

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Lead, Intergovernmental relation, Reporting and recordkeeping requirements.

Dated: March 28, 2002.  
**A. Stanley Meiburg,**  
*Acting Regional Administrator, Region 4.*

Chapter I, title 40, *Code of Federal Regulations*, is amended as follows:

**PART 52—[AMENDED]**

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

**Subpart B—Alabama**

2. Section 52.50(c) is amended by revising the entry for “Section 335–3–14.04” to read as follows:

**§ 52.50 Identification of plan.**

\* \* \* \* \*  
 (c) \* \* \*

**EPA APPROVED ALABAMA REGULATIONS**

State citation	Title subject	Adoption date	EPA approval date	Federal Register notice
*	*	*	*	*
<b>Chapter No. 335–3–14—Air Permits</b>				
Section 335–3–14.04.	Air Permits Authorizing Construction in Clean Air Areas [prevention of Significant Deterioration Permitting (PSD)].	February 5, 2002 .....	April 10, 2002 .....	[Insert citation of publication]
*	*	*	*	*

[FR Doc. 02–8531 Filed 4–9–02; 8:45 am]  
 BILLING CODE 6560–50–P

**FEDERAL COMMUNICATIONS COMMISSION**

**47 CFR Parts 2, 25 and 87**

[ET Docket No. 98–142; FCC 02–23]

**Mobile-Satellite Service above 1 GHz**

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** This document makes new spectrum available on a co-primary basis to the fixed-satellite service (“FSS”). These FSS allocations will provide necessary feeder link spectrum for a number of commercial Non-Geostationary Satellite Orbit Mobile-Satellite Service (“NGSO MSS”) systems. Specifically, we allocate the bands 5091–5250 MHz and 15.43–15.63 GHz for Earth-to-space transmissions (“uplinks”) and the band 6700–7025 MHz for space-to-Earth transmissions (“downlinks”). In addition, we grandfather two satellite systems and their associated earth stations at three sites in the downlink band 7025–7075 MHz. In accordance with international regulations, the use of these FSS allocations is limited to feeder links that will be used in conjunction with the service links of NGSO MSS systems. These actions are intended to facilitate

the introduction of innovative global radiocommunication services, consistent with international allocations for these frequency bands, and will provide incumbent operations with adequate protection from harmful interference.

**DATES:** Effective May 10, 2002.

**FOR FURTHER INFORMATION CONTACT:** Tom Mooring, Office of Engineering and Technology, (202) 418–2450, TTY (202) 418–2989, email: *tmooring@fcc.gov*.

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission’s *Report and Order*, ET Docket No. 98–142; FCC 02–23, adopted January 28, 2002, and released February 7, 2002. The full text of this document is available on the Commission’s internet site at *www.fcc.gov*. It is also available for inspection and copying during regular business hours in the FCC Reference Center (Room CY–A257), 445 Twelfth Street, SW, Washington, DC 20554. The complete text of this document may be purchased from the Commission’s duplication contractor Qualex International, (202) 863–2893 voice, (202) 863–2898 Fax, *qualexint@aol.com* email, Portals II, 445 12th St., SW, Room CY–B402, Washington, DC 20554.

**Summary of Report and Order**

1. We are allocating 325 megahertz of spectrum on a co-primary basis for NGSO MSS feeder downlinks, with an additional 50 megahertz limited to two grandfathered satellite systems and their associated earth stations at three sites.

The grandfathered sites are listed in footnote NG173. In addition, we are allocating 359 megahertz of spectrum on a co-primary basis for NGSO MSS feeder uplinks. A portion of this primary uplink allocation (59 megahertz) is temporary in nature. The need for this amount of feeder link spectrum is based on the amount of NGSO MSS service link spectrum that is available, the frequency reuse of the service link spectrum, the need for NGSO MSS feeder link earth stations (“gateways”) to service multiple satellites, and the need to coordinate with incumbent terrestrial operations. These allocations will be used exclusively by commercial NGSO MSS systems for the connection between their satellites and gateways. We have previously allocated spectrum for 2 GHz MSS and Big LEO service links. (Big LEO service links are at 1610–1626.5 MHz and 2483.5–2500 MHz and 2 GHz MSS service links are at 1990–2025 MHz and 2165–2200 MHz.) The adoption of these FSS allocations will allow us to remove conditions placed on Big LEO and 2 GHz MSS licensees’ feeder links, which we have previously licensed by waiver.

2. The band 5000–5250 MHz is currently allocated to the aeronautical radionavigation service (“ARNS”) and to several aeronautical support services on a primary basis. ARNS is a radionavigation service intended for the safe operation of aircraft. The microwave landing system (“MLS”), an

ARNS system, is an all-weather precision approach and landing system that currently operates in the band 5030–5091 MHz. Prior to this action, MLS requirements had unencumbered use of the band 5000–5250 MHz over any other use, including other ARNS systems and other primary services.

