

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

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

**REPORT AND ORDER**

**Adopted: August 9, 2013**

**Released: August 9, 2013**

By the Commission: Chairwoman Clyburn and Commissioners Rosenworcel and Pai issuing separate statements.

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## I. INTRODUCTION

1. In this Report and Order, we adopt comprehensive changes to Part 25 of the Commission's rules, which governs licensing and operation of space stations and earth stations for the provision of satellite communication services.<sup>1</sup> We anticipate that these rule changes will facilitate greater investment and further innovation in the satellite industry as well as more rapid deployment of new satellite services to the public. We are revising over 150 rule provisions in Part 25 to better reflect evolving technology; eliminate unnecessary information filing requirements for licensees and applicants; eliminate unnecessary technical restrictions; reorganize existing requirements; eliminate redundancy and unnecessary verbiage; clarify vague, confusing, or ambiguous provisions; resolve inconsistencies; and codify existing policies to improve transparency. These changes will better enable the Commission to assess the interference potential of proposed operations; afford more operational flexibility for satellite licensees; enable applicants and licensees to conserve time, effort, and expense in preparing applications and reports; ease administrative burdens for the Commission; and make the rules easier to understand.

## II. BACKGROUND

2. Satellite technology is used to provide communication services throughout the United States and the world and is particularly important for communication in remote areas that are unserved or underserved by terrestrial communication facilities. Satellites also provide connectivity for first responders in emergencies and natural disasters. Initially, most satellite communications required large earth stations, for services such as delivery of video content to cable distribution points. New technology led to the development of a variety of services delivered with smaller earth stations, such as one-way satellite television to homes, two-way data networks used by businesses for credit card transactions at retail locations, and two-way voice and data services, including broadband services, to homes, vehicles, ships, and aircraft. The Commission has conducted a number of rulemaking proceedings to keep pace with technological innovations in the satellite industry and expedite the space and earth station licensing process.<sup>2</sup> These proceedings focused on particular new services or were otherwise fairly narrow in scope.

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<sup>1</sup> 47 C.F.R. Part 25, Satellite Communications.

<sup>2</sup> See, e.g., *Streamlining the Commission's Rules and Regulations for Satellite Application and Licensing Procedures*, IB Docket No. 95-117, Report and Order, 11 FCC Rcd 21581 (1996) (*1996 Streamlining Order*); *Amendment of the Commission's Space Station Licensing Rules and Policies*, IB Docket No. 02-34, First Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 10760 (2003) (*Space Station Licensing Reform Order*); *Amendment of the Commission's Space Station Licensing Policies/2000 Biennial 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*, IB Docket Nos. 02-34 and 00-248, Third Report and Order and Second Further Notice of Proposed Rulemaking, 18 FCC Rcd 13486 (2003) (*2003 Streamlining Order*); *2000 Biennial 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, Amendment of Part 25 of the Commission's Rules and Regulations to Reduce Alien Carrier Interference Between Fixed-Satellites at Reduced Orbital Spacings and to Revise Application Procedures for Satellite Communication Services*, Fifth Report and Order in IB Docket No. 00-248 and Third Report and Order in CC Docket No. 86-496, 20 FCC Rcd 5666 (2005); *2000 Biennial 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*, IB Docket No. 00-248, Sixth Report and Order and Third Notice of Further Rulemaking, 20 FCC Rcd 5593 (2005) (*2005 Streamlining Order*); *Establishment of Policies and Service Rules for the Broadcasting-Satellite Service at the 17.3-17.7 GHz Frequency Band and the 17.7-17.8 GHz Frequency Band Internationally, and at the 24.75-25.25 GHz Frequency Band for Fixed Satellite Services Providing Feeder Links to the Broadcasting-Satellite Service and for the Satellite Services Operating Bi-Directionally in the 17.3-17.8 GHz Frequency Band*, IB Docket No. 06-123, Report and Order and Further Notice of Proposed Rulemaking, 22 FCC Rcd 8842 (2007); *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*, IB Docket Nos. 00-248 and 95-117, Eighth Report and Order and Order on Reconsideration, 23 FCC Rcd 15099 (2008) (allowing applicants to reduce power levels to compensate for smaller-than-routine antenna sizes); *Amendment to Parts 2 and 25 of the Commission's Rules to*

(continued...)

3. More recently, we initiated a review of Part 25 in its entirety. This was the first time in more than 15 years that the Commission undertook such a sweeping examination of Part 25.<sup>3</sup> In January 2010, we invited public comment on proposed clarifying and corrective changes in many Part 25 rules.<sup>4</sup> In September 2012, we adopted most of those proposed changes and several related changes advocated by commenters.<sup>5</sup> At the same time, we issued the Notice of Proposed Rulemaking (*Notice*) that initiated this proceeding, proposing more extensive changes in Part 25 with the overall objectives of affording licensees as much operational flexibility as possible consistent with minimizing harmful interference and easing administrative burdens on licensees, applicants, and the Commission.<sup>6</sup> In response to the *Notice*, 16 parties filed comments, and 10 parties filed reply comments.<sup>7</sup>

4. Among others, we adopt the following revisions to Part 25:

- Eliminate requirements to submit certain technical information in space station applications that is not needed to assess potential interference and provide alternative methods for submitting antenna contour diagrams.
- Increase the number of earth station applications eligible for routine and streamlined processing.
- Remove unnecessary reporting requirements, consolidate the remaining reporting requirements, and improve reporting of emergency contacts.
- Provide greater flexibility to earth station applicants in verifying antenna performance.
- Codify the Commission practice of granting a single earth station license that covers multiple antennas located in close proximity to each other.
- Update, improve, and consolidate definitions and technical terms throughout Part 25.
- Increase licensees' flexibility to design rain-fade compensation systems as needed.

### III. DISCUSSION

5. Most of the parties that filed comments support the proceeding's objectives and applaud the Commission's willingness to revamp Part 25. The parties agree with, or do not oppose, most of the changes proposed in the *Notice*, and we generally adopt these rule changes with little discussion. We focus below on the proposed rule changes that commenters oppose or recommend modification of, recommendations for further changes, and responses to questions aired in the *Notice*. As in the *Notice*, we first address proposals involving changes in more than one rule section and then address proposed changes in the remaining rules in the order in which they appear in Part 25. In some cases, we defer consideration to a Further Notice of Proposed Rulemaking to be issued at a later date. As discussed below, we adopt several substantive rule changes that we did not specifically propose in the

(Continued from previous page)—————

*Allocate Spectrum and Adopt Service Rules and Procedures to Govern the Use of Vehicle-Mounted Earth Stations in Certain Frequency Bands Allocated to the Fixed-Satellite Service*, IB Docket No. 07-101, Report and Order, 24 FCC Rcd 10414 (2009) (*VMES Order*); and *2006 Biennial Regulatory Review - Revision of Part 25 Establishment of a Permitted List Procedure for Ka-band Space Stations*, IB Docket No. 06-154, Declaratory Order, 25 FCC Rcd 1542 (2010) (*Ka-band Permitted List Order*).

<sup>3</sup> See *1996 Streamlining Order*, 11 FCC Rcd at 21581.

<sup>4</sup> *2006 Biennial Regulatory Review - Revision of Part 25*, IB Docket No. 06-154, Notice of Proposed Rulemaking, 25 FCC Rcd 1551 (2012).

<sup>5</sup> *2006 Biennial Regulatory Review - Revision of Part 25*, IB Docket No. 06-154, Report and Order, 27 FCC Rcd 11585 (2012) (*2012 Streamlining Order*). A summary of the *Notice* was published in the Federal Register on Nov. 8, 2012 (77 FR 67172).

<sup>6</sup> *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, IB Docket No. 12-267, Notice of Proposed Rulemaking, 27 FCC Rcd 11619 (2012) (*Notice*).

<sup>7</sup> The commenters are listed in Appendix A. Comments were due on January 14, 2013; reply comments were due on February 12, 2013.

*Notice*. These additional changes are logical outgrowths of proposals in the *Notice*.<sup>8</sup> We also adopt a number of non-substantive changes not proposed in the *Notice*.<sup>9</sup>

#### A. Definitions

6. There are two rule sections in Part 25 captioned “Definitions:” Section 25.103 in Subpart A (General) and Section 25.201 in Subpart C (Technical Standards).<sup>10</sup> Section 25.201 states in an

<sup>8</sup> See *Public Service Commission of the District of Columbia v. FCC*, 906 F.2d 713, 717 (D.C. Cir. 1990) (*PSCDC*) (“[I]t is well established that the exact result reached after a notice and comment rulemaking need not be set out in the initial notice for the notice to be sufficient. Rather, the final rule must be ‘a logical outgrowth’ of the rule proposed.”). The focus of the logical outgrowth test is whether commenting parties should have anticipated that the Commission might adopt the requirement at issue. *Aeronautical Radio, Inc., v. FCC*, 928 F.2d 428, 445-46 (D.C. Cir. 1991) (*ARINC*). The substantive changes adopted in this Report and Order that we consider logical outgrowths of proposals in our *Notice* include: modifying the definition of “shapeable antenna beam” (§ 9, *infra*); eliminating requirements to include information on satellite construction progress and expected launch dates in annual reports for satellites other than replacement satellites (§ 20, *infra*); eliminating the requirement to file copies of annual reports at the Columbia Operations Center (§ 22, *infra*); specifying a May 31 cutoff date for annual reporting of satellite malfunctions (§ 23, *infra*); adopting alternative requirements for providing information on TT&C arrangements (§ 30, *infra*); extending the time allowed for reporting changes in TT&C information (§ 32, *infra*); allowing 15 days after each milestone deadline for showing compliance with the milestone requirement (§ 44, *infra*); extending autogrant eligibility to blanket license applications (§ 55, *infra*); limiting the scope of the 1 dB rain-fade rule to avoid conflict with band-specific rules (§ 58, *infra*); requiring applicants to specify EIRP density with reference bandwidths of 4 kilohertz or 1 megahertz (§ 79, *infra*); requiring applicants to specify beam peak PFD at the command threshold rather than the minimum PFD of command beams (§ 83, *infra*); allowing applicants to provide a single representative set of gain contours for technically identical NGSO space stations (§ 97, *infra*); allowing applicants to specify the peak gain and 3 dB beamwidth of intersatellite links, rather than providing gain contours (§ 97, *infra*); adopting gain contour requirements for steerable beams analogous to those for shapeable beams (§ 99, *infra*); adopting a 10 kilometer/30 day limit on departures from the authorized orbital altitudes of NGSO satellites during repositioning without prior regulatory permission (§ 114, *infra*); requiring advance notification of operators of satellites within 20 kilometers before repositioning NGSO satellites (§ 114, *infra*); adopting cross-polarization isolation requirements for circularly-polarized antennas (§§ 131 and 152, *infra*); eliminating technical showing requirements for certain earth station applicants, instead of retaining the requirements as alternatives to coordination (§§ 150 and 203, *infra*); and adopting carrier ID requirements for digital video uplinks that are somewhat different from those proposed in the *Notice* and allowing their use for analog stations (§§ 213-14, *infra*). The general technical and spectrum management concerns that give rise to these rule changes were discussed in the *Notice* and resulted in the filing of relevant comments.

<sup>9</sup> The nonsubstantive changes adopted in this Report and Order do not require prior notice or an opportunity for comment under the Administrative Procedure Act (APA). Section 553(b) of the APA establishes an exception to the notice and comment requirement for “interpretive rules, general statements of policy, or rules of agency organization procedure, or practice.” 5 U.S.C. § 553(b)(A). Courts have defined “interpretive rule” revisions as those that clarify a previously existing requirement. *Guardian Federal Savings and Loan Ass’n. v. FSLIC*, 589 F.2d 658, 665 (D.C. Cir., 1978), cited in *United States v. Cinemark USA, Inc.*, 348 F.3d 569, 580, n.8 (6<sup>th</sup> Cir., 2003). Another exception to the notice and comment requirement applies when the Commission finds good cause for concluding that notice and comment are unnecessary. See 5 U.S.C. § 553(b)(B) (stating that notice and comment procedures do not apply “when the agency for good cause finds (and incorporates the finding and a brief statement for reasons therefore in the rules issued) that notice and public procedures thereon are ... unnecessary”). The “unnecessary” exception to the notice requirement is “confined to those situations in which the administrative rule is a routine determination, insignificant in nature and impact, and inconsequential to the industry and to the public.” *Utility Solid Waste Activities Group v. EPA*, 236 F.3d 749, 755 (D.C. Cir., 2001) (citing *Texaco v. FPC*, 412 F.2d 740, 743 (3d Cir., 1969)); *Sections 2.925 and 2.926 of the Rules Regarding Grantee Codes for Certified Radiofrequency Equipment, Order*, 27 FCC Rcd 6565, 6567, ¶ 8 (2012) (*Grantee Code Order*). “‘Unnecessary’ refers to the issuance of a minor rule or amendment in which the public is not particularly interested.” *Texaco*, 412 F.2d at 743, n.3; *Grantee Code Order*, 27 FCC Rcd at 6567, n.11. As noted below, one or both of these exceptions apply to all the rule revisions adopted in this Order without notice or opportunity for comment.

<sup>10</sup> 47 C.F.R. §§ 25.103 and 25.201.

introductory sentence that it defines terms used in Subpart C; however, some of the defined terms are also used in Subpart B (Applications and Licenses) and/or Subpart D (Technical Operations). In the *Notice*, we proposed to consolidate all Part 25 definitions into Section 25.103, to delete or revise a number of definitions, to add definitions of the previously undefined terms, and to use the defined terms consistently in Part 25.<sup>11</sup>

7. Most of the definitional changes proposed in the *Notice* are unopposed and self-explanatory. Accordingly, we adopt the following changes without discussion: consolidate all definitions into Section 25.103, delete the definitions of “active satellite,” “ambulatory,” “frequency assignment,” “allocated bandwidth,” and “low-tide elevation;” delete the definition of “baseline” from the definitional section and insert a condensed definition of that term in Section 25.221; modify the definitions of “coordination distance,” “equivalent power flux-density,” “geostationary satellite,” and “routine processing or licensing;” replace use of the term “L-band” with the defined term “1.5/1.6 GHz MSS bands;” amend the definition of “Direct Broadcast Satellite Service;” add definitions of “12/14 GHz bands” and “20/30 GHz bands,” and delete unnecessary words from other definitions.<sup>12</sup>

8. In the following paragraphs, we discuss definitions where commenters suggested changes to, or opposed, our proposals. We also discuss several changes that we did not specifically propose in the *Notice*. Finally, we discuss additional proposals suggested by commenters.

9. In the *Notice*, we proposed to define the term “shapeable antenna beam” as “a satellite transmit or receive antenna beam, the gain and/or gain pattern of which can be modified at any time.”<sup>13</sup> This term is used in new provisions in Section 25.114 adopted here that allow applicants proposing to use shapeable antenna beams to provide certain information in lieu of specifying parameters and gain contours for every possible beam configuration. The Satellite Industry Association (SIA) recommends deleting the phrase “gain and/or” from the definition, contending that the mere ability to vary the gain of an antenna should not exempt an applicant from providing a full set of gain contours.<sup>14</sup> SIA also recommends modifying the definition to limit its scope to beams with gain patterns that can be modified without physically repositioning a satellite antenna reflector. No commenter opposes these suggestions. We agree that applicants should not be excused from filing full antenna specifications and gain contours merely because they propose to use antennas with variable gain. The provisions in Section 25.114 for which the term “shapeable antenna beam” is being defined are intended only to apply to antenna beams that are generated by electronic beam-forming techniques. An example of an antenna using electronic beam-forming is the phased-array antenna, which can generate a very large number of different antenna beam shapes. The new Section 25.114 provisions are not intended to apply to antennas with gain patterns

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<sup>11</sup> *Notice*, 27 FCC Rcd at 11624-26, ¶¶ 7-11 and 13-17. The current definitions of “equivalent diameter,” “power flux density,” and “terrestrial radiocommunication” were inadvertently omitted from proposed Section 25.103 in the *Notice*’s rule appendix. We had no intention of deleting those definitions, which are retained in Section 25.103 as amended.

<sup>12</sup> Specifically, we delete unnecessary words from the definitions of the following terms: “1.6/2.4 GHz Mobile-Satellite Service,” “17/24 GHz Broadcasting-Satellite Service,” “Ancillary Terrestrial Component (ATC),” “Ancillary Terrestrial Component (ATC) base station,” “Ancillary Terrestrial Component (ATC) mobile terminal,” “C band,” “Coordination distance,” “Earth Station on Vessel (ESV),” “Earth Stations Aboard Aircraft (ESAA),” “Emergency Call Center,” “Equivalent diameter,” “Equivalent Power Flux Density (EPFD),” “NGSO FSS gateway earth station,” “Permitted Space Station List,” “Power Spectral Density (PSD),” “Protection areas,” “Routine processing or licensing,” “Selected assignment,” and “Vehicle-Mounted Earth Station (VMES).”

<sup>13</sup> *Notice*, 27 FCC Rcd at 11637, ¶ 51 and 11672-75 (Appendix A, ¶ 6).

<sup>14</sup> SIA Comments at 7. SIA is a U.S.-based trade association of satellite operators, service providers, spacecraft manufacturers, launch service providers, and ground equipment suppliers. Several other commenters (the Boeing Company, DIRECTV, LLC, EchoStar Corporation, Inmarsat, Intelsat License LLC, LightSquared Inc., SES Americom, Inc., New Skies Satellites B.V., and O3b Limited) state their support for SIA’s comments.

that can be mechanically modified by, for example, selecting a different reflector shape. Antennas using such beam-forming techniques typically have only a few possible beam shapes. We therefore adopt a definition of “shapeable antenna beam” with the changes recommended by SIA.

10. We proposed to amend the definition of “Permitted Space Station List” (Permitted List) that currently appears in Section 25.201 to provide more detail on the scope of authority granted when the Permitted List is authorized as a point of communication<sup>15</sup> in an earth station license.<sup>16</sup> The Permitted List includes all U.S.-licensed geostationary-orbit space stations providing Fixed-Satellite Service (FSS) in the conventional C and Ku bands,<sup>17</sup> as well as non-U.S.-licensed geostationary-orbit space stations approved for U.S. market access to provide FSS in the conventional C and Ku bands.<sup>18</sup> We proposed to add a definition of “Ka-band Space Station Permitted List” to provide similar detail on the scope of authority granted when the Ka-band Permitted List is authorized as a point of communication in an earth station license.<sup>19</sup> The Commission’s Ka-band Permitted List includes all U.S.-licensed geostationary-orbit space stations providing 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, as well as those non-U.S.-licensed geostationary-orbit space stations approved for U.S. market access to provide FSS in the same bands.<sup>20</sup>

11. SIA advocates a change to our proposed Permitted List and Ka-band Permitted List definitions. In particular, SIA notes that the second and third sentences in the proposed definition of “Permitted Space Station List” and the last three sentences of the proposed definition of “Ka-band Permitted Space Station List” go beyond defining the terms.<sup>21</sup> Rather, SIA notes that these sentences describe eligibility requirements for designating the “Permitted List” as a point of communication in an earth station application and the effect of this designation in an earth station license. SIA recommends removing these sentences from the definition and inserting them in new subparagraphs in Section 25.115,

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<sup>15</sup> The space stations that an earth station is authorized to access are referred to as “points of communication.”

<sup>16</sup> See *Amendment of the Commission’s Regulatory Policies to Allow Non-U.S.-Licensed Space Stations to Provide Domestic and International Satellite Service in the United States*, IB Docket No. 96-111, First Order on Reconsideration, 15 FCC Rcd 7207, 7210-11, ¶ 6, 7214-16, ¶¶ 16-20 (1999). The current Permitted List is available at <http://www.fcc.gov/ib/sd/se/permitted.html>.

<sup>17</sup> The term “conventional C band” refers to the 3700-4200 MHz (space-to-Earth) and 5925-6425 MHz (Earth-to-space) bands. “Conventional Ku band” refers to the 11.7-12.2 GHz (space-to-Earth) and 14.0-14.5 GHz (Earth-to-space) bands.

<sup>18</sup> Inclusion of non-U.S.-licensed space stations on the Permitted List is by request. Applicants for FSS earth stations that qualify for routine processing in the conventional C and Ku bands may designate the Permitted List as a point of communication in an initial license application or modification application. Once such an application is granted, the earth station may communicate with any space station on the Permitted List, provided that those 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 List.

<sup>19</sup> *Ka-band Permitted List Order*, 25 FCC Rcd at 1541. The Ka-band Permitted List is available at [http://transition.fcc.gov/ib/sd/ka\\_band.html](http://transition.fcc.gov/ib/sd/ka_band.html).

<sup>20</sup> Inclusion of non-U.S.-licensed space stations on the Ka-band Permitted List is by request. Applicants for FSS earth stations that qualify for routine processing for those bands may designate the Ka-band Permitted List as a point of communication in an initial license application or modification application. Once such application is granted, the earth station may communicate with any space station on the Ka-band Permitted List, provided that those 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 List. Significantly, the earth station may not communicate with a Ka-band space station on the Permitted 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 Section 2.106 of the Commission’s rules. 47 C.F.R. § 2.106 Footnote US334.

<sup>21</sup> SIA Comments at 5.

which prescribes filing and content requirements for earth station applications.<sup>22</sup> SIA also recommends integrating the Ka-band Permitted List into the Permitted List and accordingly expanding the definition of “Permitted Space Station List” to cover geostationary-orbit (GSO) 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, rather than adopting a separate definition of “Ka-band Permitted Space Station List.”<sup>23</sup> EchoStar Corporation, Inmarsat, SES Americom, New Skies Satellites B.V., and O3b Ltd. agree with SIA that there should be a single, integrated Permitted List.<sup>24</sup> We believe these recommended changes will serve the public interest and therefore adopt them.

12. Commenters also advocate expanding the definition of Permitted List to include all U.S.-licensed and non-U.S.-licensed GSO space stations authorized to communicate with earth stations in the United States in any FSS frequency band, including the “extended” C and Ku bands.<sup>25</sup> They contend that this would simplify processing of earth station applications and relieve service providers and the Commission from having to modify earth station licenses when GSO FSS satellites authorized to communicate with U.S. earth stations in the extended C and Ku bands are relocated or replaced. Intelsat, however, opposes redefining the Permitted List to include satellites operating in the extended C and Ku bands because of the coordination requirements applicable in these bands.<sup>26</sup> Adding these additional frequency bands to the Permitted List was not contemplated by our *Notice*, nor did we examine how such a change might affect other users of those bands. Accordingly, we will not expand the definition of Permitted List as requested. We may, however, examine the issue in the future.

13. As part of our proposal to revise the definition of Permitted List, we invited comment on phasing out the use of the term “ALSAT” in earth station applications and licenses.<sup>27</sup> An applicant proposing to operate an earth station must indicate, by choosing from a drop-down menu in an electronic application form, which space station(s) the proposed earth station would communicate with. The terms “ALSAT” and “Permitted List” both appear in the drop-down menu. The two designations have the same effect. Upon grant, a licensed earth station with either ALSAT or Permitted List as authorized points of communications may communicate with, consistent with the technical parameters of its license, all U.S.-licensed GSO FSS space stations authorized to operate in the conventional C, Ku, or (following our action today) Ka bands and all non-U.S.-licensed space stations operating in these bands that are included on the Permitted List.

14. SIA advocates continued use of the term ALSAT for purposes of licensing Earth Stations on Vessels (ESVs) and Vehicle-Mounted Earth Stations (VMESs) because SIA believes that ESV and VMES licensees cannot specify the Permitted List as a point of communication.<sup>28</sup> We note, however, that the Commission has used the terms ALSAT and Permitted List interchangeably when discussing ESV,

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<sup>22</sup> *Id.* See § 25.115(k) in Appendix B, *infra*.

<sup>23</sup> SIA Comments at 5-6.

<sup>24</sup> EchoStar Comments at 4-5; Inmarsat Reply Comments at 2; Joint Reply Comments of SES Americom, Inc., New Skies Satellites B.V., and O3b Limited (SES/NSS/O3b Reply Comments) at 3-5.

<sup>25</sup> EchoStar Comments at 4; Inmarsat Reply Comments at 2; SES/NSS/O3b Reply Comments at 3. The “extended C band” refers to the 3600-3700 MHz (space-to-Earth), 4500-4800 MHz (space-to-Earth), 5150-5250 (Earth-to-space), 5850-5925 MHz (Earth-to-space), and 6425-7075 MHz (Earth-to-space) frequency bands. The “extended Ku band” refers to the 10.7-11.7 GHz (space-to-Earth), 12.75-13.25 GHz (Earth-to-space), and 13.75-14.0 GHz (Earth-to-space) bands.

<sup>26</sup> Reply Comments of Intelsat Licensee LLC at 10-11 (citing *Space Station Licensing Reform Order*, 18 FCC Rcd at 10881, ¶ 329).

<sup>27</sup> *Notice*, 27 FCC Rcd 11637, ¶ 12.

<sup>28</sup> SIA Comments at 6.



VMES, and Earth Stations Aboard Aircraft (ESAA) licensing.<sup>29</sup> Consequently, we see no need to continue to use the term “ALSAT” in earth station applications and licenses. Accordingly, we remove the term “ALSAT” from the rule provisions where it currently appears and replace it with the term “Permitted List.” Further, “ALSAT” will no longer appear in the drop-down menu in the electronic form for earth station applications. We direct the International Bureau to implement the procedure to effectuate these changes.

15. Although not proposed in the *Notice*, there are a number of small changes we adopt here regarding the use of the acronyms “DBS,” “FSS,” “MSS,” “GSO,” and “PFD.”<sup>30</sup> These acronyms are used in many rule provisions in Part 25 but are not defined. Sometimes these acronyms are used after spelling out the words that they stand for, but more often the acronyms are used without explanation. To prevent possible confusion, we insert these abbreviations in parentheses in the definitions of “Direct Broadcast Satellite Service,” “Fixed-Satellite Service,” “Mobile-Satellite Service,” “Geostationary-orbit satellite,” and “Power flux density” in Section 25.103.

16. The acronym “NGSO” appears in several Part 25 rules without definition. Although not proposed in the *Notice*, we add a definition of the acronym, which means non-geostationary orbit, to Section 25.103. Additionally, we delete redundant text from the definitions of “17/24 GHz Broadcasting-Satellite Service” and “equivalent diameter” and revise the word order in the first sentence of the definition of “17/24 GHz Broadcasting-Satellite Service.” Further, we insert a phrase in the definition of “Earth Station on Vessel” to limit the definition to earth stations that communicate via space stations in geostationary orbit.<sup>31</sup>

17. SIA also recommends several further changes regarding definitions in Part 25 that were not proposed in the *Notice*. For instance, SIA recommends moving the definition of the term “extended Ku-band” from Section 25.218(b) to Section 25.103.<sup>32</sup> SIA also suggests substituting the term “20/30 GHz” for “Ka-band” in the definition of “protection areas” and in Section 25.209(a).<sup>33</sup> We adopt these recommendations, which are unopposed.<sup>34</sup> Moreover, SIA recommends adding a definition of “blanket

<sup>29</sup> Applications for ESV operation consistent with the off-axis EIRP density limits in Section 25.221(a)(1) or (a)(3) or Section 25.222(a)(1) or (a)(3) and applications for VMES operation consistent with the off-axis EIRP density limits in Section 25.226(a)(1) or (a)(3) and the pointing error requirements in Section 25.226(a)(1) (ii) may be granted with ALSAT authority. See 47 C.F.R. § 25.221(b)(7); *Procedures to Govern the Use of Satellite Earth Stations on Board Vessels in the 5925-6425 MHz/3700-4200 MHz Bands and 14.0-14.5 GHz/11.7-12.2 GHz Bands*, IB Docket No. 02-10, Report and Order, 20 FCC Rcd 674, 718-19, ¶ 105 (2005) (*ESV Order*); Second Order on Reconsideration, 27 FCC Rcd 8555, 8561, ¶ 17 (2012); *VMES Order*, 24 FCC Rcd at 10466, ¶ 168; Order on Reconsideration, 28 FCC Rcd 488, 495, ¶ 19 (2013). Similarly, we recently concluded that applications for ESAA operation consistent with the off-axis EIRP density limits in Section 25.227(a)(1) or (a)(3) may be granted with “ALSAT/Permitted List” authority. *Revision of 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*, IB Docket No. 12-376, Notice of Proposed Rulemaking and Report and Order, 27 FCC Rcd 16510, 16551-52, ¶ 112 and n.262 (2012) (*ESAA Order*).

<sup>30</sup> The revisions discussed in this paragraph are interpretive in nature and can therefore be adopted without notice and comment pursuant to the “interpretive rule” exception to the APA discussed above in note 9.

<sup>31</sup> This is consistent with the Commission’s intention in adopting the ESV rules, which are predicated on operation with GSO satellites spaced two degrees apart. See *ESV Order*, 20 FCC Rcd at 681-83, ¶¶ 12-14. We find good cause for concluding that the revisions discussed in this paragraph fall within the “unnecessary” exception to the notice and comment requirement of the APA, discussed above in note 9.

<sup>32</sup> SIA Comments at 8.

<sup>33</sup> *Id.*

<sup>34</sup> We conclude that these revisions fall within the “unnecessary” exception to the notice and comment requirement of the APA, discussed above in note 9.

license,” which is used in several rule sections in Part 25.<sup>35</sup> We adopt a definition of “blanket license” along the lines proposed by SIA with additional text to make clear that the term can refer to a license for Satellite Digital Audio Radio Service (SDARS) terrestrial repeaters.<sup>36</sup>

## **B. Reporting Requirements**

### **1. Annual Reports**

18. Part 25 contains annual reporting requirements for operators of most of the space stations licensed under Part 25 or approved for U.S. market access.<sup>37</sup> These rules are dispersed in several service-specific sections of Part 25. In the *Notice*, we proposed to replace these service-specific reporting rules with a uniform annual reporting requirement in new Section 25.170.<sup>38</sup> We also proposed to expand the annual reporting rule to cover all satellite services, some of which are not currently subject to an annual reporting requirement. As proposed, the uniform annual reporting rule would require all space station operators to file the following information on June 30 of each year: (1) status of space station construction and anticipated launch date, including any major problems or delays encountered; (2) identification of any space station not available for service or otherwise not performing to specifications, any spectrum that the space station is unable to use, the cause(s) of the difficulties, and when the space station was taken out of service or the malfunction was discovered; and (3) a U.S. point of contact for resolution of interference problems and emergency response. We proposed to eliminate requirements to list outages of more than 30 minutes in duration in annual reports, bearing in mind that there is an outage reporting requirement in Section 4.9(c) of the Commission’s rules.<sup>39</sup> We also proposed to eliminate other information requirements included in current service-specific rules.<sup>40</sup> We invited comment as to whether there are satellite services for which annual reporting may not be necessary.<sup>41</sup>

19. SIA and ORBCOMM agree that the annual reporting rules should be consolidated and made uniform. They also support eliminating the requirement to list temporary outages in annual reports.<sup>42</sup> No commenter opposes consolidating the reporting requirements or eliminating the reporting

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<sup>35</sup> *Id.* at 7.

<sup>36</sup> Adopting this definition is an interpretive rule change that can be adopted without notice and comment pursuant to the “interpretive rule” exception to the APA discussed above in note 9.

<sup>37</sup> The current annual reporting rules apply to operators of FSS, MSS, and Satellite Digital Audio Radio Service (SDARS) space stations. *See* 47 C.F.R. §§ 25.142(c) (annual reporting rule for operators of non-voice, non-geostationary (NVNG) MSS space stations), 25.143(e) (annual reporting rule for 1.6/2.4 GHz and 2 GHz MSS space stations), 25.144(c) (annual reporting rule for SDARS space stations), 25.145(f)(1) (annual reporting rule for 20/30 GHz FSS space stations), 25.146(l) (annual reporting rule for Ku-band NGSO FSS space stations), and 25.210(l) (general annual reporting rule for operators of FSS space stations).

<sup>38</sup> *Notice*, 27 FCC Rcd at 11626-27, ¶¶ 18-21.

<sup>39</sup> *Id.* at 11627, ¶ 21.

<sup>40</sup> *See, e.g.*, 47 C.F.R. § 25.143(e), which requires 1.6/2.4 GHz MSS and 2 GHz MSS space station licensees to specify in annual reports “the percentage of time that the system is actually used for U.S. domestic or transborder transmission, the amount of capacity (if any) sold but not in service within U.S. territorial geographic areas, and the amount of unused system capacity” and requires 2 GHz MSS licensees that “receiv[ed] expansion spectrum as part of the unserved areas spectrum incentive [to] provide a report on the actual number of subscriber minutes originating or terminating in unserved areas as a percentage of the actual U.S. system use.”

<sup>41</sup> *Notice*, 27 FCC Rcd at 11627, ¶ 20.

