

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)
)
Comprehensive Review of Licensing and) IB Docket No. 12-267
Operating Rules for Satellite Services)

To: The Commission

COMMENTS OF THE SATELLITE INDUSTRY ASSOCIATION

SATELLITE INDUSTRY ASSOCIATION

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SUMMARY

The Satellite Industry Association (“SIA”) strongly supports the Notice of Proposed Rule Making in IB Docket No. 12-267 (“NPRM”), and commends the Commission for proposing significant revisions to the rules and processes governing satellite services. The NPRM represents an important first step in what should be a multi-phase process to examine and consolidate the regulations in Part 25 of the Commission’s rules.

SIA has three primary objectives for this proceeding: (1) improving the efficiency of applications for and the licensing and operation of space and earth stations under Part 25; (2) enhancing the correlation in Part 25 between the Commission’s role in the licensing and post-licensing process and the Commission’s responsibilities under the Communications Act of 1934 and the International Telecommunication Union (“ITU”) Radio Regulations; and (3) achieving a balance in the Part 25 rules that is properly reflective of improvements in technology over the last 20 years and flexible enough to accommodate future developments.

SIA’s Comments track the NPRM structure, and address virtually all proposals made and questions posed. SIA offers specific revisions to particular rule proposals in a Rules Appendix it attaches to its Comments. An overview of SIA’s Comments follows:

General Rules Relating to Scope and Definitions

SIA supports most of the proposals regarding the Part 25 definitions, but recommends that certain additional revisions be made, including expansion of the “Permitted Space Station List” (to include Ka-band space stations), “routine processing” (for bands other than conventional C-band and conventional Ku-band) and “blanket license” (to encompass both space and earth stations) definitions. SIA also supports preservation of “ALSAT.”

The Part 25 reporting requirements, to the extent they are necessary at all, should, as the Commission has proposed, be both consolidated and revised to remove contradictions and overlaps. SIA, however, does not support expanding the reach of these requirements to licensees and operators not currently required to submit reports.

On implementation milestones, SIA recommends that the Commission provide licensees subject to the milestone requirements with a 15-day period after the milestone deadline to report milestone compliance – a timetable consistent with existing Commission build-out requirements. SIA also does not believe that greater specificity is required in the critical design review and construction-commencement milestone rules.

The policy objectives supporting FCC Form 312EZ and the autogrant procedure will be made more efficient by integrating FCC Form 312EZ into FCC Form 312.

SIA generally supports the proposals consolidating the rain fade compensation regulations into one section, and also supports providing licensees with the choice whether or not to employ rain fade compensation techniques. SIA observes, however, that the Commission appears to have inadvertently limited the ability of satellite systems above 10 GHz to use fade compensation, and recommends that the automatic power control provision apply generally to operations above 10 GHz.

Rules Relating to Applications and Licenses

The Commission's proposals regarding the filing of space station and earth station applications and the associated licensing procedures are a major step in the right direction. SIA supports many of these proposals outright, but requests revisions to others in several key places. SIA offers multiple suggestions with respect to the verification of earth station antenna performance standards, including aligning the standards applicable to antennas operating with

20/30 GHz-band geostationary-satellite orbit (“GSO”) fixed-satellite service (“FSS”) space stations and those of other GSO FSS earth station antennas. SIA also requests a significant restructuring of the Very Small Aperture Terminal (“VSAT”) licensing provisions as they apply to Ku-band VSAT networks proposing operations outside of applicable off-axis envelopes, as well as changes to the Commission’s proposals regarding the blanket licensing of 20/30 GHz-band GSO FSS earth stations so as to better align treatment of these earth stations with the treatment accorded earth stations in the C- and Ku-bands. SIA also seeks a modest expansion of the receive-only earth station rule proposals to allow registration of such earth stations operating with non-U.S. licensed satellites that have been granted U.S. market access.

Rules Relating to Technical Standards for Licensing Space and Earth Stations

With a few exceptions and some requested refinements, SIA supports the proposals regarding technical standards for the licensing of space and earth stations. Included among its refinements, SIA requests that the Commission allow some telemetry, tracking and command (“TT&C”) functions to be conducted on a non-emergency basis away from the band edge, provided that the signals cause no more interference and require no greater protection than communications or service traffic provided on those non-edge frequencies. SIA also requests a rule revision to allow earth station licensees with antennas that do not comply with off-axis equivalent isotropically radiated power (“EIRP”) envelopes with respect to compliant licensees operating space stations more than six degrees away from the target station to bring their operations into compliance with the off-axis EIRP mask.

SIA recommends the complete suppression of the now largely obsolete space station technical requirements in Part 25 designed to facilitate the increasingly rare high powered analog C-band transmissions. In addition, the proposed expansion of routine licensing for stations

transmitting narrowband analog signals in the GSO FSS up to 1 megahertz in bandwidth (other than for telecommand carriers) should be rejected as too potentially disruptive. Instead, existing non-routine licensing should be maintained.

Rules Governing Earth and Space Station Technical Operations

SIA supports a modest expansion of the current Automatic Transmitter Identification System (“ATIS”) rule in Section 25.281 to cover digital video transmissions from satellite news gathering vehicles and temporary installations, in place of the specific ATIS proposal in the NPRM. Any such expansion, however, should not apply to large fixed video uplinks, such as Direct Broadcast Satellite (“DBS”) service or 17/24 GHz Broadcasting Satellite service feeder links, or to non-video uplinks. SIA is also concerned that the proposed technical standards for digital ATIS are too detailed and too specific to account for future advances for carrier ID.

Additional Technical Changes

SIA appreciates the Commission’s willingness to consider global best practices in updating its own satellite licensing requirements, and urges the Commission to align its requirements with effective practices developed abroad, where appropriate. In the context of earth station licensing, the Commission should also consider adopting a provision that removes most licensing obligations applicable to new, low-power terminals in bands not shared with terrestrial services. This approach has been proven in Europe to streamline earth station licensing while maintaining protection of adjacent GSO satellites.

Looking Forward

Finally, SIA reiterates its position that the NPRM should serve as only the first step in a multi-step process to revise the Part 25 rules. SIA identifies several subjects for consideration in a soon-to-be-initiated next phase of this docket. Among areas identified are the reexamination of

certain aspects of milestone conditions and compliance, the orbital debris mitigation rules, the further restructuring and consolidation of the Part 25 rules, and the elimination of unnecessary numerical limits on outstanding applications or un-built authorizations.

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COMMENTS OF THE SATELLITE INDUSTRY ASSOCIATION

The Satellite Industry Association (“SIA”) hereby submits these comments in response to the above-captioned Notice of Proposed Rule Making (“NPRM”) in which the Commission proposes to modernize the rules governing satellite services.¹ The satellite industry has changed and matured in many ways since the last significant review was undertaken in the 1990s. Satellite services are instrumental to the Commission’s vision of a country where broadband services are available to each and every household. Satellite systems and networks are extremely efficient users of the spectrum. Satellite services are now at the forefront of the development of new communications technologies, and the last few years have seen the introduction of extremely high-capacity/high-throughput space stations, and more are on the way. SIA is strongly supportive of this proceeding and urges the Commission to move forward to a Report and Order as quickly as possible so that industry, the government, and consumers may begin to benefit from the proposed changes. With its NPRM, the Commission has undertaken a very

¹ *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Notice of Proposed Rulemaking, IB Docket No. 12-267, FCC 12-117 (rel. Sept. 28, 2012). The deadline for initial comments on the NPRM was extended to January 14, 2013 by *Order*, DA 12-2046 (Int’l. Bur., released December 19, 2012).

important initiative that will affect the way people in this country communicate and exchange information.

I. INTRODUCTION

SIA is a U.S.-based trade association providing worldwide representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers.² Since its creation more than fifteen years ago, SIA has become the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. As the primary spokesperson for the U.S.-based satellite industry, SIA has a direct interest in this proceeding.

SIA has three primary objectives for this important rulemaking proceeding. First, SIA seeks to improve the efficiency of applications for and the licensing and operation of space and earth stations under Part 25 of the Commission's rules. As the Commission proposes in the NPRM, and as SIA explains in detail below, this effort is a substantial undertaking – part modernization and part overhaul – that includes the removal of redundant, unnecessary or anachronistic information-gathering and regulatory oversight requirements, and the increased accommodation of routine space and earth station applications. Second, SIA seeks enhanced correlation in Part 25 of the Commission's rules between the Commission's role in the licensing and post-licensing process and the Commission's responsibilities under the Communications Act

² SIA Executive Members include: Artel, Inc.; The Boeing Company; The DIRECTV Group; EchoStar Satellite Services LLC; Harris CapRock Communications; Hughes Network Systems, LLC; Intelsat, S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; LightSquared; Lockheed Martin Corporation.; Northrop Grumman Corporation; Rockwell Collins Government Systems; SES S.A.; and Space Systems/Loral. SIA Associate Members include: AIS Engineering, Inc.; ATK Inc.; Cisco; Cobham SATCOM Land Systems; Comtech EF Data Corp.; DRS Technologies, Inc.; Encompass Government Solutions; Eutelsat, Inc.; GE Satellite; Globecom Systems, Inc.; Glowlink Communications Technology, Inc.; iDirect Government Technologies; Inmarsat, Inc.; Marshall Communications Corporation.; MTN Government Services; NewSat America, Inc.; Orbital Sciences Corporation; Panasonic Avionics Corporation; Spacecom, Ltd.; Spacenet Inc.; TeleCommunication Systems, Inc.; Telesat Canada; TrustComm, Inc.; Ultisat, Inc.; ViaSat, Inc.; and XTAR, LLC. Additional information about SIA can be found at www.sia.org.

of 1934, as amended (“Communications Act”), and the International Telecommunication Union (“ITU”) Radio Regulations, to manage radiofrequency interference (“RFI”). Third, SIA seeks to help the Commission strike the proper balance in the Part 25 regulations that will enable the rules to reflect improvements in technology over the last 20 years while simultaneously providing maximum flexibility to accommodate future developments. All three of these objectives are geared to facilitating the introduction of new services to consumers and the promotion of more efficient use of the orbital/spectrum resource.

The Commission is to be commended for undertaking to revamp its rules and processes in a way that enables old mindsets and predispositions to be refreshed. In particular, SIA is pleased to see the Commission’s willingness to examine how relevant regulatory issues are handled in other countries. The NPRM reflects the Commission’s recognition of the fact that having done things one way for as long as anyone can remember is not reason enough to continue doing things the same way on a going forward basis without change.

SIA supports the Commission’s stated objectives in initiating the NPRM – including modernizing the rules, eliminating unnecessary requirements, and providing licensee flexibility.³ SIA recognizes that, in order to implement the proposals in the NPRM and in the attached Rules Appendix, the Commission will need to substantially revise FCC Form 312, and to update its application software on the IBFS system. SIA encourages the Commission to commence this process, which could be time consuming, at its earliest opportunity.

While SIA’s proposals and comments are intended to advance the Commission’s goal of providing a comprehensive review of the Part 25 rules, SIA views the NPRM as only the first step in what should be a multi-phase process. The proposals advanced in the NPRM are positive

³ See NPRM at ¶¶ 3, 5.

and an important step forward, but further examination of underlying policies and consolidation of the regulations in Part 25 will be needed to enable the revisions to be comprehensive in scope and address all outstanding concerns.

SIA's comments closely follow the structure of the NPRM. SIA offers comments upon each of the Commission's proposals, and in many areas offers additional ideas and perspectives that it believes are consistent with the Commission's stated objectives and appropriate for inclusion in this first stage of the Part 25 review process. To assist the Commission in its review, SIA includes a Rules Appendix to these comments that shows in strikethrough and underscore format the specific modifications it suggests to Appendix A of the NPRM.⁴ In this regard, SIA emphasizes that its modifications to Appendix A stay within the structure of the current Part 25, as proposed to be modified by the NPRM. Finally, SIA identifies areas where a more in-depth review of Commission policies and practices should be made in a future phase of the instant docket. In these later-stage reviews, it may be appropriate for the Commission to consider a larger-scale restructuring of the rules to make the regulatory scheme more functional and more closely aligned with the fluid and even dynamic nature of satellite service offerings today and in the future.

⁴ SIA notes that the Commission recently adopted a new Report and Order establishing technical and licensing rules for Earth Stations Aboard Aircraft ("ESAA") that communicate with geostationary-satellite orbit ("GSO") fixed satellite service ("FSS") space stations in the Ku-band frequency range. *See Revisions to Parts 2 and 25 of the Commission's Rules to Govern the Use of Earth Stations Aboard Aircraft Communicating with Fixed-Satellite Service Geostationary-Orbit Space Stations Operating in the 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz and 14.0-14.5 GHz Frequency Bands*, FCC 12-161, Notice of Proposed Rule Making and Report and Order (released December 28, 2012) ("*ESAA Order*"). Given that the ESAA Order was issued in an ongoing proceeding, SIA has not adjusted its Rules Appendix to reflect ESAAs or new Section 25.227 of the Commission's rules, and notes instead that the Commission may need to administratively align some of the application and licensing provisions that are addressed in the NPRM and these Comments upon conclusion of the ESAA rulemaking proceeding.

II. DISCUSSION

A. General Rules Relating to Scope and Definitions

The NPRM opens with a discussion concerning the Part 25 definitions, which are contained principally in two rule sections – Sections 25.103 and 25.201. SIA supports the Commission’s proposal to consolidate all of the Part 25 definitions into Section 25.103 and to reserve Section 25.201 for future use.⁵ SIA’s comments on specific proposals and questions follow.

1. “Permitted Space Station List” and “Routine Processing”

The Commission proposes to amend the existing definition of “Permitted Space Station List” and to add a new definition of “Ka-band Space Station Permitted List.”⁶ SIA urges that the proposed definitions be revised in several ways. As an initial matter, SIA notes that the second and third sentences of the Permitted Space Station List definition are rules of permission and not definitions, and thus should appropriately be relocated into other rules. SIA specifically requests that both sentences be moved to a new subsection of Section 25.115. SIA also requests that the last sentence of the Ka-band Permitted Space Station List definition be included in this new Section 25.115 subsection as well. The Rules Appendix includes this new subsection as Section 25.115(k).

With these changes, there is no need to maintain separate definitions of “Permitted Space Station List” and “Ka-band Permitted Space Station List.” The remaining text of the two definitions should be placed under a single Permitted Space Station List definition. This integration of 20/30 GHz-band geostationary-satellite orbit (“GSO”) fixed satellite service

⁵ See NPRM at ¶ 7.

⁶ See *id.* at ¶¶ 9-10.

(“FSS”) with GSO FSS in C-band and Ku-band is reflective of the fact that the 20/30 GHz-band FSS is now a mature segment of the industry and has a degree of stability in both the technology and commercial arenas that makes such treatment appropriate.⁷

SIA also supports the Commission’s proposal to expand the definition of “routine processing” for bands other than the conventional C-band and conventional Ku-band.⁸ There is also no reason in principle why earth stations in extended bands cannot be eligible for routine processing. Earth stations communicating with any space station on the Permitted List in the extended bands would simply be subject to the limits of terrestrially coordinated operations, any applicable uplink off-axis equivalent isotropically radiated power (“EIRP”) density limits, and any other rules applicable to the band in question.

In response to the Commission’s question whether the term “ALSAT earth station” should be avoided “as a synonym for routinely licensed FSS earth stations,” SIA maintains that, for now, it is necessary to preserve “ALSAT.”⁹ Earth Stations on Vessels (“ESV”) and Vehicle-Mounted Earth Stations (“VMES”) operations are not eligible for “routine processing,” but both can be licensed as ALSAT earth stations. If the Permitted Space Station List definition is revised to remove ALSAT as proposed, ESV and VMES applicants could be deemed ineligible for ALSAT access. Thus, the Commission should preserve this authority, perhaps by ensuring that earth stations with current ALSAT designations are captured within the revised Permitted Space Station List definition – even if not eligible for routine processing.

⁷ SIA notes that this view of the maturity and stability of 20/30 GHz-band GSO FSS is reflected in several other requested changes and additions from SIA below.

⁸ See NPRM at ¶ 11. SIA does request some minor changes to the cross-referenced rules, however, to align with comments it provides below.

⁹ *Id.* at ¶ 12.

2. Blanket Licensing

SIA requests adding a new definition of “blanket license” to encompass both space and earth stations. This term is used repeatedly in other Part 25 rules, and it is important to foster a clear and common understanding of the phrase’s intent. This definition should specify licensing of multiple identical stations and, in the case of earth stations, that the identical stations could be located anywhere within a specified geographic area (e.g., CONUS). The Rules Appendix includes the revised definition of “blanket license.”

3. Shapeable Antenna Beams

The new definition of “shapeable antenna beams” is a welcome update to the Commission’s rules to reflect advancements in satellite technology.¹⁰ For the definition itself, however, SIA requests that “gain pattern” is a better phrasing than “gain and/or gain pattern.”¹¹ The ability to simply change the gain of an antenna should not exempt an applicant from having to provide all required gain patterns for that antenna.

4. Other Definitional Proposals

On the remaining definitional proposals, SIA offers the following comments:

- SIA supports the proposal to replace L-band references with “1.5/1.6 GHz MSS bands.”¹²

¹⁰ See *id.* at ¶ 16.

¹¹ The resulting definition would thus read: “A satellite transmit or receive antenna beam, the gain pattern of which can be modified at any time, without requiring the satellite antenna reflector to be physically repositioned.”

¹² See *id.* at ¶ 13.

- SIA supports the proposal for changes to Section 25.214 relating to Satellite Digital Audio Radio Service space stations.¹³
- SIA supports the proposal to move “baseline” to Section 25.221; the term appears nowhere else in Part 25, including the FSS allocation at 13.75-14.0 GHz.¹⁴
- While SIA does not oppose the replacement of “Ka-band” with “20/30 GHz” in Section 25.103, there is a resulting need to revisit the use of “Ka-band” in the definition of “protection areas” in Section 25.103 (where that definition refers to Section 25.203(j)) and in the antenna performance standards provisions of Section 25.209(a), for which SIA presents proposals below.¹⁵
- SIA supports the revised definition of “geostationary satellite,” the correction of the formula error in the definition of “equivalent power flux-density,” and the revised “coordination distance” definition.¹⁶
- SIA supports the proposed deletion of unnecessary words from the definition of “ancillary terrestrial component.”¹⁷
- For completeness, SIA also requests that the definition of “extended Ku-band” from Section 25.218(b) be moved to Section 25.103.

B. Reporting Requirements

The next category of NPRM proposals involves reporting requirements for space station licensees. SIA questions whether it is even necessary for FSS and mobile-satellite service (“MSS”) licensees to submit the currently required annual reports, especially if new mechanisms for retaining accurate licensee information needed by the Commission are established as proposed in the NPRM. To the extent that the Commission continues to require these reports,

¹³ *See id.* at ¶ 14.

¹⁴ *See id.* at ¶ 15.

¹⁵ *See infra* § II.H.6. SIA notes that even in the NPRM, there still seems to be some confusion about references in Part 25 rules to “Ka-band” and to “20/30 GHz band” stations and operations. SIA had attempted in these Comments to add some clarity to the situation, but encourages the Commission to examine the rules to be clear as to the appropriate references in each situation.

¹⁶ *See NPRM* at ¶ 16.

¹⁷ *See id.* at ¶ 17.

however, SIA agrees that consolidation here is not only appropriate, it is necessary in several instances to remove contradictions and overlaps. SIA supports many of the Commission's proposals, including the establishment of the new "Reporting Requirements" section of Subpart B. SIA offers some additional proposals below and in the Rules Appendix to help clarify and streamline the new rules.

First, SIA supports the proposal not to require the reporting of temporary outages in the annual reports filed by space station licensees.¹⁸ As the Commission notes in the NPRM, such a reporting requirement is made redundant by the reporting obligations contained in Section 4.9(c) of the Commission's rules. SIA also supports the consolidation of the various reporting requirements in Sections 25.142(c), 25.143(e), 25.144(c), 25.145(f)(1), 25.146(c) and (l), 25.210(l) and 25.272(b) into a consolidated new Section 25.170.¹⁹ This consolidation will, as the Commission observes, remove duplication and some inconsistency of treatment from the rules.

With respect to the Commission's inquiry about the applicability of reporting requirements to services not now encompassed, SIA does not support any expansion of the reach of the reporting obligation to cover services in which licensees and operators are not currently required to submit reports. Indeed, there is nothing in the NPRM that indicates why even the current level of annual reporting (as opposed to the improved maintenance of contact and status records that SIA supports below) is something that the Commission has tentatively determined to maintain. There is no indication of the use, if any, to which the Commission puts the annual reports it collects from some of its space station licensees, and there is no indication that the fact that the Commission has never collected annual reports from other types of space station

¹⁸ *See id.* at ¶ 21.

¹⁹ *See id.* at ¶ 20.

licensees results in any kind of deficiency. To be sure, the process of developing the reports is burdensome on licensees and authorization holders, and should not be lightly retained, let alone expanded. Accordingly, for this NPRM, SIA maintains that there should be no requirement for specialized satellite service (e.g., Earth Exploration-Satellite Service and Radionavigation-Satellite Service) and Direct Broadcast Satellite (“DBS”) service operators to file annual reports.

Next, SIA finds that the proposal for new Section 25.170(b) raises several questions due to its lack of clarity. For example, at what point is the assessment of “not available for service or otherwise not performing to specifications” to be made? If non-performance happens once during a reporting period and is subsequently rectified, is a mention in the report still required? If the answer is yes, this requirement could create a conflict between the obligation under Section 25.170(b) and the determination that a temporary outage not subject to Section 4.9 is not required to be reported. Whatever final form that Section 25.170 takes, SIA asks that the rule specify that the annual report due June 30 only requires information current as of the preceding May 31.²⁰

The obligation contained in Section 25.170 “to file” information with both the International Bureau and with the Columbia Operations Center is unnecessary. Filing with the International Bureau, which is required and presumed sufficient for nearly all other application and license-maintenance functions, should be sufficient for reporting purposes as well. As all IBFS filings are electronic, there will be Commission-wide access to the licensee data.

²⁰ SIA does not believe that the Note under Section 25.170 relating to Part 4 is needed. If it is retained, the Note should be revised to avoid confusion about the directive, as follows: “Space station may also be subject to outage reporting requirements in Part 4 of this chapter.”

With a few exceptions, SIA supports the relocation of contact points from Section 25.272(b) to new Sections 25.170(c) and 25.171.²¹ SIA recognizes the importance to the Commission of having up-to-date contact information for the satellite operators to resolve interference concerns. However, an annual update of this information should be sufficient. All satellite operators maintain a 24/7 network operations center and/or point of contact for their customers, and these details generally do not change very often. SIA also questions the need to file information with the Columbia Operations Center, for the reasons noted above in connection with Section 25.170.²²

If the Commission were to persist in its proposal to require updates on a basis more frequent than annual updates, the 10-day reporting period to notify the Commission of changes may be too short. It sometimes takes more time to transition completely from one facility to the next, and the deadline could generate incomplete or even inaccurate information that would tend to defeat the purpose of the proposed obligation. At the least, the Commission should either confirm that inadvertent violations of the “update” obligations of Section 25.171 are specifically excluded from enforcement proceedings, or clarify that the obligation to update between annual reports is aspirational rather than mandatory (i.e., be changed from “must” to “should”).²³ Errors will inevitably be made no matter how elaborate the procedures licensees put into place to comply with them may be, and these are minor updates that should not affect a licensee’s status or generate enforcement actions.

²¹ See *NPRM* at ¶ 22.

²² In this last regard, and because proposed Section 25.171 is worded slightly differently than proposed Section 25.170(a) on the subject of the Columbia facility, SIA must note that it is not certain that a mechanism exists to enable electronic filing through the Columbia Operations Center. It asks for a similar change to Section 25.172(c).

²³ In the Rules Appendix hereto, SIA illustrates the latter approach.

Finally, SIA requests an addition to Section 25.171 to enable the Commission to get complete contact information, including relevant updates thereto, for space stations not subject to the reporting requirements of Section 25.170. This capability seems to be missing from the NPRM.

The Commission next proposes to modify the space station control information required by the Schedule S portion of FCC Form 312.²⁴ SIA supports the proposal for not including telemetry, tracking and command (“TT&C”) arrangements at the application stage (with the consequent removal of Section 25.114(c)(9)) and instead requiring its submission prior to commencement of commercial operation under new Section 25.172(a). SIA requests that the Commission allow this obligation to be met by having licensees provide a satellite-operations-center point of contact (to be updated annually).

SIA opposes as unduly burdensome the Commission’s proposal to require licensees and operators to continually update individual antennas used for TT&C in Section 25.172(b).²⁵ SIA recommends instead that satellite operators provide updates for a point of contact at their satellite control centers along with their annual reports (if different from the point of contact for interference resolution) or under Section 25.171 if no annual report is required. Satellite operators often have multiple redundant TT&C earth station antennas that can be pressed into service as required (e.g., in conjunction with a fleet maneuver or a new launch). The Commission’s legitimate interest here is met if the Commission is able to contact the satellite

²⁴ See NPRM at ¶ 23. SIA addresses the Schedule S portion of the NPRM without prejudice or prejudice to the question whether Schedule S should continue to be used.

²⁵ See *id.*

control center, which may or may not be located near the physical antennas, and which is unlikely to change very often.

If the Commission were to adopt the new 25.172(b), then providing an exemption for temporary changes that last less than 30 days is a minimum requirement to give satellite operators flexibility. However, this exemption does not fit well with a requirement to update the Commission within 10 days of the change, as the duration of the change may not be ascertainable when initially made. SIA suggests instead (if the Commission were to go down this path) to require reporting within 30 days of change – unless the change is reversed within that time.

SIA supports the change in submission of in-orbit testing data to “upon request” under Section 25.210(k) and relocation of the obligation to new Section 25.173(a).²⁶ However, SIA opposes new Section 25.173(b) as unnecessary. The certification required under that section regarding the consistency of a spacecraft’s operations with authorized parameters is repetitive of the certification already required to be provided under Section 25.121(d) regarding commencement of operations in accordance with a Commission authorization.²⁷

C. Mobile Terminals Aboard Aircraft

SIA supports the proposed rules regarding use of mobile terminals aboard aircraft and the consolidation of the “aircraft-use” provisions into new Section 25.285.²⁸

²⁶ See *id.* at ¶ 24.

²⁷ SIA notes that a revision to proposed Section 25.121(d) is needed to remove the reference to Section 25.173(b).

²⁸ See *NPRM* at ¶¶ 25-27.

D. Milestone Rules

The NPRM contains several proposed revisions of the milestone requirements in Section 25.164. SIA addresses these below, but first offers a proposal of its own – namely, that Section 25.164 be modified to provide licensees and others subject to the rule with a 15-day period after the milestone deadline to report compliance with milestones, rather than requiring reporting compliance on or before the deadline.²⁹ Requiring reporting by the milestone deadline has the effect of shortening the milestone period. Moreover, there is Commission precedent for allowing this amount of additional time to demonstrate satisfaction of a build-out requirement.³⁰ Alignment of the two milestone approaches is both warranted and appropriate.

