that frequency assignment has been deployed and maintained at the notified orbital position for a continuous period of 90 days. The notifying administration shall so inform the Bureau within 30 days from the end of the 90-day period[25, 26, ADD 26*bis*]. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC. Resolution **40 (Rev.WRC-19)** shall apply. (WRC-~~19~~23)

Reasons: To add reference to a new footnote.

ADD USA/7D3/2

ADD 26*bis* **11.44B.3 and 11.44C.5** If the notifying administration may have commenced the 90-day bringing into use period within 120 days before the end of the seven-year regulatory period in No. **11.44**, but has not fulfilled the obligation to inform the Bureau under Nos. **11.44B** or **11.44C** as of the end of the seven-year regulatory period in No. **11.44**, the Bureau shall send the notifying administration a reminder of the obligation under Nos. **11.44B** or **11.44C** either at the end of the seven-year regulatory period or 15 days prior to the 30-day deadline in Nos. **11.44B** and **11.44C**, whichever is later. (WRC-23)

Reasons: To add a footnote that requests the Bureau to send reminders to administrations who may have commenced the BIU within 120 days before the end of the seven-year regulatory period with respect to the need to confirm the BIU if they have not yet done so.

MOD USA/7D3/3

11.44C A frequency assignment to a space station in a non-geostationary-satellite orbit network or system in the fixed-satellite service, the mobile-satellite service or the broadcasting-satellite service shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been deployed and maintained on one of the notified orbital plane(s)[27] of the non-geostationary satellite network or system for a continuous period of 90 days, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau within 30 days from the end of the 90-day period[25, ADD 26*bis*, 28, 29]. On receipt of the information sent under this provision, the Bureau shall make

that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently. (WRC-~~19~~23)

Reasons: To add a reference to a new footnote.

MOD USA/7D3/4

11.49 Wherever the use of a recorded frequency assignment to a space station of a satellite network or to all space stations of a non-geostationary-satellite system is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall, subject to the provisions of Nos. **11.49.1**, **11.49.2**, **11.49.3** or **11.49.4**, as applicable, so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available as soon as possible on the ITU website and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use[32, ADD 32*bis*, 33, 34, 35, 36] shall be not later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. Ninety days before the end of the period of suspension, the Bureau shall send a reminder to the notifying administration. If the Bureau does not receive the declaration of the commencement of the bringing back into use period within thirty days following the limit date of the period of suspension established in accordance with this provision, it shall cancel the entry in the Master Register. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-~~19~~23)

Reasons: To add a reference to a new footnote.

ADD USA/7D3/5

ADD 32*bis* **11.49.1*bis* and 11.49.2*bis*** If the notifying administration may have commenced the 90-day bringing back into use period within 120 days before the end of the suspension period in No. **11.49**, but has not fulfilled the obligation under No. **11.49.1** or **11.49.2**, as applicable, to inform the Bureau as of the end of the suspension period, the Bureau shall send the notifying administration a reminder of the obligation under No. **11.49.1** or **11.49.2**, as applicable, either at the end of the suspension period or 15 days prior to the 30-day deadline in No. **11.49.1** or **11.49.2**, whichever is later. (WRC-23)

Reasons: To add a footnote that requests the Bureau to send reminders to administrations who may have commenced the BBIU within 120 days before the end of the suspension period with respect to the need to confirm the BIU if they have not yet done so.

APPENDIX 30 (REV.WRC-19)*

Provisions for all services and associated Plans and List[1] for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2) (WRC-03)

ARTICLE 5 (REV.WRC-19)

Notification, examination and recording in the Master International Frequency Register of frequency assignments to space stations in the broadcasting-satellite service[18] (WRC-07)

A. 5.2 Examination and recording

MOD USA/7D3/6

5.2.10 Wherever the use of a frequency assignment to a space station recorded in the Master Register and emanating from the Regions 1 and 3 List is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use[20*bis*, ADD 20*ter*] shall be no later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. (WRC-~~19~~23)

Reasons: To add a reference to a new footnote.

ADD USA/7D3/7

ADD 20*ter* If the notifying administration may have commenced the 90-day bringing back into use period within 120 days before the end of the suspension period in § 5.2.10, but has not fulfilled the obligation under footnote 20*bis* to inform the Bureau as of the end of the suspension period, the Bureau shall send the notifying administration a reminder of the obligation under footnote 20*bis* either at the end of the suspension period or 15 days prior to the 30-day deadline in footnote 20*bis*, whichever is later. (WRC-23)

Reasons: To add a new footnote and add the footnote that requests the Bureau to send reminders to administrations who may have commenced the BBIU within 120 days before the end of the suspension period with respect to the need to confirm the BIU if they have not yet done so.

APPENDIX 30A (REV.WRC-19)*

Provisions and associated Plans and List[1] for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz[2] and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2 (WRC-03)

ARTICLE 5 (REV.WRC-19)

Coordination, notification, examination and recording in the Master International Frequency Register of frequency assignments to feeder-link transmitting earth stations and receiving space stations in the fixed-satellite service[21, 22] (WRC-19)

B. 5.2 Examination and recording

MOD USA/7D3/8

5.2.10 Wherever the use of a frequency assignment to a space station recorded in the Master Register and emanating from the Regions 1 and 3 List is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use[24*bis*, ADD 24*ter*] shall be no later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the

suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. (WRC-~~15~~23)

Reasons: To add a reference to a new footnote.

ADD USA/7D3/9

ADD 24*ter* If the notifying administration may have commenced the 90-day bringing back into use period within 120 days before the end of the suspension period in § 5.2.10, but has not fulfilled the obligation under footnote 24*bis* to inform the Bureau as of the end of the suspension period, the Bureau shall send the notifying administration a reminder of the obligation under footnote 24*bis* either at the end of the suspension period or 15 days prior to the 30-day deadline in footnote 24*bis*, whichever is later. (WRC-23)

Reasons: To add a footnote that requests the Bureau to send reminders to administrations who may have commenced the BBIU within 120 days before the end of the suspension period with respect to the need to confirm the BIU if they have not yet done so.

APPENDIX 30B (REV.WRC-19)

Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

ARTICLE 8 (WRC-15)

Procedure for notification and recording in the Master Register of assignments in the planned bands for the fixed-satellite service[11, 12] (WRC-19)

MOD USA/7D3/10

8.17 Wherever the use of a recorded frequency assignment to a space station is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it

in the BR IFIC. The date on which the assignment is brought back into use[14*ter*, ADD 14*quater*] shall be no later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled from the Master Register and the Bureau shall apply the provisions of § 6.33. (WRC-~~19~~23)

Reasons: To add a reference to a new footnote.

ADD USA/7D3/11

ADD 14*quater* If the notifying administration may have commenced the 90-day bringing back into use period within 120 days before the end of the suspension period in § 8.17, but has not fulfilled the obligation under footnote 14*ter* to inform the Bureau as of the end of the suspension period, the Bureau shall send the notifying administration a reminder of the obligation under footnote 14*ter* either at the end of the suspension period or 15 days prior to the 30-day deadline in footnote 14*ter*, whichever is later. (WRC-23)

Reasons: To add a footnote that requests the Bureau to send reminders to administrations who may have commenced the BBIU within 120 days before the end of the suspension period with respect to the need to confirm the BIU if they have not yet done so.

WRC-23 Agenda Item 7
Topic J - *MODs to Res. 7**6 (Rev.WRC-15)***

IWG-4 members were not able to reach consensus on a draft U.S. proposal for WRC-23 Agenda Item 7, Topic J (MODs to Res. **76 (Rev.WRC-15))**. This document provides two views on the appropriate regulatory changes the FCC should support.
View A is supported by: Amazon, Mangata, and SpaceX

View B is supported by: Intelsat and EchoStar

VIEW A

View A:

Agenda Item 7, Topic J (MODs to Res. 76 (Rev.WRC-15))

Reference: IWG-4/039 (13.12.2022)

Supported by Amazon, Mangata, and SpaceX
This proposal, which closely aligns with the NTIA/RCS proposal in Doc. IWG-4/045, seeks to modify Resolution **76 (Rev.WRC-15)** to call for ITU-R studies ahead of WRC-27 to establish a consultation procedure for use by operational non-GSO systems to ensure that there are no exceedances of the aggregate epfd limits in the Resolution for the 12/14 GHz and 30/20 GHz bands subject to epfd limits. The adoption of a procedure at WRC-23, as proposed in View B, is premature for three reasons: 1) Resolution **76 (Rev WRC-15)** *invites the ITU Radiocommuncation sector 1*-3 calls upon the ITU-R to develop a methodology containing procedures to accurately model non-GSO systems and establish a methodology on procedures to be used to evaluate the aggregate EPFD limits; 2) as recognized in the CPM text for this agenda item, there is no methodology in the ITU-R, called upon and essential to the procedure, on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the subject frequency bands; and 3) there is a potential FAI that would look at revising the limits to remove some overly-conservative elements dating back to the adoption of the limits at WRC-2000 without altering the protection provided to GSO FSS and BSS networks. The development of the methodology is an essential prerequisite to the success of the procedure and initiation of consultation meetings, and is duly promoted in the draft View A version of the revised Res. **76**. The FAI could, if adopted, lead to a revision of Res. **76**, and could have an impact on how the procedure is established. The picture on both scores will be clear by WRC-27, and that's where the procedure should be established.
The View A proponents note further that while there will be some further deployment of non-GSO FSS systems in the Res. **76** bands between WRC-23 and WRC-27, there will not be full deployment in a way that makes it urgent for WRC-23 to act on the consultation procedure itself. In any event, the obligation to ensure that the aggregate limits are respected is in place today in Res. **76** and associated RR No. **22.5K**, so the urgency is not there for WRC-23 action for this reason as well.
The organizations and companies listed above urge FCC to adopt the attached draft proposal for WRC-23 Agenda Item 7, Topic A.

ATTACHMENT TO VIEW A:

Document IWG-4/039
Date: December 13, 2022
Prepared by: Alex Epshteyn (Amazon)

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7, Topic J

*7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

7(J) Topic J - Modifications to Resolution **76 (Rev.WRC-15)**

Background:

Resolution **76 (Rev.WRC-15)** calls for the development of Recommendations on accurate modelling of interference as well as the procedures to be used amongst administrations to ensure that the aggregate equivalent power flux-density (epfd) limits are not exceeded. While the aggregate epfd limits are specified in Tables 1A to 1D of the Resolution, there is no clear methodology nor procedures outlined in Resolution **76 (Rev.WRC-15)** for the involved administrations to collaboratively determine whether these aggregate levels are exceeded. WRC-23 Agenda Item 7, Topic J calls for consideration of modifications to Resolution **76 (Rev.WRC-15)** to facilitate the development of a consultation process to ensure that operating non-GSO FSS systems do not exceed the aggregate epfd limits in Resolution **76 (Rev.WRC-15)**. Resolution **76 (WRC-15)** also invites the ITU-R to study and develop a suitable methodology for calculating the aggregate epfd produced from all non-GSO systems operating or planning to operate co-frequency in the relevant frequency bands.

It is recognized that whereas all administrations that operate or plan to operate non-GSO FSS should collaborate to ensure the aggregate epfd remains below the levels in Tables 1A to 1D, this is not simply a theoretical exercise whereby single-entry epfd levels from all satellite filings as verified by the Bureau would simply be aggregated, but rather, as recognized by Resolution 76, the aggregate calculations must be based on realistic parameters and, assumptions on accurate modelling of interference. As recognized in the CPM text for this agenda item, "there is no recent and comprehensive ITU-R Recommendation[35] which takes into account accurate modelling of interference from multiple non-GSO systems for the purposes of assessing compliance with aggregate epfd limits, nor is there a methodology or procedures for the administrations involved to collaboratively determine whether these aggregate levels are exceeded." Thus, a necessary prerequisite to the proper functioning of any consultation process is the establishment of an accurate technical foundation as proposed in CPM Method J5.

The concept of a "consultation process/meetings" has been established in other regulatory frameworks – specifically, in Resolutions **769 (WRC-19)** and **609 (Rev.WRC-07)** – to provide a

[35] It is noted that Recommendation ITU-R S.1588, which calculates aggregate epfd levels, appears not to be sufficient for this purpose.

means for administrations to evaluate aggregate interference and assure compliance with aggregate interference limits between multiple systems (non-GSO in the case of Resolution **769 (WRC-19)** and non-GSO and GSO in the case of Resolution **609 (Rev.WRC-07)**). It is noted that the sharing scenarios and challenges for the frequency bands identified in Resolution **76 (Rev.WRC-15)** differ from those included in the frequency bands identified in Resolution **769 (WRC-19)** and Resolution **609 (Rev.WRC-07)**.

The proposals below modify and update Resolution **76 (Rev.WRC-15)** to call specifically for further study and development of a technical basis for a consultation process for non-GSO FSS systems operating in the frequency bands specified in *considering* a) of the Resolution to ensure compliance with the aggregate epfd limits in Tables 1A to 1D of the Resolution. This proposal is based on CPM Method J5.

Proposals:

MOD USA-4/7J/1

RESOLUTION 76 (REV.WRC-~~15~~23)

Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems in frequency bands where equivalent power flux-density limits have been adopted

The World Radiocommunication Conference (~~Geneva~~Dubai, 20~~15~~23),

considering

a) that WRC-97 adopted, in Article **22**, provisional equivalent power flux-density (epfd) limits to be met by non-geostationary fixed-satellite service (non-GSO FSS) systems in order to protect GSO FSS and GSO broadcasting-satellite service (BSS) networks in parts of the frequency range 10.7-30 GHz;

b) that WRC-2000 revised Article **22** to ensure the limits contained therein provide adequate protection to GSO systems without placing undue constraints on any of the systems and services sharing these frequency bands;

c) that WRC-2000 decided that a combination of single-entry validation, single-entry operational and, for certain antenna sizes, single-entry additional operational epfd limits, contained in Article **22**, along with the aggregate limits in Tables 1A to 1D as contained in Annex 1 to this Resolution, which apply to non-GSO FSS systems, protects GSO networks in these frequency bands;

d) that these single-entry validation limits have been derived from aggregate epfd masks contained in Tables 1A to 1D, assuming a maximum effective number of non-GSO FSS systems of 3.5;

e) that the aggregate interference caused by all co-frequency non-GSO FSS systems in these frequency bands into GSO FSS systems should not exceed the aggregate epfd levels in Tables 1A to 1D;

f) that WRC-97 decided, and WRC-2000 confirmed, that non-GSO FSS systems in the frequency bands in question are to mutually coordinate the use of frequencies in these frequency bands under the provisions of No. **9.12**;

g) that the orbital characteristics of such systems are likely to be inhomogeneous;

h) that, as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non-GSO FSS systems will not be directly related to the actual number of systems sharing a frequency band, and the number of such systems operating co-frequency is likely to be small;

i) that the possible misapplication of single-entry limits should be avoided,

recognizing

a) that non-GSO FSS systems are likely to need to implement interference mitigation techniques to mutually share frequencies;

b) that, on account of the use of such interference mitigation techniques, it is likely that the number of non-GSO systems will remain small, as will the aggregate interference caused by non-GSO FSS systems into GSO systems;

c) that, notwithstanding *considering d)* and *e)* and *recognizing b)*, there may be instances where the aggregate interference from non-GSO systems could exceed the interference levels given in Tables 1A to 1D;

d) that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non-GSO FSS systems in the frequency bands referred to in *considering a)* above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables 1A to 1D,

noting

Recommendation ITU-R S.1588 "Methodologies for calculating aggregate downlink equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems into a geostationary fixed-satellite service network",

resolves

1 that administrations operating or planning to operate non-GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in *considering a)* above, individually or in collaboration, shall take all possible steps, including, if necessary, by means of appropriate modifications to their systems, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels given in Tables 1A to 1D to be exceeded (see No. **22.5K**);

2 that, in the event that the aggregate interference levels in Tables 1A to 1D are exceeded, administrations operating non-GSO FSS systems in these frequency bands shall take all necessary measures expeditiously to reduce the aggregate epfd levels to those given in Tables 1A to 1D, or to higher levels where those levels are acceptable to the affected GSO administration (see No. **22.5K**),

invites the ITU Radiocommunication Sector

1 to continue its studies and to develop, as a matter of urgency, ~~as appropriate,~~ a suitable methodology ~~for~~to calculat~~e~~ing the aggregate epfd produced by all non-GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in *considering a)* above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels given in Tables 1A to 1D;

2 to continue its studies and to develop, as a matter of urgency, a Recommendation on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in *considering a)* above, and taking into account the coordination of frequency use among non-GSO systems, in order to assist administrations planning or operating non-GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks, and to provide guidance to GSO network

designers on the maximum epfd↓ levels expected to be produced by all non-GSO FSS systems when accurate modelling assumptions are used;

3 to develop a Recommendation containing procedures to be used among administrations in order to ensure that the aggregate epfd limits given in Tables 1A to 1D are not exceeded by operators of non-GSO FSS systems;

4 to work on the ~~attempt to~~ development of measurement techniques to identify the interference levels from non-GSO systems in excess of the aggregate limits given in Tables 1A to 1D, and to confirm compliance with these limits,

instructs the Director of the Radiocommunication Bureau

1 to assist in the development of the methodology referred to in *invites the ITU Radiocommunication Sector* 1 above;

2 to report to a future competent conference on the results of studies in *invites the ITU Radiocommunication Sector* 1 and 3 above.

ANNEX 1 TO RESOLUTION 76 (REV.WRC-2315)

…

Reason: This method proposes to modify and update Resolution **76 (Rev.WRC-15)** to call specifically for further study on a consultation process for non-GSO FSS systems operating in the frequency bands specified in considering a) of the Resolution to use to ensure compliance with the aggregate epfd limits in Tables 1A to 1D of the Resolution.

MOD USA-4/7J/2

22.5K 8) Administrations operating or planning to operate non-geostationary-satellite systems in the fixed-satellite service in the frequency bands listed in Tables **22-1A** to **22-1D** of No. **22.5C** will apply the provisions of Resolution **76 (Rev.WRC-2315)** to ensure that the actual aggregate interference into geostationary fixed-satellite service and geostationary broadcasting-satellite service networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **1A** to **1D** of Resolution **76 (Rev.WRC-1523)**. In the event that an administration operating a geostationary-satellite network in conformity with the Radio Regulations identifies equivalent power flux-density levels from nongeostationary-satellite systems in the fixed-satellite service which may be in excess of the aggregate limits contained in Tables **1A** to **1D** of Resolution **76 (Rev.WRC-2315)**, the administrations responsible for the non-geostationary-satellite systems in the fixed-satellite service will apply the provisions contained in *resolves* 2 of Resolution **76 (Rev.WRC-2315)**. (WRC-1923)

Reason: Consequential

VIEW B

View B:

Agenda Item 7, Topic J (MODs to Res. 76 (Rev.WRC-15))

Reference: IWG-4/041R1 (20.03.2023)

Supported by Intelsat and EchoStar
Resolution **76,** "*Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems in frequency bands where equivalent power flux-density limits*" was adoptedwas to ensure protection of GSO networks from NGSO networks in 12/14 GHz and 30/20 GHz bands subject to epfd limits and Annex 1 of this Resolution includes aggregate EPFD limits that must be met by all operatonal NGSO systems to ensure protection of GSO networks. Meeting these aggregage EPFD limits allows administratonn to fulfil their obligations under the RR.
While the aggregate epfd limits are specified in Tables 1A to 1D of the Resolution, and the obligation to comply with the limits is imposed on all administrations operating non-GSO FSS in RR No. **22.5K**, there has been no joint action by administration to demonstrate that these limits are being met, and the number of NGSO systems continues to grow. It is critical for the ITU community to ensure that the aggregate EPFD limits put in place to protect GSO networks are respected.
This proposal modifies and updates Resolution **76 (Rev.WRC-15)** to introduce a "consultation process/meetings" as a solution to ensure compliance with the aggregate EPFD limits in Tables 1A to 1D as contained in Annex 1 to this Resolution. The proposal also invites the ITU Radiocommunication Sector to continue its work on relevant methodologies required. It is incumbent on WRC-23 to adopt a framework for administration operating NGSO systems to demonstrate compliance with the mandatory aggregate EPFD limits in Resolution 76. The proposal in View A does not address the protection of GSO networks and merely kicks the can down the road until after WRC-27 although the number of NGSO systems, in some frequency bands, already exceeds the 3.5 systems that the aggregate EPFD limits were based on. The work in the ITU-R should continue but in parallel administrations need to at a minimum discuss the operations of their NGSO systems and provide some certainty to GSO networks that the aggregate EPFD limits are being respected.
The companies listed above urge the FCC to adopt the attached draft proposal for WRC-23 Agenda Item 7, Topic J.

ATTACHMENT TO VIEW B:

Document IWG-4/041R1
Date: 20 Mar 2023
Prepared by: Intelsat, Hughes Network Systems LLC

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7, Topic J

*7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

7(J) Topic J - Modifications to Resolution **76 (Rev.WRC-15)**

Background:

Resolution **76 (Rev.WRC-15)** calls for the development of Recommendations on accurate modelling of interference as well as the procedures to be used amongst administrations to ensure that the aggregate equivalent power flux-density (epfd) limits are not exceeded. While the aggregate epfd limits are specified in Tables 1A to 1D of the Resolution, there is no clear methodology nor procedures outlined in Resolution **76 (Rev.WRC-15)** for the involved administrations to collaboratively determine whether these aggregate levels are exceeded. WRC-23 Agenda Item 7, Topic J calls for consideration of modifications to Resolution **76 (Rev.WRC-15)** to facilitate the development of a consultation process to ensure that operating non-GSO FSS systems do not exceed the aggregate epfd limits in Resolution **76 (Rev.WRC-15)**. Resolution **76 (WRC-15)** also invites the ITU-R to study and develop a suitable methodology for calculating the aggregate epfd produced from all non-GSO systems operating or planning to operate co-frequency in the relevant frequency bands.

It is recognized that whereas all administrations that operate or plan to operate non-GSO FSS should collaborate to ensure the aggregate epfd remains below the levels in Tables 1A to 1D, this is not simply a theoretical exercise whereby single-entry epfd levels from all satellite filings as verified by the Bureau would simply be aggregated, but rather, as recognized by Resolution 76, the aggregate calculations must be based on realistic parameters and, assumptions on accurate modelling of interference. As recognized in the CPM text for this agenda item, "there is no recent and comprehensive ITU-R Recommendation[36] which takes into account accurate modelling of interference from multiple non-GSO systems for the purposes of assessing compliance with aggregate epfd limits, nor is there a methodology or procedures for the administrations involved to collaboratively determine whether these aggregate levels are exceeded."

The proposals below modify and update Resolution **76 (Rev.WRC-15)** to introduce the "consultation process/meetings" as a solution to ensure compliance with the aggregate EPFD limits in Tables 1A to 1D as contained in Annex 1 to this Resolution. The proposal also invites the ITU Radiocommunication Sector to develop, as a matter of urgency, a suitable methodology

[36] It is noted that Recommendation ITU-R S.1588, which calculates aggregate epfd levels, appears not to be sufficient for this purpose.

to adapt, in case of aggregate EPFD limits are exceeded, the operation of all non-GSO FSS systems to ensure that the aggregate power levels given in Tables 1A to 1D of Annex 1 are met. This proposal is based on CPM Method J3.

The concept of a "consultation process/meetings" has been established in other regulatory frameworks – specifically, in Resolutions **769 (WRC-19)** and **609 (Rev.WRC-07)** – to provide a means for administrations to evaluate aggregate interference and assure compliance with aggregate interference limits between multiple systems (non-GSO in the case of Resolution **769 (WRC-19)** and non-GSO and GSO in the case of Resolution **609 (Rev.WRC-07)**).

Proposals:

MOD USA-4/7J/1

RESOLUTION 76 (REV.WRC-~~15~~23)

Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems in frequency bands where equivalent power flux-density limits have been adopted

The World Radiocommunication Conference (~~Geneva~~Dubai, 20~~15~~23),

considering

a) that WRC-97 adopted, in Article 22, provisional equivalent power flux-density (epfd) limits to be met by non-geostationary fixed-satellite service (non-GSO FSS) systems in order to protect GSO FSS and GSO broadcasting-satellite service (BSS) networks in parts of the frequency range 10.7-30 GHz;

b) that WRC-2000 revised Article 22 to ensure the limits contained therein provide adequate protection to GSO systems without placing undue constraints on any of the systems and services sharing these frequency bands;

c) that WRC-2000 decided that a combination of single-entry validation, single-entry operational and, for certain antenna sizes, single-entry additional operational epfd limits, contained in Article 22, along with the aggregate limits in Tables 1A to 1D as contained in Annex 1 to this Resolution, which apply to non-GSO FSS systems, protects GSO networks in these frequency bands;

d) that these single-entry validation limits have been derived from aggregate epfd masks contained in Tables 1A to 1D of Annex 1, assuming a maximum effective number of non-GSO FSS systems of 3.5;

e) that the aggregate interference caused by all co-frequency non-GSO FSS systems in these frequency bands into GSO FSS systems should not exceed the aggregate epfd levels in Tables 1A to 1D of Annex 1;

f) that to achieve the objective in considering e), administrations operating non-GSO FSS systems would need to establish in collaboration, through consultation meetings, the evaluation of aggregate interference levels of all concerned space stations and the implementation of measures to ensure that those non-GSO FSS space stations do not exceed the aggregate epfd levels for the protection of GSO FSS networks;

~~f~~g) that WRC-97 decided, and WRC-2000 confirmed, that non-GSO FSS systems in the frequency bands in question are to mutually coordinate the use of frequencies in these frequency bands under the provisions of No. 9.12;

~~g~~h) that the orbital characteristics of such systems are likely to be inhomogeneous;

~~h~~i) that, as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non-GSO FSS systems will not be directly related to the actual number of systems sharing a frequency band~~, and the number of such systems operating co-frequency is likely to be small~~;

~~i~~j) that the possible misapplication of single-entry limits should be avoided,

recognizing

a) that non-GSO FSS systems ~~are likely to~~may need to implement interference mitigation techniques to mutually share frequencies;

~~b) that, on account of the use of such interference mitigation techniques, it is likely that the number of non-GSO systems will remain small, as will the aggregate interference caused by non-GSO FSS systems into GSO systems;~~

~~.e~~b) that, notwithstanding considering d) and e)~~ and recognizing b)~~, there may be instances where the aggregate interference from non-GSO systems could exceed the interference levels given in Tables 1A to 1D of Annex 1;

~~d~~c) that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non-GSO FSS systems in the frequency bands referred to in considering a) above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables 1A to 1D of Annex 1,

noting

Recommendation ITU-R S.1588 "Methodologies for calculating aggregate downlink equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems into a geostationary fixed-satellite service network",

resolves

1 that administrations operating or planning to operate non-GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in considering a) above, individually or in collaboration, shall take all possible steps, including, if necessary, by means of appropriate modifications to their systems, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels given in Tables 1A to 1D of Annex 1 to be exceeded (see No. 22.5K);

2 that, in the event that the aggregate interference levels in Tables 1A to 1D of Annex 1 are exceeded, administrations operating non-GSO FSS systems complying with the applicable criteria indicated in Annex 2 in these frequency bands shall take all necessary measures expeditiously to reduce the aggregate epfd levels to those given in Tables 1A to 1D of Annex 1, or to higher levels where those levels are acceptable to the affected GSO administration (see No. 22.5K)~~.~~;

3 that administrations, evaluating aggregate power levels under resolves 1 and 2 above, shall take into account all those satellites included in the relevant information communicated to the Bureau under the applicable provisions of Resolution 35 (WRC-19) submitted by administrations operating non-GSO FSS systems complying with the applicable criteria indicated in Annex 2 in the frequency bands covered in Tables 1A to 1D of Annex 1 along with the relevant information provided to the consultation meetings referred to in considering f);

3bis that, in order to identify the non-GSO systems mentioned in resolves 3 above, the criteria listed in Annex 2 shall be used;

4 that administrations engaged in consultation meetings, in developing agreements to carry out their obligations under resolves 1 and 2 above, shall establish mechanisms to ensure that all administrations are given full visibility of the process;

5 that, since the limits of Tables 1A to 1D of Annex 1 were based on the assumption that 3.5 non-GSO FSS systems would operate simultaneously, once at least four non-GSO systems in each of the frequency bands indicated in Tables 1A to 1D of Annex 1 satisfy the applicable criteria included in Annex 2, the concerned administrations participating in this process of epfd should hold consultation meetings as needed;

5bis that administrations notifying GSO networks that meet the applicable criteria indicated in Annex 2 and operating in the frequency bands indicated in Tables 1A to 1D of Annex 1 can participate in the process mentioned in resolves 5 above.

5ter that consultation meetings should not take place earlier than when the methodologies mentioned in invites the ITU Radiocommunication Sector 1 and 2 are approved and made available to the membership, unless the criteria defined in resolve 5 are met and administrations notifying GSO networks that meet the applicable criteria indicated in Annex 2 and operating in the frequency bands indicated in Tables 1A to 1D of Annex 1 demonstrates that the aggregate epfd levels given in Tables 1A to 1D of Annex 1 may be exceeded;

5quaterthat the Terms of Reference included in Annex 3 shall be used to regulate the first consultation meeting mentioned in resolves 5 above;

6 that those administrations participating in the consultation meeting shall designate one administration that shall communicate to the Bureau the results of any technical or operational amendment to the relevant non-GSO FSS systems following the application of resolves 2 above;

7 that any amendment to the relevant non-GSO FSS systems mentioned in resolves 6 shall not affect the regulatory status of the affected non-GSO systems, including following any modifications to their published characteristics,

invites the ITU Radiocommunication Sector

1 to continue its studies and to develop-, as appropriate and as a matter of urgency, a suitable methodology for calculating the aggregate epfd produced by all non-GSO FSS systems that meet the applicable criteria indicated in Annex 2 operating ~~or planning to operate~~ co-frequency in the frequency bands referred to in considering a) above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels given in Tables 1A to 1D of Annex 1, taking into account relevant elements of Recommendation ITU-R S.1588 and Recommendation ITU-R S.1503, as appropriate;

2 to develop, as a matter of urgency, a suitable methodology to adapt the operation of all non-GSO FSS systems that meet the applicable criteria indicated in Annex 2 operating co-frequency in the frequency bands referred to in considering a) above to ensure that the aggregate power levels given in Tables 1A to 1D of Annex 1 are met,

~~2 to continue its studies and to develop a Recommendation on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in considering a) above, in order to assist administrations planning or operating non-GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks, and to provide guidance to GSO network designers on the maximum epfd↓ levels expected to be produced by all non-GSO FSS systems when accurate modelling assumptions are used;~~

~~3 to develop a Recommendation containing procedures to be used among administrations in order to ensure that the aggregate epfd limits given in Tables 1A to 1D are not exceeded by operators of non-GSO FSS systems;~~

~~4 to attempt to develop measurement techniques to identify the interference levels from non-GSO systems in excess of the aggregate limits given in Tables 1A to 1D, and to confirm compliance with these limits,~~

~~instructs the Director of the Radiocommunication Bureau~~

~~1 to assist in the development of the methodology referred to in invites the ITU Radiocommunication Sector 1 above;~~

~~2 to report to a future competent conference on the results of studies in invites the ITU Radiocommunication Sector 1 and 3 above.~~

instructs the Radiocommunication Bureau

1 to participate in consultation meetings mentioned under resolves 6 and to observe carefully the results of the epfd calculation mentioned in resolves 5;

2 to publish in the International Frequency Information Circular (BR IFIC) the information referred to in resolves 6 and instructs the Radiocommunication Bureau 1.

ANNEX 1 TO RESOLUTION 76 (REV.WRC-~~15~~23)

…(no change)

ANNEX 2 TO RESOLUTION 76 (REV.WRC-23)

Criteria to identify non-GSO systems and GSO networks, as applicable, that shall be taken into account to evaluate the aggregate epfd levels, in compliance with resolves 1 and 2

A Criteria for non-GSO systems

1 Submission of appropriate Notification information under No. 11.2 of the Radio Regulations; and

2 Submission of the information referred to in resolves 2, 3, 7 and/or 8, as applicable, of Resolution 35 (WRC-19).

B Criteria for GSO networks

1 Submission of appropriate Notification information under No. 11.2 of the Radio Regulations; and,

2 Submission of the information referred to in No. 11.44B of the Radio Regulations.

ANNEX 3 TO RESOLUTION 76 (REV. WRC-23)

Terms of Reference regulating the first Consultation Meetings taking place in application of resolves 5

1 Consultation Meetings between administrations operating non-GSO systems in the fixed-satellite service (FSS) in the frequency bands will be held in accordance with this Resolution. These meetings will ensure that the epfd produced by all non-GSO satellite systems operating does not exceed the relevant limits specified in Annex 1 to this Resolution.

2 The notifying administrations of GSO operators can participate in the Consultation Meetings in compliance with resolves *5bis* of this Resolution. The Bureau can participate in the Consultation Meetings as observer and shall also carry out the functions assigned to it in the instructs the Director of the Radiocommunication Bureau 1 and 2 of this Resolution.

3 For each Consultation Meeting, a convening administration is appointed. The appointment is made at the end of the previous Consultation Meeting and decided by the administrations of those systems under which the participating non-GSO systems operate. The convening administration is responsible for:

a) Organizing the work to be conducted during the Consultation Meeting; and

b) Preparing a draft summary record of the Consultation Meeting and a report containing the results, for discussion and approval by the participating administrations with the final report approved and submitted to the Bureau not later than 45 days after the end of the meeting.

4 No later than six (6) months before the Consultation Meeting, the convening administration shall provide participants with practical information about the meeting venue;

5 No later than six (6) months before the Consultation Meeting, the Bureau should provide the participants with a list of non-GSO systems and GSO networks submitted under No. 11.2 of

the Radio Regulations and having assignments in the subject frequency bands. The Bureau shall also indicate the worst-case geometry configuration, relevant for the computation of the single-entry epfd limits and computed in accordance with Recommendation ITU-R S.1503, for each of these systems.

6 No later than four (4) months before the Consultation Meeting, taking into account the criteria included in Annex 2 to this Resolution, administrations should indicate which of its non-GSO satellite systems and GSO networks shall be taken into account in the Consultation Meetings. For each of these systems and networks, administrations should provide the following information (a copy of such information shall be sent to the Bureau):

a) ITU satellite name and publication references (IFIC number, IFIC publication date, Special Section references) for each of the non-GSO systems and GSO networks;

b) The technical information for each of the non-GSO satellite systems, as indicated in Annex 4 to this Resolution.

7 Where multiple ITU filings[1] correspond to a single operating non-GSO satellite system, the filings will be treated as a single operating non-GSO satellite system for the purposes of performing aggregate epfd calculations. The notifying administration or administrations involved shall identify the subject filings to the participants.

8 No later than four (4) months before the Consultation Meeting, administrations will submit (after having performed a conformity check on the data to be submitted) all worst-case geometry configurations (as calculated by Recommendation ITU-R S.1503) of each non-GSO system they are responsible for.

9 No later than one (1) month before the Consultation Meeting, administrations should provide (after having performed a conformity check on the data to be submitted) all participants with results, per each non-GSO system, of the single-entry epfd Probability Density Functions (PDF) and Cumulative Density Functions (CDF), together with a detail of relevant assumptions in addition to the technical information specified in Annex 4 for the purpose evaluation of 11 a). Each administration is responsible for the software used to calculate the single-entry epfd PDF and CDF.

10 After receiving the results of § 9 above and before the Consultation Meeting, the convening administration should perform a conformity check to verify the format of the single-entry input data received, in order to ensure that the convolution process can be performed properly.

11 Each Consultation Meeting should at least perform:

a) Conformity check of the input data received;

b) Execution of all convolutions;

c) Analysis of the results: indication of ‘Pass’ or ‘Fail’ for every convolution.

12 If, following the methodology developed in application of invites the ITU Radiocommunication Sector 1, all convolutions verify that the aggregate limits are met, no action is required until the next Consultation Meeting.

13 If one or more convolutions do not pass the aggregate epfd limits check, the Consultation Meeting shall apply the methodology developed in application of invites the ITU Radiocommunication Sector 2.

[1] The terms “ITU filing” indicate the CR/C and/or Notification publications relative to a non-GSO satellite system, as applicable, included in the BR International Frequency Information Circular (BR IFIC).

14 By the end of the Consultation Meeting, all aggregate epfd limits indicated in Annex 1 to this Resolution shall be met.
15 At the end of each Consultation Meeting, the convening administration should draft a report that the Bureau shall publish on the ITU website promptly.
16 After the Consultation Meeting report is available, all administrations can provide comments that the Bureau shall publish on the ITU website promptly.
ANNEX 4 TO RESOLUTION 76 (REV. WRC-23)
Information to be provided for each non-GSO satellite system
1 ITU System Name:
2 Technical parameters of the non-GSO system
2.1 Orbital parameters
TBD
2.2 Operational parameters (as required for the application of the methodology included in Recommendation ITU-R S.1503)
• Maximum number of non-GSO satellite beams transmitting/receiving at the same frequency towards the same point
• Minimum elevation
• Minimum satellite tracking duration
• TBD, based on the possible revision of Recommendation ITU-R S.1503
3 Single-entry epfd results

epfd bin	N. of occurrences	PDF	CDF
−210			100
−209.9			99.99
−209.8			…
…			

Reason: This method proposes to modify and update Resolution **76 (Rev.WRC-15)** defining the principles of consultation meetings as a method to ensure that GSO networks will be protected from NGSO aggregate interference in the Ku and the Ka bands.

MOD USA-4/7J/2

22.5K 8) Administrations operating or planning to operate non-geostationary-satellite systems in the fixed-satellite service in the frequency bands listed in Tables **22-1A** to **22-1D** of No. **22.5C** will apply the provisions of Resolution **76 (Rev.WRC-23~~15~~)** to ensure that the actual aggregate interference into geostationary fixed-satellite service and geostationary broadcasting-satellite service networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **1A** to **1D** of Resolution **76 (Rev.WRC-~~15~~23)**. In the event that an administration operating a geostationary-satellite network in conformity with the Radio Regulations identifies equivalent power flux-density levels from nongeostationary-satellite systems in the fixed-satellite service which may be in excess of the aggregate limits contained in Tables **1A** to **1D** of Resolution **76 (Rev.WRC-23~~15~~)**, the administrations responsible for the non-geostationary-satellite systems in the fixed-satellite

service will apply the provisions contained in *resolves* 2 of Resolution **76 (Rev.WRC-23~~15~~)**. (WRC-~~19~~23)

Reason: Consequential

Comments of IWG-4 on NTIA/RCS Proposals to MOD No. 5.394 under WRC-23 Agenda Item 8

At its 19th meeting on March 21, 2023, IWG-4 considered the NTIA/RCS proposal to modify the U.S. country footnote in No. **5.394** of the Radio Regulations under WRC-23 Agenda Item 8 to align with national use. *See* Doc. WAC/109 and IWG-4/059, p. 6. IWG-4 reports that it was not in a position to formulate a view on this proposal for the WAC.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 9.1 b): *Review of the amateur service and the amateur-satellite service allocations in the frequency band 1 240 1 300 MHz to determine if additional measures are required to ensure protection of the radionavigation-satellite (space-to-Earth) service operating in the same band in accordance with Resolution* ***774 (WRC-19)***

Background:

Resolution **774 (WRC-19)** *resolves to invite the ITU Radiocommunication Sector:*

"1 to perform a detailed review of the different systems and applications used in the amateur service and amateur-satellite service allocations in the frequency band 1 240-1 300 MHz;

2 taking into account the results of the above review, to study possible technical and operational measures to ensure the protection of RNSS (space-to-Earth) receivers from the amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz, without considering the removal of these amateur and amateur-satellite service allocations."

The amateur service has a global secondary allocation in the 1 240-1 300 MHz frequency band. The amateur-satellite service has a secondary allocation in 1 260-1 270 MHz (Earth-to-space) (see No. **5.282**). Services with primary allocations in these frequency ranges include the radionavigation-satellite service (RNSS) (space-to-Earth) and (space-to-space), the radiolocation service, the earth exploration-satellite service (active), and the space research service (active).

Based on years of operational experience, many applications of the secondary amateur and amateur satellite services have successfully co-existed with all the primary services in the range 1 240-1 300 MHz. However, some cases of harmful interference caused by transmissions from stations in the amateur service operating on a secondary basis into RNSS (space-to-Earth) receivers operating on a primary basis have been observed, documented and reported in two countries.

Subsequent ITU-R studies provided an estimate of potential interference distance and confirmed that the impact of interference generally depends on the bandwidth and power of the interfering signal. Furthermore, these studies predicted that RNSS receiver protection criteria could be exceeded by co-frequency emissions from typical amateur stations.

In some cases where certain applications (in particular wide bandwidth, high duty cycle applications) could increase the potential for interference, specific spectrum management techniques and national licensing conditions have minimized any risk of harmful interference. The ITU-R is developing a Recommendation ITU-R M.[AS.GUIDANCE] providing guidelines in order to avoid such cases of harmful interference to the RNSS receivers in the future. This Recommendation could include, *inter alia*, encouragement of the use of specific sub-bands with sufficient frequency offsets from the spectrum main lobes of RNSS signals to enhance the protection of RNSS receivers in the bands under consideration.

These guidelines are intended to assist administrations and the amateur and amateur-satellite services to ensure the protection of the RNSS (space-to-Earth) in the frequency band 1 240-1 300 MHz.

Given the secondary allocation status of the service, there is no present need for any additional regulatory, operational or technical conditions incorporated into the Radio Regulations. The ITU-R can address and facilitate the compatibility between the secondary amateur and amateur-satellite services and co-frequency primary incumbent services through ITU Reports or Recommendations providing additional information for administrations on operational and technical matters that could be considered on a national basis.

Proposals:

NOC USA/9.1-B/1

ARTICLES

Reason: The United States is of the view that no changes to the Radio Regulations should be made under this Agenda item 9.1 topic. Administrations are encouraged to take into account ITU-R Reports/Recommendations under development on how the amateur allocation can coexist with primary services in the 1240 – 1300 MHz band.

SUP USA/9.1-B/2

RESOLUTION 774 (WRC-19)

Studies on technical and operational measures to be applied in the frequency band 1 240-1 300 MHz to ensure the protection of the radionavigation-satellite service (space-to-Earth)

Reason: Consequential action

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UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

[Note for WAC: Provided as a revision to the CITEL PCC.II DIAP contained in GT-CMR23-2022-40-063r1.]

Source: GT/CMR-23/doc.063r1

Agenda Item 1.3: *to consider primary allocation of the band 3 600-3 800 MHz to mobile service within Region 1 and take appropriate regulatory actions, in accordance with Resolution* ***246 (WRC-19)****;*

DRAFT INTER-AMERICAN PROPOSALS

DIAP/1.3/1

Support: [ARG], [B], [MEX], [EQA], [URG], USA

WRC-23 agenda item 1.3 addresses the~~o~~ consideration of a possible primary allocation of the band 3600-3800 MHz to mobile service, except aeronautical mobile, in Region 1. ~~and consider possible regulatory actions in the frequency band 3600-3800 MHz in Region 1 only.~~ It should be noted that Regions 2 and 3 have a primary mobile allocation in the 3600 – 4200 MHz band. The addition of a primary mobile allocation in Region 1 would globally harmonize the 3600 – 3800 MHz band for those countries wishing to deploy mobile systems. Any changes made to the Radio Regulations under WRC-23 agenda item 1.3 must not impact the existing allocations and identifications for Region 2, nor subject Region 2 to any changed procedural or regulatory provisions. Therefore, no change is proposed for Region 2 and this proposal does not address Regions 1 and 3.

FOR AGENDA

ATTACHMENT (B)

WAC-23/107

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

Mr. Tom Sullivan
Chief, International Bureau
Federal Communications Commission
45 L Street NE
Washington, DC 20554

Dear Mr. Sullivan:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, provides the attached revised WRC-23 proposals for Agenda Item 1.17 addressing study of technical and operations issues, and regulatory provisions for satellite-to-satellite links in the bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz, and 27.5-30.0 GHz. The Radio Conference Subcommittee (RCS) also approved draft proposals for WRC-23 Agenda Item 7B addressing Non-GSO bringing into use post-milestone procedures, 7D2 addressing new RR Appendix 4 parameters for Recommendation ITU-R S.1503 updates, and 7J addressing modifications to Resolution 76 (Rev.WRC-15).

NTIA looks forward to working with FCC in reconciling these proposals for submission to CITEL PCC II as U.S. proposals. Our point of contact is Mr. Charles Glass, NTIA's WRC Coordinator, who can be reached at (202) 714-1763 or cglass@ntia.gov.

Sincerely,

Steve Molina 9 January 2023

Steve Molina
Deputy Associate Administrator

Office of Spectrum Management

Enclosures (4)

XI. UNITED STATES OF AMERICA

XII. DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.17: *to determine and carry out, on the basis of ITU-R studies in accordance with Resolution **773 (WRC-19)**, the appropriate regulatory actions for the provision of inter-satellite links in specific frequency bands, or portions thereof, by adding an inter-satellite service allocation where appropriate;*

Background

Space station operations in low-Earth orbit are increasing at a rapid rate for scientific, academic, and commercial purposes. These stations vary in size from as large as the International Space Station to as small as single unit cubesats[37] and have wide ranging data requirements. Users of these systems require moving data from space to Earth, or other satellite terminal locations in an efficient, fast, and cost-effective manner.

In light of the above, satellite manufacturers are developing technologies addressing this need, including the possible use of satellite-to-satellite links with transmissions limited to the same direction of transmission (e.g., Earth-to-space direction or space-to-Earth direction) of the GSO or non-GSO FSS service providers' space station.

The ITU-R has conducted extensive sharing and compatibility studies to assess the feasibility of introducing satellite-to-satellite links in many of the frequency bands called out in Resolution **773 (WRC-19)**. Based on these studies, the United States of America proposes that use of satellite-to-satellite links be recognized in the Radio Regulations within the fixed-satellite service in the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz with transmissions limited to the same direction of transmission (e.g., Earth-to-space direction or space-to-Earth direction) of the GSO or non-GSO FSS service providers' space station.

Further, non-GSO user space stations using satellite-to-satellite links shall only transmit and receive within the cone of coverage[38] of the associated GSO or non-GSO FSS service provider space stations. Non-GSO user space stations will always operate at an orbital altitude that is lower than the orbital altitude of the FSS network or system with which it is communicating. The non-GSO user is to be part of the FSS network or system providing the service and will operate in a manner that would replicate the operations of other users of the FSS network or system. Other user space stations, e.g., a space science satellite, would include FSS frequencies and be part of the FSS network or system as a non-GSO space station under a contract with the FSS network or system operator providing the service.

A proposed new WRC-23 Resolution provides satellite-to-satellite link operating conditions and regulatory provisions to ensure protection of incumbent services operations.

[37] A single unit cubesat has the dimensions of 10x10x10 centimeters and typical mass less than 2 kilograms.

[38] The cone of coverage is the conical volume of space defined by a cone whose apex is at the service provider space station and whose base does not extend beyond the edge of the notified service area of the individual service provider space station.

The United States of America further proposes no change to the Radio Regulations for the frequency band 11.7-12.7 GHz due to lack of sufficient ITU-R studies supporting satellite-to-satellite link operations in this frequency range.

Proposals

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

NOC USA/4079A17/1

11.7-13.4 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	**11.7-12.1** FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.488 Mobile except aeronautical mobile 5.485	**11.7-12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492
	12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.488 5.485 5.489	5.487 5.487A
5.487 5.487A	**12.2-12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492 5.487A 5.488 5.490	**12.2-12.5** FIXED FIXED-SATELLITE (space-to-Earth) 5.484B MOBILE except aeronautical mobile BROADCASTING 5.487 5.484A
12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.494 5.495 5.496	**12.7-12.75** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	**12.5-12.75** FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493

Reasons: Limited ITU-R studies were done in accordance with Resolution **773 (WRC-19)** supporting only satellite-to-satellite link operations in the downlink direction in the frequency range 11.7-12.7 GHz with no corresponding uplink direction spectrum.

MOD USA/4079A17/2

15.4-18.4 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.1-18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Earth-to-space) 5.520 (space-to-space) ADD 5.A117 MOBILE 5.519 5.521	

Reasons: Include footnote in Article **5** recognizing satellite-to-satellite operations as part of the fixed-satellite service in the indicated frequency bands.

ADD USA/4079A17/3

5.A117 Space-to-space use is limited to transmissions in the space-to-Earth direction in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, and to transmissions in the Earth-to-space direction in the frequency band 27.5-30 GHz. Operations shall be in accordance with Resolution **[USA/A17/SAT-TO-SAT] (WRC-23)**. No. **4.10** does not apply.

Reasons: New footnote recognizing satellite-to-satellite operations in the fixed-satellite service with provisions for operation specified in a new WRC-23 Resolution. Such use would not fall under the safety service provisions of Article **4.10**.

MOD USA/4079A17/4

18.4-22 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.4-18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Space-to-space) ADD 5.A117 MOBILE	
18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) 5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A
18.8-19.3	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A (Space-to-space) ADD 5.A117 MOBILE	

19.3-19.7	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E (space-to-space) ADD 5.A117 MOBILE	
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A (space-to-space) ADD 5.A117 Mobile-satellite (space-to-Earth) 5.524	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A (space-to-space) ADD 5.A117 MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	**19.7-20.1** FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A (space-to-space) ADD 5.A117 Mobile-satellite (space-to-Earth) 5.524
20.1-20.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A (space-to-space) ADD 5.A117 MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	

Reasons: Include footnote in Article **5** recognizing satellite-to-satellite operations as part of the fixed-satellite service in the indicated frequency bands.

MOD USA/4079A17/5

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
27.5-28.5	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 (space-to-space) ADD 5.A117 MOBILE 5.538 5.540	
28.5-29.1	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 (space-to-space) ADD 5.A117 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
29.1-29.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A (space-to-space) ADD 5.A117 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	

29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 (space-to-space) ADD 5.A117 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 (space-to-space) ADD 5.A117 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.525 5.526 5.527 5.529 5.540	**29.5-29.9** FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 (space-to-space) ADD 5.A117 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542

Reasons: Include footnote in Article **5** recognizing satellite-to-satellite operations as part of the fixed-satellite service in the indicated frequency bands.

MOD USA/4079A17/6

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 **(space-to-space)** ADD 5.A117 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	

Reasons: Include footnote in Article **5** recognizing satellite-to-satellite operations as part of the fixed-satellite service in the indicated frequency bands.

MOD USA/4079A17/7

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section V – Limits of power flux-density from space stations

TABLE **21-4** (REV.WRC-23)

Frequency band	**Service***	**Limit in dB(W/m²) for angles of arrival (δ) above the horizontal plane**				**Reference bandwidth**
		0°-5°	**5°-25°**		**25°-90°**	
13.4-13.65 GHz (Region 1)	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	**0°-25°**	**25°-80°**	**80°-84°**	**84°-90°**	4 kHz
		$-159 + 0.4\delta$ [19]	-149 [19]	$-149 - 0.5(\delta - 80)$ [19]	-151 [19]	
17.7-19.3 GHz [7, 8]	Fixed-satellite	**0°-5°**	**5°-25°**		**25°-90°**	1 MHz

	(space-to-Earth) Fixed-satellite (space-to-space) Meteorological-satellite (space-to-Earth)	-115 [14, 15] or $-115 - X$ [13]	$-115 + 0.5(\delta - 5)$ [14, 15] or $-115 - X + ((10 + X)/20)$ $(\delta - 5)$ [13]		-105 [14, 15] or -105 [13]	
17.7-19.3 GHz [7, 8]	Fixed-satellite (space-to-Earth) Fixed-satellite (space-to-space)	**0°-3°** -120 [16]	**3°-12°** $-120 + (8/9)(\delta - 3)$ [16]	**12°-25°** $-112 + (7/13)(\delta - 12)$ [16]	-105 [16]	1 MHz
19.3-19.7 GHz	Fixed-satellite (space-to-Earth) Fixed-satellite (space-to-space)	**0°-3°** -120 [16]	**3°-12°** $-120 + (8/9)(\delta - 3)$ [16]	**12°-25°** $-112 + (7/13)(\delta - 12)$ [16]	-105 [16]	1 MHz

TABLE **21-4** (*CONTINUED*) (REV.WRC-23)

Frequency band	**Service***	**Limit in dB(W/m²) for angles of arrival (δ) above the horizontal plane**			**Reference bandwidth**
		0°-5°	**5°-25°**	**25°-90°**	
19.3-19.7 GHz 21.4-22 GHz (Regions 1 and 3) 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz 27.500- 27.501 GHz	Fixed-satellite (space-to-Earth) Fixed-satellite (space-to-space) Broadcasting-satellite Earth exploration-satellite (space-to-Earth) Inter-satellite Space research (space-to-Earth)	-115 [15]	$-115 + 0.5(\delta - 5)$ [15]	-105 [15]	1 MHz
31.0-31.3 GHz 34.7-35.2 GHz (space-to-Earth transmissions referred to in No. **5.550** on the territories of countries listed in No. **5.549**)	Space research	-115	$-115 + 0.5(\delta - 5)$	-105	1 MHz
31.8-32.3 GHz	Space research	-120 [20]	$-120 + 0.75(\delta - 5)$ [20]	-105	1 MHz
32.3-33 GHz	Inter-satellite	-135	$-135 + (\delta - 5)$	-115	1 MHz

Reasons: Include FSS (space-to-space) in Article **21**, Table **21-4** to ensure that pfd limits to protect terrestrial services that apply to FSS (space-to-Earth) also apply to FSS (space-to-space).

MOD USA/4079A17/8

APPENDIX 4 (REV.WRC-23)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-12)

[2] The Radiocommunication Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the BR IFIC (Space Services). (WRC-12)

TABLE A

GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION (Rev.WRC-23)

Items in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space-operation functions under Article 21 of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.19.b	a commitment in accordance with *resolves* 1.5 of Resolution **156 (WRC-15)** that the administration responsible for the use of the assignment shall implement *resolves* 1.4 of Resolution **156 (WRC-15)** Required only for geostationary-satellite networks operating in the fixed-satellite sebrvice in the frequency bands 19.7-20.2 GHz and 29.5-30.0 GHz communicating with transmitting earth stations in motion				+						A.19.b	
A.20	**COMPLIANCE WITH *resolves* 1.1.4 OF RESOLUTION 169 (WRC-19)**										**A.20**	
A.20.a	a commitment that the ESIM operation would be in conformity with the Radio Regulations and Resolution **169 (WRC-19)** Required only for the notification of earth stations in motion submitted in accordance with Resolution **169 (WRC-19)**				+						A.20.a	
A.21	**COMPLIANCE WITH *resolves* 1.2.6 OF RESOLUTION 169 (WRC-19)**										**A.21**	
A.21.a	a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the GSO FSS network with which ESIMs communicate shall follow the procedures in *resolves* 4 of Resolution **169 (WRC-19)** Required only for the notification of earth stations in motion submitted in accordance with Resolution **169 (WRC-19)**				+						A.21.a	
A.22	**COMPLIANCE WITH *resolves* 7 OF RESOLUTION 169 (WRC-19)**										**A.22**	
A.22.a	a commitment that aeronautical ESIMs would be in conformity with the pfd limits on the Earth's surface specified in Part II of Annex 3 to Resolution **169 (WRC-19)** Required only for the notification of earth stations in motion submitted in accordance with Resolution **169 (WRC-19)**				+						A.22.a	
A.22bis	**COMPLIANCE WITH *resolves* further 2 OF RESOLUTION [USA/A17/FSS SAT-TO-SAT] (WRC-23)**										**A.22bis**	
A.22bis.a	a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the non-GSO transmitting space station in frequency bands 27.5-30 GHz which communicate to a GSO FSS network or non-GSO FSS system shall follow the procedures in resolves further 2 of Resolution **[USA/A17/FSS SAT-TO-SAT] (WRC-23)** Required only for the notification of non-GSO space stations submitted in accordance with Resolution **[USA/A17/FSS SAT-TO-SAT] (WRC-23)**				+						A.22bis.a	
A.23	**COMPLIANCE WITH RESOLUTION 35 (WRC-19)**										**A.23**	
A.23.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					O					A.23.a	
A.24	**COMPLIANCE WITH NOTIFICATION OF A NON-GSO SHORT DURATION MISSION**										**A.24**	
A.24.a	a commitment by the administration that, in the case that unacceptable interference caused by a non-GSO satellite network or system identified as short-duration mission in accordance with Resolution **32 (WRC-19)** is not resolved, the administration shall undertake steps to eliminate the interference or reduce it to an acceptable level Required only for notification					+					A.24a	
A.25	**INCLUSION OF SPACE-TO-SPACE OPERATIONS**										**A.25**	

Item: in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*
A.25.a	an indicator showing whether space-to-space operations in accordance with Resolution [USA/A17/FSS SAT-TO-SAT] (WRC-23) with transmission in the frequency bands 27.5-30.0 GHz, or parts thereof; and reception in the frequency bands 18.1-18.6 and 18.8-20.2 GHz, or parts thereof, are included
A.25.a.1	the calculated worst-case off-axis angle between the main lobe of the space station transmitting in the frequency bands 27.5-30.0 GHz, or parts thereof, and the Earth surface
A.25.b	an indicator showing whether space-to-space operations in accordance with Resolution [USA/A17/FSS SAT-TO-SAT] (WRC-23) with transmission in the frequency bands 18.1-18.6 and 18.8-20.2 GHz, or parts thereof, and reception in the frequency bands 27.5-30.0 GHz, or parts thereof, are included
A.25.b.1	an indicator for non-GSO systems receiving in the frequency bands 27.5-28.6 GHz and 29.5-30.0 GHz showing the commitment that the equivalent power flux-density produced at any point in the geostationary-satellite orbit by emissions from all coordinated operations of space-to-space and typical Earth station transmissions shall not exceed the limits given in Table 22-2

Item: in Appendix	Radio astronomy	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions) under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)
A.25.a			X		X	X				
A.25.a.1			X		X	X				
A.25.b			X		X	X				
A.25.b.1			X		X	X				

Reasons: Four new Appendix 4 data elements are added to provide indicators for space-to-space operations for space stations operating in accordance with Resolution [USA/A17/FSS SAT-TO-SAT] (WRC-23)

ADD USA/4079A17/9

RESOLUTION [USA/A17/FSS SAT-TO-SAT] (WRC-23)

Use of 18.1-18.6, 18.8-20.2 and 27.5-30.0 GHz frequency bands for satellite-to-satellite transmissions in the fixed-satellite service

The World Radiocommunication Conference ([tbc], 2023),

considering

a) that there is a need for non-geostationary satellite orbit (non-GSO) space stations to be able to relay collected data to the Earth, and that part of this need could be met by allowing such non-GSO space stations to communicate with fixed-satellite service (FSS) space stations operating in the geostationary satellite orbit (GSO) and in the non-GSO in the frequency bands 18.1-18.6 GHz, 18.8-20.2 and 27.5-30.0 GHz, or parts thereof;

b) that **No. 1.21** states that, in some cases, the fixed satellite service includes satellite-to-satellite links

c) that the ITU Radiocommunication Sector (ITU-R) has carried out extensive sharing and compatibility studies between incumbent services in the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz, and 27.5-30 GHz and satellite-to-satellite transmissions in the fixed-satellite service;

d) that the administration responsible for the notification of non-GSO space stations communicating with GSO or non-GSO space stations in the fixed-satellite service (FSS) at higher altitude does not need to be the same administration that has already notified assignments in the FSS;

e) that imposing hard limits necessary to protect other services would provide regulatory certainty for both notifying administrations of non-GSO space station communicating with FSS space stations and potentially impacted services;

f) that the frequency bands 18.1-18.6, 18.8-20.2 GHz (space-to-Earth) and 27.5-30.0 GHz (Earth-to-space) are also allocated to terrestrial and space services used by a variety of different systems, and these existing services and their future development need to be protected, without the imposition of undue constraints, from the operation of satellite-to-satellite links,

recognizing

that any course of action taken under this Resolution has no impact on the original date of receipt of the frequency assignments of the GSO FSS satellite network or the non-GSO FSS system with which non-GSO space stations communicate or on the coordination requirements of that satellite network,

recognizing further

that in accordance with Section 6 of Rules of Procedure, associated with RR No. **11.32,** whenever a network is composed of GSO and non-GSO space stations the related assignments for communications between them shall not be considered as being subject to the coordination procedure under Section II of Article **9,**

resolves

1 that, for a non-GSO space station subject to this Resolution communicating with a GSO or non-GSO FSS space station within the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, or parts thereof, the following conditions shall apply:

a) the non-GSO space station transmitting in the frequency bands 27.5-30 GHz and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall only operate space-to-space links when its apogee altitude[39] is lower than the minimum operational altitude[40] of the GSO or non-GSO FSS space station it communicates with and when the off-nadir angle between this GSO or non-GSO FSS space station and the non-GSO space station it communicates with is less than or equal to θ_{Max} (as defined in Annex 1 of this Resolution);

b) the GSO/non-GSO FSS space station receiving in the frequency bands 27.5-30 GHz and transmitting in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof, shall only operate space-to-space links when its minimum operational altitude is higher than the apogee altitude of the non-GSO space station with which it communicates;

c) the non-GSO space station transmitting in the frequency bands 27.5-30 GHz and receiving in the frequency bands 18.1-18.6 and 18.8-20.2 GHz, or parts thereof, shall remain under the characteristics envelop and coordination agreements of the recorded assignments of the earth stations associated with the satellite network/system with which it communicates;

2 that non-GSO space stations subject to this Resolution receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof:

a) shall not claim protection from FSS and MSS networks and systems as well as terrestrial services operating in conformity with the Radio Regulations;

b) shall only receive characteristically the same emissions that are also being directed to earth stations from FSS space stations at higher orbital altitudes so that the interference environment can remain unchanged with respect to fixed and mobile stations, as well as to earth stations of other GSO and non-GSO FSS networks/systems from what is coordinated and notified in accordance with the Radio Regulations;

3 that GSO and non-GSO FSS space stations subject to this Resolution;

a) receiving in the frequency band 27.5-30 GHz from non-GSO space stations, shall not claim protection for satellite-to-satellite links from FSS and MSS networks and systems, as well as terrestrial services operating in conformity with the Radio Regulations;

b) shall comply with the provisions contained in Article **21** in the frequency band 18.1-18.6 GHz and 18.8-19.7 GHz to protect terrestrial services;

4 that non-GSO space stations transmitting in the frequency bands 27.5-30 GHz, or parts thereof:

a) shall not produce a power flux density at any point in the GSO arc greater than the power flux density produced by earth stations associated with the satellite network/system with which they communicate;

b) shall comply with the provisions contained in Annex 2 to this Resolution in the frequency band 27.5-29.5 GHz to protect terrestrial services;

[39] See item A.4.b.4.d of Appendix 4.

[40] See item A.4.b.4.f of Appendix 4.

c) when transmitting in the frequency band 29.1-29.5 GHz, shall limit communications to GSO FSS space stations;

d) shall not cause unacceptable interference to or otherwise impose constraints on operation or development of the non-GSO FSS service and protect non-GSO FSS space stations by complying with the provisions contained in Annex 3 to this Resolution;

5 that, with respect to Earth exploration-satellite service (EESS) (passive) operating in the frequency band 18.6-18.8 GHz, any non-GSO FSS system with an orbital apogee of less than 20,000 km transmitting in the frequency bands 18.1-18.6 GHz and 18.8-19.3 GHz when communicating with non-GSO space stations, and for which the complete notification information has been received by the Radiocommunication Bureau after 1 January 2025, shall not exceed a power flux-density produced at the surface of the oceans across the 200 MHz of the frequency band 18.6-18.8 GHz, of -118 dB(W/m²/200 MHz);

6 that, in order to accommodate satellite-to-satellite transmissions, GSO and non-GSO FSS space stations receiving in the frequency bands 27.5-30 GHz and transmitting in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz, or parts thereof, shall operate in compliance with the Radio Regulations and any existing and future coordination agreements between administrations,

resolves further

1 that, subject to this Resolution:

a) the notifying administration of the GSO FSS network receiving in the frequency bands 27.5-30.0 GHz and transmitting in the frequency bands 18.1-18.6 GHz, 18.8-20.2 GHz shall indicate to the Radiocommunication Bureau (BR), that it intends to include satellite-to-satellite operations for this GSO FSS network in accordance with this Resolution, considering *resolves* 3 above;

b) the notifying administration of the non-GSO FSS system receiving in the frequency bands 27.5-29.1 GHz and 29.5-30.0 GHz and transmitting in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall indicate to the BR that it intends to include satellite-to-satellite operations for this non-GSO FSS system in accordance with this Resolution, considering *resolves* 3 above;

c) the notifying administration of the non-GSO FSS system receiving in the frequency bands 27.5-28.6 GHz and 29.5-30.0 GHz shall indicate to the BR the commitment that the equivalent power flux-density produced at any point in the geostationary-satellite orbit by emissions from all combined operations of space-to-space and typical Earth station transmissions shall not exceed the limits given in Table 22-2;

d) the notifying administration of the non-GSO space station/stations transmitting in the frequency bands 27.5-30.0 GHz towards a GSO FSS network and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall send to the BR, the relevant Appendix 4 advance publication information containing the characteristics of the non-GSO space station/stations and the associated name of the GSO FSS network with which it intends to communicate;

e) the notifying administration of the non-GSO space station/stations transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30.0 GHz towards a non-GSO FSS system at a higher orbital altitude and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall send to the BR, the relevant Appendix 4 advance publication information containing the characteristics of the non-GSO space station/stations and the associated name of the non-GSO FSS system with which it intends to communicate;

f) the notifying administration for the non-GSO transmitting space station in the frequency bands 27.5-30 GHz which communicate to a GSO FSS network or non-GSO FSS system shall send to the BR, when submitting Appendix 4 data, a commitment that, upon receiving a report of unacceptable interference, the notifying administration for the non-GSO transmitting space station which communicate to a GSO FSS network or non-GSO FSS system shall follow the procedures in *resolves further* 2;

g) the notifying administration of the GSO FSS network or non-GSO FSS system receiving in the frequency bands 27.5-30 GHz with which non-GSO transmitting space stations communicate shall follow the procedures in *resolves further* 3;

2 that in case of unacceptable interference caused by a non-GSO space station transmitting in the frequency bands 27.5-30.0 GHz:

a) the notifying administration for the non-GSO space station transmitting in the frequency bands 27.5-30.0 GHz shall cooperate with an investigation on the matter and provide, to the extent of its ability, any required information on the operation of the transmitting space station and a point of contact to provide such information;

b) the notifying administration for the non-GSO space station transmitting in the frequency bands 27.5-30.0 GHz and the notifying administration of the GSO or non-GSO FSS network or system with which the non-GSO transmitting space station communicates shall, jointly or individually, as the case may be, upon receipt of a report of unacceptable interference, take required action to eliminate or reduce interference to an acceptable level;

3 that the administration responsible for the GSO or non-GSO FSS network or system with which the non-GSO transmitting space station communicates shall ensure that:

a) for the operation of non-GSO space stations transmitting in the FSS (space-to-space) service in the frequency bands 27.5-30.0 GHz, techniques to maintain pointing accuracy with the associated FSS satellite, without inadvertently tracking adjacent GSO satellites or non-associated non-GSO satellites, are employed;

b) all necessary measures are taken so that non-GSO transmitting space stations in the frequency bands 27.5-30.0 GHz in the FSS (space-to-space) service are subject to permanent monitoring and control by a network control and monitoring centre (NCMC) or equivalent facility in order to comply with the provisions in this Resolution, and are capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC or equivalent facility;

c) a permanent point of contact is provided for the purpose of tracing any suspected cases of unacceptable interference from non-GSO transmitting space stations in the frequency bands 27.5-30.0 GHz in the FSS (space-to-space) service and to immediately respond to requests from the focal point;

4 that, upon receipt of the information in *resolves further* 1*a)* - 1*e)*, the BR shall examine that information with respect to the existing regulatory provisions, as well as any conditions prescribed in this Resolution, and publish the result of such examination in the International Frequency Information Circular (BR IFIC),

instructs the Director of the Radiocommunication Bureau

1 to take all necessary actions to facilitate the implementation of this Resolution, together with providing any assistance for the resolution of interference, when required;

2 to report to future world radiocommunication conferences any difficulties or inconsistencies encountered in the implementation of this Resolution;

3 that, upon examination of the information submitted by the notifying administration under *resolves further* 1*d)* or 1*e)*, if no recorded frequency assignments with typical earth stations for the relevant frequency bands can be identified for the GSO FSS network or non-GSO FSS system with which the notifying administration's non-GSO space station intends to communicate, the BR shall return the information to the notifying administration with an unfavorable finding

4 that, when assessing compliance with the pfd limits in Annex 2, to take into account atmospheric attenuation using Recommendation ITU-R P.676 and the mean global standard atmosphere from Recommendation ITU-R P.835.

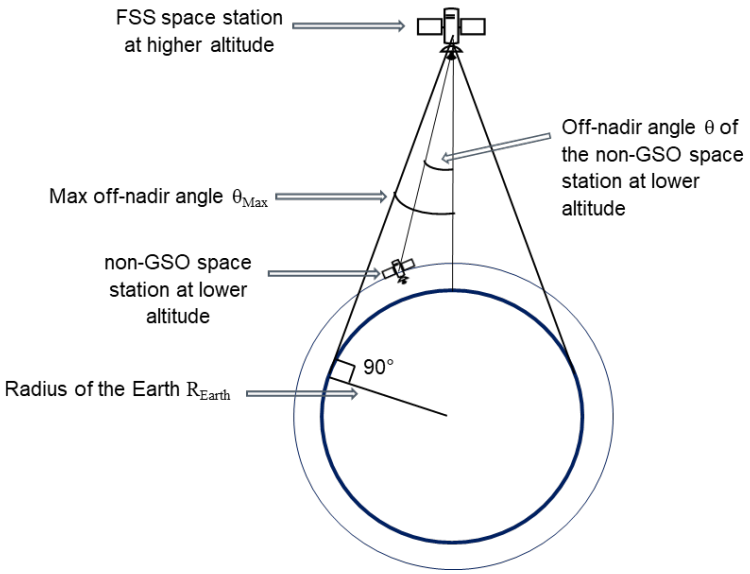
ANNEX 1 TO RESOLUTION [USA/A17/FSS SAT-TO-SAT] (WRC-23)

Determination of the off-nadir angle

1 a non-GSO FSS space station transmitting in the frequency bands 27.5-30 GHz and receiving in the frequency bands 18.1-18.6 GHz and 18.8-20.2 GHz shall only communicate with a GSO or non-GSO FSS space station at a higher orbital altitude when the off-nadir angle between this GSO or non-GSO FSS space station and the non-GSO FSS space station it communicates with is less than or equal to:

$$\theta_{Max} = \sin^{-1}\left(\frac{R_{Earth}}{R_{Earth} + Alt_{Higher\ FSS}}\right)$$

where
R_{Earth} = 6378.145 km,
Alt_{Higher_FSS} = altitude of the GSO or non-GSO space station at higher orbital altitude in km



2 In case the notified service area of the GSO or non-GSO FSS network/system at higher orbital altitude is not global, the maximum off-nadir angle θ_{Max} will vary at each azimuth according to the notified service area and there will be a specific maximum off-nadir angle associated to each azimuth based on the position in space of the FSS network/system at higher orbital altitude and the geographic coordinates (latitude, longitude) of the border of the notified service area at each azimuth, which are extracted from the Graphical Interface Management System (GIMS) database container that was submitted to the BR when notifying a specific non-global service area.

$$\theta_{Max} = \cos^{-1}\left(\frac{\left(R_{Earth} + Alt_{FSS_SS}\right)^2 + dist^2 - R_{Earth}{}^2}{2 \times \left(R_{Earth} + Alt_{FSS_SS}\right) \times dist}\right)$$

With

$$dist = \sqrt{(X_E - X_S)^2 + (Y_E - Y_S)^2 + (Z_E - Z_S)^2}$$

$$X_E = R_{Earth} \times \cos\left(lat_{sab}(\varphi)\right) \times \cos\left(lon_{sab}(\varphi)\right)$$
$$Y_E = R_{Earth} \times \cos\left(lat_{sab}(\varphi)\right) \times \sin\left(lon_{sab}(\varphi)\right)$$
$$Z_E = R_{Earth} \times \sin\left(lat_{sab}(\varphi)\right)$$

$$X_S = \left(R_{Earth} + Alt_{FSS_SS}\right) \times \cos(lat_{SS}) \times \cos(lon_{SS})$$
$$Y_S = \left(R_{Earth} + Alt_{FSS_{SS}}\right) \times \cos(lat_{SS}) \times \sin(lon_{SS})$$
$$Z_S = \left(R_{Earth} + Alt_{FSS_SS}\right) \times \sin(lat_{SS})$$

where:

$lat_{sab}(\varphi)$ = latitude of the service area border for the azimuth φ

$lon_{sab}(\varphi)$ = longitude of the service area border for the azimuth φ

lat_{SS}= latitude of the sub-satellite point of the GSO/non-GSO space station

lon_{SS}= longitude of the sub-satellite point of the GSO/non-GSO space station

ANNEX 2 TO RESOLUTION [USA/A17/FSS SAT-TO-SAT] (WRC-23)

Provisions for non-GSO space stations transmitting in the 27.5-30 GHz bands to protect terrestrial services in the frequency band 27.5-29.5 GHz

The maximum pfd produced at the surface of the Earth by emissions from a Non-GSO space station transmitting in the 27.5-30 GHz bands shall not exceed:

pfd(θ) = −115 (dB(W/(m^2 □ 1 MHz))) for 0°≤ θ ≤ 5°

pfd(θ) = −115+0.5(θ-5) (dB(W/(m^2 □ 1 MHz))) for 5°≤ θ ≤ 25°

pfd(θ) = −105 (dB(W/(m^2 □ 1 MHz))) for 25°< θ ≤ 90°

where θ is the angle of arrival of the radio-frequency wave (degrees above the horizon).

ANNEX 3 TO RESOLUTION [USA/A17/ FSS SAT-TO-SAT] (WRC-23)

Provisions for non-GSO space stations transmitting in the 27.5-30.0 GHz bands to protect non-GSO space stations

The following conditions for non-GSO space stations transmitting in the frequency bands 27.5-30.0 GHz to protect non-GSO space stations shall apply:

a) Any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz towards a GSO FSS network shall never exceed the following on-axis e.i.r.p. spectral density limits:

1. For non-GSO space station transmit on-axis antenna gains greater than 40.6 dBi: -17.5 dBW/Hz

2. For non-GSO space station transmit on-axis antenna gains less than 40.6 dBi: -17.5 – (40.6 – on-axis gain of non-GSO space station antenna in dBi) dBW/Hz.

b) Any non-GSO space station transmitting in the frequency bands 29.5-30 GHz towards a GSO FSS network shall never exceed the following on-axis e.i.r.p. spectral density limits:

1. For non-GSO space station transmit on-axis antenna gains greater than 40.6 dBi: -16 dBW/Hz,

2. For non-GSO space station transmit on-axis antenna gains less than 40.6 dBi: -16 – (40.6 – on-axis gain of non-GSO space station antenna in dBi) dBW/Hz.

c) The total e.i.r.p. from any non-GSO space station transmitting in the frequency bands 27.5-30 GHz towards a GSO FSS network shall not exceed 66 dBW.

d) To protect fixed-satellite service feeder links to non-GSO mobile-satellite service systems the following conditions for non-GSO space stations and systems transmitting in the frequency band 29.1-29.5 GHz shall apply:

1. Emissions from any non-GSO space station communicating with a GSO network shall not exceed a maximum power spectral density of -62 dBW/Hz at the input of the antenna of the non-GSO space station,
2. Any non-GSO space station communicating with a GSO network shall have a minimum antenna diameter of 30 cm whose gain shall not exceed the gain envelope of Recommendation ITU-R S.580-6,
3. Non-GSO space stations communicating with a GSO network shall only operate in orbits with inclination between 80 and 100 degrees,
4. Non-GSO systems communicating with a GSO network shall not contain more than 100 satellites.

e) Any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz towards a non-GSO FSS system with a minimum operational altitude higher than 2000 km shall never exceed an on-axis e.i.r.p. spectral density of -20 dBW/Hz and the total e.i.r.p. shall not exceed 64 dBW.

f) Any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz towards a non-GSO FSS system with a minimum operational altitude lower than 2000 km shall never exceed an on-axis e.i.r.p. spectral density of -30 dBW/Hz and the total e.i.r.p. shall not exceed 57 dBW.

g) For off-axis angles greater than the 3.5 degrees, the off-axis e.i.r.p. emissions of any non-GSO space station transmitting in the frequency bands 27.5-29.1 GHz and 29.5-30 GHz bands to communicate with a non-GSO FSS system with a minimum operational altitude higher than 2000

km shall never exceed the envelope generated by the combination of an input power spectral density at the antenna flange of -62 dBW/Hz coupled with the off-axis gain derived from 29-25 log(□) dBi for angles between 3.5 degrees and 20 degrees.

h) *Note: a provision in the resolution, including but not limited to angular avoidance, may need to be developed to ensure that satellite-to-satellite links between non-GSO users and non-GSO service providers in the* frequency bands *27.5-28.6 and 29.5-30 GHz does not result in a loss of synchronization on gateway links of other non-GSO FSS systems. Similarly, a provision may need to be developed to ensure that satellite-to-satellite links between non-GSO users and either GSO FSS or non-GSO service providers in the* frequency band *28.6-29.1 GHz does not result in a loss of synchronization on gateway links of other non-GSO FSS systems. The level at which loss of synchronization occurs is still under consideration. In this regard, the membership is invited to provide contributions on this matter.*

{Note: provision h) is still under discussion.}

SUP USA/4079A17/10

RESOLUTION 773 (WRC-19)

Study of technical and operational issues, and regulatory provisions for satellite-to-satellite links in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz

Reasons: Adoption by WRC-23 of the aforementioned proposals satisfies the agenda item and therefore Resolution **773 (WRC-19)** is no longer needed.

XIII.

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7 Topic B

7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;
7(B) Topic B - Non-GSO bringing into use post-milestone procedure

Background:
WRC-19 approved Resolution **35 (WRC-19)**, "A milestone-based approach for the implementation of frequency assignments to space stations in a non-geostationary-satellite system in specific frequency bands and services." This Resolution contains a detailed procedure to be followed by administrations and the Radiocommunication Bureau (BR) when completing the implementation of Master International Frequency Register (MIFR) frequency assignments for non-geostationary satellite (non-GSO) systems to which the Resolution applies.
One aspect raised but not addressed in a regulatory sense in the Resolution relates to the case where a non-GSO system has completed the milestone process and subsequently experiences an intermediate- or long-term reduction of the number of satellites deployed. To provide information to the BR should this case occur, WRC-19 included *resolves* 19 in Resolution **35 (WRC-19)**, which requires the notifying administration to inform the BR "for information purposes only" of the date a reduction threshold (95% of the notified number of space stations in the system, rounded down to the lower integer, minus one) was first 'crossed'. (Reporting is not required until the number remains below the threshold for six months.) Further, if appropriate and applicable, the same *resolves* states that the notifying administration should also inform the BR of the date on which the deployment of the total number of satellites was resumed. The BR is to publish all information received under *resolves* 19 on its website.
As of 30 September 2022, the Bureau had not received, and therefore not published, any information specific to Resolution **35 (WRC-19)** *resolves* 19. Addendum 2 to the Director's Report to the 91st RRB (Document RRB22-3/5Add2) lists the twenty-one non-GSO systems to which Resolution **35 (WRC-19)** applies. Of those, four systems are fully-deployed (Milestone "M3" completed), with BIU dates of 1994, 1997, 2010, and 2018. Thus, there are only four systems to which Resolution **35 (WRC-19)** *resolves* 19 applies. Given this small sample size, it is not a surprise there have been no Resolution **35 (WRC-19)** *resolves* 19 reports. This indicates neither success nor failure of the Resolution **35 (WRC-19)** milestone procedure. It indicates that Resolution **35 (WRC-19)** has not been in force long enough to generate a sufficient quantity and quality of data to the Bureau from which to draw conclusions.
The United States finds no deficiency with Resolution **35 (WRC-19)** *resolves* 19 and no need to replace it with a post-milestone procedure. It proposes that no change is warranted at WRC-23, and believes that the information-gathering under *resolves* 19 should be allowed to continue until such time as the Director of the BR, in his or her report to a future WRC, indicates that the data show that there is a need to revisit the question of a potential post-milestone mechanism to address intermediate- and long-term reductions in the number of space stations in non-GSO systems that have completed the milestone process under Resolution **35 (WRC-19).**

Proposals:

NOC **USA-4/7B/1**

ARTICLES

NOC **USA-4/7B/2**

APPENDICES

NOC **USA-4/7B/3**

RESOLUTIONS

Reasons: The United States believes the need for a post-milestone procedure has not yet been proven necessary. No data has been provided to the Bureau under Resolution **35 (WRC-19)** *resolves* 19; there is no need to replace it with a post-milestone procedure.

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UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7 Topic D2

7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

7(D2) Topic D2 - New RR Appendix **4** parameters for Recommendation ITU-R S.1503 updates

Background: This proposal implements modification of Appendix **4** data elements to support implementation of agreed revisions to Rec. ITU-R S.1503-3. WRC-23 agenda item 7, Topic D2 is predicated on a revision to Rec. ITU-R S.1503-3 being adopted by Study Group 4 prior to WRC-23.

Proposal:

APPENDIX 4 (REV.WRC-19)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-12)

Footnotes to Tables A, B, C and D

[2] The Radiocommunication Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the BR IFIC (Space Services). (WRC-12)

MOD USA-4/7(D2)/1

TABLE A

GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION (Rev.WRC-19)

Item: in Appendix	*A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION*	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 21 of Appendix 30 or 30A)	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14	**FOR STATIONS OPERATING IN A FREQUENCY BAND SUBJECT TO Nos. 22.5C, 22.5D, 22.5F OR 22.5L: SPECTRUM MASKS**										**A.14**	
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14.b.6	the mask pattern defined in terms of the power in the reference bandwidth as a function of latitude and the off-axis angle between the non-geostationary earth station boresight line and the line from the non-geostationary earth station to a point on the GSO arc or as a function of latitude, the non-geostationary earth station pointing angles (azimuth, elevation) and the difference in longitude between the non-geostationary earth station and a point on the geostationary arc					X					A.14.b.6	
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14.c.4	the type of mask, among one of the following types: (Earth-based exclusion zone angle, difference in longitude, latitude) ~~(satellite-based exclusion zone angle, difference in longitude, latitude)~~ or (satellite azimuth, satellite elevation, latitude)					X					A.14.c.4	
…	…	…	…	…	…	…	…	…	…	…	…	…
A.14.d.x1	the minimum angle in degrees at the surface of the Earth between the lines to any two active non-GSO satellites					+					A.14.d.x1	
A.14.d.x2	the maximum number of non-geostationary earth stations tracked co-frequency by a non-geostationary satellite					+					A.14.d.x2	
…	…	…	…	…	…	…	…	…	…	…	…	…

Reasons: Implement changes in Appendix 4 to support revision of Rec. ITU-R S.1503.

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7 Topic J

7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;
7(J) Topic J - Modifications to Resolution **76 (Rev.WRC-15)**

Background:
Resolution **76 (Rev.WRC-15)** calls for the development of Recommendations on procedures ensuring that the aggregate epfd limits are not exceeded and calls for collaboration among administrations to jointly ensure those levels are not exceeded. While the aggregate epfd limits are specified in Tables 1A to 1D of the Resolution, there is no clear methodology nor procedures outlined in Resolution **76 (Rev.WRC-15)** for the involved administrations to collaboratively determine whether these aggregate levels are exceeded.
It is recognized that whereas all administrations that operate or plan to operate non-GSO FSS should collaborate to reduce predicted aggregate emissions below the levels in Tables 1A to 1D, this is not simply a theoretical exercise whereby single-entry epfd levels from all satellite filings as verified by the Bureau would simply be aggregated, but rather the aggregate calculations must be based on realistic parameters, assumptions and modelling of interference. Similarly, any action to be taken by individual administrations to make modifications on the operations their non-GSO FSS systems must be based on real operational characteristics of those systems including those systems that would operate imminently.

The concept of "consultation process/meetings" has been established in other regulatory frameworks –specifically, in Resolutions **769 (WRC-19)** and **609 (Rev.WRC-07)** – to provide a means for administrations to evaluate aggregate interference and assure compliance with aggregate interference limits between multiple systems (non-GSO in the case of Resolution **769 (WRC-19)** and non-GSO and GSO in the case of Resolution **609 (Rev.WRC-07)**. It is noted that the frequency bands identified in Resolution **76 (Rev.WRC-15)** include challenges that are different from those included in the frequency bands identified in Resolution **769 (WRC-19)** and Resolution **609 (Rev.WRC-07)**.
This proposalmodifies and updates Resolution **76 (Rev.WRC-15)** to call specifically for further study on a consultation process for non-GSO FSS systems operating in the frequency bands specified in *considering* a) of the Resolution to ensure compliance with the aggregate epfd limits in Tables 1A to 1D of the Resolution.

Proposal:

MOD USA-4/7J/1

RESOLUTION 76 (REV.WRC-23)

Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems in frequency bands where equivalent power flux-density limits have been adopted

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that WRC-97 adopted, in Article **22**, provisional equivalent power flux-density (epfd) limits to be met by non-geostationary fixed-satellite service (non-GSO FSS) systems in order to protect GSO FSS and GSO broadcasting-satellite service (BSS) networks in parts of the frequency range 10.7-30 GHz;

b) that WRC-2000 revised Article **22** to ensure the limits contained therein provide adequate protection to GSO systems without placing undue constraints on any of the systems and services sharing these frequency bands;

c) that WRC-2000 decided that a combination of single-entry validation, single-entry operational and, for certain antenna sizes, single-entry additional operational epfd limits, contained in Article **22**, along with the aggregate limits in Tables 1A to 1D as contained in Annex 1 to this Resolution, which apply to non-GSO FSS systems, protects GSO networks in these frequency bands;

d) that these single-entry validation limits have been derived from aggregate epfd masks contained in Tables 1A to 1D, assuming a maximum effective number of non-GSO FSS systems of 3.5;

e) that the aggregate interference caused by all co-frequency non-GSO FSS systems in these frequency bands into GSO FSS systems should not exceed the aggregate epfd levels in Tables 1A to 1D;

f) that WRC-97 decided, and WRC-2000 confirmed, that non-GSO FSS systems in the frequency bands in question are to mutually coordinate the use of frequencies in these frequency bands under the provisions of No. **9.12**;

g) that the orbital characteristics of such systems are likely to be inhomogeneous;

h) that, as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non-GSO FSS systems will not be directly related to the actual number of systems sharing a frequency band, and the number of such systems operating co-frequency is likely to be small;

i) that the possible misapplication of single-entry limits should be avoided,

recognizing

a) that non-GSO FSS systems are likely to need to implement interference mitigation techniques to mutually share frequencies;

b) that, on account of the use of such interference mitigation techniques, it is likely that the number of non-GSO systems will remain small, as will the aggregate interference caused by non-GSO FSS systems into GSO systems;

c) that, notwithstanding *considering d)* and *e)* and *recognizing b)*, there may be instances where the aggregate interference from non-GSO systems could exceed the interference levels given in Tables 1A to 1D;

d) that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non-GSO FSS systems in the frequency bands referred to in *considering a)* above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables 1A to 1D,

noting

Recommendation ITU-R S.1588 "Methodologies for calculating aggregate downlink equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems into a geostationary fixed-satellite service network",

resolves

1 that administrations operating or planning to operate non-GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in *considering a)* above, individually or in collaboration, shall take all possible steps, including, if necessary, by means of appropriate modifications to their systems, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels given in Tables 1A to 1D to be exceeded (see No. **22.5K**);

2 that, in the event that the aggregate interference levels in Tables 1A to 1D are exceeded, administrations operating non-GSO FSS systems in these frequency bands shall take all necessary measures expeditiously to reduce the aggregate epfd levels to those given in Tables 1A to 1D, or to higher levels where those levels are acceptable to the affected GSO administration (see No. **22.5K**),

invites the ITU Radiocommunication Sector

1 to continue its studies and to develop as a matter of urgency, a suitable methodology to calculate the aggregate epfd produced by all non-GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in *considering a)* above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels given in Tables 1A to 1D;

2 to continue its studies and to develop as a matter of urgency a Recommendation on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in *considering a)* above, and taking into account the coordination of frequency use among non-GSO systems, in order to assist administrations planning or operating non-GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks, and to provide guidance to GSO network designers on the maximum epfd↓ levels expected to be produced by all non-GSO FSS systems when accurate modelling assumptions are used;

3 to develop a Recommendation containing procedures to be used among administrations in order to ensure that the aggregate epfd limits given in Tables 1A to 1D are not exceeded by operators of non-GSO FSS systems;

4 to work on the development of measurement techniques to identify the interference levels from non-GSO systems in excess of the aggregate limits given in Tables 1A to 1D, and to confirm compliance with these limits,

instructs the Director of the Radiocommunication Bureau

1 to assist in the development of the methodology referred to in *invites the ITU Radiocommunication Sector* 1 above;

2 to report to a future competent conference on the results of studies in *invites the ITU Radiocommunication Sector* 1 and 3 above.

ANNEX 1 TO RESOLUTION 76 (REV.WRC-15)

…

Reason: This method proposes to modify and update Resolution **76 (Rev.WRC-15)** to call specifically for further study on a consultation process for non-GSO FSS systems operating in the frequency bands specified in considering a) of the Resolution to use to ensure compliance with the aggregate epfd limits in Tables 1A to 1D of the Resolution.

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

Mr. Tom Sullivan
Chief, International Bureau
Federal Communications
Commission 45 L Street NE
Washington, DC 20554

Dear Mr. Sullivan:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, provides the attached revised WRC-23 proposals for Agenda Item 1.11 addressing consideration of possible regulatory action to support modernization of GMDSS and the implementation of e-navigation and 7 topic C addressing protection of geostationary-satellite networks in the mobile-satellite service operating in the 7/8 GHz and 20/30 GHz bands from emissions of non-geostationary-satellite systems operating in the same frequency bands and identical directions.

NTIA looks forward to working with FCC in reconciling these proposals for submission to CITEL PCC II as U.S. proposals. Our point of contact is Mr. Charles Glass, NTIA's WRC Coordinator, who can be reached at (202) 714-1763 or cglass@ntia.gov.

Sincerely,

Steve Molina Feb 28, 2023

Steve Molina
Deputy Associate Administrator
Office of Spectrum Management

Enclosures (2)

UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.11 Issues A and B

1.11 to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System and the implementation of e-navigation, in accordance with Resolution **361 (Rev.WRC-19)**;

Background Information

This draft proposal addresses two of the three issues pertaining to WRC-23 AI 1.11 (GMDSS modernization), issue A and issue B. Issue A addresses four issues pertaining to GMDSS modernization and issue B addresses E-navigation. The third issue (issue C) has been addressed in a separate proposal.

World Radiocommunication Conference (WRC-23)
Dubai, 20 November - 15 December 2023

PLENARY MEETING

Addendum 11 to
Document 4534-E
14 December 2022
Original: English

United States of America

XIV. DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.11

1.11 to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System and the implementation of e-navigation, in accordance with Resolution **361 (Rev.WRC-19)**;

BACKGROUND INFORMATION:
This agenda item (AI) is the continuation of the AI 1.8, Issue A of WRC-19. The modernization of GMDSS, for which the work is undertaken by the IMO was not finalized at the time of WRC-19. That Conference was only able to take some preliminary decisions regarding NAVDAT in the MF and HF bands. In 2022, IMO has adopted amendments to the 1974 Safety of Life at Sea (SOLAS) Convention Chapters III and IV, together with related and consequential amendments to existing instruments other than SOLAS. These amendments will enter into force in 2024 and concluded the IMO work on modernization of the GMDSS.
This draft proposal addresses two of the three issues pertaining to WRC-23 AI 1.11 (GMDSS modernization), issue A and issue B. Issue A addresses four issues pertaining to GMDSS modernization and issue B addresses E-navigation. The third issue (issue C) has been addressed in a separate proposal.

One of the changes to the SOLAS Convention is the removal of non-406 MHz satellite EPIRBs, leaving only satellite EPIRBs operating on 406 MHz. Consequently, satellite EPIRBs operating on 1.6 GHz (1 645.5-1 646.5 MHz) and EPIRBs using VHF digital selective calling (DSC) operating at 156.525 MHz no longer form a part of the GMDSS. Given the removal of 1.6 GHz EPIRBs by the IMO, and noting that the use of the 1.6 GHz EPIRB has already ceased operation, some administrations are of the view that WRC-23 may consider possible changes to the RR related to use of the frequency band 1 645.5-1 646.5 MHz (Earth-to-space) for EPIRBs under issue A of AI 1.11. However, some other administrations are of the view that modifications to the RR in relation to this frequency range is outside the scope of this agenda item.

GMDSS Modernization
GMDSS modernization address the following four topics under issue A:

1. **Current regulatory status of narrow band direct printing (NBDP) for the global maritime distress and safety system**

The deletion of NBDP is proposed for distress and safety communications from GMDSS in RR Appendices **15** and **17** for MF and HF in all bands. This is due to the fact that NBDP for such purpose has been deleted by the IMO from SOLAS Chapter IV. As NBDP is not in practical use on ships for distress alerting the deletion simplifies the operational use and reduces the burden on the administrations to maintain a system which is no longer in use. Technical characteristics of NBDP in the maritime mobile service (MMS) are provided by Recommendations ITU-R M.476-5 and ITU-R M.625-4, which are incorporated by reference in the RR. In Recommendation ITU-R M.625-4 direct printing telegraphy is explicitly considered as part of the GMDSS. Further characteristics are given in Recommendation ITU-R M.627 (referenced by RR No. **51.41**).

2. **An automatic connection system (ACS) for MF and HF**

The implementation of an ACS is proposed for MF and HF in selected bands using DSC technology as indicated by IMO in the related performance standards, taking into account studies performed within ITU-R, especially in Recommendation ITU-R M.493 and Recommendation ITU-R M.541 and working document towards a preliminary draft new Report ITU-R M.[ACS]. It is proposed to implement this on the frequencies which had previously been used by NBDP for GMDSS in MF and all HF bands in RR Article **5** and Appendix **17** by a footnote.

Recommendations ITU-R M.493 and ITU-R M.541 have been revised in order to allow the introduction of an ACS based on DSC for communication in the MF and HF bands. Communication by MF/HF remains an integral part of the GMDSS. The implementation of ACS will ensure simple and reliable access to the required radio links for the mariner.

3. **NAVDAT**

The introduction of the NAVDAT frequencies is proposed in MF and HF bands in RR Appendix **15** and modification of the relevant provisions in RR Articles **5**, **32**, **33** and **52**.

The amendments to the 1974 SOLAS Convention chapters III and IV made it possible for NAVDAT to become an element of the modernized GMDSS. The frequencies for NAVDAT in MF and HF have been identified in RR Article **5** and Appendix **17** by the WRC-19. These frequencies need now to be inserted in RR Appendix **15.**

4. **1.6 GHz satellite emergency position indicating radio beacons**

The frequency band 1 645.5-1 646.5 MHz is allocated to the MSS (Earth-to-space) and was previously intended to be used by satellite EPIRBs ("1.6 GHz EPIRBs") operating with MSS networks. Recommendation ITU-R M.632-3, last revised in 1997, provides technical characteristics. The 1.6 GHz EPIRB service has been withdrawn from GMDSS by the IMO, and this band has remained unused for many years. The adjacent frequency band, 1 626.5-1 645.5 MHz is allocated to the MSS and is used to provide MSS service (Earth-to-space) for ships, including GMDSS SAT-COM communications (see RR No. **5.353A**).

A. E-navigation

E-navigation is a concept under study at IMO since the MSC 81 in 2005. The definition of e-navigation is given by IMO:

"E-navigation is the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore by electronic means to enhance

berth to berth navigation and related services for safety and security at sea and protection of the marine environment."

As shipping moves into the digital world, e-navigation is expected to provide digital communications and digital information for the benefit of maritime safety, security and protection of the marine environment, reducing the administrative burden and increasing the efficiency of maritime trade and transport.
Among the objectives of e-navigation, quoting the strategy implementation plan of the IMO, there are the improvements of communications in general, the standardization and automation of ship's reporting and the integration and presentation of available information in graphical displays received via communication equipment.
Communication is a key element for e-navigation. Future communication systems should be digital and could include VDES and in the future NAVDAT and be developed to facilitate wide information management solutions.

PROPOSAL

This proposal address' methods to satisfy *resolves*1 and *resolves* 2 of WRC-23 agenda item 1.11 (Resolution **361 (Rev.WRC-19)).** The United States proposes to support Method A for issue A (global maritime distress and safety system modernization):

The deletion of NBDP for distress and safety communications from GMDSS in RR Appendices **15** and **17** for MF and HF in all bands. This is due to the fact that NBDP for such purpose has been deleted by the IMO from SOLAS Chapter IV. As NBDP is not in practical use on ships for distress alerting the deletion simplifies the operational use and reduces the burden on the administrations to maintain a system which is no longer in use.

– The implementation of an ACS for MF and HF in selected bands using DSC technology as indicated by IMO in the related performance standards, taking into account studies performed within ITU-R, especially in Recommendation ITU-R M.493 and Recommendation ITU-R M.541 and working document towards a preliminary draft new Report ITU-R M.[ACS]. It is proposed to implement this on the frequencies which had previously been used by NBDP for GMDSS in MF and all HF bands in RR Article **5** and Appendix **17** by a footnote.

– The introduction of the NAVDAT frequencies in MF and HF in RR Appendix **15** and modification of the relevant provisions in RR Articles **5**, **32**, **33** and **52**.

– To implement AIS SART as locating equipment for which frequencies are protected by reference in RR Appendix **15**. Taking into account studies performed within ITU-R, especially in Recommendation ITU-R M.1371, it is proposed to amend RR No. **31.7** that survival craft stations may carry this equipment as an alternative to the RADAR-SART to be in line with SOLAS Chapter IV.

– Regarding the frequency band 1 645.5-1 646.5 MHz:

Minor modification to RR No. **5.375** are required and modify Table 15-2 of RR Appendix **15** by replacing the phrase "D&S-OPS" in column 2 with the phrase "SAT-COM." This action removes the no longer needed EPIRB limitation in the frequency band 1 645.5-1 646.5 MHz while leaving the band available for GMDSS SAT-COM communications.

B. Method B for Issue B: E-Navigation

– Previous WRCs have identified the frequency bands to be utilized for VDES and NAVDAT. These two systems can both support e-navigation.

– Satellite networks which would support e-navigation already have their allocation identified in the Radio Regulations.

– E-navigation is not part of the GMDSS.

Therefore, it is proposed a no change (**NOC**) to RR Article **5** for issue B.

MOD USA/4534A11/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD USA/4534A11/2

495-1 800 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
495-505	MARITIME MOBILE 5.82C ADD 5.A111	

Reasons: Coordination of the NAVDAT system should be done through the procedures establish by IMO, in the same way as it is done for the NAVTEX services, see Resolution **339 (Rev.WRC-07)**.

ADD USA/4534A11/3

5.A111 When establishing coast stations in the NAVDAT system on the frequencies 500 kHz and 4 226 kHz, the conditions for the use of the frequencies 500 kHz and 4 226 kHz are prescribed in Articles 31 and 52. Administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **[A111] (WRC-23)**). (WRC-23)

MOD USA/4534A11/4

3 230-5 003 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
4 063-4 438 5.131 MOD 5.132	MARITIME MOBILE 5.79A ADD 5.A111 5.109 MOD 5.110 5.130 5.128	

ADD USA/4534A11/5

3 230-5 003 kHz ADD 5.A11

MOD USA/4534A11/6

5.110 The frequencies 2 174.5 kHz, 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz ~~are international distress frequencies for narrow-band direct-printing telegraphy. The~~

~~conditions for the use of these frequencies are prescribed in Article 31.~~ are used for automatic connection system as described in the most recent version of Recommendation ITU-R M.541. (WRC-23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. The distress frequencies for NBDP are reused for the ACS described in Recommendation ITU-R M.541 (under revision) and the new Report ITU-R M.[ACS]

MOD USA/4534A11/7

5.132 The frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see ~~Appendix~~ Appendices 15 and **17**). (WRC-23)

Reasons: First to correct the omission of RR Appendix **15** and second to be align with RR No. **5.B111**.

5 003-7 000 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
6 200-6 525	MARITIME MOBILE 5.109 5.110 5.130 MOD 5.132 ADD 5.B111 5.137	

ADD USA/4534A11/8

ADD 5B111 The frequencies 6 337.5 kHz, 8 443 kHz, 12 663.5 kHz, 16 909.5 kHz and 22 450.5 kHz are the regional frequencies for the transmission of maritime safety information (MSI) by means of NAVDAT system (see Appendices **15** and **17**). (WRC-23)

Reasons: Introduction of the regional NAVDAT frequencies.

MOD USA/4534A11/9

7 450-13 360 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
8 195-8 815	MARITIME MOBILE 5.109 5.110 MOD 5.132 5.145 ADD 5.B111 5.111	
…/…		
12 230-13 200	MARITIME MOBILE 5.109 5.110 MOD 5.132 5.145 ADD 5.B111	

Reasons: Introduction of the regional NAVDAT frequencies.

ADD USA/4534A11/10

ADD 5.B111

Reasons: First to correct the omission of RR Appendix **15** and second to be align with RR No. **5.B111**.

MOD USA/4534A11/11

5.132

13 360-18 030 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
16 360-17 410	MARITIME MOBILE 5.109 5.110	MOD 5.132 5.145 ADD 5.B111

Reasons: Introduction of the regional NAVDAT frequencies.

ADD USA/4534A11/13

MOD USA/4534A11/14

18 030-23 350 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
22 000-22 855	MARITIME MOBILE MOD 5.132 ADD 5.B111 5.156	

Reasons: Introduction of the regional NAVDAT frequencies.

ADD USA/4534A11/13

MOD USA/4534A11/15

5.228C The use of the frequency bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and the mobile-satellite (Earth-to-space) service is limited to the automatic identification system (AIS), including the AIS search and rescue transmitter (AIS-SART). The use of these frequency bands by the aeronautical mobile (OR) service is limited to AIS emissions from search and rescue aircraft operations. The AIS operations in these frequency bands shall not constrain the development and use of the fixed and mobile services operating in the adjacent frequency bands. (WRC-~~12~~23)

Reasons: Recognize the use AIS frequencies for SARTs

MOD USA/4534A11/16

5.375 The use of the band 1 645.5-1 646.5 MHz by the mobile-satellite service (Earth-to-space) and for inter-satellite links is limited to distress, urgency and safety communications (see Article 31). (WRC-23)

Reasons: Introduction of the word urgency in order to reflect the last modification of SOLAS Chapter IV.

ARTICLE 19

Identification of stations

Section I − General provisions

MOD USA/4534A11/17

19.11 5) All transmissions by satellite emergency position-indicating radiobeacons (EPIRBs) operating in the band 406-406.1 MHz ~~or the band 1 645.5-1 646.5 MHz, or by EPIRBs using digital selective calling techniques,~~ shall carry identification signals. (WRC-23)

Reasons: No EPIRB operation in L band and VHF DSC.

ARTICLE 31

Frequencies for the global maritime distress and safety system (GMDSS)

Section II − Survival craft stations

MOD USA/4534A11/18

31.7 2) Equipment for transmitting locating signals from survival craft stations shall be capable of operating in the frequency band 9 200-9 500 MHz ~~band.~~or on 161.975 MHz (AIS 1 of Appendix **18**) and 162.025 MHz (AIS 2 of Appendix **18**). (WRC-23)

Reasons: The frequencies for AIS-SART homing signal need to be included.

ARTICLE 32

Operational procedures for distress communications in the global maritime distress and safety system (GMDSS) (WRC-07)

Section I − General

MOD USA/4534A11/19

32.7 § 6 The phonetic alphabet and figure code in Appendix **14** and the abbreviations and signals in accordance with the most recent version of Recommendation ITU-R M.1172 should be used where applicable[MOD1]. (WRC-03)

Reasons:

MOD USA/4534A11/20

32.7.1 The use of the Standard Marine Communication Phrases and, where language difficulties exist~~s~~, the International Code of Signals, both published by the International Maritime Organization (IMO), is also recommended. It should be noted that the pronunciations for figures in Appendix **14** and IMO SMCP are different. (WRC-23)

Reasons: In order to avoid potential confusion, it is necessary to remind the mariners and administrations of the difference in pronunciations of figures between RR Appendix **14** and IMO SMCP.

Section II − Distress alerting and distress calling (WRC-07)

MOD USA/4534A11/21

32.11 *B − Transmission of a distress alert or a distress call* (WRC-07)

Reasons:

B1 − Transmission of a distress alert or a distress call by a ship station or a ship earth station (WRC-07)

MOD USA/4534A11/22

32.12 § 8 Ship-to-shore distress alerts or calls are used to alert rescue coordination centres via coast stations or coast earth stations that a ship is in distress. These alerts are based on the use of transmissions via satellites (from a ship earth station or a satellite EPIRB) and terrestrial services (from ship stations ~~and EPIRBs~~). (WRC-~~07~~23)

Reasons: Terrestrial VHF EPRIRB is no longer in operation.

32.20 *C − Receipt and acknowledgement of distress alerts and distress calls* (WRC-07)

C1 − Procedure for acknowledgement of receipt of distress alerts or a distress call (WRC-07)

MOD USA/4534A11/23

32.21A 2) When acknowledging receipt of a distress alert sent by DSC[8], the acknowledgement in the terrestrial services shall be made by DSC~~,~~ or radiotelephony ~~or narrow-band direct-printing telegraphy as appropriate to the circumstances,~~ on the associated distress and safety frequency in the same band in which the distress alert was received, taking due account of the directions given in the most recent versions of Recommendations ITU-R M.493 and ITU-R M.541. (WRC-~~07~~23)

Reasons: NBDP has been deleted by the IMO from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, acknowledging receipt of a distress alert by NBDP should be excluded. However, acknowledge receipt by DSC or radiotelephony should be retained.

MOD USA/4534A11/24

32.23 § 15 ~~1)~~ When acknowledging by radiotelephony the receipt of a distress alert or a distress call from a ship station or a ship earth station, the acknowledgement should be given in the following form, taking into account Nos. **32.6** and **32.7**:

- the distress signal “MAYDAY”;
- the name followed by the call sign, or the MMSI or other identification of the station sending the distress message;
- the words “THIS IS”;
- the name and call sign or other identification of the station acknowledging receipt;

– the word “RECEIVED”;
– the distress signal “MAYDAY”. (WRC-12)

Reasons: Editorial changes of numbering due to the suppression of RR No. **32.24**.

SUP USA/4534A11/25
32.24

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, the acknowledging receipt of a distress alert by NBDP is not effective.

C3 − Receipt and acknowledgement by a ship station or ship earth station (WRC-07)

MOD USA/4534A11/26
32.31 2) However, in order to avoid making unnecessary or confusing transmissions in response, a ship station, which may be at a considerable distance from the incident, receiving an HF distress alert, shall not acknowledge it but shall observe the provisions of Nos. **32.36** to **32.~~38~~37**, and shall, if the distress alert is not acknowledged by a coast station within five minutes, relay the distress alert, but only to an appropriate coast station or coast earth station (see also Nos. **32.16** to **32.19H**). (WRC-~~07~~23)

Reasons: NBDP has been deleted from the GMDSS with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. If the provision of RR No. **32.38** is deleted, this provision number should be amended.

MOD USA/4534A11/27
32.34A § 21A However, unless instructed to do so by a coast station or a rescue coordination centre, a ship station may only send an acknowledgement by DSC in the event that:

a) no acknowledgement by DSC from a coast station has been observed; and

b) no other communication by radiotelephony ~~or narrow-band direct-printing telegraphy~~ to or from the vessel in distress has been observed; and

c) at least five minutes have elapsed and the distress alert by DSC has been repeated (see No. **32.21A.1**). (WRC-07)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, distress communication by NBDP is not effective.

32.36 *D − Preparations for handling of distress traffic*

32.3**8**

SUP USA/4534A11/28

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, coast stations and ship stations

need not set watch on the NBDP frequencies for GMDSS. Radio watch on the associated frequency by radiotelephony is regulated by RR No. **32.37**.

Section III − Distress traffic

32.39 *A − General and search and rescue coordinating communications*

SUP USA/4534A11/29
32.43

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, distress traffic by NBDP is not appropriate.

SUP USA/4534A11/30
32.44

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, distress traffic by NBDP is not effective.

MOD USA/4534A11/31

32.47 ~~*d)*~~ in radiotelephony, the signal SEELONCE MAYDAY, pronounced as the French expression “silence, m’aider”; (WRC-23)

Reasons: Editorial changes of numbering due to the suppression of RR No. **32.48**.

SUP USA/4534A11/32

32.48

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, distress related traffic by NBDP is not effective.

MOD USA/4534A11/33

32.52 § 32 ~~1)~~ In radiotelephony, the message referred to in No. **32.51** should consist of the following taking into account Nos. **32.6** and **32.7**:

– the distress signal “MAYDAY”;
– the words “ALL STATIONS”, spoken three times;
– the words “THIS IS”;
– the name of the station sending that message, spoken three times;
– the call sign or other identification of the station sending the message;
– the time of handing in of the message;

– the MMSI (if the initial alert has been sent by DSC), the name and the call sign of the mobile station which was in distress;

– the words "SEELONCE FEENEE" pronounced as the French words "silence fini". (WRC-12)

Reasons: Editorial changes of numbering due to the suppression of RR No. **32.53**.

SUP USA/4534A11/34
32.53

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, there is no need to announce by NBDP that the distress traffic has been finished.

MOD USA/4534A11/35

32.54 *B − On-scene communications*

Reasons:

MOD USA/4534A11/36
32.56 2) Control of on-scene communications is the responsibility of the unit coordinating search and rescue operations[10]. Simplex communications shall be used so that all on-scene mobile stations may share relevant information concerning the distress incident. ~~If direct-printing telegraphy is used, it shall be in the forward error-correcting mode.~~ (WRC-23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. On-scene communications are distress traffic between the mobile unit in distress and assisting mobile units. Therefore, on-scene communications using NBDP is not appropriate.

MOD USA/4534A11/37
32.57 § 34 1) The preferred frequencies in radiotelephony for on-scene communications are 156.8 MHz and 2 182 kHz. ~~The frequency 2 174.5 kHz may also be used for ship-to-ship on-scene communications using narrow-band direct-printing telegraphy in the forward error-correcting mode.~~ (WRC-23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, ship-to-ship on-scene communications using NBDP is not appropriate.

MOD USA/4534A11/38
32.59 § 35 The selection or designation of on-scene frequencies is the responsibility of the unit coordinating search and rescue operations[10]. Normally, once an on-scene frequency is established, a continuous aural ~~or teleprinter~~ watch is maintained by all participating on-scene mobile units on the selected frequency. (WRC-23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, ship-to-ship on-scene communications using NBDP is not appropriate.

32.60 *C − Locating and homing signals*

MOD USA/4534A11/40

32.61 § 36 1) Locating signals are radio transmissions intended to facilitate the finding of a mobile unit in distress or the location of survivors. These signals include those transmitted by searching units, and those transmitted by the mobile unit in distress, by survival craft, by ~~float free EPIRBs, by~~ satellite EPIRBs, radar SARTs and by ~~search and rescue radar transponders~~AIS SARTs to assist the searching units. (WRC-23)

Reasons: Editorial changes to the name of EPIRB and SART. AIS-SART is also GMDSS equipment and transmit locating signal.

ARTICLE 33

Operational procedures for urgency and safety communications in the global maritime distress and safety system (GMDSS)

Section II − Urgency communications

MOD USA/4534A11/41

33.8 § 2 1) In a terrestrial system, urgency communications consist of an announcement, transmitted using digital selective calling, followed by the urgency call and message transmitted using radiotelephony~~, narrow-band direct printing~~, or data. The announcement of the urgency message shall be made on one or more of the distress and safety calling frequencies specified in Section I of Article **31** using either digital selective calling and the urgency call format, or if not available, radio telephony procedures and the urgency signal. Announcements using digital selective calling should use the technical structure and content set forth in the most recent version of Recommendations ITU-R M.493 and ITU-R M.541. A separate announcement need not be made if the urgency message is to be transmitted through the maritime mobile-satellite service. (WRC-~~07~~23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, urgency communications by NBDP are not appropriate.

MOD USA/4534A11/42

33.12 § 6 ~~1)~~ The urgency call should consist of the following, taking into account Nos. **32.6** and **32.7**:

– the urgency signal “PAN PAN”, spoken three times;

– the name of the called station or “ALL STATIONS”, spoken three times;

– the words “THIS IS”;

– the name of the station transmitting the urgency message, spoken three times;
– the call sign or any other identification;
– the MMSI (if the initial announcement has been sent by DSC),

followed by the urgency message or followed by the details of the channel to be used for the message in the case where a working channel is to be used.
In radiotelephony, on the selected working frequency, the urgency call and message consist of the following, taking into account Nos. **32.6** and **32.7**:

– the urgency signal "PAN PAN", spoken three times;
– the name of the called station or "ALL STATIONS", spoken three times;
– the words "THIS IS";
– the name of the station transmitting the urgency message, spoken three times;
– the call sign or any other identification;
– the MMSI (if the initial announcement has been sent by DSC);
– the text of the urgency message. (WRC-~~12~~23)

Reasons: Editorial change to the number of provision.

SUP USA/4534A11/43
33.13

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, urgency communications by NBDP are not appropriate.

SUP USA/4534A11/44
33.17 § 9

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, urgency communications by NBDP are not appropriate.

SUP USA/4534A11/45
33.18

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, urgency communications by NBDP are not appropriate.

Section III − Medical transports

MOD USA/4534A11/46
33.20 § 11 1) For the purpose of announcing and identifying medical transports which are protected under the above-mentioned Conventions, the procedure of Section II of this Article is used. The urgency call shall be followed ~~by the addition of the single word MEDICAL in narrow-band direct-printing and~~ by the addition of the single word MAY-DEE-CAL pronounced as in French "médical", in radiotelephony. (WRC-~~07~~23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Medical advice communication belongs to GMDSS in RR Article **33**. Therefore, urgency communications for medical advice by NBDP are not appropriate.

Section IV − Safety communications

MOD USA/4534A11/47

33.31 § 15 1) In a terrestrial system, safety communications consist of a safety announcement, transmitted using digital selective calling, followed by the safety call and message transmitted using radiotelephony~~, narrow band direct printing~~ or data. The announcement of the safety message shall be made on one or more of the distress and safety calling frequencies specified in Section I of Article **31** using either digital selective calling techniques and the safety call format, or radiotelephony procedures and the safety signal. (WRC-~~07~~23)

Reasons: NBDP has been deleted from the GMDSS., with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, safety communications by NBDP are not appropriate.

MOD USA/4534A11/48

33.35 § 19 ~~1)~~ The complete safety call should consist of the following, taking into account Nos. **32.6** and **32.7**:

– the safety signal “SECURITE”, spoken three times;
– the name of the called station or “ALL STATIONS”, spoken three times;
– the words “THIS IS”;
– the name of the station transmitting the safety message, spoken three times;
– the call sign or any other identification;
– the MMSI (if the initial announcement has been sent by DSC),

followed by the safety message or followed by the details of the channel to be used for the message in the case where a working channel is to be used.

In radiotelephony, on the selected working frequency, the safety call and message should consist of the following, taking into account Nos. **32.6** and **32.7**:

– the safety signal “SECURITE”, spoken three times;
– the name of the called station or “ALL STATIONS”, spoken three times;

– the words “THIS IS”;
– the name of the station transmitting the safety message, spoken three times;
– the call sign or any other identification;
– the MMSI (if the initial alert has been sent by DSC);
– the text of the safety message. (WRC-~~12~~23)

Reasons: Editorial changes of numbering due to the suppression of RR No. **33.36**.

SUP USA/4534A11/49
33.36

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, safety communications by NBDP are not appropriate.

SUP USA/4534A11/50
33.37

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, safety communications by NBDP are not appropriate.

SUP USA/4534A11/51
33.38

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, safety communications by NBDP are not appropriate.

Section V − Transmission of maritime safety information[2]

33.39 *A − General*
33.40 (SUP - WRC-07)

ADD USA/4534A11/52
3340*bis* **The transmission of maritime safety information using either the NAVTEX system and/or the NAVDAT system is the responsibility of the administration which shall inform the IMO in order to update the IMO Master Plan of shore-based facilities for the GMDSS (GMDSS Master Plan).** (WRC-23)

Reasons: The administrations could broadcast MSI using either the NAVTEX or NAVDAT system but shall inform the IMO in order to update the GMDSS Master Plan, this can be made by updating the GMDSS Master Plan module for the IMO GISIS (Global Integrated Ship Information System) an online system accessed via the IMO website, this is a means for mariners to know how MSI is broadcast.

33.41 § 22 The mode and format of the transmissions mentioned in Nos. **33.43**, **33.45**, **33.46**, **33.46A2** and **33.48** shall be in accordance with the relevant ITU-R Recommendations. (WRC-23)

Reasons: Reference to the new NAVDAT section in RR No. **33.46A2.**

33.42 *B − International NAVTEX system*

MOD USA/4534A11/55

33.43 § 23 Where ~~M~~maritime safety information ~~shall be~~is transmitted ~~by means of~~using the international NAVEX system, taking into account No. 33.40 *bis*, by means of narrow-band direct-printing telegraphy with forward error correction ~~using~~ the frequency 518 kHz ~~in accordance with the international NAVTEX system~~shall be used (see Appendix **15**). (WRC-23)

Reasons: Rewording of this provision taking into account RR No. **33.40*bis***.

ADD USA/4534A11/56

33.46A1 ***D − International NAVDAT system*** [TEXT MISSING]

ADD

33.46A2 § 25 Where maritime safety information is transmitted using the international NAVDAT system, taking into account No. **33.40*bis***, the frequency 500 kHz and/or 4 226 kHz shall be used (see Appendix **15**). (WRC-23)

Reasons: Introduction of a new section for the NAVDAT.

MOD USA/4534A11/57

33.47 *~~D~~ E − High seas maritime safety information*

Reasons: Editorial renumbering due to the introduction of the new NAVDAT section.

MOD USA/4534A11/58

33.48 § ~~25~~26 Maritime safety information which is transmitted by means of narrow-band direct-printing telegraphy with forward error correction ~~using~~ uses the frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz. Maritime safety information which is transmitted by means of the NAVDAT system uses the frequencies 6 337.5 kHz, 8 443 kHz, 12 663.5 kHz, 16 909.5 kHz and 22 450.5 kHz. (WRC-23)

Reasons: Introduction of the HF frequencies used for the NAVDAT, see RR Appendix **17** and Recommendation ITU-R M.2058.

MOD USA/4534A11/59

33.49 *~~E~~ F − Maritime safety information via satellite*

Reasons: Editorial renumbering due to the introduction of the new NAVDAT section.

MOD USA/4534A11/60

33.49 *E – Maritime safety information via satellite*

Reasons:

MOD USA/4534A11/61

33.50 § ~~26~~27 Maritime safety information may be transmitted via satellite in the maritime mobile-satellite service using the frequency bands 1 530-1 545 MHz and 1 621.35-1 626.5 MHz (see Appendix **15**). (WRC-~~19~~23)

Reasons: Editorial renumbering due to the introduction of the new NAVDAT section. Paragraphs Nos. **33.51** to **33.53** to be renumbered.

ARTICLE 34

Alerting signals in the global maritime distress and safety system (GMDSS)

MOD USA/4534A11/62

Section I – ~~Emergency~~ Satellite emergency position-indicating radiobeacon (EPIRB) ~~and satellite EPIRB signals~~

Reasons: Editorial changes to the name of EPIRB.

ARTICLE 47

Operator's certificates

Section III – Conditions for the issuing of certificates

MOD USA/4534A11/63

TABLE **47-1** (WRC-23)

Requirements for radio electronic and operator's certificates

The relevant certificate is issued to a candidate who has given proof of the technical and professional knowledge and qualifications enumerated below, as indicated by an asterisk in the appropriate box	1st-class radio electronic certificate	2nd-class radio electronic certificate	General operator's certificate	Restricted operator's certificate
Knowledge of the principles of electricity and the theory of radio and of electronics sufficient to meet the requirements specified below:	*	*		

Theoretical knowledge of GMDSS radiocommuni-cation equipment, including narrow-band direct-printing telegraph and radiotelephone transmitters and receivers, digital selective calling equipment, ship earth stations, satellite emergency position-indicating radiobeacons, marine antenna systems, radio equipment for survival craft together with all auxiliary items, including power supplies, as well as general knowledge of the principles of other equipment generally used for radionavigation, with particular reference to maintaining equipment in service.	*			
General theoretical knowledge of GMDSS radiocommunication equipment, including narrow-band direct-printing telegraph and radiotelephone transmitters and receivers, digital selective calling equipment, ship earth stations, (including telegrapgy), satellite emergency position-indicating radiobeacons, marine antenna systems, radio equipment for survival craft together with all auxiliary items, including power supplies, as well as general knowledge of the principles of other equipment generally used for radionavigation, with particular reference to maintaining equipment in service.		*		
Practical knowledge of the operation and knowledge of the preventive maintenance of the equipment indicated above.	*	*		
Practical knowledge necessary for the location and repair (using appropriate testing equipment and tools) of faults in the equipment mentioned above which may occur during a voyage.	*			
Practical knowledge necessary for effecting repairs in the case of faults in the equipment indicated above, using the means available on board and, if necessary, replacing modular units.		*		

TABLE **47-1 (*END*)**

The relevant certificate is issued to a candidate who has given proof of the technical and professional knowledge and qualifications enumerated below, as indicated by an asterisk in the appropriate box	**1st-class radio electronic certificate**	**2nd-class radio electronic certificate**	**General operator's certificate**	**Restricted operator's certificate**
Detailed practical knowledge of the operation of all the GMDSS sub-systems and equipment.	*	*	*	
Practical knowledge of the operation of all the GMDSS sub-systems and equipment which is required while the ship is within the range of VHF coast stations (see NOTE 1).				*
Ability to send and to receive correctly by ~~radiotelephone~~ radiotelephony and ~~direct printing~~ telegraphy.	*	*	*	
Ability to send and to receive correctly by radiotelephone.	*	*	*	*
Detailed knowledge of the regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of those provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended which relate to radio.	*	*	*	
Knowledge of the regulations applying to radiotelephone communications and specifically of that part of those regulations relating to the safety of life.				*
Sufficient knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing.	*	*	*	
An elementary knowledge of one of the working languages of the Union. Candidates should be able to express themselves satisfactorily in that language, both orally and in writing. Administrations may waive the above language requirements for holders of a restricted operator's certificate when the ship station is confined to a limited area specified by the administration concerned. In such cases the certificate shall be suitably endorsed.				*

NOTE 1 – A restricted operator's certificate covers only the operation of GMDSS equipment required for GMDSS sea areas A1, and does not cover the operation of GMDSS A2/A3/A4 equipment fitted on a ship over and above the basic A1 requirements, even if the ship is in a sea area A1. GMDSS sea areas A1, A2, A3 and A4 are identified in the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended.

NOTE 2 – (SUP - WRC-12)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Therefore, knowledge on NBDP operation is not required by GMDSS operators. Ability to send and receive correctly by radiotelephone is essential for all GMDSS operators.

ARTICLE 51

Conditions to be observed in the maritime services

Section I − Maritime mobile service

51.39 *CA − Ship stations using narrow-band direct-printing telegraphy*

MOD USA/4534A11/64

51.40 § 17 1) All ship stations using narrow-band direct-printing telegraphy equipment for general traffic ~~shall~~ should be able to send and receive on the frequency designated for ~~distress traffic by~~ narrow-band direct-printing telegraphy in the frequency bands in which they are operating. (WRC-23)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15**. Voluntary carriage of sending and receiving equipment for general traffic is still possible.

MOD USA/4534A11/65

51.41 2) The characteristics of the narrow-band direct-printing equipment ~~shall~~ should be in accordance with the most recent version of Recommendations ITU-R M.476, ~~5 and~~ ITU-R M.625 ~~4. The characteristics should also be in accordance with the most recent version of~~and Recommendation ITU-R M.627. (WRC-~~15~~23)

Reasons: NBDP has been deleted from the GMDSS. with the exception of MSI on certain frequencies which are contained in RR Appendix **15**.

51.42 CA1 − Bands between 415 kHz and 535 kHz

MOD USA/4534A11/66

51.44 *a)* send and receive class F1B or J2B emissions for general traffic on the working frequencies necessary to carry out their service; (WRC-23)

Reasons: Since NBDP is not use anymore for distress, for MSI solely the reception is needed.

51.48 CA3 − Bands between 4 000 kHz and 27 500 kHz

MOD USA/4534A11/67

51.49 § 20 All ship stations equipped with narrow-band direct-printing telegraphy apparatus for general traffic to work in the authorized bands between 4 000 kHz and 27 500 kHz

should be able to send and receive class F1B or J2B emissions on working frequencies in each of the HF maritime mobile bands necessary to carry out their service.
All ship stations equipped with narrow-band direct-printing telegraphy apparatus for MSI reception to work in the authorized bands between 4 000 kHz and 27 500 kHz shall be able to receive class F1B or J2B emissions on working frequencies in each of the HF maritime mobile bands necessary to carry out their service. (WRC-23)

Reasons: NBDP receiving only is still required for MSI reception.

51.50 *D − Ship stations using radiotelephony*

ADD

51.64A1 *E − Ship stations receiving data transmissions* (WRC-23)

ADD USA/4534A11/68

51.64A1 *E − Ship stations receiving data transmissions* (WRC-23)

ADD USA/4534A11/69
51.64A2 ***E1 − Bands between 415 kHz and 526.5 kHz***

ADD

51.64A3 § 24*bis* All ship stations equipped with NAVDAT apparatus for receiving digital data transmissions in the authorized bands between 415 kHz and 535 kHz shall be capable of receiving class W7D emission on 500 kHz, if complying with the provisions of Chapter VII. (WRC-23)

ADD USA/4534A11/70
51.64A4 ***E2 − Bands between 4 000 kHz and 27 500 kHz***
51.64A5 § 24ter All ship stations equipped with NAVDAT apparatus for receiving digital data transmissions in the authorized bands between 4 000 kHz and 27 500 kHz shall be capable of receiving class W7D emission, if complying with the provisions of Chapter VII. (WRC-23)

Reasons: These provisions are added in order to stipulate the required class of emissions for NAVDAT in accordance with Recommendations ITU-R M.2010 and ITU-R M.2058.

ARTICLE 52

Special rules relating to the use of frequencies

Section I − General provisions

52.4 *B − Bands between 415 kHz and 535 kHz*

MOD USA/4534A11/74

52.6 § 3 1) In the maritime mobile service, no assignments shall be made on the frequency 518 kHz other than for transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of automatic narrow-band direct-printing telegraphy (International NAVTEX System). In the maritime mobile service, no assignments shall be made on the frequency 500 kHz other than for transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of the International NAVDAT System. (WRC-23)

Reasons: Protection of the frequency for the international NAVDAT system.

52.12 *D − Bands between 4 000 kHz and 27 500 kHz*

ADD USA/4534A11/75

52.13A § 6bis In the maritime mobile service, no assignments shall be made on the frequency 4 226 kHz other than for transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of International NAVDAT System. (WRC-23)

Reasons: Protection of the frequency for the international NAVDAT system.

Section III − Use of frequencies for narrow-band direct-printing telegraphy

52.96 *B − Bands between 415 kHz and 535 kHz*

MOD USA/4534A11/78

52.97 § 45 All ship stations equipped with narrow-band direct-printing apparatus for general traffic to work in the authorized bands between 415 kHz and 535 kHz ~~shall~~ should be able to send and receive class F1B emissions as specified in No. **51.44**. Additionally, ship stations complying with the provisions of Chapter **VII** shall be able to receive class F1B emissions on 518 kHz (see No. **51.45**). (WRC-23)

Reasons: NBDP receiving only is still required for NAVTEX reception.

52.102 *D − Bands between 4 000 kHz and 27 500 kHz*

MOD USA/4534A11/81

52.103 § 47 All ship stations equipped with narrow-band direct-printing telegraph apparatus for general traffic to work in the authorized bands between 4 000 kHz and 27 500 kHz ~~shall~~ should be able to send and receive class F1B emissions as specified in No. **51.49**. The assignable frequencies are indicated in ~~Appendix~~ Appendices 15 and **17**. (WRC-23)

Reasons: NBDP receiving only is still required for NAVTEX reception.

Section VII – Use of frequencies for data transmissions (WRC-12)

52.261 *A – General* (WRC-12)

52.262 Frequencies assigned to coast stations for data transmissions shall be indicated in the List of Coast Stations and Special Service Stations (List IV). This List shall also indicate any other useful information concerning the service performed by each coast station. (WRC-12)

ADD USA/4534A11/84
52.262A1 *B – Bands between 415 kHz and 526.5 kHz* (WRC-23)

ADD

B1 – Mode of operation of stations **(WRC-23)**

ADD USA/4534A11/85
52.262A2 The class of emissions to be used for data transmissions in the bands between 415 kHz and 526.5 kHz should be in accordance with the most recent version of Recommendation ITU-R M.2010. Coast stations as well as ship stations should use radio systems specified in the most recent version of Recommendation ITU-R M.2010. (WRC-23)

Reasons: The frequency usages for MF NAVDAT system need to be included.

ADD USA/4534A11/86
52.263 ~~B~~C – Bands between 4 000 kHz and 27 500 kHz (WRC-~~12~~23)

Reasons:

MOD USA/4534A11/87

~~B1~~ C1 – Mode of operation of stations (WRC-~~12~~23)

Reasons:

MOD USA/4534A11/88
52.264 The class of emissions to be used for data transmissions in ~~this section~~the bands between 4 000 kHz and 27 500 kHz should be in accordance with the most recent version of Recommendation ITU-R M.1798 or the most recent version of Recommendation ITU-R M.2058. Coast stations as well as ship stations should use radio systems specified in the most recent version of Recommendation ITU-R M.1798 or the most recent version of Recommendation ITU-R M.2058. (WRC-~~15~~23)

Reasons: The frequency usages for HF NAVDAT system need to be included.

52.265 Coast stations employing the class of emissions in accordance with No. **52.264** in the frequency bands between 4 000 kHz and 27 500 kHz shall not exceed a peak envelope power of 10 kW. (WRC-12)

ADD USA/4534A11/89

52.265A1 Coast stations employing the class of emissions in accordance with the most recent version of Recommendation ITU R M.2058 in the frequency bands between 4 000 kHz and 27 500 kHz shall not exceed a mean power in the following values.

Band	*Maximum mean power*
4 MHz	5 kW
6 MHz	5 kW
8 MHz	10 kW
12 MHz	10 kW
16 MHz	10 kW
18/19 MHz	10 kW
22 MHz	10 kW

(WRC-23)

Reasons: Introduction of the maximum mean power for the NAVDAT system by the coast station in the HF bands.

MOD USA/4534A11/92

APPENDIX 14 (REV.WRC-~~07~~23)

Phonetic alphabet and figure code

(See Articles ~~30~~ 32 and 57) (WRC-~~07~~23)

Reasons: This is an editorial mistake. Articles referring to RR Appendix **14** are RR Articles **32** (**32.7**) and **57** (**57.7**) instead of RR Articles **30** and **57**.

APPENDIX 15 (REV.WRC-19)

Frequencies for distress and safety communications for the Global Maritime Distress and Safety System

MOD USA/4534A11/93

TABLE 15-1 (WRC-~~07~~23)

Frequencies below 30 MHz

Frequency (kHz)	Description of usage	Notes
490	MSI	The frequency 490 kHz is used exclusively for maritime safety information (MSI). (WRC-03)
500	MSI	The frequency 500 kHz is used exclusively by the international NAVDAT system (see Resolution [**A111**] (**WRC-23**)).
518	MSI	The frequency 518 kHz is used exclusively by the international NAVTEX system.
~~*2 174.5~~	~~NBDP COM~~	

*2 182	RTP-COM	The frequency 2 182 kHz uses class of emission J3E. See also No. **52.190**.
*2 187.5	DSC	
3 023	AERO-SAR	The aeronautical carrier (reference) frequencies 3 023 kHz and 5 680 kHz may be used for intercommunication between mobile stations engaged in coordinated search and rescue operations, and for communication between these stations and participating land stations, in accordance with the provisions of Appendix **27** (see Nos. **5.111** and **5.115**).
*4 125	RTP-COM	See also No. **52.221**. The carrier frequency 4 125 kHz may be used by aircraft stations to communicate with stations of the maritime mobile service for distress and safety purposes, including search and rescue (see No. **30.11**).
~~*4 177.5~~	~~NBDP COM~~	
*4 207.5	DSC	
4 209.5	MSI	The frequency 4 209.5 kHz is exclusively used for NAVTEX-type transmissions (see Resolution **339 (Rev.WRC-07)**).
4 210	MSI-HF	
4 226	MSI	The frequency 4 226 kHz is exclusively used for the international NAVDAT system (see Resolution [**A111**] **(WRC-23)**).
5 680	AERO-SAR	See note under 3 023 kHz above.
*6 215	RTP-COM	See also No. **52.221**.
~~*6 268~~	~~NBDP COM~~	
*6 312	DSC	

TABLE 15-1 (*END*) (WRC-07)

Frequency (kHz)	Description of usage	Notes
6 314	MSI-HF	By means of narrow-band direct-printing telegraphy.
6 337.5	MSI-HF	By means of the NAVDAT system.
*8 291	RTP-COM	
~~*8 376.5~~	~~NBDP-COM~~	
*8 414.5	DSC	
8 416.5	MSI-HF	By means of narrow-band direct-printing telegraphy.
8 443	MSI-HF	By means of the NAVDAT system.
*12 290	RTP-COM	
~~*12 520~~	~~NBDP-COM~~	
*12 577	DSC	
12 579	MSI-HF	By means of narrow-band direct-printing telegraphy.
*16 420	RTP-COM	
~~*16 695~~	~~NBDP-COM~~	
*16 804.5	DSC	
16 806.5	MSI-HF	By means of narrow-band direct-printing telegraphy.
16 909.5	MSI-HF	By means of the NAVDAT system.
19 680.5	MSI-HF	By means of narrow-band direct-printing telegraphy.
22 376	MSI-HF	By means of narrow-band direct-printing telegraphy.
22 450.5	MSI-HF	By means of the NAVDAT system.
26 100.5	MSI-HF	By means of narrow-band direct-printing telegraphy.

Legend:

AERO-SAR These aeronautical carrier (reference) frequencies may be used for distress and safety purposes by mobile stations engaged in coordinated search and rescue operations.

DSC These frequencies are used exclusively for distress and safety calls using digital selective calling in accordance with No. **32.5** (see Nos. **33.8** and **33.32**). (WRC-07)

MSI In the maritime mobile service, these frequencies are used exclusively for the transmission of maritime safety information (MSI) (including meteorological and navigational warnings and urgent information) by coast stations to ships, by means of narrow-band direct-printing telegraphy.

MSI-HF In the maritime mobile service, these frequencies are used exclusively for the transmission of high seas MSI by coast stations to ships, by means of narrow-band direct-printing telegraphy or the NAVDAT system. (WRC-23)

~~**NBDP-COM** These frequencies are used exclusively for distress and safety communications (traffic) using narrow-band direct-printing telegraphy.~~

RTP-COM These carrier frequencies are used for distress and safety communications (traffic) by radiotelephony.

* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in this Appendix is prohibited. (WRC-07)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15** and NAVDAT has been introduced in the GMDSS.

MOD USA/4534A11/94

TABLE 15-2 (WRC-~~19~~23)

Frequencies above 30 MHz (VHF/UHF)

Frequency (MHz)	Description of usage	Notes
…		
*1 645.5-1 646.5	~~D&S~~ ~~OPS~~SAT-COM	Use of the band 1 645.5-1 646.5 MHz (Earth-to-space) is limited to distress, urgency and safety operations (see No. **5.375**). (WRC-23)
…		

Reasons: The frequency band had been assigned limited to the distress alerting by EPIRB (Inmarsat E). As this service has been ceased, this frequency band should be used limited to distress, urgency and safety communication.

APPENDIX 17 (REV.WRC-19)

Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service

MOD USA/4534A11/95

PART A – Table of subdivided bands (WRC-~~19~~23)

In the Table, where appropriate[1], the assignable frequencies in a given band for each usage are:

– indicated by the lowest and highest frequency, in heavy type, assigned in that band;

– regularly spaced, the number of assignable frequencies (*f.*) and the spacing in kHz being indicated in italics.

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 063	6 200	8 195	12 230	16 360	18 780	22 000	25 070

[1] Within the non-shaded boxes.

Frequencies assignable to ship stations for oceanographic data transmission *c)*	**4 063.3** to **4 064.8** *6 f.* *0.3 kHz*							
Limits (kHz)	4 065	6 200	8 195	12 230	16 360	18 780	22 000	25 070
Frequencies assignable to ship stations for telephony, duplex operation *a) i) t)*	**4 066.4** to **4 144.4** *27 f.* *3 kHz*	**6 201.4** to **6 222.4** *8 f.* *3 kHz*	**8 196.4** to **8 292.4** *33 f.* *3 kHz*	**12 231.4** to **12 351.4** *41 f.* *3 kHz*	**16 361.4** to **16 526.4** *56 f.* *3 kHz*	**18 781.4** to **18 823.4** *15 f.* *3 kHz*	**22 001.4** to **22 157.4** *53 f.* *3 kHz*	**25 071.4** to **25 098.4** *10 f.* *3 kHz*
Limits (kHz)	4 146	6 224	8 294	12 353	16 528	18 825	22 159	25 100

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 146	6 224	8 294	12 353	16 528	18 825	22 159	25 100
Frequencies assignable to ship stations as well as coast stations for telephony, simplex operation *a) u) v)*	**4 147.4** to **4 150.4** *2 f. 3 kHz*	**6 225.4** to **6 231.4** *3 f. 3 kHz*	**8 295.4** to **8 298.4** *2 f. 3 kHz*	**12 354.4** to **12 366.4** *5 f. 3 kHz*	**16 529.4** to **16 547.4** *7 f. 3 kHz*	**18 826.4** to **18 844.4** *7 f. 3 kHz*	**22 160.4** to **22 178.4** *7 f. 3 kHz*	**25 101.4** to **25 119.4** *7 f. 3 kHz*
Limits (kHz)	4 152	6 233	8 300	12 368	16 549	18 846	22 180	25 121
Frequencies assignable to ship stations for data transmission *e) m) p) q) r) u)*	**4 153.5** to **4 168.5** *6 f. 3 kHz*	**6 234.5** to **6 258.5** *9 f. 3 kHz*	**8 301.5** to **8 337.5** *13 f. 3 kHz*	**12 369.5** to **12 417.5** *17 f. 3 kHz*	**16 550.5** to **16 613.5** *22 f. 3 kHz*	**18 847.5** to **18 871.5** *9 f. 3 kHz*	**22 181.5** to **22 238.5** *20 f. 3 kHz*	**25 122.5** to **25 176.5** *19 f. 3 kHz*
Limits (kHz)	4 170	6 260	8 339	12 419	16 615	18 873	22 240	25 178
Frequencies assignable to ship as well as coast stations for data transmission *e) m) p) q) u)*								**25 179.5** to **25 206.5** *10 f. 3 kHz*
Limits (kHz)	4 170	6 260	8 339	12 419	16 615	18 873	22 240	25 208.25
Frequencies (paired and non-paired) assignable to ship stations for narrow-band direct-printing (NBDP) telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *b) d)*		**6 260.25** to **6 260.75** *2 f. 0.5 kHz*	**8 339.25** to **8 339.75** *2 f. 0.5 kHz*	**12 419.25** to **12 419.75** *2 f. 0.5 kHz*	**16 615.25** to **16 616.75** *4 f. 0.5 kHz*	**18 873.5** to **18 880** *14 f. 0.5 kHz*		
Limits (kHz)	4 170	6 261	8 340	12 420	16 617	18 880.25	22 240	25 208.25
Frequencies assignable to ship stations for oceanographic data transmission *c)*		**6 261.3** to **6 262.5** *5 f. 0.3 kHz*	**8 340.3** to **8 341.5** *5 f. 0.3 kHz*	**12 420.3** to **12 421.5** *5 f. 0.3 kHz*	**16 617.3** to **16 618.5** *5 f. 0.3 kHz*		**22 240.3** to **22 241.5** *5 f. 0.3 kHz*	
Limits (kHz)	4 170	6 262.75	8 341.75	12 421.75	16 618.75	18 880.25	22 241.75	25 208.25

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 170	6 262.75	8 341.75	12 421.75	16 618.75	18 880.25	22 241.75	25 208.25
Frequencies (paired and non-paired) assignable to ship stations for narrow-band direct-printing (NBDP) telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *b) d) j)*	**4 170.5** to **4 180** *20 f. 0.5 kHz*	**6 263** to **6 269.5** *14 f. 0.5 kHz*		**12 422** *1 f. 0.5 kHz*				
Limits (kHz)	4 180.25	6 269.75	8 341.75	12 422.25	16 618.75	18 880.25	22 241.75	25 208.25
Frequencies assignable to ship stations for data transmission *e) m) p) q) u)*	**4 181.75** to **4 187.75** *3f. 3 kHz*	**6 271.25** to **6 277.25** *3 f. 3 kHz*	**8 343.25** to **8 358.25** *6 f. 3 kHz*	**12 423.75** to **12 450.75** *10 f. 3 kHz*	**16 620.25** to **16 680.25** *21 f. 3 kHz*	**18 881.75** to **18 893.75** *5 f. 3 kHz*	**22 243.25** to **22 288.25** *16 f. 3 kHz*	
Limits (kHz)	4 189.25	6 278.75	8 359.75	12 452.25	16 681.75	18 895.25	22 289.75	25 208.25
Frequencies assignable to ship as well as coast stations for data transmission *e) m) p) q) u)*	**4 190.75** to **4 196.75** *3f. 3 kHz*	**6 280.25** to **6 310.25** *11 f. 3 kHz*	**8 361.25** to **8 373.25** *5 f. 3 kHz*	**12 453.75** to **12 474.75** *8 f. 3 kHz*		**18 896.75** *1 f. 3 kHz*		
Limits (kHz)	4 198.25	6 311.75	8 374.75	12 476.25	16 681.75	18 898.25	22 289.75	25 208.25
Frequencies assignable to coast stations for data transmission *e) m) p) q) u)*	**4 199.75** to **4 205.75** *3f. 3 kHz*							
Limits (kHz)	4 207.25	6 311.75	8 374.75	12 476.25	16 681.75	18 898.25	22 289.75	25 208.25
Frequencies (paired and non-paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK *b) d) j)*			**8 375** to **8 383.5** *18 f. 0.5 kHz*	**12 476.5** to **12 522.5** *93 f. 0.5 kHz*	**16 682** to **16 698.5** *34 f. 0.5 kHz*		**22 290** to **22 299** *19 f 0.5 kHz*	
Limits (kHz)	4 207.25	6 311.75	8 383.75	12 522.75	16 698.75	18 898.25	22 299.25	25 208.25

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 207.25	6 311.75	8 383.75	12 522.75	16 698.75	18 898.25	22 299.25	25 208.25
Frequencies assignable to ship as well as coast stations for data transmission *e) p) q) u)*			**8 385.5** to **8 406.5** *8 f.* *3 kHz*	**12 524.25** to **12 575.25** *18 f.* *3 kHz*	**16 700.5** to **16 802.5** *35 f.* *3 kHz*		**22 300.75** to **22 372.75** *25 f.* *3 kHz*	
Limits (kHz)	4 207.25	6 311.75	8 408	12 576.75	16 804	18 898.25	22 374.25	25 208.25
Frequencies assignable to coast stations for data transmission *e) m) p) q) u)*			**8 409.5** to **8 412.5** *2 f.* *3 kHz*					
Limits (kHz)	4 207.25	6 311.75	8 414	12 576.75	16 804	18 898.25	22 374.25	25 208.25
Frequencies assignable to ship stations for digital selective calling *k) l)*	**4 207.5** to **4 209** 4 f. 0.5 kHz	**6 312** to **6 313.5** 4 f. 0.5 kHz	**8 414.5** to **8 416** 4 f. 0.5 kHz	**12 577** to **12 578.5** 4 f. 0.5 kHz	**16 804.5** to **16 806** 4 f. 0.5 kHz	**18 898.5** to **18 899.5** 3 f. 0.5 kHz	**22 374.5** to **22 375.5** 3 f. 0.5 kHz	**25 208.5** to **25 209.5** 3 f. 0.5 kHz
Limits (kHz)	4 209.25	6 313.75	8 416.25	12 578.75	16 806.25	18 899.75	22 375.75	25 210
Limits (kHz)	4 209.25	6 313.75	8 416.25	12 578.75	16 806.25	19 680.25	22 375.75	26 100.25
Frequencies (paired and non-paired) assignable to coast stations for NBDP and data transmission systems, at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *b) d) n) o)*	**4 209.5** to **4 216** 14 f. 0.5 kHz	**6 314** to **6 321.5** 16 f. 0.5 kHz	**8 416.5** to **8 423.5** 15 f. 0.5 kHz	**12 579** to **12 624.5** 92 f. 0.5 kHz	**16 806.5** to **16 821.5** 31 f. 0.5 kHz	**19 680.5** 1 f. 0.5 kHz	**22 376** 1 f. 0.5 kHz	**26 100.5** to **26 102.5** 5 f. 0.5 kHz
Limits (kHz)	4 216.25	6 321.75	8 423.75	12 624.75	16 821.75	19 680.75	22 376.25	26 102.75
Frequencies assignable to ship stations for data transmission *e) m) p) q) u)*							**22 377.75** to **22 380.75** 2 f. 3 kHz	
Limits (kHz)	4 216.25	6 321.75	8 423.75	12 624.75	16 821.75	19 680.75	22 382.25	26 102.75
Frequencies assignable to ship as well as coast stations for data transmission *e) m) p) q) u)*	**4 217.75** 1 f. 3 kHz				**16 823.25** to **16 838.25** 6 f. 3 kHz			

Limits (kHz)	4 219.25	6 321.75	8 423.75	12 624.75	16 839.75	19 680.75	22 382.25	26 102.75

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*continued*)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 219.25	6 321.75	8 423.75	12 624.75	16 839.75	19 680.75	22 382.25	26 102.75
Frequencies assignable to coast stations for data transmission *e) m) q) u)*		**6 323.25** to **6329.25** *3 f. 3 kHz*	**8 425.5** to **8 434.5** *4 f. 3 kHz*	**12 626.25** to **12 653.25** *10 f. 3 kHz*	**16 841.25** to **16 901.25** *21 f. 3 kHz*	**19 682.25** *1 f. 3 kHz*		**26 104.25** to **26 119.25** *6 f. 3 kHz*
Limits (kHz)	4 219.25	6 330.75	8 436.25	12 654.75	16 902.75	19 683.75	22 382.25	26 120.75
Frequencies (paired and non-paired) assignable to coast stations for NBDP and data transmission systems, at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *b) d)*				**12 655** to **12 656.5** *4 f. 0.5 kHz*		**19 684** to **19 691** *15 f. 0.5 kHz*	**22 382.5** to **22 389** *14 f. 0.5 kHz*	
Limits (kHz)	4 219.25	6 330.75	8 436.25	12 656.75	16 902.75	19 691.25	22 389.25	26 120.75
Frequencies assignable to coast stations for data transmission *e) m) p) q) u)*						**19 692.75** to **19 701.75** *4 f. 3 kHz*	**22 390.75** to **22 441.75** *18 f. 3 kHz*	
Limits (kHz)	4 219.25	6 330.75	8 436.25	12 656.75	16 902.75	19 703.25	22 443.25	26 120.75
Frequencies (non-paired) assignable to coast stations for NBDP and data transmission systems, at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK *b)*							**22 443.5** *1 f. 0.5 kHz*	
Limits (kHz)	4 219.25	6 330.75	8 436.25	12 656.75	16 902.75	19 703.25	22 443.75	26 120.75
Frequencies assignable to coast stations for digital selective calling *l)*	**4 219.5** to **4 220.5** *3 f. 0.5 kHz*	**6 331** to **6 332** *3 f. 0.5 kHz*	**8 436.5** to **8 437.5** *3 f. 0.5 kHz*	**12 657** to **12 658** *3 f. 0.5 kHz*	**16 903** to **16 904** *3 f. 0.5 kHz*	**19 703.5** to **19 704.5** *3 f. 0.5 kHz*	**22 444** to **22 445** *3 f. 0.5 kHz*	**26 121** to **26 122** *3 f. 0.5 kHz*
Limits (kHz)	4 221	6 332.5	8 438	12 658.5	16 904.5	19 705	22 445.5	26 122.5

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (*end*)

Band (MHz)	**4**	**6**	**8**	**12**	**16**	**18/19**	**22**	**25/26**
Limits (kHz)	4 221	6 332.5	8 438	12 658.5	16 904.5	19 705	22 445.5	26 122.5
Frequencies assignable for wide-band systems, facsimile, special and data transmission systems and direct-printing telegraphy systems *m) p) s) pp) ppp)*								
Limits (kHz)	4 351	6 501	8 707	13 077	17 242	19 755	22 696	26 145
Frequencies assignable to coast stations for telephony, duplex operation *a) t)*	**4 352.4** to **4 436.4** *29 f. 3 kHz*	**6 502.4** to **6 523.4** *8 f. 3 kHz*	**8 708.4** to **8 813.4** *36 f. 3 kHz*	**13 078.4** to **13 198.4** *41 f. 3 kHz*	**17 243.4** to **17 408.4** *56 f. 3 kHz*	**19 756.4** to **19 798.4** *15 f. 3 kHz*	**22 697.4** to **22 853.4** *53 f. 3 kHz*	**26 146.4** to **26 173.4** *10 f. 3 kHz*
Limits (kHz)	4 438	6 525	8 815	13 200	17 410	19 800	22 855	26 175

a) See Part B, Section I.

b) See Part B, Section III.

c) The frequency bands may also be used by buoy stations for oceanographic data transmission and by stations interrogating these buoys.

d) See Part B, Section II.

e) See Part B, Section IV.

i) For the use of the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz and 16 420 kHz in these sub-bands by ship and coast stations for distress and safety purposes, by single-sideband radiotelephony, see Article 31.

j) For the use of the assigned frequencies 4 177.5 kHz, 6 268 kHz, 8 376.5 kHz, 12 520 kHz and 16 695 kHz in these sub-bands by ship and coast stations for ~~distress~~ the automatic connection system (ACS)~~and safety purposes, by NBDP telegraphy, see Article 31~~. (WRC-23)

k) For the use of the assigned frequencies 4 207.5 kHz, 6 312 kHz, 8 414.5 kHz, 12 577 kHz and 16 804.5 kHz in these sub-bands by ship and coast stations for distress and safety purposes, by digital selective calling, see Article 31.

l) The following paired assigned frequencies (for ship/coast stations) 4 208/4 219.5 kHz, 6 312.5/6 331 kHz, 8 415/8 436.5 kHz, 12 577.5/12 657 kHz, 16 805/16 903 kHz, 18 898.5/19 703.5 kHz, 22 374.5/22 444 kHz and 25 208.5/26 121 kHz are the first choice international frequencies for digital selective calling (see Article 54).

m) Frequencies from these frequency bands may also be used for A1A or A1B Morse telegraphy subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions. Any frequencies so assigned shall be multiples of 100 Hz. Administrations shall ensure a uniform distribution of such assignments within the bands.

n) The assigned frequencies 4 210 kHz, 6 314 kHz, 8 416.5 kHz, 12 579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the exclusive international frequencies for the transmission of maritime safety information (MSI) (see Articles 31 and 33).

o) The frequency 4 209.5 kHz is an exclusive international frequency for the transmission of NAVTEX type information (see Articles 31 and 33).

p) These sub-bands, except the frequencies referred to in Notes *i), j)*, *n)* and *o)*, are designated for digitally modulated emissions in the maritime mobile service (e.g. as described in the most recent version of Recommendation ITU-R M.1798). The provisions of No. **15.8** apply. (WRC-15)

pp) The frequency bands 4 221-4 231 kHz, 6 332.5-6 342.5 kHz, 8 438-8 448 kHz, 12 658.5-12 668.5 kHz, 16 904.5-16 914.5 kHz and 22 445.5-22 455.5 kHz may also be used by the NAVDAT system, on condition that the use of NAVDAT system transmitting stations is limited to coast stations operating in accordance with the most recent version of Recommendation ITU-R M.2058. (WRC-19)

ppp) The frequency 4 226 kHz is an exclusive frequency for the International NAVDAT system (see Articles **33** and **52**). (WRC-23)

q) These frequency bands may be used by narrow-band direct-printing applications by administrations, subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions.

r) Frequencies in these bands may be used for wide-band telegraphy, facsimile and special data transmission on the condition that interference is not caused to and protection is not claimed from stations in the maritime mobile service using digitally modulated emissions.

s) The frequency bands 4 345-4 351 kHz, 6 495-6 501 kHz, 8 701-8 707 kHz may be used for simplex (single-sideband) telephone operation (regularly spaced by 3 kHz), in accordance with provision No. **52.177**, subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions.

t) The frequency bands 4 065-4 146 kHz, 4 351-4 438 kHz, 6 200-6 224 kHz, 6 501-6 525 kHz, 8 195-8 294 kHz, 8 707-8 815 kHz, 12 230-12 353 kHz, 13 077-13 200 kHz, 16 360-16 528 kHz, 17 242-17 410 kHz, 18 780-18 825 kHz, 19 755-19 800 kHz, 22 000-22 159 kHz, 22 696-22 855 kHz, 25 070-25 100 kHz and 26 145-26 175 kHz may be used, in accordance with the Appendix **25** allotment Plan, for digitally modulated emissions as described in the most recent version of Recommendation ITU-R M.1798 on the condition that it shall not cause harmful interference to, or claim protection from other stations in the maritime mobile service using radiotelephony operations. The digitally modulated emissions may be used provided that their occupied bandwidth does not exceed 2 800 Hz, it is situated wholly within one frequency channel and the peak envelope power of coast stations does not exceed 10 kW and the peak envelope power of ship stations does not exceed 1.5 kW per channel. (WRC-15)

u) These frequency bands may be used for wide-band digitally modulated emissions by combining multiple 3 kHz contiguous channels.

v) The frequency bands 4 146-4 152 kHz, 6 224-6 233 kHz, 8 294-8 300 kHz, 12 353-12 368 kHz, 16 528-16 549 kHz, 18 825-18 846 kHz, 22 159-22 180 and 25 100-25 121 kHz may be used for simplex digitally modulated emissions as described in the most recent version of Recommendation ITU-R M.1798 on condition that it shall not cause harmful interference to, or claim protection from other stations in the maritime mobile service using radiotelephony operations. The digitally modulated emissions may be used provided that their occupied bandwidth does not exceed 2 800 Hz, it is situated wholly within one frequency channel and the peak envelope power of coast stations does not exceed 10 kW and the peak envelope power of ship stations does not exceed 1.5 kW per channel. (WRC-15)

w) (SUP WRC-19)

Reasons: NBDP has been deleted from the GMDSS, with the exception of MSI on certain frequencies which are contained in RR Appendix **15** and the new ACS system will utilize the frequencies previously used by NBDP for distress and safety communications. Similar footnote with *o)* for NAVTEX is added for the NAVDAT.

MOD USA/4534A11/96

PART B – Channelling arrangements (WRC-15)

Section II – Narrow-band direct-printing telegraphy (paired frequencies)

1 Each coast station which uses paired frequencies is assigned one or more frequency pairs from the following series; each pair consists of a transmitting and a receiving frequency.
2 The speed of the narrow-band direct-printing telegraphy and data systems shall not exceed 100 Bd for FSK and 200 Bd for PSK.

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	4 MHz band		6 MHz band		8 MHz band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
1	4 210.5	4 172.5	6 314.5	6 263	~~8 376.5~~	~~8 376.5~~
2	4 211	4 173	6 315	6 263.5	8 417	8 377
3	4 211.5	4 173.5	6 315.5	6 264	8 417.5	8 377.5
4	4 212	4 174	6 316	6 264.5	8 418	8 378
5	4 212.5	4 174.5	6 316.5	6 265	8 418.5	8 378.5
6	4 213	4 175	6 317	6 265.5	8 419	8 379
7	4 213.5	4 175.5	6 317.5	6 266	8 419.5	8 379.5
8	4 214	4 176	6 318	6 266.5	8 420	8 380
9	4 214.5	4 176.5	6 318.5	6 267	8 420.5	8 380.5
10	4 215	4 177	6 319	6 267.5	8 421	8 381
11	~~4 177.5~~	~~4 177.5~~	~~6 268~~	~~6 268~~	8 421.5	8 381.5
12	4 215.5	4 178	6 319.5	6 268.5	8 422	8 382
13	4 216	4 178.5	6 320	6 269	8 422.5	8 382.5
14			6 320.5	6 269.5	8 423	8 383
15					8 423.5	8 383.5

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	12 MHz band		16 MHz band		18/19 MHz band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
1	12 579.5	12 477	16 807	16 683.5		
2	12 580	12 477.5	16 807.5	16 684		
3	12 580.5	12 478	16 808	16 684.5		
4	12 581	12 478.5	16 808.5	16 685		
5	12 581.5	12 479	16 809	16 685.5		
6	12 582	12 479.5	16 809.5	16 686		
7	12 582.5	12 480	16 810	16 686.5	19 684	18 873.5
8	12 583	12 480.5	16 810.5	16 687	19 684.5	18 874
9	12 583.5	12 481	16 811	16 687.5	19 685	18 874.5
10	12 584	12 481.5	16 811.5	16 688	19 685.5	18 875
11	12 584.5	12 482	16 812	16 688.5	19 686	18 875.5
12	12 585	12 482.5	16 812.5	16 689	19 686.5	18 876
13	12 585.5	12 483	16 813	16 689.5	19 687	18 876.5
14	12 586	12 483.5	16 813.5	16 690	19 687.5	18 877
15	12 586.5	12 484	16 814	16 690.5	19 688	18 877.5

Channel No.	12 MHz band		16 MHz band		18/19 MHz band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
16	12 587	12 484.5	16 814.5	16 691	19 688.5	18 878
17	12 587.5	12 485	16 815	16 691.5	19 689	18 878.5
18	12 588	12 485.5	16 815.5	16 692	19 689.5	18 879
19	12 588.5	12 486	16 816	16 692.5	19 690	18 879.5
20	12 589	12 486.5	16 816.5	16 693	19 690.5	18 880
21	12 589.5	12 487	16 817	16 693.5		
22	12 590	12 487.5	16 817.5	16 694		
23	12 590.5	12 488	16 818	16 694.5		
24	12 591	12 488.5	~~16 695~~	~~16 695~~		
25	12 591.5	12 489	16 818.5	16 695.5		
26	12 592	12 489.5	16 819	16 696		
27	12 592.5	12 490	16 819.5	16 696.5		
28	12 593	12 490.5	16 820	16 697		
29	12 593.5	12 491	16 820.5	16 697.5		
30	12 594	12 491.5	16 821	16 698		
31	12 594.5	12 492	16 821.5	16 698.5		
32	12 595	12 492.5				
33	12 595.5	12 493				
34	12 596	12 493.5				
35	12 596.5	12 494				
36	12 597	12 494.5				
37	12 597.5	12 495				
38	12 598	12 495.5				
39	12 598.5	12 496				
40	12 599	12 496.5				
41	12 599.5	12 497				
42	12 600	12 497.5				
43	12 600.5	12 498				
44	12 601	12 498.5				
45	12 601.5	12 499				

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	12 MHz band (*end*)	
	Transmit	Receive
46	12 602	12 499.5
47	12 602.5	12 500
48	12 603	12 500.5
49	12 603.5	12 501
50	12 604	12 501.5
51	12 604.5	12 502
52	12 605	12 502.5
53	12 605.5	12 503
54	12 606	12 503.5
55	12 606.5	12 504
56	12 607	12 504.5
57	12 607.5	12 505
58	12 608	12 505.5
59	12 608.5	12 506
60	12 609	12 506.5

61	12 609.5	12 507
62	12 610	12 507.5
63	12 610.5	12 508
64	12 611	12 508.5
65	12 611.5	12 509
66	12 612	12 509.5
67	12 612.5	12 510
68	12 613	12 510.5
69	12 613.5	12 511
70	12 614	12 511.5
71	12 614.5	12 512
72	12 615	12 512.5
73	12 615.5	12 513
74	12 616	12 513.5
75	12 616.5	12 514
76	12 617	12 514.5
77	12 617.5	12 515
78	12 618	12 515.5
79	12 618.5	12 516
80	12 619	12 516.5
81	12 619.5	12 517
82	12 620	12 517.5
83	12 620.5	12 518
84	12 621	12 518.5
85	12 621.5	12 519
86	12 622	12 519.5
87	~~12 520~~	~~12 520~~
88	12 622.5	12 520.5
89	12 623	12 521
90	12 623.5	12 521.5
91	12 624	12 522
92	12 624.5	12 522.5

...

Reasons: Introduction of the ACS in RR Appendix **17** using the frequencies of NBDP previously used for distress.

ADD USA/4534A11/97

DRAFT NEW RESOLUTION [A111] (WRC-23)

Coordination of NAVDAT ~~services~~system

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that the International Maritime Organization (IMO) has established procedures to coordinate the operational aspects of NAVDAT ~~services~~system, such as allocation of transmitter identification and time schedules, in the planning stages for transmissions on the international frequencies 500 kHz and/or 4 226 kHz and also on the other frequencies which are defined in No. 5.79 and Appendix **15**;

b) that coordination in the frequencies 500 kHz and/or 4 226 kHz and other frequencies which are defined in No. 5.79 and Appendix **15**, is essentially operational,

resolves

to invite administrations to apply the procedures established by IMO, taking into account the IMO NAVDAT Manual, for coordinating the use of the international frequencies 500 kHz and/or 4 226 kHz and also of the other frequencies which are defined in No. 5.79 and Appendix **15**,

instructs the Secretary-General

to invite IMO to provide ITU with information on a regular basis on operational coordination for NAVDAT ~~services~~ system on the international frequencies 500 kHz and/or 4 226 kHz and also on the other frequencies which are defined in No. 5.79 and Appendix **15**,

instructs the Director of the Radiocommunication Bureau

to publish this information in the *List of Coast Stations and Special Service Stations* (List IV) (see No. 20.7).

Reasons: New Resolution for the coordination of the NAVDAT ~~services~~ system identical to the one for the NAVTEX (Resolution **339 (Rev.WRC-07)**).

SUP USA/4534A11/98

RESOLUTION 361 (REV.WRC-19)

Consideration of possible regulatory actions to support modernization of the Global Maritime Distress and Safety System and the implementation of e-navigation

Reasons: This Resolution is proposed to be suppressed considering the finalization of the studies on WRC-23 agenda item 1.11 covered by *resolves* 1 (modernization of the GMDSS).

XV.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7 Topic C

7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

7(C) Topic C - Protection of geostationary-satellite networks in the mobile-satellite service operating in the 7/8 GHz and 20/30 GHz bands from emissions of non-geostationary-satellite systems operating in the same frequency bands and identical directions

Background:

Non-GSO systems operating in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space) currently do not require coordination with GSO MSS networks under RR No. **9.11A** (RR Nos. **9.12A** or **9.13**). However, RR No. **9.21** applies to non-GSO MSS satellite systems in the bands covered by RR No. **5.461**.

If an administration is of the view that unacceptable interference may be caused by a non-GSO system in the frequency bands 20.2-21.2 GHz and 30-31 GHz or by non-GSO FSS in the bands 7 250-7 750 MHz and 7 900-8 400 MHz to its existing or planned GSO MSS networks, e.g. by having conducted investigations providing results leading to this view, its comments may be communicated to the notifying administration responsible for the non-GSO system according to RR No. **9.3**. However, sometimes requests for the resolution of difficulties under RR No. **9.3** simply remain unanswered. This could be explained by the absence of clear criteria to be used during technical discussions. Furthermore, considering that resolving difficulties with respect to assignments of non-GSO systems subject to RR No. **9.3** does not have any regulatory implication with respect to the recording of assignments, it appears that the protection of GSO MSS networks is based on a best effort only. It should be noted that this is not the case for assignments to non-GSO MSS systems in the bands covered by RR No. **5.461**. In fact, the unsuccessful application of RR No. **9.21** (i.e. the absence of an agreement) leads to a recording in the MIFR with favourable finding but the recorded assignment is subject to not causing harmful interference nor claiming protection from the assignments of the objecting administration, i.e. the administration having stated its disagreement (see also RR No. **11.31.1**).

Under RR No. **22.2**, non-GSO systems shall not cause unacceptable interference to GSO networks in the fixed-satellite service (FSS) and broadcasting-satellite service (BSS). However, GSO MSS networks are not covered under RR No. **22.2**.

Because of this apparent deficiency in the regulatory framework, the protection of GSO MSS networks from non-GSO systems in these bands is not ensured.

The Unites States proposes changes to RR No. **5.461** and also proposes to add a new provision to Article **22** to clarify the protection of future GSO MSS networks relative to non-GSO systems in the subject frequency bands.

Proposals:
USA-7C/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD

7 250-8 500 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
7 250-7 300	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOD 5.461	
7 300-7 375	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOD 5.461	

MOD

5.461 *Additional allocation:* the frequency bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. 9.21, with the exception that No. 9.21 shall not apply to the geostationary-satellite networks in the mobile-satellite service for which complete coordination information is received by the Bureau after *[the last day of WRC-23 or the entry into force of the Final Acts of WRC-23]* with respect to non-geostationary-satellite systems for which complete coordination information is received by the Bureau after *[the last day of WRC-23 or the entry into force of the Final Acts of WRC-23].* (Rev. WRC-23)

Reason: This change makes it clear that GSO MSS networks filed after the coming into force of this modified provision no longer need to secure the agreement of previously filed non-GSO systems under No. **9.21.**

USA-7C/2

ARTICLE 22

Space services[1]

Section II − Control of interference to geostationary-satellite systems

ADD

22.2*bis* In the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 025 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space), non-geostationary-satellite systems for which complete coordination or notification information, as appropriate, is received by the Bureau after *[the last day of WRC-23 or the entry into force of the Final Acts of WRC-23]* shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the mobile-satellite service and which are operating in accordance with these Regulations. No. 5.43A does not apply in this case. (WRC-23)

Reason: This additional provision clarifies the protection of GSO MSS networks after the coming into force of this new provision relative to new non-GSO systems.

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

Mr. Tom Sullivan
Chief, International Bureau
Federal Communications
Commission 45 L Street NE
Washington, DC 20554

Dear Mr. Sullivan:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, provides the attached revised WRC-23 proposals for Agenda Items Agenda Items 4 for suppression of Res 75, 160, and 161, agenda item 8 to align its country footnote No. **5.394** in the Radio Regulations with the actual usage of the aeronautical mobile service for telemetry in the United States, and agenda item 10 to confirm preliminary agenda item 2.8 and to make necessary adjustments to the resolution as well as a separate new agenda item to address cislunar communications.

NTIA looks forward to working with FCC in reconciling these proposals for submission to CITEL PCC II as U.S. proposals. Our point of contact is Mr. Charles Glass, NTIA's WRC Coordinator, who can be reached at (202) 714-1763 or cglass@ntia.gov.

Sincerely,

Steve Molina March 15, 2023

Steve Molina
Deputy Associate Administrator
Office of Spectrum Management

Enclosures (5)

World Radiocommunication Conference (WRC-23)
Dubai, 20 November - 15 December 2023

PLENARY MEETING

Addendum 21 to
Document 4620-E
20 January 2023
Original: English

United States of America

Proposals for the work of the conference

Agenda item 4

4 in accordance with Resolution **95 (Rev.WRC-19)**, to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

SUP USA/4620A21/1

RESOLUTION 75 (REV.WRC-12)

Development of the technical basis for determining the coordination area for coordination of a receiving earth station in the space research service (deep space) with transmitting stations of high-density applications in the fixed service in the 31.8-32.3 GHz and 37-38 GHz bands

The World Radiocommunication Conference (Geneva, 2012),

Reasons: Resolution **75 (Rev.WRC-12)** deals with the development of the technical basis for determining the coordination area for coordination of a receiving earth station in the space research service (deep space) with transmitting stations of high-density applications in the fixed service in the 31.8-32.3 GHz and 37-38 GHz bands. Technical elements requested by this Resolution have been developed (Recommendations ITU-R F.1760, F.1765 approved in 2006), and no recent activity has been performed since then. Therefore, this Resolution could be considered as implemented and could be suppressed.

XVI. UNITED STATES OF AMERICA

XVII. DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 4: *in accordance with Resolution **95 (Rev.WRC-07)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;*

BACKGROUND INFORMATION:

The review of Resolutions and Recommendations of previous Conferences is a standing agenda item. Based on membership proposals, WRC-23 shall conclude on whether there is a need for any modification or suppression of Resolutions or Recommendations from previous Conferences.

The United States reviewed Resolutions and Recommendations of previous conferences and makes proposals for modification, suppression or reasoned decision to abstain from changes as follows.

Proposals

SUP USA/AI4/1

RESOLUTION 160 (WRC-15)

Facilitating access to broadband applications delivered by high-altitude platform stations

Reason: This Resolution should have been suppressed by WRC-19 as a consequence of completing the work on WRC-19 Agenda Item 1.14. The failure to suppress appears to be an administrative oversight.

SUP USA/AI4/2

RESOLUTION 161 (WRC-15)

Studies relating to spectrum needs and possible allocation of the frequency band 37.5-39.5 GHz to the fixed-satellite service

Reason: This Resolution should have been suppressed by WRC-19 as a consequence of decision not to pursue this topic as a future agenda item. The failure to suppress appears to be an administrative oversight.

XVIII. UNITED STATES OF AMERICA

XIX. DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 8: *to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution* ***26 (Rev.WRC-19)****;*

BACKGROUND INFORMATION:

A review of the Table of Frequency Allocations as implemented in the national rules of the United States revealed an inconsistency between the actual usage of the aeronautical mobile service for telemetry and its priority over other uses of by the mobile services and what is recorded in RR No. **5.394**. In the United States, the use of the band 2 360-2 395 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.

PROPOSAL

The United States proposes to align its country footnote No. **5.394** in the Radio Regulations with the actual usage of the aeronautical mobile service for telemetry in the United States.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD USA/4252A23/1

5.394 In the United States, the use of the band 2 3600-2 3950 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-2307)

Reasons: To align the footnote with the actual usage of the aeronautical mobile service for telemetry in the United States.

United States of America

DRAFT Proposals for the work of the conference

Agenda item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,

BACKGROUND INFORMATION:

Space station operations in low-Earth orbit are increasing at a rapid rate for scientific, academic and commercial purposes. These operations vary in size from as large as the International Space Station to as small as single unit cubesats and have widely ranging data requirements. All of these systems have one thing in common, the need to move data down to Earth in an efficient and cost-effective manner.

Telecommunications satellites offer a ready means to fulfill this need. The possibility for satellite-to-satellite links is particularly appealing when there is a need to relay data to a desired earth station and is likely practicable where the satellite-to-satellite link is being transmitted in the same general direction (e.g., Earth-to-space or space-to-Earth) within the receive or transmit beam of the higher orbital altitude space station. WRC-23 agenda item 1.17 is considering regulatory recognition for satellite-to-satellite operations in certain frequency bands allocated to the fixed-satellite service (FSS). Sharing studies completed by ITU-R WP4A have demonstrated compatibility with existing services and have identified the technical and operational provisions needed to ensure protection of existing services.

WRC-19 recognized that mobile-satellite service (MSS) systems could also play an important role in fulfilling some of the lower data rate needs of low-Earth orbiting space stations in relaying data to the ground and included agenda item 2.8 on the preliminary agenda for WRC-27.

PROPOSAL:

Because frequency bands allocated to the MSS are used for links between space stations and mobile earth stations, it is necessary to analyze the use of the same bands for satellite-to-satellite links to ensure compatibility with all existing services. In addition, the sharing scenario is likely to differ as the orbital characteristics of the linked satellites vary. The United States of America supports the inclusion of agenda item 2.8 on the WRC-27 agenda with the modifications provided.

Proposals

ADD USA/1

DRAFT NEW RESOLUTION [USA-2027]

Agenda for the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (TBD United Arab Emirates, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for WRC-27 should be established four to six years in advance;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

resolves to give the view

that the following items should be included in the preliminary agenda for WRC-27:

1 to take appropriate action in respect of those urgent issues that were specifically requested by WRC-23;

2 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-23, to consider and take appropriate action in respect of the following items:

[…]

2.8 to study the technical and operational matters, and regulatory provisions, for space-to-space links in the frequency bands ~~[~~1 525-1 544 MHz~~]~~, ~~[~~1 545-1 559 MHz~~]~~, ~~[~~1 610-1 645.5 MHz~~]~~, ~~[~~1 646.5-1 660.5 MHz~~]~~ and ~~[~~2 483.5-2 500 MHz~~]~~ among non-geostationary and geostationary satellites operating in the mobile-satellite service, in accordance with Resolution **249 (Rev WRC-23)**;

[…]

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-27;

2 to submit a draft Report on any difficulties or inconsistencies encountered in the application of the Radio Regulations referred in agenda item 10.2 to the second session of the CPM and to submit the final Report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: to add an agenda item for the study of satellite-to-satellite links in certain frequency bands allocated to the mobile-satellite service.

MOD USA/2

RESOLUTION 249 (REV. WRC-1923)

Study of technical and operational issues and regulatory provisions for space-to-space transmissions in the Earth-to-space direction in the frequency bands [1 610-1 645.5 and 1 646.5-1 660.5 MHz] and the space-to-Earth direction in the frequency bands [1 525-1 544 MHz], [1 545-1 559 MHz], [1 613.8-1 626.5 MHz] and [2 483.5-2 500 MHz] among non-geostationary and geostationary satellites operating in the mobile-satellite service*

The World Radiocommunication Conference (Sharm el-Sheikh, 2019TBD United Arab Emirates, 2023),

considering

a) that the definition of mobile-satellite service (MSS) in No. **1.25** includes communication between space stations;

b) that the definition of inter-satellite service (ISS) in No. **1.22** includes only links between space stations, and that the term *inter-satellite link* in this resolution is taken to mean a radiocommunication service link between artificial satellites;

c) that many non-geostationary-satellite orbit (non-GSO) satellites operate with limited and non-real-time connectivity to earth stations;

d) that by utilizing space-to-space communication between such non-GSO satellites and geostationary-satellite orbit (GSO) MSS satellites operating at higher orbital altitudes to relay data to/from the ground, data can be made available in near-real time across a much greater portion of the non-GSO satellite's orbit, enhancing the availability and value of instrument data for low latency applicationswould enhance the security and efficiency of operations;

e) that MSS satellites operating in the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz can could support these types of operation;

f) that using the frequency bands 1 610-1 645.5 MHz and 1 646.5-1 660.5 MHz allocated to the MSS (Earth-to-space) for transmissions in the Earth-to-space direction from non-GSO MSS space stations towards MSS space stations operating at higher orbital altitudes, including GSO, may increase spectral efficiency utilization in these frequency bands;

g) that using the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 613.8-1 626.5 MHz and 2 483.5-2 500 MHz allocated to the MSS (space-to-Earth) for transmissions in the space-to-Earth direction from MSS space stations operating at higher orbital altitudes, including GSO, towards non-GSO MSS satellites, may increase spectral efficiency utilization in these frequency bands;

h) that all MSS allocations in the above frequency bands include a space-to-Earth or Earth-to-space direction indicator, but do not include a space-to-space direction indicator;

i) that the ITU Radiocommunication Sector (ITU-R) has begun preliminary studies on the technical and operational issues associated with the operation of space-to-space links between non-GSO MSS satellites and GSO MSS satellites in the above frequency bands, but no studies have been conducted on the technical and operational issues associated with the operation of space-to-space links between non-GSO MSS satellites and non-GSO MSS satellites in the above frequency bands;

j) that it is technically feasible for a lower orbital altitude non-GSO space station to transmit data to and receive data from a higher orbital altitude non-GSO or GSO space station when passing within the satellite antenna coverage beam that is directed towards the Earth;

k) that several satellite systems have been relying on satellite-to-satellite communication in existing satellite frequency bands under No. **4.4**, and such reliance on No. **4.4** does not provide a sound basis for

* The appearance of square brackets around certain frequency bands in this Resolution is understood to mean that WRC-23 will consider and review the inclusion of these frequency bands with square brackets and decide, as appropriate.

continued development of such systems nor the confidence in commercial viability and availability of the service to the end users;

l) that there is growing interest for utilizing space-to-space satellite links for a variety of applications;

m) that a precedent for space-to-space links sharing with Earth-to-space links ~~and~~ or space-to-Earth links exists for the space operation, Earth exploration-satellite and space research services in ~~the~~ other frequency bands ~~2 025-2 110 MHz and 2 200-2 290 MHz~~ through the inclusion of a space-to-space ~~allocation~~direction indicator,

recognizing

a) that it is necessary to study the impact on other services, as well as Earth-to-space and space-to-Earth operation within the MSS, of the operation of inter-satellite links in the above frequency bands, taking into account applicable footnotes to the Table of Frequency Allocations, to ensure compatibility with all primary allocated services in these frequency bands and the adjacent frequency bands and avoid harmful interference;

b) that there should be no additional regulatory or technical constraints imposed on primary services to which the frequency band and adjacent frequency bands are currently allocated;

c) that it is necessary to study whether space-to-Earth direction transmissions from space stations at higher orbital altitudes, including GSO, can be successfully received by lower orbital altitude non-GSO satellites, without imposing any additional constraints on all allocated services in these frequency bands;

d) that the sharing scenarios may vary widely because of the wide variety of orbital characteristics of the non-GSO MSS space stations;

e) that out-of-band emissions, signals due to antenna pattern sidelobes, ~~reflections from receiving space stations~~ and in-band unintentional radiation due to Doppler shifts may impact services operating in the same and adjacent or nearby frequency bands;

f) that currently the only option for MSS space stations in the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 645.5 MHz, 1 646-1 660.5 MHz and 2 483.5-2 500 MHz needing to communicate with other orbital space stations is to operate under No. **4.4**, without recognition and on a non-harmful interference/non-protected basis in frequency bands allocated to another space service;

g) that RR No. 5.356 states that the use of the band 1 544-1 545 MHz by the mobile-satellite service (space-to-Earth) is limited to distress and safety communications (see Article 31);

h) that RR Nos. **5.357A** and **5.362A** provide priority for accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service in the frequency bands 1545-1555 and 1646.5-1656.5 MHz, and 1555-1559 and 1656.5-1660.5 MHz, respectively,

recognizing further

a) that the use of frequency bands by the MSS in the frequency range 1-3 GHz is subject to existing Resolutions, coordination requirements and country footnotes taking into account, in particular, the protection of safety services and aeronautical mobile-satellite (R) services, and of the Global Maritime Distress and Safety System;

b) that the fixed and mobile services are allocated on a primary basis in the frequency band 2 483.5-2 500 MHz on a global basis and that the fixed service is also allocated on a primary basis in the frequency band 1 525-1 530 MHz in Regions 1 and 3;

c) that the radionavigation-satellite service is allocated on a primary basis in the frequency band 1 559-1 610 MHz for both space-to-Earth and space-to-space use~~,~~;

d) that the radio astronomy service is extremely susceptible to interference from space and airborne transmitters (see Article **29**), and the location on space stations of transmitters operating in both the space-to-Earth and the Earth-to-space direction for the purpose of enacting inter-satellite links presents a new operating scenario,

noting

a) that section 3.1.3.2 of the Director's Report to ~~this conference~~WRC-23 ~~highlights~~ highlighted that the Radiocommunication Bureau has received an increased number of Advance Publication Information (API) submissions for non-GSO networks in frequency bands which are not allocated by Article **5** for the type of service foreseen, including satellite network filings for inter-satellite applications in frequency bands allocated only in the Earth-to-space or space-to-Earth directions;

b) that the Director's Report ~~concludes~~ concluded that, in view of recent technical developments and the increasing number of submissions of inter-satellite links in frequency bands not allocated to the ISS or to

a space service in the space-to-space direction, this conference may wish to consider means to give recognition to these uses based on the conditions derived from studies by ITU-R Working Parties 4A and 4C in order to avoid interfering with existing systems operating in the same frequency bands,

resolves to invite the ITU Radiocommunication Sector

1 to study the technical and operational characteristics of different types of non-GSO MSS space stations that operate or plan to operate space-to-space links with GSO MSS networks in the following frequency bands:

a) Earth-to-space direction in the frequency bands ~~[~~1 626.5-1 645 5 MHz and 1 646.5-1 660.5 MHz~~]~~; and

b) space-to-Earth direction in the frequency bands ~~[~~1 525-1 544 MHz and 1 545-1 559 MHz~~]~~;

2 to study the technical and operational characteristics, including those listed in *recognizing e)*, of ~~different~~ typical types of non-GSO MSS space stations that operate or plan to operate space-to-space links with non-GSO MSS systems and GSO MSS networks in the following frequency bands:

a) Earth-to-space direction in the frequency band ~~[~~1 610-1 626.5 MHz~~]~~; and

b) space-to-Earth direction in the frequency bands ~~[~~1 613.8-1 626.5 MHz and 2 483.5-2 500 MHz~~]~~;

3 to study sharing and compatibility between space-to-space links in the cases described in *resolves to invite the ITU Radiocommunication Sector* 1 and 2 and

– current and planned stations of the MSS;

– other existing primary services allocated in the same frequency bands taking into account, in particular, recognizing *h*; ~~and~~

– other existing primary services allocated in adjacent frequency bands where those services are not also allocated in the aforementioned frequency bands; and

– existing passive services and safety services allocated in adjacent frequency bands,

in order to ensure protection of, and not impose undue constraints on, other MSS operations and other services allocated in those frequency bands and in adjacent frequency bands, taking into account *recognizing further a)* to *de)*;

4 to develop technical conditions and regulatory provisions for the operation of space-to-space links in these frequency bands, including new or revised MSS allocations or the addition of ISS allocations~~, on a secondary basis,~~ while ensuring the protection of, and without imposing additional constraints on, other MSS operations or services allocated in those and adjacent frequency bands, taking into account the results of the studies called for in *resolves to invite the ITU Radiocommunication Sector* 1, 2, and 3 above;

5 to complete these studies by WRC-27,

invites administrations

to participate in the studies by submitting contributions to ITU-R,

invites the 2027 World Radiocommunication Conference

to consider the results of the above studies and take necessary regulatory actions, as appropriate.

World Radiocommunication Conference (WRC-23)
Dubai, 20 November - 15 December 2023



PLENARY MEETING

Addendum 27 to
Document 4253-E
30 June 2022
Original: English

United States of America

Proposals for the work of the conference

Agenda item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the Convention and Resolution **804 (Rev.WRC-19)**

BACKGROUND INFORMATION:

The Artemis Accords[41] lay out a shared vision for principles, established in the Outer Space Treaty of 1967, for cooperation in the civil exploration and use of the Moon, Mars, comets and asteroids for peaceful purposes. The United States space agency, NASA, and space agencies from other ITU Member States, are preparing for a return of human and robotic explorers to the Moon while developing spacecraft, surface vehicles, exploration mission plans toward achieving a sustainable and robust presence on the Moon in the next decade.

In addition to the traditional means of space-to-Earth and Earth-to-space communication links, direct communications between landers, rovers, extravehicular activity (EVA) astronauts conducting sortie missions and experiments is crucial to enable effective scientific activities and consideration of the health of the crew in the lunar environment. Initial surveys of available technologies has indicated that a network based on the 3GPP standard can be capable of servicing the reference mission concept of operation involving many user groups over a widespread surface area with high data throughput requirements. However, considering the unique topology of the Moon's surface, shielded zone of the Moon considerations, unique science opportunities in radio astronomy, and remote sensing in the lunar region/surface, careful consideration and spectrum sharing/compatibility studies are required to determine the suitable bands to support the envisioned lunar surface network using the 3GPP standard or other standards.

PROPOSAL:

The United States proposes an agenda item for WRC-27 to study the feasibility and compatibility of a new allocation to the space research service (space-to-space) for point-to-multipoint networks located on the lunar surface between a base station and EVA/rovers up to a 50 km radius. The frequency ranges of interest are: 390-450 MHz, 2 400-2 700 MHz, 3 500-3 800 MHz, 5 150-5925 MHz, and 25.25-28.35 MHz.

[41] As of July 2022 the Artemis Accords were signed by the governments of: Australia, Bahrain, Brazil, Canada, Colombia, France, Israel, Italy, Japan, the Republic of Korea, Luxembourg, Mexico, New Zealand, Poland, Romania, Saudi Arabia, Singapore, Ukraine, the United Arab Emirates, the United Kingdom, and the United States.

Proposals

ADD USA/4253A27/1

DRAFT NEW RESOLUTION [USA-A2027]

Agenda for the 2027 world radiocommunication conference

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference (WRC) should be established four to six years in advance and that a final agenda shall be established by the ITU Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and WRCs,

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-27;

b) that, in preparing this agenda, some items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a WRC be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the frequency bands under consideration, to consider and take appropriate action in respect of the following items:

[…]

1.X to conduct studies on the spectrum needs and regulatory measures for possible new allocations to the space research service (space-to-space) to support point-to-multipoint systems on the lunar surface in the frequency bands 390-450 MHz, 2 400-2 700 MHz, 3 500-3 800 MHz, 5 150-5 925 MHz, and 25.25-28.35 GHz in accordance with Resolution [**USA-B2027] (WRC-23)**;

[…]

invites the ITU Council

to finalize the agenda and arrange for the convening of WRC-23, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

1 to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting (CPM) and to prepare a report to WRC-23;

2 to submit a draft report on any difficulties or inconsistencies encountered in the application of the Radio Regulations referred in agenda item 9.2 to the second session of the CPM and to submit the final report at least five months before the next WRC,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To create an agenda item for WRC-27 to study the feasibility and compatibility of a new allocation to the space research service (space-to-space) for point-to-multipoint networks located on the lunar surface in certain frequency bands.

ADD USA/4253A27/2

DRAFT NEW RESOLUTION [USA-B2027]

Studies on frequency-related matters, including possible additional allocations to the space research service (space-to-space), for future development of point-to-multipoint communications on the lunar surface

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that there is increased interest by space research service operators from multiple Member States to conduct scientific experiments and exploration activities in the vicinity of the Moon, including on its surface;

b) that point-to-multipoint communication technology is well-developed and widely deployed on the Earth using industry standards to ensure compatibility with other services;

c) that the definition of *radiocommunication service* contained in RR No. **1.19** limits the definitions of the *fixed* and *mobiles* service to apply only to *terrestrial radiocommunication*;

d) that the average distance between the Earth and the Moon is 382 500 km and, therefore, within the 2 × 10^6 km range provided in RR No. **1.177** to define deep space;

e) that point-to-multipoint systems that would operate on the lunar surface would require an operating range of no more than approximately 50 km;

f) that point-to-multipoint systems on the lunar surface could operate in the space research service (space-to-space);

g) that the lunar surface has unique atmospheric, soil, and topography conditions;

h) that the benefits of scientific discovery and space exploration are of a global nature,

noting

Section V of Article **22** regarding protection of radio astronomy in the shielded zone of the Moon,

noting further

that the Artemis accords which promote safe, sustainable, and responsible space exploration have been signed by ITU Member States from all three Regions,

recognizing

that studies of sharing and compatibility between point-to-multipoint systems operating under the space research service (space-to-space) on the lunar surface would need to take into account any other allocated services in the same or, as appropriate, adjacent bands,

resolves to invite the ITU Radiocommunication Sector

1 to study spectrum needs of the space research service limited to point-to-multipoint systems which may operate on the lunar surface in the frequency bands 390-450 MHz, 2 400-2 700 , 3 500-3 800 MHz, 5 150-5925 MHz, and 25.25-28.35 GHz;

2 to study the propagation considerations for point-to-multipoint systems operating in the frequency ranges in *resolves to invite the ITU Radiocommunication Sector* 1 on the lunar surface;

3 to study sharing and compatibility between the systems identified in *resolves to invite the ITU Radiocommunication Sector* 1 and other services allocated to and, as appropriate, in adjacent bands;
4 to complete these studies by WRC-27,

invites administrations
to participate in the studies by submitting contributions to ITU-R,

invites the 2027 World Radiocommunication Conference
to consider the results of the above studies and take necessary regulatory actions, as appropriate, to provide additional allocations to the space research service (space-to-space) for the purposes facilitating point-to-multipoint systems operating on the lunar surface.

Reasons: To provide a Resolution supporting the agenda item.

ATTACHMENT

DRAFT PROPOSAL FOR AGENDA ITEM

Subject: Propose a WRC-27 agenda item to study possible allocation to SRS (s-s) for lunar surface EVA/Rover comm, within 50 km radius of a base station.

Origin: United States of America

Proposal: to add to the Table of Frequency Allocations a new primary allocation of Space Research Service in the space-to-space direction in the frequency ranges, in accordance with **Resolution [USA-B2027] (WRC-23)**.

Background/reason:

The Artemis Accords lays out a shared vision for principles, grounded in the Outer Space Treaty of 1967, for cooperation in the civil exploration and use of the Moon, Mars, Comets and Asteroids for peaceful purposes. NASA and numerous space agencies around the world, as partners in the Artemis missions, are preparing for a return of human to the Moon while developing spacecraft, surface vehicles, exploration mission plans toward achieving a sustainable and robust presence on the Moon in the next decade. In addition to the tradition means of space-to-Earth and Earth-to-space communication links, direct communications between landers, rovers, extravehicular activity (EVA) astronauts conducting sortie missions and experiments is crucial to enable effective scientific activities consideration the health of the crew in the lunar environment. Initial survey of available technologies has indicated that a network based on 3GPP standard can be capable of servicing reference mission concept of operation involving many user groups over a widespread surface area with high data throughput requirements. However, considering the potential unique topology of the Moon surface, shielded zone of the Moon considerations, unique science opportunities in radio astronomy and remote sensing in the lunar region/surface, careful consideration and spectrum sharing/compatibility studies are required to determine the suitable spectrum bands to support the envisioned 3GPP standard based lunar surface network.

This future conference agenda item proposes to study the compatibility of a new SRS (space-to-space) allocation for a point-to-multipoint network between a base station and EVA/rovers up to 50 km radius. The frequency ranges of interests are: 390-450 MHz, 2 400-2 700 , 3 500-3 800 MHz, 5 150-5925 MHz, and 25.25-28.35 GHz.

Radiocommunication services concerned: radiodetermination-satellite service, radionavigation-satellite service, radio astronomy service, active and passive remote sensing systems, space operation and space research services.

Indication of possible difficulties: none foreseen

Previous/ongoing studies on the issue: none

Studies to be carried out by: WP 7B	***with the participation of:*** WPs 4C, 7C, 7D

ITU-R Study Groups concerned: SG 7

ITU resource implications, including financial implications (refer to CV126): minimal

Common regional proposal: TBD	***Multi-country proposal:*** No ***Number of countries:***

Remarks

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

Mr. Tom Sullivan
Chief, International Bureau
Federal Communications
Commission 45 L Street NE
Washington, DC 20554

Dear Mr. Sullivan:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, provides the attached revised WRC-23 proposals for Agenda Items Agenda Items 1.13 addressing examination of a possible upgrade to primary status to SRS in the frequency range 14.8-15.35 GHz, 7 Topic A addressing tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS, and 10 addressing changes to Appendix 26 for wideband HF communications.

NTIA looks forward to working with FCC in reconciling these proposals for submission to CITEL PCC II as U.S. proposals. Our point of contact is Mr. Charles Glass, NTIA's WRC Coordinator, who can be reached at (202) 714-1763 or cglass@ntia.gov.

Sincerely,

Steve Molina March 21, 2023

Steve Molina
Deputy Associate Administrator
Office of Spectrum Management

Enclosures (3)

World Radiocommunication Conference (WRC-23)
[Abu Dhabi or Dubai], 20 November - 15 December 2023

PLENARY MEETING

Addendum 13 to
Document 4226-E
18 May 2022
Original: English

United States of America

Proposals for the work of the conference

Agenda item 1.13

1.13 to consider a possible upgrade of the allocation of the frequency band 14.8-15.35 GHz to the space research service, in accordance with Resolution **661 (WRC-19)**;

BACKGROUND INFORMATION

The frequency band 14.8-15.35 GHz is currently allocated on a primary basis to the fixed and mobile services, and on a secondary basis to the space research service (SRS). Within the SRS, the band is expected to enable high-speed science data return from space science missions to a limited number of earth stations located globally. Additionally, the band is also currently used in two capacities by Data Relay Satellite (DRS) systems operated by multiple administrations. These uses include forward feeder uplinks from DRS earth stations to relay satellites in GSO orbit, as well as inter-satellite return links to relay data from non-GSO space science spacecraft (including crewed space vehicles and stations) through DRS satellites to the Earth.

PROPOSAL

Based on sharing and compatibility studies with existing systems of incumbent services, existing space research service operations in the frequency band 14.8-15.35 GHz, and current domestic policy which allocates this band on a primary basis to the space research service, the United States supports upgrading the space research service (space-to-space) from secondary to primary and retaining other uses of the SRS allocation (space-to-Earth and Earth-to-space) in a secondary status at WRC-23 under Agenda Item 1.13.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD USA/4226A13/1

14.5-15.4 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14.5-14.75	FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G	
14.75-14.8 FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research 5.509G		**14.75-14.8** FIXED FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510 MOBILE Space research 5.509G
14.8-15.35	FIXED MOBILE Space research (space-to-Earth) (Earth-to-space) SPACE RESEARCH (space-to-space) 5.339	
15.35-15.4	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511	

Reasons: To upgrade the existing space research (space-to-space) from secondary allocation to primary in the frequency band 14.8-15.35 GHz.

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section V – Limits of power flux-density from space stations

MOD USA/4226A13/2

TABLE **21-4** (*CONTINUED*) (REV.WRC-~~19~~23)

Frequency band	Service*	Limit in dB(W/m^2) for angles of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
…	…	…	…	…	…
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **5.494** and **5.496**) 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3)	Fixed-satellite (space-to-Earth) (non-geostationary-satellite orbit) [25]	−124	−124 + 0.5(δ − 5)	−114	1 MHz
12.2-12.75 GHz [7] (Region 3) 12.5-12.75 GHz [7] (Region 1 countries listed in Nos. **5.494** and **5.496**)	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	−148	−148 + 0.5(δ − 5)	−138	4 kHz

13.4-13.65 GHz (Region 1)	Fixed-satellite (space-to-Earth) (geostationary-satellite orbit)	**0°-25°**	**25°-80°**	**80°-84°**	**84°-90°**	4 kHz
		−159 + 0.4δ [19]	−149 [19]	−149 − 0.5(δ − 80) [19]	−151 [19]	
14.8-15.35 GHz	Space research (space-to-space)	0°-5°	5°-25°		25°-90°	1 MHz
		-124	−124 + 0.5(δ − 5)		−114	
17.7-19.3 GHz [7, 8]	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	**0°-5°**	**5°-25°**		**25°-90°**	1 MHz
		−115 [14, 15] or −115 − X [13]	−115 + 0.5(δ − 5) [14, 15] or −115 − X + ((10 + X)/20) (δ − 5) [13]		−105 [14, 15] or −105 [13]	
17.7-19.3 GHz [7, 8]	Fixed-satellite (space-to-Earth)	**0°-3°**	**3°-12°**	**12°-25°**	−105 [16]	1 MHz
		−120 [16]	−120 + (8/9) (δ − 3) [16]	−112 + (7/13) (δ − 12) [16]		
…	…	…	…	…	…	…

Reasons: The power flux density limits proposed to be added in Table 21-4 for the space research service (s-s) will provide the required protection levels to the fixed and mobile services, including LMS and AMS.

3307

SUP USA/4226A13/6

RESOLUTION 661 **(**WRC-19**)**

Examination of a possible upgrade to primary status of the secondary allocation to the space research service in the frequency band 14.8-15.35 GHz

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

Reasons: This Resolution is no longer necessary.

XX. UNITED STATES OF AMERICA

XXI. DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev.WRC-07)**, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary satellite orbit;*
Resolution **86 (Rev.WRC-07)** – *Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference*

Topic A - *Tolerances for certain orbital characteristics of non-GSO space stations of the FSS, BSS or MSS*

BACKGROUND INFORMATION:

WRC-19 invited the ITU-R to study "as a matter of urgency, tolerances for certain orbital characteristics of non-GSO space stations of the fixed-satellite, mobile-satellite or broadcasting satellite services to account for potential differences between the notified and deployed orbital characteristics for the inclination of the orbital plane, the altitude of the apogee of the space station, the altitude of the perigee of the space station and the argument of the perigee of the orbital plane."[1] ITU-R studies conducted to date agree that there should be allowable differences between the values recorded in the Master International Frequency Register (MIFR) for the specified orbital characteristics of non-GSO space stations operating on notified frequency assignments and those representative of the actual deployment of these non-GSO space stations.

[1] See WRC-19 Document CMR19/571 (10th Plenary Minutes), Section 10.5, paragraph 2.

There are multiple aspects involved here. On the one hand, as indicated in Section 4/7/1.3 of the CPM Report for WRC-23 on this Topic: "Deviations from the nominal parameters characterizing the notified plane (A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i), have an impact on the regulatory treatment by the Bureau of the confirmation of the BIU, the BBIU or the Resolution **35 (WRC-19)** submission. These deviations could also have a major impact on the interference environment of such a system, and thereby could impact the efficient use of the non-GSO spectrum resource. The same section of the CPM Report also indicates that "design considerations, the need to ensure safe flight operations between satellites in the same and/or other systems, inter-alia, can lead to notifying administrations needing to operate some space stations in orbital parameters that are at variance from the notified orbital parameters or to employ orbital practices that do not increase interference or protection requirements." The CPM Report goes on to recognize that there are legitimate reasons for variations from notified orbital plane parameters, and that it is important not to over-regulate deviations/tolerances in a way that limits administrations' flexibility or to inappropriately limit entry of additional systems.

The CPM Report for WRC-23, addressing the studies, made the following important observation (in Section 4/7/1.3):

> Although studies have been conducted . . . with a view to identifying allowable deviation/tolerance values for altitudes of apogee/perigee and inclination for a space station in a non-GSO notified orbit, there has been no definitive conclusion on an allowable limit for any of these parameters that would both provide certainty and not unnecessarily constrain efficient use of the orbital/spectrum resource by non-GSO systems.

There simply is no maximum value for allowable deviations on any parameter that would meet both objectives stated above. A limitation on altitude variations, for example, could be unnecessarily restrictive from an interference standpoint to systems that exceed the limit, while also permitting increases in interference from systems that meet the limit.

The proposals below balance the interest in a stable interference environment and the need to avoid overregulating orbital tolerances. The proposals call for periodic reporting for awareness, and for provision of assurances that any deviations in altitude and inclination in circular-orbit non-GSO systems cannot result in an increase in interference to or an increase in required protection from other users of the orbital/spectrum resource. The proposals also require an explanatory statement of the reason for the deviation from the notified parameters, as well as a new filing or modification if the interference environment is changed with respect to any other satellite system.

By requiring specific showings at the bringing into use/bringing back into use and Resolution **35 (WRC-19)** milestone stages (where applicable), and periodically thereafter, the mechanism below provides transparency for non-GSO system operators and administrations. The mechanism also addresses the impact on the interference/protection requirements caused by modifying orbital elements. The mechanism also affords all non-GSO systems the ability to maintain operational flexibility without facing unnecessary regulatory constraints.

Proposals:

MOD USA/7A/1

11.44C A frequency assignment to a space station in a non-geostationary-satellite orbit network or system in the fixed-satellite service, the mobile-satellite service or the broadcasting-satellite service shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been deployed and maintained on one of the notified orbital plane(s)MOD27 of the non-geostationary satellite network or system for a continuous period of 90

days, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau within 30 days from the end of the 90-day period[25, 28, 29]. On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently. (WRC-~~19~~23)

MOD

[27] **MOD11.44C.1** and **MOD11.44D.1** For the purposes of No. **11.44C** or No. **11.44D**, the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.~~5.e~~4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For frequency assignments to some non-geostationary-satellite systems in specific frequency bands and services, Resolution **[B7(A)] (WRC-23)** shall apply. (WRC-~~19~~23)

Reasons: To incorporate a mandatory reference to a new WRC Resolution addressing allowable deviations on elements of a notified orbital plane, and to correct an erroneous reference to Appendix **4**.

MOD USA/7A/2

11.44D A frequency assignment to a space station in a non-geostationary satellite orbit network or system with "Earth" as the reference body, other than a frequency assignment to which No. 11.44C applies, shall be considered as having been brought into use when a space station with the capability of transmitting or receiving that frequency assignment has been deployed on one of the notified orbital plane(s)[MOD 27] of the non-geostationary satellite network or system, irrespective of the notified number of orbital planes and satellites per orbital plane in the network or system. The notifying administration shall so inform the Bureau as soon as possible, but not later than 30 days after the end of the period referred to in No. 11.44.[25, 29] On receipt of the information sent under this provision, the Bureau shall make that information available on the ITU website as soon as possible and shall publish it in the BR IFIC subsequently. (WRC-~~19~~23)

Reasons: Consequential to the modification of Nos. 11.44C and 11.44C.1 under Proposal USA/7A/1 above.

MOD USA/7A/3

11.49 Wherever the use of a recorded frequency assignment to a space station of a satellite network or to all space stations of a non-geostationary-satellite system is suspended for a period exceeding six months, the notifying administration shall inform the Bureau of the date on which such use was suspended. When the recorded assignment is brought back into use, the notifying administration shall, subject to the provisions of Nos. 11.49.1, 11.49.2, 11.49.3 or 11.49.4, as applicable, so inform the Bureau, as soon as possible. On receipt of the information sent under this provision, the Bureau shall make that information available as soon as possible on the ITU website and shall publish it in the BR IFIC. The date on which the recorded assignment is brought back into use[32, 33, 34, 35, MOD 36] shall be not later than three years from the date on which the use of the frequency assignment was suspended, provided that the notifying administration informs the Bureau of the suspension within six months from the date on which the use was suspended. If the notifying administration informs the Bureau of the suspension more than six months after the date on which the use of the frequency assignment was suspended, this three-year time period shall be reduced. In this case, the amount by which the three-year period shall be reduced shall be equal to the amount of time that has elapsed between the end of the six-month period and the date that the Bureau is informed of the suspension. If the notifying administration informs the Bureau of the suspension more than 21 months after the date on which the use of the frequency assignment was suspended, the frequency assignment shall be cancelled. Ninety days before the end of the period of suspension, the Bureau shall send a reminder to the notifying administration. If the Bureau does not receive the declaration of the

commencement of the bringing back into use period within thirty days following the limit date of the period of suspension established in accordance with this provision, it shall cancel the entry in the Master Register. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-~~19~~23)

MOD

[36] **MOD11.49.5** For the purposes of Nos. **11.49.2** and **11.49.3**, the term "notified orbital plane" means an orbital plane of the non-geostationary-satellite system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.~~5.e~~4.1 (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**. For frequency assignments to some non-geostationary-satellite systems in specific frequency bands and services, Resolution **[B7(A)] (WRC-23)** shall apply. (WRC-~~19~~23)

Reasons: To incorporate a mandatory reference to a new WRC Resolution addressing allowable deviations on elements of a notified orbital plane, and to correct an erroneous reference to Appendix **4**.

ADD USA/7A/4

DRAFT NEW RESOLUTION [B7(A)] (WRC-23)

An approach to orbital tolerances for the implementation and use of frequency assignments to space stations in a non-geostationary-satellite system in specific bands and services

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that filings for frequency assignments to circular-orbit non-geostationary-satellite (non-GSO) systems composed of hundreds to thousands of non-GSO satellites have been received by ITU since 2011, in particular in frequency bands allocated to the fixed-satellite service (FSS) or the mobile-satellite service (MSS);

b) that non-GSO systems using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° are typically composed of only a few satellites and the number of such systems notified represents only a small fraction of the number of notified non-GSO systems;

c) that under Nos. 11.44C.1, 11.44D.1, 11.49.2 and 11.49.3, the term "notified orbital plane" means an orbital plane of the non-GSO system, as provided to the Radiocommunication Bureau (Bureau) in the most recent notification information for the system's frequency assignments, that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4**;

d) that design considerations, availability of launch vehicles to support multiple satellite launches, the need to ensure safe flight operations between satellites in the same and other systems, and other factors can lead to notifying administrations needing to operate some space stations in orbital planes with some nominal variance from the notified orbital planes for the non-GSO systems referred to in *considering a)*;

e) that significant discrepancies between the operational orbital plane(s) of a non-GSO system and the notified orbital plane(s) for those systems as recorded in the Master International Frequency Register (Master Register) could negatively impact the efficient use of the orbit/spectrum resource in any frequency band used by non-GSO systems, including non-GSO systems not subject to this Resolution;

f) that minor discrepancies between the operational orbital plane(s) of a non-GSO system and the notified orbital plane(s) for those systems as recorded in the Master Register may not negatively impact the

efficient use of the orbit/spectrum resource in any frequency band used by non-GSO systems, including non-GSO systems not subject to this Resolution;

g) that the determination whether an orbital plane of a non-GSO system has characteristics that corresponds to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4** as provided to the Bureau in the most recent notification information for the system's frequency assignments is not always straightforward, and can depend on factors that are specific to the non-GSO system in question;

h) that it is important, for consideration of instances where a non-GSO system operates with orbital planes that are at variance with the system's notified orbital planes, that there is a mechanism developed for determining that such at-variance operation does not now and will not in the future result in the space stations of the non-GSO system causing more interference or claiming a higher need for protection than would have been the case if the operational orbital planes exactly matched the notified orbital planes for the system;

i) that for purposes of maximizing the efficient use of the orbit/spectrum resource for all non-GSO systems, whether or not they are in the same frequency band or service, it is important for there to be a listing maintained by the Bureau, and periodically updated by filing administrations, of all satellites in a subject non-GSO system that are operating in orbital planes that are at variance with Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4** of any of the system's notified orbital planes, as provided to the Bureau in the most recent notification information for the system's frequency assignments;

j) that notwithstanding *considerings g)*, *h)*, and *i)* above, there will be instances where the Bureau can determine without a methodology that an orbital plane of a non-geostationary-satellite system has characteristics that do not correspond to Items A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b4.i (only for orbits whose altitudes of the apogee and perigee are different) in Table A of Annex 2 to Appendix **4** as provided to the Bureau in the most recent notification information for the system's frequency assignments;

k) that, in addressing the subject of orbital tolerances, there is a need to seek a balance between the prevention of spectrum/orbit warehousing, providing accurate information regarding the operational orbital planes used by non-GSO systems to assist the proper functioning of coordination mechanisms, and the operational requirements related to the safe deployment and operation of a non-GSO system;

l) that satellites using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° have significant orbital precession rates and consequently, restrictive orbital keeping requirements, and correction of orbit parameters may lead to a reduction of such satellites' lifetime and to frequent replacement;

m) that adherence to a transparent approach to the question of orbital tolerances is desirable, as this reduces uncertainty with respect to the deployment of non-GSO systems,

recognizing

a) that the bringing into use of frequency assignments to non-GSO systems is addressed in Article 11;

b) that any regulatory mechanism for management of frequency assignments to non-GSO systems in the Master Register should not impose an unnecessary burden;

c) that the core characteristics of notified orbital planes in a non-GSO system are among the notified required characteristics as specified in Appendix **4** (specifically provision A.4.b.4.a, A.4.b.4.d, A.4.b.4.e and A.4.b.4.i);

d) that Resolution **35 (WRC-19)** addresses variances between the actual number of satellites in notified orbital planes and the notified number of satellites for each orbital plane, whereas this Resolution is addressing the subject of variances of deployed versus notified orbital characteristics ;

e) that No. 13.6 is applicable to non-GSO systems with frequency assignments in the frequency bands and services to which this Resolution applies;

f) that No. 11.49 addresses the suspension of recorded frequency assignments to a space station of a satellite network or to space stations of a non-GSO system,

recognizing further

that this Resolution relates to those aspects of non-GSO systems to which *resolves* 1 applies with regard to the notified required characteristics as specified in Appendix **4**, and the conformity of the notified required characteristics of the non-GSO systems, other than those referred to in *recognizing c)* above and Nos. 11.44C.1, 11.44D.1, 11.49.2 and 11.49.3 is outside the scope of this Resolution,

noting

that for the purpose of this Resolution:

– the term "frequency assignments" is understood to refer to frequency assignments to a space station of a non-GSO system;

– the term "notified orbital plane" means an orbital plane of the non-GSO system, as provided to the Bureau in the most recent notification information for the system's frequency assignments, that possesses the general characteristics of items:

- A.4.b.4.a, the angle of inclination of the orbital plane of the space station;
- A.4.b.4.d, the altitude of the apogee of the space station;
- A.4.b.4.e, the altitude of the perigee of the space station; and
- A.4.b.4.i, the argument of the perigee of the orbit of the space station (only for orbits whose altitudes of the apogee and perigee are different)

in Table A of Annex 2 to Appendix **4**;

resolves

1 that this Resolution applies to frequency assignments to non-GSO systems, other than non-GSO systems using the orbits described in *considering* b) above, in the frequency bands and for the services listed in the Table below:

TABLE

Frequency bands and services for application of the orbital tolerance approach

Frequency bands (GHz)	**Space radiocommunication services**		
	Region 1	**Region 2**	**Region 3**
10.70-11.70	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	
11.70-12.50	FIXED-SATELLITE (space-to-Earth)		
12.50-12.70	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	BROADCASTING-SATELLITE FIXED-SATELLITE (space-to-Earth)
12.70-12.75	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)	BROADCASTING-SATELLITE FIXED-SATELLITE (space-to-Earth)
12.75-13.25	FIXED-SATELLITE (Earth-to-space)		
13.75-14.50	FIXED-SATELLITE (Earth-to-space)		
17.30-17.70	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	None	FIXED-SATELLITE (Earth-to-space)

Frequency bands (GHz)	Space radiocommunication services		
	Region 1	Region 2	Region 3
17.70-17.80	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)
17.80-18.10	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)		
18.10-19.30	FIXED-SATELLITE (space-to-Earth)		
19.30-19.60	FIXED-SATELLITE (space-to-Earth) FIXED-SATELLITE (Earth-to-space)		
19.60-19.70	FIXED-SATELLITE (space-to-Earth) (Earth-to-space)		
19.70-20.10	FIXED-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)	FIXED-SATELLITE (space-to-Earth)
20.10-20.20	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)		
27.00-27.50		FIXED-SATELLITE (Earth-to-space)	
27.50-29.50	FIXED-SATELLITE (Earth-to-space)		
29.50-29.90	FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)
29.90-30.00	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space)		
37.50-38.00	FIXED-SATELLITE (space-to-Earth)		
38.00-39.50	FIXED-SATELLITE (space-to-Earth)		
39.50-40.50	FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth)		
40.50-42.50	FIXED-SATELLITE (space-to-Earth) BROADCASTING-SATELLITE		
47.20-50.20	FIXED-SATELLITE (Earth-to-space)		
50.40-51.40	FIXED-SATELLITE (Earth-to-space)		

2 that, for frequency assignments to which *resolves* 1 applies, and for which information concerning the bringing into use or bringing back into use of the frequency assignments is provided to the Bureau on or after 1 January 2025, the notifying administration shall communicate to the Bureau the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution no later than 30 days after the end of the regulatory period specified in No. 11.44 or No. 11.49, as applicable, or 30 days after the end of the bringing/bringing back into use period in No. 11.44C or No. 11.49.2, as applicable, whichever comes later;

3 that, for frequency assignments to which *resolves* 1 applies, and that were brought into use or brought back into use prior to 1 January 2025, the notifying administration shall communicate to the Bureau the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution no later than 1 April 2025;

4 that, for frequency assignments to which *resolves* 1 applies, and that retain the remark to the Master Register entry that was added under *resolves* 5b) of Resolution **35 (WRC-19)**, the notifying administration shall communicate to the BR the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution at the same time the notifying administration communicates to the BR the required information under *resolves* 7 or 8, as applicable, from Resolution **35 (WRC-19)**;

5 that, for frequency assignments to which *resolves* 1 applies, the notifying administration shall communicate to the Bureau the required information regarding the system's deployed space stations in accordance with Annex 1 to this Resolution three years after the date of submission in accordance with *resolves* 2 or 3 above, or if applicable, three years after the date of submission of the information required under *resolves* 7c) or 8c) from Resolution **35 (WRC-19)** as required under *resolves* 4 of this Resolution, and continue doing so on the anniversary date of submission every three years thereafter;

6 that, upon receipt of the required deployment information submitted in accordance with *resolves* 2, 3, 4 or 5 above, BR shall promptly make this information available "as received" on the ITU website

7 that, if the information provided in any Annex 1 submission under *resolves* 2, 3, 4, or 5 above shows a change in the altitude of the apogee or perigee of the space station of more than [3%], or a change of more than 1 degree in the angle of inclination of the orbital plane of the space station from the notified orbital plane(s) provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments, the notifying administration shall also submit to the BR, no later than 90 days after the deadline for the Annex 1 submission under *resolves* 2, 3, 4, or 5 above, modifications to the characteristics of the notified or recorded frequency assignments reflecting the revised parameters;

8 that, upon receipt of the modifications to the characteristics of the notified or recorded frequency assignments as referred to in *resolves* 7:

a) the BR shall promptly make this information available "as received" on the ITU website;

b) the BR, for the purpose of No. **11.43B**, shall retain the original dates of entry of the frequency assignments in the Master Register if:

iii) BR reaches a favourable finding under No. **11.31**; and

iv) the modifications are limited to changes in the altitude of the apogee of the space station (Appendix **4** data item A.4.b.4.d), the altitude of the perigee of the space station (Appendix **4** data item A.4.b.4.e), and the angle of inclination of the orbital plane of the space station (Appendix **4** data item A.4.b.4.a), along with changes associated with not causing more interference or requiring more protection than the characteristics provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available); and

iii) the notifying administration provides a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments (see Appendix **4** data item A.25.a);

c) the BR shall publish the information provided and its findings in the BR IFIC;

9 that the Bureau shall, no later than 45 days before any deadline for submission by a notifying administration under *resolves* 2, 3, 4, 5, or 6 send a reminder to the notifying administration to provide the information required;

10 that, if a notifying administration fails to communicate the information required under *resolves* 2, 3, 4, 5, or 6 as appropriate, the Bureau shall promptly send to the notifying administration a reminder asking the administration to provide the required information within 30 days from the date of this reminder from the BR;

11 that, if a notifying administration fails to provide information after the reminder sent under *resolves* 10, the Bureau shall send to the notifying administration a second reminder asking it to provide the required information within 15 days from the date of the second reminder;

12 that, if a notifying administration fails to provide the required information under *resolves* 2, 3, 4, 5, or 6, as appropriate, following the reminders under *resolves* 10 and 11, the Bureau shall:

a) inform the Radio Regulations Board (RRB), at the RRB's next scheduled meeting, that the Bureau intends to discontinue taking the entry in the Master Register into account when conducting its examinations;

b) in the absence of a determination by the RRB to reject or postpone the course of action outlined in *resolves* 12*a)* at the first RRB meeting after the Bureau provides the information in *resolves* 12*a)*, no longer consider the frequency assignments under subsequent examinations under Nos. 9.36, 11.32 or 11.32A, and inform administrations having frequency assignments subject to Sub-Section IA of Article 9 that those assignments shall not cause harmful interference to, nor claim protection from, other frequency assignments recorded in the Master Register with a favourable finding under No. 11.31;

13 that the suspension of the use of frequency assignments in accordance with No. 11.49 at any point prior to a reporting deadline as specified in *resolves* 2, 3, 4 or 5 of this Resolution, as applicable, shall not alter or reduce the requirements associated with any reporting obligations as stated in this Resolution;

14 that, if information provided by a notifying administration under *resolves* 4 of this Resolution results in any satellites not retaining their original dates of entry in the Master Register after application of *resolves* 8 of this Resolution, such satellites shall not be included in the total number of satellites deployed as part of the system during any relevant milestone period;

15 that nothing in this Resolution, including *resolves 6* above, shall be considered to limit or constrain the Bureau from implementing or following the procedure set forth in No. 13.6 of the Radio Regulations upon receipt of any Annex 1 submission under *resolves* 2, 3, 4 or 5 above, or at any other time, with respect to the bringing into use, bringing back into use, or continuation in use of frequency assignments to non-GSO space stations in accordance with the notified required characteristics of a notified orbital plane as specified in Appendix **4**,

instructs the Radiocommunication Bureau

1 to take the necessary actions to implement this Resolution;

2 to report any difficulties it encounters in the implementation of this Resolution to WRC-27,

invites the ITU-R

to continue studies with a view to identifying a methodology or methodologies for determining whether specific changes to a notified orbital plane will cause more interference or require more protection than the characteristics provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments.

ANNEX 1 TO RESOLUTION [B7(A)] (WRC-23)

Information to be submitted about the deployed space stations

A Satellite system information

1) Name of the satellite system

2) Name of the notifying administration

3) Country symbol

4) Reference to the advance publication information or the request for coordination, or the notification information, if available

5) Total number of space stations deployed into each notified orbital plane of the satellite system with the capability of transmitting or receiving the frequency assignments

6) Orbital plane number indicated in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments into which each space station is deployed.

B Space station characteristics for each space station deployed

1) Name of the space station

2) Orbital plane number with which the space station is associated

3) Altitude of the apogee and perigee of the space station and angle of inclination of the orbital plane of the space station

4) For each space station operating in an orbital plane with an altitude of the apogee/perigee or angle of inclination at variance from the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available), a detailed explanation of why there is a change in the orbital characteristics of the space station and a technical showing to support a determination that the variance does not result in any increased interference or protection requirements as compared to those requirements for operation without the variance.

C Commitment of Non-Interference/Non-Protection

By providing a submission under Annex 1 to this Resolution, the notifying administration commits that the operation of its notified frequency assignments using the orbital characteristics of the submission that are at variance with the notified orbital plane(s) will not cause more interference or require more protection than the characteristics provided in the latest notification information published in the BR IFIC (Part II-S, if available, or Part I-S if Part II-S is not available) for the frequency assignments to the non-geostationary-satellite system.

Reasons: To provide a mechanism to ensure that deviations in key orbital parameters from what is notified and/or recorded in the MIFR are transparent, reasonably up to date, and cause no change in the interference environment in which the non-GSO system operates.

MOD USA/7A/5

APPENDIX 4 (REV.WRC-19)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations or radio astronomy stations[2] (Rev.WRC-12)

Footnotes to Tables A, B, C and D

Items in Appendix	A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK OR SYSTEM, EARTH STATION OR RADIO ASTRONOMY STATION	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network or system subject to coordination under Section II	Advance publication of a non-geostationary-satellite network or system not subject to coordination under Section II	Notification or coordination of a geostationary-satellite network (including	Notification or coordination of a non-geostationary-satellite network or system	Notification or coordination of an earth station (including notification under Annexes 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
***												
A.23	COMPLIANCE WITH RESOLUTION 35 (WRC-19)										A.23	-
A.23.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					O					A.23.a	
***												
A.25	COMPLIANCE WITH RESOLUTION [B7(A)] (WRC-23)										A.25	
A.25.a	a commitment stating that the characteristics as modified will not cause more interference or require more protection than the characteristics provided in the latest notification information published in Part I-S of the BR IFIC for the frequency assignments to the non-geostationary-satellite system					O					A.25.a	

Reasons: To improve and clarify the procedural implementation provisions for Method A4.

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 10

10 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,

Draft Proposal for a WRC-27 Agenda Item

Consideration of regulatory provisions for updating Appendix 26 of the Radio Regulations to support the modernization of aeronautical mobile (OR)

The High Frequency (HF) (3-30 MHz) range has been identified as an effective alternative to provide much needed integrated and interoperable Beyond-Line-of-Sight (BLOS) communications capabilities. HF is also a critical and affordable option for global broadcasting and amateur radio, and an alternative when other communications services are unavailable due to natural disasters or other national emergencies. Commercial financial institutions are exploring the use of HF long-distance delivery for financial users requiring low latency data. The challenge with meeting the growing requirements for current HF use is the need for increased bandwidth that would be required to achieve HF's advantages while not impeding the legacy frequency needs of incumbent users, groups or countries.

Modern wideband HF (WBHF) technologies are available that enable the flexibility to use wider channel bandwidths within advanced digital HF and enhanced applications that can support a shared environment while also maximizing spectrum efficiency. Current wideband constructs embrace technology and methodologies that automate the negotiating of the Radio Frequency (RF) environment while mitigating any harmful interference to users in, or adjacent to, a desired HF frequency range. WBHF technologies would be similarly beneficial for aeronautical use of HF.

Aeronautical use of the various HF frequency bands in the range 3025 to 18030 kHz is essential to long distance aeronautical communications in remote and oceanic areas. Since the last substantive review of RR Appendix **26** of the ITU Radio Regulations by WRC-15, use of HF by aviation has continued to change and grow. Aviation is evaluating future developments within the HF band, using new technology to significantly improve capacity, connectivity, and quality of service for aviation data and voice, including increased channel bandwidths for greater data throughput. Such developments within existing aviation HF allocations would provide aviation with additional capabilities, improving safety and global coverage. Appendix **26** of the ITU Radio Regulations limits Aeronautical Mobile (OR) to a maximum bandwidth of 2.8 kHz.Thus, RR Appendix **26** should be reviewed and revised to meet the current and future aeronautical requirements by allowing for bonding contiguous HF channels and digital

modulations that support higher data rates while ensuring that interference outside of the assigned multi-channel bands is no greater than the interference of individually utilized channels.

Proposal:

To review Appendix **26** of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU-R studies, to accommodate wideband HF (WBHF) technologies in existing HF bands allocated to the aeronautical mobile (off route) service and ensure coexistence of current HF systems alongside WBHF systems, in accordance with Resolution [USA/10/WIDEBAND HF] (WRC-23).

ADD USA/XXXX/XX

DRAFT NEW RESOLUTION [USA-2027]

Agenda for the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2023),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and that a final agenda shall be established by the Council two years before the conference;

b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

resolves

to recommend to the Council that a world radiocommunication conference be held in 2027 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC-19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:

1.[XXX] to consider, on the basis of ITU-R studies in accordance with Resolution **[USA/10/ WIDEBAND HF] (WRC-23)**, appropriate regulatory actions, including possible updates to Appendix **26** of the Radio Regulations in support of aeronautical mobile (OR) Wideband HF modernization;

resolves further

to activate the Conference Preparatory Meeting,

invites the Council

to finalize the agenda and arrange for the convening of WRC-27, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-27,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

Reasons: To provide for studies, review and possible revision of RR Appendix **26** to meet current and future aeronautical requirements in light of availability of new technologies capable of modernizing HF including significant improvements to capacity, connectivity and quality of service.

ADD USA/XXXX/XX

DRAFT NEW RESOLUTION [USA/10/WIDEBAND HF] (WRC-23)

Consideration of regulatory provisions for updating Appendix 26 of the Radio Regulations in support of aeronautical mobile (OR) HF modernization

The World Radiocommunication Conference (Dubai, 2023),

considering

a) that for the purpose of this Resolution, the term "wideband" in HF communications may refer to a combination of multiple 3 kHz channels to provide improved data rates;

b) that, with the availability of advanced digital technologies and the demonstrated capabilities of aeronautical wideband HF, including contiguous or non-contiguous channel aggregation, faster data rates and better voice communications are possible;

c) that digital aeronautical HF must coexist with existing aeronautical analogue voice and data HF systems

d) that desirable properties of HF propagation enable global coverage for aircraft;

e) that aeronautical analogue voice and narrowband digital HF systems are the primary means for international and domestic aviation to communicate with aircraft in remote and oceanic areas;

f) that there is an operational need for the modernization of data link services in the HF

band for messages related to the safety and regularity of flight for use by international civil aviation;

g) that current aeronautical HF systems are limited by the available technology, and are insufficient to meet many modern aircraft information requirements without being augmented by aeronautical safety satellite communications;

h) that use of the frequencies in the frequency bands allocated to the aeronautical mobile (OR) service (AM(OR)S) between 3025 and 18030 kHz is governed by the provisions of Appendix 26,

recognizing

a) the need for improving aeronautical HF performance in support of internationally recognized aviation performance standards as defined by the International Civil Aviation Organization (ICAO);

b) that Annex 10 (Volume III) to the Convention on International Civil Aviation is a part of the international Standards and Recommended Practices (SARPs) for the current aeronautical narrowband HF communication systems used by international civil aviation;

c) that the modernization of aeronautical HF communications will not require any changes to Article **5** of the Radio Regulations;

d) that the frequencies 3 023 kHz and 5 680 kHz are designated for search and rescue in Appendix **15** of the Radio Regulations;

e) that any channel aggregation needs to be performed in a manner that protects other primary services operating in band and in adjacent frequency bands,

noting

a) that a similar resolution, (Res 429 (WRC-19)), considered regulatory provisions for updating Appendix 27 of the Radio Regulations in support of HF modernization for aeronautical mobile (R);

b) that the existing regional frequency allotments are detailed in Appendix **26** for aeronautical HF in the AM(OR)S;

c) that Appendix **26** provides international and regional allotments for HF channels within the AM(OR)S;

d) that the current aeronautical HF narrowband digital communications are detailed in Recommendation ITU-R M.1458;

e) that inter-system compatibility among internationally standardized aeronautical equipment is the responsibility of ICAO;

f) that new HF contiguous or non-contiguous channel aggregation technology allows for variable bandwidths greater than 3 kHz,

resolves to invite the ITU Radiocommunication Sector

1 to identify any necessary modifications to Appendix **26** for the AM(OR)S between 3025 and 18030 kHz, noting recognizing c);

2 to identify any necessary transition arrangements for the introduction of new digital aeronautical wideband HF systems and any consequential changes to Appendix **26**;

3 to recommend how new digital aeronautical wideband HF systems can be introduced while ensuring compliance with safety requirements and with recognizing e);

4 to define the relevant technical and operational characteristics and to conduct any necessary sharing and compatibility studies with incumbent services that are allocated on a primary basis in the same or adjacent frequency bands to avoid harmful interference in accordance with recognizing e);

5 to complete the studies in time for WRC-27,

invites the 2027 World Radiocommunication Conference

to consider necessary changes to Appendix **26**, on the basis of the studies conducted under resolves 4 *to invite the ITU Radiocommunication Sector* above,

instructs the Secretary-General

to bring this Resolution to the attention of the ICAO,

invites the International Civil Aviation Organization

to participate actively by providing aeronautical operational requirements and relevant available technical characteristics to be taken into account in ITU Radiocommunication Sector studies.

Reasons: To provide a roadmap for studies and review for possible revision of RR Appendix **26** to meet current and future aeronautical requirements in light of availability of new technologies capable of modernizing HF including significant improvements to capacity, connectivity and quality of service.

ATTACHMENT

PROPOSAL FOR FUTURE AGENDA ITEM TO UPDATE ITU RADIO REGULATION APPENDIX 26 IN SUPPORT OF WIDEBAND HF

Subject: Proposed Future WRC Agenda Item for WRC-2027 to support updates to ITU Radio Regulations in support of Wideband HF

Origin: United States of America

Proposal: To review and update the relevant sections of ITU RR Appendix 26 in support of Wideband HF for aviation applications while ensuring compatibility with legacy HF uses.

Background/reason:

The aeronautical use of the various HF frequency bands in the range 3025 and 18030 kHz kHz is essential to long distance aeronautical communications in remote and oceanic areas. Since the last substantive review of RR Appendix 26 of the ITU Radio Regulations, use of HF by aviation has continued to change and grow. Aviation is evaluating future developments within the HF band, using new technology to significantly improve capacity, connectivity, and quality of service for aviation data and voice, including increased channel bandwidths for greater data throughput. Such developments within existing aviation HF allocations would provide aviation with additional capabilities, improving safety and global coverage. RR Appendix 26 needs to be reviewed to ensure it meets the current and future aeronautical requirements by allowing for bonding contiguous HF channels and allow digital modulations that support higher data rates while ensuring that interference outside of the assigned multi-channel bands is no greater than the interference of individually utilized channels.

Radiocommunication services concerned:

Aeronautical Mobile (OR)

Indication of possible difficulties: none foreseen

Previous/ongoing studies on the issue: N/A

Studies to be carried out by: ITU-R WP5B	*with the participation of:* ICAO

ITU-R Study Groups concerned: SG 5

ITU resource implications, including financial implications (refer to CV126): minimal

Common regional proposal: Yes/No ***Multicountry proposal:*** Yes/No

Number of countries:

Remarks

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
ROGER WAHL	)	MB Docket No. 21-401
	)	
WQZS(FM), Meyersdale, PA	)	Facility ID No. 57424

REVOCATION ORDER

Issued: April 12, 2023 **Released: April 12, 2023**

By the Chief, Enforcement Bureau:

I. INTRODUCTION

1. Pursuant to section 312 of the Communications Act of 1934, as amended, and section 0.111(a)(18) of the Commission's rules, we hereby revoke the license of Mr. Roger Wahl (Mr. Wahl) for FM Station WQZS in Meyersdale, Pennsylvania.[1] This action follows an Order by Administrative Law Judge Jane Hinckley Halprin (ALJ) terminating a hearing into Mr. Wahl's qualifications to be a licensee and certifying the case to the Commission after Mr. Wahl waived his right to a hearing by failing to respond to discovery requests and failing to comply with other procedural obligations.[2]

2. We find that Mr. Wahl lacks the qualifications to be or remain a Commission licensee. The record in this proceeding—particularly Mr. Wahl's 2020 convictions for a felony and four misdemeanors, and the facts underlying those convictions—establishes that he lacks the requisite character to be a Commission licensee as described in the Commission's *Character Qualifications Policy Statement*.[3]

II. BACKGROUND

A. Factual Background

3. On July 8, 2020, Mr. Wahl pleaded guilty to five crimes.[4] The facts supporting Mr. Wahl's guilty plea were recited for the court at the time his plea was entered, and Mr. Wahl confirmed that the recitation was accurate.[5] Specifically, Mr. Wahl admitted that he: (a) secretly took nude photos

[1] *See* 47 U.S.C. § 312(a)(2); 47 CFR § 0.111(a)(18) (delegating to the Enforcement Bureau authority to "[i]ssue … appropriate orders after a hearing proceeding has been terminated by the presiding officer on the basis of waiver"). Also implicated is a pending application for consent to assignment of license for Station WQZS(FM), Meyersdale, Pennsylvania. *See* FCC File No. BALH-20200305AAH. That application will be dismissed as moot once the revocation of the WQZS license becomes a final order.