<sup>42</sup> SIA Comments at 9; ORBCOMM Comments at 5. ORBCOMM asserts that it has expended substantial resources to include detailed outage information in its annual reports but has never received any question or comment from the Commission concerning this data.

requirement for temporary outages. We adopt these changes for the reasons set forth in the comments and in the *Notice*.

20. ORBCOMM advocates eliminating the requirement for annual reports to include information on construction progress and anticipated launch dates for authorized space stations that have yet to be launched. ORBCOMM contends that this requirement is redundant with the rules that require space station licensees to demonstrate compliance with milestone requirements.<sup>43</sup> We agree that the requirement is redundant for authorized satellites subject to the milestone rules in Section 25.164. The requirement is not redundant, however, with respect to authorized replacement satellites that are not subject to Section 25.164. Consequently, we modify this reporting requirement to limit it to authorized replacement satellites.

21. While supporting our proposal to require all space station operators to provide contact information, SIA contends that operators not currently subject to annual reporting obligations should not be required to file annual reports on satellite construction progress, anticipated launch dates, and space station malfunctions.<sup>44</sup> In particular, SIA maintains that there should be no such reporting requirements for operators of Direct Broadcast Satellite Service space stations or space stations in “specialized” services, such as the Earth Exploration-Satellite Service and the Radionavigation-Satellite Service.<sup>45</sup> SIA’s concern regarding reporting of satellite construction progress and anticipated launch dates is obviated by our decision to eliminate the requirement to include such information in annual reports. We do not agree, however, with SIA that operators of some types of space stations should not be required to report malfunctions on an annual basis. The Commission needs to be apprised of space-station malfunctions affecting spectrum utilization to discharge its mandated responsibility for spectrum management, and we see no reason to exempt operators of any particular type of space stations from providing such information in annual reports.

22. The rules currently require annual reports to be filed both with the International Bureau and at the Commission’s Operations Center in Columbia, Maryland. The consolidated annual reporting rule proposed in the *Notice* would likewise require filing with the International Bureau and at the Columbia Operations Center.<sup>46</sup> SIA advocates eliminating the requirement to file copies at the Columbia Operations Center, which it contends is unnecessary since access to electronic filings in the International Bureau Filing System (IBFS) database is Commission-wide. Although annual reports are not currently routinely filed through IBFS, we agree that it is unnecessary for licensees to file copies at the Columbia Operations Center and conclude that specifying a single place for filing annual reports will facilitate Commission record management. We therefore eliminate this requirement from the annual reporting rule.

23. SIA also recommends modifying the provision requiring licensees to identify space stations that are unavailable for service or not performing to specifications to indicate that the requirement pertains to the situation as of May 31, one month prior to the proposed June 30 due date for filing annual reports.<sup>47</sup> We recognize that some time is required to assess current space station performance and convey the information to those responsible for drafting annual reports. We therefore incorporate this change in the annual reporting rule.

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<sup>43</sup> ORBCOMM Comments at 5, n.4. See 47 C.F.R. § 25.164(c)-(e) (requiring licensees to demonstrate compliance with milestone deadlines for certain phases of satellite construction and for launch and commencement of operation). See also § 25.161(a) (mandating termination of authorization if a milestone deadline is missed unless an extension is granted due to circumstances beyond the operator’s control).

<sup>44</sup> SIA Comments at 12.

<sup>45</sup> *Id.* at 9-10.

<sup>46</sup> *Notice*, 27 FCC Rcd at 11685 (Appendix A, ¶ 30).

<sup>47</sup> SIA Comments at 10.

## 2. Contact Information

24. Section 25.272(b) requires space station licensees to maintain on file “with the Commission and with its Columbia Operations Center” a current listing of contact information for resolution of interference problems. In the *Notice*, we proposed to delete Section 25.272(b) and replace it with three rule provisions: (1) a provision in new Section 25.170(c) requiring space station operators to include such contact information in annual reports; (2) a provision in new Section 25.172(a) requiring U.S. space station licensees to provide such contact information prior to commencing commercial operation and requiring operators of non-U.S.-licensed space stations with U.S. market access to provide contact information before commencing operation with U.S. earth stations; and (3) a provision in new Section 25.171 requiring space station operators to update contact information by filing notifications with the International Bureau within 10 business days of any change.<sup>48</sup>

25. SIA asserts that every satellite operator maintains a 24/7 network operations center and/or point of contact and that these arrangements are seldom changed. SIA therefore contends that annual updating of contact information should be sufficient and, thus, that there is no need for the proposed updating requirement in Section 25.171.<sup>49</sup> If we adopt such a requirement, however, SIA contends that a 10-day deadline for notifying the Commission of changes may be too short. SIA asserts that it might take more than 10 days to transition from one network operation center or contact point to another and therefore suggests increasing the time allowed to 30 days or substituting “should” for “must” in Section 25.171 to make notification within 10 days “aspirational” rather than mandatory.<sup>50</sup> We do not agree that space station operators should be allowed to postpone reporting changes in contact information until the next annual reporting date, which could result in time lags of as much as a year. Contact information can be vital during emergencies, such as hurricanes, or in cases of harmful interference. We do not think that an obligation to notify the Commission of changes in the name(s) or phone number(s) of the person or persons with authority to control operations within 10 days is unduly onerous. It is not clear how meeting this time limit could ever be infeasible, but the waiver process provides a vehicle for relief.

26. SIA recommends adding a sentence to Section 25.171 to require space station operators not subject to annual reporting requirements to file and update contact information.<sup>51</sup> As adopted herein, however, Section 25.170 requires all space station licensees to file annual reports that include contact information. Thus, SIA’s recommendation is moot.

27. SIA advocates eliminating the requirement to file updates at the Columbia Operations Center, because the information will be available Commission-wide through IBFS.<sup>52</sup> Since updates must be filed through IBFS, we agree it is unnecessary for licensees to file duplicate updates. Thus, we adopt this change.

28. We note there is a discrepancy between what we proposed in the narrative of the *Notice* for Section 25.171 and the corresponding text in the *Notice*’s rule appendix. In the narrative, we said that Section 25.171 would require operators to update contact information provided in annual reports pursuant to Section 25.170(c),<sup>53</sup> which applies only to space station operators. In the appendix, however, proposed Section 25.171 would also require earth station operators to update contact information initially provided

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<sup>48</sup> *Notice*, 27 FCC Rcd at 11627-28, ¶¶ 20 and 22 and 11685-86 (Appendix A, ¶¶ 30-32).

<sup>49</sup> SIA Comments at 11.

<sup>50</sup> *Id.* at 11 and Rules Appendix at 29.

<sup>51</sup> *Id.* at 12.

<sup>52</sup> *Id.* at 11. See ¶ 22, *supra*.

<sup>53</sup> *Notice*, 27 FCC Rcd at 11628, ¶ 22.

in earth station applications.<sup>54</sup> It would be confusing to include requirements for earth station licensees in Section 25.171, which is included in a subpart captioned “Reporting Requirements for Space Station Operators.” Therefore, we do not add such a requirement in Section 25.171. Instead, we insert a provision in Section 25.271 to require earth station licensees to update contact information.<sup>55</sup>

### 3. TT&C Arrangements

29. Section 25.114(c)(9) currently requires space station applicants to include information pertaining to telemetry, tracking, and command (TT&C) arrangements in Schedule S of FCC Form 312. Schedule S, in turn, requires applicants to list a call sign, street address, and phone number for each earth station to be used for TT&C communication with the proposed space station(s). We proposed to eliminate the requirement to submit this information in space station applications.<sup>56</sup> Instead, we proposed to adopt provisions in new Section 25.172 that would require space station operators to inform the Commission, before commencing operation with U.S. earth stations, of the call signs of U.S. earth station(s) used for TT&C for the space station(s) and the location, by city and country, of any such TT&C earth station located outside the United States. We proposed to require operators to file this information electronically through IBFS and to update it within 10 days of changes that will be in effect for 30 days or more.<sup>57</sup>

30. SIA agrees with the proposed changes that would permit space station operators to provide TT&C earth station information prior to commencing operation, rather than at the application stage.<sup>58</sup> SIA also asserts that satellite operators often arrange to use multiple redundant TT&C stations that can be pressed into service as required for fleet maneuvers or new launches. In view of this, SIA contends, it should suffice for a satellite operator to provide 24/7 contact information for its satellite control center and list the call signs or locations of all earth stations that *may* be used for TT&C, rather than identifying the TT&C stations currently in use and notifying the Commission whenever there is a shift from one to another.<sup>59</sup> We agree, and have incorporated this suggested modification in Section 25.172. The Commission, however, may request additional detail from applicants concerning TT&C arrangements in order to facilitate processing of the application.<sup>60</sup>

31. Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS) contend that if we do not require space station applicants to provide contact information for TT&C earth stations in Schedule S, the Commission should require such information to be filed in the IBFS database under the file number of the relevant space station application so it will be available online to parties receiving interference from TT&C uplink transmissions.<sup>61</sup> Similarly, SIA recommends requiring the TT&C contact information to be filed in the “Other Filings” tab in the IBFS file associated with the space station’s

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<sup>54</sup> *Id.* at 11685-86 (Appendix A, ¶ 31).

<sup>55</sup> *See* ¶ 205, *infra*.

<sup>56</sup> *Notice*, 27 FCC Rcd at 11628, ¶ 23.

<sup>57</sup> *Id.* at 11628, ¶ 23 and 11686 (Appendix A ¶ 32).

<sup>58</sup> SIA Comments at 12.

<sup>59</sup> *Id.* at 12-13 and Rules Appendix at 30.

<sup>60</sup> 47 C.F.R. § 25.111(a).

<sup>61</sup> EIBASS Comments at 7. A party receiving interference from uplink transmissions can use IBFS to identify the source and obtain contact information without combing through space-station files. The victim could search the IBFS database for an earth station operating in a specified frequency range within a specified distance from a specified geographic location and find contact information for any earth station thus identified in its license file. *See* <http://licensing.fcc.gov/myibfs/pointSearch.do>.

current authorization.<sup>62</sup> Requiring the TT&C earth station contact information to be filed in the “Other Filings” tab of IBFS under the file number of the relevant space station application will help ensure that the information can be easily located when needed. We adopt these recommendations.

32. SIA contends that the proposed requirement to update information on TT&C arrangements within 10 days does not comport with the proposed exemption for changes of less than 30 days’ duration. SIA asserts that operators might not be able to ascertain the ultimate duration of a temporary change in TT&C arrangements within the first 10 days.<sup>63</sup> Instead, SIA recommends prescribing a 30-day deadline for reporting changes in such information. We conclude that updating TT&C information within 30 days is sufficient to ensure that the information is reasonably accurate. Accordingly, we adopt Section 25.172(b) consistent with SIA’s suggestion.

#### 4. Results of In-Orbit Testing and Placement in Assigned Orbit

33. Section 25.210(k) requires space station operators to measure the co-polarized and cross-polarized performance of space station antennas during preliminary in-orbit testing and submit the measurement data to the Commission within 30 days after completing the testing. We proposed to amend this provision to require operators to submit such data only upon request from the Commission. We also proposed to remove the amended provision from Section 25.210(k) and insert it in a new Section 25.173. Moreover, we proposed to add a provision in Section 25.173(b) to require space station licensees to notify the Commission within 15 days after completing in-orbit testing whether a space station’s measured performance is within authorized limits, whether the space station has been placed in its authorized orbit or orbital location, and whether it is capable of using its assigned frequencies.<sup>64</sup>

34. SIA supports the proposal to relocate this reporting rule and modify it to require licensees to submit data only on request. SIA, Intelsat, and Inmarsat, however, oppose the proposed requirement to disclose certain information to the Commission within 15 days after completing in-orbit testing.<sup>65</sup> They contend that this requirement would be redundant with the proposed modified provisions in Section 25.121(d), which state that the license term for a GSO space station will begin when the licensee certifies that the space station has been placed in its assigned orbital location and that its performance conforms to the terms of the license and, similarly, that the license term for NGSO space stations will begin when the licensee certifies that an initial space station has been placed in its authorized orbit and is performing consistently with the license terms.

35. The proposed reporting requirement in Section 25.173(b) is not redundant with Section 25.121(d), as amended. Rather, Section 25.173(b), which we adopt as proposed, prescribes requirements that are not included in Section 25.121(d). Specifically, Section 25.173(d) requires a licensee to notify the Commission within a specified time after completing in-orbit testing whether a space station is capable of using all of the assigned spectrum and requires NGSO licensees to report the results of in-orbit testing of every space station launched pursuant to the license, not just the first one launched. Moreover, Section 25.121(d) and Section 25.173(b) serve different purposes. Section 25.121(d) specifies necessary conditions for the commencement of license terms; Section 25.173(b) is simply a reporting requirement.

#### C. MSS and ATC Terminals Aboard Aircraft

36. Several band-specific rules in Part 25 prohibit operation of MSS earth station transceivers or Ancillary Terrestrial Component (ATC) mobile terminals aboard civil aircraft because on-board

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<sup>62</sup> SIA Comments, Rules Appendix at 30.

<sup>63</sup> *Id.* at 13.

<sup>64</sup> *Notice*, 27 FCC Rcd at 11628, ¶ 24.

<sup>65</sup> SIA Comments at 13; Intelsat Comments at 3; Inmarsat Reply Comments at 4.

operation of such devices could interfere with aircraft radio navigation.<sup>66</sup> Other provisions require such devices to be labeled with a warning that they must not be operated aboard civil aircraft.<sup>67</sup> We proposed to replace these multiple band-specific use restrictions and labeling requirements with a single, uniform aircraft use restriction and associated warning label requirement in a new rule section, Section 25.285.<sup>68</sup> We also proposed three substantive changes.<sup>69</sup> First, we proposed to expand an exception to the use restriction that would allow onboard operation of devices that have been installed in a manner approved by the Federal Aviation Administration (FAA) or are used by the pilot or with the pilot's permission. Second, we proposed to limit the warning label requirement to devices that can be hand-carried. Third, we proposed to amend the use restriction to apply to transmit-only devices as well as transceivers.

37. SIA supports all of these proposed changes.<sup>70</sup> ORBCOMM supports the proposal to consolidate the rules pertaining to operation of mobile terminals aboard aircraft.<sup>71</sup> We adopt our proposal to consolidate these rules into a new Section 25.285. This change will make the requirements easier to find. We also adopt the three proposed substantive changes mentioned above, for the reasons stated in the *Notice*.

38. In addition, ORBCOMM advocates changing proposed Section 25.285 in several other respects.<sup>72</sup> As proposed in the *Notice*, Section 25.285 reads as follows:

(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:

- (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;
- (2) ATC terminals capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS bands;
- (3) Earth stations used for non-voice, non-geostationary Mobile-Satellite Service communication that can emit radiation in the 108-137 MHz band.

ORBCOMM recommends inserting "civil" before "aircraft." We adopt this suggestion, which clarifies that the rule applies only to civil aircraft, and not to military aircraft.<sup>73</sup> ORBCOMM also recommends three other changes: (1) changing "installed" to "operated;" (2) changing "approved" to "permitted;" and (3) changing "that can emit radiation in the 108-137 MHz band" to "do not comply with the FAA's harmful interference protection criteria for aeronautical radio system receivers operating in the 108-137 MHz band."<sup>74</sup> Aviation Spectrum Resources opposes these changes, stating that they fall outside the

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<sup>66</sup> See, e.g., *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile-Satellite Service*, CC Docket No. 92-76, Notice of Proposed Rulemaking, 8 FCC Rcd 6330, 6335, ¶ 27 (1993); *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile-Satellite Service*, CC Docket No. 92-76, Report and Order, 8 FCC Rcd 8450, 8453-54, ¶ 12 (1993).

<sup>67</sup> 47 C.F.R. §§ 25.135(b), 25.136(a) and (h), and 25.143(k).

<sup>68</sup> *Notice*, 27 FCC Rcd at 11629, ¶ 26.

<sup>69</sup> *Id.* at 11629, ¶ 27.

<sup>70</sup> SIA Comments at 13.

<sup>71</sup> ORBCOMM Comments at 9.

<sup>72</sup> *Id.* at 11.

<sup>73</sup> See 47 C.F.R. §§ 25.135(b) and 25.136(a) and (k).

<sup>74</sup> ORBCOMM Comments at 9-11.

scope of the *Notice*.<sup>75</sup> We agree that adopting these recommendations would effect substantive changes not contemplated in the *Notice* that might adversely affect some parties.

39. Finally, Section 25.285, as proposed in the *Notice*, was captioned “Operation of portable transmitters or transceivers on board aircraft.”<sup>76</sup> The existing use restrictions in Sections 25.135(b), 25.136(a), and 25.143(k), however, apply to all NVNG MSS transceivers, all 1.6/2.4 GHz and 2 GHz MSS transceivers, and all 1.6/2.4 GHz and 2 GHz ATC terminals, including non-portable devices. We did not intend to limit the civil aircraft use restrictions for MSS and ATC transceivers only to portable devices. Accordingly, we adopt Section 25.285 with the corrected caption “Operation of MSS and ATC transmitters or transceivers on board civil aircraft.”

#### D. Milestone Rules

40. For almost three decades, the Commission has required space station licensees to adhere to milestone schedules. Milestones are intended to ensure that licensees provide service to the public in a timely manner and do not hold scarce orbital and spectrum resources to the exclusion of others.<sup>77</sup> Before 2003, the Commission included a standard milestone schedule as a condition of most licenses. In the 2003 *Space Station Licensing Reform Order*, the Commission codified milestones for most GSO and NGSO satellites in Section 25.164.<sup>78</sup> The milestone requirements, together with a bond requirement also adopted at that time, are designed to discourage speculative applications. They also help ensure that licensees remain committed and able to proceed with timely implementation of licensed space stations, which generally cost several hundred million dollars each to launch and operate. As a result, authorizations for new satellites, excluding DBS and SDARS, include: (1) a requirement that licensees post a \$3 to \$5 million bond<sup>79</sup> with the Commission within 30 days of license grant; and (2) a requirement to construct and launch the satellite(s) consistent with the milestone schedule specified in Section 25.164.<sup>80</sup> The milestones track the three-to-five year period needed to construct and launch a satellite. The burden of proof for milestone compliance is on the licensee.<sup>81</sup> The amount of the bond may be reduced as milestones are met.<sup>82</sup> The licensee is considered to be in default if it fails to meet any milestone, and at the time of the milestone deadline, the licensee has not provided a sufficient basis for

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<sup>75</sup> Aviation Spectrum Resources, Inc., Reply Comments at 4. Aviation Spectrum Resources is the communications company of the U.S. air transport industry and is owned by U.S. airlines and other airspace users. *Id.* at 1.

<sup>76</sup> *Notice*, 27 FCC Rcd at 11695-96 (Appendix A, ¶ 55).

<sup>77</sup> *Space Station Licensing Reform Order*, 18 FCC Rcd at 10827, ¶ 173.

<sup>78</sup> *Id.* at 10764, ¶ 1. SDARS licensees are subject to milestone requirements in 47 C.F.R. § 25.144(b). DBS licensees are subject to similar “due diligence” requirements in 47 C.F.R. § 25.148(b). Operators of non-U.S.-licensed space stations that have been granted market access in the United States are also subject to the milestone requirements in Section 25.164. *See* 47 C.F.R. § 25.137(d)(1).

<sup>79</sup> The required bond is \$3 million for a GSO satellite and \$5 million for a constellation of NGSO satellites. Operators of non-U.S.-licensed space stations that have been granted market access in the United States are also subject to the bond requirement. 47 C.F.R. § 25.137(d).

<sup>80</sup> The milestone schedule for GSO satellites requires licensees to: (1) enter into a binding non-contingent contract to construct the licensed satellite within one year of grant, (2) complete the critical design review (CDR) within two years, (3) begin construction of the satellite within three years, and (4) launch and operate the satellite within five years. For NGSO systems, the milestones are slightly altered to account for the fact that the system may comprise more than one satellite. 47 C.F.R. §§ 25.164(a) and (b).

<sup>81</sup> *Space Station Licensing Reform Order*, 18 FCC Rcd at 10833-34, ¶¶ 191-93.

<sup>82</sup> 47 C.F.R. § 25.165(d).



extending the milestone.<sup>83</sup> In those situations, the license becomes null and void and the outstanding balance of the bond is paid to the U.S. Treasury.<sup>84</sup>

41. In the *Notice*, we proposed a number of minor changes to Section 25.164. We noted that Section 25.164 does not include a provision requiring a licensee to demonstrate it has met the “launch and operate” milestone for GSO systems or the “launch and operate the first satellite” or “bring [all satellites] into operation” milestones for NGSO systems, as it does for other milestones.<sup>85</sup> We therefore proposed to add a new paragraph to Section 25.164 providing that licensees must, on or before the milestone for launch and operation, either certify it has met this or advise the Commission that it has not.<sup>86</sup> No commenter opposes adopting a requirement to certify compliance with the launch and operate milestone. With the modification regarding timing discussed below,<sup>87</sup> we add this requirement in Section 25.164(f).

42. We proposed to add a sentence in Section 25.164 to clarify what is required to meet a “launch and operate” milestone.<sup>88</sup> While launch of a satellite is normally a matter of public record, operators occasionally do not file a letter in the record that states the station is operating in conformance with the authorization. The proposed addition would appear in Section 25.164(f), and would state that licensees can demonstrate compliance with a launch and operate milestone by certifying that the space station has been launched and placed in its authorized orbital location or non-geostationary orbit and that its performance has been tested in orbit and found to be consistent with the terms of the authorization. Intelsat recommends adding a provision in Section 25.164(f) allowing licensees to demonstrate compliance by filing a certification pursuant to Section 25.121(d), rather than by providing a separate certification pursuant to Section 25.164(f).<sup>89</sup> We adopt this change, which is substantively equivalent to the amendment proposed in the *Notice*.<sup>90</sup>

43. We proposed to delete provisions in Sections 25.164 that exempt licensees of satellite systems licensed prior to September 11, 2003 from the specified milestone requirements.<sup>91</sup> These grandfathering provisions are now obsolete, since no space stations licensed before September 11, 2003 are still under construction. We also proposed to delete service-specific milestone provisions in other sections of Part 25 that are redundant and/or inconsistent with current or proposed provisions in Section 25.164.<sup>92</sup> For these reasons, we adopt these changes, which SIA supports<sup>93</sup> and no commenter opposes.

44. SIA notes that Section 25.164 requires licensees to demonstrate that they have met a required milestone on or before the milestone date. SIA asserts that this effectively shortens the time

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<sup>83</sup> 47 C.F.R. § 25.165(c).

<sup>84</sup> 47 C.F.R. § 25.165; *Space Station Licensing Reform Order*, 18 FCC Rcd at 10824-25, ¶¶ 166-67.

<sup>85</sup> *See, e.g.*, 47 C.F.R. §§ 25.165(c), (d), and (e).

<sup>86</sup> *Notice*, 27 FCC Rcd at 11629-30, ¶ 28.

<sup>87</sup> *See* ¶ 44, *infra*.

<sup>88</sup> In the text of the *Notice*, we inadvertently proposed to add this sentence to Section 25.164(a)(4). *Notice*, 27 FCC Rcd at 11630, ¶ 29. In Appendix A of the *Notice*, we correctly included the sentence in Section 25.164(f). *Id.* at 11684-85 (Appendix A, ¶ 28). We also noted that this sentence is now found in Section 25.202(c), where it is out-of-context, and proposed to delete it from that section. *Id.* at 11630, ¶ 29.

<sup>89</sup> Intelsat Comments at 4.

<sup>90</sup> *See* ¶ 41, *supra*.

<sup>91</sup> *Notice*, 27 FCC Rcd at 11630, ¶ 31.

<sup>92</sup> *Id.*

<sup>93</sup> SIA Comments at 14.

period for meeting each milestone.<sup>94</sup> Although we did not propose this in the *Notice*, SIA recommends amending Section 25.164 to afford licensees 15 days after each milestone deadline to demonstrate compliance. No commenter opposes this recommendation, which we adopt for the reason stated by SIA.<sup>95</sup> The additional 15 days will afford licensees a modest period of time to prepare their milestone demonstrations.

45. Section 25.164(c) provides that licensees must submit a copy of the construction contract to the Commission to demonstrate compliance with the milestone to enter into a binding non-contingent contract to construct the licensed satellite(s). In the *Notice*, we noted that Section 25.164 does not, in contrast, detail the documents to be included in the showing required for the subsequent critical design review (CDR) and commence physical construction milestones. Instead, the rule requires licensees to submit information “sufficient to demonstrate” compliance with these milestones.<sup>96</sup> In the *Space Station Reform Order*, the Commission listed types of evidence that may be useful in demonstrating that a licensee has met the CDR milestone.<sup>97</sup> The Commission further indicated that it may require licensees to provide further information, when warranted.<sup>98</sup> The Commission has also addressed the types of evidence sufficient to demonstrate compliance with the CDR and commence physical construction milestones in orders and public notices.<sup>99</sup> In the *Notice*, we sought comment on whether we should provide greater specificity in the rules concerning the evidence appropriate for demonstrating compliance with the CDR and commence physical construction milestones.<sup>100</sup>

46. Several commenters made suggestions in this regard, ranging from codifying a limited list of evidence that can be used to meet the CDR milestone to replacing evidentiary showings for all milestones with certifications or affidavits of compliance. Boeing asks us to codify the criteria the Commission enumerated when adopting the CDR milestone in the *Space Station Reform Order* in Section 25.164(d).<sup>101</sup> Boeing asserts that instead of relying on these criteria, Commission staff regularly asks

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<sup>94</sup> *Id.*

<sup>95</sup> The redundant service-specific milestone rules that we eliminate in this Order established certification deadlines 10 days after the associated milestone deadlines. See *Notice*, 27 FCC Rcd at 11631, n.41. Thus, SIA’s proposal to establish certification deadlines 15 days after the associated milestone deadlines is a logical outgrowth of the proposal in the *Notice* to consolidate all Part 25 milestone requirements in Section 25.164.

<sup>96</sup> 47 C.F.R. §§ 25.164 (d) and (e).

<sup>97</sup> *Space Station Licensing Reform Order*, 18 FCC Rcd at 10833, ¶ 191.

<sup>98</sup> *Id.*

<sup>99</sup> *Notice*, 27 FCC Rcd at 11630, ¶ 30, n.40 (listing public notices making favorable milestone determinations); *International Bureau Provides Guidance Concerning the Critical Design Review Milestone Requirement*, Public Notice, Report No. SPB-204, DA 04-787 (Mar. 25, 2004); *Spectrum Five, LLC*, Order and Authorization, 21 FCC Rcd 14023, 14041 (Int’l Bur. 2006) (explaining that critical design review is “the stage in the spacecraft implementation process at which the design and development phase ends and the manufacturing phase starts” and discussing evidence of compliance with the CDR milestone); see also *ATCONTACT Communications, LLC*, Order, 25 FCC Rcd 7567, 7570 (2010) (explaining that when establishing compliance with the commence physical construction milestone licensees typically submit photographs of satellite components that have been delivered to or made by the manufacturer and are clearly identified for use with the licensed satellite and evidence that they have made all payments to date under the manufacturing contract).

<sup>100</sup> *Notice*, 27 FCC Rcd at 11630, ¶ 30.

<sup>101</sup> These criteria include: (1) evidence of payment of the large sum of money that satellite construction contracts typically require at the time of CDR; (2) corroborating affidavits from independent satellite manufacturers; and (3) evidence that all long-lead items needed for commencing spacecraft assembly have been ordered. Boeing Comments at 4 (citing *Space Station Licensing Reform Order*, 18 FCC Rcd at 10833, ¶ 191). See Inmarsat Reply Comments at 3; SIA Reply Comments at 10; Inmarsat Reply Comments at 5; EchoStar Reply Comments at 6.

licensees to submit CDR document packages, a process that Boeing asserts is time-consuming and results in unnecessary disclosure of proprietary information.<sup>102</sup> Other commenters agree that licensees should not have to submit CDR packages and that the Commission should rely exclusively on the types of evidence mentioned in the *Space Station Licensing Reform Order*.<sup>103</sup> Inmarsat contends that the Commission should accept affidavits from satellite manufacturers as proof that the licensee has completed CDR.<sup>104</sup> Finally, ORBCOMM recommends amending all of Section 25.164's evidentiary requirements with provisions that simply require licensees to certify milestone compliance for all milestones.<sup>105</sup>

47. We will not replace evidentiary showings with certifications or affidavits, which we did not propose or request comment on in the *Notice*. Without specific evidence, we would be unable to assess independently a licensee's progress in constructing and launching its licensed satellites. In several cases, the International Bureau has found that despite a licensee's assertion that it had met particular milestones, it had not, in fact, met the milestones.<sup>106</sup> Thus, allowing licensees to file certifications or affidavits in lieu of concrete evidence could allow a licensee not making sufficient progress to continue to hold spectrum to the exclusion of others willing and able to proceed.

48. In addition, while we have issued guidance in Orders and Public Notices as to the types of evidence sufficient to demonstrate compliance with the CDR milestone,<sup>107</sup> we are reluctant to codify these criteria at this time. Codifying specific criteria could result in a loss of flexibility to licensees in making their CDR showings, as well as to Commission staff in determining whether a licensee has, in fact, met the CDR milestone. Thus, we will not codify criteria for meeting the CDR milestone, as Boeing suggests, without further exploring this issue. Rather, we will continue to rely on criteria enunciated in Orders and Public Notices.

49. Further, Commission staff asks a licensee to submit a CDR package<sup>108</sup> when the licensee has provided insufficient evidence to demonstrate it has met the CDR milestone. Contrary to Boeing's assertion, we do not believe that requesting the CDR package, when warranted, results in unnecessary disclosure of confidential proprietary information or makes the Commission's review process unduly protracted. The Commission has a well-established and effective process for dealing with confidential information. Further, the time it takes Commission staff to review a CDR showing and to determine

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<sup>102</sup> Boeing Comments at 6-10.

<sup>103</sup> See SIA Reply Comments at 9; Intelsat Reply Comments at 4-5; EchoStar Reply Comments at 5; Inmarsat Reply Comments at 3.

<sup>104</sup> Inmarsat Reply Comments at 5.

<sup>105</sup> ORBCOMM Comments at 12.

<sup>106</sup> See, e.g., *ATCONTACT Communications, LLC, Petition for Reconsideration and Motion for Stay*, Order, 25 FCC Rcd 7567 (2010), at 7573-76, ¶¶ 18, 26 (certified it had met the beginning physical construction milestone but had not made any significant progress in building its authorized satellites) and *Mobile Communications Holdings, Inc., Authority to Construct, Launch, and Operate an Elliptical Low-Earth-Orbit Mobile-Satellite Service System*, Memorandum Opinion and Order, 16 FCC Rcd 11766 (Int'l Bur. 2001), *rev. denied*, 18 FCC Rcd 11650 (2003) (certified that it had contracted for construction of fourteen authorized NGSO satellites, although the contract did not require the manufacturer to build or deliver any satellites). See also *Spectrum Five LLC*, Opinion and Order, 26 FCC Rcd 10448, 10455 (Int'l Bur. 2011), *EchoStar Corp.*, Memorandum Opinion and Order, 26 FCC Rcd 10442, 10444 (Int'l Bur. 2011), and *Globalstar, L.P.*, Memorandum Opinion and Order, 18 FCC Rcd 1249 (Int'l Bur. 2003), *aff'd* 19 FCC Rcd 11548 (2004).

<sup>107</sup> See ¶ 45, note 99, *supra*.

<sup>108</sup> A CDR package is the material used by the licensee and manufacturer to conduct the CDR meeting, which generally takes place after spacecraft design is finalized and prior to beginning production. The material contains the detailed design for each satellite subsystem and the results of computer simulations and laboratory tests used to determine whether the proposed design meets specified performance parameters.

whether it is sufficient is the same regardless of whether the showing is based on “codified” criteria or is based on the CDR package itself. In other words, any delay in making a CDR determination is due to the adequacy of the CDR showing and not to its form. Consequently, we will not prohibit Commission staff from requesting licensees to submit their CDR packages in connection with their milestone review.

50. Finally, SIA, ORBCOMM, Inmarsat, and SES/NSS/O3b advocate other changes in Section 25.164 that are beyond the scope of the amendments proposed and issues raised for comment in the *Notice*.<sup>109</sup> These suggestions could undercut the reforms we made in 2003, which are designed to ensure licensees remain committed to constructing and launching their authorized satellites and which have proven successful. Consequently, we will not consider these suggestions further here.

#### **E. Form 312EZ and the Autogrant Procedure**

51. In public notices released in 1999 and 2000, the Commission announced an “autogrant” procedure for license applications for conventional C-band or conventional Ku-band FSS earth stations meeting certain eligibility criteria. Applications eligible for the autogrant procedure are deemed to be granted 35 days after appearing on public notice as accepted for filing, provided no objection is filed during the 30-day notice period.<sup>110</sup> In 2003, the Commission adopted a simplified application form, Form 312EZ, to be used for earth station applications eligible for autogrant processing.<sup>111</sup> Section 25.115(a)(2) contains rules pertaining to use of Form 312EZ, but these provisions do not fully specify the eligibility criteria or mention the autogrant procedure.

