FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 25

[SB Docket No. 25–306; FCC 25–69; FR ID 319249]

Space Modernization for the 21st Century

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In the Notice of Proposed Rulemaking (NPRM), the Federal Communications Commission (Commission or we) proposes to overhaul and modernize the Commission's space and earth station licensing process to help ''ensure that new space-based industries, space exploration capabilities, and cutting-edge defense systems are pioneered in America rather than by our adversaries.'' In particular, the NPRM proposes to develop a ''licensing assembly line'' designed so applications can be routed along different paths and segmented for review based on specific aspects of a request. This new process would set the stage for ongoing efficiency gains and would provide greater predictability and flexibility for applicants. In this way, we expect—like actual assembly lines—that the space review processes can be dramatically accelerated while improving the quality of the Commission's space licensing work.

DATES: Comments on the Notice of Proposed Rulemaking (NPRM) are due January 20, 2026. Reply Comments are due February 18, 2026.

ADDRESSES: You may submit comments, identified by SB Docket No. 25–306, by any of the following methods:

☐ *FCC Website: https://apps.fcc.gov/ecfs.* Follow the instructions for submitting comments.

☐ *People with Disabilities:* Contact the FCC to request reasonable accommodations (accessible format documents, sign language interpreters, CART, etc.) by email: *FCC504@fcc.gov* or phone: 202–418–0530 or TTY: 202–418–0432.

For detailed instructions for submitting comments and additional information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: Carolyn Mahoney, 202–418–7168, *Carolyn.Mahoney@fcc.gov* or Brandon Padgett, 202–418–1377, *Brandon.Padgett@fcc.gov.*

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's NPRM, FCC 25–69, adopted October 28, 2025, and released October 29, 2025. The document is available for public inspection online at *https://docs.fcc.gov/public/attachments/FCC-25-69A1.pdf.* The document is also available for inspection and copying during business hours in the FCC Reference Center, 45 L Street NE, Washington, DC 20554. To request materials in accessible formats for people with disabilities, send an email to *FCC504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at 202–418–0530 (voice), 202–418–0432 (TTY).

Procedural Matters

Comment Filing Requirements

Interested parties may file comments and reply comments on or before the dates indicated in the **DATES** section above. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS).

- *Electronic Filers.* Comments may be filed electronically using the internet by accessing the ECFS: *https://www.fcc.gov/ecfs.*
- *Paper Filers.* Parties who file by paper must include an original and one copy of each filing.
- Filings can be sent by hand or messenger delivery, by commercial courier, or by the U.S. Postal Service. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
- Hand-delivered or messenger-delivered paper filings for the Commission's Secretary are accepted between 8:00 a.m. and 4:00 p.m. by the FCC's mailing contractor at 9050 Junction Drive, Annapolis Junction, MD 20701. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
- Commercial courier deliveries (any deliveries not by the U.S. Postal Service) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- Filings sent by U.S. Postal Service First-Class Mail, Priority Mail, and Priority Mail Express, must be sent to 45 L Street NE, Washington, DC 20554.
- *People with Disabilities.* To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an email to *fcc504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at 202–418–0530 (voice) or TTY: 202–418–0432.
- *Availability of Documents.* Comments, reply comments, and *ex parte* submissions will be publicly available online via ECFS. Documents will be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

Ex Parte Presentations

Pursuant to § 1.1200(a), this proceeding will be treated as a ''permit-but-disclose'' proceeding in accordance 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 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 § 1.1206(b). In proceedings governed by § 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.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980, as amended (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.'' Accordingly, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA)

concerning the possible impact of the rule and policy changes contained in the NPRM on small entities. The IRFA is set forth in Appendix B of the Commission document, *https://docs.fcc.gov/public/attachments/FCC-25-69A1.pdf.* The Commission invites the general public, in particular small businesses, to comment on the IRFA. Comments must be filed by the deadlines for comments indicated on the first page of this document and must have a separate and distinct heading designating them as responses to the IRFA.

Paperwork Reduction Act

The NPRM may contain new or proposed modified information collections. 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 any information collections contained in this document, as required by the Paperwork Reduction Act of 1995, 44 U.S.C. 3501–3521. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, 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.

OPEN Government Data Act

The OPEN Government Data Act requires agencies to make ''public data assets'' available under an open license and as ''open Government data assets,'' *i.e.,* in machine readable, open format, unencumbered by use restrictions other than intellectual property rights, and based on an open standard that is maintained by a standards organization. This requirement is to be implemented ''in accordance with guidance by the Director'' of the OMB. The term ''public data asset'' means ''a data asset, or part thereof, maintained by the federal government that has been, or may be, released to the public, including any data asset, or part thereof, subject to disclosure under the Freedom of Information Act (FOIA).'' A ''data asset'' is ''a collection of data elements or data sets that may be grouped together,'' and ''data'' is ''recorded information, regardless of form or the media on which the data is recorded.''

Providing Accountability Through Transparency Act

Consistent with the Providing Accountability Through Transparency Act, Public Law 118–9, a summary of this document will be available on *https://www.fcc.gov/proposed-rulemakings.*

Synopsis

I. Introduction

1. Across the United States, the space economy is booming and American companies are building to ensure our nation leads into the final frontier. To assure our nation's continued space leadership, the United States must be the place where the world's space industry builds, operates, and licenses. In a recent Executive Order, the President set our nation on a course ''to ensure that new space-based industries, space exploration capabilities, and cutting-edge defense systems are pioneered in America rather than by our adversaries.'' And the Administration has called for investments in space as a key priority to ''assure America's continued space dominance.''

2. To achieve these goals and to be the nation of choice for space excellence, the United States must also have a modern, efficient space licensing system that enables innovation and exploration. That is why with the Notice of Proposed Rulemaking (NPRM) we are launching a proceeding to modernize the Commission's space and earth station licensing rules to meet the needs of the space economy for today and tomorrow. We expect that modernizing our rules will support the vibrant space economy so that the United States can achieve what the President called for in his 2025 Address to Joint Session of Congress when he said, ''We are going to conquer the vast frontiers of science, and we are going to lead humanity into space and plant the American flag on the planet Mars and even far beyond. And through it all, we are going to rediscover the unstoppable power of the American spirit, and we are going to renew unlimited promise of the American dream.''

3. With these goals in view, our proposal in the NPRM designs a ''licensing assembly line'' to process space and earth station applications with great efficiency and at the speed and scale required by the 21st century space economy. Like a physical assembly line, we seek to move standardized application materials in direct paths from one stage of the review process to the next in a highly predictable way. Given the nature of our licensing duties, our assembly line will be designed so applications can be routed along different paths and segmented for review based on specific aspects of a request. By modernizing processes in our rules, we aim to set the stage for increasing automation over time. In this way, we expect—like actual assembly lines—that the space review processes can become more efficient and dramatically accelerated while improving the quality of the Commission's licensing work for the American people.

II. Background and Objectives

4. In the early years of the Commission's work licensing space-based communications, the industry encompassed a small number of entities, many of which were quasi-governmental and largely focused on geostationary Earth orbit (GEO) deployments. In the 1990s and 2000s, there were cycles of investment and excitement, including increased interest in non-geostationary orbit (NGSO) systems, but many of these proposals met financial or technical challenges. The idea of a satellite broadband service that could fully connect rural areas and even compete with terrestrial offerings seemed impossible. However, in the last decade, the number of satellites launched into orbit, particularly by private companies, has increased dramatically, seeing a more than 10-fold increase in a decade. As a result of this increased launch cadence and growth in satellite technology, the Commission found that last year, the ''. . . availability data indicate that satellite service offering 100/20 Mbps speeds is available to almost 100% of the U.S. population.'' And beyond delivering high-speed internet service, the commercial space industry now includes a varied array of companies providing direct-to-device cell service, resilient enterprise and military connectivity, Earth observation services, and novel space activities. Innovators and explorers are embarking on lunar and interplanetary missions and considering how to use the resources of outer space for the good of humanity. This change and rapid growth in the space industry has created new demands on the Commission's resources and raised new questions about how to apply the existing licensing framework to new satellite and earth station technologies.

5. The expansion of the space economy has resulted in significantly more licensing activity at the Commission. The Commission received 295 space station applications and 2,684 earth station applications in 2024. In contrast, the Commission received only 124 space station applications and 974 earth station applications in 2016. During this time, the complexity, size, and variety of license applications has also changed. Such rapid change in the space economy—and the resulting demands on the Commission's existing licensing system—means our rules and operations must be modernized to

match the realities of the space economy. In the face of greater application volume and highly complex, non-traditional systems, the Commission's framework has resulted in slow decision timelines and unpredictable outcomes. Therefore, the time has come for the Commission to overhaul its space licensing processes. While the Commission has updated some of its licensing rules in recent years in response to these changes, today we initiate the NPRM to avoid piecemeal reforms going forward and to make the licensing process of the future fast, predictable, and flexible.

A. Rationale for Modernizing Space Licensing

6. As we modernize the Commission's space and earth station licensing process, we aim to align our rules with the pace, growth, and innovation in the space economy while upholding our statutory duties. Unnecessary regulatory burden imposed on a dynamic, early growth industry can have substantial costs. Inefficient, slow, and costly license processing thwarts innovation and reduces competition. Complex and prescriptive regulation can support incumbents' lobbying against new innovators, and highly discretionary regulation can enable regulators to arrogate their power at the expense of the public. If regulation prevents deployment of new space systems, consumers and businesses must wait to realize the tangible benefits of new innovations and services flowing from the space economy. Many satellite systems also combine commercial and national security components, and the costs of inefficient regulation may hinder America's defenses or put us at a strategic disadvantage with our adversaries.

7. With the NPRM, we have four main goals: (1) to increase license processing speed; (2) to provide more predictability to applicants and licensees; (3) to provide more flexibility for innovation and for licensees' operations; and (4) to faithfully meet our responsibilities. Pursuit of these goals guides each element of our proposal as we aim to design a system which can efficiently scale with the space economy. These goals flow directly from the mandates in the Communications Act of 1934, as amended (Act), directing the Commission ''to make available, so far as possible, to all people of the United States . . . . world-wide wire and radio communications service'' and to ''encourage the provision of new technologies and services to the public.'' Additionally, the Act provides for the regulation and licensing of radio communications, including satellite communications, for the purpose of national defense and in service of the ''public convenience, interest, or necessity.'' We believe these statutory mandates strongly support our goals of greater speed, predictability, and flexibility in the space and earth station licensing process to promote the wide availability and proliferation of communications and new technologies for the public.

8. Therefore, we direct our space licensing review toward a clear and limited set of concerns when determining if granting a license will serve the ''public convenience, interest, or necessity.'' In particular, these areas are (1) harmful interference, (2) spectrum efficiency, (3) space safety, and (4) foreign ownership. As we re-design the Commission's space licensing processes to increase speed, predictability, and flexibility we must do so in a way that guides our determination as to whether a license for space-based communications is in the public interest based on evaluation in these areas. We recognize that a process which efficiently and effectively reviews license applications for these factors will promote the wide availability of communications delivered by a thriving space economy employing new technologies. In addition, it is our intention that by simplifying and modernizing our space licensing procedures we will ensure that the use of part 5 experimental licenses will again be for the testing and development of truly novel space concepts.

9. *Increasing Processing Speed.* The Commission must increase the speed of application processing to ensure that space innovation is not limited by unnecessary delay, which entails more quickly licensing qualified applicants and dismissing unqualified requests. In burgeoning sectors like space, progress stems from a chain of iterative innovations. This means that seemingly small delays in authorizing beneficial new services—such as a few months extra to process an application—could result in a cascading chain of delays over time. Delay in innovation today means delay in the next step, and then the next, and so on in the iterative innovation process. Over time there will be less advancement, slower economic gains, and a weaker national defense. The Commission's licensing process should foster and support innovation and not be an additional source of delay and uncertainty. The volume and variety of space and earth station applications have been increasing and will continue to do so. Large amounts of staff resources go to sifting through non-standardized application materials to determine whether an application is complete and is in alignment with the Commission's rules. Application review frequently entails excessive, time-consuming back-and-forth between the Commission and applicants, with the Commission having to make a large number of non-routine decisions, which can cause delays. The application process should incentivize applicants to submit clear, high-quality, and complete applications so that Commission staff can focus on whether applicants are technically and financially qualified to deploy their systems rather than manage administrative hurdles unrelated to the quality of the application. Applicants should also have clarity as to the timing under which their applications will be processed so they can plan accordingly when designing and implementing their systems.

10. *Providing More Predictability.* Our goal is for both applicants and the public to be able to generally understand how a request will be handled in terms of process, timeframes, and requirements based on the Commission's rules. In a dynamic, capital-intensive sector like space where funding sources often depend on quick execution and demonstrated progress, it is critical that applicants know what to expect when seeking Commission authorizations. Applicants must be able to plan. Engineers need to know what requirements their systems must meet. Additionally, it is important for licensees to know the rules they must follow after receiving a grant and the consequences for rule violations or non-compliance. Furthermore, in a situation where an entity's actions can have considerable impact on others—for example, one satellite operator causing another harmful interference—it is important that there is predictability in how the regulator will approach a request so that parties can find private agreements with mutually beneficial outcomes. Unfortunately, part 25 of the Commission's rules does not always afford a high level of predictability for applicants. Timelines for acting on some license applications can be years. The sometimes-subjective nature of certain application requirements means that applications receive unpredictable levels of review. The Commission's proposals in the NPRM seek to remedy these issues by providing applicants with predictability in how applications will be processed.

11. *Expanding Flexibility for Operations.* The satellite industry is developing systems, services, and operations that were not envisioned

when the Commission adopted its current rules. The industry has evolved from GSO systems operating within a clear set of parameters to large NGSO constellations and multi-orbit systems. Recently, the Commission has received applications for a highly varied set of operations, including ISAM and lunar missions, without specification on exactly what activities these spacecrafts may undertake in the future. At the same time, existing licensees are looking to upgrade and modify their systems as technology develops. Allowing satellite operators the freedom to find the best and most efficient ways to operate and build complex systems of space-based operations, while upholding the Commission's responsibilities, is critical to the long-term economic development of the industry and our nation's ability to compete with global operators. However, the Commission's existing licensing process was not designed with the scope of the current satellite industry in mind. Certain activities that are unobjectionable and beneficial still require potentially slow review by the Commission. Many requirements can be replaced and made more efficient with the use of modern technology rather than paperwork. Over-regulation not only creates a burden on industry and the Commission but can make operations less efficient. While in the past the Commission noted that broad, somewhat subjective rules could provide flexibility for innovation, experience has shown that they sometimes leave applicants and staff struggling to figure out how a proposal should be evaluated, leading to extended back-and-forth between applicants and staff. Through this modernization effort, the Commission seeks to provide more certainty for applicants to avoid unnecessary delays and allow operators the ability to innovate and provide Americans with the best satellite services technology can offer.

12. Lastly, in addition to our key goals, we also take this as an opportunity to propose clearing out regulatory underbrush. In crafting the proposals in the NPRM, we heavily incorporate suggestions from the *Delete, Delete, Delete* proceeding and seek comment on additional reforms that should be undertaken in light of these proposals to overhaul our approach to regulation. We see our proposals in the NPRM as aligning with the President's Executive Order *Unleashing Prosperity Through Deregulation* to remove ''. . . unnecessary regulatory burdens.''

B. Three Pivots Towards Modernization

13. To modernize our licensing process so it can scale to meet the needs of the space economy, we propose three pivots away from the current framework in our part 25 rules. First, we propose a review process to facilitate permissionless innovation. Second, we propose an overhaul of the application materials for more efficient processing. Third, we propose expanding the freedom applicants and licensees have for designing and operating their systems. We believe these pivots are the conceptual path to achieving greater speed, predictability, and flexibility in space and earth station licensing.

14. *Presumed Acceptable Criteria.* The core of our proposal is an approach to facilitate permissionless innovation which sets forth a set of system features which the Commission generally presumes to be acceptable. Our proposed framework looks to the outcomes and performance of a proposed space system rather than trying to prescriptively regulate how a system must be designed to obtain authorization. The notion behind our proposed framework is that the Commission should set bright-line performance measures and characteristics of systems that it finds are presumed to be in the public interest. That is, the Commission will default toward allowing proposals that fall within these bright-line standards and characteristics. In its review, the Commission can then compare a particular applicant's proposal against such bright-line criteria. This change should allow applicants greater freedom to design systems that meet performance standards rather than the Commission providing detailed direction on how to reach a performance standard. While we recognize some applicants may find it difficult to not have prescriptive rules around how to design their system, we believe this can be mitigated by defining a clear set of boundaries as a kind of safe harbor that companies can build within.

15. Our aim is for this approach to support expedited review of any portions of an application that meet bright-line rules. Doing so then allows for targeted review of any elements which do not meet the bright-line criteria, essentially allowing the Commission to make decisions about systems once in a rulemaking (for all applicants) and taking a posture of defaulting toward permitting any requests meeting the criteria. Space companies will then be incentivized to design their systems to meet these standards that the Commission has found are in the public interest while still allowing for deviation as necessary.

16. One key element of this approach that we propose is an expedited processing pathway. We propose that an application will be placed on public notice for seven days and then be granted quickly in most circumstances if it: (1) meets certain presumed acceptable criteria that the Commission has found to be in the public interest; (2) does not request waivers; and (3) is not subject to certain limited ''exceptions'' to expedited processing. Our expectation is that operators will see expedited processing as a highly desirable way to obtain a license and will design their systems and organize their licensing requests to take advantage of this path. Such an approach with expedited processing delivers by providing faster processing speeds, more predictability as to what features of a system are unobjectionable, and greater flexibility to design systems within the performance parameters presumed to be in the public interest.

17. For applications that do not qualify for expedited processing, our proposal still postures toward granting a license application. We recognize that many applications may not meet all the bright-line standards or that may seek a waiver of the Commission's rules. There also are situations where the Commission will need to consider issues beyond the performance of a particular proposed system, such as how that proposed system will impact other operators' ability to use spectrum. To handle these situations, we propose to adopt a limited set of ''exceptions'' to the expedited processing pathway. We envision using these exceptions as a clear way to identify specific aspects of applications that require targeted review, like off-shoots from an assembly line.

18. Identified exceptions for a given application would serve as the basis for targeted review. That is, the Commission will focus on review and consideration of any identified exceptions in determining whether granting an application is in the public interest. However, existence of an exception should not necessarily mean an extensive or delayed process. For most applications with an identified exception, we propose to place complete applications on public notice for 15 days. After the public comment period ends, we expect the Commission will work quickly through the areas needing focused review. To facilitate timely review and to increase transparency, we also propose the Commission will notify applicants of any or all exceptions still undergoing

Commission review if full action has not been taken within 60 days after the close of the public comment window. This notification will inform the applicant and the public of any areas which still stand as barriers to grant and promote quicker resolution of any outstanding issues. Our expectation is that applications can be granted well before the 60-day window closes if we implement an overhauled process designed to focus attention on the areas that cannot be presumed to be in the public interest. Lastly, to provide transparency and accountability we also propose that the Space Bureau release regular updates tracking the efficiency of the modernized application framework.

19. *Enhanced Application Design.* Our proposed framework also seeks to dramatically increase processing speeds and lower burdens on applicants by using modularity, standardization, and certifications. With such reforms we seek to reduce unnecessary burden on applicants while also facilitating application routing as part of the licensing assembly line. Our vision is that the application itself will be designed so that the Commission can easily determine completeness and then appropriately route the request to expedited processing or for focused review of one or more elements. Further, a modular design will also support future changes to application requirements.

20. Over time, we expect that our standardized and modular application design will allow for increasing automation of licensing. We envision applicants being able to submit requests into an FCC system where, based on responses, the application form dynamically adjusts. Applicants would be able to quickly see which rules apply to their proposal and make certifications alongside such information. The system would also then be able to conduct validation checks, identify incomplete elements, and then route the application to Commission staff with any exceptions already identified. With standardized, machine-readable application materials organized by design, an FCC system could automatically generate public notices and draft grant materials. During the public notice period, commenters could respond to particular elements of a proposal in a system, so that when the comment period closes, all application materials and public comments are already organized by issue so that staff does not have to do such sorting. With time, artificial intelligence (AI) tools can be used to assist, automating parts of the review so that staff can focus on more complex policy questions. While our proposal does not take these steps, our enhanced application design anticipates such developments. Further, section 8(a) of the Communications Act mandates that the Commission assess and collect application fees based on the Commission's costs to process applications. Section 8(c) also requires the Commission to amend the application fee schedule if the Commission determines that the schedule requires amendment to ensure that: (1) such fees reflect increases or decreases in the costs of processing applications at the Commission or (2) such schedule reflects the consolidation or addition of new categories of applications. Thus, as we make changes to our application process, we will also consider as necessary, any changes to the Commission's schedule of application fees that result from a more standardized and modular application design.

21. Under our proposal, applicants would be able to flexibly select the application modules relevant to the system's frequency bands, orbital characteristics (*e.g.,* GSO, NGSO) and services (*e.g.,* fixed-satellite service (FSS); mobile-satellite service (MSS); telemetry, tracking, and command (TT&C)). Applicants would only need to complete the application materials needed for their request and could even choose to segment requests for more efficient processing. This modular approach de-couples in the application the orbital characteristics from the frequency and service elements so there is flexibility in how systems can be licensed. Over time, licensees could use these ''licensing building blocks'' to add to their systems with additional satellites or frequencies or make changes to improve efficiency.

22. One particular example of the flexibility and reduced burden afforded by the modular license approach that we propose is that entities be able to complete the FCC Form 312—Main Form with basic contact and ownership information *without* immediately seeking an authorization request. Then, all future license requests from one applicant could be associated with the single FCC Form 312—Main Form so applicants only need to submit this information once (and keep one form updated) and so all requests and licenses associated with an entity can easily be identified. We also propose to eliminate unnecessary narratives as these impose burden on applicants and can require significant unpacking by staff when reviewing a proposal.

23. Perhaps most important to enhancing the application process, our proposal introduces a series of certifications concerning the bright-line elements that carry a public interest presumption. These certifications are specific to the type of proposed system, such as GSO or NGSO, and applicants will certify affirmatively or negatively as to whether their proposed system meets these prespecified elements. Not only do these certifications allow us to relieve applicants of certain showings, but these certifications can be used to quickly identify specific areas where targeted review is needed. Applicants who provide a negative certification—that is, applicants who certify that their system will *not* meet a bright-line standard that the Commission has determined to be in the public interest—will be required to submit additional information so the Commission may make a determination as to whether the application is in the public interest. But in the case of an affirmative certification, applicants generally will only need to submit system design information collected in non-narrative form.

24. *Increased Freedom for Applicants and Licensees.* Our proposals also seek to increase licensees' freedom to design, build, and operate systems. Our view is that licensees should be able to easily create and authorize systems and then continuously upgrade these systems for greater capability and efficiency. It is economically inefficient for the Commission to require approvals for activities which create no harm or to over-prescribe system design features. To allow operators to have the flexibility to operate and compete in the market, our proposals would both remove the burdens of handling requests for unobjectionable activity and allow operators to improve systems over time.

25. Our proposal allows for freedom and flexibility in numerous respects so that applicants can seek authorizations that work best for their operations and so that licensees can operate as necessary. As a general matter, we follow the principle that if a request or activity does not trigger one of the specific exceptions then it is presumed to be in the public interest and requires minimal review. We also seek to allow entities, in some instances, to evaluate tradeoffs within the licensing process and then choose how to proceed with an application. Here, we note key elements of our proposal intended to offer flexibility to applicants and licensees. First, we propose to expand the set of modifications to a license which would be permitted through only a simple notification and/or certification. This means that licensees will be able to operate more freely and only have to

seek additional authorization when requesting a change which falls outside prespecified boundaries set by the Commission. Second, we propose to update our rules to provide the opportunity for applicants to request conditional grants in situations where such flexibility will fit better with the applicant's planning and design process. For example, we are proposing to grant authorizations conditioned on the applicant submitting a future satisfactory orbital debris showing prior to launch. This change would provide applicants more flexibility as to when they can submit their application to the Commission while still finalizing their system design. Third, our modularized application proposal means applicants can choose to segment their requests. If desired, an applicant could send some requests that will not trigger an exception through expedited processing while segmenting others that will take longer into a different request. In addition, over time, licensees could add satellites or frequencies to their systems incrementally at the pace needed. Fourth, we propose that applicants can request any license term shorter than the default term. Fifth, we propose to allow applicants that are not automatically subject to processing rounds to opt-in to a new processing round approach for certain bands to receive priority if needed. In exchange, the applicant would be required to maintain a surety bond on file with the Commission. This allows entities to decide whether to take on a bond in exchange for priority or whether to operate without priority and not have a bonding requirement. Lastly, for licensees with a bonding requirement, we propose a deescalating surety bond formula that declines with deployment so that licensees can control how quickly and granularly to reduce the bond.

26. A final important element of flexibility in our proposal considers new areas of space and satellite innovation that do not fit neatly into the traditional GSO or NGSO categories. In particular, we propose to create a new category of Variable Trajectory Spacecraft System (VTSS). This proposed category would provide a new licensing pathway for applicants seeking to operate space stations on spacecraft that may not follow predictable trajectories. For example, we believe that the VTSS category would include certain ISAM operations, as well as lunar missions, or missions to other celestial bodies. We recognize these systems need greater flexibility in their operations and therefore propose to update our licensing process and rules to accommodate these operations. One particular way we do this is by proposing to allow VTSS licensees to file propagated ephemeris and engage in collision avoidance rather than having to generally prespecify all activities over the license term.

III. Discussion

27. The NPRM seeks comment on all aspects of the proposal and alternative possibilities. We have organized the discussion in the NPRM around four main threads: (1) the licensing assembly line in which we describe our proposals related to the application process for space and earth stations, including application materials, handling, and decision processing; (2) additional reforms for licensing efficiency where we describe proposals related to space and earth station licenses, such as milestones and surety bonds, and the transition to part 100; (3) operational and technical requirements where we describe our proposals related to operational and technical rules for licensees; and (4) compliance where we describe our proposals for rules addressing violations. In each, we seek to explain how our proposals support the overall goals of the modernization process.

28. We propose to adopt a new part 100 of the Commission's rules that would replace the existing part 25 rules. We believe that creating a new rule part altogether would provide a better organized and improved framework for applicants and industry stakeholders, rather than extensively revising the current rules and potentially creating unnecessary confusion. We therefore propose to create part 100 and sunset part 25. Part 100, which is Reserved, is contained in 47 CFR Subchapter D—Safety and Special Radio Services which is preferrable to the current placement of part 25 in Subchapter B—Common Carrier Services. We make this proposal because, while not all our licensees or market access grantees provide common carrier services, all use radio services. We also propose titling part 100 as ''Space and Earth Station Services'' rather than the current part 25 title, ''Satellite Communications.'' Satellite communications is a subset that does not include communications with earth stations or spacecraft that are not satellites, and as such is limited. The new proposed title encompasses a broader set of communications operations that reflect the current space industry. We seek comment on implementing the new part 100 and on the overall structure of the proposed modernized rules. Are there benefits to retaining part 25, or are there alternative solutions that the Commission should consider in restructuring the rules?

29. Appendix A to the NPRM contains the largely complete proposed part 100. By providing a largely complete text of proposed rules, we aim to provide the public with a meaningful opportunity to comment on the overall framework and detailed, specific rule sections. There are instances where we do not propose specific regulatory text and instead describe a proposal in the text of the NPRM and seek comment on appropriate additional regulatory text. We also propose alternatives to the proposed rule text and seek comment on both the proposed rules in Appendix A and any alternative proposals in the NPRM. In addition, other parts of the Commission's rules contain cross-references to part 25, or specific sections within it, that would need to be updated if part 100 replaces part 25. We also seek comment on the necessary revision of these cross-references, including whether any would involve substantive changes to those rule parts.

30. We propose to organize the new part 100 into four subparts:

Subpart A—General. This would include the legal basis for the rules, authorization requirements, definitions, ownership, references, and preemption of local zoning.

Subpart B—Applications and Licenses. This would include application materials and application processing for space and earth station licenses.

Subpart C—Operational Rules. This would include rules general to all licensees and specific to operations, services, or frequencies.

Subpart D—Compliance. This would include consequences for rule violations.

31. Two of the main goals of this modernization effort are to make the Commission's space and earth station licensing rules easier to understand and to make the application process easier for incumbent and new operators alike. In this regard, an overhaul of certain aspects of our rules could bring more clarity to regulated entities, such as removing redundant portions and separating application requirements from operational rules to clarify for applicants what is required in the application process versus after grant. We believe that the proposed organization of part 100 will help applicants and licensees to more easily understand the application requirements, the application process, the rules applicable to a licensee, and the consequences for non-compliance of the rules and requirements. We seek

comment on this proposed organization of the new part 100. Additionally, we seek comment on whether certain proposed rule sections should be moved to a different subpart.

32. Another fundamental way in which we seek to provide greater clarity as part of our modernization efforts concerns the Commission's use of terms regarding the physical objects in space to which our rules and regulations apply. In the past, the Commission has at times used the terms ''space station,'' ''satellite,'' and ''spacecraft'' interchangeably despite the different definition of each term in the rules. However, such ambiguity does not support a predictable regulatory environment where defined terms carry precise meaning so that the public can understand the rules. Therefore, throughout our proposed revisions, we aim to more carefully apply and delineate these terms. The Commission's statutory authority is rooted in regulating the ''apparatus,'' which in this context includes the ''space station,'' or antenna, as a radiocommunication transmitting device. The space stations in a satellite system that the Commission licenses and regulates are often combined with a ''satellite'' or ''spacecraft'' such that interchangeability of these two terms is not a problem. However, as the Commission anticipates that it will continue to receive more new and novel licensing requests, it is important to clearly distinguish these terms to promote clarity in our rules and in matters of statutory authority. Therefore, we propose to incorporate the definitions of ''space station,'' ''satellite,'' and ''spacecraft'' from parts 2 and 25 into part 100, and use these proposed definitions throughout the NPRM. We broadly seek comment on these definitions and these concepts. We also seek comment on the use of each term throughout the proposed rules and ask whether there are instances where a different term or definition may be more appropriate.

A. Licensing Assembly Line

33. Our proposed ''licensing assembly line'' is designed so applicants can efficiently prepare applications which can be routed so that applications are identified for quick review (*i.e.,* expedited processing) or targeted review (*i.e.,* exceptions to expedited processing). Like an assembly line, the proposed approach aims to standardize the review process and route the review of each application on a predictable and ever-moving track. We seek comment on this proposed approach.

34. The licensing assembly line proposes three key phases. First, the modular application phase where applicants submit applications or other requests to the Commission. Second, the application processing phase where the request is prepared for a decision in a timely fashion by establishing completeness, seeking public comment, and requesting or receiving any additional information or amendments. Third, the application decision phase in which the Commission applies a structured review process to decide on the request in accordance with the rules. The particulars of these three phases are embodied by the rules proposed in Appendix A and are discussed below.

35. Within the proposed part 100, ''Subpart B—Applications and Licenses'' is where we propose rules for accepting and processing applications. In subpart B, we propose to organize the rule sections covering the space and earth station application requirements as well as rules for application review. Our expectation is that subpart B would be the primary portion of our rules that the public and regulated entities would reference to understand how to apply for a space station or earth station license and the application review process. We seek comment on the general organization of part 100 proposed below and in Appendix A, as well as on the specific proposals for each section.

1. Application Modularity; Required Forms

36. We propose to require applicants to submit their space and earth station applications by completing one or more application pieces depending on the nature of the request. Relying on modularity will mean applicants only need to complete relevant portions of the application and the Commission can efficiently design and update internal review processes for applications. We intend for this approach to apply to any type of application, including initial space and earth stations applications, petitions for market access, amendments, modifications, requests for special temporary authority (STA), and any other applications. The key modular pieces of the application materials under our proposal for space station applications include General and Ownership Information on FCC Form 312—Main Form, Orbital Elements on Schedule O to the FCC Form 312, and Frequency Elements on Schedule F to the FCC Form 312. Earth station applicants would file FCC Form 312—Main Form and Schedule B to FCC Form 312. Additional information would be required for applications to provide Supplemental Coverage from Space (SCS) and petitions for U.S. market access.

37. We propose to modularize the information that space station applicants must provide in the new part 100. Specifically, we propose to condense the information required for space station applications into three rule sections in part 100: one section for general applicant information; one section that contains the orbital information for a proposed system; and one section that contains the frequency information for a proposed system. Many of the information requirements that we propose in these sections are similar to the current part 25 rules, though we have sought to significantly reduce what is required. We also propose in many of these information requirements to shift away from requiring narratives and demonstrations and shift to requiring more straightforward pieces of information. In making these changes we propose to replace the current Schedule S and much of the narrative required for space station applicants with two new schedules to the FCC Form 312: Schedule O and Schedule F. Schedule O would contain the orbital information and Schedule F would contain the frequency information related to the space station application. We propose to still require earth station applicants to submit Schedule B but propose streamlined revisions.

38. Applicants would only need to complete the portions of the forms that pertain to their requested operations. We propose to still require a description of the proposed system in the application but seek to substantially reduce the narratives required. Experience with part 25 application requirements shows that lengthy narratives and non-standard submissions can slow the review process as the Commission must spend time parsing the narrative and reconciling inconsistencies with other parts of the application. Additionally, we believe that this approach could facilitate intake of application data in standardized formats for improved review over time. By modularizing the orbital and frequency information, we seek to provide a wide range of flexibility for applicants. For instance, we envision this modularity facilitating simpler approval of hosted space stations and space-as-a-service systems by only requiring the information needed for their proposal. We seek comment on how our proposed application design could support such flexibility. Are there any changes we should make to our proposal for these

kinds of requests? We also want the application process to be flexible enough to accommodate novel proposals. For instance, how can the application process accommodate an operator who seeks to transfer a hosted space station from one spacecraft to another? We seek comment on the types of systems that need flexibility and how our application materials can support such requests in line with our goals.

39. We also propose to continue to require electronic submission of applications via ICFS or another successor system and propose delegating to the Space Bureau the ability to designate the specific application filing system. In addition, we propose to codify that waiver requests are not necessary for submission of supplements or exhibits filed contemporaneously with applications due to technical limitations of the designated forms. We also propose that, consistent with Commission precedent and practice, applicants would not be entitled to refund of application filing fees once an application is reviewed. We seek comment on these proposed changes and generally on whether any changes related to the application fee rules in part 1, subpart G, or the ICFS rules in part 1, subpart Y would be required as a result of the proposals in the NPRM.

40. While the proposed rules set forth the requirements for application materials, we expect the form and format will need to be carefully designed to support our goals. Furthermore, we anticipate the need for the form and format of applications to evolve over time. Therefore, we plan to delegate authority to the Space Bureau to determine and revise the form and format for filing application materials and for designating the system for the intake of those materials. In particular, we plan to delegate to the Space Bureau the authority to announce through public notice any changes to the form and format of required application materials. This delegated authority would allow the Space Bureau to modernize and streamline the application process as necessary through improved technology and other process design improvements. We also propose to delegate authority to the Space Bureau to proceed by notice and comment rulemaking in making these changes if the Space Bureau deems required or advisable. Delegating authority to the Space Bureau as set forth above will allow it to effectuate improvements as quickly as possible. Since these delegations of authority, if made, might be of a continuing nature, we seek comment on whether corresponding rule changes should be made to Section 0.51 or other parts of our regulations. We seek comment on this approach.

a. FCC Form 312—Main Form

41. Section 25.114(a) directs applicants for NGSO and GSO space station authorizations to submit applications via FCC Form 312—Main Form, with the required exhibits attached. The FCC Form 312—Main Form also prompts applicants to respond to a number of questions relating to the applicant's compliance with the Commission's environmental policy rules, basic qualifications, and ownership, and requires certifications to the accuracy of the information provided therein. We propose to create a new rule section entitled ''Application Requirements of the FCC Form 312—Main Form'' that aggregates the required information for space or earth station license applications with the FCC Form 312—Main Form. Specifically, this section would continue to require applicants to submit contact information, management and ownership information, and attest to certifications that are included in the existing application forms. We propose to connect the requirements with the FCC Form 312—Main Form in the rules so that it is clear what information applicants must provide in applications. We seek comment on these proposals. Does this proposal provide predictability for applicants? Is there additional information that should be included in this form?

42. We propose to retain the FCC Form 312—Main Form existing requirement that the applicant include an attestation, made under penalty of perjury, that all information submitted on FCC Form 312—Main Form and any associated forms has been verified for accuracy and is believed to be complete and accurate at the time of submission similar to what is currently required by our forms. The Commission often receives applications with incomplete, inconsistent, and inaccurate information, and staff have generally engaged in a time-consuming process of guiding applicants on how to correct and amend applications so that they are acceptable for filing. Should an additional requirement be added so that the attestation be made by an officer of the applicant filing the FCC Form 312—Main Form to better ensure that the information is complete, consistent, and accurate since the submission might be taken more seriously by leadership of the entity filing the authorization if an officer has to attest? Currently, all applications are subject to the requirements outlined in part 1 of the Commission's rules to maintain the ongoing accuracy of its materials.

43. We also seek to reduce the need for applicants to fill out the same form multiple times with identical information when applying for additional space or earth station authorizations. Under the current rules, applicants must re-file the same information required by FCC Form 312, Main Form for every request. We propose to allow applicants to certify that no information has changed from a previously filed FCC Form 312—Main Form rather than requiring them to submit a new FCC Form 312—Main Form with each request. We seek comment on this proposal generally and invite suggestions on how to operationalize this requirement. Specifically, should the Commission allow applicants to certify that no information has changed from a previously submitted FCC Form 312—Main Form and provide the corresponding file number? Would this proposal relieve any significant burdens on applicants such that it would justify the operational changes that may need to be made to ICFS?

44. We also propose an avenue that would bifurcate the FCC Form 312—Main Form from the associated application schedules so that applicants could elect to file the FCC Form 312—Main Form independent of an application for space or earth station authorization. We believe that independent filing of the FCC Form 312—Main Form would allow the Commission to make a preliminary determination as to whether an applicant is qualified to hold a space station or earth station license before they actually apply for a license. Since the FCC Form 312—Main Form collects ownership information, we propose to allow entities to seek preliminary-clearance to hold a license which could facilitate accelerated review for transfers of control or assignments. Specifically, this would allow an applicant seeking to obtain a space station or earth station authorization to submit an FCC Form 312—Main Form in advance of a transfer of control or assignment and have the Commission review the ownership and legal qualifications of the applicant in advance of any transfer or assignment. It could also be a way for entities who do not typically operate space or earth stations to be pre-cleared to hold a license if that would facilitate a contractual arrangement. We seek comment on this proposal and any potential alternatives. Would this proposal facilitate a more efficient review of basic licensee qualifications

and promote investment and capital formation in the space sector? If we were to adopt this proposal, should the Commission adopt a new application fee for reviewing an FCC Form 312—Main Form application that is not associated with an underlying application, consistent with section 8 of the Act? We believe the Act provides authority for creating a process that bifurcates preliminary review of applicant qualifications from the final review of all elements of an application to achieve permissible policy objectives, such as facilitating efficient capital formation to promote investment in communications facilities. What rules, if any, need to be added to carry out this proposal? Are there any legal barriers to the Commission providing preliminary review of applicant qualifications, subject to review of any new information that may be provided in connection with a complete application for authorization?

b. Ownership Information

45. The Commission also proposes to codify in part 100 the long-standing requirement that space station applicants include a disclosure of certain management and ownership information in FCC Form 312—Main Form, and to expand this requirement to every applicant filing an FCC Form 312—Main Form, including all earth station applicants. This information has been required to ensure that applicants meet the basic qualifications to hold satellite licenses and grants of market access. While this information is already required by the current FCC Form 312—Main Form for space station applicants, we propose to include a reportable ownership requirement in part 100 that all applicants disclose information about individuals or entities holding a 10% or more direct or indirect (equity and/or voting interest) in the applicant or a controlling interest, as well as the names, citizenship, and address of each officer and director in the applicant. These requirements would also allow the Commission to identify domestic and foreign persons, governments, or entities that hold 10% or more interest, consistent with current practice. We believe that such information allows the Commission to assess whether grant of an application will serve the public interest, including consideration of any national security concerns and a determination of whether to refer an application to the Executive Branch for review to assess any national security or law enforcement issues presented by foreign ownership. We seek comment on how these proposed regulations interact with 47 CFR 1.5000 et. seq., which apply to satellite or earth station common carriers, and how to enable a single set of ownership rules with a uniform 10% reportable ownership threshold that apply to all satellite and earth station licensees and recipients of market access grants.

46. The Commission adopted a *Notice of Proposed Rulemaking* in May 2025 proposing foreign adversary ownership certification and information collection requirements for all entities holding covered Commission licenses or authorizations (*Foreign Adversary NPRM*). Specifically, the *Foreign Adversary NPRM* proposes to require such entities to affirmatively certify whether the entity is or is not directly or indirectly owned by, controlled by, or subject to the jurisdiction or direction of a foreign adversary, and if so, to submit any additional information on foreign adversary control including identities, citizenships, and descriptions of any held control. The *Foreign Adversary NPRM* proposes to require foreign adversary certification and reporting for satellite networks, specifically seeking comment on whether to modify FCC Form 312—Main Form, along with other categories of satellite licensing, to include a certification on an applicant's foreign adversary ownership. We propose to align our final rules in this proceeding with the final rules established in the *Foreign Adversary NPRM,* including the final decision on whether those requirements should be incorporated into existing licensing rules or whether the Commission should create a single set of new rules that apply to all regulated entities and whether the requirements should be reflected in FCC Form 312—Main Form.

47. Finally, we propose to incorporate the current requirement that applicants submit an ownership diagram that illustrates the applicant's vertical ownership structure, including the direct and indirect ownership interests with 10% or more ownership interest or controlling interest. This chart should clearly indicate the non-U.S. citizenship entities. As ownership and control structure of companies in the space industry have become increasingly complex, Commission staff have routinely requested that applicants provide information in this format to facilitate their analysis. We propose requiring this submission with the FCC Form 312—Main Form at the initial stage of the application process to avoid delays. We seek comment on whether this proposal should be included in final rules and any alternative methods for collecting ownership information.

c. General Space Station Application Requirements

48. We propose to create a rule section that would aggregate many of the space station application requirements currently found in separate sections of part 25 and that apply to all space station applicants. This rule section would consolidate certain part 25 rules into one rule section requiring applicants to provide the type of authorization requested, contact information for the applicant, a comprehensive description describing the satellite system, a brief public interest statement, and ITU filings and cost recovery materials. These proposed requirements are similar to the current requirements found in part 25, but we seek comment on whether certain information should be added, eliminated, or modified.

49. The FCC Form 312—Main Form requires space station applicants to submit contact information for the applicant and a point of contact if different from the applicant. We propose to retain this information and include contact information for the person or entity capable of and responsible for ceasing transmissions directly on the FCC Form 312—Main Form, which applicants are already required to submit to the Commission under the § 25.271 point of contact filing requirement. This section would also require applicants to submit a comprehensive statement that includes a description of the satellite system, detailing its services, orbits, and planned operations. While we propose to require applicants to submit most technical elements of their applications on one or more schedules to the FCC Form 312, we view the comprehensive statement as the portion of the application that describes in relatively plain language the overall design and operations of the proposed system. We see this as a valuable element that puts the rest of the information in the application into context and makes it easier for the public to understand and comment on applications when they are placed on public notice. However, we would also like to reduce the burden of unnecessary requirements. Accordingly, we propose that applicants provide a comprehensive statement rather than the currently required ''comprehensive proposal'' in § 25.114, which refers to the application in its entirety. We tentatively conclude that a statement will result in a reduced burden on applicants while still giving the public and the Commission an opportunity to scrutinize any planned operations. Should we issue additional guidance

regarding what entails a comprehensive statement to ensure that applications contain sufficient information for Commission review while preventing applicants from having to expend resources on unnecessary showings? Are there more effective or efficient ways to collect the required information within the overall application? We seek comment on whether the comprehensive statement element of an application is necessary for public review of applications. Is the statement at all redundant to any other proposed requirement?

50. We also propose in Appendix A to retain the required public interest statement supporting grant of the proposed operations. However, we seek comment on whether a public interest statement is necessary. Our proposed modified application process is designed to identify parts of an application where either a public interest presumption cannot be made *ex ante* or where a more focused review of the merits is needed. In those situations, the applicant would provide information to support a grant of authorization. Therefore, is it necessary to require a separate public interest statement? If we do retain this requirement in the new proposed rules, are there ways to limit the burden on applicants in preparing public interest statements?

51. We also propose to codify that an operator may file an application requesting authority for multiple GSO satellites under a single call sign as long as the necessary information is provided for each specific GSO satellite listed in the application. Historically, the Commission has licensed single GSO satellites for a single location on the geostationary arc. This is largely due to the distance from Earth, which requires high power and large GSO satellites that are expensive to construct, launch, and operate. But that is beginning to change. As satellite systems are becoming more advanced with increased technical capabilities, we anticipate that applicants may seek to operate multiple satellites at one location on the geostationary arc. We therefore propose to modify our rules to allow applicants to file for and receive a GSO space station license for multiple GSO satellites. We seek comment on this proposal. Should applicants only be allowed to file a single application for multiple GSO satellites if those satellites will be located at the same location on the GSO arc? Should there be a maximum number of GSO satellites allowed to operate under one license? Should existing operators be allowed to combine multiple GSO satellites under one license?

52. Finally, are there any additional requirements that generally pertain to space station applicants that should be included here? Are there elements we propose which should be removed or changed?

d. Space Station Orbital Requirements; Schedule O

53. We propose to create a new schedule to the FCC Form 312, Schedule O, as part of the application requirements for space station applicants to submit the corresponding orbital information for proposed systems. Applicants seeking license authorizations for GSO satellite systems, NGSO satellite systems, VTSS, and Multi-Orbit Satellite Systems (MOSS) would be required to submit Schedule O as part of their initial application.

54. In the proposed Schedule O, applicants would provide the system's orbital information, such as the number of satellites and orbital planes. Applicants would also certify whether a proposed system would meet a set of bright-line orbital criteria. These certification criteria, including collision risk and human casualty risk, would define the contours of the orbital criteria that the Commission presumes to be in the public interest. We want the part 100 application materials to clearly define what applicants must submit and we believe that the proposed Schedule O will help to reduce uncertainty on the orbital information required. Certain current part 25 rules require statements or technical disclosures demonstrating how the applicant meets the orbital criteria. Under our proposal, we seek to allow applicants to certify affirmatively or negatively that their system will meet the criteria, instead of preparing statements describing in detail how their system will meet a certain standard, and the Commission can verify this certification via the technical information included in the submitted orbital debris mitigation plan. In the case of a negative certification, the applicant would then submit additional information to justify why the request is in the public interest. We have largely transferred from part 25 to part 100 the same required orbital showings, but have sought to revise these showings into bright-line standards to support our certification approach where possible. In this way, applicants can have clarity on what exactly the Commission will consider and then need only submit a public interest justification for a request outside of the presumed acceptable orbital debris criteria.

55. The proposed Schedule O would aggregate some of the requirements located in part 100 to help applicants easily determine and certify whether the orbital components of their proposed system are in compliance with the Commission's rules. Additionally, Commission staff would be able to review an applicant's Schedule O to quickly determine whether the application meets the orbital requirements or requires further review. With this proposed Schedule O, we seek to clearly organize the information required under the proposed rules and provide Commission staff with an easy way to identify applications that require closer review, thereby making the licensing process more efficient. In cases where the applicant cannot certify compliance in the affirmative, then the applicant would be permitted to submit a justification for Commission review to determine if granting the license is in the public interest. In this way, the application materials would, by design, assist with routing an application along the licensing assembly line. We seek comment on this as well as the general proposal outlined here. Are the proposed Schedule O and orbital certifications therein sufficient for the Commission and the public to analyze space station applications?

56. As part of providing the orbital information for a system, under our proposal applicants will need to identify their proposal as a GSO satellite system, an NGSO satellite system, a VTSS, or a MOSS. Depending on the type of request, we propose specific application requirements. The proposed definitions and application requirements for each type of system are discussed below.

e. GSO Satellite Systems

57. The Commission's rules currently define a ''Geostationary-orbit satellite'' as ''[a] geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a geosynchronous satellite which remains approximately fixed relative to the Earth.'' This definition is included in both parts 2 and 25 of the Commission's rules, and we therefore propose to forgo its inclusion in part 100 as unnecessary and retain the definition in part 2. We do, however, propose to adopt a definition of ''GSO satellite system'' to help applicants and operators determine when a defined GSO satellite would be classified as part of a larger GSO system in the context of the Commission's regulations. We propose to define a ''GSO satellite system'' as, ''a system composed of one

or more geostationary-orbit satellites operating together at a single location and under a single call sign.'' We seek comment on this proposed definition. Should we expand this definition to include multiple GSO satellites operating at different locations as part of the same call sign? Are there other defining traits of a GSO satellite system that should be included in this definition? Should the definition require that the multiple GSO satellites be controlled by a single network control center?

58. We propose to significantly reduce the amount of information required for applicants for GSO space stations and satellite systems. Specifically, we propose to require the requested orbital location, certifications as to whether the satellite(s) will comply with the two-degree spacing requirements on the U.S. arc and the orbital debris mitigation rules we propose in subpart C. We also propose to require materials be provided to explain orbital debris mitigation plans and end-of-life disposal plans in support of the certification. We seek comment on this proposal. Is there any additional information the Commission should include in this section? Are the rules proposed in Appendix A clear so that applicants understand what is required?

f. NGSO Satellite Systems

59. We propose to codify a definition of ''NGSO satellite system.'' We think that this will make it easier for Commission staff and applicants to refer to applications and discrete satellite systems, particularly if certain applicants apply for multiple satellite systems. Specifically, we propose to define ''NGSO satellite system'' as ''[a] system of one or more non-geostationary orbit satellites operating together under one space station call sign.'' We seek comment on the proposed definition and whether it will facilitate flexibility for operators over time. Does this definition support flexibility and efficiency in how operators organize their systems? As operators build and modify their systems through the licensing process, there may be value in allowing an operator to consolidate multiple call signs so that changes to the operator's deployed system only require a change to one call sign. Should we limit the proposed ''NGSO satellite system'' definition or make clear that licensees cannot consolidate satellites that would otherwise be viewed as separate systems into a single system with a single call sign? How should we determine whether satellites are ''operating together''? Should we allow applicants to define the limits of their own satellite systems for purposes of deciding whether a separate license and/or call sign is necessary?

60. We propose to divide the information that NGSO space station applicants must provide into three parts: technical information, certifications, and additional information. The technical information that we propose to require is similar to current part 25 requirements. We propose rules in Appendix A that include information such as the number of satellites in a constellation, the requested orbital planes, inclinations, and apogee and perigee, among others. We seek comment on this proposal. Does the information we propose to require provide enough flexibility for modern systems to be described?

61. Is there any additional information that the Commission should require for both the Commission and the public to better evaluate applications, or information we do not need to require? For NGSO satellite systems, are there different aspects of a system design we should collect, or aspects we should collect differently, to ensure applicants can request the type of flexibility needed for their proposed operations? For example, do the requirements afford the opportunity for requests involving flexibility in adjusting systems across orbits or shells? Do we need to specify that the information provided only needs to reflect an applicant's initial deployment but that the system can operate flexibly as long as it is done within our rules and subject to any license conditions? Are there other areas we can build in flexibility so that applicants may request to operate within certain envelopes? If so, how would we incorporate this into our application requirements and the forms?

62. The list of proposed certifications for NGSO satellite system applicants is set forth in Appendix A. These proposed certifications include bright-line criteria that applicants must certify whether or not their requested system will meet. Many of these criteria are taken from the current streamlined small space station authorization process in part 25. For example, we propose to require applicants to certify whether their satellite(s) will be 10 cm or larger in the smallest dimension. We believe that these bright-line criteria, drawn largely from current information requirements in part 25, will make the application review process more efficient because it will remove subjective elements from the review. We seek comment on this proposal, including on the specifics of each certification we propose. Are the certifications clear enough so that applicants can make accurate certifications? Is the way we propose to rely on the National Aeronautics and Space Administration (NASA) Debris Assessment Software appropriate? Do we need to provide additional guidance as to how collision probabilities should be calculated? Do we need to provide guidance on what it means for a satellite to be able to be ''maneuvered effectively'' under proposed rule § 100.111(c)(2)(vi)? Are there additional certifications that should be added, or proposed certifications that should be deleted? Are there other proposed rules or requirements that could be turned into certifications?

63. Similar to our current application process, we propose to require that applicants submit an orbital debris mitigation plan that details their end-of-life disposal plan and demonstrates how the applicant will comply with the orbital debris rules and required certifications in subpart C of the proposed new part 100. Additionally, for applicants who may request a waiver of any orbital debris rules or certify that they will not comply with one of the bright-line rules we propose that they would provide the necessary technical information to supporting the specific waiver request. We seek comment on this proposal. Would it be helpful for the Commission to release guidance documents with examples for newer applicants to use as a model? Our goal is for the orbital debris mitigation plans to create as little burden as possible while supporting the certifications made in the application. Therefore, what steps can the Commission take to reduce the burden of these plans? Given that ensuring compliance with the orbital debris certifications will require running orbital debris models, is requiring submission of the report any more burdensome?

64. We also propose to require NGSO satellite system applicants whose requested operations trigger certain information requirements to submit additional information. We believe that these situations will arise in two cases. First, when an applicant certifies that it will not meet one of the proposed bright-line criteria, that applicant would need to provide additional justification to support a grant by the Commission. For example, an application for an NGSO satellite system with a human casualty risk that is greater than 1 in 10,000 would not fit within the criteria that the Commission presumes *ex ante* to be in the public interest. Accordingly, the applicant would need to justify why it is in the public interest for the Commission to grant the application despite having a higher casualty risk.

The second case is when an applicant proposes specific system operations where the Commission has identified that such operations require additional information. For example, we propose to require applicants whose space stations will transit through orbits used by inhabitable spacecraft to provide a description of the design and operational strategies they would employ to minimize the risk of collision with any inhabitable spacecraft. An applicant who falls within this category would then provide additional information to the Commission when they submit their application so that the Commission can determine whether granting the application is in the public interest. Under this proposal, applicants would submit additional information where necessary either in a text box on Schedule O or by filing a supplement to Schedule O. We believe including specific circumstances that require applicants to submit additional information in the ''Additional Information'' section will make it easier for applicants to identify whether they need to submit the required information. We seek comment on this proposal. Are there other information requirements that would pertain to many NGSO satellite systems—but not all—that should be included in this section? Should we place any limits on the information or its form or format to reduce burden or promote efficient review?

g. Variable Trajectory Spacecraft Systems

65. Increasingly, the Commission is receiving applications for systems that do not fit neatly into the construct of a traditional NGSO or GSO system. These applications instead seek authority for operating space stations on spacecraft with variable orbital parameters in order to conduct novel space activities. Additionally, the Commission has already issued licenses and continues to receive numerous applications for lunar landers and operations. In line with the Commission's modernization goals, we propose to add a new type of license for space stations on a ''Variable Trajectory Spacecraft System'' or VTSS. Specifically, we propose to define VTSS as, ''[o]ne or more spacecraft either operating beyond the geosynchronous orbit or operating without fixed or predictable orbital patterns over the course of its lifetime and operating under one space station call sign.'' We intend for this defined category of operations to capture applications for systems that do not fit within the traditional idea of an NGSO or GSO satellite system which have generally predictable and stable orbits. Specifically, under our proposal we expect VTSS would encompass applications for many ISAM systems, orbital transfer vehicles, lunar operations, other novel space activities and operations beyond geosynchronous orbit to asteroids and other planets, and applications for space stations that do not fit neatly within the traditional idea of an NGSO or GSO satellite or satellite system. These operations are often unique in their orbital parameters because satellites or spacecraft may move around to service different spacecraft in orbit, or they may move between NGSO and GSO orbits, or because they transit to or orbit around the moon or other celestial bodies. Our expectation is that VTSS license requests will be distinct from GSO or NGSO requests because of the variability in the orbital parameters of the spacecraft over the course of the license term. We seek comment on this definition and whether it will provide the clarity and distinction needed so that applicants are able to clearly determine whether they need to file an application for a VTSS or a different system type.

66. We seek comment on the proposed definition of VTSS and on the category more broadly. We believe there is a need to have a definition and licensing category for space stations that encompasses the wide range of applications the Commission has received and will continue to receive as companies innovate and seek authorizations for radiocommunications to support novel space activities. Does our proposal for the VTSS definition and licensing category adequately encompass the types of novel operations at the forefront of the industry? Is it sufficiently future-looking and distinct from our proposed definitions of GSO satellite system and NGSO satellite system? Would it make more sense to separate the definition so that space stations traveling beyond the geosynchronous orbit are separate from space stations operating in NGSO or GSO with variable orbits? While we propose to define VTSS (and NGSO and GSO) with respect to the orbital parameters of the system containing the space station(s) being licensed, would it make more sense to define this category based on spectrum use, with a focus on space stations that seek authority for communications not to provide services directly to consumers on Earth, but to operate spacecraft that will provide services in or beyond Earth's orbit? To provide modularity and flexibility, our proposal seeks to separate in the application process the orbital parameters of a system from the frequencies and spectrum use but we welcome suggestions for other approaches. Should we permit operators to file separate Schedule O and Schedule F for propulsion, sensor, or communications payloads that evolve over time? Furthermore, are there alternative names that would fit this definition better? Would Dynamic Satellite (or Spacecraft) System, Non-Standard Orbital Operations, Flexible Space Activities, Non-Conventional Satellite (or Spacecraft) System, or Mission Infrastructure Support Communications (MISC) be better names? Or should the Commission select a more colloquial name like Weird Space Stuff (WSS) to describe this class of applications?

67. We propose to separately specify the information that VTSS applicants must submit when filing an application under the proposed part 100 to make it easier for applicants to know which information is required of them and as a recognition that review of VTSS applications will differ from review of NGSO or GSO applications due to the unique nature of the system. Specifically, we propose to require VTSS applicants to submit information about the number of spacecraft they seek authority for as part of the system, the range of altitudes at which those space stations will operate, and the anticipated amount of time the space station(s) are expected to operate in any particular phase of a mission. These proposed requirements are similar to the proposed requirements for NGSO satellite systems, but differ slightly because we believe they will give operators flexibility in designing systems that do not follow traditional NGSO or GSO operations, while allowing the Commission to collect the information necessary to evaluate a system's potential to cause interference to other operators. We seek comment on these proposed requirements. Are there additional information requirements that should be included? Should they be further subdivided so that certain requirements only apply to certain sub-categories of VTSS, like lunar missions?

68. We also propose to include certifications for VTSS applicants similar to the certifications we propose for GSO and NGSO applicants. We propose fewer certifications for VTSS applicants than NGSO applicants to account for the added flexibility that we seek to provide these operators. Some certifications are unique to the types of operations anticipated under a VTSS application. Specifically, we propose to require applicants who plan to conduct

servicing missions to certify that operations will only happen with the consent of the client and that the applicant will consult with other relevant federal agencies. Additionally, we propose to require operators to certify that they will comply with the relevant end-of-life disposal rules for the orbit at which they will terminate operations. For example, an operator that plans to conduct servicing in medium Earth orbit (MEO) and then move to service a satellite in GEO would have to certify that they will comply with the end-of-life disposal rules for GSO satellites. We seek comment on these proposals. Additionally, is there anything specific the Commission should require from applicants seeking to provide servicing as evidence of client consent? Will the proposed information requirements for VTSS applicants provide operators with flexibility to design and operate novel space stations for novel services?

69. We currently propose adding a rule that requires all space station licensees to share ephemeris data more broadly, which is discussed further below. Is that proposed rule sufficient for VTSS applicants who will be moving spacecraft around more variably and interacting with other satellites on orbit? Should the rule be modified or changed to effectuate the goals outlined above for VTSS applicants and licensees? Should the Commission encourage or require standardized telemetry formats for conjunction assessment and covariance data? What sources might be used to set such standards?

70. In addition to the rule requiring space station licensees to share ephemeris data, we propose to require VTSS applicants to certify whether they will share propagated ephemeris and covariance data prior to and during any planned maneuvers or rendezvous and proximity operations. We believe that for operators planning to move their spacecraft over the course of their lifetime and perform RPO maneuvers, sharing propagated ephemeris and covariance data is in the public interest so the Commission and public may have information on the location of the licensed space station(s) attached to the spacecraft. Having VTSS operators share propagated ephemeris could allow licensees the flexibility to move between orbits while maintaining transparency as to where a licensed space station is. Additionally, this will support space safety and help other operators protect their satellites as well. We therefore propose adding this certification to encourage applicants to file ephemeris and to assist the Commission in quickly identifying VTSS applications that need further review if the applicant is not willing or able to share ephemeris information. We seek comment on this proposal.