[2] *See Roger Wahl*, Order Terminating Proceeding, MB Docket No. 21-401 (Halprin, ALJ, Aug. 2, 2022) (Final Termination Order); 47 CFR § 1.92(a), (c), (d).

[3] *See Policy Regarding Character Qualifications In Broad. Licensing,* Report, Order, and Policy Statement, 102 F.C.C.2d 1179 (*January 1986 Policy Statement*)*, recon. dismissed/denied*, 1 FCC Rcd 421 (*November 1986 Policy Statement*); *Policy Regarding Character Qualifications in Broad. Licensing*, Policy Statement and Order, 5 FCC Rcd 3252 (1990) (*1990 Policy Statement*), *modified*, Memorandum Opinion and Order, 6 FCC Rcd 3448 (1991) (*1991 Policy Statement*), *further modified*, Memorandum Opinion and Order, 7 FCC Rcd 6564 (1992) (collectively, *Character Qualifications Policy Statement*).

[4] *See Commonwealth of Pa. v. Wahl*, No. 56-CR-0000952-2019 (Ct. of C.P., Somerset C'nty, Pa. July 8, 2020) (Initial Order of the Court).

[5] *See Commonwealth of Pa. v. Wahl*, Sentence of Court, No. 56-CR-0000952-2019 (Ct. of C.P., Somerset C'nty, Pa. Nov. 16, 2020).

of a woman inside her home using a concealed camera he installed in her bathroom; (b) impersonated the woman on an online dating site; (c) sent the nude photos of the woman to at least one man whom he, posing as the woman, connected with through that site; and (d) posing as the woman, solicited the man to have sexual relations with her.[6] In addition, upon learning of the Pennsylvania State Police investigation, Mr. Wahl deleted the nude photos from his mobile phone and deleted the communications he made via the online dating site.[7]

4. Mr. Wahl pleaded guilty to criminal use of a communication facility, which is a third-degree felony,[8] and four related misdemeanors.[9] Specifically, Mr. Wahl pleaded guilty to second degree misdemeanors for recklessly endangering another person, unlawful dissemination of an intimate image, and tampering with evidence.[10] He also initially pleaded guilty to invasion of privacy.[11] On November 16, 2020, Mr. Wahl was sentenced to concurrent sentences that effectively placed him on probation for three years, with four months of electronic monitoring, and required him to pay $600 in fines and the costs of his prosecution and supervision.[12]

5. On October 19, 2021, the Commission's Media Bureau released an Order to Show Cause to commence a hearing proceeding before the ALJ to determine whether Mr. Wahl's license should be revoked.[13] The events that precipitated termination of that hearing are detailed in the Final Termination Order, and we briefly recount them here. Mr. Wahl, who is not an attorney, chose to represent himself in this hearing rather than retain counsel.[14] For that reason, the ALJ repeatedly excused procedural deficiencies and took pains to explain to Mr. Wahl his responsibility to respond fully to the Enforcement Bureau's discovery requests and to orders issued by the ALJ.[15] Even so, problems with Mr. Wahl's self-representation began immediately, as he failed to file his Notice of Appearance in the Commission's Electronic Comment Filing System (ECFS), as specified in the Order to Show Cause, and did not

[6] *See id*. In their investigation, the police obtained screen shots of the dating profile and photos, *id*. at 10-11 and 14, and seized Mr. Wahl's phone after finding the nude photos in the deleted photos file of the phone. *Id*. at 15-16.

[7] *See id*.

[8] *See* Initial Order of the Court. The police report from 2019 described this charge as use of a communication device to facilitate the commission of a felony or attempted felony. *See* Pa. State Police GO# PA 2019-1197584 at 29 (Wahl Police Report).

[9] *See* Initial Order of the Court.

[10] *See id*.

[11] *See id*. Subsequently, according to the record in the criminal proceeding, Mr. Wahl learned that a conviction on the invasion of privacy charge would require registration and notification as a sex offender. He then withdrew his plea of guilty with respect to that charge, and instead pleaded guilty to identity theft, a first-degree misdemeanor. *See Commonwealth of Pa. v. Wahl*, Motion to Withdraw Guilty Plea, No. 56-CR-0000952-2019 (Ct. of C.P., Somerset C'nty, Pa. July 27, 2020); *Commonwealth of Pa. v. Wahl*, Order, No. 56-CR-0000952-2019 (Ct. of C.P., Somerset C'nty, Pa. Nov. 16, 2020) (accepting withdrawal of guilty plea).

[12] *See Commonwealth of Pa. v. Wahl*, Sentence of Court, No. 56-CR-0000952-2019 (Ct. of C.P., Somerset C'nty, Pa. Nov. 16, 2020). In imposing the sentence, the court observed that the victim of Mr. Wahl's criminal activity was not physically assaulted. At the same time, it stated: "We do note that the Defendant indeed maintains a minimal prior record; however, he has caused the victim in this case substantial emotional harm. The seriousness of the offenses, the multiple actions, and the extent to which the Defendant went to perpetrate harm on the victim warrants a lengthy period of supervision. Any lesser sentence in our view would depreciate the seriousness of the offenses." *Id*. at 4.

[13] *Roger Wahl*, Hearing Designation Order, Order to Show Cause, and Notice of Opportunity for Hearing, MB Docket No. 21-401, DA 21-1305 (MB Oct. 19, 2021) (Order to Show Cause).

[14] Final Termination Order at 1-2, para. 3.

[15] *See id*.

properly serve the ALJ, as required by the Commission's rules.[16] The ALJ informed Mr. Wahl several times that failure to comply with filing requirements could cause him to lose his license.[17] Nevertheless, these problems continued, as Mr. Wahl repeatedly failed to comply with his obligations in the hearing proceeding over the next six months.[18]

6. In light of Mr. Wahl's failure to comply with the ALJ's orders and his discovery obligations, the Enforcement Bureau, on May 31, 2022, asked the ALJ to either dismiss this hearing proceeding or compel a response to then-outstanding discovery requests.[19] At the outset of the hearing proceeding, Mr. Wahl had indicated in his Notice of Appearance that "I, Roger Wahl, appear in the above referenced matter and intend to present evidence on the matters specified in the said order."[20] Finding he had not lived up to that commitment, however, the ALJ determined Mr. Wahl was not participating in the proceeding at the level necessary to render it a meaningful exercise of the opportunity for a hearing that had been afforded him.[21] The ALJ therefore found that Mr. Wahl had waived his right to a hearing, terminated the hearing proceeding, and certified the case to the Commission for further disposition consistent with her order.[22]

B. Legal Background

7. Section 312(a)(2) of the Act provides that the Commission may revoke any license if "conditions com[e] to the attention of the Commission which would warrant it in refusing to grant a license or permit on an original application."[23] Section 308(b) of the Act identifies the character of an applicant to be among those factors that the Commission considers in determining whether an applicant has the requisite qualifications to be a Commission licensee.[24] Thus, a character defect that would warrant the Commission's refusal to grant a license in the original application would likewise support a Commission determination to revoke a license.

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[16] *See id*. *See* Order to Show Cause at para. 23; 47 CFR § 1.210 (all pleadings in a hearing proceeding are to be filed in ECFS with a courtesy copy contemporaneously provided to the presiding officer).

[17] *Roger Wahl*, Order, MB Docket No. 21-401, 22M-01 (ALJ Jan. 11, 2022) at 1, para. 3 ("Dates and deadlines established throughout this proceeding are not suggestions. While the Commission's rules include procedures for requesting extensions of time if circumstances warrant, a party who does not make such a request and simply ignores a deadline is in significant danger of being held in default"); Transcript of Initial Status Conference, Tr. 7:16-19 (Mar. 8, 2022) ("This case is very formal; that's how these hearings work. And failure to follow the rules could result in dismissal of the case and revocation of your license"); *Roger Wahl*, Order Summarizing Initial Status Conference, MB Docket No. 21-401, 22M-05 (ALJ Mar. 10, 2022) at 2, para. 3 ("Finally, the Presiding Judge emphasized that failure to adhere to the Commission's hearing regulations and procedures, including filing deadlines, could lead to dismissal of this proceeding with prejudice"); *Roger Wahl*, Discovery Order, MB Docket No. 21-401, 22M-12 (ALJ Apr. 29, 2022) at para. 7.

[18] *See id*.; Final Termination Order at 4, para. 7.

[19] Enforcement Bureau's Motion to Dismiss for Failure to Participate and Waiver of Hearing, or, in the Alternative, Motion to Compel a Response to the Enforcement Bureau's Outstanding Discovery Requests, MB Docket No. 21-401 (filed May 31, 2022).

[20] Roger Wahl, Notice of Appearance, MB Docket No. 21-401 (filed Nov. 11, 2021).

[21] Final Termination Order at 4, para. 7 (noting that "[t]o date, he has filed no substantive documents in this proceeding").

[22] *Id.* at 5-6, paras. 10-12.

[23] 47 U.S.C. § 312(a)(2).

[24] *Id.* § 308(b) ("All applications for station licenses, or modifications or renewals thereof, shall set forth such facts as the Commission by regulation may prescribe as to the citizenship, character, and financial, technical, and other qualifications of the applicant to operate the station."). *See Character Qualifications Policy Statement*.

8. Reliability is a key element of character necessary to operate a broadcast station in the public interest.[25] The fundamental purpose of the Commission's character inquiry is to make predictive judgments about an applicant's truthfulness and propensity to comply with the Act and the Commission's rules.[26] For this reason, inquiries into a licensee's basic character eligibility are to "focus on the likelihood that a[] [licensee] will deal truthfully with the Commission and comply with the Communications Act and our rules and policies."[27]

9. Under the Commission's *Character Qualifications Policy Statement*, non-FCC misconduct may call into question a licensee's character.[28] In assessing character qualifications in broadcasting matters, the Commission considers, as relevant, "evidence of any conviction for misconduct constituting a felony."[29] In particular, the Commission has found that "[b]ecause all felonies are serious crimes, any conviction provides an indication of an applicant's or licensee's propensity to obey the law" and conform to provisions of both the Act and the Commission's rules and policies.[30] In addition, the Commission retains discretion to consider certain types of misdemeanors to be relevant.[31] The *Character Qualifications Policy Statement* also affirms that "a specific finding of fraudulent representation to another governmental unit" may cast doubt on a licensee's truthfulness, whether it occurs in the context of a criminal or civil dispute.[32] Such fraudulent representation may take the form of a lack of candor "involv[ing] concealment, evasion, and other failures to be fully informative."[33]

10. The question of whether misconduct is disqualifying turns on the facts of each case.[34] When making determinations in particular cases, the Commission generally considers factors such as "the willfulness of the misconduct, the frequency of the misconduct, the currentness of the misconduct, the seriousness of the misconduct, the nature of the participation (if any) of managers or owners, efforts made to remedy the wrong, overall record of compliance with FCC rules and policies, and rehabilitation."[35]

III. DISCUSSION

11. On the undisputed record before us, we find that revocation is warranted under section 312(a)(2) of the Act. Mr. Wahl was given the opportunity, pursuant to the Order to Show Cause, to demonstrate that he is qualified to be and remain a Commission licensee, but he waived his right to a hearing by failing to participate.[36] If Mr. Wahl's initial license applications were now under review, the Commission would reject them based on failure to satisfy the character requirement of section 308(b).

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[25] *January 1986 Policy Statement*, 102 F.C.C.2d at 1209-20, paras. 55-57.

[26] *See id*. at 1189, 1232, paras. 21, 114; *see also id*. at 1210, para. 60 ("[T]he trait of 'truthfulness' is one of the two key elements of character necessary to operate a broadcast station in the public interest."); *id*. at 1211, para. 61 ("The integrity of the Commission's processes cannot be maintained without honest dealing . . . by licensees."); *1990 Policy Statement*, 5 FCC Rcd at 3252, paras. 3-4 (willingness to violate other laws bears on propensity to comply with Communications Act and Commission rules).

[27] *January 1986 Policy Statement*, 102 F.C.C.2d at 1183, para. 7.

[28] The term "non-FCC misconduct" refers to misconduct other than a violation of the Commission's rules or the Communications Act. *January 1986 Policy Statement*, 102 F.C.C.2d at 1183 n.11, para. 7.

[29] *See 1990 Policy Statement*, 5 FCC Rcd at 3252, para. 4.

[30] *Id.*

[31] *Id.* at 3252, and 3254, n.3; *1991 Policy Statement*, 6 FCC Rcd at 3448.

[32] *January 1986 Policy Statement*, 102 F.C.C.2d at 1195-96, paras. 35-36.

[33] *Id*.

[34] *1990 Policy Statement*, 5 FCC Rcd at 3252, para. 5; *January 1986 Policy Statement*, 102 F.C.C.2d at 1227-29, paras. 102-06.

[35] *Id*.

[36] *See supra* paras. 5-6.

Under section 312(a)(2), Mr. Wahl's station license should thus be revoked because of conditions that would warrant refusal to grant him a license in the first place.[37]

12. Mr. Wahl's conviction for criminal use of a communication facility, a third-degree felony, by itself merits revocation of his license. Any felony conviction casts doubt on an applicant's or licensee's character.[38] The propensity to comply with the law generally is relevant to character qualifications, and an applicant or licensee's willingness to violate other laws, and, in particular, to commit felonies, is indicative of whether the applicant or licensee will conform to the Commission's rules or policies.[39] This conviction, which concerned acts intended to harm—and causing actual harm to—an individual, disqualifies Mr. Wahl as a licensee on the basis of character defect.

13. Mr. Wahl's four misdemeanor convictions form an independent basis for revoking his license. The Commission has the discretion to consider serious misdemeanor convictions in appropriate cases,[40] and this is such a case. Mr. Wahl pleaded guilty to an array of misdemeanor criminal offenses (identity theft, unlawful dissemination of an intimate image, recklessly endangering another person, and tampering with evidence) based on misconduct involving multiple actions over a period of time designed to harm his victim. Mr. Wahl then sought to evade responsibility for those actions. We find that these misdemeanor convictions directly implicate his character qualifications. In particular, the facts surrounding his conviction for identity theft show him to be deceitful both because he concealed a camera in the victim's bathroom and because he then impersonated his victim on an online dating site. His conviction for unlawful dissemination of an intimate image also shows him to be untruthful, as he assumed the victim's identity when disseminating her image—and these same deceitful acts formed the basis for his conviction for recklessly endangering another person. Further, his conviction for tampering with evidence by attempting to conceal his earlier misdeeds buttresses the conclusion that he is untruthful and lacks the character to be a licensee.

14. We also find that Mr. Wahl's station license should be revoked because of his attempt to deceive another government agency, as evidenced by his conviction for tampering with evidence. Acts of "concealment, evasion, and other failures to be fully informative" to a governmental unit equate to fraudulent representations.[41] The facts supporting Mr. Wahl's guilty plea state that Mr. Wahl deleted the communications he made via the online dating site upon learning of the Pennsylvania State Police investigation, and he likewise deleted the nude photos of the woman from his mobile phone.[42] These efforts at concealment and evasion in the face of a government investigation merit revocation of his license.

15. Thus, Mr. Wahl's felony conviction, his misdemeanor convictions, and his fraudulent misconduct before a government agency each establish that his character falls short of the standard described in the *Character Qualifications Policy Statement*—particularly in light of the factors the Commission considers when making such determinations.[43] His conduct was adjudicated to be entirely willful, comprising a sequence of acts performed over time and calculated to harm his victim.[44] The court

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[37] 47 U.S.C. § 312(a)(2).

[38] *See 1990 Policy Statement*, 5 FCC Rcd at 3252, para. 4. *See generally Contemp. Media, Inc. v. FCC*, 214 F.3d 187 (D.C. Cir. 2000).

[39] *See 1990 Policy Statement*, 5 FCC Rcd at 3252, para. 3.

[40] *Id.* at 3252, and 3254, n.3; *1991 Policy Statement*, 6 FCC Rcd at 3448.

[41] *January 1986 Policy Statement*, 102 F.C.C.2d at 1195-96, paras. 35-36.

[42] *See* Initial Order of the Court.

[43] *See 1990 Policy Statement*, 5 FCC Rcd at 3252, para. 5; *January 1986 Policy Statement*, 102 F.C.C.2d at 1227-29, paras. 102-06.

[44] *See Commonwealth of Pa. v. Wahl*, Sentence of Court, No. 56-CR-0000952-2019 (Ct. of C.P., Somerset C'nty, Pa. Nov. 16, 2020).

in the criminal case acknowledged their seriousness of these acts.[45] And even though Mr. Wahl has typically complied with FCC rules and policies, the record reflects no efforts by Mr. Wahl to remedy these wrongs. As fewer than three years have passed since his convictions, the Commission cannot hold that his character has been rehabilitated. Revocation of Mr. Wahl's license is thus warranted pursuant to section 312(a)(2) of the Act.

IV. ORDERING CLAUSES

16. Accordingly, **IT IS ORDERED**, pursuant to sections 308 and 312 of the Communications Act, 47 U.S.C. §§ 308, 312, and sections 0.111 and 1.92 of the Commission's rules, 47 CFR §§ 0.111, 1.92, and the *Character Qualifications Policy Statement*,[46] that the radio station license for WQZS(FM), Meyersdale, Pennsylvania, held by Mr. Wahl is **REVOKED**, effective the fortieth (40th) day after release of this Order, unless Mr. Wahl files a petition for reconsideration or application for review within thirty (30) days of the release of this Order, in which case the effective date will be suspended, pending further order of the Commission.

17. **IT IS FURTHER ORDERED** that the application for consent to assignment of license for radio station WQZS(FM), Meyersdale, Pennsylvania (FCC File No. BALH-20200305AAH) will be dismissed as moot once the revocation of the WQZS(FM) license becomes a final order.

18. **IT IS FURTHER ORDERED** that a copy of this **ORDER OF REVOCATION** shall be sent by certified mail, return receipt requested, to:

Roger Wahl
128 Hunsrick Road
Meyersdale, PA 15552

FEDERAL COMMUNICATIONS COMMISSION

Loyaan A. Egal
Chief
Enforcement Bureau

[45] *See id.* at 4.

[46] *See supra* note 3.

PUBLIC NOTICE

Federal Communications Commission
45 L Street NE
Washington, DC 20554

News Media Information 202-418-0500
Internet: www.fcc.gov
TTY: 888-835-5322

DA 23-307

Released: April 13, 2023

FCC ANNOUNCES EXTENSION OF DEADLINE TO SUBMIT NOMINATIONS FOR MEMBERSHIP ON THE INTERGOVERNMENTAL ADVISORY COMMITTEE

On February 7, 2023, the Federal Communications Commission ("Commission" or "FCC") opened nominations for membership on its reauthorized Intergovernmental Advisory Committee ("IAC" or "Committee").[1] The original deadline for nominations was April 7, 2023.[2] By this Public Notice, the Commission extends the deadline to submit nominations through May 12, 2023.

As indicated in the *IAC Nominations Public Notice*, the term of operations for the reauthorized IAC will be limited to two years, with an option for reauthorization at the end of the two-year period and will commence with its first meeting.[3] Because this committee consists of only State, Local or Tribal governmental elected officials (or their designated appointees), the IAC is not subject to, and is not required to follow, the procedures set forth in the Federal Advisory Committee Act (FACA).[4]

The mission of the IAC is to provide aid to the Commission on the many telecommunications issues affecting Tribal, State, and Local governments that are within the jurisdiction of the FCC. The duties of the Committee may include providing guidance to the Commission, gathering data and information, aiding the agency on outreach when needed, and performing analyses the Commission deems necessary to address questions and policy matters before it.

During its two-year term, the IAC may be tasked by the Chairperson to produce specific, substantive, written deliverables that will further the Commission's mission and objectives. The IAC may establish working groups to facilitate its work. Working group discussions will be conducted primarily through email and teleconferences. The time commitment for each working group will differ, depending on the issues on which the Commission directs the IAC to provide guidance.

APPLICATIONS AND SELECTION

Nominations procedures remain unchanged. Nominees for IAC membership must submit their applications via email to IAC@fcc.gov no later than May 12, 2023. Persons who submitted

[1] *See* FCC Announces Reauthorization of its Intergovernmental Advisory Committee and Solicits Nominations for Membership on the Committee, Public Notice, DA 23-109 (*IAC Nominations Public Notice*). https://docs.fcc.gov/public/attachments/DA-23-109A1.docx.

[2] *Id.*

[3] The IAC is authorized under Commission rules to operate for a two-year period following its first scheduled meeting. 47 CFR § 0.701(a).

[4] The Unfunded Mandates Reform Act of 1995 (UMRA) provides for this exemption for "actions in support of intergovernmental communications - where (1) meetings are held exclusively between Federal officials and elected officers of State, local, and tribal governments (or their designated employees with authority to act on their behalf) acting in their official capacities . . . ." 2 U.S.C. §1534(b).

applications prior to the original April 7, 2023 deadline *do not* need to re-apply or re-submit their materials.

The application does not require a particular format, but must include the following information:

- Resumé (including applicant's current position);
- Contact information (both email and mailing addresses, as well as telephone numbers);
- A brief description of the applicant's area of expertise and qualifications to serve on the IAC, including the applicant's experience with communications issues affecting state, local, or Tribal governments. Candidates are encouraged to provide links to any articles they have authored on relevant topics and/or public appearances available on the web for viewing; and,
- The position(s) that the applicant is applying for, *i.e.*, elected municipal officials (city mayors and city council members); county officials (county commissioners or council members); elected or appointed Local government attorney; elected State executive (Governor or Lieutenant Governor); elected State legislators; elected or appointed public utilities or public service commissioner; or elected or appointed Native American Tribal representatives. If an applicant potentially qualifies for more than one position on the IAC, he or she should specify which position they seek.

Applicants are reminded that they will undergo vetting for conflicts of interest. Please respond promptly to any inquiries from FCC Ethics Counsel to avoid any delays in the review of your application. Once the Chairperson of the Commission selects the members for the reauthorized IAC, the Commission will release a Public Notice announcing appointments of the new membership.

ACCESSIBLE FORMATS

To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice).

For further information, please contact: Donna Cyrus, Attorney Advisor, Office of Intergovernmental Affairs, Consumer and Governmental Affairs Bureau, Federal Communications Commission, (202) 418-7325, donna.cyrus@fcc.gov.

– FCC –

PUBLIC NOTICE

Federal Communications Commission
45 L St., NE
Washington, DC 20554

News Media Information 202 / 418-0500
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DA 23-315
Released: April 12, 2023

CONSUMER AND GOVERNMENTAL AFFAIRS BUREAU ANNOUNCES COMMENT DATES FOR FURTHER NOTICE OF PROPOSED RULEMAKING ON TARGETING AND ELIMINATING UNLAWFUL TEXT MESSAGES AND RULES AND REGULATIONS IMPLEMENTING THE TELEPHONE CONSUMER PROTECTION ACT OF 1991

CG Docket Nos. 02-278, 21-402

Comment Date: May 8, 2023
Reply Comment Date: June 6, 2023

On March 17, 2023, the Commission released a Report and Order and Further Notice of Proposed Rulemaking, Targeting and Eliminating Unlawful Text Messages and Rules and Regulations Implementing the Telephone Consumer Protection Act of 1991, seeking comment on: (i) whether to require terminating mobile wireless providers to block text messages when notified by the Commission that they are likely scams; (ii) caller ID authentication for text messages; (iii) clarifying Do-Not-Call protections for marketing text messages; and (iv) banning the practice of obtaining a single consumer consent as justification for calls and texts from multiple, sometimes hundreds, of sellers and potential fraudsters. The Further Notice of Proposed Rulemaking sets deadlines for filing comments and reply comments at 30 days and 60 days after publication in the Federal Register.

On April 7, 2023, a summary of the Further Notice of Proposed Rulemaking was published in the Federal Register.[1] Accordingly, comments are due May 8, 2023, and reply comments are due June 6, 2023. Complete comment filing instructions are set forth in the Further Notice of Proposed Rulemaking and the Federal Register.

For further information, contact Mika Savir, Attorney Advisor, Consumer Policy Division, Consumer and Governmental Affairs Bureau, at (202) 418-0384 or mika.savir@fcc.gov.

[1] Federal Communications Commission, Targeting and Eliminating Unlawful Text Messages and Rules and Regulations Implementing the Telephone Consumer Protection Act of 1991, 88 FR 20800 (April 7, 2023).

PUBLIC NOTICE

Federal Communications Commission
45 L Street NE
Washington, DC 20554

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Internet: https://www.fcc.gov
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DA 23-316
Released: April 12, 2023

WIRELINE COMPETITION BUREAU AND OFFICE OF THE MANAGING DIRECTOR ANNOUNCE UPDATE ON WIND DOWN OF COVID-19 TELEHEALTH PROGRAM

WC Docket No. 20-89

By this Public Notice, the Wireline Competition Bureau (Bureau) and Office of the Managing Director announce that the service delivery/receipt deadline for the COVID-19 Telehealth Program was April 10, 2023 due to the signing and enactment of the joint resolution ending the COVID-19 national emergency on the same day.[1] This guidance supersedes earlier guidance identifying May 11, 2023 as the service delivery/receipt deadline.[2] Pursuant to the Coronavirus Aid, Relief, and Economic Security (CARES) Act, the Commission may reimburse COVID-19 Telehealth Program participants for eligible telehealth expenses only if the participant made payment and received the supported services and equipment before the emergency period ended.

In the CARES Act, Congress appropriated $200 million to the Federal Communications Commission (Commission) "to prevent, prepare for, and respond to" COVID-19, "including to support efforts of health care providers to address coronavirus by providing telecommunications services, information services, and devices necessary to enable the provision of telehealth services during an emergency period as defined in Section 1135(g)(1) of the Social Security Act."[3] In the Consolidated Appropriations Act, 2021, Congress appropriated an additional $249.95 million for the COVID-19 Telehealth Program, which the Commission created under the authority provided by the CARES Act.[4] The Social Security Act defines an "emergency period" as the period during which there exists "(i) an emergency or disaster declared by the President pursuant to the National Emergencies Act or the Robert

[1] The White House, Briefing Room, https://www.whitehouse.gov/briefing-room/legislation/2023/04/10/bill-signed-h-j-res-7/ (last visited Apr. 12, 2023).

[2] *See Wireline Competition Bureau and Office of the Managing Director Announce Wind Down of COVID-19 Telehealth Program*, Public Notice, DA 23-227 (rel. Mar. 16, 2023). At the time that earlier guidance was issued, it was anticipated that the COVID-19 national emergency would end on May 11, 2023.

[3] CARES Act, Pub. L. No. 116-136, 134 Stat. 28, 531 (2020). This bill is available at Library of Congress, *Congress.gov*, https://www.congress.gov/bill/116th-congress/house-bill/748?q=%7B%22search%22%3A%5B%22cite%3APL116-136%22%5D%7D&s=1&r=1 (last visited Apr. 16, 2023).

[4] Consolidated Appropriations Act, 2021, Pub. L. No: 116-260, Division N-Additional Coronavirus Response and Relief, Title IX-Broadband Internet Access Service, § 903 "FCC COVID-19 Telehealth Program" (2020), https://www.congress.gov/bill/116th-congress/house-bill/133/text (*Consolidated Appropriations Act, 2021*): ("(b) ADDITIONAL APPROPRIATION.—Out of amounts in the Treasury not otherwise appropriated, there is appropriated $249,950,000 in additional funds for the COVID–19 Telehealth Program, of which $50,000 shall be transferred by the Commission to the Inspector General of the Commission for oversight of the COVID–19 Telehealth Program.") (capitalization in original).

T. Stafford Disaster Relief and Emergency Assistance Act, and (ii) a public health emergency declared by the Secretary (of Health and Human Services) pursuant to section 319 of the Public Health Service Act."[5]

The emergency period applicable to the COVID-19 Telehealth Program under the CARES Act is tied to the existence of both the National Emergency and the Public Health Emergency. On January 31, 2020, the Department of Health and Human Services declared that a public health emergency existed and had existed since January 27, 2020.[6] On March 13, 2020, President Trump declared a national emergency, based on powers granted in the National Emergencies Act.[7] Both declarations were extended several times since those dates.[8] A resolution terminating the national emergency based on the powers granted in the National Emergencies Act passed the House of Representatives on February 1, 2023, passed the Senate on March 29, 2023, and was signed by President Biden on April 10, 2023.[9]

Pursuant to the CARES Act and program rules, the COVID-19 Telehealth Program may reimburse only for eligible telehealth expenses incurred by health care providers from March 13, 2020, through April 10, 2023, the end of the emergency period. Other deadlines are not impacted by the end of the emergency period. Below is a summary of[10] Program deadlines:

- **Purchase/implementation deadline:** The deadline to purchase and implement services supported by the COVID-19 Telehealth Program has already passed, so the expiration of the emergency period will not impact this deadline. For most awardees, the deadline to purchase services was October 31, 2022.[11] The deadline was extended to February 28, 2023, for awardees in Puerto Rico, Florida, South Carolina, and North Carolina due to Hurricanes Fiona and Ian.[12]

- **Service delivery/receipt deadline:** All equipment supported by the Program was required to be delivered by and all recurring services were required to be received by the end of the emergency period on April 10, 2023. Recurring services were deemed received when the health care provider made a payment to the vendor.[13]

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[5] *See* 42 U.S.C. § 1320b-5(g)(1)(A).

[6] Department of Health and Human Services, Administration for Strategic Preparedness & Response, *Determination That A Public Health Emergency Exists* (Jan. 31, 2020), https://aspr.hhs.gov/legal/PHE/Pages/2019-nCoV.aspx.

[7] The White House, Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak, 85 Fed. Reg. 15337. *See* National Archives and Records Administration, Federal Register, https://www.federalregister.gov/d/2020-05794 (last visited Apr. 12, 2023).

[8] Department of Health and Human Services, Administration for Strategic Preparedness & Response, *Renewal of Determination That A Public Health Emergency Exists* (Feb. 9, 2023), https://aspr.hhs.gov/legal/PHE/Pages/COVID19-9Feb2023.aspx.

[9] *See* H.J. Res. 7, 118th Congress (2023-2024), https://www.congress.gov/bill/118th-congress/house-joint-resolution/7.

[10] This notice is addressed to Round 2 participants, and the listed deadlines are only for Round 2. Round 1 is complete; the most recent past deadline was Jan. 31, 2022, when Post-Program Reports were due for submission. *See Wireline Competition Bureau and Office of the Managing Director Set July 31, 2021 Invoicing Deadline for COVID-19 Telehealth Program and Provide Post-Program Guidance*, WC Docket No. 20-89, Public Notice, 35 FCC Rcd 14628 (WCB/OMD 2020).

[11] *See Wireline Competition Bureau Extends Deadlines for the COVID-19 Telehealth Program Round 2*, WC Docket No. 20-89, Public Notice, DA 22-805 (WCB July 29, 2022) (*Round 2 Deadlines Notice*).

[12] *See Schools and Libraries Universal Service Support Mechanism et al.,* CC Docket No. 02-6 et al., Order, DA 22-998 (WCB 2022) (*Hurricane Fiona Order*); *Schools and Libraries Universal Service Support Mechanism et al.*, CC Docket No. 02-6 et al., Order, DA 22-1063 (WCB 2022) (*Hurricane Ian Order*).

[13] Awardees with recurring service contracts should note that until the emergency period ends, recurring costs may be paid for monthly or in advance. *See* FCC website, *COVID-19 Telehealth Program (Invoices & Reimbursements)*, (continued….)

- **Deadline to submit requests for reimbursement:** The deadline of October 31, 2023, to submit requests for reimbursement[14] is unaffected by the expiration of the national emergency.

- **Deadline to submit Post-Program Feedback Reports:** The deadline of January 31, 2024, to submit Post-Program Feedback Reports[15] is unaffected by the expiration of the national emergency.

The Commission is committed to guarding against waste, fraud, and abuse and ensuring that funds disbursed through the COVID-19 Telehealth Program are used for appropriate purposes. In the event of a violation of Program rules or requirements, the Commission reserves the right to take appropriate action, including, but not limited to, seeking recovery of funds.[16] Awardees may also be subject to compliance audits to ensure compliance with rules and requirements for the COVID-19 Telehealth Program.[17] If audited, awardees must provide documentation related to their participation in the COVID-19 Telehealth Program.[18] Awardees are reminded to retain relevant records for six years past the last date of delivery of services or connected devices and records may be requested as part of any follow-up audit.[19]

Additional Information. For assistance, all program participants are encouraged to email Round2TelehlthInvoicSupp@fcc.gov. For special situations or to resolve ambiguous issues, please contact Clinton Highfill, Attorney-Advisor, Telecommunications Access Policy Division, Wireline Competition Bureau, clinton.highfill@fcc.gov or (202) 418-0091. Frequently Asked Questions (FAQs) are posted at the Commission's website for the COVID-19 Telehealth Program, www.fcc.gov/covid19telehealth.

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(Continued from previous page)
Round 2 FAQs tab, FAQ No. 24, https://www.fcc.gov/covid-19-telehealth-program-invoices-reimbursements (last visited Apr. 12, 2023).

[14] *See Round 2 Deadlines Notice*. Information on the invoicing process is available at USAC, *Round 2 Invoicing FAQs*, https://www.usac.org/about/covid-19-telehealth-program/covid-19-telehealth-program-invoicing-faqs/round-2-invoicing-faqs/ (last visited Apr. 12, 2023).

[15] *See Round 2 Deadlines Notice*. *See also* FCC website, *COVID-19 Telehealth Program (Invoices & Reimbursements)*, Round 2 FAQs tab, FAQ No. 25, https://www.fcc.gov/covid-19-telehealth-program-invoices-reimbursements (last visited Apr. 12, 2023). The reporting template is posted at: https://www.fcc.gov/sites/default/files/covid-19_telehealth_post-program_feedback_template.xlsx (last visited Apr. 12, 2023). Completed reports should be filed in WC Docket No. 20-89 in the Commission's electronic comment filing system, available at https://www.fcc.gov/ecfs/.

[16] *See* 47 CFR § 54.631.

[17] *See COVID-19 Telehealth Program; Promoting Telehealth for Low-Income Consumers*, WC Docket Nos. 20-89 and 18-213, Report and Order and Order on Reconsideration, 36 FCC Rcd 7141 at 7176-77, paras. 79-80 (2021) (*Second COVID-19 Report and Order*).

[18] *See id*.

[19] *See id*.

PUBLIC NOTICE

Federal Communications Commission
45 L Street NE
Washington, DC 20554

News Media Information 202-418-0500
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DA 23-318
Released: April 12, 2023

WIRELINE COMPETITION BUREAU SEEKS INFORMATION FOR THE ANNUAL INFORMATION COLLECTION ON 988 FUNDS MANDATED BY THE NATIONAL SUICIDE HOTLINE DESIGNATION ACT OF 2020

WC Docket No. 18-336

The Wireline Competition Bureau invites states, political subdivisions, Indian Tribes, or villages or regional corporations to submit information on their jurisdiction's authority to collect 988 fees or charges, the amount of revenue collected from the 988 fee or charge, and how the revenue collected from the 988 fee or charge was used, covering the period of January 1, 2022 through December 31, 2022. This information will be used by the Commission in its report to Congress on 988 funds as mandated by the National Suicide Hotline Designation Act of 2020 (Suicide Hotline Act).[1] The requested 988 fee information must be provided through a fillable questionnaire, available for download at https://www.fcc.gov/988-fee-reports-and-reporting, and be submitted to 988feereport@fcc.gov no later than July 17, 2023. In the coming weeks, states and other jurisdictions can expect to receive more detailed information on the questionnaire and how to submit it to the Commission.

On October 17, 2020, the President signed the Suicide Hotline Act into law. The Suicide Hotline Act designates 988 as "the universal telephone number within the United States for the purpose of the national suicide prevention and mental health crisis hotline system operating through the 988 Suicide and Crisis Lifeline."[2] It also requires the Commission to submit annually a 988 fee accountability report to Congress.[3] By this public notice, we seek information regarding the collection and use of 988 funds to inform the second annual 988 fee accountability report, which is due to Congress by October 17, 2023.[4]

Section 4 of the Suicide Hotline Act requires the Commission to submit an annual report to Congress that details how each state, political subdivision, Indian Tribe, or village or regional corporation collects and expends 988 fees or charges.[5] It also requires the Commission to determine the amount of 988 fees or charges that have been diverted or transferred for uses other than those approved in the Suicide Hotline Act.[6] Under the Suicide Hotline Act, a 988 fee or charge may only be imposed, collected, and used for 988 related services, which include: (1) the "efficient and effective routing of calls" to 988

[1] National Suicide Hotline Designation Act of 2020, § 3(a), Pub. L. No. 116-172, https://www.congress.gov/116/plaws/publ172/PLAW-116publ172.pdf (Suicide Hotline Act).

[2] Suicide Hotline Act, § 3(a).

[3] Suicide Hotline Act, § 4(b). Congress also directed the Commission to submit a report on location identification. Suicide Hotline Act § 5. The location identification report was submitted to Congress on April 15, 2021. FCC, 988 Geolocation Report – National Suicide Hotline Designation Act of 2020 (2021), https://docs.fcc.gov/public/attachments/DOC-371709A1.pdf (988 Geolocation Report).

[4] Suicide Hotline Act, § 4(b).

[5] Suicide Hotline Act, § 4(b)(1), (b)(2).

[6] Suicide Hotline Act, § 4(b)(2).

to an appropriate crisis center and (2) "personnel and the provision of acute mental health, crisis outreach and stabilization services" for 988 calls.[7]

For further information, please contact Jaime McCoy at 988feereport@fcc.gov.

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[7] Suicide Hotline Act, § 4(a)(2)(A), (a)(2)(B).

PUBLIC NOTICE

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DA No. 23-319

Report No. SCL-00411 **Thursday April 13, 2023**

Actions Taken Under Cable Landing License Act

Section 1.767(a) Cable Landing Licenses, Modifications, and Assignments or Transfers of Control of Interests in Cable Landing Licenses (47 CFR § 1.767(a))

By the Chief, Telecommunications and Analysis Division, Office of International Affairs:

Pursuant to an Act relating to the landing and operation of submarine cables in the United States, 47 U.S.C. §§ 34-39 (Cable Landing License Act), Executive Order No. 10530, Exec. Ord. No. 10530 reprinted as amended in 3 U.S.C. § 301, and section 1.767 of the Commission's rules, 47 CFR § 1.767, the following applications ARE GRANTED. These grants of authority are taken under section 0.261 of the Commission's rules. 47 CFR § 0.261. Petitions for reconsideration under section 1.106 or applications for review under section 1.115 of the Commission's rules may be filed within thirty (30) days of the date of this public notice. 47 CFR §§ 1.106, 1.115.

These applications have been coordinated with the Department of State and other Executive Branch agencies pursuant to section 1.767(b) of the Commission's rules and consistent with procedures established with the Department of State. 47 CFR § 1.767(b); see Review of Commission Consideration of Applications under the Cable Landing License Act, IB Docket No. 00-106, Report and Order, 16 FCC Rcd 22167, 22192-93, paras. 51-52 (2001) (Submarine Cable Landing License Report and Order); Commission Announces Department of State's Revised Procedures for its Consideration of Submarine Cable Landing License Applications, IB Docket No. 16-155, Public Notice, DA 22-435 (rel. Apr. 19, 2022).

This public notice serves as each cable landing licensee's Cable Landing License, or modification thereto, pursuant to the Cable Landing License Act and sections 1.767 and 1.768 of the Commission's rules. 47 CFR §§ 1.767, 1.768. Cable landing licensees should review the terms and conditions of their licenses. Failure to comply with these terms and conditions or relevant Commission rules and policies could result in fines or forfeitures.

SCL-LIC-20220114-00004 E AT&T Corp.

Submarine Cable Landing License

Grant of Authority Date of Action: 04/12/2023

Acceptability for Filing Public Notice: On January 14, 2022, AT&T Corp. filed an application (Application) for a new cable landing license to allow the continued operation of the St. Thomas-St. Croix Cable System for an additional 25-year term following the expiration of the current license on April 30, 2022. See Streamlined Submarine Cable Landing License Applications Accepted for Filing, File No. SCL-LIC-20220114-00004, Public Notice, Report No. SCL-00356S (IB Feb. 3, 2022). No comments or oppositions were filed in response to the Public Notice. AT&T Corp. was granted Special Temporary Authority (STA) to allow the continued operation of the St. Thomas-St. Croix Cable System following expiration of the license, while the Commission considered the application for a new cable landing license. See File Nos. SCL-STA-20220318-00011 and SCL-STA-20220930-00026. AT&T Corp. filed a supplement on July 30, 2022, to update the ownership information of AT&T of the Virgin Islands, Inc. (AT&T VI).

The St. Thomas-St. Croix Cable System is a non-common carrier fiber-optic submarine cable system that connects Magens Bay, St. Thomas, U.S. Virgin Islands and Butler Bay, St. Croix, U.S. Virgin Islands. The cable was originally licensed in 1996 and commenced service on May 1, 1997. See AT&T Submarine Systems, Inc., File No. SCL-94-006, Cable Landing License, 11 FCC Rcd 14885 (IB 1996); IBFS File No. SCL-LIC-19940815-00003.

The Application has been coordinated with the Department of State and other Executive Branch agencies pursuant to section 1.767(b) of the Commission's rules, 47 CFR § 1.767(b), and consistent with the procedures established by the Department of State. See Review of Commission Consideration of Applications under the Cable Landing License Act, IB Docket No. 00-106, Report and Order, 16 FCC Rcd 22167, 22192-93, paras. 51-52 (2001) (Submarine Cable Landing License Report and Order); Commission Announces Department of State's Revised Procedures For Its Consideration of Submarine Cable Landing License Applications, IB Docket No. 16-155, Public Notice, DA 22-435 (IB Apr. 19, 2022). On March 14, 2022, the Department of Homeland Security filed a letter requesting that we defer action on the application. On January 24, 2023, the National Telecommunications and Information Administration, on behalf of the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector (Committee), filed a Petition to Adopt Conditions to Authorization and License. The Committee has no objection to the Commission approving authority to renew the authority to operate the St. Thomas-St. Croix Cable System, provided that the Commission conditions its approval on the assurance AT&T Corp. to abide by the commitments and undertakings set forth in the January 9, 2023, Letter of Agreement from AT&T Corp. to the Department of Homeland Security and the Department of Defense.

Actions Taken: (1) Grant of Cable Landing License to AT&T Corp. for the purpose of landing and operating a non-common carrier fiber-optic submarine cable system, the St. Thomas-St. Croix Cable System, that connects Magens Bay, St. Thomas, U.S. Virgin Islands and Butler Bay, St. Croix, U.S. Virgin Islands; (2) waiver of section 1.767(h)(1) of the Commission's rules, 47 CFR § 1.767(h)(1), in connection with the license; and (3) grant of the Petition to Adopt Conditions to Authorization and License filed by the National Telecommunications and Information Administration on January 24, 2023.

Licensee Information: AT&T Corp. is a New York corporation. AT&T Corp. is a direct, wholly owned subsidiary of AT&T Inc., which is a publicly traded Delaware corporation whose stock is widely held by the public. According to AT&T Corp., no person or entity holds a 10% or greater ownership interest in AT&T Inc.

Cable Design and Capacity: The St. Thomas-St. Croix Cable System is 113.708 km in length. The cable has been upgraded several times and consisted of 12 fiber pairs in a single sheath between the cable landing stations in Magens Bay, St. Thomas, U.S. Virgin Islands and Butler Bay, St. Croix, U.S. Virgin Islands at the time of the Application. According to the Application, by the end of 2021 or early 2022, there will be only one fiber pair (the fifth fiber pair) in use, with the other 11 idle. The operating fiber pair has a capacity of 4400 Gigabits per second (Gbps). Assuming the same design capability across all 12 fiber pairs, the design capacity for the entire cable was estimated to be 12 times 4400 Gbps, or a total of 52800 Gbps, at the time of the Application.

Ownership and Control of the Cable System and Landing Points: AT&T Corp. owns 100% of the St. Thomas-St. Croix Cable System. The cable landing stations in Magens Bay, St. Thomas, U.S. Virgin Islands and Butler Bay, St. Croix, U.S. Virgin Islands are entirely owned and operated by AT&T of the Virgin Islands, Inc. (AT&T VI). At the time the Application was filed, AT&T VI was a direct wholly-owned subsidiary of AT&T Corp. On March 31, 2022, an internal re-organization occurred whereby AT&T VI became a wholly-owned subsidiary of AT&T Columbus Holdings, Inc. AT&T Columbus Holdings is also a direct wholly-owned subsidiary of AT&T Inc.

AT&T Corp. requests a waiver of 1.767 (h)(1) of the Commission's rules, 47 CFR § 1.767(h)(1), so that AT&T VI need not be a joint applicant for the cable landing license for the St. Thomas-St. Croix Cable System. Section 1.767(h)(1) requires that "[a]ny entity that owns or controls a cable landing station in the United States" shall be "applicants for, and licensees on, a cable landing license." 47 CFR § 1.767(h)(1). According to the Application, AT&T VI will not have any ability to affect significantly the operation of the St. Thomas-St. Croix Cable System. AT&T Corp. asserts that all personnel who operate the two landing stations are supervised, directly or indirectly, by AT&T Corp. personnel. AT&T Corp. states that it has and will retain operational authority over the two cable landing facilities and will continue to provide direction to AT&T VI in all matters relating to the St. Thomas-St- Croix Cable System. Thus, accordingly to AT&T Corp., the inclusion of AT&T VI as a joint applicant is not necessary to ensure compliance by AT&T Corp. with the Cable Landing License Act, the Commission's cable landing license rules, or the terms of any cable landing license.

AT&T Corp. further asserts in the July 30, 2022 supplement that the internal re-organization, whereby AT&T VI became a wholly owned subsidiary of AT&T Columbus Holdings, Inc., does not change the premise for its waiver request. According to the July 30, 2022 supplement, all personnel at the landing stations will be supervised, directly or indirectly, by AT&T Corp.'s personnel, and AT&T Corp. will retain operational authority over the two cable landing facilities and will continue to provide direction to AT&T VI in all matters relating to the St. Thomas-St-Croix Cable System.

The purpose of the section 1.767(h)(1) requirement is to ensure that entities having a significant ability to affect the operation of the cable system become licensees so that they are subject to the conditions and responsibilities associated with the license. See Submarine Cable Landing License Report and Order, 16 FCC Rcd at 22194-95, paras. 53-54. Although AT&T VI is the owner of the cable landing stations in Magens Bay, St. Thomas, U.S. Virgin Islands and Butler Bay, St. Croix, U.S. Virgin Islands, we find, based on the record in this proceeding, that AT&T VI will not have the ability to affect significantly the operation of the cable system. Accordingly, we grant AT&T Corp. a waiver of section 1.767(h)(1) and do not require AT&T VI to be an applicant/licensee for the St. Thomas-St- Croix Cable System.

Regulatory Status of the Cable: AT&T Corp. will continue to operate the St. Thomas-St. Croix Cable System as a non-common carrier cable.

Conditions and Requirements: AT&T Corp. shall comply with the routine conditions specified in section 1.767(g) of the Commission's rules, 47 CFR § 1.767(g), and with the requirements of section 1.768 of the Commission's rules, 47 CFR § 1.768 (Notification by and prior approval for submarine cable landing licenses that are or propose to become affiliated with a foreign carrier).

We grant the Petition to Adopt Conditions to Authorization and License (Petition) filed in this proceeding by the National Telecommunications and Information Administration, on behalf of the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector, on January 24, 2023. Accordingly, we condition grant of the Application on AT&T Corp. abiding by the commitments and undertakings contained in the January 9, 2023, Letter of Agreement (LOA) from Corey M. Anthony, Senior Vice President, Network Engineering and Operations, AT&T Services, Inc., to Assistant Secretary for Trade and Economic Security, Office of Strategy, Policy, and Plans, U.S. Department of Homeland Security; Global Investment and Economic Security Directorate, Director, Undersecretary of Acquisition and Sustainment, U.S. Department of Defense. Copies of the Petition and the LOA are publicly available and may be viewed on the FCC's website through the International Bureau Filing System (IBFS) by searching for SCL-LIC-20220114-00004 and accessing "Other filings related to this application" from the Document Viewing area.

A failure to comply and/or remain in compliance with any of these commitments and undertakings shall constitute a failure to meet a condition of the cable landing license and thus grounds for declaring the license terminated without further action on the part of the Commission. Failure to meet a condition of the license may also result in monetary sanctions or other enforcement action by the Commission.

License term: Under the Commission's rules a cable landing license shall expire 25 years after the in-service date for the cable. 47 CFR § 1.767(g)(15). As the St. Thomas-St. Croix Cable System is already in-service, this license shall expire 25 years from grant, April 12, 2048.

PUBLIC NOTICE

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DA No. 23-320

Report No. TEL-02266 **Thursday April 13, 2023**

International Authorizations Granted

Section 214 Applications (47 CFR §§ 63.18, 63.24); Section 310(b) Petitions (47 CFR § 1.5000)

By the Chief, Telecommunications and Analysis Division, Office of International Affairs:

The following applications have been granted pursuant to the Commission's processing procedures set forth in sections 63.12 and 63.20 of the Commission's rules. 47 CFR §§ 63.12, 63.20.

Unless otherwise noted, these grants authorize the applicants to: (1) become a facilities-based international common carrier subject to 47 CFR §§ 63.21, 63.22 and/or a resale-based international common carrier subject to 47 CFR §§ 63.21, 63.23; (2) assign or transfer control of international section 214 authority in accordance with 47 CFR § 63.24; or (3) exceed the foreign ownership benchmarks applicable to common carrier radio licensees under 47 U.S.C. § 310(b); see Subpart T of Part 1 of the Commission's rules, 47 CFR §§ 1.5000-5004.

THIS PUBLIC NOTICE SERVES AS EACH NEWLY AUTHORIZED CARRIER'S SECTION 214 CERTIFICATE. It contains general and specific conditions, which are set forth below. Newly authorized carriers should carefully review the terms and conditions of their authorizations. Failure to comply with general or specific conditions of an authorization, or with other relevant Commission rules and policies, could result in fines and forfeitures.

Petitions for reconsideration under section 1.106 or applications for review under section 1.115 of the Commission's rules, 47 CFR §§ 1.106, 1.115, in regard to the grant of any of these applications may be filed within 30 (thirty) days of this public notice. See 47 CFR § 1.4(b)(2).

ISP-AMD-20230320-00004 P FiberLight LLC

Amendment

Grant of Authority Date of Action: 04/12/2023

On March 21, 2023, FiberLight, LLC (FiberLight) and Fiber BidCo LLC (Fiber BidCo) (together, Petitioners) filed an amendment to their July 5, 2022 petition for a declaratory ruling requesting that the Commission find that it would serve the public interest to permit foreign ownership of FiberLight Holdings II, LLC (FH II), the controlling U.S. parent of FiberLight, to exceed the 25% benchmarks in section 310(b)(4) of the Communications Act of 1934, as amended (the "Act"), 47 U.S.C. § 310(b)(4), pursuant to section 1.5000(a)(1) of the Commission's rules, 47 CFR § 1.5000(a)(1). On August 4, 2022, Petitioners filed a supplement, and on October 6, 2022, Petitioners filed a restated petition for a declaratory ruling (Restated Petition). See ISP-PDR-20220705-00005, Non Streamlined International Applications/Petitions Accepted For Filing, Report No. TEL-02226NS, Public Notice (IB rel. Oct. 21 2022). Petitioners amend the Restated Petition to provide additional ownership information, revise the ownership interests and specific approval request for six foreign entities identified in the Restated Petition, and request specific and advance approval for ten foreign entities not previously disclosed.

The Restated Petition, as amended, is granted. See ISP-PDR-20220705-00005.

ISP-PDR-20220705-00005 E FiberLight LLC

Petition for Declaratory Ruling

Grant of Authority Date of Action: 04/12/2023

On July 5, 2022, FiberLight, LLC (FiberLight) and Fiber BidCo LLC (Fiber BidCo) (together, "Petitioners") filed a petition for a declaratory ruling (Petition) requesting that the Commission find that it would serve the public interest to permit foreign ownership of FiberLight Holdings II, LLC (FH II), the controlling U.S. parent of FiberLight, to exceed the 25% benchmarks in section 310(b)(4) of the Communications Act of 1934, as amended (the "Act"), 47 U.S.C. § 310(b)(4), and section 1.5000(a)(1) of the Commission's rules, 47 CFR § 1.5000(a)(1). On August 4, 2022, Petitioners filed a supplement, and on October 6, 2022, Petitioners filed a restated petition for a declaratory ruling (Restated Petition). See ISP-PDR-20220705-00005, Non Streamlined International Applications/Petitions Accepted For Filing, Report No. TEL-02226NS, Public Notice (IB rel. Oct. 21 2022). Petitioners filed an amendment to the Restated Petition on March 21, 2023. See ISP-AMD-20230320-00004, Non Streamlined International Applications/Petitions Accepted For Filing, Report No. TEL-02261NS, Public Notice (IB rel. Mar. 24, 2023).

FiberLight is a limited liability company organized under the laws of Delaware and holds 24 common carrier wireless licenses. FH II, a Colorado limited liability company, owns 99.7145% of FiberLight. The remaining 0.2855% of FiberLight is owned by Michael Miller, a U.S. citizen. FH II is wholly owned by FiberLight Holdings I, LLC (FH I), a Colorado limited liability company. Thermo Acquisitions Inc. (Thermo), a Delaware corporation, owns approximately 95% of FH I. The remaining 5% of FHI is held by FiberLight Chief Executive Officer, Christopher Rabii; Chief Strategy Officer, Ronald Kormos; and Chief Financial Officer, Jon Couch, all of whom are U.S. citizens.

Pursuant to an equity purchase agreement dated June 28, 2022 (the "Transaction"), the Petitioners intend to engage in a series of transactions that will result in Fiber BidCo acquiring indirect ownership and control of FiberLight. Fiber BidCo is a newly formed Delaware limited liability company created for purposes of the Transaction. Fiber BidCo is wholly owned by Fiber MidCo LLC, a Delaware limited liability company, which in turn is wholly owned by Fiber TopCo LLC (TopCo), a Delaware limited liability company. TopCo is wholly owned by Fiber HoldCo L.P. (Fiber LP), a Delaware limited partnership. Fiber LP is controlled by its general partner Fiber GP LLC (Fiber GP), a Delaware limited liability company.

Upon completion of the Transaction, Fiber GP will be owned by: (1) Fiber MCO L.P. (MCO LP), a Delaware limited partnership (50%); (2) Sunsuper Pooled Superannuation Trust (PST), an Australian entity (25%); and (3) GVC Lumens Holdings, Inc. (GVC Holdings), a Delaware limited liability company (25%). These entities also hold the equity interests in Fiber LP: (1) MCO LP (49.5%), (2) PST (24.5%), and (3) GVC Holdings (24.5%;); a limited partnership comprised of FiberLight management will hold the other 2% equity interest. MCO LP is owned by The Morrison & Co Infrastructure Partnership Master Fund SCSp (MCO IP), a Luxembourg special limited partnership, registered with the Luxembourg Trade and Companies Register. PST is owned by Australian Retirement Trust (ART) and Australian Retirement Trust Pty Ltd (ART Trustee) serves as the trustee for PST and ART. GCV Holding is owned by Golden VinzClortho, LLC (GVC), a Delaware limited liability company. The board of Fiber GP will be comprised of up to eight directors chosen by MCO IP, ART, and GVC as determined by their respective equity interests (i.e., 4 chosen by MCO IP, 2 chosen by ART, and 2 chosen by GVC).

Pursuant to section 1.5001(i) of the Commission's rules, 47 CFR § 1.5001(i), the Petitioners request that the Commission specifically approve the indirect foreign equity and/or voting interests that would be held in FH II by the individuals and entities listed below:

Sunsuper Pooled Superannuation Trust (24.5% equity, deemed 100% voting) (Australia);
The Morrison & Co Infrastructure Partnership Master Fund SCSp (49.5% equity, 100% voting) (Luxembourg);
Australian Retirement Trust (36.12% equity, deemed 100% voting) (Australia);
Australian Retirement Trust Pty Ltd (36.12% equity, deemed 100% voting) (Australia);
Morrison & Co Infrastructure Partnership GP S.à r.l (0% equity, 100% voting) (Luxembourg);
Morrison & Co IP Limited (0% equity, 100% voting) (New Zealand);
H.R.L. Morrison & Co United States Holdings Limited (0% equity, 44.27% voting) (New Zealand);
H.R.L. Morrison & Co Group Limited Partnership (0% equity, 100% voting) (New Zealand);
H.R.L. Morrison & Co Group GP Limited (0% equity, 100% voting) (New Zealand);
Morrison Nominees Limited (0% equity, deemed 100% voting) (New Zealand);
ICM FM Limited (0% equity, 23.64% voting) (Bermuda);
ICM Limited (0% equity, 23.64% voting) (Bermuda);
The ICM Trust (0% equity, 23.64% voting) (Bermuda);
Somers Isles Private Trust Company Limited (0% equity, 23.64% voting) (Bermuda);
Lloyd Morrison Trust (0% equity, 40.26% voting) (New Zealand);
The Morrison & Co Infrastructure Partnership Australia Feeder Fund (44.27% equity, 44.27% voting) (Australia);
State Street Australia Limited, as custodian for Australian Retirement Trust (36.12% equity, deemed 100% voting) (Australia);
Hostplus Pty Ltd, as trustee of the Hostplus Pooled Superannuation Trust (9.95% equity, 9.95% voting) (Australia);
Government Employees Superannuation Board (9.95% equity, 9.95% voting) (Australia);
Morrison & Co Infrastructure Partnership Australia Feeder Fund Pty Ltd (0% equity, 44.27% voting) (Australia);
Morrison & Co Infrastructure Partnership Management Pty Ltd (0% equity, 44.27% voting) (Australia);
H.R.L. Morrison & Co Australia Holdings Limited (0% equity, 44.27% voting) (New Zealand);
Alter Domus Management Company S.A. (0% equity, deemed 100% voting) (Luxembourg);
Andrew James Steward (0% equity, 40.26% voting) (New Zealand);
Robert William Bentley Morrison (0% equity, deemed100% voting) (New Zealand);
Anthony James William Howard (0% equity, 40.26% voting) (New Zealand);
Paul Newfield (0% equity, deemed 100% voting) (New Zealand);
Duncan Saville (0% equity, 23.64% voting) (United Kingdom);
Clearpool Capital Holdings Limited (0% equity, 6.92% voting) (British Virgin Islands);
Yi Tong ("Anthony") Muh (0% equity, 5.71% voting) (New Zealand);
The Morrison & Co Infrastructure Partnership Feeder Fund SCSp (15% equity, 15% voting) (Luxembourg);
The Morrison & Co Infrastructure Partnership Flow Through Feeder Fund SCSp (10% equity, 10% voting) (Luxembourg);
Superannuation Funds Management Corporation of South Australia (15% equity, 15% voting) (Australia);
Hedged Feeder Fund (11% equity, 11% voting) (Australia);

Hedged Feeder Fund Trustee (11% equity, 11% voting) (Australia);
Watchman Trust (0% equity, 7.14% voting) (New Zealand);
OnePath Funds Management Limited as trustee for the Wholesale Unlisted Infrastructure Trust (5% equity, 5% voting) (Australia);
MLC Investments Limited as trustee for WM Pool - Fixed Interest Trust No. 15 (8.4% equity, 8.4% voting) (Australia);
MLC Wealth Limited (8.4% equity, 8.4% voting) (Australia); and
Insignia Financial Ltd. (13.4% equity, 13.4% voting) (Australia).

Pursuant to section 1.5001(k) of the Commission's rules, 47 CFR § 1.5001(k), the Petitioners request advance approval for the following controlling foreign entities that have indirect ownership interest in FH II to increase their interests in FH II up to and including a controlling 100% voting interest and a non-controlling 49.99% equity interest:

The Morrison & Co Infrastructure Partnership Master Fund SCSp (49.99% equity, 100% voting) (Luxembourg);
Morrison & Co Infrastructure Partnership GP S.à r.l (49.99% equity, 100% voting) (Luxembourg);
Morrison & Co IP Limited Partnership (49.99% equity, 100% voting) (New Zealand);
H.R.L. Morrison & Co Group Limited Partnership (49.99% equity, 100% voting) (New Zealand); and
H.R.L. Morrison & Co Group GP Limited (49.99% equity, 100% voting) (New Zealand).

The Petitioners also request advance approval for the following non-controlling foreign entities and individuals to increase their indirect equity and voting interests in FH II up to a non-controlling 49.99%:

Sunsuper Pooled Superannuation Trust (49.99% equity and voting) (Australia);
Australian Retirement Trust (49.99% equity and voting) (Australia);
Australian Retirement Trust Pty Ltd (49.99% equity and voting) (Australia);
Morrison Nominees Limited (49.99% equity and voting) (New Zealand);
State Street Australia Limited, as custodian for Australian Retirement Trust (49.99% equity and voting) (Australia);
Alter Domus Management Company S.A. (49.99% equity and voting) (Australia);
Robert William Bentley Morrison (49.99% equity and voting) (Australia);
Paul Newfield (49.99% equity and voting) (Australia);
H.R.L. Morrison & Co United States Holdings Limited (49.99% equity and voting) (New Zealand);
ICM FM Limited (49.99% equity and voting) (Bermuda);
ICM Limited (49.99% equity and voting) (Bermuda);
The ICM Trust (49.99% equity and voting) (Bermuda);
Somers Isles Private Trust Company Limited (49.99% equity and voting) (Bermuda);
Lloyd Morrison Trust (49.99% equity and voting) (New Zealand);
The Morrison & Co Infrastructure Partnership Australia Feeder Fund (49.99% equity and voting) (Australia);
Hostplus Pty Ltd, as trustee of the Hostplus Pooled Superannuation Trust (49.99% equity and voting) (Australia);
Government Employees Superannuation Board (49.99% equity and voting) (Australia);
Morrison & Co Infrastructure Partnership Australia Feeder Fund Pty Ltd (49.99% equity and voting) (Australia);
Morrison & Co Infrastructure Partnership Management Pty Ltd (49.99% equity and voting) (Australia);
H.R.L. Morrison & Co Australia Holdings Limited (49.99% equity and voting) (New Zealand);
Andrew James Steward (49.99% equity and voting) (New Zealand);
Anthony James William Howard (49.99% equity and voting) (New Zealand);
Duncan Saville (49.99% equity and voting) (United Kingdom);
Clearpool Capital Holdings Limited (49.99% equity and voting) (British Virgin Islands);
Yi Tong ("Anthony") Muh (49.99% equity and voting) (New Zealand);
The Morrison & Co Infrastructure Partnership Feeder Fund SCSp (49.99% equity and voting) (Luxembourg);
The Morrison & Co Infrastructure Partnership Flow Through Feeder Fund SCSp (49.99% equity and voting) (Luxembourg);
Superannuation Funds Management Corporation of South Australia (49.99% equity and voting) (Australia);
Hedged Feeder Fund (49.99% equity and voting) (Australia);
Hedged Feeder Fund Trustee (49.99% equity and voting) (Australia);
Watchman Trust (49.99% equity and voting) (New Zealand);OnePath Funds Management Limited as trustee for the Wholesale Unlisted Infrastructure Trust (49.99% equity and voting) (Australia);
MLC Investments Limited as trustee for WM Pool - Fixed Interest Trust No. 15 (49.99% equity and voting) (Australia);
MLC Wealth Limited (49.99% equity and voting) (Australia); and
Insignia Financial Ltd. (49.99% equity and voting) (Australia).

Pursuant to Commission practice, the Restated Petition and the associated domestic and international applications for transfer of control of section 214 authority (WC Docket No. 22-256; ITC-T/C-20220705-00080) were referred to the relevant Executive Branch agencies for their views on any national security, law enforcement, foreign policy or trade policy concerns related to the foreign ownership of the Applicants. See Process Reform for Executive Branch Review of Certain FCC Applications and Petitions Involving Foreign Ownership, IB Docket 16-155, Report and Order, 35 FCC 10927 (2020). On March 21, 2023, the National Telecommunications and Information Administration, on behalf of the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector (Committee), filed a letter stating that the Committee has reviewed the Restated Petition and the applications and has no recommendation at this time to the Commission and no objection to the Commission granting the ruling. We note that the Executive Branch agencies considered the newly disclosed entities and revised ownership interests set forth in the Amendment prior to issuing its decision. The Committee reserves the right to review any resulting authorization in the future to identify any additional or new risks to U.S. national security or law enforcement interests. See Exec. Order No. 13913, § 6(a), 85 Fed. Reg. 19643, 19645 (2020).

Foreign Ownership Ruling. We find that the public interest would not be served by prohibiting foreign ownership of FH II in excess of the 25% benchmarks in section 310(b)(4) of the Act. We, therefore, grant the Restated Petition as amended subject to the conditions set out herein.

This ruling authorizes 100% aggregate foreign ownership of FH II, as the controlling U.S. parent of FiberLight, subject to the terms and conditions set forth in section 1.5004 of the Commission's rules, including the requirement to obtain Commission approval before indirect foreign ownership of FH II exceeds the terms and conditions of this ruling. 47 CFR § 1.5004. Specifically, pursuant to section 1.5001(i) of the Commission's rules, we grant Petitioners' request to permit the above-listed foreign entities and individuals to hold indirect equity and/or voting interests in FH II, the controlling U.S. parent, in the amounts specified above. Uninsulated individuals and entities that hold minority equity and voting interests in FH II with a deemed 100% voting interest in FH II in accordance with section 1.5002(b)(iii)(A) of the Commission's rules will continue to be deemed to hold a 100% voting interest in FH II. 47 CFR § 1.5002(b)(iii)(A). A finding that an entity or individual is "deemed" to have a 100% voting interest for purposes of determining compliance with section 310(b)(4) of the Act and section 1.5000(a)(1) et seq. of the Commission's rules does not indicate that the interest constitutes de jure control for purposes of compliance with section 310(d) of the Act.

In addition, pursuant to section 1.5001(k) of the Commission's rules, we grant Petitioners' request for advance approval for the above listed foreign entities and individuals to increase their interests up to and including an indirect non-controlling 49.99% equity and voting interests in FH II as the controlling U.S. parent of FiberLight. Further, pursuant to section 1.5001(k), we grant Petitioners' request for advance approval for the following foreign entities to increase their interests up to and including direct and/or indirect non-controlling 49.99% equity and 100% voting interests in FH II as the controlling U.S. parent of FiberLight: The Morrison & Co Infrastructure Partnership Master Fund SCSp; Morrison & Co Infrastructure Partnership GP S.à r.l; Morrison & Co IP Limited Partnership; H.R.L. Morrison & Co Group Limited Partnership; and H.R.L. Morrison & Co Group GP Limited.

Petitioners have an affirmative duty to monitor their foreign equity and voting interests, calculate these interests consistent with the attribution principles enunciated by the Commission, including the standards and criteria set forth in sections 1.5002 through 1.5003 of the Commission's rules, and otherwise ensure continuing compliance with the provisions of section 310(b) of the Act. 47 CFR §§ 1.5002-1.5003; 47 CFR § 1.5004, Note to paragraph (a). A failure to comply and/or remain in compliance with any of these requirements shall constitute a failure to meet a condition of this ruling and the underlying licenses and thus grounds for declaring them terminated without further action on the part of the Commission. Failure to meet a condition of this ruling may also result in monetary sanctions or other enforcement action by the Commission.

Grant of this declaratory ruling is without prejudice to the Commission's action on any other related pending application(s).

ITC-214-20230222-00038 E GR8 CONNECT CORP

International Telecommunications Certificate

Service(s): Global or Limited Global Facilities-Based Service, Global or Limited Global Resale Service

Grant of Authority Date of Action: 04/07/2023

GR8 Connect Corp. (GR8 Connect) filed an application for authority to provide facilities-based and resale services in accordance with sections 63.18(e)(1) and (e)(2) of the Commission's rules, 47 C.FR. §§ 63.18(e)(1) and (e)(2).

GR8 Connect, a New York corporation, is 100% owned by Yisroel Gordon, a U.S. citizen.

ITC-AMD-20230320-00040 P FiberLight LLC

Amendment

Grant of Authority Date of Action: 04/12/2023

On March 21, 2023, Fiber BidCo LLC (Fiber BidCo), Thermo Acquisitions, Inc. (Thermo) and FiberLight, LLC (FiberLight) filed an amendment to their July 5, 2022 application to transfer control of Fiberlight from Thermo to Fiber BidCo. See ITC-T/C-20220705-00080, Non Streamlined International Applications/Petitions Accepted For Filing, Report No. TEL-02226NS, Public Notice (IB rel. Oct. 21 2022). Applicants amend the Application to provide additional ownership information, including seven entities that were not previously disclosed that may now have a 10% or greater indirect equity interest in Fiber Bidco and Fiberlight upon consummation of the transaction.

The transfer of control application, as amended, is granted. See ITC-T/C-20220705-00080.

ITC-ASG-20230130-00009 E Hargray Communications Group, Inc.

Assignment

Grant of Authority Date of Action: 04/12/2023

Current Licensee: Hargray, LLC

FROM: Hargray, LLC

TO: Hargray Communications Group, Inc.

On January 30, 2023, Hargray Communications Group, Inc. (HCG) filed a notification of the pro forma assignment of international section 214 authorization ITC-214-20010816-00430, held by Hargray, LLC (Hargray), to HCG, effective January 2, 2023. Applicants filed supplements on February 8, 2023 and March 28, 2023.

Hargray is wholly owned by HCG, both South Carolina entities. In a corporate reorganization, Hargray assigned its international 214 authorization to HCG. Hargray now provides international service to its customers under the international section 214 authorization held by HCG (ITC-214-20010816-00430) pursuant to section 63.24(h) of the Commission's rules. 47 CFR § 63.24(h).

ITC-ASG-20230130-00010 E Hargray, LLC

Assignment

Grant of Authority Date of Action: 04/12/2023

Current Licensee: Low Country Carriers, Inc. d/b/a Hargray Long Distance

FROM: Low Country Carriers, Inc. d/b/a Hargray Long Distance

TO: Hargray, LLC

On January 30, 2023, Hargray LLC (Hargray) filed notification of the assignment of the customers and assets held by Low Country Carriers, Inc. d/b/a Hargray Long Distance, (Low Country) to Hargray, effective January 2, 2023. Applicants filed supplements on February 8, 2023 and March 28, 2023.

Hargray and Low Country are both wholly owned by Hargray Communications Group, Inc. (HCG), all South Carolina entities. In a corporate reorganization, Low Country assigned its customers and assets to Hargray, its affiliate. Hargray provides international service to its newly acquired customers under the international section 214 authorization held by HCG (ITC-214-20010816-00430) pursuant to section 63.24(h) of the Commission's rules. 47 CFR § 63.24(h). Low Country retained its international section 214 authorization (ITC-214-19890109-00003), which it has subsequently surrendered.

ITC-ASG-20230328-00042 E Hargray, LLC

Assignment

Grant of Authority Date of Action: 04/12/2023

Current Licensee: Hargray, Inc.

FROM: Hargray, Inc.

TO: Hargray, LLC

On March 28, 2023, Hargray LLC filed a pro forma notification of the assignment of international section 214 authorization ITC-214-20010816-00430 held by Hargray Inc. to Hargray LLC, effective December 31, 2022. Hargray Inc. converted from a South Carolina corporation to a South Carolina limited liability company.

ITC-T/C-20220705-00080 E FiberLight LLC

Transfer of Control

Grant of Authority Date of Action: 04/12/2023

Current Licensee: FiberLight LLC

FROM: Thermo Acquisitions, Inc.

TO: Fiber BidCo LLC

FiberLight LLC (Fiberlight), a Delaware limited liability company that holds an international section 214 authorization (ITC-214-20051011-00437), has filed an application to transfer control of Fiberlight from Thermo Acquisitions, Inc. (Thermo) to Fiber BidCo LLC (Fiber BidCo). Applicants filed supplements to the application on August 4, 2022 and October 6, 2022. See ITC-T/C-20220705-00080, Non Streamlined International Applications/Petitions Accepted For Filing, Report No. TEL-02226NS, Public Notice (IB rel. Oct. 21 2022). Petitioners filed an amendment to the Restated Petition on March 21, 2023. See ITC-AMD-20230320-00040, Non Streamlined International Applications/Petitions Accepted For Filing, Report No. TEL-02261NS, Public Notice (IB rel. Mar. 24, 2023).

FiberLight Holdings II, LLC (FH II) owns 99.7145% of FiberLight. FH II is wholly owned by FiberLight Holdings I, LLC (FH I), and Thermo owns approximately 95% of FH I.

Pursuant to an equity purchase agreement dated June 28, 2022 (the "Transaction"), the Applicants intend to engage in a series of transactions that will result in Fiber BidCo acquiring indirect ownership and control of FiberLight. Fiber BidCo is a newly formed Delaware limited liability company created for purposes of this Transaction. Fiber BidCo is wholly owned by Fiber MidCo LLC, a Delaware limited liability company, which in turn is wholly owned by Fiber TopCo LLC (TopCo), a Delaware limited liability company. TopCo is wholly owned by Fiber HoldCo L.P. (Fiber LP), a Delaware limited partnership. Fiber LP is controlled by its general partner Fiber GP LLC (Fiber GP), a Delaware limited liability company.

Upon completion of the Transaction, Fiber GP will be owned by: (1) Fiber MCO L.P. (MCO LP), a Delaware limited partnership (50%); (2) Sunsuper Pooled Superannuation Trust (PST), an Australian entity (25%); and (3) GVC Lumens Holdings, Inc. (GVC Holdings), a Delaware limited liability company (25%). These entities also hold the equity interests in Fiber LP: (1) MCO LP (49.5%), (2) PST (24.5%), and (3) GVC Holdings (24.5%;); a limited partnership comprised of FiberLight management will hold the other 2% equity interest. MCO LP is owned by The Morrison & Co Infrastructure Partnership Master Fund SCSp (MCO IP), a Luxembourg special limited partnership, registered with the Luxembourg Trade and Companies Register. PST is owned by Australian Retirement Trust (ART) and Australian Retirement Trust Pty Ltd (ART Trustee) serves as the trustee for PST and ART. GCV Holding is owned by Golden VinzClortho, LLC (GVC), a Delaware limited liability company. The board of Fiber GP will be comprised of up to eight directors chosen by MCO IP, ART, and GVC as determined by their respective equity interests (i.e., 4 chosen by MCO IP, 2 chosen by ART, and 2 chosen by GVC).

Pursuant to Commission practice, the Application and the associated domestic application for transfer of control of section 214 authority and petition for declaratory ruling (WC Docket No. 22-256; ISP-PDR-20220705-00005) (collectively, Applications/Petition) were referred to the relevant Executive Branch agencies for their views on any national security, law enforcement, foreign policy or trade policy concerns related to the foreign ownership of the Applicants. See Process Reform for Executive Branch Review of Certain FCC Applications and Petitions Involving Foreign Ownership, IB Docket 16-155, Report and Order, 35 FCC 10927 (2020). On March 21, 2023, the National Telecommunications and Information Administration, on behalf of the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector (Committee), filed a letter stating that the Committee has reviewed the Applications/Petition and has no recommendation at this time to the Commission and no objection to the Commission granting the Application. We note that the Executive Branch agencies considered the newly disclosed entities and revised ownership interests set forth in the Amendment prior to issuing its decision. The Committee reserves the right to review any resulting authorization in the future to identify any additional or new risks to U.S. national security or law enforcement interests. See Exec. Order No. 13913, § 6(a), 85 Fed. Reg. 19643, 19645 (2020).

This authorization is without prejudice to the Commission's action in any other related pending proceedings.

ITC-T/C-20230105-00001 E Cable and Wireless BVI Limited

Transfer of Control

Grant of Authority Date of Action: 04/12/2023

Current Licensee: Cable and Wireless BVI Limited

FROM: Liberty Latin America Ltd.

TO: Liberty Latin America Ltd.

On January 5, 2023, Cable & Wireless (BVI) Limited (Cable & Wireless BVI) a British Virgin Islands entity that holds an international section 214 authorization to construct and operate the Taino-Carib Cable System (ITC-MOD-20191025-00173), filed a notification of the pro forma transfer of control of Cable & Wireless (BVI), effective January 10, 2020. Through a series of intercorporate transactions, two intermediate holding companies--C&W Senior Secured Parent Limited (C&W Senior Secured) and C&W Senior Finance Limited (C&W Senior Finance)--were inserted between Cable & Wireless BVI and Liberty Latin America Ltd. (Liberty Latin America). As a result of the transaction, Cable & Wireless BVI became an indirect, wholly-owned subsidiary of C&W Senior Secured and C&W Senior Finance. Cable & Wireless BVI was and remains an indirect wholly-owned subsidiary of Liberty Latin America. C&W Senior Secured and C&W Senior Finance are both Cayman Islands entities. Liberty Latin America is a Bermuda entity.

ITC-T/C-20230210-00015 E Sunset Fiber, LLC

Transfer of Control

Grant of Authority Date of Action: 04/07/2023

Current Licensee: Sunset Fiber, LLC

FROM: GTCR Broadband Aggregator LLC

TO: BP Broadband Aggregator, L.P.

Sunset Fiber LLC (Sunset Fiber), a Delaware limited liability company that holds international section 214 authorizations (ITC-214-20020404-00165 and ITC-214-2005102-00434), filed an application seeking Commission consent to the transfer of control of Sunset Fiber from GTCR Broadband Aggregator, LLC (GTCR Aggregator) to BP Broadband Aggregator, L.P. (BP Broadband). Sunset Fiber is a direct wholly owned subsidiary of Point Broadband Fiber Holding, LLC (Point Broadband) and an indirect wholly owned subsidiary of Point Broadband Holdings, LLC, both Delaware entities. GTCR Aggregator, a Delaware entity, holds a 61.2% controlling interest in Point Broadband.

Pursuant to a January 29, 2023 Unit Purchase Agreement, BP Broadband will acquire an approximate 31.8% ownership interest in Point Broadband after which GTCR Aggregator will hold an approximate 40% ownership interest in Point Broadband. Post-consummation BP Broadband and GCTR Aggregator will jointly exercise control of Point Broadband through their minority ownership interests, joint control of the Board of Directors, and the exercise of their mutual consent rights. The other approximately 28.2% interest in Point Broadband will be held by other investors, none of which will have a 10% or greater interest in Point Broadband.

GTCR Fund XIII/B LP (Fund XIII/B) has a 72.2% ownership interest and GTCR Point Broadband Splitter L.P. (GTCR Splitter) has a 27.5% ownership interest in GTCR Aggregator. GTCR Partners XIII/B LP (Partners XIII/B) is the general partner of both Fund XIII/B and GTCR Splitter. GTCR Point Broadband Blocker Corp (GTCR Blocker), which is owned by GTCR Fund XIII/C LP (Fund XIII/C), is the limited partner of GTCR Splitter. GTCR Investment XIII LLC (GTCR) is the general partner of both Partners XIII/B and Fund XIII/C. All the GTCR entities are Delaware entities. Control of GTCR is held by eight managing directors, all of whom are U.S. citizens.

BP Broadband Fund X Holdings, L.P. (BP Fund X) has a 74% limited partnership interest in BP Broadband. Berkshire Fund X, L.P. (Berkshire Fund X) has a 54.3% limited partnership interest and PBB Blocker I LLC (PBB Blocker) has a 42.2% limited partnership interest in BP Fund X. Fund X-A PBB AIV, L.P. (Fund X-A PBB AIV) is the sole member of PBB Blocker. Tenth Berkshire Associates LLC (Tenth Berkshire) is the general partner of BP Broadband, Berkshire Fund X and Fund X-A PBB. All these are Delaware entities. Control of Tenth Berkshire Associates LLC is held by 32 managing directors, all of whom are U.S. citizens.

According to the Applicants no other individuals or entities will have 10% or greater direct or indirect ownership interest in BP Broadband or Sunset Fiber.

This authorization is without prejudice to the Commission's action in any other related pending proceedings.

ITC-T/C-20230302-00025 E Insight Mobile, Inc.

Transfer of Control

Grant of Authority Date of Action: 04/07/2023

Current Licensee: Insight Mobile, Inc.

FROM: Insight Mobile, Inc.

TO: Insight Mobile, Inc.

Insight Mobile, Inc. (Insight Mobile), a Delaware corporation that holds an international section 214 authorization (ITC-214-20220314-00037), has filed an application seeking Commission consent to the transfer of control of Insight Mobile from Kevin Pourtavosi to Shadi Aslemand. Pursuant to a Stock Purchase Agreement, Shadi Aslemand will acquire 100% of the stock of Insight Mobile from Kevin Pourtavosi. Upon closing, Insight Mobile will be wholly owned by Shadi Aslemand, a U.S. citizen.

This authorization is without prejudice to the Commission's action in any other related pending proceedings.

ITC-T/C-20230302-00026 E Square Mobile, Inc.

Transfer of Control

Grant of Authority Date of Action: 04/07/2023

Current Licensee: Square Mobile, Inc.

FROM: Square Mobile, Inc.

TO: Square Mobile, Inc.

Square Mobile Inc. (Square Mobile), a Delaware corporation that holds an international section 214 authorization (ITC-214-20211220-00200), has filed an application seeking Commission consent to the transfer of control of Square Mobile from Chung-Chih John Liu to Han Zhou. Pursuant to a Stock Purchase Agreement, Han Zhou will acquire 100% of the stock of Square Mobile from Chung-Chih John Liu. Upon closing, Square Mobile will be wholly owned by Han Zhou, a U.S. citizen.

This authorization is without prejudice to the Commission's action in any other related pending proceedings.

ITC-T/C-20230314-00039 E PRESTO WIRELESS CORP.

Transfer of Control

Grant of Authority Date of Action: 04/07/2023

Current Licensee: PRESTO WIRELESS CORP.

FROM: PRESTO WIRELESS CORP.

TO: Presto Holdings, LLC

Presto Wireless Corp. (PWC), a New York corporation that holds an international section 214 authorization (ITC-214-20221202-00146), has filed an application seeking Commission consent to the transfer of control of PWC from Alfred West to Presto Holdings LLC (Presto Holdings). Pursuant to a February 10, 2023 Stock Purchase Agreement, Presto Holdings will acquire 100% of the issued and outstanding common stock of PWC from Alfred West. Upon closing, PWC will become a direct wholly owned subsidiary of Presto Holdings, a Delaware limited liability company. Israel Max, a U.S. citizen, is the sole 100% owner of Presto Holdings.

This authorization is without prejudice to the Commission's action in any other related pending proceedings.

INFORMATIVE

ITC-214-19960610-00234 Arelion U.S. Inc.

By letter dated April 3, 2023, the Commission was notified that Telia Carrier U.S. Inc. has changed its name to Arelion U.S. Inc.

ITC-214-19960610-00239 Arelion U.S. Inc.

By letter dated April 3, 2023, the Commission was notified that Telia Carrier U.S. Inc. has changed its name to Arelion U.S. Inc.

ITC-214-19960619-00257 Arelion U.S. Inc.

By letter dated April 3, 2023, the Commission was notified that Telia Carrier U.S. Inc. has changed its name to Arelion U.S. Inc.

ITC-214-19961002-00478 Arelion U.S. Inc.

By letter dated April 3, 2023, the Commission was notified that Telia Carrier U.S. Inc. has changed its name to Arelion U.S. Inc.

SURRENDER

ITC-214-20100324-00125 One Ring Networks, Inc.

By letter filed on April 5, 2023, One Ring Networks, Inc. notified the Commission that it surrendered its international section 214 authorization effective April 5, 2023.

ITC-214-20131104-00283 Cloud Call Center PBX Solutions, LLC

By letter filed on April 11, 2023, Cloud Call Center PBX Solutions, LLC notified the Commission that it surrendered its international section 214 authorization effective April 11, 2023.

CONDITIONS APPLICABLE TO INTERNATIONAL SECTION 214 AUTHORIZATIONS

(1) These authorizations are subject to the Exclusion List for International Section 214 Authorizations, which identifies restrictions on providing service to particular countries or using particular facilities. The most recent Exclusion List is at the end of this Public Notice. The list applies to all U.S. international carriers, including those that have previously received global or limited global section 214 authority, whether by Public Notice or specific written order. Carriers are advised that the attached Exclusion List is subject to amendment at any time pursuant to the procedures set forth in Streamlining the International Section 214 Authorization Process and Tariff Requirements, IB Docket No. 95-118, 11 FCC Rcd 12884 (1996), para. 18. A copy of the current Exclusion List is maintained in the FCC Reference Information Center and is available at https://www.fcc.gov/exclusion-list-international-section-214-authorizations. It is also attached to each Public Notice that grants international Section 214 authority.

(2) The export of telecommunications services and related payments to countries that are subject to economic sanctions may be restricted. For information concerning current restrictions, call the Office of Foreign Assets Control, U.S. Department of the Treasury, (202) 622-2520.

(3) Carriers shall comply with the requirements of Section 63.11 of the Commission's rules, which requires notification by, and in certain circumstances prior notification by, U.S. carriers acquiring an affiliation with foreign carriers. A carrier that acquires an affiliation with a foreign carrier will be subject to possible reclassification as a dominant carrier on an affiliated route pursuant to the provisions of section 63.10 of the rules.

(4) A carrier may provide switched services over its authorized resold private lines in the circumstances specified in section 63.23(d) of the rules, 47 CFR § 63.23(d).

(5) Carriers shall comply with the "No Special Concessions" rule, section 63.14, 47 CFR § 63.14.

(6) Carriers regulated as dominant for the provision of a particular communications service on a particular route for any reason other than a foreign carrier affiliation under section 63.10 of the rules shall file tariffs pursuant to Section 203 of the Communications Act, as amended, 47 U.S.C. § 203, and Part 61 of the Commission's Rules, 47 CFR Part 61. Carriers shall not otherwise file tariffs except as permitted by section 61.19 of the rules, 47 C.F.R. § 61.19. Except as specified in section 20.15 with respect to commercial mobile radio service providers, carriers regulated as non-dominant, as defined in section 61.3, and providing detariffed international services pursuant to section 61.19, must comply with all applicable public disclosure and maintenance of information requirements in sections 42.10 and 42.11.

(7) International facilities-based service providers must file and maintain a list of U.S.-international routes on which they have direct termination arrangements with a foreign carrier. 47 CFR § 63.22(h). A new international facilities-based service provider or one without existing direct termination arrangements must file its list within thirty (30) days of entering into a direct termination arrangement(s) with a foreign carrier(s). Thereafter, international facilities-based service providers must update their lists within thirty (30) days after adding a termination arrangement for a new foreign destination or discontinuing an arrangement with a previously listed destination. See Process For The Filing Of Routes On Which International Service Providers Have Direct Termination Arrangements With A Foreign Carrier, ITC-MSC-20181015-00182, Public Notice, 33 FCC Rcd 10008 (IB 2018).

(8) Any U.S. Carrier that owned or leased bare capacity on a submarine cable between the United States and any foreign point must file a Circuit Capacity Report to provide information about the submarine cable capacity it holds. 47 CFR § 43.82(a)(2). See https://www.fcc.gov/circuit-capacity-data-us-international-submarine-cables.

(9) Carriers should consult section 63.19 of the rules when contemplating a discontinuance, reduction or impairment of service.

(10) If any carrier is reselling service obtained pursuant to a contract with another carrier, the services obtained by contract shall be made generally available by the underlying carrier to similarly situated customers at the same terms, conditions and rates. 47 U.S.C. § 203.

(11) To the extent the applicant is, or is affiliated with, an incumbent independent local exchange carrier, as those terms are defined in section 64.1902 of the rules, it shall provide the authorized services in compliance with the requirements of section 64.1903.

(12) Except as otherwise ordered by the Commission, a carrier authorized here to provide facilities-based service that (i) is classified as dominant under section 63.10 of the rules for the provision of such service on a particular route and (ii) is

affiliated with a carrier that collects settlement payments for terminating U.S. international switched traffic at the foreign end of that route may not provide facilities-based switched service on that route unless the current rates the affiliate charges U.S. international carriers to terminate traffic are at or below the Commission's relevant benchmark adopted in International Settlement Rates, IB Docket No. 96-261, Report and Order, 12 FCC Rcd 19806 (1997). See also Report and Order on Reconsideration and Order Lifting Stay in IB Docket No. 96-261, FCC 99-124 (rel. June 11, 1999). For the purposes of this rule, "affiliated" and "foreign carrier" are defined in section 63.09.

(13) Carriers shall comply with the Communications Assistance for Law Enforcement Act (CALEA), see 47 CFR §§ 1.20000 et seq.

(14) Every carrier must designate an agent for service in the District of Columbia. see 47 U.S.C. § 413, 47 CFR §§ 1.47(h), 64.1195.

Exclusion List for International Section 214 Authorizations

The following is a list of countries and facilities not covered by grant of global section 214 authority under section 63.18(e)(1) of the Commission's Rules, 47 CFR § 63.18(e)(1). Carriers desiring to serve countries or use facilities listed as excluded hereon shall file a separate section 214 application pursuant to section 63.18(e)(3) of the Commission's Rules. See 47 CFR § 63.22(c).

Countries:

None.

Facilities:

Any non-U.S.-licensed space station that has not received Commission approval to operate in the U.S. market pursuant to the procedures adopted in the Commission's DISCO II Order, IB Docket No. 96-111, Report and Order, FCC 97-399, 12 FCC Rcd 24094, 24107-72 paragraphs 30-182 (1997) (DISCO II Order). Information regarding non-U.S.-licensed space stations approved to operate in the U.S. market pursuant to the Commission's DISCO II procedures is maintained at https://www.fcc.gov/approved-space-station-list.

This list is subject to change by the Commission when the public interest requires. The most current version of the list is maintained at https://www.fcc.gov/exclusion-list-international-section-214-authorizations.

For additional information, contact the Office of International Affairs' Telecommunications and Analysis Division, (202) 418-1480.

PUBLIC NOTICE

Federal Communications Commission
45 L St., N.E.
Washington, D.C. 20554

News Media Information 202 / 418-0500
Internet: http://www.fcc.gov

DA 23-321
Released: April 13, 2023

DOMESTIC SECTION 214 APPLICATION GRANTED FOR THE TRANSFER OF CONTROL OF FIBERLIGHT, LLC TO FIBER BIDCO, LLC

WC Docket No. 22-256

By this Public Notice, the Wireline Competition Bureau (Bureau) grants an application filed by Thermo Acquisitions, Inc. (Thermo), FiberLight, LLC (FiberLight or Licensee), and Fiber BidCo LLC (Fiber BidCo) (collectively, Applicants), pursuant to section 214 of the Communications Act of 1934, as amended, and sections 63.03-04 of the Commission's rules,[1] requesting consent to transfer ownership and control of FiberLight to Fiber BidCo (the Transaction).[2]

On October 21, 2022, the Bureau released a Public Notice seeking comment on the Application.[3] The Bureau did not receive comments or petitions in opposition to the Application.

Applicants and Description of the Transaction

[1] 47 U.S.C. § 214; 47 CFR §§ 63.03-04.

[2] *See* Application of Thermo Acquisitions, Inc., FiberLight, LLC, and Fiber BidCo LLC for Grant of Authority Pursuant to Section 214 of the Communications Act of 1934, as Amended, and Sections 63.04 and 63.24 of the Commission's Rules, WC Docket No. 22-256 (filed July 5, 2022) (Application). On August 4, 2022, October 6, 2022, January 23, 2023, and March 21, 2023, Applicants filed supplements to the Application providing, among other things, corrections and updates to Exhibits A and B of the Application related to the ownership interests of upstream entities related to Fiber BidCo. Letter from James C. Falvey, Counsel to Thermo Acquisitions, Inc. and FiberLight, LLC, and Andrew D. Lipman, Counsel to Fiber BidCo LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256 (filed Aug. 4, 2022) (August Supplement); Letter from James C. Falvey, Counsel to Thermo Acquisitions, Inc. and FiberLight, LLC, and Andrew D. Lipman, Counsel to Fiber BidCo LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256 (filed Oct. 6, 2022); Letter from James C. Falvey, Counsel to Thermo Acquisitions, Inc. and FiberLight, LLC, and Andrew D. Lipman, Counsel to Fiber BidCo LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256 (filed Jan. 23, 2023) (disclosing new entities which may, post-transaction, be attributed indirect non-controlling interests in FiberLight and Fiber BidCo); Letter from James C. Falvey, Counsel to Thermo Acquisitions, Inc. and FiberLight, LLC, and Andrew D. Lipman, Counsel to Fiber BidCo LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256 (filed Mar. 21, 2023) (March Supplement) (providing final amended Exhibits A and B to the Application). Applicants also filed applications for the transfer of an authorization associated with international services, ITC-T/C-20220705-00080, and wireless services, as well as a petition for declaratory ruling asking the Commission to find that it would serve the public interest to permit foreign ownership of the controlling U.S. parent, Fiber BidCo, to exceed the 25% benchmarks in section 310(b)(4) of the Act, 47 U.S.C. § 310(b)(4). Any action on this domestic section 214 application is without prejudice to Commission action on other related, pending applications.

[3] *See Domestic Section 214 Application Filed for the Transfer of Control of FiberLight, LLC to Fiber BidCo, LLC*, WC Docket No. 22-256, Public Notice, DA 22-1115 (WCB Oct. 21, 2022) (*Public Notice*).

FiberLight, a Delaware limited liability company and indirect subsidiary of Thermo, a Delaware corporation, constructs and operates fiber optic networks and is authorized to provide competitive local exchange carrier, competitive access, private line, and/or interexchange telecommunications services in Alabama, Florida, Georgia, Louisiana, Maryland, Mississippi, New Mexico, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Washington DC, and West Virginia.[4] FiberLight is an eligible telecommunications carrier (ETC) in Georgia.[5] FiberLight's affiliate, FiberLight of Virginia, LLC (FiberLight-VA), a Virginia limited liability company, provides competitive intrastate telecommunications services in Virginia and is an ETC in Virginia.[6] On July 14, 2022, the Bureau authorized FiberLight and FiberLight-VA to receive Rural Digital Opportunity Fund (RDOF) Auction 904 support to provide service to locations in Georgia and Virginia.[7] FiberLight is directly owned (99.998%) by FiberLight Holdings II, LLC (FH II),[8] which, in turn, is directly wholly-owned by FiberLight Holdings I, LLC (FH I), both Colorado limited liability companies.[9] Thermo directly owns (over 95%) of FH I.[10]

Fiber BidCo, a Delaware limited liability holding company, was created for the purposes of the Transaction and does not itself provide telecommunications services.[11] Fiber BidCo is indirectly wholly-owned by Fiber HoldCo L.P. (Fiber LP).[12] Fiber LP is controlled by its general partner, Fiber GP LLC (Fiber GP), a Delaware limited liability company. Upon completion of the Transaction, Fiber GP, will be owned by: (1) Fiber MCO L.P. (MCO LP), a Delaware limited partnership (50%), (2) Sunsuper Pooled Superannuation Trust (PST), an Australian entity (25%), and (3) GVC Lumens Holdings, Inc. (GVC Holdings), a Delaware limited liability company (25%). These entities also hold the equity interests in Fiber LP: (1) MCO LP (49.5%), (2) PST (24.5%), and (3) GVC Holdings (24.5%;); a limited partnership comprised of FiberLight management will hold the other 2% equity interest. MCO LP is owned by The Morrison & Co Infrastructure Partnership Master Fund SCSp (MCO IP), a Luxembourg special limited partnership, registered with the Luxembourg Trade and Companies Register. PST is owned by Australian Retirement Trust (ART) and Australian Retirement Trust Pty Ltd (ART Trustee), which serves as the trustee for PST and ART. GCV Holding is owned by Golden VinzClortho, LLC (GVC), a Delaware

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[4] Application at 3 and 11.

[5] *Id*. at 12.

[6] *Id*.

[7] *Rural Digital Opportunity Fund Support Authorized for 1,605 Winning Bids*, AU Docket No. 20-34 et al., Public Notice, DA 22-759, at 8 and Attach. A (Authorized Long-Form Applicants and Winning Bids) (WCB July 14, 2022) (stating that eligible telecommunication carriers "seeking to transfer control of their domestic authorizations to operate pursuant to section 214 of the Communications Act of 1934, as amended, or to engage in the sale of assets under section 214 must first receive approval from the Commission in accordance with sections 63.03 and 63.04 of the Commission's rules governing the procedures for domestic transfer of control/asset applications") (*Eleventh RDOF Authorization Public Notice*). The Commission authorized FiberLight to receive $458,892.20 for 687 estimated locations in Georgia and FiberLight-VA to receive $1,067,075.80 for 3,038 estimated locations in Virginia over a 10-year period. *See id.* at Attach. A.

[8] Application.at 4. Michael Miller, a U.S. citizen, holds the other .002% of FiberLight. *Id.*

[9] *Id*.

[10] *Id*. The remainder of FH I is held by FiberLight executives, Christopher Rabii, Ronald Kormos, and Jon Couch. *Id*. Thermo, along with other parent entities, hold a 10% or greater ownership in Globalstar, Inc. (Globalstar), a provider of global mobile satellite voice and data services. *Id.*

[11] *Id*. at 1. Fiber BidCo is affiliated with OpenFiber Kentucky Company, LLC d/b/a Accelecom, a provider of enterprise and wholesale communications services in Kentucky, and is authorized to provide intrastate telecommunications services in Ohio. *Id.* at 13.

[12] *Id.* at 2.

limited liability company.[13] The board of Fiber GP will be comprised of up to eight directors chosen by MCO IP, ART, and GVC as determined by their respective equity interests (i.e., 4 chosen by MCO IP, 2 chosen by ART, and 2 chosen by GVC).[14] Applicants state that, post-transaction, and other than what is described in the Application, no person or entity holding a 10% or greater interest in Fiber BidCo will hold a 10% or greater interest in any other provider of domestic telecommunications services.[15]

Pursuant to terms of the Transaction, Applicants will engage in a series of transactions that will result in Fiber BidCo LLC acquiring indirect ownership and control of FiberLight.[16] As a result, Fiber BidCo LLC will indirectly own all the equity in FH I and, in turn, all the equity in FH II and FiberLight, LLC.[17]

Discussion

We find, upon consideration of the record, that a grant of the Application will serve the public interest, convenience, and necessity. To make this determination under Commission precedent, we consider whether the Transaction could result in public interest harms by substantially frustrating or impairing the objectives or implementation of the Act or related statutes.[18] We then employ a balancing test weighing any potential public interest harms of the Transaction against any potential public interest benefits.[19] The Applicants bear the burden of proving, by a preponderance of the evidence, that the Transaction, on balance, serves the public interest.[20]

We find that there are no potential public interest harms identified in the record. First, the Transaction will not result in a significant reduction of competition. Although Fiber BidCo is affiliated with OpenFiber Kentucky Company, LLC d/b/a Accelecom, a provider of enterprise and wholesale communications services in Kentucky,[21] there will be no physical overlap or reduction in service providers in any markets as a result of the Transaction.[22] Further, because the Transaction is occurring at

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[13] March Supplement, Amended Exh. B at paras. 8-11.

[14] Application at 2.

[15] *Id.* at 13.

[16] *Id*. at 4-5.

[17] *Id.*

[18] *See, e.g.*, *Application of Verizon Communications Inc. and América Móvil S.A.B. de C.V for Consent to Transfer Control of International Section 214 Authorization*, GN Docket No. 21-112, IBFS File No. ITC-T/C-20200930-00173, Memorandum Opinion and Order, FCC 21-121, at 8, para. 21 (Nov. 22, 2021) (*Verizon-TracFone Order*) (citing *China Mobile International (USA) Inc., Application for Global Facilities-Based and Global Resale International Telecommunications Authority Pursuant to Section 214 of the Communications Act of 1934, as Amended*, ITC-214-20110901-00289, Memorandum Opinion and Order, 34 FCC Rcd 3361, 3366, para. 9 (2019); *Applications for Consent to the Assignment and/or Transfer of Control of Licenses, Adelphia Communications Corporation (and Subsidiaries, Debtors-in-Possession), Assignors, to Time Warner Cable Inc. (Subsidiaries), Assignees; Adelphia Communications Corporation, (and Subsidiaries, Debtors-in-Possession), Assignors and Transferors et al*., MB Docket No. 05-192, Memorandum Opinion and Order, 21 FCC Rcd 8203, 8219-21, paras. 27-28 (2006) (*Adelphia-TWC Order*)).

[19] *See Verizon-TracFone Order* at 8, para. 21 (citing *Applications of AT&T Inc. and DIRECTV for Consent to Assign or Transfer Control of Licenses and Authorizations*, MB Docket No. 14-90, Memorandum Opinion and Order, 30 FCC Rcd 9131, 9140, para. 18 (2015) (*AT&T-DIRECTV Order*)) (further citations omitted).

[20] *See Verizon-TracFone Order* at 8, para. 21 (citing *AT&T-DIRECTV Order*, 30 FCC Rcd at 9140, para. 18; *Adelphia-TWC Order*, 21 FCC Rcd at 8217, para. 23; *Application of EchoStar Communications Corp., General Motors Corp., and Hughes Electronics Corp., Transferors, and EchoStar Communications Corp., Transferee*, CS Docket No. 01-348, Hearing Designation Order, 17 FCC Rcd 20559, 20574, para. 25 (2002)) (further citations omitted).

[21] Application at 13.

the holding company level, it will have no impact on Licensee's day-to-day operations and service offerings.[23] Applicants state further that Licensee will "continue to offer its existing services with no change in the rates, terms, and conditions"[24] and, thus, we expect no potential harm to existing customers to result from the Transaction.

Second, Licensee remain financially, managerially, and technically obligated to meet all public interest and performance obligations associated with the receipt of RDOF funding in accordance with the Commission's pre-transaction approval of its qualifications, and we expect that the Transaction will not negatively impact these obligations. Indeed, Applicants assert that the infusion of capital resulting from the Transaction will better position FiberLight or FiberLight-VA to "expand broadband infrastructure and other services to meet the demands of consumers,"[25] and, with regard to the RDOF program, "will enhance Licensee's and FiberLight-VA's managerial, technical, and financial capabilities which will enhance their ability to meet their RDOF service obligations."[26] Applicants have confirmed that the Transaction "will not result in an increase in the level of debt, nor will it result in any alteration to the buildout plans submitted to the Commission to qualify for RDOF funding."[27] Applicants have also confirmed that they anticipate that FiberLight's senior management team "will remain in place following the Transaction"[28] and that "Licensee's managerial, technical, and operational standards will be maintained and strengthened by the influx of new investment by Transferee."[29] Overall, we conclude that the record in this proceeding does not support a finding of a public interest harm.

We next consider whether the Transaction is likely to generate verifiable, transaction-specific public interest benefits.[30] Applicants must provide evidence of a claimed benefit to allow the Commission to verify its likelihood and magnitude.[31] Where potential harms appear unlikely, as is the case with the Application before us here, the Commission accepts a lesser degree of magnitude and likelihood than when harms are present.[32]

Applicants claim that the Transaction will provide additional capital and managerial resources that will "strengthen Licensee's financial condition by providing Licensee with access to additional resources through a combination of new equity investment, reinvestment of operating cash flows, and prudent use of third-party debt financing that will support the buildout, operation, and maintenance of its fiber network, and enable Licensee to operate more efficiently and effectively."[33] Further, Applicants assert that "[w]ith Licensee's management experience coupled with the experience and financial backing of Transferee, Licensee will continue to build, operate, and maintain state-of-the-art communications networks which can be leveraged by Licensee and its wholesale customers to expand broadband infrastructure and other services to meet the demands of consumers."[34] The Commission has specified

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[22] *Id.*

[23] *Id*. at 7.

[24] *Id.*

[25] *Id.*

[26] *Id.* at 12.

[27] Application at 12-13; August Supplement at 1-2.

[28] Application at 6.

[29] *Id.* at 7.

[30] *See AT&T/DIRECTV Order*, 30 FCC Rcd at 9237, paras. 273-74.

[31] *See id*. at 9237-38, paras. 275-76.

[32] *See id*.

[33] Application at 6.

[34] *Id*. at 6-7.

that ensuring consumers receive new or additional services is an important public interest factor,[35] and accelerating private sector deployment of advanced services is one of the aims of the Communications Act.[36] In light of the Applicants' commitments to meet all of Licensee's federal high-cost funding obligations[37] and the fact that Applicants are prepared to devote additional capital to accelerate facilities-based service offerings,[38] we find it likely that the Transaction would result in some public interest benefits. Absent any potential harms, and considering that the Transaction is likely to yield some benefits, we find, on balance, that the Transaction serves the public interest.

National Security, Law Enforcement, Foreign Policy, and Trade Policy Concerns

When analyzing a transfer of control or assignment application that includes foreign investment, we also consider public interest issues related to national security, law enforcement, foreign policy, or trade policy concerns.[39] As part of the public interest analysis, the Commission coordinates with the relevant Executive Branch agencies that have expertise in these particular issues.[40] The Commission accords deference to the expertise of these Executive Branch agencies in identifying issues related to national security, law enforcement, foreign policy, or trade policy concerns raised by the relevant Executive Branch agencies.[41] The Commission, however, ultimately makes an independent decision on the application based on the record in the proceedings.[42]

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[35] *See, e.g.*, *AT&T-DIRECTV Order*, 30 FCC Rcd at 9140, para. 19.

[36] *See Verizon-TracFone Order* at 9, para. 22; *see also* 47 U.S.C. §§ 254, 332(c)(7), 1302; Telecommunications Act of 1996, Pub. L. No. 104-104, Preamble, 110 Stat. 56 (1996) (one purpose of the Act is to "accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services").

[37] Application at 2, 11-12.

[38] *Id*. at 6, 8, 12.

[39] *See Process Reform for Executive Branch Review of Certain FCC Applications and Petitions Involving Foreign Ownership*, IB Docket 16-155, Report and Order, 35 FCC Rcd 10927 (2020) (setting rules and procedures for referring applications for Executive Branch review consistent with Executive Order No. 13913) (*Executive Branch Review Order*); *Rules and Policies on Foreign Participation in the U.S. Telecommunications Market; Market Entry and Regulation of Foreign-Affiliated Entities*, IB Docket Nos. 97-142 & 95-22, Report and Order and Order on Reconsideration, 12 FCC Rcd 23891, 23918-21, paras. 59-66 (1997) (*Foreign Participation Order*), *recon. denied*, 15 FCC Rcd 18158 (2000) (in opening the U.S. telecommunications market to foreign entry in 1997, the Commission affirmed that it would consider national security, law enforcement, foreign policy, and trade policy concerns related to reportable foreign ownership as part of its overall public interest review of application for international section 214 authority, submarine cable landing licenses, and declaratory rulings to exceed the foreign ownership benchmarks of section 310(b) of the Act); *see also Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations, et al.*, WT Docket 18-197, Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification, 34 FCC Rcd 10578, 10732-33, para. 349 (2019) (*T-Mobile/Sprint Order*).

[40] *See Executive Branch Review Order*, 35 FCC Rcd at 10935-36, paras. 17, 24.

[41] *Id.* at 10930, para. 7 (citing *Foreign Participation Order*, 12 FCC Rcd at 23920-21, paras. 65-66; *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States; Amendment of Section 25.131 of the Commission's Rules and Regulations to Eliminate the Licensing Requirement for Certain International Receive-Only Earth Stations*, IB Docket No. 96-111, CC Docket No 93-23, RM-7931, Report and Order, 12 FCC Rcd 24094, 24171-72, paras. 179, 182 (1997)); *see also T-Mobile/Sprint Order*, 34 FCC Rcd at 10733, paras. 349; *Review of Foreign Ownership Policies for Broadcast, Common Carrier and Aeronautical Radio Licensees under Section 310(b)(4) of the Communications Act of 1934, as Amended*, GN Docket No. 15-236, Report and Order, 31 FCC Rcd 11271, 11277, para. 6 (2016), *pet. for recon. dismissed*, 32 FCC Rcd 4780 (2017).

[42] 47 CFR § 1.40001(b) ("The Commission will consider any recommendations from the [E]xecutive [B]ranch on pending application(s) . . . that may affect national security, law enforcement, foreign policy, and/or trade policy as

Pursuant to Commission practice, the Application, the international transfer of control application (ITC-T/C-20220705-00080), and the associated petition for declaratory ruling (ISP-PDR-20220705-00005) (collectively, Applications/Petition), were referred to the relevant Executive Branch agencies for their review of any national security, law enforcement, foreign policy, or trade policy concerns related to the foreign ownership of the Applicants.[43] On October 28, 2022, the U.S. Department of Justice (DOJ), on behalf of the Committee, filed a notification with the Commission that the Committee was reviewing the Applications/Petition for any national security and law enforcement concerns that may be raised by foreign participation in the United States telecommunications services sector and requested that the Commission defer action on the Applications/Petition.[44] We deferred action in response to this request from the Committee. On December 15, 2022, DOJ notified the Commission that the Committee was "conducting [a 120-day] initial review to assess whether granting the Applications will pose a risk to national security or law enforcement interests of the United States."[45]

On March 21, 2023, the National Telecommunications and Information Administration (NTIA) informed the Commission that "the Committee has reviewed the application and has no recommendation at this time to the Commission approving the application and no objection to the Commission granting it" and that the Committee "reserves the right to review any resulting authorization in the future to identify any additional or new risks to U.S. national security or law enforcement interests."[46]

Grant of Application, Subject to Condition

We find, upon consideration of the record, that the proposed transfer will serve the public interest, convenience, and necessity.[47] This grant of the Application is conditioned as set out in this Public Notice.

Pursuant to section 214 of the Act, 47 U.S.C. § 214, and sections 0.91, 0.291, 63.03, and 63.04 of the Commission's rules, 47 CFR §§ 0.91, 0.291, 63.03, and 63.04, the Bureau hereby grants the Application discussed in this Public Notice, subject to Applicants' compliance with all applicable obligations.[48]

Pursuant to section 1.103 of the Commission's rules, 47 CFR § 1.103, the grant is effective upon release of this Public Notice.[49] Petitions for reconsideration under section 1.106 or applications for

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part of its public interest analysis. The Commission will evaluate concerns raised by the [E]xecutive [B]ranch and will make an independent decision concerning the pending matter.").

[43] *See Public Notice* at 3.

[44] Letter from David P. Palmer, Department of Justice, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256; ISP-PDR-20220705-00005, ITC-T/C-20220705-00080, and Attach. (filed Oct. 28, 2022).

[45] Letter from David P. Palmer, Department of Justice, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256; ISP-PDR-20220705-00005, ITC-T/C-20220705-00080, and Attach. (filed Dec. 15, 2022).

[46] Letter from Stephanie Weiner, Chief Counsel, National Telecommunications and Information Administration, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 22-256; ISP-PDR-20220705-00005, ITC-T/C-20220705-00080 (Mar. 21, 2023). On March 14, 2023, DOJ filed a memorandum in the relevant dockets requesting that NTIA, on behalf of the Committee, notify the Commission of the final recommendation on or before March 21, 2023. Memorandum from the U.S. Department of Justice, National Security Division, to the National Telecommunications and Information Administration, U.S. Department of Commerce (Mar. 14, 2023) (on file in WC Docket No. 22-256).

[47] *See* 47 U.S.C. § 214(a); 47 CFR § 63.03.

[48] *See CAF Phase II Public* Notice, 34 FCC Rcd at 5967-71; *RDOF Public Notice* at 1-9 (listing obligations of authorized support recipients).

[49] We direct Applicants to submit, within 30 days of closing the Transaction, a notice in WC Docket No. 22-256 that the Transaction has closed, with the consummation date, and also provide a courtesy copy of the notice to hcinfo@usac.org.

review under section 1.115 of the Commission's rules, 47 CFR §§ 1.106, 1.115, may be filed within 30 days of the date of this Public Notice.

For further information, please contact Gregory Kwan, Wireline Competition Bureau, Competition Policy Division, (202) 418-1191.

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
ELKO TELEVISION DISTRICT	)	Facility ID Nos.: 19374, 19379, 19380,
	)	19381, 19382, 19383, 19401, 19407, 19408,
Licensee of Stations K12MD-D, Elko, NV;	)	126978, 19405
K23FC-D, Elko, NV; K06MK-D, Elko, NV;	)	NAL/Acct. No.: 202341420016
K25FR-D, Elko, NV; K08LS-D, Elko, NV;	)	FRN: 0006952121
K15EE-D, Elko, NV; K05JU-D, Elko, NV;	)	LMS File Nos. 195104, 195107, 195109,
K19FZ-D, Elko, NV; K17DT-D, Elko, NV;	)	195110, 195111, 195113, 195292, 195293,
K24NB-D, Elko, NV; K26OE-D, Elko, NV	)	195294, 195295, 195297
	)	

MEMORANDUM OPINION AND ORDER
AND
NOTICE OF APPARENT LIABILITY FOR FORFEITURE

Adopted: April 13, 2023 **Released: April 13, 2023**

By the Chief, Video Division, Media Bureau:

I. INTRODUCTION

1. The Media Bureau (Bureau) has before it the applications (Applications)[1] of ELKO TELEVISION DISTRICT (Licensee), for renewal of its licenses for K12MD-D, Elko, NV; K23FC-D, Elko, NV; K06MK-D, Elko, NV; K25FR-D, Elko, NV; K08LS-D, Elko, NV; K15EE-D, Elko, NV; K05JU-D, Elko, NV; K19FZ-D, Elko, NV; K17DT-D, Elko, NV; K24NB-D, Elko, NV; and K26OE-D, Elko, NV (Stations). In this *Memorandum Opinion and Order and Notice of Apparent Liability for Forfeiture* (*NAL*), we find the Licensee apparently willfully violated section 73.3539(a) of the Commission's rules (Rules)[2] by failing to timely file a license renewal application for the Stations. Based upon our review of the facts and circumstances before us, we conclude that the Licensee is apparently liable for a monetary forfeiture in the amount of sixteen thousand five hundred dollars ($16,500).

II. BACKGROUND

2. Section 73.3539(a) of the Rules requires that applications for renewal of license for broadcast stations must be filed "not later than the first day of the fourth full calendar month prior to the expiration date of the license sought to be renewed."[3] The applications for renewal of the Stations' licenses should have been filed by June 1, 2022, the first day of the fourth full calendar month prior to the Stations' licenses expiration date of October 1, 2022.[4] However, the Licensee did not file the Applications until July 15, 2022. The Licensee did not provide an explanation for the late filings.

[1] Applications of Elko Television District for Renewal of Licenses, LMS File Nos. 195104, 195107, 195109, 195110, 195111, 195113 (filed. Jul. 15, 2022) (filed for stations K12MS-D, K23FC-D, K06MD-D, K25FR-D, K08LS-D, and K15EE-D respectively). Applications of Elko Television District for Renewal of Licenses, LMS File Nos. 195292, 195293, 195294, 195295, 195297 (filed. Jul. 19, 2022) (filed for stations K05JU-D, K19FZ-D, K17DT-D, K24NB-D, and K26OE-D respectively).

[2] 47 CFR § 73.3539(a).

[3] *Id*.

[4] *See* 47 CFR §§ 73.1020, 73.3539(a); *See Media Bureau Announces Procedures For 2020-2023 Television License* (continued….)

III. DISCUSSION

3. *Proposed Forfeiture.* We find that the Licensee is apparently liable for a forfeiture in the amount of $16,500. In this case, the Licensee failed to file the Applications on or before June 1, 2022, as required by section 73.3539(a) of the Rules.[5] The Applications were not received until July 15, 2022, and July 19, 2022, over one month late.[6]

4. Pursuant to section 503(b)(1)(B) of the Communications Act of 1934, as amended (Act), a person who is found to have willfully and/or repeatedly failed to comply with any provision of the Act or any rule, regulation, or order issued by the Commission, shall be liable to the United States for a forfeiture penalty.[7] Section 312(f)(1) of the Act defines willful as "the conscious and deliberate commission or omission of [any] act, irrespective of any intent to violate" the law.[8] The legislative history to section 312(f)(1) of the Act clarifies that this definition of willful applies to both section 312 and 503(b) of the Act,[9] and the Commission has so interpreted the term in the section 503(b) context.[10] Section 312(f)(2) of the Act provides that "[t]he term 'repeated,' when used with reference to the commission or omission of any act, means the commission or omission of such act more than once or, if such commission or omission is continuous, for more than one day."[11]

5. The Commission's *Forfeiture Policy Statement* and section 1.80(b)(10) of the Rules establish a base forfeiture amount of $3,000 for failure to file a required form or information.[12] In determining the appropriate forfeiture amount, we may adjust the base amount upward or downward by considering the factors enumerated in section 503(b)(2)(E) of the Act, including "the nature, circumstances, extent and gravity of the violation, and, with respect to the violator, the degree of culpability, any history of prior offenses, ability to pay, and such other matters as justice may require."[13]

6. In this case, the Licensee failed to timely file a license renewal application for eleven (11) stations, as required by section 73.3539(a) of the Rules.[14] The Licensee did not provide an explanation for the late filings. Taking into consideration all of the factors required by section 503(b)(2)(E) of the Act and the *Forfeiture Policy Statement*,[15] we will reduce the forfeiture from the base amount to $1,500 per station for the failure to file a timely renewal application, because, as digital television translators, the Stations are providing a secondary service.[16] Furthermore, as translators the Stations are not originating

(Continued from previous page)
Renewal Cycle, Public Notice, 35 FCC Rcd 3656 (2020).

[5] 47 CFR § 73.3539(a).

[6] *See supra* note 1.

[7] *See* 47 U.S.C. § 503(b)(1)(B); *see also* 47 CFR § 1.80(a)(2).

[8] 47 U.S.C. § 312(f)(1).

[9] *See* H.R. Rep. No. 97-765, at 51 (1982) (Conf. Rep.).

[10] *See Southern California Broadcasting Co.*, Memorandum Opinion and Order, 6 FCC Rcd 4387, 4388, para. 5 (1991) (*Southern California*), recon. denied, 7 FCC Rcd 3454 (1992).

[11] 47 U.S.C. § 312(f)(2).

[12] *See Forfeiture Policy Statement and Amendment of Section 1.80 of the Rules to Incorporate the Forfeiture Guidelines*, Report and Order, 12 FCC Rcd 17087, 17113-15 (1997) (*Forfeiture Policy Statement*), *recon. denied*, 15 FCC Rcd 303 (1999); 47 CFR § 1.80(b), paragraph (b)(10), Table 1.

[13] 47 U.S.C. § 503(b)(2)(E). *See also Forfeiture Policy Statement*, 12 FCC Rcd at 17100-01; 47 CFR § 1.80(b)(10); 47 CFR § 1.80(b), paragraph (b)(10), Table 3.

[14] 47 CFR § 73.3539(a).

[15] *Supra* note 13.

programing, but instead providing important "fill-in" service to areas that otherwise may be unable to receive over-the-air television signals. Because the Applications include eleven (11) stations the total proposed forfeiture amount is $16,500.

7. *License Renewal Application.* In evaluating an application for license renewal, the Commission's decision is governed by section 309(k) of the Act.[17] That section provides that if, upon consideration of the application and pleadings, we find that: (1) the station has served the public interest, convenience, and necessity; (2) there have been no serious violations of the Act or the Rules; and (3) there have been no other violations which, taken together, constitute a pattern of abuse, we are to grant the renewal application.[18] If, however, the licensee fails to meet that standard, the Commission may deny the application—after notice and opportunity for a hearing under section 309(e) of the Act—or grant the application "on terms and conditions as are appropriate, including renewal for a term less than the maximum otherwise permitted."[19]

8. We find that the Licensee's apparent violation of section 73.3539(a) of the Rules[20] does not constitute a "serious violation" warranting designation of the Applications for evidentiary hearing. Moreover, we find no evidence of violations that, when considered together, constitute a pattern of abuse.[21] Further, based on our review of the Applications, we find that the Stations served the public interest, convenience, and necessity during the subject license term. We will therefore grant the Applications by separate action upon the conclusion of this forfeiture proceeding if there are no issues other than those set forth in this *NAL* that would preclude grant of the Applications.

IV. ORDERING CLAUSES

9. Accordingly, **IT IS ORDERED**, pursuant to section 503(b) of the Communications Act of 1934, as amended,[22] and sections 1.80 and 0.283(d) of the Commission's rules,[23], that Elko Television District, is hereby **NOTIFIED** of its **APPARENT LIABILITY FOR FORFEITURE in the amount of**

(Continued from previous page)

[16] *See*, *e.g.*, *Juan Carlos Matos.*, Notice of Apparent Liability for Forfeiture, 36 FCC Rcd 8932 (Vid. Div. 2021) (paid Jun. 11, 2021); *H&R Production Group*, Notice of Apparent Liability for Forfeiture, 36 FCC Rcd 8937 (Vid. Div. 2021) (paid Jun. 9, 2021); *Nichols Broadcasting Group, LLC*, Notice of Apparent Liability for Forfeiture, 36 FCC Rcd 8978 (Vid. Div. 2021) (paid Jun. 10, 2021) (all reducing fine for a late renewal application to $1,500 because the stations "provid[e] a secondary service."). *See also Digital Low Power Television, Television Translator, and Television Booster Stations and Digital Class A Television Stations*, Report and Order, 19 FCC Rcd 19331, 19333, paras. 2-6 (2004) ("The low power television service consists of LPTV, TV translator, and television booster stations…. Stations in the low power television service are authorized with 'secondary' frequency use status.").

[17] 47 U.S.C. § 309(k).

[18] 47 U.S.C. § 309(k)(1).

[19] 47 U.S.C. §§ 309(k)(2), 309(k)(3).

[20] 47 CFR § 73.3539(a).

[21] For example, we do not find here that the Licensee's operation of the Stations "was conducted in an exceedingly careless, inept and negligent manner and that the licensee is either incapable of correcting or unwilling to correct the operating deficiencies." *See Heart of the Black Hills Stations*, Decision, 32 FCC 2d 196, 198, para. 6 (1971). Nor do we find on the record here that "the number, nature and extent" of the violations indicate that "the licensee cannot be relied upon to operate [the station] in the future in accordance with the requirements of its licenses and the Commission's Rules." *Id.* at 200, paras. 10-11. *See also Center for Study and Application of Black Econ. Dev.*, Hearing Designation Order, 6 FCC Rcd 4622 (1991); *Calvary Educ. Broad. Network, Inc*., Hearing Designation Order, 7 FCC Rcd 4037 (1992).

[22] 47 U.S.C. § 503(b).

[23] 47 CFR §§ 1.80 and 0.283.

sixteen thousand five hundred dollars ($16,500) for its apparent willful violation of section 73.3539(a) of the Commission's rules.[24]

10. **IT IS FURTHER ORDERED** that, pursuant to section 1.80 of the Commission's rules,[25] within thirty (30) days of the release date of this *NAL*, Elko Television District, **SHALL PAY** the full amount of the proposed forfeiture or **SHALL FILE** a written statement seeking reduction or cancellation of the proposed forfeiture.

11. Payment of the forfeiture must be made by credit card, ACH (Automated Clearing House) debit from a bank account using CORES (the Commission's online payment system),[26] or by wire transfer. Payments by check or money order to pay a forfeiture are no longer accepted. Upon payment, it is requested that Licensee send notice that payment has been made to VideoRenewals@fcc.gov. Below are instructions that payors should follow based on the form of payment selected:[27]

- Payment by wire transfer must be made to ABA Number 021030004, receiving bank TREAS/NYC, and Account Number 27000001. A completed Form 159 must be faxed to the Federal Communications Commission at 202-418-2843 or e-mailed to RROGWireFaxes@fcc.gov on the same business day the wire transfer is initiated. Failure to provide all required information in Form 159 may result in payment not being recognized as having been received. When completing FCC Form 159, enter the Account Number in block number 23A (call sign/other ID), enter the letters "FORF" in block number 24A (payment type code), and enter in block number 11 the FRN(s) captioned above (Payor FRN).[28] For additional detail and wire transfer instructions, go to https://www.fcc.gov/licensing-databases/fees/wire-transfer.
- Payment by credit card must be made by using the Commission's Registration System (CORES) at https://apps.fcc.gov/cores/userLogin.do. To pay by credit card, log-in using the FCC Username associated to the FRN captioned above. If payment must be split across FRNs, complete this process for each FRN. Next, select "Manage Existing FRNs | FRN Financial | Bills & Fees" from the CORES Menu, then select FRN Financial and the view/make payments option next to the FRN. Select the "Open Bills" tab and find the bill number associated with the NAL/Acct. No. The bill number is the NAL Acct. No. (e.g., NAL/Acct. No. 1912345678 would be associated with FCC Bill Number 1912345678). After selecting the bill for payment, choose the "Pay by Credit Card" option. Please note that there is a $24,999.99 limit on credit card transactions.
- Payment by ACH must be made by using the Commission's Registration System (CORES) at https://apps.fcc.gov/cores/paymentFrnLogin.do. To pay by ACH, log in using the FRN captioned above. If payment must be split across FRNs, complete this process for each FRN. Next, select "Manage Existing FRNs | FRN Financial | Bills & Fees" on the CORES Menu, then select FRN Financial and the view/make payments option next to the FRN. Select the "Open Bills" tab and find the bill number associated with the NAL/Acct. No. The bill number is the NAL/Acct. No. (e.g., NAL/Acct. No. 1912345678 would be associated with FCC Bill Number 1912345678). Finally, choose the "Pay from Bank Account" option.

[24] 47 CFR § 73.3539(a).

[25] 47 CFR § 1.80.

[26] Payments made using CORES do not require the submission of an FCC Form 159.

[27] For questions regarding payment procedures, please contact the Financial Operations Group Help Desk by phone at 1-877-480-3201 (option #6), or by e-mail at ARINQUIRIES@fcc.gov.

[28] Instructions for completing the form may be obtained at https://www.fcc.gov/Forms/Form159/159.pdf.

Please contact the appropriate financial institution to confirm the correct Routing Number and the correct account number from which payment will be made and verify with that financial institution that the designated account has authorization to accept ACH transactions.

12. Requests for full payment of the forfeiture proposed in this *NAL* under the installment plan should be sent to: Associate Managing Director-Financial Operations, 45 L Street, NE, Washington, DC 20554.[29] Questions regarding payment procedures should be directed to the Financial Operations Group Help Desk by phone, 1-877-480-3201 (option #6), or by e-mail at ARINQUIRIES@fcc.gov.

13. The written response seeking reduction or cancellation of the proposed forfeiture, if any, must include a detailed factual statement supported by appropriate documentation and affidavits pursuant to sections 1.16 and 1.80(g)(3) of the Rules.[30] The written response must be filed with the Office of the Secretary, Federal Communications Commission, 45 L Street, NE, Washington, DC 20554, ATTN: Barbara A. Kreisman, Chief, Video Division, Media Bureau, and **MUST INCLUDE** the NAL/Acct. No. referenced above. A courtesy copy should also be emailed to VideoRenewals@fcc.gov to assist in processing the response.

- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
    - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
    - Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington, DC 20554.
    - Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.[31]

14. The Commission will not consider reducing or canceling a forfeiture in response to a claim of inability to pay unless the respondent submits: (1) federal tax returns for the most recent three-year period; (2) financial statements prepared according to generally accepted accounting practices (GAAP); or (3) some other reliable and objective documentation that accurately reflects the respondent's current financial status. Any claim of inability to pay must specifically identify the basis for the claim by reference to the financial documentation submitted. Inability to pay, however, is only one of several factors that the Commission will consider in determining the appropriate forfeiture, and we have discretion to not reduce or cancel the forfeiture if other prongs of section 503(b)(2)(E) of the Act support that result.[32]

15. **IT IS FURTHER ORDERED**, that copies of this *NAL* shall be sent, by First Class and Certified Mail, Return Receipt Requested, to Elko Television District, P.O. Box 456, Elko, NV 89803 and by electronic mail to elkotvdistrict@gmail.com.

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[29] *See* 47 CFR § 1.1914.

[30] 47 CFR §§ 1.16 and 1.80(g)(3).

[31] *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, 35 FCC Rcd 2788 (2020).

[32] 47 U.S.C. § 503(b)(2)(E). *See, e.g.*, *Adrian Abramovich*, Forfeiture Order, 33 FCC Rcd 4663, 4678-79, paras. 44-45 (2018).

FEDERAL COMMUNICATIONS COMMISSION

Barbara A. Kreisman
Chief, Video Division
Media Bureau

Before the
Federal Communications Commission
Washington, D.C. 20554

In re Applications of	)	NAL/Acct. No. MB-202341410005
	)	FRN: 0006395925
Fresh Life Church, Inc. (Assignor)	)	Application File No. 0000197399, *et. seq.*
CSN International, Inc. (Assignee)	)	
	)	
For Consent to Assignment of Broadcast Station Licenses	)	
	)	
and	)	
	)	
Calvary Chapel Pearl Harbor (Assignor)	)	Application File No. 0000194181, *et. seq.*
CSN International, Inc. (Assignee)	)	
	)	
For Consent to Assignment of Broadcast Station Licenses	)	
	)	
and	)	
	)	
Spirit Communications, Inc. (Assignor)	)	Application File No. 0000202702
CSN International, Inc. (Assignee)	)	
	)	
For Consent to Assignment of FM Translator Station K270AF, Grover City, California	)	
	)	
and	)	
	)	
CSN International, Inc. (Old Board) (Transferor)	)	Application File Nos. 0000205167, *et. seq.*,
CSN International, Inc. (New Board) (Transferee)	)	0000213714, *et. seq.*
	)	
For Consent to Transfer of Control	)	

ORDER

Adopted: April 18, 2023 **Released: April 18, 2023**

By the Chief, Audio Division, Media Bureau:

1. In this Order, we adopt the attached Consent Decree entered into by the Media Bureau (Bureau) and CSN International, Inc. (CSN), the licensee/permittee of the stations listed in section II of the Appendix and the proposed assignee of the stations listed in section I of the Appendix. The Consent Decree resolves issues arising from the Bureau's review of the above-captioned applications for Commission consent to the proposed assignment of licenses and transfer of control of CSN (Assignment and Transfer Applications).

2. The Consent Decree resolves the Bureau's investigation of CSN's compliance with

section 1.17 of the Commission's rules (Rules).[1] Specifically, CSN failed to disclose that it had not reported some members of its governing board on various applications as required by the application instructions and the Commission's rules, contrary to CSN's certifications that the applications were complete and satisfied the relevant Commission criteria.[2]

3. Pursuant to the terms of the Consent Decree, CSN stipulates that it violated section 1.17 of the Rules. The Consent Decree requires, among other things, that CSN make a ten thousand dollar ($10,000) civil penalty payment to the United States Treasury. A copy of the Consent Decree is attached hereto and incorporated by reference.

4. After reviewing the terms of the Consent Decree, we find that the public interest will be served by its approval and by terminating all pending proceedings related to the Bureau's investigation of potential violations of the Rules and the Act in connection with the Assignment and Transfer Applications.

5. Based on the record before us, we conclude that nothing in the record creates a substantial and material question of fact as to whether CSN possesses the basic qualifications to hold a Commission license or authorization.

6. ACCORDINGLY, IT IS ORDERED that, pursuant to section 4(i) of the Act,[3] and by the authority delegated by sections 0.61 and 0.283 of the Rules,[4] the Consent Decree attached hereto IS ADOPTED without change, addition, or modification.

7. IT IS FURTHER ORDERED that the investigation by the Bureau of the matters noted above ARE TERMINATED.

8. IT IS FURTHER ORDERED that copies of this Order shall be sent, by First Class and Certified Mail, Return Receipt Requested, to counsel for CSN, Cary S. Tepper, Esq., Tepper Law Firm, LLC, 4900 Auburn Avenue, Suite 100, Bethesda, MD 20814.

FEDERAL COMMUNICATIONS COMMISSION

Albert Shuldiner
Chief, Audio Division
Media Bureau

[1] 47 CFR § 1.17.

[2] Application File Nos. 0000197399, *et. seq*. (filed Aug. 11, 2022), 0000194181, *et. seq*. (filed June 30, 2022), 0000202702 (filed Oct. 20, 2022).

[3] 47 U.S.C. § 154(i).

[4] 47 CFR §§ 0.61, 0.283.

Before the
Federal Communications Commission
Washington, D.C. 20554

In re Applications of	)	NAL/Acct. No. MB-202341410005
	)	FRN: 0006395925
Fresh Life Church, Inc. (Assignor)	)	Application File No. 0000197399, *et. seq.*
CSN International, Inc. (Assignee)	)	
	)	
For Consent to Assignment of Broadcast Station Licenses	)	
	)	
and	)	
	)	
Calvary Chapel Pearl Harbor (Assignor)	)	Application File No. 0000194181, *et. seq.*
CSN International, Inc. (Assignee)	)	
	)	
For Consent to Assignment of Broadcast Station Licenses	)	
	)	
and	)	
	)	
Spirit Communications, Inc. (Assignor)	)	Application File No. 0000202702
CSN International, Inc. (Assignee)	)	
	)	
For Consent to Assignment of FM Translator Station K270AF, Grover City, California	)	
	)	
and	)	
	)	
CSN International, Inc. (Old Board) (Transferor)	)	Application File Nos. 0000205167, *et. seq.*,
CSN International, Inc. (New Board) (Transferee)	)	0000213714, *et. seq.*
	)	
For Consent to Transfer of Control	)	

CONSENT DECREE

I. INTRODUCTION

1. This Consent Decree is entered into by and between the Media Bureau (Bureau) of the Federal Communications Commission and CSN International, Inc. (CSN), for the purpose of terminating the Bureau's investigation into CSN's compliance with section 1.17 of the Commission's rules (Rules) in connection with the above-captioned assignment and transfer of control applications.[1] To resolve these matters, CSN agrees to pay a civil penalty of $10,000.

[1] 47 CFR § 1.17.

II. DEFINITIONS

2. For purposes of this Consent Decree, the following definitions shall apply:

(a) "Act" means the Communications Act of 1934, as amended, 47 U.S.C. § 151 *et. seq.*;

(b) "Adopting Order" means the order of the Bureau adopting this Consent Decree;

(c) "Assignment Applications" means the FCC Form 2100, Schedule 314 applications for consent to assignment of broadcast station licenses, Application File Nos. 0000197399 *et. seq.*, 0000194181 *et. seq.*, and 0000202702;

(d) "Bureau" means the Media Bureau of the Federal Communications Commission;

(e) "Civil Penalty" means the payment CSN has agreed to pay to the United States Treasury;

(f) "Commission" or "FCC" means the Federal Communications Commission and all of its bureaus and offices;

(g) "CSN" means CSN International, Inc.;

(h) "Effective Date" means the date on which the Bureau releases the Adopting Order;

(i) "Investigation" means the Bureau's investigation of the information contained in the Assignment and Transfer Applications, as detailed herein;

(j) "Parties" mean CSN and the Bureau, each of which is a "Party";

(k) "Rules" mean the FCC's rules, found in Title 47 of the Code of Federal Regulations;

(l) "Transfer Applications" means the FCC Form 2100, Schedule 315 applications for consent to transfer of control, Application File Nos. 0000205167, *et. seq.*, and 0000213714 *et. seq.*;

(m) "Violations" means CSN's failure to disclose on the Assignment Applications, as originally filed, and previous applications that CSN had not reported all of its governing board members as parties to the applications, contrary to its certifications on each application that all statements made in the application were complete, in violation section 1.17 of the Rules.

III. BACKGROUND

3. Section 1.17 of the Rules states that no person may provide, in any written statement of fact, "material factual information that is incorrect or omit material information that is necessary to prevent any material factual statement that is made from being incorrect or misleading without a reasonable basis for believing that any such material factual statement is correct and not misleading."[2] Even absent an intent to deceive, a false statement may constitute an actionable violation of Section 1.17 if it is submitted without a reasonable basis for believing that the statement is correct and not misleading.[3]

4. Among other things, the broadcast non pro forma assignment of license application forms and instructions require the disclosure of information about the proposed assignee and all parties to the

[2] *See* 47 CFR § 1.17.

[3] *See Amendment of Section 1.17 of the Commission's Rules Concerning Truthful Statements to the Commission,* Report and Order, 18 FCC Rcd 4016, 4017, para. 5 (2003) (subsequent history omitted).

application.[4] For an entity such as CSN, which is not a for-profit corporation, partnership, or limited liability company, each executive officer, member of the governing board, and owner or holder of 5% or more of the votes in the applicant is considered a party to the application.[5]

5. On each of the Assignment Applications, CSN listed only the members of the governing board's executive committee as parties to the application but did not disclose that it was doing so.[6] In each case CSN certified that it answered each question on the application based on its review of the application instructions, that the application satisfied each of the pertinent standards and criteria set forth in the application instructions, and that all statements made in the application were true, complete, correct, and made in good faith.[7] Because CSN did not disclose that it reported only some of its governing board members, its certifications that all statements made in the applications were complete was false.[8] Only after Commission staff inquired about the accuracy of the information did CSN disclose that it had not reported some members of its governing board, contrary to its representations on the Assignment Applications, and that it had also done so on previous applications.[9] CSN then filed the pending Transfer Applications for its existing stations and amended the Assignment Applications to report all the members of its governing board.

6. The Bureau and CSN have negotiated the terms of this Consent Decree that terminates the Investigation into the matters discussed above. As part of this Consent decree, CSN agrees to make a Civil Penalty payment of ten thousand dollars ($10,000) to the U.S. Treasury.

IV. TERMS OF AGREEMENT

7. **Adopting Order**. The provisions of this Consent Decree shall be incorporated by the Bureau in an Adopting Order.

8. **Jurisdiction**. CSN agrees that the Bureau has jurisdiction over it and the matters contained in this Consent Decree and the authority to enter into and adopt this Consent Decree.

9. **Effective Date; Violations**. The Parties agree that this Consent Decree shall become effective on the Effective Date as defined herein. Upon the Effective Date, the Adopting Order and this Consent Decree shall have the same force and effect as any other order of the Commission. CSN agrees that it is required to comply with each individual condition of this Consent Decree. Each specific condition is a separate condition of the Consent Decree as approved. Any violation of the Adopting Order or the terms of this Consent Decree shall constitute a separate violation of a Commission order, entitling the Commission to exercise any rights and remedies attendant to enforcement of a Commission order.

10. **Termination of Investigation**. In express reliance on the covenants and representations in this Consent Decree and to avoid further expenditure of public resources, the Bureau agrees to terminate the Investigation. In consideration for the termination of the Investigation, CSN agrees to the terms, conditions, and procedures contained herein.

11. The Bureau further agrees that, in the absence of new material evidence, it will not use the Violations or the existence of this Consent Decree in any action against CSN concerning the matters

[4] *See* Instructions to FCC Form 2100, Schedule 314 at 13-14; Instructions to FCC Form 2100, Schedule 345 at 18-20.

[5] *Id.*

[6] *See* Assignment Applications.

[7] *Id.*

[8] *See* 47 CFR § 1.17.

[9] *See* Assignment Applications.

that were the subject of the Investigation, provided that CSN satisfies all of its obligations under this Consent Decree. In the event that CSN fails to satisfy any obligations under this Consent Decree, the Bureau may take any enforcement action available pursuant to the Act and the Rules with respect to each Violation, and/or the violation of this Consent Decree.

12. **Admission of Liability**. CSN stipulates for purposes of this Consent Decree that it violated section 1.17 of the Rules by failing to disclose on the Assignment Applications, as originally filed, and previous applications that CSN had not reported all of its governing board members as parties to the applications, contrary to its certification on each application that all statements made in the application were complete. CSN acknowledges that the Commission or its delegated authority may consider CSN's admission of liability in this Consent Decree in proposing any future forfeiture against CSN in the event that CSN is determined to have apparently committed a violation of the Act, the Rules, or of any orders of the Commission after the Effective Date, whether related to the accuracy of CSN's application certifications or otherwise.

13. **Civil Penalty**. CSN agrees to make the Civil Penalty payment to the United States Treasury in the amount of Ten Thousand Dollars ($10,000), within thirty (30) calendar days of the Effective Date. CSN acknowledges and agrees that upon execution of this Consent Decree, the Civil Penalty shall become a "Claim" or "Debt" as defined in Section 3701(b)(1) of the Debt Collection Improvement Act of 1996.[10]

14. **Payment**. CSN shall send electronic notification of payment of the Civil Penalty to Joseph Cohen at Joseph.Cohen@fcc.gov and Christopher Clark at Christopher.Clark@fcc.gov on the date said payment is made. Payment of the Civil Penalty must be made by credit card, ACH (Automated Clearing House) debit from a bank account using CORES (the Commission's online payment system),[11] or by wire transfer. The Commission no longer accepts Civil Penalty payments by check or money order. Below are instructions that payors should follow based on the form of payment selected:[12]

- Payment by wire transfer must be made to ABA Number 021030004, receiving bank TREAS/NYC, and Account Number 27000001. A completed Form 159 must be faxed to the Federal Communications Commission at 202-418-2843 or e-mailed to RROGWireFaxes@fcc.gov on the same business day the wire transfer is initiated. Failure to provide all required information in Form 159 may result in payment not being recognized as having been received. When completing FCC Form 159, enter the Account Number in block number 23A (call sign/other ID), enter the letters "FORF" in block number 24A (payment type code), and enter in block number 11 the FRN(s) captioned above (Payor FRN).[13] For additional detail and wire transfer instructions, go to https://www.fcc.gov/licensing-databases/fees/wire-transfer.
- Payment by credit card must be made by using the Commission's Registration System (CORES) at https://apps.fcc.gov/cores/userLogin.do. To pay by credit card, log-in using the FCC Username associated to the FRN captioned above. If payment must be split across FRNs, complete this process for each FRN. Next, select "Manage Existing FRNs | FRN Financial | Bills & Fees" from the CORES Menu, then select FRN Financial and the view/make payments option next to the FRN. Select the "Open Bills" tab and find the bill number associated with the NAL/Acct. No. The bill number is the NAL Acct. No. (e.g.,

[10] Debt Collection Improvement Act of 1996, Pub. L. No. 104-134, 110 Stat. 1321, 1358 (Apr. 26, 1996).

[11] Payments made using CORES do not require the submission of an FCC Form 159.

[12] For questions regarding payment procedures, please contact the Financial Operations Group Help Desk by phone at 1-877-480-3201 (option #6), or by e-mail at ARINQUIRIES@fcc.gov.

[13] Instructions for completing the form may be obtained at http://www.fcc.gov/Forms/Form159/159.pdf.

NAL/Acct. No. 1912345678 would be associated with FCC Bill Number 1912345678). After selecting the bill for payment, choose the "Pay by Credit Card" option. Please note that there is a $24,999.99 limit on credit card transactions.

- Payment by ACH must be made by using the Commission's Registration System (CORES) at https://apps.fcc.gov/cores/paymentFrnLogin.do. To pay by ACH, log in using the FRN captioned above. If payment must be split across FRNs, complete this process for each FRN. Next, select "Manage Existing FRNs | FRN Financial | Bills & Fees" on the CORES Menu, then select FRN Financial and the view/make payments option next to the FRN. Select the "Open Bills" tab and find the bill number associated with the NAL/Acct. No. The bill number is the NAL/Acct. No. (e.g., NAL/Acct. No. 1912345678 would be associated with FCC Bill Number 1912345678). Finally, choose the "Pay from Bank Account" option. Please contact the appropriate financial institution to confirm the correct Routing Number and the correct account number from which payment will be made and verify with that financial institution that the designated account has authorization to accept ACH transactions.

15. **Qualifications; Agreement to Grant**. The Bureau finds that its Investigation raises no substantial and material questions of fact as to whether CSN possesses the basic qualifications, including those relating to character, to hold a Commission license or authorization. Accordingly, the Bureau agrees to grant the Assignment and Transfer Applications after the Effective Date, provided that the following conditions have been met: 1) the Civil Penalty payment, referenced in paragraph 13 of this Decree, has been fully and timely satisfied; and 2) there are no issues other than the Violations that would preclude grant of the Assignment and Transfer Applications.

16. **Waivers**. CSN agrees to waive any and all rights it may have to seek administrative or judicial reconsideration, review, appeal, or stay, or to otherwise challenge the validity of this Consent Decree and the Adopting Order, provided the Consent Decree is adopted without change, addition or modification. If any Party (or the United States on behalf of the Commission) brings a judicial action to enforce the terms of the Consent Decree or Adopting Order, no Party will contest the validity of the Consent Decree or Adopting Order, and CSN will waive any statutory right to a *trial de novo*. CSN further agrees to waive any claims they may otherwise have under the Equal Access to Justice Act, 5 U.S.C. Section 504 and Section 1.1501 *et. seq.* of the Rules relating to the Consent Decree or Adopting Order.

17. **Severability**. The Parties agree that if a court of competent jurisdiction renders any of the provisions of this Consent Decree unenforceable, such unenforceability shall not render unenforceable the Consent Decree, but rather the entire Consent Decree shall be construed as if not containing the particular unenforceable provision or provisions, and the rights and obligations of the Parties shall be construed and enforced accordingly.

18. **Invalidity**. In the event that this Consent Decree in its entirety is rendered invalid by any court of competent jurisdiction, it will become null and void and may not be used in any manner in any legal proceeding.

19. **Subsequent Rule or Order**. The Parties agree that if any provision of this Consent Decree conflicts with any subsequent Rule or Order adopted by the Commission (except an order specifically intended to revise the terms of this Consent Decree to which CSN does not expressly consent), such provision will be superseded by such Rule or Order.

20. **Successors and Assigns**. CSN agrees that the provisions of this Consent Decree shall be binding on its successors, assigns, and transferees.

21. **Final Settlement.** The Parties agree and acknowledge that this Consent Decree shall constitute a final settlement between the Parties with respect to the Investigation.

22. **Modifications**. This Consent Decree cannot be modified or amended without the advance written consent of all Parties.

23. **Paragraph Headings**. The headings of the paragraphs in this Consent Decree are inserted for convenience only and are not intended to affect the meaning or interpretation of this Consent Decree.

24. **Authorized Representative**. Each Party represents and warrants to the other Party that it has full power and authority to enter into this Consent Decree. Each person signing this Consent Decree on behalf of a Party hereby represents that he or she is fully authorized by the Party to execute this Consent Decree and to bind the Party to its terms and conditions.

25. **Counterparts**. This Consent Decree may be signed in counterpart (including electronically or by facsimile). Each counterpart, when executed and delivered, shall be an original, and all of the counterparts together shall constitute one and the same fully executed instrument.

MEDIA BUREAU
FEDERAL COMMUNICATIONS COMMISSION



By: _____
Albert Shuldiner, Chief, Audio Division

Date: 4/14/23

CSN INTERNATIONAL, INC.

By: _____
Michael Kestler, President

Date: _____

DocuSign Envelope ID: 05D6EC33-1C26-4E98-8F07-A6D5AB22D4EC

22. **Modifications**. This Consent Decree cannot be modified or amended without the advance written consent of all Parties.

23. **Paragraph Headings**. The headings of the paragraphs in this Consent Decree are inserted for convenience only and are not intended to affect the meaning or interpretation of this Consent Decree.

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25. **Counterparts**. This Consent Decree may be signed in counterpart (including electronically or by facsimile). Each counterpart, when executed and delivered, shall be an original, and all of the counterparts together shall constitute one and the same fully executed instrument.

MEDIA BUREAU
FEDERAL COMMUNICATIONS COMMISSION

By: _____
Albert Shuldiner, Chief, Audio Division

Date: _____

CSN INTERNATIONAL, INC.

DocuSigned by:
By: _____
7ADE0402F609420...
Michael Kestler, President

4/14/2023
Date: _____

APPENDIX

I. **Authorizations Subject to Assignments**

a. From Fresh Life Church, Inc. (Assignor) to CSN International, Inc. (Assignee)

Call Sign	Service	Facility ID	City, State	File Number
KYWH	FM	93512	LOCKWOOD, MT	0000197399
K296EM	FX	71835	BILLINGS, MT	0000197400

b. From Calvary Chapel Pearl Harbor (Assignor) to CSN International, Inc. (Assignee)

Call Sign	Service	Facility ID	City, State	File Number
NEW	FM	767430	HOODSPORT, WA	0000194181
NEW	FM	767224	MOUNT LAGUNA, CA	0000194182
NEW	FM	767193	SOLEDAD, CA	0000194183
NEW	FM	767423	MOSES LAKE, WA	0000194184

c. From Spirit Communications, Inc. (Assignor) to CSN International, Inc. (Assignee)

Call Sign	Service	Facility ID	City, State	File Number
K270AF	FX	83335	GROVER CITY, CA	0000202702

II. **Authorizations Subject to Transfers**

a. CSN International, Inc. (Licensee) From CSN International, Inc. (Old Board) (Transferor) to CSN International, Inc. (New Board) (Transferee), Application File No. 0000213714, *et. seq.*

Call Sign	Service	Facility ID	City, State	File Number
NEW	FM	775505	PALMER, AK	0000213714
NEW	FM	775563	AUKE BAY, AK	0000213715
NEW	FM	775824	NORTH POLE, AK	0000213716
NEW	FM	776330	NORTH POLE, AK	0000213717

b. CSN International, Inc. (Licensee) From CSN International, Inc. (Old Board) (Transferor) to CSN International, Inc. (New Board) (Transferee), Application File No. 0000205167, *et. seq.*

Call Sign	Service	Facility ID	City, State	File Number
KAWZ	FM	8414	TWIN FALLS, ID	0000205167
K214CT	FX	84432	MARIPOSA, CA	0000205168
K204EU	FX	92229	ELKO, NV	0000205169
W208BA	FX	12407	MYRTLE BEACH, SC	0000205170
K210DY	FX	93402	BLACK CANYON CITY, AZ	0000205171
K211FE	FX	92263	WINNEMUCCA, NV	0000205172

K216EH	FX	91971	COLTON, OR	0000205173
W213BY	FX	92936	HUNTSVILLE, AL	0000205174
W218BV	FX	77975	WAYNESBORO, MS	0000205175
K206CY	FX	122262	POCATELLO, ID	0000205176
K211DS	FX	92772	PARIS, TX	0000205177
K210DP	FX	79206	COOS BAY, OR	0000205178
K240CD	FX	71988	SOQUEL, ETC., CA	0000205179
K218DN	FX	88253	GALLATIN GATEWAY, ET, MT	0000205180
K218DE	FX	92689	JONESBORO, AR	0000205181
K205DM	FX	92498	GLIDE, OR	0000205182
KWCF	FM	90842	SHERIDAN, WY	0000205183
KQXI	FM	170239	GRANITE FALLS, WA	0000205184
K258AP	FX	93836	WHITEFISH, MT	0000205185
K271AR	FX	143727	COOS BAY, OR	0000205186
WGWS	FM	172973	ST. MARY'S CITY, MD	0000205187
W224CP	FX	138593	HIGH POINT, NC	0000205188
K214ET	FX	77025	SAN LUIS OBISPO, CA	0000205189
K219LN	FX	93799	KERNVILLE, CA	0000205190
K220HI	FX	92437	CLARKSTON, UT	0000205191
K202CC	FX	77062	PROVO, UT	0000205192
K288BO	FX	72012	PASO ROBLES, CA	0000205193
K215CW	FX	92312	GLENDIVE, MT	0000205194
W211AY	FX	77607	MENOMONIE, WI	0000205195
K210CN	FX	92022	BELLINGHAM, WA	0000205196
K212GA	FX	92087	EVANSTON, WY	0000205197
K206CX	FX	122263	AMMON, ID	0000205198
K201FG	FX	92314	CULBERTSON, MT	0000205199
W207CH	FX	92864	BLUE RIDGE, GA	0000205200
K212FS	FX	91592	KIHEI, HI	0000205201
K208FS	FX	92436	FORT MORGAN, CO	0000205202
K202ED	FX	86755	MOUNT VERNON, WA	0000205203
KIPA	AM	33324	HILO, HI	0000205204
K212FW	FX	8437	JOPLIN, MO	0000205205
K298AF	FX	72000	SHASTA, CA	0000205206
KIMW	FM	191575	HEFLIN, LA	0000205207
KCIF	FM	81518	HILO, HI	0000205208
K252CK	FX	71995	SALINAS, CA	0000205209
K205DT	FX	94146	INDIO, CA	0000205210
K201FO	FX	92353	JENNINGS, LA	0000205211
KTJC	FM	92487	KELSO, WA	0000205212

K220HG	FX	92319	ELKO, NV	0000205213
W291AN	FX	87017	EDEN, NC	0000205214
KTYJ-LP	LPA	15648	COEUR D'ALENE, ID	0000205215
K218CE	FX	76660	MARSHALLTOWN, IA	0000205216
K220II	FX	122157	LAKEVIEW, OR	0000205217
K208FE	FX	79216	TOPEKA, KS	0000205218
W258BT	FX	92941	PERRYSBURG, OH	0000205219
K272DV	FX	87429	MOUNTAIN HOME, ID	0000205220
K201FD	FX	92132	FORKS, WA	0000205221
K212EY	FX	85364	SANDPOINT, ID	0000205222
K258BV	FX	121882	KETCHUM/HAILEY, ID	0000205223
K275AL	FX	150758	DENHAM SPRINGS, LA	0000205224
K208FD	FX	92600	ELK CITY, OK	0000205225
K215EQ	FX	71998	LOMPOC, CA	0000205226
K201FF	FX	92129	WINNEMUCCA, NV	0000205227
WIFF	FM	2868	WINDSOR, NY	0000205228
W204CD	FX	92766	PANAMA CITY, FL	0000205229
K206EG	FX	77537	PORTALES, NM	0000205230
K218CP	FX	90737	SANTA BARBARA, CA	0000205231
W219CX	FX	94033	RICHMOND, VA	0000205232
K271CJ	FX	72007	SCOTIA, CA	0000205233
K255CW	FX	93794	BILLINGS, MT	0000205234
W214BN	FX	93156	MALBIS, AL	0000205235
K212DK	FX	92870	WESTWOOD, CA	0000205236
K266BJ	FX	122265	BURLEY, ID	0000205237
K204ES	FX	92001	BRAINERD, MN	0000205238
W228BE	FX	138597	WINSTON SALEM, NC	0000205239
K202EH	FX	90256	GOLD BEACH, OR	0000205240
K264CG	FX	142426	FERNLEY, NV	0000205241
K266BK	FX	91845	MISSOULA, MT	0000205242
K214ED	FX	91104	BAKERSFIELD, CA	0000205243
K273AI	FX	93257	ARIEL, WA	0000205244
K218DP	FX	90439	CAVE JUNCTION, OR	0000205245
K204DN	FX	92655	PARAGOULD, AR	0000205246
W218CU	FX	91309	CARO, MI	0000205247
K205CK	FX	8419	GRAND JUNCTION, CO	0000205248
K212DG	FX	91956	BUSHLAND, TX	0000205249
K257GV	FX	203183	HILO, HI	0000205250

W207CG	FX	140701	BOWLING GREEN, KY	0000205251
K206EJ	FX	86906	KAILUA KONA, HI	0000205252
K204DT	FX	93707	ROGERSVILLE, MO	0000205253
KBJF	FM	174640	SARATOGA SPRINGS, UT	0000205254
K278AR	FX	143030	MOSCOW, ID	0000205255
K209CY	FX	90667	BLYTHE, CA	0000205256
WSMA	FM	122202	SCITUATE, MA	0000205257
K297BH	FX	91872	MOUNT VERNON, WA	0000205258
K262AI	FX	76791	LARAMIE, WY	0000205259
KLWD	FM	84184	GILLETTE, WY	0000205260
K272EY	FX	92542	CHICKASHA, OK	0000205261
W244CD	FX	88246	BROWNS SUMMIT, NC	0000205262
KPIJ	FM	92491	JUNCTION CITY, OR	0000205263
K221DV	FX	92815	KAMILCHE, WA	0000205264
K288DR	FX	72006	DESERT HOT SPRINGS,, CA	0000205265
W204BK	FX	92654	SHERWOOD, WI	0000205266
K237GK	FX	56806	DORRIS, CA	0000205267
W224BS	FX	140013	ROANOKE, VA	0000205268
K201FW	FX	93377	LOS GATOS, CA	0000205269
K204EQ	FX	92597	WOODWARD, OK	0000205270
K215CX	FX	92320	LOVELOCK, NV	0000205271
K267AJ	FX	91890	MT. SHASTA, CA	0000205272
W206AY	FX	91849	FRUITLAND, MD	0000205273
W220EH	FX	93847	GAINESVILLE, GA	0000205274
KEFS	FM	122934	NORTH POWDER, OR	0000205275
K273AJ	FX	91973	ELWOOD, OR	0000205276
K228ED	FX	154989	THERMOPOLIS, WY	0000205277
K210EV	FX	91412	PINE GROVE, CA	0000205278
K292FF	FX	138666	TERRELL WELLS, TX	0000205279
K219KQ	FX	91357	PAYSON, AZ	0000205280
W225AJ	FX	138636	SANDY, SC	0000205281
W205BJ	FX	89524	CHARLESTON, SC	0000205282
K201IH	FX	91413	NAPA, CA	0000205283
W201DM	FX	122159	WOODSTOCK, GA	0000205284
K218DU	FX	8434	RIDGECREST, CA	0000205285
K218ER	FX	92798	BERLIN, OK	0000205286
K214EL	FX	78529	HOLBROOK, AZ	0000205287
W237DR	FX	87024	MARTINSVILLE, VA	0000205288
K203EU	FX	77282	HUTCHINSON, KS	0000205289

K206DF	FX	91893	TALMAGE, CA	0000205290
K297BD	FX	91810	GREENWATER, WA	0000205291
W203BH	FX	78537	MACON, GA	0000205292
K201IP	FX	92423	STERLING, CO	0000205293
K220FY	FX	77127	SITKA, AK	0000205294
K205EK	FX	8422	SUSANVILLE, CA	0000205295
K220IJ	FX	92420	YUMA, CO	0000205296
K238AY	FX	142325	RIO LINDA, CA	0000205297
W214AR	FX	78019	OSWEGO, NY	0000205298
K265EY	FX	86881	CASCADE, ID	0000205299
K228DU	FX	143019	CLARKSTON, WA	0000205300
K201DH	FX	77128	PENDLETON, OR	0000205301
K204DX	FX	91767	SAN ANTONIO, TX	0000205302
K289AK	FX	142691	ORTING, WA	0000205303
K216FI	FX	77051	HONOLULU, HI	0000205304
K209FR	FX	92651	ABERDEEN, SD	0000205305
K218CX	FX	92020	YAKIMA, WA	0000205306
W296DI	FX	138690	SENECA FALLS, NY	0000205307
K237EW	FX	150763	PORT ALLEN, LA	0000205308
K205EG	FX	91527	THE DALLES, OR	0000205309
K207ER	FX	91484	BURNEY, CA	0000205310
K256DI	FX	200925	SEBREE, ID	0000205311
K213FA	FX	93953	GRAND RAPIDS, MN	0000205312
W207CD	FX	8423	HAMLER, OH	0000205313
K216FA	FX	93062	QUARTZ HILL, CA	0000205314
K216FR	FX	92560	CLINTON, OK	0000205315
K218EV	FX	93262	BATTLE MOUNTAIN, NV	0000205316
K204CZ	FX	88517	KENNEWICK, WA	0000205317
K200AA	FX	83363	SUN VALLEY, NV	0000205318
K207CE	FX	78615	COTTONWOOD, CA	0000205319
K281BO	FX	92863	CLIFTON, AZ	0000205320
KJFT	FM	93587	ARLEE, MT	0000205321
W206AR	FX	82785	FLORENCE, SC	0000205322
K220GI	FX	86642	CAMP VERDE, AZ	0000205323
K218DF	FX	106582	CLE ELUM, WA	0000205324
W207CE	FX	78766	KEY WEST, FL	0000205325
K209FO	FX	89649	OLYMPIA, WA	0000205326
K201HB	FX	92767	ABERDEEN, SD	0000205327
W285DI	FX	2869	BINGHAMTON, NY	0000205328
K259AU	FX	139416	STOCKTON, CA	0000205329
KLKI	FM	90917	DOLAN SPRINGS, AZ	0000205330
K201EN	FX	89734	EVERETT, WA	0000205331

W219DN	FX	122820	ELIZABETH CITY, NC	0000205332
K216CX	FX	8425	YUCCA VALLEY, CA	0000205333
W201CF	FX	91284	BALDWIN, MI	0000205334
K216DG	FX	77115	KETCHIKAN, AK	0000205335
K206ET	FX	85652	GRANGEVILLE, ID	0000205336
K211DC	FX	78969	LAS VEGAS, NV	0000205337
K217FX	FX	87699	GROOM CREEK, AZ	0000205338
W204BP	FX	91966	EAU CLAIRE, WI	0000205339
K202DT	FX	91875	CANYONVILLE, OR	0000205340
K212GF	FX	79364	LAS CRUCES, NM	0000205341
K212AK	FX	72002	CORVALLIS, OR	0000205342
K206CI	FX	92796	MOORELAND, OK	0000205343
K208DH	FX	91129	AMARILLO, TX	0000205344
K276EO	FX	139145	MERLIN, OR	0000205345
KEFX	FM	8432	TWIN FALLS, ID	0000205346
K220KA	FX	121236	KERRVILLE, TX	0000205347
K205EJ	FX	92074	CHESTER, CA	0000205348
KKJA	FM	92285	REDMOND, OR	0000205349
W204CP	FX	106487	WESTPORT, KY	0000205350
K217GG	FX	92797	KALAOA, HI	0000205351
W215BE	FX	92421	DIBERVILLE/BILOXI, MS	0000205352
K207DJ	FX	106681	LAKE ISABELLA, CA	0000205353
K211FZ	FX	92021	AUSTIN, TX	0000205354
K279AK	FX	151518	GRANGER, WA	0000205355
KNGW	FM	176566	JUNEAU, AK	0000205356
K206BW	FX	82219	ADEL, IA	0000205357
K215FK	FX	8420	SPARKS, NV	0000205358
W220CD	FX	90071	ENKA, NC	0000205359
K210EN	FX	83977	JOSHUA TREE, CA	0000205360
K217DN	FX	93087	RIEPETOWN/ELY, NV	0000205361
K204DQ	FX	93158	WICHITA, KS	0000205362
K204DK	FX	92862	CHICO, CA	0000205363
W224BC	FX	138589	BURLINGTON, NC	0000205364
K214CM	FX	77106	ROSEBURG, OR	0000205365
W214BQ	FX	93256	BRENTWOOD, TN	0000205366
K220JU	FX	89823	NAMPA, ID	0000205367
W219BY	FX	88245	MOUNT OLIVE, NC	0000205368
K201FP	FX	92559	ARAPAHO, OK	0000205369
W213BP	FX	89379	SOUTH PORTSMOUTH, KY	0000205370
K207CW	FX	92540	PARIS, AR	0000205371

K260AN	FX	143010	CLARKSTON, WA	0000205372
KJCC	FM	122517	CARNEGIE, OK	0000205373
K216FQ	FX	71984	SANTA MARIA, CA	0000205374
K279BV	FX	92958	JOHNSTONVILLE, CA	0000205375
K206DM	FX	87314	BREMERTON, WA	0000205376
K285EW	FX	72004	SAN LUIS OBISPO, CA	0000205377
K256BQ	FX	77116	BRANSON, MO	0000205378
K201HS	FX	155135	WORLAND, WY	0000205379
K208FX	FX	88141	TWISP, WA	0000205380
W201CC	FX	91293	BUFORD, GA	0000205381
KOGJ	FM	174802	KENAI, AK	0000205382
K238AL	FX	139540	REEDSPORT, OR	0000205383
K223BC	FX	148441	NACHES, WA	0000205384
W238DB	FX	200906	TAZEWELL, VA	0000205385
K217DR	FX	93680	GRANGEVILLE, ID	0000205386
K217GC	FX	92311	NEVADA, MO	0000205387
K203DP	FX	122156	ARGENTA, NV	0000205388
K219LD	FX	122160	RAPID CITY, SD	0000205389
W246AS	FX	141241	OLYMPIA, SC	0000205390
K218FK	FX	91003	HAPPY CAMP, CA	0000205391
W203BG	FX	12403	CONWAY, SC	0000205392
W218BX	FX	89261	BLUFFTON, SC	0000205393
K207DQ	FX	93077	FLORENCE, OR	0000205394
K277BW	FX	82391	RENO, NV	0000205395
W216BW	FX	93906	HAMBURG, IN	0000205396
KGNR	FM	37433	JOHN DAY, OR	0000205397
W288CI	FX	141076	NASHVILLE, TN	0000205398
K207CP	FX	89733	SOUTH LAKE TAHOE, NV	0000205399
NEW	FM	775565	SITKA, AK	0000205400
K268AS	FX	141013	BOZEMAN, MT	0000205401
K258AR	FX	139549	CLOVERDALE, OR	0000205402
W213BE	FX	93159	SNELLVILLE, GA	0000205403
K212EJ	FX	76658	SCOTTSBLUFF, NE	0000205404
KTBJ	FM	76989	FESTUS, MO	0000205405
K220HE	FX	91974	CHEHALIS, WA	0000205406
K203CQ	FX	77061	TOOELE, UT	0000205407
K202DS	FX	91288	PORT ANGELES, WA	0000205408
K216DF	FX	77070	KODIAK, AK	0000205409
W204BW	FX	8424	GULF BREEZE, FL	0000205410
W201CH	FX	92801	S. CHARLESTON, SC	0000205411
KGDL	FM	171016	TRENT, TX	0000205412

W236AL	FX	138590	SUMMERFIELD, NC	0000205413
K251BI	FX	151108	BELLEVUE, CA	0000205414
W217BL	FX	93157	JACKSONVILLE, FL	0000205415
K211DD	FX	76687	YUMA, AZ	0000205416
K260BT	FX	154792	RAPID CITY, SD	0000205417
K214EM	FX	92762	DURANT, OK	0000205418
W298BL	FX	93658	THOMASVILLE, GA	0000205419
W213CB	FX	93954	COVINGTON, KY	0000205420
W203BO	FX	77055	ATHENS, GA	0000205421
K271BH	FX	8429	PINETOP, AZ	0000205422
K208EY	FX	86506	WENATCHEE, WA	0000205423
W205CM	FX	92411	MANITOWOC, WI	0000205424
K294CV	FX	89202	POWELL BUTTE, OR	0000205425
K224CV	FX	139387	CASCADE, ID	0000205426
WUJC	FM	122209	ST. MARKS, FL	0000205427
W283AW	FX	140901	TALLAHASSEE, FL	0000205428
W203AY	FX	91393	GOLDEN LAKES, FL	0000205429
W215CE	FX	77342	CAPE MAY, NJ	0000205430
W214AY	FX	89602	WALKER, MI	0000205431
KQDL	FM	174458	HINES, OR	0000205432
K215FN	FX	121782	DES MOINES, IA	0000205433
W209BM	FX	93795	DE PERE, WI	0000205434
K256AN	FX	139380	MCCALL, ID	0000205435
K212EK	FX	76689	VICTORVILLE, CA	0000205436
WYJC	FM	122010	GREENVILLE, FL	0000205437
K203ER	FX	143013	CLARKSTON, WA	0000205438
W203BY	FX	77535	WARNER ROBINS, GA	0000205439
K212EO	FX	76809	EL PASO, TX	0000205440
K254BF	FX	92350	OROVILLE, CA	0000205441
K207DS	FX	92759	WISTER, OK	0000205442
K207EI	FX	78541	EMPORIA, KS	0000205443
K212BD	FX	8427	BARSTOW, CA	0000205444
K202EJ	FX	93021	WELLSVILLE, UT	0000205445
K279AL	FX	150752	BATON ROUGE, LA	0000205446
K220EU	FX	21099	ERWINVILLE, LA	0000205447
K215EG	FX	85731	GALLUP, NM	0000205448
W274AM	FX	157478	LOUISVILLE, KY	0000205449
K218EU	FX	92260	NORTH SAN JUAN, CA	0000205450
K215EH	FX	89650	KAILUA, HI	0000205451
K272DX	FX	142323	GRASS VALLEY, CA	0000205452
K201DP	FX	82787	ST. GEORGE, UT	0000205453

W215CF	FX	78733	MILLEDGEVILLE, GA	0000205454
K247AQ	FX	139138	ASHLAND, OR	0000205455
K249AQ	FX	71986	SAN ARDO & BRADLEY, CA	0000205456
K206DW	FX	92602	CRESTON, IA	0000205457
K266BG	FX	93289	EDMOND, OK	0000205458
K201FQ	FX	92769	HILO, HI	0000205459
K220IN	FX	121763	PORTLAND, OR	0000205460
K212DJ	FX	92163	CLEARLAKE, CA	0000205461
KDJC	FM	121839	BAKER, OR	0000205462
W206AT	FX	76657	SAVANNAH, GA	0000205463
K288FT	FX	138942	PORTLAND, OR	0000205464
K208DS	FX	92825	CHEROKEE, IA	0000205465
K205EB	FX	122260	LANAI CITY, HI	0000205466
K204DM	FX	92613	YREKA, CA	0000205467
K254AR	FX	88576	TRUCKEE, CA	0000205468
K212DB	FX	90750	MOSES LAKE, WA	0000205469
K215DX	FX	91591	ROUND MOUNTAIN, NV	0000205470
K201FJ	FX	92315	WILLISTON, ND	0000205471
K206DH	FX	88571	WINSLOW, AZ	0000205472
K201CW	FX	8431	MOAB, UT	0000205473
K220IA	FX	106581	MAPLE CREEK, CA	0000205474
K201DV	FX	77718	BROOKINGS, OR	0000205475
K204ET	FX	77003	ABERDEEN, WA	0000205476
WKQY	FM	64665	TAZEWELL, VA	0000205477
K212DQ	FX	122154	LAKEVIEW, OR	0000205478
W218CM	FX	92761	GLASGOW, KY	0000205479
K201IN	FX	78524	HAMILTON, MT	0000205480
W287DO	FX	138655	LEBANON, TN	0000205481
W220CC	FX	89016	JOHNSONVILLE, TN	0000205482
W273AJ	FX	138669	ATHENS, AL	0000205483
K249EW	FX	56805	SHASTA, CA	0000205484
W209CI	FX	94040	BINGHAMTON, NY	0000205485
K213DX	FX	92774	HINES, OR	0000205486
K216FU	FX	92615	ISLAND CITY, OR	0000205487
K220JV	FX	71991	BYRON, CA	0000205488
K212GE	FX	78522	LIHUE, HI	0000205489
K205CJ	FX	37440	PRAIRIE CITY, OR	0000205490
K275BW	FX	93040	SEQUIM, WA	0000205491
K205DF	FX	89775	ENUMCLAW, WA	0000205492
K213CK	FX	88127	MONTROSE, CO	0000205493

K217EM	FX	93793	BILLINGS, MT	0000205494
WXPD	FM	766380	WHEATFIELD, IN	0000205495
K295BS	FX	92678	BENTONVILLE, AR	0000205496
K280BK	FX	71989	SELMA, OR	0000205497
K206DL	FX	92481	GRANITE FALLS/EVERET, WA	0000205498
K272AY	FX	71987	CRESCENT CITY, CA	0000205499
KWYC	FM	87267	CHEYENNE, WY	0000205500
K208ET	FX	93152	TONOPAH, NV	0000205501
K216AX	FX	71971	LAUREL, CA	0000205502
K220HT	FX	93218	ST. LOUIS, MO	0000205503
K217EQ	FX	78540	COALINGA, CA	0000205504
K201FX	FX	93759	RENO, TX	0000205505
K234AL	FX	151436	SONORA, CA	0000205506
K216GJ	FX	78527	HELENA, MT	0000205507
W207BA	FX	89658	HAMMETT, PA	0000205508
K217FM	FX	92763	NORFOLK, NE	0000205509
K213CQ	FX	89166	SALT LAKE CITY, UT	0000205510
KHJC	FM	81138	LIHUE, HI	0000205511
W214CE	FX	91287	GREENVILLE, SC	0000205512
K220GL	FX	87709	PLEASANTON, TX	0000205513
KJCU	FM	87930	FORT BRAGG, CA	0000205514
W204AL	FX	12405	KINGSTREE, SC	0000205515
K204DO	FX	92518	PINE BLUFF, AR	0000205516
KAWS	FM	8417	MARSING, ID	0000205517
W229AH	FX	139248	EASTPORT, FL	0000205518
K220JS	FX	88130	ONTARIO, OR	0000205519
K220JY	FX	76817	ODESSA, TX	0000205520
K296BS	FX	71972	MEDFORD, OR	0000205521
KGFJ	FM	172645	BELT, MT	0000205522
W220BX	FX	88126	YORK, PA	0000205523
W205BY	FX	88320	LEXINGTON, NC	0000205524
K219LS	FX	72005	GARBERVILLE, CA	0000205525
K246BB	FX	139146	KENO, OR	0000205526
K258CE	FX	157551	FORT SMITH, AR	0000205527
K212DF	FX	91892	RED BLUFF, CA	0000205528
K206CJ	FX	91156	ISSAQUAH, WA	0000205529
K240AK	FX	71978	SOLEDAD, CA	0000205530
K208CG	FX	76176	OKLAHOMA CITY, OK	0000205531
K222BH	FX	78965	ST. JOSEPH, MO	0000205532
K259CA	FX	88496	CALIENTE, CA	0000205533
K220JX	FX	91843	MISSOULA, MT	0000205534

K209FQ	FX	91130	SHELTON, WA	0000205535
K211FH	FX	92828	SHELTON, WA	0000205536
K213DT	FX	106679	KERRVILLE, TX	0000205537
KNMA	FM	122932	TULAROSA, NM	0000205538
K220IR	FX	77019	LEWISTON, CA	0000205539
K239AC	FX	81218	GARDEN CITY, ID	0000205540
K220GJ	FX	87499	BORREGO SPRINGS, CA	0000205541
K223AM	FX	106680	WELLS, NV	0000205542
KWRC	FM	90500	HERMOSA, SD	0000205543
WWUN-FM	FM	16523	FRIAR'S POINT, MS	0000205544
K201EY	FX	91808	KALISPELL, MT	0000205545
KJCH	FM	90263	COOS BAY, OR	0000205546
K204FR	FX	92131	LOVELOCK, NV	0000205547
W207BQ	FX	91844	COLUMBIA, SC	0000205548
K214EE	FX	91850	YANKEE HILL, CA	0000205549
K206EH	FX	122005	SPRAGUE RIVER, OR	0000205550
K213EH	FX	92826	CHICO, CA	0000205551
K218CF	FX	78621	NEW BRAUNFELS, TX	0000205552
KVJC	FM	91804	GLOBE, AZ	0000205553
KLWL	FM	176981	CHILLICOTHE, MO	0000205554
K212FQ	FX	153118	SALMON, ID	0000205555
K238AJ	FX	138679	HAYFORK, CA	0000205556
K220JW	FX	122267	LAS VEGAS, NV	0000205557
K201FK	FX	92415	BURLINGTON, CO	0000205558
K201IQ	FX	42935	FERGUS FALLS, MN	0000205559
W203AZ	FX	92786	CHATTANOOGA, TN	0000205560
K217GE	FX	91593	KIHEI, HI	0000205561
W219DU	FX	92893	BRUNSWICK, GA	0000205562
K267BM	FX	90378	LANGLOIS, OR	0000205563
W213BI	FX	77110	DECATUR, IL	0000205564
K210DS	FX	92634	BROOKINGS, OR	0000205565
K217DG	FX	92133	RAWLINS, WY	0000205566
K201ES	FX	90670	RIPLEY/BLYTHE, CA	0000205567
K201IS	FX	91871	RINCON, CA	0000205568
K206CL	FX	92352	CHINOOK, WA	0000205569
K295CG	FX	8435	GREAT FALLS, MT	0000205570
K203EB	FX	78619	FARMINGTON, NM	0000205571
K220IK	FX	92414	LIMON, CO	0000205572
KMHI	AM	72657	MOUNTAIN HOME, ID	0000205573
W211BV	FX	141234	LEXINGTON, SC	0000205574

K207CT	FX	91286	LAKEHEAD, CA	0000205575
W204BH	FX	92374	BOONES MILL, VA	0000205576
K275BO	FX	72001	LAS CRUCES, CA	0000205577
W216BX	FX	92626	BENTON HARBOR, MI	0000205578
K209EV	FX	92768	HADAR, NE	0000205579
K211EI	FX	92416	LAMAR, CO	0000205580
K210DL	FX	93333	APPLE VALLEY, CA	0000205581
W218CV	FX	93601	FREDERICKSBURG, VA	0000205582
W206BO	FX	122915	DICKSON, TN	0000205583
K217GD	FX	142345	MARYSVILLE, CA	0000205584
K220JK	FX	88872	GARDENDALE, TX	0000205585
K202DV	FX	92023	BELLINGHAM, WA	0000205586
K213EA	FX	88509	ROSWELL, NM	0000205587
K201FN	FX	92539	DICKINSON, ND	0000205588
K208EK	FX	92264	PARSONS, KS	0000205589
K203EF	FX	92538	MOUNT VERNON, IL	0000205590
K213EU	FX	88124	FAYETTEVILLE, AR	0000205591
K220HX	FX	93753	FRANKLIN, NE	0000205592
K266BI	FX	93878	POLSON, MT	0000205593
K225AV	FX	139993	MIDLAND, TX	0000205594
KGSF	FM	92987	HUNTSVILLE, AR	0000205595
K213CF	FX	82789	GRANTS PASS, OR	0000205596
KCNU	FM	198794	SILVER CITY, ID	0000205597
K276EF	FX	89084	SAN BERNARDINO, CA	0000205598
KJCF	FM	106475	ASOTIN, WA	0000205599
K260AO	FX	139371	MCCALL, ID	0000205600
K259AK	FX	86398	CARSON CITY, NV	0000205601
K229AF	FX	71997	EUREKA, CA	0000205602
K253CC	FX	142401	RED BLUFF, CA	0000205603

PUBLIC NOTICE

Federal Communications Commission
45 L Street, NE
Washington, D.C. 20554

News Media Information 202 / 418-0500
Internet: http://www.fcc.gov

DA 23-326
Released: April 14, 2023

COMMENTS INVITED ON SECTION 214 APPLICATION(S) TO DISCONTINUE DOMESTIC NON-DOMINANT CARRIER TELECOMMUNICATIONS SERVICES

WC Docket No(s). 23-69

Comments Due: May 1, 2023

Unless otherwise specified, the following procedures and dates apply to the application(s) (the Section 214 Discontinuance Application(s)) listed in the Appendix.

The Wireline Competition Bureau (Bureau), upon initial review, has found the Section 214 Discontinuance Application(s) listed herein to be acceptable for filing and subject to the procedures set forth in Section 63.71 of the Commission's rules.[1] The application(s) request authority, under section 214 of the Communications Act of 1934, as amended,[2] and section 63.71 of the Commission's rules,[3] to discontinue, reduce, or impair certain domestic telecommunications service(s) (Affected Service(s)) in specified geographic areas (Service Area(s)) as applicable and as fully described in each application.

In accordance with section 63.71(f) of the Commission's rules, the Section 214 Discontinuance Application(s) listed in the Appendix will be deemed granted automatically on **May 15, 2023**, the 31st day after the release date of this public notice, unless the Commission notifies any applicant(s) that their grant will not be automatically effective.[4] We note that the date on which an application for Commission authorization is deemed granted may be different from the date on which applicants are authorized to discontinue, reduce, or impair service ("Authorized Date"). Any applicant whose application has been deemed granted may discontinue, reduce or impair their Affected Service(s) in their Service Area(s) on or after the authorized date(s) specified in the Appendix, in accordance with their filed representations. Accordingly, pursuant to section 63.71(f), and the terms outlined in each application, absent further Commission action, each applicant may discontinue, reduce or impair the Affected Service(s) in the Service Area(s) described in their application on or after the authorized discontinuance date(s) listed in the Appendix for that application. For purposes of computation of time when filing a petition for reconsideration, application for review, or petition for judicial review of the Commission's decision(s), the date of "public notice" shall be the later of the auto grant date stated above in this Public Notice, or the release date(s) of any further public notice(s) or order(s) announcing final Commission action, as

[1] 47 CFR § 63.71.

[2] 47 U.S.C. § 214.

[3] 47 CFR § 63.71.

[4] *See* 47 CFR § 63.71(f) (stating, in relevant part, that an application filed by a non-dominant carrier "shall be automatically granted on the 31st day… unless the Commission has notified the applicant that the grant will not be automatically effective.").

applicable. Should no petitions for reconsideration, applications for review, or petitions for judicial review be timely filed, the proceeding(s) listed in this Public Notice shall be terminated, and the docket(s) will be closed.

Comments objecting to any of the applications listed in the Appendix must be filed with the Commission on or before **May 1, 2023**.[5] Comments should refer to the specific WC Docket No. and Comp. Pol. File No. listed in the Appendix for the particular Section 214 Discontinuance Application that the commenter intends to address. Comments should include specific information about the impact of the proposed discontinuance on the commenter, including any inability to acquire reasonable substitute service. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies.[6] Comments may be filed electronically using the Internet by accessing the ECFS: http://apps.fcc.gov/ecfs. Filers should follow the instructions provided on the Web site for submitting comments. Generally, only one copy of an electronic submission must be filed. In completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and the applicable docket number.

Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit one additional copy for each additional docket or rulemaking number associated with the proceeding in which they choose to file comments. Filings can be sent by commercial overnight courier or by first-class or overnight U.S. Postal Service mail.[7] All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701. U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington, D.C. 20554.

Copies of the comments may also be emailed to the Competition Policy Division, Wireline Competition Bureau, Federal Communications Commission, using the contact information listed in the Appendix for the appropriate Section 214 Application. In addition, comments should be served upon the Applicant(s).

These proceedings are considered "permit but disclose" proceedings for purposes of the Commission's *ex parte* rules.[8] Participants should familiarize themselves with the Commission's *ex parte* rules. Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or

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[5] Comments are normally due 15 days after the Commission releases public notice of the proposed discontinuance. 47 CFR § 63.71(a). For purposes of computation of time, if the comment deadline falls on a weekend or officially recognized Federal legal holiday, however, comments will be due on the next business day. *See* 47 CFR § 1.4(e) and (j).

[6] *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

[7] Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Filing*, Public Notice, 35 FCC Rcd 2788 (OMD 2020), https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy.

[8] 47 CFR § 1.1200 *et seq*.

otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b).

People with Disabilities: We ask that requests for accommodations be made as soon as possible in order to allow the agency to satisfy such requests whenever possible. Send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at (202) 418-0530.

For further information, please see the contact(s) for the specific discontinuance proceeding you are interested in as listed in the Appendix. For further information on procedures regarding section 214 please visit https://www.fcc.gov/encyclopedia/domestic-section-214-discontinuance-service.

– FCC –

Appendix

1) **Applicant(s): TDS Metrocom, LLC**
WC Docket No. 23-69, Comp. Pol. File No. 1831
Link – https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2223-69%22))
Affected Service(s) – all retail voice and data services and DSL[9]
Service Area(s) – Illinois
Authorized Date(s) – on or after May 16, 2023
Contact(s) – Kimberly Jackson, (202) 418-7393 (voice), Kimberly.Jackson@fcc.gov, of the Competition Policy Division, Wireline Competition Bureau

[9] Only DSL service offered in whole or in part as a telecommunications service is currently subject to the section 214 discontinuance process.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules Governing Standards for Hearing Aid-Compatible Handsets	)	WT Docket No. 20-3

ORDER

Adopted: April 14, 2023 **Released: April 14, 2023**

By the Chief, Wireless Telecommunications Bureau:

I. INTRODUCTION

1. Today, we take action[1] to ensure that handset manufacturers can continue to release the newest handset models capable of achieving hearing aid compatibility by extending the technical standard transition period referenced in section 20.19(b) of our hearing aid compatibility rules by six months.[2] This provision requires that starting June 5, 2023, handset manufacturers must exclusively use the 2019 ANSI Standard for certifying new handset models as hearing aid-compatible and may no longer use the 2011 ANSI Standard for certification purposes.[3] We take this step to ensure that handset manufacturers can continue to certify new handset models with improved hearing aid compatibility features under the 2011 ANSI Standard while we consider a petition for waiver filed by ATIS to modify the 2019 ANSI Standard to allow handset models satisfying a reduced volume control testing methodology to be certified as hearing aid-compatible.[4] With this brief extension of time, we allow handset manufacturers to continue to use either the 2011 or the 2019 ANSI Standard to certify new handset models as hearing aid-compatible until December 5, 2023.[5] We expect that during this six month period handset manufacturers

[1] 47 CFR § 1.3.

[2] 47 CFR § 20.19(b).

[3] 47 CFR § 20.19(b). The 2019 ANSI Standard refers to the technical document entitled Accredited Standards Committee C63® - Electromagnetic Compatibility, *American National Standard Methods of Measurement of Compatibility Between Wireless Communications Devices and Hearing Aids*, ANSI C63.19-2019 (2019 ANSI Standard). The 2011 ANSI Standard refers to the technical document entitled Accredited Standards Committee C63® - Electromagnetic Compatibility, *American National Standard Methods of Measurement of Compatibility Between Wireless Communications Devices and Hearing Aids*, ANSI C63.19-2011 (2011 ANSI Standard). *See also* 47 CFR § 20.19(a), (l).

[4] Petition of ATIS on Behalf of the Covered Entities of the Hearing Aid Compatibility Task Force for Limited, Interim Waiver, WT Docket Nos. 15-285 and 20-3 (filed Dec. 16, 2022) (*ATIS Petition*). The covered entities of the Hearing Aid Compatibility Task Force include Apple, Inc.; AT&T; Competitive Carriers Association; Consumer Technology Association; CTIA; Google; Mobile & Wireless Forum; Samsung Research America; T-Mobile USA; Telecommunications Industry Association ("TIA"); Union Telephone Company; USCellular; and Verizon. *Id.* at 1 & n.1.

[5] Given that the testing and certification process can take over a month to complete, any handset models to be certified under the 2011 ANSI Standard will have to start and *complete* the entire certification process prior to December 5, 2023. *See* Federal Communications Commission, Office of Engineering and Technology Laboratory Division, *Equipment Authorization Guidance For Hearing Aid Compatibility* (Sept. 19, 2022) ("All Hearing Aid Compatibility (HAC) applicable grants of certification, including permissive changes, issued on or after June 5,

(continued….)

will abide by their commitment to include innovative new technologies in the handset models that they release which will benefit consumers, especially those with hearing loss. Continuing to allow new handset models to be certified as hearing aid-compatible is essential to moving towards the Commission's commitment to attaining 100% hearing aid-compatibility of covered wireless handsets, as soon as achievable.

II. BACKGROUND

2. The Commission's rules require handset manufacturers to ensure that at least 85% of the total number of handset models that they offer to consumers are hearing aid-compatible.[6] Handset models are considered hearing aid-compatible if they meet ANSI technical standards that the Commission has incorporated by reference into the hearing aid compatibility rules. In September 2019, the ANSI Committee[7] petitioned the Commission to replace the existing 2011 ANSI Standard that had been incorporated by reference into the Commission's rules with the 2019 ANSI Standard.[8] Both standards address acoustic and inductive coupling between wireless handsets and hearing aids,[9] but the 2019 ANSI Standard for the first time includes a volume control requirement.[10] This new standard specifically incorporates by reference the ANSI/TIA-5050:2018 volume control standard and requires handset models to meet this standard in order to be certified as hearing aid-compatible.[11]

3. On February 22, 2021, the Commission adopted the 2019 ANSI Standard and the related ANSI/TIA volume control standard.[12] The Commission noted that "[t]he 2019 ANSI Standard is broadly supported by both industry and consumer groups."[13] The Commission determined to make the 2019 ANSI Standard and the associated volume control requirement the exclusive testing standard for determining hearing aid compatibility after a two year transition period.[14] During the transition period,

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2023 must be compliant with ANSI C63.19-2019 and their supporting HAC test report(s) shall demonstrate compliance with ANSI C63.19-2019.").

[6] 47 CFR § 20.19(c)(1)(ii).

[7] The ANSI Committee refers to the Accredited Standards Committee C63®–Electromagnetic Compatibility, which is the accredited standards development organization whose working group, C63.19, is responsible for developing and maintaining ANSI C63.19-the wireless hearing aid compatibility standard. ANSI, Introduction to ANSI, https://www.ansi.org/about_ansi/introduction/introduction.aspx?menuid=1 (last visited Mar. 20, 2023).

[8] *See* Report and Petition of American National Standards Institute Accredited Standards Committee C63®, CG Docket No. 13-46, WT Docket Nos. 07-250 and 10-254, at 1 (filed Sept. 23, 2019).

[9] Hearing aids operating in acoustic coupling mode receive sounds through a microphone and then amplify all sounds surrounding the user, including both desired sounds, such as a telephone's audio signal, and unwanted ambient noise. To use a wireless handset with a hearing aid or cochlear implant in acoustic coupling mode, radiofrequency interference and other electromagnetic interference from the handset must be controlled. Hearing aids operating in inductive coupling mode turn off their microphone to avoid amplifying unwanted ambient noise, instead using a telecoil (T-Coil) to receive only audio signal-based magnetic fields generated by inductive coupling-capable telephones. The hearing aid converts these fields back to sound or to a signal appropriate for cochlear implant users.

[10] *Amendment of the Commission's Rules Governing Standards for Hearing Aid-Compatible Handsets*, WT Docket No. 20-3, Report and Order, 36 FCC Rcd 4566, 4568-569, para. 6 (2021) (*2021 HAC Order*).

[11] ANSI/TIA-5050:2018, *Telecommunications – Communications Products – Receive Volume Control Requirements for Wireless (Mobile) Devices* (approved Jan. 17, 2018) (*ANSI/TIA Volume Control Standard*); 47 CFR § 20.19(a), (l). The volume control requirement establishes a standard and testing methodology that uses conversation gain to measure the acoustic output level of speech from a handset relative to the acoustic level that would be present in a fact-to-face conversation with two people one meter apart. ANSI/TIA Volume Control Standard at 1.

[12] *2021 HAC Order*, 36 FCC Rcd 4566.

[13] *2021 HAC Order*, 36 FCC Rcd at 4567, para. 2.

[14] *2021 HAC Order*, 36 FCC Rcd at 4576, para. 22.

handset manufacturers may use either the 2011 or the 2019 ANSI Standard when certifying new handset models.[15] The Commission found that a two-year transition period was an appropriate length of time because it was consistent with past practice and took into consideration the typical handset industry product development cycle. The Commission noted that CTIA and Samsung, among others, supported a two-year transition period before requiring the exclusive use of the new testing standard.[16] The two-year transition period that the Commission adopted ends on June 5, 2023.[17] Without today's action, beginning on this date, handset models would only be certified as hearing aid-compatible using the new standard and the related volume control standard.

4. On December 16, 2022, ATIS filed a petition for waiver asking the Commission to allow wireless handsets to satisfy a reduced volume control testing methodology—instead of the full ANSI/TIA Volume Control Standard incorporated into the 2019 ANSI Standard—in order to be certified as hearing aid-compatible.[18] According to ATIS, handset manufacturers have discovered "significant and material problems with the methodology used for testing volume control"[19] that renders compliance with the 2019 ANSI Standard functionally impossible for handsets.[20] On March 23, 2023, the Wireless Telecommunications Bureau (Bureau) released a Public Notice seeking comment on ATIS's petition that establishes a 45-day comment period that closes on May 18, 2023.[21] The Public Notice seeks comment on the petition within the context of the Commission's commitment to attaining 100% hearing aid compatibility for all covered wireless handsets, as soon as achievable,[22] as well as the Commission's previous finding that a volume control requirement is necessary "to ensure the provision of effective telecommunications for people with hearing loss."[23]

5. Subsequently, on March 29, 2023, CTIA filed a letter with the Commission urging "the Commission to provide near-term relief in light of the flawed volume control testing methodology and upcoming exclusive use compliance date of June 5, 2023."[24] CTIA states that without action, the timing of the current comment cycle will likely alter the HAC-rated phone market.[25] Likewise, on April 5, 2023,

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[15] *2021 HAC Order*, 36 FCC Rcd at 4576, para. 22; 47 CFR § 20.19(b)(2).

[16] *2021 HAC Order*, 36 FCC Rcd at 4576, para. 22.

[17] 47 CFR § 20.19(b).

[18] *ATIS Petition* at 1-2.

[19] *ATIS Petition* at 3.

[20] *ATIS Petition* at 3-4.

[21] *Wireless Telecommunications Bureau Seeks Comment on ATIS Waiver Request on Behalf of the Covered Entities of the Hearing Aid Compatibility Task Force*, WT Docket No. 20-3, Public Notice, (rel. Mar. 23, 2023) (*ATIS Petition PN*); FCC, Notice; request for comments, 88 Fed. Reg. 19639 (Apr. 3, 2023) (establishing that comments are due on or before May 3, 2023 and reply comments are due on or before May 18, 2023).

[22] *See, e.g.*, *Improvements to Benchmarks and Related Requirements Governing Hearing Aid-Compatible Mobile Handsets*, WT Docket No. 15-285, Report and Order, 31 FCC Rcd 9336, 9337, 9345, paras. 4, 22 (2016); *2021 HAC Order*, 36 FCC Rcd at 4566, para. 1. Simultaneously with the release of the Public Notice seeking comment on ATIS's petition, the Bureau also released a Public Notice seeking comment on a report recently filed by the Hearing Aid Compatibility Task Force regarding its recommendations for achieving 100% hearing aid compatibility for wireless handsets. *Wireless Telecommunications Bureau Requests Comment on the Hearing Aid Compatibility Task Forces' Final Report and Recommendation*, WT Docket No. 15-285, Public Notice (rel. Mar. 23, 2023).

[23] *See Amendment of the Commission's Rules Governing Hearing Aid-Compatible Mobile Handsets*, WT Docket No. 07-250, Report and Order and Order on Reconsideration, 32 FCC Rcd 9063, 9073-074, para. 23 (2017) (*2017 HAC Report and Order*).

[24] Letter from Scott Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-3, at 1 (filed Mar. 29, 2023) (*CTIA Letter*).

[25] CTIA Letter at 2.

the ATIS Hearing Aid Compatibility Task Force (Task Force) filed a letter urging "the Commission to act to grant interim, near-term relief that enables new wireless handsets with improved or novel features for people with hearing loss to receive HAC ratings while the Commission considers the [ATIS] waiver request."[26] In its letter, the Task Force explains that "[h]andset testing takes several weeks, and therefore the FCC will not be able to resolve the Petition before covered entities must test phones in advance of the June 5, 2023 compliance date given the current comment cycle."[27]

III. DISCUSSION

6. Section 1.3 of the Commission's rules provides that the Commission may "on its own motion or on petition" suspend a rule "for good cause shown, in whole or in part, at any time."[28] The Commission may find that the "good cause shown" standard is met when: (1) "special circumstances warrant a deviation from the general rule" and (2) "such deviation will serve the public interest."[29] In this case, we find good cause to suspend the June 5, 2023 exclusive use transition date contained in section 20.19(b) of our rules for six months.

7. ATIS's petition and the subsequent letters filed by CTIA and the Task Force express significant concerns about the pending June 5 exclusive use date for the 2019 ANSI Standard. These filings demonstrate both that special circumstances warrant an extension of the transition period and that an extension of the exclusive use date will serve the public interest. First, ATIS's petition states that handset manufacturers have discovered "significant and material problems with the methodology used for testing volume control."[30] ATIS's petition states that there is a flaw in the existing volume control testing methodology that renders compliance with the standard functionally impossible and, as a result, compliance with the requirements of the 2019 ANSI Standard impossible.[31] ATIS asserts that we must act in order to ensure that new handset models can be certified as hearing aid-compatible after the exclusive use transition date passes. Without Commission action, ATIS states that handset manufacturers will only be able to release a limited number of new handset models, if any at all.[32] ATIS recognizes that the Commission's rules require handset manufacturers to ensure that 85% of the total number of handset models that they offer to the public are hearing aid-compatible. ATIS argues that the 85% deployment benchmark will limit the ability of handset manufacturers to release new handset models if they cannot certify new handset models as hearing aid-compatible. As such, the Bureau placed the petition on public notice to develop a record in order to fully consider the technical aspects and functional implications of ATIS's petition.

8. Further, CTIA and the Task Force urge the Commission to take immediate action and grant near-term relief while the record develops for ATIS's petition. CTIA asserts that the 2019 ANSI Standard's volume control testing methodology contains "insurmountable flaws" and without immediate Commission action the handset marketplace will be altered.[33] The Task Force states that "the volume control testing measures in the 2019 ANSI standard are unworkable."[34] According to these parties, after

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[26] Letter from Thomas Goode, General Counsel, ATIS, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-3, at 3 (filed Apr. 5, 2023) (*Task Force Letter*).

[27] Task Force Letter at 1 & n.1.

[28] 47 CFR § 1.3.

[29] *See, e.g.*, *Ne. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990); *see WAIT Radio v. FCC*, 418 F.2d 1153, 1157-59 (D.C. Cir. 1969) (*WAIT Radio*).

[30] *ATIS Petition* at 3.

[31] *ATIS Petition* at 3-4.

[32] *ATIS Petition* at 16.

[33] *CTIA Letter* at 1-2.

[34] *Task Force Letter* at 2.

the exclusive use transition date passes, handset manufacturers will not be able to certify new handset models as hearing aid-compatible and this will harm consumers with hearing loss because they may not consider purchasing new handset models that lack hearing aid compatibility certification—even though these new models might offer improved hearing aid compatibility features that better meet their needs.[35] This lack of certification, CTIA and the Task Force argue, will deprive consumers with hearing loss of the information that they need to make informed purchasing decisions.[36] Additionally, as explained in the Task Force's letter, handset testing takes several weeks, which would require the covered entities to begin testing new phones before the conclusion of the comment cycle for ATIS's Petition.[37]

9. Moreover, the Task Force, CTIA, and ATIS indicate that during the extended transition period, consumers with hearing loss will receive additional benefits in terms of advancements in hearing aid-compatible handsets. The Task Force states that "industry stakeholders will continue to roll out new, advanced wireless phones that have the latest features, including volume control while the Commission provides interim relief."[38] In addition, the Task Force states that during the period of interim relief, handset manufacturers "will continue to offer innovative coupling and volume control capabilities,"[39] and that handset manufacturers are committed to "continue to explore advanced solutions and offer innovative coupling and volume control capabilities, and improved audio quality while interim relief is in effect."[40] CTIA asserts that handset manufacturers already may be in the process of designing new handset models to meet certain aspects of the 2019 ANSI Standard.[41] CTIA indicates that these new handset models may provide for improved acoustic and T-Coil coupling between handsets and hearing aids, operate over a wider range of frequencies, and have volume control capabilities.[42] In its petition, ATIS stresses that new handset models are being designed to produce increased amplification, consistent with the Commission's goal for adopting volume control requirements.[43]

10. Based on the special circumstances outlined above, as well as the commitments made by the Task Force, CTIA, and ATIS that handset manufacturers will continue to improve coupling and volume control capabilities of new handset models during any interim relief, we find that granting this extension of six months to December 5, 2023 is in the public interest. During this six-month extension, handset manufacturers may continue to use either the 2011 or the 2019 ANSI Standards for certification. If a manufacturer chooses to use the 2019 ANSI Standard for certification, the submitted handset model must meet all aspects of the standard, including the volume control requirements, in order for the handset to be certified as hearing aid-compatible. Otherwise, new handset models must meet all aspects of the 2011 ANSI Standard in order to be certified as hearing aid-compatible. The 2011 ANSI Standard is a well-established and utilized standard for determining hearing aid compatibility and granting this extension permitting use of the standard for six months will ensure that new handset models will continue to be released to the public.[44]

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[35] *CTIA Letter* at 2; *Task Force Letter* at 2; *see also ATIS Petition* at 16.

[36] *CTIA Letter* at 2; *Task Force Letter* at 2.

[37] *Task Force Letter* at 1 n.1.

[38] *Task Force Letter* at 3.

[39] *Task Force Letter* at 1.

[40] *Task Force Letter* at 3.

[41] *CTIA Letter* at 2.

[42] *CTIA Letter* at 2.

[43] *ATIS Petition* at 4.

[44] In April of 2012, the Bureau and OET adopted the 2011 ANSI Standard as an alternative standard to use to certify new handset models as hearing aid-compatible. *Amendment of the Commission's Rules Governing Hearing Aid-Compatible Mobile Handsets*, WT Docket No. 07-250, Third Report and Order, 27 FCC Rcd 3732, 3735, para. 9 (continued….)

11. Our extension is consistent with the policy objective underlying our hearing aid compatibility rules. These rules are based on the principle that consumers with hearing loss should have the same access to the newest and most advanced handset models as consumers without hearing loss.[45] By extending the transition period, we ensure that in the coming months handset manufacturers will be able to release new handset models when they otherwise might not be able to because of the 85% hearing aid-compatible handset deployment benchmark. The extended transition period permits new handset models to be certified as hearing aid-compatible, which in turn ensures that consumers with hearing loss will have the opportunity to consider these handsets for their needs just like consumers without hearing loss. By granting this extension, we act to ensure that the handset marketplace will not be disrupted by certification issues and will continue to operate as it has during the existing two-year transition period.

12. Additionally, a six-month extension is the appropriate length of time to preserve the status quo pending resolution of the testing problems identified by ATIS. This extension gives the public time to fully review and comment on ATIS's petition, which will ensure that we have a complete record on which to assess the request. Further, given the complexity of the technical issues involved with ATIS's petition, we wish to ensure that members of the public have time to meet with us if they wish to express their views in *ex parte* presentations.[46] Thus, we agree with CTIA and the Task Force that granting interim relief serves the public interest because it will allow the record to develop in response to ATIS's petition.[47]

13. We are encouraged by the technological advancements that the Task Force, CTIA, and ATIS refer to in their filings and the commitment by handset manufacturers to continue to innovate and to include these innovations in new handset models released during the extended transition period. Consumers with hearing loss will benefit from these improvements, and we expect that handset manufacturers will incorporate these changes into new handset models released in the coming months. In addition, these commitments will bring us closer to the time when all handset models will be certified as hearing aid-compatible and consumers with hearing loss will be able to consider all handset models for their needs, including the newest and most technologically advanced models. We continue to strive toward our goal of 100% hearing aid compatibility in the near future and our decision to adopt a six month extension does not require us to adjust our time frame for making this decision. Our extension permits handset manufacturers to continue the process of certifying all of their handset models as hearing aid-compatible, as many of them do now.[48] These advancements support our decision to grant this brief extension and ensure that our action today is in the public interest.

14. For all of the above reasons, we find good cause to extend by six months the June 5, 2023 exclusive use transition date contained in section 20.19(b) of our hearing aid compatibility rules to December 5, 2023.

15. *Paperwork Reduction Act.* This document does not contain new or substantively modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection

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(WTB/OET 2012). In October 2017, the Commission made the 2011 ANSI Standard the exclusive testing standard for determining hearing aid compatibility. *2017 HAC Report and Order*, 32 FCC Rcd at 9085, para. 46 (2017).

[45] *Amendment of the Commission's Rules Governing Hearing Aid-Compatible Mobile Handsets*, WT Docket No. 07-250, Policy Statement and Second Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 11167, 11174, para. 18 (2010).

[46] *See ATIS Petition PN* at para. 20.

[47] *Task Force Letter* at 1, 2; *CTIA Letter* at 2 (stating that interim relief will "allow the record in response to the waiver public notice to develop in an orderly fashion").

[48] *See* FCC, Hearing Aid Compatibility Reports: Device Manufacturers Summary, Hearing Aid Compatibility Status Reporting, https://www.fcc.gov/wireless/systems-utilities/universal-licensing-system/hearing-aid-compatibility-status-reporting-1 (many handset manufacturers report 100% compliance).

burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4).

16. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that this rule is "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this Order to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

IV. ORDERING CLAUSE

17. Accordingly, IT IS ORDERED, pursuant to section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), and sections 0.331 and 1.3 of the Commission's rules, 47 CFR §§ 0.331 and 1.3, that the June 5, 2023 date included within section 20.19(b) is extended to December 5, 2023.

18. IT IS FURTHER ORDERED that the Office of the Managing Director, Performance Evaluation and Records Management, SHALL SEND a copy of this Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Joel Taubenblatt
Chief, Wireless Telecommunications Bureau

PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION
45 L STREET NE
WASHINGTON D.C. 20554

News media information 202-418-0500
Internet: http://www.fcc.gov (or ftp.fcc.gov)
TTY (202) 418-2555

DA No. 23-328

Report No. SAT-01717 **Friday April 14, 2023**

Satellite Licensing Division Information

Actions Taken

The Commission, by its Space Bureau or International Bureau, took the following actions pursuant to delegated authority. The effective date of these actions is the release date of this Notice, except where an effective date is specified.

SAT-LOA-20230411-00080 E S3169 Umbra Lab Inc
Launch and Operating Authority
Withdrawn Effective Date: 04/11/2023

Nature of Service: Earth Exploration Satellite Service

SAT-MOD-20230208-00025 E S3073 Capella Space Corp.
Modification
Withdrawn Effective Date: 04/11/2023

Nature of Service: Earth Exploration Satellite Service

SAT-PDR-20190321-00018 E S3045 Spire Global, Inc.
Petition for Declaratory Ruling
Granted in Part/ Deferred in Part Effective Date: 04/10/2023

Nature of Service: Earth Exploration Satellite Service, Other

On April 10, 2023, the International Bureau, Satellite Division granted in part, with conditions, the request of Spire Global, Inc. for U.S. market access to operate in the 399.9-400.05 MHz (Earth to-space) and 400.15-401 MHz (space-to-Earth) frequency bands. Specifically, the Satellite Division granted authority for four Spire satellites in the MINAS system (call sign S3045) identified by the following NORAD IDs to communicate with certain earth stations authorized for Myriota Pty. Ltd.: NORAD ID 52732, NORAD ID 52736, NORAD ID 55013, and NORAD ID 55038.

SAT-STA-20230330-00068 E S2387 Intelsat License LLC
Special Temporary Authority
Grant of Authority Effective Date: 04/10/2023

On April 10, 2023, the International Bureau, Satellite Division granted, with conditions, the request of Intelsat License LLC for special temporary authority, for a period of up to 30 days, to: (1) conduct telemetry, tracking, and command during operations to raise the Galaxy 15 satellite from the 108.9º W.L. orbital location to an altitude approximately 150 km above the geostationary arc, and during subsequent relocation of the satellite to a disposal orbit of at least 266.9 km above the geostationary arc; and (2) conduct testing at an altitude approximately 150 km above the geostationary arc.

SAT-STA-20230403-00069 E S2423 Intelsat License LLC

Special Temporary Authority

Grant of Authority Effective Date: 04/07/2023

On April 7, 2023, the International Bureau, Satellite Division granted, with conditions, the request of Intelsat License LLC, for special temporary authority, for a period of up to 30 days to: (1) operate Horizons 2 with a new bias of 1.0º E, 0.0º N and operate the East Coast North America V beam with the resulting new coverage area; and (2) continue to operate the North America Ku Beam with the coverage area previously authorized by special temporary authority.

SAT-T/C-20230213-00034 E Maxar License Inc.

Transfer of Control

Grant of Authority Effective Date: 04/13/2023

Current Licensee: Maxar License Inc.

FROM: Maxar Technologies Inc.

TO: Galileo Topco, Inc.

No. of Station(s) listed: 2

For more information concerning this Notice, contact the Satellite Licensing Division at (202) 418-0719.

PUBLIC NOTICE

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

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DA 23-329
Released: April 14, 2023

MEDIA BUREAU ANNOUNCES COMMENT AND REPLY COMMENT DEADLINES FOR THE LOW POWER PROTECTION ACT NPRM

MB Docket No. 23-126

Comment Date: May 15, 2023
Reply Comment Date: June 13, 2023

On March 30, 2023, the Commission released a *Notice of Proposed Rulemaking* (*NPRM*) implementing the Low Power Protection Act (LPPA), which provides certain low power television stations with a "limited window of opportunity" to apply for primary spectrum use status as Class A television stations.[1] The Commission set deadlines for filing comments and reply comments in response to the *NPRM* at 30 and 60 days, respectively, after publication of the *NPRM* in the Federal Register.[2]

A summary of the *NPRM* was published in the Federal Register on April 14, 2023.[3] Accordingly, comments will be due on or before May 15, 2023, and reply comments on or before June 13, 2023. Commenters should follow the filing instructions provided in paragraph 46 of the *NPRM*.[4] The *NPRM* is available on the Commission's website.[5]

For additional information, contact Kim Matthews, Kim.Matthews@fcc.gov, of the Policy Division, Media Bureau, (202) 418-2154, or Joyce Bernstein, Joyce.Bernstein@fcc.gov, of the Video Division, Media Bureau, (202) 418-1647.

- FCC -

[1] *Implementation of the Low Power Protection Act*, Notice of Proposed Rulemaking, MB Docket No. 23-126, FCC 23-23 (rel. March 30, 2023).

[2] *Id*. at 1.

[3] 88 FR 22980 (April 14, 2023).

[4] *See NPRM* at para. 46.

[5] *See* https://docs.fcc.gov/public/attachments/FCC-23-23A1.docx (Word); https://docs.fcc.gov/public/attachments/FCC-23-23A1.pdf (PDF).

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Triangle Communication System, Inc.	)	ULS File Nos. 0009485845; 0009485846
	)	0009485847; 0009485848; 0009485849
	)	
Northern Valley Communications, LLC	)	ULS File No. 0009804405
	)	
Request for Waiver of Interim Buildout Deadline Penalties	)	

ORDER

Adopted: April 14, 2023 **Released: April 14, 2023**

By the Chief, Broadband Division, Wireless Telecommunications Bureau:

I. INTRODUCTION

1. In this Order, we grant, in part, the requests for relief submitted by Triangle Communication System, Inc. ("Triangle")[1] and Northern Valley Communications, LLC ("NVC")[2] (collectively "the Companies") for failing to meet the interim construction deadlines for their AWS-3 licenses.[3] For the reasons discussed below, we find that the unique circumstances described by Triangle and NVC warrant waiving the penalties associated with section 27.14(s)(3) of the Commission's rules. As a result, the 12-year license term and final buildout deadline for the Companies' AWS-3 licenses at issue will not be accelerated.

II. BACKGROUND

2. In 2015, the Wireless Telecommunications Bureau (WTB) granted Triangle and NVC their AWS-3 licenses.[4] Under the AWS-3 licensing rules, a licensee must meet an interim buildout requirement in which the licensee must provide reliable signal coverage and offer service within six years

[1] *See* ULS File Nos. 0009485845, 0009485846, 0009485847, 0009485848, 0009485849; Attachment A: Request for Extension of Time to Meet Buildout Requirements, Triangle Communication System, Inc. (filed Apr. 7, 2021) (Triangle Extension Request); *see also* File Nos. 0009485845, 0009485846, 0009485847, 0009485848, 0009485849; Attachment A: Request for Waiver of Two Year License Term Penalty, Triangle Communication System, Inc. (filed Jan. 20, 2022) (Triangle Waiver Request).

[2] NVC originally filed its extension application and waiver request on November, 19, 2021. ULS File No. 0009804405, Request for Limited Waiver and Extension of Time (NVC Waiver Request, Nov. 19, 2021 filing). It subsequently amended its waiver request on October 28, 2022 (NVC Waiver Request, Oct. 28, 2022 filing), and November 7, 2022 (NVC Waiver Request, Nov. 7, 2022 filing).

[3] *See* 47 CFR § 27.14(s)(3).

[4] *See Wireless Telecommunications Bureau Grants AWS-3 Licenses in the 1755-1780 MHz AND 2155-2180 MHz Bands*, Public Notice, 30 FCC Rcd 2952 (WTB Apr. 8, 2015) (Call Signs WQVP460, WQVP461, WQVP462, WQVP463, and WQVP464); *Wireless Telecommunications Bureau Grants AWS-3 Licenses in the 1755-1780 MHz AND 2155-2180 MHz Bands*, Public Notice, 30 FCC Rcd 13325 (WTB Nov. 19, 2015) (Call Sign WQWU317).

from the date of the initial license to at least 40 percent of the population in each of its licensed areas.[5] In addition, a licensee must provide reliable signal coverage and offer service within 12 years from the date of the initial license to at least 75 percent of the population in each of its licensed areas.[6] If a licensee fails to meet the 40 percent interim buildout requirement, its license term and final buildout deadline to provide 75 percent coverage shall be accelerated from 12 to 10 years.[7]

3. *Supply Chain Proceeding.* Triangle and NVC, both recipients of Universal Service Fund (USF) funds, initially planned to build out their AWS-3 licenses using their existing Huawei core and accompanying network equipment.[8] In November 2019, the Commission adopted a rule to prospectively prohibit recipients from using USF funds "to purchase, obtain, maintain, improve, modify, or otherwise support any equipment or services produced or provided by any company posing a national security threat to the integrity of communications networks or the communications supply chain"[9] (covered companies), and initially designated Huawei Technologies Company (Huawei) and ZTE Corporation (ZTE) as covered companies for purposes of this rule.[10] In June 2020, the Public Safety and Homeland Security Bureau issued final designations of Huawei and ZTE as covered companies, effective immediately.[11]

4. In the *Supply Chain Second Report and Order*,[12] the Commission promulgated rules for the Secure and Trusted Communications Networks Reimbursement Program (Reimbursement Program) to reimburse eligible providers of advanced communications service—such as Triangle and NVC—for costs reasonably incurred in the removal, replacement, and disposal of communications equipment/services.[13] The *Supply Chain Third Report and Order*, adopted on July 13, 2021, amended the rules for the Reimbursement Program to be consistent with the 2021 Consolidated Appropriations Act, passed on December 27, 2020.[14] The Wireline Competition Bureau released a *Supply Chain Public Notice* on August 3, 2021, that provided final Reimbursement Program application procedures and reimbursement processes, a cost catalog, and replacement list.[15] The filing window for the

[5] *See* 47 CFR § 27.14(s)(1).

[6] *See* 47 CFR § 27.14(s)(2).

[7] *See* 47 CFR § 27.14(s)(3).

[8] Triangle Waiver Request at 1; NVC Waiver Request, Nov. 19, 2021 filing at 2.

[9] 47 CFR § 54.9(a).

[10] *See* 47 CFR § 54.9(b); *In the Matter of Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs,* WC Docket No. 18-89, Report and Order and Further Notice of Proposed Rulemaking and Order, 34 FCC Rcd 11423 (2019) (*Supply Chain Order* or *Supply Chain Further Notice*).

[11] *In the Matter of Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs – Huawei Designation*, PS Docket No. 19-351, Order, 35 FCC Rcd 6604, 6631 para. 63 (PSHSB 2020) (*Huawei Designation Order*); *In the Matter of Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs – ZTE Designation*, PS Docket No. 19-352, Order, 35 FCC Rcd 6633, 6646-47 para. 29 (PSHSB 2020).

[12] *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Second Report and Order, WC Docket 18-89, 35 FCC Rcd 14284 (rel. Dec. 11, 2020) (*Supply Chain Second Report and Order*).

[13] *See generally Supply Chain Second Report and Order.*

[14] *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Third Report and Order, WC Docket 18-89 (rel. July 14, 2021) (*Supply Chain Third Report and Order*); *see also* Pub. L. 116-260, Division N-Additional Coronavirus Response and Relief, Title IX-Broadband Internet access Service, §§ 901, 906, 134 Stat. 1182 (2020) (2021 Consolidated Appropriations Act or CAA).

[15] *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Public Notice, WC Docket 18-89 (rel. Aug. 3, 2021) (*Reimbursement Program Procedures Public Notice*). *See also*

(continued….)

Reimbursement Program opened on October 29, 2021, and closed on January 28, 2022.[16] Both Triangle and NVC[17] filed applications to participate in the Reimbursement Program, and their applications were granted in July 2022.[18]

5. *Triangle Request*. On April 7, 2021, Triangle submitted a request for extension of time to meet the interim construction requirement for each of its five AWS-3 licenses.[19] On January 20, 2022, Triangle amended its applications to submit the waiver request at issue in this *Order*.[20] In its request, Triangle notes that the "Huawei-related national security issues arose after Triangle had acquired the subject AWS3 licenses in April 2015 and those security issues arose many years after Triangle had already invested significant sums of money in securing and installing Huawei-based telecommunications core and related equipment and software."[21] Triangle states that the "[core] equipment of one manufacturer does not work with the transmission equipment produced by another manufacturer" and that its decision to invest a significant sum of money in securing and installing Huawei-based telecommunications equipment locks it into a manufacturer-based dependency.[22] Triangle seeks a waiver of the interim benchmark penalty, asserting that such a waiver "would not advantage Triangle over other licenses, but would ensure that Triangle had the same opportunity to meet the final buildout benchmark as other licensees who were not affected by the national security concern."[23] Triangle states that it "envisions that it can complete the 75% final AWS3 buildout with a waiver of the two year license term penalty rule."[24]

6. *NVC Request*. NVC filed its application for extension of time and initial waiver request on November 19, 2021, seeking a limited extension to meet the interim construction requirement for its AWS-3 license in South Dakota (BEA 114).[25] NVC notes that soon after it acquired its license, it ordered Radio Access Network ("RAN") equipment from Huawei "to deploy AWS-3 network infrastructure in BEA114, in order to deploy service and cover 40 percent of the population well in advance of its

(Continued from previous page)
Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs, Public Notice, WC Docket 18-89 (rel. Sept. 27, 2021) (*Reimbursement Program Filing Window Public Notice*) (announcing a Reimbursement Program filing window opening on October 29, 2021, and closing on January 14, 2022). The Wireline Competition Bureau later extended the Reimbursement filing window closing date to January 28, 2022. *See Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Order, WC Docket 18-89 (rel. Dec. 29, 2021) (*Reimbursement Program Extension Order*).

[16] *Reimbursement Program Filing Window Public Notice* at 1; *see also Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Order, WC Docket 18-89, DA 21-1648 (rel. Dec. 29, 2021) (extending the window closing date from January 14, 2022 to January 28, 2022).

[17] Northern Valley Communications, LLC is a wholly-owned subsidiary of James Valley Cooperative Telephone Company, which filed to participate in the Reimbursement Program.

[18] *See Wireline Competitive Bureau Announced the Grant of Applications for the Secure and Trusted Communications Networks Reimbursement Program*, WC Docket No. 18-89, Public Notice, DA 22-774, at Appendix (WCB, Jul. 18, 2022).

[19] *See generally* Triangle Extension Request. The subject AWS-3 licenses (WQVP460, WQVP461, WQVP462, WQVP463, and WQVP464) were granted on April 8, 2015.

[20] *See generally* Triangle Waiver Request.

[21] Triangle Waiver Request at 1.

[22] Triangle Waiver Request at 1.

[23] Triangle Waiver Request at 3.

[24] Triangle Waiver Request at 2.

[25] NVC Waiver Request at 1. NVC's AWS-3 license, WQWU317, was granted on November 19, 2015.

November 19, 2021 interim buildout deadline."[26] NVC explains that subsequent to its acquisition and installation of Huawei equipment in its service area, the Commission adopted the *Supply Chain Order*, causing NVC to "immediately suspend[] any further deployment of [Huawei] network infrastructure and equipment, including further AWS-3 deployment in its BEA114 area."[27] At its November 19, 2021 deadline, NVC indicated that it provided coverage to just over 35 percent of its license area.[28] On October 28, 2022, NVC filed a construction notification demonstrating 62.73 percent coverage within its license area, and amended its waiver request to seek an extension for the time period NVC required to meet its interim construction benchmark.[29] NVC subsequently amended its extension application on November 7, 2022.[30]

7. Triangle and NVC each seek a waiver of section 27.14(s) of the Commission's rules, with respect to the interim buildout requirements for their AWS-3 licenses. Specifically, Triangle seeks a waiver of the penalties imposed by section 27.14(s)(3) of the Commission's rules, which provides that if an AWS-3 licensee fails to meet the interim buildout requirement, its license term and final buildout deadline for each license area in which it fails to meet the interim buildout requirement shall be accelerated by two years (from twelve to ten years). NVC requests a limited waiver of Section 27.14(s)(1) of the Commission's rules to extend its deadline to allow for the additional time needed to meet its interim construction benchmark.[31] No petitions to deny or oppositions were filed against either request.

8. *Equipment Updates.* Since filing their respective waiver requests, both Triangle and NVC have provided updates to the Commission on their progress toward replacing their Huawei equipment as part of the Secure and Trusted Communications Networks Reimbursement Program.[32] Specifically, Triangle notes that it "ha[s] been engaged in the preparation and execution of a plan to install the new replacement equipment that will be used to replace like Huawei equipment" and that "installations are underway."[33] Triangle also notes, however, that "[f]inding experienced contractors and staff to perform the work required has been a real challenge."[34] NVC, through its wholly-owned parent, James Valley Cooperative Telephone Company, notes that it "has successfully installed almost all of the replacement equipment on all 27 sites, including replacing some towers that needed replacing due to structural capacity" but that "the deployment of the replacement equipment . . . took much longer than expected due to crew shortages, equipment supply chain issues, and technology compatibility difficulties."[35] In a subsequent update, James Valley notes that it is "still awaiting a handful of

[26] NVC Waiver Request, Nov. 19, 2021 filing at 1.

[27] NVC Waiver Request, Nov. 19, 2021 filing at 2.

[28] NVC Waiver Request, Nov. 19, 2021 filing at 4.

[29] ULS File No. 0010260011; NVC Waiver Request, Oct. 28, 2022 filing.

[30] NVC Waiver Request, Nov. 7, 2022 filing.

[31] NVC Waiver Request, Nov. 7, 2022 filing.

[32] *See* FCC, *Secure and Trusted Communications Networks Reimbursement Program – Status Updates*, https://www.fcc.gov/supplychain/reimbursement (last visited Mar. 1, 2023).

[33] *See* Triangle Communication Systems, Inc., Secure and Trusted Communications Networks Reimbursement Program Oct. 13, 2022 Status Update.

[34] *Id*.

[35] *See* James Valley Cooperative Telephone Company, Secure and Trusted Communications Networks Reimbursement Program Oct. 13, 2022 Status Update.

replacement equipment for multiple sites, which have been delayed for months due to supply chain issues."[36]

III. DISCUSSION

9. As described in more detail below, we find that the unique circumstances described by Triangle and NVC warrant a waiver of the penalties associated with section 27.14(s)(3) of the Commission's rules. A request for a waiver may be granted if it is shown that: (i) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest; or (ii) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.[37]

10. Here, we find that Triangle's and NVC's situation meet the second prong of the Commission's waiver standard because the unique circumstances in which the Companies found themselves would make application of the rule inequitable, and because the Companies had no reasonable alternative. When the Commission adopted the *Supply Chain* rules, it substantially altered the Companies' ability to build out their existing networks with Huawei equipment.[38] Not only would the Companies ultimately need to rip out and replace any newly-installed Huawei network equipment due to the *Supply Chain* restrictions, they could also face penalties if they could not prove to the Commission's satisfaction that they used non-USF funds to deploy that network.[39] Even prior to the Commission's adoption of these rules, Triangle stated that the regulatory uncertainty created by the *Supply Chain* proceeding created "a huge question mark" with respect to investments to build out their AWS-3 licenses.[40] In addition, the Companies stated that they were unable to invest resources in equipment from an alternative manufacturer because that equipment would not have been interoperable with their existing infrastructure.[41]

11. As Triangle notes, when it won its AWS-3 licenses at auction it "was locked into the Huawei equipment/services ecosystem" and believed that it could purchase Huawei equipment to build out its AWS-3 license areas using its Huawei core network.[42] To this end, Triangle states that it invested "significant sums of money in securing and installing Huawei-based telecommunications core and related

[36] *See* James Valley Cooperative Telephone Company, Secure and Trusted Communications Networks Reimbursement Program Jan. 11, 2023 Status Update.

[37] 47 CFR § 1.925(b)(3).

[38] Triangle Waiver Request at 1 ("The Huawei-related national security issues arose after Triangle had acquired the subject AWS3 licenses in April 2015 and those security issues arose many years after Triangle had already invested significant sums of money in securing and installing Huawei-based telecommunications core and related equipment and software."); NVC Waiver Request, Nov.19, 2021 filing at 2 ("But for the equipment replacement delays prompted by the national security issues and Commission response relating to Huawei equipment, NVC would have the coverage necessary to meet the Interim Buildout Requirement as of November 19, 2021.").

[39] 47 CFR § 54.9 (prohibiting use of Universal Service funds for covered equipment). *See also Supply Chain Order*, 34 FCC Rcd at 11452, para. 72. Although the rule does not prohibit USF recipients from using their own funds to purchase or obtain equipment or services from covered companies, the Commission stated that it "believe[s] it unlikely that many USF recipients will be able to show the detailed records necessary to demonstrate that no USF funds were used" and expressed skepticism "that any USF recipient seeking to use USF funds on an 'eligible' portion of such a project would will be able to establish with the necessary certainty." *Id.*

[40] Triangle Waiver Request at 2.

[41] *See* Triangle Waiver Request at 1; NVC Waiver Request, Nov. 19, 2021 filing at 2.

[42] Triangle Waiver Request at 2.

equipment and software."[43] Three years into Triangle's license term (and with three years remaining to meet its interim buildout requirement), however, the Commission initiated the *Supply Chain* proceeding, which significantly affected Triangle's ability to continue with its construction plans. Triangle indicates that "installations are underway"[44] but that "[f]inding experienced contractors and staff to perform the work required has been a real challenge."[45]

12. Similarly, NVC states that it was forced to suspend "any further deployment of its network infrastructure and equipment, as a result of the *Supply Chain* proceeding . . . [b]ecause non-Huawei equipment is not interoperable with Huawei equipment that NVC had already deployed."[46] In addition, NVC notes that it faced "lengthy delivery delays of the compliant equipment," and "the limited availability of tower crews during the construction season[.]"[47] NVC indicates that, as of October 28, 2022, it provides 62.73 percent coverage within its license area,[48] up from over 35 percent as of November 19, 2021.[49]

13. In view of these unique factual circumstances, we conclude that Triangle and NVC had no reasonable path to meet their AWS-3 interim construction requirements, and that imposing the penalties associated with missing the interim construction requirements would be inequitable in these unique circumstances.[50]

14. Further, granting Triangle and NVC relief in this instance is consistent with the Bureau's approach regarding other construction extension requests involving the *Supply Chain* proceeding.[51] In 2020, WTB partially granted Pine Cellular's request for an extension of time to meet its Tribal lands bidding credit (TLBC) construction requirement under similar circumstances, in which Pine Cellular used Huawei equipment for its core network.[52] Likewise, in 2021, the Bureau granted Northern Michigan University (NMU) a six-month extension to meet its construction deadline where NMU stated that its network used Huawei technology and it had not anticipated rules that would substantially alter its plans to build out its existing network when it licenses were granted.[53]

[43] Triangle Waiver Request at 1.

[44] *See* Triangle Communication Systems, Inc., Secure and Trusted Communications Networks Reimbursement Program Oct. 13, 2022 Status Update.

[45] *Id*.

[46] NVC Waiver Request, Nov. 19, 2021 filing at 2.

[47] NVC Waiver Request, Nov. 7, 2022 filing.

[48] NVC Waiver Request, Oct. 28, 2022 filing; ULS File No. 0010260011.

[49] NVC Waiver Request, Nov. 19, 2021 filing at 4.

[50] *See* 47 CFR § 1.925(b)(3)(ii).

[51] *Pine Cellular Phones, Inc. Further Limited Waiver and Extension of Time to Satisfy the Construction Requirement*, Order, ULS File No. 0009638398, DA 21-1553, (WTB BD 2021) (*Pine Cellular Further Order*); Pine Cellular Phones, Inc. Limited Waiver and Extension of Time to Satisfy the Construction Requirement, *Order*, ULS File No. 0009088322, 35 FCC Rcd 10677 (WTB BD 2020) (*Pine Cellular Order*).

[52] *See generally Pine Cellular Order*, 35 FCC Rcd 10677. Subsequently, WTB granted Pine Cellular a further one-year extension in 2021 because the Commission's implementation of the Reimbursement Fund was still ongoing. *Pine Cellular Further Order* at para. 14.

[53] *See* ULS File Nos. 0009467720 and 0009467747, Limited Waiver and Extension of Time to Satisfy the Construction Requirement, Northern Michigan University (filed Mar. 24, 2021).

15. Finally, granting the waiver will help ensure that equipment that could pose a national security risk is not introduced into the supply chain, even as the Companies remain obligated to provide the prescribed level of service by the final construction deadline.

16. For these reasons, we grant the Companies waivers of the penalty for failure to meet their interim construction deadlines, such that the license term and final buildout deadline for their AWS-3 licenses will remain the same, and will not be accelerated by two years.

IV. ORDERING CLAUSES

17. Accordingly, IT IS ORDERED, pursuant to Sections 4(i), 303(c), and 309(a) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(c), 309(a), and Section 1.925(b)(3) of the Commission's Rules, 47 CFR § 1.925(b)(3), that the waiver request filed by Triangle Communication System, Inc. on April 7, 2021, as amended, IS GRANTED, and Section 27.14(s)(3) of the Commission's rules IS WAIVED such that the license term and final buildout deadline for Call Signs WQVP460, WQVP461, WQVP462, WQVP463, and WQVP464 will remain April 8, 2027, and will not be accelerated by two years.

18. IT IS FURTHER ORDERED, pursuant to Sections 4(i), 303(c), and 309(a) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(c), 309(a), and Section 1.925(b)(3) of the Commission's Rules, 47 CFR § 1.925(b)(3), that the waiver request filed by Northern Valley Communications, LLC on November 19, 2021, as amended, IS GRANTED to the extent described herein, and Section 27.14(s)(3) of the Commission's rules IS WAIVED such that the license term and final buildout deadline for Call Sign WQWU317 will remain November 19, 2027, and will not be accelerated by two years.