3. To provide spectrum for NGSO MSS feeder uplinks, we are removing MLS's right of precedence over all other uses in the band 5150–5250 MHz, but are maintaining that right in the band 5000–5150 MHz. Consistent with international allocations, no new NGSO MSS feeder link assignments will be made in the band 5091–5150 MHz after January 1, 2008; and two years later, FSS use of this band becomes secondary to ARNS. In addition, MLS requirements that can not be met in the band 5000–5091 MHz take precedence over all other uses of the band 5091–5150 MHz. These requirements are codified at 47 CFR 2.106, footnote S5.444A, and are being adopted domestically in this *Order*. Together, these actions will accommodate first generation NGSO MSS feeder link requirements, while providing existing MLS stations, which operate in the band 5030–5091 MHz, and gateways, which will operate in the band 5091–5250 MHz, with non-overlapping spectrum. We are also removing unused and unneeded aeronautical support allocations. Specifically, we are removing the aeronautical mobile-satellite (R) service ("AMS(R)S") from

the bands 5150–5250 MHz and 15.4–15.7 GHz, the inter-satellite service ("ISS") from the bands 5000–5250 MHz and 15.4–15.7 GHz, and the FSS to the extent that it is limited to aeronautical support functions from the bands 5000–5250 MHz and 15.4–15.7 GHz.

4. Incumbent terrestrial users of the band 6700–7075 MHz raise several concerns with regard to sharing this band with NGSO MSS feeder downlinks. To resolve these concerns, we adopt the proposed power flux-density ("pfd") limits and establish coordination procedures in the band 6700–6875 MHz using existing parts 25 and 101 rules. The pfd limits have been added to § 25.208. If an NGSO MSS satellite transmitting in the band 6700–6875 MHz causes harmful interference to previously licensed co-frequency Public Safety facilities, then that satellite licensee is obligated to remedy the interference complaint. This requirement has been added as § 25.147.

5. We will address coordination requirements in the band 6875–7025 MHz in a future proceeding, but as an interim measure specify that coordination in this band will be on an individual basis using existing parts 25 and 101 rules. The focus of that proceeding will be the issue of "growth zones," the protection of incumbent mobile operations in their normal operating area; and the protection of receive earth stations from later-licensed mobile stations. In addition, we observe that terrestrial fixed users' concerns

about effective and equitable use of spectrum in bands shared by the FSS and the fixed service are being considering in IB Docket No. 00–203.

6. In order to permit (mobile) television pickup ("TVPU") stations to continue to operate freely on two channels in essentially all of the country (in addition to two other channels, which will not share spectrum with gateways), we are limiting the use of the band 7025–7075 MHz to three gateways, two of which are operational and the other of which is undergoing testing. In addition, we recommend that, in the band 6875–7125 MHz, airborne TVPU stations use the channels 7075–7100 MHz and 7100–7125 MHz wherever possible. We find that these actions balance competing demands for spectrum and will mitigate interference between satellite and terrestrial services.

7. We explicitly require that applications for commercial earth stations in the bands 5091–5250 MHz and 15.43–15.63 GHz be coordinated with Federal agencies. In order to better protect MLS operations in the band 5000–5091 MHz, we recommend that non-Government tracking and telecommand operations be conducted in the band 5150–5250 MHz. These requirements are in footnotes US344 and US359 and in §§ 25.202 and 87.173. The following table summarizes the existing domestic allocations versus the allocations we are adopting in this *Order*.

EXISTING VS. ADOPTED ALLOCATIONS

[All services are allocated on a primary basis, unless otherwise stated]