71. We also seek comment on whether we should allow VTSS operators who decline to share their propagated ephemeris and covariance data to instead submit a completed agreement with another government agency approving the applicant's space safety plan. Given that some operators work closely with federal agencies, would it be feasible to rely on another federal agency to review and coordinate a VTSS applicant's plans consistent with our obligations under the statute? Could allowing applicants to work with other government agencies for operations that are unique like those we envision under the VTSS framework and submit a coordinated agreement for consideration by the Commission be a substitute for sharing propagated ephemeris and covariance data? Are there other possible ways that operators could meet the needs we identify as in the public interest if they cannot or will not certify to submitting their ephemeris data? Should operators ever be allowed to refuse to submit this data if they are planning on performing maneuvers and RPO? Should we let VTSS applicants submit an orbital debris mitigation plan and certifications to the requirements for NGSO satellite systems or GSO satellite systems, depending on the proposed operations?

72. We also propose to require that VTSS applicants submit certain additional information depending on the specific requested operations. In this section for additional information, we propose to require VTSS applicants whose space stations will travel beyond the geosynchronous orbit to submit a description of any instruments or rovers onboard that will engage in radiofrequency communications with the spacecraft as well as a description of coordination with government entities such as the National Science Foundation We seek comment on this proposal. These information requirements come from the Commission's experience with lunar applications. Are there additional information requirements that the Commission should seek for these missions? We also propose to require applicants who plan to engage in servicing or otherwise interact with other spacecraft on-orbit to submit the following information: a list of FCC file numbers or call signs for applications or grants related to the operations, including for client space stations; a list of ITU filings or United Nations (U.N.) registration information, or the expected State of Registry with the U.N., for any space stations not licensed by the FCC or without market access that will be client spacecraft or related to the proposed operations; and a statement disclosing planned proximity operations and addressing any debris generation. Since many VTSS operators may not likely know at the application stage the particulars of this information, should we instead set this as a notification requirement unless the information is already known? Could the Commission, working with others in the United States government, create pre-cleared lists of nations for which operations need not be specifically disclosed? Or potentially a list of only spacecraft overseen by certain administrations? We seek comment on these proposals. Is there any additional information that the Commission should request?

h. Space Station Frequency Requirements; Schedule F

73. We propose to adopt a new Schedule F to the FCC Form 312—Main Form on Space Station Frequency Information Requirements as the other main schedule for information that applicants must provide to the Commission. Schedule F would replace the current Schedule S but contain much of the same required frequency information. We believe that including all required frequency information in one section will make it easier in the future for the Commission to update both the Schedule F and the Commission's rules as industry and technologies evolve. In addition, we seek to reduce the number of technical showings that applicants must submit. For example, if the Commission were to use an electronic filing system that auto-populated information based on an applicant's requested services, orbital locations, and frequencies, we would not need to change the rules to accommodate that system. We seek comment on this proposal.

74. Similar to the space station orbital information requirements in the proposed Schedule O, we also propose to include certifications in the space station frequency information requirements section. Specifically, we propose to include the following certifications in Schedule F: the space station(s) will comply with all applicable technical rules; the space station(s) will operate under ITU coordinated procedures and agreements; and the space station(s) can be commanded to immediately cease transmissions to eliminate harmful interference. We believe that these certifications will help the Commission quickly identify applications that are in

compliance with the rules and can therefore be processed quickly, distinguishing from applications that request a waiver and therefore require further review. We seek comment on these certifications. Are there additional certifications specific to frequency information that we should include in Schedule F? We also propose to include a subsection that points applicants who seek to operate in specific frequency bands or to provide specific services to the appropriate rule sections in subpart C where additional application materials can be found. We believe that this will be more efficient and reduce the overall length of part 100. We seek comment on this proposal. Does it give applicants sufficient notice of what information is required of them? Are there proposed requirements we should not adopt?

75. The specific frequency information we propose to require is set forth in Appendix A. We seek comment on this proposed rule and the information and certifications. Are there any frequency information requirements that are no longer needed or relevant, either because they are not used in practice by space station operators to assess interference or because technology has evolved? Are there additional frequency or technical requirements or data that we should require applicants to provide? Are there alternative methods for collecting the relevant frequency information from applicants that the Commission should consider?

i. Requirements of Supplemental Coverage From Space Applications

76. Because SCS is a developing service, we do not at this time propose to make any substantive changes to our rules from what is currently required in part 25. We generally believe that making substantive changes to the requirements for SCS at this juncture would be premature and may risk derailing efforts by the industry to build systems that comply with the current rules, with one exception where we propose to eliminate a current requirement.

77. As has been pointed out in other proceedings, and as we have seen in applications before the Commission, although we had endeavored to create a flexible and low burden approach to licensing devices for SCS, there may be some areas which can be further improved. We think this proceeding serves as an opportunity to potentially revise our SCS equipment rules in a targeted manner. As such, we seek comment on whether to remove the requirements for equipment authorization certifications under part 25 and omit them from new part 100 for SCS earth stations. We tentatively conclude that this requirement is unnecessary because all devices used for the provision of SCS must be certified under other rule parts and, the way the rule is structured, the certification under part 25 mirrors the certifications under other rule parts without requiring anything new. We seek comment on this tentative conclusion. Is there a reason to keep this requirement? If we do adopt our proposal, would a rule in the new part 100 making all equipment that meets the equipment authorization requirements of parts 22, 24, or 27, SCS earth stations by default be sufficient to classify the devices as earth stations for allocation purposes? Alternatively, is there a way that we can incentivize manufacturers who are responsible for equipment certifications to certify their equipment to be SCS compliant? We do not seek comment on any other matters related to SCS or the other rules previously adopted.

j. U.S. Market Access

78. The Commission permits satellite systems that are licensed by jurisdictions other than the United States to access the U.S. market. Our current rules require a demonstration that U.S. licensed space stations have effective competitive opportunities to provide analogous services in the country in which the non-U.S. licensed space station is licensed. The Commission currently allows this access to the U.S. market via either a petition for declaratory ruling filed by the space station operator or a request to access the foreign satellite by a Commission-licensed earth station operator. We propose to continue to review market access applications to ensure U.S. licensed space stations have effective competitive opportunities to access other markets.

79. Additionally, we propose a change to our request for market access procedures to prohibit U.S. market access via earth station licensing. We seek comment on whether to prohibit companies that seek U.S. registration for a space station or system pursuant to the Registration Convention from receiving an FCC authorization for U.S. market access.

80. Current § 25.137 allows earth station applicants to request authority to communicate with a non-U.S. licensed space stations via a petition for declaratory ruling under requirements that are equivalent to those currently outlined in § 25.137 which governs access via satellites. In practice, however, we have found that this process creates confusion among operators since this rule provision only allows for communication with the specific earth station for which the petition for declaratory ruling was made and not broader access to the U.S. market. The current process also creates unnecessary burdens on the Commission to process multiple earth station market access applications rather than a single market access application for a non-U.S. licensed satellite or satellite system. Therefore, we propose to eliminate this option in our rules and only permit market access for non-U.S. licensed satellites pursuant to petitions for declaratory ruling for satellites and no longer via earth stations. We seek comment on this proposal.

81. We seek comment on whether to change our market access rules to prohibit applicants who seek registration by the United States under the processes defined in the Registration Convention from receiving authorization to access the U.S. market via a petition for declaratory ruling and instead require those entities to hold an FCC space station license. We seek comment on whether to require entities that seek registration from the United States to hold a U.S. space station license pursuant to our licensing authority under section 301(f) of the Act, the stated purpose of which is ''to maintain the control of the United States over all the channels of radio transmission,'' and section 303(r) of the Act, which directs the Commission to make such rules and prescribe such restrictions to carry out the provisions of the Act and ''any international radio [ ] communications treaty or convention, or regulations annexed thereto, including any treaty or convention insofar as it relates to the use of radio, to which the United States is or may hereafter become a party.'' We seek comment on whether this change in our licensing process is necessary to fulfill the statutory objectives expressly stated in section 301, and to assist the United States as a party to the Outer Space Treaty, pursuant to the express requirements of section 303(r) of the Act. Under the Registration Convention, States register space objects in a registry maintained by each State in order to provide information regarding each space object to the U.N. We also seek comment on whether there are other sound reasons to make this change.

82. When entities seek authorization for space stations from non-U.S. administrations, in many cases, the authorization is of limited scope. For example, the authorization may only involve ITU filings for some, but not all,

of the operational frequencies, or it may be only one of several authorizations for space activities that the country's national legislation provides. Given that the non-U.S. authorization may be incomplete, we seek comment on whether an FCC license should be required when an applicant seeks to have its satellites registered by the United States under the processes defined by the Registration Convention. Is this requirement necessary so that the United States can maintain ''authorization and continuing supervision'' over the space object? We therefore seek comment on how the U.S. space station licensing process can better align with the registration process. Additionally, we seek comment on how to implement any new rule if adopted, recognizing the complexity of issues that could arise between the licensing administration, the ITU filing, and the U.N. registration. Should any operator that seeks or obtains registration by the United States under the Registration Convention be required to obtain a FCC space station license as of the effective date of any new rule? Should a condition be added on any grant of U.S. market access, providing that authorization would be automatically terminated without further action by the Commission if, after grant, the grantee seeks or receives registration by the United States for any of the authorized satellites and if so, what effect would that have on existing services? If any new requirement only applies on a going-forward basis, should the requirement for a U.S. license attach if current operators who received market access and were registered by the United States apply for renewal, if a renewal period is established, or a major modification and what effect would that have on existing services? We seek comment on how real-world scenarios should be addressed as well as any alternative suggestions.

83. Finally, it is our intention to ensure that operators who are granted authorization to access the U.S. market via a petition for declaratory ruling do not receive an advantage over entities holding a U.S. satellite license. Do our proposed rules meet that goal, and if not, how can they be improved? We note that the European Union (EU) recently proposed a comprehensive EU Space Law which includes additional requirements for non-EU entities to gain access to the EU market, such as appointing an EU legal representative. Under the EU proposal, some of these requirements may be waived if the European Commission determines the non-EU jurisdiction's regulatory framework is sufficiently equivalent to its own. Are there additional requirements, including requirements like those proposed by the EU, that should be incorporated into the Commission's rules for market access entities to establish a level playing field for U.S. operators? For example, there is no license term for U.S. satellite market access grants, and instead we rely on the review of the licensing administration, which establishes the term, if any, on the original license. Therefore, we propose to establish a 15- or 20-year license term for these authorizations, as discussed below. Are there additional requirements that should be imposed on the grantees of market access? For example, should the Commission require a periodic certification that grantees continue to hold a license from their authorizing administration, and/or the ITU and continue to provide service to end-users in the U.S. market? If so, when should such a certification be required? Commenters should describe proposals with specificity, including whether the requirement can be waived upon a showing of sufficiency of the regulation in the country in which the operator holds its original license.

k. Small Satellite Systems

84. We believe the Commission's small satellite and small spacecraft rules in §§ 25.122 and 25.123 have generally been successful despite applicants facing some of the same challenges as other applicants for part 25 licenses. In addition to the more straightforward criteria to qualify as a small satellite system (akin to our proposed approach to prespecify acceptable criteria), the current rules for small satellite systems afford applicants relaxed surety bond and milestone requirements. Accordingly, we do not propose separate rules for small satellite systems. Instead, under the proposed part 100, we expect that applications for all space stations will be reviewed against a prespecified set of standards for expedited processing, as described in the NPRM. Our proposed framework essentially expands the existing small satellite authorization process to encompass a broader range of systems eligible for faster processing. In addition, as proposed herein, small systems would not be required to post a surety bond. We therefore believe that applications that are currently eligible for small satellite or small spacecraft processing will receive the same benefits—no surety bond, exemption from processing rounds, faster processing—under the proposed part 100 rules. Further, our proposal expands the class of applications that would receive these benefits. We seek comment on this approach and alternatives.

85. First, we seek comment on whether we should eliminate the streamlined small space station and small spacecraft authorization processes entirely if we adopt the proposed processing rules in the NPRM. Specifically, because the rules we propose aim to optimize all application processing and would only require larger systems to post a surety bond, as discussed below, would these changes effectively negate the need for a process specific to small satellite systems? We do not propose to address any regulatory fee issues in the NPRM but seek comment on any alternatives the Commission should consider as far as designating certain systems as ''small satellite systems.''

86. Alternatively, we seek comment on whether we should continue to distinguish a small satellite system from an NGSO satellite system. Could we revise the definition to be any NGSO satellite system of ten or fewer satellites under a certain mass limit? Would it then make sense to retain the shorter six-year license term? Should we change the current mass requirement by increasing it? We seek comment on this proposal and how to define ''small satellite'' or ''small satellite system'' if we retain these categories. Is there any benefit to having this specific carve out and definition? What benefits, if any, would a small satellite system get given our proposed streamlined approach to application processing and the proposed changes to the surety bond requirement for applicants and licensees? Is this proposed definition too restrictive or not restrictive enough? We seek comment on these questions and proposals generally.

l. Earth Station Licensing Application Requirements

87. We propose to streamline the earth station application requirements by shifting to a predominately Nationwide, Non-Site License approach, and modularize the application so that applicants only provide information that is necessary for the license sought. We believe that this will be more efficient than the current approach, where the Commission requires certain information that it typically does not review. We propose to require additional specific information be submitted based upon the type of application. For instance, rather than applying radiofrequency exposure requirements to all applicants, we propose to only require the information for user terminal and Earth Stations in

Motion (ESIMs) applications. We believe that the changes we make to the requirements for earth station applications will streamline the process for most applicants and promote more efficient Commission processes.

88. Our current rules regarding earth station application requirements are overly burdensome and outdated. Experience indicates our earth station rules often confuse applicants. Much of what the Commission currently requires an applicant to provide is information that is redundant or unnecessary to the Commission's review. In addition, we generally require separate applications for earth stations with the same operating or technical parameters, requiring multiple and redundant reviews. The current approach by the Commission to reviewing earth station applications requires applicants and the Commission to engage in time-consuming submissions and tedious reviews. In addition, the current rules do not take into account advances in technology since the rules were written. To modernize our process, similarly to how we propose reviewing space station applications, we propose to shift to a certification-based approach for earth station applications. Under this approach, applicants who do not operate in accordance with the certifications that they make in the application will assume the risk of an enforcement action for falsely certifying, including the possibility of forfeitures and revocation. So, while the proposed approach may increase speed and efficiency for applicants, it comes with more responsibility on the applicants to ensure they are meeting the Commission's requirements. We seek comment on our proposals. We note that some of the proposals may impact earth stations that operate in the Upper Microwave Flexible Use Service (UMFUS). We do not propose any substantive changes to the UMFUS regulations in this proceeding and do not seek comment on changes to the UMFUS rules here, instead leaving any such substantive discussion to other proceedings.

89. In addition, we also seek comment on a number of specific questions that may inform the Commission on how our proposed approach will impact industry and the public. Specifically, if an applicant provides all of the certifications in the application, is that sufficient, or does the Commission need to require additional information or review before placing an application on public notice? What additional information, if any, should an applicant be required to provide? For instance, we propose to require applicants to provide their power levels, out-of-band emissions (OOBE), and other power information and also to certify that they are operating within the rules we have established. Is this redundant? Should we instead only require the certification? If we should require both the technical data and the certifications, what is the benefit to doing so? What should the Commission do if an applicant does not certify that they have completed coordination but states they are in the coordination process? Should this be deemed an incomplete application? For operations in shared bands, should we request different or additional information? We tentatively conclude that an applicant, for operations other than those for Immovable earth station Nationwide, Non-Site License, will likely have coordinated applicable operations before submitting an application with the Commission and that such coordination would be reflected in the coordination report. We seek comment on this conclusion. Instead of requiring applicants to provide their coordination reports, should we require licensees to certify that they will complete coordination prior to operation but have available at the request of the Commission evidence of having completed that coordination? Would a coordination report be appropriate evidence or something else? Is there any particular benefit to having a coordination report in a license file instead of simply requiring licensees to produce evidence of coordination at the request of the Commission? Should applicants provide a description of their operations? Is that information relevant for Commission review and licensing? For instance, if an applicant applies for a user terminal authorization, should they be required to tell us what the intended use is, or should they be allowed to use the devices as they see fit so long as they do not violate the Commission's rules? For an applicant who fails to certify in the affirmative or who requests a waiver of the Commission's rules, what information should we require from them? Should we be more specific as to what showings (*e.g.,* interference analysis) should be included with particular types of waiver requests? Is any of the information proposed to be requested unnecessary? Are there sufficient similarities between ESIMs and user terminals so that an applicant can apply for both ESIM and user terminal authorization in the same application if the technical information provided meets applicable requirements specific to each service? Further, we seek comment generally on any potential impacts our proposed changes to earth station licensing could have on services in shared spectrum bands. In addition, should we exclude spectrum bands that are subject to freezes or other limitations—such as C-band—from the proposed licensing rules?

m. Nationwide, Non-Site Licensing With Registration for Immovable Earth Stations

90. We propose to shift our earth station licensing from the current, burdensome site-by-site approach to a predominately Nationwide, Non-Site Licensing approach. While the site-by-site approach will still be available, the dramatic increase in the number of earth stations required by the space industry necessitates a much more streamlined approach that can scale licensing earth stations. We envision a framework involving two steps: first, obtaining a Nationwide, Non-Site License; and second registering earth station sites and completing coordination before operations. Under this two-step process, an operator would only need to go through a full licensing process once but could then register earth station sites as needed. Under this proposal, either at the time of registration or after registration but prior to operation the licensee would certify and/or demonstrate compliance with any location- or frequency-specific rules that might apply. Our intention is for the proposed two-step framework to apply to all frequency bands. However, given that there are specific rules related to different frequency band usage and that we do not propose to change them here, we see this approach as setting the framework for licensing and registering earth stations so we progressively make registration more efficient in various bands. While initially some bands or locations may vary in how registration takes place, it is our goal to progressively move toward simpler, data-based enabled registration of earth stations under this Nationwide, Non-Site Licensing model. For example, similar to what the Commission has adopted for the 70/80/90 GHz band, such an approach could be applied to other frequency bands used for earth station operations.

91. We propose to adopt a new class of earth station, the Immovable earth station. We propose to define ''Immovable earth station'' as, ''[a]n earth station licensed under either a Nationwide, Non-Site License or a single location authorization that is located at a single fixed location that must be registered and coordinated before operating.'' We propose this definition to distinguish from the

Commission's definition of fixed earth station (which operate in the FSS) from other types of earth stations. Additionally, we propose to only allow applicants who do not require any exceptions or waivers to apply for a Nationwide, Non-Site License for Immovable earth stations and then register locations. We believe that this new type of earth station and definition, one that makes clear that an earth station must be registered at a location, will provide flexibility to applicants and avoid confusion with the definition for fixed earth stations that currently exists in our rules. In addition, under the current rules, the Commission requires, generally, that every new earth station at a different location goes through the entire licensing process, even where new earth stations are technically identical. Although currently the part 25 rules allow for blanket licensing in certain frequency bands, those bands are limited and do not account for technical advancements or more efficient use of spectrum in the future. Accordingly, we believe that creating this new class of Immovable earth station, and permitting nationwide, non-site licensing with registration requirements, is a more efficient way to license earth stations.

92. We do not wish to allow licensees to circumvent coordination or other requirements that are meant to protect against harmful interference. We therefore propose that applications requiring a waiver or an exception, other than for federal coordination, will be required to file a site-specific license application for the earth station that requires the exception or waiver. In addition, while we propose allowing applicants to register their sites instead of needing to go through a full licensing approach, we still will require proof that coordination has occurred prior to the earth station operating at the newly registered site. In this case, we propose to require applicants to file a certification prior to beginning operations affirming that all required frequency and site-specific coordination has been completed. To be clear, what we propose is a two-step process. An applicant can first be licensed for the use of a specific frequency without the need to coordinate but would then have to coordinate with all required commercial and federal entities prior to operating at a site registered under the Nationwide, Non-Site License. What we propose still requires that coordination occurs between operators prior to operations—although registration may occur prior to certifying to meeting coordination. We envision this approach to be used in all frequency bands. We tentatively believe that our coordination before operation but after registration proposal would ensure protection and that the criteria of any frequency specific rules, such as those for the UMFUS bands, are met. Although we propose to allow an applicant to receive a license, this proposal does not allow a licensee to begin operations prior to both registering their sites and certifying that coordination has been completed at those sites and completing all coordination requirements. We believe this two-step approach—licensing first then site specific registration and coordination prior to operations—would allow for a streamlined licensing regime wherein operators would only need to come to the Commission for a license once and then register sites pursuant to the Nationwide, Non-Site License and begin operations after certifying to completing all required coordination without having to seek additional Commission approval.

93. Alternatively, rather than requiring filed coordination reports prior to operations, would self-coordination amongst operators as the default approach in all frequency bands achieve the same objectives? Specifically, should we allow earth station operators to assess the risk of harmful interference to incumbent users prior to operation and require them to take steps to proactively prevent harmful interference to earlier-in-time users? Would this approach better allow for licensee's to begin their operations quickly while still ensuring that other users are protected? Are there any drawbacks to this approach? What benefits are there to this approach over what we propose above? Alternatively, is there a way to combine the two approaches that would still allow for quickly deploying and operating while ensuring there is no harmful interference to incumbent operations? We note that the proposal above does allow for licensees to register sites prior to coordination, but must coordinate and certify to meeting all coordination requirements before operating. Would instead allowing operations on an unprotected/non-interference basis while coordination is occurring but still require a coordination report or certification be filed upon completion of coordination be a suitable alternative to what we propose? Should we instead adopt this self-certification approach for certain bands and exclude others? Alternatively, would allowing licensees at the time of registration to certify that they will complete coordination prior to beginning operations but rather than file a coordination report only require that they be able to provide evidence of completed coordination at the request of the Commission achieve the same goals with a reduced administrative burden?

94. We are cognizant, however, that a one size fits all approach for every frequency band is unlikely to be possible in the immediate future. Many bands have certain restrictions or limitations that likely need to be addressed in separate rulemakings. However, we tentatively believe that the new predominately nationwide, non-site licensing approach we propose here can be applied broadly nonetheless. We invite comment on whether there are any spectrum bands today that are suitable for a lighter approach than what is proposed. For instance, are there any where we can require only to supplement their license file with the locations at which they seek to operate rather than officially registering the sites? Are there any other approaches that should be considered for certain frequency bands that do not have coordination concerns or use limitations?

95. While we tentatively conclude that adopting a nationwide, non-site licensing approach would best serve the dual needs of ensuring growth in the industry while protecting other spectrum users, we recognize that there are issues that may still need to be addressed. Accordingly, we seek comment on specific questions and proposals. First, as part of this approach, should we establish any sort of first in time right? For instance, if two licensees want to register at the same location, should the one that files first have protection over the one that files second? Should it be based on who begins operations first? Are such rules even necessary, or does the coordination process coupled with the requirements to only operate within the Commission's rules without the need for waiver or exceptions resolve most of these issues? We note that under our current rules, coordination is only required for operational sites. Does that address these issues? In that same regard, how should site-specific licenses be treated when determining priority? Should there be different operational limits for different frequency bands or do the proposed operational limits in Appendix A sufficiently protect other spectrum users? Similarly, are there bands that should be excluded from our proposed Nationwide, Non-Site License with registration approach? Is there a benefit to allowing for registration prior to certifying to coordination if it means that the earth station cannot operate until the certifications are also filed?

Could this result in warehousing of locations for a year at a time? Should we establish a mechanism where multiple parties can register at a site, so that if the party that registers first is unable to meet the 365 day deadline, the applicant that is next in line will have a chance to begin operations at the site?

96. Further, should the Commission establish a database for registering the sites? We note that no database currently exists, but licensees are currently able to file supplements in their license files in ICFS. Does the filing of supplements achieve the same purpose as a database? If so, how would the public be made aware that the registration has been filed without causing unnecessary burdens on Commission resources? We also ask whether we should have different registration systems generally for different frequency bands or if they should all be uniform? For instance, UMFUS bands have specific requirements that must be met before a licensee can begin operating, but S- and X-band frequencies do not have those same requirements. Does this warrant establishing different registration systems or rules for registration for specific frequency bands? Could establishing a database similar to what the Commission has established for the 70/80/90 GHz bands be a solution that would allow for a single database? Should the Commission instead delegate to the Space Bureau responsibility to find the best approach for registering sites at a later date? Should the Commission establish a new database that is more easily searchable and tailored specifically to just these proposed registrations?

97. In addition to the questions above, we seek comment on general questions related to this approach. Specifically, what possible issues exist with adopting a Nationwide, Non-Site License approach? Are there specific bands where this proposal would not work, and if so, why not? How would this impact coordination between operators or with the federal government? Is there a benefit to this approach, or will applicants primarily only seek site specific licenses? Should we permit applicants that seek a waiver of certain rules, such as the U.S. Table of Frequency Allocations, to utilize the Nationwide, Non-Site License approach? Are there any drawbacks or benefits to allowing an applicant who requests a waiver to utilize the Nationwide, Non-Site License approach?

2. Application Handling

98. We propose to revise the Commission's rules guiding how a filed application will be processed prior to a final action by the Commission. The proposed rules in this portion of subpart B would establish certain processing timelines, a standard of completeness, public comment processes and guidelines for information requests to applicants. As part of the licensing assembly line, application processing is designed to gather and organize all the information needed in preparation for the Commission to consider the application. We believe that these proposed rules will increase processing speed and reduce burden on applicants and the Commission. Our proposed rules would function as follows:

- Within 30 days of filing and confirmation of fee payment, the Commission must either place an application on public notice or, if the application is incomplete, ask for all information needed to establish completeness.
- Once an incomplete application is supplemented and deemed complete, the application will be placed on public notice as soon as practicable.
- If an application is complete, and the applicant certifies in the affirmative to meeting all the bright-line criteria for their system, does not request a waiver, and is not subject to any ''exceptions'' to expedited processing, the application will be placed on seven-day public notice (*i.e.,* expedited processing).
- Applications not eligible for expedited processing will be placed on 15-day public notice.
- Applications subject to section 309(b) of the Act will be placed on 30-day public notice.
- If no action is taken on the space station application within 60 days following the end of the public notice period, the Commission will inform the applicant of the reasons preventing a license grant with specific reference to any exceptions.

We seek comment on the specific revisions to the application processing phase detailed below and in Appendix A.

a. Completeness

99. Before an application is placed on public notice, the Commission must determine that the application is complete. It is longstanding Commission precedent that applications must be ''substantially complete'' before they are accepted for filing, meaning that ''applications must be complete in substance, and must provide all the information required in the application form.'' The substantially complete standard does not refer to a determination on the merits of the application, nor does it imply that the Commission does not have further questions for an applicant after an application is placed on public notice. Rather, it is designed to ensure that an application includes all of the information required by the Commission's rules and helps to deter against the filing of speculative applications.

100. The Commission's rules state that an application will be unacceptable for filing and returned to the applicant if ''the application is defective with respect to completeness of answers to questions, informal showings, internal inconsistencies, execution, or other matters of a formal character.'' Further, § 25.112 of the Commission's rules states, in part, that an application will be unacceptable for filing and returned to the applicant if the application does not substantially comply with the Commission's rules, regulations, specific requests for additional information, or other requirements. In adopting this rule, the Commission clarified that ''[w]hile in some instances it is efficient for staff to help parties address discrepancies in their pending applications, we require all applications under part 25 to be substantially complete when they are filed.'' The current requirements for space station applications additionally require that an applicant provide a ''comprehensive proposal.'' The Commission has previously noted that a ''comprehensive proposal'' must describe ''in detail all pertinent technical, operational and ownership aspects of the system and its ability to proceed expeditiously with construction and launch.''

101. Our experience is that these overlapping and subjective standards have not served to promote expediency in placing applications on public notice or in making applicants aware of what comprises a complete application. We believe that establishing a clearer standard for what determines ''completeness'' as a precursor to the application review process will be an important and beneficial addition to the rules if we adopt our proposal to determine whether an application qualifies for expedited processing prior to the public notice period. This proposed rule section would codify the existing process for determining whether an application is complete and the process by which an applicant will be notified of any deficiencies in the application. To provide applicants with clarity and a more predictable standard, we propose to clearly articulate the

standard for completeness before an application can be accepted for filing and placed on public notice. Accordingly, we propose to include a new rule section in part 100 defining the standard for completeness, stating, ''An application will be considered complete if, under the relevant rule section(s), all required information, forms, certifications, and showings are included in the application.'' We believe this definition focuses on whether all required materials have been provided rather than involving a determination on the merits of an application. In addition, the application certifications and processing framework to identify exceptions to expedited processing as proposed herein aim to allow for a more objective determination of whether all information required has been provided and an application can be deemed complete. We also clarify that applications with negative certifications or waiver requests must provide additional information to be complete, which will assist the Commission as it informs applicants of any deficiencies in an application within 30 days of filing. We seek comment on the proposed definition and standard for completeness. Are there alternative proposals or methods the Commission should consider in determining that an application is ''complete''? Does the proposed standard provide the intended benefit and guidance to applicants in stating a more clear standard on when applications can be accepted for filing? We believe that 30 days will give the Commission sufficient time to review space station applications and either place them on public notice or contact applicants to inform them of any missing information or other deficiencies. Should the initial timeline be longer to encourage more intensive review prior to public notice to identify any missing application requirements or exceptions that might delay grant so that the Commission can proceed with grant more quickly following the end of the public notice period?

b. Public Notices and Oppositions to Applications

102. We propose to overhaul our current public notice procedures for all applications not subject to section 309(b) and (c) of the Act. For most applications that are determined to be acceptable for filing, we propose a shortened public notice period of either seven or fifteen days. Applications that do not have any enumerated exceptions would be subject to expedited processing and placed on a seven-day public notice period. All other applications would be placed on a 15-day public notice period. Applications subject to section 309(b) and (c) of the Act would continue to be placed on public notice for a 30-day comment period.

103. We propose that oppositions to applications, including petitions to deny and other pleadings (collectively ''oppositions''), would need to be received by the Commission within seven days after public notice for applications. Any replies responding to oppositions must be filed within five days after the expiration of the time for filing oppositions, consistent with the current rules. We note that the Commission currently accepts informal objections filed outside of the established public notice window or outside of conformance with § 25.154(a). To encourage timely filings, we propose to include in part 100 the requirement that any commenter, petitioner, or filer request a waiver of the rules when filing outside of a designated filing window. Finally, we propose allowing the Commission to shorten or extend a public notice period on its own motion.

104. We seek comment on these proposals. It is our goal to provide certainty to process applications quickly while still guaranteeing opportunity for public comment. Do these comment periods provide enough time for the public to understand and comment on applications, particularly given our proposed revisions to the application requirements so the request may be more quickly understood? Is the rule language sufficiently clear to inform applicants of the relevant public notice period? Does this proposed rule section include all pleadings that are subject to public notice requirements, or should additional classes of pleadings be added? The proposed rules only allow reply comments to be filed by the party that filed a petition to deny. Would a more robust record result if that constraint were eliminated and the public at large allowed to participate at this stage of the proceeding? Would expanding the process in such a manner complicate the proceeding or cause delay in resolution? We seek comment on the full range of options available for expediting public notice procedures, consistent with the goals of this proceeding.

c. Processing Timelines for Space Stations

105. We propose to adopt timelines for space station application processing in order to achieve our goals of speed and predictability. We propose that if no action is taken on a space station application within 60 days following the end of the public notice period, Commission staff will inform the applicant and public of the reasons preventing a license grant with particular note to any exceptions. We believe this approach will foster accountability and transparency which in turn will facilitate resolution of outstanding issues as the applicant will be better able to understand the Commission's view on its license request. We seek comment on these proposals. Are these timelines appropriate? In what manner should the Commission notify the applicant of any issues or deficiencies? Would a letter filed in ICFS (or successor system) be sufficient?

d. Processing for Earth Station Applications

106. We also propose to adopt processing timelines for earth stations that mirror those for space stations. Under our current policies, earth station license applications are placed on public notice within 30 days of filing. However, the Commission has not generally adopted strict timelines for taking action on an earth station application, other than in the case of renewals. While this approach has drastically increased the speed of earth station application processing, it leaves applicants with a lack of clarity on status once the public notice period ends. Accordingly, we propose to adopt rules that specify for applicants how their applications will be processed. We seek comment on our proposals.

107. As a general matter, we acknowledge that while earth station processing has seen dramatic increases in speed over the last year, there is still plenty of opportunity for improvement to the process. With that in mind, we propose to overhaul the processing of earth station applications to be more streamlined so that applicants can start providing services faster. Under our current rules, when staff processes applications, no differentiation is made between applications that conform to the Commission's rules and those that seek waivers. This results in all of the applications being processed in the order in which they are received rather than creating a way for those applications that comply with Commission rules to move through the process faster. Accordingly, we propose to create two separate processes for earth station applications. Specifically, we propose a process where applications that conform to the Commission's rules can begin temporary pre-grant operations on a non-interference, unprotected basis once the application is placed on public notice,

similar to the current process for STA. Applications that do not conform with the Commission's rules—for example, if they request a waiver or do not certify in the affirmative to requested certifications—will not be afforded this status. We seek comment on these proposals.

108. While we are cognizant of concerns of harmful interference when allowing operations to begin before the completion of a public notice period, we note that what we propose allowing is similar to what the Commission currently allows via STA, only without the extra step of submitting another application. Specifically, earth station operators often file for STA operations while their underlying applications are being processed so that they may begin operations, even if it is on a non-interference and unprotected basis. We seek comment on whether our proposal of permitting operations to commence prior to grant without requiring the submission of another application would be consistent with statutory requirements.

109. In addition, we seek comment on whether the industry has matured to a point where users in shared frequency bands or adjacent bands are able to coordinate amongst themselves to prevent interference such that allowing operations while an application is on public notice would cause little to no harm. Should there be restrictions on specific bands or operations? For instance, should this approach be limited to non-Federal bands only? If so, why? And if not, is it because the coordination and interference protection is band agnostic? Do there need to be any other restrictions? Given that we only propose to allow the operations beginning at public notice in specific circumstances, do the proposed rules offer sufficient protection and afford operators a sense of predictability? Does the differentiation even matter, or should the Commission allow operations for all applicants, regardless of whether they require any waivers or exceptions? What are the benefits or drawbacks to this approach? Should we allow operations while an application is on public notice when the applicant requests waiver of certain rules? Are there common waivers the Commission grants regularly that we should consider as part of this approach such as waivers of the U.S. Table of Frequency Allocations or location restrictions?

e. Information Requests

110. Applicants need predictability, whether in terms of launch timing, regulatory requirements, or the kind of questions that can be expected during the licensing process. At the same time, it is critical that the Commission receive clear, complete, and factually accurate applications. Accordingly, we propose specifying the scope of information the Commission may request from applicants. We propose that information requests must be targeted at obtaining information directly material to a determination of whether the requested authorization is in the public interest, or to resolve inconsistencies, technical issues, or other matters of concern that have a direct bearing on the decision. We believe that by requiring the Commission to identify all issues with an application in the initial information request and explain why the information is necessary, we will not only increase the level of predictability for applicants, but also increase the speed at which applications can be processed. We seek comment on our proposal generally.

111. We propose that the Commission may request information from applicants to: (1) determine completeness of the application; (2) understand the facts of informational showings, inconsistencies, execution, or other technical matters when the factual issue is directly material to the review; (3) determine if an exception applies to the application; (4) resolve matters of concern raised in pleadings, objections, or comments in response to an application; (5) evaluate compliance with the Commission's rules, regulations or other requirements; and (6) consider issues that are directly material and necessary for the Commission to evaluate the merits of the application under the Commission's rules. Our objective is to limit information requests to only those showings that are directly material to the Commission's review of the application under our rules and regulations. Do these categories sufficiently cover such areas? Are there any ways in which the information requests allowed should be narrowed to prevent unnecessary or tangential inquiry?

112. To be clear, we do not propose to limit the Commission's ability to speak with applicants to discuss the status of an application or as part of *ex parte* presentations outside of a formal information request to address issues or deficiencies with applications. We believe that the proposed rule strikes the right balance of speed and predictability but also provides applicants the opportunity to engage with Commission staff to address any issues or concerns within the application that may risk delay in the licensing process. We seek comment on this proposal. Further, is there value in expressly outlining guidance by which the Commission may ask for additional information from an applicant? Do our proposed rules provide enough flexibility for the Commission to be able to get all the information necessary to make a final determination on the merits?

3. Review of Applications for Decision

113. We propose to apply a standardized decision framework to determine whether grant of a space or earth station application would be in the public interest. We propose rules that would standardize the Commission's review process by using the information received in the application materials and through public comment. Our proposal seeks to focus review of the application primarily on areas where the Commission needs to consider an issue that is not presumed to be in the public interest. If there are no issues, then the application will receive expedited processing. If there is one or more identified ''exception'' to expedited processing, then the Commission will consider the issue(s) triggering the exception in light of the record. We detail our proposals and seek comment on each below.

114. *Expedited Processing.* We propose that an application which does not trigger one or more specific ''exceptions'' following the public comment period will generally be presumed to be in the public interest and thus granted as soon as practicable. For applications placed on seven-day public notice (based on the Commission's initial review not identifying any exceptions to expedited processing), we propose to allow a conditional grant by rule upon completion of the public notice period if no comments are received. Not only would this allow operators to more quickly begin operations prior to a license being issued, but we expect this would reduce the number of requests for STAs. As discussed in more detail below, operations under a conditional grant would be at the operator's risk and would not guarantee a final grant, though we would expect in most instances that the Commission would issue a license soon after. We seek comment on this proposal.

115. *Exceptions to Expedited Processing for Applications.* For applications where the Commission identifies one or more exceptions to expedited processing—for example, a waiver request or negative certification—then the Commission would focus its review on the element(s)

of the application triggering the exception. The logic behind our proposal is that the portions of an application that do not result in an exception may generally be considered to be in the public interest and therefore would not need additional review. Therefore, the Commission can focus attention on the smaller set of issues needing an individualized public interest determination. We seek comment on this proposed approach and on any alternative frameworks.

116. To operationalize this framework, we propose to adopt rules that clearly identify the instances when an application would be removed from expedited processing. We propose to refer to these instances as ''exceptions'' to the expedited processing timeline. We believe that by including a specified list of scenarios that would qualify an application for an exception to expedited processing and how the Commission will process and review such applications, applicants will be provided more regulatory predictability.

117. We describe the proposed exceptions to expedited processing below, and seek comment on each:

- *Negative Certification.* If an applicant is not able to affirmatively certify a particular element on the relevant application materials then we will consider that to be a ''negative certification,'' requiring review. In some instances, a negative certification would require a waiver of one or more rules, but it may simply require a review of additional information supplied by the applicant. Applicants would be able to provide additional information to support a public interest finding for negative certifications.
- *Request for Waiver.* If an applicant requests a waiver of any of the Commission's rules, the waiver request would require review on the merits to determine if it is in the public interest.
- *Foreign Ownership.* Reportable foreign ownership above a threshold and control information, including foreign adversary ownership or control, will need to be carefully reviewed.
- *Processing Round.* Applications requesting to operate in certain identified frequency bands that have been designated for a processing round would be considered as part of that processing round and thus excepted from expedited processing.
- *Spectral Constraints.* A proposed system also may require the use of frequencies which may be subject to limitations prescribed by rule or that relate to existing users or international arrangements. The Commission would need to review such proposals.
- *Federal Coordination.* Applications involving frequency bands subject to federal coordination would not be eligible for expedited processing.
- *Market Access.* Requests for market access would need to be reviewed in light of market access rules addressing whether applicants' home administrations have opened access to U.S. companies.

118. Our goal is to provide applicants with a high degree of predictability as to whether an exception to expedited processing would apply to an application. Relying on our proposed design of the application materials and required certifications, we believe the Negative Certification exception can be clearly identified. We also believe it will generally be clear to applicants whether the Waiver Request, Foreign Ownership, Federal Coordination, and Market Access exceptions will apply. Under our proposal for processing rounds, we also believe clarity can be provided as to whether a processing round exception would apply. We expect the most ambiguous exception may be Spectral Constraints, and we seek comment on how we might provide clarity as to when such an exception would apply. What criteria could be elaborated upon to make it clear when such an exception is likely to be applicable? Is there a need for delegation to the Space Bureau to provide continuing clarity around the Spectral Constraint exception or any other exceptions? We also seek comment on each of the exceptions and whether they could be applied in a straightforward and predictable manner.

119. As part of reviewing exceptions related to an application, we expect there will be situations where information is needed beyond what is required by the application sections. For instance, under the Spectral Constraint exception there may be a need for interference analyses from the applicant so that the Commission can determine whether it is technically feasible for a system to operate in certain frequency bands in accordance with our rules while protecting other operators. Under our proposed application design, we have sought to limit such showings and technical narratives for *all* applicants so we can narrow the scope of situations where such submissions must be made. To ensure the Commission can request the information needed to review any of the exceptions, we propose to allow for such information requests for the purpose of making a decision related to any exceptions. While supplemental information may need to be requested, our hope is that, by providing clarity in the rules as to which exceptions are likely to apply, the Commission can help applicants predict what will be needed so they can supply that information with the initial application. We seek comment on this approach. Are there ways we can provide further clarity so that applicants know what information will eventually be requested as part of reviewing exceptions? Will this approach reduce the amount of unnecessary information requests pertaining to areas of an application which require more focused review (*e.g.,* exceptions)?

120. Do these exceptions from expedited processing sufficiently encompass all instances where the Commission may need to conduct a more thorough review of an application to determine if it is both in conformance with the rules and in the public interest? As discussed above, we propose to place applications *not* triggering any exceptions and not requiring a thirty-day public notice, on seven-day public notice with the potential for a conditional grant by rule if no comments are filed in response to the application. In that context, are these exceptions appropriate? Are the proposed classes of exceptions too subjective? Are there any other classes of exception that should be added? Or should any of the classes be removed? Are there approaches to federal coordination that we might adopt and which we discuss elsewhere that would allow us to remove the exception for federal coordination? We ask commenters to provide examples of possible additional exceptions to expedited processing with justification as to why an exception should be added or removed. In particular, we ask that proposed exceptions be able to function within the framework we have set out such that whether an exception applies may be quickly and clearly determined.

121. We also seek comment on the factors the Commission should consider when determining whether a request is in the public interest if an application includes one of the listed exceptions. We seek comment on how we may better operationalize application of these rules during the review and decision-making periods. In particular, we seek comment on how decisions around Negative Certifications, Waiver Requests, Foreign Ownership, and Spectral Constraints should be made. Given that we expect many applications for new and novel operations would have one or more negative certifications or waiver requests, how or should we provide additional guidance on any additional information that applicants should provide? How can we make sure triggering an exception would not result in longer review timelines? Given our

desire and statutory responsibility to promote the proliferation of new technology, how might we implement decision-making processes that support innovative and novel technologies? To seek specific comment, we propose that system designs resulting in negative certifications would be in the public interest if the expected benefits of the system design with the negative certification exceed the expected costs to society. This approach would allow for applicants to submit information demonstrating the net positive benefits to society and would give the Commission a basis for making a decision. We would expect such showings in most instances to be limited to a basic set of calculations with reasonable assumptions. We seek comment on this proposal, as well as alternatives, and ways the process could be made as straightforward as possible. Should this approach be applied to review of other exceptions besides Negative Certification?

122. Both applicants and the Commission often have struggled to figure out how a new technology or innovative proposal fits into the Commission's rules. Since we seek to provide predictability and flexibility, we seek comment as to how our proposed licensing approach can address and anticipate new technologies in the Commission's rules. Our expectation is that the exceptions framework will route the novel portions of an application for focused review. Within that focused review, an expectation of grant in situations where the net benefits are positive can greatly facilitate approval for proposals that fall outside the bounds of the presumed acceptable framework. In this way, applicants can have some predictability in seeking a potential license grant. Is this a workable way to provide for innovation and technological development over time? We seek comment on this approach and alternatives that will assist the Commission in making sure the Commission's space licensing rules are able to continuously accommodate in a structured and predictable way new innovations which cannot necessarily be foreseen.

123. In addition, we seek comment on the proposed timelines and the requirements on the Commission to communicate to applicants why no action has been taken on an application. Specifically, is the fact that the Commission must either act on an application within 60 days or notify applicants and the public of the reasons for not processing an application sufficient? We seek comment on what impact, if any, that might have on the proposed process. Regarding applications for shared Federal bands, would it assist the process if the Commission were to provide a point of contact at the National Telecommunications and Information Administration (NTIA) as part of the notice to an applicant if the reason the application has not been acted upon is due to federal coordination? Alternatively, in shared terrestrial bands where an applicant is unable to coordinate with a terrestrial operator and that is preventing action on the application, should we require the terrestrial operator to justify why they cannot complete coordination with the applicant? Ultimately these are issues that may be primarily outside the Commission's control but that can still prevent action on an application. How can the Commission ensure transparency for these or other instances that are outside the Commission's control? We seek comment on these questions and welcome comment on other situations or proposals for how the Commission can achieve its goals.

124. To further guide decisions on applications, we propose a section articulating the standards under which requests will be judged. A portion of this section is similar to § 25.156(a) and explains circumstances generally under which a request ''will be granted.'' However, we further propose to make clear in our rules that any request which demonstrates compliance with the Commission's rules, regulations, and policies is in the public interest. We believe these clear statements will provide greater predictability to applicants as they seek to understand how a request will be reviewed. Furthermore, such a public interest presumption reinforces our desire to take a permissive posture toward innovation by allowing flexibility within the rules the Commission has adopted.

4. Conditional Grants

125. We propose to add an option for a conditional grant of authority for certain types of applications. We believe that the option for a conditional grant will help alleviate delays in the application grant process caused by one or more specific requests in an applicant's proposal that might prevent the applicant from beginning operations in other frequency bands or with certain satellites that are not affected by the issue. Specifically, we propose to allow conditional grants by rule in the scenarios discussed below.

126. *Expedited Processing Conditional Grant.* We propose to permit conditional grants for applications that are eligible for expedited processing. Specifically, we propose that an application that is not subject to any of the exceptions described herein, that is deemed complete and placed on public notice, and that receives no objections, comments, or other petitions during the public notice period would be conditionally granted upon the expiration of the seven-day public notice period. We propose that this conditional grant would apply to all proposed operations and will authorize operations only on an unprotected, non-interference basis. Commencement of operations following a conditional grant would be at the operator's own risk, including adverse final action on the application or conditions imposed on the authorization following completion of staff review. We seek comment on this proposal and whether it provides sufficient oversight of satellite operations consistent with our rules and treaty commitments. Should there be a specified process for moving to a full grant after the conditional grant? If so, what should it be? Should the Commission adopt a rule that it will issue a final decision within a certain number of days after the public notice period? If so, how many days should that be? We specifically believe that conditional grants would be particularly beneficial in situations where applicants file an application for a license modification and then file multiple STAs covering the same request while the modification application is pending. Under this proposed rule, an applicant who files an application for license modification that fits within the parameters of this conditional grant would not need to file for STA during application review and would instead be able to operate under the conditional grant.

127. Should conditional grants be allowed for expedited processing even if comments or petitions to deny or other filings are made on the underlying application? Would the requirement that all operations be on a non-interference, unprotected basis be sufficient to protect other operators? Would the rule that all operations are at the applicant's own risk—and therefore the Commission could deny the application and the applicant would be forced to immediately cease operations—be sufficient to ensure applicants are operating within our rules? Are there other guardrails that we should put in place to ensure that no harmful interference results from

operations under this proposed conditional grant mechanism?

128. *Orbital Debris Deferral Conditional Grant.* We also propose to allow a conditional grant for applicants who are not sufficiently advanced in the critical design review phase to be able to submit the orbital debris mitigation plan (ODMP) when they submit their space station license application. In recent years, the Commission has received requests for waiver of the orbital debris showings which are handled on an *ad hoc* basis. We believe our proposal will create a standard approach so applicants can flexibly plan their system design and application filing. Applicants could elect when they initially file their application to receive a conditional grant without providing certifications and supporting materials related to orbital debris. Under this proposal, an applicant may file for a conditional grant with the requirement that at least six months prior to integration with a launch vehicle, the applicant must submit an ODMP for Commission review and approval. Additionally, we propose to require applicants who seek this conditional grant to meet the following requirements: (1) provide all information required by the space station information requirement sections in the proposed rules, and any additional information required; (2) certify that the finished and operational satellite system will comply with all the requirements in the orbital debris rules adopted by the Commission as well as all of the showings required by the proposed ''Space Station Orbital Information'' section; (3) file an ODMP that demonstrates compliance with all relevant orbital debris rules and certifications at least six months prior to integration of any satellites with a launch vehicle. We propose that if an applicant is unable to follow these requirements, they would be directed to file an application for license modification and the conditional grant would be revoked. We believe this approach would incentivize applicants to provide an ODMP as soon as practicable while still having much more flexibility during the design process. Additionally, we believe this would incentivize applicants to design satellite systems that comply with the bright-line criteria rather than request a modification. We seek comment on this proposal. Is there additional information that we should require at the time of the application? Is six months prior to integration with a launch vehicle sufficient time to allow the Commission to review the ODMP?

129. *Commercial Coordination Conditional Grant.* Finally, we propose allowing applicants to receive a conditional grant in situations where an applicant is coordinating with other operators in specific frequency bands. Specifically, we propose to allow a conditional grant for operations in the frequency bands or portions of the frequency bands that are not subject to coordination with other commercial operators. We further propose to condition the operations in shared frequency bands or bands that require coordination with other operators on the applicant providing notice to the Commission of successful coordination with other commercial operators. Does this proposal provide sufficient flexibility for operators to use frequencies not subject to coordination? If not, how should this proposal be modified? Would it instead be more efficient to allow operations in the bands subject to coordination on a non-interference, unprotected basis to incentivize coordination? What are the risks and benefits to this approach? What exactly should the applicant be required to submit to the Commission to show successful coordination—a coordination report that becomes part of the grant?

130. In addition, we seek comment on specific questions related to conditional grants. Specifically, should there be a maximum timeline for how long a conditional grant can last? Should the Commission update a conditional grant to reflect that the condition has been met or should the licensee's notification suffice? Further, we propose to allow operators to launch while subject to a conditional grant, but only with an express launch authorization from the Commission. Should the Commission allow operators to launch new satellites under only a conditional grant? Or should the conditional grant only be allowed for modifications or for operators who must satisfy the condition before launching? What ramifications should there be if an applicant launches without approval from the Commission while only conditionally licensed? Similarly, how should the Commission address instances where the Commission approves launching the satellite while it is conditionally licensed, but subsequently the licensee does not meet the condition of the license? We expect that the commercial coordination conditional grant will be particularly beneficial for earth station operators and especially those that request multiple frequency bands because it will allow them to begin operations in bands without coordination issues while addressing necessary coordination for the other bands.

131. *Federal Coordination Conditional Grant.* We seek comment on whether we should allow for conditional grant of a license in a frequency band that is subject to federal coordination. Specifically, what are the benefits or drawbacks to allowing conditional grant for licenses that are subject to federal coordination? If we adopt this approach, should we allow for conditional grant for all requested frequencies—including those subject to federal coordination—or only allow it for the bands not subject to the federal coordination, similar to what we propose for commercial coordination conditional grants? Do existing rules and coordination requirements for shared bands mitigate the risks of allowing for conditional grants in bands subject to federal coordination requirements? Should applicants be required to demonstrate that coordination with the federal government is complete? Or instead, should applicants only be required to certify that they will complete coordination prior to operating and be able to provide evidence of completed coordination upon request by the Commission or any impacted federal agency? What type of certification or documentation is sufficient to demonstrate this? Alternatively, would a certification from the applicant be sufficient, or should the Commission require some other indication that federal coordination is complete? Further should we instead adopt a framework in our rules that outlines specific license conditions for operations in shared federal bands rather than any bespoke license conditions for federal coordination? Should this framework also establish a mechanism for licensees to quickly determine what shared frequency bands with federal operations may be subject to more stringent coordination reviews? Alternatively, rather than a framework for federal coordination conditions, would adoption of a conditional grant subject to federal coordination in our rules, rather than bespoke conditions or a framework, achieve the same goals? Is there any reason to tailor the criteria for meeting this federal coordination requirement under a conditional grant on the basis of which coordinating agencies, or categories of agencies are involved? If this approach is adopted, should the Commission be required to provide a point of contact at NTIA as part of the conditional grant to an applicant? If we condition grant on

federal coordination, should we remove federal coordination as one of the listed exceptions to expedited processing?

5. Processing Rounds

132. *Processing Rounds for NGSO Applications.* The Commission currently considers applications for NGSO system licenses in groups based on filing dates under a processing round framework. Under the current rules, a processing round is initiated when an application for NGSO-like satellite operation is placed on public notice as a ''lead application,'' establishing a cut-off date for applications filed in response, or ''competing applications.'' The Commission then reviews each application filed in the processing round and any pleadings filed in response, and grants applications for which the Commission finds that the applicant is legally, technically, and otherwise qualified, and that the proposed facilities and operations will comply with all applicable rules and policies and will serve the public interest, convenience, and necessity. The rules also detail the spectrum sharing procedures for applications granted within a processing round.

133. We propose to revise the processing round framework for NGSO FSS applications, both in terms of the general structure of processing rounds and of which applications would be included in a processing round. Considering the significant evolution in NGSO system technology and increase in applications in recent years, we seek comment on whether the traditional processing round framework still provides both applicants and the Commission with the same functionality or advantages as originally intended. When an application is designated as a lead application and a processing round is opened, interested entities have a limited window of time to prepare and file these competing applications before the cut-off date. As a result, competing applications often lack significant technical, operational, or other fundamental system details to demonstrate a proposal for a viable system, consequently leading to extended review timelines and leaving other applicants in the same processing round unable to fully assess and plan for their own operations and coordination obligations. Furthermore, the decision to open a processing round is discretionary based on designation of a lead application and therefore there is little predictability as to whether an application will initiate a processing round. As part of our modernization efforts, we aim to revise the NGSO processing framework to limit regulatory obstacles and provide a clearer and more reliable path to authorization and operation.

134. Instead of the existing approach, we propose that the Commission would pre-determine specific frequency bands (''processing round-eligible bands'') and applications for authorization in those bands would accordingly be processed in a processing round. For each of these designated frequency bands, by rule, a processing round would *automatically* open on January 1 at 12:00 a.m. Eastern Time and close on October 31 at 11:59 p.m. Eastern Time of the same year, eliminating the cut-off date for applications. This way, the licensing assembly line would automatically determine when and into which processing round(s) a license application would be considered. Thus, regardless of the existence of any actual applications, there would be an annual processing round open for each of the designated bands (*i.e.,* ''synthetic processing round'').

135. Under this proposal, applicants would file applications for inclusion in a processing round at any time, with priority status based on the date of grant, rather than the date of filing. Applications granted during the same band-specific processing round in a given year would have the same priority status. For example, applications granted for a specific band between January 1, 2027, and October 31, 2027, would be part of the 2027 processing round. We note that the NPRM does not propose any changes to the spectrum sharing procedures in part 25 and we propose to incorporate the relevant rule sections into proposed part 100. With this approach, we intend to allow applicants enough time to prepare comprehensive applications and request authorization for realistic NGSO systems, rather than provide applicants and industry with a limited window of time and opportunity to prepare an application for a system that may or may not be viable for operation. This would also negate the need to designate a lead application as the requisite first step in the framework, allowing applicants to plan and prepare for a processing round to open annually for specific frequency bands, rather than file in response to the Commission's determination of a lead application. Further, the pre-designated annual processing round window would provide applicants with a significant amount of time to prepare applications with the necessary level of detail to be considered ''complete'' under our proposed completeness standard. Additionally, since processing rounds are band-specific, if a request to operate in one frequency band could be granted more quickly than a request for a different frequency band in the same application, then the earlier-granted band would hold an earlier year priority in one processing round than a band granted in the following year. We intend that this revised timeline for review would benefit all applicants by creating the necessary structure to both encourage complete applications and provide predictability in timing and spectrum availability. Overall, we see this proposal as a way to process applications for certain bands in a way that retains the benefits and intent of processing rounds while mitigating the delays that result from the current processing round framework.

136. We seek comment on this proposed processing round structure for NGSO systems and ask for industry input as to which bands the Commission should designate for processing rounds and how the Commission should make these determinations. For example, the Commission envisions this structure being useful for frequency bands that are optimal for NGSO FSS operations, including the Ka-, Ku-, V-, and Q-bands. Should the Commission delegate to the Space Bureau to announce which frequency bands are subject to a processing round for the following year, prior to the January 1 opening date or should this determination be made by the Commission? Should this announcement be made by a certain date in the prior year to allow possible applicants enough time to plan? For example, if the Commission were to adopt a cut-off date of October 31 for the annual processing round, should the announcement of the following year's frequency band be made by then as well, to give applicants several months to plan applications? Should the yearly processing round be established with reference to the fiscal year running from October 1 to September 30, rather than the calendar year, to align with the period for assessment of regulatory fees? Should the Commission seek comment on which bands it should open for a processing round for the following year, or should the Commission make this decision without seeking comment? How should the Commission inform potential applicants as to which bands are subject to the processing rounds? Does the shift from a 30-day filing window to a full calendar year processing window provide applicants with the intended benefits of increased predictability and flexibility? Should the Commission consider an alternative or additional process to open a

processing round based on a request or petition to do so? Should the window for a processing round be three or six months instead of the ten months currently proposed to minimize the risk that less qualified applicants submit strategically upon seeing other submissions rather than because they are ready to submit on their own merits? If processing round windows are shorter, should there be multiple processing rounds in a calendar year? Should the annual processing round end on a date other than October 31st? If processing rounds run from January 1 to October 31, should the Commission freeze grants for any pending processing round applications until January 1 of the following year, so that all applications granted for a single processing round are granted in the same calendar year? Or should applications granted between November 1 and December 31 be considered part of the following year's processing round? What other structures or methodologies would provide applicants with the best opportunity to maximize the benefits of processing rounds? Are there potential consequences or complications that may result from the proposed annual processing round framework? We also ask for input on whether applications should be placed into a processing round based on the date of filing, rather than the date of grant, or by another classification. What are the benefits or disadvantages of determining processing round by grant date? Does this provide applicants and earlier-round operators with enough predictability to successfully coordinate with new or other operators in the band?

137. Specific to eligibility for inclusion in a processing round, we propose that an NGSO application would be placed by rule into a processing round if the application meets two criteria: (1) the application proposes operations in one or more frequency band(s) that the Commission has pre-designated as a processing round-eligible band; and (2) the applicant's system proposed for operation includes 200 or more satellites. We note that under the revised proposals to the surety bond rules discussed below, an NGSO satellite system seeking authorization for 200 or more satellites would be required to post a surety bond to the U.S. Treasury in the event of a default, in accordance with the surety bond requirements and calculation proposed in the NPRM. Our logic behind such a proposal is that applicants seeking priority in a processing round should be held to a bonding requirement. We seek comment on these proposals. Do the proposed criteria justify inclusion in a processing round? Are there other factors or alternative methods the Commission should consider in determining whether and how an application should be included in a processing round? We additionally ask for input on whether a system with 200 or more satellites would be an effective benchmark for determining that an application should be considered in a processing round and therefore required to post a surety bond.

138. We also, however, propose that applicants who do not meet the surety bond criteria (*i.e.,* fewer than 200 satellites) but seek to operate in a processing round-eligible band may request for an application to be included in that processing round to receive priority status. In that case, the requesting applicant would be required to comply with the surety bond requirements and post the required bond within 30 days of the license grant. We see this as a way for operators to have the flexibility to seek priority in a processing round if that is worth the cost of taking on the bond. We seek comment on this approach, proposed eligibility via surety bond, and alternative methods in greater detail in the section of the NPRM discussing proposed reforms to surety bonds. Relatedly, we discuss the intersection of the processing rounds and milestone deployment requirements in the milestone section below.

139. Under the proposed annual processing round framework, NGSO system applicants that request to operate in multiple frequency bands would be placed in the corresponding processing round for each frequency band and the remainder of the frequency bands requested (*i.e.,* those not subject to a processing round) would be considered under the expedited processing procedures detailed herein, unless another exception to expedited processing applies. This could lead to a scenario where a single operator of a large satellite system that operates in multiple frequency bands could hold a different priority status for each band in which it is authorized, depending on when authority to operate in each requested band is granted. How should we handle these cases? Would this annual processing round structure disincentivize satellite operators from upgrading their systems and instead encourage them to design new systems and file new applications? Should we grant priority based on when the first communications for the system are initially authorized? We seek comment on these questions and any other proposals that could help inform the Commission on how to address these issues.