52. In the interest of improving transparency, we proposed to amend Section 25.115(a)(2) to codify the autogrant procedure and list all of the eligibility criteria.<sup>112</sup> We also proposed to amend Section 25.115(a)(2) to: (1) make use of Form 312EZ optional rather than mandatory for eligible applicants, (2) add applications for aircraft earth stations to the types of applications ineligible for autogrant processing (the then-current rule excluded only ESV and VMES applications), (3) codify a practice of permitting applicants to apply for only one transmitting antenna on Form 312EZ, and (4) extend Form 312EZ and autogrant eligibility to routine applications for individual earth stations that would transmit in the 28.35-28.6 GHz and/or 29.25-30.0 GHz band to GSO FSS satellites previously coordinated with Federal Government systems. In addition, we proposed to delete a provision in Section 25.115(a)(3) stating that an applicant that would otherwise be required to use Form 312EZ must use Form 312, Main Form and Schedule B, if the EZ form is unavailable.<sup>113</sup> Last, we invited comment on whether to add an eligibility criterion for autogrant processing that pertains to FAA notification that may be required by Part 17 of the Commission’s rules.

53. No one opposes our proposals to codify the autogrant procedure and list all of the eligibility criteria. We adopt these changes for the reasons stated in the *Notice*. Also, no commenter opposes our proposal to expand the exclusion for ESV and VMES applications to include applications for

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<sup>109</sup> SIA Comments at 15 (suggests eliminating the CDR milestone requirement or combining it with the commence physical construction requirement) and 15-16 (recommends adopting a rule that milestone requirements in a GSO space station license can be met by moving an existing space station into the assigned orbital location); ORBCOMM Comments at 12-13 (recommends adopting an exemption for replacement or second-generation satellites); SES/NSS/O3b Reply at 12-13 (supports ORBCOMM’s recommendation and alternatively recommends that only a single milestone requirement, for launch and commencement of operation, be specified for GSO or NGSO replacement satellites).

<sup>110</sup> *Commission Launches Earth Station Streamlining Initiative*, Public Notice, 14 FCC Rcd 9834 (1999); *Commission Launches C-Band Earth Station Streamlining Initiative*, Public Notice, 15 FCC Rcd 24075 (2000).

<sup>111</sup> *2003 Streamlining Order*, 18 FCC Rcd at 13505-06, ¶¶ 52-54.

<sup>112</sup> *Notice*, 27 FCC Rcd at 11631, ¶ 33.

<sup>113</sup> *Id.* at 11631-32, ¶¶ 33-35.

aircraft earth stations, which was subsequently adopted in another proceeding.<sup>114</sup> We also adopt our proposal to make use of Form 312EZ optional, which no commenter opposes. Doing so eliminates the need for the provision in Section 25.115(a)(3) that directs applicants to use the regular application form if Form EZ is “not available.” We therefore eliminate this provision.

54. We received unanimous support for our proposal to extend autogrant eligibility to applications for GSO FSS earth stations operating in the 28.35-28.6 GHz and 29.5-30.0 GHz uplink bands, which are designated as primary for GSO FSS operation and secondary for NGSO FSS operation under the Commission’s 20/30 GHz band plan.<sup>115</sup> We adopt this proposal for the reasons stated in the *Notice*, for applicants proposing to communicate via satellites for which coordination has been completed with Federal Government operators pursuant to Footnote US334 of the U.S. Table of Frequency Allocations under an agreement previously approved by the Commission and the National Telecommunications and Information Administration.

55. Commenters further suggest that the autogrant process should be available not only for applications for single-station licenses but also for blanket applications for GSO FSS earth stations transmitting in the 28.35-28.6 GHz and/or 29.5-30.0 GHz bands or in the conventional Ku band.<sup>116</sup> We adopt the recommendations to extend autogrant eligibility to applications for blanket licenses for fixed earth stations transmitting to GSO FSS satellites in the 28.35-28.6 GHz and/or 29.5-30.0 GHz bands or for fixed earth stations transmitting to GSO FSS satellites in the 14.0-14.5 GHz band.<sup>117</sup> The Commission’s rules currently provide for routine processing of applications for blanket licenses for ubiquitously deployed fixed earth stations communicating with GSO FSS space stations in those bands.<sup>118</sup> Earth station applicants meeting the routine processing criteria are not required to coordinate uplink operation in those bands with operators of other systems. We find that the autogrant procedure will provide adequate regulatory oversight for such blanket license applications, and making the procedure available for such applications will promote the objectives of predictability and administrative efficiency.

56. One aspect of our proposal to extend autogrant eligibility to the 20/30 GHz band received conflicting comments. Specifically, commenters disagreed as to whether autogrant eligibility should extend to applications for GSO FSS earth stations operating in the 29.25-29.5 GHz sub-band, which the Commission has designated for co-primary sharing by GSO FSS earth stations and MSS feeder link

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<sup>114</sup> *ESAA Order*, 27 FCC Rcd at 16581.

<sup>115</sup> SIA Comments at 17-18; EchoStar Comments at 6; Inmarsat Reply Comments at 4; SES/NSS/O3b Joint Reply Comments at 11. *See Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, CC Docket No. 92-297, First Report and Order, 11 FCC Rcd 19005 (1996) (adopting band plan), modified by *Third Report and Order*, 12 FCC Rcd 22310 (1997).

<sup>116</sup> SIA Comments at 17-18; EchoStar Comments at 6; Inmarsat Reply Comments at 4; SES/NSS/O3b Joint Reply Comments at 11.

<sup>117</sup> Implementing this expansion of eligibility will require changing FCC Form 312EZ and the IBFS validation software. When an updated version of the Form 312EZ and the IBFS validation software becomes available, we direct the International Bureau to issue a Public Notice announcing that newly eligible applicants may begin submitting FCC Form 312EZ. We anticipate that a phased approach to updating Form 312EZ may be necessary, in which case more than one Public Notice announcing the availability of an updated version of the form may be issued. Until the updated Form 312EZ and IBFS validation software become available, applicants for single-station and/or blanket licenses for fixed earth stations transmitting to GSO FSS satellites in the 28.35-28.6 GHz and/or 29.5-30.0 GHz bands and applicants for blanket licenses for fixed earth stations transmitting to GSO FSS satellites in the 14.0-14.5 GHz band must continue to use Form 312 and Schedule B.

<sup>118</sup> *See* 47 C.F.R. §§ 25.134(b)-(g) and 25.138(a).

stations.<sup>119</sup> We may address the conflicting recommendations concerning use of the autogrant procedure for applications for GSO FSS earth station operation in the 29.25-29.5 GHz band at another time.<sup>120</sup> Finally, we received no comment on adding an autogrant eligibility criterion pertaining to FAA notification. We are not adopting such a change in this Report and Order, but we may invite comment on this issue again at another time.

#### F. Rain Fade Compensation

57. The Commission's rules allow earth stations transmitting in frequencies above 10 GHz to increase the power of uplink transmissions above otherwise applicable limits to overcome "rain fade." Rain fade is signal attenuation due to the scattering and absorbing effects of precipitation in the atmosphere. In the *Notice*, we noted that although most of the rain fade compensation provisions are contained in Section 25.204, others are interspersed throughout Part 25.<sup>121</sup> We also noted that some of the provisions are redundant or contradictory. We proposed to consolidate all of the rain fade provisions in Section 25.204(e) and correct the inconsistencies.<sup>122</sup> To this end, we proposed to narrow the scope of the rule permitting a 1 dB power increase above measured attenuation in transmissions above 10 GHz to apply only to transmissions in the 14.0-14.5 GHz band, noting that this would be consistent with the Commission's intent when it adopted the rule.<sup>123</sup> We also proposed to eliminate the provision making rain fade compensation mandatory for 20/30 GHz earth stations.<sup>124</sup> Further, we invited comment on adopting a rule that would allow earth stations transmitting in frequencies above 10 GHz, and that are not otherwise subject to rain fade rules, to increase uplink power to the extent needed to close communication links, provided that doing so does not cause harmful interference.<sup>125</sup>

58. SIA supports consolidating the rain fade rules and making rain fade compensation optional, rather than mandatory, for 20/30 GHz earth stations.<sup>126</sup> SIA, however, opposes our proposal to limit the scope of the 1 dB rule to transmissions in the 14.0-14.5 GHz band.<sup>127</sup> Instead, SIA suggests

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<sup>119</sup> EchoStar, Inmarsat, and SES/NSS/O3b advocate extending autogrant eligibility to applications for GSO FSS earth stations that would operate in the 29.25-29.5 GHz band. EchoStar Comments at 8-9; Inmarsat Reply Comments at 4; SES/NSS/O3b Joint Reply Comments at 11. In contrast, Iridium, which uses the 29.25-29.3 GHz band for feeder uplinks and command signals for its NGSO MSS system, contends that applications for GSO FSS earth stations in the 29.25-29.5 GHz band are unsuitable for autogrant because such applications must include a showing of technical compatibility or coordination with NGSO MSS feeder link operation in that band. Iridium Comments at 2-3. *See also* EchoStar Reply Comments at 13-15 and Iridium Reply Comments at 7-8.

<sup>120</sup> Similarly, we will not address at this time the related recommendations from SIA, EchoStar, and SES/NSS/O3b that are beyond the scope of the *Notice*. *See* SIA Comments at 16-17 (recommending integration of autogrant criteria in Form 312 and elimination of Form 312EZ, replacing antenna-size and input-power eligibility criteria with off-axis EIRP density criteria, and extending eligibility to applicants specifying non-U.S.-licensed satellite points of communication not on the Permitted List); EchoStar Comments at 6 and 8-9 (recommends extending autogrant eligibility to applications for DBS feeder link operation in the 17.3-17.8 GHz band); SES/NSS/O3b Joint Reply Comments at 11 (contends that applications for NGSO FSS earth station operation in the 28.6-29.1 GHz uplink band should be eligible for autogrant).

<sup>121</sup> *Notice*, 27 FCC Red at 11632-33, ¶ 37.

<sup>122</sup> *Id.*

<sup>123</sup> *Id.* As noted in the *Notice*, limiting the scope of the 1 dB rule would resolve conflict with rain fade rules for transmissions in certain other frequency bands above 10 GHz, namely the 13.77-13.78 GHz and 24.75-25.25 GHz bands.

<sup>124</sup> *Id.*

<sup>125</sup> *Id.* at 11633, ¶ 38.

<sup>126</sup> SIA Comments at 18.

<sup>127</sup> *Id.* at 18-19.

limiting its scope to transmissions in frequencies above 10 GHz that are not subject to more band-specific rain fade compensation rules. No party commented on whether to adopt a rule that would allow earth stations not subject to band-specific rain fade rules to increase power “to the extent necessary to close communications links.” On further reflection, we conclude that such a rule would be unduly restrictive, as it would afford no margin above the minimum power level necessary to close communication links. Consequently, we amend the 1 dB rule in accordance with SIA’s recommendation, which eliminates the conflicts noted in the *Notice*. We also amend the rules as necessary to consolidate the rain fade rules in Section 25.204(e).<sup>128</sup>

59. In addition, SIA recommends eliminating a provision in the 1 dB rule that requires earth station operators to coordinate the maximum power level for power control purposes with satellite operators.<sup>129</sup> EchoStar urges us to expand the scope of the rain fade compensation rule for GSO FSS earth station operation in the 28.35-28.6 GHz or 29.25-30.0 GHz bands to include operation in the 28.6-29.1 GHz band.<sup>130</sup> Adopting these recommendations would effect substantive changes not contemplated in the *Notice* that might adversely affect some parties. We will address these matters in a Further NPRM.

## **G. Other Proposed Changes to Subpart B – Applications and Licenses**

### **1. Section 25.111 “Additional information”**

60. Section 25.111 contains requirements pertaining to international coordination for U.S.-licensed space stations. The first sentence in Section 25.111(b) states that “applicants, permittees, and licensees of radio stations governed by this part shall provide the Commission with all information it requires for the Advance Publication, Coordination, and Notification of frequency assignments pursuant to the International Radio Regulations.” We proposed to add that the required information includes “due diligence” information, change “shall” to “must,” and change the phrase “International Radio Regulations” to “Radio Regulations of the International Telecommunication Union.” We also proposed to correct a grammatical error in the next sentence in Section 25.111(b) and insert the word “such” in the following sentence, and delete several unnecessary words.<sup>131</sup> We received only one comment regarding these proposed changes: SIA suggests a word-order change in the first sentence.<sup>132</sup> We adopt the proposed changes in Section 25.111(b) with the further change recommended by SIA, which makes the first sentence of that provision easier to understand without changing its meaning.

61. The International Telecommunication Union (ITU) assesses cost recovery fees for processing information filings for satellite networks. Following the introduction of ITU cost recovery fees, the Commission’s International Bureau issued a Public Notice announcing that a party on whose behalf the Bureau submits such filings to the ITU will be responsible for timely payment of such fees and must certify that it accepts this obligation.<sup>133</sup> We proposed to codify this policy in a new paragraph (d) in

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<sup>128</sup> Among other things, the consolidation involves removing an existing rain-fade compensation rule for 17/24 GHz BSS feeder link stations from Section 25.223(e), inserting it in Section 25.204(e), and deleting a redundant and less-specific provision in Section 25.204(g) that applies both to 20/30 GHz earth stations and 17/24 GHz feeder link stations. The *Notice*’s rule appendix included a proposal to move the rule that currently appears in Section 25.223(e) to Section 25.204(e), but we neglected to say or indicate in the appendix that Section 25.223(e) would consequently be removed. The amendments adopted herein include removal of Section 25.223(e).

<sup>129</sup> SIA Comments at 19.

<sup>130</sup> EchoStar Comments at 6-7.

<sup>131</sup> *Notice*, 27 FCC Red at 11633-34, ¶ 40 and 11670-71 (Appendix A, ¶ 3).

<sup>132</sup> SIA Comments at 20 (moving the phrase “including due diligence information” to earlier in the sentence).

<sup>133</sup> *Implementation of ITU Cost Recovery Charges for Satellite Network Filings*, Public Notice, 16 FCC Red 18732 (IB 2001).

Section 25.111.<sup>134</sup> The proposed rule states that the Commission will submit information to the ITU only after the applicant or licensee files a signed declaration that it accepts consequent ITU cost-recovery responsibility. The proposed rule also states that the declaration must reference the pertinent FCC call sign and international satellite name and include contact information for cost recovery purposes. Moreover, the proposed rule states that the party-in-interest must remit payment of any resultant cost-recovery fee by the due date specified in the ITU's invoice and that a license granted in reliance on such a declaration, and disposition of any pending or future Part 25 application from the same party, would be contingent upon discharge of this payment obligation.

62. SIA does not oppose the proposal to codify the obligation to pay ITU cost-recovery fees, but disagrees with the proposal to require licensees to file signed declarations of cost-recovery responsibility. Instead, SIA recommends allowing applicants to certify acceptance of cost-recovery responsibility either by checking a box in the license application form or by filing a letter from counsel of record.<sup>135</sup> The obligation to pay ITU cost-recovery fees, however, is not linked to the FCC's disposition of an application or license. Requiring the declarations to be filed as separate, signed documents, rather than as checkmarks in an electronic application form, will ensure that they remain on file in the event the underlying applications are dismissed or withdrawn. Although the declaration may be filed as an attachment to a letter from counsel, it should be signed by the licensee or, if the licensee is a corporation or partnership, by a corporate officer or partner on its behalf.

63. SIA also opposes requiring cost recovery filings to identify the relevant international satellite system name because this might not be known when a cost recovery declaration is filed.<sup>136</sup> If the international satellite system name is not mentioned in a cost recovery declaration, however, the Commission will not know which satellite system the declaration pertains to, nor will the declaration, on its face, bind the applicant or licensee to pay the fee for a particular satellite system. The International Bureau's Satellite Division routinely assigns international names for U.S. satellite systems when initiating the ITU coordination process. Thus, an applicant or licensee can determine what name will be assigned simply by contacting staff in the Satellite Division before filing a cost recovery declaration.

64. SIA, Intelsat, and DIRECTV oppose the proposal to include a provision in Section 25.111(d) that would make disposition of pending or future applications contingent on discharge of a cost recovery payment obligation.<sup>137</sup> Intelsat contends that it would disserve the public interest to suspend processing of applications for modification of unrelated licenses for currently operating space stations pending resolution of a cost recovery dispute.<sup>138</sup> Instead, Intelsat asserts that the Commission should only suspend a license, or the processing of applications, that pertain to operation of the satellite system associated with the cost recovery obligation.

65. On review, we agree that limiting the scope of the rule to related applications and authorizations is the better approach. As adopted, Section 25.111(d) provides that licenses are conditioned on the discharge of the payment obligation. If the applicant or licensee does not pay the fee by the original due date, or upon resolution of a timely appeal with the ITU, we will dismiss any application associated with the satellite system in question and may refer a violation of Section 25.111(d) to the Enforcement Bureau for investigation and potential issuance of a notice of apparent liability.<sup>139</sup>

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<sup>134</sup> Notice, 27 FCC Rcd at 11634, ¶ 41.

<sup>135</sup> SIA Comments at 20-21.

<sup>136</sup> *Id.* at 21.

<sup>137</sup> *Id.* at 20; Intelsat Comments at 4-7; DIRECTV Reply Comments at 6-7.

<sup>138</sup> Intelsat Comments at 5.

<sup>139</sup> See 47 C.F.R. § 25.160(a) ("A forfeiture may be imposed for failure to operate in conformance with ... any of the Commission's rules ...."). Intelsat concedes that such action might be appropriate. Intelsat Comments at 7.



## 2. Section 25.112 “Defective applications”

66. Pursuant to the first-come, first-served licensing framework, the Commission places applications for new GSO-like satellites<sup>140</sup> at new orbital locations and market access requests for non-U.S.-licensed GSO-like satellites at new orbital locations in a “queue,” and considers them in the order in which they are filed.<sup>141</sup> In certain circumstances, the International Bureau makes an orbital location available by announcing that a filing window will open at a specific date and time. In these situations, operators often file multiple, identical applications just before and after the filing window opens in an attempt to attain first-in-line status.<sup>142</sup> The Bureau dismisses, as premature, applications filed before a filing window opens.<sup>143</sup> As stated in the *Notice*, the rules do not provide, however, for dismissal of duplicative applications filed after a filing window has opened, which can cause confusion and administrative delay.<sup>144</sup> We therefore proposed to amend Section 25.112(a), which specifies grounds for dismissing applications, to provide for dismissal of such duplicative applications and market access requests.<sup>145</sup>

67. SIA supports,<sup>146</sup> and no commenter opposes, the proposed amendment of Section 25.112(a), which we adopt for the reason stated above.

## 3. Section 25.113 “Station construction, launch authority, and operation of spare satellites”

68. We proposed a number of changes in Sections 25.113(a)-(e), which pertain to earth station construction. We proposed to amend Section 25.113(a), which states that applicants for earth station licenses must comply with rules regarding environmental impact before beginning construction, to add that earth station applicants must also comply with certain rules governing construction, marking, and lighting of antenna structures.<sup>147</sup> We proposed to insert similar provisions in Section 25.113(b) regarding construction of ATC base stations. We proposed to condense the provisions in Sections 25.113(c) and (e), which relate to prior registration and FAA notification of construction of new or altered antenna structures, move the revised provisions into Section 25.115, and delete duplicative provisions in Section 25.130(e).<sup>148</sup> We also proposed to remove a provision in Section 25.113(d) regarding painting, marking, and lighting of earth station antenna structures, insert that provision in a new Section 25.286, and delete two words from the provision.<sup>149</sup> SIA supports these proposed changes in Sections 25.113(a)-(e),<sup>150</sup>

<sup>140</sup> See 47 C.F.R. § 25.158(a) (defining “GSO-like satellite”).

<sup>141</sup> See 47 C.F.R. §§ 25.158(b) and 25.137(c).

<sup>142</sup> For example, an applicant might file its application several seconds before the filing window opens, and multiple times after the filing window opens. As a result, the applicant would have multiple identical applications on file. Only the first timely filed application is needed to establish a place in the processing queue.

<sup>143</sup> See, e.g., *Policy Branch Information*, Report No. SAT-00875, Public Notice, 27 FCC Rcd 6383 (Int’l Bur., 2012).

<sup>144</sup> *Notice*, 27 FCC Rcd at 11634, ¶ 42.

<sup>145</sup> *Id.*

<sup>146</sup> SIA recommends that in such cases Commission employees contact applicants before dismissing applications as duplicative to ensure that the right applications are dismissed. SIA Comments at 21. We will not adopt SIA’s recommendation in this regard. Commission staff is capable of ascertaining which applications are duplicative without consultations with applicants.

<sup>147</sup> *Notice*, 27 FCC Rcd at 11634-35, ¶ 43.

<sup>148</sup> *Id.* at 11635, ¶ 44.

<sup>149</sup> *Id.* at 11635, ¶ 45.

<sup>150</sup> SIA Comments at 21-22.

which no commenter opposes. We adopt these changes, which will make these rules more succinct and easier to understand.

69. Section 25.113(f) states that construction permits are not required for U.S.-licensed space stations. Because Section 319(d) of the Communications Act requires construction permits to be issued for broadcast stations,<sup>151</sup> we proposed to modify this provision to state that construction permits are not required for U.S.-licensed space stations unless they are authorized to disseminate radio communications to the public at large.<sup>152</sup> No commenter opposes this proposed amendment, which we adopt.

70. Section 25.113(h) states that NGSO space station licensees need not apply separately for authority to place in service technically identical in-orbit spare satellites previously authorized by a blanket space station license. The provision requires the licensee to notify the Commission within 30 days of activating an in-orbit spare and certify that it has not increased the number of operating satellites above the maximum authorized by the license and that it will operate the activated spare within the terms of the license. Sections 25.143(d) and 25.146(n) similarly provide that 1.6/2.4 GHz MSS, 2 GHz MSS, and 12/14 GHz NGSO FSS licensees may activate technically identical in-orbit spares after notifying the Commission and certifying that they have not exceeded the authorized number of operating space stations. Unlike Section 25.113(h), however, Sections 25.143(d) and 25.146(n) require licensees to file the notifications within 10 days and do not require them to submit such filings on Form 312. To resolve these discrepancies, we proposed to amend Section 25.113(h) to require licensees to file these notifications and certifications within 10 days of activating an in-orbit spare and to eliminate the requirement to submit these filings on Form 312.<sup>153</sup> We also proposed to eliminate, as redundant, Sections 25.143(d) and 25.146(n). Moreover, we invited comment as to whether we should amend Section 25.113(h) to require licensees to certify that they have tested activated in-orbit spares and that the tested operation is consistent with the license terms.

71. ORBCOMM supports all of the proposed changes in Section 25.113(h) and the proposed deletion of Sections 25.143(d) and 25.146(n). ORBCOMM also states that it does not object to requiring NGSO licensees to certify that they have tested the performance of each activated spare and found it to be within authorized specifications.<sup>154</sup> SIA supports eliminating the requirement to file activation notices on Form 312 and deleting Sections 25.143(d) and 25.146(n).<sup>155</sup> SIA and Globalstar oppose reducing the time allowed for filing activation notices and certifications to 10 days. SIA asserts that more than 10 days of testing might be necessary to determine whether an activated spare is operating within authorized specifications and therefore recommends retaining the current 30-day time limit.<sup>156</sup> Globalstar maintains that it would be sufficient to require licensees to include information on in-orbit spare activation in their annual reports.<sup>157</sup> We will retain the 30-day notice period in Section 25.113(h), as recommended by SIA, and reject Globalstar's suggestion to postpone filing the notification until the next annual report. We find that 30 days is ample time for notifying the Commission of spare activations, and we see no reason to allow licensees to withhold such notifications until their next annual report. As proposed in the *Notice*, we eliminate the requirement to file activation notices on Form 312 and delete redundant Sections 25.143(d) and 25.146(n). We also delete Section 25.145(i), which contains a similarly redundant provision. Further, we amend Section 25.113(h) to require licensees to include, in activation notices,

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<sup>151</sup> See Section 319(d) of the Communications Act of 1934, 47 U.S.C. § 319(d).

<sup>152</sup> *Notice*, 27 FCC Rcd at 11635-36, ¶ 46.

<sup>153</sup> *Id.* at 11636, ¶ 47.

<sup>154</sup> ORBCOMM Comments at 7-8.

<sup>155</sup> SIA Comments at 22.

<sup>156</sup> *Id.*

<sup>157</sup> Globalstar Comments at 3.

certification that the performance of activated in-orbit spares has been tested and found in compliance with the license terms.<sup>158</sup> Moreover, consistent with changes in Section 25.114 adopted here,<sup>159</sup> we amend the first sentence in Section 25.113(h) to refer to Section 25.114(a) rather than Section 25.114(e) and delete the phrase “or any other satellite blanket licensing provision in this part.”

72. SIA recommends amending Section 25.113(h) to indicate that this rule applies to holders of “letters of intent” or other market access grants for non-U.S.-licensed NGSO satellites issued pursuant to Section 25.137.<sup>160</sup> We do not adopt this recommended change. Under a general policy codified in Section 25.137(d), U.S. market access for non-U.S.-licensed space stations is predicated on compliance with the Commission’s applicable service rules. It is unnecessary to reiterate this in Section 25.113(h).

#### 4. Section 25.114 “Applications for space station authorizations”

##### a. Section 25.114(a)

73. Section 25.114 prescribes content requirements for space station applications.<sup>161</sup> Section 25.114(a) states that applicants must submit a comprehensive proposal for each proposed space station on FCC Form 312, Main Form and Schedule S, together with attached exhibits required by Section 25.114(d). We proposed to amend Section 25.114(a) to clarify that a party may submit an application either for a single space station or for a constellation of NGSO satellites. In connection with this proposed change, we proposed to delete Section 25.114(e), which states an applicant may file a single application for a constellation of technically identical NGSO space stations. Unlike the current provision in Section 25.114(e), the provision that we proposed to add in Section 25.114(a) would not preclude an applicant from requesting blanket authority for a constellation of NGSO space stations that are not all technically identical. SIA supports these proposed changes,<sup>162</sup> and no commenter opposes them. We find that the proposed changes in Sections 25.114(a) and the proposed deletion of Section 25.114(e) will improve coherence and eliminate an unnecessary restriction on applicants’ flexibility. Accordingly, we adopt the proposed changes.

##### b. Section 25.114(c)

74. Section 25.114(c) lists the types of information that space station applicants must provide in FCC Form 312, Main Form and Schedule S. In the *Notice*, we sought comment on several revisions to Section 25.114(c) that would simplify or clarify information requirements, remove information requirements that are redundant or have become outdated, or in some cases update information requirements to reflect certain technological developments.<sup>163</sup> Generally, commenters either supported or did not respond to most of these proposed revisions, in which case we adopt the revisions for the reasons set forth in the *Notice* or for other reasons stated below.<sup>164</sup> In some cases, SIA suggests additional

<sup>158</sup> As with other post-licensing filings, the notification should be electronically filed in the “Other Filings” tab of the pertinent application file in the IBFS database.

<sup>159</sup> See ¶ 73, *infra*.

<sup>160</sup> SIA Comments at 22.

<sup>161</sup> 47 C.F.R. § 25.114.

<sup>162</sup> SIA Comments at 22.

<sup>163</sup> *Notice*, 27 FCC Rcd at 11637-40, ¶¶ 50-64.

<sup>164</sup> Implementing changes to Section 25.114(c) will require modifying the FCC Form 312, Schedule S form and Schedule S application software before space station applicants can file all of the information required by Section 25.114(c) in electronic form in Schedule S. When an updated version of the Schedule S form and software become available, we direct the International Bureau to issue a Public Notice to announce that a revised Schedule S is available and applicants must begin submitting applications using the revised Schedule S. We anticipate that a phased approach to revising Schedule S may be necessary, in which case more than one Public Notice advising the public of the availability of a revised version of the schedule may be issued. Between the effective date of the rules

(continued...)

revisions to Section 25.114(c). We adopt the SIA's suggestions, which provide further clarity, with one exception that we defer to a Further Notice. We discuss in detail below all the revisions to Section 25.114(c) adopted in this Order.

75. Section 25.114(c)(4)(i) requires applicants to specify “[r]adio frequencies and polarization plan (including beacon, telemetry, and telecommand functions), center frequency, and polarization of transponders (both receiving and transmitting frequencies).” We proposed to amend this provision to state that applicants must specify the frequency characteristics of each uplink and downlink beam and the maximum range of frequencies over which each beam can operate. No commenter opposes these proposed changes, which we adopt.

76. We invited comment as to whether we should also amend Section 25.114(c)(4)(i) to allow applicants to specify the center frequencies of command beams within a five megahertz range or a range of 2 percent of the assigned bandwidth, whichever is smaller, rather than specifying such center frequencies precisely, as is now required.<sup>165</sup> SIA advocates adopting such an amendment with minor changes for clarification. Specifically, SIA recommends inserting the phrase “each of” before “the center frequencies” and changing “channel bandwidth” to “assigned bandwidth.”<sup>166</sup> We adopt the amendment with the changes recommended by SIA.

77. We proposed to amend Section 25.114(c)(4)(ii) to eliminate requirements for applicants to specify certain transmission parameters (emission designators, allocated emission bandwidths, final amplifier output power, and net losses between amplifier output and antenna input), and add a requirement to specify maximum equivalent isotropically radiated power (EIRP) spectral density for each transmitting beam.<sup>167</sup> SIA supports these proposals,<sup>168</sup> which we adopt.

78. We also proposed to add a requirement in Section 25.114(c)(4)(ii) to specify peak antenna gain. SIA contends that the existing requirement to specify maximum EIRP and the proposed requirement to specify EIRP density obviates any need to specify peak antenna gain.<sup>169</sup> We agree and therefore will not add a requirement to specify peak antenna gain.

79. We proposed to require applicants to specify EIRP density in dBW/Hz. SIA opposes requiring applicants to specify EIRP density with a reference bandwidth of 1 hertz. Rather, SIA contends that we should require applicants to specify EIRP density with reference bandwidths aligned with those in the ITU's regulations: 4 kilohertz for emissions in frequencies below 15 GHz and 1 megahertz for emissions in frequencies at or above 15 GHz.<sup>170</sup> We incorporate this recommended change in Section 25.114(c)(4)(ii).

80. We also proposed to adopt modified information requirements in Section 25.114(c)(4)(ii) to reduce paperwork burdens for applicants proposing to use shapeable beam technology. No commenter opposes this change, which we adopt.

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in Section 25.114(c) as revised by this Order and the time a revised Schedule S becomes available, applicants should submit any information required by the revised Section 25.114(c) that cannot be entered in the current version of Schedule S in the narrative portion of their applications.

<sup>165</sup> Notice, 27 FCC Red at 11637, ¶ 50 and 11672-75 (Appendix A, ¶ 6).

<sup>166</sup> SIA Comments at 23.

<sup>167</sup> Notice, 27 FCC Red at 11637, ¶ 51.

<sup>168</sup> SIA Comments at 23-24.

<sup>169</sup> *Id.*

<sup>170</sup> *Id.* at 24.

81. Section 25.114(c)(4)(iii) requires a space station applicant to identify “which beams are connected or switchable to each transponder and TT&C function.” We proposed to delete this provision because it would be rendered unnecessary by the changes that we proposed to adopt in Section 25.114(c)(4)(i).<sup>171</sup> SIA supports deleting this provision,<sup>172</sup> which no other commenter opposes. We therefore delete Section 25.114(c)(4)(iii).

82. Section 25.114(c)(4)(iv) requires applicants to specify receiver noise temperature. We proposed to delete this provision as unnecessary.<sup>173</sup> SIA supports this proposal, which we adopt.<sup>174</sup>

83. Section 25.114(c)(4)(v) requires applicants to specify satellite receive antenna gain pattern, gain-to-temperature ratio, and saturation flux density for each antenna beam. We proposed to amend this to require applicants to specify peak antenna gain and gain-to-temperature ratio at beam peak for each receive communication beam and to specify the maximum and minimum saturation flux density at beam peak for receive beams fed into transponders. For command beams, we proposed to require applicants to specify the minimum required uplink power flux density (PFD). For shapeable beams, we proposed to require applicants to specify minimum and maximum gain-to-temperature ratio within the beam coverage area and the minimum and maximum saturation PFD within the 0 dB antenna gain isoline of shapeable receive beams fed into transponders.<sup>175</sup> SIA recommends deleting redundant text regarding frequency specifications for command beams and requiring applicants to specify beam peak flux density at the command threshold rather than the required minimum uplink PFD of command beams. Otherwise, SIA supports the proposed changes in Section 25.114(c)(4)(v).<sup>176</sup> We incorporate SIA’s suggested changes in amended Section 25.114(c)(4)(v). Finally, we are not adopting our proposal to require applicants to specify peak receive antenna gain because this reception parameter is unnecessary for an interference analysis.