Band	Existing allocations	Adopted allocations	Summary of major changes
359 Megahertz Allocated for Commercial NGSO MSS Feeder Uplinks, 300 of which is permanent (Prior to this action, Federal & non-Federal Gov't allocations were identical in the hands of 5000–5250 MHz and 15.4–15.7 GHz)			
5000–5091 MHz ....	ARNS (MLS takes precedence over other uses; MLS currently operated in the sub-band 5030–5091 MHz).	ARNS (MLS takes precedence over other uses).	Additional 59 megahertz for commercial NGSO MSS feeder uplinks on a temporary, primary basis.
5091–5150 MHz ....	AMS(R)S .....  FSS & ISS (limited to aeronautical support).	non-Federal Gov't FSS (limited to NGSO MSS feeder uplinks). ARNS (MLS takes precedence over other uses). AMS(R)S .....	Maintains MLS's right of precedence in the band 5000–5150 MHz. Reduction for 150 megahertz for FSS & ISS used for aeronautical support.
5150–5250 MHz ....	ARNS (MLS takes precedence over other uses). AMS(R)S .....	non-Federal Gov't FSS (limited to NGSO MSS feeder uplinks). ARNS .....	Additional 100 megahertz for commercial NGSO MSS feeder uplinks. Reduction of 100 megahertz for AMS(R)S and for FSS & ISS used for aeronautical support.
15.40–15.43 GHz ..	FSS & ISS (limited to aeronautical support). (Available for U–NII devices) ..... ARNS .....	RDSS (downlinks in the sub-band 5150–5216 MHz). (Available for U–NII devices) ..... ARNS .....	MLS loses right of precedence in 100 megahertz.
15.43–15.63 GHz ..	AMS(R)S .....  FSS & ISS (limited to aeronautical support).	non-Federal Gov't FSS (limited to NGSO MSS feeder uplinks). ARNS .....	Additional 200 megahertz for commercial NGSO MSS feeder uplinks. Reduction of 300 megahertz for AMS(R)S and for FSS & ISS used for aeronautical support.

EXISTING VS. ADOPTED ALLOCATIONS—Continued

[All services are allocated on a primary basis, unless otherwise stated]

Band	Existing allocations	Adopted allocations	Summary of major changes
15.63–15.70 GHz ..	.....	ARNS .....	
325 Megahertz Allocated for Commercial NGSO MSS Feeder Downlinks, with an additional 50 megahertz limited to grandfathered facilities (The band 6700–7075 MHz is non-Federal Government exclusive spectrum.)			
6700–6785 MHz ....	FSS (uplinks; the sub-band 6725–6875 MHz is part of the internationally planned band that extends from 6725–7025 MHz). FIXED (half of the band 6525–6875 MHz that is used by common carrier & private operational fixed point-to-point microwave licenses).	FSS (uplinks) (downlinks, limited to NGSO MSS feeder links). FIXED .....	Additional 175 megahertz for commercial NGSO MSS feeder downlinks.  Require coordination using Part 25 and Part 101 rules.
6875–7025 MHz ....	FSS (uplinks; remainder of the internationally planned band that extends from 6725–7025 MHz; the sub-band 7025–7075 MHz is available for SDARS feeder links).	FSS (uplinks) (downlinks, limited to NGSO MSS feeder links). FIXED & MOBILE .....	Additional 150 megahertz for commercial NGSO MSS feeder downlinks; case-by-case coordination required on interim basis.
7025–7075 MHz ....	FIXED & MOBILE (used by BAS and CARS licensees for ENG, STLs, ICR & remote event coverage).	FSS (uplinks) (downlinks, limited to grandfathered NGSO MSS feeder links). FIXED & MOBILE .....	Additional 50 megahertz for commercial NGSO MSS feeder downlinks, limited to 2 grandfathered systems and 3 sites.

**Final Regulatory Flexibility Certification**

8. The Regulatory Flexibility Act (“RFA”)<sup>1</sup> requires that a regulatory flexibility analysis be prepared for notice and comment rulemaking proceedings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.” The RFA generally defines “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act. 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).

9. This Report and Order allocates the bands 5091–5250 MHz and 15.43–15.63 GHz for FSS uplinks on a primary basis, allocates the band 6700–7025 MHz on a primary basis for FSS downlinks, and limits the use of these FSS allocations to feeder links that would be used in conjunction with the service links of NGSO MSS systems. In addition, two satellite systems and three sites are grandfathered in the downlink band 7025–7075 MHz. We take this action on

our own initiative in order to adopt domestically the NGSO MSS feeder link allocations that have been adopted internationally. These allocations will accommodate the growing demand for NGSO MSS services and will provide satellite operators with increased flexibility in the design of their systems.

10. The Commission has not developed a definition of small entities specifically applicable to the satellite services licensees here at issue. Therefore, the applicable definition of small entity in the satellite services industry is the definition under the Small Business Administration (“SBA”) rules applicable to Communications Services “Not Elsewhere Classified.”<sup>2</sup> This definition provides that a small entity is expressed as one with \$11.0 million or less in annual receipts. According to Census Bureau data, there are 848 firms that fall under the category of Communications Services, Not Elsewhere Classified. Of those, approximately 775 reported annual receipts of \$11 million or less and qualify as small entities.<sup>3</sup> The Census Bureau category is very broad and commercial satellite services constitute only a subset of its total.

11. None of the NGSO MSS licensees is a small business because each has revenues in excess of \$11 million annually or has a parent company or

investors that have revenues in excess of \$11 million annually.