19. IT IS FURTHER ORDERED, pursuant to Sections 4(i) and 309 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 309, and Section 27.14 of the Commission's rules, 47 CFR § 27.14, that the licensing staff of the Broadband Division SHALL PROCESS the applications filed by Triangle Communication System, Inc. and Northern Valley Communications, LLC in accordance with this *Order* and the Commission's rules and policies.

20. This action is taken under delegated authority pursuant to Sections 0.131 and 0.331 of the Commission's Rules, 47 CFR §§ 0.131, 0.331.

FEDERAL COMMUNICATIONS COMMISSION

Blaise A. Scinto
Chief, Broadband Division
Wireless Telecommunications Bureau

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Lingo Telecom, LLC	)	Complaint No. 6093592
	)	
Complaint Regarding	)	
Unauthorized Change of	)	
Subscriber's Telecommunications Carrier	)	

ORDER

Adopted: April 14, 2023 **Released: April 17, 2023**

By the Acting Chief, Consumer Policy Division, Consumer and Governmental Affairs Bureau:

1. In this Order, we consider a complaint alleging that Lingo Telecom, LLC (Lingo) changed Complainant's telecommunications service provider without obtaining authorization and verification from Complainant as required by the Commission's rules.[1] We find that Lingo has responded to Complainant's complaint and has taken action to resolve the complaint.

2. Section 258 of the Communications Act of 1934, as amended (the Act), prohibits the practice of "slamming," the submission or execution of an unauthorized change in a subscriber's selection of a provider of telephone exchange service or telephone toll service.[2] The Commission's implementing rules require, among other things, that a carrier receive individual subscriber consent before a carrier change may occur.[3] Specifically, a carrier must: (1) obtain the subscriber's written or electronically signed authorization in a format that satisfies our rules; (2) obtain confirmation from the subscriber via a toll-free number provided exclusively for the purpose of confirming orders electronically; or (3) utilize an appropriately qualified independent third party to verify the order.[4] The Commission has also adopted rules to limit the liability of subscribers when an unauthorized carrier change occurs, and to require carriers involved in slamming practices to compensate subscribers whose carriers were changed without authorization.[5]

3. We received Complainant's complaint alleging that Lingo had changed Complainant's telecommunications service provider without Complainant's authorization. Complainant states she never authorized the switch from her preferred provider to Lingo, and that when she received a bill from Lingo,

[1] *See* Informal Complaint No. 6093592 (filed Mar. 13, 2023); *see also* 47 CFR §§ 64.1100 – 64.1190.

[2] 47 U.S.C. § 258(a).

[3] *See* 47 CFR § 64.1120.

[4] *See id.* § 64.1120(c). Section 64.1130 details the requirements for letter of agency form and content for written or electronically signed authorizations. *Id.* § 64.1130.

[5] These rules require the unauthorized carrier to absolve the subscriber where the subscriber has not paid his or her bill. If the subscriber has not already paid charges to the unauthorized carrier, the subscriber is absolved of liability for charges imposed by the unauthorized carrier for service provided during the first 30 days after the unauthorized change. *See id.* §§ 64.1140, 64.1160. Any charges imposed by the unauthorized carrier on the subscriber for service provided after this 30-day period shall be paid by the subscriber to the authorized carrier at the rates the subscriber was paying to the authorized carrier at the time of the unauthorized change. *Id.* Where the subscriber has paid charges to the unauthorized carrier, the Commission's rules require that the unauthorized carrier pay 150 percent of those charges to the authorized carrier, and the authorized carrier shall refund or credit to the subscriber 50 percent of all charges paid by the subscriber to the unauthorized carrier. *See id.* §§ 64.1140, 64.1170.

she immediately called Lingo to inquire about the bill since her company was not "and never has been a customer of Lingo."[6]

4. Pursuant to our rules, we notified Lingo of the complaint.[7] Lingo responded and provided an electronic authorization form, which it said was signed by Complainant in June of 2022 for a three-year contract term.[8] Lingo also stated that Complainant contacted Lingo in July of 2022 to cancel service, but that the cancellation request was not processed correctly and thus, not completed until three months later in October 2022. Lingo therefore charged Complainant for four months of service and early termination fees.[9]

5. Based on all of the information provided by Lingo and Complainant, it appears that Lingo has fully absolved Complainant of all charges assessed by Lingo in a manner consistent with the Commission's liability rules.[10] We therefore find that the complaint referenced herein has been resolved.[11]

6. Accordingly, IT IS ORDERED that, pursuant to section 258 of the Communications Act of 1934, as amended, 47 U.S.C. § 258, and sections 0.141, 0.361 and 1.719 of the Commission's rules, 47 CFR §§ 0.141, 0.361, 1.719, the complaint filed against Lingo Telecom, LLC IS RESOLVED.

7. IT IS FURTHER ORDERED that this Order is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Kristi Thornton
Acting Chief
Consumer Policy Division
Consumer and Governmental Affairs Bureau

[6] *See* E-mail from Complainant to Consumer Policy Division, Consumer and Governmental Affairs Bureau (Apr. 13, 2023).

[7] 47 CFR § 1.719 (Commission procedure for informal complaints filed pursuant to section 258 of the Act); *id*. § 64.1150 (procedures for resolution of unauthorized changes in preferred carrier).

[8] *See* Lingo Response to Informal Complaint No. 6093592 (filed Apr. 13, 2023) (*Lingo Response*).

[9] Lingo billed Complainant $539.62 for charges incurred from July through October of 2022, and $2,143.35 in early termination fees. Lingo states, however, that Complainant will not be responsible for the disputed balance on the account and that the account will be "zeroed out." *See Lingo Response* at 1.

[10] *See id.*; *see also* 47 CFR § 64.1160.

[11] If Complainant is unsatisfied with the resolution of its complaint, Complainant may file a formal complaint with the Commission pursuant to section 1.721 of the Commission's rules, 47 CFR § 1.721. Such filing will be deemed to relate back to the filing date of Complainant's informal complaint so long as the formal complaint is filed within 45 days from the date this order is mailed or delivered electronically to Complainant. *See id.* § 1.719.

PUBLIC NOTICE

Federal Communications Commission
45 L St., N.E.
Washington, D.C. 20554

News Media Information 202 / 418-0500
Internet: http://www.fcc.gov
TTY: 1-888-835-5322

DA 23-332
Released: April 18, 2023

MEDIA BUREAU ANNOUNCES MAY 18, 2023 EFFECTIVE DATE OF REVISED DTS RULES FOR CLASS A AND LOW POWER TELEVISION BROADCAST STATIONS

MB Docket No. 20-74 and GN Docket No. 16-142

On January 19, 2021, the Commission released a Report and Order (*R&O*) in its proceeding to address technical issues that may impede the adoption of distributed transmission system (DTS) by a broadcast television station.[1] The *R&O* created new DTS rules for Class A television and low power television (LPTV) stations.[2] On April 7, 2023, the Office of Management and Budget (OMB) approved the form changes associated with the DTS rule changes for Class A television and LPTV stations.

By this *Public Notice*, the Media Bureau announces that summary of the *R&O*, including notice of the effective date for the rule changes applicable to Class A television and LPTV stations, was published in the *Federal Register* on April 18, 2023,[3] announcing that the effective date for these changes is May 18, 2023.[4]

For additional information on this proceeding, contact Kevin Harding, Kevin.Harding@fcc.gov, of the Media Bureau, Video Division. Press inquiries should be directed to Janice Wise, Janice.Wise@fcc.gov, (202) 418-8165.

--FCC--

[1] *Rules Governing the Use of Distributed Transmission System Technologies*, *Authorizing Permissive Use of the "Next Generation" Broadcast Television Standard*, MB Docket No. 20-74, GN Docket No. 16-142, Report and Order, 36 FCC Rcd 1227 (2021).

[2] The DTS rule changes for Class A television and LPT stations include adding paragraph (e) to section 73.6010, revising section 73.6023, and adding section 74.720 to subpart G of Part 74 of the Commission's rules.

[3] *Rules Governing the Use of Distributed Transmission System Technologies*, *Authorizing Permissive Use of the "Next Generation" Broadcast Television Standard*, 88 Fed. Reg. 23581 (Apr. 18, 2023).

[4] *Id*.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
ELKO TELEVISION DISTRICT	)	Facility ID Nos.: 129068, 129071, 129073, ,
	)	128758, 129150
Licensee of Stations K32GK-D, Elko, NV;	)	NAL/Acct. No.: 202341420017
K34HE-D, Elko, NV; K36HA-D, Elko, NV;	)	FRN: 0006952121
K35OI-D, Starr Valley, NV; K28PJ-D, Elko, NV	)	LMS File Nos. 201074, 201080
	)	

MEMORANDUM OPINION AND ORDER
AND
NOTICE OF APPARENT LIABILITY FOR FORFEITURE

Adopted: April 18, 2023 **Released: April 18, 2023**

By the Chief, Video Division, Media Bureau:

I. INTRODUCTION

1. The Media Bureau (Bureau) has before it the applications (Applications)[1] of Elko Television District (Licensee), for renewal of its license for Stations K32GK-D, Elko, NV; K34HE-D, Elko, NV; K36HA-D, Elko, NV; K35OI-D, Starr Valley, NV; and K28PJ-D, Elko, NV (Stations). In this *Memorandum Opinion and Order and Notice of Apparent Liability for Forfeiture* (*NAL*), we find the Licensee apparently willfully violated section 73.3539(a) of the Commission's rules (Rules)[2] by failing to timely file a license renewal application for the Stations. Based upon our review of the facts and circumstances before us, we conclude that the Licensee is apparently liable for a monetary forfeiture in the amount of seven thousand five hundred dollars ($7,500).

II. BACKGROUND

2. Section 73.3539(a) of the Rules requires that applications for renewal of license for broadcast stations must be filed "not later than the first day of the fourth full calendar month prior to the expiration date of the license sought to be renewed."[3] The applications for renewal of the Stations' licenses should have been filed by June 1, 2022, the first day of the fourth full calendar month prior to the Stations' licenses expiration date of October 1, 2022.[4] However, the Licensee did not file the Applications until September 28, 2022. The Licensee did not provide an explanation for the late filings.

III. DISCUSSION

3. *Proposed Forfeiture.* We find that the Licensee is apparently liable for a forfeiture in the amount of $7,500. In this case, the Licensee failed to file the Applications on or before June 1, 2022, as

[1] Application of Elko Television District for Renewal of License, LMS File No. 201080 (filed. Sep. 28, 2022). As is permitted, the licensee filed for renewal of the of the licenses of stations K32GK-D, K34HE-D, K36HA-D, and K35OI-D in a single renewal application. Application of Elko Television District for Renewal of License, LMS File No. 201074 (filed Sep. 28, 2022).

[2] 47 CFR § 73.3539(a).

[3] *Id*.

[4] *See* 47 CFR §§ 73.1020, 73.3539(a); *See Media Bureau Announces Procedures For 2020-2023 Television License Renewal Cycle*, Public Notice, 35 FCC Rcd 3656 (2020).

required by section 73.3539(a) of the Rules.[5] The Applications were not received until September 28, 2022, over three month late.[6]

4. Pursuant to section 503(b)(1)(B) of the Communications Act of 1934, as amended (Act), a person who is found to have willfully and/or repeatedly failed to comply with any provision of the Act or any rule, regulation, or order issued by the Commission, shall be liable to the United States for a forfeiture penalty.[7] Section 312(f)(1) of the Act defines willful as "the conscious and deliberate commission or omission of [any] act, irrespective of any intent to violate" the law.[8] The legislative history to section 312(f)(1) of the Act clarifies that this definition of willful applies to both section 312 and 503(b) of the Act,[9] and the Commission has so interpreted the term in the section 503(b) context.[10] Section 312(f)(2) of the Act provides that "[t]he term 'repeated,' when used with reference to the commission or omission of any act, means the commission or omission of such act more than once or, if such commission or omission is continuous, for more than one day."[11]

5. The Commission's *Forfeiture Policy Statement* and section 1.80(b)(10) of the Rules establish a base forfeiture amount of $3,000 for failure to file a required form or information.[12] In determining the appropriate forfeiture amount, we may adjust the base amount upward or downward by considering the factors enumerated in section 503(b)(2)(E) of the Act, including "the nature, circumstances, extent and gravity of the violation, and, with respect to the violator, the degree of culpability, any history of prior offenses, ability to pay, and such other matters as justice may require."[13]

6. In this case, the Licensee failed to timely file a license renewal application for five (5) stations, as required by section 73.3539(a) of the Rules.[14] The Licensee did not provide an explanation for the late filings. Taking into consideration all of the factors required by section 503(b)(2)(E) of the Act and the *Forfeiture Policy Statement*,[15] we will reduce the forfeiture from the base amount to $1,500 per station for the failure to file a timely renewal application, because, as digital television translators, the Stations are providing a secondary service.[16] Furthermore, as translators the Stations are not originating

[5] 47 CFR § 73.3539(a).

[6] *See supra* note 1.

[7] *See* 47 U.S.C. § 503(b)(1)(B); *see also* 47 CFR § 1.80(a)(2).

[8] 47 U.S.C. § 312(f)(1).

[9] *See* H.R. Rep. No. 97-765, at 51 (1982) (Conf. Rep.).

[10] *See Southern California Broadcasting Co.*, Memorandum Opinion and Order, 6 FCC Rcd 4387, 4388, para. 5 (1991) (*Southern California*), recon. denied, 7 FCC Rcd 3454 (1992).

[11] 47 U.S.C. § 312(f)(2).

[12] *See Forfeiture Policy Statement and Amendment of Section 1.80 of the Rules to Incorporate the Forfeiture Guidelines*, Report and Order, 12 FCC Rcd 17087, 17113-15 (1997) (*Forfeiture Policy Statement*), *recon. denied*, 15 FCC Rcd 303 (1999); 47 CFR § 1.80(b), paragraph (b)(10), Table 1.

[13] 47 U.S.C. § 503(b)(2)(E). *See also Forfeiture Policy Statement*, 12 FCC Rcd at 17100-01; 47 CFR § 1.80(b)(10); 47 CFR § 1.80(b), paragraph (b)(10), Table 3.

[14] 47 CFR § 73.3539(a).

[15] *Supra* note 13.

[16] *See*, *e.g.*, *Juan Carlos Matos.*, Notice of Apparent Liability for Forfeiture, 36 FCC Rcd 8932 (Vid. Div. 2021) (paid Jun. 11, 2021); *H&R Production Group*, Notice of Apparent Liability for Forfeiture, 36 FCC Rcd 8937 (Vid. Div. 2021) (paid Jun. 9, 2021); *Nichols Broadcasting Group, LLC*, Notice of Apparent Liability for Forfeiture, 36 FCC Rcd 8978 (Vid. Div. 2021) (paid Jun. 10, 2021) (all reducing fine for a late renewal application to $1,500 because the stations "provid[e] a secondary service."). *See also Digital Low Power Television, Television Translator, and Television Booster Stations and Digital Class A Television Stations*, Report and Order, 19 FCC Rcd

(continued….)

programming, but instead providing important "fill-in" service to areas that otherwise may be unable to received over-the-air television signals. Because the Application includes five (5) stations the total proposed forfeiture amount is $7,500.

7. *License Renewal Application.* In evaluating an application for license renewal, the Commission's decision is governed by section 309(k) of the Act.[17] That section provides that if, upon consideration of the application and pleadings, we find that: (1) the station has served the public interest, convenience, and necessity; (2) there have been no serious violations of the Act or the Rules; and (3) there have been no other violations which, taken together, constitute a pattern of abuse, we are to grant the renewal application.[18] If, however, the licensee fails to meet that standard, the Commission may deny the application—after notice and opportunity for a hearing under section 309(e) of the Act—or grant the application "on terms and conditions as are appropriate, including renewal for a term less than the maximum otherwise permitted."[19]

8. We find that the Licensee's apparent violation of section 73.3539(a) of the Rules[20] does not constitute a "serious violation" warranting designation of the Application for evidentiary hearing. Moreover, we find no evidence of violations that, when considered together, constitute a pattern of abuse.[21] Further, based on our review of the Application, we find that the Stations served the public interest, convenience, and necessity during the subject license term. We will therefore grant the Application by separate action upon the conclusion of this forfeiture proceeding if there are no issues other than those set forth in this *NAL* that would preclude grant of the Application.

IV. ORDERING CLAUSES

9. Accordingly, **IT IS ORDERED**, pursuant to section 503(b) of the Communications Act of 1934, as amended,[22] and sections 1.80 and 0.283(d) of the Commission's rules,[23] that Elko Television District, is hereby **NOTIFIED** of its **APPARENT LIABILITY FOR FORFEITURE in the amount of seven thousand five hundred dollars ($7,500)** for its apparent willful violation of section 73.3539(a) of the Commission's rules.[24]

(Continued from previous page)
19331, 19333, paras. 2-6 (2004) ("The low power television service consists of LPTV, TV translator, and television booster stations…. Stations in the low power television service are authorized with 'secondary' frequency use status.").

[17] 47 U.S.C. § 309(k).

[18] 47 U.S.C. § 309(k)(1).

[19] 47 U.S.C. §§ 309(k)(2), 309(k)(3).

[20] 47 CFR § 73.3539(a).

[21] For example, we do not find here that the Licensee's operation of the Stations "was conducted in an exceedingly careless, inept and negligent manner and that the licensee is either incapable of correcting or unwilling to correct the operating deficiencies." *See Heart of the Black Hills Stations*, Decision, 32 FCC 2d 196, 198, para. 6 (1971). Nor do we find on the record here that "the number, nature and extent" of the violations indicate that "the licensee cannot be relied upon to operate [the station] in the future in accordance with the requirements of its licenses and the Commission's Rules." *Id.* at 200, paras. 10-11. *See also Center for Study and Application of Black Econ. Dev.*, Hearing Designation Order, 6 FCC Rcd 4622 (1991); *Calvary Educ. Broad. Network, Inc*., Hearing Designation Order, 7 FCC Rcd 4037 (1992).

[22] 47 U.S.C. § 503(b).

[23] 47 CFR §§ 1.80 and 0.283.

[24] 47 CFR § 73.3539(a).

10. **IT IS FURTHER ORDERED** that, pursuant to section 1.80 of the Commission's rules,[25] within thirty (30) days of the release date of this *NAL*, ELKO TELEVISION DISTRICT, **SHALL PAY** the full amount of the proposed forfeiture or **SHALL FILE** a written statement seeking reduction or cancellation of the proposed forfeiture.

11. Payment of the forfeiture must be made by credit card, ACH (Automated Clearing House) debit from a bank account using CORES (the Commission's online payment system),[26] or by wire transfer. Payments by check or money order to pay a forfeiture are no longer accepted. Upon payment, it is requested that Licensee send notice that payment has been made to VideoRenewals@fcc.gov. Below are instructions that payors should follow based on the form of payment selected:[27]

- Payment by wire transfer must be made to ABA Number 021030004, receiving bank TREAS/NYC, and Account Number 27000001. A completed Form 159 must be faxed to the Federal Communications Commission at 202-418-2843 or e-mailed to RROGWireFaxes@fcc.gov on the same business day the wire transfer is initiated. Failure to provide all required information in Form 159 may result in payment not being recognized as having been received. When completing FCC Form 159, enter the Account Number in block number 23A (call sign/other ID), enter the letters "FORF" in block number 24A (payment type code), and enter in block number 11 the FRN(s) captioned above (Payor FRN).[28] For additional detail and wire transfer instructions, go to https://www.fcc.gov/licensing-databases/fees/wire-transfer.
- Payment by credit card must be made by using the Commission's Registration System (CORES) at https://apps.fcc.gov/cores/userLogin.do. To pay by credit card, log-in using the FCC Username associated to the FRN captioned above. If payment must be split across FRNs, complete this process for each FRN. Next, select "Manage Existing FRNs | FRN Financial | Bills & Fees" from the CORES Menu, then select FRN Financial and the view/make payments option next to the FRN. Select the "Open Bills" tab and find the bill number associated with the NAL/Acct. No. The bill number is the NAL Acct. No. (e.g., NAL/Acct. No. 1912345678 would be associated with FCC Bill Number 1912345678). After selecting the bill for payment, choose the "Pay by Credit Card" option. Please note that there is a $24,999.99 limit on credit card transactions.
- Payment by ACH must be made by using the Commission's Registration System (CORES) at https://apps.fcc.gov/cores/paymentFrnLogin.do. To pay by ACH, log in using the FRN captioned above. If payment must be split across FRNs, complete this process for each FRN. Next, select "Manage Existing FRNs | FRN Financial | Bills & Fees" on the CORES Menu, then select FRN Financial and the view/make payments option next to the FRN. Select the "Open Bills" tab and find the bill number associated with the NAL/Acct. No. The bill number is the NAL/Acct. No. (e.g., NAL/Acct. No. 1912345678 would be associated with FCC Bill Number 1912345678). Finally, choose the "Pay from Bank Account" option. Please contact the appropriate financial institution to confirm the correct Routing Number and the correct account number from which payment will be made and verify with that financial institution that the designated account has authorization to accept ACH transactions.

[25] 47 CFR § 1.80.

[26] Payments made using CORES do not require the submission of an FCC Form 159.

[27] For questions regarding payment procedures, please contact the Financial Operations Group Help Desk by phone at 1-877-480-3201 (option #6), or by e-mail at ARINQUIRIES@fcc.gov.

[28] Instructions for completing the form may be obtained at https://www.fcc.gov/Forms/Form159/159.pdf.

12. Requests for full payment of the forfeiture proposed in this *NAL* under the installment plan should be sent to: Associate Managing Director-Financial Operations, 45 L Street, NE, Washington, DC 20554.[29] Questions regarding payment procedures should be directed to the Financial Operations Group Help Desk by phone, 1-877-480-3201 (option #6), or by e-mail at ARINQUIRIES@fcc.gov.

13. The written response seeking reduction or cancellation of the proposed forfeiture, if any, must include a detailed factual statement supported by appropriate documentation and affidavits pursuant to sections 1.16 and 1.80(g)(3) of the Rules.[30] The written response must be filed with the Office of the Secretary, Federal Communications Commission, 45 L Street, NE, Washington, DC 20554, ATTN: Barbara A. Kreisman, Chief, Video Division, Media Bureau, and **MUST INCLUDE** the NAL/Acct. No. referenced above. A courtesy copy should also be emailed to VideoRenewals@fcc.gov to assist in processing the response.

- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
    - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
    - Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington, DC 20554.
    - Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.[31]

14. The Commission will not consider reducing or canceling a forfeiture in response to a claim of inability to pay unless the respondent submits: (1) federal tax returns for the most recent three-year period; (2) financial statements prepared according to generally accepted accounting practices (GAAP); or (3) some other reliable and objective documentation that accurately reflects the respondent's current financial status. Any claim of inability to pay must specifically identify the basis for the claim by reference to the financial documentation submitted. Inability to pay, however, is only one of several factors that the Commission will consider in determining the appropriate forfeiture, and we have discretion to not reduce or cancel the forfeiture if other prongs of section 503(b)(2)(E) of the Act support that result.[32]

15. **IT IS FURTHER ORDERED**, that copies of this *NAL* shall be sent, by First Class and Certified Mail, Return Receipt Requested, to Elko Television District, P.O. Box 456, Elko, NV 89803 and by electronic mail to elkotvdistrict@gmail.com

[29] *See* 47 CFR § 1.1914.

[30] 47 CFR §§ 1.16 and 1.80(g)(3).

[31] *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, 35 FCC Rcd 2788 (2020).

[32] 47 U.S.C. § 503(b)(2)(E). *See, e.g.*, *Adrian Abramovich*, Forfeiture Order, 33 FCC Rcd 4663, 4678-79, paras. 44-45 (2018).

FEDERAL COMMUNICATIONS COMMISSION

Barbara A. Kreisman
Chief, Video Division
Media Bureau

Federal Communications Commission
Washington, D.C. 20554

April 17, 2023

DA 23-335
In Reply Refer To:
1800B3-ARR
Released: April 17, 2023

Sanctuary Church
c/o James E. Price, III
P.O. Box 1877
LaFayette, GA 30728
(sent by electronic email to: sterlingjamesp@gmail.com)

Frequency Zero, Inc.
c/o Francisco Montero, Esq.
Fletcher, Heald & Hildreth, PLC
1300 N. 17th Street, Ste. 1100
Arlington, VA 22209
(sent by electronic email to: montero@fhhlaw.com)

In re: **NCE MX Group 63**

Sanctuary Church
New NCE FM, Darien, Georgia
Facility ID No. 766888
Application File No. 0000165972

Frequency Zero, Inc.
New NCE FM, Darien, Georgia
Facility ID No. 763893
Application File No. 0000166102

Petition to Deny

Dear Applicants:

We have before us two mutually exclusive (MX) applications filed by Sanctuary Church (SC) and Frequency Zero, Inc. (FZI) for construction permits for new noncommercial educational (NCE) FM stations in Darien, Georgia, which the Media Bureau (Bureau) designated as NCE MX Group 63.[1] The

[1] *Media Bureau Identifies Groups of Mutually Exclusive Applications Submitted in the November 2021, Filing Window for New Noncommercial Education Stations; Opens Window to Accept Settlements and Technical Amendments*, Public Notice, 36 FCC Rcd 16452 (MB 2021); *see also* Application File Nos. 0000165972 (SC Application); 0000166102 (FZI Application). NCE MX Group 63 originally included a third application for a proposed station in Darien, Georgia, filed by Inverse Focus Ministry, Inc. Application File No. 0000167489 (IFM Application). The IFM Application was amended on February 23, 2023, to eliminate its mutual exclusivity with the other applications in NCE MX Group 63, making the IFM Application a singleton. *See* IFM Application, Amendment (filed Feb. 23, 2023) at Attach. "MX Group 63 Settlement.pdf".

Commission identified the SC Application as the tentative selectee of the group.[2] We also have before us a Petition to Deny the SC Application[3] filed by FZI. For the reasons set forth below, we dismiss the SC Application.[4] We will withhold action on the Petition and the FZI Application until dismissal of the SC Application becomes final.[5]

Background. The subject applications were filed during the November 2021, NCE FM filing window.[6] In the *Third Comparative Order*,[7] the Commission determined that because each applicant proposes to serve the same community, the three applicants would proceed to a point system analysis.[8] SC was awarded three points as an established local applicant; SC, IFM, and FZI each received two points for diversity of ownership.[9] Accordingly, SC was credited with the most points and designated the tentative selectee in Group 63.[10]

In the Petition, FZI argues that SC is ineligible to hold an NCE license because it is neither incorporated in the state of Georgia, nor recognized as an unincorporated association under Georgia law.[11] FZI also attaches exhibits demonstrating that: 1) there are no registered articles of incorporation for SC in Georgia; 2) SC's associated FCC Registration Number (FRN) is actually registered to Downtown Baptist Sanctuary Church Incorporated (DBSCI), which incorporated as a non-profit in 2008, failed to file annual

[2] *Comparative Consideration of 34 Groups of Mutually Exclusive Applications for Permits to Construct New Noncommercial Educational FM Stations*, Memorandum Opinion and Order, FCC 23-5, at 13-14, paras. 45-46 (Jan. 24, 2023) (*Third Comparative Order*).

[3] *See* Pleading File No. 0000211164 (filed Feb. 22, 2023) (Petition). As of the date of this Letter, SC has not filed an Opposition to the Petition.

[4] In the *Third Comparative Order*, the Commission directed Bureau staff to "consider any petitions, comments, and objections to determine whether there is any substantial and material question of fact concerning whether grant of the tentatively selected application would serve the public interest." *Third Comparative Order* at 26, para. 108. The Commission delegated authority to the Bureau staff "to act on any routine matter that may be raised, including whether the applicant is eligible, as certified, for the points awarded herein, and whether the application complies with all relevant Commission rules and policies." *Id.*

[5] *See* 47 CFR § 1.117(a) (providing for 40 days after public notice of the Bureau's decision for the Commission on its own motion to order the record before it for review). In addition to the issue discussed below, the Petition also argues that SC is ineligible to claim three established local applicant points. Petition at 3-5. We will not consider arguments concerning SC's eligibility for points at this time, but will do so should SC seek *nunc pro tunc* reinstatement of its corporate status. *See, e.g., New Bohemia Group, Inc.,* Letter Order, 24 FCC Rcd 1357, 1360 (MB 2009) (granting new NCE FM application where applicant's corporate status had lapsed with the State of Iowa, but applicant had sought *nunc pro tunc* reinstatement of its corporate status with the state) (citing *Fatima Response, Inc.*, Memorandum Opinion and Order, 14 FCC Rcd 18543, 18546 (1999*), recon. dismissed*, 15 FCC Rcd 10520 (2000)).

[6] *Media Bureau Announces NCE FM New Station Application Filing Window; Window Open from November 2, 2021, to November 9, 2021*, MB Docket No. 20-343, Public Notice, 36 FCC Rcd 7449 (MB 2021).

[7] *Third Comparative Order* at 13-14, paras. 45-46.

[8] *Id.* at 13, para. 45.

[9] *Id.* at 13, para. 46.

[10] *Id.* at 13-14, para. 46.

[11] Petition at 10-12 and 13-14.

registrations, and was administratively dissolved by the Georgia Secretary of State in 2016;[12] and 3) there is no process for entities to otherwise register as unincorporated associations in Georgia.[13]

Discussion. Applicants for NCE stations must meet basic eligibility requirements.[14] Further, applicants must be incorporated or otherwise recognized under state law at the time of filing in order to qualify for an NCE FM license.[15] SC has not refuted FZI's claim that it is ineligible to hold an NCE license because its corporate status was dissolved in 2016. Further, FZI submits screenshots of the Georgia Secretary of State Corporations Division search, demonstrating that there is no current corporate authorization for either SC or DBSCI, the entity associated with SC's FRN.[16] The staff has independently reviewed the records of the Georgia Secretary of State, determined that DBSCI's corporate status lapsed in 2016, and the corporation is currently dissolved.[17] Accordingly, we find SC ineligible to hold an NCE license and dismiss the SC Application.

Conclusion/Actions. For the reasons set forth above, **IT IS ORDERED** that the application of Sanctuary Church (Application File No. 0000165972) **IS DISMISSED**.

Sincerely,

Albert Shuldiner
Chief, Audio Division
Media Bureau

[12] *Id.* at 11 and Exhs. A-C.

[13] *Id.* at 11-12.

[14] 47 CFR § 73.503(a) ("A noncommercial educational FM broadcast station will be licensed only to a nonprofit educational organization and upon showing that the station will be used for the advancement of an educational program."); *see also* 47 U.S.C. § 397(6)(A) (eligibility for noncommercial broadcast stations).

[15] *See Applications For Review of Decision Regarding Six Applicants For New Low Power FM Stations*, Memorandum Opinion and Order, 28 FCC Rcd 13390, 13394, para. 12 (2013); *Hope Radio of Rolla, Inc.*, Memorandum Opinion and Order, 28 FCC Rcd 7754, 7754, para. 2 (2013) (to be eligible to hold an authorization for an NCE service, the applicant "must be a public agency or non-profit private foundation, corporation, or association that is recognized by the laws of the state in which it proposes to operate at the time it submits its application").

[16] Petition at 11-12 and Exhs. A-C.

[17] *See* Georgia Corporations Division, https://ecorp.sos.ga.gov/BusinessSearch/BusinessInformation?businessId=1348222&businessType=Domestic%20Nonprofit%20Corporation&fromSearch=True (last visited Apr. 12, 2023).

PUBLIC NOTICE

Federal Communications Commission
45 L Street NE
Washington, DC 20554

News Media Information 202-418-0500
Internet: www.fcc.gov
TTY: 888-835-5322

DA 23-336
Enforcement Advisory No. 2023-02
Released: April 20, 2023

FCC ENFORCEMENT ADVISORY

FCC LICENSEES AND AUTHORIZATION HOLDERS MUST TIMELY DISCLOSE CHANGES IN FOREIGN OWNERSHIP AND CONTROL

Commission and Executive Branch review of foreign ownership of Commission licensees and authorization holders protects vital U.S. national security and law enforcement interests.

Communications systems have been identified as uniquely critical because of the enabling functions they provide across all critical infrastructure.[1] The Communications Act of 1934, as amended (the Act), tasks the Federal Communications Commission (Commission or FCC) with identifying and addressing communications sector vulnerabilities.[2] The Commission's Enforcement Bureau (Bureau) issues this Enforcement Advisory to remind regulated entities that hold certain FCC licenses or authorizations (collectively, licenses), and those seeking control of the same, of their obligation to seek and receive Commission approval prior to assignments or transfers of control through mergers, sales or otherwise and prior to other changes in ownership resulting in reportable new foreign interest holders or reportable increases in existing foreign ownership interests.[3]

A regulated entity's failure to make the appropriate Commission filings and provide the required ownership information violates the Act and Commission rules. These statutory provisions and rules are intended to ensure that such changes are consistent with the public interest. A critical component of this public interest evaluation includes important national security, law enforcement, foreign policy and trade policy concerns.[4] The Commission has established

[1] *See* The White House, Presidential Policy Directive 21: Critical Infrastructure Security and Resilience (PPD-21) (Feb. 12, 2013), https://obamawhitehouse.archives.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil.

[2] 47 U.S.C. §§ 214, 310(a), 310(b), 310(d). *See Process Reform for Executive Branch Review of Certain FCC Applications and Petitions Involving Foreign Ownership*, Report and Order, 35 FCC Rcd 10927 (2020) (*Executive Branch Review Order*); *Rules and Policies on Foreign Participation in the U.S. Telecommunications Market*, Report and Order and Order on Reconsideration, 12 FCC Rcd 23891, 23918-21, paras. 61-66 (1997) (*Foreign Participation Order*); Order on Reconsideration, 15 FCC Rcd 18158 (2000).

[3] Likewise, we remind regulated entities of their obligation to notify the Commission promptly of pro forma transactions that do not require prior approval, as noted further below.

[4] *See Executive Branch Review Order*, 35 FCC Rcd 10927; *Foreign Participation Order*, 12 FCC Rcd at 23918-21, paras. 61-66.

processes for ensuring review of such questions, in conjunction with obtaining the views of the Executive Branch, particularly when addressing risks to U.S. national security and law enforcement interests.[5]

Failure to comply with these statutory and regulatory requirements for Commission consent to such assignments and transfers of control may result in monetary forfeiture, divestiture of ownership, continuing reporting obligations, and/or revocation of the underlying license(s).

Risks Arising from Non-Notified Changes in Foreign Ownership

While all unauthorized assignments or transfers of control will be subject to such enforcement actions, we note in particular that unauthorized foreign ownership of a U.S. entity can result in unaddressed and unmitigated risks to U.S. national security and law enforcement interests. The Commission's public interest analysis of ownership and control of applicants for Commission licenses rests, in part, on an applicant's foreign ownership structure as it exists at the time the Commission considers the application, and in connection with such consideration, refers an application to the Executive Branch for review. The level of foreign ownership or control at the time of a review may also inform the analysis of whether these risks can be mitigated.[6] Any subsequent undisclosed and unauthorized assignments or transfers of control may alter the national security and law enforcement risk analyses, including whether and how these risks can be mitigated. Absent proper disclosures to the FCC, the Commission's initial public interest determination may no longer apply, because a non-notified transfer or assignment may introduce a new threat which presents an ongoing and unmitigated risk to national security or law enforcement interests.

Licensees and Authorization Holders Must Receive Commission Approval Prior to Assigning or Transferring Control of a License or Authorization

Broadcast, common carrier, wireless, and other license and authorization holders must request and receive permission from the Commission before assigning or transferring control of a license or authorization.[7] The Commission must determine that a proposed transaction is in the public interest. Specifically, section 310(d) of the Act provides that no radio licenses "shall be transferred, assigned, or disposed of in any manner, voluntarily or involuntarily, directly or indirectly, or by transfer of control of any corporation holding [the] license," unless the license

[5] *See Executive Brach Review Order*, 35 FCC Rcd 10927; *Foreign Participation Order*, 12 FCC Rcd at 23918-21, paras. 61-66; *see also* Executive Order No. 13913, Establishing the Committee for the Assessment of Foreign Participation in the United States Telecommunications Services Sector, 85 Fed. Reg. 19643, 19645 (Apr. 8, 2020) (Executive Order) (stating the Committee shall assess whether a grant or transfer of a license poses a risk to national security or law enforcement interests).

[6] *See* Executive Order, 85 Fed. Reg. at 19648 (noting that the Committee may recommend to the FCC that the Commission condition grant of a license or a transfer on compliance with mitigation measures intended to mitigate risks to national security or law enforcement interests of the United States).

[7] *See, e.g.*, 47 CFR §§ 1.948 (wireless radio services), 63.03-04, 63.24 25.119 (common carrier satellite communications), 73.3540-73.3541 (broadcast stations); 78.35 (cable television relay service).

holder applies for Commission authority to transfer the license, and the Commission finds that the transfer is in the "public interest, convenience, and necessity."[8]

Likewise, control of domestic or international section 214 authority may be transferred to another party, and an international section 214 authorization may be assigned, only by application and after prior Commission approval.[9] A carrier may apply for Special Temporary Authority relating to temporary or emergency services under a section 214 authorization.[10] Prior Commission approval is also required for the assignment or transfer of control of any interest in a submarine cable system and associated cable landing license.[11]

Through this review process, the applicant provides the Commission with, among other things, contact information, ownership information (equity and voting interests), including citizenship, information on any affiliations it may have with foreign carriers, certification that it will comply with Commission rules, and certification that the applicant is not subject to denial of federal benefits pursuant to the Anti-Drug Abuse Act of 1988.[12]

Statutory Benchmarks on Foreign Ownership in Certain Commission Licenses

Section 310(b)(4) of the Act establishes 25 percent benchmarks on ownership by foreign individuals, corporations, and governments in U.S.-organized entities that directly or indirectly control a U.S. broadcast, common carrier, or aeronautical radio station licensee.[13] The Commission may permit higher levels of foreign equity or voting interest in the licensee if it determines that such higher levels are consistent with the public interest.[14] Licensees must

[8] 47 U.S.C. § 310(d). Certain transactions considered to be "pro forma" (i.e., non-substantial) do not require prior approval but must be reported promptly after completion in accordance with applicable regulations. *See, e.g.*, 47 CFR §§ 1.948(c), 1.9020(i)-(j) (spectrum manager leasing arrangements), 1.9030(h)-(i) (long term de facto leasing arrangements).

[9] 47 CFR §§ 63.03-63.04, 63.24(a). A pro forma transaction does not require prior Commission approval, but an international section 214 authorization holder is required to notify the Commission of the pro forma assignment or transfer within 30 days of the transaction. 47 CFR § 63.24(f). In addition, any party that would be a domestic common carrier under section 214 of the Act is authorized to undertake a pro forma transaction without providing notice, except a domestic common carrier must notify the Commission no later than 30 days after control of the carrier is transferred in a bankruptcy proceeding. 47 CFR § 63.03(d).

[10] *Id.* §§ 63.25, 63.63.

[11] 47 CFR § 1.767(a)(11) (prior approval required); *id.* § 1.767(g)(7) (notification in lieu of prior approval for pro forma transactions). *See also* 47 U.S.C. §§ 34–39; Executive Order No. 10530, 19 FR 2709 (May 10, 1954).

[12] *Id.* §§ 63.04, 63.18(a)-(d), (h)-(p), 63.24(e)(2).

[13] 47 U.S.C. § 310(b)(4). Section 310(b)(3) prohibits foreign individuals, governments, and corporations from owning more than 20 percent of the capital stock of a broadcast, common carrier, or aeronautical radio station licensee. 47 U.S.C. § 310(b)(3).

[14] 47 U.S.C. § 310(b)(4). The Commission determined to forbear from applying the foreign ownership limits in section 310(b)(3) to the class of common carrier wireless licensees in which the foreign investment is held in the licensee through U.S.-organized entities that do not control the licensee, to the extent the Commission determines such foreign ownership is consistent with the public interest under the policies and procedures that apply to the Commission's public interest review of foreign ownership subject to section 310(b)(4) of the Act. 47 CFR § 1.5000(a)(2); *see also Review of Foreign Ownership Policies for Common Carrier and Aeronautical Radio Licensees under Section 310(b)(4) of the Communications Act, as Amended*, IB Docket No. 11-133, First Report and Order, 27 FCC Rcd 9832 (2012) (*2012 Review of Foreign Ownership Policies)*. This forbearance determination (continued….)

obtain prior Commission approval by filing a petition for declaratory ruling pursuant to the Commission's rules before direct or indirect aggregate foreign equity interests and/or voting interests in a U.S.-organized entity that controls a broadcast, common carrier, or aeronautical fixed radio station licensee exceeds the 25 percent benchmarks in section 310(b)(4).[15]

Even after a U.S.-organized entity controlling a licensee receives a declaratory ruling by the Commission that permits it to exceed the foreign ownership benchmarks in section 310(b)(4), further Commission approval is required before any foreign individual or entity not previously approved by the Commission acquires, directly or indirectly, a five percent or greater direct or indirect equity or voting interest in the controlling U.S. organized entity.[16]

Notable Enforcement Actions

América Móvil, S.A.B. de C.V. In June 2016, the Bureau reached a settlement with América Móvil, S.A.B. de C.V. (América Móvil), a Mexican company and the parent of Puerto Rico Telephone Company, Inc. (PRTC), a U.S. territorial company. In the Consent Decree, América Móvil admitted to violations of the Commission's foreign ownership rules, including América Móvil's failure to obtain Commission approval prior to exceeding the Act's statutory ownership benchmarks on foreign individuals and/or entities holding equity and/or voting interests in the U.S. controlling parent of a licensee in violation of section 310(b)(4) when América Móvil and PRTC failed to request and receive prior Commission approval for increases in indirect equity and voting interests that resulted from a corporate transaction. The settlement required América Móvil pay a civil penalty of $1.1 million, a three-year compliance plan, and detailed monthly ownership reports by América Móvil.[17]

Truphone, Inc. In April 2022, the Commission issued a Notice of Apparent Liability for Forfeiture against Truphone, Inc. (Truphone), the controlling U.S. parent of iSmart Mobile, LLC (iSmart), for: (1) apparently violating section 310(b)(4) of the Act by failing to obtain Commission approval prior to exceeding the Act's statutory ownership benchmarks on foreign individuals and/or entities holding equity and/or voting interests in the U.S. controlling parent of a licensee that is subject to section 310(b)(4); and (2) apparently violating sections 214 and 310(d) of the Act and sections 1.948 and 63.24 of the Commission's rules by filing applications in 2011 in which Truphone misreported its ownership structure.[18] As a result, control of iSmart's

(Continued from previous page)
does not apply to foreign ownership held in the licensee other than indirectly through an intervening U.S.-organized entity that does not control the licensee. *Id*. The Commission's forbearance authority does not extend to broadcast or aeronautical radio station licensees covered by section 310(b)(3). *See* 47 U.S.C. § 160. Licensees subject to section 310(b)(3) forbearance must obtain Commission approval by filing a petition for declaratory ruling or similar request *before* foreign ownership of the licensee exceeds 20 percent of its equity and/or voting interests. 47 CFR § 1.5000(a)(2); *2012 Review of Foreign Ownership Policies*, 27 FCC Rcd at 9837.

[15] 47 U.S.C. § 310(b)(4); 47 CFR § 1.5000-1.5004. *See Review of Foreign Ownership Policies for Broadcast, Common Carrier and Aeronautical Radio Licensees Under Section 310(b)(4) of the Communications Act of 1934 as Amended,* GN Docket No. 15-236, Report and Order, 31 FCC Rcd 11272 (2016) (*2016 Foreign Ownership Order*).

[16] 47 CFR § 1.5004(a)(1). *See Review of Foreign Ownership Policies for Common Carrier and Aeronautical Radio Licenses Under Section 310(b)(4) of the Communications Act of 1934 as Amended*, Second Report and Order, 28 FCC Rcd 5741, 5786-87, para. 83 (2013). *See also 2016 Foreign Ownership Order*, 31 FCC Rcd at 11274, 11284, paras. 4, 22 (extending specific approval requirement for foreign individual or entity not previously approved by the Commission to broadcast licensees).

[17] *América Móvil, S.A.B. de C.V.,* Order and Consent Decree, DA 16-647, 2016 WL 3541055 (June 28, 2016).

FCC licenses and international section 214 authorization passed to foreign entities that were not vetted as required by the Act. The Commission proposed a forfeiture of $660,639. The Commission ultimately settled this matter with Truphone for $600,000 and a Consent Decree requiring the divestment of ownership in the company by several Russian families, various reporting obligations, and compliance with the U.S. Department of the Treasury's Specially Designated Nationals and Blocked Persons List.[19]

Vertex Telecom, Inc. In August 2021, the Bureau entered into a Consent Decree with Vertex Telecom, Inc. and Vertex SSX, Inc.[20] In 2016, 100 percent of the stock in both companies was sold to a large privately traded Chinese telecom company, Dr. Peng Holding, Inc., without receiving the required approvals from the Commission to transfer control of the companies' international and domestic authorizations in violation of section 214 of the Act and sections 63.03, 63.04, and 63.24 of the Commission's rules. The consent decree required that the companies discontinue all regulated activities, pay a $24,000 forfeiture, be divested of all ownership interests held by Dr. Peng, and request and receive approval from the Commission before offering regulated services in the future.

Media inquiries should be directed to 202-418-0500 or MediaRelations@fcc.gov.

Issued by: Chief, Enforcement Bureau

(Continued from previous page)

[18] *Truphone, Inc*., Notice of Apparent Liability for Forfeiture, FCC 22-30, 2022 WL 1238424 (Apr. 21, 2022).

[19] *Truphone, Inc.*, Order and Consent Decree, DA 22-1072, 2022 WL 13583456 (EB Oct. 20, 2022).

[20] *Vertex Telecom, Inc., Vertex SSX, Inc.*, Order and Consent Decree, 36 FCC Rcd 12537 (EB 2021).

PUBLIC NOTICE

Federal Communications Commission
45 L Street NE
Washington, DC 20554

News Media Information 202-418-0500
Internet: www.fcc.gov
TTY: 888-835-5322

DA 23-338
Released: April 18, 2023

SPACE BUREAU AND WIRELESS TELECOMMUNICATIONS BUREAU SEEK COMMENT ON FILINGS OF SPACEX AND T-MOBILE REQUESTING TO ESTABLISH SUPPLEMENTAL COVERAGE FROM SPACE; SPACE EXPLORATION HOLDINGS, LLC APPLICATION ACCEPTED FOR FILING

GN Docket No. 23-135
IBFS File No. SAT-MOD-20230207-00021

Comments/Petitions Due: May 18, 2023
Response to Comments/Oppositions to Petitions Due: May 29, 2023
Replies to Reponses/Oppositions Due: June 2, 2023

The Space Bureau and Wireless Telecommunications Bureau seek comment on filings by Space Explorations Holdings, LLC (SpaceX)[1] and T-Mobile USA Inc. (T-Mobile)[2] that jointly seek Commission relief to establish supplemental coverage from space for T-Mobile's terrestrial network using SpaceX satellites. We seek comment on the following filings by the parties.

SpaceX requests modification of its license for its second generation (Gen2) Starlink constellation of low-Earth orbit, non-geostationary orbit satellites to add a direct-to-cellular communications capability on up to 7,500 Gen2 Starlink satellites. Specifically, SpaceX seeks to operate in the mobile-satellite service using the 1910-1915 MHz (Earth-to-space) and 1990-1995 MHz (space-to-Earth) bands for links to end-user devices. SpaceX also seeks to support these operations with feeder links utilizing frequencies in the Ka-band and E-band for gateway operations, including Ka-band frequencies authorized for gateway stations used to support its Ku-Band fixed satellite service links to end-user devices. In connection with its request, SpaceX seeks waivers of the U.S. Table of Frequency Allocations and sections 25.102(a), 25.112(a)(3), 25.112(b), 25.114(a)(1), 25.115(a)(1)(i), 25.202(a)(1), 25.156(d), and 25.157 of the Commission's rules. The SpaceX space station license modification request is accepted for filing under part 25 of the Commission's rules.[3] The Commission reserves the right to return any application or petition if, upon further examination, it is determined to be defective and not in conformance with the Commission's rules or policies.

T-Mobile filed a long-term spectrum manager lease notification informing the Commission of an arrangement whereby SpaceX satellites would provide supplemental coverage to T-Mobile's terrestrial network on Personal Communications Service (PCS) G-block (1910-1915 MHz and 1990-1995 MHz) spectrum licensed to T-Mobile, if the Commission also takes favorable action regarding part 25 licensing.

[1] IBFS File No. SAT-MOD-20230207-00021; Call Sign S3069.

[2] ULS File Nos. 0010303032, 0010303084, 0010303124, and 0010303146.

[3] *See* 47 CFR § 25.151.

Filing Requirements. Interested parties may file comments on or before the date indicated on the first page of this document.[4] All filings must refer to GN Docket No. 23-135 and IBFS File No. SAT-MOD-20230207-00021. Comments regarding IBFS File No. SAT-MOD-20230207-00021 must be filed in accordance with section 25.154 of the Commission's rules. However, in order to facilitate consideration of the requests, we waive on our own motion the portion of section 25.154 that requires filings to be submitted in the International Bureau Filing System (IBFS).[5] Instead, comments and other pleadings may be filed using the Commission's Electronic Comment Filing System (ECFS).[6]

- Electronic Filers: Pleadings may be filed electronically using the Internet by accessing ECFS: http://apps.fcc.gov/ecfs/.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.
- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S.-Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701. U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington DC 20554.
- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.[7]

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice).

Ex Parte Rules. This proceeding shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[8] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made; and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with section 1.1206(b) of the Commission's rules. In proceedings governed by section 1.49(f) of the rules or for which the Commission has made available a method of electronic filing, written *ex*

[4] *See* 47 CFR §§ 1.2, 1.405, and 1.419.

[5] 47 CFR § 25.154(a)(3), (d), and (e).

[6] *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121-01 (1998).

[7] *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, DA 20-304 (Mar. 19, 2020), https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy.

[8] 47 CFR §§ 1.1200 *et seq.*

parte presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf).[9] Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

For further information regarding this proceeding, please contact Stephanie Neville of the Space Bureau, at stephanie.neville@fcc.gov or Alice Koethe of the Mobility Division, Wireless Telecommunications Bureau, at alice.koethe@fcc.gov.

- FCC -

[9] *Id.* § 1.1206(b).

Federal Communications Commission
Washington, D.C. 20554

April 19, 2023

DA 23-339
In Reply Refer To:
1800B3-DB

Paul Reynolds
Brantley Broadcast Associates, LLC
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In re: W237FK, Opp, AL
Facility ID No. 201661
Application File No. 0000204488

Application for Assignment of License

Petition to Deny

Dear Applicant and Counsel,

We have before us the above-referenced application (Application) for consent to assign the license of FM translator W237FK, Opp, Alabama (W237FK), from Brantley Broadcast Associates, LLC (Brantley), to Christopher W. Johnson (Johnson), licensee of station WAMI(AM), Opp, Alabama (WAMI).[1] Also before us is a petition to deny the Application, which we treat as an informal objection, filed by Marble City Media, LLC (Marble City).[2] For the reasons set forth below, we (1) grant the Objection; (2) rescind the grant of the W237FK authorization and dismiss, with prejudice, the associated application; (3) cancel the W237FK construction permit; (4) delete the W237FK call sign; and (5) dismiss, with prejudice, the Application at issue. We also dismiss as moot a related petition to deny filed by Marble City and a special temporary authority (STA) extension request filed by Brantley.

[1] Application File No. 0000204488.

[2] Petition to Deny of Marble City Media, LLC, Pleading File No. 0000205607 (filed Dec. 15, 2022) (Objection). The Objection is unopposed.

Background. In October 2015, the Commission directed the Media Bureau (Bureau) to open two filing windows during which AM station licensees or permittees seeking to rebroadcast on an FM translator were permitted to acquire and relocate one non-reserved band FM translator station up to 250 miles as a minor modification application, notwithstanding section 74.1233(a)(1) of the Commission's rules (Rules).[3] The first modification window was available only to applications to modify and/or relocate FM translator stations rebroadcasting Class C and D AM stations.[4] The second window was available to applications to modify and/or relocate FM translator stations rebroadcasting any AM station of any class, including Class C and D stations that did not file an application in the initial window.[5] The Commission accepted applications to modify authorized FM translator stations that the AM station licensee or permittee owned, sought to acquire in a pending assignment or transfer application,[6] or for which the AM station licensee had a rebroadcasting agreement.[7] Beginning in 2017, to further promote the long-term viability of the AM service, the Commission directed the Media Bureau, in conjunction with the Wireless Telecommunications Bureau, to open new FM translator application auction windows, designated as Auctions 99 and 100, for AM stations that did not file a modification application in 2016.[8]

On August 1, 2017, pursuant to the Auction 99 Public Notice and section 73.3517 of the Rules, Brantley filed a contingent application for a new translator construction permit (CP) at Calera, Alabama.[9] The same day, Johnson filed an application for consent to assign the license of WAMI to Brantley.[10] On January 17, 2018, the Bureau granted the CP Application subject to conditions, including the following:[11]

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[3] *See Revitalization of the AM Radio Service*, First Report and Order, Further Notice of Proposed Rule Making, and Notice of Inquiry, 30 FCC Rcd 12145, 12152, para. 15 (2015) (*Revitalization of the AM Radio Service First Report and Order*); 47 CFR § 74.1233(a)(1).

[4] *Revitalization of the AM Radio Service First Report and Order*, 30 FCC Rcd 12145, 12152, para. 15.

[5] *Id*.

[6] 47 CFR § 73.3517(a) ("Upon filing of an application for the assignment of a license or construction permit, or for a transfer of control of a licensee or permittee, the proposed assignee or transferee may, upon payment of the processing fee prescribed in Subpart G, Part 1 of this chapter, file applications in its own name for authorization to make changes in the facilities to be assigned or transferred contingent upon approval and consummation of the assignment or transfer.").

[7] *Revitalization of the AM Radio Service First Report and Order*, 30 FCC Rcd at 12152, para. 15.

[8] *Id*. at 12151, para. 12; *FCC Announces Opening of First Auction Filing Window for AM Broadcasters Seeking New FM Translators*, Public Notice, 32 FCC Rcd 5159 (2017) (Auction 99 Public Notice).

[9] *See* File No. BNPFT-20170801AJA (seeking authority to construct a new FM translator station on channel 293 at Calera, Alabama), as modified by File No. BNPFT-20171219AEO (seeking authority to construct a new FM translator station on channel 292 at Calera, Alabama) (CP Application). As stated above, the Media Bureau granted the CP Application on January 17, 2018. *See* File No. BNPFT-20171219AEO (granted Jan. 17, 2018) (2018 Permit). Subsequently, on April 23, 2020, Brantley filed an application for a minor modification to the 2018 Permit, which the Bureau granted on May 13, 2020. *See* Application File No. 0000112504. Brantley then filed another permit minor modification application on June 7, 2021, which the Bureau granted on June 10, 2021. *See* Application File No. 0000114527.

[10] *See* File No. BAL-20170801AIN (granted Mar. 1, 2018) (WAMI Assignment Application or WAMI Assignment).

[11] *See* 2018 Permit (Special Operating Condition 4- "Pursuant to Revitalization of the AM Radio Service, Notice of Proposed Rule Making, 28 FCC Rcd 15221, 15227, para. 14 (2013), and First Report and Order, 30 FCC Rcd 12145, 12154, para. 17 and n.43 (2015), the permittee and any successor in interest (licensee, transferee, or

> Grant of this authorization is conditioned on the common ownership, in perpetuity, of this facility and the specified AM primary station. Any violation of this condition shall result in the rescission of the grant of this authorization and the dismissal, with prejudice of the associated application and, if applicable, cancellation of the associated construction permit.

Roughly two months later, the Bureau then granted the WAMI Assignment Application. Among other things, the grant required that consummation of the assignment was to be completed within 90 days of the grant and notification of the completion was to be furnished promptly to the Commission in letter form by the seller or buyer showing the date the acts necessary to effect the transaction were completed.[12] On July 9, 2021, just before the modified 2018 Permit expired, Brantley filed a license to cover application, and then filed an amendment to that application on March 30, 2022.[13] The Bureau granted the license to cover the same day and again conditioned the license authorization on, among other things, "the common ownership, in perpetuity, of [W237FK] and the specified AM primary station, [i.e., WAMI]."[14]

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assignee) shall be subject to the following restrictions: (1) this facility may only, in perpetuity, be used to rebroadcast the authorized facilities of the AM primary station set forth in this construction permit, except that it may also originate nighttime programming if the AM primary station set forth in this construction permit is not authorized regular nighttime service, and then only during periods of the broadcast day when the primary AM station is not regularly authorized to operate; (2) if the AM primary station is operating with reduced facilities, this cross-service FM translator facility may only operate if its coverage contour conforms to the limits set forth in 47 CFR Section 74.1201(g) as applied to the reduced facilities of the AM primary station; (3) the authorization for this facility may not be assigned or transferred except in conjunction with the primary AM station set forth in this construction permit; and (4) if the authorization of the AM primary station set forth in this construction permit is rescinded, revoked, surrendered, subject to special temporary authorization (STA) to remain silent, or is otherwise suspended from operation, the authorization of this cross-service FM translator station shall likewise be rescinded, revoked, surrendered, silent for the duration of the AM primary station's STA to remain silent, or suspended from operation. Minor modifications of this authorization are permitted, provided that the translator meets all of the preceding conditions. Grant of this authorization is conditioned on the common ownership, in perpetuity, of this facility and the specified AM primary station. Any violation of this condition shall result in the rescission of the grant of this authorization and the dismissal, with prejudice, of the associated application and, if applicable, cancellation of the associated construction permit.") (Special Operating Condition). The 2018 Permit, as modified, expired on July 17, 2021.

[12] WAMI Assignment (authorization stating that "[t]he assignee [(Brantley)] is not authorized to construct or operate WAMI unless and until notification of consummation in letter form is forwarded to the Commission.").

[13] *See* Application File No. 0000152159.

[14] Application File No. 0000152159 (granting license covering Application File No. 0000114527); Special Operating Condition. We note that on March 30, 2022, Brantley filed a STA request for W237FK to remain silent because its primary station, WAMI, was silent due to tower site issues. *See* File No. BLSTA-20220330AAB. The Bureau granted the STA request on June 1, 2022. *Id*. Brantley then filed, on September 29, 2022, another minor modification application proposing to move W237FK from Opp, Alabama, to Tuskegee, Alabama. *See* Application File No. 0000201205 (Tuskegee Modification Application). Marble City opposed the Tuskegee Modification Application in a petition to deny filed on October 5, 2022, and requests in the instant Objection that the Bureau incorporate those arguments in this proceeding. *See* Petition to Deny of Marble City Media, LLC, Pleading File No. 0000201957 (filed Oct. 5, 2022) (October Petition); Objection at 1. While the Tuskegee Modification Application was pending, Brantley filed a STA extension request for W237FK on November 23, 2022, seeking authorization to remain silent until March 26, 2023, when WAMI "implements the facilities in the construction permit." *See*

In the Objection, Marble City argues that Brantley failed to comply with the specific terms of the W237FK authorization and associated construction permit requiring common ownership of W237FK and WAMI, and also violated the Commission's *Revitalization of the AM Radio Service First Report and Order* and section 73.3517 of the Rules.[15] Specifically, Marble City maintains that Brantley and Johnson failed to consummate the WAMI Assignment and that violation of this condition requires the rescission of the grant of the W237FK authorization and dismissal, with prejudice, of the associated application.[16] Marble City further contends that without the required consummation of the WAMI Assignment, Brantley does not hold a valid license for W237FK which can be assigned.[17] Accordingly, Marble City urges the Bureau to deny the instant Application.[18]

Discussion. Section 310(d) of the Communications Act of 1934, as amended (Act),[19] requires the Commission to determine whether the proposed assignment or transfer of a broadcast license is in the public interest. Section 309(d)(1) of the Act states that any party in interest may file a petition to deny certain applications, including assignment applications such as the one currently before us.[20] A petition to deny must "contain specific allegations of fact sufficient to show that the petitioner is a party in interest and that a grant of the application would be *prima facie* inconsistent with [the public interest]."[21] The allegations of fact, except for those of which official notice may be taken, must be supported by an affidavit or declaration under penalty of perjury of someone with personal knowledge of the facts alleged.[22] Here, Marble City has not provided an affidavit to support the allegations raised in its pleading.[23] Therefore, we find that the pleading is a procedurally defective petition to deny and dismiss it as such.[24] Consistent with Commission practice, however, we instead consider the pleading as an

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Application File No. 0000204178 (STA Extension Request). On December 15, 2022, the Bureau dismissed the Tuskegee Modification Application because the proposed 40 dBμ F(50,10) interfering contour would overlap the 60 dBμ F(50,50) protected contour of WRLD(FM) in violation of section 74.1204(a) of the Rules. *See Broadcast Actions*, Public Notice, Report No. PN-2-221219-01 (MB Dec. 19, 2022). In light of the Bureau's dismissal of the Tuskegee Modification Application, we dismiss the October Petition as moot. However, because some of the arguments raised in the October Petition are related and relevant to the instant matter, we incorporate them here by reference. Additionally, as discussed below, we dismiss the STA Extension Request, which has remained pending until this point.

[15] *See* Petition at 2.

[16] Petition at 2; October Petition at 3-4 (referencing Application File No. 0000152159 and Application File No. 0000114527).

[17] Petition at 1.

[18] *Id*.

[19] 47 U.S.C. § 310(d).

[20] 47 U.S.C. § 309(d)(1).

[21] *Id.*

[22] *Id.*

[23] *Id.*

[24] 47 CFR § 73.3584(e).

informal objection pursuant to section 73.3587 of the Rules[25] and grant the Objection for the reasons discussed below.

Like petitions to deny, informal objections must provide properly supported allegations of fact that, if true, would establish a substantial and material question of fact that grant of the application would be *prima facie* inconsistent with the Act.[26] We find that Marble City has met this burden.

We have carefully considered all of the facts involved in this matter and find that Brantley failed to act with the responsibility and diligence expected of a Commission licensee and required by the terms of the W237FK authorization and associated construction permit. When Brantley accepted the conditional authorization and permit, it agreed to be subject to the conditions set forth therein, including the condition requiring common ownership, in perpetuity, of translator W237FK and station WAMI.[27] In order to comply with this condition, Brantley or Johnson was required to submit to the Commission by May 29, 2018, a notification of the completed consummation of the WAMI Assignment in letter form showing the date the acts necessary to effect the transaction were completed.[28] It was incumbent upon Brantley to comply with the terms of its conditional authorization and permit or to seek additional time to comply with those conditions. Brantley had explicit notice that failure to comply the express terms of its conditional license and permit would result in the rescission of the grant of its authorization and the dismissal, with prejudice, of the associated application and, if applicable, cancellation of the associated construction permit. More than four years have passed since the grant of the WAMI Assignment and neither party has notified the Commission that consummation of the assignment was completed or has requested an extension of time to fulfill the condition.[29] Because Brantley failed to comply with its conditional authorization for W237FK and the associated construction permit, we rescind the grant of the W237FK authorization, dismiss, with prejudice, the associated application, cancel the associated construction permit, and delete the W237FK call sign. Additionally, we terminate W237FK's operating authority, effective immediately, and dismiss Brantley's STA Extension Request. We also dismiss, with prejudice, the Application at issue as there is no valid license to assign.

Conclusion/Actions. For the foregoing reasons, **IT IS ORDERED** that the Petition to Deny filed by Marble City Media, LLC, Pleading File No. 0000205607, on December 15, 2022, **IS DISMISSED** as procedurally defective and alternatively **GRANTED** on the merits as an informal objection.

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[25] 47 CFR § 73.3587.

[26] *See Area Christian Television, Inc.*, Memorandum Opinion and Order, 60 RR 2d 862, 864, para. 6 (1986) (informal objections, like petitions to deny, must contain adequate and specific factual allegations sufficient to warrant the relief requested).

[27] *See* Application File No. 0000152159; Special Operating Condition. *See also P&R Temmer v. FCC*, 743 F.2d 918, 928 (D.C. Cir. 1984) ("An FCC licensee takes its license subject to the conditions imposed on its use. These conditions may be contained in both the Commission's regulations and in the license. Acceptance of a license constitutes accession to all such conditions. A licensee may not accept only the benefits of the license while rejecting the corresponding obligations."). *See also* 47 CFR § 1.110 (applicants are subject to a 30-day deadline after conditional grant of an application to challenge the condition).

[28] WAMI Assignment Application.

[29] *See* Application, Asset Purchase Agreement at Section 1(c) (acknowledging that Johnson is the owner of WAMI(AM)).

IT IS FURTHER ORDERED that the application filed by Brantley Broadcast Associates, LLC on November 11, 2022, for consent to assign the license of FM translator W237FK, Opp, Alabama to Christopher W. Johnson, Application File No. 0000204488, **IS DISMISSED WITH PREJUDICE**.

IT IS FURTHER ORDERED that grant of the license for FM translator W237FK, Opp, Alabama, Application File No. 0000152159, **IS RESCINDED**, and the application **IS DISMISSED WITH PREJUDICE**.

IT IS FURTHER ORDERED that the construction permit for FM translator W237FK, Opp, Alabama, Application File No. 0000114527, **IS CANCELLED**.

IT IS FURTHER ORDERED that call sign W237FK **IS DELETED**.

IT IS FURTHER ORDERED that FM translator W237FK, Opp, Alabama, **MUST CEASE OPERATIONS IMMEDIATELY**.

IT IS FURTHER ORDERED that the request filed by Brantley Broadcast Associates, LLC on November 23, 2022, for an extension of silent special temporary authority for FM translator W237FK at Opp, Alabama, Application File No. 0000204178, **IS DISMISSED.**

IT IS FURTHER ORDERED that the Petition to Deny filed by Marble City Media, LLC, Pleading File No. 0000201957, on October 5, 2022, **IS DISMISSED AS MOOT**.

Sincerely,

Albert Shuldiner
Chief, Audio Division
Media Bureau

PUBLIC NOTICE

Federal Communications Commission
45 L Street NE
Washington, DC 20554

News Media Information 202-418-0500
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DA 23-340
Released: April 19, 2023

BROADBAND DATA TASK FORCE ANNOUNCES PROCESS FOR ACADEMIC INSTITUTIONS AND OTHER ORGANIZATIONS TO LICENSE BROADBAND SERVICEABLE LOCATION FABRIC DATA FOR BROADBAND AVAILABILITY RESEARCH

WC Docket Nos. 19-195, 11-10

By this Public Notice, the Broadband Data Task Force (Task Force) and Office of Economics and Analytics (OEA) announce that parties may now obtain a license to use the Broadband Serviceable Location Fabric (Fabric) for purposes of conducting non-commercial academic or public-policy research directly related to broadband availability.

The Fabric is the "common dataset of all locations in the United States where fixed broadband internet access service can be installed, as determined by the Commission."[1] As required under the Broadband DATA Act, the Fabric "shall . . . serve as the foundation upon which all data relating to the availability of fixed broadband internet access service . . . shall be reported and overlaid."[2] The Broadband DATA Act further requires that the Commission create a process whereby information included in the Fabric may be challenged by consumers, state, local, and Tribal governmental entities, and other entities or individuals.[3]

Fabric licenses are now available to entities seeking to conduct non-commercial academic or public-policy research directly related to broadband availability. Such entities must first obtain a username, password, and FRN (FCC Registration Number) via the Commission Registration System (CORES) at https://apps.fcc.gov/cores/userLogin.do, then log into the BDC system at http://bdc.fcc.gov using that username and password, and fill in the Entity Information page for the FRN. Entities will then receive an email from CostQuest about how to execute a limited end-user license agreement for the Fabric. Depending on its organization type, the entity may need to provide a brief description of how the intended use of the Fabric data supports non-commercial academic or public-policy research and how the organization is involved in issues related to broadband availability. For more information, see https://help.bdc.fcc.gov/hc/en-us/articles/10419121200923-How-Entities-Can-Access-the-Location-Fabric-.

The Task Force initially made Version 1 of the Fabric data available to internet service providers and state, local, and Tribal governmental entities on June 23, 2022, so that they could submit broadband availability data prior to the close of the filing window on September 1, 2022.[4] Additionally, these

[1] 47 U.S.C. § 642(b)(1)(A)(i).

[2] 47 U.S.C. § 642(b)(1)(B)(ii).

[3] 47 U.S.C. § 642(b)(5)(A).

[4] *See Broadband Data Task Force Announces the Availability of the Production Version of the Broadband Serviceable Location Fabric*, WC Docket Nos. 19-195 & 11-10, Public Notice, DA 22-668 (BDTF, WCB, OEA June 23, 2022).

entities were able to submit bulk Fabric challenges when that process commenced on September 12, 2022.[5] As of November 15, 2022, other entities and organizations were also able to obtain a license to the Fabric for purposes of submitting fixed challenges and crowdsource data to improve the accuracy of the BDC maps. Version 2 of the Fabric data was made available to all licensed entities on January 3, 2023.

A variety of technical assistance resources related to the Fabric, including tutorials, knowledge base articles, FAQs, and other information, are available on the BDC Help Center at https://help.bdc.fcc.gov. Requests for technical support may be submitted using the "Get Help" link available on that page.

For information about the Fabric or the Broadband Data Collection, please visit the BDC website at https://www.fcc.gov/BroadbandData. For media inquiries, please contact Anne Veigle in the Office of Media Relations at anne.veigle@fcc.gov.

– FCC –

[5] *See Broadband Data Task Force Announces the Start of the Broadband Serviceable Location Fabric Bulk Challenge Process*, WC Docket Nos. 19-195 & 11-10, Public Notice, DA 22-913 (BDTF, WCB, OEA Sept. 2, 2022).

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Clear Rate Communications	)	Complaint No. 6082153
	)	
Complaint Regarding	)	
Unauthorized Change of	)	
Subscriber's Telecommunications Carrier	)	

ORDER

Adopted: April 19, 2023 **Released: April 20, 2023**

By the Acting Chief, Consumer Policy Division, Consumer and Governmental Affairs Bureau:

1. In this Order, we consider a complaint alleging that Clear Rate Communications (Clear Rate) changed Complainant's telecommunications service provider without obtaining authorization and verification from Complainant as required by the Commission's rules.[1] We conclude that Clear Rate's actions violated the Commission's slamming rules, and we therefore grant Complainant's complaint.

2. Section 258 of the Communications Act of 1934, as amended (the Act), prohibits the practice of "slamming," the submission or execution of an unauthorized change in a subscriber's selection of a provider of telephone exchange service or telephone toll service.[2] The Commission's implementing rules require, among other things, that a carrier receive individual subscriber consent before a carrier change may occur.[3] Specifically, a carrier must: (1) obtain the subscriber's written or electronically signed authorization in a format that satisfies our rules; (2) obtain confirmation from the subscriber via a toll-free number provided exclusively for the purpose of confirming orders electronically; or (3) utilize an appropriately qualified independent third party to verify the order.[4] The Commission has also adopted rules to limit the liability of subscribers when an unauthorized carrier change occurs, and to require carriers involved in slamming practices to compensate subscribers whose carriers were changed without authorization.[5]

3. The Commission's slamming rules prohibit misrepresentations on sales calls to further reduce the incidence of slamming.[6] Under the rules, upon a finding of material misrepresentation during

[1] *See* Informal Complaint No. 6082153 (filed Mar. 8, 2023); *see also* 47 CFR §§ 64.1100 – 64.1190.

[2] 47 U.S.C. § 258(a).

[3] *See* 47 CFR § 64.1120.

[4] *See id.* § 64.1120(c). Section 64.1130 details the requirements for letter of agency form and content for written or electronically signed authorizations. *Id.* § 64.1130.

[5] These rules require the unauthorized carrier to absolve the subscriber where the subscriber has not paid his or her bill. If the subscriber has not already paid charges to the unauthorized carrier, the subscriber is absolved of liability for charges imposed by the unauthorized carrier for service provided during the first 30 days after the unauthorized change. *See id.* §§ 64.1140, 64.1160. Any charges imposed by the unauthorized carrier on the subscriber for service provided after this 30-day period shall be paid by the subscriber to the authorized carrier at the rates the subscriber was paying to the authorized carrier at the time of the unauthorized change. *Id.* Where the subscriber has paid charges to the unauthorized carrier, the Commission's rules require that the unauthorized carrier pay 150 percent of those charges to the authorized carrier, and the authorized carrier shall refund or credit to the subscriber 50 percent of all charges paid by the subscriber to the unauthorized carrier. *See id.* §§ 64.1140, 64.1170.

[6] *Id.* § 64.1120(a)(1)(i)(A).

the sales call, the consumer's authorization to change carriers will be deemed invalid even if the carrier has some evidence of consumer authorization of a carrier switch, e.g., a third-party verification (TPV) recording. Sales misrepresentations may not be cured by a facially valid TPV.[7] The rule provides that a consumer's credible allegation of misrepresentation shifts the burden of proof to the carrier to provide evidence to rebut the consumer's claim regarding misrepresentation. The Commission made clear that an accurate and complete recording of the sales call may be the carrier's best persuasive evidence to rebut the consumer's claim that a misrepresentation was made on the sales call.[8]

4. We received Complainant's complaint alleging that Complainant's telecommunications service provider had been changed without her authorization.[9] In the complaint, Complainant states that she was contacted by "someone stating they were from Verizon and were offering our non-profit a cheaper rate per line and that we will [] have no problems with our services."[10] Complainant also explained that she accepted the offer in part because the caller provided her non-profit's Verizon account number. Complainant then discovered that her non-profit organization's telephone line had been switched when there was no dial tone. She immediately filed a complaint with the Commission, stating that "I never ordered anything but a discount rate" when "the [Clear Rate representative] clearly said she was calling [from a] Verizon company."[11]

5. Pursuant to our rules, we notified Clear Rate of the complaint.[12] Clear Rate responded, stating that Complainant agreed to and authorized the carrier switch, and that the terms and conditions of service were described in detail for Complainant on the TPV call.[13] Clear Rate also provided two audio recordings—the TPV recording and a recording Clear Rate characterized as a "quality assurance call."[14] Clear Rate did not provide a recording of the sales call or any other evidence related to the sales call.

6. The Division thoroughly reviewed all the evidence provided by both the Complainant and Clear Rate. Based on the evidence in the record, we find Complainant's allegation of a sales call misrepresentation to be credible. We further find that Clear Rate has failed to provide persuasive evidence to rebut Complainant's misrepresentation claim and therefore that Complainant's authorization to change carriers is invalid. As the Commission stated in the *2018 Slamming Order*, "[w]hen a consumer's decision to switch carriers is predicated on false information provided in a sales call, that

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[7] *See Protecting Consumers from Unauthorized Carrier Changes and Related Unauthorized Charges*, 33 FCC Rcd 5773, 5778-80, paras. 17-19 (2018) (*2018 Slamming Order*); 47 CFR § 64.1120(a)(1)(i)(A).

[8] *See 2018 Slamming Order*, 33 FCC Rcd at 5781, para. 23. The Commission also stated that a carrier is uniquely positioned via its access to sales scripts, recordings, training, and other relevant materials relating to sales calls to proffer evidence to rebut a consumer's claims. *Id*.

[9] *See* Informal Complaint No. 6082153.

[10] *Id.*

[11] *Id.*

[12] 47 CFR § 1.719 (Commission procedure for informal complaints filed pursuant to section 258 of the Act); *id.* § 64.1150 (procedures for resolution of unauthorized changes in preferred carrier). In the notification, we directed Clear Rate to respond to the specific misrepresentation allegation and to provide any evidence to rebut it.

[13] *See* Clear Rate Response to Informal Complaint No. 6082153 (filed Mar. 27, 2023) (also stating that the final balance due on the account is $2,090.03 which includes charges for three days of service (3/8/23 – 3/10/23) and early termination fees; *see also* 47 CFR § 64.1160.

[14] We note that on the "quality assurance call," the Clear Rate representative states that "you will not have any interruptions in your current service. This is through a contract agreement between Verizon and Clear Rate; that Clear Rate will just provide your billing at a wholesale rate and manage your customer service needs in a more timely manner." During the call, Complainant asks, "there will be no extra charges for that second company, right?" The Clear Rate representative responds, "right."

consumer's authorization to switch carriers can no longer be considered binding."[15] We therefore find that Clear Rate's actions resulted in an unauthorized change in Complainant's telecommunications service provider, as defined by the rules, and we discuss Clear Rate's liability below.[16]

7. Clear Rate must remove all charges incurred for service provided to Complainant for the first thirty days after the alleged unauthorized change in accordance with the Commission's liability rules.[17] We have determined that Complainant is entitled to absolution for the charges incurred during the first thirty days after the unauthorized change occurred and that neither the Complainant's authorized carrier nor Clear Rate may pursue any collection against Complainant for those charges.[18] Any charges imposed by Clear Rate on the Complainant for service provided after this 30-day period shall be paid by the Complainant to the authorized carrier at the rates the Complainant was paying the authorized carrier at the time of the unauthorized change of their telecommunications service provider.[19]

8. Accordingly, IT IS ORDERED that, pursuant to section 258 of the Communications Act of 1934, as amended, 47 U.S.C. § 258, and sections 0.141, 0.361, and 1.719 of the Commission's rules, 47 CFR §§ 0.141, 0.361, 1.719, the complaint filed against Clear Rate Communications IS GRANTED.

9. IT IS FURTHER ORDERED that, pursuant to section 64.1170(d) of the Commission's rules, 47 CFR § 64.1170(d), Complainant is entitled to absolution for the charges incurred during the first thirty days after the unauthorized change occurred and that Clear Rate Communications may not pursue any collection against Complainant for those charges.

10. IT IS FURTHER ORDERED that this Order is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Kristi Thornton
Acting Chief
Consumer Policy Division
Consumer and Governmental Affairs Bureau

[15] *2018 Slamming Order*, 33 FCC Rcd at 5779, para. 18 (citing *Advantage Forfeiture Order*, 32 FCC Rcd 3723, 3725-30, paras. 7-13 (2017) (finding that the carrier's TPV recordings did not disprove that unlawful misrepresentations were made during the telemarketing calls and further, that questions posed during the separate TPV calls did not cure those misrepresentations)).

[16] If Complainant is unsatisfied with the resolution of the complaint, the Complainant may file a formal complaint with the Commission pursuant to Section 1.721 of the Commission's rules, 47 CFR § 1.721. Such filing will be deemed to relate back to the filing date of Complainant's informal complaint so long as the formal complaint is filed within 45 days from the date this order is mailed or delivered electronically to Complainant. *See id.* § 1.719.

[17] *See id.* § 64.1160(b).

[18] *See id.* § 64.1160(d).

[19] *See id.* § 64.1140, 64.1160.

PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION
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DA No. 23-342

Report No. SAT-01719 **Friday April 21, 2023**

Satellite Licensing Division and Satellite Programs and Policy Division Information

Actions Taken

The Commission, by its Space Bureau, took the following actions pursuant to delegated authority. The effective date of these actions is the release date of this Notice, except where an effective date is specified.

SAT-STA-20230412-00082	E	Astranis Projects USA LLC
Special Temporary Authority		
Grant of Authority		Effective Date: 04/20/2023

On April 20, 2023, the Satellite Programs and Policy Division granted, with conditions, the request of Astranis Projects USA LLC, for special temporary authority, for a period of up to 60 days to operate the Arcturus geostationary-orbit satellite, authorized for operations at the 163° W.L. orbital location, using the following center frequencies for telemetry, tracking, and command: 28.352 GHz and 28.355 GHz (Earth-to-space) and 19.702 GHz and 19.705 GHz (space-to-Earth).

For more information concerning this Notice, contact the Satellite Licensing Division and Satellite Programs and Policy Division at (202) 418-0719.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Clear Rate Communications	)	Complaint No. 6166985
	)	
Complaint Regarding	)	
Unauthorized Change of	)	
Subscriber's Telecommunications Carrier	)	

ORDER

Adopted: April 21, 2023 **Released: April 21, 2023**

By the Acting Chief, Consumer Policy Division, Consumer and Governmental Affairs Bureau:

1. In this Order, we consider a complaint alleging that Clear Rate Communications (Clear Rate) changed Complainant's telecommunications service provider without obtaining authorization and verification from Complainant as required by the Commission's rules.[1] We conclude that Clear Rate's actions violated the Commission's slamming rules, and we therefore grant Complainant's complaint.

2. Section 258 of the Communications Act of 1934, as amended (the Act), prohibits the practice of "slamming," the submission or execution of an unauthorized change in a subscriber's selection of a provider of telephone exchange service or telephone toll service.[2] The Commission's implementing rules require, among other things, that a carrier receive individual subscriber consent before a carrier change may occur.[3] Specifically, a carrier must: (1) obtain the subscriber's written or electronically signed authorization in a format that satisfies our rules; (2) obtain confirmation from the subscriber via a toll-free number provided exclusively for the purpose of confirming orders electronically; or (3) utilize an appropriately qualified independent third party to verify the order.[4] The Commission has also adopted rules to limit the liability of subscribers when an unauthorized carrier change occurs, and to require carriers involved in slamming practices to compensate subscribers whose carriers were changed without authorization.[5]

3. The Commission's slamming rules prohibit misrepresentations on sales calls to further reduce the incidence of slamming.[6] Under the rules, upon a finding of material misrepresentation during

[1] *See* Informal Complaint No. 6166985 (filed Apr. 17, 2023); *see also* 47 CFR §§ 64.1100 – 64.1190.

[2] 47 U.S.C. § 258(a).

[3] *See* 47 CFR § 64.1120.

[4] *See id.* § 64.1120(c). Section 64.1130 details the requirements for letter of agency form and content for written or electronically signed authorizations. *Id.* § 64.1130.

[5] These rules require the unauthorized carrier to absolve the subscriber where the subscriber has not paid his or her bill. If the subscriber has not already paid charges to the unauthorized carrier, the subscriber is absolved of liability for charges imposed by the unauthorized carrier for service provided during the first 30 days after the unauthorized change. *See id.* §§ 64.1140, 64.1160. Any charges imposed by the unauthorized carrier on the subscriber for service provided after this 30-day period shall be paid by the subscriber to the authorized carrier at the rates the subscriber was paying to the authorized carrier at the time of the unauthorized change. *Id.* Where the subscriber has paid charges to the unauthorized carrier, the Commission's rules require that the unauthorized carrier pay 150 percent of those charges to the authorized carrier, and the authorized carrier shall refund or credit to the subscriber 50 percent of all charges paid by the subscriber to the unauthorized carrier. *See id.* §§ 64.1140, 64.1170.

[6] *Id.* § 64.1120(a)(1)(i)(A).

the sales call, the consumer's authorization to change carriers will be deemed invalid even if the carrier has some evidence of consumer authorization of a carrier switch, e.g., a third-party verification (TPV) recording. Sales misrepresentations may not be cured by a facially valid TPV.[7] The rule provides that a consumer's credible allegation of misrepresentation shifts the burden of proof to the carrier to provide evidence to rebut the consumer's claim regarding misrepresentation. The Commission made clear that an accurate and complete recording of the sales call may be the carrier's best persuasive evidence to rebut the consumer's claim that a misrepresentation was made on the sales call.[8]

4. We received Complainant's complaint alleging that Complainant's telecommunications service provider had been changed without his authorization.[9] In the complaint, Complainant states that their business was contacted by a Clear Rate representative "notifying us that we had 'been good customers' and offer[ing] to reduce our phone bill while making it seem like we would still be with CenturyLink." Complainant also states that "[t]he call was clearly designed to confuse and make us believe CenturyLink was giving us a lower rate, when in reality Clear Rate was the provider."[10]

5. Pursuant to our rules, we notified Clear Rate of the complaint.[11] Clear Rate responded, stating that Complainant agreed to and authorized the carrier switch, and that the terms and conditions of service were described in detail for Complainant on the TPV call.[12] Clear Rate also provided two audio recordings—the TPV recording and a recording Clear Rate characterized as a "quality assurance call."[13] Clear Rate did not provide a recording of the sales call or any other evidence related to the sales call.

6. The Division thoroughly reviewed all the evidence provided by both the Complainant and Clear Rate. Based on the evidence in the record, we find Complainant's allegation of a sales call misrepresentation to be credible. We further find that Clear Rate has failed to provide persuasive evidence to rebut Complainant's misrepresentation claim and therefore that Complainant's authorization to change carriers is invalid. As the Commission stated in the *2018 Slamming Order*, "[w]hen a consumer's decision to switch carriers is predicated on false information provided in a sales call, that consumer's authorization to switch carriers can no longer be considered binding."[14] We therefore find

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[7] *See Protecting Consumers from Unauthorized Carrier Changes and Related Unauthorized Charges*, 33 FCC Rcd 5773, 5778-80, paras. 17-19 (2018) (*2018 Slamming Order*); 47 CFR § 64.1120(a)(1)(i)(A).

[8] *See 2018 Slamming Order*, 33 FCC Rcd at 5781, para. 23. The Commission also stated that a carrier is uniquely positioned via its access to sales scripts, recordings, training, and other relevant materials relating to sales calls to proffer evidence to rebut a consumer's claims. *Id*.

[9] *See* Informal Complaint No. 6166985.

[10] *Id.* Complainant further explained that Clear Rate had shut off their company's internet, "crucial to the functioning of our business, which is causing huge problems for [our] being able to operate. We can no longer accept credit card payments, access our mechanic software, or put cars online."

[11] 47 CFR § 1.719 (Commission procedure for informal complaints filed pursuant to section 258 of the Act); *id.* § 64.1150 (procedures for resolution of unauthorized changes in preferred carrier). In the notification, we directed Clear Rate to respond to the specific misrepresentation allegation and to provide any evidence to rebut it.

[12] *See* Clear Rate Response to Informal Complaint No. 6166985 (filed Apr. 19, 2023); *see also* 47 CFR § 64.1160.

[13] We note that on the "quality assurance call," the Clear Rate representative states that "you will not have any interruptions in your current service. This is through a contract agreement between CenturyLink and Clear Rate; that Clear Rate will just provide your billing at a wholesale rate and manage your customer service needs in a more timely manner."

[14] *2018 Slamming Order*, 33 FCC Rcd at 5779, para. 18 (citing *Advantage Forfeiture Order*, 32 FCC Rcd 3723, 3725-30, paras. 7-13 (2017) (finding that the carrier's TPV recordings did not disprove that unlawful misrepresentations were made during the telemarketing calls and further, that questions posed during the separate TPV calls did not cure those misrepresentations)).

that Clear Rate's actions resulted in an unauthorized change in Complainant's telecommunications service provider, as defined by the rules, and we discuss Clear Rate's liability below.[15]

7. Clear Rate must remove all charges incurred for service provided to Complainant for the first thirty days after the alleged unauthorized change in accordance with the Commission's liability rules.[16] We have determined that Complainant is entitled to absolution for the charges incurred during the first thirty days after the unauthorized change occurred and that neither the Complainant's authorized carrier nor Clear Rate may pursue any collection against Complainant for those charges.[17] Any charges imposed by Clear Rate on the Complainant for service provided after this 30-day period shall be paid by the Complainant to the authorized carrier at the rates the Complainant was paying the authorized carrier at the time of the unauthorized change of their telecommunications service provider.[18]

8. Accordingly, IT IS ORDERED that, pursuant to section 258 of the Communications Act of 1934, as amended, 47 U.S.C. § 258, and sections 0.141, 0.361, and 1.719 of the Commission's rules, 47 CFR §§ 0.141, 0.361, 1.719, the complaint filed against Clear Rate Communications IS GRANTED.

9. IT IS FURTHER ORDERED that, pursuant to section 64.1170(d) of the Commission's rules, 47 CFR § 64.1170(d), Complainant is entitled to absolution for the charges incurred during the first thirty days after the unauthorized change occurred and that Clear Rate Communications may not pursue any collection against Complainant for those charges.

10. IT IS FURTHER ORDERED that this Order is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

Kristi Thornton
Acting Chief
Consumer Policy Division
Consumer and Governmental Affairs Bureau

[15] If Complainant is unsatisfied with the resolution of the complaint, the Complainant may file a formal complaint with the Commission pursuant to Section 1.721 of the Commission's rules, 47 CFR § 1.721. Such filing will be deemed to relate back to the filing date of Complainant's informal complaint so long as the formal complaint is filed within 45 days from the date this order is mailed or delivered electronically to Complainant. *See id.* § 1.719.

[16] *See id.* § 64.1160(b).

[17] *See id.* § 64.1160(d).

[18] *See id.* § 64.1140, 64.1160.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Unlicensed White Space Device Operations in the Television Bands	)	ET Docket No. 20-36
	)	
	)	
Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37	)	ET Docket No. 14-165

ORDER ON RECONSIDERATION, REPORT AND ORDER, AND MEMORANDUM OPINION AND ORDER

Adopted: April 11, 2023 **Released: April 12, 2023**

By the Commission:

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I. INTRODUCTION

1. As the Commission continues taking steps to sustain and spur growth within the white space ecosystem, we adopt three orders addressing pending issues associated with white space devices. These actions will provide additional certainty to white space device users and manufacturers to enable unlicensed white space devices to operate efficiently while protecting other spectrum users. In the Report

and Order we adopt rules specifying the database re-check interval for the new categories of mobile and narrowband white space devices established in 2020. In the Order on Reconsideration, we dismiss in part and, on alternative and independent grounds, deny a petition for reconsideration of two rule changes for white space devices operating in the broadcast television (TV) bands. In the Memorandum Opinion and Order, we decline to modify the rules to permit white space databases to use more complex terrain-based models to determine the available frequencies for white space devices and will instead continue to rely on the simpler established model that has worked reliably to prevent interference to TV and other protected services.

II. BACKGROUND

2. Unlicensed white space devices, which operate in the TV broadcast bands and portions of the 600 MHz band at locations where frequencies are not in use by licensed services or other protected entities, provide a variety of wireless services to the public.[1] For example, Wireless Internet Service Providers (WISPs) use fixed white space devices to provide Internet connectivity in rural and underserved areas, including broadband data for schools and libraries, and on tribal lands. These devices obtain a list of available channels and data on power levels that may be used at their particular locations from databases administered by private entities approved by the Commission.[2] Fixed and mobile white space devices must incorporate a geo-location capability and a means to access a database.[3] Personal/Portable white space devices can either acquire a list of available channels via another white space device (Mode I), or themselves include geo-location and database access capabilities (Mode II).[4] Once the white space device acquires channel and power information for its location, it selects an appropriate frequency from that list for transmitting.

3. Since 2008 when the Commission first authorized unlicensed white space device operations in the VHF and UHF TV bands, it has taken a number of further actions to make the white space rules more flexible while protecting incumbent services to facilitate improved broadband services to all Americans, particularly those in rural, Tribal and other underserved areas.[5] Operating in the TV and 600 MHz Service bands allows these devices to operate over long distances at moderate power levels making them ideal for connecting these areas. The Commission continues to examine and modify, as needed, the white space device rules to maximize their efficiency and ensure that the American public continues to reap their benefits.

4. In its *2015 White Spaces Order*, the Commission modified the technical rules for white space device operations in the spectrum that continues to be TV band spectrum following the incentive auction.[6] It maintained the requirement for fixed and Mode II personal/portable devices to re-check the

[1] *See generally* 47 CFR Part 15 subpart H.

[2] 47 CFR §§ 15.711(c)(2), (d)(2) and 15.715.

[3] 47 C.F.R. § 15.711(c)(1), (k)(2), (5).

[4] 47 CFR §§ 15.703(i) and 15.711(d-e). A Mode I device is not required to incorporate geo-location and database access capabilities.

[5] *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket Nos. 04-186 and 02-380, Second Memorandum Opinion and Order, 25 FCC Rcd 18661 (2010) (*2010 Second MO&O*); *Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket Nos. 04-186 and 02-380, Third Memorandum Opinion and Order, 27 FCC Rcd 3692 (2012); *Amendment of Part of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and the 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, ET Docket No. 14-165 and GN Docket No. 12-268, 30 FCC Rcd 9551 (2015) (*2015 White Spaces Order*).

[6] *See generally 2015 White Spaces Order*.

white space database at least once per day, but it also adopted additional requirements intended to better protect licensed wireless microphone operations registered in the white space database. Specifically, the Commission required the white space databases to "push" changes in channel availability information to fixed and Mode II personal/portable devices when a licensed wireless microphone is registered on a previously vacant TV channel ("push notifications").[7] In response to petitions for reconsideration arguing that the push notification requirement was overly burdensome and would need modifications to be effective, the Commission waived this requirement pending final action on the petitions for reconsideration.[8] The Commission, acting on these petitions in 2022, removed the push notification requirement.

5. In the *2020 White Spaces Order and FNPRM*, the Commission made targeted changes to the rules for white space devices in the TV bands to provide improved broadband coverage for American consumers in rural and underserved areas and improved access to narrowband Internet of Things (IoT) applications in all areas.[9] Specifically, the Commission permitted higher EIRP and higher antenna height above average terrain (HAAT) for fixed white space devices in "less congested" geographic areas, i.e., those areas where at least half the TV channels in a device's band of operation are vacant.[10] In addition, the Commission permitted higher power mobile device operation within defined geo-fenced areas in "less congested" areas and adopted rule changes designed to facilitate the development of new and innovative narrowband IoT services.[11] Mobile devices, which operate within a bounded area at power levels comparable to fixed devices, were implemented as a new class of white space device.[12] Narrowband devices are a subset of fixed or personal/portable devices, and are subject to technical rules which permit narrower channel bandwidths than other fixed and personal/portable devices.[13] The Commission, consistent with existing rules, required narrowband and mobile devices to comply with a once daily database check.[14]

6. Shure Incorporated filed a petition for reconsideration of two Commission decisions in the *2020 White Spaces Order and FNPRM*, expressing concern about possible interference to wireless

[7] *2015 White Spaces Order*, 30 FCC Rcd at 9662-64, para. 273-78.

[8] *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37*, Order, 31 FCC Rcd 13798 (2016) (*Push Notification Waiver Order*). The original waiver was due to expire June 23, 2017, but the Office of Engineering and Technology subsequently extended this waiver multiple times. The waiver expired upon the effective date of the rules adopted by the Commission in January 2022 that removed the push notification requirement and replaced it with a requirement for more frequent database re-checks by white space devices. *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and the 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, *Unlicensed White Space Device Operations in the Television Bands, Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 14-165, GN Docket No. 12-268, ET Docket Nos. 20-36 and 04-186, FCC 22-6, at 15 (January 26, 2022) (*2022 White Spaces Order and FNPRM*).

[9] *Unlicensed White Space Device Operations in the Television Bands*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 12603 (2020) (*2020 White Spaces Order and FNPRM*).

[10] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12606, para. 7.

[11] *Id.*

[12] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12623-24, para. 53.

[13] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12626-29, paras. 62-67.

[14] 47 CFR § 15.711(c)(2)(iii), (d)(4), (k)(9).

microphones.[15] Shure believes that the 16-watt EIRP limit that the Commission permitted for geo-fenced mobile devices is too high and requests that this limit be reduced.[16] Shure also objects to narrowband IoT devices being permitted to operate anywhere rather than limited to "less congested" areas, and wants the Commission to consider imposing additional requirements on narrowband IoT devices, such as requiring device operators to register the times, locations and technical operating parameters in the white space database.[17]

7. The Commission sought comment in the *2020 White Spaces Order and FNPRM* on whether it should allow the use of a terrain-based propagation model such as the Longley-Rice Irregular Terrain Model for determining white space channel availability.[18] It sought to develop a record on whether or not to implement such a model, the effect use of such a model would have on white space device channel availability, how a terrain-based model could be implemented within the current white space device framework, the technical parameters necessary to use such a model for identifying available spectrum while protecting incumbents from harmful interference, and various database and device implementation issues.

8. Unlicensed proponents support permitting the use of terrain-based models by white space database administrators as an optional alternative to the current model that requires white space devices to comply with minimum separation distances outside the protected service contours of co-channel and adjacent channel TV stations.[19] These parties generally argue that the current protection model can be overly conservative and that permitting terrain-based models would make more spectrum available for white space devices.[20] However, TV broadcast interests oppose allowing the use of terrain-based models for determining white space channel availability due to concerns about interference to TV reception.[21]

9. In its 2022 *White Spaces Order and FNPRM*, the Commission addressed the 2015 petitions for reconsideration of the push notification requirement. It replaced this requirement with a simpler requirement that all fixed and Mode II personal/portable devices, with the exception of narrowband devices, must comply with a more frequent database re-check interval (once per hour instead of once per day).[22] The Commission did not apply the more frequent re-check requirement to the newer classes of mobile and narrowband white space devices established in 2020 but instead sought comment on what database re-check interval should apply to mobile and narrowband devices, e.g., once per hour, once per day, or some other interval.[23] Commenters support an hourly database re-check interval for mobile

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[15] Petition for Reconsideration of Shure Incorporated, ET Docket No. 20-36, at 5, 15 (filed Feb. 11, 2021), https://www.fcc.gov/ecfs/file/download/DOC-5de50adf5a400000-A.pdf?file_name=Shure%20-%20TVWS%20Petition%20for%20Reconsideration%20-%20ET%20Docket%20No.%2020-36%20(2.11.21).pdf (Shure Petition). Shure submitted two attachments with their petition. Attachment A - Mobile WSD Impact Assessment on Wireless Microphones, https://www.fcc.gov/ecfs/file/download/DOC-5de50adf5a400000-B.pdf?file_name=Attachment%20A%20-%20Mobile%20WSD%20Impact%20Assessment%20on%20Wireless%20Microphones.pdf; Attachment B - Environment Study for 900 ISM Projects (ULXD/QLXD), https://www.fcc.gov/ecfs/file/download/DOC-5de50adf5a400000-C.pdf?file_name=Attachment%20B%20-%20Environment%20Study%20for%20900%20ISM%20Projects.pdf.

[16] Shure Petition at 5.

[17] Shure Petition at 15, 20.

[18] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12632-33, para. 79.

[19] Microsoft Comments at 7; WISPA Comments at 8; DSA Comments at 8; PISC Comments at 13.

[20] Microsoft Comments at 2; WISPA Comments at 3; DSA Comments at 2; PISC Comments at 11.

[21] NAB Comments at 4; Smith and Fisher Comments at 4; Cohen, Dippell and Everist Reply at 2; BitPath Reply at 3; ONE Media Reply at 6.

[22] *2022 White Spaces Order and FNPRM* at 10, para. 22.

[23] *2022 White Spaces Order and FNPRM* at 10, 16-17, paras. 22, 38-41.

devices,[24] but are divided on the appropriate re-check interval for narrowband devices. Unlicensed interests support a once daily re-check interval for narrowband devices, while broadcasters and wireless microphone interests support an hourly re-check interval.[25]

III. ORDER ON RECONSIDERATION

10. In this Order on Reconsideration, we dismiss in part and, on alternative and independent grounds, deny Shure's petition for reconsideration and uphold the Commission's decisions allowing mobile devices to operate at 16 watts EIRP and permitting narrowband white space devices to operate in all areas rather than limiting them to "less congested" areas.

A. Mobile device power limits

11. *Background*. In the *2020 White Spaces Order and FNPRM*, the Commission established a new class of mobile white space device which is permitted to operate within defined geo-fenced areas in "less congested" areas.[26] It permitted these mobile devices to operate with up to 16 watts EIRP, which is the same power level permitted for fixed devices in "less congested" areas.[27] The white space database must determine channel availability in the geo-fenced area using the same separation distances applicable to 16 watt fixed devices, and the database may indicate a channel as being available for a mobile device only if it is available at the same power level throughout the entire geo-fenced area.[28] A mobile device must incorporate a geo-location capability and check its location at least once every 60 seconds to determine whether it is still within the geo-fenced area where its operating channel is available.[29] It must cease operation if it moves to within 1.9 kilometers of the boundary of the geo-fenced area or is outside of the area.[30]

12. Shure filed a petition for reconsideration of this decision, expressing concern about possible interference to unlicensed wireless microphones. Shure believes that the 16-watt EIRP limit that the Commission permitted for geo-fenced mobile devices is too high and recommends that the power limit be reduced to 100 milliwatts, but in no case greater than 4 watts.[31] It argues that the Commission's decision to authorize high power mobile white space devices is irreconcilable with a 2010 decision denying a request for higher power mobile operation and is not in the public interest.[32] Shure also argues that the *2020 White Spaces Order and FNPRM* misguidedly conflates the interference profiles of fixed and mobile white space devices, fails to consider substantial risks of harm to the many users of unlicensed wireless microphones in less congested areas, and indefensibly deviates from the Commission's consistent policy of exercising caution when introducing new white space services.[33] Microsoft opposes Shure's petition, arguing that the Commission's decision to adopt a 16-watt EIRP limit for mobile devices operating within geo-fenced areas was well-reasoned, cautious, and consistent with precedent.[34]

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[24] NAB Comments at 1-2; Shure Comments at 5; Sennheiser Comments at 5; Microsoft Comments at 3.

[25] Microsoft Comments at 3; CTA Reply at 2; OTI and PK Reply at 2; NAB Comments at 5; Shure Comments at 5; Sennheiser Comments at 3.

[26] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12623, para. 53.

[27] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12624, para. 54.

[28] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12624, para. 55.

[29] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12625, paras. 57-58.

[30] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12625, para. 58.

[31] Shure Petition at 5.

[32] Shure Petition at 6.

[33] Shure Petition at 7-13.

[34] Microsoft Opposition at 1.

13. We uphold the Commission's decision to allow the new class of mobile white space devices to operate at up to 16 watts EIRP. We disagree with Shure's contention that this decision is irreconcilable with past Commission actions.[35] The Commission made the 2010 decision that Shure cites in response to a Motorola petition for reconsideration of the 100 milliwatt power limit for personal/portable devices that the Commission established in 2008.[36] Motorola had requested on reconsideration that the Commission establish a new class of vehicle mounted portable devices that could operate at up to four watts EIRP either under the control of a fixed device or that contacted a white space database to obtain a list of available channels, i.e., analogous to the operation of Mode I and Mode II personal/portable devices, but at a higher power level.[37] The Commission denied Motorola's request, stating that personal/portable devices generally pose a greater risk of harmful interference to authorized operations than fixed devices because these devices will change locations, making identification of both unused TV frequencies and the devices themselves, if interference occurs, more complex and difficult.[38] The Commission also noted the significant distances at which interference could occur from a personal/portable device operating at greater than 100 milliwatts would make it very difficult to identify a device that is the source of interference.[39] However, the rules the Commission adopted in the *2020 White Spaces Order and FNPRM* to allow higher power mobile devices are different from what Motorola previously suggested in that they contain requirements to minimize the likelihood of interference that were not considered in 2010.

14. Specifically, mobile devices must operate within a pre-defined (geo-fenced) area in which the white space database has determined in advance that at least one TV channel is available at all locations within the area.[40] A channel is considered available for a mobile device if it meets the minimum required separation distances applicable to 16-watt fixed devices from all protected services in the TV bands, including TV broadcast services (full power, Class A and low power), licensed wireless microphones, land mobile radio services, and registered TV and broadcast auxiliary service receive sites.[41] In addition to the geo-fencing requirement, mobile devices are limited to operation in "less congested" areas, which are defined as those areas where at least half the channels within the band of operation are vacant.[42] For example, for devices operating in the UHF TV band (channels 14-36), a location is considered "less congested" if at least 12 of the 23 UHF TV channels are vacant. These two requirements, limiting the new class of higher power mobile device to areas with more available spectrum, substantially reduces the likelihood of harmful interference to authorized services in the TV bands, and enables all unlicensed devices, including other white space devices and unlicensed wireless microphones, to have an opportunity to access spectrum in the TV bands.[43] Limiting operation of mobile devices to geo-fenced areas also addresses the concern the Commission previously noted about difficulties mobile devices may have in identifying vacant spectrum because the database will determine in advance which

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[35] Shure Petition at 6; *2010 Second MO&O*, 25 FCC Rcd at 18694, para. 78; Petition for Reconsideration and Clarification of Motorola, Inc.; ET Docket No. 04-186, at 15-19 (filed Mar. 19, 2009), https://www.fcc.gov/ecfs/file/download/6520201876.pdf (Motorola Petition).

[36] *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 04-186, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807, 16852, para. 126 (2008) (*2008 Second R&O and MO&O*).

[37] Motorola Petition at 16; *2008 Second R&O and MO&O*, 23 FCC Rcd at 16852, para. 124. A Mode I device operates under the control of a fixed or Mode II device, while a Mode II device has its own geo-location and database access capabilities.

[38] *2010 Second MO&O*, 25 FCC Rcd at 18694, para. 78.

[39] *Id.*

[40] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12624, para. 55.

[41] *Id.*

[42] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12623, para. 53; 47 CFR § 15.703.

[43] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12626, para. 59.

channels are available over an entire geo-fenced area. Thus mobile devices will have flexibility to move freely within the area without causing harmful interference. The requirement for mobile devices to comply with the same separation distances as fixed devices, which have the same power limits as mobile devices, will ensure that mobile devices have no greater interference potential than fixed devices, and that services in the TV bands are adequately protected, even at the larger separation distances required from higher power mobile devices. The potential for mobile devices to interfere with unlicensed wireless microphones could in some cases be lower than fixed devices because mobile devices will generally operate with an antenna height above ground of no more than 4 meters due the necessity for vehicle clearance under bridges, power lines, trees, etc., so a mobile device signal could be attenuated by clutter such as buildings, trees and hills between a mobile device and a wireless microphone.[44] In addition, because a mobile device may operate at the maximum 16 watts EIRP only if it uses a highly directional antenna with a gain of at least 12 dBi, which would require use of an electrical antenna beam steering system, mobile device operators may choose the less costly option of operating with an omnidirectional antenna which would have a lower gain, resulting in an EIRP of less than 16 watts.[45]

15. We disagree with Shure's contention that the technical limits for mobile devices (maximum in-band power, antenna gain, power spectral density, adjacent channel and out-of-band emissions) require additional study by the Commission.[46] Shure's petition focuses on the EIRP limit for mobile devices, which is a function of the in-band conducted power and antenna gain.[47] While it requests a lower EIRP limit for mobile devices which we decline to adopt, it does not request specific changes to the in-band conducted power and antenna gain limits and does not raise specific concerns about the suitability of any other technical limits, e.g., power spectral density, adjacent channel and out-of-band emissions, nor does it suggest any modifications to them.[48] We therefore make no changes to the technical limits for mobile devices adopted in the *2020 White Spaces Order and FNPRM*.

16. We recognize that the white space database does not have the capability to track the exact location of a mobile device, making it more difficult to identify an interfering mobile device than a registered fixed device. However, the database will contain information on the devices operating within the boundaries of each geo-fenced area, and can determine the TV channel(s) that are available within that area. This information could be used to help identify potentially interfering devices if the need arises. Because mobile devices will operate primarily within rural areas where it is likely that there will be only a single or very limited number of white space devices operating within a geo-fenced area, we expect that it should not be difficult to find out which device is causing interference. Also, the rules require the white space database administrator to cease providing lists of available channels to specific white space devices

[44] The Interstate Highway System requires a minimum clearance of 16 feet (4.9 meters) under bridges, although many bridges in both urban and rural areas have a clearance of 14 feet (4.3 meters). https://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_verticalclearance.cfm.

[45] The maximum allowable transmitter power for mobile devices is one watt (30 dBm). In order to achieve an EIRP of 42 dBm, and antenna with a gain of 12 dBi is required. 47 CFR § 15.709(b)(1), (c)(2). We do not have specific information on the gain of commercially available omnidirectional antennas suitable for mobile white space applications, but if, for example, a mobile device used an antenna with a gain of 6 dBi, the maximum EIRP would be four watts, and if it used an antenna with a gain of 0 dBi, the EIRP would be one watt.

[46] Shure Petition at 8-9.

[47] 47 CFR § 15.709(b)(1), (c)(2).

[48] The Commission established power spectral density limits to prevent multiple white space devices from simultaneously operating at the maximum allowable power with transmit bandwidths of less than six megahertz within a single television channel, which would result in a total transmitted power within that channel significantly greater than the limit. *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12626, para. 61. The adjacent channel and out-of-band emission limits protect services outside the channel where a white space device operates. 47 CFR § 15.709(b)(1), (d).

upon request by the Commission.[49] The Commission could request that the database administrator stop providing lists of available channels to all mobile devices operating within a specific geo-fenced area where interference has occurred. As discussed in the Report and Order below, we are requiring mobile white space devices to re-check the database at least once per hour, which will ensure a device ceases operation quickly if the database ceases providing lists of available channels to it.

17. We also recognize Shure's concern about potential interference from high power mobile devices to unlicensed wireless microphones operating in "less congested" areas.[50] We do not believe it is appropriate to lower the mobile device power limit to a level (e.g., 100 milliwatts EIRP) intended to allow coexistence with co-channel wireless microphones at short distances since that would severely limit the utility of mobile devices. We disagree that Shure's example of a white space device made by Redline Communications, which purportedly has a range of 50 kilometers, supports a lower power limit for mobile devices.[51] The web page Shure referenced for Redline is no longer active, but the power levels Shure cites for these devices (100 milliwatts for the CPE and 1 watt for the base unit) are conducted power levels, whereas the white space device power limits for both fixed and mobile devices are specified in terms of EIRP, i.e., a maximum of one watt conducted power plus antenna gain.[52] Thus, the Redline devices could operate with high gain antennas to achieve an EIRP much higher than 100 milliwatts or 1 watt.[53] Additionally, fixed devices can be mounted with both the transmit and receive antennas high above ground to clear terrain and other obstacles to achieve long range, whereas mobile device antennas are limited to approximately four meters above ground. We expect that a device operating with 100 milliwatts or 1 watt of conducted power would require both high gain transmit and receive antennas and high antenna heights to achieve a range of 50 kilometers.

18. The Commission decided to limit operation of mobile devices to less congested areas to enable all unlicensed devices, including other white space devices and unlicensed wireless microphones, to have an opportunity to access spectrum in the TV bands.[54] Because mobile devices operate only in "less congested" areas, there will, by definition, be multiple vacant TV channels available where unlicensed wireless microphones can operate, e.g., at least 12 in the UHF band. Thus, if mobile devices operate on one or even several TV channels in an area, there will still be multiple vacant channels available for use by unlicensed wireless microphones where mobile white space devices do not operate. As noted above, the white space database will contain information on geo-fenced areas used for mobile devices, and this information could be used by unlicensed wireless microphone users to determine whether any mobile devices could operate in their area.[55] We also point out that unlicensed wireless

[49] 47 CFR § 15.715(k).

[50] Shure Petition at 9, Attachment A at 1, 5. We dismiss on procedural grounds Shure's reliance in its Petition on its technical study, which it did not submit earlier in this proceeding in response to the NPRM, which specifically requested comment on whether "four watts [is] an appropriate maximum power to permit for such operations or should a different maximum power level be permitted (e.g., 10 watts or 16 watts EIRP)." *Unlicensed Operation in the TV Broadcast Bands*, ET Docket No. 20-36, Notice of Proposed Rulemaking, 35 FCC Rcd 2101, 2115, para. 42 (2020). Shure has not shown why it was unable to present this study before adoption of the *2020 White Spaces Order and FNPRM*. *See* 47 C.F.R. § 1.429(b).

[51] Shure Petition at 12-13.

[52] The URL Shure provided now connects to a web site for Aviat Networks which purchased Redline Communications. It is not clear whether they are still marketing the Redline devices that Shure referenced.

[53] A white space device with one watt conducted power could use an antenna with a gain up to 12 dBi in "less congested" areas to achieve an EIRP of 16 watts. A white space device with a conducted power of 100 milliwatts would achieve 1.6 watts EIRP using a 12 dBi gain antenna, or could use an even higher gain antenna to achieve a higher power level.

[54] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12626, para. 59.

[55] 47 CFR § 15.715(m). All information in the white space database required by the rules must be publicly available, with the exception of certain information provided by 600 MHz licensees on the areas where they have

(continued….)

microphones operate on an equal basis with white space devices in the TV bands and that neither one has priority over the other. As with all unlicensed devices operating under our Part 15 rules, unlicensed wireless microphones are subject to the condition that they may receive interference—including interference from other unlicensed devices.[56] As such, while the presence of multiple vacant channels in "less congested" areas indicates that there will likely be spectrum available for both white space devices and unlicensed wireless microphones, the unlicensed wireless microphones operate under the same spectrum access provisions as all Part 15 unlicensed devices where all such devices have equal access to the spectrum and must accept interference that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator.[57]

B. Narrowband devices

19. *Background*. The Commission established a new class of "narrowband white space device" that can be used in IoT applications, which it defined as a type of fixed or personal/portable white space device operating in a bandwidth of no greater than 100 kilohertz.[58] The Commission's rules require narrowband devices to comply with the same power spectral density (PSD), antenna gain and adjacent channel emission limits as four watt EIRP fixed devices, and limit them to a one percent duty cycle (36 seconds per hour).[59] It also requires narrowband devices to comply with a channelization plan (55 narrowband carriers within the center 5.5 megahertz of a TV channel) which ensures that the maximum instantaneous power within a TV channel can never be greater than four watts EIRP.[60] The Commission noted that because the transmission time is limited to no more than thirty-six seconds per hour, the interference potential of narrowband white space devices will actually be significantly less than that of four-watt EIRP fixed devices, since it is extremely unlikely that devices would transmit at maximum power on all 55 narrowband channels simultaneously, and even if they did, that would occur for no more than 36 seconds per hour.[61] The Commission decided not to limit narrowband device operation to "less congested" areas as suggested by wireless microphone interests, noting that the white space database will ensure that narrowband devices do not operate on channels at locations where registered licensed wireless microphones operate.[62] It also noted that unlicensed wireless microphones must already share spectrum with four watt EIRP white space devices, and that narrowband devices will generally have a significantly lower interference potential in the vast majority of cases.[63]

20. Shure believes that the Commission erred in authorizing narrowband IoT white space device operations on a nationwide basis.[64] It argues that the Commission failed to justify authorizing a new nationwide class of IoT services within a rural access proceeding and that it did not consider the negative public interest impact nationwide narrowband white space devices will have on coequal

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commenced operation. The white space database does not yet support mobile white space device operation, but when this capability is added we will ensure that information on registered geo-fenced areas is publicly available as the rules require.

[56] 47 CFR § 15.5(b).

[57] 47 CFR § 15.5(b).

[58] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12627, para. 64.

[59] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12628, para. 65.

[60] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12629, para. 67.

[61] *Id.*

[62] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12629, para. 68.

[63] *Id.*

[64] Shure Petition at 15.

unlicensed users scanning for available spectrum.[65] Shure further argues that the Commission failed to consider mitigation measures that would ease the feasibility of coexistence with other spectrum users, such as disclosing the times, locations, and technical operating parameters to the white space database, or requiring IoT devices to incorporate a transmission signal that would enable wireless microphone users to better identify clear and occupied channels.[66] Microsoft responds that the Commission appropriately authorized nationwide IoT mobile device operations and is not required to restrict these devices to rural areas, and that the rules adopted in the *2020 White Spaces Order and FNPRM* consider and mitigate the impact on coequal unlicensed users.[67]

21. *Discussion*. We affirm the Commission's decision to allow narrowband devices to operate in all areas and decline to adopt additional requirements for narrowband devices suggested by Shure that are intended to facilitate their detection or that would require additional information to be submitted to the white space database.[68] As an initial matter, the Commission previously noted that narrowband devices have no greater interference potential than four watt EIRP devices, and that as a practical matter their interference potential will be significantly lower because a device is unlikely to transmit on all possible 55 narrowband channels simultaneously, and if it did the transmissions are limited to a one percent maximum duty cycle.[69] Unlicensed wireless microphones are already required to share spectrum with white space devices operating at up to four watts EIRP (outside of "less congested" areas) on an equal basis, and the *2020 White Spaces Order and FNPRM* made no changes to this sharing regime.[70] Unlicensed wireless microphones must accept interference from white space devices, and conversely, white space devices must accept interference from both licensed and unlicensed wireless microphones.[71] However, as discussed below, we expect that there will generally be spectrum available for unlicensed wireless microphones in areas where narrowband white space devices are used, and there are steps that wireless microphone users can take under the current rules to help identify where narrowband devices may be in use.

22. We disagree with Shure's contention that the Commission should not have permitted nationwide deployment of narrowband devices in this proceeding.[72] The fact that this proceeding focuses primarily on rural areas does not preclude the Commission from adopting rules that benefit persons in all areas. While Microsoft noted that several major narrowband IoT use cases and applications are predominately in rural areas, it did not suggest, and the Commission did not propose or even seek comment on whether to limit narrowband white space device operation to only less congested areas.[73] Thus, Shure had notice that the Commission was considering allowing narrowband devices to operate in all areas. In adopting rules to permit the new class of narrowband devices, the Commission already considered and rejected requests by wireless microphone interests to limit narrowband devices to "less

[65] Shure Petition at 16-17.

[66] Shure Petition at 20.

[67] Microsoft Opposition at 10-12.

[68] Shure Petition at 15-21.

[69] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12629, para. 67. Narrowband devices are subject to a channelization plan that allows up to 55 narrowband (100 kHz) channels within a 6-megahertz TV channel. The Commission noted that it is extremely unlikely that all 55 channels would be used simultaneously.

[70] *Id.*; 47 CFR § 15.5(a)-(b).

[71] 47 CFR § 15.5(b).

[72] Shure Petition at 16.

[73] Petition for Rulemaking, ET Docket No. 14-165 and RM-11840, at 15 (filed May 3, 2019), https://ecfsapi.fcc.gov/file/1050380945109/White%20Spaces%20Petition%20for%20Rulemaking%20(May%203%202019).pdf (Microsoft Petition).*Unlicensed White Space Device Operations in the Television Bands*, Notice of Proposed Rulemaking, 35 FCC Rcd 2101, 2117-18, paras. 45-49 (2020) (*2020 White Spaces NPRM*).

congested" areas, noting that these devices have no greater interference potential than four watt EIRP white space devices that were already permitted to operate in any area.[74]

23. We expect that there will generally be spectrum available for unlicensed wireless microphones at locations where narrowband devices are used outside of "less congested" areas for several reasons. First, narrowband white space devices must comply with the same separation distances from TV contours and other protected services as four watt EIRP fixed devices.[75] These rules require that a four watt EIRP device operate outside the protected contours of both co-channel and adjacent channel TV stations, which means that a narrowband device can operate only at a location where there are at least three contiguous vacant TV channels, with the white space device operating in the center 6 megahertz channel and both adjacent channels vacant.[76] Thus, at a location where a narrowband white space device is being used outside of a "less congested" area, there will be a minimum of 12 megahertz of spectrum available for wireless microphones that cannot be used by a narrowband white space device.[77] Further, a narrowband white space device would not preclude operation of unlicensed wireless microphones over large distances. Licensed wireless microphones are protected to a one kilometer distance from co-channel white space devices operating with up to ten watts EIRP.[78] Since a narrowband device will generally have a much lower interference potential than a four watt EIRP device, and therefore even less than a ten watt EIRP device, the distance at which it could potentially interfere with wireless microphones will be significantly less than one kilometer.[79]

24. Because narrowband devices have a lower interference potential than other fixed white space devices with which unlicensed wireless microphones must already share spectrum, and because there will continue to be spectrum available for unlicensed wireless microphones at locations where narrowband devices operate, we decline to adopt additional requirements for narrowband devices as suggested by Shure.[80] We recognize Shure's concern about the difficulty in scanning spectrum for the presence of white space devices that transmit for short periods of time, but there is no clear solution to this concern.[81] The white space rules have never specified any requirements on the time interval over which devices may transmit, and establishing a minimum transmission time to facilitate detection by wireless microphone users could require devices to transmit unnecessarily, potentially affecting battery life in battery-powered devices or impacting the use of spectrum by other white space devices and unlicensed wireless microphones.[82] Similarly, requiring white space devices to transmit a beacon signal could also affect the battery life of battery powered devices, and depending on the nature of the signal transmitted could also impact spectrum use by other white space devices or wireless microphones.

25. We will not require operators of narrowband devices to register additional information in the white space database. The Commission previously rejected requests to require white space devices to provide additional information to the white space database, including their specific operating channel, in the interest of keeping the rules simple and avoiding the imposition of unnecessary requirements that

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[74] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12629, para. 67.

[75] 47 CFR § 15.712.

[76] 47 CFR § 15.712(a)(2).

[77] There will be considerably more spectrum available for wireless microphones in "less congested" areas, since by definition at least half the TV channels in the band of operation must be vacant. 47 CFR § 15.703.

[78] 47 CFR § 15.712(f)(1).

[79] A narrowband device will reach a power level of 4 watts only if all 55 narrowband carriers within the channel transmit simultaneously.

[80] Shure Petition at 20.

[81] Shure Petition at 17.

[82] Shure Petition at 18. Shure states that the short transmissions expected from a narrowband device, e.g., 10 milliseconds or less, will be difficult to detect with current scanning equipment.

could hamper innovation.[83] These same considerations lead us to decline to require operators of narrowband devices to register additional information in the white space database. However, unlicensed wireless microphone operators can use the white space database to identify locations where fixed devices, including narrowband devices, are in use. This information is publicly available and can allow unlicensed wireless microphone users to determine whether any fixed devices are in their vicinity, e.g., less than 1 kilometer.[84] In addition, the white space database can provide a list of available channels at an unlicensed wireless microphone's location, which can indicate where narrowband devices could potentially operate (i.e., groups of three vacant channels) and thus, where they could not.

IV. REPORT AND ORDER

26. In this Report and Order, we require mobile white space devices, which operate on TV channels 2-35, to comply with the same hourly database re-check interval that the Commission recently required for most fixed and Mode II personal/portable white space devices.[85] We continue to require narrowband white space devices, which also operate on TV channels 2-35, to re-check the white space database once per day rather than once per hour due to their lower potential for causing harmful interference to protected services in the TV bands, including licensed wireless microphones.

A. Mobile devices

27. *Background.* Because of the technical similarities between fixed and mobile devices, the Commission proposed in the *2022 White Spaces Order and FNPRM* to require mobile devices to comply with the same hourly database re-check interval as fixed devices (excluding narrowband) that operate in the TV bands to more effectively protect licensed wireless microphones.[86] The Commission also proposed to require mobile devices to comply with the other database re-check requirements for fixed devices (excluding narrowband) in the TV bands, specifically, the requirement to cease operation no more than 120 minutes after the last successful database contact in the event a device is no longer able to successfully contact the database, and the requirement to adjust their use of TV channels in accordance with wireless microphone scheduling information provided by the white space database for the two hour period beginning when the device last contacted the database.[87] The Commission further proposed that any modified rules would become effective six months after publication in the Federal Register.[88] NAB, Shure, and Sennheiser support an hourly re-check interval for mobile white space devices, and Shure also suggests decreasing the amount of time that a mobile device can continue to operate from 60 minutes to 10 minutes in the event it is unable to make its hourly contact with the database.[89] Microsoft states that it has no objection to an hourly database re-check requirement for mobile devices.[90]

28. We will require mobile devices to re-check the white space databases at least once per hour; the same re-check interval required for fixed devices (excluding narrowband). We believe this is an appropriate re-check interval due to the technical similarities between mobile and fixed devices, e.g., maximum transmitter power, power spectral density, antenna gain, requirement to connect to a database

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[83] *2010 Second MO&O*, 25 FCC Rcd at 18709, para. 117.

[84] 47 CFR § 15.715(m). We note, however, that information includes only the device's location and not the specific channels that are in use. All currently certified white space devices are fixed devices.

[85] *2022 White Spaces Order and FNPRM* at 10, para. 22. The changes apply only to mobile devices, which are permitted to operate on TV channels 2-35, and not to any other types of devices or in any other frequency bands. *See* GE Healthcare Comments at 3.

[86] *2022 White Spaces Order and FNPRM* at 17, para. 40.

[87] *Id.*

[88] *Id.*

[89] NAB Comments at 1-2; Shure Comments at 5; Sennheiser Comments at 5.

[90] Microsoft Comments at 8.

to obtain a list of available channels, and protection criteria for other services in the TV bands.[91] We will also require mobile devices to comply with the other database re-check requirements applicable to fixed devices, specifically, the requirement to cease operation no later than 120 minutes after the last successful database contact and the requirement to adjust their use of TV channels in accordance with wireless microphone scheduling information provided by the white space database for the two hour period beginning when the device last contacted the database.[92] We are implementing this change by removing the mobile device database re-check requirements from Section 15.711(k)(9) and replacing them with a cross-reference to Section 15.711(h), which will specify the database re-check requirements applicable to fixed, mobile, and Mode II personal/portable devices.[93]

29. We disagree with Shure that it is necessary to shorten the time period that a mobile device can continue to operate if it is unable to make its hourly contact with the database. There is 12 megahertz of spectrum available for wireless microphones nationwide in the 600 MHz duplex gap and guard band where they can be immediately operated without advance registration.[94] Further, as discussed above, since mobile white space devices may operate only in "less congested" areas where at least half the TV channels in the band of operation are vacant, there will by definition be at least 12 unused TV channels out of the 23 in the UHF TV band, so there will be multiple TV channels available for wireless microphones in addition to the 12 megahertz of spectrum available nationwide in the 600 MHz duplex gap and guard band. Therefore, a potentially slightly longer time interval for operation after a failed database re-check (60 minutes as opposed to Shure's suggestion of 10 minutes) should not be problematic for licensed wireless microphone operators as it will not substantially increase the potential of harmful interference because other spectrum is available where licensed wireless microphones can operate until a TV channel occupied by a white space device is cleared. In the case of large events held in "less congested" areas where a licensed wireless microphone operator registers TV channels in advance, this slightly longer time interval is even less likely to be problematic because operators will have the information necessary to register wireless microphones (e.g., location, times, dates, channels required) well in advance of an event, so a small amount of extra time needed to release a channel after registration is insignificant. Finally, we note that the extra time that a device is permitted to operate beyond a failed database re-check is expected to be an infrequent occurrence limited to those instances when a device is unable to contact the database; it is not a device's normal mode of operation.

30. While the Commission proposed a 6-month transition period for parties to comply with a changed database re-check interval for mobile devices, upon further consideration we do not believe that a transition period is necessary since the white space database is not yet capable of supporting mobile devices and there are as of yet no certified mobile white space devices. No party indicated a need for a transition period. Accordingly, we make the rules changing the database re-check interval for mobile white space devices effective 30 days after publication in the Federal Register.

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[91] *See, e.g.,* 47 CFR §§ 15.709(a)(2)(i)(A) and 15.709(a)(5) (maximum 16 watts EIRP for both fixed and mobile devices); 47 CFR § 15.709(b)(1) (same conducted power, power spectral density and adjacent channel emission limits for fixed and mobile devices), 47 CFR § 15.709(c)(2) (same requirement for fixed and mobile devices to reduce conducted power when an antenna with a gain greater than 12 dBi is used), 47 CFR § 15.711(k)(6) (mobile devices must comply with the same separation distances from protected services as fixed devices).

[92] 47 CFR § 15.711(h)(1).

[93] 47 CFR § 15.711(h)(1), (k)(9).

[94] A four megahertz segment of the duplex gap (653-657 MHz) is available for licensed wireless microphones. 47 CFR § 74.802(a)(2). The 600 MHz guard band (614-616 MHz) is available for unlicensed wireless microphones. 47 CFR § 15.236(b)(5). The upper six megahertz segment of the 600 MHz duplex gap (657-663 MHz) is available for both unlicensed wireless microphone and 40 milliwatt white space device use. 47 CFR §§ 15.236(b)(3), 15.707(a)(2) and 15.709(a)(4).

B. Narrowband devices

31. *Background.* The rules currently require narrowband white space devices to re-check the database at least once daily and permit them to operate until 11:59 PM the following day if they are unable to contact the database on a given day.[95] Microsoft previously argued that requiring narrowband fixed white space devices used for IoT applications to comply with an hourly database re-check would negatively impact battery life, limit potential form factors, and increase the cost of those devices.[96] It requests that the Commission maintain its existing requirement that narrowband fixed devices check the white space database once a day to ensure capturing wireless microphone reservations rather than hourly.[97]

32. The Commission sought comment in the *2022 White Spaces Order and FNPRM* on the database re-check interval that should be required for narrowband white space devices.[98] It sought comment on whether to retain the current requirement for a once daily database check and allow continued operation until 11:59 PM the following day if a device is temporarily unable to contact the database, or whether narrowband devices should comply with the same hourly re-check interval as other fixed and Mode II personal/portable devices.[99] The Commission further sought comment on the types of devices to which a different re-check interval should apply, e.g., both fixed and Mode II personal/portable narrowband devices, battery-powered devices only or to AC powered devices as well.[100] It also sought comment on the impact of the database re-check interval on the protection of licensed wireless microphones.[101]

33. Microsoft, CTA, and OTI/PK support a once daily database re-check requirement for narrowband devices, generally arguing that a more frequent re-check interval (e.g., once per hour) would be overly burdensome, have a negative impact on device design, including battery life, and is not necessary to prevent harmful interference to licensed wireless microphones.[102] Microsoft and OTI/PK argue that because narrowband devices can only be used in areas where there are at least three contiguous vacant channels, operation will be precluded in urban and most suburban locations, and this three-channel requirement means channels adjacent to one used by a narrowband device will remain available for wireless microphone use.[103] They also argue that the low duty cycle of narrowband devices (36 seconds per hour) further reduces the likelihood of harmful interference to wireless microphones.[104] However, NAB, Shure and Sennheiser support an hourly re-check interval for narrowband devices.[105] NAB does not believe that an hourly re-check is burdensome, while Shure and Sennheiser express concern about the potential for interference to licensed wireless microphones from a longer re-check interval.[106]

34. We decline to require narrowband white space devices to re-check the database on an hourly basis instead of once daily. However, we believe that modifying the rule to eliminate the grace

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[95] 47 CFR § 15.711(h)(2).

[96] *2022 White Spaces Order and FNPRM* at 15, para. 37.

[97] *Id.*

[98] *2022 White Spaces Order and FNPRM* at 16, para. 38.

[99] *Id.*

[100] *Id.*

[101] *2022 White Spaces Order and FNPRM* at 16, para. 39.

[102] Microsoft Comments at 3-7; CTA Reply at 2; OTI/PK Reply at 2-5

[103] Microsoft Comments at 5; OTI/PK Reply at 3.

[104] Microsoft Comments at 2; OTI/PK Reply at 4.

[105] NAB Comments at 5; Sennheiser Comments at 3; Shure Comments at 5.

[106] NAB Comments at 7; Sennheiser Comments at 4; Shure Comments at 4.

period that permits narrow band white space devices to operate until 11:59 PM the following day if they are unable to successfully contact a database will provide a better balance among competing interests for spectrum access in this band. Instead, we will require narrowband white space devices to successfully contact the database at least once within each 24-hour period it will be operating. Microsoft urges the Commission to retain the current rules specifying a once per day recheck interval along with grace period permitting continued operation until 11:59 PM the following day absent a successful contact with the database.[107] OTI/PK also urges the Commission to retain the current recheck rules for narrowband white space devices.[108] In contrast, Shure notes that operation under the existing rules could result in a white space device operating for a nearly 48-hour period where there is no communication with the database and in addition to modifying the recheck time to once per hour, recommends changing the grace period to 10 minutes.[109] By modifying the rules to eliminate the grace period that could extend narrowband white space device usage up to almost an entire day without contacting the database, we believe we can provide more certainty to wireless microphone operators regarding their ability to access spectrum to cover late breaking news events without detrimental impact to narrowband white space device operation.

35. First, with respect to narrowband white space devices, the rules require frequency selection based on accessing a white space database. Inherent in that requirement is the expectation that the device has established a good, stable, long lasting connection with the database. In addition, we are not aware that the database has experienced any significant downtime to date. Thus, we do not foresee many, if any, situations where a narrowband white space device will be impacted by a lack of connectivity to a white space database. Even if a device was unable to contact a database, we note that it still may transmit for 24-hours since its last successful connection which should provide ample time to transmit any data the device has collected. Moreover, we expect that most IoT information that will be transmitted on these data links is not time critical information and can tolerate some delay in the event that the database cannot be contacted. And in such situations, we do not expect any outages or loss of connection to a database to persist over a significant amount of time. Finally, we note that as an unlicensed device, narrowband white space devices already operate under a best effort framework with no guarantee regarding quality of service. For these reasons, we do not believe that eliminating the grace period will negatively impact narrowband white space device operation nor do we believe it will alter users' expectations.

36. We do believe that changing the recheck time to one-hour from the current once per day requirement will have significant impact on narrowband white space devices that could render them impractical and deprive their utility to users. As noted by Microsoft, requiring narrowband devices to re-check the database once daily rather than once hourly will provide longer battery life and a smaller form factor for battery-powered devices.[110] Although the transmission time and amount of data sent by a narrowband device when re-checking the database may be small as suggested by NAB,[111] requiring hourly checks will require 24 times the battery power of once daily checks, which could have a negative impact on battery life of very small battery-powered devices. While we have no specific data regarding the impact on battery size or cost, we note that many IoT devices (e.g., optical sensors for streetlights or internal sensors embedded in machinery) are designed to be very small due to environmental constraints (e.g., size of the structure or machine they are attached to) and correspondingly necessitate small batteries that must last for long periods of time as the IoT device's location may make replacement difficult and costly. Thus, size and form factor are essential characteristics that may drive device design and in turn limit maximum battery size. Given that a battery's capacity is at maximum levels at installation, decreases over time with use, and that more use intuitively causes the battery to drain faster and

[107] Microsoft Comments at 2.

[108] OTI and PK Reply at 2.

[109] Shure Comments at 4-5.

[110] Microsoft Reply at 8.

[111] NAB Comments at 7.

necessitate replacement sooner, we agree with Microsoft that our rules should accommodate such applications. The alternative would be either larger devices that cannot be installed where needed or devices that have inadequate battery life and must be serviced more frequently which could be costly and may be impractical for many locations.

37. We believe that by making this change, we will provide a more predictable spectrum environment for wireless microphones and continue to maintain a low potential for harmful interference. As an initial matter, we note that licensed wireless microphones have access to a registration system in which users can preregister locations to ensure that white space devices do not operate on certain television channels during specific times. In contrast, unlicensed wireless microphones operate on an equal basis with white space devices and neither device type has any spectral rights over the other. We also note that wireless microphones are generally used for two types of events – preplanned events known well in advance (such as sporting events, concerts, shows and conventions) and late breaking events (such as on-site news reporting). For the former case, we expect licensed wireless microphone users to use the tools available to them and register their usage well in advance of these events to ensure that the television channels they intend to use are clear when they need them. With respect to the latter case, wireless microphone users have always operated in an environment where many microphone users converge on an area and on-the-scene frequency coordination and management must be accomplished in real time; users often have flexibility to choose among several television channels on which to tune their microphones. In such situations, our rules ensure that ample spectrum should be available even if a narrowband white space device is operating nearby.

38. Because narrowband white space devices must comply with the same separation distances from co-channel and adjacent channel TV station contours as four-watt fixed white space devices, they may only operate when there are at least three contiguous television channels available and may not operate on the lowest or highest channel.[112] Thus, for late breaking events where licensed microphone users may not have ample time to register their usage, there will still be spectrum available. Wireless microphones could operate on the available television channels adjacent to the channel being used by the narrowband white space device, or on any other vacant TV channels where narrowband devices cannot operate, i.e., channels on which one or both of the adjacent channels are occupied. In addition, as noted above other spectrum will also be available for wireless microphone usage, including 12 megahertz in the 600 MHz guard band and duplex gap. In all cases, fixed white space devices, including narrowband devices, must be registered in the white space database and those registrations are publicly available, thus allowing prospective wireless microphone users to determine the precise locations where fixed narrowband devices are in use.[113] The white space database can also show which channels cannot be used by narrowband devices, i.e., those where four-watt fixed devices cannot operate due to occupied adjacent channels and thus, are available for microphone use.

39. For late breaking events where licensed microphone users are unable to preregister their usage, it is not apparent that changing the database recheck requirement from once per day to once per hour would result in any difference regarding the channels on which narrowband white space devices operate as in many cases, microphone users may not be able to register their usage at all as they are focused on getting to the scene, not on registering their usage. However, even in instances where a wireless microphone may operate in the vicinity of a narrowband white space device, the potential for harmful interference is low. As discussed above, the interference potential of a narrowband device is significantly less than that of a four watt EIRP device due to the fact that it operates intermittently with narrowband carriers with a duty cycle of less than one percent. These rules working in tandem will provide a spectrum environment where wireless microphones users, that for whatever reason cannot operate on one of the available channels or chooses not to, will be able to operate in close proximity to a narrowband white space device without experiencing any detrimental effect. In this regard, our rules

[112] 47 CFR § 15.712.

[113] Personal/portable devices, however, are not required to register in the database.

require fixed white space devices operating at up to 40 dBm (10 watts) EIRP to maintain a 1 km buffer from registered wireless microphone locations.[114] Narrowband white space devices operate with maximum 18.6 dBm/100 kHz EIRP. In the unlikely situation that all narrowband channels are in use at any given time, the total equivalent energy is no worse than a 36 dBm (4 watts) white space device and the duration of any such situation will be extremely short due to the one percent duty cycle limit. Also, because the rule requiring geographic separation is based on devices operating at maximum antenna height (250 meters generally and 500 meters in less congested areas) and devices operating at lower antenna heights have shorter line-of-sight distance and experience more clutter losses, coupled with the extremely low potential of all narrowband white space devices operating at the same time,[115] we expect that wireless microphones will be able to operate without experiencing harmful interference at much closer distances. Due to this low interference potential, we do not see a need to require a more frequent database re-check interval than once daily. Sennheiser does not clearly state why it believes narrowband devices have a higher potential for causing interference than other white space devices.[116] Also, the primary use case of narrowband devices is in rural and other less populated areas where there is less likelihood that one will be used in close proximity to a licensed wireless microphone.[117] The fact that narrowband devices can operate only at locations where there are three contiguous channels will help ensure that they are used only in areas where there are fewer TV stations in operation and thus more spectrum available for wireless microphones.

40. In sum, we find that a once daily database check will facilitate a wide variety of IoT devices, will not affect the potential for narrowband white space devices to cause harmful interference and will continue to allow widespread wireless microphone use. We are therefore maintaining the current daily re-check interval for all types of narrowband devices (e.g., AC and battery-powered). No party indicated a need for different requirements for different types of devices. We find that an hourly re-check interval is not necessary for narrowband devices due to the very low likelihood of them to cause harmful interference to licensed wireless microphones and because other protected services in the TV bands such as broadcast TV change operating parameters on a less frequent basis.[118] In the rare event of a conflict between narrowband white space devices and licensed wireless microphones used in applications that require immediate spectrum access, there will typically be other spectrum available where the microphones can operate until a newly registered TV channel is cleared of white space devices. In cases where a channel is reserved more than a day in advance for large planned events, a daily re-check interval will be sufficient to ensure that licensed wireless microphones have access to that TV band spectrum. However, to better accommodate licensed microphone usage when such usage is registered a day in advance, we are eliminating the grace period that would otherwise permit narrowband white space devices to operate until 11:59 PM the following day if it does not successfully contact a database. We find that due to the expected use cases for narrowband white space devices, such a change will not adversely impact their ability to deliver their intended services. Accordingly, we are modifying the rules to require narrowband white space devices to successfully contact a database at least once every 24-hours or cease operating until such time at it does communicate with a database and obtains an up-to-date available channel list.[119]

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[114] 47 CFR § 15.712(f).

[115] From a practical standpoint, narrowband white space devices cannot operate on all channels simultaneously to avoid interfering with other devices operating on adjacent or nearby narrowband channels.

[116] Sennheiser Comments at 4.

[117] Microsoft Comments at 6-8; OTI/PK Comments at 5; CTA Comments at 1-2.

[118] The only protected use for which white space database information generally changes more frequently than once daily is wireless microphones. *2015 White Spaces Order*, 30 FCC Rcd at 9661, para. 271.

[119] 47 CFR 15.711(h)(2).

V. MEMORANDUM OPINION AND ORDER

41. In this Memorandum Opinion and Order, we decline to allow the white space database to use terrain-based models, such as the Longley-Rice Irregular Terrain Model (Longley-Rice) to determine which TV channels are available for white space device operation at a particular location. We instead require that white space databases continue to use only the current model for determining TV channel availability.[120]

A. Background.

42. Under current rules, white space devices must generally operate outside the defined protected contours of co-channel and adjacent channel TV stations.[121] The rules provide a table of separation distances beyond the protected contour that white space devices must meet that is based on the white space device's EIRP and HAAT.[122] These distances are based on a desired-to-undesired (D/U) signal ratio of 23 dB at the edge of the protected contour for co-channel operation, and -33 dB at the edge of the protected contour for adjacent channel operation, with a 14 dB allowance for TV receive antenna front-to-back ratio.[123]

43. The Longley-Rice propagation model is used to make predictions of radio signal field strength using the median attenuation calculated as a function of distance and the signal variability in time and space.[124] The model can be run in point-to-point mode where it examines a specific radio signal path between a transmitter and a receiver, or in area mode in which it predicts field strength at many geographic points within a specified area. Each operational mode uses a terrain elevation profile in making predictions; in the point-to-point mode path-specific parameters can be determined from the terrain profile between the transmitter and receiver, and in area mode the elevation profile between the transmitter and each specific reception point is examined. The model may require a large number of reception points to be individually examined. It also requires a large set of input parameters encompassing system parameters (e.g., frequency, polarization, antenna heights), environmental parameters (e.g., terrain irregularity, electrical ground constants, surface refractivity, climate information), deployment parameters, and statistical parameters (e.g., reliability and confidence level).[125] Based on the predicted radio signal attenuation and using additional factors such as transmitter power and antenna directivity, the D/U signal ratio can be estimated and compared against the 23 dB co-channel and -33 dB adjacent channel standards used as the basis when developing the white space device rules to predict whether harmful interference is likely to occur to television reception.

44. In the *2020 White Spaces Order and FNPRM*, the Commission sought comment on whether the use a terrain-based model such as Longley-Rice for determining white space channel availability would better serve the white space device community as well as television broadcasters and other protected entities in the television bands.[126] In particular, it sought comment on how the Longley-Rice propagation model could be used to determine available white space channels and whether it could

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[120] 47 CFR § 15.712. This section requires white space devices to meet minimum separation distances from the protected contours of co-channel and adjacent channel TV stations, as well as from other protected services including licensed wireless microphones, land mobile stations, and certain receive sites.

[121] 47 CFR § 15.712(a).

[122] *Id.*

[123] *White Spaces Third MO&O*, 27 FCC Rcd at 3699, para. 16-17 & n.43. The distances were calculated using the F(50,10) curves for separation distances of greater than 15 kilometers, the F(50,50) curves for separation distances of 1.5 to 15 kilometers, and the TM-91-1 model for separation distances of less than 1.5 kilometers.

[124] *See* A Guide to the Use of the ITS Irregular Terrain Model in the Area Prediction Mode, NTIA Report 82-100; https://www.ntia.doc.gov/files/ntia/publications/ntia_82-100_20121129145031_555510.pdf.

[125] *Id.*

[126] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12634, para. 84.

be used to protect other services in the TV bands (e.g., licensed wireless microphones, translator receive sites, land mobile stations) in addition to TV.[127] The Commission also sought comment on whether the use of a terrain-based model should be mandatory or an optional alternative to the current protection model and on the technical parameters that would be necessary to use such a model for identifying available spectrum while protecting incumbents from harmful interference.[128] In addition, the Commission sought comment on various white space database and device implementation issues that would need to be addressed if the Commission were to allow or require use of a terrain-based model.[129]

45. Unlicensed proponents support permitting the use of terrain-based models by white space database administrators as an optional alternative to the current model.[130] These parties generally argue that the current protection model can be overly conservative and that permitting terrain-based models would make more spectrum available for white space devices.[131] They also state that the increased computer resources to make the calculations are not an issue with current technology.[132] Microsoft suggests limiting use of terrain-based models to locations outside of a TV station's protected contour, while WISPA and DSA suggest also allowing use within an adjacent channel station's protected contour.[133] RED Technologies, the only currently active white space database administrator, suggests using a terrain-based model only for the purpose of calculating TV station protected contours and leaving the current separation distances beyond the contour unchanged.[134]

46. TV broadcast interests oppose allowing the use of terrain-based models by the white space database due to concerns about interference to TV reception.[135] Commenters argue that a terrain-based model does not work well for protecting individual TV receivers.[136] Commenters also argue that now is not a good time to change the white space protection requirements due to TV broadcasters transitioning to ATSC 3.0 and recent rule changes regarding distributed transmission systems and white space devices.[137]

B. Discussion.

47. We decline at this time to permit use of terrain-based models in place of, or as an alternative to, the current method of protecting TV and other services using minimum distance separations from defined protected service contours or defined geographic points. We find that we lack a sufficient record to adopt rules on issues such as whether a terrain-based model is an appropriate method for protecting TV services from white space devices, and if so, the exact technical parameters that would need to be specified to implement the model, whether a terrain-based model should be used only outside of a TV station's protected contour or whether it could also be used within a protected contour, whether it should be used only for protecting TV services or for protecting other services as well (e.g., land mobile stations, licensed wireless microphones).

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[127] *Id.*

[128] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12635-36, para. 85-89.

[129] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12636, para. 90-93.

[130] Microsoft Comments at 7; WISPA Comments at 8; DSA Comments at 8; PISC Comments at 13.

[131] Microsoft Comments at 2; WISPA Comments at 3; DSA Comments at 2; PISC Comments at 11.

[132] Microsoft Comments at 9; WISPA Comments at 4; DSA Comments at 4; PISC Comments at 10.

[133] Microsoft Comments at 8; WISPA Comments at 10; DSA Comments at 6.

[134] RED Technologies Comments at 2.

[135] NAB Comments at 4; Smith and Fisher Comments at 4; Cohen, Dippell and Everist Reply at 2; BitPath Reply at 3; ONE Media Reply at 6.

[136] NAB Comments at 3; BitPath Reply at 3; ONE Media Reply at 6.

[137] NAB Comments at 8; Smith and Fisher Comments at 1; BitPath Reply at 2; ONE Media Reply at 9.

48. The record does not show whether allowing use of a more complex terrain-based model for determining channel availability would yield any significant increase in spectrum for white space devices. While unlicensed interests state that this could be the case in some instances, no party provided analysis to substantiate this claim.[138] TV spectrum available for white space devices became more limited after the broadcast incentive auction due to the reduction in size of the UHF TV band and the re-packing of UHF TV stations into the remaining portion of the band (channels 14-36). The need to protect adjacent channel TV stations means that a fixed white space device may operate at higher power levels (up to four watts EIRP generally, 16 watts EIRP in "less congested" areas) only at locations where there are at least three contiguous vacant channels, with the white space device operating on the center channel and both adjacent channels vacant.[139] After the incentive auction, there are fewer groups of three vacant TV channels in most areas, particularly in urban and suburban areas, as well as fewer single or pairs of vacant TV channels where white space devices could operate at lower power levels. There is no evidence in the record that allowing the use of terrain-based models to determine white space channel availability could address these spectrum limitations.

49. The record does not adequately address broadcaster concerns that terrain-based models are not an appropriate method of determining white space channel availability and that their use could result in harmful interference to TV.[140] While we do not conclude that terrain-based models are necessarily inappropriate for determining white space channel availability, we note that there are differences between how these models are currently used as compared to their potential use in determining white space channel availability. For example, the Longley-Rice methodology is used by the Commission for evaluating TV service coverage and interference within a TV station's protected contour.[141] The area within a protected contour is divided into a grid with 1 kilometer by 1 kilometer cells and the station's coverage and any interference received from other TV stations are calculated at a single point within each grid cell. While the Commission has successfully used this method for determining TV station coverage, it is not clear from the record that it is sufficiently precise to be used in determining white space channel availability since TV receivers are spread over a wide area where their locations are not known, which increases the possibility of interference if a terrain-based model cannot accurately predict TV signal levels at all potentially affected receiver locations.[142] There are also differences in the interference environment for TV reception compared to other applications where the Commission allows calculation of potential interference using terrain-based models, such as for unlicensed devices in the 6 GHz bands and devices in the Citizens Broadband Radio Service.[143] The record lacks sufficient information on these differences and how broadcasters' interference concerns could be addressed.

50. We also believe that implementing terrain-based models could create burdens on the white space database administrator, the Commission and other parties.[144] The white space database administrator would have to develop and test new, more complex computer code to determine channel

[138] PISC Comments at 7; WISPA Comments at 3; Microsoft Reply at 10.

[139] 47 CFR § 15.712(b).

[140] NAB Comments at 2-6; BitPath Reply at 3-5; Cohen, Dippell and Everist Reply at 2-3; ONE Media Reply at 6;

[141] OET Bulletin No. 69, Longley-Rice Methodology for Evaluating TV Coverage and Interference, February 06, 2004.

[142] NAB Comments at 2-6.

[143] For example, unlicensed devices in the 6 GHz band must protect point-to-point microwave links where both the transmitter and receiver sites are known, and there is a single receive site on each end of the link. In the Citizens Broadband Radio Service, devices must protect various incumbent operations in the bands at known locations or within known areas, including Federal Government radar systems, fixed satellite receive sites and grandfathered wireless users.

[144] RED Technologies is currently the sole active white space database administrator.

availability and also to upgrade its computer system.[145] Even after updated code is developed, the Commission or another party, e.g., a test laboratory, would have test and validate that the code provides accurate channel availability information.[146] Because there is currently only one active white space database administrator and fewer than 300 registered fixed devices, the implementation costs, including any third party testing, would have to be spread over a relatively small user base or borne by the white space database administrator.[147] In comparison, there are five spectrum access system (SAS) administrators in the Citizens Broadband Radio Service with hundreds of thousands of devices in use, and the Commission recently conditionally approved thirteen 6 GHz automated frequency coordination system (AFC) operators and we expect that 6 GHz device deployment will substantially exceed white space device deployment due to the greater amount of spectrum available.[148] We note that the white space database administrator suggests only a very limited implementation of a terrain-based model, specifically, to calculate TV station protected contours while making no other changes to the current protection model.[149]

51. In sum, while we believe the use of a terrain-based propagation model for calculating whether the potential for causing harmful interference exists is appropriate in some instances, it is not clear that it would be beneficial to allow use of a terrain-based model in determining white space channel availability. As noted above, there are unresolved interference concerns as well as implementation costs that may outweigh any potential benefits of the changes. Further, there is already a simple, well-defined model for determining white space channel availability which no party argues is inadequate for protecting services in the TV bands.[150] For these reasons, we decline at this time to permit the use of terrain-based models in determining white space channel availability.

C. Rule correction.

52. We are making a ministerial correction to Section 15.713(e)(6) of the rules, which contains a requirement that white space databases not provide a list of available channels to fixed white space devices that exceed specific antenna height limits.[151]

53. Prior to 2019, fixed white space devices were generally limited to a maximum antenna height above ground of 30 meters and a maximum HAAT of 250 meters.[152] In the 2019 *White Spaces Order on Reconsideration*, the Commission raised the antenna height above ground limit to 100 meters in

[145] RED Technologies Comments at 1.

[146] The Commission tested white space database systems developed using the current model, but relied on third party testing of Citizens Broadband Radio Service Spectrum Access Systems. The Commission has also specified that 6 GHz automated frequency coordination systems currently under development will be tested by third party laboratories.

[147] DSA Comments at 8 (stating that it is unclear the extent to which the upfront cost of applying a new model can be recouped).

[148] *OET Announces Conditional Approval for 6 GHz Band Automated Frequency Coordination Systems*, ET Docket No. 21-352, Public Notice, DA 22-1146 (OET Nov. 2, 2022).

[149] RED Technologies Comments at 2.

[150] As discussed in the Order on Reconsideration, Shure objects to the Commission's power limit for mobile devices and its decision to allow narrowband devices in all areas. However, Shure's objections are not based on the white space protection model itself, but rather on the maximum power level and permissible operating locations for certain types of white space devices.

[151] 47 CFR § 15.713(e)(6).

[152] 47 CFR § 15.709(g)(1); 15.713(e)(6) (2018). Fixed devices operating at 40 milliwatts on a single channel or 100 milliwatts spread across two contiguous channels may operate within the protected service contours of adjacent channel TV stations, and they are limited to an antenna height above ground of 10 meters to reduce their likelihood of causing interference to TV reception.

"less congested" areas while retaining the 30 meter height above ground and 250 meter HAAT limits in all other areas.[153] In the *2020 White Spaces Order and FNPRM*, the Commission increased the HAAT limit to 500 meters in "less congested" areas, retained the 250 meter HAAT limit in all other areas, and removed the antenna height above ground limit for most fixed white space devices.[154] The Commission revised Sections 15.709(g)(1) and 15.713(e)(6) to reflect these decisions, but in doing so it inadvertently continued to include an outdated reference to the former 30 meter antenna height above ground limit in Section 15.713(e)(6). Accordingly, we modify Section 15.713(e)(6) to remove this reference and conform the text of the rule to the Commission's decision.[155]

VI. PROCEDURAL MATTERS

54. *Paperwork Reduction Act.* This document does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

55. *Final Regulatory Flexibility Analysis*. The Regulatory Flexibility Act of 1980 (RFA) requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[156] Accordingly, we have prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule changes contained in this Order on Reconsideration, Report and Order, and Memorandum Opinion and Order on small entities. The FRFA is set forth in Appendix E.

56. *Congressional Review Act*. [The Commission will submit this draft Order on Reconsideration, Report and Order and Memorandum Opinion and Order to the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, for concurrence as to whether this rule is "major" or "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2).] The Commission will send a copy of this Order on Reconsideration, Report and Order, and Memorandum Opinion and Order to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

57. *People with Disabilities*: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

58. *Additional Information*. For additional information on this proceeding, contact Hugh L. Van Tuyl, Hugh.VanTuyl@fcc.gov, (202) 418-7506 or Syed Hasan, Syed.Hasan@fcc.gov, (202) 418-418-2454.

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[153] *Amendment of Part 15 of the Commission's Rules for Unlicensed White Space Devices; Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions,* ET Docket Nos. 16-56 and 14-165 and GN Docket No. 12-268, Report and Order and Order on Reconsideration, 34 FCC Rcd 1827, 1851-53, paras. 64-67 (2019) (*2019 White Spaces Order*).

[154] *2020 White Spaces Order and FNPRM*, 35 FCC Rcd at 12609-10, 12614-15, paras. 20, 32-33. The Commission retained the 10 meter height above ground limit for fixed devices operating within the contour of adjacent channel TV stations.

[155] This rule update is ministerial in nature, implementing the Commission's prior rulemaking decision issued following notice-and-comment procedures. Accordingly, for good cause, we find that further notice and public procedure before this update is unnecessary under the terms of the Administrative Procedure Act (APA). *See* 5 U.S.C § 553(b)(B) (setting forth the "good cause" exception to the notice-and-comment requirements of the APA).

[156] *See 5 U.S.C.* § 605(b).

VII. ORDERING CLAUSES

59. Accordingly, IT IS ORDERED that, pursuant to the authority contained in Sections 4(i), 302, 303(b), (c), (e), (f), (r), and 307 of the Communications Act of 1934, as amended, and sections 6403 and 6407 of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, 47 U.S.C. §§ 154(i), 302, 303(b), (c), (e), (f), (r), 307, 1452, 1454, this Order on Reconsideration, Report and Order, and Memorandum Opinion and Order IS HEREBY ADOPTED.

60. IT IS FURTHER ORDERED that the petition for reconsideration filed by Shure Incorporated on February 11, 2021 in ET Docket No. 20-36 IS DISMISSED IN PART on procedural grounds and, as an independent and alternative basis, DENIED.

61. IT IS FURTHER ORDERED that the amendments of the Commission's rules as set forth in Appendix A ARE ADOPTED, effective thirty days from the date of publication in the *Federal Register*.

62. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Order on Reconsideration, Report and Order, and Memorandum Opinion and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

63. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Order on Reconsideration, Report and Order, and Memorandum Opinion and Order, including the Final Regulatory Flexibility Analysis, to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

Appendix A

Final Rules

For the reasons set forth in the preamble, the Federal Communications Commission amends part 15 of Title 47 of the Code of Federal Regulations to read as follows:

1. The authority citation for part 15 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, 304, 307, 336, 544a, and 549.

Source: 54 FR 17714, Apr. 25, 1989, unless otherwise noted.

2. Amend section 15.711 by revising paragraph (h)(1) introductory text and paragraph (h)(2) introductory text, adding a new paragraph (h)(3) and revising paragraph (k)(9) to read as follows:

§ 15.711 Interference avoidance methods.

* * * * *

(h) * * *

(1) Mobile devices and fixed and Mode II personal/portable devices, excluding narrowband devices, operating in the television bands.

(i) * * *

(ii) * * *

(2) Fixed and Mode II personal/portable devices operating outside of the television bands.

(i) * * *

(ii) * * *

(3) Narrowband devices operating in the television bands.

(i) A device that has been in a powered-on state shall access the database at least once each 24-hour period to verify that the operating channel(s) and associated maximum power levels continue to be available at its location.

(ii) A device must cease operating if it fails to successfully access the database once 24 hours from its last successful contact elapses until it re-establishes contact with the white space database and re-verifies its list of available channels and corresponding power levels.

* * * * *

(k) * * *

(9) A mobile white space device shall access the database at least as frequently as specified in paragraph (h) of this section to verify that the operating channel(s) and corresponding power levels continue to remain available.

* * * * *

3. Amend section 15.713 by revising paragraph (e)(6) to read as follows:

§ 15.713 White space database.

* * * * *

(e) * * *

(6) A fixed device with an antenna height above average terrain (HAAT) that exceeds 250 meters generally, or 500 meters in less congested areas, shall not be provided a list of available channels. The HAAT is to be calculated using computational software employing the methodology in § 73.684(d) of this chapter.

* * * * *

Appendix B

List of Parties Filing Comments – ET Docket No. 14-165

Comments

1. GE Healthcare
2. Microsoft Corporation
3. National Association of Broadcasters (NAB)
4. Sennheiser Electronic Corporation
5. Shure Incorporated

Reply comments

1. Consumer Technology Association (CTA)
2. Microsoft Corporation
3. National Association of Broadcasters
4. Open Technology Institute at New America and Public Knowledge (OTI and PK)

Appendix C

List of Parties filing Petitions for Reconsideration and Oppositions – ET Docket No. 20-36

Petition for Reconsideration

Shure Incorporated

Opposition to Petition for Reconsideration

Microsoft Corp.

Reply to Opposition to Petition for Reconsideration

Shure Incorporated

Appendix D

List of Parties Filing Comments – ET Docket No. 20-36

Comments

1. Cohen, Dippell and Everist
2. Dynamic Spectrum Alliance
3. Microsoft Corporation
4. National Association of Broadcasters
5. Public Interest Spectrum Coalition
6. RED Technologies
7. Smith and Fisher, LLC
8. Wireless Internet Service Providers Association

Reply comments

5. BitPath
6. Cohen, Dippell and Everist
7. Microsoft Corporation
8. National Association of Broadcasters
9. ONE Media 3.0, LLC
10. Wireless Internet Service Providers Association

Appendix E

FINAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated into the Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and the 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, Unlicensed White Space Device Operations in the Television Bands, Unlicensed Operation in the TV Broadcast Bands, *Second Order on Reconsideration, Further Notice of Proposed Rulemaking, and Order*, ET Docket No. 14-165, et al[2] and Unlicensed White Space Device Operations in the Television Bands, *Report and Order and Further Notice of Proposed Rulemaking*, ET Docket No. 20-36.[3] The Commission sought written public comment on the proposals in the *Further Notices of Proposed Rulemaking*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[4]

A. Need for, and Objectives of, the Order on Reconsideration, Report and Order, and Memorandum Opinion and Order

2. The Order on Reconsideration dismisses in part and, on alternative and independent grounds, denies a petition for reconsideration of two rules adopted in Unlicensed White Space Device Operations in the Television Bands, Report and Order and Further Notice of Proposed Rulemaking.5 Specifically, it denies a request to reduce the maximum permissible power for mobile white space devices (16 watts EIRP) and a request to limit operation of narrowband devices to "less congested" areas, which are defined as those areas where at least half the TV channels in a device's band of operation are vacant. The Report and Order increases the frequency at which mobile white space devices must re-check a database to determine channel availability from once daily to once hourly, but declines to make a similar change for narrowband white space devices. The Memorandum Opinion and Order declines to allow white space databases to use a different and more complex method for determining channel availability for white space devices. It also corrects a minor error in the rule specifying the maximum allowable antenna height for fixed white space devices.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

3. There were no comments filed that specifically addressed the IRFA.

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37; Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and the 600 MHz Duplex Gap, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, *Unlicensed White Space Device Operations in the Television Bands, Unlicensed Operation in the TV Broadcast Bands*, Second Order on Reconsideration, Further Notice of Proposed Rulemaking, and Order, ET Docket No. 14-165, GN Docket No. 12-268, ET Docket Nos. 20-36 and 04-186, FCC 22-6 (January 26, 2022) (*2022 White Spaces Order and FNPRM*).

[3] *Unlicensed White Space Device Operations in the Television Bands*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 12603 (2020) (*2020 White Spaces Order and FNPRM*).

[4] *See* 5 U.S.C. § 604.

[5] *2020 White Spaces Order and FNPRM*.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

4. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.[6]

5. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

6. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[7] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[8] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[9] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[10]

7. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe, at the outset, three broad groups of small entities that could be directly affected herein.[11] First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the Small Business Administration's (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.[12] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 32.5 million businesses.[13]

8. Next, the type of small entity described as a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[14] The Internal Revenue Service (IRS) uses a revenue benchmark of $50,000 or less to delineate its annual

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[6] *Id.* § 604(a)(3).

[7] Id. § 604(a)(4).

[8] *See* 5 U.S.C. § 601(6).

[9] *See* 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[10] *See* 15 U.S.C. § 632.

[11] *See* 5 U.S.C. § 601(3)-(6).

[12] *See* SBA, Office of Advocacy, Frequently Asked Questions, "What is a small business?," https://cdn.advocacy.sba.gov/wp-content/uploads/2021/11/03093005/Small-Business-FAQ-2021.pdf. (Nov 2021).

[13] *Id*.

[14] *See* 5 U.S.C. § 601(4).

electronic filing requirements for small exempt organizations.[15] Nationwide, for tax year 2020, there were approximately 447,689 small exempt organizations in the U.S. reporting revenues of $50,000 or less according to the registration and tax data for exempt organizations available from the IRS.[16]

9. Finally, the small entity described as a "small governmental jurisdiction" is defined generally as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[17] U.S. Census Bureau data from the 2017 Census of Governments[18] indicate there were 90,075 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.[19] Of this number, there were 36,931 general purpose governments (county,[20] municipal, and town or township[21]) with populations of less than 50,000 and 12,040 special purpose governments—independent school districts[22] with enrollment

[15] The IRS benchmark is similar to the population of less than 50,000 benchmark in 5 U.S.C § 601(5) that is used to define a small governmental jurisdiction. Therefore, the IRS benchmark has been used to estimate the number small organizations in this small entity description. S*ee* Annual Electronic Filing Requirement for Small Exempt Organizations – Form 990-N (e-Postcard), "Who must file," https://www.irs.gov/charities-non-profits/annual-electronic-filing-requirement-for-small-exempt-organizations-form-990-n-e-postcard. We note that the IRS data does not provide information on whether a small exempt organization is independently owned and operated or dominant in its field.

[16] *See* Exempt Organizations Business Master File Extract (EO BMF), "CSV Files by Region," https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf. The IRS Exempt Organization Business Master File (EO BMF) Extract provides information on all registered tax-exempt/non-profit organizations. The data utilized for purposes of this description was extracted from the IRS EO BMF data for businesses for the tax year 2020 with revenue less than or equal to $50,000 for Region 1-Northeast Area (58,577), Region 2-Mid-Atlantic and Great Lakes Areas (175,272), and Region 3-Gulf Coast and Pacific Coast Areas (213,840) that includes the continental U.S., Alaska, and Hawaii. This data does not include information for Puerto Rico.

[17] *See* 5 U.S.C. § 601(5).

[18] *See* 13 U.S.C. § 161. The Census of Governments survey is conducted every five (5) years compiling data for years ending with "2" and "7". *See also* Census of Governments, https://www.census.gov/programs-surveys/cog/about.html.

[19] *See* U.S. Census Bureau, 2017 Census of Governments – Organization Table 2. Local Governments by Type and State: 2017 [CG1700ORG02], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. Local governmental jurisdictions are made up of general purpose governments (county, municipal and town or township) and special purpose governments (special districts and independent school districts). *See also* tbl.2. CG1700ORG02 Table Notes_Local Governments by Type and State_2017.

[20] *See id.* at tbl.5. County Governments by Population-Size Group and State: 2017 [CG1700ORG05], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 2,105 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

[21] *See id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2017 [CG1700ORG06], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 18,729 municipal and 16,097 town and township governments with populations less than 50,000.

[22] *See id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2017 [CG1700ORG10], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 12,040 independent school districts with enrollment populations less than 50,000. *See also* tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2017 [CG1700ORG04], CG1700ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2017.

populations of less than 50,000.[23] Accordingly, based on the 2017 U.S. Census of Governments data, we estimate that at least 48,971 entities fall into the category of "small governmental jurisdictions."[24]

10. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.* This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment.[25] Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.[26] The SBA small business size standard for this industry classifies businesses having 1,250 employees or less as small.[27] U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year.[28] Of this number, 624 firms had fewer than 250 employees.[29] Thus, under the SBA size standard, the majority of firms in this industry can be considered small.

11. *Television Broadcasting.* This industry is comprised of "establishments primarily engaged in broadcasting images together with sound."[30] These establishments operate television broadcast studios and facilities for the programming and transmission of programs to the public.[31] These establishments also produce or transmit visual programming to affiliated broadcast television stations, which in turn broadcast the programs to the public on a predetermined schedule. Programming may originate in their own studio, from an affiliated network, or from external sources. The SBA small business size standard for this industry classifies businesses having $41.5 million or less in annual receipts as small.[32] 2017 U.S. Census Bureau data indicate that 744 firms in this industry operated for the

[23] While the special purpose governments category also includes local special district governments, the 2017 Census of Governments data does not provide data aggregated based on population size for the special purpose governments category. Therefore, only data from independent school districts is included in the special purpose governments category.

[24] This total is derived from the sum of the number of general purpose governments (county, municipal and town or township) with populations of less than 50,000 (36,931) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (12,040), from the 2017 Census of Governments - Organizations tbls.5, 6 & 10.

[25] *See* U.S. Census Bureau, *2017 NAICS Definition, "334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing,"* https://www.census.gov/naics/?input=334220&year=2017&details=334220.

[26] *Id*.

[27] *See* 13 CFR § 121.201, NAICS Code 334220.

[28] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 334220, https://data.census.gov/cedsci/table?y=2017&n=334220&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[29] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[30] *See* U.S. Census Bureau, *2017 NAICS Definition, "515120 Television Broadcasting,"* https://www.census.gov/naics/?input=515120&year=2017&details=515120.

[31] *Id.*

[32] *See* 13 CFR § 121.201, NAICS Code 515120.

entire year.[33] Of that number, 657 firms had revenue of less than $25,000,000.[34] Based on this data we estimate that the majority of television broadcasters are small entities under the SBA small business size standard.

12. As of December 31, 2022, there were 1,375 licensed commercial television stations.[35] Of this total, 1,282 stations (or 93.2%) had revenues of $41.5 million or less in 2021, according to Commission staff review of the BIAKelsey Media Access Pro Online Television Database (MAPro) on January 13, 2023,[36] and therefore these licensees qualify as small entities under the SBA definition. In addition, the Commission estimates as of December 31, 2022, there were 383 licensed noncommercial educational (NCE) television stations, 383 Class A TV stations, 1,912 LPTV stations and 3,122 TV translator stations.[37] The Commission, however, does not compile and otherwise does not have access to financial information for these television broadcast stations that would permit it to determine how many of these stations qualify as small entities under the SBA small business size standard. Nevertheless, given the SBA's large annual receipts threshold for this industry and the nature of these television station licensees, we presume that all of these entities qualify as small entities under the above SBA small business size standard.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

13. White space devices are unlicensed devices that operate in the television bands, the upper portion of the 600 MHz duplex gap, the 600 MHz service bands and on channel 37 at locations where frequencies are not in use by licensed services. These devices may be fixed, mobile or portable. To prevent harmful interference to broadcast television stations and other protected users[38] of these bands, fixed, mobile and some portable white space devices must obtain a list of available channels that may be used at their location from databases administered by private entities selected by the Commission. Fixed and mobile white space devices incorporate a geo-location capability and a means to access a database that provides a list of available channels and power levels that may be used at their operating location (a single point for fixed devices or a geo-fenced area for mobile devices). Personal/portable white space devices can either acquire a list of available channels via another device (Mode I) or include geo-location

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[33] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515120, https://data.census.gov/cedsci/table?y=2017&n=515120&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[34] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[35] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[36] BIA Advisory Services, BIAKelsey Media Access Pro Online Television Database, http://www.biakelsey.com/data-platforms/media-access-pro (last visited on Jan. 13, 2023).

[37] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[38] White space devices must protect: 1) digital television stations, and digital Class A TV, low power TV, TV translator and TV booster stations; 2) certain TV translator, low power TV (including Class A) and Multi-channel Video Programming Distributor (MVPD) receive sites; 3) fixed Broadcast Auxiliary Service (BAS) links; 4) Private Land Mobile Radio Service and Commercial Mobile Radio Service (PLMRS/CMRS) operations; 5) Offshore Radiotelephone Service; 6) low power auxiliary services, including wireless microphones; 7) border areas near Canada and Mexico; 8) radio astronomy services; 9) 600 MHz band services; 10) Wireless Medical Telemetry Service (WMTS) on channel 37; and (11) 488-494 MHz band in Hawaii. 47 CFR § 15.712(a)-(k).

and database access capabilities (Mode II) that provides a list of available channels that may be used at their location.

14. Fixed, mobile and Mode II personal/portable devices were all previously required to contact a white space database at least once per day to obtain a list of available channels and adjust their use of channels in accordance with channel availability schedule information provided by the database for the 48-hour period beginning at the time the device last accessed the database. If a white space device cannot contact a database on a given day, it may continue to operate until 11:59 PM the next day, after which time it must cease operation if it is unable to contact a database. In the *2022 White Spaces Order*, the Commission increased the frequency at which fixed and Mode II personal/portable devices (excluding narrowband devices), must contact the white space database. It required these device to check the database hourly, and decreased the amount of time that a device can continue to operate if it cannot contact the database to 120 minutes. The Commission proposed that mobile devices comply with an hourly re-check requirement and sought comment on whether an hourly re-check requirement should also apply to narrowband devices.\

15. Most RF transmitting equipment, including white space devices, must be authorized through the certification procedure. Certification is an equipment authorization issued by a designated Telecommunication Certification Body based on an application and test data submitted by the responsible party (e.g., the manufacturer or importer). The Order on Reconsideration, Report and Order, and Memorandum Opinion and Order does not change the authorization procedure for white space devices, but it modifies certain technical requirements for them. Specifically, it requires mobile white space devices to comply with the same hourly database re-check requirement the Commission previously adopted for fixed and Mode II personal/portable devices (excluding narrowband devices). The Commission is retaining the daily re-check requirement for narrowband devices.

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

16. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[39]

17. The *Order on Reconsideration, Report and Order* requires mobile white space devices to comply with the same hourly database re-check requirement that the Commission previously adopted for fixed and Mode II personal/portable devices (excluding narrowband devices). The Commission adopted this requirement to better protect licensed wireless microphones that can register for protection from white space devices. It noted that mobile devices have similar technical characteristics to fixed devices, such as the maximum power level and minimum separation distances from protected services, so the Commission decided it is appropriate to require the same database re-check interval for mobile devices as fixed devices.

18. The Commission is retaining the daily re-check requirement for narrowband devices because these devices have a significantly lower likelihood of causing harmful interference to licensed wireless microphones than mobile devices or other fixed devices.

19. The Commission proposed a transition period of six months for mobile white space devices being certified, imported, marketed or operated to comply with the more frequent database re-check interval. However, because there are currently no certified mobile devices and the white space

[39] *See* 5 U.S.C. § 603(c)(1) – (c)(4).

database is not yet capable of supporting mobile devices, the Commission determined that a transition period is not necessary.

G. Report to Congress

20. The Commission will send a copy of the *Order on Reconsideration, Report and Order, and Memorandum Opinion and Order*, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.[40] In addition, the Commission will send a copy of the *Order on Reconsideration, Report and Order, and Memorandum Opinion and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the *Order on Reconsideration, Report and Order, and Memorandum Opinion and Order* and FRFA (or summaries thereof) will also be published in the Federal Register.[41]

[40] *See* 5 U.S.C. § 801(a)(1)(A).

[41] *See* 5 U.S.C. § 604(b).

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	MB Docket No. 03-185
Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television and Television Translator Stations	)	
	)	
Update of Parts 74 of the Commission's Rules Related to Low Power Television and Television Translator Stations	)	MB Docket No. 22-261

REPORT AND ORDER

Adopted: April 17, 2023 **Released: April 17, 2023**

By the Commission:

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I. INTRODUCTION

1. In this Report and Order (*Report and Order*), we update the Commission's Part 74 rules for low power television (LPTV) and TV translator services (collectively "LPTV/translator")[1] to reflect the current operating environment, including the termination of analog operations in the LPTV/translator service as of July 13, 2021.[2] Consistent with the proposals set forth in the Notice of Proposed

[1] 47 CFR, Part 74, Subpart G (Low Power TV and TV Translator Stations).

[2] *See* 47 CFR § 74.790(m); *see also Media Bureau Reminds Low Power Television and Television Translator Stations that the July 13, 2021, Digital Transition Date and Other Important Deadlines are One Week Away*, Public Notice, 36 FCC Rcd 10364 (MB 2021).

Rulemaking (*NPRM*) in this proceeding[3] and the resulting record, we adopt rules to reflect the all-digital nature of these services, and make other updates. These updates reflect the Commission's continued effort to ensure our rules clearly reflect the Commission's requirements, and are understandable to all stakeholders.

II. BACKGROUND

2. The *NPRM* described the Commission's ongoing effort to ensure that our rules are current and to update rules pertaining to television.[4] Full power television stations largely completed their transition from analog to digital operations by June 12, 2009,[5] and Class A television stations did the same by September 1, 2015.[6] In 2011, the Commission first adopted a digital transition deadline for LPTV/translator stations of September 1, 2015,[7] which was ultimately extended to July 13, 2021 – the final date by which all LPTV/translator stations were required to terminate all analog television operations, regardless of whether their digital facilities were operational.[8] The LPTV/translator transition was successfully completed, and LPTV/translator stations are now operating in digital.[9] Thus, analog television is now a legacy service. Further, on October 25, 2021, in connection with the completion of the incentive auction and broadcast television spectrum repacking authorized by the Middle Class Tax Relief

[3] *See Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television and Television Translator Stations*, *Update of Parts 74 of the Commission's Rules Related to Low Power Television and Television Translator Stations,* Order and Sixth Notice of Proposed Rulemaking, FCC 22-58 (rel. July 13, 2022) (*NPRM*); Erratum, FCC 22-58 (rel. Sept. 9, 2022).

[4] *NPRM* at paras. 2-4. We have similarly started a proceeding to update rules in Part 73, including Subparts E (Television Broadcast Stations); H (Rules Applicable to All Broadcast Stations); I (Procedures for Competitive Bidding and for Applications for Noncommercial Educational Broadcast Stations on Non-Reserved Channels); J (Class A Television Broadcast Stations); and L (Incorporated Standards). *See Amendment of Part 73 of the Commission's Rules to Update Television and Class A Television Broadcast Station Rules, and Rules Applicable to All Broadcast Stations*, MB Docket No. 22-227, Notice of Proposed Rulemaking, FCC 22-73, para. 5 (rel. Sept. 29, 2022) (*Part 73 NPRM*) (88 FR 8636 (rel. Feb. 9, 2023)).

[5] *See DTV Delay Act*, Pub. L. No. 111-4, 123 Stat. 112 (2009); *Digital Television Transition and Public Safety Act of 2005*, which is Title III of the Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) (*codified at* 47 U.S.C. §§ 309(j)(14) and 337(e)).

[6] *See Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations*, MB Docket No. 03-185, Second Report and Order, 26 FCC Rcd 10732, 10735, para. 7 (2011).

[7] *Id.* at 10738, para. 12 (also noting that "[the Communications Act] forbids permitting low power television stations to forever avoid converting to digital").

[8] *See* 47 CFR § 74.790(m). In accordance with our rules, all licenses for analog operations automatically cancelled after 11:59 p.m. on July 13, 2021, without any affirmative action by the Commission. *See also Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television and Television Translator Stations,* MB Docket No. 03-185, Third Report and Order and Fourth Notice of Proposed Rulemaking, 30 FCC Rcd 14927, 14932-33, paras. 8-9 (2015). *See also Incentive Auction Closing and Channel Reassignment Public Notice: The Broadcast Television Incentive Auction Closes; Reverse Auction and Forward Auction Results Announced; Final Television Band Channel Assignments Announced; Post-Auction Deadlines Announced*, GN Docket No. 12-268, Public Notice, 32 FCC Rcd 2786 (WTB/MB 2017) (*Closing and Channel Reassignment Public Notice*) (Given the April 13, 2017 release date of the *Closing and Channel Reassignment Public Notice*, the LPTV/translator digital transition date was July 13, 2021.).

[9] We note that some analog LPTV and translator stations have not yet completed construction of their digital facilities and have been granted additional time to do so. Since analog television operations are no longer permitted, these LPTV and translator stations must remain silent until such time as they complete construction.

and Job Creation Act,[10] the Commission adopted a new Table of TV Allotments for full power television stations[11] and also amended Parts 1, 73, and 74 to remove references to channels and frequency bands that are no longer in-core television spectrum and/or references to analog TV operations which were no longer permitted.[12]

3. In July 2022, the Commission adopted the *Order and NPRM* in this proceeding.[13] The *Order* deleted or revised Commission rules that no longer have any practical effect given the completion of the LPTV/translator digital transition, or that were otherwise obsolete or irrelevant, and made certain ministerial changes. The other ministerial changes included deleting analog rules that were found in Part 74, and adding definitions and other information previously adopted in rulemaking proceedings but inadvertently omitted through oversight.

4. The *NPRM* in this proceeding proposed to adopt additional adjustments to Part 74 rules, including rules for digital LPTV/translator operations that were previously applicable to analog operations, and proposed to remove or amend certain analog elements of those rules, update coordinates used to determine predicted interference, clarify how stations may identify their broadcasts over the air, require LPTV stations to transmit with a virtual channel that avoids conflicts with other stations, and make clarifications concerning certain procedures, including the use of the Commission's Licensing and Management System (LMS).[14]

5. In response to the *NPRM*, the Commission received comments and replies from thirteen parties, including comments from broadcast industry stakeholders, including associations, licensees, and engineering firms. As discussed more fully below, the parties supported the Commission's efforts to update its rules, but some parties offered clarifications, including regarding the geographic coordinates for land mobile protection, station identification, and other technical proposals. In addition, a few parties advanced comments on additional topics that were not included in the Commission's *NPRM*.

III. DISCUSSION

6. In this *Report and Order*, we largely adopt the rules proposed in the *NPRM,* with certain limited exceptions or modifications. First, we adopt rules proposed in the *NPRM* to reflect LPTV/translator digital operations. Second, we adopt proposals from the *NPRM* to update rules to protect land mobile radio service. Third, in light of the record, we decline to adopt the proposal in the *NPRM* to eliminate a rule related to the Digital Data Services Act. Fourth, we adopt the rules proposed in the *NPRM* related to station identification for LPTV stations with some modifications, but we decline to adopt the proposed identification requirements for TV translator stations. Fifth, we adopt technical modifications to our rules as proposed in the *NPRM* with some modifications and clarifications. Sixth, we consider requests and comments received from commenters on subjects not included in the *NPRM* proposals. And finally, we analyze costs and benefits of the rules adopted here, as well as their potential to promote or inhibit advances in diversity, equity, inclusion, and accessibility.

A. Rules Applicable to LPTV/Translator Digital Operations

7. As we stated in the *NPRM*, when the Commission initially adopted rules for digital LPTV/translators in 2004, it did not apply all of the Part 74 rules to digital LPTV/translators. Instead, it

[10] *Middle Class Tax Relief and Job Creation Act of 2012*, Pub. L. No. 112-96, §§ 6402 (*codified at* 47 U.S.C. § 309(j)(8)(G)), 6403 (*codified at* 47 U.S.C. § 1452), 126 Stat. 156 (2012).

[11] 47 CFR § 73.622(j) (Table of TV Allotments).

[12] *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auction*, GN Docket No. 12-268, Order, 36 FCC Rcd 15891, 15891, 15896-7, paras 2, 10, 14, n.35 and n.48 (2021).

[13] *See supra* n.3.

[14] *NPRM* at para. 9.

adopted eleven rules specifically for digital LPTV/translator stations, and also identified in Section 74.789 which of the Part 74 rules applicable to analog LPTV/translator operations would also apply to digital LPTV/translator operations.[15] Now that the LPTV/translator digital transition is completed, we tentatively concluded in the *NPRM* that it is necessary and appropriate to eliminate the analog version of our rules, and update all of the Part 74 rules as necessary for digital operations.[16] We tentatively concluded that the transition to digital operation did not provide any basis to relieve LPTV/translator stations of these obligations and that their continued applicability is in the public interest.[17] No commenters opposed our proposal and ATBA offered support.[18] We therefore now adopt the proposals. These changes are reflected in Appendix A and described below.

8. Specifically, we adopt the following unopposed proposals, for the reasons discussed in the *NPRM*. First, we conclude that a revised Section 74.702(b) (Channel assignments), which describes LPTV/translator stations' secondary status with respect to a primary station's proposal to change the Table of TV Allotments, should apply to digital LPTV/translator stations, consistent with existing practice. In addition, Section 74.702(a) and Section 74.786 (Digital channel assignments) reflect the same information pertaining to channel assignments. We therefore retain the requirements in Section 74.702(a) and delete Section 74.786. Similarly, we also delete Sections 74.789 (Broadcast regulations applicable to low power television and television translator stations) and 74.787(a)(5)(viii) (Licensing). For the reasons discussed in the *NPRM*, we conclude that there is no need to have rules specifying which Part 74 rules apply to digital LPTV/translators, as, with the elimination of the analog rules, all rules in Part 74 will apply to digital. We also adopt and apply to digital LPTV/translator stations a new Section 74.737 regarding antenna location, which tracks and replaces a corresponding rule that has previously applied to analog LPTV/translator stations, and a new Section 74.762 regarding frequency measurements.[19]

9. We also adopt two proposals, with some modification, that did receive comment. In the *NPRM,* we proposed that Section 74.750 (Transmission system facilities), regarding the certification of equipment, should continue to apply to digital LPTV/translator stations. Section 74.750(c)(5), which we proposed to move to new Section 74.795(b)(6),[20] requires that an LPTV/translator station's transmission equipment be capable of automatically placing the station in a "non-radiating condition" if the station's input channel is lost, either due to the absence of a transmitting signal or failure of the receiving portion of the facilities used for rebroadcasting the signal of another station. Canyon TV/Cannaliato suggests this rule is no longer relevant after the digital transition, because the transmitter would not be transmitting white noise if it were to lose its input channel.[21] Canyon TV/Cannaliato asserts that the requirement exists "to prevent the transmission of out of band and spurious energy" and offers that a better rule might be to require licensees to ensure a translator which loses its input channel "does not radiate any spurious

[15] *NPRM* at para. 10, citing 47 CFR §§ 74.786 through 74.796; *Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations*, MB Docket No. 03-185, Report and Order, 19 FCC Rcd 19331 (2004) (*2004 Order*) (subsequent history omitted).

[16] *NPRM* at para. 10.

[17] *Id*.

[18] Comments of the Advanced Television Broadcasting Alliance, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (ATBA Comments) at 2.

[19] We adopt new station identification requirements in 47 CFR § 74.783 that apply to digital operations, as discussed *infra*.

[20] *NPRM* at para. 10.

[21] Comments of Canyon TV, MB Docket No. 03-185 (filed Aug. 17, 2022) (Canyon TV/Cannaliato Comments) at 1. Canyon TV/Cannaliato states that it is the licensee of one translator in the State of Montana. Canyon TV/Cannaliato Comments at 1.

or out of band energy that is less than 60db [sic] below the amplitude of the pilot carrier."[22] We disagree. We do not believe it is in the public interest for a station to transmit null packets in the event it loses its input channel and can no longer provide over-the-air programming to viewers. This practice would occupy spectrum that may be used by other entities to provide service to the public[23] and may cause interference to other stations, even if the station that has lost its input channel is otherwise operating in accordance with the rules.[24] We also note that transmitting null packets would not constitute "broadcasting" as that term is defined in the Communications Act of 1934, as amended,[25] and that LPTV/translator stations that fail to broadcast a signal meant to be received by the general public must notify the Commission that they are silent,[26] and are subject to automatic cancellation under Section 312(g) of the Communications Act if they are silent for more than a consecutive 12-month period.[27] We therefore adopt our proposed changes to Section 74.750 (Transmission system facilities), including retaining certain aspects of technical requirements contained in Section 74.750(c) (subsections (c)(5) and (c)(8)) and move them to digital rule Section 74.795(b)(6)-(b)(7).

10. We also adopt new Section 74.762 regarding frequency measurements, as proposed in the *NPRM,* with some modification. Canyon TV/Cannaliato objects to this proposal, which would require LPTV/translator stations to measure the frequency of their output channel as often as necessary to ensure operation consistent with the Advanced Television Systems Committee (ATSC) standard in Section 73.682 of the rules. Consistent with the prior analog rule, these measurements would be required to be made during specified intervals not exceeding 14 months. In the event a station was found to be operating in a manner inconsistent with the standard, it would be required to promptly suspend operation and not resume operation until the transmitter is restored to its assigned frequency. Canyon TV/Cannaliato claims that this process would require removing modulation, which cannot be done with most transmission equipment currently in use, and that replacing such equipment would be costly and untimely with ATSC 3.0 on the horizon.[28] Canyon TV/Cannaliato instead suggests that we employ a similar requirement to what is imposed on full power television stations in Section 73.1540 (Carrier frequency measurements).[29] By contrast, ATBA supports our proposed frequency measurement requirement.[30] No other comments were received regarding this proposal. We disagree with the premise of Canyon TV/Cannaliato's argument. We believe that LPTV/translator stations can meet the proposed

[22] *Id.*

[23] *See* 47 CFR § 74.763(c) (Time of operation) ("Failure of a low power TV or TV translator station to operate for a period of 30 days or more, except for causes beyond the control of the licensee, shall be deemed evidence of discontinuation of operation and the license of the station may be cancelled at the discretion of the FCC.").

[24] *See also* ATBA Comments at 2 (supporting a number of the Commission's proposed changes, including "[m]odifying Section 74.750 regarding the certification of equipment to reflect the completion of the LPTV/translator analog to digital transition").

[25] *See* 47 U.S.C. § 153(7) (BROADCASTING. – "The term 'broadcasting' means the dissemination of radio communications intended to be received by the public, directly or by the intermediary of relay stations."). *See also* 47 CFR § 74.701(a) and (j) (Definitions).

[26] *See* 47 CFR §§ 73.1740(a)(4) (Minimum operating schedule) and 74.763(b) (Time of operation).

[27] 47 U.S.C § 312(g); *see also ETC Communications, Inc.*, Letter, 25 FCC Rcd 10686, 10688 (MB 2010) (transmitting an equipment test pattern was insufficient to establish a break in a station's silence for the purpose of Section 312(g)), *citing A-O Broadcasting Corporation*, Memorandum Opinion and Order, 23 FCC Rcd 603 (2008).

[28] *See* Canyon TV/Cannaliato Comments at 1, which state that "replacing these processors/exciters would be a financial burden at $3,000+ for each translator station, but also an untimely one with ATSC 3.0 on the horizon."

[29] *Id*. at 1-2. We would note that in September 2022, after Canyon TV/Cannaliato filed its comments, the Commission proposed to strike such language from 47 CFR § 73.1540 because this technical engineering term related to analog television operation and is now obsolete. *See Part 73 NPRM* at n.12.

[30] ATBA Comments at 2.

frequency measurement requirement without replacing existing equipment. Stations can comply with the rule by reviewing the station's signal on a spectrum analyzer and determining that the pilot carrier (for ATSC 1.0) and the overall signal (for ATSC 1.0 and ATSC 3.0) appear correctly and are properly contained within their assigned spectrum, consistent with the standard in use and our rules. This approach would not be burdensome, even on an annual basis, and would ensure the station is operating in a manner consistent with the standard. We believe the rule as proposed is able to preemptively correct potential equipment issues and does not impose the cost of additional equipment on stations. However, for the sake of clarity, we identify the specific portions of Section 73.682 that contain the information needed to conduct frequency measurements, rather than citing to the entire broadcast standard (Section 73.682 as a whole), which includes audio and video transmission standards irrelevant to frequency measurements, as well as the PSIP standard, which does not apply to LPTV/translators. Therefore, the rule we adopt today in Section 74.762 replaces a reference to Section 73.682 with references to Section 73.682(d), A/53 Part 2 (for ATSC 1.0), and Section 73.682(f)(2) (for ATSC 3.0).

B. LPTV/Translator Protection of Land Mobile Radio Service

11. We adopt the proposals set forth in the *NPRM* relating to LPTV/translator protection of the Land Mobile Radio Service (LMRS). Sections 74.709(a) and (b) (Land mobile station protection) of the Commission's rules[31] require LPTV/translator stations to protect certain channels for use by the LMRS in thirteen U.S. cities listed in the rule, which specifies a 130 kilometer radius from the coordinates for these cities as a threshold for determining interference. The 130 kilometer radius around each set of coordinates was calculated based on the 1927 North American Datum (NAD 27). As a result of improvements in technology and measuring capabilities, NAD 27 has been superseded by the 1983 North American Datum (NAD 83). The Commission's Office of Engineering and Technology and Office of the Managing Director have previously explained that "[g]eodetic datum is a set of constants specifying the coordinate system used for calculating the coordinates of points on the Earth. NAD 83 was developed based on satellite and remote-sensing measurement techniques, and provides greater accuracy than the older NAD 27."[32] Because it provides greater accuracy and the older NAD 27 is outdated, we proposed in the *NPRM* to amend the rule to use NAD 83 for purposes of specifying these coordinates.[33] We further tentatively concluded that updating the coordinates in the rule to NAD 83 would serve the public interest by conforming the values with the coordinate system used in the Commission's LMS database and with those found in Section 90.303(b) (Availability of frequencies) of the rules, which define the service that Section 74.709 protects.[34] As such, conforming the values in Section 74.709(a) to those of Section 90.303(b) would help to ensure that land mobile operations are appropriately considered and protected from LPTV/translator operations. There is no equivalent to Section 74.709(b) in the Part 90 rules, so we therefore proposed to convert these values to NAD 83 by conforming them to the as-filed coordinates for the associated television station if the associated station still exists at the same location, or if it does not, converting them directly to NAD 83.

12. Commenters generally agree with our proposal to replace the NAD 27 coordinates with

[31] 47 CFR § 74.709 (Land mobile station protection).

[32] *Amendment of Parts 1, 2, 25, 73, 74, 90, and 97 of the Commission's Rules to Make Non-Substantive Editorial Revisions to the Table of Frequency Allocations and to Various Service Rules*, Memorandum Opinion and Order, 23 FCC Rcd 3775, 3796, para. 61, n.101 (OET/OMD 2008) (*2008 OET/OMD Order*).

[33] *NPRM* at para. 12; *2008 OET/OMD Order*, 23 FCC Rcd at 3796, para. 61, n.101.

[34] *Id*. Section 90.303(b) defines the specific center points used to permit land mobile operations, which represent the specific locations that Section 74.709(a) is designed to protect. *See* 47 CFR § 90.303(a) (stating that "coordinates are referenced to the North American Datum 1983 (NAD83)") and (b) (listing coordinates of geographic centers and TV channels of thirteen urbanized areas).

the more current NAD 83,[35] but some commenters express specific concerns. The National Association of Broadcasters (NAB) points out, and the Society of Broadcast Engineers (SBE) agrees, that a few of the coordinates we proposed are different from those derived if the existing coordinates are converted to NAD 83 via the North American Datum Conversion program (NADCON).[36] We note that the coordinates we proposed are the ones found in Part 90 of the Commission's rules, and differ by 25 meters at most (approximately 82 feet). Given that the values in this table are designed to protect the Part 90 service, we believe the most consistent approach is to make the values in Section 74.709 match those found in Part 90.[37]

13. NAB also encourages us to add a note to Section 74.709(a) for Cleveland, Ohio and Detroit, Michigan that is consistent with the notes found in Part 90 indicating that these channels are not available for land mobile use and thus do not require protection.[38] In addition, NAB urges the Commission to consider using this docket to "remove land mobile assignments that have remained unused for more than 50 years," citing Cleveland, Ohio and Detroit, Michigan.[39] We note that a pending petition for rulemaking submitted by the Land Mobile Communications Council (LMCC) also addresses this issue. In that petition, LMCC proposed removing the Cleveland, Ohio and Detroit, Michigan rows entirely from the relevant rule section in Part 90.[40] Due to the pendency of that petition, we decline at this time to add a note to Section 74.709(a). We do not believe that this will create confusion for licensees, as the note in Part 90 already indicates that the Cleveland, Ohio and Detroit, Michigan channels are not available and thus those areas do not require protection.

14. NAB also requests that this update to the coordinates not result in stations having to relocate.[41] We note that the coordinates in the rule are used only to determine whether an LPTV/translator application's interfering contour is outside of the relevant LMRS protected zone for the potentially affected channel and community for purposes of granting an application. We are not aware of any actual instance in which a station would have to relocate and we believe it is unlikely that these minor corrections will result in any stations suddenly finding themselves no longer compliant with Section

[35] *See, e.g.*, ATBA Comments at 2 ("*First*, the FCC proposes to replace the use of the near century old NAD 27 geodetic datum with the more current NAD 83 to determine land mobile protections. ATBA agrees that the use of NAD 83 will improve accuracy and consistency with the Commission's other databases.") (internal references omitted).

[36] *See* Comments of the National Association of Broadcasters, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (NAB Comments) at 2-3; Reply Comments of the Society of Broadcast Engineers, Inc., MB Docket Nos. 03-185 and 22-261 (filed Nov. 7, 2022) (SBE Reply) at 3-4. As NAB notes, NADCON was superseded by the NGS Coordinate Conversion and Transformation Tool (NCAT). NAB Comments at 2.

[37] Staff discovered after the *NPRM* was issued that the proposed Miami longitude seconds value contained a typographical error, which is being corrected in this *Report and Order*.

[38] NAB Comments at 4. *See* 47 CFR § 90.303(b), nn. 2 and 3. *See also* SBE Reply at 6. We also note that there are full power and Class A television stations assigned to some of these channels already, making them unusable for land mobile operations at the present time.

[39] NAB Comments at 4.

[40] *See Consumer & Governmental Affairs Bureau Reference Information Center Petition for Rulemakings Filed, Land Mobile Communications Counsel (LMCC), Petition for Rulemaking in the Matter of Subpart L of Part 90 of FCC Rules: Updated Method to Determine Potential Interference Between Land Mobile Stations and Digital Television Stations Operating in the 470-512 MHz Band ("T-Band")*, Public Notice, Report No. 3186 (rel. Jan. 12, 2022); Petition for Rulemaking of Land Mobile Communications Council, RM-11915 (filed June 24, 2021).

[41] NAB Comments at 4.

74.709. But in response to NAB's concern, we clarify that absent any actual interference,[42] we do not anticipate requiring an LPTV/translator station to make changes solely due to these coordinate updates.

C. LPTV Pilot Project Digital Data Services Act

15. We decline to adopt the *NPRM* proposal to delete the rule implementing the LPTV Pilot Project Digital Data Services Act (DDSA).[43] The DDSA mandated that the Commission issue regulations establishing a pilot project pursuant to which twelve specified LPTV stations could provide digital data services to demonstrate the feasibility of using LPTV stations to provide high-speed wireless digital data service, including Internet access, to unserved areas. When the Commission implemented the DDSA in 2001,[44] the Commission had not yet authorized Class A or LPTV/translator stations to operate digital facilities. In 2004, the Commission authorized all LPTV/translator stations to operate in digital.[45] Currently, all LPTV stations must operate in digital and may offer ancillary and supplementary services, including the services contained in the pilot project of the DDSA.[46] We stated in the *NPRM* that none of the stations identified in the statute are currently providing service pursuant to an experimental authorization issued under the DDSA, and that some of the stations have been cancelled.[47] As a result, in the *NPRM*, we tentatively concluded that this rule served no useful purpose.[48]

16. Three comments were submitted in response to this proposal in the *NPRM*, all urging the retention of the DDSA rule. These commenters question the Commission's authority to modify the Congressional directive, and seek to preserve the program.[49] Based on the interests set forth by these

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[42] *See* 47 CFR § 74.703(e) (Interference) provides that "[LPTV/translator] stations are being authorized on a secondary basis to existing land mobile uses and must correct whatever interference they cause to land mobile stations or cease operation." LPTV/translator stations are required to protect land mobile operations even if they otherwise comply with the rules.

[43] *NPRM* at para. 14. *See* LPTV Digital Data Services Act (P.L. 106-554, 114 Stat. 4577, Dec. 21, 2000 (DDSA), *codified at* 47 U.S.C. § 336(h)); 47 CFR § 74.785 (Low power TV digital data service pilot project).

[44] The DDSA was implemented by the Commission in *Implementation of LPTV Digital Data Services Pilot Project*, Order, 16 FCC Rcd 9734 (2001); Order on Reconsideration, 17 FCC Rcd 2988 (2002); 47 CFR § 74.785.

[45] *See 2004 Order*.

[46] *See* 47 CFR §§ 74.790(i) and (m) (Permissible service of TV translator and LPTV stations); 73.624(c) and (e) (Digital television broadcast stations). The Commission's ancillary and supplementary rules provide that broadcasters may offer services that "include, but are not limited to computer software distribution, data transmissions, teletext, interactive materials, aural messages, paging services, audio signals, subscription video, and any other services that do not derogate DTV broadcast stations' obligations under paragraph (b) of this section." 47 CFR § 73.624(c). One difference between the Commission's ancillary and supplementary rules and the DDSA is that the rules require that ancillary and supplementary services may not derogate the station's required signal to viewers, while the DDSA does not.

[47] *NPRM* at para. 14. At the time the statute was enacted, the LPTV stations to which it applied were KHLM-LP, Houston, Texas; WTAM-LP, Tampa, Florida; WWRJ-LP, Jacksonville, Florida; WVBG-LP, Albany, New York; KHHI-LP, Honolulu, Hawaii; KPHE-LP (K19DD), Phoenix, Arizona; K34FI and K65GZ, Bozeman, Montana; WXOB-LP, Richmond, Virginia; WIIW-LP, Nashville, Tennessee; WSPY-LP (now WLPD-CD), Plano, Illinois; W24AJ (now WPVN-CD), Aurora, Illinois; and "[a] station and repeaters . . . [to provide] service to communities in the Kenai Peninsula Borough and Matanuska Susitna Borough." According to LMS, three of these stations (K34FI, K44GE (formerly K65GZ), and WXOB-LP) have been cancelled. In addition, two of the stations (WLPD-CD and WPVN-CD) are now Class A television stations, and the DDSA only applies to LPTV stations.

[48] *NPRM* at para. 14.

[49] Comments of U.S. Television LLC, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (U.S. Television LLC Comments) at 1-2; Comments of Wireless Access, LLC, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (Wireless Access Comments) at 1, 4; Reply Comments of the LPTV Broadcasters Association, MB Docket Nos. 03-185 and 22-261 (filed Nov. 3, 2022) (LPTV Broadcasters Association Reply) at 3.

commenters, we conclude that retaining the DDSA digital pilot program rule may serve a useful purpose, and therefore, we decline to adopt the proposal in the *NPRM* and will retain the DDSA digital pilot program rule.

D. Station Identification

17. After evaluation of the record, we are persuaded to adopt our LPTV station identification proposals, but we decline to adopt our proposed changes to identification requirements for TV translator stations at this time. In the *NPRM*, we examined Section 74.783(a) (Station identification), which requires analog LPTV/translator stations to provide station identification.[50] When the Commission adopted its rules for digital LPTV/translator operations in 2004, it declined to adopt a separate rule for digital stations, choosing instead to allow such LPTV/translator stations the flexibility to identify themselves in different manners, including following the analog station identification provisions in Section 74.783(a).[51] These provisions allow identification via (1) transmitting the call sign in International Morse Code at least once every hour, or (2) arranging for the primary station whose signal is being rebroadcast to identify the translator station by transmitting an easily readable visual presentation or a clearly understandable aural presentation of the translator station's call letters and location.[52] We tentatively concluded in the *NPRM* that given the completion of the LPTV/translator digital transition, we should require digital LPTV/translator stations to comply with the station identification provisions set forth in Section 74.783, as revised to reflect digital operations.[53] We also proposed in the *NPRM* to include the option for LPTV/translator stations to use the Program and System Information Protocol (PSIP)[54] to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV/translator station transmits.[55]

18. As discussed in detail below, in light of the record on these proposals, we decline to adopt identification requirements for TV translator stations at this time in light of concerns of commenters, but we may consider extending station identification requirements to TV translator stations

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[50] *NPRM* at para. 15. *See* 47 CFR § 74.783(a)-(c) (Station identification).

[51] *See 2004 Order*, 19 FCC Rcd at 19337-38, paras. 15-18 (noting that Commission was unable to award second channels to LPTV/translator or Class A stations to facilitate their digital transitions due to the lack of sufficient spectrum. To prevent the disruption of service to viewers, the Commission determined that the low power television digital transition should be completed at some fixed time after the deadline for full power television stations, which would allow viewers to transition to digital service without loss of their existing service). *See id.* at 19394, para. 192 (declining to establish identification requirements for digital LPTV and TV translator stations). While the Commission declined to adopt such a requirement, it explained that it believed that digital TV translator and LPTV stations could be practically identified by other means. The Commission encouraged "operators of digital LPTV and TV translator stations to experiment with possible means for identifying their stations" and "plan[ned] to revisit this issue in a future periodic review proceeding." *See id*. at 19395, para. 194. Thus, we disagree with the National Television Association's (NTA) assertion that "18 years ago the Commission decided that digital translators would not be subject to a station identification requirement." Comments of the National Television Association, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (NTA Comments) at 1.

[52] 47 CFR § 74.783(a)(1) and (2) (Station identification).

[53] *NPRM* at para. 15; 47 CFR § 74.783(a)(1) and (2).

[54] PSIP transmits a television station's virtual channel (*see infra*), and can also transmit electronic program guides with titles and descriptions to be decoded and displayed by a viewer's digital receiver. ATSC A/65C defines the standard protocol – referred to as PSIP – for the transmission of data tables compatible with digital multiplex bit streams via terrestrial broadcasts.

[55] *NPRM* at para. 16. The "short channel name" is a seven character field in the Terrestrial Virtual Channel Table that stations use to comply with the digital transmission standard set forth in ATSC A/65C as incorporated in Section 73.682(d) of our rules. *See* 47 CFR § 73.682(d). For example, a station would enter in the short channel name field the station's call sign, *e.g.*, "K20DA-D."

in a future proceeding. We do find sufficient support to require digital LPTV stations to comply with the station identification provisions set forth in Section 74.783 applicable to analog operations, updated to reflect digital operations. We also adopt our proposal to include an option for LPTV stations to use the PSIP to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV station transmits.

19. *Identification Requirements for TV Translator Stations*. A number of commenters objected to our proposed station identification requirements for TV translator stations. These commenters express concerns about cost[56] and consumer confusion.[57] NAB recommends instead that the use of PSIP for station identification purposes be limited to LPTV stations that originate programming and do not operate as translators.[58]

20. In light of the commenter concerns about the technical challenges inherent in our proposal for TV translators and the unintended costs that could be imposed by the proposed modification of the rule, we decline to adopt the proposed identification requirements for TV translator stations at this time. Consistent with the Commission's decision in 2004 to allow TV translator stations the flexibility to identify themselves in different manners,[59] we encourage TV translator stations that are not currently providing station identification to explore options for providing identification. In this regard, instead of the proposed mandatory requirement, we adopt a rule that includes one voluntary option for TV translator stations to identify their signal, specifically, arranging with the originating station to provide identification in a visual manner.[60]

21. *Identification Requirements for LPTV Stations*. After evaluation of the record, we are persuaded to require LPTV stations to comply with our analog LPTV station identification rules now that the LPTV/translator digital transition is complete and analog operations have terminated. Accordingly, we adopt the proposal in the *NPRM* that digital LPTV stations continue to comply with the station identification provisions set forth in Section 74.783, updated to reflect digital operations.[61] We received support for this proposal,[62] and received no opposition to the proposal with respect to LPTV stations that

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[56] NTA Comments at 1 and 3. In support, NTA cites translator use in Alaska and asserts that "Alaska Public Television operates about 125 heterodyne translators in very small and remote communities. Under the Commission's PSIP identification alternative, unless identified by DTV primary stations, these translators would have to be replaced at great cost." *Id*. at 4. NTA also indicates that not all TV translator stations are identifying at this time, and if we were to adopt a rule, many of those translators would not have the means to do so. One translator owner and operator of a Montana translator station estimates that if not identified by their DTV primary station, the cost of updating equipment to enable translators to insert data into the PSIP of the received data would cost between $4,000 and $10,000 for each translator. *Id*. at 5 and Exhibit 1, Statement of Charles J. Cannaliato.

[57] NAB Comments at 5. *See also* SBE Reply at 2 ("SBE supports NAB's recommendation that [the ability of translating stations to make changes in their PSIP] be limited to those LPTV stations that actually do originate programming to avoid causing confusion among viewers.").

[58] *Id.*

[59] *See 2004 Order*, 19 FCC Rcd at 19395, para. 194.

[60] *See* revised Section 74.783(b). We note that FM translator stations, despite not being able to use visual identification, are still required to identify. One option for identifying is to arrange for the primary station to identify the translator three times per day. *See* 47 CFR § 74.1283(c)(1) (Station identification).

[61] *NPRM* at para. 15.

[62] ATBA Comments at 2 (ATBA "supports the Commission's proposals to update its station identification rules to reflect digital operations.") (internal references omitted); Comments of One Ministries, Inc., MB Docket Nos. 03-185 and 22-261 (filed Sept. 26, 2022) (OMI Comments) ("OMI agrees that it is helpful to have the using [sic] the option for LPTV/translator stations to use the Program and System Information Protocol (PSIP) to transmit the station's call sign as the 'short channel name' on at least one stream of programming that the LPTV/translator station transmits.").

originate programming. We do not believe the transition to digital operation provides any basis to relieve LPTV stations that originate programming of their obligation to provide station identification, and we therefore adopt our proposal to require such stations to follow the station identification provisions set forth in Section 74.783.[63]

22. We also adopt our proposal in the *NPRM* to revise Section 74.783(a)(1) to provide an alternative identification method for LPTV stations to replace the outdated option to insert the call sign via Morse Code.[64] Specifically, we proposed to allow the option to use PSIP to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV station transmits.[65] Commenters supported this update.[66] We agree, and we amend the rules accordingly to include the option for LPTV stations to use PSIP to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV station transmits. In addition, because we have decided herein to apply these requirements to LPTV stations but not to TV translator stations, we reorganize Section 74.783 to make it more clearly understandable by delineating the subsections that separately apply to LPTV stations (Section 74.783(a)), TV translators (Section 74.783(b)), and to both (Section 74.783(c)).[67]

23. While not opposing this change, one commenter expressed concern that, because some Commission-assigned LPTV/translator call signs are in the format of two numbers followed by three letters,[68] this proposal would require eight characters, but the "short channel name" field in PSIP only allows seven characters.[69] This commenter proposed dropping the "-D" from the end of call signs which have such a designation, as this is a remnant of when it was necessary to distinguish between analog and digital operations.[70] While the "-D" may be superfluous with the transition of all LPTV/translator stations to digital, we do not believe it is necessary to prescribe a mandatory change of the call signs of a significant number of stations. Instead, we clarify here that any station with an eight character call sign that seeks to identify by this method may opt to drop the "-D" when placing it in the "short channel name" field. We have revised Section 74.783 to include this clarification.[71]

24. *TSID Requirements*. We adopt the proposal in the *NPRM* regarding LPTV/translator stations' use of transport stream ID (TSID) with some modifications. To identify a station using the PSIP "short channel name," a station must request and be assigned a TSID.[72] In the *NPRM*, we proposed to require that an LPTV/translator station that has requested and been assigned a TSID must broadcast with

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[63] Consistent with our decision above, LPTV stations that do not originate programming will be considered to be under the same rules for station identification as translators. *See supra* paras. 19-20.

[64] *NPRM* at para. 16. 47 CFR § 74.783(a)(1) (Station identification).

[65] *NPRM* at para. 16 and n.48.

[66] OMI agrees that it is helpful for LPTV stations to use the PSIP to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV station transmits. OMI Comments. ATBA also supports the proposal, saying it "believes the proposed alternate methods for stations to identify their broadcasts will streamline the station identification process . . ." ATBA Comments at 2.

[67] *See infra* paras. 24-25. In its comments, it appears that ATBA is suggesting that the alternative method apply to full power and Class A television stations. *See* ATBA Comments at 2-3 (stating the alternate method should apply to "all stations and streams"). To the extent that ATBA's proposal relates to stations in categories beyond LPTV stations, the proposal is outside the scope of this Part 74 LPTV/translator rules proceeding, and thus we decline to adopt it for other categories of stations.

[68] *See* revised Section 74.791(d) (Call signs), as discussed in para. 31.

[69] *See* Canyon TV/Cannaliato Comments at 1.

[70] *Id.*

[71] *See* revised Section 74.783(a)(2).

[72] *See NPRM* at para. 17.

the station's assigned TSID during its hours of operation.[73] We also proposed to require translator stations that had not been assigned a TSID to pass through the TSID of their respective originating station.[74] The proposed requirement to broadcast with the assigned TSID would be in addition to, and not in place of, one of the other identification requirements.[75] We also proposed to apply the same requirement to a station's bit stream ID (BSID), which is the equivalent value used in ATSC 3.0.[76]

25. While the proposal did receive support,[77] several commenters object to this proposal, concerned that it would require translators to insert a TSID or BSID.[78] For example, NAB asserts that the use of a BSID is contrary to the applicable ATSC standard, and urges the Commission not to allow translator stations to use a BSID for identification, arguing that it would create industry and viewer confusion.[79] The *NPRM's* proposal was directed only at scenarios where stations have assigned TSIDs because they are either originating programming or otherwise modifying the streams of originating stations.[80] Our intent is to prevent a station that is modifying one or more originating station(s) stream(s) from failing to transmit a TSID, and preventing a station that is originating programming while providing PSIP data from failing to transmit its assigned TSID even though the PSIP equipment would allow it to do so. Our aim is to eliminate cases where stations that are originating programming and are assigned TSIDs do not properly transmit that TSID, or where stations are otherwise passing through signals from one or more originating stations but either fail to provide a TSID or provide an incorrect one. Contrary to commenter concerns, we do not expect a translator that is not otherwise altering the signal of a single originating station to insert a unique TSID or BSID different from that of the originating station. We therefore adopt our proposal, with clarifying changes to require stations assigned a TSID to transmit that TSID.[81] We conclude that the TSID requirement is in addition to, and not in place of, one of the other identification requirements. We also adopt the same requirement with respect to a station's BSID, which has the same function as the TSID, but in the ATSC 3.0 context.

26. *LPTV Virtual Channels*. We adopt the proposal in the *NPRM* to codify the Media Bureau's practice of requiring LPTV stations to transmit with a virtual channel that avoids conflicts with any full power or Class A station's virtual channel in cases where a contour overlap would arise, or with

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[73] *Id.*

[74] *See NPRM* at para. 17 and Appendix B (proposed Section 74.783(d)(1)). *See* revised Section 74.783(c).

[75] *See NPRM* at para. 17.

[76] *See NPRM* at para. 17 and proposed Section 74.783(d)(2).

[77] OMI Comments.

[78] *See, e.g.*, Canyon TV/Cannaliato Comments at 1. Canyon TV/Cannaliato asserts that the proposal to use TSIDs would "impose a significant financial burden to community translators because the majority (perhaps more than 80%) of translator stations do not have the capability of inserting a TSID into the data stream." *Id*.

[79] NAB Comments at 5-6. SBE also joins NAB in "advocating against the use of BSID for translator stations operating in ATSC 3.0." SBE Reply at 3.

[80] For example, a single TV translator station may rebroadcast the respective primary streams of several different originating television stations, each of which have their own TSIDs. A TV translator, however, can only pass through one TSID, and currently our rules do not address which TSID a TV translator station would use. Under our adopted rule, under these circumstances, a TV translator station providing PSIP would be required to ask to be assigned its own unique TSID and broadcast it.

[81] *See* revised Section 74.783(c)(1) (stating that all low power TV stations originating programming shall transmit their assigned odd-numbered TSID, if one has been assigned. All TV translator stations, and low power TV stations not originating programming, shall pass through the assigned TSID of the originating station, unless the station is modifying the signal of one or more originating stations in such a way that it is not clear which originating station's TSID should be used. In that case, the station shall transmit its assigned odd-numbered TSID if one has been assigned).

virtual channels chosen by other LPTV stations.[82] We stated in the *NPRM* that LPTV licensees are not required to comply with the virtual channel assignment methodology found in ATSC A/65C Annex B, as full power and Class A stations are, and we were not proposing to require them to do so.[83]

27. ATBA agrees with our proposal, but asks us to provide "greater flexibility" to select a virtual channel.[84] In the absence of any further information of what this request entails, we decline to make further modifications. But we note that LPTV stations are already permitted to select any valid virtual channel within channels 2-69 that does not create a conflict.

28. SBE proposes that we require LPTV stations to enter their virtual channels in LMS.[85] We note that we already allow stations to informally request that the staff enter their virtual channels into LMS on a voluntary basis, and encourage LPTV stations to do so.[86] Because virtual channel assignments do not require Commission approval, we do not believe it is necessary to make this voluntary procedure mandatory, and we decline to explicitly require it.

29. SBE also requests that the Commission affirm that full power and Class A virtual channels have primary rights over those of LPTV/translator stations.[87] We believe that our proposed language makes this clear, in that LPTV/translator stations are required to utilize a virtual channel which does not create an overlap with a station that is required to follow ATSC A/65C, Annex B, which includes full power and Class A stations.[88] As a result, we do not believe it is necessary to amend the proposed language to affirm SBE's assertion.

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[82] *NPRM* at para. 18. During the DTV transition, most full power television stations transmitted two over-the-air signals using two different radio frequency (RF) channels—an analog (NTSC) channel and a paired digital channel capable of transmitting multiple streams of programming. ATSC, an international, non-profit member organization, developed the PSIP standard setting forth rules and priorities for determining a digital television station's "virtual" channel number, the channel number viewers see on their television receiver when they view a digital television station over-the-air. *See Request for Declaratory Ruling by Meredith Corporation and "Alternative PSIP Proposal" by PMCM TV, LLC for WJLP (formerly KVNV(TV)), Middletown Township, New Jersey*, 32 FCC Rcd 7229, 7230, para. 3 and *passim* (2017), *petitions for review denied*, *PMCM TV, LLC v. Fed. Commc'ns Comm'n*, 731 Fed. App'x 1 (D.C. Cir. 2018). Under Annex B.1.1 to ATSC 65/C, which sets forth the mandatory requirements for assigning the virtual channel number components of full power and Class A stations' virtual channels, most of those stations' virtual channel numbers begin with their analog channel numbers. A TV translator is required to pass through the virtual channel number of its primary station unless it conflicts with a broadcaster operating in the service area of the translator, in which the translator must change its virtual channel number to a non-conflicting number. Annex B.1.10. As discussed below, Annex B does not apply to LPTV stations.

[83] *NPRM* at para. 18.

[84] ATBA Comments at 3.

[85] SBE Reply at 2-3. NAB, in its reply, also notes that virtual channel assignments and changes in virtual channel assignments should be included in the Commission's database to "avoid potential conflicts and viewer confusion." *See* Reply Comments of the National Association of Broadcasters, MB Docket Nos. 03-185 and 22-261 (filed Nov. 7, 2022) (NAB Reply) at 3.

[86] LPTV stations may ask the staff to indicate their virtual channel in LMS by sending a request to the Video Division in the Media Bureau. Such requests should include the station's facility ID, virtual channel, and a map showing the station's contour and the contours of surrounding stations using the indicated virtual channel to demonstrate the lack of overlap with other full power, Class A, and LPTV/translator stations. In the event that overlap with other full power, Class A, or LPTV/translator stations is observed, the staff will notify the station making the request that it must choose an alternative virtual channel.

[87] SBE Reply at 2-3.

[88] *See* revised Section 74.790(n). *See also* ATSC A/65C, Annex B.1.8, which indicates that the virtual channel number used by a broadcaster should "be different from those used by any other broadcaster with an overlapping DTV service area." Should the contour of a full-power and Class A station come into conflict with that of an LPTV, since the LPTV station has secondary status, it is required to change its virtual channel. For example, the

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30. In light of the comments, we find that it is in the public interest to codify the Bureau's practice of requiring LPTV stations to transmit with a virtual channel that avoids conflicts with any full power or Class A station's virtual channel in cases where a contour overlap would arise, or with virtual channels previously chosen by other LPTV stations.[89] Absent this rule change, LPTV stations could potentially create contour overlap with full power and Class A stations, leading to virtual channel conflicts. We reiterate that LPTV licensees are not required to comply with the virtual channel assignment methodology found in ATSC A/65C, Annex B,[90] as full power and Class A stations are required to do.

31. *LPTV/Translator Call Sign Assignment Protocol*. In this *Report and Order*, we adopt our tentative conclusion from the *NPRM* that we should add a new Section 74.791(d) (Call signs) to reflect the staff's current call sign assignment protocol for LPTV/translator stations.[91] Section 74.783(d) (Station identification) provides that an LPTV/translator station call sign will be made up of the letters K or W, the station's channel number, and "two additional letters."[92] For certain channel numbers, however, all two letter combinations have been exhausted for several years, and consistent with the Commission's policy that all stations have a unique call sign, stations have been assigned a three letter call sign beginning with "AAA," continuing sequentially through the alphabet for the third letter. This three letter protocol is built into the Commission's LMS system. ATBA supports this proposal, and no entity opposed it.[93] Considering the necessity of modifying the two letter protocol due to the exhaustion of such combinations, and the fact that any change would affect the staff's ability to continue timely processing applications, we adopt the proposal and amend Section 74.791 to add paragraph (d).

E. Technical Modifications

32. *Processing Priority*. We adopt the processing priority proposal put forth in the *NPRM*. Section 74.708(b) (Class A TV and digital Class A TV station protection) requires LPTV/translator stations to protect previously filed Class A applications, and Section 74.710(a) (Digital low power TV and TV translator station protection) requires LPTV/translator stations to protect previously filed LPTV/translator applications.[94] These subsections reference the Bureau's practice that if two applications are filed on different days and otherwise have equal processing priority, the filing earlier in time will receive priority. In the *NPRM*, we tentatively concluded that these requirements should be maintained in the rules, but moved into the Commission's digital rules in Section 74.787(c) (Licensing).[95] No

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Commission recently announced winning bidders in the Commission's auction of construction permits for full power television stations (Auction 112), and awarded a total of eighteen construction permits. *Auction of Construction Permits for Full Power Television Stations Closes, Winning Bidders Announced for Auction 112*, AU Docket No. 21-449, Public Notice, DA 22-659 (OEA/MB 2022). These new full power stations will determine their virtual channels using ATSC A/65C, Annex B, as required by Section 74.682(d) of the Commission's rules. If that virtual channel number overlaps with that of an LPTV station, the LPTV station will be required to change its virtual channel.

[89] *2004 Order*, 19 FCC at 19413, para. 243, n.505. *See* revised Section 74.790(n).

[90] *2004 Order*, 19 FCC Rcd at 19413, para. 243 (noting that the Commission will not at the time require digital LPTV stations to comply with the ATSC A/65B standard). *See also* ATSC A/65C, Annex B (2006) (ATSC A/65C, Annex B); 47 CFR § 73.682(d) (TV transmission standards) (The Commission later incorporated the 2006 version of Annex B into the Commission's rules by reference for full power and Class A stations).

[91] *NPRM* at para. 19 and Appendix B.

[92] *See* 47 CFR § 74.783(d) (Station identification).

[93] ATBA Comments at 3.

[94] 47 CFR §§ 74.708(b) (Class A TV and digital Class A TV station protection) and 74.710(a) (Digital low power TV and TV translator station protection).

[95] *NPRM* at para. 20.

commenters opposed this proposal. We therefore adopt the proposal, maintain the rules, and move them into the Commission's digital rules in Section 74.787(c).[96]

33. *Vertical Polarization Considerations*. We adopt our proposal in the *NPRM* to remove references to antennas with solely vertical polarization in certain Part 74 rules. Sections 74.735(c) (Power limitations) and 74.750(f) (Transmission system facilities) of the rules reference vertically polarized transmitting antennas.[97] We noted in the *NPRM* that despite the reference, the Commission's LMS filing system does not and has not allowed stations to specify a vertically polarized antenna. Further, we noted that television viewers' home receive antennas are generally horizontally, not vertically, polarized. In the *NPRM*, we therefore proposed to modify the language in Sections 74.735(c) and in revised Section 74.750(f) to remove the reference to antennas with solely vertical polarization.[98] We also proposed to clarify, consistent with the similar rule applicable to full power stations,[99] that the horizontally polarized power is to be higher than or equal to the vertically polarized power in all directions, and require documentation that antennas meet this requirement.[100]

34. OMI and NTA believe we should retain the reference to antennas with solely vertical polarization and OMI requests that we modify LMS to allow them. OMI's comments do not argue in favor of antennas with solely vertical polarization so much as they make a case for the use of a vertical polarization component.[101] We note that a vertical polarization component is already permitted via elliptically- and circularly-polarized antennas,[102] and that these types of antennas would not be implicated by the rule change proposed. While there may be future applications where a vertically polarized component is helpful, use of antennas with solely vertical polarization would require television viewers to change their home receive antennas from horizontal to vertical polarization, which we do not believe viewers should be required to do. Thus, we do not believe that permitting the use of antennas with solely vertical polarization makes sense. We therefore decline to retain this reference for unknown future applications, but will address such applications when and if they materialize.

35. As NAB notes, station assignments and analysis parameters assume the use of horizontal polarization, U.S. bilateral agreements with Canada and Mexico do not permit solely vertical polarization, and NAB suggests that "[a] loss of standardization in this regard will adversely affect the entire broadcast television industry."[103] We agree with NAB's concerns, and we therefore adopt the proposal in the *NPRM* and modify the language in Sections 74.735(c) and in revised Section 74.750(f) to remove the reference to antennas with solely vertical polarization.[104]

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[96] 47 CFR § 74.787(c).

[97] 47 CFR §§ 74.735(c) (Power limitations) and 74.750(f) (Transmission system facilities).

[98] *NPRM* at para. 21.

[99] *See* 47 CFR § 73.682(a)(14) (TV transmission standards) ("It shall be standard to employ horizontal polarization."). *See also* 47 CFR § 73.316(a) (FM antenna systems).

[100] *NPRM* at para. 21 and n.57.

[101] OMI Comments.

[102] 47 CFR § 74.735(c).

[103] NAB Reply at 4.

[104] NTA cites a single case of a TV translator station in Mink Creek, Idaho (Mink Creek) which takes advantage of a polarity shift caused by reflecting the signal of a vertically-polarized station off a mountain in order to achieve horizontal polarity at the receive antennas in the community targeted by the station. NTA Comments at 11-12. While we acknowledge this example, we do not believe it is evidence of a commonly-used method or cause for the Commission to contemplate use of vertical-only operations in its licensing or record keeping. We are not aware of any other examples of scenarios like Mink Creek. Given the burdens associated with changing equipment, we direct the Media Bureau to consider requests for waiver of the rule. Mink Creek and any other existing similar situations

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36. With respect to our proposal to require that vertical power not exceed horizontal power, commenters agree that the our proposal might be overly prescriptive in that an antenna could be designed to comply with the rule, but after installation be found to have a slightly higher vertical than horizontal power. In that scenario the rule as proposed could require the antenna to be removed and replaced.[105] We agree with commenters and note that this outcome was not the intent of the proposal. Thus, we clarify that the amended rule requires that an antenna should be *designed* such that the horizontal power is intended to be higher than or equal to the vertical power in all directions.[106] NAB and SBE also suggest that our wording in the proposed revised Section 74.735(c)(2) – to require submission of documentation that the antenna is designed such that the horizontal power is intended to be higher than or equal to the vertical power in all directions – may have been unclear.[107] NAB put forth a suggested revision to provide additional clarity.[108] We agree that NAB's formulation contains a clearer statement of the intent of our original proposal. We therefore adopt the proposal in the *NPRM* using the modified, clearer language proposed by NAB.

37. *Antenna Pattern Plots*. We adopt our proposal in the *NPRM* to update our requirements for submitting antenna pattern plots in applications, with minor adjustments. Section 74.735(c)(4) (Power limitations) currently requires that horizontal plane patterns be plotted "to the largest scale possible on unglazed letter-size polar coordinate paper."[109] The *NPRM* suggested that this requirement is outdated and not consistent with current licensee and Commission staff practices. We proposed in the *NPRM* to require licensees to submit patterns in the form of a .pdf attachment to an application filed in LMS, and clarify that similar plots are required for elevation (Section 74.735(c)(6)) or matrix patterns (Section 74.735(c)(7)) submitted in the LMS form.[110] No commenter disagreed with our assessment, but NAB points out, and SBE agrees, that the terminology we used in the proposed text for the revised rule could be modified to more accurately reflect our intent.[111] NAB urges that the proposed Section 74.735(c)(4) should read: "All azimuth plane patterns be plotted in a PDF attachment to the application in a size sufficient to be easily viewed."[112] We agree that NAB's formulation contains a clearer statement of the intent of our original proposal and therefore adopt it.[113] NAB also proposes that matrix patterns should be

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where stations are currently operating with vertical-only polarization should promptly, upon the effective date of these rules, submit a waiver request to the Video Division, Media Bureau.

[105] *See, e.g.*, NAB Comments at 6; Letter from Robert Weller, Vice-President, National Association of Broadcasters, to Marlene H. Dortch, Secretary, FCC (Nov. 18, 2022) (*NAB Ex Parte*) (requesting that some clarification may be needed to ensure that proposed rule changes do not adversely affect the operation of existing stations or impose new requirements); Reply Comments of Hammett & Edison, Inc., Consulting Engineers, MB Docket Nos. 03-185 and 22-261 (filed Nov. 7, 2022) (H&E Reply) at 1.

[106] This new requirement is consistent with stations being primarily horizontal, with a possible vertical component intended to be less than or equal to the horizontal component. *See* revised Section 74.735(c).

[107] NAB Comments at 9; SBE Reply at 6.

[108] NAB Comments at 9 (suggesting that the modified text should read instead: "Relative field azimuth plane pattern (patterns for both horizontal and vertical polarization should be included if elliptical or circular polarization is used) of the proposed antenna. A value of 1.0 should be used for the maximum radiation in the horizontal polarization.").

[109] 47 CFR § 74.735(c)(4).

[110] *NPRM* at para. 22. *See* revised Sections 74.735(c)(6) and 74.735(c)(7).

[111] NAB Comments at 9; SBE Reply at 6.

[112] *Id*.

[113] We note that one goal of this proposal is to ensure that undistorted and complete antenna patterns are available for review. For example, when a station with mechanical beam tilt files a distorted horizontal plane pattern in LMS to reflect what the antenna looks like in terms of interference to other stations, it can be difficult or impossible to determine the undistorted azimuth pattern absent additional documentation. A station with mechanical beam tilt
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submitted as spreadsheets rather than PDFs. We agree that this approach would provide flexibility to applicants and conform to modern practices and include that option in the revised rule. Having received no comments on the *NPRM's* proposal to clarify that similar plots are required for elevation or matrix patterns submitted in the LMS form, we adopt that proposal, as well.

38. *Modification of Transmission Systems*. We adopt our proposal in the *NPRM* to amend Section 74.751 (Modification of transmission systems) with a modification proposed by commenters. Section 74.751(b)(4)(i) states: "(b) [f]ormal application (FCC Form 2100, Schedule C) is required for any of the following changes: (4) [a]ny horizontal change of the location of the antenna structure which would (i) be in excess of 152.4 meters (500 feet)."[114] Therefore, the section on its face appears to permit a licensee to relocate its antenna structure less than 500 feet (152.4 meters) without requesting authorization.[115] We note that, scenarios where an antenna structure moves less than 500 feet are highly unlikely to occur in the real world. Additionally, we note a change of location at distances under 500 feet without submission of an application, is not consistent with standard licensing practices.

39. In the *NPRM*, we noted that the Commission staff's standard processing practice is to require a licensee to file a minor modification application whenever a station seeks to relocate its antenna.[116] We explained in the *NPRM* that because the most precise antenna location provides the most accurate results when using OET Bulletin No. 69 (OET-69 Bulletin), the staff has consistently required a minor modification application for all antenna relocations, and the industry has routinely submitted such minor modification applications.[117] We therefore proposed in the *NPRM* to revise the language of the rule to codify current staff practice and the application filing requirements of LMS, related to the movement of the station antenna specifically, and modify Section 74.751(b)(4) to require LPTV/translator licensees and permittees to file an application in LMS on FCC Form 2100, Schedule C, requesting authorization for all antenna relocations.[118]

40. In filed comments, ATBA requests that we "preserve [the Commission's] existing rule that permits a licensee to relocate facilities less than 500 feet (152.4 meters) without requesting prior authorization and to incorporate this rule into its processing practices."[119] NTA asserts that changes in location of less than 500 feet should not make a material difference to the result of the OET-69 Bulletin analyses,[120] and additionally cites to the fact that a 1.0 kilometer cell size is the default in such analyses for LPTV/translator stations, noting that means each cell is "approximately 3,900 feet" on a side.[121] We

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should instead submit in LMS an undistorted azimuth and elevation pattern and provide the amount and azimuth of the mechanical tilt, or may submit a matrix pattern, but such stations are not required to do so.