As for the Commission’s milestone proposals, SIA supports the new “launch and operate” clarification proposed for Section 25.164(a)(4), and the deletion of obsolete grandfathering provisions stemming from the rule’s initial adoption.³¹

In response to the Commission’s inquiry as to whether there should be greater specificity in the rules regarding several milestones, SIA does not believe there is any such need in connection with the rules for the critical design review (“CDR”) and physical construction milestones.³² There is no evidence that greater specificity would either reduce the burdens on licensees or operators, or meet a Commission responsibility. The Commission is currently seeking too much information from licensees at CDR on an ad hoc basis, and even seems to be relying on post-CDR activities, events or expenditures when determining whether a licensee has

²⁹ See Rules Appendix for requested language.

³⁰ Section 1.946(d) grants licensees of the Wireless Radio Services to file notification of construction compliance “within 15 days of the expiration of the applicable construction or coverage period.” 47 C.F.R. § 1.946(d).

³¹ See NPRM at ¶¶ 29, 31.

³² See *id.* at ¶ 30.

met the CDR milestone. This is inconsistent with the original intent of the milestones as implementation way points. The unfortunate effect of providing the entire CDR package to the Commission is that it can take a very long time for the Commission to process milestone submissions. This creates an odd, quasi-proceeding status for milestone submissions, and produces an unwelcome level of uncertainty for licensees and putative users of the subject orbital/spectrum resource. Perhaps the Commission could consider combining the CDR and construction-commencement milestones, or even eliminating the CDR milestone altogether.³³

It is more important for the Commission to process milestone compliance showings rapidly to help ensure that the complex and delicate process of developing a new satellite or system does not get mired in uncertainty and needless delay for all involved. The longer it takes to process such showings, the longer a licensee must continue to pay for and maintain the performance bond at the higher dollar amount (sometimes for years). Such delays can be limited by reducing the amount of information that needs to be reviewed or by streamlining the review by clarifying its purpose. The Commission can and should rely on later milestones to weed out deficient implementations.

Finally, and in recognition of the changing nature of the satellite business and the reality that the pressures on orbital and spectrum resources today are different from those of the “paper filings” era that spawned financial qualifications requirements and their milestone successors, the Commission should confirm in the Part 25 rules that a licensed operator may meet its milestones by moving an existing space station into the licensed orbital location in appropriate circumstances and subject to appropriate conditions. At the very least, the Commission should

³³ At a minimum, the Commission should resume acceptance of certifications from satellite manufacturers as to the completion of CDR. This would certainly expedite the review process and reduce the volume of material that authorization holders are now being asked regularly to provide.

clarify that operation of an in-orbit satellite that utilizes the same frequencies as the licensed satellite and retains some substantial amount of remaining life is sufficient to satisfy milestone requirements if the maneuver is not a means to avoid compliance with applicable Commission policies, including the prevention of orbital spectrum warehousing.

There are numerous good reasons for allowing an in-orbit satellite to satisfy milestones from a policy standpoint. Such a procedure would promote the prompt and efficient use of spectrum and orbital resources. It would also help advance the Commission's goal for increasing broadband coverage via satellite. From an operator standpoint, such a procedure would be beneficial by lowering overall risk and cost, and would allow the introduction of new service areas and offerings and provide an opportunity for existing operators and new entrants alike to validate the market. Such a procedure could also reduce the considerable entry barriers that new satellite service entrants face. SIA urges the Commission to explore this idea in greater detail in the near future.

E. FCC Form 312EZ and the Autogrant Procedure

SIA appreciates the policy objective that is behind the promotion of FCC Form 312EZ and the autogrant procedure.³⁴ SIA requests, however, that this objective can be met in a much more efficient manner if the autogrant concept is integrated into FCC Form 312 itself and if FCC Form 312EZ is eliminated. Expanded routine processing of earth station license applications and expanded use of autogrant would create significant benefits for the many users of satellite capacity, without impairing the Commission's ability to ensure compliance with its rules or to address cases of interference.

³⁴ See NPRM at ¶ 32.

On this basis, SIA requests that the conditions for autogrant be included as a section on FCC Form 312, and integrated into a single form, rather than to be included on a separate form. In addition, SIA urges the Commission to expand the conditions under which the autogrant procedure is available, as discussed below in connection with Section 25.115; to include checkboxes on FCC Form 312 relative to applicability for the procedure; and to revise Section 25.115 accordingly.

The applicable off-axis EIRP envelopes set forth in Section 25.218 should be added, along with the applicable envelopes in Section 25.138, to the list of criteria to be met before the Commission will consider an application for an earth station to be routine and subject to the “autogrant” procedure list.³⁵ SIA also believes that Section 25.134, as conceived by SIA below,³⁶ is no longer relevant for purposes of an autogrant determination. In fact, the reference to input power to the antenna is unnecessary in those FSS bands where there are off-axis EIRP density masks in Section 25.218.

As noted above, it is time now that 20/30 GHz-band GSO FSS be integrated with C-band and Ku-band GSO FSS in rules considering FSS because 20/30 GHz-band FSS is now a mature segment of the industry with a degree of marketplace and technological stability, including in earth station licensing, that is comparable to C-band and Ku-band FSS. The 20/30 GHz-band GSO FSS should not be differentiated on an administrative or procedural level from C-band or Ku-band GSO FSS operations. SIA thus urges that the autogrant procedure should be available for FSS earth stations operating with GSO FSS space stations in conventional C-, conventional Ku-, and in portions of the 20/30 GHz-bands. SIA also urges the Commission to allow autogrant

³⁵ *See id.*

³⁶ *See infra* § II.G.13.

for GSO FSS earth station blanket licenses in the 14.0-14.5 GHz, 28.35-28.6 GHz, and 29.5-30.0 GHz bands, with individual licenses required in all other GSO FSS autogrant bands. SIA does not take a position on whether the autogrant procedure should or should not be available in any form for earth station applications seeking to use the 28.6-29.5 GHz band.

F. Rain Fade Compensation

SIA supports the proposal to consolidate the provisions regarding rain fade compensation into Section 25.204(e) in general.³⁷ SIA also supports the elimination of Section 25.204(g) so as to provide licensees with the flexibility to employ or not employ rain fade compensation techniques, as they see fit.

SIA is concerned, however, that the Commission is proposing to limit the scope of the automatic power control provision previously applicable to all operations above 10 GHz to just the 14.0-14.5 GHz band. As a matter of physics, earth station transmissions at higher frequencies (generally those above 10 GHz) are subject to rain fade, and there is no technical justification for limiting the use of automatic power control for rain fade compensation to just the conventional Ku-band or to routinely-processed earth stations or the other specific bands called out in the Commission's proposed revision.

The Commission has authorized numerous earth stations to operate at frequencies above 10 GHz that are not within the 14.0-14.5 GHz, 13.77-13.78 GHz, 28.35-28.6 GHz, 29.25-30.0 GHz and the 24.75-25.25 GHz bands covered by the Commission's proposed revision. These include the extended Ku-band frequencies (the 13.75-14.0 GHz and 12.75-13.25 GHz bands) and, more recently, the 28.6-29.1 GHz band allocated for primary non-geostationary satellite orbit ("NGSO") FSS use. Many of these earth station operators routinely rely upon the

³⁷ See NPRM at ¶ 37.

existing Section 25.204(e) (which applies generally to operations above 10 GHz) to employ automatic power control to compensate for rain fade. Limiting the automatic power control rule to the 14.0-14.5 GHz band now would work a hardship on such licensees, a result that may not be intended and which should be avoided.³⁸

To address these concerns, SIA recommends that the Commission modify its new Section 25.204(e)(1) to allow automatic power control for operations above 10 GHz generally (as in the case of the existing rule), except when the more band-specific rules in subparagraphs (2) to (4) apply.

SIA supports the proposal for 20/30 GHz band rain fade compensation in the bands mentioned in Section 25.204(e)(3) for communications with GSO satellites,³⁹ but has no opinion on the use of rain fade compensation in the 28.6-29.1 GHz band when used to communicate on a secondary basis with GSO FSS space stations.⁴⁰ Fade compensation techniques affect operation in a two-degree spacing environment, and not interservice operations (including with NGSO FSS systems).

SIA also requests elimination of the requirement in Section 25.204(e)(1) to have Ku-band applicants coordinate the maximum power level for power control purposes. The maximum is set at 1 dB above actual monitored excess attenuation, so there is no need to also coordinate the maximum. There is no similar coordination requirement in the rain fade compensation rule for the 20/30 GHz band.

³⁸ The Commission's revised rule is particularly strange in that it does not allow use of automatic power control in the 13.75-14.0 GHz band, except in the 13.77-13.78 GHz sliver that is particularly sensitive and the subject of special power restrictions.

³⁹ See NPRM at ¶ 37.

⁴⁰ To clarify, SIA supports allowing the use of automatic power control in the 28.6-29.1 GHz band when communicating with NGSO FSS space stations on a primary basis in accordance with Section 25.204(e)(1).

G. Rules Relating to Applications and Licenses

The Commission's NPRM contains numerous proposals to revise and update the rules relating to the filing of space and earth station applications and associated licensing procedures. SIA, as noted, believes the Commission has taken a big step in the right direction with these proposals, and offers its comments herein.

1. Section 25.111 "Additional information"

SIA agrees with the Commission's proposal to add a reference to "due diligence information" to Section 25.111(b).⁴¹ SIA urges the Commission to move that reference earlier in the new language to make clear that the reference means ITU Resolution 49 (Rev. WRC-12) due diligence only. The Rules Appendix includes SIA's recommended placement of the "due diligence" reference.

SIA, however, does not support the Commission's proposal regarding cost recovery fees in Section 25.111(d).⁴² The proposal is too rigid in that it holds all of an applicant's or licensee's future FCC filings hostage to ITU cost recovery compliance – forever. Under the rule, as proposed, a single day's delay in making a timely cost-recovery payment to the ITU will preclude all future FCC applications from the same party. What happens in the case of a dispute with the ITU's Radiocommunication Bureau over fees? Only the license relating to the ITU filing should be subject to proposed Section 25.111(d).

SIA also disagrees with the Commission's proposal to require signed cost recovery "declarations."⁴³ In lieu of a signed declaration, the Commission should add a checkbox similar

⁴¹ *See id.* at ¶ 40.

⁴² *See id.* at ¶ 41.

⁴³ *See id.*

to the one included on FCC Form 312 today for Anti-Drug Act⁴⁴ compliance and Section 304 waivers, and handle correspondence through the application contact unless otherwise specified. Importantly, SIA urges the Commission to retain the option for applicants/licensees to file separately from FCC Form 312 for post-application submissions of cost-recovery information. Such non-Form 312 filings should be permitted via letter from counsel of record, as is today's practice, rather than by declaration.

Finally, SIA asks the Commission to remove "international satellite name" from the list of required elements. This information may not be known to the applicant at the time the cost recovery letter or FCC Form 312 is submitted to the International Bureau.

2. Section 25.112 "Defective applications"

SIA supports the proposal to enable the Commission to dismiss duplicative applications filed after a filing window has opened, and not just before the opening of the window as currently allowed.⁴⁵ SIA encourages the Commission, however, to continue its practice of contacting the applicant making duplicative applications before exercising this power of dismissal to confirm that the correct application is being dismissed.

3. Section 25.113 "Station licenses and launch authority"

SIA supports the Commission's proposals to clarify subsections (a)-(e) of Section 25.113.⁴⁶ Specifically, SIA supports adding the proposed Part 17 antenna construction, marking and lighting requirements to Section 25.113, the relocation of the FAA notification

⁴⁴ See Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. § 862.

⁴⁵ See NPRM at ¶ 42.

⁴⁶ See *id.* at ¶¶ 43-45.

requirements to Section 25.115, and the relocation of antenna structure operating requirements to a new Section 25.286.

SIA also supports the proposed revisions to Section 25.113(h) regarding activation of in-orbit NGSO spares, and the related elimination of the requirement to provide active spare notification and certification on FCC Form 312.⁴⁷ SIA agrees that with this change, Sections 25.143(d) and 25.146(n) become redundant and can be removed. With regard to whether Section 25.113(h) should be further amended to require licensee certification that the activated in-orbit spare's operations conform to the license, SIA notes that it may be difficult to complete this testing within the 10-day window for certifying, and thus the Commission's proposal creates ambiguity as to when the certification should be filed – e.g., 10 days after operation or 10 days after completion of testing (which could be an indefinite period). SIA asks the Commission instead to make the certifications due within 30 days of bringing the in-orbit spare into operation. It also requests further amendment of subsection (h) to make clear that the rule applies to Letter of Intent (“LOI”) holders and earth station applicants seeking initial access to non-U.S.-licensed NGSO systems as well.

4. Section 25.114 “Applications for Space Station Authorizations”

SIA's positions on the Commission's proposals for Section 25.114, the space station application rules, are as follows:

a. Section 25.114(a)

SIA supports the proposal to modify Section 25.114(a) to allow blanket authority for NGSO constellations with non-identical space stations.⁴⁸

⁴⁷ See *id.* at ¶ 47.

⁴⁸ See *id.* at ¶ 49.

b. Section 25.114(c)(4)(i)

SIA also supports the concept of the Commission’s proposal in Section 25.114(c)(4)(i), to allow applicants to specify a range within which a spacecraft’s TT&C frequencies will be located, rather than specify the exact frequency. However, the manner in which the rule would require that range to be determined may require further thought and refinement. First, the phrase “channel bandwidth” in the second sentence should be changed to “assigned bandwidth.” Channel bandwidth makes no sense in the context of the rule, and SIA suggests that the Commission intended the calculation to be made by reference to the assigned bandwidth. SIA notes further that there may be cases where 2 percent of the assigned bandwidth (e.g., 34 MHz for MSS at 1626.5-1660.5 MHz) is both less than 5 MHz and less than the bandwidth of the command channel, meaning that the “whichever is smaller” formulation in the proposed rule may not work – at least if TT&C is done in the MSS bands rather than in the FSS bands used for feeder links.⁴⁹ Additionally, for further clarity, SIA urges the Commission to insert the words “each of” into the second sentence of the proposed rule as indicated in the Rules Appendix.

c. Section 25.114(c)(4)(ii)

SIA generally supports the proposal for Section 25.114(c)(4)(ii) to specify the maximum EIRP density for each transmitting beam of a given space station.⁵⁰ This approach is a more effective way of describing information required by the Commission to perform its responsibilities. SIA, however, does not support the inclusion of the term “peak antenna gain” in either of the two locations in the proposed rule. The Commission does not need to know the

⁴⁹ SIA, however, is unaware of any case, other than perhaps the Non-Voice, Non-Geostationary (“NVNG”) MSS, where MSS TT&C functions are performed in the service band rather than in the FSS. This concern, thus, may be only theoretical.

⁵⁰ *See id.* at ¶ 51.

“peak antenna gain” for interference assessment purposes when it is being given maximum EIRP and maximum EIRP density for each space station transmitting beam. For shapeable antenna beams, the peak antenna gain number is artificially derived in any event.

SIA does not support the Commission’s proposal to require applicants to specify EIRP density in dBW/Hz.⁵¹ Reference bandwidths should be aligned with the bandwidths used by the ITU. In this regard, SIA requests that the reference bandwidth or specification of EIRP density should either be dBW/4 kHz for frequencies below 15 GHz, and dBW/1 MHz for frequencies at 15 GHz and above, or should be “averaged over the worst 4 kHz (below 15 GHz) or worst 1 MHz (above 15 GHz)” as specified in Appendix 4 to the ITU Radio Regulations.⁵²

d. Section 25.114(c)(4)(iii)

SIA supports removal of Section 25.114(c)(4)(iii) as unnecessary in light of the proposed changes to Section 25.114(c)(4)(i).⁵³

e. Section 25.114(c)(4)(iv)

SIA supports removal of Section 25.114(c)(4)(iv) as unnecessary because, as it explains in the NPRM,⁵⁴ the Commission can easily calculate the receiver noise temperature from other data provided by proposed Section 25.114(c)(4)(v).

f. Section 25.114(c)(4)(v)

SIA requests that the phrase “indicate frequencies within a 5 MHz range or a range of 2 percent of the allocated bandwidth, whichever is smaller, and” be removed from the proposed

⁵¹ See NPRM Appendix A, proposed Section 25.114(c)(4)(ii).

⁵² ITU Radio Regulations, Appendix 4, Annex 2 at Footnote 2 to Tables A, B, C and D.

⁵³ See NPRM at ¶ 52.

⁵⁴ See *id.* at ¶ 53.

rule in Section 25.114(c)(4)(v). This is repetitive of proposed Section 25.114(c)(4)(i). SIA also requests that the phrase “0 dB antenna gain isoline” in the penultimate sentence be clarified with the addition of “relative” between “0 dB” and “antenna gain isoline”

Additionally, SIA is uncertain about what the Commission seeks when it proposes the specification of “the required minimum uplink power flux density” at the end of proposed Section 25.114(c)(4)(v). Providing the minimum power flux density (“PFD”) does not address the interference potential of the command beam. SIA requests instead that the last sentence, with the changes above, be modified to read as follows: “For command beams, specify the beam peak flux density at the command threshold.”⁵⁵

g. Section 25.114(c)(4)(vi)

SIA requests that Section 25.114(c)(4)(vi) be split into two parts – one each for GSO networks and NGSO systems, with the NGSO subsection to instruct that the NGSO contour be specified with the beam pointed to nadir.⁵⁶ In addition, SIA recommends the addition of the clarifying word “relative” between “0 dB” and “antenna gain isoline” as proposed for 25.114(c)(4)(v) above. For the GSO subsection, the phrase “each . . . geostationary orbital location” can be removed, since there is only one location in each GSO application. The reference for each NGSO orbital plane should be retained in the NGSO subsection. SIA also proposes to subdivide the section further for readability to place the discussion of space stations with shapeable antenna beams and space stations with non-shapeable steerable beams into

⁵⁵ The Rules Appendix includes SIA’s full request regarding Section 25.114(c)(4)(v).

⁵⁶ See NPRM at ¶ 55.

separate subsections that apply to both the GSO and NGSO subsections. Finally, SIA supports relocation of this revamped section from 25.114(d)(3) into subsection (c) as proposed.⁵⁷

h. Sections 25.114(c)(5) and (c)(6)

SIA supports the proposed modification of Section 25.114(c)(5), especially the removal of the rule requiring justification of the selection of the orbital location.⁵⁸ The Commission has no reason to solicit such information. SIA similarly supports the proposed modification to the NGSO information in Section 25.114(c)(6).⁵⁹ However, it is appropriate to also include the phrase “and the number of space stations in each orbital plane” in Section 25.114(c)(6)(i), as this would help clarify the system design.

i. Sections 25.114(c)(7), (c)(8) and (c)(10)

SIA supports the removal of Section 25.114(c)(7) as a consequence of the revision to Section 25.114(c)(5),⁶⁰ and the addition of “maximum” to Section 25.114(c)(8) and the additional minor changes proposed.⁶¹ SIA also fully agrees with the proposal to remove data elements unrelated to the Commission’s responsibilities from Section 25.114(c)(10) and Schedule S, and to retain only the element for estimated operational lifetime.⁶²

⁵⁷ The Rules Appendix includes SIA’s full request regarding Section 25.114(c)(4)(vi). SIA addresses Section 25.114(c)(4)(vi) without prejudice or prejudice to whether the rule should require presentation of information in a GIMS-readable format.

⁵⁸ See NPRM at ¶ 56.

⁵⁹ See *id.* at ¶ 57.

⁶⁰ See *id.* at ¶ 58.

⁶¹ See *id.* at ¶ 59.

⁶² See *id.* at ¶ 60.

j. Sections 25.114(c)(11) and (c)(12)

For Section 25.114(c)(11), SIA supports the simplification of information regarding common carriage as all that is required on this matter under the statutory mandate.⁶³ SIA also agrees with the Commission that milestone rules and related reporting requirements make Section 25.114(c)(12) unnecessary, and warrant its deletion.⁶⁴

k. Section 25.114(c)(13)

SIA asks that the revision to Section 25.114(c)(13) be further revised to require only submission of cross-polarization isolation information for space stations subject to Sections 25.210(c) and (i).⁶⁵ SIA also requests below that Section 25.210(a) be suppressed and that the cross-polarization isolation requirement (contained in Section 25.210(i)(1)) for FSS space stations be removed.⁶⁶ The phrasing of the proposed rule – requiring submission of information “for determining compliance” – is confusing. This could be interpreted to require a showing rather than a number. SIA requests that this provision be revised instead to read more clearly as follows: “(13) The cross-polarization isolation number for purposes of §§ 25.210(c) and (i);”

l. Section 25.114(d)(1)

SIA generally supports the proposed changes to Section 25.114(d)(1), but urges the Commission to remove the language calling for a description of system facilities and

⁶³ *See id.* at ¶ 61.

⁶⁴ *See id.* at ¶ 62.

⁶⁵ *See id.* at ¶ 63.

⁶⁶ *See infra* § II.H.7.

operations.⁶⁷ These two items have no link to interference assessment and analysis, and would not have a common understanding among applicants. SIA also supports the addition regarding how uplink and downlink bands can be connected.

m. Section 25.114(d)(2)

SIA supports the deletion of Section 25.114(d)(2) for the reasons given in the NPRM.⁶⁸

n. Section 25.114(d)(3)

For Section 25.114(d)(3), SIA requests that the section, with some modest revisions, be relocated to subsection (c) as a new Section 25.114(c)(4)(vii) due to the fact that it relates most immediately to subsection (c)(4)(vi), which precedes it.⁶⁹ To improve the technical accuracy of Section 25.114(d)(3)(ii), SIA requests that the reference to “beam boresight locations” be changed to “maximum (antenna) gain point(s).” The beam boresight may not necessarily be the point or points of maximum antenna gain for all types of antennas. SIA also requests removal of the ambiguous phrasing “some or” from Section 25.114(d)(3)(iii) of the new rule and add “or more” after “one.”⁷⁰ SIA also tracks the splitting of this provision into separate GSO and NGSO sentences (as was done for Section 25.114(c)(4)(vi) above), so that how to comply with the contour requirements is clear for each type of applicant.

⁶⁷ See NPRM at ¶ 65. The resulting provision would thus begin, “Overall description of services”

⁶⁸ See *id.* at ¶ 66.

⁶⁹ See *id.* at ¶ 67.

⁷⁰ The resulting text at the end would read: “. . . by combining all of the spot beams into one or more composite beams”

o. Sections 25.114(d)(4) and (d)(5)

SIA supports the Commission’s proposal to relocate current Section 25.114(d)(4) to Section 25.114(c)(7).⁷¹ It also requests that the revision to Section 25.114(d)(5) include the word “bandwidth” after “energy dispersal” to align it with Section 25.114(c)(8).⁷² While SIA also supports the addition of the word “maximum” before “power flux density,” the revision raises the question whether “Calculation of maximum . . .” should be “Calculated maximum . . .” to align Section 25.114(d)(5) with Section 25.114(c)(8). SIA also inquires whether Section 25.114(d)(5) could be folded into Section 25.114(c)(8), or perhaps moved to fill the newly “reserved” slot in Section 25.114(c)(9).

p. Sections 25.114(d)(7) and (d)(10)

SIA supports the reference clarifications for Section 25.114(d)(7).⁷³ SIA also supports the change in the cross reference in Section 25.114(d)(10) to include Section 25.143(b).⁷⁴

q. Section 25.114(d)(11)

SIA supports the deletion of common carrier information from Section 25.114(d)(11) because identical information is required by Section 25.114(c)(11).⁷⁵

r. Section 25.114(d)(13)

SIA supports the proposal to make minor changes to references in Section 25.114(d)(13).⁷⁶

⁷¹ *See id.* at ¶ 69.

⁷² *See id.* at ¶ 70.

⁷³ *See id.* at ¶ 71. SIA also notes that there is a “§” missing from the last line of Section 25.114(d)(7).

⁷⁴ *See id.* at ¶ 72.

⁷⁵ *See id.* at ¶ 73.

⁷⁶ *See id.* at ¶ 74.

s. Section 25.114(d)(14) – Orbital Debris Mitigation

SIA generally supports the Commission’s limited proposals for the orbital debris mitigation provisions in Section 25.114(d)(14),⁷⁷ but believes that additional changes are merited in this first phase of the proceeding, and that later phases of the proceeding should revisit aspects of the Commission’s 2004 order on orbital debris mitigation.⁷⁸ Specifically, SIA supports amending Section 25.114(d)(14)(iv) to add that applicants for space stations used only for commercial remote-sensing may, in lieu of submitting detailed post-mission disposal plans to the Commission, certify that they have submitted such plans to the National Oceanic and Atmospheric Administration for review.⁷⁹ SIA also supports the increased use of check boxes and certifications on FCC Form 312 as a way to clarify and simplify the disclosure process. There is no need, for example, for a detailed statement that risk of collision and debris fragmentation is minimized, as the alternative is illogical.

SIA also requests to have Section 25.283(c) aligned with the language of Section 25.114(d)(14)(ii) on “equivalent procedures” by changing “and appropriate measures” to “or appropriate measures” at the end of the current Section 25.283(c). This specifically addresses spacecraft that do not fully vent all pressure vessels at end of life, which is a relatively common design today, and has been for many years. SIA emphasizes that allowing reasonable alternatives to full venting is consistent with international standards.⁸⁰ It is time for the

⁷⁷ *See id.* at ¶ 75.

⁷⁸ *See Mitigation of Orbital Debris*, Second Report and Order, 19 FCC Rcd 11567, 11609-610 (2004) (“Orbital Debris Order”).

⁷⁹ SIA includes a proposal for this language in the Rules Appendix at Section 25.114(d)(14)(iv).

⁸⁰ In this regard, SIA points out that the U.S. Government Orbital Debris Mitigation Standard Practices specify, in pertinent part, that in order to limit the risk to other space systems from accidental explosions after completion of mission operations, “[a]ll on-board sources of stored energy of a spacecraft or upper stage should be depleted *or*

Commission to undertake a more comprehensive review of orbital debris mitigation policy that is now nearly a decade old. For a future phase of the instant rulemaking proceeding, SIA urges the Commission to revisit and address several aspects of its orbital debris mitigation policies. For example, for spacecraft that do not fully vent all pressure vessels at end of life (including in-orbit spacecraft – whether U.S.-licensed or foreign-licensed), the Commission routinely asks for information such as the volume of the non-venting tank, the chemical composition of the tank’s contents, and the volume and pressure of the tank’s contents. Responding to such requests is not always trivial, especially for satellites launched many years ago, and the use to which the Commission puts this information is unclear.

In addition, the Commission’s practice of deferring grant of launch and operational authority for NGSO space stations until after CDR and a further review of post-mission disposal plans creates great uncertainty for such “licensees” and could negatively impact their ability to secure financing.⁸¹ The Commission needs to revisit the implications of this treatment, which is not specified in the rules, in a future phase of this proceeding.

t. Section 25.114(d)(15)

SIA asks that Section 25.114(d)(15) be modified slightly. In subsections (i) and (iii), SIA requests replacement of the applicant’s obligation to demonstrate compliance with PFD limits

safed when they are no longer required for mission operations or postmission disposal.” U.S. Government Orbital Debris Mitigation Standard Practices at Section 2-2 (emphasis added) (available online at http://www.nesdis.noaa.gov/CRSRA/files/USG_Orbital%20Debris_Standard_Practices.pdf (last visited January 7, 2012)). The European Code of Conduct for Space Debris Mitigation provides similar latitude to operators when it comes to passivation, providing a specific pair of alternative measures to be employed when it is not possible to fulfill the objective that space systems should be passivated at the end of the disposal phase and remain passivated. European Code of Conduct for Space Debris Mitigation, at Section 4.2.1 (p. 9) (June 28, 2004).