140. *NGSO FSS Spectrum Sharing.* NGSO FSS operators who are granted authority to operate in certain frequency bands through a processing round would be still subject to the Commission's spectrum sharing rules among NGSO FSS systems. For these systems, the Commission has recently adopted specific protection criteria and other sharing obligations developed with the benefit of a substantial technical record. Specifically, NGSO FSS systems authorized in a later processing round are required to either certify that they have reached a coordination agreement with any earlier-round, operational NGSO FSS system or demonstrate that they will satisfy the dual protection criteria of: (1) causing no more than 3% degraded throughput to the earlier-round system; and (2) causing no more than 0.4% absolute change in availability to the earlier-round system. In this proceeding, we do not propose to make any substantive changes to the NGSO FSS sharing criteria currently in § 25.261, including the requirement that NGSO FSS licensees and market access recipients must coordinate in good faith the use of commonly authorized frequencies regardless of their processing round status. We also propose to carry over the provision currently in § 25.157(b)(2) that NGSO FSS space station license applications granted within a processing round are exempt from the frequency band segmentation procedures that otherwise apply to applications for NGSO operations.

141. The Commission currently applies a default spectrum-splitting procedure for systems approved in the same processing round, absent a coordination agreement, and requires later round-systems to either coordinate with or otherwise demonstrate they will protect earlier-round systems, subject to the sunsetting provision. NGSO FSS systems authorized in the same processing round share spectrum on an equal basis under a $\Delta T/T > 6\%$ spectrum-splitting rule, and this equal treatment is also extended to later-round NGSO FSS systems following a 10-year sunset period. We propose to incorporate these procedures as is into the new proposed part 100 and do not intend to consider any substantive revisions to the NGSO FSS sharing requirements, including the 10-year sunset period, currently in § 25.261 as part of this rulemaking. Considering the

proposed processing round framework, we seek comment on any changes that should be made to better adapt processing rounds to the existing NGSO FSS spectrum sharing criteria.

142. What are the benefits and costs of each processing round approach? How does a processing round framework help or harm innovation for NGSO operators? Do processing rounds place a burden on operators who are able to launch, deploy, and operate systems quickly while simultaneously encouraging hastily submitted applications for systems that may not be viable? Does our proposed approach address these problems? Alternatively, should we instead maintain the existing processing round approach and address these issues in a separate proceeding? What other changes might we consider to improve the processing round framework?

143. *Mutually Exclusive Applications.* We propose to delete the Commission's rule on mutual exclusivity in § 25.155. Given that satellite and earth station operators share spectrum, this requirement is no longer needed. In particular, our proposed rules account for the compatible operations of different licensees through first-come, first-served application processing, processing rounds, and various technical requirements on space station and earth station operation. In light of these, we believe the concept of mutually exclusive applications is unnecessary in part 100. We seek comment on this proposal and alternatives, including whether, in light of the proposed yearly processing rounds for NGSO systems and first-come, first-served processing for GSO networks we need to include a mechanism for deciding priority for orbital or spectrum resources between applications received at exactly the same time, or whether such rare instances, if they ever occur, could be sufficiently resolved on a case-by-case basis within the Commission's licensing discretion or potentially through a prescribed resolution criteria.

144. *Compatibility of Systems Authorized Outside of a Processing Round.* For NGSO licensees authorized to operate in frequency bands that are not granted in a processing round, we propose to require compatibility with existing or future operations in those bands. Specifically, we propose that ''the NGSO satellite system must be compatible with existing operations in the authorized frequency band(s) and must not materially constrain future space station entrants from using the authorized frequency band(s).'' This is similar to how small satellite systems currently operate under § 25.122(c)(9), and we believe this could be appropriate for a broader range of operations. We seek comment on this proposal. Is the fact that we are requiring licensees to not materially constrain future space station entrants from using the frequency band sufficient to protect future entrants, or should we require additional information from licensees? Does this proposal provide enough certainty to licensees and future applicants that they will be able to design their systems to be sufficiently flexible to accommodate future users?

6. First-Come, First-Served Processing

145. *GSO Systems.* We propose to maintain the current first-come, first-served application processing for GSO FSS and GSO broadcasting-satellite service (BSS) systems in the new part 100. This process, currently described in § 25.158, is generally reflected in the proposed new § 100.142. Similarly, we propose to carry over the technical requirements for two-degree orbital spacing of GSO FSS networks in the U.S. arc, the requirements for four-degree spacing of 17/24 GHz BSS networks, and other technical rules underpinning the first-come, first-served processing of GSO system license applications. We invite comment, however, on any improvements to our first-come, first-served procedures as they apply to GSO systems.

146. *NGSO System*s. The Commission currently licenses certain NGSO satellite systems outside of a processing round when they are shown to be compatible with existing operations and will not materially constrain future entrants. In the context of NGSO FSS satellite systems, as described above, the Commission has adopted specific technical criteria to ensure their compatible operation. These criteria, applied in the processing round context, could readily be used to create a first-come, first-served licensing procedure for NGSO FSS systems. For example, a new applicant could either coordinate with each earlier-filed NGSO FSS system operating in the same frequency bands or demonstrate that it will meet the dual protection criteria of causing no greater than 3% average degraded throughput or 0.4% absolute change in unavailability for any system with which coordination is outstanding, in order to be licensed. Additionally, 10 years after licensing of a new system, we could apply the current sunset period and afford that system equal spectrum sharing with earlier-filed systems under the $\Delta T/T > 6\%$ spectrum-splitting rule. We invite comment on whether to authorize NGSO FSS systems on a first-come, first-served basis and, if so, how best to adapt our current sharing criteria to such an approach. We also invite comment on whether, and how, to authorize any additional NGSO systems on a first-come, first-served basis, including whether any applications that qualify for such processing should be considered for expedited processing as outlined above.

B. Additional Reforms for Licensing Efficiency

147. In addition to the proposed processes discussed above, we also propose rules to improve the efficiency of the licensing process. We expect these proposals to further enhance the proposed licensing process by alleviating burdens on the licensing system and aligning parties' incentives to act in more efficient ways. For example, in addition to allowing greater freedom for entities to operate and upgrade their systems, some of our proposals for modifications will mean that fewer requests will need to be processed. We also seek comment on how the Commission can reduce the complexity of requirements and the cost of licensing in the United States.

1. Dismissal and Return of Applications

148. § 25.112 of the Commission's rules details the procedures for dismissal and return of applications. To better harmonize the proposed rules, and in consideration of the proposed completeness standard discussed above, we propose to clarify the § 25.112 requirements in part 100. The Commission proposes that, unless otherwise specified, dismissal or return of an application would be without prejudice. An application would be deemed unacceptable for filing and may be dismissed with a brief statement if the application is determined not to meet the standard for complete applications under proposed § 100.131. Additionally, an application would be dismissed if an application requests authority for a specific type of system that does not align with the proposed operations. Applications would also be subject to dismissal if the application does not comply with relevant application requirements, is duplicative of a pending application on file with the Commission, or if there is clear indication that the application contains materially false information. We also propose to include a new section clarifying that application fees are due upon filing and that applications filed without the corresponding application fee will be dismissed by the Commission. We believe that a deviation from the existing part 1 rule,

which allows applicants a 14-day window after filing to pay the associated application fee, is warranted to effectuate the processing timelines we propose here. We seek comment on the proposed revisions. Are there other scenarios the Commission should include in the proposed rules to provide applicants with a clear framework for dismissal or return of applications?

149. We also seek comment on how the Commission should address applications where the applicant does not sufficiently address any additional questions asked by staff in their review of the application. Should the Commission establish a default standard of how to address applications where the applicant does not sufficiently answer additional information requests? Should the Commission immediately dismiss those applications? Should we only allow for a single follow-up request for the same questions? We invite comment on these proposals and any other commenters may have.

2. Other Application Filings

a. Amendments to Applications

150. We propose to adopt new procedures for the filing and processing of amendments to applications and expand the scope of the term ''major amendment,'' as a means of preventing abuses of the amendment system while also streamlining the process. Under the current rules, a pending application generally may be amended until the Commission adopts a final order on the application. An amendment is deemed to be a ''major amendment'' if it increases the potential for interference or changes the proposed frequencies or orbital locations to be used, or the amendment, or its effect, is determined to be substantial under section 309 of the Act. Major amendments are also subject to the public notice requirements under § 25.151 of the Commission's rules.

151. We propose to adjust the scope of requests or changes to an application that would qualify an amendment as a major amendment. We propose that if an amendment would result in the application falling within one of the proposed exceptions to expedited processing, it would be categorized as a major amendment. Additionally, we propose that an amendment would be deemed a major amendment if the amendment: would result in the application qualifying under an exception to expedited processing; adds frequencies to the proposed operations; proposes to increase power, power density, or OOBE beyond what is permitted in the Commission's rules; modifies the antenna pattern(s) or antenna gain characteristics; requests operations outside of already coordinated ranges or would require re-coordination with federal agencies; would cause an increased risk of radiofrequency exposure to humans; or would otherwise be determined substantial under section 309 of the Act. For non-blanket licensed earth stations, an amendment would be classified as a major amendment if the amendment proposes a change of more than 10 seconds from the location requested in the application. We seek comment on the proposed list of major amendments. Is this list sufficient, or is it too broad or not broad enough? Are there other circumstances that the Commission should consider in categorizing major amendments?

152. We propose to continue considering major amendments as newly filed applications, regardless of the type of service in which the applicant requests to operate. Consistent with the current rules, we propose to place major amendments on public notice after a determination of completeness. In addition, we tentatively conclude that it is in the public interest to limit when an applicant can file a major amendment to prevent applicants from filing speculative applications and then strategically waiting months or years to amend that application. Specifically, we propose that major amendments may not be filed more than 45 days after the date of filing of an initial application, unless as otherwise directed by the Commission. Given the Commission's goal of rapidly increasing application processing speed, allowing applicants to file major amendments too late in the review process risks delay. It could also help the Commission to avoid directing resources to review of an application that is later significantly amended. In addition, we propose to automatically dismiss major amendments filed after the 45-day window. We seek comment on this proposal. Does a 45-day window give applicants sufficient time to file any major amendments? Should we limit the permissible timeframe for the filing of major amendments to the period before an application is placed on public notice?

b. Applications for License Modifications

153. Currently, if an applicant wants to make a change to its systems or operations, the applicant typically must file either an application for modification or a notice of modification with the Commission. While the Commission previously revised the modification rules in part 25 based on the record we had before us, we believe that the structural overhauls proposed in this rulemaking present an opportune time to propose larger changes to what types of modifications require notice or application.

154. Under the current rules as recently amended, any modification not specifically categorized as a ''minor modification'' must be treated as major modification. While the recent changes the Commission made are an improvement, an operator must still file an application and wait for Commission approval to begin operations even for modifications that would have little to no risk of harm to people or the radio frequency environment. In turn, licensees often seek STA to operate under a revised set of parameters while modification applications are pending, or in lieu of seeking a modification at all. We believe that by allowing applicants to make a broader range of changes to their systems without needing to notify the Commission or seek prior approval, we can alleviate the need for STAs and allow staff to prioritize reviewing license applications while ensuring no harmful interference and that the public interest is served. We also hope to give licensees the flexibility to test and modify systems as needed to determine the most effective and efficient system equipment or operational parameters as quickly as reasonably possible.

155. Once a license has been granted, the licensee can make changes through modifications. As a general principle, our proposal would permissively allow operators to make changes to their authorized system and operations if the change(s) do not explicitly fall into the categories of a major or minor modification. We propose to clarify that unless a modification is considered a major or minor modification as defined in the proposed rules, a licensee could freely make changes to their system and operations without notifying or seeking approval from the Commission. We propose to divide modifications into three classes: (1) modifications not requiring notice to the Commission; (2) minor modifications, that is, those that an applicant can make subject to notifying the Commission either before or after the modifying event occurs; and (3) major modifications, meaning any modification that requires express prior Commission approval to modify the license authorization.

156. We recognize that there are modifications that risk creating harmful interference to other licensed operations and warrant public review and comment. Therefore, what we are

proposing, while giving maximum flexibility to licensees, still requires that licensees either seek prior Commission approval for certain modifications or notify the Commission either before or after the modification in certain instances. We believe that this careful balancing act that started in the *Streamlining Second Report and Order* and that we propose to expand upon here is necessary to ensure we are maintaining our obligation to protect against harmful interference and ensure the public interest is met. We seek comment on our proposal generally.

157. We seek comment on the proposed categories of major and minor modifications in part 100 and the types of operations included in each. Are these categories sufficiently clear in outlining which types of activities would require approval rather than notification, or no notice at all? We also seek comment on other potential changes or operations the Commission should consider in categorizing the types of modifications and any corresponding needs for notice or approval by the Commission. For example, we generally want operators to be able to increase transmission capacity and improve spectral efficiency with minimal regulatory barriers. Do the proposed rules herein provide enough leeway for licensees to make such improvements with minimal burden or delay? Are there ways we can make clearer the type of changes that are permissible without approval? Additionally, although the Commission recently modified the part 25 rules to make adding a point of communication or changing certain satellite equipment minor modifications (requiring only prior notification to the Commission), we did so based on the record before us in that proceeding. We seek comment on whether we should instead change those minor modification requirements so that the Commission may be notified after the change is made. Are there any benefits to this?

158. As licensees deploy and operate their systems, we generally want to permit them to simplify the number of licenses that must be maintained. Could this be accomplished through modifications that only require notification? For instance, should we allow for modifications to merge call signs or combine multiple licenses? Will licensees wish to combine licenses in such a way as to align license terms, and could this be accomplished with modifications? We seek comment on these questions.

159. We also seek comment on whether a licensee's decision to host other space stations could be accommodated through a license modification. If a satellite is already licensed and would like to host a space station that is separately licensed, should this be allowed without the need for a modification? Or should we require a notification, and if so, from which licensee? Should the notification requirements differ if the space station is U.S.-licensed or non-U.S.-licensed? How should we handle situations where the hosted space station and the host satellite are licensed by different administrations? If a hosted space station is licensed by the U.S., should that licensee be required to file for a license modification to attach to a satellite?

160. Finally, could we use modifications to handle situations where one spacecraft transfers a hosted space station to another spacecraft? Anticipating such requests in the future, is a modification the most straightforward approach to handling such requests? For example, should the Commission review requests to transfer a hosted space station that would remove the hosted space station from one license and add it to another license via modification? In that situation, could the ''offloading'' modification be a notification while the ''onloading'' modification would require a major modification if adding a space station to a separate system? If multiple spacecraft are joining, should licenses be modified? Should we add to the rules a specific type of modification to handle such situations or can it be handled by our proposed modification framework? What are the orbital debris and radiofrequency implications involved? We broadly seek comment on what type of activities and scenarios this may involve and how the proposed modification framework could accommodate these situations in a flexible and predictable way with minimal burden on operators and the Commission.

c. Special Temporary Authorizations

161. We propose to significantly overhaul and limit the way in which STAs may be used in part because we believe that the changes proposed in the NPRM for license modifications and conditional grants will greatly alleviate the need for STAs. Specifically, we propose to only allow for two types of STAs—60 day and 180 day—and limit requests for extension without public notice. In addition, we propose to deem granted earth station STA requests for 60 days or fewer upon the filing and payment of fees. We seek comment on these proposals more fully below. As the Commission recently recognized, the current STA process is ''generally in need of reexamination.'' The current STA application process for space and earth stations has created administrative burdens and a loophole for applicants and operators to secure prolonged temporary authorizations as a substitute for the proper licensing or to initiate prolonged temporary operations before the conclusion of a public notice period. This is neither the principle behind nor the intended effect of the STA process.

162. We recognize that there are instances where an STA is necessary in lieu of a permanent license authorization. For instance, during natural disasters, emergencies, or other anomalies, STAs are vital to quickly ensure continued operations. Thus, we are not proposing to eliminate STAs. Rather, we propose to limit the types of STAs available to licensees, shorten the processing timelines, and incentivize applications for STAs only when necessary, rather than when convenient. In addition, with the proposed conditional grants and the proposed overhauls regarding license modifications without Commission approval, we believe operators will have less need for STAs beyond actual short-term use or emergency situations, as directed and intended by the Act.

163. We seek comment on whether our proposal to create conditional grants would eliminate the need for an applicant to seek STA to commence operations prior to the grant of their license. Further, we seek comment on whether the two proposed terms for STAs, 180 days and 60 days, are enough time for true emergency and short-term uses. Should these terms be extended or reduced? Are there any limits placed on the Commission by the Act on how we can change our rules for STAs? Should we put STAs on public notice? The Space Bureau has previously announced that STAs for services not covered by section 309(b) of the Act will not be placed on public notice. We also seek comment on our proposal to deem granted earth station STAs for a term of up to 60 days upon the filing and payment of fees. Should our deemed granted approach for earth station STAs only be permitted in certain frequency bands or in specific situations? We note that all STAs are granted on an unprotected, non-interference basis. Does that alleviate the coordination and interference concerns given that the STA holder is responsible for ceasing operations in the event of any interference? Considering the proposals to the license modification process discussed above, do the proposed changes and limitations on STAs sufficiently address and resolve

ambiguities on the appropriate use of each of these two types of applications for the type of authorization requested? We ask for comment on whether the NPRM provides applicants and licensees with the tools to determine when a modification is needed compared to an STA, and if not, how we can more clearly distinguish the two to avoid further conflation and improper use of the licensing process. Finally, we seek comment on any alternative proposals, requirements, or limitations for the STA process.

d. Assignments and Transfers of Control

164. We propose to largely maintain the text of current § 25.119, which sets forth the requirements for assignment and transfer of control of space and earth station licenses and receive-only earth station registrations, although we propose a reorganization of the rule provisions to more logically group relevant requirements together and propose textual changes to more clearly state existing requirements. We also propose to incorporate into this section the requirements for assignments and transfers of control in the context of non-U.S.-licensed space stations granted U.S. market access. We seek comment on the proposed regulatory language and its structure. We note that, as discussed above, we propose that applicants include with the FCC Form 312—Main Form a diagram depicting ownership and control and, for assignments and transfers of control, we propose that the diagram include both the pre-transaction and post-transaction ownership of the authorization holder. We seek comment on these proposals and any alternatives.

e. Submission of ITU Filings

165. Before the Commission submits a filing to the ITU for a satellite system on behalf of an applicant, the Commission has required an applicant to first file the space station application describing the overall system, operational parameters, type of service, and the service area(s). This requirement was intended to prevent speculative filings with the ITU and ensure that the filings submitted to the ITU are consistent with the associated application. This, however, may have led some operators to submit ITU filings through other regulatory regimes that vary in the requirements and processes for submitting applicants' filings to the ITU. Considering the proposals to the licensing structure in the NPRM and the ITU cost recovery fees associated with ITU filings, we propose to allow prospective applicants greater flexibility to submit ITU filings to the Commission without requiring an underlying space station application. We seek comment on this proposed change. Should we limit this proposal so that a prospective applicant can only submit one ITU filing to the Commission without an underlying application? Given that applicants are already required to pay the ITU cost recovery fees for each filing submitted to the ITU, is there any need to limit the number of ITU filings? How would this affect a first-come, first-served application process? Are there any additional safeguards needed alongside such a new rule to prevent potentially harmful, speculative filings with the ITU? We also seek comment on other measures the Commission can take to facilitate ITU filings from prospective applicants and operators.

166. If the Commission allows prospective applicants to submit ITU filings to the Commission without having filed an underlying application, how long should the Commission maintain these filing(s) without an underlying application before suppressing them? Is four years a reasonable timeline? If no application is filed, could the entity lose the ability to use the ITU filing but the Commission allow another entity to do use that filing? Are there other considerations that we should take into account?

167. Regarding space station experimental applications filed under part 5 of the Commission's rules, the Commission will typically submit the ITU filing after the application has been granted. This allows for complete coordination with U.S. government operators before submitting the ITU filing, specifically in frequency bands that are shared on an equal basis with federal operators, given the quick turnaround time for a part 5 grant. We seek comment on the Commission submission of part 5 satellite ITU filings while an FCC experimental license application is pending for bands that are not primarily allocated to federal operations. For bands that are co-shared on an equal basis with federal and non-federal users, we seek comment on the Commission submission of ITU filing for these bands while the application is pending provided the applicant is able to obtain a letter from NTIA agreeing to the ITU submission. Are there other considerations that we should take into account?

3. Milestones and Surety Bonds

168. We seek to simplify and reduce the costs associated with bonds and milestones while making sure resources are used efficiently. We seek comment on our proposals detailed below.

169. *Milestones.* The Commission currently requires space station licensees and market access recipients to comply with milestone deployment deadlines. GSO space station licensees are required to launch and operate the authorized space station no later than five years after the grant of the license. NGSO space station licenses are subject to both interim and final milestones. NGSO operators are required to launch 50% of the maximum number of authorized satellites, place them into orbit, and operate them in accordance with the station authorization no later than six years after the grant of authorization. The remainder of the satellites in the authorized constellation must be launched, placed into orbit, and operational no later than nine years after the grant of the authorization. Licensees subject to these milestone requirements must demonstrate compliance or notify the Commission that an applicable deadline was not met within 15 days after the specified deadline.

170. We propose to eliminate the milestone requirement for GSO space station licensees. Considering the proposed license terms for GSO space station licensees in the NPRM, we believe that the five-year milestone benchmark for a 20-year license term would not be necessary to ensure that GSO system operators launch the authorized satellite(s) and position and operate the satellite(s) in the orbital location by the end of the license term. We seek comment on this proposal to remove the milestone requirements for GSO systems. In the alternative, should the Commission retain a milestone requirement for GSO licensees, or alternatively revise the GSO system milestones to more closely align with the ITU requirements for GSO systems? If so, should the Commission continue to require the five-year deployment milestone for GSO licensees, or should the Commission shorten or extend this milestone to more effectively ensure that GSO satellites are timely launched and operational? Similar to the NGSO milestone proposals discussed below, should the Commission similarly require an initial ''bringing-into-use'' (BIU) benchmark to align with the ITU requirements for GSO licensees? If the Commission took that approach, should we further align to only require a BIU benchmark for GSO licensees rather than a milestone deadline, or require both a BIU and milestone deadline? We seek comment on alternative milestone proposals and the benefits to any such proposals on a revised GSO milestone benchmark framework. Are there other approaches or benchmarks the

Commission should consider specific to GSO systems to ensure that GSO satellites are timely launched and operational, for example, should the five-year milestone be maintained or should we establish alignment with the proposed first NGSO milestone? Specifically, we seek comment on a requirement that GSO operators enter into a verifiable launch contract no later than five years after the grant of the license. This approach may be desirable as it replaces overly strict milestone requirements with a more flexible launch contract obligation that continues to promote timely deployment while reducing administrative burdens on technically prepared applicants. We seek comment on this alternative to our proposal and on any other approaches. We propose to retain interim and final milestone requirements only for NGSO satellite systems and recipients of U.S. market access grants, but we propose to align the milestones with the milestone deployment benchmarks as required by the ITU for NGSO satellite system operators. Under the current rules, a licensee is subject to both the Commission's milestones and the ITU milestones. We view this alignment of the two sets of milestone benchmarks as an effective way to simplify requirements for licensees.

171. As such, we propose that recipients of an initial authorization for an NGSO satellite system, other than a Satellite Digital Audio Radio Service (SDARS) system, would be required to deploy at least one satellite in the authorized system no later than seven years after the date of the license grant, consistent with the ITU's BIU period. Licensees would be considered to have met the requirement upon notification to the Commission that a satellite has been deployed and operating for a continuous period of 90 days consistent with a system's authorization. If a licensee fails to meet this requirement, the license would be automatically terminated and declared null and void. After this point, NGSO system licensees would be required to deploy 10% of the authorized satellites no later than nine years after the date of grant, 50% of the authorized satellites within twelve years after the date of grant, and the remainder of the authorized satellites within fourteen years after the date of grant. A licensee that does not meet these milestones will lose its authorization to launch additional space stations beyond those that they have already launched. We note that this would retain the general requirement for NGSO licensees to comply with interim and final milestone requirements but would add an initial milestone requiring that the licensee launch, deploy, and operate 10% of the maximum number of satellites authorized for service. As required by the current rules, NGSO system licensees subject to milestones must either demonstrate compliance with the applicable milestone or otherwise notify the Commission in writing that the requirement was not met within 15 days after the specified deadline. We seek comment on whether aligning the Commission's milestones with the ITU milestones would benefit U.S. NGSO system licensees and applicants, compared to our current interim and final milestones.

172. We do not propose to implement milestone requirements for recipients of a VTSS license. We believe that VTSS licensees do not need the same milestones as NGSO licensees because VTSS will often involve shorter duration missions due to the satellites moving around in and between orbits. Additionally, we believe that VTSS licenses will typically involve smaller satellite systems that will likely not raise spectrum warehousing concerns which the main issue milestones are meant to address. We therefore seek comment on these proposed revisions to the milestone structure. Are there alternative milestone frameworks or requirements that the Commission should consider adopting for all services or for specific services? Conversely, does this proposed increase in the number of milestone requirements align with the goals of this proceeding? Are there other methods by which licensees can effectively notify the Commission of compliance with a milestone deadline? Should we implement milestones for VTSS authorizations?

173. Further, we seek comment on alternatives to our proposal regarding the milestone deployment benchmarks as applicable to NGSO licensees authorized within a processing round. Specifically, we ask whether systems authorized in a processing rounds should be subject to milestones other than the ITU-aligned milestones we propose to apply to all NGSO systems. In particular, should the Commission retain the existing six- and nine-year milestones only for NGSO licensees authorized in a processing round, rather than apply the proposed revised milestones? What would be the benefits and drawbacks to this approach? Would the proposed milestones in the NPRM cause undue difficulty for future licensees seeking authorization via processing round, and if so, how? Would there be benefits to having milestones which fall well within the ten-year sunset window for a processing round? Would this allow licensees to coordinate more effectively? Regarding compliance with the milestone benchmarks for NGSO licensees authorized in a processing round, we seek comment on more effective or reformed approaches to deployment timelines within the processing round framework. If the Commission were to retain the existing milestones for NGSOs authorized within a processing round and a licensee fails to meet a required milestone deadline, should that licensee's remaining undeployed space stations be moved to a subsequent processing round? In that scenario, should those undeployed space stations be treated as a new system within that next or subsequent processing round, or still as part of the originally authorized system? What other methods could the Commission employ to ensure that NGSO licensees in a processing round are both on track in reaching the required milestone obligations while fulfilling the spectrum sharing and coordination obligations with other systems authorized within a processing round? We seek comment on this approach and any alternative methods or suggestions to best support NGSO systems deployment within a processing round framework as proposed in the NPRM.

174. With respect to licensees authorized to operate different types of satellites in the same system under a MOSS authorization, we propose to revise § 25.164(g), which requires that licensees must meet the applicable milestone deployment deadlines for its satellites, to reflect whatever milestone is ultimately established in the final order. We seek comment on this proposal. We also propose to carry over the current requirement that, in cases where the Commission grants more than one space station authorization for the same system in different stages, the earliest of the milestone schedules will be applied to the entire system. Effectively, the first authorization for a satellite system establishes the milestone deployment timeliness and applies to any subsequent authorizations for that system. Retaining this provision would provide necessary clarity to NGSO operators, especially considering the revised milestone schedule and modernized licensing framework proposed herein, in establishing that all space stations authorized within one licensed system are subject to the same milestone deployment timelines. We seek comment on this rule part and any revisions the Commission should

consider regarding multiple space station authorizations within one system and the associated deployment timelines. Should the Commission consider multiple deployment timelines for one system in certain circumstances, or does retaining this provision provide licensees with a helpful bright-line rule? We seek comment on the proposed requirement and on any alternative approaches.

175. *Surety Bonds.* Under the current rules, all space station licensees are required to post a surety bond covering the potential payment liability to the U.S. Treasury in the event of a milestone default. The Commission adopted the application-stage surety bond requirement to establish a market-based mechanism for ensuring that licensees are financially willing and able to proceed with satellite construction and to discourage warehousing of scarce spectrum resources. Space station licensees generally must post the required bond within thirty days from the date of the license grant, while NGSO systems granted under the small satellite procedures are required to post the bond within one year and thirty days from the date of the grant. Failure to post the bond in full within the designated timeframe automatically renders the license null and void. The amount of a licensee's total surety bond is determined based on a formula calculation dependent on the number of days from the date the license is surrendered, increasing liability for default over time.

176. For NGSO space stations, the Commission proposes to limit the requirement of a surety bond to licensees with 200 or more authorized satellites in one system, excluding replacements. We believe that satellite systems with 200 satellites or more raise spectrum warehousing concerns and require more intense spectrum use and therefore should be subject to the surety bond requirement. In contrast, GSO space stations, NGSO space stations of fewer than 200 satellites that do not seek inclusion in a processing round, and VTSS licensees will generally raise a lesser concern about spectrum warehousing leading us to propose to eliminate the surety bond requirement for those space stations. We seek comment on our proposals to limit the types of space station licensees required to post a surety bond. What are the costs and benefits of removing the requirements as proposed such that the changes are warranted? We also seek comment on whether the proposed threshold of 200 satellites in an NGSO system is reasonable. Should the threshold be more, or less? Alternatively, in contrast to our proposal, should the Commission continue to require surety bonds for all licensed systems or for some additional classifications or types of systems or operators? Additionally, given that a threshold such as this creates incentives for licensees to ''structure'' licenses to avoid the bond, should we establish requirements to prevent circumventing the purpose of the surety bond, and what would they be?

177. We further propose that any NGSO space station licensee authorized to operate fewer than 200 satellites but licensed within a processing round would also be required to post a surety bond. We tentatively conclude that the current surety bond requirement for all NGSO and GSO licensees to discourage spectrum warehousing and encourage efficient construction is no longer necessary to impose on all such licensees, considering the Commission's revisions to the regulatory fee requirements for space station authorizations. In addition, under our proposal licensees granted access to bands outside a processing round would be operating on a compatible basis with other systems and would not be required to post a surety bond. We see little benefit to adding the cost of a bond to systems for which no particular priority is provided and for which there is likely to be no material preclusion of other systems in terms of resources. We also believe that by dramatically reducing the number of situations in which a bond is required, we will better encourage U.S. companies to license with the Commission rather than overseas, and even with a potential increase in non-priority applications due to the removal of the bond requirement, we do not anticipate harmful interference risks that would justify the cost burden. We seek comment on whether this assessment is correct.

178. The Commission proposes to revise the surety bond formula to calculate the surety bond that a licensee must maintain on file and the amount required for payment in the event of a default. We propose two significant changes to the Commission's approach to the surety bond requirement. First, we propose to shift the approach to the surety bond formula from an escalating bond to a deescalating bond calculation. Second, we propose to apply two different calculations—one applicable to NGSO space station licensees with two hundred or more authorized satellites and one applicable to NGSO space stations with fewer than two hundred satellites but that are authorized within a processing round. For NGSO space stations with 200 or more authorized satellites, we propose the following calculation, rounded to the nearest dollar: $B = \$10{,}000 * ((0.9*A) - D)$, where B is the bond amount, D is the number of satellites deployed, and A is the number of satellites authorized. For NGSO space stations authorized in a processing round but with fewer than 200 authorized satellites, we propose using the following calculation, rounded to the nearest non-negative dollar amount: $B = \$1{,}800{,}000 * (1 - (D/(0.9 * A)))$. Since licensees authorized in a processing round are granted a priority status, we believe it is reasonable to set a minimum surety bond amount to disincentivize applications for speculative systems and promote more intensive use of spectrum resources. The proposed formula for NGSO systems with fewer than 200 authorized satellites maintains consistency across small systems, avoids discontinuities in regulatory treatment at the 200-satellite threshold, and ensures that the cost of entry remains sufficiently high to preserve the functional separation between priority and non-priority licensing. We seek comment on these formulae and ask whether there are alternative approaches?

179. We believe that these proposed calculations, where the total amount of the surety bond would decrease based on the number of satellites deployed in an authorized system, would provide a more effective incentive structure to support satellite operators in reaching full deployment, rather than requiring payment of the surety bond based on compliance with deployment milestones. Also, for systems with 200 or more satellites, the formula varies the initial bond amount based on the size of the system which we see as preferable to our current approach, which applies the same initial bond amount to all licensees.

180. Alternatively, we seek comment on other approaches to revising the surety bond calculation and the resulting required commitments for licensees. Should the Commission adopt an alternative formula or methodology from the proposed calculations? What other formula might better incent deployment in a timely manner? Are there better ways to reduce the number of systems which are licensed but never deployed while not preventing operators from licensing in the United States? What other factors, such as system altitudes or beam sizes, might be incorporated either directly or indirectly into a bond formula so that the Commission's objectives in having a bond are met? Should the Commission

apply a separate surety bond calculation for those entities seeking to be licensed through a processing round? If the Commission were to consider a surety bond formula for applicants seeking authorization through a processing round, should the initial surety bond amount be a flat value that would apply to all applicants, regardless of system size or other characteristics, and diminish over time based on deployment progress? For example, should the Commission adopt an initial flat bond of $20 million applicable to all processing round applicants that would diminish over time based on the percentage of satellites deployed? Is a flat initial bond of $20 million an appropriate starting point for the surety bond requirement, or should this number be higher or lower? How should the required bond decline with deployment so that the right incentives are in place to achieve the objectives of having the bond? We ask for input on specific formulaic approaches and the costs and benefits to any proposed methodologies or revised calculations.

181. We also propose to revise the point at which a licensee is relieved of its surety bond obligation. We propose to shifting from upon a finding of compliance with the deployment milestone obligations to the point when the licensee has deployed the total number of satellites such that the bond formula equals zero dollars or less and has notified the Commission of its deployment status. Each proposed formula declines such that the required bond would reach $0 when 90% of the authorized satellites have been deployed. At that point, the licensee could be relieved of the bond while having the flexibility to deploy up to 10% fewer satellites without defaulting on its bond obligation, if necessary. However, the licensee would still be subject to the final deployment milestone requirement, and failure to meet the final deployment milestone which would cap the system authorization at the number of satellites deployed by the milestone date. We also propose to carry over the existing requirement that a licensee will be considered to be in default with respect to the surety bond filed if it surrenders the license, but in alignment with the proposals herein, default would occur if the license is surrendered prior to surety bond amount deescalating to zero, rather than prior to meeting a milestone requirement. Licensees with a surety bond on file would be permitted to notify the Commission on the number of satellites deployed in the authorized system to decrease the total payment that would be required in the event of a default using the applicable formula.

182. We seek input from stakeholders on the proposed approach to surety bonds and milestone compliance and on the revised surety bond formulas. Would these formulas adjusting the amount of the surety bond proportionate to the percentage of deployed authorized satellites effectively incentivize satellite operators while continuing to deter spectrum or resource warehousing? Do each of the proposed formulas support these goals equally, or are there specific considerations or concerns with either of the two formulas? Should the Commission include an inflation adjustment to the bond formula so that the bond amount retains its purpose? If so, what measure of inflation should the Commission rely upon and how frequently should the Commission perform this adjustment? Are there other methodologies or proposals for alternative surety bond formulas or calculations that the Commission should consider in modernizing the surety bond requirement? How should licensees be permitted to notify the Commission of its deployment progress to reduce the total amount of the bond?

183. We additionally inquire as to when and how any revised milestone and bond requirements should come into effect if the proposed revised milestone deployment benchmarks and surety bond requirements and calculations are adopted. When the Commission revised the surety bond requirements in 2016, the Commission permitted space station licensees and market access grantees with existing grants at the time the new rules came into effect to submit a letter requesting to replace its current milestone schedule and bond obligation with the new schedule and obligation. These operators were also permitted to submit a new or modified bond and were relieved of their previous obligations, or retained the option to continue under the milestone and bond conditions established in their grants. We seek comment on whether the Commission should take a similar approach to any revisions to the milestone or bond requirements, allowing applicants the option to either keep their existing obligations and bond amount or replace them with the new rule requirements. In the case that the Commission adopts its proposals to require surety bonds for only those systems authorized to operate 200 or more satellites or for NGSO systems with fewer than 200 satellites authorized within a processing round, or an alternative proposed methodology, we propose that current licensees holding authorizations pursuant to §§ 25.122 and 25.123 of the Commission's rules would be relieved of their bond obligations under § 25.165(a) upon the effective date of any adopted rules. Are there other approaches or considerations the Commission should consider in transitioning to this revised surety bond framework? Should the Commission consider different approaches to the implementation of any revised milestone and surety bond requirements specific to licensees authorized within a processing round? How should the Commission address licensees with surety bonds on file with upcoming milestone deployment deadlines?

4. License Terms, Extensions, Replacements, and Renewals

184. *License Terms.* Currently there are a variety of different license terms for satellite and earth station licenses in our rules. Authorizations for GSO and NGSO space stations are issued for fifteen-year license terms, with certain service-specific exceptions, while satellites licensed under the small satellite and small spacecraft rules are licensed for six-year terms. For GSO space stations, license terms begin at 3 a.m. Eastern Time on the date when the licensee notifies that the Commission that the space station has been placed into orbit at the assigned location and the operations are compliant with the license terms and conditions. NGSO space station license terms begin at 3 a.m. Eastern Time when the licensee notifies the Commission that operation of an initial space station that is compliant with the license terms and conditions is placed into the authorized orbit. Our current rules state that the term of earth stations shall be specified in its authorization.

185. We propose extending the license term for most space stations and earth stations to 20 years. We note that we routinely receive applications to extend the license term beyond fifteen years for GSO satellites, and that we have generally found extensions of five years to be in the public interest. As such, there is efficiency in not requiring licensees to file (and the Commission to review) modification applications to seek authority for five-year license extensions for GSO satellites and to extend by rule the license term of GSO satellites from fifteen years to twenty years. Is there any danger that the proposed extension of the license term may limit the ability for newer technology to be licensed, given the scarcity of resources? We seek comment on this proposal and alternatives. Licenses for Direct Broadcast Satellite

(DBS) space stations and 17/24 GHz BSS space stations that are licensed as broadcast facilities, and for SDARS space stations and terrestrial repeaters, are currently issued for a period of eight years. Licenses for DBS space stations not licensed as broadcast facilities are currently issued for a period of 10 years. We seek comment on whether license terms for all GSO satellites other than those that are licensed as broadcast facilities where the license term is statutorily defined at eight years, should be aligned at a standardized license term, whether that be established at 15 or 20 years or some other term, for ease of administration and tracking. Our current rules also include a provision for GSO satellites to seek license term extensions via modification requests in increments of five years or less, and we propose maintaining this option. We seek comment on whether to maintain the ability for GSO satellites to extend their license term in this manner given our proposal to increase the standard GSO license term to 20 years and, if so, whether the information required for this modification is sufficient. We also seek comment on whether such an option should be provided for NGSO and VTSS satellites and, if so, what criteria should be applied, or whether such a provision is unnecessary given our other proposals regarding license terms, replacement space stations, and renewal expectancy.

186. For NGSO and VTSS satellites, we also propose a 20-year license term. We recognize that most NGSO satellites may have a shorter useful life than 20 years, but that replacement space stations may be used during the license term when needed. Our current regulations allow for both GSO and NGSO systems to replace satellites. We propose to add a definition of ''replacement space station'' that largely mirrors the language in § 25.165(e). Specifically, we propose to define ''replacement space station'' as ''a space station that is authorized to operate in the same frequency bands and with the same coverage area as the space station to be replaced, at an orbital location within 0.15° of the assigned location of a GSO space station to be replaced or in the authorized orbit of an existing NGSO space station to be replaced, and that is scheduled to be launched so that it will be brought into use at approximately the same time as, but no later than, the existing space station is retired.'' We seek comment on this proposed definition and if it provides sufficient clarity to applicants and licensees. Current rules allow for NGSO systems to replace satellites with ''technically identical'' satellites with 30 days advance notification to the Commission and certification that the additional space stations(s) will not increase the number of space stations providing service above the maximum number specified in the license. ''Technically identical,'' however, is not a defined term in the part 25 rules. We propose to retain the ability for NGSO licensees to replace satellites, up to the number of authorized satellites but without notification to the Commission, provided that any changes to the authorized satellites would not require the filing of a modification application, as enumerated in our major modifications proposed rules discussed above, or a condition on its authorization.

187. We believe that permitting NGSO licensees to replace satellites in their authorized constellation, except for those that would trigger a major modification or a change to its underlying authorization, allows for upgrades of the overall satellite system to take place during the license term without the need for additional Commission involvement, which further provides flexibility, ensures no harmful interference, and lessens administrative burden on Commission staff. We seek comment on this proposals, which we believe provide more clarity and flexibility for NGSO operators than the current requirements of §§ 25.165(e) and 25.113(i). We also propose removing the requirements for replacement space stations from their current placement in the surety bond rule and placing them in an expanded section of our new rules regarding license terms, replacements, and renewals since they are more logically related to these provisions than to surety bonds. We seek comment on NGSO and VTSS license terms and definitions and conditions for replacement space and earth stations generally.

188. As was noted when the Commission extended the license term for space stations from 10 years to 15 years, the goal is to reduce the number of times licensees will be required to renew their licenses and reduce administrative burdens. We think aligning the satellite license terms is even more important now when we receive applications for systems that contain both GSO and NGSO satellites. Our existing rules do not contain a set license term for earth stations and Commission practice has been to align the term of the earth station with the term of the satellite with which it is communicating. We believe that having a set license term for earth station licenses will support faster disposition of applications by the Commission staff, since a decision on license term will no longer need to be made on a case-by-case basis and it will instead be standardized. This proposed change should also provide predictability for operators, who may operate earth stations which communicate with multiple satellites with license terms ending on different dates. Finally, we note that we currently do not generally establish a term for market access grantees, instead frequently conditioning the grant of U.S. market access on continued authorization by the non-U.S. administration. We propose establishing a definitive market access term length, whether established at 15 or 20 years, or an alternative term, on market access grantees to establish consistent rules for these operators and domestic satellite licensees, which would be consistent with our requirements under the World Trade Organization (WTO) agreements, since this term length would establish parity of treatment and non-discrimination between U.S. and foreign licensed satellites, including those from WTO member countries. We seek comment on this proposal. We also seek comment on whether and how to implement this change for existing market access grantees in light of any expectations at the time of grant.

189. The Commission retains discretion to establish shorter license terms if in its judgement the public interest will be served, and we propose maintaining that discretion as well as the ability for applicants to seek a shorter license term. Applicants may at the outset of the application process seek a shorter license term, which is currently done through notation in the application narrative. We propose continuing to allow applicants to request a shorter license term than the applicable standard license term at the time they apply for a license and seek comment on this approach. Should there be a question on the general application of Schedule O or Schedule F for applicants to choose the standard license term for a particular license or to specify a request for a shorter term? Would formalizing this option serve the interest of freeing spectrum and orbital resources sooner than otherwise? Do the recent changes to the satellite and earth station regulatory fees make this change unnecessary since licensees will have a financial interest in surrendering their licenses promptly? Licensees currently may surrender a license should they complete operations before the license term ends, and we propose maintaining that option.

190. We further propose revising the license term rules to state that license or market access grant terms for space stations and earth stations will begin on the date that the license is granted, with a potential exception for receive-only earth stations. While this is a change from our current rules, under which a license term generally begins when the operator notifies the Commission the satellite has been placed into orbit with operations in conformance with the authorization or license ''terms and conditions,'' in practice this process has sometimes proven difficult to track as operators may forget to notify the Commission and the end date of the license then may be unclear. There also may be ambiguity regarding when to notify the Commission that the space station is operating in conformance with the ''terms and conditions'' of the license. Considering the proposed extension of the license terms for GSO and NGSO space stations to 20 years, we tentatively conclude that commencing the license term on the date when the Commission issues the license or market access grant will provide licensees with clarity and predictability while ensuring that licensees are ensured sufficient time to recoup their investment. We seek comment on this proposal. Should the license term for both space stations and earth stations, excepting receive-only earth stations, begin on the date of grant, or are there service-specific considerations to justify commencing the license term after the date of grant? Furthermore, we seek comment below on whether to continue registration of receive-only earth stations. If we do continue to register these earth stations, we propose a 20-year term that would begin on the date that the application was filed since these stations do not ultimately receive a license. We seek comment on our proposals on license terms, including their lengths, time of commencement, approaches for replacement space stations, and alternatives. We also seek comment on whether these changes should be applied retroactively to existing licensees and market access grantees and, if so, how that change should be made.

191. *Renewal Expectancy.* Operators of, and investors in, satellite systems and earth stations need sufficient time to recoup the substantial financial investment and effort in establishing and operating their ever-more complex systems. An expectation that a license will be renewed at the end of its term can add to the stability of the satellite and earth station business environment. The Commission generally has proceeded on a case-by-case basis regarding renewal of satellite and earth station authorizations, with the vast majority of renewal applications being granted. In practice, however, the case-by-case adjudication of renewals has occasionally led to protracted disputes about whether a renewal is warranted.

192. We therefore seek comment on whether to establish guidance on renewal expectancy and whether to establish such an expectancy for all types of space stations and for earth stations. Is such a renewal relevant in the GSO context given our proposal for license extensions, consistent with past processes? For renewal expectancy more generally, as a baseline standard, should we require that the renewal application include a certification that the station or system has not operated in a manner which would cause automatic termination pursuant to our proposed automatic termination rules? The criteria triggering automatic termination include, among others, that an earth station has not been operational for more than ninety days and that an NGSO operator has failed to maintain fifty percent of the maximum number of NGSO satellites authorized for service following the nine-year milestone period as functional satellites in authorized orbits. Would requiring certification that the automatic termination criteria have not been triggered be an effective way to ensure that renewal applications are only filed by operators who have been making significant use of resources for which they have been authorized? Should additional guidelines be considered? The Commission issued a Notice of Inquiry in 2013 that examined factors for FSS operations that could be considered where there are allegations of spectrum warehousing, including gaps in service, older ''replacement'' satellites, license extensions, and underutilized space stations. Are any of these criteria relevant to license renewal, and if so, how should they be incorporated into the Commission's review? Should a minimum level of operations or service to customers be required beyond what is defined in the automatic termination rules? For example, for NGSO satellites, should a certification be required that at least 50% of authorized satellites provide ongoing service to customers? If so, how should those terms be defined? How would changes in ownership or control or developments affecting a licensee's qualifications be factored into a renewal expectancy framework? We seek comment on whether additional guidance on renewals should be delineated in our rules, and if so, what criteria should be used for evaluating space stations and earth stations. Our current and proposed rules do not require license renewals to be placed on public notice, but the discretionary authority under proposed § 100.132(v) could be used to place renewal applications of particular importance on public notice. Is this process sufficient or should explicit public notice requirements be added to our rules for certain renewal types? We seek comment on the appropriate public notice for renewal applications.

5. Accountability and Transparency Requirements

193. *Removal of Application Requirements.* The Commission endeavors to make information available to the public to help them understand how efficiently the agency is operating, and to manage expectations on processing timelines so that applicants can have a predictable environment for business planning. We seek comment on how to remove unnecessary elements in applications efficiently, consistent with the President's goals of reducing and eliminating unnecessary and burdensome regulation. We seek comment on whether this function should be undertaken by the Commission or if it is more effective to delegate this function to the Bureau. Would notice and comment be required or desirable in all cases, or can such changes be made without notice and comment? If this function is delegated to the Bureau, should it be included in the rules governing Space Bureau delegation or elsewhere in our rules? We ask for alternative proposals for a process to eliminate unnecessary application elements in the most expeditious manner possible. Is there additional guidance the Commission can provide to applicants in furthering its goals of providing transparency and clarity on the application process consistent with the Space Bureau's directives?

194. *Reporting on Space Bureau Licensing.* To promote transparency for the public, we also propose to require the Space Bureau to report once a year, in December, on the status of all pending space station and earth station applications. We propose this reporting would be released in a public notice and posted on a Space Bureau website and would detail the number of pending applications, the percentage of applications that have been pending for less than 30 days, 31–60 days, 61–90 days, 91–120 days, 121–150 days, 151–180 days, and more than 180 days. Are there any other metrics which we

should also require? Or different metrics? Should the type of requests be separated? We seek comment on this proposal and alternatives that would improve transparency and accountability as to the Commission's space licensing operations.

6. Transition to Part 100

195. *Transition from Existing Part 25 to New Part 100.* When creating a new rule part for existing services, we must be careful in how we transition to the new rule part to avoid any unnecessary issues or disruptions to incumbent satellite and earth station operators. Because there are thousands of licensees under the existing part 25 rules and because there are hundreds of new applications a year for new or modified part 25 authorizations, we are aware of the caution necessary when effectuating the transition between rule parts. Accordingly, we propose to delegate authority to the Space Bureau to effectuate the transition to the new rule part in the most efficient manner, tentatively concluding that the Space Bureau is best positioned to determine the mechanics of the transition from part 25 to part 100.

196. We invite comment on this proposal generally and welcome additional comment on how to effectuate the change over from part 25 to part 100. Are there any best practices that the Commission should rely on from any previous rule part transitions? Are there any specific areas of our proposal that may be difficult to transition to part 100 given the number of current licenses or pending applications such as those for earth stations or for space station modifications?

197. *Prospective Application of Part 100 Rules.* We seek comment on what rule changes should apply to existing licensees and market access grant recipients as of the effective date of the rule changes, or what, if any, reason exists to grandfather existing licensees for particular aspects of the existing regulatory framework. The Commission's goal is to ensure that all licensees and market access recipients ultimately operate under a single set of part 100 rules without disrupting reasonable expectations.

198. Accordingly, we propose to apply all procedural aspects of part 100 prospectively to every licensee, regardless of whether the authorization was issued under part 25 or part 100, subject to a few exceptions. For example, if a system is licensed under part 25, and subsequent system changes would have required prior approval under part 25 but not part 100, we anticipate that such changes will be governed under the part 100 procedures and timelines ultimately adopted by the Commission.

199. At the same time, we intend to maintain certain substantive obligations included in existing license authorizations to protect other operators and respect certain reasonable reliance expectations even after the transition. Specifically, we propose maintaining the license terms, bonds, milestones, processing round status, and trackability attached to individual licenses and grants of market access at the time of authorization. We also propose to preserve license-specific conditions imposed prior to part 100's effective date. We seek comment on this proposal. Are there other proposed rule changes that should not apply to existing licensees and recipients of market access grants after the effective date?

200. We appreciate that some situations may present complexity between these two rule parts. For example, while we expect to apply part 100's modification procedures to part 25 licenses, a major modification may alter a license's processing round status under part 25. In certain circumstances, we propose to grandfather a license's processing round status under part 25 because of the complexity of those rules and the effect changes to priority may have on other systems in a processing round. Comments should state with specificity which rules should be exempted from applicability for current authorizations or whether any of the rules we propose to exempt should not be included. What considerations should we be mindful of to ensure this process is the most equitable and efficient process it can be while still ensuring that all legal requirements are met? We seek comment on these questions and proposals.

201. *Transitioning Legacy Part 25 Authorizations.* We also seek comment on transitioning licenses and authorizations issued under part 25 to part 100. It is our intention to sunset part 25 as quickly as possible in an orderly manner and delete part 25 from the Code of Federal Regulations. We believe that objective is best achieved by clearly specifying events to convert authorizations to part 100. During renewal, for instance, we propose to reissue authorizations that meet part 100's specifications. We also propose to reissue part 100 licenses following transfers of control or assignments and major modifications to the greatest extent possible. We seek comment on creating other opportunities for licensees to convert their authorizations to part 100, for example should an application for a license extension trigger a reissuance? Should we allow, or potentially even require by a date certain, authorizations to be reissued under part 100 by way of specialized application? We seek comment on the circumstances under which a full conversion to part 100 may not be feasible, and how the Commission might address them. For instance, if certain legacy part 25 obligations are necessary to preserve for a specific license, should we incorporate those legacy obligations in grant conditions that attach to the new part 100 authorization? Are there different considerations that warrant different approaches for the transition of space station and earth station licenses, given the number of earth stations and the fact that some have continued operation for relatively longer periods of time without modification or issues via renewals? In addition, are there different considerations for the transition for space and earth station licenses that we propose to be included in new categorizations? We seek comment on any other special considerations that should govern the conversion of earth station and space station authorizations.

202. Are there alternative approaches that should be considered? Commenters should address how to operationalize any proposal and consider the resources needed to effectuate this transition. For example, in addition to reissuing licenses on an individual basis at certain triggering events (renewals, major modifications, extensions, transfers of control or assignments), could the Commission issue an appendix as part of a future Report and Order that lists each part 25 rule and its corresponding rule in part 100 with a statement that any part 25 rules that attached to a license will now be mapped to the new rule part in part 100? Should a rule be added to part 100 that articulates that the part 100 rules will apply to licenses and market access grants issued under part 25, subject to any exceptions established in the final order?

203. *Pending Applications.* We seek comment on how to treat applications pending at part 100's effective date. To facilitate a speedy and orderly transition to part 100, should the Commission require applicants with pending applications as of the effective date of the new rules to supplement their applications to address the new requirements of part 100? Or should there be a cut-off date prior to the effective date of part 100 when the Commission will stop accepting applications pursuant to part 25 in order

to minimize the number of applications that are processed under the old rules and which may receive a license term of 15 years? If so, what time period for cut-off would be reasonable? Could we allow applications that are pending under part 25 when part 100 becomes effective to optionally amend the application to conform with part 100 and then be handled under part 100?

C. Operational and Technical Requirements

204. The Commission proposes to restructure the rules governing the technical standards and operations for space station and earth station licensees. Specifically, the Commission proposes to create a new ''Subpart C—Operational Requirements'' in the proposed part 100 that includes the rules that licensees must follow. We propose to further subdivide this subpart C to create clear sections that outline: (1) general rules applicable to space and earth stations; (2) general space station rules; (3) NGSO frequency specific rules; (4) GSO frequency specific rules; (5) coordination requirements and rules; (6) satellite digital audio radio service rules; (7) general earth station rules; (8) general earth station coordination and performance requirements; (9) frequency specific earth station rules; and (10) miscellaneous rules. We believe that organizing the rules in this manner will make it easier for licensees to understand their obligations and the rules with which they must comply based on their individual licenses. Additionally, we believe it will make it easier for the Commission to update rules in the future while keeping rules that pertain to the same subject together. We seek comment on this organizational approach.

205. The Commission proposes and seeks comment on certain rule sections specific to the technical operations of space stations licensed under part 25. We propose to largely incorporate the rules currently located in subparts C through J of part 25 in this new subpart C in part 100, while making improvements for clarity and ease of use. Although some notable proposed changes are discussed below, we seek comment on the entirety of our proposed subpart C.

206. Furthermore, we recognize that many portions of our proposed subpart C which are carried over from part 25 may be outdated and worth removing or revising. While we have begun to remove some such rules, we have chosen to not completely overhaul such rules at this time so that this proceeding may initially focus on modernizing the overall framework we apply to space station and earth station licensing and regulation. We expect that through further notice and additional proceedings we will further modernize the rules proposed for subpart C in part 100. Therefore, we seek comment on possible revisions, with the expectation that we may make such changes if supported by the record or we may seek further comment.

207. Regarding all of the proposed operational and technical requirements, we particularly seek comment as to whether the rules afford flexibility and predictability for licensees. As we seek to modernize our operational and technical rules in this proceeding and in others, we aim to apply the presumed acceptable framework widely by setting standards according to outcomes rather than prescribing specific designs. To give a few examples, we propose requiring in subpart C of part 100 that systems be able to cease emissions, operate according to ITU filings, and respond to collision risk warnings, but we propose allowing operators considerable freedom as to how they meet these standards. However, we also recognize some of the proposed part 100 technical rules transferred from part 25 may not follow this framework. Therefore, in addition to seeking comment on the substance of such operational and technical rules, we also seek comment on how the rules might be revised to follow a presumed acceptable framework which yields more flexibility and predictability. In particular we seek comment on how new technologies (*e.g.,* Software-defined Networks) are or are not addressed by our proposed rules. Where are specific places we need to update our rules to better allow for such new technologies while continuing to carry out our statutory duties?

1. General Licensee Operations

208. We propose to begin subpart C with general rules applicable to all licensees under proposed part 100. Specifically, we propose to begin with rules that outline permissions and obligations that apply to all licensees, including license terms and renewals.

209. *Licensee Operations.* The Commission proposes a new section to clearly state that licensees may operate within the parameters of their authorization. Specifically, we propose to adopt new rule text that states: ''Licensees under this part may operate within the boundaries of their authorizations, the rules in this part, and any other relevant provision of this chapter, the Act of 1934, as amended, or other statute, subject to any Commission action and any conditions or constraints placed on the license or licensee in any such grant of authority.'' We believe that this rule will clearly outline the fact that operators may operate their licensed systems in any way that complies with all rules applicable to that system as well as with the terms and conditions of the specific license. We seek comment on these proposals.

2. Space Station Operations

210. We propose to modify several existing rules that outline permissible actions for space station operators. We seek comment on the proposed revisions to the Commission's rules below.

211. *Orbit-Raising Maneuvers.* We propose to modify the rule pertaining to orbit-raising maneuvers to authorize both NGSO and GSO operators to transmit in connection with orbit-raising maneuvers and to allow NGSO licensees to engage in orbit-raising maneuvers without Commission approval. We propose to limit this authority to frequencies in which the space station is authorized for TT&C, and to require operators to coordinate on an operator-to-operator basis with potentially affected satellite networks and to accept interference from lawfully operating satellite systems. We seek comment on this proposal and ask commenters whether expanding this authority beyond GSO operators provides a worthwhile benefit to NGSO operators while not posing any unnecessary risk or other disadvantages. Are there additional conditions that would need to be met for NGSO operators to safely engage in orbit-raising maneuvers without first seeking Commission permission?

212. *Operating Provisions for NGSO FSS Space Stations.* We propose to incorporate § 25.146, ''Operating provisions for NGSO FSS space stations.'' We propose to make minor edits to remove the requirement that operators certify that they will comply with certain ITU equivalent power flux density (EPFD) and power flux density (PFD) limits and instead change it to a requirement that operators comply with those limits. We believe this will make it easier for applicants because they will not have to certify to multiple separate requirements with which they must comply regardless. Instead, we propose to require a general certification that applicants' operations will comply with the Commission's rules. We believe that this will be more efficient because applicants will only need to make one certification that encompasses multiple rules with which they must comply. We seek comment on this proposal.

213. *Two-Degree Spacing for GSO Space Stations.* We propose to revise the requirement for two-degree spacing of GSO space stations so that it applies only to operations to and from the United States. The Commission's longstanding policy on two-degree orbital spacing for GSO systems was initially adopted to separate potentially interfering systems and thereby limit the need for coordination on spectrum usage. This requirement aimed to facilitate GSO–GSO FSS spectrum sharing and resulted from independent Commission consideration, departing from the international requirement of six degrees or greater, to enable more satellites to serve the United States and increase competition and service offerings. However, now two-degree orbital spacing may no longer be necessary in some instances. GSO operators frequently coordinate at orbital spacings necessary to provide services to customers without creating harmful interference or otherwise impeding on effective spectrum sharing. Further, the two-degree spacing requirement may risk disadvantaging U.S. licensed operators in designing advanced GSO space station systems vis-à-vis non-U.S. licensed operators or inhibit beneficial coordination outcomes internationally. Therefore, we propose that for operations outside the U.S., GSO operators are permitted to operate under ITU coordinated parameters rather than be restricted to the two-degree spacing. We invite comment on this proposal and also on how to resolve compatibility between U.S.-licensed operations outside the United States that rely on U.S.-submitted ITU filings and are not required to coordinate with each other internationally. Alternatively, we also seek comment on keeping the two-degree spacing rules for GSO space stations for U.S. licensed space stations operating outside the U.S. as they currently are given that the GSO space station industry has utilized the two-degree spacing rules for years? Similarly, should we also maintain the +/- 0.05 degree station keeping requirements associated with the two-degree spacing rules? Would keeping these rules ensure any greater certainty or predictability for the market or potentially create undue burdens on applicants or licensees? Conversely, would eliminating the two-degree spacing and station keeping requirements cause burdens on the industry, or is there a benefit to doing so that outweighs any burdens on the industry? Has the GSO industry matured enough to the point that these requirements are no longer necessary? We seek comment on both our proposal and alternative solutions to build a robust record on this issue.

3. Reporting Requirements

214. As we propose to modernize our approach to regulating operations, we seek to limit reporting requirements as much as possible to only those which will support a more efficient, safe, and flexible space operating environment. We see these requirements as being part of a transition from the Commission's static, backward-looking approach to regulating licensees to a dynamic, forward-looking model where operators have greater freedom to operate within prescribed parameters designed to protect against harmful interference, allowing operators to simply inform others how and where they are operating instead of seeking permission for each change in operations. Therefore, we see these proposals as deregulatory in the long run and facilitating more intensive and efficient use of space for the delivery of communications services.