[114] 47 CFR § 74.751(b)(4)(i) (Modification of transmission systems).

[115] *See id*. We note that this rule, as written, only addresses relocations of the entire "antenna structure," which is a tower or building.

[116] *NPRM* at para. 23.

[117] *Id*.

[118] *Id.*

[119] ATBA Comments at 3. The rule, however, appears to apply only to relocation of the entire antenna structure and not generally to other relocations of antennas. *See supra* para. 38.

[120] NTA Comments at 19. The OET-69 Bulletin is referenced in Section 74.793 of the Commission's rules and provides guidance on the use of Longley-Rice methodology for evaluating TV service coverage and interference in accordance with the Commission's rules.

[121] NTA Comments at 19. We calculate that 1.0 kilometer is approximately 3,280 feet, not 3,900 feet. NTA further states that "[r]ather [than] having to file a minor change to move your antenna 20 feet, or adjust a small error in coordinates, LPTV and translator owners should be able to continue to use an informal procedure, such as letter notifications, just like their full service counterparts." NTA Comments at 20. Neither LPTV/TV translator nor full
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disagree. We find that there is good cause to amend the rule to require the filing of a minor modification application for moves of less than 500 feet and that such moves can make a material difference to the result of the OET-69 Bulletin. Specifically, we note that stations have the option of selecting both a smaller cell size than the 1.0 kilometer default in the OET-69 Bulletin (0.5 kilometers) and an option to select a smaller path profile spacing increment, as small as 0.05 kilometers or 164 feet, when the path loss calculations are conducted. A station which has used a smaller path profile spacing increment than the default 1.0 kilometer value can thus change the terrain paths used in the calculation of interference with a relatively small change of coordinates. Additionally, in particularly rough terrain, 500 feet can be, for instance, the difference between the peak of a mountain and a point significantly down the slope of that mountain. Because LPTV/translator stations are more likely than full power stations to operate from very short antenna heights and also because they do so in mountainous areas where significant changes in terrain height can occur over short distances, these differences can be meaningful. While the fact that the Commission uses the radiation center above mean sea level to determine antenna height for interference calculations should limit the impact of some cases, we remain concerned that such moves could cause changes to interference calculations, particularly when smaller path profile spacing increments are used as described above, since it could cause changes in the impact of terrain shielding near the transmitter site. We therefore disagree with ATBA and NTA, and conclude that it serves the public interest for such changes to be evaluated via an application for a construction permit.

41. NAB argues that "LPTV and TV Translator stations should not be held to a higher standard than full power stations, which are generally allowed to change geographic coordinates by three seconds of latitude and/or longitude as a matter of right"[122] and compares our proposal to the requirements applicable to full power stations contained in Section 73.1690 (Modification of transmission systems). We agree with NAB that it is reasonable to conform the LPTV/translator rule to more closely match this full power rule. Section 73.1690(b)(2) and the associated Section 73.1690(c)(11) apply only to coordinate corrections and not to relocations. Section 73.1690(c)(11) explicitly requires that a station may correct its coordinates in a streamlined manner "provided there is no physical change in location and no other licensed parameters are changed."[123] We therefore amend Section 74.751 to permit LPTV/translator stations as well to correct station coordinates in the absence of any such physical change in location or other licensed parameters, where the change is not more than three seconds latitude and/or three seconds longitude.[124] Limiting streamlined processing only to coordinate corrections improves the accuracy of the coordinates of the facility already in operation, and thus such a correction cannot cause a change in real world interference, even if the predictions change slightly, and therefore we believe this change serves the public interest.[125]

42. We also adopt the proposal in the *NPRM* to delete two subsections of Section 74.751 as irrelevant and unnecessary.[126] Section 74.751(b)(6)[127] permits relocation of a station's transmitter without

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power stations are permitted to follow such a procedure; for example, full power stations are required to formally file such changes in LMS on Form 2100, Schedule B.

[122] NAB Comments at 7 (internal references omitted).

[123] 47 CFR § 73.1690(c)(11) (Modification of transmission systems).

[124] *See* revised Section 74.751(b)(4) and (c). *See infra* para. 42.

[125] As minor modifications do not require a filing fee, and because the staff practice is to process such modifications as rapidly as possible, we do not believe the two-step process is a significant burden. However, to mitigate the concern expressed by NAB related to cost, we direct the Media Bureau to waive any LMS-imposed filing fee associated with the LPTV/translator station's FCC Form 2100 filing, consistent with the current practice for full power stations. *See* NAB Comments at 8.

[126] *NPRM* at para. 24.

[127] 47 CFR § 74.751(b)(6).

authorization in only certain instances. As we stated in the *NPRM*, because the antenna location, rather than the transmitter location, is the relevant consideration in determining interference, service, and loss, we proposed to delete Section 74.751(b)(6) entirely regarding the transmitter's location, as it is not relevant in this analysis. The *NPRM* also proposed to delete Section 74.751(c), which requires LPTV/translator licensees to notify the Commission in writing of any other equipment changes they make that are not specifically referenced in paragraphs (a) and (b) of the section.[128] We noted that we do not believe this information is relevant to the Commission's application decision-making processes, and that staff does not routinely receive such notifications. We received no comments opposing these proposed changes, and so we adopt the proposal in the *NPRM*, and delete the subsections.

43. *Minimum Service Standards*. We adopt our proposal in the *NPRM* to update the video quality standard. Section 74.790(g)(3) (Permissible service of TV translator and LPTV stations) provides that "LPTV station[s] must transmit at least one over-the-air video program signal at no direct charge to viewers at least comparable in resolution to that of its associated analog (NTSC) LPTV station or, in the case of an on-channel digital conversion, that of its former analog LPTV station."[129] We proposed in the *NPRM* to update the quality standard set forth in the rule to reflect that 480i video resolution is "comparable in resolution to analog television programming," consistent with the update the Commission made to its full power station rules in Section 73.624(b).[130] We received no comments opposing this proposal. We conclude that this quality standard is an appropriate standard for LPTV stations and therefore adopt it. Furthermore, we adopt the proposal in the *NPRM* that the desired-to-undesired (D/U) ratios for ATSC 3.0 into TV and vice versa for predicting interference to stations are assumed to be similar and need not be differentiated in the rules beyond TV service.[131]

44. *LMS Filing Procedures*. We adopt our proposal in the *NPRM* to update certain rules to require electronic filing. Certain rules specify the filing of a letter or similar submission for relief with the Commission. We proposed in the *NPRM* to update such rules to instead require submission in LMS, the Commission's broadcast licensing and management database.[132] Doing so is consistent with current licensee and Commission staff practices not just for LPTV/translators, but also full power and Class A licensees and permittees. We received no comments opposing these proposed updates. Therefore, we amend our rules to require LPTV/translator licensees and permittees to file written reports, submissions, letters, notifications, or other required filings in LMS.[133] We believe that this amendment is in the public interest because it will streamline application submission, processing, and record keeping, and provide a centralized location for public inspection of all licensing-related matters.

F. Additional Questions and Proposals Raised by Commenters

45. We decline to adopt several proposals raised by commenters. In doing so, we note that the *NPRM's* scope was limited to amendments to the Part 74 rules to reflect the current operating environment, including the termination of analog operations in the LPTV/translator service.[134] We

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[128] 47 CFR § 74.751(c).

[129] 47 CFR § 74.790(g)(3); *see also 2004 Order*, 19 FCC Rcd at 19348-9, para. 51.

[130] *See NPRM* at para. 25; *see also Promoting Broadcast Internet Innovation through ATSC 3.0*, MB Docket No. 20-145, Report and Order, 35 FCC Rcd 14492, 14507, para. 30 (2020).

[131] *See NPRM* at para. 25.

[132] *NPRM* at para. 26. We also proposed to require e-mail submission of certain specified information in the event LPTV/TV translator stations rebroadcast the programs of other TV broadcast stations. *See NPRM*, Appendix B at proposed Section 74.784(b).

[133] 47 CFR §§ 74.703(h) (Interference); 74.734(a)(4) (Attended and unattended operation); and 74.763(b) (Time of operation). We also note that we amend Section 74.784(b) (Rebroadcasts) as proposed to require e-mail submission.

[134] Specifically, the *NPRM* proposed to adopt rules previously applicable to analog operations for digital operations, update geographic coordinates to the current NAD standard, modify station identification requirements, require

(continued)

received several proposals that seek to make material changes to our rules, or changes outside of Part 74.[135] We therefore decline to adopt these proposals as outside the scope of this proceeding.

46. Aside from the proposals that were outside the scope of this proceeding, CDE asked whether the wording in Section 74.701(c) (Definitions) adopted in the *Part 74 Order* ("analog to digital replacement translator (DRT)") is correct given that the analog sunset date was July 13, 2021 at 11:59 p.m.[136] We take this opportunity to clarify that the wording is correct. In this instance, we do require reference to the word "analog" despite completion of the digital transition. In 2009, the Commission adopted a new, replacement digital translator service to permit full power television stations to continue to provide service to viewers within their existing analog coverage areas where the viewers would otherwise lose service after the station transitioned to digital.[137] While the definition of the DRT service includes the word "analog" because it is replacing service to the analog coverage area, the replacement translator service is digital.

47. Finally, the LPTV Broadcasters Association proposes replacing the term "low power television" in the Commission's rules with "local power television."[138] While we recognize the local service that LPTV can provide, we decline to adopt this change. As discussed above, the purpose of this proceeding is to eliminate confusion within our rules. Because several of our rules stem from statutory requirements, and because Congress has used the term "low power television,"[139] we believe that changing this term would result in inconsistencies between the statute and the rules and would create, not eliminate, confusion within our rules.

G. Cost Benefit and Diversity, Equity and Inclusion Analysis

48. After evaluating the record received in response to the *NPRM's* request for comment on the benefits and costs associated with adopting the proposals set forth in the *NPRM*, we conclude that to the extent that the revised rules impose any costs on Commission licensees and regulatees, such costs will be minimal and are outweighed by the benefits to the public of the revised rules.[140] A few commenters

(Continued from previous page)
LPTV stations to transmit with a virtual channel that avoids conflicts with other stations, update the process for filing applications with the Commission, and make other technical modifications. *See NPRM* at para. 9.

[135] Comments of Scripps Broadcasting Holdings LLC, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (Scripps Comments) at 1, 4 (proposing to adopt a "90-day shot clock" for resolving channel substitution petitions for rulemaking in Part 73); ATBA Comments at 4-6 (proposing that the freeze on major modifications of LPTV stations be lifted and requesting that the Commission "provide greater certainty for LPTV operators planning to invest in new and innovative digital technologies."); Comments of Mountain Broadcasting Corporation, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (Mountain Broadcasting Comments) at 2; *see also* Reply Comments of Mountain Broadcasting Corporation, MB Docket Nos. 03-185 and 22-261 (filed Nov. 7, 2022) (Mountain Broadcasting Reply) at 5-6 (proposing that the Commission apply Annex B of the ATSC A/65C to both full power and LPTV stations and allow any virtual channel designation that does not result in a contour overlap; and require LPTV stations to file items similar to those maintained by full power stations in a public file).

[136] Comments of Cohen, Dippell and Everist, P.C., MB Docket No 22-261 (filed Oct. 24, 2022) (CDE Comments) at 2; *see also* 47 CFR § 74.701(c) (Definitions).

[137] *Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Replacement Digital Low Power Television Translator Stations*, MB Docket No. 08-253, Report and Order, 24 FCC Rcd 5931 (2009).

[138] Comments of the LPTV Broadcasters Association, MB Docket Nos. 03-185 and 22-261 (filed Oct. 24, 2022) (LPTV Broadcasters Association Comments) at 1-3.

[139] *See, e.g.*, 47 U.S.C. § 336(h) (Provision of Digital Data Service by Low-Power Television Stations); *Low Power Protection Act* (P.L. No. 117-344, S. 3405 (Jan. 5, 2023) (defining "low power TV station" with respect to section 74.701 of the Commission's rules); *Community Broadcasters Protection Act of 1999*, P. L. No. 106-113, 113 Stat. Appendix 1 at pp. 1501A-594-1501A-598 (1999), *codified at* 47 U.S.C. § 336(f).

[140] *NPRM* at para. 27 (seeking comment on the benefits and costs associated with adopting the proposed changes).

explicitly addressed the costs and benefits of the proposed rules or provided specific data and analysis supporting claimed costs and benefits in response to the *NPRM*. For example, Canyon TV/Cannaliato asserts that our proposal to use TSIDs would impose a significant financial burden to community translators.[141] NTA in its comments cites an estimate by one translator owner and operator of Montana translator stations of the cost to update equipment to enable translators to insert data into the PSIP of the received data for each translator.[142] Canyon TV/Cannaliato also noted with respect to our frequency measure requirement proposal that replacing certain equipment in order to comply would be a financial burden for translator stations.[143] As described *supra*, the revisions to the rules codify the staff's current practices or better reflect technological advancements in the industry and take into consideration potential financial burdens on LPTV/translators. We did not adopt the TSID- and PSIP-related rules that could have led to increased costs, and we clarified in the *Report and Order* that we do not believe the frequency measurement requirement will lead to increased cost. The revised rules reflect an effort to simplify, streamline, and modernize existing rules and procedures that will enable LPTV/translator stations to more easily comply with licensing requirements through familiar and low cost measures. Thus, we expect any costs imposed by the updated rules will be minimal and outweighed by the public benefits of clarity and modernization.

49. The *NPRM* also sought comment on how the proposals set forth in the *NPRM* can advance equity in the provision of broadcast services for all people of the United States, without discrimination on the basis of race, color, religion, national origin, sex, or disability. The *NPRM* also sought comment on how our proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility.[144] We received no comments on these topics and no objection to adoption of the proposed rules based on these concerns. We acknowledge the importance of these aims, and we believe that the revised rules reflect an effort to simplify, streamline, and modernize existing rules and procedures that will enable LPTV/translator stations to more easily comply with licensing requirements through familiar and low cost measures and we do not believe they will have negative implications related to diversity, equity, inclusion, or accessibility.

IV. PROCEDURAL MATTERS

50. *Paperwork Reduction Analysis*. The *Report and Order* contains either new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA).[145] It will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA. OMB, the general public, and other federal agencies are invited to comment on the new or modified information collection requirements contained in this proceeding. The Commission will publish a separate document in the Federal Register at a later date seeking these comments. In addition, we note that, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4), the Commission previously sought specific comment on how it might further reduce the information collection burden for small business concerns with fewer than 25 employees. We have described impacts that might affect small businesses in the FRFA in Appendix B.

51. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that this rule is non-major under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this *Report and Order* to Congress and the Government Accountability office, pursuant to 5 U.S.C. § 801(a)(1)(A).

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[141] *See* Canyon TV/Cannaliato Comments at 1.

[142] *See* NTA Comments at 5.

[143] *See* Canyon TV/Cannaliato Comments at 1.

[144] *NPRM* at para. 28.

[145] Pub. L. No. 104-13.

52. *Regulatory Flexibility Analysis.* The Regulatory Flexibility Act of 1980, as amended (RFA),[146] requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[147] Accordingly, we have prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of rule and/or policy changes contained in this Report and Order on small entities. The FRFA is set forth in Appendix B.

53. *People with Disabilities*. To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at (202) 418-0530.

54. *Additional Information*. For additional information on this proceeding, please contact Joyce Bernstein, Video Division, Media Bureau at Joyce.Bernstein@fcc.gov, Emily Harrison, Video Division, Media Bureau at Emily.Harrison@fcc.gov, or Mark Colombo, Video Division, Media Bureau at Mark.Colombo@fcc.gov.

V. ORDERING CLAUSES

55. Accordingly, **IT IS ORDERED**, pursuant to the authority contained in sections 1, 4, 301, 303, 307, 308, 309, 310, 316, 319, 336, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154, 301, 303, 307, 308, 309, 310, 316, 319, 336, 403, this Report and Order **IS ADOPTED**.

56. **IT IS FURTHER ORDERED** that the Commission's rules **ARE HEREBY AMENDED** as set forth in Appendix A and such amendments shall be effective 30 days after publication in the *Federal Register*, except for sections 74.703, 74.734, 74.735, 74.751, 74.763, and 74.784, which contain new or modified information collection requirements and will be submitted for approval by the Office of Management and Budget under the Paperwork Reduction Act and shall become effective after the Commission publishes a notice in the *Federal Register* announcing such approval and the relevant effective date.

57. **IT IS FURTHER ORDERED** that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, **SHALL SEND** a copy of the Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

58. **IT IS FURTHER ORDERED**, that pursuant to section 801(a)(1)(A) of the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A), the Commission **SHALL SEND** a copy of this Report and Order to Congress and to the Government Accountability Office.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

[146] *See* 5 U.S.C. § 603.

[147] *See id.* § 605(b).

APPENDIX A

Final Regulations

The Federal Communications Commission amends part 74 of Title 47 of the Code of Federal Regulations (CFR) as follows:

PART 74 - EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES

1. The authority citation for part 74 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, 307, 309, 310, 325, 336 and 554.

2. Section 74.702 is amended by revising paragraph (b) to read as follows:

§ 74.702 Channel assignments.

* * * * *

(b) Changes in the Table of TV Allotments (§ 73.622(j) of this chapter), authorizations to construct new full power television stations or to authorizations to change facilities of existing such stations, may be made without regard to existing or proposed low power TV or TV translator stations. Where such a change results in a low power TV or TV translator station causing actual interference to reception of the full power television station, the licensee or permittee of the low power TV or TV translator station shall eliminate the interference or file an application for a change in channel assignment pursuant to § 73.3572 of this chapter.

* * * * *

3. Section 74.703 is amended by revising paragraph (h) to read as follows:

§ 74.703 Interference.

* * * * *

(h) In each instance where suspension of operation is required, the licensee shall submit a full report to the FCC after operation is resumed containing details of the nature of the interference, the source of the interfering signals, and the remedial steps taken to eliminate the interference. This report shall be filed

via a Resumption of Operations notice in the FCC's Licensing and Management System (LMS).

* * * * *

4. Remove and reserve § 74.708.

§ 74.708 [Removed and Reserved]

5. Section 74.709 is amended by revising the tables in paragraphs (a) and (b)(2) to read as follows:

§ 74.709 Land mobile station protection.

(a) * * *

Table 1 to Paragraph (a)

City	Channels	Coordinates	
		Latitude	Longitude
Boston, MA	14, 16	42°21′24.4″	071°03′23.2″
Chicago, IL	14, 15	41°52′28.1″	087°38′22.2″
Cleveland, OH	14, 15	41°29′51.2″	081°49′49.5″
Dallas, TX	16	32°47′09.5″	096°47′38.0″
Detroit, MI	15, 16	42°19′48.1″	083°02′56.7″
Houston, TX	17	29°45′26.8″	095°21′37.8″
Los Angeles, CA	14, 16, 20	34°03′15.0″	118°14′31.3″
Miami, FL	14	25°46′38.4″	080°11′31.2″
New York, NY	14, 15, 16	40°45′06.4″	073°59′37.5″
Philadelphia, PA	19, 20	39°56′58.4″	075°09′19.6″
Pittsburgh, PA	14, 18	40°26′19.2″	079°59′59.2″
San Francisco, CA	16, 17	37°46′38.7″	122°24′43.9″
Washington, DC	17, 18	38°53′51.4″	077°00′31.9″

(b) * * *

(2) * * *

Table 2 to Paragraph (b)(2)

City	Channel	Coordinates	
		Latitude	Longitude
San Diego, CA	15	32°41′52.7″	116°56′06.3″
Waterbury, CT	20	41°31′02.3″	073°00′58.4″
Washington, DC	14	38°57′17.4″	077°00′15.9″
Washington, DC	20	38°57′49.9″	077°06′17.2″
Champaign, IL	15	40°04′10.0″	087°54′46.0″
Jacksonville, IL	14	39°45′52.1″	090°30′29.5″
Ft. Wayne, IN	15	41°05′35.2″	085°10′41.9″
South Bend, IN	16	41°36′20.0″	086°12′46.0″
Salisbury, MD	16	38°24′15.4″	075°34′43.7″
Mt. Pleasant, MI	14	43°34′24.1″	084°46′21.0″
Hanover, NH	15	43°42′30.2″	072°09′14.3″
Canton, OH	17	40°51′04.2″	081°16′36.4″
Cleveland, OH	19	41°21′19.2″	081°44′23.5″
Oxford, OH	14	39°30′26.2″	084°44′08.8″
Zanesville, OH	18	39°55′42.0″	081°59′07.0″
Elmira-Corning, NY	18	42°06′22.0″	076°52′16.0″
Harrisburg, PA	21	40°20′43.1″	076°52′08.3″
Johnstown, PA	19	40°19′47.3″	078°53′44.1″
Lancaster, PA	15	40°15′45.0″	076°27′50.0″
Philadelphia, PA	17	40°02′30.9″	075°14′21.9″
Pittsburgh, PA	16	40°26′46.2″	079°57′50.2″
Scranton, PA	16	41°10′58.3″	075°52′19.7″
Parkersburg, WV	15	39°20′59.8″	081°33′55.4″
Madison, WI	15	43°03′03.0″	089°29′13.0″

* * * * *

6. Remove and reserve § 74.710.

§ 74.710 [Removed and Reserved]

7. Section 74.734 is amended by revising the first sentence of paragraph (a)(4) to read as follows:

§ 74.734 Attended and unattended operation.

(a) * * *

(4) A notification must be filed with the FCC via a Change of Control Point Notice in LMS providing the name, address, and telephone number of a person or persons who may be called to secure suspension of operation of the transmitter promptly should such action be deemed necessary by the FCC. * * *

* * * * *

8. Section 74.735 is amended by revising the first and second sentences of paragraphs (c) introductory text and (c)(2) and paragraph (c)(4) and adding paragraphs (c)(6) and (7) to read as follows:

§ 74.735 Power limitations.

* * * * *

(c) The limits in paragraph (b) of this section apply to the effective radiated power in the horizontally polarized plane. For either omnidirectional or directional antennas, where the ERP values of the vertically and horizontally polarized components are not of equal strength, the ERP limits shall apply to the horizontal polarization, and the vertical ERP shall not intentionally exceed the horizontal ERP in any direction. * * *

(2) Relative field azimuth plane pattern (patterns for both horizontal and vertical polarization should be included if elliptical or circular polarization is used) of the proposed directional antenna. A value of 1 0 should be used for the maximum radiation in the horizontal polarization * * *

* * * * *

(4) All azimuth plane patterns must be plotted in a PDF attachment to the application in a size sufficient to be easily viewed.

* * * * *

(6) If an elevation pattern is submitted in the application form, similar tabulations and PDF attachments shall be provided for the elevation pattern.

(7) If a matrix pattern is submitted in the application form, similar tabulations shall be provided as necessary in the form of a spreadsheet to accurately represent the pattern.

9. Revise § 74.737 to read as follows:

§ 74.737 Antenna location.

(a) An applicant for a new low power TV or TV translator station or for a change in the facilities of an authorized station shall endeavor to select a site that will provide a line-of-sight transmission path to the entire area intended to be served and at which there is available a suitable signal from the primary station, if any, that will be retransmitted.

(b) The transmitting antenna should be placed above growing vegetation and trees lying in the direction of the area intended to be served, to minimize the possibility of signal absorption by foliage.

(c) A site within 8 kilometers of the area intended to be served is to be preferred if the conditions in paragraph (a) of this section can be met.

(d) Consideration should be given to the accessibility of the site at all seasons of the year and to the availability of facilities for the maintenance and operation of the transmitting equipment.

(e) The transmitting antenna should be located as near as is practical to the transmitter to avoid the use of long transmission lines and the associated power losses.

(f) Consideration should be given to the existence of strong radio frequency fields from other transmitters at the site of the transmitting equipment and the possibility that such fields may result in the retransmissions of signals originating on frequencies other than that of the primary station being rebroadcast.

10. Revise § 74.750 to read as follows:

§ 74.750 Transmission system facilities.

(a) A low power TV or TV translator station shall operate with a transmitter that is either certificated for licensing under the provisions of this subpart or type notified for use under part 73 of this chapter.

(b) External preamplifiers also may be used provided that they do not cause improper operation of the transmitting equipment, and use of such preamplifiers is not necessary to meet the provisions of § 74.795(b).

(c) - (d) [Reserved]

(e) The following procedures shall apply:

(1) Any manufacturer of apparatus intended for use at low power TV or TV translator stations may request certification by following the procedures set forth in part 2, subpart J, of this chapter.

(2) Low power TV and TV translator transmitting apparatus that has been certificated by the FCC will normally be authorized without additional measurements from the applicant or licensee.

(3) Applications for certification of modulators to be used with existing certificated TV translator apparatus must include the specifications electrical and mechanical interconnecting requirements for

the apparatus with which it is designed to be used.

(4) Other rules concerning certification, including information regarding withdrawal of type acceptance, modification of certificated equipment, and limitations on the findings upon which certification is based, are set forth in part 2, subpart J, of this chapter.

(f) The transmitting antenna system may be designed to produce horizontal, elliptical, or circular polarization.

(g) Low power TV or TV translator stations installing new certificated transmitting apparatus incorporating modulating equipment need not make equipment performance measurements and shall so indicate on the station license application. Stations adding new or replacing modulating equipment in existing low power TV or TV translator station transmitting apparatus must have a qualified person examine the transmitting system after installation. A report of the methods, measurements, and results must be kept in the station records. However, stations installing modulating equipment solely for the limited local origination of signals permitted by § 74.790 need not comply with the requirements of this paragraph (g).

11. Section 74.751 is amended by:

a. Revising paragraph (b)(4); and

b. Removing and reserving paragraph (b)(6); and

c. Revising paragraph (c).

The revision reads as follows:

§ 74.751 Modification of transmission systems.

* * * * *

(b) * * *

(4) Any horizontal change of the location of the antenna.

* * * * *

(c) Notwithstanding the requirements in paragraph (b) of this section, a station may file in LMS a correction of geographic coordinates where the change is 3 seconds or fewer in latitude and/or 3 seconds or fewer in longitude, provided there is no physical change in location and no other licensed parameters are changed. An exhibit should be attached to the application(s) specifying that it is a coordinate correction.

12. Revise § 74.762 to read as follows:

§ 74.762 Frequency measurements.

(a) The licensee of a low power TV station or a TV translator station must measure the frequency of its output channel as often as necessary to ensure operation consistent with the Advanced Television Systems Committee (ATSC) standard (see § 73.682 of this chapter; for ATSC 1.0, § 73.682(d), ATSC A/53 Part 2, and for ATSC 3.0, § 73.682(f)(2)), and at least once each calendar year at intervals not exceeding 14 months.

(b) In the event that a low power TV or TV translator station is found to be operating inconsistent with the standard in paragraph (a) of this section, the licensee promptly shall suspend operation of the transmitter and shall not resume operation until the transmitter has been restored to its assigned frequency.

13. Section 74.763 is amended by revising paragraph (b) to read as follows:

§ 74.763 Time of operation.

* * * * *

(b) In the event that causes beyond the control of the low power TV or TV translator station licensee make it impossible to continue operating, the licensee may discontinue operation for a period of not

more than 30 days without further authority from the FCC. Notification must be sent to the FCC via a Suspension of Operations Notice filing in LMS, not later than the 10th day of discontinued operation. During such period, the licensee shall continue to adhere to the requirements in the station license pertaining to the lighting of antenna structures. In the event normal operation is restored prior to the expiration of the 30 day period, the FCC shall be notified via a Resumption of Operations Notice filing in LMS of the date normal operations resumed. If causes beyond the control of the licensee make it impossible to comply within the allowed period, a request for Special Temporary Authority (see § 73.1635 of this chapter) shall be made to the FCC no later than the 30th day for such additional time as may be deemed necessary via LMS.

* * * * *

14. Revise § 74.783 to read as follows:

§ 74.783 Station identification.

(a) Each low power TV station as defined by § 74.701(f) must transmit its station identification using one of the following methods:

(1) When originating programming, as defined by § 74.701(h), a low power TV station may use the station identification procedures given in § 73.1201 of this chapter on its primary stream. Other streams may use the method in paragraph (a)(2) of this section. The identification procedures given in the remainder of this paragraph are to be used at any time the station is not originating programming; or

(2) By transmitting the call sign in the short channel name field of the Program and System and Information Protocol (PSIP) (or its ATSC 3.0 equivalent) for at least one stream on the station. If the station is assigned an alphanumeric call sign consistent with § 74.791(d) and its call sign has more than 7 characters, it may drop the "-D" from the end of the call sign when identifying with this

method; or

(3) By arranging for the primary station, whose signal is being rebroadcast, to identify the low power TV station by transmitting an easily readable visual presentation or a clearly understandable aural presentation of the low power TV station's call letters and location. Two such identifications shall be made between 7 a.m. and 9 a.m. and 3 p.m. and 5 p.m. each broadcast day at approximately one hour intervals during each time period. Television stations which do not begin their broadcast day before 9 a.m. shall make these identifications in the hours closest to these time periods at the specified intervals.

(b) Licensees of television translator stations may arrange for identification via the method in paragraph (a)(3) of this section. Licensees of television translators who make such arrangements for station identification to be made by the television station whose signals are being rebroadcast by the translator, must secure agreement with this television station licensee to keep in its file, and available to FCC personnel, the translator's call letters and location, giving the name, address, and telephone number of the licensee or his service representative to be contacted in the event of malfunction of the translator. It shall be the responsibility of the translator licensee to furnish current information to the television station licensee for this purpose.

(c) Transport Stream ID (TSID) values are identification numbers assigned to stations by the FCC and stored in the Commission’s online database. Two sequential values are assigned to each station.

(1) All low power TV stations originating programming shall transmit their assigned odd-numbered TSID, if one has been assigned. All TV translator stations, and low power TV stations not originating programming, shall pass through the assigned TSID of the originating station, unless the translator or low power TV station is modifying the signal of one or more originating stations in such a way that it is not clear which originating station’s TSID should be used. In that case, the station shall transmit its assigned odd-numbered TSID if one has been assigned.

(2) In ATSC 3.0, a similar value is used called a Bit Stream ID (BSID). LPTV stations operating in ATSC 3.0 mode shall utilize their assigned even-numbered TSID as their BSID, and LPTV/translator stations shall transmit the BSID as otherwise required of the TSID in paragraph (d)(1) of this section.

15. Section 74.784 is amended by revising paragraph (b) to read as follows:

§ 74.784 Rebroadcasts.

* * * * *

(b) The licensee of a low power TV or TV translator station shall not rebroadcast the programs of any other TV broadcast station or other station authorized under the provisions of this subpart without obtaining prior consent of the station whose signals or programs are proposed to be retransmitted. The FCC shall be notified of the call letters of each station rebroadcast, and the licensee of the low power TV or TV broadcast translator station shall certify it has obtained written consent from the licensee of the station whose programs are being retransmitted. This notification shall be provided by e-mail to TVRebroadcast@fcc.gov, the Video Division's e-mail box.

* * * * *

16. Remove and reserve § 74.786.

§ 74.786 [Removed and Reserved]

17. Section 74.787 is amended by removing paragraph (a)(5)(viii) and adding paragraph (c) to read as follows:

§ 74.787 Licensing.

* * * * *

(c) Licensing. An application to construct a new low power TV or TV translator station or change the facilities of an existing station will not be accepted if it fails to protect an authorized Class A, low power TV or TV translator station or an application for such a station filed prior to the date the low power TV

or TV translator application is filed.

18. Remove and reserve § 74.789.

§ 74.789 [Removed and Reserved]

19. Section 74.790 is amended by revising paragraph (g)(3) and adding paragraph (n) to read as follows:

§ 74.790 Permissible service of TV translator and LPTV stations.

* * * * *

(g) * * *

(3) Whenever operating, an LPTV station must transmit at least one over-the-air video program signal at no direct charge to viewers at a resolution of at least 480i (vertical resolution of 480 lines, interlaced).

* * * * *

(n) An LPTV station shall transmit at least the minimum Program System and Information Protocol (PSIP) information necessary for receivers to display the station's programming. The station is not required to utilize any specific virtual channel number but must avoid creating a contour overlap with any full power TV or Class A TV station's virtual channel, or creating a contour overlap with another LPTV station using the same virtual channel.

20. Section 74.791 is amended by adding paragraph (d) to read as follows:

§ 74.791 Call signs.

* * * * *

(d) Call sign protocol. The use of the initial letter generally will follow the pattern used in the broadcast service, i.e., stations west of the Mississippi River will be assigned an initial letter K and those east, the

letter W. The two letter combinations following the channel number will be assigned in order, and requests for the assignment of the particular combinations of letters will not be considered. The channel number designator for Channels 2 through 9 will be incorporated in the call sign as a 2-digit number, i.e., 02, 03, etc., so as to avoid similarities with call signs assigned to amateur radio stations. In the event that the two letter combination following the channel numbers reaches ZZ, the next subsequent call sign shall have three letters, beginning with AAA.

21. Section 74.795 is amended by:

a. Removing "and" at the end of paragraph (b)(4);

b. Removing the period at the end of paragraph (b)(5) and adding ";" in its place; and

c. Adding paragraphs (b)(6) and (7).

The additions read as follows:

§ 74.795 Low power TV and TV translator transmission system facilities.

* * * * *

(b) * * *

(6) The apparatus must be equipped with automatic controls that will place it in a non-radiating condition when no signal is being received on the input channel, either due to absence of a transmitted signal or failure of the receiving portion of the facilities used for rebroadcasting the signal of another station. The automatic control may include a time delay feature to prevent interruptions caused by fading or other momentary failures of the incoming signal; and

(7) Wiring, shielding, and construction shall be in accordance with accepted principles of good engineering practice.

* * * * *

APPENDIX B

Final Regulatory Flexibility Act Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Initial Regulatory Flexibility Act Analysis (IRFA) was incorporated into the *Notice of Proposed Rulemaking* (*NPRM*) released in July 2022.[2] The Federal Communications Commission (Commission) sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. No comments were filed addressing the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

A. Need for, and Objectives of, the Report and Order

2. The *Report and Order* reflects the Commission's effort to update its rules following the termination of analog operations in the low power television (LPTV) and TV translator services (collectively LPTV/translator). The Commission adopts certain rules previously applicable to analog operations for digital operations and considers requests and comments received on subjects not included in the *NPRM* proposals, including analysis of the cost and benefits of the proposed rules.

3. In the *Report and Order*, the Commission retains the rule requiring LPTV stations that avail themselves of the provisions set forth in the LPTV Pilot Project Digital Data Services Act (DDSA) digital data service pilot project to comply with the Commission's rule implementing the DDSA. The *Report and Order* amends the Commission's rules for LPTV/translator alphanumeric call signs to account for exhaustion of all two letter call sign combinations for some channel numbers, and consistent with the Commission's policy that all stations have a unique call sign, the *Report and Order* codifies the current practice of assigning a call sign ending in three letters beginning with "AAA" and continuing sequentially through the alphabet ("AAB", "AAC", etc.) in such cases. The *Report and Order* also requires digital LPTV stations to comply with the station identification provisions in Section 74.783 applicable to analog operations, updated to reflect digital operations. Additionally, the Commission adopts its proposal to include an option for LPTV stations to use the Program and System Information Protocol (PSIP) to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV station transmits, and mandates the broadcast of the station's assigned TSID (or BSID, which is the Advanced Television Systems Committee (ATSC) 3.0 functional equivalent), assuming one is assigned.

4. The *Report and Order* adopts a modified version of the Commission's proposal to require a minor modification application on FCC Form 2100, Schedule C for all station relocations, including those under 500 feet, but allows for coordinate corrections of under 3 seconds latitude and/or longitude without paying a filing fee. The *Report and Order* also codifies the staff's practice of requiring LPTV stations to transmit with a virtual channel that avoids conflicts with any full power or Class A station's virtual channel in cases where a contour overlap would arise, or with virtual channels chosen by other LPTV stations. Further, the *Report and Order* updates various filing requirements that currently specify submission by letter or other means to the FCC to instead require submission in the Commission's Licensing and Management System (LMS), or otherwise through electronic submission, and clarifies what documentation is required when applications are submitted with various kinds of directional patterns. In addition, the *Report and Order* removes references in the rules to the use of antennas with

[1] 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television and Television Translator Stations*, *Update of Parts 74 of the Commission's Rules Related to Low Power Television and Television Translator Stations,* Order and Sixth Notice of Proposed Rulemaking, FCC 22-58 (rel. July 13, 2022) (*NPRM*); Erratum, FCC 22-58 (rel. Sept. 9, 2022).

[3] 5 U.S.C. § 604.

solely vertical polarization, and requires that the design of broadcast antennas is such that horizontal power is intended to be higher than or equal to the vertical power in all directions.

5. The *Report and Order* also adopts updates to the coordinates found throughout Section 74.709 from NAD 27 to NAD 83 and otherwise conforms the values in Section 74.709(a) with those found in Section 90.303. These coordinates are used only to determine where the Commission will or will not grant applications. Section 74.703(e) still requires the resolution of actual interference, so the adjustments to Section 74.709(a) will not change the required amount of interference protection between LPTV/translator stations and land mobile operations. Finally, the *Report and Order* adopts updates to the quality standard set forth in Section 74.790(g)(3) to reflect that 480i video resolution is "comparable in resolution to analog television programming," consistent with the update the Commission made to its full power station rules.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

6. There were no comments filed that specifically addressed the rules and policies proposed in the IRFA.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

7. Pursuant to the Small Business Jobs Act of 2010, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.[4]

8. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

9. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the rules adopted herein.[5] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[6] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act (SBA).[7] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[8]

10. The rules adopted herein will directly affect small television broadcast stations. Below, we provide a description of such small entities, as well as an estimate of the number of such small entities, where feasible.

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[4] *Id.* § 604(a)(3).

[5] *Id.* § 604(a)(4).

[6] *Id.* § 601(6).

[7] *Id.* § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632(a)(1)). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." *Id.*

[8] 15 U.S.C. § 632.

11. *Television Broadcasting.* This industry is comprised of "establishments primarily engaged in broadcasting images together with sound."[9] These establishments operate television broadcast studios and facilities for the programming and transmission of programs to the public.[10] These establishments also produce or transmit visual programming to affiliated broadcast television stations, which in turn broadcast the programs to the public on a predetermined schedule. Programming may originate in their own studio, from an affiliated network, or from external sources. The SBA small business size standard for this industry classifies businesses having $41.5 million or less in annual receipts as small.[11] 2017 U.S. Census Bureau data indicate that 744 firms in this industry operated for the entire year.[12] Of that number, 657 firms had revenue of less than $25,000,000.[13] Based on this data, we estimate that the majority of television broadcasters are small entities under the SBA small business size standard.

12. As of December 31, 2022, there were 1,375 licensed commercial television stations.[14] Of this total, 1,282 stations (or 93.2%) had revenues of $41.5 million or less in 2021, according to Commission staff review of the BIAKelsey Media Access Pro Online Television Database (MAPro) on January 13, 2023,[15] and therefore these licensees qualify as small entities under the SBA definition. In addition, the Commission estimates as of December 31, 2022, there were 383 licensed noncommercial educational (NCE) television stations, 383 Class A TV stations, 1,912 LPTV stations and 3,122 TV translator stations.[16] The Commission, however, does not compile and otherwise does not have access to financial information for these television broadcast stations that would permit it to determine how many of these stations qualify as small entities under the SBA small business size standard. Nevertheless, given the SBA's large annual receipts threshold for this industry and the nature of these television station licensees, we presume that all of these entities qualify as small entities under the above SBA small business size standard.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

13. In this section, we identify the reporting, recordkeeping, and other compliance requirements adopted in the *Report and Order* and consider whether small entities are affected disproportionately by any such requirements. While the Commission is not in a position to determine whether small entities will have to hire professionals to comply with our decisions and cannot quantify the cost of compliance for small entities, the approaches we have taken to implement the requirements have minimal or *de minimis* cost implications for impacted entities.

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[9] *See* U.S. Census Bureau, *2017 NAICS Definition, "515120 Television Broadcasting,"* https://www.census.gov/naics/?input=515120&year=2017&details=515120.

[10] *Id.*

[11] *See* 13 CFR § 121.201, NAICS Code 515120 (as of Oct. 1, 2022 NAICS Code 516120).

[12] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515120, https://data.census.gov/cedsci/table?y=2017&n=515120&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[13] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[14] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 23-21 (rel. Jan. 11, 2023) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[15] BIA Advisory Services, BIAKelsey Media Access Pro Online Television Database, http://www.biakelsey.com/data-platforms/media-access-pro (last visited on Jan. 13, 2023).

[16] *Broadcast Station Totals PN.*

14. The Commission concludes it will modify Section 74.751(b)(4) to require LPTV/translator licensees and permittees to file a minor modification application requesting authorization for all station relocations, including those moving the antenna or the antenna structure less than 500 feet (152.4 meters), but will permit stations seeking to correct coordinates by less than 3 seconds of latitude and/or longitude to do so without paying a filing fee.[17] These requirements will result in a modified paperwork obligation for small entities and other licensees. The *Report and Order* adopts a new Section 74.762 regarding frequency measurements, which would require small and other LPTV/translator stations to measure the frequency of their output channel as often as necessary, but not exceeding 14 months, to ensure operation consistent with the ATSC standard in Section 73.682 of the rules. The Commission also adopts LPTV station identification proposals to comply with Section 74.783, updated to reflect digital operations, including the option to transmit the station's "short channel name" on at least one stream of programming. Further, the *Report and Order* amends our rules to require LPTV/translator licensees and permittees to file written reports, submissions, letters, notifications, or other required filings in LMS, or otherwise by electronic submission, thereby streamlining application submission, processing, and record keeping for small and other entities. The Commission will seek approval and the corresponding burdens, such as those require to comply with the Paperwork Reduction Act of 1995 (PRA),[18] to account for this modified reporting requirement.

F. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

15. The RFA requires an agency to provide, "a description of the steps the agency has taken to minimize the significant economic impact on small entities…including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected."[19]

16. The actions taken by the Commission in the *Report and Order* were considered to be the least costly and minimally burdensome for small and other entities impacted by the rules. As such, the Commission does not expect the adopted requirements to have a significant economic impact on small entities. Below we discuss actions we take in the *Order* to minimize any significant economic impact on small entities and some alternatives that were considered.

17. The *Report and Order* adopts a number of proposals that would codify the staff's current practices or better reflect technological advancements in the industry that may benefit small entities. For example, the *Report and Order* codifies the staff's practice of requiring LPTV stations that voluntarily transmit with a virtual channel to choose one that avoids conflicts with any full-power or Class A station's virtual channel in cases where a contour overlap would arise, or with virtual channels chosen by other LPTV stations. We considered alternatives by the Society of Broadcast Engineers (SBE) that would require small and other LPTV licensees to enter these channels in LMS, but decline this option because LPTV virtual channel assignments do not need Commission approval. Moreover, the *Report and Order* removes references in the rules to the use of antennas with solely vertical polarization, and requires that the horizontal power is intended to be higher than or equal to the vertical power in all directions, consistent with the requirements for full-power stations. We considered proposals from the National Association of Broadcasters (NAB) and SBE that we modify the wording of the proposed rules, and adopted the clearer language proposed by NAB. These revisions simplify, streamline, and modernize existing rules and procedures that will enable small and other LPTV/translator stations to more easily comply with licensing requirements through familiar and low cost measures. We also adopted a rule for

[17] *See* revised Section 74.751(b)(4) and (c) (Modification of transmission systems). The rule as currently written exempts relocations of the station's antenna structure by less than 500 feet from the application process.

[18] Pub. L. No. 104-13.

[19] 5 U.S.C. § 604(a)(6).

LPTV stations allowing the option of identifying by using PSIP to transmit the station's call sign as the "short channel name" on at least one stream of programming that the LPTV station transmits.[20] The rule we adopted is simpler and less expensive than other methods of identification for stations that are already using PSIP.

18. The *Report and Order* also updates the coordinates in Section 74.709 from NAD 27 to NAD 83 in order to conform the values with those found in Part 90 of the Commission's rules. These coordinates are used only to determine whether the Commission will or will not grant applications. Section 74.703(e) still requires the resolution of actual interference, and so the Commission would not need to balance the interference protection afforded to land mobile operation with the updated, streamlined benefits for small entities as a result of this revision. While NAB encourages us to add a note to Part 90 regarding land mobile assignments, we decline to do so due to a pending petition for rulemaking on that subject. Further, the *Report and Order* updates various filing requirements that currently specify submission by letter or other means to the FCC to instead require submission in LMS or electronically. The Commission anticipates that this option will lessen the physical burden on small entities.

19. A few commenters explicitly addressed the costs and benefits of the proposed rules or provided specific data and analysis supporting claimed costs and benefits in response to the *NPRM*. Specifically, Canyon TV/Cannaliato noted the financial burden TSIDs would impose to community translators, and that replacing equipment to comply with the rules would be a financial burden for translator stations. NTA cited similar cost concerns in its comments. In assessing the impact on small entities, we took into consideration potential financial burdens on small and other LPTV/translators, and in adopting the TSID- and PSIP-related rules we had proposed, we clarified that we did not intend to impose a requirement that could have led to increased cost. Additionally, Canyon TV/Cannaliato raised the possibility of additional costs due to our proposed requirement to regularly conduct frequency measurements. However, in adopting this proposed rule, we believe small and other LPTV/translator stations can comply without replacing existing equipment. Specifically, stations can comply with the rule by reviewing the station's signal on a spectrum analyzer and determining that the pilot carrier (for ATSC 1.0) and the overall signal (for ATSC 1.0 and ATSC 3.0) appear correctly and are properly contained within their assigned spectrum, consistent with the standard in use and our rules. We also clarified in the *Report and Order* that we do not believe the frequency measurement requirement will lead to increased cost, and identified specific portions of Section 73.682 that contain the information needed to conduct frequency measurements, easing the burden on small and other entities in comparison to citing the entire broadcast standard.

G. Report to Congress

20. The Commission will send a copy of the *Report and Order*, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[21] In addition, the Commission will send a copy of the *Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. The *Report and Order* and FRFA (or summaries thereof) will also be published in the *Federal Register*.[22]

[20] *NPRM* at para. 16 and n.48.

[21] *Id.* § 801(a)(1)(A).

[22] *See id.* § 604(b).

APPENDIX C

List of Commenters

Commenters

Canyon TV
One Ministries, Inc.
Scripps Broadcasting Holdings LLC
National Association of Broadcasters
Wireless Access, LLC
Advanced Television Broadcasting Alliance
Mountain Broadcasting Corporation
Cohen, Dippell and Everist, P.C.
The LPTV Broadcasters Association
National Television Association
U.S. Television LLC

Reply Commenters

Hammett & Edison, Inc.
Mountain Broadcasting Corporation
National Association of Broadcasters
Society of Broadcast Engineers, Inc.
The LPTV Broadcasters Association

***Ex Parte* Comments**

National Association of Broadcasters
National Television Association

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Sharm el-Sheikh, 2019) (WRC-19), Other Allocation Issues, and Related Rule Updates	)	ET Docket No. 23-121
	)	
Amendment of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2015) (WRC-15), Other Allocation Issues, and Related Rule Updates	)	ET Docket No. 23-120
	)	
Petition to Amend Parts 2 and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2015) To Allocate the Band 5351.5-5366.5 kHz to the Amateur Radio Service	)	RM-11785

ORDER AND NOTICE OF PROPOSED RULEMAKING

Adopted: April 18, 2023 **Released: April 21, 2023**

Comment Date: [60 days after date of publication in the Federal Register]
Reply Comment Date: [90 days after date of publication in the Federal Register]

By the Commission:

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I. INTRODUCTION

1. By this action, we take the necessary steps to implement certain decisions of the World Radiocommunication Conferences held in 2015 (WRC-15) and 2019 (WRC-19). This action consists of two components: 1) an Order that amends part 2 of the Commission's rules to make non-substantive, editorial revisions to the Commission's Table of Frequency Allocations (Allocation Table), primarily to reflect decisions from the Final Acts World Radiocommunication Conference 2019 (*WRC-19 Final Acts*); and 2) a Notice of Proposed Rulemaking that proposes to amend the Allocation Table and related service rules to implement certain radiofrequency allocation decisions from the Final Acts World Radiocommunication Conference 2015 (*WRC-15 Final Acts*).[1]

2. In the Order (WRC-19 Admin Order), we revise the Allocation Table by updating the International Table of Frequency Allocations (International Table) portion to reflect the International Telecommunication Union's (ITU's) Table of Frequency Allocations in its Radio Regulations (Edition of 2020) (Radio Regulations) and by making updates and corrections in the United States Table of Frequency Allocations (U.S. Table) portion.[2] These ministerial actions do not modify or otherwise change the Commission's rules with respect to any party's underlying rights or responsibilities.

3. In the Notice of Proposed Rulemaking (WRC-15 Notice), we propose to amend parts 2, 25, 74, 78, 90, 97, and 101 of the Commission's rules to implement certain of the remaining allocation decisions from the *WRC-15 Final Acts* concerning portions of the radio spectrum between 5330.5 kHz and 29.5 GHz, make other allocation changes, and make related updates to our service rules in this

[1] *See* International Telecommunication Union (ITU), Final Acts WRC-15 (2016) (*WRC-15 Final Acts*), http://handle.itu.int/11.1002/pub/80d4e1c0-en; ITU Final Acts WRC-19 (2020) (*WRC-19 Final Acts*), http://handle.itu.int/11.1002/pub/813b5921-en; and 47 CFR § 2.106.

[2] 47 CFR § 2.106. *See* ITU Radio Regulations, http://handle.itu.int/11.1002/pub/814b0c44-en. All citations to the ITU Radio Regulations in this document refer to the Edition of 2020 unless otherwise stated. *Id*., Vol. 1, at III. The United States Table of Frequency Allocations (U.S. Table) is subdivided into the Federal Table of Frequency Allocations (Federal Table, column 4 of § 2.106) and the non-Federal Table of Frequency Allocations (non-Federal Table, column 5 of § 2.106). The Federal Table is administered by the National Telecommunications and Information Administration (NTIA) and the non-Federal Table is administered by the Commission. 47 CFR § 2.105(a). The International Table and Federal Table are included in the Allocation Table for informational purposes only. 47 CFR §§ 2.104(a), 2.105(d)(3).

frequency range. The WRC-15 Notice follows the *WRC-15 Admin Order*,[3] which made non-substantive, editorial revisions to the Allocation Table and to other related rules.[4] Many of these proposals are based on the National Telecommunications and Information Administration's (NTIA's) recommendations for national implementation of the *WRC-15 Final Acts*.[5] Collectively, our proposals are designed to harmonize our spectrum allocations with and conform our rules to the *WRC-15 Final Acts* to the extent that doing so would better meet domestic requirements.

II. EXECUTIVE SUMMARY

4. In the WRC-19 Order, we take non-substantive, editorial actions to update the Commission's Allocation Table, including removing expired text and correcting errors. In the WRC-15 Notice, we propose to implement certain of the allocation decisions from the *WRC-15 Final Acts*, make other allocation changes, and make related updates to our service rules, including those for the amateur radio, cable television relay, fixed microwave, private land mobile, and satellite services, and for aural broadcast auxiliary and television broadcast auxiliary stations. Specifically, we seek comment on:

Satellite Issues

- Providing satellite-based search and rescue systems with protection from out-of-band emissions in the 406-406.1 MHz band by adding footnote US265 and revising section 90.265 to prohibit new fixed and mobile service assignments in the adjacent 100 kilohertz.
- Allocating the 410-420 MHz band to the space research service (space-to-space) on a secondary basis for non-Federal use, limited to communication links with an orbiting, manned space vehicle.
- Providing for Global Flight Tracking by allocating the 1087.7-1092.3 MHz sub-band to the aeronautical mobile-satellite (route) service (Earth-to-space) on a primary basis for Federal and non-Federal use, limited to space station reception of existing automatic dependent surveillance-broadcast (ADS-B) emissions from aircraft.
- Whether to allocate the 7190-7235 MHz band to the space research service (Earth-to-space) and the 7190-7250 MHz band to the Earth exploration-satellite service (Earth-to-space) on a secondary basis for non-Federal use.
- Whether to allocate the 9.2-9.3 GHz and 9.9-10.4 GHz bands to the Earth exploration-satellite service (active) on a primary basis for Federal use and on a secondary basis for non-Federal use and add several footnotes that will limit the impact of this new allocation on certain existing allocations.
- Revising footnote NG62 to permit grandfathered fixed stations in the 28.5-29.1 GHz and 29.25-29.5 GHz bands to operate on a secondary basis; update footnote US139 and the related service rules because incumbent fixed stations in the 18.3-19.3 GHz band no longer have primary status; and seek comment on whether the secondary non-Federal fixed-satellite service (space-to-Earth) allocation in the 18.142-18.3 GHz band should be raised to co-primary status with the fixed service.
- Deleting the primary radionavigation-satellite service allocation from the 149.9-150.05 MHz and 399.9-400.05 MHz bands.

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[3] *Amendment of Parts 1, 2, 15, 27, and 95 of the Commission's Rules to Make Non-Substantive Editorial Revisions to the Table of Frequency Allocations and to Various Other Rules*, Order, 34 FCC Rcd 12830 (2020) (*WRC-15 Admin Order*).

[4] All references to Title 47 of the Code of Federal Regulations (CFR) refer to the annual edition, which was revised as of October 1, 2021. 47 CFR § 2.106.

[5] *Infra* note 15. The Federal Communications Commission (FCC), an independent agency, administers non-Federal radio spectrum, and NTIA, an agency of the U.S. Department of Commerce, administers Federal radio spectrum. NTIA sets forth regulations for Federal use of the radio spectrum within its Manual of Regulations and Procedures for Federal Radio Frequency Management (*NTIA Manual*). 47 CFR §§ 2.1(c), 2.105(a).

Terrestrial Issues

- Allocating the 5351.5-5366.5 kHz (60 meter) band to the amateur service on a secondary basis, on whether four existing channels should continue to be made available for amateur use, and on appropriate limits for 60 meter band operations.
- Updating the coordination and contact information for amateur stations operating in previously defined areas of the 420-450 MHz (70 centimeter) band.
- Revising footnote US288 to authorize on-board communication stations to use three new 12.5 kilohertz channels/channel pairs nationwide, and five internationally-harmonized 6.25 kilohertz channels and channel pairs at coastal and certain inland ports; and revising footnote US287 to allocate several frequency bands between 457 MHz and 468 MHz totaling 231.25 kilohertz to the maritime mobile service, limited to on-board communication stations.
- Deleting the broadcasting service allocation from the 700 MHz band.
- Adding a new footnote US78 to the 960-1164 MHz band to recognize Federal use by military Identification Friend or Foe (IFF) systems on center frequencies 1030/1090 MHz.

III. BACKGROUND

5. The ITU[6] convenes a World Radiocommunication Conference (WRC) typically every three to four years to address international spectrum use. Specifically, the ITU allocates frequency bands to various radio services generally on either a worldwide or Regional basis and enters these radio services in its Table of Frequency Allocations (which is reflected in section 2.106 of our rules as the International Table) as part of the Radio Regulations.[7]

6. The Commission conducted its primary preparations for WRC-15 via its 2015 World Radiocommunication Conference Advisory Committee (WAC), which held eight public meetings between August 9, 2012, and May 20, 2015, to evaluate and approve recommendations and preliminary views that were later submitted for Commission consideration.[8] The ITU held a conference preparatory meeting (CPM) from March 23 through April 2, 2015, to prepare and approve a report on the technical, operational, and regulatory/procedural matters relevant to the WRC-15 agenda.[9] In addition, the United

[6] When we refer to the ITU in this document, we are generally referring to ITU Radiocommunication Sector (ITU-R). The work of ITU-R is organized and coordinated by the Director of the Radiocommunication Bureau (referred to as the "Bureau" in the ITU Radio Regulations, including the International Table). Under its constitution, the ITU is charged with allocating bands of the radiofrequency (RF) spectrum, allotting radio frequencies, and registering RF assignments in order to avoid harmful interference between radio stations of different countries. The ITU constitution also provides that world radiocommunication conferences "shall normally be convened every three to four years" to consider specific radiocommunication matters. *See* Constitution and Convention of the International Telecommunication Union adopted by the 2018 Plenipotentiary Conference (published in Basic Texts, 2019), http://handle.itu.int/11.1004/020.1000/5, at 5, 21, 90. *See also* the ITU Radiocommunication Sector's homepage, http://www.itu.int/en/ITU-R (last visited Feb. 28, 2022).

[7] The ITU may also include allocation use conditions, which are specified in international footnotes to the Allocation Table.

[8] The WAC was chartered under the Federal Advisory Committee Act (FACA) to provide the Commission with advice, technical support, and recommended proposals for WRC-15. The Commission published the committee's recommendations for public comment. After consideration by the U.S. Government, many of the recommendations became a part of the U.S. views and draft proposals. For the Commission's WRC-15 homepage, *see* https://www.fcc.gov/wrc-15 (last visited Feb. 28, 2022).

[9] *See* ITU Radiocommunication Sector "CPM Report on technical, operational and regulatory/procedural matters to be considered by the World Radiocommunication Conference 2015" (*CPM Report to WRC-15*), https://www.itu.int/pub/R-ACT-CPM-2015.

States worked with other nations to craft common proposals for Region 2 (North and South America).[10] By August 27, 2015, the United States had provided its contributions to the Inter-American Telecommunication Commission (CITEL), which then provided the Region 2 proposals to WRC-15.[11]

7. The ITU convened WRC-15 from November 2 to November 27, 2015, in Geneva, Switzerland, with 162 Member States, including the United States, participating.[12] WRC-15 addressed more than 40 topics related to frequency allocation and frequency sharing for the efficient use of spectrum and orbital resources, and adopted allocation changes that affect both Federal and non-Federal entities.[13] The ITU published the decisions made at WRC-15 as the *WRC-15 Final Acts* and subsequently revised the Radio Regulations to incorporate these decisions.[14] On September 10, 2018, NTIA submitted its recommendations for national implementation of the *WRC-15 Final Acts* to the Commission.[15]

8. On December 23, 2019, the Chief, Office of Engineering and Technology and the Managing Director released the *WRC-15 Admin Order*, which reflected the WRC-15 changes to the International Table and made other non-substantive, editorial changes to the Commission's rules, including revisions to the Federal Table that did not require notice and comment.[16]

9. The Commission has already considered certain of the WRC-15 allocation decisions in six different proceedings.[17] Specifically, the Commission has revised its rules to provide for mobile

[10] *See* "U.S. WRC-15 Contributions to CITEL PCC.II" (updated on 8/7/2015), https://www.fcc.gov/general/us-contributions-sent-citel-pccii.

[11] See CITEL's WRC-15 Inter-American Proposals (IAPs) at https://www.fcc.gov/general/citel-inter-american-proposals-iap.

[12] *See* ITU Press Release captioned "World Radiocommunication Conference allocates spectrum for future innovation," Nov. 27, 2015, http://www.itu.int/net/pressoffice/press_releases/2015/56.aspx#.WjL1sfCnHcs. For the ITU's WRC-15 homepage, *see* https://www.itu.int/en/ITU-R/conferences/wrc/2015/Pages/default.aspx (last visited Feb. 28, 2022).

[13] "Results and implications of World Radiocommunication Conference, 2015," https://www.itu.int/en/ITU-R/seminars/rrs/2017-Africa/Documents/Plenary/03_%20WRC-15%20Outcomes.pdf (last visited Feb. 28, 2022).

[14] ITU Radio Regulations (Edition of 2016), Vol. 1, Article 5 (titled "Frequency allocations"), at 37, section IV (titled "Table of Frequency Allocations") at 43, https://www.itu.int/pub/R-REG-RR-2016.

[15] Letter from Peter A. Tenhula, Acting Associate Administrator, Office of Spectrum Management, NTIA, to Julius P. Knapp, Chief, FCC Office of Engineering and Technology, dated Sept. 10, 2018 (NTIA WRC-15 Implementation Recommendations).

[16] *Supra* notes 3 and 5. *WRC-15 Admin Order*, paras. 9-14 (Revisions to the Federal Table).

[17] *Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band*, ET Docket No. 98-237, First Report and Order and Second Notice of Proposed Rule Making, 15 FCC Rcd 20488 (2000) para. 1 (FCC 00-363); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, 6705-07 paras. 317-321 (2014); Order, 32 FCC Rcd 6916, 6917-19 paras. 4-5 (2017); *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 3970-74 paras. 30-43 (2015); *Facilitating Shared Use in the 3100-3550 MHz Band*, WTB Docket No. 19-348, Second Report and Order, Order on Reconsideration, and Order of Proposed Modification, 36 FCC Rcd 5987-88, 5995-97 paras. 1, 17-19 (2021); *Amendment of Parts 1, 2, 15, 90 and 95 of the Commission's Rules to Permit Radar Services in the 76-81 GHz Band*, ET Docket No. 15-26, Report and Order, 32 FCC Rcd 8822, 8827-29 paras. 10-12 (2017); and *Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service*, IB Docket No. 17-95, Report and Order and Further Notice of Proposed Rulemaking, 33 FCC Rcd 9327, 9337-38, 9340, 9349, 9354 paras. 32-33, 44, 66, 89 (2018).

broadband use in the 614-698 MHz and 3450-3700 MHz bands,[18] vehicular and airport radar applications in the 76-81 GHz range,[19] and earth stations in motion (ESIMs) in the 10.95-11.2, 11.45-12.2, 14-14.47, 19.7-20.2, and 29.5-30 GHz bands.[20]

IV. ORDER (WRC-19 ADMIN ORDER)

10. In this Order, we make several non-substantive, editorial changes to the Commission's Allocation Table.[21] None of the rule changes discussed in this order are subject to the notice and comment requirements for rulemaking in the Administrative Procedure Act (APA).[22] Section 553(b)(B) of the APA provides exceptions to the notice and comment requirements for rulemakings when, among other things, the agency finds good cause that the notice and comment requirements are "impracticable, unnecessary, or contrary to the public interest" with respect to the rules at issue. Specifically, in this Order, we make conforming changes to and correct minor errors in the Allocation Table, including removing expired text from domestic footnotes. All of these changes are summarized below. These changes have no substantive effect on industry or the general public. Accordingly, we find that it is "unnecessary," within the meaning of section 553(b)(B) of the APA, to provide notice and an opportunity for public comment before adopting these rule revisions.

A. Reflecting WRC-19 Revisions in the International Table

11. We update the International Table within section 2.106 of the Commission's rules to reflect Article 5, section IV of the Radio Regulations (Edition of 2020), except as revised herein.[23] The

[18] 47 CFR part 27, subpart N, 600 MHz Band, §§ 27.1300-27.1321, subpart Q, 3.45 GHz Service (3450-3550 MHz), §§ 27.1600-27.1607; 47 CFR part 90, subpart Z, Wireless Broadband Services in the 3650-3700 MHz Band, §§ 90.1301-90.1338; 47 CFR part 96, subpart A, Citizens Broadband Radio Service (3550-3700 MHz), § 96.11. WRC-15 identified the 614-698 MHz, 3.3-3.6 GHz, and 3.6-3.7 GHz bands for International Mobile Telecommunications (IMT), which is generally known as mobile broadband in the United States, through its adoption of footnotes 5.308A, 5.431B, and 5.434, respectively. 47 CFR § 2.106 footnotes 5.308A, 5.431B, and 5.434.

[19] 47 CFR part 95, subpart M, The 76-81 GHz Band Radar Service, §§ 95.3301-95.3385.

[20] 47 CFR §§ 25.115, 25.202, 25.209, 25.228. The frequency bands listed that pertain to ESIMs contain a reference to footnote 5.484B, which states that "Resolution 155 (WRC-15) shall apply." This resolution states, *inter alia*, that ESIMs on board unmanned aircraft in Region 2 may communicate with geostationary satellites in the fixed-satellite service (GSO FSS) in the 10.95-11.2, 11.45-12.2, 14-14.47, 19.7-20.2, and 29.5-30 GHz bands for the control and non-payload communications (CNPC) of unmanned aircraft systems (UAS) and that CNPC links relate to the safe operation of UAS. Footnote 5.527A states that the operation of ESIMs is subject to Resolution 156, which pertains to ESIMs communicating with GSO FSS satellites in the 19.7-20.2 and 29.5-30 GHz bands for non-safety-of-life applications. In footnote NG527A and its part 25 rules, the Commission did not limit ESIMs to safety-of-life applications in any frequency band, made additional frequency bands available to ESIMs operating with GSO FSS satellites, and made most of the same frequency bands available to ESIMs operating with non-geostationary FSS satellites. 47 CFR § 2.106 footnotes 5.484B, 5.527A, NG527A.

[21] The Commission's rules provide the International Table for informational purposes only. 47 CFR § 2.104(a). To ensure that we timely and efficiently reflect WRC decisions affecting the International Table, we typically first issue an order, as appropriate, to reflect such updates and to address administrative changes within the U.S. Allocation Table. Substantive changes to the U.S. Table require additional review and coordination between NTIA and FCC and are therefore addressed through a subsequent notice and comment rulemaking proceeding. We develop proposals in that subsequent proceeding to harmonize our spectrum allocations with and conform our rules to the International Table to the extent that doing so would better meet domestic allocation requirements.

[22] *See* 5 U.S.C. § 553 (herein referred to as the "APA"), and in particular, 5 U.S.C. § 553(b)(B) (allowing for implementation without notice and comment or publication in the Federal Register if good cause exists).

[23] Specifically, we reflect WRC-19's allocation actions by revising the International Table (by updating the radio service entries and the references to international footnotes in the Region 1, Region 2, and Region 3 Tables) and the list of International Footnotes (by adding 35 international footnotes, revising 127 existing international footnotes, (continued….)

International Table is included within the Commission's Allocation Table for informational purposes only.[24] Consistent with past practice,[25] we incorporate the following corrections and updates to the ITU's Table of Frequency Allocations for display as the International Table in section 2.106 of the Commission's rules: First, we update eight footnotes (5.328B, 5.341A, 5.341B, 5.341C, 5.351A, 5.384A, 5.388, 5.484B) by cross referencing four resolutions (Resolutions 155, 212, 223, 610) that were revised at WRC-19. Next, we: 1) revise two footnotes (5.169A, 5.169B) to make them consistent with the Federal Register's style used in footnote 5.346 and update the cross reference to Resolution 99 in footnote 5.346 to match the version shown in footnotes 5.169A and 5.169B; and 2) correct footnotes 5.547 and 5.550E by adding the missing notation "Rev." and by removing a dash that is inconsistent with 72 other instances of "non-geostationary-satellite systems" in Volume 1 of the Radio Regulations, respectively.[26] Finally, we note that WRC-19 revised footnote 5.79 by permitting the use of the NAVDAT [navigational data] system to expand the potential uses of the band. Because this is not a non-substantive editorial change to the International Table that affects the U.S. Table, we maintain the status quo of the U.S. Table by replacing the existing reference to footnote 5.79 in the 415-472 kHz, 479-495 kHz, and 505-510 kHz bands within the U.S. Table with that of placeholder footnote US79A. Footnote US79A contains the pre-WRC-19 text of footnote 5.79, except that we list only the bands where footnote 5.79 currently applies (i.e., we exclude the 472-479 kHz band, which is no longer allocated to the maritime mobile service, and the 510-525 kHz band, to which we have never applied the provisions of footnote 5.79). We further note that revised footnote 5.79 applies to the maritime mobile service in the 415-495 kHz and 505-526.5 kHz bands in all ITU Regions; however, a reference to footnote 5.79 is not shown in the 510-525 kHz band within the Region 2 Table and there is no maritime mobile service entry or reference to footnote 5.79 in

and removing seven international footnotes). The International Table within section 2.106 of the rules is included for informational purposes only, and thus, the changes that we make are non-substantive, editorial actions. 47 CFR § 2.104(a). Any minor, editorial differences between the ITU Radio Regulations and the International Table in section 2.106 of the Commission's rules that are discussed in this Order will also be listed in the FCC Online Table of Frequency Allocations, http://www.fcc.gov/oet/spectrum/table/fcctable.pdf. We note that Title 47 of the Code of Federal Regulations (CFR) contains the official version of the Table of Frequency Allocations and the FCC Online Table of Frequency Allocations is provided for convenience only. The official version of Title 47 CFR is available at https://www.ecfr.gov/current/title-47.

[24] 47 CFR § 2.104(a).

[25] *See, e.g., Amendment of Parts 1, 2, 15, 25, 73, and 90 of the Commission's Rules to Make Non-Substantive Editorial Revisions to the Table of Frequency Allocations and to Various Other Rules*, Order, 25 FCC Rcd 9712, 9721, para. 17 (OET and OMD 2010) (stating that "we will not replicate typographical or other errors (in the version of the International Table displayed in section 2.106) that hold the potential to cause reader confusion or convey misleading information.").

[26] We are in the process of revising the Allocation Table to comport with Federal Register codification formatting requirements. *See Amendment of the Commission's Rules to Make Non-Substantive Editorial Revisions to Part 2*, ET Docket No. 23-108, Order (2023). To conform to the rules and policies of the Office of the Federal Register, we will no longer use the ITU's notational system, which signifies which world radiocommunication conference adopted or revised an international footnote, in the Commission's list of international footnotes. Nor will we append the notation "(FCC)" to signify that we are revising (simplifying) the text of an international footnote in section 2.106. We will continue to maintain a list of discrepancies in note 1 of the FCC Online Table. We are maintaining previous cross reference updates for six resolutions (Resolutions 75, 222, 225, 413, 517, 716) in six footnotes (5.197A, 5.351A, 5.353A, 5.389A, 5.389C, 5.547) that WRC-19 did not update. We note that while footnote 5.357A contains the correct cross reference to Resolution 222, i.e., "(Rev.WRC-12)," the Radio Regulations still include a note by the Secretariat stating that this resolution was revised by WRC-07 and WRC-12. ITU Radio Regulations, Vol. 1, Article 5, footnote 5.357A, *Note by the Secretariat*, at 104.

the 525-526.5 kHz sub-band within the Region 2 Table of the Radio Regulations.[27] Therefore, we add this footnote 5.79 issue to note 1 of the Online Table.[28]

B. Reflecting WRC-19 Revisions in the U.S. Table

12. WRC-19 deleted one international footnote (5.396) that is referenced in the U.S. Table and revised a resolution that is referenced in two domestic footnotes (US444B, G132). We reviewed the relevant footnotes (5.396, US444B, G132) and find that implementing these changes in the Commission's rules will have no substantive effect on non-Federal operations.

13. Footnote 5.396 requires space stations in the broadcasting-satellite service (BSS) in the band 2310-2360 MHz operating in accordance with footnote 5.393 that may affect the services to which this band is allocated in other countries to be coordinated and notified in accordance with Resolution 33 (Rev.WRC-15), and further provides that complementary terrestrial broadcasting stations shall be subject to bilateral coordination with neighboring countries prior to their bringing into use. WRC-19 deleted Resolution 33 because the processing of filings under this Resolution was completed prior to WRC-07, and consequently deleted footnote 5.396 after moving its still-relevant text to footnote 5.393.[29] We are updating footnote 5.393 in the International Footnotes to reflect the WRC-19 revisions. See Appendix A. In the United States, BSS operators provide satellite radio service to customers using the 2320-2345 MHz band and footnote 5.393 is not included in the 2310-2360 MHz band of the U.S. Table. We therefore find that removal of footnote 5.396 will have no substantive effect on non-Federal operations. We find that the reference to footnote 5.396 should be removed from the non-Federal Table, consistent with the WRC-19 implementation.

14. Footnote US444B contains a cross reference to Resolution 418 (Rev.WRC-12).[30] WRC-19 revised Resolution 418 by updating the guidance on the aeronautical mobile service use of the 5091-5150 MHz band by citing to Resolution 748 (Rev.WRC-19), by deleting the invitation that the ITU

[27] ITU Radio Regulations, Vol. 1, Article 5, at 48.

[28] Commission staff will revise note 1 of the FCC Online Table to read as follows: The International Table (columns 1-3 of § 2.106) reflects Article 5, section IV of the ITU Radio Regulations (Edition of 2020), except for certain style/notational/accounting differences (e.g., suppressed footnotes, footnote numbers that are not used, bolded text, a historical note, and a space between the third and fourth digits are not shown), minor corrections (i.e., the deletion of an unneeded note by the Secretariat and an unneeded dash in footnotes 5.357A and 5.550E, respectively), and the note and revisions listed below:

Band; Table	Remarks
510-525 kHz; Region 2	Footnote 5.79 is missing in the bands 510-525 kHz and 525-526.5 kHz and "MARITIME MOBILE" is not shown in the band 525-526.5 kHz.
525-526.5 kHz; Region 2	
International Footnote	Action
5.169A, 5.169B, 5.346	Deleted the first star, replaced the second star with "Note:" and updated Resolution 99 from "(Rev. Busan, 2014)" to "(Rev. Dubai, 2018)" in 5.346.
5.197A, 5.328B, 5.341A, 5.341B, 5.341C, 5.351A, 5.353A, 5.384A, 5.388, 5.389A, 5.389C, 5.484B, 5.547	The cross-references to ITU Resolutions 75, 155, 212, 222, 223, 225, 413, 608, 610, and 716 have been updated to reflect the versions shown in Volume 3 of the ITU Radio Regulations (Edition of 2020).

[29] *See CPM Report to WRC-15*, *supra* note 9, Annex 6/4-1, page 838. WRC-19 edited footnote 5.393 by including the last sentence in deleted footnote 5.396 ("Complementary terrestrial broadcasting stations shall be subject to bilateral coordination with [neighboring] countries prior to their bringing into use."). *See* ITU Radio Regulations, Vo1. 1, Article 5, footnote 5.393, at 115.

[30] In pertinent part, footnote US444B states that, in the 5091-5150 MHz band, use of the primary aeronautical mobile service allocation by aeronautical telemetry transmissions from aircraft stations (AMT) must be in accordance with Resolution 418 (Rev.WRC-12). 47 CFR § 2.106 footnote US444B.

continue to study the conditions and arrangements for flight testing in this band, and by simplifying its text. Therefore, we find that changing the reference to WRC-19's revision of Resolution 418 will not have any substantive effect on non-Federal operations.

15. We update footnote G132, which applies to the 1215-1240 MHz band, to cross reference revised Resolution 608, replacing "(Rev.WRC-15)" with "(Rev.WRC-19)."[31] Resolution 608 pertains to the protection of the radionavigation service in certain countries in Regions 1 and 3; because the United States is located in Region 2 , the revision of this resolution will not have any substantive effect on non-Federal operations.

C. Other Revisions to the Allocation Table

16. In this section, we make the following additional editorial changes to section 2.106 of the Commission's rules:

- Correct the Federal and non-Federal Tables by removing the reference to footnote 5.79A from the 435-472 kHz band because the footnote does not apply to that band.
- Revise footnotes US1, US82, US247, US281, US283, US296, US342, and G115 by changing the references to frequency units from "kHz" to "MHz" and revise footnote G32 from "MHz" to "GHz" in order to make the text of the footnotes consistent with the frequency units shown in the Allocation Table.[32]
- Add a space between the third and fourth digits of frequency bands that contain five digits in 28 international footnotes.[33]
- Simplify the display of facing pages in the Allocation Table.[34]
- Remove the references to footnote US108 from the 3300-3500 and 3500-3550 MHz bands in the Federal Table and from the 3300-3450 and 3450-3600 MHz bands in the non-Federal Table and revise footnote G2 by deleting "(except as provided for in US108)" because footnote US108 no longer applies to the 3300-3550 MHz band.[35] Also move the reference to footnote US431B from the bottom of the cell to the right of RADIOLOCATION in the 3300-3500 MHz band within the Federal Table because the footnote applies to only the radiolocation service.
- Place footnotes US431B and US433 in ascending numerical order in the 3450-3600 MHz band within the non-Federal Table. On page 39 of the Allocation Table, change the frequency range of the facing pages from "2483.5-3500" to "2483.5-3600" because 3450-3600 MHz is the last frequency band in the non-Federal Table in this set of facing pages.

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[31] 47 CFR § 2.106 footnote G132.

[32] In each of these footnotes, we also move the decimal point three spaces to the left and delete unneeded zeros. In footnote US342, we also correct a typographical error by changing from "23.07-23.12 GHz" to "23.07-23.12 GHz."

[33] Specifically, we make this display change by revising footnotes 5.109, 5.110, 5.111, 5.132, 5.133A, 5.134, 5.145, 5.145B, 5.146, 5.147, 5.149, 5.149A, 5.150, 5.151, 5.152, 5.153, 5.154, 5.155, 5.155A, 5.155B, 5.156, 5.156A, 5.157, 5.158, 5.474D, 5.477, 5.478, and 5.479. This display change is based on the format used in the Radio Regulations. ITU Radio Regulations, Vol. 1, Article 5, at 35-186.

[34] The heading on the top page of Allocation Table also applies to the bottom page, i.e., every two pages in the Allocation Table are facing pages. We simplify the display of facing pages in the Allocation Table by ending page 19 on the frequency 52 MHz in the Region 1 Table and on the frequency 54 MHz in all other tables (instead of permitting the entries for the 50-54 MHz band in the combined table for Regions 2 and 3 and the non-Federal Table, and the 50-73 MHz band in the Federal Table, to span pages 19 and 20).

[35] Footnote US108 was recently revised to remove the text that applied to the 3300-3550 MHz band. *Facilitating Shared Use in the 3100-3550 MHz Band*, WT Docket No. 19-348, Second Report and Order, Order on Reconsideration, and Order of Proposed Modification, 36 FCC Rcd 5987, 6057, 6060 (2021); 47 CFR § 2.106 footnote US108.

- Simplify the non-Federal Table by combining the common radiocommunication service entries in the 3600-3650 MHz and 3650-3700 MHz bands to form the 3600-3700 MHz band, move the text of footnote NG185 to footnote NG169, and remove footnote NG185 from the list of non-Federal government (non-Federal) footnotes.
- Simplify the Federal Table by combining the common radiocommunication service entries in the 17.8-18.3 GHz and 18.3-18.6 GHz bands to form the 17.8-18.6 GHz band.
- Correct the placement of footnote NG65 in the 24.75-25.25 GHz and 47.2-48.2 GHz bands by moving the footnote reference from the right of the fixed-satellite service (Earth-to-space) entry to the bottom of the cell because this footnote refers to three allocated services.[36]
- Correct footnotes 5.430A, 5.458, 5.509D, and 5.547 to reflect their text as shown in the Radio Regulations.[37]
- Revise footnote US52 to account for now-expired text. Footnote US52 states that use of the frequencies 156.775 MHz and 156.825 MHz by the mobile-satellite service (Earth-to-space) is restricted to the reception of long-range Automatic Identification System (AIS) broadcast messages from ships. It also provided, in the text of the footnote, for port operations and ship navigation communications on these two frequencies (AIS 3 and AIS 4) until August 26, 2019.[38] We revise footnote US52 paragraph (b) to remove the reference to August 26, 2019. Previous port operations and ship navigation communications on these two frequencies (AIS 3 and AIS 4) expired on August 26, 2019 and are no longer permitted.[39]
- Revise footnotes US100,[40] US312,[41] and NG33[42] to remove footnote text that pertains to dates that have passed (i.e. expired text).

[36] For consistency in the Allocation Table, we employ the following rules for footnote placement in both the International and U.S. Tables: The footnote references that appear below the allocated service or services apply to more than one of the allocated services, or to the whole of the allocation concerned. The footnote references that appear to the right of the name of a service are applicable only to that particular service. 47 CFR § 2.104(h)(5)-(6).

[37] ITU Radio Regulations, Vol. 1, Article 5, at 122, 132, 150, and 164. Specifically, we correct footnotes: 1) 5.430A by deleting the last sentence (i.e., "This allocation is effective from 17 November 2010."); 2) 5.458 by changing from "6425-7025 MHz" to "6425-7075 MHz" in the last sentence; 3) 5.509D by changing from "19000" to "19 000" in the last sentence; and 4) 5.547 by changing from "Resolution 75 (WRC-12)" to "Resolution 75 (Rev.WRC-12)."

[38] 47 CFR § 2.106 footnote US52 paragraph (b).

[39] Recommendation ITU-R M.1371-5 (02-2014) designates channels 75 and 76, otherwise known as AIS 3 and AIS 4, for Long Range Detection of AIS, Earth-to-space. Recommendation ITU-R M.1371-5 (02-2014), 49, § 4.1.1, 65-67, § 3, Annex 4. This change was made due to excessive channel loading on AIS 1 and AIS 2 that made ship detection by satellite extremely difficult and could result in a potential safety hazard.

[40] 47 CFR § 2.106 footnote US100. Specifically, we update footnote US100 by removing the expired text in paragraph (b) providing that the 2345-2360 MHz band would be available for non-Federal aeronautical telemetering and associated telecommand operations for flight testing of aircraft and missiles until January 1, 2020.

[41] 47 CFR § 2.106 footnote US312. Specifically, we update footnote US312 by limiting the use of the frequency 173.075 MHz by all stolen vehicle recovery systems to an authorized bandwidth not to exceed 12.5 kilohertz and striking language regarding operations on 20 kilohertz that expired on May 27, 2019.

[42] 47 CFR § 2.106 footnote NG33. Specifically, we update footnote NG33 by removing the expired text in paragraph (a), i.e., the transition period for full-power and Class A television (TV) station and fixed TV broadcast auxiliary station operations in the 614-698 MHz band has concluded and the band is now used predominately for mobile broadband services. We also correct a typographical error, i.e., white space devices may operate in the 657-663 MHz band in accordance with section 15.707(a)(2), instead of paragraph (a)(4), and we simplify the text of the footnote. 47 CFR § 15.707(a)(2).

V. NOTICE OF PROPOSED RULEMAKING (WRC-15 NOTICE)

17. In this Notice of Proposed Rulemaking (WRC-15 Notice), we propose to: 1) implement certain WRC-15 allocation decisions not previously addressed; 2) make other allocation changes that are not related to WRC-15 implementation;[43] and 3) revise parts 2, 25, 74, 78, 90, 97, and 101 of the rules to reflect the allocation changes that we are proposing in this Notice. We first address satellite allocation issues in seven sections, and then we address terrestrial allocation issues in five sections.

A. Satellite Issues

1. Protection of Search and Rescue Satellites Receiving in the 406-406.1 MHz Band

18. We propose to adopt new footnote US265 for the 403-410 MHz band to protect satellite-based search and rescue systems[44] operating in the 406-406.1 MHz band from out-of-band emissions originating from operations in adjacent bands, as provided in Resolution 205 (Rev.WRC-19).[45] Proposed US265 would prohibit new frequency assignments[46] within the 405.9-406.0 MHz and 406.1-406.2 MHz bands under the mobile and fixed services allocations.[47] For radiosonde applicants that seek to operate in this band, proposed US265 would require that the frequency drift characteristics of radiosondes be taken into account when selecting operating frequencies above 405 MHz to avoid transmitting in the 406-406.1 MHz band and that all practical steps be taken to avoid the operating

[43] The proposals that are not related to WRC-15 implementation are: 1) restricting the use of the mobile-satellite service (Earth-to-space) in the frequency bands designated for use by the Automatic Identification System (AIS 1-4) to non-Federal space station reception of AIS messages; 2) deleting the broadcasting service allocation from the 700 MHz band; 3) updating the rules to recognize that the transition period for the reallocation of the 18.3-19.3 GHz band from the fixed service to the fixed-satellite service (space-to-Earth) has concluded; and 4) removing eight inactive call signs from footnote NG62.

[44] Our rules authorize Emergency Position-Indicating Radio Beacon, Emergency Locator Transmitter, and Personal Locator Beacon transmissions to Federal government satellites that carry Search and Rescue Satellite (SARSAT) receivers. The National Oceanic and Atmospheric Administration (NOAA) operates polar orbiting and geostationary satellites that carry payloads providing distress alert and location information to appropriate public safety rescue authorities for maritime, aviation, and land users in distress. 47 CFR §§ 80.209(a)(7), 80.905(a)(3)(vi), (a)(4)(vi), 80.1077, 80.1129(c), 87.139(h), 87.147(e), 87.173(b), 87.187(m), 87.195(a), 87.199, 95.2963, and 95.2971. NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex 9.1.1, 83-86.

[45] In the companion WRC-19 Order, footnote 5.265 is revised to cross reference Resolution 205 (Rev.WRC-19), i.e., WRC-19 added *noting d)*, which states "that Report ITU-R SM.1051 provides a methodology to monitor the electromagnetic environment in the adjacent frequency bands 405.9-406 MHz and 406.1-406.2 MHz)." ITU Radio Regulations, Vol. 3, p. 225, Resolution 205 (Rev.WRC-19), *noting d)*. Footnote 5.267 states that any emission capable of causing harmful interference to the authorized uses of the 406-406.1 MHz band is prohibited. 47 CFR § 2.106 footnote 5.267.

[46] Assignment (of a radio frequency or radio frequency channel) is defined as an authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. 47 CFR § 2.1(c). In general, the assignment of frequencies and frequency bands must be in accordance with the Allocation Table. 47 CFR § 2.102(a). The radio frequency devices authorized pursuant to 47 CFR part 15 are not based on allocated radio services. 47 CFR § 2.105(e) note 1. The term, short-range radiocommunication devices, is intended to cover radio transmitters that have low capability of causing interference to other radio equipment. In general, such devices are permitted to operate on a non-interference, no protection from interference basis. Simple licensing requirements may be applied, e.g. general licenses or general frequency assignments or even license exemption. *See* Recommendation ITU-R SM.1538-1, Annex 1, p. 2 at 2 (Definition of short-range radiocommunication devices). Medical Device Radio Communications (MedRadio) devices, similar to part 15 devices, are short-range devices.

[47] In Resolution 205, WRC-15 (and later WRC-19) resolved to "to request administrations not to make new frequency assignments within the frequency bands 405.9-406.0 MHz and 406.1-406.2 MHz under the mobile and fixed services." *Id.* at *resolves* 1.

frequency drifting close to 406 MHz.[48] This proposed footnote seeks to address concerns that aggregate levels of electromagnetic interference, including interference from transmissions in adjacent frequency bands, may present a risk of satellite emergency transmissions being undetected, or delayed in reception, or lead to reduced accuracy of the calculated locations. We seek comment on this proposal.

19. Currently, non-Federal use of the fixed and mobile services in the adjacent 403-406 MHz and 406.1-410 MHz bands is permitted pursuant to footnotes US13, US55, and US64.[49] Footnote US64 states, *inter alia*, that the 403-406 MHz band is allocated to the mobile except aeronautical mobile service on a secondary basis and that non-Federal use is limited to medical device radiocommunication service (MedRadio) operations.[50] MedRadio is an ultra-low power radio service that is associated with medical implant devices and medical body-worn devices. MedRadio stations are licensed-by-rule and operate in accordance with part 95, subpart I of the rules, so the Commission does not issue individual station licenses for MedRadio devices.[51] Hence, we tentatively conclude that continued operations of MedRadio devices are consistent with proposed US265. We seek comment on this tentative conclusion.

20. Footnote US13 and section 90.265 of the Commission's rules make 48 channels available for transmitting hydrological and meteorological data (Hydro channels), including channels with center frequencies 406.125 MHz and 406.175 MHz.[52] We propose to revise footnote US13 and section 90.265 to state that, after the effective date of final rules in this proceeding, no assignments for the frequencies 406.1250 MHz and 406.1750 MHz will be made, and that existing stations may continue to operate indefinitely on these frequencies as they are currently licensed.[53] See Appendix B. By no longer issuing licenses for the frequencies 406.1250 MHz and 406.1750 MHz, we would ensure consistency with proposed new footnote US265 and protect satellite-based search and rescue systems operating in the adjacent 406-406.1 MHz band from out-of-band emissions originating on those frequencies. We seek comment on these proposals.

21. Footnote US55 provides that the Commission may authorize public safety use of 40 Federal Interoperability Channels that are designated in section 4.3.16 of the *NTIA Manual*. However, because section 4.3.16 of the *NTIA Manual* does not include frequencies within the 406.1-406.2 MHz sub-band, it is not necessary to amend the language of this footnote.[54] Finally, we propose to update footnote US117 to properly reflect that non-Federal use of the 406.1-410 MHz band is limited to the

[48] The 403-406 MHz band is a Federal/non-Federal shared band that is allocated to the meteorological aids service (radiosonde) on a primary basis. The Commission licenses radiosondes under its part 5 experimental radio service; however, there are currently no active licenses for non-Federal radiosonde use of the 403-406 MHz band. 47 CFR part 5.

[49] 47 CFR § 2.106 footnotes US13, US55, and US64.

[50] 47 CFR § 2.106, US64(a).

[51] See 47 CFR §§ 95.2505 (MedRadio is defined as an ultra-low power radio service), 95.2567 (radiated power limited to a maximum of 25 microwatts M-EIRP, 95.2503 [MedRadio equivalent isotropically radiated power]). "Licensed-by-rule" means that an authorized user can access the entire available spectrum without an individual station license document and is instead authorized to operate as long as the operations are in accordance with the applicable service rules. *See* 47 U.S.C. § 307(e). Thus, while all spectrum use is shared among users who meet the eligibility and technical qualifications and no one has exclusive rights to any portion of the spectrum, those users are collectively afforded interference protection *vis-à-vis* other services, based on the allocation status under which they operate.

[52] 47 CFR §§ 2.106 footnote US13, 90.265(a), (a)(8).

[53] As of April 18, 2023, 63 licenses in the Commission's Universal Licensing System authorized operation in the 406.125-406.175 MHz band. This Notice does not modify those licenses.

[54] *See* National Telecommunications and Information Administration's Manual of Regulations and Procedures for Federal Radio Frequency Management (*NTIA Manual*), 2021 Edition, section 4.3.16, at pages 4-280 and 4-281.

radio astronomy service and as provided by footnotes US13 and US55, as shown in Appendix B.[55] We seek comment on these proposals, including any estimates of the costs and benefits of implementation.

2. Space Research Service (space-to-space) in the 410-420 MHz Band

22. We propose to allocate the 410-420 MHz band to the space research service (space-to-space) on a secondary basis for non-Federal use, and to adopt footnote 5.268, which would limit use of this allocation to communication links with an orbiting, manned space vehicle and require compliance with a power flux-density limit at the Earth's surface to protect existing and future licensees.[56] The 410-420 MHz band is currently allocated to the fixed, mobile, and space research (space-to-space) services on a primary basis for Federal use; the 413-419 MHz segment is allocated to the mobile, except aeronautical mobile, service on a secondary basis, with non-Federal use limited to part 95 MedRadio operations.[57] The National Aeronautics and Space Administration (NASA) operates systems in support of extra-vehicular activity communications for the manned space program and other space related efforts in this band.[58] The systems are used for communications between crew members and for relaying telemetry data to the main spacecraft. Non-Federal use is limited to MedRadio operations, hydrological/meteorological data, and public safety.[59] We expect that the additional non-Federal use would be similar to the current Federal uses and would occur because of increasing space exploration by private companies. We request comment on these proposals, including information on the costs and benefits.[60]

3. Global Flight Tracking for Civil Aviation (1087.7-1092.3 MHz)

23. We propose to allocate the 1087.7-1092.3 MHz band to the aeronautical mobile-satellite (route) service (Earth-to-space) on a primary basis, limited to space station reception of automatic dependent surveillance-broadcast (ADS-B) emissions from aircraft. If adopted, we would implement this proposed allocation by referencing footnote 5.328AA in the 960-1164 MHz band within the U.S. Table.[61] The 960-1164 MHz band is currently allocated to the aeronautical mobile (route) and aeronautical radionavigation services on a primary basis for Federal and non-Federal use.[62] Aircraft

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[55] This proposed revision of US117 was overlooked when the Commission originally adopted US55.

[56] Footnote 5.268 limits the power flux-density (PFD) at the surface of the Earth to maximum specified values (–153 to –148 dBW/m² in a 4 kilohertz bandwidth) depending on the angle of arrival and prohibits stations in the space research service from claiming protection from, or constraining the use and development of, stations of the fixed and mobile services. 47 CFR § 2.106 footnote 5.268.

[57] 47 CFR § 2.106, US64(b); see *supra* note 50.

[58] NTIA's "Federal Government Spectrum Use Reports 225 MHz – 7.125 GHz," 410-420 MHz, at 13 no. 4c. (last visited Feb. 28, 2022).

[59] 47 CFR § 2.106 footnotes US13, US55, US64(b).

[60] NTIA recommends we adopt this proposal. NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex 1.13, 66.

[61] Footnote 5.328AA states that: 1) stations must operate in accordance with recognized international aeronautical standards; 2) stations in the aeronautical mobile-satellite (route) service operating in the band shall not claim protection from stations operating in the aeronautical radionavigation service; and 3) Resolution 425 (WRC-15) shall apply). 47 CFR § 2.106 footnote 5.328AA. In the companion WRC-19 Order, we update footnote 5.328AA by cross referencing the current version of Resolution 425, i.e., "(Rev.WRC-19)" instead of the superseded version, i.e., "(Rev.WRC-15)." *See also* NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex GFT/IFF, 104, and Attachment 2 – US128, 107; and ITU Radio Regulations, Resolution 425 (WRC-15), at 281-282.

[62] 47 CFR § 2.106. Under footnote 5.327A, use of the aeronautical mobile (route) service allocation is limited to systems that operate in accordance with recognized international aeronautical standards and in accordance with Resolution 417 (Rev.WRC-15). Under footnote 5.328, use of the 960-1215 MHz band by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic

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currently transmit ADS-B signals to report their position to ground-based receivers in a 4.6-megahertz wide band centered on 1090 MHz under the existing aeronautical mobile (route) service allocation.[63] This proposed allocation would extend reception of ADS-B signals beyond terrestrial line-of-sight to facilitate reporting the position of aircraft located anywhere in the world.[64] We tentatively conclude that providing for satellite reception of ADS-B signals would ensure the efficient management of air traffic in oceanic, polar, and remote airspace.[65] Further, we tentatively conclude that this proposed allocation would support the Federal Aviation Administration's rules regarding aircraft location information.[66] We also propose to add new paragraph (a)(13) to section 25.202 of the Commission's rules to permit the licensing of space stations that can receive ADS-B emissions from aircraft.[67] We seek comment on these proposals.

24. Further, as recommended by NTIA, we propose to add new footnote US78 to the 960-1164 MHz band to recognize Federal use by military Identification Friend or Foe (IFF) systems on center frequencies 1030/1090 MHz. We propose this use would be subject to the condition that harmful interference would not be caused to the aeronautical radionavigation service or the aeronautical mobile (R) service.[68] Finally, we propose to revise footnote US224 to require that Federal systems utilizing spread spectrum techniques for terrestrial communication, navigation, and identification in the 960-1215 MHz band be authorized on the condition that harmful interference not be caused to the aeronautical mobile (R) and aeronautical radionavigation services in the 960-1164 MHz band, military IFF systems on center frequencies 1030/1090 MHz, aeronautical mobile-satellite (R) service (Earth-to-space) in the 1087.7-1092.3 MHz band, and the aeronautical radionavigation and radionavigation-satellite (space-to-Earth) (space-to-space) services in the 1164-1215 MHz band. We request comment on these proposals, including whether any modifications to the part 87 rules for aviation services would be necessary to implement our proposals.

4. Satellite Uplinks in the 7190-7250 MHz Band

25. As recommended by NTIA, we seek comment on whether to provide additional spectrum on a secondary basis for non-Federal Earth-to-space operations in the Earth exploration-satellite service in the 7190-7250 MHz band and space research service in the 7190-7235 MHz band.[69] In the U.S. Table, the 7190-7250 MHz band is allocated to the Earth exploration-satellite (Earth-to-space) and fixed

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aids to air navigation and any directly associated ground-based facilities. Under footnote US224, Federal systems utilizing spread spectrum techniques for terrestrial communication, navigation, and identification may be authorized to operate in the 960-1215 MHz band on the condition that harmful interference will not be caused to the aeronautical radionavigation service. *Id*. footnotes 5.327A, 5.328, US224.

[63] 47 CFR § 2.106.

[64] *Supra* note 61, Resolution 425 (WRC-15) at c*onsidering g)*. On June 6, 2019, we proposed in WT Docket No. 19-140 to establish rules specifically for airborne ADS-B transmissions on 1090 MHz. *Amendment of the Commission's Rules to Promote Aviation Safety*, WT Docket No. 19-140, Notice of Proposed Rulemaking, 34 FCC Rcd 4984, 4991-93, paras. 22-24 (2019) (*Aviation Safety NPRM*).

[65] *See generally*, *CITEL Proposals to WRC-15*, agenda item GFT(PP-14), Addendum 25 to Document 7-E, dated August 21, 2015 (Doc. 4000-GFT.doc), p. 5 (Reasons for proposed footnote).

[66] *Aviation Safety NPRM*, 34 FCC Rcd 4991-92, para. 22.

[67] See Appx. B.

[68] Specifically, NTIA recommends a footnote (which we propose as US78) stating that military systems used for Identification Friend or Foe (IFF) operations are authorized to operate on the center frequencies 1030 MHz for interrogators and 1090 MHz for transponders on the condition that harmful interference would not be caused to the aeronautical radionavigation service or the aeronautical mobile (route) service. *Supra* note 61.

[69] NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex 1.11, 56-60.

services, both on a primary basis and exclusively for Federal use.[70] The 7190-7235 MHz portion of the band is also allocated on a primary basis to the space research service (Earth-to-space) exclusively for Federal use.

26. Consistent with NTIA's recommendation, should we make these Federal uplink bands available for non-Federal use on a secondary basis for Earth-to-space operations in the Earth exploration-satellite and space research services, respectively, by adding footnotes US460 and US460A to the 7190-7235 MHz band and footnote US460A to the 7235-7250 MHz band? Footnote US460 would provide a secondary non-Federal allocation in the 7190-7235 MHz band for the space research service (Earth-to-space) and would prohibit emissions from such systems intended for deep space. Footnote US460A would allocate the 7190-7250 MHz band to the Earth exploration-satellite service (Earth-to-space) on a secondary basis for non-Federal use, limited to tracking, telemetry, and command (TT&C) for the operation of spacecraft.[71] In both cases, should we explicitly require that authorizations be subject to a case-by-case electromagnetic compatibility (EMC) analysis and approval?[72] Qualcomm urges the Commission to seek comment on whether such allocations would "remain in line with the Commission's present spectrum priorities," noting that the Chairwoman has identified the 7-15 GHz spectrum range, and some stakeholders, other administrations, and regional organizations are considering the 7190-7250 MHz band, for the next generation wireless technology.[73] We request comment on these recommendations.

5. Earth Exploration-Satellite Service (Active) in the 9.2-9.3 GHz and 9.9-10.4 GHz Bands

27. We seek comment on allocating the 9.2-9.3 GHz and 9.9-10.4 GHz bands to the Earth exploration-satellite service (active) on a primary basis for Federal use and on a secondary basis for non-Federal use, subject to four footnotes: 5.474A, 5.474B, 5.474C, and US474D.[74] This would implement WRC-15's expansion of the current worldwide Earth exploration-satellite service (active) allocation in the 9.3-9.9 GHz band by allocating 600 megahertz of additional spectrum in the adjacent bands to this service, which would support the growing demand for greater radar image resolution to satisfy global environmental monitoring requirements.[75] Spaceborne radars operating in this band support

[70] As requested by NTIA, in the *WRC-15 Admin Order*, we added a primary allocation for the Federal Earth exploration-satellite service (EESS) (Earth-to-space) in the 7190-7250 MHz band and two international footnotes (5.460A, 5.460B) that limit the use of this EESS uplink allocation. Footnote 5.460A limits the EESS uplink allocation to tracking, telemetry, and command for the operation of spacecraft, and, e.g., specifies that space stations operating under this allocation in the 7190-7250 MHz band may not claim protection from stations in the fixed and mobile services. Footnote 5.460B states that EESS geostationary satellites receiving in the 7190-7235 MHz band may not claim protection from existing and future stations of the space research service. We also replaced footnote G133 with the essentially identical international footnote 5.460. *WRC-15 Admin Order*, *supra* note 3, para. 10. 47 CFR § 2.106 footnotes 5.458 (passive measurements), 5.460A, 5.460B, G134 (up to five earth stations in the meteorological-satellite service (Earth-to-space) may be authorized).

[71] The restrictions in footnotes US460 and US460A are based on footnotes 5.460 and 5.460A.

[72] Appx. B, footnotes US460 and US460A (proposed text).

[73] Letter from Aspasia A. Paroutsas, Vice President, Federal Regulatory Affairs, Qualcomm, to Marlene Dortch, Secretary, FCC, ET Docket Nos. 23-121 and 23-120, RM-11785, at 2 (filed April 12, 2023) (Qualcomm *Ex Parte*).

[74] Footnote US474D is based on the text in international footnote 5.474D, except that we do not include the radiolocation service in the 9.2-9.3 GHz band because this allocation has secondary status in both the Federal and non-Federal Tables, and we do not include the radionavigation service in the 9.9-10 GHz band because that allocation only applies in the countries listed in footnote 5.478. Appx. B (US474D); 47 CFR § 2.106 footnotes 5.474A, 5.474B, 5.474C, 5.474D; and NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex 1.12, 61-63.

[75] WRC-15 added a primary Earth exploration-satellite service (active) allocation in the 9.2-9.3 GHz, 9.9-10.0 GHz, and 10-10.4 GHz bands for all Regions in the ITU Allocation Table, adjacent to the existing Earth exploration-

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a large number of scientific and geoinformation applications, such as disaster relief and humanitarian aid, land use, and large area coastal surveillance.[76] We request comment on these potential allocations.

28. In the U.S. Table, the 9.2-9.3 GHz band is allocated to the maritime radionavigation service on a primary basis and to the radiolocation service on a secondary basis for Federal and non-Federal use.[77] The 9.9-10.5 GHz band is allocated to the radiolocation service on a primary basis for Federal use and on a secondary basis for non-Federal use.[78] The 10-10.5 GHz and 10.45-10.5 GHz bands are allocated to the amateur and amateur-satellite services on a secondary basis, respectively.[79] The 2023 World Radiocommunication Conference will consider whether to identify the 10-10.5 GHz for International Mobile Telecommunications (IMT) in ITU Region 2.

29. The four footnotes we seek comment on adding to the 9.2-9.3 GHz and 9.9-10.4 GHz bands would limit their use to systems in the Earth exploration-satellite service (active) requiring a necessary bandwidth greater than 600 megahertz that cannot be fully accommodated within the 9.3-9.9 GHz band (5.474A); protect the radio astronomy service in the 10.6-10.7 GHz band from unwanted emissions (5.474B); protect the space research service (space-to-Earth) in the 8.4-8.5 GHz band from unwanted emissions (5.474C); and require that the Earth exploration-satellite service (active) not cause harmful interference to, or claim protection from, the maritime radionavigation service in the 9.2-9.3 GHz band and the radiolocation service in the 9.9-10.4 GHz band (US474D).[80] Qualcomm urges the Commission to seek comment on whether the proposed allocations would "remain in line with the Commission's present spectrum priorities," noting that the Chairwoman has identified the 7-15 GHz spectrum range, and some stakeholders, other administrations, and regional organizations are considering the 9.2-9.3 GHz and 9.9-10.4 GHz bands, for the next generation wireless technology.[81]

30. We also propose to revise footnote US128 to support the Department of Defense's development of pulsed emission systems in the 10-10.5 GHz band. Currently, US128 prohibits pulsed emissions in the 10-10.5 GHz band, except for weather radars on board meteorological satellites in the 10-10.025 GHz sub-band.[82] NTIA states that the Department of Defense requires flexibility for development of pulsed systems in this band to meet future system needs.[83] We seek comment on all of the proposals in this section. In addition we request comment on whether the 9.2-9.8 GHz and 9.9-10.4 GHz bands should be allocated to the Earth exploration-satellite service (active) on a primary basis for

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satellite service (active) allocations at 9.3-9.8 GHz (primary) and 9.8-9.9 GHz (secondary). *See WRC-15 Final Acts* at 37 and 39.

[76] "For such applications, there is a growing demand for increasing radar image resolution. Therefore, it is necessary to increase the bandwidth by another 600 MHz for a total of 1200 MHz contiguous bandwidth." *CITEL Proposals to WRC-15*, agenda item 1.12, Addendum 12 to Document 7-E, dated August 21, 2015 (Doc-4000-1_12.doc) and *CPM Report to WRC-15*, agenda item 11.2, Chapter 2, p. 21-22, Background.

[77] These allocations are subject to four footnotes. 47 CFR § 2.106 footnotes 5.472, 5.474, US110, G59.

[78] The 9.975-10.025 GHz band is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars. 47 CFR § 2.106 footnote 5.479.

[79] Five footnotes apply to the 10-10.5 GHz band. 47 CFR § 2.106 footnotes 5.479, US108, US128, G32, NG50.

[80] 47 CFR § 2.106 footnotes 5.474A, 5.474B, 5.474C, and 5.474D and Appx. B (US474D). *See also* Recommendation ITU-R RS.2065-0 (12/2014) and Recommendation ITU-R RS.2066-0 (12/2014).

[81] Qualcomm *Ex Parte* at 2.

[82] 47 CFR § 2.106 footnote US128 (the amateur, the amateur-satellite, and the non-Federal radiolocation services, which shall not cause harmful interference to the Federal radiolocation service, are the only non-Federal services permitted in the 10-10.5 GHz band, and the non-Federal radiolocation service is limited to survey operations as specified in footnote US108).

[83] NTIA WRC-15 Implementation Recommendations, Attachment 2 – US128, at 106; e-mail from Charles Cooper, Associate Administrator, Office of Spectrum Management, NTIA, to Ronald Repasi, Acting Chief, FCC Office of Engineering and Technology, August 8, 2021, attachment at 1.

non-Federal use, so the status of those non-Federal allocations would mirror the status of the Federal Earth exploration-satellite service (active) allocations in those bands.

6. Revision of the 18.142-19.3 GHz, 28.5-29.1 GHz, and 29.25-29.5 GHz Bands

31. In this section, we make proposals and seek comment on allocation and service rule changes that would clarify the status of grandfathered fixed stations in the 18.3-19.3 GHz band and permit a heavier use of the fixed-satellite service (FSS) in the 18.142-18.3 GHz, 28.5-29.1 GHz, and 29.25-29.5 GHz bands.

32. First, we propose to amend footnote US139 by stating that, in the 18.3-19.3 GHz band, earth station licensees in the fixed-satellite service (space-to-Earth) may require that licensees of grandfathered stations in the fixed service cease operations, consistent with the provisions in section 101.95 of the Commission's rules.[84] We make this proposal because, in the 18.3-19.3 GHz band, there is no fixed service allocation and there are no longer any primary grandfathered fixed stations.[85] Consequently, we also propose to revise sections 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r) of the rules in order to update the introductory text and the frequencies that are available to applicants of aural broadcast auxiliary stations, television broadcast auxiliary stations, cable television relay service, and fixed microwave services, respectively. These proposals are consistent with the Commission's previous decision concerning the re-channelization of the 17.7-18.3 GHz and 19.3-19.7 GHz bands for fixed microwave services under part 101 of the rules.[86] While most of the proposed changes remove channels that are no longer allocated to the fixed service, in one instance we propose to add replacement channels, i.e., we proposed replacing the 12 frequency pairs in section 74.502(c)(1)(i) of the rules with the 5 megahertz channels from section 101.147(r)(5) in Appendix B. We also propose to update sections 101.95(a) and 101.147(a) to remove expired text and to remove six sections concerning expired policies governing fixed service relocation from the 18.3-19.3 GHz band, i.e., sections 101.83 through 101.91 and 101.97. See Appendix B for the proposed revisions of sections 74.502(c), 74.602(g), 78.18(a)(4), 101.95(a), and 101.147(a) and (r). We request comment on these proposals.

33. Second, we propose to revise footnote NG62 to permit the fixed stations authorized pursuant to the 10 listed call signs to continue to operate indefinitely on a secondary basis. The

[84] On August 26, 2022, Commission staff conducted an advanced license search of the Universal Licensing System (ULS) and found 344 active licenses that authorize operations in the 18.3-19.3 GHz band: 182 microwave public safety pool (radio service code MW), 81 microwave industrial/business pool (MG), 66 common carrier fixed point-to-point microwave (CF), eight TV intercity relay (TI), six local television transmission (CT), and one TV studio transmitter link (TS) licenses.

[85] Specifically, section 101.85 states that fixed service operations in the 18.3-18.58 GHz and 18.58-19.3 GHz bands that remain co-primary under the provisions of sections 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r) will continue to be co-primary with the fixed-satellite service (FSS) until dates that have long since passed, i.e., these transition periods have concluded. In addition, section 101.95(a), which concerns the sunset provisions for the 18.3-19.3 GHz band, includes the following: Once the relocation rules sunset, an FSS licensee may require the incumbent to cease operations, provided that the FSS licensee intends to turn on a system within interference range of the incumbent, as determined by TIA Bulletin 10-F or any standard successor. FSS licensee notification to the affected FS [fixed service] licensee must be in writing and must provide the incumbent with no less than six months to vacate the spectrum. After the six-month notice period has expired, the FS licensee must turn its license back into the Commission, unless the parties have entered into an agreement that allows the FS licensee to continue to operate on a mutually agreed upon basis. 47 CFR §§ 101.85(b)(1)-(2), 101.95(a).

[86] In 2006, the Commission adopted a revised band plan for the paired and unpaired spectrum used by the fixed service from 17.7-18.3 GHz and 19.3-19.7 GHz, consisting of a variety of channel bandwidths, primarily narrower bandwidths, and a block of unpaired spectrum from 17.7-17.74 GHz and also designated a contiguous 600 megahertz block of one-way spectrum from 17.7-18.3 GHz for use by Multichannel Video Programming Distributors (MVPDs). *Rechannelization of the 17.7-19.7 GHz Frequency Band for Fixed Microwave Services under Part 101 of the Commission's Rules*, WT Docket No. 04-143, Report and Order, 21 FCC Rcd 10900 (2006), (FCC 06-141).

Commission adopted footnote NG62 when it deleted the primary fixed and mobile service allocations from the 28.5-29.1 GHz and 29.25-29.5 GHz bands. Footnote NG62 states that, in the 28.5-29.1 GHz and 29.25-29.5 GHz bands, stations in the fixed-satellite service shall not cause harmful interference to, or claim protection from, stations in the fixed service operating under 18 listed call signs; however, only 10 of these call signs are currently active.[87] We note that WRC-19 and the Commission's rules permit earth stations in motion (ESIMs) to operate in these frequency bands.[88] The proposed secondary status of these fixed stations would recognize that ESIMs, which may operate anywhere without coordination with the fixed stations, may cause intermittent interference to these fixed stations. See Appendix B for the proposed text of revised footnote NG62. We request comment on these proposals.

34. Third, we request comment on whether we should raise the non-Federal secondary fixed-satellite service (space-to-Earth) allocation in the 18.142-18.3 GHz band (158 megahertz) to primary status, i.e., co-equal with the non-Federal primary fixed service allocation in the band. If adopted, this upgrade of allocation status would provide receiving earth stations with interference protection from later-licensed fixed stations that are used for part 74 and part 101 Multichannel Video Programming Distributor (MVPD) and part 78 cable television relay service (CARS) operations that operate in accordance with the proposed rules in this section. We tentatively conclude this should result in significantly heavier earth station use of this band in the future, thereby enhancing spectrum efficiency. As background, we note that there are seven part 78 CARS licenses, which are located in three California counties and Maui Island, Hawaii; and 35 grandfathered fixed service licenses that authorize operations in the 18.142-18.3 GHz band.[89] In contrast, as of August 26, 2022, there are 222 licenses for earth station reception in the 18.142-18.3 GHz band and there are 414 pending applications for earth stations that would receive in the band.[90]

35. Finally, we request comment on whether we should allow the continued operation of existing CARS licenses that authorize operation in the 18.3-18.304 GHz and 18.3-18.334 GHz bands in

[87] On Feb. 28, 2022, Commission staff conducted a Site Based Search of the Universal Licensing System (ULS) and found that ten licenses authorize common carrier fixed point-to-point microwave (radio service code CF) operations in the 28.5-29.1 GHz and 29.25-29.5 GHz bands. Specifically, one license authorizes operational fixed use (station class FXO) in the 28.5-29.5 GHz band in Honolulu, Hawaii (call sign WML443) and nine licenses authorize temporary fixed operations (station class FX5) in the 29.1-29.5 GHz band in a total of 15 states (call signs KIL20, KME49, KQG58, KQH74, KSA96, KSE73, KZS88, WMP367, and WSL69).

[88] 47 CFR § 25.202(a)(10)(i)-(ii); Appx. A, footnote 5.517A.

[89] On March 1, 2022, Commission staff conducted a General Menu (GENMEN) license search (by site/frequency) and found the following under the heading "FCC Media Bureau Cable Operations and Licensing System Database" in the 18.142-18.3 GHz band: 1) the 17,982-18,300 MHz band is licensed in Vacaville, Solano County, California (call sign WLY-820); 2) the 18,138-18,294 MHz band is licensed in Blue Ridge and Porterville, Tulare County, California (call signs WGV-505 and WHZ-511); 3) the 18,148-18,304 MHz band is licensed in Puu Nianiau, Maui County, Hawaii (call sign WBM-742); and 4) the 18,154-18,226 MHz band is licensed in Georgetown and Auburn Lake and the 18,250-18,334 MHz band is licensed in Placerville, El Dorado County, California (call signs WLY-796, WLY-797, and WGK-480). On Feb. 28, 2022, Commission staff conducted a Site License Search of the Universal Licensing System (ULS) and found 35 active licenses that authorize grandfathered operations (i.e., operations not in accordance with the current part 101 channel plan) in the 18.142-18.3 GHz band. The 35 grandfathered fixed service licenses consist of 25 temporary fixed station (station class FX5) licenses [18 common carrier point-to-point microwave (radio service code CF) licenses, which authorize nationwide (one license), continental (three), multistate (seven), and statewide (eight) use, and six local television transmission (CT) licenses, which authorize nationwide use] and 10 operational fixed station (station class FXO) licenses (eight microwave industrial/business pool (MG) licenses and two microwave public safety pool (MW) licenses, all of which authorize local area use). We note that grandfathered licensees are required to disclose locations and technical parameters of their links during the coordination process.

[90] While conducting the GENMEN license search on March 3, 2021, Commission staff noted that there were 119 currently licensed and pending International Bureau Filing System (IBFS) files; however, as of August 26, 2022, there are 636 currently licensed and pending IBFS files. *Id.*

Puu Nianiau, Hawaii, and Placerville, California, respectively, and revise footnote US139 to codify that these fixed station operations may continue to operate indefinitely under the existing conditions.

7. Deletion of the Radionavigation-Satellite Service from the 149.9-150.05 MHz and 399.9-400.05 MHz Bands

36. Consistent with the *WRC-15 Final Acts*, we propose to delete the radionavigation-satellite service allocation from the 149.9-150.05 MHz and 399.9-400.05 MHz bands.[91] WRC-15 deleted this allocation because it had expired pursuant to footnote 5.224B.[92] In the U.S. Table, the 149.9-150.05 MHz and 399.9-400.05 MHz bands are Federal/non-Federal shared bands that are allocated to the mobile-satellite service (Earth-to-space) and the radionavigation-satellite service on a primary basis. This proposal would make these two bands – totaling 300 kilohertz – exclusively allocated to the mobile-satellite service (Earth-to-space). We seek comment on this proposal.

B. Terrestrial Issues

1. Amateur Service in the 5351.5-5366.5 kHz Band

37. We propose to allocate the 5351.5-5366.5 kHz band to the Amateur Radio Service on a secondary basis and seek comment on whether the amateur service should keep the existing channels they use in the 60 meter band.[93] During WRC-15, the International Telecommunication Union allocated this band to the amateur service on a secondary basis in all ITU Regions. The ITU generally set the maximum radiated power at 15 watts (W) equivalent isotropically radiated power (EIRP), which is equivalent to 9.15 W effective radiated power (ERP).[94]

38. These frequencies are currently part of the 5275-5450 kHz band, which is allocated for Federal/non-Federal shared use, on a primary basis, to the fixed service and, on a secondary basis, to the mobile except aeronautical mobile service. Footnote US23 to the Allocation Table currently provides a secondary allocation to the amateur service on five discrete channels – each with a maximum bandwidth of 2.8 kilohertz and centered on the frequencies 5332, 5348, 5358.5, 5373, and 5405 kHz.[95] However, pursuant to Commission rules, stations in the amateur service may transmit on these frequencies with a maximum radiated power of 100 W ERP – over ten times more powerful than WRC-15's EIRP limit.[96]

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[91] NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annexes 9.2b and 9.2c, 88-89.

[92] Footnote 5.224B was adopted at the 1997 World Radiocommunication Conference. The *WRC-15 Admin Order* removed footnote 5.224B from the Commission's rules. *WRC-15 Admin Order*, *supra* note 3, Appx. at 13 (amendatory instruction 9.b).

[93] Amateur radio service licensees often refer to frequency bands by the wavelength of the signal. The bands at issue here are often collectively referred to as the 60 meter band.

[94] WRC-15 adopted footnote 5.133B, which is shown in Appendix A and that we summarize as follows: Stations in the amateur service using the 5351.5-5366.5 kHz band must not exceed a maximum EIRP of 15 watts, except that in 33 of the 35 ITU Member States in Region 2 a higher maximum EIRP is permitted, i.e., 20 W in Mexico and 25 W in all other ITU Member States in Region 2 – except for the United States and Canada. However, Canada subsequently decided to permit stations in the amateur service using the WRC-15 band to operate with a maximum ERP of 100 W; see note 104, below.

[95] While footnote US23 of the Allocations Table does not have an explicit bandwidth limit, it limits use of these frequencies to specified emission types and designators, which in effect limit the bandwidth to a maximum of 2.8 kilohertz, i.e. phone (2K80J3E), data (2K80J2D), RTTY [narrow-band direct-printing telegraphy emissions having specified designators] (60H0J2B), and CW [International Morse code telegraphy emissions having specified designators] (150HA1A). 47 CFR §§ 2.101, 2.102, 2.106 footnote US23, 97.3(c)(1), (c)(7).

[96] Footnote US23 of the Allocations Table and section 97.313(i) of the Commission's rules state that amateur service use of these frequencies is restricted to a maximum ERP of 100 watts "PEP" and that no station may transmit with an ERP exceeding 100 watts "PEP," respectively. These requirements are inconsistent with the definitions in part 97 of the Commission's rules, i.e., PEP is the average power supplied to the antenna transmission

(continued….)

NTIA recommends that we conform footnote US23 to the *WRC-15 Final Acts* by allocating the 5351.5-5366.5 kHz band to the amateur service on a secondary basis, removing the four existing amateur channels outside this proposed new amateur band, and restricting the maximum radiated power of amateur operations in the band to 15 W EIRP.[97] Federal agencies use the larger 5275-5450 kHz band for services that include military, law enforcement, disaster relief, emergency, and contingency operations.[98] Most non-Federal operations in the 60 meter band are part 90 industrial business pool land mobile operations.[99]

39. In 2017, ARRL, the National Association for Amateur Radio (ARRL), filed a petition for rulemaking asking the Commission to allocate the 5351.5-5366.5 kHz band to the amateur service on a secondary basis, as provided in the *WRC-15 Final Acts*, and also to retain the four amateur service channels that are outside this band (i.e., the frequencies 5332 kHz, 5348 kHz, 5373 kHz, and 5405 kHz)[100] Further, ARRL supports using the same operating rules in terms of permitted emission types, power level, and access by class of amateur licensee for the new contiguous allocation that is currently applied to the existing five amateur channels.[101] Essentially, ARRL supports extending the provisions of footnote US23 of the Allocation Table and section 97.303(h) of the Commission's rules that apply to the existing five amateur channels, including the 100 watt ERP limit, to the new allocation.[102] Therefore, ARRL disagrees with applying the 15 W EIRP limit suggested in the *WRC-15 Final Acts*. While most commenters support implementation of the ARRL Petition as filed, some commenters disagreed with various aspects of the ARRL Petition as addressed below. Some even argue that the entire 60 meter band should be opened for amateur use at higher power because they are not aware of any complaints of harmful interference.[103] Finally, we note that Canada has essentially implemented the same rules as ARRL has requested.[104]

40. We propose to modify footnote US23 and part 97 of our rules to implement the new international allocation at 5351.5-5366.5 kHz, but also seek comment on whether we should maintain the

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line by a transmitter during one RF cycle at the crest of the modulation envelope taken under normal operating conditions and ERP is the product of the power supplied to the antenna and its gain relative to a half-wave dipole in a given direction. 47 CFR § 97.3(b)(2)-(3), (9). Our review finds that these rules were intended to limit the radiated power to 100 watts ERP based on the 2006 agreement between NTIA and ARRL and, to minimize confusion we refer to this limit in our discussion. Petition for Rule Making of ARRL, RM-11353, at Exhibit A (filed Oct. 10, 2006); 47 CFR § 97.313(k), (l).

[97] NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex 1.4, 29 (emphasis in original).

[98] As of March 2022, there are 36 Federal assignments in the 5351.5-5366.5 kHz band.

[99] As of April 17, 2023, there are 44 non-Federal licenses that authorize operations in the 5351.5-5366.5 kHz segment and 44 non-Federal licenses that authorize operations in the 5275-5450 kHz band. Licenses that authorize operations in the 5351.5-5366.5 kHz segment authorize disaster or long distance communications pursuant to footnote US22 on specific frequencies in the 5005-5450 kHz band. 47 CFR §§ 2.106 footnote US22, 90.264, 90.266.

[100] Petition for Rule Making, ARRL, RM-11785 (filed Jan. 12, 2017) (ARRL Petition); Comments of ARRL, RM-11785 (filed March 29, 2017). The Commission issued a public notice announcing receipt of this petition on February 16, 2017. *See* Public Notice Consumer & Governmental Affairs Bureau Information Center Petition For Rulemakings Filed, Report No. 3071 (rel. Feb. 16, 2017). As of Feb. 28, 2022, there were 119 filings in RM-11785, most of which support the ARRL petition.

[101] ARRL Petition at 18.

[102] *Id*. at 19.

[103] *See, e.g.*, Daniel P Schaff Comments at 1; Michael Goltz Comments at 1; Danny Douglas Comments at 1.

[104] *See Decision on Proposed Revisions to the Canadian Table of Frequency Allocations*, SMSE-07-18, April 2018, pages 1-2.

existing four channels at 5332, 5348, 5373, and 5405 kHz that are outside of the new allocation.[105] Under this proposal, amateurs would have access to a contiguous 15 kilohertz-wide band. Allowing amateurs to use these internationally-harmonized frequencies could facilitate amateur communications across international borders. We note however, there is significant opposition from the amateur community regarding the removal of the four discrete channels at 5332, 5348, 5373, and 5405 kHz from amateur use, as requested by NTIA.[106] An argument could be made that amateur operations should remain on harmonized international frequencies because of the long-range propagation of these frequencies. Further, amateur licensees also have access to other high frequency (HF) bands at 3 and 7 MHz, so we believe there should be sufficient spectrum options for amateur operations without deviating from the internationally harmonized spectrum. However, some commenters contend that the amateur community has been using the four discrete channels at 5332, 5348, 5373, and 5405 kHz that fall outside of the proposed band for some time and argue that these channels are important in responding to disasters.[107] We seek comment on this issue and what spectrum in the 60 meter band should be made available for amateur use.

41. Alternatively, we seek comment on whether the four discrete channels at 5332, 5348, 5373, and 5405 kHz should be kept available for limited amateur use under certain conditions or only in response to disasters. For example, could the channels be authorized for amateur use during disasters as part of the Military Auxiliary Radio System (MARS) or SHAred RESources High Frequency Radio (SHARES) programs where participating amateur licensees can operate on Federal channels in coordination with the Department of Defense or Department of Homeland Security, respectively? Should we permit amateur stations participating in established emergency communications programs such as the Amateur Radio Emergency Service (ARES) or the Radio Amateur Civil Emergency Service (RACES) to use the additional channels or operate at higher power during emergencies and drills?[108] Could the discrete channels be maintained under lower power or under other conditions that might reduce their potential to interfere with primary allocation services in the band? If so, we invite comment on whether the existing discrete channels should continue to be used for secondary amateur use and under what rules and conditions.

42. While many amateur commenters argue they should be permitted access to more of the 60 meter band because they are not aware of any complaints of interference arising from their current operations, we note there are a variety of important non-Federal and Federal fixed and mobile except aeronautical mobile service operations in the band where even rare instances of interference could endanger public safety. Therefore, we tentatively find that the spectrum requirements for the amateur service in the 5005-5450 kHz band should be met by the WRC-15 amateur band and that only the four existing amateur channels at 5332, 5348, 5373, and 5405 kHz that are outside this band should be considered in this proceeding. Nevertheless, we seek comment on this idea. Commenters that support expanded access to the 60 meter band should provide information regarding how heavily the five amateur

[105] Specifically, we propose to make the following amendments to part 97 of the rules: 1) replace the five center frequencies with the 5351.5-5366.5 kHz band in sections 97.301(b)-(d) and 97.305(c); 2) simplify the frequency sharing requirements in section 97.303(h) by stating that amateur stations transmitting in the band must not cause harmful interference to, and must accept interference from, stations authorized by the United States and other nations in the fixed service; and other nations in the mobile except aeronautical mobile service; and 3) revise the emission standard in section 97.307(f)(14) by removing unneeded text, including the unneeded upper sideband and Morse telegraphy restrictions (as requested by ARRL in its petition). Appx. B.

[106] *See, e.g.*, Steve Schroder Comments at 1; Ronald F. Henry Comments at 1; James J. Martin Comments at 1.

[107] *See, e.g.*, Roland Wayne Woodhams Comments at 1; Troy M King Comments at 1; Hugh Bahar Comments at 1; ARRL Comments at 9.

[108] RACES is a radio service using amateur stations for civil defense communications during periods of local, regional, or national civil emergencies. 47 CFR § 97.3(a)(38). ARES is an ARRL program for radio amateurs who participate in emergency communications. *See* http://www.arrl.org/ares (last visited Feb. 28, 2022).

frequencies in the 5275-5450 kHz band are used and why additional amateur spectrum in this frequency range is needed if we adopt the proposed allocation.

43. *Power.* ARRL seeks a maximum radiated power limit of 100 W ERP for the new secondary amateur allocation and to maintain the existing maximum radiated power limit of 100 W ERP for the existing discrete channels at 5332, 5348, 5373, and 5405 kHz. ARRL argues that such an implementation would support amateurs engaged in emergency and disaster relief communications to more reliably, flexibly, and capably conduct those communications; that imposing a maximum radiated power limit of 15 W EIRP would render the band unsuitable for emergency and public service communications; that the lower power limit is insufficient to permit reliable communications on the paths that are most critical; and that this reduced radiated power limit is not necessary to protect primary services from interference.[109]

44. Harold Ross Lambert and Michael Goltz argue that the power limit should be increased to 500 W to deal with propagation challenges in disaster communications;[110] and Milton K. Miller supports 500 W power with the use of more efficient antennas.[111] Phillip Finkle urges for at least 200 W of power designated as output power instead of ERP because ERP is difficult to measure.[112] Janis Carson initially expresses concern over allowing U.S. amateurs to operate at much higher powers than the international standard, suggesting a compromise power of 30 W because digital modes are very effective at lower power and world-wide communications can be achieved at lower power levels like 5 W.[113] However, in later comments Ms. Carson supports the ARRL proposal to allow 100 W for "more reliable communications in an environment of high static crashes."[114] William Springer urges the adoption of the 15 W power limit in the *WRC-15 Final Acts* because he contends that newer digital modes are more efficient, and so weaker signals are not an impediment to achieving communication.[115] Finally Hugh Bahar cautions that deviating from limits agreed to at the international level is unwise and could lead to other countries ignoring the standards and could be viewed as an act of bad faith.[116]

45. Several commenters also argue for more flexibility in the types of antennas permitted in the 60 meter band.[117] Scott Wright and George Dominick contend that antennas with gain greater than 0 dBi should be allowed since they are essential for efficient communications during an emergency.[118] In contrast, Mathew Pitts does not support increasing the permitted antenna gain and contends the power should range between 15 and 30 W.[119]

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[109] ARRL Petition at 3, 19-21.

[110] Harold Ross Lambert Comments at 1; Michael Goltz Comments at 1.

[111] Milton K. Miller Comments at 1.

[112] Phillip Finkle Comments at 1.

[113] Janis Carson March 13, 2017 Comments at 1.

[114] Janis Carson December 2, 2019 Comment at 1.

[115] William Springer Comments at 1, William K. Mabry Comments at 1.

[116] Hugh Bahar Comments at 1.

[117] The rules do not limit antenna gain and thus it is unclear why commenters have made this assertion. These comments appear to relate to section 97.313(i) of the rules, which states that: 1) for the purpose of computing ERP, the transmitter PEP will be multiplied by the antenna gain relative to a half-wave dipole antenna; 2) a half-wave dipole antenna will be presumed to have a gain of 1 (0 dBd); and 3) licensees using other antennas must maintain in their station records either the antenna manufacturer's data on the antenna gain or calculations of the antenna gain. 47 CFR § 97.313(i).

[118] Scott Wright Comments at 1, George Dominick Comments at 1.

[119] Mathew Pitts Comments at 1.

46. We seek comment on the appropriate power limit for the new internationally harmonized amateur allocation and for the discrete channels if they are maintained for amateur use. We tentatively conclude that limiting the radiated power of amateur stations to 15 W EIRP would reduce the potential of harmful interference to incumbent primary operations, while maintaining consistency with the power limits established internationally for amateur operations in this band. However, the majority of the amateur comments are opposed to lower power limits and neighboring countries in Region 2 permit power levels higher than 15 W EIRP.[120] We agree with certain commenters that the long-range propagation capabilities of these frequencies is likely to allow efficient communications at low-power levels, but there may be instances where more power is needed to deal with propagation challenges.

47. We acknowledge that valid arguments may exist for adopting power limits above 15 W up to 100 W. For example, footnote 5.133B of the Allocations Table, which addresses this international allocation, outlines a power limit of 20 W EIRP for Mexico and 25 W EIRP for all Latin American countries and for many Caribbean countries/territories.[121] Further, a review of our licensing database indicates other licenses with higher allocation status operating at power levels ranging from 15 W up to as high as 5000 W. Accordingly, we seek to build a more comprehensive record on the appropriate power limit for 60-meter band amateur operations. Interested parties seeking a power limit above the proposed 15 W EIRP limit should explain how much power would be appropriate, and how higher power limits would affect other operations in the 60-meter band? For example, should we allow the higher power allowed in other countries in ITU Region 2, such as Mexico and most Caribbean countries? Should we allow higher power during times of emergency drills/response or as part of programs where Amateur licensees support Federal emergency response? Should higher power only be permitted during disasters or drills supporting disaster relief? If, going forward, the discrete channels are permitted to be used by amateur operators under certain parameters or during disasters, what power limits should apply and when? What other conditions or considerations should be applied to amateur use of the 60 meter band?

48. Further, we seek comment on how the limit should be specified in the rules. Specifically, should the power limit be defined in terms of EIRP to be consistent with the WRC-15 recommendation, or through some other means, such as ERP or transmitter output power? While some commenters argue that radiated power limits are difficult to calculate for certain types of antennas,[122] we find that amateur licensees are supposed to study the radio arts and should be capable of determining their operating power. We seek comment on the pros and cons of the various power limit alternatives and which method is best for the 60 meter band. If we adopt a radiated power limit, we do not propose to adopt antenna limitations because a radiated power limit would ensure that excess power is not used, and flexibility in antenna choices may lead to spectrum efficiencies because the signal will propagate in its intended direction. Nevertheless, we seek comment on whether, and, if so what, antenna limitations are appropriate for amateur operations in this band using these different power limit measurements and how the Commission's decision could affect how these frequencies would be used by the amateur community.

49. *Channelization*. ARRL and several commenters argue that the new allocation should not designate sub-bands for various modes of operation to enable maximum flexibility to avoid interference with other operations.[123] Janis Carson contends channelization is wasteful because narrowband modes can operate at less than three kilohertz and flexibility is need to address prevailing circumstances.[124] She

[120] *See, e.g.*, Blair Balden Comments at 1; Bruce Pitman Comments at 1; Harold Ross Lambert Comments at 1; Roland Wayne Woodhams Comments at 1.

[121] *See* 47 C.F.R § 2.106 footnote 5.133B.

[122] *See e.g.*, Louis Lee Grande Barrett Comments at 1 (arguing "[n]o one can easily determine their wire antenna gain (or other) without intensive mathematical analysis and a knowledge of logarithms to determine ERP. Please conform to a Power Output as on other bands and disregard the antenna gain/ERP ratings.")

[123] ARRL Petition at 18. *See also e.g.*, Phillip Finkle Comments at 1, Scott Wright Comments at 1.

[124] Janis Carson March 13, 2017 Comments at 2.

adds that a maximum bandwidth of 500 Hertz should be allowed in the new contiguous allocation.[125] Charles Powell supports the ARRL request and contends that amateur equipment is not designed to maintain a high level of frequency accuracy and that such a design change would make equipment prohibitively expensive.[126] However, William Springer argues that the new allocation should be channelized into five 3 kilohertz channels to promote efficiency and avoid overlapping transmissions.[127] Benjamin Russell also supports five discrete channels, but suggests creating ten overlapping channels for narrowband carrier wave (CW) use.[128] Ronald F Henry contends that channelization would facilitate sharing with Federal users and, given there are several bands available for amateur use, the "60 Meter band must be set aside for emergency communications as the primary use and as such, channelization is desired to protect both the primary and secondary user."[129]

50. We propose that the 5351.5-5366.5 kHz band should not be channelized or have sub-bands. Due to the wide variety of potential applications and the need to protect other communications, dividing the band into channels may lead to inefficient spectrum use. However, we agree with commenters who state that some wideband digital emissions could create spectrum sharing problems, and so we propose a maximum emission bandwidth of 2.8 kilohertz for amateur operations in this band. We seek comment on this proposal and whether there are other limits or technical rule changes necessary to ensure reliable and efficient use of this band.

51. *Station Class and Permitted Uses.* ARRL and certain other commenters state that only amateurs with a General Class license or higher should be allowed to use the new allocation, because Technician Class license holders may not have the experience to operate consistent with the interference avoidance protocols needed for the band.[130] William Springer opposes the allowance of CW transmissions in the band because he contends that they are outdated and inefficient, but supports the use of any commonly-available, unencrypted digital transmission mode limited by a maximum occupied bandwidth that fits within the channel.[131] Scott Wright supports the allowance of CW, arguing that several CW emissions can fit within a small amount of bandwidth.[132] Janis Carson and Hugh Bahar oppose the allowance of automatically controlled digital stations and wideband digital modes that could block the entire allocation and could cause interference without busy channel detection.[133] In her reply comments, Ms. Carson adds that the new allocation should be used for narrowband digital or CW and that the discrete channels, along with the one 3 kHz channel contained within the new allocation, could remain for use of single-side band (SSB) voice or wider digital modes.[134] Ms. Carson also suggests not allowing any automatic store and forward email systems in the 60 meter band, claiming that these systems have a high potential to cause interference due to the "hidden transmitter" effect, where the offshore initiating

[125] *Id*. at 3.

[126] Charles Powell Comments at 1.

[127] William Springer Comments at 1. Other commenters supporting channelization of the band include: John Rohow Comment at 1; Ronald F. Henry Comment at 1.

[128] Benjamin Russell Comments at 1. CW (the abbreviation coming from the fact that it uses a Carrier Wave, or a Continuous Wave that is interrupted) is defined as international Morse code telegraphy emissions having designators with A, C, H, J or R as the first symbol; 1 as the second symbol; A or B as the third symbol; and emissions J2A and J2B. 47 CFR § 97.3(c)(1).

[129] Ronald F. Henry Comment at 1.

[130] ARRL Petition at 21; Janis Carson March 13, 2017 Comments at 1; Hugh Bahar Comments at 1.

[131] William Springer Comments at 1.

[132] Scott Wright Comments at 1.

[133] Janis Carson March 13, 2017 Comments at 2, Hugh Bahar Comments at 1.

[134] Janis Carson Reply Comment at 2.

station cannot hear a primary user in the skip zone of the shore based relay station.[135] Finally, W. Lee McVey contends that the 60 meter band rules should ensure that only publicly documented digital codes operate in the band to prohibit encrypted communications.[136]

52. Consistent with the current amateur class requirements for the 60 meter band,[137] we propose to permit amateurs holding a General Class license or higher to use the 5351.5-5366.5 kHz band. We agree with commenters that the long-range propagation characteristics in the band combined with the need to protect important safety of life communications by Federal operations potentially requires a higher level of radio knowledge to ensure the spectrum is properly shared.[138] We seek comment on this proposal. Further, if we maintain the four existing discrete channels at 5332, 5348, 5373, and 5405 kHz outside of the international allocation, we propose that those channels also be permitted for General Class licensees or higher. We seek comment on this proposal and other alternatives. For example, if we adopt the new allocation and keep the existing discrete channels, should different amateur classes be permitted on the new allocation versus the discrete channels? If we allow station classes below General Class licensees to access the 60 meter band, what conditions should be applied? For example, should certain classes be permitted to operate in certain modes (*i.e.*, voice vs. digital) or at certain times (*e.g.*, only in response to a disaster)? Given the limited spectral resource at issue, commenters supporting more flexible use should support their comments with suggested safeguards or ideas on how the spectrum can be efficiently used without interfering with primary allocation operations.

53. At this time, we are not proposing to preclude CW or any other radio technique currently permitted in the 60 meter band because the record is inconclusive on whether certain modulation methods should be prohibited. However, we note that the amateur rules generally preclude encrypted operations,[139] and so we seek comment on whether the 60 meter band rules need to be clearer on what types of digital operations are permitted. As discussed above, we propose to limit the emission bandwidth to 2.8 kilohertz, which may limit some techniques. We seek comment on these proposals and encourage the amateur community to attempt to reach consensus on what radio techniques should be permitted, given the limited amount of spectrum available, the need to use this spectrum efficiently, and the importance of ensuring that the primary users are protected from harmful interference.

2. Amateur Service in the 420-450 MHz Band

54. Based on a request from NTIA, we propose to update the coordination and contact information in footnote US270 for the areas wherein the peak envelope power of an amateur station operating in the 420-450 MHz (70 cm) band is generally limited to 50 watts, and to revise the cross reference to this footnote in section 97.313(f) of the rules.[140] See Appendix B for the proposed text of footnote US270 and section 97.313(f). We request comment on these proposals.

3. Maritime On-board Communication Stations (457/467 MHz)

55. We propose to revise footnote US288 to make a limited number of narrowband channels from the international channel plan adopted at WRC-15 available for use by on-board communication stations. An on-board communication station is a low-powered mobile station in the maritime mobile service used for internal communications on board a ship, or between a ship and its lifeboats and life-rafts

[135] Janis Carson December 2, 2019 Comment.

[136] W. Lee McVey August 30, 2021 *ex parte* at 1-2.

[137] *See* 47 C.F.R. § 97.301.

[138] *See, e.g.,* Hugh Bahar Comments at 1; ARRL Comments at 9; Janis Carson Comments at 1.

[139] *See generally* 47 C.F.R. § 97.309 (outlining various requirements for RTTY and data emissions including the requirement that digital codes must not be transmitted for the purpose of obscuring the meaning of any communication).

[140] *See* e-mail from Charles Cooper, Associate Administrator, Office of Spectrum Management, NTIA, to Ronald Repasi, Acting Chief, FCC Office of Engineering and Technology, August 8, 2021, attachment at 1-2.

during lifeboat drills or operations, or for communication within a group of vessels being towed or pushed, as well as for line handling and mooring instructions.[141] Our proposals are intended to benefit the maritime industry by making available a subset of the internationally-harmonized narrowband channels for on-board communication use while ships are in U.S. territorial waters.[142] Our overarching goals in making these proposals are to minimize the potential for intermittent and harmful interference to stations in the land mobile and fixed services that operate on the same or adjacent frequencies to on-board communication stations and to promote more efficient and effective use of the available spectrum, while fully meeting the operational requirements of ship station licensees for on-board communication stations.[143]

56. Footnote US288 and section 80.373(g) of the rules make seven internationally-harmonized frequencies in the 457.5125-457.5875 MHz and 467.5125-467.5875 MHz bands (150 kilohertz) and five other frequencies available for use by on-board communication stations in U.S. territorial waters (275 kilohertz in total).[144] Specifically, section 80.373(g)(1) states that the

[141] 47 CFR §§ 2.1(c), 80.5.

[142] WRC-15 revised footnote 5.287 to require that the characteristics of on-board communications stations conform to Recommendation ITU-R M.1174-3. Subsequently, Recommendation ITU-R M.1174-3 was revised to correct the frequency deviation for 6.25 kilohertz channels, and consequently, Recommendation ITU-R M.1174-4 is now in force. For the purposes of this section, internationally-harmonized channel means that the center frequency is specified in Recommendation ITU-R M.1174-4 and that this frequency is available, or is proposed to be made available, for licensed use in part 80 of our rules. Recommendation ITU-R 1174-4 includes the following: "Provision is made for 25 kHz or 12.5 kHz channel spacing for analogue and digital technologies. In addition, 6.25 kHz channel spacing may also be used for digital technology." In this section, we refer to the 25, 12.5, and 6.25 kilohertz-spaced channels in the 457.5125-457.6125 MHz, 467.5125-467.5875 MHz, and 467.7375-467.8375 MHz bands as "25 kilohertz channels," "12.5 kilohertz channels," and "6.25 kilohertz channels," respectively. With respect to the United States, "territorial sea means the waters, 12 nautical miles wide, adjacent to the coast of the United States and seaward of the territorial sea baseline" for "[i]nterpreting international law" and the other purposes specified in 33 CFR section 2.22(a), internal waters means the waters shoreward of the territorial sea baseline, and territorial waters of the United States means the territorial sea and the internal waters of the United States. Normally, the territorial sea baseline is the mean low water line along the coast of the United States. *See* 33 CFR subpart B at §§ 2.20, 2.22(a), 2.24(a), 2.26, and 2.36; Recommendation ITU-R M.1174-4 (10-2019), Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz.

[143] The 456-460 MHz and 462.7375-462.5375 MHz bands are allocated to the fixed and land mobile services on a primary basis for non-Federal use and the bands are available for licensing to applicants in the Industrial/Business Radio Pool pursuant to our part 90 rules for Private Land Mobile Radio Services. The 467.5375-467.7375 MHz band is allocated to the land mobile service on a primary basis for non-Federal use and this band is licensed by rule pursuant to our part 95 rules for Personal Radio Services. This band is shared between the Family Radio Service (part 95 subpart B) and the General Mobile Radio Service (part 95 subpart E). A ship station license permits operation of all maritime services transmitting equipment on board a vessel. In contrast, a ship station that is licensed by rule is limited to certain part 80 VHF frequencies. In particular, ship stations that are licensed by rule do "not travel to foreign ports" and are not eligible for on-board communication stations. 47 CFR §§ 80.13, part 90 subpart C, part 95 subparts B and E.

[144] The seven internationally-harmonized frequencies are 457.525 MHz (channel 1 or 11), 457.5375 MHz (channel 12), 457.550 MHz (channel 2 or 13), 457.5625 MHz (channel 14), 457.575 MHz (channel 3 or 15), 467.5375 MHz (channel 22), and 467.5625 MHz (channel 24), which are specified in Recommendation ITU-R M.1174-4. The five frequencies that are not internationally harmonized are 457.600 MHz, 467.750 MHz, 467.775 MHz, 467.800 MHz, and 467.825 MHz. Channels 1-3 and the five non-harmonized frequencies are 25 kilohertz channels and channels 11-15, 22, and 24 are 12.5 kilohertz channels. Footnote US288 does not currently prohibit on-board communications stations on foreign-flagged vessels from operating on other internationally-harmonized channels in U.S. territorial waters that are not licensed for such use by the Commission, and thus stations in the fixed and land mobile services may experience intermittent interference from on-board communication stations that operate in up to 275 kilohertz of spectrum (457.5125-457.6125 MHz, 467.5125-467.5875 MHz, and 467.7375-467.8375 MHz) under the current rules.

frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, and 457.600 MHz may be used by on-board repeater stations[145] and by unpaired on-board mobile stations (i.e., single-frequency simplex operation[146]) and that four frequencies in the 467.7375-467.8375 MHz band (i.e., 467.750, 467.775, 467.800, and 467.825 MHz) may be used by on-board mobile stations in two-frequency repeater systems. In addition, section 80.373(g)(2) states that, where needed, equipment designed for 12.5 kilohertz channel spacing using the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz, and 467.5625 MHz (i.e., channels 12, 14, 22, and 24) may be introduced for on-board communications;[147] however, no use of these channels is currently authorized.[148]

57. WRC-15 revised the international channel plan for on-board communication stations to provide for 6.25 kilohertz channels.[149] This new channel plan, shown in Table 1 below, specifies 40 frequencies that support the use of equipment designed to operate on 25, 12.5, or 6.25 kilohertz channels. The shaded channels in Table 1 indicate the internationally-harmonized channels that are currently available for use under our rules.

Table 1: International vs. United States Channels for On-Board Communication Stations

International Footnote 5.287 and Recommendation ITU-R M.1174-4												US1-US3 (25/25 kHz with the lower channel harmonized)[150]
Lower Band Channels						Upper Band Channels						
25 kHz		12.5 kHz		6.25 kHz		25 kHz		12.5 kHz		6.25 kHz		
Ch	MHz	Ch	MHz	Ch	MHz	Ch	MHz	Ch	MHz	Ch	MHz	
1	457.525	-	-	102	457.515625	4	467.525	-	-	202	467.515625	US1 consists of channel 1 and a channel centered on 467.750 MHz
		11	457.5250	111	457.521875			21	467.5250	211	467.521875	
				112	457.528125					212	467.528125	
		12	457.5375	121	457.534375			22	467.5375	221	467.534375	
2	457.550			122	457.540625	5	467.550			222	467.540625	US2 consists of channel 2 and a channel centered on 467.775 MHz
		13	457.5500	131	457.546875			23	467.5500	231	467.546875	
				132	457.553125					232	467.553125	
		14	457.5625	141	457.559375			24	467.5625	241	467.559375	
3	457.575			142	457.565625	6	467.575			242	467.565625	US3 consists of channel 3 and a
		15	457.5750	151	457.571875			25	467.5750	251	467.571875	

[145] An on-board repeater is a radio station that receives and automatically retransmits signals between on-board communication stations. On-board frequencies are assignable only to ship stations. When an on-board repeater is used, paired frequencies must be used. On-board repeater frequencies must be used for single-frequency simplex operations. 47 CFR §§ 80.5, 80.1177.

[146] Simplex operation is the operating method in which transmission is made possible alternatively in each direction of a telecommunication channel, for example, by means of manual control. Duplex operation is the operating method in which transmission is possible simultaneously in both directions of a telecommunication channel. In general, duplex operation requires two frequencies and simplex operation may use either one or two. 47 CFR § 2.1(c).

[147] 47 CFR § 80.373(g)(2).

[148] The 12.5 kilohertz channels are internationally-harmonized channels centered on the frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz, and 467.5625 MHz (designated as channels 12, 14, 22, and 24, respectively). As of April 17, 2023, no equipment for use in the 12.5 kilohertz channels had been certified. 47 CFR §§ 2.106 footnote US288, 80.203(a), 80.373(g)(2).

[149] *See also WRC-15 Admin Order*, *supra* note 3, para. 8, Appx. at 25 (U.S. Table); 47 CFR § 2.106 footnotes 5.287, 5.288.

[150] Because the frequencies 457.525, 457.550, and 457.575 MHz are designated as channels 1-3 in Recommendation ITU-R M.1174-4 (when using equipment designed to operate in 25 kHz spaced channels), we are referring to these channel pairs as channels US1-US3 in this proceeding.

				152	457.578125					252	467.578125	channel centered on 467.800 MHz
		-	-	161	457.584375			-	-	261	467.584375	

58. To permit the deployment of more spectrally efficient narrowband equipment, we propose to revise footnote US288 by authorizing on-board communication stations to use 12.5 and 6.25 kilohertz channels in the territorial waters of the United States as described in the following paragraphs.

59. First, we propose to revise footnote US288 to authorize: 1) nationwide use of channels 11-15, which are internationally-harmonized 12.5 kilohertz channels, for on-board repeater stations and on-board mobile stations used for single-frequency simplex operation;[151] 2) on-board mobile stations to operate nationwide on five non-harmonized frequencies that are 10.225 megahertz higher in frequency than the center frequency of their associated on-board repeater stations (frequencies shown in Table 2, below); and 3) on-board repeater stations to operate on channels 12 and 14 and associated on-board mobile stations operating on channels 22 and 24, respectively, in the Territorial Sea of the United States and at coastal ports and the inland ports of Baton Rouge, Houston, and Portland, and on the waterways and at other ports between these inland ports and the ocean.[152] We request comment on these proposals.[153]

Table 2: Center Frequencies for 12.5 Kilohertz On-board Paired Channels

Channel[154]	On-board Repeater Station	On-board Mobile Station
US11	Channel 11 – 457.5250 MHz	467.7500 MHz
US12	Channel 12 – 457.5375 MHz	467.7625 MHz
US13	Channel 13 – 457.5500 MHz	467.7750 MHz
US14	Channel 14 – 457.5625 MHz	467.7875 MHz
US15	Channel 15 – 457.5750 MHz	467.8000 MHz

60. Second, we propose to revise footnote US288 to authorize on-board repeater stations and on-board mobile stations used for single-frequency simplex operation to operate on the 6.25 kilohertz channels 102, 121, 122, 141, and 142 and for on-board mobile stations operating with a repeater station to

[151] Three of the center frequency pairs proposed for 12.5 kilohertz channels are the same as those currently used by 25 kilohertz channels (i.e., channels US1-US3) and the other two proposed center frequencies in the 457 MHz band are the existing 12.5 kilohertz channels (i.e., channels 12 and 14) and they (like channels US1-US3) are paired with center frequencies in the 467 MHz band that are offset from the internationally-harmonized frequencies by 225 kilohertz.

[152] Channel 24 is co-channel with the Family Radio Service (FRS) and General Mobile Radio Service (GMRS) interstitial channel centered on 467.5625 MHz (± 6.25 kilohertz; FRS channel 8) and channel 24 overlaps the GMRS main channels centered on 467.5500 MHz and 467.5750 MHz (± 10 kilohertz) by 3.75 kilohertz, which is the same overlap as the FRS/GMRS interstitial channel. Channel 22 also overlaps the GMRS main channel centered on 467.5500 MHz by 3.75 kilohertz. Because the effective radiated power (ERP) of these FRS and GMRS units must not exceed 0.5 watt, the increase in interference potential to these GRMS main channels would be caused solely by on-board mobile stations transmitting at 2 watts ERP. 47 CFR §§ 95.563, 95.567, 95.1763, 95.1767(c).

[153] Our proposal would make two new frequencies (467.7625 and 467.7875 MHz) available for use by on-board communication stations and would authorize the use of eight existing frequencies with twice the power spectral density (PSD) in their narrower authorized bandwidth, which increases the potential for harmful interference to nearby stations of the fixed and land mobile services that also operate on these frequencies. PSD is defined as the "power of an emission in the frequency domain, such as in terms of ERP or EIRP, stated per unit bandwidth, e.g., watts/MHz." 47 CFR § 22.99. Currently, the part 80 rules limit the ERP of on-board communication stations in the 456-468 MHz band to 2 watts in a 25 kilohertz channel (80 mW/kHz). If we authorize the same ERP in 6.25 kilohertz, then the PSD would double (160 mW/kHz), thereby increasing the potential for harmful interference over the signal's bandwidth because the signal's power is concentrated over a narrower bandwidth. We intend to address the PSD issue in any subsequent service rules proceeding.

[154] For purposes of this proceeding, we are referring to the associated channel pairs as channels US11-US15.

operate on the 6.25 kilohertz channels 202, 221, 222, 241, and 242, respectively, in the Territorial Sea of the United States and at coastal ports and the inland ports of Baton Rouge, Houston, and Portland, and on the waterways and at other ports between these inland ports and the ocean.[155] We request comment on this proposal, noting that eight of these channels overlap the 12.5 kilohertz channels that we are proposing in the previous paragraph (i.e., channels 12, 14, 22, and 24) and that channels 102 and 202 are between low-power part 90 channels.[156] We request comment on these proposals, noting that the use of 6.25 kilohertz channels with center frequencies that are offset from the frequencies used by stations in the fixed and land mobile services by 6.25 kilohertz are expected to enhance spectrum sharing.[157] We also solicit comment on whether we should authorize the use of channel pairs 121/221 on those waterways in the contiguous United States that the Department of Transportation has designated as part of America's Marine Highway.[158]

61. We also propose to revise the text of footnote US288 to state that, in the territorial waters of the United States, footnote 5.287 applies, except that on-board communication stations must transmit only on the listed frequencies and must operate as specified herein. On-board repeater stations and mobile stations used for single-frequency simplex operation currently may transmit only in the band 457.5125-457.6125 MHz. We propose that the preferred frequencies for repeater systems would be 457.525 MHz (channel 1 or 11), 457.5375 MHz (channel 12), 457.550 MHz (channel 2 or 13), 457.5625 MHz (channel 14), 457.575 MHz (channel 3 or 15), and 457.600 MHz paired, respectively, with 467.750 MHz, 467.7625 MHz, 467.775 MHz, 467.7875 MHz, 467.800 MHz, and 467.825 MHz; and the preferred frequencies for single-frequency operations would be those designated as channels 1-3, 11-15, and 121. Finally, we propose that use of channels 122, 141, and 142 and channel pairs 12/22, 14/24, 102/202, 121/221, 122/222, 141/241, and 142/242 would be authorized at coastal ports and the inland ports of Houston, Baton Rouge, and Portland, and along the waterways and at other ports between these inland ports and the ocean; however, on-board communication stations would not be able to transmit on these channels while in port and not underway or preparing to get underway. See Appendix B for the proposed text of footnote US288. We seek comment on these proposals.

62. Finally, we propose to revise footnote US287 by allocating the 457.5125-457.6125 MHz, 467.512375-467.518625 MHz, 467.55625-467.56875 MHz, 467.53125-467.54375 MHz, and 467.7375-467.8375 MHz bands (231.25 kilohertz) to the maritime mobile service on a primary basis, by limiting the use of these allocations to on-board communication stations, and by stating that, in these frequency bands, stations in the fixed and land mobile services may not claim protection from interference caused by on-board communication stations operating in accordance with US288 and that on-board communication stations may not claim protection from stations in the fixed and land mobile services. See Appendix B for the proposed text of footnote US287. Alternatively, we request comment on whether existing part 90 Private Land Mobile and part 95 Personal Radio Service licensees operating in the 456-470 MHz band should be afforded any protection from interference caused by on-board communication stations operating in accordance with US288. We observe that the 456-470 MHz band is

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[155] The eight 6.25 kilohertz channels are internationally-harmonized channels that are centered on the frequencies 457.534375 MHz, 457.540625 MHz, 457.559375 MHz, 457.565625 MHz, 467.534375 MHz, 467.540625 MHz, 467.559375 MHz, and 467.565625 MHz, which are designated as channels 121, 122, 141, 142, 221, 222, 241, and 242, respectively. Channels 222, 241, and 242 also overlap the GMRS main channels centered on 467.5500 MHz and 467.5750 by 3.75 kilohertz.

[156] Channels 102 and 202 are between frequencies in the Group A low power pool (i.e., 457.5125, 457.51875, 467.5125, and 467.51875 MHz), which are limited to a maximum ERP of 2 or 6 watts. 47 CFR § 90.267(b)(2)(i), (b)(4), (c)(2)(i), (c)(3).

[157] We also note that the power spectral density of these channels would be four times greater than that of 25 kilohertz channels (320 mW/6.25 kHz). See *supra* note 153.

[158] *See* https://www.maritime.dot.gov/grants/marine-highways/marine-highway and, in particular, https://cms.marad.dot.gov/sites/marad.dot.gov/files/2021-05/Route%20Designation%20one-pagers%20May%202021.pdf (last visited , 2022).

allocated to the mobile service on a primary basis in all ITU Regions, and request comment on the public interest benefits of both our proposal and the alternative.

4. Deletion of the Broadcasting Service from the 700 MHz Band

63. We propose to delete the broadcasting service allocation in the 698-758 MHz, 775-788 MHz, and 805-806 MHz bands from the non-Federal Table and to revise footnote NG159 by removing the reference to part 74, subpart G. Between 1998 and 2010, the Commission transitioned the 698-806 MHz (700 MHz) band from television broadcasting use (i.e., TV channels 52-69) to public safety and mobile broadband uses.[159] Currently, the entire 700 MHz band is allocated to the fixed and mobile services on a primary basis, but the broadcasting service allocation still remains in the 698-758 MHz, 775-788 MHz, and 805-806 MHz portions on a primary basis, and licensees in those bands have the flexibility to provide broadcast services, if they choose.[160] See Appendix B for the proposed text of footnote NG159. We request comment on our proposal. In the event that we delete the broadcast allocation as proposed, we seek comment on whether, and which, part 27 service rules should be modified to reflect the change (*e.g.*, sections 27.3 (Other Applicable Rule Parts), 27.4 (Terms and Definitions), 27.10 (Regulatory Status), 27.13 (License Period), 27.50 (Power Limits and Duty Cycle), and 27.55 (Power Strength Limits)).[161]

5. Deletion of Footnote NG155

64. We propose to remove footnote NG155 from the rules because the frequencies and frequency bands to which it applies are not authorized in part 80 of the Commission's rules.[162] The ITU has identified the frequencies that can generally be used worldwide for intership communications.[163] Thus, we tentatively conclude that there is no need to specify any other frequencies for intership use. We note that, in the Second Report and Order in PR Docket No. 92-257 that added footnote NG155 to section 2.106 of the Commission's rules, the Commission declined to adopt the proposed rules for part 80

[159] *Reallocation of Television Channels 60-69, the 746-806 MHz Band*, 12 FCC Rcd 22953 (1998); *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, 17 FCC Rcd 1022 (2002); *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, 22 FCC Rcd 5289 (2007); *Amendment of Parts 1, 2, 25, 73, 74, 90, and 97 of the Commission's Rules to Make Non-Substantive Editorial Revisions to the Table of Frequency Allocations and to Various Service Rules*, 23 FCC Rcd 3775, 3785 para. 27 (2008); and *Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band*, 25 FCC Rcd 643 (2010). Specifically, the 698-758, 775-788, and 805-806 MHz bands are licensed for commercial mobile broadband use and as reflected in footnote NG34, the 758-775 and 788-805 MHz bands are designated for public safety use.

[160] While full-power television stations have vacated this spectrum, part 27 geographic area licenses may provide broadcast services, although none currently list it as a radio service type on their licenses. There are also television broadcast auxiliary stations remaining in the band. Footnote NG159 allows these stations to operate indefinitely on a secondary basis to all other stations operating in that band. Television broadcast auxiliary stations may be authorized pursuant to part 74, subpart F of the rules. On April 17, 2023, Commission staff conducted a Site Based Search of the Universal Licensing System (ULS) and found that 14 licenses authorize various types of television broadcast auxiliary stations to operate in the 698-806 MHz band (i.e., one TV relay, two TV translator relay, and 11 TV studio-transmitter link stations) and that there are no active licenses that authorize operations pursuant to part 74, subpart G in the band. *WRC-15 Admin Order*, *supra* note 3, para. 15; 47 CFR § 2.106 footnote NG159.

[161] *See, e.g.,* 47 CFR §§ 27.3, 27.4, 27.10, 27.13, 27.50, 27.55.

[162] Footnote NG155 states that: "The bands 159.500-159.675 MHz and 161.375-161.550 MHz are allocated to the maritime service as described in 47 CFR part 80. Additionally, the frequencies 159.550, 159.575, and 159.600 MHz are available for low-power intership communications." 47 CFR § 2.106 footnote NG155.

[163] ITU Radio Regulations, Vol. 2, Appendix 18 (Rev.WRC-19) at 299.

regarding maritime sharing of private land mobile radio frequencies for intership communications.[164] We request comment on this proposal.

C. Other Matters

65. As a result of discussions regarding the protection of near-Earth operations of deep space missions,[165] WRC-15 added a provision in Article 4 of the Radio Regulations (No. 4.24) to describe the use of space research service (deep space) allocations.[166] Similarly, we propose to add a new paragraph to section 2.102 of the Commission's rules to clarify that: "Space research systems intended to operate in deep space may also use the space research service (deep space) allocations, with the same status as those allocations, when the spacecraft is near the Earth, such as during launch, early orbit, flying by the Earth and returning to the Earth." We request comment on this proposal.[167]

66. We propose to amend section 2.1(c) of the rules to add or revise the definitions for the terms "meteorological aids land station," "meteorological aids mobile station," and "coordinated universal time" in accordance with the WRC-15 adopted definitions. We also propose to add a definition for the term "frequency band" based on that term's ITU definition.[168] The proposed language of these definitions appears in the Appendix. We seek comment on these definitions.

67. We propose to amend section 2.105(d) of the rules by stating that the footnote references which appear in the United States Table below the allocated service or services apply to more than one of the allocated services, or to the whole of the allocation concerned, and that the footnote references which appear to the right of the name of a service are applicable only to that particular service. See Appendix B for the proposed text of section 2.105(d)(6)-(8), where the text in paragraph (d)(6) has been moved to paragraph (d)(8).

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[164] *See Amendment of the Commission's Rules Concerning Maritime Communications*, PR Docket No. 92-257, Second Report and Order and Second Further Notice of Proposed Rulemaking, 12 FCC Rcd 16949, 16894-16896, paras. 70-73

[165] Specifically, in examining the wording of footnotes 5.460 and 5.465, parties concluded that there may be an interpretation of these footnotes that is physically impossible to comply with and could lead to constraints on the use of frequencies that are not compatible with the design of a spacecraft meant for deep space operations. *CITEL Proposals to WRC-15*, agenda item 9.2 (9.2.2), Addendum 2 to Document 7(Add.23)(Add.2)-E, dated August 21, 2015 (Doc. 4000-9_2_2.doc).

[166] ITU Radio Regulations, Vol. 1, Article 4 (Assignment and use of frequencies), No. 4.24.

[167] This clarification pertains to the following frequency bands:

Table 3: Frequency Bands Allocated to the Space Research Service (Deep Space) in the U.S. Table

Band	Directional Indicator	Remarks
2110-2120 MHz	Earth-to-space	Primary allocation per footnote US252
2290-2300 MHz	Space-to-Earth	Primary Federal and non-Federal allocations
7145-7190 MHz	Earth-to-space	Primary Federal & secondary non-Federal use, Goldstone only per US262
8400-8450 MHz	Space-to-Earth	Primary Federal and secondary non-Federal allocations
12.75-13.25 GHz	Space-to-Earth	Secondary international allocation; use limited to Goldstone per US251
16.6-17.1 GHz	Earth-to-space	Secondary Federal allocation
31.8-32.3 GHz	Space-to-Earth	Primary allocation, limited to Goldstone, per footnote US262
34.2-34.7 GHz	Earth-to-space	Primary Federal & secondary non-Federal use, Goldstone only per US262

[168] NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annexes 1.14 and 9.2.1, 70, 101. We note that NTIA revised its existing term "meteorological aids base station" to "meteorological aids base/land station" in order to avoid confusion. Because we do not have such an existing term in our rules, it is unnecessary to propose NTIA's term. The definition for "frequency band" is taken from the ITU's online database of Terms and Definitions, https://www.itu.int/pub/R-TER-DB (last visited Feb. 28, 2022).

68. In response to NTIA's recommendation that we add a subset of the international footnotes that identify spectrum for International Mobile Telecommunications (IMT) to the non-Federal Table, we direct the Chief, Office of Engineering and Technology to maintain a "Mobile Broadband Spectrum in the United States" file on the "Radio Spectrum Allocation" webpage.[169] We request comment on whether this file meets the public's needs.

69. *Digital Equity and Inclusion*. Finally, the Commission, as part of its continuing effort to advance digital equity for all,[170] including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invites comment on any equity-related considerations[171] and benefits (if any) that may be associated with the proposals and issues discussed herein. Specifically, we seek comment on how our proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well as the scope of the Commission's relevant legal authority.

VI. PROCEDURAL MATTERS

A. Order

70. *Regulatory Flexibility Act*. None of the rule changes discussed in the Order are subject to the notice and comment requirements for rulemaking in the Administrative Procedure Act (APA).[172] Section 553(b)(B) of the APA provides exceptions to the notice and comment requirements for rulemakings when, among other things, the agency finds good cause that the notice and comment requirements are "impracticable, unnecessary, or contrary to the public interest" with respect to the rules at issue. The changes discussed in the Order have no substantive effect on industry or the general public. Accordingly, we find that it is "unnecessary," within the meaning of section 553(b)(B) of the APA, to provide notice and an opportunity for public comment before adopting these rule revisions. Because the rule changes are being adopted without notice and comment, the Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq.,* does not apply.[173]

71. *Paperwork Reduction Act*. This Order does not contain new or modified information collections subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13 (44 U.S.C. §§ 3501-3520). In addition, it does not contain any new or modified information collection burden for small

[169] The FCC Online Allocation Table and Allocation History File are currently available on the "Radio Spectrum Allocation" webpage, i.e., https://www.fcc.gov/engineering-technology/policy-and-rules-division/general/radio-spectrum-allocation. NTIA recommends that we add references to footnotes 5.295, 5.308A, 5.431B, and 5.434 to the 470-608 MHz, 614-698 MHz, 3550-3600 MHz, and 3600-3700 MHz bands, respectively. NTIA WRC-15 Implementation Recommendations, Attachment 1 – Annex 1.1 and 1.2, at 4, 11.

[170] Section 1 of the Communications Act of 1934 as amended provides that the FCC "regulat[es] interstate and foreign commerce in communication by wire and radio so as to make [such service] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex." 47 U.S.C. § 151.

[171] The term "equity" is used here consistent with Executive Order 13985 as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. *See* Exec. Order No. 13985, 86 Fed. Reg. 7009, Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (January 20, 2021).

[172] *See* 5 U.S.C. § 553 (herein referred to as the "APA"), and in particular, 5 U.S.C. § 553(b)(B) (allowing for implementation without notice and comment or publication in the Federal Register if good cause exists).

[173] *See* 5 U.S.C. §§ 601(2) (definition of "rule"), 604(a) (requiring a final regulatory flexibility analysis when an agency promulgates a final rule "after being required … to publish a general notice of proposed rulemaking").

business concerns with fewer than 25 employees pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4).

72. *Congressional Review Act*. The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that this rule is "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this Order to Congress and the Government Accountability office, pursuant to 5 U.S.C. § 801(a)(1)(A).

B. NPRM

73. *Paperwork Reduction Analysis*. This document does not contain proposed information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, therefore, it does not contain any proposed information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

74. *Regulatory Flexibility Act.* The Regulatory Flexibility Act of 1980, as amended (RFA),[174] requires an agency to prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[175] Accordingly, , the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) concerning the potential impact of the rule and policy changes contained in the *WRC-15 Notice*.[176] The IRFA is set forth in Appendix C. Written public comments are requested on the IRFA. Comments must be filed in accordance with the same filing deadlines as comments filed in response to the *WRC-15 Notice*, and must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this *WRC-15 Notice*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with the Regulatory Flexibility Act.[177]

75. *Filing Requirements.* Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document.

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the Commission's Electronic Comment Filing System (ECFS): http://apps.fcc.gov/ecfs/.[178]

- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.

  Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
  - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
  - U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington DC 20554.

[174] 5 U.S.C. §§ 601–612. The RFA has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[175] 5 U.S.C. § 605(b).

[176] 5 U.S.C. § 603.

[177] 5 U.S.C. § 603(a).

[178] *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.[179]

- People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

76. The proceeding that this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[180] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

77. *Availability of Documents*. Comments, reply comments, and *ex parte* submissions will be publicly available online via ECFS.[181]

78. When the FCC Headquarters reopens to the public, these documents will also be available for public inspection during regular business hours in the FCC Reference Center, Federal Communications Commission, 45 L Street N.E., Washington, DC 20554.

79. *Additional Information*. For additional information on this proceeding, contact Patrick Forster, Office of Engineering and Technology, Patrick.Forster@fcc.gov, (202) 418-7061.

VII. ORDERING CLAUSES

80. IT IS ORDERED that, pursuant to sections 1, 4(i), 4(j), 7, 301, 303(c), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), 157, 301, 303(c), 303(f), and 303(r), this Order and Notice of Proposed Rulemaking IS ADOPTED.

81. IT IS FURTHER ORDERED pursuant to section 1.407 of the Commission's rules, 47 CFR § 1.407, that the petition for rulemaking filed by the American Radio Relay League, Incorporated, Amendment of Parts 2 and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2015) to Allocate the Band 5351.5-5366.5 kHz to the Amateur Radio Service, RM-11785, IS GRANTED IN PART.

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[179] *See* FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (Mar. 19, 2020). https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy.

[180] 47 CFR §§ 1.1200 *et seq.*

[181] Documents will generally be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

82. IT IS FURTHER ORDERED that the amendments of part 2 of the Commission's rules, as set forth in Appendix A, ARE ADOPTED, effective thirty (30) days after publication in the Federal Register.

83. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Order and Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

84. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

The Federal Communications Commission amends 47 CFR part 2 as follows:

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Amend § 2.106 as follows:

a. Revise pages 3, 4, 19 through 28, 30, 33, 34, 38 through 42, 50, 52 through 56, 58 through 60, 62, 66, and 68 in paragraph (a);

b. Revise paragraphs (b)(67) introductory text, (b)(67)(ii), and (b)(70);

c. Remove and reserve paragraph (b)(71);

d. Revise paragraphs (b)(77) and (79);

e. Add paragraph (b)(82)(i) and reserved paragraph (b)(82)(ii);

f. Revise paragraphs (b)(87), (107), (109) through (112), (114), (117), (118), (123), and (128), (b)(132) introductory text, (b)(132)(ii), (b)(133)(i) and (ii), (b)(134), (b)(141)(ii), (b)(145) introductory text, (b)(145)(ii), (b)(146) and (147), (b)(149) through (155), (b)(156) introductory text, (b)(156)(i), (b)(157) through (159), (b)(161)(i) and (ii), (b)(162)(i), and (b)(163) through (165);

g. Add paragraph (b)(166);

h. Revise paragraphs (b)(169), (171), (194), (201), and (202);

i. Add paragraph (b)(203);

j. Revise paragraphs (b)(204) and (b)(208)(i) and (ii);

k. Add paragraph (b)(209)(i) and reserved (b)(209)(ii);

l. Revise paragraphs (b)(211), (212), and (214);

m. Add paragraph (b)(218)(i) and reserved (b)(218)(ii);

n. Revise paragraphs (219) and (221);

o. Redesignate paragraphs (b)(228)(i) through (vii) as paragraphs (b)(228)(iii) through (ix) and add new paragraphs (b)(228)(i) and (ii);

p. Revise paragraphs (b)(242) and (252);

r. Add paragraphs (b)(260) and (b)(264)(i) and (ii);

s. Revise paragraphs (b)(265), (275), (277), and (278), (b)(279) introductory text, (b)(279)(i), (b)(280), (b)(286)(ii), (b)(287), (288), and (295), (b)(296) introductory text, (b)(296)(i), (b)(297), (b)(308) introductory text, and (b)(308)(i);

t. Remove and reserve paragraph (b)(311);

u. Revise paragraphs (b)(312) introductory text, (b)(312)(i), (b)(313) and (316), (b)(317)(i), (b)(323), (b)(325)(i), (b)(328)(ii) and (iii), (b)(329) and (331), (b)(338)(i), (b)(341)(i) through (iii), (b)(345), (346), (349), and (350), (b)(351)(i), (b)(352), (359), (368), and (372);

t. Add paragraph (b)(373);

u. Revise paragraphs (b)(382), (b)(384)(i), (b)(388) introductory text, (b)(388)(ii), (b)(389)(i) and (iv), and (b)(393);

v. Remove and reserve paragraph (b)(396);

w. Revise paragraphs (b)(401), (418), and (428), (b)(429) introductory text, (b)(429)(i) through (iv) and (vi), (b)(430) introductory text, (b)(430)(i), (b)(431) introductory text, (b)(432), (b)(433)(i), (b)(434), (b)(441)(i) and (ii), (b)(444)(ii), and (b)(446)(i) and (iii);

x. Add paragraph (b)(446)(iv);

y. Revise paragraphs (b)(447) introductory text, (b)(447)(vi), (b)(448), (b)(450)(i), (b)(453), (455), (458), and (468), (b)(473) introductory text, (b)(474)(iv), (b)(477), (b)(478) introductory text, (b)(479) through (481) and (483), (b)(484)(ii), (b)(495) and (505), (b)(508) introductory text, (b)(509)(iii), and (b)(516)(ii);

z. Add paragraph (b)(517)(i) and reserved paragraph (b)(517)(ii);

aa. Revise paragraph (b)(530)(ii);

bb. Redesignate paragraph (b)(532)(ii) as paragraph (b)(532)(iv) and add new paragraph (b)(532)(ii) and paragraph (b)(532)(iii);

cc. Add paragraph (b)(534);

dd. Revise paragraphs (b)(536)(i) and (ii), (b)(537)(i), (b)(543)(i), and (b)(546) and (547);

ee. Add paragraphs (b)(550)(ii) through (v);

ff. Revise paragraph (b)(552)(i).

gg. Add paragraphs (b)(553)(i) and (ii), and (b)(555)(ii);

hh. Revise paragraph (b)(559)(i);

ii. Add paragraph (b)(559)(ii);

jj. Revise paragraph (b)(562)(ii);

kk. Remove and reserve paragraphs (b)(562)(vi) and (vii);

ll. Add paragraph (b)(564);

mm. Revise paragraph (c)(1)

nn. Redesignate Note 2 to paragraph (c)(22)(ii)(B) as Note 4 to § 2.106(c)(22)(ii)(B);

oo. Revise paragraph (c)(52);

pp. Add paragraph (c)(79)(iii);

qq. Revise paragraph (c)(82);

rr. Redesignate Note 3 to table 4 to paragraph (c)(83) as Note 5 to table 4 to § 2.106(c)(83);

ss. Redesignate Note 4 to paragraph (c)(88)(ii) as Note 6 to § 2.106(c)(88)(ii);

tt. Redesignate Note 5 to paragraph (c)(91)(ii)(B) as Note 7 to § 2.106(c)(91)(ii)(B);

uu. Redesignate Note 6 to paragraph (c)(91)(ii)(C) as Note 8 to § 2.106(c)(91)(ii)(C);

vv. Redesignate Note 7 to paragraph (c)(97) as Note 9 to § 2.106(c)(97);

ww. Revise paragraph (c)(100);

xx. Redesignate Note 8 to paragraph (c)(136)(ii) as Note 10 to § 2.106(c)(136)(ii);

yy. Redesignate Note 9 to paragraph (c)(161)(ii) as Note 11 to § 2.106(c)(161)(ii);

zz. Revise paragraphs (c)(247), (281), (283), (296), (312), and (342), and (c)(444)(ii);

aaa. Redesignate Note 10 to paragraph (c)(565) as Note 12 to § 2.106(c)(565);

bbb. Revise paragraph (d)(33);

ccc. Redesignate Note 11 to paragraph (d)(53) as Note 13 to paragraph (d)(53);

ddd. Revise paragraph (d)(169);

eee. Remove and reserve paragraph (d)(185); and

fff. Revise paragraphs (e)(2), (32), (115), and (132).

The revisions and additions read as follows:

§ 2.106 Table of Frequency Allocations.

(a) * * *

Table of Frequency Allocations — 137.8-1800 kHz (LF/MF) — Page 3

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
137.8-148.5 FIXED MARITIME MOBILE 5.64 5.67 148.5-255 BROADCASTING	137.8-160 FIXED MARITIME MOBILE 5.64 160-190 FIXED	137.8-160 FIXED MARITIME MOBILE RADIONAVIGATION 5.64 160-190 FIXED Aeronautical radionavigation	137.8-160 FIXED MARITIME MOBILE 5.64 US2 160-190 FIXED MARITIME MOBILE US2	160-190 FIXED US2	Maritime (80)
5.68 5.69 5.70	190-200 AERONAUTICAL RADIONAVIGATION		190-200 AERONAUTICAL RADIONAVIGATION US18 US2		Aviation (87)
255-283.5 BROADCASTING AERONAUTICAL RADIONAVIGATION 5.70	200-275 AERONAUTICAL RADIONAVIGATION Aeronautical mobile	200-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile	200-275 AERONAUTICAL RADIONAVIGATION US18 Aeronautical mobile US2		
283.5-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	275-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Maritime radionavigation (radiobeacons)		275-285 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Maritime radionavigation (radiobeacons) US2 US18		
5.74	285-315 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73		285-325 MARITIME RADIONAVIGATION (radiobeacons) 5.73 Aeronautical radionavigation (radiobeacons)		
315-325 AERONAUTICAL RADIONAVIGATION Maritime radionavigation (radiobeacons) 5.73 5.75	315-325 MARITIME RADIONAVIGATION (radiobeacons) 5.73 Aeronautical radionavigation	315-325 AERONAUTICAL RADIONAVIGATION MARITIME RADIONAVIGATION (radiobeacons) 5.73	US2 US18 US364		
325-405 AERONAUTICAL RADIONAVIGATION	325-335 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Maritime radionavigation (radiobeacons)	325-405 AERONAUTICAL RADIONAVIGATION Aeronautical mobile	325-335 AERONAUTICAL RADIONAVIGATION (radiobeacons) Aeronautical mobile US2 US18		Aviation (87)
	335-405 AERONAUTICAL RADIONAVIGATION Aeronautical mobile		335-405 AERONAUTICAL RADIONAVIGATION (radiobeacons) US18 Aeronautical mobile US2		
405-415 RADIONAVIGATION 5.76	405-415 RADIONAVIGATION 5.76 Aeronautical mobile		405-415 RADIONAVIGATION 5.76 US18 Aeronautical mobile US2		Maritime (80) Aviation (87)
415-435 MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION	415-472 MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77 5.80		415-435 MARITIME MOBILE US79A AERONAUTICAL RADIONAVIGATION US2		

435-472 MARITIME MOBILE 5.79 Aeronautical radionavigation 5.77				435-472 MARITIME MOBILE US79A Aeronautical radionavigation	435-472 MARITIME MOBILE US79A	
5.82	5.78 5.82			5.82 US2 US231	5.82 US2 US231	
472-479 MARITIME MOBILE 5.79 Amateur 5.80A Aeronautical radionavigation 5.77 5.80				472-479	472-479 Amateur 5.80A	Amateur Radio (97)
5.80B 5.82				US2	5.82 US2 NG8	
479-495 MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.80	479-495 MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.77 5.80			479-495 MARITIME MOBILE US79A 5.79A Aeronautical radionavigation	479-495 MARITIME MOBILE US79A 5.79A	Maritime (80)
5.82	5.82			5.82 US2 US231	5.82 US2 US231	
495-505 MARITIME MOBILE 5.82C				495-505 MARITIME MOBILE		Maritime (80) Aviation (87)
505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	505-510 MARITIME MOBILE 5.79 510-525 MARITIME MOBILE 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile		505-510 MARITIME MOBILE US79A 510-525 MARITIME MOBILE (ships only) 5.79A 5.84 AERONAUTICAL RADIONAVIGATION (radiobeacons) US18 US14 US225		Maritime (80) Maritime (80) Aviation (87)
	525-535 BROADCASTING 5.86 AERONAUTICAL RADIONAVIGATION	526.5-535 BROADCASTING Mobile 5.88		525-535 MOBILE US221 AERONAUTICAL RADIONAVIGATION (radiobeacons) US18 US239		Aviation (87) Private Land Mobile (90)
526.5-1606.5 BROADCASTING	535-1605 BROADCASTING	535-1606.5 BROADCASTING		535-1605	535-1605 BROADCASTING NG1 NG5	Radio Broadcast (AM)(73) Private Land Mobile (90)
5.87 5.87A	1605-1625			1605-1615	1605-1705	
1606.5-1625 FIXED MARITIME MOBILE 5.90 LAND MOBILE	BROADCASTING 5.89	1606.5-1800 FIXED MOBILE RADIOLOCATION RADIONAVIGATION		MOBILE US221 G127 1615-1705	BROADCASTING 5.89	Radio Broadcast (AM)(73) Alaska Fixed (80) Private Land Mobile (90)
5.92	5.90					
1625-1635 RADIOLOCATION	1625-1705 FIXED MOBILE					
5.93	BROADCASTING 5.89					
1635-1800 FIXED MARITIME MOBILE 5.90 LAND MOBILE	Radiolocation 5.90			US299	US299 NG1 NG5	
	1705-1800 FIXED MOBILE RADIOLOCATION			1705-1800 FIXED MOBILE RADIOLOCATION		Alaska Fixed (80) Private Land Mobile (90)
5.92 5.96	AERONAUTICAL RADIONAVIGATION	5.91		US240		Page 4

Table of Frequency Allocations — 41.015-117.975 MHz (VHF) — Page 19

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
40.98-41.015 FIXED MOBILE Space research 5.160 5.161			40-41.015 MHz: see previous page		
41.015-42 FIXED MOBILE			41.015-41.665 FIXED MOBILE RADIOLOCATION US132A US220	41.015-41.665 RADIOLOCATION US132A US220	Private Land Mobile (90)
5.160 5.161 5.161A			41.665-42 FIXED MOBILE US220	41.665-42 US220	
42-42.5 FIXED MOBILE Radiolocation 5.132A 5.160 5.161B	42-42.5 FIXED MOBILE 5.161		42-43.35	42-43.35 FIXED LAND MOBILE NG124 NG141	Public Mobile (22) Private Land Mobile (90)
42.5-44 FIXED MOBILE			43.35-44 RADIOLOCATION US132A	43.35-43.69 FIXED LAND MOBILE RADIOLOCATION US132A NG124 43.69-44 LAND MOBILE RADIOLOCATION US132A	Private Land Mobile (90)
5.160 5.161 5.161A 44-47 FIXED MOBILE			44-46.6	NG124 44-46.6 LAND MOBILE NG124 NG141	
5.162 5.162A 47-50 BROADCASTING	47-50 FIXED MOBILE	47-50 FIXED MOBILE BROADCASTING	46.6-47 FIXED MOBILE 47-49.6	46.6-47 47-49.6 LAND MOBILE NG124	Private Land Mobile (90)
5.162A 5.163 5.164 5.165		5.162A	49.6-50 FIXED MOBILE	49.6-50	
50-52 BROADCASTING Amateur 5.166A 5.166B 5.166C 5.166D 5.166E 5.169 5.169A 5.169B 5.162A 5.164 5.165	50-54 AMATEUR		50-54	50-54 AMATEUR	Amateur Radio (97)
	5.162A 5.167 5.167A 5.168 5.170				

52-68				
BROADCASTING	54-68 BROADCASTING Fixed Mobile	54-68 FIXED MOBILE BROADCASTING	54-73	54-72 BROADCASTING NG5 NG14 NG115 NG149 NG3 NG16 NG56	Broadcast Radio (TV)(73) LPTV, TV Translator/ Booster (74G) Low Power Auxiliary (74H)
5.162A 5.163 5.164 5.165 5.169 5.169A 5.169B 5.171	5.172	5.162A			
68-74.8	68-72	68-74.8		72-73	Public Mobile (22)
FIXED	BROADCASTING	FIXED		FIXED	Maritime (80)
MOBILE except aeronautical mobile	Fixed Mobile	MOBILE		MOBILE	Aviation (87) Private Land Mobile (90)
	5.173				Personal Radio (95)
	72-73 FIXED MOBILE		73-74.6 RADIO ASTRONOMY US74 US246		
	73-74.6 RADIO ASTRONOMY 5.178				
	74.6-74.8 FIXED MOBILE		74.6-74.8 FIXED MOBILE		Private Land Mobile (90)
5.149 5.175 5.177 5.179		5.149 5.176 5.179	US273		
74.8-75.2			74.8-75.2		
AERONAUTICAL RADIONAVIGATION			AERONAUTICAL RADIONAVIGATION		Aviation (87)
5.180 5.181			5.180		
75.2-87.5	75.2-75.4		75.2-75.4		
FIXED	FIXED		FIXED		Private Land Mobile (90)
MOBILE except aeronautical mobile	MOBILE		MOBILE		
	5.179		US273		
	75.4-76 FIXED MOBILE	75.4-87 FIXED MOBILE	75.4-88	75.4-76 FIXED MOBILE	Public Mobile (22) Maritime (80) Aviation (87) Private Land Mobile (90)
				NG3 NG16 NG56	Personal Radio (95)
	76-88 BROADCASTING Fixed Mobile	5.182 5.183 5.188 87-100 FIXED MOBILE		76-88 BROADCASTING NG5 NG14 NG115 NG149	Broadcast Radio (TV)(73) LPTV, TV Translator/ Booster (74G) Low Power Auxiliary (74H)
5.175 5.179 5.187	5.185	BROADCASTING			
87.5-100					
BROADCASTING	88-100		88-108	88-108	Broadcast Radio (FM)(73)
5.190	BROADCASTING			BROADCASTING NG2	FM Translator/Booster (74L)
100-108					
BROADCASTING					
5.192 5.194			US93	US93 NG5	
108-117.975			108-117.975		
AERONAUTICAL RADIONAVIGATION			AERONAUTICAL RADIONAVIGATION		Aviation (87)
5.197 5.197A			5.197A US93		

Table of Frequency Allocations — 117.975-150.8 MHz (VHF) — Page 21

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
117.975-137 AERONAUTICAL MOBILE (R)			117.975-121.9375 AERONAUTICAL MOBILE (R) 5.111 5.200 US26 US28 US36		Aviation (87)
			121.9375-123.0875 US30 US31 US33 US80 US102 US213	121.9375-123.0875 AERONAUTICAL MOBILE US30 US31 US33 US80 US102 US213	
			123.0875-123.5875 AERONAUTICAL MOBILE 5.200 US32 US33 US112		
			123.5875-128.8125 AERONAUTICAL MOBILE (R) US26 US36		
			128.8125-132.0125	128.8125-132.0125 AERONAUTICAL MOBILE (R)	
			132.0125-136 AERONAUTICAL MOBILE (R) US26		
5.111 5.200 5.201 5.202			136-137 US244	136-137 AERONAUTICAL MOBILE (R) US244	
137-137.025 SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208			137-137.025 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US319 US320 SPACE RESEARCH (space-to-Earth) 5.208		Satellite Communications (25)
137.025-137.175 SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208			137.025-137.175 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) US319 US320 5.208		
137.175-137.825 SPACE OPERATION (space-to-Earth) 5.203C 5.209A METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208			137.175-137.825 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US319 US320 SPACE RESEARCH (space-to-Earth) 5.208		

137.825-138 SPACE OPERATION (space-to-Earth) 5.203C METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208			137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) US319 US320 5.208		
138-143.6 AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	138-143.6 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth) 5.207 5.213	138-143.6 FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	138-144 FIXED MOBILE	138-144	
143.6-143.65 AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	143.6-143.65 FIXED MOBILE RADIOLOCATION SPACE RESEARCH (space-to-Earth) 5.207 5.213	143.6-143.65 FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.207 5.213			
143.65-144 AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	143.65-144 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth) 5.207 5.213	143.65-144 FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	G30 144-148	144-146 AMATEUR AMATEUR-SATELLITE	Amateur Radio (97)
144-146 AMATEUR AMATEUR-SATELLITE 5.216					
146-148 FIXED MOBILE except aeronautical mobile (R)	146-148 AMATEUR 5.217	146-148 AMATEUR FIXED MOBILE 5.217		146-148 AMATEUR	
148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.209 5.218 5.218A 5.219 5.221	148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.218A 5.219 5.221		148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) US319 US320 US323 US325 5.218 5.219 G30	148-149.9 MOBILE-SATELLITE (Earth-to-space) US320 US323 US325 5.218 5.219 US319	Satellite Communications (25)
149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.220			149.9-150.05 MOBILE-SATELLITE (Earth-to-space) US319 US320 RADIONAVIGATION-SATELLITE		
150.05-153 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	150.05-154 FIXED MOBILE 5.225		150.05-150.8 FIXED MOBILE US73 G30	150.05-150.8 US73	

Table of Frequency Allocations — 150.8–162.0375 MHz (VHF) — Page 23

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
150.05–153 MHz: see previous page	150.05-154 MHz: see previous page		150.8-152.855	150.8-152.855 FIXED LAND MOBILE NG4 NG51 NG112 US73 NG124	Public Mobile (22) Private Land Mobile (90) Personal Radio (95)
			US73 152.855-156.2475	152.855-154 LAND MOBILE NG4 NG124 154-156.2475	Remote Pickup (74D) Private Land Mobile (90)
153-154 FIXED MOBILE except aeronautical mobile (R) Meteorological aids					
154-156.4875 FIXED MOBILE except aeronautical mobile (R)	154-156.4875 FIXED MOBILE			FIXED LAND MOBILE NG112	Maritime (80) Private Land Mobile (90)
5.225A 5.226	5.226	5.225A 5.226	156.2475-156.5125	5.226 NG22 NG124 NG148 156.2475-156.5125	Personal Radio (95)
156.4875-156.5625 MARITIME MOBILE (distress and calling via DSC)				MARITIME MOBILE NG22	Maritime (80) Aviation (87)
			5.226 US52 US227 US266	5.226 US52 US227 US266 NG124	
			156.5125-156.5375 MARITIME MOBILE (distress, urgency, safety and calling via DSC) 5.111 5.226 US266		
			156.5375-156.7625	156.5375-156.7625 MARITIME MOBILE	
5.111 5.226 5.227 156.5625-156.7625 FIXED MOBILE except aeronautical mobile (R) 5.226	156.5625-156.7625 FIXED MOBILE 5.226		5.226 US52 US227 US266	5.226 US52 US227 US266	
156.7625-156.7875 MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228 156.7875-156.8125	156.7625-156.7875 MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space) 5.111 5.226 5.228	156.7625-156.7875 MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	156.7625-156.7875 MOBILE-SATELLITE (Earth-to-space) (AIS 3) 5.226 US52 US266 156.7875-156.8125		Satellite Communications (25) Maritime (80)
MARITIME MOBILE (distress and calling) 5.111 5.226			MARITIME MOBILE (distress, urgency, safety and calling) 5.111 5.226 US266		Maritime (80) Aviation (87)
156.8125-156.8375 MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	156.8125-156.8375 MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space) 5.111 5.226 5.228	156.8125-156.8375 MARITIME MOBILE Mobile-satellite (Earth-to-space) 5.111 5.226 5.228	156.8125-156.8375 MOBILE-SATELLITE (Earth-to-space) (AIS 4) 5.226 US52 US266		Satellite Communications (25) Maritime (80)
156.8375-157.1875 FIXED MOBILE except aeronautical mobile	156.8375-157.1875 FIXED MOBILE		156.8375-157.0375 5.226 US52 US266 157.0375-157.1875 MARITIME MOBILE US214	156.8375-157.0375 MARITIME MOBILE 5.226 US52 US266 157.0375-157.1875	Maritime (80) Aviation (87) Maritime (80)
5.226	5.226		5.226 US266 G109	5.226 US214 US266	
157.1875-157.3375 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	157.1875-157.3375 FIXED MOBILE Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226		157.1875-161.575	157.1875-157.45 MOBILE except aeronautical mobile US266	Maritime (80) Aviation (87) Private Land Mobile (90)

157.3375-161.7875 FIXED MOBILE except aeronautical mobile	157.3375-161.7875 FIXED MOBILE			5.226 NG111 157.45-161.575 FIXED LAND MOBILE NG28 NG111 NG112 5.226 NG6 NG70 NG124 NG148 NG155	Public Mobile (22) Remote Pickup (74D) Maritime (80) Private Land Mobile (90)
			161.575-161.625 5.226 US52	161.575-161.625 MARITIME MOBILE 5.226 US52 NG6 NG17	Public Mobile (22) Maritime (80)
			161.625-161.9625	161.625-161.775 LAND MOBILE NG6 5.226 161.775-161.9625 MOBILE except aeronautical mobile US266 NG6	Public Mobile (22) Remote Pickup (74D) Low Power Auxiliary (74H) Maritime (80) Private Land Mobile (90)
5.226 161.7875-161.9375 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226	5.226 161.7875-161.9375 FIXED MOBILE Maritime mobile-satellite 5.208A 5.208B 5.228AB 5.228AC 5.226			US266 5.226	
161.9375-161.9625 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	161.9375-161.9625 FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226			161.9625-161.9875 AERONAUTICAL MOBILE (OR) (AIS 1) MARITIME MOBILE (AIS 1) MOBILE-SATELLITE (Earth-to-space) (AIS 1) 5.228C US52	Satellite Communications (25) Maritime (80)
161.9625-161.9875 FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	161.9625-161.9875 AERONAUTICAL MOBILE (OR) MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space) 5.228C 5.228D	161.9625-161.9875 MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226		161.9875-162.0125 MOBILE except aeronautical mobile	Maritime (80)
161.9875-162.0125 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 5.229	161.9875-162.0125 FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226			162.0125-162.0375 AERONAUTICAL MOBILE (OR) (AIS 2) MARITIME MOBILE (AIS 2) MOBILE-SATELLITE (Earth-to-space) (AIS 2) 5.228C US52	Satellite Communications (25) Maritime (80)
162.0125-162.0375 FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B 5.229	162.0125-162.0375 AERONAUTICAL MOBILE (OR) MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space) 5.228C 5.228D	162.0125-162.0375 MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226			

Table of Frequency Allocations — 162.0375-400.05 MHz (VHF/UHF) — Page 25

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
162.0375-174 FIXED MOBILE except aeronautical mobile	162.0375-174 FIXED MOBILE		162.0375-173.2 FIXED MOBILE US8 US11 US13 US55 US73 US300 US312 G5	162.0375-173.2 US8 US11 US13 US55 US73 US300 US312	Remote Pickup (74D) Private Land Mobile (90)
			173.2-173.4	173.2-173.4 FIXED Land mobile	Private Land Mobile (90)
			173.4-174 FIXED MOBILE G5	173.4-174	
5.226 5.229	5.226 5.230 5.231				
174-223 BROADCASTING	174-216 BROADCASTING Fixed Mobile	174-223 FIXED MOBILE BROADCASTING	174-216	174-216 BROADCASTING NG5 NG14 NG115 NG149	Broadcast Radio (TV)(73) LPTV, TV Translator/ Booster (74G) Low Power Auxiliary (74H)
	216-220 FIXED MARITIME MOBILE Radiolocation 5.241		216-217 Fixed Land mobile US210 US241 G2	216-219 FIXED MOBILE except aeronautical mobile US210 US241 NG173	Maritime (80) Private Land Mobile (90) Personal Radio (95)
			217-220 Fixed Mobile	219-220 FIXED MOBILE except aeronautical mobile Amateur NG152	Maritime (80) Private Land Mobile (90) Amateur Radio (97)
	5.242		US210 US241	US210 US241 NG173	
	220-225 AMATEUR FIXED MOBILE Radiolocation 5.241		220-222 FIXED LAND MOBILE US241 US242		Private Land Mobile (90)
5.235 5.237 5.243		5.233 5.238 5.240 5.245	222-225	222-225	
223-230 BROADCASTING Fixed Mobile		223-230 FIXED MOBILE BROADCASTING AERONAUTICAL RADIONAVIGATION Radiolocation		AMATEUR	Amateur Radio (97)
5.243 5.246 5.247	225-235 FIXED MOBILE		225-235 FIXED MOBILE	225-235	
230-235 FIXED MOBILE		230-235 FIXED MOBILE AERONAUTICAL RADIONAVIGATION			
5.247 5.251 5.252		5.250	G27		

235-267 FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A	235-267 FIXED MOBILE 5.111 5.256 G27 G100	235-267 5.111 5.256		
267-272 FIXED MOBILE Space operation (space-to-Earth) 5.254 5.257	267-322 FIXED MOBILE	267-322		
272-273 SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254				
273-312 FIXED MOBILE 5.254				
312-315 FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255				
315-322 FIXED MOBILE 5.254	G27 G100			
322-328.6 FIXED MOBILE RADIO ASTRONOMY 5.149	322-328.6 FIXED MOBILE US342 G27	322-328.6 US342		
328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258 5.259	328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258		Aviation (87)	
335.4-387 FIXED MOBILE 5.254	335.4-399.9 FIXED MOBILE	335.4-399.9		
387-390 FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255				
390-399.9 FIXED MOBILE 5.254	G27 G100			
399.9-400.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 5.260A 5.260B	399.9-400.05 MOBILE-SATELLITE (Earth-to-space) US319 US320 RADIONAVIGATION-SATELLITE		Satellite Communications (25)	

Table of Frequency Allocations — 400.05-456 MHz (UHF) — Page 27

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)			400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz)		
5.261 5.262			5.261		
400.15-401 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264			400.15-401 METEOROLOGICAL AIDS (radiosonde) US70 METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.263 SPACE RESEARCH (space-to-Earth) Space operation (space-to-Earth) 5.264	400.15-401 METEOROLOGICAL AIDS (radiosonde) US70 MOBILE-SATELLITE (space-to-Earth) US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.264	Satellite Communications (25)
401-402 METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B			401-402 METEOROLOGICAL AIDS (radiosonde) US70 SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) US64 US384	401-402 METEOROLOGICAL AIDS (radiosonde) US70 SPACE OPERATION (space-to-Earth) Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US64 US384	MedRadio (95I)
402-403 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile 5.264A 5.264B			402-403 METEOROLOGICAL AIDS (radiosonde) US70 EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) US64 US384	402-403 METEOROLOGICAL AIDS (radiosonde) US70 Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US64 US384	
403-406 METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265			403-406 METEOROLOGICAL AIDS (radiosonde) US70 US64 G6	403-406 METEOROLOGICAL AIDS (radiosonde) US70 US64	
406-406.1 MOBILE-SATELLITE (Earth-to-space) 5.265 5.266 5.267			406-406.1 MOBILE-SATELLITE (Earth-to-space) 5.266 5.267		Maritime (EPIRBs) (80V) Aviation (ELTs) (87F) Personal Radio (95)
406.1-410 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265			406.1-410 FIXED MOBILE RADIO ASTRONOMY US74 US13 US55 US117 G5 G6	406.1-410 RADIO ASTRONOMY US74 US13 US55 US117	Private Land Mobile (90)

410-420 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268		410-420 FIXED MOBILE SPACE RESEARCH (space-to-space) 5.268 US13 US55 US64 G5	410-420 US13 US55 US64	Private Land Mobile (90) MedRadio (95I)
420-430 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271		420-450 RADIOLOCATION G2 G129	420-450 Amateur US270	Private Land Mobile (90) MedRadio (95I) Amateur Radio (97)
430-432 AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277	430-432 RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279			
432-438 AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.271 5.276 5.277 5.280 5.281 5.282	432-438 RADIOLOCATION Amateur Earth exploration-satellite (active) 5.279A 5.271 5.276 5.277 5.278 5.279 5.281 5.282			
438-440 AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277 5.283	438-440 RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279			
440-450 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286		450-454 5.286 US64 US87 5.286 US64 US87 US230 US269 US270 US397 G8	450-454 LAND MOBILE 5.286 US64 US87 NG112 NG124 5.282 5.286 US64 US87 US230 US269 US397	Remote Pickup (74D) Low Power Auxiliary (74H) Private Land Mobile (90) MedRadio (95I)
450-455 FIXED MOBILE 5.286AA		454-456	454-455 FIXED LAND MOBILE US64 NG32 NG112 NG148 455-456 LAND MOBILE	Public Mobile (22) Maritime (80) MedRadio (95I)
5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E 455-456 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	455-456 FIXED MOBILE 5.286AA MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209	455-456 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E US64		Remote Pickup (74D) Low Power Auxiliary (74H) MedRadio (95I)

5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312 694-790 MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING	614-698 BROADCASTING Fixed Mobile 5.293 5.308 5.308A 5.309	614-890	614-698 FIXED MOBILE NG5 NG14 NG33 NG115 NG149	RF Devices (15) Wireless Communications (27) LPTV, TV Translator/Booster (74G) Low Power Auxiliary (74H)
	698-806 MOBILE 5.317A BROADCASTING Fixed		698-758 FIXED MOBILE BROADCASTING NG159	Wireless Communications (27) LPTV and TV Translator (74G)
			758-775 FIXED MOBILE NG34 NG159	Public Safety Land Mobile (90R)
5.300 5.312 790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING			775-788 FIXED MOBILE BROADCASTING NG159	Wireless Communications (27) LPTV and TV Translator (74G)
			788-805 FIXED MOBILE NG34 NG159	Public Safety Land Mobile (90R)
	5.293 5.309		805-806 FIXED MOBILE BROADCASTING NG159	Wireless Communications (27) LPTV and TV Translator (74G)
	806-890 FIXED MOBILE 5.317A BROADCASTING		806-809 LAND MOBILE	Public Safety Land Mobile (90S)
			809-849 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
			849-851 AERONAUTICAL MOBILE	Public Mobile (22)
5.312 5.319 862-890 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322			851-854 LAND MOBILE	Public Safety Land Mobile (90S)
			854-894 FIXED LAND MOBILE	Public Mobile (22) Private Land Mobile (90)
5.319 5.323	5.317 5.318	5.149 5.305 5.306 5.307 5.320	US116 US268	Page 30

Table of Frequency Allocations — 1400-1626.5 MHz (UHF) — Page 33

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341			1400-1427 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) 5.341 US246		
1427-1429 SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A 5.341B 5.341C 5.338A 5.341			1427-1429.5 LAND MOBILE (medical telemetry and medical telecommand) US350	1427-1429.5 LAND MOBILE (telemetry and telecommand) Fixed (telemetry)	Private Land Mobile (90) Personal Radio (95)
1429-1452 FIXED MOBILE except aeronautical mobile 5.341A	1429-1452 FIXED MOBILE 5.341B 5.341C 5.343		5.341 US79 1429.5-1432 5.341 US79 US350	5.341 US79 US350 NG338A 1429.5-1432 FIXED (telemetry and telecommand) LAND MOBILE (telemetry and telecommand) 5.341 US79 US350 NG338A	
5.338A 5.341 5.342	5.338A 5.341		1432-1435 5.341 US83	1432-1435 FIXED MOBILE except aeronautical mobile 5.341 US83 NG338A	Wireless Communications (27)
5.338A 5.341 5.342 1452-1492 FIXED MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.342 5.345	1452-1492 FIXED MOBILE 5.341B 5.343 5.346A BROADCASTING BROADCASTING-SATELLITE 5.208B 5.341 5.344 5.345		1435-1525 MOBILE (aeronautical telemetry) US338A		Aviation (87)
1492-1518 FIXED MOBILE except aeronautical mobile 5.341A 5.341 5.342	1492-1518 FIXED MOBILE 5.341B 5.343 5.341 5.344	1492-1518 FIXED MOBILE 5.341C 5.341			
1518-1525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.342	1518-1525 FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.344	1518-1525 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341	5.341 US84 US343		
1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349 5.341 5.342 5.350 5.351 5.352A 5.354	1525-1530 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.343 5.341 5.351 5.354	1525-1530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354	1525-1535 MOBILE-SATELLITE (space-to-Earth) US315 US380		Satellite Communications (25) Maritime (80)

1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile	1530-1535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343		5.341 5.351	
5.341 5.342 5.351 5.354	5.341 5.351 5.354		1535-1559 MOBILE-SATELLITE (space-to-Earth) US308 US309 US315 US380 5.341 5.351 5.356	Satellite Communications (25) Maritime (80) Aviation (87)
1535-1559 MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A			1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-Space) 5.341 US85 US208 US260	Aviation (87)
1559-1610 AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A				
5.341 1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) US319 US380 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.372 US208	Satellite Communications (25) Aviation (87)
1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) US319 US380 RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.372 US208 US342	Satellite Communications (25) Aviation (87)
1613.8-1621.35 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	1613.8-1621.35 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	1613.8-1621.35 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) US319 US380 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth)	
1621.35-1626.5 MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	1621.35-1626.5 MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) except maritime mobile-satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.368 5.372	1621.35-1626.5 MARITIME MOBILE-SATELLITE (space-to-Earth) 5.373 5.373A MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) except maritime mobile-satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372		

		2310-2320 Fixed Mobile US100 Radiolocation G2 US97 US327	2310-2320 FIXED MOBILE BROADCASTING-SATELLITE RADIOLOCATION US97 US100 US327	Wireless Communications (27)
		2320-2345 Fixed Radiolocation G2 US327	2320-2345 BROADCASTING-SATELLITE US327	Satellite Communications (25)
		2345-2360 Fixed Mobile US100 Radiolocation G2 US327	2345-2360 FIXED MOBILE US100 BROADCASTING-SATELLITE RADIOLOCATION US327	Wireless Communications (27)
		2360-2390 MOBILE US276 RADIOLOCATION G2 G120 Fixed US101	2360-2390 MOBILE US276 US101	Aviation (87) Personal Radio (95)
		2390-2395 MOBILE US276 US101	2390-2395 AMATEUR MOBILE US276 US101	Aviation (87) Personal Radio (95) Amateur Radio (97)
		2395-2400 US101 G122	2395-2400 AMATEUR US101	Personal Radio (95) Amateur Radio (97)
		2400-2417 5.150 G122	2400-2417 AMATEUR 5.150 5.282	RF Devices (15) ISM Equipment (18)
		2417-2450 Radiolocation G2 5.150	2417-2450 Amateur 5.150 5.282	Amateur Radio (97)
5.150 5.282 5.395	5.150 5.282 5.393 5.394	2450-2483.5 5.150	2450-2483.5 FIXED MOBILE Radiolocation 5.150 US41	RF Devices (15) ISM Equipment (18) TV Auxiliary Broadcasting (74F) Private Land Mobile (90) Fixed Microwave (101)
2450-2483.5 FIXED MOBILE Radiolocation 5.150	2450-2483.5 FIXED MOBILE RADIOLOCATION 5.150			

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2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 Radiolocation 5.398A	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 US380 US391 RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398	2483.5-2495 MOBILE-SATELLITE (space-to-Earth) US380 RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 5.150 5.402 US41 US319 NG147 2495-2500 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) US380 RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398 5.150 5.402 US41 US319 US391 NG147	ISM Equipment (18) Satellite Communications (25) ISM Equipment (18) Satellite Communications (25) Wireless Communications (27)
5.150 5.399 5.401 5.402	5.150 5.402	5.150 5.401 5.402	5.150 5.402 US41		
2500-2520 FIXED 5.410 MOBILE except aeronautical mobile 5.384A	2500-2520 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A	2500-2520 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.407 5.414 5.414A	2500-2655	2500-2655 FIXED US205 MOBILE except aeronautical mobile	Wireless Communications (27)
5.412	5.404	5.404 5.415A			
2520-2655 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416	2520-2655 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416	2520-2535 FIXED 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.403 5.414A 5.415A 2535-2655 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416			
5.339 5.412 5.418B 5.418C	5.339 5.418B 5.418C	5.339 5.418 5.418A 5.418B 5.418C	5.339 US205	5.339	
2655-2670 FIXED 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.208B 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2670 FIXED 5.410 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2670 FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)	2655-2690 Earth exploration-satellite (passive) Radio astronomy US385 Space research (passive)	2655-2690 FIXED US205 MOBILE except aeronautical mobile Earth exploration-satellite (passive) Radio astronomy Space research (passive)	
5.149 5.412	5.149 5.208B	5.149 5.208B 5.420			

2670-2690 FIXED 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.412	2670-2690 FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 (space-to-Earth) 5.208B 5.415 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	2670-2690 FIXED 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A 5.419 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	US205	US385	
2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422			2690-2700 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246		
2700-2900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424			2700-2900 METEOROLOGICAL AIDS AERONAUTICAL RADIONAVIGATION 5.337 US18 Radiolocation G2 5.423 G15	2700-2900 5.423 US18	Aviation (87)
2900-3100 RADIOLOCATION 5.424A RADIONAVIGATION 5.426 5.425 5.427			2900-3100 RADIOLOCATION 5.424A G56 MARITIME RADIONAVIGATION 5.427 US44 US316	2900-3100 MARITIME RADIONAVIGATION Radiolocation US44 5.427 US316	Maritime (80) Private Land Mobile (90)
3100-3300 RADIOLOCATION Earth exploration-satellite (active) Space research (active) 5.149 5.428			3100-3300 RADIOLOCATION G59 Earth exploration-satellite (active) Space research (active) US342	3100-3300 Earth exploration-satellite (active) Space research (active) Radiolocation US342	Private Land Mobile (90)
3300-3400 RADIOLOCATION 5.149 5.429 5.429A 5.429B 5.430	3300-3400 RADIOLOCATION Amateur Fixed Mobile 5.149 5.429C 5.429D	3300-3400 RADIOLOCATION Amateur 5.149 5.429 5.429E 5.429F	3300-3500 RADIOLOCATION US431B G2 US103 US105 US431B US433	3300-3450 US103 US342	
3400-3600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.430A Radiolocation 5.431	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.431A 5.431B Amateur Radiolocation 5.433 5.282	3400-3500 FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432 5.432B Radiolocation 5.433 5.282 5.432A		3450-3600 FIXED MOBILE except aeronautical mobile	Wireless Communications (27) Citizens Broadband (96)

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			3550-3650 RADIOLOCATION G59 AERONAUTICAL RADIONAVIGATION (ground-based) G110 US105 US107 US245 US433	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) US107 US245 NG169 MOBILE except aeronautical mobile	Satellite Communications (25) Citizens Broadband (96)
3600-4200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.434 Radiolocation 5.433	3600-3700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation	3650-3700 US109 US349	US105 US109 US349 US433	
		5.435	3700-4200	3700-4000 FIXED MOBILE except aeronautical mobile NG182 NG457A	Wireless Communications (27)
	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile			4000-4200 FIXED FIXED-SATELLITE (space-to-Earth) NG457A NG182	Satellite Communications (25)
4200-4400 AERONAUTICAL MOBILE (R) 5.436 AERONAUTICAL RADIONAVIGATION 5.438 5.437 5.439 5.440			4200-4400 AERONAUTICAL RADIONAVIGATION 5.440 US261		Aviation (87)
4400-4500 FIXED MOBILE 5.440A			4400-4940 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A				4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.440A 5.441A 5.441B 5.442 Radio astronomy			US113 US245 US342 4940-4990	4800-4940 US113 US342 4940-4990 FIXED MOBILE except aeronautical mobile	Public Safety Land Mobile (90Y)
5.149 5.339 5.443			5.339 US342 US385 G122	5.339 US342 US385	
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149			4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		

5000-5010 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)		5000-5010 AERONAUTICALMOBILE (R) US115 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (Earth-to-space) US211	Aviation (87)
5010-5030 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B		5010-5030 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B US115 US211	
5030-5091 AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444		5030-5091 AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION US260 US211 US444	
5091-5150 FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444		5091-5150 AERONAUTICAL MOBILE US111 US444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 US211 US344 US444 US444A	Satellite Communications (25) Aviation (87)
5150-5250 FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.446D 5.447 5.447B 5.447C		5150-5250 AERONAUTICAL RADIONAVIGATION US260 US211 US307 US344	5150-5250 FIXED-SATELLITE (Earth-to-space) 5.447A US344 AERONAUTICAL RADIONAVIGATION US260 5.447C US211 US307	RF Devices (15) Satellite Communications (25) Aviation (87)
5250-5255 EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.447E 5.448 5.448A		5250-5255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.447D 5.448A	5250-5255 Earth exploration-satellite (active) Radiolocation Space research	RF Devices (15) Private Land Mobile (90)
5255-5350 EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) 5.447E 5.448 5.448A		5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.448A	5255-5350 Earth exploration-satellite (active) Radiolocation Space research (active) 5.448A	
5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C		5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION G56 AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) US390 G130	5350-5460 AERONAUTICAL RADIONAVIGATION 5.449 Earth exploration-satellite (active) 5.448B Radiolocation Space research (active) US390	Aviation (87) Private Land Mobile (90)

13.4-13.65 EARTH EXPLORATION-SATELLITE (active) 5.499A 5.499B RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal-satellite (Earth-to-space) 5.499E 5.500 5.501 5.501B	13.4-13.65 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.499C 5.499D Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	13.4-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH 5.499C 5.499D 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.501B	13.4-13.75 Earth exploration-satellite (active) Radiolocation Space research Standard frequency and time signal-satellite (Earth-to-space)	Private Land Mobile (90)
13.65-13.75 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B		13.75-14 RADIOLOCATION G59 Standard frequency and time signal-satellite (Earth-to-space) Space research US337 US356 US357	13.75-14 FIXED-SATELLITE (Earth-to-space) US337 Standard frequency and time signal-satellite (Earth-to-space) Space research Radiolocation US356 US357	Satellite Communications (25) Private Land Mobile (90)
13.75-14 FIXED-SATELLITE (Earth-to-space) 5.484A RADIOLOCATION Earth exploration-satellite Standard frequency and time signal-satellite (Earth-to-space) Space research 5.499 5.500 5.501 5.502 5.503		14-14.2 Space research US133	14-14.2 FIXED-SATELLITE (Earth-to-space) NG527A Mobile-satellite (Earth-to-space) Space research US133	Satellite Communications (25)
14-14.25 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A 5.505		14.2-14.4	14.2-14.47 FIXED-SATELLITE (Earth-to-space) NG527A Mobile-satellite (Earth-to-space)	
14.25-14.3 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508				
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.484B 5.506 5.506B Mobile-satellite (Earth-to-space) 5.506A Radionavigation-satellite 5.504A			
14.4-14.47 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.484B 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A		14.4-14.47 Fixed Mobile		

15.63-15.7 RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION			15.63-15.7 RADIOLOCATION 5.511E 5.511F US511E AERONAUTICAL RADIONAVIGATION US260 US211	15.63-15.7 AERONAUTICAL RADIONAVIGATION US260 US211 US511E	Aviation (87)
15.7-16.6 RADIOLOCATION 5.512 5.513			15.7-16.6 RADIOLOCATION G59	15.7-17.2 Radiolocation	Private Land Mobile (90)
16.6-17.1 RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513			16.6-17.1 RADIOLOCATION G59 Space research (deep space) (Earth-to-space)		
17.1-17.2 RADIOLOCATION 5.512 5.513			17.1-17.2 RADIOLOCATION G59		
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17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 BROADCASTING-SATELLITE Radiolocation 5.514 5.515		17.3-17.7 Radiolocation US259 G59 US402 G117	17.3-17.7 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) NG527A BROADCASTING-SATELLITE US259 US402 NG58	Satellite Communications (25)
17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE	17.7-17.8 FIXED FIXED-SATELLITE (space-to-Earth) 5.517 5.517A (Earth-to-space) 5.516 BROADCASTING-SATELLITE Mobile 5.515	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE	17.7-17.8 US334 G117	17.7-17.8 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) NG527A US334 NG58	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
	17.8-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.517A (Earth-to-space) 5.516 MOBILE 5.519		17.8-18.6 FIXED-SATELLITE (space-to- Earth) US334 G117	17.8-18.3 FIXED Fixed-satellite (space-to-Earth) NG527A US334 US519	
18.1-18.4 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A (Earth-to-space) 5.520 MOBILE 5.519 5.521				18.3-18.6 FIXED-SATELLITE (space-to-Earth) NG527A	Satellite Communications (25)
18.4-18.6 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B 5.517A MOBILE			US139 US519	US139 US334	

Table of Frequency Allocations — 18.6-24.45 GHz (SHF) — Page 53

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) 5.522A	18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.517A 5.522B MOBILE except aeronautical mobile Space research (passive) 5.522A	18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) US255 US334 G117 SPACE RESEARCH (passive) US139 US254	18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED-SATELLITE (space-to-Earth) US255 NG164 NG527A SPACE RESEARCH (passive) US139 US254 US334	Satellite Communications (25)
18.8-19.3 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.517A 5.523A MOBILE			18.8-20.2 FIXED-SATELLITE (space-to-Earth) US334 G117	18.8-19.3 FIXED-SATELLITE (space-to-Earth) NG165 NG527A US139 US334	
19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.517A 5.523B 5.523C 5.523D 5.523E MOBILE				19.3-19.7 FIXED FIXED-SATELLITE (space-to-Earth) NG166 US334 NG527A	Satellite Communications (25) TV Broadcast Auxiliary (74F) Cable TV Relay (78) Fixed Microwave (101)
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A Mobile-satellite (space-to-Earth) 5.524	19.7-20.2 FIXED-SATELLITE (space-to-Earth) NG527A MOBILE-SATELLITE (space-to-Earth)		Satellite Communications (25)
20.1-20.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B 5.516B 5.527A MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528			US139	5.525 5.526 5.527 5.528 5.529 US334	
20.2-21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) 5.524			20.2-21.2 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Standard frequency and time signal-satellite (space-to-Earth) G117	20.2-21.2 Standard frequency and time signal-satellite (space-to-Earth)	
21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive)			21.2-21.4 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) US532		Fixed Microwave (101)
21.4-22 FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B	21.4-22 FIXED 5.530E MOBILE 5.530A	21.4-22 FIXED MOBILE BROADCASTING-SATELLITE 5.208B 5.530A 5.530B 5.531	21.4-22 FIXED MOBILE		

22-22.21 FIXED MOBILE except aeronautical mobile 5.149			22-22.21 FIXED MOBILE except aeronautical mobile US342	
22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) 5.149 5.532			22.21-22.5 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) US342 US532	
22.5-22.55 FIXED MOBILE			22.5-22.55 FIXED MOBILE US211	
22.55-23.15 FIXED INTER-SATELLITE 5.338A MOBILE SPACE RESEARCH (Earth-to-space) 5.532A 5.149			22.55-23.15 FIXED INTER-SATELLITE US145 US278 MOBILE SPACE RESEARCH (Earth-to-space) 5.532A US342	Satellite Communications (25) Fixed Microwave (101)
23.15-23.55 FIXED INTER-SATELLITE 5.338A MOBILE			23.15-23.55 FIXED INTER-SATELLITE US145 US278 MOBILE	
23.55-23.6 FIXED MOBILE			23.55-23.6 FIXED MOBILE	Fixed Microwave (101)
23.6-24 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			23.6-24 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246	
24-24.05 AMATEUR AMATEUR-SATELLITE 5.150			24-24.05 5.150 US211	24-24.05 AMATEUR AMATEUR-SATELLITE 5.150 US211
24.05-24.25 RADIOLOCATION Amateur Earth exploration-satellite (active) 5.150			24.05-24.25 RADIOLOCATION G59 Earth exploration-satellite (active) 5.150	24.05-24.25 Amateur Earth exploration-satellite (active) Radiolocation 5.150
24.25-24.45 FIXED MOBILE except aeronautical mobile 5.338A 5.532AB	24.25-24.45 FIXED 5.532AA MOBILE except aeronautical mobile 5.338A 5.532AB RADIONAVIGATION	24.25-24.45 FIXED MOBILE 5.338A 5.532AB RADIONAVIGATION	24.25-24.45	24.25-24.45 FIXED MOBILE

24-24.05 AMATEUR AMATEUR-SATELLITE 5.150 US211	ISM Equipment (18) Amateur Radio (97)
24.05-24.25 Amateur Earth exploration-satellite (active) Radiolocation 5.150	RF Devices (15) ISM Equipment (18) Private Land Mobile (90) Amateur Radio (97)
24.25-24.45 FIXED MOBILE	RF Devices (15) Upper Microwave Flexible Use (30)

Table of Frequency Allocations — 24.45-31.8 GHz (SHF/EHF) — Page 55

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
24.45-24.65 FIXED INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	24.45-24.65 FIXED 5.532AA INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB RADIONAVIGATION 5.533	24.45-24.65 FIXED INTER-SATELLITE MOBILE 5.338A 5.532AB RADIONAVIGATION 5.533	24.45-24.65 INTER-SATELLITE RADIONAVIGATION 5.533		RF Devices (15) Satellite Communications (25)
24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB	24.65-24.75 FIXED 5.532AA INTER-SATELLITE MOBILE except aeronautical mobile 5.338A 5.532AB RADIOLOCATION-SATELLITE (Earth-to-space)	24.65-24.75 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B INTER-SATELLITE MOBILE 5.338A 5.532AB	24.65-24.75 INTER-SATELLITE RADIOLOCATION-SATELLITE (Earth-to-space)		
24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.532B MOBILE except aeronautical mobile 5.338A 5.532AB	24.75-25.25 FIXED 5.532AA FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE except aeronautical mobile 5.338A 5.532AB	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) 5.535 MOBILE 5.338A 5.532AB	24.75-25.25	24.75-25.25 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE NG65	RF Devices (15) Satellite Communications (25) Upper Microwave Flexible Use (30)
25.25-25.5 FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB Standard frequency and time signal-satellite (Earth-to-space)			25.25-25.5 FIXED INTER-SATELLITE 5.536 MOBILE Standard frequency and time signal-satellite (Earth-to-space)	25.25-25.5 Inter-satellite 5.536 Standard frequency and time signal-satellite (Earth-to-space)	RF Devices (15)
25.5-27 EARTH EXPLORATION-SATELLITE (space-to-Earth) 5.536B FIXED 5.534A INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB SPACE RESEARCH (space-to-Earth) 5.536C Standard frequency and time signal-satellite (Earth-to-space)			25.5-27 EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED INTER-SATELLITE 5.536 MOBILE SPACE RESEARCH (space-to-Earth) Standard frequency and time signal-satellite (Earth-to-space)	25.5-27 SPACE RESEARCH (space-to-Earth) Inter-satellite 5.536 Standard frequency and time signal-satellite (Earth-to-space)	
5.536A			5.536A US258	5.536A US258	
27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE 5.338A 5.532AB	27-27.5 FIXED 5.534A FIXED-SATELLITE (Earth-to-space) INTER-SATELLITE 5.536 5.537 MOBILE 5.338A 5.532AB		27-27.5 FIXED INTER-SATELLITE 5.536 MOBILE	27-27.5 Inter-satellite 5.536	
27.5-28.5 FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.539 MOBILE		27.5-30	27.5-28.35 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	27.5-28.35 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	RF Devices (15) Satellite Communications (25) Upper Microwave Flexible Use (30) Fixed Microwave (101)
5.538 5.540			28.35-29.1 FIXED-SATELLITE (Earth-to-space) NG165 NG527A		RF Devices (15) Satellite Communications (25)

28.5-29.1 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.517A 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540			NG62 29.1-29.25 FIXED FIXED-SATELLITE (Earth-to-space) NG166 MOBILE 29.25-29.5 FIXED-SATELLITE (Earth-to-space) NG527A NG535A NG62	Satellite Communications (25) Fixed Microwave (101) Satellite Communications (25)
29.1-29.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.517A 5.523C 5.523E 5.535A 5.539 5.541A MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540				
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 MOBILE-SATELLITE (Earth-to-space) 5.541 Earth exploration-satellite (Earth-to-space) 5.541 5.525 5.526 5.527 5.529 5.540	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	29.5-30 FIXED-SATELLITE (Earth-to-space) NG527A MOBILE-SATELLITE (Earth-to-space)	
29.9-30 FIXED-SATELLITE (Earth-to-space) 5.484A 5.484B 5.516B 5.527A 5.539 MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542			5.525 5.526 5.527 5.529 5.543	
30-31 FIXED-SATELLITE (Earth-to-space) 5.338A MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542			30-31 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) G117	Standard frequency and time signal-satellite (space-to-Earth)
31-31.3 FIXED 5.338A 5.543B MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149			31-31.3 Standard frequency and time signal-satellite (space-to-Earth) US211 US342	31-31.3 FIXED NG60 MOBILE Standard frequency and time signal-satellite (space-to-Earth) US211 US342
31.3-31.5 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340			31.3-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)	Fixed Microwave (101)
31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.546	31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	31.5-31.8 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149	US246	

37-37.5 FIXED MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) 5.547			37-38 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) US151	37-37.5 FIXED MOBILE except aeronautical mobile US151	Upper Microwave Flexible Use (30)
37.5-38 FIXED FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE except aeronautical mobile 5.550B SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547				37.5-38 FIXED FIXED-SATELLITE (space-to-Earth) NG63 MOBILE except aeronautical mobile US151	Satellite Communications (25) Upper Microwave Flexible Use (30)
38-39.5 FIXED 5.550D FIXED-SATELLITE (space-to-Earth) 5.550C MOBILE 5.550B Earth exploration-satellite (space-to-Earth) 5.547			38-38.6 FIXED MOBILE 38.6-39.5	38-39.5 FIXED FIXED-SATELLITE (space-to-Earth) NG63 MOBILE NG175	
39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 5.550E			39.5-40 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US382 G117	39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) NG63 MOBILE NG175 US382	
40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C MOBILE 5.550B MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) 5.550E			40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) G117	40-40.5 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) US382	Satellite Communications (25)
40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical mobile Maritime mobile 5.547	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical mobile Maritime mobile Mobile-satellite (space-to-Earth) 5.547	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical mobile Maritime mobile 5.547	40.5-41 FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth) US211 G117	40.5-41 FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Fixed Mobile Mobile-satellite (space-to-Earth) US211	
41-42.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.550C LAND MOBILE 5.550B BROADCASTING BROADCASTING-SATELLITE Aeronautical mobile Maritime mobile 5.547 5.551F 5.551H 5.551I			41-42.5 US211	41-42 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE US211	

Table of Frequency Allocations — 42-56.9 GHz (EHF) — Page 59

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
41-42.5 GHz: see previous page			41-42.5 GHz: see previous page	42-42.5 FIXED MOBILE US211	
42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile 5.550B RADIO ASTRONOMY 5.149 5.547			42.5-43.5 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile RADIO ASTRONOMY US342	42.5-43.5 RADIO ASTRONOMY US342	
43.5-47 MOBILE 5.553 5.553A MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE			43.5-45.5 FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) G117 45.5-46.9 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION-SATELLITE 5.554	43.5-45.5	
5.554 47.47.2 AMATEUR AMATEUR-SATELLITE			46.9-47 MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION-SATELLITE 5.554 47.48.2	46.9-47 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIONAVIGATION-SATELLITE 5.554 47.47.2 AMATEUR AMATEUR-SATELLITE	Amateur Radio (97)
47.2-47.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B				47.2-48.2 FIXED FIXED-SATELLITE (Earth-to-space) US297 MOBILE	Satellite Communications (25) Upper Microwave Flexible Use (30)
5.552A					
47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A MOBILE 5.553B	47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B				
47.9-48.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.553B					
5.552A				NG65	

48.2-48.54 FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	48.2-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.516B 5.550C 5.552 MOBILE	48.2-50.2 FIXED FIXED-SATELLITE (Earth-to-space) US156 US297 MOBILE US264		Satellite Communications (25)
48.54-49.44 FIXED FIXED-SATELLITE (Earth-to-space) 5.550C 5.552 MOBILE 5.149 5.340 5.555				
49.44-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	5.149 5.340 5.555	5.555 US342		
50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340		50.2-50.4 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) US246		
50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.550C MOBILE Mobile-satellite (Earth-to-space)		50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) US156 MOBILE MOBILE-SATELLITE (Earth-to-space) G117	50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) US156 MOBILE MOBILE-SATELLITE (Earth-to-space) NG65	Satellite Communications (25)
51.4-52.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.555C MOBILE		51.4-52.6 FIXED US157 MOBILE		
5.338A 5.547 5.556 52.4-52.6 FIXED 5.338A MOBILE 5.547 5.556				
52.6-54.25 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340 5.556		52.6-54.25 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) US246		
54.25-55.78 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive) 5.556B		54.25-55.78 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.556A SPACE RESEARCH (passive)		Satellite Communications (25)
55.78-56.9 EARTH EXPLORATION-SATELLITE (passive) FIXED 5.557A INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) 5.547 5.557		55.78-56.9 EARTH EXPLORATION-SATELLITE (passive) FIXED US379 INTER-SATELLITE 5.556A MOBILE 5.558 SPACE RESEARCH (passive) US353 US532		

66-71 INTER-SATELLITE MOBILE 5.553 5.558 5.559AA MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	66-71 MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	66-71 INTER-SATELLITE MOBILE 5.553 5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	
71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) US389	71-74 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) US389		Fixed Microwave (101)
74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) US389	74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space research (space-to-Earth) US389	74-76 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) US389	RF Devices (15) Fixed Microwave (101)
76-77.5 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	76-81 RADIO ASTRONOMY RADIOLOCATION Space research (space-to-Earth) US342	76-77 RADIO ASTRONOMY RADIOLOCATION Amateur Space research (space-to-Earth) US342	RF Devices (15) Personal Radio (95) Amateur Radio (97)
77.5-78 AMATEUR AMATEUR-SATELLITE RADIOLOCATION 5.559B Radio astronomy Space research (space-to-Earth) 5.149	77-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth)		
78-79 RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) 5.149 5.560			
79-81 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) 5.149	5.560 US342	5.560 US342	

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155.5-158.5 FIXED MOBILE RADIO ASTRONOMY	155.5-158.5 FIXED MOBILE RADIO ASTRONOMY		
5.149	US342		
158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	158.5-164 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)		
	US211		
164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	164-167 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340	US246		
167-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558	167-174.5 FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE 5.558		
5.149 5.562D	US211 US342		
174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558	174.5-174.8 FIXED INTER-SATELLITE MOBILE 5.558		
174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	174.8-182 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)		
182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	182-185 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		
5.340	US246		
185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)	185-190 EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE 5.562H SPACE RESEARCH (passive)		
190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)	190-191.8 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive)		
5.340	US246		

238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE	238-240 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE		
240-241 FIXED MOBILE RADIOLOCATION	240-241 FIXED MOBILE RADIOLOCATION		
241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 5.149	241-248 RADIO ASTRONOMY RADIOLOCATION 5.138 US342	241-248 RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite 5.138 US342	ISM Equipment (18) Amateur Radio (97)
248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy 5.149	248-250 Radio astronomy US342	248-250 AMATEUR AMATEUR-SATELLITE Radio astronomy US342	Amateur Radio (97)
250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)	250-252 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive)		
5.340 5.563A	5.563A US246		
252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE	252-265 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE		
5.149 5.554	5.554 US211 US342		
265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY	265-275 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY		
5.149 5.563A	5.563A US342		
275-3000 (Not allocated)	275-3000 (Not allocated)		Amateur Radio (97)
5.564A 5.565	US565		

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(b) * * *

(67) 5.67 *Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 130-148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate.