⁸¹ SIA observes that this practice should be a point that is examined during any further review of the issues associated with the CDR milestone, as suggested in Section II.D above.

with an obligation to certify compliance. This change is consistent with the obligation in revised Section 25.114(c)(8) to provide “calculated” maximum PFDs.

5. Section 25.115 “Applications for earth station authorizations”

A number of consequential changes to Sections 25.130(a) are required if the Commission were to accept SIA’s comments regarding the elimination of FCC Form 312EZ, and the definitions for Permitted Space Station List. These changes are discussed below.

a. Section 25.115(a)(2) – Autogrant and FCC Form 312EZ

Regarding Section 25.115(a)(2) and the autogrant procedure, SIA offers the following suggested revisions:

As discussed above (*see* Section II.E), SIA requests that FCC Form 312EZ be deleted and replaced with autogrant eligibility that is folded into FCC Form 312. This request, if adopted, will require modification of subsection 25.115(a)(2) to remove references to FCC Form 312EZ.

SIA requests expansion of autogrant to otherwise qualified earth stations that communicate with non-U.S. licensed satellites that have already been granted U.S. market access – regardless of whether they are on the modified Permitted Space Station List or not. There is no reason to exclude such earth stations from access to this procedure.

SIA also requests that the autogrant procedure apply to blanket license applications in the 14.0-14.5 GHz, 28.35-28.6 GHz, and 29.5-30.0 GHz bands.⁸² These key band segments for GSO FSS are not shared with terrestrial services or primary government users and have well established rules on which an autogrant procedure could be based.

⁸² SIA addresses the Commission’s proposal for Section 25.115(a)(2)(ii) without prejudgment or prejudice to the applicability of the autogrant procedure to the 29.25-29.5 GHz band.

SIA requests modification of the final sentence of subsection (a)(2) to change the phrase “provided that no objection is filed during the 30-day notice period” to “provided that no petition to deny or other objection under § 25.154(a) is filed during the 30-day notice period.” This change will exclude allowing an informal objection to become the basis of removal from autogrant status.

SIA also seeks to reorganize the criteria in Section 25.115(a)(2)(i), *et seq.*, to have a parallel structure, and to remove reference to the minimum antenna size for both C-band and Ku-band antennas. In each case, it is sufficient if the off-axis EIRP density does not exceed the levels specified in Section 25.218, without regard to antenna diameter.

b. Sections 25.115(d) and (e)

SIA supports the proposed revisions to Section 25.115(d).⁸³ The removal of references to specific frequency bands for blanket MSS licenses is a positive change. SIA also supports the change of reference to include new Section 25.287, which replaces portions of Section 25.136. SIA also agrees with the proposal to delete the first sentence of subsection (e).⁸⁴

c. Other Provisions

In the discussion below regarding Section 25.132(b),⁸⁵ SIA asks that Section 25.218 be included on the list of provisions that require antenna pattern showings in Section 25.132(b)(3). This change will have the consequence of allowing the removal of much of the redundant information called for in Section 25.115(h). The resulting language from Section 25.115(h), as revised by SIA, is shown in the Rules Appendix.

⁸³ See NPRM at ¶ 76.

⁸⁴ See *id.* at ¶ 77.

⁸⁵ See *infra* § II.G.11.

SIA requests a new paragraph (l) to Section 25.115 to include a reference to Section 25.203(k) for GSO FSS earth station applicants seeking to use bands shared equally between GSO FSS earth stations and NGSO MSS feeder links, and to Sections 25.203(j), (k), and 25.258(c) for NGSO MSS feeder link applicants seeking to use bands shared equally between NGSO MSS feeder link and GSO FSS earth stations. In connection with this change, SIA is suggesting a correction to Section 25.203(j) to limit the bands that are identified to these shared bands.

For a future phase of the proceeding in IB Docket No. 12-267, SIA urges the Commission to look at the alignment and interoperation of earth station licensing provisions in Sections 25.115, 25.130, 25.131, 25.132, 25.134 and 25.138. There is considerable overlap and cross-referencing in these provisions that could be significantly simplified and streamlined without impacting substantive obligations as modified in this proceeding.

6. Section 25.118 “Modifications not requiring prior authorization”

There are many types of modifications to space and earth station licenses beyond those already contained in Section 25.118 that should be allowed to be made without requiring prior Commission authorization. The primary concerns when it comes to expanding licensees’ ability to make changes without prior Commission authorization are ensuring the protection of others (be they consumers or competitors) from RFI and enabling the Commission to meet its statutory and the United States’ treaty obligations. Accordingly, the focus of any revisions to this section should be on RFI and the Commission’s obligations under the Communications Act and the ITU Radio Regulations. SIA identifies below⁸⁶ that certain practices adopted for the licensing and regulation of earth stations using an interference envelope approach by European regulators

⁸⁶ See *infra* § II.J.

could be implemented domestically for some FSS earth stations – without compromising either the protections provided under the current RFI approaches or the Commission’s responsibilities.

SIA supports the proposed revision of Section 25.118(a)(2)(i), which allows antennas not subject to Section 25.209 to be modified without prior authorization if all other criteria are met.⁸⁷ SIA also supports the proposed clarification of Section 25.118(e)(5) to require coordination of station-keeping volume in the event of a space station relocation under this section.⁸⁸ Both of the modifications are welcome improvements.

In response to the Commission’s inquiry whether to allow NGSO licensees to reposition space stations without prior authorization, SIA supports such a change provided the number of authorized operating satellites is not exceeded and provided the licensee certify that the changes will not increase interference.⁸⁹ SIA requests that the new rule also specify that the licensee certifies that the repositioned satellite will be in an already-authorized orbital plane, and that there will be no increase in protection required from interference by others.⁹⁰ In other words, not just increased interference is to be avoided, increased sensitivity to interference is to be avoided as well.

SIA opposes modifying Section 25.118(e) to allow repositioning of an NGSO satellite that involves only a temporary (as opposed to a “permanent”) departure from the satellite’s authorized altitude or orbital plane. There are too many variables (e.g., RFI/PFD compliance and orbital debris mitigation considerations) to make this practical. Moreover, it is unclear what is

⁸⁷ See NPRM at ¶ 78.

⁸⁸ See *id.* at ¶ 79.

⁸⁹ See *id.* at ¶ 81.

⁹⁰ The NPRM did not include a specific proposal on this point, but encourages that any actual rule developed on this point include the two points identified here.

“permanent” and what is “temporary” under this concept. The potential for abuse and misinterpretation is great. NGSO licensees can seek special temporary authorizations (“STAs”) if there is an urgent need to effect such a repositioning on a temporary basis, and a license modification if “permanent” repositioning is desired, consistent with current practice.

Finally, SIA introduces two new requests concerning Section 25.118. First, SIA requests that Section 25.118(a)(3) be modified to allow an increase in the number of authorized blanket-licensed, mobile, and Very Small Aperture Terminal (“VSAT”) earth terminals without prior approval.⁹¹ This modified provision makes clear that only the number of terminals can be increased, and that no new types of terminals can be added. The modified proposal would be conditioned on compliance with all other conditions of the underlying authorization. SIA’s endorsement of this proposal is limited to primary bands, and is without prejudgment or prejudice to different regulatory consideration of VSATs operating on a secondary or non-conforming basis.

Second, SIA requests revisions to Section 25.118(a)(5) to allow specification of a new point of communication by an earth station operator where no repointing of the earth station antenna is required and where the new point of communication is a space station (i) operated by the operator of the original point of communication within +/- 0.15 degrees at the same location, (ii) with authority to serve the U.S., and (iii) which does not entail any increase in earth station EIRP or EIRP density (both main lobe and side lobe) or transmitted power. This change will correct a deficiency in the current process of allowing replacement satellites. This is particularly important for smaller terminals authorized under Section 25.220 procedures that require

⁹¹ The Rules Appendix includes SIA’s requested language.

specification of individual space station points of communication, rather than “ALSAT” or the Permitted Space Station List.

7. Section 25.121 “License terms and renewals”

SIA asks that the provision in Section 25.121(d)(1) for GSO space stations be aligned (at least in part) with the new bringing-into-use language from No. 11.44B of the ITU Radio Regulations.⁹² Under No. 11.44B, a frequency assignment to a space station in GSO is considered as having been brought into use “when a space station in the geostationary satellite orbit with the *capability of transmitting or receiving that frequency assignment* has been deployed and maintained at the notified orbital position for a continuous period of ninety days”⁹³ Consistent with that ITU provision, SIA suggests that the FCC license term should commence once a spacecraft capable of operating on the frequency assignments is deployed to the authorized orbital location. It may take some time for traffic to be loaded on to a spacecraft, especially at a new orbital location or in a new frequency band from which service had not previously been provided. SIA also supports the Commission’s proposed change to Section 25.121(d)(2) for NGSOs, with the same suggested modification to reflect that the license term commences when a space station capable of operations compliant with its license has been deployed to the assigned orbital location.⁹⁴

SIA requests that the Commission modify Section 25.121(e) to specify that the International Bureau will provide notice to the earth station or space station licensee of the impending expiration of its authorization 90 days prior to the actual expiration date. This type of

⁹² See NPRM at ¶ 82. The new provision was adopted at WRC-12, and went into effect on January 1, 2013.

⁹³ ITU Radio Regulation No. 11.44B (WRC-2012) (emphasis added).

⁹⁴ See NPRM at ¶ 83. There is no ITU analog at the moment.

renewal notice is provided by other Commission bureaus and offices (e.g., the Office of Engineering and Technology). Provision of such a notification will reduce the burden on Commission staff and licensees in terms of the reinstatement and replacement of inadvertently expired authorizations and ensuing enforcement actions. Reliability of the contact information is made easier, of course, by the Commission's new rules regarding currency of licensee contact information.⁹⁵

8. Section 25.129 "Equipment authorization for portable earth-station transceivers"

SIA supports the cross-reference changes proposed for Section 25.129.⁹⁶

9. Section 25.130 "Filing requirements for transmitting earth stations"

SIA asks that the Commission modify subsection (a) of Section 25.130 to reflect the proposed elimination of FCC Form 312EZ, and to delete the now-unnecessary last sentence. SIA also supports the deletion of redundant material (i.e., suppression of subsection (e) regarding FAA notification) from Section 25.130.⁹⁷

SIA, however, does not support the addition of new subsection (g). The proposal would codify a 20-year old policy that is, unfortunately, not consistent with the current practice of the International Bureau. There are many examples of multiple-antenna earth station licenses where antennas are not bounded geographically, as proposed in the new rule. SIA questions how they are to be treated under the new rule. Is grandfathering an option? The NPRM does not so indicate, nor does the Commission explain why the situation is different in 20/30 GHz than in other FSS bands.

⁹⁵ See NPRM Appendix A, proposed Section 25.171. The Rules Appendix includes requested text.

⁹⁶ See NPRM at ¶ 84.

⁹⁷ See *id.* at ¶ 85.

In addition, application of proposed subsection (g) to NGSO MSS feeder links, where site diversity is used within an earth station complex, could create difficulties.⁹⁸ This is unlike the current situation, which allows administrative flexibility and efficiency to licensees at no cognizable or articulated cost to the Commission. For this reason, the existing arrangement should be retained and proposed Section 25.130(g) should not be added.

10. Section 25.131 “Filing requirements for receive-only earth stations”

SIA supports the proposed changes to Section 25.131(b) and requests a modest expansion of that provision to allow registration of receive-only earth stations operating with non-U.S. licensed satellites that have been granted U.S. market access (e.g., through an LOI or Permitted Space Station List petition).⁹⁹ There is no reason why interference protection for receive-only earth stations should be easier to obtain when the antenna is pointed at a U.S.-licensed satellite than when the antenna is pointed at a non-U.S. licensed satellite that has been duly authorized to serve the United States.

SIA also supports the proposed changes to Section 25.131(j).¹⁰⁰ In addition, SIA asks that Section 25.131(j) be expanded to allow receive-only operation with any non-U.S. licensed space station that has been granted U.S. market access, not just those on the Permitted Space Station List. As in the case of subsection (b), it is unclear why unlicensed receive-only operation is allowed for Permitted Space Station List space stations, but is not available to other non-U.S.-licensed space station that have been granted U.S. market access. In each case, the Commission

⁹⁸ At the very least, it would appear that the proposed rule would be in conflict with Section 25.257, which specifies that a feeder link earth station complex for the NGSO MSS service in 29.1-29.25 GHz may include up to three earth station groups, with each earth station group having up to four antennas, located within a radius of 75 km of a given set of geographic coordinates. *See* 47 C.F.R. § 25.257(a).

⁹⁹ *See* NPRM at ¶ 86.

¹⁰⁰ *See id.* at ¶ 88.

has already determined that it is in the public interest for the non-U.S. licensed space station to serve the United States. In each case, the unlicensed receive-only operations cannot cause interference. And in each case, the receive-only operations would be subject to the applicable rules and conditions of market access. Accordingly, there is no justification for requiring a license in the one instance and not in the other.¹⁰¹

Finally, SIA supports the elimination of the reference to Sections 25.209(a) and (b) from Section 25.131(j).¹⁰² As the Commission noted, receive-only earth stations cannot cause interference, regardless of whether their antennas meet certain standards.

11. Section 25.132 “Verification of earth station antenna performance standards”

SIA has multiple proposals with respect to Section 25.132, which should have as its primary goal the establishment of mechanisms to enable verification of earth station antenna performance standards contained elsewhere in the rules, and not a setting of the standards itself. As an initial matter, SIA notes that there is a mismatch between subsections (a)(1) and (a)(2), as not all 20/30 GHz earth stations are subject to Section 25.138. To fix this incongruity, SIA asks that the Commission replace the words “subject to § 25.138 of this chapter” in Section 25.132(a)(1) with “communicating with geostationary-orbit space stations” This will make subsections (a)(1) and (a)(2) of Section 25.132 complements of each other as far as 20/30 GHz is concerned.

It also makes no sense that there are different showings for antenna pattern compliance under Sections 25.132(b)(1) and 25.138(d)(1). These are just compliance showings. The better

¹⁰¹ The Rules Appendix includes requested text.

¹⁰² *See id.*

approach is to use the same measurement points and parameters for both 20/30 GHz GSO antennas and other FSS antennas. To that end, SIA suggests bringing the values from Sections 25.138(d)(1)(i)-(iii) into Sections 25.132(b)(1)(i)-(iii) – i.e., make the measurement parameters for 20/30 GHz-band antennas universal.¹⁰³ In addition, in both Sections 25.132(b)(1)(ii) and 25.138(d)(1)(ii) dealing with cross-polarization patterns, SIA requests removal of the reference to the E- and H-planes. The E- and H- planes are relevant for linearly polarized antennas, but many antennas today are circularly polarized. SIA believes that there is no need to specify the plane, as the “cross-polarization pattern” is a well-understood industry term that can capture the cases of both linear polarization and circular polarization. The revised provision in both Sections 25.132 and 25.138 would read, “(ii) Cross-polarization patterns, plus and minus 10 degrees.”

SIA supports the Commission’s proposal to add a reference to Section 25.218 in subsection (b)(3).¹⁰⁴ This will allow revision of Section 25.115(h) as noted above.¹⁰⁵ SIA also supports the proposed changes to Section 25.132(d) to clarify the subsection’s inapplicability to large earth station antennas for 20/30 GHz band GSO FSS, which have a different procedure proposed for them in Section 25.138(d)(2).¹⁰⁶

Unfortunately, SIA finds the proposal for a new subsection (a)(1)(ii) to be flawed. Any antenna that meets only Section 25.132(a)(1)(ii) – and not Section 25.132(a)(1)(i) – would be a Section 25.218 antenna for which the applicant would need to provide a pattern under

¹⁰³ SIA notes that the angles in Section 25.138(d)(1) are more akin to what is used in some other relevant assessment standards than the angles found in Section 25.132(b)(1).

¹⁰⁴ See *id.* at ¶ 92.

¹⁰⁵ See *supra* § II.G.5.

¹⁰⁶ See NPRM at ¶ 91.

Section 25.132(b)(3). For this reason, subsection (a)(1)(ii) should not be added. The point of the rule structure, as SIA understands it, is that subsection (a)(1) exempts pattern submission for antennas compliant with Sections 25.209(a) and (b); subsection (a)(2) points GSO FSS antennas in the 20/30 GHz bands to Section 25.138; and subsection (b)(3) provides that all other antenna patterns must be submitted to the Commission (unless the antenna is on the Commission's list of non-standard patterns already on file).¹⁰⁷

As set forth in the attached Rules Appendix, SIA offers a few additional clarifying adjustments to subsection (a)(1) – e.g., to allow certification of examination by the applicant of the manufacturer's claim as to testing, and to relate compliance to measurements performed under subsection (b)(1). SIA also requests removal of the phrase “and submitted to the Commission” from the end of subsection (b)(1), as this contradicts the fact that under (a)(1), measurements examined or taken need to comply with subsection (b)(1), but do not need to be submitted to the Commission unless requested.¹⁰⁸

¹⁰⁷ SIA's requested revisions to Section 25.132(a)(1) to reflect these comments are included in the Rules Appendix. Another option, either as an alternative to the revisions or to facilitate their use, would be to include a helper table that specifies the requirement applicable to the particular antenna scenario.

¹⁰⁸ There is an opportunity, perhaps in a future phase of this proceeding in IB Docket No. 12-267, to engage in a more meaningful streamlining and reorganization of the Commission's earth station licensing rules. For example, it may be possible to explore combining Sections 25.138(d) and (e) with Section 25.132. It also may be possible: (i) to move the patterns from Section 25.138(a) into Section 25.218; (ii) to move the PFD threshold of Section 25.138(a)(6) into a relevant rule addressing provisions on routine processing of applications for 20/30 GHz earth stations operating with GSO FSS space stations; (iii) to delete Section 25.138(f) as redundant of Section 25.273; and (iv) to either delete Section 25.138(g) or possibly move it into Section 25.121 on renewals. Together, these changes would allow removal of Section 25.138 and a full integration of 20/30 GHz-band GSO FSS earth station operations with other FSS operations and procedures. Alternatively, the Commission could develop separate rule sections for different frequency bands. This may require a certain amount of repetition in the rules, but would ease compliance by applicants and licensees.

12. Section 25.133 “Period of construction; certification of commencement of operation”

SIA supports the modifications to Section 25.133 as proposed in the NPRM.¹⁰⁹ In particular, the clarification that certifications are required only for initial licenses under subsection (b) is very helpful. The current rule is unclear as to applicability of notices to modifications of earth station licenses.

SIA notes that the text of the proposed modification to Section 25.133(a)(2) is misaligned with the NPRM. The word “mobile” in the proposed rule should be replaced with the word “blanket.” This rule too supports the notion that a definition of “blanket license” is needed in Section 25.103.¹¹⁰ SIA also asks that the word “authorized” be added toward the end of Section 25.133(b)(1)(v), so that the addition at the end of that rule would read “. . . the pattern specified in § 25.209 or other applicable authorized pattern;”.

13. Section 25.134 “Licensing provisions for Very Small Aperture Terminal (VSAT) and C-band Small Aperture Terminals (CSAT) networks”

SIA requests a significant restructuring of Section 25.134 as it applies to Ku-band VSAT networks.¹¹¹ For Section 25.134(b), SIA requests that rather than refer to the power spectral density and/or antenna input power levels in subsection (g), subsection (b) should specify instead that applicants for VSAT networks in the 14.0-14.5 GHz and 11.7-12.2 GHz bands that propose to operate outside of the off-axis envelopes in Section 25.218 must comply with the procedures set forth in Section 25.220. Section 25.134(c) would be utilized to specify that any VSAT

¹⁰⁹ See NPRM at ¶¶ 93-94.

¹¹⁰ See *supra* § II.A.2.

¹¹¹ See *id.* at ¶¶ 95-100. SIA supports the deletion of Section 25.134(a)(1) as overtaken by time.

applications for antennas that are compliant with Section 25.218 would be routinely processed, regardless of diameter.

This would result in the complete suppression of Sections 25.134(g)(1) and (g)(2), with retention only of the relevant portions of Sections 25.134(g)(3) and (g)(4) relating to satellite downlink EIRP densities in the new Section 25.134(c), and of Section 25.134(g)(5) as the new Section 25.134(g). If it is not suppressed, a subsection (g)(1) requires modification to eliminate the reference to a minimum antenna diameter, as diameter is irrelevant if compliance with Sections 25.209(a) and (b) is achieved.

If subsection (g) is retained intact, the Commission should also add a modified version of Section 25.226(b)(3)(i) at the end of the subsection to address cases where the applicant would use variable power-density control of individual simultaneously transmitting co-frequency earth stations in the receive beam of the satellite.¹¹² This is an important provision. Such an applicant would be required to make a detailed showing of the measures it intends to employ to maintain the effective aggregate EIRP-density from all simultaneously transmitting co-frequency terminals in the receive beam of the satellite at least 1 dB below the applicable EIRP-density limits. As in Section 25.226(b)(3)(i), the rule would specify that in this context, the term “effective” means the resultant co-polarized and cross-polarized EIRP density experienced by any GSO satellite must not exceed that produced by a single earth station transmitter operating at 1 dB below the relevant limits.

¹¹² SIA, since it requests suppression of Section 25.134(g), does not include this provision in the Rules Appendix. An example of the type of language SIA refers to here can be found in the proposal for Section 25.138(a)(5) in the Rules Appendix.

14. Section 25.135 “Licensing provisions for earth station networks in the non-voice, non-geostationary Mobile-Satellite Service” and Section 25.136 “Licensing provisions for user transceivers in the 1.6/2.4 GHz, and 2 GHz Mobile Satellite Services”

SIA has no objection to the proposals for NVNG MSS in Section 25.135 and the dismantling of Section 25.136.¹¹³ SIA notes that the types of consolidation and realignment the Commission proposes for Section 25.136 in particular are possible with other sections and topics, and believes that more of this type of true reorganization can be carefully considered for other areas of Part 25 in later phases of this proceeding.

15. Section 25.138 “Blanket licensing provisions of GSO FSS earth stations in 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) bands”

SIA generally supports the proposals for changes to the caption for Section 25.138 and lead-in text for subsection (a) because, as the Commission explains in the NPRM, the rule is applicable to 20/30 GHz band GSO FSS earth stations.¹¹⁴

For Section 25.138(a), SIA requests that the reference bandwidths in the tables be changed from dBW/40 kHz to dBW/1 MHz. This change is consistent with the use of a 1 MHz reference bandwidth for frequencies above about 15 GHz. SIA shows the changed values for the subsection (a) tables in the Rules Appendix. SIA also proposes to editorially align the treatment of the notes under the tables in Sections 25.138(a)(1) and (a)(2) with the treatment of the notes under the table in Section 25.138(a)(3).

SIA has two fundamental difficulties with the proposals the Commission has made to Section 25.138(b). First, SIA opposes the new notion that there must be a need-based

¹¹³ See NPRM at ¶¶ 101-103.

¹¹⁴ See *id.* at ¶ 104.

demonstration for exceedances of the levels specified in paragraph (a), even in cases where the applicant can certify that the target satellite operator has coordinated with adjacent operators. Such a showing is not required in other FSS bands. There is no reason to treat 20/30 GHz band GSO FSS earth station applications differently than those for 12/14 GHz GSO FSS earth stations under Sections 25.218 and 25.220.

Second, SIA does not support a default rule that would allow applicants proposing to deploy earth stations that do not comply with 25.138(a) to simply make a non-interference showing.¹¹⁵ Instead, the default rule for non-compliant earth stations in the 20/30 GHz band should be the same as in the C-band and Ku-band under Section 25.220, which specifies that proponents of non-compliant operations must provide coordination statements regarding the 6-degree neighbors of the target satellite. This mechanism has worked well to date and its use should be encouraged. Moreover, this mechanism will reduce the need for satellite operators to review every earth station application for non-compliant operations being proposed on neighboring satellites.

This does not mean that an earth station applicant cannot seek a waiver of the coordination requirement in exceptional cases. As the Commission has explained in the Fifth and Eighth Reports and Orders in IB Docket No. 00-248 on Section 25.220, requests for waiver coupled with non-interference showings can be considered on a case-by-case basis.¹¹⁶ However, there is no need to codify this exception in the rule for the reasons stated above. There remains the risk that waiver requests will escape the notice of potentially affected satellite operators. In

¹¹⁵ See NPRM at ¶ 105.

¹¹⁶ See *2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission’s Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations*, Fifth Report and Order in IB Docket No. 00-248, 20 FCC Rcd 5666, 5700 (2005); Eighth Report and Order and Order on Reconsideration, 23 FCC Rcd 15099, 15145 (2008).

this regard, SIA suggests that any public notice accepting a non-compliant earth station application for filing where coordination statements are absent specifically reference a request for waiver of Section 25.138(b).¹¹⁷

SIA also requests that Section 25.138(b) be modified to import language from Section 25.220(d)(4) that specifies that applicants are not required to certify that the target satellite operator has reached coordination agreements with operators of other satellites within +/- 6 degrees where the off-axis EIRP density level of the proposed earth station operations is less than or equal to the levels specified by the applicable off-axis EIRP envelope in paragraph (a) in the direction of the part of the geostationary orbit arc within 1 degree of the nominal orbit location of the adjacent satellite. This is an important exception to the requirement that any exceedance triggers the need for full coordination. The exception reduces the burden on applicants and operators without compromising protection in a two-degree spacing environment.

Next, as discussed in connection with Section 25.134 above, SIA requests that the Commission add a modified version of Section 25.226(b)(3)(i) to the end of Section 25.138(a) to address cases where the applicant proposes to use variable power-density control of individual simultaneously transmitting co-frequency earth stations in the receive beam of the satellite. Including this worthwhile provision into Section 25.138 will help promote efficiency.¹¹⁸

SIA also requests a revision to Section 25.138(c) to provide a mechanism pursuant to which earth station licensees with antennas that do not comply with the off-axis EIRP density envelope in Section 25.138(a) with respect to present and future compliant licensees operating

¹¹⁷ SIA makes a similar proposal in connection with proposed Section 25.223(c) on the 17/24 GHz BSS. *See infra* § II.H.14.

¹¹⁸ The attached Rules Appendix provides SIA's proposal for Section 25.138(a)(5).

with space stations more than six degrees away from the target space station will be able to bring their operations into compliance with the off-axis density mask to avoid or resolve material interference issues.¹¹⁹ The current rule is insufficient in this regard, as its applicability is limited to future applicants or licensees operating with space stations within six degrees of longitude; the potential adverse effects could impact current licensees with compliant antennas as well as current and future users operating with space stations more than six degrees away. SIA emphasizes that it is not necessary for the Commission to expand the prior coordination obligation of Section 25.138(b) beyond the current six degree longitudinal figure because many exceedances beyond six degrees are nominal or would not result in harmful interference.¹²⁰

SIA requests below that revisions be made to Sections 25.220(d)(2) and 25.223(d) to address the same point that is discussed immediately above in connection with Section 25.138(c).¹²¹ SIA notes further that a similar concept may need to be added to the Commission's rules relating to earth stations on mobile platforms operating in the FSS (e.g., Sections 25.221, 25.222, and 25.226), as there does not appear to be a competent mechanism in those rules for addressing a harmful interference impact of mask exceedances to present and future compliant licensees operating with space stations more than six degrees away from the target space station. This is not just a theoretical concern, and the fix is straightforward.