215. *Licensee Reporting Obligations.* Space station licensees and market access grantees are currently required to provide contact information for interference resolution and emergency response on an annual basis and provide an update with any changes to the contact information on record within 10 days of the change. We propose to eliminate the annual point of contact reporting requirement in light of the existing requirement to provide updates to contact information on record within 10 days of the change. However, we propose to amend this timeline to file the required contact information updates with the Commission within 48 hours of the effective date of the change. We seek comment on these proposed changes. Should the Commission require any additional information to be included in the point of contact information? Are there other reporting requirements for space station licensees and market access grantees that would provide a benefit to other operators?

216. *Ephemeris Data.* As the American space industry booms and the number of satellites in orbit rises, the need for data sharing becomes more important and there is a public interest benefit to the public being informed as to where licenses space stations are located. Commercial satellite operators and space situational awareness (SSA) service providers both have roles in this process. SSA service providers track objects in Earth orbit, predict their future positions, and warn of potential collisions with active spacecraft (commonly referred to as conjunction warnings). SSA service providers use ground-based sensors (and potentially space-based sensors) for object tracking, supplemented by high-accuracy ephemeris data provided by satellite operators to increase the accuracy and predictability of conjunction warnings.

217. Satellite operators have more precise and timely information about the location and trajectory of their spacecraft than SSA service providers do from object tracking alone. While operators know of their planned satellite maneuvers and account for them in their satellite's predicted ephemeris, the orbit propagated by an SSA service provider from tracking alone will not capture any planned trajectory changes due to maneuvering and therefore will leave unreported any satellite conjunctions that could arise from the modified trajectory. Even for non-maneuverable satellites, operators generally have a better understanding of the spacecraft's construction and non-conservative force parameters, such as the ballistic coefficient and solar radiation pressure coefficient. Thus, a satellite operator's prediction of its satellite's future position, captured in predictive ephemeris data, is often reliable and valuable adjoining data to the future position information calculated from a space catalog entry.

218. The Commission's rules currently require NGSO space station license applicants to disclose whether they plan to share information regarding initial deployment, ephemeris, and/or planned maneuvers with the 18th Space Control Squadron or successor entity, other entities that engage in space situational awareness or space traffic management functions, and/or other operators. Applicants must also certify that upon receipt of a space situational awareness conjunction warning, the operator will take all possible steps to assess and mitigate the collision risk, including by contacting operators of active spacecraft involved in the warning and sharing ephemeris data. NGSO FSS satellite operators specifically must ensure that ephemeris data for their constellations are available to all operators of authorized, in-orbit, co-frequency satellite systems in a manner that is mutually acceptable. Non-voice, non-geostationary (NVNG) MSS licensees are also required to obtain ephemeris information necessary to comply with restrictions around certain protection zones.

219. In 2020, the Commission adopted the requirement that NGSO satellite applicants disclose any plans they have for sharing ephemeris data with an SSA

service provider, like the 18th Space Control Squadron, but stopped short of requiring satellite operators to actually provide such ephemeris data to an SSA service provider. At the time, the Commission concluded that such an ephemeris sharing requirement was unnecessary given the newly adopted disclosure requirement and the required certification that upon receipt of a space situational awareness conjunction warning, the operator will review and take all possible steps to assess the collision risk, and will mitigate the collision risk if necessary and that the assessment and potential mitigation should include, as appropriate, sharing ephemeris data and other relevant operational information. While current rules require operators to address conjunction warnings that they receive, there is no general requirement for satellite operators to share predicted ephemeris data for their own systems, including planned maneuvers, to ensure the most accurate information on potential conjunctions with other operators' systems.

220. As we seek to provide greater flexibility for space operations, we recognize the need for orderly activities by spacecraft with licensed space stations. Predictable commercial operations allow GSOs and NGSOs to plan their missions in advance, operate more efficiently, and give VTSS licensees more flexibility in conducting their missions. To the extent feasible, we want licensees to be able to operate freely but to also inform operators, the Commission, and the public of their location by contributing accurate ephemeris data to an SSA system. We see this as the long-term path to replacing the need for many notifications or license requests. Given that SSA technology and the ecosystem is still evolving, our proposal is for a flexible framework for how licensees may comply with this requirement.

221. Accordingly, we propose to require that all space station operators file their ephemeris data via space-track or with the 18th Space Control Squadron or with one or more SSA service providers that would be identified by the Space Bureau through a public notice (after notice and comment if the Space Bureau deems required or advisable). We also propose to ensure that this data be made available to all authorized operators of co-frequency systems. We seek comment on this proposal and ask for specific information as to the frequency of reporting, the method of reporting, any other associated reporting requirements or notifications the Commission should require along with the ephemeris data, or alternative approaches. For example, should we also require that ephemeris data specifically be made available to all other satellite operators at shared altitudes, in addition to shared frequency bands, through an appropriate SSA? If so, how should we define shared altitudes and ensure that such a requirement is not unduly burdensome, particularly on smaller operators? Do we need any additional requirements regarding initial launch phase or post-service mission operations? Should we specifically require operators to immediately notify an SSA provider of any temporary, ongoing, planned, or unplanned spacecraft system outages that would prevent collision avoidance maneuvers? Additionally, we seek comment on how the Commission and the Space Bureau should identify appropriate SSA provider. What criteria should the Space Bureau look for in an appropriate SSA provider? Should we require reporting of the data with a specific frequency? If so, what frequency would be appropriate? Would a frequency of submission of ephemeris data and covariance of no less than every eight hours for spacecraft operating at or below 750 km altitude and every 24 hours for spacecraft operating above 750 km altitude be appropriate? Should we specify that space station operators must register with an SSA provider at least 30 days before initial launch of a spacecraft and must submit ephemeris data and covariance within eight hours of launch or initial insertion for all spacecraft in their authorized system? Is space-track the best place for requiring the reporting? Are there standard data formats that should be required so the data can be widely used? Should the Commission adopt a rule that gives the Commission the ability to update the required reporting method via public notice? Should the Commission define accuracy standards for the ephemeris data submitted to an SSA provider and if so, what should those standards be?

222. *Space System Safety Reports.* We also propose that NGSO space station licensees, after the launch of the first satellite in an NGSO system, must file a semi-annual report in ICFS covering the preceding six-month period detailing the number of conjunction events identified, including the number of events resulting in maneuver or coordination with other operators, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. These semi-annual reports would be filed by January 1 and July 1 of each year, covering the preceding period from June 1 to November 30 and December 1 to May 31, respectively. We seek comment on this proposal. Is there other information that the Commission should require as part of the reporting that would provide an additional benefit to other operators? Should the Commission delegate to the Space Bureau the ability to stop requiring these reports if they are not used or if other tools such as SSA systems develop to the point where such reports are no longer needed?

4. Orbital Debris

223. The Commission proposes to incorporate the current orbital debris requirements into the proposed part 100 though with important changes to align with our modernized approach of applying bright-line criteria. Specifically, as part of the application submission we propose to require applicants to submit certifications as to whether their satellite systems will comply with specific orbital debris criteria, including: satellites will be identifiable; satellites will fall below a certain threshold for small debris collision risk, large object collision risk, and human casualty risk; stored energy will be vented at the end of operational lifetime; and others. These elements are part of the application process and will be reviewed at that time. In addition to the certifications that we propose to include in the application requirements section, we also propose to create a section in subpart C that includes orbital debris rules that all licensees must follow. These are in line with the Commission's current rules but we believe including them in subpart C provides better organization and clarity. Specifically, we propose to include a rule that details certain operational requirements and end-of-life disposal. Additionally, we propose to create a rule detailing certain space safety rules for NGSO satellite systems. We see these as common sense approaches that have been developed through fulsome Commission proceedings and which will help ensure the ongoing ability of systems to deliver communications services.

224. *End-of-Life Disposal.* We propose to incorporate current § 25.283 which details the end-of-life disposal requirements for GSO and NGSO satellite licensees. We propose to add a requirement that space station operators must operate their systems in accordance with the orbital debris mitigation and end-of-life disposal plans that they provide to the Commission in their applications. We also propose to

require applicants to notify the Commission of any significant changes to the ODMP, statements, and disclosure within 30 days of the change. We seek comment on this proposal, including whether it provides the predictability and flexibility we seek. We also propose to require that space station licensees limit operational debris, debris resulting from accidental explosions, or liquids released that will persist in droplet form. We believe that taking the current requirement for applicants to provide a statement that they have ''assessed and limited the probability'' of accidental explosions and release of liquids that will persist in droplet form and turning it into an affirmative obligation for operators will provide a more objective standard for applicants and operators to meet while also increasing space safety. We seek comment on this proposal. Are there additional information requirements that we could make affirmative obligations? Should the Commission require a specific showing as to how an applicant will satisfy the requirement?

225. We also propose to turn two other current information requirements found in part 25 into affirmative obligations that all space station licensees must follow. Specifically, we propose to require that all NGSO satellites be trackable, with the presumption that each satellite larger than 10 cm in the smallest dimension is trackable. We also propose to require that, upon receipt of a space situational awareness conjunction warning, all operators must review and take all possible steps to assess and mitigate the collision risk. This is similar to the current certification required by § 25.114(d)(14)(iv)(A)(5), but relieves the operator of the obligation to certify to this specific requirement and instead imposes an affirmative obligation on all space station operators to assess and mitigate collision risk. We believe that incorporating these requirements, currently found in a similar manner in part 25, into the new part 100, and making them affirmative obligations will make it easier for space station applicants and operators to understand their obligations and will promote space safety. We seek comment on these proposals. Are there additional orbital debris information requirements that the Commission could turn into affirmative obligations?

5. Interference, Spectrum Sharing, and Coordination

226. *Coordination Requirements with Federal Government Users.* We propose to create a new rule section that lays out the coordination process the Commission will undertake with respect to achieving compatible operations between federal government users under the jurisdiction of NTIA and commercial licensees under the jurisdiction of the Commission in shared government/non-government frequency bands. We propose rule language that is similar to current § 25.279(b)(1). In addition, we propose to include the following language: ''The Commission will coordinate with the National Telecommunications and Information Administration regarding the operations of any licensees authorized to operate in a shared government/non-government frequency band.'' We believe that this standalone section will make the rules clearer and make it easier for cross-references in other rules that speak to federal coordination. We seek comment on this proposal. Is there additional text or are there additional rules that we should include here, or should any of the proposed text be eliminated?

227. *Procedures to be Followed in the Event of Harmful Interference.* We propose to incorporate § 25.274, ''Procedures to be followed in the event of harmful interference,'' with certain revisions. Specifically, we propose to delete current paragraphs (a) and (b) as we believe they are redundant and unused in practice. We propose to incorporate some of these paragraphs and revise paragraph (c) to read as follows: ''An earth station operator experiencing harmful interference must determine that the interference is not a result of equipment fault and that the source of the harmful interference is not from another earth station operating in the same network or from a terrestrial source. The earth station operator shall then contact the satellite system control center and advise the satellite operator of the problem. The control center operator shall observe the interference incident and make reasonable efforts to determine the source of the problem. A record shall be maintained by the control center operator and the earth station operator of all harmful interference incidents and their resolution. These records shall be made available to an FCC representative on request.'' We seek comment on this proposed language, and more broadly on the necessity of the provisions in this section.

228. *Additional Coordination Obligations.* § 25.278 of the Commission's rules details additional coordination obligations for NGSO and GSO systems operating in FSS. The Commission proposes to delete this rule section as redundant with the Commission's requirements requiring such coordination.

229. *OOBE Limitations.* § 25.202(f), (h) and (k) set forth the limits for OOBE. We seek comment on whether these limits should be updated in part 100 in light of modern communications systems and technological improvements in both transmitter and receiver designs.

6. Earth Stations

230. We do not propose to make significant changes to the specific technical criteria for operations of earth stations. We conclude that much of that work is better suited for other proceedings that are more focused on the technical issues. However, as it may relate to application requirements and processing and removing redundant or unnecessary materials from the operational requirements, we do propose to make a number of changes that are reflected in our proposed rules. With this in mind, the Commission has endeavored to structure the new rules in a manner that better groups like services or requirements together. Generally, we seek comment on how we propose to structure the rules and welcome alternative proposals and justifications.

231. Furthermore, we propose removing the enumerated list of available frequency bands because it is redundant of the U.S. Table of Frequency Allocations. We seek comment on this proposal. We tentatively conclude that the inclusion of this list can cause confusion among applicants and can result in misstatements or misinterpretation by the Commission or applicants. We seek comment on this conclusion. Should the Commission keep the enumerated list? If so, what are the benefits of doing so? What are the drawbacks and benefits of removing the list from the rules? Is all of the information contained in the current § 25.202 found in the U.S. Table of Frequency Allocations, and if not, how should this be handled? In order to achieve our goal of allowing satellite operators to apply for any spectrum where there is an allocation for them, do we need to provide a specific rule? Or is the fact that the U.S. Table of Frequency Allocations identifies the bands where satellite operations are permitted sufficient? Should there be any carve-outs for any specific bands?

232. *Choice of Sites and Frequencies.* We do not propose any changes to the established power limits, other than rearranging the relevant part 25 rules to group power limits together. We seek comment on whether any of the requirements of this section are unnecessary given our proposed shift to

a Nationwide, Non-Site License regime for all earth station types. Should any of this section be revised to reflect the new proposal? If so, how should this be revised and why? Further, given that the Commission is now relying on self-certification for coordination, would any of what we require in this section become unnecessary if, as proposed, we will no longer be reviewing an application's coordination other than to see that a report has been provided? We seek comment on these questions and invite any proposals for revising this section.

233. *Receive-Only Earth Stations.* Although we propose to keep the rules relating to receive-only earth stations, we do invite comment on whether we need to have these rules. Specifically, given that the Commission determined that it was unnecessary to license receive-only earth stations communicating with U.S.-authorized space stations, and instead only register them, is this rule part unnecessary? If so, we invite commenters to provide details as to how and why. In addition, we invite comment on how we should treat existing rule parts that limit the receive-only protections available to those already registered, such as in C-band. Alternatively, should we keep this rule because of a potential benefit of registering receive-only earth stations? If so, why? Further, if we choose to adopt a proposal to eliminate the rules, should we address C-band related issues, including registration of sites for receive-only earth stations, in a future proceeding given the unique circumstances surrounding the C-band?

234. *Earth Station Antenna Performance Standards.* We take this opportunity to propose a more streamlined approach in which we generalize the antenna performance standards to cover multiple bands as opposed to on a band-by-band basis, and to have a single standard for the co-polarization and cross-polarization antenna gains rather than the amalgamation that currently exists of specifying different standards based on frequency. Under our current rules, the earth station antenna performance standards have caused a large amount of confusion amongst operators and are unmeetable for many newer antenna types. We believe the streamlined approach we propose here would accommodate more antenna types while providing for the necessary protection of other systems and services. We seek comment on this proposal generally.

235. In addition, we seek comment on whether the streamlined approach we propose here would be sufficient to protect current and future systems. Does it sufficiently account for all types of missions including FSS, MSS, and VTSS? If not, what should be changed to better accommodate all service and system types while still giving maximum flexibility for the types of antennas operators choose to use?

236. *Earth Station Off-Axis EIRP Density Limits.* We propose to significantly streamline the off-axis EIRP density limits for earth stations from what is currently in our rules. Under our current rules, off-axis EIRP limits vary greatly based on frequency bands and whether the transmitted signal is analog or digital. Since almost all transmissions in modern communication systems are digital, as part of our steaming effort, we propose to have a single requirement for both digital and analog transmissions as opposed to different requirements. Also, given the proliferation of NGSO systems with a large number of satellites, we are proposing to add a new off-axis EIRP density requirement for NGSO FSS earth stations, including for feeder links for other satellite services in order to limit interference to other systems and services. Further, we are also proposing to streamline the GSO off-axis EIRP limits by creating a single requirement that would address the different bands as opposed to on a band-by-band basis under the current rules. We seek comment on our proposals. Are the new and modified off-axis EIRP limits we propose both broad enough to include all necessary services, but specific enough such that the requirements are actually meetable and useful? Is there any reason to keep the limits as we currently have them in our rules? Are there any benefits or drawbacks to our proposals? We seek comment on these questions and invite commenters to provide alternative proposals that achieve the same goals of reducing confusion and eliminating unnecessary regulations.

237. *Period of Construction.* We propose to make changes to the period of construction to account for our proposed Immovable earth stations and their registration status. We propose to require that an Immovable earth station licensee begin operations at a registered site within 365 days of registering the site to prevent spectrum warehousing or disadvantage others that may want to operate. We seek comment on this proposal.

238. *Responsibility of Licensee for Blanket Licensed Earth Stations.* In this section we propose to include language in our rules that makes clear who is responsible for an earth station and how they must maintain control of the device. We seek comment on this proposal. Specifically, as the proliferation of direct-to-device and SCS continues, it becomes impossible for licensees to maintain physical control over every device. Accordingly, we propose to only require that the licensee be in control of the network and maintain the ability to cease transmissions to or from the device over their network. We seek comment on this proposal and invite comment on any alternative approaches.

239. *Radiofrequency Exposure Requirements.* We propose to streamline the radiofrequency exposure requirements in our rules. We seek comment on this proposal. We seek comment on whether the general radiofrequency exposure requirements of part 1 that are applicable to all services, combined with the filing requirements and instructions of the forms in ICFS, would sufficiently demonstrate compliance with the rules such that a specific rule under the new part 100 would become redundant and unnecessary. We also request comment on whether, similar to the certification rules for SCS equipment, such requirements could alternatively be relocated under part 2 rules to sufficiently address radiofrequency exposure requirements for all other types of transmitting satellite equipment.

240. *User Terminals and ESIMs.* We propose to make substantial changes to our rules related to user terminals and ESIMs. As technology has developed, the Commission has seen more and more that the same technological parameters and devices are used for both fixed user terminals and ESIMs. With that in mind, the Commission proposes to combine the rule requirements for user terminals and ESIMs into a single rule section. We seek comment on this proposal. Specifically, is there enough overlap between ESIMs and user terminals that a single rule part is sufficient? Should these rule parts remain separate? Why or why not? We tentatively conclude that there is enough overlap that the rule parts can be combined, but seek comment on this conclusion.

241. *Earth Station Coordination Requirements.* We propose to clearly lay out the requirements for coordination between earth station operators in our rules. While we generally make few changes to our current requirements, we do seek comment on this proposal and on ways we can improve coordination amongst earth station operators. For instance, are the requirements described in this proposed rule overly broad and burdensome? Alternatively, are they too narrow to be of much use? Given the

proliferation of third-party coordinators, does the Commission need to specifically enumerate what needs to be provided for coordination, or should operators be able to decide amongst themselves what information they do or do not need to see and evaluate? What are the benefits or drawbacks to the Commission specifying how coordination works and the information needed to be provided? Is there any benefit to the Commission developing a real-time database that handles coordination in real time for applicants and licensees? Or is the current coordination process sufficient?

242. We understand that in some instances, coordination may be used as a tool to prevent new entrants from being able to receive a license. Do the proposed rules provide sufficient guidance and guardrails to prevent this from happening? If they do not, we ask commenters to provide proposals of ways in which the proposed rules can be revised to better protect against gamesmanship in the coordination process.

D. Benefits and Costs

243. We find that the rules we propose today, if adopted, will promote efficiency in the Commission's licensing process, provide more predictability and flexibility for licensees, as well as meet our statutory responsibilities and international obligations. We expect that our proposals would significantly reduce regulatory compliance costs, resulting in annual cost savings of at least $165,000. These cost savings are in addition to other benefits that are more difficult to quantify, but nevertheless important, such as reduced harmful interference, increased spectrum efficiency, and space safety. We estimate that the costs resulting from the changes that we propose will be approximately $90,000. We therefore conclude that the cost savings alone will fully offset the associated costs, such that the proposed rules are in the public interest. We seek comment on these findings.

244. We estimate that the deregulatory steps we take today will result in annual cost savings of approximately $165,000. This reduction will accrue primarily from limiting the cases in which operators are required to submit modification filings and STA requests. Based on conservative assumptions, we expect the proposed changes will reduce such filings by at least 15%. We expect this reduction to result from measures such as eliminating the requirement for waiver requests for contemporaneous supplements or exhibits, allowing applicants to certify that no information has changed from a previously filed FCC Form 312—Main Form, eliminating certain milestone requirements, and allowing prospective applicants to submit ITU filings without the need for prior filings with the Commission. We seek comment on our estimate of cost savings. We also ask commenters to identify additional potential cost savings that we have not considered in our estimate.

245. In addition to these quantified savings, we anticipate significant potential cost savings from eliminating the surety bond requirements for GSO space stations and certain NGSO systems. These savings include monthly fees that licensees would otherwise pay to third parties for posting a surety bond, as well as the opportunity cost of capital that operators forgo by having to set aside financial resources for surety bonds. While we do not quantify these savings here, we believe that they will represent a meaningful reduction in regulatory burden for affected operators. We seek comment on this view.

246. We estimate that the total cost associated with the proposals will be approximately $90,000. This estimate is primarily driven by the cost of preparing semi-annual space system safety reports, which require information on the number of conjunction events identified for satellites in the NGSO system during the reporting period, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. Since we assume that all NGSO operators already collect the relevant information as part of their routine operations, this estimate only accounts for the costs associated with preparing and submitting the report. We also assume that costs associated with all other proposed reporting requirements will be negligible. Specifically, the costs of sharing ephemeris and covariance data is expected to be minimal, as operators already generate and maintain this information for their own operational purposes. Sharing it with a designated SSA service provider would primarily involve integrating with an existing SSA Application Processing Interface, which should require minimal additional effort. Additionally, we expect that eliminating the annual point of contact requirement will result in cost savings rather than impose new costs, although we do not quantify those savings here. We seek comment on our estimate as well as on the assumptions underlying our estimate.

247. Overall, we anticipate that cost savings will fully offset the total estimated costs associated with this item. Moreover, our analysis does not account for the additional benefits expected to accrue from these changes, including improvements in spectrum efficiency, space safety, and reduced regulatory burden. We seek comment on the potential benefits of our proposed rules. Commenters are encouraged to submit quantifications of all claimed benefits and costs.

E. Compliance

248. As we seek to shift to a more efficient application review process, we recognize there will be a need to ensure compliance with the proposed framework requirements. To that end, our proposal would provide the Commission with a range of tools, in addition to traditional enforcement mechanisms, to address instances of noncompliance. A cornerstone of the Commission's new application and licensing approach relies on ensuring compliance with the Commission's rules after a license is granted, given the greater reliance on certifications to improve processing efficiency. While we expect applicants to operate in compliance with the Commission's rules and in accordance with license authorizations, it is important that the Commission can effectively and nimbly address violations of its rules. Accordingly, we propose additional non-monetary enforcement remedies to ensure and address compliance with the Commission's rules and clearly express in our rules the requirements of operators beyond the operational requirements.

249. Section 25.161 of the Commission's rules provides that a station will be automatically terminated, in whole or in part, if the station is not operational or the license term expires, for failure to meet applicable milestone deadlines. We propose to retain the Commission's existing rule outlining the circumstances when a station authorization will be automatically terminated, in whole or in part, with certain proposed additional circumstances to reflect the proposed rules in the NPRM. We propose that earth station licenses would be subject to automatic termination for failure to comply with the proposed certification requirements for Immovable earth station authorizations. Earth station licenses would also be automatically terminated for failure to meet any of the operational, coordination, or frequency-specific rules. The Commission further proposes to modify the compliance provisions specific to milestone deployments to align with the proposed deployment timelines for satellites.

250. In addition to admonishments and forfeitures, we propose that the Commission could address non-compliance through a variety of other means, including by revoking or terminating a license, requiring cessation of transmissions, placing an entity in an ''authorization freeze'' status (*i.e.,* no additional authorizations may be granted until an issue is resolved), or pausing launch authorization for continued deployment under an existing license. Unlike some other areas under the Commission's jurisdiction, space activities are uniquely complex in that addressing violations of certain rules can be more complicated, if not nearly impossible, if the violation stems from a space station already deployed and in orbit, for example, if space station connectivity fails, if an operator is unable to address or reduce risks to other deployed systems, or if a space station is unable to safely deorbit. With this in mind, we believe our proposed compliance rules will offer a range of ways to ensure licensees comply with the Commission's rules for the benefit of other operators and the space economy at large. We also recognize that it may often be in public interest to address violations outside of traditional enforcement mechanisms. Further, since we propose to rely more heavily on affirmative certifications, we expect that ensuring the Commission can quickly respond to post-grant violations or submissions of misleading or materially false information in an application will ultimately strengthen the overall integrity of the licensing system. We seek comment generally on our proposed compliance measures, including on how we can efficiently and effectively promote compliance while conforming to the procedural requirements of the Commission's rules, the Act, the Administrative Procedure Act, and due process. Under what circumstances could the Commission require immediate corrective action even before an operator has the opportunity to respond? Could the Commission implement automatic enforcement consequences as a licensing condition or through a rule? Are there additional or alternative compliance mechanisms the Commission has not considered that would achieve the goals of this proceeding?

251. Further, if an operator has a history of anomalous events, or other noncompliance with our rules, such as unlicensed operations, should the application no longer be presumed to be in the public interest, and, if so, should the burden of proof shift to the applicant to show that the application is in the public interest? Do the proposed remedies sufficiently dissuade operators from engaging in bad acts or harmful behavior? Are they too stringent or lenient? In either case, what alternatives should the Commission consider to more effectively address and discourage bad actors? We seek comment on these questions and input for other proposals to encourage responsible behavior by all applicants, licensees, and market access grantees.

252. We believe that these approaches are not prohibited by the Act nor do they run afoul of recent judicial precedents.

F. Miscellaneous

1. Delete, Delete, Delete Proceeding

253. This proceeding incorporates the results of the Commission's comprehensive deregulatory review initiated in the *Delete, Delete, Delete* proceeding as it concerns our part 25 satellite licensing rules. Indeed, we are fully aligned with the deregulatory intent of that proceeding, and several commenters in that proceeding suggested an omnibus satellite licensing rulemaking to address the many satellite-related topics raised in that record. Our proposals if adopted would result in a substantial overall reduction in the quantity of satellite licensing rules. In addition to numerous proposed recissions of duplicative, outdated, unused, or unjustifiably burdensome rule provisions identified by Commission staff, we have incorporated commenter suggestions from the *Delete, Delete, Delete* proceeding into the questions above and the proposed rules.

254. We also invite comment on SiriusXM's suggestion to delete the SDARS provisions requiring use of interoperable radios, requiring terrestrial repeaters to retransmit the complete programming transmitted by the SDARS licensee's satellite(s), and requiring terrestrial repeaters not to retransmit different transmissions from a satellite to different regions within that satellite's coverage area. Are these rules, which affect a limited number of licensees, still in the public interest, or should they be modified or removed? Is this something that we should address here, or is it better suited for a separate proceeding? Further, are there any other rule parts that we should consider deleting either because they are redundant of rule parts found in other parts of the Commission's rules, or because they are outdated and unnecessary, or overly burdensome? We seek comment on this generally.

2. Other Open Proceedings

255. Some of the proposals outlined herein and proposed in Appendix A may overlap with other open Commission proceedings. Specifically, certain proposals here overlap with the Commission's recent *ISAM NPRM;* the Commission's proceeding on orbital debris mitigation; and the Commission's *Foreign Adversary NPRM.* We specify how we propose to handle any overlap between these open proceedings and this proceeding below.

256. For the *ISAM NPRM,* we recognize that many of the proposals we make here, regarding changes to application requirements and application processing, including proposals related to bonds and milestones, overlap with the proposals made in the *ISAM NPRM* on those same issues. As described in depth above, we believe the changes we propose to make in the *NPRM* are preferable to those teed up in the *ISAM NPRM,* given our overall modernization goals and proposed framework. We therefore propose to move forward with the proposals in the *NPRM* rather than the overlapping proposals in the *ISAM NPRM.*

257. For the Commission's orbital debris proceeding, we clarify that other than where clearly identified above, we do not seek comment on any of the proposals outlined in the most recent *2020 Orbital Debris Order and FNPRM.* We recognize that the Commission sought comment on a number of proposals related to the orbital debris rules in that FNPRM. Due to the expansive nature of the *NPRM,* and the numerous proposals we make here to modernize the Commission's space and earth station licensing processes, we do not intend to incorporate the open orbital debris proceeding into this proceeding.

258. Similarly, we do not here re-open or invite any comment on any of the inquiries in the ongoing *NGSO–GSO Spectrum Sharing* proceeding or the *Facilitating More Intensive Use of Upper Microwave Flexible Spectrum* Notice of Proposed Rulemaking. Rather, any rule changes to part 25 adopted in those proceedings will be incorporated into the corresponding rule provisions in part 100, if any changes are adopted.

259. We propose to align our final rules in this proceeding with the final rules established in the *Foreign Adversary NPRM,* including the final decision on whether those requirements should be incorporated into existing licensing rules or whether the Commission should create a single set of new rules that apply to all regulated entities and whether the requirements

should be reflected in FCC Form 312—Main Form. We do not seek comment on any of the substantive proposals in the *Foreign Adversary NPRM* here.

260. Finally, we also propose that for any other pending or subsequent FCC proceedings that propose or adopt changes to the part 25 rules, we will incorporate any final rules in part 100, if adopted.

3. Additional Matters

261. *Basis and Scope.* § 25.101(a) of the Commission's rules contains a recitation of the statutory authority for part 25 that is partially out-of-date and with the authority citation in part 25 required by the Code of Federal Regulations. Accordingly, we propose to delete what is currently paragraph (a) from our rules. We seek comment on this proposal.

262. *Definitions.* We believe it is necessary to update, remove, and add certain definitions to the definition section in the new part 100 that we propose. We do not list all of the proposed definition changes here, we instead highlight some significant changes but invite commenters to provide feedback on all the proposed definitions in Appendix A.

263. We propose to delete several definitions from current part 25 that are duplicative of definitions in part 2 of the Commission's rules. Specifically, we propose to delete the following definitions: Coordination distance, Earth station, Feeder link, Inter-Satellite Service, Ku-band, Land earth station, Land Mobile Earth Station, mobile earth station, Radiodetermination Satellite Service, Satellite system, Selected assignment, Space radiocommunication, Terrestrial radiocommunication, and Terrestrial station. We seek comment on this proposal.

264. In addition, and as discussed more fully above, we propose to establish a definition for expedited processing to make clear what that category of processing an application means. Further, and as discussed above, we propose to create a definition for Variable Trajectory Spacecraft Systems as a category of licensable systems distinct from existing NGSO and GSO categories of licenses.

265. We propose to add a definition of ''Replacement satellite.'' Specifically, we propose to define replacement satellite as ''[a] satellite that is authorized to operate in the same frequency bands and with the same coverage area as the satellite to be replaced, at an orbital location within 0.15° of the assigned location of a GSO satellite to be replaced or in the authorized orbit of an existing NGSO satellite to be replaced, and that is scheduled to be launched so that it will be brought into use at approximately the same time as, but no later than, the existing satellite is retired.'' We seek comment on these proposed definitions and if they provide sufficient clarity to applicants and licensees on the scope and applicability of these terms.

266. *Review in the Public Interest.* Our proposed part 100 rules reflect our view that the Commission's public interest review of authorizations for space-based communications can be described as four categories that correspond to the Commission's statutory remit, our historic practice, and the equities of other federal agencies: (1) harmful interference; (2) spectrum efficiency; (3) space safety; and (4) foreign ownership. We seek comment on the foregoing. To the extent commenters find these categories under- or over-inclusive, they are expected to support such arguments with legal authorities specifically relevant to the Commission's space licensing activities.

267. *EEO and Public Interest Obligations to Parts 73 and 76.* §§ 25.601, 25.701, and 25.702 of the Commission's rules contain political programming and public interest obligations on DBS and SDARS licensees as well as equal employment opportunity requirements for FSS, DBS, and 17/24 GHz BSS operators who provide video programming directly to the public on a subscription basis. These rules cover certain media-related obligations and requirements applicable to these services, which the Commission added to part 25 because the underlying licenses for the operations are part 25 licenses. But the Space Bureau does not administer these rules. Thus, we tentatively conclude that these rule provisions would be best housed outside the new part 100 and we seek comment on the best place to relocate them. As media-related rules, would they make more sense in parts 73 and 76, which concern broadcast and multichannel video programming services? If so, we seek comment on how we can best rewrite and relocate these rule provisions to make clear which entities are subject to the regulations and make it easy for those entities to find those regulations.

268. *Relevancy of Analog Video Provisions.* Part 25 contains several provisions governing analog video transmissions. Given the transition from analog to digital video transmission standards in recent decades, we invite comment on whether any of these provisions are still relevant and should be included in part 100. Are there other part 25 rules governing analog transmissions that are out-of-date or unnecessary?

269. *Enabling Competition in the Commercial Space Industry Executive Order.* The August 2025 Executive Order, ''Enabling Competition in the Commercial Space Industry,'' (E.O.) states that it is the policy of the United States to support commercial space activities, in part by enabling a competitive space launch marketplace and increasing commercial space launches and novel space activities by 2030. The E.O. directs the Federal Government to streamline commercial license and permit approvals for United States-based operators to further these objectives. We believe that the proposals to the Commission's space and earth station licensing framework in the NPRM, as part of the broader initiative in modernizing space licensing, support the goals and directives of the E.O. to foster a competitive space marketplace while aligning with the Commission's priorities to boost the space economy through an improved licensing regime. With this in mind, we seek comment on how the proposed rules in the NPRM support and align with the policy initiatives outlined in the E.O. We invite commenters to provide feedback on this intersection and offer additional or alternative proposals that the Commission may consider to create a more cohesive regulatory environment for commercial space and satellite operators. We note that as other offices and departments within the Federal Government work to revise agency-specific licensing processes as directed by the E.O., the Commission will continue to monitor any developments and will address any necessary revisions or additions to the Commission's rules at a later date.

IV. Initial Regulatory Flexibility Act Analysis

270. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), the Federal Communications Commission (Commission) has prepared the Initial Regulatory Flexibility Analysis (IRFA) of the policies and rules proposed in the NPRM assessing the possible significant economic impact on a substantial number of small entities. The Commission requests written public comments on the IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments specified on the first page of the NPRM. The Commission will send a copy of the NPRM, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA). In addition, the NPRM and IRFA

(or summaries thereof) will be published in the **Federal Register**.

A. Need for, and Objectives of, the Proposed Rules

271. In the NPRM, the Commission initiates this rulemaking proceeding seeking comment on its proposals to update part 25 of the Commission's rules to improve the application process for space and earth station applicants and licensees, and remove certain rules and references that are no longer relevant or no longer provide the intended benefit to the Commission. The Commission continues its efforts to modernize and update the regulatory framework to promote investment, innovation, and competition in the space economy proposing to replace part 25 with the new proposed part 100 to implement the proposed revised application framework designed to process review of applications with increased speed and efficiency, while providing applicants with a higher degree of predictability during the licensing process. The Commission also proposes to streamline the information required from space station and earth station applicants and proposes to update the ways in which applications are processed and granted for authorization. We seek comment on these proposals along with a number of other potential changes to the licensing process, operational requirements, reporting and information requirements, and compliance mechanisms.

272. The primary objectives of the proposals in the NPRM are: (1) to increase license processing speed, (2) to provide more predictability to applicants and licensees, (3) to provide more flexibility for innovation and for licensees' operations, and (4) to faithfully meet our statutory responsibilities and international obligations in order to create a space and earth station licensing process that can promote the wide availability and proliferation of communications and new technologies for the public, and efficiently scale with the space economy as it continues to grow. To that end, the cornerstone of the proposed licensing process is whether granting a license will serve the ''public convenience, interest, or necessity'' based on the assessment of harmful interference, spectrum efficiency, space safety, and foreign ownership which could undermine the continued growth of the space economy and hinder the public's access to advanced communications services and emerging technologies if not evaluated. The Commission anticipates the modernization of its space and earth station licensing rules and processes to meet the current needs of the space industry, and allow for future expansion and growth of the space economy will facilitate better access and opportunity for companies to enter and compete in the space industry.

B. Legal Basis

273. The proposed action is authorized pursuant to sections 4(i), 7(a), 301, 303, 307, 308, 309, 310, and 332 of the Communications Act of 1934, as amended, U.S.C. 154(i), 157(a), 301, 303, 307, 308, 309, 310, 332.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

274. 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. The RFA generally defines the term ''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 SBA. A ''small business concern'' is one in 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. The SBA establishes small business size standards that agencies are required to use when promulgating regulations relating to small businesses; agencies may establish alternative size standards for use in such programs, but must consult and obtain approval from SBA before doing so.

275. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe three broad groups of small entities that could be directly affected herein. First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the SBA's Office of Advocacy, in general, a small business is an independent business having fewer than 500 employees. These types of small business represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses. Next, ''small organizations'' are not-for-profit enterprises that are independently owned and operated and not dominant in their field. 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. Nationwide, for tax year 2022, there were approximately 530,109 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. Finally, ''small governmental jurisdictions'' are defined as cities, counties, towns, townships, villages, school districts, or special districts with populations of less than fifty thousand. Based on the 2022 U.S. Census of Governments data, we estimate that at least 48,724 out of 90,835 local government jurisdictions have a population of less than 50,000.

276. The rules proposed in the NPRM will apply to small entities in the industries identified in the chart below by their six-digit North American Industry Classification System (NAICS) codes and corresponding SBA size standard. Based on currently available U.S. Census data regarding the estimated number of small firms in each identified industry, we conclude that the proposed rules will impact a substantial number of small entities. Where available, we also provide additional information regarding the number of potentially affected entities in the industries identified below.

Regulated industry	NAICS code	SBA size standard	Total firms	Small firms	% Small firms in industry
Wired Telecommunications Carriers	517111	1,500 employees	3,054	2,964	97.05
Satellite Telecommunications	517410	$47 million	275	242	88.00
All Other Telecommunications	517810	$40 million	1,079	1,039	96.29

D. Description of Economic Impact and Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

277. The RFA directs agencies to describe the economic impact of proposed rules on small entities, as well as projected reporting, recordkeeping and other compliance requirements, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record.

278. The NPRM proposes a number of rule changes that will affect the application and licensing process and requirements for space and earth station operators. The NPRM proposes to add an additional milestone deployment requirement, increasing the number of milestone requirements for NGSO systems from two to three, each requiring notice to the Commission of meeting the respective milestone. However, the Commission proposes to remove the milestone requirement for GSO system operators.

279. *Licensing Assembly Line.* The Commission proposes an assembly line approach to modernizing the licensing process which would adopt a modular application to replace the submission of one large, narrative-heavy application, with a process that allows applicants to complete specific sections (or modules) that are tailored to their system type and licensing needs. Applicants can file the main application form FCC Form 312—Main Form once and its schedules (Schedules O and F) based on the type of system license for which they are applying. The key information sections for space station applications include the General and Ownership Information on FCC Form 312—Main Form, Orbital Elements on Schedule O, and Frequency Elements on Scheule F. Earth station applicants would file Form 312 and a Schedule B. In addition, for Supplemental Coverage from Space (SCS) and market access requests additional information would be required. The Commission intends to apply this modular application approach to any type of application, including initial space and earth stations applications, requests for market access, amendments, modifications, requests for STA, and any other applications. In future filings, an applicant could reference their FCC Form 312—Main Form, and certify that the information in FCC Form 312—Main Form remains accurate.

280. The NPRM proposes that certain written explanation filings will be replaced with certifications requirements, which will reduce the burdens of administrative preparation and filings. For example, the Commission proposes to align its certification requirements in this proceeding with a May 2025 rulemaking proposing foreign adversary ownership certification and information collection requirements for all entities holding Commission licenses or authorizations. Applicants would still need to include ownership charts and plans for managing orbital debris under this proposal. The Commission also proposes the requirement that all applications must be filed electronically. This new approach is expected to reduce administrative work requirements and delays, making the licensing process more predictable and easier for companies to plan around. It is also designed to be scalable to grow with the industry which will benefit small entities. Cost savings for small entities will result from removing repetitive paperwork, simplifying forms, reducing the need for STA and waiver requests, and allow for future automation. Further, because the proposed process is less cumbersome and more straightforward, it is likely that small applicants will not need to hire lawyers or engineers for routine filings, although more complex cases may still require professional assistance.

281. *Additional Reforms for Licensing Efficiency.* The proposed reporting and recordkeeping requirements clarify when applications may be dismissed as incomplete or non-compliant, which should allow small and other applicants to sufficiently prepare their application to avoid unnecessary delays. The proposed process for amending or modifying applications has been streamlined to allow a licensee to make changes to their systems and operations without notifying or seeking approval from the Commission depending on the type of modification. The reporting/notification requirement for modifications will fall into three groups: (1) those that an applicant can make without informing the Commission; (2) minor modifications, or those that an applicant can make but will need to notify the Commission either before or after the modification; and (3) major modifications, or any modification that meets certain parameters but is also not covered by the first two categories, and that requires Commission authorization. By expanding the scope of permissible modifications the need for STA requests should be reduced. These changes are expected to lower regulatory uncertainty for small and other entities, and speed up decision-making which in turn should spur investment. Small entities should incur cost savings from the elimination of unnecessary filings, and should face lower compliance costs and fewer administrative burdens. Consistent with the impacts of the processes discussed in the preceding paragraph, the removal of requirements, and clarification and simplification of processes for additional efficiency should reduce the need for small entities to hire legal or technical consultants for filing of standard applications.

282. *Operational and Technical Requirements.* The proposed operational and technical requirements in the NPRM introduce several new reporting and recordkeeping obligations aimed at improving space safety and regulatory efficiency. The Commission proposes to eliminate the annual reporting requirement for space station licensees and market access recipients, and proposes to amend the timeline for updating point of contact information from within ten days to within 48 hours of the change. The Commission also proposes to modernize data sharing by requiring the submission of orbital ephemerides data into SSA systems. More specifically, we propose to require space station licensees and market access recipients to submit ephemeris data for all space stations in an authorized satellite system to either the 18th Space Control Squadron, or to one or more U.S. SSA systems as selected by the Commission.

283. To address space system safety and ensure that licensees are monitoring the safety and efficacy of licensed and operating systems, the NPRM proposes a reporting requirement that would require licensed operators of NGSO systems to report on the safety of their operating systems on a biannual basis. The semi-annual reports would cover a preceding six-month period on space system safety, the number of conjunction events, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. The proposed rules in the NPRM also update requirements for orbital debris mitigation and end-of-life reporting. These measures are expected to promote safer and more efficient operations while reducing long-term costs by helping to prevent collisions and avoid regulatory delays. Small entities are likely to experience additional cost savings from streamlined antenna and radiation hazard rules, as well as the elimination of outdated technical standards and redundant reporting.

284. Next we turn to our discussion to the compliance costs for the reporting, recordkeeping and other proposals in the NPRM. The Commission estimates the total cost for an operator to implement the earth and space station licensing process modernization rules will be $90,000. This estimate is primarily driven by the cost of preparing semi-annual space system safety reports, which require information on the number of conjunction events identified for satellites in the NGSO system during the reporting period, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. However, overall, we expect that our proposals would significantly reduce regulatory compliance costs, resulting in annual cost savings of at least $165,000 each for small and other operators. We attribute these potential savings to limits on the cases in which operators are required to submit modification filings and STA requests, elimination of the need for applicants to request certain waivers and provide associated showings, elimination of the need for operators to meet certain milestone requirements, elimination of the need for applicants to resubmit an FCC Form 312—Main Form in certain circumstances, ability for applicants to submit an ITU filing without the need for prior filings with the Commission, and elimination of the bond requirement for certain space station operators. Small entities may need to hire professionals to comply with the proposals in the NPRM if adopted however, the degree to which the services of such professionals are required should be reduced in light of the aforementioned elimination of filings, showings and other regulatory requirements. These cost savings are in addition to other benefits that are more difficult to quantify, but nevertheless important, such as reduced harmful interference, increased spectrum efficiency, and space safety.

285. The Commission seeks comment on costs associated with the modernization process we discuss in the NPRM, including but not limited to our estimates, assumptions, calculations, and any costs or other burdens we did not consider and/or include that are relevant to the costs for small and other entities to comply with the proposals in this proceeding.

E. Discussion of Significant Alternatives Considered That Minimize the Significant Economic Impact on Small Entities

286. The RFA directs agencies to provide a description of any significant alternatives to the proposed rules that would accomplish the stated objectives of applicable statutes, and minimize any significant impact on small entities. The discussion is required to include alternatives such as: ''(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.''

287. The NPRM proposes to reorganize the current part 25 rules and both modify and simplify the existing requirements to provide an updated framework for space and earth station applicants under a new proposed part 100 of the Commission's rules. All of these proposals could lessen the burdens of the licensing process and operational requirements for space and earth station operators. Specifically, the NPRM proposes to replace a number of the current information requirements included on space and earth station applications with certifications, intended to significantly cut down on the time required to prepare and complete applications and the related costs to applicants. Additionally, the *NPRM* proposes to permit certain qualified applications to receive a conditional grant of authority prior to submission of the required orbital debris plan materials. The NPRM also proposes to increase the number of permissible space station operations that do not require an application for modification or notification of the operation. These proposals are designed to simplify the overall application process and help to clarify the specific required information as part of the licensing stage for space and earth station operator entities. The NPRM seeks comment on each proposed rule, as well as the application framework in general, as to whether the Commission's proposed revisions would provide the intended increased application processing speed, predictability, and clarity for applicants. The proposed revisions would ultimately lead to benefits for space and earth station operators in the long term. The NPRM also proposes to eliminate unnecessary technical and information filing requirements along with outdated or unused rule provisions.

288. To assist with the Commission's evaluation of the economic impact on small entities that may result from the actions and alternatives that have been discussed in this proceeding, the NPRM seeks alternative proposals, and requests information on the potential costs of such alternatives to small and other licensees. The Commission expects to consider more fully the economic impact on small entities following its review of comments filed in response to the NPRM, including costs and benefits information. Alternative proposals and approaches from commenters could also help the Commission further minimize the economic impact on small entities. The Commission's evaluation of the comments filed in this proceeding will shape the final conclusions it reaches, the final alternatives it considers, and the actions it ultimately takes in this proceeding to minimize any significant economic impact that may occur on small entities from the final rules that are ultimately adopted.

289. The NPRM seeks comment from all interested parties. Small entities are encouraged to bring to the Commission's attention any specific concerns that they may have with the proposals outlined in the NPRM.

F. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rules

290. None.

V. Ordering Clauses

291. *It is ordered,* pursuant to sections 4(i), 4(j), 7(a), 301, 303, 307, 308, 309, 310, 312, 316, 332 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 154(j), 157(a), 301, 303, 307, 308, 309, 310, 312, 316, 332, that the NPRM *is adopted.*

292. *It is further ordered* that the Office of the Secretary, *shall send* a copy of the NPRM, including the Initial Regulatory Flexibility Act Analysis, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with Section 603(a) of the Regulatory Flexibility Act.

List of Subjects 47 CFR Part 25

Administrative practice and procedure, Satellites.

Federal Communications Commission.

Marlene Dortch,

Secretary.

Proposed Rules

For the reasons discussed, the Federal Communications Commission proposes to amend title 47 of the Code of Federal

Regulations to remove part 25 and add part 100, as follows:

PART 25—[REMOVED]

■ 1. Remove part 25.

■ 2. Add part 100 to read as follows:

PART 100—SPACE AND EARTH STATION SERVICES

Subpart A—General

Subpart B—Applications and Licenses

Space Station Applications

Earth Station Applications

General Application Processing

Subpart C—Operational and Frequency Specific Requirements

General Space Station Rules

NGSO Frequency-Specific Rules

GSO Frequency-Specific Rules

Coordination/Interference/Sharing for Space Stations

Orbital Debris

General Earth Station Rules

General Earth Station Coordination and Performance Requirements

Frequency-Specific Earth Station Rules

Miscellaneous Rules

Subpart D—Compliance

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

Subpart A—General

§ 100.1 Scope.

The rules and regulations in this part are in addition to and supplement the rules and regulations contained in or to be added to, other parts of this chapter currently in force, or which may subsequently be promulgated, and which are applicable to matters relating to communications by space stations and earth stations.

§ 100.2 Station Authorization Required.

No person shall use or operate apparatus for the transmission of energy or communications or signals by space or earth stations except under, and in

accordance with, an appropriate authorization granted by the Federal Communications Commission.

§ 100.3 Definitions.

1.5/1.6 GHz Mobile-Satellite Service. Mobile-Satellite Service that operates in the 1525–1559 MHz space-to-Earth band and the 1626.5–1660.5 MHz Earth-to-space band, or any portion thereof.

1.6/2.4 GHz Mobile-Satellite Service. A Mobile-Satellite Service that operates in the 1610–1626.5 MHz and 2483.5–2500 MHz bands, or in any portion thereof.

2 GHz Mobile-Satellite Service. A Mobile-Satellite Service that operates in the 2000–2020 MHz and 2180–2200 MHz bands, or in any portion thereof.

17/24 GHz Broadcasting-Satellite Service (17/24 GHz BSS). A radiocommunication service involving transmission from one or more feeder-link earth stations to other earth stations via geostationary satellites, in the 17.3–17.7 GHz (space-to-Earth) (domestic allocation), 17.3–17.8 GHz (space-to-Earth) (international allocation) and 24.75–25.25 GHz (Earth-to-space) bands. For purposes of the application processing provisions of this part, the 17/24 GHz BSS is a GSO-like service. Unless specifically stated otherwise, 17/24 GHz BSS systems are subject to the rules in this part applicable to FSS.

Ancillary Terrestrial Component (ATC). A terrestrial communications network used in conjunction with a qualifying satellite network system authorized pursuant to these rules and the conditions established in the Orders issued in IB Docket No. 01–185, *Flexibility for Delivery of Communications by Mobile-Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band.*

Ancillary Terrestrial Component (ATC) base station. A terrestrial fixed facility used to transmit communications to or receive communications from one or more ancillary terrestrial component mobile terminals.

Ancillary Terrestrial Component (ATC) mobile terminal. A terrestrial mobile facility used to transmit communications to or receive communications from an ancillary terrestrial component base station or a space station.

Blanket license. A blanket license is a license for:

(a) Multiple earth stations in the FSS or MSS, or for SDARS terrestrial repeaters, that may be operated anywhere within a geographic area authorized in the license; or

(b) Multiple space stations in non-geostationary-orbit.

Contiguous United States (CONUS). For purposes of subparts B and C of this part, the contiguous United States consists of the contiguous 48 states and the District of Columbia as defined by Partial Economic Areas Nos. 1–41, 43–211, 213–263, 265–297, 299–359, and 361–411, which includes areas within 12 nautical miles of the U.S. Gulf coastline. In this context, the rest of the United States includes the Honolulu, Anchorage, Kodiak, Fairbanks, Juneau, Puerto Rico, Guam-Northern Mariana Islands, U.S. Virgin Islands, American Samoa, and the Gulf of America PEAs (Nos. 42, 212, 264, 298, 360, 412–416). *See* § 27.6(m) of this chapter.

Conventional C-band. The 3700–4200 MHz (space-to-Earth) and 5925–6425 MHz (Earth-to-space) FSS frequency bands.

Conventional Ka-band. The 18.3–18.8 GHz (space-to-Earth), 19.7–20.2 GHz (space-to-Earth), 28.35–28.6 GHz (Earth-to-space), and 29.25–30.0 GHz (Earth-to-space) frequency bands, which the Commission has designated as primary for GSO FSS operation.

Conventional Ku-band. The 11.7–12.2 GHz (space-to-Earth) and 14.0–14.5 GHz (Earth-to-space) FSS frequency bands.

Coordination distance. When determining the need for coordination, the distance on a given azimuth from an earth station sharing the same frequency band with terrestrial stations, or from a transmitting earth station sharing the same bidirectionally allocated frequency band with receiving earth stations, beyond which the level of permissible interference will not be exceeded and coordination is therefore not required.

Direct Broadcast Satellite (DBS) Service. A radiocommunication service in which signals transmitted or retransmitted by Broadcasting-Satellite Service space stations in the 12.2–12.7 GHz band are intended for direct reception by subscribers or the general public. For the purposes of this definition, the term direct reception includes individual reception and community reception.

Earth Station Aboard Aircraft (ESAA). An earth station operating aboard an aircraft that receives from and transmits to Fixed-Satellite Service space stations.

Earth Station in Motion (ESIM). A term that collectively designates ESV, VMES and ESAA earth stations, as defined in this section.

Earth Station on Vessel (ESV). An earth station onboard a craft designed for traveling on water, receiving from and transmitting to Fixed-Satellite Service space stations.

Equivalent diameter. When circular aperture reflector antennas are employed, the size of the antenna is generally expressed as the diameter of the antenna's main reflector. When non-reflector or non-circular-aperture antennas are employed, the equivalent diameter is the diameter of a hypothetical circular-aperture antenna with the same aperture area as the actual antenna. For example, an elliptical aperture antenna with major axis a and minor axis b will have an equivalent diameter of $[a \times b]^{1/2}$. A rectangular aperture antenna with length l and width w will have an equivalent diameter of $[4(l \times w)/\pi]^{1/2}$.

Equivalent Power Flux Density (EPFD). The sum of the power flux densities produced at a geostationary-orbit receive earth or space station on the Earth's surface or in the geostationary orbit, as appropriate, by all the transmit stations within a non-geostationary-orbit Fixed-Satellite Service system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction.

The equivalent power flux density, in dB(W/m^2) in the reference bandwidth, is calculated using the following formula:

$$10 \log_{10} \left[\sum_{n=1}^{N_a} 10^{\frac{p_i}{10}} \frac{G_t(\theta_i)}{4\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,max}} \right]$$

Where:

N_a is the number of transmit stations in the non-geostationary orbit system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i is the index of the transmit station considered in the non-geostationary orbit system;

P_i is the RF power at the input of the antenna of the transmit station, considered in the non-geostationary orbit system in dBW in the reference bandwidth;

θ_i is the off-axis angle between the boresight of the transmit station considered in the non-geostationary orbit system and the direction of the GSO receive station;

$G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the station considered in the non-geostationary orbit system in the direction of the GSO receive station;

d_i is the distance in meters between the transmit station considered in the non-geostationary orbit system and the GSO receive station;

ϕ_i is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the *i*th transmit station considered in the non-geostationary orbit system;

$G_r(\theta_i)$ is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the *i*th transmit station considered in the non-geostationary orbit system;

$G_{r,max}$ is the maximum gain (as a ratio) of the antenna of the GSO receive station.

Expedited processing. The processing of applications that are not subject to any exceptions to expedited processing.

Extended C-band. The 3600–3700 MHz (space-to-Earth), 5850–5925 MHz (Earth-to-space), and 6425–6725 MHz (Earth-to-space) FSS frequency bands.

Extended Ka-band. The 17.3–18.3 GHz (space-to-Earth), 18.8–19.4 GHz (space-to-Earth), 19.6–19.7 GHz (space-to-Earth), 27.5–28.35 GHz (Earth-to-space), and 28.6–29.1 GHz (Earth-to-space) FSS frequency bands.

Extended Ku-band. The 10.95–11.2 GHz (space-to-Earth), 11.45–11.7 GHz (space-to-Earth), and 13.75–14.0 GHz bands (Earth-to-space) FSS frequency bands.

Fixed earth station. An earth station intended to be used at a fixed position. The position may be a specified fixed point or any fixed point within a specified area.

Geographically independent area (GIA). Any of the following six areas:

(1) CONUS;

(2) Alaska;

(3) Hawaii;

(4) American Samoa;

(5) Puerto Rico/U.S. Virgin Islands; and

(6) Guam/Northern Mariana Islands.

Geostationary-orbit (GSO) satellite. A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a geosynchronous satellite which remains approximately fixed relative to the Earth.

GSO satellite system. A system composed of one or more geostationary-orbit satellites operating together at a single orbital location and under a single space station call sign.

Immovable earth station. An earth station licensed under either a Nationwide, Non-Site License or an individual location authorization that is located at a single fixed location that must be registered and coordinated before operating.

Inter-Satellite Service. A radiocommunication service providing links between artificial satellites.

(RR)*Ku band.* In this rule part, the terms ''Ku band'' and ''conventional Ku band'' refer to the 11.7–12.2 GHz (space-to-Earth) and 14.0–14.5 GHz (Earth-to-space) bands. These paired bands are allocated to the Fixed-Satellite Service and are also referred to as the 12/14 GHz bands.

Licensable System. A system that proports to use an apparatus in space for the use of radio frequency spectrum to communicate with an apparatus or object on the Earth's surface or within the major portion of the Earth's atmosphere or between satellite or spacecraft beyond the major portion of the Earth's atmosphere.

Network Control and Monitoring Center (NCMC). As used in part 100, a facility that has the capability to remotely control earth stations operating as part of a satellite network or system.

NGSO. Non-geostationary orbit.

NGSO FSS gateway earth station. An earth station or complex of multiple earth station antennas that supports the routing and switching functions of an NGSO FSS system and that does not originate or terminate communication traffic. An NGSO FSS gateway earth station may also be used for telemetry, tracking, and command transmissions.

NGSO satellite system. A system of one or more non-geostationary orbit satellites operating together under one space station call sign and that is not a Variable Trajectory Spacecraft System.

Non-Voice, Non-Geostationary (NVNG) Mobile-Satellite Service. A Mobile-Satellite Service reserved for use by non-geostationary satellites in the provision of non-voice communications in the 137–138 MHz (space-to-Earth), 148–150.05 MHz (Earth-to-space), 399.9–400.05 MHz (Earth-to-space), and 400.15–401 MHz (space-to-Earth) bands, which may include satellite links between land earth stations at fixed locations.

Permitted Space Station List. A list of all U.S.-licensed geostationary-orbit space stations providing Fixed-Satellite Service in the extended or conventional C-band, the extended or conventional Ku-band, the conventional Ka-band, or the 24.75–25.25 GHz band, as well as non-U.S.-licensed geostationary-orbit space stations approved for U.S. market access to provide Fixed-Satellite Service in the conventional C-band, conventional Ku-band, or 18.3–18.8 GHz, 19.7–20.2 GHz, 28.35–28.6 GHz, and 29.25–30.0 GHz bands.

Plane perpendicular to the GSO arc. The plane that is perpendicular to the ''plane tangent to the GSO arc,'' as defined below, and includes a line between the earth station in question and the GSO space station that it is communicating with.

Plane tangent to the GSO arc. The plane defined by the location of an earth station's transmitting antenna and a line in the equatorial plane that is tangent to the GSO arc at the location of the GSO space station that the earth station is communicating with.

Power flux density (PFD). The amount of power flow through a unit area within a unit bandwidth. The units of power flux density are those of power spectral density per unit area, namely watts per hertz per square meter. These units are generally expressed in decibel form as $dB(W/Hz/m^2)$, $dB(W/m^2)$ in a 4 kHz band, or $dB(W/m^2)$ in a 1 MHz band.

Power Spectral Density (PSD). The amount of an emission's transmitted carrier power applied at the antenna input falling within the stated bandwidth. The units of power spectral density are watts per hertz and are generally expressed in decibel form as dB(W/Hz) when measured in a 1 Hz bandwidth, dB(W/4kHz) when measured in a 4 kHz bandwidth, or dB(W/MHz) when measured in a 1 MHz bandwidth.

Protection areas. The geographic regions where U.S. Department of Defense meteorological satellite systems or National Oceanic and Atmospheric Administration meteorological satellite systems, or both such systems, receive signals from low earth orbiting satellites. Also, areas around NGSO MSS feeder-link earth stations in the 1.6/2.4 GHz Mobile-Satellite Service determined in the manner specified in § 100.283.

Replacement space station. A space station that is authorized to operate in the same frequency bands and with the same coverage area as the space station to be replaced, at an orbital location within 0.15° of the assigned location of a GSO space station to be replaced or in

the authorized orbit of an existing NGSO space station to be replaced, and that is scheduled to be launched so that it will be brought into use at approximately the same time as, but no later than, the existing space station is retired.

Satellite. A body which revolves around another body of preponderant mass and which has a motion primarily and permanently determined by the force of attraction of that other body. (RR)

Satellite Digital Audio Radio Service (SDARS). A radiocommunication service in which audio programming is digitally transmitted by one or more space stations directly to fixed, mobile, and/or portable stations, and which may involve complementary repeating terrestrial transmitters and telemetry, tracking and command facilities.

SCS earth stations. Any earth station used for the provision of supplemental coverage from space.

Selected assignment. A spectrum assignment voluntarily identified by a 2 GHz MSS licensee at the time that the licensee's first 2 GHz Mobile-Satellite Service satellite reaches its intended orbit.

Shapeable antenna beam. A satellite transmit or receive antenna beam, the gain pattern of which can be modified at any time without physically repositioning a satellite antenna reflector.

Skew angle. The angle between the minor axis of an axially asymmetric antenna beam and the plane tangent to the GSO arc.