* * * * *

(ii) 5.67B The use of the frequency band 135.7-137.8 kHz in Algeria, Egypt, Iraq, Lebanon, Syrian Arab Republic, Sudan, South Sudan and Tunisia is limited to the fixed and maritime mobile services. The amateur service shall not be used in the previously-mentioned countries in the frequency band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use.

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(70) 5.70 *Alternative allocation:* in Angola, Botswana, Burundi, the Central African Rep., Congo (Rep. of the), Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, the Dem. Rep. of the Congo, South Africa, Tanzania, Chad, Zambia and Zimbabwe, the frequency band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis.

* * * * *

(77) 5.77 *Different category of service:* in Australia, China, the French overseas communities of Region 3, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea, the Dem. People's Rep. of Korea and Sri Lanka, the allocation of the frequency band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. In Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Latvia, Uzbekistan and Kyrgyzstan, the allocation of the frequency band 435-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in all the aforementioned countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the frequency band 435-495 kHz do not cause interference to reception by coast stations of transmissions from ship stations on frequencies designated for ship stations on a worldwide basis.

* * * * *

(79) 5.79 In the maritime mobile service, the frequency bands 415-495 kHz and 505-526.5 kHz are limited to radiotelegraphy and may also be used for the NAVDAT system in accordance with the most recent version of Recommendation ITU-R M.2010, subject to agreement between interested and affected administrations. NAVDAT transmitting stations are limited to coast stations.

* * * * *

(82) * * *

(i) 5.82C The frequency band 495-505 kHz is used for the international NAVDAT system as described in the most recent version of Recommendation ITU-R M.2010. NAVDAT transmitting stations are limited to coast stations.

(ii) [Reserved]

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(87) 5.87 *Additional allocation:* in Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia and Niger, the frequency band 526.5-535 kHz is also allocated to the mobile service on a secondary basis.

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(107) 5.107 *Additional allocation:* in Saudi Arabia, Eritrea, Eswatini, Ethiopia, Iraq, Libya and Somalia, the frequency band 2160-2170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W.

* * * * *

(109) 5.109 The frequencies 2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 kHz, 12 577 kHz and 16 804.5 kHz are international distress frequencies for digital selective calling. The conditions for the use of these frequencies are prescribed in Article 31.

(110) 5.110 The frequencies 2174.5 kHz, 4177.5 kHz, 6268 kHz, 8376.5 kHz, 12 520 kHz and 16 695 kHz are international distress frequencies for narrow-band direct-printing telegraphy. The conditions for the use of these frequencies are prescribed in Article 31.

(111) 5.111 The carrier frequencies 2182 kHz, 3023 kHz, 5680 kHz, 8364 kHz and the frequencies 121.5 MHz, 156.525 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article 31. The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

(112) 5.112 *Alternative allocation:* in Sri Lanka, the frequency band 2194-2300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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(114) 5.114 *Alternative allocation*: in Iraq, the frequency band 2502-2625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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(117) 5.117 *Alternative allocation*: in Côte d'Ivoire, Egypt, Liberia, Sri Lanka and Togo, the frequency band 3155-3200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

(118) 5.118 *Additional allocation:* in the United States, Mexico and Peru, the frequency band 3230-3400 kHz is also allocated to the radiolocation service on a secondary basis.

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(123) 5.123 *Additional allocation:* in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency band 3900-3950 kHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21.

* * * * *

(128) 5.128 Frequencies in the frequency bands 4063-4123 kHz and 4130-4438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Pakistan, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the frequency bands 4063-4123 kHz, 4130-4133 kHz and 4408-4438 kHz, stations in the fixed service, with a

mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service.

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(132) 5.132 The frequencies 4210 kHz, 6314 kHz, 8416.5 kHz, 12579 kHz, 16 806.5 kHz, 19 680.5 kHz, 22 376 kHz and 26 100.5 kHz are the international frequencies for the transmission of maritime safety information (MSI) (see Appendix 17).

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(ii) 5.132B *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 4438-4488 kHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis.

(133) * * *

(i) 5.133A *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 5250-5275 kHz and 26 200-26 350 kHz are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

(ii) 5.133B Stations in the amateur service using the frequency band 5351.5-5366.5 kHz shall not exceed a maximum radiated power of 15 W (e.i.r.p.). However, in Region 2 in Mexico, stations in the amateur service using the frequency band 5351.5-5366.5 kHz shall not exceed a maximum radiated power of 20 W (e.i.r.p.). In the following Region 2 countries: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Dominica, El Salvador, Ecuador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, as well as the overseas countries and territories within the Kingdom of the Netherlands in Region 2, stations in the amateur service using the frequency band 5351.5-5366.5 kHz shall not exceed a maximum radiated power of 25 W (e.i.r.p.).

(134) 5.134 The use of the frequency bands 5900-5950 kHz, 7300-7350 kHz, 9400-9500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service is subject to the application of the procedure of Article 12. Administrations are encouraged to use these frequency bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution 517 (Rev.WRC-19).

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(141) * * *

(ii) 5.141B *Additional allocation:* in Algeria, Saudi Arabia, Australia, Bahrain, Botswana, Brunei Darussalam, China, Comoros, Korea (Rep. of), Diego Garcia, Djibouti, Egypt, United Arab Emirates, Eritrea, Guinea, Indonesia, Iran (Islamic Republic of), Japan, Jordan, Kuwait, Libya, Mali, Morocco, Mauritania, Niger, New Zealand, Oman, Papua New Guinea, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sudan, South Sudan, Tunisia, Viet Nam and Yemen, the frequency band 7100-7200 kHz is also allocated to the fixed and the mobile, except aeronautical mobile (R), services on a primary basis.

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(145) 5.145 The conditions for the use of the carrier frequencies 8291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles 31 and 52.

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(ii) 5.145B *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency bands 9305-9355 kHz and 16 100-16 200 kHz are allocated to the fixed service on a primary basis.

(146) 5.146 *Additional allocation:* frequencies in the bands 9400-9500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz may be used by stations in the fixed service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies in the fixed service, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

(147) 5.147 On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9775-9900 kHz, 11 650-11 700 kHz and 11 975-12 050 kHz may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station using a total radiated power not exceeding 24 dBW.

* * * * *

(149) 5.149 In making assignments to stations of other services to which the bands listed in table 1 to paragraph (b)(149) of this section are allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne

stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 4.5 and 4.6 and Article 29).

Table 1 to Paragraph (b)(149) Introductory Text

13 360-13 410 kHz,	23.07-23.12 GHz,
25 550-25 670 kHz,	31.2-31.3 GHz,
37.5-38.25 MHz,	31.5-31.8 GHz in Regions 1 and 3,
73-74.6 MHz in Regions 1 and 3,	36.43-36.5 GHz,
150.05-153 MHz in Region 1,	42.5-43.5 GHz,
322-328.6 MHz,	48.94-49.04 GHz,
406.1-410 MHz,	76-86 GHz,
608-614 MHz in Regions 1 and 3,	92-94 GHz,
1330-1400 MHz,	94.1-100 GHz,
1610.6-1613.8 MHz,	102-109.5 GHz,
1660-1670 MHz,	111.8-114.25 GHz,
1718.8-1722.2 MHz,	128.33-128.59 GHz,
2655-2690 MHz,	129.23-129.49 GHz,
3260-3267 MHz,	130-134 GHz,
3332-3339 MHz,	136-148.5 GHz,
3345.8-3352.5 MHz,	151.5-158.5 GHz,
4825-4835 MHz,	168.59-168.93 GHz,
4950-4990 MHz,	171.11-171.45 GHz,
4990-5000 MHz,	172.31-172.65 GHz,
6650-6675.2 MHz,	173.52-173.85 GHz,
10.6-10.68 GHz,	195.75-196.15 GHz,
14.47-14.5 GHz,	209-226 GHz,
22.01-22.21 GHz,	241-250 GHz,
22.21-22.5 GHz,	252-275 GHz
22.81-22.86 GHz,	

(i) 5.149A *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 13 450-13 550 kHz is allocated to the fixed service on a primary basis and to the mobile, except aeronautical mobile (R), service on a secondary basis.

(ii) [Reserved]

(150) 5.150 The following bands: 13 553-13 567 kHz (centre frequency 13 560 kHz), 26 957-27 283 kHz (centre frequency 27 120 kHz), 40.66-40.70 MHz (centre frequency 40.68 MHz), 902-928 MHz in Region 2 (centre frequency 915 MHz), 2400-2500 MHz (centre frequency 2450 MHz), 5725-5875 MHz (centre frequency 5800 MHz), and 24-24.25 GHz (centre frequency 24.125 GHz) are also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within these bands must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. 15.13.

(151) 5.151 *Additional allocation:* frequencies in the bands 13 570-13 600 kHz and 13 800-13 870 kHz may be used by stations in the fixed service and in the mobile except aeronautical mobile (R) service, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

(152) 5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, the Russian Federation, Georgia, Iran (Islamic Republic of), Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan,

Turkmenistan and Ukraine, the band 14 250-14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW.

(153) 5.153 In Region 3, the stations of those services to which the band 15 995-16 005 kHz is allocated may transmit standard frequency and time signals.

(154) 5.154 *Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 18 068-18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW.

(155) 5.155 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ikraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) service on a primary basis.

(i) 5.155A In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

(ii) 5.155B The band 21 870-21 924 kHz is used by the fixed service for provision of services related to aircraft flight safety.

(156) 5.156 *Additional allocation:* in Nigeria, the band 22 720-23 200 kHz is also allocated to the meteorological aids service (radiosondes) on a primary basis.

(i) 5.156A The use of the band 23 200-23 350 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

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(157) 5.157 The use of the band 23 350-24 000 kHz by the maritime mobile service is limited to inter-ship radiotelegraphy.

(158) 5.158 *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 24 450-24 600 kHz is allocated to the fixed and land mobile services on a primary basis.

(159) 5.159 *Alternative allocation:* in Armenia, Belarus, Moldova and Kyrgyzstan, the frequency band 39-39.5 MHz is allocated to the fixed and mobile services on a primary basis.

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(161) * * *

(i) 5.161A *Additional allocation:* in Korea (Rep. of), the United States and Mexico, the frequency bands 41.015-41.665 MHz and 43.35-44 MHz are also allocated to the radiolocation service on a primary basis. Stations in the radiolocation service shall not cause harmful interference to, or claim protection from, stations operating in the fixed or mobile services. Applications of the radiolocation service are limited to oceanographic radars operating in accordance with Resolution 612 (Rev.WRC-12).

(ii) 5.161B *Alternative allocation:* in Albania, Germany, Armenia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Cyprus, Vatican, Croatia, Denmark, Spain, Estonia, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malta, Moldova, Monaco, Montenegro, Norway, Uzbekistan, Netherlands, Portugal, Kyrgyzstan, Slovakia,

Czech Rep., Romania, United Kingdom, San Marino, Slovenia, Sweden, Switzerland, Turkey and Ukraine, the frequency band 42-42.5 MHz is allocated to the fixed and mobile services on a primary basis.

(162) * * *

(i) 5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the frequency band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution 217 (WRC-97).

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(163) 5.163 *Additional allocation:* in Armenia, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis.

(164) 5.164 *Additional allocation:* in Albania, 'lgeria, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Croatia, Denmark, Spain, Estonia, Eswatini, Finland, France, Gabon, Greece, Hungary, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Slovakia, Czech Rep., Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Chad, Togo, Tunisia and Turkey, the frequency band 47-68 MHz, in South Africa the frequency band 47-50 MHz, and in Latvia the frequency bands 48.5-56.5 MHz and 58-68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each frequency band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the frequency band.

(165) 5.165 *Additional allocation:* in Angola, Cameroon, Congo (Rep. of the), Egypt, Madagascar, Mozambique, Niger, Somalia, Sudan, South Sudan, Tanzania and Chad, the frequency band 47-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

(166)(i) 5.166A *Different category of service:* in Austria, Cyprus, the Vatican, Croatia, Denmark, Spain, Finland, Hungary, Latvia, the Netherlands, the Czech Republic, the United Kingdom, Slovakia and Slovenia, the frequency band 50.0-50.5 MHz is allocated to the amateur service on a primary basis. Stations in the amateur service in these countries shall not cause harmful interference to, or claim protection from, stations of the broadcasting, fixed and mobile services operating in accordance with the Radio Regulations in the frequency band 50.0-50.5 MHz in the countries not listed in this provision. For a station of these services, the protection criteria in paragraph (b)(169)(ii) of this section shall also apply. In Region 1, with the exception of those countries listed in paragraph (b)(169) of this section, wind profiler radars operating in the radiolocation service under paragraph (b)(162)(i) of this section are authorized to operate on the basis of equality with stations in the amateur service in the frequency band 50.0-50.5 MHz.

(ii) 5.166B In Region 1, stations in the amateur service operating on a secondary basis shall not cause harmful interference to, or claim protection from, stations of the broadcasting service. The field strength generated by an amateur station in Region 1 in the frequency band 50-52 MHz shall not exceed a calculated value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the border of a country with operational analogue broadcasting stations in Region 1 and of neighbouring countries with broadcasting stations in Region 3 listed in paragraphs (b)(167) and (b)(168) of this section.

(iii) 5.166C In Region 1, stations in the amateur service in the frequency band 50-52 MHz, with the exception of those countries listed in paragraph (b)(169) of this section, shall not cause harmful interference to, or claim protection from, wind profiler radars operating in the radiolocation service under paragraph (b)(162)(i) of this section.

(iv) 5.166D *Different category of service:* in Lebanon, the frequency band 50-52 MHz is allocated to the amateur service on a primary basis. Stations in the amateur service in Lebanon shall not cause harmful interference to, or claim protection from, stations of the broadcasting, fixed and mobile services operating in accordance with the Radio Regulations in the frequency band 50-52 MHz in the countries not listed in this provision.

(v) 5.166E In the Russian Federation, only the frequency band 50.080-50.280 MHz is allocated to the amateur service on a secondary basis. The protection criteria for the other services in the countries not listed in this provision are specified in paragraphs (b)(166)(ii) and (b)(169)(ii) of this section.

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(169) 5.169 *Alternative allocation:* in Botswana, Eswatini, Lesotho, Malawi, Namibia, Rwanda, South Africa, Zambia and Zimbabwe, the frequency band 50-54 MHz is allocated to the amateur service on a primary basis. In Senegal, the frequency band 50-51 MHz is allocated to the amateur service on a primary basis.

(i) 5.169A *Alternative allocation:* in the following countries in Region 1: Angola, Saudi Arabia, Bahrain, Burkina Faso, Burundi, the United Arab Emirates, Gambia, Jordan, Kenya, Kuwait, Mauritius, Mozambique, Oman, Uganda, Qatar, South Sudan and Tanzania, the frequency band 50-54 MHz is allocated to the amateur service on a primary basis. In Guinea-Bissau, the frequency band 50.0-50.5 MHz is allocated to the amateur service on a primary basis. In Djibouti, the frequency band 50-52 MHz is allocated to the amateur service on a primary basis. With the exception of those countries listed in this paragraph (b)(169), stations in the amateur service operating in Region 1 under this footnote, in all or part of the frequency band 50-54 MHz, shall not cause harmful interference to, or claim protection from, stations of other services operating in accordance with the Radio Regulations in Algeria, Egypt, Iran (Islamic Republic of), Iraq, Israel, Libya, Palestine, the Syrian Arab Republic, the Dem. People's Republic of Korea, Sudan and Tunisia. The field strength generated by an amateur station in the frequency band 50-54 MHz shall not exceed a value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the borders of listed countries requiring protection.

Note 1 to § 2.106(b)(169)(i): Pursuant to Resolution 99 (Rev. Dubai, 2018) and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

(ii) 5.169B Except countries listed under this paragraph (b)(169), stations in the amateur service used in Region 1, in all or part of the 50-54 MHz frequency band, shall not cause harmful interference to, or claim protection from, stations of other services used in accordance with the Radio Regulations in Algeria, Armenia, Azerbaijan, Belarus, Egypt, Russian Federation, Iran (Islamic Republic of), Iraq, Kazakhstan, Kyrgyzstan, Libya, Uzbekistan, Palestine, the Syrian Arab Republic, Sudan, Tunisia and Ukraine. The field strength generated by an amateur station in the frequency band 50-54 MHz shall not exceed a value of +6 dB(μV/m) at a height of 10 m above ground for more than 10% of time along the borders of the countries listed in this provision.

Note 2 to § 2.106(b)(169)(ii): Pursuant to Resolution 99 (Rev. Dubai, 2018) and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

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(171) 5.171 *Additional allocation:* in Botswana, Eswatini, Lesotho, Malawi, Mali, Namibia, Dem. Rep. of the Congo, Rwanda, South Africa, Zambia and Zimbabwe, the frequency band 54-68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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(194) 5.194 *Additional allocation:* in Kyrgyzstan, Somalia and Turkmenistan, the frequency band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis.

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(201) 5.201 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq (Republic of), Japan, Kazakhstan, Mali, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Romania, Senegal, Tajikistan, Turkmenistan and Ukraine, the frequency band 132-136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service.

(202) 5.202 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bulgaria, the United Arab Emirates, the Russian Federation, Georgia, Iran (Islamic Republic of), Jordan, Mali, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, Senegal, Tajikistan, Turkmenistan and Ukraine, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service.

(203) 5.203C The use of the space operation service (space-to-Earth) with non-geostationary satellite short-duration mission systems in the frequency band 137-138 MHz is subject to Resolution 660 (WRC-19). Resolution 32 (WRC-19) applies. These systems shall not cause harmful interference to, or claim protection from, the existing services to which the frequency band is allocated on a primary basis.

(204) 5.204 *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Singapore, Thailand and Yemen, the frequency band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. 5.33).

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(208) * * *

(i) 5.208A In making assignments to space stations in the mobile-satellite service in the frequency bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz and in the maritime mobile-satellite service (space-to-Earth) in the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the frequency bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions as shown in the most recent version of Recommendation ITU-R RA.769.

(ii) 5.208B In the frequency bands 137-138 MHz, 157.1875-157.3375 MHz, 161.7875-161.9375 MHz, 387-390 MHz, 400.15-401 MHz, 1452-1492 MHz, 1525-1610 MHz, 1613.8-1626.5 MHz, 2655-2690 MHz, 21.4-22 GHz, Resolution 739 (Rev.WRC-19) applies.

(209) * * *

(i) 5.209A The use of the frequency band 137.175-137.825 MHz by non-geostationary-satellite systems in the space operation service identified as short-duration mission in accordance with Appendix 4 is not subject to No. 9.11A.

(ii) [Reserved]

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(211) 5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Guinea, Ireland, Israel, Kenya, Kuwait, Lebanon, Liechtenstein, Luxembourg, North Macedonia, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the frequency band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis.

(212) 5.212 *Alternative allocation:* in Angola, Botswana, Cameroon, the Central African Rep., Congo (Rep. of the), Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Lesotho, Liberia, Libya, Malawi, Mozambique, Namibia, Niger, Oman, Uganda, Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Chad, Togo, Zambia and Zimbabwe, the frequency band 138-144 MHz is allocated to the fixed and mobile services on a primary basis.

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(214) 5.214 *Additional allocation:* in Eritrea, Ethiopia, Kenya, North Macedonia, Montenegro, Serbia, Somalia, Sudan, South Sudan and Tanzania, the frequency band 138-144 MHz is also allocated to the fixed service on a primary basis.

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(218) * * *

(i) 5.218A The frequency band 148-149.9 MHz in the space operation service (Earth-to-space) may be used by non-geostationary-satellite systems with short-duration missions. Non-geostationary-satellite systems in the space operation service used for a short-duration mission in accordance with Resolution 32 (WRC-19) of the Radio Regulations are not subject to agreement under No. 9.21. At the stage of coordination, the provisions of Nos. 9.17 and 9.18 also apply. In the frequency band 148-149.9 MHz, non-geostationary-satellite systems with short-duration missions shall not cause unacceptable interference to, or claim protection from, existing primary services within this frequency band, or impose additional constraints on the space operation and mobile-satellite services. In addition, earth stations in non-geostationary-satellite systems in the space operation service with short-duration missions in the frequency band 148-149.9 MHz shall ensure that the power flux-density does not exceed −149 dB(W/(m² · 4 kHz)) for more than 1% of time at the border of the territory of the following countries: Armenia, Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, Russian Federation, India, Iran (Islamic Republic of), Japan, Kazakhstan, Malaysia, Uzbekistan, Kyrgyzstan, Thailand and Viet Nam. In case this power flux-density limit is exceeded, agreement under No. 9.21 is required to be obtained from countries mentioned in this footnote.

(ii) [Reserved]

(219) 5.219 The use of the frequency band 148-149.9 MHz by the mobile-satellite service is subject to coordination under No. 9.11A. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the frequency band 148-149.9 MHz. The use of

the frequency band 148-149.9 MHz by non-geostationary-satellite systems in the space operation service identified as short-duration mission is not subject to No. 9.11A.

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(221) 5.221 Stations of the mobile-satellite service in the frequency band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Djibouti, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Eswatini, Ethiopia, the Russian Federation, Finland, France, Gabon, Georgia, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia and Zimbabwe.

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(228) * * *

(i) 5.228AB The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (Earth-to-space) is limited to non-geostationary-satellite systems operating in accordance with Appendix 18.

(ii) 5.228AC The use of the frequency bands 157.1875-157.3375 MHz and 161.7875-161.9375 MHz by the maritime mobile-satellite service (space-to-Earth) is limited to non-geostationary-satellite systems operating in accordance with Appendix 18. Such use is subject to agreement obtained under No. 9.21 with respect to the terrestrial services in Azerbaijan, Belarus, China, Korea (Rep. of), Cuba, the Russian Federation, the Syrian Arab Republic, the Dem. People's Rep. of Korea, South Africa and Viet Nam.

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(242) 5.242 *Additional allocation:* in Canada and Mexico, the frequency band 216-220 MHz is also allocated to the land mobile service on a primary basis.

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(252) 5.252 *Alternative allocation:* in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe, the frequency bands 230-238 MHz and 246-254 MHz are allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. 9.21.

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(260)(i) 5.260A In the frequency band 399.9-400.05 MHz, the maximum e.i.r.p. of any emission of earth stations in the mobile-satellite service shall not exceed 5 dBW in any 4 kHz band and the maximum e.i.r.p. of each earth station in the mobile-satellite service shall not exceed 5 dBW in the whole 399.9-400.05 MHz frequency band. Until 22 November 2022, this limit shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22

November 2019 and that have been brought into use by that date. After 22 November 2022, these limits shall apply to all systems within the mobile-satellite service operating in this frequency band. In the frequency band 399.99-400.02 MHz, the e.i.r.p. limits as specified in this paragraph (b)(260)(i) shall apply after 22 November 2022 to all systems within the mobile-satellite service. Administrations are requested that their mobile-satellite service satellite links in the 399.99-400.02 MHz frequency band comply with the e.i.r.p. limits as specified in this paragraph (b)(260)(i), after 22 November 2019.

(ii) 5.260B In the frequency band 400.02-400.05 MHz, the provisions of paragraph (b)(169)(i) of this section are not applicable for telecommand uplinks within the mobile-satellite service.

(264) * * *

(i) 5.264A In the frequency band 401-403 MHz, the maximum e.i.r.p. of any emission of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW in any 4 kHz band for geostationary-satellite systems and non-geostationary-satellite systems with an orbit of apogee equal or greater than 35 786 km. The maximum e.i.r.p. of any emission of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 7 dBW in any 4 kHz band for non-geostationary-satellite systems with an orbit of apogee lower than 35 786 km. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 22 dBW for geostationary-satellite systems and non-geostationary-satellite systems with an orbit of apogee equal or greater than 35 786 km in the whole 401-403 MHz frequency band. The maximum e.i.r.p. of each earth station in the meteorological-satellite service and the Earth exploration-satellite service shall not exceed 7 dBW for non-geostationary-satellite systems with an orbit of apogee lower than 35 786 km in the whole 401-403 MHz frequency band. Until 22 November 2029, these limits shall not apply to satellite systems for which complete notification information has been received by the Radiocommunication Bureau by 22 November 2019 and that have been brought into use by that date. After 22 November 2029, these limits shall apply to all systems within the meteorological-satellite service and the Earth exploration-satellite service operating in this frequency band.

(ii) 5.264B Non-geostationary-satellite systems in the meteorological-satellite service and the Earth exploration-satellite service for which complete notification information has been received by the Radiocommunication Bureau before 28 April 2007 are exempt from provisions of paragraph (b)(264)(i) of this section and may continue to operate in the frequency band 401.898-402.522 MHz on a primary basis without exceeding a maximum e.i.r.p. level of 12 dBW.

(265) 5.265 In the frequency band 403-410 MHz, Resolution 205 (Rev.WRC-19) applies.

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(275) 5.275 *Additional allocation:* in Croatia, Estonia, Finland, Libya, North Macedonia, Montenegro and Serbia, the frequency bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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(277) 5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Uzbekistan, Poland, the Dem. Rep. of the Congo, Kyrgyzstan, Slovakia, Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the frequency band 430-440 MHz is also allocated to the fixed service on a primary basis.

(278) 5.278 *Different category of service:* in Argentina, Brazil, Colombia, Costa Rica, Cuba, Guyana, Honduras, Panama, Paraguay, Uruguay and Venezuela, the allocation of the frequency band

430-440 MHz to the amateur service is on a primary basis (see No. 5.33).

(279) 5.279 *Additional allocation:* in Mexico, the frequency bands 430-435 MHz and 438-440 MHz are also allocated on a primary basis to the mobile, except aeronautical mobile, service, and on a secondary basis to the fixed service, subject to agreement obtained under No. 9.21.

(i) 5.279A The use of the frequency band 432-438 MHz by sensors in the Earth exploration-satellite service (active) shall be in accordance with Recommendation ITU-R RS.1260-2. Additionally, the Earth exploration-satellite service (active) in the frequency band 432-438 MHz shall not cause harmful interference to the aeronautical radionavigation service in China. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. 5.29 and 5.30.

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(280) 5.280 In Germany, Austria, Bosnia and Herzegovina, Croatia, Liechtenstein, North Macedonia, Montenegro, Portugal, Serbia, Slovenia and Switzerland, the frequency band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this frequency band must accept harmful interference which may be caused by these applications. ISM equipment operating in this frequency band is subject to the provisions of No. 15.13.

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(286) * * *

(ii) 5.286AA The frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolution 224 (Rev.WRC-19). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

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(287) 5.287 Use of the frequency bands 457.5125-457.5875 MHz and 467.5125-467.5875 MHz by the maritime mobile service is limited to on-board communication stations. The characteristics of the equipment and the channelling arrangement shall be in accordance with Recommendation ITU-R M.1174-4. The use of these frequency bands in territorial waters is subject to the national regulations of the administration concerned.

(288) 5.288 In the territorial waters of the United States and the Philippines, the preferred frequencies for use by on-board communication stations shall be 457.525 MHz, 457.550 MHz, 457.575 MHz and 457.600 MHz paired, respectively, with 467.750 MHz, 467.775 MHz, 467.800 MHz and 467.825 MHz. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-4.

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(295) 5.295 In the Bahamas, Barbados, Canada, the United States and Mexico, the frequency band 470-608 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution 224 (Rev.WRC-19). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply.

(296) 5.296 *Additional allocation:* in Albania, Germany, Angola, Saudi Arabia, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cameroon, Vatican, Congo (Rep. of the), Côte d'Ivoire, Croatia, Denmark, Djibouti, Egypt, United Arab Emirates, Spain, Estonia, Eswatini, Finland, France, Gabon, Georgia, Ghana, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Malawi, Mali, Malta, Morocco, Mauritius, Mauritania, Moldova, Monaco, Mozambique, Namibia, Niger, Nigeria, Norway, Oman, Uganda, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Slovakia, the Czech Republic, Romania, the United Kingdom, Rwanda, San Marino, Serbia, Sudan, South Africa, Sweden, Switzerland, Tanzania, Chad, Togo, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the frequency band 470-694 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting and programme-making. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote.

(i) 5.296A In Micronesia, the Solomon Islands, Tuvalu and Vanuatu, the frequency band 470-698 MHz, or portions thereof, and in Bangladesh, Maldives and New Zealand, the frequency band 610-698 MHz, or portions thereof, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolution 224 (Rev.WRC-19). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. The mobile allocation in this frequency band shall not be used for IMT systems unless subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply.

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(297) 5.297 *Additional allocation:* in Canada, Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana and Jamaica, the frequency band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. 9.21. In the Bahamas, Barbados and Mexico, the frequency band 512-608 MHz is also allocated to the mobile service on a primary basis, subject to agreement obtained under No. 9.21. In Mexico, the frequency band 512-608 MHz is also allocated on a secondary basis to the fixed service (see No. 5.32).

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(308) 5.308 *Additional allocation:* in Belize, Colombia and Guatemala, the frequency band 614-698 MHz is also allocated to the mobile service on a primary basis. Stations of the mobile service within the frequency band are subject to agreement obtained under No. 9.21.

(i) 5.308A In the Bahamas, Barbados, Belize, Canada, Colombia, the United States, Guatemala and Mexico, the frequency band 614-698 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution 224 (Rev.WRC-19). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply.

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(312) 5.312 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 645-862 MHz, and in Bulgaria the frequency bands 646-686 MHz, 726-753 MHz, 778-811 MHz and 822-

852 MHz, are also allocated to the aeronautical radionavigation service on a primary basis.

(i) 5.312A In Region 1, the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile, service is subject to the provisions of Resolution 760 (Rev.WRC-19). See also Resolution 224 (Rev.WRC-19).

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(313) 5.313A The frequency band, or portions of the frequency band 698-790 MHz, in Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Korea (Rep. of), Fiji, India, Indonesia, Japan, Kiribati, Lao P.D.R., Malaysia, Myanmar (Union of), New Zealand, Pakistan, Papua New Guinea, the Philippines, the Dem. People's Rep. of Korea, Solomon Islands, Samoa, Singapore, Thailand, Tonga, Tuvalu, Vanuatu and Viet Nam, are identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

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(316) 5.316B In Region 1, the allocation to the mobile, except aeronautical mobile, service in the frequency band 790-862 MHz is subject to agreement obtained under No. 9.21 with respect to the aeronautical radionavigation service in countries mentioned in No. 5.312. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolutions 224 (Rev.WRC-19) and 749 (Rev.WRC-19) shall apply, as appropriate.

(317) * * *

(i) 5.317A The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions 224 (Rev.WRC-19), 760 (Rev.WRC-19) and 749 (Rev.WRC-19), where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

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(323) 5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the frequency band 862-960 MHz, in Bulgaria the frequency bands 862-880 MHz and 915-925 MHz, and in Romania the frequency bands 862-880 MHz and 915-925 MHz, are also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. 9.21 with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime.

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(325) * * *

(i) 5.325A *Different category of service:* in Argentina, Brazil, Costa Rica, Cuba, Dominican Republic, El Salvador, Ecuador, the French overseas departments and communities in Region 2, Guatemala, Paraguay, Uruguay and Venezuela, the frequency band 902-928 MHz is allocated to the land mobile service on a primary basis. In Mexico, the frequency band 902-928 MHz is allocated to the

mobile, except aeronautical mobile, service on a primary basis. In Colombia, the frequency band 902-905 MHz is allocated to the land mobile service on a primary basis.

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(328) * * *

(ii) 5.328AA The frequency band 1087.7-1092.3 MHz is also allocated to the aeronautical mobile-satellite (R) service (Earth-to-space) on a primary basis, limited to the space station reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft transmitters that operate in accordance with recognized international aeronautical standards. Stations operating in the aeronautical mobile-satellite (R) service shall not claim protection from stations operating in the aeronautical radionavigation service. Resolution 425 (Rev.WRC-19) shall apply.

(iii) 5.328B The use of the bands 1164-1300 MHz, 1559-1610 MHz and 5010-5030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. 9.12, 9.12A and 9.13. Resolution 610 (Rev.WRC-19) shall also apply; however, in the case of radionavigation-satellite service (space-to-space) networks and systems, Resolution 610 (Rev.WRC-19) shall only apply to transmitting space stations. In accordance with No. 5.329A, for systems and networks in the radionavigation-satellite service (space-to-space) in the bands 1215-1300 MHz and 1559-1610 MHz, the provisions of Nos. 9.7, 9.12, 9.12A and 9.13 shall only apply with respect to other systems and networks in the radionavigation-satellite service (space-to-space).

(329) 5.329 Use of the radionavigation-satellite service in the frequency band 1215-1300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under paragraph (b)(331) of this section. Furthermore, the use of the radionavigation-satellite service in the frequency band 1215-1300 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. No. 5.43 shall not apply in respect of the radiolocation service. Resolution 608 (Rev.WRC-19) shall apply.

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(331) 5.331 *Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, North Macedonia, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, Pakistan, the Kingdom of the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, South Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the frequency band 1215-1300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the frequency band 1240-1300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service.

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(338) * * *

(i) 5.338A In the frequency bands 1350-1400 MHz, 1427-1452 MHz, 22.55-23.55 GHz, 24.25-27.5 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.4 GHz, 52.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution 750 (Rev.WRC-19) applies.

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(341) * * *

(i) 5.341A In Region 1, the frequency bands 1427-1452 MHz and 1492-1518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19). This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with paragraph (b)(342) of this section.

(ii) 5.341B In Region 2, the frequency band 1427-1518 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

(iii) 5.341C The frequency bands 1427-1452 MHz and 1492-1518 MHz are identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19). The use of these frequency bands by the referenced administrations for the implementation of IMT in the frequency bands 1429-1452 MHz and 1492-1518 MHz is subject to agreement obtained under No. 9.21 from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

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(345) 5.345 Use of the frequency band 1452-1492 MHz by the broadcasting-satellite service, and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-19).

(346) 5.346 In Algeria, Angola, Saudi Arabia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo (Rep. of the), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Gabon, Gambia, Ghana, Guinea, Iraq, Jordan, Kenya, Kuwait, Lesotho, Lebanon, Liberia, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Palestine, Qatar, Dem. Rep. of the Congo, Rwanda, Senegal, Seychelles, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Tunisia, Zambia, and Zimbabwe, the frequency band 1452-1492 MHz is identified for use by administrations listed in this paragraph (b)(346) wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19). This identification does not preclude the use of this frequency band by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained under No. 9.21 with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with paragraph (b)(342) of this section. See also Resolution 761 (Rev.WRC-19).

Note 3 to § 2.16(b)(346) introductory text: The use by Palestine of the allocation to the mobile service in the frequency band 1452-1492 MHz identified for IMT is noted, pursuant to Resolution 99 (Rev. Dubai, 2018) and taking into account the Israeli-Palestinian Interim Agreement of 28 September 1995.

(i) 5.346A The frequency band 1452-1492 MHz is identified for use by administrations in Region 3 wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19) and Resolution 761 (Rev.WRC-19). The use of this frequency band by the above

administrations for the implementation of IMT is subject to agreement obtained under No. 9.21 from countries using stations of the aeronautical mobile service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

(ii) [Reserved]

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(349) 5.349 *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Cameroon, Egypt, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, Lebanon, North Macedonia, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, the allocation of the frequency band 1525-1530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33).

(350) 5.350 *Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 1525-1530 MHz is also allocated to the aeronautical mobile service on a primary basis.

(351) * * *

(i) 5.351A For the use of the bands 1518-1544 MHz, 1545-1559 MHz, 1610-1645.5 MHz, 1646.5-1660.5 MHz, 1668-1675 MHz, 1980-2010 MHz, 2170-2200 MHz, 2483.5-2520 MHz and 2670-2690 MHz by the mobile-satellite service, see Resolutions 212 (Rev.WRC-19) and 225 (Rev.WRC-12).

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(352) 5.352A In the frequency band 1525-1530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Viet Nam and Yemen notified prior to 1 April 1998.

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(359) 5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Cameroon, the Russian Federation, Georgia, Guinea, Guinea-Bissau, Jordan, Kazakhstan, Kuwait, Lithuania, Mauritania, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Tunisia, Turkmenistan and Ukraine, the frequency bands 1550-1559 MHz, 1610-1645.5 MHz and 1646.5-1660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these frequency bands.

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(368) 5.368 The provisions of No. 4.10 do not apply with respect to the radiodetermination-satellite and mobile-satellite services in the frequency band 1610-1626.5 MHz. However, No. 4.10 applies in the frequency band 1610-1626.5 MHz with respect to the aeronautical radionavigation-satellite service when operating in accordance with paragraph (b)(366) of this section, the aeronautical mobile satellite (R) service when operating in accordance with paragraph (b)(367) of this section, and in the frequency band 1621.35-1626.5 MHz with respect to the maritime mobile-satellite service when used for GMDSS.

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(372) 5.372 Harmful interference shall not be caused to stations of the radio astronomy service using the frequency band 1610.6-1613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services (No. 29.13 applies). The equivalent power flux-density (epfd) produced in the frequency band 1610.6-1613.8 MHz by all space stations of a non-geostationary-satellite system in the mobile-satellite service (space-to-Earth) operating in frequency band 1613.8-1626.5 MHz shall be in compliance with the protection criteria provided in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, using the methodology given in Recommendation ITU-R M.1583-1, and the radio astronomy antenna pattern described in Recommendation ITU-R RA.1631-0.

(373) 5.373 Maritime mobile earth stations receiving in the frequency band 1621.35-1626.5 MHz shall not impose additional constraints on earth stations operating in the maritime mobile-satellite service or maritime earth stations of the radiodetermination-satellite service operating in accordance with the Radio Regulations in the frequency band 1610-1621.35 MHz or on earth stations operating in the maritime mobile-satellite service operating in accordance with the Radio Regulations in the frequency band 1626.5-1660.5 MHz, unless otherwise agreed between the notifying administrations.

(i) 5.373A Maritime mobile earth stations receiving in the frequency band 1621.35-1626.5 MHz shall not impose constraints on the assignments of earth stations of the mobile-satellite service (Earth-to-space) and the radiodetermination-satellite service (Earth-to-space) in the frequency band 1621.35-1626.5 MHz in networks for which complete coordination information has been received by the Radiocommunication Bureau before 28 October 2019.

(ii) [Reserved]

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(382) 5.382 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, North Macedonia, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Turkmenistan, Ukraine and Yemen, the allocation of the frequency band 1690-1700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33), and in the Dem. People's Rep. of Korea, the allocation of the frequency band 1690-1700 MHz to the fixed service is on a primary basis (see No. 5.33) and to the mobile, except aeronautical mobile, service on a secondary basis.

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(384) * * *

(i) 5.384A The frequency bands 1710-1885 MHz, 2300-2400 MHz and 2500-2690 MHz, or portions thereof, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-19). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

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(388) 5.388 The frequency bands 1885-2025 MHz and 2110-2200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications (IMT). Such use does not preclude the use of these frequency bands by other services to which they are allocated. The frequency bands should be made available for IMT in accordance with Resolution 212 (Rev.WRC-19) (see also Resolution 223 (Rev.WRC-19)).

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(ii) 5.388B In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, Jordan, Kenya, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, South Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT base station in neighbouring countries, in the frequency bands referred to in paragraph (b)(388)(i) of this section, shall not exceed a co-channel power flux-density of −127 dB(W/(m² · MHz)) at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS.

(389) * * *

(i) 5.389B The use of the frequency band 1980-1990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the fixed and mobile services in Argentina, Brazil, Canada, Chile, Ecuador, the United States, Honduras, Jamaica, Mexico, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

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(iv) 5.389F In Algeria, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syrian Arab Republic and Tunisia, the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services.

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(393) 5.393 *Additional allocation:* in Canada, the United States and India, the frequency band 2310-2360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-19), with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. Complementary terrestrial sound broadcasting stations shall be subject to bilateral coordination with neighbouring countries prior to their bringing into use.

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(401) 5.401 In Angola, Australia, Bangladesh, China, Eritrea, Eswatini, Ethiopia, India, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syrian Arab Republic, Dem. Rep. of the Congo, Sudan, Togo and Zambia, the frequency band 2483.5-2500 MHz was already allocated on a primary basis to the radiodetermination-satellite service before WRC-12, subject to agreement obtained under No. 9.21 from countries not listed in this provision. Systems in the radiodetermination-satellite service for which complete coordination information has been received by the Radiocommunication Bureau before 18 February 2012 will retain their regulatory status, as of the date of receipt of the coordination request information.

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(418) 5.418 *Additional allocation:* in India, the frequency band 2535-2655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (Rev.WRC-19). The provisions of paragraph (b)(416) of this section and Table 21-4 of Article 21 do not apply to this additional allocation. Use of non-geostationary-satellite systems in the

broadcasting-satellite service (sound) is subject to Resolution 539 (Rev.WRC-19). Geostationary broadcasting-satellite service (sound) systems for which complete Appendix 4 coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the frequency band 2630-2655 MHz, and for which complete Appendix 4 coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation: −130 dB(W/(m² · MHz)) for $0° \le \theta \le 5°$, $-130 + 0.4 (\theta - 5)$ dB(W/(m² · MHz)) for $5° < \theta \le 25°$, −122 dB(W/(m² · MHz)) for $25° < \theta \le 90°$, where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits provided in this paragraph (b)(418), the pfd value of −122 dB(W/(m² · MHz)) shall be used as a threshold for coordination under No. 9.11 in an area of 1500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system. In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under paragraph (b)(416) of this section for systems for which complete Appendix 4 coordination information has been received after 1 June 2005.

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(428) 5.428 *Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 3100-3300 MHz is also allocated to the radionavigation service on a primary basis.

(429) 5.429 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Benin, Brunei Darussalam, Cambodia, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Egypt, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, New Zealand, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Sudan and Yemen, the frequency band 3300-3400 MHz is also allocated to the fixed and mobile services on a primary basis. New Zealand and the countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.

(i) 5.429A *Additional allocation:* in Angola, Benin, Botswana, Burkina Faso, Burundi, Djibouti, Eswatini, Ghana, Guinea, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3300-3400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. Stations in the mobile service operating in the frequency band 3300-3400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service.

(ii) 5.429B In the following countries of Region 1 south of 30° parallel north: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, Eswatini, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, the Dem. Rep. of the Congo, Rwanda, Sudan, South Sudan, South Africa, Tanzania, Chad, Togo, Zambia and Zimbabwe, the frequency band 3300-3400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). The use of this frequency band shall be in accordance with Resolution 223 (Rev.WRC-19). The use of the frequency band 3300-3400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

(iii) 5.429C *Different category of service*: in Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3300-3400 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis. In Argentina, Brazil, the Dominican Republic, Guatemala, Mexico, Paraguay and Uruguay, the frequency band 3300-3400 MHz is also allocated to the fixed service on a primary basis. Stations in the fixed and mobile services operating in the frequency band 3300-3400 MHz shall not cause harmful interference to, or claim protection from, stations operating in the radiolocation service.

(iv) 5.429D In the following countries in Region 2: Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Guatemala, Mexico, Paraguay and Uruguay, the use of the frequency band 3300-3400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution 223 (Rev.WRC-19). This use in Argentina, Paraguay and Uruguay is subject to the application of No. 9.21. The use of the frequency band 3300-3400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service, and administrations wishing to implement IMT shall obtain the agreement of neighbouring countries to protect operations within the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

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(vi) 5.429F In the following countries in Region 3: Cambodia, India, Indonesia, Lao P.D.R., Pakistan, the Philippines and Viet Nam, the use of the frequency band 3300-3400 MHz is identified for the implementation of International Mobile Telecommunications (IMT). Such use shall be in accordance with Resolution 223 (Rev.WRC-19). The use of the frequency band 3300-3400 MHz by IMT stations in the mobile service shall not cause harmful interference to, or claim protection from, systems in the radiolocation service. Before an administration brings into use a base or mobile station of an IMT system in this frequency band, it shall seek agreement under No. 9.21 with neighbouring countries to protect the radiolocation service. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

(430) 5.430 *Additional allocation:* in Kyrgyzstan and Turkmenistan, the frequency band 3300-3400 MHz is also allocated to the radionavigation service on a primary basis.

(i) 5.430A The allocation of the frequency band 3400-3600 MHz to the mobile, except aeronautical mobile, service is subject to agreement obtained under No. 9.21. This frequency band is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The provisions of Nos. 9.17 and 9.18 shall also apply in the coordination phase. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m² □ 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) and with the assistance of the Bureau if so requested. In case of disagreement, calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the frequency band 3400-3600 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004).

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(431) 5.431 *Additional allocation:* in Germany, the frequency band 3400-3475 MHz is also allocated to the amateur service on a secondary basis.

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(432) 5.432 *Different category of service:* in Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the allocation of the frequency band 3400-3500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 5.33).

(i) 5.432A In Korea (Rep. of), Japan, Pakistan and the Dem. People's Rep. of Korea, the frequency band 3400-3500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m² □ 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to in this paragraph (i). Stations of the mobile service in the frequency band 3400-3500 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004).

(ii) 5.432B *Different category of service:* in Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, India, Indonesia, Iran (Islamic Republic of), Malaysia, New Zealand, the Philippines, Singapore and Thailand, the frequency band 3400-3500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. 9.21 with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m² □ 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to in this paragraph (ii). Stations of the mobile service in the frequency band 3400-3500 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004).

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(i) 5.433A In Australia, Bangladesh, Brunei Darussalam, China, French overseas communities of Region 3, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, New Zealand, Pakistan, the Philippines and the Dem. People's Rep. of Korea, the frequency band 3500-3600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in

the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this frequency band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB (W/(m² □ 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to in this paragraph (i). Stations of the mobile service in the frequency band 3500-3600 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004).

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(434) 5.434 In Canada, Chile, Colombia, Costa Rica, El Salvador, the United States and Paraguay, the frequency band 3600-3700 MHz, or portions thereof, is identified for use by these administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a base or mobile station of an IMT system, it shall seek agreement under No. 9.21 with other administrations and ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m² □ 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to in this paragraph (434). Stations of the mobile service, including IMT systems, in the frequency band 3600-3700 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004).

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(i) 5.441A In Brazil, Paraguay and Uruguay, the frequency band 4800-4900 MHz, or portions thereof, is identified for the implementation of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of this frequency band for the implementation of IMT is subject to agreement obtained with neighbouring countries, and IMT stations shall not claim protection from stations of other applications of the mobile service. Such use shall be in accordance with Resolution 223 (Rev.WRC-19).

(ii) 5.441B In Angola, Armenia, Azerbaijan, Benin, Botswana, Brazil, Burkina Faso, Burundi, Cambodia, Cameroon, China, Côte d'Ivoire, Djibouti, Eswatini, Russian Federation, Gambia, Guinea, Iran (Islamic Republic of), Kazakhstan, Kenya, Lao P.D.R., Lesotho, Liberia, Malawi, Mauritius, Mongolia, Mozambique, Nigeria, Uganda, Uzbekistan, the Dem. Rep. of the Congo, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, South Africa, Tanzania, Togo, Viet Nam, Zambia and Zimbabwe, the frequency band 4800-4990 MHz, or portions thereof, is identified for use by administrations wishing

to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. 9.21 with concerned administrations, and IMT stations shall not claim protection from stations of other applications of the mobile service. In addition, before an administration brings into use an IMT station in the mobile service, it shall ensure that the power flux-density (pfd) produced by this station does not exceed −155 dB(W/(m² · 1 MHz)) produced up to 19 km above sea level at 20 km from the coast, defined as the low-water mark, as officially recognized by the coastal State. This pfd criterion is subject to review at WRC-23. Resolution 223 (Rev.WRC-19) applies. This identification shall be effective after WRC-19.

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(ii) 5.444B The use of the frequency band 5091-5150 MHz by the aeronautical mobile service is limited to: systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution 748 (Rev.WRC-19); aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution 418 (Rev.WRC-19).

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(i) 5.446A The use of the frequency bands 5150-5350 MHz and 5470-5725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution 229 (Rev.WRC-19).

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(iii) 5.446C *Additional allocation:* in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan, South Sudan and Tunisia), the frequency band 5150-5250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC-19). These stations shall not claim protection from other stations operating in accordance with Article 5. No. 5.43A does not apply.

(iv) 5.446D *Additional allocation:* in Brazil, the band 5150-5250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution 418 (Rev.WRC-19).

(447) 5.447 *Additional allocation:* in Côte d'Ivoire, Egypt, Lebanon, the Syrian Arab Republic and Tunisia, the frequency band 5150-5250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. 9.21. In this case, the provisions of Resolution 229 (Rev.WRC-19) do not apply.

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(vi) 5.447F In the frequency band 5250-5350 MHz, stations in the mobile service shall not claim protection from the radiolocation service, the Earth exploration-satellite service (active) and the space research service (active). The radiolocation service, the Earth exploration-satellite service (active) and the space research service (active) shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution 229 (Rev.WRC-19).

(448) 5.448 *Additional allocation:* in Kyrgyzstan, Romania and Turkmenistan, the frequency band 5250-5350 MHz is also allocated to the radionavigation service on a primary basis.

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(i) 5.450A In the frequency band 5470-5725 MHz, stations in the mobile service shall not claim protection from radiodetermination services. The radiodetermination services shall not impose more stringent conditions upon the mobile service than those stipulated in Resolution 229 (Rev.WRC-19).

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(453) 5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, Equatorial Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Niger, Nigeria, Oman, Uganda, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Sri Lanka, Tanzania, Chad, Thailand, Togo, Viet Nam and Yemen, the frequency band 5650-5850 MHz is also allocated to the fixed and mobile services on a primary basis. In this case, the provisions of Resolution 229 (Rev.WRC-19) do not apply. In addition, in Afghanistan, Angola, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Dem. Rep. of the Congo, Fiji, Ghana, Kiribati, Lesotho, Malawi, Maldives, Mauritius, Micronesia, Mongolia, Mozambique, Myanmar, Namibia, Nauru, New Zealand, Papua New Guinea, Rwanda, Solomon Islands, South Sudan, South Africa, Tonga, Vanuatu, Zambia and Zimbabwe, the frequency band 5725-5850 MHz is allocated to the fixed service on a primary basis, and stations operating in the fixed service shall not cause harmful interference to and shall not claim protection from other primary services in the frequency band.

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(455) 5.455 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency band 5670-5850 MHz is also allocated to the fixed service on a primary basis.

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(458) 5.458 In the band 6425-7075 MHz, passive microwave sensor measurements are carried out over the oceans. In the band 7075-7250 MHz, passive microwave sensor measurements are carried out. Administrations should bear in mind the needs of the Earth exploration-satellite (passive) and space research (passive) services in their future planning of the bands 6425-7075 MHz and 7075-7250 MHz.

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(468) 5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, Congo (Rep. of the), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guyana, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Senegal, Singapore, Somalia, Sudan, Chad, Togo, Tunisia and Yemen, the frequency band 8500-8750 MHz is also allocated to the fixed and mobile services on a primary basis.

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(473) 5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the frequency bands 8850-9000 MHz and 9200-9300 MHz are also allocated to the radionavigation service on a primary basis.

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(474) * * *

(iv) 5.474D Stations in the Earth exploration-satellite service (active) shall not cause harmful interference to, or claim protection from, stations of the maritime radionavigation and radiolocation services in the frequency band 9200-9300 MHz, the radionavigation and radiolocation services in the frequency band 9900-10 000 MHz and the radiolocation service in the frequency band 10.0-10.4 GHz.

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(477) 5.477 *Different category of service:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Djibouti, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Uganda, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Trinidad and Tobago, and Yemen, the allocation of the frequency band 9800-10 000 MHz to the fixed service is on a primary basis (see No. 5.33).

(478) 5.478 *Additional allocation:* in Azerbaijan, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the frequency band 9800-10 000 MHz is also allocated to the radionavigation service on a primary basis.

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(479) 5.479 The band 9975-10 025 MHz is also allocated to the meteorological-satellite service on a secondary basis for use by weather radars.

(480) 5.480 *Additional allocation:* in Argentina, Brazil, Chile, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Paraguay, the overseas countries and territories within the Kingdom of the Netherlands in Region 2, Peru and Uruguay, the frequency band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Colombia, Costa Rica, Mexico and Venezuela, the frequency band 10-10.45 GHz is also allocated to the fixed service on a primary basis.

(481) 5.481 *Additional allocation:* in Algeria, Germany, Angola, Brazil, China, Côte d'Ivoire, Egypt, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Pakistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Tunisia and Uruguay, the frequency band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. In Costa Rica, the frequency band 10.45-10.5 GHz is also allocated to the fixed service on a primary basis.

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(483) 5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China, Colombia, Korea (Rep. of), Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Tajikistan, Turkmenistan and Yemen, the frequency band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

(484) * * *

(ii) 5.484B Resolution 155 (Rev.WRC-19) shall apply.

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(495) 5.495 *Additional allocation:* in Greece, Monaco, Montenegro, Uganda and Tunisia, the frequency band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

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(505) 5.505 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Djibouti, Egypt, the United Arab Emirates, Eswatini, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, South Sudan, Chad, Viet Nam and Yemen, the frequency band 14-14.3 GHz is also allocated to the fixed service on a primary basis.

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(508) 5.508 *Additional allocation:* in Germany, France, Italy, Libya, North Macedonia and the United Kingdom, the frequency band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis.

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(509) * * *

(iii) 5.509D Before an administration brings into use an earth station in the fixed-satellite service (Earth-to-space) not for feeder links for the broadcasting-satellite service in the frequency bands 14.5-14.75 GHz (in countries listed in Resolution 163 (WRC-15)) and 14.5-14.8 GHz (in countries listed in Resolution 164 (WRC-15)), it shall ensure that the power flux-density produced by this earth station does not exceed −151.5 dB(W/(m^2 · 4 kHz)) produced at all altitudes from 0 m to 19 000 m above sea level at 22 km seaward from all coasts, defined as the low-water mark, as officially recognized by each coastal State.

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(516) * * *

(ii) 5.516B The following bands are identified for use by high-density applications in the fixed-satellite service: 17.3-17.7 GHz (space-to-Earth) in Region 1, 18.3-19.3 GHz (space-to-Earth) in Region 2, 19.7-20.2 GHz (space-to-Earth) in all Regions, 39.5-40 GHz (space-to-Earth) in Region 1, 40-40.5 GHz (space-to-Earth) in all Regions,40.5-42 GHz (space-to-Earth) in Region 2, 47.5-47.9 GHz (space-to-Earth) in Region 1, 48.2-48.54 GHz (space-to-Earth) in Region 1, 49.44-50.2 GHz (space-to-Earth) in Region 1, and 27.5-27.82 GHz (Earth-to-space) in Region 1, 28.35-28.45 GHz (Earth-to-space) in Region 2, 28.45-28.94 GHz (Earth-to-space) in all Regions, 28.94-29.1 GHz (Earth-to-space) in Regions 2 and 3,

29.25-29.46 GHz (Earth-to-space) in Region 2, 29.46-30 GHz (Earth-to-space) in all Regions, 48.2-50.2 GHz (Earth-to-space) in Region 2. This identification does not preclude the use of these frequency bands by other fixed-satellite service applications or by other services to which these frequency bands are allocated on a co-primary basis and does not establish priority in these Radio Regulations among users of

the frequency bands. Administrations should take this into account when considering regulatory provisions in relation to these frequency bands. See Resolution 143 (Rev.WRC-19).

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(517) * * *

(i) 5.517A The operation of earth stations in motion communicating with geostationary fixed-satellite service space stations within the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) shall be subject to the application of Resolution 169 (WRC-19).

(ii) [Reserved]

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(530) * * *

(ii) 5.530E The allocation to the fixed service in the frequency band 21.4-22 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction, and shall be in accordance with the provisions of Resolution 165 (WRC-19).

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(532) * * *

(ii) 5.532AA The allocation to the fixed service in the frequency band 24.25-25.25 GHz is identified for use in Region 2 by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS is limited to the HAPS-to-ground direction and shall be in accordance with the provisions of Resolution 166 (WRC-19).

(iii) 5.532AB The frequency band 24.25-27.5 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 242 (WRC-19) applies.

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(534) 5.534A The allocation to the fixed service in the frequency band 25.25-27.5 GHz is identified in Region 2 for use by high-altitude platform stations (HAPS) in accordance with the provisions of Resolution 166 (WRC-19). Such use of the fixed-service allocation by HAPS shall be limited to the ground-to-HAPS direction in the frequency band 25.25-27.0 GHz and to the HAPS-to-ground direction in the frequency band 27.0-27.5 GHz. Furthermore, the use of the frequency band 25.5-27.0 GHz by HAPS shall be limited to gateway links. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations.

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(536) * * *

(i) 5.536A Administrations operating earth stations in the Earth exploration-satellite service or the space research service shall not claim protection from stations in the fixed and mobile services operated by other administrations. In addition, earth stations in the Earth exploration-satellite service or in the space research service should be operated taking into account the most recent version of Recommendation ITU-R SA.1862. Resolution 242 (WRC-19) applies.

(ii) 5.536B In Algeria, Saudi Arabia, Austria, Bahrain, Belgium, Brazil, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Estonia, Finland, Hungary, India, Iran (Islamic Republic of), Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Slovenia, Sudan, Sweden, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the frequency band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. Resolution 242 (WRC-19) applies.

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(537) * * *

(i) 5.537A In Bhutan, Cameroon, China, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Iraq, Japan, Kazakhstan, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sudan, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the frequency band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution 145 (Rev.WRC-19).

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(543) * * *

(i) 5.543B The allocation to the fixed service in the frequency band 31-31.3 GHz is identified for worldwide use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution 167 (WRC-19).

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(546) 5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Oman, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the frequency band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 5.33).

(547) 5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution 75 (Rev.WRC-12)). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see para. (b)(516)(ii) of this section),

administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate.

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(550) * * *

(ii) 5.550B The frequency band 37-43.5 GHz, or portions thereof, is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Because of the potential deployment of FSS earth stations within the frequency range 37.5-42.5 GHz and high-density applications in the fixed-satellite service in the frequency bands 39.5-40 GHz in Region 1, 40-40.5 GHz in all Regions and 40.5-42 GHz in Region 2 (see paragraph (b)(516)(ii) of this section), administrations should further take into account potential constraints to IMT in these frequency bands, as appropriate. Resolution 243 (WRC-19) applies.

(iii) 5.550C The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to the application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service but not with non-geostationary-satellite systems in other services. Resolution 770 (WRC-19) shall also apply, and No. 22.2 shall continue to apply.

(iv) 5.550D The allocation to the fixed service in the frequency band 38-39.5 GHz is identified for worldwide use by administrations wishing to implement high-altitude platform stations (HAPS). In the HAPS-to-ground direction, the HAPS ground station shall not claim protection from stations in the fixed, mobile and fixed-satellite services; and No. 5.43A does not apply. This identification does not preclude the use of this frequency band by other fixed-service applications or by other services to which this frequency band is allocated on a co-primary basis and does not establish priority in the Radio Regulations. Furthermore, the development of the fixed-satellite, fixed and mobile services shall not be unduly constrained by HAPS. Such use of the fixed-service allocation by HAPS shall be in accordance with the provisions of Resolution 168 (WRC-19).

(v) 5.550E The use of the frequency bands 39.5-40 GHz and 40-40.5 GHz by non-geostationary-satellite systems in the mobile-satellite service (space-to-Earth) and by non-geostationary-satellite systems in the fixed-satellite service (space-to-Earth) is subject to the application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite and mobile-satellite services but not with non-geostationary-satellite systems in other services. No. 22.2 shall continue to apply for non-geostationary-satellite systems.

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(552) * * *

(i) 5.552A The allocation to the fixed service in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz is identified for use by high-altitude platform stations (HAPS). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated on a co-primary basis, and does not establish priority in the Radio Regulations. Such use of the fixed-service allocation in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz by HAPS shall be in accordance with the provisions of Resolution 122 (Rev.WRC-19).

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(553) * * *

(i) 5.553A In Algeria, Angola, Bahrain, Belarus, Benin, Botswana, Brazil, Burkina Faso, Cabo Verde, Korea (Rep. of), Côte d'Ivoire, Croatia, United Arab Emirates, Estonia, Eswatini, Gabon, Gambia, Ghana, Greece, Guinea, Guinea-Bissau, Hungary, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lesotho, Latvia, Liberia, Lithuania, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Qatar, Senegal, Seychelles, Sierra Leone, Slovenia, Sudan, South Africa, Sweden, Tanzania, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 45.5-47 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT), taking into account paragraph (b)(553) of this section. With respect to the aeronautical mobile service and radionavigation service, the use of this frequency band for the implementation of IMT is subject to agreement obtained under No. 9.21 with concerned administrations and shall not cause harmful interference to, or claim protection from these services. This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Resolution 244 (WRC-19) applies.

(ii) 5.553B In Region 2 and Algeria, Angola, Saudi Arabia, Australia, Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Comoros, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Djibouti, Egypt, United Arab Emirates, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kenya, Kuwait, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malaysia, Malawi, Mali, Morocco, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Singapore, Slovenia, Somalia, Sudan, South Sudan, South Africa, Sweden, Tanzania, Chad, Togo, Tunisia, Zambia and Zimbabwe, the frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. Resolution 243 (WRC-19) applies.

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(555) * * *

(ii) 5.555C The use of the frequency band 51.4-52.4 GHz by the fixed-satellite service (Earth-to-space) is limited to geostationary-satellite networks. The earth stations shall be limited to gateway earth stations with a minimum antenna diameter of 2.4 metres.

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(559) * * *

(i) 5.559AA The frequency band 66-71 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which this frequency band is allocated and does not establish priority in the Radio Regulations. Resolution 241 (WRC-19) applies.

(ii) 5.559B The use of the frequency band 77.5-78 GHz by the radiolocation service shall be limited to short-range radar for ground-based applications, including automotive radars. The technical characteristics of these radars are provided in the most recent version of Recommendation ITU-R M.2057. The provisions of No. 4.10 do not apply.

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(562) * * *

(ii) 5.562B In the frequency bands 105-109.5 GHz, 111.8-114.25 GHz and 217-226 GHz, the use of this allocation is limited to space-based radio astronomy only.

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(564) 5.564A For the operation of fixed and land mobile service applications in frequency bands in the range 275-450 GHz: The frequency bands 275-296 GHz, 306-313 GHz, 318-333 GHz and 356-450 GHz are identified for use by administrations for the implementation of land mobile and fixed service applications, where no specific conditions are necessary to protect Earth exploration-satellite service (passive) applications. The frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz may only be used by fixed and land mobile service applications when specific conditions to ensure the protection of Earth exploration-satellite service (passive) applications are determined in accordance with Resolution 731 (Rev.WRC-19). In those portions of the frequency range 275-450 GHz where radio astronomy applications are used, specific conditions (e.g. minimum separation distances and/or avoidance angles) may be necessary to ensure protection of radio astronomy sites from land mobile and/or fixed service applications, on a case-by-case basis in accordance with Resolution 731 (Rev.WRC-19). The use of the above-mentioned frequency bands by land mobile and fixed service applications does not preclude use by, and does not establish priority over, any other applications of radio services in the range of 275-450 GHz.

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(c) * * *

(1) US1 The bands 2501-2502 kHz, 5003-5005 kHz, 10.003-10.005 MHz, 15.005-15.01 MHz, 19.99-19.995 MHz, 20.005-20.01 MHz, and 25.005-25.01 MHz are also allocated to the space research service on a secondary basis for Federal use. In the event of interference to the reception of the standard frequency and time broadcasts, these space research transmissions are subject to immediate temporary or permanent shutdown.

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(52) US52 In the VHF maritime mobile band (156-162 MHz), the following provisions apply:

(i) Except as provided for below, the use of the bands 161.9625-161.9875 MHz (AIS 1 with center frequency 161.975 MHz) and 162.0125-162.0375 MHz (AIS 2 with center frequency 162.025 MHz) by the maritime mobile and mobile-satellite (Earth-to-space) services is restricted to Automatic Identification Systems (AIS). The use of these bands by the aeronautical mobile (OR) service is restricted to AIS emissions from search and rescue aircraft operations. Frequencies in the AIS 1 band may continue to be used by non-Federal base, fixed, and land mobile stations until March 2, 2024.

(ii) The use of the bands 156.7625-156.7875 MHz (AIS 3 with center frequency 156.775 MHz) and 156.8125-156.8375 MHz (AIS 4 with center frequency 156.825 MHz) by the mobile-satellite service (Earth-to-space) is restricted to the reception of long-range AIS broadcast messages from ships (Message 27; see most recent version of Recommendation ITU-R M.1371).

(iii) The frequency 156.3 MHz may also be used by aircraft stations for the purpose of search and rescue operations and other safety-related communication.

(iv) Federal stations in the maritime mobile service may also be authorized as follows:

(A) Vessel traffic services under the control of the U.S. Coast Guard on a simplex basis by coast and ship stations on the frequencies 156.25, 156.55, 156.6 and 156.7 MHz;

(B) Inter-ship use of the frequency 156.3 MHz on a simplex basis;

(C) Navigational bridge-to-bridge and navigational communications on a simplex basis by coast and ship stations on the frequencies 156.375 and 156.65 MHz;

(D) Port operations use on a simplex basis by coast and ship stations on the frequencies 156.6 and 156.7 MHz;

(E) Environmental communications on the frequency 156.75 MHz in accordance with the national plan; and

(F) Duplex port operations use of the frequencies 157 MHz for ship stations and 161.6 MHz for coast stations.

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(79) * * *

(iii) US79A The use of the bands 415-472 kHz, 479-495 kHz, and 505-510 kHz by the maritime mobile service is limited to radiotelegraphy.

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(82) US82 In the bands 4146-4152 kHz, 6224-6233 kHz, 8294-8300 kHz, 12.353-12.368 MHz, 16.528-16.549 MHz, 18.825-18.846 MHz, 22.159-22.18 MHz, and 25.1-25.121 MHz, the assignable frequencies may be authorized on a shared non-priority basis to Federal and non-Federal ship and coast stations (SSB telephony, with peak envelope power not to exceed 1 kW).

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(100) US100 The bands 2310-2320 and 2345-2360 MHz are available for Federal aeronautical telemetering and associated telecommand operations for flight testing of manned or unmanned aircraft, missiles, or major components thereof, on a secondary basis to the Wireless Communications Service (WCS). The frequencies 2312.5 MHz and 2352.5 MHz are shared on a co-equal basis by Federal stations for telemetering and associated telecommand operations of expendable and reusable launch vehicles, irrespective of whether such operations involve flight testing. Other Federal mobile telemetering uses may be provided in the bands 2310-2320 and 2345-2360 MHz on a non-interference basis to all other uses authorized pursuant to this paragraph (c)(100).

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(247) US247 The band 10.1-10.15 MHz is allocated to the fixed service on a primary basis outside the United States and its insular areas. Transmissions from stations in the amateur service must not cause harmful interference to this fixed service use and stations in the amateur service must make all necessary adjustments (including termination of transmission) if harmful interference is caused.

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(281) US281 In the band 25.07-25.21 MHz, non-Federal stations in the Industrial/Business Pool must not cause harmful interference to, and must accept interference from, stations in the maritime mobile service operating in accordance with the Table of Frequency Allocations.

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(283) US283 In the bands 2850-3025 kHz, 3400-3500 kHz, 4650-4700 kHz, 5450-5680 kHz, 6525-6685 kHz, 10.005-10.1 MHz, 11.275-11.4 MHz, 13.26-13.36 MHz, and 17.9-17.97 MHz, frequencies may be authorized for non-Federal flight test purposes on the condition that harmful interference will not be caused to services operating in accordance with the Table of Frequency Allocations.

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(296) US296 In the bands designated for ship wide-band telegraphy, facsimile and special transmission systems, the following assignable frequencies are available to non-Federal stations on a shared basis with Federal stations: 2070.5 kHz, 2072.5 kHz, 2074.5 kHz, 2076.5 kHz, 4154 kHz, 4170 kHz, 6235 kHz, 6259 kHz, 8302 kHz, 8338 kHz, 12.37 MHz, 12.418 MHz, 16.551 MHz, 16.615 MHz, 18.848 MHz, 18.868 MHz, 22.182 MHz, 22.238 MHz, 25.123 MHz, and 25.159 MHz.

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(312) US312 The frequency 173.075 MHz may also be authorized on a primary basis to non-Federal stations in the Public Safety Radio Pool, limited to police licensees and an authorized bandwidth not to exceed 12.5 kHz, for stolen vehicle recovery systems.

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(342) US342 In making assignments to stations of other services to which the bands in table 17 to paragraph (c)(342) of this section are allocated (*indicates radio astronomy use for spectral line observations), all practicable steps must be taken to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (*see* ITU *Radio Regulations* at Nos. 4.5 and 4.6 and Article 29).

Table 17 to paragraph (c)(342)

13.36-13.41 MHz	42.77-42.87 GHz*
25.55-25.67 MHz	43.07-43.17 GHz*
37.5-38.25 MHz	43.37-43.47 GHz*
322-328.6 MHz*	48.94-49.04 GHz*
1330-1400 MHz*	76-86 GHz
1610.6-1613.8 MHz*	92-94 GHz
1660-1660.5 MHz*	94.1-100 GHz
1668.4-1670 MHz*	102-109.5 GHz
3260-3267 MHz*	111.8-114.25 GHz
3332-3339 MHz*	128.33-128.59 GHz*
3345.8-3352.5 MHz*	129.23-129.49 GHz*
4825-4835 MHz*	130-134 GHz
4950-4990 MHz	136-148.5 GHz
6650-6675.2 MHz*	151.5-158.5 GHz
14.47-14.5 GHz*	168.59-168.93 GHz*
22.01-22.21 GHz*	171.11-171.45 GHz*
22.21-22.5 GHz	172.31-172.65 GHz*
22.81-22.86 GHz*	173.52-173.85 GHz*
23.07-23.12 GHz*	195.75-196.15 GHz*
31.2-31.3 GHz	209-226 GHz
36.43-36.5 GHz*	241-250 GHz
42.5-43.5 GHz	252-275 GHz

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(444) * * *

(ii) US444B In the band 5091-5150 MHz, the following provisions apply to the aeronautical mobile service:

(A) Use is restricted to:

(*1*) Systems operating in the aeronautical mobile (R) service (AM(R)S) in accordance with international aeronautical standards, limited to surface applications at airports, and in accordance with Resolution 748 (Rev.WRC-12) (*i.e.*, AeroMACS); and

(*2*) Aeronautical telemetry transmissions from aircraft stations (AMT) in accordance with Resolution 418 (Rev.WRC-19).

(B) Consistent with Radio Regulation No. 4.10, airport surface wireless systems operating in the AM(R)S have priority over AMT systems in the band.

(C) Operators of AM(R)S and AMT systems at the following airports are urged to cooperate with each other in the exchange of information about planned deployments of their respective systems so that the prospects for compatible sharing of the band are enhanced:

(*1*) Boeing Field/King County Intl Airport, Seattle, WA;

(*2*) Lambert-St. Louis Intl Airport, St. Louis, MO;

(*3*) Charleston AFB/Intl Airport, Charleston, SC;

(*4*) Wichita Dwight D. Eisenhower National Airport, Wichita, KS;

(*5*) Roswell Intl Air Center Airport, Roswell, NM; and

(*6*) William P. Gwinn Airport, Jupiter, FL. Other airports may be addressed on a case-by-case basis.

(D) Aeronautical fixed communications that are an integral part of the AeroMACS system authorized in paragraph (c)(444)(ii)(A)(*1*) of this section are also authorized on a primary basis.

* * * * *

(d) * * *

(33) NG33 In the band 614-698 MHz, the following provisions apply. In the sub-bands 617-652 MHz and 663-698 MHz, low power television and TV translator stations may operate on a secondary basis to stations in the fixed and mobile services until required to terminate their operations in accordance with § 73.3700(g)(4) of this chapter, and white space devices may also operate in these sub-bands, except in those areas where their use is prohibited in accordance with §§ 15.707(a)(5) and 15.713(b)(2)(iv) of this chapter. In addition, white space devices may operate in the sub-band 657-663 MHz in accordance with § 15.707(a)(2) of this chapter, low power auxiliary stations may operate in the sub-band 653-657 MHz, and unlicensed wireless microphones may operate in the sub-bands 614-616 MHz and 657-663 MHz.

* * * * *

(169) NG169 In the band 3650-3700 MHz, use of the non-Federal fixed-satellite service (space-to-Earth) is limited to international inter-continental systems and, after December 1, 2000, primary operations are limited to grandfathered earth stations. All other earth station operations in the band

3650-3700 MHz are authorized on a secondary basis. Grandfathered earth stations are those authorized prior to December 1, 2000, or granted as a result of an application filed prior to December 1, 2000, and constructed within 12 months of initial authorization. License applications for primary operations for new earth stations, major amendments to pending earth station applications, or applications for major modifications to earth station facilities filed on or after December 18, 1998, and prior to December 1, 2000, will not be accepted unless the proposed facilities are within 16.1 kilometers (10 miles) of an authorized primary earth station operating in the band 3650-3700 MHz. License applications for primary operations by new earth stations, major amendments to pending earth station applications, and applications for major modifications to earth station facilities, filed after December 1, 2000, will not be accepted, except for changes in polarization, antenna orientation or ownership of a grandfathered earth station.

* * * * *

(e) * * *

(2) G2 In the bands 216.965-216.995 MHz, 420-450 MHz (except as provided for in G129), 890-902 MHz, 928-942 MHz, 1300-1390 MHz, 2310-2390 MHz, 2417-2450 MHz, 2700-2900 MHz, 3300-3500 MHz, 5650-5925 MHz, and 9000-9200 MHz, use of the Federal radiolocation service is restricted to the military services.

* * * * *

(32) G32 Except for weather radars on meteorological satellites in the band 9.975-10.025 GHz and for Federal survey operations (see paragraph (c)(108) of this section), Federal radiolocation in the band 10-10.5 GHz is limited to the military services.

* * * * *

(115) G115 In the band 13.36-13.41 MHz, the fixed service is allocated on a primary basis outside the conterminous United States. Within the conterminous United States, assignments in the fixed service are permitted, and will be protected for national defense purposes or, if they are to be used only in an emergency jeopardizing life, public safety, or important property under conditions calling for immediate communication where other means of communication do not exist.

* * * * *

(132) G132 Use of the radionavigation-satellite service in the band 1215-1240 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under paragraph (b)(331) of this section. Furthermore, the use of the radionavigation-satellite service in the band 1215-1240 MHz shall be subject to the condition that no harmful interference is caused to the radiolocation service. ITU Radio Regulation No. 5.43 shall not apply in respect of the radiolocation service. ITU Resolution 608 (Rev.WRC-19) shall apply.

* * * * *

APPENDIX B

Proposed Rules

The Federal Communications Commission proposes to amend 47 CFR parts 2, 25, 74, 78, 90, 97, and 101 as follows:

PART 2—FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Amend section 2.1(c) by:

i. Revising the definition for "Coordinated Universal Time (UTC)" and

ii. Adding definitions for "Frequency band (Band)," "Meteorological aids land station," and "Meteorological aids mobile station" in alphabetical order.

The revisions and additions read as follows:

§ 2.1 Terms and definitions.

* * * * *

(c) * * *

Coordinated Universal Time (UTC). Time scale, based on the second (SI), as described in Resolution 655 (WRC-15). (RR)

* * * * *

Frequency band (Band). A contiguous set of frequencies lying between two specified limiting frequencies. A frequency band is characterized by two values which define its position in the frequency spectrum, for example, its lower and upper limiting frequencies.

* * * * *

Meteorological aids land station. A station in the meteorological aids service not intended to be used while in motion. (RR)

Meteorological aids mobile station. A station in the meteorological aids service intended to be used while in motion or during halts at unspecified points. (RR)

* * * * *

3. Amend section 2.102 by adding paragraph (i) to read as follows:

§ 2.102 Assignment of frequencies.

* * * * *

(i) Space research systems intended to operate in deep space may also use the space research service (deep space) allocations, with the same status as those allocations, when the spacecraft is near the Earth, such as during launch, early orbit, flying by the Earth and returning to the Earth.

4. Amend section 2.105 by revising paragraph (d)(6) and adding paragraphs (d)(7) and (8) to read as follows:

§ 2.105 United States Table of Frequency Allocations.

* * * * *

(d) * * *

(6) The footnote references which appear in the United States Table below the allocated service or services apply to more than one of the allocated services, or to the whole of the allocation concerned.

(7) The footnote references which appear to the right of the name of a service are applicable only to that particular service.

(8) The coordinates of latitude and longitude that are listed in United States, Federal, and non-Federal footnotes are referenced to the North American Datum of 1983 (NAD 83).

5. Amend section 2.106 by:

a. Revising paragraph (a) Allocation Table pages 22, 24, 26 through 30, 32, 45, 47, and 48.

b. Revising paragraphs (c)(13) and (23);

c. Adding paragraph (c)(78);

d. Revising paragraphs (c)(117), (128), (139), and (224);

e. Adding paragraph (c)(265);

f. Revising paragraphs (c)(270), (287), and (288);

g. Adding paragraphs (c)(460), (460)(i), and (474);

h. Revising paragraph (d)(62);

i. Removing and reserving paragraph (d)(155); and

j. Revising paragraph (d)(159).

The revisions and additions read as follows:

§ 2.106 Table of Frequency Allocations.

* * * * *

137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208			137.825-138 SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-satellite (space-to-Earth) US319 US320 5.208		
138-143.6 AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	138-143.6 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth)	138-143.6 FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	138-144 FIXED MOBILE	138-144	
143.6-143.65 AERONAUTICAL MOBILE (OR) SPACE RESEARCH (space-to-Earth) 5.211 5.212 5.214	143.6-143.65 FIXED MOBILE RADIOLOCATION SPACE RESEARCH (space-to-Earth)	143.6-143.65 FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.207 5.213			
143.65-144 AERONAUTICAL MOBILE (OR) 5.210 5.211 5.212 5.214	143.65-144 FIXED MOBILE RADIOLOCATION Space research (space-to-Earth)	143.65-144 FIXED MOBILE Space research (space-to-Earth) 5.207 5.213	G30		
144-146 AMATEUR AMATEUR-SATELLITE 5.216			144-148	144-146 AMATEUR AMATEUR-SATELLITE	Amateur Radio (97)
146-148 FIXED MOBILE except aeronautical mobile (R)	146-148 AMATEUR 5.217	146-148 AMATEUR FIXED MOBILE 5.217		146-148 AMATEUR	
148-149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221	148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 5.218 5.219 5.221		148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) US319 US320 US323 US325 5.218 5.219 G30	148-149.9 MOBILE-SATELLITE (Earth-to-space) US320 US323 US325 5.218 5.219 US319	Satellite Communications (25)
149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.220			149.9-150.05 MOBILE-SATELLITE (Earth-to-space) US319 US320		

150.05-153 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149	150.05-154 FIXED MOBILE 5.225	150.05-150.8 FIXED MOBILE US73 G30	150.05-150.8 US73	

5.226	5.226			157.45-161.575 FIXED LAND MOBILE NG28 NG111 NG112 5.226 NG6 NG70 NG124 NG148	Public Mobile (22) Remote Pickup (74D) Maritime (80) Private Land Mobile (90)
			161.575-161.625 5.226 US52	161.575-161.625 MARITIME MOBILE 5.226 US52 NG6 NG17	Public Mobile (22) Maritime (80)
			161.625-161.9625 US266	161.625-161.775 LAND MOBILE NG6 5.226	Public Mobile (22) Remote Pickup (74D) Low Power Auxiliary (74H)
				161.775-161.9625 MOBILE except aeronautical mobile US266 NG6 5.226	Maritime (80) Private Land Mobile (90)
161.9375-161.9625 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226	161.9375-161.9625 FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226				
161.9625-161.9875 FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B	161.9625-161.9875 AERONAUTICAL MOBILE (OR) MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space) 5.228C 5.228D	161.9625-161.9875 MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226	161.9625-161.9875 AERONAUTICAL MOBILE (OR) (AIS 1) MARITIME MOBILE (AIS 1) MOBILE-SATELLITE (Earth-to-space) (AIS 1) 5.228C US52		Satellite Communications (25) Maritime (80)
161.9875-162.0125 FIXED MOBILE except aeronautical mobile Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226 5.229	161.9875-162.0125 FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA 5.226		161.9875-162.0125	161.9875-162.0125 MOBILE except aeronautical mobile 5.226	Maritime (80)
162.0125-162.0375 FIXED MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.228F 5.226 5.228A 5.228B 5.229	162.0125-162.0375 AERONAUTICAL MOBILE (OR) MARITIME MOBILE MOBILE-SATELLITE (Earth-to-space) 5.228C 5.228D	162.0125-162.0375 MARITIME MOBILE Aeronautical mobile (OR) 5.228E Mobile-satellite (Earth-to-space) 5.228F 5.226	162.0125-162.0375 AERONAUTICAL MOBILE (OR) (AIS 2) MARITIME MOBILE (AIS 2) MOBILE-SATELLITE (Earth-to-space) (AIS 2) 5.228C US52		Satellite Communications (25) Maritime (80)

162.0375-174 FIXED MOBILE except aeronautical mobile 5.226 5.229	162.0375-174 FIXED MOBILE 5.226 5.230 5.231	162.0375-173.2 FIXED MOBILE US8 US11 US13 US55 US73 US300 US312 G5	162.0375-173.2 US8 US11 US13 US55 US73 US300 US312	Remote Pickup (74D) Private Land Mobile (90)
		173.2-173.4	173.2-173.4 FIXED Land mobile	Private Land Mobile (90)
		173.4-174 FIXED MOBILE G5	173.4-174	Page 24
272-273 SPACE OPERATION (space-to-Earth) FIXED MOBILE 5.254				
273-312 FIXED MOBILE 5.254				
312-315 FIXED MOBILE Mobile-satellite (Earth-to-space) 5.254 5.255				
315-322 FIXED MOBILE 5.254		G27 G100		
322-328.6 FIXED MOBILE RADIO ASTRONOMY 5.149		322-328.6 FIXED MOBILE US342 G27	322-328.6 US342	
328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258 5.259		328.6-335.4 AERONAUTICAL RADIONAVIGATION 5.258		Aviation (87)
335.4-387 FIXED MOBILE 5.254		335.4-399.9 FIXED MOBILE	335.4-399.9	
387-390 FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.254 5.255				

390-399.9 FIXED MOBILE 5.254	G27 G100		
399.9-400.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.220	399.9-400.05 MOBILE-SATELLITE (Earth-to-space) US319 US320		Satellite Communication (25)
400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261 5.262	400.05-400.15 STANDARD FREQUENCY AND TIME SIGNAL-SATELLITE (400.1 MHz) 5.261		

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
400.15-401 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264			400.15-401 METEOROLOGICAL AIDS (radiosonde) US70 METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLLITE (space-to-Earth) US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.264	400.15-401 METEOROLOGICAL AIDS (radiosonde) US70 MOBILE-SATELLITE (space-to-Earth) US319 US320 US324 SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.264	Satellite Communications (25)
401-402 METEOROLOGICAL AIDS SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile			401-402 METEOROLOGICAL AIDS (radiosonde) US70 SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) US64 US384	401-402 METEOROLOGICAL AIDS (radiosonde) US70 SPACE OPERATION (space-to-Earth) Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US64 US384	MedRadio (95I)
402-403 METEOROLOGICAL AIDS EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile			402-403 METEOROLOGICAL AIDS (radiosonde) US70 EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) US64 US384	402-403 METEOROLOGICAL AIDS (radiosonde) US70 Earth exploration-satellite (Earth-to-space) Meteorological-satellite (Earth-to-space) US64 US384	
403-406 METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile 5.265			403-406 METEOROLOGICAL AIDS (radiosonde) US70 US64 US265 G6	403-406 METEOROLOGICAL AIDS (radiosonde) US70 US64 US265	
406-406.1 MOBILE-SATELLITE (Earth-to-space) 5.265 5.266 5.267			406-406.1 MOBILE-SATELLITE (Earth-to-space) 5.266 5.267 US265		Maritime (EPIRBs) (80V) Aviation (ELTs) (87F) Personal Radio (95)
406.1-410 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149 5.265			406.1-410 FIXED MOBILE RADIO ASTRONOMY US74 US13 US55 US117 US265 G5 G6	406.1-410 RADIO ASTRONOMY US74 US13 US55 US117 US265	Private Land Mobile (90)

410-420 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) 5.268		410-420 FIXED MOBILE SPACE RESEARCH (space-to-space) 5.268 US13 US55 US64 G5	410-420 Space research (space-to-space) 5.268 US13 US55 US64	Private Land Mobile (90) MedRadio (95I)
420-430 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271		420-450 RADIOLOCATION G2 G129	420-450 Amateur US270	Private Land Mobile (90) MedRadio (95I) Amateur Radio (97)
430-432 AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277	430-432 RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279			
432-438 AMATEUR RADIOLOCATION Earth exploration-satellite (active) 5.279A 5.138 5.271 5.276 5.277 5.280 5.281 5.282	432-438 RADIOLOCATION Amateur Earth exploration-satellite (active) 5.279A 5.271 5.276 5.277 5.278 5.279 5.281 5.282			
438-440 AMATEUR RADIOLOCATION 5.271 5.274 5.275 5.276 5.277 5.283	438-440 RADIOLOCATION Amateur 5.271 5.276 5.277 5.278 5.279			
440-450 FIXED MOBILE except aeronautical mobile Radiolocation 5.269 5.270 5.271 5.284 5.285 5.286		5.286 US64 US87 US230 US269 US270 US397 G8	5.282 5.286 US64 US87 US230 US269 US397	
450-455 FIXED MOBILE 5.286AA 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E		450-454 5.286 US64 US87	450-454 LAND MOBILE 5.286 US64 US87 NG112 NG124	Remote Pickup (74D) Low Power Auxiliary (74H) Private Land Mobile (90) MedRadio (95I)
		454-456	454-455 FIXED LAND MOBILE US64 NG32 NG112 NG148	Public Mobile (22) Maritime (80) MedRadio (95I)

455-456 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	455-456 FIXED MOBILE 5.286AA MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209	455-456 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	US64	455-456 LAND MOBILE US64	Remote Pickup (74D) Low Power Auxiliary (74H) MedRadio (95I)

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
456-459 FIXED MOBILE 5.286AA 5.271 5.287 5.288			456-459 US64 US287 US288	456-460 FIXED LAND MOBILE	Public Mobile (22) Maritime (80) Private Land Mobile (90) MedRadio (95I)
459-460 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	459-460 FIXED MOBILE 5.286AA MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209	459-460 FIXED MOBILE 5.286AA 5.209 5.271 5.286A 5.286B 5.286C 5.286E	459-460	US64 US287 US288 NG32 NG112 NG124 NG148	
460-470 FIXED MOBILE 5.286AA Meteorological-satellite (space-to-Earth) 5.287 5.288 5.289 5.290			460-470 Meteorological-satellite (space-to-Earth) US73 US209 US287 US288 US289	460-462.5375 FIXED LAND MOBILE US209 US289 NG124	Private Land Mobile (90)
				462.5375-462.7375 LAND MOBILE US289	Personal Radio (95)
				462.7375-467.5375 FIXED LAND MOBILE US73 US209 US287 US288 US289 NG124	Maritime (80) Private Land Mobile (90)
				467.5375-467.7375 LAND MOBILE US287 US288 US289	Maritime (80) Personal Radio (95)
				467.7375-470 FIXED LAND MOBILE US73 US287 US288 US289 NG124	Maritime (80) Private Land Mobile (90)
470-694 BROADCASTING	470-512 BROADCASTING Fixed Mobile 5.292 5.293 5.295	470-585 FIXED MOBILE 5.296A BROADCASTING 5.291 5.298	470-608	470-512 FIXED LAND MOBILE BROADCASTING NG5 NG14 NG66 NG115 NG149	Public Mobile (22) Broadcast Radio (TV)(73) LPTV, TV Translator/Booster (74G) Low Power Auxiliary (74H) Private Land Mobile (90)
	512-608 BROADCASTING 5.295 5.297	585-610 FIXED MOBILE 5.296A BROADCASTING RADIONAVIGATION 5.149 5.305 5.306 5.307		512-608 BROADCASTING NG5 NG14 NG115 NG149	Broadcast Radio (TV)(73) LPTV, TV Translator/Booster (74G) Low Power Auxiliary (74H)
	608-614 RADIO ASTRONOMY		608-614 LAND MOBILE (medical telemetry and medical		Personal Radio (95)

	Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	610-890 FIXED MOBILE 5.296A 5.313A 5.317A BROADCASTING	telecommand) RADIO ASTRONOMY US74 US246	

5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312	614-698 BROADCASTING Fixed Mobile 5.293 5.308 5.308A 5.309		614-890	614-698 FIXED MOBILE NG5 NG14 NG33 NG115 NG149	 RF Devices (15) Wireless Communications (27) LPTV, TV Translator/Booster (74G) Low Power Auxiliary (74H)
694-790 MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING	698-806 MOBILE 5.317A BROADCASTING Fixed			698-758 FIXED MOBILE NG159	 Wireless Communications (27) LPTV and TV Translator (74G)
5.300 5.312				758-775 FIXED MOBILE NG34 NG159	 Public Safety Land Mobile (90R)
790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING				775-788 FIXED MOBILE NG159	 Wireless Communications (27) LPTV and TV Translator (74G)
	5.293 5.309			788-805 FIXED MOBILE NG34 NG159	 Public Safety Land Mobile (90R)
	806-890 FIXED MOBILE 5.317A BROADCASTING			805-806 FIXED MOBILE NG159	 Wireless Communications (27) LPTV and TV Translator (74G)
5.312 5.319				806-809 LAND MOBILE	 Public Safety Land Mobile (90S)
862-890 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322		5.149 5.305 5.306 5.307 5.320		809-849 FIXED LAND MOBILE	 Public Mobile (22) Private Land Mobile (90)
				849-851 AERONAUTICAL MOBILE	 Public Mobile (22)
				851-854 LAND MOBILE	 Public Safety Land Mobile (90S)
	5.317 5.318			854-894 FIXED LAND MOBILE	 Public Mobile (22) Private Land Mobile (90)

5.319 5.323					
				US116 US268	Page 30
				939.5-940 FIXED LAND MOBILE US116 US268	Private Land Mobile (90)
				940-941 FIXED MOBILE US116 US268	Personal Communications (24)
5.323	5.325	5.327	US116 US268 G2		
942-960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 5.323	942-960 FIXED MOBILE 5.317A	942-960 FIXED MOBILE 5.317A BROADCASTING 5.320	941-944 FIXED US84 US268 US301 G2 944-960	941-944 FIXED US84 US268 US301 NG30 NG35 944-960 FIXED NG35	Public Mobile (22) Aural Broadcast Auxiliary (74E) Low Power Auxiliary (74H) Fixed Microwave (101)
960-1164 AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 5.328AA			960-1164 AERONAUTICAL MOBILE (R) 5.327A AERONAUTICAL RADIONAVIGATION 5.328 5.328AA US78 US224		Aviation (87)
1164-1215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A			1164-1215 AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328A US224		
1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332			1215-1240 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) G132 SPACE RESEARCH (active) 5.332	1215-1240 Earth exploration-satellite (active) Space research (active)	
1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A			1240-1300 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 SPACE RESEARCH (active) AERONAUTICAL RADIONAVIGATION 5.332 5.335	1240-1300 AERONAUTICAL RADIONAVIGATION Amateur Earth exploration-satellite (active) Space research (active) 5.282	Amateur Radio (97)
1300-1350 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-space)			1300-1350 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation G2	1300-1350 AERONAUTICAL RADIONAVIGATION 5.337	Aviation (87)

5.149 5.337A		US342	US342	
1350-1400 FIXED MOBILE RADIOLOCATION	1350-1400 RADIOLOCATION 5.338A	1350-1390 FIXED MOBILE RADIOLOCATION G2 5.334 5.339 US342 US385 G27 G114	1350-1390 5.334 5.339 US342 US385	
		1390-1395 5.339 US79 US342 US385	1390-1395 FIXED MOBILE except aeronautical mobile 5.339 US79 US342 US385 NG338A	Wireless Communications (27)
5.149 5.338 5.338A 5.339	5.149 5.334 5.339	1395-1400 LAND MOBILE (medical telemetry and medical telecommand) 5.339 US79 US342 US385		Personal Radio (95)

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
7145-7190 FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 5.459			7145-7190 FIXED SPACE RESEARCH (deep space)(Earth-to-space) US262 5.458 G116	7145-7190 5.458 US262	RF Devices (15)
7190-7235 EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED MOBILE SPACE RESEARCH (Earth-to-space) 5.460 5.458 5.459			7190-7235 EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A 5.460B FIXED SPACE RESEARCH (Earth-to-space) 5.460 5.458 US460 US460A G134	7190-7235 5.458 US460 US460A	
7235-7250 EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A FIXED MOBILE 5.458			7235-7250 EARTH EXPLORATION-SATELLITE (Earth-to-space) 5.460A FIXED 5.458 US460A	7235-7250 5.458 US460A	
7250-7300 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 5.461			7250-7300 FIXED-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed G117	7250-8025	
7300-7375 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.461			7300-7375 FIXED FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth) G117		
7375-7450 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB			7375-7450 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB Mobile-satellite except maritime mobile-satellite (space-to-Earth) G117		
7450-7550 FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA 5.461AB			7450-7550 FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) 5.461AA		

5.461A	5.461AB Mobile-satellite except maritime mobile-satellite (space-to-Earth) G104 G117		

International Table			United States Table		FCC Rule Part(s)
Region 1 Table	Region 2 Table	Region 3 Table	Federal Table	Non-Federal Table	
8.65-8.75 RADIOLOCATION 5.468 5.469			8.65-9 RADIOLOCATION G59	8.65-9 Radiolocation	Aviation (87) Private Land Mobile (90)
8.75-8.85 RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.470 5.471					
8.85-9 RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473			US53	US53	
9-9.2 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION 5.471 5.473A			9-9.2 AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION G2 5.473A G19	9-9.2 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation	
9.2-9.3 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474 5.474D			9.2-9.3 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C MARITIME RADIONAVIGATION 5.472 Radiolocation US110 G59 5.474 US474D	9.2-9.3 MARITIME RADIONAVIGATION 5.472 Earth exploration-satellite (active) 5.474A 5.474B 5.474C Radiolocation US110 5.474 US474D	Maritime (80) Private Land Mobile (90)
9.3-9.5 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION 5.475 SPACE RESEARCH (active) 5.427 5.474 5.475A 5.475B 5.476A			9.3-9.5 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G56 RADIONAVIGATION US475 SPACE RESEARCH (active) Meteorological aids 5.427 5.474 5.475A 5.475B US67 US71 US476A	9.3-9.5 RADIONAVIGATION US475 Meteorological aids Earth exploration-satellite (active) Radiolocation Space research (active) 5.427 5.474 US67 US71 US476A	Maritime (80) Aviation (87) Private Land Mobile (90)
9.5-9.8 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) 5.476A			9.5-9.8 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active)	9.5-9.9 Earth exploration-satellite (active) Radiolocation Space research (active)	Private Land Mobile (90)

9.8-9.9 RADIOLOCATION Earth exploration-satellite (active) Fixed Space research (active) 5.477 5.478 5.478A 5.478B			9.8-9.9 RADIOLOCATION Earth exploration-satellite (active) Space research (active)		
9.9-10 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Fixed 5.474D 5.477 5.478 5.479			9.9-10 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION 5.479 US474D	9.9-10 Earth exploration-satellite (active) 5.474A 5.474B 5.474C Radiolocation 5.479 US474D	
10-10.4 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	10-10.4 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION Amateur 5.474D 5.479 5.480	10-10.4 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C FIXED MOBILE RADIOLOCATION Amateur 5.474D 5.479	10-10.5 EARTH EXPLORATION-SATELLITE (active) 5.474A 5.474B 5.474C RADIOLOCATION US108 G32	10-10.45 Amateur Earth exploration-satellite (active) 5.474A 5.474B 5.474C Radiolocation US108 5.479 US128 474D NG50	Private Land Mobile (90) Amateur Radio (97)
10.4-10.45 FIXED MOBILE RADIOLOCATION Amateur	10.4-10.45 RADIOLOCATION Amateur 5.480	10.4-10.45 FIXED MOBILE RADIOLOCATION Amateur			
10.45-10.5 RADIOLOCATION Amateur Amateur-satellite 5.481			5.479 US128 US474D	10.45-10.5 Amateur Amateur-satellite Radiolocation US108 US128 NG50	
10.5-10.55 FIXED MOBILE Radiolocation	10.5-10.55 FIXED MOBILE RADIOLOCATION		10.5-10.55 RADIOLOCATION US59		Private Land Mobile (90)
10.55-10.6 FIXED MOBILE except aeronautical mobile Radiolocation			10.55-10.6	10.55-10.6 FIXED	Fixed Microwave (101)
10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 5.482 5.482A			10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) US130 US131 US482	10.6-10.68 EARTH EXPLORATION-SATELLITE (passive) FIXED US482 SPACE RESEARCH (passive) US130 US131	
10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY			10.68-10.7 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74		

SPACE RESEARCH (passive) 5.340 5.483		SPACE RESEARCH (passive) US131 US246		
10.7-10.95 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.7-10.95 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE except aeronautical mobile	10.7-11.7	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 US131 US211 NG52	Satellite Communications (25) Fixed Microwave (101)
10.95-11.2 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.95-11.2 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.484B MOBILE except aeronautical mobile	US131 US211	NG527A	

* * * * *

UNITED STATES (US) FOOTNOTES

(c) * * *

(13)(i) US13 The following center frequencies, each with a channel bandwidth not greater than 12.5 kHz, are available for assignment to non-Federal fixed stations for the specific purpose of transmitting hydrological and meteorological data in cooperation with Federal agencies, subject to the condition that harmful interference will not be caused to Federal stations:

Table 2 to paragraph (c)(13)(i):

HYDRO CHANNELS (MHZ)

169.4250	170.2250	171.0250	171.8375	412.6625
169.4375	170.2375	171.0375	171.8500	412.6750
169.4500	170.2500	171.0500	171.8625	412.6875
169.4625	170.2625	171.0625	171.8750	412.7125
169.4750	170.2750	171.0750	171.8875	412.7250
169.4875	170.2875	171.0875	171.9000	412.7375
169.5000	170.3000	171.1000	171.9125	412.7625
169.5125	170.3125	171.1125	171.9250	412.7750
169.5250	170.3250	171.1250	406.1250	415.1250
……...	……...	171.8250	406.1750	415.1750

(ii) After [**INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION OF FINAL RULES**], no assignments on the frequencies 406.125 MHz and 406.175 MHz will be made, but stations with existing assignments may continue to operate on these frequencies.

* * * * *

(23) US23 The band 5351.5-5366.5 kHz (60 m band) is allocated to the amateur service on a secondary basis. Amateur service use of the 60 m band frequencies must meet the requirements in Part 97 of these rules. Amateur operators using the data and RTTY emissions must exercise care to limit the length of transmissions so as to avoid causing harmful interference to Federal stations.

* * * * *

(78) US78 Military systems used for Identification, Friend or Foe (IFF) operations are authorized to operate in the band 960-1164 MHz on center frequencies 1030 MHz for interrogators and 1090 MHz for transponders on the condition that harmful interference will not be caused to the aeronautical radionavigation service (ARNS) or the aeronautical mobile (R) service (AM(R)S).

* * * * *

(117) US117 In the band 406.1-410 MHz, the following provisions shall apply:

(i) Stations in the fixed and mobile services are limited to a transmitter output power of 125 watts, and new authorizations for stations, other than mobile stations, are subject to prior coordination by the applicant in the following areas:

(A) Within Puerto Rico and the U.S. Virgin Islands, contact Spectrum Manager, Arecibo Observatory, HC3 Box 53995, Arecibo, PR 00612. Phone: 787-878-2612, Fax: 787-878-1861, E-mail: prcz@naic.edu.

(B) Within 350 km of the Very Large Array (34° 04' 44" N, 107° 37' 06" W), contact Spectrum Manager, National Radio Astronomy Observatory, P.O. Box O, 1003 Lopezville Road, Socorro, NM 87801. Phone: 505-835-7000, Fax: 505-835-7027, E-mail: nrao-rfi@nrao.edu.

(C) Within 10 km of the Table Mountain Observatory (40° 08' 02" N, 105° 14' 40" W) and for operations only within the sub-band 407-409 MHz, contact Radio Frequency Manager, Department of Commerce, 325 Broadway, Boulder, CO 80305. Phone: 303-497-4619, Fax: 303-497-6982, E-mail: frequencymanager@its.bldrdoc.gov.

(ii) Non-Federal use is limited to the radio astronomy service and as provided by footnotes US13 and US55.

* * * * *

(128) US128 In the band 10-10.5 GHz, pulsed emissions are prohibited, except for the military services and for weather radars on board meteorological satellites in the sub-band 10-10.025 GHz. The amateur service, the amateur satellite service, and the non-Federal radiolocation service, which shall not cause harmful interference to the Federal radiolocation service, are the only non-Federal services permitted in this band. The non-Federal radiolocation service is limited to survey operations as specified in footnote US108.

* * * * *

(139) US139 In the band 18.3-19.3 GHz, earth station licensees in the fixed-satellite service (space-to-Earth) may require that licensees of grandfathered stations in the fixed service cease operations in accordance with the provisions in section 101.95 of this chapter.

* * * * *

(224) US224 Federal systems utilizing spread spectrum techniques for terrestrial communication, navigation and identification may be authorized to operate in the band 960-1215 MHz on the condition that harmful interference will not be caused to the aeronautical mobile (R) and aeronautical radionavigation services in the band 960-1164 MHz, military Identification Friend or Foe (IFF) systems on center frequencies 1030/1090 MHz, aeronautical mobile-satellite (R) service (Earth-to-space) in the band 1087.7-1092.3 MHz, and the aeronautical radionavigation and radionavigation-satellite (space-to-Earth) (space-to-space) services in the band 1164-1215 MHz. These systems will be handled on a case-by-case basis. Such systems are subject to a review at the national level for operational requirements and electromagnetic compatibility prior to development, procurement or modification.

* * * * *

(265) US265 In accordance with Resolution 205 (Rev.WRC-19), the following provisions apply in the band 403-410 MHz:

(i) New frequency assignments to stations in the fixed and mobile services will not be made within the bands 405.9-406.0 MHz and 406.1-406.2 MHz.

(ii) The frequency drift characteristics of radiosondes must be taken into account when selecting their operating frequencies above 405 MHz to avoid transmitting in the band 406-406.1 MHz and all practical steps must be taken to avoid frequency drifting close to 406 MHz.

* * * * *

(270) US270 In the band 420-450 MHz, the following provisions shall apply to the amateur service:

(i) The peak envelope power of an amateur station shall not exceed 50 watts in the following areas, unless expressly authorized by the FCC after mutual agreement, on a case-by-case basis, between the

Regional Director of the applicable field office and the military area frequency coordinator at the applicable military base as listed in table 1 to paragraph (c)(270)(i).

Table 1 to paragraph (c)(270)(i)

Location	Geographic limitation	Coordination contact information
Arizona	None (statewide)	DoD AFC AZ, (520) 538-6423 DoD AFC AZ – DSN – 879-6423
New Mexico	None (statewide)	DoD AFC WSMR – DSN – 258-5417 DoD AFC WSMR, (575) 678-5417, usarmy.wsmr.imcomcentral.list.dodafc@mail.mil
Texas	West of longitude 104° W	
California	South of latitude 37° 10' N	DoD Western AFC, (760) 939-6832 DoD Western – DSN – 437-6832
Nevada	South of latitude 37° 10' N	Nevada AFC – DSN – 875-0607 Nevada AFC, (702) 679-0607, dodafc@nellis.af.mil usaf.nellis.99-abw.mbx.dod-afcorg@mail.smil.mil
Point Mugu, CA	Within 322 km of 34° 09' N, 119° 11' W	NMCSO SW DSN 312-735-9889 NMCSO SW at (619)545-9978, Nctssdsdni_nmcso_southwest@navy.mil
Florida	None (statewide)	DoD Eastern – DSN – 467-8436 DoD Eastern AFC, (321) 853-8426, 45sw.dodeafc@us.af.mil
Patrick AFB, FL	Within 322 km of 28° 21' N, 080° 43' W	
Eglin AFB, FL	Within 322 km of 30° 30' N, 086° 30' W	DoD Gulf – DSN – 875-5648 DoD Gulf AFC, (850) 883-5982
Beale AFB, CA	Within 240 km of 39° 08' N, 121° 26' W	HQ SpOC Spectrum Management Office, (719) 554-6400, SpOC.SMO@us.af.mil HQ SpOC DSN – 692-6400
Goodfellow AFB, TX	Within 200 km of 31° 25' N, 100° 24' W	
Warner Robins AFB, GA	Within 200 km of 32° 38' N, 083° 35' W	
Clear AFS, AK	Within 160 km of 64° 17' N, 149° 10' W	
Concrete, ND	Within 160 km of 48° 43' N, 097° 54' W	
Otis AFB, MA	Within 160 km of 41° 45' N, 070° 32' W	

(ii) In the sub-band 420-430 MHz, the amateur service is not allocated north of Line A (def. § 2.1).

* * * * *

(287) US287 The bands 457.5125-457.6125 MHz, 467.53125-467.54375 MHz, 467.512375-467.518625 MHz, 467.55625-467.56875 MHz, and 467.7375-467.8375 MHz are also allocated to the maritime mobile service on a co-equal, primary basis with the non-Federal fixed and land mobile services. Use of these frequency bands by the maritime mobile service is limited to on-board communication stations. In these frequency bands, stations in the fixed and land mobile services may not claim protection from interference caused by on-board communication stations operating in accordance with US288 and on-board communication stations may not claim protection from stations in the fixed and land mobile services.

(288) US288 In the territorial waters of the United States, footnote 5.287 applies, except that on-board communication stations must transmit only on the listed frequencies and must operate as specified herein. On-board repeater stations and mobile stations used for single-frequency simplex operation may

transmit only in the band 457.5125-457.6125 MHz. The preferred frequencies for repeater systems are 457.525 MHz (channel 1 or 11), 457.5375 MHz (channel 12), 457.550 MHz (channel 2 or 13), 457.5625 MHz (channel 14), 457.575 MHz (channel 3 or 15), and 457.600 MHz paired, respectively, with 467.750 MHz, 467.7625 MHz, 467.775 MHz, 467.7875 MHz, 467.800 MHz, and 467.825 MHz; and the preferred frequencies for single-frequency operations are channels 1-3, 11-15, and 121. Use of channels 122, 141, and 142 and channel pairs 12/22, 14/24, 102/202, 121/221, 122/222, 141/241, and 142/242 is also authorized at coastal ports and the inland ports of Houston, Baton Rouge, and Portland, and along the waterways and at other ports between these inland ports and the ocean; however, on-board communication stations must not transmit on these channels while in port and not underway or preparing to get underway.

* * * * *

(460) US460 The band 7190-7235 MHz is also allocated to the space research service (Earth-to-space) on a secondary basis for non-Federal use. No emissions from space research service (Earth-to-space) systems intended for deep space may be effected in this frequency band. Authorizations are subject to a case-by-case electromagnetic compatibility analysis and approval.

(i) US460A The band 7190-7250 MHz is also allocated to the Earth exploration-satellite service (Earth-to-space) on a secondary basis for non-Federal use, limited to tracking, telemetry and command for the operation of spacecraft. Authorizations are subject to a case-by-case electromagnetic compatibility analysis and approval.

(ii) [Reserved]

* * * * *

(474) US474D Stations in the Earth exploration-satellite service (active) must not cause harmful interference to, or claim protection from, stations of the maritime radionavigation service in the band 9.2-9.3 GHz and the radiolocation service in the band 9.9-10.4 GHz.

* * * * *

NON-FEDERAL GOVERNMENT (NG) FOOTNOTES

(d) * * *

(62) NG62 In the bands 28.5-29.1 GHz and 29.25-29.5 GHz, stations in the fixed service operating under the following call signs may operate indefinitely on a secondary basis: KIL20, KME49, KQG58, KQH74, KSA96, KSE73, KZS88, WML443, WMP367, and WSL69.

* * * * *

(159) NG159 In the band 698-806 MHz, stations authorized under 47 CFR part 74, subpart F may continue to operate indefinitely on a secondary basis to all other stations operating in that band.

* * * * *

PART 25—SATELLITE COMMUNICATIONS

6. The authority citation for part 25 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

7. Amend section 25.202 by adding paragraph (a)(13) to read as follows:

§ 25.202 Frequencies, frequency tolerance, and emission limits.

(a) * * *

* * * * *

(13) The 1087.7-1092.3 MHz band (center frequency 1090 MHz) is available for use by the aeronautical mobile-satellite (R) service (Earth-to-space) for the reception of Automatic Dependent Surveillance-Broadcast (ADS-B) emissions from aircraft.

* * * * *

PART 74—EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES

8. The authority citation for part 74 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, 307, 309, 310, 325, 336 and 554.

9. Amend section 74.502 by revising paragraphs (c) introductory text and (c)(1)(i) to read as follows:

§ 74.502 Frequency assignment.

* * * * *

(c) The following frequencies are available for assignment to aural broadcast STL and intercity relay stations. Licensees in the fixed-satellite service may require that licensees of grandfathered stations operating in the bands 18,760-18,820 MHz and 19,100-19,160 MHz cease operations in accordance with the provisions in section 101.95 of this chapter.

(1)(i) 5 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 Megahertz Separation	
17702.5	n/a
17707.5	n/a
17712.5	n/a
17717.5	n/a
17722.5	n/a
17727.5	n/a
17732.5	n/a
17737.5	n/a
18062.5	19622.5
18067.5	19627.5

18072.5	19632.5
18077.5	19637.5
18082.5	19642.5
18087.5	19647.5
18092.5	19652.5
18097.5	19657.5
18102.5	19662.5
18107.5	19667.5
18112.5	19672.5
18117.5	19677.5
18122.5	19682.5
18127.5	19687.5
18132.5	19692.5
18137.5	19697.5

* * * * *

10. Amend section 74.602 by:

a. Revising paragraph (g) introductory text

b. Removing and reserving paragraph (g)(2); and

c. Revising paragraphs (g)(3) through (6).

The revisions read as follows:

§ 74.602 Frequency assignment.

* * * * *

(g) The following frequencies are available for assignment to television STL, television relay stations and television translator relay stations. Licensees may use either a two-way link or one or both frequencies of a frequency pair for a one-way link and shall coordinate proposed operations pursuant to procedures required in § 101.103(d) of this chapter. Licensees in the fixed-satellite service may require that licensees of grandfathered stations operating in the 18.3-18.58 GHz and 19.26-19.3 GHz bands cease operations in accordance with the provisions in § 101.95 of this chapter.

(1) * * *

(2) [Reserved]

(3) 10 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 MHz Separation	
17705.0	n/a
17715.0	n/a
17725.0	n/a
17735.0	n/a
17745.0	19305.0
17755.0	19315.0

17765.0	19325.0
17775.0	19335.0
17785.0	19345.0
17795.0	19355.0
17805.0	19365.0
17815.0	19375.0
17825.0	19385.0
17835.0	19395.0
17845.0	19405.0
17855.0	19415.0
17865.0	19425.0
17875.0	19435.0
17885.0	19445.0
17895.0	19455.0
17905.0	19465.0
17915.0	19475.0
17925.0	19485.0
17935.0	19495.0
17945.0	19505.0
17955.0	19515.0
17965.0	19525.0
17975.0	19535.0
17985.0	19545.0
17995.0	19555.0
18005.0	19565.0
18015.0	19575.0
18025.0	19585.0
18035.0	19595.0
18045.0	19605.0
18055.0	19615.0
18065.0	19625.0
18075.0	19635.0
18085.0	19645.0
18095.0	19655.0
18105.0	19665.0
18115.0	19675.0
18125.0	19685.0
18135.0	19695.0

(4) 20 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	**Receive (transmit) (MHz)**
1560 MHz Separation	
17710.0	n/a
17730.0	n/a

17750.0	19310.0
17770.0	19330.0
17790.0	19350.0
17810.0	19370.0
17830.0	19390.0
17850.0	19410.0
17870.0	19430.0
17890.0	19450.0
17910.0	19470.0
17930.0	19490.0
17950.0	19510.0
17970.0	19530.0
17990.0	19550.0
18010.0	19570.0
18030.0	19590.0
18050.0	19610.0
18070.0	19630.0
18090.0	19650.0
18110.0	19670.0
18130.0	19690.0

(5) 40 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	**Receive (transmit) (MHz)**
1560 MHz Separation	
17720.0	n/a
17760.0	19320.0
17800.0	19360.0
17840.0	19400.0
17880.0	19440.0
17920.0	19480.0
17960.0	19520.0
18000.0	19560.0
18040.0	19600.0
18080.0	19640.0
18120.0	19680.0

(6) 80 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	**Receive (transmit) (MHz)**
1560 MHz Separation	
17740.0	n/a
17820.0	19380.0
17900.0	19460.0
17980.0	19540.0

18060.0	19620.0

* * * * *

PART 78—CABLE TELEVISION RELAY SERVICE

11. The authority citation for part 78 continues to read as follows:

AUTHORITY: 47 U.S.C. 152, 153, 154, 301, 303, 307, 308, 309.

12. Amend section 78.18 by:

a. Revising paragraph (a)(4) introductory text:

b. Removing and reserving paragraph (a)(4)(ii); and

c. Revising paragraphs (a)(4)(iii) through (vi).

The revisions read as follows:

§78.18 Frequency assignments.

(a) * * *

(4) The Cable Television Relay Service is also assigned the following frequencies in the 17,700-18,300 MHz and 19,300-19,700 MHz bands. These frequencies are co-equally shared with stations in other services under parts 25, 74, and 101 of this chapter. Licensees in the fixed-satellite service may require that licensees of grandfathered stations operating in the 18.3-18.58 GHz and 19.26-19.3 GHz bands cease operations in accordance with the provisions in § 101.95 of this chapter.

* * * * *

(iii) 10 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 MHz Separation	
17705.0	n/a
17715.0	n/a
17725.0	n/a
17735.0	n/a
17745.0	19305.0
17755.0	19315.0
17765.0	19325.0
17775.0	19335.0
17785.0	19345.0
17795.0	19355.0
17805.0	19365.0
17815.0	19375.0
17825.0	19385.0

17835.0	19395.0
17845.0	19405.0
17855.0	19415.0
17865.0	19425.0
17875.0	19435.0
17885.0	19445.0
17895.0	19455.0
17905.0	19465.0
17915.0	19475.0
17925.0	19485.0
17935.0	19495.0
17945.0	19505.0
17955.0	19515.0
17965.0	19525.0
17975.0	19535.0
17985.0	19545.0
17995.0	19555.0
18005.0	19565.0
18015.0	19575.0
18025.0	19585.0
18035.0	19595.0
18045.0	19605.0
18055.0	19615.0
18065.0	19625.0
18075.0	19635.0
18085.0	19645.0
18095.0	19655.0
18105.0	19665.0
18115.0	19675.0
18125.0	19685.0
18135.0	19695.0

(iv) 20 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	**Receive (transmit) (MHz)**
1560 MHz Separation	
17710.0	n/a
17730.0	n/a
17750.0	19310.0
17770.0	19330.0
17790.0	19350.0
17810.0	19370.0
17830.0	19390.0
17850.0	19410.0
17870.0	19430.0

17890.0	19450.0
17910.0	19470.0
17930.0	19490.0
17950.0	19510.0
17970.0	19530.0
17990.0	19550.0
18010.0	19570.0
18030.0	19590.0
18050.0	19610.0
18070.0	19630.0
18090.0	19650.0
18110.0	19670.0
18130.0	19690.0

(v) 40 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	**Receive (transmit) (MHz)**
1560 MHz Separation	
17720.0	n/a
17760.0	19320.0
17800.0	19360.0
17840.0	19400.0
17880.0	19440.0
17920.0	19480.0
17960.0	19520.0
18000.0	19560.0
18040.0	19600.0
18080.0	19640.0
18120.0	19680.0

(vi) 80 MHz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	**Receive (transmit) (MHz)**
1560 MHz Separation	
17740.0	n/a
17820.0	19380.0
17900.0	19460.0
17980.0	19540.0
18060.0	19620.0

* * * * *

PART 90—PRIVATE LAND MOBILE RADIO SERVICES

13. The authority citation for part 90 continues to read as follows:

AUTHORITY: 47 U.S.C. 154(i), 161, 303(g), 303(r), 332(c)(7), 1401-1473.

* * * * *

14. Amend section 90.265 by revising paragraph (a)(8) to read as follows:

§ 90.265 Assignment and use of frequencies in the bands allocated for Federal use.

(a) * * *

(8) After [**INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION OF FINAL RULES**], no assignments for the frequencies 406.1250 MHz and 406.1750 MHz will be made, but stations with existing assignments may continue to operate on these frequencies.

* * * * *

PART 97—AMATEUR RADIO SERVICE

15. The authority citation for part 97 continues to read as follows:

AUTHORITY: 47 U.S.C. 151-155, 301-609, unless otherwise noted.

16. Amend section 97.301 by revising the entry for the "60 m" wavelength band in the table in paragraphs (b) through (d) to read as follows:

§ 97.301 Authorized frequency bands.

* * * * *

(b) * * *

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 97.303 (Paragraph)
* * * * * * *				
HF	MHz	MHz	MHz	
* * * * * * *				
60 m	5.3515-5.3665	5.3515-5.3665	5.3515-5.3665	(h)
* * * * * * *				

(c) * * *

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 97.303 (Paragraph)
* * * * * * *				
HF	MHz	MHz	MHz	
* * * * * * *				
60 m	5.3515-5.3665	5.3515-5.3665	5.3515-5.3665	(h)
* * * * * * *				

(d) * * *

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements see § 97.303 (Paragraph)
* * * * * * *				
HF	MHz	MHz	MHz	
* * * * * * *				
60 m	5.3515-5.3665	5.3515-5.3665	5.3515-5.3665	(h)
* * * * * * *				

17. Amend section 97.303 by revising paragraph (h) to read as follows:

§ 97.303 Frequency sharing requirements.

* * * * *

(h) Amateur stations transmitting on frequencies in the 60 m band must not cause harmful interference to, and must accept interference from, stations authorized by:

(1) The United States (NTIA and FCC) and other nations in the fixed service; and

(2) Other nations in the mobile except aeronautical mobile service.

* * * * *

18. Amend section 97.305 by revising the entry for the "60 m" wavelength band in the table in paragraph (c) to read as follows:

§ 97.305 Authorized emission types.

* * * * *

(c) * * *

Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307(f), paragraph:
* * * * * * *			
HF:			
* * * * * * *			
60 m	5.3515-5.3665 MHz	Phone, RTTY, data	(14)
* * * * * * *			

19. Amend section 97.307 by revising paragraph (f)(14) to read as follows:

§ 97.307 Emission standards.

* * * * *

(f) * * *

(14) In the 60 m band: (i) A station may transmit only phone, RTTY, data, and CW emissions. RTTY or data emissions shall meet the digital code specifications listed in § 97.309. Emissions shall not exceed a bandwidth of 2.8 kilohertz.

(ii) The control operator of a station transmitting data or RTTY emissions must exercise care to limit the length of transmissions so as to avoid causing harmful interference to United States Government stations.

20. Amend section 97.313 by revising paragraphs (f) and (i) to read as follows:

§ 97.313 Transmitter power standards.

* * * * *

(f) No station may transmit with a transmitter power exceeding 50 W PEP on the UHF 70 cm band from an area specified in paragraph (i) of footnote US270 in § 2.106 of this chapter, unless expressly authorized by the FCC after mutual agreement, on a case-by-case basis, between the Regional Director of the applicable field facility and the military area frequency coordinator at the applicable military base. An Earth station or telecommand station, however, may transmit on the 435-438 MHz segment with a maximum of 611 W effective radiated power (1 kW equivalent isotropically radiated power) without the authorization otherwise required. The transmitting antenna elevation angle between the lower half-power (−3 dB relative to the peak or antenna bore sight) point and the horizon must always be greater than 10°.

* * * * *

(i) No station may transmit on frequencies in the 60 m band with a radiated power exceeding 15 W (insert value at order stage). For the purpose of computing EIRP, the transmitter PEP will be multiplied by the antenna gain relative to an isotropic antenna. An isotropic antenna will be presumed to have a gain of 1 (0 dBi). Licensees must maintain in their station records either the antenna manufacturer's data on the antenna gain or calculations of the antenna gain.

* * * * *

PART 101—FIXED MICROWAVE SERVICES

21. The authority citation for part 101 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 303.

22. Remove and reserve § 101.83.

§ 101.83 [Removed and Reserved]

23. Remove and reserve § 101.85.

§ 101.85 [Removed and Reserved]

24. Remove and reserve § 101.89.

§ 101.89 [Removed and Reserved]

25. Remove and reserve § 101.91.

§ 101.91 [Removed and Reserved]

26. Amend § 101.95 by revising the section heading and paragraph (a) to read as follows:

§ 101.95 Provisions for grandfathered licensees in the 18.30-19.30 GHz band.

(a) The transition period for the 18.30-19.30 GHz band has concluded and thus FSS licensees are not required to pay relocation costs. FSS licensees may require the incumbent to cease operations, provided that the FSS licensee intends to turn on a system within interference range of the incumbent, as determined by TIA Bulletin 10-F or any standard successor. FSS licensee notification to the affected FS licensee must be in writing and must provide the incumbent with no less than six months to vacate the spectrum. After the six-month notice period has expired, the FS licensee must turn its license back into the Commission, unless the parties have entered into an agreement which allows the FS licensee to continue to operate on a mutually agreed upon basis.

* * * * *

27. Remove and reserve § 101.97.

§ 101.97 [Removed and Reserved]

28. Amend § 101.147 by:

a. In paragraph (a):

i. Revising the list of frequency bands; and

ii. Removing note 30;

b. Revising paragraph (r) introductory text;

c. Removing and reserving paragraph (r)(4); and

d. Revising paragraphs (r)(7), (8), (10), (12), and (13).

The revisions read as follows:

§ 101.147 Frequency assignments.

(a) * * *

928.0–929.0 MHz (28)

932.0–932.5 MHz (27)

932.5–935 MHz (17)

941.0–941.5 MHz (27)

941.5–944 MHz (17) (18)

952.0–960.0 MHz (28)

1,850–1,990 MHz (20) (22)

2,110–2,130 MHz) (1) (3) (7) (20) (23)

2,130–2,150 MHz (20) (22)

2,160–2,180 MHz (1) (2) (20) (23)

2,180–2,200 MHz (20) (22)

2,450–2,500 MHz (12)

2,650–2,690 MHz

3,700–4,200 MHz (8) (14) (25)

5,925–6,425 MHz (6) (14) (25)

6,425–6,525 MHz (24)

6,525–6.875 MHz (14) (33)

6,875–7,125 MHz (10), (34)

10,550–10,680 MHz (19)

10,700–11,700 MHz (8) (9) (19) (25)

11,700–12,200 MHz (24)

12,200–12,700 MHz (31)

12,700–13,200 (22), (34)

13,200–13,250 MHz (4) (24) (25)

14,200-14,400 MHz (24)

17,700-18,300 MHz (5) (10) (15)

19,300-19,700 MHz (5) (10) (15)

21,200–22,000 MHz (4) (11) (12) (13) (24) (25) (26)

22,000–23,600 MHz (4) (11) (12) (24) (25) (26)

24,250–25,250 MHz

29,100–29,250 MHz (5), (16)

31,000–31,300 MHz (16)

42,000–42,500 MHz

71,000–76,000 MHz (5) (17)

81,000–86,000 MHz (5) (17)

92,000–94,000 MHz (17)

94,100–95,000 MHz (17)

* * * * *

(r) In the bands 17,700 to 19,700 and 24,250 to 25,250 MHz*:* Operation of stations using frequencies in these bands is permitted to the extent specified in this paragraph (r). Licensees, except 24 GHz band licensees, may use either a two-way link or one frequency of a frequency pair for a one-way link and must coordinate proposed operations pursuant to the procedures required in § 101.103. The use of the band 18.3-19.3 GHz is limited to grandfathered stations. Licensees in the fixed-satellite service may require that licensees of grandfathered stations operating in the bands 18.3-19.3 GHz cease operations in accordance with the provisions in section 101.95. (Note that stations authorized as of September 9, 1983, to use frequencies in the band 17.7-19.7 GHz may, upon proper application, continue to be authorized for such operations, consistent with the above conditions related to the 18.3-19.3 GHz band.) Applicants for one-way spectrum from 17.7-18.3 GHz for multichannel video programming distribution are governed by paragraph (r)(6) of this section. Licensees are also allowed to use one-way (unpaired) channels in the 17.7-17.74 GHz sub-band to pair with other channels in the FS portions of the 18 GHz band where, for example, the return pair is already in use and therefore blocked or in TDD systems. Stations used for MVPD operations in the 17.7-17.8 GHz band must coordinate with the Federal Government before operating in the zones specified in § 1.924(e) of this chapter.

* * * * *

(7) 10 Megahertz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 Megahertz Separation	
17705.0	N/A
17715.0	N/A
17725.0	N/A
17735.0	N/A
17745.0	19305.0
17755.0	19315.0
17765.0	19325.0
17775.0	19335.0
17785.0	19345.0
17795.0	19355.0
17805.0	19365.0

17815.0	19375.0
17825.0	19385.0
17835.0	19395.0
17845.0	19405.0
17855.0	19415.0
17865.0	19425.0
17875.0	19435.0
17885.0	19445.0
17895.0	19455.0
17905.0	19465.0
17915.0	19475.0
17925.0	19485.0
17935.0	19495.0
17945.0	19505.0
17955.0	19515.0
17965.0	19525.0
17975.0	19535.0
17985.0	19545.0
17995.0	19555.0
18005.0	19565.0
18015.0	19575.0
18025.0	19585.0
18035.0	19595.0
18045.0	19605.0
18055.0	19615.0
18065.0	19625.0
18075.0	19635.0
18085.0	19645.0
18095.0	19655.0
18105.0	19665.0
18115.0	19675.0
18125.0	19685.0
18135.0	19695.0

(8) 20 Megahertz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 Megahertz Separation	
17710.0	N/A
17730.0	N/A
17750.0	19310.0
17770.0	19330.0
17790.0	19350.0
17810.0	19370.0
17830.0	19390.0

17850.0	19410.0
17870.0	19430.0
17890.0	19450.0
17910.0	19470.0
17930.0	19490.0
17950.0	19510.0
17970.0	19530.0
17990.0	19550.0
18010.0	19570.0
18030.0	19590.0
18050.0	19610.0
18070.0	19630.0
18090.0	19650.0
18110.0	19670.0
18130.0	19690.0

* * * * *

(10) 40 Megahertz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 Megahertz Separation	
17720.0	N/A
17760.0	19320.0
17800.0	19360.0
17840.0	19400.0
17880.0	19440.0
17920.0	19480.0
17960.0	19520.0
18000.0	19560.0
18040.0	19600.0
18080.0	19640.0
18120.0	19680.0

* * * * *

(12) 80 Megahertz maximum authorized bandwidth channels:

Transmit (receive) (MHz)	Receive (transmit) (MHz)
1560 Megahertz Separation	
17740.0	N/A
17820.0	19380.0
17900.0	19460.0
17980.0	19540.0
18060.0	19620.0

(13) The following frequencies on channels 35-39 are available for point-to-multipoint systems and are available by geographic area licensing in the 24 GHz Service to be used as the licensee desires. The 24 GHz spectrum can be aggregated or disaggregated and does not have to be used in the transmit/receive manner shown except to comply with international agreements along the U.S. borders. Channels 35 through 39 are licensed in the 24 GHz Service by Economic Areas for any digital fixed service. Channels may be used at either nodal or subscriber station locations for transmit or receive but must be coordinated with adjacent channel and adjacent area users in accordance with the provisions of § 101.509. Stations also must comply with international coordination agreements.

Channel No.	Nodal station frequency band (MHz) limits	User station frequency band (MHz) limits
35	24,250-24,290	25,050-25,090
36	24,290-24,330	25,090-25,130
37	24,330-24,370	25,130-25,170
38	24,370-24,410	25,170-25,210
39	24,410-24,450	25,210-25,250

* * * * *

APPENDIX C

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[182] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the *WRC-15 Notice of Proposed Rulemaking* (*WRC-15 Notice*). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments provided in the *WRC-15 Notice*. The Commission will send a copy of the *WRC-15 Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[183] In addition, the *WRC-15 Notice* and IRFA (or summaries thereof) will be published in the *Federal Register*.[184]

A. Need for, and Objectives of, the Proposed Rules

2. In the *WRC-15 Notice*, the Commission proposes to amend parts 2, 25, 74, 78, 90, 97, and 101 of its rules to implement certain frequency allocation decisions from the World Radiocommunication Conference (Geneva, 2015) (WRC-15) in the Commission's Table of Frequency Allocations, to make other allocation changes, and to make certain updates to its service rules for service providers and other entities, including those for the amateur radio, aviation, cable television relay, fixed microwave, private land mobile, and satellite services, and for aural broadcast auxiliary and television broadcast auxiliary stations. These proposals are designed to conform the Commission's rules to the *WRC-15 Final Acts* and seek to harmonize U.S. frequency allocations with the decisions made at WRC-15 to the extent this would better meet domestic requirements.

B. Legal Basis

3. The proposed action is authorized pursuant to sections 1, 4(i), 4(j), 7, 301, 303(c), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), 157, 301, 303(c), 303(f), and 303 (r).

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Would Apply

4. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[185] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[186] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[187] A small business

[182] *See* 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[183] *See* 5 U.S.C. § 603(a).

[184] *See id.*

[185] 5 U.S.C. § 603(b)(3).

[186] 5 U.S.C. § 601(6).

[187] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3),, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term that are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[188]

5. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions*. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe, at the outset, three broad groups of small entities that could be directly affected herein.[189] First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, from the Small Business Administration's (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.[190] These types of small businesses represent 99.9% of all businesses in the United States which translates to 32.5 million businesses.[191]

6. Next, the type of small entity described as a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[192] The Internal Revenue Service (IRS) uses a revenue benchmark of $50,000 or less to delineate its annual electronic filing requirements for small exempt organizations.[193] Nationwide, for tax year 2020, there were approximately 447,689 small exempt organizations in the U.S. reporting revenues of $50,000 or less according to the registration and tax data for exempt organizations available from the IRS.[194]

7. Finally, the small entity described as a "small governmental jurisdiction" is defined generally as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[195] U.S. Census Bureau data from the 2017 Census of Governments[196] indicate there were 90,075 local governmental jurisdictions consisting of general

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[188] 15 U.S.C. § 632.

[189] *See* 5 U.S.C. § 601(3)-(6).

[190] *See* SBA, Office of Advocacy, Frequently Asked Questions, "What is a small business," https://cdn.advocacy.sba.gov/wp-content/uploads/2021/11/03093005/Small-Business-FAQ-2021.pdf. (Nov 2021).

[191] *Id*.

[192] 5 U.S.C. § 601(4).

[193] The IRS benchmark is similar to the population of less than 50,000 benchmark in 5 U.S.C § 601(5) that is used to define a small governmental jurisdiction. Therefore, the IRS benchmark has been used to estimate the number of small organizations in this small entity description. S*ee* Annual Electronic Filing Requirement for Small Exempt Organizations — Form 990-N (e-Postcard), "Who must file," https://www.irs.gov/charities-non-profits/annual-electronic-filing-requirement-for-small-exempt-organizations-form-990-n-e-postcard. We note that the IRS data does not provide information on whether a small exempt organization is independently owned and operated or dominant in its field.

[194] *See* Exempt Organizations Business Master File Extract (EO BMF), "CSV Files by Region," https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf. The IRS Exempt Organization Business Master File (EO BMF) Extract provides information on all registered tax-exempt/non-profit organizations. The data utilized for purposes of this description was extracted from the IRS EO BMF data for businesses for the tax year 2020 with revenue less than or equal to $50,000 for Region 1-Northeast Area (58,577), Region 2-Mid-Atlantic and Great Lakes Areas (175,272), and Region 3-Gulf Coast and Pacific Coast Areas (213,840) that includes the continental U.S., Alaska, and Hawaii. This data does not include information for Puerto Rico.

[195] *See* 5 U.S.C. § 601(5).

[196] *See* 13 U.S.C. § 161. The Census of Governments survey is conducted every five (5) years compiling data for years ending with "2" and "7". *See also* Census of Governments, https://www.census.gov/programs-surveys/cog/about.html.

purpose governments and special purpose governments in the United States.[197] Of this number, there were 36,931 general purpose governments (county,[198] municipal, and town or township[199]) with populations of less than 50,000 and 12,040 special purpose governments—independent school districts[200] with enrollment populations of less than 50,000.[201] Accordingly, based on the 2017 U.S. Census of Governments data, we estimate that at least 48,971 entities fall into the category of "small governmental jurisdictions."[202]

8. *Amateur Radio Service.* Amateur service is a radiocommunication service intended for self-training, intercommunication and technical investigations carried out by amateurs, that is, duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.[203] Amateur radio service encompasses amateur service, amateur-satellite service and radio amateur civil emergency service.[204] Licenses are generally held by individuals but can also be held by clubs, associations and other non-profit entities. Radio Stations[205] is the closest industry with a SBA small business size standard applicable to this service. The SBA small business size standard for this industry classifies a small entity as one that has $41.5 million or less in annual receipts.[206] U.S. Census Bureau data for 2017 show that 2,963 firms operated in this industry during that year.[207] Of this number,

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[197] *See* U.S. Census Bureau, 2017 Census of Governments – Organization Table 2. Local Governments by Type and State: 2017 [CG1700ORG02], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. Local governmental jurisdictions are made up of general purpose governments (county, municipal and town or township) and special purpose governments (special districts and independent school districts). *See also* tbl.2. CG1700ORG02 Table Notes_Local Governments by Type and State_2017.

[198] *See id.* at tbl.5. County Governments by Population-Size Group and State: 2017 [CG1700ORG05], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 2,105 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

[199] *See id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2017 [CG1700ORG06], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 18,729 municipal and 16,097 town and township governments with populations less than 50,000.

[200] *See id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2017 [CG1700ORG10], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 12,040 independent school districts with enrollment populations less than 50,000. *See also* tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2017 [CG1700ORG04], CG1700ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2017.

[201] While the special purpose governments category also includes local special district governments, the 2017 Census of Governments data does not provide data aggregated based on population size for the special purpose governments category. Therefore, only data from independent school districts is included in the special purpose governments category.

[202] This total is derived from the sum of the number of general purpose governments (county, municipal and town or township) with populations of less than 50,000 (36,931) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (12,040), from the 2017 Census of Governments - Organizations tbls.5, 6 & 10.

[203] *See* 47 CFR § 97.3(a)(4).

[204] See id. § 97.3(a)(2).

[205] *See* U.S. Census Bureau, *2017 NAICS Definition, "515112 Radio Stations,"* https://www.census.gov/naics/?input=515112&year=2017&details=515112.

[206] *See* 13 CFR § 121.201, NAICS Code 515112 (as of 10/1/22 NAICS Code 516110).

[207] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515112,

(continued….)

1,879 firms operated with revenue of less than $25 million per year.[208] Therefore, based on the SBA's size standard the majority of firms are small entities. Additionally, according to Commission data as of December 2021, there were approximately 841,734 active licenses for this service.[209] While the majority of these licenses are held by individuals, the Commission estimates that the licenses in this service held by clubs, associations and other non-profit entities are small entities under the SBA small business size standard.

9. *Radio Frequency Equipment Manufacturers (RF Manufacturers).* There are several analogous industries with an SBA small business size standard that are applicable to RF Manufacturers. These industries are Fixed Microwave Services, Other Communications Equipment Manufacturing, Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. A description of these industries and the SBA small business size standards are detailed below.

10. *Fixed Microwave Services.* Fixed microwave services include common carrier,[210] private-operational fixed,[211] and broadcast auxiliary radio services.[212] They also include the Upper Microwave Flexible Use Service (UMFUS),[213] Millimeter Wave Service (70/80/90 GHz),[214] Local Multipoint Distribution Service (LMDS),[215] the Digital Electronic Message Service (DEMS),[216] 24 GHz Service,[217] Multiple Address Systems (MAS),[218] and Multichannel Video Distribution and Data Service (MVDDS),[219] where in some bands licensees can choose between common carrier and non-common

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https://data.census.gov/cedsci/table?y=2017&n=515112&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false. We note that the US Census Bureau withheld publication of the number of firms that operated for the entire year.

[208] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We note that the U.S. Census Bureau withheld publication of the number of firms that operated with sales/value of shipments/revenue in the individual categories for less than $100,000, and $100,000 to $249,999 to avoid disclosing data for individual companies (see Cell Notes for the sales/value of shipments/revenue in these categories). Therefore, the number of firms with annual receipts that meet the SBA size standard would be higher that noted herein. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[209] Based on a FCC Universal Licensing System search on December 9, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = HV, HA; Authorization Type = All; Status = Active.

[210] *See* 47 CFR Part 101, Subparts C and I.

[211] *See id*. Subparts C and H.

[212] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 CFR Part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[213] *See* 47 CFR Part 30.

[214] *See* 47 CFR Part 101, Subpart Q.

[215] *See id*. Subpart L.

[216] *See id*. Subpart G.

[217] *See id*.

[218] *See id.* Subpart O.

[219] *See id*. Subpart P.

carrier status.[220] Wireless Telecommunications Carriers (*except* Satellite)[221] is the closest industry with an SBA small business size standard applicable to these services. The SBA small size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[222] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[223] Of this number, 2,837 firms employed fewer than 250 employees.[224] Thus, under the SBA size standard, the Commission estimates that a majority of fixed microwave service licensees can be considered small.

11. The Commission's small business size standards with respect to fixed microwave services involve eligibility for bidding credits and installment payments in the auction of licenses for the various frequency bands included in fixed microwave services. When bidding credits are adopted for the auction of licenses in fixed microwave services frequency bands, such credits may be available to several types of small businesses based average gross revenues (small, very small and entrepreneur) pursuant to the competitive bidding rules adopted in conjunction with the requirements for the auction and/or as identified in Part 101 of the Commission's rules for the specific fixed microwave services frequency bands.[225]

12. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

13. *Other Communications Equipment Manufacturing*. This industry comprises establishments primarily engaged in manufacturing communications equipment (except telephone apparatus, and radio and television broadcast, and wireless communications equipment).[226] Examples of such manufacturing include fire detection and alarm systems manufacturing, Intercom systems and equipment manufacturing, and signals (e.g., highway, pedestrian, railway, traffic) manufacturing.[227] The SBA small business size standard for this industry classifies firms having 750 or fewer employees as small.[228] For this industry, U.S. Census Bureau data for 2017 shows that 321 firms operated for the entire

[220] *See* 47 CFR §§ 101.533, 101.1017.

[221] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[222] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[223] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[224] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[225] *See* 47 CFR §§ 101.538(a)(1)-(3), 101.1112(b)-(d), 101.1319(a)(1)-(2), and 101.1429(a)(1)-(3).

[226] *See* U.S. Census Bureau, *2017 NAICS Definitions, "334290 Other Communications Equipment Manufacturing,*" https://www.census.gov/naics/?input=334290&year=2017&details=334290.

[227] *Id.*

[228] *See* 13 CFR 121.201, NAICS Code 334290.

year.[229] Of that number, 310 firms operated with fewer than 250 employees.[230] Based on this data, we conclude that the majority of Other Communications Equipment Manufacturers are small.

14. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing*. This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment.[231] Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.[232] The SBA small business size standard for this industry classifies firms having 1,250 employees or less as small.[233] U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year.[234] Of this number, 624 had fewer than 250 employees.[235] Based on this data, we conclude that a majority of manufacturers in this industry are small.

15. *Wireless Telecommunications Carriers (except Satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves.[236] Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless Internet access, and wireless video services.[237] The SBA size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[238] U.S. Census Bureau data for 2017 show that there were 2,893 firms in this industry that operated for the entire year.[239] Of that number, 2,837 firms employed fewer than 250 employees.[240] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report,

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[229] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 334290, https://data.census.gov/cedsci/table?y=2017&n=334290&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[230] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[231] *See* U.S. Census Bureau, *2017 NAICS Definition*, "*334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing,*" https://www.census.gov/naics/?input=334220&year=2017&details=334220.

[232] *Id.*

[233] *See* 13 CFR § 121.201, NAICS Code 334220.

[234] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 334220, https://data.census.gov/cedsci/table?y=2017&n=334220&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[235] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[236] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers (except Satellite),"* https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[237] *Id.*

[238] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[239] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[240] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

as of December 31, 2020, there were 797 providers that reported they were engaged in the provision of wireless services.[241] Of these providers, the Commission estimates that 715 providers have 1,500 or fewer employees.[242] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

16. The *WRC-15 Notice* proposes and seeks comment regarding the implementation of WRC-15 allocation decisions and other allocation changes. Further, the *WRC-15 Notice* proposes to revise footnote US288 by authorizing use of new 12.5 kilohertz and 6.25 kilohertz channels by on-board communication stations operating on spectrum near 457 MHz and 467 MHz in the 450 470 MHz band in the territorial waters of the United States.

17. The *WRC-15 Notice* does not propose to establish any new reporting or recordkeeping requirements for small entities, nor does it specifically propose any additional operational or implementation costs. At this time however, the Commission is not in a position to determine whether, if adopted, our proposals and the matters upon which we seek comment will require small entities to hire professionals to comply, and cannot quantify the cost of compliance with the potential rule changes discussed herein.

18. We anticipate the information we receive in comments including, where requested, cost and benefit analyses, will help the Commission identify and evaluate relevant compliance matters for small entities, including compliance costs and other burdens that may result from the proposals and inquiries we make in the *WRC-15 Notice*.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

19. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[243]

20. The *WRC-15 Notice* proposal to revise footnote US288 by authorizing operation on new narrower-bandwidth channels for on-board communication stations using spectrum near 457 MHz and 467 MHz in the 450-470 MHz band has the potential to cause harmful interference to existing operations of stations in the fixed and land mobile services, which could require some small entities to relocate to other channels to avoid such interference. This potential for interference and the need for relocation to other channels has been minimized by proposing to: 1) allow use of the existing channels for many of the proposed narrower-bandwidth channels; 2) limit the use of channels 122, 141, and 142 and channel pairs 12/22, 14/24, 102/202, 121/221, 122/222, 141/241, and 142/242 by on-board communication stations to coastal ports and the inland ports of Houston, Baton Rouge, and Portland, and along the waterways and at other ports between these inland ports and the ocean; and 3) require that on-board communication stations do not transmit on these channels while in port and not underway or preparing to get underway.

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[241] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[242] *Id.*

[243] *See* 5 U.S.C. § 603(c)(1)–(4).

21. The measures proposed above to minimize the potential for harmful interference to land mobile radio stations operated by small and other entities may be sufficient to avoid causing any harmful interference to such existing stations and thereby avoid imposing a significant economic burden on small entities by requiring relocation to other channels. In addition, the power authorized for on-board communication stations is sufficiently low enough for us to tentatively find that implementation of these narrowbanding proposals would not have a significant economic impact on a substantial number of small entities in the 450-470 MHz band. However, we anticipate considering additional measures (e.g., a constant power spectral density consistent with that used in the existing 25 kilohertz channels) to protect land mobile operations from harmful interference in the follow-on service rules proceeding for these on-board communication operations.

22. The regulatory burdens we have proposed are necessary to implement certain of the frequency allocation decisions from the 2015 World Radiocommunication Conference in the Commission's Table of Frequency Allocations, to make other frequency allocation decisions, and make certain updates to the Commission's service rules. These proposals are designed to conform the Commission's rules to the *WRC-15 Final Acts* and seek to harmonize U.S. frequency allocations with the decisions made at WRC-15 to the extent that doing so would better meet domestic requirements.

23. To assist in the Commission's evaluation of the economic impact on small entities, as a result of proposed rules in the *WRC-15 Notice* and to better explore options and alternatives, the Commission seeks public comment as to whether the proposed rules pose any significant economic impacts to small entities and whether any of the costs associated with the *WRC-15 Notice* requirements can be alleviated for small entities. The Commission expects to more fully consider the economic impact and alternatives for small entities following the review of comments filed in response to the *WRC-15 Notice*.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

24. None.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services	)	ET Docket No. 23-122
	)	
	)	
Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance	)	ET Docket No. 22-137
	)	

POLICY STATEMENT

Adopted: April 20, 2023 **Released: April 21, 2023**

By the Commission: Chairwoman Rosenworcel and Commissioner Simington issuing separate statements.

I. INTRODUCTION

1. Meeting the spectrum demands of tomorrow requires a framework to make efficient, effective, and equitable use of the airwaves today. As spectrum bands grow more congested, our networks continue to require greater bandwidth to support next-generation applications like robotics, artificial intelligence, precision farming, augmented reality, and cloud computing. To build the networks of the future, the Commission must periodically take a fresh look at its spectrum management principles to guide stakeholders and keep pace with the state of the art. We seize that opportunity with this Policy Statement.

2. To maximize spectrum access and promote coexistence among different services, the Commission has traditionally regulated transmitters and their operations. Our transmitter rules are designed to enable a multitude of diverse services in spectral proximity without the risk of undue impairment. Technological advances in receiver resiliency, however, can also unleash new services without unnecessarily restricting transmitters in neighboring bands. As such, the properties of receivers, and their immunity to out-of-band interference in particular, offer an increasingly promising pathway to manage spectrum needs in a balanced and comprehensive way.

3. To pave the way for the next generation of radiofrequency technologies, this Policy Statement provides guidance on how the Commission intends to manage spectrum efficiently and effectively going forward.[1] In establishing such guidance, we set forth core principles that will help

[1] This Policy Statement is intended to help guide Commission decision-making and stakeholder action as the RF environment evolves and does not constitute rules. Accordingly, this Policy Statement is not binding on the Commission or other parties, and it will not prevent the Commission from making a different decision in any matter that comes to its attention for resolution. This Policy Statement does not intend to prejudge considerations in any particular proceeding regarding receiver performance, including the nature of the particular services involved, the requirements for effective performance of receivers for their intended uses, and how to address legacy receivers or the costs associated with replacing legacy receivers with more interference-resilient receivers. Furthermore, this Policy Statement relates to the Commission's management of non-Federal spectrum; it does not address issues relating to Federal spectrum. This Policy Statement provides guidance primarily on spectrum-management considerations for spectrally proximate services. Although this Policy Statement does not directly address co-
(continued….)

inform the Commission's future actions and stakeholder expectations about interference from spectrally and spatially proximate sources. These principles, described below, fall into three general categories. *First*, the realities of interference, drawn from basic physics, should guide the reasonable expectations of receivers and transmitters on how best to operate in an increasingly noisy radiofrequency (RF) environment. *Second*, in light of these foundational realities, both receivers and transmitters share responsibility to take prophylactic action to reduce the likelihood and impact of harmful interference. *Finally*, robust quantitative data—including information about transmitters and receivers—will be highly probative in how we analyze the RF environment and evaluate the merits of interference-related claims. Holistically considering the unique roles of transmitters and receivers will help us better introduce new services that operate in spectral proximity in an evolving RF environment.

4. In developing this guidance, we have considered a rich body of technical literature on improving spectrum management, including from the Commission's Technological Advisory Committee (TAC), other governmental entities, industry, public-interest organizations, and commenters in response to our April, 2022 *Notice of Inquiry* (*NOI*).[2] The principles we describe below draw, with modification, from the TAC's *Basic Principles for Assessing Compatibility of New Spectrum Allocations* (*TAC Basic Principles*),[3] a 2015 white paper that recommends a set of Commission principles to address the role of transmitter and receiver performance and to establish express expectations of incumbent services and new spectrum users.[4]

5. The following are the principles articulated in this Policy Statement, which will be discussed in more detail:

Interference Realities

- *Interference and harmful interference are affected by the characteristics of both the transmitting service(s) and nearby receiving service(s) in frequency, space, and/or time.*
- *The electromagnetic environment is highly variable, and zero risk of occasional service degradation or interruption cannot be guaranteed.*
- *Services should plan for the spectrum environment in which they intend to operate, the service they intend to provide, and the characteristics of spectrally and spatially proximate operations. Planning should be ongoing and account for changes in spectrum operating environments.*

Shared Responsibilities

- *Transmitters authorized for use in a given service should be designed to minimize the amount of their transmitted energy outside of the service's assigned frequencies and authorizations.*
- *Receivers authorized for use in a service should, as a general matter, be designed to mitigate*

(Continued from previous page)
channel spectrum sharing, we note that many of the technical and policy principles could be applied in those situations as well.

[2] *Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance*, __ FCC Rcd __, paras. 1-3, 33-36 (2022) (*NOI*).

[3] *See* TAC Spectrum and Receiver Performance Working Group, Basic Principles for Assessing the Compatibility of New Spectrum Allocations (Dec. 15, 2015) (*TAC Basic Principles*), https://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting121015/Principles-White-Paper-Release-1.1.pdf. The Commission's Technological Advisory Council (TAC) provides technical advice to the Commission. It is organized under the authority of the Federal Advisory Committee Act, and is comprised of a diverse array of leading experts that helps the FCC identify important areas of innovation and develop informed technology policies supporting America's competitiveness and job creation in the global economy. *See* https://www.fcc.gov/general/technological-advisory-council.

[4] *TAC Basic Principles* at 3 (Executive Summary).

interference from emissions from outside of their service's assigned frequencies or channels.

- *Radio transmitter and receiver system operators and equipment manufacturers should plan for and design error tolerant systems, using good engineering practices, to mitigate degradation from interference.*

Data-Driven Regulatory Approaches to Promote Co-Existence

- *Relevant information about services' transmitter and receiver standards, guidelines, and operating characteristics is needed to promote effective spectrum management and efficient co-existence.*
- *Quantitative analyses of interactions between services that are fact- and evidence-based, sufficiently robust, transparent, and reproducible are needed to better inform spectrum management decision-making.*
- *The Commission will explore, in future rulemakings, interference limits policies in particular spectrum bands to promote effective co-existence.*

II. BACKGROUND

6. The demand for spectrum continues to grow dramatically. Spectrum is a critical—but finite—input for services and technologies that are used by a wide array of stakeholders. Releasing more spectrum for advanced radiofrequency services helps promote the public interest by unlocking educational and vocational opportunities, enhancing American leadership and security, spurring domestic innovation, and promoting economic growth. Accordingly, as the Commission continuously evaluates opportunities to identify new sources of licensed, unlicensed, and shared spectrum to satisfy this growing demand, it must find ways to promote more intensive use of spectrum while ensuring coexistence among both new and existing services.[5]

7. Spectrum management is one of the Commission's core functions.[6] Because "greenfield" spectrum—unutilized spectrum immediately ready for deployment—is particularly scarce, different services have found themselves increasingly packed in closer spectral proximity. In ensuring that different services may co-exist, the likelihood of out-of-band harmful interference has played an important role in our decisional calculus.

8. Among other factors, our spectrum decisions and rules have highlighted the relevance of receiver performance in promoting co-existence among services. In some cases, we have required receivers to meet resiliency and immunity benchmarks—such as sensitivity levels, adjacent channel rejection ratios, and intermodulation rejection ratios—as a condition of claiming protection from other services.[7] In others, we have mandated receiver performance—through specific immunity requirements,[8]

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[5] *See, e.g.,* Aspen Digital / Aspen Institute, Toward a National Spectrum Strategy, at 15-19 (Sept. 2022) (*Aspen Institute Report*), https://www.aspeninstitute.org/publications/toward-a-national-spectrum-strategy/.

[6] The Communications Act vests in the Commission broad authority to manage non-Federal spectrum, adopt spectrum rules and policies, issue spectrum licenses, and prescribe the nature of wireless services to be rendered. *See, e.g.*, 47 U.S.C §§ 301, 302a, 303, 309. *See also* 47 U.S.C. § 303(e) (allowing the Commission to "regulate the kind of apparatus to be used with respect to its external effects and the purity and sharpness of the emissions from each station and from the apparatus"); *id.* § 303(f) (directing the Commission to "[m]ake such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this chapter"); *id.* § (giving the Commission general rulemaking authority); *id.* § 154(i) (providing authority "to perform any and all acts, make such rules and regulations, and issue such orders").

[7] *See* 47 CFR § 90.672(b) (806-824 MHz and 900 MHz narrowband); 47 CFR § 27.1221(c) (2496-2690 MHz).

[8] 47 CFR § 87.151(c), (d) (Part 87 Aviation Service); 47 CFR § 15.117(f) (digital television receivers).

filtered receiver systems,[9] and industry standards[10]—to maintain quality of service expectations in noisy RF environments.

9. In April 2022, we issued an *NOI* seeking comment on promoting more efficient spectrum use by expressly reorienting the Commission's spectrum management framework to a holistic inquiry that considers *both* the transmitter *and* receiver components of wireless systems.[11] The *NOI* also invited comment on whether the Commission should issue guidance, such as a policy statement, on the role of receivers and receiver performance in spectrum management.[12] To inform such a policy, the *NOI* identified a considerable body of technical reports, white papers, and studies recommending how the Commission might enable more efficient spectrum use among a heterogenous set of operators and users.[13] We also observed that non-U.S. regulators have considered both transmitter and receiver performance as part of an overall approach to effective spectrum management.[14]

10. The *NOI* sought particular comment on the *TAC Basic Principles*, which recommended a set of Commission principles on the role that transmitter and receiver performance might play in decisions that may affect spectrally and spatially proximate services. Many commenters supported a Commission policy statement or more explicit guidance on our spectrum management framework.[15]

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[9] *See* 47 CFR §§ 27.1411(b)(5), 27.1412, 27.1413 (3.7-3.98 GHz FSS earth stations).

[10] 47 CFR §§ 80.7(d)(8), (10), (12) (maritime services), 47 CFR § 95.2989 (personal radio services).

[11] *NOI*, __ FCC Rcd __, paras. 1-3, 33-36. The *NOI* sought comment on three general approaches, and some combination thereof: (1) industry-led voluntary guidelines or standards, (2) Commission policy guidance, and (3) receiver performance mandates. *Id.* at __, paras. 78-147.

[12] *NOI*, __ FCC Rcd at __, paras. 93-136. As noted in the *NOI*, the Commission previously has issued policy statements aimed at guiding public considerations and advancing spectrum management pursuits. *Id.* at __, para. 110; *see Principles for Reallocation of Spectrum to Encourage Development of Telecommunications Technologies for the New Millennium*, Policy Statement, 14 FCC Rcd 19868 (1999) (guiding principles on Commission's spectrum management approaches going forward); *Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets*, Policy Statement, 15 FCC Rcd 24178 (2000) (same).

[13] *See generally id.* at __, paras. 25-31, 93-96. *See, e.g.*, *TAC Basic Principles*, Silicon Flatirons Roundtable, "Receivers, Interference, and Regulatory Options" (Feb. 20, 2013) (*Silicon Flatirons Report on Receivers*), at 5, found at https://siliconflatirons.org/publications/receivers-interference-and-regulatory-options-4/; Silicon Flatirons Summit Report, "Efficient Interference Management: Regulation, Receivers, and Right Enforcement" (Jan. 10, 2012) (*Silicon Flatirons Report on Efficient Interference Management*), https://siliconflatirons.org/publications/efficient-interference-management-regulation-receivers-and-right-enforcement-2/; Evan Kwerel and John Williams, *Forward-Looking Interference Regulation*, 9 J. on Telecomm. & High Tech. L. 516-18 (2011), http://jthtl.org/content/articles/V9I2/JTHTLv9i2_DeVries.PDF; *Commerce Spectrum Management Advisory Committee Interference and Dynamic Spectrum Access Subcommittee Final Report*, at 61-66 (Nov. 8, 2010), https://www.ntia.doc.gov/files/ntia/publications/csmac_interferencecommitteereport_01102011.pdf; GAO Report 13-265, *Spectrum Management – Further Consideration of Options to Improve Receiver Performance* (*GAO Report on Spectrum Management*), at 34-37 (Feb. 2013), https://www.gao.gov/products/gao-13-265; PCAST Report to the President, *Realizing the Full Potential of Government-held Spectrum to Spur Economic Growth* (2012) (*PCAST Report*), at 33-38, 107-21, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf;

[14] *NOI*, __ FCC Rcd at __, paras. 32, 117 (discussing regulatory approaches of the International Telecommunication Union (ITU) Radio Regulations (ITU-RR), the European Union Radio Equipment Directive (EU-RED), the United Kingdom's Ofcom, and others).

[15] *See, e.g.*, AT&T Comments at 1-8 & Reply at 1-2; NCTA Comments at 6-13; Ericsson Comments at 12-13; Intel Comments at 3-8; Nokia Comments at 9-10; Public Knowledge Comments at 8; Qualcomm Comments at 4; Verizon Comments at 9-11; de Vries Reply at ii; ITIF Reply at 2-3; Enterprise Wireless Alliance Comments at 4 (supports policy pronouncements as backdrop to voluntary industry efforts). *See also* Aspen Digital / Aspen Institute, *Toward a National Spectrum Strategy*, at 16-17, 21-26 (September 2022) (*Aspen Institute Report*),

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III. POLICY PRINCIPLES

11. This Policy Statement provides guidance within the context of three general categories. The first set of principles describe the physical realities of interference that apply to transmitters and receivers in all spectrum-based services.[16] The second set outlines the Commission's expectations about the shared responsibilities of transmitter and receiver systems to co-exist with other services in spectrally proximate bands. And the third highlights the importance of reliable data in the Commission's technical analysis of spectrum issues, including data about transmitters and receivers. These general categories and specific principles draw from the *TAC Basic Principles,*[17] which we find a suitable starting point because they represent the consensus thinking of the Commission's own expert advisory committee and are widely supported in the record in response to our *NOI*.

A. Interference Realities

12. *Interference and harmful interference are affected by the characteristics of both the transmitting service(s) and nearby receiving service(s) in frequency, space, and/or time.* While the types and sources of interference are myriad and complex, interference is at a minimum a function of transmitter and receiver characteristics.[18] Transmitters emit energy that can cause interference, and receivers can experience interference by processing such energy. For example, interference can be driven by a receiver's choice of protocol for interference immunity performance—that is, the receiver's ability to attenuate noise, unwanted emissions, and undesired signals.[19] Other factors can include the distance between the transmitter and receiver, the physical environment, relative antenna orientation, and the RF environment.[20]

13. Users and operators of both transmitters and receivers should recognize that interference is not solely a function of transmitter emissions. As one example, Commission rules may specify maximum power level and maximum unwanted emissions outside the authorized band. The range between a transmitter's fundamental power level and its unwanted out-of-band emissions is controlled to

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https://www.aspeninstitute.org/publications/toward-a-national-spectrum-strategy/ (calling for the Commission to provide guidance that considers receivers); 5G Americas, *Radio Frequency Receiver Performance* (February 2023) (*5G Americas Report*), found at https://www.5gamericas.org/wireless-receiver-performance/ (similar).

[16] In this Policy Statement, we use the term "service" broadly to include services and other authorized operations, including unlicensed device operations, that are authorized by the Commission. The Commission authorizes a variety of services (e.g., mobile and fixed terrestrial, satellite, commercial wireless, public safety, aviation, radionavigation, broadcast). The Commission also authorizes "unlicensed" operations under its Part 15 rules, although these operations are not technically "services" under our rules; unlicensed operations must adhere to strict technical and operational conditions, are not permitted to cause harmful interference to other authorized services and operations, and must accept interference from those other operations. 47 CFR § 15.5(c).

[17] *See TAC Basic Principles* at 1-2; *see generally id.*

[18] Interference sources include transmitters, components and processes within receivers, the environment, as well as non-linearities creating harmonics and intermodulation. *See generally TAC Basic Principles*. Undesired signals, unwanted emissions, and noise within a receiver may be caused by factors such as unwanted unintentional RF emissions from a nearby transmitter, receiver overload due to the receiver's inability to block (i.e., tune or cancel out) a nearby undesired transmitter's signal, environmental noise sources external to both the transmitter and receiver, and noise from components and interactions within the receiver.

[19] In this Policy Statement we generally use terms such as "emissions," "unwanted emissions," "interference," and "harmful interference" as they are defined in our regulations and are applied in our decisions. *See* 47 CFR § 2.1. Consistent with our rules, we use the term "undesired signals" in this Policy Statement to refer generally to intentional emissions that are undesired by a specific receiver, in contrast to the desired intentional emission(s) for that receiver. *See, e.g.*, 47 CFR §§ 22.970 (a)(1)(ii)(B), 90.672(a)(1)(ii)(B), 73.213 (a)(1), 73.827 (a)(1), 74.1203 (a)(3)(v), 15.118 (c)(2).

[20] *See generally TAC Basic Principles* at 7-13.

a large extent by the design of the transmitter system and establishes a reference power range of what receivers may need to tolerate. At the same time, the receiver system's design controls how it internally processes the range of in-band and out-of-band RF power/energy.[21] As another example, the strength of a potentially interfering signal directed at a receiver can be affected by the location and antenna orientation of the two systems. Energy that otherwise causes harmful interference may not have an adverse effect if the receiver attenuates or mitigates potential interference by incorporating filters, error correction, signal processing, or other measures. In either case, whether unwanted emissions or undesired signals constitute "harmful interference" will depend on the specific characteristics of the transmitter and receiver.

14. Accordingly, receiver characteristics, especially the dynamic range of desired and undesired power over which receivers are designed to operate, can be as important as transmitter characteristics in enabling efficient spectrum use and co-existence among different services.

15. *The electromagnetic environment is highly variable, and zero risk of occasional service degradation or interruption cannot be guaranteed*. RF energy is ubiquitous, whether caused by RF device emissions or natural noise sources. Even in the absence of human activity, numerous environmental RF factors can contribute to interference, including: atmospheric refraction, scattering fluctuations, thermal noise, precipitation and rain fade, terrain variation and ground reflection losses, propagation losses from multipath and reflection, propagation delay, rapid and slow signal variations, electromagnetic polarization change, and signal intermodulation.

16. The RF environment is also highly variable. Variations can be individually modeled to design transmitter and receiver systems that achieve a specified performance, based on the overall effect of an assumed RF environment. Spectrum users do, and should, consider the state of the art to mitigate potential harmful interference in an increasingly noisy and variable RF environment. For example, technological advances such as dynamic antenna directional beam steering and RF filter technology are intended to improve performance, notwithstanding fluctuations in the RF environment.

17. The likelihood of harmful interference should be assessed under a range of operating conditions, but not on an expectation of 100% service availability, or in contemplation of exceptional events. The level of interference protection afforded to particular services under the Commission's rules may vary, and some may require higher levels of service reliability than others.[22] A uniform or absolute expectation of service availability could preclude the introduction of valuable new services in the RF environment and undermine the efficient use of spectrum resources. The Commission routinely evaluates probable, real-world effects instead of worst-case hypotheses.[23] Given the complex interplay of radio

[21] There are exceptions to these general statements about transmitters and receivers, such as, the potential for intermodulation signals (new signals produced at different frequencies than the desired signals to be received) which can result from signals present in the environment independent of those produced by either transmitters or receivers. Non-linearities, harmonics, and intermodulation signals can also be produced within a transmitter or receiver. While the Commission will consider these exceptions as appropriate in future proceedings, they do not affect our underlying Policy Statement.

[22] *See NOI*, __ FCC Rcd at __, paras. 52-58 (discussing the differences in receiver performance and reliability requirements that apply to public safety, satellite, radionavigation, and other services). Several commenters emphasized that the Commission must in its spectrum management recognize that different types of services – including public safety, aviation, satellite, and passive scientific services – have particular mission or reliability needs that differ from others. *See, e.g.*, Boeing Comments at 6-11 (aviation); Deere Comments at 2-4 (GPS); GPS Innovation Alliance Comments at 1-4 (GPS); Lockheed Martin Comments at 3-8 (aviation GPS, satellite, radars); Motorola Solutions Comments at 4 (public safety); NPSTC Comments at 5, 13 (public safety); National Academy of Sciences CORF Comments at 2-4 (radioastronomy); Inmarsat Reply at 2 (satellite); *see also* Utilities Technology Council et al. *Ex Parte* (filed Apr. 13, 2023) (critical infrastructure services). *See also TAC Basic Principles* at 12-13 (discussing service outages and noting the varying service needs/requirements, such as the higher reliability needs of public safety compared to cellular services).

[23] *See, e.g.*, *In the Matter of Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, 35 FCC Rcd 3852 (2020) (recognizing the importance of service rules based on sound

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service operations, completely eliminating interference is often unrealistic and unachievable. We encourage spectrum users to plan accordingly as they design and implement systems to ensure that they operate under expected, or even exceptional, conditions, in a changing RF environment.

18. *Services should plan for the spectrum environment in which they intend to operate, the service they intend to provide, and the characteristics of spectrally and spatially proximate operations. Planning should be ongoing and account for changes in spectrum operating environments*. Because spectrum use has become more intensive, the Commission will expect service operators and equipment manufacturers to plan not only for interference in the current RF environment, but also for an RF environment that can reasonably be expected to change. As one example of a factor that the Commission may take into account going forward, the ITU Radio Regulations note that transmitters and receivers should be designed to account for the technical characteristics of transmitter and receiver equipment likely to be employed in spectrally proximate bands.[24]

19. Operators and users of spectrum should understand that the Commission will continue to evaluate how best to introduce new services in spectrally proximate bands. In these proceedings, the Commission intends to consider the immunity of receivers and their ability to reject undesired and unwanted signals.[25] With the introduction of new services in spectral proximity, accounting for reasonably foreseeable changes to the RF environment remains critical.[26]

B. Shared Responsibilities

20. Operators, users, and equipment manufacturers are expected to consider how to accommodate a changing RF environment as services are deployed more closely in spectral distance. The Commission intends to be proactive in supporting "good neighbor" policies that promote more efficient and effective co-existence among spectrum users. Depending on the specific circumstances, we may consider whether spectrum users should be expected to make improvements to transmitters and receivers over time to mitigate the potential for harmful interference from spectrally proximate services.

21. Many receivers in operation today were built to perform in a static RF environment. They may not be designed to withstand potential interruption or degradation from changes in the current RF environment. Furthermore, operators or users of such receivers may not be proactive in replacing or updating their equipment to improve resiliency.

22. Going forward, the Commission intends to consider the respective responsibilities of transmitting and receiving services. We note broad support for an approach focusing on shared

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engineering principles and reliable technical data rather than exceptional cases, and focusing on the likelihood and severity of harmful interference based on realistic deployment models), *affirmed AT&T v. FCC*, No. 20-1190 (D.C. Cir. 2021) (*6 GHz Order*).

[24] ITU Radio Regulations (ITU-RR) 3.3 ("Transmitting and receiving equipment intended to be used in a given part of the frequency spectrum should be designed to take into account the technical characteristics of transmitting and receiving equipment likely to be employed in neighbouring and other parts of the spectrum, provided that all technically and economically justifiable measures have been taken to reduce the level of unwanted emissions from the latter transmitting equipment and to reduce the susceptibility to interference of the latter receiving equipment.").

[25] *NOI*, __ FCC Rcd at __, paras. 17-18.

[26] *See, e.g.*, *TAC Basic Principles* at 8-9; *Silicon Flatirons Report on Efficient Interference Management* at 8-11; AT&T Comments at 5-6; CTA Comments at 14-15; Intel Comments at 5; ITIF Reply at 5. *See also* Ofcom, "Supporting the UK's wireless future – Our spectrum management strategy for the 2020s" (Ofcom Report on Spectrum Management) at 23 (section 3.58) (encouraging spectrum neighbors to be "good neighbours" [sic] by, among other things, adopting and promoting approaches in which wireless systems are more resilient to interference from their neighbours, and encourage spectrum users to recognize the benefits of planning for an evolving radio environment in which they operate), found at https://www.ofcom.org.uk/__data/assets/pdf_file/0017/222173/spectrum-strategy-statement.pdf.

responsibilities. The TAC recommends greater clarity about the shared responsibilities of receivers and transmitters to address interference concerns, which will enable better spectrum management. So do commenters in response to the *NOI*. The ITU, the European Union, and Ofcom, for their part, have recognized the shared responsibilities of transmitters and receivers to support efficient spectrum use.[27]

23. *Transmitters authorized for use in a given service should be designed to minimize the amount of their transmitted energy outside of the service's assigned frequencies and authorizations*. We reaffirm our long-standing approach that transmitters associated with a service should be designed to minimize unwanted emission outside of the service's authorized frequencies. The TAC and commenters also emphasize the need for transmitters to minimize the amount of out-of-band emissions to the greatest extent practical.[28] The ITU Radio Regulations and the EU RED also emphasize that transmitters should, as far as practical, be based on the most recent technological advances.[29]

24. The Commission regulates transmitter emissions throughout its service rules. Transmitters must meet specified performance and operational parameters, which typically limit emissions outside of the authorized service band.[30] These service rules often have been the primary means by which the Commission protects spectrally and spatially proximate operations from harmful interference.[31] The Commission plans to continue with this approach, and going forward we also expect to consider whether transmitters can include design features that provide additional ways to minimize the potential to cause harmful interference. Further, as transmitter technologies improve with respect to interference mitigation, we encourage service providers to deploy improved transmitters to the extent practical.

25. Based on our experience, we expect further generational improvements in transmitter technologies. We also anticipate developments, such as cost reductions, performance improvements, and new industry-led standards, that will make deployment of advanced transmitters more feasible. We will consider whether improved transmitters should be deployed in certain bands. As one example, we

[27] *See, e.g.*, ITU-RR 3.3 (discussed above); EU RED Article 3.2 ("Radio Equipment shall be so constructed that it both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference."); *EU Radio Equipment Directive 2014/53/EU* at L 153/63, No. 10 ("In order to ensure that radio equipment uses the spectrum efficiently and supports the efficient use of radio spectrum, radio equipment should be constructed so that, in the case of a transmitter, … it generates radio wave emissions that so not create harmful interference, while unwanted radio waves emissions generated by the transmitter (e.g., in adjacent channels) … should be limited to such a level that, according to the state of art, harmful interference is avoided; and, in the case of receivers, it has a level of performance that allows it to operate as intended and protects it against the risk of harmful interference, in particular from shared or adjacent channels, and, in so doing, supports improvements in the efficient use of shared or adjacent channels"); Ofcom Report on Spectrum Management at 24 (sections 3.66-3.69) (encouraging spectrum users to be more resilient to interference).

[28] *See, e.g., TAC Basic Principles* at 17-18; Intel Comments at 8.

[29] *See* ITU RR 3.2 ("as far as compatible with practical considerations, the choice of transmitting, receiving, and measuring equipment shall be based on the most recent advances"); ITU RR 3.3 (discussed above); EU RED Article 3.2 (discussed above).

[30] While transmitters are designed to emit RF energy in the channels and/or frequency band(s) in which the associated service is authorized, a design artifact of practical filters results in some energy outside of those channels or frequencies. These out-of-channel or out-of-band emissions are called unwanted emissions (i.e., spurious and out-of-band emissions) and such unwanted emissions can cause undesired interference to adjacent or nearby users, including potentially harmful interference to receivers.

[31] *See, e.g.*, *NOI*, __ FCC Rcd at __, para. 60.

anticipate examining whether a transmitter can reduce unwanted emissions without degrading quality of service. Such technologies may facilitate more tailored limits for allowable emissions.[32]

26. *Receivers authorized for use in a service should, as a general matter, be designed to mitigate interference from emissions from outside of their service's assigned frequencies or channels*. Although we have adopted receiver standards,[33] we generally do not require receivers to meet specific design or performance criteria. As a result, some receivers may be designed only to operate in the then-extant RF environment. These legacy receivers in deployment do not reflect the state of the art and may be vulnerable to spectrally proximate sources of undesired emissions. Given the variability in receiver vulnerability, some receivers in use may be more robust than others to changes in the RF environment.

27. Receivers' insufficient robustness to new sources of spectrally proximate emissions has complicated recent Commission efforts to introduce beneficial new services.[34] Commenters recommend Commission guidance to promote efficient spectrum use by clarifying the need for receiver interference immunity to new sources of spectrally proximate emissions,[35] and the level of interference protection that will be afforded as technology and the RF environment evolves.[36]

28. Operators and users should not assume that receivers designed for their original RF environment will remain categorically protected in the future as the Commission endeavors to authorize important new services. It is not the policy of the Commission to always provide interference protection to the worst (*i.e.*, least selective) performing receivers, particularly when it is technically feasible and practical, over an appropriate amount of time, for receivers to perform their required functions with significantly more interference immunity.[37] Indeed, the ITU and EU RED also emphasize that receivers should, as far as practical, be based on the most recent technological advances.[38]

29. Accordingly, we encourage stakeholders to design receivers that not only meet their services' needs, but also mitigate the impacts from undesired signals outside of their services' assigned

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[32] For example, these types of emission limits could include: tighter out-of-band emission limits (frequency); antenna elevation angle emission masks for terrestrial service transmitters to protect aeronautical and space-based receivers (spatial); and scheduling emissions at times that will not interfere with reception times of receivers (temporal).

[33] *See supra* note 8; *NOI*, __ FCC Rcd at __, paras. 7-16.

[34] *See NOI,* __ FCC Rcd at __, para. 18.

[35] *See, e.g.*, *TAC Basic Principles* at 14 ("Receivers are responsible for mitigating interference outside their assigned channels."); AT&T Comments at 3-4 (receivers are responsible for mitigation of interference outside their assigned channels, and radio systems should only use the spectrum they are authorized); Intel Comments at 7 (receivers should be designed, selected, and operated in a manner that takes into account harmful interference from outside the authorized frequencies); NCTA Comments at 7-8; Public Knowledge Comments at 5-8; Verizon Comments at 9-10.

[36] *See, e.g.,* Kwerel and Williams, 9 J. on Telecomm. & High Tech. L. at 516-18; AT&T Reply at 6 (receiver users cannot treat the use of spectrum outside their authorized band as a public right, and should continuously review the evolution of radio use and reevaluate receiver performance in light of these changes); Nokia Comments at 2 (incumbent protection based on previous assumptions (or lack of assumptions) should not be perpetual); Verizon Comments at 10.

[37] *See, e.g.*, *Expanding the Economic Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Second Report and Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd 13071 (2014) at 13088-89, 13093-96, paras. 34-35, 42-47 (inference protection not afforded to one type of receiver that has not as interference-immune as other types of receivers).

[38] *See, e.g.*, ITU RR 3.3 (discussed above); ITU RR 3.13 (among other things, the performance characteristics of receivers "should be adequate to ensure that they do not suffer from interference due to transmitters situated at a reasonable distance"); *EU Radio Equipment Directive 2014/53/EU* at L 153/63, No. 10 (discussed above); EU RED Article 3.2 (discussed above); CEPT/Electronic Communications Committee (ECC) Report 310 at 16 (§3.5), found at https://docdb.cept.org/document/13606.

frequencies. Further, as new receiver technologies are developed with improved interference immunity, and as legacy equipment is being replaced over time, we encourage service providers periodically to deploy receivers that reflect the latest technical improvements.

30. The Commission will in future proceedings examine the manner in which receivers are being deployed, operated, and maintained. Such examination could include whether receivers are, or should be, designed with due consideration of a changing RF environment from spectrally proximate emissions. In considering whether and when we must protect receivers from out-of-band emissions, we anticipate that improved receiver interference immunity performance will play a key role.

31. Going forward, we plan to examine a number of factors relating to the foregoing questions, including but not limited to: (a) whether receivers in an authorized service are sufficiently designed to mitigate undesired signals from outside of their service's assigned frequencies, irrespective of location; (b) the extent to which receivers can self-protect by minimizing performance degradation and employing filters with sufficient selectivity to withstand a range of undesired signal strength and unwanted emissions from spectrally proximate services; (c) the state of the art in receivers deployment and the passage of time since relevant equipment was last upgraded; (d) the scope and scale of legacy receivers in active operation; and (e) the practicality and feasibility of upgrading to receivers that better withstand changes to the RF environment.

32. Examining these and other factors will help ensure that future receivers can accommodate the introduction of new services in spectrally proximate bands. Our approach will include review of the prospect for development of receivers that have improved interference immunity, including industry-led efforts to promote greater resilience that enables effective co-existence. We believe that adopting these general, forward-looking considerations with respect to receivers will advance our overall goal of promoting more efficient and effective spectrum use. Any future decisions will consider receiver performance based on the facts and circumstances of each individual proceeding.

33. *Radio transmitter and receiver system operators and equipment manufacturers should plan for and design error tolerant systems, using good engineering practices, to mitigate degradation from interference*. The TAC, several reports and studies, and commenters have emphasized the importance of good engineering practices concerning equipment and systems to promote more effective and efficient co-existence among spectrum users.[39]

34. A range of engineering and design techniques are presently available to help satisfy the performance and reliability expectations of receiver equipment. They include analog and digital filtering, antenna design, adaptive modulation and coding techniques with error correction, dynamic frequency selection, automatic gain control, intermodulation rejection, and countless other methods to accommodate a highly variable and complex spectrum environment. Implementation margins of various types[40] may be employed to ensure minimal degradation to a receiver's desired signal in relation to unwanted emissions and undesired signals to reduce interference risk. Margins are important to accommodate and balance the variable and statistical nature of interference protection.

35. As a matter of general practice, the Commission does not dictate or mandate the use of specific techniques, nor does it design radio systems or specify how device manufacturers should develop

[39] *See, e.g.*, *TAC Basic Principles* at 15-17 (realities of current and future spectrum use prescribe the need for a robust radio system, including the incorporation of practical mitigation techniques into the radio system that would be considered good engineering practice); AT&T Comments at 9; Qualcomm Comments at 9-10 (FCC should require good engineering practices for receiver designs); NCTA Reply at 5. *See also* ITU RR 3.2 (as far as compatible with practical considerations, the choice of transmitting, receiving, and measuring equipment shall be based on the most recent advances in the technique as indicated).

[40] These may include implementation margins for component manufacturing variation, thermal environmental variation, fading margins for RF environment variations, body loss, polarization mismatch, antenna gain variations, etc.

their equipment. However, the Commission does consider the upper and lower bounds of RF power levels over which transmitters and receivers are expected to operate. We consider practical and realizable ranges of both desired and undesired RF signal output and input power when establishing our technical service rules. The Commission also will look for system operators to employ good engineering techniques and best practices where such techniques would facilitate better service reliability to its users.

C. Data-Driven Regulatory Approaches to Promote Co-Existence

36. Sufficient technical information on current and proposed systems, including robust interference analyses and receiver and transmitter performance, will be expected from stakeholders to help the Commission discharge its spectrum management functions more effectively. In addition, the Commission intends to further explore flexible regulatory approaches, such as interference limits.

37. *Relevant information about services' transmitter and receiver standards, guidelines, and operating characteristics is needed to promote effective spectrum management and efficient co-existence*. As the Commission seeks to introduce new services, relevant information about current and proposed systems—including transmitters, receivers, and their respective characteristics—is essential. Recent Commission proceedings also underscore the importance of this kind of information to evaluate the RF environment and make decisions about the manner in which new services can be introduced successfully.[41] The TAC, numerous reports and studies, and commenters also agree that this information is important to promote effective spectrum management.[42] In some situations, however, this level of detail has not been made available.[43]

38. Going forward, the Commission will consider whether to require disclosure of relevant information on transmitter, receiver, and system characteristics associated with particular services. In some cases, such disclosure may enable the Commission to more effectively perform its responsibilities, evaluate potential harmful interference concerns, and optimize effective and efficient outcomes in its decision-making. Determining compatibility requires that the Commission have sufficient relevant information about the various potentially affected transmitters and receivers, as well as systems communication parameters. Only then can the Commission consider the full range of possible solutions, such as how legacy receivers should be addressed.

39. The Commission anticipates that sufficiently detailed information that would inform robust analyses about potential harmful interference concerns would be needed.[44] With respect to

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[41] *See supra* notes 7-11 *NOI*, __ FCC Rcd at __, para. 18.

[42] *See, e.g.*, *TAC Basic Principles* at 18 (determination of compatibility requires information about the transmitters and receivers, as well as systems communication parameters; recommends that services under FCC jurisdiction be expected to disclose the relevant standards, guidelines and operating characteristics of their systems to the Commission if they expect protection from harmful interference); AT&T Comments at 10-12; 5G Americas Comments at 3 (detailed parameters on how both transmitting and receiving systems operate must be understood in order for improvements in spectrum efficiency); CTA Comments at 15; Ericsson Comments at 13; Virginia Tech Comments at 4-5; Monisha Ghosh Comments at 4 (imperative that characteristics of systems be disclosed fully to the Commission); Verizon Comments at 10-11. *See also Aspen Institute Report* at 38 (any party requesting receiver protection must have disclosed their receiver characteristics in a publicly accessible Commission database); *5G Americas Report* at 14; CEPT/ECC Report 310 at 15-16. *Cf.* NTIA Comments at 3-4 (NTIA gathers receiver characteristics information in its certification process); RTCA Comments at 3 (RCTA plans to catalog all existing receiver performance requirements).

[43] *See, e.g.*, *Silicon Flatirons Report on Efficient Interference Management* at 8-9; *Silicon Flatirons Report on Receivers* at 5-6; *GAO Report on Spectrum Management* at 27; ITIF Reply at 7; *cf.* Bykowsky/Sharkey Reply at 1-2, 6-7 (Commission should pursue a solution to promotes disclosure of requisite information so that radio system operators and receiver manufacturers can develop market solutions).

[44] *NOI*, __ FCC Rcd at __, para. 68 (noting that disclosure of proprietary, classified, or confidential information would be addressed in particular spectrum proceedings).

transmitters, relevant information could include information on the spectrum mask, emission type, power level, the range of antenna height above average terrain, anticipated antenna gain, antenna pattern, antenna direction, service coverage area, etc. For receivers, relevant information could include details concerning the filter masks and blocking dynamic range to limit out-of-band signals carried through the receiver chain, interference resiliency, receiver selectivity, intermodulation rejection, noise figure/factor, and signal-to-interference-noise (SINR) requirements,[45] as well as the extent of variation among receivers or receiver classes, and other information on legacy receivers that would enable an informed consideration of harmful interference concerns.[46]

40. Disclosing such information also would help inform and incentivize industry-led initiatives. The Commission supports voluntary industry efforts to promote more efficient use of spectrum. We believe that a combination of approaches—a policy statement and voluntary industry-led efforts—represent be the best means to promoting our spectrum management goals.[47]

41. *Quantitative analyses of interactions between services that are fact- and evidence-based, sufficiently robust, transparent, and reproducible are needed to better inform spectrum management decision-making*. The Commission expects proponents of a harmful interference claim to supply sufficiently complete, transparent, and reproducible quantitative analytical models of the interactions between radio services, with respect to transmitter and receiver performance characteristics and the RF environment. Stakeholders that supply such evidence are more likely to present a compelling case than those that do not. These expectations, particularly in complex proceedings, will better enable the Commission and stakeholders to make evidence-based determinations about spectrum management.[48]

42. Transparent and reproducible quantitative analyses best inform the Commission's decision-making. Transparency—particularly about transmitters, receivers, and degradation metrics—gives stakeholders and the Commission the ability to validate the fidelity of interference models and ensure that they represent realistic operating conditions and scenarios, with balanced protection criteria.

43. The most useful comprehensive quantitative analyses provide information on more than just a narrow set of receivers or transmitters without regard to whether they are fairly representative of deployed and operational radio equipment, or only some undisclosed subset of them. Underlying assumptions should be transparent and should not disregard inherent variations in the RF environment or typical conditions. Furthermore, while lab measurements (e.g., for certifying compliance with equipment authorization rules) may be germane, they may not always capture the real-world operations or conditions of deployed systems. For a comprehensive analysis of equipment, measurements taken at appropriate sensitivity levels to depict actual performance will better inform Commission decision-making.

44. The Commission will encourage, if necessary, cross-industry information sharing and collaboration. While fundamental radio physics is common across many radio services, Commission

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[45] *NOI*, __ FCC Rcd at __, para. 67 (seeking comment on receiver characteristics that would be relevant if the Commission were to require that information on receiver characteristics be made available). CEPT/ECC Report 310 defined receiver characteristics as: receiver noise floor, sensitivity, linearity, dynamic range, protection ratio, selectivity (including adjacent channel selectivity), blocking and overloading (including intermodulation rejection), and spurious response rejection. CEPT/ECC Report 310 at 17-34.

[46] *See NOI*, __ FCC Rcd at __, paras. 59-70; *see id.* at __, paras. 115-16 (seeking comment on the TAC proposal to require disclosure of relevant standards, guidelines, and operating characteristics of systems); *TAC Basic Principles* at 18-19 (describing what might constitute relevant information).

[47] *NOI*, __ FCC Rcd at __, para. 79.

[48] *See, e.g.*, *TAC Basic Principles* at 23-26; AT&T Comments at 10-12. *See Aspen Institute Report* at 26 ("[g]ood policy requires a transparent, collaborative, and trust-based decision-making process based on science, engineering, [and] economics"); *5G Americas Report* at 13-15.

guidance may be needed to align cross-industry engineering analyses where terminology, methods, metrics and norms may be different, and conflicts of interest may inhibit information sharing. Where necessary, confidential data may be shared with the Commission under protective order, which can protect the confidentiality of stakeholder proprietary information while allowing data analysis results to be disclosed at granular categorical levels of transmitter output and receiver input power levels. Analytical models should be reproducible so that the conditions and results of such models can be validated by multiple diverse stakeholders. Disclosing receiver and transmitter performance parameters (such as spectrum masks and input power limits at which receiver degradation metric(s) are satisfied) can be important to develop a clear understanding of the range of RF power tolerances and the performance of different categories of transmitters and receivers.

45. *The Commission will explore, in future rulemakings, interference limits policies in particular spectrum bands to promote effective co-existence*. To advance our spectrum management goal of promoting co-existence among services, the Commission will explore whether to apply interference limits policies to quantify a service's interference-related rights with regard to the transmitter and receiver operations when different services operate in close proximity.

46. An interference limits approach could better help evaluate tradeoffs between receiver and transmitter performance among spectrum users, without receiver performance mandates.[49] We sought comment in particular on various considerations of an interference limits approach,[50] with many commenters supporting further examination[51] and others raising concerns in certain situations.[52]

47. We intend to explore applying interference limits approaches in future proceedings. As we examine possible models for interference limits, the following factors, among others, will be relevant: (a) the particular bands and services at issue; (b) proceeding-specific technical considerations; and (c) the rights and protections that might attach to incumbents and new entrants.

IV. CONCLUSION

48. With this Policy Statement, we restate and update our framework for a balanced spectrum management approach that comprehensively evaluates both transmitter and receiver performance. This framework is intended to help guide Commission decision-making and stakeholder action as the RF environment evolves. We are confident that refreshing our spectrum management policies for the state of the art will advance the efficient and effective use of our nation's spectrum,

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[49] *See NOI*, __ FCC Rcd at __, paras. 119-21. In seeking comment, we discussed the TAC's White Papers on interference limits and the harm claim thresholds approach; we noted that the "harm claim threshold" approach represented a particular form of an interference limits approach. *Id. See generally* TAC Receivers and Spectrum Working Group, "Interference Limits Policy – The use of harm claim thresholds to improve the interference tolerance of wireless systems," (Feb. 6, 2013) (*White Paper on Interference Limits Policy*), found at https://transition.fcc.gov/bureaus/oet/tac/tacdocs/WhitePaperTACInterferenceLimitsv1.0.pdf; TAC Spectrum / Receiver Performance Working Group, "Interference Limits Policy and Harm Claim Thresholds: An Introduction" (Mar. 5, 2014) (*White Paper on Harm Claim Thresholds*), found at https://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting61014/InterferenceResolution-Enforcement-Radio-Noise-White-Paper.pdf.

[50] *See id.* at __, paras. 122-36; *see generally* TAC *White Paper on Interference Limits Policy*; TAC *White Paper on Harm Claim Thresholds.*

[51] *See, e.g.*, AT&T Comments at 8 (supporting exploration of approach); Nokia Comments at 9 (approach holds promise but poses challenges); Verizon Comments at 11 (approach holds promise and needs further study); de Vries Comments at 50 (supports use of harm claim thresholds approach); Ericsson Comments at 14 (approach holds promise and further study is warranted); ITIF Reply at 5-6. *See also PCAST Report* at 33 (supporting consideration of a harm claim thresholds approach); *5G Americas Report* at 16-17.

[52] *See, e.g.*, Garmin Comments at 9 (particular concerns about applying the approach with respect to navigation services such as GPS); Lockheed Martin Comments at 5 (same).

promote co-existence among services, and facilitate the development and rapid deployment of new technologies, products, and services for the benefit of the public.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

STATEMENT OF
CHAIRWOMAN JESSICA ROSENWORCEL

Re: *Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services,* ET Docket No. 23-122; *Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance*, ET Docket No. 22-137, Policy Statement (April 20, 2023)

Wireless spectrum is a scarce resource. But when we put this limited resource to creative use, we can expand communications for all, foster innovation, and support our economic and national security. Our history is full of examples of us doing just that. It's why in the United States our spectrum policies have long led the wireless world. After all, it was nearly three decades ago that the Federal Communications Commission took the academic ideas of Ronald Coase and ushered in a whole new era of spectrum auctions. We also pioneered the use of unlicensed spectrum—the airwaves we now know and use every day as Wi-Fi. More recently, we blazed a trail for two-sided incentive auctions and dynamic spectrum sharing. With each of these efforts, we took spectrum scarcity and turned it into abundance.

We need to do it again.

Today, more of our civic and commercial life relies on wireless technologies than ever before. Commercial spectrum bands are increasingly crowded. This congestion is making it harder to make room in our skies for new technologies and new services. But we have to find a way, because no one wants opportunity and innovation to grind to a halt. We need smarter policies—policies that promote more efficient use of this scarce resource. I've called it an abundance agenda.

That's why one year ago, almost to the day, we launched our inquiry into wireless receiver performance. We did so because we recognized that to date, most discussions of spectrum efficiency have been a one-way effort. They focus almost exclusively on transmitters. To avoid harmful interference, we typically have rules about how and when transmitters can operate.

But wireless communications systems involve transmitters *and* receivers. It's a two-way proposition. Both are vital. Both matter.

So today we begin to rethink our approach to spectrum policy and move beyond just transmitters to consider receivers, too. That's because receivers that are not sufficiently resilient can make it more difficult to introduce additional services in the same or adjacent airwaves. They can diminish the spectral environment and shut out new uses before they even begin.

There is too little in our existing spectrum policies that recognizes this truth.

That's where today's Policy Statement comes in. Drawing upon the work of the Commission's Technological Advisory Council, this Policy Statement sets out nine principles to provide guidance on how we will approach questions of spectrum management going forward. These principles are based on a recognition of the physical realities of interference, an expectation that responsibility for spectrum coexistence is shared on both sides of a communications system, and a firm belief in data-driven policy making.

At the same time, this Policy Statement recognizes that there is not a one-size-fits-all approach to spectrum management and different systems and different use cases have different needs. But this Policy Statement identifies a framework the Commission will seek to apply as we strive for greater efficiency

and effectiveness in increasingly congested spectrum.

Finally, this is just a first step. We will continue to review the record developed in last year's Notice of Inquiry and will learn from our experience operating under this Policy Statement, as we consider further actions to once again turn spectrum scarcity into abundance. I look forward to making progress.

I want to thank Commissioner Simington, for his enthusiasm and work on this subject. I also want to thank the staff who worked on this effort, including Edwin Abrazado, Damian Ariza, Bahman Badipour, Martin Doczkat, David Duarte, Miguel Gallegos, Michael Ha, Sayed Hasan, Ira Keltz, Matthew Miller, Paul Murray, Nick Oros, Bob Pavlak, Siobahn Philemon, Ron Repasi, Aniqa Tahsin, and Sean Yun of the Office of Engineering and Technology; Baron Chan, Tom Derenge, Madelaine Maior, Roger Noel, Blaise Scinto, Arpan Sura, Joel Taubenblatt, Jennifer Tomchin, Mary Claire York, and Janet Young of the Wireless Bureau; Jim Schlichting of the International Bureau; Zenji Nakazawa of the Public Safety and Homeland Security Bureau; Jonathan Campbell, Even Kwerel, Paul Lafontaine, Cher Li, Kate Matraves, Giulia McHenry, Mark Montano, Don Stockdale, and Aleks Yankelevich of the Office of Economics and Analytics; and Deborah Broderson, Doug Klein, and Bill Richardson of the Office of General Counsel.

STATEMENT OF
COMMISSIONER NATHAN SIMINGTON

Re: *Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services,* ET Docket No. 23-122; *Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance*, ET Docket No. 22-137, Policy Statement (April 20, 2023)

The Policy Statement we adopt today lays out a common sense approach for how the Commission will conduct spectrum management going forward—in what is in my opinion the only common sense way to do so—by measuring and managing the efficient use of spectrum by *both* transmitters and receivers. As I've said numerous times, there is much value in getting to a place where conflicts such as the C-Band altimeter fight are headed off at the pass and spectrum allocation and deployment processes become smooth and orderly endeavors. This item takes that first step, and paves the way for a framework to accomplish this.

The principles laid out in the Policy Statement will enable the FCC to identify potential interference issues in bands adjacent to new commercial spectrum, in advance, and to define clear rights regarding interference protection. Clear rights provide incentives for innovation and collaboration among spectrum users in a way that avoids technical regulatory mandates, which can often be misguided, imprecise and overly burdensome.

Looking forward, I am eager to see an NPRM where the Commission proposes a procedural framework for implementing these principles on a band-by-band and service by service basis. To address the overarching "one-size-fits-all" and band and service-specific concerns raised in the record of the NOI, this proposal will create procedures to implement what I like to refer to as "band-specific performance boundaries" or technical parameters, such as OOBE for transmitters or, for receivers, an emissions mask. These would be applied to both transmitters and receivers. These parameters, or principles, or band-specific performance boundaries—call them what you will—would become part of the FCC's standard analysis when considering a new band for commercial use, or reallocating a commercial band for a new use.

This approach allows for maximum industry feedback and input because the FCC's current process is to seek comment on the service rules for each band through notice and comment rulemaking. This would not change in my view. It would just be expanded to seek comment on parameters applicable to receivers. Band-specific performance boundaries should be technology agnostic, and otherwise governed by the characteristics of the particular spectrum band where applied. They are congruent with a flexible use model and could foster easier spectrum sharing by creating additional efficiencies in a band.

Band specific performance boundaries would establish operational thresholds as part of the service rules that *both* transmitters and receivers must adhere to in a given band and any operations falling outside those boundaries would not be protected from interference.
This approach addresses commenter concerns while also allowing the FCC to execute on the vision laid out in this Policy Statement. I look forward to this next step.

I would like to thank the staff of OET for all of their diligent work on this item. I am very happy to support it. Thank you.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems	)	IB Docket No. 21-456
	)	
	)	

REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING

Comment Date: 45 Days After Publication in the Federal Register
Reply Comment Date: 75 Days After Publication in the Federal Register

Adopted: April 20, 2023 **Released: April 21, 2023**

By the Commission: Chairwoman Rosenworcel and Commissioner Starks issuing separate statements.

I. INTRODUCTION

1. In this Report and Order, we revise Commission rules governing spectrum sharing among a new generation of broadband satellite constellations to promote market entry, regulatory certainty, and spectrum efficiency through good-faith coordination. Specifically, we adopt rules clarifying protection obligations between non-geostationary satellite orbit, fixed-satellite service (NGSO FSS) systems authorized through different processing rounds by using a degraded throughput methodology, and subject those protections to a sunset period. After the sunset period, new entrants authorized in later processing rounds will share spectrum on an equal basis with earlier-round incumbents. We also clarify that all NGSO FSS operators licensed or granted market access in the United States must coordinate with each other in good faith, regardless of their processing round status, and we explain our expectations for information sharing during this good-faith coordination. In the accompanying Further Notice of Proposed Rulemaking, we seek comment on which specific metrics should be used to define the protection afforded to an earlier-round NGSO FSS system from a later-round system, and seek specific comment on implementation of the degraded throughput methodology that we are adopting. This Report and Order and Further Notice of Proposed Rulemaking will continue the Commission's efforts to promote development and competition in broadband NGSO satellite services made possible by the new space age.[1]

II. BACKGROUND

2. This proceeding continues the Commission's recent efforts to update and refine its rules governing NGSO FSS systems.[2] Constellations of NGSO FSS satellites traveling in low- and medium-

[1] *See generally* Executive Order No. 14036, Promoting Competition in the American Economy, 86 FR 36987 (July 9, 2021) ("The heads of all agencies shall consider using their authorities to further the policies set forth in section 1 of this order, with particular attention to: (i) the influence of their respective regulations, particularly any licensing regulations, on concentration and competition in the industries under their jurisdiction; and…"). Executive Order at 86 FR 36991.

[2] *Revising Spectrum Sharing Rules for Non- Geostationary Orbit, Fixed-Satellite Service Systems*, IB Docket No. 21-456, Notice of Proposed Rulemaking, 36 FCC Rcd 17871 (2021); *Revision of Section 25.261 of the Commission's Rules to Increase Certainty in Spectrum Sharing Obligations Among Non-Geostationary Orbit Fixed-Satellite Service Systems*, Order, RM-11855, FCC 21-123 (2021) (*NPRM*); *see also Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order, 32 FCC Rcd 7809 (2017) (*NGSO FSS Report and Order*), *pets. for recon. pending*.

Earth orbit may provide broadband services to industry, enterprise, and residential customers with lower latency and wider coverage than has previously been available via satellite.[3] The number of applications filed in recent years for NGSO FSS system authorizations, and the number of satellites launched, are unprecedented.[4]

3. *Processing Round Procedure Overview*. Applications for NGSO FSS system licenses and petitions for declaratory ruling seeking U.S. market access for non-U.S.-licensed NGSO FSS systems are considered in groups based on filing date, under a processing round procedure. Pursuant to the Commission's rules, a license application for "NGSO-like"[5] satellite operation, including operation of an NGSO FSS system, that satisfies the acceptability for filing requirements[6] is reviewed to determine whether it is a "competing application" or a "lead application."[7] A competing application is one filed in response to a public notice initiating a processing round.[8] Any other application is a lead application.[9] Competing applications are placed on public notice to provide interested parties an opportunity to file pleadings in response to the application.[10] Lead applications are also placed on public notice.[11] The public notice for a lead application initiates a processing round, establishes a cut-off date for competing NGSO-like satellite system applications, and provides interested parties an opportunity to file pleadings in response to the application.[12]

4. The Commission reviews each application in the processing round and all the pleadings filed in response to each application.[13] Based upon this review and consideration of such other matters as it may officially notice, the Commission will grant all the applications for which the Commission finds that the applicant is legally, technically, and otherwise qualified, that the proposed facilities and operations comply with all applicable rules, regulations, and policies, and that grant of the application will serve the public interest, convenience and necessity.[14] The Commission will deny the other applications.[15]

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[3] *See generally, e.g.*, *Communications Marketplace Report*, FCC 22-103, para. 6 (2022) (approximately 98% of all satellite launches in 2021 were deployed into low-Earth orbit to provide internet connectivity) (*CMR*).

[4] *See generally Mitigation of Orbital Debris in the New Space Age*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 4156, 4158, para. 3 (2020); *see also, e.g.*, *CMR*, FCC 22-103, para. 6 (noting SpaceX had launched more than 3,350 of its satellites); Letter from Blake Wiles, Market Access Manager, North America, OneWeb, to Marlene H. Dortch, Secretary, FCC, IBFS File No. SAT-MPL-20200526-00062 (filed Jan. 20, 2023) (noting OneWeb had launched 544 of its satellites).

[5] The term "NGSO-like satellite operation" is defined as: (1) Operation of any NGSO satellite system; and (2) operation of a geostationary satellite orbit, mobile-satellite service satellite to communicate with earth stations with non-directional antennas. 47 CFR § 25.157(a).

[6] 47 CFR § 25.112.

[7] 47 CFR §§ 25.156(d)(1), 25.157(c). A non-U.S.-licensed NGSO-like satellite system seeking to serve the United States can be considered contemporaneously with other U.S. NGSO-like satellite systems pursuant to this procedure and considered before later-filed applications of other U.S. satellite system operators if the non-U.S.-licensed satellite system: (1) Is in orbit and operating; (2) has a license from another administration; or (3) has been submitted for coordination to the International Telecommunication Union. 47 CFR § 25.137(c). This procedure does not apply to applications for authority to operate certain replacement space stations. 47 CFR § 25.157(b)(1).

[8] 47 CFR § 25.157(c).

[9] *Id.*

[10] 47 CFR § 25.157(c)(1).

[11] 47 CFR § 25.157(c)(2).

[12] *Id.*

[13] 47 CFR § 25.157(d).

[14] 47 CFR § 25.156(a).

5. *NGSO FSS System Spectrum Sharing Overview*. The Commission has adopted rules for spectrum sharing among NGSO FSS systems.[16] NGSO FSS space station applications granted with a condition to abide by these sharing rules are exempt from frequency band segmentation procedures that otherwise apply to applications for NGSO-like satellite operation.[17] Instead, NGSO FSS operators must coordinate with one another in good faith the use of commonly authorized frequencies.[18] If two or more NGSO FSS satellite systems fail to complete coordination, a default spectrum-splitting procedure applies.[19]

6. Under the default spectrum-splitting procedure, whenever the percentage increase in system noise temperature of an earth station receiver, or a space station receiver for a satellite with on-board processing, of either system, $\Delta T/T$, exceeds 6% due to interference from emissions originating in the other system in a commonly authorized frequency band, such frequency band will be divided among the affected satellite networks (i.e., individual links) in accordance with the following: (1) Each of n (number of) satellite networks involved must select 1/n of the assigned spectrum available in each of these frequency bands; (2) the affected station(s) of the respective satellite systems may operate in only the selected (1/n) spectrum associated with its satellite system while the $\Delta T/T$ of 6% threshold is exceeded; and (3) all affected station(s) may resume operations throughout the assigned frequency bands once the $\Delta T/T$ of 6% threshold is no longer exceeded.[20] The spectrum selection order for each satellite network is determined by the date that the first space station in each satellite system is launched and capable of operating in the frequency band under consideration.[21]

7. In the *NGSO FSS Report and Order*, the Commission stated that it will "initially limit" sharing under the $\Delta T/T$ of 6% threshold to qualified applicants in a processing round.[22] The Commission explained that treatment of later applicants would be case-by-case based on the situation at the time and considering both the need to protect existing expectations and investments and provide for additional entry, as well as any comments filed by incumbent operators and reasoning presented by the new applicant.[23]

8. *NPRM*. The *NPRM* sought comment on rule changes that would clarify the relative obligations between NGSO FSS systems approved in different processing rounds.[24] Specifically, the Commission proposed to limit the existing NGSO FSS spectrum-splitting procedure in section 25.261 to those systems approved in the same processing round, and to require systems approved in a later processing round to coordinate with, or demonstrate they will protect, earlier-round systems. The Commission invited comment on how to quantify inter-round protection and whether it should sunset

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[15] *See* 47 CFR § 25.157(d).

[16] 47 CFR § 25.261. These sharing rules apply to NGSO FSS operation with earth stations with directional antennas anywhere in the world under a Commission license, or in the United States under a grant of U.S. market access. 47 CFR § 25.261(a).

[17] 47 CFR § 25.157(b)(2), (e), (f), (g).

[18] 47 CFR § 25.261(b).

[19] 47 CFR § 25.261(c).

[20] *Id.*

[21] 47 CFR § 25.261(c)(1); *see also The Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ku-Band*, Report and Order, 17 FCC Rcd 7841, 7857, para. 53 & n.77 (2002) ("A[n NGSO FSS] system is deemed operational when at least one of its satellites reaches its intended orbit and initiates transmission and reception of radio signals.").

[22] *NGSO FSS Report and Order*, 32 FCC Rcd 7809, 7829, para. 61.

[23] *Id.*

[24] *NPRM*, FCC 21-123, paras. 12-26.

after a period of time. The Commission also proposed to require all NGSO FSS grantees,[25] regardless of their processing round status, to coordinate with each other in good faith and sought comment on specific information sharing obligations that could facilitate operator-to-operator coordination. In response to the *NPRM*, seventeen comments, fifteen reply comments, and numerous *ex partes* were filed.[26]

III. DISCUSSION

9. After review of the record, we adopt rule changes that will promote market entry, regulatory certainty, and spectrum efficiency among a new generation of broadband NGSO satellite constellations. Specifically, we adopt three proposals in the *NPRM* that received broad support: 1) limiting the default spectrum-splitting procedure in section 25.261 to NGSO FSS systems approved in the same processing round, before sunsetting; 2) requiring NGSO FSS systems approved in a later processing round to coordinate with, or demonstrate they will protect, earlier-round systems; and 3) requiring all NGSO FSS grantees to coordinate with each other in good faith. We also address three issues that produced a diverse record. After reviewing the proposed options for inter-round protection, we conclude that an interference analysis based on a degraded throughput methodology offers the most technically promising path for NGSO FSS inter-round sharing and require later-round systems to use such a methodology when demonstrating that they will protect earlier-round systems. On information sharing requirements, we clarify our expectations as to the necessary exchanges of information that will take place as part of the universal NGSO FSS good-faith coordination requirement we are adopting in this Order. We also conclude that protection of earlier-round NGSO FSS systems must ensure a stable environment for continued service and investment but should not hinder later-round systems indefinitely. Accordingly, we adopt a sunsetting provision. NGSO FSS systems will be entitled to protection from systems approved in a subsequent processing round until ten years after the first authorization or market access grant in that subsequent processing round. After that date, all systems in both processing rounds will be treated on an equal basis with respect to spectrum sharing in the absence of a coordination agreement, and the default spectrum-splitting procedure in section 25.261 will also apply between systems in the two rounds. Finally, we apply the rule changes adopted in this Report and Order to all current NGSO FSS licensees and market access grantees as well as pending and future applicants and petitioners.

A. Limiting the Default Spectrum-Splitting Procedure to Systems Approved Through the Same Processing Round, before Sunsetting

10. In the *NPRM*, the Commission noted that, while it stated in the 2017 *NGSO FSS Report and Order* that it would "initially limit" the default spectrum-splitting procedure in section 25.261 to qualified NGSO FSS applicants in the same processing round,[27] there is no such limitation in the current rule text. Nonetheless, recent NGSO FSS system licenses and grants of market access have included a requirement to apply the spectrum-splitting procedure only among NGSO FSS systems approved within the same processing round.[28] To provide greater regulatory certainty, the Commission proposed to codify

[25] In this Report and Order and Further Notice of Proposed Rulemaking, the term "grantee" refers to U.S.-licensed satellite operators granted Commission space station licenses and non-U.S. licensed satellite operators granted U.S. market access.

[26] *See* Appx. E.

[27] *See NGSO FSS Report and Order*, 32 FCC Rcd 7809, 7829, para. 61.

[28] *See, e.g.*, *WorldVu Satellites Limited, Debtor-in-Possession, Petition for Declaratory Ruling Granting Access to the U.S. Market for the OneWeb Non-Geostationary Satellite Orbit Fixed-Satellite Service V-Band System*, Order and Declaratory Ruling, 35 FCC Rcd 10150, 10160, para. 30m (2020) (*OneWeb V-band Grant*); *Kuiper Systems, LLC, Application for Authority to Deploy and Operate a Ka-band Non-Geostationary Satellite Orbit System*, Order and Authorization, 35 FCC Rcd 8324, 8344, para. 59b (2020) (*Kuiper Grant*); *ViaSat, Inc., Petition for Declaratory Ruling Granting Access for a Non-U.S.-Licensed Non-Geostationary Orbit Satellite Network*, Order and Declaratory Ruling, 35 FCC Rcd 4324, 4342-43, para. 54 (2020) (*Viasat Grant*); *The Boeing Company, Application for*

(continued….)

this limitation.[29] Doing so would eliminate general "case-by-case" consideration of how to treat later NGSO FSS applicants relative to approved systems,[30] except when considering waiver requests.

11. Commenters broadly welcome the Commission's proposal,[31] which we adopt to provide greater regulatory stability and predictability to NGSO FSS operators as they deploy their initial constellations, subject to the sunsetting provision described below. The purpose of the Commission's recent NGSO FSS processing rounds has been to establish a sharing environment among authorized systems to provide a measure of certainty in lieu of adopting an open-ended requirement to accommodate all future applicants.[32] NGSO FSS operators have planned, invested, and begun deploying thousands of satellites in their initial constellations based in part on their assessment of the specific characteristics of other participants in their processing round, which allows them to estimate the amount of spectrum likely to be available during a situation governed by the spectrum-splitting procedure. Limiting the spectrum-splitting procedure to systems approved within the same processing round is therefore an important element of regulatory stability for NGSO FSS grantees as they deploy their initial constellations, reflected in the licensing decisions taken under the current, case-by-case approach. Over time, this anticipated NGSO FSS sharing environment will change as system authorizations granted in the same processing round are surrendered or not ultimately built out, new entrants are approved in later processing rounds and coordinate with existing systems, and operators' own system designs are updated for later-generation constellations. Therefore, while we do expect that the need for the stability and predictability offered by limiting the default spectrum-splitting procedure to systems approved through the same processing round will diminish over time and should be counterbalanced with the benefits of promoting new entry, as addressed through the sunsetting provision discussed below, we conclude that the establishment of an initial sharing environment will promote the development of NGSO FSS systems.

12. While no commenter suggests the Commission grant every new NGSO FSS application filed after a processing round cut-off date on an equal basis with applications filed within the processing round, some parties nonetheless encourage the Commission to retain discretion when considering later-filed NGSO FSS applications.[33] We always retain such discretion in the context of a rule waiver upon a finding of good cause, although we expect such circumstances to be rare.[34] We believe the waiver standard is the appropriate threshold for considering whether an NGSO FSS application submitted after a relevant processing round cut-off date should be treated as if it had been filed within the processing round

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Authority to Launch and Operate a Non-Geostationary Satellite Orbit System in the Fixed-Satellite Service, Order and Authorization, FCC 21-115, para. 52 (2021) (*Boeing V-band Grant*).

[29] *NPRM*, FCC 21-123, para. 13.

[30] *NGSO FSS Report and Order*, 32 FCC Rcd 7809, 7829, para. 61 (explaining that the case-by-case approach would consider: (1) "the situation at the time"; (2) "the need to protect existing expectations and investments"; (3) the need to "provide for additional entry"; and (4) "any comments filed by incumbent operators and reasoning presented by the new applicant").

[31] *See, e.g.*, SpaceX Comments at 5; O3b Comments at 5-7; Kepler Comments at 3-4; Telesat Comments at 3-4; SN Space Comments at 6; SpaceLink Comments at 4-8; Hughes Comments at 3-4; Inmarsat Comments at 3.

[32] *NGSO FSS Report and Order*, 32 FCC Rcd at 7829, para. 61.

[33] *See* AST Comments at 2-3; *see also* Intelsat Comments at 3-4.

[34] 47 CFR § 1.3. Waiver is appropriate only if both (1) special circumstances warrant a deviation from the general rule, and (2) such deviation better serves the public interest. *NetworkIP, LLC v. FCC*, 548 F.3d 116, 125-128 (D.C. Cir. 2008) (*citing Northeast Cellular Telephone Co*., 897 F.2d 1164, 1166 (1990)). Generally, the Commission may waive any rule for good cause shown and, in making this determination, may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis. *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972) (*WAIT Radio*); *Northeast Cellular*, 897 F.2d at 1164, 1166 (D.C. Cir. 1990) (Northeast Cellular); *NetworkIP*, 548 F.3d at 125-128.

window and therefore given equal access to spectrum, through the default spectrum-splitting procedure, with timely filed applications.

B. Protection of Earlier-Round Systems from Later-Round Systems

13. Another important element of regulatory stability for NGSO FSS grantees is the knowledge that they will be protected from harmful interference that might be caused by later-authorized systems. In the NPRM, the Commission proposed to codify an inter-round protection requirement consistent with licensing decisions.[35] The rule would require that, prior to commencing operations, an NGSO FSS licensee or market access recipient must either certify that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or demonstrate that it will not cause harmful interference to any such system with which coordination has not been completed.[36]

14. Commenters broadly support, and none oppose, a requirement for later-round NGSO FSS grantees to protect earlier-round grantees, which we adopt herein.[37] As explained in the *NPRM*, the protection of an NGSO FSS system from systems approved through a subsequent processing round goes to the heart of the stability of interference environment the Commission intended to create through use of the processing round procedure.[38] Accordingly, to clarify the obligations of later-round grantees and to provide greater regulatory certainty, we codify a requirement that, prior to commencing operations,[39] an NGSO FSS licensee or market access recipient must either submit in the International Communications Filing System (ICFS) a certification that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or submit for Commission approval a showing that it will not cause harmful interference to any such system with which coordination has not been completed.[40] If an earlier-round system becomes operational after a later-round system has commenced operations, the later-round licensee or market access recipient must submit a certification of coordination or a compatibility showing with respect to the earlier-round system no later than 60 days after the earlier-round system commences operations as notified under section 25.121(b) or

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[35] *See Kuiper Grant*, 35 FCC Rcd at 8344, para. 59a (2020); *Space Exploration Holdings, LLC, Request for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System*, Order and Authorization, FCC 22-91, para. 135v (2022) (*SpaceX Gen2 Order*).

[36] *NPRM*, FCC 21-123, para. 16. The Commission further sought comment on how to quantify such protection, for example using an I/N limit or degraded throughput methodology, and whether to sunset the inter-round protection requirement after a period of time.

[37] *See, e.g.*, Letter from David Goldman, Sr. Director, Satellite Policy, SpaceX, Kimberly Baum, VP, Spectrum Engineering & Strategy, OneWeb, Suzanne Malloy, VP Legal and Regulatory Affairs, O3b, and Nickolas Spina, Director of Regulatory Affairs, Kepler, to Marlene H. Dortch, Secretary, FCC, Exh. A at 1 (field Nov. 22, 2022) (*SpaceX, OneWeb, O3b, and Kepler* ex parte); Telesat Comments at 3; Viasat Comments at 11; Hughes Comments at 3. As discussed below, the inter-round protection requirement is subject to a sunset provision and may be quantified as a result of the Further Notice of Proposed Rulemaking.

[38] *NPRM*, FCC 21-123, para. 15.

[39] In this context, commencing operations means that the licensee or market access grantee has successfully placed a space station into its approved non-geostationary orbit and begun transmission and reception in conformance with the terms and conditions of the space station license or grant of market access. *See* 47 CFR § 25.121(b); *The Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-Band*, Report and Order, 17 FCC Rcd at 7857, para. 53 & n.77 (2002). The operator need not have begun providing service to customers.

[40] We believe that the public certification of coordination will provide transparency into compliance with this requirement, and decline to remove the certification element and re-order the rule text as proposed by one commenter. *See* Letter from David Goldman, Sr. Director, Satellite Policy, SpaceX, to Marlene H. Dortch, Secretary, FCC, at 10 (filed Nov. 22, 2022).

otherwise.[41] Notices of commencement of operations for NGSO FSS systems subject to section 25.261 will be placed on public notice as informative to facilitate the filing of these certifications and showings. Compatibility showings will be placed on public notice for comment by interested parties before action by the Commission.[42] Further, to address the possibility that a later-round system may need to significantly limit its operations to protect a large, planned, earlier-round system of which only one or a few satellites have been launched and are operating,[43] we will allow later-round systems to operate on an unprotected, non-interference basis with respect to an earlier-round system after they have submitted a required compatibility showing for the earlier-round system and while it remains pending with the Commission.[44] By requiring this technical showing before operations on a non-interference basis may begin, we will allow the affected earlier-round operator, and any other interested parties, to provide the Commission with their views on the sufficiency of the showing. At the same time, we guard against an incentive for earlier-round grantees to use Commission processes to delay service by the later-round system by vigorously opposing all compatibility showings by grantees that have not yet completed coordination with them.[45]

C. Level of Protection for Earlier-Round Systems

15. The *NPRM* identified three principal methods, suggested by satellite operators, by which the Commission could quantify a required level of protection for earlier-round NGSO FSS systems from

[41] Under section 25.121(b), the license term for a non-geostationary orbit space station authorization begins on the date when the licensee notifies the Commission pursuant to section 25.173(b) that operation of an initial space station is compliant with the license terms and conditions and that the space station has been placed in its authorized orbit. 47 CFR § 25.121(b)(2), (3). Non-U.S. licensed satellite operators granted U.S. market access are not subject to section 25.121(b). However, non-U.S. licensed NGSO FSS operators have notified the Commission, and other NGSO FSS grantees, of their commencement of operations with respect to section 25.261(c)(1). *See, e.g.*, Letter from Brian D. Weimer, Sheppard, Mullin, Richter & Hampton LLP, Counsel for OneWeb, to Marlene H. Dortch, Secretary, FCC, IBFS File No. SAT-LOI-20160428-00041 (filed April 29, 2019); Letter from Nick G. Spina, Director Launch & Regulatory Affairs, Kepler, to Marlene H. Dortch, Secretary, FCC, IBFS File No. SAT-LOI-20160428-00041 (filed May 13, 2019).

[42] *See* OneWeb Comments at 13.

[43] *See* Intelsat Comments at 5.

[44] In the *NPRM*, the Commission proposed to require that, prior to commencing operations, an NGSO FSS licensee or market access recipient must either certify that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or demonstrate that it will not cause harmful interference to any such system with which coordination has not been completed. *NPRM*, FCC 21-123, para. 16 and Appx. A. One commenter specifically proposes that the Commission affirmatively act on any compatibility showings before a grantee may commence operations in the absence of a coordination agreement. OneWeb Comments at 13. Allowing later-round operations on a non-interference basis pending approval of a compatibility showing is consistent with most recent Commission licensing action. *See SpaceX Gen2 Order*, FCC 22-91, para. 135v. Our approach is also simpler and more easily implemented than limiting inter-round protection to those earlier-round systems which have "begun deploying and [are] capable of delivering service, consistent with the scale envisioned by their authorizations," a vague standard, as suggested by one commenter. *See* Intelsat Comments at 5. It also allows later-round operators to operate on an unprotected, non-interference basis with respect to the actual, in-orbit operations of an earlier-round system rather than with respect to its entire approved constellation after submission of a required compatibility showing. *See id.*; Letter from Michael John Carlson, Senior Corporate Counsel, Kuiper, to Marlene H. Dortch, Secretary, FCC at 6 (filed Apr. 13, 2023) (*Kuiper Apr. 13, 2023* Ex Parte) (suggesting removal of the submission of a certification of coordination or a compatibility showing with respect to the earlier-round system if an earlier-round system becomes operational after a later-round system has commenced operations).

[45] *But see* OneWeb Comments at 13 (arguing the Commission should affirmatively act on any compatibility showings before a grantee may commence operations in the absence of a coordination agreement).

later-round systems or otherwise ensure their compatible operations.[46] First, the Commission could develop and adopt an interference-to-noise (I/N) limit. The I/N limit could incorporate a standard reference antenna mask and standard noise temperature and specify a percentage of time during which the limit may be exceeded. Applicants in a later processing round could be required to demonstrate that their proposed systems would comply with the I/N limit based on a probabilistic analysis. Second, the Commission could adopt interference protection criteria based upon the percentage of degraded throughput experienced by the earlier-round NGSO FSS system. A degraded throughput method would recognize that most, if not all, modern NGSO systems will use adaptive coding and modulation (ACM) and may be designed to meet performance objectives stated as either the packet error ratio or the spectral efficiency (bit/s/Hz) as a function of carrier-to-noise ratio (C/N). Satellite systems using ACM can maintain a satellite connection despite signal degradation, but at lower throughput rates. Third, the Commission could adopt a modified spectrum-splitting procedure for inter-round sharing. Under this option, when a 6% $\Delta T/T$ threshold is passed, the earlier-round system would be entitled to use 75% of the commonly authorized spectrum and the later-round system 25% of the available spectrum, instead of the 50%/50% split applicable to NGSO FSS systems approved through the same processing round.

16. Commenters are divided on their preference for an I/N limit,[47] a degraded throughput methodology,[48] or a modified band-splitting option.[49] Supporters of an I/N limit argue that it is easily administrable, familiar to operational NGSO systems engaged in coordination, and less susceptible to misapplication based on subjective carrier characteristics.[50] Commenters that favor a degraded throughput methodology note that it takes into account the design and objectives of modern NGSO systems, including the use of ACM.[51] Proponents of a modified band-splitting option argue that it would encourage both parties to coordinate because both would have to reduce their spectrum use when the interference trigger is reached.[52] Several commenters request the Commission seek further comment on the development of an inter-round protection criteria before it is adopted,[53] and specifically argue that no reference values currently exist for quantifying proposed new criteria.[54]

17. After review of the record in response to the *NPRM*, we believe that pursuing a degraded

[46] *NPRM*, FCC 21-123, paras. 17-21.

[47] *See* SpaceX at 6-12; Hughes Comments at 6; Kepler Comments at 7; SN Space Comments at 7; OneWeb Reply at 12. SpaceX also states that a degraded throughput method "holds significant promise." SpaceX Comments at 15.

[48] *See* Kuiper Comments at 5-12; Intelsat Comments at 6-9; Intelsat Reply, Exh. A; PIO Comments at 8-11; Telesat Comments at 6; Viasat Comments at 12; Letter from Simone La Torre, Director, Spectrum Planning and International Coordination, Stellar Telecommunications SAS, to Marlene H. Dortch, Secretary, FCC (filed Jan. 13, 2023); Letter from Michael Calabrese, Director, Wireless Future Program, New America's Open Technology Institute, to Marlene H. Dortch, Secretary, FCC at 2 (filed Apr. 5, 2023) (*OTI and PK Apr. 5, 2023* Ex Parte); Letter from Cynthia J. Grady, Assistant General Counsel, Intelsat, to Marlene H. Dortch, Secretary, FCC at 2 (filed Apr. 13, 2023) (*Intelsat Apr. 13, 2023* Ex Parte); Letter from Cynthia J. Grady, Assistant General Counsel, Intelsat, to Marlene H. Dortch, Secretary, FCC at 2 (filed Apr. 14, 2023) (*Intelsat Apr. 14, 2023* Ex Parte).

[49] *See* O3b Comments at 8-9; Comments of the Boeing Company at 7-8; Mangata Reply at 3; *see also* SN Space Reply at 5 n.12.

[50] *See generally, e.g.*, SpaceX Comments at 13-15. While supporting an I/N limit, OneWeb opposes use of standardized system parameters. *See* OneWeb Reply at 14.

[51] *See, e.g.*, Kuiper Comments at 7-9.

[52] *See, e.g.*, O3b Comments at 9.

[53] *See SpaceX, OneWeb, O3b, and Kepler* ex parte, Exh. A at 1; Letter from Jennifer A. Manner, Senior Vice President, Regulatory Affairs, Hughes, to Marlene H. Dortch, Secretary, FCC, at 2 (filed June 2, 2022); Telesat Reply at 12; SpaceLink Reply at 6; Inmarsat Comments at 4; *see also* Viasat Reply at 7 n.19.

[54] *See SpaceX, OneWeb, O3b, and Kepler* ex parte, Exh. A at 1.

throughput approach to quantify the level of protection for earlier-round systems from later-round systems is the most technically promising option as it would account for the realities of modern NGSO systems and be based on a key design consideration for such systems. As they transit through the view of an earth station, NGSO satellites operate across a range of path distances, elevation angles, and antenna scan angles.[55] Atmospheric conditions, such as rain attenuation, can also cause link degradations and outages, especially in higher frequency bands and modern NGSO systems use ACM, uplink and downlink power control, and network protocols to provide continuous data services in the face of these varying environmental effects. A degraded throughput methodology would recognize that the mechanisms NGSO FSS systems use to tolerate signal degradation due to path-loss changes and link outages due to weather effects, and would also provide resilience to certain interference from other NGSO FSS systems. Further, degraded throughput analyses submitted on the record demonstrate that the analysis can be performed using widely available satellite system operational information, such as contained in an ITU filing or Commission space station application, and is not unduly difficult to perform.[56] With respect to the issues of potential synchronization loss and taking into account GSO interference and aggregate interference from multiple NGSO FSS constellations, these will be explored through the Further Notice of Proposed Rulemaking below and can be addressed within the framework of a degraded throughput methodology.[57] Accordingly, we will require an NGSO FSS licensee or market access recipient that has not yet reached a coordination agreement with an earlier-round system to use a degraded throughput methodology in its demonstration that it will protect earlier-round systems.[58]

18. In contrast, we are concerned that adopting an I/N limit for the protection of earlier-round systems, rather than as a band-splitting trigger for systems in the same processing round, may overprotect[59] earlier-round systems by not taking into account ACM and other methods used by modern NGSO systems to tolerate certain amounts of interference while continuing to provide reliable service to consumers, and therefore weaken their incentives to complete coordination with new entrants. In addition, while a 75%/25% band-splitting procedure between earlier- and later-round systems would provide some incentive to both parties to coordinate, this option may not ensure the continuity of earlier-round operations with existing customer bases if the earlier-round operator were required to reduce its spectrum usage by 25% during an event surpassing the $\Delta T/T$ threshold with a later-round system with which it has not yet found an appropriate accommodation.[60]

19. While we adopt a requirement to use a degraded throughput methodology in demonstrations of compatibility with earlier-round systems because it accounts for ACM and other techniques used by modern NGSO systems and holds the best potential proposed on the record to protect earlier-round systems without unduly burdening later-round systems, we recognize that certain details of its implementation may benefit from further comment, such as the final percentage criteria to be used.[61]

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[55] *See, e.g.*, Kuiper Comments at 7-9.

[56] *See* Intelsat Reply, Exhs. A and B; Letter from Michael John Carlson, Corporate Counsel, Kuiper Systems LLC, to Marlene H. Dortch, Secretary, FCC, Appx. A (filed Sept. 23, 2022) (*Kuiper Sept. 23, 2022* Ex Parte).

[57] We can also address, through selection of final percentage metrics, the fact that operators may have service quality commitments that vary by customer. *See* O3b Comments at 12.

[58] We do not adopt a percentage value at this time and seek comment on additional technical details in the FNPRM. *See SpaceX Apr. 12, 2023* Ex Parte at 2

[59] *See* Intelsat Reply, Exh. A; *Kuiper Sept. 23, 2022* Ex Parte, Appx. B.

[60] It is also unclear how the unequal spectrum-splitting procedure would apply among multiple systems and/or systems approved through first, second, third, or even later processing rounds. *See* Intelsat Reply at 5.

[61] *See also SpaceX Apr. 12, 2023* Ex Parte at 2 ("[T]he record is sufficient to adopt a degraded throughput methodology to protect next-generation satellite systems in earlier processing rounds. But the draft correctly looks to further examine the appropriate protection values and assumptions.").

The Further Notice of Proposed Rulemaking is dedicated to finalizing these issues. However until the particular issues in the Further Notice are resolved, we conclude that using the degraded throughput methodology as a basis for inter-round protection is more promising than an I/N protection criteria or modified spectrum-splitting option proposed on the record for the reasons discussed above.

D. Good-Faith Coordination

20. Although the Commission has adopted default rules for spectrum sharing among NGSO FSS systems, it has consistently affirmed that coordination among NGSO FSS operators in the first instance offers the best opportunity for efficient spectrum sharing.[62] Accordingly, the *NPRM* proposed to adopt a rule providing that the good-faith coordination requirement applies among all NGSO FSS grantees, including those approved through different processing rounds.

21. All commenters on this issue support the Commission's proposal to require good-faith coordination among all NGSO FSS grantees,[63] which we adopt.[64] With this requirement, we make clear that all NGSO FSS operators approved by the Commission must engage in good faith when discussing and accommodating the shared use of spectrum with other NGSO FSS operators. We will review any allegations that an NGSO FSS operator has not met the good-faith coordination requirement and may take enforcement actions, including monetary forfeitures,[65] modification, or termination of the NGSO FSS authorization.[66] We discuss expectations for information sharing in the context of good-faith coordination below.

E. Information Sharing during Good-Faith Coordination

22. In addition to the overall need for good-faith coordination, the Commission has emphasized that information sharing among NGSO FSS operators is essential to their efficient use of spectrum.[67] In the *NPRM*, the Commission invited comment on whether to require sharing of certain types of information, such as beam-pointing information, that may be necessary for the implementation of any spectrum-sharing solution or protection criteria between NGSO FSS systems. The NPRM also sought comment on any practical concerns associated with such information sharing, and how best to address any associated, potential, competitive harms. More broadly, the Commission inquired as to whether it should add a definition of "good faith" coordination in our rules and how it may better

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[62] *NPRM*, FCC 21-123, para. 16; *NGSO FSS Report and Order*, 32 FCC Rcd at 7825, para. 48 *But see SpaceX Apr. 12, 2023* Ex Parte at 2 (stating that the Commission should generally seek comment on spectrum efficiency for earlier-round systems).

[63] *See* AST Comments at 3-4; Astra Comments at 3; Boeing Comments at 17; Inmarsat Comments at 3; Intelsat Comments at 9; Kepler Comments at 8-9; Kuiper Comments at 22-23; Mangata Comments at 3; O3b Comments at 3-7; OneWeb Comments at 15; PIO Comments at 4; SN Space Comments at 3; SpaceX Comments at 5; SpaceLink Comments at 10; Telesat Comments at 5; Hughes Comments at 4; *OTI and PK Apr. 5, 2023* Ex Parte at 1; *see also Intelsat Apr. 13, 2023* Ex Parte at 1; *Intelsat Apr. 14, 2023* Ex Parte at 1. We note that Intelsat states that good faith coordination obligations should be extended to NGSO FSS applicants as well. *Intelsat Apr. 13, 2023* Ex Parte at 6-7; *Intelsat Apr. 14, 2023* Ex Parte at 6-7. Nothing in this order suggests that applicants should not also be coordinating in good faith. We simply focus here on the sharing rules applicable to licensees or market access grantees.