12. The Commission did not receive any comments on its the initial regulatory flexibility certification. Nonetheless, we take this opportunity to explain a *de minimus* burden with regards to terrestrial users in the band 6700–7025 MHz. In the *Notice of Proposed Rule Making*, the Commission proposed to allocate the band 6700–7075 MHz to the FSS for satellite transmissions down to earth stations on a primary shared basis with incumbent users. Because such co-primary use implies coordination, the comments of the terrestrial users focused on limiting the impact of the allocation by placing restrictions on earth station use of the band, that is, the terrestrial parties requested that the normal coordination process not apply to this band. In the Report and Order, the Commission requires the use of the normal coordination process in the band 6700–6875 MHz, which is used by fixed point-to-point microwave licensees. If gateway applications are filed prior to the completion of an upcoming rule making that will deal with final coordination rules in the band 6875–7025 MHz, then case-by-case coordination will be required of the gateway applicants. Our action to limit the number of sites for earth stations in the band 7025–7075 MHz to three will also reduce future coordination costs. The Commission finds that, because of the limited number of receive earth stations to be deployed and their viable locations (that is, in rural areas), there will be minimal impact on potential

<sup>1</sup> The RFA, 5 U.S.C. 601 *et. seq.*, has been amended by the Contract with American Advancement Act of 1996, Public Law 104–121, 110 Stat. 847 (1996) (“CWAAA”). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (“SBREFA”).

<sup>2</sup> 13 CFR 121.201, Standard Industrial Classification (NAICS) Codes 48531, 513322, 51334, 513391.

<sup>3</sup> U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 2D, Employment Size of Firms: 1992.

coordination costs. We therefore certify that this Report and Order will not have a significant economic impact on a substantial number of small entities.

13. The Commission will send a copy of the Report and Order, including a copy of this final certification, in a report to Congress pursuant to the Congressional Review Act, 5 U.S.C. 801(a)(1)(A). In addition, the Report and Order and this certification will be sent to the Chief Counsel for Advocacy of the Small Business Administration, 5 U.S.C. 605(b).

#### Ordering Clauses

14. Authority for issuance of this Report and Order is contained sections 1, 4(i), 301, 302, 303(e), 303(f), 303(g), 303(r), 304, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 301, 302, 303(e), 303(f), 303(g), 303(r), 304, and 307.

15. Parts 2, 25, and 87 of the Commission's rules are amended May 10, 2002.

16. The Commission's Consumer Information Bureau, Reference Information Center, Shall send a copy of this Report and Order, including the

Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

#### List of Subjects in 47 CFR

##### 42 CFR Part 2

Telecommunications.

##### 42 CFR Part 25

Satellites.

##### 42 CFR Part 87

Air Transportation.

Federal Communications Commission.

**William F. Caton,**

*Acting Secretary.*

#### Rules Changes

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 2, 25, and 87 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. Section 2.106 is amended as follows:

a. Revise pages 45, 52, 55, 56, 57, 58, and 67.

b. In the list of International Footnotes under heading I., add footnotes S5.351A and S5.384A; remove footnotes S5.408 and S5.417; and revise footnotes S5.447, S5.448, and S5.511A.

c. In the list of International Footnotes under heading II., remove footnotes 733, 753F, 796, and 797.

d. In the list of United States (US) Footnotes, remove footnote US306 and add footnotes US344 and US359.

e. In the list of Non-Federal Government (NG) Footnotes, add footnotes NG171 and NG172.

#### § 2.106 Table of Frequency Allocations.

The revisions and additions read as follows:

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BILLING CODE 6712-01-P

1610-1670 MHz (UHF)			United States Table		FCC Rule Part(s)
International Table			Federal Government	Non-Federal Government	
Region 1	Region 2	Region 3			
1610-1610.6 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION  S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space)  S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space)  S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372	1610-1610.6 MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE(Earth-to-space)  S5.341 S5.364 S5.366 S5.367 S5.368 S5.372 US208		Satellite Communications (25) Aviation (87)
1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION  S5.149 S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space)  S5.149 S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space)  S5.149 S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372	1610.6-1613.8 MOBILE-SATELLITE (Earth-to-space) US319 RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space)  S5.149 S5.341 S5.364 S5.366 S5.367 S5.368 S5.372 US208		
1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth)  S5.341 S5.355 S5.359 S5.363 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION RADIODETERMINATION- SATELLITE (Earth-to- space) Mobile-satellite (space-to- Earth)  S5.341 S5.364 S5.365 S5.366 S5.367 S5.368 S5.370 S5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to- Earth) Radiodetermination- satellite (Earth-to-space)  S5.341 S5.355 S5.359 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.372	1613.8-1626.5 MOBILE-SATELLITE (Earth-to-space) US319 AERONAUTICAL RADIONAVIGATION US260 RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth)  S5.341 S5.364 S5.365 S5.366 S5.367 S5.368 S5.372 US208		