Spacecraft. A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere. (RR)

Space radiocommunication. Any radiocommunication involving the use of one or more space stations or the use of one or more reflecting satellites or other objects in space. (RR)

Space station. A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere. (RR)

Space system. Any group of cooperating earth stations and/or space stations employing space radiocommunication for specific purposes. (RR)

Supplemental coverage from space (SCS). The provision of coverage to terrestrial wireless subscribers through an arrangement or agreement (see § 1.9047 of this chapter) between one or more NGSO or GSO operator(s) and one or more terrestrial wireless licensee(s), involving transmissions between space stations and SCS earth stations. NGSO and GSO operators and terrestrial wireless service licensees seeking to provide SCS must be authorized in compliance with § 100.113.

Terrestrial station. A station effecting terrestrial radiocommunication.

Two-degree-compliant space station. A GSO FSS space station operating in the conventional or extended C-bands, the conventional or extended Ku-bands, the 24.75–25.25 GHz band, or the conventional or extended Ka-bands within the limits on downlink equivalent isotropically radiated power (EIRP) density or PFD specified in § 25.140(a)(3) or (b)(3) and communicating only with earth stations operating in conformance with routine uplink parameters specified in § 100.278.

Vehicle-Mounted Earth Station (VMES). An earth station, operating from a motorized vehicle that travels primarily on land, that receives from and transmits to Fixed-Satellite Service space stations and operates within the United States.

Variable Trajectory Spacecraft System (VTSS). One or more spacecraft either operating beyond the geosynchronous orbit or operating without fixed or predictable orbital patterns over the course of its lifetime and operating under one space station call sign.

§ 100.4 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved incorporation by reference (IBR) material is available for inspection at the FCC and the National Archives and Records Administration (NARA).

(b) European Telecommunications Standards Institute (ETSI), 650 Route des Lucioles, 06921 Sophia-Antipolis Cedex, France; *http://www.etsi.org;* Voice: +33 (0)4 92 94 42 00; Fax: +33 (0)4 93 65 47 16; email: *webstore@etsi.org.*

(1) ETSI TS 103 129 V1.1.2 (2014–03), ''Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation of a carrier identification system (DVB–CID) for satellite transmission,'' Version 1.1.2, March 2014. Incorporation by reference approved for § 25.281(b).

(c) International Telecommunication Union (ITU), Place des Nations, 1211 Geneva 20 Switzerland; *www.itu.int;* Voice: +41 22 730 5111; Fax: +41 22 733 7256; email: *itumail@itu.int.*

(1) ITU Radio Regulations, Volume 1: Articles, Article 21, ''Terrestrial and space services sharing frequency bands above 1 GHz,'' Section V, ''Limits of power flux-density from space stations,'' Edition of 2024, copyright 2024, *http://www.itu.int/pub/R-REG-RR-2016.* Incorporation by reference approved for § 100.222(a).

(2) ITU Radio Regulations, Volume 1: Articles, Article 22, ''Space services,'' Section II, ''Control of interference to geostationary-satellite systems,'' Edition of 2024, copyright 2024, *http://www.itu.int/pub/R-REG-RR-2016.* Incorporation by reference approved for §§ 100.222(a), 100.240(a).

(3) ITU Radio Regulations, Volume 2: Appendices, Appendix 30, ''Provisions for all services and associated Plans and List 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),'' Edition of 2012, *http://www.itu.int/pub/R-REG-RR-2012.* Incorporation by reference approved for §§ 100.100, 100.143, 100.230, and 100.231.

(4) ITU Radio Regulations, Volume 2: Appendices, Appendix 30A, ''Provisions and associated Plans and List 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 and 17.3–18.1 GHz in Regions 1 and 3, and 17.3–17.8 GHz in Region 2,'' Edition of 2012, *http://www.itu.int/pub/R-REG-RR-2012.* Incorporation by reference approved for §§ 100.100, 100.143, 100.230, and 100.231.

(5) ITU Radio Regulations, Volume 2: Appendices, Appendix 30B, ''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, 11.2–11.45 GHz and 12.75–13.25 GHz,'' Edition of 2012, *http://www.itu.int/pub/R-REG-RR-2012.* Incorporation by reference approved for §§ 100.100 and 100.230.

(6) ITU Radio Regulations, Volume 3: Resolutions and Recommendations, Resolution 76 (Rev.WRC–15), ''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,'' Edition of 2024, copyright 2024, *http://www.itu.int/pub/R-REG-RR-2016.* Incorporation by reference approved for § 100.222(a).

(7) ITU Radio Regulations, Volume 3: Resolutions and Recommendations, Resolution 85 (WRC–03), ''Application of Article 22 of the Radio Regulations to the protection of geostationary fixed-

satellite service and broadcasting-satellite service networks from non-geostationary fixed-satellite service systems,'' Edition of 2024, copyright 2024, *http://www.itu.int/pub/R-REG-RR-2016.* Incorporation by reference approved for § 100.222(b).

(8) Recommendation ITU–R M.1186 ''Technical Considerations for the Coordination Between Mobile Satellite Service (MSS) Networks Utilizing Code Division Multiple Access (CDMA) and Other Spread Spectrum Techniques in the 1–3 GHz Band'' (1995). Incorporation by reference approved for § 100.284.

(d) Radio Technical Commission for Maritime Services (RTCM). 2200 Wilson Blvd., Suite 102–109, Arlington, VA 22201; email: *info@rtcm.org;* website: *www.rtcm.org.*

(1) RTCM 12800.0, ''Satellite Emergency Notification Devices (SENDs),'' dated August 1, 2011. Incorporation by reference approved for § 100.2901.

§ 100.5 Cross-reference.

(a) Space and SCS earth stations providing SCS are subject to technical rules in parts 2, 22, 24, and 27 of this chapter where applicable.

(b) Space and earth stations in the Experimental Radio Service may be subject to licensing under part 5 of this chapter.

(c) Space and earth stations in the 3700–4200 MHz band may be subject to transition rules in part 27 of this chapter.

(d) Ship earth stations in the Maritime Mobile-Satellite Service transmitting in the 1626.5–1646.5 MHz band are subject to licensing under part 80 of this chapter.

(e) Earth stations in the Aeronautical Mobile-Satellite (Route) Service are subject to licensing under part 87 of this chapter.

(f) Space and earth stations in the Amateur Satellite Service are licensed under part 97 of this chapter.

§ 100.6 Preemption of local zoning of earth stations.

(a) Any state or local zoning, land-use, building, or similar regulation that materially limits transmission or reception by satellite earth station antennas or imposes more than minimal costs on users of such antennas, is preempted unless the promulgating authority can demonstrate that such regulation is reasonable, except that nonfederal regulation of radio frequency emissions is not preempted by this section. For purposes of this paragraph (a), reasonable means that the local regulation:

(1) Has a clearly defined health, safety, or aesthetic objective that is stated in the text of the regulation itself; and

(2) Furthers the stated health, safety or aesthetic objective without unnecessarily burdening the federal interests in ensuring access to satellite services and in promoting fair and effective competition among competing communications service providers.

(b)

(1) Any state or local zoning, land-use, building, or similar regulation that affects the installation, maintenance, or use of a satellite earth station antenna that is two meters or less in diameter and is located or proposed to be located in any area where commercial or industrial uses are generally permitted by non-federal land-use regulation shall be presumed unreasonable and is therefore preempted subject to paragraph (b)(2) of this section. No civil, criminal, administrative, or other legal action of any kind shall be taken to enforce any regulation covered by this presumption unless the promulgating authority has obtained a waiver from the Commission pursuant to paragraph (e) of this section, or a final declaration from the Commission or a court of competent jurisdiction that the presumption has been rebutted pursuant to paragraph (b)(2) of this section.

(2) Any presumption arising from paragraph (b)(1) of this section may be rebutted upon a showing that the regulation in question:

(i) Is necessary to accomplish a clearly defined health or safety objective that is stated in the text of the regulation itself;

(ii) Is no more burdensome to satellite users than is necessary to achieve the health or safety objective; and

(iii) Is specifically applicable on its face to antennas of the class described in paragraph (b) of this section.

(c) Any person aggrieved by the application or potential application of a state or local zoning or other regulation in violation of paragraph (a) of this section may, after exhausting all nonfederal administrative remedies, file a petition with the Commission requesting a declaration that the state or local regulation in question is preempted by this section. Nonfederal administrative remedies, which do not include judicial appeals of administrative determinations, shall be deemed exhausted when:

(1) The petitioner's application for a permit or other authorization required by the state or local authority has been denied and any administrative appeal and variance procedure has been exhausted;

(2) The petitioner's application for a permit or other authorization required by the state or local authority has been on file for ninety days without final action;

(3) The petitioner has received a permit or other authorization required by the state or local authority that is conditioned upon the petitioner's expenditure of a sum of money, including costs required to screen, pole-mount, or otherwise specially install the antenna, greater than the aggregate purchase or total lease cost of the equipment as normally installed; or

(4) A state or local authority has notified the petitioner of impending civil or criminal action in a court of law and there are no more nonfederal administrative steps to be taken.

(d) Procedures regarding filing petitions requesting declaratory rulings and other related pleadings will be set forth in subsequent Public Notices. All allegations of fact contained in petitions and related pleadings must be supported by affidavit of a person or persons with personal knowledge thereof.

(e) Any state or local authority that wishes to maintain and enforce zoning or other regulations inconsistent with this section may apply to the Commission for a full or partial waiver of this section. Such waivers may be granted by the Commission in its sole discretion, upon a showing by the applicant that local concerns of a highly specialized or unusual nature create a necessity for regulation inconsistent with this section. No application for waiver shall be considered unless it specifically sets forth the particular regulation for which waiver is sought. Waivers granted in accordance with this section shall not apply to later-enacted or amended regulations by the local authority unless the Commission expressly orders otherwise.

(f) A satellite earth station antenna that is designed to receive direct broadcast satellite service, including direct-to-home satellite services, that is one meter or less in diameter or is located in Alaska is covered by the regulations in § 1.4000 of this chapter.

Subpart B—Applications and Licenses

General Application Requirements

§ 100.100 Filing of applications.

(a) For purposes of this section, applications include all filings by an entity related to any application or authorization under this part including space and earth station applications, requests for market access, amendments, modifications, and requests for special

temporary authority and any other applications, supplements, addenda, requests, or notifications.

(b) All applications must be filed electronically and submitted via the International Communications Filing System (ICFS), or any successor system designated by the Space Bureau.

(c) The Commission delegates to the Space Bureau the authority to issue public notices directing changes in the form and format for filing all space station and earth station applications and other filings under this part. Filing in the specified form and format is a requirement of the application.

(d) All applicants must submit FCC Form 312—Main Form.

(e) Space station applicants must submit the information required in §§ 100.110, 100.111, and 100.112 on FCC Form 312—Main Form, Schedule O, and Schedule F.

(f) An application for a multi-orbit or multi-service system must provide the required information for each of the proposed orbits and services that are described in § 100.110.

(g) Earth station applicants must submit the general information required in § 100.120 and the information required by §§ 100.120 and 100.121 on FCC Form 312—Main Form and Schedule B.

(h) Applications for Commission consent to the assignment of a license or the transfer of control of a licensee, and notifications of assignment or transfer of control when permitted under this part, must be filed on FCC Form 312—Main Form and Schedule A.

(i) Requests for U.S. market access must include all additional information required by § 100.114.

(j) Applicants may submit required or additional information as a supplement or exhibit to the application filed contemporaneously with the FCC Form 312—Main Form, or any other required schedule or form, in the case of technical limitations with the designated forms.

(k) Application fees must be paid at the time of filing your application in ICFS. A schedule of application fees applicable to this part can be found at § 1.1107 in this chapter. If an application is dismissed, the applicant will generally not be entitled to a refund of the filing fee.

(l) Applicants must respond completely and accurately to all questions and certifications.

(m) Each applicant is responsible for the continuing accuracy and completeness of information furnished in a pending application consistent with the requirements of § 1.65 of this chapter.

§ 100.101 Application requirements of the FCC Form 312—Main Form.

(a) Applicants filing the FCC Form 312—Main Form must include the following information:

(1) *Contact information.*

(i) The name, email, and phone number of the applicant and a designated contact, if different from the applicant; and

(ii) The name, mailing address, email, and telephone number of the person(s), including counsel, to whom inquiries or correspondence should be directed.

(2) *Ownership information.*

(i) *Ownership definitions and methodology.* Applicants under this section must use the definitions and methodology found in § 1.5000 of this chapter.

(ii) *Ownership.* Applicants must disclose the names, citizenship/place of organization, principal place of business, and mailing address of any individual or entity holding a 10% or greater direct or indirect equity or voting interest in the applicant, or a controlling interest, along with the percentages of those interests held.

(iii) *Officers and directors.* Applicants must provide the names, addresses, and citizenship of each individual officer and director of the applicant entity.

(iv) *Ownership diagram.* Applicants must provide a diagram illustrating the applicant's vertical ownership structure, including the direct and indirect equity and voting interests held by each individual and entity listed in response to paragraph (a)(2)(ii) of this section. For assignment and transfer of control applications, the ownership diagram must include both the pre-transaction and post-transaction ownership of the authorization holder.

(3) *Certifications.*

(i) A certification waiving any claim to the use or ownership of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise as required by 47 U.S.C. 304.

(ii) A certification that neither the applicant nor any party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to the Anti-Drug Act of 1988, 21 U.S.C. 862, because of a conviction for possession or distribution of a controlled substance.

(iii) An attestation under penalty of perjury that all information submitted on or associated with any FCC Form 312—Main Form, or that will be associated with FCC Form 312—Main Form, has been verified for accuracy and believed to be complete and accurate at the time of submission.

(b) A single FCC Form 312—Main Form may be associated with multiple applications filed by the same applicant or licensee. If an applicant or licensee already has a current FCC Form 312—Main Form on file when it files an additional authorization request, it may certify that it has a current FCC Form 312—Main Form on file that is complete and accurate.

Space Station Applications

§ 100.110 General space station application requirements.

(a) Applicants for space station licenses must submit the following information:

(1) Type of authorization requested;

(2) Requested license term in years, if different than the default terms in § 100.149;

(3) Contact information, if different than the contact information listed on the FCC Form 312—Main Form associated with the applicant:

(i) Name, address, email, and telephone number of the applicant;

(ii) Name, address, email, and telephone number of the person(s), including counsel, to whom inquiries or correspondence should be directed;

(iii) Name, address, email, and telephone number of the person(s) or entity with the authority and capability to cease transmissions of any service for which the application seeks authorization and who must be available 24/7 365 days a year and located within the United States;

(4) A comprehensive statement describing the satellite system, including orbits, any service(s) to be provided, and planned operations (including the service areas); and

(5) A brief description of how the proposed operations would serve the public interest.

(b) An operator may apply for multiple GSO satellites under a single call sign so long as all necessary information is provided for each space station listed in the application.

(c) To the extent that satellites in an NGSO satellite system will be technically identical, the applicant may submit an application for a blanket license for those satellites that are technically identical. If the satellites and space stations in the NGSO satellite system will not be technically identical, the applicant must provide the information required for each distinct type.

§ 100.111 Space station orbital information requirements.

(a) *General requirements.* Space station applicants must identify whether they are applying for a GSO satellite system, an NGSO satellite system, a multi-orbit satellite system, or a VTSS authorization. Applicants must submit the following information, depending on the type of application. If an application includes more than one system type, the applicant must submit the required information for each system type.

(b) *GSO satellite systems.* An applicant for a GSO satellite system must provide the following information, except that applications filed pursuant to § 100.139(a)(2) do not need to provide the information in paragraph (b)(3):

(1) *Orbital location.* The requested orbital location(s) of the satellite(s), the east-west, north-south station-keeping range and the accuracy to which the antenna axis (yaw, pitch and roll) attitude will be maintained.

(2) *Certifications.* Certification whether the following criteria will or will not be met for all space station(s) to be operated under the license:

(i) For operations on the U.S. Arc, the operator will comply with the 2-degree spacing requirements; and

(ii) The space station(s) will comply with the orbital debris rules in § 100.260.

(3) *Orbital debris.* An orbital debris mitigation plan and end-of-life disposal plan that demonstrates how the operator will or will not comply with § 100.260 and that supports the certifications made according to paragraph (b)(2) of this section.

(4) *Conditional grant.* Whether the applicant is requesting a grant conditioned on a deferred orbital debris showing under § 100.139(a)(2).

(c) *NGSO satellite systems.* An application for an NGSO satellite system must provide the following information, except that applications filed pursuant to § 100.139(a)(2) do not need to provide the information required by paragraphs (c)(3) and (c)(4)(ii)–(iv) of this section.

(1) *Technical information.*

(i) The number of satellites in the constellation,

(ii) The number of in-orbit spares if any,

(iii) The orbital planes and the number of satellites in each plane,

(iv) The inclination of the orbital plane(s),

(v) The orbital period,

(vi) The apogee,

(vii) The perigee,

(viii) The argument(s) of perigee,

(ix) Active service arc(s),

(x) Right ascension of the ascending node(s),

(xi) The initial phase angle at the reference time for each satellite in each orbital plane,

(xii) The tolerances with which the orbital parameters will be maintained, including apogee, perigee, inclination, and the right ascension of the ascending node(s), and

(xiii) Estimated operational lifetime of each satellite in the constellation.

(2) *Certifications.* Applicants must certify whether the following criteria will or will not be met for all satellites that the applicant proposes to operate under the license:

(i) The space station(s) will operate only in non-geostationary orbit;

(ii) The space station(s) will be identifiable by a unique signal-based telemetry marker distinguishing it from other space stations or space objects;

(iii) The satellite(s) will be 10 cm or larger in the smallest dimension;

(iv) The operator will take appropriate steps to assess and mitigate collision risk upon receipt of a space situational awareness conjunction warning, including, but not limited to: contacting the operator of any active spacecraft involved in such a warning, sharing ephemeris data and other appropriate operational information with any such operator, and modifying satellite attitude and/or operations.

(v) The probability that any individual satellite will become a source of debris by collision with small debris or meteoroids that would cause loss of control and prevent disposal is 0.01 (1 in 100) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or a higher fidelity assessment tool;

(vi) The probability of collision between each satellite and any large object (10 centimeters or larger) during the orbital lifetime of the space station, including any de-orbit phases is 0.001 (1 in 1,000) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or higher fidelity tool. The collision risk may be assumed zero for a satellite during any period in which the satellite will be maneuvered effectively to avoid colliding with large objects;

(vii) The probability of human casualty from portions of the spacecraft surviving re-entry and reaching the surface of the Earth with a kinetic energy in excess of 15 joules is 0.0001 (1 in 10,000) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or higher fidelity tool;

(viii) The stored energy will be removed at the end of life for each satellite, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures;

(ix) The space station(s) will be disposed of via atmospheric re-entry;

(x) The space station(s) will de-orbit no later than five years after the end of the mission; and

(xi) The system will maintain a probability of success of disposal of 0.9 or greater for any individual space station.

(3) *Orbital debris.* An orbital debris mitigation plan and end-of-life disposal plan that demonstrates how the proposal will or will not comply with §§ 100.260 and 100.261 and that supports the certifications made pursuant to paragraph (c)(2) of this section.

(4) *Additional information.* Applicants must provide the following information:

(i) Whether the applicant is requesting an authorization conditioned on a deferred orbital debris showing under § 100.139(a)(2).

(ii) If at any time during the space station(s)' mission or de-orbit phase the space station(s) will transit through any orbits used by any inhabitable spacecraft, a description of the design and operational strategies, if any, that will be used to minimize the risk of collision and avoid posing any operational constraints to the inhabitable spacecraft.

(iii) A description of the design, operation, capability and reliability of maneuverability and deorbit systems, if any, including the quantity of fuel that will be reserved for disposal maneuvers, as well as the anticipated evolution over time of the orbit of the proposed satellite(s).

(iv) If the space station(s) will not terminate operations in an orbit in or passing through the low-Earth orbit region below 2000 km altitude, the operator must submit a statement indicating whether disposal will involve use of a storage orbit or long-term atmospheric re-entry. If disposal will involve the use of a storage orbit, provide a plot of the long-term (100 years or more) stability of the orbit reflecting the orbit variations over time.

(d) *Variable Trajectory Spacecraft System.* An application for a VTSS authorization must provide the following information, except that applications filed pursuant to § 100.139(a)(2) do not need to provide the information required by paragraph (d)(4) of this section:

(1) *Technical information:*

(i) The number of spacecraft and the maximum number of spacecraft operating at any one time if the number of operational spacecraft will vary during the course of the license period;

(ii) The range of altitudes (or orbital shell(s)) in which the space station(s) will operate;

(iii) The initial deployment apogee, perigee, and inclination, and

(iv) The planned amount of time expected to be spent in any particular phase of the operations, including earth's orbit, transiting to the moon, lunar orbit, lunar surface, transiting beyond the moon, and/or operating on another celestial body, as applicable to the individual application.

(2) *Certifications.* Applicants must certify whether the following criteria will be met for all space station(s) proposed for operation under the license:

(i) The space station(s) will be identifiable by a unique signal-based telemetry marker distinguishing it from other space stations or space objects.

(ii) The spacecraft will be 10 cm or larger in the smallest dimension.

(iii) The operator will take appropriate steps to assess and mitigate collision risk upon receipt of a space situational awareness conjunction warning, including, but not limited to: contacting the operator of any active spacecraft involved in such a warning, sharing ephemeris data and other appropriate operational information with any such operator, and modifying spacecraft attitude and/or operations.

(iv) Prior to, and during, any planned maneuvers or rendezvous and proximity operations, the operator will share and update propagated ephemeris and covariance data according to § 100.200(c).

(v) If the spacecraft will terminate its mission beyond the geosynchronous orbit, the spacecraft will be disposed of beyond Earth's orbit.

(vi) For all related space stations under paragraph (d)(5)(iv)(A), operations will be conducted only with the consent of the operator of the related station, and with certification from the other operator to be submitted when consent is finalized.

(vii) For all related space stations under paragraph (d)(5)(iv)(A), the applicant is or will consult with other relevant federal agencies, including but not limited to the State Department and the Commerce Department, as necessary.

(viii) Operations that will terminate in low-earth orbit will comply with § 100.260(e).

(ix) Operations that will terminate at or near the GSO arc will comply with § 100.260(b).

(3) *Negative certifications.* If an applicant certifies in the negative to the certifications required under paragraph (d)(2)(iii) or paragraph (d)(2)(iv) of this section, the applicant may submit one of the following to avoid an exception to expedited processing under § 100.140:

(i) A completed agreement with one or more relevant government entities, (*i.e.,* NOAA), approving of the system's space safety plan; or

(ii) Affirmative certifications to all required certifications for an NGSO satellite system in paragraph (c)(2) of this section or a GSO satellite system in paragraph (b)(2) of this section, depending on the applicant's proposed operations. The applicant must also provide the required orbital debris mitigation plan pursuant to paragraph (b)(3) or (c)(3) of this section.

(4) *Orbital debris.* An orbital debris and end-of-life disposal plan that demonstrates how the proposal will or will not comply with §§ 100.260 and 100.261 and supports the certifications pursuant to paragraph (d)(2) of this section.

(5) *Additional information.* Applicants must provide the following information:

(i) Whether the applicant is requesting a grant conditional on a deferred orbital debris showing under § 100.139(a)(2).

(ii) If at any time during the space station(s)' mission or de-orbit phase the space station(s) will transit through any orbits used by any inhabitable spacecraft, a description of the design and operational strategies, if any, that will be used to minimize the risk of collision and avoid posing any operational constraints to the inhabitable spacecraft.

(iii) Applicants planning to travel beyond the geosynchronous orbit must provide the following information, if known at the time of filing. In the case where such information is not known at the time of filing, the applicant must affirmatively certify that this information will be provided to the Commission as soon as practicable once the information is known, and prior to beginning any such operations.

(A) A description of any instruments or rovers onboard the spacecraft that will engage in radiofrequency communications with the spacecraft while in transit or on the surface of the moon or any other celestial body.

(B) A description of completed or planned coordination with relevant government entities such as the National Science Foundation (NSF), National Radio Astronomy Observatory (NRAO), or other similar groups regarding radio astronomy or space research considerations that may be impacted by any instruments or experiments to be conducted on board or other mitigation of contamination of the lunar environment or other celestial bodies.

(iv) Applicants planning to engage in servicing or otherwise planning to interact with additional spacecraft on-orbit must provide the following information, if known at the time of filing. In the case where such information is not known at the time of filing, the applicant must affirmatively certify that this information will be provided to the Commission as soon as practicable once the information is known, and prior to beginning any such operations.

(A) All FCC file numbers or call signs for any applications or Commission grants related to the proposed operations (*e.g.,* experimental license grants, other space station or earth station applications or grants), including client space stations or spacecraft, spacecraft that have become debris the applicant seeks to remediate, and other space stations or spacecraft the applicant plans to interact with as part of its operations.

(B) A list of the International Telecommunications Union filings and United Nations Registration information, or the expected State of United Nations Registry, for any space stations or spacecraft not licensed or granted market access by the United States that are related to the proposed operations, including client space stations or spacecraft, spacecraft that have become debris the applicant seeks to remediate, and other space stations or spacecraft the applicant plans to interact with or collaborate with as part of its operations.

(C) A statement disclosing planned proximity operations and addressing debris generation that will or may result from the proposed operations, including any planned release of debris, the risk of accidental explosions, the risk of accidental collision, and measures taken to mitigate those risks.

§ 100.112 Space station frequency information requirements.

(a) *Services identified.* Space station applicants must identify all services included in the proposed system.

(b) *Required information.* Applications must provide the following information:

(1) The frequencies that the satellite proposes to both transmit and receive on and the polarization and channelization plan (with carrier

frequency and bandwidth of each channel) for each beam. For space stations in which the channels are dynamically generated and the bandwidth varies, specify only the range of frequencies in that band over which the beam can operate and the polarization plan.

(2) An explanation of how uplink frequency bands would be connected to downlink frequency bands.

(3) Identification of any requested bands for which there are Federal allocations. Applicants shall provide sufficient information to evaluate electromagnetic compatibility with the federal government use of the spectrum, and any additional information requested by the Commission. As part of the coordination process, applicants shall show that they will not cause harmful interference to authorized federal government users, based upon existing system information provided by the federal government.

(4) For each space station, the maximum EIRP, maximum EIRP density and emission bandwidth for each transmitting beam. If the satellite uses shapeable antenna beams, specify instead the maximum possible EIRP, maximum possible EIRP density and emission bandwidth within each shapeable beam's proposed coverage area. Provide this information for each frequency band in which the transmitting antenna would operate. For bands below 15 GHz, specify EIRP density in dBW/4 kHz; for bands at and above 15 GHz, specify EIRP density in dBW/MHz. If the EIRP density varies, specify the maximum possible EIRP density.

(5) For each space station, the receive antenna gain and the gain-to-temperature ratio at beam peak for each receiving beam. For receiving beams fed into transponders, also specify the minimum and maximum saturation flux density at beam peak. If the satellite uses shapeable beams, specify the minimum and maximum gain-to-temperature ratio and the corresponding receive antenna gains within each shapeable beam's proposed coverage area. For shapeable receiving beams fed into transponders, specify the minimum and maximum saturation power flux density within the 0 dB relative antenna gain isoline. Provide this information for each frequency band in which the receiving beam can operate.

(6) For GSO space stations, the predicted antenna gain contour(s) for each transmit and receive antenna beam. The contours should be plotted on an area map with the beam depicted on the surface of the earth with the space station's peak antenna gain pointed at nadir to a latitude and longitude within the proposed service area. The contour(s) should be plotted at 2 dB intervals down to 10 dB below the peak gain and at 5 dB intervals between 10 dB and 20 dB below the peak gain. The plots should be presented in a Graphical Interference Management System (GIMS)-readable format. For intersatellite links, applicants must specify the peak antenna gain and 3 dB beamwidth.

(7) For requests involving NGSO satellites, the predicted antenna gain contour(s) plotted on an area map with the beam depicted on the surface of the earth for each transmit and each receive antenna beam for one space station for each orbital plane if all space stations in the orbital plane are identical. If individual space stations in the NGSO constellation have different antenna beam configurations, specify the predicted antenna gain contours for each transmit and each receive beam for each space station type in each orbital plane requested. The contour(s) should be plotted on an area map with the beam depicted on the surface of the earth with the space stations' peak antenna gain pointed at nadir to a latitude and longitude within the proposed service area. The contour(s) should be plotted at 2 dB intervals down to 10 dB below the peak gain and at 5 dB intervals between 10 dB and 20 dB below the peak gain. The plots should be presented in a Graphical Interference Management System (GIMS)-readable format. For intersatellite links, applicants must specify the peak antenna gain and 3 dB beamwidth.

(8) For space stations with shapable antenna beams, the antenna gain contours, as specified in (6) or (7) of this section, as applicable, for the transmitting beam configuration that results in the highest EIRP density, and the receiving beam configuration with the smallest gain-to-temperature ratio and the highest saturation power flux density for the beams listed in (5) of this section. If the beams are also steerable, include the contours, plotted on an area map, of the 0 dB and -3 dB relative antenna gain isolines that that would result from moving the beam peak around the limit of the effective beam peak area. The proposed maximum coverage area must be clearly specified.

(9) For space stations with steerable antenna beams that are not shapeable, in addition to (6) or (7) of this section, the contours, plotted on an area map, of the 0 dB and -3 dB relative antenna gain isolines that would result from moving the beam peak around the limit of the effective beam peak area. The proposed maximum coverage area must be clearly specified.

(10) In addition to (6) through (9) of this section, area maps showing all of the transmit beams, and all of the receive beams, depicted on the surface of the Earth.

(11) Transmitter and receiver characteristics (transmit power, transmit antenna gain, EIRP density, emission bandwidth, receive antenna gain, receiver noise temperature and receiver bandwidth) and link budget for each of the different links.

(12) For each space station emission (space-to-Earth), the power flux-density at the Earth's surface for the various angles of arrival (0–5°, 5–25°, 25–90°) above the horizontal plane under free-space propagation conditions.

(13) A description how the requested spectrum can be shared with both current and future operators, (*e.g.,* antenna design, earth station geographic locations) and whether operations will materially constrain other operations in the requested frequency band(s).

(14) Whether the space station will operate on a common carrier basis.

(c) *Certifications.* Applicants for space station licenses must certify whether the following criteria will be met for all requested space station(s):

(1) The space station(s) will comply with and operate within the applicable service and frequency requirements and technical and operational parameters outlined in the Commission's rules;

(2) The space station(s) will operate under ITU coordination procedures and agreements; and

(3) The space station(s) can be commanded to immediately cease transmissions and the licensee will have the capability to eliminate harmful interference when required under the terms of the license or other applicable regulations.

(d) *Service-specific application requirements.*

(1) Applications for SCS must also provide the information required in § 100.113.

(2) In the Direct Broadcast Satellite service, applicants and licensees shall also provide the Commission with all information it requires in order to modify the plans for the Broadcasting-Satellite Service (BSS) in Appendix 30 of the ITU Radio Regulations (RR) and associated feeder-link plans in Appendix 30A of the ITU RR, if the system has technical characteristics differing from those specified in the Appendix 30 BSS Plans, the Appendix 30A feeder link Plans, Annex 5 to Appendix 30, or Annex 3 to Appendix 30A. For such systems, no protection from interference caused by radio

stations authorized by other Administrations is guaranteed until the agreement of all affected Administrations is obtained and the frequency assignment becomes a part of the appropriate Region 2 BSS and feeder-link Plans. Authorizations for which coordination is not completed and/or for which the necessary agreements under Appendices 30 and 30A have not been obtained may be subject to additional terms and conditions as required to effect coordination or obtain the agreement of other Administrations. Applicants and licensees shall also provide the Commission with the information required by Appendix 4 of the ITU RR for advance publication and notification or coordination of the frequencies to be used for tracking, telemetry and control functions of DBS systems.

(3) Space station license applications must also include any additional information required by applicable provisions in subpart C of this part:

(i) *NVNG MSS in 137–138 MHz, 148–150.05 MHz, 399.9–400.05 MHz, and 400.15–401. See* § 100.220.

(ii) *1.6/2.4 GHz and 2 GHz MSS. See* § 100.214.

(iii) *SDARS in 2.3 GHz. See* § 100.250.

(iv) *NGSO FSS in 10.7–30 GHz. See* § 100.222.

(v) *DBS in 12.2–12.7 GHz. See* § 100.233.

(vi) *GSO FSS or BSS in 17.3–17.8 GHz. See* § 100.231 and § 100.232.

(vii) *GSO FSS and 17/24 GHz BSS. See* § 100.230 and § 100.234.

(viii) *Inter-satellite service.* See § 100.240(c).

(ix) *Default service rules.* For space station operations in a frequency band where band-specific service rules have not yet been adopted, *see* § 100.204.

§ 100.113 Additional information for supplemental coverage from space.

(a) *SCS entry criteria.* This section applies only to applicants seeking to provide SCS. An applicant for SCS space station authorization must hold either an existing NGSO or GSO license or grant of U.S. market access under this part, or must be seeking an NGSO or GSO license or grant of U.S. market access under this part, and must have a lease arrangement(s) or agreement pursuant to § 1.9047 of this chapter with one or more terrestrial wireless licensee(s) that hold, collectively or individually, all co-channel licenses throughout a GIA in a band identified in § 2.106(d)(33)(i) of this chapter. Applicants for SCS space stations must comply with the requirements set forth in paragraph (b) of this section.

(b) *SCS space station application requirements.* An applicant seeking a space station authorization to provide SCS must either submit an application requesting modification of a current NGSO or GSO license or grant of U.S. market access under this part, or an application seeking a new NGSO or GSO license or grant of U.S. market access under this part.

(1) The application must certify that:

(i) A lease notification(s) or application(s), pursuant to § 1.9047 of this chapter, where a single terrestrial wireless licensee holds or multiple co-channel licensees collectively hold all co-channel licenses within the relevant Geographically Independent Area (GIA) in the bands identified in § 2.106(d)(33)(i) of this chapter, or as it pertains to FirstNet, an agreement, is on file with the Commission;

(ii) The current space station licensee under this part or grantee of market access for NGSO or GSO satellite operation under this part seeks modification of authority to provide SCS in the same geographic areas covered in the relevant GIA, or the applicant for a space station license under this part or grant of market access for NGSO or GSO satellite operation under this part seeks to provide SCS in the same geographic areas covered in the relevant GIA; and

(iii) SCS earth stations will qualify as ''licensed by rule'' earth stations under § 100.120(e).

(2) The application must include a proposal for the prospective SCS system and the certifications described in paragraph (b)(1) of this section.

(3) The application must include a list of the file and identification numbers associated with the relevant leasing notifications under part 1 of this chapter, application(s), and FCC Form 601(s).

(4) The application must provide a description of the coverage areas that will be served both domestically and internationally, as applicable.

(5) If the licensee is seeking to provide SCS in a foreign administration with a foreign terrestrial partner then the licensee must submit a request for authorization via ICFS to operate in a foreign country which must include a letter from the communications authority approving the SCS operations as well as a letter from the mobile operator certifying that there is a lease agreement between them and the licensee. This request must include the frequencies of operation and a certification that cross-border interference has been assessed and the operations proposed will not cause harmful interference to stations in other countries.

(c) *Equipment authorization for SCS earth stations.* Each SCS earth station used to provide SCS under this section must meet the equipment authorization requirements under paragraph (d) of this section and all equipment authorization requirements for all intended uses of the device pursuant to the procedures specified in part 2 of this chapter and the requirements of at least one of part 22, 24, or 27 of this chapter.

(d) *SCS earth station equipment certification requirements.* Applicants for certification for SCS earth stations for use with a satellite system must meet all requirements for equipment certification and equipment test data necessary to demonstrate compliance with pertinent standards under parts 22, 24, or 27 of this chapter as applicable.

(e) *Effective date and continued operation of SCS authorization.* SCS authorization will be deemed effective in the Commission's records and for purposes of the application of the rules set forth in this section after each of the following requirements is satisfied:

(1) Grant of:

(i) A modification application under this part or request for modification of a grant of market access; or

(ii) An application to launch and operate or for market access;

(2) Approval of a leasing arrangement(s) or agreement(s) under part 1 of this chapter; and

(3) Grant of a valid SCS earth station equipment certification under part 2 of this chapter.

§ 100.114 Requests for U.S. market access.

(a) Petitioners for a grant of U.S. market access must provide all the applicable information for the type of system for which they are requesting market access as described in §§ 100.110 through 100.113 and the application requirements general to all applications described in §§ 100.100 and 100.101.

(b) Entities filing a petition for declaratory ruling seeking to access the United States market using a non-U.S.-licensed space station must provide an exhibit demonstrating:

(1) That U.S.-licensed space stations have effective competitive opportunities to provide analogous services in the country in which the non-U.S. licensed space station is licensed; and

(2) For requests to operate using a space station that is not licensed by, or seeking a license from, a member nation of the World Trade Organization for services covered under the WTO BTA, that U.S.-licensed space stations have effective competitive opportunities to provide analogous services in all countries in which communications

will originate or terminate. The application must include a statement that grant is in the public interest, and the applicant bears the burden of showing that there are no practical or legal constraints that limit or prevent access of U.S. space stations in the relevant foreign markets.

(c) Entities filing a petition for declaratory ruling seeking to access the United States must demonstrate that the system, at the time of filing:

(1) Is in orbit and operational;

(2) Has a license from another administration; or

(3) Has been submitted for coordination to the ITU and has been published as ''as received.''

(d) Entities filing a petition for declaratory ruling to access the United States market must certify that the non-U.S. licensed space station has complied with all applicable Commission requirements, including but not limited to the following:

(1) Milestones.

(2) Reporting requirements.

(3) Any other applicable service rules.

(4) The surety bond requirement pursuant to § 100.148, for non-U.S.-licensed space stations that are not in orbit and operating.

(5) Entities that have one market access request on file with the Commission for NGSO satellite system operations in a particular frequency band will not be permitted to request access to the U.S. market for another NGSO satellite system in that frequency band in the same processing round subject to §§ 100.141 and 100.241.

(e) Non-U.S. licensed space station operators may file initial petitions for U.S. market access, amendments to petitions, petitions for modification of U.S. market access, petitions for special temporary market access, and other requests for Commission action using the same procedures as space station license applicants, provided they comply with all relevant application and operational requirements, and unless otherwise provided in this part.

(f) A non-U.S. licensed space station operator with a grant of market access may seek special temporary access for operations under the procedures set forth in § 100.144.

Earth Station Applications

§ 100.120 Earth station licensing application requirements.

(a) *Requirements for all earth station license applications.*

(1) All applicants must provide the name, address, email, and telephone number of the person(s) or entity with the authority and capability to cease transmissions of any service for which the application seeks authority. This person or entity must be available 24/7, 365 days a year and be located within the United States.

(2) Earth station applicants must certify whether the applicant will operate the earth station at the lowest power level to close the link as required by § 100.201.

(3) A certification whether the application complies with all the Commission's rules or if a waiver is requested of any Commission rule.

(4) Earth station applicants must provide the following technical information:

(i) Whether the request is for a blanket license;

(ii) The frequencies that the earth station(s) propose(s) to use;

(iii) If requesting a location area other than nationwide blanket authorization, the applicant must provide the geographic coordinates and operating radius of the earth station(s);

(iv) The proposed relevant power, out of band emission, off axis limits, and power density limits as described in §§ 100.270–100.280;

(v) The antenna type;

(vi) The number of antennas or devices if not requesting an unlimited number;

(vii) If the applicant is not seeking 360 degree coordination, the maximum and minimum elevation and azimuth angles for intended operations for the antenna; and

(viii) Any additional information necessary to complete coordination with federal entities.

(b) *Additional service-specific information.*

(1) *Type of application.* Earth station applicants must identify whether their application is for an Immovable earth station, user terminal including VSATs and transportable, ESIM, or mobile earth station.

(2) *Additional requirements for Immovable earth station authorizations.*

(i) Applicants must certify whether the following criteria will or will not be met for all Immovable Earth Stations to be operated under the license:

(A) For non-Nationwide, Non-Site Licenses, that the applicant has completed all required location and frequency specific coordination.

(B) For Nationwide, Non-Site Licenses, that the applicant will register all site locations in ICFS or a successor system and will complete all required location and frequency specific coordination for the registered sites prior to operation.

(C) That the proposed operations meet the relevant power, out of band emission, off axis limits, and power density limits as described in §§ 100.270–100.280.

(ii) Applicants must also provide the geographic coordinates of the proposed Immovable Earth Station for those applications that do not affirmatively certify to all application requirements, or that request a waiver of the Commission's rules, or are subject to an exception outlined in § 100.140 other than federal coordination, or that are not seeking Nationwide, Non-Site License.

(3) *Additional requirements for user terminals and Earth Stations in Motion authorizations.* Applicants must certify whether the following will be met for all User Terminals or Earth Stations in Motion to be operated under the license:

(i) That the proposed operations meet the relevant power, out of band emission, off axis limits, and power density limits as described in § 100.282.

(ii) The radiofrequency exposure meets the requirements of § 100.270.

(iii) The applicant has completed all required location and frequency specific coordination.

(4) *Additional requirements for mobile earth station authorizations.* Applicants must certify whether the following will be met for all mobile earth stations to be operated under the license:

(i) The proposed operations meet the relevant power, out of band emission, off axis limits, and power density limits as described in §§ 100.270–100.280 and 100.283.

(ii) The radiofrequency exposure meets the requirements of § 100.270.

(c) *Earth stations subject to § 100.281.* Earth stations proposing to operate in frequencies subject to § 100.281 must provide all information required under § 100.281 and any additional information required under paragraph (b) of this section.

(d) *SCS earth stations application requirements.*

(1) An applicant seeking to use SCS earth stations to provide Supplemental Coverage from Space must comply with § 100.113.

(2) A satellite operator licensed under § 100.113 to provide SCS is permitted to communicate with all terrestrial wireless licensee(s)-associated SCS earth stations that have been approved for such use under part 2 of this chapter.

(i) Such earth stations must show compliance with this part and at least one of either part 22, 24, or 27 of this chapter to provide SCS within the technical parameters and provisions associated with the device certification.

(ii) The device certification must show compliance with the licensed parameters of the terrestrial wireless

license(s) and at least one of either part 22, 24, or 27 of this chapter, as applicable.

(3) An earth station may be used for the provision of SCS when:

(i) The satellite operator licensed under § 100.113 is a party to a valid and approved spectrum leasing arrangement or agreement pursuant to § 1.9047 of this chapter with at least one terrestrial wireless licensee(s) licensed under one of either part 22, 24, or 27 of this chapter; and

(ii) That terrestrial wireless licensee(s) has met and operates within all conditions associated with the relevant terrestrial wireless license(s).

(4) A satellite operator authorized to provide SCS under § 100.113 is authorized under this section to communicate with SCS earth stations for any period during which each of the following apply:

(i) The service is provided during the valid duration of any spectrum leasing arrangement or agreement pursuant to § 1.9047 of this chapter between the terrestrial wireless licensee(s) and satellite operator;

(ii) The devices to which service is provided are certified under part 2 of this chapter; and

(iii) The terrestrial wireless licensee(s) is a valid licensee(s) under part 22, 24, or 27 of this chapter.

(5) A satellite operator with SCS authorization via a grant of market access can avail itself of the provisions of this paragraph but, in addition to the parameters established in this section, must also comply with any additional parameters included in the satellite operator's space station market access grant.

(6) A space station licensee operating in conformance with the parameters established in this part does not need a separate earth station authorization for the provision of SCS under this part.

(e) *Other requirements in subpart C.* Applicants for earth station authorizations must also submit any information required by applicable provisions in subpart C of this part:

(1) *Radiofrequency exposure reports.* See § 100.270,

(2) *Siting.* See § 100.276.

(3) *MSS and ATC.* See § 100.283.

(4) *Receive-only earth stations.* See § 100.273.

(5) *Analog video transmissions in 5925–6425 MHz and 14–14.5 GHz.* See § 100.234.

(6) *Temporary-fixed earth stations.* See § 100.274.

(7) *UMFUS.* See § 100.281.

(8) *Coordination and sharing requirements.* See § 100.276.

§ 100.121 Earth station application processing.

(a) For applications for which there are no exceptions to expedited processing pursuant to § 100.140:

(1) The application will be placed on public notice pursuant to § 100.132(2)(i);

(2) When an application is placed on public notice pursuant to this subsection, the applicant may begin operating pursuant to the parameters requested in the underlying application that have already been coordinated, if coordination is required as reflected in the filed coordination report. These operations must be on a non-interference, unprotected basis until further action is taken by the Commission on the application.

(b) For applications that are subject to one of the exceptions in § 100.140:

(1) The application will be placed on public notice pursuant to § 100.132(2)(ii).

(2) An application placed on public notice pursuant to this subsection may not begin operations until authorized to do so by the Commission.

(3) An applicant for an immovable earth station that affirmatively certifies to all application requirements in § 100.120 may apply for a Nationwide, Non-Site License. Applicants who seek to operate in frequency bands subject to federal coordination may apply for a blanket authorization or a Nationwide, Non-Site License pursuant to the limits and requirements established in §§ 100.139 and 100.140.

(c) A licensee with a Nationwide, Non-Site License for Immovable Earth Stations must register earth station sites in accordance with the Commission's guidance and certify that any necessary location and frequency specific coordination has been completed prior to operations within the period described in § 100.275.

General Application Processing

§ 100.130 Receipt of applications.

Applications received by the Commission are given a file number and a unique station identifier for administrative convenience. Neither the assignment of a file number and/or other identifier nor the listing of the application on public notice as received for filing indicates that the application has been found acceptable for filing or precludes subsequent return or dismissal of the application if it is found to be defective or not in accordance with the Commission's rules.

§ 100.131 Completeness.

(a) An application will be considered complete if, under the relevant rule section(s), all required information, forms, certifications, exhibits, and showings are included in the application.

(b) Applications with negative certifications and without the appropriate waiver requests or additional information are incomplete and may be dismissed.

(c) If an application is determined to be complete, the Commission will place the application on public notice pursuant to § 100.132.

(d) If an application is determined to be incomplete, the Commission will provide notice within 30 days of filing to the applicant identifying deficiencies related to the completeness of the application. An applicant receiving such notice must either amend or supplement the filed application within 30 days from the date of receipt of notice or the application will be dismissed subject to § 100.135.

§ 100.132 Public notice.

(a) *Public notices for space station license or market access requests.*

(1) At regular intervals, the Commission will issue public notices listing:

(i) The receipt of applications for new space station licenses that have been accepted for filing;

(ii) The receipt of applications for major amendments to pending applications;

(iii) The receipt of applications for major modifications to space station authorizations;

(iv) Applications for special temporary authority filed pursuant to § 100.144(d);

(v) Significant Commission actions regarding applications; or

(vi) Information that the Commission in its discretion believes to be of public significance.

(2) The following public notice periods will apply to applications that are accepted for filing:

(i) Applications not subject to any identified exceptions under § 100.140 or paragraph (a)(2)(iii) of this section and STAs filed pursuant to § 100.144(d)(2) will be placed on public notice for a period of seven days.

(ii) Applications subject to an identified exception under § 100.140 and major amendments under 100.143(c) will be placed on public notice for a period of 15 days.

(iii) Notwithstanding paragraphs (a)(2)(i)–(ii) of this section, applications for stations in the broadcasting or common carrier services, or stations listed in § 309(b)(2)(A)–(E), subject to Section 309 of the Communications Act will be placed on public notice

following the procedures described in Section 309 of the Communications Act for a period of at least 30 days.

(b) *Public notices for earth station license requests.*

(1) At regular intervals, the Commission will issue public notices listing:

(i) The receipt of new earth station applications that have been accepted for filing;

(ii) The receipt of applications for major amendments to pending applications;

(iii) The receipt of applications for major modifications to earth station authorizations;

(iv) Applications for special temporary authority filed pursuant to § 100.144(d); and

(v) Information that the Commission in its discretion believes to be of public significance or where speed is of the essence and efficiency of Commission process will be served thereby.

(2) The following public notice periods will apply to applications that are accepted for filing:

(i) Applications will be subject to the operation procedures described in § 100.121.

(ii) Applications eligible for expedited processing and STAs filed pursuant to §§ 100.144(b)(2)(iv) and (d)(2) or of this chapter will be placed on public notice for a period of seven days.

(iii) Applications that that are not eligible for expedited processing under § 100.140 and major amendments under § 100.143(c) will be placed on public notice for a period of 15 days.

(iv) Notwithstanding paragraphs (b)(2)(i)–(iii) of this section, applications for stations in the broadcasting or common carrier services, or stations listed in § 309(b)(2)(A)–(E), subject to Section 309 of the Communications Act will be placed on public notice following the procedures described in section 309 of the Communications Act for a period of at least 30 days.

(c) *Time periods for public notice.* The Commission may, in its sole discretion or upon request by an applicant, petitioner, or commenter, extend or shorten the public notice periods outlined herein, except for applications subject to the requirements of § 309(b) of the Communications Act.

§ 100.133 Opposition to applications and other pleadings.

(a) Oppositions, including petitions to deny, petitions for other forms of relief, and other objections must:

(1) Identify the application(s) (including applicant's name, station location, Commission file numbers, and radio service and frequencies involved) with which it is concerned;

(2) Contain the specific allegations of fact to support the relief requested, which shall be supported by affidavit of a person or persons with personal knowledge thereof, and which shall be sufficient to demonstrate that the petitioner (or respondent) is a party in interest and that a grant of, or other Commission action regarding, the application would be inconsistent with any of the rules in this chapter or the Communications Act, or otherwise inconsistent with the public interest;

(3) Be timely filed within the designated public notice period, unless designated otherwise by the Commission;

(4) Be filed in accordance with the pleading limitations, periods, and other applicable provisions of §§ 1.41 through 1.52 of this chapter, except that such pleadings or filings must be filed electronically through ICFS; and

(5) Contain a certificate of service showing that it has been served on the applicant in accordance with § 1.47 of this chapter no later than the date the pleading is filed with the Commission.

(b) Reply comments by the party who filed the original pleading must be filed within five days after the expiration of the time for filing oppositions.

(c) Pleadings, oppositions, and comments filed pursuant to this section must address the merits and/or public interest considerations of the application(s) with which they are concerned. Pleadings, oppositions, and comments outside the scope of the application or applications will not be considered.

(1) Pleadings, oppositions, and comments may only be filed during the public notice period. Pleadings, oppositions, and comments filed outside of the public notice period will not be considered without a petition requesting the Commission for leave to file.

(2) An applicant may reply to any pleadings, oppositions, or comments filed against their application within five days of a filing filed pursuant to this section even if the public notice period has closed and need not file a request for leave to file.

(d) The Commission may, in its sole discretion upon request by a petitioner, commenter, or applicant, extend or shorten the filing periods outlined herein, except that the Commission may not shorten the 30-day notice period for applications subject to the requirements of section 309(b) of the Communications Act.

§ 100.134 Information requests.

(a) The Commission may request additional information from applicants and licensees to:

(1) Determine completeness of an application;

(2) Understand the facts of informational showings, inconsistencies, execution, or other technical matters, if the factual issue is directly material to the review;

(3) Determine whether an exception in § 100.140 applies to an application;

(4) Resolve matters of concern raised in pleadings, objections, or comments;

(5) Evaluate compliance with the Commission's rules, the Communications Act, or other requirements; or

(6) Consider issues which are directly material and necessary for the Commission to evaluate the merits of an application, including evaluating exceptions in § 100.140, under the Commission's rules.

(b) Following any filing period pursuant to §§ 100.132 and 100.133, the Commission will identify all deficiencies requiring additional information or clarification and notify the applicant as follows:

(1) The Commission must clearly identify any deficiencies with an application as soon as practicable;

(2) The Commission must raise all known or identified deficiencies in an initial request for information;

(3) Applicants must respond completely to all deficiencies raised in a request for additional information within the prescribed time frame and in the manner required by the information request;

(4) If an applicant's response raises additional issues outside the scope of an initial information request the Commission may request additional information from the applicant; and

(5) Nothing in this rule part prevents the Commission from issuing subsequent information requests if the applicant fails to fully respond to the initial information request except that the Commission must adhere to the requirements of paragraphs (b)(2) and (b)(4) of this section when issuing any subsequent information requests.

§ 100.135 Dismissal and return of applications.

(a) Unless otherwise specified, dismissal or return of an application is without prejudice.

(b) An application will be deemed unacceptable for filing and may be dismissed with a brief statement identifying the reason if:

(1) The application is determined incomplete pursuant to § 100.131 and

the applicant does not complete the application within 30 days of a notice of deficiency from the Commission;

(2) The application does not contain all necessary forms, unless the applicant is filing the FCC Form 312—Main Form without any associated schedules pursuant to § 100.101;

(3) The application fails to propose a Licensable System as defined in § 100.3;

(4) The application is filed for a specific type of authority (*i.e.,* NGSO satellite system, GSO satellite system, VTSS) that does not align with the proposed operations;

(5) The application or any associated waiver requests do not comply with the relevant application requirements as described §§ 100.100 through 100.121;

(6) The application is duplicative of a pending application on file with the Commission; or

(7) The application contains, or clearly appears to contain, materially false information.

(c) Applications for space station licenses found defective under paragraph (b)(1) of this section may be accepted for filing if:

(1) The application is accompanied by a request which sets forth the reasons in support of a waiver of (or exception to), in whole or in part, any specific rule, regulation, or requirement with which the application is in conflict; or

(2) The Commission, upon its own motion, waives (or allows an exception to), in whole or in part, any rule, regulation, or requirement.

(d) The Commission will dismiss an application for failure to prosecute or failure to respond substantially within a specified time period to official correspondence or requests for additional information.

(e) An application that is not accompanied by the appropriate application fee in accordance with part 1, subpart G of this chapter will be dismissed by the Commission.

(f) An applicant may request that an application be dismissed or returned without action at any time prior to final action by the Commission but will not be entitled to a refund of filing fees.

(g) Applicants may withdraw an application at any time prior to final action by the Commission. Withdrawal will be without prejudice.

§ 100.136 Consideration of applications.

(a) Applications for a new space station or earth station authorization, or for modification or renewal of an existing station authorization, will be reviewed under the presumption that any requested authorization is in the public interest if the application demonstrates compliance with the Commission's rules, regulations, and policies.

(b) An application will be granted if, upon examination of the application, any pleadings or objections filed, and upon consideration of such other matters as it may officially notice, 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.

§ 100.137 Amendments to applications.

(a) *General.* Except as specified in this section, any pending application may be amended prior to final action being taken by the Commission. Amendments will not be placed on public notice under § 100.132 unless the Commission determines that the amendment qualifies as a major amendment under paragraph (b) of this section or that placing the amendment on public notice is otherwise in the public interest.

(b) *Major amendments.* Major amendments submitted pursuant to paragraph (a) of this section establish a new filing date for the part of the application being amended and are subject to the process for initial applications, including completeness, public notice, and dismissal rules. Major amendments may not be filed later than 45 days from the date of filing of associated pending application. Major amendments filed 45 days or later from the initial date of filing will be dismissed pursuant to § 100.135. An amendment will be deemed as a major amendment under the following circumstances:

(1) It would result in an exception under § 100.140;

(2) It requests a waiver of the Commission's rules;

(3) It would increase power, power density, or increase in the out-of-band emissions beyond what is permitted in the Commission's rules;

(4) It would result in modification of the antenna pattern(s) or antenna gain characteristics beyond what is permitted in the Commission's rules;

(5) It would require operations outside of already coordinated ranges or require re-coordination with federal agencies;

(6) It seeks to add frequencies;

(7) It would cause an increased risk of radiofrequency exposure to humans beyond what is permitted pursuant to § 100.270;

(8) For non-blanket licensed earth stations, it proposes a change of more than 10 seconds from the initially requested location; or

(9) If the amendment, or the cumulative effect of the amendment, is determined by the Commission otherwise to be substantial pursuant to section 309 of the Communications Act.

§ 100.138 Application processing timelines.

(a) *Processing timelines for space stations.*

(1) For an application for a space station authorization, no later than 30 days after the application is filed and application fee has been paid as reflected in the FCC's fee filing system, the Commission will place the application on public notice, dismiss the application, or identify for the applicant additional information required to achieve completeness.

(2) The Space Bureau will place an application on public notice as soon as practicable once an application is determined to be complete pursuant to § 100.131.

(3) If full action (*i.e.,* grant, conditional grant, denial, dismissal) has not been taken on the space station application within 60 days following the end of the public notice period, the Commission will inform the applicant and the public of the reason(s) preventing grant with particular note to any and all identified exceptions under § 100.140.

(b) *Processing timelines for earth stations.*

(1) For an earth station application filed pursuant to § 100.120, no later than 30 days after the application is filed and application fees have been received as reflected in the FCC's fee filing system, the Commission will place the application on Public Notice, dismiss the application, or identify for the applicant additional information required to achieve completeness.

(2) The Bureau will place an application on Public Notice as soon as practicable once an application is determined to be complete.

(3) If full action (*i.e.,* grant, conditional grant, denial, dismissal) has not been taken on the earth station application within 60 days following the end of the public notice period, the Commission will inform the applicant and the public of the reason(s) preventing grant with particular note to any and all identified exceptions under § 100.140.

(4) Applications for earth station renewals that affirmatively certify to all certifications described in § 100.120 and do not request a waiver of any of the Commission's rules will be deemed granted 30 days after filing the

application and payment of any application fees unless the Commission notifies the applicant otherwise prior to the expiration of the 30 days.

§ 100.139 Conditional grants.

(a) The Commission may conditionally grant an application under the circumstances described in this section.

(1) *Expedited processing conditional grant.* An application that is not subject to any of the exceptions under § 100.140, that is deemed complete and accepted for filing, placed on public notice and for which no objections, comments, or other petitions are filed will be conditionally granted upon the expiration of the public notice period, subject to the outcome of the Commission's determination on the application and any terms and conditions of grant following completion of review.

(2) *Operations.* A licensee of a conditional grant under this section, issued under § 100.139(a)(1), must operate subject to the following conditions:

(i) Operations authorized by the conditional grant under this section must be on an unprotected, non-interference basis and are limited only to the operations requested and coordinated, if coordination is required, in the underlying application;

(ii) The space station may be launched or integrated into a launch vehicle only with express approval from the Commission;

(iii) Operations under a conditional grant are entirely at the grant holder's own risk and the Commission may revoke the conditional grant at any time. Upon receipt of revocation notice from the Commission, the conditional licensee or grantee must immediately cease all operations, other than those required to maintain control of the apparatus.

(3) *Orbital debris deferral.* The Commission may issue a conditional grant to an applicant if the applicant elects to defer providing the required orbital debris showing, subject to the following requirements:

(i) The applicant must provide all information required by §§ 100.110, 100.111, 100.112, and 100.113, as necessary, except the orbital debris plan and related certifications.

(ii) The applicant must certify that the finished and operational satellite system detailed in the application will comply with all the requirements in § 100.260 and § 100.111, including affirmative certifications.

(iii) The applicant must certify that it will submit a complete orbital debris plan that demonstrates compliance with § 100.260 and supports the affirmative orbital debris certifications in § 100.111 at least 6 months prior to integration of any satellites for which authority is sought with a launch vehicle.

(iv) A licensee conditionally authorized under this section that cannot demonstrate compliance with § 100.260 or provide an orbital debris mitigation plan that supports the affirmative orbital debris certifications in § 100.111 at least 6 months prior to integration with a launch vehicle must file a major modification application pursuant to § 100.143 and receive Commission approval prior to beginning operations.

(A) The filing of a major modification under paragraph (a)(3)(iv) of this section will render the conditional grant null and void.

(B) The major modification will be placed on public notice pursuant to § 100.132.

(4) *Commercial coordination.* If an applicant is coordinating with other operators in certain frequency bands not subject to federal coordination, but the application is otherwise eligible for grant, the Commission may grant the application conditioned upon any portion(s) of the application not subject to ongoing coordination and condition grant of the remaining portion(s) of the application on notice to the Commission of successful coordination, provided that the applicant is coordinating in good faith.

(5) *Withholding conditional grants.* The Commission may, at its discretion and after providing notice to the applicant, withhold conditional grant and instead complete its review of the application without conditionally granting the application prior to completion of review. A conditional grant is not a final determination on the merits of the application and does not convey any rights to the applicant to receive a license under §§ 100.100 through 100.121.

§ 100.140 Exceptions to expedited processing for applications.

(a) For complete applications, exceptions to expedited processing will be identified based on the materials available to the Commission.

(b) Applications for which there are no exceptions identified are presumed eligible for grant in the public interest and generally will be acted upon as soon as practicable while applications with identified exceptions will require additional review to determine if a grant is in the public interest.