[64] We agree with commenters that, as drafted in the *NPRM*, the good-faith coordination rule in section 25.261(b) unnecessarily included the phrase "unless otherwise provided by the Commission" and we remove this phrase from the final adopted rule. *See* Inmarsat Comments at 3-4; OneWeb Comments at 16; O3b Reply at 4-5.

[65] *See* 47 U.S.C. § 503(b).

[66] *See also OTI and PK Apr. 5, 2023* Ex Parte at 2 (arguing that the Commission should "more explicitly state that… the Commission intends to review and vigorously enforce any complaints about a failure to coordinate").

[67] *NPRM*, FCC 21-123, para. 23. Cf. *OTI and PK Apr. 5, 2023* Ex Parte at 2 (stating that the Commission should "more explicitly state that good faith coordination inherently includes necessary and feasible information sharing").

encourage efficiency among NGSO FSS systems.

23. The record produced a variety of views regarding information sharing requirements. Commenters generally recognize that more detailed technical discussions may assist parties in reaching an operator-to-operator coordination agreement, but diverge on whether the types of information to be shared should be agreed to by the coordinating parties,[68] or whether the Commission should specify types of information that must be shared in all coordination discussions.[69] Some commenters recommend the development of a third-party clearinghouse or industry-run database to facilitate sharing of NGSO FSS operational information.[70] Commenters raise particular concern that a requirement to share *real-time* beam-pointing information may be impracticable for systems that use dynamic beam pointing and reveal confidential and proprietary traffic trends whose competitive harm may be difficult to address by means such as non-disclosure agreements.[71] Some commenters argue that information sharing requirements should be limited to operational NGSO FSS systems,[72] or make other proposals.[73]

[68] *See, e.g.*, AST Reply at 3 ("[T]he Commission should decline a blanket mandate for the exchange of highly sensitive and dynamic beam-pointing information at every instance, and should instead permit the parties to any individual coordination to determine what information should be exchanged"); Boeing Reply at 14 ("[T]he Commission must resist injecting itself in the coordination process by delineating the specific information that must be shared between the parties"); O3b Reply at 13 ("[T]he Commission can and should rely on operators engaged in coordination to determine what information they should exchange to facilitate an agreement"); SpaceX Reply at 13-14 ("[T]he Commission should rely on the coordinating NGSO operators to determine which and how much information to share during the coordination process"); *SpaceX Apr. 12, 2023* Ex Parte at 2 ("[S]pecific information sharing requirements are not required for extending its good-faith coordination requirement.").

[69] *See* Letter from Michael Carlson, Corporate Counsel, Kuiper Systems LLC, to Marlene H. Dortch, Secretary, FCC, at 5 (filed Dec. 14, 2022) (proposing "the Commission adopt a rule that would require the disclosure of satellite-selection information and gateway location information as part of operators' obligation to coordinate with each other in good faith."); Intelsat Reply at 11 ("[T]he Commission should adopt a rule requiring operators to provide key operational parameters in bilateral coordination: (1) satellite tracking strategy, to determine which satellites are active; (2) the number of satellites that can provide service at the same location; (3) the exclusion angle to the GSO arc; (4) the average distance between earth stations; and (5) the minimum earth station elevation angle."); SN Space Reply at 6 (contending that "sharing as much information as is commercially and operational feasible would be in the interest of all NGSO operators."); TechFreedom Reply at 6 (arguing the good-faith coordination rules should include a requirement to share all necessary information, including beam locations); Hughes Comments at 6-8 (proposing detailed information requirements in NGSO FSS applications); Letter from Michael J. Carlson, Senior Corporate Counsel, Kuiper, to Marlene H. Dortch, Secretary, FCC at 1-2 (filed Apr. 12, 2023) (*Kuiper Apr. 12, 2023* Ex Parte) (reiterating Kuiper's proposal that the Commission require the disclosure of satellite-selection information and gateway location information); *see also* Letter from Michael J. Carlson, Senior Corporate Counsel, Kuiper, to Marlene H. Dortch, Secretary, FCC at 2 (filed Apr. 7, 2023) (emphasizing the necessity of stronger incentives and clearer requirements to share information in coordination); *Kuiper Apr. 12, Ex Parte* at 2 (requesting that the Commission specify that securing greater protection should act as an incentive for further information sharing).

[70] *See* SpaceX Comments at 19; Intelsat Comments at 10; PIO Comments at 7-8; Kuiper Reply at 18. *But see* Boeing Comments at 13; Telesat Reply at 9.

[71] *See, e.g.*, Telesat Comments at 7 ("[T]he Commission should not be requiring operators to share beam-pointing information that is only available after the fact, when it could not be acted upon, and that includes sensitive information the disclosure of which would be detrimental to potential customers requiring confidentiality and would facilitate unfair competition."); Viasat Reply at 12-13; O3b Reply at 13-17; Space Link Comments at 9; *see also* Mangata Reply at 1-2 (supporting the sharing of beam-pointing information between operators in a manner that preserves confidentiality in advance of system implementation, to facilitate operator-to-operator coordination, but opposing a requirement for operators to exchange dynamic beam-pointing information in real time after system implementation).

[72] *See* SpaceX Comments at 18-19; OneWeb Comments at 16.

24. We decline to codify specific information sharing requirements as part of good-faith NGSO FSS coordination at this time. As an initial matter, we are encouraged that some first-round and second-round NGSO FSS systems have already completed coordination agreements under the Commission's existing regulatory framework, and this demonstrates that systems can effectively coordinate, even absent a third-party clearinghouse or other database to facilitate information sharing.[74] We expect that number will grow as systems proceed in development and deployment. For systems approved in the same processing round, we believe the prospect of splitting spectrum under the default sharing mechanism provides significant incentive for both parties to share the necessary technical information to conclude an agreement that ensures beneficial and stable access to spectrum. For systems approved in different processing rounds, the prospect of a later-round system operating on a non-interference basis after submitting a compatibility showing, which can be made using publicly available information, also may provide an incentive to the earlier-round operator to share additional technical information to ensure its ongoing operations are in fact protected. Beyond these incentives, we expect that certain essential NGSO operating parameters and other information that is typically publicly available, such as the maximum number of satellites that can provide service simultaneously at the same location (N_{co}), exclusion angle to the GSO arc, minimum earth station elevation angle, and location of gateway earth stations,[75] will not be withheld during good-faith coordination. We also recognize that satellite selection information, revealing which satellites will be transmitting in a given situation, can be especially important to efficient spectrum sharing between larger and smaller constellations to ensure the smaller constellation is not unnecessarily restricted.[76] When evaluating whether an NGSO FSS operator has acted in good faith in refusing to provide information in coordination, we will consider the relative benefit of the information to the other party, which may increase if the other party is already operational, as well as the relative competitive or other risks to providing the information.[77] However, coordination

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[73] Kepler Comments at 8 (proposing an annual reporting requirement to disclose NGSO FSS operational information); OneWeb Reply at 15-16 (supporting requirements to share beam pointing and satellite selection information and proposing that if "operators still wish to retain the right to abstain from sharing the necessary technical information, the Commission should require that those operators use their own satellite diversity to avoid the interference events that could otherwise be mitigated if the information had been shared").

[74] *See* Letter from David Goldman, Senior Director, Satellite Policy, SpaceX, and Kimberly Baum, VP, Spectrum Engineering & Strategy, OneWeb, to Marlene H. Dortch, Secretary, FCC, IBFS File No. SAT-MPL-20200526-00062 (filed June 13, 2022) (announcing successful coordination between the first-round and second-round systems of OneWeb and SpaceX "after extensive good faith coordination discussions"); Letter from Julie Zoller, Global Head of Regulatory Affairs, Kuiper Systems LLC, and Torstein Losnedahl, Group Legal Counsel/Contract Manager, Space Norway AS, to Marlene H. Dortch, Secretary, FCC, IBFS File No. SAT-MPL-20220311-00029 (filed Nov. 18, 2022) (announcing successful coordination between the Space Norway first-round system and the Kuiper second-round system); Letter from Julie Zoller, Global Head of Regulatory Affairs, Kuiper Systems LLC, and Elisabeth Neasmith, Director, ITU and Regulatory, Telesat, to Marlene H. Dortch, Secretary, FCC, IBFS File No. SAT-LOA-20190704-00057 (filed Sept. 21, 2022) (announcing successful coordination between Telesat's first-round system, including "the relevant portion of Telesat's contemplated expansion of this system," and the Kuiper second-round system).

[75] While individually licensed earth station locations are publicly available on the Commission's website, they may not be routinely publicly disclosed in other licensing administrations.

[76] *See* Intelsat Reply, Exh. C; *see also Intelsat Apr. 13, 2023* Ex Parte at 1-2 (contending that this clarification of the scenarios in which information sharing would be required will maximize the public interest benefits of the NGSO sector); *Intelsat Apr. 14, 2023* Ex Parte at 1.

[77] As noted above, an NGSO FSS operator found to have not lived up to its good-faith coordination obligation may be subject to forfeiture or modification or termination of license. Given that we are not adopting explicit information sharing requirements during good-faith coordination, however, we also decline to adopt any companion provision that a party not sharing required information would have to protect the other party using its own satellite diversity, if available. *See* OneWeb Reply at 15-16.

discussions typically do not begin only once the two systems are operational. With respect to sharing of real-time beam information, we note the practical difficulties raised in the record for advanced systems with dynamically repointable beams which, in addition to competitive concerns, may not be overcome by use of a third-party clearinghouse or industry-run database because introducing a third-party database between the operator that has changed its beam pointing plans in real time could only further delay the time until other operators receive the updated beam pointing data, adjust their own operations to reflect these changes, and then further de-conflict any interference issues that may arise from the other operators having adjusted their operations which must also be circulated via the third-party database. However, we will monitor the progress of NGSO FSS systems as they proceed in coordination and deployment and may revisit this issue in the future if ongoing coordination difficulties among operational systems suggest that more information sharing requirements are required. We note that the potential benefits for spectrum efficiency of dynamic beam pointing would appear to require some level of information sharing in order to be realized by more than one system so that other operators are not required to protect links that could be used, but are not used at a given time.[78] When earlier round systems do not share certain non-public information, later round systems may have to make assumptions regarding the operations of earlier round systems in order to plan operations and submit a compatibility showing.

25. Beyond a general good-faith coordination requirement, and any related information sharing requirements, OneWeb argues the Commission should adopt a definition of "good faith" that mandates, *inter alia*, "that both parties to the coordination agree to utilize all inherent flexibility and capabilities in the operation of their respective systems to avoid interference between the two systems."[79] We believe good-faith coordination places obligations on both parties to promote spectral efficiency. OneWeb's proposed definition, however, could disincentivize investments in more advanced, spectrally efficient systems by requiring all those efficiencies to be used to accommodate systems that have been built with more limited sharing capabilities.[80] We decline to require such a sharing outcome in all cases and therefore do not adopt the proposed definition. As noted above, we intend to monitor compliance with the foregoing requirements and will address the need for further steps in light of our experience.

F. Sunsetting of Inter-Round Protection Requirement

26. In conjunction with the proposal in the *NPRM* to require later-round NGSO FSS systems to protect earlier-round systems absent a coordination agreement, the Commission also inquired as to whether this inter-round protection requirement should sunset after a period of time, and what protection should apply to an NGSO FSS system after any sunsetting.[81] We sought specific comment on how any sunset provision may affect investment in NGSO FSS systems and ongoing operations of earlier-round systems as well as competition and new market entry.

27. Commenters suggest a variety of sunset periods. Several oppose any sunsetting.[82] Some commenters also encourage a further notice of proposed rulemaking on this issue.[83] Proponents of

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[78] *See also Kuiper Apr. 13, 2023* Ex Parte at 7 (contending that securing greater protection by sharing additional operational information should act as an incentive for further information sharing).

[79] *See* OneWeb Comments at 15; *see also* Intelsat Reply at 13. *But see* O3b Reply at 5; SpaceX Reply at 4-5. Intelsat alternatively requests that operators be required "to use satellite operational strategies that minimize the probability of in-line events." Intelsat Reply at 12.

[80] *See, e.g.*, SpaceX Reply at 5 (arguing that under the proposed definition, a system's "inherent *in*flexibility and *in*capability to avoid in-line events would place the entire burden for spectrum sharing on other NGSO systems that have invested in technologies that facilitate efficient spectrum sharing"). Intelsat's similar proposal raises the same concern and we do not adopt it for the same reason.

[81] *NPRM*, FCC 21-123, para. 25.

[82] *See, e.g.*, Letter from Steve Collar, Chief Executive Officer, SES, S.A., O3b Limited, Matt Desch, Chief Executive Officer, Iridium Communications Inc., David Kagan, Chief Executive Officer, Globalstar, Inc., Dean A. Manson, Executive Vice President, General Counsel & Secretary, EchoStar Satellite Services L.L.C., Hughes

(continued….)

sunsetting argue that it would encourage innovation and new entry, promote coordination by time limiting the advantages of incumbency, and is consistent with the iterative and dynamic approach of NGSO FSS operators upgrading and modifying their own systems.[84] Opponents argue that any sunsetting provision would jeopardize quality and continuity of service by operational earlier-round systems, incentivize coordination delays by later-round systems until after an earlier round system's priority expires, and discourage investment by introducing regulatory uncertainty.[85]

28. The proposed sunset periods are: 6 years after the application cut-off date in a processing round;[86] 6 years after grant of the earlier-round system;[87] at the 6-year, 50% deployment milestone of an earlier-round system if the milestone is not met, otherwise at the 9-year, full deployment milestone;[88] less than 10 years after grant of the earlier-round system;[89] less than the 15-year license term of the earlier-round system;[90] at the expiration of the 15-year license term of the earlier-round system;[91] 10 or 12 years after grant of the first application in a subsequent processing round; or 15 years commencing from release of this Order for the current Ku-/Ka-band processing rounds, and 15 years from the first authorization or market access grant in a subsequent processing round for future processing rounds.[92] Commenters propose that after the sunset period has run, both earlier- and later-round systems would share spectrum on an equal basis under the spectrum-splitting procedure in section 25.261.[93]

29. After review of the record and consideration of furthering development and competition in NGSO FSS systems, we adopt a sunset provision of 10 years after the first grant in a subsequent processing round.[94] As the Commission has repeatedly stated, the purpose of the recent NGSO FSS

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Network Systems, LLC, Barry French, Chief Marketing & Communications Officer, Inmarsat, Michael Schwartz, Senior Vice President, Corporate and Business Development, Telesat Corporation, John Janka, Chief Officer, Global Government Affairs & Regulatory, Viasat Inc., and Massimiliano Ladovaz, Chief Technology Officer, WorldVu Satellites Limited, to Marlene H. Dortch, Secretary, FCC (filed Nov. 21, 2022) (*Sunsetting Opponents Ex Parte*); Boeing Comments at 15-16; SpaceLink Comments at 10-11; Letter from Kimberly M. Baum, Vice President, Spectrum Engineering and Strategy, OneWeb, to Marlene H. Dortch, Secretary, FCC at 1 (filed Apr. 7, 2023) (*OneWeb Apr. 7, 2023* Ex Parte); Letter from Kimberly M. Baum, Vice President, Spectrum Engineering and Strategy, OneWeb, to Marlene H. Dortch, Secretary, FCC at 1 (filed Apr. 12, 2023) (*OneWeb Apr. 12, 2023* Ex Parte); Letter from Kimberly M. Baum, Vice President, Spectrum Engineering and Strategy, OneWeb, to Marlene H. Dortch, Secretary, FCC at 1 (filed Apr. 13, 2023) (*OneWeb Apr. 13, 2023* Ex Parte); Letter from Kimberly M. Baum, Vice President, Spectrum Engineering and Strategy, OneWeb, to Marlene H. Dortch, Secretary, FCC at 1 (filed Apr. 14, 2023) (*OneWeb Apr. 14, 2023* Ex Parte); Letter from Suzanne Malloy, Vice President, Legal and Regulatory Affairs, O3b, to Marlene H. Dortch, Secretary, FCC at 1 (filed Apr. 13, 2023) (*SES & O3b Apr. 13, 2023* Ex Parte).

[83] *See* Letter from David Goldman, Sr. Director, Satellite Policy, SpaceX, to Marlene H. Dortch, Secretary, FCC, at 2 (filed Nov. 22, 2022); Intelsat Comments at 11.

[84] *See, e.g.*, Kuiper Comments at 15-18; SpaceX Comments at 15-18.

[85] *See Sunsetting Opponents Ex Parte*.

[86] Intelsat Reply at 15.

[87] Kuiper Comments at 16; PIO Comments at 11; AST Comments at 6; *see also OTI and PK Apr. 5, 2023* Ex Parte at 3 (proposing a sunset of six or at most eight years).

[88] SN Space Comments at 8.

[89] TechFreedom Reply at 7.

[90] Astra Comments at 3.

[91] Kepler Comments at 9.

[92] *OneWeb Apr. 7, 2023* Ex Parte at 2; *OneWeb Apr. 12, 2023* Ex Parte at 2; *OneWeb Apr. 13, 2023* Ex Parte at 1-2; *OneWeb Apr. 14, 2023* Ex Partie at 1-2; *SES & O3b Apr. 13, 2023* Ex Parte at 2.

[93] *See* SpaceX Comments at 16; Intelsat Reply at 15.

processing rounds has been to establish a stable sharing environment among authorized systems.[95] But earlier-round advantages should not continue indefinitely.

30. We believe that the protection afforded to an earlier-round system by a later-round system should work in concert with our deployment milestones for NGSO systems to relieve earlier-round grantees of the uncertainty of near-term, equal sharing with new entrants while also giving later-round systems an equal opportunity after they have demonstrated their commitment to provide service and completed their final deployment milestone. To accomplish these goals, the sunset date should be tied to the date of authorization of systems in a subsequent processing round,[96] and define the period during which they will be required to protect any earlier-round systems. With each new processing round, therefore, incumbents will be ensured of a period of time during which they will be protected by systems approved in that processing round, and may plan to accommodate those systems as they proceed through deployment, before the time that they will be required to share spectrum on an equal basis in the absence of a coordination agreement. Fixing a sunset date dependent on the authorization date of the earlier-round system could mean that after the sunset date, any approved later-round system would automatically be afforded equal spectrum sharing with existing, earlier-round systems, without the same lead time that would enable earlier-round systems to assess their likely sharing requirements with the systems that will actually proceed to deployment, and adjust accordingly. In addition, fixing a single date to sunset the protection between systems in two processing rounds simplifies the sharing expectations for all operators in both rounds. By fixing the sunset date at 10 years after the first grant in a subsequent processing round, many later-round systems will be near, or have already passed, their 9-year full deployment milestone depending on their grant date. Thus, later-round systems will be afforded equal spectrum sharing opportunities under the spectrum-splitting procedure once their full service constellations are operational, while earlier-round systems will have had time to adjust to the constellations ultimately deployed by later-round grantees.[97] We believe this period appropriately

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[94] SpaceX Reply at 12; *Kuiper Apr. 13, 2023* Ex Parte at 2 ("The Draft Order's sunset period of 10 years reflects a reasonable compromise."). *See also* O3b Comments at 20 ("At a minimum, any sunset rule should be tied to the licensing date of the later-filed system, not the earlier-round system. That way, a new entrant would at least have to build out its proposed fleet before gaining equal sharing rights with established, operational systems."); Kepler Reply at 9 (agreeing that a sunset provision tied to the licensing date of later-round systems would enable new systems to reach maturity before they are treated on equal footing with earlier licensed systems.). Despite Kuiper's support of a ten year sunset period, Kuiper also suggests that we inquire about shortening the sunset period in the FNPRM. *See Kuiper Apr. 13, 2023* Ex Parte at 8. Relatedly, Intelsat proposes that we state our intent to adopt a sunset period but defer determination of the length of the sunset period and the sunset trigger in the FNPRM, arguing that the sunset creates no incentive for rapid deployment of NGSO FSS systems, relies on multiple contingencies, and that tying the sunset trigger to the earlier processing round encourages earlier- and later-round grantees to rapidly deploy their systems. *See Intelsat Apr. 13, 2023* Ex Parte at 2-6; *Intelsat Apr. 14, 2023* Ex Parte at 2-6.

[95] *See NGSO FSS Report and Order*, 32 FCC Rcd 7809, 7829, para. 61; *NPRM*, FCC 21-123, para. 15.

[96] This authorization can include partial grant or modification, provided the NGSO FSS operations will be considered part of the later processing round. *See Intelsat Apr. 13, 2023* Ex Parte, Exh. C (asking how should the sunset interact with partial grants, or if it matters whether the application is a modification); *Intelsat Apr. 14, 2023* Ex Parte, Exh. C.

[97] While the sunset may occur before some later-round systems have reached the full deployment milestone at nine years, contrary to OneWeb's argument, this would not "effectively eliminate" advantages for first-round operators, since the speed of deployment of the later-round systems would not affect the overall time that the incumbents will be protected by systems approved in the later processing round. *See, e.g.*, *OneWeb Apr. 14, 2023* Ex Parte at 1-2. Moreover, later round systems will also be subject to the six-year deployment milestone, requiring that the operator launch and operate fifty percent of the maximum number of authorized space stations within six years after grant. 47 CFR § 25.164(b)(1).

balances the need for stability for incumbent operations and the possibility for new entrants to compete on an equal footing once they have built out their systems.

31. The length of this sunset period also addresses several concerns on the record. First, we do not expect the sunset period to introduce significant coordination delays because the period is long enough that a later-round grantee would not wish to operate for years, including at near its full constellation size, without an agreement with earlier-round grantees. Second, the iterative nature of NGSO FSS systems, and relatively shorter lifetime of NGSO satellites when compared to GSO satellites,[98] undermines arguments that sunsetting would jeopardize existing services. Rather than maintaining a fixed system design, our experience has been that NGSO FSS operators have proposed to modify and expand their NGSO FSS systems.[99] As earlier-round grantees propose to expand and update their constellations, including through participation in subsequent processing rounds, any burden imposed by sunsetting their inter-round protection rights should be offset by benefits to the later-generations of their systems. Sunsetting also will not upset existing expectations of interference protection because, under Commission policy in effect prior to this Order, later-round applicants were considered on a case-by-case basis as to whether they will be entitled to share spectrum on an equal basis with earlier-round systems – as such there was never a guarantee that earlier-round grantees would be entitled to protection from all later-round systems.[100] Nor do we believe that sunsetting will discourage overall investment in NGSO FSS systems or hamper efforts to promote broadband in underserved areas – on the contrary, we expect that increased competition facilitated by sunsetting inter-round protections will spur investment and development of new systems while providing appropriate returns for earlier-round systems initial constellations.[101] Finally, the iterative development of NGSO FSS systems and evolving spectrum sharing requirements counsels in particular in favor of a sunsetting provision in this instance, as compared to other instances where the Commission has preferred to maintain incumbent protections indefinitely. As noted, many earlier-round grantees have proposed updated, second-generation systems filed in a later processing round that will enhance the services these grantees intend to provide. Therefore, incumbents themselves will benefit from sunsetting for their second-generation systems. The nature of NGSO FSS systems, which must be designed to endure changing environmental effects, also renders them more capable of sharing spectrum than other system designs. After sunsetting, incumbents will be subject to co-equal spectrum sharing with the new entrants;[102] but they will have had a significant period of time during which to reach a coordination agreement through good faith discussions that improves both operators' spectrum usage possibilities. Given the dynamic nature of NGSO FSS systems and the benefits of competition and new entry, we conclude that a 10-year sunset period beginning on the date of the first grant in a subsequent processing round appropriately balances the interests involved.

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[98] For example, SpaceX satellites have a service life of 5-7 years. *Space Exploration Holdings, LLC Request for Modification of the Authorization for the SpaceX NGSO Satellite System*, Order and Authorization and Order on Reconsideration, 36 FCC Rcd 7995, para. 63 (2021).

[99] *See, e.g.*, O3b Limited, Application to Modify U.S. Market Access Grant for the O3b Ka-band Satellite System, IBFS File No. SAT-MOD-20200526-00058 (filed May 26, 2020); WorldVu Satellites Limited, Modification to OneWeb Market Access Grant for the OneWeb Ku- and Ka- Band System, IBFS File No. SAT-MPL-20200526-00062 (filed May 26, 2020); Space Exploration Holdings, LLC, Application for the SpaceX Gen2 NGSO Satellite System, IBFS File No. SAT-LOA- 20200526-00055 (filed May 26, 2020); Telesat Canada, Application to Modify Petition for Declaratory Ruling to Grant Access to the U.S. Market for Telesat's NGSO Constellation, IBFS File No. SAT-MPL-20200526-00053 (filed May 26, 2020); Viasat, Inc., Application for Modification of Viasat NGSO System, IBFS File No. SAT-MPL- 20200526-00056 (filed May 26, 2020).

[100] *See also Kuiper Apr. 13, 2023* Ex Parte at 3.

[101] *See also id.*

[102] *See infra FNPRM*.

G. Application of Rule Changes

32. The *NPRM* invited comment on whether to apply all, or some, of the rule changes adopted in this proceeding to existing grantees and pending applicants or only to new license applications, license modification applications, application amendments, and market access petitions filed after the new rules go into effect.[103]

33. Most commenters on this issue support the general applicability of rule changes in this proceeding to existing grantees and applicants as well as future applicants.[104] Some argue that applying certain rule changes to already approved systems would be onerous, as it may require reconsideration of the design and operation of the systems.[105]

34. We will apply all rule changes adopted in this Report and Order to current NGSO FSS licensees and market access grantees, pending applicants and petitioners, as well as future applicants and petitioners.[106] With respect to pending applications, applicants do not gain any vested right merely by filing an application, and the simple act of filing an application is not considered a "transaction already completed" for purposes of this analysis.[107] Applying our new rules and procedures to pending space station applications will not impair the rights any applicant had at the time it filed its application. Nor will doing so increase an applicant's liability for past conduct. Similarly, with respect to current NGSO FSS licensees and market access grantees, none of the actions we take here (that is, limiting the default spectrum-splitting procedure to NGSO FSS systems approved in the same processing round (subject to a sunset), requiring later-round systems to coordinate with or protect earlier-round systems, and requiring

[103] *NPRM*, FCC 21-123, para. 26.

[104] *See* Boeing Comments at 18; Kuiper Comments at 24; Hughes Comments at 10; SpaceLink Comments at 11; SpaceX Comments at 20; Intelsat Reply at 19-20; TechFreedom Reply at 8.

[105] *See* Kepler Comments at 11 (arguing that "any new NGSO FSS sharing regimes or establishment of specific protection criteria" should apply only to systems which have yet to be granted licenses); *see also* AST Comments at 6 (arguing that pending NGSO FSS applications should continue to be evaluated on a case-by-case basis); O3b Comments at 21-22 (contending that any sunset provision or requirement to share beam-pointing information should not be applied to existing grantees).

[106] An agency order is impermissible as "primarily retroactive" if it "alters the *past* legal consequences of past actions." *Mobile Relay Assocs. v. FCC,* 457 F.3d 1, 11 (D.C. Cir. 2006) (quoting *Bowen v. Georgetown Univ. Hosp.,* 488 U.S. 204, 219 (1988) (Scalia, J., concurring) (emphasis in original)). An order can be primarily retroactive if it (1) "increase[s] a party's liability for past conduct"; (2) "impair[s] rights a party possessed when he acted"; or (3) "impose[s] new duties with respect to transactions already completed." *Landgraf v. USI Film Prods.,* 511 U.S. 244, 280 (1994). An agency order that "alters the future effect, not the past legal consequences" of an action or that ''upsets expectations based on prior law'' is not primarily retroactive. *Mobile Relay Assocs.,* 457 F.3d at 11 (citations and quotations omitted). Rather, such an order is considered secondarily retroactive and will be upheld if "reasonable, *i.e*., if it is not arbitrary or capricious," both "in substance and in being made retroactive." *Id*.; *U.S. Airwaves, Inc. v. FCC,* 232 F.3d 227, 233 (D.C. Cir. 2000).

[107] *Chadmoore Communications, Inc. v. FCC*, 113 F.3d 235, 240-41 (D.C. Cir. 1997) ("In this case the Commission's action did not increase [the applicant's] liability for past conduct or impose new duties with respect to completed transactions. Nor could it have impaired a right possessed by [the applicant] because none vested on the filing of its application."); *Hispanic Info. & Telecomms. Network v. FCC*, 865 F.2d 1289, 1294-95 (D.C.Cir.1989) ("The filing of an application creates no vested right to a hearing; if the substantive standards change so that the applicant is no longer qualified, the application may be dismissed."); *Schraier v. Hickel*, 419 F.2d 663, 667 (D.C.Cir.1969) (filing of application that has not been accepted does not create a legal interest that restricts discretion vested in agency); *see also United States v. Storer Broadcasting Co.*, 351 U.S. 192 (1952) (pending application for new station dismissed due to rule change limiting the number of licenses that could be held by one owner); *Bachow Communications, Inc. v. FCC*, 237 F.3d 683, 686-88 (D.C. Cir. 2001) (upholding freeze on new applications and dismissal of pending applications in light of adoption of new licensing scheme); *PLMRS Narrowband Corp. v. FCC*, 182 F. 3d 995, 1000-01 (D.C. Cir. 1999) (applicant did not, by virtue of filing application, obtain the right to have it considered under the rules then applicable).

all NGSO FSS grantees to coordinate with each other in good faith), increase liability for past conduct, impair rights a party possessed when he acted, or impose new duties with respect to transactions already completed. Rather, all of these actions take effect in the future, after the rules become effective. While some commenters claim that some of the rule changes here, such as the sunsetting of interference protections, upset their expectations,[108] NGSO FSS grants have been conditioned upon the outcome of future rulemakings and thus licensees and grantees have been on notice that the regulatory environment in which they are operate was subject to change.[109] Moreover, even under the rules in effect prior to this Order, first round systems were not guaranteed protection from later round systems; rather, this issue was to be considered on a "case-by-case" basis.[110] Accordingly, applying these rule changes to existing licenses and grants of market access will not upset any grantee's reasonable expectations. Further, we have crafted the sunset provision to provide incumbent NGSO FSS grantees sufficient time to evaluate and adapt to the eventual, equal sharing environment with systems ultimately deployed in each subsequent processing round. Not applying the sunset provision to existing grantees, while applying the other rule changes to them, would substantially frustrate the purpose of sunsetting by locking in incumbent protections that are not assured under the current, case-by-case regime. Sunsetting the inter-round protection requirement, and allowing later-round systems an opportunity to share spectrum on an equal basis with earlier-round systems after the sunset period, removes a barrier to entry and therefore promotes competition and will favor technological innovation among earlier-round systems that facilitates their sharing with new entrants. Whereas exempting first-round systems from sunsetting, which includes some large constellations, would destroy these benefits for all new entrants in second and later processing rounds for as long as the first-round systems remain active.

H. Digital Equity and Inclusion

35. The Commission, as part of its continuing effort to advance digital equity for all,[111] including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invited comment on any equity-related considerations[112] and benefits (if any) that may be associated with the proposals and issues discussed in the *NPRM*.[113]

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[108] *See* Kepler Comments at 11; AST Comments at 6; O3b Comments at 21-22; *see also generally Sunsetting Opponents* Ex Parte.

[109] *See, e.g.*, *OneWeb V-band Grant*, 35 FCC Rcd 10150, 10161, para. 31; *Kuiper Grant*, 35 FCC Rcd 8324, para. 65; *Viasat Grant*, 35 FCC Rcd 4324, 4342, para. 52e; *Boeing V-band Grant*, FCC 21-115, para. 50c.

[110] *See NGSO FSS Report and Order*, 32 FCC Rcd 7809, 7829, para. 61.

[111] Section 1 of the Communications Act of 1934 as amended provides that the FCC "regulat[es] interstate and foreign commerce in communication by wire and radio so as to make [such service] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex." 47 U.S.C. § 151.

[112] The term "equity" is used here consistent with Executive Order 13985 as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. *See* Exec. Order No. 13985, 86 Fed. Reg. 7009, Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (January 20, 2021).

[113] *NPRM*, FCC 21-123, para. 27.

36. Commenters support the Commission's ongoing efforts to bridge the digital divide and highlight the role of satellite services in providing broadband access to underserved communities.[114] They support technology inclusive policies that ensure regulatory certainty and spectrum access for satellite operators.[115] We believe that the rule amendments in this Report and Order will encourage a more stable and competitive environment for the development of NGSO FSS systems well suited to reaching underserved areas with new broadband capacity, and therefore that this rulemaking will enhance digital equity and inclusion.

I. Other Issues Raised in Comments

37. Some commenters also suggest the Commission pursue broader rule changes regarding NGSO FSS systems to tackle a variety of issues, including addressing orbital debris concerns,[116] verifying NGSO compliance with equivalent power-flux density limits for the protection of GSO networks,[117] revisiting the spectrum-splitting procedure in section 25.261,[118] updated in 2017,[119] or the NGSO milestone requirements,[120] revised in 2015 and 2017,[121] or taking up other suggestions not treated in the *NPRM*.[122] Other commenters caution against expanding the scope of the current proceeding.[123] Given the complexity and diversity of issues raised and their differing procedural statuses, some reiterating arguments in petitions for reconsideration or petitions for rulemaking,[124] we decline to create an "omnibus" NGSO rulemaking at this time and instead move immediately in the Further Notice of Proposed Rulemaking below to propose to finalize the remaining key issue raised in the *NPRM*.

IV. FURTHER NOTICE OF PROPOSED RULEMAKING

38. In the Report and Order above, we adopt a requirement that, prior to commencing operations, an NGSO FSS licensee or market access recipient must either certify that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or submit a showing for Commission approval that it will not cause harmful interference to any such system with which coordination has not been completed using a degraded throughput methodology. In this Further Notice of Proposed Rulemaking, we propose to

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[114] *See* SIA Reply; AST Comments at 6-7; Hughes Comments at 11; SN Space Comments at 9-10; Kuiper Comments at 25-27; PIO Comments at 12-13; Boeing Comments at 18-20.

[115] SIA Reply at 3.

[116] *See* Viasat Comments at 5-6.

[117] *See* Viasat Comments at 6-7; Hughes Comments at 8-10; OneWeb Reply at 28; O3b Reply at 29.

[118] *See* Viasat Comments at 5-6, 9-11; OneWeb Comments at 9-10, 11; Intelsat Comments at 7; SN Space Comments at 6-7; Kuiper Comments at 14-15; SpaceX Comments at 10-12; AST Reply at 2-3.

[119] *NGSO FSS Report and Order*, 32 FCC Rcd at 7823-29, paras. 45-61.

[120] *See* Intelsat Comments at 12-13.

[121] *NGSO FSS Report and Order*, 32 FCC Rcd at 7830-31, paras. 66-67; *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Second Report and Order, 30 FCC Rcd 14713, 14738 para. 59 (2015).

[122] *See* Viasat Comments at 5-6; OneWeb Comments at 5-6; Intelsat Comments at 11-12.

[123] *See* SpaceX Reply at 18 (arguing the Commission should "reject the invitation to introduce extraneous issues into this proceeding"); O3b Reply at 29-30 (" [T]he primary result of any such [rulemaking] consolidation would be to unnecessarily slow down Commission action on the time-critical matters at issue here.").

[124] *See generally* Viasat Petition for Reconsideration, IB Docket 16-408 (filed Jan. 17, 2018); OneWeb Petition for Reconsideration, IB Docket 16-408 (filed Jan. 17, 2018); Kuiper Systems LLC, Petition for Rulemaking, RM-11861 (filed July 9, 2020); SpaceX Petition for Rulemaking, Revision of Section 25.261 of the Commission's Rules to Increase Certainty in Spectrum Sharing Obligations Among Non-Geostationary Orbit Fixed-Satellite Service Systems, RM-11855, (filed Apr. 30, 2020).

finalize the details of the degraded throughput methodology and invite specific comment on the appropriate values and assumptions to be used in this requirement and whether we should adopt a rule limiting aggregate interference from later-round NGSO FSS systems into earlier-round systems.

39. We expect that the degraded throughput analysis should consist of three steps.[125] The first step is to establish a baseline of performance. To do this, an operator models the earlier-round NGSO system's performance without any additional interference by computing the earlier-round NGSO system's probabilistic C/N level using its published system parameters and a rain-attenuation model.[126] This provides the baseline in terms of: (1) the earlier-round system's time-weighted average throughput (derived by computing the spectral efficiency from the C/N results), and (2) the earlier-round system's link unavailability time percentage (i.e., the percentage of time when the earlier-round system's expected C/N will fall below its minimum usable level). The second step is to repeat the analysis above, adding in the effect of the later-round system's interference into the earlier-round system. This produces a second measurement of time-weighted average throughput and link unavailability time-percentage. The third step is to compare these two sets of figures to measure the effect of any additional interference. If the resulting performance impact exceeds the permissible limits, then the later-round system must adjust its operations to mitigate interference to a permissible level. We seek comment on this process.

40. Specifically, noting that 3% has been suggested as an appropriate value for several aspects of the degraded throughput analysis,[127] we invite comment on the appropriate values for these limits, including their technical justification. What is the appropriate baseline to consider for the earlier-round system, and should it include existing sources of interference, such as interference from GSO networks or intra-system interference?[128] Should a degraded throughput methodology compare an incumbent's baseline level of performance given only natural degradation to that same incumbent's expected performance given a single new entrant's operations? Should we use standardized antenna patterns and noise temperatures for the computation of C/(I+N) in a degraded throughput method? A degraded throughput methodology would rely on detailed technical data about the relevant NGSO FSS systems. How many locations should be evaluated in the methodology, and should the locations include sites outside the United States? How should rain fade conditions in different locations be incorporated into the degraded throughput analysis? What other technical data is needed to appropriately evaluate degraded throughput effects, and how can the Commission ensure that any degraded throughput analysis appropriately protects the specific characteristics of an NGSO system's operations?[129] What role should Schedule S information play in the analysis? [130] Are additional means needed to protect earlier-round systems against loss of synchronization due to potentially high levels of short term interference? Should the earlier-round operator be able to specify two C/N objectives – one relative to the C/N level below which the victim modem would lose lock and another relative to the C/N level below which the victim

[125] *See* Kuiper Comments at 6-7.

[126] Commenters in this proceeding have produced such technical analyses using a degraded throughput methodology based on widely available information, *see* Intelsat Reply, Exhs. A and B and *Kuiper Sept. 23, 2022* Ex Parte, Annex A, contrary to concerns that this analysis requires information unavailable to satellite operators. Letter from Suzanne Malloy, Vice President, Regulatory Affairs, O3b Limited, to Marlene H. Dortch, Secretary, FCC, Appx. at 2 (filed Nov. 17, 2022).

[127] *See* Kuiper Comments at 5-6; Kuiper Reply at 4; *Kuiper Sept. 23, 2022* Ex Parte at 3-4; *Kuiper Feb. 17, 2023* Ex Parte at 6-10; *OTI and PK Apr. 5, 2023* Ex Parte at 2 (seeking a degraded throughput threshold of no less than 3%).

[128] *See* Intelsat Reply at 9, Exh. B (providing study results showing that "for the hypothetical NGSO systems considered and a notional throughput degradation criterion of 3%, only a 3° avoidance angle is needed when GSO interference is considered. By contrast, if GSO interference is not considered, the necessary avoidance angle would be 18°.").

[129] *See SES & O3b Apr. 13, 2023* Ex Parte at 2.

[130] *See also id.*

link would become unavailable because it is not able to offer the minimum wanted throughput? What mitigation techniques would be appropriate if degraded throughput thresholds were not otherwise satisfied?

41. We also note concerns on the record about aggregate interference from multiple NGSO systems.[131] What is a permissible aggregate interference level for protecting priority NGSO systems in a frequency band, as part of an earlier processing round? Should we expect that there will be a maximum number of NGSO FSS systems that can be accommodated in a given frequency band and if so, how should that affect any inter-round protection criteria and the opening of additional processing rounds? How does this methodology accommodate multiple NGSO systems that span multiple processing rounds?

42. Additionally, we seek comment on what criteria should be applied among NGSO systems after the sunset period? We recognize that our default spectrum splitting process is intended to encourage negotiation between systems in the same processing round. Should that also be the default procedure applicable between systems after the sunsetting of interference protection in order to facilitate coordination, or is there an alternative better suited to systems that may be at different stages of deployment? We seek comment on the fit of the default spectrum splitting process to the post-sunset environment. What does co-equal mean when there are established operators on a co-equal basis with newer entrants?[132]

43. *Digital Equity and Inclusion.* Finally, the Commission, as part of its continuing effort to advance digital equity for all,[133] including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invites comment on any equity-related considerations[134] and benefits (if any) that may be associated with the proposals and issues discussed herein. Specifically, we seek comment on how our proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well the scope of the Commission's relevant legal authority

V. PROCEDURAL MATTERS

A. Ex Parte Rules - Permit-But-Disclose

44. The proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[135] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons

[131] *See SpaceX, OneWeb, O3b, and Kepler* ex parte at 3; Letter from David Goldman, Sr. Director, Satellite Policy, SpaceX, to Marlene H. Dortch, Secretary, FCC, Appx. A (filed Nov. 22, 2022);

[132] *See OneWeb Apr. 13, 2023* Ex Parte at 4; *OneWeb Apr. 14, 2023* Ex Parte at 4-5; *see also OneWeb Apr. 7, 2023* Ex Parte at 4; *OneWeb Apr. 12, 2023* Ex Parte at 4.

[133] Section 1 of the Communications Act of 1934 as amended provides that the FCC "regulat[es] interstate and foreign commerce in communication by wire and radio so as to make [such service] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex." 47 U.S.C. § 151.

[134] The term "equity" is used here consistent with Executive Order 13985 as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. *See* Exec. Order No. 13985, 86 Fed. Reg. 7009, Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (January 20, 2021).

[135] 47 CFR § 1.1200 *et seq.*

making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with section 1.1206(b). In proceedings governed by section 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

B. Filing Requirements—Comments and Replies

45. *Filing Comments*. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). See Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998).

- *Electronic Filers*. Comments may be filed electronically using the Internet by accessing the ECFS: http://apps.fcc.gov/ecfs.
- *Paper Filers*. Parties who choose to file by paper must file an original and one copy of each filing.
  - Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
  - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street NE Washington, DC 20554.
  - Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (March 19, 2020). https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy.
- *Persons with Disabilities*. To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

C. Regulatory Flexibility Act

46. *Regulatory Flexibility Analysis.* The Regulatory Flexibility Act of 1980, as amended (RFA),[136] requires that an agency prepare a regulatory flexibility analysis for notice and comment

[136] 5 U.S.C. §§ 601–612. The RFA has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

rulemakings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[137] Accordingly, we have prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule changes contained in this *Report and Order* on small entities. The FRFA is set forth in Appendix B.

47. We have also prepared an Initial Regulatory Flexibility Analysis (IRFA) concerning the potential impact of the rule and policy changes contained in the *Further Notice*. The IRFA is set forth in Appendix C. Written public comments are requested on the IRFA. Comments must be filed by the deadlines for comments on the *Further Notice* indicated on the first page of this document and must have a separate and distinct heading designating them as responses to the IRFA.

D. Paperwork Reduction Act

48. The Report and Order contains modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, other Federal agencies, and the general public are invited to comment on the modified information collection requirements contained in this document.

49. In this document, we have assessed the effects of requiring later-round NGSO FSS grantees to submit compatibility showings with respect to earlier-round grantees with whom coordination has not yet been reached. We find that doing so will serve the public interest and is unlikely to directly affect businesses with fewer than 25 employees.

50. In addition, the Further Notice of Proposed Rulemaking contains proposed modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

E. Congressional Review Act

51. The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget concurs, that this rule is "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. § 801(a)(1)(A).

VI. ORDERING CLAUSES

52. IT IS ORDERED, pursuant to Sections 4(i), 7(a), 10, 303, 308(b), and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 157(a), 160, 303, 308(b), 316, that this Report and Order IS ADOPTED, the policies, rules, and requirements discussed herein ARE ADOPTED, Part 25 of the Commission's rules IS AMENDED as set forth in Appendix A, and this Further Notice of Proposed Rulemaking IS ADOPTED.

53. IT IS FURTHER ORDERED that this Report and Order SHALL BE effective 30 days after publication in the Federal Register, except Section 25.261(d) which contains new or modified information collection requirements and will be submitted for approval by the Office of Management and Budget under the Paperwork Reduction Act and shall become effective after the Commission publishes a notice in the Federal Register announcing such approval and the relevant effective date.

[137] 5 U.S.C. § 605(b).

54. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center will send a copy of this Order and Further Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with Section 603(a) of the Regulatory Flexibility Act, 5 U.S.C. § 601 *et seq*.

55. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

The Federal Communications Commission proposes to amend title 47 of the Code of Federal Regulations, part 25, as follows:

PART 25 – SATELLITE COMMUNICATIONS

1. The authority citation for part 25 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

2. Amend § 25.151 by revising paragraphs (a)(10)-(12) and adding paragraph (a)(13).

§ 25.151 Public notice.

(a) * * *

(10) The receipt of space station application information filed pursuant to § 25.110(b)(3)(iii);

(11) The receipt of notifications of non-routine transmission filed pursuant to § 25.140(d);

(12) The receipt of EPFD input data files from an NGSO FSS licensee or market access recipient, submitted pursuant to § 25.111(b) or § 25.146(c)(2); and

(13) The receipt of NGSO FSS compatibility showings filed pursuant to § 25.261(d).

* * * * *

3. Amend § 25.261 by revising paragraph (b), revising the first sentence in paragraph (c)(1), and adding paragraphs (d) and (e) to read as follows:

§25.261 Sharing among NGSO FSS space stations.

* * * * *

(b) *Coordination*. NGSO FSS licensees and market access recipients must coordinate in good faith the use of commonly authorized frequencies regardless of their processing round status.

(c) * * *

(1) Each of n (number of) satellite networks involved that were licensed or granted market access through the same processing round, except as provided in paragraph (e) of this section, must select 1/n of the assigned spectrum available in each of these frequency bands. * * *

(d) *Protection of earlier-round systems*. Prior to commencing operations, an NGSO FSS licensee or market access recipient must either certify that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or submit for Commission approval a compatibility showing which demonstrates by use of a degraded throughput methodology that it will not cause harmful interference to any such system with which coordination has not been completed. If an earlier-round system becomes operational after a later-round system has commenced operations, the later-round licensee or market access recipient must submit a certification of coordination or a compatibility showing with respect to the earlier-round system no later than 60 days after the earlier-round system commences operations as notified pursuant to § 25.121(b) or otherwise.

(1) Compatibility showings will be placed on public notice pursuant to § 25.151(a)(13).

(2) While a compatibility showing remains pending before the Commission, the submitting NGSO FSS licensee or market access recipient may commence operations on an unprotected, non-interference basis

with respect to the operations of the system that is the subject of the showing.

(e) *Sunsetting*. Ten years after the first authorization or grant of market access in a processing round, the systems approved in that processing round will no longer be required to protect earlier-rounds systems under paragraph (d) of this section, and instead will be required to share spectrum with earlier-round systems under paragraph (c) of this section.

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980 (RFA), as amended,[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Revising Spectrum Sharing Rules for Non- Geostationary Orbit, Fixed-Satellite Service Systems*, Notice of Proposed Rulemaking (NPRM) in December 2021 in this proceeding.[2] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. No comments were filed addressing the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

A. Need for, and Objectives of, the Order:

2. In recent years, the Commission has received an unprecedented number of applications for non-geostationary satellite orbit (NGSO) space station licenses, including for NGSO fixed-satellite service (FSS) systems. Traveling closer to the Earth than a traditional GSO satellite, low- and medium-orbit NGSO FSS satellite constellations are capable of providing broadband services to industry, enterprise, and residential customers with lower latency and wider coverage than was previously available via satellite. This rulemaking continues to facilitate the deployment of NGSO FSS systems capable of providing broadband and other services on a global basis, and will promote competition among NGSO FSS system proponents, including the market entry of new competitors.

3. The Order amends the Commission's rules governing the treatment of NGSO FSS systems filed in different processing rounds. In particular, the Order adopts rules specifying that the Commission's existing spectrum sharing mechanism for NGSO FSS systems will be limited to those systems approved in the same processing round. The Order also adopts a rule providing that later-round NGSO FSS systems will have to protect earlier-round systems by using a degraded throughput methodology. In addition, the Order adopts a sunset provision after which earlier-round grantees and later-round grantees will share spectrum on an equal basis under the existing spectrum sharing mechanism for NGSO FSS systems.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

4. There were no comments filed that specifically addressed the proposed rules and policies presented in the IRFA.

C. Legal Basis:

5. The proposed action is authorized under sections 4(i), 7(a), 303, 308(b), and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 157(a), 303, 308(b), 316.

D. Response to Comments by the Chief Counsel for Advocacy of the Small Business

6. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.[4] The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, (SBREFA) Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *Revising Spectrum Sharing Rules for Non- Geostationary Orbit, Fixed-Satellite Service Systems*, IB Docket No. 21-456, Notice of Proposed Rulemaking, 36 FCC Rcd 17871 (2021).

[3] *See* 5 U.S.C. § 604.

[4] 5 U.S.C. § 604(a)(3).

E. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

7. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.[5] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[6] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[7] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[8] Below, we describe and estimate the number of small entities that may be affected by the adoption of the final rules.

8. ***Satellite Telecommunications***. This industry comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[9] Satellite telecommunications service providers include satellite and earth station operators. The SBA small business size standard for this industry classifies a business with $38 million or less in annual receipts as small.[10] U.S. Census Bureau data for 2017 show that 275 firms in this industry operated for the entire year.[11] Of this number, 242 firms had revenue of less than $25 million.[12] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 71 providers that reported they were engaged in the provision of satellite telecommunications services.[13] Of these providers, the Commission estimates that approximately 48 providers have 1,500 or fewer employees.[14] Consequently using the SBA's small business size standard, a little more than half of these providers can be considered small entities.

9. ***All Other Telecommunications.*** The "All Other Telecommunications" category is comprised of establishments primarily engaged in providing specialized telecommunications services,

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[5] *Id.*

[6] 5 U.S.C. § 601(6).

[7] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[8] 15 U.S.C. § 632.

[9] *See* U.S. Census Bureau, 2017 NAICS Definition, "517410 Satellite Telecommunications," https://www.census.gov/naics/?input=517410&year=2017&details=517410.

[10] *See* 13 CFR § 121.201, NAICS Code 517410.

[11] *See* U.S. Census Bureau, 2017 Economic Census of the United States, Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017, Table ID: EC1700SIZEREVFIRM, NAICS Code 517410, https://data.census.gov/cedsci/table?y=2017&n=517410&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[12] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[13] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/pubId.lic/attachments/DOC-379181A1.pdf.

[14] *Id.*

such as satellite tracking, communications telemetry, and radar station operation.[15] This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.[16] Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.[17] The SBA has developed a small business size standard for "All Other Telecommunications," which consists of all such firms with annual receipts of $35 million or less.[18] For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.[19] Of those firms, a total of 1,400 had annual receipts of less than $25 million and 15 firms had annual receipts of $25 million to $49, 999,999.[20] Thus, the Commission estimates that the majority of "All Other Telecommunications" firms potentially affected by our action can be considered small.

F. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

10. The Order amends rules that are applicable to space station operators requesting a license or authorization from the Commission, or entities requesting that the Commission grant a request for U.S. market access. Specifically, the Order adopts changes to the spectrum sharing requirements among NGSO FSS satellite systems and requires space station licensees and market access grantees that were authorized through a later processing round to submit a technical demonstration that they will not cause harmful interference to space station licensees and market access grantees that were authorized through an earlier processing round, prior to the sunsetting period, if the later-round grantees have not certified that they have reached a coordination agreement with the earlier-round grantees. The technical demonstration of compatibility between the later-round system and the earlier-round system is based on a degraded throughput methodology that consists of three steps. The first step is to establish a baseline of performance. To do this, an operator models the earlier-round NGSO system's performance without any additional interference by computing the earlier-round NGSO system's probabilistic carrier-to-noise (C/N) level using its published system parameters and a rain-attenuation model. This provides the baseline: (1) the earlier-round system's time-weighted average throughput (derived by computing the spectral efficiency from the C/N results), and (2) the earlier-round system's link unavailability time percentage (i.e., the percentage of time when the earlier-round system's expected C/N will fall below its minimum usable level). The second step is to repeat the analysis above, adding in the effect of the later-round system's interference into the earlier-round system. This produces a second measurement of time-weighted average throughput and link unavailability time-percentage. The third step is to compare these two sets of figures to measure the effect of any additional interference. If the resulting performance impact exceeds the permissible limits, then the later-round system must adjust its operations to mitigate interference to a permissible level.

11. Because of the costs involved in developing and deploying an NGSO FSS satellite

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[15] *See* U.S. Census Bureau, 2017 NAICS Definition, "517919 All Other Telecommunications," https://www.census.gov/cgibin/sssd/naics/naicsrch?input=517919&search=2017+NAICS+Search&search=2017.

[16] *Id.*

[17] *Id.*

[18] *See* 13 CFR § 121.201, NAICS Code 517919.

[19] *See* U.S. Census Bureau, 2012 Economic Census of the United States, Table ID: EC1251SSSZ4, Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the U.S.: 2012, NAICS Code 517919, https://data.census.gov/cedsci/table?text=EC1251SSSZ4&n=517919&tid=ECNSIZE2012.EC1251SSSZ4&hidePreview=false.

[20] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard of annual receipts of $35 million or less.

constellation, we anticipate that few NGSO FSS operators affected by this rulemaking would qualify under the definition of "small entity."

G. Steps Taken to Minimize the Significant Economic Impact on Small Entities

12. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[21]

13. The Order adopts a requirement for NGSO FSS systems authorized through a later processing round to either complete a coordination agreement with, or submit a technical demonstration using a degraded throughput methodology that they will not interfere with, NGSO FSS systems authorized through an earlier processing round. The Commission adopted this requirement to ensure that earlier-round NGSO FSS systems will continue to have their services protected as new entrants deploy their systems. The Commission selected a degraded throughput methodology as the basis for the technical demonstration because it offers the most promising technical path for protection of earlier-round systems without unduly burdening the operations of later-round systems. The Commission also considered use of an interference-to-noise ratio (I/N) as a protection criteria for earlier-round systems, or use of a modified band-splitting approach in which earlier-round systems and later-round systems would have to operate in different spectrum bands, with the earlier-round system entitled to more spectrum than the later-round system, in the event that an interference threshold is surpassed. The Commission did not adopt an I/N protection criteria because it may unduly burden the operations of later-round systems, and did not adopt a modified band-splitting approach because the Commission preferred a technically grounded inter-round sharing solution. While a technical demonstration using a degraded throughput methodology might be more burdensome to produce than a demonstration using an I/N level, the record demonstrated the feasibility of degraded throughput analyses and their superior ability to model contemporary NGSO FSS systems and more precisely account for the likelihood of harmful interference.

14. As noted above, because of the high costs typically involved in the development of NGSO FSS constellations, we anticipate that few small entities will be required to submit such technical demonstrations. However, for small entities seeking to operate NGSO FSS systems, adoption of a sunset provision combined with use of degraded throughput methodology will provide operators incentive to innovate and to coordinate with other systems, which will increase spectral efficiency and permit entities to implement newer socially-valuable technologies.

H. Report to Congress

15. The Commission will send a copy of this Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[22] In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of this Second Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register.

[21] 5 U.S.C. § 603(c)(1)-(4).

[22] 5 U.S.C. § 801(a)(1)(A).

APPENDIX C

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act (RFA),[1] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in this Further Notice of Proposed Rulemaking (Further Notice). The Commission requests written public comments on this IRFA. Commenters must identify their comments as responses to the IRFA and must file the comments by the deadlines provided on the first page of the Further Notice and as instructed in the Further Notice. The Commission will send a copy of the Further Notice, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.[2] In addition, the Further Notice and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Rules:

2. In recent years, the Commission has received an unprecedented number of applications for non-geostationary satellite orbit (NGSO) space station licenses, including for NGSO fixed-satellite service (FSS) systems. Traveling closer to the Earth than a traditional geostationary-satellite orbit (GSO) satellite, low- and medium-orbit NGSO FSS satellite constellations are capable of providing broadband services to industry, enterprise, and residential customers with lower latency and wider coverage than was previously available via satellite. This rulemaking continues to facilitate the deployment of NGSO FSS systems capable of providing broadband and other services on a global basis, and will promote competition among NGSO FSS system proponents, including the market entry of new competitors.[4]

3. This Further Notice seeks public comment on proposed revisions to the Commission's rules governing the treatment NGSO FSS systems filed in different space station processing rounds. Specifically, this Further Notice seeks comment on details regarding the implementation of a degraded throughput methodology. It also seeks comment on what criteria should be applied among NGSO systems after the sunset period.

B. Legal Basis:

4. The proposed action is authorized under sections 4(i), 7(a), 303, 308(b), and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 157(a), 303, 308(b), 316.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rulemaking Will Apply:

5. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules and policies, if adopted.[5] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[6] In addition, the term "small business" has

[1] 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612 has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 847 (1996).

[2] 5 U.S.C. § 603(a).

[3] *Id.*

[4] *See generally* Executive Order No. 14036, Promoting Competition in the American Economy, 86 FR 36987 (July 9, 2021 ("The heads of all agencies shall consider using their authorities to further the policies set forth in section 1 of this order, with particular attention to: (i) the influence of their respective regulations, particularly any licensing regulations, on concentration and competition in the industries under their jurisdiction; and…"). Executive Order at 86 FR 36991.

[5] 5 U.S.C. § 603(b)(3).

[6] 5 U.S.C. § 601(6).

the same meaning as the term "small business concern" under the Small Business Act.[7] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[8]

6. ***Satellite Telecommunications.*** This industry comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[9] Satellite telecommunications service providers include satellite and earth station operators. The SBA small business size standard for this industry classifies a business with $35 million or less in annual receipts as small.[10] U.S. Census Bureau data for 2017 show that 275 firms in this industry operated for the entire year.[11] Of this number, 242 firms had revenue of less than $25 million.[12] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 71 providers that reported they were engaged in the provision of satellite telecommunications services.[13] Of these providers, the Commission estimates that approximately 48 providers have 1,500 or fewer employees.[14] Consequently using the SBA's small business size standard, a little more than half of these providers can be considered small entities.

7. ***All Other Telecommunications.*** The **"**All Other Telecommunications" category is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.[15] This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.[16] Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.[17] The SBA has developed a small business size standard for "All Other

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[7] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[8] 15 U.S.C. § 632.

[9] *See* U.S. Census Bureau, *2017 NAICS Definition, "517410 Satellite Telecommunications,"* https://www.census.gov/naics/?input=517410&year=2017&details=517410.

[10] *See* 13 CFR § 121.201, NAICS Code 517410.

[11] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 517410, https://data.census.gov/cedsci/table?y=2017&n=517410&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[12] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[13] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/*pubId.lic*/attachments/DOC-379181A1.pdf.

[14] *Id.*

[15] *See* U.S. Census Bureau, *2017 NAICS Definition*, "*517919 All Other Telecommunications*", https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517919&search=2017+NAICS+Search&search=2017.

[16] *Id.*

[17] *Id*.

Telecommunications", which consists of all such firms with annual receipts of $35 million or less.[18] For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.[19] Of those firms, a total of 1,400 had annual receipts less than $25 million and 15 firms had annual receipts of $25 million to $49, 999,999.[20] Thus, the Commission estimates that the majority of "All Other Telecommunications" firms potentially affected by our action can be considered small.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities:

8. The Commission seeks comment on potential changes to the spectrum sharing requirements among NGSO FSS satellite systems. Specifically, comment is sought on how to implement the degraded throughput methodology. Because of the costs involved in developing and deploying an NGSO FSS satellite constellation, we anticipate that few NGSO FSS operators affected by this rulemaking would qualify under the definition of "small entity."

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered:

9. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rules for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[21]

10. The Commission adopted a requirement that, prior to commencing operations, an NGSO FSS licensee or market access recipient must either certify that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or submit a showing for Commission approval that it will not cause harmful interference to any such system with which coordination has not been completed using a degraded throughput methodology. This Further Notice invites comment on which specific metrics should be used to define the protection afforded to an earlier-round NGSO FSS system from a later-round system.

11. The Commission seeks comment on the appropriate values and assumptions to be used with the degraded throughput requirement. The Commission also seeks comment on whether to adopt a rule limiting aggregate interference from NGSO FSS systems that were authorized in a later processing round into NGSO FSS systems authorized in an earlier processing round. The Commission also seeks comment on alternative means of protection of earlier-round NGSO FSS systems.

12. The Further Notice also seeks comment on whether the Commission should expect that there will be a maximum number of NGSO FSS systems that can be accommodated in a given frequency band and if so, how should that affect any inter-round protection criteria and the opening of additional processing rounds. The Further Notice also seeks comment on how the degraded throughput methodology accommodates multiple NGSO systems that span multiple processing rounds.

---

[18] *See* 13 CFR § 121.201, NAICS Code 517919.

[19] *See* U.S. Census Bureau, *2012 Economic Census of the United States*, Table ID: EC1251SSSZ4, *Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the U.S.: 2012*, NAICS Code 517919, https://data.census.gov/cedsci/table?text=EC1251SSSZ4&n=517919&tid=ECNSIZE2012.EC1251SSSZ4&hidePreview=false.

[20] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard of annual receipts of $35 million or less.

[21] 5 U.S.C. § 603(c)(1)–(c)(4).

13. To assist in the Commission's evaluation of the economic impact on small entities, as a result of actions that have been proposed in the Further Notice, and to better explore options and alternatives, the Commission seeks comment on whether any of the burdens associated with the filing, recordkeeping and reporting requirements described above can be minimized for small entities.[22] Additionally, the Commission seeks comment on whether any of the costs associated with any of the proposed requirements to eliminate unlawful robocalls can be alleviated for small entities.[23] The Commission expects to more fully consider the economic impact and alternatives for small entities based on its review of the record and any comments filed in response to the Further Notice and this IRFA.

F. Federal Rules that May Duplicate, Overlap, or Conflict With the Proposed Rules:

14. None

[22] *Id.* at para. 8.

[23] *Id.*

APPENDIX D

List of Commenters

Comments in IB Docket No. 21-456

AST&Science LLC (AST)
Astra Space Platform Services LLC (Astra)
The Boeing Company (Boeing)
Hughes Network Systems, LLC (Hughes)
Inmarsat Inc. (Inmarsat)
Intelsat License LLC (Intelsat)
Kepler Communications Inc. (Kepler)
Kuiper Systems LLC (Kuiper)
Mangata Networks LLC (Mangata)
New America's Open Technology Institute, Public Knowledge, the Center for Rural Strategies, Next Century Cities, the Benton Institute for Broadband & Society, Oregon Fiber Partnership (dba Link Oregon), and Access Humboldt (collectively, Public Interest Organizations or PIOs)
O3b Limited (O3b)
SN Space Systems Limited (SN Space Systems)
SpaceLink Corporation (SpaceLink)
Space Exploration Holdings, LLC (SpaceX)
Telesat Canada (Telesat)
Viasat, Inc. (Viasat)
WorldVu Satellites Limited (OneWeb)

Reply Comments in IB Docket No. 21-456

AST
Boeing
Intelsat
Kepler
Kuiper
Mangata
OneWeb
O3b
The Satellite Industry Association (SIA)
SN Space Systems
SpaceLink
SpaceX
TechFreedom
Telesat
ViaSat

***Ex Parte* Filings in IB Docket No. 21-456**

Letter from Doris Matsui and Brett Guthrie, Members of U.S. Congress (filed Apr. 11, 2022)
Kuiper (filed May 18, 2022)
Kuiper (filed May 24, 2022)
Kuiper (filed May 24, 2022)
Kuiper (filed May 25, 2022)
Kuiper (filed May 25, 2022)
Hughes (filed June 2, 2022)

Kuiper (filed Aug. 4, 2022)
Intelsat (filed Aug. 15, 2022)
Viasat (filed Aug. 24, 2022)
Kuiper (filed Sept. 6, 2022)
SpaceX (filed Sept. 7, 2022)
Viasat (filed Sept. 20, 2022)
Kuiper (filed Sept. 23, 2022)
SpaceX (filed Sept. 28, 2022)
Kuiper (filed Oct. 13, 2022)
SpaceX (filed Oct. 21, 2022)
O3b (filed Oct. 26, 2022)
SpaceX (filed Nov. 17, 2022)
O3b (filed Nov. 17, 2022)
EchoStar Satellite Services LLC and Hughes, Globalstar, Inc., Iridium Communications Inc., Inmarsat, OneWeb, O3b, Telesat, Viasat (filed Nov. 21, 2022)
Kepler, OneWeb, O3b, SpaceX (filed Nov. 22, 2022)
SpaceX (filed Nov. 22, 2022)
SpaceX (filed Nov. 23, 2022)
Intelsat (filed Dec. 1, 2022)
Viasat (filed Dec. 2, 2022)
Kuiper (filed Dec. 14, 2022)
SpaceX (filed Dec. 16, 2022)
PIOs (filed Dec. 16, 2022)
PIOs (filed Dec. 16, 2022)
PIOs (filed Dec. 20, 2022)
PIOs (filed Dec. 20, 2022)
Stellar Telecommunications SAS (Stellar) (filed Jan. 13, 2023)
PIOs (filed Feb. 1, 2023)
SpaceX (filed Feb. 7, 2023)
Kuiper (filed Feb. 17, 2023)
Kuiper (filed Feb. 23, 2023)
Kuiper (filed Feb. 28, 2023)
SpaceX (filed Feb. 28, 2023)
Mangata (filed Mar. 1, 2023)
Public Knowledge (filed Mar. 3, 2023)
Kuiper (filed Mar. 3, 2023)
Mangata (filed Mar. 10, 2023)
SES & O3b (filed Mar. 13, 2023)
Mangata (filed Mar. 15, 2023)
Open Technology Institute at New America and Public Knowledge (filed Mar. 15, 2023)
Kuiper (filed Mar. 16, 2023)
OneWeb (filed Mar. 2, 2023)
SpaceX (filed Mar. 22, 2023)
Mangata (filed Mar. 23, 2023)
OneWeb (filed Mar. 28, 2023)
Open Technology Institute at New America and Public Knowledge (filed Apr. 5, 2023)
OneWeb (filed Apr. 7, 2023)
Kuiper (filed Apr. 7, 2023)
OneWeb (filed Apr. 12, 2023)
Kuiper (filed Apr. 12, 2023)
SES & O3b (filed Apr. 13, 2023)
Kuiper (filed Apr. 13, 2023)
Intelsat (filed Apr. 13, 2023)

OneWeb (filed Apr. 13, 2023)
OneWeb (filed Apr. 14, 2023)
OneWeb (filed Apr. 14, 2023)
Intelsat (filed Apr. 14, 2023)

STATEMENT OF
CHAIRWOMAN JESSICA ROSENWORCEL

Re: *Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems*, IB Docket No. 21-456; *Revision of Section 25.261 of the Commission's Rules to Increase Certainty in Spectrum Sharing Obligations Among Non-Geostationary Orbit Fixed-Satellite Service Systems*, RM-11855, Order and Further Notice of Proposed Rulemaking (April 20, 2023)

When I announced my plan to reorganize the Federal Communications Commission and establish a new Space Bureau, I said it was about ensuring that our policies keep up with the incredible pace of activity in the space sector. I said that in light of this activity we need to identify how our existing frameworks may need to be reexamined and updated. After all, you cannot just keep doing things the old way and expect to lead in the new.

Today's effort is a testament to this proposition. We adopt a new framework for spectrum sharing among non-geostationary fixed satellite service systems that promotes efficiency, competition, and innovation. All three are essential for the growing space economy.

It has long been the practice of the Commission to license these satellite constellations in processing rounds. In practice, this means that satellite systems that get their applications in early during the same round have equal rights to the shared spectrum in the band. But for applications that come in later, it's a different story. They have to protect these earlier systems and work around the incumbents that are already there. This means systems in the earlier round get a first-mover advantage. This can be a good thing because it provides early entrants with the certainty needed to invest in costly and complex satellite deployments. But the downside is that when this first-mover advantage continues in perpetuity it shuts out would-be competitors, prevents newer deployments, and discourages operators from transitioning to more efficient systems that are better suited to sharing. That's a not-so-good thing. So today we update this process. We adopt a sunset on this spectrum priority that kicks in ten years after a later-round system is authorized. Now the first movers will enjoy the advantage they've earned by daring to think big and take on that risk, but they won't be able to hold on to that regulatory privilege forever. This will open our skies to more competition.

We also adopt rules that bring more certainty to the rights and obligations of systems within a processing round and among different processing rounds. Under our old framework, there was an incentive to refuse to coordinate with your competitor and block them from entering the marketplace. Today we fix that. We clarify that it is the responsibility of all parties to coordinate in good faith and to exchange the information with each other that is necessary to ensure the shared spectrum resources used by satellite systems can accommodate new innovation and new ideas.

These updates are smart and modern. They reward early investment but also help clear the way for new entrants. They promote spectrum efficiency and open up possibilities for new innovation without regard to the date of system authorization.

I am proud to have this be the first effort presented for vote by the new Space Bureau. Congratulations to Julie Kearney, the Chief of the Space Bureau, and to her team. There is more to do and I am looking forward to working with the Bureau to make it happen.

Thank you to the agency staff who worked on this important rulemaking, including Clay DeCell, Jennifer Gilsenan, Julie Kearney, Karl Kensinger, Adrienne McNeil, Kathyrn Medley, Kerry Murray, Stephanie Neville, Jeanine Poltronieri, Sankar Persaud, Troy Tanner, and Merissa Velez of the Space Bureau; Michael Carowitz, Kimberly Cook, Matthew Gibson, Jason Koslofsky, Shannon Lipp, Jeremy

Marcus, Ryan McDonald, Janet Moran, Elizabeth Mumaw, Victoria Randazzo, and Dedrick Roybiskie of the Enforcement Bureau; Paul Lafontaine, Catherine Matraves, Giulia McHenry; Michelle Schaefer, and Aleks Yankelevich from the Office of Economics and Analytics; Tom Sullivan from the Office of International Affairs; David Konczal and Bill Richardson from the Office of the General Counsel; and Cara Grayer and Joy Ragsdale from the Office of Communications Business Opportunities.

STATEMENT OF
COMMISSIONER GEOFFREY STARKS

Re: *Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems*, Report and Order and Further Notice of Proposed Rulemaking – IB Docket No. 21-456

One thing is for sure—when you're talking about spectrum sharing between NGSO systems, much is at stake. Successful coordination could be the difference between expanding broadband's reach to the hardest locations to serve in the United States—or delaying service and choice to those on the wrong side of the digital divide. It could be the difference between maintaining pole position in the global space economy—or handing the lead to our economic and geopolitical rivals. And it could be the difference between finding an economically sustainable path for massive space investments—or watching them shine fast and bright for a few years only to fizzle. Then comes our security. In this day and age, having multiple, secure, resilient, high-capacity, low-latency, and U.S.-based satellite broadband networks is essential. *That* could be the difference between keeping our military and allies online and connected—or having their communications go dark when our collective security depends on access.

But reaching the right result is as challenging as it is important. Why? We're being asked to strike a delicate balance that provides stability and security on the one hand while accommodating serial innovation in a truly dynamic industry on the other. To further complicate matters, we have to achieve balance on any number of policy levers, many of which are interrelated. What's the right sharing methodology? What's the right protection level under that sharing methodology? What's the right effective period for that protection and how should sharing work after it expires? What can operators do—and not do—while they're still demonstrating how they will share with an existing system?

I think we've reached that right balance today. And it wasn't easy—just look at the filings from the past three weeks. I'm also pleased that we're not rushing to judgment on several key issues that could benefit from additional exploration. Because given the stakes here, getting each detail right is important.

Finally, I'd be remiss if I didn't thank the International Bureau for a fantastic closing performance in its long and storied history. I look forward to working with the newly launched Space Bureau—and its inaugural Chief, Julie Kearney—on this and other satellite proceedings in the future.

This item has my full support.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Wireless Emergency Alerts	)	PS Docket No. 15-91
	)	
Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System	)	PS Docket No. 15-94

FURTHER NOTICE OF PROPOSED RULEMAKING

Adopted: April 20, 2023 **Released: April 21, 2023**

Comment Date: (30 days from the date of publication in the *Federal Register*)
Reply Comment Date: (60 days from the date of publication in the *Federal Register*)

By the Commission: Chairwoman Rosenworcel issuing a statement.

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APPENDIX A – Proposed Rules
APPENDIX B – Initial Regulatory Flexibility Anaylsis

I. INTRODUCTION

1. Since the launch of the Wireless Emergency Alert (WEA) system in 2012, the alerts and warnings that commercial mobile service providers (CMS Providers) deliver to the mobile devices of people within the United States have become an integral part of our nation's emergency preparedness and response infrastructure.[1] Over the last decade, more than 600 alerting authorities have used WEA more than 78,000 times.[2] When disasters occur, people regularly credit WEA messages for notifying them that an emergency was occurring and helping them to take protective action.[3] WEA messages have also been credited with bringing 131 missing children to safety.[4]

2. While WEA has been helpful for many, there remain gaps that limit its effectiveness. Notwithstanding the potentially lifesaving benefits WEA can offer, some alerting authorities hesitate to use WEA because they do not understand or have confidence in how the system will perform in their jurisdictions during an emergency.[5] Further, under our current rules, alerting authorities can only send WEA messages in English and Spanish,[6] provided they have the in-house language capability to compose

[1] *Public Safety and Homeland Security Bureau Announces Timetable for Commercial Mobile Service Providers Electing Not to Transmit Commercial Mobile Alert System (CMAS) Alerts to Notify Existing and Potential Customers*, PS Docket No. 07-287, Public Notice, 27 FCC Rcd 2622 (Mar. 16, 2012).

[2] *See* Email from Mark Lucero, FEMA IPAWS Program Management Office, to James Wiley, Deputy Chief, Cybersecurity and Communications Reliability Division, Public Safety and Homeland Security Bureau, FCC (Mar. 9, 2023) (on file with author) (stating that, as of March 8, 2023, alerting authorities have issued 78,316 WEA messages); The term "alerting authority" refers to a federal, state, territorial, tribal, or local entities authorized by the Federal Emergency Management Agency (FEMA) to use the Integrated Public Alert and Warning System (IPAWS) to issue public alerts and warnings, including WEA alert messages, in emergency situations. More than [1,500] federal, state, local, tribal and territorial alerting authorities use IPAWS." FEMA, Integrated Public Alert & Warning System, Public Safety Officials, https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public-safety-officials (last visited Feb. 15, 2023). In this *Further Notice of Proposed Rulemaking* (*Notice*), we use term "alerting authority" as coextensive with the terms "alerting originator" and "emergency management agency."

[3] *See* 47 CFR § 10.10(a) (defining an "alert message" as "a message that is intended to provide the recipient information regarding an emergency, and that meets the requirements for transmission by a Participating Commercial Mobile Service Provider under this part"); Will McDuffie et al., *26 dead as 'destructive' EF-4 tornado tears through Mississippi, National Weather Service says*, ABC (Mar. 25, 2023), https://abc7.com/tornado-mississippi-rolling-fork-damage-warning-silver-city/13011601/; Ryan Prior, *During late night storms, phone alerts are saving lives in ways TV and radio warning can't*, CNN (May 29, 2019), https://www.cnn.com/2019/05/29/us/weather-alert-tech-saved-lives-trnd/index.html; Rick Mecklenburg, *Countless Lives Spared From Tornadoes By Text Messages*, (Nov. 20, 2013), Fox https://www.fox17online.com/2013/11/20/countless-lives-spared-from-tornadoes-by-text-messages.

[4] *See* AMBER Alert, *Statistics* (Jan. 2, 2023), https://amberalert.ojp.gov/statistics.

[5] *See* APCO International, Comments, PS Docket No. 15-91, at 5 (Dec. 8, 2016); Nassau County Office of Emergency Management, Comments, PS Docket No. 15-91, at 2 (Dec. 8, 2016); Harris County, Texas Homeland Security and Emergency Management, Comment, PS Docket No. 15-91, at 1 (Sept. 7, 2018); New York City Emergency Management Department, Comments, PS Docket No. 15-91, at 15 (Dec. 8, 2016); Wireless RERC & CACP, Comments, PS Docket No. 15-91, at 14 (Dec. 8, 2016).

[6] *See Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 11112, 11195, para. 131 (2016) (*WEA R&O*) (requiring Participating CMS Providers to support WEA alerts initiated in Spanish); 47 CFR § 10.480. According to the FEMA IPAWS Program Management Office, since the requirement to support WEA messages in Spanish became effective, as of Mar. 8, 2023. alerting authorities have issued 21,781 WEA messages, 14,240 of which have been translated into Spanish.

alert messages in that language.[7] Even if every WEA message were sent in both English and Spanish, this would still leave the approximately 26 million people living in the United States who do not primarily speak English or Spanish at risk for not understanding the potentially life-saving information conveyed by alert messages.[8] Those who speak other languages are routinely excluded from accessing life-saving information during emergencies.[9]

3. It is essential that the public be able to receive WEA messages in their native language and that alerting authorities better understand WEA performance. Accordingly, we propose to require CMS Providers that have elected to participate in WEA (Participating CMS Providers) take measures to:

- Make WEA more accessible, including to people who primarily speak a language other than English or Spanish and people with disabilities who cannot access messages displayed in conventional formats;
- Integrate WEA more seamlessly into people's lives through increased flexibility in whether the attention signal and/or vibration is triggered;
- Satisfy performance measures for WEA; and
- Provide alerting stakeholders with greater transparency regarding where and on what devices they offer WEA, as well as information about WEA performance.

Through these proposals, we intend to help the millions of people who primarily speak languages other than English or Spanish, as well as those with disabilities, better understand and take protective actions in response to WEA messages;[10] facilitate the more tailored use of WEA through increased flexibility and options for the alerting authority and consumer; and provide alerting authorities with the information they need to use WEA with confidence.

II. BACKGROUND

4. WEA is a tool for authorized federal, state, and local government entities to geographically target alerts and warnings to WEA-capable mobile devices of Participating CMS Providers' subscribers. The Warning Alert and Response Network (WARN) Act establishes WEA as a

[7] *Multilingual Alerting for the Emergency Alert System and Wireless Emergency Alerts*, (Sep. 28, 2022), https://www.fcc.gov/MultilingualAlerting_EAS-WEA.

[8] U.S. Census Bureau, *DP02 | Selected Social Characteristics in the United States* (2021), https://data.census.gov/cedsci/table?q=DP02#. Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, pages 8, 14-15 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf; *see also* US Census Bureau, *The 2020 Census Speaks More Languages* (Mar. 9, 2020), https://www.census.gov/newsroom/press-releases/2020/languages.html.

[9] *See* Press Release, Attorney General James Urges FCC and the U.S. Wireless Industry to Expand Language Accessibility for Severe Weather Warnings (Oct. 27, 2022), https://ag.ny.gov/press-release/2022/attorney-general-james-urges-fcc-and-us-wireless-industry-expand-language; Ashley Wong, *Push for Language Access After Ida Highlights a Greater Need in N.Y.*, (Mar. 3, 2022), https://www.nytimes.com/2022/03/03/nyregion/severe-weather-alerts-languages-ida.html; *How the 2017 fires helped reveal Sonoma County's problems with equity*, https://socoemergency.org/recover/2017-tubbs-nuns-fire/looking-back-at-2017-wildfires/how-the-2017-fires-helped-reveal-sonoma-countys-problems-with-equity/ (last visited on Feb. 21, 2023); Kate Yoder, *During wildfires and hurricanes, a language gap can be deadly*, (Jun. 15, 2021), https://grist.org/language/wildfires-hurricanes-translation-language-gap/.

[10] US Census Bureau, *DP02 | Selected Social Characteristics in the United States*(2021), https://data.census.gov/cedsci/table?q=DP02#. Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, pages 8, 14-15 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf; *See also* US Census Bureau, *The 2020 Census Speaks More Languages* (Mar. 9, 2020), https://www.census.gov/newsroom/press-releases/2020/languages.html.

voluntary system in which CMS providers may elect to participate and gives the Commission authority to adopt "relevant technical standards, protocols, procedures and other technical requirements . . . necessary to enable commercial mobile service alerting capability for commercial mobile service providers that voluntarily elect to transmit emergency alerts."[11] Pursuant to this authority, the Commission has adopted requirements to prescribe WEA capabilities, WEA testing, and WEA election procedures.[12] While participation by wireless providers is voluntary, those that offer the service must adhere to the technical and operational requirements established by the Commission. The Commission requires each CMS Provider to file an election with the Commission indicating whether it intends to transmit emergency alerts "in whole or in part."[13] Twenty one of the 76 wireless providers[14] that elect to transmit alert messages, including the three nationwide service providers AT&T, Verizon Wireless, and T-Mobile, have elected to transmit emergency alert messages "in part."[15] A CMS Provider that elects, in whole or in part, not to transmit emergency alerts is also required to make that election in writing to the Commission, provide conspicuous notice at the point of sale of any devices that will not transmit emergency alerts, and notify its existing subscribers of this election.[16] While Participating CMS Providers, including the three nationwide providers, serve the majority of wireless consumers, hundreds of wireless providers (over 450 of them) have elected not to transmit WEA alert messages.[17]

5. Federal, state, local, tribal, and territorial emergency management agencies apply to the Federal Emergency Management Agency's (FEMA's) Integrated Public Alert and Warning System (IPAWS) Program Management Office to become authorized as alerting authorities.[18] FEMA authorizes alerting authorities to issue WEA and other alerts through IPAWS either individually or as part of a Collaborative Operating Group (COGs) after they enter into a Memorandum of Agreement (MOA) with FEMA agreeing to certain rules of behavior.

6. Once authorized, as depicted in *Figure 1* in the following page, alerting authorities can use FEMA-approved alert origination software to send a WEA message written in the Common Alerting

[11] Warning, Alert and Response Network (WARN) Act, Title VI of the Security and Accountability for Every Port Act of 2006, 120 Stat. 1884, § 602(a), codified at 47 U.S.C. § 1201, et seq., § 1202(a) (2006) (WARN Act).

[12] *See*, *e.g.*, 47 CFR § 10.400 *et seq*. (Alert Message Requirements); 47 CFR § 10.500 *et seq*. (Equipment Requirements); 47 CFR § 10.350 (WEA testing and proficiency training requirements); 47 CFR § 10.200 *et seq*. (Election to Participate in Wireless Emergency Alerts System).

[13] *See* 47 CFR § 10.210.

[14] As a result of the deficiencies in the current WEA data collection mechanisms, many of which are identified in this FNPRM, the number of CMS Providers who have elected to participate "in whole or in part" may not be up to date. For example, the WEA registry lists Sprint Nextel and T-Mobile as having separate WEA elections. *See* FCC Master Registry, https://www.fcc.gov/files/weamasterregistry112019xls.

[15] *See* FCC Master Registry, https://www.fcc.gov/files/weamasterregistry112019xls (last visited Feb. 14, 2023) (containing a record as of 2019 of all Participating CMS Providers' elections to transmit or not transmit alert messages). As of December 31, 2021, AT&T, T-Mobile, and Verizon Wireless were the three facilities-based mobile wireless service providers in the United States that cover a substantial majority of the country. *See Communications Marketplace Report,* 2022 Communications Marketplace Report, GN Docket No. 22-203, FCC 22-103, para. 64 (2022).

[16] 47 U.S.C. §§ 1201(b)(1)(B), (C).

[17] Of the over 400 entities that have filed an election regarding their WEA participation status, however, many appear to be paging operators, specialized mobile radio operators, mobile virtual network operators, and other wireline companies that may or may not be in operation as a CMS Provider. *See* FCC Master Registry, https://www.fcc.gov/files/weamasterregistry112019xls (last visited Feb. 14, 2023).

[18] FEMA, Sign Up to Use IPAWS to Send Public Alerts and Warnings, https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public-safety-officials/sign-up (last visited Feb. 20, 2023).

Protocol to the FEMA-operated Alert Aggregator (IPAWS Open) via a secure, Internet-based interface (the A-Interface), where it is authenticated, validated and subsequently delivered to FEMA's Alert Gateway (the B-Interface).[19] At the FEMA Alert Gateway, the alert message is prepared for delivery to Participating CMS Providers by being converted to Commercial Mobile Alert for C-Interface (CMAC) format to render it readable by CMS networks. The alert message is then disseminated across a secure Internet-based interface (the C-Interface) to the Participating CMS Provider's Alert Gateway (CMSP Gateway) for distribution to mobile customers over cell broadcast (CMSP Infrastructure).[20] Receipt of a WEA message is accompanied by an "attention signal," a loud, attention-grabbing, two-tone audio signal that uses frequencies and sounds identical to the distinctive and familiar attention signal used by the Emergency Alert System (EAS).[21] The Commission adopted the WEA attention signal and vibration cadence requirements to ensure that subscribers, particularly those with hearing and vision disabilities would be notified when their mobile device receives a WEA.[22]

[19] CAP is an open, interoperable, XML-based standard that can include multimedia such as streaming audio or video. *See* OASIS CAP v1.2 (IPAWS Profile for the OASIS Common Alerting Protocol IPAWS USA). CAP messages contain standardized fields that facilitate interoperability between and among devices. *See id.*

[20] From a technical standpoint, the WEA system currently deployed by FEMA and Participating CMS Providers is based on standards created by the Alliance for Telecommunications Industry Solutions (ATIS), the Telecommunications Industry Association (TIA), and the 3rd Generation Partnership Project (3GPP). *See CSRIC IV WEA Messaging Report* at 7. We note that nothing in the WARN Act or the Commission's rules requires WEA to be a cell-broadcast-based service. *See also* CSRIC V, *Working Group Two, Wireless Emergency Alerts – Recommendations to Improve Geo-targeting and Offer Many-to-One Capabilities*, Final Report and Recommendations at 8 (2016); *but see* Letter from Rebecca Murphy Thompson, EVP and General Counsel, Competitive Carriers Association, to Marlene Dortch, Secretary, Federal Communications Commission, PS Docket No. 15-91, at 2 (Oct. 6, 2017) (stating that some carriers offer WEA using a software application, rather than cell broadcast). In addition to the steps listed above, the FEMA Alert Gateway uses a second path to send alert messages to PBS WARN, which acts as a back-up for the C-interface and provides redundancy and resiliency for WEA as a safeguard if WEA's primary deliver path is disrupted.

[21] 47 CFR § 10.520.

[22] *See Commercial Mobile Alert System*, PS Docket No. 07-287, Report and Order, 23 FCC Rcd 6144. 6168-69, paras. 64-67 (2008); 47 CFR §§ 10.520 (attention signal), 10.530 (vibration cadence).

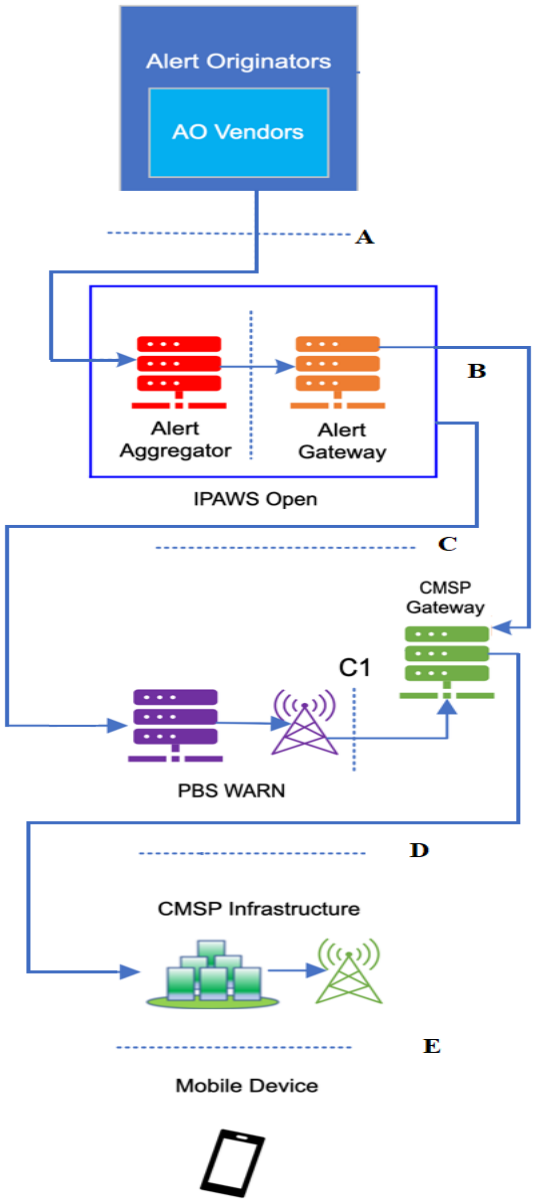


Figure 1: WEA Architecture[23]

7. The Commission does not currently require Participating CMS Providers to measure the performance of their WEA service. In 2016, the Commission proposed to require Participating CMS Providers to annually report on the performance of their WEA systems, and sought comment on whether Participating CMS Providers should log additional information about the WEA alert messages that they transmit to enable performance measurements, including at the mobile device where WEA alert messages

[23] Communications Security, Reliability, and Interoperability Council VII, Report on WEA Performance Reporting (2022) https://www.fcc.gov/file/24518/download (*CSRIC VIII Report on WEA Performance Reporting*). For the purpose of this diagram, an "interface" describes demarcation points between nodes.

are received.[24] In 2018, the Commission sought additional comment on how WEA's performance should be measured and reported, and how the Commission should address inconsistent WEA delivery.[25] In 2022, the Commission sought to refresh the issue of developing metrics for WEA performance and reporting standards to assist stakeholders with understanding the effectiveness of WEA in their alerting areas, and identify areas for improvement.[26] We proposed that Participating CMS Providers report on reliability, speed, and accuracy to help stakeholders develop an understanding of the WEA system's end-to-end performance. We also sought comment on how these metrics should be defined and how the data should be logged and reported to the Commission.

8. In 2020, the Government Accountability Office (GAO) reviewed the federal response to natural disasters, and examined the Commission's oversight of WEA in particular.[27] GAO observed that WEA usage has increased and now serves as the nation's primary alerting method.[28] GAO noted that while the FCC collects test data from Emergency Alert System (EAS) tests,[29] a similar mechanism does not exist for WEA.[30] GAO found that, while the FCC has required Participating CMS Providers to implement new WEA capabilities, it "has not developed goals and performance measures to help monitor how well the new capabilities perform during emergencies."[31] GAO observed that "because [the] FCC does not have specific goals and performance measures to monitor WEA improvements, [the] FCC will have difficulty assuring that these improvements are working as intended during emergencies and identifying areas where performance is lacking, which could undermine authorities' confidence in using IPAWS."[32] Accordingly, GAO recommended that the FCC should develop measurable goals and performance measures for WEA.[33] In response, the Commission stated it would "complete geo-targeting

[24] *See Wireless Emergency Alerts*, *Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 11112, para. 161 (2016) (proposing to amend Section 10.350 to require Participating CMS Providers to submit annual reports to the Commission that demonstrate reliability and availability, latency, and geotargeting for their nationwide WEA deployment); *see also id.* at 11215, paras. 173-74 (seeking comment on "whether the logging requirements . . . should extend beyond the CMS Provider Alert Gateway to the [Radio Access Network (RAN)] . . . and to WEA-capable mobile devices . . . whether requiring Participating CMS Providers to log data relevant to the accuracy of geo-targeting, the extent of alert delivery latency, and the system availability and reliability could contribute to the collection of data for Annual WEA Performance Reports?").

[25] *See Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System; Wireless Emergency Alerts*, PS Docket Nos. 15-91, 15-94, Report and Order and Further Notice of Proposed Rulemaking, 33 FCC Rcd 7086, 7105-06, paras. 46-49 (2018) (*Alerting Reliability FNPRM*). The *Alerting Reliability FNPRM* did not specifically reference the *2016 WEA R&O and FNPRM* although it sought comment on the same issues of performance reporting and measurement.

[26] *Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91 and 15-94, Further Notice of Proposed Rulemaking (April 21, 2022) (*2022 NPRM*).

[27] *See* Government Accountability Office, Emergency Alerting: Agencies Need to Address Pending Applications and Monitor Industry Progress on System Improvements at 1(2020), https://www.gao.gov/assets/gao-20-294.pdf.

[28] *See id.* at 11.

[29] *See* EAS Test Reporting System, (ETRS), https://www.fcc.gov/general/eas-test-reporting-system (last visited Mar. 1, 2023).

[30] *See* Government Accountability Office, Emergency Alerting: Agencies Need to Address Pending Applications and Monitor Industry Progress on System Improvements at 16 (2020), https://www.gao.gov/assets/gao-20-294.pdf.

[31] *See id.* at 25.

[32] *See id.* at 33.

[33] *See id.*

pilot testing with selected local jurisdiction partner(s)" and "complete associated rulemaking to adopt performance measures for enhanced WEA capabilities, as appropriate."[34]

9. Over the years, the Communications Security, Reliability and Interoperability Council (CSRIC) has studied and reported on various aspects of the WEA system. In 2014, CSRIC IV discussed the possibility of including maps and other graphic information in WEA alert messages, concluding that more study was necessary.[35] More recently, in 2022, CSRIC VIII examined the issue of WEA performance reporting and developed technical requirements for an application programming interface (API) that would allow WEA firmware to leverage native mobile device capabilities.[36] CSRIC VIII recommended automated performance data reporting via email and discussed alternative ways to implement WEA performance reporting, including through the use of staged devices.[37] CSRIC VII also recommended enhancements to WEA messages such as support for machine-based translation, location aware maps, and other multimedia content.[38]

III. DISCUSSION

A. Making WEA More Accessible

10. People with native languages other than English or Spanish, or people with disabilities, may be excluded during emergencies if they are not notified in a manner that they can understand. We tentatively conclude that WEA needs to do more to deliver essential warnings in languages and in a format that is most likely to reach those communities who need this information most. Accordingly, we propose to require Participating CMS Providers to ensure that the WEA-capable mobile devices they sell have the capacity to translate alert messages into most subscribers' alert language preferences and support multimedia content. We seek comment on these proposals as well as on any other actions that the Commission can take to empower alerting authorities to deliver emergency alerts in an accessible manner to everyone in their communities.

1. Enhancing WEA's Language Support

11. We propose to require Participating CMS Providers to take steps, described below, to ensure that their subscribers' WEA-capable mobile devices have the capacity to translate English-language alert messages that they receive into the default language preferences of most subscribers by taking advantage of machine translation technologies. This proposal would address alerting authorities' need to be able to communicate with people in their communities in languages other than English or Spanish, irrespective of the alerting authorities' in-house language translation capabilities.[39]

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[34] FCC, Emergency Alerting (103277) Corrective Action Plan at 2 (2020), https://www.gao.gov/products/gao-20-294.

[35] *See* Communications Security, Reliability, and Interoperability Council IV, Geographic Targeting, Message Content and Character Limitation Subgroup Report at 50 (2014), https://transition.fcc.gov/pshs/advisory/csric4/CSRIC_CMAS_Geo-Target_Msg_Content_Msg_Len_Rpt_Final.pdf.

[36] *See* Communications Security, Reliability, and Interoperability Council VIII, *Report on WEA Performance Reporting* (2022) https://www.fcc.gov/file/24518/download (*CSRIC VIII Report on WEA Performance Reporting*); Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at (Mar. 2023).

[37] *CSRIC VIII Report on WEA Performance Reporting* at 31-34 (2022).

[38] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface (Mar. 2023).

[39] Sarah Poss, California Governor's Office of Emergency Services, Comments, PS Docket Nos. 15-91 and 15-94, at 3-4 (Rec. Dec. 15, 2016) (CalOES Comments); Bob Iberger, Islip Office of Emergency Management, Comments, PS Docket No. 15-91, at 1 (Rec. Dec. 5, 2016); Letter from Preston Findlay, Counsel, NCMEC, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 15-91 et al., at 2 (filed July 6, 2017) (NCMEC *ex parte*); Craig Craft,

(continued….)

12. We seek comment on the technical feasibility of this proposal. Based on recent feedback from industry participants, we believe machine translation technologies have matured sufficiently to support such a requirement.[40] Just last month, for example, AT&T posited that "software translation technologies are sufficiently mature to effectively support the translation of WEA alerts into the most commonly spoken languages" and recommended that "translation beyond English and Spanish use the software translation capabilities provided by mobile device operating systems."[41] CSRIC VIII also reports that "[w]ith improvements in language translation technology, there is an opportunity to provide WEAs in the user-preferred language via language translation."[42] Machine translation technologies such as Google Cloud Translation and Apple Translate are pre-installed on many WEA-capable mobile devices.[43] A device-level API to leverage these applications could make WEA messages accessible to every major language group in the U.S.[44] A machine translation application could access an English-language WEA message before it is presented to the subscriber by using this API, translate the English-language alert into the device's preferred language, and then present the translated alert instead of or in addition to the English-language version. We seek comment on the technical feasibility of this approach and on any other considerations for implementing machine translation technology.[45] Currently,

(Continued from previous page)
Nassau County Office of Emergency Management, Comments, PS Docket No. 15-91, at 1 (Dec. 8, 2016) (Nassau County OEM Comments); New York City Emergency Management Department, Comments, PS Docket Nos. 15-91 and 15-94, at 10 (Rec. Dec. 8, 2016) (NYCEM Comments); City and County of San Francisco Department of Emergency Management, Comments, PS Docket No. 15-91, at 2 (Rec. Dec. 8, 2016); *see also* FCC Disability Advisory Committee, Comments on Improving Wireless Emergency Alerts and Community-Initiated Alerts, PS Docket No. 15-91, at 3 (Rec. June 17, 2016) (recognizing the importance of multilingual alerting) (DAC 2016 WEA Comments).

[40] When the Commission last sought comment on the accuracy of machine translation in 2016, commenters suggested the technology was not mature enough for use in emergency communications. *See* Apple 2016 Reply Comments at 6 n.21; AT&T 2016 Comments at 16-17; NCMEC 2016 *Ex Parte* at 2; NYCEM 2016 *Ex Parte* at 3.

[41] Letter from Rhonda J. Johnson, Executive Vice President, Federal Regulatory Affairs, AT&T, to Jessica Rosenworcel, Chairwoman, FCC, at 4-5 (Rec. Feb. 27, 2023) (stating "[w]e believe that software translation technologies are sufficiently mature to effectively support the translation of WEA alerts into the most commonly spoken languages" and "[i]n the future . . . [an] alert could be broadcast in English and automatically translated into the default language for the user's device by a WEA application"). *See also* Letter from Chemu Langat, Chief Operating Officer and Vice President, Quality and Regulatory, Best Buy Health, Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 3 (Rec. Feb. 27, 2023) ("[b]ased upon input from our technical teams, we believe it is possible that machine translation technologies could be leveraged to translate emergency alert messages into commonly spoken languages . . . our technology teams have not opined on whether existing machine translation technologies operate with a high-enough degree of accuracy to safely enable multilingual WEAs"); Darah Franklin, Counsel, Google North America Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 2 (Rec. Feb. 27, 2023) ("machine translations technologies can be used to scale translation capabilities, but accuracy and reliability varies across ML-based translation providers/implementations.").

[42] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 23 (Mar. 2023), https://www.fcc.gov/file/25058/download.

[43] *See* Google Cloud Translation AI, https://cloud.google.com/translate (last visited Feb 28, 2023); Apple, iPhone User Guide, https://support.apple.com/guide/iphone/translate-text-voice-and-conversations-iphd74cb450f/ios (last visited Feb. 28, 2023).

[44] *See* Darah Franklin, Counsel, Google North America Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 2 (Rec. Feb. 27, 2023).

[45] Improvements in the accuracy and reliability of machine-based automatic translation technology also may have implications for expanding the distribution of emergency information over the Emergency Alert System (EAS) in languages other than English, as the Commission has noted in the past. *See, e.g., Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System; Wireless Emergency Alerts*, Notice of Proposed Rulemaking, PS Docket Nos. 15-91, 15-94, FCC 16-5, 31 FCC Rcd 594, 637-38, para. 94 (2016) (seeking comment (continued….)

Participating CMS Providers transmit Spanish-language versions of WEA messages created by alerting authorities so that they may be presented in addition to the English language version. As CSRIC VIII explained, "[i]f multiple additional languages are included in the WEA broadcast, capacity limits may not allow for the expected behavior of the WEA system in the case of a crisis scenario with multiple live alerts in three or more languages."[46] Should WEA messages presented in other languages also be presented in addition to, rather than instead of, the English-language version?

13. We propose to require the WEA-capable mobile devices that Participating CMS Providers sell to support the presentation of emergency alerts in the 13 most commonly spoken languages in the United States, in addition to English: Spanish, Chinese, Tagalog, Vietnamese, Arabic, French, Korean, Russian, Haitian Creole, German, Hindi, Portuguese, and Italian.[47] Best Buy Health/Lively suggests that the Commission should "identify a specific group of commonly spoken languages to which WEAs will be expanded."[48] We seek comment on whether we have identified the right set of languages for WEA to support.

14. We seek comment on the accuracy of machine translation technologies for these languages. Are there languages that, due to the accuracy and ease of machine translation, should be added to the list above?[49] For which languages does machine translation perform most accurately and reliably? We invite commenters to submit information identifying the languages for which sufficiently accurate machine translation technology is currently available and estimating the number of years until the technology for machine translation of other languages will be sufficiently mature for this purpose. What metric(s) are commonly used to describe the accuracy of machine translation technologies? How accurate must machine translation be to effectively convey emergency information?

15. We also seek comment on whether existing mobile devices in the marketplace today have the capacity to support machine translation software. Would subscribers need to purchase new devices to benefit from machine translation for WEA? We seek comment on steps that we can take to eliminate obstacles to consumer access to machine translation for WEA messages. In addition to (or in lieu of) installing machine translation software on consumers' devices, could such software or functionality be

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on "the state of technology for machine-generated translation . . . to provide emergency alerts in non-English languages, . . . whether and how such technology could be leveraged by both the EAS and WEA systems[,]" and whether "such translators [could] be incorporated into EAS equipment"); *Review of the Emergency Alert System*, Order, EB Docket No. 04-296, FCC 16-32, 31 FCC Rcd 2414, 2418, para. 7 & n. 21 (2016) (noting efforts to "develop[] multilingual translation solutions for EAS equipment" and questioning "whether these solutions currently include automatic, reliable speech-to-speech translation").

[46] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 20 (Mar. 2023).

[47] U.S. Census Bureau, *DP02 | Selected Social Characteristics in the United States* (2021), https://data.census.gov/cedsci/table?q=DP02#; Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, pages 8, 14-15 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf; *see also* US Census Bureau, *The 2020 Census Speaks More Languages* (Mar. 9, 2020), https://www.census.gov/newsroom/press-releases/2020/languages.html. Roughly 78% of the U.S. population primarily speaks English, 13.5% primarily speak Spanish, and 5% primarily speak one of the other twelve listed here. *See* Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, pages 8, 14-15 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf.

[48] Letter from Chemu Langat, Chief Operating Officer and Vice President, Quality and Regulatory, Best Buy Health, Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 3 (Rec. Feb. 27, 2023).

[49] *See* Darah Franklin, Counsel, Google North America Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 2 (Rec. Feb. 27, 2023) (stating that machine-translation technology can be used to scale translation technologies but that accuracy varies).

deployed in Participating CMS Providers' networks or elsewhere in the framework for generating and distributing WEA messages?

16. *Template-based alerts.* We seek comment on alternative approaches to promoting multilingual WEA. We observe that the New York City Emergency Management Department supports multilingual alerting in 13 different languages in addition to English through its Notify NYC application. This application presents an English-language message, along with a link to 13 other pre-scripted translations. These alert message translations have been written by people fluent in the languages and vetted with native speakers from language communities.[50] This allows alerts to reach communities of people who otherwise may not understand the alerts they receive. We seek comment on whether this approach could be supported by Participating CMS Providers and/or handset vendors in a modified manner that would eliminate the need to click on a URL. Instead, the pre-scripted translations for the most common alerts could be pre-installed and stored in the mobile device itself. These templates would be "activated" by a data element included in alert message metadata, which would prompt the mobile device to display the relevant template alert message in the mobile device's default language chosen by the consumer. We seek comment on which messages should be translated and pre-loaded into WEA firmware, and into which languages they should be translated. Could devices offered by Participating CMS Providers support the presentation of the most common alert messages in the 13 most commonly spoken languages in the United States in this manner?[51] Could this be achieved by translating the most common alerts into these 13 languages and storing those translations at the device?[52] In the event that a mobile device is configured with a default language preference other than one for which a translation exists, could the device default to displaying the alert in English?

17. We observe that Google and the United States Geological Survey (USGS) have partnered to deliver ShakeAlert earthquake early warning system messages to Android Mobile devices by supporting communication that triggers Android mobile devices to display alert content pre-installed on the mobile device.[53] We seek comment on whether this approach would enable multilingual alerting and

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[50] *See*, *e.g.*, Pacific ADA Center, Webinar: FEMA Promising Practice: Strategies for Effective Communication with People who are Deaf or Hard of Hearing in Emergencies, Transcript (Jul. 14 2016), https://adapresentations.org/doc/7_14_16/Transcript_7_14_16.pdf; Letter from William H. Johnson, Senior Vice President, Verizon, to Jessica Rosenworcel, Chairwoman, FCC, at 2-3 (Rec. Feb. 27, 2023), https://www.fcc.gov/ecfs/search/searchfilings/filing/10227186202891 (with updated standards and handset/OS vendor support "nothing in wireless networks would preclude devices from performing those functions").

[51] U.S. Census Bureau, *DP02 | Selected Social Characteristics in the United States* (2021), https://data.census.gov/cedsci/table?q=DP02#. Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, pages 8, 14-15 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf; *See also* US Census Bureau, *The 2020 Census Speaks More Languages* (Mar. 9, 2020), https://www.census.gov/newsroom/press-releases/2020/languages.html.

[52] Letter from Chemu Langat, Chief Operating Officer and Vice President, Quality and Regulatory, Best Buy Health, Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 2 (Rec. Feb. 27, 2023), https://www.fcc.gov/ecfs/search/search-filings/filing/1022730060888 ("we believe it would be possible to build pre-scripted WEA messages that are displayed based on the language setting the device user has selected. We estimate that the development work necessary to build such pre-scripted messages would be significant, and we note that collaboration with parties responsible for mobile device operating systems would be key to enabling WEAs in a multitude of languages"); Letter from William H. Johnson, Senior Vice President, Verizon, to Jessica Rosenworcel, Chairwoman, FCC, at 2-3 (Rec. Feb. 27, 2023); https://www.fcc.gov/ecfs/search/search-filings/filing/10227186202891 (stating that, with updated standards and handset/OS vendor support, "nothing in wireless networks would preclude devices from performing those functions.").

[53] Google, *How Android Earthquake Alerts System Works*, https://crisisresponse.google/android-alerts/ (last visited Feb. 16, 2023).

simultaneously alleviate industry concerns about bandwidth limitations.[54] We seek comment on whether a data element would be able to be transmitted with a relatively small bandwidth.[55]

18. We also observe that Dr. Jeanette Sutton, University of Albany, has been funded by the Department of Homeland Security to create a Message Design Dashboard that enables alerting authorities to quickly craft template alerts from prefabricated message elements.[56] If the message elements that the Message Design Dashboard uses to create alert and warning messages were translated into languages other than English and stored at the mobile device, could mobile devices automatically translate this prefabricated alert message content? We also seek comment on whether there any other technological or practical approaches that would enable alerting authorities to deliver alert messages in languages that they do not, themselves, speak.

19. *American Sign Language.* We seek comment on whether and how WEA might be improved to provide support for American Sign Language (ASL). Would a significant number of deaf and hard-of-hearing people benefit from having WEA messages presented in ASL format on their mobile devices in lieu of the conventional text format used for WEA messages?[57] Could a pre-scripted, template-based approach work for ASL? Can video content be compressed for storage on the mobile device?[58] Are there any other feasible solutions for ASL?

20. *Text-to-speech.* Many people with vision disabilities, including elderly people, rely on text-to-speech functionality to make text more accessible. While the WEA system does not incorporate text-to-speech functionality at present, many blind and low-vision subscribers may already have screen reading (text-to-speech) functionality installed on their mobile devices. We seek comment on the extent to which such applications are in use and on whether they can generate audible versions of WEA messages. CSRIC VIII recommends that WEA be enhanced to speak the name of the type of hazard to which a WEA message pertains in English and/or the user preferred language when the WEA message is presented on the device.[59] We seek comment on whether Participating CMS Providers could support a text-to-speech functionality for the name of the hazard to which a WEA message pertains. Would this limited text-to-speech capability provide equal access to emergency information for those that rely upon it? Could Participating CMS Providers support text-to-speech for other alert message elements, like the geographic area to which the alert message applies or the entire WEA message? Could Participating CMS Providers support this text-to-speech functionality in English, Spanish, and other languages? We seek comment on the accuracy and reliability of such text-to-speech technologies and on whether the resulting audible information is comprehensible to most listeners. We invite commenters to identify the languages for which acceptable text-to-speech applications are currently available and those for which

[54] *See Improving Wireless Emergency Alerts and Community-initiated Alerting*, PS Docket Nos. 15-91 and 15-94, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 11112 (2015) (addressing comments regarding concerns about bandwidth and network congestion).

[55] For the purposes of this FNPRM, we contemplate that this data element has minimal impact on industry network capabilities and bandwidth limitations.

[56] *See* Dr. Jeannette Sutton, Writing Effective Messages: The Message Design Dashboard, FEMA – Wireless Emergency Alerts, https://jeannettesutton.com/current-projects-1 (last visited Mar. 16, 2023).

[57] Telecommunications for the Deaf and Hard of Hearing et al, Reply Comments, PS Docket Nos. 15-91 and 15-94, at 3 (Rec. Jan. 9, 2017) ("Contrary to popular public perception, ASL is not derived from English, nor any spoken language. Instead, it is an independent linguistic system with morphological and grammatical complexity comparable to or exceeding that of spoken languages.")

[58] *See, e.g.*, ASL Emergency Alert System, Signtel Inc., https://www.signtelinc.com/asl-emergency-alert-system.html (last visited Feb. 18, 2023) (describing how text typed into the software can be translated into sign language and shown on video in real time).

[59] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 29 (Mar. 2023).

they are not. Can such technologies be tailored to generate information that can be understood by people who speak languages in different regional dialects or accents?[60] Would text-to-speech enable people with vision disabilities to understand and act on the alerts they receive more readily? How should the risk that relying on text-to-speech functionality for WEA alert messages might yield confusing mispronunciations be weighed against the public benefits of vulnerable populations receiving alert messages? Would a template-based approach to supporting multilingual alerting facilitate the use of text-to-speech technologies because it would allow stakeholders an opportunity to verify the audio conversion of pre-fabricated messages for accuracy and accessibility?

2. Improving WEA's Effectiveness with Multimedia Content

21. We propose to require support for certain multimedia content in WEA messages and to sunset aspects of our existing WEA message requirements to free up bandwidth to support this capability. Alerting authorities currently do not have the ability to send multimedia content through WEA, despite a robust record demonstrating their desire to do so. Alerting authorities state that the ability to send multimedia content would improve emergency planning and response,[61] provide additional information during emergencies, personalize threats, improve message comprehension for people with disabilities, and function as a way to reach people who do not speak English.[62] In response, industry has expressed concerns about bandwidth limitations of cellular networks, possible delay of receipt of the alert message, and costs.[63] Since the last time the Commission sought comment on these issues, CSRIC VIII issued a report that recommends WEA messages include a link to access "location-aware" maps.[64] A location-aware map would depict the alert's target geographic area and the alert recipient's position in relation to the target area. CSRIC VIII suggests that this enhancement is feasible leveraging current technology and would promote public safety.[65]

22. We propose to require Participating CMS Providers to support the sending of thumbnail-sized images in WEA messages over the air. ATIS' *Feasibility Study for WEA Supplemental Text* finds that Participating CMS Providers could support the transmission of an appropriately formatted, thumbnail-sized image using 0.013 megabytes of data.[66] We seek comment on whether the image format

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[60] For example, speakers of Cantonese Chinese may not be able to understand a spoken sentence in the Mandarin dialect or vice versa, even though all use the same written form of the language. Similarly, Spanish speakers accustomed to Mexican or Central American accents may find it difficult to follow Spanish spoken in an Argentinian or Castilian accent, and vice versa.

[61] *Wireless Emergency Alert Enhancement FAQs for Authorized Alert Originators*, https://www.fcc.gov/wireless-emergency-alert-enhancements-faqs-authorized-alert-originators, (last visited on Mar. 1, 2022).

[62] APCO International, Comments, PS Docket Nos. 15-91 and 15-94, at 3 (Rec. Dec. 8, 2016) (APCO Comments); CalOES Comments at 3; Letter from Francisco Sanchez, Liaison to the Director and Public Information Officer for Harris County Texas HSEM, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 15-91, at 1 (filed July 10, 2017) (Harris County Ex Parte); NCMEC *ex parte* at 2; Nassau County OEM Comments at 1; Letter from Michael E. Gerber, Physical Scientist, Office of Dissemination, NWS, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 15-91, at 4 (filed July 18, 2017) (NWS 2017 Ex Parte); NYCEM Comments at 7-10; *see also* DAC 2016 WEA Comments at 2-3 (recognizing the importance of multimedia messages in alerts).

[63] ATIS Comments at 7; AT&T Reply Comments at 4; ATIS Comments at 7-8; CTIA Comments at 9; Microsoft Comments at 6-7; T-Mobile Comments at 2-4, 8-9; Verizon, Comments, PS Docket Nos. 15-91 and 15-94, at 4 (Rec. Dec. 8, 2016).

[64] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 26 (Mar. 2023).

[65] *Id*.

[66] ATIS, *ATIS Feasibility Study for WEA Supplemental Text, ATIS 0700026* (2015) (contemplating that a thumbnail-sized photo of about 1.5"x1.5" with a resolution of 72 dots per inch (DPI) will produce an image of 120x120 pixels and that if 8-bit color scale is used, then a digital image file will be about 14,400 bytes (0.013 megabytes) in size).

contemplated by ATIS would minimize the burden that transmission of such data would impose on Participating CMS Providers while providing sufficient resolution to be accessible on modern mobile device displays. The National Center for Missing and Exploited Children (NCMEC) has long advocated for the Commission to enable them to transmit a thumbnail-sized image of a missing child within the body of a WEA alert, noting that "in those cases in which AMBER Alert is credited for the safe rescue of a child 89% included a picture and/or vehicle and license plate information."[67] Other alerting authorities support this proposal because of its "obvious helpful implications."[68] The Commission has received complaints indicating that the public may be finding that AMBER Alerts that do not contain an image of a missing child do not meaningfully enable the public to assist in the search for that child.[69] Industry commenters generally oppose this proposal because of concerns about incompatibility with the cell broadcast method used for WEA and latency.[70] Microsoft recommends that transmission of thumbnail-sized photos "should be permitted only after applicable standards have been developed and only for AMBER Alerts which, while time sensitive, are better positioned than other types of emergency warnings to tolerate a 60-second latency."[71] We seek comment on how long the delay caused by including a thumbnail-sized photo would be. Alerting authorities often use embedded references in WEA messages to direct the public to a website that contains information about a missing child, but the additional effort needed to click through a link to learn more about a child abduction and possible concerns over the legitimacy of embedded links may prevent many people from rendering assistance. Moreover, the web servers on which alerting authorities host emergency information often become congested, rendering their information unavailable.[72] We tentatively conclude that including a picture of a missing child in the body of an AMBER Alert will make WEA AMBER Alerts significantly more attention-grabbing and, as a result, motivate more people to more effectively render assistance to law enforcement to search for a missing child. We seek comment on this view.

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[67] Letter from Linda Krieg, Acting Chief Executive Officer, National Center for Missing & Exploited Children, to James Wiley, Attorney Advisor, Public Safety and Homeland Security Bureau, FCC, at 3 (May 1, 2015); National Center for Missing and Exploited Children, Comment, PS Docket No. 15-91, at 2 (rec. Jan. 13, 2016), https://www.fcc.gov/ecfs/document/60001375619/1 ("Beyond text, NCMEC is acutely aware that photos fill a vital role in the search for missing children. Wherever possible, it is standard for NCMEC to include a photograph of the missing child for every other type of missing child alert, message, bulletin, notice, and poster that NCMEC disseminates. As noted in NCMEC's earlier comments, the vast majority of recent AMBER Alerts that contributed to the successful recovery of an abducted child featured license plate information or a photo of the child, or both. Although this same content could be provided without significant technical adjustments through text-only WEA messages that include a URL linked to the AMBER Alert website, NCMEC also supports the ability to add images, maps, or other multi-media content to WEA messages in the future, which also could greatly enhance the immediate usefulness of AMBER Alerts."); Letter from Preston Findlay, Counsel, NCMEC, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 15-91 et al., at 2 (filed July 6, 2017); Letter from Preston Findlay, Counsel, NCMEC, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 15-91 et al., at 2 (filed May 24, 2016), https://www.fcc.gov/ecfs/search/search-filings/filing/1070698168870.

[68] NWS Comments at 2; NYCEM Comments at 7; Lower Colorado River Authority (Austin, TX), Llano County, TX, Travis County, TX, City of Austin, TX, Austin Water Utility, TX, Caldwell County, TX, Blanco County, TX, Colorado County, TX, Williamson County, TX, Bastrop County, TX, Fayette County, TX, Matagorda County, TX, Burnet County, TX, Wharton County, TX, Hays County, TX, Comments, PS Docket Nos. 15-91, 15-94, and OET 16-127, at 1 (Rec. Dec. 8, 2016).

[69] *See* Email from Richard Witte to the Public Safety Support Center (Mar. 15, 2023).

[70] AT&T Comments at 14-15; T-Mobile Comments at 8; Verizon Comments at 4.

[71] Microsoft Comments at 6-7.

[72] *See* FEMA IPAWS, Tip #29: WEA and the Web (Aug. 2020), https://www.fema.gov/sites/default/files/2020-09/fema_ipaws-tips_08-2020.pdf.

23. Such multimedia displays might yield benefits for WEAs concerning a broad range of emergencies beyond AMBER alerts. APCO states that, more broadly "providing more detailed information about an emergency through embedded multimedia would help reduce milling behavior and duplicative 9-1-1 calls."[73] We seek comment on use cases other than AMBER Alerts where alerting authorities could improve the public's response to alerts and warnings by including thumbnail-sized images in their WEA messages, and whether the tradeoffs for bandwidth, latency, and other considerations would support this use.

24. We propose to free up bandwidth on the cell broadcast channel over which Participating CMS Providers have chosen to transmit alert messages. Are there any steps that can be taken to continue to provide active mobile devices that are incapable of receiving 360-character maximum alert messages with access to WEA while still freeing up bandwidth? For example, should we sunset the requirement to transmit a 90-character-maximum version of alerts in addition to the 360-character-maximum version? If adopted, by the time this rule becomes effective, we believe that the percentage of active mobile devices that are incapable of receiving 360-character alert messages is likely to be negligible. We seek comment on this proposal and on this view. Would this reduce the total number of bits needed to transmit an alert message? Could those bits be reallocated to other WEA functionalities, such as the transmission of thumbnail-sized images? We also seek comment on any other bandwidth saving measures that could be implemented to more effectively allocate available bandwidth.

25. We also propose to require Participating CMS Providers to support the presentation of "location-aware maps" in WEA messages. When the Commission last sought comment on this issue in 2016, alerting authorities were in favor of including location-aware maps in WEA messages to personalize alerts and bolster awareness.[74] Industry commenters did not oppose.[75] CSRIC VIII observes that "maps are commonly used to depict alert location across a variety of alert dissemination methods (e.g., TV, social media)" and states that presenting WEA alert messages via mapping applications on the device "could help the recipient better understand the boundaries of the Alert Area and the device's location relative to the Alert Area."[76] CSRIC VIII concludes that location-aware maps should be incorporated into WEA such that alert message "text is immediately displayed and an additional option to display a WEA map is provided."[77] The map displayed by the native application would be enhanced by the target area information already included in WEA messages so that consumers could more easily comprehend that the alert message is intended for them and that they should promptly take responsive action. There would be no need for Participating CMS Providers to transmit additional information over the air to support this functionality. Would this approach of providing consumers with a link allowing them access to a location-aware map alleviate industry's concerns about bandwidth limitations? We seek comment on the benefits of including location-aware maps in WEA messages without having to transmit map data over the air. Are there any other technological approaches that could be taken to achieve this result?

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[73] APCO 2016 Comments at 3.

[74] *WEA R&O*, 31 FCC Rcd at 11195, para. 131; APCO 2016 Comments at 3; CalOES 2016 Comments at 3; Nassau County OEM 2016 Comments at 1; Letter from Michael E. Gerber, Physical Scientist, Office of Dissemination, NWS, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 15-91, at 4 (filed July 18, 2017) (NWS 2017 Ex Parte) ("The NWS wishes to reiterate the need for WEA to display a map of the recipient's location relative to the threat area. This is necessary in order to better personalize the threat and increase the likelihood that people in the path of the threat take decisive life-saving action.").; NYCEM 2016 Comments at 8.

[75] ATIS 2016 Comments at 7-8; AT&T 2016 Reply Comments at 4; CTIA 2016 Comments at 9; Microsoft 2016 Comments at 6-7; T-Mobile 2016 Comments at 2-4, 8-9; Verizon 2016 Comments at 4.

[76] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 11 (Mar. 2023).

[77] *Id.* at 11-15, 26.

26. In our discussion of multilingual alerting above, we seek comment on whether it is feasible for Participating CMS Providers to support the transmission of a data element that triggers mobile devices to display pre-installed, translated alert content. Could this same technological approach be leveraged to prompt mobile devices upon receipt of a WEA alert to display other media content pre-installed on the mobile device, such as infographics? Alerting authorities ask the Commission to enable them to send infographics that, for example, show alert recipients how to shelter in place.[78] We note that the National Weather Service has created many potentially beneficial infographics relating to weather-based emergencies,[79] such as guidelines to be followed before and during tornados, hurricanes, and floods.[80] We seek comment on whether support for infographics would increase WEA's ability to prompt people to take protective actions during emergencies more quickly and effectively. What other media could be pre-installed on mobile devices and presented upon a receipt of a WEA message or signal that would improve public safety outcomes when events threaten life and property?

27. We seek to refresh the record on whether Participating CMS Providers could enable WEA messages to include a symbol set designed for emergency communications, such as that developed by the National Alliance for Public Safety GIS (NAPSG) Foundation and endorsed by FEMA IPAWS.[81] When the Commission sought comment on these issues in 2016 and 2018,[82] alerting authorities favored this proposal, stating that hazard symbols would "allow for quicker comprehension and therefore increase accessibility, including for individuals who are deaf, hard of hearing, deafblind, and deaf with mobility issues."[83] FEMA IPAWS states that "symbols can help make public alerts and warnings more effective for people with disabilities, those with limited English proficiency, and the whole community."[84] Industry commenters have historically opposed this proposal because of concerns about incompatibility with the cell broadcast technology used for WEA, questions about the utility of symbols, and the need for

[78] Calhoun CEMA 2016 Comments at 2-3 (". . . images could potentially include evacuation maps, instructions for protective action such as shelter-in-place, etc."); NYCEM 2016 Comments at 7-8 ("NYCEM may not be able to adequately describe emergency instructions (even to English speakers), including an infographic that provides such information would be helpful and potentially lifesaving").

[79] *Tornado Infographics*, https://www.weather.gov/wrn/tornado_infographics, (last visited on Nov. 17, 2022); *Hurricane Infographics*, https://www.weather.gov/wrn/hurricane_infographics, (last visited on Nov. 17, 2022); *Flood Infographics*, https://www.weather.gov/wrn/flood_infographics, (last visited on Nov. 17, 2022).

[80] *See, e.g. Tornado Sheltering Guidelines*, https://www.weather.gov/images/wrn/Infographics/tornado_sheltering_guidelines.png (last visited on Feb. 27, 2023); *See, e.g. Assemble Disaster Supplies*, https://www.weather.gov/images/wrn/Infographics/hurricane_assemble_supplies.png (last visited on Feb. 27, 2023); *See, e.g. Coastal Flooding*, https://www.weather.gov/images/wrn/Infographics/coastal-flooding-infographic.jpg (last visited on Feb. 27, 2023).

[81] *See* NAPSG Foundation, Symbol Library, https://www.napsgfoundation.org/all-resources/symbology-library/ (last visited Mar. 1, 2023); FEMA IPAWS, Tip #36: The IPAWS Symbol Set, https://www.napsgfoundation.org/all-resources/symbology-library/ (last visited Mar. 1, 2023); *see also* NextGen Video Information Systems Alliance, Visually Integrated Display Symbology (2020), https://www.nvisa.org/_files/ugd/0ddb93_d8a48ee7679442038238ecdd869852e7.pdf.

[82] *See* 2016 WEA R&O and FNPRM at 11193-95 paras. 129-31; *Parties Asked to Refresh the Record on Facilitating Multimedia Content in Wireless Emergency Alerts*, PS Docket Nos. 15-91 and 15-94, Public Notice, 33 FCC Rcd 2919 (2018).

[83] *See*, *e.g.*, Consumer Groups and DHH-RERC 2016 Reply Comments at 5; *see also* Telecommunications for the Deaf and Hard of Hearing, Inc. et al, Reply Comments, PS Docket Nos. 15-91 and 15-94, at 5 (Rec. Jan. 9, 2017) (Consumer Groups and DHH-RERC Reply Comments); National Weather Service, Comments, PS Docket Nos 15-91 and 15-94, at 2 (rec. Dec. 1, 2016).

[84] *See* FEMA IPAWS, Tip #36: The IPAWS Symbol Set, https://www.napsgfoundation.org/all-resources/symbology-library/ (last visited Mar. 1, 2023).

consumer education,[85] but CSRIC VIII recommends that "WEA message presentation include a standardized symbol representative of the event," and recommends that ATIS, public warning risk communications experts, and social scientists should develop standards and best practices and choose a symbol set to use.[86] If we do require Participating CMS Providers to support the inclusion of symbols in WEA messages, should we require them to support a specific symbol set? If so, which one? As a technical matter, would Participating CMS Providers support symbols by transmitting them over the air or by pre-installing them on mobile devices? As a practical matter, what steps could alerting authorities or federal, state, local, tribal, and territorial government agencies take to educate the public about emergency communications symbols so that their receipt results in rapid comprehension and action? Would it be possible to ensure that graphics and links to images are readable by screen readers for persons who are blind or have low vision?[87]

B. Integrating WEA More Seamlessly into People's Lives

28. In the decade since WEA launched, alerting authorities have leveraged WEA for new and different types of circumstances. The incidence of active shooter incidents in the United States has risen precipitously.[88] Climate conditions have resulted in wildfires grow more intense and destructive, and hurricanes cause more rainfall and increased coastal flooding.[89] Alerting authorities have turned to WEA to help them to keep their communities safe in the face of these threats.[90] We believe that WEA can and must improve to meet the challenge that evolving threats pose. Accordingly, we propose to allow alerting

[85] AT&T Comments at 14-15; Verizon Comments at 4; Wireless RERC & CACP Comments at 8-9 ("in 2016, the Wireless RERC conducted a usability study that included 16 IPAWs approved hazard symbols to determine if message comprehension was impacted by the inclusion of American Sign Language (ASL) and/or symbology. . . . Results indicated that some of the symbols helped with text comprehension. The symbols most often understood included Flood Warning, Hurricane Warning, Tornado Warning. The other symbols were not consistently assigned the same meaning by all participants, indicating that it will be interpreted differently and is not a 'universal symbol.' Most importantly, some of the symbols were misinterpreted. For example, the shelter in place symbol which is intended to elicit a behavioral response was interpreted by our participants as 'It's a house.' Additional unknown symbols included Civil Emergency, Evacuation Immediate, and Hazardous Materials. We found that participants recognized symbols only for events that typically happen near them and none of the participants understood that 'All Clear' meant that the emergency was over. From this preliminary study, we concluded that user outreach and education would be integral to the utility of the symbology").

[86] Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 29 (Mar. 2023).

[87] The FCC has strongly encouraged following the Web Content Accessibility Guidelines published by the World Wide Web Consortium's Web Accessibility Initiative. *See* WCAG, 2.1 Understanding Docs, "Images of Text (Level AA)," https://www.w3.org/WAI/WCAG21/Understanding/images-of-text.html (last visited Mar. 8, 2023); *see* FCC Consumer Advisory Committee, CG Docket No. 22-2, Recommendation Regarding Consumer Broadband Labels, at 3 (Rec. Apr. 26, 2022); American Council of the Blind, CG Docket No. 22-2, Comments (Rec. Mar. 9, 2022); *Empowering Broadband Consumers Through Transparency,* CG Docket No. 22-2, Notice of Proposed Rulemaking, FCC 22-7, para. 27 n.42 (2022) (describing W3C standards).

[88] *See* Nikk Ogasa, *Mass Shootings and Gun Violence in the United States are Increasing*, ScienceNews (May 26, 2022), https://www.sciencenews.org/article/gun-violence-mass-shootings-increase-united-states-data-uvalde-buffalo.

[89] Angela Colbert, *A Force of Nature: Hurricanes in a Changing Climate*, NASA (Jun. 1, 2022), https://climate.nasa.gov/news/3184/a-force-of-nature-hurricanes-in-a-changing-climate/; USGS, *Wildfire and Climate Change*, https://www.usgs.gov/science-explorer/climate/wildfire (last visited Mar. 2, 2023).

[90] *See*, *e.g.*, Becky Metrick, *Did you get an emergency alert from Dauphin County? Here's Why*, PennLive Patriot News (Jan. 6, 2023), https://www.pennlive.com/news/2023/01/did-you-get-an-emergency-alert-from-dauphin-county-heres-why.html; Government of the District of Columbia, *COVID-19 Wireless Emergency Alerts (WEA)*, https://coronavirus.dc.gov/wea (last visited Mar. 2, 2023).

authorities more flexibility in how WEA messages are presented to accommodate different emergencies, while ensuring that people with disabilities are afforded access to information. We also propose measures to prevent unnecessary consumer opt-out and facilitate more effective public awareness testing. We seek comment on these proposals and on any additional measures that the Commission can take to ensure that WEA is a suitable tool to mitigate loss of life and property damage during today's most serious emergencies.

1. Allow Alerting Authorities More Flexibility in how WEA Messages Are Presented

29. The Commission's WEA rules do not give alerting authorities control over how mobile devices present the WEA audio attention signal or the vibration cadence.[91] The mandatory presentation of the WEA audio attention signal and vibration cadence could prevent the use of WEA during an active shooter scenario, where the attention signal and vibration could draw the attacker's attention to those who need to stay hidden to stay safe.[92] The mandatory presentation of these signals might also result in user annoyance and WEA opt-out, particularly where WEA is used in connection with a public health crisis such as the COVID-19 pandemic.[93] Accordingly, we propose to require that Participating CMS Providers be able to send WEA messages, at the alerting authority's option, without triggering the audio attention signal and the vibration cadence.[94] We seek comment on the relative benefits and burdens of this proposal, if adopted. Would providing alerting authorities the ability to customize how WEA messages are sent (e.g., with or without the WEA audio attention signal and/or vibration cadence) make WEA safer to use during active shooter events and less intrusive (and thus more versatile) to use during public health emergencies or other less emergent but nevertheless important public safety situations?[95] We seek

[91] 47 CFR §§ 10.520, 10.530.

[92] *See id.*; Erin B. Logan, Anya Kamentz, *Should The Parkland Shooting Change How We Think About Phones, Schools and Safety*, National Public Radio, (Feb. 17, 2018), https://www.npr.org/sections/ed/2018/02/17/586534079/should-the-parkland-shooting-change-how-we-think-about-phones-schools-and-safety (last visited Feb. 8, 2023) ("The sound of the phone, whether ringing or on vibrate, could alert an assailant to a hiding place.").

[93] Gregory S. Schneider and Erin Cox, *Virginia's emergency alert on coronavirus vaccine availability startles some*, (Apr. 20, 2021), https://www.washingtonpost.com/local/coronavirus-dc-virginia-maryland/2021/04/20/6937167e-a204-11eb-a7ee-949c574a09ac_story.html (an emergency alert about COVID-19 was effective in getting the public to visit Virginia's vaccine information website, but also resulted in complaints from startled consumers who thought the alert signal meant there was an urgent emergency, such as one Tweet stating "I thought Nukes were incoming or something"); *see also* Elizabeth Ellcessor, *COVID-19 Messages Make Emergency Alerts Just Another Text in the Crowd on Your Home Screen*, (Jun. 10, 2021), https://www.nextgov.com/ideas/2021/06/covid-19-messages-make-emergency-alerts-just-another-text-crowd-your-home-screen/174613/ ("Traditionally, emergency alerts are sent to phones in a given area only in very serious circumstances . . . use of a technology designated for emergencies effectively declares an emergency, and when people believe they are in the midst of an emergency they often change their feelings and behavior"); *See* Erik Pedersen, *'Walking Dead', 'Jimmy Kimmel Live' & Others Hit With FCC Fines For "Misusing" Emergency Alert Tones*, (Aug. 15, 2019), https://deadline.com/2019/08/fcc-fines-walking-dead-jimmy-kimmel-live-others-hit-with-fcc-fines-for-misuing-emergency-alert-tones-1202669390/ (noting the FCC disallows the use of EAS tones for non-emergencies due to concerns about alert fatigue).

[94] 47 U.S.C. § 1201(a); *cf.* 47 CFR §§ 10.520; 10.530 (adopting, without discussion of the Commission's WARN Act authority, requirements precluding both Participating CMS Providers and equipment manufacturers from marketing of mobile devices that are incapable of presenting the WEA audio attention signal and vibration cadence).

[95] *See* Letter from Avi Primo, Celltick Technologies, to James Wiley, Deputy Chief, Cybersecurity and Communications Reliability Division, PS Docket No. 15-91 (Apr. 8, 2021) ("Alerting the mobile devices using the current defined handset behavior, which plays the same unique attention signal and vibration cadence on the mobile device regardless of the threat type, urgency level, or severity might create unnecessary panic situations when several threats are occurred simultaneously at the same area and therefore cannot be distinguished without reading

(continued….)

comment on whether an alert received without the attention signal and/or vibration cadence could fail to grab alert recipients' attention during time-sensitive active shooter situations.

30. We seek comment on steps that the Commission can take to balance the need for alerting authorities to be able to suppress the presentation of the WEA attention signal with the need to present accessible alert messages to people with access and functional needs. In addition to the suppression of the WEA audio attention signal, should alerting authorities be able to suppress the vibration cadence? The WEA vibration cadence may result in a sound that gives away the location of a person in hiding or cause annoyance. It also may be necessary for consumers who are deaf or hard of hearing to know that they have received an emergency alert. Should we limit the suppression of the attention signal and/or the vibration cadence to specific circumstances (e.g., active shooter) situations only, and if so, what should those situations be? Or, should we defer to the alerting authority to best accommodate and balance competing considerations without limitation? If we adopt requirements that WEA support text-to-speech, should alerting authorities also have discretion to suppress this capability? Finally, we ask commenters to identify whether and which standards and/or device-level software or firmware would need to be modified to enable this capability for alerting authorities. We seek comment on whether the 12 months that the Commission has previously allocated for the development of WEA standards would be sufficient for this purpose.[96] If not, why not? We also seek comment on any other technical issues that may arise in implementing this functionality at the mobile device.

2. Prevent Unnecessary Consumer Opt-Out

31. We are concerned that members of the public might experience alert fatigue and might be annoyed by WEA's audio attention signal and vibration cadence, leading them to opt out of receiving WEA alert messages entirely.[97] Consumers who have opted out of receiving WEA alert messages have no chance of receiving potentially life-saving emergency instructions through WEA. To remedy this, we propose to require Participating CMS Providers to provide their subscribers with the option to durably turn off WEA's audio attention signal and vibration cadence for all alerts. The Commission's rules allow for consumers to be able to mute the audio attention signal and vibration cadence.[98] In 2016, we sought comment on whether the Commission should require Participating CMS Providers to support consumer choice by allowing consumers to receive WEAs with the audio attention signal and vibration cadence turned off by default as an alternative to opting out of WEA entirely.[99] Microsoft Corporation, California Governor's Office of Emergency Services, and the New York City Emergency Management Department support allowing consumers to change their WEA delivery preferences, including by allowing them to

(Continued from previous page)
the warning text shown on the screen. On the other hand, activating the current signal for less urgent alerts may result in people opting out from these alerts.").

[96] *See WEA R&O*, 31 FCC Rcd at 11177, para. 98.

[97] *See Why would anyone want to turn off government alerts such as emergency notifications and Amber alerts in their iPhone settings? Why is this even an option?*, https://www.quora.com/Why-would-anyone-want-to-turn-off-government-alerts-such-as-emergency-notifications-and-Amber-alerts-in-their-iPhone-settings-Why-is-this-even-an-option (last visited on Feb. 10, 2023) (most of the reasons cited for opting out of emergency alerts by Quora users are because of the jarring attention signal); *See also* Tarun Wadha, *About Those Startling Government Phone Alerts That You Never Signed Up For*, (Aug. 6, 2013), https://www.forbes.com/sites/tarunwadhwa/2013/08/06/about-those-startling-government-phone-alerts-that-you-never-signed-up-for/?sh=7ee1e9df6666 (last visited Feb. 10, 2023) (complaining about the attention signal).

[98] 47 CFR § 10.520(e); 47 CFR § 10.530(c).

[99] *See Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 11112, 11154-57, para. 157 (2016) (*WEA R&O*).

receive WEAs without the attendant audio attention signal and vibration cadence.[100] We seek to refresh the record on this issue. How do mobile device manufacturers operationalize silencing the WEA audio attention signal and vibration cadence when users set their devices to "do not disturb" mode? What other options do consumers have to personalize the audio attention signal and vibration cadence? We tentatively conclude that Participating CMS Providers should work with mobile device manufacturers to present this option to subscribers in the mobile device's WEA notification settings in addition to the current, binary choice to opt in or opt out. We seek comment on this approach.

32. We seek comment on whether giving consumers the option to suppress the presentation of the WEA audio attention signal and vibration cadence promotes consumer choice and would make it more likely that people interested in receiving alert messages – but not interested in being interrupted by them – can continue to receive potentially life-saving instructions intended for them.[101] What other public safety and consumer benefits would attend this proposal, if adopted? We note, however, that if the rule is adopted, consumers who have already opted out of receiving alert messages may not be aware that the option to receive alert messages without being interrupted by them is available. How might this information be best shared with the public? Should Participating CMS Providers re-set WEA-capable mobile devices to their default opt-in status as part of their implementation of this proposal? Would they have the technical ability to do so? To what extent would CMS Providers require support from device manufacturers to support such a re-set and update? Could such a re-set take place without affecting other settings on a user's device (e.g., location)? Should the customer be made aware of the attempted re-set, and if so, how? We seek comment on any alternatives that would help to ensure that the public is able to yield the public safety benefits of this proposal.

33. We seek comment on whether there are additional reasons why consumers commonly opt out of receiving WEA messages. Currently, when consumers receive an alert, some mobile device operating systems present the alert together with an option for the consumer to go to their WEA notification settings, where the only option presented is opt-out. Does this operating system functionality promote unnecessary WEA opt-out? We seek comment on alternative ways in which unnecessary consumer opt-out can be mitigated or prevented.

3. Facilitate More Effective WEA Public Awareness Exercises

34. We seek comment on whether our current rules governing State/Local WEA tests are impeding the ability of emergency managers to fully understand how WEA operates within their unique jurisdictions and circumstances and to engage in important public awareness exercises. At present, our rules authorize Participating CMS Providers to transmit a State/Local WEA Test message, which consumers must affirmatively opt in to receive.[102] Alerting authorities thus cannot conduct an end-to-end

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[100] *See Comments of the New York City Emergency Management Department*, (Dec. 8, 2016), PS Docket Nos. 15-91 and 15-94, para. 32 ("NYCEM also agrees with commenters that, in certain circumstances, consumers should have the ability to set receipt preferences."); *see* Comment, Microsoft, PS Docket Nos. 15-91 and 15-94, page 8 ("Allowing consumers to fine-tune when and how they wish to receive the different types of alerts will encourage greater consumer participation in the system."); *see* Comment, California Governor's Office of Emergency Services page 1 ("Cal OES support the proposed rule's proposal to maintain a user-accessible list of previous alerts for 24 hours within WEA devices, including those that have expired.").

[101] The average American checks their cellphone 344 times per day, about once every four minutes, so consumers muting the attention signal should not have an overly negative impact on how quickly they can receive emergency information. Trevor Wheelwright, *2022 Cell Phone Usage Statistics: How Obsessed Are We?*, (Jan. 24, 2022), https://www.reviews.org/mobile/cell-phone-addiction/. Prior to COVID-19, the average American checked their phone 96 times per day, or about once every ten minutes. Tudor Cibean, *Adults in the U.S. check their phones 352 times a day on average, 4x more often than in 2019*, (Jun. 5, 2022), https://www.techspot.com/news/94828-adults-us-check-their-phones-352-times-day.html.

[102] 47 CFR § 10.350. Specifically, the Commission's rules require Participating CMS Providers to participate in monthly tests initiated by the Federal Emergency Management Agency and in periodic tests of WEA's C-Interface. (continued….)

WEA test, where members of the public receive the test message by default, without receiving a waiver of the Commission's rules. In contrast, the Commission's rules allow EAS Participants to participate in two Live Code Tests per calendar year, provided that the entity conducting the test takes specified actions to make clear that the alert being sent is only a test.[103] We continue to believe that State/Local WEA Tests are valuable tools for system readiness testing and proficiency training. To the extent State/Local WEA Tests are used for proficiency training and alerting authorities' system checks alone, the fact that the public does not receive State/Local WEA Tests by default is beneficial. This same attribute, however, prevents State/Local WEA Tests from being useful tools for raising public awareness about how to respond to emergencies that are likely to occur.[104] Over the years, the Commission has granted waivers in certain circumstances to enable alerting authorities to test WEA using alerts that the public receives by default.[105] In assessing these waivers, the Commission has balanced raising awareness about emergencies with protecting against alert fatigue.[106]

35. Based on the experience we have gained from evaluating these waiver requests, we believe we can identify circumstances where it is beneficial for consumers to receive WEA test messages by default without conducting a case-by-case evaluation of waiver requests, going forward. Thus, we propose to authorize Participating CMS Providers to support up to two end-to-end WEA tests (in which consumers receive test messages by default) per alerting authority each year, provided that the alerting authority: 1) conducts outreach and notifies the public in advance of the planned WEA test and that no emergency is, in fact, occurring; 2) includes in its test message that the alert is only a test; 3) coordinates the test among Participating CMS Providers, state and local emergency authorities, relevant State Emergency Communications Committees (SECCs), and first responder organizations; and 4) provides notification to the public in widely accessible formats that the test is only a test. We note these conditions are the same conditions that attend alerting authorities' conduct of EAS Live Code Tests and the Commission has routinely conditioned waiver its rules to conduct public awareness exercises on these criteria.[107] We seek comment on whether we should condition authorization on alerting authorities

(Continued from previous page)
Id. On November 1, 2016, the Commission adopted a Report and Order that amended the WEA testing rules to permit emergency managers to conduct end-to-end WEA tests to the public to assess how WEA is working within their jurisdictions. *See WEA R&O* at paras. 65-68; *WEA R&O*, 31 FCC Rcd at 11154-55, para. 65 (requiring Participating CMS Providers to provide their subscribers with the option to receive State/Local WEA Tests, whereby subscribers must affirmatively select the option to receive State/Local WEA Test messages).

[103] 47 CFR § 11.61(a)(5) (requiring entities conducting Live Code Tests to notify the public before the test in widely-accessible formats that live event codes will be used, but that no emergency is, in fact occurring; states in the test message that the event is only a test; and coordinates the test among EAS Participants, state and local emergency authorities, the relevant state emergency communications committees (SECC), and first responder organizations).

[104] Lisa M. Fowlkes, *Emergency Alert Testing Matters*, (Oct. 2, 2018), https://www.fcc.gov/news-events/blog/2018/10/02/emergency-alert-testing-matters ("[live code tests] . . . can increase the proficiency of local alerting officials while educating the public about how to respond to actual alerts").

[105] *See*, *e.g.*, *Wireless Emergency Alert Performance Testing Wireless Emergency Alerts Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 22-160, 15-91, and 15-94, Order, DA-22-901, (2022); *Wireless Emergency Alerts Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91 and 15-94, Order, DA-22-850, (2022); *Improving Wireless Emergency Alerts and Community-Initiated Alerting Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91 and 15-94, 36 FCC Rcd 12734 (2021).

[106] *See Improving Wireless Emergency Alerts and Community-Initiated Alerting Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91 and 15-94, 35 FCC Rcd 1527, para. 6 (2020) (stating that the State/Local WEA test category was adopted to prevent consumers from "alert fatigue.").

[107] 47 CFR § 11.61(a)(5).

conducting certain types of outreach or on the outreach being completed a certain period of time before transmitting the test. We also seek comment on whether, as an additional condition to conduct public awareness exercises, alerting authorities should have to keep records on how they comply with the above-mentioned four conditions, and produce these records if requested by a Participating CMS Provider or the Commission. We believe that, by authorizing Participating CMS Providers to support up to two tests per alerting authority each year without filing waiver requests or obtaining our permission in advance, we can reduce unnecessary administrative burdens on alerting authorities, CMS Providers, and ourselves, and thereby eliminate a potential obstacle to conducting end-to-end WEA tests that advance several public interest goals. We seek comment on this proposal and on whether the same conditions that are appropriate for EAS tests are also relevant for such WEA system tests. We further propose that alerting authorities issue these WEA tests as "Public Awareness Tests" to make clear that the test messages will be sent to the public by default.[108]

36. We seek comment on the benefits and costs of this proposal. Would this amendment of our rules facilitate more seamless joint exercises of EAS and the WEA system?[109] Would they make the WEA system a more powerful tool for proactively warning the public in advance of emergencies, ultimately preparing them to take more effective protective actions in the event that an emergency actually occurs? We also seek comment on how this amendment of the rules may affect alert fatigue. Are the proposed rules restrictive enough to mitigate potential alert fatigue? Recognizing that alerting authorities may have overlapping jurisdictions (*e.g.*, a city, within a county, within a state), should we limit the number of tests to two per county (or other geographic area) per year, to ensure that alerting authorities coordinate with one another to prevent alert fatigue for their citizens? Are there any additional conditions or alternatives that could make WEA a more effective tool for raising public awareness about emergency situations likely to occur while mitigating the risk of alert fatigue?

C. Establishing a WEA Database to Promote Transparency about WEA Availability and Benchmark WEA Performance

37. We propose to modernize the WEA election process and facilitate access to WEA availability and performance information through the development of a Commission-hosted WEA Database. At present, to access information about WEA's availability in their jurisdictions, alerting authorities and the public must review all of the WEA election letters filed with the Commission. Even then, those letters are often unclear about whether a Participating CMS Provider participates in whole or in part and their level of support for WEA geographically and on different types of mobile devices. We anticipate that the WEA Database would be an interactive portal where CMS Providers submit information about the availability and performance of WEA on their networks, and where such information could be readily accessible to both alerting authorities and the public.

1. Reporting Information about WEA Availability

38. We propose to require all CMS Providers, irrespective of whether they elect to transmit WEA messages, to report their level of WEA participation in a WEA Database. In order for the WEA Database to be effective in providing a full understanding of WEA coverage, we propose the database should identify which CMS Providers offer WEA, in what geographic areas, and on which devices. In addition, this information must be current.

39. *Identify which wireless providers offer WEA.* We propose to require that CMS Providers identify whether they elect to participate in WEA in whole or in part, or whether they elect not to participate. If a CMS Provider elects to participate in part or not to participate at all, we propose that they

[108] *See* Appendix A.

[109] The Bureau has received requests for waiver to support end-to-end tests of WEA and the EAS in the past. *See e.g.*, *Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91 and 15-94, Order, DA 22-1359 (2022).

provide an explanation or basis for this decision using free form text. CMS Providers should submit their election in the WEA Database regardless of whether they have previously filed in the docket. We propose that CMS Providers should also identify the entities on behalf of which they are filing. We seek comment on this proposal. It is often difficult for the Commission and alerting authorities to know which service providers are participating in WEA because CMS Providers take inconsistent approaches to disclosing the names of subsidiary companies on behalf of which their election is filed, any "doing business as" names under which they are offering services that support WEA, and the names of Mobile Virtual Network Operators (MVNOs) and wireless resellers through which their network supports WEA.[110] Should this responsibility be limited to entities with which CMS Providers have a contractual relationship? Are there any other relationships a CMS Provider's WEA election should capture to better identify wireless providers' WEA participation status? This proposed requirement would make WEA elections more uniform and provide a more complete picture of WEA's availability nationwide. To ease the burden of this proposal, the WEA Database would leverage any relevant information that is available through existing Commission systems like the Commission Registration System (CORES).[111] We seek comment on the burdens such proposals would impose upon CMS Providers and on any alternative approaches that the Commission could take to accurately identify the universe of the entities that participate in WEA.

40. *Identify where WEA is offered.* We propose to require CMS Providers to disclose the extent to which they offer WEA in the entirety of their geographic service area. We seek comment on this proposal. When CMS Providers elect to transmit WEA messages "in part" today, those elections often provide little information about what "in part" means as a practical matter. For example, they rarely specify whether there are geographic areas excluded from their WEA coverage. This could lead to confusion about the extent to which the public receives WEA messages. This is problematic from the standpoint of an alerting authority trying to plan for how it will reliably communicate with the public during an emergency. For example, during this past wildfire season, alerting authorities and the Commission struggled to identify whether the non-delivery of WEA alert messages in New Mexico was due to service degradation or the Participating CMS Providers' choice not to transmit WEA alert messages in the affected counties.[112] Would information about the geographic areas where CMS Providers support WEA be helpful to alerting authorities during situations like the New Mexico wildfires?

41. For CMS Providers that report in the WEA Database that they are participating in WEA in whole, we propose to represent their geographic service area using the voice geographical information system (GIS) coverage area, which CMS Providers submit to the Commission as their mobile voice coverage area in the biannual Broadband Data Collection (BDC).[113] We believe that the voice channel coverage area is a conservative estimate of the control channel which is used to deliver the WEA coverage. The estimate is conservative because voice communication has a higher bandwidth requirement than data transferred over the control channel, resulting in a smaller coverage area than the control channel. We believe that this conservative estimate may be appropriate to avoid misleading

[110] Currently, some MVNOs have elected to transmit alert messages, but the Commission does not have election information for many others. *See* PS Docket No. 08-146, https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2208-146%22)).

[111] *See* Commission Registration System for the FCC, https://www.fcc.gov/licensing-databases/commission-registration-system-fcc (last visited Mar. 28, 2023).

[112] *See* Andrew Hay, *'Huge firefight' to defend New Mexico villages, city from blaze*, Reuters (May 2, 2022), https://www.reuters.com/world/us/residents-new-mexico-town-prepare-evacuate-amid-wildfire-2022-05-01/.

[113] Federal Communications Commission Broadband Data Collection Help Center, Formatting Mobile Voice Availability Coverage Maps, https://help.bdc.fcc.gov/hc/en-us/articles/6047464151195-Formatting-Mobile-Voice-Availability-Coverage-Maps (June 22, 2022).

consumers into thinking they will receive a WEA where they will not. We seek comment on this approach. For those CMS Providers that do not support WEA through their entire geographic service area, we propose to require them to submit a GIS polygon coverage area that most accurately represents their WEA coverage area. We seek comment on whether these proposals would represent a cost-effective and accurate approach to reporting WEA availability, in a manner that would be readily understood by other stakeholders. Do the cost savings for Participating CMS Providers attendant to using a voice coverage shapefile already on file with the Commission outweigh the potential public safety benefit of a more precise representation of a WEA coverage area? Would a source of geospatial data other than shapefile be either less burdensome to produce or more beneficial to alerting authorities? We seek comment on any alternative ways of reporting this information and their associated benefits and costs.

42. Does information about the geographic availability of WEA need to be supplemented with additional information about WEA delivery to be useful to alerting authorities? For example, because our WEA rules require Participating CMS Providers to support WEA for roaming subscribers, would it be a more helpful representation of a WEA coverage area if Participating CMS Providers submitted a shapefile describing their WEA coverage area and any additional areas where they have a roaming agreement with another Participating CMS Provider?[114] Do Participating CMS Providers have access to such information from roaming partners in the first instance? If not, we seek comment on whether to require Participating CMS Providers to provide a list of their roaming partners via the WEA database to allow the database to compile that coverage area information. Further, it is unclear from the record whether mobile assets (e.g., cells on wheels (COWs), cells on light trucks (COLTs)) deployed to compensate for cell site outages were provisioned into providers' WEA systems. During emergencies, cell facilities that normally would be capable of transmitting WEA messages to a certain geographic area might not be available to do so. Should CMS Providers who file reports in the Disaster Information Reporting System (DIRS) regarding a particular emergency also include information about whether any COWs and COLTs deployed support WEA?[115] We seek comment on the benefit to alerting authorities of knowing whether COWS/COLTS deployed in their area support WEA. Would the value of this information be enhanced if Participating CMS Providers also disclosed the location of those deployable assets? Should CMS Providers report if they do not support WEA when using certain network technologies (e.g., a CMS Provider sends WEA messages on its 5G network, but not its 3G network)? Are there other kinds of information about WEA availability that CMS providers should be required to report, and if so, how would that information assist alerting authorities in protecting the public? We also seek comment on how this information, if required, should be reported to ease burdens and promote uniformity in reporting. For example, for network technology information, should CMS Providers be presented with simple checkboxes to indicate whether they offer WEA on all deployed generations of wireless network technology or on all available deployable mobile assets? Should the Commission use Participating CMS Providers' technology specific shapefiles submitted as part of the BDC for this purpose?

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[114] *See* 47 CFR § 10.470.

[115] *See* FCC, Disaster Information Reporting System, https://www.fcc.gov/general/disaster-information-reporting-system-dirs-0 (last visited Mar. 3, 2023) (stating that DIRS activations typically precede an anticipated major emergency, like a major hurricane, or follow an unpredictable disaster and that the FCC announces DIRS activations through public notices and emails to DIRS participants). We note that with limited exceptions, reporting in DIRS is currently voluntary, although pending before the Commission is a proposal to make reporting mandatory by certain providers. *See Resilient Networks; Amendments to Part 4 of the Commission's Rules Concerning Disruptions to Communications; New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, PS Docket No. 21-346 and 15-80; ET Docket No. 04-35, Report and Order and Further Notice of Proposed Rulemaking (June 27, 2022); *see also The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, et al., WC Docket Nos. 18-143, 10-90 and 14-58, Report and Order and Order on Reconsideration, 34 FCC Rcd 9109, at para 138 (Sept. 30, 2019) (DIRS filing is mandatory for Stage 2 recipients of the Bringing Puerto Rico Together Fund and the Connect USVI Fund).

43. *Identify which devices support WEA.* Like geographic area, "in part" WEA elections rarely share information about the mobile devices that are capable of receiving WEA messages. While this information is provided by CMS Providers at the point of sale,[116] it is prohibitively difficult for alerting authorities to aggregate that information from all possible points of sale, including by third-party retailers. For this reason, we propose to require Participating CMS Providers to report in the WEA Database all mobile devices that the Participating CMS Provider currently offers for sale that are WEA-capable. We seek comment on this proposal. By collecting this information in a uniform way in a single database, we believe that alerting authorities will be better able to understand how WEA messages will be received by individuals in their jurisdiction and better able to determine if WEA is an appropriate tool for their emergency communications needs. For example, would this information help alerting authorities to understand the deployment status of new WEA capabilities, the availability of which may be dependent on Participating CMS Providers' and equipment manufacturers' decisions about whether to support deployed mobile devices with software updates? Most Participating CMS Providers do, though, maintain public online information relating to device WEA capabilities. How can we avoid creating confusion in light of the already existing public information? We note that our proposal, if adopted, would not shed light on the WEA capabilities of the installed base of mobile devices that connect to the Participating CMS Provider's network but are not sold by the Participating CMS Provider at the time of reporting. Does this create a predictable gap in alerting authorities' and the Commission's understanding of WEA's availability? How could Participating CMS Providers provide alerting authorities and the Commission with visibility into WEA capabilities of the mobile devices operating on the Participating CMS Provider's network but that they do not sell? Do all versions of a given make and model of mobile device have the same WEA capabilities, irrespective of where they are sold? Or, does a mobile device's WEA capabilities depend on firmware specific to Participating CMS Providers? We seek comment on any alternative approaches that might further reduce reporting burdens. We particularly encourage commenters to address other ways the Commission may leverage data CMS Providers already submit to the Commission to alleviate any burden attendant to reporting this information.

44. To modernize our rules and better support this proposed reporting requirement, we propose to update the definition of what constitutes a "WEA-capable mobile device." We observe that as WEA's capabilities have evolved over the last several years, the definition of what is considered a WEA-capable mobile device has not evolved with it. As a result, mobile devices have continued to be considered "WEA-capable" even if they do not support the capabilities that have become central to WEA's effectiveness, such as supporting a 360-character message length or the inclusion of URLs. We are concerned that if the term "WEA-capable" continues to include any mobile device with at least partial WEA functionality, consumers might be confused and mistakenly believe that all "WEA-capable" mobile devices offer all WEA capabilities. Accordingly, we propose to amend our rules to define a "WEA-capable mobile device" as a mobile device that is compliant with the Part 10, Subpart E equipment requirements, and to make explicit that WEA-capable mobile devices must support the alert message requirements in Part 10, Subpart D (e.g., support for the alert message classifications, national alert prioritization, WEA message elements, the 360-maximum character limit, geo-targeting, roaming, and support for both English- and Spanish-language alerts).[117] We seek comment on this proposal. We also seek comment on any alternative approaches.

45. The Commission's rules currently define a "mobile device" for the purpose of WEA as "[t]he subscriber equipment generally offered by CMS providers that supports the distribution of WEA Alert Messages."[118] We observe that this definition does not account for mobile devices that do not

[116] *See* 47 U.S.C. § 1201(b)(1) (requiring CMS Providers who elect, in whole or in part, "not to transmit emergency alerts to subscribers to provide clear and conspicuous notice at the point of sale of any devices for which its commercial service is included, that it will not transmit such alerts via the service it provides for the device").

[117] 47 CFR § 10.400 *et seq.*

[118] *See* 47 CFR § 10.10(j).

support WEA messages. Accordingly, we propose to update the definition of a "mobile device" for the purpose of WEA as "any customer equipment used to receive commercial mobile service." We seek comment on this proposal. We believe that this amended definition appropriately acknowledges the possibility that a mobile device does not support WEA, while also being broad enough to potentially include devices that are commonly considered to be mobile devices, such as tablets, wearables, or other non-smartphone devices.[119] This amended definition may also increase access to WEA messages by individuals with disabilities who frequently rely on these devices for connecting to wireless services.[120] Individuals with mobility or dexterity disabilities may find smaller devices too difficult to use; thus, these devices may accommodate those with such disabilities.[121] We seek comment on whether these devices are capable of receiving WEAs. Would providing WEA to data-plan-enabled tablets and other devices that receive commercial mobile service allow individuals with disabilities (e.g., individuals that lack the manual dexterity required to manipulate a smaller device) to receive WEA messages for the first time?[122]

46. *Provide current information.* We propose to require that CMS Providers update the WEA Database within 30 days of a change in their WEA participation. Currently, our rules do not require CMS Providers to update their WEA election status when the nature of their WEA service profile changes and, in fact, most CMS Providers have not updated their election to transmit alert messages since filing their initial election in 2008. As a result, we are concerned that many WEA elections could now be outdated and do not accurately reflect WEA's current availability. We propose that a 30-day timeframe reflects an appropriate balance between affording CMS Providers adequate time to submit an update and providing stakeholders current information on WEA availability. We seek comment on this proposal. Rather than requiring that CMS Providers update their WEA elections within 30 days of a change in their participation, should updates be required periodically, irrespective of updates based on a change in their participation? If so, how often should those updates be required? The BDC requires filers to update their filings biannually (i.e., twice each year).[123] Would this biannual update approach work for WEA or would this result in alerting authorities frequently accessing outdated information in the WEA Database that undermines their emergency communication efforts? Alternatively, if changes to WEA availability are made infrequently, would a biannual filing be unnecessary?

2. Improving WEA's Performance to Make it a More Effective Life-saving Tool

[119] *See id*; *also cf. Amendment of the Commission's Rules Governing Hearing Aid-Compatible Mobile Handsets*, WT Docket No. 07-250, Policy Statement and Second Report and Order and Further Notice of Proposed Rulemaking, 25 FCC Rcd 11167, 11192-11200 paras. 74-93 (2010) (defining a mobile device for the purpose of hearing aid compatibility as "customer equipment used to provide wireless voice communications over any type of network among members of the public or a substantial portion of the public via a built-in speaker where the equipment is typically held to the ear").

[120] *See* Telecommunications for the Deaf and Hard of Hearing, Inc., et al., Comments to the Notice of Proposed Rulemaking, PS Dockets No. 15-94 and 15-91, at 7 (filed May 9, 2016).

[121] *See, e.g., Implementation of Sections 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications and Video Advancement Act of 2010,* CG 10-213, Biennial Report to Congress, DA 22-1075, para. 11 (Oct. 11, 2022) (discussing new features that allow persons with mobility disabilities to control wireless devices with facial gestures); *id.*, para. 33 (describing Requests of Dispute Assistance filed by persons who have difficulty holding or operating mobile phones).

[122] *See* Telecommunications for the Deaf and Hard of Hearing, Inc., et al., Comments to the Notice of Proposed Rulemaking, PS Dockets No. 15-94 and 15-91, at 7 (filed May 9, 2016).

[123] Federal Communications Commission, Broadband Data Collection, *Data Specifications for Biannual Submission of Subscription, Availability, and Supporting Data* at 7 (Feb. 7, 2023) https://us-fcc.app.box.com/v/bdc-availability-spec.7, 2023) https://us-fcc.app.box.com/v/bdc-availability-spec.

47. To improve the effectiveness of WEA, and consistent with the recommendations of the GAO,[124] we propose to establish WEA performance minimums that Participating CMS Providers must satisfy for every WEA message they send. Press reports indicate that, due to deficiencies in Participating CMS Providers' implementation of WEA, many people are not receiving critical, timely information during life-threatening and time-sensitive emergencies, such as earthquakes or wildfires, while others are receiving information that is irrelevant to them, which degrades the value of the WEA system as a whole.[125] When people receive alert messages not relevant to their geographic area, they may learn to ignore the WEA messages they receive or they may opt out of receiving WEA messages entirely. It is our understanding that inconsistent WEA performance may have led some emergency management agencies to delay becoming authorized as alerting authorities and may have caused others to limit their use of WEA.[126] Are there other reasons why emergency management agencies may delay becoming authorized as alerting authorities or otherwise limit their use of WEA, such as the costs of establishing and maintaining alerting capabilities with third party vendors? We seek comment on these issues.

48. *WEA Reliability*. To ensure that all WEA-capable mobile devices within a target area receive alerts intended for them, we propose to require Participating CMS Providers to meet a minimum requirement for the reliability with which they deliver WEA messages to their subscribers. We note that our rules already require WEA messages to be delivered to 100 percent of the target area.[127] We are concerned that this requirement is not sufficient to ensure that the public can rely on their Participating CMS Provider to deliver to them promptly the WEA messages intended for them every time, including when they enter the alert's target area after the alert's initial transmission. We seek comment on an improvement to our existing minimum reliability requirement that is technically feasible and generally achievable across circumstances. For example, we seek comment on whether Participating CMS Providers should deliver WEA messages to all WEA-capable mobile devices that are within an alert message's target area at the time the Participating CMS Provider initially transmits the message. We also seek comment on whether Participating CMS Providers should deliver WEA messages to all WEA-capable mobile devices that enter the alert message's target area after the initial transmission, while the alert message is active. This approach would go one step further than our existing requirement by ensuring that the messages delivered to that area to be presented to the subscriber, regardless of whether

[124] FCC, Emergency Alerting (103277) Corrective Action Plan at 2 (2020), https://www.gao.gov/products/gao-20-294.

[125] *See* Brianna Sacks, *A dangerous side of America's digital divide: Who receives emergency alerts*, Washington Post (Dec. 21, 2022), https://www.washingtonpost.com/climate-environment/2022/12/21/weather-alerts-storms-disasters/; *see also* Brandon Behle, et al., *Didn't get the nationwide alert? This might be why, and here's how to fix it*, ABC (Oct. 3, 2018), https://abc7news.com/presidential-alert-system-what-is-a-emergency/4405202/; Beck Metrick, *Did you get an emergency alert from Dauphin County? Here's Why,* PennLive (Jan 6, 2023), https://www.pennlive.com/news/2023/01/did-you-get-an-emergency-alert-from-dauphin-county-heres-why.html; *Utah discontinues wireless emergency alerts at state lines*, Utah.gov (Apr. 13, 2020).

[126] *See*, *e.g.,* Who's Using IPAWS – And Who Could Be and Isn't, HyperReach (Oct. 30, 2020), https://www.hyper-reach.com/whos-using-ipaws-and-who-could-be-and-isnt/ ("("14 states have an authorized agency at the county level among at least half of their counties. That means that 36 states have less than half their counties using IPAWS. There are 17 states where less than a quarter of county authorities are approved to use IPAWS. Municipal use of IPAWS is growing but is still quite small. There are now 6 states (NH, NV, CA, MA, NM and VA) with 5%+ of municipalities authorized for IPAWS, compared to just 2 three years ago. But that obviously means that the vast majority of cities and towns are not using this tool."); Steve Staeger & Sam Bergum, *Emergency Alert Systems Used Inconsistently Across Colorado Counties*, 9News (July 28, 2022), https://www.9news.com/article/news/special-reports/9news-originals/colorado-emergency-alert-systems/73-efbe999b-fcfb-4259-a473-9ed81e89f53f; Steve Staeger & Sam Bergum, *Limitations with Wireless Alert System Complicate Evacuations*, 9News (Feb. 6, 2023), https://www.9news.com/article/news/local/wildfire/limitations-wireless-alert-system/73-528593e2-5ffc-4aa3-a636-8e4f7ce5a0ad.

[127] 47 CFR § 10.450(a).

the subscriber is in the target area at the time the alert is transmitted or enter the target area later, provided the alert remains active. Are there any technical challenges that may prevent all devices from receiving and presenting alerts? How can those challenges be addressed?

49. *WEA Accuracy.* The Commission's WEA rules require Participating CMS Providers to deliver WEA messages with no more than 0.1 of a mile overshoot unless, for example, mobile devices have location services disabled or legacy networks and devices could not be updated to support geofencing, in which case Participating CMS Providers are permitted to send an alert to their best approximation of the target area.[128] We seek comment on whether these exceptions to the Commission's existing accuracy requirement remain necessary and, if not, we propose to sunset them. For example, we seek comment on whether WEA-capable mobile devices located more than 0.1 miles outside of a targeted area should suppress alerts for that area, regardless of whether its location services are enabled. We are concerned that this exception may be resulting in considerable WEA overshoot.[129] We seek comment on the extent to which this exception is still necessary for modern WEA-capable mobile devices. Since the Commission adopted its enhanced WEA geo-targeting requirement, industry WEA stakeholders have changed the WEA functionality of mobile devices from being enabled by software to being enabled by firmware. As we have seen in other public safety contexts, even when a consumer disables location services, a CMS Provider may still access that data when necessary (e.g., to support 9-1-1 calling).[130] We seek comment on whether we should require location services to always be enabled for WEA on WEA-capable mobile devices, even if they are disabled for other uses.

50. We also seek comment on whether to eliminate the exception to those same geotargeting rules that exempts legacy networks and mobile devices that cannot be updated.[131] Under this approach, mobile devices could not be considered "WEA-capable" unless they can comply with the geotargeting requirements. We believe this would be consistent with our proposal, discussed in greater detail above, to update the definition of "WEA-capable mobile device" to only include devices that support the alert message requirements in Part 10, Subpart D. We seek comment on this approach, and the likely effect of churn. We seek comment on whether any legacy CMS network facilities cannot be updated to support geofencing. If so, why? On what timeframe do Participating CMS Providers intend to remove these legacy network elements from their facilities?

51. We seek comment on other reasons why WEA-capable mobile devices may be falling short of meeting our existing geo-targeting requirements. Are these shortfalls related to the amount of time mobile devices are allowed to calculate their location before displaying the alert? Why might a mobile device be unable to calculate its location for the purposes of WEA within the permissible period, even when the device's location services are turned on and available to the WEA firmware? Is there another issue or problem with the geofencing solution being used in WEA-capable mobile devices? Alternatively, we invite industry stakeholders to submit test results or studies demonstrating that their devices strike the correct balance between presenting WEA messages in a timely and accurate manner.

52. *WEA Speed.* We propose to require Participating CMS Providers to satisfy minimum speed requirements, to ensure WEA messages are displayed as swiftly as possible during emergencies

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[128] *Id.*

[129] *See id.*

[130] *Manage your Android device's location settings, https://support.google.com/android/answer/3467281?hl=en#:~:text=To%20open%20your%20device's%20Settings, the%20top%20of%20the%20screen.&text=Safety%20%26%20emergency.,Location%20Service%20on%20or%20off (last visited Apr. 5, 2023); Apple's iOS 12 securely and automatically shares emergency location with 911, (Jun. 18, 2018), https://www.apple.com/newsroom/2018/06/apple-ios-12-securely-and-automatically-shares-emergency-location-with-911/*

[131] 47 CFR § 10.450(a).

where every second counts. We seek comment on a minimum speed requirement that is technically feasible and generally achievable across circumstances. For example, we seek comment on whether Participating CMS Providers should present alerts within five minutes on 99% of WEA-capable mobile devices that have not opted out from receiving the alert and are within the target area? Should we measure 5 minutes as the amount of time between receipt of the alert message at the Participating CMS Provider alert gateway and presentation of the alert on the device?[132] We note that the ATIS WEA geofencing standard allows mobile devices to take up to four minutes and fifteen seconds to determine their location before defaulting to displaying the alert.[133] To the extent that some devices may need additional time to confirm their locations, we believe that a requirement of five minutes provides sufficient time to do so. We believe that this approach would acknowledge that there may be localized complexities in the radio frequency environment that may prevent some devices from receiving the first transmission of an alert.[134] Is five minutes the appropriate speed requirement for WEA, and if not, what should that requirement be? Are there any circumstances that may result in significant delay in the time between the transmission of an alert by a Participating CMS Provider and presentation by a WEA-capable mobile device? If so, how should we adjust our WEA speed metric to compensate? On the other hand, should we require more than 99% of opted-in WEA 3.0-capable devices to present WEA alerts within five minutes, and if so, why? Alternatively, we seek comment on the percentage of mobile devices that may be able to display an alert within one second. Would one second from receipt at the Participating CMS Provider alert gateway be an appropriate benchmark for the percentage of mobile devices that already have a location determination at the time they receive a WEA and therefore need to engage in limited additional processing before presenting the alert message? How else could we benchmark WEA's speed to reflect latencies between receipt between Participating CMS Providers'

53. We seek comment on the public safety benefits of requiring Participating CMS Providers to optimize their network's performance to satisfy these performance minimums. Would these performance minimums make WEA a much more effective and dependable emergency communication tool? Would the adoption of these performance minimums cause more alerting authorities to use WEA, or motivate more emergency management agencies to become alerting authorities? If these performance metrics are not the right minimum benchmarks for WEA's performance, how should the Commission benchmark WEA's reliability, accuracy, and speed? We seek comment on any additional WEA performance data regarding how the public is currently receiving alerts and how that data should affect the adoption of minimum WEA performance minimums.

54. *Other WEA Performance Improvements.* As an alternative, or in addition to ensuring WEA's minimum performance as described above, we seek comment on whether to require Participating CMS Providers to take specific measures to improve WEA's reliability. Should we require Participating CMS Providers to retransmit alert messages at one-minute intervals throughout an alert's active period, as AT&T currently does?[135] Other major Participating CMS Providers only broadcast an alert message a single time or a limited number of times after a delay of at least several minutes.[136] We are concerned that this means that people entering the target area after the initial transmission may not receive the alert

[132] For devices that enter a targeted geographic area after the initial transmission of the alert, we propose that the five minutes be measured from the time that they entered the target area.

[133] *See* The Alliance for Telecommunications Industry Solutions, Wireless Emergency Alerts (WEA) 3.0 Device-Based Geo-Fencing at 10 (2019) (providing standards that permit Participating CMS Providers to choose to wait for any amount of time between zero seconds and 255 seconds (4 minutes and 15 seconds), before giving up on obtaining a location fix on the device and defaulting to presenting the alert message).

[134] *See CSRIC VIII Report on WEA Performance Reporting* at 25 (noting, e.g., that users may turn on devices for the first time while the WEA is active).

[135] FCC, Report: August 11, 2021 Nationwide WEA Test at 18-19 (2021) (2021 WEA Test).

[136] *Id.*

in a timely manner. We seek comment on whether this requirement would improve WEA's reliability, particularly among people that enter an alert's target area during an alert's active period, but after Participating CMS Providers' initial transmission of the alert. We also seek comment in the alternative on whether to require Participating CMS Providers to take specific measures to improve WEA's accuracy. Pursuant to WEA standards, receipt of a WEA message does not necessarily prompt geofencing-capable mobile devices to obtain a fresh location fix. Receipt of a WEA message prompts a geofencing-capable mobile device to determine its location, but if the mobile device has a stored record of its location, the mobile device may use that record rather than obtain a fresh location fix from the network, even if the location information stored on the mobile device is old and inaccurate. We seek comment on whether this is a deficiency in the standard that predictably leads the location information available to WEA to be less accurate than our 0.1 of a mile requirement. Should the message that Participating CMS Providers send to mobile devices to trigger them to obtain a location fix for the purpose of WEA geofencing prompt mobile devices to obtain a fresh location if the location fix that it has is not sufficiently accurate or fresh to comply with our existing WEA accuracy requirement? From where should mobile devices seek to retrieve this location fix (e.g., GPS, A-GPS, device-based hybrid location) to best balance potentially competing concerns about accuracy and network impacts? What other potential technical measures could Participating CMS Providers implement to optimize the WEA system's reliability, accuracy, or speed?

3. Reporting Information about WEA's Performance

55. To help measure and enforce compliance with our proposed performance requirements, as well as to help public safety stakeholders understand how WEA works in their respective areas, we propose that Participating CMS Providers submit data to the Commission regarding WEA's reliability, accuracy and speed using the WEA Database. In doing so, we also address and build on the record developed in our 2022 Further Notice of Proposed Rulemaking (*2022 FNPRM*), where public safety commenters argue that performance reporting would directly assist them in using WEA effectively, and that reliability, speed, and accuracy are the most important performance metrics on which Participating CMS Providers should report.[137]

56. For each of the performance areas (reliability, accuracy, and speed), we seek comment on the data set that should be submitted to the Commission, as well as the source of data from which the data set should be derived. In each instance, data submitted should be sufficient to demonstrate compliance with the Commission's performance requirements across a variety of circumstances that reflect real-world conditions. We seek comment on whether this necessitates collecting raw data representing performance on individual mobile devices, or whether there are alternative viable ways to capture WEA performance as experienced by subscribers. What measures would handset manufacturers and OS vendors need to take to capture, store, and provide such information? What are the privacy implications of this proposal for users? Does this proposal raise implications for device manufacturers' security and privacy policies or for device costs? Can CMS Providers access or collect raw data at the device level? Does current technology allow for device manufacturers and Participating CMS Providers to connect location data to a customer's decision to opt-in to WEA participation? We seek comment on whether Participating CMS Providers should submit aggregated data and percentages on the performance of mobile devices as a whole for all alerts, or whether it is feasible to collect performance information from a sample, such as a randomized portion of all mobile devices or data about certain specified alerts. If commenters favor reporting performance information expressed as a percentage, we seek comment on the proposed equations by which Participating CMS Providers would calculate WEA's reliability, accuracy, and speed,

[137] *See*, *e.g.*, APCO International, Comments, PS Docket Nos. 15-91 and 15-94, at 2 (Rec. Jun. 21, 2022) (APCO Comments) ("APCO agrees that gaining insight into the reliability, speed, and accuracy of WEA will help promote its use and effectiveness."); NOAA/National Weather Service, Comments, PS Docket Nos. 15-91 and 15-94, at 2 (Rec. Jun. 21, 2022) (NWS Comments) ("objective information on WEA performance from the wireless industry would be very helpful to the local warning program and formal service assessment.").

as it would be important to adopt uniform equations across all providers.

57. We anticipate that data can be gathered at the device level that is derived from data elements that Participating CMS Providers can potentially log, such as unique alert message identifiers, the geographic target area, and the opt-in status of the device. We seek comment on the following *Figure 2*, which depicts our assessment of where data elements relevant to WEA performance could be available for logging by Participating CMS Providers and WEA-capable mobile devices.

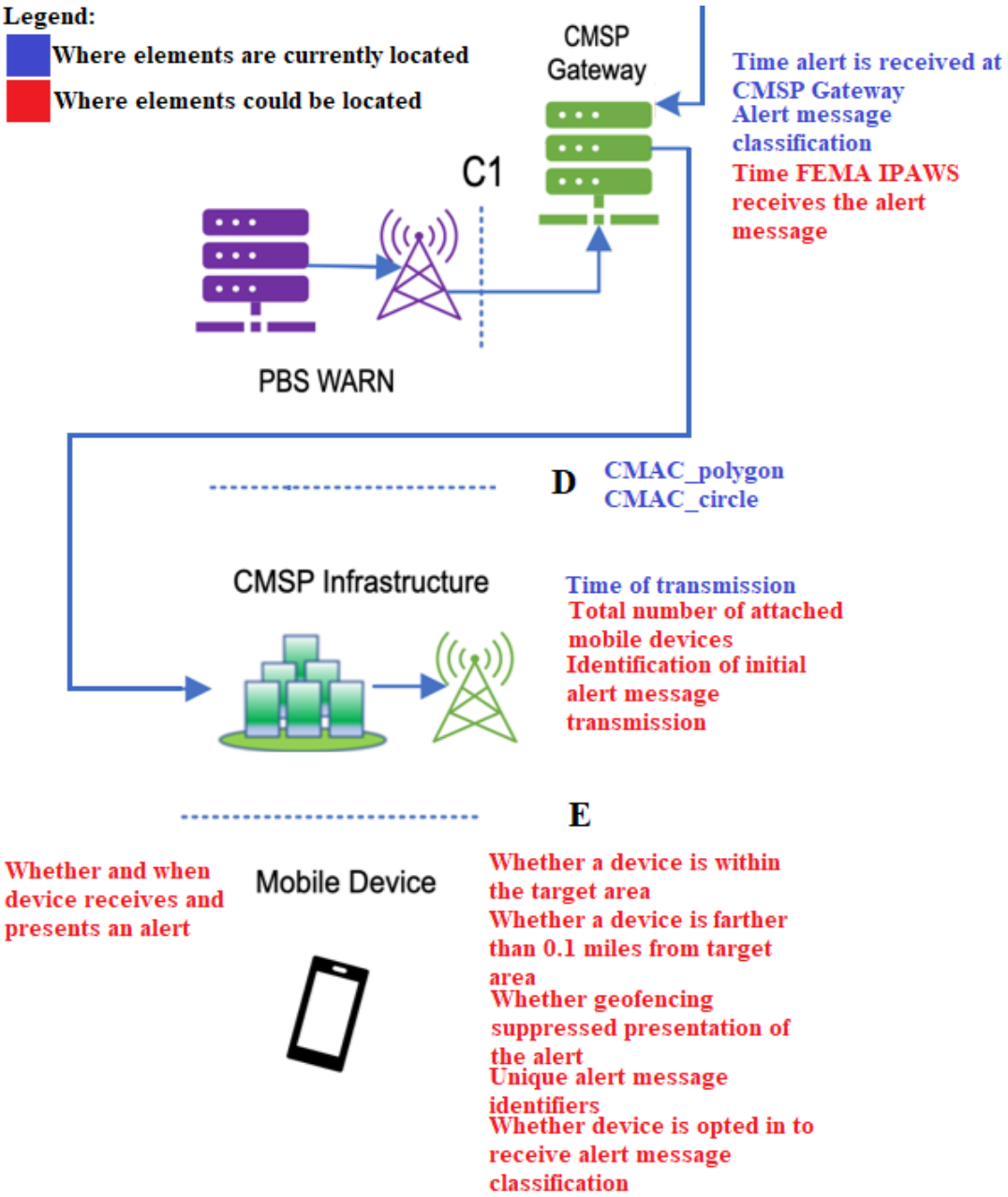


Figure 2: WEA Performance Reporting Architecture and WEA Data Elements

Does *Figure 2* accurately capture the data elements and their respective locations where Participating CMS Providers could potentially log them to measure WEA's performance? Is it technically feasible for Participating CMS Providers to log each of the data elements that currently reside in their network during WEA transmission, because Participating CMS Providers already log many such data elements under our rules?[138] Is it technically feasible for WEA-capable mobile devices to receive a firmware update to enable them to log those data elements described above that are uniquely available at the mobile device, because mobile devices already log data about the tasks they perform as part of routine device processes? We seek comment on potential changes to standards and software that Participating CMS Providers, handset manufacturers, and handset OS vendors would need to complete to comply with this proposal, if adopted. We seek comment on any refinements that would make the collection of WEA performance data less burdensome and/or more effective.

58. We seek comment on how these data elements, as well as other information available to Participating CMS Providers, can be used to demonstrate WEA's performance. One approach would be for Participating CMS Providers to submit data to the Commission's WEA Database regarding the number of WEA-capable mobile devices located inside an alert message's geographic target area that are capable of receiving an alert and opted into sharing WEA performance information; the number of WEA-capable mobile devices located outside an alert message's geographic target area that are capable of receiving an alert (e.g., mobile devices that meet the foregoing criteria and are connected to the cell facility that initially transmits the WEA message); the number of such devices located inside and outside the area that are opted into presenting the alert; and the number of those devices inside and outside of the area that presented the alert. Could the Commission use this data to calculate the percentage of devices in the target area that succeeded at displaying or suppressing an alert? For measuring WEA's speed, one approach would be for Participating CMS Providers to also submit to the Commission's WEA Database the times at which mobile devices received and presented an alert, as well as the time when the alert was received at a Participating CMS Provider's alert gateway. Could the Commission use this data to calculate WEA's speed? Are there any other ways the Commission should use these or other data elements to measure WEA performance?

59. Would Participating CMS Providers face technical challenges in collecting or reporting this information? While CSRIC VIII states that the total number of devices in the alert area is unknown and "cannot be obtained without a complete redesign of existing cellular technology," we observe that a cell site can generate a record, at any given time, of how many mobile devices are attached to it.[139] We seek comment on this assessment. We also seek comment on CSRIC VIII's view that it is not possible for Participating CMS Providers to know the number of devices in a targeted area that have opted into sharing WEA performance data.[140] Is CSRIC VIII correct? What steps could be taken to improve the ability to Participating CMS Providers to obtain this information? CSRIC VIII finds that WEA-capable mobile devices currently do not know whether they are receiving the first WEA broadcast or a later WEA

[138] 47 CFR § 10.320(g).

[139] *See CSRIC VIII Report on WEA Performance Reporting* at 23. When a mobile device connects to a cellular facility, it sends a signal that identifies the device to the network. This signal includes information such as the device's International Mobile Equipment Identity (IMEI) number, its location, and other identifying information. Using this information, the cellular network can determine the number of mobile devices attached to a particular cell facility at any given time and their location. Indeed, Participating CMS Providers already can generate and produce an account of the mobile devices attached to cell facilities at a given point in time for law enforcement purposes. Jennifer Lynch, *Massachusetts's Highest Court Upholds Cell Tower Dump Warrant* (May 27, 2022), https://www.eff.org/deeplinks/2022/05/massachusetts-highest-court-upholds-cell-tower-dump-warrant#:~:text=A%20%E2%80%9Ctower%20dump%E2%80%9D%20occurs%20when,that%20area%20at%20the%20time; *see also Commonwealth v. Perry*, 489 Mass. 436 (Mass. 2022).

[140] *CSRIC VIII Report on WEA Performance Reporting* at 24.

broadcast.[141] Could Participating CMS Providers take measures to enable devices to identify the initial transmission?

60. We seek comment on the feasibility of measuring WEA's performance using staged devices, as contemplated by CSRIC VIII.[142] Specifically, could Participating CMS Providers capture actionable information about WEA's performance by conducting regular testing using devices positioned in and around the target area of a Required Monthly Test (RMT)?[143] Could such a testing and performance measurement requirement also leverage State/Local WEA Tests or leverage alerting authority and Participating CMS Provider volunteers? How would the resulting data differ in quality from data derived at the device level from real WEA activations? Would there be any limitations to the public safety benefits of measuring performance using staged devices? We seek comment on whether there would be any cost or time savings attendant to this approach if Participating CMS Providers had to update network and mobile device firmware to measure WEA's performance using staged devices.

61. We also seek comment on any privacy implications if information is collected at the mobile device level. In response to the *2022 FNPRM*, some commenters raise consumer privacy concerns about the nature of the data that Participating CMS Providers would collect from mobile devices to support a reporting requirement, especially location data.[144] We believe that Participating CMS Providers would not need to collect any personally identifiable information (PII) or customer proprietary network information (CPNI) to provide device-level data.[145] Specifically, Participating CMS Providers would not have to collect precise location information. Rather, each WEA-capable mobile device would potentially have to log and provide to the Participating CMS Provider only whether the device was located inside the target area or farther than 0.1 miles from the target area. We seek comment on this view. We also note that CMS Providers already have access to location information about their customers' mobile devices by virtue of their provision of service.[146] If, contrary to our expectations, CMS

[141] *Id.* at 25.

[142] *Id* at 31-34.

[143] *Id.* at 31-32; 47 CFR § 10.350(a).

[144] AT&T Comments at 8-9; ATIS Comments at 11-12; CTIA Comments at 2; NCTA Reply at 3; T-Mobile Comments at 5; Verizon Reply at 1.

[145] PII is defined as "information that can be used to distinguish or trace an individual's identity, either alone or when combined with other information that is linked or linkable to a specific individual." Office of Management and Budget, Memorandum for Heads of Executive Departments and Agencies, Preparing for and Responding to a Breach of Personally Identifiable Information, M-17-12, at 8 (2017), https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/memoranda/2017/m-17-12_0.pdf (OMB M-17-12); see also OMB, to the Heads of Executive Departments and Agencies, Managing Information as a Strategic Resource, Circular No. A-130, Section 10(a)(57) (2016), https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A130/a130revised.pdf. "Because there are many different types of information that can be used to distinguish or trace an individual's identity, the term PII is necessarily broad"; it requires an "assessment of the specific risk that an individual can be identified using the information with other information that is linked or linkable to the individual." OMB M-17-12, at 8. Wireless carriers have access to "highly sensitive" PII about their customers, "especially when location data [are] combined with other types of data." *E.g.*, Letter from Jessica Rosenworcel, Chair, FCC, to John Stankey, Chief Executive Officer, AT&T Services, Inc. (July 19, 2022), https://www.fcc.gov/document/rosenworcel-probes-mobile-carriers-data-privacy-practices.

[146] Letter from Joan Marsh, Executive Vice President, Federal Regulatory Affairs, AT&T, to Jessica Rosenworcel, Chairwoman, FCC, at 2, 5 (filed Aug. 3, 2022) ("AT&T Mobility collects network location information from the cellular towers used to power AT&T Mobility's wireless network . . . software, developed and owned by AT&T, is embedded in the firmware of Android devices by original equipment manufacturers . . . collects device diagnostic and location data on a passive basis . . . including latitude/longitude information"); Letter from Kathleen Ham, Senior Vice President, Government Affairs, T-Mobile, to Jessica Rosenworcel, Chairwoman, FCC, at 2-3 (filed Aug. 3, 2022) ("Like all wireless providers, T-Mobile (including Metro) collects several different types of location

(continued….)

providers were required to collect precise location information to satisfy WEA reporting obligations, we would require CMS providers to protect that information subject to the same statutory and regulatory duties that apply to the most sensitive CPNI.[147] We seek comment on this approach. We also seek comment on the other specific data elements that CMS Providers would need to collect to satisfy their reporting obligations and the extent to which the information types collected could be minimized to protect consumer privacy.

62. To further safeguard consumer privacy, in the event we were to proceed with a device-level approach, we propose that Participating CMS Provider should offer subscribers the ability to opt out of participating in the collection of information necessary to measure WEA's performance. We believe that Participating CMS Providers could enable this consumer choice by adding a simple, binary toggle switch to the existing WEA settings menu. We note that, by comparison, CSRIC VIII examines a method of automatically collecting WEA performance data from mobile devices whose users have opted in to share WEA performance analytic data with their wireless provider.[148] Should we affirmatively prohibit Participating CMS Providers from collecting or using precise mobile device location information or any PII or CPNI for purposes of reporting this information to the Commission? Should we require Participating CMS Providers to timely and securely destroy any data gathered solely for the purpose of this collection? Should the mobile devices, Participating CMS Providers, or the WEA Database perform functions to further anonymize the data collected? We seek comment on other potential privacy impact mitigations. Our intent is to ensure that any approach to collecting performance data would not change wireless providers' existing access to mobile device location data or change the compliance status of their existing information collections under applicable privacy laws and regulations. We seek comment on any refinements to our proposals that would further this goal.

63. We seek comment on any alternative approaches to WEA performance reporting. For example, CSRIC VIII also recommends that the FCC consider a requirement for an automated email to convey WEA performance reporting information from Participating CMS Providers to an alerting authority or a centralized reporting location for each sent WEA.[149] We seek comment on the utility of WEA performance information communicated by email directly to alerting authorities, either in addition or as an alternative to a WEA database. CSRIC VIII recommends that the details of this approach be worked out between alerting authorities, PBS, and Participating CMS Providers.[150] We encourage WEA stakeholders to submit a detailed proposals of how this alternative approach could work in practice.

64. *Reporting timeframe.* In what timeframe should Participating CMS Providers collect and submit WEA performance data to the WEA Database? To reduce the risk of wireless service performance degradation during an emergency, should Participating CMS Providers collect and report WEA performance data sufficiently outside of any actual activation of WEA? For example, Participating

(Continued from previous page)
information . . . T-Mobile can access the current location of a handset to provide the estimated longitude and latitude . . . in response to either a customer placing a call or sending a text message to 911"); Letter from William H. Johnson, Senior Vice President, Federal Regulatory & Legal Affairs, Verizon, to Jessica Rosenworcel, Chairwoman, FCC, at 2-3 (filed Aug. 3, 2022) ("Verizon Wireless collects the cell site and sector within our network that a mobile device connects to and generates other information regarding the mobile device's relative position to the cell site . . . Verizon Wireless has a small number of Verizon-branded applications for consumer mobile devices that obtain express customer permission to collect device location data . . . [t]his data may be as specific as . . . latitude/longitude coordinates."); *CSRIC VIII Report on WEA Performance Reporting* at 34-35 (noting alert originators view that device location data is already known).

[147] *See* 47 U.S.C. § 222; 47 CFR part 64 subpt. U.

[148] *CSRIC VIII Report on WEA Performance Reporting* at 21.

[149] *Id.* at 34.

[150] *Id.*

CMS Providers could submit data to the WEA Database within 24 hours of the issuance of the WEA message or State/Local WEA Test to which the performance data pertains. Would it be feasible for Participating CMS Providers to delay collecting WEA performance information until off-peak network hours? CSRIC VIII raises concerns, however, that "[e]ven delayed automated reporting, triggered at a later time, carries that possibility of localized congestion during the reporting period."[151] What timeframe would strike the right balance between timely performance reporting that provides relevant, actionable information, and the need to protect networks from congestion during actual emergencies?

4. Establishing a WEA Database

65. *Data submission.* We seek comment on the most cost-effective mechanism for CMS Providers to submit WEA elections and performance information into the WEA Database, while minimizing burdens on CMS Providers. We propose that WEA elections and WEA performance data be filed electronically using a web-based interface and, if feasible, an application programming interface (API). In addition to an API, what other tools or features should we consider when designing the data submission elements of the WEA Database to ease reporting burdens and improve efficiency? For example, would Participating CMS Providers prefer to submit information regarding the WEA-capable mobile devices they support either through a file upload or through a form, or should both options be available?

66. *Promote stakeholder understanding.* To promote transparency and address alert originators' need to better understand WEA performance in their respective areas, we propose to enable the WEA Database to provide information about WEA availability and performance. With respect to WEA availability information, we seek to ensure that the public has access to information about which service providers offer WEA, in which locations, and on what devices, so they are empowered to make the right decisions for their unique needs when they choose a mobile device and service plan. We seek comment on this proposal, and on whether the use of the WEA database is the most effective manner to convey this information.

67. We also seek comment on how the WEA Database can best meet consumers' and alerting authorities' need for information about WEA's performance. To maximize relevance for alert originators, we propose to provide performance data expressed as percentages of mobile devices satisfying our reliability, accuracy, and speed performance standards, and to provide this information on a per provider and per geographic area basis. We seek comment on this approach. For example, with respect to reliability, we propose to provide the percentages of devices that succeeded and failed at presenting the alert. We expect this would help alerting authorities better understand how many people within their jurisdictions would receive an alert, which would inform their decisions about how to use WEA in conjunction with other emergency communication tools. For accuracy, we propose to provide the percentages of devices outside of the geographic target area that failed to suppress the alert. We expect this would help alerting authorities better understand the extent of WEA message overshoot, which we expect would inform their future decisions about how to best target their alerts. For speed, we propose to provide the percentiles of time that CMS Providers take to both ensure an alert's receipt as well as the alert's presentation on mobile devices, following the CMS Provider's receipt of the alert at their alerting gateway (i.e., the 10^{th}, 25^{th}, 50^{th}, 90^{th}, and 99^{th} percentile time figures). We expect this would help alerting authorities better understand how quickly their alerts reach the public, which would inform their future decisions about the optimal times to send alerts and whether delays in the delivery of those alerts warrant the supplementary use of other emergency communication tools. We propose that alerting authorities be able to use the WEA Database to see WEA's performance both for their own activations and nationwide so that they can better contextualize any performance issues they may experience. We believe this approach would provide up-to-date information about WEA and thereby greatly improve alerting authorities' visibility into WEA. The database would allow alerting authorities to better

[151] *Id.* at 30.

understand WEA's reach when planning whether and how to use WEA during emergencies, thus increasing its value as a tool to protect life and property.

68. To avoid disclosing information that Participating CMS Providers may consider to be competitively sensitive, we do not propose to use the WEA Database to disclose the number of WEA-capable mobile devices that are located within the alert message's geographic target area at the time the Participating CMS Provider initially transmits the message or the number of WEA-capable mobile devices connected to cell facilities transmitting the alert message that are located farther than 0.1 miles outside of the message's geographic target area at the time the Participating CMS Provider initially transmits the alert message. We seek comment on this approach. We anticipate that using a dedicated database would be more efficient than the current practice of searching for WEA elections that have been filed directly in a docket one-by-one and downloading individual election letters, which are unlikely to be uniform in how they make their elections. We seek comments on our views. What alternative steps could we take to make WEA election information more accessible to relevant stakeholders?

69. *Public Access*. We propose that the contents of the WEA Database be available to the general public. We believe the general public has an interest in knowing whether and to what extent the WEA system is available in their local area, as well as whether the WEA system performs reliably in their local area. We also believe the public should have an informed expectation about the likelihood that they will receive alert messages that do not apply to them. We seek comment on these views. Will making WEA availability and performance information more readily available in the WEA database influence consumer purchasing decisions related to CMS service and mobile devices? Will this foster increased market competition around WEA performance? We seek comment on the extent to which emergency management agencies accessing the publicly available WEA Database that are not currently authorized by FEMA to issue alerts through IPAWS, might be encouraged to become authorized and, as a result, increase the availability of alert messages to unserved areas.

70. We observe that the WEA availability information that Participating CMS Providers would submit to the WEA Database is already publicly available, although not aggregated with other WEA information. The information that Participating CMS Providers would supply to the WEA Database about their WEA coverage area is already publicly available through the National Broadband Map, which makes available for download the mobile voice coverage areas collected through the Broadband Data Collection. Similarly, many Participating CMS Providers already make publicly available information about the WEA-capable mobile devices that they offer at the point of sale. If we were to require Participating CMS Providers to disclose whether they make WEA available using currently deployed public cellular network technologies, that would likely require them to disclose information that is not currently public, but we do not believe that this disclosure would warrant confidential treatment either. The Commission grants the presumption of confidentiality to outage information submitted in NORS for reasons related to national security and competitive sensitivity, but we do not believe those same concerns exist here. We seek comment on our views.

71. We also do not believe that WEA performance information submitted in the WEA Database would warrant confidential treatment. We do not believe that the public availability of this information raises any concerns about national security or competitive sensitivity, and it would not include any PII or CPNI. Data submitted to the WEA Database under this proposal would already be aggregated and anonymized with other mobile device data by CMS Providers and could not be deanonymized to obtain any information about an individual mobile device's receipt of an alert message. Because of this aggregated, anonymized approach to data collection, the Commission does not anticipate that it will receive any CPNI or PII. Accordingly, we seek comment on whether WEA performance information requires confidential treatment or other data privacy protection and, if so, why. We note that since FEMA and the Commission began testing WEA on nationwide and regional bases in 2018, the Commission has regularly made publicly available after-action reports that describe WEA's performance during the exercise. Similarly, the WEA Database would make after-action performance analysis available to alerting authorities. We seek comment on why information about Participating CMS

Providers' performance in the WEA Database should be treated confidentially when information about WEA's performance is already publicly available.

72. *Emergency management agency access*. Section 10.450(b) of the Commission's rules provides that "[u]pon request from an emergency management agency, a Participating CMS Provider will disclose information regarding their capabilities for geo-targeting alert messages. A Participating CMS Provider is only required to disclose this information to an emergency management agency insofar as it would pertain to alert messages initiated by that emergency management agency, and only so long as the emergency management agency offers confidentiality protection at least equal to that provided by the federal FOIA." Notwithstanding the fact that nationwide Participating CMS Providers have established contact information purposefully identified for WEA geo-targeting inquiries, alerting authorities have had difficulty obtaining this information. Accordingly, if the WEA performance reporting proposal we offer today is adopted, we propose to have it replace the existing requirement that Participating CMS Providers share information about WEA's reliability and accuracy upon request from emergency management agencies. We seek comment on this approach. What, if any, harms could arise from granting alerting authorities access to WEA data outside of their local area, alert and warning jurisdictions, or territory? Would public safety be better served if alerting authorities had visibility into the WEA system's availability and performance beyond their jurisdictional boundaries? For example, would it be beneficial for a state agency to have access to data showing the alert messages that its neighboring state transmits would likely overshoot into their state? Would access to additional WEA data beyond an alerting authority's jurisdiction provide a more complete picture of WEA system availability and performance, particularly for alerting authorities that have not yet used the WEA system, or have used it infrequently?

73. If any information in the WEA Database is determined to require confidential treatment, we seek comment on how to protect it. Should we adopt procedures for alerting authority eligibility, user account access, certification requirements, data security, and information sharing similar to those that we adopted for providing federal, state, Tribal, and territorial agencies with direct access to NORS and DIRS? Should any aspects of those procedures differ for the WEA database?

74. If we require credentialed access to the WEA Database, we propose that the WEA Database also include a public-facing portal that would allow the public to query if WEA is available on the mobile wireless network to which they may subscribe, at a specified address where they may live or work, and on specific mobile devices that they may have. If the query indicates WEA is not available, we propose that the WEA Database present the consumer with a description of Participating CMS Providers that offer WEA at their specified location and mobile device. We seek comment on this proposal.

D. Promoting Digital Equity

75. The Commission, as part of its continuing effort to advance digital equity for all,[152] including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invites comment on any equity-related considerations[153] and benefits (if any) that may be

[152] Section 1 of the Communications Act of 1934 as amended provides that the FCC "regulat[es] interstate and foreign commerce in communication by wire and radio so as to make [such service] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex." 47 U.S.C. § 151.

[153] The term "equity" is used here consistent with Executive Order 13985 as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality. *See* Exec. Order No. 13985, 86 Fed. Reg. 7009, Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Jan. 20, 2021).

associated with the proposals and issues discussed herein. Specifically, we seek comment on how our proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well the scope of the Commission's relevant legal authority.[154]

E. Compliance Timeframes

76. In this Section, we propose compliance timeframes for the proposals in this *Further Notice* that aim to strike an appropriate balance between the urgent public safety need for the contemplated improvements to WEA and wireless industry's need to develop standards, software, practices, and procedures to effectively comply. We note that, similar to the geotargeting rule, because the new capabilities would be dependent on device-level software, firmware, or hardware changes, they necessarily would not be available to alerting authorities and consumers on a 'flash cut' basis. For each of these proposals, we seek comment on whether it would be appropriate to allow CMS Providers that are small- or medium-sized businesses additional time to comply. We seek comment on how we should define small- and medium-sized businesses in this context and whether we should make a distinction between nationwide and non-nationwide CMS Providers in this regard. We also seek comment on how much additional time, if any, small- or medium-sized businesses would reasonably need for compliance with the proposals in this *Further Notice*.

77. *Enhancing WEA's Language Support.* For the rules we propose today requiring Participating CMS Providers' WEA-capable mobile devices to translate English-language alert messages that they receive into the subscriber's default language preference, we propose to set a compliance date of 30 months after the publication of final rules in the *Federal Register*. Depending on the approach used by Participating CMS Providers to satisfy this requirement, compliance with this proposal would necessitate updates to standards and firmware. We also note that CSRIC VIII directed ATIS to conduct a study to determine a feasible, accurate, and effective method for enhancing language support.[155] The Commission has previously reasoned that it takes industry 30 months to comply with rules that implicate the need for updates to WEA standards and firmware— i.e., 12 months to work through appropriate industry bodies to publish relevant standards; another 12 months for Participating CMS Providers and mobile device manufacturers to develop, test, and integrate firmware upgrades consistent with those standards; and 6 more months to deploy the new technology to the field during normal technology refresh cycles.[156] We seek comment on the applicability of this approach and timeframe to these proposals. We believe that a machine-based translation approach to increasing WEA's language support, as contemplated by this *Further Notice*, is likely to only require updates to mobile devices, not to the CMS network, which potentially means less standards and firmware development would be needed. If the record supports the feasibility of that approach to compliance, should we require a shorter compliance deadline, and if so, what should that deadline be?

78. *Improving WEA's Effectiveness with Multimedia Content*. Our proposals to make WEA more accessible by requiring Participating CMS Providers to support sending thumbnail-sized images in

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[154] *See Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert* System, Report and Order and Further Notice of Proposed Rulemaking, FCC 16-127, PS Docket Nos. 15-191 and 15-94, Para. 176 at 11217 (Sept. 29, 2016) (*2016 EAS Amendments to Part 11*).

[155] *See* Communications Security, Reliability, and Interoperability Council VIII, Report on WEA Application Programming Interface at 27 (Mar. 2023), https://www.fcc.gov/file/25058/download; *see also* Letter from Thomas Goode, General Counsel, ATIS, to James Wiley, Deputy Chief, Cybersecurity and Communications Reliability Division, FCC, PS Docket Nos. 15-91 and 15-94, at 1-2 (Apr. 7, 2023) (stating that ATIS has already begun this examination and indicating that the approach that this *Further Notice* takes to improving WEA's language support is aligned with the direction of ATIS' work on this issue).

[156] *See Wireless Emergency Alerts Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 11112, 11161-62, para. 79 (2016).

WEA alerts and the integration of location-aware maps would implicate updates to standards and firmware in both the CMS network and at mobile devices. To give Participating CMS Providers sufficient time to complete the updates to standard and software necessary, we propose to set a compliance date for these requirements of 36 months from the publication of the rules in the *Federal Register*. We seek comment on this proposal. Would 36 months be sufficient time for all mobile devices that are still technically incompatible with the receipt of 360-character-maximum alerts to churn out of use by subscribers?[157]

79. *Integrate WEA More Seamlessly into People's Lives*. For the rules we propose today that require Participating CMS Providers to be able to send WEA messages without triggering the audio attention signal and the vibration cadence and provide their subscribers with the option to turn off attention signal and vibration cadence, we propose to require Participating CMS Providers and mobile device manufacturers to comply within 30 months of the rules' publication in the *Federal Register.* We believe this compliance deadline is consistent with deadlines for past requirements that have necessitated updates to standards and firmware, as discussed above. We seek comment on this proposal. Can compliance with our proposal to allow subscribers to turn off the attention signal and vibration cadence be achievable only with updates to WEA standards and software at the mobile device? If so, can compliance be achieved in less time than 30 months?

80. *Facilitate More Effective WEA Public Awareness Exercises.* We propose that Participating CMS Providers would be authorized to support up to two annual end-to-end WEA tests per alerting authority 30 days after the Public Safety and Homeland Security Bureau issues a Public Notice announcing OMB approval of any new information collection requirements associated with this rule change. We do not believe that Participating CMS Providers would need to make any changes to support such public awareness testing because such tests would present to a Participating CMS Provider in a manner indistinguishable from any other WEA message. We seek comment on this proposals and our views.

81. *Establishing a WEA Database to Promote Transparency about WEA Availability and Benchmark WEA Performance.* We propose to set a compliance date of 30 months after the publication of final rules in the *Federal Register* or within 30 days of the Public Safety and Homeland Security Bureau's publication of a public notice announcing that the WEA Database is ready to accept filings, whichever is later, for the proposed rules requiring Participating CMS Providers to satisfy WEA performance minimums and submit reports measuring WEA's performance. We believe 30 months is appropriate because Participating CMS Providers will have to update standards and firmware to comply with the performance reporting requirements, and we believe that it is sensible for the performance minimums to go into effect at the same time that the Commission receives the performance measurement data that can assist with enforcing them. We seek comment on this approach. We also seek specific comment on whether to offer an extended compliance timeframe for Participating CMS Providers that are small- and medium-sized businesses, which may have different network resource constraints than the nationwide CMS Providers.

82. We propose to require CMS Providers to refresh their elections to participate in WEA using the WEA Database within 30 days of the Public Safety and Homeland Security Bureau's publication of a public notice announcing (1) OMB approval of any new information collection requirements and (2) that the WEA Database is ready to accept filings. We seek comment on this proposal. We note that the Commission gave wireless industry 30 days within to comply with the Commission's initial requirement to elect whether to participate in WEA.[158] We anticipate that CMS

[157] Letter from Amy E. Bender, Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, PS Docket Nos. 15-91 and 15-94, at 13 (Apr. 13, 2023) (requesting more time for compliance with this proposal).

[158] *The Commercial Mobile Alert System*, PS Docket 07-287, Third Report and Order, 23 FCC Rcd 12561, 15 para. 32 (2008) revised by Erratum (Sep. 5, 2008).

providers would need to undertake the same measures as they did in their first WEA election to refresh their WEA election in compliance with this proposal, if adopted: assessing the extent to which they can agree to offer WEA in the entirety of their geographic service area, assessing the extent to which all mobile devices that they offer at the point of sale are WEA capable, and assessing their ability to comply with the Commission's technical and procedural WEA rules. To the extent that the requirements we propose to adopt would require additional data entry than was required in CMS Providers' first WEA elections, we believe that using the WEA Database's electronic interface would make the entry of that data achievable within 30 days. We seek comment on these views. We also seek comment on the extent to which pre-populating relevant information that the Commission already has available to it in the WEA Database can further ease the burden of compliance and make it easier for CMS Providers to comply with this requirement within 30 days. We seek comment on any other measures that we can take to facilitate timely compliance with this proposal by all CMS Providers. We do not believe that compliance with this proposal would present unique or heightened burdens to CMS Providers that are small- or medium-sized businesses. We seek comment on this view.

F. Benefit-Cost Analysis

83. In this section, we seek comment on whether we can reasonably expect the minimum benefit resulting from the improvements to WEA we propose today to exceed their maximum cost. We estimate that the proposed rules, both separately and jointly, would improve the effectiveness of WEA and bring benefits through improved public safety outcomes. We estimate the maximum, aggregated cost of compliance with the proposals in this *Further Notice* would be $39.9 million as a one-time cost and $422,500 as an annually recurring cost. Although most of the benefits are difficult to quantify, we believe they outweigh the overall costs of the proposed rules.

1. Benefits

84. We seek comment on the benefits of the proposals in this *Further Notice* taken together. We are cognizant of the fact that, as a general matter, it is impossible to assign precise dollar values to changes to WEA that improve the public's safety, life, and health.[159] We also believe that these proposals will result in benefits measurable in terms of lives saved and injuries and property damage prevented. We seek comment on developments in social science that add support to or refute the premise that effective alerts and warnings help to move people more effectively to take protective actions during emergencies.[160] We seek comment on how to quantify the value of the improvements to public safety outcomes that result from faster and more effective protective actions during disasters. Are there situations where, had the Commission implemented the improvements to WEA on which we seek comment today, deaths and injuries could have been prevented or mitigated? We seek comment on the extent to which the improved alert message accessibility and personalization features that we propose in this *Further Notice* would improve the effectiveness of WEA alert messages and reduce "milling" behavior.[161] We seek comment on whether our proposals to integrate WEA more seamlessly into people's lives will increase the rate of consumer opt-in to WEA or otherwise result in more people receiving and effectively responding to potentially life-saving instructions from alerting authorities during emergencies. We also seek comment on any enhancements to our proposals that would make WEA more likely to save lives, prevent injuries, and protect properties. Would the adoption of our proposed rules, such as WEA alert tests and accessible WEA Database, also provide additional benefits to alerting authorities, for instance, reducing costs of

[159] *Resilient Networks*, Report and Order, PS Docket 21-346, FCC 22-50, para. 46 (2022) (*Resilient Networks Order*) ("it would be impossible to quantify the precise financial value of these health and safety benefits").

[160] *See* Michele M. Wood, Dennis Mileti, Hamilton Bean, Brooke Liu, Jeannette Sutton, and Stephanie Madden, *Milling and Public Warnings*, 50 Environment and Behavior (2017), https://www.researchgate.net/publication/317242672_Milling_and_Public_Warnings.

[161] *Id.*

analyzing alerts' performance? We seek further comment on the benefits of our proposals taken individually and jointly.

85. *Enhancing WEA's Language Support.* We tentatively conclude that the benefit of the proposed WEA language support is likely to be significant. Currently, the 76 CMS Providers participating in WEA send alerts to 75% of mobile phones in the country.[162] Among the 26 million people who do not primarily speak English or Spanish, nearly 15.4 million speak primarily one of the 12 languages that we propose to integrate into the WEA system in addition to English and Spanish.[163] Assuming 75% of these individuals are covered by the WEA system, approximately 10 million people who have been receiving WEA alerts in languages they cannot comprehend would understand the content of WEA alerts under the proposed WEA language support.[164] Even if alerts reach just 1% of this population per year (i.e., nearly 100,000 people) the potential of WEA to prevent property damage, injuries, and deaths could be enormous.

86. *Improving WEA's Effectiveness with Multimedia Content.* We tentatively conclude that the proposed requirement of support for multimedia content in WEA messages, including "location-aware maps" and thumbnail-sized images, will result in enhanced effectiveness of the messages. Images can strengthen communications by stimulating attention, conveying large amount of information in a short amount of time, and promoting information retention.[165] Therefore, requiring support for multimedia content is likely to raise receivers' attention and situational awareness and lead to improved public safety. Although the benefit is difficult to quantify, it is likely to dwarf the small costs associated with the inclusion of multimedia content in WEA messages. Given the small size of such content (e.g., thumbnail-sized image using 0.013 megabytes of data),[166] we anticipate the additional cost to transmit it to be negligible. We seek comment and data on this assessment. We also anticipate that transmitting location-aware maps and thumbnail-sized images in WEA alert messages would not cause significant delays in alert transmission. We seek comment on this assessment.

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[162] Fox News, *FEMA tests 'presidential alert' to 225 million electronic devices*, https://www.foxnews.com/us/fema-tests-presidential-alert-to-225-million-electronic-devices (last visited Mar. 7, 2023) ("FEMA officials estimate nearly 75 percent of all mobile phones in the country, including major carriers, will receive the (presidential) alert").

[163] Among the 26 million people who do not primarily speak English or Spanish, 15,375,637 individuals speak one of the additional 12 languages that we propose to add to the WEA system. Staff calculation based on Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, page 8 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf. Assuming 75% of these individuals are able to receive WEA messages, approximately 10 million [15,375,637*75% = 9,994,164] additional people would receive these messages in the primary language they speak.

[164] According to the *2022 Communications Marketplace Report*, Numbering Resource Utilization/Forecast (NRUF) data show that, at year end-2021 in the United States, there were 439 million wireless connections, which are measured as phone numbers being assigned to mobile wireless devices. *See 2022 Communications Marketplace Report* at 56, para. 73. The number of wireless connections greatly exceeds the U.S. population which was under 332 million based on 2020 U.S. Census data. U.S. Census Bureau, *U.S. Census Bureau Today Delivers State Population Totals for Congressional Apportionment* (Apr. 26, 2021), https://www.census.gov/library/stories/2021/04/2020-census-data-release.html. Although the connection count includes both traditional handsets and other connected devices, e.g., wearables, for simplicity, we assume that the entire U.S. population can be reach via mobile connections.

[165] Jerry Weissman, Forbes, *The power of pictures in presentation design* (Feb. 25, 2022), https://www.forbes.com/sites/jerryweissman/2022/02/25/the-power-of-pictures-in-presentation-design/?sh=1d2760db20a7 (as oppose to text, visuals are processed 60,000 times faster).

[166] ATIS, ATIS Feasibility Study for WEA Supplemental Text, ATIS 0700026 (2015) (contemplating that a thumbnail-sized photo of about 1.5"x1.5" with a resolution of 72 dots per inch (DPI) will produce an image of 120x120 pixels and that if 8 bit color scale is used, then a digital image file will be about 14,400 bytes (0.013 megabytes) in size).

87. *Allow Alerting Authorities More Flexibility in how WEA Messages are Presented.* We believe that allowing alerting authorities more flexibility in deciding how WEA messages are presented, such as suppressing the audio attention signal and vibration cadence in an active shooter scenario, could help reduce casualties. According to the FBI, there were 61 active shooter incidents in 2021, resulting in 243 casualties—including 103 deaths and 140 injuries, excluding to the shooters.[167] It is reasonable to assume that suppressing the audio attention signal and vibration cadence during an active-shooting scenario could reduce casualties by discretely warning the public, yielding substantial benefits to public safety. We seek comment on statistics and data related to the benefits through the reduction of casualties resulting from the messaging flexibility. Although suppressing the audio attention signal and vibration cadence may not be warranted in all situations, we believe that alerting authorities would be in the best position in determining whether a specific situation warrants the adjustment in how messages are presented so the adverse impact of inattention would be minimized. We also believe allowing alerting authorities this flexibility would be technically feasible at a minimal expense, and hence the proposed rule would likely result in net benefits. We seek comment on our assessment.

88. *Prevent Unnecessary Consumer Opt-out.* We believe that offering an alternative in addition to the binary choices between opt-out and opt-in may help retain consumers on the WEA system. The Commission's rules already allow for consumers to mute the audio attention signal and vibration cadence when users set their devices to "do not disturb" mode. Outside of these "do not disturb" windows, consumers would find "opt-out" to be the only option to avoid the distraction of WEA alerts. Without the third option that allows consumers to silently receive all WEA alerts, consumers are likely to opt out from WEA if they still find the audio attention signal and vibration cadence interrupting. For those who already opted out from WEA, adding this muting option does not make them any worse off and may even cause some of them to opt in again. Therefore, we believe this proposed rule can prevent unnecessary consumer opt-out and result in improvement in public safety outcomes. Although this proposal would require collaboration between wireless providers and device manufacturers, we believe the technical difficulties and costs should be small. As a result, we tentatively conclude that the proposed rule would enhance public safety at a minimal cost. We seek comment on this assessment and any evidence and data to support or correct our assessment.

89. *Facilitate More Effective WEA Public Awareness Exercises.* We propose to authorize Participating CMS Providers to support up to two annual end-to-end WEA tests per alerting authority, consistent with EAS test rules. We believe harmonizing WEA and EAS test rules would improve the effectiveness of public awareness exercises and reduce consumer alert fatigue when such tests are better coordinated than tested separately. We do not believe that CMS Providers would incur any cost to comply with our proposal to allow alerting authorities to conduct two public awareness tests per year. Therefore, we believe this proposal will bring net benefits to the public. We seek comment on these assessments.

90. *Establishing a WEA Database to Promote Transparency about WEA Availability and Benchmark WEA Performance.* We believe that establishing measurable goals and performance measures for WEA will improve the speed, accuracy and reliability of WEA messages. The public will benefit from improved and targeted usage of WEA alert messages. Greater accuracy in sending alert messages will result in less overshoot, which in turn will mean that fewer people will receive alert messages not intended for them and will be less likely to take unnecessary action or opt out of receiving alert messages. We seek comment on the benefits of establishing benchmarks that will make WEA faster, more accurate, and more reliable. We seek comment on whether improving WEA performance would encourage greater and more effective usage of WEA. Would alerting authorities be more likely to issue an alert message if they knew it would be received by the people for whom it was intended while not being received by people for whom it was not intended? Will improving WEA also result in more emergency management

[167] Federal Bureau of Investigation (FBI), Active shooter incidents in the United States in 2021 at 8 (2022), https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2021-052422.pdf/view.

agencies investing the time, effort, and resources necessary to become authorized as alerting authorities? We seek comment on the benefit of emergency management agencies using alert messages both more often and more effectively. Will improved performance cause current alerting authorities to use WEA in circumstances they might have hesitated to use them previously? We seek comment on these benefits.

91. The proposed WEA Database would provide a nationwide WEA availability and performance dataset. We believe that giving the Commission, FEMA, alerting authorities, and consumers access to this dataset through a graphical user interface and data visualization tool will significantly improve their understanding of how WEA works in practice. We believe that understanding how WEA works in practice will help alerting authorities to use WEA more effectively, enable consumers to use their mobile devices as preparedness tools, and enable the Commission and FEMA to more effectively discharge their responsibilities as stewards of the nation's alert and warning capability. We seek comment on this view. As discussed above, emergency management agencies may be declining to use the WEA system in situations where it could save lives because they lack information about, and confidence in, how WEA works in practice.[168] We seek comment on our tentative conclusion that implementing a WEA Database will increase alerting authorities' confidence in and use of the WEA system by providing visibility and assurances. We seek comment on whether the WEA Database would also promote the public interest by providing alerting authorities with information as to where their alerts will not reach intended recipients and their need to employ alternate methods of notifying the public of emergency situations. We also seek comment on whether WEA availability and performance information would promote public confidence in WEA and influence consumer choice when deciding from which CMS provider to purchase service. As a result, would market forces be more likely to incentivize additional CMS Providers to elect to transmit emergency alerts or to improve the availability of the WEA service that they offer? How would Participating CMS Providers, emergency managers, and the public benefit if some among the over 450 CMS Providers that have elected not to participate in WEA started transmitting WEA alert messages? We seek comment on whether greater knowledge of WEA's coverage, in terms of geographic areas and network technologies, would encourage providers to increase their support for WEA. We seek additional comment on other benefits that can be gleaned from WEA availability and performance reporting.

2. Costs

92. We seek comment on the costs that Participating CMS Providers would expect to incur as a result of their compliance with the rule changes we propose in this *Further Notice.* We anticipate that these rules will lead Participating CMS Providers to incur costs associated with modifying standards and software, and recordkeeping and reporting costs. We seek comment on whether adopting all these proposals as a package may result in a cost savings as opposed to having to modify standards and software in response to several, incremental policy changes.

93. We estimate that Participating CMS Providers would incur a $39.9 million one-time cost to update the WEA standards and software necessary to comply the proposals in this *Further Notice*. This figure consists of approximately a $814,000 cost to update applicable WEA standards and approximately a $39.1 million cost to update applicable software. We quantify the cost of modifying standards as the annual compensation for 30 network engineers compensated at the national average for

[168] *CSRIC VIII Report on WEA Performance Reporting* at 4. Over 1,600 emergency management agencies are authorized to use WEA but only 619 have ever done so. Consumer groups, the National Center for Missing and Exploited Children, and emergency management agencies state that performance requirements and reporting are necessary to give them enough confidence to use WEA and to enable them to use WEA more adeptly. *See* APCO International, Comments, PS Docket No. 15-91, at 5 (Dec. 8, 2016); Nassau County Office of Emergency Management, Comments, PS Docket No. 15-91, at 2 (Dec. 8, 2016); Harris County, Texas Homeland Security and Emergency Management, Comment, PS Docket No. 15-91, at 1 (Sept. 7, 2018); New York City Emergency Management Department, Comments, PS Docket No. 15-91, at 15 (Dec. 8, 2016); Wireless RERC & CACP, Comments, PS Docket No. 15-91, at 14 (Dec. 8, 2016).

their field ($120,650/year; $58/hour), plus annual benefits ($60,325/year; 29/hour) working for the amount of time that it takes to develop a standard (one hour every other week for one year, 26 hours) for 12 distinct standards.[169] We quantify the cost of modifying software as the annual compensation for a software developer compensated at the national average for their field ($120,990/year), plus annual benefits ($60,495/year) working for the amount of time that it takes to develop software (ten months) at each of the 76 CMS Providers that participate in WEA.[170] We quantify the cost of testing these modifications (including integration testing, unit testing and failure testing) to require 12 software developer compensated at the national average for their field working for two months at each of the 76 CMS Providers that participate in WEA.[171] In quantifying costs for software development, we have used the same framework since 2016 for changes to software ranging from developing new standards to enhanced geo-targeting.[172] Does this remain an appropriate framework to describe the costs of software or firmware updates needed to comply with the proposals in this *Further Notice*? We seek comment on these cost estimates and the underlying cost methodology we are using.

94. We also seek comment on specific costs of reporting and recordkeeping related to reporting information about WEA's availability and performance in the WEA Database. We expect costs associated with our proposals related to WEA availability reporting to be negligible for Participating CMS Providers that participate in WEA in whole or that otherwise offer WEA in the entirety of their geographic service area because such Participating CMS Providers have already provided the Commission with the shapefile data needed to fulfill a significant aspect of their reporting obligation in

[169] This is calculated as follows: 30 network engineers x ($58 + $29) per hour per network engineer x 26 hours per standard x 12 standards = $814,320. We round this figure to $814,000 to avoid the false appearance of precision in our estimate. *See* Bureau of Labor Statistics Employer Costs for Employee Compensation Summary, Computer Network Architect (May 2021), https://www.bls.gov/oes/current/oes151241.htm (last visited Aug. 25, 2022) (stating that the average base salary for a computer network architect is $120,730/yr); Letter from Tom Goode, General Counsel, ATIS, to Marlene Dortch, Secretary, FCC, PS Docket No. 15-91, at 1 (filed Sep. 6, 2016) (stating that, when standards need to be modified for WEA, it would be common practice for groups of approximately 30 individuals with relevant technical expertise meet approximately bi-weekly for an hour to discuss the modifications); *Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, Second Report and Order and Second Order on Reconsideration, 33 FCC Rcd 1320, 1344-45, para. 33, n.154 (2018) (listing the 12 WEA standards).

[170] This is calculated as follows: ($120,650 + $60,325) annually per Participating CMS Provider x 10 months / 12 months per year x 76 Participating CMS Providers = $11,461,750. See Bureau of Labor Statistics Employer Costs for Employee Compensation Summary, Software Developers, (May 2021) https://www.bls.gov/oes/current/oes151252.htm, (last visited Aug. 25, 2022) (stating that the average base salary for a software developer is $120,730/year, which results in total compensation of $180,960 when benefits are included); Verizon, PS Docket No. 15-91, Comments, PS Docket No. 15-91, at 5 (Jan. 13, 2016) (stating that it takes manufacturers and vendors 12 months to incorporate WEA standards into their products and test them); FCC, Master WEA Registry, https://www.fcc.gov/files/weamasterregistry112019xls (last visited Aug. 19, 2022) (reflecting that 76 CMS Providers participate in WEA either in whole or in part).

[171] This is calculated as follows: 12 software developers x ($120,650 + $60,325) annually per Participating CMS Provider x 2 months / 12 months per year x 76 Participating CMS Providers = $ 27,508,200. *Id.*

[172] *See Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, Report and Order and Further Notice or Proposed Rulemaking, 31 FCC 11112, 11168-81 paras. 96-103 (2016) ("According to ATIS, when standards need to be modified for WEA, it would be common practice for groups of approximately 30 individuals with relevant technical expertise meet approximately bi-weekly for an hour to discuss the modifications. Commenters assert that these standards-setting processes can be completed within 12 months, or 26 bi-weekly, one-hour meetings."); *see also Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, Second Report and Order and Second Order on Reconsideration, 33 FCC Rcd 1320, 1344-45, para. 33 (2018) ("We received no objections to this approach in the record.").

furtherance of their obligations to support the Commission's Broadband Data Collection.[173] We seek comment on this view. For CMS Providers participating in WEA in part that may need to tailor shapefiles to reflect the extent of its WEA coverage, what, if any, costs would they incur to recreate or reformat shapefiles to depict the extent of its WEA coverage? In the Supporting Document of Study Area Boundary Data Reporting in Esri Shapefile Format, the Office of Information and Regulatory Affairs estimates that it takes an average of 26 hours for a data scientist to modify a shapefile.[174] We believe submitting WEA availability information in shapefile format should require less time than modifying a shapefile. Therefore, we believe 26 hours would be an upper bound of the time required for a Participating CMS Provider to report its WEA availability in shapefile format. Given that the median wage rate is $48.52/hour for data scientists,[175] with a 45% markup for benefits,[176] we arrive at $70.40 as the hourly compensation rate for a data scientist. We estimate an aggregate cost of WEA availability reporting to be approximately $139,000 (≈ $70.40 per hour x 26 hours x 76 providers), which may be recurring on an annual basis since availability may change and need to be updated over time. We seek comment on our estimates of the time and costs Participating CMS Providers have to spend on gathering and submitting WEA's availability information in GIS shapefile format in the WEA Database?

95. We acknowledge that our proposed rules on collecting the data necessary to measure WEA's reliability, accuracy, and speed for each alert in a WEA Database would incur some operating costs for Participating CMS Providers. However, we believe that once Participating CMS Providers upgrade the standards and software necessary to automate WEA performance reporting, we expect that the process of data collection and data submission would require minimal human intervention. Although we anticipate such performance reporting would be largely automated once it is set up, we estimate a routine administrative monitoring cost that Participating CMS Providers may still incur when they file the performance report for each alert incident. We estimate that, for each alert, a provider will need an office administrator, who is compensated at $27 hour, to spend 0.5 hours in monitoring each data transmission. At the aggregate level, we believe there will be 21,000 performance reports transmitted to the WEA database, resulting in a $283,500 annual recurring cost at the aggregate level.[177] We seek comment on our estimates and alternative approaches to assess recordkeeping and reporting costs for WEA performance reporting.

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[173] *See generally*, *Establishing the Digital Opportunity Data Collection; Modernizing the FCC Form 477 Data Program*, WC Docket Nos. 19-195 and 11-10, Report and Order and Second Further Notice of Proposed Rulemaking (2019) (discussing costs of requiring submission of broadband coverage maps (polygons) from fixed providers).

[174] *See* Office of Information and Regulatory Affairs, Office of Management and Budget Executive Office of the President, 2022 Study Area Boundary Data Reporting in Esri Shapefile Format DA 12-1777 and DA 13-282, Supporting Statement - OMB Control No. 3060-1181, at 5- paras. 12 (Feb. 15, 2022), https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202202-3060-009.

[175] We use the Bureau of Labor Statistics median wage for data scientists, which they estimate at $48.52. *See* Bureau of Labor Statistics, *Occupational Employment Statistics*, https://www.bls.gov/oes/current/oes152051.htm (last visited Mar. 9, 2023).

[176] *See Compensation Benefit Mark-up.*

[177] Given that WEA was used 70,000 times over the last decade, we estimate that 7,000 alerts (= 70,000 / 10 years) were issued per year. According to 2022 Communications Marketplace Report, nearly 95% of consumers have at least three wireless provider options in their areas. *See Communications Marketplace Report* et al., GN Docket No. 22-203, Report, FCC 22-103, at 110, Fig. II.B.37 (Dec. 30, 2022), https://www.fcc.gov/document/2022-communications-marketplace-report. Therefore, we estimate that the total number of performance reports that need to be filed would be 21,000 (=7,000 alerts x 3 providers per alert). Assuming each alert take an additional 0.5 hours for an office administrator to process for Participating CMS Provider at a compensation rate of $27 per hour, the total additional recurring cost is $283,500 (= $27/hour x 0.5 hours x 21,000 reports) per year. *See Office Administrator Compensation*.

96. Because CMS Providers' participation in WEA is voluntary,[178] Participating CMS Providers may opt out of participating in WEA if they decide the costs of the proposed rules are too burdensome. Despite the voluntary nature of the program and potential Participating CMS Providers' opt-out, it is our belief that they have incurred significant good will from their voluntary Participation in WEA over the last decade that justifies their continued participation. Therefore, we anticipate that existing Participating CMS Providers are very unlikely to withdraw their participation in the WEA system if the performance standards and reporting requirements are adopted. We seek comment on this assessment and any forecast and data to support or refute our assessment. We seek comment on whether there are any other types of costs that we should consider as relevant to our analysis. Are there alternative methods of achieving our goals in these areas that would present Participating CMS Providers with lesser burdens? If so, we seek comment on costs associated with these alternative methods. We also seek costs on any modifications that we could implement to our proposed rules to limit the burden of compliance on entities considered to be small- or medium-sized businesses.