¹¹⁹ Any noncompliance here means a level of interference that is greater than the exceedances already allowed for in Section 25.138(a) at larger off-axis angles.

¹²⁰ In this connection, SIA seeks to limit the ability for compliant users operating with satellites separated by more than six degrees in longitude from the satellite associated with the exceedance of the mask to seek redress to cases where actual adverse impacts result. For situations within six degrees of longitudinal separation, where coordination is required, the potential for adverse impact from an exceedance is all that should be required. SIA's changes to Section 25.138(c) to reflect the modifications discussed here are shown in the Rules Appendix.

¹²¹ See *infra* §§ II.H.13 and II.H.14.

SIA supports the changes proposed to Sections 25.138(d), (e), and (f).¹²² For Section 25.138(d), as noted above in connection with Section 25.132(b), SIA notes that it requests alignment of the values with those in Section 25.132(b)(1), and to remove the words “in the E- and H-planes” from Section 25.138(d)(1)(ii). SIA strongly supports the provisions in Section 25.138(d)(2), as they correct a situation that was impossible for operators of large antennas to meet.¹²³

With respect to Section 25.138(e), and the requirements for protection of downlink reception, SIA emphasizes that the references to Sections 25.209(a) and (b) are included for reference only; the rule only states that downlink reception may not, in any case, be protected to a level greater than the protection that would be afforded to an earth station antenna that is compliant with Sections 25.209(a) and (b). In other words, there is no obligation associated with this provision.¹²⁴ At some future point in this proceeding, it would be appropriate for the Commission to reexamine the linkage in this subsection to Section 25.209.

Finally, SIA also requests the suppression of Section 25.138(g). This provision, which requires 20/30 GHz-band GSO FSS earth station renewal applicants to specify the number of constructed earth stations, is unlike any found for other FSS bands, including VSAT provisions, and there is no reason to treat 20/30 GHz-band GSO FSS earth stations differently.

¹²² See NPRM at ¶¶ 107-09.

¹²³ As noted above, Section 25.138(f) may be redundant of other provisions in Part 25, and thus unneeded. See *supra* n.108.

¹²⁴ SIA also notes that the band 18.8-19.3 GHz is appropriately not within the range specified in Section 25.138(e), as GSO FSS downlink reception in this band is currently accomplished on a non-protected basis.

16. Section 25.140 “Requirements for license applications for space stations in the Fixed-Satellite Service and 17/24 GHz Broadcasting-Satellite Service”

SIA requests addition of the word “geostationary” before “Fixed-Satellite Service” in the title to Section 25.140, and “geostationary” before “fixed-satellites” in subsection (a). This clarifies the inapplicability of the rule to NGSO space stations.

With respect to references to Commission documents in the Part 25 rules, SIA generally supports improvements to those references, such as the ones the Commission proposes for Section 25.140(b)(2).¹²⁵ SIA supports the Commission’s efforts to update those references to make them easier to find and would urge the Commission to make available on-line all documents that are incorporated by reference in the Part 25 in the interests of transparency. For other rule provisions with citations to extra-rule FCC documents, SIA believes the general approach should be that external citations are acceptable when referred to provide guidance in meeting a requirement, but that the Commission should codify all substantive and procedural requirements in the Commission’s reports and orders, whenever practicable.

17. Section 25.144 “Licensing provisions for the 2.3 GHz satellite digital audio radio service”

SIA has no objection to the proposed deletion of Section 25.144(a)(3)(iii).¹²⁶ This appears to be a good reflection of operational experiences.

¹²⁵ See NPRM at ¶ 112. SIA expressly states that it has no opinion on the other text changes proposed in the NPRM for Section 25.140(b)(2).

¹²⁶ See *id.* at ¶ 113.

18. Section 25.145 “Licensing provisions for the Fixed-Satellite Service in the 20/30 GHz bands”

SIA supports the proposed deletion of Section 25.145(a) for the reasons provided in the NPRM.¹²⁷

In addition, SIA requests deletion of Section 25.145(f)(2), which requires an annual FSS earth station report from blanket licensees of 20/30 GHz-band earth station. As no other FSS earth station licensees have to file similar annual reports, there is no justification for maintenance of this rule. 20/30 GHz-band GSO FSS earth stations are of the same status and technical maturity as lower frequency FSS bands, and should not be treated differently from a regulatory perspective.

SIA notes that the dates regarding terrestrial relocation from the 18.3-19.3 GHz band have now all expired. This enables a significant revision of Section 25.145(g), as shown in the Rules Appendix, to indicate that FSS operations in this band are entitled to protection from former co-primary terrestrial operations.

19. Section 25.154 “Opposition to applications and other pleadings”

SIA supports the proposed amendments to Sections 25.154(d) and (e) with respect to petitions to deny applications filed pursuant to Section 25.220.¹²⁸ Harmonization of the pleading schedules makes good sense.

20. Section 25.161 “Automatic termination of station authorization”

SIA supports the proposed modification of Section 25.161(b) to specify that the filing of an application for extension of a space station license term tolls the expiration of the license

¹²⁷ See *id.* at ¶ 114.

¹²⁸ See *id.* at ¶ 115.

pending action on that application.¹²⁹ If the rules do not provide for renewal applications for space station licenses, it at least is appropriate to enable the filing of modification applications seeking extension of a license term to toll the expiration of the license.

H. Rules Relating to Technical Standards for Licensing Earth and Space Stations

1. Section 25.202 “Frequencies, frequency tolerances and emission limitations”

SIA supports the proposed elimination of Section 25.202(c) for the reasons provided in the NPRM.¹³⁰ Its individual provisions have been superseded by subsequent Commission policies or are codified elsewhere in the Commission’s rules.

With respect to Section 25.202(g), SIA requests that the Commission add a subparagraph (2) to allow some TT&C functions to be conducted on a non-emergency basis away from the band edge, provided that the signals here cause no more interference and require no greater protection than communications or service traffic the operator would provide on those non-edge frequencies.¹³¹ The proposed addition would accommodate certain satellite designs that, for example, use beacons away from the band edge to help the spacecraft maintain accurate beam pointing. It would also allow mid-band beacons that are used for earth station antenna tracking only.

The Rules Appendix includes SIA’s proposals regarding Section 25.202(g), including application of all of subsection (g) to all U.S. and non-U.S.-licensed satellites seeking U.S. market access. Such a change aligns the provision with Section 25.137. Notwithstanding this

¹²⁹ See *id.* at ¶ 116.

¹³⁰ See *id.* at ¶ 118.

¹³¹ See *id.* at ¶ 121.

addition, applicants remain free to request a waiver of Section 25.202(g) for good cause shown where a spacecraft's main TT&C frequencies are away from the band edge (as in the case of some foreign spacecraft and legacy designs).

Finally, SIA objects to the Commission's proposal to substitute the phrase "allocated band(s)" for "assigned band(s)" in subsection (g).¹³² The band-edge TT&C rule is designed to reduce the likelihood that a spacecraft's TT&C frequencies will fall within the middle of an adjacent spacecraft's communications transponders. But if "assigned band(s)" is used instead of "allocated band(s)", the result could be high-power or sensitive TT&C channels that are in the middle of a satellite band. This is because an applicant is always free to request "assigned bands" that are less than the entire "allocation" (e.g., requesting 14.0-14.25 GHz rather than the entire 14.0-14.5 GHz band). While there may continue to be debates about what constitutes the "edge" of an "allocated band" in particular cases, keeping the original "allocated band(s)" language would better serve the purpose of the rule.

2. Section 25.204 "Power limits"

SIA supports the caption change for Section 25.204.¹³³ SIA's proposals for Section 25.204(e) are addressed in Section II.F above on rain-fade compensation.¹³⁴

3. Section 25.205 "Minimum angle of antenna elevation"

SIA supports the concept of reducing the minimum earth station elevation angle requirement in Section 25.205(a) to 3 degrees in routine cases.¹³⁵ Notwithstanding this change,

¹³² *See id.*

¹³³ *See id.* at ¶ 122.

¹³⁴ *See supra* § II.F.

¹³⁵ *See* NPRM at ¶ 123.

however, applicants should continue to be able to request waivers to allow transmission at elevation angles below 3 degrees on a case-by-case basis for good cause shown.

4. Section 25.206 “Station identification”

SIA supports correcting the phantom cross-reference to the Automatic Transmitter Identification System rule in Section 25.206.¹³⁶

5. Section 25.208 “Power flux density limits”

SIA supports the addition of a note regarding free-space propagation conditions to Section 25.208(w).¹³⁷

6. Section 25.209 “Earth station antenna performance standards”

SIA supports the proposed deletion of obsolete Section 25.209(d) and editorial correction of the gain envelope in Section 25.209(h)(1).¹³⁸ Both changes are justified for the reasons provided in the NPRM.

In addition, SIA offers several additional requests of its own. First, SIA asks for additional modifications to Sections 25.209(a)(1)-(4), as shown in the Rules Appendix, to replace references to “Ka-band” with appropriate references to the 20/30 GHz band.

SIA next asks the Commission to modify the penultimate sentence of Section 25.209(f) to read as follows: “For other FSS earth stations, this demonstration must comply with the procedures set forth in §§ 25.218, 25.220, or 25.138, as appropriate.” This new language will bring Section 25.138 and its own procedures clearly into view. SIA also requests the

¹³⁶ See *id.* at ¶ 124.

¹³⁷ See *id.* at ¶ 125.

¹³⁸ See *id.* at ¶ 126.

suppression of Section 25.209(g), with its note about Ku-band antenna performance standards, as inconsistent with Sections 25.209(a) and (b), and overtaken by events.

Finally, SIA requests the addition of a new Section 25.209(i) (or possibly as a replacement for Section 25.209(g), if suppressed as requested above) to clarify that Section 25.209 applies to antennas used for transmission from FSS earth stations (including earth stations used for the provision of feeder links for other satellite services).

7. Section 25.210 “Technical requirements for space stations”

SIA requests the complete suppression of Section 25.210(a), as these provisions are not necessary any longer.¹³⁹ The subsection was designed to facilitate high-powered analog C-band transmissions on adjacent satellites, and such transmissions are becoming rare. Suppression will require deletion of a reference to Section 25.210(a) in Section 25.114(c)(13) as discussed above.

SIA also supports the Commission’s proposed suppression of Sections 25.210(b) and (c), for the reasons given in the NPRM.¹⁴⁰

SIA supports the Commission’s proposal to relocate the cross-polarization isolation provision for DBS to the newly-vacated Section 25.210(c), and supports reduction of that figure to the 27 dB level prescribed by the Region 2 BSS/BSS Feeder Link Plans.¹⁴¹ For non-BSS services, SIA requests elimination of the cross-polarization isolation figure, and thus requests the suppression and reservation of Section 25.210(i)(1). Cross-polarization isolation is relevant only for self-interference considerations, and in cases where multiple satellites using the same frequencies are located at or around a single orbital location.

¹³⁹ See *id.* at ¶ 127.

¹⁴⁰ See *id.* at ¶¶ 128-29.

¹⁴¹ See *id.* at ¶ 137.

SIA next asks the Commission to clarify Section 25.210(f), as adopted in September 2012 in IB Docket No. 06-154.¹⁴² To the end of the rule, as modified, a sentence should be added stating that the full frequency re-use obligation does not apply to TT&C functions.

8. Section 25.211 “Analog video transmissions in the Fixed-Satellite Service”

SIA supports the Commission’s proposal to remove the term “full transponder” from Section 25.211(d).¹⁴³ There is no reason to limit routine processing under this rule to full transponder transmissions. SIA also supports the addition to the same section of certification requirements relating to antenna performance as a prerequisite to routine processing under the rule.¹⁴⁴

SIA notes, in addition, that in Section 25.211(b), there is an important exception regarding unmodulated carriers that should be applied more broadly than to 4/6 GHz analog video systems. SIA urges that the following sentence be stricken from Section 25.211(b), and moved into Section 25.275 (on particulars of operation) as a rule of general applicability: “The transmission of an unmodulated carrier at a power level sufficient to saturate a transponder is prohibited, except by the space station licensee to determine transponder performance characteristics.” This provision is effectively preventive medicine for satellites, and should not be limited to 4/6 GHz-band analog transmissions.

¹⁴² See *2006 Biennial Regulatory Review – Revisions of Part 25*, Report and Order, 27 FCC Rcd 11585, 11590 (2012). SIA notes that the Commission adopted a change concerning application of the full frequency re-use obligation to TT&C functions in the Report and Order, but that the change did not appear in the accompanying revised Section 25.210(f). See *id.* at 11609.

¹⁴³ See NPRM at ¶ 131.

¹⁴⁴ *Id.*

9. Section 25.212 “Narrowband analog transmission and all digital transmissions in the GSO Fixed-Satellite Service”

SIA has concerns with the Commission’s proposal to expand the routine licensing of stations transmitting analog signals under Section 25.212 from 200 kHz to up to 1 MHz in bandwidth.¹⁴⁵ Interference produced by a 1 MHz carrier at the power levels in Section 25.212(c) could be disruptive. Such carriers should continue to be required to utilize the non-routine procedures of Section 25.220. For this reason, the proposal to open up the routine licensing provision in the manner proposed in the NPRM is too broad.

SIA does, however, support a change to subsections (c), (d), and (e) of Section 25.212 that limits the increase in the bandwidth of narrowband analog carriers eligible for routine licensing from 200 kHz to 1 MHz to telecommand carriers (which are typically FM modulated and wider than 200 kHz). The number of telecommand carriers is necessarily limited, and most of these carriers are found at a band edge. As a result, the interference situation from telecommand carriers of this bandwidth is manageable today and will continue to be manageable with routine licensing. SIA thus asks the Commission to revise the references to the maximum bandwidth to read as follows: “. . . with bandwidths up to 200 kHz (or up to 1 MHz for telecommand carriers)”¹⁴⁶

¹⁴⁵ See *id.* at ¶ 133.

¹⁴⁶ SIA questions, however, whether the changes proposed for Sections 25.212(c), (d), and (e) have been superseded by other, broader changes proposed in the NPRM. For instance, there is now a definition of “routine processing,” which extends to antennas that comply with the off-axis EIRP density limits in Section 25.218 for the analog and digital transmissions in the conventional C- and Ku-bands. The EIRP density limits already implicitly reflect the input power spectral density limits that are specified in Sections 25.212(c) and (d), but are more flexible since they are not limited by antenna diameter or carrier bandwidth. If earth stations that meet the off-axis EIRP density limits in Section 25.218 can be routinely processed, then the better course may be to eliminate the portions of Sections 25.212(c) and (d) that specify uplink transmission parameters eligible for routine licensing, and to keep only those portions specifying maximum satellite EIRP densities.

SIA supports the Commission's other proposals for Section 25.212, including the amended cross-reference to Section 25.132 in paragraphs (c) and (d), the removal of obsolete date references.¹⁴⁷

As a final matter, SIA observes that there appear to be conflicts now between Section 25.212(c)(2) as revised, and Sections 25.132(a) and 25.134, dealing with routine processing. There is no reason to limit routine processing of earth stations otherwise compliant with off-axis EIRP masks to a minimum antenna diameter in the 14.0-14.5 GHz band. It may be that there are too many provisions dealing with routine processing, and that some reconciliation is required to ensure consistency in intent and implementation.

10. Section 25.215 “Technical requirements for space stations in the Direct Broadcast Satellite Service”

For SIA's comments regarding Section 25.215, see the discussion in Section II.H.7 above on cross-polarization isolation for DBS space stations.¹⁴⁸

11. Section 25.217 “Default service rules”

SIA supports the cross-reference changes proposed in the NPRM regarding the default service rules.¹⁴⁹

12. Section 25.218 “Off-axis EIRP envelopes for FSS earth station operations”

SIA supports the amendment to Section 25.218 to remove the language specifically excluding earth stations operating in the 17/24 GHz band. The rule, by its terms, applies only to

¹⁴⁷ See *id.* at ¶¶ 133, 134.

¹⁴⁸ See *id.* at ¶ 137.

¹⁴⁹ See *id.* at ¶¶ 138-39.

GSO FSS earth stations operating in the C-band, Ku-band, and extended Ku-band.¹⁵⁰ SIA also requests that the Commission modify Section 25.218(b) to correct the cross-reference to the definition of conventional Ku-band, which the Commission has proposed to move from Section 25.201 to Section 25.103. By the same token, if a definition of “extended Ku-band” is also moved to Section 25.103 (as SIA has suggested), then Section 25.218(b) should be modified to cross-reference that definition.

Next, as it suggests for Sections 25.134 and 25.138 above, SIA requests that the Commission add a modified version of Section 25.226(b)(3)(i) at the end of 25.218 to address cases where the applicant would use variable power-density control of individual simultaneously transmitting co-frequency earth stations in the receive beam of the satellite. This is a significant improvement that will update this portion of the rules to take into account the latest developments in satellite network technologies.¹⁵¹

SIA makes the general observation here that Section 25.218 (for C-band and Ku-band), along with the corollary provisions in Section 25.138 (for Ka-band) represents the future of earth station regulation. Many disparate provisions on power levels and minimum antenna sizes are subsumed within these masks and rendered unnecessary for separate retention. In these Comments, SIA has made a first-step effort in trying to reconcile and eliminate some of the duplicate provisions in favor of the mask approach, but more work is needed in this important area in later stages of the comprehensive Part 25 review proceeding if true reform is to be achieved.

¹⁵⁰ See *id.* at ¶ 140.

¹⁵¹ As shown in the attached Rules Appendix, the substance of this provision would be the same as requested in Section II.G.15 above.

13. Section 25.220 “Non-conforming transmit/receive earth station operations”

SIA requests a revision to Section 25.220 to provide a means pursuant to which earth station licensees with antennas that do not comply with the off-axis EIRP envelopes of Section 25.218 with respect to present and future compliant licensees operating with space stations more than six degrees away from the target space station will be able to bring their operations into compliance with the off-axis EIRP mask to avoid or resolve material interference issues.¹⁵² The current rule is insufficient in this regard, as its applicability is limited to future applicants operating with space stations within six degrees of longitude; the potential adverse effects could impact current licensees with compliant antennas as well as current and future users operating with space stations more than six degrees away. SIA emphasizes that it is not necessary for the Commission to expand the prior coordination obligation of Section 25.220 beyond the current six degree longitudinal figure because many exceedances beyond six degrees are nominal or would not result in harmful interference.¹⁵³

14. Section 25.223 “Off-axis EIRP spectral density limits for feeder-link earth stations in the 17/24 GHz BSS”

SIA generally supports the Commission’s proposals regarding 17/24 GHz BSS in Section 25.223.¹⁵⁴ However, SIA does not support the proposal to include in Section 25.223(c) permission to make interference showings without coordination. As noted above in connection

¹⁵² Any noncompliance here means a level of interference that is greater than the exceedances already allowed for in the Section 25.218 masks at larger off-axis angles.

¹⁵³ SIA requests comparable revisions to Sections 25.138(c) and 25.223(d). *See supra* § II.G.15 and *infra* § II.H.14. In this regard, the language SIA seeks to add to Sections 25.138(c) and 25.223(d) is clearer and more precise than the language in current Section 25.220(d)(2). For this reason, SIA urges the Commission to replace the latter provision with the formulation SIA has developed for the same purpose in Sections 25.138(c) and 25.223(d). The Rules Appendix contains SIA’s revision to Section 25.220(d)(2).

¹⁵⁴ *See* NPRM at ¶¶ 141-43.

with Section 25.138(b), such a provision would require satellite licensees to examine every earth station application, and incentivizes applicants to eschew coordination in favor of unilateral showings.¹⁵⁵ SIA requests instead to retain the requirement to include a coordination statement, but to have the Commission indicate in the Report and Order in this proceeding that applicants may request waivers supported by interference showings on a case-by-case basis.¹⁵⁶

SIA offers two additional revisions to Section 25.223. First, SIA requests for Section 25.223(c) the addition of a provision based on Section 25.220(d)(4) that specifies that applicants are not required to certify that U.S.-authorized 17/24 GHz satellite networks within the relevant distances under Section 25.223 have not objected to the exceedances in situations where the off-axis EIRP density level of the proposed earth station operations is less than or equal to the levels specified by the applicable off-axis EIRP envelope in paragraph (b) in the direction of the part of the geostationary orbit arc within 1 degree of the nominal orbit location of the nearby satellite. This is an important exception to the requirement that any exceedance triggers the need for full coordination. The exception reduces the burden on applicants and operators without compromising protection in the specified orbital spacing environment.¹⁵⁷

Second, SIA requests for Section 25.223(d) a revision comparable to those requested in connection with Sections 25.138(c) and 25.220(d)(2) – namely, a means pursuant to which earth

¹⁵⁵ See *supra* § II.G.15.

¹⁵⁶ As noted above in connection with Section 25.138, SIA does not support a default rule that would allow applicants proposing to deploy earth stations that do not comply with applicable off-axis EIRP density limits to simply make a non-interference showing. Instead, the default rule for non-compliant earth stations in the 17/24 GHz BSS bands should be the same as under Section 25.220, which specifies that proponents of non-compliant operations must provide coordination statements regarding the neighbors of the target satellite within specified longitudinal separations. This mechanism has worked well to date and its use should be encouraged. Moreover, this mechanism will reduce the need for satellite operators to review every earth station application for non-compliant operations being proposed on neighboring satellites. This does not mean that an earth station applicant cannot seek a waiver of the coordination requirement in exceptional cases. See *supra* § II.G.15.

¹⁵⁷ The Rules Appendix includes requested text.

station licensees with antennas that do not comply with the off-axis EIRP envelopes of Section 25.223 with respect to present and future compliant licensees operating with space stations more than the relevant longitudinal separation from the target space station will be able to bring their operations into compliance with the off-axis EIRP mask to avoid or resolve material interference issues.¹⁵⁸ As above, the requested change will provide earth stations with mask exceedances at separations beyond those in Section 25.223(c) the opportunity to coordinate operations with future applicants and future and present licensees.

15. Sections 25.259 “Time sharing between NOAA meteorological satellite systems and non-voice, non-geostationary satellite systems in the 137-138 MHz band” and 25.260 “Time sharing between DoD meteorological satellite systems and non-voice, non-geostationary satellite systems in the 400.15-401 MHz band”

SIA has no objection to the proposed revisions to Sections 25.259 and 25.260.¹⁵⁹

I. Rules Governing Earth and Space Station Technical Operations

1. Section 25.271 “Control of transmitting stations”

SIA is unsure about what the Commission is asking in the NPRM regarding Section 25.271.¹⁶⁰ The Commission has already proposed a provision in new Section 25.171 requiring updating of contact information in an earth station application. SIA’s comments on the earth station contact information requirement are provided in Section II.B above, and are incorporated by reference here. SIA does not support the inclusion of any additional contact requirement, especially not in an operational rule, when the Commission has attempted in the same proceeding to consolidate reporting requirements elsewhere in Part 25.

¹⁵⁸ See *supra* §§ II.G.15 and II.H.13.

¹⁵⁹ See NPRM at ¶ 144.

¹⁶⁰ See *id.* at ¶ 146.

2. Section 25.276 “Points of Communication”

SIA supports the proposed change to Section 25.276(a), and the suppression of the vestigial Section 25.276(b).¹⁶¹ SIA’s support, however, is conditioned upon its understanding that the proposed change to subsection (a) does not alter in any way the ability for an earth station to transmit to any space station with U.S. market access, if that space station is listed as a point of communication or included within ALSAT or the Permitted Space Station List.

3. Section 25.281 “Automatic Transmitter Identification System (ATIS)”

The Commission presents several proposals concerning the Automatic Transmitter Identification System (“ATIS”), including its extension to digital broadband video services, and not just analog services.¹⁶² SIA supports a modest expansion of the ATIS rule to cover digital video transmissions from satellite news gathering (“SNG”) vehicles and other similar temporary fixed installations. SNG transmissions are a well-known source of interference because they are often hastily set up and are prone to pointing errors or excessive power levels. Fortunately, there is a sufficient level of standardization in the SNG community around the DVB-S standard for an ATIS-like “carrier ID” rule to be adopted for the entire community within a reasonable phase-in period.

There is no need, however, for a similar rule to extend to large fixed video uplinks, such as DBS and 17/24 GHz feeder links, because such installations tend to be permanent facilities that are professionally maintained and the use of larger antennas implies a narrower beamwidth that is less likely to cause interference to adjacent satellites. It is also not appropriate, at this time, to extend the ATIS rule to non-video uplinks, as there is not the same level of

¹⁶¹ See *id.* at ¶¶ 147-48.

¹⁶² See *id.* at ¶¶ 149-154.

standardization in those other communities that would make a carrier identification (“carrier ID”) mandate practically feasible. For these reasons, the ATIS rule should not extend beyond the SNG community at this stage.

With respect to the technical specifications for a digital ATIS proposed by the Commission in the NPRM, SIA is concerned that they are too detailed and too specific to take into account possible evolution in industry standards for “carrier ID.” The Commission’s proposal recognizes the development of two different methods of “carrier ID” in the DVB-S community – one that embeds certain information in the Network Information Table and one that encodes a distinctive sub-carrier into the video signal. However, the former appears to be an interim method of “carrier ID” that will be superseded by the latter method. There may be further improvements in carrier ID technology in the future. Rather than codify the specifics of any particular DVB-S carrier ID standard, SIA would suggest that the Commission instead make a rule that incorporates by reference the “latest version” of that industry standard. This provides clarity to the SNG community as to which standard to follow and will enable improvements in “carrier ID” technology to be automatically taken into account.

Moreover, while means of carrier identification technologies are being developed by industry for traffic types other than video, they have yet to reach a point where the techniques are sufficiently stable and the breadth of applicability fully understood. Until greater experience is gained through the deployment and use of such technologies, SIA urges the Commission to eschew codification of digital carrier ID rules for non-SNG applications in favor of allowing the satellite industry the flexibility of developing and adopting best practices and standards for addressing interference resolution.

Accordingly, SIA focuses its changes on the current version of Section 25.281, rather than upon the proposed replacement for that rule in Appendix A to the NPRM. SIA seeks to revise the title of Section 25.281 and Section 25.281(a) to clarify the limitation of automatic transmitter identification encoding to analog FM applications (since the existing technology was developed for and is applicable only to analog video transmissions), and adds a new Section 25.281(b) to specify transmitter identification requirements for digital DVB-S SNG applications.

The new Section 25.281(b) introduces a requirement to embed analogous transmitter identification in *digital* video transmissions encoded in the DVB-S format. The specific method of embedding or encoding such identification is as defined by the DVB-S standard then in force. As noted above, the common adoption of the DVB-S format for SNG digital video transmission makes adoption of a transmitter identification requirement for such uplink facilities appropriate, as it is relatively straightforward for the operator of the victim satellite to decode that information in cases of interference.

In addition, as with the introduction of ATIS for analog FM video transmission, SIA asks that the digital ATIS for the SNG community be introduced over two years. The provision SIA requests as a replacement for the Commission's revision to Section 25.281 is included in the Rules Appendix, and is compared against the current version of the rule (rather than against the versions proposed in Appendix A to the NPRM). The requested rule in the Rules Appendix assumes an effective date for the changes of January 2015.