84. We proposed to delete Section 25.114(c)(4)(vi), which requires applicants to specify the gain of transponder channels, and Section 25.114(c)(4)(vii), which requires applicants to specify predicted receiver and transmitter channel filter response characteristics.<sup>177</sup> No commenter opposes deleting these requirements. We delete these provisions for the reasons stated in the *Notice*.

85. Section 25.114(c)(5) requires applicants to specify orbital locations and station-keeping tolerances for GSO space stations. We proposed to delete the phrase “or locations if alternatives are proposed” from Section 25.114(c)(5)(i), which reflects a policy that the Commission eliminated when it reformed space station licensing procedures in 2003.<sup>178</sup> Moreover, we proposed to delete the provision in Section 25.114(c)(5)(ii) that requires an applicant to state reasons for requesting the proposed orbital location(s) because the need for such information was also eliminated in 2003.<sup>179</sup> We also proposed to delete redundant phrases from Sections 25.114(c)(5)(iii) and 25.114(c)(5)(iv).<sup>180</sup> We adopt these proposed changes in Section 25.114(c)(5), which SIA supports and no commenter opposes.

<sup>171</sup> *Notice*, 27 FCC Rcd at 11638, ¶ 52.

<sup>172</sup> SIA Comments at 24.

<sup>173</sup> *Notice*, 27 FCC Rcd at 11638, ¶ 53.

<sup>174</sup> SIA Comments at 24.

<sup>175</sup> *Notice*, 27 FCC Rcd at 11638, ¶ 54 and at 11672-75 (Appendix A, ¶ 6).

<sup>176</sup> SIA Comments at 24-25.

<sup>177</sup> *Notice*, 27 FCC Rcd at 11638, ¶ 55.

<sup>178</sup> *Space Station Licensing Reform Order*, 18 FCC Rcd at 10821-22, ¶ 158.

<sup>179</sup> *Id.*

<sup>180</sup> *Notice*, 27 FCC Rcd at 11638, ¶ 56.

86. We proposed to delete an unnecessary phrase from Section 25.114(c)(6) and add a provision to that section that would require NGSO space station applicants to specify the initial phase angle of each proposed satellite in its orbital plane at a reference time.<sup>181</sup> ORBCOMM supports the proposed requirement to specify initial phase angles.<sup>182</sup> SIA supports both of the proposed changes in Section 25.114(c)(6).<sup>183</sup> SIA notes, however, that NGSO applicants currently specify the number of proposed space stations in each orbital plane in Schedule S and recommends amending Section 25.114(c)(6)(i) to reflect this.<sup>184</sup> We adopt the changes in Section 25.114(c)(6) that we proposed in the *Notice*, which are unopposed, and the further change recommended by SIA.

87. Section 25.114(c)(7) requires applicants for GSO space stations to specify “the accuracy with which the orbital inclination, the antenna axis attitude, and longitudinal drift will be maintained.” We proposed to move the requirement to specify antenna-axis attitude accuracy to Section 25.114(c)(5) and to delete the text in Section 25.114(c)(7) regarding orbital inclination accuracy and longitudinal drift accuracy, which is redundant with provisions in Section 25.114(c)(5). We also proposed to insert a provision in Section 25.114(c)(7) to codify the requirement for applicants to include a general specification of frequency bands, which is currently collected in Schedule S.<sup>185</sup> SIA supports these proposals, and no other commenter opposes them. We adopt these proposed changes in Section 25.114(c)(7).

88. Section 25.114(c)(8) requires applicants to specify PFD levels within each proposed coverage area and the energy dispersal necessary to comply with the PFD limits in Section 25.208. For clarification, we proposed to change “[c]alculation of” to “[c]alculated,” “power flux density levels” to “maximum power flux density levels,” and “energy dispersal” to “energy dispersal bandwidths.”<sup>186</sup> We adopt these changes, which SIA supports<sup>187</sup> and no commenter opposes.

89. Section 25.114(c)(10) requires applicants to specify spacecraft weight and dimensions, on-ground and in-orbit mass, power budgets at beginning and end of life, estimated space station operational lifetime, estimated space station reliability, and the basis for the reliability estimate. We proposed to retain the requirement to specify estimated operational lifetime and delete the other requirements in Section 25.114(c)(10) as redundant or unnecessary.<sup>188</sup> SIA and ORBCOMM support these proposed changes,<sup>189</sup> and no commenter opposes them. We adopt these amendments.

90. Section 25.114(c)(11) requires applicants to indicate whether they will operate their proposed space stations on a common carrier or non-common carrier basis. If an applicant proposes to operate on a non-common carrier basis, the rule requires it to provide a general description of the non-common carrier transactions and to specify “the number of transponders to be offered on a non-common carrier basis.” In the *Notice*, we proposed to retain the requirement that space station applicants specify whether they plan to provide common carrier or non-common carrier service. We proposed to delete the requirement to describe non-common carrier transactions and quantify the transponders to be used for

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<sup>181</sup> *Id.* at 11638, ¶ 57.

<sup>182</sup> ORBCOMM Comments at 8.

<sup>183</sup> SIA Comments at 26.

<sup>184</sup> *Id.*

<sup>185</sup> *Notice*, 27 FCC Rcd at 11639, ¶ 58.

<sup>186</sup> *Id.* at 11639, ¶ 59.

<sup>187</sup> SIA Comments at 26.

<sup>188</sup> *Notice*, 27 FCC Rcd at 11639, ¶ 60.

<sup>189</sup> SIA Comments at 26; ORBCOMM Comments at 5-6.

non-common-carrier operations, stating that there is no need for routine review of such information.<sup>190</sup> SIA and ORBCOMM support this proposed amendment,<sup>191</sup> and no commenter opposes it. For the reasons stated in the *Notice*, we adopt the amendment.

91. Section 25.114(c)(12) requires an applicant to estimate the dates when it will begin satellite construction, when it will complete construction, when it will launch the satellite(s), and when it will place them into service. We proposed to delete this requirement, the need for which was obviated by the Commission's codification of standard milestone implementation rules and associated reporting requirements.<sup>192</sup> SIA supports this proposed amendment,<sup>193</sup> and no commenter opposes it. We adopt the amendment.

92. Section 25.114(c)(13) requires applicants to provide "[t]he polarization information specified in §§ 25.210(a)(1), (a)(3), and (i), to the extent applicable."<sup>194</sup> For clarity, we proposed to revise the rule to require applicants to provide "the polarization information necessary for determining compliance with" those provisions in Section 25.210.<sup>195</sup> SIA advocates eliminating Section 25.210(a) and accordingly recommends that we delete the cross-reference to Section 25.210(a) in Section 25.114(c)(13).<sup>196</sup> We adopt the change in Section 25.114(c)(13) proposed in the *Notice*. As discussed below, we will address SIA's recommendation to delete Section 25.210(a) in a Further NPRM.<sup>197</sup> Consequently, we will leave the cross-reference to Section 25.210(a) in Section 25.114(c)(13) at this time.

**c. Section 25.114(d)**

93. Section 25.114(d) specifies the types of information space station applicants must provide in a narrative attachment to FCC Form 312. Section 25.114(d)(1) requires applicants to include a "[g]eneral description of the overall system facilities, operations, and services." We proposed to amend this provision to add a requirement to explain how uplink frequency bands would be connected to downlink frequency bands, which would codify a requirement already included in Schedule S.<sup>198</sup> SIA supports the proposed amendment, which we adopt. SIA, however, advocates eliminating the requirement to provide an overall description of system facilities and operation because such a description is not necessary for assessing interference.<sup>199</sup> We retain the requirement to include an overall description of system facilities and services. Such a description provides the Commission and the public with an overview of a proposed system as well as the benefits to be derived from the proposed system. Further, providing this description is a minimal burden for applicants.

94. Section 25.114(d)(2) requires space station applicants to specify any requested feeder link and/or inter-satellite frequencies in the narrative attachment, "together with any demonstration otherwise required by this chapter for use of those frequencies (*e.g.*, §§ 25.203(j) and (k))." Section 25.114(c), as amended herein, requires applicants to provide the same information in Schedule S, thus rendering the

<sup>190</sup> *Notice*, 27 FCC Rcd at 11639, ¶ 61.

<sup>191</sup> SIA Comments at 27; ORCOMM Comments at 5-6.

<sup>192</sup> *Notice*, 27 FCC Rcd at 11639, ¶ 62. *See* 47 C.F.R. § 25.164.

<sup>193</sup> SIA Comments at 27.

<sup>194</sup> 47 C.F.R. § 25.114(c)(13).

<sup>195</sup> *Notice*, 27 FCC Rcd at 11639-40, ¶ 63.

<sup>196</sup> SIA Comments at 27.

<sup>197</sup> *See* ¶ 180, *infra*.

<sup>198</sup> *Notice*, 27 FCC Rcd at 11640, ¶ 65 and 11672-75 (Appendix A, ¶ 6).

<sup>199</sup> SIA Comments at 27-28.

Section 25.114(d)(2) requirement duplicative and consequently unnecessary.<sup>200</sup> As we also observed in the *Notice*, the cross-reference to Section 25.203(k) is misplaced, as that provision does not prescribe a content requirement for space station applications. We therefore proposed to delete Section 25.114(d)(2).<sup>201</sup> SIA supports this proposal,<sup>202</sup> and no commenter opposes it. We delete Section 25.114(d)(2) for the reasons restated here.

95. Section 25.114(d)(3) requires applicants to submit predicted antenna gain contours for each transmit and receive antenna beam. The rule requires applicants to submit the contours for GSO space stations in .gxt files, which can be opened with the GIMS software program.<sup>203</sup> To reduce paperwork burdens, we proposed to amend this rule to require applicants to submit antenna gain contours in a GIMS-readable format, which would allow an applicant to submit required contours either in multiple .gxt files or in a single GIMS container file. Because applicants submit the contours as attachments to Schedule S, we proposed to move this rule from Section 25.114(d)(3) to Section 25.114(c)(4)(vi).<sup>204</sup> We also proposed to modify the rule to relieve applicants from any obligation to submit such contours for beams whose gain contours at 8 dB below peak fall entirely beyond the edge of the visible Earth.<sup>205</sup> SIA supports these proposed amendments.<sup>206</sup> Intelsat contends that the rule should not require antenna gain contours to be submitted in a GIMS-readable format, asserting that this would force interested parties to incur the cost of obtaining the GIMS software to read antenna gain contour data and project it on maps. Instead, Intelsat advocates amending the rule to require applicants to show coverage contours on flat-Earth projection maps.<sup>207</sup> In reply, DIRECTV asserts that requiring use of GIMS-readable formats would impose no additional software cost on anyone, since GIMS software is available free of charge from the ITU.<sup>208</sup> DIRECTV asserts, moreover, that the industry has used the GIMS format for many years without problems and that the GIMS software can produce the flat-Earth projections that Intelsat prefers.<sup>209</sup>

96. The GIMS software is downloadable at no cost from the ITU's website.<sup>210</sup> Further, the ITU prefers that international coordination filings for GSO space stations provide antenna contours in GIMS-readable format.<sup>211</sup> Allowing applicants to provide contours to the FCC in either GIMS-readable format (*i.e.*, .gxt files or GIMS container files) will eliminate the need for applicants proposing a large number of antenna beams to submit multiple data files for this purpose. Use of GIMS container files will also facilitate application processing, as the current method of attaching .gxt files to Schedule S requires

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<sup>200</sup> See Sections 25.114(c)(4)(i), 25.114(c)(4)(vi), and 25.114(c)(7) in Appendix B, *infra*.

<sup>201</sup> *Notice*, 27 FCC Rcd at 11640, ¶ 66.

<sup>202</sup> SIA Comments at 28.

<sup>203</sup> GIMS is the ITU Radiocommunication Bureau's Graphical Interference Management System software program. The GIMS program accepts antenna pattern contour diagram electronic files in two formats. One is a .gxt file containing a textual representation of graphical data. The other is a GIMS container file containing a database of antenna pattern contour diagrams in Microsoft Access database format. See <http://www.itu.int/en/ITU-R/software/Pages/gims.aspx> (last accessed April 24, 2013).

<sup>204</sup> *Notice*, 27 FCC Rcd at 11640, ¶ 67.

<sup>205</sup> *Id.* at 11672-75 (Appendix A, ¶ 6).

<sup>206</sup> SIA Comments at 25-26.

<sup>207</sup> Intelsat Comments at 11-12.

<sup>208</sup> DIRECTV Reply Comments at 2-3.

<sup>209</sup> *Id.*

<sup>210</sup> See <http://www.itu.int/en/ITU-R/software/Pages/gims.aspx>.

<sup>211</sup> See Resolution 55 (REV. WRC-12) of the ITU Radio Regulations at *resolves* 6.



Commission staff to manually download, convert, and print each diagram separately. Moreover, requiring contours in GIMS-readable format facilitates use of GIMS software for interference analysis and conversion of the contours to other mapping formats. We therefore amend Section 25.114(c)(4)(vi) to require applicants to submit GSO space station antenna gain contours in GIMS-readable format.

97. SIA recommends adopting provisions that would allow NGSO applicants to provide a single representative set of antenna gain contours for technically identical space stations in a given orbital plane, and to specify the peak antenna gain and 3 dB beamwidth of intersatellite links rather than submitting contours for intersatellite antennas.<sup>212</sup> Section 25.114(e), which we are moving to Section 25.114(a) in this order, already implicitly allows NGSO license applicants to submit a representative set of contours,<sup>213</sup> and SIA's proposal would make this explicit. Intersatellite links are not oriented toward the Earth, and therefore do not produce measurable gain contours on the surface of the Earth. The 3 dB beamwidth would therefore be more useful than contours for determining whether an intersatellite link is likely to cause harmful interference to other satellites. We therefore incorporate SIA's recommended provisions into Section 25.114(c)(4)(vi), as amended.

98. In the interest of administrative efficiency and reducing paperwork, we proposed to adopt a rule that would allow applicants proposing space stations with a large number of identical spot beams to provide gain contours for just one transmit and one receive antenna beam, together with one of the following: (1) a map showing the locations of all of the spot beams, (2) a table specifying the geographic locations of the antenna beam boresights, in latitude and longitude to within 0.1 degree, or (3) a map of the isolines formed by combining some or all of the spot beams into one composite beam. We proposed to insert this provision in Section 25.114(d)(3).<sup>214</sup> SIA generally supports this proposal but recommends several textual changes and also recommends adding a parallel provision for NGSO applicants and inserting these provisions in a new paragraph (vii) in Section 25.114(c)(4) rather than in Section 25.114(d)(3).<sup>215</sup> The suggestion to include a parallel provision for NGSO applicants is helpful, as there is no reason to require applicants proposing to operate NGSO satellites with large numbers of identical spot beams to provide contour diagrams for every beam. We also agree that Section 25.114(c)(4), which contains other requirements for specification of the technical characteristics of satellite antenna beams, is the most appropriate place for these provisions. SIA's suggestions for textual changes are also helpful, as the suggested changes improve the clarity and technical accuracy of the provision pertaining to spot beams on GSO satellites.<sup>216</sup> We therefore adopt the proposed rule with the modifications recommended by SIA.

99. We also proposed to adopt modified gain-contour specification requirements for applicants proposing space stations with shapeable antenna beams.<sup>217</sup> SIA recommends a minor change from the proposal by inserting the word "relative" before "antenna gain isoline," and advocates adopting a

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<sup>212</sup> SIA Comments at 25 and Rules Appendix at 9.

<sup>213</sup> *Id.*

<sup>214</sup> *Notice*, 27 FCC Rcd at 11640-41, ¶ 68.

<sup>215</sup> SIA Comments at 28.

<sup>216</sup> SIA suggests changing "beam boresight locations" to "maximum (antenna) gain points" because the boresight might not be the direction of maximum gain for all antenna types. SIA also suggests changing "combining some or all of the spot beams into one composite beam" to "combining all of the spot beams into one or more composite beams." More than one composite beam may be appropriate in instances where there are groups of spot beams covering different non-contiguous geographic regions. In such instances, each group of spot beams covering a specific region can be combined into one composite beam covering that region. Combining all of the spot beams into a single composite beam, however, could give the impression that areas between the regions covered by the spot beams are also covered.

<sup>217</sup> *See* proposed text in § 25.114(c)(4)(vi) in *Notice*, 27 FCC Rcd at 11672-75 (Appendix A, ¶ 6).

parallel requirement for space stations with steerable antenna beams that are non-shapeable.<sup>218</sup> The required gain isolines are relative to peak gain rather than absolute, so “relative gain isolines” is technically correct. We adopt the proposed rule with the modifications recommended by SIA. These provisions are incorporated in Section 25.114(c)(4)(vi).

100. Section 25.114(d)(4) requires space station applicants to describe the types of services to be provided, the areas to be served, the transmission characteristics and performance objectives for each type of proposed service, details of the link noise budget, typical or baseline earth station parameters, modulation parameters, and overall link performance analysis. As Schedule S collects information about services to be provided and service areas, we proposed to eliminate the requirement to provide this information in the narrative exhibit and, instead, insert a provision in Section 25.114(c)(7) requiring applicants to provide such information in Schedule S. We proposed to delete the other requirements in Section 25.114(d)(4), which are either redundant or unnecessary for assessing interference.<sup>219</sup> We adopt these proposed changes, which SIA supports<sup>220</sup> and no commenter opposes.

101. SIA suggests melding Section 25.114(d)(5) with the nearly identical provision in Section 25.114(c)(8), which requires applicants to specify, in Schedule S, the calculated PFD at angles of arrival of 5°, 10°, 15°, 20°, and 25° above the horizontal. As noted above, Section 25.114(c) specifies the types of information to be provided in Schedule S, while Section 25.114(d) specifies the types of information to include in a narrative attachment. The current FCC Form 312, Schedule S contains data fields for PFD at angles of arrival of 5°, 10°, 15°, 20°, and 25°, but not for PFD at other angles of arrival. Thus, the requirement to specify PFD at arrival angles of 5°, 10°, 15°, 20°, and 25° in Schedule S is codified in Section 25.114(c), and the requirement to specify PFD at other angles of arrival is codified in Section 25.114(d). Because we need to modify Schedule S to reflect other changes in Section 25.114(c), however, we will take this opportunity to modify Schedule S to accommodate PFD angles of arrival other than 5°, 10°, 15°, 20°, and 25° above the horizontal. Thus, we can merge the requirements in Section 25.114(d)(5) into those in Section 25.114(c)(8), as recommended by SIA. We can do so by deleting Section 25.114(d)(5) and changing Section 25.114(c)(8) to read, consistent with the revisions already discussed in paragraph 88, *supra*, “Calculated maximum power flux density levels within each coverage area and energy dispersal bandwidths, if any, needed for compliance with Section 25.208, for the angles of arrival specified in the applicable paragraph(s) of Section 25.208”. Until the revised Schedule S that incorporates the necessary data fields for angles of arrival other than 5°, 10°, 15°, 20°, and 25° above the horizontal becomes available, applicants must continue to provide the data for the other angles of arrival specified in the applicable paragraph(s) of Section 25.208 in the narrative portion of their applications.<sup>221</sup>

102. We also proposed minor changes to Sections 25.114(d)(7), (d)(10), (d)(11), and (d)(13). More specifically, we proposed to delete a circuitous cross-reference from Section 25.114(d)(7), amend a cross-reference in Section 25.114(d)(10) to make it more specific, delete redundant text from Section 25.114(d)(11), and clarify cross-references in Section 25.114(d)(13).<sup>222</sup> We adopt the proposed amendments, which SIA supports<sup>223</sup> and no commenter opposes. We also remove unnecessary words from Section 25.114(d)(12), as shown in Appendix B.

<sup>218</sup> SIA Comments at 25, n.57, and Rules Appendix at 9.

<sup>219</sup> Notice, 27 FCC Rcd at 11641, ¶ 69. The requirement to describe transmission characteristics is redundant with more specific requirements in Sections 25.114(c)(4)(i), (ii), (vi), and (vii). Service performance objectives, link noise budget details, typical or baseline earth station parameters, modulation parameters, and overall link performance analysis are unnecessary for interference analysis.

<sup>220</sup> SIA Comments at 29.

<sup>221</sup> See n.164, *supra*.

<sup>222</sup> Notice, 27 FCC Rcd at 11641, ¶¶ 71-74.

<sup>223</sup> SIA Comments at 29.

103. Section 25.114(d)(14) requires applicants requesting authority to launch and operate a space station, or requesting access to the U.S. market for a non-U.S.-licensed space station, to disclose plans to mitigate the creation and effects of orbital debris. We did not propose to change substantively the information that applicants must disclose as part of an orbital debris mitigation plan. We sought comment, however, on ways to clarify and simplify the disclosure process. Thus, we sought comment on amending Section 25.114(d)(14) to reflect policies or rules that the Commission has previously adopted regarding orbital debris mitigation disclosure that were not codified in Part 25.<sup>224</sup> For example, we invited comment on amending Section 25.114(d)(14)(iv) to add that applicants for space stations to be used only for commercial remote sensing may certify that they have submitted post-mission disposal plans to the National Oceanic and Atmospheric Administration (NOAA) for review, in lieu of submitting them to the Commission.<sup>225</sup> We also invited comment as to whether we should permit applicants to indicate by certification or data entries in Schedule S that they have debris mitigation plans consistent with the Commission's requirements, rather than describing their plans in narrative exhibits.<sup>226</sup> Alternatively, we invited comment on the feasibility of making a template available to simplify preparation and review of orbital debris mitigation plans.<sup>227</sup>

104. SIA supports codifying the Commission's policy pertaining to applicants for remote-sensing space stations that submit post-mission disposal plans to NOAA.<sup>228</sup> Further, EchoStar, Inmarsat, and SES/NSS/O3b advocate codifying a policy the Commission adopted in the *Orbital Debris Second Report and Order* that provides that a party requesting U.S. market access for a non-U.S.-licensed space station may satisfy orbital debris disclosure requirements by demonstrating that debris mitigation plans for the space station are subject to "direct and effective" regulatory oversight by the national licensing authority.<sup>229</sup> We adopt these unopposed recommendations to codify these policies, which lessen filing requirements for some applicants.<sup>230</sup>

105. SIA, Intelsat, and ORBCOMM urge us to permit applicants to certify, by checking boxes in Schedule S, that they will comply with orbital debris mitigation requirements, rather than reiterating each requirement in narratives and confirming that they will comply with it.<sup>231</sup> Alternatively, ORBCOMM advocates developing a debris-plan template through a collaborative process with industry input.<sup>232</sup> These recommendations warrant further study and may be addressed at another time.<sup>233</sup>

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<sup>224</sup> Notice, 27 FCC Rcd at 11641-42, ¶ 75.

<sup>225</sup> *Id.* (citing *Mitigation of Orbital Debris*, IB Docket No. 02-54, Second Report and Order, 19 FCC Rcd 11567, 11610 at ¶ 104 (2004) (*Orbital Debris Second Report and Order*)).

<sup>226</sup> *Id.*

<sup>227</sup> *Id.*

<sup>228</sup> SIA Comments at 30.

<sup>229</sup> EchoStar Comments at 7-8; Inmarsat Reply Comments at 5; SES/NSS/O3b Reply Comments at 6-7. *See Orbital Debris Second Report and Order*, 19 FCC Rcd at 11606, ¶ 95.

<sup>230</sup> The *Orbital Debris Second Report and Order* described one method for showing direct and effective regulatory oversight, but did not specify an exclusive method. *Orbital Debris Second Report and Order*, 19 FCC Rcd at 11606, ¶ 95 ("One method of making this showing is to submit an English language version of the debris mitigation rules or regulations of the national licensing authority and to indicate the current status of the national licensing authority's review of [the applicant's] debris mitigation plans."). As the determination of direct and effective regulatory oversight depends on the particular national laws, regulations, and regulatory processes involved, the International Bureau will continue to address the sufficiency of such showings on a case-by-case basis.

<sup>231</sup> SIA Comments at 30; Intelsat Comments at 7; ORBCOMM Comments at 8.

<sup>232</sup> ORBCOMM Comments at 9.

## 5. Section 25.115 “Applications for earth station authorizations”

106. Section 25.115 contains rules governing earth station applications. We proposed to amend Section 25.115(d), which states that NVNG, 1.6/2.4 GHz, and 2 GHz MSS user transceivers may be blanket licensed, to remove the references to specific frequency bands, since all MSS user transceivers are blanket licensed, regardless of the bands in which they operate.<sup>234</sup> We also proposed to replace the provision in Section 25.115(d) that requires applications for blanket licenses for MSS user transceivers to include “the information described in [Section] 25.136” with a provision that would require an applicant for a blanket license for 1.5/1.6 GHz MSS mobile earth stations to explain how it would comply with priority and preemptive access requirements.<sup>235</sup> SIA supports these proposed amendments,<sup>236</sup> and no commenter opposes them. We adopt these proposed amendments, which clarify the rule in Section 25.115(d) and eliminate unnecessary and potentially confusing text.

107. The first sentence in Section 25.115(e) requires license applications for individual earth stations operating in the 20/30 GHz bands to include the kinds of information that Section 25.138 requires in applications for blanket licenses for 20/30 GHz earth stations. In the *Notice*, we proposed to amend Section 25.115(e) to match the scope of Section 25.138, which applies to applications for earth stations that will communicate via GSO space stations in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz frequency bands, which are designated for primary or co-primary GSO FSS operations. To this end, we proposed to replace “20/30 GHz” with specific frequency bands. However, as Iridium notes, the proposed rule specified the broader frequency ranges of 18.3-20.2 GHz and 28.35-30.0 GHz, not all of which are subject to Section 25.138.<sup>237</sup> Accordingly, we revise the first sentence in Section 25.115(e) to state that license applications for FSS earth stations that would communicate with GSO satellites in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and/or 29.25-30.0 GHz frequency bands must include the information required by Section 25.138.

108. EchoStar contends that the rules should require applications for secondary and non-conforming GSO FSS earth station operation in the 18.8-19.7 GHz and 28.6-29.25 GHz frequency bands to include technical showings pursuant to Section 25.138 to facilitate coordination.<sup>238</sup> This recommendation, which Iridium opposes,<sup>239</sup> is beyond the scope of the *Notice*, and we decline to address it at this time.

109. We also proposed to delete a redundant provision from the first sentence of Section 25.115(e).<sup>240</sup> SIA supports this change,<sup>241</sup> which we adopt.

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<sup>233</sup> As to other recommendations for changes in Section 25.114, we find these suggested changes are beyond the scope of the *Notice*. See Intelsat Comments at 10-11 (advocates amending Section 25.114(c) to allow all information to be filed in narrative form and amending Section 25.114(b) to eliminate the provision requiring applicants to submit “concrete proposal[s]”) and SIA Comments at 31-32 (advocates amending Section 25.114(d)(15) to change the requirement for applicants to “demonstrate” compliance with PFD limits to merely require certification of compliance).

<sup>234</sup> *Notice*, 27 FCC Rcd at 11642, ¶ 76.

<sup>235</sup> *Id.*

<sup>236</sup> SIA Comments at 33.

<sup>237</sup> Iridium Comments at 5.

<sup>238</sup> EchoStar Comments at 10 and Reply Comments at 16-17.

<sup>239</sup> Iridium Comments at 5.

<sup>240</sup> *Notice*, 27 FCC Rcd at 11642-43, ¶ 77.

<sup>241</sup> SIA Comments at 33.

## 6. Section 25.118 “Modifications not requiring prior authorization”

110. Section 25.118(a)(2) states that an earth station licensee may, without prior authority, add or change transmitters or antenna facilities or replace such facilities with equipment that is not electrically identical, provided that the added, changed, or replaced facilities conform to the off-axis gain limits in Section 25.209, do not exceed existing technical constraints, and do not require frequency coordination.<sup>242</sup> We noted that the provision regarding conformance with Section 25.209 effectively limits the applicability of this rule to changes in FSS earth stations and invited comment as to whether we should modify the rule to apply, as well, to MSS earth stations.<sup>243</sup> To that end, we suggested inserting the phrase “any applicable requirements” in the proviso regarding conformance with Section 25.209.<sup>244</sup> SIA and ORBCOMM both recommend adoption of this suggested amendment to Section 25.118(a)(2), which no commenter opposes.<sup>245</sup> We adopt this amendment.

111. Section 25.118(e) provides that a licensee may move a GSO space station to a different orbital location assigned to that licensee without prior authority under certain circumstances, after giving prior notice to the Commission and potentially affected parties.<sup>246</sup> One of the prerequisites in Section 25.118(e)(5) is that the licensee must certify that it has completed any necessary coordination for operation at the new location with potentially affected space station operators. We proposed to amend this provision to make clear that such coordination must include coordination of orbital station-keeping ranges.<sup>247</sup> SIA and Intelsat support this proposed amendment,<sup>248</sup> which no commenter opposes. We adopt this amendment.

112. Section 25.118(e)(8) states that before relocating a DBS space station without prior authority, the licensee must certify that it “will not cause more interference at the new location than ... would occur from the current U.S. assignments in the [ITU] Region 2 BSS Plan and its associated Feeder Link Plan.” We proposed to revise this provision to also allow DBS operators who will operate within the parameters of a pending Region 2 DBS Plan modification to relocate their space stations under the provisions of Section 25.118(e). The proposed revision will afford DBS operators more flexibility while achieving the same purpose as the current rule.<sup>249</sup> EchoStar and DIRECTV support this proposed amendment,<sup>250</sup> which no commenter opposes. We adopt this amendment for the reason stated above.<sup>251</sup>

113. We invited comment as to whether we should add a new provision in Section 25.118(e) that would allow licensees to reposition NGSO space stations without prior Commission authority, provided that the number of authorized operating space stations is not exceeded and the licensee certifies that the change(s) will not increase interference. We also invited comment as to whether such a rule should exclude repositioning involving a permanent departure from an NGSO space station’s authorized altitude or orbital plane.<sup>252</sup> The commenters that responded agree that the Commission should adopt a

<sup>242</sup> 47 C.F.R. § 25.118(a)(2).

<sup>243</sup> Notice, 27 FCC Rcd at 11643, ¶ 78.

<sup>244</sup> *Id.* at 11676 (Appendix A, ¶ 8).

<sup>245</sup> SIA Comments at 35 and Rules Appendix at 15; ORBCOMM Comments at 6.

<sup>246</sup> 47 C.F.R. § 25.115(e).

<sup>247</sup> Notice, 27 FCC Rcd at 11643, ¶ 79.

<sup>248</sup> SIA Comments at 35; Intelsat Comments at 8.

<sup>249</sup> Notice, 27 FCC Rcd at 11643, ¶ 80.

<sup>250</sup> EchoStar Comments at 10; DIRECTV Reply Comments at 4.

<sup>251</sup> Notice, 27 FCC Rcd at 11643, ¶ 80.

<sup>252</sup> *Id.* at 11643-44, ¶ 81.

rule that would allow NGSO space stations to be repositioned without prior regulatory approval, but disagree as to whether the rule should allow changes in orbital altitude without prior approval. Globalstar and ORBCOMM recommend adopting a rule permitting such repositioning without prior approval. They maintain that NGSO operators need to adjust satellite positions to compensate for outages and degradations and accommodate needs for additional coverage or capacity in particular regions and that applying for license modifications for such adjustments is costly and time-consuming.<sup>253</sup> SIA, Iridium, and SES/NSS/O3b recommend adopting a rule that would allow licensees to reposition NGSO space stations without prior FCC permission, provided the repositioning does not involve any change in a satellite's orbital plane or altitude and the licensee certifies that it will not seek increased interference protection because of the repositioning.<sup>254</sup> Globalstar contends, however, that we should also permit temporary departures from an authorized NGSO altitude without prior regulatory approval.<sup>255</sup> SIA replies that Globalstar does not suggest where to draw the line between temporary and permanent departures.<sup>256</sup> ORBCOMM contends that we should not require prior approval for NGSO adjustments that do not increase interference or orbital debris risk or reduce geographic coverage below that required by Commission rule, regardless whether the adjustments involve deviation from previously authorized altitudes, orbital planes, or the number and distribution of spacecraft within each plane.<sup>257</sup> In contrast, SIA and SES/NSS/O3b contend that no departure from authorized NGSO orbital altitudes should be allowed without prior Commission authority.<sup>258</sup>

114. We agree with Globalstar and ORBCOMM that a rule allowing NGSO space stations to be repositioned without prior FCC permission should not bar temporary changes in altitude, as it is infeasible to change the relative position of an NGSO space station within an orbital plane without temporarily changing its altitude. We do not agree with ORBCOMM, however, that permanent changes in orbital altitude, which could increase collision risk or affect compliance with PFD limits, should be permitted without prior Commission approval. Accordingly, we adopt a new rule, Section 25.118(f), that allows licensees to reposition NGSO space stations (*i.e.*, adjust their phasing) within previously authorized orbital planes without prior Commission approval, after giving the Commission 10 days advance notice and certifying that the repositioning will not increase risk of interference to other systems, increase collision risk, or result in non-compliance with license conditions or applicable rules, and that the licensee will not seek increased protection because of the repositioning. The new rule will permit temporary changes in altitude of up to 10 kilometers for up to 30 days, as necessary to effect such repositioning. This should afford sufficient leeway to reposition NGSO space stations in circular low-earth orbits, which is the type of orbit in which most U.S.-licensed commercial NGSO space stations operate.<sup>259</sup> Section 25.118(f) will also require licensees to notify the operator(s) of any satellite within 20 kilometers of the interim orbit at least 10 days before commencing such repositioning. As is the case now, NGSO licensees may request authority for altitude changes of more than 10 kilometers or for longer than 30 days by applying for license modification or filing a request for special temporary authority.