(c) Exceptions to expedited processing are as follows:

(1) *Negative certifications.*

(i) If an applicant does not affirmatively certify to all of the certifications required in the application and described in §§ 100.100 through 100.121, that are applicable to the request, the Commission will remove the application from expedited processing.

(ii) The Commission will review materials supplied regarding any negative certifications to determine with respect to that element of the application whether grant is in the public interest.

(2) *Requests for waiver.*

(i) If an application is accompanied by a request for waiver of the Commission's rules the Commission will remove the request from expedited processing unless the waiver request is deemed to be for a purely administrative issue;

(ii) The Commission will review materials supplied regarding the waiver request to determine whether grant of the waiver is in the public interest.

(3) *Foreign ownership.* The Commission will review materials supplied regarding reportable foreign ownership to determine whether grant is in the public interest.

(4) *Processing round.*

(i) If the Commission determines that an application or petition for declaratory ruling to access the U.S. market should be subject to processing round procedures, the Commission will place an application into the appropriate processing round pursuant to the procedures described in § 100.141.

(ii) The Commission will place an application into a processing round if it determines:

(A) the application seeks to operate in a frequency band identified by the Commission as a ''processing round-eligible'' frequency band; and

(B) the applicant is subject to the surety bond requirement pursuant to § 100.148(a); or

(C) If the applicant is not subject to the surety bond requirement but requests inclusion into a processing round for a processing-round eligible frequency band.

(iii) If the Commission grants an authorization for an NGSO satellite system outside of a processing round, then the operations of the NGSO satellite system must be compatible with existing operations in the authorized frequency band(s) and must not materially constrain future space station entrants from using the authorized frequency band(s).

(5) *Spectral constraints.* Based upon review of the application, the Commission determines that the

frequencies that the applicant seeks to use are limited in the use either by rule, by existing users, or by international arrangement.

(6) *Federal coordination.* Applications requesting use of bands shared with federal operations will be removed from expedited processing.

(7) *Market access.* Petitions for declaratory ruling for U.S. market access will be removed from expedited processing and handled pursuant to § 100.114.

(d) The Commission will determine whether a request for authorization is in the public interest despite any identified exceptions, after reviewing materials provided by the applicant and any comments received with respect to each element of a request related to the identified exception.

(e) In addition to applying any other applicable Commission rules, statutory requirements, and public interest considerations, the Commission will determine whether an element of a request related to an identified exception is in the public interest based on whether granting the request would result in a net benefit to the United States.

§ 100.141 Processing rounds for NGSO satellite system applications.

(a) The Commission will annually determine specific frequency bands that will be subject to processing rounds. The Commission will announce the list of frequency bands automatically subject to processing rounds via public notice.

(b) Band-specific processing rounds will open on January 1st at 12:00 a.m. Eastern Time of every year and will close the processing round at 11:59 p.m. Eastern Time on October 31st of the same year.

(1) All applications that are granted in the same year that meet the criteria of § 100.140(c)(4)(ii) will automatically be considered part of the band-specific processing round for that year.

(2) FSS system licensees authorized in the same processing round must share spectrum in accordance with § 100.241(c).

(3) If two or more non-FSS system licensees are authorized in the same processing round, they will be required to coordinate on an equal basis to share the spectrum among all operators licensed in the same processing round. A licensee authorized in an earlier processing round may not prevent licensees granted in later processing rounds from accessing spectrum.

(4) Applications granted in the same processing round will have equal priority that will sunset ten years after the close of the processing round.

(5) Applications granted in subsequent processing rounds must coordinate with and protect already granted operations for a period of ten years from the date of grant.

(c) If an NGSO satellite system operator is licensed in a frequency band prior to the first processing round for that frequency band, the operator must comply with any sharing requirements later applied to licensees authorized in the first processing round in that band.

§ 100.142 First-come, first-served application processing for GSO systems.

Applications processed on a first-come, first-served basis will be placed in a queue and considered in the order in which they are filed. Such applications will be granted only if the proposed operation will not cause harmful interference to any previously authorized operations, and the application otherwise meets the criteria for grant.

§ 100.143 Modifications.

(a) *General.* A licensee may request to modify any portion of a license subject to the requirements described in this section and any conditions placed on the license.

(b) *Modifications not requiring notification.* A licensee may modify system operations without notifying the Commission unless the change is a major or minor modification pursuant to paragraphs (c) and (d) of this section.

(c) *Major modifications.*

(1) Major modification requests will be considered as initial requests for licenses under this paragraph.

(2) A major modification is any modification that would:

(i) Result in an exception under § 100.140;

(ii) Require a waiver of the Commission's rules;

(iii) Increase power, power density, or increase in the out-of-band emissions beyond what is permitted in the Commission's rules or limits placed on a license;

(iv) Modify the antenna pattern(s) or antenna gain characteristics or expand the coverage area beyond what is permitted under the licensee's authorization;

(v) Require operations outside of already coordinated ranges or require re-coordination with federal agencies;

(vi) Add frequencies;

(vii) Increase any orbital debris risk beyond that permitted in the licensee's authorization;

(viii) Cause an increased risk of radiofrequency exposure to humans beyond what is permitted pursuant to § 100.270; or

(ix) Remove or change conditions on a license.

(3) A licensee granted a conditional authorization pursuant to § 100.139(a)(2) that is unable to certify in the affirmative to all orbital debris certification requirements at the time of submitting orbital debris information must file a major modification pursuant to this section.

(4) Major modifications require prior authorization from the Commission before a licensee may begin any operations as proposed in the modification.

(5) Applications for major modifications must comply with the application and processing requirements described in §§ 100.100 through 100.121.

(6) Applications for major modifications will be placed on public notice pursuant to § 100.132.

(d) *Minor modifications.*

(1) *Notification required within 30 days after modification.*

(i) A licensee may move and locate satellites across already authorized orbital shells and altitudes but must submit a notification via ICFS no later than 30 days after the change.

(ii) Satellite operators may commence operations in inclined orbit mode without obtaining prior Commission authorization provided that the Commission is notified no later than 30 days after the last north-south station keeping maneuver. The notification must include:

(A) The operator's name;

(B) The date of commencement of inclined orbit operation;

(C) The initial inclination;

(D) The rate of change in inclination per year; and

(E) The expected end-of-life of the satellite accounting for inclined orbit operation, and the maneuvers specified under § 100.260 of the Commission's rules for end-of-life disposal.

(2) *Notification required prior to modification.*

(i) Space station operators may change an antenna, sensor, or microelectronics upon 30 days prior notification to the Commission, if the changes do not cause a change that would result in a major modification.

(ii) An earth station operator may add a point of communication upon seven days prior notification to the Commission.

(A) An earth station applicant may begin operations with the added point of communication under this rule part after filing the FCC Form 312—Main Form and Schedule B in ICFS in

accordance with the applicable provisions of part 1, subpart Y of this chapter and paying the applicable filing fee, subject to the following provisions:

(1) The operator has permission from the satellite operator to communicate with the satellite system;

(2) The earth station operator has completed frequency coordination with other potentially affected licensees as required by Commission rules;

(3) Adding the point of communication does not result in a change classified as a major modification; and

(4) The added point of communication has either an FCC space station license or U.S. market access.

(B) This notification shall constitute a conditional authorization. The conditional authorization will automatically expire and the operator must terminate operations immediately using the new point of communication if, within 15 days of paying the filing fee, the Commission notifies the earth station operator that the added point of communication does not comply with requirements of this paragraph. If the Commission does not provide the foregoing notice within the prescribed period, the conditional authorization will automatically expire and the license will be modified in ICFS to add the point of communication as of the date of payment of the filing fee. Nothing in this rule part prohibits the Commission from pursuing enforcement action after the lapse of the 15-day period for noncompliant operation, including noncompliant operation occurring during the period of conditional authorization.

(iii) A space station licensee may conduct telemetry, tracking and command functions necessary to relocate a U.S.-licensed GSO space station to, and maintain the space station at, a different orbital location on the geostationary arc, without prior authorization, but must provide seven days prior notice to the Commission. The notice must include the following information:

(A) A notification of the date on which the space station is planned to depart from its current orbital location, the planned duration of the drift and the planned date of arrival at the new location.

(B) A certification that the licensee will limit operations of the space station to tracking, telemetry, and command functions.

(C) A description of the frequencies and radiocommunication services to be provided during and after the space station relocation.

(D) A certification that the space station will be relocated to a position within ±0.15° of an orbital location for which a filing of the administration of the United States of America has been recorded in the Master International Frequency Register of the International Telecommunications Union (ITU).

(E) A certification that the space station has coordinated all operations at the relocated site location under the ITU filing of the administration of the United States of America at that location.

(F) A certification that that the space station will conduct all operations after the relocation within the technical parameters coordinated under the ITU filing of the administration of the United States of America at that location.

(G) A certification that all operations, including any non-telemetry, tracking and command operations, during and after the relocation will be conducted on an unprotected, non-harmful interference basis and that all operations will be coordinated with any existing geostationary space stations to ensure that no harmful interference results from operations during or after the relocation.

(H) A certification that the licensee will file an application to modify the license of the space station to reflect operations at the new location within 60 days.

(I) A certification that the relocation will not result in a lapse of service for any current customer and provides a list of any frequency bands that will not be in use by the licensee at the current orbital location after the relocation of the space station.

(J) A certification that the space station will not be used to bring into use, or maintain the use of, any ITU filing of an administration other than the United States of America.

(K) A certification that:

(1) The licensee has assessed and limited the probability of the satellite(s) becoming a source of debris as a result of collisions with large debris or other operational satellites during or after the relocation;

(2) The proposed station-keeping volume of the space station(s) following relocation will not overlap a station-keeping volume reasonably expected to be occupied by any other space station, including those authorized by the Commission, applied for and pending before the Commission, or otherwise the subject of an ITU filing and either in orbit or progressing towards launch; and

(3) The relocation will not result in any changes to the previously approved orbital debris mitigation plans for the satellite(s), including the end-of-life disposal plans for the satellite(s) and the quantity of fuel that will be reserved for disposal maneuvers.

(L) A certification that the licensee acknowledges that any action taken or expense incurred as a result of the relocation is solely at the licensee's own risk and is without prejudice to any potential enforcement action by the Commission.

(3) Minor modifications are not subject to the public notice requirements in § 100.132, unless the Commission determines that the minor modification, or effect of the minor modification, would qualify as or amount to a major modification under § 100.143(c)(2).

§ 100.144 Special temporary authorizations.

(a) In circumstances requiring immediate or temporary use of facilities, a request may be made for special temporary authority (STA) to install and/or operate new or modified equipment or for modified operations.

(b) A request for STA must be filed in the manner and meeting the requirements of the applicable license type as described in §§ 100.100 through 100.121. Alternatively, a request for STA may instead reference a pending license application if the requested STA is for identical operations as requested in the license application.

(c) No request for temporary authority will be considered unless it is received by the Commission at least 3 business days prior to the date of proposed operation, pursuant to § 1.4 of this chapter. A request received within less than 3 business days may be accepted only upon due showing of extraordinary reasons for the delay in submitting the request which could not have been reasonably foreseen by the applicant.

(d) Other than for those services expressly enumerated in § 309(b) of the Communications Act, the Commission may grant a temporary authorization pursuant to the following:

(1) The Commission may grant a temporary authorization only if there are extraordinary circumstances requiring temporary operations in the public interest and that delay in the institution of these temporary operations would seriously prejudice the public interest.

(2) If placed on public notice, subject to the 7-day public notice period pursuant to § 100.132, the Commission may grant an STA for up to 180 days that may not be renewed or extended. Temporary authorization holders authorized under this paragraph may file for a new STA for up to another 180

days no sooner than 60 days and no later than 30 days before the end of the prior grant of special temporary authority.

(3) If not placed on public notice, the Commission may grant an STA for a period of up to 60 days.

(4) An STA for an earth station not placed on public notice and not subject to federal coordination requirements will be deemed granted upon filing and paying of the application fee and notice of the grant will appear in the actions taken public notice.

(5) An STA holder authorized pursuant to paragraph (d)(3) of this section cannot file for subsequent STAs without going on public notice pursuant to paragraph (d)(2) of this section.

(e) For operations expressly enumerated in section 309(b) of the Communications Act, the Commission may grant an STA pursuant to the following:

(1) The Commission may grant a temporary authorization only upon a finding that there are extraordinary circumstances requiring temporary operations in the public interest and that delay in the institution of these temporary operations would seriously prejudice the public interest. Convenience to the applicant, such as marketing considerations or meeting scheduled customer in-service dates, will not be deemed sufficient for this purpose.

(2) The Commission may grant a temporary authorization for a period not to exceed 180 days, with additional periods not exceeding 180 days, if the Commission has placed the STA request on public notice.

(3) The Commission may grant a temporary authorization for a period not to exceed 60 days, if the STA request has not been placed on public notice, and the applicant plans to file a request for regular authority for the service.

(4) The Commission may grant a temporary authorization for a period not to exceed 30 days, if the STA request has not been placed on public notice, and an application for regular authority is not contemplated.

(f) Temporary authorizations granted pursuant to this subsection are not of a continuing nature or subject to § 1.62 of this chapter.

(g) All operations authorized by and pursuant to this rule part are on a non-interference, unprotected basis and cannot be modified.

(h) A special temporary authorization shall automatically terminate upon the expiration date specified therein, or upon failure of the grantee to comply with any terms or conditions in the authorization.

§ 100.145 Coordination requirements with Federal government users.

The Commission will coordinate with the National Telecommunications Information Administration regarding the operations of any application for license or market access requesting to operate in a shared government/non-government frequency band. The Commission will use its procedures for liaison with NTIA to reach agreement with respect to achieving compatible operations between federal government users under the jurisdiction of NTIA and commercial applicants of the Commission in shared government/non-government frequency bands through the frequency assignment and coordination practices established by NTIA and the Interdepartment Radio Advisory Committee (IRAC) or any successor organization.

§ 100.146 Assignments and transfers of control.

(a) *Prior approval required.* An application for Commission authorization must be filed, and granted, prior to the transfer, assignment, or disposal of a construction permit or station license, or accompanying rights, under this part, whether voluntarily or involuntarily, directly or indirectly, or by transfer of control of any entity, unless otherwise provided in this section.

(b) *Transfers of control.* Transfers of control requiring Commission approval, for purposes of this section, include all transactions that:

(1) Change the party controlling the affairs, operations, or management of the licensee; or

(2) Effect any change in a controlling interest in the ownership of the licensee, including changes in legal or equitable ownership.

(c) *Pro forma transactions.*

(1) *Pro forma transactions involving a telecommunications carrier.* No prior Commission approval is required for a non-substantial (pro forma) transfer of control or assignment of license involving a telecommunications carrier as defined in 47 U.S.C. 153(51). The pro forma transferee or assignee must file a notification with the Commission no later than 30 days after the transfer or assignment is complete and include a certification that the transfer of control or assignment was pro forma and, together with all previous pro forma transactions, did not result in a change of the actual controlling party.

(2) *Pro forma transactions not involving a telecommunications carrier.* An application for Commission approval of a non-substantial (pro forma) transfer of control or assignment of a license not involving a telecommunications carrier, as defined in 47 U.S.C. 153(51), will be deemed granted one business day after filing, provided that:

(i) Approval does not require a waiver of, or declaratory ruling pertaining to, any applicable Commission rule; and

(ii) The application includes a certification that the proposed transfer of control or assignment is pro forma and that, together with all previous pro forma transactions, it would not result in a change in the actual controlling party.

(d) *Market access.*

(1) A non-U.S.-licensed satellite operator that acquires control of a non-U.S.-licensed space station that is permitted to serve the United States must notify the Commission within 30 days after consummation of the transaction.

(2) If the transferee or assignee is not licensed by, or seeking a license from a country that is a WTO member for services covered under the WTO BTA, the non-U.S.-licensed satellite operator must provide the showings under the market access application procedures in § 100.114.

(3) A non-U.S.-licensed satellite that is transferred to new owners may continue to provide service in the United States unless and until the Commission determines otherwise.

(e) *Receive-only earth station registrations.* No prior Commission approval is required for the assignment or transfer of control of a receive-only earth station registration. For all such transactions other than non-substantial (pro forma) transfers of control, the transferee or assignee must file a notification with the Commission no later than 30 days after the assignment or transfer of control is completed. No notification is required for a pro forma transfer of control of a receive-only earth station registrant.

(f) *Involuntary assignments or transfers of control.* Applications for assignment or transfer of control on an involuntary basis (*e.g.,* by bankruptcy, death, or legal disability) must be filed within ten days of the event causing the assignment or transfer of control.

(g) *Applications with multiple authorizations.* A single application or notification may be filed to cover a group of station authorizations held by the same entity, provided the authorizations are in the same radio service for the same class of facility and would be transferred or assigned to a single transferee or assignee.

(h) *Consummation.* Assignments and transfers of control shall be completed within 180 days from the date of

authorization. Within 30 days of consummation, the Commission shall be notified via ICFS of the date of consummation and the file numbers of the applications involved in the transaction.

(i) *Good faith intent to construct.* The Commission retains discretion in reviewing assignments and transfers of control of space station and earth station licenses to determine whether the initial license was obtained in good faith with the intent to construct the licensed system.

§ 100.147 Milestones for NGSO and Multi-Orbit systems.

(a) Recipients of an initial authorization for an NGSO satellite system or grant of U.S. market access, other than a SDARS space station license or VTSS authorization, are required to launch, deploy, and operate at least one satellite in accordance with the space station authorization for a continuous period of ninety (90) days and no later than seven years after the grant of the authorization, unless a different schedule is established by Title 47, Chapter 1 or by the Commission.

(b) For recipients of an initial authorization for an NGSO satellite system meeting the requirements of paragraphs (a) and (c)(1) of this section, other than a SDARS space station license or VTSS authorization, the following milestone requirements apply:

(1) *Preliminary milestone.* The recipient of an initial authorization for an NGSO satellite system or grant of U.S. market access must launch ten percent of the maximum number of satellites authorized for service, place them in their orbits, and operate them in accordance with the station authorization no later than nine years after grant of the authorization unless a different schedule is established by Title 47, Chapter 1 or by the Commission.

(2) *Interim milestone.* The recipient of an initial authorization for an NGSO satellite system or grant of U.S. market access that satisfies the requirement in paragraph (b)(1) of this section must launch 50% of the maximum number of satellites authorized for service, place them in their orbits, and operate them in accordance with the station authorization no later than 12 years after the grant of the authorization, unless a different schedule is established by Title 47, Chapter 1 or by the Commission.

(3) *Final milestone.* The recipient of an initial authorization for an NGSO satellite system or grant of U.S. market access that satisfies the requirements in paragraphs (b)(1) and (b)(2) of this section must launch the remaining satellites necessary to complete its authorized NGSO satellite system, or grant of U.S. market access, place them in their assigned orbits, and operate each of them in accordance with the station authorization no later than 14 years after the grant of the authorization.

(c) A licensee subject to the milestone requirements in paragraphs (a) and (b) of this section must either demonstrate compliance with the applicable milestone or notify the Commission in writing that the milestone was not met, within 15 days of the specified deadline.

(1) Compliance with paragraphs (a) of this section may be demonstrated by certifying that a satellite has been launched, placed in an authorized orbital location or non-geostationary orbit(s), and that in-orbit operation of the satellite has been tested, maintained, and found to be consistent with the terms of the authorization for a continuous period of 90 days.

(2) Compliance with the milestone requirements in paragraph (b) of this section may be demonstrated by certifying that the satellites in question have been launched and placed in the authorized orbital location or non-geostationary orbit(s) and that in-orbit operation of the satellites have been tested and found to be consistent with the terms of the authorization.

(d) A space station authorization shall be automatically terminated in whole or in part without further notice to the licensee if the licensee fails to meet an applicable milestone required by paragraph (a) of this section or any other milestone imposed on a NGSO satellite system license as a condition to the license authorization.

(1) If a licensee fails to meet the requirements in paragraphs (a) and (c)(1) of this section, the station authorization shall be automatically terminated in whole.

(2) If at least one authorized satellite is functional in an authorized orbit by the milestone date specified in paragraph (a) of this section or imposed as a condition to the license authorization, but fails to meet the milestone requirements in paragraphs (b) or (c)(2) of this section or by a condition of authorization, the space station authorization shall be terminated in part, resulting in the termination of authority to launch and operate additional satellites beyond those already in operation.

(3) After termination of a space station authorization under paragraph (d)(2) of this section, licensees may continue to launch and operate technically identical replacements, such that the total number of satellites operating at any one time is not greater than the number of functional satellites in an authorized orbit at the time of the applicable milestone in paragraph (b) of this section or as imposed as a condition to the license authorization.

(e) Licensees of multi-orbit systems must meet the applicable requirements of this section for each type of satellite in its system.

(f) In cases where the Commission grants more than one space station authorization for the same system in different stages, the milestone schedule as applied to the first authorization will be applied to the entire satellite system.

§ 100.148 Surety bonds.

(a) For all recipients of a license to operate an NGSO satellite system under §§ 100.110 through 100.113 and authorized to operate 200 or more satellites, excluding replacements, the licensee must post a surety bond within 30 days from the date of the license grant.

(b) An NGSO licensee authorized pursuant to § 100.141 must post a bond in accordance with paragraph (d) of this section within 30 days from the date of the license grant, regardless of the number of authorized satellites.

(c) Failure to post a required bond within 30 days will automatically render the license null and void.

(d) An NGSO licensee subject to paragraph (a) or (b) of this section must have on file with the Commission a surety bond requiring payment in the event of a default as defined in paragraph (g) of this section, in an amount, at a minimum, determined by the applicable formula:

(1) An NGSO licensee with 200 or more authorized satellites subject to paragraph (a) of this section must have a surety bond on file in an amount determined by the following formula, with the resulting dollar amount rounded to the nearest dollar: $B = \$10{,}000 * ((0.9 * A) - D)$, where B is the bond amount, D is the number of satellites deployed, and A is the number of satellites authorized, excluding replacements.

(2) An NGSO licensee authorized pursuant to § 100.141 with fewer than 200 satellites subject to paragraph (b) of this section must have a surety bond on file in an amount determined by the following formula, with the resulting dollar amount rounded to the nearest dollar: $B = \$1{,}800{,}000 * (1 - D/(0.9 * A))$, where B is the bond amount, D is the number of satellites deployed, and A is the number of satellites authorized, excluding replacements.

(e) A licensee may reduce the amount of the surety bond required, as determined by paragraph (d)(1) or (d)(2)

of this section, upon written notification to the Commission providing an update on the total number of deployed satellites (D) in the authorized system.

(f) A licensee will be relieved of the surety bond obligation under paragraph (a) or (b) of this section once the amount of the surety bond, as calculated under paragraph (d)(1) or (d)(2) of this section, is zero dollars.

(g) A licensee will be in default of its surety bond obligation filed pursuant to paragraph (a) or (b) of this section if it surrenders the license before the amount of the bond required, as calculated under paragraph (d)(1) or (d)(2) of this section, is zero dollars.

(h) The licensee must use a surety company deemed acceptable within the meaning of 31 U.S.C. 9304 *et seq.* (*See, e.g.,* Department of Treasury Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and As Acceptable Reinsurance Companies, 57 FR 29356, July 1, 1992.) The bond must name the U.S. Treasury as beneficiary in the event of the licensee's default. The licensee must provide the Commission with a copy of the performance bond, including all details and conditions.

§ 100.149 License and market access terms, extensions and renewals, NGSO replacements.

(a) *General.* License and market access grant terms shall be as set forth in this section, unless a shorter term is specified by the Commission, in its discretion, or requested by the applicant.

(b) *GSO satellite systems.*

(1) *License terms.* Licenses and market access grants for GSO satellite system authorizations will be issued for a period of 20 years beginning on the date of grant of the license, except as follows:

(i) *Broadcast and SDARS.* Licenses and market access grants for DBS space stations and 17/24 GHz BSS space stations licensed as broadcast facilities, and for SDARS space stations and terrestrial repeaters, will be issued for a period of eight years.

(ii) *Non-broadcast DBS.* Licenses for DBS space stations not licensed as broadcast facilities will be issued for a period of 10 years.

(2) *Extensions.* For GSO satellite systems issued an authorization initial license or market access term for a period of twenty years, licensees may apply for a major modification to extend the license term in increments of five years or less. GSO satellite system licensees seeking a license or market access term extension through a license or market access modification application must provide a statement that includes the following:

(i) The requested duration of the license or market access extension;

(ii) The estimated total remaining space station lifetime;

(iii) A description of any single points of failure or other malfunctions, defects, or anomalies during the satellite's operation that could affect its ability to conduct end-of-life procedures as planned, and an assessment of the associated risk;

(iv) A certification that remaining fuel reserves are adequate to complete de-orbit as planned; and

(v) A certification that telemetry, tracking, and command links are fully functional.

(c) *NGSO satellite systems and VTSS.*

(1) *License terms.* Licenses and market access grants for NGSO satellite systems and VTSS authorizations will be issued for a period of 20 years beginning on the date of grant of the license.

(2) *Renewals.* Applications for renewals of authorizations for NGSO satellite systems or VTSS authorizations shall be filed no earlier than 12 months, and no later than 30 days, before the expiration date of the license.

(3) *NGSO replacement satellites.* NGSO satellite system licensees or recipients of market access grants that include a blanket license may replace satellites in their constellation with satellites up to the number of satellites authorized, without application or notification to the Commission, provided the replacement does not result in a modification under § 100.143, unless otherwise specified in the authorization.

(d) *Earth stations.*

(1) *Transmitting stations.* Licenses for transmitting earth stations will be issued for a period of 20 years beginning on the date of grant of the license. Earth station site registrations for Immovable earth stations will be valid until the date identified in the underlying Nationwide, Non-Site License grant.

(2) *Receive-only stations.* Licenses and registrations for receive-only earth stations will be issued for a period of 20 years from the date on which the application was filed.

(3) *Renewals.* Applications for renewals of earth station licenses or receive-only registrations must be submitted on FCC Form 312R no earlier than 12 months, and no later than 30 days, before the expiration date of the license. Immovable Earth Stations registered pursuant to § 100.120 will be renewed in conjunction with renewal of the underlying Nationwide, Non-Site License authorization.

Subpart C—Operational and Frequency Specific Requirements

§ 100.200 Reporting requirements.

(a) *Point of contact.*

(1) *Space stations.* If, at any time, a space station licensee's or market access recipient's point of contact information on file changes, the licensee or market access recipient must file the updated information within 48 hours of the change.

(2) *Earth stations.* The licensee of any transmitting earth station licensed under this part must update the contact information provided in the most recent license application for the station within 10 days of any change therein. The updated information must be filed in the station's current authorization file.

(b) *Space station control arrangements.* The operator of any space station licensed by the Commission or granted U.S. market access must file the following information with the Commission in ICFS prior to commencing operation with the space station, or, in the case of a non-U.S.-licensed space station, prior to commencing operation with U.S. earth stations.

(1) The call signs of any telemetry, tracking, and command earth station(s) communicating with the space station from any site in the United States.

(2) The location, by city and country, of any telemetry, tracking, and command earth station that communicates with the space station from any point outside the United States.

(3) Alternatively, instead of listing the call signs and/or locations of earth stations currently used for telemetry, tracking, and command, the space station operator may provide 24/7 contact information for a satellite control center and a list of the call signs of any U.S. earth stations, and the locations of any non-U.S. earth stations, that are used or may be used for telemetry, tracking, and command communication with the space station(s) in question.

(4) If call sign or location information provided pursuant to this paragraph becomes invalid due to a change of circumstances, the space station operator must file updated information in ICFS within 30 days, except with respect to changes less than 30 days in duration, for which no update is necessary.

(c) *Ephemeris data.*

(1) Space station licensees and market access recipients must submit accurate and timely ephemeris data for all spacecraft in their authorized system(s),

including the propagated ephemeris data and covariance for any planned maneuvers, to the following:

(i) The 18th Space Control Squadron or a successor entity as identified by the Commission; or

(ii) One or more U.S. space situational awareness systems which have been identified by the Commission as satisfying this requirement.

(2) Space station operators are responsible for ensuring the quality of data submitted to space situational awareness systems in accordance with the requirements of such systems.

(d) *Space system safety reports.* Beginning after the launch of the first satellite in an NGSO satellite system, space station operators must provide a semi-annual report, by January 1 and July 1 each year, covering the preceding six-month period, respectively, from June 1 to November 30 and December 1 to May 31, that includes the following information:

(1) The number of conjunction events identified for satellites in the NGSO satellite system during the reporting period, including the number of events that resulted in an action such as maneuver or coordination with another operator;

(2) The number of satellites that were removed from operation or screened from further deployment; and

(3) The number of satellites that re-entered the atmosphere.

§ 100.201 Licensee operations.

Licensees under this part may operate within the boundaries of their authorizations, the rules in this part, and any other relevant provision of this chapter, the Communications Act of 1934, as amended, or other statute, subject to any Commission action and any conditions or constraints placed on the license or licensee in any such grant of authority.

§ 100.202 Duties regarding space communications transmissions.

(a) *Unauthorized transmissions.* No person shall:

(1) Transmit to a space station unless the specific transmission is first authorized by the satellite network control center;

(2) Conduct transmissions over a space station unless the operator is authorized to transmit at that time by the space station licensee;

(3) Transmit communications to or from earth stations in the United States unless such communications are authorized under a service contract with the holder of a pertinent FCC earth station license or under a service contract with another party with authority for such operation delegated by such a licensee; or

(4) Transmit in any manner that causes harmful interference to the authorized transmission of another licensee unless that licensee is authorized on an unprotected basis.

(b) *Cessation of emissions.* Space stations and earth stations shall be made capable of ceasing radio emissions by the use of appropriate devices (battery life, timing devices, ground command, etc.) that will ensure definite cessation of emissions.

(c) *Operations at lowest level necessary to close the link.* Each earth and space station transmission shall be conducted at the lowest power level necessary to close the link for the required signal quality as indicated in the application and further amended by any coordination agreement(s).

(d) *Unauthorized access.* Licensees shall ensure that the licensed facilities are properly secured against unauthorized access or use. For space station operations, this includes securing satellite commands against unauthorized access and use.

(e) *ITU filings.* Space station licensees must operate in accordance with any filings submitted to the ITU by the Commission on behalf of the licensee, unless otherwise conditioned by the Commission. No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless ITU procedures are timely completed or, with respect to individual Administrations, coordination agreements are successfully completed. A license for which such procedures have not been completed may be subject to additional terms and conditions required for coordination of the frequency assignments with other Administrations.

(f) *Coordination agreements.* Any coordination agreements, both domestic and international, concerning specific frequency usage constraints, including non-use of any particular frequencies within the frequency bands listed in the station authorization, are considered to be conditions of the station authorization.

(g) *Sharing of operational information and resolution of interference.*

(1) Space station licensees are responsible for maintaining complete and accurate technical details of current and planned transmissions over their satellites and shall require that authorized users of transponders on their satellites, whether by tariff or contract, provide any necessary technical information in this regard including that required by § 100.240.

(2) Based on this information, space station licensees shall exchange among themselves general technical information concerning current and planned transmission parameters as needed to identify and promptly resolve any potential cases of harmful interference between their satellite systems.

(3) Space station licensees shall provide upon request by the Commission, and by earth station licensees authorized to transmit on their satellites, relevant information needed to avoid harmful interference to other users, including the polarization angles for proper illumination of a given transponder.

(4) Where the operations of a space station or earth station are suspected of causing harmful interference, the station operator shall take reasonable measures to determine whether its operations are the source of interference, and if they are, shall take all measures necessary to resolve the interference.

(5) A record shall be maintained by the space station licensee and/or earth station licensee of all harmful interference incidents and their resolution. These records shall be made available to the Commission upon request.

(6) All licensees are required to cooperate fully with the Commission in any investigation of interference problems.

(h) *Station identification.* The requirement to transmit station identification is waived for all radio stations licensed under this part with the exception of earth stations subject to the requirements of § 100.233.

§ 100.203 Telemetry, tracking, and command.

(a) Telemetry, tracking, and command signals may be transmitted in frequencies within the assigned bands that are not at a band edge only if the transmissions cause no greater interference and require no greater protection from harmful interference than the communications traffic on the satellite network or, for GSO space stations, have been coordinated with operators of authorized co-frequency space stations at orbital locations within six degrees of the assigned orbital location.

(b) Frequencies, polarization, and coding of telemetry, tracking, and command transmissions must be selected to minimize interference into other satellite networks.

§ 100.204 Default service rules.

(a) *Scope.* The technical rules in this section only apply to licenses to operate

a satellite service in a frequency band granted after a domestic frequency allocation has been adopted for that band, but before any frequency band-specific rules have been adopted for that frequency band.

(b) *NGSO satellite systems.* For all NGSO satellite system licenses authorizing operations in a frequency band for which the Commission has not adopted frequency band-specific service rules at the time the license is granted, the licensee will be required to comply with the applicable technical requirements of the Commission's rules.

(c) *GSO satellite systems.* For all GSO satellite system licenses authorizing operations in a frequency band for which the Commission has not adopted frequency band-specific service rules at the time the license is granted, the licensee will be required to comply with the applicable technical requirements in the Commission's rules.

(d) *Earth stations.*

(1) Earth station licensees authorized to operate with one or more space stations described in paragraph (c)(1) of this section shall comply with the earth station antenna performance verification requirements in § 100.279.

(2) Earth station licensees with a gain equivalent or higher than the gain of a 1.2 meter antenna operating in the 14.0–14.5 GHz band, authorized to operate with one or more space stations described in paragraph (c)(1) of this section in frequency bands greater than 14.5 GHz shall be required to comply with the antenna input power density requirements set forth in § 100.279.

(3) Mobile earth station licensees authorized to operate with one or more space stations must comply with the requirements in § 100.282. In addition, earth station licensees authorized to operate with one or more space stations in frequency bands shared with terrestrial wireless services shall comply with the requirements in § 100.276.

(e) *Later-adopted service rules.* In the event that the Commission adopts frequency band-specific service rules for a particular frequency band after it has granted one or more space station or earth station licenses for operations in that frequency band, those licensees will be required to come into compliance with the frequency band-specific service rules within 30 days of the effective date of those rules, unless otherwise specified by either the Commission or Space Bureau.

General Space Station Rules

§ 100.210 Orbit raising maneuvers.

A space station authorized to operate under this part is also authorized to transmit in connection with short-term, transitory maneuvers directly related to post-launch, orbit-raising or orbit-lowering maneuvers, provided that the following conditions are met:

(a) Authority is limited to those tracking, telemetry, and control frequencies in which the space station is authorized to operate once it reaches its assigned orbital location;

(b) The space station operator will coordinate in good faith on an operator-to-operator basis with any potentially affected satellite networks; and

(c) The space station licensee is required to accept interference from any lawfully operating satellite network or radio communication system.

§ 100.211 Frequency use generally.

(a) *Frequency-use restrictions.* In addition to the frequency-use restrictions set forth in § 2.106 of this chapter, the following restrictions apply:

(1) In the 27.5–28.35 GHz band, the FSS (Earth-to-space) is secondary to the Upper Microwave Flexible Use Service authorized pursuant to part 30 of this chapter, except for FSS operations associated with earth stations authorized pursuant to § 100.281.

(2) Use of the 37.5–40 GHz band by the FSS (space-to-Earth) is limited to individually licensed earth stations. Earth stations in this band must not be ubiquitously deployed and must not be used to serve individual consumers.

(3) The U.S. non-Federal Table of Frequency Allocations, in § 2.106 of this chapter, is applicable between Commission space station licensees relying on a U.S. ITU filing and transmitting to or receiving from anywhere on Earth, including airborne earth stations, in the 17.3–20.2 GHz or 27.5–30.0 GHz bands.

(b) *Frequency tolerance, space stations.* The carrier frequency of each space station transmitter authorized in these services shall be maintained within 0.002% of the reference frequency.

(c) *Cross-polarization isolation.* Space station antennas operating in the DBS or operating in the FSS for reception of feeder links for DBS must be designed to provide a cross-polarization isolation such that the ratio of the on-axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band is at least 27 dB within the primary coverage area.

(d) *Full frequency re-use.* All space stations in the FSS operating in any portion of the 3600–4200 MHz, 5091–5250 MHz, 5850–7025 MHz, 10.7–12.7 GHz, 12.75–13.25 GHz, 13.75–14.5 GHz, 15.43–15.63 GHz, 17.3–17.8 GHz, 18.3–20.2 GHz, 24.75–25.25 GHz, or 27.5–30.0 GHz bands, including feeder links for other space services, and in the BSS in the 17.3–17.8 GHz band (space-to-Earth), shall employ state-of-the-art full frequency reuse, either through the use of orthogonal polarizations within the same beam and/or the use of spatially independent beams. This requirement does not apply to telemetry, tracking, and command operation.

§ 100.212 Power flux-density and in-band field strength limits.

(a) *SCS.* The aggregate field strength at the earth's surface produced by all visible beams and satellites at and beyond the service boundary of each satellite constellation providing SCS service as they move over any given point or area in bands authorized by NG33A in the United States Table of Frequency Allocations must not exceed:

(1) 40 dBμV/m for the 600 MHz, 700 MHz, and 800 MHz bands; and

(2) 47 dBμV/m for the AWS and PCS bands; and

(3) Licensees must comply with all applicable provisions and requirements of treaties and other international agreements between the United States Government and the governments of other countries, including Canada and Mexico. Absent specific international agreements regarding SCS, licensees must comply with the limits provided in this section.

(b) *2496–2500 MHz—NGSO.* In the 2496–2500 MHz band, the power flux-density at the Earth's surface produced by emissions from non-geostationary space stations for all conditions and all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) −144 dB (W/m^2) in 4 kHz for all angles of arrival between 0 and 5 degrees above the horizontal plane; −144 dB (W/m^2) + 0.65(δ − 5) in 4 kHz for all angles of arrival between 5 and 25 degrees above the horizontal plane;

(2) −131 dB (W/m^2) in 4 kHz and for all angles of arrival between 25 and 90 degrees above the horizontal plane;

(3) −126 dB (W/m^2) in 1 MHz for all angles of arrival between 0 and 5 degrees above the horizontal plane; −126 dB (W/m^2) + 0.65(δ − 5) in 1 MHz for all angles of arrival between 5 and 25 degrees above the horizontal plane; and

(4) −113 dB (W/m^2) in 1 MHz and for all angles of arrival between 25 and 90 degrees above the horizontal plane.

(c) *3650–4200 MHz.* In the 3650–4200 MHz band, the power flux density at the Earth's surface produced by emissions from a space station for all conditions

and for all method/s of modulation shall not exceed the following values:

(1) −152 dB(W/m2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

(2) −152 + (δ−5)/2 dB(W/m2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane.

(3) −142 dB(W/m2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plan.

(4) These limits relate to the power flux density which would be obtained under assumed free-space propagation conditions.

(d) *6700–7075 MHz.* The power-flux density at the Earth's surface produced by emissions from a space station in the FSS (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 1—LIMITS OF POWER-FLUX DENSITY FROM SPACE STATIONS IN THE BAND 6700–7075 MHZ

Frequency band	Limit in dB (W/m²) 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 and −134	−154 + 0.5(δ−5) and −134 + 0.5(δ−5)	−144 and −124	4 kHz. 1 MHz.

(e) *10.7–11.7 GHz.* In the 10.95–11.2 and 11.45–11.7 GHz bands for GSO FSS space stations and 10.7–11.7 GHz band for NGSO FSS space stations, the power flux-density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the lower of the following values:

(1) −150 dB(W/m²) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane; −150 + (δ−5)/2 dB(W/m²) in any 4 kHz band for angles of arrival (δ) (in degrees) between 5 and 25 degrees above the horizontal plane; and −140 dB(W/m²) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane; or

(2) −126 dB(W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane; −126 + (δ−5)/2 dB(W/m²) in any 1 MHz band for angles of arrival (δ) (in degrees) between 5 and 25 degrees above the horizontal plane; and −116 dB(W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

Note to paragraph (e): These limits relate to the power flux density, which would be obtained under assumed free-space propagation conditions.

(f) *12.2–12.7 GHz—NGSO.* In the 12.2–12.7 GHz band, for NGSO FSS space stations, the specified low-angle power flux-density at the Earth's surface produced by emissions from a space station shall not be exceeded into an operational MVDDS receiver:

(1) −158 dB(W/m²) in any 4 kHz band for angles of arrival between 0 and 2 degrees above the horizontal plane; and

(2) −158 + 3.33(δ−2) dB(W/m²) in any 4 kHz band for angles of arrival (δ) (in degrees) between 2 and 5 degrees above the horizontal plane.

Note to paragraph (f): These limits relate to the power flux density which would be obtained under assumed free-space propagation conditions.

(g) *17.7–24.75 GHz.* For a GSO space station in the 17.7–19.7 GHz, 22.55–23.55 GHz, or 24.45–24.75 GHz bands, or for an NGSO space station in the 22.55–23.55 GHz or 24.45–24.75 GHz bands, the PFD at the Earth's surface produced by emissions for all conditions and for all methods of modulation must not exceed the following values:

(1) −115 dB (W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

(2) −115 + 0.5 (δ−5) dB (W/m²) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane.

(3) −105 dB (W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(h) *25.25–27.5 GHz.* The power flux-density at the Earth's surface produced by emissions from a space station in either the Earth exploration-satellite service in the 25.5–27 GHz band or the inter-satellite service in the 25.25–27.5 GHz band for all conditions and for all methods of modulation shall not exceed the following values:

(1) −115 dB(W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

(2) −115 + 0.5(−5) dB(W/m²) in any 1 MHz band for angles of arrival between 5 and 25 degrees above the horizontal plane.

(3) −105 dB(W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(4) These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

(i) *37.5–40 GHz—NGSO.* In the 37.5–40.0 GHz band, the power flux-density at the Earth's surface produced by emissions from a non-geostationary space station for all methods of modulation shall not exceed the following values:

(1) This limit relates to the power flux-density which would be obtained under assumed free space conditions (that is, when no allowance is made for propagation impairments such as rain-fade):

(i) −132 dB(W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) −132 + 0.75 (δ−5) dB(W/m²) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(iii) −117 dB(W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane;

(2) This limit relates to the maximum power flux-density which would be obtained anywhere on the surface of the Earth during periods when FSS system raises power to compensate for rain-fade conditions at the FSS earth station:

(i) −120 dB(W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) −120 + 0.75 (δ−5) dB(W/m²) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(iii) −105 dB(W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

Note to paragraph (i): The conditions under which satellites may exceed these power flux-density limits for normal free space propagation described in this section to compensate for the effects of rain fading are under study and have therefore not yet been defined. Such conditions and the extent to which these limits can be exceeded will be

the subject of a further rulemaking by the Commission on the satellite service rules.

(j) *37.5–40 GHz—GSO.* In the 37.5–40.0 GHz band, the power flux-density at the Earth's surface produced by emissions from a geostationary space station for all methods of modulation shall not exceed the following values.

(1) This limit relates to the power flux-density which would be obtained under assumed free space conditions (that is, when no allowance is made for propagation impairments such as rain-fade):

(i) -139 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) $-139 + 4/3\ (\delta - 5)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 20 degrees above the horizontal plane;

(iii) $-119 + 0.4\ (\delta - 20)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 20 and 25 degrees above the horizontal plane; and

(iv) -117 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(2) This limit relates to the maximum power flux-density which would be obtained anywhere on the surface of the Earth during periods when FSS system raises power to compensate for rain-fade conditions at the FSS earth station:

(i) -127 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) $-127 + 4/3\ (\delta - 5)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 20 degrees above the horizontal plane;

(iii) $-107 + 0.4\ (\delta - 20)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 20 and 25 degrees above the horizontal plane; and

(iv) -105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

Note to paragraph (h): The conditions under which satellites may exceed the power flux-density limits for normal free space propagation described in this section to compensate for the effects of rain fading are under study and have therefore not yet been defined. Such conditions and the extent to which these limits can be exceeded will be the subject of a further rulemaking by the Commission on the satellite service rules.

(k) *40–40.5 GHz.* In the 40.0–40.5 GHz band, the power flux density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) -115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) $-115 + 0.5\ (\delta - 5)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(3) -105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(l) *40.5–42 GHz—NGSO.* In the 40.5–42.0 GHz band, the power flux density at the Earth's surface produced by emissions from a non-geostationary space station for all conditions and for all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) -115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) $-115 + 0.5\ (\delta - 5)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(3) -105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(m) *40.5–42 GHz—GSO.* In the 40.5–42.0 GHz band, the power flux-density at the Earth's surface produced by emissions from a geostationary space station for all conditions and for all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) -120 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) $-120 + (\delta - 5)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 15 degrees above the horizontal plane;

(3) $-110 + 0.5\ (\delta - 15)$ dB(W/m^2) in any 1 MHz band for angles of arrival δ (in degrees) between 15 and 25 degrees above the horizontal plane; and

(4) -105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

§ 100.213 Unwanted emissions limits generally; space stations.

(a) *General.* The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (a)(1)–(a)(4) of this section.

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB.

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB.

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: an amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts.

(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (a)(1) through (3) of this section.

(b) *23.6–24 GHz—NGSO.* The following unwanted emissions power limits for non-geostationary satellites operating in the inter-satellite service that transmit in the 22.55–23.55 GHz band shall apply in any 200 MHz of the 23.6–24 GHz passive band, based on the date that complete advance publication information is received by the ITU's Radiocommunication Bureau:

(1) For information received before January 1, 2020: -36 dBW.

(2) For information received on or after January 1, 2020: -46 dBW.

(c) *SCS.* Space station downlinks operating as SCS under the provisions of § 100.113 and § 2.106(d)(33)(i) of this chapter are subject to the following rules.

(1) *Out of band emission limits.* Notwithstanding the emission limitations of § 100.213, the aggregation of all space station downlink emissions outside a licensee's SCS frequency band(s) of operation shall not exceed a power flux density of -120 dBW/m^2/MHz at 1.5 meters above ground level.

(2) *Interference caused by out of band emissions.* If any emission from a transmitter operating in the SCS service results in harmful interference to users of another radio service, the FCC may require a greater attenuation of the emission than specified in this section.

§ 100.214 Licensing provisions for the 1.6/2.4 GHz MSS and 2 GHz MSS.

(a) *Technical qualifications.* In addition to providing the information specified in §§ 100.110 through 100.112, each applicant and petitioner must demonstrate the following:

(1) That a proposed system in the 1.6/2.4 GHz MSS frequency bands employs a non-geostationary constellation or constellations of satellites;

(2) That a system proposed to operate using non-geostationary satellites be capable of providing MSS to all locations as far north as 70° North

latitude and as far south as 55° South latitude for at least 75% of every 24-hour period, *i.e.,* that at least one satellite will be visible above the horizon at an elevation angle of at least 5° for at least 18 hours each day within the described geographic area;

(3) That a system proposed to operate using non-geostationary satellites be capable of providing MSS on a continuous basis throughout the fifty states, Puerto Rico and the U.S. Virgin Islands, *i.e.,* that at least one satellite will be visible above the horizon at an elevation angle of at least 5° at all times within the described geographic areas; and

(4) That a system only using geostationary orbit satellites, at a minimum, be capable of providing MSS on a continuous basis throughout the 50 states, Puerto Rico, and the U.S. Virgin Islands, if technically feasible.

(5) That operations will not cause harmful interference to other authorized users of the spectrum.

(b) *Safety and distress communications.*

(1) Stations operating in the 1.6/2.4 GHz MSS and 2 GHz MSS that are voluntarily installed on a U.S. ship or are used to comply with any statute or regulatory equipment carriage requirements may also be subject to the requirements of sections 321(b) and 359 of the Communications Act. Licensees are advised that these provisions give priority to radio communications or signals relating to ships in distress and prohibits a charge for the transmission of maritime distress calls and related traffic.

(2) Licensees offering distress and safety services should coordinate with the appropriate search and rescue organizations responsible for the licensees' service area.

NGSO Frequency-Specific Rules

§ 100.220 Requirements for the non-voice, non-geostationary MSS.

(a) *NVNG MSS space station application requirements.*

(1) *General.* Each application for a space station license in the non-voice, non-geostationary mobile-satellite service (NVNG MSS) shall describe in detail the proposed NVNG MSS system, setting forth all pertinent technical and operational aspects of the system, and the technical and legal qualifications of the applicant. In addition to the information specified in §§ 100.110 through 100.112, applicants must also file information demonstrating compliance with all requirements of this section, and showing, based on existing system information publicly available at the Commission at the time of filing, that they will not cause harmful interference to any NVNG MSS system authorized to construct or operate.

(2) *Power flux density.* Applicants for a NVNG MSS space station license must identify the power flux density produced at the Earth's surface by each space station of their system in the 137–138 MHz and 400.15–401 MHz bands, to allow determination of whether coordination with terrestrial services is required under any applicable footnote to the Table of Frequency Allocations in § 2.106 of this chapter. In addition, applicants must identify the measures they would employ to protect the radio astronomy service in the 150.05–153 MHz and 406.1–410 MHz bands from harmful interference from unwanted emissions.

(3) *Emission limitations.*

(i) Applicants in the NVNG MSS shall show that their space stations will not exceed the emission limitations of § 100.213, as calculated for a fixed point on the Earth's surface in the plane of the space station's orbit, considering the worst-case frequency tolerance of all frequency determining components, and maximum positive and negative Doppler shift of both the uplink and downlink signals, taking into account the system design.

(ii) Applicants in the NVNG MSS service shall show that no signal received by their space stations from sources outside of their system shall be retransmitted with a power flux density level, in the worst 4 kHz, higher than the level described by the applicants in paragraph (a)(2) of this section.

(b) *Operating conditions.* In order to ensure compatible operations with authorized users in the frequency bands to be utilized for operations in the NVNG MSS, NVNG MSS systems must operate in accordance with the conditions specified in this section.

(1) *Service limitation.* Voice services may not be provided.

(2) *Coordination among non-voice, non-geostationary mobile-satellite service systems.* All affected applicants, permittees, and licensees shall, at the direction of the Commission, cooperate fully and make every reasonable effort to resolve technical problems and conflicts that may inhibit effective and efficient use of the radio spectrum; however, the permittee or licensee being coordinated with is not obligated to suggest changes or re-engineer an applicant's proposal in cases involving conflicts.

(3) *Safety and distress communications.* Stations operating in the NVNG MSS that are used to comply with any statutory or regulatory equipment carriage requirements may also be subject to the provisions of sections 321(b) and 359 of the Communications Act. Licensees are advised that these provisions give priority to radio communications or signals relating to ships in distress and prohibit a charge for the transmission of maritime distress calls and related traffic.

§ 100.221 Obligation to remedy interference caused by NGSO MSS feeder downlinks in the 6700–6875 MHz band.

If an NGSO MSS satellite transmitting in the 6700–6875 MHz band causes harmful interference to previously licensed co-frequency Public Safety facilities, the satellite operator has an obligation to remedy the interference.

§ 100.222 Operating provisions for NGSO FSS space stations.

(a) NGSO FSS system licensees and market access recipients operating in the 10.7–30 GHz frequency range must comply with:

(1) Any applicable power flux-density levels in Article 21, Section V, Table 21–4 of the ITU Radio Regulations (incorporated by reference, § 100.4), except:

(i) In the 19.3–19.4 GHz and 19.6–19.7 GHz bands, applicants must comply with the ITU power flux-density limits governing NGSO FSS systems in the 17.7–19.3 GHz band; and

(ii) In the 17.3–17.7 GHz band, applicants must comply with the ITU power flux-density limits governing NGSO FSS systems in the 17.7–17.8 GHz band.

(2) Any applicable equivalent power flux-density levels in Article 22, Section II, and Resolution 76 of the ITU Radio Regulations (both incorporated by reference, § 100.4), except that for operations in the 17.3–17.8 GHz band, operators must comply with the ITU equivalent power flux-density limits applicable to NGSO FSS system operations in the 17.8–18.4 GHz band.

(b) Prior to the initiation of service, an NGSO FSS operator licensed or holding a market access authorization to operate in the 10.7–30 GHz frequency range must receive a ''favorable'' or ''qualified favorable'' finding by the ITU Radiocommunication Bureau, in accordance with Resolution 85 of the ITU Radio Regulations (incorporated by reference, § 100.4), regarding its compliance with applicable ITU EPFD limits. In addition, a market access holder in these bands must:

(1) Communicate the ITU finding to the Commission; and

(2) Submit the input data files used for the ITU validation software.

GSO Frequency-Specific Rules

§ 100.230 Further requirements for license applications for GSO space station operation in the FSS and 17/24 GHz BSS.

(a) *Additional information requirements for GSO space stations.* In addition to the information required by §§ 100.110 through 100.112, an applicant for GSO FSS space station operation in the FSS and 17/24 GHz BSS must comply with the following:

(1) An applicant for GSO FSS space station operation involving transmission of analog video signals must certify that the proposed analog video operation has been coordinated with operators of authorized co-frequency space stations within six degrees of the requested orbital location.

(2) An applicant for GSO FSS space station operation, including applicants proposing feeder links for space stations operating in the 17/24 GHz BSS, that will be located at an orbital location less than two degrees from the assigned location of an authorized co-frequency GSO space station, must either certify that the proposed operation has been coordinated with the operator of the co-frequency space station or submit an interference analysis demonstrating the compatibility of the proposed system with the co-frequency space station. Such an analysis must include, for each type of radio frequency carrier, the link noise budget, modulation parameters, and overall link performance analysis. (See Appendices B and C to Licensing of Space Stations in the Domestic Fixed-Satellite Service, FCC 83–184, and the following public notices, copies of which are available in the Commission's EDOCS database, available at *https://www.fcc.gov/edocs:* DA 03–3863 and DA 04–1708.) The provisions in this paragraph (a)(2) do not apply to proposed analog video operation, which is subject to the requirement in paragraph (a)(1) of this section.

(3) An applicant for a GSO FSS space station, including applicants proposing feeder links for space stations operating in the 17/24 GHz BSS, must provide the following for operation other than analog video operation:

(i) With respect to proposed operation in the conventional or extended C-bands, a certification that downlink EIRP density will not exceed 3 dBW/4kHz for digital transmissions or 8 dBW/4kHz for analog transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in § 100.280 unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station and except as provided in paragraph (d) of this section.

(ii) With respect to proposed operation in the conventional or extended Ku-bands, a certification that downlink EIRP density will not exceed 13 dBW/4kHz for digital transmissions or 17 dBW/4kHz for analog transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in § 100.280 unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station and except as provided in paragraph (d) of this section.

(iii) With respect to proposed FSS operation in the conventional or extended Ka-bands, a certification that the proposed space station will not generate power flux density at the Earth's surface in excess of the limits in paragraphs (a)(3)(iii)(A) and (B) of this section, and that associated uplink operation will not exceed applicable EIRP density envelopes in § 25.218(i) unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location and except as provided in paragraph (d) of this section.

(A) −118 dBW/m²/MHz, except as provided in paragraph (a)(3)(iii)(B) of this section.

(B) For space-to-Earth FSS transmissions in the 17.3–17.8 GHz band in the region of the contiguous United States, located west of 100 West Longitude: −121 dBW/m²/MHz.

(iv) With respect to proposed operation in the 24.75–25.25 GHz band (Earth-to-space), a certification that the proposed uplink operation will not exceed the applicable EIRP density envelopes in § 100.280 and that the associated space station will not generate a power flux density at the Earth's surface in excess of the applicable limits in this part, unless the non-routine uplink and/or downlink FSS operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location and except as provided in paragraph (d) of this section.

(v) With respect to proposed operation in the 4500–4800 MHz (space-to-Earth), 6725–7025 MHz (Earth-to-space), 10.70–10.95 GHz (space-to-Earth), 11.20–11.45 GHz (space-to-Earth), and/or 12.75–13.25 GHz (Earth-to-space) bands, a statement that the proposed operation will take into account the applicable requirements of Appendix 30B of the ITU Radio Regulations (incorporated by reference, see § 100.4) and a demonstration that it is compatible with other U.S. ITU filings under Appendix 30B.

(vi) With respect to proposed operation in other FSS bands, an interference analysis demonstrating compatibility with any previously authorized co-frequency space station at a location two degrees away or a certification that the proposed operation has been coordinated with the operator(s) of the previously authorized space station(s). If there is no previously authorized space station at a location two degrees away, the applicant must submit an interference analysis demonstrating compatibility with a hypothetical co-frequency space station two degrees away with the same receiving and transmitting characteristics as the proposed space station.

(b) *Operations in the 17.3–17.8 GHz band.*

(1) Each applicant for a license to operate a space station transmitting in the 17.3–17.8 GHz band must provide the following information:

(2) An applicant for a license to operate a 17/24 GHz BSS space station transmitting in the 17.3–17.8 GHz band must certify that the downlink power flux density on the Earth's surface will not exceed the regional power flux density limits listed in paragraphs (b)(2)(i) through (iv) of this section:

(i) In the region of the contiguous United States, located south of 38° North Latitude and east of 100° West Longitude: −115 dBW/m²/MHz.

(ii) In the region of the contiguous United States, located north of 38° North Latitude and east of 100° West Longitude: −118 dBW/m²/MHz.

(iii) In the region of the contiguous United States, located west of 100° West Longitude: −121 dBW/m²/MHz.

(iv) For all regions outside of the contiguous United States including Alaska and Hawaii: −115 dBW/m²/MHz.

(3) Except as described in paragraph (b)(5) of this section, the following applicants must either certify that their proposed operations have been coordinated with the adjacent operator of a previously authorized or proposed co-frequency space station, or must provide an interference analysis of the kind described in this section, except that the applicant must demonstrate that its proposed network will not cause more interference to the adjacent space station transmitting in the 17.3–17.8

GHz band operating in compliance with the technical requirements of this part, than if the applicant were located at an orbital separation of four degrees from the previously licensed or proposed space station:

(i) Applicants for a 17/24 GHz BSS space station transmitting in the 17.3–17.8 GHz band to be located less than four degrees from a previously authorized or proposed co-frequency 17/24 GHz BSS space station;

(ii) Applicants for a FSS space station transmitting in the 17.3–17.8 GHz band to be located less than four degrees from a previously authorized or proposed co-frequency 17/24 GHz BSS space station; and

(iii) Applicants for a 17/24 GHz BSS space station transmitting in the 17.3–17.8 GHz band to be located less than four degrees from a previously authorized or proposed co-frequency FSS space station transmitting in the 17.3–17.8 GHz band.

(4) Where an authorized or proposed 17/24 GHz BSS or FSS space station is located within four degrees of a previously authorized or proposed 17/24 GHz BSS space station, no new third proposed 17/24 GHz BSS or FSS space station may be located within eight degrees of the first authorized or proposed space station in the same direction as the second authorized or proposed space station, unless the applicant for the third space station certifies that its proposed operation has been coordinated with the operator of the first previously authorized or proposed 17/24 GHz BSS space station, or the applicant for the third proposed space station provides an interference analysis of the kind described in this section, or the applicant for the third proposed space station demonstrates that its proposed network will not cause more interference to the first previously authorized or proposed space station than if the applicant for the third proposed space station were located at an orbital separation of eight degrees from the first previously authorized or proposed 17/24 GHz BSS space station.

(5) In addition to the requirements of paragraphs (b)(1)–(4) of this section, the link budget for any satellite transmitting in the 17.3–17.8 GHz band (space-to-Earth) must take into account longitudinal station-keeping tolerances. Any applicant for a space station transmitting in the 17.3–17.8 GHz band that has reached a coordination agreement with an operator of another space station to allow that operator to exceed the PFD levels specified in paragraph (a)(3)(iii) or (b)(2) of this section, must use those higher PFD levels for the purpose of this showing.

(c) *GSO FSS operations in certain bands.*

(1) An operator of a GSO FSS space station in the conventional or extended C-bands, conventional or extended Ku-bands, 24.75–25.25 GHz band (Earth-to-space), or conventional or extended Ka-bands may notify the Commission of its non-routine transmission levels and be relieved of the obligation to coordinate such levels with later applicants and petitioners.

(2) The letter notification must include the downlink off-axis EIRP density levels or power flux density levels and/or uplink off-axis EIRP density levels, specified per frequency range and space station antenna beam, that exceed the relevant routine limits set forth in paragraphs (a)(3)(i) through (iii) of this section and § 100.280.

(3) Non-routine transmissions notified pursuant to this section need not be coordinated with operators of authorized co-frequency space stations that filed their complete applications or petitions after the date of filing of the notification with the Commission. Such later applicants and petitioners must accept any additional interference caused by the notified non-routine transmissions.

(4) An operator of a replacement space station, may operate with non-routine transmission levels to the extent permitted under this section for the replaced space station.