J. Additional Technical Changes

In the NPRM, the Commission seeks comment on whether there are technical rules or technical practices developed by other countries that might further the Commission's policy objectives.¹⁶³

1. Satellite Licensing

SIA welcomes the Commission's willingness to consider global best practices in updating and streamlining its satellite licensing requirements. SIA believes that an examination of the satellite licensing regimes of other experienced space-faring nations – such as Canada, Germany, the Netherlands and the United Kingdom – could provide further ideas and opportunities for the streamlining of the Commission's own processes. The experience of SIA members with foreign satellite licensing regimes would suggest that regulatory agencies can exert effective regulatory oversight without requiring applicants to provide as much information as required by the Commission's existing rules.

This experience reinforces the Commission's important efforts in this proceeding to eliminate many unnecessary or outdated data elements from Section 25.114 of its rules. For example, the Commission in this proceeding is wisely proposing to remove the detailed spacecraft design elements (such as spacecraft dimensions, power budgets and reliability estimates) from Section 25.114(c)(10) that are unnecessary to its primary task of regulating the interference environment in which satellites and other radio services operate. This is consistent with the approach of countries such as Germany and the Netherlands that do not require such information. Another potential area of fruitful international comparison may be the approaches of other nations with regard to orbital debris mitigation and post-mission disposal of satellites.

¹⁶³ See *id.* at ¶ 155.

Countries such as Canada and Germany, for example, simply require satellite operators to conform to international standards without requiring detailed showings from applicants.

SIA encourages the Commission to examine these and other aspects of the satellite licensing regimes of other experienced space-faring countries in later phases of this proceeding to see if any parts of their streamlined regulatory approaches may be appropriate for adoption consistent with the statutory and regulatory environment of the United States.

2. Earth Station Licensing

In the context of earth station licensing, SIA believes that certain regulatory approaches that have been in use abroad for several years now can be beneficially adopted domestically. In particular, a provision that removes most licensing obligations for new, low-power terminals in bands not shared with terrestrial services will bring the U.S. process in line with other regions of the world and not forsake protection of adjacent GSO satellites. In Europe, the responsibility of ensuring compliance of small satellite terminals is left to the service provider and the satellite operator, not the regulator(s). Only large earth stations that have a higher potential for causing interference and for personal harm from radiofrequency radiation are individually licensed. This approach reduces regulatory costs and burdens on both the earth station licensees and the regulators, without adding any increased risk of RFI. Operators and their customers are both strongly incentivized to avoid implementations that upset the interference environment, and both are in the best position to effectively ensure that such interference does not occur.

The Commission could greatly simplify its licensing work without loss of its regulatory authority or abdication of its responsibilities by relieving operators of networks of small terminals of the obligation to provide detailed descriptions of their terminals and to constantly update records as parameters change (e.g., antenna model number, emission codes, bandwidth). While Section 25.118 allows some changes without prior approval, these changes are very

narrowly limited, and in each case an FCC Form 312 must still be submitted. Moreover, under the current approach there is always the risk that the Commission may determine after the fact that a change filed with as a post-action notification was not one that was appropriate for submission under Section 25.118, with the potential of resulting enforcement action.

To take advantage of the different approaches developed in Europe,¹⁶⁴ which apply to the GSO FSS bands at 14.0-14.25 GHz and 29.5-30.0 GHz, SIA requests the inclusion of new subsections in Sections 25.134 and 25.138. The European approach is limited to the 14.0-14.25 GHz and 29.5-30.0 GHz bands because those bands are not shared with co-primary terrestrial services in any part of Europe. On this basis, there is no reason not to extend the European approach beyond these band segments to the U.S. blanket-licensed bands at 14.25-14.5 GHz and 28.35-28.6 GHz, so these segments are included as well in the respective proposals in the Rules Appendix. These new rules specify that applicants for new or modified authorizations for VSAT earth station networks operating in the 14.0-14.5 GHz band with a maximum earth station EIRP of 50 dBW or less, or for blanket-licensed earth stations in the 28.35-28.6 GHz and 29.5-30.0 GHz bands with a maximum earth station EIRP of 50 dBW or less, are not required to submit any technical parameters other than the maximum EIRP, provided that they certify that the proposed terminals will comply with all applicable Part 25 operational and technical requirements, including the applicable off-axis EIRP limits in Sections 25.218 and 25.138. Applicants under the new Ku-band provision in Section 25.134(i) would be able to apply for authority for terminals not complying with Section 25.218 provided that they submit all of the

¹⁶⁴ See, e.g., Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive); Electronic Communications Committee, ECC Decision of 24 March 2006 on Exemption from Individual Licensing of high e.i.r.p. satellite terminals (HEST) operating within the frequency bands 10.70-12.75 GHz or 19.70-20.20 GHz space-to-Earth and 14.00-14.25 GHz or 29.50-30.00 GHz Earth-to-space, ECC/DEC/(06)03.

information called for in Section 25.220(d). Applicants under the new provision for the 20/30 GHz band FSS in Section 25.138(h) would be able to apply for authority for terminals not complying with Section 25.138(a), provided that they certify that all potentially affected parties (i.e., those GSO FSS satellite networks that are within +/- 6 degrees away from the proposed point of communication) acknowledge and do not object to the use of the applicant's higher power densities.

The NPRM provides adequate notice for the adoption of these new limited-scope provisions. Additional developments can be analyzed in later phases of the instant proceeding.

K. SIA Proposals for Additional Phases of the Rulemaking Proceeding in IB Docket No. 12-267

As SIA has explained above, this instant rulemaking proceeding should serve as only the first step of a multi-step process to revise the Part 25 rules. Areas for future consideration in this docket, or perhaps in a separate rulemaking proceeding if the Commission sees fit to proceed in such a fashion, include important issues raised in the preceding comments, including milestone conditions and compliance, the orbital debris mitigation rules, the restructuring and consolidation of the Part 25 rules, and the elimination of regulatory status distinction between 20/30 GHz-band FSS and 12/14 GHz-band FSS.

In addition to these matters, the modification of Section 25.110(f) to include a partial exemption from application fees for pro forma and involuntary transfers of control and assignments warrants further consideration. The International Bureau process is out of alignment with other Commission bureaus in this regard. Many pro forma applications are not required to be placed on full public notice and do not require detailed assessments, and yet attract the same fees. While the Commission has no ability to create new statutory fee categories, the Commission can issue a standing, partial waiver of the application fee for assignment and

transfer applications if it would result in a non-substantive change in control in the licensed facility.

SIA also believes it may be time to revisit the rules that put numerical limits on outstanding applications or un-built authorizations.¹⁶⁵ Several compelling reasons support SIA's position. First, the numerical limits are redundant given the Commission's milestone requirements, which are designed to ensure that there is no waste of orbital and spectrum resources. Second, the Commission's rule imposing additional obligations on licensees that miss three or more implementation milestones in a three-year period (Section 25.159(d)) serve as an effective inhibitor on potential speculation. Third, the limits artificially constrain licensee flexibility and planning for fleet upgrades and expansions. Fourth, as international coordination prospects may become clear only in the future, enhanced flexibility resulting from elimination of the numerical limits will provide operators with more options. And fifth, legitimate business plans may call for investment in a number of new satellites that exceeds the existing limits. For these reasons, SIA urges the Commission to consider eliminating its numerical limits on outstanding applications or un-built authorizations.

III. CONCLUSION

SIA appreciates the thought and effort the Commission expended in developing the NPRM. It is clear that both the Commission and the satellite-industry stakeholders have a strong interest in and are committed to updating and streamlining the Commission's satellite licensing rules and regulations.

In the foregoing comments and attached Rules Appendix, SIA offers its constructive comments on the NPRM. These comments and recommendations, if adopted in this initial phase

¹⁶⁵ See 47 C.F.R. § 25.159.

of the instant proceeding, will mark a very strong start to what will become a truly comprehensive review of Part 25 of the Commission's rules.

Respectfully submitted,

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RULES APPENDIX

<u>Comments Section</u>	<p align="center">SIA Proposed Modifications to Appendix A Proposed Rule Changes</p> <p><i>NOTE: Except as noted for §§25.210(f) and 25.281, all revisions are either against the NPRM Proposals, or are against existing rules where provisions were not proposed for modification in Appendix A</i></p>
II.A	<p><u>§ 25.103 Definitions.</u></p> <p><u>Terms with definitions including the “(RR)” designation are defined in the same way in § 2.1 of this chapter and in the Radio Regulations of the International Telecommunication Union.</u></p> <p><u>1.5/1.6 GHz Mobile-Satellite Service.</u> Mobile-Satellite Service provided in any portions of the 1525-1559 MHz space-to-Earth band and the 1626.5-1660.5 MHz Earth-to-space band, which are referred to in this rule part as the “1.5/1.6 GHz MSS bands.”</p> <p><u>1.6/2.4 GHz Mobile-Satellite Service.</u> A Mobile-Satellite Service that operates in the 1610-1626.5 MHz and 2483.5-2500 MHz bands, or in any portion thereof.</p> <p><u>2 GHz Mobile-Satellite Service.</u> A Mobile-Satellite Service that operates in the 2000-2020 MHz and 2180-2200 MHz bands, or in any portion thereof.</p> <p><u>12/14 GHz bands.</u> The 11.7-12.2 GHz Fixed-Satellite Service space-to-Earth band and the 14.0-14.5 GHz Fixed-Satellite Service Earth-to-space band.</p> <p><u>17/24 GHz Broadcasting-Satellite Service.</u> A radiocommunication service using geostationary satellites between one or more feeder-link earth stations and other earth stations, in the 17.3-17.7 GHz (space-to-Earth) (domestic allocation), 17.3-17.8 GHz (international allocation) and 24.75-25.25 GHz bands. This service is also known as “17/24 GHz BSS.” For purposes of the application processing provisions of this part, the 17/24 GHz BSS is a GSO-like service. For purposes of the technical requirements of this part, we will treat the 17/24 GHz BSS as if it were FSS. Unless specifically stated otherwise, the 17/24 GHz BSS systems are subject to the rules in this part applicable to FSS.</p> <p><u>20/30 GHz bands.</u> The 18.3-20.2 GHz frequency range, which is allocated for Fixed-Satellite Service (FSS) space-to-Earth transmission, and the 28.35-30.0 GHz frequency range, which is allocated for FSS Earth-to-space transmission.</p> <p><u>Ancillary Terrestrial Component (ATC).</u> 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, <i>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.</i></p> <p><u>Ancillary Terrestrial Component (ATC) base station.</u> A terrestrial fixed facility used to transmit communications to or receive communications from one or more ancillary terrestrial component mobile terminals.</p> <p><u>Ancillary Terrestrial Component (ATC) mobile terminal.</u> A terrestrial mobile facility used to transmit communications to or</p>

receive communications from an ancillary terrestrial component base station or a space station.

Blanket license. For purposes of this part, the term “blanket license” signifies a license for multiple-space or earth stations, including earth stations in the fixed-satellite service and mobile-satellite service that could be operated from anywhere within a geographic area specified in the license or while in motion.

C-band. For purposes of this part, the terms “C-band” and “conventional C-band” refer specifically to the 3700-4200 MHz space-to-Earth and 5925-6425 MHz Earth-to-space bands. These paired bands are allocated to the Fixed-Satellite Service and are also referred to as the 4/6 GHz 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. (RR)

Direct Broadcast Satellite 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. A station located either on the Earth’s surface or within the major portion of the Earth’s atmosphere intended for communication:

- (1) With one or more space stations; or
- (2) With one or more stations of the same kind by means of one or more reflecting satellites or other objects in space. (RR)

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.

Emergency Call Center. A facility that subscribers of satellite commercial mobile radio services call when in need of emergency assistance by dialing “911” on their mobile earth station terminals.

Equivalent Power Flux-Density (EPFD). The sum of the power flux-densities produced at a geostationary orbit (GSO) 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 (NGSO FSS) 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/m²) in the reference bandwidth, is calculated using the following formula:

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

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;

$G_r(\phi_i)$ 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.

Extended Ku-band. For purposes of this part, the term "extended Ku-band" refers specifically to the 10.7-11.7 GHz space-to-Earth and 12.75-13.25 GHz and 13.75-14 GHz MHz Earth-to-space Fixed-Satellite Service bands.

Feeder link. A radio link from a fixed earth station at a given location to a space station, or vice versa, conveying information for a space radiocommunication service other than the Fixed-Satellite Service. The given location may be at a specified fixed point or at any fixed point within specified areas. (RR)

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.

Fixed-Satellite Service. A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the Fixed-Satellite Service may also include feeder links of other space radiocommunication services. (RR)

Geostationary 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. (RR)

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

~~Ka-band Permitted Space Station List. A list of all U.S. licensed geostationary orbit space stations providing Fixed-Satellite Service in the 20/30 GHz bands, as well as those non-U.S. licensed geostationary orbit space stations approved for U.S. market access to provide Fixed-Satellite Service in the 20/30 GHz bands. Applicants for Fixed-Satellite Service earth stations that qualify for routine processing in the 20/30 GHz bands may designate the Ka-band Permitted Space Station List as a point of communication. Once such an application is granted, the earth station operator may communicate with any space station on the Ka-band Permitted Space Station List, provided that the communications fall within the technical parameters and conditions established in the earth station license and any limitations placed on the space station authorization or noted in the Ka-band Permitted Space Station List. The earth station operator may not communicate with a space station on the list in the 18.3-18.8 GHz or 19.7-20.2 GHz band until the space station operator has completed coordination under Footnote US334 to § 2.106.~~

Ku-band. In this rule part, the terms “Ku-band” and “conventional Ku-band” refer specifically to the 11700-12200 MHz space-to-Earth and 14000-14500 MHz 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.

Land earth station. An earth station in the Fixed-Satellite Service or, in some cases, in the Mobile-Satellite Service, located at a specified fixed point or within a specified area on land to provide a feeder link for the Mobile-Satellite Service. (RR)

Land Mobile Earth Station. A mobile earth station in the land mobile-satellite service capable of surface movement within the geographical limits of a country or continent. (RR)

Mobile Earth Station. An earth station in the Mobile-Satellite Service intended to be used while in motion or during halts at unspecified points. (RR)

Mobile-Satellite Service. A radiocommunication service:

- (1) Between mobile earth stations and one or more space stations, or between space stations used by this service; or
- (2) Between mobile earth stations, by means of one or more space stations.

This service may also include feeder links necessary for its operation. (RR)

NGSO FSS gateway earth station. An earth station complex consisting of multiple interconnecting earth station antennas supporting the communication routing and switching functions of a non-geostationary orbit Fixed-Satellite Service (NGSO FSS) system as a whole. A gateway earth station in the NGSO FSS:

- (1) Does not originate or terminate radiocommunication traffic, but interconnects multiple non-collocated user earth stations operating in frequency bands other than designated gateway bands, through a satellite with other primary terrestrial networks, such as the public switched telephone network (PSTN) and/or Internet networks.
- (2) Is not for the exclusive use of any customer.
- (3) May also be used for telemetry, tracking, and command transmissions for the same NGSO FSS system.

(4) May include multiple antennas, each required to meet the antenna performance standard in § 25.209(h), located within an area of one second latitude by one second longitude. Additional antennas located outside such area will be considered as a separate gateway earth station complex for purposes of coordination with terrestrial services.

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 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 conventional C-, ~~and conventional Ku-, and 20/30 GHz~~ bands, as well as those non-U.S.-licensed geostationary-orbit space stations approved for U.S. market access to provide Fixed-Satellite Service in the conventional C-, ~~conventional and Ku-, and 20/30 GHz~~ bands. ~~Applicants for Fixed-Satellite Service earth stations that qualify for routine processing in the conventional C- and Ku-bands may designate the Permitted Space Station List as a point of communication. Once such an application is granted, the earth station may communicate with any space station on the Permitted Space Station List, provided that the communications fall within the technical parameters and conditions in the earth station license and any limitations placed on the space station authorization or noted on the Permitted Space Station List.~~

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/1MHz) when measured in a 1 MHz bandwidth.

Protection areas. The geographic regions on the surface of the Earth where U.S. Department of Defense (DoD) meteorological satellite systems or National Oceanic and Atmospheric Administration (NOAA) meteorological satellite systems, or both such systems, are receiving signals from low earth orbiting satellites. Also, geographic protection areas around 20/30 GHz band NGSO MSS Ka-band-feeder-link earth stations in the 1.6/2.4 GHz Mobile-Satellite Service are determined in the manner specified in § 25.203(j).

Radiodetermination-Satellite Service. A radiocommunication service for the purpose of radiodetermination involving the use of one or more space stations. This service may also include feeder links necessary for its own operation. (RR)

Routine processing or licensing. Expedited processing of unopposed applications for Fixed-Satellite Service earth stations communicating via geostationary satellites that satisfy the criteria in § 25.134(a), § 25.134 (~~cg~~), § 25.138(a), § 25.211(d), § 25.212(c), § 25.212(d), § 25.212(f), § 25.218, or § 25.223(b), include all required information, are consistent with all Commission rules, and do not raise any policy issues. Some, but not all, routine earth station applications are eligible for an autogrant procedure under § 25.115(a)(~~34~~).

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, telemetry, tracking and control facilities.

	<p><u>Satellite system.</u> A space system using one or more artificial earth satellites. (RR)</p> <p><u>Selected assignment.</u> 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.</p> <p><u>Shapeable antenna beam.</u> A satellite transmit or receive antenna beam, the gain and/or gain pattern of which can be modified at any time, without requiring the satellite antenna reflector to be physically repositioned.</p> <p><u>Spacecraft.</u> A man-made vehicle which is intended to go beyond the major portion of the Earth’s atmosphere. (RR)</p> <p><u>Space radiocommunication.</u> 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.</p> <p><u>Space station.</u> 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)</p> <p><u>Space system.</u> Any group of cooperating earth stations and/or space stations employing space radiocommunication for specific purposes. (RR)</p> <p><u>Terrestrial station.</u> A station effecting terrestrial radiocommunication.</p> <p><u>Vehicle-Mounted Earth Station (VMES).</u> An earth station, operating from a motorized vehicle that travels primarily on land, that receives from and transmits to geostationary orbit Fixed-Satellite Service space stations and operates within the United States pursuant to the requirements set out in § 25.226.</p>
II.B.1	<p><u>§ 25.111 Additional information and ITU cost recovery.</u></p> <p>* * * * *</p> <p>(b) Applicants and licensees of radio stations governed by this part must provide the Commission with the information required for Advance Publication, Coordination, and Notification of frequency assignment filings, <u>including due diligence information,</u> pursuant to the ITU Radio Regulations (RR) including due diligence information. No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless coordination procedures are timely completed or, with respect to individual administrations, coordination agreements are successfully completed. A license for which such coordination has not been completed may be subject to additional terms and conditions required for coordination of the frequency assignments with other Administrations.</p> <p>* * * * *</p> <p>(d) The Commission will submit the information required by paragraphs (b) or (c) of this section to the ITU only after the party in interest has <u>certified on Form 312 or</u> submitted a <u>letter stating signed declaration</u> that it unconditionally accepts all consequent ITU cost-recovery responsibility. Any The letter declaration must be electronically filed in the “Other Filings” tab of the pertinent</p>

	<p>application file in the IBFS database, and a paper copy must be mailed to the International Bureau, Satellite Division. The letter filing must reference the pertinent call sign and international satellite name and include the name(s), address(es), email address(es), and telephone and fax number(s) of a contact person, or persons, responsible for cost recovery inquiries and ITU correspondence and filings. Supplements must be filed as necessary to apprise the Commission of changes in the contact information. The party in interest must remit payment of any resultant cost-recovery fee to the ITU by the due date specified in the pertinent ITU invoice. A license granted in reliance on such a commitment and disposition of any pending or future Part 25 application from the same party will be contingent upon discharge of any such payment obligation.</p>
No SIA Proposal	<p><u>§ 25.112 Defective applications.</u></p> <p>(a) * * *</p> <p>(1) * * *</p> <p>(4) The application is identical to a pending application that was timely filed pursuant to §§ 25.157 or 25.158 of this chapter.</p> <p>* * * * *</p>
II.G.3	<p><u>§ 25.113 Provisions pertaining to station construction, launch authority, and operation of spare satellites.</u></p> <p>(a) Construction permits are not required for earth stations. Construction of such stations may commence prior to grant of an earth station license at the applicant's own risk, subject to the requirements of § 1.1312 and Part 17 of this chapter concerning environmental processing and construction, marking, and lighting of antenna structures.</p> <p>(b) 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, 1.6/2.4 GHz, or 2 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. 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. 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 International Bureau Filing System 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. 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. An MSS/ATC licensee may not offer ATC service to the public for compensation during pre-operational testing.</p> <p>(c) [Reserved]</p> <p>(d) [Reserved]</p>

	<p>(e) [Reserved]</p> <p>(f) Construction permits are not required for U.S.-licensed space stations, except for stations that the applicant proposes to operate to disseminate program content to be received by the public at large, rather than only by subscribers. Construction of a station for which a construction permit is not required may commence, at the applicant’s own risk, prior to grant of a license. Before commencing pre-grant construction, however, an applicant must notify the Commission in writing that it plans to begin construction at its own risk.</p> <p>* * * * *</p> <p>(h) Licensees <u>and authorization holders</u> of Non-Geostationary Satellite Orbit (NGSO) satellite systems need not file separate applications to operate technically identical in-orbit spares authorized as part of a blanket license <u>or authorization</u> pursuant to §25.114(e) or any other satellite blanket licensing provision in this part. However, the licensee <u>or authorization holder</u> must notify the Commission within <u>310</u> days of bringing the in-orbit spare into operation and certify that operation of this space station did not cause the licensee to exceed the total number of operating space stations authorized by the Commission <u>to be exceeded</u> and that the licensee will operate the space station <u>will be operated</u> within the applicable terms and conditions of its license <u>or authorization</u>.</p>
II.G.4.b-t	<p><u>§ 25.114 Applications for space station authorizations.</u></p> <p>(a) A comprehensive proposal must be submitted for each proposed GSO space station or NGSO satellite constellation on FCC Form 312, Main Form and Schedule S, together with attached exhibits as described in paragraph (d) of this section. An application for blanket authority for an NGSO satellite constellation comprised of space stations that are not all technically identical must provide the information required by paragraphs (c) and (d) of this section for each type of space station in the constellation.</p> <p>* * * * *</p> <p>(c) * * *</p> <p>(4)(i) For each space station transmitting and receiving antenna beam (including telemetry and tracking beams but not command beams), specify channel center frequencies and bandwidths and polarization plan. For command beams, specify <u>each of</u> the center frequencies within a 5 MHz range or a range of 2 percent of the assigned channel bandwidth, whichever is smaller, and the polarization plan. If the space station can vary channel bandwidth in a particular frequency band with on-board processing, specify only the range of frequencies in that band over which the beam can operate and the polarization plan.</p> <p>(ii) Specify peak antenna gain, maximum EIRP, and maximum EIRP density for each space station transmitting antenna beam. If the satellite uses shapeable antenna beams, as defined in § 25.103, specify instead peak antenna gain, maximum possible EIRP, and maximum possible EIRP density within each shapeable beam’s proposed coverage area. Provide this information for each frequency band in which the transmitting antenna would operate. <u>For bands below 15 GHz, specify EIRP density in dBW/40 kHz; for bands 15 GHz and above, in all cases,</u> specify EIRP density in dBW/<u>1</u> MHz. If the EIRP density varies over time, specify the maximum possible EIRP density.</p>

(iii) [Reserved]

(iv) [Reserved]

(v) For each space station receiving beam other than command beams, specify the peak antenna gain and the gain-to-temperature ratio at beam peak. 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 peak antenna gain and minimum and maximum gain-to-temperature ratio within each shapeable beam's proposed coverage area, and 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. For command beams, ~~indicate frequencies within a 5 MHz range or a range of 2 percent of the allocated bandwidth, whichever is smaller, and~~ specify the beam peak required minimum uplink power flux density at the command threshold;

(vi) (A) For space stations in geostationary orbit, Sspecify predicted space station antenna gain contour(s) for each transmit and receive antenna beam ~~and geostationary orbital location or non-geostationary orbit requested~~, except for beams where the contour at 8 dB below peak falls entirely beyond the edge of the visible Earth. These contour(s) should be plotted on an area map 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. Applications ~~for geostationary orbit satellites~~ must present this information in a GIMS-readable format.

(B) For space stations in non-geostationary orbits, specify for each unique orbital plane the predicted space station antenna gain contour(s) for each transmit and receive antenna beam, as defined in § 25.114(c)(4)(vi)(A) above, for one space station if all space stations are identical in the constellation. If individual space stations in the constellation have different antenna beam configurations, specify the predicted space station antenna gain contours for each transmit and receive beam for each space station type and orbit or orbital plane requested. The contours should be plotted on an area map with the beam depicted on the surface of the earth with the non-geostationary space stations' peak antenna gain pointed at nadir to a latitude and longitude that is within the service area of the non-geostationary space stations. These contour(s) should be plotted on this area map 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. For intersatellite links, provide the peak antenna gain and the 3dB beamwidth.

(C) For satellites-space stations with shapeable antenna beams, provide the contours, as defined in §§ 25.114(c)(4)(vi)(A) or (B) above, for the transmitting beam configuration that results in the highest EIRP density for the beams listed in § 25.114(c)(4)(ii) above and for the receiving beam configuration with the smallest gain-to-temperature ratio and the highest required saturation power flux density for the beams listed in § 25.114(c)(4)(v) above. If the shapeable beams are also steerable, include the contours that would result from moving the beam peak around the limit of the effective beam peak area and the 0 dB relative antenna gain isoline. The proposed maximum coverage area must be clearly specified by the applicant.

(D) For space stations with non-shapeable steerable beams, provide the applicable contours, as defined in §§ 25.114(c)(4)(vi)(A) or (B) above, with a clear description of the area that the steerable beam(s) is expected to serve, or provide the contour information described in § 25.114(c)(4)(vi)(C) above;

(vii) For geostationary satellites with large numbers of identical fixed spot beams, other than DBS satellites, applicants may, as an alternative to submitting the information described in paragraph (c)(4)(vi) above with respect to these beams, provide the

predicted antenna gain pattern for one transmit and receive antenna beam, along with one of the following: (i) an area map showing all of the spot beams depicted on the surface of the Earth; (ii) a table identifying the maximum (antenna) gain point(s) in latitude and longitude to the nearest 0.1 degree; or (iii) a map of the isolines formed by combining all of the spot beams into one or more composite beams. For non-geostationary satellites with large numbers of identical fixed beams on each satellite, applicants may as an alternative to submitting the information described in paragraph (c)(4)(vi) above with respect to those beams, provide the predicted antenna gain pattern for one transmit and receive beam pointed to nadir, along with an area map showing all of the spot beams depicted on the surface of the earth with the non-geostationary satellites' peak antenna gain pointed to a selected latitude and longitude that is within the service area.