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<sup>253</sup> Globalstar Comments at 2; ORBCOMM Comments at 15.

<sup>254</sup> SIA Comments at 35; Iridium Comments at 4; SES/NSS/O3b Reply Comments at 12.

<sup>255</sup> Globalstar Comments at 2, n.6.

<sup>256</sup> SIA Reply Comments at 8.

<sup>257</sup> ORBCOMM Comments at 16.

<sup>258</sup> SIA Comments at 35-36; SES/NSS/O3b Reply Comments at 12.

<sup>259</sup> Repositioning such a satellite to the maximum possible extent (*i.e.*, shifting its phasing by 180°) in a circular orbit at 2000 kilometers of altitude can be completed in approximately 26 days without exceeding the 10 kilometer limit. Due to the presence of the Van Allen radiation belt, the maximum feasible altitude for NGSO operation in low-earth orbit is approximately 2000 kilometers. Phase shifts can be completed in less time in circular orbits at altitudes below 2000 kilometers.

115. SIA, DIRECTV, Intelsat, and Iridium advocate other changes in Section 25.118 not contemplated in the *Notice*, which we do not address here.<sup>260</sup>

#### 7. Section 25.121 “License term and renewals”

116. Section 25.121(d)(1) states that the license term for a GSO space station will begin when the licensee certifies to the Commission that the satellite has been placed into orbit and that its operation is fully consistent with the terms of the license.<sup>261</sup> Similarly, Section 25.121(d)(2) states that the license term for NGSO space stations will begin when the licensee certifies that the first of the authorized space stations has been placed into orbit and that its operation is consistent with the terms of the license. We proposed to modify Section 25.121(d)(1) slightly to provide that the license term for a GSO space station will begin when the licensee notifies the Commission pursuant to Section 25.173(b) that the space station’s tested performance is consistent with the station authorization and that the space station has been placed in its assigned orbital location and is capable of using the assigned frequencies.<sup>262</sup> Similarly, we proposed to amend Section 25.121(d)(2) to provide that the license term for NGSO space stations will begin on the date when the licensee certifies pursuant to Section 25.173(b) that the tested performance of an initial space station is consistent with the authorization and that the space station has been placed in its assigned orbit and is capable of using the assigned frequencies.<sup>263</sup> We also proposed to remove redundant text from Section 25.121(d).

117. SIA advocates amending Section 25.121(d) to state that a license term will begin when the licensee certifies that a GSO space station or first NGSO space station has been placed in the assigned orbital location or authorized NGSO orbit and is capable of operating on the assigned frequencies in compliance with the terms and conditions of the license, without referring to the certification rule in Section 25.173(b).<sup>264</sup>

118. We amend Section 25.121(d) to state that the license term will begin when the licensee notifies the Commission pursuant to Section 25.173(b) that the satellite has been placed in the authorized orbit and that its tested performance is consistent with the authorization, whether or not the licensee certifies that the satellite is capable of using all of the assigned frequencies. Under the amended rule proposed in the *Notice*, as noted above, notification that a satellite is capable of using all of the assigned spectrum would have been a prerequisite for a license term to begin, but on further reflection we have decided that it would be unfair to withhold operating authority in cases where, due to an unexpected malfunction, a newly launched satellite is capable of operating only in some of the assigned spectrum.<sup>265</sup>

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<sup>260</sup> SIA Comments at 36 and EchoStar Reply Comments at 17 (request amendments to allow increases in number of blanket-licensed earth stations without prior approval and to allow earth stations to communicate via space stations within 0.15 degrees of an originally authorized point of communication without prior approval); Intelsat Comments at 8, EchoStar Reply Comments at 3, and DIRECTV Reply Comments at 3 (propose amendment to allow relocation of a GSO space station to a position slightly offset from an orbital location assigned to the same licensee without prior approval); Iridium Comments at 6 (advocates amendment to allow increase in number of blanket-licensed earth stations without prior approval if the authorized operation has primary status); DIRECTV Reply Comments at 4 (request amendment of Section 25.118(e)(5) to make clear that coordination is not required with operators of unbuilt systems). We may address one or more of these recommendations in a Further NPRM.

<sup>261</sup> 47 C.F.R. § 25.121(d)(1).

<sup>262</sup> *Notice*, 27 FCC Rcd at 11644, ¶ 82.

<sup>263</sup> *Id.*

<sup>264</sup> SIA Comments at 37 and Rules Appendix at 16. As noted previously, SIA opposes adoption of Section 25.173(b). See ¶ 34, *supra*.

<sup>265</sup> In cases where a satellite is not capable of operating on all authorized spectrum, additional action may eventually be required to free the unused spectrum for other use.

119. We proposed to remove redundant text from the second sentence of Section 25.121(d)(2) without altering the substance of that provision, which states that operating authority for all space stations “brought into service” under an NGSO constellation license will terminate when the license expires.<sup>266</sup> In the *Notice*’s appendix containing the proposed rules, however, the sentence reads that operating authority for space stations “subsequently launched” pursuant to an NGSO license will terminate upon expiration of the license.<sup>267</sup> We correct this discrepancy so that, as before, Section 25.121(d)(2) refers to NGSO space stations that are “brought into service” under the license. This covers activated in-orbit spares as well as replacements subsequently launched from the ground.<sup>268</sup>

#### **8. Section 25.129 “Equipment authorization for portable earth-station transceivers”**

120. Section 25.129(c) prescribes content requirements for applications for certification of portable earth station transceivers pursuant to Part 2, Subpart J.<sup>269</sup> We proposed to amend this provision by adding a cross-reference to the labeling requirement in proposed new Section 25.285(b).<sup>270</sup> SIA supports this proposed change,<sup>271</sup> which no commenter opposes. We adopt the proposed amendment of Section 25.129(c). We also amend this provision to delete unnecessary text (“additional equipment” and “prescribed”) and replace the phrase “pertinent standards for transmitter performance” with “pertinent performance standards,” which is more accurate, since some of the standards pertain to antenna gain rather than transmitter performance.

#### **9. Section 25.130 “Filing requirements for transmitting earth stations”**

121. In the *Notice*, we proposed to adopt a new rule, Section 25.130(g), to codify a policy that an applicant may request a single FSS earth station license for multiple antennas at specified locations under one call sign in certain circumstances.<sup>272</sup> In FSS frequency bands shared on a co-primary basis with terrestrial services, an applicant may request a single license for multiple antennas sited within an area bounded by 1 second of latitude and longitude.<sup>273</sup> In FSS frequency bands allocated on a primary basis only to satellite services, an applicant may request a single license for multiple fixed antennas sited within an area bounded by 10 seconds of latitude and longitude.<sup>274</sup> We invited comment on the type of information applicants should be required to provide to facilitate administration of this policy.

<sup>266</sup> *Notice*, 27 FCC Rcd at 11644, ¶ 83.

<sup>267</sup> *Id.* at 11677 (Appendix A, ¶ 9).

<sup>268</sup> We do not address SIA’s recommendation to amend Section 25.121(e) to add a statement that the International Bureau will notify licensees of impending license expiration 90 days in advance, which is beyond the scope of the *Notice*.

<sup>269</sup> See 47 C.F.R. §§ 2.803, 2.1033 *et seq.*, and 2.1204.

<sup>270</sup> *Notice*, 27 FCC Rcd at 11644, ¶ 84.

<sup>271</sup> SIA Comments at 38.

<sup>272</sup> *Notice*, 27 FCC Rcd at 11644-45, ¶ 85.

<sup>273</sup> A geographic second is a measure of distance that is 1/3600<sup>th</sup> of a degree in longitude or latitude.

<sup>274</sup> See *Additional Guidelines for Filing Modification and Renewal Applications for Domestic Fixed-Satellite Earth Stations*, Public Notice, 8 FCC Rcd 1679 (1993); *cf.* 1996 *Streamlining Order*, 11 FCC Rcd at 21596-97, ¶ 37. Licensing of multiple transmitting facilities at specified locations under this policy is to be distinguished from blanket licensing of fixed or mobile transmit/receive earth stations at unspecified locations operating under central network control. See, e.g., 47 C.F.R. §§ 25.134(b)-(h), 25.138, and 25.221. In this regard, the proposed rule stated that it would not apply to applications for blanket licenses issued under Section 25.134, 25.221, 25.222, or 25.226 or “blanket [license] applications for 20/30 GHz earth stations.” Section 25.227, which governs blanket licensing of earth stations aboard aircraft communicating with GSO FSS space stations in certain frequency bands, was adopted (continued...)



122. ORBCOMM supports the proposed rule,<sup>275</sup> and SIA opposes it. SIA notes that the Commission's staff has not consistently adhered to the 1-second/10-second policy and, consequently, that a number of current FSS earth station licenses authorize multiple transmitting facilities at widely separated locations. SIA asks whether we would "grandfather" these existing authorizations. SIA also notes that the *Notice* did not explain why the proposed multiple antenna rule would not apply to applications for 20/30 GHz earth stations. SIA contends, moreover, that the proposed rule would conflict with Section 25.257, which provides that a feeder-link earth station "complex" for an NGSO MSS system transmitting in the 29.1-29.25 GHz band may include up to three station groups with up to four antennas each within a radius of 75 kilometers.<sup>276</sup>

123. We adopt our proposal to codify the 1/10 second policy in Section 25.130(g). This provides a streamlined procedure by which applicants can request, and the Commission can license, multiple earth station antennas located in proximity to each other under a single call sign. Contrary to SIA's assertion, the proposed rule covers 20/30 GHz earth stations that would otherwise be individually licensed. We limit the scope of Section 25.130(g) to make it clear that Section 25.257 continues to govern licensing of 29 GHz NGSO MSS feeder-link complexes.

124. We acknowledge that staff may have inadvertently granted a few applications that were inconsistent with the 1/10-second policy. Codifying the policy, which governs application processing rather than station operation, does not change the authority conferred in any existing license. We direct the International Bureau, however, to examine options for ensuring that FSS earth station authorizations conform to the 1/10-second policy.

#### 10. Section 25.131 "Filing requirements for receive-only earth stations"

125. We proposed to amend Section 25.131(b) to clarify that a receive-only FSS earth station receiving transmissions from a non-U.S.-licensed space station may be registered for interference protection if the space station is on the Permitted List.<sup>277</sup> We further proposed to amend Section 25.131(b) by inserting a cross-reference to Section 25.209(e), which states that earth stations with antennas not conforming to the off-axis gain standards in Sections 25.209(a) and (b) are entitled to no more protection from interference than earth stations that do conform to those standards.<sup>278</sup> We also proposed to delete a provision from Section 25.131(j)(2) that bars unlicensed receive-only earth stations not in conformance with those standards in Section 25.209 from receiving transmissions from non-U.S.-licensed space stations on the Permitted List.<sup>279</sup> SIA supports these amendment proposals,<sup>280</sup> and no commenter opposes them. We adopt the proposed amendments to Section 25.131.

126. We also amend Section 25.131(a) to delete a misplaced cross-reference to Section 25.115(a) and delete the second sentence in Section 25.131(d), which is redundant with provisions in Section 25.112.

(Continued from previous page)—————

after the release of the *Notice*. As adopted here, Section 25.130(g) similarly excludes earth station applications covered by Section 25.227.

<sup>275</sup> ORBCOMM Comments at 3.

<sup>276</sup> SIA Comments at 38-39 and n.98.

<sup>277</sup> *Notice*, 27 FCC Rcd at 11645, ¶ 86.

<sup>278</sup> *Id.* at 11645, ¶ 87.

<sup>279</sup> *Id.* at 11645-46, ¶ 88.

<sup>280</sup> SIA Comments at 39-40. SIA recommends further amendments in Sections 25.131 that are beyond the scope of the *Notice*, which we will discuss at another time. *Id.* (advocates amendment to allow unlicensed receive-only stations to receive signals from satellites that are approved for U.S. market access but are not on the Permitted List and allow such stations to be registered).

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

127. Section 25.132(a)(1) states that license applications for transmitting earth stations, except earth stations operating in the 20/30 GHz band, must include a certificate from the antenna manufacturer that it has ascertained through testing that the antenna’s performance conforms to the off-axis gain standards in Section 25.209. We proposed to amend this rule in three respects: 1) to clarify that the certification requirement applies only to applications for FSS earth stations; 2) to allow applicants, themselves, to certify off-axis performance based on review of testing performed by antenna manufacturers; and 3) to allow applicants to certify that antenna performance is consistent with off-axis EIRP density standards in Part 25 or with coordinated off-axis EIRP density limits, in lieu of certifying conformance with the standards in Section 25.209.<sup>281</sup> SIA points out that the proposed change mentioned in 3) above is not necessary since it would be redundant with the provision in Section 25.132(b)(3), which we proposed to cross-reference in Section 25.132(a)(1).<sup>282</sup> We agree, and have not included this change in the amended version of Section 25.132(a)(1) adopted herein. We adopt the other changes in Section 25.132(a)(1) described above, which no commenter opposes.

128. Without supporting rationale, SIA advocates a further change in Section 25.132(a)(1) that would allow applicants to rely on a manufacturer’s representations concerning antenna performance without reviewing test data.<sup>283</sup> We decline to adopt this suggestion. We believe that requiring earth station applicants to examine antenna manufacturers’ test data promotes antenna quality control, reducing the risk of increased interference to satellite uplinks from antennas with excessive off-axis gain.

129. Section 25.132(a)(2) states that all applications for transmitting earth stations operating in the 20/30 GHz band must include measured antenna performance data of the kind described in Sections 25.138(d) and (e). We proposed to amend Section 25.132(a)(2) to state that only applications for 20/30 GHz earth stations communicating via GSO space stations need to include such data.<sup>284</sup> SIA agrees that this change should be made.<sup>285</sup> On further reflection, however, we conclude that applicants for 20/30 GHz earth stations that will communicate with NGSO satellites should not be exempt from providing antenna gain patterns. Without uplink-band gain patterns, the Commission could not fully assess the interference potential of proposed NGSO FSS earth stations. Without downlink-band gain patterns, the Commission could not assess potential vulnerability to inference from downlink transmissions from co-frequency GSO satellites.

130. Section 25.132(b)(1) prescribes the method for measuring antenna gain for purposes of determining compliance with the off-axis gain standards in Section 25.209 and states that the measurement data “shall be ... submitted to the Commission.” SIA notes that the requirement to submit the data to the Commission is inconsistent with Section 25.132(a)(1), which does not require applicants to submit supporting measurement data unless the Commission requests it.<sup>286</sup> SIA therefore recommends that we delete the phrase “submitted to the Commission” from Section 25.132(b)(1). We adopt this amendment for the reason stated by SIA.

131. Section 25.132(b)(1) requires applicants to submit cross-polarization radiation patterns “in the E and H planes.” SIA notes that E/H-plane patterns are relevant only when an applicant proposes

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<sup>281</sup> Notice, 27 FCC Rcd at 11646, ¶ 89.

<sup>282</sup> SIA Comments at 41-42.

<sup>283</sup> *Id.*, Rules Appendix at 18.

<sup>284</sup> Notice, 27 FCC Rcd at 11646, ¶ 90.

<sup>285</sup> SIA Comments at 41.

<sup>286</sup> *Id.* at 42.

to use linear polarization.<sup>287</sup> Licensees often use circular polarization, however, and we see no reason to preclude its use. Therefore, we amend Section 25.132(b)(1) to state that applicants must provide cross-polarization patterns in the E and H planes for linear-polarized antennas and in two orthogonal planes for circularly-polarized antennas.<sup>288</sup>

132. Section 25.132(b)(3) requires applicants that request licenses based on coordination or compliance with off-axis EIRP density standards under Section 25.220, 25.221, 25.222, 25.223, or 25.226 to submit gain test plots from the antenna manufacturers. We proposed to delete unnecessary text from Section 25.132(b)(3) and add that applicants seeking authority to operate pursuant to Section 25.218 must likewise submit antenna gain test plots.<sup>289</sup> SIA supports these proposed amendments,<sup>290</sup> which no commenter opposes. We adopt these amendments.

133. Section 25.132(d) prescribes on-site measurement requirements for earth station antennas over three meters in diameter. We proposed to amend this rule to clarify that it does not apply to antennas that are subject to the different measurement requirements for 20/30 GHz earth stations in Section 25.138(d).<sup>291</sup> SIA supports this proposed amendment,<sup>292</sup> and no commenter opposes it. We adopt the proposed amendment.

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

134. Section 25.133(a)(1) states that each earth station license, except licenses for mobile earth stations, shall specify a deadline for completing station construction and commencing operation.<sup>293</sup> Section 25.133(a)(2) states that each license for mobile earth stations will include a condition specifying a time in which station operation must commence and further states that the network in which the mobile stations will operate must be brought into operation within 12 months of the license grant, unless the Commission determines otherwise. This distinction between Sections 25.133(a)(1) and (a)(2) reflects a difference in licensing frameworks. Rather than individually licensing each mobile earth station that would operate in a network, the Commission generally issues a blanket license covering operation of a specified number of mobile earth stations. The *Notice* recognized that the Commission also issues blanket licenses for fixed earth stations. Accordingly, we proposed to amend Section 25.133(a)(2) to apply to all blanket earth station licenses.<sup>294</sup> We further proposed to amend Sections 25.133(a)(1) and (2) to limit their applicability to initial license grants. SIA supports the proposed amendments in Section 25.133(a),<sup>295</sup> which no commenter opposes. We adopt these amendments.

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<sup>287</sup> *Id.* at 41.

<sup>288</sup> SIA also advocates amending Section 25.132(b)(1) to alter the specified range of required measurements in the azimuth and elevation planes to match the corresponding measurement specifications for 20/30 GHz antennas in Section 25.138(d)(1). *Id.* at 40-41. We reserve judgment on this recommendation, which is beyond the scope of the *Notice*.

<sup>289</sup> *Notice*, 27 FCC Rcd at 11646, ¶ 92 and 11678 (Appendix A ¶ 13).

<sup>290</sup> SIA Comments at 41.

<sup>291</sup> *Notice*, 27 FCC Rcd at 11646, ¶ 91.

<sup>292</sup> SIA Comments at 41.

<sup>293</sup> 47 C.F.R. § 25.133(a)(1).

<sup>294</sup> *Notice*, 27 FCC Rcd at 11647, ¶ 93.

<sup>295</sup> SIA Comments at 43. SIA notes that the amendment in Section 25.133(a)(2) proposed in *Notice*, 27 FCC Rcd at 11647, ¶ 93, is not reflected in the *Notice*'s rule appendix. We correct this error.

135. Section 25.133(b)(1)<sup>296</sup> states that each license for a transmitting earth station not subject to blanket licensing will require the licensee to certify it has completed construction and verify that it has tested each antenna and found its performance to be within 2 dB of “the pattern specified in § 25.209, § 25.135 ..., or § 25.213 ....” Because there is no antenna pattern specification in Section 25.135 or Section 25.213 and conformance to the patterns in Section 25.209 is not required in all cases, we proposed to amend Section 25.133(b)(1) to state that the licensee will be required to certify that the tested performance is within 2 dB of the applicable pattern in Section 25.209 or other applicable pattern.<sup>297</sup> SIA supports these proposed amendments but recommends inserting the word “authorized” in Section 25.133(b)(1)(v) so that the text at the end of that provision would read as follows: “the pattern specified in § 25.209 or other applicable authorized pattern.”<sup>298</sup> We adopt the proposed amendments in Section 25.133(b)(1) with “authorized” inserted, as recommended, in Section 25.133(b)(1)(v), and with “applicable” repositioned to modify “pattern specified in § 25.209,” where it makes better sense.

136. We also proposed to amend Section 25.133(b)(1) to apply only to initial licenses, and SIA supports this proposal.<sup>299</sup> Limiting the rule to initial license grants, however, would make the rule inapplicable to license modifications for transmitting antennas. Therefore, instead of amending Section 25.133(b)(1) to apply only to initial licenses, we amend this provision to apply to “[e]ach initial license for a transmitting earth station or modified license authorizing operation of an additional transmitting antenna.”

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

137. Section 25.134(a)(1) specifies standards for “routine” processing of applications for analog VSAT networks and applications for digital VSAT networks “granted on or before September 15, 2005.”<sup>300</sup> We proposed to delete this rule because it is redundant with Section 25.134(g) as it pertains to analog VSAT applications and obsolete as it pertains to digital VSAT applications “granted” prior to a specified date in 2005.<sup>301</sup> No commenter opposes deleting this rule. Accordingly, we delete Section 25.134(a)(1).

138. Section 25.134(b) states that license applicants for digital and/or analog 12/14 GHz VSAT networks that propose to operate with downlink EIRP density or antenna input power higher than the values specified in Section 25.134(a) must “comply with the procedures” in Section 25.220. We proposed to delete the unnecessary phrase “digital and/or analog.”<sup>302</sup> No commenter opposes this proposed amendment, which we adopt. We also replace “procedures” with “requirements,” since Section 25.220 prescribes application content requirements rather than procedures.

139. We further proposed to amend Section 25.134(b) to cross reference Section 25.134(g) rather than Section 25.134(a) because the provisions specifying downlink EIRP density and input power levels in Section 25.134(a) were superseded by similar provisions in Section 25.134(g).<sup>303</sup> SIA contends that instead of referring to the values in Section 25.134(g), Section 25.134(b) should state that applicants for 12/14 GHz VSAT networks proposing off-axis EIRP density levels above the levels specified in

<sup>296</sup> Notice, 27 FCC Rcd at 11647, ¶ 94.

<sup>297</sup> *Id.*

<sup>298</sup> SIA Comments at 43.

<sup>299</sup> Notice, 27 FCC Rcd at 11647, ¶ 94; SIA Comments at 43.

<sup>300</sup> 47 C.F.R. § 25.134(a)(1); 2005 Streamlining Order, 20 FCC Rcd at 5649 (Appendix B, ¶ 2).

<sup>301</sup> Notice, 27 FCC Rcd at 11647, ¶ 95.

<sup>302</sup> *Id.* at 11647-48, ¶ 96.

<sup>303</sup> *Id.*

Section 25.218 must meet the requirements of Section 25.220.<sup>304</sup> This recommendation and associated SIA recommendations for substantial changes in other paragraphs of Section 25.134<sup>305</sup> are beyond the scope of the *Notice*. We will not address these recommendations at this time. As proposed, we amend Section 25.134(b) to refer to Section 25.134(g) rather than Section 25.134(a).

140. Section 25.134(e) states that a 12/14 GHz VSAT network may have more than one hub station. We proposed to add, for clarification, that the licensee may site the network's hubs in different places.<sup>306</sup> We also proposed to replace "VSAT operators in the 11.7-12.2 GHz and 14.0-14.5 GHz frequency bands" in Section 25.134(f) with "12/14 GHz VSAT operators" and delete unnecessary words from that provision.<sup>307</sup> No commenter opposes these proposed amendments, which we adopt.

141. Section 25.134(g) states that as of March 10, 2005, the Commission will routinely process applications for 12/14 GHz VSAT networks that meet specified limits on downlink EIRP density and input power density to earth station antennas.<sup>308</sup> Compliance with the input power density limit does not necessarily ensure that VSAT terminals will suppress off-axis radiation sufficiently to prevent harmful interference. Therefore, we proposed to amend Section 25.134(g) to add that to qualify for routine processing under this rule, the proposed antennas must have an equivalent diameter of at least 1.2 meters and the applicant must certify that the antennas meet the relevant off-axis gain standards in Section 25.209.<sup>309</sup> We also proposed to delete two obsolete effective dates in Section 25.134(g). SIA does not object to the deletion but suggests that requiring applicants to certify conformance with Section 25.209 as proposed would obviate any need for a minimum antenna size.<sup>310</sup> SIA's suggestion regarding antenna size is beyond the scope of the *Notice* and we will not address it at this time.<sup>311</sup> We amend Section 25.134(g) as proposed in the *Notice*.

142. Section 25.134(h) requires VSAT operators to use remote earth stations that are designed to stop transmission "when synchronization with the target satellite fails." This rule is intended to ensure that remote earth stations will not transmit unless they are receiving a signal originating from a hub earth station transmitted through the target satellite. For accuracy, we proposed to change "synchronization

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<sup>304</sup> SIA Comments at 43-44.

<sup>305</sup> *Id.* at 44 and Rules Appendix at 21 (SIA advocates deleting Section 25.134(g)(1) and (g)(2) and adopting a new provision that would allow applicants for conventional Ku-band VSAT networks proposing operation with maximum uplink EIRP of 50 dBW or less to omit all other technical parameters and merely certify that the proposed operation will comply with all applicable Commission rules; alternatively, advocates adding a provision to Section 25.134 similar to the rule in Section 25.226(b)(3)(i), for applicants proposing to dynamically control the radiated power of individual stations transmitting simultaneously in the same frequency range).

<sup>306</sup> *Notice*, 27 FCC Rcd at 11648, ¶ 97.

<sup>307</sup> *Id.* at 11648, ¶ 98.

<sup>308</sup> 47 C.F.R. § 25.134(g).

<sup>309</sup> *Notice*, 27 FCC Rcd at 11648, ¶ 99. A 12/14 GHz VSAT application not meeting the criteria in Section 25.134(g) may nevertheless be eligible for routine licensing based on conformance with off-axis EIRP density standards in Section 25.218.

<sup>310</sup> SIA Comments at 44.

<sup>311</sup> We note, however, that SIA does not advocate any change in the routine licensing rule for 4/6 GHz VSAT stations in Section 25.134(a)(2), which includes both an antenna-size criterion and a requirement to conform to the standards in Section 25.209. We also note that, although SIA supports our proposal to add a Section 25.209 compliance requirement to the routine licensing rule in Section 25.211(d), it does not ask us to delete the antenna-size criterion from that rule. See ¶¶ 185-186, *infra*.

with the target satellite” to “synchronization to signals from the target satellite.”<sup>312</sup> No commenter opposes this proposed amendment, which we adopt.

**14. Sections 25.135, 25.136, and 25.143**

143. Sections 25.135 and 25.136 prescribe operational requirements for MSS user transceivers. To improve the organizational coherence of Part 25, we proposed to move the provisions in the second sentence of Section 25.135(c), Section 25.135(d), and Sections 25.136 (b), (c), (d), and (e) to a new Section 25.287 in Subpart C (Technical Standards). We also proposed to amend some of those provisions to make them more concise.<sup>313</sup>

144. Section 25.136(f) states that an L-band (*i.e.*, 1.5/1.6 GHz) MSS licensee may construct ATC base stations at any time after commencing construction of its MSS system. Section 25.143(i) contains an identical provision for 1.6/2.4 GHz and 2 GHz MSS licensees. We proposed to replace these band-specific rules with a generally applicable rule in Section 25.113(b).<sup>314</sup>

145. Section 25.136(g) prescribes rules pertaining to “build-out” and pre-operational testing of ATC facilities. Section 25.143(j) contains identical provisions specifically for 1.6/2.4 GHz and 2 GHz ATC facilities. We proposed to delete the duplicative rules in Section 25.143(j) and move the provisions in Section 25.136(g) to a separate subparagraph of Section 25.113(b). We also proposed to revise these provisions to make them more succinct.<sup>315</sup>

146. SIA supports the proposed amendments to Sections 25.135, 25.136 and 25.143,<sup>316</sup> and no commenter opposes them. We adopt these amendments.

**15. Section 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”**

147. Section 25.138 specifies a routine processing standard and content requirements for applications for earth stations that communicate with GSO FSS space stations in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz frequency bands.<sup>317</sup> We proposed to amend the caption and first sentence in Section 25.138(a) to indicate that Section 25.138 applies to applications for both individual stations and blanket licenses.<sup>318</sup> SIA supports these proposed amendments,<sup>319</sup> which no commenter opposes. We adopt these amendments. For clarification, we also amend Section 25.138(a) to indicate that to be eligible for routine processing an application filed pursuant to Section 25.138 must include the information required by Section 25.138(d).

148. Section 25.138(b) requires an applicant proposing to operate with off-axis uplink EIRP density or downlink PFD levels in excess of those specified in Section 25.138(a) to provide link budget analyses. In addition, such applicants must show how each uplink and downlink power density value is derived, indicate whether operation with the proposed higher levels would cause “margin shortfalls in any existing baseline service,” and explain how the applicant intends to resolve such shortfalls. Furthermore,

<sup>312</sup> Notice, 27 FCC Rcd at 11648, ¶ 100.

<sup>313</sup> *Id.* at 11648-49, ¶ 101.

<sup>314</sup> *Id.* at 11649, ¶ 102.

<sup>315</sup> *Id.* at 11649, ¶ 103.

<sup>316</sup> SIA Comments at 45.

<sup>317</sup> 47 C.F.R. § 25.138.

<sup>318</sup> Notice, 27 FCC Rcd at 11649, ¶ 104.

<sup>319</sup> SIA Comments at 45.

Section 25.138(b) requires such applicants to certify that operators of potentially affected space stations within six degrees of the proposed target satellite do not object to the proposed higher power density.<sup>320</sup> We proposed to amend Section 25.138(b) to give applicants a choice between providing link budgets and accompanying technical information described above or providing evidence of consent by adjacent satellite operators, rather than submitting both.<sup>321</sup>

149. SIA contends that applicants proposing to operate with higher off-axis EIRP density levels than those specified in Section 25.138(a) should not have an option to submit a “non-interference showing” (*i.e.*, the technical showing required by Section 25.138(b)) without a “coordination” showing (*i.e.*, evidence of consent by potentially-affected satellite operators).<sup>322</sup> Rather, SIA contends that coordination with adjacent satellite operators should be mandatory for 20/30 GHz GSO FSS earth station applicants under these circumstances, just as it is under Section 25.220 for applicants proposing to operate C-band or Ku-band earth stations at EIRP-density levels above those that Section 25.218 specifies for routine licensing. Therefore, SIA advocates retaining the requirement to provide a coordination showing and eliminating the requirement to submit the technical showing described in Section 25.138(b).<sup>323</sup>

150. FSS earth station applicants proposing to exceed routine off-axis EIRP density levels, in bands other than 20/30 GHz, are required to establish that such proposed operations are coordinated. They are not given an option to provide a technical showing in lieu of providing evidence of consent by adjacent satellite operators. We see no reason to treat 20/30 GHz earth stations applicants differently. Coordination ensures that potentially affected parties are aware of the proposed non-routine operation and have no objection to it. We therefore adopt SIA’s recommendation to retain the coordination requirement and to eliminate the technical showing requirement in Section 25.138(b).<sup>324</sup>

151. Section 25.138(d) requires applicants for 20/30 GHz GSO FSS earth stations to provide measured radiation patterns for each proposed antenna type. We proposed to replace the undefined term “the 30 GHz band” in Section 25.138(d)(1) with “each requested uplink band.” We also proposed to insert text in Section 25.138(d)(2) similar to that in Section 25.132(d), stating that applicants or licensees may measure the radiation patterns of antennas more than 3 meters in diameter that will be assembled on site after installation, rather than prior to filing the application.<sup>325</sup> SIA supports these proposed

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<sup>320</sup> Section 25.138(b) currently states that the applicant must certify that “[operators of] GSO FSS satellite networks that are 2, 4, and 6 degrees apart acknowledge and do not object to the use of the applicant's higher power densities.” As amended by this Order, the provision now states that operators of “all co-frequency GSO FSS space stations within 6 degrees of the proposed satellite point(s) of communication are aware of the applicant’s proposal to operate with the higher power densities and have stated that they have no objection to such operation.”

<sup>321</sup> *Notice*, 27 FCC Rcd at 11649-50, ¶ 105.

<sup>322</sup> SIA Comments at 46.

<sup>323</sup> *Id.* at 45-46 and Rules Appendix at 23.