IV. PROCEDURAL MATTERS

97. *Paperwork Reduction Act.* This document contains proposed new and modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. § 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

98. *Ex Parte Rules - Permit-But-Disclose*. This proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[179] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with Rule 1.1206(b). In proceedings governed by Rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

99. *Regulatory Flexibility Act*. The Regulatory Flexibility Act of 1980, as amended (RFA),[180] requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that "the rule will not, if promulgated, have a significant

[178] *See WEA NPRM*, 30 FCC Rcd at 13818, para 79.

[179] 47 CFR §§ 1.1200 *et seq.*

[180] *See* 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601–612, was amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

economic impact on a substantial number of small entities."[181] Accordingly, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) concerning the possible impact of the rule and policy changes contained in this *Further Notice of Proposed Rulemaking*. The IRFA is set forth in Appendix B.

100. *Filing Requirements—Comments and Replies*. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: https://www.fcc.gov/ecfs/.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
    - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
    - Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street, NE, Washington, DC 20554.
- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19.[182]
- During the time the Commission's building is closed to the general public and until further notice, if more than one docket or rulemaking number appears in the caption of a proceeding, paper filers need not submit two additional copies for each additional docket or rulemaking number; an original and one copy are sufficient.

101. *People with Disabilities*. To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice).

102. *Additional Information*. For further information regarding Notice, please contact WEA@fcc.gov, or David Kirschner, Cybersecurity and Communications Reliability Division, Public Safety and Homeland Security Bureau, (202) 418-0695, or by email to david.kirschner@fcc.gov.

V. ORDERING CLAUSES

103. Accordingly, IT IS ORDERED that pursuant to Sections 1, 2, 4(i), 4(n), 301, 303(b), 303(e), 303(g), 303(j), 303(r), 307, 309, 316, 403, and 706 of the Communications Act of 1934, as amended, 47 U.S.C §§ 151, 152, 154(i), 154(n), 301, 303(b), 303(e), 303(g), 303(j), 303(r), 307, 309, 316, 403, 606; and sections 602(a), (b), (c), (f), 603, 604, and 606 of the Warning Alert and Response Network (WARN) Act, 47 U.S.C. §§ 1201(a), (b), (c), (f), 1203, 1204, 1206, that this *Further Notice of Proposed Rulemaking* IS hereby ADOPTED.

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[181] *Id.*

[182] *See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy*, Public Notice, 35 FCC Rcd 2788 (2020).

104. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Further Notice of Proposed Rulemaking*, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Proposed Rules

For the reasons set forth above, Part 10 of title 47 of the Code of Federal Regulations is amended as follows:

PART 10 – WIRELESS EMERGENCY ALERTS

1. The authority citation for part 10 is revised to read as follows:

Authority: 47 U.S.C §§ 151, 152, 154(i), 154(n), 301, 303(b), 303(e), 303(g), 303(j), 303(r), 307, 309, 316, 403, 544(g), 6061201(a), (b), (c), (f), 1203, 1204, 1206

2. Amend § 10.10 by revising paragraph (j), redesignating paragraphs (k) and (l) as paragraphs (l) and (m), and adding new paragraph (k) to read as follows:

§ 10.10 Definitions.

* * * * *

(j) ***Mobile Devices.*** Any customer equipment used to receive commercial mobile service.

(k) ***WEA-Capable Mobile Devices***. Mobile devices, as defined paragraph (j) of this section, that support the Subpart E Equipment Requirements.

* * * * *

3. Amend § 10.210 by revising paragraph (a) introductory text, (b), and (c), redesignating paragraphs (b) and (c) as paragraphs (d) and (e), adding new paragraphs (b) and (c), and revising paragraph (e) to read as follows:

§ 10.210 WEA participation election procedures.

(a) A CMS provider that elects to transmit WEA Alert Messages must elect to participate in part or in whole, as defined by § 10.10(l) and (m), and shall electronically file in the Commission's WEA Database attesting that the Provider:

* * *

(b) A CMS Provider that elects to participate in WEA must disclose the following information in their election filed in the Commission's WEA Database:

(1) The entities on behalf of which the Participating CMS Provider files its election, including the subsidiary companies on behalf of which their election is filed, the "doing business as" names under which a Participating CMS Provider offers WEA, and the Mobile Virtual Network Operators (MVNOs) and wireless resellers through which the Participating CMS Provider offers WEA;

(2) The extent to which the Participating CMS Provider offers WEA in the entirety of their geographic service area, as demonstrated by the following:

(i) a map of their wireless coverage area in shapefile format;

(ii) to the extent that it differs from their wireless coverage area specified in response to paragraph (b)(2)(i) of this section, a map of the geographic areas to which they elect to transmit WEA alert messages in shapefile format.

(3) The extent to which all WEA-capable mobile devices that the Participating CMS Provider offers at the point of sale are WEA-capable, as demonstrated by the following:

(i) the mobile devices, as defined in § 10.10(j), that the Participating CMS Provider offers at their point of sale;

(ii) the WEA-capable mobile devices, as defined in § 10.10(k), that the Participating CMS Provider offers at their point of sale.

(c) If the terms of a CMS Provider's WEA participation change in any manner described by paragraph (b) of this section, it must update the information about its WEA participation disclosed pursuant to that paragraph within 30 days such that the information in the WEA Database accurately reflects the terms of their WEA participation.

(d) A CMS Provider that elects not to transmit WEA Alert Messages shall file electronically in the Commission's WEA Database attesting to that fact, and include the subsidiary companies, the CMS Provider's "doing business as" names, MVNOs, and wireless resellers on behalf of which the election is filed.

(e) CMS Providers shall file their elections electronically into the WEA Database.

* * * * *

4. Amend §10.280 by redesignating paragraph (b) as paragraph (d) and adding new paragraphs (b) and (c) to read as follows:

§ 10.280 Subscribers' right to opt out of WEA notifications.

(a) * * *

(b) CMS providers shall provide their subscribers with a distinct option to durably turn off WEA's audio attention signal and vibration cadence for all alerts received.

(c) CMS providers shall provide their subscribers with the option to opt out of the collection of WEA performance analytic information described by § 10.500(i).

(d) * * *

* * * * *

5. Amend § 10.330 by adding a new paragraph (d), to read as follows

§ 10.330 Provider infrastructure requirements.

* * * * *

(d) Collecting the data elements necessary to measure WEA's performance, as defined in Section 10.360.

* * * * *

6. Amend § 10.350 by adding a new paragraph (d) to read as follows:

§ 10.350 WEA testing and proficiency training requirements.

This section specifies the testing that is required of Participating CMS Providers.

* * *

(d) ***Public Awareness Tests.*** Participating CMS Providers may participate in no more than two (2) WEA System tests per calendar year that the public receives by default to raise public awareness, provided that the entity conducting the test:

(i) Conducts outreach and notifies the public before the test that live event codes will be used, but that no emergency is, in fact, occurring;

(ii) To the extent technically feasible, states in the test message that the event is only a test;

(iii) Coordinates the test among Participating CMS Providers and with state and local emergency authorities, the relevant SECC (or SECCs, if the test could affect multiple states), and first responder organizations, such as PSAPs, police, and fire agencies); and,

(iv) Provides in widely accessible formats the notification to the public required by this paragraph that the test is only a test and is not a warning about an actual emergency.

* * * * *

7. Add § 10.360 to subpart C to read as follows:

§ 10.360 Performance Reporting.

Participating CMS Providers are required to transmit performance data to the Commission's WEA Database regarding WEA's reliability, accuracy and speed.

* * * * *

8. Amend § 10.450 by revising the introductory text and paragraphs (a) and (b) and removing paragraph (c), to read as follows:

§ 10.450 Geographic targeting.

This section establishes minimum requirements for the geographic targeting of Alert Messages. A Participating CMS Provider will determine which of its network facilities, elements, and locations will be used to geographically target Alert Messages. A Participating CMS Provider must deliver any Alert Message that is specified by a circle or polygon to an area that matches the specified circle or polygon.

(a) A Participating CMS Provider is considered to have matched the target area they meet both of the following conditions:

(1) *Reliability.* Deliver an Alert Message to 100 percent of WEA-capable Mobile Devices that are located within a Participating CMS Provider's WEA coverage area and are located within an Alert Message's geographic target area during an Alert Message's active period.

(2) *Accuracy.* Do not present an Alert Message on mobile devices located farther than 0.1 miles outside the Alert Message's target area.

* * * * *

9. Revise § 10.460 to read as follows:

§ 10.460 WEA Transmission Speed.

No more than 5 minutes shall elapse for 99% of mobile devices from the time that a Participating CMS Provider receives an alert message at the CMS Alert Gateway and the time that mobile devices present the alert message based on aggregated, annualized data submitted to the WEA Database.

* * * * *

10. Amend § 10.480 by redesignating the introductory text as paragraph (a) and adding a new paragraph (b) to read as follows:

§ 10.480 Language support.

a) Participating CMS Providers are required to transmit WEA Alert Messages that are issued in the Spanish language or that contain Spanish-language characters.

* * * * *

11. Add a new § 10.490 to subpart D to read as follows:

§ 10.490 Multimedia support

a) Participating CMS Providers are required to transmit "thumbnail-sized" images in WEA alert messages. A thumbnail sized image meets or exceeds each of the following parameters: 1.5"x1.5" in size with a resolution of 72 dots per inch consisting of 120x120 pixels in 8 bit color scale.

b) Participating CMS Providers are required support mobile devices' presentation of maps that include at least the following elements:

1. Shape of the target area
2. User location relative to the target area
3. A graphical representation of the geographic area in which both the targeted area and user are located.

* * * * *

12. Amend § 10.500 by revising paragraph (e) and adding new paragraphs (i) and (j) to read as follows:

§ 10.500 General requirements.

* * * * *

(e) Extraction of alert content in English or translation of alert content into the subscriber's preferred language;

* * *

(i) Logging and making available to the CMS network the data elements necessary to measure WEA's performance, as defined in § 10.360;

(j) Any additional functions necessary to support the Subpart D Alert Message Requirements

* * * * *

13. Amend § 10.520 by adding a new paragraph (f) to read as follows:

§ 10.520 Common audio attention signal.

* * * * *

(f) Participating CMS Providers and mobile device manufacturers must provide alerting authorities with the option to send WEA Alert Messages without triggering the audio attention signal.

* * * * *

14. Amend § 10.530 by adding a new paragraph (d) to read as follows:

§ 10.530 Common vibration cadence.

* * * * *

(d) Participating CMS Providers and mobile device manufacturers must provide alerting authorities with the option to send WEA Alert Messages without triggering the common vibration cadence.

APPENDIX B

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),

2. [1] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the *Further Notice of Proposed Rulemaking* (*Further Notice*). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Further Notice*. The Commission will send a copy of the *Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *Further Notice* and IRFA (or summaries thereof) will be published in the *Federal Register*.[3]

A. Need for, and Objectives of, the Proposed Rules

3. The performance and accessibility of the nation's alert and warning systems is essential to helping safeguard the lives and property of all people. To ensure that Wireless Emergency Alerts (WEA) remain strong, the Commission must act proactively in its oversight of stakeholders associated with this system. The Commission has previously engaged with stakeholders to ensure that WEA had minimum performance minimums and to ensure WEA was accessible to Spanish speaking people. Moreover, approximately 26 million people who do not primarily speak English or Spanish are at risk because they cannot understand the potentially life-saving information conveyed by alert messages.[4] We believe we should take action to increase WEA's accessibility by ensuring minimum benchmarks are being met through performance reporting and providing alerts in additional languages. In the *Further Notice*, the Commission acts to 1) develop measurable goals and performance measures for WEA by proposing the adoption of WEA performance metrics and establishing the WEA Database and performance requirements, 2) making WEA more accessible by enhancing WEA's language support and effectiveness with multimedia content, and 3) integrating WEA more seamlessly into people's lives by improving active shooter and public health alerts, preventing unnecessary consumer opt-out, and facilitating more effective WEA public awareness exercises.

4. Specific proposals upon which the Commission seeks comment include: proposing definitions for reliability, accuracy, and speed, and setting benchmarks based on these definitions that Participating CMS Providers would be required to meet; requiring Participating CMS Providers to submit data regarding WEA availability and performance into a WEA Database to be shared with FEMA and authorized alerting authorities; translating alerts into the thirteen most commonly spoken languages in the United States and storing them at the mobile device to be displayed when an alerting authority deems relevant; sending thumbnail-sized images in alerts over the air; incorporating location-aware maps into WEA by utilizing an API; allowing alerting authorities to send alerts without the associated attention signal and vibration cadence; allowing consumers to cache their receipt of WEA; proposing to authorize two annual end-to-end WEA tests per Alerting authority; and on how our proposals in the *Notice* may

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[1] *See* 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See* 5 U.S.C. § 603(a).

[3] *See id.*

[4] U.S. Census Bureau, *DP02 | Selected Social Characteristics in the United States* (2021), https://data.census.gov/cedsci/table?q=DP02#. Sandy Dietrich and Erik Hernandez, *Language Use in the United States: 2019*, pages 8, 14-15 (2022), https://www.census.gov/content/dam/Census/library/publications/2022/acs/acs-50.pdf; *see also* US Census Bureau, *The 2020 Census Speaks More Languages* (Mar. 9, 2020), https://www.census.gov/newsroom/press-releases/2020/languages.html.

promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well as on the scope of the Commission's relevant legal authority.

B. Legal Basis

5. The proposed action is authorized pursuant to sections 1, 2, 4(i), 4(n), 301, 303(b), 303(e), 303(g), 303(j), 303(r), 307, 309, 316, 403, and 706 of the Communications Act of 1934, as amended, 47 U.S.C §§ 151, 152, 154(i), 154(n), 301, 303(b), 303(e), 303(g), 303(j), 303(r), 307, 309, 316, 403, 544(g), and 606; The Warning, Alert and Response Network (WARN) Act, WARN Act §§ 602(a), (b), (c), (f), 603, 604, and 606, 47 U.S.C. §§ 1201(a),(b),(c), (f), 1203, 1204 and 1206.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

6. The RFA directs agencies to provide a description of and, where feasible, an estimate of, the number of small entities that may be affected by the proposed rules, if adopted.[5] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[6] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[7] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[8]

7. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three broad groups of small entities that could be directly affected herein.[9] First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the Small Business Administration's (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.[10] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 32.5 million businesses.[11]

8. Next, the type of small entity described as a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[12] The Internal Revenue Service (IRS) uses a revenue benchmark of $50,000 or less to delineate its annual electronic filing requirements for small exempt organizations.[13] Nationwide, for tax year 2020, there

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[5] *See id.* § 603(b)(3).

[6] *See id.* § 601(6).

[7] *See id.*§ 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[8] 15 U.S.C. § 632.

[9] *See* 5 U.S.C. § 601(3)-(6).

[10] *See* SBA, Office of Advocacy, Frequently Asked Questions, "What is a small business?," https://cdn.advocacy.sba.gov/wp-content/uploads/2021/11/03093005/Small-Business-FAQ-2021.pdf. (Nov 2021).

[11] *Id*.

[12] *See* 5 U.S.C. § 601(4).

[13] The IRS benchmark is similar to the population of less than 50,000 benchmark in 5 U.S.C § 601(5) that is used to define a small governmental jurisdiction. Therefore, the IRS benchmark has been used to estimate the number small organizations in this small entity description. S*ee* Annual Electronic Filing Requirement for Small Exempt

(continued….)

were approximately 447,689 small exempt organizations in the U.S. reporting revenues of $50,000 or less according to the registration and tax data for exempt organizations available from the IRS.[14]

9. Finally, the small entity described as a "small governmental jurisdiction" is defined generally as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[15] U.S. Census Bureau data from the 2017 Census of Governments[16] indicate that there were 90,075 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.[17] Of this number there were 36,931 general purpose governments (county[18], municipal and town or township[19]) with populations of less than 50,000 and 12,040 special purpose governments - independent school districts[20] with enrollment populations of less than 50,000.[21] Accordingly, based on the 2017 U.S. Census of Governments data, we estimate that at least 48,971 entities fall into the category of "small governmental jurisdictions."[22]

(Continued from previous page)
Organizations — Form 990-N (e-Postcard), "Who must file," https://www.irs.gov/charities-non-profits/annual-electronic-filing-requirement-for-small-exempt-organizations-form-990-n-e-postcard. We note that the IRS data does not provide information on whether a small exempt organization is independently owned and operated or dominant in its field.

[14] *See* Exempt Organizations Business Master File Extract (EO BMF), "CSV Files by Region," https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf. The IRS Exempt Organization Business Master File (EO BMF) Extract provides information on all registered tax-exempt/non-profit organizations. The data utilized for purposes of this description was extracted from the IRS EO BMF data for businesses for the tax year 2020 with revenue less than or equal to $50,000, for Region 1-Northeast Area (58,577), Region 2-Mid-Atlantic and Great Lakes Areas (175,272), and Region 3-Gulf Coast and Pacific Coast Areas (213,840) which includes the continental U.S., Alaska, and Hawaii. This data does not include information for Puerto Rico.

[15] *See* 5 U.S.C. § 601(5).

[16] *See* 13 U.S.C. § 161. The Census of Governments survey is conducted every five (5) years compiling data for years ending with "2" and "7". *See also* Census of Governments, https://www.census.gov/programs-surveys/cog/about.html.

[17] *See* U.S. Census Bureau, 2017 Census of Governments – Organization Table 2. Local Governments by Type and State: 2017 [CG1700ORG02], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. Local governmental jurisdictions are made up of general purpose governments (county, municipal and town or township) and special purpose governments (special districts and independent school districts). *See also* tbl.2. CG1700ORG02 Table Notes_Local Governments by Type and State_2017.

[18] *See id.* at tbl.5. County Governments by Population-Size Group and State: 2017 [CG1700ORG05], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 2,105 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

[19] *See id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2017 [CG1700ORG06], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 18,729 municipal and 16,097 town and township governments with populations less than 50,000.

[20] *See id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2017 [CG1700ORG10], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 12,040 independent school districts with enrollment populations less than 50,000. *See also* tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2017 [CG1700ORG04], CG1700ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2017.

[21] While the special purpose governments category also includes local special district governments, the 2017 Census of Governments data does not provide data aggregated based on population size for the special purpose governments category. Therefore, only data from independent school districts is included in the special purpose governments category.

10. *Wireless Telecommunications Carriers (except Satellite).* This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves.[23] Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services.[24] The SBA size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[25] U.S. Census Bureau data for 2017 show that there were 2,893 firms in this industry that operated for the entire year.[26] Of that number, 2,837 firms employed fewer than 250 employees.[27] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 797 providers that reported they were engaged in the provision of wireless services.[28] Of these providers, the Commission estimates that 715 providers have 1,500 or fewer employees.[29] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

11. *Broadband Personal Communications Service.* The broadband personal communications services (PCS) spectrum encompasses services in the 1850-1910 and 1930-1990 MHz bands.[30] The closest industry with a SBA small business size standard applicable to these services is Wireless Telecommunications Carriers (except Satellite).[31] The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[32] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[33] Of this number, 2,837 firms employed fewer than 250 employees.[34] Thus under the SBA size standard, the Commission

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[22] This total is derived from the sum of the number of general purpose governments (county, municipal and town or township) with populations of less than 50,000 (36,931) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (12,040), from the 2017 Census of Governments - Organizations tbls.5, 6 & 10.

[23] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers (except Satellite),"* https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[24] *Id.*

[25] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[26] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[27] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[28] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/*public*/attachments/DOC-379181A1.pdf.

[29] *Id.*

[30] *See* 47 CFR § 24.200.

[31] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[32] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[33] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[34] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

estimates that a majority of licensees in this industry can be considered small.

12. Based on Commission data as of November 2021, there were approximately 5,060 active licenses in the Broadband PCS service.[35] The Commission's small business size standards with respect to Broadband PCS involve eligibility for bidding credits and installment payments in the auction of licenses for these services. In auctions for these licenses, the Commission defined "small business" as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $40 million for the preceding three years, and a "very small business" as an entity that, together with its affiliates and controlling interests, has had average annual gross revenues not exceeding $15 million for the preceding three years.[36] Winning bidders claiming small business credits won Broadband PCS licenses in C, D, E, and F Blocks.[37]

13. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

14. Narrowband Personal Communications Services. Narrowband Personal Communications Services *(Narrowband PCS)* are PCS services operating in the 901-902 MHz, 930-931 MHz, and 940-941 MHz bands.[38] PCS services are radio communications that encompass mobile and ancillary fixed communication that provide services to individuals and businesses and can be integrated with a variety of competing networks.[39] Wireless Telecommunications Carriers (*except* Satellite)[40] is the closest industry with a SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[41] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[42] Of this number, 2,837 firms employed fewer than 250 employees.[43] Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

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[35] Based on a FCC Universal Licensing System search on November 16, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CW; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[36] *See* 47 CFR § 24.720(b).

[37] *See* Federal Communications Commission, Office of Economics and Analytics, Auctions, Auctions 4, 5, 10, 11, 22, 35, 58, 71 and 78, https://www.fcc.gov/auctions.

[38] *See* 47 CFR § 24.5.

[39] *Id*.

[40] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[41] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[42] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[43] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

15. According to Commission data as of December 2021, there were approximately 4,211 active *Narrowband PCS* licenses.[44] The Commission's small business size standards with respect to *Narrowband PCS* involve eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of these licenses, the Commission defined a "small business" as an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $40 million.[45] A "very small business" is defined as an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $15 million.[46] Pursuant to these definitions, 7 winning bidders claiming small and very small bidding credits won approximately 359 licenses.[47] One of the winning bidders claiming a small business status classification in these *Narrowband PCS* license auctions had an active license as of December 2021.[48]

16. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

17. *Wireless Communications Services*. Wireless Communications Services (WCS) can be used for a variety of fixed, mobile, radiolocation, and digital audio broadcasting satellite services. Wireless spectrum is made available and licensed for the provision of wireless communications services in several frequency bands subject to Part 27 of the Commission's rules.[49] Wireless Telecommunications Carriers (*except* Satellite)[50] is the closest industry with a SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[51] U.S. Census Bureau data for 2017 show that there were 2,893 firms that

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[44] Based on a FCC Universal Licensing System search on December 10, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CN; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[45] *See* 47 CFR § 24.321(a)(1)-(2).

[46] *Id.*

[47] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 41: Narrowband PCS, Summary, Closing Charts, License By Bidder,

https://www.fcc.gov/sites/default/files/wireless/auctions/41/charts/41cls2.pdf; Auction 50: Narrowband PCS, Summary, Closing Charts, License By Bidder, https://www.fcc.gov/sites/default/files/wireless/auctions/50/charts/50cls2.pdf.

[48] Based on a FCC Universal Licensing System search on December 10, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = CN; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[49] *See* 47 CFR §§ 27.1 – 27.1607.

[50] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[51] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

operated in this industry for the entire year.[52] Of this number, 2,837 firms employed fewer than 250 employees.[53] Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

18. The Commission's small business size standards with respect to WCS involve eligibility for bidding credits and installment payments in the auction of licenses for the various frequency bands included in WCS. When bidding credits are adopted for the auction of licenses in WCS frequency bands, such credits may be available to several types of small businesses based average gross revenues (small, very small and entrepreneur) pursuant to the competitive bidding rules adopted in conjunction with the requirements for the auction and/or as identified in the designated entities section in Part 27 of the Commission's rules for the specific WCS frequency bands.[54]

19. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

20. *700 MHz Guard Band Licensees*. The 700 MHz Guard Band encompasses spectrum in 746-747/776-777 MHz and 762-764/792-794 MHz frequency bands. Wireless Telecommunications Carriers (*except* Satellite)[55] is the closest industry with a SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[56] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[57] Of this number, 2,837 firms employed fewer than 250 employees.[58] Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

21. According to Commission data as of December 2021, there were approximately 224 active 700 MHz Guard Band licenses.[59] The Commission's small business size standards with respect to

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[52] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[53] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[54] *See* 47 CFR §§ 27.201 – 27.1601. The Designated entities sections in Subparts D – Q each contain the small business size standards adopted for the auction of the frequency band covered by that subpart.

[55] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[56] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[57] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[58] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[59] Based on a FCC Universal Licensing System search on December 14, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match

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700 MHz Guard Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For the auction of these licenses, the Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years, and a "very small business" an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[60] Pursuant to these definitions, five winning bidders claiming one of the small business status classifications won 26 licenses, and one winning bidder claiming small business won two licenses.[61] None of the winning bidders claiming a small business status classification in these 700 MHz Guard Band license auctions had an active license as of December 2021.[62]

22. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

23. *Lower 700 MHz Band Licenses*. The lower 700 MHz band encompasses spectrum in the 698-746 MHz frequency bands. Permissible operations in these bands include flexible fixed, mobile, and broadcast uses, including mobile and other digital new broadcast operation; fixed and mobile wireless commercial services (including FDD- and TDD-based services); as well as fixed and mobile wireless uses for private, internal radio needs, two-way interactive, cellular, and mobile television broadcasting services.[63] Wireless Telecommunications Carriers (*except* Satellite)[64] is the closest industry with a SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[65] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[66] Of this number, 2,837 firms employed fewer than 250 employees.[67] Thus under the SBA

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only the following radio service(s)", Radio Service = WX; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[60] *See* 47 CFR § 27.502(a).

[61] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 33: Upper 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, https://www.fcc.gov/sites/default/files/wireless/auctions/33/charts/33cls2.pdf, Auction 38: Upper 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, https://www.fcc.gov/sites/default/files/wireless/auctions/38/charts/38cls2.pdf.

[62] Based on a FCC Universal Licensing System search on December 14, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = WX; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[63] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auctions 44, 49, 60: Lower 700 MHz Band, Fact Sheet, Permissible Operations, https://www.fcc.gov/auction/44/factsheet, https://www.fcc.gov/auction/49/factsheet, https://www.fcc.gov/auction/60/factsheet.

[64] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[65] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[66] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312,

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size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

24. According to Commission data as of December 2021, there were approximately 2,824 active Lower 700 MHz Band licenses.[68] The Commission's small business size standards with respect to Lower 700 MHz Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For auctions of Lower 700 MHz Band licenses the Commission adopted criteria for three groups of small businesses. A very small business was defined as an entity that, together with its affiliates and controlling interests, has average annual gross revenues not exceeding $15 million for the preceding three years, a small business was defined as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $40 million for the preceding three years, and an entrepreneur was defined as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $3 million for the preceding three years.[69] In auctions for Lower 700 MHz Band licenses seventy-two winning bidders claiming a small business classification won 329 licenses,[70] twenty-six winning bidders claiming a small business classification won 214 licenses,[71] and three winning bidders claiming a small business classification won all five auctioned licenses.[72]

25. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

26. *Upper 700 MHz Band Licenses*. The upper 700 MHz band encompasses spectrum in the 746-806 MHz bands. Upper 700 MHz D Block licenses are nationwide licenses associated with the 758-763 MHz and 788-793 MHz bands.[73] Permissible operations in these bands include flexible fixed, mobile, and broadcast uses, including mobile and other digital new broadcast operation; fixed and mobile

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https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[67] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[68] Based on a FCC Universal Licensing System search on December 14, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = WY, WZ; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[69] *See* 47 CFR § 27.702(a)(1)-(3).

[70] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 44: Lower 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, https://www.fcc.gov/sites/default/files/wireless/auctions/44/charts/44cls2.pdf.

[71] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 49: Lower 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, https://www.fcc.gov/sites/default/files/wireless/auctions/49/charts/49cls2.pdf.

[72] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 60: Lower 700 MHz Guard Bands, Summary, Closing Charts, Licenses by Bidder, https://www.fcc.gov/sites/default/files/wireless/auctions/60/charts/60cls2.pdf.

[73] *See* 47 CFR § 27.4.

wireless commercial services (including FDD- and TDD-based services); as well as fixed and mobile wireless uses for private, internal radio needs, two-way interactive, cellular, and mobile television broadcasting services.[74] Wireless Telecommunications Carriers (*except* Satellite)[75] is the closest industry with a SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[76] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[77] Of that number, 2,837 firms employed fewer than 250 employees.[78] Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

27. According to Commission data as of December 2021, there were approximately 152 active Upper 700 MHz Band licenses.[79] The Commission's small business size standards with respect to Upper 700 MHz Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For the auction of these licenses, the Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years, and a "very small business" an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[80] Pursuant to these definitions, three winning bidders claiming very small business status won five of the twelve available licenses.[81]

28. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

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[74] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 73: 700 MHz Band, Fact Sheet, Permissible Operations, https://www.fcc.gov/auction/73/factsheet. We note that in Auction 73, Upper 700 MHz Band C and D Blocks as well as Lower 700 MHz Band A, B, and E Blocks were auctioned.

[75] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[76] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[77] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[78] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[79] Based on a FCC Universal Licensing System search on December 14, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = WP, WU; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[80] *See* 47 CFR § 27.502(a).

[81] *See Auction of 700 MHz Band Licenses Closes; Winning Bidders Announced for Auction 73*, Public Notice, DA-08-595, Attachment A, Report No. AUC-08-73-I (Auction 73) (March 20, 2008). The results for Upper 700 MHz Band C Block can be found on pp. 62-63.

29. *Advanced Wireless Services (AWS) - (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3);* 2000-2020 MHz and 2180-2200 MHz (AWS-4)*)*. Spectrum is made available and licensed in these bands for the provision of various wireless communications services.[82] Wireless Telecommunications Carriers (*except* Satellite)[83] is the closest industry with a SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[84] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[85] Of this number, 2,837 firms employed fewer than 250 employees.[86] Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

30. According to Commission data as December 2021, there were approximately 4,472 active AWS licenses.[87] The Commission's small business size standards with respect to AWS involve eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of AWS licenses, the Commission defined a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding $15 million.[88] Pursuant to these definitions, 57 winning bidders claiming status as small or very small businesses won 215 of 1,087 licenses.[89] In the most recent auction of AWS licenses 15 of 37 bidders qualifying for status as small or very small businesses won licenses.[90]

31. In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small

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[82] *See* 47 CFR § 27.1(b).

[83] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[84] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[85] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[86] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[87] Based on a FCC Universal Licensing System search on December 10, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service = AD, AH, AT, AW; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[88] *See* 47 CFR §§ 27.1002, 27.1102, 27.1104, 27.1106.

[89] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 66: Advanced Wireless Services (AWS-1), Summary, Spreadsheets, https://www.fcc.gov/sites/default/files/wireless/auctions/66/charts/66cls2.pdf.

[90] *See Auction of Advanced Wireless Services (AWS-3) Licenses Closes; Winning Bidders Announced for Auction 97*, Public Notice, DA-15-131, Attachments A-B, (Auction No. 97) (January 30, 2015).

business size standard.

32. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems, and "wireless cable,"[91] transmit video programming to subscribers and provide two-way high speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).[92] Wireless cable operators that use spectrum in the BRS often supplemented with leased channels from the EBS, provide a competitive alternative to wired cable and other multichannel video programming distributors. Wireless cable programming to subscribers resembles cable television, but instead of coaxial cable, wireless cable uses microwave channels.[93]

33. In light of the use of wireless frequencies by BRS and EBS services, the closest industry with a SBA small business size standard applicable to these services is Wireless Telecommunications Carriers (*except* Satellite).[94] The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees.[95] U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year.[96] Of this number, 2,837 firms employed fewer than 250 employees.[97] Thus under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

34. According to Commission data as December 2021, there were approximately 5,869 active BRS and EBS licenses.[98] The Commission's small business size standards with respect to BRS involves eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of BRS licenses, the Commission adopted criteria for three groups of small businesses. A very small business is an entity that, together with its affiliates and controlling interests, has average annual gross revenues exceed $3 million and did not exceed $15 million for the preceding

[91] The use of the term "wireless cable" does not imply that it constitutes cable television for statutory or regulatory purposes.

[92] *See* 47 CFR § 27.4; *see also Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

[93] Generally, a wireless cable system may be described as a microwave station transmitting on a combination of BRS and EBS channels to numerous receivers with antennas, such as single-family residences, apartment complexes, hotels, educational institutions, business entities and governmental offices. The range of the transmission depends upon the transmitter power, the type of receiving antenna and the existence of a line-of-sight path between the transmitter or signal booster and the receiving antenna.

[94] *See* U.S. Census Bureau, *2017 NAICS Definition, "517312 Wireless Telecommunications Carriers* (*except Satellite*)," https://www.census.gov/naics/?input=517312&year=2017&details=517312.

[95] *See* 13 CFR § 121.201, NAICS Code 517312 (as of 10/1/22, NAICS Code 517112).

[96] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517312, https://data.census.gov/cedsci/table?y=2017&n=517312&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[97] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[98] Based on a FCC Universal Licensing System search on December 10, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service =BR, ED; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

three years, a small business is an entity that, together with its affiliates and controlling interests, has average gross revenues exceed $15 million and did not exceed $40 million for the preceding three years, and an entrepreneur is an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $3 million for the preceding three years.[99] Of the ten winning bidders for BRS licenses, two bidders claiming the small business status won 4 licenses, one bidder claiming the very small business status won three licenses and two bidders claiming entrepreneur status won six licenses.[100] One of the winning bidders claiming a small business status classification in the BRS license auction has an active licenses as of December 2021.[101]

35. The Commission's small business size standards for EBS define a small business as an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than $55 million for the preceding five (5) years, and a very small business is an entity that, together with its affiliates, its controlling interests and the affiliates of its controlling interests, has average gross revenues that are not more than $20 million for the preceding five (5) years.[102] In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

36. *The Educational Broadcasting Services.* Cable-based educational broadcasting services fall under the broad category of the Wired Telecommunications Carriers industry.[103] The Wired Telecommunications Carriers industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks.[104] Transmission facilities may be based on a single technology or a combination of technologies.[105] Establishments in this industry use the wired telecommunications network facilities that they operate to

[99] *See* 47 CFR § 27.1218(a).

[100] *See* Federal Communications Commission, Economics and Analytics, Auctions, Auction 86: Broadband Radio Service, Summary, Reports, All Bidders, https://www.fcc.gov/sites/default/files/wireless/auctions/86/charts/86bidder.xls.

[101] Based on a FCC Universal Licensing System search on December 10, 2021, https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service =BR; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[102] *See* 47 CFR § 27.1219(a).

[103] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311. Examples of this category are: broadband Internet service providers (e.g., cable, DSL); local telephone carriers (wired); cable television distribution services; long-distance telephone carriers (wired); closed circuit television (CCTV) services; VoIP service providers, using owner operated wired telecommunications infrastructure; direct-to-home satellite system (DTH) services; telecommunications carriers (wired); satellite television distribution systems; and multichannel multipoint distribution services (MMDS).

[104] *Id.*

[105] *Id.*

provide a variety of services, such as wired telephony services, including VoIP services; wired (cable) audio and video programming distribution; and wired broadband Internet services." [106]

37. The SBA small business size standard for this industry classifies businesses having 1,500 or fewer employees as small.[107] U.S. Census Bureau data for 2017 show that there were 3,054 firms in this industry that operated for the entire year.[108] Of this total, 2,964 firms operated with fewer than 250 employees.[109] Thus, under this size standard, the majority of firms in this industry can be considered small. Additionally, according to Commission data as of December 2021, there were 4,477 active EBS licenses.[110] The Commission estimates that the majority of these licenses are held by non-profit educational institutions and school districts and are likely small entities.

38. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing*. This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment.[111] Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.[112] The SBA small business size standard for this industry classifies businesses having 1,250 employees or less as small.[113] U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year.[114] Of this number, 624 firms had fewer than 250 employees.[115] Thus, under the SBA size standard, the majority of firms in this industry can be considered small.

39. *Software Publishers.* This industry comprises establishments primarily engaged in computer software publishing or publishing and reproduction.[116] Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing

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[106] *Id.*

[107] *See* 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

[108] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[109] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[110] Based on a FCC Universal Licensing System search on December 17, 2021. https://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp. Search parameters: Service Group = All, "Match only the following radio service(s)", Radio Service =ED; Authorization Type = All; Status = Active. We note that the number of active licenses does not equate to the number of licensees. A licensee can have one or more licenses.

[111] *See* U.S. Census Bureau, *2017 NAICS Definition, "334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing,*" https://www.census.gov/naics/?input=334220&year=2017&details=334220.

[112] *Id.*

[113] *See* 13 CFR § 121.201, NAICS Code 334220.

[114] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 334220, https://data.census.gov/cedsci/table?y=2017&n=334220&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[115] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[116] *See* U.S. Census Bureau, *2017 NAICS Definition, "511210 Software Publishers,"* https://www.census.gov/naics/?input=511210&year=2017&details=511210.

documentation, assisting in installation, and providing support services to software purchasers.[117] These establishments may design, develop, and publish, or publish only.[118] The SBA small business size standard for this industry classifies businesses having annual receipts of $41.5 million or less as small.[119] U.S. Census Bureau data for 2017 indicate that 7,842 firms in this industry operated for the entire year.[120] Of this number 7,226 firms had revenue of less than $25 million.[121] Based on this data, we conclude that a majority of firms in this industry are small.

40. *Noncommercial Educational (NCE) and Public Broadcast Stations.* Noncommercial educational broadcast stations and public broadcast stations are television or radio broadcast stations which under the Commission's rules are eligible to be licensed by the Commission as a noncommercial educational radio or television broadcast station and are owned and operated by a public agency or nonprofit private foundation, corporation, or association; or are owned and operated by a municipality which transmits only noncommercial programs for education purposes.

41. The SBA small business size standards and U.S. Census Bureau data classify radio stations[122] and television broadcasting[123] separately and both categories may include both noncommercial and commercial stations. The SBA small business size standard for both radio stations and television broadcasting classify firms having $41.5 million or less in annual receipts as small.[124] For Radio Stations, U.S. Census Bureau data for 2017 show that 1,879 of the 2,963 firms that operated during that year had revenue of less than $25 million per year.[125] For Television Broadcasting, U.S. Census Bureau data for 2017 show that 657 of the 744 firms that operated for the entire year had revenue of less than

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[117] *Id.*

[118] *Id.*

[119] *See* 13 CFR § 121.201, NAICS Code 511210 (as of 10/1/22, NAICS Code 513210).

[120] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 511210, https://data.census.gov/cedsci/table?y=2017&n=511210&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[121] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[122] *See* U.S. Census Bureau, *2017 NAICS Definition, "515112 Radio Stations*," https://www.census.gov/naics/?input=515112&year=2017&details=515112.

[123] *See* U.S. Census Bureau, *2017 NAICS Definition, "515120 Television Broadcasting,*" https://www.census.gov/naics/?input=515120&year=2017&details=515120.

[124] *See* 13 CFR § 121.201, NAICS Code 515112 (as of 10/1/22, NAICS Code 516110) (Radio Stations); NAICS Code 515120 (as of 10/1/22, NAICS Code 516120) (Television Broadcasting).

[125] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515112, https://data.census.gov/cedsci/table?y=2017&n=515112&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We note that the U.S. Census Bureau withheld publication of the number of firms that operated for the entire year. We also note that the U.S. Census Bureau withheld publication of the number of firms that operated with sales/value of shipments/revenue in the individual categories for less than $100,000, and $100,000 to $249,999 to avoid disclosing data for individual companies (see Cell Notes for the sales/value of shipments/revenue in these categories). Therefore, the number of firms with revenue that meet the SBA size standard would be higher that noted herein. We further note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

$25,000,000.[126] While the U.S. Census Bureau data does not indicate the number of non-commercial stations, we estimate that under the applicable SBA size standard the majority of noncommercial educational broadcast stations and public broadcast stations are small entities.

42. According to Commission data as of December 31, 2022, there were 4,590 licensed noncommercial educational radio and television stations.[127] In addition, the Commission estimates as of December 31, 2022, there were 383 licensed noncommercial educational (NCE) television stations, 383 Class A TV stations, 1,912 LPTV stations and 3,122 TV translator stations.[128] The Commission does not compile and otherwise does not have access to financial information for these stations that permit it to determine how many stations qualify as small entities under the SBA small business size standards. However, given the nature of these services, we will presume that all noncommercial educational and public broadcast stations qualify as small entities under the above SBA small business size standards.

43. *Radio Stations*. This industry is comprised of "establishments primarily engaged in broadcasting aural programs by radio to the public."[129] Programming may originate in their own studio, from an affiliated network, or from external sources.[130] The SBA small business size standard for this industry classifies firms having $41.5 million or less in annual receipts as small.[131] U.S. Census Bureau data for 2017 show that 2,963 firms operated in this industry during that year.[132] Of this number, 1,879 firms operated with revenue of less than $25 million per year.[133] Based on this data and the SBA's small business size standard, we estimate a majority of such entities are small entities.

44. The Commission estimates that as of December 31, 2022, there were 4,484 licensed commercial AM radio stations and 6,686 licensed commercial FM radio stations, for a combined total of 11,170 commercial radio stations.[134] Of this total, 11,168 stations (or 99.98 %) had revenues of $41.5

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[126] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515120, https://data.census.gov/cedsci/table?y=2017&n=515120&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[127] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[128] *Id*.

[129] *See* U.S. Census Bureau, *2017 NAICS Definition, "515112 Radio Stations*," https://www.census.gov/naics/?input=515112&year=2017&details=515112.

[130] *Id.*

[131] *See* 13 CFR § 121.201, NAICS Code 515112 (as of 10/1/22, NAICS Code 516110).

[132] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515112, https://data.census.gov/cedsci/table?y=2017&n=515112&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false. We note that the US Census Bureau withheld publication of the number of firms that operated for the entire year.

[133] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We note that the U.S. Census Bureau withheld publication of the number of firms that operated with sales/value of shipments/revenue in the individual categories for less than $100,000, and $100,000 to $249,999 to avoid disclosing data for individual companies (see Cell Notes for the sales/value of shipments/revenue in these categories). Therefore, the number of firms with revenue that meet the SBA size standard would be higher that noted herein. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[134] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

million or less in 2021, according to Commission staff review of the BIAKelsey Media Access Pro Online Database (MAPro) on January 13, 2023,[135] and therefore these licensees qualify as small entities under the SBA definition. In addition, the Commission estimates that as of December 31, 2022, there were 4,207 licensed noncommercial (NCE) FM radio stations, 2,015 low power FM (LPFM) stations, and 8,950 FM translators and boosters.[136] The Commission however does not compile, and otherwise does not have access to financial information for these radio stations that would permit it to determine how many of these stations qualify as small entities under the SBA small business size standard. Nevertheless, given the SBA's large annual receipts threshold for this industry and the nature of these radio station licensees, we presume that all of these entities qualify as small entities under the above SBA small business size standard.

45. We note, however, that in assessing whether a business concern qualifies as "small" under the above definition, business (control) affiliations[137] must be included. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action, because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies. In addition, another element of the definition of "small business" requires that an entity not be dominant in its field of operation. We are unable at this time to define or quantify the criteria that would establish whether a specific radio or television broadcast station is dominant in its field of operation. Accordingly, the estimate of small businesses to which the rules may apply does not exclude any radio or television station from the definition of a small business on this basis and is therefore possibly over-inclusive. An additional element of the definition of "small business" is that the entity must be independently owned and operated. Because it is difficult to assess these criteria in the context of media entities, the estimate of small businesses to which the rules may apply does not exclude any radio or television station from the definition of a small business on this basis and similarly may be over-inclusive.

46. *FM Translator Stations and Low-Power FM Stations.* FM translators and Low Power FM Stations are classified in the industry for Radio Stations.[138] The Radio Stations industry comprises establishments primarily engaged in broadcasting aural programs by radio to the public.[139] Programming may originate in their own studio, from an affiliated network, or from external sources.[140] The SBA small business size standard for this industry classifies firms having $41.5 million or less in annual receipts as small.[141] U.S. Census Bureau data for 2017 show that 2,963 firms operated during that year.[142] Of that

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[135] BIA Advisory Services, BIAKelsey Media Access Pro Online Radio Database, http://www.biakelsey.com/data-platforms/media-access-pro (last visited January 13, 2023).

[136] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[137] "[Business concerns] are affiliates of each other when one concern controls or has the power to control the other or a third party or parties controls or has the power to control both." 13 CFR § 21.103(a)(1).

[138] *See* U.S. Census Bureau, *2017 NAICS Definition, "515112 Radio Stations,"* https://www.census.gov/naics/?input=515112&year=2017&details=515112.

[139] *Id.*

[140] *Id.*

[141] *See* 13 CFR § 121.201, NAICS Code 515112 (as of 10/1/22, NAICS Code 516110).

[142] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515112,

https://data.census.gov/cedsci/table?y=2017&n=515112&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false. We note that the US Census Bureau withheld publication of the number of firms that operated for the entire year.

number, 1,879 firms operated with revenue of less than $25 million per year.[143] Therefore, based on the SBA's size standard we conclude that the majority of FM Translator stations and Low Power FM Stations are small. Additionally, according to Commission data, as of December 31, 2022, there were 8,950 FM Translator Stations and 2,015 Low Power FM licensed broadcast stations.[144] The Commission however does not compile and otherwise does not have access to information on the revenue of these stations that would permit it to determine how many of the stations would qualify as small entities. For purposes of this regulatory flexibility analysis, we presume the majority of these stations are small entities.

47. *Television Broadcasting*. This industry is comprised of "establishments primarily engaged in broadcasting images together with sound."[145] These establishments operate television broadcast studios and facilities for the programming and transmission of programs to the public.[146] These establishments also produce or transmit visual programming to affiliated broadcast television stations, which in turn broadcast the programs to the public on a predetermined schedule. Programming may originate in their own studio, from an affiliated network, or from external sources. The SBA small business size standard for this industry classifies businesses having $41.5 million or less in annual receipts as small.[147] 2017 U.S. Census Bureau data indicate that 744 firms in this industry operated for the entire year.[148] Of that number, 657 firms had revenue of less than $25,000,000.[149] Based on this data we estimate that the majority of television broadcasters are small entities under the SBA small business size standard.

48. As of December 31, 2022, there were 1,375 licensed commercial television stations.[150] Of this total, 1,282 stations (or 93.2%) had revenues of $41.5 million or less in 2021, according to Commission staff review of the BIAKelsey Media Access Pro Online Television Database (MAPro) on January 13, 2023,[151] and therefore these licensees qualify as small entities under the SBA definition. In addition, the Commission estimates as of December 31, 2022, there were 383 licensed noncommercial educational (NCE) television stations, 383 Class A TV stations, 1,912 LPTV stations and 3,122 TV

[143] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We note that the U.S. Census Bureau withheld publication of the number of firms that operated with sales/value of shipments/revenue in the individual categories for less than $100,000, and $100,000 to $249,999 to avoid disclosing data for individual companies (see Cell Notes for the sales/value of shipments/revenue in these categories). Therefore, the number of firms with annual receipts that meet the SBA size standard would be higher that noted herein. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[144] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[145] *See* U.S. Census Bureau, *2017 NAICS Definition, "515120 Television Broadcasting,"* https://www.census.gov/naics/?input=515120&year=2017&details=515120.

[146] *Id.*

[147] *See* 13 CFR § 121.201, NAICS Code 515120 (as of 10/1/22, NAICS Code 516120).

[148] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515120, https://data.census.gov/cedsci/table?y=2017&n=515120&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[149] *Id*. The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[150] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[151] BIA Advisory Services, BIAKelsey Media Access Pro Online Television Database, http://www.biakelsey.com/data-platforms/media-access-pro (last visited on Jan. 13, 2023).

translator stations.[152] The Commission however does not compile, and otherwise does not have access to financial information for these television broadcast stations that would permit it to determine how many of these stations qualify as small entities under the SBA small business size standard. Nevertheless, given the SBA's large annual receipts threshold for this industry and the nature of these television station licensees, we presume that all of these entities qualify as small entities under the above SBA small business size standard.

49. *Cable and Other Subscription Programming.* The U.S. Census Bureau defines this industry as establishments primarily engaged in operating studios and facilities for the broadcasting of programs on a subscription or fee basis.[153] The broadcast programming is typically narrowcast in nature (e.g., limited format, such as news, sports, education, or youth-oriented). These establishments produce programming in their own facilities or acquire programming from external sources.[154] The programming material is usually delivered to a third party, such as cable systems or direct-to-home satellite systems, for transmission to viewers.[155] The SBA small business size standard for this industry classifies firms with annual receipts less than $41.5 million as small.[156] Based on U.S. Census Bureau data for 2017, 378 firms operated in this industry during that year.[157] Of that number, 149 firms operated with revenue of less than $25 million a year and 44 firms operated with revenue of $25 million or more.[158] Based on this data, the Commission estimates that the majority of firms operating in this industry are small.

50. *Cable System Operators (Rate Regulation Standard).* The Commission has developed its own small business size standard for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers nationwide.[159] Based on industry data, there are about 420 cable companies in the U.S.[160] Of these, only seven have more than 400,000 subscribers.[161] In addition, under the Commission's rules, a "small system" is a cable system serving

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[152] *Broadcast Station Totals as of December 31, 2022*, Public Notice, DA 22-721 (rel. Jan. 11, 2022) (*December 2022 Broadcast Station Totals PN*), https://www.fcc.gov/document/broadcast-station-totals-december-31-2022.

[153] *See* U.S. Census Bureau, *2017 NAICS Definition, "515210 Cable and Other Subscription Programming,"* https://www.census.gov/naics/?input=515210&year=2017&details=515210.

[154] *Id.*

[155] *Id.*

[156] *See* 13 CFR § 121.201, NAICS Code 515210.

[157] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 515210, https://data.census.gov/cedsci/table?y=2017&n=515210&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false. The US Census Bureau withheld publication of the number of firms that operated for the entire year to avoid disclosing data for individual companies (see Cell Notes for this category).

[158] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We note that the U.S. Census Bureau withheld publication of the number of firms that operated with sales/value of shipments/revenue in all categories of revenue less than $500,000 to avoid disclosing data for individual companies (see Cell Notes for the sales/value of shipments/revenue in these categories). Therefore, the number of firms with revenue that meet the SBA size standard would be higher than noted herein. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[159] 47 CFR § 76.901(d).

[160] S&P Global Market Intelligence, S&P Capital IQ Pro, U.S. MediaCensus, *Operator Subscribers by Geography* (last visited May 26, 2022).

[161] S&P Global Market Intelligence, S&P Capital IQ Pro, *Top Cable MSOs 12/21Q (*last visited May 26, 2022); S&P Global Market Intelligence, Multichannel Video Subscriptions, Top 10 (April 2022).

15,000 or fewer subscribers.[162] Based on industry data, there are about 4,139 cable systems (headends) in the U.S.[163] Of these, about 639 have more than 15,000 subscribers.[164] Accordingly, the Commission estimates that the majority of cable companies and cable systems are small.

51. *Cable System Operators (Telecom Act Standard)*. The Communications Act of 1934, as amended, contains a size standard for a "small cable operator," which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than one percent of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[165] For purposes of the Telecom Act Standard, the Commission determined that a cable system operator that serves fewer than 677,000 subscribers, either directly or through affiliates, will meet the definition of a small cable operator based on the cable subscriber count established in a 2001 Public Notice.[166] Based on industry data, only six cable system operators have more than 677,000 subscribers.[167] Accordingly, the Commission estimates that the majority of cable system operators are small under this size standard. We note however, that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed $250 million.[168] Therefore, we are unable at this time to estimate with greater precision the number of cable system operators that would qualify as small cable operators under the definition in the Communications Act.

52. *Satellite Telecommunications*. This industry comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[169] Satellite telecommunications service providers include satellite and earth station operators. The SBA small business size standard for this industry classifies a business with $35 million or less in annual receipts as small.[170] U.S. Census Bureau data for 2017 show that 275

[162] 47 CFR § 76.901(c).

[163] S&P Global Market Intelligence, S&P Capital IQ Pro, U.S. MediaCensus, *Operator Subscribers by Geography* (last visited May 26, 2022).

[164] S&P Global Market Intelligence, S&P Capital IQ Pro, *Top Cable MSOs 12/21Q (*last visited May 26, 2022).

[165] 47 U.S.C. § 543(m)(2).

[166] *FCC Announces New Subscriber Count for the Definition of Small Cable Operator*, Public Notice, 16 FCC Rcd 2225 (CSB 2001) (*2001 Subscriber Count PN*). In this Public Notice, the Commission determined that there were approximately 67.7 million cable subscribers in the United States at that time using the most reliable source publicly available. *Id*. We recognize that the number of cable subscribers changed since then and that the Commission has recently estimated the number of cable subscribers to be approximately 58.1 million. *See Communications Marketplace Report*, GN Docket No. 20-60, 2020 Communications Marketplace Report, 36 FCC Rcd 2945, 3049, para. 156 (2020) (*2020 Communications Marketplace Report*). However, because the Commission has not issued a public notice subsequent to the *2001 Subscriber Count PN,* the Commission still relies on the subscriber count threshold established by the *2001 Subscriber Count PN* for purposes of this rule. *See* 47 CFR § 76.901(e)(1).

[167] S&P Global Market Intelligence, S&P Capital IQ Pro, *Top Cable MSOs 12/21Q (*last visited May 26, 2022); S&P Global Market Intelligence, Multichannel Video Subscriptions, Top 10 (April 2022).

[168] The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority's finding that the operator does not qualify as a small cable operator pursuant to § 76.901(e) of the Commission's rules. *See* 47 CFR § 76.910(b).

[169] *See* U.S. Census Bureau, *2017 NAICS Definition, "517410 Satellite Telecommunications,"* https://www.census.gov/naics/?input=517410&year=2017&details=517410.

[170] *See* 13 CFR § 121.201, NAICS Code 517410.

firms in this industry operated for the entire year.[171] Of this number, 242 firms had revenue of less than $25 million.[172] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 71 providers that reported they were engaged in the provision of satellite telecommunications services.[173] Of these providers, the Commission estimates that approximately 48 providers have 1,500 or fewer employees.[174] Consequently using the SBA's small business size standard, a little more than of these providers can be considered small entities.

53. *All Other Telecommunications*. This industry is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.[175] This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.[176] Providers of Internet services (e.g. dial-up ISPs) or voice over Internet protocol (VoIP) services, via client-supplied telecommunications connections are also included in this industry.[177] The SBA small business size standard for this industry classifies firms with annual receipts of $35 million or less as small.[178] U.S. Census Bureau data for 2017 show that there were 1,079 firms in this industry that operated for the entire year.[179] Of those firms, 1,039 had revenue of less than $25 million.[180] Based on this data, the Commission estimates that the majority of "All Other Telecommunications" firms can be considered small.

54. *Direct Broadcast Satellite ("DBS") Service.* DBS service is a nationally distributed subscription service that delivers video and audio programming via satellite to a small parabolic "dish" antenna at the subscriber's location. DBS is included in the Wired Telecommunications Carriers industry which comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and

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[171] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 517410, https://data.census.gov/cedsci/table?y=2017&n=517410&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[172] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

[173] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[174] *Id.*

[175] *See* U.S. Census Bureau, *2017 NAICS Definition*, "*517919 All Other Telecommunications,*" https://www.census.gov/naics/?input=517919&year=2017&details=517919.

[176] *Id.*

[177] *Id.*

[178] *See* 13 CFR § 121.201, NAICS Code 517919 (as of 10/1/22, NAICS Code 517810).

[179] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 517919, https://data.census.gov/cedsci/table?y=2017&n=517919&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[180] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

video using wired telecommunications networks.[181] Transmission facilities may be based on a single technology or combination of technologies.[182] Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services, wired (cable) audio and video programming distribution; and wired broadband internet services.[183] By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.[184]

55. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.[185] U.S. Census Bureau data for 2017 show that 3,054 firms operated in this industry for the entire year.[186] Of this number, 2,964 firms operated with fewer than 250 employees.[187] Based on this data, the majority of firms in this industry can be considered small under the SBA small business size standard. According to Commission data however, only two entities provide DBS service - DIRECTV (owned by AT&T) and DISH Network, which require a great deal of capital for operation.[188] DIRECTV and DISH Network both exceed the SBA size standard for classification as a small business. Therefore, we must conclude based on internally developed Commission data, in general DBS service is provided only by large firms.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

56. We expect the actions proposed in the *Further Notice*, if adopted, will impose additional reporting, recordkeeping and other compliance obligations on small as well as other entities who are Participating CMS Providers voluntarily participating in WEA.

57. At this time the Commission cannot quantify the cost of compliance for small entities to comply with the proposals and all of the matters that we seek comment on in the *Further Notice*. However, we have conducted an analysis estimating the total costs that would be incurred by all Participating CMS providers as a group. We anticipate that the proposed rules will result in costs associated with modifying standards and software, and recordkeeping and reporting costs for Participating CMS Providers. In the *Further Notice,* we seek comment whether adopting all these proposals as a package may result in a cost savings as opposed to having to modify standards and software in response to several, incremental policy changes. Based on our analysis, it is likely that small entities will have to

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[181] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311.

[182] *Id.*

[183] *See id*. Included in this industry are: broadband Internet service providers (*e.g.*, cable, DSL); local telephone carriers (wired); cable television distribution services; long-distance telephone carriers (wired); closed-circuit television (CCTV) services; VoIP service providers, using own operated wired telecommunications infrastructure; direct-to-home satellite system (DTH) services; telecommunications carriers (wired); satellite television distribution systems; and multichannel multipoint distribution services (MMDS).

[184] *Id*.

[185] *See* 13 CFR § 121.201, NAICS Code 517311.

[186] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[187] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[188] *See Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Eighteenth Report,* Table III.A.5, 32 FCC Rcd 568, 595 (Jan. 17, 2017).

hire professionals to comply with our proposals, if adopted. Below we discuss some anticipated reporting, recordkeeping and other compliance obligations and our cost analysis estimating certain costs.

58. *WEA Database*. The Commission proposes the creation of a Commission-hosted WEA Database that would contain WEA availability and performance information. All small and other Participating CMS Providers would be required to report their level of WEA participation in the WEA Database regardless of whether they elect to transmit WEA messages. Participating CMS Providers that elect to transmit WEA alert messages will be required to elect to participate and electronically file the participation election in the WEA Database. Participating CMS Providers' WEA election should state whether they elect to participate in WEA in whole, in part, or whether they elect not to participate. Their filings would also be required to identify the entities on behalf of which they are filing (including the subsidiary companies on behalf of which their election is filed, the "doing business as" names under which the Participating CMS Provider offers WEA, and the Mobile Virtual Network Operators (MVNOs) and wireless resellers through which the Participating CMS Provider offers WEA), specify the geographic locations in which they do and do not offer WEA, and identify the mobile devices that the Participating CMS Provider offers that are WEA-capable. We also propose to require that Participating CMS Providers' WEA Database filing include the names of all wireless service providers that use their network to deliver WEA messages to the public (or do not deliver WEA messages at all, in the case of entities electing not to participate in WEA) and identify all mobile devices that the Participating CMS Provider offers that are WEA-capable. Additionally, we propose to require small and other Participating CMS Providers to update the WEA Database within 30 days of any change in their participation in WEA.

59. *Performance Measures Reporting*. In the *Further Notice*, we propose performance measures for reliability, accuracy, and speed that small and other Participating CMS Providers will be required to meet for each WEA message it sends and to provide performance data to the Commission

60. *Language and Multimedia Support.* To make WEA messages more accessible and to expand their reach, in the *Further Notice* we propose to require small and other Participating CMS Providers' WEA-capable mobile devices to translate English-language alert messages that they receive into the subscriber's default language preference. If adopted, compliance with this obligation will require small and other Participating CMS providers to support Chinese, Tagalog, Vietnamese, Arabic, French, Korean, Russian, Haitian Creole, German, Hindi, Portuguese, and Italian, in addition to English and Spanish alerts. Our proposed requirements that Participating CMS Providers transmit "thumbnail-sized" images in WEA alert messages could also improve accessibility for individuals with disabilities and individuals that do not speak English. To comply with our proposed multimedia support requirement small and other Participating CMS Providers would also be required support mobile devices' presentation of maps that include at least the following elements: shape of the target area; user location relative to the target area and a graphical representation of the geographic area in which both the targeted area and user are located.

61. *Cost Estimates.* The Commission estimates a $39.9 million one-time cost for all Participating CMS Providers to update the WEA standards and software necessary to comply with our proposed WEA availability reporting, automated WEA performance reporting, support for template alerting in the twelve most common languages in addition to English and Spanish, support for multimedia infographic alerting, support for incorporating location-aware maps into WEA through an API, enabling of alerting authorities to send alerts without the associated attention signal, allowing of consumers to cache their receipt of WEA, and support for additional testing. This figure consists of approximately $814,000 to update the applicable WEA standards and approximately $39.1 million to update the applicable software. The Commission estimates a $422,500 annually recurring cost for all Participating CMS Providers to report WEA availability and performance information to the WEA Database. This figure consists of approximately $139,000 to report information about the availability of WEA and $285,500 to report information about WEA's performance.

62. We derived the one-time $39.9 million cost estimate based on several calculations. Our estimate to update the applicable WEA standards is based on the cost of modifying standards using annual

compensation for 30 network engineers compensated at the national average for their field ($120,650/year or $58/hour), plus annual benefits ($60,325/year or 29/hour) working for the amount of time that it takes to develop a standard (one hour every other week for one year, 26 hours) for 12 distinct standards.[189] Our cost estimate to implement the necessary software changes calculated the cost of modifying software as the annual compensation for a software developer compensated at the national average for their field ($120,990/year), plus annual benefits ($60,495/year) working for the amount of time that it takes to develop software (ten months) at each of the 76 CMS Providers that participate in WEA.[190] Our cost estimate to test these modifications (including integration testing, unit testing and failure testing) is based on using 12 software developer compensated at the national average for their field ($120,650/year or $58/hour), plus annual benefits ($60,325/year or 29/hour) working for two months at each of the 76 CMS Providers that participate in WEA.[191]

63. In the Supporting Document of Study Area Boundary Data Reporting in Esri Shapefile Format, the Office of Information and Regulatory Affairs estimates that it takes an average of 26 hours for a data scientist to modify a shapefile.[192] We believe submitting WEA availability information in shapefile format should require less time than modifying a shapefile. Therefore, we believe 26 hours would be an upper bound of the time required for a Participating CMS Provider to report its WEA availability in shapefile format. Given that the median wage rate is $48.52/hour for data scientists,[193] with a 45% markup for benefits,[194] we arrive at $70.40 as the hourly compensation rate for a data scientist. We estimate an aggregate cost of WEA availability reporting to be approximately $139,000 (≈ $70.40 per

[189] This is calculated as follows: 30 network engineers x ($58 + $29) per hour per network engineer x 26 hours per standard x 12 standards = $814,320, a figure that we round to $814,000 to avoid the false appearance of precision in our estimate. *See* Bureau of Labor Statistics Employer Costs for Employee Compensation Summary, Computer Network Architect (May 2021), https://www.bls.gov/oes/current/oes151241.htm (last visited Aug. 25, 2022) (stating that the average base salary for a computer network architect is $120,730/yr); Letter from Tom Goode, General Counsel, ATIS, to Marlene Dortch, Secretary, FCC, PS Docket No. 15-91, at 1 (filed Sep. 6, 2016) (stating that, when standards need to be modified for WEA, it would be common practice for groups of approximately 30 individuals with relevant technical expertise meet approximately bi-weekly for an hour to discuss the modifications); *Wireless Emergency Alerts; Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket Nos. 15-91, 15-94, Second Report and Order and Second Order on Reconsideration, 33 FCC Rcd 1320, 1344-45, para. 33, n.154 (2018) (listing the 12 WEA standards).

[190] This is calculated as follows: ($120,650 + $60,325) annually per Participating CMS Provider x 10 months / 12 months per year x 76 Participating CMS Providers = $11,461,750. *See* Bureau of Labor Statistics Employer Costs for Employee Compensation Summary, Software Developers, (May 2021) https://www.bls.gov/oes/current/oes151252.htm, (last visited Aug. 25, 2022) (stating that the average base salary for a software developer is $120,730/year, which results in total compensation of $180,960 when benefits are included); Verizon, PS Docket No. 15-91, Comments, PS Docket No. 15-91, at 5 (Jan. 13, 2016) (stating that it takes manufacturers and vendors 12 months to incorporate WEA standards into their products and test them); FCC, *Master WEA Registry*, https://www.fcc.gov/files/weamasterregistry112019xls (last visited Aug. 19, 2022) (reflecting that 76 CMS Providers participate in WEA either in whole or in part).

[191] This is calculated as follows: 12 software developers x ($120,650 + $60,325) annually per Participating CMS Provider x 2 months / 12 months per year x 76 Participating CMS Providers = $27,508,200. *Id*.

[192] *See* Office of Information and Regulatory Affairs, Office of Management and Budget Executive Office of the President, 2022 Study Area Boundary Data Reporting in Esri Shapefile Format DA 12-1777 and DA 13-282, Supporting Statement - OMB Control No. 3060-1181, at 5- paras. 12 (Feb. 15, 2022), https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202202-3060-009.

[193] We use the Bureau of Labor Statistics median wage for data scientists, which they estimate at $48.52. *See* Bureau of Labor Statistics, *Occupational Employment Statistics*, https://www.bls.gov/oes/current/oes152051.htm (last visited Mar. 9, 2023).

[194] *See Compensation Benefit Mark-up.*

hour x 26 hours x 76 providers), which may be recurring on an annual basis since availability may change and need to be updated over time.

64. We expect that the process of data collection and data submission would require minimal human intervention. Although we anticipate such performance reporting would be largely automated once it is set up, we estimate a routine administrative monitoring cost that Participating CMS Providers may still incur when they file the performance report for each alert incident. We estimate that, for each alert, a provider will need an office administrator, who is compensated at $27 hour, to spend 0.5 hours in monitoring each data transmission. At the aggregate level, we believe there will be 21,000 performance reports transmitted to the WEA database, resulting in a $283,500 annual recurring cost at the aggregate level.[195]

65. To help the Commission more fully evaluate the cost of compliance for small entities should our proposals be adopted, in the *Further Notice*, we request comments on the cost implications of our proposals and ask whether there are more efficient and less burdensome alternatives (including cost estimates) for the Commission to consider. We expect the information we received in comments including cost and benefit analyses, to help the Commission identify and evaluate relevant matters for small entities, including compliance costs and other burdens that may result from the proposals and inquiries we make in the *Further Notice*.

E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

66. The RFA requires an agency to describe any significant, specifically small business alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for such small entities; (3) the use of performance, rather than design, standards; and (4) and exemption from coverage of the rule, or any part thereof, for such small entities."[196]

67. The Commission has taken steps to minimize the impact of the proposals in the *Further Notice* as a general matter, and specifically targeting small entities, has sought comment on the extent to which we can limit the overall economic impact of these proposed requirements if we provide increased flexibility for small entities. We believe that the proposals to improve and enhance WEA in the *Further Notice*, are the most efficient and least burdensome approach. Below we discuss some specific actions taken and alternatives considered by the Commission in the *Further Notice*.

68. *Making WEA More Accessible*. Our proposals to make WEA more accessible considered feedback and information from industry participants and the Communications Security, Reliability and Interoperability Council VIII (CSRIC VIII)[197] which provided real-world insight to better inform the

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[195] Given that WEA was used 70,000 times over the last decade, we estimate that 7,000 alerts (= 70,000 / 10 years) were issued per year. According to 2022 Communications Marketplace Report, nearly 95% of consumers have at least three wireless provider options in their areas. *See Communications Marketplace Report* et al., GN Docket No. 22-203, Report, FCC 22-103, at 110, Fig. II.B.37 (Dec. 30, 2022), https://www.fcc.gov/document/2022-communications-marketplace-report. Therefore, we estimate that the total number of performance reports that need to be filed would be 21,000 (=7,000 alerts x 3 providers per alert). Assuming each alert take an additional 0.5 hours for an office administrator to process for Participating CMS Provider at a compensation rate of $27 per hour, the total additional recurring cost is $283,500 (= $27/hour x 0.5 hours x 21,000 reports) per year. *See Office Administrator Compensation*.

[196] 5 U.S.C. § 603(c)(1)-(4).

[197] *See* Communications Security, Reliability, and Interoperability Council VIII, *Report on WEA Performance Reporting* (2022) https://www.fcc.gov/file/24518/download (*CSRIC VIII Report on WEA Performance Reporting*).

Commission on currently available technologies that could be leveraged to accomplish our objectives in a cost-effective manner. Requiring small and other Participating CMS providers to support the most common languages spoken in the U.S. is based on our belief that machine language translation technologies have matured sufficient to support such a requirement.[198] Industry information supports our belief[199] and CSRIC VIII reports Participating CMS Providers may be able to leverage machine translation technologies such as Google Cloud Translation and Apple Translate that is pre-installed on many WEA-capable mobile devices using an application programming interface (API) to make WEA messages accessible to every major language group in the U.S.[200] Our proposal of the expanded language support requirement with an approach that gives small Participating CMS Providers the potential to leverage existing technologies that are already pre-installed in many of their WEA capable handsets should reduce the economic impact for small Participating CMS Providers.

69. To support multilingual WEA, we also considered template-based alerts which are being utilized by the New York City Emergency Management Department through its Notify NYC application to support multilingual alerting in 14 different languages. This application presents an English-language message, along with a link to 13 other pre-scripted translations. The alert message translations have been written by people fluent in the languages and vetted with native speakers from language communities.[201] In the *Further Notice* we seek comment on our proposed requirement and on alternative approaches to promoting multilingual WEA.

70. More Seamless Integration of WEA. To integrate WEA more seamlessly into people's lives we took actions to facilitate more effective WEA public awareness exercises. We propose allowing small and other Participating CMS Providers to support up to two annual end-to-end WEA tests per alerting authority that the consumers receive by default, provided that the alerting authority: 1) conducts outreach and notifies the public in advance of the planned WEA test and that no emergency is, in fact, occurring; 2) include in its test message that the alert is only a test; 3) coordinates the test among Participating CMS Providers, state and local emergency authorities, relevant State Emergency Communications Committees (SECCs), and first responder organizations, and 4) provides notification to the public in widely accessible formats that the test is only a test. If adopted, this proposal would remove the requirement for small and other alerting authorities to request waiver for up to two annual end-to-end WEA tests and the associated costs of making such a request. Moreover, the proposed conditions are the

[198] When the Commission last sought comment on the accuracy of machine translation in 2016, commenters suggested the technology was not mature enough for use in emergency communications. *See* Apple 2016 Reply Comments at 6 n.21; AT&T 2016 Comments at 16-17; NCMEC 2016 *Ex Parte* at 2; NYCEM 2016 *Ex Parte* at 3.

[199] Letter from Rhonda J. Johnson, Executive Vice President, Federal Regulatory Affairs, AT&T, to Jessica Rosenworcel, Chairwoman, FCC, at 4-5 (Rec. Feb. 27, 2023) (stating "[w]e believe that software translation technologies are sufficiently mature to effectively support the translation of WEA alerts into the most commonly spoken languages" and "[i]n the future . . . [an] alert could be broadcast in English and automatically translated into the default language for the user's device by a WEA application"). *See also* Letter from Chemu Langat, Chief Operating Officer and Vice President, Quality and Regulatory, Best Buy Health, Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 3 (Rec. Feb. 27, 2023) ("[b]ased upon input from our technical teams, we believe it is possible that machine translation technologies could be leveraged to translate emergency alert messages into commonly spoken languages . . . our technology teams have not opined on whether existing machine translation technologies operate with a high-enough degree of accuracy to safely enable multilingual WEAs"); Darah Franklin, Counsel, Google North America Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 2 (Rec. Feb. 27, 2023) ("machine translations technologies can be used to scale translation capabilities, but accuracy and reliability varies across ML-based translation providers/implementations.").

[200] *See* Darah Franklin, Counsel, Google North America Inc., to Jessica Rosenworcel, Chairwoman, FCC, at 2 (Rec. Feb. 27, 2023).

[201] *See*, *e.g.*, Pacific ADA Center, Webinar: FEMA Promising Practice: Strategies for Effective Communication with People who are Deaf or Hard of Hearing in Emergencies, Transcript (Jul. 14 2016), https://adapresentations.org/doc/7_14_16/Transcript_7_14_16.pdf.

same conditions applicable for alerting authorities to conduct EAS Live Code Tests.[202]

71. Establishing a WEA Database to Promote Transparency about WEA Availability and Benchmark WEA Performance. In the *Further Notice* we propose to adopt reliability, accuracy and speed benchmarks for WEA, and performance minimums that small and other Participating CMS Providers must satisfy to improve the effectiveness of WEA, and that are consistent with the recommendations in the Government Accountability Office (GAO) Report.[203] We also propose to require small and other Participating CMS Providers to submit performance reliability, accuracy, and speed data for all WEA alert messages and for State/Local WEA Tests.

72. Further, as an alternative, or in addition to, the requirements proposed above to ensure WEA's minimum performance, we considered and seek comment on whether to require small and other Participating CMS Providers to take measures to improve WEA's reliability and accuracy, and on what other potential technical measures we could require to optimize the reliability, accuracy, or speed of the WEA system.

73. We also considered in the alternative, and in the *Further Notice* seek comment on, the feasibility of measuring WEA's performance using staged devices as proposed by CSRIC VIII.[204] Regarding this alternative we inquire, 1) whether small and other Participating CMS Providers could capture actionable information about WEA's performance by conducting regular testing using devices positioned in and around the target area of a Required Monthly Test (RMT);[205] 2) could such a testing and performance measurement requirement also leverage State/Local WEA Tests or leverage alerting authority volunteers to supplement their own; 3) whether small and other Participating CMS Providers could use staged devices to annually measure WEA's performance on a representative sample of handsets and in representative environments, including dense urban, urban, suburban, and rural areas;[206] 4) whether, and if so, how the resulting data collected would differ in quality from the data that we propose to collect today and 5) whether there would be any limitations to the public safety benefits of measuring performance using staged devices. We seek comment these inquiries, and on whether there would be any cost or time savings associated with this approach if small and other Participating CMS Providers had to update network and mobile device firmware to measure WEA's performance using staged devices.

74. *WEA Database*. In the preceding section we discussed our proposal in the *Further Notice* to create a Commission-hosted WEA database containing information filed by small and other Participating CMS Providers that would allow alerting authorities to access and review information about WEA's availability and performance in their jurisdictions. We anticipate that the WEA Database would be an interactive portal where small and other Participating CMS Providers submit information about the availability and performance of WEA on their networks, and where such information could be readily accessible to Participating CMS Providers, alerting authorities, and the public. Our decision to propose the creation of a WEA Database contemplated what would be the most cost-effective mechanism for small and other Participating CMS Providers to submit WEA elections and performance information into the WEA Database. Consistent with this objective, in the *Further Notice* we propose to support electronic filings for WEA elections that leverage GIS shapefiles, drop-down menus, and freeform text where

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[202] 47 CFR § 11.61(a)(5).

[203] FCC, Emergency Alerting (103277) Corrective Action Plan at 2 (2020), https://www.gao.gov/products/gao-20-294.

[204] *CSRIC VIII Report on WEA Performance Reporting* at 31-34.

[205] *Id*. at 31-32; *see also* 47 CFR § 10.350(a).

[206] This would be similar to our 911 indoor wireless location accuracy tests. *See Indoor Location Accuracy Timeline and Live Call Data Reporting Template*, (Jul. 26, 2021), https://www.fcc.gov/public-safety-and-homeland-security/policy-and-licensing-division/911-services/general/location-accuracy-indoor-benchmarks; *In the Matter of Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, 7779 at para. 64 (2020).

appropriate. We envision that WEA performance data that only requires entry of specific numbers or times would be simpler and less costly to submit. We also recognize however, that our proposal may require filings to be made frequently, particularly as updated lists of WEA-capable mobile devices or new performance data on new alerts need to be submitted. Thus, we considered how to best approach data collection for the WEA Database while minimizing costs and other burdens for small and other Participating CMS Providers, such as whether to utilize an application programming interface (API) that would facilitate the automated filing of data. We seek comment on these matters in the *Further Notice,* as well as input on other factors the Commission should consider when designing the data submission elements of the WEA database.

75. There may be alternative approaches to our WEA Database for performance reporting that might strike a better balance between the need that the Commission has identified to provide alerting authorities with access to WEA performance information, while limiting the impact of countervailing considerations, such as costs, development time, or privacy concerns. An alternative recommended by CSRIC VIII proposes a requirement that would use an automated email to convey WEA performance reporting information from Participating CMS Providers to an alerting authority or a centralized reporting location for each sent WEA.[207] CSRIC VIII recommends that the details of this approach should be worked out between alerting authorities, PBS, and Participating CMS Providers.[208] In the *Further Notice,* we seek comment on the utility of WEA performance information communicated by email directly to alerting authorities, either in addition or as an alternative to a WEA database, and encourage WEA stakeholders to file detailed proposals of how this alternative approach could work in practice.

76. Compliance Timeframes. To minimize any significant impact our proposed rules may have on small entities, as an alternative to the compliance timeframes we propose in the *Further Notice* we inquire and seek comment on whether it is appropriate to allow Participating CMS Providers that are small- or medium-sized businesses additional time to comply. The compliance deadline in the *Further Notice* for the proposed rules to enhance WEA's language support and integrate WEA more seamlessly into people's lives is 30 months after the publication of final rules in the *Federal Register*. The compliance deadline in the *Further Notice* for the proposed rules to improve WEA's effectiveness with multimedia content is 36 months after the publication of final rules in the *Federal Register*. To facilitate more effective WEA public awareness exercises, Participating CMS Providers would be authorized to support up to two annual end-to-end WEA tests per alerting authority 30 days after the Public Safety and Homeland Security Bureau issues a Public Notice announcing OMB approval of any new information collection requirements associated with this rule change.

77. The compliance deadline in the *Further Notice* for the proposed rules associated with developing measurable goals and performance measures for WEA is 30 months after the publication of final rules in the *Federal Register* or within 30 days of the Public Safety and Homeland Security Bureau's publication of a public notice announcing that the WEA Database is ready to accept filings, whichever is later. This includes the proposed rules requiring small and other Participating CMS Providers to satisfy WEA performance minimums and submit reports measuring WEA's performance. Further, we seek specific comment on whether to offer an extended compliance timeframe for Participating CMS Providers that are small- and medium-sized businesses, which may have different network resource constraints than the nationwide Participating CMS Providers. Additionally, we propose to require Participating CMS Providers to refresh their elections to participate in WEA using the WEA Database within 30 days of the Public Safety and Homeland Security Bureau's publication of a public notice announcing, 1) OMB approval of any new information collection requirements and 2) that the WEA Database is ready to accept filings and seek comment on this proposal.

78. The Commission expects to more fully consider the economic impact and alternatives for

[207] *CSRIC VIII Report on WEA Performance Reporting* at 34.

[208] *Id*.

small entities following the review of comments filed in response to the *Further Notice,* including costs and benefits analyses. Having data on the costs and economic impact of proposals and approaches will 'allow the Commission to better evaluate options and alternatives to minimize any significant economic impact on small entities that may result from the proposals and approaches raised in the *Further Notice*. The Commission's evaluation of this information will shape the final alternatives it considers to minimize any significant economic impact that may occur on small entities, the final conclusions it reaches and any final rules it promulgates in this proceeding.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

79. None.

STATEMENT OF
CHAIRWOMAN JESSICA ROSENWORCEL

Re: *Wireless Emergency Alerts*, PS Docket No. 15-91; *Amendments to Part 11 of the Commission's Rules Regarding the Emergency Alert System*, PS Docket No. 15-94; Further Notice of Proposed Rulemaking (April 20, 2023)

It is the worst nightmare of any parent. Your child has gone missing. I cannot imagine the horror. Nor can I imagine the waves of relief when they are found. During the last decade, as Wireless Emergency Alerts went mainstream, more than 130 children have been rescued and saved from harm. Countless other children and adults have had their lives saved because these alerts gave them the notice they needed to take shelter in a storm or evacuate in advance of deadly fire and floods.

Over the last ten years, more than 78,000 Wireless Emergency Alerts have been issued in the United States. By now we are not just familiar with them, they have become part of the fabric of modern life, much like the mobile phones that are always with us, in our palms, pockets, and purses. It can be easy to forget that this alert system for public safety is still relatively new. But it is important to remember this is a system we can still improve.

That is why today we have a series of proposals to enhance the accessibility of Wireless Emergency Alerts. This effort starts with language. Right now, these alerts can only be sent in English and Spanish. But I think we can do more to reach more people in more places with emergency information. In fact, I know we can.

A big reason for this is that New York State Attorney General Letitia James—who joined us today—brought to our attention how expanded multilingual alerting can save lives. In a letter she wrote late last year, she highlighted how during Hurricane Ida nearly all of those who lost their lives in rising floodwaters in New York spoke languages other than English and Spanish. The Wireless Emergency Alerts never reached this population. She called on us to do more and noted how the New York City Emergency Management Department has developed an application that provides alerting in English and 13 other languages. It proves if we are creative we can find a way to do this—and we can save more lives.

Another reason I know we can do better is that in advance of today's rulemaking I wrote to the nine largest providers of Wireless Emergency Alerts to inquire about what more can be done to have these alerts available in more languages. Their responses informed this effort, and I am hopeful they will speed this process.

But we're not stopping there. Because there are other improvements we can make. We propose a new database to increase transparency and track participation in Wireless Emergency Alerts along with performance information like reliability, speed, and location accuracy. And, ending where I began, we ask about sending thumbnail-sized images in alerts, noting that it would be especially effective for those involving missing children.

In short, we can do some real good here. We can improve Wireless Emergency Alerts and make this relatively new tool for public safety more powerful, more accessible, more accurate, and more effective. So let's get to it.

I want to thank the staff responsible for this effort including Nicole McGinnis, Austin Randazzo, Erika Olsen, James Wiley, Shabbir Hamid, Michael Antonino, David Kirschner, Tara Shostek, Haille Laws, Ahmed Lajouji, Steven Carpenter, and David Sieradzki from the Public Safety and Homeland Security Bureau; Christina Clearwater and Garnet Hanley from the Wireless Telecommunications Bureau; Suzy Rosen Singleton and William David Wallace from the Consumer and Governmental Affairs Bureau; Victoria Randazzo, Jeremy Marcus, and Ryan McDonald from the Enforcement Bureau; Chana Wilkerson from the Office of Communications Business Opportunities; Aleks Yankelovich, Craig Stroup, Emily Talega, and Cher Li from the Office of Economics and Analytics; William Huber, Elliot Tarloff, Douglas Klein, and William Richardson from the Office of General Counsel.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage	)	WC Docket No. 18-155
	)	
	)	

SECOND REPORT AND ORDER

Adopted: April 20, 2023 **Released: April 21, 2023**

By the Commission: Chairwoman Rosenworcel issuing a statement.

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I. INTRODUCTION

1. For over a decade, the Commission has combated abuse of its access charge regime. Such regulatory arbitrage has taken several forms over the years, all of which center around the artificial inflation of the number of telephone calls for which long-distance carriers (interexchange carriers or IXCs) must pay tariffed access charges to the local telephone companies (local exchange carriers or LECs) that terminate the telephone calls to their end users. Some local telephone companies, often in areas of the country with high access charges, partner with high-volume calling service providers, such as "free" conference calling or chat line services, to inflate the number of calls terminating to the LEC and, in turn, inflate the amount of access charges the LEC can bill IXCs. This practice is inefficient because it often introduces unnecessary entities or charges into a call flow, perverts the intended purpose of access charges (i.e., to cover the LECs' cost of providing the service), and raises costs for IXCs, and ultimately their customers, whether they use the high-volume calling service or not.

2. Despite multiple orders and investigations making clear the Commission will not tolerate access arbitrage, some providers continue to manipulate their call traffic or call flows in attempts to evade our rules. Recently, LECs have inserted Internet Protocol Enabled Service (IPES) Providers[1] into call paths as part of an ongoing effort to evade our rules and to continue to engage in access stimulation. After inserting an IPES Provider into the call flow, the LEC then claims that it is not engaged in access stimulation as currently defined in our rules. The insertion of an additional provider (or providers) into the call flow is inefficient and is aimed at preserving the LEC's ability to charge IXCs terminating switched access charges on access-stimulation traffic—the very practice the Commission found unlawful in 2019.[2]

3. Today, we take additional steps to deter arbitrage of our access charge system. In this Order, we adopt rule revisions to close perceived loopholes in our Access Stimulation Rules[3] that are being exploited by opportunistic access-stimulating entities whose actions ultimately cause IXCs' end-user customers to continue to bear costs for services they do not use.

II. BACKGROUND

4. The access charge regime was designed to compensate carriers for use of their networks by other carriers. Interexchange carriers are required to pay LECs for access to their networks, and in the case of calls to customers located in rural areas, IXCs[4] historically had to pay particularly high access charges to rural LECs to terminate those calls. These higher access charges implicitly subsidized rural LECs' networks to help defray the higher costs those LECs incurred in serving less densely populated areas. In 1996, Congress directed the Commission to eliminate implicit subsidies[5]—a process the Commission has pursued by establishing the Universal Service Fund and by steadily moving access charges to a bill-and-keep framework.[6]

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[1] For purposes of this Order, we consider the term "IPES Provider" to include "VoIP provider," and use the term "IPES Provider" throughout to refer both to VoIP providers and other entities that provide IP-enabled services. See infra Appx. A (47 CFR § 61.3(eee)) (defining "IPES Provider" as "a provider offering a service that: (1) enables communications; (2) requires a broadband connection from the user's location or end to end; (3) requires Internet Protocol-compatible customer premises equipment (CPE); and (4) permits users to receive calls that originate on the public switched telephone network or that originate from an Internet Protocol service.").

[2] The phrase "access-stimulation traffic," as used throughout this Order, is shorthand for traffic that has met or exceeded the ratios in section 61.3(bbb) of the Commission's rules and therefore is properly characterized as access-stimulation traffic. The phrase access-stimulation traffic is not a term defined in our rules, but rather a phrase we use in this Order as a shorthand for traffic bound for a LEC or IPES provider that has met one or more of the access-stimulation triggers in our rules.

[3] Prior to the revisions in this Order, the Commission's Access Stimulation Rules are codified in 47 CFR §§ 51.903(k)-(m), 51.914(a)-(e), 51.917(c), 61.3(bbb)-(ddd), 61.26(g)(3), 61.39(g), 69.3(e)(12)(iv), 69.4(l), and 69.5(b). The Access Stimulation Rule revisions and additions adopted in this Order may be found in Appendix A. *See infra* Appx. A (amending, redesignating and/or adding 47 CFR §§ 51.914, 61.3(bbb)-(ccc), (eee)-(fff), 69.4(l), 69.5(b)).

[4] The term IXC, as used in this Order, encompasses wireless carriers to the extent they are payers of switched access charges.

[5] *See* 47 U.S.C. § 254(b)(5), (e). *Connect America Fund et al.*, WC Docket No. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17909, para. 747 (2011) (*USF/ICC Transformation Order*), *aff'd*, *In re FCC 11-161*, 753 F.3d 1015 (10th Cir. 2014) (noting the "direction from Congress in the 1996 Act that the Commission should make support explicit rather than implicit"); *see also Updating the Intercarrier* Compensation *Regime to Eliminate Access Arbitrage*, WC Docket No. 18-155, Report and Order and Modification of Section 214 Authorizations, 34 FCC Rcd 9035, 9046, para. 26 (2019) (*Access Arbitrage Order*), *aff'd*, *Great Lakes Communications Corp. v. FCC*, 3 F.4th 470 (D.C. Cir. 2021) (*Great Lakes*).

[6] *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report and Order, 12 FCC Rcd 8776, 8780, para. 2 (1997); *USF/ICC Transformation Order*, 26 FCC Rcd at 17676, para. 34 (adopting "a uniform national (continued….)

5. Some LECs took advantage of technological advances to undermine the Commission's access charge regime by engaging in "access arbitrage." These LECs exploited high access charges in rural areas by artificially stimulating terminating "call volumes through arrangements with entities that offer high-volume calling services."[7] The resulting high call volumes with no requirement that such LECs reduce their tariffed switched access rates "almost uniformly ma[d]e the LEC's interstate switched access rates unjust and unreasonable under section 201(b) of the Act."[8]

6. In the 2011 *USF/ICC Transformation Order*, the Commission adopted rules to identify rate-of-return LECs and competitive LECs engaged in access stimulation and required that such LECs lower their tariffed access charges. The rules adopted in 2011 defined "Access Stimulation" as occurring when two conditions were satisfied: (1) a rate-of-return LEC or competitive LEC had entered into an access revenue sharing agreement that, "over the course of the agreement, would directly or indirectly result in a net payment to the other party";[9] and (2) one of two traffic triggers was met: either "an interstate terminating-to-originating traffic ratio of at least 3:1 in a calendar month" or "more than a 100 percent growth in interstate originating and/or terminating switched access minutes of use in a month compared to the same month in the preceding year."[10] At the same time, the Commission began moving many terminating end-office switched access charges to bill-and-keep.[11]

7. Parties that wanted to continue to engage in access stimulation adapted to these rules by interposing Intermediate Access Providers, that arguably were not subject to the access stimulation rules adopted in 2011,[12] into the call flow because many of these providers were still able to charge tariffed

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bill-and-keep framework as the ultimate end state for all telecommunications traffic exchanged with a LEC"). As the Commission has explained, "[u]nder bill-and-keep, carriers look first to their subscribers to cover the costs of the network, then to explicit universal service support where necessary." *USF/ICC Transformation Order*, 26 FCC Rcd at 17676, para. 34.

[7] *Access Arbitrage Order*, 34 FCC Rcd at 9035-36, para. 1.

[8] *USF/ICC Transformation Order*, 26 FCC Rcd at 17874, para. 657. Most of the costs of providing telephone service are "fixed" network costs, which do not vary based on usage. Access charges for end office switching, tandem switching, and tandem switched transport between the end office and the tandem originally were based on dividing the costs that were attributed to interstate access by the number of interstate access minutes of use the LEC provided for each of these services. *See, e.g.*, *Access Charge Reform et al.*, CC Docket No. 96-262 et al., First Report and Order, 12 FCC Rcd 15982, 15994-96, 16006, paras. 28-31, 63 (1997). As a result, access charges were typically higher in rural areas than in urban areas, as rural providers had relatively high network costs and fewer minutes over which to recover those costs. Rates no longer change based on traffic volumes, so higher traffic volumes result in inflated revenues, particularly in rural areas that historically have had relatively low traffic volumes. *See USF/ICC Transformation Order*, 26 FCC Rcd at 17874-75, paras. 657, 662 ("Commenters agree that the interstate switched access rates being charged by access stimulating LECs do not reflect the volume of traffic associated with access stimulation.").

[9] 47 CFR § 61.3(bbb)(1)(i) (2012). The definition of "Access Stimulation" adopted in 2011 stated that the access revenue sharing agreement could be "express, implied, written or oral," and that in such agreements, payment by the rate-of-return LEC or competitive LEC "is based on the billing or collection of access charges from interexchange carriers or wireless carriers. When determining whether there is a net payment under this rule, all payments, discounts, credits, services, features, functions, and other items of value, regardless of form, provided by the rate-of-return local exchange carrier or Competitive Local Exchange Carrier to the other party to the agreement shall be taken into account." *Id*.

[10] 47 CFR § 61.3(bbb)(1)(ii) (2012); *USF/ICC Transformation Order*, 26 FCC Rcd at 17874, para. 658.

[11] *USF/ICC* Transformation *Order*, 26 FCC Rcd at 17934-36, fig. 9.

[12] *See Access Arbitrage Order*, 34 FCC Rcd at 9036, para. 3. Some terminating tandem charges for price-cap LECs have moved to bill-and-keep, but not the terminating tandem charges for rate-of-return LECs, and for competitive LECs that benchmark to rate-of-return LECs, which are at issue here. *See id*. at 9039, para. 10; *USF/ICC Transformation Order*, 26 FCC Rcd at 17934-36, fig. 9; *Updating the Intercarrier Compensation Regime to*
(continued….)

tandem switching and transport charges.[13] Interexchange carriers still had to send traffic to LECs serving high-volume calling service providers and pay tariffed tandem switching and transport access charges, that were not transitioning to bill-and-keep, to the terminating LECs or the Intermediate Access Providers the LECs chose. As a result, IXCs and their customers were subsidizing the "free" services offered by high-volume calling service providers, whether IXC customers used those services or not.[14]

8. In response to this ongoing arbitrage, the Commission adopted a Notice of Proposed Rulemaking on the subject.[15] The record received in response to the *Access Arbitrage Notice* confirmed that access arbitrage continued even after adoption of the 2011 rules.[16] Therefore, in 2019, the Commission adopted the *Access Arbitrage Order*, broadening the scope of its Access Stimulation Rules by adopting two additional definitions of "Access Stimulation" unrelated to the existence of a revenue sharing agreement between parties. Competitive LECs with a terminating-to-originating traffic ratio of at least 6:1, absent a revenue-sharing agreement, and rate-of-return LECs with a terminating-to-originating traffic ratio of at least 10:1, absent a revenue-sharing agreement, would be found to be engaged in access stimulation under the rules adopted in 2019.[17] Most significantly, the Commission also found that requiring "IXCs to pay the tandem switching and tandem switched transport charges for access-stimulation traffic is an unjust and unreasonable practice" prohibited by section 201(b) of the Communications Act of 1934, as amended (the Act).[18] The Commission addressed this unjust and unreasonable practice by adopting rules making access-stimulating LECs—rather than IXCs—financially responsible for the tandem switching and tandem switched transport service access charges associated with the delivery of traffic from an IXC to an access-stimulating LEC's end office or its equivalent.[19] The Court of Appeals for the District of Columbia Circuit upheld the *Access Arbitrage Order*.[20]

9. After the rules adopted in 2019 took effect, parties advised Commission staff that access stimulators had adopted new practices designed to evade the updated rules, primarily by inserting IPES Providers into the call flow.[21] For example, some providers began "converting traditional CLEC telephone numbers to [IPES] numbers in order to claim that the 2019 [*Access*] *Arbitrage Reform Order* is not applicable" to the resulting traffic because the calls were bound for telephone numbers obtained by IPES Providers, rather than to LECs serving end users, as required by our rules.[22] LECs and IPES

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Eliminate Access Arbitrage, WC Docket No. 18-155, Notice of Proposed Rulemaking, 33 FCC Rcd 5466, 5468-69, para. 6 (2018) (*Access Arbitrage Notice*).

[13] *Access Arbitrage Notice*, 33 FCC Rcd at 5467, para. 2; *see Access Arbitrage Order*, 34 FCC Rcd at 9036, para. 3. Some terminating tandem charges for price-cap LECs have moved to bill-and-keep, but not the terminating tandem charges for rate-of-return LECs and competitive LECs that benchmark to rate-of-return LECs, which are at issue here. *See Access Arbitrage Order*, 34 FCC Rcd at 9039, para. 10; *USF/ICC Transformation Order*, 26 FCC Rcd at 17934-36, fig. 9.

[14] *Access Arbitrage Order*, 34 FCC Rcd at 9036, para. 3.

[15] *Access Arbitrage Notice*.

[16] *Access Arbitrage Order*, 34 FCC Rcd at 9041-42, paras. 14-16.

[17] *Id.* at 9053, para. 43; *infra* App. A (47 CFR § 61.3(bbb)(1)(ii)-(iii)).

[18] *Access Arbitrage Order*, 34 FCC Rcd at 9073, para. 92.

[19] 47 CFR §§ 69.4(l), 69.5(b); *Access Arbitrage Order*, 34 FCC Rcd at 9036-37, para. 4.

[20] *Great Lakes*, 3 F.4th at 474-79.

[21] Letter from Matthew S. DelNero, Counsel to Inteliquent, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155 et al., Attach. at 1 (filed Jan. 29, 2020) ("Initial impact of new rules, from Inteliquent's observation of traffic flows: No reduction in MOU [(minutes of use)], but traffic is shifting from multiple rural CLECs to a limited number of rural CLECs and IPES providers; Rural CLECs previously identified as access stimulators and still receiving traffic appear to be claiming they are outside the scope of access stimulation rules.").

Providers may obtain telephone numbers directly from numbering authorities, indirectly from a LEC partner,[23] or indirectly via a commercial or leasing arrangement.[24] All companies receiving telephone numbers directly from numbering administrators are assigned a unique Operating Company Number (OCN)[25] that identifies the provider associated with each telephone number.[26]

10. In a 2021 enforcement order against competitive LEC Wide Voice, LLC (Wide Voice), we found that Wide Voice "inserted a VoIP [(Voice over Internet Protocol)] provider into the call path for the sole purpose of avoiding the financial obligations that accompany the Commission's access stimulation rules."[27] Then, in July 2022, we adopted a *Further Notice of Proposed Rulemaking* seeking

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[22] Letter from Mike Saperstein, VP, Strategic Initiatives & Partnerships, USTelecom, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Sept. 22, 2020) (USTelecom Sept. 22, 2020 Ex Parte Letter); see also Letter from Michael Hunseder, Counsel for AT&T, & Scott H. Angstreich, Counsel for Verizon, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Mar. 26, 2020) ("These companies claim that traffic routed to or from the PSTN through a LEC to telephone numbers assigned to a VoIP provider should be ignored when applying the Commission's traffic-volume tests for identifying access stimulating LECs."). In an attachment to its ex parte letter, USTelecom makes the point that "[a]lthough IPES providers cannot bill [tariffed] switched access, the tandem provider to the IPES entity can bill [tariffed] tandem switching on originating and terminating traffic." USTelecom Sept. 22, 2020 Ex Parte Letter Attach. at 2.

[23] *Numbering Policies for Modern Communications et al.*, WC Docket No. 13-97 et al., Report and Order, 30 FCC Rcd 6839, 6847, para. 19 n.57 (2015) (*VoIP Direct Access Order*) ("We expect interconnected VoIP providers will continue to use carrier partners in some instances. For example, in areas where the interconnected VoIP provider does not have many customers and thus does not need a block of numbers, it may obtain numbers through a partner rather than directly from a number administrator. This Order does not prohibit those partner relationships."), *appeal dismissed*, *NARUC v. FCC*, 851 F.3d 1324 (D.C. Cir. 2017); *see* 47 CFR § 52.15.

[24] If there is a relevant industry definition applicable to the terms "directly assigned" or "indirectly assigned," we do not invoke those definitions here. Rather, we use the terms "directly assigned" and "indirectly assigned" informally and to differentiate between telephone numbers that have been received by the current user from a numbering administrator as compared to those telephone numbers that have been received by the current user via porting, moving, or changing ownership or usage from one entity to another regardless of how the parties involved refer to the action.

[25] An "Operating Company Number" is a unique four-character code assigned by the National Exchange Carrier Association and used to identify telecommunications service providers, including IPES Providers. *VoIP Direct Access Order*, 30 FCC Rcd at 6843, para. 7 n.20; *see also* Verizon, Industry Codes and Contacts, https://www22.verizon.com/wholesale/business/local/establish/content/est-maint-industrycodescontacts.html (last visited Mar. 13, 2023) (explaining industry standard codes and stating that the "Operating Company Numbers (OCNs) are used like social security numbers to uniquely identify [a] company and are assigned to all telecommunications service providers. They are used in mechanized systems throughout the industry to facilitate the exchange of information").

[26] *VoIP Direct Access Order*, 30 FCC Rcd at 6859, para. 44 (requiring "each interconnected VoIP provider to use its own unique OCN—as opposed to using the OCN of a carrier affiliate or partner—when obtaining numbers directly from the Numbering Administrators. Requiring each interconnected VoIP provider to use its own unique OCN follows the same procedure required for telecommunications carriers already getting direct access to numbers, which must request numbers using their own unique OCNs."); *id.* at 6859, para. 43 (requiring "VoIP providers to give accurate regulatory and numbering contact information to the state commission when they request numbers in that state . . . [and] update this information whenever it becomes outdated").

[27] *AT&T Corp., AT&T Services, Inc., and MCI Communications Services LLC v. Wide Voice, LLC*, Proceeding No. 20-362; Bureau ID No. EB-20-MD-005, Memorandum Opinion and Order, 36 FCC Rcd 9771, 9785, para. 31 (2021) (*AT&T v. Wide Voice Enforcement Order*), *pet. for review denied, Wide Voice, LLC v. FCC*, 61 F.4th 1018 (9th Cir. 2023) (*Wide Voice v. FCC*); *see also id.* at 9781, para. 23 ("Wide Voice, in concert with closely related companies, acted to evade the Commission's access stimulation rules by rearranging traffic flows to preserve the ability to impose tandem access charges on IXCs that it otherwise could not charge."); *Wide Voice v. FCC,* 61 F.4th at 1021, (continued….)

comment on proposals to prevent companies from leveraging perceived ambiguities in our rules to continue to engage in access arbitrage.[28] In the *Further Notice*, we sought comment on sample call flows and proposed several definitions relevant to our Access Stimulation Rules, as well as rule revisions making clear "that an Intermediate Access Provider shall not charge an IXC tariffed charges for terminating switched access tandem switching and switched access tandem transport for traffic bound to an IPES Provider whose traffic exceeds the [access-stimulation] ratios in sections 61.3(bbb)(1)(i) or 61.3(bbb)(1)(ii) of our Access Stimulation Rules."[29]

11. The following diagrams, which were also included in the *Further Notice*, illustrate sample call flows.[30] Diagram 1 represents a call flow that includes both a LEC and an IPES Provider between an Intermediate Access Provider and an end user that is a high-volume calling service provider. Diagram 2 provides an example of a call where the LEC has been removed from the call flow and there is only an IPES Provider between the Intermediate Access Provider and the high-volume calling service provider that is the end-user recipient of the call.

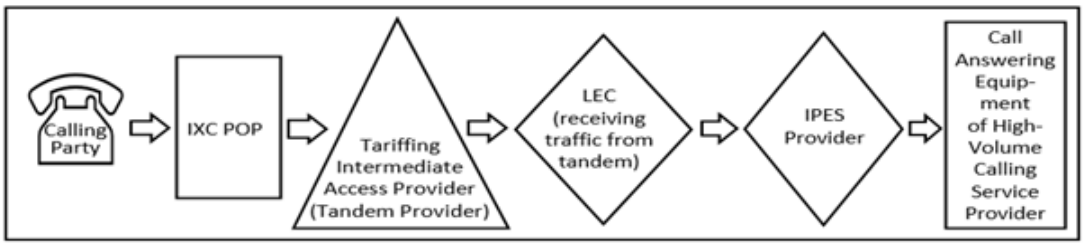


Diagram 1: Showing a hypothetical call path including a LEC and an IPES Provider—to facilitate discussion throughout the remainder of this Order. "POP" refers to point of presence.[31]

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1028-29 (repeatedly affirming the Commission's finding that Wide Voice rearranged its business model to evade the *Access Arbitrage Order* and continue to charge IXCs terminating access charges).

[28] *Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage*, WC Docket No. 18-155, Further Notice of Proposed Rulemaking, FCC 22-54 (July 15, 2022) (*Further Notice*).

[29] *Id.* at 8, para. 17.

[30] These diagrams were not meant to reflect tacit Commission approval of certain call flows but were included in the *Further Notice* merely to facilitate discussion in the record. *Further Notice* at 6-7, paras. 12-14 & Diagrams 1 & 2. Commenters used those diagrams and provided alternative diagrams to facilitate the discussion as intended. *See*, *e.g.*, Aureon Sept. 6, 2022 Comments at 7-8; Inteliquent Sept. 6, 2022 Comments at 3-4; HD Carrier Oct. 3, 2022 Reply at 4-5.

[31] A "point of presence" (POP) is a common term used in the telecommunications industry. A point of presence is a "physical place where a carrier has a presence for network access." Newton's Telecom Dictionary 927 (27th ed. 2013). In Diagram 1, an IXC connects with the network of the service provider for the calling party at the "IXC POP." Thus, for example, the term "IXC POP" can refer to the location where an IXC's network connects to a LEC's network. *E.g.*, 47 CFR § 69.703(c).

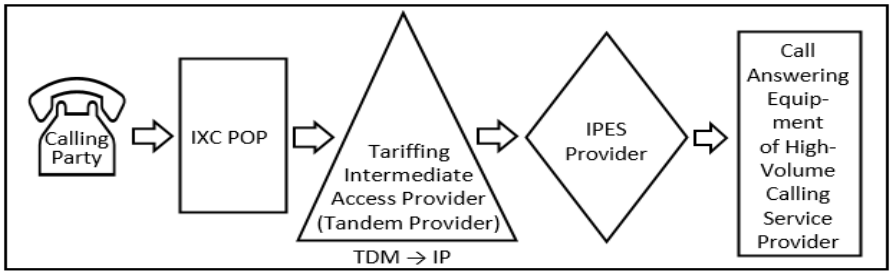


Diagram 2: Showing a hypothetical call path where the Intermediate Access Provider sends traffic directly to the IPES Provider—to facilitate discussion throughout the remainder of this Order. "TDM (time division multiplexing) to IP" refers to a transition that occurs during the transfer of a telephone call between the technologies used by the entities involved in the call flow.

12. In response to the *Further Notice*, we received widespread support for further action to stem access arbitrage.[32] USTelecom confirms that, after the reforms adopted in the 2019 *Access Arbitrage Order* became effective, entities manipulated their business models to continue charging IXCs terminating tandem switching and transport access charges for calls delivered to access stimulators.[33] USTelecom suggests that the "primary difference between the new scheme and the old scheme is not the concept, but the regulatory classification of the entities in the call stream, purposely inserted by arbitrageurs to claim these arrangements are beyond the Commission's reach."[34] Verizon agrees that "access stimulation has not materially decreased, only changed form."[35] AT&T explains that its long-distance network now terminates approximately 400 million minutes of use (MOU) to IPES Providers per month, which is "essentially twice" the MOU it terminated to IPES Providers prior to the 2019 *Access Arbitrage Order*.[36] Thus, the record strongly suggests that instead of ceasing access-stimulation activity—or taking responsibility for paying certain access charges, as required by our Access Stimulation Rules—some providers chose to exploit a perceived loophole in those rules. Commenters also suggested

[32] *E.g.*, AT&T Sept. 6, 2022 Comments at 1; Bandwidth Sept. 6, 2022 Comments at 2; USTelecom Sept. 6, 2022 Comments at 1; AT&T Oct. 3, 2022 Reply at 1; Inteliquent Oct. 3, 2022 Reply at 1; Letter from Michael J. Hunseder, Counsel to AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Jan. 31, 2023) (AT&T Jan. 31, 2023 *Ex Parte* Letter); Letter from Timothy Boucher, Asst. General Counsel, Federal Regulatory Affairs, Lumen, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Feb. 21, 2023) (Lumen Feb. 21, 2023 *Ex Parte* Letter).

[33] USTelecom Sept. 6, 2022 Comments at 2-3 ("With the ink barely dry on publication of the Commission's 2019 rules addressing access stimulation in high-cost areas, USTelecom members began to see the latest scheme emerge to exploit the Commission's access charge system. Gallingly, the latest version of arbitrage made use of the same concept that the Commission had just acted to squelch: using the existing intercarrier compensation system to force IXC payments to LECs that either are, or are partnered with, access stimulators, often in high-cost areas.").

[34] USTelecom Sept. 6, 2022 Comments at 3.

[35] Verizon Sept. 6, 2022 Comments at 6.

[36] AT&T Sept. 6, 2022 Comments at 5; *see also id*. ("[W]hile the Commission's 2019 rules led some entities to exit the access stimulation business, the free conferencing traffic those entities had been stimulating was simply re-routed (with insufficient notice) to IPES providers."); *id*. ("The associated access charges—and anti-consumer subsidies—associated with these IPES-based schemes can be very large, totaling to many millions of dollars per year."); Letter from Michael J. Hunseder, Counsel to AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 n.3 (filed Dec. 14, 2022) (AT&T Dec. 14, 2022 *Ex Parte* Letter). *But see* Letter from Andrew Nickerson, Wide Voice, LLC, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 2 (filed Jan. 10, 2023) (Wide Voice Jan. 10, 2023 *Ex Parte* Letter) (suggesting, that the increase in MOU to IPES Providers reflects "real progress from an antiquated TDM network to IP").

several revisions to the proposed rule language to further strengthen our Access Stimulation Rules and prevent ongoing arbitrage.[37]

III. DISCUSSION

13. We are compelled to act again to fight regulatory arbitrage of the Commission's access charge regime.[38] In this Order, we eliminate any perceived ambiguity in our Access Stimulation Rules that results in parties attempting to circumvent those rules simply by inserting IPES Providers into the call path. This practice directly contravenes the Commission's orders, policies, and Access Stimulation Rules.[39] We adopt narrow and focused changes to our rules that are designed to prevent entities from evading responsibility for their access-stimulation activity. The rules and revisions strike an appropriate balance between addressing harmful access-stimulation conduct on the part of certain entities and avoiding negative effects on providers that are not engaged in such activity. We find these rule revisions will serve the public interest by reducing carriers' incentives and ability to send traffic over the Public Switched Telephone Network (PSTN) for the purpose of collecting inflated, tariffed terminating tandem switching and transport access charges from IXCs, thereby artificially increasing costs to IXCs and harming their end-user customers.

A. Limiting the Imposition of Access Charges when IPES Providers Are Engaged in Access Stimulation

14. We find significant support in the record for our proposal to prohibit Intermediate Access Providers from charging IXCs tariffed terminating tandem switching and transport access charges for traffic bound for IPES Providers engaged in access stimulation as defined in section 61.3(bbb) of our rules.[40] Therefore, we adopt rules providing that, when traffic is delivered to an IPES Provider by a LEC or an Intermediate Access Provider and the terminating-to-originating traffic ratios of the IPES Provider meet or exceed the triggers in the existing Access Stimulation Rules, the IPES Provider will be deemed to be engaged in access stimulation.[41] In this case, "any entity that provides terminating switched access tandem switching or terminating switched access tandem transport services between the final Interexchange Carrier in a call path and"[42] an access stimulator is considered an Intermediate Access

[37] Bandwidth Sept. 6, 2022 Comments at 3-4, 7-8, 10-15; Lumen Sept. 6, 2022 Comments at 6-7; USTelecom Sept. 6, 2022 Comments at 1, 4, 8-10; Verizon Sept. 6, 2022 Comments at 2, 16-17, 20; Inteliquent Oct. 3, 2022 Reply at 3-4, 6; NCTA Oct. 3, 2022 Reply at 1; USTelecom Oct. 3, 2022 Reply at 3-5; *see also* AT&T Sept. 6, 2022 Comments at 2 (supporting USTelecom revisions); AT&T Oct. 3, 2022 Reply at 1 (same).

[38] *See* Letter from Tamar E. Finn, Counsel to Bandwidth Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 2 (filed Jan. 26, 2023) (Bandwidth Jan. 26, 2023 *Ex Parte* Letter) ("So long as access charges exist, however, parties that originate and terminate traffic have an incentive to arbitrage the associated economics for themselves, their affiliates, and their carrier partners.").

[39] *Access Arbitrage Order*; *USF/ICC Transformation Order*; *Further Notice.*

[40] *Further Notice* at 8-9, paras. 17-19; *e.g.*, AT&T Sept. 6, 2022 Comments at 5; Verizon Sept. 6, 2022 Comments at 16; USTelecom Sept. 6, 2022 Comments at 2, 4-5; *see infra* Appx. A (47 CFR §§ 51.914(b)-(e), 61.3(bbb), 69.4(l), 69.5(b)). Other commenters also agree with the Commission's proposals to make IPES Providers responsible for access-stimulation traffic by requiring them to calculate terminating-to-originating traffic ratios and to provide notice if they meet or exceed those ratios. Those commenters also advocate that access-stimulating IPES Providers be required to bear financial responsibility on an equal basis with access-stimulating LECs, unlike our proposal and the rules we adopt. Bandwidth Sept. 6, 2022 Comments at 4; Inteliquent Sept. 6, 2022 Comments at 2; Lumen Sept. 6, 2022 Comments at i, 3.

[41] *See infra* Appx. A (47 CFR § 61.3(bbb)). In the *Further Notice*, we referred to the requirements in the Access Stimulation Rules being triggered when an entity's traffic ratios exceed the triggers in section 61.3(bbb). *Further Notice* at 9, para. 19 ("Under our proposal, if the IPES Provider's traffic ratios exceed the applicable rule triggers, it would have to notify the Intermediate Access Provider, the Commission, and affected IXCs."). For clarity and consistency with the text of the rules in section 61.3(bbb), throughout this Order we refer to application of the Access Stimulation Rules when the traffic ratios are met or exceeded.

Provider and shall not impose tariffed terminating tandem switching and transport access charges on IXCs sending traffic to the IPES Provider or the IPES Provider's end-user customer.[43] The Intermediate Access Provider may seek compensation from the IPES Provider for charges the Intermediate Access Provider cannot bill to IXCs.[44] The IPES Provider, if it chooses, may seek reimbursement for these access charges from its end-user customer(s).

15. Commenters widely agree with our proposal to use the same terminating-to-originating traffic ratio triggers for IPES Providers that we currently use for LECs.[45] Thus, we apply to IPES Providers the 3:1 terminating-to-originating traffic ratio plus revenue-sharing agreement trigger in section 61.3(bbb)(1)(i), and the 6:1 terminating-to-originating traffic ratio trigger, absent a revenue-sharing agreement, in section 61.3(bbb)(1)(ii).[46] We find no need, based on the record, to reconsider the existence of revenue-sharing arrangements between parties in the context of our rules.[47] At the same time, we do not apply to IPES Providers the 10:1 terminating-to-originating traffic ratio applicable to rate-of-return carriers. IPES Providers' rates are not subject to rate-of-return regulation and no commenters suggested that their network configurations or call flows are in any way similar to rate-of-return regulated LECs' networks or call flows. No commenter suggested applying the 10:1 ratio to IPES Providers, and no information in the record justifies expanding the applicability of the 10:1 ratio in such a manner.[48]

16. We reject Teliax's unsupported assertion that price-cap incumbent LECs should be subject to the same traffic ratio reporting requirements as competitive LECs, rate-of-return LECs, and IPES Providers.[49] The Commission has previously explained that "complaints regarding access

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[42] 47 CFR § 61.3(ccc).

[43] *See infra* Appx. A (47 CFR §§ 51.914(c), (e), 69.4(l)). If a LEC or a LEC partner provides a portion of the tandem services (with an Intermediate Access Provider providing the other portion of the necessary tandem services) in the call path from an IXC to an IPES Provider engaged in access stimulation, the LEC would be an Intermediate Access Provider and both the LEC and the Intermediate Access Provider would be prohibited from imposing tariffed terminating tandem access charges on IXCs sending traffic to the access-stimulating IPES Provider. *See infra* Appx. A (47 CFR §§ 61.3(ccc)(3), 69.4(l)).

[44] *See infra* Appx. A (47 CFR § 51.914(c), (e)). We make several edits to section 51.914(c)(1) as it was proposed in the *Further Notice* so that the wording flows better grammatically. *See infra* Appx. A (47 CFR § 51.914(c)) (e.g., removing "it shall" from the initial clause, and adding "The IPES Provider shall" to the beginning of section 51.914(c)(1)). These changes are conforming and non-substantive edits which will help strengthen our Access Stimulation Rules against potential loopholes and prevent further arbitrage. *See Further Notice* at 17-18, para. 45.

[45] *Further Notice* at 8, para. 17; *e.g.*, Bandwidth Sept. 6, 2022 Comments at 4; Inteliquent Sept. 6, 2022 Comments at 3.

[46] *See infra* Appx. A (47 CFR § 61.3(bbb)(1)(i)-(ii)). We also adopt our proposal to change the word "part" to "rule," in section 61.3(bbb)(1)(i)(A). *Further Notice* Appx. A (proposed 47 CFR § 61.3(bbb)(1)(i)(A)). This change corrects the nomenclature for reference to revenue sharing. No commenters opposed the change.

[47] *Further Notice* at 12, paras. 27-28. No commenters discussed ongoing revenue sharing, but several reiterated their opposition to the practice or discussed their lack of insight into whether entities continue to engage in revenue sharing. Aureon Sept. 6, 2022 Comments at 9; Bandwidth Sept. 6, 2022 Comments at 5.

[48] 47 CFR § 61.3(bbb)(1)(iii).

[49] Letter from Robert H. Jackson, Counsel to Teliax, Inc., to Lynne Engledow, Deputy Chief, Pricing Policy Division, Wireline Competition Bureau, FCC, WC Docket No. 18-155, Attach. at 10-11 (filed Nov. 25, 2022) (Teliax Nov. 25, 2022 *Ex Parte* Letter). Teliax repeats its claims in a filing submitted to the Commission on April 13, 2023 and available on the Commission's Electronic Comment Filing System (ECFS): https://www.fcc.gov/ecfs/document/10413215067724/1. This filing is not signed as required by section 1.52 of our rules and is not labeled as an *ex parte* filing as required by section 1.1206(b)(2) of our rules. 47 CFR §§ 1.52, 1.1206(b)(2). Although this filing is procedurally deficient under our rules, we also find it unavailing on the merits as it essentially repeats the argument that Teliax raised in its comments, i.e., that price-cap LECs should be subject to the same traffic ratio reporting requirements as competitive LECs, rate-of-return LECs, and IPES Providers. We explain our (continued….)

stimulation activities have not directly involved price cap carriers."[50] The record in this proceeding provides no evidence that this has changed. Nor is there any evidence that supports Teliax's assertion that any price-cap LECs are engaged in access stimulation.[51] Even if Teliax's proposal had merit, it is beyond the scope of this current rulemaking as we did not seek comment on expanding our Access Stimulation Rules to encompass price-cap LECs. For these reasons, we lack any basis for expanding our Access Stimulation Rules as Teliax proposed.

17. According to HD Carrier, an IXC or its wireless affiliate has an incentive to send traffic over TDM, and then assert that it does not need to pay access charges by claiming a provider later in the call path is engaged in access stimulation.[52] HD Carrier provides no support for its claims, however. To the contrary, HD Carrier's arguments rely on several incorrect assumptions which we correct here: (a) IXCs cannot unilaterally enter in to interconnection agreements and for that reason, they may still have to use the tariffed, TDM path to terminate traffic;[53] (b) the terminating carrier, not the originating carrier, dictates the call path possibilities at the terminating end of the call, and any Intermediate Access Providers, through call routing instructions detailed in the LERG Routing Guide (LERG);[54] and (c) not all wireless companies have IXC affiliates.

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basis for rejecting that argument in the text above. *See also* Letter from David Erickson, Founder of FreeConferenceCall.com, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 2 n.1 (filed Apr. 13, 2023) (HD Carrier Apr. 13, 2023 *Ex Parte* Letter).

[50] *Connect America Fund et al.*, WC Docket No. 10-90 et al., Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking, 26 FCC Rcd 4554, 4760, para. 642 (2011) (*USF/ICC Transformation Notice*) ("As the Commission observed in the *Access Stimulation NPRM*, as a general matter, complaints regarding access stimulation activities have not directly involved price cap carriers.") (citing *Establishing Just and Reasonable Rates for Local Exchange Carriers*, WC Docket No. 07-135, Notice of Proposed Rulemaking, 22 FCC Rcd 17989, 18033, para. 33 (2007)).

[51] *See* AT&T Dec. 14, 2022 *Ex Parte* Letter at 2.

[52] HD Carrier Oct. 3, 2022 Reply at 2-3 ("The [Further Notice's] proposed rules would create a perverse outcome that enables an originating provider to choose a TDM, multi-party, call-degrading call path that *preserves* antiquated access charges—charges that are then forced upon the terminating IPES Provider.") (emphasis in original); Letter from David Erickson, Founder, FreeConferenceCall.com, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Oct. 3, 2022) (HD Carrier Oct. 3, 2022 *Ex Parte* Letter); Letter from David Erickson, Founder of FreeConferenceCall.com, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 3 (filed Feb. 17, 2023) (HD Carrier Feb. 17, 2023 *Ex Parte* Letter); Letter from David Erickson, Founder of FreeConferenceCall.com, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1-2 (filed Jan. 9, 2023) (HD Carrier Jan. 9, 2023 *Ex Parte* Letter) ("HD Carrier has offered, and continues to offer, a direct, IP, bill-and-keep connection to any originating service provider. If, for example, AT&T Wireless has traffic destined for a conference end user, it does not need to send that traffic to its IXC affiliate which then routes it to an intermediate provider and then to a terminating LEC. By sending the traffic down the direct IP path—every issue raised in this proceeding is fully addressed."); HD Carrier Apr. 13, 2023 *Ex Parte* Letter at 1-2, Attach. at 1-4. The rules we adopt do not force any charges "upon the terminating IPES Provider," and HD Carrier makes no showing that any wireless carrier is in fact sending calls to an IXC affiliate to avoid access charges.

[53] Letter from Diana Eisner, VP, Policy & Advocacy, USTelecom, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Feb. 13, 2023) (USTelecom Feb. 13, 2023 *Ex Parte* Letter); *id*. at 1-2 ("Moreover, the ability of carriers and IPES providers involved in arbitrage to quickly rearrange traffic can turn direct IP interconnection and traffic exchange negotiations into a game of whack-a-mole—as soon as an agreement is reached with one carrier or IPES provider, that traffic might move to another carrier or IPES provider where access charges might again be extracted.").

[54] The LERG is "an industry guide generally used by carriers in their network planning and engineering and numbering administration. It contains information regarding all North American central offices and end offices." *Implementation of the National Suicide Hotline Improvement Act of 2018*, WC Docket No. 18-336, Notice of Proposed Rulemaking, 34 FCC Rcd 12562, 12576, para. 34 n.131 (2019); *e.g.*, Iconectiv, TruOps Telecom Routing Administration (TRA) LERG Routing Guide; General Information at 5-6 (June 1, 2020),

(continued….)

18. The record confirms that the rules we adopt serve the public interest because they are essential to deterring access stimulation.[55] These new rules, similar to those adopted in the *Access Arbitrage Order*, will prohibit Intermediate Access Providers and LECs from requiring IXCs to pay tandem switching and tandem transport charges for access-stimulation traffic that the Commission has found to be unjust and unreasonable in violation of section 201(b) of the Act.[56] Under the rules we adopt, an IPES Provider will be responsible for calculating its traffic ratios at each end office or end office equivalent and providing the required notifications of access-stimulation activity to the Commission and affected entities.[57] These rules are consistent with other public interest requirements imposed on VoIP providers, such as universal service, E911, and other reporting obligations.[58]

19. Some commenters ask us to go a step further, and not only apply the access-stimulation triggers and notification requirements to IPES Providers, but also impose on IPES Providers the same financial responsibility for access-stimulation traffic as LECs have under the current rules.[59] Bandwidth,

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https://trainfo.iconectiv.com/sites/trainfo/files/2022-06/LERG-General-Information-Document-060122.pdf (Iconectiv LERG Routing Guide) (describing the data in the LERG, including homing arrangements that map tandems to switches); Letter from Matthew S. DelNero and Thomas G. Parisi, Counsel to Inteliquent, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 2 (filed Apr. 30, 2021) (Inteliquent/Lumen Apr. 30, 2021 *Ex Parte* Letter) ("[T]the IPES provider . . . designates an access tandem in the LERG, the purpose of which is for IXCs to deliver long distance traffic from anywhere outside the local area."); Inteliquent Sept. 6, 2022 Comments at 5-6 ("IPES Providers . . . [m]ake their own choices as to call processing."). *See generally Further Notice* at 9, para. 19 (referring to the IPES Provider or its LEC partner as determining the call path).

[55] *Further Notice* at 6, para. 11 (explaining our rules "will serve the public interest by reducing carriers' incentives and ability to send traffic over the Public Switched Telephone Network (PSTN) solely for the purpose of collecting tariffed tandem switching and transport access charges from IXCs to subsidize high-volume calling services, which the Commission has found to be an unjust and unreasonable practice"); *e.g.*, *AT&T v. Wide Voice Enforcement Order*, 36 FCC Rcd at 9785-86, paras. 31, 36 (finding that Wide Voice's "insert[ion of] a VoIP provider into the call path" was part of a "sham arrangement" to evade financial responsibility and instead "to continue and to create new opportunities to bill IXCs for tandem services relating to access stimulation traffic"); USTelecom Sept. 6, 2022 Comments at 4 ("Just as in prior access stimulation arbitrage schemes, a public interest problem emerges when the call flow is designed and implemented inefficiently, inserting an IPES Provider in the call flow, to maximize access revenues and create an arbitrage scheme."); AT&T Sept. 6, 2022 Comments at 4.

[56] *Access Arbitrage Order*, 34 FCC Rcd at 9073, para. 92 (citing 47 U.S.C. § 201(b)).

[57] *See infra* Appx. A (47 CFR § 51.914(d)); 47 CFR § 61.3(bbb). We slightly change the wording in new section 51.914(d)(3) from what was in the *Further Notice* Appendix A. As proposed, section 51.914(d)(3) requires that an IPES Provider will notify the Commission, affected Intermediate Access Providers or Interexchange Carriers "[t]hat the IPES Provider may pay for those services as of that date." *Further Notice* Appx. A (proposed 47 CFR § 51.914(d)(3)). To eliminate any ambiguity about the information IPES Providers must provide to the Commission, affected Intermediate Access Providers, or Interexchange Carriers, we modify the language to say that the IPES Provider will notify the Commission, affected Intermediate Access Providers, or Interexchange Carriers "[w]hether the IPES Provider will pay for those services as of that date." *Infra* Appx. A (47 CFR § 51.914(d)(3)). These changes are conforming and non-substantive edits which will help strengthen our Access Stimulation Rules against potential loopholes and prevent further arbitrage. *See Further Notice* at 17-18, para. 45.

[58] *Further Notice* at 9, para. 18 (citing 47 CFR § 1.7001(b) (requiring interconnected VoIP providers serving end users to file FCC Form 477), and 47 CFR § 64.604 (requiring interconnected VoIP providers to contribute to the Telecommunications Relay Service Fund)). The Commission requires interconnected VoIP service providers to contribute to the Universal Service Fund as a means of ensuring a level playing field among direct competitors. 47 CFR § 54.706(a); *Universal Service Contribution Methodology et al.*, WC Docket No. 06-122 et al., Report and Order and Notice of Proposed Rulemaking, 21 FCC Rcd 7518, 7541, paras. 44-45 (2006) (*Universal Service Contribution Order*); *IP-Enabled Servs. E911 Requirements for IP-Enabled Serv. Providers*, 20 FCC Rcd 10245 (2005) (E911 requirements applicable to VoIP providers); *IP-Enabled Servs. et al.*, WC Docket No. 04-36 et al., Report and Order, 22 FCC Rcd 11275, 11293-97, paras. 36-41 (2007) (*IP-Enabled Services*) (FCC Form 499 reporting requirements apply to VoIP providers.).

for example, proposes that, "[r]ather than stating an IPES Provider 'may' pay for terminating switched access tandem switching and terminating switched access tandem transport services where the IPES Provider is engaged in access stimulation, the rule should ***require*** the IPES Provider . . . to assume financial responsibility for the services."[60]

20. Although our Access Stimulation Rules require access-stimulating LECs to assume financial responsibility for tandem services used to deliver access-stimulation traffic, as proposed in the *Further Notice*, we decline to impose the same mandatory condition on access-stimulating IPES Providers.[61] Instead, the IPES Provider "may" assume financial responsibility.[62] We do, however, make clear that IXCs shall not be billed by Intermediate Access Providers for terminating tandem and transport charges to deliver traffic to an IPES Provider engaged in access stimulation.[63] Under the rules we adopt here, an Intermediate Access Provider will have an option and may seek compensation from an access-stimulating IPES Provider,[64] or it shall seek compensation from the IPES Provider's LEC partner (if that LEC had directly assigned numbers that it transferred to the IPES Provider that then used those numbers to receive access-stimulated traffic) for the tariffed terminating tandem switching and transport access charges related to traffic bound for an IPES Provider engaged in access stimulation.[65] In short, Intermediate Access Providers, LECs, and IPES Providers may determine their own billing arrangements among themselves when an IPES Provider is engaged in access stimulation but tariffed terminating switched access charges may not be imposed on IXCs in those situations.[66] We find that this approach

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[59] Lumen agreed with our proposal to make IPES Providers responsible for access-stimulation traffic, like LECs, by requiring them to calculate terminating-to-originating traffic ratios and provide notice if they meet or exceed those triggers. But Lumen also argued that once an IPES Provider was found to be engaged in access stimulation, financial responsibility for the terminating switched access tandem switching or transport charges should shift to the IPES Provider, as it does for LECs, which differs from our proposal in the *Further Notice*. Lumen Sept. 6, 2022 Comments at i, 3-4. *Cf. Further Notice* at 9, para. 19 ("Under our proposal, if the IPES Provider's traffic ratios exceed the applicable rule triggers, it would have to notify the Intermediate Access Provider, the Commission and affected IXCs. The Intermediate Access Provider would then be prohibited from billing IXCs tariffed rates for terminating switched access tandem switching or terminating switched access transport charges. Instead, the Intermediate Access Provider *could* recover the costs from the IPES Provider, or the IPES Provider's LEC partner.") (emphasis added).

[60] Bandwidth Sept. 6, 2022 Comments at 4 (emphasis in original); *see also* Inteliquent Sept. 6, 2022 Comments at 2 ("[T]he Commission should specify that IPES Providers are accountable for their own traffic and thus *must* pay the charges associated with delivering traffic to the IPES Provider if the terminating-to-originating traffic ratio for the IPES Provider exceeds the triggers established in the Commission's rules.") (emphasis added); Lumen Sept. 6, 2022 Comments at 3 (arguing that if an IPES Provider engages in access stimulation, there should be a "shifting [of] responsibility for tariffed terminating tandem switching and transport access charges . . . to the IPES Provider" but mistakenly referring to this as the Commission's proposal); Letter from Tamar E. Finn, Counsel to Bandwidth Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, Appx. B at 2 (filed Dec. 23, 2022) (Bandwidth Dec. 23, 2022 *Ex Parte* Letter) (suggesting edits to proposed 47 CFR § 51.914(c)(1) and 51.914(d)(3) stating that the IPES Provider "*shall* pay" for tariffed access services if it meets the definition of an access-stimulating IPES Provider) (emphasis added).

[61] *Further Notice* at 9, para. 19 & Appx. A (proposed 47 CFR § 51.914(c)(2), (e)).

[62] *See infra* Appx. A (47 CFR § 51.914(c)(2), (e)). In contrast, our rules require a LEC that engages in access stimulation to assume financial responsibility for any applicable Intermediate Access Provider's charges. *See infra* Appx. A (47 CFR § 51.914(a)(3)).

[63] *See infra* Appx. A (47 CFR §§ 51.914(c)(3), (e), 69.4(l)).

[64] *See infra* Appx. A (47 CFR § 51.914(c)(2)).

[65] *See infra* Appx. A (47 CFR §§ 51.914(a)(3), (b)(3), (e)). In this case, the partner LEC would also be an access-stimulating LEC because it would be required to count the traffic going to and from its directly assigned phone numbers in its traffic ratio and would have met the access-stimulation trigger. As a result, the Intermediate Access Provider shall bill the LEC partner for the Intermediate Access Provider's tandem services.

recognizes the difference in regulatory treatment between LECs and IPES Providers while also advancing our goal of curbing access stimulation.[67] And under this approach, if access is being stimulated and an IXC is unlawfully charged for tariffed terminating tandem switching or transport, the IXC may file a complaint against the LEC if the stimulated traffic is being sent to numbers that were directly assigned to the LEC, or it may bring a court action against the IPES Provider if the stimulated traffic is being sent to numbers that were directly assigned to the IPES Provider.

21. In addition, we decline Bandwidth's request to expand the Access Stimulation Rules to "require [a]ccess [s]timulators to pay any tariffed charges associated with stimulated originating and terminating traffic."[68] Bandwidth suggests that its proposal would prevent access-stimulating entities

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[66] *Further Notice* at 9, para. 19 ("The Intermediate Access Provider would . . . be prohibited from billing IXCs tariffed rates for terminating switched access tandem switching or terminating switched access transport charges. Instead, the Intermediate Access Provider could recover the costs from the IPES Provider, or the IPES Providers' LEC partner. Thus, the entities choosing the call path—the IPES Provider or its partner—should only be willing to generate traffic that creates more value than the costs these tariffed access charges are intended to recover. As a result, they would have an economic incentive to make efficient call routing decisions and little, if any, incentive to artificially stimulate traffic."). In the event an Intermediate Access Provider does not already have, or is unable to reach, a commercial agreement relating to compensation with a subtending IPES Provider that is engaged in access stimulation, the Intermediate Access Provider may be justified in refusing to deliver calls bound for that IPES Provider that have been sent to the Intermediate Access Provider's tandem. We do not encourage any refusal to deliver traffic but also do not sanction tandem services being used without compensation. Letter from Timothy M. Boucher, Asst. General Counsel, Federal Regulatory Affairs, Lumen, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, Attach. (filed Apr. 12, 2023) (Lumen Apr. 12, 2023 *Ex Parte* Letter); *see also* Letter from Tamar E. Finn and Patricia Cave, Counsel to Bandwidth Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 2 (filed Apr. 13, 2023) (Bandwidth Apr. 13, 2023 *Ex Parte* Letter) (supporting additional language to address the possible non-payment for Intermediate Access Provider services). Common carriers may revise their federally filed tariffs as they deem appropriate in accordance with the Act and our rules. *See* Bandwidth Apr. 13, 2023 *Ex Parte* at 1 ("Bandwidth intends (following adoption of the *Draft Second R&O*) to revise its tariff as necessary to ensure that Bandwidth is not forced to provide services to IPES Providers without compensation. Bandwidth submits imposing such charges by tariff or contract is consistent with the rules permitting Bandwidth the option to seek compensation from an access-stimulating IPES Provider.").

[67] We also decline to adopt Inteliquent and Lumen's proposal that we issue a declaratory ruling that IPES Providers are to be treated like LECs for purposes of the current Access Stimulation Rules. *Further Notice* at 13, para. 34 (citing Inteliquent/Lumen Apr. 30, 2021 *Ex Parte* Letter at 2 (arguing that when IPES Providers are inserted into the call flow, they function as a LEC)); *see also* Inteliquent Sept. 6, 2022 Comments at 8-9; Letter from Timothy M. Boucher, Asst. General Counsel, Lumen, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, Attach. at 2; Lumen Reply, WC Docket No. 13-97 et al., at 6 (rec. June 15, 2022). First, there is no support for this proposal in the record. Second, we interpret this suggestion to include requiring IPES Providers to be financially responsible for tariffed terminating switched access charges and, for the reasons discussed here, we reject that approach. This decision is consistent with Commission precedent of applying requirements to VoIP providers in a targeted manner designed to address specific, fundamental regulatory obligations when necessary and in the public interest. *E.g.*, 47 CFR § 54.706(a); *Universal Service Contribution Order*, 21 FCC Rcd at 7541, para. 44 (extending contribution obligations to interconnected VoIP service providers). Although the Commission did not address the regulatory classification of interconnected VoIP services under the Act, the Commission concluded that interconnected VoIP service providers are "providers of interstate telecommunications" for purposes of universal service contributions. *Universal Service Contribution Order*, 21 FCC Rcd at 7537, para. 35 (citing 47 U.S.C. § 254(d)).

[68] Bandwidth Sept. 6, 2022 Comments at 15; Letter from Tamar E. Finn, Counsel to Bandwidth Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 4 (filed Dec. 2, 2022) (Bandwidth Dec. 2, 2022 *Ex Parte* Letter); Bandwidth Dec. 23, 2022 *Ex Parte* Letter Appx. B at 1 (for proposed 47 CFR § 51.914(a)(1)-(2), proposing the deletion of references to "terminating" access charges; and for proposed 47 CFR § 69.5(b)(1)-(2), proposing the addition of references to originated traffic). We address Bandwidth's concern about the potential for multiple tandem charges in the Adopting Additional Rule Revisions Section below. *Infra* Section III.C – Adopting Additional Rule Revisions.

from charging any originating access charges and would make them, instead of IXCs, financially responsible for all tandem service charges—including dedicated tandem charges—for both terminating and originating traffic heading to or from access stimulators[69] and argues that not incorporating its proposal would create a loophole in our Access Stimulation Rules.[70]

22. As AT&T acknowledges, however, we did not seek comment on expanding the current Access Stimulation Rules to encompass originating traffic or dedicated tandem service charges.[71] Although Bandwidth correctly points out that the *Further Notice* included certain questions regarding originating 8YY traffic,[72] we only asked about "issues regarding the treatment of originating 8YY traffic for purposes of calculating the traffic ratios related to the triggers in our Access Stimulation Rules."[73] Those questions were focused on whether we needed to refine the existing methodology for calculating traffic ratios used to determine whether an entity is engaged in terminating access stimulation. They were not designed to elicit comments about potential reforms to our originating access or 8YY access charge rules, and we thus lack a full record on which to consider such reforms. Indeed, any changes to our rules governing originating traffic would have far-reaching implications that are best addressed in other docketed proceedings, such as the 8YY Access Charge Reform and Intercarrier Compensation reform dockets.[74]

23. Bandwidth and AT&T also raised concerns about the potential practice of carriers imposing additional, improper access charges on IXCs to make up for tandem switching and switched access transport revenue which terminating carriers lost as a result of the rules adopted in the *Access Arbitrage Order* and the *8YY Access Charge Reform Order*.[75] To the extent there are any concerns that providers may be imposing charges for terminating switched access tandem switching or terminating switched access transport services that are precluded by our Access Stimulation Rules, we find that our existing rules adequately address that issue.[76] The definition of "tandem-switched transport and tandem charge" in section 69.111 of our rules includes charges for the following services: tandem switched transport facility, common transport multiplexing, tandem switched transport termination, and tandem

[69] Bandwidth Sept. 6, 2022 Comments at 15-17 (identifying four dedicated tandem service charges—trunk port, dedicated multiplexing, direct trunked transport, and entrance facility); *see also* AT&T Oct. 3, 2022 Reply at 4-5 (describing Bandwidth's proposals and agreeing that "they raise an important issue that should be brought to the Commission's attention and addressed by further proceedings").

[70] Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 2.

[71] AT&T Oct. 3, 2022 Reply at 4 ("While such proposals are well-intentioned, AT&T recognizes they may be outside of the scope of the Further Notice.").

[72] Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4; *Further Notice* at 19, para. 47. The term "8YY traffic" refers to toll-free calls.

[73] *Further Notice* at 19, para. 47.

[74] *8YY Access Charge Reform*, WC Docket No. 18-156; *Connect America Fund et al*., WC Docket No. 10-90 et al.

[75] Bandwidth Sept. 6, 2022 Comments at 16 ("While the Commission thinks it has precluded 'all' tandem charges in cases of access stimulation, in Bandwidth's experience, Intermediate Access Providers often impose by tariff additional charges such as tandem switched transport facility, common transport multiplexing, trunk port, dedicated multiplexing, direct trunked transport, and entrance facility fees to make up for lost tandem switching and switched transport revenue."); AT&T Oct. 3, 2022 Reply at 5; *8YY Access Charge Reform*, WC Docket No. 18-156, Report and Order, 35 FCC Rcd 11594 (2020) (*8YY Access Charge Reform Order*); *see also* Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4; Bandwidth Dec. 23, 2022 *Ex Parte* Letter at 1, Attach. A.

[76] The Access Stimulation Rules apply to "terminating switched access tandem switching" and "terminating switched access transport charges" for calls between the "local exchange carrier's terminating end office or equivalent and the associated access tandem switch." 47 CFR § 51.914(a)(1); *see infra* para. 83 (discussing the language change from "terminating switched access tandem switching *and* terminating switched access transport charges" to "terminating switched access tandem switching *or* terminating switched access transport charges" in several rules).

switching.[77] Thus, pursuant to our Access Stimulation Rules, Intermediate Access Providers and LECs are not permitted to charge IXCs tariffed rates for any of those four rate elements or services, if the LEC (under either the current rules or the new and revised rules) or the IPES Provider (under the new and revised rules) is engaged in access stimulation. Our rules apply to access-stimulating entities that provide tariffed services with rate elements that are equivalent to those described here, even if they are offered under different names. We will scrutinize any tariff modifications filed by LECs or Intermediate Access Providers that improperly attempt to shift recovery of precluded terminating switched access tandem switching or terminating switched access transport costs to other charges in a provider's tariff.[78] We will also be vigilant in looking for any attempts carriers may make to impose tariffed charges for functions they do not actually perform.[79]

24. *Definition of "End Office Equivalent."* We adopt our proposal that IPES Providers be required to calculate their traffic ratios in each end office or equivalent at which they receive traffic for purposes of determining whether they meet or exceed the traffic ratios in our Access Stimulation Rules.[80] Contrary to claims in the record, this is consistent with how the Access Stimulation Rules have been applied.[81] First, however, we dispel concerns in the record that IPES Providers may attempt to evade responsibility for calculating their traffic ratios by claiming their traffic should not be counted because it does not transit an "end office or equivalent," as the present rules require.[82]

25. To make clear how providers' traffic ratio calculations should be made, we adopt two new rules. We add a definition of "End Office Equivalent" to our rules to ensure that our Access Stimulation Rules are specifically applicable to IPES Providers that do not have a traditional "end office," as well as to LECs that do have an "end office."[83] We also adopt a rule that clarifies the methodology that

[77] The four rate elements are defined in section 69.111 of the Commission's rules. 47 CFR § 69.111. The tandem switched transport facility rate element, as defined in section 69.111(e)(2)(i) of our rules, is the per MOU per-mile (distance-sensitive) charge for the common transport facility connecting the tandem switch and the end office. *Id.* § 69.111(e)(2)(i) (price-cap and rate-of-return LECs). The common transport multiplexing rate element is multiplexing provided in conjunction with common transport between the end office and the tandem switch. *Id.* §§ 69.4(j)(4) (rate-of-return LECs), 69.111(l)(1) (price-cap LECs). Both of those rate elements were raised by Bandwidth. Bandwidth Sept. 6, 2022 Comments at 16. Two other rate elements are included under the Access Stimulation Rules: (a) tandem switched transport termination, which is a per-MOU (non-distance sensitive) charge for use of the circuit equipment at the ends of a common transport facility, 47 CFR § 69.111(e)(2)(ii); and (b) tandem switching, 47 CFR § 69.111(a)(2)(ii).

[78] *See, e.g.*, Bandwidth Sept. 6, 2022 Comments at 16.

[79] Bandwidth Apr. 13, 2023 *Ex Parte* Letter at 2.

[80] *Further Notice* at 9-11, paras. 19-20, 22-25; *see also* Bandwidth Sept. 6, 2022 Comments at 6 ("Bandwidth agrees that calculating traffic ratios based on traffic measurements 'in an end office' is the right approach."), 8 ("Bandwidth does not support AT&T's proposal to eliminate the phrase 'in an end office' in a calendar month from section 61.3(bbb)(1)(ii)."); Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 3.

[81] *Further Notice* at 10, para. 23 ("The Access Stimulation Rules currently require traffic ratios to be calculated on the basis of traffic 'in an end office' for purposes of determining whether the 6:1 or 10:1 traffic ratios are exceeded."). *But see* Lumen Apr. 12, 2023 *Ex Parte* Letter at 2-3 (arguing that calculating traffic 'in the end office' for purposes of the Access Stimulation definition "is not how the industry has interpreted the counting obligation to-date" and thus advocating for the removal of the "in the end office" phrase in the revised Access Stimulation Rules to allow for traffic ratio calculation on a less granular, company-wide basis). The industry has not exhibited confusion over the plain language of the Access Stimulation definition. *See, e.g.*, Request of Onvoy, LLC d/b/a Inteliquent for Renewal of Temporary Waiver of Section 61.3(bbb)(1)(ii) of the Commission's Rules, WC Docket No. 18-155, at Exhs. A & B (filed Aug. 18, 2020), https://www.fcc.gov/ecfs/document/10818669205172/1 (providing data to support its waiver request on a less than company-wide basis).

[82] Letter from Brett Farley, Assistant Vice President – Senior Legal Counsel, AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1-2 (filed Nov. 8, 2022) (AT&T Nov. 8, 2022 *Ex Parte* Letter); Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4; USTelecom Sept. 6, 2022 Comments at 10 n.30.

IPES Providers and other providers are required to use in calculating their access-stimulation traffic ratios.[84]

26. The term "end office" is already defined in our rules and is a common term used to mean "the telephone company office from which the end user receives exchange service."[85] We now adopt a new term, "End Office Equivalent," as section 61.3(fff), solely for purposes of our Access Stimulation Rules, which is defined as follows:

> *End Office Equivalent*. For purposes of this part and §§ 51.914, 69.3(e)(12)(iv) and 69.4(l) of this chapter, an End Office Equivalent is the geographic location where traffic is delivered to an IPES Provider for delivery to an end user. This location shall be used as the terminating location for purposes of calculating terminating-to-originating traffic ratios, as provided in this section. For purposes of the Access Stimulation Rules, the term "equivalent" in the phrase "end office or equivalent" means End Office Equivalent.[86]

27. AT&T expresses concern that arbitrageurs might "claim[] that certain IP terminating arrangements do not transit an end office 'equivalent' at all."[87] In response, Bandwidth argues that IPES Providers with authority to receive direct numbering assignments do, in fact, have an end office equivalent in which they can determine their terminating-to-originating traffic ratios for purposes of our Access Stimulation Rules.[88] The new definition we adopt requires a geographic location. In addition, as Bandwidth suggests, a possible geographic location for an "End Office Equivalent" applicable to IPES Providers could be a switch POI (point of interconnection) CLLI (Common Language Location Identifier).[89] Bandwidth explains that both an end office and switch POI CLLI are associated with a geographic rate center making the switch POI CLLI the equivalent of an end office.[90] We do not specify that an IPES Provider must use a switch POI CLLI as the geographic location of termination for the calculation of traffic ratios, but the definition of "End Office Equivalent" we adopt acknowledges that

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[83] *See infra* Appx. A (47 CFR § 61.3(fff)); *see also Further Notice* at 10-11, para. 23 ("To apply these requirements to an IPES Provider, what guidance should we provide as to what would be considered 'equivalent' to a LEC's end office?"); Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4 (stating that "an IPES Provider cannot provide the equivalent of an end office function because the Commission has determined that function requires physical loop connections that an IPES Provider typically does not connect to its switching equipment").

[84] *See infra* Appx. A (47 CFR § 61.3(bbb)(5)).

[85] 47 CFR § 69.2(pp).

[86] *See infra* Appx. A (47 CFR § 61.3(fff)).

[87] AT&T Nov. 8, 2022 *Ex Parte* Letter at 1-2; *see also* USTelecom Sept. 6, 2022 Comments at 10 n.30 (arguing that under the VoIP symmetry rule, "over-the-top (OTT) VoIP providers do not have 'functionally equivalent' end offices," so if "'functionally equivalent'" were inserted in the arbitrage rules, OTT providers would be exempt from the traffic ratio calculations).

[88] Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 1.

[89] *Id.* A POI is the location where two service providers interconnect to exchange traffic. Iconectiv LERG Routing Guide at 40. A CLLI Code is an "11 character, globally unique code that represents a physical location for a network site." Iconectiv, TruOps Common Language; Location Information Services CLLI at 2, https://iconectiv.com/sites/default/files/2021-07/TruOps_Common_Language_Brochure_clli.pdf (last visited Mar. 10, 2023).

[90] Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 1 ("In the case of an IPES provider with authority to receive direct numbering assignments, telephone numbers typically are assigned to a switch Point of [Interconnection] ("POI") CLLI. That switch POI CLLI is associated with a geographic rate center. Although IP telephony can be non-geographic, LERG rules require telephone numbers to be associated with rate centers. Therefore, an IPES provider should be able to determine an inbound/outbound traffic ratio for each switch POI CLLI, which is the equivalent of an end office for a LEC.").

every IPES Provider has one or more End Office Equivalent locations and that each one shall be used as a terminating location for purposes of calculating traffic ratios under our Access Stimulation Rules. Therefore, the definition of "End Office Equivalent" makes clear that, for purposes of our Access Stimulation Rules, the definition of "Access Stimulation" in section 61.3(bbb) unquestionably applies to IPES Providers.

28. *Calculating Traffic Ratios*. We also adopt a rule that incorporates our proposal that IPES Providers be required to calculate their terminating-to-originating traffic ratios and provides the methodology for how such traffic ratios should be calculated for purposes of our Access Stimulation Rules.[91] Most commenters agree that the IPES Provider is in the best position to calculate its own traffic ratios, because it "necessarily has visibility into its own access traffic,"[92] is "the entity that chooses how it will send or receive its traffic," and tracks its calls for billing purposes.[93] Accordingly, we decline to adopt our alternative proposal that would have required Intermediate Access Providers to calculate IPES Providers' traffic ratios.[94] We agree with commenters that such a requirement would unduly burden Intermediate Access Providers and is unworkable because Intermediate Access Providers do not possess the information needed to compute the relevant traffic ratios.[95] We find that requiring IPES Providers to count their own traffic for purposes of the access-stimulation triggers is necessary to thwart the latest efforts to evade our Access Stimulation Rules by inserting IPES Providers into the call flow.[96] As a result of the actions we take today, entities will no longer be able to "claim that the [*Access Arbitrage Order*] is inapplicable because the traffic is bound for telephone numbers obtained by IPES Providers and not bound for LECs serving end users."[97]

29. At the same time, in response to concerns raised in the comments, it is important for us to provide a clear methodology of how IPES Providers and LECs should calculate their terminating-to-originating traffic ratios. Otherwise, there may be confusion that could lead to the miscalculation of traffic ratios, disputes between providers, or potential new arbitrage opportunities.[98] Above we detail *where* traffic should be calculated (for LECs at each of their end offices, and for IPES Providers at each of their "End Office Equivalents") for purposes of our Access Stimulation Rules. Here we detail *how* a LEC or IPES Provider must calculate its traffic ratios; that is, based on MOU to and from telephone numbers directly assigned to that LEC or IPES Provider, respectively. Presently, certain commenters

[91] *Further Notice* at 8-9, paras. 17-18.

[92] Inteliquent/Lumen Apr. 30, 2021 *Ex Parte* Letter at 2.

[93] Bandwidth Sept. 6, 2022 Comments at 5 ("Only the entity that chooses how it will send or receive its traffic is in the best position to calculate and determine traffic ratios. The IPES Provider has the commercial relationship with its customer . . . and . . . will track the traffic it delivers through billings or detailed traffic records in order to manage its commercial relationship. The IPES Provider also is in the best position to understand if it is part of a revenue sharing agreement."); *see also* Inteliquent Oct. 3, 2022 Reply at 1-2; Lumen Sept. 6, 2022 Comments at 5-6; USTelecom Sept. 6, 2022 Comments at 4.

[94] *Further Notice* at 9-10, para. 20.

[95] *E.g.*, Aureon Sept. 6, 2022 Comments at 6, 9 ("Obtaining the information needed to calculate traffic ratios and bill appropriate charges to IPES Providers with which Aureon has no relationship would create more uncertainty and lead to more disputes between Intermediate Access Providers, IXCs, and IPES Providers, and inhibit the ability of Intermediate Access Providers to provide the services needed by IXCs to provide services to rural customers. Additionally, the impossibility of the task proposed to be imposed on Intermediate Access Providers such as Aureon weighs heavily against its adoption."); Lumen Sept. 6, 2022 Comments at 5.

[96] *See, e.g.*, *Further Notice* at 4, para. 8.

[97] *Id.* (explaining various scenarios designed to evade the rules).

[98] *E.g.*, Inteliquent Oct. 3, 2022 Reply at 1 (noting "some confusion and potential disagreement [in the record] over important details" regarding "the methodology for determining the party to whom traffic is attributed for purposes of calculating terminating-to-originating traffic ratios").

explain, when an Intermediate Access Provider delivers traffic to an IPES Provider (for delivery to telephone numbers leased or bought by the IPES Provider from a LEC that then indirectly assigns those numbers to the IPES Provider), those calls are still counted in the LEC's traffic ratios because LECs calculate their ratios on traffic to and from telephone numbers directly assigned to their OCNs, including when a LEC provides those telephone numbers to another entity via indirect assignment.[99]

30. Given the ongoing attempts by some entities to misapply or exploit perceived loopholes in our current Access Stimulation Rules and concerns expressed in the record,[100] we agree that we must specify how carriers calculate their traffic ratios for purposes of our Access Stimulation Rules. Accordingly, we adopt a new rule, consistent with how LECs in the industry already count traffic,[101] for compliance with our Access Stimulation Rules, requiring each competitive LEC, rate-of-return LEC, or IPES Provider to include in its terminating-to-originating traffic ratio, to be counted separately at each end office or End Office Equivalent, all traffic "going to and from any telephone number associated with an Operating Company Number that has been issued" to such LEC or IPES Provider.[102] Under this rule, IPES Providers will be required to include in their traffic ratios all calls made to and from telephone numbers they receive directly from a numbering administrator, but not calls made to and from telephone numbers obtained indirectly from a LEC.[103]

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[99] *E.g.*, Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 2 ("The traffic associated with telephone numbers and supporting interconnection services that VoIP providers obtain from LECs . . . is included in LEC traffic ratios and subject to the access stimulation rules via the LEC."); Letter from Matthew S. DelNero and Jocelyn G. Jezierny, Counsel to Inteliquent, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 1-2 (filed Dec. 2, 2022) (Inteliquent Dec. 2, 2022 *Ex Parte* Letter) (stating that when traffic is exchanged with a VoIP provider using numbers supplied by a LEC today, "those minutes are counted towards the traffic ratio of the LEC from which the VoIP provider leased or bought its numbers"). No commenter disagreed with this characterization of how traffic ratios are currently calculated for purposes of our Access Stimulation Rules.

[100] *E.g.*, Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 2 (stating that "Bandwidth calculates its ratios on traffic to and from [telephone] numbers assigned to Bandwidth OCNs" whether or not it uses those telephone numbers itself or provides them to other entities via indirect assignment, and that its billing system is not designed to separate out its indirectly assigned numbers). When a numbering administrator issues a telephone number to a provider's OCN, that telephone number has been "directly assigned" to that provider. New section 61.3(bbb)(5) requires that ratios be calculated for all traffic "going to and from any telephone number associated with an Operating Company Number" issued to a provider, that is, a telephone number that has been directly assigned to that provider. *Infra* Appx. A (47 CFR § 61.3(bbb)(5)).

[101] Inteliquent Oct. 3, 2022 Reply at 4 (noting that today "if a CLEC provides its OCN-listed telephone number to a VoIP Provider, the CLEC includes in its ratios the traffic that ultimately terminates to or is originated from those numbers").

[102] New section 61.3(bbb)(5) reads as follows:

> In calculating the interstate terminating-to-originating traffic ratio at each end office or equivalent under this paragraph (bbb), each Competitive Local Exchange Carrier, rate-of-return local exchange carrier or IPES Provider shall include in such calculation only traffic traversing that end office or equivalent and going to and from any telephone number associated with an Operating Company Number that has been issued to such Competitive Local Exchange Carrier, rate-of-return local exchange carrier or IPES Provider. The term "equivalent" in the phrase "end office or equivalent" means "End Office Equivalent," as defined in this section.

Infra Appx. A (47 CFR § 61.3(bbb)(5)); *see also* Inteliquent Oct. 3, 2022 Reply at 5.

[103] *See infra* Appx. A (47 CFR § 61.3(bbb)(5)). The rule we adopt will not "exempt . . . IPES providers that lease or purchase [telephone] numbers from other carriers, as opposed to owning the telephone number outright, which could result in companies attempting to avoid application of the triggers by obtaining numbers indirectly." AT&T Nov. 8, 2022 *Ex Parte* Letter at 2; *see also* AT&T Oct. 3, 2022 Reply at 4.

31. Similarly, in the case where one LEC supplies another LEC with telephone numbers (indirectly assigning numbers to the second LEC), the first LEC that was directly assigned the telephone numbers by a numbering administrator is required to calculate its ratios by counting the calls to and from those directly assigned telephone numbers, even though that first LEC has assigned those telephone numbers to a second LEC.[104] The clarity this rule provides will prevent confusion and potential double-counting of calls—once by the LEC that was assigned the numbers directly and again by the IPES Provider, or LEC, that received those numbers indirectly from a LEC.[105]

32. We also reject other methods for calculating traffic, particularly by state, specific end user, or Intermediate Access Provider, or some other manner, instead of at the end office or End Office Equivalent.[106] There was some discussion in the record about calculating traffic ratios at the state level.[107] Calculating traffic ratios at the state level would make traffic manipulation easier—a result or potential loophole we do not want to allow. Several other parties suggested alternative ways to calculate traffic, such as at the network or aggregate level.[108] None of these parties provided sufficient support for these suggestions, however, and we find these proposals would allow for even easier traffic manipulation contrary to our goal of deterring access stimulation. For example, if traffic were counted in the aggregate, as some parties suggest, access-stimulating LECs or IPES Providers could send terminating traffic to one or a few end offices, or End Office Equivalents, of an unrelated LEC or IPES Provider such that the original LEC's or IPES Provider's ratios over the totality of their network, would not meet or exceed the traffic ratio triggers in the rules, meaning IXCs would have to pay for all terminating access charges even though if the traffic had not been shifted the traffic ratio triggers would have been met. Under our new rules, traffic ratio calculations must be made at each end office or End Office Equivalent for telephone numbers directly assigned to the provider's OCN. As under the current rules applicable to LECs, if an IPES Provider is deemed to be engaged in access stimulation because it meets or exceeds the traffic ratio triggers in an End Office Equivalent, then it must comply with the Access Stimulation Rules and IXCs would not be charged for terminating tandem switching or transport.[109] This takes into account the possibility that entities have more than one end office or End Office Equivalent and will discourage traffic manipulation, whether between end offices or End Office Equivalents of the same provider, or between different companies' end offices or End Office Equivalents, to stay under the traffic ratio triggers.

33. We find that the methodology we adopt—calculating a provider's traffic ratios at each end office or End Office Equivalent based on calls to and from telephone numbers assigned to that provider's OCN—provides a simple-to-administer, bright-line test that eliminates confusion in determining which entity is responsible for counting traffic and will deter potential future access-stimulation arbitrage.[110] Counting traffic based on which entity is assigned a particular telephone number

[104] *See infra* Appx. A (47 CFR § 61.3(bbb)(5)).

[105] Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 2 (suggesting traffic might "be counted twice, once by a VoIP provider and again by the LEC assigning telephone numbers indirectly to the VoIP provider"); Inteliquent Oct. 3, 2022 Reply at 1, 4-6.

[106] *Further Notice* at 11, para. 24.

[107] *E.g.*, Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 3 (requesting that traffic ratios be calculated at the end office level, "not states or regions"); *cf.* AT&T Jan. 31, 2023 *Ex Parte* Letter at 5 ("Accordingly it is appropriate to calculate the traffic ratio at the OCN and state level . . . ."). In response to this statement from AT&T, Lumen says that "[t]he Commission's [access stimulation] rules specify that its [access stimulation] ratios are to be calculated on a provider-wide basis." Lumen Feb. 21, 2023 *Ex Parte* Letter at 3 n.6. This is incorrect. Lumen cites no rule provision containing such a requirement, and Lumen ignores the requirement in sections 61.3(bbb)(1)(ii)-(iii) that the ratios be determined "in an end office."

[108] Teliax Nov. 25, 2022 *Ex Parte* Letter Attach. at 14 (suggesting reporting "at the network level"); Wide Voice Jan. 10, 2023 *Ex Parte* Letter at 3 (suggesting that ratios should be "measured in aggregate (if used at all)").

[109] *See infra* Appx. A (47 CFR § 61.3(bbb)(1)(ii)).

not only identifies the responsible entity, it also ensures that all calls are accounted for in calculating the access-stimulation traffic ratios and that no calls are double-counted.[111] In addition, even though the networks of IPES Providers and LECs may route traffic differently, the common denominator of our methodology is that providers have a bright-line test for calculating ratios on the basis of calls routed to and from telephone numbers associated with an end office or equivalent and an OCN that identifies that provider.[112]

34. We conclude that the benefits of this methodology overcome any potential risks it may pose to a LEC that sells or leases telephone numbers to IPES Providers or to other LECs.[113] It is true that, under new section 61.3(bbb)(5), a LEC, for example, is held responsible if it has directly assigned numbers that it then indirectly assigns to an IPES Provider that uses those telephone numbers it receives from that LEC to stimulate traffic, even though the LEC may have limited visibility into, or control over, the IPES Provider's traffic flow.[114] The relationship by which a LEC indirectly assigns numbers to an IPES Provider, however, is a business arrangement that the parties enter into voluntarily. As such, each party can contractually protect itself from the possibility that one of them may engage in access stimulation and can, for example, require that each party hold the other harmless from any financial responsibility for such activities and expressly provide that such numbers will not be used to violate our Access Stimulation Rules. Under the new rule we adopt today, LECs "would have a strong incentive to take corrective steps to avoid being deemed an access stimulator—up to and including ending the relationship with the stimulating customer."[115] Indeed, competitive LECs took such steps to terminate their agreements with providers shortly after the Commission adopted rules in 2019 to make access-

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[110] We agree with Inteliquent that, if we were instead to adopt rules attributing traffic to an IPES Provider when the IPES Provider obtained telephone numbers from a LEC that were assigned to the LEC's OCN, it would be more difficult for IXCs to verify the traffic ratios for IPES Providers—which could lead to increased arbitrage opportunities. Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 3. AT&T also expresses concerns that any rule we adopt should not adversely affect its ability to verify traffic ratios of providers that obtain telephone numbers from LECs. AT&T Dec. 14, 2022 *Ex Parte* Letter at 1-2. The approach we adopt addresses AT&T's concern that "[i]t is potentially unclear how this definition might apply to (i) telephone numbers ported to an IPES provider or (ii) a provider that obtains some, but not all, of its telephone numbers directly." AT&T Jan. 31, 2023 *Ex Parte* Letter at 6 n.13; *see also* AT&T Jan. 31, 2023 *Ex Parte* Letter at 7.

[111] We also agree with commenters that if we were to allow an IPES Provider to use traffic that is not associated with its OCN in its ratio calculations, it could use wholesale originated traffic to inflate its originating traffic volumes, thereby offsetting stimulated terminating traffic and making it easier to evade classification as an access stimulator. Inteliquent Oct. 3, 2022 Reply at 6.

[112] *See* Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 1 ("In the case of an IPES provider with authority to receive direct numbering assignments, telephone numbers typically are assigned to a switch Point of [Interconnection] ('POI') CLLI. That switch POI CLLI is associated with a geographic rate center. Although IP telephony can be non-geographic, LERG rules require telephone numbers to be associated with rate centers. Therefore, an IPES provider should be able to determine an inbound/outbound traffic ratio for each switch POI CLLI, which is the equivalent of an end office for a LEC.").

[113] *Cf.* Lumen Feb. 21, 2023 *Ex Parte* Letter at 2 ("[A]dopting an alternative approach that would, for example, make CLECs responsible for IPES provider traffic would potentially make a CLEC's status as a non-access-stimulator precarious.").

[114] *See infra* Appx. A (47 CFR § 61.3(bbb)(5)); AT&T Jan. 31, 2023 *Ex Parte* Letter at 6 (acknowledging that when IPES Providers receive telephone numbers indirectly from a LEC then IXCs would see the volume of traffic to and from the LEC because it is the entity listed in the number portability database).

[115] Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 2. Bandwidth agrees that a "LEC has an incentive to maintain balanced traffic ratios to avoid triggering the access stimulation rules and therefore has an incentive to monitor and manage any VoIP provider customer engaged in traffic pumping." Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 2; *see also* Inteliquent Oct. 3, 2022 Reply at 5-6.

stimulating LECs, rather than IXCs, financially responsible for tandem switching and transport service access charges in the delivery of traffic.[116]

35. In cases where an IPES Provider obtains telephone numbers from a LEC, the LEC that indirectly assigns numbers to the IPES Provider will include calls to those numbers in the LEC's own ratio calculations. Thus, IXCs can easily ascertain from LERG databases, available to the public, which telephone numbers are assigned to which provider (the LEC or the IPES Provider) to evaluate the traffic ratios based on the OCN associated with any particular group of telephone numbers. Otherwise, as Inteliquent explains, IXCs:

> will have no visibility into the identity of this provider or providers because the associated traffic will not be assigned to the provider(s) OCNs in the LERG. Without a public record demonstrating which phone numbers belong to the provider, the interexchange carrier[s] will have no visibility as to their inbound or outbound traffic, meaning that there will be no independent or objective way to evaluate the traffic ratios of the party using numbers supplied to it by a LEC.[117]

Without the use of public databases, it would be easier for a LEC, possibly one that is presently deemed an access stimulator under the current rules, to evade responsibility for stimulated traffic by claiming the traffic is the responsibility of the other provider.

36. To conclude, our new rule 61.3(bbb)(5) makes explicit that a competitive LEC, rate-of-return LEC, or an IPES Provider is required to calculate its traffic ratios on calls that traverse its end office or End Office Equivalent and go to and from telephone numbers directly assigned to that provider's OCN.[118] And if that LEC or IPES Provider meets or exceeds the relevant traffic ratio trigger, then an IXC shall not be charged terminating access charges for the delivery of that traffic.[119] Thus, the addition of this rule will minimize providers' ability to skirt responsibility for access stimulation.

37. *Notification Requirements.* We next amend our rules to require that an IPES Provider notify Intermediate Access Providers, IXCs, and the Commission if it is engaged in access stimulation as defined in our revised rules, similar to the obligations that already apply to LECs.[120] An IPES Provider

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[116] *See* Inteliquent Oct. 3, 2022 Reply at 5 (citing letters by competitive LECs notifying the Commission that they were ceasing business activity that could categorize them as an access stimulator); *see, e.g.*, Letter from Ronald Laudner, Jr., CEO, Interstate Cablevision, LLC, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Jan. 9, 2020) (Interstate Cablevision Jan. 9, 2020 *Ex Parte* Letter) (as of December 29, 2019, the company terminated end-user relationships with high-volume calling providers); Letter from Randy Foor, General Manager, Louisa Communications, Inc., to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Dec. 27, 2019) (Louisa Communications, Inc., Dec. 27, 2019 *Ex Parte* Letter) (notifying the Commission that the company terminated its end-user relationships with high-volume calling providers as of December 25, 2019).

[117] Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 3; *see also id*. ("[I]f there is a belief that a LEC is engaging in access stimulating behavior, the IXC examines the total traffic that flows to that LEC and that flows from that LEC's phone numbers. This provides the basis for the IXC's estimate of the LEC's traffic ratio . . . . [If the Commission were to adopt a rule whereby a LEC provided numbers to another entity and access-stimulation traffic was counted in that entity's traffic ratios rather than by the LEC, then] if the IXC approaches the LEC concerning its ratios, the LEC could claim that the traffic does not belong to the LEC but rather to one (or more) of the LEC's VoIP customers. The IXC will now face the nearly impossible task of identifying the correct VoIP and assessing their traffic ratios.").

[118] *See infra* Appx. A (47 CFR § 61.3(bbb)(5)). Wide Voice questions whether "*all* IPES traffic [will] be part of the ratio [calculation] or just IPES traffic that traverses the PSTN." Wide Voice Jan. 10, 2023 *Ex Parte* Letter at 3 (emphasis in original). By requiring LECs and IPES Providers to calculate the traffic to and from telephone numbers assigned by a numbering administrator to their OCNs, we make clear that all traffic is to be calculated for purposes of our Access Stimulation Rules.

[119] *See infra* Appx. A (47 CFR §§ 51.914(a)(1), (c), (e), 61.3(bbb), 69.4(l)).

engaged in access stimulation as defined in sections 61.3(bbb)(1)(i)-(ii) of our rules shall satisfy its notice and reporting requirement to the Commission by filing a record of its access-stimulating status in WC Docket No. 18-155 on the same day that it issues such notice to affected IXCs and Intermediate Access Providers.[121] We find that these requirements are necessary to enable Intermediate Access Providers to determine whether they can lawfully charge IXCs tariffed rates for interstate and intrastate terminating tandem services in connection with calls terminating to, or through, an IPES Provider, and to help IXCs determine if the charges are appropriate.[122]

38. We disagree with Bandwidth's proposal to change the present notice and reporting requirements. Bandwidth suggests that a "more prominent, public disclosure" is necessary, and that the Commission should publish public filings in its Daily Digest to "provide all IXCs (and consumers) with notice of where access stimulation occurs."[123] The Commission has already established a disclosure requirement that is both well understood by the industry and available to the public through the Commission's Electronic Comment Filing System.[124] There is no indication that the present filing procedure is insufficient for providing effective notice of access-stimulation activity to all affected or interested parties.[125]

39. We take seriously concerns that IXCs may be using improper self-help to withhold payment for services they have obtained pursuant to tariffs.[126] We caution IXCs against improperly using our rules to engage in the wrongful withholding of payments. We continue to discourage providers from engaging in self-help except to the extent that such self-help is consistent with the Act, our rules, and applicable tariffs.[127] Moreover, we would expect and encourage any IXC with evidence of unlawful

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[120] *See infra* Appx. A (47 CFR § 51.914(b), (d)); *see Further Notice* at 8-9, para. 18 ("Under our proposal, the IPES Provider would be responsible for calculating its traffic ratios and for making the required notifications to the Commission and affected carriers, just as LECs are responsible for these activities under the current rules."); *Further Notice* at 9, 19-20, paras. 19, 49. No party objected to this notification requirement.

[121] *See Access Arbitrage Order*, 34 FCC Rcd at 9068, para. 75 (establishing this procedure for access-stimulating LECs).

[122] *See infra* Appx. A (47 CFR § 51.914).

[123] Bandwidth Sept. 6, 2022 Comments at 6.

[124] *Access Arbitrage Order*, 34 FCC Rcd at 9068, para. 75; *see Further Notice* at 8-9, para. 18. The Electronic Comment Filing System (ECFS) "serves as the repository for official records in the FCC's docketed proceedings . . . . The public can use ECFS to retrieve any document in the system, including selected pre-1992 documents." FCC, Welcome to the FCC's Electronic Comment Filing System, https://www.fcc.gov/ecfs/search/search-filings (last visited Mar. 14, 2023).

[125] *See Further Notice* at 8-9, para. 18 ("After the rules adopted in the *Access Arbitrage Order* became effective, some carriers satisfactorily notified the Commission that they were stopping their access stimulation activities by filing letters in docket 18-155."); *see also* Letter from G. David Carter, Counsel to Northern Valley Communications, LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-155 and 20-11 (filed Apr. 8, 2020) (providing notice that Northern Valley engages in access stimulation).

[126] Although some commenters complain that IXCs are using self-help as a "tactic" against competitors or as a means of discrimination, they have offered no support for their anti-competition and unlawful discrimination claims. Aureon Oct. 3, 2022 Reply at 2; HD Carrier Oct. 3, 2022 Reply at 4; HD Carrier Oct. 3, 2022 *Ex Parte* Letter Attach. at 4; Teliax Nov. 25, 2022 *Ex Parte* Letter Attach. at 10; *see also* Letter from David Erickson, Founder of FreeConferenceCall.com, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Nov. 18, 2022).

[127] *See, e.g.*, *Access Arbitrage Order*, 34 FCC Rcd at 9065, para. 68; *8YY Access Charge Reform Order*, 35 FCC Rcd at 11614, para. 48. "Disallowing self-help . . . [c]ould be inconsistent with existing tariffs, some of which permit customers to withhold payment under certain circumstances." *Access Arbitrage Order*, 34 FCC Rcd at 9065, para. 68. We do not depart from a prior finding that the Commission "has never held that a failure to pay tariffed charges violates the Act itself." *All Am. Tel. Co., E-Pinnacle Commc'ns, Inc., and Chasecom v. AT&T Corp.*, File No. EB-10-MD-003, Memorandum Opinion and Order, 26 FCC Rcd 723, 728, para. 13 (2011). We also do not (continued….)

conduct on the part of a LEC or Intermediate Access Provider to bring a complaint proceeding under section 208 of the Act for damages to deter such conduct in the future.

40. We decline to adopt Verizon's proposal that we add a rule defining the financial liability of an IPES Provider that engages in access stimulation but fails to provide timely notice of that activity to affected parties. Verizon requests that we amend section 51.914 of our rules "to make clear that, where an IPES [P]rovider does not timely self-identify and the Commission or a court later holds that the IPES [P]rovider should have self-identified . . . the obligation to bear tandem switching and transport charges applies retroactively to when the IPES [P]rovider should have self-identified" and that the IPES Provider "must then reimburse long-distance carriers for any amounts improperly billed."[128] We find that such a rule is unnecessary to achieve its intended purpose.

41. Under the rules we adopt today, an IPES Provider that meets or exceeds the access-stimulation triggers but fails to provide the proper notice would violate our rules.[129] If a LEC or an IPES Provider is engaged in access stimulation and fails to notify the Intermediate Access Provider or IXC, for whatever reason, an IXC's recourse is against the LEC or IPES Provider, not the Intermediate Access Provider.[130] Our rules and the Act permit an IXC to bring proceedings before the Commission or the courts and recover full damages, including any retroactive damages, if the IXC is improperly billed by another carrier.[131] Complaints involving IPES Providers, which are not common carriers, may be brought in the courts for adjudication.

42. The determination of liability and the award of specific damages involving access-stimulation traffic is a fact-intensive inquiry requiring analysis of the functions of multiple carriers in transmitting, and billing for, calls in a particular call path.[132] Thus, the Commission or a court, in an adjudicatory proceeding, is best suited to determine issues of liability and damages, including whether, based on the facts at hand, "the obligation to bear tandem switching and transport charges applies retroactively to when the IPES [P]rovider should have self-identified."[133] Indeed, Verizon's proposed rule could have the unintended effect of inappropriately pre-judging liability and damages.

43. *When an IPES Provider Is No Longer Engaged in Access Stimulation*. We received no comments regarding our proposal that IPES Providers conform to the same requirements as LECs for determining when an IPES Provider that was engaged in access stimulation is no longer deemed to be engaged in access stimulation.[134] Thus, we adopt our proposal to extend those same requirements to IPES Providers. Accordingly, if an IPES Provider has an access charge revenue-sharing agreement and is engaged in access stimulation because it meets or exceeds the 3:1 interstate terminating-to-originating

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depart here from a prior Commission finding that it is unlawful for a tariff to require payment of disputed amounts while those amounts are in dispute. *Sprint Commc'ns Co. L.P. v. Northern Valley Commc'ns, LLC*, File No. EB-11-MD-003, Memorandum Opinion and Order, 26 FCC Rcd 10780, 10786-87, para. 14 (2011).

[128] Verizon Sept. 6, 2022 Comments at 20; 47 CFR § 51.914.

[129] *See infra* Appx. A (47 CFR § 51.914(d)).

[130] *See* Aureon Oct. 3, 2022 Reply at 1-2; Lumen Sept. 6, 2022 Comments at 6-7; *see also Access Arbitrage Order*, 34 FCC Rcd at 9071-72, para. 86.

[131] 47 U.S.C. §§ 206 (liability of carriers for damages), 207 (recovery of damages), 208 (complaints to the Commission), 209 (orders for payment of money); 47 CFR § 51.914; *see also* AT&T Oct. 3, 2022 Reply at 3 n.8 ("[S]uch a carrier is *already* liable on a retroactive basis to pay 'full' damages 'sustained in consequence' of its violation, [(47 U.S.C. § 206)] which would include tandem and transport charges that the carrier should have paid but that were improperly billed to IXCs because the carrier failed to provide the required certification.").

[132] *See, e.g.*, *AT&T v. Wide Voice Enforcement Order*.

[133] Verizon Sept. 6, 2022 Comments at 20.

[134] *See Further Notice* at 10, para. 21.

traffic ratio at an end office or equivalent in a calendar month, as described in section 61.3(bbb)(1)(i) of our rules, it would no longer be deemed to be engaged in access stimulation if it terminates all revenue sharing agreements and its traffic ratio is below 6:1.[135] In the case of an IPES Provider that has no revenue-sharing agreement and is engaged in access stimulation because it meets or exceeds the 6:1 traffic ratio established by section 61.3(bbb)(1)(ii) of our rules, it would no longer be deemed to be engaged in access stimulation if its traffic ratio falls below 6:1 for six consecutive months, similar to the current rule applicable to competitive LECs.[136] Additionally, once an IPES Provider terminates its engagement in access stimulation, it would be required to notify the Commission and any affected Intermediate Access Providers and IXCs of its changed status, similar to the current rule applicable to LECs.[137]

44. *Implementation and Effective Dates*. In the *Further Notice*, we proposed that providers should be required to comply with the new and revised rules adopted in this Order within 45 days following their effective date.[138] This is the same timeframe that the Commission found to be reasonable when it adopted the current Access Stimulation Rules.[139] We asked parties if this timeframe posed any challenges or difficulties. We did not receive any comments in response and have no reason to believe this timeframe is insufficient, as there have been no complaints about this timeframe since it was first adopted for the existing rules. Thus, we give providers 45 days to come into compliance with our new and revised rules once they become effective. The effective date of the rules that do not require Paperwork Reduction Act (PRA) review is 30 days after publication in the Federal Register.[140] Several of the rules we adopt may require Office of Management and Budget (OMB) review pursuant to the PRA. A separate notice will be published in the Federal Register detailing the effective dates and compliance dates for those rules.[141]

B. Declining to Adopt Commenters' Proposals That Are Unnecessary or Insufficiently Supported

45. Commenters submitted several additional proposals not addressed in the *Further Notice* that, for the reasons discussed below, we decline to adopt. We find that these proposals are duplicative of our existing processes, lack sufficient support in the record to allow us to adopt them, or have already been rejected by the Commission.

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[135] *See infra* Appx. A (47 CFR § 61.3(bbb)(2)).

[136] *See infra* Appx. A (47 CFR § 61.3(bbb)(2)). We also adopt the proposed language to be added to section 61.3(bbb)(2)—"that has engaged in Access Stimulation" and continue to be "deemed to be engaged"—to which no commenters objected. *See infra* Appx. A (47 CFR § 61.3(bbb)(2)). Both phrases ensure that section 61.3(bbb)(2) applies to competitive LECs and IPES Providers that engage in Access Stimulation. Further, we adopt the proposal in the *Further Notice* for similar phrases to be added to section 61.3(bbb)(3). *Further Notice* at Appx. A (proposed 47 CFR § 61.3(bbb)(3)); *infra* Appx. A (47 CFR § 61.3(bbb)(3)). No commenters objected to these changes. In sections 61.3(bbb)(2) and 61.3(bbb)(3), we retain the "(bbb)" portion of the paragraph references, contrary to what we proposed in the *Further Notice* Appendix A. This change is a conforming or non-substantive edit and is made to ensure compliance with rule drafting guidelines applicable to the Code of Federal Regulations and consistency in our Access Stimulation Rules. *See Further Notice* at 17-18, para. 45.

[137] *See infra* Appx. A (47 CFR § 51.914(g)). Current section 51.914(e) has been renamed as new section 51.914(g) (because other sections were added above it), and "IPES Provider" has been added as an entity subject to the rule. 47 CFR § 51.914(e); *infra* Appx. A (47 CFR § 51.914(g)). Both changes were proposed in the *Further Notice*. *Further Notice* at Appx. A (proposed 47 CFR § 51.914(g)). No commenter objected to these changes.

[138] *Further Notice* at 11-12, para. 26.

[139] *Access Arbitrage Order*, 34 FCC Rcd at 9068, para. 75; *see Further Notice* at 11-12, para. 26.

[140] *Infra* para. 104 (discussing the effective date for rules requiring review by the Office of Management and Budget (OMB) pursuant to the PRA).

[141] *Infra* para. 104 (discussing the effective date for rules requiring review by OMB pursuant to the PRA).

46. *Formally Establish a Rebuttable Presumption and an Access-Stimulation Specific Complaint Process*. We received several comments requesting clarification of, or changes to, our current informal and formal complaint processes targeted to access stimulation.[142] Because these suggestions do not materially differ from our current enforcement processes, and are moot with regard to IPES Providers because our section 208 complaint process does not apply to IPES Providers, we reject them as duplicative and unnecessary.

47. Several commenters request that we make clear that the rebuttable presumption process outlined in the *USF/ICC Transformation Order* applies to IPES Providers.[143] These commenters explain that IXCs lack access to access stimulators' (and their partners') traffic and call routing information.[144] Therefore, these commenters argue that a complaining carrier should be permitted to rely on its own internal data to show that an IPES Provider's traffic with the complaining carrier meets or exceeds the access-stimulation triggers, shifting the burden to the IPES Provider or its LEC partner to rebut the presumption with its own traffic data.[145] These parties propose that if the LEC or IPES Provider is unable to rebut this presumption, or chooses not to provide data, then Intermediate Access Providers or LECs could not charge IXCs for terminating tandem switching and transport service for the delivery of traffic to that LEC or IPES Provider.[146]

48. We confirm that IXCs remain able to initiate a complaint with the Commission by using their traffic data to assert that a LEC is engaged in access stimulation, with the burden then shifting to the LEC to use its traffic data to confirm or refute the IXC's allegations, and that this process will remain in place after this Order takes effect.[147] A complaining IXC may rely on its own data, for example data calculated at a LEC or IPES Provider's company-wide level,[148] about the traffic it exchanges as the basis for filing a complaint or a court action.[149] Lumen and USTelecom provide examples of information that

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[142] USTelecom Sept. 6, 2022 Comments at 7-8; Verizon Sept. 6, 2022 Comments at 20-21; AT&T Oct. 3, 2022 Reply at 2.

[143] AT&T Sept. 6, 2022 Comments at 6; USTelecom Sept. 6, 2022 Comments at 6; Verizon Sept. 6, 2022 Comments at 17-18; USTelecom Oct. 3, 2022 Reply at 3; *see also USF/ICC Transformation Order*, 26 FCC Rcd at 17889, para. 699 (explaining that a "complaining carrier may rely on the 3:1 terminating-to-originating traffic ratio and/or the traffic growth factor for the traffic it exchanges with the LEC as the basis for filing a complaint. This will create a rebuttable presumption that revenue sharing is occurring and the LEC has violated the Commission's rules. The LEC then would have the burden of showing that it does not meet both conditions of the definition. . . . If the LEC challenges that it has met either of the traffic measurements, it must provide the necessary traffic data to establish its contention.").

[144] AT&T Sept. 6, 2022 Comments at 6-7; USTelecom Sept. 6, 2022 Comments at 7; Verizon Sept. 6, 2022 Comments at 18-19; USTelecom Oct. 3, 2022 Reply at 3-4. AT&T explains that "[a] long distance carrier would usually have data showing the overall amount of its traffic (including, *e.g.*, terminating-to-originating traffic) that is ultimately routed to a VoIP provider (*e.g.*, by examining traffic to and from the telephone numbers associated with the VoIP provider). A long distance carrier would also have information from the Local Exchange Routing Guide showing that calls to telephone numbers associated with a VoIP provider are to be routed via a particular LEC or LECs. However, a long distance carrier would not necessarily know the volumes routed to each of the LECs." AT&T Sept. 6, 2022 Comments at 7 n.9.

[145] AT&T Sept. 6, 2022 Comments at 7-8; Verizon Sept. 6, 2022 Comments at 18; USTelecom Sept. 6, 2022 Comments at 7; *see also* Bandwidth Sept. 6, 2022 Comments at 5. Aureon opposes the creation of a rebuttable presumption based solely on IXC data due to IXCs' lack of traffic visibility. Aureon Oct. 3, 2022 Reply at 2-3.

[146] *USF/ICC Transformation Order*, 26 FCC Rcd at 17889, para. 699; AT&T Sept. 6, 2022 Comments at 6-8; USTelecom Sept. 6, 2022 Comments at 8; AT&T Jan. 31, 2023 *Ex Parte* Letter at 3, 7; 47 CFR § 51.914.

[147] *USF/ICC Transformation Order*, 26 FCC Rcd at 17889, para. 699.

[148] Verizon Sept. 6, 2022 Comments at 17-18.

[149] *USF/ICC Transformation Order*, 26 FCC Rcd at 17889, para. 699; USTelecom Sept. 6, 2022 Comments at 6; Verizon Sept. 6, 2022 Comments at 17-18. *Cf.* HD Carrier Feb. 17, 2023 *Ex Parte* Letter at 3 (HD Carrier expresses (continued….)

may be used to support (for example, traffic ratio data calculated at the company-wide level rather than in an end office or equivalent) or rebut (for example, showing that traffic associated with certain telephone numbers should be attributed to an IPES Provider rather than the LEC) a claim of access stimulation.[150] We do not dictate the type or amount of information that may be effective to support or rebut an IXC's claim of access stimulation and acknowledge that a court will manage any complaints presented before it as it deems appropriate. The LEC (or IPES Provider) would then have the burden of showing that it is not engaged in access stimulation by providing the necessary traffic data rebutting the IXC's allegation.[151] We rely on the industry to self-police this issue, and we find that our current complaint processes or appropriate court proceedings have been effective in addressing violations of our Access Stimulation Rules. We also expect that the rule we adopt today detailing how LECs and IPES Providers are to calculate their traffic ratios will, by use of publicly available information, provide greater transparency into entities' traffic ratios which will help resolve disputes about whether an entity is engaged in access stimulation.[152] To the extent commenters request that our enforcement process be extended to IPES Providers, IPES Providers are not subject to complaints made pursuant to section 208 of the Act because IPES Providers are not common carriers under Title II of the Act.[153] We therefore must decline proposals to extend our enforcement process to IPES Providers.

49. Verizon offers a similar proposal for streamlining the process for bringing access-stimulation complaints, calling for us to establish a new "hybrid informal-formal" complaint process "to lower the [transaction] costs" for identifying access stimulators.[154] Verizon proposes that we modify our complaint processes to allow an IXC to initiate a complaint by presenting sufficient evidence that an alleged access stimulator (LEC or IPES Provider) meets or exceeds the traffic ratios in our rules.[155] Unlike the current enforcement rules, Verizon proposes that the primary burden of producing data would be on the entity alleged to be engaged in access stimulation, and that an alleged access stimulator could meet that burden by, for example, submitting to the Commission its complete switched access call detail records.[156] Under this proposal, the responding LEC or IPES Provider would also be required to provide "a certification that the records are complete and accurate."[157] Then the Commission could conduct an

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concern that by using its own data, AT&T will misidentify HD Carrier as an access stimulator.). The Commission or reviewing court, as applicable, will review all data provided in any subsequent complaint or court review process, not just that provided by an IXC.

[150] *See* Lumen Feb. 21, 2023 *Ex Parte* Letter at 3 (proposing criteria to satisfy a rebuttal); Letter from Diana Eisner, VP, Policy & Advocacy, USTelecom, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1-2 (filed Apr. 12, 2023) (USTelecom Apr. 12, 2023 *Ex Parte* Letter) (proposing information to support a complaint alleging access stimulation); Letter from Timothy M. Boucher, Asst. General Counsel, Federal Regulatory Affairs, Lumen, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, at 3 (filed Apr. 14, 2023).

[151] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17889, para. 699.

[152] *See infra* Appx. A (47 CFR § 61.3(bbb)(5)); *supra* paras. 28-36 (how to calculate traffic).

[153] 47 U.S.C. §§ 201 (applying the Commission's Title II authority to common carriers), 208(a) (specifying that parties may file complaints against "any common carrier subject to this [Act]"), 153(11) (defining "common carrier" as "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio or interstate or foreign radio transmission of energy, except where reference is made to common carriers not subject to this chapter; but a person engaged in radio broadcasting shall not, insofar as such person is so engaged, be deemed a common carrier").

[154] Verizon Sept. 6, 2022 Comments at 3, 21; AT&T Oct. 3, 2022 Reply at 2; AT&T Jan. 31, 2023 *Ex Parte* Letter at 1.

[155] Verizon Sept. 6, 2022 Comments at 21; USTelecom Sept. 6, 2022 Comments at 7-8.

[156] Verizon Sept. 6, 2022 Comments at 21. AT&T supports Verizon's proposal to create a hybrid, access stimulation specific process, calling the Commission's current process "burdensome and resource-taxing." AT&T Oct. 3, 2022 Reply at 2.

independent evaluation of the traffic data.[158] According to Verizon, the Commission's evaluation would enable the filing of a formal complaint if the alleged access stimulator refuses to self-identify as an access stimulator regardless of what the call detail records indicate.[159]

50. We decline to adopt Verizon's proposal to create a new "hybrid" process to adjudicate an IXC's claims of access stimulation. Verizon's proposal does not differ appreciably from our already-established informal and formal complaint processes as applied to Title II carriers.[160] For example, as AT&T acknowledges, our rules currently require written responses to informal complaints.[161] Although Verizon proposes mandating that parties certify that their records are complete and accurate, our rules already require parties to respond to discovery requests fully in writing under oath or affirmation.[162] Likewise, Verizon's proposal that discovery be subjected to an "independent evaluation"[163] is currently required by section 208(a) of the Act, which confirms that it is "the duty of the Commission to investigate the matters complained of in such manner and by such means as it shall deem proper."[164] Thus, we find that Verizon's proposal is already substantially captured by our current enforcement rules and processes.[165] For these reasons, we reject proposals that we create a special process to resolve access-stimulation complaints.[166]

51. *No Direct Connection Mandate or Section 61.26(f) Clarification*. We next reject Lumen's proposal that we "should mandate that VoIP provider applicants for direct access [to numbers] certify that their CLEC partners will allow IXCs to have direct connection in terminating switched access routing."[167] Aureon opposes this proposal, noting that it is outside the scope of this proceeding,[168] and that the Commission has already considered and rejected Lumen's proposal.[169] It also explains that Lumen's

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[157] Verizon Sept. 6, 2022 Comments at 21.

[158] *Id.*

[159] *Id.*

[160] *E.g.*, 47 CFR §§ 1.716, 1.721, 1.722, 1.726, 1.728.

[161] 47 CFR § 1.717; AT&T Oct. 3, 2022 Reply at 2 n.6.

[162] 47 CFR § 1.730; *see also USF/ICC Transformation Order*, 26 FCC Rcd at 17889, para. 699.

[163] Verizon Sept. 6, 2022 Comments at 21.

[164] 47 U.S.C. § 208(a).

[165] Not only would there be no appreciable value served by creating the proposed "hybrid" complaint procedure specifically designed for access stimulation oversight, but it also would set an undesirable precedent. Parties could be emboldened to claim that other regulatory issues under the Commission's authority should have their own unique enforcement processes, which would impose an onerous undertaking for the Commission when, in fact, our current complaint procedures are sufficient to adjudicate the issues. Finally, Verizon does not address how such a hybrid informal-formal complaint process would apply to non-Title II providers such as IPES Providers.

[166] *See, e.g.*, USTelecom Apr. 12, 2023 *Ex Parte* Letter at 2-3 (requesting additions to draft rule 61.3(bbb)(5) to provide how an IXC may support a complaint of access stimulation). We do not make USTelecom's requested additions to our rule language because we have decided not to provide an access-stimulation specific complaint process but the types of information USTelecom suggests may be useful to support a complaint filing in the appropriate forum.

[167] Lumen Sept. 6, 2022 Comments at 7. Lumen has previously raised this proposal in another proceeding, WC Docket No. 13-97. Lumen Comments, WC Docket No. 13-97 et. al, at 7-9 (rec. Oct. 14, 2021) (Lumen Oct. 14, 2021 Numbering Policies Comments). Subsequently, Lumen submitted an *ex parte* letter that included these comments as an attachment to incorporate the comments in this proceeding, WC Docket No. 18-155. Letter from Timothy M. Boucher, Assistant General Counsel, Lumen, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-155, Attach. at 23 (June 15, 2022) (Lumen June 15, 2022 *Ex Parte* Letter).

[168] Aureon Oct. 3, 2022 Reply at 4.

proposal would be ineffective, and cautions that direct connections would result in access stimulators moving their traffic, leading to stranded costs for LECs and IXCs.[170]

52. We also reject Lumen's request that we clarify the applicability of section 61.26(f) of our rules, which addresses the rates a competitive LEC may charge for switched exchange access services,[171] because, according to Lumen, there is a "lack of uniformity in the industry when it comes to the billing capability afforded" by that rule.[172] Lumen suggests that this issue is directly within the scope of the *Further Notice*.[173] AT&T argues that such a clarification would be contrary to the Commission's goal of transitioning to bill-and-keep by expanding "situations in which access charges could be billed."[174]

53. Lumen's proposals are outside the scope of this proceeding, and we therefore decline to consider them here.[175] We emphasize, however, that the Commission has previously rejected suggestions to mandate direct connections, and note that Lumen has not provided good reason for us to reconsider that decision.[176] Likewise, any requirement for direct connection would be counter to the Commission's long-standing policy that parties determine their best means of interconnection.[177] Furthermore, we disagree with Lumen's suggestion that section 61.26(f) of our rules is unclear or needs modification. Even if we agreed with Lumen, we find that its arguments are better addressed in our existing proceeding on direct access to numbers, not in the context of addressing the access stimulation of terminating switched tandem

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[169] *Id.* at 5 (citing *Access Arbitrage Order*, 34 FCC Rcd at 9051-52, paras. 40-41, 62).

[170] *Id*. at 6. Aureon also claims that "Lumen determined that because traffic stimulators can shift traffic with ease, an IXC may find it impossible to avoid high access charges because the stimulators could simply move their activities to a different area where the IXC does not have direct connections." *Id.* (citing CenturyLink (now Lumen) Comments, WC Docket No. 18-155, at 2 (filed July 20, 2018) (responding to the *Access Arbitrage Notice*)).

[171] 47 CFR § 61.26(f).

[172] Lumen Sept. 6, 2022 Comments at 8; *see also* Lumen Oct. 14, 2021 Numbering Policies Comments at 9; Letter from Timothy M. Boucher, Assistant General Counsel, Lumen, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 13-97, at 3-4 (May 20, 2022). Both filings were originally submitted in WC Docket No. 13-97 and subsequently refiled and incorporated in this proceeding. Lumen June 15, 2022 *Ex Parte* Letter Attach. at 2, 23.

[173] Lumen Sept. 6, 2022 Comments at 8.

[174] AT&T Oct. 3, 2022 Reply at 3-4.

[175] *See* 5 U.S.C. § 553; Aureon Oct. 3, 2022 Reply at 4; AT&T Oct. 3, 2022 Reply at 3-4.

[176] *Access Arbitrage Order*, 34 FCC Rcd at 9051, 9062-63, paras. 40, 62 (rejecting, over concerns of stranded investment, the proposal in the *Access Arbitrage Notice* to allow access-stimulating LECs to offer direct connections to IXCs to avoid financial responsibility for terminating tandem switching and transport access charges).

[177] The Commission has long been committed to efficient interconnection. In the *USF/ICC Transformation Order*, the Commission sought to ensure that the entities choosing the network and traffic path would have the appropriate incentives to make efficient decisions, and recognized that intercarrier compensation rates above cost enable arbitrage. *USF/ICC Transformation Order*, 26 FCC Rcd at 17875, 17905-06, paras. 663, 742. In considering telecommunications carriers' interconnection obligations, the Commission has specified that carriers should be permitted to employ direct or indirect interconnection to satisfy their obligations under section 251(a)(1) of the Act "based upon their most efficient technical and economic choices." *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket Nos. 96-98 and 95-185, First Report and Order, 11 FCC Rcd 15499, 15991, para. 997 (1996). Similarly, in the case of LEC-CMRS interconnection under section 332 of the Act, the Commission has anticipated that the type of interconnection can depend upon "the best engineering or cost effective approach," and thus, for example, "[t]he particular point of interconnection of a given cellular system will be dependent upon the design of the system and other factors which may vary from case to case." *An Inquiry into the Use of the Bands 825-845 MHz and 870-890 MHz for Cellular Communications Systems*; *and Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems*, CC Docket No. 79-318, Report and Order, 86 F.C.C.2d 469, 496, para. 55 (1981).

and transport charges, and we note that Lumen has already made similar arguments in the Direct Access to Numbers proceeding.[178]

54. HD Carrier suggests that we "provide an 'access-stimulating' IPES the option to offer to connect directly in IP on a bill-and-keep basis to the originating service provider to avoid the shifting of financial responsibility that may otherwise occur under [the Commission's Access Stimulation Rules] if the IPES exceeded certain traffic ratios."[179] Wide Voice agrees that we have "other tools at [our] disposal, such as IP reciprocal, bill and keep interconnection arrangements to stomp out the so-called abuse of access charges."[180] As discussed here, the Commission has not, and we do not now, mandate how entities interconnect for the exchange of traffic—in IP or TDM. If parties wish to enter into contractual agreements for the exchange of traffic using IP technology at mutually beneficial terms, perhaps bill-and-keep, they have been, and remain, free to do that; i.e., they have the "option" to do so. No action we take in this Order affects that ability. Consistent with precedent, we expressly limit the requirements of IPES Providers, adopted in this Order, to measures targeted to address the arbitrage of terminating tandem switching and transport switched access charges.[181]

55. *We Do Not Require IPES Providers with Direct Access to Numbers to Certify They Will Not Use Numbering Resources to Evade or Violate Our Access Stimulation Rules*. We reject proposals that we require IPES Providers with direct access to numbers to certify annually that they will not use numbering resources to evade the Access Stimulation Rules.[182] We have already sought comment on this issue in our Direct Access to Numbers proceeding.[183] The Direct Access to Numbers docket is a separate proceeding with a separate record. To make a decision on this proposal here would introduce confusion and unnecessarily complicate the Direct Access to Numbers proceeding. Additionally, we received a more comprehensive record on the certification proposal in the Direct Access to Numbers proceeding where related questions were asked and discussed.[184] We therefore decline to adopt an annual certification requirement here and leave any final decision on that issue for the Direct Access to Numbers proceeding.

56. *Proposals for Which the Commission Has Already Provided a Decision*. In its comments, Inteliquent describes an arbitrage practice whereby calls routed to a LEC or an IPES Provider

[178] *Numbering Policies for Modern Communications et al.*, WC Docket No. 13-97 et al.; Lumen Oct. 14, 2021 Numbering Policies Comments, at 9-11; Lumen Reply, WC Docket No. 13-97 et al., at 8 (rec. Nov. 15, 2021).

[179] HD Carrier Jan. 9, 2023 *Ex Parte* Letter at 1; HD Carrier Oct. 3, 2022 Reply at 2-5. The company also advocates that we adopt a "requirement for IP providers to offer an IP, bill-and-keep option." HD Carrier Jan. 9, 2023 *Ex Parte* Letter at 2-3; *see also* HD Carrier Apr. 13, 2023 *Ex Parte* Letter at 3 (speculating about why IXCs may not accept offers of direct IP interconnection at bill-and-keep).

[180] Wide Voice Jan. 10, 2023 *Ex Parte* Letter at 1-2.

[181] *See infra* Section III.D – Legal Authority; *Access Arbitrage Order*, 34 FCC Rcd at 9039, 9052, paras. 11, 42.

[182] Verizon Sept. 6, 2022 Comments at 19 (proposing that "IPES providers with direct access should acknowledge and affirmatively agree to observe the Commission's access stimulation rules, including the rules the Commission is considering adopting in this proceeding," and suggesting that IPES Providers that have previously obtained direct access to numbers be required to make the same certification); *see also* AT&T Oct. 3, 2022 Reply at 3.

[183] *Numbering Policies for Modern Communications et al*., WC Docket No. 13-97 et al., Further Notice of Proposed Rulemaking, 36 FCC Rcd 12907, 12915-16, para. 17 (2021) (seeking comment on whether to adopt changes to the VoIP direct access rules to require that interconnected VoIP providers receiving direct access to numbers certify that their numbering resources will not be used to evade our Access Stimulation Rules). In that proceeding, the Commission is considering possible changes to the rules governing VoIP providers' direct access to numbers and is not considering changes to the Access Stimulation Rules.

[184] In the *Further Notice* we asked, for example, whether we should condition the ability of an IPES Provider to obtain direct access to numbers on an agreement by the provider to voluntarily subject itself to our Access Stimulation Rules but did not receive much comment in response. *Further Notice* at 14, para. 34.

are blocked or otherwise rejected when transmitted via a regulated path to the high-volume calling service provider served by the terminating LEC or IPES Provider.[185] Inteliquent claims that when the calls are rerouted through unregulated providers, they are completed.[186] Inteliquent asks that we address this issue by clarifying that "traffic will be attributed to the [traffic ratios of the] terminating IPES Provider or LEC whenever an IXC attempts to deliver that traffic over the path specified by the IPES Provider/LEC in the LERG, but the call is rejected over that path," so the IPES Provider/LEC is not able "to escape designation as an access stimulating provider" by diverting some traffic over an unregulated path.[187] We decline to act as Inteliquent requests because traffic traversing the non-regulated path is outside the scope of our Access Stimulation Rules, which are tied to tariffed services. Also, the Commission has already explicitly explained that, in the case of traffic destined for an access-stimulating LEC, an IXC or Intermediate Access Provider may consider its call completion duties satisfied once it has delivered the call to the tandem.[188] For similar reasons, such a limitation on the scope of call completion duties would be reasonable to apply to traffic destined for an access-stimulating IPES Provider in the calling scenario Inteliquent describes.[189]

57. Teliax questions whether "[a] ratio alone could prove to be overly inclusive by encompassing LECs that had realized access traffic growth through general economic development—as well as changes in technology and markets."[190] On the other hand, AT&T and Verizon express concerns that because the traffic ratio triggers are bright-line rules, then "traditionally those 'triggers are necessarily under-inclusive.'"[191] We have seen no evidence in the industry that our ratios are not working as intended, nor, as discussed, is there evidence in the record to support establishing different traffic ratios to apply to IPES Providers than those in the existing rules.[192] Indeed, the Commission purposely decided

[185] Inteliquent Sept. 6, 2022 Comments at 6-9 ("[A]ccess stimulation and call blocking have come together to form a newer method of arbitrage in which high-volume calling platforms and/or their LEC partners resort to intentionally rejecting the very high traffic that they have stimulated when that traffic is delivered over the regulated path (i.e., via a tandem). This practice causes that traffic to be route advanced to an intermediate provider owned by the calling platform.").

[186] *Id.* at 7 ("When a carrier such as Inteliquent hands off the call to the [centralized equal access provider (CEA)], this traffic is intentionally rejected by the calling platform connected to the LEC end-office. When the same call is then re-routed to an IXC or other provider that has a direct route into the calling platform's affiliated intermediate provider, the call completes successfully. Accordingly, the call completely bypasses the CEA tandem and the LEC end-office, and the calling platform's affiliated network provider charges a fee to the IXC for terminating the call over its network. The terminating LEC then does not include the rejected calls when calculating its traffic ratios, which can enable the LEC to evade triggering the rules that apply when the ratios are exceeded.").

[187] *Id.* at 6-8 (requesting that the Commission clarify via a declaratory ruling "that traffic will be attributed to the terminating IPES Provider or LEC whenever an IXC attempts to deliver that traffic over the path specified by the IPES Provider/LEC in the LERG, but the call is rejected over that path" and that IPES Providers which exceed the access-stimulation ratios "should be forced to pay the IXC's cost of route-advancing the traffic.").

[188] *Access Arbitrage Order*, 34 FCC Rcd at 9049, para. 35 (explaining that, "in the case of traffic destined for an access-stimulating LEC, when the access-stimulating LEC is designating the route to reach its end office and paying for the tandem switching and transport, the IXC or intermediate access provider may consider its call completion duties satisfied once it has delivered the call to the tandem designated by the access-stimulating LEC, either in the LERG or in a contract").

[189] Inteliquent Sept. 6, 2022 Comments at 7-8 (including a diagram of call paths).

[190] Teliax Nov. 25, 2022 *Ex Parte* Letter Attach. at 7, 13. To the extent that Teliax is seeking to relitigate the traffic ratios in the current Access Stimulation Rules, this is an untimely effort to reconsider settled law. The *Access Arbitrage Order* was adopted in 2019 and affirmed on appeal by the D.C. Circuit in 2021. *Access Arbitrage Order*; *Great Lakes*. If Teliax is commenting solely on the traffic ratios as specifically applied to IPES Providers, we respond here.

[191] AT&T Jan. 31, 2023 *Ex Parte* Letter at 2 (citing Verizon Sept. 6, 2022 Comments at 12).

[192] *See supra* para. 15 (We received no comments opposing the use of the current traffic ratios.).

to err on the side of caution and adopted conservative triggers in an effort to avoid the chance that a company might be wrongly identified as engaging in access-stimulation activity.[193] Further, as is already the case with LECs, if an IPES Provider, "not engaged in arbitrage, finds that its traffic will meet or exceed a prescribed terminating-to-originating traffic ratio," the provider may request a waiver and demonstrate special circumstances that warrant a deviation from our rules.[194] The traffic ratios in section 61.3(bbb) of our rules are the bright-line tests the Commission has established for determining when an entity is engaged in access stimulation and for enforcing our rules to prevent it. We do not expect our rules to capture any entities that are not actively engaged in access stimulation. But we do expect that the rules adopted today will capture additional entities engaged in access stimulation, strengthen our existing rules, close perceived loopholes, and enhance the overall enforceability of our Access Stimulation Rules.

C. Adopting Additional Rule Revisions

1. Definition of "IPES Provider"

58. To implement the rules adopted in this Order, we add a definition of "IPES Provider" in section 61.3(eee) that applies only in the context of the Access Stimulation Rules.[195] In the *Further Notice*,[196] we proposed a definition of "IPES Provider" based on the existing definition of "Interconnected VoIP service" in our rules,[197] but we make changes to that proposed definition, based on comments we received in the record.[198]

59. First, we remove the proposed requirement that an IPES Provider support real-time, "two-way voice" communications.[199] We sought comment on USTelecom's proposal to remove "two-way voice" from the definition of "IPES Provider" in the *Further Notice*, and several commenters supported this modification, arguing that the definition should be broader.[200] For example, Verizon

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[193] *Access Arbitrage Order*, 34 FCC Rcd at 9055, para. 47 (adopting a new traffic ratio test of 6:1 without a revenue sharing agreement in "an effort to be conservative and not overbroad," thereby helping to avoid the possibility of "costly disputes between carriers and confusion in the market"); *see also* Teliax Nov. 25, 2022 *Ex Parte* Letter Attach. at 7.

[194] *Access Arbitrage Order*, 34 FCC Rcd at 9058-59, para. 53; 47 CFR § 1.3 (waivers may be granted for good cause). The Commission has granted limited waivers related to increases in traffic due to remote work and schooling during the COVID-19 pandemic. *E.g.*, *Petition of Onvoy d/b/a Inteliquent, Inc., for Temporary Waiver of Section 61.3(bbb)(1)(ii) of the Commission's Rules*, WC Docket No. 18-155, Order, 35 FCC Rcd 14570 (WCB 2020).

[195] *See infra* Appx. A (47 CFR § 61.3(eee)).

[196] *Further Notice* at 15, para. 38 & Appx. A (proposed 47 CFR § 61.3(eee)).

[197] 47 CFR § 9.3.

[198] In the *Further Notice*, we asked if the service providers that we are now referring to as "IPES Providers," should be referred to as "interconnected VoIP" providers. *Further Notice* at 16, para. 40. No commenter argued in favor of using the "interconnected VoIP" provider nomenclature instead of creating a specific definition of "IPES Provider." Indeed, Bandwidth specifically asked us to refer just to "IPES Providers" and not to refer to "VoIP" and "IPES" Providers interchangeably. Bandwidth Sept. 6, 2022 Comments at 12. Inteliquent suggested that we add a definition of both "IPES Provider" and "Interconnected VoIP Service" to the Access Stimulation Rules. Inteliquent Oct. 3, 2022 Reply at 3-4.

[199] *Further Notice* at 15-16, paras. 38-39 & Appx. A (proposed 47 CFR § 61.3(eee)); 47 CFR § 9.3 (defining "Interconnected VoIP service" as one that "[e]nables real-time, two-way voice communications").

[200] *Further Notice* at 16, para. 39 (citing Letter from Diana Eisner, VP, Policy & Advocacy, USTelecom, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155 (filed June 30, 2022); USTelecom Sept. 6, 2022 Comments at 8-9; Verizon Sept. 6, 2022 Comments at 16 & Appx. A (proposing to delete "two-way voice" from the proposed definition of "IPES Provider"); Inteliquent Oct. 3, 2022 Reply at 3 (agreeing with Verizon and other commenters that we should not limit the definition of "IPES Provider" to "entities providing a two-way VoIP service"); AT&T (continued….)

discusses a "call-to-listen" service, whereby a user can make a long-distance telephone call to listen to a radio station.[201] Verizon explains that a "call-to-listen" service uses only a simplex channel—"one that sends voice communications in one direction (to the listener)."[202] Verizon argues that such services should be covered by our Access Stimulation Rules, but is concerned that they may not be considered "two-way voice communications."[203] We do not need to determine whether a "call-to-listen" service, or other similar services mentioned in the comments, are two-way services, or one-way services.[204] We agree, however, that we should not limit the definition of "IPES Provider" to encompass only entities that provide two-way voice services. Instead, we eliminate the phrase "two-way voice" from our final rule to avoid any ambiguity and close what could have been a potential loophole in our definition of "IPES Provider."[205] No commenter objected to the removal of "two-way voice."

60. Second, we eliminate language in the proposed "IPES Provider" definition referring to "real-time" communications.[206] In the *Further Notice*, we asked whether the proposed definition of "IPES Provider" would "capture all providers that could be used to try to circumvent the Access Stimulation Rules."[207] One commenter suggested the deletion of the requirement for the provision of "real-time communications."[208] We are concerned that arbitrageurs could develop services that do not provide "real time" communications in an effort to evade our Access Stimulation Rules.[209] Like our decision to delete the phrase "two-way voice" from the definition of "IPES Provider," the elimination of the term "real-time" will also help advance our goal of eliminating arbitrage of our access charge regime. Furthermore, similar to our decision to eliminate the "two-way voice" phrase, we need not determine whether a service provides "real-time" communications. By deleting the term "real-time" from the definition of "IPES Provider," we eliminate another potential loophole in the proposed rules by capturing more providers that may try to circumvent the Access Stimulation Rules. No commenter opposed the elimination of the term "real-time." With this change, and the above change to eliminate the phrase "two-way voice," the phrase "enables real-time two-way voice communications" in the proposed definition of "IPES Provider" is changed to simply "enables communications" in the final definition we adopt in this Order.[210]

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Oct. 3, 2022 Reply at 4 (supporting USTelecom's position); *see* Bandwidth Sept. 6, 2022 Comments at 12 (noting that some "one-way service providers engage in access stimulation").

[201] Verizon Sept. 6, 2022 Comments at 16.

[202] *Id.* at 2, 16.

[203] *Id.*

[204] *E.g.*, USTelecom Sept. 6, 2022 Comments at 8-9 (describing a foreign radio calling service that only terminates calls and is listen-only).

[205] USTelecom Sept. 6, 2022 Comments at 8 (explaining that the deletion of "two-way voice" would close a loophole in the proposed definition that is "reflected in the arbitrage schemes that USTelecom members are already seeing today"); Inteliquent Oct. 3, 2022 Reply at 3 (agreeing with Verizon that "applying the Access Stimulation Rules to one-way service will ensure that parties cannot skirt the rules by providing only inbound or outbound VoIP service").

[206] *Further Notice* at 15, para. 38 & Appx. A (proposed 47 CFR § 61.3(eee)).

[207] *Id.* at 16, para. 40.

[208] Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 2-3 (proposing that we eliminate the requirement that an IPES Provider "[e]nable[] real-time communications"); Bandwidth Dec. 23, 2022 *Ex Parte* Letter Appx. B at 5 (same).

[209] For example, if we were to leave the phrase "real-time" in the "IPES Provider" definition, an arbitrageur might promote a service that allows callers to dial in and to listen to recordings of people reading books. Callers would not engage in conversation with another live person, but would simply listen to a recording, thereby stimulating terminating access charges for a service that, arguably, does not offer "real-time" communication.

[210] *See infra* Appx. A (47 CFR § 61.3(eee)).

61. Third, we define "IPES Provider" to include those entities that receive terminating traffic, regardless of whether they also originate traffic.[211] In the proposed definition of "IPES Provider," the requirement to originate traffic was given in the following text: "a provider offering a service that . . . permits users . . . to terminate calls to the public switched telephone network or . . . terminate to an Internet Protocol service or an Internet Protocol application."[212] Commenters objected to the proposed definitional language arguing that the inclusion of such language could create potential loopholes in our Access Stimulation Rules. For example, commenters asserted that if we required an IPES Provider to both originate and terminate traffic, an arbitrageur could separate terminating and originating traffic, and provide just terminating services and claim that it was not subject to the Access Stimulation Rules because it did not also originate traffic.[213] We agree. Accordingly, we eliminate the text in the proposed definition of "IPES Provider" in our Access Stimulation Rules that would have applied those rules only to providers that transmit both originating and terminating traffic; no commenters requested that we require IPES Providers to originate traffic. Additionally, because our definition of "IPES Provider" applies to section 51.914 of our rules, we do not adopt proposed section 51.903(q).[214] The sole purpose of proposed section 51.903(q) was to define "IPES Provider" for section 51.914, but that definition is not needed because section 51.914 now references the definition of IPES Provider in section 61.3(eee).[215] No commenters addressed proposed section 51.903(q).

62. Finally, both Bandwidth and Inteliquent suggest that the definition of "IPES Provider" should include a requirement that the IPES Provider acquire the telephone numbers it uses directly from a numbering administrator.[216] Bandwidth argues that this would provide a clear definition and "capture more potential access stimulators in the marketplace."[217] Alternatively, Bandwidth proposes that we modify either the Access Stimulation definition or the IPES Provider definition in our rules to account for possible "wholesale IPES Providers."[218] We find that Bandwidth's concerns are better addressed by our rule governing the calculation of traffic ratios, rather than in the definition of "IPES Provider." In our new rule governing the calculation of traffic ratios for purposes of our Access Stimulation Rules, we require LECs and IPES Providers to include in their ratio calculations all traffic going through their end

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[211] *See infra* Appx. A (47 CFR § 61.3(eee)).

[212] *Further Notice* at 15, para. 38 & Appx. A (proposed 47 CFR § 61.3(eee)).

[213] Verizon Sept. 6, 2022 Comments at 17 (suggesting that "some IPES providers 'offer[] purportedly separate "outbound-only" and "inbound-only" calling services'"); *see also* USTelecom Sept. 6, 2022 Comments at 9 ("[A]n IPES provider that hosts a foreign radio calling service could, by the very nature of the service, only terminate calls—it will not originate them; nor will it provide two-way traffic—the service is listen-only. Without modification, an IPES provider hosting these services could claim that it is beyond the scope of the Commission's rules because the service is not two-way and the provider does not originate traffic.").

[214] *Further Notice* at Appx. A (proposed 47 CFR § 51.903(q)).

[215] *Id.*; *see infra* Appx. A (47 CFR §§ 51.914, 61.3(eee)).

[216] Bandwidth Sept. 6, 2022 Comments at 11 ("The Commission should define IPES Providers for purposes of the Rules to include all entities that have direct access to numbers tied to a company code ('IPES OCN') as assigned by NECA."); Inteliquent Oct. 3, 2022 Reply at 2-3 (Inteliquent proposes the following rule language: "IPES Provider means . . . a provider of an interconnected VoIP service using numbers that the provider has obtained directly via the process under 47 C.F.R. § 52.15(g)(3).").

[217] Bandwidth Sept. 6, 2022 Comments at 11.

[218] Bandwidth Apr. 13, 2023 *Ex Parte* Letter at 3-4. Bandwidth raises a concern of another perceived loophole that may occur when a "wholesale IPES Provider" is inserted in the call flow. We cannot anticipate every action providers may take in an effort to continue to engage in access arbitrage but, as detailed in the *AT&T v. Wide Voice Enforcement Order*, any attempt to circumvent our Access Stimulation Rules may be an unjust and unreasonable practice under section 201(b) of the Act. *See generally AT&T v. Wide Voice Enforcement Order*; *Wide Voice v. FCC*.

office or equivalent to and from any telephone number associated with an Operating Company Number issued to that LEC or IPES Provider (that is, numbers directly assigned to that LEC or IPES Provider).[219]

2. Definition of "Intermediate Access Provider"

63. As proposed in the *Further Notice*,[220] we amend the definition of "Intermediate Access Provider" in section 61.3(ccc) of our rules to include IPES Providers as entities that may receive traffic from an Intermediate Access Provider, and to specify the type of service being provided by the Intermediate Access Provider.[221] One commenter supported, and no commenters opposed, the proposed addition of IPES Providers to the definition of "Intermediate Access Provider."[222] As discussed below, we incorporate minor edits to the definition that we proposed in the *Further Notice*.[223]

64. We make a total of four changes to our definition of "Intermediate Access Provider" in section 61.3(ccc). First, as proposed in the *Further Notice*, we amend section 61.3(ccc) to specify two additional types of entities that may receive traffic from the final IXC in the call path.[224] The amendment we adopt adds the phrase "IPES Provider" to section 61.3(ccc) in two circumstances: (a) where a LEC delivers traffic to an IPES Provider engaged in access stimulation; and (b) where an Intermediate Access Provider delivers calls directly to an IPES Provider engaged in access stimulation.[225] Second, as proposed in the *Further Notice* (with one exception), we modify the phrase "any entity that carries or processes traffic at any point between the final Interexchange Carrier . . ." in current section 61.3(ccc)[226] to specify the access service being provided, as follows: "any entity that provides terminating switched access tandem switching or terminating switched access tandem transport services between the final Interexchange Carrier . . . ."[227] This change makes section 61.3(ccc) clearer and more consistent with our other Access Stimulation Rules, such as revised section 69.4(l).[228]

65. Third, we amend the list of sections to which the revised definition of "Intermediate Access Provider" applies.[229] Currently, the definition begins with: "[t]he term means, for purposes of this

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[219] *Supra* paras. 28-36 (how to calculate traffic); *infra* Appx. A (47 CFR § 61.3(bbb)(5)) (describing how to calculate interstate terminating-to-originating traffic ratios). *See generally Further Notice* at 5-6, para. 9 (citing USTelecom Sept. 22, 2020 *Ex Parte* Letter at 2 (describing claims that the Access Stimulation Rules do not apply to traffic terminating at "IPES numbers")).

[220] *Further Notice* at 16-17, paras. 41-42 & Appx. A (proposed 47 CFR § 61.3(ccc)).

[221] *See infra* Appx. A (47 CFR § 61.3(ccc)).

[222] Bandwidth Sept. 6, 2022 Comments at 12-13 (supporting the proposed addition of IPES Providers in the definition of "Intermediate Access Provider," and requesting an expansion of the definition to include originating traffic); Bandwidth Dec. 23, 2022 *Ex Parte* Letter Appx. B at 5 (suggesting language for a definition of "Intermediate Access Provider" that would include originating traffic).

[223] *Further Notice* at Appx. A (proposed 47 CFR § 61.3(ccc)).

[224] *See infra* Appx. A (47 CFR § 61.3(ccc)).

[225] *See infra* Appx. A (47 CFR § 61.3(ccc)).

[226] 47 CFR § 61.3(ccc).

[227] *See infra* Appx. A (47 CFR § 61.3(ccc)). We note that the draft rule language in proposed section 61.3(ccc) in Appendix A of the *Further Notice* mistakenly referred to "terminating switched access tandem switching *and* terminating switched access tandem transport services." *Further Notice* at Appx. A (proposed 47 CFR § 61.3(ccc)). For consistency in the Access Stimulation Rules, we change the "and" in the phrase to "or." *E.g.*, 47 CFR § 51.914(a)(1) (using "or"); *see Further Notice* at 17-18, para. 45. The change also broadens the definition to help capture all providers that could be used to try to circumvent our rules, and is consistent with the use of "or" in the existing definition. 47 CFR § 61.3(ccc).

[228] *See infra* Appx. A (47 CFR § 69.4(l)).

[229] *See infra* Appx. A (47 CFR § 61.3(ccc)).

part and §§ 69.3(e)(12)(iv) and 69.5(b) of this chapter."[230] We now add sections 51.914 and 69.4(l) to this list, because they also reference "Intermediate Access Provider."[231] We remove the reference to section 69.3(e)(12)(iv), because that section does not reference "Intermediate Access Provider."[232] Thus, the revised definition of "Intermediate Access Provider" begins with "[t]he term means, for purposes of §§ 51.914, 69.4(l), and 69.5(b) of this chapter."[233] Although we did not specifically propose this amendment in the *Further Notice*, we did seek comment on conforming edits and non-substantive edits to our rules.[234] These edits to section 61.3(ccc) are conforming or non-substantive edits made to ensure consistency in our Access Stimulation Rules.[235] Finally, we change the reference to "Intermediate Access Provider" in the last clause of section 61.3(ccc) in the proposed definition in the *Further Notice*[236] to "the entity," so that the definition is not self-referential.[237] We consider this edit also to be a conforming or non-substantive edit.[238]

66. Bandwidth suggests that we go further and broaden the definition of "Intermediate Access Provider" to include the possibility that there may be more than one Intermediate Access Provider in a call flow, and to prohibit all Intermediate Access Providers in the call flow from imposing any tariffed access charges when the LEC (or, with the other rule revisions adopted today, the IPES Provider) is engaged in access stimulation.[239] We find that we do not need to broaden the definition as Bandwidth suggests, but we take this opportunity to emphasize that the definition of "Intermediate Access Provider" in section 61.3(ccc) of our rules includes *any entity* "that provides terminating switched access tandem switching or terminating switched access tandem transport services between the final Interexchange Carrier in a call path" and the LEC or IPES Provider, as discussed above.[240] The reference to "any entity" was in section 61.3(ccc) prior to the revisions adopted today.[241] Section 61.3(ccc), read in combination with sections 51.914, 69.4(1), and 69.5(b), prohibits IXCs from being charged for terminating tandem switching or tandem transport charges provided by *any entity* that meets the definition of "Intermediate

[230] 47 CFR § 61.3(ccc).

[231] *Id.* §§ 51.914, 69.4(l).

[232] *Id.* § 69.3(e)(12)(iv).

[233] *See infra* Appx. A (47 CFR § 61.3(ccc)).

[234] *See Further Notice* at 17-18, para. 45.

[235] *See id.* In addition, the Commission gave notice that it proposed to modify section 61.3(ccc). *Further Notice* at 16-17, paras. 41-42 & nn.88, 90 & Appx. A (proposed 47 CFR § 61.3(ccc)).

[236] *Further Notice* at Appx A (proposed 47 CFR § 61.3(ccc)).

[237] *See infra* Appx. A (47 CFR § 61.3(ccc)). We also delete the reference to § 61.3 in section 61.3(ccc)(1), as proposed in the *Further Notice*. *Further Notice* at Appx. A (proposed 47 CFR § 61.3(ccc)(1)); *infra* Appx. A (47 CFR § 61.3(ccc)(1)). This deletion makes it clear that the Access Stimulation definition is contained in § 61.3(bbb). No commenters opposed this proposal.

[238] *See Further Notice* at 17-18, para. 45.

[239] Bandwidth Sept. 6, 2022 Comments at 12-13; Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4 ("Bandwidth explained that access stimulation rules should prevent multiple (double, triple or more) tandem charges for calls to/from access stimulators. . . . If the definition of an Intermediate Access Provider is not broad enough to require the access stimulator to pay for all access charges assessed on the call path between the IXC and the stimulating party (LEC or IPES Provider), there will be a financial incentive to stimulate traffic.").

[240] *See infra* Appx. A (47 CFR § 61.3(ccc)).

[241] "*Intermediate Access Provider.* The term means, for purposes of this part and §§ 69.3(e)(12)(iv) and 69.5(b) of this chapter, any entity that carries or processes traffic at any point between the final Interexchange Carrier in a call path and a local exchange carrier engaged in Access Stimulation, as defined in paragraph (bbb) of this section." 47 CFR § 61.3(ccc) (2020).

Access Provider" in the call flow. The definition is broad enough to include more than one entity as an Intermediate Access Provider in a call flow. Thus, the rule addresses the concerns raised by Bandwidth.

67. Bandwidth also suggests not including references to terminating switched access tandem switching or terminating switched access tandem transport services in the proposed definition of "Intermediate Access Provider," and elsewhere in our Access Stimulation Rules, and replacing it with the more general term "tariffed access services."[242] Bandwidth argues that these changes are necessary to ensure that Intermediate Access Providers do not improperly impose additional tariffed charges to make up for access charge revenue they may lose as a result of our Access Stimulation Rules.[243] As described above, section 69.111 of our rules, which defines "tandem-switched transport and termination charge," specifies the four rate elements or services that will become the financial responsibility of an access-stimulating LEC or IPES Provider and addresses Bandwidth's concerns.[244] Accordingly, we find no reason to make the additional rule changes Bandwidth proposes to address this issue.

68. Bandwidth also seems to suggest that we should expand the definition of "Intermediate Access Provider" to include Intermediate Access Providers on the originating side of the telephone call by adding the phrase "or the first Interexchange carrier in an originating call path" to the "Intermediate Access Provider" definition.[245] We decline to consider the changes Bandwidth proposes, as they are outside the scope of this proceeding. This proceeding is focused on addressing arbitrage of terminating access charges.[246] The service providers and charges involved in the arbitrage of originating access have been addressed in a separate Commission proceeding.[247]

69. Finally, we reject Bandwidth's suggestion that we eliminate proposed section 61.3(ccc)(2) from the "Intermediate Access Provider" definition.[248] Bandwidth provides no explanation for this change. The call path provided in the rule that Bandwidth seeks to remove corresponds to many situations described in the record where a LEC is located in the call path between an Intermediate Access Provider and an access-stimulating IPES Provider.[249] We retain such call paths in the Intermediate Access Provider definition to ensure that the definition applies to entities in such call paths.

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[242] Bandwidth Sept. 6, 2022 Comments at 13; Bandwidth Dec. 23, 2022 *Ex Parte* Letter Appx. B at 5 (proposed revisions to section 61.3(ccc)).

[243] Bandwidth Sept. 6, 2022 Comments at 16-17.

[244] *Supra* para. 23 (discussing section 69.111); *see also* 47 CFR § 69.111 (definition of "Tandem-switched transport and termination charge").

[245] Bandwidth Sept. 6, 2022 Comments at 13; *see* Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4 (suggesting a revision to encompass "tandem charges for calls to/from access stimulators"); Bandwidth Dec. 23, 2022 *Ex Parte* Letter Appx. B at 5 (proposing rule revisions to delete "terminating").

[246] *See, e.g.*, *Access Arbitrage Order*, 34 FCC Rcd at 9039, para. 11 ("At issue in this proceeding are arbitrage schemes that take advantage of . . . access charges . . . for . . . terminating tandem switching and transport services . . . .").

[247] *8YY Access Charge Reform Order*, 35 FCC Rcd at 11594-95, paras. 1-4.

[248] Bandwidth Dec. 23, 2022 *Ex Parte* Letter Appx. B at 5 (proposed revisions to section 61.3(ccc) which eliminate proposed section 61.3(ccc)(2)).

[249] *Further Notice* at 6, Diagram 1; Aureon Sept. 6, 2022 Comments at 8; Inteliquent Sept. 6, 2022 Comments at 5; HD Carrier Oct. 3, 2022 Reply at 5; Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 4; Bandwidth Dec. 23, 2022 *Ex Parte* Letter Attach A.

3. Calculating Traffic Ratios at the "End Office or Equivalent" and the Requirement That an Access Stimulator Serve End Users

70. *End Office or Equivalent.* As proposed in the *Further Notice*,[250] we amend many of our Access Stimulation Rules to apply to traffic ratios counted at the "end office or equivalent."[251] As discussed above, we also add a definition of "End Office Equivalent" to ensure that our Access Stimulation Rules are also specifically applicable to IPES Providers.[252]

71. Some commenters would prefer that we remove the phrase "end office or equivalent" wherever that phrase currently appears in our Access Stimulation Rules.[253] These commenters assert that the phrase "end office or equivalent" complicates the calculation of traffic ratios.[254] None of these commenters provide any examples or explanations of how our amendments would complicate the relevant calculations, nor do they explain what alternative location should be used for purposes of calculating traffic ratios, if not at each "end office or equivalent." Indeed, the commenters do not explain where the calculations are made now.[255]

72. Commenters also assert that the phrase "end office or equivalent" could create new potential loopholes in our rules. AT&T, USTelecom, and NCTA posit that arbitrageurs could shift traffic between end offices to keep from meeting or exceeding the traffic ratio triggers in the Access Stimulation Rules.[256] But these commenters do not show whether carriers allegedly engaged in access stimulation have more than one end office (or an equivalent location, in the case of IPES Providers) to move traffic between, or if they are moving traffic to another entity, or if there is some other traffic manipulation.[257]

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[250] *Further Notice* at 10, para. 23 & Appx. A (proposed 47 CFR § 61.3(bbb)).

[251] *See infra* Appx. A (47 CFR §§ 51.914(c)(2), 61.3(bbb)(1)(i)(B), (ii)-(iii), (2)-(3)).

[252] *Supra* paras. 24-27 (definition of "End Office Equivalent"); *infra* Appx. A (47 CFR § 61.3(fff)); Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 4 (stating that "an IPES Provider cannot provide the equivalent of an end office function because the Commission has determined that function requires physical loop connections that an IPES Provider typically does not connect to its switching equipment"); *see* USTelecom Sept. 6, 2022 Comments at 10 n.30 (arguing that under the VoIP symmetry rules, "over-the-top (OTT) VoIP providers do not have 'functionally equivalent' end offices," so if "'functionally equivalent'" were inserted in the arbitrage rules, OTT providers would be exempt from the traffic ratio calculations).

[253] USTelecom Sept. 6, 2022 Comments at 10 (requesting the removal of the phrase but not explaining what the potential loopholes were that allegedly arose with the "insertion of the 'end office' language"); NCTA Oct. 3, 2022 Reply at 1 (agreeing with USTelecom); *see also* AT&T Dec. 14, 2022 *Ex Parte* Letter at 2.

[254] USTelecom Sept. 6, 2022 Comments at 10 & n.31 (asserting that "by adding 'end office or equivalent' throughout," the Commission "could create . . . additional burdens on complaining carriers and the Commission by complicating trigger calculations"—but not explaining what that complexity would be, and admitting "there were disputes under the 3:1 trigger regarding what traffic counted"); NCTA Oct. 3, 2022 Reply at 1 (arguing that inserting "end office or equivalent" in section 61.3(bbb)(1)(i)(B) "will make it more difficult for providers to calculate traffic ratios" but not explaining why it would be more difficult); *see* AT&T Dec. 14, 2022 *Ex Parte* Letter at 2 (similarly asserting that adding the "end office or equivalent" language "could create added complexity" without explaining what that complexity is).