(5) For space stations in geostationary orbit:

- (i) Orbital location requested,
- (ii) [Reserved]
- (iii) East-west station-keeping range,
- (iv) North-south station-keeping range, and
- (v) Accuracy to which antenna axis attitude will be maintained;

(6) For space stations in non-geostationary orbits:

- (i) The number of space stations, ~~and~~ the number of orbital planes, and the number of space stations in each orbital plane,
- (ii) The inclination of the orbital plane(s),
- (iii) The orbital period,
- (iv) The apogee,
- (v) The perigee,
- (vi) The argument(s) of perigee,
- (vii) Active service arc(s),
- (viii) Right ascension of the ascending node(s), and
- (ix) For each satellite in each orbital plane, the initial phase angle at the reference time;

(7) The frequency bands, types of services, and the coverage areas;

(8) Calculated maximum power flux density levels within each coverage area and energy dispersal bandwidths, if any, needed for compliance with § 25.208, for angles of arrival of 5°, 10°, 15°, 20°, and 25° above the horizontal;

(9) [Reserved]

(10) Estimated operational lifetime;

- (11) Whether the space station is to be operated on a common carrier basis;
- (12) [Reserved]
- (13) The ~~cross-polarization isolation number for purposes of information for determining compliance with~~ §§ 25.210(~~ca~~)(1), (~~a~~)(3), and (i);
- * * * * *
- (d) * * *
- (1) Overall description of ~~system facilities, operations and~~ services and explanation of how uplink frequency bands can be connected to downlink frequency bands;
- (2) [Reserved]
- (3) ~~[Reserved] For satellites with large numbers of identical fixed spot beams, other than DBS satellites, applicants may, as an alternative to submitting the information described in paragraph (c)(4)(vi) above with respect to these beams, provide the predicted antenna gain pattern for one transmit and receive antenna beam, along with one of the following: (i) a map showing all of the spot beams depicted on the surface of the Earth; (ii) a table identifying the beam boresight locations in latitude and longitude to the nearest 0.1 degree; or (iii) a map of the isolines formed by combining some or all of the spot beams into one composite beam;~~
- (4) [Reserved]
- (5) Calculat~~ed~~~~ion of~~ maximum power flux density levels within each coverage area and ~~of the~~ energy dispersal bandwidth, if any, needed for compliance with § 25.208, for angles of arrival other than 5°, 10°, 15°, 20°, and 25° above the horizontal;
- * * * * *
- (7) Applicants for authorizations for space stations in the Fixed-Satellite Service must also include the information specified in § 25.140(b)(2) of this part. Applicants for authorizations for space stations in the 17/24 GHz Broadcasting-Satellite Service must also include the information specified in §~~§~~ 25.140(b)(3), (b)(4), (b)(5), or (b)(6) of this part;
- * * * * *
- (10) Applications for space station authorizations in the 1.6/2.4 GHz Mobile-Satellite Service must also provide all information required by § 25.143(b);
- * * * * *
- (11) Applications for space stations in the Direct Broadcast Satellite Service must include a clear and detailed statement of whether the space station is to be operated on a broadcast or non-broadcast basis;

* * * * *

(13) For satellite applications in the Direct Broadcast Satellite Service, if the proposed system's technical characteristics differ 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 of the ITU Radio Regulations, each applicant must provide:

(i) The information requested in Appendix 4 of the ITU Radio Regulations. Further, applicants must provide sufficient technical showing that the proposed system could operate satisfactorily if all assignments in the BSS and feeder link Plans were implemented.

(ii) Analyses of the proposed system with respect to the limits in Annex 1 to Appendices 30 and 30A of the ITU Radio Regulations;

(14) * * *

(iv) A statement detailing the post-mission disposal plans for the space station at end of life, including the quantity of fuel—if any—that will be reserved for post-mission disposal maneuvers. For geostationary-Earth orbit space stations, the statement must disclose the altitude selected for a post-mission disposal orbit and the calculations that are used in deriving the disposal altitude. The statement must also include a casualty risk assessment if planned post-mission disposal involves atmospheric re-entry of the space station. In general, an assessment should include an estimate as to whether portions of the spacecraft will survive re-entry and reach the surface of the Earth, as well as an estimate of the resulting probability of human casualty.

Applicants for space stations to be used only for commercial remote-sensing may, in lieu of submitting detailed post-mission disposal plans to the Commission, certify that they have submitted such plans to the National Oceanic and Atmospheric Administration for review.

(15) Each applicant for a space station license in the 17/24 GHz broadcasting-satellite service shall include the following information as an attachment to its application:

(i) Except as set forth in paragraph (d)(15)(ii) of this section, an applicant proposing to operate in the 17.3-17.7 GHz frequency band, must ~~certify~~provide a demonstration that the proposed space station will comply with the power flux density limits set forth in § 25.208(w) of this part.

(ii) In cases where the proposed space station will not comply with the power flux density limits set forth in § 25.208(w) of this part, the applicant will be required to provide a certification that all potentially affected parties acknowledge and do not object to the use of the applicant's higher power flux densities. The affected parties with whom the applicant must coordinate are those GSO 17/24 GHz BSS satellite networks located up to $\pm 6^\circ$ away for excesses of up to 3 dB above the power flux-density levels specified in § 25.208(w) of this part, and up to $\pm 10^\circ$ away greater for excesses greater than 3 dB above those levels.

(iii) An applicant proposing to provide international service in the 17.7-17.8 GHz band must ~~demonstrate~~certify that it will meet the power flux density limits set forth in § 25.208(c) of this part.

	<p>(iv) * * *</p> <p>* * * * *</p>
<p>II.A.1 (for subsection (k)), II.G.5 (for subsections (a)(2) and (a)(3). II.G.11 (for subsection (h))</p>	<p><u>§ 25.115 Application for earth station authorizations.</u></p> <p>(a)(1) * * *</p> <p>(2) Unless the Commission orders otherwise, an application for transmitting earth stations in the Fixed-Satellite Service that meets all of the following criteria will be deemed granted 35 days after the date of the public notice that the application has been accepted for filing, provided no petition to deny or other objection under §25.154(a) is filed during the 30-day notice period. Applicants for licenses for transmitting earth stations in the Fixed-Satellite Service may file on Form 312EZ if all of the following criteria are met:</p> <p>(i) the application is for a single station with only one transmitting antenna;</p> <p>(ii) the earth station <u>antenna(s)</u> will transmit <u>to geostationary space stations</u> in the 5925-6425 MHz band, the 14.0-14.5 GHz band, or the 28.35-28.6 GHz <u>band</u>, and/or <u>the</u> 29.25-30.0 GHz band;</p> <p><u>(ii) if the station will transmit in the 5925-6425 MHz band, the application is for a single station with only one transmitting antenna;</u></p> <p>(iii) the earth station will not be installed in ships, aircraft, or other moving vehicles and operated while the vehicles are in motion;</p> <p>(iv) the equivalent diameter of the proposed antenna is 4.5 meters or greater if the station will transmit in the 5925-6425 MHz band or 1.2 meters or greater if the station will transmit in the 14.0-14.5 GHz band;</p> <p>(iv) if the station will transmit in the 5925-6425 MHz band or the 14.0-14.5 GHz band, the performance of the proposed antenna comports with the standards in § 25.209(a) and (b) and is verified in accordance with applicable provisions of § 25.132;</p> <p>(v) if the station will transmit in the 5925-6425 MHz band or the 14.0-14.5 GHz band, off-axis EIRP density will not exceed the levels specified in §25.218; input power to the antenna will not exceed applicable limits specified in §§ 25.211 and 25.212;</p> <p>(vi) if the station will transmit in the 28.35-28.6 GHz and/or 29.25-30.0 GHz band, off-axis EIRP density will not exceed the levels specified in § 25.138(a);</p> <p>(vi) if the station will transmit in the 28.35-28.6 GHz and/or 29.25-30.0 GHz band, off-axis EIRP density will not exceed the levels specified in § 25.138(a);</p> <p>(vii) <u>if the station will transmit in the 5925-6425 MHz band,</u> operation of the proposed station has been successfully coordinated with terrestrial systems, if the station would transmit in the 5925-6425 MHz band;</p> <p>(viii) the applicant has provided an environmental impact statement pursuant to § 1.1311 of the Commission's rules, if required; and</p> <p>(ix) the applicant does not propose to communicate via non-U.S.-licensed satellites unless such satellites have been granted U.S. market access and the applicant proposes to operate within the conditions of such market access grants not on the Permitted</p>

List.

~~(3) The procedure in paragraph (a)(2) of this section will not apply unless the applicant has provided all relevant certifications pertaining to paragraph (a)(2) of this section in its application filed on FCC Form 312. Unless the Commission orders otherwise, an application filed on Form 312EZ in accordance with paragraph (a)(2) of this section will be deemed granted 35 days after the date of the public notice that the application has been accepted for filing, provided no objection is filed during the 30-day notice period.~~

~~(4) * * *~~

~~* * * * *~~

(d) Mobile-Satellite Service user transceivers need not be individually licensed. Service vendors may file blanket applications for such transceivers using FCC Form 312, Main Form and Schedule B, specifying the number of units to be covered by the blanket license. A blanket license application for 1.5/1.6 GHz MSS user transceivers must include an explanation of how the applicant will comply with the priority and preemptive access requirements in § 25.287 of this chapter.

(e) Earth stations operating in the Fixed-Satellite Service in the 20/30 GHz band: License applications for Fixed-Satellite Service earth stations that would communicate via geostationary satellites in the 18.3-20.2 GHz and 28.35-30.0 GHz bands must include the information required by § 25.138. Such earth stations may be licensed on a blanket basis. An application for a blanket license for such earth stations must specify the number of terminals to be covered by the license.

~~* * * * *~~

(h) Any earth station applicant filing an application pursuant to § 25.218 of this chapter must ~~file three tables showing the off-axis EIRP level of the proposed earth station antenna of the plane of the geostationary orbit, the elevation plane, and towards the horizon. In each table, the EIRP level must be provided at increments of 0.1° for angles between 0° and 10° off-axis, and at increments of 5° for angles between 10° and 180° off-axis.~~

~~(1) For purposes of the off-axis EIRP table in the plane of the geostationary orbit, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the target satellite, within the plane determined by the focal point of the antenna and the line tangent to the arc of the geostationary satellite orbit at the position of the target satellite.~~

~~(2) For purposes of the off-axis EIRP table in the elevation plane, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the target satellite, within the plane perpendicular to the plane determined by the focal point of the antenna and the line tangent to the arc of the geostationary satellite orbit at the position of the target satellite.~~

~~(3) For purposes of the off-axis EIRP table towards the horizon, the off-axis angle is the angle in degrees from the line determined by the intersection of the horizontal plane and the elevation plane described in paragraph (h)(2) of this section, in the horizontal~~

	<p>plane. The horizontal plane is the plane determined by the focal point of the antenna and the horizon.</p> <p>(4) In addition, in an attachment to its application, the earth station applicant must certify that it will limit its pointing error to 0.5°, or demonstrate that it will comply with the applicable off-axis EIRP envelopes in § 25.218 of this part when the antenna is mispointed at its maximum pointing error.</p> <p>(j) An application for a new fixed earth station or modification involving alteration of the overall height of one or more existing earth station antenna structures must include the FCC Antenna Structure Registration Number(s) for the antenna structure(s), if assigned. If no such number has been assigned, the application must state whether prior FAA notification is required by Part 17 of this chapter and, if so, whether the applicant or owner of the structure has notified the FAA of the proposed construction or alteration and applied for an Antenna Structure Registration Number in accordance with Part 17. Applicants who maintain that prior FAA notification is not required for construction or alteration of a structure with overall height more than 6.1 meters above ground level must explain in the application why such prior notification is not required.</p> <p><u>(k) (1) Applicants for Fixed-Satellite Service earth stations that qualify for routine processing in the C-, Ku-, and 20/30 GHz bands may designate the Permitted Space Station List as a point of communication. Once such an application is granted, the earth station operator may communicate with any space station on the Permitted Space Station List, provided that the communications fall within the technical parameters and conditions established in the earth station license and any limitations placed on the space station authorization or noted in the Permitted Space Station List.</u></p> <p><u>(2) Notwithstanding paragraph (k)(1) of this section, the operator of an earth station that qualifies for routine processing in the 20/30 GHz bands may not communicate with a space station on the Permitted Space Station List in the 18.3-18.8 GHz or 19.7-20.2 GHz band until the space station operator has completed coordination under Footnote US334 to § 2.106.</u></p> <p><u>(l) Applicants for operation of an earth station, other than an ESV or a VMES, that will operate with a geostationary satellite or non-geostationary satellite in a shared frequency band in which the non-geostationary system is (or is proposed to be) licensed for feeder links shall provide the information called for in § 25.203(k). In addition, applicants for non-geostationary 1.6/2.4 GHz Mobile-Satellite Service/Radiodetermination satellite service feeder links in the 20/30 GHz bands shall provide the information called for, as applicable, in §§ 25.203(j) and 25.258(c).</u></p>
II.G.6	<p><u>§ 25.118 Modifications not requiring prior authorization.</u></p> <p>(a) * * *</p> <p>(2) Except for replacement of equipment where the new equipment is electrically identical to the existing equipment, an authorized earth station licensee may add, change or replace transmitters or antenna facilities without prior authorization, provided:</p> <p> (i) The added, changed, or replaced facilities conform to any applicable requirements in § 25.209;</p> <p>* * * * *</p>

	<p>(3) Unless otherwise restricted in the license, earth station licensees may increase the number of Aauthorized VSAT earth station operators may add VSAT remote terminals, <u>blanket-licensed earth stations (including blanket-licensed earth stations used to support mobile applications in the FSS bands), and mobile earth stations in the mobile-satellite service,</u> without prior authorization, provided that they have complied with all other conditions of the initial authorization<u>applicable frequency coordination procedures in accordance with §25.251.</u></p> <p>* * * * *</p> <p>(5) Earth station operators may change their points of communication without prior authorization, provided that the <u>earth station operator does not repoint its antenna and that (i) the change results from a space station license modification described in paragraph (e) of this section, or (ii) the new point of communication is a space station operated by the operator of the original point of communication within +/- 0.15 degrees of longitude at the same location, with authority to serve the U.S., and does not entail any increase in earth station EIRP or EIRP density (both main lobe and side lobe), or transmitted power</u>and the earth station operator does not repoint its antenna. Otherwise, any modification of an earth station license to add or change a point of communication will be considered under §25.117.</p> <p>* * * * *</p> <p>(e) * * *</p> <p>(5) The space station licensee certifies that it has completed any necessary coordination of its space station at the new location with other potentially affected space station operators, including coordination of station-keeping volume.</p> <p>* * * * *</p> <p>(8) A DBS space station licensee must certify that there will be no increase in interference due to the operations of the relocated space station that would require the Commission to submit a proposed modification to the ITU Appendix 30 Broadcasting-Satellite Service (“BSS”) Plan and/or the Appendix 30A feeder link Plan to the ITU Radiocommunication Bureau.</p>
<p>II.G.7 II.B (for reference to §25.173(b))</p>	<p><u>§ 25.121 License term and renewals.</u></p> <p>* * * * *</p> <p>(d) <u>Space stations.</u> (1) For geostationary-orbit space stations, the license term will begin at 3 a.m. Eastern Time on the date when the licensee certifies pursuant to § 25.173(b) of this chapter that the space station has been successfully placed into orbit at its assigned orbital location for a continuous period of 90 days and that <u>the space station is capable of using its assigned frequencies in conformity with its operations fully conform to</u> the terms and conditions of the space station authorization.</p> <p>(2) For non-geostationary orbit space stations, the license period will begin at 3 a.m. Eastern Time on the date when the licensee certifies pursuant to § 25.173(b) that operation of an initial space station in its authorized orbit is <u>fully capable of operations</u> compliant with the license terms and conditions. Operating authority for all space stations subsequently launched <u>and placed into</u></p>

	<p><u>their authorized orbits</u> pursuant to the license will terminate upon expiration of the license.</p> <p>(e) <i>Renewal of licenses.</i> Applications for renewals of earth station licenses must be submitted on FCC Form 312R no earlier than 90 days, and no later than 30 days, before the expiration date of the license. Applications for space station system replacement authorization for non-geostationary orbit satellites shall be filed no earlier than 90 days, and no later than 30 days, prior to the end of the twelfth year of the existing license term. <u>In each case, the Bureau shall provide notice of the impending expiration, by post or electronic means, to the licensee no later than 90 days before the expiration date of the license.</u></p> <p><u>*****</u></p>
No SIA Proposal	<p><u>§ 25.129 Equipment authorization for portable earth-station transceivers.</u></p> <p><u>*****</u></p> <p>(c) In addition to the information required by § 1.1307(b) and § 2.1033(c) of this chapter, applicants for certification required by this section must submit any additional equipment test data necessary to demonstrate compliance with pertinent standards for transmitter performance prescribed in § 25.138, § 25.202(f), § 25.204, § 25.209, and § 25.216, must submit the statements required by § 2.1093(c) of this chapter, and must demonstrate compliance with the labeling requirement in § 25.285(b).</p> <p><u>*****</u></p>
II.G.9	<p><u>§ 25.130 Filing requirements for transmitting earth stations.</u></p> <p>(a) Applications for a new or modified transmitting earth station facility shall be submitted on FCC Form 312, and associated Schedule B, accompanied by any required exhibits, except for those earth station applications filed on FCC Form 312EZ pursuant to § 25.115(a). All such earth station license applications must be filed electronically through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter. Additional filing requirements for Earth Stations on Vessels are described in §§ 25.221 and 25.222. Additional filing requirements for Vehicle-Mounted Earth Stations are described in § 25.226. In addition, applicants not required to submit applications on Form 312EZ, other than ESV or VMES applicants, must submit the following information to be used as an “informative” in the public notice issued under § 25.151 as an attachment to their application:</p> <p>(1) A detailed description of the service to be provided, including frequency bands and satellites to be used. The applicant must identify either the specific satellite(s) with which it plans to operate, or the eastern and western boundaries of the arc it plans to coordinate.</p> <p>(2) The diameter or equivalent diameter of the antenna.</p> <p>(3) Proposed power and power density levels.</p> <p>(4) Identification of any random access technique, if applicable.</p>

	<p>(5) Identification of a specific rule or rules for which a waiver is requested.</p> <p>* * * * *</p> <p>(e) [Reserved]</p> <p>* * * * *</p> <p>(g) Parties may apply for a single earth station license covering operation of multiple fixed antennas transmitting in frequency bands shared with terrestrial services on a co-primary basis if the proposed antennas will all be sited within an area bounded by one second of latitude and one second of longitude. Parties may apply for a single earth station license covering operation of multiple fixed antennas transmitting in frequency bands not shared with terrestrial services if the proposed antennas will all be sited within an area bounded by 10 seconds of latitude and 10 seconds of longitude. These restrictions do not apply to network applications filed pursuant to § 25.134, blanket applications for 20/30 GHz earth stations, or blanket applications filed pursuant to § 25.221, § 25.222, or § 25.226 of this chapter.</p>
II.G.10	<p><u>§ 25.131 Filing requirements and registration for receive-only earth stations.</u></p> <p>* * * * *</p> <p>(b) Receive-only earth stations in the Fixed-Satellite Service that operate with U.S.-licensed satellites, or that operate with non-U.S.-licensed satellites that have been granted market access to the United States on the Permitted Space Station List in accordance with paragraph (j) of this section, 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 in accordance with the procedures of §§ 25.203 and 25.251, subject to the stricture in § 25.209(e).</p> <p>* * * * *</p> <p>(j) * * *</p> <p>(2) Operators of receive-only earth stations used to receive transmissions from non-U.S.-licensed space stations that have been granted market access to the United States on the Permitted Space Station List need not file for licenses, provided that the space station operator and earth station operator comply with all applicable rules in this chapter and with the applicable conditions in the space station authorization<u>Permitted Space Station List</u>.</p>
II.G.11	<p><u>§ 25.132 Verification of earth station antenna performance standards.</u></p> <p>(a) (1) Except for applications for 20/30 GHz earth stations communicating with geostationary-orbit space stations subject to § 25.138 of this chapter and applications subject to the requirement in paragraph (b)(3) of this section, applications for transmitting earth stations in the Fixed-Satellite Service, including feeder-link stations, must include a certification that (i) the applicant has reviewed the results of a series of radiation pattern tests performed by the antenna manufacturer on representative equipment in representative configurations or the antenna manufacturer's representation as to the result of such tests, and either (ii) the test results demonstrate that the equipment meets the performance standards in § 25.209 <u>as measured in accordance with paragraph</u></p>

	<p>(b)(1) of this section, or (ii) the tested antenna performance, taking into account the applicant's proposed antenna input power spectral density levels, is consistent with either applicable off-axis EIRP density standards in Part 25 or with coordinated off-axis EIRP density limits. The licensee must be prepared to submit the antenna radiation pattern measurements to the Commission on request.</p> <p>(2) Applicants for transmitting earth stations communicating with geostationary-orbit space stations in the 20/30 GHz band must provide the antenna measurements specified in §§ 25.138(d) and (e).</p> <p>(b)(1) In order to demonstrate compliance with § 25.209 (a) and (b), the following measurements on a production antenna performed on calibrated antenna range, as a minimum, shall be made at the bottom, middle and top of each allocated frequency band and submitted to the Commission:</p> <p>(i) Co-polarized patterns for each of two orthogonal senses of polarizations in two orthogonal cuts of the antenna.</p> <p>(A) In the azimuth plane, plus and minus 107 degrees and plus and minus 180 degrees.</p> <p>(B) In the elevation plane, zero to thirtyfourty five degrees.</p> <p>(ii) Cross-polarization patterns in the E and H planes, plus and minus 9-10 degrees.</p> <p>(iii) Main beam gain.</p> <p>***</p> <p>(3) Except as provided in paragraph (d) of this section, applicants seeking authority to operate a Fixed-Satellite Service earth station pursuant to the requirements in § 25.218, § 25.220, § 25.221, § 25.222, § 25.223 or § 25.226, must submit a copy of the manufacturer's range test plots of the antenna gain patterns specified in paragraph (b)(1) of this section.</p> <p>* * * * *</p> <p>(d) For each new or modified transmitting antenna over 3 meters in diameter, except antennas subject to measurement under § 25.138(d) of this chapter, the following on-site verification measurements must be completed at one frequency on an available transponder in each frequency band of interest and submitted to the Commission. * * *</p> <p>* * * * *</p>
II.G.12	<p><u>§ 25.133 Period of construction; certification of commencement of operation.</u></p> <p>(a)(1) Each initial license for an earth station governed by this part, except for blanket licenses, will specify as a condition therein the period in which construction of facilities must be completed and station operation commenced. * * *</p> <p>(2) Each initial license for blanketmobile earth stations will specify as a condition therein the period in which station operation must be commenced. * * *</p> <p>(b)(1) Each initial license for a transmitting earth station subject to this part, except for blanket-licensed earth stations, will also</p>

	<p>specify as a condition therein that upon completion of station construction, the licensee must file with the Commission a certification containing the following information:</p> <p>(i) * * *</p> <p>(v) A certification that the facility as authorized has been completed and that each antenna has been tested and found to perform within 2 dB of the pattern specified in § 25.209 or other applicable <u>authorized</u> pattern;</p> <p>* * * * *</p>
<p>II.G.13 II.J (for §25,134(i))</p>	<p><u>§ 25.134 Licensing provisions for 12/14 GHz Band Very Small Aperture Terminal (VSAT) and C-band Small Aperture Terminal (CSAT) networks.</u></p> <p>(a)(1) [Reserved]</p> <p>* * * * *</p> <p>(b) <u>VSAT networks operating in the 12/14 GHz band.</u> An applicant for a VSAT network authorization proposing to operate with <u>off-axis EIRP density levels transmitted power spectral density and/or antenna input power</u> in excess of the <u>applicable</u> values specified in <u>§ 25.218 paragraph (g) of this section</u> must comply with the procedures set forth in § 25.220.</p> <p>(c) {Reserved} <u>Applications for VSAT operation in the 12/14 GHz bands that specify antennas that comply with § 25.218 will be routinely processed, without regard to equivalent antenna diameter, if the maximum GSO FSS satellite EIRP spectral density of the digital modulated emission does not exceed 10 dB(W/4kHz) for all methods of modulation and accessing techniques, and if the maximum GSO FSS satellite EIRP spectral density for analog carriers does not exceed +17.0 dB(W/4kHz).</u></p> <p>* * * * *</p> <p>(e) VSAT networks operating in the 12/14 GHz bands may use more than one hub earth station, and the hubs may be sited at different locations.</p> <p>(f) 12/14 GHz VSAT operators may use temporary fixed earth stations as hub earth stations or remote earth stations in their networks, but must specify, in their license applications, the number of temporary fixed earth stations they plan to use.</p> <p>(g) Applications for VSAT operation in the 12/14 GHz bands that meet the following requirements will be routinely processed: (1) Equivalent antenna diameter is 1.2 meters or more and the application includes certification of conformance with antenna performance standards pursuant to § 25.132(a)(1) of this chapter.</p> <p>(2) The maximum transmitter power spectral density of a digital modulated carrier into any GSO FSS earth station antenna must not exceed $-14.0 - 10\log(N)$ dB(W/4 kHz). For a VSAT network using frequency division multiple access (FDMA) or time division multiple access (TDMA) technique, N is equal to one. For a VSAT network using code division multiple access (CDMA) technique, N is the maximum number of co-frequency simultaneously transmitting earth stations in the same satellite receiving beam.</p>

	<p>(3) The maximum GSO FSS satellite EIRP spectral density of the digital modulated emission must not exceed 10 dB(W/4kHz) for all methods of modulation and accessing techniques.</p> <p>(4) The maximum transmitter power spectral density of an analog carrier into any GSO FSS earth station antenna must not exceed -8.0 dB(W/4kHz) and the maximum GSO FSS satellite EIRP spectral density must not exceed +17.0 dB(W/4kHz).</p> <p>(5) Any earth station applicant filing an application to operate a VSAT network in the 12/14 GHz bands and planning to use a contention protocol must certify that its contention protocol usage will be reasonable.</p> <p>(h) VSAT operators licensed pursuant to this section are prohibited from using remote earth stations in their networks that are not designed to stop transmission when synchronization to signals from the target satellite fails.</p> <p><u>(i) Applicants for new or modified authorizations for VSAT earth station networks operating in the 14.0-14.5 GHz band with a maximum earth station EIRP of 50 dBW or less are not required to submit any technical parameters other than the maximum EIRP, provided that they certify that the proposed terminals will comply with all applicable Part 25 operational and technical requirements, including paragraphs (c) and (g) of this section. Applicants may apply for authority under this paragraph for terminals not complying with §§ 25.134(c) and (g), provided that they submit all of the information called for in Section 25.220(d) of these rules.</u></p>			
No SIA Proposal	<p><u>§ 25.135 Licensing provisions for earth station networks in the non-voice, non-geostationary Mobile-Satellite Service.</u></p> <p>* * * * *</p> <p>(b) [Reserved]</p> <p>(c) Transceiver units in this service are authorized to communicate with and through U.S.-authorized space stations only.</p>			
No SIA Proposal	<p><u>§ 25.136 [Reserved]</u></p>			
<p>II.G.5 (for bands)</p> <p>II.G.11 (for alignment of (d)(1) and §25.132(b)(1))</p> <p>II.G.15 (for (a) and (b))</p> <p>II.J (for §25.134(h))</p>	<p><u>§ 25.138 Licensing requirements for GSO FSS Earth Stations in 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) bands</u></p> <p>(a) Applications for earth station licenses in the GSO FSS in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands that meet the following requirements will be routinely processed:</p> <p>(1) GSO FSS earth station antenna off-axis EIRP spectral density for co-polarized signals shall not exceed the following values, within $\pm 3^\circ$ of the GSO arc, under clear sky conditions:</p> <table border="1" data-bbox="409 1307 1942 1388"> <tr> <td data-bbox="409 1307 1060 1388">32.5<u>18.5</u>-25log(θ)-10log(N)</td> <td data-bbox="1060 1307 1417 1388">dBW/<u>1 MHz</u>40kHz</td> <td data-bbox="1417 1307 1942 1388">for $2.0^\circ \leq \theta \leq 7^\circ$</td> </tr> </table>	32.5 <u>18.5</u> -25log(θ)-10log(N)	dBW/ <u>1 MHz</u> 40kHz	for $2.0^\circ \leq \theta \leq 7^\circ$
32.5 <u>18.5</u> -25log(θ)-10log(N)	dBW/ <u>1 MHz</u> 40kHz	for $2.0^\circ \leq \theta \leq 7^\circ$		

11.37 - 2.63 -10log(N)	dBW/ 1 MHz 40kHz	for $7^\circ \leq \theta \leq 9.23^\circ$
35.5 21.5 -25log(θ)-10log(N)	dBW/ 40kHz 1 MHz	for $9.23^\circ \leq \theta \leq 48^\circ$
3.5 - 10.5 -10log(N)	dBW/ 1 MHz 40kHz	for $48^\circ < \theta \leq 180^\circ$

Where:

θ is the angle in degrees from the axis of the main lobe; ~~F~~for systems where more than one earth station is expected to transmit simultaneously in the same bandwidth, e.g., CDMA systems, N is the likely maximum number of simultaneously transmitting co-frequency earth stations in the receive beam of the satellite; N=1 for TDMA and FDMA systems.