2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.351A Radiolocation S5.150 S5.371 S5.397 S5.398 S5.399 S5.400 S5.402	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.351A RADIOLOCATION RADIO DETERMINATION- SATELLITE (space-to- Earth) S5.398 S5.150 S5.402	2483.5-2500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.351A RADIOLOCATION Radiodetermination-satellite (space-to-Earth) S5.398 S5.150 S5.400 S5.402	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 RADIO DETERMINATION- SATELLITE (space-to- Earth) S5.398 S5.150 S5.402 US41	2483.5-2500 MOBILE-SATELLITE (space-to-Earth) US319 RADIO DETERMINATION- SATELLITE (space-to- Earth) S5.398 S5.150 S5.402 US41 NG147	ISM Equipment (18) Satellite Communications (25) Private Land Mobile (90) Fixed Microwave (101)
2500-2520 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.384A MOBILE-SATELLITE (space- to-Earth) S5.403 S5.351A S5.405 S5.407 S5.412 S5.414	2500-2520 FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.384A MOBILE-SATELLITE (space-to-Earth) S5.403 S5.351A S5.404 S5.407 S5.414 S5.415A	2500-2520 FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.384A MOBILE-SATELLITE (space-to-Earth) S5.403 S5.351A	2500-2655 FIXED S5.409 S5.411 US205 FIXED-SATELLITE (space-to-Earth) NG102 MOBILE except aeronautical mobile BROADCASTING- SATELLITE NG101	2500-2655 FIXED S5.409 S5.411 US205 FIXED-SATELLITE (space-to-Earth) NG102 MOBILE except aeronautical mobile BROADCASTING- SATELLITE NG101	Domestic Public Fixed (21) Auxiliary Broadcasting (74)
2520-2655 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.384A BROADCASTING- SATELLITE S5.413 S5.416	2520-2655 FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.384A BROADCASTING- SATELLITE S5.413 S5.416 S5.339 S5.403	2520-2535 FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.384A BROADCASTING- SATELLITE S5.413 S5.416 S5.403 S5.415A	2520-2535 FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.384A BROADCASTING- SATELLITE S5.413 S5.416 S5.339 US205 US269	2520-2535 FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.384A BROADCASTING- SATELLITE S5.413 S5.416 S5.339 US205 US269	
S5.339 S5.403 S5.405 S5.412 S5.418	S5.339 S5.403	S5.339 S5.418	S5.339 US205 US269	S5.339 US269	

International Table		United States Table		FCC Rule Part(s)
Region 1	Region 2	Federal Government	Non-Federal Government	
	Region 3	3700-5650 MHz (SHF)		
See previous page for 3600-4200 MHz	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	3700-4200	3700-4200 FIXED NG41 FIXED-SATELLITE (space-to-Earth)	International Fixed (23) Satellite Communications (25) Fixed Microwave (101)
4200-4400 AERONAUTICAL RADIONAVIGATION S5.438		4200-4400 AERONAUTICAL RADIONAVIGATION S5.440 US261		Aviation (87)
S5.437 S5.439 S5.440		4400-4500 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) S5.441 MOBILE		4500-4800 FIXED MOBILE US245	4500-4800 FIXED-SATELLITE (space-to-Earth) 792A US245	
4800-4990 FIXED MOBILE S5.442 Radio astronomy		4800-4940 FIXED MOBILE S5.149 US203	4800-4940 S5.149 US203	
S5.149 S5.339 S5.443		4940-4990 FIXED MOBILE S5.149 S5.339 US257	4940-4990 S5.149 S5.339 US257	Note: 4940-4990 MHz became non-Federal Government exclusive spectrum in March 1999
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) S5.149		4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		
5000-5150 AERONAUTICAL RADIONAVIGATION S5.367 S5.444 S5.444A		5000-5250 AERONAUTICAL RADIO-NAVIGATION US260	5000-5150 AERONAUTICAL RADIO-NAVIGATION US260 S5.367 S5.444 S5.444A US211 US344	Satellite Communications (25) Aviation (87)