<sup>324</sup> We proposed to amend Section 25.138(b) to require applicants proposing to operate with non-routine EIRP density levels to demonstrate that operating with those levels is necessary to close communications links. *Notice*, 27 FCC Rcd at 11649-50, ¶ 105. SIA and Intelsat oppose this proposal. Intelsat Reply Comments at 3; SIA Comments at 45-46. Because we adopt SIA’s recommendation to delete the technical showing requirement from Section 25.138(b), this issue is moot. SIA also advocates amending Section 25.138(b) to allow applicants proposing to operate an earth station with off-axis EIRP density levels in excess of the routine licensing limits only at certain angles to omit coordination with adjacent satellites at positions where the proposed station’s off-axis EIRP density will not exceed the limits for routine licensing. SIA Comments at 47. We will address this recommendation, which is beyond the scope of the *Notice*, in a Further NPRM.

<sup>325</sup> *Notice*, 27 FCC Rcd at 11650, ¶ 107.

amendments, particularly the proposed amendment of Section 25.138(d)(2),<sup>326</sup> and no commenter opposes them. We adopt these amendments.

152. Like Section 25.132(b)(1), Section 25.138(d) requires applicants to submit cross-polarization radiation patterns “in the E and H planes.” We amend this provision in the same way and for the same reason that we amend Section 25.132(b)(1).<sup>327</sup>

153. Section 25.138(e) specifies the extent to which 20/30 GHz GSO FSS earth station licensees are entitled to protection from interference from downlink operation of adjacent satellites and requires applicants to provide “antenna performance plots for the 20 GHz band, including the format specified in paragraph (d) of this section.” For clarification, we proposed to change “receive earth stations” to “downlink reception” in the first sentence of Section 25.138(e), replace the term “20 GHz band” with “18.3-18.8 GHz and 19.7-20.2 GHz bands,” and change “including the format specified in paragraph (d)” to “in the format specified in paragraph (d).”<sup>328</sup> We also proposed to delete provisions from Section 25.138(f) that are subsumed by a general rule in Section 25.273(a).<sup>329</sup> SIA supports these proposed amendments in Sections 25.138(e) and (f),<sup>330</sup> which no commenter opposes. We adopt these amendments. Moreover, we amend the last sentence in Section 25.138(f) to make it compatible with expanding the scope of Section 25.138 to include applications for individual stations.

154. We proposed a minor amendment in Section 25.138(g) to correct a reference to an application form that is no longer in use.<sup>331</sup> No commenter opposes this proposed amendment, which we adopt.

155. SIA, EchoStar, Cobham Technical Services, and Cobham Satcom recommend other changes in Section 25.138 not contemplated in the *Notice*.<sup>332</sup> We will consider these recommendations at another time.

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<sup>326</sup> SIA Comments at 49.

<sup>327</sup> See ¶ 131, *supra*.

<sup>328</sup> *Notice*, 27 FCC Rcd at 11650, ¶ 108 and 11680-81 (Appendix A, ¶ 18).

<sup>329</sup> *Id.* at 11650, ¶ 109.

<sup>330</sup> SIA Comments at 49; EchoStar Comments at 13.

<sup>331</sup> *Notice*, 27 FCC Rcd at 11650-51, ¶ 110.

<sup>332</sup> EchoStar Comments at 12 and Inmarsat Reply Comments at 6 (advocate amending Section 25.138 to apply to applications for GSO FSS earth stations operating in frequency bands where GSO FSS operation is secondary); SIA Comments at 45 (advocates increasing the reference bandwidths in the tables in Section 25.138(a)); SIA Comments at 47 (advocates adopting a provision that would require applicants proposing to allow more than one terminal to transmit simultaneously in the same frequency range within the same satellite receive beam to demonstrate that they will keep aggregate off-axis EIRP density 1 dB below the levels specified in the tables in Section 25.138(a)); Cobham Technical Services Comments at 2-3 (advocates amending Section 25.138(a) to specify different off-axis EIRP density masks for small flat-plate antennas); SIA Comments at 47-48 (advocates amending Section 25.138(c) to require licensees with antennas with non-conforming off-axis EIRP density to coordinate with operators of potentially affected satellites more than six degrees from the target satellite(s)); EchoStar Comments at 12-13 (advocates amending Section 25.138(e) to reference the off-axis EIRP density envelopes in Section 25.138(a) instead of the off-axis gain envelopes in Section 25.209); Cobham Satcom Comments at 1-2 (advocates amending Section 25.138(e) to delete the reference to Section 25.209 and instead specify a receive gain mask relative to the main lobe peak level); Cobham Technical Services Comments at 2 and Inmarsat Reply Comments at 6 (advocate amending Section 25.138(e) to state that gain is to be measured at off-axis angles of two degrees or more and that 0 dBi gain is allowed between 48 and 85 degrees off axis); SIA Comments at 49 (advocates deleting Section 25.138(g)).



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

156. For clarification, we proposed to delete text from the caption to Section 25.140 and from Section 25.140(b) that could be construed to mean that FSS space station applications must include a “qualification” showing of an unspecified nature in addition to the information specifically required by Sections 25.114 and 25.140.<sup>333</sup> We also proposed to amend the caption to Section 25.140 and the first sentence of Section 25.140(b) to clarify that the subsection applies to both FSS and 17/24 GHz BSS space station applicants. No commenter opposes these proposed amendments, which we adopt. In addition, SIA recommends inserting “geostationary” in the caption to Section 25.140. We do so.

157. Section 25.140(b)(2), which requires a GSO FSS space station applicant to submit an interference analysis demonstrating compatibility with space stations within two degrees of the proposed space station, includes a cross-reference to a 1983 Commission order. We proposed to cite the order’s FCC number and add a reference to more recent public notices that provide relevant guidance.<sup>334</sup> SIA supports these proposed changes.<sup>335</sup> In contrast, Intelsat advocates deleting the two degree interference analysis requirement. It contends that the rules that require GSO FSS licensees to operate within specific technical limits or coordinate non-conforming operation with operators of adjacent satellites obviate any need to include an interference analysis in space station applications.<sup>336</sup> In response, SES/NSS/O3b contend that we should retain the interference analysis requirement because the Commission has not established off-axis uplink EIRP density and downlink PFD limits or coordination thresholds for every FSS band and because GSO FSS space stations are not always separated from each other by a full two degrees.<sup>337</sup> We agree with SES/NSS/O3b and will retain the interference analysis requirement. We therefore adopt the changes to Section 25.140(b)(2) as proposed.

158. Because all of the substantive provisions in Section 25.140(b) except subparagraph (b)(2) apply only to applications for 17/24 GHz Broadcasting-Satellite Service (BSS) space stations, we move the provision in (b)(2) to Section 25.140(a), which is currently vacant, and revise the introductory text in Section 25.140(b) to indicate that the following subparagraphs all pertain to 17/24 GHz BSS applications.

**17. Section 25.142 “Licensing provisions for the non-voice, non-geostationary Mobile-Satellite Service”**

159. Section 25.142(e) prescribes contingent spectrum rights for the holder of the “System 2” license that was granted in the second NVNG MSS application processing round. The rule states that these rights will terminate upon expiration, revocation, or surrender of the System 2 license. In 2004, the International Bureau declared the System 2 license null and void for noncompliance with milestone

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<sup>333</sup> Notice, 27 FCC Rcd at 11651, ¶ 111.

<sup>334</sup> *Id.* at 11651, ¶ 112. See *International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis*, Public Notice, Report No. SPB-207, 19 FCC Rcd 10652 (Int’l Bur., Sat. Div., 2004); *Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis*, Public Notice, No. SPB-195, 18 FCC Rcd 25099 (Int’l Bur., Sat. Div., 2003).

<sup>335</sup> SIA Comments at 50.

<sup>336</sup> Intelsat Comments at 13-14.

<sup>337</sup> SES/NSS/O3b Reply Comments at 17-18.

requirements.<sup>338</sup> Although we did not propose to do so in the *Notice*, we delete Section 25.142(e) as obsolete.<sup>339</sup>

**18. Section 25.143 “Licensing provisions for the 1.6/2.4 GHz Mobile-Satellite Service and 2 GHz Mobile-Satellite Service”**

160. The first sentence in Section 25.143(b) states that each application for a 1.6/2.4 GHz MSS or 2 GHz MSS space station license “shall describe in detail the proposed satellite system, setting forth all pertinent technical and operational aspects of the system, and the technical and legal qualifications of the applicant.” The next sentence states that such applications must include the information specified in Section 25.114. Although we did not propose to do so in the *Notice*, we delete the quoted text from the first sentence of Section 25.143(b), which is redundant with the following sentence and with provisions in Section 25.114.<sup>340</sup>

**19. Section 25.144 “Licensing provisions for the 2.3 GHz Satellite Digital Audio Radio Service”**

161. Section 25.144(a)(3)(iii) requires an applicant for a 2.3 GHz SDARS system license to specify the compression rate(s) it proposes to use for audio programming and any ancillary service. Because compression rates for SDARS audio transmissions vary dynamically depending on program content and overall bandwidth allocation needs, we proposed to delete this rule.<sup>341</sup> SIA supports this proposed amendment,<sup>342</sup> which no commenter opposes. We adopt the proposed amendment for the reason stated in the *Notice*.

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

162. We proposed to delete, as overbroad, the statement in Section 25.145(a) that “[e]xcept as provided in § 25.210(b), in general all rules contained in this part apply to Fixed-Satellite Service in the 20/30 GHz bands.”<sup>343</sup> SIA supports this proposal,<sup>344</sup> which no commenter opposes. We adopt the proposed amendment for the reason stated in the *Notice*.

163. Section 25.145(g) acknowledges that certain frequencies in the 18.3-19.3 GHz band were reallocated for primary use by the FSS, subject to rules that accorded temporary co-primary status for specified periods of time to previously authorized terrestrial stations. Section 25.145(g) states that FSS operations in those bands will be entitled to protection from such terrestrial stations once their co-primary status expires.<sup>345</sup> We did not propose any change in Section 25.145(g) in the *Notice*, but SIA notes that the time periods for co-primacy of grandfathered terrestrial stations in the 18.3-19.3 GHz band have all

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<sup>338</sup> *Final Analysis Communications Services, Inc.*, 19 FCC Rcd 4768 (Int’l Bur., 2004).

<sup>339</sup> We conclude that this rule revision falls within the “unnecessary” exception to the notice and comment requirement of the APA, discussed above in note 9.

<sup>340</sup> We conclude that this rule revision falls within the “unnecessary” exception to the notice and comment requirement of the APA, discussed above in note 9.

<sup>341</sup> *Notice*, 27 FCC Rcd at 11651, ¶ 113.

<sup>342</sup> SIA Comments at 50.

<sup>343</sup> *Notice*, 27 FCC Rcd at 11651-52, ¶ 114.

<sup>344</sup> SIA Comments at 51.

<sup>345</sup> See 47 C.F.R. §§ 21.901(e), 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r).

expired and recommends revising Section 25.145(g) to reflect this.<sup>346</sup> We adopt the change that SIA recommends to Section 25.145(g).<sup>347</sup>

#### 21. Section 25.153 “Repetitious applications”

164. Section 25.153(a) states that the Commission may, for good cause shown, waive the rules in that section. Section 1.3 states that the Commission may waive any rule for good cause, and it is unnecessary to reiterate that principle in Part 25. Although we did not propose to do so in the *Notice*, we therefore delete this statement in Section 25.153(a) as unnecessary.<sup>348</sup>

#### 22. Section 25.154 “Opposition to applications and other pleadings”

165. Section 25.154 prescribes procedural requirements for petitions to deny Part 25 applications and related pleadings. Section 25.154(a) states that a petition to deny a Part 25 application must be filed within 30 days after the application is placed on public notice. Section 25.154(c) states that oppositions to petitions to deny must be filed within 10 days after the petition to deny is filed. Section 25.154(d) provides that replies to such oppositions must be filed within five days after the opposition is filed. By their terms, however, Sections 25.154(c) and (d) do not apply in cases where a petition to deny has been filed against an earth station application filed pursuant to Section 25.220.<sup>349</sup> In such cases, Section 25.154(e) requires the applicant to file a statement within 30 days after the petition to deny is filed, stating whether all of the issues raised by the petitioner have been resolved.<sup>350</sup> Section 25.154(e) does not, however, contain any provision for filing an opposition in response to a petition to deny an application filed pursuant to Section 25.220. In the *Notice*, we proposed to amend Section 25.154(e) to state that an opposition to a petition to deny an application filed pursuant to Section 25.220 may be filed within the 30-day period allowed for filing the statement regarding resolution of issues.<sup>351</sup> We also proposed to eliminate the exception from Section 25.154(d) for applications filed pursuant to Section 25.220.<sup>352</sup> We observed that adopting these rule revisions would allow replies to oppositions to petitions to deny to be filed within five days of the opposition in all cases involving Part 25 applications.<sup>353</sup> This, in turn, would allow a more complete record for considering contested Section 25.220 applications.<sup>354</sup>

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<sup>346</sup> SIA Comments at 51.

<sup>347</sup> We find that notice and comment for this revision is unnecessary within the meaning of Section 553(b)(B) of the APA. SIA also advocates deleting the reporting requirement in Section 25.145(f)(2), which we did not propose in the *Notice*. *Id.* We will address this recommendation in a Further NPRM.

<sup>348</sup> We find that notice and comment for this revision is unnecessary within the meaning of Section 553(b)(B) of the APA.

<sup>349</sup> 47 C.F.R. § 25.220. Section 25.220 contains provisions for licensing “non-conforming” earth stations – that is, fixed earth stations not meeting routine technical standards specified elsewhere in Part 25 – based on coordination with potentially affected satellite operators.

<sup>350</sup> The Commission’s intention when adopting Section 25.154(e) was to afford applicants filing pursuant to Section 25.220 an extended time period in which to resolve a petitioner’s objections through coordination with operators of potentially affected space stations. *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*, IB Docket No. 00-248, Fifth Report and Order, 20 FCC Rcd 5666, 5693, ¶ 68 (2005).

<sup>351</sup> *Notice*, 27 FCC Rcd at 11652, ¶ 115.

<sup>352</sup> *Id.*

<sup>353</sup> *Id.*

<sup>354</sup> *Id.*

SIA supports these proposed amendments,<sup>355</sup> which no commenter opposes. We adopt the proposed amendments for the reasons stated in the *Notice*.

### 23. Section 25.161 “Automatic termination of station authorization”

166. Section 25.161 specifies the circumstances under which station licenses granted under Part 25 automatically terminate.<sup>356</sup> We proposed to amend Section 25.161(b) to indicate that operational authority for a space station will not terminate at the end of a license term if a modification application for extension of the license term is pending.<sup>357</sup> Previously, Section 25.161(b) did not include any mention of space station licenses. SIA and ORBCOMM support this proposed amendment, which no commenter opposes.<sup>358</sup> We adopt this amendment.

### H. Other Proposed Changes in Subpart C – “Technical Standards”

167. Subpart C of Part 25 specifies operating requirements for earth stations and space stations. As discussed below, we proposed changes in various operating rules to reflect evolving technology, eliminate requirements that are no longer needed, remove unnecessary text, and revise confusing text.

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

168. We proposed to delete Section 25.202(c).<sup>359</sup> The first sentence in Section 25.202(c) states that assigned orbital locations are subject to change by summary order. This is a remnant of a policy the Commission discarded in 2003.<sup>360</sup> The next sentence states that a space station authorization becomes null and void if the licensee does not meet specified milestones. This is redundant with a provision in Section 25.161(a)(1). The third and last sentence in Section 25.202(c) states that frequency and orbital assignments are subject to policies set forth in certain Commission orders, all of which have either been incorporated elsewhere in Part 25 or have been superseded. SIA supports deleting Section 25.202(c),<sup>361</sup> which no commenter opposes. We delete Section 25.202(c).<sup>362</sup>

169. Section 25.202(g) requires operators to transmit TT&C signals for “U.S. domestic satellites” at either or both edges of the “allocated” frequency bands. We proposed to replace the obsolete term “U.S. domestic satellites” with “U.S.-licensed satellites” and change “allocated band(s)” to “assigned band(s).”<sup>363</sup> SIA notes that the purpose of the rule is to prevent operators from transmitting

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<sup>355</sup> SIA Comments at 51.

<sup>356</sup> 47 C.F.R. § 25.161.

<sup>357</sup> *Notice*, 27 FCC Rcd at 11652, ¶ 116. This codifies in Part 25 the substance of other legal provisions. *See* 47 C.F.R. § 1.62; 5 U.S.C. § 558.

<sup>358</sup> SIA Comments at 51-52; ORBCOMM Comments at 7. In addition, EchoStar and DIRECTV advocate amending the introductory sentence of Section 25.161 to state that the Commission “may terminate” a station license upon the occurrence of any of the three triggering events for termination of a station authorization specified in Section 25.161, rather than stating that the license will terminate automatically upon any such event. EchoStar Comments at 14-15; DIRECTV Reply Comments at 6. We will consider this recommendation, which is beyond the scope of the *Notice*, at another time.

<sup>359</sup> *Notice*, 27 FCC Rcd at 11653, ¶¶ 118-20.

<sup>360</sup> *See Space Station Licensing Reform Order*, 18 FCC Rcd at 10760, ¶ 158.

<sup>361</sup> SIA Comments at 52.

<sup>362</sup> Deleting the sentence stating that a space station authorization becomes null and void if the licensee fails to meet milestones does not alter the policies regarding compliance with milestones, including conditions applicable to replacement authorizations.

<sup>363</sup> *Notice*, 27 FCC Rcd at 11654, ¶ 121.

high power, or highly sensitive, TT&C signals on frequencies that adjacent satellites use for communications channels. SIA contends that changing “allocated band(s)” to “assigned band(s)” would undermine this purpose, since applicants may request assigned bands that do not extend across an entire allocation.<sup>364</sup> SIA also recommends that we simply delete the phrase “U.S. domestic satellites” without replacing it, which would align this rule with the policy in Section 25.137(d) that non-U.S.-licensed space stations with U.S. market access must comply with applicable service rules in Part 25.<sup>365</sup> SIA’s points are well-taken. We delete the phrase “U.S.-licensed satellites” and retain the phrase “allocated band(s).”

170. We invited comment as to whether we should amend Section 25.202(g) to allow satellite operators to transmit TT&C signals in the middle of assigned bands, provided such transmissions would cause no more interference and require no greater protection than ordinary communication traffic.<sup>366</sup> SIA advocates an amendment to this effect.<sup>367</sup> Intelsat advocates deleting Section 25.202(g) altogether.<sup>368</sup> DIRECTV and SES/NSS/O3b oppose deleting the rule. DIRECTV contends that emergency TT&C signals can be transmitted at very high power and should therefore be confined to the band edges to limit risk of interference with adjacent satellites’ communications traffic.<sup>369</sup> SES/NSS/O3b note that retaining the current rule does not preclude the possibility of waivers “when there is a reason to place TT&C channels in mid-band and such operations can be successfully coordinated with adjacent operations.”<sup>370</sup> We are not persuaded on the basis of the current record that amending Section 25.202(g) to allow mid-band TT&C signals in this regard is warranted, as the concerns raised by DIRECTV and SES/NSS/O3b warrant further examination.

## 2. Section 25.203 “Choice of sites and frequencies”

171. Section 25.203(f) requires applicants for transmitting earth stations in the vicinity of certain radio astronomy sites to notify the National Radio Astronomy Director when filing the applications. Although we did not propose to do so in the *Notice*, we revise the word order in this provision to make it easier to understand. We also delete an irrelevant exception for certain types of stations that are not subject to Part 25.<sup>371</sup>

172. Section 25.203(i) requires applicants for permanent fixed earth stations in Puerto Rico or certain islands off the Puerto Rican coast to notify officials at the Arecibo Observatory of the proposed operation. Although we did not propose to do so in the *Notice*, we amend this rule to correct grammatical and syntactical errors in the first sentence of the introductory text of Section 25.203(i) and in Section 25.203(i)(1).<sup>372</sup>

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<sup>364</sup> SIA Comments at 53.

<sup>365</sup> *Id.* at 52.

<sup>366</sup> *Notice*, 27 FCC Red at 11654, ¶ 121.

<sup>367</sup> SIA Comments at 52 and Rules Appendix at 31.

<sup>368</sup> Intelsat Comments at 14-15.

<sup>369</sup> DIRECTV Reply Comments at 5-6.

<sup>370</sup> SES/NSS/O3b Reply Comments at 18-19.

<sup>371</sup> The revisions we are adopting to clarify Sections 25.203(f) and (i) can be adopted without notice and comment pursuant to Section 553(b)(A) of the APA, 5 U.S.C. § 553(b)(A). In addition, the deletion of the irrelevant exception from Section 25.203(f) is a rule change for which notice and comment is unnecessary under Section 553(b)(B) of the APA, 5 U.S.C. § 553(b)(B).

<sup>372</sup> SIA advocates amending Section 25.203(j) to limit its applicability to applications for authority for NGSO MSS feeder-link operation in bands designated on a co-primary basis with GSO FSS earth stations. SIA Comments at 8. We may consider this recommendation, which is beyond the scope of the *Notice*, at a later time.

### 3. Section 25.204 “Power limits”

173. Section 25.204 is simply captioned “Power limits,” although all of the limits that it specifies pertain only to earth station operation. We proposed to amend the caption to read “Power limits for earth stations.”<sup>373</sup> SIA supports this proposed amendment,<sup>374</sup> which no commenter opposes. We adopt the revised caption.

### 4. Section 25.205 “Minimum angle of antenna elevation”

174. Section 25.205(a) states that although the Commission will not normally permit earth stations to transmit at elevation angles less than five degrees above the horizontal plane, it may authorize operation at an elevation angle as low as three degrees in a seaward direction or upon a showing of good cause. Noting that the ITU Radio Regulations specify a 3-degree minimum elevation angle for earth station antennas, except as otherwise agreed in international coordination,<sup>375</sup> we invited comment as to whether we should revise Section 25.205(a) to allow earth stations to be routinely licensed to operate at elevation angles down to three degrees in frequency bands not shared with terrestrial radio systems.<sup>376</sup> SIA, which is the only party that addressed this issue, advocates such an amendment and contends that applicants should be able to request waivers to operate at angles less than three degrees.<sup>377</sup> Our request for comment did not address the related provisions pertaining to ESV and VMES stations in Sections 25.205(b) and (c) or the subsequently adopted minimum elevation rule in Section 25.205(d) for ESAA stations on the ground. Nor did SIA address these other provisions in its comments. Rather than adopting a piecemeal change in Section 25.205(a) at this time, we will invite comment on a comprehensive revision of Section 25.205 in a Further NPRM.

### 5. Section 25.206 “Station identification”

175. We proposed to correct an erroneous cross-reference in Section 25.206 to the Automatic Transmitter Identification rules. We proposed to change the cross-reference from Section 25.308, which no longer exists, to Section 25.281.<sup>378</sup> We adopt this correction, which SIA supports<sup>379</sup> and no commenter opposes.

### 6. Section 25.208 “Power flux density limits”

176. Section 25.208(w) specifies regional limits on PFD at the Earth’s surface from downlink transmissions in the 17.3-17.7 GHz band “for all conditions, including clear sky.” Because PFD on the ground may be locally affected by weather conditions that are not uniform throughout a satellite beam’s coverage area, we proposed to add a note to Section 25.208(w) stating that the prescribed limits pertain to the PFD that would be obtained under assumed free-space propagation conditions. SIA supports this proposal,<sup>380</sup> which no commenter opposes. We adopt this proposed change. We also proposed to delete

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<sup>373</sup> Notice, 27 FCC Rcd at 11654, ¶ 122.

<sup>374</sup> SIA Comments at 53.

<sup>375</sup> ITU Radio Regulations, No. 21.14.

<sup>376</sup> Notice, 27 FCC Rcd at 11654, ¶ 123.

<sup>377</sup> SIA Comments at 53.

<sup>378</sup> Notice, 27 FCC Rcd at 11654, ¶ 124. The Automatic Transmitter Identification rules are set forth in Section 25.281.

<sup>379</sup> SIA Comments at 54.

<sup>380</sup> *Id.*

the phrase “including clear sky” as unnecessary.<sup>381</sup> No commenter opposes this change, which we also adopt.

#### 7. Section 25.209 “Earth station antenna performance standards”

177. The first sentence in Section 25.209(a) says that the gain of any FSS earth station antenna used for transmission must lie within the (relevant) envelope specified in the following sub-paragraphs. Similarly, the first sentence in Section 25.209(b) states that the off-axis cross-polarization gain of any transmitting FSS earth station antenna must lie within certain specified limits. These statements are inconsistent with other paragraphs of Section 25.209 that apply to earth stations with off-axis gain patterns not conforming to the envelopes in Sections 25.209(a) and/or (b).<sup>382</sup> Although we did not propose to do so in the *Notice*, we add cross-references to Section 25.209(f) in Sections 25.209(a) and (b) to resolve this discrepancy.<sup>383</sup>

178. We proposed to delete obsolete grandfathering provisions in Section 25.209(d) and correct the antenna gain envelope in Section 25.209(h)(1).<sup>384</sup> SIA supports these proposed amendments,<sup>385</sup> which no commenter opposes. We adopt these amendments.

179. SIA recommends several further corrective or clarifying changes in Section 25.209.<sup>386</sup> Specifically, SIA recommends that we replace the undefined term “Ka-band” throughout Section 25.209(a) with the defined term “20/30 GHz;” delete the adjective “domestic” from the obsolete phrase “domestic Fixed-Satellite Service” in Section 25.209(b); change the phrase “the standards of paragraphs (a) and (b)” in Section 25.209(f) to “relevant standards in paragraphs (a) and (b);” add a cross-reference to Section 25.138 in the next-to-last sentence in Section 25.209(f); and delete Section 25.209(g), which has been overtaken by events and is inconsistent with Sections 25.209(a) and (b).<sup>387</sup> We agree that Section 25.209(g) should be deleted, as the requirements in that rule were superseded by revisions to Sections 25.209(a) and (b) adopted in 2005.<sup>388</sup> SIA’s recommended changes to Sections 25.209(a), (b), and (f)

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<sup>381</sup> *Notice*, 27 FCC Rcd at 11654-55, ¶ 125.

<sup>382</sup> Section 25.209(e) states, in essence, that an earth station not in conformance with the off-axis gain envelopes in Sections 25.209(a) and (b) is entitled to no more interference protection than if its gain pattern were within those envelopes. Section 25.209(f) notes that earth stations may be licensed to operate with gain patterns not conforming to the envelopes in Sections 25.209(a) or (b), pursuant to rules in Sections 25.218, 25.220, 25.221, 25.222, 25.223, 25.226, and 25.227.

<sup>383</sup> As these revisions clarify the previously existing requirements of Sections 25.209(a) and (b), they are within the “interpretive rule” exception to the notice and comment requirement. *See* 5 U.S.C. § 553(b)(A); *supra* note 9.

<sup>384</sup> *Notice*, 27 FCC Rcd at 11655, ¶ 126.

<sup>385</sup> SIA Comments at 54.

<sup>386</sup> *Id.* at 54-55.

<sup>387</sup> SIA and EchoStar recommend other changes in Section 25.209 that we did not propose in the *Notice*. *See* SIA Comments at 55 (advocates inserting a statement that the off-axis gain limits in Section 25.209 apply to antennas used for transmission of feeder links); EchoStar Comments at 15 and SES/NSS/O3b Reply Comments at 9 (advocates adding a statement that the off-axis gain limits in Section 25.209 apply to NGSO MSS feeder-link stations operating in bands shared with co-primary GSO FSS); EchoStar Comments at 16 (advocates revising the start angles specified in Section 25.209(a) and (b) from 1.5 and 1.8 degrees to two degrees). We will consider these recommendations at another time.

<sup>388</sup> *See Part 25 Fifth Report and Order*, 20 FCC Rcd at 5604, ¶ 22.

would make those rules clearer without effecting any substantive change. We therefore adopt these recommended changes, although we did not propose such changes in the *Notice*.<sup>389</sup>

#### 8. Section 25.210 “Technical requirements for space stations”

180. Section 25.210(a) requires FSS space stations operating in the 4/6 GHz bands to use orthogonal linear polarization with one polarization sense parallel to the equatorial plane, put opposite polarization senses on uplink and downlink transmissions on the same transponder, and be able to switch polarization senses on ground command. We invited comment as to whether these requirements are still necessary.<sup>390</sup> SIA asserts that these requirements were devised to facilitate coordination of high-power analog C-band transmissions on adjacent satellites, which are becoming rare, and therefore contends that the requirements are no longer necessary and should be eliminated.<sup>391</sup> There are still a number of authorized C-band satellites that transmit analog signals, and the rules do not preclude authorizing such satellites in the future. We cannot conclude from the record that eliminating the requirements in Section 25.210(a) would have no adverse impact on operators of C-band analog stations, but we will consider this recommendation in a Further NPRM.

181. Section 25.210(b) prescribes the same requirements for 20/30 GHz FSS space stations that Section 25.210(a) prescribes for 4/6 GHz FSS space stations. We tentatively concluded that the purpose of these requirements, to promote re-use of 20/30 GHz spectrum, is sufficiently served by the less-restrictive rule in Section 25.210(f), which requires 20/30 GHz space stations to employ “state-of-the-art full frequency re-use” through use of orthogonal polarization and/or spatially independent beams. We therefore proposed to delete Section 25.210(b).<sup>392</sup> SIA supports this proposed amendment,<sup>393</sup> which no commenter opposes. We delete Section 25.210(b) for the reason stated in the *Notice*.

182. Section 25.210(c) requires FSS space stations to be capable of changing transponder saturation flux densities by ground command in 4 dB steps over a range of 12 dB. We noted that the rule was devised to facilitate coordination with neighboring space stations but concluded that it is unnecessary to impose specific design requirements to that end. We therefore proposed to delete this requirement.<sup>394</sup> SIA supports this proposed amendment,<sup>395</sup> which no commenter opposes. We delete this requirement from Section 25.210(c).<sup>396</sup>

183. In the *Report and Order* in IB Docket No. 06-154, released in September 2012, we adopted an SIA recommendation to add a sentence in Section 25.210(f) stating that the frequency-reuse requirement in that provision does not apply to TT&C operation.<sup>397</sup> This amendment did not take effect, however, due to an inadvertent omission in the associated rule appendix. In its comments to the *Notice*,

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<sup>389</sup> We adopt the changes in Sections 25.209(a), (b), and (f) pursuant to the “interpretive rule” exception to the notice and comment requirement. We find that providing notice and opportunity for comment on the elimination of Section 25.209(g) is “unnecessary” within the meaning of Section 553(b)(B) of the APA. *See supra* note 9.

<sup>390</sup> *Notice*, 27 FCC Rcd at 11655, ¶ 127.

<sup>391</sup> SIA Comments at 55.

<sup>392</sup> *Notice*, 27 FCC Rcd at 11655, ¶ 128.

<sup>393</sup> SIA Comments at 55.

<sup>394</sup> *Notice*, 27 FCC Rcd at 11655-56, ¶ 129.

<sup>395</sup> SIA Comments at 55.

<sup>396</sup> We are replacing the deleted text in Section 25.210(c) with a provision that is currently in Section 25.215. *See* ¶ 192, *infra*.

<sup>397</sup> *2012 Streamlining Order*, 27 FCC Rcd at 11590, ¶ 20.



SIA notes this omission and reiterates its request for the amendment.<sup>398</sup> We correct Section 25.210(f) to incorporate this change.

184. We invited comment as to whether we should relax the cross-polarization isolation requirement for FSS space stations in Section 25.210(i)(1). Alternatively, we invited comment as to whether we should replace the minimum cross-polarization isolation requirement with a provision stating that operators of FSS space stations with less than 30 dB of receive-beam cross-polarization isolation are entitled to no more interference protection than they would be if operating with 30 dB of isolation.<sup>399</sup> SIA advocates eliminating this cross-polarization isolation requirement, contending that cross-polarization isolation has no bearing on inter-system interference except in cases where multiple satellites using the same frequencies operate at or around the same orbital location.<sup>400</sup> We recognize that there are still some satellites carrying analog video transmissions, which require a very high carrier to noise plus interference ratio (C/(N+I)) to provide high quality video. No commenter provided a technical analysis that establishes that such transmissions would continue to be protected if we eliminate the cross-polarization requirement. We therefore leave Section 25.210(i)(1) unchanged, but we will consider SIA's recommendation in a Further NPRM.

#### 9. Section 25.211 "Analog video transmissions in the Fixed-Satellite Service"

185. Section 25.211(d) states that the Commission may routinely license an earth station for full-transponder analog video transmission in the 5925-6425 MHz band if the equivalent diameter of its antenna is 4.5 meters or more and input power to the antenna does not exceed 26.5 dBW or in the 14.0-14.5 GHz band if the equivalent antenna diameter is 1.2 meters or more and the input power does not exceed 27 dBW. As we observed in the *Notice*, the input power limits in Section 25.211(d) were devised to constrain the interference potential of full-transponder analog video transmissions from earth stations using antennas with off-axis gain within the limits in Sections 25.209(a) and (b).<sup>401</sup> Because antennas that meet the minimum-diameter requirements in Section 25.211(d) may not fully meet the off-axis gain limits in Sections 25.209(a) and (b), we proposed to amend Section 25.211(d) to add that to be eligible for routine processing under this rule, applicants must certify pursuant to Section 25.132(a)(1) that antenna performance is consistent with the standards in Section 25.209.<sup>402</sup> SIA supports this proposed amendment,<sup>403</sup> which no commenter opposes. We adopt this amendment, which provides applicants proposing full-transponder analog video operations in the 5925-6425 MHz or the 14.0-14.5 GHz bands a complete list of the eligibility criteria for routine processing.