(2) GSO FSS earth station antenna off-axis EIRP spectral density for co-polarized signals shall not exceed the following values, for all directions other than within $\pm 3^\circ$ of the GSO arc, under clear sky conditions:

21.5 35.5 -25log(θ)-10log(N)	dBW/ 1 MHz 40kHz	for $3.5^\circ \leq \theta \leq 7^\circ$
14.37 0.37 -10log(N)	dBW/ 1 MHz 40kHz	for $7^\circ < \theta \leq 9.23^\circ$
38.5 24.5 -25log(θ)-10log(N)	dBW/ 1 MHz 40kHz	for $9.23^\circ < \theta \leq 48^\circ$
-6.57 .5 -10log(N)	dBW/ 1 MHz 40kHz	for $48^\circ < \theta \leq 180^\circ$

Where:

θ : is the angle in degrees from the axis of the main lobe; ~~F~~for systems where more than one earth station is expected to transmit simultaneously in the same bandwidth, e.g., CDMA systems; ~~N~~ is the likely maximum number of simultaneously transmitting co-frequency earth stations in the receive beam of the satellite; N=1 for TDMA and FDMA systems.

(3) The values given in paragraphs (a) (1) and (2) of this section may be exceeded by 3 dB, for values of $\theta > 10^\circ$, provided that the total angular range over which this occurs does not exceed 20° when measured along both sides of the GSO arc.

(4) GSO FSS earth station antenna off-axis EIRP spectral density for cross-polarized signals shall not exceed the following values, in all directions relative to the GSO arc, under clear sky conditions:

<u>22.58.5</u> -25log(θ)-10log(N)	dBW/ <u>1 MHz</u> <u>40 kHz</u>	For	$2.0^\circ < \theta \leq 7.0^\circ$
<u>1.37</u> - <u>12.63</u> -10log(N)	dBW/ <u>1 MHz</u> <u>40 kHz</u>	For	$7.0^\circ < \theta \leq 9.23^\circ$

where θ is the angle in degrees from the axis of the main lobe. For systems where more than one earth station is expected to transmit simultaneously in the same bandwidth, *e.g.*, CDMA systems, N is the likely maximum number of simultaneously transmitting co-frequency earth stations in the receive beam of the satellite. N=1 for TDMA and FDMA systems.

~~***~~

~~(5) [Reserved] An applicant for an earth station license under paragraph (a) of this section and using variable power-density control of individual simultaneously transmitting co-frequency earth stations in the receive beam of the satellite shall make a detailed showing of the measures it intends to employ to maintain the effective aggregate EIRP-density from all simultaneously transmitting co-frequency terminals at least 1 dB below the applicable EIRP-density limits. In this context the term “effective” means that the resultant co-polarized and cross-polarized EIRP-density experienced by any GSO satellite shall not exceed that produced by a single earth station transmitter operating at 1 dB below the applicable EIRP-density limits. The International Bureau will place this showing on public notice along with the application.~~

~~*****~~

~~(b)(1) An application proposing levels in excess of those specified in paragraph (a) of this section must demonstrate that the higher proposed power is necessary to close the communications link and include one of the following: (i) an interference analysis, demonstrating that the proposed operation is compatible with operation of other authorized or proposed systems communicating via space stations within 6 degrees of the proposed satellite point(s) of communication, providing details of its proposed radio frequency carriers which it believes should be taken into account in this analysis, and including, for each such radio frequency carrier, the link noise budget, modulation parameters, and overall link performance analysis; or (ii) certification by the applicant that operators of all co-frequency GSO FSS space stations within 6 degrees of the proposed satellite point(s) of communication have acknowledged awareness of the applicant’s proposed operation with the higher power densities and stated that they have no objection to such operation.~~

~~(2) Notwithstanding paragraph (b)(1) of this section, a party applying for an earth station license pursuant to this section will not be required to certify that its target satellite operator has reached a coordination agreement with another satellite operator whose satellite is within 6° of orbital separation from its satellite in cases where the off-axis EIRP density level of the proposed earth station operations will be less than or equal to the levels specified by the applicable off-axis EIRP envelope set forth in paragraph (a) of this section in the direction of the part of the geostationary orbit arc within 1° of the nominal orbit location of the adjacent satellite.~~

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(c) Licensees authorized pursuant to paragraph (b) of this section shall bear the burden of coordinating with any future applicants or present or future licensees whose proposed compliant operations at 6 degrees or smaller orbital spacing, as defined by paragraph (a) of this section, ~~is~~ are potentially or actually adversely affected by the operation of the non-compliant licensee. Licensees authorized pursuant to paragraph (b) of this section shall also bear the burden of coordinating with any present or future licensees whose proposed compliant operations at orbital spacings greater than 6 degrees, as defined by paragraph (a) of this section, are actually adversely affected by the operation of the non-compliant licensee. If no good faith agreement can be reached, however, the non-compliant licensee shall reduce its earth station and space station power density levels to be compliant with those specified in paragraph (a) of this section.

(d)(1) The applicant must provide, for each earth station antenna type, a series of radiation patterns measured on a production antenna. The measurements must be performed on a calibrated antenna range and, at a minimum, must be made at the bottom, middle, and top frequencies of each requested uplink band. The radiation patterns are:

(i) Co-polarized patterns for each of two orthogonal senses of polarization s in two orthogonal cutsplanes of the antenna.

(A) In the azimuth plane, plus and minus 10 degrees and plus and minus 180 degrees.

(B) In the elevation plane, 0 to 30 degrees.

(ii) Cross-polarization patterns ~~in the E and H planes~~, plus and minus 10 degrees.

(iii) Main beam gain.

(2)(i) The tests specified in paragraph (d)(1) of this section are normally performed at the manufacturer's facility; but for antennas more than 3 meters in diameter that will only be assembled on-site, on-site measurements may be used for product qualification data. If on-site data is to be used for qualification, the test frequencies and number of patterns should follow, where possible, the requirements in paragraph (d)(1) of this section for at least one frequency.

(ii) Certification that the testing required by paragraph (d)(2)(i) of this section has been satisfactorily performed must be included with the certification filed pursuant to § 25.133(b).

(e) Protection of downlink reception from adjacent satellite interference is based on either the antenna performance specified in § 25.209 (a) and (b), or the actual receiving earth station antenna performance, if actual performance provides greater isolation from adjacent satellite interference. For purposes of ensuring the correct level of protection, the applicant must provide, for each earth station antenna type, antenna performance plots for the 18.3-18.8 GHz and 19.7-20.2 GHz bands in the format prescribed in paragraph (d) of this section.

(f) The holder of a blanket license pursuant to this section will be responsible for operation of any transceiver to receive GSO FSS service provided by that licensee or provided by another party with the blanket licensee's consent. Operators of GSO FSS space stations operating in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands must not transmit

	<p>communications to or from user transceivers in the United States unless such communications are authorized under a service contract with the holder of a pertinent FCC blanket license or under a service contract with another party with authority for such transceiver operation delegated by such a blanket licensee.</p> <p>(g) [Reserved] A licensee applying for renewal of a license issued pursuant to this section must specify on FCC Form 312R the number of constructed earth stations.</p> <p>(h) Notwithstanding the provision of paragraphs (b), (d), and (e) of this section, applicants for new or modified authorizations for earth stations operating in the 28.35-28.6 GHz and 29.5-30.0 GHz bands with a maximum earth station EIRP of 50 dBW or less are not required to submit any technical parameters other than the maximum EIRP. Applicants for authority under this subsection must certify that the proposed terminals will comply with all applicable Part 25 operational and technical requirements, including paragraph (a) of this section. Applicants may apply for authority under this subsection for terminals not complying with § 25.138(a), provided that they certify that all potentially affected parties (i.e., those GSO FSS satellite networks that are within +/- 6 degrees away from the proposed point of communication) acknowledge and do not object to the use of the applicant's higher power densities. Paragraph (c) of this section shall apply to non-compliant earth stations authorized under this paragraph.</p>
II.G.16	<p><u>§ 25.140 Further requirements for license applications for geostationary space stations in the Fixed-Satellite Service and the 17/24 GHz Broadcasting-Satellite Service.</u></p> <p>* * * * *</p> <p>(b) Each applicant for a license for an FSS space station <u>in geostationary orbit</u> or <u>a 17/24 GHz Broadcasting-Satellite Service</u> space station must provide the following information, in addition to that required by § 25.114:</p> <p>(1) [Reserved]</p> <p>(2) Except as set forth in paragraphs (b)(3), (b)(4), (b)(5), and (b)(6) of this section, applicants must provide an interference analysis to demonstrate the compatibility of their proposed system with respect to authorized space stations within 2 degrees of any proposed satellite point of communication. An applicant should provide details of its proposed radio frequency carriers which it believes should be taken into account in this analysis. At a minimum, the applicant 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: DA 03-3863 and DA 04-1708.)</p> <p>* * * * *</p>
No SIA Proposal	<u>§ 25.142 [Amended]</u>
No SIA Proposal	<u>§ 25.143 [Amended]</u>
No SIA	<u>§ 25.144 [Amended]</u>

Proposal	
II.G.18	<p><u>§ 25.145 [Amended]</u></p> <p>* * * * *</p> <p>(f)(4) * * *</p> <p>(2) Licensees shall submit to the Commission a yearly report indicating the number of earth stations actually brought into service under its blanket licensing authority. The annual report is due to the Commission no later than the first day of April of each year and shall indicate the deployment figures for the preceding calendar year.</p> <p>(g) Policy governing the relocation of terrestrial services from in the 18.3 to 19.3 GHz band. Frequencies in the 18.3-19.3 GHz band listed in parts 21, 74, 78, and 101 of this chapter have been reallocated for primary use by the Fixed-Satellite Service, subject to various provisions for the existing terrestrial licenses. Fixed-Satellite Service operations are not entitled to protection from the former co-primary operations in this frequency band until after the period during which terrestrial stations remain co-primary has expired. (see §§ 21.901(e), 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r) of this chapter).</p> <p>* * * * *</p>
No SIA Proposal	<p><u>§ 25.146 [Amended]</u></p>
No SIA Proposal	<p><u>§ 25.149 Application requirements for ancillary terrestrial components in the Mobile-Satellite Service networks operating in the 1.5/1.6 GHz, 1.6/2.4 GHz and 2 GHz Mobile-Satellite Service.</u></p> <p>(a) * * *</p> <p>(1) ATC must 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 2 GHz MSS band, the 1.5/1.6 GHz MSS bands, and the 1.6/2.4 GHz MSS bands.</p> <p>NOTE TO PARAGRAPH (a)(1): A 1.5/1.6 GHz 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.</p> <p>(2) * * *</p> <p>(ii) In the 1.5/1.6 GHz MSS bands, ATC operations are limited to the frequency assignments authorized and internationally coordinated for the MSS system of the MSS licensee that seeks ATC authority.</p> <p>(iii) In the 1.6/2.4 GHz MSS 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.</p> <p>* * * * *</p>

	<p>(b) * * *</p> <p>(1) * * *</p> <p>(ii) For the 1.5/1.6 GHz MSS bands, an applicant must demonstrate that it can provide space-segment service covering all 50 states, Puerto Rico, and the U.S. Virgin Islands 100 percent of the time, unless it is not technically possible for the MSS operator to meet the coverage criteria from its orbital position.</p> <p>* * * * *</p> <p>(5) * * *</p> <p>(ii) In the 1.6/2.4 GHz MSS bands, MSS ATC is limited to no more than 7.775 MHz of spectrum in the 1610-1626.5 MHz band and 11.5 MHz of spectrum in the 2483.5-2500 MHz band. Licensees in these bands may implement ATC only on those channels on which MSS is authorized, consistent with the Big LEO band-sharing arrangement.</p> <p>(iii) In the 1.5/1.6 GHz MSS bands, 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.</p> <p>* * * * *</p>
No SIA Proposal	<p><u>§ 25.154 Opposition to applications and other pleadings.</u></p> <p>* * * * *</p> <p>(d) Reply comments by a party that filed a petition to deny may be filed in response to pleadings filed pursuant to paragraph (c) or (e) of this section within 5 days after expiration of the time for filing oppositions unless the Commission extends the filing deadline and must be in accordance with other applicable provisions of §§ 1.41 through 1.52 of this chapter, except that such reply comments must be filed electronically through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter.</p> <p>(e) Within 30 days after a petition to deny an application filed pursuant to § 25.220 is filed, the applicant may file an opposition to the petition and must file a statement with the Commission, either in conjunction with, or in lieu of, such opposition, explaining whether the applicant has resolved all outstanding issues raised by the petitioner. This statement and any conjoined opposition must be in accordance with the provisions of §§ 1.41 through 1.52 of this chapter applicable to oppositions to petitions to deny, except that such reply comments must be filed electronically through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter.</p>
No SIA Proposal	<p><u>§ 25.161 Automatic termination of station authorization.</u></p> <p>* * * * *</p> <p>(b) The expiration of the license term, unless, in the case of an earth station license, an application for renewal of the license has</p>

	<p>been filed with the Commission pursuant to § 25.121(e) or, in the case of a space station license, an application for extension of the license term has been filed with the Commission; or</p> <p>* * * * *</p>
II.D	<p><u>§ 25.164 Milestones.</u></p> <p>(a) * * *</p> <p>(4) <u>Five years:</u> Launch the space station, position it in its assigned orbital location, and operate it in accordance with the station authorization.</p> <p>(b) * * *</p> <p>(4) <u>Three years, six months:</u> Launch the first space station, place it in the authorized orbit, and operate it in accordance with the station authorization.</p> <p>* * * * *</p> <p>(c) Licensees of all satellite systems, other than DBS and DARS satellite systems, will be required to submit a copy of their <u>timely</u> binding non-contingent satellite construction contracts with the Commission <u>no later than 15 days after on or before</u> the milestone date for entering into such a contract.</p> <p>(d) Licensees of all satellite systems, other than DBS and DARS satellite systems, will be required to submit information to the Commission sufficient to demonstrate that the licensee has <u>timely</u> completed the critical design review of the licensed satellite system <u>no later than 15 days after on or before</u> the milestone date scheduled for entering into such completion.</p> <p>(e) Licensees of all satellite systems, other than DBS and DARS satellite systems, will be required to submit information to the Commission sufficient to demonstrate that the licensee has commenced physical construction of its licensed spacecraft on or before the milestone date for such commencement <u>no later than 15 days after the milestone date scheduled for such a demonstration.</u></p> <p>(f) Licensees of all space stations, other than DBS and SDARS space stations, must, <u>no later than 15 days after on or before</u> an applicable deadline for operation or launch and operation specified in paragraph (a) or (b) of this section, demonstrate compliance with that milestone requirement. Compliance with a milestone requirement contained in paragraph (a)(4), (b)(4), or (b)(5) of this section may be demonstrated by certifying that the space station has or the space stations have been launched and placed in the authorized orbital location or non-geostationary orbit(s) and that in-orbit operation of the space station or stations has been tested and found to be consistent with the terms of the authorization.</p> <p>(g) Licensees of satellite systems that include both non-geostationary orbit satellites and geostationary orbit satellites, other than DBS and DARS satellite systems, will be required to comply with the schedule set forth in paragraph (a) of this section with respect to the geostationary orbit satellites, and with the schedule set forth in paragraph (b) of this section with respect to the non-</p>

	<p>geostationary orbit satellites.</p> <p>(h) In cases where the Commission grants a satellite authorization in different stages, such as a license for a satellite system using feeder links or inter-satellite links, the earliest of the milestone schedules will be applied to the entire satellite system.</p>
No SIA Proposal	Amend <u>Subpart B – Applications and Licenses</u> by adding subtitle REPORTING REQUIREMENTS FOR SPACE STATION LICENSEES after § 25.165.
II.B	<p><u>§ 25.170 Annual Reporting Requirements.</u></p> <p>All operators of <u>Fixed-Satellite Service, Mobile-Satellite Service, and 17/24 GHz Broadcasting-Satellite Service</u> space stations licensed under Part 25 or granted U.S. market access must, on June 30 of each year, file a report with the International Bureau and the Commission's Columbia Operations Center, 9200 Farm House Lane, Columbia, MD 21046, containing the following information <u>current as of May 31 of the same year:</u></p> <p>(a) Status of space station construction and anticipated launch date, including any major problems or delay encountered;</p> <p>(b) Identification of any space station(s) not available for service or otherwise not performing to specifications, any spectrum within the scope of the Part 25 license or market access grant that the space station is unable to use, the cause(s) of these difficulties, and the date any space station was taken out of service or the malfunction identified; and</p> <p>(c) A current listing of the names, titles, addresses, email addresses, and telephone numbers of the points of contact for resolution of interference problems and for disaster response. Contact personnel should include those responsible for resolution of short term, immediate interference problems at the system control center, and those responsible for long term engineering and technical design issues.</p> <p><u>[NOTE TO § 25.170: Space station operators may are also <u>be</u> subject to outage reporting requirements in Part 4 of this chapter.]</u></p>
II.B	<p><u>§ 25.171 Contact Information Reporting Requirements.</u></p> <p>If contact information filed in an earth station application or pursuant to § 25.170(c) changes, the operator must file corrected information with both the International Bureau and the Columbia Field Office electronically in the Commission's International Bureau Filing System (IBFS), in the "Other Filings" tab of the station's current authorization file, and with the Commission's Columbia Operations Center, at the address listed in § 25.170. The operator should<u>must</u> file the updated information within 10 days. <u>Contact information of the type specified in § 25.170(c) for operators of space stations licensed under Part 25 or granted U.S. market access, but that are not included in § 25.170, must be provided within 30 days after the space station commences operation, and must be updated as provided for in this section.</u></p>
II.B	<p><u>§ 25.172 Requirements for Reporting Space Station Control Arrangements.</u></p> <p>(a) The operator of any space station licensed by the Commission or granted U.S. market access must file the following information with the Commission prior to commencing commercial operation with the space station, or, in the case of a non-U.S.-</p>

	<p>licensed space station, prior to commencing commercial operation with U.S. earth stations.</p> <ol style="list-style-type: none"> 1) The information required by § 25.170(c). 2) The call signs of any telemetry, tracking, and telecommand earth station(s) communicating with the space station from any site in the United States. 3) The location, by city and country, of any telemetry, tracking, and telecommand earth station that communicates with the space station from any point outside the United States. <p><u>(b) The obligation specified in paragraphs (a)(2) and (3) of this section may be met by providing the contact information for the operator's 24/7 satellite operations center and a list of telemetry, tracking, and command earth stations, wherever situated, that are used or able to be used by the operator with respect to that space station.</u></p> <p>(c) <u>The information required by paragraphs (a) and (b) of this section must be filed with the International Bureau in the Commission's International Bureau Filing System (IBFS), in the "Other Filings" tab of the station's current authorization, and is subject to the reporting requirement in § 25.171, Commission's Columbia Operations Center, at the address listed in § 25.170. If such information becomes invalid due to a change of circumstances, the operator must file updated information in the same manner within 10 days, except with respect to temporary changes that will be in effect for less than 30 days, in which case no update is necessary.</u></p>
II.B	<p><u>§ 25.173 Results of in-orbit testing.</u></p> <p>(a) Space station operators must measure the co-polarized and cross-polarized performance of space station antennas through in-orbit testing and submit the measurement data to the Commission upon request.</p> <p>(b) Within 15 days after completing in-orbit testing of a space station licensed under this part, the operator must notify the Commission that such testing has been completed and (i) certify that the space station's measured performance is consistent with the station authorization and that the space station is capable of using its assigned frequencies or (ii) inform the Commission of any discrepancy. The licensee must also indicate in the filing whether the space station has been placed in the assigned geostationary orbital location or non-geostationary orbit. If the licensee files a certification pursuant to (i), above, before the space station has been placed in its assigned orbit or orbital location, the licensee must separately notify the Commission that the space station has been placed in such orbit or orbital location within 3 days after such placement.</p>
No SIA Proposal	<p><u>§ 25.201</u> [Reserved]</p>
II.H.1	<p><u>§ 25.202 Frequencies, frequency tolerance, emission limits, and orbital location.</u></p> <p>* * * * *</p> <p>(c) [Reserved]</p>

	<p>* * * * *</p> <p>(g)(1) Telemetry, tracking and command functions for U.S.-licensed satellites must be conducted at either or both edges of the allocated<u>assigned</u> band(s).</p> <p><u>(2) Notwithstanding subsection (g)(1) above, additional, non-emergency telemetry, tracking, and telecommand functions may be located away from the band edge if the carriers for these functions cause no more interference and require no greater protection from harmful interference than the communications traffic to be carried over the satellite network.</u></p> <p>(3) Frequencies, polarization and coding must be selected to minimize interference into other satellite networks and within the operator's own satellite system.</p> <p>* * * * *</p>
NEW – II.A.4	<p><u>§ 25.203 Choice of sites and frequencies.</u></p> <p>* * * * *</p> <p>(j) Applicants for non-geostationary 1.6/2.4 GHz Mobile-Satellite Service/ Radiodetermination satellite service feeder links in the bands <u>19.3-19.7 GHz and 29.1-29.5</u> 17.7-20.2 GHz and 27.5-30.0 GHz shall indicate the frequencies and spacecraft antenna gain contours towards each feeder-link earth station location and will coordinate with licensees of other fixed-satellite service and terrestrial-service systems sharing the band to determine geographic protection areas around each non-geostationary mobile-satellite service/radiodetermination satellite service feeder-link earth station.</p> <p>* * * * *</p>
II.F	<p><u>§ 25.204 Power limits for earth stations.</u></p> <p>* * * * *</p> <p>(e) To the extent specified in subparagraphs (1)-(4) below, earth stations in the Fixed-Satellite Service 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.</p> <p>(1) <u>Except when subparagraphs (2)-(4) below apply, T</u>transmissions from FSS earth-stations in the 14.0-14.5 GHz bands <u>above 10 GHz</u>, including stations that have been routinely licensed pursuant to § 25.134, § 25.211, or § 25.212, 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. The maximum power level for power control purposes must be coordinated with adjacent satellite operators.</p> <p>(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. 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. Automatic power control may be used to increase the EIRP</p>

	<p>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.</p> <p>(3) FSS earth stations transmitting to geostationary satellites <u>space stations</u> in the 28.35-28.6 GHz <u>and/or</u> 29.25-30.0 GHz bands may employ uplink adaptive power control or other methods of fade compensation. For stations employing uplink power control, the values in paragraphs (a)(1), (a)(2), and (a)(4) of § 25.138 may be exceeded by up to 20 dB under conditions of uplink fading due to precipitation. The amount of such increase in excess of the actual amount of monitored excess attenuation over clear sky propagation conditions must not exceed 1.5 dB or 15 percent of the actual amount of monitored excess attenuation in dB, whichever is larger, with a confidence level of 90 percent except over transient periods accounting for no more than 0.5 percent of the time during which the excess is no more than 4.0 dB.</p> <p>(4) Transmissions in the 24.75-25.25 GHz band from 17/24 GHz BSS feeder-link earth stations employing power control may exceed the values in paragraphs (b)(1), (b)(2), and (b)(4) of § 25.223 by up to 20 dB under conditions of uplink fading due to precipitation. The amount of such increase in excess of the actual amount of monitored excess attenuation over clear sky propagation conditions must not exceed 1.5 dB or 15 percent of the actual amount of monitored excess attenuation in dB, whichever is larger, with a confidence level of 90 percent except over transient periods accounting for no more than 0.5 percent of the time during which the excess is no more than 4.0 dB.</p> <p>(f) An earth station in the Fixed-Satellite Service transmitting in the 13.75-14 GHz band must have a minimum antenna diameter of 4.5 m, and the EIRP of any emission in that band should be at least 68 dBW and should not exceed 85 dBW.</p> <p>(g) [Reserved.]</p> <p>* * * * *</p>
No SIA Proposal	<p><u>§ 25.206 Station identification.</u></p> <p>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 § 25.281 of this chapter.</p>
No SIA Proposal	<p><u>§ 25.208 Power flux density limits.</u></p> <p>* * * * *</p> <p>(w) The power flux density at the Earth's surface produced by emissions from a 17/24 GHz BSS space station operating in the 17.3-17.7 GHz band for all conditions and all methods of modulation must not exceed the regional power flux density levels prescribed below.</p> <p>(1) * * *</p> <p>(2) * * *</p>

(3) * * *

(4) * * *

NOTE TO PARAGRAPH (w): These limits pertain to the power flux-density that would be obtained under assumed free-space propagation conditions.

II.H.6

§ 25.209 Antenna performance standards.

(a) The gain of any antenna to be employed in transmission from an earth station in the fixed-satellite service shall lie below the envelope defined below:

(1) In the plane of the geostationary satellite orbit as it appears at the particular earth station location, for earth stations not operating in the ~~20/30 GHz Ka~~ band or conventional Ku-band:

$29-25\log_{10}\theta$	dBi	For	$1.5^\circ \leq \theta \leq 7^\circ$
8	dBi	For	$7^\circ < \theta \leq 9.2^\circ$
$32-25\log_{10}\theta$	dBi	For	$9.2^\circ < \theta \leq 48^\circ$
-10	dBi	For	$48^\circ < \theta \leq 180^\circ$

where θ is the angle in degrees from the axis of the main lobe, and dBi refers to dB relative to an isotropic radiator. For the purposes of this section, the peak gain of an individual sidelobe may not exceed the envelope defined above for θ between 1.5 and 7.0 degrees. For θ greater than 7.0 degrees, the envelope may be exceeded by no more than 10% of the sidelobes, provided no individual sidelobe exceeds the gain envelope given above by more than 3 dB.