<p>5150-5250 AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) S5.447A</p>	<p>S5.367 S5.444 US211 US307 US344</p>	<p>5150-5250 AERONAUTICAL RADIO- NAVIGATION US260 FIXED-SATELLITE (Earth- to-space) S5.447A US344</p>	<p>S5.446 S5.447 S5.447B S5.447C</p>	<p>S5.447C US211 US307</p>	
<p>5250-5255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH S5.447D</p>	<p>5250-5350 RADIOLOCATION S5.333 US110 G59</p>	<p>5250-5350 Radiolocation S5.333 US110</p>	<p>S5.448 S5.448A 5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) S5.448 S5.448A</p>	<p>5350-5460 AERONAUTICAL RADIO- NAVIGATION S5.449 RADIOLOCATION G56</p>	<p>5350-5460 AERONAUTICAL RADIO- NAVIGATION S5.449 Radiolocation</p>
<p>5350-5460 EARTH EXPLORATION-SATELLITE (active) S5.448B AERONAUTICAL RADIONAVIGATION S5.449 Radiolocation</p>	<p>US48</p>	<p>US48 Aviation (87)</p>	<p>5460-5470 RADIONAVIGATION S5.449 Radiolocation</p>	<p>5460-5470 RADIONAVIGATION S5.449 Radiolocation</p>	
<p>5470-5650 MARITIME RADIONAVIGATION Radiolocation</p>	<p>US49 US65 5470-5600 MARITIME RADIONAVIGATION Radiolocation G56 US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51 G56 S5.452 US65</p>	<p>US49 US65 5470-5600 MARITIME RADIONAVIGATION Radiolocation US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51 S5.452 US65</p>	<p>S5.450 S5.451 S5.452</p>	<p>US49 US65 5470-5600 MARITIME RADIONAVIGATION Radiolocation US50 US65 5600-5650 MARITIME RADIONAVIGATION METEOROLOGICAL AIDS Radiolocation US51</p>	<p>Maritime (80)</p>



5650-7250 MHz (SHF)

International Table		United States Table		FCC Rule Part(s)
Region 1	Region 2	Federal Government	Non-Federal Government	
5650-5725 RADIOLOCATION Amateur Space research (deep space) S5.282 S5.451 S5.453 S5.454 S5.455		5650-5925 RADIOLOCATION G2	5650-5830 Amateur	ISM Equipment (18) Amateur (97)
5725-5830 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur S5.150 S5.451 S5.453 S5.455 S5.456	5725-5830 RADIOLOCATION Amateur S5.150 S5.453 S5.455		S5.150 S5.282	
5830-5850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) S5.150 S5.451 S5.453 S5.455 S5.456	5830-5850 RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) S5.150 S5.453 S5.455		5830-5850 Amateur Amateur-satellite (space-to-Earth) S5.150	
5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation S5.150	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation S5.150		5850-5925 FIXED-SATELLITE (Earth-to-space) US245 MOBILE NG160 Amateur S5.150	ISM Equipment (18) Private Land Mobile (90) Amateur (97)
5925-6700 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE		S5.150 US245 5925-6425	S5.150 5925-6425 FIXED NG41 FIXED-SATELLITE (Earth-to-space)	Satellite Communications (25) Fixed Microwave (101)
		6425-6525	6425-6525 FIXED-SATELLITE (Earth-to-space) MOBILE S5.440 S5.458	Auxiliary Broadcasting (74) Cable TV Relay (78) Fixed Microwave (101)

<p>S5.149 S5.440 S5.458 6700-7075 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.441 MOBILE</p>	<p>6525-6700 FIXED FIXED-SATELLITE (Earth-to-space) S5.149 S5.458</p>	<p>Satellite Communications (25) Fixed Microwave (101)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>6700-6875 FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.441 S5.458 S5.458A S5.458B</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>6875-7025 FIXED NG118 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.441 MOBILE NG171 S5.458 S5.458A S5.458B</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>7025-7075 FIXED NG118 FIXED-SATELLITE (Earth-to-space) NG172 MOBILE NG171 S5.458 S5.458A S5.458B</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>7075-7125 FIXED NG118 MOBILE NG171 S5.458</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>7125-7190 FIXED S5.458 US252 G116</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>7190-7235 FIXED SPACE RESEARCH (Earth-to-space) S5.458</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>
<p>S5.458 S5.458A S5.458B 7075-7250 FIXED MOBILE</p>	<p>7235-7250 FIXED S5.458</p>	<p>Satellite Communications (25) Auxiliary Broadcasting (74) Cable TV Relay (78)</p>