(d) *Geographic service requirements.*

(1) Each operator of a 17/24 GHz BSS space station that is used to provide video programming directly to consumers in the 48 contiguous United States (CONUS) must provide comparable service to Alaska and Hawaii, unless such service is not technically feasible or not economically reasonable from the authorized orbital location.

(2) Each operator of a 17/24 GHz BSS space station subject to paragraph (d)(1) of this section must design and configure its space station to be capable of providing service to Alaska and Hawaii, that is comparable to the service that such satellites will provide to CONUS subscribers, from any orbital location capable of providing service to either Alaska or Hawaii to which it may be located or relocated in the future.

(3) If an operator of a 17/24 GHz BSS space station that is used to provide video programming directly to consumers in the United States relocates or replaces a 17/24 GHz BSS space station at a location from which service to Alaska and Hawaii had been provided by another 17/24 GHz BSS space station, the operator must use a space station capable of providing at least the same level of service to Alaska and Hawaii as previously provided from that location.

§ 100.231 Licensing and domestic coordination requirements for 17/24 GHz BSS space stations and FSS space stations transmitting in the 17.3–17.8 GHz band.

(a) A 17/24 GHz BSS or FSS applicant seeking to transmit in the 17.3–17.8 GHz band may be authorized to operate a space station at levels up to the maximum power flux density limits defined in paragraphs (a)(1) and (2) of this section without coordinating its power flux density levels with adjacent licensed or permitted operators, as follows:

(1) For 17/24 GHz BSS applicants, up to the power flux density levels specified in § 100.230 only if there is no licensed space station, or prior-filed application for a space station transmitting in the 17.3–17.8 GHz band at a location less than four degrees from the orbital location at which the applicant proposes to operate; and

(2) For FSS space station applicants transmitting in the 17.3–17.8 GHz band, up to the maximum power flux density levels in § 100.230, only if there is no licensed 17/24 GHz BSS space station, or prior-filed application for a 17/24 GHz BSS space station, at a location less than four degrees from the orbital location at which the FSS applicant proposes to operate, and there is no licensed FSS space station, or prior-filed application for an FSS space station transmitting in the 17.3–17.8 GHz band, at a location less than two degrees from the orbital location at which the applicant proposes to operate.

(b) Any U.S. licensee or permittee authorized to transmit in the 17.3–17.8 GHz band that does not comply with the applicable power flux-density limits set forth in § 100.230 shall bear the burden of coordinating with any future co-frequency licensees and permittees of a space station transmitting in the 17.3–17.8 GHz band.

(c) If no good faith agreement can be reached, the operator of the FSS space station transmitting in the 17.3–17.8 GHz band that does not comply with § 100.230 or the operator of the 17/24 GHz BSS space station that does not comply with § 100.230 shall reduce its power flux-density levels to be compliant with those specified in § 100.230 as appropriate.

(d) Any U.S. licensee or permittee of a space station transmitting in the 17.3–17.8 GHz band that is required to provide information in its application pursuant to § 100.230 must accept any increased interference that may result from adjacent space stations

transmitting in the 17.3–17.8 GHz band that are operating in compliance with the rules for such space stations specified in this part.

(e) Notwithstanding the provisions of this section, licensees and permittees will be allowed to apply for a license or authorization for a replacement space stations that will be operated at the same power level and interference protection as the satellite to be replaced.

§ 100.232 Requirements to facilitate reverse-band operation in the 17.3–17.8 GHz band.

(a) Each applicant or licensee for a space station transmitting in the 17.3–17.8 GHz band must submit a series of tables or graphs containing predicted off-axis gain data for each antenna that will transmit in any portion of the 17.3–17.8 GHz band, in accordance with the following specifications. Using a Cartesian coordinate system wherein the X axis is tangent to the geostationary orbital arc with the positive direction pointing east, *i.e.,* in the direction of travel of the satellite; the Y axis is parallel to a line passing through the geographic north and south poles of the Earth, with the positive direction pointing south; and the Z axis passes through the satellite and the center of the Earth, with the positive direction pointing toward the Earth, the applicant or licensee must provide the predicted transmitting antenna off-axis antenna gain information:

(1) In the X–Z plane, *i.e.,* the plane of the geostationary orbit, over a range of ±30 degrees from the positive and negative X axes in increments of 5 degrees or less.

(2) In planes rotated from the X–Z plane about the Z axis, over a range of ±60 degrees relative to the equatorial plane, in increments of 10 degrees or less.

(3) In both polarizations.

(4) At a minimum of one measurement frequency at the center of the portion of the 17.3–17.8 GHz frequency band over which the space station is designed to transmit. Applicants or licensees must provide additional measurement data at 5 MHz above the lower edge of the band and/or at 5 MHz below the upper edge of the band, upon request by the Commission staff.

(5) Over a greater angular measurement range, if necessary, to account for any planned spacecraft orientation bias or change in operating orientation relative to the reference coordinate system. The applicant or licensee must state the reasons for including such additional information.

(b) A space station applicant or licensee transmitting in any portion of the 17.3–17.8 GHz band must submit PFD calculations based on the predicted gain data submitted in accordance with paragraph (a) of this section, as follows:

(1) The PFD calculations must be provided at the location of all prior-filed U.S. DBS space stations where the applicant's PFD level exceeds the coordination trigger of −117 dBW/m²/100 kHz in the 17.3–17.8 GHz band. In this rule, the term prior-filed U.S. DBS space station refers to any co-frequency Direct Broadcast Satellite service space station for which an application was filed with the Commission, or an authorization was granted by the Commission, prior to the filing of the information and certifications required by paragraphs (a) and (b) of this section. The term prior-filed U.S. DBS space station does not include any applications (or authorizations) that have been denied, dismissed, or are otherwise no longer valid. Prior-filed U.S. DBS space stations may include foreign-licensed DBS space stations seeking authority to serve the United States market, but do not include foreign-licensed DBS space stations that have not filed applications with the Commission for market access in the United States.

(2) The calculations must take into account the aggregate PFD levels at the DBS receiver at each measurement frequency arising from all antenna beams on the space station transmitting in the 17.3–17.8 GHz band. They must also take into account the maximum permitted longitudinal station- keeping tolerance, orbital inclination and orbital eccentricity of both the space station transmitting in the 17.3–17.8 GHz band and DBS space stations, and must:

(i) Identify each prior-filed U.S. DBS space station at whose location the coordination threshold PFD level of −117 dBW/m²/100 kHz is exceeded; and

(ii) Indicate the extent to which the calculated PFD of the space station's transmissions in the 17.3–17.8 GHz band exceed the threshold PFD level of −117 dBW/m²/100 kHz at those prior-filed U.S. DBS space station locations.

(3) If the calculated PFD exceeds the threshold level of −117 dBW/m²/100 kHz at the location of any prior-filed U.S. DBS space station, the applicant or licensee must also provide with the PFD calculations a certification that all affected DBS operators acknowledge and do not object to such higher off-axis PFD levels. No such certification is required in cases where the frequencies assigned to the DBS and to the space station transmitting in the 17.3–17.8 GHz band do not overlap.

(4) The information and any certification required by paragraph (b) of this section must be submitted to the Commission for each license application that is filed for a space station transmitting in any portion of the 17.3–17.8 GHz band no later than two years after license grant for the space station.

(c) No later than two months prior to launch, each licensee of a space station transmitting in any portion of the 17.3–17.8 GHz band must update the predicted transmitting antenna off-axis gain information provided in accordance with paragraph (a) of this section by submitting measured transmitting antenna off-axis gain information over the angular ranges, measurement frequencies and polarizations specified in paragraphs (a)(1) through (5) of this section. The transmitting antenna off-axis gain information should be measured under conditions as close to flight configuration as possible. As an alternative, licensees authorized to operate at locations one degree or greater from a prior-filed DBS space station may submit simulated transmitting antenna off-axis gain data in lieu of measured data, over the same angular ranges, frequencies and polarizations.

(d) No later than two months prior to launch, or when applying for authority to change the location of a space station transmitting in any portion of the 17.3–17.8 GHz band that is already in orbit, each such space station licensee must provide PFD calculations based on the measured off-axis gain data submitted in accordance with paragraph (c) of this section, as follows:

(1) The PFD calculations must be provided:

(i) At the location of all prior-filed U.S. DBS space stations as defined in paragraph (b)(1) of this section, where the applicant's PFD level in the 17.3–17.8 GHz band exceeds the coordination trigger of −117 dBW/m²/100 kHz; and

(ii) At the location of any subsequently filed U.S. DBS space station where the PFD level in the 17.3–17.8 GHz band calculated on the basis of measured gain data exceeds −117 dBW/m²/100 kHz. In paragraph (d)(1)(ii) of this section, the term ''subsequently filed U.S. DBS space station'' refers to any co-frequency DBS service space station proposed in a license application filed with the Commission after the operator of a space station transmitting in any portion of the 17.3–17.8 GHz band submitted the predicted data required by paragraphs (a) and (b) of this section but before submission of the

measured data required by this paragraph. Subsequently filed U.S. DBS space stations may include foreign-licensed DBS space stations seeking authority to serve the United States market. The term does not include any applications (or authorizations) that have been denied, dismissed, or are otherwise no longer valid, nor does it include foreign-licensed DBS space stations that have not filed applications with the Commission for market access in the United States.

(2) The PFD calculations must take into account the maximum permitted longitudinal station-keeping tolerance, orbital inclination and orbital eccentricity of both the transmitting 17.3–17.8 GHz and DBS space stations, and must:

(i) Identify each prior-filed U.S. DBS space station at whose location the coordination threshold PFD level of −117 dBW/m²/100 kHz is exceeded; and

(ii) Demonstrate the extent to which the applicant's or licensee's transmissions in the 17.3–17.8 GHz band exceed the threshold PFD level of −117 dBW/m²/100 kHz at those prior-filed U.S. DBS space station locations.

(e) If the aggregate PFD level calculated from the measured data submitted in accordance with paragraph (d) of this section is in excess of the threshold PFD level of −117 dBW/m²/100 kHz:

(1) At the location of any prior-filed U.S. DBS space station as defined in paragraph (b)(1) of this section, then the operator of the space station transmitting in any portion of the 17.3–17.8 GHz band must either:

(i) Coordinate its operations that are in excess of the threshold PFD level of −117 dBW/m²/100 kHz with the affected prior-filed U.S. DBS space station operator, or

(ii) Adjust its operating parameters so that at the location of the prior-filed U.S. DBS space station, the PFD level of −117 dBW/m²/100 kHz is not exceeded.

(2) At the location of any subsequently filed U.S. DBS space station as defined in paragraph (d)(1) of this section, where the aggregate PFD level submitted in accordance with paragraph (d) of this section is also in excess of the PFD level calculated on the basis of the predicted data submitted in accordance with paragraph (a) of this section that were on file with the Commission at the time the DBS space station application was filed, then the operator of the space station transmitting in the 17.3–17.8 GHz band must either:

(i) Coordinate with the affected subsequently-filed U.S. DBS space station operator all of its operations that are either in excess of the PFD level calculated on the basis of the predicted antenna off-axis gain data, or are in excess of the threshold PFD level of −117 dBW/m²/100 kHz, whichever is greater; or

(ii) Adjust its operating parameters so that at the location of the subsequently-filed U.S. DBS space station, either the PFD level calculated on the basis of the predicted off-axis transmitting antenna gain data, or the threshold PFD level of −117 dBW/m²/100 kHz, whichever is greater, is not exceeded.

(3) No coordination or adjustment of operating parameters is required in cases where there is no overlap in frequencies assigned to the DBS and the space station transmitting in the 17.3–17.8 GHz band.

(f) The applicant or licensee for the space station transmitting in the 17.3–17.8 GHz band must modify its license, or amend its application, as appropriate, based upon new information:

(1) If the PFD levels submitted in accordance with paragraph (d) of this section, are in excess of those submitted in accordance with paragraph (b) of this section at the location of any prior-filed or subsequently-filed U.S. DBS space station as defined in paragraphs (b)(1) and (d)(1) of this section, or

(2) If the operator of the space station transmitting in the 17.3–17.8 GHz band adjusts its operating parameters in accordance with paragraph (e)(1)(ii) or (e)(2)(ii) or this section.

(g) Absent an explicit agreement between operators to permit more closely spaced operations, U.S. authorized 17/24 GHz BSS or FSS space stations transmitting in the 17.3–17.8 GHz band and U.S. authorized DBS space stations with co-frequency assignments may not be licensed to operate at locations separated by less than 0.2 degrees in orbital longitude.

(h) All operational space stations transmitting in the 17.3–17.8 GHz band must be maintained in geostationary orbits that:

(1) Do not exceed 0.075° of inclination.

(2) Operate with an apogee less than or equal to 35,806 km above the surface of the Earth, and with a perigee greater than or equal to 35,766 km above the surface of the Earth (*i.e.,* an eccentricity of less than $4.7 \times 10-4$).

(i) U.S. authorized DBS networks may claim protection from space path interference arising from the reverse-band operations of U.S. authorized space stations transmitting in the 17.3–17.8 GHz band to the extent that the DBS space station operates within the bounds of inclination and eccentricity listed in paragraphs (i)(1) and (2) of this section. When the geostationary orbit of the DBS space station exceeds these bounds on inclination and eccentricity, it may not claim protection from any additional space path interference arising as a result of its inclined or eccentric operations and may only claim protection as if it were operating within the bounds listed in paragraphs (i)(1) and (2) of this section:

(1) The DBS space station's orbit does not exceed 0.075° of inclination; and

(2) The DBS space station's orbit maintains an apogee less than or equal to 35,806 km above the surface of the Earth, and a perigee greater than or equal to 35,766 km above the surface of the Earth (*i.e.,* an eccentricity of less than $4.7 \times 10-4$).

§ 100.233 Provisions for direct broadcast satellite service.

(a) *Geographic service requirements.* Applicants for DBS service must provide DBS service to Alaska and Hawaii where such service is technically feasible from the authorized orbital location. This requirement does not apply to DBS satellites authorized to operate at the 61.5° W.L. orbital location. DBS applicants seeking to operate from locations other than 61.5° W.L. who do not provide service to Alaska and Hawaii must provide technical analyses to the Commission demonstrating that such service is not feasible as a technical matter, or that while technically feasible such services would require so many compromises in satellite design and operation as to make it economically unreasonable.

(b) *Technical qualifications.* DBS operations must be in accordance with the sharing criteria and technical characteristics contained in Appendices 30 and 30A of the ITU's Radio Regulations. Operation of systems using differing technical characteristics may be permitted, with adequate technical showing, and if a request has been made to the ITU to modify the appropriate Plans to include the system's technical parameters.

§ 100.234 Analog video transmissions in the FSS.

(c) All conventional C-band analog video transmissions must contain an energy dispersal signal at all times with a minimum peak-to-peak bandwidth set at whatever value is necessary to meet the power flux density limits specified in § 100.212 and successfully coordinated internationally and accepted by adjacent U.S. satellite operators based on the use of state of the

art space and earth station facilities. All transmissions in frequency bands described in § 100.212 must also contain an energy dispersal signal at all times with a minimum peak-to-peak bandwidth set at whatever value is necessary to meet the power flux density limits specified in § 100.212 and successfully coordinated internationally and accepted by adjacent U.S. satellite operators based on the use of state of the art space and earth station facilities.

(d) All initial analog video transmissions shall be preceded by a video test transmission at an uplink e.i.r.p. at least 10 dB below the normal operating level. The earth station operator shall not increase power until receiving notification from the satellite network control center that the frequency and polarization alignment are satisfactory pursuant to the procedures specified in § 100.240. The stationary earth station operator that has successfully transmitted an initial video test signal to a satellite pursuant to this paragraph is not required to make subsequent video test transmissions if subsequent transmissions are conducted using exactly the same parameters as the initial transmission.

(e) An earth station may be routinely licensed for transmission of full-transponder analog video services in the 5925–6425 MHz band or 14.0–14.5 GHz band provided:

(1) The application includes certification, of conformance with the antenna performance standards in § 100.279;

(2) For transmission in the 5925–6425 MHz band, the input power into the antenna will not exceed 26.5 dBW; or

(3) For transmission in the 14.0–14.5 GHz band, the input power into the antenna will not exceed 27 dBW.

§ 100.235 Inclined orbit operations.

Licensees operating in inclined-orbit are required to:

(a) Periodically correct the satellite attitude to achieve a stationary spacecraft antenna pattern on the surface of the Earth and centered on the satellite's designated service area;

(b) Control all electrical interference to adjacent satellites, as a result of operating in an inclined orbit, to levels not to exceed that which would be caused by the satellite operating without an inclined orbit;

(c) Not claim protection in excess of the protection that would be received by the satellite network operating without an inclined orbit; and

(d) Continue to maintain the space station at the authorized longitude orbital location in the geostationary satellite arc with the appropriate east-west station-keeping tolerance.

Coordination/Interference/Sharing for Space Stations

§ 100.240 NGSO/GSO sharing/coordination.

(a) *Protection of GSO networks by NGSO systems.* Unless otherwise provided in this chapter, an NGSO system licensee must not cause harmful interference to, or claim protection from, a GSO FSS or GSO BSS network. An NGSO licensee operating in compliance with the applicable equivalent power flux-density limits in Article 22, Section II of the ITU Radio Regulations (incorporated by reference, § 100.4) will be considered as having fulfilled this obligation with respect to any GSO network.

(b) 10.7–12.75 GHz NGSO/GSO coordination. Coordination will be required between NGSO FSS systems and GSO FSS earth stations in the 10.7–12.75 GHz band when:

(1) The GSO satellite network has receive earth stations with earth station antenna maximum isotropic gain greater than or equal to 64 dBi; G/T of 44 dB/K or higher; and emission bandwidth of 250 MHz; and

(2) The $EPFD_{down}$ radiated by the NGSO satellite system into the GSO specific receive earth station, either within the U.S. for domestic service or any points outside the U.S. for international service, as calculated using the ITU software for examining compliance with EPFD limits exceeds -174.5 dB(W/(m^2/40kHz)) for any percentage of time for NGSO systems with all satellites only operating at or below 2500 km altitude, or -202 dB(W/(m^2/40kHz)) for any percentage of time for NGSO systems with any satellites operating above 2500 km altitude.

(c) *Coordination among inter-satellite service systems.* Applicants for authority to establish inter-satellite service are encouraged to coordinate their proposed frequency usage with existing permittees and licensees in the inter-satellite service whose facilities could be affected by the new proposal in terms of frequency interference or restricted system capacity. All affected applicants, permittees, and licensees, shall at the direction of the Commission, cooperate fully and make every reasonable effort to resolve technical problems and conflicts that may inhibit effective and efficient use of the radio spectrum; however, the permittee or licensee being coordinated with is not obligated to suggest changes or re-engineer an applicant's proposal in cases involving conflicts.

§ 100.241 Sharing among NGSO FSS space stations.

(a) *Scope.* This section applies 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.

(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) *Default procedure for NGSO FSS space stations.* Absent coordination between two or more satellite systems, whenever the 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 six percent 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 in accordance with the following procedure:

(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. The selection order for each satellite network will be 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;

(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 six percent threshold is exceeded;

(3) All affected station(s) may resume operations throughout the assigned frequency bands once the threshold is no longer exceeded.

(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 § 100.149 or otherwise.

(1) Compatibility showings must contain the following elements:

(i) A demonstration that the later-round system will cause no more than three percent time-weighted average degraded throughput of the link to the earlier-round system, for links with a baseline link availability of 99.0% or higher at a C/N threshold of 0 dB;

(ii) A demonstration that the later-round system will cause no more than 0.4% absolute change in link availability to the earlier-round system using a C/N threshold value of 0 dB, for links with a baseline link availability of 99.0% link availability or higher; and

(iii) With respect to an earlier-round system that has not yet satisfied its 50% deployment milestone pursuant to § 100.147, the compatibility showing may consider only 50% deployment of the earlier-round system; if the 50% deployment milestone has been satisfied, the showing must consider 100% deployment of the authorized system.

(2) Compatibility showings will be placed on public notice pursuant to § 100.132.

(3) 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.

(4) A later-round NGSO FSS system will be required to conform its operations to its compatibility showing submitted for the protection of an earlier-round system to the extent necessary to protect the actual number of deployed and operating space stations of the earlier-round system.

(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.

§ 100.242 Time sharing between NOAA meteorological satellite systems and non-voice, non-geostationary satellite systems in the 137–138 MHz band.

(a) The space stations of a non-voice, non-geostationary Mobile-Satellite Service (NVNG MSS) system time-sharing downlink spectrum in the 137–138 MHz band with National Oceanic and Atmospheric Administration (NOAA) satellites shall not transmit signals into the ''protection areas'' of the NOAA satellites.

(1) With respect to transmission in the 137.333–137.367 MHz, 137.485–137.515 MHz, 137.605–137.635 MHz, and 137.753–137.787 MHz bands, the protection area for a NOAA satellite is the area on the Earth's surface in which the NOAA satellite is in line of sight from the ground at an elevation angle of five degrees or more above the horizon. No NVNG MSS satellite shall transmit in these bands when it is in line of sight at an elevation angle of zero degrees or more from any point on the ground within a NOAA satellite's protected area for that band.

(2) With respect to transmission in the 137.025–137.175 MHz and 137.825–138 MHz bands, the protection area for a NOAA satellite is the area on the Earth's surface in which the NOAA satellite is in line of sight from the ground at any elevation angle above zero degrees. No NVNG MSS satellite shall transmit in these bands when at a line-of-sight elevation angle of zero degrees or more from any point on the ground within a NOAA satellite's protected area for that band. In addition, such an NVNG MSS satellite shall cease transmitting when it is at an elevation angle of less than zero degrees from any such point, if reasonably necessary to protect reception of the NOAA satellite's signal.

(3) An NVNG MSS licensee is responsible for obtaining the ephemeris data necessary for compliance with these restrictions. The ephemeris information must be updated system-wide on at least a weekly basis. For calculation required for compliance with these restrictions an NVNG MSS licensee shall use an orbital propagator algorithm with an accuracy equal to or greater than the NORAD propagator used by NOAA.

(b) An NVNG licensee time sharing spectrum in the 137–138 MHz band must establish a 24-hour per day contact person and telephone number so that claims of harmful interference into NOAA earth stations and other operational issues can be reported and resolved expeditiously. This contact information must be made available to NOAA or its designee. If the NTIA notifies the Commission that NOAA is receiving harmful interference from a NVNG licensee, the Commission will require such NVNG licensee to terminate its interfering operations immediately unless it demonstrates to the Commission's reasonable satisfaction, and that of NTIA, that it is not responsible for causing harmful interference into the worldwide NOAA system. An NVNG licensee assumes the risk of any liability or damage that it and its directors, officers, employees, affiliates, agents and subcontractors may incur or suffer in connection with an interruption of its MSS, in whole or in part, arising from or relating to its compliance or noncompliance with the requirements of this paragraph.

(c) Each satellite in a NVNG licensee's system time-sharing spectrum with NOAA in the 137–138 MHz band shall automatically turn off and cease satellite transmissions if, after 72 consecutive hours, no reset signal is received from the NVNG licensee's gateway earth station and verified by the satellite. All satellites in such NVNG licensee's system shall be capable of instantaneous shutdown on any sub-band upon command from such NVNG licensee's gateway earth station.

§ 100.243 Time sharing between DoD meteorological satellite systems and non-voice, non-geostationary satellite systems in the 400.15–401 MHz band.

(a) The space stations of a non-voice, non-geostationary Mobile-Satellite Service (NVNG MSS) system time-sharing downlink spectrum in the 400.15–401.0 MHz band with Department of Defense (DoD) satellites shall not transmit signals into the ''protection areas'' of the DoD satellites.

(1) The protection area for such a DoD satellite is the area on the Earth's surface in which the DoD satellite is in line of sight from the ground at an elevation angle of five degrees or more above the horizon.

(2) An NVNG MSS space station shall not transmit in the 400.15–401 MHz band when at a line-of-sight elevation angle of zero degrees or more from any point on the ground within the protected area of a DoD satellite operating in that band.

(3) An NVNG MSS licensee is responsible for obtaining the ephemeris data necessary for compliance with this restriction. The ephemeris information must be updated system-wide at least once per week. For calculation required for compliance with this restriction an NVNG MSS licensee shall use an orbital propagator algorithm with an accuracy equal to or greater than the NORAD propagator used by DoD.

(b) An NVNG licensee time sharing spectrum in the 400.15–401 MHz band must establish a 24-hour per day contact person and telephone number so that claims of harmful interference into DoD earth stations and other operational issues can be reported and resolved expeditiously. This contact information must be made available to DoD or its designee. If the NTIA notifies the Commission that DoD is receiving harmful interference from a NVNG licensee, the Commission will require such NVNG licensee to terminate its interfering operations immediately unless it demonstrates to the Commission's reasonable satisfaction, and that of NTIA, that it is not responsible for causing harmful interference into the worldwide DoD system. A NVNG licensee assumes the risk of any liability or damage that it and its directors, officers, employees, affiliates, agents and subcontractors may incur or suffer in connection with an interruption of its MSS, in whole or in part, arising from or relating to its compliance or noncompliance with the requirements of this paragraph.

(c) Each satellite in a NVNG licensee's system time-sharing spectrum with DoD in the 400.15–401 MHz band shall automatically turn off and cease satellite transmissions if, after 72 consecutive hours, no reset signal is received from the NVNG licensee's gateway earth station and verified by the satellite. All satellites in such NVNG licensee's system shall be capable of instantaneous shutdown on any sub-band upon command from such NVNG licensee's gateway earth station.

(d) Initially, a NVNG licensee time-sharing spectrum with DoD in the 400.15–401 MHz band shall be able to change the frequency on which its system satellites are operating within 125 minutes of receiving notification from a DoD required frequency change in the 400.15–401 MHz band. Thereafter, when an NVNG licensee constructs additional gateway earth stations located outside of North and South America, it shall use its best efforts to decrease to 90 minutes the time required to implement a DoD required frequency change. An NVNG licensee promptly shall notify the Commission and NTIA of any decrease in the time it requires to implement a DoD required frequency change.

(e) Once an NVNG licensee time-sharing spectrum with DoD in the 400.15–401 MHz band demonstrates to DoD that it is capable of implementing a DoD required frequency change within the time required under paragraph (d) of this section; thereafter, such NVNG licensee shall demonstrate its capability to implement a DoD required frequency change only once per year at the instruction of DoD. Such demonstrations shall occur during off-peak hours, as determined by the NVNG licensee, unless otherwise agreed by the NVNG licensee and DoD. Such NVNG licensee will coordinate with DoD in establishing a plan for such a demonstration. In the event that an NVNG licensee fails to demonstrate to DoD that it is capable of implementing a DoD required frequency change in accordance with a demonstration plan established by DoD and the NVNG licensee, upon the Commission's receipt of a written notification from NTIA describing such failure, the Commission shall impose additional conditions or requirements on the NVNG licensee's authorization as may be necessary to protect DoD operations in the 400.15–401 MHz downlink band until the Commission is notified by NTIA that the NVNG licensee has successfully demonstrated its ability to implement a DoD required frequency change. Such additional conditions or requirements may include, but are not limited to, requiring such NVNG licensee immediately to terminate its operations interfering with the DoD system.

§ 100.244 Inter-service coordination requirements for the 1.6/2.4 GHz MSS.

(f) *Protection of the radio astronomy service in the 1610.6–1613.8 MHz band against interference from 1.6/2.4 GHz MSS systems.*

(1) All 1.6/2.4 GHz MSS systems shall be capable of determining the position of the user transceivers accessing the space segment through either internal radiodetermination calculations or external sources such as LORAN–C or the Global Positioning System.

In the 1610.6–1613.8 MHz band, within a 160 km radius of the following radio astronomy sites:

Observatory	Latitude (DMS)	Longitude (DMS)
Arecibo, PR	18 20 46	66 45 11
Green Bank Telescope, WV	38 25 59	79 50 24
	38 26 09	79 49 42
Very Large Array, NM	34 04 43	107 37 04
Owens Valley, CA	37 13 54	118 17 36
Ohio State, OH	40 15 06	83 02 54

(i) In the 1610.6–1613.8 MHz band, within a 50 km radius of the following radio astronomy sites:

Observatory	Latitude (DMS)	Longitude (DMS)
Pile Town, NM	34 18 04	108 07 07
Los Alamos, NM	35 46 30	106 14 42
Kitt Peak, AZ	31 57 22	111 36 42
Ft. Davis, TX	30 38 06	103 56 39
N. Liberty, IA	41 46 17	91 34 26
Brewster, WA	48 07 53	119 40 55
Owens Valley, CA	37 13 54	118 16 34
St. Croix, VI	17 45 31	64 35 03
Mauna Kea, HI	19 48 16	155 27 29
Hancock, NH	42 56 01	71 59 12

(ii) Out-of-band emissions of a mobile earth station licensed to operate within the 1610.0–1626.5 MHz band shall be attenuated so that the PFD it produces in the 1610.6–1613.8 MHz band at any radio astronomy site listed in paragraph (a)(1)(i) or (ii) of this section shall not exceed the emissions of a mobile earth station operating within the 1610.6–1613.8 MHz band at the edge of the protection zone applicable for that site. As an alternative, a mobile earth station shall not operate during radio astronomy observations within the 1613.8–1615.8 MHz band within 100 km of the radio astronomy sites listed in paragraph (a)(1)(i) of this section, and within 30 km of the sites listed in paragraph (a)(1)(ii) of this section, there being no restriction on a mobile earth station operating within the 1615.8–1626.5 MHz band.

(iii) For airborne mobile earth stations operating in the 1610.0–1626.5 MHz band, the separation distance shall be the larger of the distances specified in paragraph (a)(1)(i), (ii), or (iii) of this section, as applicable, or the distance, d, as given by the formula:

d (km) = 4.1 square root of (h)

where h is the altitude of the aircraft in meters above ground level.

(iv) Smaller geographic protection zones may be used in lieu of the areas specified in paragraphs (a)(1)(i), (ii), (iii), and (iv) of this section if agreed to by the MSS licensee and the Electromagnetic Spectrum Management Unit (ESMU), National Science Foundation, Washington, DC upon a showing by the MSS licensee that the operation of a mobile earth station will not cause harmful interference to a radio astronomy observatory during periods of observation.

(v) The ESMU shall notify MSS space station licensees authorized to operate mobile earth stations in the 1610.0–1626.5 MHz band of periods of radio astronomy observations. The MSS systems shall be capable of terminating operations within the frequency bands and protection zones specified in paragraphs (a)(1)(i) through (iv) of this section, as applicable, after the first position fix of the mobile earth station either prior to transmission or, based upon its location within the protection zone at the time of initial transmission of the mobile earth station. Once the Mobile-Satellite Service system

determines that a mobile earth station is located within an RAS protection zone, the Mobile-Satellite Service system shall immediately initiate procedures to relocate the mobile earth station operations to a non-RAS frequency.

(vi) A beacon-actuated protection zone may be used in lieu of fixed protection zones in the 1610.6–1613.8 MHz band if a coordination agreement is reached between a MSS system licensee and the ESMU on the specifics of beacon operations.

(2) Additional radio astronomy sites, not located within 100 miles of the 100 most populous urbanized areas as defined by the United States Census Bureau at the time, may be afforded similar protection one year after notice to the MSS system licensees by issuance of a public notice by the Commission.

(3) MSS space stations transmitting in the 1613.8–1626.5 MHz band shall take whatever steps necessary to avoid causing harmful interference to the radio astronomy facilities listed in paragraphs (a)(1)(i) and (ii) of this section during periods of observation.

(4) MSS space stations operating in the 2483.5–2500 MHz frequency band shall limit spurious emission levels in the 4990–5000 MHz band so as not to exceed -241 dB (W/m^2/Hz) at the surface of the Earth.

(5) The Radioastronomy Service shall avoid scheduling radio astronomy observations during peak MSS/RDSS traffic periods to the greatest extent practicable.

(g) If a MSS space station operator in the 2496–2500 MHz band intends to operate at powers levels that exceed the PFD limits in § 100.212, or if actual operations routinely exceed these PFD limits, the MSS operator must receive approval from each operational BRS system in the affected geographical region.

§ 100.245 Acceptance of interference in 2000–2020 MHz.

MSS receivers operating in the 2000–2020 MHz band must accept interference from lawful operations in the 1995–2000 MHz band, where such interference is due to:

(a) The in-band power of any operations in 1995–2000 MHz (*i.e.,* the portion of transmit power contained in the 1995–2000 MHz band); or

(b) The portion of out-of-band emissions contained in 2000–2005 MHz.

Satellite Digital Audio Radio Service

§ 100.250 Licensing provisions for the 2.3 GHz satellite digital audio radio service.

(a) *General requirements.* Each application for a system authorization in the satellite digital audio radio service in the 2310–2360 MHz band shall describe in detail the proposed satellite digital audio radio system, setting forth all pertinent technical and operational aspects of the system, and the technical, legal, and financial qualifications of the applicant.

(b) *Technical qualifications.* In addition to the information specified in paragraph (a)(1) of this section, each applicant shall:

(1) Demonstrate that its system will, at a minimum, service the 48 contiguous states of the United States (full CONUS); and

(2) Certify that its satellite DARS system includes a receiver that will permit end users to access all licensed satellite DARS systems that are operational or under construction.

(c) *Milestone requirements.* Each applicant for system authorization in the satellite digital audio radio service must demonstrate within 10 days after a required implementation milestone as specified in the system authorization, and on the basis of the documentation contained in its application, certify to the Commission by affidavit that the milestone has been met or notify the Commission by letter that it has not been met. At its discretion, the Commission may require the submission of additional information (supported by affidavit of a person or persons with knowledge thereof) to demonstrate that the milestone has been met. The satellite DARS milestones are as follows, based on the date of authorization:

(1) One year: complete contracting for construction of first satellite or begin satellite construction;

(2) Two years: if applied for, complete contracting for construction of second satellite or begin second satellite construction;

(3) Four years: in orbit operation of at least one satellite; and

(4) Six years: full operation of the satellite system.

§ 100.251 Information sharing requirements for SDARS terrestrial repeater operators.

This section requires SDARS licensees in the 2320–2345 MHz band to share information regarding the location and operation of terrestrial repeaters with WCS licensees in the 2305–2320 MHz and 2345–2360 MHz bands. § 27.72 of this chapter requires WCS licensees to share information regarding the location and operation of base stations in the 2305–2320 MHz and 2345–2360 MHz bands with SDARS licensees in the 2320–2345 MHz band.

(a) *Site and frequency selection.* SDARS licensees must select terrestrial repeater sites and frequencies, to the extent practicable, to minimize the possibility of harmful interference to WCS base station operations in the 2305–2320 MHz and 2345–2360 MHz bands.

(b) *Notice requirements.* SDARS licensees that intend to operate a new terrestrial repeater must, before commencing such operation, provide 10 business days prior notice to all potentially affected Wireless Communications Service (WCS) licensees. SDARS licensees that intend to modify an existing repeater must, before commencing such modified operation, provide five business days prior notice to all potentially affected WCS licensees.

(1) For purposes of this section, a ''potentially affected WCS licensee'' is a WCS licensee that:

(i) Is authorized to operate a base station in the 2305–2315 MHz or 2350–2360 MHz bands in the same Major Economic Area (MEA) as that in which the terrestrial repeater is to be located;

(ii) Is authorized to operate base station in the 2315–2320 MHz or 2345–2350 MHz bands in the same Regional Economic Area Grouping (REAG) as that in which the terrestrial repeater is to be located;

(iii) In addition to the WCS licensees identified in paragraphs (b)(1)(i) and (ii) of this section, in cases in which the SDARS licensee plans to deploy or modify a terrestrial repeater within 5 kilometers of the boundary of an MEA or REAG in which the terrestrial repeater is to be located, a potentially affected WCS licensee is one that is authorized to operate a WCS base station in that neighboring MEA or REAG within 5 kilometers of the location of the terrestrial repeater.

(2) For modifications other than changes in location, a licensee may provide notice within 24 hours after the modified operation if the modification does not result in a predicted increase of the PFD at ground level by more than 1 dB since the last advance notice was given. If a demonstration is made by the WCS licensee that such modifications may cause harmful interference to WCS receivers, SDARS licensees will be required to provide notice five business days in advance of additional repeater modifications.

(3) SDARS repeaters operating below 2 watts EIRP are exempt from the notice requirements set forth in this paragraph.

(4) SDARS licensees are encouraged to develop separate coordination agreements with WCS licensees to facilitate efficient deployment of and coexistence between each service. To the extent the provisions of any such

coordination agreement conflict with the requirements set forth herein, the procedures established under a coordination agreement will control. SDARS licensees must maintain a copy of any coordination agreement with a WCS license in their station files and disclose it to prospective assignees, transferees, or spectrum lessees and, upon request, to the Commission.

(5) SDARS and WCS licensees may enter into agreements regarding alternative notification procedures.

(c) *Contents of notice.*

(1) Notification must specify relevant technical details, including, at a minimum:

(i) The coordinates of the proposed repeater to an accuracy of no less than ±1 second latitude and longitude;

(ii) The proposed operating power(s), frequency band(s), and emission(s);

(iii) The antenna center height above ground and ground elevation above mean sea level, both to an accuracy of no less than ±1 meter;

(iv) The antenna gain pattern(s) in the azimuth and elevation planes that include the peak of the main beam; and

(v) The antenna downtilt angle(s).

(2) An SDARS licensee operating terrestrial repeaters must maintain an accurate and up-to-date inventory of its terrestrial repeaters operating above 2 watts average EIRP, including the information set forth in this section which shall be available upon request by the Commission.

(d) *Calculation of notice period.* Notice periods are calculated from the date of receipt by the licensee being notified. If notification is by mail, the date of receipt is evidenced by the return receipt on certified mail. If notification is by fax, the date of receipt is evidenced by the notifying party's fax transmission confirmation log. If notification is by email, the date of receipt is evidenced by a return email receipt. If the SDARS licensee and all potentially affected WCS licensees reach a mutual agreement to provide notification by some other means, that agreement must specify the method for determining the beginning of the notice period.

(e) *Duty to cooperate.* SDARS licensees must cooperate in good faith in the selection and use of new repeater sites to reduce interference and make the most effective use of the authorized facilities. SDARS licensees should provide WCS licensees as much lead time as practicable to provide ample time to conduct analyses and opportunity for prudent repeater site selection prior to SDARS licensees entering into real estate and tower leasing or purchasing agreements. Licensees of stations suffering or causing harmful interference must cooperate in good faith and resolve such problems by mutually satisfactory arrangements. If the licensees are unable to do so, the Space Bureau, in consultation with the Office of Engineering and Technology and the Wireless Telecommunications Bureau, will consider the actions taken by the parties to mitigate the risk of and remedy any alleged interference. In determining the appropriate action, the Space Bureau will take into account the nature and extent of the interference and act promptly to remedy the interference. The Space Bureau may impose restrictions on SDARS licensees, including specifying the transmitter power, antenna height, or other technical or operational measures to remedy the interference, and will take into account previous measures by the licensees to mitigate the risk of interference.

Orbital Debris

§ 100.260 Operations and end-of-life disposal.

(a) *Orbital debris mitigation plans.*

(1) Space station operators must operate in accordance with the orbital debris mitigation plans, statements, and disclosures provided to the Commission pursuant to §§ 100.110 through 100.114.

(2) Operators must notify the Commission of any significant changes to the orbital debris mitigation plans, statements, and disclosures within 30 days of the date the change is effective.

(b) *Geostationary orbit satellites.* Unless otherwise explicitly specified in an authorization, a satellite authorized to operate in the geostationary satellite orbit under this part shall be relocated, at the end of its useful life, barring catastrophic failure of satellite components, to an orbit with a perigee with an altitude of no less than:

$$36{,}021 \text{ km} + (1000 \cdot CR \cdot A/m)$$

where CR is the solar radiation pressure coefficient of the spacecraft, and A/m is the Area to mass ratio, in square meters per kilogram, of the spacecraft.

(c) *GSO end-of-life operations.* A space station authorized to operate in the geostationary satellite orbit under this part may operate using its authorized telemetry, tracking, and command frequencies, and outside of its assigned orbital location, for the purpose of removing the satellite from the geostationary satellite orbit at the end of its useful life, provided that the conditions of paragraph (b) of this section are met, and on the condition that the space station's telemetry, tracking, and command transmissions are planned so as to avoid radio frequency interference to other space stations, and coordinated with any potentially affected satellite networks.

(d) *All space stations.* Upon completion of any relocation authorized by paragraph (c) of this section, or any relocation at end-of-life specified in an authorization, or upon a spacecraft otherwise completing its authorized mission, a space station licensee shall ensure, unless prevented by technical failures beyond its control, that stored energy sources on board the spacecraft are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, or other appropriate measures.

(e) *Low-earth orbit space stations.* For spacecraft ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry, disposal must be completed as soon as practicable following end of mission, and no later than five years after the end of the mission. For purposes of this paragraph (e), end of mission is defined as the time at which the individual spacecraft is no longer capable of conducting collision avoidance maneuvers. For spacecraft without collision avoidance capabilities, end of mission is defined as the point in which the individual spacecraft has completed its primary mission.

(f) *Debris generation.* A space station operator shall limit, during and after completion of mission operations, unnecessary operational debris, debris resulting from accidental explosions, or liquids released that will persist in droplet form.

§ 100.261 NGSO space safety rules.

(a) *Trackability.* Each individual satellite in an NGSO satellite system must be trackable. Satellites operating in low-Earth orbit will be presumed trackable if each individual satellite is 10 cm or larger in its smallest dimension, excluding deployable components.

(b) *Conjunction warnings.* Upon receipt of a space situational awareness conjunction warning, the operator must review and take all possible steps to assess and mitigate the collision risk. These steps should include, but are not limited to: contacting the operator of any active spacecraft involved in such a warning, sharing ephemeris data and other appropriate operational information with any such operator, and modifying spacecraft attitude or operations.

General Earth Station Rules

§ 100.270 Radiofrequency exposure requirements.

(a) Earth station applicants must provide a radiofrequency exposure report that demonstrates compliance with the Commission's radio frequency exposure requirements in §§ 1.1307(b), 2.1091, and 2.1093 of this chapter, as appropriate. Applicants with terminals that will exceed the guidelines in § 1.1310 of this chapter for radio frequency radiation exposure shall provide a plan for mitigation of radiofrequency exposure to the extent required to meet those guidelines.

(b) Earth stations defined as mobile devices as defined in § 2.1091 of this chapter must comply with the requirements of part 2, subpart J of this chapter.

§ 100.271 Responsibility of blanket licensed earth station licensees.

(a) The holder of an FCC blanket earth station license is responsible for operation of any earth station or user terminal under that license.

(b) For purposes of this part, a blanket licensee for user terminals, ESIMs, or Mobile Earth Stations, does not need to maintain control over the specific device, but must be in control of the network and maintain the ability to cease transmissions from the device.

§ 100.272 Minimum elevation angle.

(a) Earth station antennas must not transmit at elevation angles less than five degrees, measured from the horizontal plane to the direction of maximum radiation, in a frequency band shared with terrestrial radio services or in a frequency band with an allocation to space services operating in both the Earth-to-space and space-to-Earth directions. In other bands, earth station antennas must not transmit at elevation angles less than three degrees. In some instances, it may be necessary to specify greater minimum elevation angles because of interference considerations.

(b) ESAAs in aircraft on the ground must not transmit at elevation angles less than three degrees. There is no minimum angle of antenna elevation for ESAAs while airborne.

§ 100.273 Receive-only earth stations.

(a) *17/24 GHz BSS.* Receive-only earth stations operating in the 17/24 GHz BSS can claim no greater protection from interference than they would receive if the equivalent antenna diameter were equal to or greater than 45 cm and the antenna meets the co-polar and cross-polar performance patterns represented by the following set of formulas (adopted in Recommendation ITU–R BO.1213–1, dated November 2005) that are valid for $D/\lambda \geq 11$:

(1) Co-polar pattern:

$$G_{co}(\varphi) = G_{max} - 2.5 \times 10^{-3}\left(\frac{D}{\lambda}\varphi\right)^2 \text{ for } 0 \leq \varphi < \varphi_m$$

where:

$$\varphi_m = \frac{\lambda}{D}\sqrt{\frac{G_{max} - G_1}{0.0025}}$$

$$G_{max} = 10\log\left(\eta\left(\frac{\pi D}{\lambda}\right)^2\right)$$

$$G_1 = 29 - 25\log\varphi_r, \text{ and } \varphi_r = 95\frac{\lambda}{D}$$

$$G_{CO}(\varphi) = G_1 \qquad \text{for } \varphi_m \leq \varphi < \varphi_r$$

$$G_{CO}(\varphi) = 29 - 25\log\varphi \qquad \text{for } \varphi_r \leq \varphi < \varphi_b \text{ where } \varphi_b = 10^{(34/25)}$$

$$G_{CO}(\varphi) = -5\text{dBi} \qquad \text{for } \varphi_b \leq \varphi < 70°$$

$$G_{CO}(\varphi) = 0\text{dBi} \qquad \text{for } 70° \leq \varphi < 180°$$

(2) Cross-polar pattern:

$$G_{cross}(\varphi) = G_{max} - 25 \qquad \text{for } 0 \leq \varphi < 0.25\varphi_0$$

where:

$$\varphi_0 = 2\frac{\lambda}{D}\sqrt{\frac{3}{0.0025}} = 3\text{dB beamwidth}$$

$$G_{cross}(\varphi) = G_{max} - 25 + 8\left(\frac{\varphi - 0.25\varphi_0}{0.19\varphi_0}\right) \text{for } 0.25\varphi_0 \leq \varphi < 0.44\varphi_0$$

$$G_{cross}(\varphi) = G_{max} - 17 \qquad \text{for } 0.44\varphi_0 \leq \varphi < \varphi_0$$

$$G_{cross}(\varphi) = G_{max} - 17 + C\left|\frac{\varphi - \varphi_0}{\varphi_1 - \varphi_0}\right| \text{for } \varphi_0 \leq \qquad \varphi < \varphi_1 \text{ where } \varphi\,0 = 10.1875$$

$$\text{and } C = 21 - 25\log\left(\varphi_1\right) - \left(G_{max} - 17\right)$$

$$G_{cross}(\varphi) = 21 - 25\log\varphi \qquad \text{for } \varphi_1 \leq \varphi < \varphi_2 \text{ where } \varphi_2 = 10^{(26/25)}$$

$$G_{cross}(\varphi) = -5\text{dBi} \qquad \text{for } \varphi_2 \leq \varphi < 70°$$

$$G_{cross}(\varphi) = 0\text{dBi} \qquad \text{for } 70° \leq \varphi < 180°$$

where:

D: equivalent antenna diameter

λ: wavelength expressed in the same unit as the diameter

φ: off-axis angle of the antenna relative to boresight (degrees)

η: antenna efficiency = 0.65

(b) *Applicability.* This paragraph does not apply to 17/24 GHz BSS telemetry earth stations.

(c) *Protection from interference.* Receive-only earth stations in the FSS that operate with U.S.-licensed space stations, or with non-U.S.-licensed space stations that have been duly approved for U.S. market access, may be

registered with the Commission in order to protect them from interference from terrestrial microwave stations in bands shared co-equally with the Fixed Service. The registration of a receive-only earth station results in the listing of an authorized frequency band at the location specified in the registration. Interference protection levels are those agreed to during coordination.

(d) *Use of programming.* Licensing or registration of receive-only earth stations with the Commission confers no authority to receive and use signals or programming received from satellites. *See* Section 705 of the Communications Act, 47 U.S.C. 605.

(e) *Applications.* Applications for registration must be accompanied by the exhibits and certifications of § 100.120.

(f) *International agreements.* Reception of signals or programming from non-U.S. satellites may be subject to restrictions as a result of international agreements or treaties.

(g) *Modifications.* Applications for modification of license or registration of receive-only earth stations must be made in conformance with § 100.143. In addition, registrants are required to notify the Commission when a receive-only earth station is no longer operational or when it has not been used to provide any service during any six-month period.

(h) *Reception from non-U.S. licensed space stations.*

(1) Except as set forth in this section, operators of receive-only earth stations seeking to operate with non-U.S. licensed space stations must file an FCC Form 312—Main Form requesting a license or license modification to operate such station.

(2) Operators of receive-only earth stations need not apply for a license to receive transmissions from non-U.S.-licensed space stations that have been duly approved for U.S. market access, provided the space station operator and earth station operator comply with all applicable rules in this chapter and with applicable conditions in the Permitted Space Station List or market-access grant.

§ 100.274 Temporary-fixed earth station operations.

(a) When an earth station in the FSS is to remain at a single location for fewer than six months, the location may be considered to be temporary fixed. Services provided at a single location which are initially known to be of longer than six months' duration shall not be provided under a temporary fixed authorization.

(b) When a station, other than an ESV, authorized as a temporary fixed earth station, is to remain at a single location for more than six months, application for a regular station authorization at that location shall be filed at least thirty days prior to the expiration of the six-month period.

(c) The licensee of an earth station, other than an ESV, which is authorized to conduct temporary fixed operations in bands shared co-equally with terrestrial fixed stations shall provide the following information to the licensees of all terrestrial facilities lying within the coordination contour of the proposed temporary fixed earth station site before beginning transmissions:

(1) The name of the person operating the station and the telephone number at which the operator can be reached directly;

(2) The exact frequency or frequencies used and the type of emissions and power levels to be transmitted; and

(3) The commencement and anticipated termination dates of operation from each location.

(d) Transmissions may not be commenced until all affected terrestrial licensees have been notified and the earth station operator has confirmed that harmful interference will not be caused to such terrestrial stations.

(e) Operations of temporary fixed earth stations shall cease immediately upon notice of harmful interference from the Commission or the affected licensee.

(f) Filing requirements concerning applications for new temporary fixed earth station facilities operating in frequency bands shared co-equally with terrestrial fixed stations.

(i) When the initial location of the temporary fixed earth station's operation is known, the applicant shall provide, as part of the FCC Form 312—Main Form application, a frequency coordination report in accordance with § 100.276 for the initial station location.

(ii) When the initial location of the temporary fixed earth station's operation is not known at the time the application is filed, the applicant shall provide, as part of FCC Form 312—Main Form application, a statement by the applicant acknowledging its coordination responsibilities under § 100.276.

§ 100.275 Period of construction.

(a) A licensee for site specific earth stations must certify to commencement of operations within 365 days from grant.

(b) A Nationwide, Non-Site Licensee that is required to register locations prior to operations must certify to the commencement of operations within 365 days from registration.

(c) A blanket licensee for user terminals, ESIMs, or Mobile Earth Stations, must certify to the commencement of operations within 365 days from license grant.

General Earth Station Coordination and Performance Requirements

§ 100.276 Earth station coordination requirements.

(a) *Terrestrial coordination report.* An applicant for an earth station authorization, other than an ESV, in a frequency band shared with equal rights with terrestrial microwave services shall provide, as part of their application, a coordination report that demonstrates coordination with potentially impacted services and includes all relevant transmitting and/or receiving parameters necessary in assessing the likelihood of interference.

(b) *Requirements for coordination with terrestrial stations.*

(1) The administrative aspects of the coordination process are set forth in § 101.103 of this chapter in the case of coordination of terrestrial stations with earth stations and in this subpart in the case of earth station coordination with terrestrial stations.

(2) An applicant for an earth station authorization or registrants pursuant to an immovable earth station licensed under a Nationwide, Non-Site License, shall coordinate the proposed frequency usage with existing terrestrial users and with applicants for terrestrial station authorizations with previously filed applications in accordance with the following procedure:

(i) An applicant for an earth station authorization shall perform an interference analysis in accordance with the procedures set forth below for each terrestrial station, for which a license or construction permit has been granted or for which an application has been accepted for filing, which is or is to be operated in a shared frequency band to be used by the proposed earth station and which is located within the great circle coordination distance contour(s) of the proposed earth station.

(ii) The earth station applicant shall provide each such terrestrial station licensee, permittee, and prior grantee with the technical details of the proposed earth station and the relevant interference analyses that were made. At a minimum, the earth station applicant shall provide the terrestrial user with the following technical information:

(A) The geographical coordinates of the proposed earth station antenna(s),

(B) Proposed operating frequency band(s) and emission(s),

(C) Antenna center height above ground and ground elevation above

mean sea level, Antenna gain pattern(s) in the plane of the main beam,

(D) Longitude range of GSO satellites at which antenna may be pointed, for proposed earth station antenna(s) accessing GSO satellites,

(E) Horizon elevation plot,

(F) Antenna horizon gain plot(s) for satellite longitude range specified in (a)(2)(vi) of this section, taking into account the provisions of requirements for earth stations operating with NGSO satellites,

(G) Minimum elevation angle,

(H) Maximum equivalent isotropically radiated power (e.i.r.p.) density in the main beam in any 4 kHz band, (dBW/4 kHz) for frequency bands below 15 GHz or in any 1 MHz band (dBW/MHz) for frequency band above 15 GHz,

(I) Maximum available RF transmit power density in any 1 MHz band and in any 4 kHz band at the input terminals of the antenna(s),

(J) Maximum permissible RF interference power level as determined in accordance with (a)(1) of this section for all applicable percentages of time, and

(K) A plot of great circle coordination distance contour(s) and rain scatter coordination distance contour(s).

(3) The coordination procedures specified in § 101.103 of this chapter shall be applicable except that the information to be provided shall be that set forth in paragraph (a)(2) of this section, and that the 30-day period allowed for response to a request for coordination may be increased to a maximum of 45 days by mutual consent of the parties.

(4) Where technical problems are resolved by an agreement or operating arrangement between the parties that would require special procedures be taken to reduce the likelihood of harmful interference (such as the use of artificial site shielding) or would result in lessened quality or capacity of either system, the details thereof shall be contained in the application.

(5) Multiple antennas in an NGSO FSS gateway earth station complex located within an area bounded by one second of latitude and one second of longitude may be regarded as a single earth station for purposes of coordination with terrestrial services.

(c) *Technical aspects of coordination.* The technical aspects of coordination are based on Appendix 7 of the International Telecommunication Union Radio Regulations (incorporated by reference, *see* § 100.4) and certain recommendations of the ITU Radiocommunication Sector (available at the address in § 0.445 of this chapter).

(d) *Coordination across international boundaries.* An applicant for operation of an earth station, other than an ESV, VMES or an ESAA, shall also ascertain whether the great circle coordination distance contours and rain scatter coordination distance contours, computed for those values of parameters indicated in Appendix 7 of the ITU RR (incorporated by reference, see § 100.4 for international coordination across the boundaries of another Administration). In this case, the applicant shall furnish the Commission copies of these contours on maps drawn to appropriate scale for use by the Commission in effecting coordination of the proposed earth station with the Administration(s) affected.

(e) *Protection for Table Mountain Radio Receiving Zone, Boulder County, Colorado.* Applicants for a station authorization to operate in the vicinity of Boulder County, Colorado under this part are advised to give due consideration, prior to filing applications, to the need to protect the Table Mountain Radio Receiving Zone from harmful interference. These are the research laboratories of the Department of Commerce, Boulder County, Colorado. To prevent degradation of the present ambient radio signal level at the site, the Department of Commerce seeks to ensure that the field strengths of any radiated signals (excluding reflected signals) received on this 1800 acre site (in the vicinity of coordinates 40°07′50″ N Latitude, 105°14′40″ W Longitude) resulting from new assignments (other than mobile stations) or from the modification or relocation of existing facilities do not exceed the following values:

Frequency range	In authorized bandwidth of service	
	Field strength (mV/m)	Power flux density [1] (dBW/m^2)
Below 540 kHz	10	−65.8
540 to 1600 kHz	20	−59.8
1.6 to 470 MHz	10	[2] −65.8
470 to 890 MHz	30	[2] −56.2
Above 890 MHz	1	[2] −85.8

[1] Equivalent values of power flux density are calculated assuming free space characteristic impedance of 376.7 = 120π ohms.

[2] Space stations shall conform to the power flux density limits at the earth's surface specified in appropriate parts of the FCC rules, but in no case should exceed the above levels in any 4 kHz band for all angles of arrival.

(f) *Notification to the National Radio Astronomy Observatory in West Virginia.* In order to minimize possible harmful interference at the National Radio Astronomy Observatory site at Green Bank, Pocahontas County, W. Va., and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, W. Va., any applicant for operating authority under this part for a new transmit or transmit-receive earth station, other than a mobile or temporary fixed station, within the area bounded by 39°15′ N on the north, 78°30′ W on the east, 37°30′ N on the south and 80°30′ W on the west or for modification of an existing license for such station to change the station's frequency, power, antenna height or directivity, or location must, when filing the application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box No. 2, Green Bank, W. Va. 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the observatory. After receipt of such applications, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Naval Radio Research Observatory, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(g) *Protection for Federal Communications Commission monitoring stations.*

(1) Applicants for authority to operate a new transmitting earth station in the vicinity of an FCC monitoring station or to modify the operation of a transmitting earth station in a way that would increase the field strength produced at such a monitoring station above that previously authorized should consider the possible need to protect the FCC stations from harmful interference. Geographic coordinates of the facilities that require protection are listed in § 0.121(c) of this chapter.

(2) Applications for fixed stations that will produce field strength greater than 10 mV/m or power flux density greater than -65.8 dBW/m^2 in the authorized emission bandwidth at any of the referenced coordinates may be examined to determine the extent of possible interference. Depending on the theoretical field strength value and existing root-sum-square or other ambient radio field signal levels at the referenced coordinates, a condition to protect the monitoring station may be included in the station authorization.

(3) In the event that the calculated value of the expected field strength exceeds 10 mV/m (-65.8 dBW/m^2) at the reference coordinates, or if there is any question whether field strength levels might exceed the threshold value, advance consultation with the FCC to discuss any protection necessary should be considered. See § 0.401 of this chapter for contact information

(h) *Puerto Rico, Desecheo, Mona, Vieques, or Culebra Site Requirements.*

(1) Any applicant for a new permanent transmitting fixed earth station to be located on the island of Puerto Rico, Desecheo, Mona, Vieques, or Culebra, or for modification of an existing authorization to change the frequency, power, antenna height, directivity, or location of such a station on one of these islands in a way that would increase the likelihood of causing interference, must notify the Interference Office, Arecibo Observatory, HC3 Box 53995, Arecibo, Puerto Rico 00612, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines, which will be provided by Cornell University. Applicants who choose to transmit information electronically should email to: *prcz@naic.edu.*

(2) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification must specify the geographical coordinates of the antenna (NAD–83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency, relevant FCC rule part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(3) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(4) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

(i) *Co-primary GSO and NGSO system earth station coordination.* Prior to filing an earth station application, in bands with co-primary allocations to GSO and NGSO system earth stations, the applicant shall coordinate the proposed site and frequency usage with existing earth station licensees and with current earth station authorization applicants.

(j) *Special operational requirements of the 3.65–3.7 GHz band.* Upon request from a terrestrial licensee authorized under part 90, subpart Z that seeks to place base and fixed stations in operation within 150 km of a primary earth station, licensees of earth stations operating on a primary basis in the FSS in the 3.65–3.7 GHz band must negotiate in good faith with that terrestrial licensee to arrive at mutually agreeable operating parameters to prevent harmful interference.

(k) *Earth stations in the 3.7–4.2 GHz band.*

(1) Applications for new, modified, or renewed earth station licenses and registrations in the 3.7–4.0 GHz portion of the band in CONUS are no longer accepted.

(2) Applications for new earth station licenses or registrations within CONUS in the 4.0–4.2 GHz portion of the band will not be accepted until the transition is completed and upon announcement by the Space Bureau via public notice that applications may be filed.

(3) Fixed and temporary fixed earth stations operating in the 3.7–4.0 GHz portion of the band within CONUS will be protected from interference by licensees in the 3.7 GHz Service subject to the deadlines set forth in § 27.1412 of this chapter and are eligible for transition into the 4.0–4.2 GHz band so long as they:

(i) Were operational as of April 19, 2018 and continue to be operational;

(ii) Were licensed or registered (or had a pending application for license or registration) in the ICFS database on November 7, 2018; and

(iii) Timely certified the accuracy of the information on file with the Commission by May 28, 2019.

(4) Fixed and temporary earth station licenses and registrations that meet the criteria in paragraph (c) of this section may be renewed or modified to maintain operations in the 4.0–4.2 GHz band.

(5) Applications for new, modified, or renewed licenses and registrations for earth stations outside CONUS operating in the 3.7–4.2 GHz band will continue to be accepted.

§ 100.277 Frequency tolerance.

The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001% of the reference frequency.

§ 100.278 Emissions limits generally; earth stations.

(a) *General.* Except for SDARS terrestrial repeaters, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in this section.

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50% up to and including 100% of the authorized bandwidth: 25 dB.

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100% up to and including 250% of the authorized bandwidth: 35 dB.

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250% of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts.