(2) In the plane of the geostationary satellite orbit as it appears at the particular earth station location, for earth stations operating in the ~~20/30 GHz band Ka-band~~ or conventional Ku-band:

$29-25\log_{10}\theta$	dBi	For	$1.5^\circ \leq \theta \leq 7^\circ$
8	dBi	For	$7^\circ < \theta \leq 9.2^\circ$
$32-25\log_{10}\theta$	dBi	For	$9.2^\circ < \theta \leq 48^\circ$

-10	dBi	For	$48^\circ < \theta \leq 85^\circ$
0	dBi	For	$85^\circ < \theta \leq 180^\circ$

(3) In all other directions, or in the plane of the horizon including any out-of-plane potential terrestrial interference paths, for all earth stations not operating in the 20/30 GHz Ka-band or conventional Ku-band:

Outside the main beam, the gain of the antenna shall lie below the envelope defined by:

$32-25\log_{10}\theta$	dBi	For	$3^\circ < \theta \leq 48^\circ$
-10	dBi	For	$48^\circ < \theta \leq 180^\circ$

where θ and dBi are defined above. For the purposes of this section, the envelope may be exceeded by no more than 10% of the sidelobes provided no individual sidelobe exceeds the gain envelope given above by more than 6 dB. The region of the main reflector spillover energy is to be interpreted as a single lobe and shall not exceed the envelope by more than 6 dB.

(4) In all other directions, or in the plane of the horizon including any out-of-plane potential terrestrial interference paths, for all earth stations operating in the 20/30 GHz Ka-band or conventional Ku-band:

Outside the main beam, the gain of the antenna shall lie below the envelope defined by:

$32-25\log_{10}\theta$	dBi	For	$3^\circ < \theta \leq 48^\circ$
-10	dBi	For	$48^\circ < \theta \leq 85^\circ$
0	dBi	For	$85^\circ < \theta \leq 180^\circ$

where θ and dBi are defined above. For the purposes of this section, the envelope may be exceeded by no more than 10% of the sidelobes provided no individual sidelobe exceeds the gain envelope given above by more than 6 dB. The region of the main reflector spillover energy is to be interpreted as a single lobe and shall not exceed the envelope by more than 6 dB.

* * * * *

(b) The off-axis cross-polarization gain of any antenna to be employed in transmission from an earth station to a space station in the ~~domestic~~ fixed-satellite service shall be defined as follows:

(1) In the plane of the geostationary satellite orbit as it appears at the particular earth station location:

$19-25\log_{10}\theta$	dBi	For	$1.8^\circ < \theta \leq 7^\circ$
-2	dBi	For	$7^\circ < \theta \leq 9.2^\circ$

where θ is the angle in degrees from the axis of the main lobe, and dBi refers to dB relative to an isotropic radiator.

(2) In all other directions, or in the plane of the horizon including any out-of-plane potential terrestrial interference paths:

$19-25\log_{10}\theta$	dBi	For	$3^\circ < \theta \leq 7^\circ$
-2	dBi	For	$7^\circ < \theta \leq 9.2^\circ$

where θ and dBi are defined above.

* * * * *

(d) [Reserved]

* * * * *

(f) An earth station with an antenna not conforming to the relevant standards of paragraphs (a) and (b) of this section will be authorized only if the applicant meets its burden of demonstrating that its antenna will not cause unacceptable interference. For ESVs in the C-band, this demonstration must comply with the procedures set forth in § 25.221. For ESVs in the Ku-band, this demonstration must comply with the procedures set forth in § 25.222. For VMES, this demonstration shall comply with the procedures set forth in § 25.226. For feeder-link earth stations in the 17/24 GHz BSS, this demonstration must comply with the procedures set forth in § 25.223. For other FSS earth stations, this demonstration must comply with the procedures set forth in §§ 25.138, 25.218 or 25.220, as appropriate. In any case, the Commission will impose appropriate terms and conditions in its authorization of such facilities and operations.

(g) ~~[Reserved]The antenna performance standards of small antennas operating in the 12/14 GHz band with diameters as small as 1.2 meters starts at 1.25° instead of 1° as stipulated in paragraph (a) of this section.~~

* * * * *

(h)(1) The gain of any transmitting gateway earth station antenna operating in the 10.7-11.7 GHz, 12.75-13.15 GHz, 13.2125-13.25 GHz, 13.8-14.0 GHz, and 14.4-14.5 GHz bands and communicating with NGSO FSS satellites must lie below the envelope

	<p>defined as follows:</p> <p>$29-25\log_{10}(\theta)$ dBi for $1^\circ \leq \theta \leq 36^\circ$</p> <p>-10 dBi for $36^\circ < \theta \leq 180^\circ$</p> <p>Where: θ is the angle in degrees from the axis of the main lobe, and dBi means dB relative to an isotropic radiator.</p> <p>(2) * * *</p> <p><u>(i) This section applies to antennas used for transmission from FSS earth stations, including earth stations used for the provision of feeder links for other satellite services.</u></p> <p>* * * * *</p>
II.H.7	<p><u>§ 25.210 Technical requirements for space stations.</u></p> <p><u>* * * * *</u></p> <p>(a) [Reserved] All space stations in the Fixed-Satellite Service used for domestic service in the 3700-4200 MHz and 5925-6425 MHz frequency bands shall:</p> <p>(1) Use orthogonal linear polarization with one of the planes defined by the equatorial plane;</p> <p>(2) Be designed so that the polarization sense of uplink transmissions is opposite to that of downlink transmissions on the same transponder; and</p> <p>(3) Shall be capable of switching polarization sense upon ground command.</p> <p>(b) [Reserved]</p> <p>(c) Space station antennas operating in the Direct Broadcast Satellite Service or operating in the Fixed-Satellite Service for reception of feeder links for Direct Broadcast Service 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.</p> <p>* * * * *</p> <p>(f) All space stations in the Fixed-Satellite Service operating in any portion of the 3600<u>3400</u>-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, 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 Broadcasting-Satellite Service 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. <u>This obligation does not apply to telemetry, tracking and command functions.</u></p>

Ed. Note: Baseline for §25.210(f) is as modified in R&O FCC 12-116, IB Docket No. 06-154 (released Sept. 28, 2012).

* * * * *

~~(1) Space station antennas in the Fixed-Satellite Service, other than antennas in the 17/24 GHz BSS, 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 shall be at least 30 dB within its primary coverage area.~~

~~(2)~~ Space station antennas in the 17/24 GHz Broadcasting Satellite Service 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 shall be at least 25 dB within its primary coverage area.

* * * * *

II.H.8

§ 25.211 Analog video transmissions in the Fixed-Satellite Service.

* * * * *

(b) All 4/6 GHz analog video transmissions shall 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 § 25.208(a) 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. Further, all transmissions operating in frequency bands described in § 25.208 (b) and (c) shall 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 § 25.208(b) and (c) 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. ~~The transmission of an unmodulated carrier at a power level sufficient to saturate a transponder is prohibited, except by the space station licensee to determine transponder performance characteristics.~~ All 12/14 GHz video transmissions for TV/FM shall identify the particular carrier frequencies for necessary coordination with adjacent U.S. satellite systems and affected satellite systems of other administrations.

* * * * *

(d) An earth station may be routinely licensed for transmission of analog video services in the 5925-6425 MHz band or 14.0-14.5 GHz band provided:

- (1) the application includes certification, pursuant to § 25.132(a)(1), of conformance with the antenna performance standards in § 25.209(a) and (b);
- (2) an antenna with an equivalent diameter of 4.5 meters or greater will be used for such transmission in the 5925-6425 MHz band, and the input power into the antenna will not exceed 26.5 dBW;
- (3) an antenna with an equivalent diameter of 1.2 meters or greater will be used for such transmission in the 14.0-14.5 GHz band, and the input power into the antenna will not exceed 27 dBW.

	<p>(e) Applications for authority for analog video uplink transmission in the Fixed-Satellite Service that are not eligible for routine licensing under paragraph (d) of this section are subject to the provisions of § 25.220 of this chapter.</p>
<u>II.H.9</u>	<p><u>§ 25.212 Narrowband analog transmissions and digital transmissions in the GSO Fixed-Satellite Service.</u></p> <p>* * * * *</p> <p>(c) (1) An earth station that is not subject to licensing under § 25.222 or § 25.226 of this chapter and will not be installed in aircraft may be routinely licensed for analog transmissions in the 14.0-14.5 GHz band with bandwidths up to <u>200 kHz (or up to 1 MHz for telecommand carriers)</u> if the equivalent diameter of the transmitting antenna is 1.2 meters or greater, input power spectral density into the antenna will not exceed -8 dBW/4 kHz, transmitted satellite carrier EIRP density will not exceed 17 dBW/4 kHz, and the application includes certification pursuant to § 25.132(a)(1) of conformance with the antenna performance standards in § 25.209(a) and (b).</p> <p>(2) An earth station that is not subject to licensing under § 25.222 or § 25.226 of this chapter and will not be installed in aircraft may be routinely licensed for digital transmission, including digital video transmission, in the 14.0-14.5 GHz band if the equivalent diameter of the transmitting antenna is 1.2 meters or greater, input power spectral density into the antenna will not exceed -14 dBW/4 kHz, transmitted satellite carrier EIRP density will not exceed +10.0 dBW/4 kHz, and the application includes certification pursuant to § 25.132(a)(1) of conformance with the antenna performance standards in § 25.209(a) and (b).</p> <p>(d) An earth station that is not subject to licensing under § 25.221 of this chapter may be routinely licensed for transmission in the 5925-6425 MHz band if the equivalent diameter of the transmit antenna is 4.5 meters or greater, the application includes certification pursuant to § 25.132(a)(1) of conformance with the antenna performance standards in § 25.209(a) and (b), and maximum power densities into the antenna will not exceed +0.5 dBW/4 kHz for analog carriers with bandwidths up to <u>200 kHz (or up to 1 MHz for telecommand carriers)</u> or $-2.7 - 10\log(N)$ dBW/4 kHz for digital carriers. For digital transmission with frequency division multiple access (FDMA) or time division multiple access (TDMA), N is equal to one. For digital transmission with code division multiple access (CDMA), N is the maximum number of co-frequency simultaneously transmitting earth stations in the same satellite receiving beam.</p> <p>(e) An applicant for authority for an earth station in the Fixed-Satellite Service proposing to transmit digital signals or transmit analog signals in bandwidths up to <u>200 kHz (or up to 1 MHz for telecommand carriers)</u> and to operate with transmitted satellite carrier EIRP densities, and/or maximum antenna input power densities in excess of those specified in applicable provisions of paragraph (c) or (d) of this section or operate with a smaller antenna than specified in a relevant provision of those paragraphs must comply with the requirements in § 25.218 or § 25.220 of this chapter, unless the application is subject to licensing pursuant to § 25.221, § 25.222, or § 25.226.</p> <p>* * * * *</p>
No SIA Proposal	<p><u>§ 25.214 Technical requirements for space stations in the Satellite Digital Audio Radio Service and associated terrestrial repeaters.</u></p> <p>(a) [Reserved]</p>

	<p>* * * * *</p> <p>(c) * * *</p> <p>(1) Exclusive SDARS licenses are limited to the 2320-2345 MHz segment of the 2310-2360 MHz allocated bandwidth for SDARS;</p> <p>* * * * *</p>
No SIA Proposal	<u>§ 25.215 [Reserved]</u>
No SIA Proposal	<p><u>§ 25.217 Default service rules.</u></p> <p>* * * * *</p> <p>(b)(1) For all NGSO-like satellite licenses for which the application was filed pursuant to the procedures set forth in § 25.157 after August 27, 2003, 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 following technical requirements, notwithstanding the frequency bands specified in these rule provisions: §§ 25.142(d), 25.143(b)(2)(ii), 25.143(b)(2)(iii), 25.204(g), 25.210(d), 25.210(f), and 25.210(i).</p> <p>(2) * * *</p> <p>(3) Mobile earth station licensees authorized to operate with one or more space stations subject to paragraph (b)(1) of this section must comply with the requirements in §§ 25.285 and 25.287, notwithstanding the frequency bands specified in that section. * * *</p> <p>(c)(1) For all GSO-like satellite licenses for which the application was filed pursuant to the procedures set forth in § 25.158 after August 27, 2003, 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 following technical requirements, notwithstanding the frequency bands specified in these rule provisions: §§ 25.142(d), 25.143(b)(2)(iv), 25.204(g), 25.210(d), 25.210(f), 25.210(i), and 25.210(j).</p> <p>* * * * *</p>
II.H.12	<p><u>§ 25.218 Off-axis EIRP envelopes for FSS earth stations transmitting in certain frequency bands.</u></p> <p>(a) This section applies to all applications for Fixed-Satellite Service earth stations transmitting to geostationary space stations in the C-band, Ku-band, or extended Ku-band, except for:</p> <p>(1) ESV and VMES applications, and</p> <p>(2) Analog video earth station applications.</p> <p>(b) ***Earth station applications subject to this section are eligible for routine processing if they meet the applicable off-axis</p>

	<p>EIRP envelope set forth in this section below. For purposes of this section, the term “extended Ku-band” is the 10.7 through 11.7 GHz, 12.75 through 13.25 GHz, and 13.75 through 14.0 GHz band. The terms “conventional Ku-band” and “extended Ku-band” are defined in § 25.103204 of this chapter.</p> <p>* * * * *</p> <p><u>(i) An applicant for an earth station license under paragraphs (c) through (h) of this section and using variable power-density control of individual simultaneously transmitting co-frequency earth stations in the receive beam of the satellite shall make a detailed showing of the measures it intends to employ to maintain the effective aggregate EIRP-density from all simultaneously transmitting co-frequency terminals at least 1 dB below the applicable EIRP-density limits. In this context the term “effective” means that the resultant co-polarized and cross-polarized EIRP-density experienced by any GSO satellite shall not exceed that produced by a single earth station transmitter operating at 1 dB below the applicable EIRP-density limits. The International Bureau will place this showing on public notice along with the application.</u></p>
New – II.H.13	<p><u>§ 25.220 Non-conforming transmit/receive earth station operations.</u></p> <p>* * * * *</p> <p><u>(d) * * *</u></p> <p><u>(2) A license granted pursuant to paragraph (d)(1) of this section will include, as a condition on that license, that if a good faith agreement cannot be reached between the satellite operator and the operator of a future 2° compliant satellite, the earth station operator shall accept the power density levels that would accommodate the 2° compliant satellite. Licensees authorized pursuant to paragraph (d)(1) of this section shall bear the burden of coordinating with any future applicants or present or future licensees whose proposed compliant operations at 6 degrees or smaller orbital spacing are potentially or actually adversely affected by the operation of the non-compliant licensee. Licensees authorized pursuant to paragraph (d)(1) of this section shall also bear the burden of coordinating with any present or future licensees whose proposed compliant operations at orbital spacings greater than 6 degrees, are actually adversely affected by the operation of the non-compliant licensee. If no good faith agreement can be reached, however, the non-compliant licensee shall reduce its earth station and space station power density levels to be compliant with those specified in Section 25.218.</u></p> <p>* * * * *</p> <p><i>Ed. Note: The concept of §25.220(d)(2), as proposed to be revised here, should be incorporated into both §25.138(c) and §25.223(d). The case of an earth station that exceeds the off-axis limits beyond the coordination arc having to be brought back into compliance with the relevant off-axis limits is needed in and common to all three rules, and common proposals are included at the relevant points above and below.</i></p>

	<p><u>§ 25.221 Blanket Licensing provisions for Earth Stations on Vessels (ESVs) receiving in the 3700-4200 MHz (space-to-Earth) band and transmitting in the 5925-6425 MHz (Earth-to-space) band, operating with GSO Satellites in the Fixed-Satellite Service.</u></p> <p>(a) * * *</p> <p>(12) * * * 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.</p> <p>* * * * *</p>
II.H.14	<p><u>§ 25.223 Alternative licensing rules for feeder link earth stations in the 17/24 GHz BSS.</u></p> <p>(a) This section applies to license applications for earth stations that transmit to 17/24 GHz Broadcasting-Satellite Service space stations, in which the proposed earth station’s antenna does not conform to the standards of § 25.209(a) and (b), and/or the proposed input power density level is in excess of that specified in § 25.212(f) of this part.</p> <p>* * * * *</p> <p>(c) Each earth station license applicant that proposes levels in excess of those defined in paragraph (b) of this section must:</p> <p>(1) Submit with its application link budget analyses of the operations proposed along with a detailed written explanation of how each uplink and each transmitted satellite carrier density figure is derived, and one of the following: (i) an interference analysis demonstrating that the proposed operations are compatible with the operations of other potentially affected parties, providing details of its proposed radio frequency carriers which it believes should be taken into account in this analysis, and including, for each such radio frequency carrier, the link noise budget, modulation parameters, and overall link performance analysis; or (ii) certification that all potentially affected parties acknowledge and do not object to the use of the applicant’s higher power densities. For proposed power levels less than or equal to 3 dB in excess of the limits defined in paragraph (b) of this section, the potentially affected parties are those co-frequency U.S.-authorized 17/24 GHz BSS satellite networks that are located at angular separations of up to ±6° away; for power levels greater than 3 dB and less than or equal to 6 dB in excess of the limits defined in paragraph (b) of this section, potentially affected parties are all those co-frequency U.S.-authorized operators at up to ±10° away.</p> <p><u>(2) Notwithstanding paragraph (c)(1) of this section, a party applying for an earth station license pursuant to this section will not be required to certify that its target satellite operator has reached a coordination agreement with another satellite operator whose satellite is within 6° or within 10° of orbital separation from its satellite, as the case may be, in cases where the off-axis EIRP density level of the proposed earth station operations will be less than or equal to the levels specified by the applicable off-axis EIRP envelope set forth in paragraph (b) of this section in the direction of the part of the geostationary orbit arc within 1° of the</u></p>

	<p><u>nominal orbit location of the adjacent satellite.</u></p> <p>(32) No power levels greater than 6 dB in excess of the limits defined in paragraph (b) of this section will be permitted.</p> <p>(d) Licensees authorized pursuant to paragraph (c) of this section shall bear the burden of coordinating with any future applicants or <u>present or future</u> licensees whose proposed compliant operations at 10 degrees or smaller orbital spacing, as defined by paragraph (b) of this section, <u>are</u> potentially or actually adversely affected by the operation of the non-compliant licensee. <u>Licensees authorized pursuant to paragraph (c) of this section shall bear the burden of coordinating with any present or future licensees whose proposed compliant operations at orbital spacings of more than 10 degrees, as defined by paragraph (b) of this section, are actually adversely affected by the operation of the non-compliant licensee.</u> If no good faith agreement can be reached, however, the non-compliant licensee shall reduce its earth station EIRP spectral density levels to be compliant with those specified in paragraph (b) of this section.***</p> <p>*****</p>
No SIA Proposal	<p><u>§ 25.253 Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz/1525-1559 MHz bands.</u></p> <p>(a) ***</p> <p>(1) In any band segment coordinated for the exclusive use of an MSS applicant within the land area of the United States, where there is no other 1.5/1.6 GHz 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.</p> <p>*****</p> <p>(c) ***</p> <p>(1) 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 1.5/1.6 GHz MSS spectrum by the Aeronautical Mobile-Satellite Route Service (AMS(R)S) and the Global Maritime Distress and Safety System (GMDSS).</p> <p>*****</p> <p>(h) When implementing multiple base stations and/or base stations using multiple carriers, where any third-order intermodulation product of these base stations falls on a 1.5/1.6 GHz MSS band segment 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</p>

	actual signal polarizations for the ATC signals and the MSS system may be used.
No SIA Proposal	<p><u>§ 25.259 Time sharing between NOAA meteorological satellite systems and non-voice, non-geostationary satellite systems in the 137-138 MHz band.</u></p> <p>* * * * *</p> <p>(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 the NOAA or its designee. If the NTIA notifies the Commission that the NOAA is receiving unacceptable 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 Mobile-Satellite Service, in whole or in part, arising from or relating to its compliance or noncompliance with the requirements of this paragraph.</p> <p>* * * * *</p>
No SIA Proposal	<p><u>§ 25.260 Time sharing between DoD meteorological satellite systems and non-voice, non-geostationary satellite systems in the 400.15-401 MHz band.</u></p> <p>* * * * *</p> <p>(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 the DoD or its designee. If the NTIA notifies the Commission that the DoD is receiving unacceptable 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 Mobile-Satellite Service, in whole or in part, arising from or relating to its compliance or noncompliance with the requirements of this paragraph.</p> <p>* * * * *</p>
No SIA Proposal	<u>§ 25.272 [Amended]</u>
New – II.H.8	<p><u>§ 25.275 Particulars of Operation.</u></p> <p><u>* * * * *</u></p>

	<u>(e) The transmission of an unmodulated carrier at a power level sufficient to saturate a transponder is prohibited, except by the space station licensee to determine transponder performance characteristics.</u>
No SIA Proposal	<p><u>§ 25.276 Points of communication.</u></p> <p>(a) Unless otherwise specified in the station authorization, an earth station may transmit to any space station in the same radio service that is listed as a point of communication in the earth station license, provided that permission has been received from the space station operator to access that space station.</p> <p>(b) [Reserved]</p>
II.I.3	<p><u>Ed. Note: All revisions here are shown against the current version of §25.281 in the Part 47 CFR, not against the version of §25.281 in the NPRM.</u></p> <p><u>§ 25.281 Automatic Transmitter Identification Requirements for Analog FM and Digital DVB-S Satellite News Gathering Video Transmissions System (ATIS).</u></p> <p>All satellite uplink transmissions carrying broadband <u>analog FM</u> video information <u>or digital DVB-S satellite news gathering (SNG) uplink transmissions</u> shall be <u>equipped with a identified through the use of an automatic</u> transmitter identification system as specified below.</p> <p>(a) <u>Automatic Transmitter Identification System (ATIS) for analog FM Video.</u> Effective March 1, 1991, all <u>analog FM satellite</u> video uplink facilities shall be equipped with an ATIS encoder meeting the specifications <u>set forth in paragraph (d)</u> of this section.</p> <p><u>(1b)</u> All <u>analog FM</u> video uplink facilities utilizing a transmitter manufactured on or after March 1, 1991 shall be equipped with an ATIS encoder meeting the performance specifications set forth in paragraph <u>(a)(3)d)</u> of this section and the encoder shall be integrated into the uplink transmitter chain in a method that cannot easily be defeated.</p> <p><u>(e2)</u> The ATIS signal shall be a separate subcarrier which is automatically activated whenever any RF emissions occur. The ATIS information shall continuously repeat.</p> <p><u>(3d)</u> The ATIS signal shall consist of the following:</p> <p><u>(i4)</u> A subcarrier signal generated at a frequency of 7.1 MHz <u>±25 Kk</u>Hz and injected at a level no less than -26 dB (referenced to the unmodulated carrier). The subcarrier deviation shall not exceed 25 kHz peak deviation.</p> <p><u>(ii2)</u> The protocol shall be International Morse Code keyed by a 1200 Hz <u>±800</u> Hz tone representing a mark and a message rate of 15 to 25 words per minute. The tone shall frequency modulate the subcarrier signal.</p> <p><u>(iii3) The ATIS signal as a minimum shall consist of the following:</u></p> <p><u>(i)</u> The FCC assigned earth station call sign;</p>

	<p>(iv) A telephone number providing immediate access to personnel capable of resolving ongoing interference or coordination problems with the station;</p> <p>(vii) A unique ten digit serial number of random number code programmed into the ATIS device in a permanent manner such that it cannot be readily changed by the operator on duty;</p> <p>(vi) Additional information may be included within the ATIS data stream provided the total message length, including ATIS, does not exceed 30 seconds.</p> <p><u>(b) Transmitter Identification Requirements for SNG Digital DVB-S Video Uplinks. Effective January 1, 2015, all digital DVB-S video uplink facilities used for SNG uplinks shall transmit digital carrier identification meeting the specifications of this section.</u></p> <p><u>(1) All SNG digital DVB-S video uplink facilities utilizing a transmitter manufactured on or after January 1, 2015 shall be equipped with the capability of transmitting, and shall transmit, a digital carrier identification that complies with the DVB-S standard.</u></p> <p><u>(2) Additional information may be included within the digital carrier identification, provided that paragraph (b)(1) of this section is complied with.</u></p>
	<p>§25.283 End-of-life disposal.</p> <p>* * * * *</p> <p>(c) All space stations. Upon completion of any relocation authorized by paragraph (b) 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 all stored energy sources on board the satellite are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, orand other appropriate measures <u>to render the space station safe.</u></p> <p>* * * * *</p>
No SIA Proposal	<p><u>§ 25.285 Operation of portable transmitters or transceivers on board aircraft.</u></p> <p>(a) Operation of any of the following devices aboard 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:</p> <p>(1) Earth stations capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz Mobile-Satellite Service frequency bands;</p> <p>(2) ATC terminals capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS bands;</p> <p>(3) Earth stations used for non-voice, non-geostationary Mobile-Satellite Service communication that can emit radiation in the 108-137 MHz band.</p> <p>(b) No portable device of any type identified in paragraph (a) of this section (including transmitter or transceiver units installed in</p>

	<p>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.</p>
No SIA Proposal	<p><u>§ 25.286 Antenna painting and lighting</u></p> <p>The owner of an earth station antenna structure must comply with all applicable painting, marking, and/or lighting requirements in Part 17 of this chapter. In the event of default by the owner, the station licensee will be responsible for ensuring that such requirements are met.</p>
No SIA Proposal	<p><u>§ 25.287 Requirements pertaining to operation of mobile stations in the NVNG, 1.5/1.6 GHz, 1.6/2.4 GHz, and 2 GHz Mobile-Satellite Service bands.</u></p> <p>(a) 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 47 C.F.R. § 2.106 and the priority and real-time preemption requirements imposed by Footnote US315.</p> <ol style="list-style-type: none"> (1) 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. (2) Each MES with a requirement to handle maritime distress and safety data communications must be capable of either: <ol style="list-style-type: none"> (i) Recognizing message and call priority identification when transmitted from its associated Land Earth Station (LES), or (ii) 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. (3) Each MES must be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to a system. (4) 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. (5) 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. (6) 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. (7) 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. (8) 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.

(b) 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 Footnotes 5.353A and the priority and real-time preemption requirements imposed by Footnote US315. An LES fulfilling these requirements must not have any additional priority with respect to FSS stations operating with other systems.

(1) 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.

(2) 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.

(3) 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.

(4) The LES must be capable of transmitting channel assignment commands to the MESs.

(5) 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.

(6) The LES must transmit periodic control signals to MESs that do not continuously monitor the LES signaling channel.

(7) 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.

(8) The LES must be capable of transmitting channel-shut-off commands to MESs on signaling or communications channels.

(9) 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.

(10) 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.

(c) 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 Mobile-Satellite Service 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.

(d) The holder of an FCC blanket license for operation of mobile transmitters or transceivers for communication via an NVNG, 1.6/2.4 GHz, 1.5/1.6 GHz, or 2 GHz Mobile Satellite Service system will be responsible for operation of any such device to receive service provided by that licensee or provided by another party with the blanket licensee's consent. Operators of such satellite systems must not transmit communications to or from such devices in the United States unless such communications are authorized under a service contract with the holder of a pertinent FCC blanket earth station license or under a service contract with

	another party with authority for such operation delegated by such a blanket licensee.
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