186. We proposed to delete the term "full transponder" from Section 25.211(d) because we saw no reason to limit routine processing under Section 25.211(d) to earth station applications proposing full-transponder operation.<sup>404</sup> No commenter opposes this proposed amendment. On further reflection, we have decided not to adopt this change here because doing so would have consequences not considered in the *Notice*. Section 25.211(d) limits input power but does not limit power spectral density. If we were to amend Section 25.211(d) to allow routine processing regardless of transmission bandwidth, the limits on input power and antenna size might not ensure that radiated power spectral density, which is a function

<sup>398</sup> SIA Comments at 56.

<sup>399</sup> *Notice*, 27 FCC Rcd at 11656, ¶ 130.

<sup>400</sup> SIA Comments at 55.

<sup>401</sup> *Notice*, 27 FCC Rcd at 11656, ¶ 131. See also *Routine Licensing of Earth Stations in the 6 GHz and 14 GHz Bands Using Antennas Less than 9 Meters and 5 Meters in Diameter, Respectively, for Both Full Transponder and Narrowband Transmissions*, Declaratory Order, 2 FCC Rcd 2149 (CCB 1987) at 2149-50, ¶¶ 3 and 5.

<sup>402</sup> *Notice*, 27 FCC Rcd at 11656, ¶ 131.

<sup>403</sup> SIA Comments at 56.

<sup>404</sup> *Notice*, 27 FCC Rcd at 11656, ¶ 131.

of emission bandwidth as well as input power and antenna gain, would be sufficiently constrained to prevent harmful interference in all cases. While we are not expanding routine processing under Section 25.211(d) at this time, we intend to revisit this issue in a Further NPRM.

187. Section 25.211(e) provides, in effect, that proposed operation of earth stations transmitting analog video signals in the 5925-6425 MHz band with antennas smaller than 4.5 meters in diameter or in the 14.0-14.5 GHz band with antennas smaller than 1.2 meters in diameter must be coordinated pursuant to Section 25.220. Similarly, Section 25.211(f) states that applicants for “authorization for analog [earth-station] transmissions ... proposing to use maximum power into the antenna in excess of [the levels] specified in § 25.211(d)” must comply with the requirements in Section 25.220. We proposed to combine these provisions in Section 25.211(e) and replace the phrase “analog transmission,” currently used in Section 25.211(f), with “analog video transmission” to avoid conflict with provisions in Section 25.212.<sup>405</sup> No commenter opposes these proposed amendments, which we adopt.<sup>406</sup>

#### 10. Section 25.212 “Narrowband analog transmissions and digital transmissions in the GSO Fixed-Satellite Service”

188. Sections 25.212(c) and (d) provide for routine licensing of GSO FSS earth stations that transmit digital signals in the conventional C or Ku bands or analog signals in those bands with bandwidths of 200 kilohertz or less, provided the proposed antenna meets minimum size criteria and power spectral density at the antenna input does not exceed certain levels. We proposed to expand these rules to cover applications for earth stations transmitting analog signals of up to one megahertz in bandwidth.<sup>407</sup> SIA supports relaxing the bandwidth limit only for analog command signals at the band edges, contending that mid-band transmission of a one megahertz analog signal with the input power density allowed by Sections 25.212(c) or (d) could be disruptive.<sup>408</sup> We agree with SIA that adopting the rule as proposed could have adverse consequences. Therefore, we amend the routine licensing rules in Sections 25.212(c) and (d) to increase the bandwidth limit to one megahertz for analog command signals at the band edges, but retain the 200 kilohertz limit for other analog transmissions.

189. We proposed to amend Sections 25.212(c) and (d) to cross-reference the antenna performance verification requirement in Section 25.132(a)(1).<sup>409</sup> We also proposed to amend the routine licensing rules for Ku-band stations in Sections 25.212(c) to exclude applications for Ku-band ESV or VMES authorizations, which are subject to licensing rules in other sections,<sup>410</sup> and applications for Ku-band earth stations installed in aircraft, for which special rules were then under consideration.<sup>411</sup>

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<sup>405</sup> *Id.* at 11656-57, ¶ 132.

<sup>406</sup> Intelsat and SIA recommend changes in Section 25.211 that we did not propose in the *Notice*. Intelsat Comments at 15-16 (advocates eliminating of Section 25.211(a)); SIA Comments at 56 (contends that the last sentence in Section 25.211(b) should be moved to Section 25.275). We will not address these recommendations at this time.

<sup>407</sup> *Notice*, 27 FCC Rcd at 11657, ¶ 133.

<sup>408</sup> SIA Comments at 57.

<sup>409</sup> In other words, we proposed to require applicants to comply with the antenna performance verification rule in Section 25.132(a)(1) to be eligible for routine licensing under Section 25.212(c) or (d), for the same reason that we proposed a similar change in Section 25.211(d). See ¶ 185, *supra*.

<sup>410</sup> See 47 C.F.R. §§ 25.221, 25.222, and 25.226.

<sup>411</sup> *Notice*, 27 FCC Rcd at 11633, ¶ 39. We subsequently adopted licensing rules for conventional Ku-band earth stations aboard aircraft in *Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service*, IB Docket No. 05-20, Report and Order, 27 FCC Rcd 16510 (2012). Accordingly, we add a cross-reference to Section 25.227, which incorporates these licensing rules, in Sections 25.212(c)(1) and (2).

Likewise, we proposed to amend the routine licensing rules for C-band stations in Section 25.212(d) to exclude applications for C-band Earth Stations on Vessels. SIA supports these proposed amendments,<sup>412</sup> which no commenter opposes. We adopt these amendments.

190. As noted above, SIA supports the proposed changes to Section 25.212(c). SIA asserts, however, that if we revise Section 25.212(c)(2) as proposed it may be inconsistent with the routine licensing provisions in Sections 25.132(a) and 25.134.<sup>413</sup> More generally, SIA observes that the rules concerning routine licensing for earth stations may be overly complex.<sup>414</sup> We see no conflict between the revised Section 25.212(c)(2) and Section 25.132(a), which does not, in fact, specify requirements for routine licensing. There is a difference, however, between the routine licensing criteria for digital Ku-band stations in Section 25.212(c)(2) and the routine licensing criteria for digital Ku-band VSATs in Section 25.134(g).<sup>415</sup> In view of this, we amend Section 25.212(c)(2) to exclude applications subject to Section 25.134. We may propose to simplify and consolidate routine licensing rules for GSO FSS earth station operation in the conventional C and Ku bands at another time.

191. Section 25.212(d) prescribes routine licensing standards for earth stations that transmit digital or narrowband analog single-channel-per-carrier signals in the conventional C band. Section 25.212(d)(1) prescribes requirements for routine licensing of these stations before March 10, 2005, and Section 25.212(d)(2) prescribes requirements for routine licensing after that date. We proposed to delete Section 25.212(d)(1) as obsolete and to delete the obsolete date reference in Section 25.212(d)(2). We also proposed to expand Section 25.212(d)(2) to apply to applications for all digital carriers and all analog carriers with bandwidths up to one megahertz.<sup>416</sup> Finally, we proposed to amend Section 25.212(e) to clarify the procedure for licensing earth stations with C-band antennas smaller than 4.5 meters in diameter or Ku-band antennas smaller than 1.2 meters in diameter and consolidate certain provisions in Sections 25.212(c) and (d)(3) into Section 25.212(e).<sup>417</sup> SIA supports these proposed amendments,<sup>418</sup> which no commenter opposes. We adopt these amendments.

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

192. Section 25.215 prescribes a 30 dB cross-polarization isolation requirement for DBS space station antennas. Noting that the International Bureau has routinely granted partial waivers allowing DBS space stations to operate with cross-polarization isolation of only 27 dB, we proposed to relax the rule to comport with practice and invited comment as to whether we should allow isolation of less than 27 dB. We also proposed to move this rule from Section 25.215 to Section 25.210(c).<sup>419</sup> SIA supports relaxing the requirement to 27 dB and moving the rule to Section 25.210(c).<sup>420</sup> No commenter advocates reducing the required isolation level below 27 dB. We adopt these amendments as proposed for the reason stated in the *Notice*.

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<sup>412</sup> SIA Comments at 58.

<sup>413</sup> *Id.*

<sup>414</sup> *Id.*

<sup>415</sup> Specifically, Section 25.134(g) specifies a variable limit on input power density that takes into account the number of earth stations in a CDMA VSAT network that could transmit simultaneously in the same frequencies in the same satellite beam; in contrast, Section 25.212(c)(2) simply specifies a fixed limit on input power density.

<sup>416</sup> *Notice*, 27 FCC Red at 11657, ¶¶ 134-35.

<sup>417</sup> *Id.* at 11657, ¶ 136.

<sup>418</sup> SIA Comments at 58.

<sup>419</sup> *Notice*, 27 FCC Red at 11657-58, ¶ 137.

<sup>420</sup> SIA Comments at 55 and 58.

## 12. Section 25.217 “Default service rules”

193. Section 25.217 specifies default operating rules for space stations and earth stations licensed to operate in frequency bands for which the Commission has yet to adopt frequency-specific service rules. Sections 25.217(b)(1) and (c)(1) require space stations operating in such bands under licenses granted pursuant to the procedure specified in Section 25.157 or Section 25.158 to meet the technical requirements in certain cross-referenced rule provisions, including Sections 25.204(g) and 25.210(c), (d), (k), and (l). In connection with other amendments we are adopting here,<sup>421</sup> we replace the cross-reference to Section 25.204(g) with a cross-reference to Section 25.204(e) and delete the cross-references to Sections 25.210(c), 25.210(k), and 25.210(l). We also delete the cross-reference to 25.210(d), which was deleted in 2012.<sup>422</sup>

194. Section 25.217(b)(3) requires earth station licensees authorized to communicate via space stations operating under the default rules in Section 25.217(b)(1) to comply with the requirements in Section 25.136. We proposed to amend Section 25.217(b)(3) to cross-reference Sections 25.285 and 25.287, rather than Section 25.136, which we proposed to delete and are deleting here.<sup>423</sup> We also proposed to amend Section 25.217(b)(3) to clarify that it applies specifically to mobile earth station licensees. No one filed comments on these proposed amendments, which we adopt.

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

195. Section 25.218 provides for routine licensing of FSS earth stations that meet limits on off-axis radiated power spectral density. The first sentence in Section 25.218(a) states that Section 25.218 applies to “all applications for FSS earth stations operating in the C band, Ku band, or extended Ku band, except for: (1) ESV, VMES, and ESAA applications, (2) analog video earth station applications, and (3) [a]pplications for feeder-link earth stations in the 17/24 GHz BSS.” As it is unnecessary to exclude 17/24 GHz BSS feeder-link earth stations, which do not transmit in the C band, Ku band, or extended Ku band, we proposed to delete Section 25.218(a)(3). We also proposed to amend Section 25.218(a) to indicate that the rules in Section 25.218 apply only to applications for earth stations that transmit to GSO space stations.<sup>424</sup> SIA supports deleting Section 25.218(a)(3), and no commenter opposes these proposed amendments.<sup>425</sup> We modify Section 25.218(a) as proposed.

196. The term “EIRP” is used in various places in Section 25.218 when what is actually meant (as correctly shown in the tables included in that section) is EIRP density. Although we did not propose to do so in the *Notice*, we amend Section 25.218 to correct this.<sup>426</sup>

197. In connection with its recommendation to define “extended Ku band” in Section 25.103, which we have adopted, SIA recommends replacing the definition of that term in Section 25.218(b) with a cross-reference to Section 25.103.<sup>427</sup> We adopt this suggested amendment.

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<sup>421</sup> See ¶¶ 18-19, 33-35, 57-58, and 182, *supra* (eliminating the existing text in Section 25.210(c), deleting Sections 25.204(g) and 25.210(k) and (l), and consolidating rain fade rules in Section 25.204(e)).

<sup>422</sup> See *2012 Streamlining Order*, 27 FCC Rcd 11585.

<sup>423</sup> *Notice*, 27 FCC Rcd at 11658, ¶ 139. See ¶¶ 144-146, *supra*.

<sup>424</sup> *Id.* at 11658, ¶ 140.

<sup>425</sup> SIA Comments at 58.

<sup>426</sup> This clarification is an interpretive revision, within the exception to the notice and comment requirement in Section 553(b)(A) of the APA.

<sup>427</sup> SIA Comments at 59. SIA also advocates inserting a modified version of the rule in Section 25.226(b)(3)(i) in a new paragraph at the end of Section 25.218. *Id.* We will address this recommendation, which is beyond the scope of the *Notice*, in a Further NPRM.

198. EchoStar recommends changing the start angles in the off-axis EIRP density envelopes specified in Sections 25.218(c)-(h) for C-band and Ku-band earth stations from 1.5 degrees to two degrees. EchoStar maintains that this would simplify the application process without increasing interference risk.<sup>428</sup> DIRECTV and SES/NSS/O3b oppose this recommendation.<sup>429</sup> DIRECTV points out that the separation between GSO space stations is sometimes slightly less than two degrees. SES/NSS/O3b note that in another rulemaking proceeding, the Commission concluded that 1.5 degrees is the most appropriate start angle for off-axis radiation standards for C-band and Ku-band earth stations<sup>430</sup> and contend that EchoStar has presented no evidence that warrants reconsidering that determination. We agree that EchoStar has not shown that there is any need to revisit this decision.

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

199. Section 25.220(a) states that the provisions in Section 25.220 apply to earth station applications, other than applications for ESV, VMES, or 17/24 GHz BSS earth stations, that propose operations not falling within an applicable off-axis EIRP density envelope in Section 25.218. Section 25.220(d) requires such applicants to certify that the proposed operations have been coordinated with operators of potentially affected satellite networks. Applications for full-transponder analog video earth stations are not eligible for routine licensing under Section 25.218 but are nevertheless required by provisions in Section 25.211(e) to meet the coordination requirements in Section 25.220 if they do not meet the technical standards in Section 25.211(d).<sup>431</sup> Although we did not propose to do so in the *Notice*, we therefore amend Section 25.220(a) to clarify that the requirements in Section 25.220 apply to applications for full-transponder analog video earth stations not eligible for routine licensing under Section 25.211(d).<sup>432</sup>

15. **Sections 25.221, 25.222, and 25.226**

200. The term “EIRP” appears in Section 25.221(b)(1)(i) where EIRP density is actually meant. The same error occurs in Section 25.222(b)(1)(i) and Section 25.226(b)(1)(i). Although we did not propose to do so in the *Notice*, we amend these provisions to correct this.<sup>433</sup>

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

201. Section 25.223(b) specifies off-axis EIRP spectral density levels that serve as an alternative routine licensing standard for 17/24 GHz feeder-link earth station applications not eligible for routine licensing under Section 25.212(f).<sup>434</sup> Section 25.223(c) provides for licensing such earth stations if their off-axis EIRP spectral density levels do not exceed the levels specified in Section 25.223(b) by

<sup>428</sup> EchoStar Comments at 16.

<sup>429</sup> DIRECTV Reply Comments at 5; SES/NSS/O3b Joint Reply Comments at 15-16.

<sup>430</sup> See *2005 Streamlining Order*, 20 FCC Rcd at 5600-06, ¶¶ 14-25.

<sup>431</sup> See the current provisions in 47 C.F.R. §§ 25.211(e) and (f), and Section 25.211(e) as amended herein.

<sup>432</sup> These clarifications are within the exception to the notice and comment requirement in Section 553(b)(A) of the APA. SIA recommends a change in Section 25.220 that we did not propose in the *Notice*. SIA Comments at 60 (advocates revising Section 25.220(d) to require applicants to coordinate with operators of adversely-affected space stations more than six degrees away from the target satellite(s)). We will address this recommendation in a Further NPRM.

<sup>433</sup> These clarifications are within the exception to the notice and comment requirement in Section 553(b)(A) of the APA.

<sup>434</sup> 47 C.F.R. § 25.212(f) provides that earth stations that transmit in the 24.75-25.25 GHz band with Section 25.209-compliant antennas may be routinely licensed if the maximum power density into the antenna will not exceed 3.5 dBW/MHz.

more than 6 dB and the applicant has coordinated the non-routine operations with the operators of potentially affected satellites. In view of this, we proposed to amend the section caption to read “Alternative licensing rules for feeder-link earth stations in the 17/24 GHz BSS,” which is a more accurate description of the rules in Section 25.223.<sup>435</sup> SIA supports this proposed amendment,<sup>436</sup> which no commenter opposes. We adopt the amendment.

202. Section 25.212(f) contains antenna pattern and antenna input power density standards for routine licensing of transmitting earth stations in the 24.75-25.25 GHz band, which transmit feeder-link signals to 17/24 GHz BSS space stations.<sup>437</sup> The intent of Section 25.223(a) is to provide alternative licensing requirements for 17/24 GHz BSS feeder-link earth stations that do not meet the routine licensing standards of Section 25.212(f). Section 25.223(a) states, however, that “[t]his section applies to all applications for earth station licenses in the 17/24 GHz BSS frequency bands, *except for* applications in which the proposed antenna *does not* conform to the standards of Sections 25.209(a) and (b), and/or the proposed power density levels are in excess of those specified in Section 25.212(f) of this part” [emphasis added]. As we said in the *Notice*, this is precisely the opposite of what the Commission intended when it adopted Section 25.223.<sup>438</sup> We proposed to correct Section 25.223(a) by amending it to state that the rules in Section 25.223 apply to 17/24 GHz BSS earth station applications proposing antennas that do not conform to the standards of Section 25.209(a) and (b) and/or proposing input power density in excess of the level specified in Section 25.212(f).<sup>439</sup> SIA supports this proposed amendment,<sup>440</sup> and no commenter opposes it. After further consideration, we amend Section 25.223(a) to state, instead, that it applies to applications for 17/24 GHz BSS earth stations that are not eligible for routine licensing under Section 25.212(f). This is substantively equivalent to the change we proposed in the *Notice* but more succinctly captures the intent of the rule.

203. Consistent with changes that we proposed in Section 25.138(b), we proposed to amend Section 25.223(c) to give applicants proposing to operate with non-conforming off-axis EIRP density a choice of submitting either a technical showing or a coordination showing.<sup>441</sup> SIA opposes this proposal for the same reason that it opposes an analogous proposed change in Section 25.138(b), discussed above.<sup>442</sup> We agree with SIA. As with Section 25.138(b), we amend Section 25.223(c) to delete the requirement to submit a technical showing and retain the requirement to demonstrate coordination.<sup>443</sup>

## 17. Sections 25.259 and 25.260

204. Sections 25.259 and 25.260 prescribe time-sharing rules for NVNG satellite systems operating in frequency bands shared with meteorological satellite systems operated by Federal agencies.

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<sup>435</sup> *Notice*, 27 FCC Rcd at 11659, ¶ 142.

<sup>436</sup> SIA Comments at 60.

<sup>437</sup> 47 C.F.R. § 2.106, Footnote NG167.

<sup>438</sup> *Notice*, 27 FCC Rcd at 11658-59, ¶ 141 (citing *17/24 GHz BSS 2007 Report and Order and FNPRM*, 22 FCC Rcd 8842).

<sup>439</sup> *Id.*

<sup>440</sup> SIA Comments at 60.

<sup>441</sup> *Notice*, 27 FCC Rcd at 11659, ¶ 143.

<sup>442</sup> SIA Comments at 60-61 and n.156. See ¶ 149, *supra*.

<sup>443</sup> SIA recommends amending Section 25.223(c) to eliminate the requirement to coordinate with space stations operating at positions where the proposed earth station’s off-axis EIRP density would be within the limits for routine licensing. SIA also recommends amending Section 25.223(d) to require coordination with operators of adversely affected satellites more than 10 degrees from the target satellite(s). SIA Comments at 61-62. We will address these recommendations in a Further NPRM.

Each of these rules includes a statement that “the Commission will not hesitate to impose sanctions ... including monetary forfeitures and license revocations, when appropriate” on licensees that violate these rules. We proposed to delete these statements, as it is unnecessary to restate in these rules that the Commission may impose sanctions for rule violations.<sup>444</sup> No commenter opposes these amendments, which we adopt.

**I. Other Proposed Changes in Subpart D – Technical Operations**

**1. Section 25.271 “Control of transmitting stations”**

205. Because Commission staff has discovered during emergency and interference events that contact information for earth station licensees is sometimes out of date, we invited comment on whether we should adopt a provision in Section 25.271 to require earth station licensees to maintain up-to-date point-of-contact information.<sup>445</sup> SIA points out that as proposed in the *Notice*’s rule appendix, Section 25.171 would require earth station licensees to update contact information within 10 days of changes and opposes adopting another such rule in Section 25.271.<sup>446</sup> We agree that the requirement should be set forth only once in Part 25, and we insert it in Section 25.271, which is a more appropriate place for it than Section 25.171.<sup>447</sup>

**2. Section 25.276 “Points of Communication”**

206. Section 25.276(a) states that unless otherwise indicated in the station license, an earth station may transmit to any space station in the same radio service, provided the space station operator has permitted such access. We proposed to amend this rule to clarify that any space station accessed must be authorized as a point of communication in the earth station license.<sup>448</sup> SIA supports this proposed amendment, based on its understanding that the amendment would not bar an earth station with “ALSAT” or “Permitted List” designated as a point of communication in the license from transmitting to any space station on the Permitted Space Station List.<sup>449</sup> SIA’s understanding is correct. We adopt this amendment, which no commenter opposes.

207. We proposed to delete Section 25.276(b), which states that space stations licensed under Part 25 may provide service to earth stations in the specified service area, stating that this rule is a vestige of policies that the Commission abandoned years ago.<sup>450</sup> SIA supports this proposed amendment,<sup>451</sup> and no commenter opposes it. We adopt this amendment.

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<sup>444</sup> *Notice*, 27 FCC Rcd at 11659, ¶ 144. See 47 U.S.C. §§ 312 and 503(b) and 47 C.F.R. §§ 1.80, 1.89, and 1.91.

<sup>445</sup> *Notice*, 27 FCC Rcd at 11659-60, ¶ 146.

<sup>446</sup> SIA Comments at 62.

<sup>447</sup> See discussion in ¶ 28, *supra*. This new provision is not redundant with Section 1.65, which requires applicants to update information in pending applications.

<sup>448</sup> *Notice*, 27 FCC Rcd at 11660, ¶ 147.

<sup>449</sup> SIA Comments at 63.

<sup>450</sup> *Notice*, 27 FCC Rcd at 11660, ¶ 148 (citing *Amendment to the Commission’s Regulatory Policies Governing Domestic Fixed Satellites and Separate International Satellite Systems*, IB Docket No. 95-41, Report and Order, 11 FCC Rcd 2429 (1996)).

<sup>451</sup> SIA Comments at 63.

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

208. Section 25.281 requires broadband video uplinks to include a subcarrier signal identifying the transmitting earth station’s call sign and including contact information.<sup>452</sup> Such an identification signal is called an Automatic Transmitter Identification System (ATIS) signal. The purpose of the ATIS rule is to facilitate rapid identification of sources of interference and prompt resolution of interference problems. When the Commission adopted Section 25.281, more than 20 years ago, operators transmitted video signals with analog modulation. Today, video signals are often transmitted as encoded and compressed digital data streams using more spectrum-efficient digital modulation techniques. The technical characteristics of the ATIS signal currently specified in Section 25.281 are not suited for use with digitally modulated broadband video signals, however. We therefore proposed to revise Section 25.281 to prescribe appropriate methods of ATIS message transmission for earth stations transmitting video signals with digital modulation.<sup>453</sup> We invited comment on the following related issues:

- Should ATIS be required for all types of satellite uplinks, and, if not, which type(s) should be excepted? In particular, should DBS and 17/24 GHz BSS feeder-link transmissions be excepted, in view of the fact that they are usually generated by large antennas with relatively low off-axis gain that are installed, pointed, and calibrated by skilled personnel?
- Should the Commission require use of a particular method or methods for transmitting ATIS information with digitally modulated video uplinks, and if so, which method(s) should be prescribed?
- Should the Commission require ATIS signals in digitally-modulated uplinks to include more (or less) information than Section 25.281(d)(3) currently requires?
- Should the Commission dictate a format for ATIS messages?
- Should there be a grace period after the effective date of the rule change to afford time for operators to conform to new ATIS requirements, and, if so, how much time should be allowed?

209. *Scope.* SIA advocates modifying the ATIS requirements to apply only to frequency modulated analog video transmissions and digital video transmissions from satellite news gathering (SNG) vehicles. SIA maintains that SNG earth stations are known to cause interference because they are often hastily set up, with consequent antenna mispointing, and sometimes operate with excessive power.<sup>454</sup> SIA contends, however, that there is no need to prescribe ATIS requirements for DBS or 17/24 GHz BSS feeder-link transmissions, since DBS and 17/24 GHz BSS feeder-link earth stations are permanent, professionally maintained installations using large antennas with narrow beamwidths that are unlikely to cause interference to adjacent satellites. SIA also maintains that it would be inappropriate, at this time, to prescribe ATIS requirements for non-video uplinks, as stable carrier identification technologies have yet to be developed for traffic types other than video.<sup>455</sup> EchoStar, DIRECTV, Intelsat, and SES/NSS/O3b agree with SIA that the Commission should adopt digital-video ATIS requirements for SNG stations but not for permanent fixed earth stations and should not adopt ATIS requirements at this time for non-video uplinks.<sup>456</sup> NCTA and Time Warner contend that the types of uplink facilities operated by cable

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<sup>452</sup> See 47 C.F.R. § 25.281(d)(3) (requiring the message transmitted on the subcarrier signal to include the earth station’s call sign, a telephone number providing immediate access to someone capable of resolving interference problems, and a unique ten-digit serial number).

<sup>453</sup> Notice, 27 FCC Red at 11660-61, ¶¶ 150-51.

<sup>454</sup> SIA Comments at 63. See also EchoStar Comments at 16-17 (also noting that SNG stations frequently repoint their antennas, and frequently change polarization and transponder assignment).

<sup>455</sup> SIA Comments at 64.

<sup>456</sup> EchoStar Comments at 16-17; DIRECTV Reply Comments at 1-2; Intelsat Reply Comments at 8; SES/NSS/O3b Joint Reply Comments at 13-14.



programmers at well-established fixed locations present a low risk of interference.<sup>457</sup> On the other hand, Comtech EF Data Corporation (Comtech) urges the Commission to adopt ATIS requirements for all non-bursting, fixed-frequency digital uplink transmissions with a symbol rate of 128,000 per second or more, not just digital SNG uplinks or digital video uplinks.<sup>458</sup> Comtech agrees that there should be an exception for DBS and 17/24 GHz BSS feeder links but contends that the exception should be limited to operation that is monitored on a 24/7 basis.<sup>459</sup>

210. We modify the scope of the ATIS rule to apply only to analog video transmissions and digitally-modulated video uplinks from SNG vehicles and other temporary-fixed earth stations. We are not convinced, on the basis of the comments received in this proceeding, that it is currently necessary to prescribe an ATIS requirement for other digitally-modulated uplink transmissions. The record does not suggest that earth stations transmitting continuous digitally-modulated uplink signals other than SNG and other temporary-fixed earth stations are a significant source of interference. Consequently, we will not require ATIS messages to be transmitted by large fixed earth stations transmitting video signals, such as DBS and 17/24 GHz BBS feeder-link earth stations and large fixed earth stations operated by cable programmers. Further, there does not appear to be any industry consensus on how to implement an ATIS technique for intermittent or “burst” transmissions, such as those transmitted by remote terminals in VSAT networks. Therefore, we will not adopt an ATIS requirement for earth stations using burst transmissions at this time.

211. *Method.* As noted above, we recognized in the *Notice* that the current ATIS requirement in Section 25.281 is not suited for use with digitally-modulated signals. We therefore sought comment on whether our rules should specify a particular method or methods for transmitting ATIS information on digitally modulated broadband video signals, and if so, which method(s) we should specify. We stated we were aware of two methods for including ATIS information in digitally-modulated video uplinks: 1) inserting ATIS information into the Network Information Table of an MPEG transport stream or 2) using a low-data-rate spread spectrum signal to transmit ATIS information.<sup>460</sup> The second method is a carrier identification (carrier ID) technique developed by Comtech EF Data, which is described in the Technical Appendix to its comments.<sup>461</sup> We proposed specific technical parameters for the spread spectrum method, which we based on a description by Comtech of the implementation of its spread spectrum carrier ID method that was available at the time of the *Notice*.<sup>462</sup> In the *Notice*, we tentatively proposed to allow use of either the MPEG Network Information Table method or the spread spectrum method.<sup>463</sup>

212. SIA contends that use of the MPEG Network Information Table method will be superseded by the spread spectrum method.<sup>464</sup> It also contends that, until an industry standard is adopted,

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<sup>457</sup> Letter from Rick Chessen, Senior Vice President, Law and Regulatory Policy, NCTA, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 12-267, at 2 (filed Aug. 5, 2013); Letter from Susan A. Mort, Assistant General Counsel, Time Warner, IB Docket No. 12-267, at 1 (filed Aug. 2, 2013).

<sup>458</sup> Comtech Comments at 8-9. Comtech designs, develops, and markets satellite communications equipment and has developed a carrier-identification technique using spread-spectrum technology. *Id.* at 2 and 4-6.

<sup>459</sup> Comtech Reply Comments at 6, n.18.

<sup>460</sup> *Notice*, 27 FCC Rcd at 11661, ¶ 151.

<sup>461</sup> Comtech Comments at the Technical Appendix. The technical appendix is based on a Comtech white paper we cited in the *Notice*. See *Notice*, 27 FCC Rcd at 11661, n.176 (citing [http://www.comtechefdata.com/files/articles\\_papers/WP-Carrier-ID-Using-MetaCarrier.pdf](http://www.comtechefdata.com/files/articles_papers/WP-Carrier-ID-Using-MetaCarrier.pdf) (last visited August 2, 2013)).

<sup>462</sup> *Notice*, 27 FCC Rcd at 11694-95 (Appendix A, ¶ 54).

<sup>463</sup> *Id.*

<sup>464</sup> SIA Comments at 64.

specifying detailed technical parameters for the spread spectrum method would be premature.<sup>465</sup> Consequently, SIA recommends incorporating by reference the latest version of an industry standard for carrier identification for use with the Digital Video Broadcasting-Satellite (DVB-S) standard.<sup>466</sup> EchoStar supports this recommendation.<sup>467</sup> The Global VSAT Forum (GVF) and the National Cable & Telecommunications Association (NCTA) advise the Commission to refrain from revising the ATIS rule until the industry has completed developing global standards for digital carrier identification.<sup>468</sup> National Public Radio (NPR) contends that the Commission should limit acceptable ATIS techniques so that potentially affected satellite operators will not need to purchase and operate a variety of ATIS signal receivers.<sup>469</sup> NPR supports allowing operators to insert ATIS information into the MPEG Network Information Table but does not oppose allowing use of a spread spectrum method. Comtech urges the Commission to adopt a spread spectrum ATIS rule for digital carriers at this time, and to base the rule on a draft standard that has been endorsed by DVB Project working groups and is based on the carrier ID method that Comtech developed.<sup>470</sup>

213. We agree with SIA that Section 25.281 should incorporate by reference the industry standard for carrier ID rather than specifying detailed technical characteristics of the spread spectrum carrier ID method.<sup>471</sup> Since the comment cycle ended, the DVB Project Steering Board, the Satellite Interference Reduction Group,<sup>472</sup> and the European Telecommunications Standards Institute (ETSI) have all endorsed the spread spectrum carrier ID method developed by Comtech, which these groups refer to as the DVB-CID standard.<sup>473</sup> The DVB-CID standard is essentially the same as the spread spectrum method we proposed in the *Notice*. This method is superior to the method of inserting carrier ID information in the MPEG Network Information Table. The Network Information Table may not be recoverable when the carrier-to-noise-plus-interference ratio ( $C/(N+I)$ ) of the MPEG digital video transmission, at a satellite receiving interference, is below the threshold of receiveability. In contrast, the very low bit rate and the strong forward error correction required by the DVB-CID standard enable carrier ID messages to be received when the  $C/(N+I)$  of the MPEG digital video transmission is below the threshold. In light of this, we amend Section 25.281 to require temporary-fixed operators to use the DVB-CID standard for

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<sup>465</sup> *Id.* and Reply Comments at 7.