International Table		United States Table		FCC Rule Part(s)
Region 1	Region 2	Federal Government	Non-Federal Government	
14.5-18.3 GHz (SHF)				
14.5-14.8 FIXED FIXED-SATELLITE (Earth-to-space) S5.510 MOBILE Space research	Region 3	14.5-14.7145 FIXED Mobile Space research	14.5-14.7145	
14.8-15.35 FIXED MOBILE Space research		14.7145-15.1365 MOBILE Fixed Space research	14.7145-15.1365	
S5.339		US310	US310	
15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive)		15.1365-15.35 FIXED Mobile Space research	15.1365-15.35	
S5.340 S5.511		S5.339 US211	S5.339 US211	
15.4-15.43 AERONAUTICAL RADIONAVIGATION		15.35-15.4 EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY US74 SPACE RESEARCH (passive) US246		
S5.511D		15.4-15.43 AERONAUTICAL RADIONAVIGATION US260		Aviation (87)
15.43-15.63 FIXED SATELLITE (space-to-Earth) (Earth-to-space) S5.511A AERONAUTICAL RADIONAVIGATION		US211		
S5.511C		15.43-15.63 AERONAUTICAL RADIO- NAVIGATION US260	15.4-15.43 FIXED SATELLITE (Earth-to-space) AERONAUTICAL RADIO- NAVIGATION US260	Satellite Communications (25) Aviation (87)
15.63-15.7 AERONAUTICAL RADIONAVIGATION		S5.511C US211 US359	S5.511C US211 US359	
S5.511D		15.63-15.7 AERONAUTICAL RADIONAVIGATION US260		Aviation (87)
15.7-16.6 RADIOLOCATION		US211		
S5.512 S5.513		15.7-16.6 RADIOLOCATION US110 G59	15.7-17.2 Radiolocation US110	Private Land Mobile (90)

**International Footnotes**

\* \* \* \* \*

*I. New "S" Numbering Scheme*

\* \* \* \* \*

S5.351A For the use of the bands 1525–1544 MHz, 1545–1559 MHz, 1610–1626.5 MHz, 1626.5–1645.5 MHz, 1646.5–1660.5 MHz, 1980–2010 MHz, 2170–2200 MHz, 2483.50–2500 MHz, 2500–2520 MHz and 2670–2690 MHz by the mobile-satellite service, see Resolutions 212 (Rev. WRC–97) and 225 (WRC–2000).

\* \* \* \* \*

S5.384A The bands, or portions of the bands, 1710–1885 MHz and 2500–2690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT–2000) in accordance with Resolution 223 (WRC–2000). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

\* \* \* \* \*

S5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5150–5250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. S9.21.

S5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania and Turkmenistan, the band 5250–5350 MHz is also allocated to the radionavigation service on a primary basis.

\* \* \* \* \*

S5.511A The band 15.43–15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43–15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. S9.11A. The use of the frequency band 15.43–15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane

and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU–R S.1341. In order to protect the radio astronomy service in the band 15.35–15.4 GHz, the aggregate power flux-density radiated in the 15.35–15.4 GHz band by all the space stations within any feeder-link of a non-geostationary system in the mobile-satellite service (space-to-Earth) operating in the 15.43–15.63 GHz band shall not exceed the level of –156 dB(W/m<sup>2</sup>) in a 50 MHz bandwidth, into any radio astronomy observatory site for more than 2% of the time.

\* \* \* \* \*

**United States (US) Footnotes**

\* \* \* \* \*

US344 In the band 5091–5250 MHz, non-Government earth stations in the fixed-satellite service (Earth-to-space) shall be coordinated through the Frequency Assignment Subcommittee (see Recommendation ITU–R S.1342). In order to better protect the operation of the international standard system (microwave landing system) in the band 5000–5091 MHz, non-Government tracking and telecommand operations should be conducted in the band 5150–5250 MHz.

\* \* \* \* \*

US359 In the band 15.43–15.63 GHz, use of the fixed-satellite service (Earth-to-space) is limited to non-Government feeder links of non-geostationary systems in the mobile-satellite service. These non-Government earth stations shall be coordinated through the Frequency Assignment Subcommittee (see Annex 3 of Recommendation ITU–R S.1340).

\* \* \* \* \*

**Non-Federal Government (NG) Footnotes**

\* \* \* \* \*

NG171 In the band 6875–7125 MHz, the following two channels should be used for airborne TV pickup stations, wherever possible: 7075–7100 MHz and 7100–7125 MHz.

NG172 In the band 7025–7075 MHz, the fixed-satellite service (space-to-Earth) is allocated on a primary basis, but the use of this allocation shall be limited to two grandfathered satellite systems. Associated earth stations located within 300 meters of the following locations shall be grandfathered: (1) in the band 7025–7075 MHz, Brewster, Washington (48°08'46.7" N, 119°42'8.0" W); and, (2) in the band 7025–7055 MHz, Clifton, Texas (31°47'58.5" N, 97°36'46.7" W) and Finca Pascual, Puerto Rico

(17°58'41.8" N, 67°8'12.6" W). All coordinates are specified in terms of the North American Datum of 1983.