(4) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

(b) *Emission limits in shared bands between 1 and 15 GHz.* In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station, other than an ESV, operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits:

(1) + 40 dBW in any 4 kHz band for $\theta \leq 0°$;

(2) + 40 + 3θ dBW in any 4 kHz band for $0° < \theta \leq 5°$; and

(3) where θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

(c) *Emission limits in shared bands above 15 GHz.* In bands shared coequally with terrestrial radiocommunication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands above 15 GHz shall not exceed the following limits:

(1) + 64 dBW in any 1 MHz band for $\theta \leq 0°$;

(2) + 64 + 3 θ dBW in any 1 MHz band for $0° < \theta \leq 5°$; and

(3) where θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

(d) *Emissions limits in the 50.2–50.4 GHz band.* For earth stations in the FSS (Earth-to-space) that transmit in the 49.7–50.2 GHz and 50.4–50.9 GHz bands, the unwanted emission power in the 50.2–50.4 GHz band shall not exceed −20 dBW/200 MHz (measured at the input of the antenna), except that the maximum unwanted emission power may be increased to −10 dBW/200 MHz for earth stations having an antenna gain greater than or equal to 57 dBi. These limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

(e) *Angles of elevation greater than 5°.* For angles of elevation of the horizon greater than 5° there shall be no restriction as to the equivalent isotropically radiated power transmitted by an earth station towards the horizon.

(f) *Fade compensation limits.* Earth stations in the FSS may employ uplink adaptive power control or other methods of fade compensation to facilitate transmission of uplinks at power levels required for desired link performance while minimizing interference between networks.

(1) Transmissions from FSS earth stations in frequencies above 10 GHz may exceed the uplink EIRP and EIRP density limits specified in the station authorization under conditions of uplink fading due to precipitation by an amount not to exceed 1 dB above the actual amount of monitored excess attenuation over clear sky propagation conditions. EIRP levels must be returned to normal as soon as the attenuating weather pattern subsides.

(2) An FSS earth station transmitting to a geostationary space station in the 13.77–13.78 GHz band must not generate more than 71 dBW EIRP in any 6 MHz band.

(3) An FSS earth station transmitting to a non-geostationary space station in the 13.77–13.78 GHz band must not generate more than 51 dBW EIRP in any 6 MHz band.

(4) Automatic power control may be used to increase the EIRP density in a 6 MHz uplink band in this frequency range to compensate for rain fade, provided that the power flux-density at the space station does not exceed the value that would result when transmitting with an EIRP of 71 dBW or 51 dBW, as appropriate, in that 6 MHz band in clear-sky conditions.

(g) *Emission limits on SCS earth stations.* SCS earth stations providing SCS pursuant to § 100.120 shall comply with the power requirements and out-of-band emission limits corresponding to devices operating in part 22, 24, or 27 of this chapter, as required for their operating frequencies.

(h) *Limits on emissions from 1.6 GHz mobile earth stations for protection of aeronautical radionavigation-satellite service.*

(1) The e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1660.5 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1559–1587.42 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth generated by such stations shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval, in that band.

(2) The e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1626.5 MHz shall not exceed −64 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1587.42–1605 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth generated by such stations shall not exceed −74 dBW, averaged over any 2 millisecond active transmission interval, in the 1587.42–1605 MHz band.

(3) The e.i.r.p. density of emissions from mobile earth stations placed in service after July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1660.5 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1559–1605 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval, in the 1559–1605 MHz band.

(4) As of January 1, 2005, the e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1660.5 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the 1559–1605 MHz band. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval, in the 1559–1605 MHz band. Inmarsat-B terminals manufactured more than six months after **Federal Register** publication of the rule changes adopted in FCC 03–283 must meet these limits.

(5) The e.i.r.p density of emissions from mobile earth stations with assigned uplink frequencies between 1990 MHz and 2025 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in frequencies between 1559 MHz and 1610 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations between 1559 MHz and 1605 MHz shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations between 1605 MHz and 1610 MHz manufactured more than six months after **Federal Register** publication of the rule changes adopted in FCC 03–283 shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval.

(6) Mobile earth stations placed in service after July 21, 2002 with assigned uplink frequencies in the 1610–1660.5 MHz band shall suppress the power density of emissions in the 1605–1610 MHz band to an extent determined by linear interpolation from −70 dBW/

MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz.

(7) Mobile earth stations manufactured more than six months after **Federal Register** publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies in the 1610–1626.5 MHz band shall suppress the power density of emissions in the 1605–1610 MHz band-segment to an extent determined by linear interpolation from −70 dBW/MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz averaged over any 2 millisecond active transmission interval. The e.i.r.p of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from −80 dBW at 1605 MHz to −20 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

(8) Mobile earth stations manufactured more than six months after **Federal Register** publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies in the 1626.5–1660.5 MHz band shall suppress the power density of emissions in the 1605–1610 MHz band-segment to an extent determined by linear interpolation from −70 dBW/MHz at 1605 MHz to −46 dBW/MHz at 1610 MHz, averaged over any 2 millisecond active transmission interval. The e.i.r.p of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from −80 dBW at 1605 MHz to −56 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

(9) The e.i.r.p density of carrier-off state emissions from mobile earth stations manufactured more than six months after **Federal Register** publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies between 1 and 3 GHz shall not exceed −80 dBW/MHz in the 1559–1610 MHz band averaged over any two millisecond interval.

(10) A Root-Mean-Square detector shall be used for all power density measurements.

§ 100.279 Earth station antenna performance standards.

(a) The gain of any earth station antenna operating in the FSS, including feeder links for other satellite services, transmitting to a GSO satellite, may not exceed the following:

(i) In the plane tangent to the GSO arc as defined in § 100.3:

$29–25\log_{10}\theta$	dBi	for $1.5° \le \theta \le 7°$.
8	dBi	for $7° < \theta \le 9.2°$.
$32–25\log_{10}\theta$	dBi	for $9.2° < \theta \le 19.1°$.
0	dBi	for $19.1° < \theta \le 48°$.
$29–25\log_{10}\theta$	dBi	for $1.5° \le \theta \le 7°$.
−10	dBi	for $48° < \theta \le 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite, and dBi refers to dB relative to an isotropic radiator.

(ii) In the plane perpendicular to the GSO arc as defined in § 100.3:

$32–25\log_{10}\theta$	dBi	for $3° \le \theta \le 7°$.
10.9	dBi	for $7° < \theta \le 9.2°$.
$35–25\log_{10}\theta$	dBi	for $9.2° < \theta \le 19.1°$.
3	dBi	for $19.1° < \theta \le 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite, and dBi refers to dB relative to an isotropic radiator.

(b) The gain of any earth station antenna operating in the FSS, including feeder links for other satellite services, transmitting to a NGSO satellite, may not exceed the following:

$29–25\log_{10}\theta$	dBi	for $1.5° \le \theta \le 36.5°$.
−10	dBi	for $36.5° < \theta \le 180°$.

(c) An FSS receiving earth station, including feeder link earth station for other satellite services, not confirming to the gain patterns in (a) and (b) of this section is not entitled to any greater protection from interference from authorized operation of other stations that would not have cause interference to that earth station if it was using an antenna with gain patterns conforming to the levels specified (a) and (b) of this section.

§ 100.280 Off-axis EIRP density limits.

(a) The off-axis eirp density of any earth station operating in the FSS, including feeder links for other satellite services, transmitting to a GSO satellite, the co-polarized transmissions may not exceed the following:

(i) In the plane tangent to the GSO arc as defined in § 100.3:

$18–25\log_{10}\theta$	dBW/4 kHz	for $1.5° \le \theta \le 7°$.
−3	dBW/4 kHz	for $7° < \theta \le 9.2°$.
$21–25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \le 48°$.
−21	dBW/4 kHz	for $48° < \theta \le 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite.

(ii) In the plane perpendicular to the GSO arc as defined in § 100.3:

$21–25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 7°$.
0	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$24–25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 48°$.
−18	dBW/4 kHz	for $19.1° < \theta \leq 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite.

(b) The off-axis eirp density of any earth station operating in the FSS, including feeder links for other satellite services, transmitting to a GSO satellite, the cross-polarized transmission may not exceed the following:

(i) In the plane tangent to the GSO arc as defined in § 100.3:

$8–25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
−13	dBW/4 kHz	for $7° < \theta \leq 9.2°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite.

(ii) In the plane perpendicular to the GSO arc as defined in § 100.3:

$11–25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 7°$.
−10	dBW/4 kHz	for $7° < \theta \leq 9.2°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite.

(c) The off-axis eirp density of any earth station operating in the FSS, including feeder links for other satellite services, transmitting to a NGSO satellite, may not exceed the following:

$18–25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 36.5°$.
−21	dBW/4 kHz	for $36.5° < \theta \leq 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the target satellite.

Frequency-Specific Earth Station Rules

§ 100.281 Earth stations in the 24.75–25.25 GHz, 27.5–28.35 GHz, 37.5–40 GHz, 47.2–48.2 GHz, and 50.4–51.4 GHz bands.

(a) FSS is secondary to the UMFUS in the 27.5–28.35 GHz band. Notwithstanding that secondary status, an applicant for a license for a transmitting earth station in the 27.5–28.35 GHz band that meets one of the following criteria may be authorized to operate without providing interference protection to stations in the UMFUS:

(1) The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz;

(2) The FSS earth station was authorized prior to July 14, 2016;

(3) The application for the FSS earth station was filed prior to July 14, 2016 and has been subsequently granted; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the 27.5–28.35 GHz band within the county where the proposed earth station is located that meet the criteria contained in either paragraph (a)(1), (2), (3), or (4) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz, together with the similar area of any other earth station authorized pursuant to paragraph (a) of this section, does not cover, in the aggregate, more than the amount of population of the UMFUS license area within which the earth station is located as noted in table 1 to this paragraph (a)(4)(ii):

TABLE 1 TO PARAGRAPH (a)(4)(ii)

Population within UMFUS license area	Maximum permitted aggregate population within −77.6 dBm/m²/MHz PFD contour of earth stations
Greater than 450,000	0.1 percent of population in UMFUS license area.
Between 6,000 and 450,000	450 people.
Fewer than 6,000	7.5 percent of population in UMFUS license area.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in paragraph (a)(4)(ii) of this section shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive

Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this rule, an urban area shall be an Adjusted Urban Area as defined in 21 U.S.C. 101(a)(37).

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(b) Applications for earth stations in the 37.5–40 GHz band shall provide an exhibit describing the zone within which the earth station will require protection from transmissions of UMFUS licensees. For purposes of this rule, the protection zone shall consist of the area where UMFUS licensees may not locate facilities without the consent of the earth station licensee. The earth station applicant shall demonstrate in its application, using reasonable engineering methods, that the requested protection zone is necessary in order to protect its proposed earth station.

(c) The protection zone (as defined in paragraph (b) of this section) shall comply with the following criteria. The applicant must demonstrate compliance with all of the following criteria in its application:

(1) There are no more than two other authorized earth stations operating in the 37.5–40 GHz band within the county within which the proposed earth station is located that meet the criteria contained in paragraph (c) of this section, and there are no more than 14 other authorized earth stations operating in the 37.5–40 GHz band within the PEA within which the proposed earth station is located that meet the criteria contained in paragraph (c) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(2) The protection zone, together with the protection zone of other earth stations in the same PEA authorized pursuant to this, does not cover, in the aggregate, more than the amount of population of the PEA within which the earth station is located as noted in table 2 to this paragraph (c)(2):

TABLE 2 TO PARAGRAPH (c)(2)

Population within Partial Economic Area (PEA) where earth station is located	Maximum permitted aggregate population within protection zone of earth stations
Greater than 2,250,000	0.1 percent of population in PEA.
Between 60,000 and 2,250,000	2,250 people.
Fewer than 60,000	3.75 percent of population in PEA.

(3) The protection zone does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in the preceding sentence shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this rule, an urban area shall be an Adjusted Urban Area as defined in 21 U.S.C. 101(a)(37).

(4) The applicant has successfully completed frequency coordination with the UMFUS licensees within the protection zone with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(d) Notwithstanding that FSS is co-primary with the UMFUS in the 47.2–48.2 GHz band, earth stations in the 47.2–48.2 GHz band shall be limited to individually licensed earth stations. An applicant for a license for a transmitting earth station in the 47.2–48.2 GHz band must meet one of the following criteria to be authorized to operate without providing any additional interference protection to stations in the UMFUS:

(1) The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz;

(2) The earth station in the 47.2–48.2 GHz band was authorized prior to February 1, 2018;

(3) The application for the earth station in the 47.2–48.2 GHz band was filed prior to February 1, 2018; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the 47.2–48.2 GHz band within the county where the proposed earth station is located that meet the criteria contained in paragraphs (d)(1), (2), (3), or (4) of this section, and there are no more than 14 other authorized earth stations operating in the 47.2–48.2 GHz band within the PEA where the proposed earth station is located that meet the criteria contained in paragraphs (d)(1), (2), (3), or (4) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz, together with the similar area of any other earth station authorized pursuant to paragraph (d) of this section, does not cover, in the aggregate, more than the amount of population of the PEA within which the earth station is located as noted in table 3 to this paragraph (d)(4)(ii):

TABLE 3 TO PARAGRAPH (d)(4)(ii)

Population within Partial Economic Area (PEA) where earth station is located	Maximum permitted aggregate population within −77.6 dBm/m²/MHz PFD contour of earth stations
Greater than 2,250,000	0.1 percent of population in PEA.

TABLE 3 TO PARAGRAPH (d)(4)(ii)—Continued

Population within Partial Economic Area (PEA) where earth station is located	Maximum permitted aggregate population within −77.6 dBm/m²/MHz PFD contour of earth stations
Between 60,000 and 2,250,000	2,250 people.
Fewer than 60,000	3.75 percent of population in PEA.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz does not contain any major event venue, any highway classified by the U.S. Department of Transportation under the categories Interstate, Other Freeways and Expressways, or Other Principal Arterial, or an urban mass transit route, passenger railroad, or cruise ship port; and

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(e) Notwithstanding that FSS is co-primary with the UMFUS in the 24.75–25.25 GHz and 50.4–51.4 GHz bands, earth stations in these bands shall be limited to individually licensed earth stations. An applicant for a license for a transmitting earth station in the 24.75–25.25 GHz or 50.4–51.4 GHz band must meet one of the following criteria to be authorized to operate without providing any additional interference protection to stations in the UMFUS:

(1) The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a power flux density (PFD), at 10 meters above ground level, of greater than or equal to −77.6dBm/m²/MHz;

(2) The earth station in the 24.75–25.25 GHz band was authorized prior to August 20, 2018; or the earth station in the 50.4–51.4 GHz band was authorized prior to June 12, 2019;

(3) The application for the earth station in the 24.75–25.25 GHz band was filed prior to August 20, 2018; or the application for the earth station in the 50.4–51.4 GHz band was filed prior to June 12, 2019; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the same frequency band within the county where the proposed earth station is located that meet the criteria contained in either paragraph (e)(1), (2), (3), or (4) of this section, and there are no more than 14 other authorized earth stations operating in the same frequency band within the Partial Economic Area where the proposed earth station is located that meet the criteria contained in paragraph (e)(1), (2), (3), or (4) of this section. For purposes of the requirement in this paragraph (e)(4), multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz, together with the similar area of any other earth station operating in the same frequency band authorized pursuant to paragraph (e) of this section, does not cover, in the aggregate, more than the amount of population of the county within which the earth station is located as noted in table 4 to this paragraph (e)(4)(ii):

TABLE 4 TO PARAGRAPH (e)(4)(ii)

Population within the County where earth station is located	Maximum permitted aggregate population within −77.6 dBm/m²/MHz PFD contour of earth stations
Greater than 450,000	0.1 percent of population in county.
Between 6,000 and 450,000	450 people.
Fewer than 6,000	7.5 percent of population in county.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in paragraph (e)(4)(ii) of this section shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this paragraph (e)(4), an urban area shall be an Adjusted Urban Area as defined in 21 U.S.C. 101(a)(37); and

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m²/MHz with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(f) If an earth station applicant or licensee in the 24.75–25.25 GHz, 27.5–28.35 GHz, 37.5–40 GHz, 47.2–48.2 GHz and/or 50.4–51.4 GHz bands enters into an agreement with an UMFUS licensee, their operations shall be governed by that agreement, except to the extent that the agreement is inconsistent with the Commission's rules or the Communications Act.

(g) Any earth station authorizations issued pursuant to §§ 100.120–100.121 and 100.281 shall be conditioned upon operation being in compliance with the criteria contained in the applicable paragraph.

(h) *Re-coordination.* An earth station licensed under this section that is brought into operation later than one year after the date of the license grant must be re-coordinated with UMFUS

stations using the applicable processes in § 101.103(d) of this chapter. The earth station licensee must complete re-coordination within one year before its commencement of operation. The re-coordination should account for any demographic or geographic changes as well as changes to the earth station equipment or configuration. A re-coordination notice must be filed in ICFS before commencement of earth station operations.

§ 100.282 User terminals and earth stations in motion.

(a) *Self-monitoring.* Each FSS ESIM and user terminal must be self-monitoring and, should a condition occur that would cause the ESIMs to exceed its authorized off-axis EIRP density limits in the case of GSO FSS ESIMs or any emission limits included in the licensing conditions in the case of NGSO FSS ESIMs, the ESIM must automatically cease transmissions within 100 milliseconds, and not resume transmissions until the condition that caused the ESIM to exceed those limits is corrected.

(b) *NCMC.* Each FSS ESIM and user terminal must be monitored and controlled by a network control and monitoring center (NCMC) or equivalent facility. Each terminal must comply with a ''disable transmission'' command from the NCMC within 100 milliseconds of receiving the command. In addition, the NCMC must monitor the operation of each terminal in its network, and transmit a ''disable transmission'' command to any terminal that operates in such a way as to exceed the authorized off-axis EIRP density limit described in § 100.280 or any emission limits included in the licensing conditions. The NCMC must not allow the terminal(s) under its control to resume transmissions until the condition that caused the terminals(s) to exceed the authorized EIRP density limits is corrected.

(c) *Installation and radiofrequency exposure.* ESIM and user terminal licensees must ensure installation of terminals on vehicles by qualified installers who have an understanding of the antenna's radiation environment and the measures best suited to maximize protection of the general public and persons operating the vehicle and equipment. A terminal exhibiting radiofrequency exposure levels exceeding 1.0 mW/cm^2 in accessible areas (or the appropriate limit pursuant to § 1.1310 of this chapter), such as at the exterior surface of the radome, must have a label attached to the surface of the terminal warning about the radiofrequency exposure and must include thereon a diagram showing the regions around the terminal where the radiation levels could exceed the maximum radiofrequency exposure limit specified in Table 1 in § 1.1310 of this chapter.

(d) *ESVs on vessels of foreign registry.* ESV NCMC operators communicating with ESVs on vessels of foreign registry must maintain detailed information on each such vessel's country of registry and a point of contact for the relevant administration responsible for licensing those ESVs.

(e) *ESVs operating in 3700–4200 MHz and 5925–6425 MHz.* The following requirements govern all operations in the 3700–4200 MHz (space-to-Earth) and 5925–6425 MHz (Earth-to-space) frequency bands of ESVs receiving from or transmitting to GSO satellites in the FSS:

(1) ESVs must not operate in the 5925–6425 MHz (Earth-to-space) and 3700–4200 MHz (space-to-Earth) frequency bands on vessels smaller than 300 gross tons.

(2) ESV operators transmitting in the 5925–6425 MHz (Earth-to-space) frequency band to GSO satellites in the FSS must not seek to coordinate, in any geographic location, more than 36 megahertz of uplink bandwidth on each of no more than two GSO FSS satellites.

(3) ESVs, operating while docked, for which coordination with terrestrial stations in the 3700–4200 MHz band is completed in accordance with § 100.276, will receive protection from such terrestrial stations in accordance with the coordination agreements, for 180 days, renewable for 180 days.

(4) ESVs in motion must not claim protection from harmful interference from any authorized terrestrial stations to which frequencies are already assigned, or any authorized terrestrial station to which frequencies may be assigned in the future in the 3700–4200 MHz (space-to-Earth) frequency band.

(5) ESVs operating within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation, must complete coordination with potentially affected U.S.-licensed fixed service operators prior to operation. The coordination method and the interference criteria objective will be determined by the frequency coordinator. The details of the coordination must be maintained and available at the frequency coordinator, and must be filed with the Commission electronically via ICFS or successor system to be placed on public notice. The coordination notifications must be filed in the form of a statement referencing the relevant call signs and file numbers. Operation of each individual ESV may commence immediately after the public notice that identifies the notification sent to the Commission is released. Continuance of operation of that ESV for the duration of the coordination term must be dependent upon successful completion of the normal public notice process. If, prior to the end of the 30-day comment period of the public notice, any objections are received from U.S.-licensed Fixed Service operators that have been excluded from coordination, the ESV licensee must immediately cease operation of that particular station on frequencies used by the affected U.S.-licensed Fixed Service station until the coordination dispute is resolved and the ESV licensee informs the Commission of the resolution. As used in this section, ''baseline'' means the line from which maritime zones are measured. The baseline is a combination of the low-water line and closing lines across the mouths of inland water bodies and is defined by a series of baseline points that include islands and ''low-water elevations,'' as determined by the U.S. Department of State's Baseline Committee.

(6) An ESV must automatically cease transmission if the ESV operates in violation of the terms of its coordination agreement, including, but not limited to, conditions related to speed of the vessel or if the ESV travels outside the coordinated area, if within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation. Transmissions may be controlled by the ESV network control and monitoring center. The frequency coordinator may decide whether ESV operators should automatically cease transmissions if the vessel falls below a prescribed speed within a prescribed geographic area.

(7) ESV transmissions in the 5925–6425 MHz (Earth-to-space) band shall not exceed an EIRP spectral density towards the radio-horizon of 17 dBW/MHz, and shall not exceed an EIRP towards the radio-horizon of 20.8 dBW. The ESV network shall shut-off the ESV transmitter if either the EIRP spectral density towards the radio-horizon or the EIRP towards the radio-horizon is exceeded.

(f) *ESAAs.* The following requirements govern all ESAA operations:

(1) All ESAA terminals operated in U.S. airspace, whether on U.S.-registered civil aircraft or non-U.S.-registered civil aircraft, must be licensed by the Commission. All ESAA terminals on U.S.-registered civil aircraft operating outside of U.S. airspace must

be licensed by the Commission, except as provided by section 303(t) of the Communications Act.

(2) Prior to operations within a foreign nation's airspace, the ESAA operator must ascertain whether the relevant administration has operations that could be affected by ESAA terminals, and must determine whether that administration has adopted specific requirements concerning ESAA operations. When the aircraft enters foreign airspace, the ESAA terminal must operate under the Commission's rules, or those of the foreign administration, whichever is more constraining. To the extent that all relevant administrations have identified geographic areas from which ESAA operations would not affect their radio operations, ESAA operators may operate within those identified areas without further action. To the extent that the foreign administration has not adopted requirements regarding ESAA operations, ESAA operators must coordinate their operations with any potentially affected operations.

(3) For ESAA transmissions in the 14.0–14.5 GHz band from international airspace within line-of-sight of the territory of a foreign administration where fixed service networks have primary allocation in this band, the maximum PFD produced at the surface of the Earth by emissions from a single aircraft carrying an ESAA terminal must not exceed the following values unless the foreign Administration has imposed other conditions for protecting its fixed service stations:

$-132 + 0.5 \cdot \theta$	dB(W/(m^2 · MHz))	For	$\theta \leq 40°$.
-112	dB(W/(m^2 · MHz))	For	$40° < \theta \leq 90°$.

Where: θ is the angle of arrival of the radio-frequency wave (degrees above the horizontal) and the aforementioned limits relate to the PFD under free-space propagation conditions.

§ 100.283 MSS and ATC requirements.

(a) *Construction and pre-operational testing.*

(1) *No construction permit required.* Construction permits are not required for Ancillary Terrestrial Component (ATC) stations. A party with licenses issued under this part for launch and operation of 1.5/1.6 GHz or 1.6/2.4 GHz Mobile-Satellite Service space stations and operation of associated ATC facilities may commence construction of ATC base stations at its own risk after commencing physical construction of the space stations, subject to the requirements of § 1.1312 and part 17 of this chapter.

(2) *Equipment tests.* Such an MSS/ATC licensee may also conduct equipment tests for the purpose of making adjustments and measurements necessary to ensure compliance with the terms of its ATC license, applicable rules in this part, and technical design requirements.

(3) *Notification.* Prior to commencing such construction and pre-operational testing, an MSS/ATC licensee must notify the Commission of the commencement of physical satellite construction and the licensee's intention to construct and test ATC facilities. This notification must be filed electronically in the appropriate file in the ICFS database. The notification must specify the frequencies the licensee proposes to use for pre-operational testing and the name, address, and telephone number of a representative for the reporting and mitigation of any interference resulting from such testing.

(4) *Experimental requirements.* MSS/ATC licensees engaging in pre-operational testing must comply with §§ 5.83, 5.85(c), 5.111, and 5.117 of this chapter regarding experimental operations.

(5) *Compensation.* A n MSS/ATC licensee may not offer ATC service to the public for compensation during pre-operational testing.

(b) *Special Requirements for ATC operations in the 1626.5–1660.5 MHz/1525–1559 MHz bands.*

(1) An ancillary terrestrial component in these bands shall:

(i) In any band segment coordinated for the exclusive use of an MSS applicant within the land area of the U.S., where there is no other L-band MSS satellite making use of that band segment within the visible portion of the geostationary arc as seen from the ATC coverage area, the ATC system will be limited by the in-band and out-of-band emission limitations contained in this section and the requirement to maintain a substantial MSS service.

(ii) In any band segment that is coordinated for the shared use of the applicant's MSS system and another MSS operator, where the coordination agreement existed prior to February 10, 2005 and permits a level of interference to the other MSS system of less than 6% ΔT/T, the applicant's combined ATC and MSS operations shall increase the system noise level of the other MSS to no more then 6% ΔT/T. Any future coordination agreement between the parties governing ATC operation will supersede this paragraph.

(iii) In any band segment that is coordinated for the shared use of the applicant's MSS system and another MSS operator, where a coordination agreement existed prior to February 10, 2005 and permits a level of interference to the other MSS system of 6% ΔT/T or greater, the applicant's ATC operations may increase the system noise level of the other MSS system by no more than an additional 1% ΔT/T. Any future coordination agreement between the parties governing ATC operations will supersede this paragraph.

(iv) In a band segment in which the applicant has no rights under a coordination agreement, the applicant may not implement ATC in that band.

(2) ATC base stations shall not exceed an out-of-channel emissions measurement of −57.9 dBW/MHz at the edge of a MSS licensee's authorized and internationally coordinated MSS frequency assignment.

(3) An applicant for an ancillary terrestrial component in these bands shall:

(i) Demonstrate, at the time of application, how its ATC network will comply with the requirements of footnotes US308 and US315 to the Table of Frequency Allocations contained in § 2.106 of this chapter regarding priority and preemptive access to the L-band MSS spectrum by the aeronautical mobile-satellite en-route service (AMS(R)S) and the global maritime distress and safety system (GMDSS).

(ii) Coordinate with the terrestrial CMRS operators prior to initiating ATC transmissions when co-locating ATC base stations with terrestrial commercial mobile radio service (CMRS) base stations that make use of Global Positioning System (GPS) time-based receivers.

(iii) Provide, at the time of application, calculations that demonstrate the ATC system conforms to the ΔT/T requirements of this section, if a coordination agreement that incorporates the ATC operations does not exist with other MSS operators.

(4) Applicants for an ATC in these bands must demonstrate that ATC base stations shall not:

(i) Exceed a peak EIRP of 31.9–10*log (number of carriers) dBW/200kHz, per sector, for each carrier in the 1525–1541.5 MHz and 1547.5–1559 MHz frequency bands;

(ii) Exceed an EIRP in any direction toward the physical horizon (not to include man-made structures) of 26.9–10*log (number of carriers) dBW/200 kHz, per sector, for each carrier in the 1525–1541.5 MHz and 1547.5–1559 MHz frequency bands;

(iii) Exceed a peak EIRP of 23.9 −10*log(number of carriers) dBW/200 kHz, per sector, for each carrier in the 1541.5–1547.5 MHz frequency band;

(iv) Exceed an EIRP toward the physical horizon (not to include man-made structures) of 18.9 −10*log(number of carriers) dBW/200 kHz, per sector, for each carrier in the 1541.5–1547.5 MHz frequency band;

(v) Exceed a total PFD level of −56.8 dBW/m^2/200 kHz at the edge of all airport runways and aircraft stand areas, including takeoff and landing paths from all carriers operating in the 1525–1559 MHz frequency bands. The total PFD here is the sum of all power flux density values associated with all carriers in a sector in the 1525–1559 MHz frequency band, expressed in dB(Watts/m^2/200 kHz). Free-space loss must be assumed if this requirement is demonstrated via calculation;

(vi) Exceed a total PFD level of −56.6 dBW/m^2/200 kHz at the water's edge of any navigable waterway from all carriers operating in the 1525–1541.5 MHz and 1547.5–1559 MHz frequency bands. The total PFD here is the sum of all power flux density values associated with all carriers in a sector in the 1525–1541.5 MHz and 1547.5–1559 MHz frequency bands, expressed in dB(Watts/m^2/200 kHz). Free-space loss must be assumed if this requirement is demonstrated via calculation;

(vii) Exceed a total PFD level of −64.6 dBW/m^2/200 kHz at the water's edge of any navigable waterway from all carriers operating in the 1541.5–1547.5 MHz frequency band. The total PFD here is the sum of all power flux density values associated with all carriers in a sector in the 1541.5–1547.5 MHz frequency band, expressed in dB(Watts/m^2/200 kHz). Free-space loss must be assumed if this requirement is demonstrated via calculation;

(viii) Exceed a peak antenna gain of 16 dBi;

(ix) Generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559–1605 MHz band or greater than a level determined by linear interpolation in the 1605–1610 MHz band, from −70 dBW/MHz at 1605 MHz to −46 dBW/MHz at 1610 MHz. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out-of-band emissions of less than 700 Hz bandwidth from such base stations shall not exceed −80 dBW in the 1559–1605 MHz band or exceed a level determined by linear interpolation in the 1605–1610 MHz band, from −80 dBW at 1605 MHz to −56 dBW at 1610 MHz. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(5) Applicants for an ancillary terrestrial component in these bands must demonstrate, at the time of the application, that ATC base stations shall use left-hand-circular polarization antennas with a maximum gain of 16 dBi and overhead gain suppression according to the following:

Angle from direction of maximum gain, in vertical plane, above antenna (degrees)	Antenna discrimination pattern (dB)
0	Gmax.
5	Not to Exceed Gmax −5.
10	Not to Exceed Gmax −19.
15 to 55	Not to Exceed Gmax −27.
55 to 145	Not to Exceed Gmax −30.
145 to 180	Not to Exceed Gmax −26.

Where: Gmax is the maximum gain of the base station antenna in dBi.

(6) Prior to operation, ancillary terrestrial component licensees shall:

(i) Provide the Commission with sufficient information to complete coordination of ATC base stations with Search-and-Rescue Satellite-Aided Tracking (SARSAT) earth stations operating in the 1544–1545 MHz band for any ATC base station located either within 27 km of a SARSAT station, or within radio horizon of the SARSAT station, whichever is less.

(ii) Take all practicable steps to avoid locating ATC base stations within radio line of sight of Mobile Aeronautical Telemetry (MAT) receive sites in order to protect U.S. MAT systems consistent with ITU–R Recommendation ITU–R M.1459. MSS ATC base stations located within radio line of sight of a MAT receiver must be coordinated with the Aerospace and Flight Test Radio Coordinating Council (AFTRCC) for non-Government MAT receivers on a case-by-case basis prior to operation. For government MAT receivers, the MSS licensee shall supply sufficient information to the Commission to allow coordination to take place. A listing of current and planned MAT receiver sites can be obtained from AFTRCC for non-Government sites and through the FCC's IRAC Liaison for Government MAT receiver sites.

(7) ATC mobile terminals shall:

(i) Be limited to a peak EIRP level of 0 dBW and an out-of-channel emissions of −67 dBW/4 kHz at the edge of an MSS licensee's authorized and internationally coordinated MSS frequency assignment.

(ii) Be operated in a fashion that takes all practicable steps to avoid causing interference to U.S. radio astronomy service (RAS) observations in the 1660–1660.5 MHz band.

(iii) Not generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559–1605 MHz band or greater than a level determined by linear interpolation in the 1605–1610 MHz band, from −70 dBW/MHz at 1605 MHz to −46 dBW/MHz at 1610 MHz. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out-of-band emissions of less than 700 Hz bandwidth from such mobile terminals shall not exceed −80 dBW in the 1559–1605 MHz band or exceed a level determined by linear interpolation in the 1605–1610 MHz band, from −80 dBW at 1605 MHz to −56 dBW at 1610 MHz. The EIRP density of carrier-off-state emissions from such mobile terminals shall not exceed −80 dBW/MHz in the 1559–1610 MHz band, averaged over a two-millisecond interval. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband

EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(8) When implementing multiple base stations and/or base stations using multiple carriers, where any third-order intermodulation product of these base stations falls on an L-band MSS band coordinated for use by another MSS operator with rights to the coordinated band, the MSS ATC licensee must notify the MSS operator. The MSS operator may request coordination to modify the base station carrier frequencies, or to reduce the maximum base station EIRP on the frequencies contributing to the third-order intermodulation products. The threshold for this notification and coordination is when the sum of the calculated signal levels received by an MSS receiver exceeds −70 dBm. The MSS receiver used in these calculations can be assumed to have an antenna with 0 dBi gain. Free-space propagation between the base station antennas and the MSS terminals can be assumed and actual signal polarizations for the ATC signals and the MSS system may be used.

(c) *Special requirements for ATC operations in the 1610–1626.5 MHz/2483.5–2500 MHz bands.*

(1) An applicant for an ATC in these bands must demonstrate that ATC base stations shall:

(i) Not exceed a peak EIRP of 32 dBW in 1.25 MHz;

(ii) Not cause harmful interference to systems identified in paragraph (c) of this section and, in any case, shall not exceed out-of-channel emissions of −44.1 dBW/30 kHz at the edge of the MSS licensee's authorized frequency assignment;

(iii) At the time of application, that it has taken, or will take steps necessary to avoid causing interference to other services sharing the use of the 2450–2500 MHz band through frequency coordination; and

(iv) Base stations operating in frequencies above 2483.5 MHz shall not generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559–1610 MHz band. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out-of-band emissions of less than 700 Hz bandwidth from such base stations shall not exceed −80 dBW in the 1559–1610 MHz band. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(2) An applicant for an ancillary terrestrial component in these bands must demonstrate that mobile terminals shall:

(i) Meet the requirements contained to protect radio astronomy service (RAS) observations in the 1610.6–1613.8 MHz band from harmful interference;

(ii) Observe a peak EIRP limit of 1.0 dBW in 1.25 MHz;

(iii) Observe an out-of-channel EIRP limit of −57.1 dBW/30 kHz at the edge of the licensed MSS frequency assignment; and

(iv) For ATC mobile terminals operating in assigned frequencies in the 1610–1626.5 MHz band, not generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559–1605 MHz band or greater than a level determined by linear interpolation in the 1605–1610 MHz band, from −70 dBW/MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out-of-band emissions of less than 700 Hz bandwidth from such mobile terminals shall not exceed −80 dBW in the 1559–1605 MHz band or exceed a level determined by linear interpolation in the 1605–1610 MHz band, from −80 dBW at 1605 MHz to −20 dBW at 1610 MHz. The EIRP density of carrier-off-state emissions from such mobile terminals shall not exceed −80 dBW/MHz in the 1559–1610 MHz band, averaged over a two-millisecond interval. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(3) Applicants for an ancillary terrestrial component to be used in conjunction with an MSS system using CDMA technology shall coordinate the use of the 1.6/2.4 GHz MSS spectrum designated for CDMA systems using the framework established by the ITU in Recommendation ITU–R M.1186.

(4) To avoid interference to an adjacent channel licensee in the Broadband Radio Service (BRS), the power of any ATC base station emission above 2495 MHz shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below.

(i) For base stations, the attenuation shall be not less than 43 + 10 log (P) dB at the upper edge of the authorized ATC band, unless a documented interference complaint is received from an adjacent channel licensee in the BRS. Provided that a documented interference complaint cannot be mutually resolved between the parties, the following additional attenuation requirements shall apply:

(ii) If a pre-existing BRS base station suffers harmful interference from emissions caused by a new or modified ATC base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the ATC licensee must attenuate its emissions by at least 67 + 10 log (P) dB measured at 3 megahertz above the edge of the authorized ATC band, and shall immediately notify the complaining licensee upon implementation of the additional attenuation.

(iii) If a pre-existing BRS base station suffers harmful interference from emissions caused by a new or modified ATC base station located less than 1.5 km away, within 24 hours of the receipt of a documented interference complaint the ATC licensee must attenuate its emissions by at least 67 + 10 log (P) − 20 log(D_{km}/1.5) dB measured at 3 megahertz above the edge of the authorized ATC band, or if both base stations are co-located, limit its undesired signal level at the pre-existing BRS base station receiver(s) to no more than −107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level.

(iv) If a new or modified BRS base station suffers harmful interference from emissions caused by a pre-existing ATC base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of the ATC base station must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz above the edge of the authorized ATC band.

(v) If a new or modified BRS base station suffers harmful interference from emissions caused by a pre-existing ATC base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint:

(A) the ATC licensee must attenuate its base station emissions by at least 67 + 10 log (P) − 20 log(D_{km}/1.5) dB measured 3 megahertz above the edge of the authorized ATC band, or

(B) if both base stations are co-located, the ATC licensee must limit its undesired signal level at the new or modified BRS base station receiver(s) to

no more than −107 dBm measured in a 5.5 megahertz bandwidth.

(vi) Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately above and adjacent to the 2495 MHz a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided the measured power is integrated over the full required measurement bandwidth (*i.e.,* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

(5) Licensees of terrestrial low-power systems operating in the 2483.5–2495 MHz band shall operate consistent with the technical limits and other requirements.

Note to § 100.283: The requirements adopt in this section are based on cdma2000 and IS–95 system architecture. A licensee may use different system architecture upon demonstration that it will produce no greater potential interference than would be produced in a cdma2000 and IS–95 system architecture.

(d) *Requirements for MES operations in the NVNG, 1.5/1.6 GHz, 1.6/2.4 GHz and 2 GHz MSS bands.*

(1) Any mobile earth station (MES) operating in the 1530–1544 MHz and 1626.5–1645.5 MHz bands must have the following minimum set of capabilities to ensure compliance with Footnote 5.353A in § 2.106 of this chapter and the priority and real-time preemption requirements imposed by Footnote US315 in § 2.106 of this chapter.

(i) All MES transmissions must have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety communications sharing the band.

(ii) Each MES with a requirement to handle maritime distress and safety data communications must be capable of either:

(A) Recognizing message and call priority identification when transmitted from its associated Land Earth Station (LES), or

(B) Accepting message and call priority identification embedded in the message or call when transmitted from its associated LES and passing the identification to shipboard data message processing equipment.

(iii) Each MES must be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to a system.

(iv) After an MES has gained access to a system, the mobile terminal must be under control of an LES and must obtain all channel assignments from it.

(v) All MESs that do not continuously monitor a separate signaling channel or signaling within the communications channel must monitor the signaling channel at the end of each transmission.

(vi) Each MES must automatically inhibit its transmissions if it is not correctly receiving separate signaling channel or signaling within the communications channel from its associated LES.

(vii) Each MES must automatically inhibit its transmissions on any or all channels upon receiving a channel-shut-off command on a signaling or communications channel it is receiving from its associated LES.

(viii) Each MES with a requirement to handle maritime distress and safety communications must have the capability within the station to automatically preempt lower precedence traffic.

(2) Any LES for an MSS system operating in the 1530–1544 MHz and 1626.5–1645.5 MHz bands must have the following minimum set of capabilities to ensure compliance with Footnote 5.353A and the priority and real-time preemption requirements imposed by Footnote US315 in § 2.106 of this chapter. An LES fulfilling these requirements must not have any additional priority with respect to FSS stations operating with other systems.

(i) LES transmissions to MESs must have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety communications pursuant to paragraph (a) of this section.

(ii) The LES must recognize the priority of calls to and from MESs and make channel assignments taking into account the priority access that is given to maritime distress and safety communications.

(iii) The LES must be capable of receiving the MES identification number when transmitted and verifying that it is an authorized user of the system to prohibit unauthorized access.

(iv) The LES must be capable of transmitting channel assignment commands to the MESs.

(v) The communications channels used between the LES and the MES shall have provision for signaling within the voice/data channel, for an MES that does not continuously monitor the LES signaling channel during a call.

(vi) The LES must transmit periodic control signals to MESs that do not continuously monitor the LES signaling channel.

(vii) The LES must automatically inhibit transmissions to an MES to which it is not transmitting in a signaling channel or signaling within the communications channel.

(viii) The LES must be capable of transmitting channel-shut-off commands to MESs on signaling or communications channels.

(ix) Each LES must be capable of interrupting, and if necessary, preempting ongoing routine traffic from an MES in order to complete a maritime distress, urgency or safety call to that MES.

(x) Each LES must be capable of automatically turning off one or more of its associated channels in order to complete a maritime distress, urgency or safety call.

(3) No person without an FCC license for such operation may transmit to a space station in the NVNG, 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS from anywhere in the United States except to receive service from the holder of a pertinent FCC blanket license or from another party with the permission of such a blanket licensee.

(e) *Operations of MES and ATC transmitters or transceivers on board civil aircraft.*

(1) Operation of any of the following devices aboard civil aircraft is prohibited, unless the device is installed in a manner approved by the Federal Aviation Administration or is used by the pilot or with the pilot's consent:

(i) Earth stations capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS frequency bands;

(ii) ATC terminals capable of transmitting in the 1.5/1.6 GHz or 1.6/2.4 GHz MSS bands;

(iii) Earth stations used for non-voice, non-geostationary MSS communication that can emit radiation in the 108–137 MHz band.

(2) No portable device of any type identified in paragraph (a) of this section (including transmitter or transceiver units installed in other devices that are themselves portable) may be sold or distributed to users unless it conspicuously bears the following warning: ''This device must

be turned off at all times while on board aircraft.'' For purposes of this section, a device is portable if it is a ''portable device'' as defined in § 2.1093(b) of this chapter or is designed to be carried by hand.

§ 100.284 Requirements for ancillary terrestrial components in Mobile-Satellite Service networks operating in the 1.5./1.6 GHz and 1.6/2.4 GHz Mobile-Satellite Service.

(a) *Technical certifications or showings.* Applicants for ancillary terrestrial component authority shall demonstrate that the applicant does or will comply with the following through certification or explanatory technical exhibit, as appropriate:

(1) ATC shall be deployed in the forward-band mode of operation whereby the ATC mobile terminals transmit in the MSS uplink bands and the ATC base stations transmit in the MSS downlink bands in portions of the 1626.5–1660.5 MHz/1525–1559 MHz bands (L-band) and the 1610–1626.5 MHz/2483.5–2500 MHz bands.

Note to paragraph (a)(1): An L-band MSS licensee is permitted to apply for ATC authorization based on a non-forward-band mode of operation provided it is able to demonstrate that the use of a non-forward-band mode of operation would produce no greater potential interference than that produced as a result of implementing the rules of this section. A 1.6/2.4 GHz band licensee is permitted to apply for ATC authorization on a non-forward-band mode of operation where the equipment deployed will meet the requirements of paragraph (c)(4) of this section.

(2) ATC operations shall be limited to certain frequencies:

(i) In the 1626.5–1660.5 MHz/1525–1559 MHz bands (L-band), ATC operations are limited to the frequency assignments authorized and internationally coordinated for the MSS system of the MSS licensee that seeks ATC authority.

(ii) In the 1610–1626.5 MHz/2483.5–2500 MHz bands, ATC operations are limited to the 1610–1617.775 MHz, 1621.35–1626.5 MHz, and 2483.5–2495 MHz bands and to the specific frequencies authorized for use by the MSS licensee that seeks ATC authority.

(3) ATC operations shall not exceed the geographical coverage area of the Mobile-Satellite Service network of the applicant for ATC authority.

(4) ATC base stations shall comply with all applicable antenna and structural clearance requirements established in part 17 of this chapter.

(5) ATC base stations and mobile terminals shall comply with part 1 of this chapter, Subpart I—Procedures Implementing the National Environmental Policy Act of 1969, including the guidelines for human exposure to radio frequency electromagnetic fields as defined in §§ 1.1307(b) and 1.1310 of this chapter for PCS networks.

(6) ATC base station operations shall use less than all available MSS frequencies when using all available frequencies for ATC base station operations would exclude otherwise available signals from MSS space-stations.

(b) *Additional certifications.* Applicants for an ATC shall demonstrate that the applicant does or will comply with the following criteria through certification:

(1) *Geographic and temporal coverage.*

(i) For the L-band, an applicant must demonstrate that it can provide space-segment service covering all 50 states, Puerto Rico, and the U.S. Virgin Islands one-hundred percent of the time, unless it is not technically possible for the MSS operator to meet the coverage criteria from its orbital position.

(ii) For the 1.6/2.4 GHz Mobile-Satellite Service bands, an applicant must demonstrate that it can provide space-segment service to all locations as far north as 70° North latitude and as far south as 55° South latitude for at least 75% of every 24-hour period, *i.e.,* that at least one satellite will be visible above the horizon at an elevation angle of at least 5° for at least 18 hours each day, and on a continuous basis throughout the fifty states, Puerto Rico and the U.S. Virgin Islands, *i.e.,* that at least one satellite will be visible above the horizon at an elevation angle of at least 5° at all times.

(2) *Replacement satellites.*

(i) Operational NGSO MSS ATC systems shall maintain an in-orbit spare satellite.

(ii) Operational GSO MSS ATC systems shall maintain a spare satellite on the ground within one year of commencing operations and launch it into orbit during the next commercially reasonable launch window following a satellite failure.

(iii) All MSS ATC licensees must report any satellite failures, malfunctions or outages that may require satellite replacement within ten days of their occurrence.

(3) *Commercial availability.* Mobile-satellite service must be commercially available (viz., offering services for a fee) in accordance with the coverage requirements that pertain to each band as a prerequisite to an MSS licensee's offering ATC service.

(4) *Integrated services.* MSS ATC licensees shall offer an integrated service of MSS and MSS ATC. Applicants for MSS ATC may establish an integrated service offering by affirmatively demonstrating that:

(i) The MSS ATC operator will use a dual-mode handset that can communicate with both the MSS network and the MSS ATC component to provide the proposed ATC service; or

(ii) Other evidence establishing that the MSS ATC operator will provide an integrated service offering to the public.

(5) *In-band operation.*

(i) In the 1.6/2.4 GHz Mobile-Satellite Service bands, MSS ATC is limited to no more than 7.775 MHz of spectrum in the L-band and 11.5 MHz of spectrum in the S-band. Licensees in these bands may implement ATC only on those channels on which MSS is authorized, consistent with the 1.6/2.4 GHz MSS band-sharing arrangement.

(ii) In the L-band, MSS ATC is limited to those frequency assignments available for MSS use in accordance with the Mexico City Memorandum of Understanding, its successor agreements or the result of other organized efforts of international coordination.

(c) *Equipment certification.*

(1) Each ATC mobile station utilized for operation under this part and each transmitter marketed, as set forth in § 2.803 of this chapter, must be of a type that has been authorized by the Commission under its certification procedure for use under this part.

(2) Any manufacturer of radio transmitting equipment to be used in these services may request equipment authorization following the procedures set forth in subpart J of part 2 of this chapter. Equipment authorization for an individual transmitter may be requested by an applicant for a station authorization by following the procedures set forth in part 2 of this chapter.

(3) Licensees and manufacturers shall ensure compliance with the Commission's radio frequency exposure requirements in §§ 1.1307(b), 2.1091, and 2.1093 of this chapter, as appropriate. An Environmental Assessment may be required if RF radiation from the proposed facilities would, in combination with radiation from other sources, cause RF power density or field strength in an accessible area to exceed the applicable limits specified in § 1.1310 of this chapter. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements. Technical information showing the basis for this statement must be

submitted to the Commission upon request.

(4) Applications for equipment authorization of terrestrial low-power system equipment that will operate in the 2483.5–2495 MHz band shall demonstrate the following:

(i) The transmitted signal is digitally modulated;

(ii) The 6 dB bandwidth is at least 500 kHz;

(iii) The maximum transmit power is no more than 1 W with a peak EIRP of no more than 6 dBW;

(iv) The maximum power spectral density conducted to the antenna is not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission;

(v) Emissions below 2483.5 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least 40 + 10 log (P) dB at the channel edge at 2483.5 MHz, 43 + 10 log (P) dB at 5 MHz from the channel edge, and 55 + 10 log (P) dB at X MHz from the channel edge where X is the greater of 6 MHz or the actual emission bandwidth;

(vi) Emissions above 2495 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least 43 + 10 log (P) dB on all frequencies between the channel edge at 2495 MHz and X MHz from this channel edge and 55 + 10 log (P) dB on all frequencies more than X MHz from this channel edge, where X is the greater of 6 MHz or the actual emission bandwidth; and

(vii) Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately above and adjacent to the 2495 MHz a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. If 1 percent of the emission bandwidth of the fundamental emission is less than 1 MHz, the power measured must be integrated over the required measurement bandwidth of 1 MHz. A resolution bandwidth narrower than 1 MHz is permitted to improve measurement accuracy, provided the measured power is integrated over the full required measurement bandwidth (*i.e.,* 1 MHz). The emission bandwidth of the fundamental emission of a transmitter is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

(d) *Compliance with other rules.* Applicants for an ancillary terrestrial component authority shall demonstrate that the applicant does or will comply with the provisions of § 1.924 of this chapter and § 100.276 and with this section, as appropriate, through certification or explanatory technical exhibit.

(e) *Limitations on grant timing.* Except as provided for in paragraphs (f) and (g) of this section, no application for an ancillary terrestrial component shall be granted until the applicant has demonstrated actual compliance with the provisions of paragraph (b) of this section. Upon receipt of ATC authority, all ATC licensees shall ensure continued compliance with this section, as appropriate.

(f) *Special provision for operational MSS systems.* Applicants for MSS ATC authority with operational MSS systems that are in actual compliance with the requirements prescribed in paragraphs (b)(1), (b)(2), and (b)(3) of this section at the time of application may elect to satisfy the requirements of paragraphs (b)(4) and (b)(5) of this section prospectively by providing a substantial showing in its certification regarding how the applicant will comply with the requirements of paragraphs (b)(4) and (b)(5) of this section. Notwithstanding paragraph (e) of this section, the Commission may grant an application for ATC authority based on such a prospective substantial showing if the Commission finds that operations consistent with the substantial showing will result in actual compliance with the requirements prescribed in paragraphs (b)(4) and (b)(5) of this section. An MSS ATC applicant that receives a grant of ATC authority pursuant to this paragraph (f) shall notify the Commission within 30 days once it begins providing ATC service. This notification must take the form of a letter formally filed with the Commission in the appropriate MSS license docket and shall contain a certification that the MSS ATC service is consistent with its ATC authority.

(g) *Special provisions for terrestrial low-power systems in the 2483.5–2495 MHz band.*

(1) An operational MSS system that applies for authority to deploy ATC in the 2483.5–2495 MHz band for terrestrial low-power operations satisfying the equipment certification requirements of paragraph (c)(4) of this section is not required to demonstrate compliance with paragraph (b) of this section, except to demonstrate the commercial availability of MSS, without regard to coverage requirements.

(2) An ATC licensee seeking to modify its license to add authority to operate a terrestrial low-power network shall certify in its modification application that its operations will utilize a Network Operating System (NOS), consisting of a network management system located at an operations center or centers. The NOS shall have the technical capability to address and resolve interference issues related to the licensee's network operations by reducing operational power; adjusting operational frequencies; shutting off operations; or any other appropriate means. The NOS shall also have the ability to resolve interference from the terrestrial low-power network to the licensee's MSS operations and to authorize access points to the network, which in turn may authorize access to the network by end-user devices. The NOS operations center shall have a point of contact in the United States available twenty-four hours a day, seven days a week, with a phone number and address made publicly-available by the licensee.

(3) All access points operating in the 2483.5–2495 MHz band shall only operate when authorized by the ATC licensee's NOS, and all client devices operating in the 2483.5–2495 MHz band shall only operate when under the control of such access points.

(h) *Spectrum leasing.* Leasing of spectrum rights by MSS licensees or system operators to spectrum lessees for ATC use is subject to the rules for spectrum manager leasing arrangements (see § 1.9020) as set forth in part 1, subpart X of this chapter (see § 1.9001 *et seq.*). In addition, at the time of the filing of the requisite notification of a spectrum manager leasing arrangement using Form 608 (see §§ 1.9020(e) and 1.913(a)(5)), both parties to the proposed arrangement must have a complete and accurate Form 602 (see § 1.913(a)(2)) on file with the Commission.

§ 100.285 Procedures for resolving harmful interference related to ATC in the 1.5/1.6 GHz and 1.6/2.4 GHz bands.

If harmful interference is caused to other services by ancillary MSS ATC operations, either from ATC base stations or mobile terminals, the MSS ATC operator must resolve any such interference. If the MSS ATC operator claims to have resolved the interference and other operators claim that interference has not been resolved, then the parties to the dispute may petition

the Commission for a resolution of their claims.

§ 100.286 Transmitter identification requirements for video uplink transmissions.

(a) *Analog.* Earth-to-space transmissions carrying video information with analog modulation must be identified through use of an Automatic Transmitter Identification System (ATIS) with an analog identifier or a direct sequence spread spectrum signal. Use of an analog identifier must be in accordance with the following requirements:

(1) The ATIS signal must be a separate subcarrier that is automatically activated whenever any radio frequency signal is transmitted.

(2) The ATIS message must continuously repeat.

(3) The ATIS subcarrier signal must be generated at a frequency of 7.1 MHz ±25 kHz and modulate the uplink radio frequency carrier at a level no less than −26 dB (referenced to the unmodulated carrier).

(4) ATIS subcarrier deviation must not exceed 25 kHz.

(5) The ATIS message protocol must be International Morse Code keyed by a 1200 Hz ±800 Hz tone representing a mark and a message rate of 15 to 25 words per minute. The tone must frequency-modulate the subcarrier signal with the ATIS message.

(6) The ATIS message must include the FCC-assigned call sign of the transmitting earth station, a telephone number providing immediate access to personnel capable of resolving interference or coordination problems, and a unique serial number of ten or more digits programmed into the ATIS message in a permanent manner so that it cannot be readily changed by the operator on duty. Additional information may be included in the ATIS data stream provided the total ATIS message length does not exceed 30 seconds.

(7) Use of a direct sequence spread spectrum ATIS signal must be in accordance with the requirements of this section.

(b) *Digital.* Transmissions of fixed-frequency, digitally modulated video signals with a symbol rate of 128,000/s or more from a temporary-fixed earth station must be identified through use of an ATIS in accordance with the requirements that follow.

(1) The ATIS message must be modulated onto a direct sequence spread spectrum signal in accordance with the DVB–CID standard, ETSI TS 103 129 V1.1.2 (2014–03)

(2) The ATIS message must continuously repeat.

Note 1 to paragraph (b): Paragraph (b) of this section is waived for earth stations using modulators manufactured before August 1, 2017, that cannot be made compliant with the DVB–CID standard by a software upgrade.

(c) *Integration.* ATIS equipment must be integrated into the uplink transmitter chain with a method that cannot easily be defeated.

Miscellaneous Rules

§ 100.290 Satellite Emergency Notification Devices (SENDs).

No device described by the marketer or seller using the terms ''SEND'' or ''Satellite Emergency Notification Device'' may be marketed or sold in the United States unless it complies with the requirements of RTCM 12800.0.

Subpart D—Compliance

§ 100.300 Temporary Measures for Non-Compliance

(a) A space station or earth station operator may be required to temporarily cease radio emissions upon a Commission determination of:

(1) Failure to operate in conformance with the Commission's rules or conditions on a license authorization;

(2) Failure to timely pay any regulatory fee debts without prior Commission approval or request for waiver in advance of the payment deadline; or

(3) During the pendency of an investigation into any potential violation of the Commission's rules or conditions on a license as directed by the Commission.

§ 100.301 Administrative sanctions.

(a) Subject to section 503 of the Communications Act, a forfeiture may be imposed for failure to operate in conformance with the Communications Act, license terms, any conditions imposed on an authorization, or any of the Commission's rules and regulations; or for failure to comply with Commission requests for information needed to complete international coordination or for failure to cooperate in Commission investigations with respect to international coordination.

(b) Subject to section 503 of the Communications Act, a forfeiture will be imposed and the station license may be terminated for malicious transmission of any signal that causes harmful interference with any other radio communications or signals.

(c) Subject to section 312 of the Communications Act, a station license may be revoked for any reason stated in section 312(a) of the Communications Act, including repeated or willful violation of the kind set forth in paragraphs (a) and (b) of this section. The operator of a space station license that has been revoked under this rule part must maintain control of each authorized spacecraft until it has deorbited.

(d) The Commission may prevent a licensee from launching or operating additional satellites or space stations under a space station license for any violation of the kind set forth in paragraphs (a) and (b) of this section until such violation is cured.

(e) The Commission may place a licensee into an authorization freeze status preventing a licensee from receiving any new or additional licenses or authorizations for any violation of the kind set forth in paragraphs (a) and (b) of this section.

(f) Subject to sections 312(a)(1) and 316 of the Communications Act, the Commission may revoke or modify a station license if the grant of the operations requested in the station license was predicated on statements subsequently found to be intentionally false or misleading.

(g) The sanctions specified in paragraphs (a) through (f) of this section will be imposed pursuant to such notice and an opportunity to be heard as is required pursuant to Titles III and V of the Communications Act, the Administrative Procedure Act, and the requirements of due process.

(h) For purposes of this section, the term ''repeated'' and ''willful'' are defined as set out in section 312(f) of the Communications Act, 47 U.S.C. 312(f).

§ 100.302 Automatic termination of station authorization.

(a) All space and earth station licenses shall be automatically terminated in whole or in part without further notice to the licensee upon:

(1) The failure to meet an applicable milestone as specified in § 100.147.

(2) The failure to meet any registration and coordination requirements as specified in § 100.120(c)(2).

(3) The failure to meet any operational requirements for earth stations as specified in §§ 100.270 through 100.286.

(4) The expiration of the license term, unless an application for extension of the license term has been filed with the Commission pursuant to § 100.149.

(5) The removal or alteration of earth station equipment or antennas that renders the earth station not operational for more than 90 days, or upon the occurrence of a failure or anomaly that renders a space station permanently unable to conduct any radiocommunications.

(6) The failure to maintain 50% of the maximum number of NGSO satellites

authorized for service following the 12-year milestone period as functional space stations in authorized orbits, for NGSO satellite system licensees, which failure will result in the termination of authority for the space stations not in orbit as of the date of noncompliance, but allow for replacements pursuant to § 100.149(d).

(7) The failure to provide any SCS on all or some of the SCS authorized frequencies for more than 90 days, for an SCS space station licensee authorized pursuant to § 100.113. In this instance, the authorization will be terminated in whole or in part with respect to the relevant frequencies on which SCS has not be operational for more than 90 days in the United States, unless specific authority is requested.

§ 100.303 Reinstatement.

A station authorization terminated in whole or in part under the provisions of § 100.302 may be reinstated if the Commission, in its discretion, determines that reinstatement would best serve the public interest, convenience, and necessity. Petitions for reinstatement will be considered only if:

(a) The petition is filed within 30 days after the expiration date set forth in § 100.301, whichever is applicable;

(b) The petition explains the failure to file a timely notification or renewal application; and

(c) The petition sets forth with specificity the procedures that have been established to ensure timely filings in the future.

§ 100.304 Cause for termination of interference protection for registered receiving earth stations.

The protection from interference afforded by the registration of a receiving earth station shall be automatically terminated if:

(a) The request for registration is not submitted to the Commission within three months of the completion of the frequency coordination process, except for as provided in § 100.276;

(b) The receiving earth station is not constructed and placed into service within six months after completion of coordination;

(c) The Commission finds that the station has been used less than 50% of the time during any 12 month period;

(d) The Commission finds that the station has been used for an unlawful purpose or otherwise in violation of the Commission's rules, regulations or policies;

(e) The Commission finds that the actual use of the facility is inconsistent with what was set forth in the registrant's application; or

(f) The Commission finds that the frequency coordination exhibit, upon which the granted registration is based, is incomplete or does not conform with established coordination procedures.

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