[255] Teliax suggests that "[t]he reason ILECs/IXCs do not want end office level reporting is because their ratios would signal access stimulation." Teliax Nov. 25, 2022 *Ex Parte* Letter Attach. at 11. As explained above, however, there is no evidence that any price-cap incumbent LECs are engaged in access stimulation. *Supra* para. 16 (discussing Teliax's argument).

[256] AT&T Nov. 8, 2022 *Ex Parte* Letter at 1-2; USTelecom Sept. 6, 2022 Comments at 10; NCTA Oct. 3, 2022 Reply at 1.

[257] Verizon's comments purportedly show that HD Carrier has moved traffic from one local telephone company to another, but do not provide evidence that HD Carrier has shifted traffic between end offices of the same company. Verizon Sept. 6, 2022 Comments at 8; *see also* USTelecom Oct. 3, 2022 Reply at 4.

73. In sum, we include the phrase "end office or equivalent" in new section 51.914(c) and add it to sections 61.3(bbb)(1)(i)(B), (ii)-(iii), (2)-(3) for consistency, to make the rules applicable to both LECs and IPES Providers equally, and to clearly designate where the traffic ratio calculations shall be made.[258] We add the definition of "End Office Equivalent" as new section 61.3(fff) to avoid any ambiguity about the meaning of the word "equivalent" in the phrase "end office or equivalent," as that phrase is used in our Access Stimulation Rules.[259]

74. *Serving End User(s)*. As proposed in the *Further Notice*,[260] we retain the phrase "serving end user(s)" in the rule defining when a LEC, and now an IPES Provider, engages in Access Stimulation.[261] We also add the phrase "serving end user(s)" to the rules defining when a LEC and, now, an IPES Provider will be deemed to continue to be engaging in Access Stimulation.[262] Although AT&T expresses concern that this language may hinder enforcement of our Access Stimulation Rules,[263] AT&T did not provide any explanation supporting these concerns, and acknowledged that "[i]f IPES Providers are brought directly within the [Access Stimulation Rules], then this language may in theory become less problematic."[264] The other rule revisions we make today bring IPES Providers within our Access Stimulation Rules.[265]

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[258] *See infra* Appx. A (47 CFR §§ 51.914(c)(2), 61.3(bbb)(1)(i)(B), (ii)-(iii), (2)-(3)). Additional changes are made to the same sections as described elsewhere in this Order.

[259] *See infra* Appx. A (47 CFR § 61.3(fff)).

[260] *Further Notice* at 13, para. 31 & Appx. A (proposed 47 CFR § 61.3(bbb)(1)).

[261] *See infra* Appx. A (47 CFR § 61.3(bbb)(1)).

[262] *See infra* Appx. A (47 CFR § 61.3(bbb)(2)-(3)). Although the proposed rules in the *Further Notice* refer to "serving end users" in several locations, the current section 61.3(bbb)(1) of our rules refers to "serving end user(s)"—with the "(s)." No commenters mentioned the use of the "(s)." We will maintain "serving end user(s)" in the current rule, and use the same spelling in this Order and wherever we insert "serving end user(s)" (instead of "serving end users") in our rules. This spelling with the "(s)" will include situations where a LEC or IPES Provider may serve just one end user, such as when an IPES Provider serves one high-volume calling service provider. This change is a conforming edit which will help strengthen our Access Stimulation Rules against potential loopholes and prevent further arbitrage. *See Further Notice* at 17-18, para. 45.

[263] AT&T may be expressing concern about Wide Voice's actions that AT&T complained about in the AT&T v. Wide Voice enforcement proceeding. For example, in the *AT&T v. Wide Voice Enforcement Order*, we found that "Wide Voice admits that it was in the access stimulation business and it continues to serve the same high volume customer (Free Conferencing), via HD Carrier. Nonetheless, Wide Voice claims that because it no longer directly serves end users, it can continue to charge AT&T and Verizon for tandem switching and tandem switched transport charges for access stimulation traffic." *AT&T v. Wide Voice Enforcement Order*, 36 FCC Rcd at 9779, para. 19.

[264] AT&T Dec. 14, 2022 *Ex Parte* Letter at 3. AT&T originally proposed a definition of "serving end user(s)" to "'ensure that LECs' traffic ratios include traffic carried directly to called or calling parties, as well as traffic carried for a partnered VoIP provider that has been inserted into the call routing.'" *Further Notice* at 12-13, paras. 30-31 & n.60 (citing AT&T Comments, WC Docket No. 13-97, at 7 (rec. Oct. 14, 2021), and seeking comment on AT&T's proposal); *see also* Bandwidth Sept. 6, 2022 Comments at 7 (suggesting changes to AT&T's proposal); Bandwidth Dec. 23, 2022 *Ex Parte* Letter Attach. B at 4 (same). "Although AT&T had . . . proposed a specific set of revisions to the rules"—including its definition of "serving end user(s)"—AT&T abandoned its proposals "in order to reach a solution that reflects broader industry consensus," and instead supported "the approach set forth in the *NPRM*, as modified by USTelecom." AT&T Sept. 6, 2022 Comments at 2; *see* AT&T Oct. 3, 2022 Reply at 1 (reiterating its support for the proposed rules in the *Further Notice* with modifications provided by USTelecom).

[265] *See, e.g.*, Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 2 ("If the trigger is based on measuring ratios at an end office, and an IPES switch POI CLLI is defined at the equivalent of an end office, counting all traffic associated with telephone numbers assigned to an end office for LECs, or a switch POI CLLI for IPES providers, should obviate the need to include 'serving end users' language in the rule."); *see also infra* Appx. A (47 CFR § 61.3(bbb)(5), (fff)).

75. We also decline to adopt AT&T's proposed language to define the meaning of "serving end users" on which we sought comment in the *Further Notice*.[266] AT&T had proposed that we define a LEC to be "serving end users" when "it provides service to a called or calling party, either directly or through arrangements with one or more VoIP providers or other entities that serve called or calling parties," except if the LEC is an Intermediate Access Provider.[267] Bandwidth suggested edits to AT&T's proposed rule language, but also acknowledged that "bringing IPES [P]roviders with direct numbering resources within the scope of the [Access Stimulation Rules] may make the 'serving end users' language unnecessary."[268] AT&T also acknowledged that the inclusion of the phrase "serving end user(s)" in our Access Stimulation Rules indicates that it is not appropriate to calculate ratios of "originating-to-terminating traffic for a LEC or IPES entity that includes aggregated originating traffic placed by end users not served by the LEC or IPES [P]rovider."[269] This practical result would deter arbitrage and provides another reason to retain and add, where appropriate, the phrase "serving end user(s)" to our Access Stimulation Rules. No other commenters specifically addressed our proposed uses of the phrase "serving end user(s)." We find that the changes to our rules will allow for greater consistency in the Access Stimulation Rules. We also find that AT&T's and Bandwidth's proposed revisions are rendered moot by the other reforms we adopt in this Order.[270] Accordingly, we adopt the proposed modifications and reject other proposals to define our use of the term "serving end user(s)."[271]

4. Interstate/Intrastate Language

76. As proposed in the *Further Notice*,[272] we amend sections 51.914(a)(1), 69.4(l), 69.5(b)(1), and 69.5(b)(2) of our rules to include the phrase "interstate or intrastate" to reflect language in the *Access Arbitrage Order* making clear that the rules adopted in that *Order* apply to the charges for both interstate and intrastate access services.[273] We also include the phrase "interstate or intrastate" in new section 51.914(e) (which is the new designation for current section 51.914(c), because other sections have been added above it).[274] No commenter objected to these proposed changes.[275]

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[266] *Further Notice* at 12-13, paras. 30-31.

[267] *Id.* at 12, para. 30.

[268] Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 2 (citing Bandwidth Dec.23, 2022 *Ex Parte* Letter Attach. B at 4 (supporting the retention of the phrase "serving end users" as we proposed in the *Further Notice*)).

[269] AT&T Jan. 31, 2023 *Ex Parte* Letter at 5-6.

[270] For example, our determination of how to calculate traffic ratios eliminates the need for a rule defining "serving end user(s)," because each LEC or IPES Provider will calculate its own traffic ratios using calls placed to telephone numbers that are issued to that provider by a numbering administrator and are thus associated with that provider's OCN. *Supra* paras. 28-36 (how to calculate traffic).

[271] We adopt the changes indicated in the *Further Notice* Appendix A. We also add "serving end user(s)" after "Competitive Local Exchange Carrier" in section 61.3(bbb)(1) to provide language construction that is parallel to that used in section 61.3(bbb)(2). *Infra* Appx. A (47 CFR § 61.3(bbb)(1)-(2)). This change is a conforming edit which will help strengthen our Access Stimulation Rules against potential loopholes and further arbitrage. *See Further Notice* at 17-18, para. 45.

[272] *Further Notice* at 15, para. 37 & Appx. A (proposed 47 CFR §§ 51.914(a)(1), 69.4(l), 69.5(b)(1)-(2)).

[273] *See infra* Appx. A (47 CFR §§ 51.914(a)(1), 69.4(l), 69.5(b)(1)-(2)).

[274] *See infra* Appx. A (47 CFR § 51.914(e)); 47 CFR § 51.914(c)). We also modify new section 51.914(e) to state "paragraphs (b) or (d) of this section." *Infra* Appx. A (47 CFR § 51.914(e)). The current rule states "paragraph (b) of this section." 47 CFR § 51.914(c) (Current paragraph (c) is redesignated as new paragraph (e) in this Order.). The reference to paragraph (d) was placed in the proposed rule to refer to the notice requirements for IPES Providers, but "of this section" was inadvertently omitted. *Further Notice* at Appx. A (proposed 47 CFR § 51.914(e)). Thus, our modification ensures that paragraph (d) is included, and that the reference is to "this section." No commenter objected to our proposed addition of the reference to paragraph (d). These changes are

(continued….)

77. In the *Access Arbitrage Order*, the Commission made clear that the rules it was adopting to combat access stimulation were intended to prohibit providers of tandem switching and transport from billing IXCs for interstate and intrastate terminating switched access tandem switching or terminating switched access tandem transport, for traffic bound for access-stimulating LECs.[276] The Commission explained that applying the rules "equally to interstate and intrastate traffic will discourage gamesmanship related to the geographic classification of the traffic; i.e., carriers creating ways to move access-stimulation schemes to intrastate service."[277] The reference to intrastate traffic was not reflected in the text of the rules, however. As proposed in the *Further Notice*,[278] we now amend sections 51.914(a)(1), 69.4(l), 69.5(b)(1), and 69.5(b)(2) of our rules to make clear that competitive LECs, rate-of-return LECs, and Intermediate Access Providers shall not charge IXCs for interstate or intrastate terminating switched access tandem switching and terminating switched access tandem transport when the terminating traffic is destined for a competitive LEC, rate-of-return LEC, or IPES Provider engaged in access stimulation, as defined in section 61.3(bbb) of our rules.[279]

78. We reject, however, Bandwidth's suggestion that we add the term "intrastate" to the definition of "Access Stimulation" in section 61.3(bbb) of our rules or delete references to "interstate" throughout that section.[280] Bandwidth briefly comments that this will make the section "consistent with [the] proposal [in the Further Notice] that [the] rules address intrastate access."[281] We disagree. Bandwidth's proposed changes would result in providers having to include both interstate and intrastate traffic in calculating their ratios of terminating traffic to originating traffic. That is not consistent with our intent in this Order or with the Commission's actions in the *Access Arbitrage Order*. Bandwidth is correct that we proposed rule amendments reflecting language in the *Access Arbitrage Order* indicating that when a LEC or IPES Provider is engaged in access stimulation, the IXC shall not be charged interstate or intrastate terminating switched access tandem switching and terminating switched access tandem transport charges.[282] That is different, however, than requiring that both intrastate and interstate traffic be included in the traffic ratio calculations described in section 61.3(bbb) of our rules. Not only is Bandwidth's proposal contrary to the language in the *Access Arbitrage Order* and *Further Notice*,[283] but

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conforming and non-substantive edits which will help strengthen our Access Stimulation Rules against potential loopholes and prevent further arbitrage. *See Further Notice* at 17-18, para. 45.

[275] *See* Bandwidth Sept. 6, 2022 Comments at 10 (supporting the addition of "intrastate" in sections 69.4(l) and 69.5(b)).

[276] *Access Arbitrage Order*, 34 FCC Rcd at 9076, para. 98 n.302. *See generally* 47 U.S.C. § 251(b)(5); *USF/ICC Transformation Order*, 26 FCC Rcd at 17916-18, paras. 764-67.

[277] *Access Arbitrage Order*, 34 FCC Rcd at 9076, para. 98 n.302.

[278] *Further Notice* at Appx. A (proposed 47 CFR §§ 51.914(a), 69.4(l), 69.5(b)(1)-(2)).

[279] *See infra* Appx. A (47 CFR §§ 51.914(a), 69.4(l), 69.5(b)(1)-(2)). Although proposed sections 69.4(l), 69.5(b)(1), and 69.5(b)(2) in the *Further Notice* Appendix A used the phrase "local exchange carrier," we amend that phrase to indicate that the rules apply to competitive LECs and rate-of-return LECs to be consistent with the definition of "Access Stimulation." 47 CFR § 61.3(bbb)(1) (applying the definition of "Access Stimulation" to competitive LECs and rate-of-return LECs). At the same time, we remove an "a" before the list of services provided and add an "s" to "charge," in sections 69.5(b)(1) and 69.5(b)(2) as proposed in the *Further Notice*. We make these minor terminology amendments to ensure conformity in our other Access Stimulation Rules. *See Further Notice* at 17-18, para. 45 (seeking comment on making conforming edits and non-substantive edits to our rules).

[280] *E.g.*, Bandwidth Dec. 23, 2022 *Ex Parte* Letter at Appx. B at 3-4 (proposed revisions to section 61.3(bbb)).

[281] *E.g.*, *id.* at 3 (comment bubble to proposed revisions to rule 61.3(bbb)).

[282] *Further Notice* at 15, para. 37.

[283] In fact, we did not seek comment, in the *Further Notice*, on adding intrastate traffic volumes to the traffic ratio calculations.

Bandwidth does not provide any justification for us to adopt this significant change to our Access Stimulation Rules. We therefore reject Bandwidth's proposed modifications to section 61.3(bbb) of our Access Stimulation Rules.[284]

5. Conforming Edits to Our Rules

79. We amend sections 51.914(a)(2), 51.914(b)(2), 69.4(l), 69.5(b)(1), and 69.5(b)(2) of our rules to eliminate inconsistencies among sections of the Access Stimulation Rules that are meant to be consistent.[285] We received no comment opposing these proposed rule revisions and therefore adopt the rules as proposed.[286] New sections 51.914(c)(1) and 51.914(d)(2) are consistent with our amendments to section 51.914(a)(2).[287]

80. We amend section 51.914(a)(2) of our rules to remove any ambiguity about its mandatory requirement.[288] The unrevised section 51.914(a)(2) requires that an access-stimulating LEC shall designate, "if needed," the Intermediate Access Provider that will provide certain terminating access services to the LEC.[289] This designation applies in cases where an Intermediate Access Provider is different from the end office LEC.[290] However, the current wording may lead to a misconception that a LEC may subjectively decide on its own when this designation is needed.[291] Therefore, as we proposed in

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[284] We do not make any changes to section 61.3(bbb)(4). That section was listed in the proposed rules without any changes. *Further Notice* at Appx. A (proposed 47 CFR § 61.3(bbb)(4)). Bandwidth is the only party that commented on that section, suggesting that we eliminate the word "interstate." Bandwidth Dec. 23, 2022 *Ex Parte* Letter at Appx. B (proposed revisions to section 61.3(bbb)). For the reasons provided here, we reject Bandwidth's suggestion.

[285] *See infra* Appx. A (47 CFR §§ 51.914(a)(2), 69.4(l), 69.5(b)(1)-(2)).

[286] *See* Bandwidth Sept. 6, 2022 Comments at 4 n.7 (supporting the proposed changes to sections 69.4(l) and 69.5(b)(2)); AT&T Sept. 6, 2022 Comments at 7 n.7 (supporting the proposed edit to section 51.914(a)(2)).

[287] *See infra* Appx. A (47 CFR § 51.914(c)(1), (d)(2)); *Further Notice* at 17, para. 43. The released version of the *Further Notice* correctly states our proposed amendments to sections 51.914(a) and 51.914(b), which specify the compliance deadline as: "within 45 days of commencing Access Stimulation, or within 45 days of ~~November 27, 2019~~ [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER], whichever is later." *Further Notice* at Appx. A (proposed 47 CFR § 51.914(a)-(b)). Similarly, our proposed new sections 51.914(c) and 51.914(d) contain that same phrase for the corresponding compliance deadlines. *Further Notice* at Appx. A (proposed 47 CFR § 51.914(c)-(d)). These compliance deadlines correspond to the text of the *Further Notice* where we proposed "a 45-day period for compliance after the effective date of the rules." *Further Notice* at 11, para. 26. In the Federal Register summary of the *Further Notice*, proposed section 51.914(a) through section 51.914(d) each indicate that compliance is required "within 45 days of commencing Access Stimulation, or within 45 days of September 6, 2022, whichever is later." FCC, Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage, 87 Fed. Reg. 47673, 47686-87 (Aug. 4, 2022) (Further Notice Federal Register Publication). This mention of "September 6, 2022" is a drafting error. Because that date occurred before the end of the comment cycle for the *Further Notice*, it was not correct. Further Notice Federal Register Publication, 87 Fed. Reg. at 47688 (specifying the comment cycle). No commenters mentioned this error, and no commenters mentioned the 45-day period for compliance. We therefore have amended sections 51.914(a) and 51.914(b) as proposed in the released version of the *Further Notice*, and included the correct text in new sections 51.914(c) and 51.914(d). *Infra* Appx. A (47 CFR § 51.914(a)-(d)).

[288] *See infra* Appx. A (47 CFR § 51.914(a)(2)). We also capitalize the term "Access Stimulation" in section 51.914(a)(2) to reflect that this is a defined term in our rules. *See infra* Appx. A (47 CFR § 61.3(bbb)). This conforming edit was in the *Further Notice* at Appx. A. We received no comment on this proposed change.

[289] 47 CFR § 51.914(a)(2).

[290] *Further Notice* at 17, para. 43.

[291] *Id.*; *see Northern Valley Communications, LLC, Tariff F.C.C. No. 3*, WC Docket No. 20-11, Memorandum Opinion and Order, 35 FCC Rcd 6198, 6219, para. 48 (2020) (The Commission found Northern Valley's tariff unlawful, in part, because of Northern Valley's mistaken belief that section 51.914(a)(2) gave it the right to

(continued….)

the *Further Notice*, we change the phrase "if needed" to "if any."[292] We similarly use the phrase "if any" in new sections 51.914(c)(1) and 51.914(d)(2) which apply to an access-stimulating IPES Provider and its designation of an Intermediate Access Provider.[293] We received no comment about ensuring that new sections 51.914(c)(1) and 51.914(d)(2) conform with the proposed edit to section 51.914(a)(2),[294] and we adopt the rule language as proposed.[295] We also amend section 51.914(b)(2) by adding the phrase "if any" and similarly require the designation of an Intermediate Access Provider "if any" that will provide service to an access-stimulating LEC.[296] This addition is a conforming edit intended to ensure consistency in our Access Stimulation Rules.[297]

81. We amend current section 51.914(d), which applies when traffic is bound for a LEC engaged in access stimulation, to also apply when traffic is bound for an IPES Provider engaged in access stimulation, consistent with our intent to conform our Access Stimulation Rules to apply equally to IPES Providers, as well as to LECs, and redesignate the section as 51.914(f).[298] We do not add the phrase "or receives traffic from an Intermediate Access Provider destined for an IPES Provider engaged in Access Stimulation," as we proposed in the *Further Notice*, because we find it redundant and unnecessary.[299] We received no comments addressing specific terms in this proposed rule.[300] The rule is now section 51.914(f), because other rules were added that precede it.[301]

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"unilaterally [] shift the location at which IXCs are responsible for delivering traffic destined for Northern Valley."). We delete the word "Shall" at the beginning of section 51.914(a)(2), and the phrase "that the local exchange carrier shall" at the beginning of section 51.914(a)(3), because the phrase "it shall" appears at the beginning of section 51.914(a). 47 CFR § 51.914(a)(2)-(3); *infra* Appx. A (47 CFR § 51.914(a)(2)-(3)). Both of these changes were proposed in the *Further Notice*. *Further Notice* at Appx. A (proposed 47 CFR § 51.914(a)(2)-(3)). We received no comment opposing the changes.

[292] *Further Notice* at 17, para. 43; *see infra* Appx. A (47 CFR § 51.914(a)(2)); *see also* AT&T Sept. 6, 2022 Comments at 7 n.7 (supporting the proposed edit).

[293] *See infra* Appx. A (47 CFR § 51.914(c)(1), (d)(2)).

[294] *Further Notice* at 17, para. 43.

[295] *See infra* Appx. A (47 CFR § 51.914(c)(1), (d)(2)); *Further Notice* at 17, para. 43.

[296] *See infra* Appx. A (47 CFR § 51.914(b)(2)). We also capitalize the term "Access Stimulation" in section 51.914(b)(2) to reflect that this is a defined term in our rules. *See infra* Appx. A (47 CFR § 61.3(bbb)). This conforming edit was in the *Further Notice* at Appx. A. We received no comment on this proposed change. Further, we replace the phrase "that it" in section 51.914(b)(3) with "That the local exchange carrier," to emphasize that it is the LEC that pays for the services. This change was proposed in the *Further Notice*. *Further Notice* at Appx. A (proposed 47 CFR § 51.914(b)(3)). We received no comment opposing the change.

[297] *See Further Notice* at 17-18, para. 45.

[298] 47 CFR § 51.914(d); *see infra* Appx. A (47 CFR § 51.914(f)).

[299] *Further Notice* at Appx. A (proposed 47 CFR § 51.914(f)). A LEC that receives traffic from an Intermediate Access Provider destined for an IPES Provider engaged in Access Stimulation, would itself be an Intermediate Access Provider, because it would be providing a portion of the requisite terminating tandem access services between the final IXC in a call path and the IPES Provider engaged in Access Stimulation. *See infra* Appx. A (47 CFR § 61.3(ccc)) (definition of "Intermediate Access Provider"); *supra* para. 66 (discussing the "any entity" language in the "Intermediate Access Provider" definition). Thus, such a LEC would be "serv[ing] as an Intermediate Access Provider with respect to traffic . . . bound for an IPES Provider engaged in Access Stimulation"—the phrase that appears earlier in proposed rule 47 CFR § 51.914(f)—thereby eliminating the need for the final phrase about a LEC receiving traffic from an Intermediate Access Provider.

[300] We address Lumen's comments about the proposed rule language, including new section 51.914(d), above. *See supra* paras. 20-21 (detailing the proposals we adopt and those we do not).

[301] *See infra* Appx. A (47 CFR § 51.914(f)).

82. We amend section 69.4(l) of our rules to ensure that the requirement to not bill certain carriers is mandatory.[302] Section 69.4(l) currently requires that a LEC engaged in access stimulation "may not bill" IXCs terminating switched access tandem switching or terminating switched access tandem transport charges for access-stimulation traffic.[303] However, in the *Access Arbitrage Order*, the Commission made clear that it is unlawful for a LEC engaged in access stimulation to charge an IXC terminating switched access tandem switching or terminating switched access tandem transport charges.[304] As we proposed in the *Further Notice*, we change the phrase "may not bill" to "shall not bill," in section 69.4(l) to eliminate any ambiguity that a LEC engaged in access stimulation "shall not bill" IXCs terminating switched access tandem switching or terminating switched access tandem transport charges for access-stimulation traffic.[305]

83. We also make consistent where appropriate in the Access Stimulation Rules the references to "terminating switched access tandem switching or terminating switched access transport" services. Currently, some of the Access Stimulation Rules refer to "terminating switched access tandem switching *or* terminating switched access transport,"[306] and some refer to "terminating switched access tandem switching *and* terminating switched access transport."[307] This primarily is an inadvertent error which results in an inconsistency in the rules that may be exploited by entities engaged in access stimulation or that want to engage in access stimulation. For example, with the use of the "and" in section 51.914(b)(2), we are concerned that a LEC engaged in access stimulation may claim that it does not use an Intermediate Access Provider that provides both tandem switching *and* transport, and argue that it, therefore, does not need to provide the notifications required in section 51.914(b)(2).[308] Such an outcome would be contrary to our rules and policies against arbitrage. We have indicated our intention to remove potential loopholes in our Access Stimulation Rules, reduce opportunities for arbitrage, and minimize unintended consequences.[309] In furtherance of those goals, we change "terminating switched access tandem switching *and* terminating switched access transport" to "terminating switched access tandem switching *or* terminating switched access transport" in sections 51.914(a)(2) and 51.914(b)(2), and the word "or" is used in new sections 51.914(c)(1) and 51.914(d)(2)[310] to make clear that the rules apply to either, or both, terminating switched access tandem switching and terminating switched access transport.[311]

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[302] *See infra* Appx. A (47 CFR § 69.4(l)). Other amendments to section 69.4(l) are discussed elsewhere in this Order.

[303] 47 CFR § 69.4(l).

[304] *Access Arbitrage Order*, 34 FCC Rcd at 9073-74, para. 92.

[305] *Further Notice* at 17, para. 44; *see infra* Appx. A (47 CFR § 69.4(l)). We did not receive any comments on these proposed rule revisions.

[306] *E.g.*, 47 CFR §§ 51.914(a)(1), (c), 69.4(l), 69.5(b)(1)-(2).

[307] *E.g.*, *id.* § 51.914(a)(2), (b)(2).

[308] *Id.* § 51.914(b)(2).

[309] *Further Notice* at 17-18, para. 45.

[310] *See infra* Appx. A (47 CFR § 51.914(a)(2), (b)(2), (c)(1), (d)(2)). A conforming edit to section 61.3(ccc) is discussed above. *See supra* para. 64 (discussion of the "Intermediate Access Provider" definition, describing the adoption of the "terminating switched access tandem switching *or* terminating switched access transport" rule language).

[311] Two exceptions to this change to the use of "or" are sections 61.26(g)(3)(i) and 69.3(e)(12)(iv)(A)—both requiring carriers to remove tandem switching *and* transport services from tariffs in specific situations. We retain the "and" in both of those rules to emphasize that both services should be removed from tariffs. 47 CFR §§ 61.26(g)(3)(i), 69.3(e)(12)(iv)(A).

84. We adopt our proposed amendments to section 69.5(b)(2) to: (a) correct the inadvertent omission of the word "not"; (b) change the word "may" to "shall" to be consistent with other uses in these rules; and (c) make clear that it is "IXCs" and not "LECs" that are not being charged access charges under our Access Stimulation Rules.[312] We make similar amendments to section 69.5(b)(1) to be consistent with section 69.5(b)(2). Thus, we correct "may not" to "shall not."[313] We also make a wording clarification by adding "of this part" to the two references to "§ 69.4(b)(5)" in sections 69.5(b)(1) and 69.5(b)(2).[314] Finally, we edit text in sections 69.5(b)(1) and 69.5(b)(2), for consistency between those sections. Thus, the middle of both sections now refers to traffic that is destined "for a competitive local exchange carrier, or a rate-of-return local exchange carrier, or is destined, directly or indirectly, for an IPES Provider, where such carrier or Provider is engaged in Access Stimulation."[315] These are conforming and non-substantive edits made to ensure consistency in our Access Stimulation Rules.[316] These amendments are shown in Appendix A.[317]

D. Legal Authority

85. We conclude that sections 201, 251, and 254 of the Act provide us with the authority needed to adopt the definitions, rule changes, and rule additions contained in this Order.[318] Several commenters support our tentative conclusion in this regard in the *Further Notice* and the use of ancillary authority pursuant to section 4(i) of the Act.[319] Commenters also point out that the rules we adopt in the Order are similar to other requirements the Commission has imposed on IP providers.[320] Although the

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[312] *Further Notice* at 17, para. 44 & Appx. A (proposed 47 CFR § 69.5(b)(2)); *see infra* Appx. A (47 CFR § 69.5(b)(2)).

[313] These proposed changes to section 69.5(b)(1) are shown in Appendix A of the *Further Notice*. *Further Notice* at Appx. A (proposed 47 CFR § 69.5(b)(1)); *see infra* Appx. A (47 CFR § 69.5(b)(1)).

[314] *See infra* Appx. A (47 CFR § 69.5(b)(1)-(2)). We proposed to add "of this chapter" to section 69.5(b)(1), but "in this part" is the proper nomenclature; thus, we add "in this part." *Further Notice* at Appx. A (proposed 47 CFR § 69.5(b)(1)). Similarly, we add "of this part" to the references to § 69.3(e)(12)(iv) in sections 69.5(b)(1) and 69.5(b)(2), because that is the proper nomenclature. Although we did not include the addition of "of this chapter" (or "in this part") to section 69.5(b)(2) in the *Further Notice* Appendix A, and did not include "of this part" at the ends of sections 69.5(b)(1) and 69.5(b)(2) in the *Further Notice* Appendix A, we did seek comment on making conforming edits and non-substantive edits to our rules. *Further Notice* at 17-18, para. 45. The additions of "in this part" to rule 69.5(b)(2), and "of this part" at the ends of sections 69.5(b)(1) and 69.5(b)(2), are conforming or non-substantive edits and are made to ensure consistency and clarity in our Access Stimulation Rules. We also add "as defined in § 61.3(bbb) of this chapter" after the term "Access Stimulation" in new section 51.914(e) and section 69.5(b)(2). These amendments are conforming or non-substantive edits, and are made to ensure clarity and consistency in our Access Stimulation Rules. *See Further Notice* at 17-18, para. 45. We do not adopt any amendments to section 61.3(ddd), the definition of "interexchange carrier." In the *Further Notice*, we did not propose any amendments to that section, and no commenters requested changes. *Further Notice* at Appx. A (proposed 47 CFR § 61.3(ddd)).

[315] *See infra* Appx. A (47 CFR § 69.5(b)(1)-(2)).

[316] *See Further Notice* at 17-18, para. 45.

[317] *See infra* Appx. A (47 CFR § 69.5(b)(1)-(2)).

[318] 47 U.S.C. §§ 201, 251, 254.

[319] *Further Notice* at 19-20, paras. 48-51; Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 4-5; USTelecom Sept. 6, 2022 Comments at 11 (suggesting that "section 201, when combined with ancillary authority, provides the Commission with adequate authority"); Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 5 (suggesting that our Title I ancillary jurisdiction is sufficient legal authority).

[320] USTelecom Sept. 6, 2022 Comments at 11 ("It is not unusual for the Commission to apply certain Title II obligations to VoIP providers without classifying the services they provide as Title II services. It has done so, for example, in extending disability access requirements [(citing *IP-Enabled Services*)], emergency calling capabilities [(citing *IP-Enabled Services*; *E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 04-36 and 05-

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Commission has never asserted expansive jurisdiction over IP providers, it has consistently adopted rules to address specific issues and serve the public interest.[321] The rules we adopt today are consistent with that practice. Our new rules directed at IPES Providers are narrowly tailored to address specific concerns related to access arbitrage.[322] For example, although we require IPES Providers to calculate their traffic ratios and comply with the Access Stimulation Rules' reporting requirements, we do not require an access-stimulating IPES Provider to pay an Intermediate Access Provider's tandem and transport access charges.

86. *Section 201 of the Act*. In the *Access Arbitrage Order*, the Commission determined that imposing tariffed tandem switching and tandem switched transport access charges on IXCs for terminating access-stimulation traffic is an unjust and unreasonable practice under section 201(b) of the Act.[323] In rejecting challenges to the *Access Arbitrage Order*, the United States Court of Appeals for the D.C. Circuit held that "[o]n its face, Section 201(b) gives the Commission broad authority to define and prohibit practices or charges that it determines unreasonable. Fees intentionally accrued by artificially stimulating and inefficiently routing calls would appear to fall within that wide authority."[324] Thus, we find that we have ample authority to adopt the limited rule revisions in this Order.

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196, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245 (2005))], Customer Proprietary Network Information (CPNI) rules [(citing *Implementation of the Telecommunications Act of 1996: Telecommunications Carriers' Use of Customer Proprietary Network Information and Other Customer Information*; *IP-Enabled Services*, CC Docket No. 96-115, WC Docket No. 04-36, 22 FCC Rcd 6927 (2007))], and universal service contribution requirements [(citing *Universal Service Contribution Methodology Order*)]."); Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 5 ("Also of note, the Commission cited Section 251(e)(1) of the Act when it extended both the numbering rights and obligations to interconnected VoIP providers that chose to obtain direct access to numbers in 2015. Adding the access arbitrage rules to the scope of obligations that an IPES Provider accepts along with the benefits of direct access is a natural application of that legal authority under Section 251(e)(1) or, alternatively, its ancillary authority to carry out its responsibilities under Section 251(e)(1)." (footnote omitted)).

[321] As USTelecom explains, "[m]ost recently, the Commission used its ancillary authority to adopt rules addressing rural call completion issues in the rural call completion proceeding." USTelecom Sept. 6, 2022 Comments at 11 (citing *Rural Call Completion*, WC Docket No. 13-39, Second Report and Order and Third Further Notice of Proposed Rulemaking, 33 FCC Rcd 4199, 4224, para. 56 (2018) (citing *Rural Call Completion*, WC Docket No. 13-39, Report and Order and Further Notice of Proposed Rulemaking, 28 FCC Rcd 16154, 16169-74, paras. 28-39 (2013) (*First Rural Call Completion Order*))). "The Commission relied on its prior holding that 'if we do not apply these [rural call completion] requirements to providers of VoIP service, telecommunications carriers could evade the rules by partnering with a VoIP provider in a way that allows . . . the carrier to circumvent the requirements we adopt today and undermine the purpose of those rules.'" *Id.* (citing *First Rural Call Completion Order*, 28 FCC Rcd at 16173, para. 38). "The same logic applies here, as the Commission proposes to use its Section 201(b) authority, buttressed by ancillary authority to protect the public interest and enforce its access arbitrage rules." *Id.* at 11-12. USTelecom further observes that "section 201, when combined with ancillary authority, provides the Commission with adequate authority to prescribe rules addressing access stimulation involving IPES providers." *Id.* at 12 n.39.

[322] Despite suggestions to the contrary, we continue to encourage the transition to all-IP networks and to bill-and-keep. *See* HD Carrier Oct. 3, 2022 Reply at 5; *see also* HD Carrier Jan. 9, 2023 *Ex Parte* Letter at 2; Wide Voice Jan. 10, 2023 *Ex Parte* Letter at 2. Nothing in this Order detracts from those goals. Rather, this Order, and the accompanying rules, serve to mitigate some of the harms that are occurring while the transition to bill-and-keep continues. Wide Voice also claims, without support, that in an enforcement decision, made pursuant to section 208 of the Act, the "FCC determined it had no authority over IPES." Wide Voice Jan. 10, 2023 *Ex Parte* Letter Attach. at 1 (referring to the *AT&T v. Wide Voice Enforcement Order*). We made no such finding, nor could we, as no IPES Provider was a party to that proceeding. *Wide Voice v. FCC*, 61 F.4th at 1030-31 ("[T]he FCC found that Wide Voice, not HD Carrier, violated § 201(b) by using its knowledge that the FCC *currently* does not subject VoIP providers to the *Access Arbitrage Order* to devise a workaround of the rules." (emphasis in original)).

[323] *Access Arbitrage Order*, 34 FCC Rcd at 9073-74, para. 92.

[324] *Great Lakes*, 3 F.4th at 475; *see id*. at 474-76 (rejecting an argument that the FCC lacked authority under section 201(b) to adopt the *Access Arbitrage Order*).

87. Providers' attempts to assess tandem switching or tandem switched transport access charges on IXCs for delivering traffic to access-stimulating IPES Providers are virtually indistinguishable from practices the Commission has already found to be unjust and unreasonable. Section 201(b) of the Act gives us the authority to "prescribe such rules and regulations as may be necessary in the public interest to carry out the provisions of this Act."[325] This language provides us with the authority to prohibit Intermediate Access Providers or other LECs from charging IXCs tariffed tandem switching and transport access charges for traffic routed to an access-stimulating IPES Provider, or an access-stimulating LEC. Furthermore, section 201(b) grants us authority to ensure that all charges and practices "in connection with" a common carrier service are "just and reasonable."[326] This authority encompasses a situation, such as here, where an IPES Provider is receiving traffic from Intermediate Access Providers and/or LECs for the purpose of engaging in access arbitrage. Thus, section 201(b) grants us authority to require IPES Providers to designate the Intermediate Access Provider(s), if any, that will provide terminating switched access tandem switching and transport services, and to require IPES Providers to calculate their traffic ratios and notify Intermediate Access Providers, IXCs, and the Commission if the IPES Provider is engaged in access stimulation. Intermediate Access Providers will then be able to determine whether they can lawfully charge IXCs for interstate and intrastate tandem switching and transport services (and IXCs can determine if such charges are appropriate).[327]

88. *Sections 251 and 254 of the Act*. Our authority to adopt these rule revisions is also rooted in other sections of the Act on which the Commission relied in the *Access Arbitrage Order*. First, section 251(b)(5) of the Act gives us authority to regulate exchange access and providers of exchange access, during the transition to bill-and-keep.[328] Indeed, the Commission "br[ought] all traffic within the section 251(b)(5) regime" years ago, as part of the reforms adopted in the *USF/ICC Transformation Order*.[329] Second, section 251(g) of the Act provides us with the authority to address problematic conduct that occurs during the ongoing transition to bill-and-keep.[330] Third, section 254 of the Act provides the Commission with the authority to eliminate implicit subsidies.[331] To the extent that the access charges

[325] 47 U.S.C. § 201(b).

[326] *Id*.

[327] *See also* USTelecom Sept. 6, 2022 Comments at 11-12.

[328] 47 U.S.C. § 251(b)(5); *see, e.g*., *Access Arbitrage Order*, 34 FCC Rcd at 9076, para. 98.

[329] 47 U.S.C. § 251(b)(5); *USF/ICC Transformation Order*, 26 FCC Rcd at 17916, para. 764. The rules we adopt today are applicable to all traffic, including intrastate traffic, bound for access-stimulating LECs and IPES Providers. As in the *Access Arbitrage Order*, "[w]e believe that making clear that our rules apply equally to interstate and intrastate traffic will discourage gamesmanship related to the geographic classification of the traffic; i.e., carriers creating ways to move access-stimulation schemes to intrastate service. This approach will also help prevent the possible undoing of our rules which address the unjust and [un]reasonable practice of charging IXCs for the tandem switching and tandem switched transport access charges necessary to terminate access-stimulation traffic, the inefficiencies and network unreliability created by such schemes, and the implicit subsidies underlying those schemes." *Access Arbitrage Order*, 34 FCC Rcd at 9076 n.302; *see supra* paras. 76-78 (discussing the applicability of the Access Stimulation Rules to intrastate charges).

[330] 47 U.S.C. § 251(g); *see Access Arbitrage Order*, 34 FCC Rcd at 9077, para. 102 (explaining that "even assuming *arguendo* that the specific Commission rules adopted to address access stimulation here were viewed as falling outside the scope of section 251(b)(5), our action would, at a minimum, fall within the understanding of the Commission's role under section 251(g) reflected [in] the *USF/ICC Transformation Order*. As the Commission stated there, section 251(g) grandfathers historical exchange access requirements 'until the Commission adopts rules to transition away from that system,' including through transitional rules that apply pending the completion of comprehensive reform moving to a new, permanent framework under section 251(b)(5). [*USF/ICC Transformation Order*, 26 FCC Rcd at 17923, para. 778.] The access stimulation concerns raised here arise, in significant part, because of ways in which the Commission's planned transition to bill-and-keep is not yet complete and, in that context, we find it necessary to address problematic conduct that we observe on a transitional basis until that comprehensive reform is finalized.").

paid by IXCs for access-stimulation traffic continue to subsidize LEC networks, section 254 gives us the authority to adopt the rules in this Order to eliminate those implicit subsidies. The rules we adopt are intended to encourage terminating LECs and IPES Providers to make efficient interconnection choices in the context of access-stimulation schemes and are thus consistent with longstanding Commission policy and Congressional direction. Accordingly, sections 201, 251, and 254 of the Act give us the authority to adopt the rules described in this *Order*.[332]

89. *Section 4(i) of the Act.* Although we conclude that the statutory sections identified above provide us sufficient authority to adopt our revised rules, we also conclude that our ancillary authority pursuant to section 4(i) of the Act[333] provides an additional, independent basis to adopt limited rules with respect to IPES Providers.[334] Commenters agreed with this conclusion; no commenters disagreed.[335] Section 4(i) of the Act gives the Commission the authority to perform acts, adopt rules, and issue orders, as necessary in the execution of its functions.[336] The D.C. Circuit has determined that the Commission's exercise of its ancillary authority is appropriate when "'(1) the Commission's general jurisdictional grant under Title I [of the Act] covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities.'"[337] The requirements we adopt today, that are applicable to IPES Providers, are "reasonably ancillary to the Commission's effective performance of [its] responsibilities."[338] Specifically, IPES Providers interconnected with the PSTN and exchanging IP traffic clearly provide "interstate . . . communication by wire or radio" pursuant to section 152(a) of the Act.[339] The rules we adopt, that are applicable to IPES

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[331] 47 U.S.C. § 254(e) (requiring universal service support to be "explicit"); *see Access Arbitrage Order*, 34 FCC Rcd at 9075-76, para. 97 ("To the extent that access stimulation activities have the effect of subsidizing certain end-user services—allowing providers to offer the services to their customers at no charge in many instances—we also conclude that regulatory reforms that eliminate those implicit subsidies better accord with the objectives of section 254 of the Act . . . . Any implicit subsidies resulting from access stimulation are based solely on the whims of the individual service providers, which are no substitute for the considered policy judgments the Commission makes consistent with the framework Congress established in section 254." (footnotes omitted)).

[332] 47 U.S.C. §§ 201, 251, 254; *see Access Arbitrage Order*, 34 FCC Rcd at 9073-79, paras. 89-105.

[333] 47 U.S.C. § 154(i).

[334] *See generally United States v. Sw. Cable Co.*, 392 U.S. 157, 178 (1968) (*Sw. Cable Co.*) (agreeing with the Commission's use of ancillary authority to regulate cable television).

[335] USTelecom Sept. 6, 2022 Comments at 12 ("The Commission may adopt rules pursuant to its ancillary authority when '"(1) the Commission's general jurisdictional grant under Title I [of the Communications Act] covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities."' Clearly IPES service is 'interstate . . . communication by wire or radio' satisfying the first prong of the test. For part two, it is an express part of the Commission's duty to prevent unjust or unreasonable charges or practices by carriers.") (quoting *Comcast Corp. v. FCC*, 600 F.3d 642, 646 (D.C. Cir. 2010) (quoting *Am. Library Ass'n v. FCC*, 406 F.3d 689, 691-92 (D.C. Cir. 2005)), and 47 U.S.C. § 201); *see also* Bandwidth Dec. 2, 2022 *Ex Parte* Letter at 5 ("The Commission has clear and sufficient legal authority to apply the Access Stimulation Rules to IPES Providers under its Title I ancillary jurisdiction.").

[336] 47 U.S.C. § 154(i). *See generally Sw. Cable Co.*, 392 U.S. at 178.

[337] *Comcast Corp.*, 600 F.3d at 646 (quoting *Am. Library Ass'n*, 406 F.3d at 691-92).

[338] *Sw. Cable Co.*, 392 U.S. at 178; *see also, e.g.*, *First Rural Call Completion Order*, 28 FCC Rcd at 16562, para. 35 ("Ancillary authority may be employed, at the Commission's discretion, when the Act covers the regulated subject and the assertion of jurisdiction is reasonably ancillary to the effective performance of [the Commission's] various responsibilities." (footnotes omitted)).

[339] 47 U.S.C. § 152(a); *see* Inteliquent Dec. 2, 2022 *Ex Parte* Letter at 5 ("[Inteliquent] agreed that requiring IPES Providers to comply with the access arbitrage rules is reasonably ancillary to the Commission's performance of the foregoing statutory responsibilities, particularly given that—as the Access Arbitrage FNPRM explains—IPES

(continued….)

Providers, are reasonably ancillary to our established authority to deter access arbitrage. For example, the Commission has found it to be an unjust and unreasonable practice under section 201(b) of the Act for IXCs to pay terminating tandem switching and tandem switched transport charges for the delivery of access-stimulation traffic.[340] The record indicates that IPES Providers have been inserted into the call flow in an effort to evade this holding and for parties to continue to engage in access stimulation. Therefore, we are justified in asserting our ancillary authority in adopting rule revisions applicable to IPES Providers to help deter access arbitrage and ensure just and reasonable practices under our statutory responsibilities provided in section 201(b) of the Act.[341]

90. Similarly, as the Commission has repeatedly made clear, it may, pursuant to section 251(b)(5), require the transition of access charges to a bill-and-keep framework.[342] And, the Commission has recognized that section 251(g) grandfathers the historical exchange access system "until the Commission adopts rules to transition away from the system."[343] In the *Access Arbitrage Order* the Commission found that access stimulation arises, "in significant part, because of ways in which the Commission's planned transition to bill-and-keep is not yet complete, and in that context, we find it necessary to address problematic conduct that we observe on a transitional basis until that comprehensive reform is finalized."[344] In this Order, we have found that IPES Providers are inserted into the call flow for the purpose of collecting inflated, tariffed terminating tandem switching and transport access charges from IXCs.[345] This practice is contrary to the Commission's stated goal of transitioning to bill-and-keep; that is, reducing the access charges carriers pay one another. Taking action to deter the insertion of IPES Providers into a call flow, in direct contravention of Commission precedent, orders and rules, is reasonably ancillary to our statutory mission to ensure just and reasonable rates and practices under section 201(b) of the Act.

91. Finally, as relevant here, the Commission has previously applied the statutory requirements of section 254 to VoIP providers pursuant to its ancillary authority. Specifically, the Commission found that its statutory requirement to establish "specific, predictable and sufficient mechanisms . . . to preserve and advance universal service"[346] necessitated that VoIP providers contribute to the Universal Service Fund.[347] As discussed above, section 254 also requires the elimination of implicit subsidies. Asserting ancillary authority over IPES Providers will help ensure that LEC networks are not

(Continued from previous page)
Providers interconnected with the [public switched telephone network] and exchanging IP traffic clearly constitutes 'communication by wire or radio.'").

[340] *Access Arbitrage Order*, 34 FCC Rcd at 9073-74, para. 92.

[341] *Universal Service Contribution Methodology Order*, 21 FCC Rcd at 7541-43, paras. 46-49 (using ancillary jurisdiction to extend universal service contribution obligations to interconnected VoIP providers). The Commission has similarly invoked its ancillary jurisdiction to impose outage reporting requirements to interconnected VoIP providers, explaining that the provision of interconnected VoIP is communication by wire or radio within the general jurisdictional grant of section 2 of the Act, and is "'reasonably ancillary'" to ensuring interconnected VoIP providers can satisfy their statutorily-mandated E911 obligations. *Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice over Internet Protocol Service Providers and Broadband Internet Service Providers*, PS Docket No. 11-82, Report and Order, 27 FCC Rcd 2650, 2651, 2678, paras. 1, 66 n.144 (2012).

[342] *Access Arbitrage Order*, 34 FCC Rcd at 9076, para. 98; *USF/ICC Transformation Order*, 26 FCC Rcd at 17915, para. 762.

[343] *USF/ICC Transformation Order*, 26 FCC Rcd at 17923, para. 778; 47 U.S.C. § 251(g).

[344] *Access Arbitrage Order*, 34 FCC Rcd at 9077, para. 102.

[345] *Supra* para. 13 (additional action taken to deter access stimulation is in the public interest).

[346] 47 U.S.C. § 254(d).

[347] *Universal Service Contribution Methodology Order*, 21 FCC Rcd at 7542-43, para. 48.

implicitly subsidized by access charges for access-stimulation traffic. This action will help close a perceived loophole in our rules that has been exploited by those interested in continued arbitrage of our access charge regime and the improper use of access charges to fund "free," or no-cost to the consumer, high-volume calling services. For these reasons, we conclude that requiring IPES Providers, as defined for the purposes of our Access Stimulation Rules, to comply with our limited revised rules is reasonably ancillary to the Commission's effective performance of its statutory responsibilities as described above.

E. Cost Benefit Analysis

92. *Harms of Access Arbitrage*. Access arbitrage exploits our intercarrier compensation regime by requiring the payment of terminating switched access tandem switching and switched access transport charges for activities and to providers that our policies are not intended to benefit.[348] As Bandwidth explains, "[s]o long as access charges exist, . . . parties that originate and terminate traffic have an incentive to arbitrage the associated economies for themselves, their affiliates, and their carrier partners. The purpose of this proceeding is to reduce the arbitrage and fraud based on that incentive."[349] Parties pursue access arbitrage opportunities by artificially stimulating traffic, and then routing that traffic along more expensive, and/or less efficient, call paths.[350] We first outline how the actions we take today will reduce the various harms caused by access arbitrage. We then show that the expected benefits from reducing just one of the harms—reducing the burden on IXCs to avoid being exploited—exceed the estimated costs of our actions.

93. The record does not allow us to fully quantify the cost of artificial traffic stimulation and inefficient routing, but given that tens of millions of dollars of payments are made to access arbitrageurs, these costs are likely high.[351] The waste of inefficient traffic routing is acute because the party that chooses the call path does not pay the relevant intercarrier compensation charges, and instead typically gains from them.[352] The costs of access stimulation are also likely large because the costs of these traffic-generating activities are not fully paid for by the users of the high-volume calling services, who often pay nothing for these services.[353] This means some consumers use such services even though they value them less than the cost of supply. It also means consumers who do not use the high-volume calling services effectively pay for them when they purchase other telecommunications services at rates that are higher because they are based on recovering the costs of artificially inflated access charges their carriers must pay to deliver access-stimulation traffic.[354] These rates unnecessarily and inefficiently curtail demand for those other telecommunications services. If providers of high-volume calling services were to charge prices that wholly recovered the costs of arbitrage (rather than a portion of those costs being borne by consumers who do not use high-volume calling services), then purchases of the high-volume calling services would decline, leaving only purchases where the consumer values the service at more than its

[348] *See supra* Section II - Background.

[349] Bandwidth Jan. 26, 2023 *Ex Parte* Letter at 2.

[350] *See supra* Section I – Introduction.

[351] AT&T Sept. 6, 2022 Comments at 5 ("The associated access charges—and anti-consumer subsidies—associated with these IPES-based schemes can be very large, totaling to many millions of dollars per year."); *Wide Voice v. FCC*, 61 F.4th at 1023 ("Meanwhile, because other LECs had left the market, the volume of calls that Wide Voice transferred to HD Carrier for delivery to Free Conferencing significantly increased, causing call congestion and leading to charges totaling over $5 and $6 million annually."); *see Access Arbitrage Order*, 34 FCC Rcd at 9038-39, para. 9 ("IXCs estimate that access arbitrage [then] cost[] IXCs between $60 million and $80 million annually.").

[352] *See generally supra* Section II – Background; USTelecom Feb. 13, 2023 *Ex Parte* Letter at 1 ("[T]he availability of legacy access charges on TDM networks, and the arbitrage schemes they can enable, can prevent [arguably more efficient direct IP interconnection] agreements from being reached.").

[353] *See generally supra* Section II – Background.

[354] *See generally supra* Section II – Background.

cost. Every call minute so reduced would help eliminate waste or create value equal to the difference between the cost-covering prices and these low-demand consumers' valuations of the service. At the same time, a reduction in the costs paid by other consumers due to a decrease in arbitrage would efficiently expand the use of telecommunications services, to the benefit of the general public by, for example, reducing call congestion and service disruptions caused by access stimulation.[355]

94. Behavior driven by access arbitrage also threatens the Commission's mandate to ensure that telecommunications services are provided at just and reasonable rates.[356] The telecommunications network depends on carriers being able to exchange vast quantities of traffic every minute in an efficient and reasonable manner at just and reasonable rates absent the artificial inflation of costs due to arbitrage.[357] Without the actions we take today, this process of exchanging traffic—fundamental to personal and business interactions across our nation—would be undermined, thereby threatening the longer-term viability of the network. We are not able to quantify this harm with a specific cost in dollars, but any threat to the long-term viability of the nationwide communications network is intolerable and subject to our legislative mandate to ensure just and reasonable rates and practices for consumers.[358]

95. Lastly, service providers seeking to avoid being exploited by access arbitrageurs must engage in costly defensive measures that would be unnecessary in the absence of access arbitrage. Examples of these wastes include:

- disputes over questionable demands for payment by tandem service providers that send calls to apparent access stimulators;
- attempts by IXCs to identify the sources of traffic that appears to have been arbitraged; and
- time and money spent by parties seeking to protect against or reduce access arbitrage opportunities, as in this proceeding.[359]

96. Evidence from AT&T allows us to demonstrate the costs parties incur in seeking to avoid being exploited by access arbitrageurs would vastly exceed the costs parties would incur as a result of the

[355] *See* USTelecom Feb. 13, 2023 *Ex Parte* Letter at 1 ("Arbitrage from IPES providers continues to create inefficiencies in the marketplace to the detriment of consumers."); *Great Lakes*, 3 F.4th at 477 "([A]rtificial network stimulation harms consumers by distorting the market."); *Further Notice* at 4 n.21 (referencing specific inefficiencies detailed in the record in this proceeding). After the Access Stimulation Rules became effective, access-stimulation traffic formerly destined to several LECs that had exited the business was rerouted through Wide Voice to HD Carrier which "precipitated significant and preventable call congestion." *AT&T v. Wide Voice Enforcement Order*, 36 FCC Rcd at 9788-89, para. 41; *see Wide Voice v. FCC*, 61 F.4th at 1023 (call congestion caused by Wide Voice and HD Carrier rerouting traffic).

[356] 47 U.S.C. § 201(b).

[357] In 2021, nearly 40 billion interstate switched access minutes were carried by incumbent LECs alone. FCC, Federal-State Joint Board Monitoring Reports, 2022 Monitoring Report, Supplementary Material, S.6.4. ILEC Interstate Switched Access Minutes of Use - by State, https://fcc.gov/file/24828/download (last visited Mar. 13, 2023) (To obtain the report, use the link to download the .zip file for 2022, extract the file folder "Supplementary Material," select "Section 6," and then select "S.6.4," an Excel spreadsheet.). (Incumbent LECs are a subset of all LECs. *See* 47 U.S.C. § 251(h).) That is over 100 million minutes a day.

[358] 47 U.S.C. § 201(b).

[359] *See* Aureon Oct. 3, 2022 Reply at 1-3 ("Some IXCs continue to wrongfully allege that Aureon is engaged in access stimulation . . . ."); Verizon Sept. 6, 2022 Comments at 6 (noting that "access stimulators and their IPES provider partners have gotten better at hiding their traffic, by routing it so that it is intermingled with legitimate traffic," and describing the need to be vigilant of tariff filings which may be withdrawn after "long-distance carriers spend the time and resources to identify and challenge those tariffs"), 21 (complaining about the cost of "bring[ing] access stimulators to the Commission's attention"); AT&T Jan. 31, 2023 *Ex Parte* at 3 n.6.

rules we adopt today. For example, AT&T reported spending 15,000 employee-hours over three years to identify and combat access stimulation.[360] Applying an hourly rate of $50,[361] the annual expense of this labor for AT&T alone would come to $250,000.[362] If the Commission takes no action, AT&T would incur similar annual costs every year. Even if, being conservative, our actions were to save AT&T just half of the costs it may incur in only three years, this would be a benefit of approximately $300,000.[363] The actual cost savings will be much higher, however: AT&T will save costs every year well beyond just a three-year period. In addition, AT&T is only one of many IXCs that are harmed by access arbitrage. Every IXC that delivers traffic to access stimulators will also realize savings. These estimates do not even count the gains from reducing the unquantified, but likely much more significant, harms discussed above.

97. *Costs of Our New Rules*. When the 2019 *Access Arbitrage Order* was adopted, at least 21 carriers were identified as allegedly engaging in access stimulation.[364] At least five former access-stimulating LECs have notified the Commission that they have left the access-stimulation business.[365]

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[360] AT&T Jan. 31, 2023 *Ex Parte* Letter at 3 n.6 ("Since the *Access Arbitrage Order* went into effect in January 2020, AT&T conservatively estimates it has spent upwards of 15,000 employee-hours identifying and combating access stimulation, not including hours spent by outside counsel and experts."); *see also* USTelecom Feb. 13, 2023 *Ex Parte* Letter at 1 ("USTelecom members have incurred significant intercarrier compensation and personnel costs in fighting these abuses.").

[361] For comparison's sake, the median hourly wage for computer programmers is $44.71, and for accountants and auditors it is $37.14. Bureau of Labor Statistics, *Economic News Release, Table 1. National Employment and Wage Data from the Occupational Employment and Wage Statistics Survey by Occupation*, May 2021 (Mar. 31, 2022), https://www.bls.gov/news.release/ocwage.t01.htm. These rates do not include non-wage compensation or work-related overhead. In September 2022, non-wage compensation for the private sector was 29.5% of total compensation. Bureau of Labor Statistics, *Economic News Release, Employer Costs for Employee Compensation Summary* (Dec. 15, 2022), https://www.bls.gov/news.release/ecec.nr0.htm (entitled "September 2022"; described as "benefit costs"). Non-wage compensation can be accounted for by marking up the wage compensation by 41.8% (= ((non-wage compensation) / (1 – non-wage compensation)) = 0.295 / 0.705). To account for expenses related to office space and equipment, we apply a further markup of 20%. The results are hourly rates for computer programmers of $76.08 (= ((hourly wage for computer programmers) * (41.8% markup for non-wage compensation) * (20% markup for office space and equipment)) = $44.71 * 1.418 * 1.2), and for accountants and auditors of $63.20 (= ((hourly wage for accountants and auditors) * (41.8% markup for non-wage compensation) * (20% markup for office space and equipment)) = $37.14 * 1.418 * 1.2). Because these are estimates and we want to avoid overstating the benefits of our actions, we round these down to an hourly rate of $50.

[362] The net present value of an annual expense of $250,000 over three years, discounted at a rate of 7%, would be $656,079 (half of which is $328,040). The discount rate of 7% follows the guidelines of the OMB, Circular A-4, Regulatory Analysis at 33 (Sept. 17, 2003), https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A4/a-4.pdf, and OMB, Circular A-94, Guidelines for Discount Rates for Benefit-Cost Analysis of Federal Programs at 9 (Oct. 29, 1992), https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A94/a094.pdf.

[363] The calculation of the benefit over three years is: (($250,000 cost per year) * 0.5) * 3 years = $375,000. To be conservative, we round down to $300,000.

[364] *Access Arbitrage Order*, 34 FCC Rcd at 9041, para. 15 & n.42.

[365] Interstate Cablevision Jan. 9, 2020 *Ex Parte* Letter at 1 (noting that as of December 29, 2019, the company terminated end-user relationships with high-volume calling providers); Letter from Ronald Laudner, Jr., CEO, OmniTel Communications, Inc., to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Jan. 9, 2020) (notifying the Commission that as of October 29, 2019, the company terminated end-user relationships with high-volume calling providers); Louisa Communications, Inc., Dec. 27, 2019 *Ex Parte* Letter at 1 (notifying the Commission that the company terminated its end-user relationships with high-volume calling providers as of December 25, 2019); Letter from Jared C. Johnson, General Manager, Goldfield Access Network, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Dec. 27, 2019) (providing notice that as of December 25, 2019, the company terminated its end-user relationships with high-volume calling providers); Letter from Jeff

(continued….)

That suggests 16 LECs are engaged in access stimulation today.[366] We assume a similar number of IPES Providers engage in access stimulation.[367] In that case, our Access Stimulation Rules would impact approximately 30 providers.[368] Our existing, modified and new Access Stimulation Rules will require those providers to: (1) perform traffic studies; (2) calculate traffic ratios to determine if they are engaged in access stimulation under the traffic ratios in our Access Stimulation Rules; (3) notify Intermediate Access Providers, IXCs, and the Commission if they are engaged in access stimulation; and (4) notify Intermediate Access Providers, IXCs, and the Commission if they are no longer engaged in access stimulation.[369] Those access-stimulating providers that file tariffs may also have to: (1) adjust their billing systems to no longer bill IXCs; and (2) modify their tariffs to ensure that IXCs are not billed for tandem switching or tandem transport access charges for calls delivered to access-stimulating LECs or IPES Providers.[370] As the Commission did in the 2019 *Access Arbitrage Order*, we estimate that the required effort for each firm (here, a LEC or IPES Provider) would be unlikely to exceed 100 hours of work.[371] By applying an hourly rate of $100,[372] the present value of the costs that all access-stimulating LECs or IPES Providers may incur would not exceed $300,000.[373]

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Roiland, CEO, BTC, Inc., to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Dec. 27, 2019) (indicating that as of December 25, 2019, the company terminated its end-user relationships with high-volume calling providers); Letter from David Schornack, Director of Sales & Business Development, Tekstar Communications, Inc. dba Arvig, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-155, at 1 (filed Dec. 11, 2019) (notifying the Commission that its revenue sharing agreements would be terminated on or before January 10, 2020).

[366] Our estimate that there may be 16 LECs engaged in access stimulation is based on: (21 carriers identified in 2019) – (5 former access-stimulating LECs that notified the Commission) = 16 LECs. Verizon, a single IXC, provided a list of nine LECs for which it has traffic data showing traffic ratios exceeding the applicable triggers. Verizon Sept. 6, 2022 Comments Appx. B. An estimate of nine LECs engaged in access stimulation from one IXC suggests that there are more LECs engaged in access stimulation that other IXCs may do business with.

[367] The prevalence of IPES providers is demonstrated by AT&T's information that its long-distance network "sees approximately 400 million minutes of traffic terminating to IPES carriers per month, essentially twice the number of IPES minutes AT&T saw prior to the 2019 *Access Arbitrage Order*." AT&T Sept. 6, 2022 Comments at 5. "Wide Voice sees this statistic as real progress," showing a "meaningful transition to IP." Wide Voice Jan. 10, 2023 *Ex Parte* Letter at 2 (citation omitted) (referring to AT&T's data).

[368] Prior to the rule amendments adopted in this Order, access-stimulating IPES Providers have had no requirement to report their status to the Commission. Therefore, we hypothesize, for purposes of our cost benefit analysis, that the number of access-stimulating IPES Providers is similar to the estimated number of access-stimulating LECs. Thus, if there are about 16 access-stimulating LECs and a similar number of access-stimulating IPES Providers, there are a total of approximately 30 access-stimulating providers.

[369] *See infra* Appx. A (47 CFR §§ 51.914, 61.3(bbb)).

[370] *See infra* Appx. A (47 CFR § 51.914).

[371] *See, e.g.*, FCC, OMB Control No. 3060-0298, Supporting Statement at 6-8 (Feb. 2020), https://www.reginfo.gov/public/do/PRAMain (Under "Current Inventory, Select Agency," select "Federal Communications Commission," and click Submit; scroll down to and click on "OMB Control Number: 3060-0298"; click on "202001-3060-005"; click on "View Supporting Statement and Other Documents"; and click on "3060-0298 Supporting Statement_1.31.2020.docx.") (for the Information Collection Review by the Office of Management and Budget, and showing the annual burdens for compliance with several Access Stimulation Rules).

[372] Above, in estimating the cost of the harms we are trying to reduce, we rounded our hourly rate down to $50. *Supra* note 361. Here, in estimating the costs our actions will impose, we round the hourly rate up to $100.

[373] The calculation is: (100 hours) * ($100 per hour) * (30 LECs and IPES Providers) = $300,000. This calculation assumes that all costs are incurred in the first year, which increases their present value. Bureau of Labor Statistics, Occupational Employment and Wage Statistics, May 2021 National Occupational Employment and Wage Estimates (Mar. 31, 2022), https://www.bls.gov/oes/current/oes_nat.htm (showing the median hourly wage for computer
(continued….)

98. *The Benefits of Our New and Revised Rules Outweigh Their Costs*. The rules we adopt today promote the integrity of tariffed rates for tandem switching and tandem switched transport services, and hence the goal of connectivity—the ability of consumers to connect with each other across the entire U.S. telecommunications network—at just and reasonable rates.[374] By meeting our legislative responsibility to ensure IXCs do not pay tariffed tandem switching and transport rates for access-stimulation traffic, which the Commission has found to be an unjust and unreasonable practice,[375] we help to protect the policies that underlie our intercarrier compensation rules, and the widespread willingness of carriers to interconnect and deliver calls across the network. Although the bulk of the benefits of maintaining the ability to connect with each other cannot be quantified, as we have shown, even the quantifiable components are significant and likely are vastly greater than $300,000—our present value estimate of the costs of our actions.[376]

IV. PROCEDURAL MATTERS

99. *Paperwork Reduction Act Analysis*. This document may contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. All such new or modified information collection requirements will be submitted to OMB for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies will be invited to comment on any new or modified information collection requirements contained in this proceeding. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4), we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.[377]

100. In this Order, we have assessed the effects of requiring IPES Providers to keep necessary records, calculate applicable ratios, and provide required third-party disclosure of certain information to the Commission, parties they do business with and the public, and find that IPES Providers likely keep this information and perform these responsibilities in the normal course of business. Therefore, these additional requirements should not be overly burdensome. We do not believe there are many access-stimulating IPES Providers operating today but note that of the small number of access-stimulating IPES Providers in existence, most, if not all, will be affected by this Order. We believe that access-stimulating IPES Providers are typically smaller businesses and may employ fewer than 25 people. We sought comment on the potential effects of the information collection rules we adopt today in the *Further Notice*,[378] and we received no comment specifically addressing burdens on small business concerns either in response to this request or on our Initial Regulatory Flexibility Act Analysis.[379] We find the benefits that will be realized by a decrease in the uneconomic effects of access stimulation outweigh any burden associated with the changes required by this Second Report and Order.

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programmers is $44.71, and for accountants and auditors it is $37.14, as used above in calculating hourly wages); *supra* note 361.

[374] 47 U.S.C. § 201(b); *see, e.g.*, *USF/ICC Transformation Notice*, 26 FCC Rcd at 4763, para. 654 (explaining that "the ubiquity and reliability of the nation's telecommunications network is of paramount importance to the goals of the Act").

[375] *Access Arbitrage Order*, 34 FCC Rcd at 9073-74, para. 92.

[376] *See also* AT&T Nov. 8, 2022 *Ex Parte* Letter at 2 ("The ability of providers to collect excessive, anti-consumer access charges through traditional TDM traffic exchange is one of the primary stumbling blocks to reaching IP interconnection agreements.").

[377] *Further Notice* at 24, para. 60.

[378] *Id.* at 24, para. 61.

[379] *Id.* at Appx. B.

101. *Congressional Review Act*. The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs that these rules are "non-major" under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this Second Report and Order to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

102. *Final Regulatory Flexibility Analysis*. As required by the Regulatory Flexibility Act of 1980 (RFA), as amended, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) relating to this Second Report and Order.[380] The FRFA is contained in Appendix B.

V. ORDERING CLAUSES

103. Accordingly, **IT IS ORDERED** that, pursuant to sections 1, 2, 4(i), 201, 251, 254, and 303(r), of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 201, 251, 254, and 303(r), and section 1.1 of the Commission's rules, 47 CFR § 1.1, this Second Report and Order IS ADOPTED.

104. **IT IS FURTHER ORDERED** that, pursuant to sections 1.4, 1.103 and 1.427 of the Commission's Rules, 47 CFR §§ 1.4, 1.103, 1.427, the amendments to the Commission's rules as set forth in Appendix A ARE ADOPTED, effective 30 days after publication in the Federal Register, except that the amendments to sections 51.914(d) and 51.914(g) of the Commission's rules, 47 CFR § 51.914(d), (g), which may contain new or modified information collection requirements, will not become effective until the Office of Management and Budget completes review of any information collection requirements that the Wireline Competition Bureau determines is required under the Paperwork Reduction Act. Compliance with the amendments to the Commission's rules as set forth in Appendix A will be required 45 days following the effective date. The Commission directs the Wireline Competition Bureau to announce the effective dates and the compliance dates for sections 51.914(d) and 51.914(g) by subsequent Public Notice.

105. **IT IS FURTHER ORDERED** that the Office of the Managing Director, Performance Evaluation and Records Management, SHALL SEND a copy of this Second Report and Order, including the Final Regulatory Flexibility Analysis, in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A).

106. **IT IS FURTHER ORDERED** that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center SHALL SEND a copy of this Second Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

[380] *See* 5 U.S.C. § 604. The RFA, *see* U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 847 (1996). The SBREFA was enacted as Title II of the Contract with America Advancement Ace of 1996 (CWAA).

APPENDIX A

Final Rules

For the reasons set forth above, the Federal Communications Commission amends parts 51, 61 and 69 of Title 47 of the Code of Federal Regulations as follows:

PART 51—INTERCONNECTION

The authority citation for part 51 continues to read as follows:

Authority: 47 U.S.C. 151-55, 201-05, 207-09, 218, 225-27, 251-52, 271, 332 unless otherwise noted.

1. Amend § 51.914 by revising paragraphs (a) and (b), redesignating paragraphs (c), (d), and (e) as paragraphs (e), (f), and (g), with revisions, and adding paragraphs (c) and (d) as follows:

§ 51.914 Additional provisions applicable to Access Stimulation traffic.

(a) Notwithstanding any other provision of this part, if a local exchange carrier is engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter, it shall, within 45 days of commencing Access Stimulation, or within 45 days of [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*], whichever is later:

(1) Not bill any Interexchange Carrier for interstate or intrastate terminating switched access tandem switching or terminating switched access transport charges for any traffic between such local exchange carrier's terminating end office or equivalent and the associated access tandem switch; and

(2) Designate the Intermediate Access Provider(s), if any, that will provide terminating switched access tandem switching or terminating switched access tandem transport services to the local exchange carrier engaged in Access Stimulation; and

(3) Assume financial responsibility for any applicable Intermediate Access Provider's charges for such services for any traffic between such local exchange carrier's terminating end office or equivalent and the associated access tandem switch.

(b) Notwithstanding any other provision of this part, if a local exchange carrier is engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter, it shall, within 45 days of commencing Access Stimulation, or within 45 days of [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*], whichever is later, notify in writing the Commission, all Intermediate Access Providers that it subtends, and Interexchange Carriers with which it does business of the following:

(1) That it is a local exchange carrier engaged in Access Stimulation; and

(2) That it shall designate the Intermediate Access Provider(s), if any, that will provide the terminating switched access tandem switching or terminating switched access tandem transport services to the local exchange carrier engaged in Access Stimulation; and

(3) That the local exchange carrier shall pay for those services as of that date.

(c) Notwithstanding any other provision of the Commission's rules, if an IPES Provider, as defined in § 61.3(eee) of this chapter, is engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter,

then within 45 days of commencing Access Stimulation, or within 45 days of [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*], whichever is later:

(1) The IPES Provider shall designate the Intermediate Access Provider(s), if any, that will provide terminating switched access tandem switching or terminating switched access tandem transport services to the IPES Provider engaged in Access Stimulation; and further

(2) The IPES Provider may assume financial responsibility for any applicable Intermediate Access Provider's charges for such services for any traffic between such IPES Provider's terminating end office or equivalent and the associated access tandem switch; and

(3) The Intermediate Access Provider shall not assess any charges for such services to the Interexchange Carrier.

(d) Notwithstanding any other provision of the Commission's rules, if an IPES Provider, as defined in § 61.3(eee) of this chapter, is engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter, it shall, within 45 days of commencing Access Stimulation, or within 45 days of [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*], whichever is later, notify in writing the Commission, all Intermediate Access Providers that it subtends, and Interexchange Carriers with which it does business of the following:

(1) That it is an IPES Provider engaged in Access Stimulation; and

(2) That it shall designate the Intermediate Access Provider(s), if any, that will provide the terminating switched access tandem switching or terminating switched access tandem transport services directly, or indirectly through a local exchange carrier, to the IPES Provider engaged in Access Stimulation; and

(3) Whether the IPES Provider will pay for those services as of that date.

(e) In the event that an Intermediate Access Provider receives notice under paragraphs (b) or (d) of this section that it has been designated to provide terminating switched access tandem switching or terminating switched access tandem transport services to a local exchange carrier engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter, or to an IPES Provider engaged in Access Stimulation, directly, or indirectly through a local exchange carrier, and that local exchange carrier engaged in Access Stimulation shall pay or the IPES Provider engaged in Access Stimulation may pay for such terminating access service from such Intermediate Access Provider, the Intermediate Access Provider shall not bill Interexchange Carriers for interstate or intrastate terminating switched access tandem switching or terminating switched access tandem transport service for traffic bound for such local exchange carrier or IPES Provider but, instead, shall bill such local exchange carrier or may bill such IPES Provider for such services.

(f) Notwithstanding paragraphs (a) through (d) of this section, any local exchange carrier that is not itself engaged in Access Stimulation, as that term is defined in § 61.3(bbb) of this chapter, but serves as an Intermediate Access Provider with respect to traffic bound for a local exchange carrier engaged in Access Stimulation or bound for an IPES Provider engaged in Access Stimulation, shall not itself be deemed a local exchange carrier engaged in Access Stimulation or be affected by paragraphs (a) and (b) of this section.

(g) Upon terminating its engagement in Access Stimulation, as defined in § 61.3(bbb) of this chapter, the local exchange carrier or IPES Provider engaged in Access Stimulation shall provide concurrent,

written notification to the Commission and any affected Intermediate Access Provider(s) and Interexchange Carrier(s) of such fact.

PART 61 – TARIFFS

The authority citation for part 61 continues to read as follows:

Authority: 47 U.S.C. 151, 154(i), 154(j), 201-205, 403, unless otherwise noted.

2. Amend § 61.3 by revising paragraphs (bbb)(1), (2), and (3), and (ccc), and adding paragraphs (bbb)(5), (eee) and (fff) to read as follows:

§ 61.3 Definitions.
* * * * *

(bbb) Access Stimulation.

(1) A Competitive Local Exchange Carrier serving end user(s) or an IPES Provider serving end user(s) engages in Access Stimulation when it satisfies either paragraphs (bbb)(1)(i) or (bbb)(1)(ii) of this section; and a rate-of-return local exchange carrier serving end user(s) engages in Access Stimulation when it satisfies either paragraphs (bbb)(1)(i) or (bbb)(1)(iii) of this section.

(i) The rate-of-return local exchange carrier, Competitive Local Exchange Carrier, or IPES Provider:

(A) Has an access revenue sharing agreement, whether express, implied, written or oral, that, over the course of the agreement, would directly or indirectly result in a net payment to the other party (including affiliates) to the agreement, in which payment by the rate-of-return local exchange carrier, Competitive Local Exchange Carrier, or IPES Provider is based on the billing or collection of access charges from interexchange carriers or wireless carriers. When determining whether there is a net payment under this rule, all payments, discounts, credits, services, features, functions, and other items of value, regardless of form, provided by the rate-of-return local exchange carrier, Competitive Local Exchange Carrier, or IPES Provider to the other party to the agreement shall be taken into account; and

(B) Has either an interstate terminating-to-originating traffic ratio of at least 3:1 in an end office or equivalent in a calendar month, or has had more than a 100 percent growth in interstate originating and/or terminating switched access minutes of use in a month compared to the same month in the preceding year for such end office or equivalent.

(ii) A Competitive Local Exchange Carrier or IPES Provider has an interstate terminating-to-originating traffic ratio of at least 6:1 in an end office or equivalent in a calendar month.

(iii) A rate-of-return local exchange carrier has an interstate terminating-to-originating traffic ratio of at least 10:1 in an end office or equivalent in a three-calendar month period and has 500,000 minutes or more of interstate terminating minutes-of-use per month in the same end office in the same three-calendar month period. These factors will be measured as an average over the three-calendar month period.

(2) A Competitive Local Exchange Carrier serving end user(s), or an IPES Provider serving end user(s), that has engaged in Access Stimulation will continue to be deemed to be engaged in Access Stimulation until: For a carrier or provider engaging in Access Stimulation as defined in paragraph (bbb)(1)(i) of this section, it terminates all revenue sharing agreements covered in paragraph (bbb)(1)(i) of this section and does not engage in Access Stimulation as defined in paragraph (bbb)(1)(ii) of this section; and for a carrier or provider engaging in Access Stimulation as defined in paragraph (bbb)(1)(ii) of this section, its interstate terminating-to-originating traffic ratio for an end office or equivalent falls below 6:1 for six consecutive months, and it does not engage in Access Stimulation as defined in paragraph (bbb)(1)(i) of this section.

(3) A rate-of-return local exchange carrier serving end user(s) that has engaged in Access Stimulation will continue to be deemed to be engaged in Access Stimulation until: For a carrier engaging in Access Stimulation as defined in paragraph (bbb)(1)(i) of this section, it terminates all revenue sharing agreements covered in paragraph (bbb)(1)(i) of this section and does not engage in Access Stimulation as defined in paragraph (bbb)(1)(iii) of this section; and for a carrier engaging in Access Stimulation as defined in paragraph (bbb)(1)(iii) of this section, its interstate terminating-to-originating traffic ratio falls below 10:1 for six consecutive months and its monthly interstate terminating minutes-of-use in an end office or equivalent falls below 500,000 for six consecutive months, and it does not engage in Access Stimulation as defined in paragraph (bbb)(1)(i) of this section.

* * *

(5) In calculating the interstate terminating-to-originating traffic ratio at each end office or equivalent under this paragraph (bbb), each Competitive Local Exchange Carrier, rate-of-return local exchange carrier or IPES Provider shall include in such calculation only traffic traversing that end office or equivalent and going to and from any telephone number associated with an Operating Company Number that has been issued to such Competitive Local Exchange Carrier, rate-of-return local exchange carrier or IPES Provider. The term "equivalent" in the phrase "end office or equivalent" means "End Office Equivalent," as defined in this section.

(ccc) *Intermediate Access Provider*. The term means, for purposes of this part and §§ 51.914, 69.4(1), and 69.5(b) of this chapter, any entity that provides terminating switched access tandem switching or terminating switched access tandem transport services between the final Interexchange Carrier in a call path and:

(1) A local exchange carrier engaged in Access Stimulation, as defined in paragraph (bbb) of this section; or

(2) A local exchange carrier delivering traffic to an IPES Provider engaged in Access Stimulation, as defined in paragraph (bbb) of this section; or

(3) An IPES Provider engaged in Access Stimulation, as defined in paragraph (bbb) of this section, where the entity delivers calls directly to the IPES Provider.

* * *

(eee) *IPES (Internet Protocol Enabled Service) Provider*. The term means, for purposes of this part and §§ 51.914, 69.4(l) and 69.5(b) of this chapter, a provider offering a service that: (1) enables communications; (2) requires a broadband connection from the user's location or end to end; (3) requires Internet Protocol-compatible customer premises equipment (CPE); and (4) permits users to receive calls

that originate on the public switched telephone network or that originate from an Internet Protocol service.

(fff) End Office Equivalent. For purposes of this part and §§ 51.914, 69.3(e)(12)(iv) and 69.4(l) of this chapter, an End Office Equivalent is the geographic location where traffic is delivered to an IPES Provider for delivery to an end user. This location shall be used as the terminating location for purposes of calculating terminating-to-originating traffic ratios, as provided in this section. For purposes of the Access Stimulation Rules, the term "equivalent" in the phrase "end office or equivalent" means End Office Equivalent.

* * * * *

PART 69 – ACCESS CHARGES

The authority citation for part 69 continues to read as follows:

Authority: 47 U.S.C. 154, 201, 202, 203, 205, 218, 220, 254, 403.

3. Amend § 69.4 by revising paragraph (l) to read as follows:

§ 69.4 Charges to be filed.
* * * * *

(l) Notwithstanding paragraph (b)(5) of this section, a competitive local exchange carrier or a rate-of-return local exchange carrier engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter, the Intermediate Access Provider it subtends, or an Intermediate Access Provider that delivers traffic directly or indirectly to an IPES Provider engaged in Access Stimulation, as defined in § 61.3(bbb) of this chapter, shall not bill an Interexchange Carrier, as defined in § 61.3(bbb) of this chapter, for interstate or intrastate terminating switched access tandem switching or terminating switched access tandem transport charges for any traffic between such competitive local exchange carrier's, such rate-of-return local exchange carrier's, or such IPES Provider's terminating end office or equivalent and the associated access tandem switch.

4. Amend § 69.5 by revising paragraph (b) to read as follows:

§ 69.5 Persons to be assessed.
* * * * *

(b) Carrier's carrier charges shall be computed and assessed upon all Interexchange Carriers that use local exchange switching facilities for the provision of interstate or foreign telecommunications services, except that:

(1) Competitive local exchange carriers and rate-of-return local exchange carriers shall not assess terminating interstate or intrastate switched access tandem switching or terminating switched access tandem transport charges described in § 69.4(b)(5) of this part on Interexchange Carriers when the terminating traffic is destined for a competitive local exchange carrier, or a rate-of-return local exchange carrier, or is destined, directly or indirectly, for an IPES Provider, where such carrier or Provider is engaged in Access Stimulation, as that term is defined in § 61.3(bbb) of this chapter, consistent with the provisions of § 61.26(g)(3) of this chapter and § 69.3(e)(12)(iv) of this part.

(2) Intermediate Access Providers shall not assess terminating interstate or intrastate switched access tandem switching or terminating switched access tandem transport charges described

in § 69.4(b)(5) of this part on Interexchange Carriers when the terminating traffic is destined for a competitive local exchange carrier, or a rate-of-return local exchange carrier, or is destined, directly or indirectly, for an IPES Provider, where such carrier or Provider is engaged in Access Stimulation, as that term is defined in § 61.3(bbb) of this chapter, consistent with the provisions of § 61.26(g)(3) of this chapter and § 69.3(e)(12)(iv) of this part.

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Further Notice of Proposed Rulemaking* for the access arbitrage proceeding.[2] We sought written public comments on the proposals in the *Further Notice*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

A. Need for, and Objectives of, the Final Rules

2. For over a decade, the Commission has combatted arbitrage of its access charge regime, which ultimately raises the rates consumers pay for telecommunications service. In the 2011 *USF/ICC Transformation Order*, the Commission adopted rules identifying local exchange carriers (LECs) engaged in access stimulation and requiring that such LECs lower their tariffed access charges.[4] In 2019, to address access arbitrage schemes that persisted despite prior Commission action, the Commission adopted the *Access Arbitrage Order*, in which it revised its Access Stimulation Rules to prohibit LECs and Intermediate Access Providers from charging interexchange carriers (IXCs) for terminating tandem switching and transport services used to deliver calls to access-stimulating LECs.[5]

3. Since the 2019 rules were implemented, the Commission has received information about new ways entities are manipulating their businesses to continue their arbitrage schemes in the wake of the new rules. In this Order, we adopt rule revisions to close perceived loopholes in our Access Stimulation Rules that are being exploited by opportunistic access-stimulating entities whose actions ultimately cause consumers to continue to bear costs for services they do not use.[6]

4. We modify our Access Stimulation Rules to address access arbitrage that takes place when an Internet Protocol Enabled Service (IPES) Provider is incorporated into the call flow.[7] When a LEC or Intermediate Access Provider delivers traffic to an IPES Provider and the terminating-to-originating traffic ratios of the IPES Provider meet or exceed the triggers in the Access Stimulation Rules, the IPES Provider will be deemed to be engaged in access stimulation.[8] In such cases, a LEC or an Intermediate Access Provider will be prohibited from charging an IXC tariffed charges for terminating switched access tandem switching and switched access transport for traffic bound to an IPES Provider whose traffic meets or exceeds the ratios in sections 61.3(bbb)(1)(i) or 61.3(bbb)(1)(ii) of our Access

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[1] *See* 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage*, WC Docket No. 18-155, Further Notice of Proposed Rulemaking, FCC 22-54 (July 15, 2022) (*Further Notice*).

[3] *See* 5 U.S.C. § 604.

[4] *Connect America Fund et al*., WC Docket No. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17874-90, paras. 656-701 (2011) (*USF/ICC Transformation Order*), *aff'd*, *In re FCC 11-161*, 753 F.3d 1015 (10th Cir. 2014).

[5] *See generally Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage*, WC Docket No. 18-155, Report and Order and Modification of Section 214 Authorizations, 34 FCC Rcd 9035 (2019) (*Access Arbitrage Order*), *aff'd*, *Great Lakes Communications Corp. v. FCC*, 3 F.4th 470 (D.C. Cir. 2021). *See also Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage*, WC Docket No. 18-155, Notice of Proposed Rulemaking, 33 FCC Rcd 5466 (2018).

[6] *See* Second Report and Order (Order), *supra* Sections III.A, C.

[7] *See* Order, *supra* Sections III.A, C.

[8] *See* Order, *supra* Section III.A.

Stimulation Rules.[9] The IPES Provider will be responsible for calculating its traffic ratios and for making the required notifications to the affected IXC(s), Intermediate Access Provider(s) and the Commission.[10] We likewise modify the definition of Intermediate Access Provider to include entities delivering traffic to an IPES Provider.[11] The rules we adopt will serve the public interest by reducing the incentives and ability to send traffic over the Public Switched Telephone Network for the purpose of collecting tariffed tandem switching and transport access charges from IXCs to fund high-volume calling services, which the Commission has found to be an unjust and unreasonable practice.[12]

5. The reforms adopted in this Order apply the same framework that we currently use for competitive LECs that have engaged in access stimulation to determine when an IPES Provider that was engaged in access stimulation no longer is considered to be engaged in access stimulation.[13] The Access Stimulation Rules currently require traffic ratios to be calculated at the end office. The rules adopted today apply this manner of traffic calculations to IPES Providers as well. Affected entities must comply with the final rules no later than 45 days after their effective date.[14] The effective date is 30 days after publication in the Federal Register except for certain rule revisions which contain information collection requirements that are subject to review by the Office of Management and Budget under the Paperwork Reduction Act.[15] The effective date for these latter rules will be announced separately by the Commission.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

6. The Commission did not receive comments specifically addressing the rules and policies proposed in the IRFA.

C. Response to Comments by Chief Counsel for Advocacy of the Small Business Administration

7. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel of the Small Business Administration (SBA) and to provide a detailed statement of any change made to the proposed rule(s) as a result of those comments.[16]

8. The Chief Counsel did not file any comments in response to the proposed rule(s) in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Final Rules Will Apply

9. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[17] The RFA generally defines the term ”small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”[18] In addition, the term “small business” has the

[9] *See* Order, *supra* Section III.A.

[10] *See* Order, *supra* Section III.A.

[11] *See* Order, *supra* Section III.C.

[12] *See* Order, *supra* Section III; *Access Arbitrage Order*, 34 FCC Rcd at 9073, para. 92 (citing 47 U.S.C. § 201(b)).

[13] *See* Order, *supra* Section III.A.

[14] *Supra* Appx. A; *see* Order, *supra* Section V.

[15] *Supra* Appx. A; *see* Order, *supra* Section V.

[16] 5 U.S.C. § 604(a)(3).

[17] 5 U.S.C. § 603(b)(3).

[18] *See id.* § 601(6).

same meaning as the term "small business concern" under the Small Business Act.[19] A small business concern is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; (3) satisfies any additional criteria established by the Small Business Administration (SBA).[20]

10. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe, at the outset, three broad groups of small entities that could be directly affected herein.[21] First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the Small Business Administration's (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.[22] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 32.5 million businesses.[23]

11. Next, the type of small entity described as a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[24] The Internal Revenue Service (IRS) uses a revenue benchmark of $50,000 or less to delineate its annual electronic filing requirements for small exempt organizations.[25] Nationwide, for tax year 2020, there were approximately 447,689 small exempt organizations in the U.S. reporting revenues of $50,000 or less according to the registration and tax data for exempt organizations available from the IRS.[26]

12. Finally, the small entity described as a "small governmental jurisdiction" is defined generally as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[27] U.S. Census Bureau data from the 2017 Census of Governments[28] indicate there were 90,075 local governmental jurisdictions consisting of general

[19] *See id.* § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632).

[20] *See* 15 U.S.C. § 632.

[21] *See* 5 U.S.C. § 601(3)-(6).

[22] *See* SBA, Office of Advocacy, Frequently Asked Questions, "What is a small business?," https://cdn.advocacy.sba.gov/wp-content/uploads/2023/03/07121547/Frequently-Asked-Questions-About-Small-Business-March-2023-508c.pdf (Mar. 2023).

[23] *Id*.

[24] *See* 5 U.S.C. § 601(4).

[25] The IRS benchmark is similar to the population of less than 50,000 benchmark in 5 U.S.C § 601(5) that is used to define a small governmental jurisdiction. Therefore, the IRS benchmark has been used to estimate the number small organizations in this small entity description. S*ee* Annual Electronic Filing Requirement for Small Exempt Organizations – Form 990-N (e-Postcard), "Who must file," https://www.irs.gov/charities-non-profits/annual-electronic-filing-requirement-for-small-exempt-organizations-form-990-n-e-postcard. We note that the IRS data does not provide information on whether a small exempt organization is independently owned and operated or dominant in its field.

[26] *See* Exempt Organizations Business Master File Extract (EO BMF), "CSV Files by Region," https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf. The IRS Exempt Organization Business Master File (EO BMF) Extract provides information on all registered tax-exempt/non-profit organizations. The data utilized for purposes of this description was extracted from the IRS EO BMF data for businesses for the tax year 2020 with revenue less than or equal to $50,000 for Region 1-Northeast Area (58,577), Region 2-Mid-Atlantic and Great Lakes Areas (175,272), and Region 3-Gulf Coast and Pacific Coast Areas (213,840) that includes the continental U.S., Alaska, and Hawaii. This data does not include information for Puerto Rico.

[27] *See* 5 U.S.C. § 601(5).

[28] *See* 13 U.S.C. § 161. The Census of Governments survey is conducted every five (5) years compiling data for years ending with "2" and "7". *See also* Census of Governments, https://www.census.gov/programs-surveys/cog/about.html.

purpose governments and special purpose governments in the United States.[29] Of this number, there were 36,931 general purpose governments (county,[30] municipal, and town or township[31]) with populations of less than 50,000 and 12,040 special purpose governments—independent school districts[32] with enrollment populations of less than 50,000.[33] Accordingly, based on the 2017 U.S. Census of Governments data, we estimate that at least 48,971 entities fall into the category of "small governmental jurisdictions."[34]

13. *Wired Telecommunications Carriers.* The U.S. Census Bureau defines this industry as establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired communications networks.[35] Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services, wired (cable) audio and video programming distribution, and wired broadband Internet services.[36] By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.[37] Wired Telecommunications Carriers are also referred to as wireline carriers or fixed local service providers.[38]

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[29] *See* U.S. Census Bureau, 2017 Census of Governments – Organization Table 2. Local Governments by Type and State: 2017 [CG1700ORG02], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. Local governmental jurisdictions are made up of general purpose governments (county, municipal and town or township) and special purpose governments (special districts and independent school districts). *See also* tbl.2. CG1700ORG02 Table Notes_Local Governments by Type and State_2017.

[30] *See id.* at tbl.5. County Governments by Population-Size Group and State: 2017 [CG1700ORG05], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 2,105 county governments with populations less than 50,000. This category does not include subcounty (municipal and township) governments.

[31] *See id.* at tbl.6. Subcounty General-Purpose Governments by Population-Size Group and State: 2017 [CG1700ORG06], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 18,729 municipal and 16,097 town and township governments with populations less than 50,000.

[32] *See id.* at tbl.10. Elementary and Secondary School Systems by Enrollment-Size Group and State: 2017 [CG1700ORG10], https://www.census.gov/data/tables/2017/econ/gus/2017-governments.html. There were 12,040 independent school districts with enrollment populations less than 50,000. *See also* tbl.4. Special-Purpose Local Governments by State Census Years 1942 to 2017 [CG1700ORG04], CG1700ORG04 Table Notes_Special Purpose Local Governments by State_Census Years 1942 to 2017.

[33] While the special purpose governments category also includes local special district governments, the 2017 Census of Governments data does not provide data aggregated based on population size for the special purpose governments category. Therefore, only data from independent school districts is included in the special purpose governments category.

[34] This total is derived from the sum of the number of general purpose governments (county, municipal and town or township) with populations of less than 50,000 (36,931) and the number of special purpose governments - independent school districts with enrollment populations of less than 50,000 (12,040), from the 2017 Census of Governments - Organizations tbls.5, 6 & 10.

[35] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311.

[36] *Id.*

[37] *Id.*

[38] Fixed Local Service Providers include the following types of providers: Incumbent Local Exchange Carriers (ILECs), Competitive Access Providers (CAPs) and Competitive Local Exchange Carriers (CLECs), Cable/Coax CLECs, Interconnected VOIP Providers, Non-Interconnected VOIP Providers, Shared-Tenant Service Providers, Audio Bridge Service Providers, and Other Local Service Providers. Local Resellers fall into another U.S. Census Bureau industry group and therefore data for these providers is not included in this industry.

14. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.[39] U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.[40] Of this number, 2,964 firms operated with fewer than 250 employees.[41] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 5,183 providers that reported they were engaged in the provision of fixed local services.[42] Of these providers, the Commission estimates that 4,737 providers have 1,500 or fewer employees.[43] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

15. *Local Exchange Carriers (LECs).* Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. Providers of these services include both incumbent and competitive local exchange service providers. Wired Telecommunications Carriers[44] is the closest industry with an SBA small business size standard.[45] Wired Telecommunications Carriers are also referred to as wireline carriers or fixed local service providers.[46] The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.[47] U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.[48] Of this number, 2,964 firms operated with fewer than 250 employees.[49] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 5,183 providers that reported they were fixed local exchange service providers.[50] Of these providers, the Commission estimates that 4,737 providers have 1,500 or fewer employees.[51] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

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[39] *See* 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

[40] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[41] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[42] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[43] *Id.*

[44] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311.

[45] *See* 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

[46] Fixed Local Exchange Service Providers include the following types of providers: Incumbent Local Exchange Carriers (ILECs), Competitive Access Providers (CAPs) and Competitive Local Exchange Carriers (CLECs), Cable/Coax CLECs, Interconnected VOIP Providers, Non-Interconnected VOIP Providers, Shared-Tenant Service Providers, Audio Bridge Service Providers, Local Resellers, and Other Local Service Providers.

[47] *Id.*

[48] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[49] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[50] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[51] *Id.*

16. *Incumbent Local Exchange Carriers (Incumbent LECs).* Neither the Commission nor the SBA have developed a small business size standard specifically for incumbent local exchange carriers. Wired Telecommunications Carriers[52] is the closest industry with an SBA small business size standard.[53] The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.[54] U.S. Census Bureau data for 2017 show that there were 3,054 firms in this industry that operated for the entire year.[55] Of this number, 2,964 firms operated with fewer than 250 employees.[56] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 1,227 providers that reported they were incumbent local exchange service providers.[57] Of these providers, the Commission estimates that 929 providers have 1,500 or fewer employees.[58] Consequently, using the SBA's small business size standard, the Commission estimates that the majority of incumbent local exchange carriers can be considered small entities.

17. *Competitive Local Exchange Carriers (LECs).* Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. Providers of these services include several types of competitive local exchange service providers.[59] Wired Telecommunications Carriers[60] is the closest industry with a SBA small business size standard. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.[61] U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.[62] Of this number, 2,964 firms operated with fewer than 250 employees.[63] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 3,956 providers that reported they were competitive local exchange service providers.[64] Of these providers, the Commission estimates that 3,808 providers have

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[52] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311.

[53] *See* 13 CFR § 121.201, NAICS Code 517311.

[54] *Id.*

[55] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[56] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[57] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[58] *Id.*

[59] Competitive Local Exchange Service Providers include the following types of providers: Competitive Access Providers (CAPs) and Competitive Local Exchange Carriers (CLECs), Cable/Coax CLECs, Interconnected VOIP Providers, Non-Interconnected VOIP Providers, Shared-Tenant Service Providers, Audio Bridge Service Providers, Local Resellers, and Other Local Service Providers.

[60] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311.

[61] *See* 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

[62] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[63] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

1,500 or fewer employees.[65] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

18. *Interexchange Carriers (IXCs)*. Neither the Commission nor the SBA have developed a small business size standard specifically for Interexchange Carriers. Wired Telecommunications Carriers[66] is the closest industry with a SBA small business size standard.[67] The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small.[68] U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year.[69] Of this number, 2,964 firms operated with fewer than 250 employees.[70] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 151 providers that reported they were engaged in the provision of interexchange services. Of these providers, the Commission estimates that 131 providers have 1,500 or fewer employees.[71] Consequently, using the SBA's small business size standard, the Commission estimates that the majority of providers in this industry can be considered small entities.

19. *Local Resellers*. Neither the Commission nor the SBA have developed a small business size standard specifically for Local Resellers. Telecommunications Resellers is the closest industry with a SBA small business size standard.[72] The Telecommunications Resellers industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households.[73] Establishments in this industry resell telecommunications; they do not operate transmission facilities and infrastructure.[74] Mobile virtual network operators (MVNOs) are included in this industry.[75] The SBA small business size standard for Telecommunications Resellers classifies a business as small if it has 1,500 or fewer employees.[76] U.S. Census Bureau data for 2017 show that 1,386 firms in this industry provided resale services for the entire year.[77] Of that number, 1,375

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[64] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[65] *Id.*

[66] *See* U.S. Census Bureau, *2017 NAICS Definition, "517311 Wired Telecommunications Carriers,"* https://www.census.gov/naics/?input=517311&year=2017&details=517311.

[67] *See* 13 CFR § 121.201, NAICS Code 517311 (as of 10/1/22, NAICS Code 517111).

[68] *Id.*

[69] *See* U.S. Census Bureau, *2017 Economic Census of the United States, Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517311, https://data.census.gov/cedsci/table?y=2017&n=517311&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[70] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[71] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[72] *See* U.S. Census Bureau, *2017 NAICS Definition*, "*517911 Telecommunications Resellers,*" https://www.census.gov/naics/?input=517911&year=2017&details=517911.

[73] *Id*.

[74] *Id*.

[75] *Id*.

[76] *See* 13 CFR § 121.201, NAICS Code 517911 (as of 10/1/22, NAICS Code 517121).

firms operated with fewer than 250 employees.[78] Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 293 providers that reported they were engaged in the provision of local resale services.[79] Of these providers, the Commission estimates that 289 providers have 1,500 or fewer employees.[80] Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

20. *Cable Companies and Systems (Rate Regulation).* The Commission has developed its own small business size standard for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers nationwide.[81] Based on industry data, there are about 420 cable companies in the U.S.[82] Of these, only seven have more than 400,000 subscribers.[83] In addition, under the Commission's rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[84] Based on industry data, there are about 4,139 cable systems (headends) in the U.S.[85] Of these, about 639 have more than 15,000 subscribers.[86] Accordingly, the Commission estimates that the majority of cable companies and cable systems are small.

21. *Cable System Operators (Telecom Act Standard).* The Communications Act of 1934, as amended, contains a size standard for a "small cable operator," which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than one percent of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[87] For purposes of the Telecom Act Standard, the Commission determined that a cable system operator that serves fewer than 677,000 subscribers, either directly or through affiliates, will meet the definition of a small cable operator based on the cable subscriber count established in a 2001 Public Notice.[88] Based on industry data, only six cable system operators have more than 677,000 subscribers.[89]

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[77] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Employment Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEEMPFIRM, NAICS Code 517911, https://data.census.gov/cedsci/table?y=2017&n=517911&tid=ECNSIZE2017.EC1700SIZEEMPFIRM&hidePreview=false.

[78] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard.

[79] Federal-State Joint Board on Universal Service, Universal Service Monitoring Report at 26, Table 1.12 (2021), https://docs.fcc.gov/public/attachments/DOC-379181A1.pdf.

[80] *Id.*

[81] 47 CFR § 76.901(d).

[82] S&P Global Market Intelligence, S&P Capital IQ Pro, U.S. MediaCensus, *Operator Subscribers by Geography* (last visited May 26, 2022).

[83] S&P Global Market Intelligence, S&P Capital IQ Pro, *Top Cable MSOs 12/21Q (*last visited May 26, 2022); S&P Global Market Intelligence, Multichannel Video Subscriptions, Top 10 (April 2022).

[84] 47 CFR § 76.901(c).

[85] S&P Global Market Intelligence, S&P Capital IQ Pro, U.S. MediaCensus, *Operator Subscribers by Geography* (last visited May 26, 2022).

[86] S&P Global Market Intelligence, S&P Capital IQ Pro, *Top Cable MSOs 12/21Q (*last visited May 26, 2022).

[87] 47 U.S.C. § 543(m)(2).

[88] *FCC Announces New Subscriber Count for the Definition of Small Cable Operator*, Public Notice, 16 FCC Rcd 2225 (CSB 2001) (*2001 Subscriber Count PN*). In this Public Notice, the Commission determined that there were approximately 67.7 million cable subscribers in the United States at that time using the most reliable source publicly available. *Id*. We recognize that the number of cable subscribers changed since then and that the Commission has recently estimated the number of cable subscribers to traditional and telco cable operators to be approximately 58.1 million. *See Communications Marketplace Report*, GN Docket No. 20-60, 2020 Communications Marketplace Report, 36 FCC Rcd 2945, 3049, para. 156 (2020) (*2020 Communications Marketplace Report*). However, because

(continued….)

Accordingly, the Commission estimates that the majority of cable system operators are small under this size standard. We note however, that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed $250 million.[90] Therefore, we are unable at this time to estimate with greater precision the number of cable system operators that would qualify as small cable operators under the definition in the Communications Act.

22. *All Other Telecommunications.* This industry is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.[91] This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.[92] Providers of Internet services (e.g., dial-up ISPs) or Voice over Internet Protocol (VoIP) services, via client-supplied telecommunications connections are also included in this industry.[93] The SBA small business size standard for this industry classifies firms with annual receipts of $35 million or less as small.[94] U.S. Census Bureau data for 2017 show that there were 1,079 firms in this industry that operated for the entire year.[95] Of those firms, 1,039 had revenue of less than $25 million.[96] Based on this data, the Commission estimates that the majority of "All Other Telecommunications" firms can be considered small.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

23. The rule revisions adopted in the Order will affect LECs, Intermediate Access Providers, and IPES Providers. This Order modifies our Access Stimulation Rules to address arbitrage which takes place when an IPES Provider is incorporated into the call flow. In this Order, we adopt rules to further limit or eliminate the occurrence of access arbitrage, including access stimulation, which could affect potential reporting requirements. The adopted rules also contain recordkeeping, reporting, and third-party

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the Commission has not issued a public notice subsequent to the *2001 Subscriber Count PN,* the Commission still relies on the subscriber count threshold established by the *2001 Subscriber Count PN* for purposes of this rule. *See* 47 CFR § 76.901(e)(1).

[89] S&P Global Market Intelligence, S&P Capital IQ Pro, *Top Cable MSOs 12/21Q (*last visited May 26, 2022); S&P Global Market Intelligence, Multichannel Video Subscriptions, Top 10 (April 2022).

[90] The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority's finding that the operator does not qualify as a small cable operator pursuant to § 76.901(e) of the Commission's rules. *See* 47 CFR § 76.910(b).

[91] *See* U.S. Census Bureau, *2017 NAICS Definition*, "*517919 All Other Telecommunications,*" https://www.census.gov/naics/?input=517919&year=2017&details=517919.

[92] *Id.*

[93] *Id*.

[94] *See* 13 CFR § 121.201, NAICS Code 517919 (as of 10/1/22, NAICS Code 517810).

[95] *See* U.S. Census Bureau, *2017 Economic Census of the United States*, *Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2017,* Table ID: EC1700SIZEREVFIRM, NAICS Code 517919, https://data.census.gov/cedsci/table?y=2017&n=517919&tid=ECNSIZE2017.EC1700SIZEREVFIRM&hidePreview=false.

[96] *Id.* The available U.S. Census Bureau data does not provide a more precise estimate of the number of firms that meet the SBA size standard. We also note that according to the U.S. Census Bureau glossary, the terms receipts and revenues are used interchangeably, *see* https://www.census.gov/glossary/#term_ReceiptsRevenueServices.

notification requirements for access-stimulating LECs and IPES Providers, which may impact small entities. Some of the requirements may also involve tariff changes.[97]

24. The rules adopted in the Order require that when an Intermediate Access Provider or a LEC delivers traffic to an IPES Provider and the terminating-to-originating traffic ratios of the IPES Provider meet or exceed the triggers in the Access Stimulation Rules, the IPES Provider will be deemed to be engaged in access stimulation.[98] In those cases, the IPES Provider will be responsible for calculating its traffic ratios and for making the required third-party notifications. As such, providers may need to modify their in-house recordkeeping to comply with the new rules. If the IPES Provider's traffic ratios meet or exceed the applicable rule triggers, it must notify the Intermediate Access Providers it subtends, the Commission, and affected IXCs.[99] The Intermediate Access Provider is then prohibited from charging IXCs tariffed rates for terminating switched access tandem switching or terminating switched access transport charges.[100]

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities and Significant Alternatives Considered

25. The RFA requires an agency to describe any significant, specifically small business alternatives that it has considered in reaching its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for such small entities; (3) the use of performance, rather than design, standards; and (4) and exemption from coverage of the rule, or any part thereof, for such small entities."[101]

26. The actions taken by the Commission in the Order were considered to be the least costly and minimally burdensome for small and other entities impacted by the rules. As such, the Commission does not expect the adopted requirements to have a significant economic impact on small entities. Below we discuss actions we take in the Order to minimize any significant economic impact on small entities and some alternatives that were considered.

27. *Transition Period to Assist Small Entity Compliance*. To minimize the impact of changes that may affect entities, we implement up to a 45-day transition period for compliance. We expect that transition period will allow even small business entities adequate time to amend their tariffs and recordkeeping, reporting and third-party notification practices, if needed, to meet the requirements in the adopted rules. This will also allow time if parties choose to make additional changes to their operations as a result of our reforms to further reduce access stimulation. To ensure clarity and increase transparency, we require that access-stimulating LECs and IPES Providers notify affected IXCs, Intermediate Access Providers, and the Commission of their access-stimulating status within 45 days of PRA approval (or, for an entity that later engages in access stimulation, within 45 days from the date it commences access stimulation), and file a notice in the Commission's Access Arbitrage docket on the same date and to the same effect.[102]

28. We announced aspects of the transition period in the *Further Notice*, and received no related comments.[103] Such changes are also subject to the Paperwork Reduction Act approval process

[97] *Supra* Appx. A (47 CFR §§ 51.914(b), (d), (g), 69.4(l), 69.5(b)).

[98] *See* Order, *supra* Section III.A.

[99] *See* Order, *supra* Section III.A.

[100] *See* Order, *supra* Section III.A.

[101] 5 U.S.C. § 604(a)(6).

[102] *Supra* Appx. A (47 CFR § 51.914(b), (d), (g)).

[103] *Further Notice* at 11-12, para. 26.

which allows for additional notice and comment on the burdens associated with the requirements.[104] This process will occur after adoption of this Order, thus providing additional time for parties to make the changes necessary to comply with the newly adopted rules. Also, being mindful of the attendant costs of any reporting obligations, we do not require that affected entities adhere to a specific notice format. Instead, we allow each responding entity to prepare third-party notice and notice to the Commission in the manner they deem to be most cost-effective and least burdensome, provided the notice announces the entities' access-stimulating status and acceptance of financial responsibility. Furthermore, by electing not to require carriers to fully withdraw and file entirely new tariffs and requiring only that they revise their tariffs to remove relevant provisions, if necessary, we mitigate the filing burden on affected carriers.

29. We consider any potential billing system changes to be straightforward, but to allow sufficient time for affected parties, including small business entities, to make any adjustments. We grant small entities the same period from the effective date for implementing such changes. Thus, affected Intermediate Access Providers have 45 days from the effective date of this rule (or, with respect to those entities that later engage in access stimulation, within 45 days from the date such entities commence access stimulation) to implement any billing system changes or prepare any tariff revisions which they may see fit to file. The time granted by this period should help small business entities affected make an orderly, less burdensome, transition.

30. These same considerations were taken into account for LECs and IPES Providers that cease access stimulation, a change that carries concomitant reporting obligations and to which we apply associated transition periods for billing changes and/or for tariff revisions that, collectively, are virtually identical to those mentioned above.

G. Report to Congress

31. The Commission will send a copy of this Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.[105] In addition, the Commission will send a copy of the Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. The Order and FRFA (or summaries thereof) will also be published in the Federal Register.[106]

[104] *Supra* Appx. A; *see* Order, *supra* Section IV.

[105] *See* 5 U.S.C. § 801(a)(1)(A).

[106] *See id.* § 604(b).

STATEMENT OF
CHAIRWOMAN JESSICA ROSENWORCEL

Re: *Updating the Intercarrier Compensation Regime to Eliminate Access Arbitrage*, WC Docket No. 18-155, Second Report and Order (April 20, 2023).

For decades, a Byzantine system of hidden subsidies helped keep prices down and phone service available for consumers in rural areas—but its complexity also created opportunities for gaming the system. In 1996, Congress passed the Telecommunications Act and directed this agency to update the system. That meant making once-implicit subsidies explicit, moving to a bill-and-keep regime where carriers' own customers support networks, and supporting carriers in expensive-to-serve rural areas with the universal service high-cost program.

If that sounds complicated, well, it is. Because the agency has been hard at work on that task ever since. We have come a long way, but there are still some entities determined to exploit this system. In particular, some companies artificially pump phone traffic to remote locations where they receive extra fees for terminating calls. Now that we have identified this loophole, we need to shut it down—and that is exactly what we do here. As complex as this is, our goal is simple: to make the system fairer and more efficient for everyone who pays a phone bill.

Thank you to the staff responsible for this effort, including Susan Bahr, Allison Baker, Ahuva Battams, Callie Coker, Lynne Engledow, Trent Harkrader, Heather Hendrickson, Edward Krachmer, Albert Lewis, Jodie May, Michael Nemcik, Jordan Marie Reth, Marvin Sacks, Michelle Slater, Gil Strobel, and Raphael Sznajder from the Wireline Competition Bureau; Stacy Jordan, Eugene Kiselev, Richard Kwiatkowski, Giulia McHenry, Eric Ralph, Michelle Schaefer, and Shane Taylor from the Office of Economics and Analytics; James Carr, Sarah Citrin, Michele Ellison, Andrea Kearney, Richard Mallen, William Richardson, William Scher, Jeffrey Steinberg, and Derek Yeo from the Office of General Counsel; Anthony DeLaurentis, Loyaan Egal, Lisa Griffin, and Rosemary McEnery from the Enforcement Bureau; and Cara Grayer and Joy Ragsdale from the Office of Communications Business Opportunities.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
The Uniendo a Puerto Rico Fund and the Connect USVI Fund	)	WC Docket No. 18-143
	)	
	)	
Connect America Fund	)	WC Docket No. 10-90
	)	

REPORT AND ORDER AND ORDER ON REVIEW

Adopted: April 19, 2023 **Released: April 19, 2023**

By the Commission: Chairwoman Rosenworcel issuing a statement.

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I. INTRODUCTION

1. In this Report and Order, we continue our efforts to bolster mobile and fixed voice and broadband services throughout Puerto Rico and the U.S. Virgin Islands (the Territories). In the aftermath of Hurricanes Maria and Irma in 2017, the Commission committed to ensuring the restoration, hardening, and expansion of advanced telecommunications networks in the Territories by creating the Bringing Puerto Rico Together Fund (PR Fund) and the Connect USVI Fund.[1] As part of these efforts, the Commission adopted a plan to support state-of-the-art mobile wireless networks in the Territories,

[1] *The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, WC Docket No. 18-143, Order and Notice of Proposed Rulemaking, 33 FCC Rcd 5404, 5408, para. 13 (2018) (*Stage 1 Order* or *Stage 2 NPRM*) (establishing the two stages of the Bringing Puerto Rico Together Fund and the Connect USVI Fund).

including the 5G services being deployed nationwide, and adopted a single-round competitive process to award fixed broadband support tied to defined broadband deployment obligations. Without Commission action, the support that mobile and incumbent fixed providers receive through these Funds will end by June 2023. The recent devastation caused by Hurricane Fiona in Puerto Rico, however, demonstrates the continued need for support to restore, harden, and expand critical communications infrastructure in areas prone to hurricanes.

2. We take action to ensure support for providers in the Territories to continue strengthening their existing networks. First, we extend the PR Fund and the Connect USVI Fund mobile support for up to two years, with support at 50% of its current monthly support level in the first year and 25% of its current monthly support level in the second year. We also extend phase-down frozen support for fixed voice and broadband providers until December 31, 2025. Our actions enable providers in the Territories to strengthen and harden mobile networks and make existing fixed networks more resilient and redundant while new networks are built. In addition, in this Order on Review, we deny the Puerto Rico Telephone Company's (PRTC) Application for Review of the Wireline Competition Bureau's (Bureau) Public Notice declaring Liberty Communications of Puerto Rico LLC (Liberty) as the winning applicant in the PR Fund Stage 2 competitive process with respect to certain municipios.[2] Based on the record before us, we find that PRTC failed to establish grounds to overturn the Bureau's decision. We therefore affirm the Bureau's determinations and deny the Application for Review.

II. BACKGROUND

3. Hurricane Irma and Hurricane Maria caused widespread devastation in the Territories in 2017. The destruction extended to the advanced telecommunications networks in the Territories, which left many residents isolated and unable to connect with family or emergency service personnel in the aftermath of the storms. In response to the hurricanes, the Commission acted quickly to aid in restoring service and to ensure the hardening and expansion of advanced telecommunications networks in the Territories by creating the PR Fund and the Connect USVI Fund.[3] As the Commission noted, however, simply restoring service to pre-2017 levels was not the only goal of the Funds; because the Territories continue to be subject to hurricanes, the long-term goal is to "facilitate the deployment of fast, resilient, and reliable networks to all parts of the islands that will stand the test of time and provide digital opportunity to all Americans living in Puerto Rico and the U.S. Virgin Islands."[4]

4. The PR Fund and the Connect USVI Fund support state-of-the-art mobile wireless and fixed networks. For mobile wireless, these Funds are leading to the expansion and hardening of 4G LTE networks and the deployment of next-generation 5G-New Radio (5G-NR) networks across the Territories.[5] For fixed services, by phasing down frozen high-cost support and replacing it with broadband-targeted support, these Funds are efficiently leading to deployment of resilient and redundant networks that will provide all locations in Puerto Rico with access to at least 100/20 megabits per second (Mbps), 31.5% of those locations with at least 1 gigabit per second (Gbps) download and 500 Mbps upload, and all locations in the U.S. Virgin Islands with access to at least 1 Gbps/500 Mbps.

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[2] Application of PRTC for Review of the Public Notice of the Wireline Competition Bureau Announcing Winners in the Uniendo a Puerto Rico Fund Stage 2 Competitive Process, WC Docket Nos. 18-143, 10-90 (filed Dec. 2, 2020) (Application for Review). PRTC subsequently modified its request for confidentiality as to portions of its Application for Review and refiled a copy of its Application for Review for public inspection on August 20, 2021. Letter from Edgar Class, Counsel for PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90, 14-58 (Aug. 20, 2021) (Amended PRTC Application) available at https://www.fcc.gov/ecfs/filing/10820800615610.

[3] *Stage 1 Order*, 33 FCC Rcd at 5408, para. 13.

[4] *The Uniendo a Puerto Rico Fund and the Connect USVI Fund et al.*, WC Docket No. 18-143, Report and Order and Order on Reconsideration, 34 FCC Rcd 9109, 9110, para. 2 (2019) (*2019 PR USVI Order*).

[5] *See 2019 PR USVI Order*, 34 FCC Rcd at 9167, 9171-72, paras. 114, 122-24.

5. In the midst of these efforts, the floods, landslides, and outages from Hurricane Fiona in 2022 demonstrated that communications infrastructure in these storm-prone insular areas must be further strengthened to withstand storm damage and have redundant capabilities, and that continuing support in the Territories for fixed and mobile providers is needed. The public safety benefits to be gleaned are vast: strengthening and adding redundancy to the communications infrastructure will better enable the general population and the authorities to notify, prepare, evacuate, locate, and rescue victims of natural disasters. With the currently authorized support for mobile wireless ending starting in June 2023 and the phase-down of frozen support for fixed voice and broadband ending in May 2023 (as newly funded networks are still being deployed), we provide continued, needed support to facilitate this transition by acting on proposals stemming from our October 2022 Further Notice of Proposed Rulemaking (*Transitional Support FNPRM*).[6]

A. Mobile Interim Support

6. In 2019, the Commission adopted the *2019 PR USVI Order*, which allocated additional support to facilitate the restoration of damaged mobile networks in Puerto Rico and the U.S. Virgin Islands, and to harden and deploy modern, high-speed, and storm-hardened advanced telecommunications networks.[7] The Commission adopted a three-year budget of up to $254.4 million for the PR Fund and up to $4.4 million for the Connect USVI Fund. These funds were intended to not only restore mobile network coverage to prior service levels, but also to foster greater access to advanced telecommunications for the Territories.[8]

7. The Commission provided eligible facilities-based mobile carriers a one-time election of funding for a three-year funding period with support based on their relative subscriber counts in the Territories before the 2017 hurricanes.[9] An eligible mobile carrier could elect to receive: (1) up to 75% of its total support allocated in the *2019 PR USVI Order* to restore, harden, and expand networks capable of providing 4G LTE or better services at outdoor data transmission rates of at least 10/1 Mbps;[10] and (2) up to 25% of its total eligible support allocated in the *2019 PR USVI Order* to deploy networks capable of providing 5G-NR service at outdoor data transmission rates of at least 35/3 Mbps.[11] Nearly all eligible mobile carriers in Puerto Rico and the U.S. Virgin Islands elected to receive 100% of their total eligible support to restore, harden, and expand 4G LTE and 5G-NR communication networks.[12]

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[6] *The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, WC Docket No.18-143, Further Notice of Proposed Rulemaking, FCC 22-79 (Oct. 28, 2022) (*Transitional Support FNPRM*) (seeking comment on providing transitional support for mobile providers while a long-term funding mechanism is established, and on extending the phase-down of frozen support to ensure the reliability of existing networks as new networks are deployed).

[7] *2019 PR USVI Order*, 34 FCC Rcd at 9162-63, 9166, 9167, paras. 101-102, 111-12, 114.

[8] *Id.* at 9166, para. 111.

[9] *Id.* at 9162-63, para. 101. Subscriber counts were based on June 2017 FCC Form 477 data. 47 CFR § 54.1509(c); *2019 PR USVI Order*, 34 FCC Rcd at 9164-65, paras. 106-107.

[10] 47 CFR §§ 54.1509(c), 54.1514(b)(1); *see also 2019 PR USVI Order*, 34 FCC Rcd at 9171, para. 122 (discussing 4G LTE).

[11] 47 CFR §§ 54.1509(c), 54.1514(b)(2); *see also 2019 PR USVI Order*, 34 FCC Rcd at 9172, para. 124 (discussing 5G-NR).

[12] *See Wireline Competition Bureau Authorizes Stage 2 Mobile Support for Certain Providers Participating in the Uniendo a Puerto Rico Fund and the Connect USVI Fund*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 6321, 6324, Attach. A (WCB 2020) (starting the support period in June 2020 for AT&T, PRTC, and T-Mobile in Puerto Rico, and AT&T in the U.S. Virgin Islands); *Wireline Competition Bureau Authorizes Stage 2 Mobile Support for T-Mobile in Puerto Rico*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 10303, 10305, Attach. A (WCB 2020) (authorizing additional mobile support in September 2020 for T-Mobile based on its acquisition of PR Wireless PR, LLC); *Wireline Competition Bureau Authorizes Stage 2 Mobile Support for Viya in the U.S. Virgin*

(continued….)

8. In addition to requiring specific network performance criteria, the Commission imposed obligations and reporting requirements on mobile recipients.[13] Where a recipient uses its high-cost support to harden its network, the recipient is required to demonstrate how it used the support by annually submitting a map and detailed narrative description of its network hardening activities from the prior calendar year.[14] The Commission also adopted interim and final benchmarks for the full restoration of mobile network coverage.[15] At the end of the three-year term of support, in 2023, each mobile support recipient must have restored its mobile network coverage to areas that are equal to or greater than 100% of its pre-hurricane coverage.[16] For the deployment of 5G-NR technology, the Commission required carriers to submit annual reports for the costs related to deployment during the preceding 12-month period.[17] Carriers must return any Stage 2 support that is not used to restore, harden, or expand their 4G LTE and 5G-NR capable networks.[18]

B. Fixed Support

9. For fixed broadband services, the *2019 PR USVI Order* adopted comprehensive funding mechanisms that would make services available to all locations throughout Puerto Rico and the U.S. Virgin Islands,[19] and ultimately authorized approximately $127.1 million of high-cost support in the Territories for a 10-year period.[20] The Commission employed a single-round competitive proposal process to select applicants based on the lowest score for a series of weighted, objective criteria for price and network performance, including speed, latency, and usage allowance.[21] The competitive proposal process also placed significant weight on resiliency and redundancy to account for the heightened risk of

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Islands, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 11555, 11557, Attach. A (WCB 2020) (starting the support period in October 2020 for Viya) (collectively *Mobile Authorization Notices*).

[13] 47 CFR §§ 54.313, 54.316, 54.1514(d), 54.1515.

[14] 47 CFR § 54.1514(d). The first deadline to submit reports was November 16, 2022. *Wireline Competition Bureau Revises Reporting Deadlines for PR-USVI Stage 2 Mobile Recipients*, WC Docket No. 18-143, Public Notice, DA 22-896 (WCB Aug. 29, 2022) (setting a deadline of November 16, 2022, for current support recipients to file their annual reports) (*Stage 2 Reporting Deadline Public Notice*).

[15] 47 CFR § 54.1513(b).

[16] *Id*. The Commission provided that the mobile network coverage milestones will be determined in comparison to the network coverage areas prior to the hurricanes based on June 2017 FCC Form 477 data. *2019 PR USVI Order*, 34 FCC Rcd at 9170, para. 119; *see also* 47 CFR §§ 54.1509(c), 54.1510.

[17] 47 CFR § 54.1514(e).

[18] 47 CFR § 54.1509(d); *2019 PR USVI Order*, 34 FCC Rcd at 9172, para. 125. PR-USVI Stage 2 support may also be used to deploy distributed antenna systems (DAS) networks within public or publicly accessible facilities that aid disaster response. *See Uniendo a Puerto Rico Fund and the Connect USVI Fund; Connect America Fund*, WC Docket No. 18-143, Declaratory Ruling, DA 22-719 (WCB 2022).

[19] *2019 PR USVI Order*, 34 FCC Rcd at 9146, 9148, paras. 67, 70.

[20] *Wireline Competition Bureau Announces Winning Applicants for the Connect USVI Fund Stage 2 Competitive Process*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 12921 (WCB 2020); *Wireline Competition Bureau Announces Winning Applicants for Uniendo a Puerto Rico Fund Stage 2 Competitive Process*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 12699 (WCB 2020)*; Connect USVI Fund Stage 2 Support Authorized for Broadband VI*, WC Docket No. 18-143, Public Notice, 36 FCC Rcd 9405 (WCB 2021) (*USVI Fixed Authorization Notice*); *Wireline Competition Bureau Authorizes Stage 2 Support for Puerto Rico Telephone Company and Liberty Communications of Puerto Rico*, WC Docket No. 18-143, Public Notice, 36 FCC Rcd 9914 (WCB 2021) (*PR Fixed Authorization Notice*) (collectively *Fixed Authorization Notices*).

[21] *Id.* at 9114-16, paras. 11, 13; *see also Uniendo A Puerto Rico Fund and Connect USVI Fund Notice and Filing Requirements and Other Procedures for Stage 2 Fixed Competitive Proposal Process*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 218, 220, 252-55, paras. 2, 124-34 (2020) (*Procedures Public Notice*).

natural disasters in the Territories. The applicant with the lowest combined overall score for each geographic area won support for that area.[22]

10. The Commission found that the existing annual universal service high-cost support provided to incumbents for fixed services in Puerto Rico ($36.3 million) and the U.S. Virgin Islands ($16 million) would no longer be necessary because of these new funding mechanisms and should be phased out. The Commission further noted that the existing frozen support was not tied to specific and accountable build-out targets.[23] As a result, the Commission directed the phase-down of existing frozen support in the Territories, where an incumbent carrier that did not win high-cost support for a specific geographic area would receive 2/3 of its frozen support for the first 12 months following authorization of the winning applicants; 1/3 of its frozen support in the second 12-month period; and zero frozen support thereafter.[24]

11. Following the competitive processes, the Bureau announced the winning carriers and authorized them to receive fixed support.[25] Each support recipient is required to "deploy a network that is fully capable of delivering speeds and usage allowances that meet or exceed—and latency that meets or falls below—the relevant standards to all locations within the geographic area."[26] Thus, as a condition of receiving support, each winning carrier must deploy to all locations within a geographic area to meet the Commission's goals of ensuring resilient service to all parts of the Territories and its decision to make all locations eligible for support.[27] Using the most recent data available at the time, the Bureau determined there to be approximately 46,039 locations in the USVI and 1,222,508 locations in Puerto Rico where the winning carriers must make voice and broadband services available.[28] Each winning carrier must complete its network deployment such that it will begin offering mass-market service to 40% of the locations in its service area by December 31, 2024, with an additional 20% deployment required each subsequent year and 100% deployment to all locations by December 31, 2027.[29]

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[22] *2019 PR USVI Order,* 34 FCC Rcd at 9140, para. 52.

[23] *Id.* at 9156, para. 87. Frozen support was authorized in the *2011 Connect America Fund Order*, when the Commission announced that "all existing legacy high-cost support to price cap carriers" would be frozen at its current amount, and the price cap carriers that accepted that support would be subject to deployment obligations. *Connect America Fund*, WC Docket No. 10-90, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17673, para. 22 (2011). In the *December 2014 Connect America Fund Order*, WC Docket No. 10-90, Report and Order, 29 FCC Rcd 15644, 15661-63, paras. 45-49 (2014), the Commission decided to allow price-cap carriers in insular areas, including Puerto Rico and the U.S. Virgin Islands, to elect to continue receiving frozen high-cost support amounts in exchange for accepting tailored service obligations to be adopted at a later date. PRTC (in Puerto Rico) and Viya (in the U.S. Virgin Islands) elected to receive frozen support, and the Commission subsequently established in 2019 specific service obligations for competitive carriers as part of Stage 2 of the Bringing Puerto Rico Together Fund and the Connect USVI Fund. *2019 PR USVI Order*, 34 FCC Rcd at 9121-46, paras. 21-66.

[24] *Id.* at 9156, para. 87; 47 CFR § 54.1504(b).

[25] *See Fixed Authorization Notices*.

[26] *2019 PR USVI Order,* 34 FCC Rcd at 9121, para. 22.

[27] *Id.* at 9143, para. 59.

[28] *Wireline Competition Bureau Releases Updated List of Reserve Prices and Location Counts for the Uniendo a Puerto Rico Fund and Connect USVI Fund Stage 2 Fixed Support Competitive Proposal Process*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 8228, Attach. (2020).

[29] 47 CFR § 54.1506; *USVI Fixed Authorization Notice*, 36 FCC Rcd at 9407; *PR Fixed Authorization Notice*, 36 FCC Rcd at 9916. The Commission recognized when adopting the requirement that all locations be served in Puerto Rico and the USVI that specific data available at that time regarding the number of actual locations might be inaccurate and that population shifts following the Hurricanes could affect the number of locations. *2019 PR USVI Order,* 34 FCC Rcd at 9143, para. 60. The Commission established a location adjustment process to resolve

(continued….)

12. In the *Fixed Authorization Notices*, the Bureau also announced that the frozen support the incumbents received would be phased down in accordance with the *2019 PR USVI Order*, with phase-down support ending entirely by May 2023.[30] The phase-down support amounts specified in the *Fixed Authorization Notices* would immediately replace the frozen support the incumbent previously received for areas where another applicant's competitive proposal was selected as the winning proposal.[31]

13. In light of the approaching end of the phase-down of frozen support for fixed service and the end of Stage 2 mobile support, we issued the *Transitional Support FNPRM* in October 2022.[32] In the *Transitional Support FNPRM*, we sought comment on "proposals to ensure that mobile carriers continue to implement advanced telecommunications services and that fixed providers have sufficient resiliency and redundancy during the transition periods of the Bringing Puerto Rico Together Fund and the Connect USVI Fund."[33]

III. REPORT AND ORDER

14. After a careful review of the record, we adopt many of our proposals from the *Transitional Support FNPRM*. For mobile service, we adopt a transitional support period of up to 24 months, which will allow support recipients to continue to receive support for hardening their networks as we work to develop a long-term funding mechanism. For fixed service, we extend the phase-down of frozen support at its current monthly amount until December 31, 2025. This extension of support will allow those fixed providers to harden their networks and ensure continuous service as new, storm-hardened networks are deployed throughout the Territories.

A. Transitional Funding for Mobile Services

15. We adopt a transitional support period of up to 24 months for eligible facilities-based mobile carriers currently receiving Stage 2 mobile support. In the *Transitional Support FNPRM,* we sought comment on a number of issues relating to the provision of mobile support: whether transitional support should be provided after the current Stage 2 funding ends; the proper level of transitional support until a long-term funding mechanism is established; the appropriate length of a transitional support schedule; and several other issues.[34]

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discrepancies between the estimated number of locations identified by the Bureau and the actual total number of all locations, to which the winning applicant must deploy qualifying voice and broadband. *2019 PR USVI Order*, 34 FCC Rcd at 9144-46, paras. 63-66. A winning carrier may seek to reduce its deployment obligations within its winning area if it is able to demonstrate by a preponderance of the evidence that there are fewer locations that exist than identified by the Bureau as part of a mandatory one-year location adjustment process. *Id.* at 9144-45, paras. 63-65. Moreover, a winning carrier may seek a voluntary reassessment of the number of locations after the fifth year of support. This reassessment process "will allow the Bureau to determine whether to adjust any deployment requirements based on newly-available data or changes in circumstances." *Id*. at 9145-46, para. 66. Thus, if the actual number of locations, all of which must be served, in a municipio or island is higher or lower than what was initially determined, support can be adjusted accordingly. Although the location adjustment process is currently delayed, the Bureau expects to implement the adjustment process based on an internal review of the Broadband Data Collection's Fabric data and broadband availability map.

[30] 47 CFR § 54.1504(b); *see also USVI Fixed Authorization Notice*, 36 FCC Rcd at 9410; *PR Fixed Authorization Notice*, 36 FCC Rcd at 9919-20.

[31] *2019 PR USVI Order*, 34 FCC Rcd at 9156, para. 87. *See also USVI Fixed Authorization Notice*, 36 FCC Rcd at 9410; *PR Fixed Authorization Notice*, 36 FCC Rcd at 9919-20.

[32] *Transitional Support FNPRM*.

[33] *Id*. at 2, para. 2.

[34] *Id.* at 4-8, paras. 10-20.

16. *Transition for Mobile Support*. In the *Transitional Support FNPRM,* we proposed a period of transitional support so carriers currently receiving Stage 2 mobile support would not see their support abruptly end at the conclusion of Stage 2.[35] We also sought comment on whether all facilities-based carriers that receive Stage 2 mobile support should be eligible to receive transitional support.[36]

17. Commenters unanimously supported our proposal for the provision of transitional support, which we now adopt.[37] The record shows that if we do not provide transitional support after the conclusion of Stage 2, all mobile wireless carriers receiving Stage 2 support would face a sudden, significant loss of support, which could harm their ability to provide service to consumers and endanger critical communications needs. With heightened risk from hurricanes, any lapse in funding, no matter how brief, may undermine progress made in increasing the robustness of existing 4G LTE services and 5G-NR services.[38] We conclude that it is in the public interest to provide transitional support to help carriers strengthen and harden their existing networks and make advanced telecommunications service more resilient. This support will be for a limited period while we develop a long-term funding mechanism for mobile support in the Territories.

18. *Eligibility for Transitional Support*. We limit eligibility for transitional support to the facilities-based providers currently receiving Stage 2 mobile support in a given area. While T-Mobile proposed expanding eligibility to all facilities-based mobile carriers, including those that do not currently receive Stage 2 mobile support in a given area, if the transitional support amount we adopt is lower than existing Stage 2 mobile support,[39] we decline to adopt this proposal. Our goal in providing transitional support is ensuring that the current recipients are able to continue their existing efforts to strengthen their networks until a long-term funding mechanism is established. We believe that eligibility for other potential support recipients is best addressed as part of a long-term funding mechanism. Allowing other carriers to receive transitional support would require additional resources to administer, which would then delay and thwart the goal of this transitional support—to ensure that current support recipients can continue serving consumers without interruption.

19. *Transitional Support Schedule*. We adopt a 24-month transitional support schedule, with support ending before 24 months if a long-term funding mechanism is established. In the *Transitional Support FNPRM*, we proposed a support schedule of up to 24 months—beginning in the month immediately following the conclusion of each eligible carrier's current Stage 2 mobile support—in order to ensure continuous funding for recipients of Stage 2 mobile support. We also proposed ending transitional support once support is authorized under a long-term funding mechanism, even if such support was authorized before the 24-month period ended. Finally, we sought comment on extending the 24-month schedule if authorizations under a long-term funding mechanism have not occurred by that time.[40]

20. Commenters generally supported our proposal of establishing a 24-month transitional support schedule, and having that support end before 24 months if a long-term funding mechanism is established.[41] We now adopt that proposal. Transitional support will extend for 24 months after the end of the current term for Stage 2 mobile support and will end the month after a long-term funding mechanism is established, if such mechanism is established before the 24-month period ends.

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[35] *Id.* at 4-5, para. 11.

[36] *Id*. at 5, para. 11.

[37] *See, e.g.*, Liberty Comments at 9; T-Mobile Comments at 2.

[38] *Transitional Support FNPRM* at 5, para. 12.

[39] T-Mobile Comments at 7-8.

[40] *Transitional Support FNPRM* at 5, paras. 12-13.

[41] Liberty Comments at 9; T-Mobile Comments at 2.

Specifically, we will deem the long-term funding mechanism established the month after such support is authorized. Furthermore, we emphasize that no carrier shall receive transitional support and long-term support in the same month.

21. Many commenters supported automatically extending the 24-month schedule if a long-term funding mechanism has not been established by the end of the 24-month schedule.[42] We decline to adopt this proposal. We believe that transitional funding is only meant to have a limited duration. Although PRTC noted that the Commission should act now to permit transitional support to continue until there is a long-term mobile funding mechanism in place in order to conserve public resources and protect against any potential gap in funding,[43] it is not in the public interest to commit to maintaining funding beyond 24 months without our first examining its effects on network hardening and resiliency, or any other changed circumstances in the Territories. We conclude that we will be able to better determine the appropriate support amount in the future once we have been able to evaluate the effectiveness of transitional support, and we therefore decline to extend transitional support beyond its scheduled 24-month period.

22. *Transitional Support Amounts*. In the *Transitional Support FNPRM,* we proposed providing transitional support to all current support recipients in the amount that they currently receive for 5G-NR technologies, meaning that carriers would receive 25% of their current monthly support amount as transitional support for both years of the transitional support period.[44] We tentatively concluded that carriers had rebuilt and hardened their existing 4G-capable networks, and, as a result, less support would be required moving forward as we focused on facilitating the deployment of 5G-NR service.[45]

23. Commenters generally opposed our proposal to reduce support to 25% of current monthly levels.[46] Commenters argued that the proposed support reduction would leave them unable to sufficiently harden their existing networks, which would ultimately harm consumers.[47] Other commenters argued that reduced support would impair 5G-NR deployment.[48] After careful consideration of the record, we adopt a modified version of our proposal, and will provide transitional support recipients with 50% of their current monthly support level for both 4G LTE and 5G-NR[49] in the first year of transitional support, then

[42] PRTC Comments at 5-6; Liberty Comments at 9.

[43] PRTC Comments at 6-7.

[44] *Transitional Support FNPRM* at 5-7, paras. 14-15.

[45] *Id.* at 5-6, paras. 14-15.

[46] *See, e.g.*, Liberty Comments at 2-3; T-Mobile Comments at 2-3. In its recent filing, T-Mobile argues that setting transitional support at an amount below the current level of Stage 2 mobile support could constitute a violation of the Administrative Procedure Act. Letter from Indra Sehdev Chalk, T-Mobile USA, Inc., to Marlene Dortch, Secretary, FCC, WC Docket No. 18-143 et al., at 2-3 (filed Apr. 14, 2023) (T-Mobile *Ex Parte*). We disagree. While commenters, all but one of whom currently receive Stage 2 mobile support, opposed our proposal to make the amount of transitional support lower than the current amount of Stage 2 mobile support, our judgment, as explained in more detail below, is that less support will be needed during the brief transitional support period, as Stage 2 support recipients have largely rebuilt their networks to their pre-hurricane status. *See infra* para. 24.

[47] *See, e.g.*, PRTC Comments at 8-9; Letter from Ferdinand Ramos-Soegaard, Interim President of the Puerto Rico Telecommunications Bureau, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90 (filed Apr. 17, 2023).

[48] PRTC Comments at 11-13.

[49] We note that the transitional support amount we adopt is based on the monthly Stage 2 mobile support amount an eligible carrier receives and not the total eligible pro-rated Stage 2 mobile support amount that was previously authorized to carriers based on Form 477 subscriber data. *See 2019 PR USVI Order*, 34 FCC Rcd at 9165-66, paras. 109-10.

25% of their current monthly support in the second year of transitional support.[50] We believe that these support amounts strike the appropriate balance between managing our limited universal service funding resources and providing sufficient support to ensure that consumers in the Territories receive the benefits of strengthened networks.

24. We disagree with some commenters who argue that the transitional support amounts should remain the same as the Stage 2 support amounts.[51] When we announced the three-year funding period for Stage 2, we were clear that we would "revisit the amount of support necessary to further expand and/or harden mobile service available in the Territories."[52] As we noted in the *Transitional Support FNRPM*, we had tentatively found that carriers in the Territories will have sufficiently restored and hardened their networks to at least pre-hurricane levels by the conclusion of Stage 2,[53] so the level of transitional support should be lower than the current level of Stage 2 mobile support. While some support recipients argue that they have existing network upgrade plans that will cost more than the transitional support amounts they would receive,[54] the primary goal of Stage 2 mobile support was to help carriers restore their networks to at least their pre-hurricane status and to foster greater access to advanced telecommunications services in the Territories. We find those goals have been met.[55] The purpose of transitional support, in contrast, is to seamlessly provide some support that existing support recipients must use to harden mobile wireless networks to protect against future natural disasters.[56] As such, we find it appropriate to address additional support for 5G-NR deployment through a long-term funding mechanism rather than the transitional support considered here.[57] Accordingly, based on the progress that Stage 2 support recipients have already made, we do not believe that transitional support should continue at its current levels, and we adopt a reduced level of transitional support that will allow recipients to continue to make progress on strengthening and protecting their existing networks.

25. *Appropriate Use of Support*. In the *Transitional Support FNPRM,* we noted our past conclusion that carriers were rapidly investing in 5G-NR service throughout the United States and that

[50] We recognize that current mobile support will end at different times for eligible carriers. *Supra* note 12. Therefore, we clarify that the first year of transitional support means the 12-month period in which transitional support is authorized following the end of each carrier's current Stage 2 mobile support. Likewise, the second year of support means the period of time encompassing transitional support for the 13th through 24th months following the end of Stage 2 mobile support.

[51] *See* PRTC Comments at 4; T-Mobile *Ex Parte* at 1-2.

[52] *2019 PR USVI Order*, 34 FCC Rcd at 9167, para. 115.

[53] *Transitional Support FNPRM* at 6, para. 14.

[54] *See, e.g.*, PRTC Comments at 8; Letter from Robert L. Hoegle, Counsel for Liberty, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90 (filed Apr. 18, 2023) (Liberty *Ex Parte*). To the extent that Liberty's projected expenditures will exceed the amount of support it will receive in the future, we note that the purpose of transitional support is not to cover the entirety of a recipient's costs; instead, our focus is to bolster carrier spending to harden networks. *2019 PR USVI Order*, 34 FCC Rcd at 9164, para. 106.

[55] Certified FCC Form 477 data submitted by each mobile support recipient demonstrates that more than 66% of its network coverage area, and nearly all mobile coverage, has been restored to pre-2017 hurricane levels. *See* Mobile Deployment Form 477 Data, available at https://www.fcc.gov/mobile-deployment-form-477-data, *and* PRTC Comments at 4 (stating that "full restoration of network coverage areas to pre-hurricane Maria levels using 4G LTE or better technologies has been accomplished"); Mobile Deployment Form 477 Data, available at https://www.fcc.gov/mobile-deployment-form-477-data.

[56] Because we believe that the provision of transitional support should be as seamless as possible, we also decline Viya's proposal to adopt new support amounts in the U.S. Virgin Islands by "updat[ing] market share allocations to reflect current conditions pending adoption of a more complete and cohesive permanent mechanism." Viya Reply at 7.

[57] *See* PRTC Comments at 11-13.

mobile customers in the Territories should not receive substandard service.[58] Based on our observation that carriers are moving toward 5G-NR deployment, we proposed limiting transitional support to "restoring, hardening, or expanding networks with 5G-NR-capable networks, and to end use of this support for 4G LTE."[59] We alternatively sought comment on allowing support recipients to use transitional support to "restore (as necessary), harden, or expand networks with 4G LTE and 5G-NR baseline performance requirements and standards set forth in the *2019 PR USVI Order* or any subsequent standard adopted by [the] Commission."[60]

26. Some commenters supported requiring transitional support to be used on 5G-NR-capable networks;[61] others disagreed, stating that limiting support to 5G-NR networks was too restrictive.[62] Additionally, many commenters asked us to clarify that transitional support could be used on 4G-capable networks if that support would benefit a shared 4G and 5G-NR network.[63] One commenter also proposed a waiver process that would allow transitional support to be used on 4G LTE networks.[64]

27. We conclude that recipients of transitional support must use it to improve the redundancy and resiliency of facilities for 4G LTE or better technologies, including the maintenance of backup power systems for such networks, to help ensure continuity of service by preventing or withstanding damage from natural disasters. While long-term 5G-NR network expansion is important, it is paramount, as Hurricane Fiona reminded us, that networks remain operational during times of natural disaster during this transitional period. To ensure that networks remain operational, ubiquitous hardening is necessary.[65] Consequently, we determine that transitional support must be used for redundancy and resiliency for any part of the network with 4G LTE or better technologies. Transitional support may be used for either current facilities or for newly built facilities, as we expect carriers will continue network expansion. Furthermore, recognizing the short-term nature of the support but still cognizant of recipients' time needed to plan, we require all transitional support to be spent within one year of the conclusion of the transitional support period.[66]

28. While we encourage transitional support recipients to use funding for 5G-NR networks, we are also mindful of the short-term nature of transitional support and of the importance of hardened, resilient, and redundant networks. We also note that some physical infrastructure of 5G-NR-capable networks may be inseparable from the infrastructure of 4G LTE-capable networks,[67] such that an investment in a carrier's network may benefit both 4G LTE- and 5G-NR-capable networks. Limiting transitional support to 5G-NR networks could ultimately end up harming the residents of the Territories who rely on existing 4G LTE and 5G-NR-capable networks.[68] By allowing transitional support recipients

[58] *Transitional Support FNPRM* at 7, para. 16 (citing *2019 PR USVI Order*, 34 FCC Rcd at 9170-71, para 121).

[59] *Transitional Support FNPRM* at 7, para. 16 .

[60] *Id*.

[61] *See, e.g.,* T-Mobile Comments at 6.

[62] PRTC Comments at 16.

[63] Liberty Comments at 10; PRTC Reply at 14.

[64] PRTRB Comments at 5-6.

[65] PRTRB Reply at 3-4.

[66] *See infra* Appendix A, 47 CFR § 54.1516(d). *Cf*. Letter from L. Charles Keller, Counsel, Viya, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-143, at 2 (filed Mar. 17, 2023) (Viya *Ex Parte*) (noting the "permitting and power issues that all providers in the Territory face").

[67] Liberty Comments at 10 (noting that, in some cases, the 4G and 5G networks use shared sites).

[68] Because transitional support may be used on both 4G and 5G-capable networks, we do not need to address the proposed waiver process that would allow transitional support to be used on 4G networks. PRTRB Comments at 5-6.

to use the support for both 4G LTE and 5G-NR-capable networks, we believe that we will encourage the deployment of 5G-NR service while also ensuring resilient networks.

29. *Eligible Areas*. In the *Transitional Support FNRPM,* we sought comment on continuing to allow support to be used throughout Puerto Rico and the U.S. Virgin Islands.[69] We also sought comment on limiting transitional support to less-populated areas of the Territories based on data from the Broadband Data Collection (BDC), and on whether alternative geographic or population limitations would be appropriate.[70]

30. Commenters unanimously supported allowing transitional support to be used throughout the Territories.[71] We agree, and do not impose a geographic requirement on where transitional support may be used within each Fund's respective territory. While we are mindful of our obligation to use data from the BDC,[72] we conclude that because we intend for carriers to use transitional support to strengthen and harden existing networks, it would be more appropriate to allow transitional support to be used throughout the Territories.[73] The entirety of these Territories are at risk from hurricanes, so geographically limiting where carriers can spend transitional support could hinder the benefit we aim to achieve. Additionally, we emphasize that this Order only establishes a short-term, transitional funding mechanism. We anticipate that the BDC maps will be an integral and fundamental part of a long-term funding mechanism.[74]

31. *Minimum Service Requirements and Reporting*. We adopt the Stage 2 performance and reporting requirements for carriers receiving transitional support, with a few modifications, consistent with our decisions in this Order. In the *Transitional Support FNPRM,* we proposed that carriers receiving transitional support "continue to be subject to performance and reporting requirements during the transitional support period."[75] We sought comment on the specific requirements to adopt and noted that current support recipients must: (1) comply with minimum service requirements for 4G LTE and 5G-NR technologies, (2) file reports and data regarding the use of support for hardening networks and 5G-NR technology deployment, (3) maintain a Disaster Preparation and Response Plan, and (4) perform mandatory reporting using the Disaster Information Reporting System (DIRS).[76]

32. Commenters generally supported our proposals, and several commenters stated that the minimum service requirements and reporting requirements for transitional support should remain the same as the current Stage 2 requirements, to minimize disruption as Stage 2 ends.[77] We agree with these commenters and adopt the Stage 2 performance and reporting requirements for carriers receiving transitional support, with a few modifications to reflect our decisions in this Order. We will continue to

[69] *Transitional Support FNPRM* at 7, para. 17.

[70] *Id.*

[71] *See, e.g.*, PRTC Comments at 16; Liberty Comments at 11-12.

[72] *See* Pub. L. No. 116-130, 134 Stat. 228, 236 (regarding use of the Commission's Broadband DATA Act coverage maps "when making any new award of funding with respect to the deployment of broadband internet access service intended for use by residential and mobile customers").

[73] Furthermore, transitional support is not for "the deployment of broadband Internet access service" but is instead for the hardening of networks. *See* 47 U.S.C. § 642(c)(2)(B).

[74] *See, e.g.*, PRTRB Comments at 5 (arguing that maps should be used to more efficiently target support as part of a long-term funding mechanism).

[75] *Transitional Support FNPRM* at 8, para. 18; *see id.* at 7-8, para. 18 (tentatively concluding that "in exchange for accepting transitional support, each mobile carrier must commit to accountability measures for deployment in the Territories").

[76] *Id*.

[77] *See, e.g.*, T-Mobile Comments at 6-7; PRTC Comments at 17-18.

require support recipients to file (1) an annual map reporting the network hardening activities undertaken during the prior calendar year; and (2) a detailed narrative description of the network hardening activities identified and of how it made use of the support to facilitate those network hardening activities.[78] Given that the intended use of the support is to strengthen and harden rather than expand networks, transitional support recipients will not have to file reports detailing their 5G-NR technology deployment.[79] Support recipients also must maintain a Disaster Preparation and Response Plan and perform mandatory DIRS reporting.[80] In addition, carriers will be subject to the same minimum service requirements for 4G LTE and 5G-NR service that currently exist for Stage 2 mobile support.[81]

33. *Minimum Security Reporting and Requirements*. We also require transitional support recipients to submit network security reports. In recognition of the importance of network security, in the *Transitional Support FNPRM*, we proposed requiring transitional support recipients to "report and explain the network security controls that [they have] implemented and how they are commensurate with established best practices or an established risk management framework."[82] In addition, we sought comment on requiring transitional support recipients to "report and explain to the Commission instances of unauthorized access to their systems and services."[83]

34. As noted in the *Transitional Support FNPRM*, the "provision of advanced services necessitates a recognition that such services, in order to be effective and available, must be reasonably secure."[84] All commenters agreed that requiring a report on network security controls is appropriate.[85] Accordingly, we require transitional support recipients to submit a network security report by August 31, 2023, that identifies and explains the network security controls implemented, their effectiveness in fending off cyberattacks and how those controls are commensurate with established network security best practices and standards or an established risk management framework.[86] A second report will be due by March 31, 2025, and will cover the time period between August 31, 2023 and March 1, 2025. These two reports will allow us to monitor changes and developments during the transitional support term. We note that commenters disagreed about whether we should require transitional support recipients to report and

[78] *See* 47 CFR § 54.1514(d). The Bureau will publish a Public Notice detailing what must be provided in the hardening report.

[79] Nonetheless, we note that information collected from the BDC will provide information on any network expansion. *See* 47 CFR § 1.7004(c)(3)-(7).

[80] *See* 47 CFR § 54.1515.

[81] *2019 PR USVI Order,* 34 FCC Rcd at 9171-72, paras. 122-24.

[82] *Transitional Support FNPRM* at 8, para. 19.

[83] *Id*.

[84] *Id*.

[85] *See, e.g.*, Liberty Comments at 12, PRTRB Comments at 6-7.

[86] *See, e.g.*, NIST Computer Security Resource Center, Getting Started with the NIST Cybersecurity Framework: A Quick Start Guide (April 19, 2022), https://csrc.nist.gov/Projects/cybersecurity-framework/nist-cybersecurity-framework-a-quick-start-guide (providing a system development process that prepares an organization to identify, protect against, detect, respond to, and recover from cyber threats); NIST Computer Security Resource Center, About the NIST Risk Management Framework (July 14, 2022), https://csrc.nist.gov/projects/risk-management/about-rmf (providing a system development process that prepares an organization to manage security and privacy risks by categorizing the system and information processed, stored and transmitted by the system, selecting and implementing controls to protect the system, and continuously assessing the system to determine if the controls are providing the desired results); Cybersecurity and Infrastructure Security Agency (CISA), Cross-Sector Cybersecurity Performance Goals, https://www.cisa.gov/cross-sector-cybersecurity-performance-goals (last visited Apr. 18, 2023).

explain unauthorized network access.[87] While unauthorized access to systems and services is an important issue for networks we support, we find the record insufficient to make a determination at this time.[88] Accordingly, we will require transitional support recipients to submit network security reports but not report on unauthorized network access. Due to the inherently sensitive nature of information describing network security, we will treat these reports as presumptively confidential.[89]

35. *Election of Transitional Support*. In the *Transitional Support FNPRM*, we proposed requiring transitional support recipients to affirmatively elect to receive that support.[90] Commenters supported this idea,[91] which we now adopt. We believe requiring recipients to affirmatively elect to receive transitional support will ensure that they understand the specific requirements that come with accepting that support. Accordingly, eligible mobile carriers may elect to receive transitional support from their respective funds through an election process.

36. Carriers shall submit their election letters through the Commission's Electronic Comment Filing System (ECFS) specifically referencing the PR Fund and Connect USVI Docket Number 18-143 and to the Bureau at ConnectAmerica@fcc.gov within 15 days of the publication of this Order in the Federal Register. To elect the transitional mobile support, a carrier must submit a letter signed by an officer of the company confirming that the carrier elects the transitional mobile support described above and commits to satisfy the specific service obligations and requirements. If a carrier fails to submit any final election letter by the deadline, it will be deemed to have declined the transitional mobile support offer and will no longer continue to receive mobile high-cost support as part of either the PR Fund or the Connect USVI Fund. Carriers submitting election letters will receive an e-mail confirming that their election letters have been received and reviewed for completeness, and should contact the Bureau no later than five business days following the deadline if they have not received such confirmation.

B. Extending Interim Support to Ensure Fixed Service in Puerto Rico and the U.S. Virgin Islands

37. As discussed in more detail above,[92] as part of the *2019 PR USVI Order*, the Commission adopted a comprehensive long-term funding mechanism for fixed voice and broadband in the Territories via a single-round competitive proposal process (Stage 2 fixed support). Proposals were evaluated based on a series of objective criteria. As part of that funding mechanism, existing frozen support for fixed broadband is being phased down, with frozen support for providers that did not win long-term support in

[87] *Compare* Liberty Comments at 12 (voicing support for requiring support recipients to report unauthorized network access), *with* PRTC Comments at 18-19 (stating that a separate proceeding to determine reporting requirements for unauthorized access would be appropriate).

[88] We encourage support recipients to report instances of unauthorized access to CISA pursuant to the NIST Computer Security Incident Handling Guide. *See* CISA, Report to CISA, https://www.cisa.gov/report (last visited Apr. 18, 2023); NISA, Computer Security Incident Handling Guide, NIST Special Publication 800-61 Revision 2 (2012) https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-61r2.pdf. We also encourage support recipients to inform the Commission when they have reported instances of unauthorized access to CISA.

[89] PRTC Comments at 18.

[90] *Transitional Support FNPRM* at 8, para. 20.

[91] *See* T-Mobile Comments at 7; PRTC Comments at 20.

[92] *See supra* Section II.B.

an area currently at 1/3 of their legacy support[93] and scheduled to end by May 2023. Providers authorized for Stage 2 fixed support have their first mandatory service milestone on December 31, 2024.[94]

38. In light of the 19-month gap between the end of existing frozen support for incumbent providers that did not win long-term support in an area and the first deployment obligation for the winners of the competitive proposal process, as well as the ongoing threat of natural disasters, we proposed in the *Transitional Support FNPRM* to freeze the provision of phase-down support at the current 1/3 support level until December 31, 2025, and we sought comment on alternative support schedules and appropriate uses of phase-down support.[95]

39. We adopt our proposal to extend phase-down support frozen at 1/3 of the current support level until December 31, 2025, to avoid leaving incumbent providers that did not win support in an area with insufficient resources to maintain their existing networks until the long-term support recipients have made substantial progress deploying their networks. Upon examination of the record, we believe that this extension most effectively addresses our concerns about the resilience of existing networks while also protecting limited universal service resources.

40. We agree with commenters who note the potential for disruption for residents of the Territories, as the long-term support recipients may not be able to broadly provide high-speed service until their networks are more fully deployed,[96] and this could leave residents of the Territories without service.[97] Moreover, consistent storm activity requires that the Territories' networks are resilient and capable of providing service to residents in the event of natural disasters. As commenters note, while significant progress has been made in restoring and hardening the Territories' existing networks, more work remains to be done.[98]

41. We reject the arguments of legacy providers and the PRTRB that frozen support should be extended beyond the 31-month period we provide.[99] Viya, which supports an extension of frozen support until December 31, 2027, states that when the phase-down ends, it will relinquish its Eligible Telecommunications Carrier (ETC) designation, and many existing consumers could be left without reliable high-speed internet service until Broadband VI fully fulfills its Stage 2 commitments.[100] PRTC, which supports the same extension, argues that terminating frozen support when the competitive support recipient has deployed to 60% of the population of a given area would leave the other 40% of that population at risk of losing access to reliable communications services.[101]

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[93] As the Commission provided in the *2019 PR USVI Order*, the amount of frozen support for a geographic area is based on the percentage of fixed Stage 2 support the model allocated to the area because it ties frozen support to an estimate of the relative cost of serving different geographic areas. *2019 PR USVI Order*, 34 FCC Rcd at 9156, para. 87.

[94] 47 CFR § 54.1506.

[95] *Transitional Support FNPRM* at 9-11, paras. 21-26.

[96] Viya Comments at 7.

[97] *See, e.g.*, PRTC Comments at 21-22.

[98] PRTRB Comments at 2. *See also* Letter from Edgar Class, Counsel for Puerto Rico Telephone Company, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90 (filed Feb. 22, 2023).

[99] *See, e.g.*, Viya Comments at 8-10; PRTC Comments at 20-22. *See also* Letter from Edgar Class, Counsel for PRTC, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-143 et al., at 1-2 (filed Apr. 7, 2023); Letter from Edgar Class, Counsel for PRTC, to Marlene Dortch, Secretary, FCC, WC Docket No. 18-143 et al., at 1-2 (filed Apr. 14, 2023) (PRTC April 14 *Ex Parte*).

[100] Viya Comments at 8.

[101] PRTC Comments at 21-22.

42. The PRTRB argues that extending support is necessary to ensure that no areas are left without service during the transition to competitive support[102] and asserts that, while it is mindful of our commitment to efficiently target support, the priority during this transition period should be on ensuring service for the most people.[103] Additionally, the PRTRB argues that even if a competitive provider met its deployment obligation before the deadline, phase-down support should not be terminated before its scheduled end date, as the existing physical infrastructure of the incumbent LEC may not have fully depreciated.[104]

43. We are unpersuaded that these arguments justify an extension of phase-down support until December 31, 2027, for several reasons. Notably, PRTC has stated that it will continue to offer service in the areas where it did not win competitive support even after its phase-down support has ended.[105] Viya, which serves 98% of the locations in the U.S. Virgin Islands, does not explain why our proposal to provide an additional 31 months of phase-down support to harden its existing network[106] would be insufficient to ensure long-term network resiliency and redundancy and result in the decision to discontinue offering service to existing locations within its already-existing network. Indeed, it makes little sense to immediately cease providing service on a network which will have been hardened with several years of Universal Service Fund (USF) support. While Viya again raises the possibility of relinquishing its ETC designation, as the Commission previously noted, "Viya remains subject to section 214 discontinuance approval obligations and to carrier of last resort requirements which collectively guard against an abrupt loss of service."[107] Given the record before us, we are not convinced that customers in Puerto Rico and the U.S. Virgin Islands will face a significant risk of losing service once phase-down support ends.[108] Because it would make sense for the incumbent carriers to continue offering service in the areas where they previously received phase-down support and continue to invest in their existing networks, we believe that it would also make sense for them to continue to ensure that they have a sufficiently resilient network in those same areas in order to continue offering voice and broadband service even after phase-down support ends.

44. We also reject the arguments of Liberty, which won competitive support in both Puerto Rico (as Liberty Communications PR) and the U.S. Virgin Islands (as Broadband VI)[109] that phase-down support should not be extended at all beyond the current May 2023 deadline. Liberty argues that extending phase-down support would be wasteful and that it would be unfair to Liberty, which relied

[102] PRTRB Comments at 7-8.

[103] *Id.* at 8.

[104] *Id.* at 8.

[105] PRTC Reply at 4.

[106] *See infra* para. 48.

[107] *2019 PR USVI Order*, 34 FCC Rcd at 9158, para. 90 (internal citations omitted).

[108] For these same reasons, we disagree that extending phase-down support until December 31, 2025, would have a negative impact on digital equity. *See* Viya Comments at 2. We also disagree with the PRTRB's argument that phase-down support should continue even after 100% deployment occurs. PRTRB Comments at 8-9. To continue phase-down support after 100% deployment of a resilient, storm-hardened network would be an inefficient use of Universal Service Fund resources, as it would fund duplicative networks in the same area, without regard for balancing the necessary provision of support and our goal of efficient Fund administration. Likewise, we reject PRTC's argument that we should extend the phasedown to the end of 2027. PRTC April 14 *Ex Parte* at 1-2. Even though the use of phase-down support will be limited to increasing resiliency and redundancy of incumbent networks, *see infra* paras. 48-49, we still do not believe that extending phase-down support past the 60 percent deployment milestone for Stage 2 strikes the proper balance between providing necessary support and acting as a responsible steward of limited USF funding.

[109] *See Fixed Authorization Notices*.

upon the scheduled phase-out of frozen support when it calculated its competitive bids.[110] Liberty also states that extending phase-down support would provide the incumbent LECs that did not win support in a given area with significant funding without any buildout requirements, which would put Liberty at a competitive disadvantage.[111] Additionally, Liberty argues that if phase-down support is extended, Liberty should receive support in the areas where it provides service but did not win competitive support, even though it is not the incumbent and has not previously received frozen high-cost support in those areas.[112] Finally, Liberty argues that if the Commission does extend phase-down support, that support should terminate once the competitive support winner has met its 60% deployment obligation, even if that occurs before December 31, 2025.[113] As discussed above, while we agree that extending support beyond a *necessary* phase-down period would be wasteful, our analysis of the record indicates that the necessary phase-down period is longer than we originally anticipated in the *2019 PR USVI Order*.[114] Hurricanes and other challenges in these insular areas have made it clear that the existing networks in the Territories require further support and an assurance that providers have resources to make their networks resilient and available during future natural disasters while new networks are constructed. Given our rationale here and the record, the current level of Liberty's deployment, while noted, is ultimately of limited consequence to our decision to extend the phase-down support for purposes of more storm-resistant networks.[115]

45. Furthermore, to the extent that Liberty relied on its revenue projections on phase-down support ending in May 2023, it did so despite the Commission's reminder that "pending and future judicial proceedings, as well as certain pending and future proceedings before the Commission—including applications, applications for modification, notices of proposed rulemaking, notices of inquiry, petitions for rulemaking, requests for special temporary authority, waiver requests, petitions to deny, petitions for reconsideration, informal objections, and applications for review—may relate to or affect licensees or applicants for support in the Stage 2 Competition."[116] Because the Commission put Liberty on notice of the possibility that the phase-down support schedule could be modified when it made its proposals, we are unpersuaded that an extension of the support schedule causes unfair harm.

46. Liberty also asserts that extending phase-down support would result in "competitive harm" because it provides the incumbent LECs that did not win support with more money than Liberty will receive as the competitive support winner.[117] We disagree. As discussed above,[118] Liberty was on notice that modification of the phase-down support schedule was a possibility. Also as detailed below,[119]

[110] Liberty Comments at 13-14.

[111] Liberty Comments at 14-15; Liberty *Ex Parte* at 4-5. In its *ex parte*, Liberty argues that the phase-down frozen support awarded to PRTC could be used throughout PRTC's service area and not exclusively in the areas where Liberty won competitive support. As we discuss in more detail below, *see infra* paras. 48-49, we limit the use of phase-down support to increasing resiliency and redundancy of incumbent networks. To the extent that this support promotes hardening of networks throughout Puerto Rico as well as in those areas where the incumbent did not win competitive support, we find this is in the public interest.

[112] Liberty Comments at 15-16.

[113] Liberty Comments at 16.

[114] *2019 PR USVI Order*, 34 FCC Rcd at 9155, para. 87.

[115] *See* Letter from Robert L. Hoegle, Counsel to Liberty Communications of Puerto Rico LLC, to Suzanne Yelen, Associate Bureau Chief, Wireline Competition Bureau, FCC, WC Docket No. 18-143 (Feb. 2, 2023).

[116] *Procedures Public Notice*, 35 FCC Rcd at 239, para. 70.

[117] Liberty Comments at 15.

[118] *See supra* para. 45.

[119] *See infra* para. 48.

the phase-down support may only be used on network resiliency and maintenance, and may not be used to deploy service to new areas.[120] To the extent this additional high-cost funding would then allow incumbent LECs to reallocate resources for deployment,[121] we believe that ensuring there are resources for increased hardening and resiliency of existing networks during the construction of new networks outweighs other concerns.

47. We also disagree with Liberty that if we do extend phase-down support, it should end before December 31, 2025, if the competitive provider meets its 60% deployment obligation before that date.[122] We believe that recipients of phase-down support have a need for certainty and predictability so they can plan how to use that support to harden their existing networks.[123] Ending phase-down support once the competitive provider has met its 60% deployment obligation, which can occur prior to December 31, 2025, could undermine that certainty, as the recipients of phase-down support would not reasonably know in advance when their phase-down support could end.[124] We distinguish this from our adoption of the rule to end transitional mobile support upon the implementation of a long-term mobile support mechanism.[125] Any process for adoption of a long-term mobile funding mechanism will provide carriers with ample notice and transparency for carriers to reasonably plan. Conversely, Liberty's proposal to end phase-down support, which is based on the winning applicant's meeting its internal buildout plan for geographic areas, does not provide the predictability and certainty of a specific end date or substantial advance notice.

48. *Appropriate Uses of Phase-Down Support*. We adopt our proposals to limit the use of phase-down support to resiliency and redundancy measures and to require recipients of phase-down support to at least maintain their current footprint for voice and broadband services.[126] We also adopt our proposal to require recipients of additional phase-down support to maintain their Disaster Preparation and Preparedness Plan.[127]

49. Commenters generally supported our proposal to limit phase-down support to resiliency and redundancy measures and to require recipients of phase-down support to maintain their current footprint for voice and broadband services.[128] Given the importance of services during times of natural disaster and the intended use of the support, we require phase-down support recipients to maintain a Disaster Preparation and Preparedness Plan and report using the Disaster Information Reporting System.[129] Finally, in response to comments,[130] we clarify that phase-down support may be used on

[120] While Liberty requests to receive support in the areas of Puerto Rico where it provides service but was not awarded Stage 2 support, it provides no basis, for instance the amount of support, for us to weigh this proposal or any other administrative hurdles. *See* Liberty Comments at 15-16.

[121] Liberty Comments at 14.

[122] Liberty Comments at 16.

[123] Viya *Ex Parte* at 2 (stating that support should continue until six months after the 100% deployment milestone of December 31, 2027, but that a "date certain is needed so that Viya can appropriately plan its resiliency and hardening investments").

[124] We expect all high-cost support recipients, including in Puerto Rico and U.S. Virgin Islands, to meet their network deployment commitments on time. However, should Liberty or Broadband VI fail to meet the deadline for its 60% deployment milestone, we may consider whether a request for extending the phase-down period is in the public interest.

[125] *Supra* Section III.A.

[126] *Transitional Support FNPRM* at 10, para. 24.

[127] *Id*.

[128] PRTC Comments at 23; Viya Comments at 13.

[129] *See*, *e.g.*, 47 CFR § 54.1515. We make clear that if an eligible mobile provider or incumbent LEC has not previously submitted a Disaster Preparation and Response Plan to the Bureau and was approved to receive Stage 2 (continued….)

maintenance of existing networks as well as backup power to ensure continuity of voice and broadband service because maintenance of the network backup power inherently aids resiliency.[131]

50. *Oversight and Reporting for Phase-Down Support Recipients*. In order to provide oversight and prevent waste, fraud, and abuse, we adopt our proposal to subject phase-down support recipients to ongoing oversight from the Commission and the Universal Service Administrative Company by adding new requirements.[132] Specifically, we require each phase-down support recipient to "submit a spending plan for its use of phase-down support for redundancy and resiliency measures to the Bureau for approval," by July 1, 2023,[133] and, at the end of each calendar year, to provide the Commission with a report of how the phase-down support was spent on resiliency and redundancy measures consistent with the Bureau-approved plan,[134] along with a certification pursuant to section 54.313 of the Commission's rules that the support was used only for authorized purposes.[135] Commenters supported our proposal,[136] and we find that a spending plan will provide an important layer of oversight and help us ensure that the phase-down support is going to its intended purpose.[137] Recognizing the short-term nature of the support but also cognizant of the time that recipients need to plan, we require all phase-down support to be spent by December 31, 2026, which is one year after the end of the support term.[138] Recipients must submit a final spending report by January 31, 2027, and shall return an amount equal to the unused (i.e., not spent consistently with the approved spending plan) amount of support to USAC within 30 days of December 31, 2026. In addition, recipients of phase-down support will continue to be subject to all current obligations associated with the receipt of high-cost support and designation as an ETC.[139]

(Continued from previous page)
mobile or fixed support, an eligible carrier of transitional mobile support or phase-down support must submit such a plan to the Bureau by July 1, 2023. We find it is in the public interest to permit an eligible carrier to receive transitional mobile support or phase-down support prior to the Bureau's approval of the Disaster Preparation and Response Plan in order to facilitate the seamless hardening of advanced telecommunications networks. Notwithstanding, we expect the Bureau to review the Disaster Preparation and Response Plan as quickly as possible to identify concerns and/or deficiencies for the support recipient to address in order to obtain the Bureau's approval. Moreover, we retain safeguards of the USF by adopting a rule that the failure to comply with obtaining the Bureau's approval of the disaster plan or spending plan, or failure to conduct mandatory reporting shall result in the withholding of high-cost support.

[130] *See* PRTC Comments at 23-24; Viya Comments at 13-14 (requesting this clarification).

[131] Recipients of phase-down support shall certify that such support authorized after May 2023 was used only for resiliency and redundancy measures and maintain their footprint as of June 2023 for voice and broadband services.

[132] *Transitional Support FNPRM* at 10, para. 25.

[133] *See* Viya *Ex Parte* at 2 ("urg[ing] the Commission to provide support recipients with at least 60 days after the release of an order to prepare the initial submission").

[134] *Cf.* 47 CFR § 54.1514(d),(e) (requiring Stage 2 mobile carriers to provide an annual hardening map and narrative identifying network hardening activities, and cost accounting for specific deployments during the prior calendar year). The required spending plans phase-down support recipients submit should be similar to the reports required by 47 CFR § 54.1514(d),(e).

[135] *Transitional Support FNPRM* at 10, para. 25.

[136] *See* PRTRB Comments at 9; Viya Comments at 10.

[137] At this time we decline to adopt a new, streamlined process for the Bureau to approve spending plans, because we are not convinced that the need for such a new process exists. *See* Viya Comments at 14-15.

[138] *See infra* Appendix A, 47 CFR § 54.1523(c); *see also* Viya *Ex Parte* at 2 (noting the "permitting and power issues that all providers in the Territory face").

[139] We note that WorldNet Telecommunications, Inc., a fixed competitive ETC, also currently receives frozen high-cost support in Puerto Rico and will continue to receive phase-down frozen support until December 31, 2025,
(continued….)

IV. ORDER ON REVIEW

51. In this Order on Review, we address the Application for Review[140] filed by PRTC seeking review of the Bureau's Public Notice declaring Liberty as the winning applicant in the PR Fund Stage 2 competitive process with respect to certain municipios.[141] For the reasons explained below, we affirm the Bureau's determinations and deny the Application for Review.

A. Background

52. In the *2019 PR USVI Order*, the Commission adopted a single-round competitive proposal process to select applicants based on the lowest score for a series of weighted, objective criteria.[142] The Stage 2 competitive process awarded fixed support based on the weighting of price and network performance, including speed, latency, and usage allowance.[143] This process also placed significant weight on resiliency and redundancy to account for the heightened risk of natural disasters in the Territories. Under this competitive process, the Commission directed the Bureau to score applicants for fixed high-cost support using a 270-point scale for price, performance, and network resiliency and redundancy for each geographic area for which an applicant sought support.[144] The Commission directed that the applicant with the lowest combined overall score for each municipio in Puerto Rico would win support for that area.[145]

53. Specifically, the Commission found that using the 270-point scale "relies on objective criteria that are preferable to a more subjective competitive proposal process or negotiated approach because it better implements our policy goals of promoting efficiency, certainty, transparency, and impartiality, and allows us to compare applications using different network technologies and offering differing performance."[146] The 270-point scale was allocated across different objective criteria as follows:

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subject to the same requirements as adopted herein. *2019 PR USVI Order*, 34 FCC Rcd at 9155, para. 87 & n.312; *PR Fixed Authorization Notice*, 36 FCC Rcd at 9920.

[140] Application of PRTC for Review of the Public Notice of the Wireline Competition Bureau Announcing Winners in the Uniendo a Puerto Rico Fund Stage 2 Competitive Process, WC Docket Nos. 18-143, 10-90 (filed Dec. 2, 2020) (Application for Review). PRTC subsequently modified its request for confidentiality as to portions of its Application for Review and refiled a copy of its Application for Review for public inspection on August 20, 2021. Letter from Edgar Class, Counsel for PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90, 14-58 (Aug. 20, 2021) (Amended PRTC Application) available at https://www.fcc.gov/ecfs/filing/10820800615610.

[141] *Wireline Competition Bureau Announces Winning Applicants for Uniendo a Puerto Rico Fund Stage 2 Competitive Process*, WC Docket No. 18-143, Public Notice, 35 FCC Rcd 12699, at Attachment A - Stage 2 Winning Proposals Summary (WCB 2020) (*PR Winners' Public Notice*).

[142] *2019 PR USVI Order*, 34 FCC Rcd at 9114-15, para. 11.

[143] *Id.* at 9116, para. 13; *Procedures Public Notice*, 35 FCC Rcd at 220, 252-55, paras. 2, 124-34.

[144] *2019 PR USVI Order,* 34 FCC Rcd at 9117, para. 14; *Procedures Public Notice*, 35 FCC Rcd at 252-55, paras. 124-34.

[145] *2019 PR USVI Order,* 34 FCC Rcd at 9140, para. 52.

[146] *Id.* at 9114-15, para. 11.

Criteria	Assigned Points
Price Per Location	100
Network Performance	90
Network Resilience and Redundancy	80
Total	**270**

54. The Commission adopted the scoring for the price criteria in order to achieve the most economical solution possible while maintaining quality and resilience.[147] The reserve price established for each municipio represented the maximum amount that an applicant may commit to accept, and a proposal to accept the reserve price would receive the maximum, and least favorable, number of points for the price criteria.[148] To encourage proposals for the best price possible, the Commission provided that one point would be subtracted from an applicant's score for each percentage point its proposal price was below the reserve price.[149]

55. While the Commission afforded price per location the greatest weight, network performance, resiliency, and redundancy were given almost as much importance, such that a proposal with superior performance, resilience, and/or redundancy could prevail over a less-expensive but less-robust and resilient network.[150] Given the unique, insular circumstances in the Territories and the destructive power of natural disasters, the Commission adopted scoring criteria to encourage the deployment of high-performing, storm-hardened networks.[151]

56. To ensure that USF dollars are wisely spent, the Commission specifically considered the benefits of network performance in developing the Stage 2 competitive process.[152] The Commission observed the value to consumers of having access during the 10-year support term to service that exceeds the established minimum network performance requirements when establishing three network speed tiers and allocating scores for each tier "to ensure that customers and service providers in the Territories are not subject to a lesser standard of service than other parts of the country."[153] The Commission provided that "[f]or a proposal to qualify for any tier, the applicant must commit to deploying a network that is fully capable of delivery speeds and usage allowances that meet or exceed . . . the relevant standards to all locations within the geographic area."[154] In this regard, the Commission established three tiers for application scoring based on a specific network performance speed, along with a minimum monthly usage allowance.[155]

[147] *Id.*at 9118, para. 17.

[148] *Id.*

[149] *Id.*

[150] *Id.* at 9116-17, para. 13 ("Thus, while we allocate price the greatest individual weight, combined weights for network performance and resilience/redundancy can outweigh price, to encourage applicants to deploy high-performing, storm-hardened networks."). *See also Procedures Public Notice*, 35 FCC Rcd at 253, para. 125.

[151] *2019 PR USVI Order,* 34 FCC Rcd at 9116-17, para. 13; *Procedures Public Notice*, 35 FCC Rcd at 253, para. 125.

[152] *2019 PR USVI Order*, 34 FCC Rcd at 9121, para. 21.

[153] *Id.* at 9121-22, paras. 22, 23.

[154] *Id.* at 9121, para. 22.

[155] *Id.* at 9123, para. 25.

57. With regard to network resiliency and redundancy, the Commission allocated 80 points, providing up to 60 points for resiliency considerations and up to 20 points for redundancy considerations.[156] The Commission recognized that "resilience involves many factors" and chose to score proposals on "key, objective criteria."[157] Accordingly, the Commission said proposals should be weighted based on the percentage of network miles that are made up of certain types of network infrastructure. The Commission agreed with many service providers that burying fiber was ideal and created the most resilient networks hardened against natural disasters.[158] Conversely, the Commission concluded that the record demonstrated standard aerial wireline deployment required the most repairs and left networks the most vulnerable to disasters.[159] Accordingly, the Commission designed a scoring preference for burying as much fiber as possible while allowing for other resiliency solutions.[160] A network using only underground fiber received zero points for resiliency, whereas a network using only standard aerial wireline deployment received 60 points. The network redundancy score was calculated based on the percentage of network miles served by alternative network infrastructure or route paths.[161] The Commission applied these weighting considerations as follows:[162]

Resilience and Redundancy Criteria	Specific Resiliency or Redundancy Measure	Possible Points for Specific Measure	Total Possible Criteria Points
Resiliency	Aerial wireline deployment	60	60
	Satellite; fixed wireless end user location connection; microwave backhaul; aerial wireline deployment using high-wind rated composite poles	40-60 sliding scale	
	Underground fiber	0-60 sliding scale	
Redundancy	Backup network/path diversity	0-20 sliding scale	20

58. The Bureau released the *Procedures Public Notice* on February 2, 2020, applying the Commission's determinations and establishing the application filing procedures.[163] In the public notice, the Bureau specifically stated, consistent with the *2019 PR USVI Order*, that it would accept applications "at one of three performance levels, each with its own minimum download and upload speed."[164] Using

[156] *2019 PR USVI Order,* 34 FCC Rcd at 9127-30, paras. 30-33; *Procedures Public Notice*, 35 FCC Rcd at 253-54, paras. 132-34.

[157] *2019 PR USVI Order,* 34 FCC Rcd at 9127, para. 30.

[158] *Id.*at 9126-27, para. 29.

[159] *Id.* at 9126-27, para. 29 ("It is clear . . . that aerial transmission lines are not a storm-hardened solution….").

[160] *Id.* at 9126-27, para. 29.

[161] *Id.* at 9128-29, para. 32.

[162] *Id.* at 9130, para. 33.

[163] *See generally Procedures Public Notice*.

[164] *Procedures Public Notice*, 35 FCC Rcd at 222, para. 8, Table.

FCC Form 5634 Schedule B,[165] applicants provided information regarding its proposed price, network performance, including speed tier, usage allowance, latency, and resiliency and redundancy for each area that it proposed to provide service.[166]

59. The Bureau received applications from five entities, including PRTC and Liberty, for support in Puerto Rico.[167] Based on application information from FCC Form 5634 Schedule B, the Bureau calculated each proposal's overall score for the criteria established by the Commission. The Bureau determined the price criteria scores based on the proposal price commitment submitted in FCC Form 5634 Schedule B, subtracting one point from 100 possible points for each percentage point below the reserve price.[168] For network performance, an applicant received "point reductions only by meeting specific [network] performance metrics" and was "assign[ed] zero points only if an applicant's proposal meets or exceeds speeds of 1 Gbps/500 Mbps[.]"[169] With regard to resiliency, the Bureau calculated points ranging from zero points, which is most favorable score, to 60 points.[170] In this regard, an applicant submitted the total network miles of its proposals within a specific municipio, as well as the total network miles within the same municipio, that consist of buried fiber, aerial fiber using standard poles, aerial fiber using composite high-wind rated poles, and fixed wireless technology.[171] The Bureau scored each proposal's network resilience based on the percentage of these technologies, as measured by network miles that comprise the entire network within the municipio.[172] The Bureau also scored each proposal's redundancy on a sliding scale from zero to 20 points based on the amount of network miles within the municipio that included a backup network, path diversity, or both.[173] On November 2, 2020, after reviewing and scoring the applications, the Bureau announced that PRTC was the winning applicant in 35 municipios and Liberty was the winning applicant in 43 municipios.[174]

60. *Application for Review*. On December 2, 2020, PRTC filed its Application for Review seeking review of the Bureau's determination that Liberty won 11 specific municipios.[175] PRTC alleges the Bureau erred in determining the winning proposal in two groups of municipios: (1) three municipios where PRTC proposed 100% fiber builds at lower prices than Liberty ("GPON Municipios"); and (2) eight municipios where PRTC proposed fixed-wireless and fiber builds at lower prices than Liberty

[165] The Bureau released the FCC Form 5634 application form, application instructions, and the FCC Form 5634 Schedule B Microsoft Excel Template as attachments to the public notice announcing the Stage 2 competitive process filing window. *Wireline Competition Bureau Announces Application Window for Stage 2 of The Uniendo a Puerto Rico Fund and the Connect USVI Fund,* WC Docket No. 18-143, Public Notice, 35 FCC Rcd 8254 (WCB 2020).

[166] *Procedures Public Notice*, 35 FCC Rcd at 252, 253, paras. 124, 128; FCC Form 5634 Application Instructions at 4, para. 29.

[167] *Wireline Competition Bureau Announces Applications Submitted to Participate in Uniendo a Puerto Rico Fund and Connect USVI Fund Fixed Competitive Proposal Process,* WC Docket No. 18-143, Public Notice, 35 FCC Rcd 10341, 10342 (WCB 2020).

[168] *2019 PR USVI Order,* 34 FCC Rcd at 9118, para. 17; *see also Procedures Public Notice*, 35 FCC Rcd at 252-253, para. 127.

[169] *Procedures Public Notice*, 35 FCC Rcd at 253, para. 130.

[170] *Id.* at 254, paras. 132-34.

[171] *Id.* at 254, para. 133.

[172] *Procedures Public Notice*, 35 FCC Rcd at 254, para. 133*; see also 2019 PR USVI Order*, 34 FCC Rcd at 9128, para. 31 (explaining the calculation of resiliency score where an applicant uses a mix of outside plant).

[173] *Procedures Public Notice*, 35 FCC Rcd at 254, para. 134.

[174] *PR Winners' Public Notice*, at Attachment A.

[175] *See generally* Application for Review.

("Hybrid Municipios").[176] In the GPON Municipios, PRTC argues that the Bureau erred in selecting Liberty as the winner because PRTC's price proposals were substantially lower than those submitted in Liberty's winning proposal;[177] PRTC proposed to deploy fiber to all locations;[178] and PRTC proposed a 100% redundant network in these municipios.[179] Although acknowledging that it proposed a mix of buried and aerial fiber in the GPON Municipios, PRTC argues that "[t]ogether with [its] significant advantage in the price category—which is the most heavily weighted factor—and its zero score in the network performance category, the Bureau's selection of Liberty as the winning applicant in the GPON Municipios conflicts with statute and established Commission policy and is predicated on an erroneous finding as to a material question of fact."[180] Moreover, PRTC claims that "[g]iven [the Commission's] statutory obligation to act as a responsible steward of the USF and its policy objective in this proceeding, the difference in the price proposals for the GPON Municipios is so dramatic that appropriate action by the Commission is warranted."[181]

61. Regarding the Hybrid Municipios, PRTC similarly alleges that the Bureau erred in its selection of Liberty as the winning applicant. PRTC again argues that because its price proposals were substantially lower than the bids submitted by Liberty, "the Bureau's selection of Liberty as the winning applicant conflicts with the statute and established Commission policy and is predicated on an erroneous finding as to a material question of fact" based on the additional costs to the PR Fund over the 10-year term.[182] In addition, despite proposing to deploy fixed wireless technology in Hybrid Municipios, PRTC also argues that the Bureau incorrectly scored the network performance by requiring it to select a single tier for network performance in its proposals.[183] While conceding that "[e]ven if Liberty performed better than PRTC in the network resilience category," PRTC suggests the Bureau erred because "PRTC should still have received zero points in the redundancy/path diversity category due to its substantial redundancy and back-up power capabilities[.]"[184]

62. At the time, PRTC sought confidential treatment as to the entirety of its Application for Review, citing the Commission's prohibited communications rule in effect for the competitive process[185] and "confidential and commercially sensitive information that falls within Exemption 4 of the Freedom of Information Act."[186] On August 20, 2021, following the conclusion of the competitive process and the authorization of support to winning applicants in Puerto Rico, which ended the application of the prohibited communications rule, PRTC revised its request for confidential treatment and resubmitted its Application for Review in partially unredacted form.[187] Nevertheless, PRTC maintained that certain

[176] Application for Review at 2-3.

[177] Application for Review at 5-7.

[178] Application for Review at 7.

[179] Application for Review at 7-9.

[180] Application for Review at 8-9.

[181] Application for Review at 6-7.

[182] Application for Review at 10-11.

[183] Application for Review at 11-12.

[184] Application for Review at 12-13.

[185] *2019 PR USVI Order*, 34 FCC Rcd at 9133-34, para. 39; *Procedures Public Notice,* 35 FCC Rcd at 243, para. 87.

[186] Letter from Edgar Class, Counsel for PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90, 14-58, at 1-2 (filed Dec. 2, 2020).

[187] Letter from Edgar Class, Counsel for PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90, 14-58 (Aug. 20, 2021) (Amended PRTC Application) available at https://www.fcc.gov/ecfs/filing/10820800615610

proposal information in its Application for Review was commercially sensitive and should remain confidential.[188]

63. On August 27, 2021, the Bureau sought comment on the Application for Review and adopted a Protective Order to allow interested parties access to confidential information.[189] The Bureau noted that "[c]ertain application information submitted by the parties as part of the Stage 2 competitive process may be relevant and material to the issues raised and constitute the record on which the Commission must evaluate PRTC's Application for Review."[190] The Bureau announced to the parties and stakeholders the process necessary to obtain access to highly confidential and confidential information for this proceeding and directed them to the *Protective Order* concurrently adopted by the Bureau.[191] In the *Protective Order*, the Bureau provided that any person seeking access to confidential information for this proceeding "shall sign and date the Acknowledgment agreeing to be bound by the terms and conditions of this *Protective Order*, and file the Acknowledgment with the Commission.[192] The *Protective Order* defined "Highly Confidential Information" to include "[i]nformation submitted in connection with the FCC Form 5634 that provides detailed documentation regarding the party's Bringing Puerto Rico Together Stage 2 fixed application, including but not limited to the network plan, technology description and system design . . . [and] both information submitted with Form 5634 and subsequent submissions in connection with the original application."[193]

64. In response to the *Protective Order*, counsel for Liberty submitted the Acknowledgment of Confidentiality to the Commission on August 31, 2021.[194] Liberty timely filed an opposition to the Application for Review on September 13, 2021.[195] First, Liberty argued that PRTC's proposals with the lowest prices do not guarantee its selection as the winning applicant for the challenged areas because that ignores the Commission's balance of other policy objectives, namely deployment of resilient and redundant networks, reflected in the overall proposal framework and scores.[196] Second, Liberty argued that the Bureau did not err in implementing the Commission's framework provided by the *2019 PR USVI Order* to assign points based on three network performance tiers for the Hybrid Municipios.[197] Moreover, to the extent PRTC wished to challenge those policy decisions, Liberty argued such challenges were time barred.[198]

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[188] Amended PRTC Application; Letter from Edgar Class, Counsel for PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 18-143, 10-90 (filed Aug. 20, 2021) (maintaining request for confidentiality of "discreet information concerning PRTC's price proposals for eleven municipios . . ., as well as certain technical information about PRTC's island-wide network").

[189] *Request for Comment and Procedures for Obtaining Confidential Stage 2 Information Related to Application for Review by Puerto Rico Telephone Company*, WC Docket No. 18-143, Public Notice, 36 FCC Rcd 13173 (WCB 2021) (*Comment Request Notice*).

[190] *Comment Request Notice*, 36 FCC Rcd at 13173.

[191] *Id*. at 13173-74.

[192] *The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, WC Docket No. 18-143, Protective Order, 36 FCC Rcd 13175, 13178-9, para. 7 (WCB 2021) (*Protective Order*).

[193] *Protective Order* at Appendix A.

[194] Letter from Daniele Frappier, Counsel for Liberty, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 18-143, 10-90 (Aug. 31, 2021) (Liberty Confidentiality Acknowledgment).

[195] Opposition to Puerto Rico Telephone Company, Inc.'s Application for Review by Liberty Communications of Puerto Rico LLC, WC Docket Nos. 18-143, 10-90 (filed Sept. 13, 2021) (Liberty Opposition).

[196] Liberty Opposition at 2-3, 5-6.

[197] Liberty Opposition at 6-8.

[198] Liberty Opposition at 8-9.

65. The record in this proceeding reflects that counsel for PRTC did not sign and submit the Acknowledgement of Confidentiality in response to the Bureau's *Protective Order*. Nonetheless, on September 23, 2021, PRTC filed its reply to Liberty's opposition, maintaining the argument that the Bureau incorrectly announced Liberty as the winning applicant of eleven specific municipios.[199] In its reply, PRTC argued that it raised material questions of fact regarding the selection of Liberty as the winning applicant and that the Bureau failed to disclose sufficient application information from which PRTC may determine whether Liberty was the winning applicant of the challenged municipios.[200] PRTC further argued that the Bureau should release additional application information submitted by Liberty regarding network performance, latency, resiliency and redundancy submitted as part of Form 5634, and its failure to release such information violated the Commission's policy objective to act as a responsible steward of the Universal Service Fund.[201] With regard to its Hybrid Municipios, PRTC again argued that it must receive a more favorable score for network performance because the Commission did not provide in the *2019 PR USVI Order* that an applicant would only receive its score based on the slower network speeds deployed in an area.[202] For both its Application for Review and its reply, PRTC acknowledged that its arguments are based on its knowledge of only its own proposals and that it therefore "believed that the Bureau erred in determining Liberty to be the winning applicant in two groups of municipios."[203]

B. Discussion

66. Based on the record, we find that the Bureau's determinations were consistent with the directives and policy goals of the *2019 PR USVI Order* and that the Bureau appropriately scored proposals in determining the winning applicants for the GPON and Hybrid Municipios. Finding no error in the scoring of the proposals, we dismiss PRTC's arguments both on the merits and, for certain arguments, as untimely challenges to policy determinations the Commission made in the *2019 PR USVI Order*. For all the reasons discussed herein, we therefore affirm the Bureau's decision and deny the Application for Review.

67. We reject PRTC's argument that the Bureau erred in determining that Liberty was the winning applicant for the GPON Municipios. With respect to the GPON Municipios, the crux of PRTC's argument is that the Bureau erred because PRTC should have received the lowest overall scores for GPON Municipios due to its "substantially lower" prices, network performance tiers, and redundancy regardless of its less favorable score for resiliency.[204] As the record reflects, PRTC in fact received more favorable scores for its price proposals and zero scores for network performance and redundancy in GPON Municipios.[205] However, as the proposal scores in Appendix B to this Report and Order and Order on Review (supported by the accompanying information) clearly show, PRTC's unfavorable resiliency scores placed it overall behind Liberty in the GPON Municipios.[206] PRTC proposed networks for GPON

[199] PRTC's Reply to Opposition by Liberty Communications of Puerto Rico, LLC, WC Docket Nos. 18-143, 10-90 (filed Sept. 23, 2021) (PRTC Reply).

[200] PRTC Reply at 1-5.

[201] PRTC Reply at 5.

[202] PRTC Reply at 8-10.

[203] PRTC Reply at 6; Application for Review at 6.

[204] Application for Review at 3 ("While the Bureau also must score the applications in two non-price categories, the difference in the price proposals is so dramatic to call into serious question the appropriateness of the Bureau's decision.").

[205] *See Bringing Puerto Rico Together Fund Stage 2 Proposal Scores*, Public Notice, WC Docket No. 18-143, DA 21-718 (WCB 2021), available at https://www.fcc.gov/ecfs/filing/10623120554065.

[206] Application for Review at 8 ("Even assuming Liberty performed better than PRTC in the network resilience category . . . for the GPON Municipios PRTC should still receive zero points in the redundancy/path diversity category…. Together with PRTC's significant advantage in the price category—which is the most heavily weighted (continued….)

Municipios that relied on aerial fiber, the least favorable measure on the resiliency scale.[207] Reviewing the confidential network information PRTC and Liberty provided in their FCC Form 5634 Schedule B, which is reflected in Appendix B, we find that the Bureau correctly calculated PRTC's resiliency score based on the adopted scoring methodology that uses the percentage of total network miles based on the proposed resiliency measures.[208] PRTC's deployment of aerial wire led to unfavorable scores for resiliency and overall for each of the GPON Municipios.[209] As the publicly available scores in Appendix B make clear, PRTC's scoring advantage on price failed to overcome its scoring disadvantage in the resilience category.[210] We therefore find no error in the Bureau's determination of Liberty as the winner of the GPON Municipios.

68. To the extent that PRTC is arguing that it should have been the winning applicant based solely on its proposed price and scores for performance and redundancy, it is presenting an untimely challenge to the *2019 PR USVI Order* in which the Commission established the scoring methodology.[211] Nonetheless, we separately and independently reject this argument on the merits. The Commission balanced cost considerations against its "goal … to award funding to the carrier that can provide the highest performing and most resilient network possible."[212] Accordingly, the scoring framework the Commission established gave the most weight to price but also counted performance, resiliency, and redundancy as important criteria. While PRTC correctly asserts that our selection of Liberty's proposals results in "tens of millions of dollars" in additional costs to the USF, our fiscal stewardship of the PR Fund does not require us to choose the short-term, lowest-cost option in every case. The Commission found the benefits in other criteria of network performance,[213] resiliency, and redundancy[214] were significant and relevant to the public interest value of the USF support provided in the Territories. In particular, "a hardened network can help guard against future restoration costs[]" and it is in "the public

(Continued from previous page)
factor—and its zero score in network performance category, the Bureau's selection of Liberty as the winning applicant in the GPON Municipios conflicts with the statute and established Commission policy and is predicated on an erroneous finding as to a material question of fact.").

[207] *2019 PR USVI Order*, 34 FCC Rcd at 9124-30, paras. 27-33 (favoring buried fiber and scoring up to 60 points for aerial wireline deployment based on percentage of network miles); *Procedures Public Notice*, 35 FCC Rcd at 254-55, paras. 132-34.

[208] *See infra* Appendix B. In the *2019 PR USVI Order*, the Commission recognized that applicants are likely to use a mix of outside plant types and point reductions in a proposal's resiliency score will be based on the percentage of miles an applicant proposes to use for a particular solution in a geographic area. *2019 PR USVI Order*, 34 FCC Rcd at 9128, para. 31. The Commission provided the following example: "[I]f a provider intends to bury fiber to 70% of the miles of its network in a geographic area, use a fixed wireless end user connection solution for 20% of the miles of its network in a geographic area, and aerial deployment for 10% of its network in geographic area, we will assign 6 points for aerial (10% of 60), assign 8 points for fixed wireless (20% of 40), and assign no points for buried fiber (70% of 0)—for a total of 14 assigned points for resilience." We find that the Bureau did just that in correctly calculating the resiliency scores. *See infra* Appendix B. As we discuss in Section IV.A, had PRTC chosen to access confidential information pursuant to the Protective Order, PRTC would have been able to reproduce these scores to verify their accuracy, and its "concerns [could] be put to rest." PRTC Reply at 8 ("If the winning applicants' proposals regarding the non-price categories are made available, then PRTC's concerns can be put to rest.").

[209] Application for Review at 8 (proposing to serve GPON Municipios using "a mix of buried and aerial fiber"); *see infra* Appendix B.

[210] *See infra* Appendix B.

[211] *See* 47 CFR § 1.429(d) (providing that petitions for reconsideration of a rulemaking order shall be filed within 30 days of the date of public notice of that order).

[212] *2019 PR USVI Order,* 34 FCC Rcd at 9116-17, para. 13.

[213] *Id.* at 9121, para. 22.

[214] *Id.* at 9124-25, para. 27.

interest to account for the heightened possibility of future natural disasters in the Territories."[215] PRTC itself illustrated the importance of these criteria during the proceeding, illuminating that the devasting nature of natural disasters in the Territories can, and did, render prior USF spending lost due to the near complete destruction of telecommunications infrastructure.[216] The Commission found that any prudent future funding in the Territories must account for resiliency and redundancy considerations to protect the high-cost support investment against future natural disasters, and we again endorse that decision.[217]

69. For the Hybrid Municipios, PRTC advances the same flawed price argument, asserting that the substantial costs savings of its proposals versus those from Liberty indicate that PRTC should be the winning applicant.[218] For the same reasons, we likewise reject PRTC's argument that the Bureau erred in determining that Liberty was the winning applicant in the Hybrid Municipios. Our review of the scoring for the Hybrid Municipios reflects that Liberty correctly achieved the lowest overall score based on its proposals submitted in FCC Form 5634 despite PRTC's competing, lower price proposals, as reflected in Appendix B (and supported by the accompanying information).[219] Notably, PRTC proposed a mix of aerial fiber and fixed wireless infrastructure for the Hybrid Municipios,[220] which negatively impacted its scores for network performance and resiliency.[221] As in the GPON Municipios, Liberty's advantage on network performance and resiliency simply exceeded any advantage PRTC gained from its lower pricing score. Accordingly, we find that the Bureau did not err in determining Liberty to be the winner in the Hybrid Municipios.

70. We also reject, both on procedural and substantive grounds, PRTC's apparent argument that the Bureau exceeded its authority in requiring an applicant to select only a single tier of service for each municipio and that this policy unfairly prejudiced PRTC in the network performance scoring for Hybrid Municipios.[222] Specifically, PRTC takes issue with the fact that it was required to select the 100/20 Mbps tier for its Hybrid Municipios, resulting in an additional 25 points for its network performance score, even if only a small percentage of locations were to be served with lower than Gigabit speeds.[223] PRTC argues that this policy decision was not the Bureau's to make and was inconsistent with the *2019 PR USVI Order*, and unfairly prejudiced its bids.[224]

71. PRTC's argument amounts to a challenge of the network performance scoring methodology implemented by the Bureau in the *Procedures Public Notice*, which is consistent with the Commission's direction in the *2019 PR USVI Order*. As such, this challenge is untimely and procedurally barred. Our rules require an application for review of an action on delegated authority to be

[215] *Id.* at 9125, para. 27.

[216] *Id.* at 9124-25, para. 27 (*citing* PRTC Comments at 7; PRTC Reply at 14-15).

[217] *2019 PR USVI Order,* 34 FCC Rcd at 9124-25, para. 27.

[218] Application for Review at 9-10 ("As explained above regarding the GPON Municipios, the Bureau's selection of Liberty as the winning applicant in the Hybrid Municipios conflicts with the statute and established Commission policy and is predicated on erroneous finding as to the material question of fact.").

[219] Application for Review at Attachment A. For seven of the eight Hybrid Municipios, PRTC proposed lower prices than Liberty, and for the last Hybrid Municipio, PRTC and Liberty proposed the same price. *Id*.

[220] Application for Review at 11.

[221] Application for Review at Attachment A.

[222] Application for Review at 11-12.

[223] Application for Review at 11.

[224] Application for Review at 11.

filed within 30 days of public notice of such action.[225] We therefore reject as untimely PRTC's argument regarding the requirement that it select a single performance tier per municipio.

72. We separately and independently reject PRTC's argument on the merits. As noted above, the Bureau's instruction in the *Procedures Public Notice* that applicants select a single performance tier per municipio was at the Commission's direction. In the *2019 PR USVI Order*, the Commission outlined the scoring parameters for the network performance category.[226] The Commission established three tiers for network speed, two tiers for network latency and allocated points for each.[227] The Commission specifically contemplated that an applicant would select a given tier only if all locations in the municipio received service at that selected tier. Unlike its sliding-scale approach to resiliency and redundancy scoring, the Commission did not describe a scoring process using a sliding scale for network performance or direct the Bureau to score multiple performance tiers within a municipio.[228] Rather, the Commission provided that "[f]or a proposal to qualify for any tier, the applicant must commit to deploying a network that is fully capable of delivering speeds and usage allowances that meet or exceed . . . the relevant standards to *all* locations within a geographic area."[229] Thus, the Commission clearly rejected the use of a sliding scale in the assignment of points for the three tiers of network speed.[230]

73. Pursuant to the Commission's adopted framework, the Bureau stated in the *Procedures Public Notice* that for "each geographic area the applicant seeks support, the applicant specifies the specific speed, usage, and latency in Schedule B of the Application Form."[231] The Bureau explained that an applicant did not have to select the same performance tier in every municipio in which it submitted a proposal but made clear that it would not allow applicants to select multiple performance tiers or use sliding scales when scoring performance tiers in a single municipio as adopted in the *2019 PR USVI Order*.[232] Contrary to PRTC's assertion, the Bureau did not make "a policy decision that should have been left to the Commission to resolve."[233] Rather, it correctly implemented a policy decision made by the Commission in the *2019 PR USVI Order* to require the selection of a single performance tier per municipio. Accordingly, the Bureau properly required PRTC to select the 100/20 Mbps tier for scoring the network performance of Hybrid Municipios because, by PRTC's own admission, between 18.27% and 33.69%, depending on the specific Hybrid Municipio, of the locations within each municipio would not have access to 1 Gbps speeds. We therefore find no error by the Bureau in requiring the selection of a single network performance tier for scoring proposals of the Hybrid Municipios.

74. We further find that this policy decision did not unfairly prejudice PRTC. All applicants faced this requirement and, accordingly, all were subject to the requirement that they select a single performance tier for each municipio. All applicants were required to select the lower applicable

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[225] *See* 47 CFR § 1.115(d). To the extent PRTC challenges the scoring methodology for network performance the Commission adopted in the *2019 PR USVI Order*, PRTC's argument is similarly untimely. *See* 47 CFR § 1.429(d).

[226] *2019 PR USVI Order,* 34 FCC Rcd at 9121, para. 21.

[227] *Id.* at 9121, para. 22.

[228] *2019 PR USVI Order,* 34 FCC Rcd at 9123, para. 25, Table 3—Network Performance Scoring. *Cf. 2019 PR USVI Order,* 34 FCC Rcd at 9128, 9129, para. 31, Table 5—Network Resilience and Redundancy Scoring ("We recognize that applicants are likely to use a mix of outside plant types, so we award point reductions for resiliency based on the percentage of the miles an applicant proposes to use for a particular solution (e.g., buried fiber or aerial) within the geographic area for which it is submitting an application.").

[229] *2019 PR USVI Order,* 34 FCC Rcd at 9121, para. 22 (emphasis added).

[230] *2019 PR USVI Order,* 34 FCC Rcd at 9123, para. 25, Table 3—Network Performance Scoring.

[231] *Procedures Public Notice*, 35 FCC Rcd at 251, para. 128.

[232] *See Procedures Public Notice*, 35 FCC Rcd at 251-52, paras. 128-30.

[233] Application for Review at 11.

performance tier even if many or most of the subscribers in the municipio would receive higher speeds. It is not unfair or prejudicial to subject the PRTC application to the same requirement other applicants faced.

75. With regard to both the GPON Municipios and Hybrid Municipios, we are likewise unpersuaded by PRTC's argument that the Bureau withheld certain confidential application information that precluded PRTC from validating the Bureau's determination of Liberty as the winning applicant and that, in so doing, the Bureau violated its own procedures and acted against the public interest.[234] Specifically, PRTC argues that the Commission should instruct the Bureau to disclose to non-winning applicants Liberty's proposal information for performance tier, latency, terrestrial network miles, broken down by miles buried, aerial miles using standard and composite poles, fixed wireless, redundancy miles, and the methodology used to determine such information.[235] We reject PRTC's argument and request because the Bureau already did exactly as PRTC requests.

76. First, the Bureau released for public inspection every applicants' scores for price, network performance, latency, resiliency, and redundancy, as well as the overall score of each proposal for all of Puerto Rico, following the authorizations for winning applicants to receive support consistent with the *Procedures Public Notice*.[236] The Bureau's release of the applicants' proposal scores validates the selection of Liberty as the winning applicant of the GPON Municipios and Hybrid Municipios.[237] Second, to the extent that PRTC desired access to other confidential application information in order to "validate the appropriateness of the Bureau's scoring,"[238] the Bureau made such application information available to the parties in this proceeding.[239] On August 27, 2021, the Bureau adopted the *Protective Order* to provide access to PRTC's unredacted Application for Review and FCC Form 5634 Schedule B information from applicants. The *Protective Order* provided the parties and relevant stakeholders with the opportunity to access "Highly Confidential Information," including "[i]nformation submitted in connection with the FCC Form 5634 that provides detailed documentation regarding the party's Bringing Puerto Rico Together Stage 2 fixed application, including but not limited to the network plan, technology description and system design . . . [and] both information submitted with [FCC] Form 5634 and subsequent submissions in connection with the original application."[240] This information includes the confidential application information related to scoring for resiliency and redundancy of the parties' proposals and network mileage information sought by PRTC.[241] PRTC, however, failed, without explanation, to take advantage of the process to gain access to the confidential and highly confidential application information it claims to be necessary. We thus reject PRTC's argument that the Bureau erred

[234] PRTC Reply at 3-5 ("Only upon release of this [application] information would individual bidders be able to compare their proposals to a winning applicant's and validate the appropriateness of the Bureau's scoring.").

[235] PRTC Reply at 3.

[236] *Bringing Puerto Rico Together Fund Stage 2 Proposal Scores*, Public Notice, WC Docket No. 18-143, DA 21-718 (WCB 2021) available at https://www.fcc.gov/ecfs/filing/10623120554065. The Bureau also released non-confidential application information for all applicants, including PRTC and Liberty. PRTC Application available at https://www.fcc.gov/ecfs/filing/106230600408907; Liberty Application available at https://www.fcc.gov/ecfs/filing/106233022704580.

[237] *2019 PR USVI Order*, 34 FCC Rcd at 9114, para. 11.

[238] PRTC Reply at 3.

[239] *Protective Order* at 4-5, para. 7.

[240] *Protective Order* at Appendix A.

[241] PRTC Reply at 3 (arguing that the Bureau must release "(a) performance tier code; (b) latency tier code; (c) terrestrial network in miles broken down by the number of proposed miles of buried fiber, aerial wireline using standard poles, aerial wireline using composite poles, and fixed wireless; (d) the number of total network miles with redundancy; and (e) the methodology detailing how each of the mileage counts were developed").

in failing to provide access to certain confidential information.[242] Finally, we note that if PRTC had chosen to access the confidential application information available pursuant to the *Protective Order*, PRTC would have found, as we explain above, that the Bureau did not err in calculating the proposal scores for the GPON Municipios and Hybrid Municipios, and in selecting Liberty as the winning applicant of support for those areas. Because the Commission adopted specific evaluation criteria assigned numerical values, the calculation of each participant's score is ministerial and can easily be reproduced with examination of the confidential application information.

77. For the reasons discussed above, we find the Bureau appropriately scored the GPON Municipios and Hybrid Municipios, and reject PRTC's arguments and deny the Application for Review.

V. PROCEDURAL MATTERS

78. *Paperwork Reduction Act Analysis*. As we noted in the *Transitional Support FNPRM*, the rules that we adopt today specifically apply only to the four existing recipients of Stage 2 mobile support and the three existing recipients of phase-down support for fixed services in Puerto Rico and the USVI.[243] Therefore the reporting and recordkeeping requirements adopted in this Order are imposed on fewer than ten persons and are not subject to the Paperwork Reduction Act.[244]

79. *Final Regulatory Flexibility Certification.* The Regulatory Flexibility Act of 1980, as amended (RFA),[245] requires that a regulatory flexibility analysis be prepared for rulemaking proceedings, unless the agency certifies that "the rule will not have a significant economic impact on a substantial number of small entities."[246] The RFA generally defines "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[247] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[248] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[249]

80. This Report and Order and Order on Review provides transitional support for mobile providers in Puerto Rico and the U.S. Virgin Islands, and it extends the provision of phase-down support for fixed voice and broadband providers in the same areas. The Report and Order and Order on Review makes transitional mobile support available to the mobile providers who already receive Stage 2 support in the Puerto Rico and the U.S. Virgin Islands, and it extends frozen phase-down fixed broadband support to the providers that currently receive it. Four mobile carriers and three fixed providers in Puerto Rico

[242] *See* 47 CFR § 1.115(b). As a result of our conclusion discussed above, we dismiss as moot Liberty's Motion for Leave to File Surreply. Motion for Leave to File Surreply by Liberty Communications of Puerto Rico, LLC, WC Docket Nos. 18-143, 10-90 (filed Oct. 4, 2021).

[243] *Transitional Support FNPRM* at 11, para. 27, n.75.

[244] *See* 44 U.S.C. § 3502(3)(A)(i), (10).

[245] The RFA, see 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[246] 5 U.S.C. § 605(b).

[247] 5 U.S.C. § 601(6).

[248] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[249] Small Business Act, 15 U.S.C. § 632.

and the U.S. Virgin Islands currently receive Stage 2 mobile support and phase-down support for fixed services, respectively.[250]

81. These rules will not affect more than 7 providers out of the 1,778 providers currently receiving high-cost support. Accordingly, we anticipate that this Report and Order and Order on Review will not affect a substantial number of carriers, and so we do not anticipate that it will affect a substantial number of small entities. Therefore, we certify that the requirements of this Report and Order and Order on Review will not have a significant economic impact on a substantial number of small entities.

82. The Commission will send a copy of the Order, including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Congressional Review Act.[251] In addition, the Order and this final certification will be sent to the Chief Counsel for Advocacy of the SBA, and will be published in the Federal Register.[252]

83. *Congressional Review Act*. The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that this rule is non-major under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this Report and Order and Order on Review to Congress and the Government Accountability Office pursuant to 5 U.S.C. § 801(a)(1)(A).

VI. ORDERING CLAUSES

84. Accordingly, IT IS ORDERED, pursuant to the authority contained in sections 1, 2, 4(i), 214, 254, 303(r), and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 214, 254, 303(r), and 403, sections 1.1 and 1.425 of the Commission's rules, 47 CFR §§ 1.1 and 1.425, that this Report and Order IS ADOPTED.

85. IT IS FURTHER ORDERED that Part 54 of the Commission's rules IS AMENDED as set forth in Appendix A, and that any such rule amendments SHALL BE EFFECTIVE 30 days after publication in the Federal Register.

86. IT IS FURTHER ORDERED, pursuant to sections to sections 1, 4(i), and 5(c) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), and 155(c), and section 1.115 of the Commission's rules, 47 CFR § 1.115, that this Order on Review IS ADOPTED and, pursuant to section 1.103(a) of the Commission's rules, 47 CFR § 1.103(a), SHALL BE EFFECTIVE upon release.

87. IT IS FURTHER ORDERED, for the reasons stated herein, that the Application for Review filed by Puerto Rico Telephone Company, Inc. d/b/a CLARO IS DISMISSED IN PART as untimely and otherwise DENIED .

88. IT IS FURTHER ORDERED that, for the reasons stated herein, that the Motion for Leave to File Surreply by Liberty Communications of Puerto Rico LLC IS DISMISSED AS MOOT.

[250] *See Mobile Authorization Notices; Fixed Authorization Notices*.

[251] *See* 5 U.S.C. § 801(a)(1)(A).

[252] *See* 5 U.S.C. § 605(b).

89. IT IS FURTHER ORDERED that the Office of the Managing Director, Performance Evaluation and Records Management, SHALL SEND a copy of this Order and Order on Review to Congress and the Government Accountability Office pursuant to the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A).

90. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Order and Order on Review, including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

For the reasons set forth above, Part 54 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 54 – UNIVERSAL SERVICE

1. Authority for part 54 continues to read as follows:

AUTHORITY: 47 U.S.C. 151, 154(i), 155, 201, 205, 214, 219, 220, 254, 303(r), 403, and 1302 unless otherwise noted.

SUBPART D – UNIVERSAL SERVICE SUPPORT FOR HIGH COST AREAS

2. Amend section 54.313 by revising paragraphs (c), (c)(4) and (o), adding and reserving paragraph (p) and adding paragraph (q) to read as follows:

§ 54.313 Annual reporting requirements for high-cost recipients.

* * *

(c) In addition to the information and certifications in paragraph (a) of this section, price cap carriers that receive frozen high-cost support pursuant to § 54.312(a) shall provide:

* * *

(4) By July 1, 2016 and in subsequent years. A certification that all frozen-high cost support the company received in the previous year was used to build and operate broadband-capable networks used to offer the provider's own retail broadband service in areas substantially unserved by an unsubsidized competitor. Recipients of frozen high-cost support under § 54.1504(b), for annual reports due July 1, 2024, 2025, and 2026, shall certify that such support received after June 1, 2023 was used for resiliency and redundancy measures and to maintain their network footprint for voice and broadband services as of June 1, 2023.

* * *

(o) Recipients of Uniendo a Puerto Rico Fund or Connect USVI Fund Stage 2 mobile support and recipients of transitional support under section 54.1516 shall certify that they are in compliance with all requirements in this part for receipt of such support to continue.

(p) [Reserved]

(q) Recipients of transitional support under § 54.1516, as part of either the Uniendo a Puerto Rico Fund or Connect USVI Fund shall certify that such support was not used for costs that are (or will be) reimbursed by other sources of support, including Federal or local government aid or insurance reimbursements; and that support was not used for other purposes, such as the retirement of company debt unrelated to eligible expenditures, or other expenses not directly related to network restoration, hardening, and expansion consistent with the framework of the Uniendo a Puerto Rico Fund or Connect USVI Fund, respectively. Recipients of transitional support under § 54.1516 shall certify that they have conducted an annual review of the documentation required by § 54.1515(a) through (c) or § 54.1524, respectively, to determine the need for and to implement changes or revisions to disaster preparation and recovery documentation.

3. Amend section 54.1504 by revising the section title, revising paragraph (b) to read as follows:

§ 54.1504 Term of Stage 2 fixed support, phase-down of legacy fixed support, and reporting obligations for phase-down support recipient.

* * *

(b) *Phase-down of legacy support*. Stage 2 of the fixed Uniendo a Puerto Rico Fund and of the fixed Connect USVI Fund shall replace the legacy frozen high-cost support for the Territories. Beginning on a date determined by the Wireline Competition Bureau and announced by public notice following authorization of a winning application, frozen support recipient carriers will receive 2⁄3 frozen fixed support amortized for the first 12 months following the date announced by public notice; and 1⁄3 frozen fixed support amortized over the second 12-month period. Beginning June 1, 2023, legacy frozen support recipient carriers that continue receiving phase-down legacy support for use in accordance with applicable rules shall be authorized to continue to receive 1/3 frozen fixed support for the geographic areas in which it was not selected as the winning applicant of the Stage 2 competitive process. The frozen support recipient carriers shall receive a monthly support amount equal to the amortized monthly 1/3 frozen fixed support amount until December 31, 2025, and zero frozen support thereafter.

4. Add the following sections to Subpart O to part 54 to read as follows:

Subpart O—Uniendo a Puerto Rico Fund and Connect USVI Fund

Sec.

* * *

54.1516 Uniendo a Puerto Rico Fund and the Connect USVI Fund—Transitional support for mobile service

54.1517 Transitional support mobile carrier eligibility

54.1518 Appropriate uses of transitional mobile support

54.1519 Geographic area eligible for transitional mobile support

54.1520 Provision of transitional mobile support

54.1521 Transitional mobile support additional annual reporting

54.1522 Security Reporting

54.1523 Spending Plans for Recipients of Legacy Frozen Phase-Down Support

54.1524 Disaster preparation and response measures; Disaster Information Reporting System

* * *

§ 54.1516 Uniendo a Puerto Rico Fund and the Connect USVI Fund—Transitional support for mobile service.

(a) *Term of support.* Uniendo a Puerto Rico Fund or the Connect USVI Fund transitional mobile support shall be made available to eligible mobile carriers that elect to make a commitment to their eligible service areas for a term of up to 24 months to begin in the month immediately following the end of the carrier's Stage 2 mobile support. The term of support shall end the earlier of either 24 months following a carrier's authorization to begin receiving transitional support or the authorization of support under a long-

term funding mechanism subsequently adopted by the Commission providing mobile wireless support in the carrier's respective territory.

(b) *Election of support*. Eligible mobile carriers as provided in section 54.1517 shall have a one-time option to elect to receive transitional mobile support from the Uniendo a Puerto Rico Fund and the Connect USVI Fund for the eligible service area. To participate, an eligible carrier must submit an election to participate within 15 days following publication in the Federal Register of the order adopting transitional mobile support of the Uniendo a Puerto Rico Fund and the Connect USVI Fund. Each carrier must submit its election to receive transitional support to the Commission through the Commission's Electronic Comment Filing System as well as by emailing a copy of its election to ConnectAmerica@fcc.gov.

(c) *Support amounts*. An eligible carrier that elects to receive transitional support shall receive a pro rata share of its monthly Stage 2 mobile support as of May 1, 2023. Each eligible carrier may receive 50% of its Stage 2 monthly mobile support amount as of May 1, 2023 in the first 12-month period (months 1-12) of transitional support, and 25% of its current monthly mobile Stage 2 support as if May 1, 2023 in the second 12-month period (months 13-24) of transitional support. However, the provision of monthly transitional support may end prior to the completion of the 24-month term as provided in subsection (a).

(d) *Return of unused support.* Each eligible mobile carrier that elects to receive transitional support from the Uniendo a Puerto Rico Fund or the USVI Connect Fund will receive monthly installments of its pro rata share of mobile support over the support period provided in subsections (a) and (c). A mobile carrier that fails to use all its eligible transitional mobile support pursuant to section 54.1517 within one year of the end of the support term shall return an amount equal to the unused amount of transitional support to the Administrator within 30 days following the end of the term of support under paragraph (a).

§ 54.1517 Transitional support mobile carrier eligibility.

Facilities-based mobile carriers that are recipients of mobile support from Stage 2 as of May 1, 2023 of the Uniendo a Puerto Rico Fund or the Connect USVI Fund shall be eligible to elect and receive transitional mobile support in the areas where they receive Stage 2 support.

§ 54.1518 Appropriate uses of transitional mobile support.

Recipients of Uniendo a Puerto Rico and Connect USVI transitional mobile support shall use the support to improve the redundancy and resiliency of facilities for 4G LTE or better technologies to help ensure continuity of service by preventing or withstanding damage from disasters, including the maintenance of backup power systems for such networks.

§ 54.1519 Geographic area eligible for transitional mobile support.

Uniendo a Puerto Rico Fund and Connect USVI Fund transitional mobile support may be used for all geographic areas of Puerto Rico or of the U.S. Virgin Islands, respectively, within a recipient's designated eligible telecommunications carrier service area.

§ 54.1520 Provision of transitional mobile support.

A recipient of transitional mobile support shall commit to, at a minimum, maintaining its network coverage area as of June 30, 2023, or 100 percent of its network coverage area prior to Hurricanes Maria and Irma as specified by section 54.1514(a), whichever is greater. The recipient shall also commit to

provide a minimum level of service that meets or exceeds network levels and at reasonably comparable levels to those services and rates available in urban areas as required by section 54.1521(a).

§ 54.1521 Transitional mobile support additional annual reporting.

(a) Each recipient of transitional mobile support shall report and certify, no later than thirty (30) days following the end of the calendar year in which it receives such transitional support, that it has met the requisite mobile transmissions supporting voice and data to and from the network meeting or exceeding the following:

(1) For 4G LTE service, outdoor data transmission rates of at least 10 Mbps download/1 Mbps upload, at least one service plan that includes a data allowance of at least 5 GB that is offered to consumers at a rate that is reasonably comparable to similar service plans offered by mobile wireless providers in urban areas, and latency of 100 milliseconds or less round trip; and

(2) For 5G-NR service, outdoor data transmission rates of at least 35 Mbps download/3 Mbps upload and a plan offered to consumers at a rate that is reasonably comparable to similar service plans offered by mobile wireless providers in urban areas.

(b) Each recipient of transitional mobile support shall submit no later than thirty (30) days following the end of the calendar year an annual map reporting the network hardening activities undertaken during the prior calendar year. The recipient must submit, along with the map, a detailed narrative description of the network hardening activities identified and of how it made use of the support to facilitate those network hardening activities.

(c) Each report shall be submitted to the Office of the Secretary of the Commission through the Electronic Comment Filing System clearly referencing the appropriate docket for the Uniendo a Puerto Rico Fund and the Connect USVI Fund; the Administrator; and the authority in the U.S. Territory, or Tribal governments, as appropriate. All filings and certifications shall also be submitted to the Bureau at ConnectAmerica@fcc.gov.

(d) Recipients of transitional mobile support have a continuing obligation to maintain the accuracy and completeness of the information provided in their reports. All recipients of transitional mobile support shall provide information about any substantial change that may be of decisional significance regarding their eligibility for transitional support and compliance with Uniendo a Puerto Rico Fund and the Connect USVI Fund requirements as an update to their report submitted to the entities listed in paragraph (c) of this section. Such notification of a substantial change, including any reduction in the network coverage area being served or any failure to comply with any of the transitional support requirements, shall be submitted within ten (10) business days after the reportable event occurs.

(e) In order for a recipient of transitional mobile support to continue to receive transitional mobile support for the second 12-month period, it must submit the reports and certification required by this section by the deadlines set forth above.

§ 54.1522 Security Reporting

By August 31, 2023, support recipients under section 54.1516 shall file their first network security report that identifies and explains the network security controls implemented, their effectiveness in fending off cybersecurity attacks, and how those controls are commensurate with established network security best practices and standards or an established risk management framework. By March 31, 2025, support recipients under section 54.1516 shall file their second network security report, covering the time period between August 31, 2023, and March 1, 2025, that identifies and explains the network security controls implemented, their effectiveness in fending off cybersecurity attacks and how those controls are

commensurate with established network security best practices and standards or an established risk management framework.

§ 54.1523 Spending Plans for Recipients of Legacy Frozen Phase-Down Support

(a) *Spending plan submissions for phase-down support recipients*. By July 1, 2023, recipients of support under section 54.1504(b) shall submit a spending plan for its use of that support for redundancy, resiliency, and maintenance measures to the Bureau for approval. Phase-down support shall be suspended if a recipient fails to submit a spending plan by the requisite deadline or fails to receive approval from the Bureau. Recipients of support must submit an updated spending plan if the details in their spending plan change.

(b) *Annual reporting requirements for phase-down support recipients*. By January 31, 2024, 2025, and 2026, recipients of support under section 54.1504(b) shall file with the Commission a report of how they spent phase-down support on resiliency and redundancy measures consistent with the approved spending plan approved under paragraph (a).

(c) Recipients of support under section 54.1504(b) that fail to use all such support consistent with the approved spending plan approved under paragraph (a) by December 31, 2026 shall return an amount equal to the unused amount of support to the Administrator within 30 days of December 31, 2026.

(d) By January 31, 2027 recipients of support under section 54.1504(b) shall file with the Commission a final report of how they spent phase-down support on resiliency and redundancy measures consistent with the approved spending plan approved under paragraph (a).

§ 54.1524 Disaster preparation and response measures; Disaster Information Reporting System.

(a) Each recipient of support under section 54.1504(b) or 54.1516 shall maintain a Disaster Preparation and Response Plan document approved by the Bureau for Stage 2 of the Uniendo a Puerto Rico Fund or Connect USVI Fund, as applicable, that describes and commits to the methods and procedures that it will use, during the period in which it receives support under section 54.1516 or 54.1504(b), to prepare for and respond to disasters in the Territories, including detailed descriptions of methods and processes to strengthen infrastructure; to ensure network diversity; to ensure backup power; to monitor its network; and to prepare for emergencies. If an eligible recipient has not previously submitted a Disaster Preparation and Response Plan that was approved by the Bureau prior to the authorization to receive fixed or mobile support, as applicable, the eligible recipient must submit a Disaster Preparation and Response Plan for Bureau approval by July 1, 2023. Phase-down support shall be suspended if a recipient fails to submit a Disaster Preparation and Response Plan by the requisite deadline or fails to receive approval from the Bureau.

(b) Each recipient of support under section 54.1504(b) or 54.1516 shall maintain the Disaster Preparation and Response Plan approved by the Bureau for Stage 2 of each funding mechanism that completely and thoroughly address the criteria enumerated in subsection (a). Recipients shall materially comply with the representations in the document and shall amend their Disaster Preparation and Response Plan following any material change(s) to internal processes and responsibilities and provide the updated Disaster Preparation and Response Plan to the Bureau within 10 business days following the material change(s).

(c) Each recipient of support under section 54.1504(b) or 54.1516 shall perform mandatory Disaster Information Reporting System reporting.

(d) A recipient's failure to comply with the requirements of this section may result in the withholding of transitional or phase-down support until the support recipient has cured deficiencies identified by the Bureau.

APPENDIX B

Bringing Puerto Rico Together Fund, Scored Applications

BRINGING PUERTO RICO TOGETHER FUND
SCORED APPLICATIONS

GPON Municipios

Municipio	Applicant	Final score	Price score	Performance score	Latency score	Resiliency score	Redundancy score	Proposal price	Performance tier	Latency tier	Buried fiber	Aerial std_poles	Aerial comp_poles	Fixed wireless	Total manual	Total automatic	Miles with backup	Locations satellite	Locations backup
Barranquitas	Liberty_FRN 0013778857_Schedule B_090320	59.00	53.00	0.00	0.00	6.00	0.00	531,383.57	1	1	98.89	10.99	0.00	0.00	109.88	109.88	109.88	0.00	0.00
Barranquitas	PRTC_FRN 0001731470_Schedule B_090320	67.56	15.00	0.00	0.00	52.56	0.00	{[redacted]}											
Culebra	Liberty_FRN 0013778857_Schedule B_090320	32.00	26.00	0.00	0.00	6.00	0.00	132,452.53	1	1	26.10	2.90	0.00	0.00	29.00	29.00	29.00	0.00	0.00
Culebra	PRTC_FRN 0001731470_Schedule B_090320	33.66	5.00	0.00	0.00	28.66	0.00	{[redacted]}											
Rincón	Liberty_FRN 0013778857_Schedule B_090320	72.00	66.00	0.00	0.00	6.00	0.00	224,962.73	1	1	86.00	9.56	0.00	0.00	95.56	95.56	95.56	0.00	0.00
Rincón	PRTC_FRN 0001731470_Schedule B_090320	78.00	27.00	0.00	0.00	51.00	0.00	{[redacted]}											

Hybrid Municipios

Municipio	Applicant	Final score	Price score	Performance score	Latency score	Resiliency score	Redundancy score	Proposal price	Performance tier	Latency tier	Buried fiber	Aerial std_poles	Aerial comp_poles	Fixed wireless	Total manual	Total automatic	Miles with backup	Locations satellite	Locations backup
Arroyo	Liberty_FRN 0013778857_Schedule B_090320	116.41	75.00	0.00	0.00	41.41	0.00	167,645.83	1	1	22.59	50.33	0.00	0.00	72.92	72.92	72.92	0.00	0.00
Arroyo	PRTC_FRN 0001731470_Schedule B_090320	122.24	40.00	25.00	0.00	40.92	16.31	{[redacted]}											
Barceloneta	Liberty_FRN 0013778857_Schedule B_090320	94.25	32.00	25.00	0.00	37.25	0.00	76,307.63	2	1	27.82	45.54	0.00	0.00	73.36	73.36	73.36	0.00	0.00
Barceloneta	PRTC_FRN 0001731470_Schedule B_090320	114.20	32.00	25.00	0.00	42.04	15.16	{[redacted]}											
Cidra	Liberty_FRN 0013778857_Schedule B_090320	93.00	87.00	0.00	0.00	6.00	0.00	828,924.59	1	1	235.79	26.20	0.00	0.00	261.99	261.99	261.99	0.00	0.00
Cidra	PRTC_FRN 0001731470_Schedule B_090320	109.10	28.00	25.00	0.00	40.25	15.84	{[redacted]}											
Guayama	Liberty_FRN 0013778857_Schedule B_090320	91.00	85.00	0.00	0.00	6.00	0.00	663,977.61	1	1	178.30	19.81	0.00	0.00	198.11	198.11	198.11	0.00	0.00
Guayama	PRTC_FRN 0001731470_Schedule B_090320	101.29	19.00	25.00	0.00	41.98	15.31	{[redacted]}											
Sabana Grande	Liberty_FRN 0013778857_Schedule B_090320	89.00	86.00	0.00	0.00	3.00	0.00	535,005.18	1	1	118.41	6.23	0.00	0.00	124.64	124.64	124.64	0.00	0.00
Sabana Grande	PRTC_FRN 0001731470_Schedule B_090320	108.47	24.00	25.00	0.00	43.32	16.15	{[redacted]}											
Salinas	Liberty_FRN 0013778857_Schedule B_090320	82.00	76.00	0.00	0.00	6.00	0.00	584,699.11	1	1	158.91	17.66	0.00	0.00	176.57	176.57	176.57	0.00	0.00
Salinas	PRTC_FRN 0001731470_Schedule B_090320	107.73	25.00	25.00	0.00	44.89	12.84	{[redacted]}											
Santa Isabel	Liberty_FRN 0013778857_Schedule B_090320	88.29	57.00	0.00	0.00	31.29	0.00	255,508.57	1	1	46.20	50.35	0.00	0.00	96.55	96.55	96.55	0.00	0.00
Santa Isabel	PRTC_FRN 0001731470_Schedule B_090320	99.73	17.00	25.00	0.00	41.63	16.10	{[redacted]}											
Yabucoa	Liberty_FRN 0013778857_Schedule B_090320	96.00	93.00	0.00	0.00	3.00	0.00	792,754.62	1	1	192.31	10.12	0.00	0.00	202.43	202.43	202.43	0.00	0.00
Yabucoa	PRTC_FRN 0001731470_Schedule B_090320	107.78	26.00	25.00	0.00	41.96	14.82	{[redacted]}											

STATEMENT OF
CHAIRWOMAN JESSICA ROSENWORCEL

Re: *The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, WC Docket No. 18-143; *Connect America Fund*, WC Docket No. 10-90, Report and Order and Order on Review (April 19, 2023).

Hurricane season will be underway in just a few weeks. The damage these storms can do is now all too familiar because the images—homes torn apart, flooded streets, and downed power lines—linger. I know because I have seen it up close and witnessed first-hand how dangerous weather can harm communications. I saw it when I visited Puerto Rico after Hurricane Maria and again last year after Hurricane Fiona, when I met with officials charged with emergency response, including Governor Pedro Pierluisi and members of the Telecommunications Regulatory Board. What I also saw on this most recent trip was incredible progress with communications networks that were more resilient and restored more quickly after a major weather event than ever before. That's in large part a result of the Federal Communications Commission's efforts through the Bringing Puerto Rico Together Fund. For the last three years, this fund and the Connect USVI Fund have provided support to carriers to strengthen networks in the Caribbean region. Today, I am pleased that the agency has determined a way forward for this effort that provides clarity for providers as they continue efforts to harden, restore, and expand communications networks.