\* \* \* \* \*

**PART 25—SATELLITE COMMUNICATIONS**

3. The authority citation for part 25 continues to read as follows:

**Authority:** 47 U.S.C. 701–744. Interprets or applies Sections 4, 301, 302, 303, 307, 309 and 332 of the Communications Act, as amended, 47 U.S.C. Sections 154, 301, 302, 303, 307, 309 and 332, unless otherwise noted.

4. Add § 25.147 to subpart B to read as follows:

**§ 25.147 Licensing provision for NGSO MSS feeder downlinks in the band 6700–6875 MHz.**

If an NGSO MSS satellite transmitting in the band 6700–6875 MHz causes harmful interference to previously licensed co-frequency Public Safety facilities, then that satellite licensee is obligated to remedy the interference complaint.

5. Section 25.202 is amended by adding footnotes 14 and 15 to the table in paragraph (a)(1) to read as follows:

**§ 25.202 Frequencies, frequency tolerance and emission limitations.**

(a) \* \* \*

Space-to-Earth (GHz)	Earth-to-space (GHz)
3.7–4.2 <sup>1</sup>	5.091–5.25 <sup>12,14</sup>
6.7–7.025 <sup>12</sup>	5.925–6.425 <sup>1</sup>
10.7–10.95 <sup>1,12</sup>	12.75–13.15 <sup>1,12</sup>
10.95–11.2 <sup>1,2,12</sup>	13.2125–13.25 <sup>1,12</sup>
11.2–11.45 <sup>1,12</sup>	13.75–14 <sup>4,12</sup>
11.45–11.7 <sup>1,2,12</sup>	14–14.2 <sup>5</sup>
11.7–12.2 <sup>3</sup>	14.2–14.5
12.2–12.7 <sup>13</sup>	15.43–15.63 <sup>12,15</sup>
18.3–18.58 <sup>1,10</sup>	17.3–17.8 <sup>9</sup>
18.58–18.8 <sup>6,10,11</sup>	27.5–29.5 <sup>1</sup>
18.8–19.3 <sup>7,10</sup>	29.5–30
19.3–19.7 <sup>8,10</sup>	48.2–50.2
19.7–20.2 <sup>10</sup>	
37.6–38.6	
40–41	

\* \* \* \* \*

<sup>14</sup> See 47 CFR 2.106, footnotes S5.444A and US344, for conditions that apply to this band.

<sup>15</sup> See 47 CFR 2.106, footnotes S5.511C and US359, for conditions that apply to this band.

\* \* \* \* \*

6. In § 25.208 add paragraph (n) to read as follows:

**§ 25.208 Power flux density limits.**

\* \* \* \* \*

(n) The power-flux density at the Earth's surface produced by emissions

from a space station in the fixed-satellite service (space-to-Earth), for all conditions and for all methods of modulation, shall not exceed the limits given in Table N. These limits relate to the power flux-density which would be obtained under assumed free-space conditions.

TABLE N.—LIMITS OF POWER-FLUX DENSITY FROM SPACE STATIONS IN THE BAND 6700–7075 MHZ

Frequency band	Limit in dB(W/m <sup>2</sup> ) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
	0°–5°	5°–25°	25°–90°	
6700–6825 MHz .....	– 137 .....	– 137 + 0.5(δ – 5) .....	– 127 .....	1 MHz
6825–7075 MHz .....	– 154 .....	– 154 + 0.5(δ – 5) .....	144 .....	4 kHz
	and .....	and .....	and .....	1 MHz
	– 134 .....	– 134 + 0.5(δ – 5) .....	– 124 .....	

**PART 87—AVIATION SERVICES**

7. The authority citation for part 87 continues to read as follows:

**Authority:** 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, 307(e) unless

otherwise noted. Interpret or apply 48 Stat. 1064–1068, 1081–1105, as amended; 47 U.S.C. 151–156, 301–609.

8. Section 87.173 is amended by adding the following entries to the table in paragraph (b) to read as follows:

**§ 87.173 Frequencies.**

\* \* \* \* \*

(b) Frequency table:

\* \* \* \* \*

Frequency or frequency band	Subpart	Class of station	Remarks
* * * * *			
5000–5250 MHz <sup>1</sup> .....	Q .....	MA, RLW .....	Microwave landing system.
* * * * *			
15400–15700 MHz <sup>2</sup> .....	Q .....	RL .....	Aeronautical radionavigation.
* * * * *			

<sup>1</sup> See 47 CFR 2.106, footnotes S5.444A and US344, for conditions that apply to this band.

<sup>2</sup> See 47 CFR 2.106, footnotes S5.511C and US359, for conditions that apply to this band.