<sup>466</sup> *Id.*

<sup>467</sup> EchoStar Reply Comments at 20.

<sup>468</sup> GVF Comments at 2; NCTA Comments at 2-5.

<sup>469</sup> NPR Comments at 2.

<sup>470</sup> Comtech Reply Comments at 2. According to its website, <http://www.dvb.org/>, the Digital Video Broadcasting Project is an industry-led consortium of over 200 broadcasters, manufacturers, network operators, software developers, regulatory bodies, and others in over 35 countries committed to designing open technical standards for the global delivery of digital television and data services.

<sup>471</sup> SIA Comments at 64; SIA Reply Comments at 7.

<sup>472</sup> See “New Carrier ID Technology Approved For Standardisation,” at <http://www.suirg.org/p.asp?id=57&pid=16>. According to its website, the Satellite Interference Reduction Group is a global industry organization whose mission is to combat and mitigate radio frequency interference in spectrum used for satellite communication services. The DVB Project Steering Board ratified the DVB-CID standard at a meeting held on February 28, 2013. See “Carrier ID Specification Earns Approval from DVB Steering Board” at [http://www.dvb.org/news\\_events/press\\_releases/press\\_releases/DVB\\_pr232-Steering-Board-Approves-Carrier-ID-Specification.pdf](http://www.dvb.org/news_events/press_releases/press_releases/DVB_pr232-Steering-Board-Approves-Carrier-ID-Specification.pdf).

<sup>473</sup> See Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation of a carrier identification system (DVB-CID) for satellite transmission, ETSI TS 103 129 (2013-05).

digitally modulated video, rather than give operators the option to use the method of inserting the carrier ID information in the MPEG Network Information Table.<sup>474</sup>

214. While we did not propose to make any changes to the ATIS requirements for analog video transmissions in the *Notice*, Comtech suggests we give these operators the option to use the DVB-CID method. We agree with this recommendation, which would give operators additional flexibility.<sup>475</sup> We amend Section 25.281(a) accordingly.

215. ATIS message content. Section 25.281(d) currently requires ATIS signals to include the transmitting station's call sign, a contact telephone number, and a unique serial number. We invited comment in the *Notice* as to whether to change these requirements in any way. NPR recommends adding a requirement to include the transmitting station's geographic location.<sup>476</sup> In response, EchoStar notes that NPR provides no supporting explanation for its recommendation and advises the Commission to refrain from imposing additional content requirements.<sup>477</sup> Comtech contends that the only information that should be required in spread-spectrum carrier ID signals is a unique serial number that satellite operators can use to identify the operators of earth stations causing interference.<sup>478</sup> SIA recommends keeping the existing ATIS content requirements for analog video transmissions, but does not recommend imposing ATIS content requirements for digital transmissions beyond those required by the industry standard.<sup>479</sup>

216. The DVB-CID standard that we incorporate by reference in Section 25.281 requires transmission of a 64-bit Global Unique Identifier. It also provides for the transmission of a user programmable data field for optional entry of additional information, such as a telephone number and/or geographic location. Consistent with the DVB-CID standard, we eliminate the requirements to include call signs and telephone numbers in ATIS messages transmitted with digital video uplinks. We retain these ATIS content requirements for analog video transmissions.

217. ATIS message format. Currently, Section 25.281 requires ATIS signals to be transmitted in Morse Code.<sup>480</sup> We proposed to delete that requirement for digital signals but did not propose to alter it for analog video transmissions.<sup>481</sup> Consistent with what we proposed in this regard, Section 25.281, as amended here, will not require digital video earth station operators to transmit ATIS messages in Morse Code, which is incompatible with the DVB-CID standard.

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<sup>474</sup> We consider the decision not to adopt the MPEG Network Information Table technique option a logical outgrowth of the *Notice*. See note 9, *supra*.

<sup>475</sup> For example, earth station operators currently transmitting video signals with analog modulation at some times and digital modulation at other times would not have to maintain the capability to transmit ATIS messages using the analog modulation method currently required by Section 25.281 as well as using the DVB-CID method for digital transmissions. Also, earth station operators currently transmitting video signals with analog modulation but planning to migrate to digital modulation could switch from transmitting the ATIS message using the current analog technique to using the DVB-CID method in advance of switching their video transmissions to digital video modulation and still meet the requirements of Section 25.281.

<sup>476</sup> NPR Comments at 3.

<sup>477</sup> EchoStar Reply Comments at 20.

<sup>478</sup> Comtech Comments at 11.

<sup>479</sup> SIA Comments, Rules Appendix at 45.

<sup>480</sup> 47 C.F.R. § 25.281(d)(2).

<sup>481</sup> *Notice*, 27 FCC Rcd at 11694-95 (Appendix A, ¶ 54).

218. In the *Notice*, we proposed to adopt a provision that would have required all ATIS messages to be transmitted in an ASCII text format.<sup>482</sup> Requiring use of an ASCII format would be incompatible with the Morse Code format that we retain for analog video transmissions (for operators electing to continue using the previously mandated ATIS technique) and would also be incompatible with the DVB-CID standard.<sup>483</sup> Therefore, Section 25.281, as amended here, does not require use of an ASCII text format.

219. *System architecture.* Section 25.281 currently includes a requirement that ATIS equipment “shall be integrated into the uplink transmitter chain [with] a method that cannot easily be defeated.” We proposed to retain this requirement.<sup>484</sup> Comtech advocates a stricter rule that would ultimately require ATIS capability to be “embedded” – *i.e.*, physically incorporated in essential earth station components rather than embodied in separate components inserted into an uplink transmitter chain – to make it more difficult for users to disable the ATIS function. We are not convinced that such a requirement, which would necessitate replacing existing equipment, is warranted.

220. *Implementation.* As noted above, we asked whether there should be a grace period for operators to come into compliance with any new ATIS requirements adopted in this proceeding. SIA recommends a two-year grace period.<sup>485</sup> Comtech recommends a complex phase-in schedule with a cut-off date for manufacture or importation of equipment without embedded ATIS capability, another cut-off date for commencing operation of a new station without such embedded capability, an interim deadline for existing stations to implement digital-carrier ATIS either with separate or embedded components, and an ultimate deadline for implementing digital-carrier ATIS with embedded components.<sup>486</sup> Because we are not adopting an embedding requirement, we believe a simple two-year grace period is sufficient.

#### J. Recommendations for Further Changes in Part 25

221. Some of the comments filed in this proceeding include recommendations for changes in rule sections that we did not propose to amend and were not the subject of any question raised for comment in the *Notice*.<sup>487</sup> We will address these recommendations at another time.

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<sup>482</sup> *Id.*

<sup>483</sup> The American Standard Code for Information Interchange (ASCII) text format transmits alphanumeric, punctuation, and special characters from a character set of 128 possible characters as 7-bit binary numbers. Morse Code transmits characters as a string of short and long pulses, commonly called “dots” and “dashes”. The DVB-CID standard does not incorporate either the ASCII or the Morse Code character coding standard, but requires data to be transmitted in 122-bit frames. Each frame contains a 64-bit unique identifier broken into two 32-bit segments, and 48 bits of optional data broken into two 24-bit segments and encoded according to specific rules in the DVB-CID standard.

<sup>484</sup> *Id.*

<sup>485</sup> SIA Comments at 65.

<sup>486</sup> Comtech Comments at 13.

<sup>487</sup> See SIA Comments at 69 (advocates amending Section 25.110(f) to provide a partial exemption from application filing fees for *pro forma* and involuntary transfers of control and license assignments); Intelsat Comments at 9-10 (advocates amending Section 25.117 to provide for automatic grant of unopposed applications for certain types of license modifications for GSO space stations); SIA Comments at 70 and EchoStar Comments at 13-14 (advocate amending the rules in Section 25.159 that bar parties with applications for space stations already on file or holding licenses for unbuilt space stations from filing applications for additional space stations under certain circumstances); ORBCOMM Comments at 18 and SES/NSS/O3b Reply Comments at 13 (advocate amending Section 25.165 to exempt NGSO licensees from bond requirements for replacement satellites); DIRECTV Comments at 5-6 (advocates amending the schedule in Section 25.264 for filing off-axis gain and PFD data for 17/24 GHz BSS space stations); and SIA Comments at 30-31 (advocates amending or reconsidering orbital debris mitigation rules in Section 25.283).

(continued...)

#### IV. REGULATORY IMPACT CONCLUSION

222. The amendments we adopt here update the Commission's rules for satellite services to reflect evolving technology, eliminate unnecessary technical and information-filing requirements, and reorganize, clarify, and simplify existing requirements. These changes will benefit the public interest by promoting compliance with the Commission's operating rules, improving the ability of the public and Commission to assess the interference potential of proposed operations, affording more flexibility for incorporating state-of-the-art design, easing administrative burdens, and facilitating rapid deployment of new and improved satellite services. We conclude that these benefits outweigh any resultant costs and that the rule changes will reduce net costs, on average, for applicants and licensees.

#### V. PROCEDURAL MATTERS

##### A. Regulatory Flexibility Act

223. Pursuant to the Regulatory Flexibility Act of 1980, as amended,<sup>488</sup> the Commission's Final Regulatory Flexibility Certification in this Report and Order is attached as Appendix C.

##### B. Paperwork Reduction Act

224. This document contains new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new or modified information collection requirements contained in this proceeding.

225. Pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4), we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees. We received no comments on this issue. We have assessed the effects of the revisions adopted that might impose information collection burdens on small business concerns, and find that the impact on businesses with fewer than 25 employees will be an overall reduction in burden. The amendments adopted in this Report and Order eliminate unnecessary information filing requirements for licensees and applicants; eliminate unnecessary technical restrictions and enable applicants and licensees to conserve time, effort, and expense in preparing applications and reports. Overall, these changes may have a greater positive impact on small business entities with more limited resources.

##### C. Congressional Review Act

226. The Commission will send copies of this Report and Order to Congress and the General Accountability Office pursuant to the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A), and will send a copy including the final regulatory flexibility act analysis to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with Section 603(a) of the Regulatory Flexibility Act, 5 U.S.C. § 601, et seq. (1981).

##### D. Effective Date

227. While not all the revisions to Part 25 adopted in this order require approval by OMB under the PRA, many do. These requirements cannot go into effect until OMB has approved the information collection requirements and the Commission has published a notice announcing the effective

(Continued from previous page)—————

In addition, EIBASS contends that the Commission should amend its rules to relax requirements for terrestrial systems to protect reception of satellite downlinks and prescribe new requirements for protection of receive-only electronic news-gathering stations in the Broadcast Auxiliary Services. EIBASS Comments at 1-6. These recommendations are beyond the scope of this proceeding.

<sup>488</sup> 5 U.S.C. § 601 *et. seq.*

date of those requirements. To avoid confusion, all rule changes adopted in this Report and Order will become effective on the same date. The International Bureau will issue a Public Notice announcing the effective date for all of the rules adopted in this Report and Order.

#### **VI. ORDERING CLAUSES**

228. IT IS ORDERED, pursuant to Sections 4(i), 7(a), 11, 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 157(a), 161, 303(c), 303(f), 303(g), and 303(r), that this Report and Order IS ADOPTED, the policies, rules and requirements discussed herein ARE ADOPTED, and Part 25 of the Commission's rules IS AMENDED as set forth in Appendix B.

229. IT IS FURTHER ORDERED that all policies, rules, rule parts and requirements adopted or amended herein, including all rules that contain new information collection requirements that require approval by the Office of Management and Budget under the Paperwork Reduction Act, SHALL BE EFFECTIVE upon the same date, which will be designated in a Public Notice published in the Federal Register. That Public Notice will not be published until the Office of Management and Budget (OMB) has approved those rule revisions adopted in this Report and Order that impose new or changed information collection requirements, and such approval will be noted in that Public Notice.

230. IT IS FURTHER ORDERED that the International Bureau is delegated authority to issue Public Notices consistent with this Report and Order.

231. IT IS FURTHER ORDERED that the International Bureau will issue a Public Notice announcing the effective date for all of the changes adopted in this Report and Order.

232. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

**APPENDIX A**

**List of Commenters**

**Commenters**

The Boeing Company

Cobham SATCOM

Cobham Technical Services

Comtech EF Data Corporation

DIRECTV, LLC

EchoStar Corporation

Engineers for the Integrity of Broadcast Auxiliary Services Spectrum

Intelsat License LLC

Iridium Satellite LLC

Globalstar, Inc.

Global VSAT Forum

LightSquared Inc.

National Cable & Telecommunications Association

National Public Radio, Inc.

ORBCOMM Inc.

Satellite Industry Association

**Reply Commenters**

Aviation Spectrum Resources, Inc.

Comtech EF Data Corporation

DIRECTV, LLC

EchoStar Corporation

Inmarsat

Iridium Satellite LLC

Intelsat License LLC

National Public Radio, Inc.

Satellite Industry Association

SES Americom, Inc., New Skies Satellites B.V., and O3b Limited

**Other Pleadings**

National Cable and Telecommunications Association (*Ex Parte* filing)

Time Warner, Inc. (*Ex Parte* filing)

Satellite Industry Association (*Ex Parte* filing)



## APPENDIX B

## Final Rules

The Federal Communications Commission amends title 47 of the Code of Federal Regulations, part 25, as follows:

## PART 25 -- SATELLITE COMMUNICATIONS

1. The authority citation for Part 25 is revised to read as follows:

Authority: Interprets or applies Sections 4, 301, 302, 303, 307, 309, 319, 332, 705, and 721 of the Communications Act, as amended, 47 U.S.C. Sections 154, 301, 302, 303, 307, 309, 319, 332, 605, and 721, unless otherwise noted.

2. Revise § 25.103 to read as follows:

§ 25.103 Definitions.

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.

1.5/1.6 GHz Mobile-Satellite Service. Mobile-Satellite Service provided in any portion 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.”

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

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

12/14 GHz bands. 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.

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

20/30 GHz bands. The 18.3-20.2 GHz Fixed-Satellite Service space-to-Earth band and the 28.35-30.0 GHz Fixed-Satellite Service Earth-to-space band.

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

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

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

**Blanket license.** A license for multiple fixed or mobile earth stations or SDARS terrestrial repeaters that may be operated anywhere within a geographic area specified in the license, or for multiple non-geostationary-orbit space stations.

**C band.** As used in this part, the terms “C band” and “conventional C band” refer 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 (DBS) Service.** A radiocommunication service in which signals transmitted or retransmitted by Broadcasting-Satellite Service space stations in the 12.2-12.7 GHz band are intended for direct reception by subscribers or the general public. For the purposes of this definition, the term direct reception includes individual reception and community reception.

**Earth station.** 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 geostationary-orbit Fixed-Satellite Service space stations.

**Earth Stations Aboard Aircraft (ESAA).** Earth stations operating aboard aircraft that receive from and transmit to geostationary-orbit Fixed-Satellite Service space stations and operate within the United States pursuant to the requirements in § 25.227 of this part.

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

**Equivalent Power Flux Density (EPFD).** The sum of the power flux densities produced at a geostationary-orbit receive earth or space station on the Earth’s surface or in the geostationary orbit, as appropriate, by all the transmit stations within a non-geostationary-orbit Fixed-Satellite Service system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. The equivalent power flux density, in dB(W/m<sup>2</sup>) in the reference bandwidth, is calculated using the following formula:

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

Where:

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

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

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

$\theta_i$  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;

$\phi_i$  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. As used in this part, the term “extended Ku band” refers to the 10.7-11.7 GHz (space-to-Earth), 12.75-13.25 GHz (Earth-to-space), and 13.75-14.0 GHz (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 (FSS). 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-orbit (GSO) satellite. A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth’s equator and which thus remains fixed relative to the Earth; by extension, a geosynchronous satellite which remains approximately fixed relative to the Earth.

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

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

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 (MSS). 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 system. A gateway earth station in the NGSO FSS:

- (1) Does not originate or terminate radiocommunication traffic, but interconnects multiple non-located 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 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 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.

NGSO. Non-geostationary orbit.

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 band, the conventional Ku band, or the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands, as well as non-U.S.-licensed geostationary-orbit space stations approved for U.S. market access to provide Fixed-Satellite Service in the conventional C band, conventional Ku band, or 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands.

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

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

Protection areas. The geographic regions 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, areas around 20/30 GHz NGSO MSS feeder-link earth stations in the 1.6/2.4 GHz Mobile-Satellite Service 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-orbit satellites that satisfy the criteria in § 25.134(a), § 25.134 (g), § 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)(4).

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

Satellite system. A space system using one or more artificial earth satellites. (RR)

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

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

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

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

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

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

Terrestrial radiocommunication. Any radiocommunication other than space radiocommunication or radio astronomy. (RR)

Terrestrial station. A station effecting terrestrial radiocommunication.

Vehicle-Mounted Earth Station (VMES). 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.

3. In § 25.111, add paragraph (d) and revise the caption and paragraph (b) to read as follows:

§ 25.111 Additional information and ITU cost recovery.

\* \* \* \* \*

(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, including due diligence information, pursuant to the Radio Regulations of the International Telecommunication Union. No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless ITU procedures are timely completed or, with respect to individual Administrations, coordination agreements are successfully completed. A license for which such procedures have not been completed may be subject to additional terms and conditions required for coordination of the frequency assignments with other Administrations.

\* \* \* \* \*

(d) The Commission will submit the information required by paragraphs (b) or (c) of this section to the ITU only after the applicant or licensee has submitted a signed declaration that it unconditionally accepts all consequent ITU cost-recovery responsibility. The declaration must be electronically filed in the "Other Filings" tab of the application file in the IBFS database, and a paper copy must be mailed to the International Bureau, Satellite Division. The filing must reference the call sign and name of the international satellite system 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 until the ITU cost-recovery responsibility is discharged. The applicant or licensee must remit payment of any resultant cost-recovery fee to the ITU by the due date specified in the ITU invoice, unless an appeal is pending with the ITU that was filed prior to the due date. A license granted in reliance on such a commitment will be conditioned upon discharge of any such cost-recovery obligation. Where an applicant or licensee has an overdue ITU cost-recovery fee and does not have an appeal pending with the ITU, the Commission will dismiss any application associated with that satellite network.

4. In § 25.112, add a new sub-paragraph (a)(4), to read as follows:

§ 25.112 Defective applications.

(a) \* \* \*

(1) \* \* \*

(4) The application is identical to a pending application that was timely filed pursuant to § 25.157 or § 25.158 of this chapter.

\* \* \* \* \*

5. In § 25.113, remove and reserve paragraphs (c), (d), and (e) and revise the section caption and paragraphs (a), (b), (f), and (h) to read as follows:

§ 25.113 Station construction, launch authority, and operation of spare satellites.

(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.

(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.

(c) [Reserved]

(d) [Reserved]

(e) [Reserved]

(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.

\* \* \* \* \*

(h) Operators of NGSO satellite systems licensed by the Commission need not file separate applications to operate technically identical in-orbit spares launched pursuant to a blanket license granted under § 25.114(a). However, the licensee must notify the Commission within 30 days of bringing the in-orbit spare into operation and certify that its activation has not increased the number of operating space stations above the number previously authorized and that the licensee has determined by measurement that the activated spare is operating within the terms of the license.

6. In § 25.114, remove paragraph (e) and revise paragraphs (a), (c), and (d) to read as follows:

§ 25.114 Applications for space station authorizations.

(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.

\* \* \* \* \*

(c) \* \* \*

(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 each of the center frequencies within a 5 MHz range or a range of 2 percent of the assigned 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.

(ii) Specify 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 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. For bands below 15 GHz, specify EIRP density in dBW/4 kHz; for bands at and above 15 GHz, specify EIRP density in dBW/MHz. If the EIRP density varies over time, specify the maximum possible EIRP density.

(iii) [Reserved]

(iv) [Reserved]

(v) For each space station receiving beam other than command beams, specify 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 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, specify the beam peak flux density at the command threshold;

(vi) (A) For space stations in geostationary orbit, specify predicted space station antenna gain contour(s) for each transmit and receive antenna beam, 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. Applicants 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 antenna gain contour(s) for each transmit and receive antenna beam 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 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 space stations' peak antenna gain pointed at nadir to a latitude and longitude within the proposed service area. The contour(s) should be plotted at 2 dB intervals down to 10 dB below the peak gain and at 5 dB intervals between 10 dB and 20 dB below the peak gain. For intersatellite links, specify the peak antenna gain and 3 dB beamwidth.

(C) For space stations with shapeable antenna beams, specify the contours, as defined in paragraph (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) 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). 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.

(D) For space stations with steerable beams that are not shapeable, specify the applicable contours, as defined in paragraph (A) or (B) above, with a description of the area that the steerable beam(s) is expected to serve, or provide the contour information described in paragraph (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 contours for one transmit and receive antenna beam, together 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, specify the predicted antenna gain contours for one transmit and receive beam pointed to nadir, together with an area map showing all of the spot beams depicted on the surface of the earth with the satellites' peak antenna gain pointed to a selected latitude and longitude 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 orbital planes and the number of space stations in each 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 service, and 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 the angles of arrival specified in the applicable paragraph(s) of Section 25.208;
- (9) [Reserved]
- (10) Estimated operational lifetime;
- (11) Whether the space station is to be operated on a common carrier basis;
- (12) [Reserved]
- (13) The polarization information necessary for determining compliance with §§ 25.210(a)(1), (a)(3), and (i);

\* \* \* \* \*

(d) \* \* \*

- (1) Overall description of system facilities, operations and services and explanation of how uplink frequency bands would be connected to downlink frequency bands;
- (2) [Reserved]
- (3) [Reserved]
- (4) [Reserved]
- (5) [Reserved]

\* \* \* \* \*

(7) Applicants for authorizations for space stations in the Fixed-Satellite Service must also include the information specified in § 25.140(a) 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;

(12) Applications for authorizations in the non-geostationary orbit Fixed-Satellite Service in the 10.7-14.5 GHz bands must also provide all information specified in § 25.146.

(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) \* \* \* 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.

(v) For non-U.S.-licensed space stations, the requirement to describe the design and operational strategies to minimize orbital debris risk can be satisfied by demonstrating that debris mitigation plans for the space station(s) for which U.S. market access is requested are subject to direct and effective regulatory oversight by the national licensing authority.

\* \* \* \* \*

7. In § 25.115, add new paragraphs (j) and (k) and revise paragraphs (a), (d), and (e) to read as follows:

§ 25.115 Application for earth station authorizations.

(a)(1) \* \* \*

(2) Applicants for licenses for transmitting earth stations in the Fixed-Satellite Service may file on FCC Form 312EZ if all of the following criteria are met:

(i) the application is for a single station that will transmit to a FSS GSO space station, or stations, in the 5925-6425 MHz band, or for single or multiple stations that will transmit to a FSS GSO space station, or stations, in the 14.0-14.5 GHz, 28.35-28.6 GHz, and/or 29.5-30.0 GHz band;

(ii) the earth station(s) will not be installed or operated on ships, aircraft, or other moving vehicles;

(iii) 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;

(iv) if the station(s) 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;

(v) if the station(s) will transmit in the 5925-6425 MHz band or the 14.0-14.5 GHz band, input power to the antenna will not exceed applicable limits specified in §§ 25.211 and 25.212; if the station(s) will transmit in the 28.35-28.6 GHz and/or 29.5-30.0 GHz band, off-axis EIRP density will not exceed the levels specified in § 25.138(a);

(vi) operation of the proposed station has been successfully coordinated with terrestrial systems, if the station would transmit in the 5925-6425 MHz band;

(vii) the applicant has provided an environmental impact statement pursuant to § 1.1311 of the Commission's rules, if required; and

(viii) the applicant does not propose to communicate via non-U.S.-licensed satellites not on the Permitted Space Station List.

(ix) if the proposed station(s) will transmit in the 28.35-28.6 GHz and/or 29.5-30 GHz bands, the applicant is proposing to communicate only via satellites for which coordination has been completed pursuant to Footnote US334 of the U.S. Table of Frequency Allocations with respect to Federal Government systems authorized on a primary basis, under an agreement previously approved by the Commission and the National Telecommunications and Information Administration, and the applicant certifies that it will operate consistently with the agreement.

(3) Unless the Commission orders otherwise, an application filed on FCC 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 public 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 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and/or 29.25-30.0 GHz band 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.

\* \* \* \* \*

(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.

(k) (1) Applicants for Fixed-Satellite Service earth stations that qualify for routine processing in the C, Ku, or 20/30 GHz band, including ESV applications filed pursuant to § 25.222(a)(1) or (a)(3), VMES applications filed pursuant to § 25.226(a)(1) or (a)(3), and ESAA applications filed pursuant to § 25.227(a)(1) or (a)(3), 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 operation is consistent with 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.

(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.

8. In § 25.118, revise paragraphs (a)(2) and (e) to read as follows and add paragraph (f):

§ 25.118 Modifications not requiring prior authorization.

(a) \* \* \*

(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:

(i) The added, changed, or replaced facilities conform to any applicable requirements in § 25.209;

\* \* \* \* \*

(e) Relocation of GSO space stations. \* \* \*

(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.

\* \* \* \* \*

(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.

\* \* \* \* \*

(f) Repositioning of NGSO space stations. A licensee may reposition NGSO space stations within an authorized orbital plane without prior Commission approval, provided the licensee notifies the Commission of the repositioning 10 days in advance by electronic filing on Form 312 in the International Bureau Filing System. The notification must specify all changes in previously authorized parameters and must certify the following:

(1) the licensee will continue to comply with the conditions of the space station license and all applicable Commission rules, including geographic coverage requirements, after the repositioning;

(2) the repositioning will not increase risk of harmful interference to other systems not permitted by coordination agreements;

(3) the licensee will not request increased interference protection because of the repositioning;

(4) the licensee will monitor collision risk during the maneuver and take any necessary evasive measures.

(5) any change of orbital altitude entailed by the repositioning will not exceed 10 kilometers in extent or 30 days in duration and the licensee has notified, or will notify, the operator(s) of any satellite within 20 kilometers of the interim orbit at least 10 days before commencing the repositioning maneuver.

9. In § 25.121, revise paragraph (d) to read as follows:

§ 25.121 License term and renewals.

\* \* \* \* \*

(d) Space stations. (1) For geostationary-orbit space stations, the license term will begin at 3 a.m. Eastern Time on the date when the licensee notifies the Commission pursuant to § 25.173(b) that the space station has been successfully placed into orbit at its assigned orbital location and that its operations conform to the terms and conditions of the space station authorization.

(2) For non-geostationary orbit space stations, the license period will begin at 3 a.m. Eastern Time on the date when the licensee notifies the Commission pursuant to § 25.173(b) that operation of an initial space station is compliant with the license terms and conditions and that the space station has been placed in its authorized orbit. Operating authority for all space stations subsequently brought into service pursuant to the license will terminate upon its expiration.

\* \* \* \* \*

10. In § 25.129, revise paragraph (c) to read as follows:

§ 25.129 Equipment authorization for portable earth-station transceivers.

\* \* \* \* \*

(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 test data necessary to demonstrate compliance with pertinent performance standards 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).

\* \* \* \* \*

11. In § 25.130, remove and reserve paragraph (e) and add new paragraph (g), to read as follows:

§ 25.130 Filing requirements for transmitting earth stations.

\* \* \* \* \*

(e) [Reserved]

\* \* \* \* \*

(g) Parties may apply for a single FSS earth station license under one call sign covering operation of multiple transmitting antennas not eligible for blanket licensing under another section of Part 25, in the following circumstances:

(1) the antennas would transmit in frequency bands shared with terrestrial services on a co-primary basis and the antennas would be sited within an area bounded by 1 second of latitude and 1 second of longitude.

(2) the antennas would transmit in frequency bands allocated to FSS on a primary basis and there is no co-primary allocation for terrestrial services, and the antennas would be sited within an area bounded by 10 seconds of latitude and 10 seconds of longitude.

This paragraph does not apply to applications filed pursuant to §§ 25.134, 25.138, 25.221, 25.222, 25.226, or 25.227 or to applications for 29 GHz NGSO MSS feeder link stations in a complex as defined in § 25.257.

12. In § 25.131, revise the caption and paragraphs (a), (b), (d), and (j) to read as follows:

§ 25.131 Filing requirements and registration for receive-only earth stations.

(a) Except as provided in paragraphs (b) and (j) of this section, applications for licenses for receive-only earth stations shall be submitted on FCC Form 312, Main Form and Schedule B, accompanied by any required exhibits and the information described in §§ 25.130(a)(1) through 25.130(a)(5). Such 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.

(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 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).

\* \* \* \* \*

(d) Applications for registration must be filed on FCC Form 312, Main Form and Schedule B,

accompanied by the coordination exhibit required by § 25.203 and any other required exhibits.

\* \* \* \* \*

(j) \* \* \*

(2) Operators of receive-only earth stations used to receive transmissions from non-U.S.-licensed space stations 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 Permitted Space Station List.

13. In § 25.132, revise paragraphs (a), (b)(1), (b)(3), and the first sentence of paragraph (d) to read as follows:

§ 25.132 Verification of earth station antenna performance standards.

(a) (1) Except for applications for 20/30 GHz earth stations 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 certification that the applicant has reviewed the results of a series of radiation pattern tests performed by the antenna manufacturer on representative equipment in representative configurations, and the test results demonstrate that the equipment meets the off-axis gain standards in § 25.209, measured in accordance with paragraph (b)(1) of this section. The licensee must be prepared to submit the radiation pattern measurements to the Commission on request.

(2) Applications for transmitting GSO FSS earth stations operating in the 20/30 GHz band must include the antenna measurements specified in §§ 25.138(d) and (e). Applications for transmitting NGSO FSS earth stations operating in the 20/30 GHz band must include the antenna measurements specified in § 25.138(d).

(b) (1) For purposes of paragraph (a)(1), the following measurements on a production antenna performed on calibrated antenna range, as a minimum, must be made at the bottom, middle and top of each allocated frequency band:

(i) Co-polarized patterns in the E- and H- planes for linear-polarized antennas or in two orthogonal cuts for circularly-polarized antennas:

(A) In the azimuth plane, plus and minus 7 degrees and plus and minus 180 degrees from beam peak.

(B) In the elevation plane, 0 to 45 degrees from beam peak.

(ii) Cross-polarization patterns in the E- and H- planes for linear-polarized antennas or in two orthogonal cuts for circularly-polarized antennas, plus and minus 9 degrees from beam peak.

(iii) \* \* \*

\* \* \* \* \*

(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, § 25.226, or § 25.227 must submit a copy of the manufacturer's range test plots of the antenna gain patterns specified in paragraph (b)(1) of this section.

\* \* \* \* \*

(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. \* \* \*

\* \* \* \* \*

14. In § 25.133, revise the first sentence of paragraph (a)(1), the first sentence of paragraph (a)(2), the introductory text of paragraph (b)(1), and paragraph (b)(1)(v) to read as follows:

§ 25.133 Period of construction; certification of commencement of operation.

(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. \* \* \*

(2) Each initial blanket license for multiple earth stations at unspecified locations will specify as a condition therein the period in which station operation must be commenced. \* \* \*

(b)(1) Each initial license for a transmitting earth station or modified license authorizing operation of an additional transmitting antenna, except for blanket licenses, will also specify as a condition therein that upon completion of construction, the licensee must file with the Commission a certification containing the following information:

(i) \* \* \*

(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 applicable pattern specified in § 25.209 or other authorized pattern;

\* \* \* \* \*

15. In § 25.134, remove and reserve paragraph (a)(1) and revise paragraphs (b), (e), (f), (g), and (h) to read as follows:

§ 25.134 Licensing provisions for 12/14 GHz Very Small Aperture Terminal (VSAT) and C-band Small Aperture Terminal (CSAT) networks.

(a)(1) [Reserved]

\* \* \* \* \*

(b) VSAT networks operating in the 12/14 GHz band. An applicant for a VSAT network authorization proposing to operate with transmitted power spectral density and/or antenna input power in excess of the values specified in paragraph (g) of this section must comply with the requirements in § 25.220.

\* \* \* \* \*

(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.

(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.

(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 relevant antenna performance standards in § 25.209 pursuant to § 25.132(a)(1) of this chapter.

(2) The maximum transmitter power spectral density of a digital modulated carrier into any GSO FSS earth station antenna does not exceed  $-14.0 - 10\log(N)$  dB(W/4 kHz). For a VSAT network using a frequency division multiple access (FDMA) or a time division multiple access (TDMA) technique, N is equal to one. For a VSAT network using a code division multiple access (CDMA) technique, N is the

maximum number of co-frequency simultaneously transmitting earth stations in the same satellite receiving beam.

(3) 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.

(4) The maximum transmitter power spectral density of an analog carrier into any GSO FSS earth station antenna does not exceed -8.0 dB(W/4kHz) and the maximum GSO FSS satellite EIRP spectral density does not exceed +17.0 dB(W/4kHz).

(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.

(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.

16. In § 25.135, remove and reserve paragraph (b), remove paragraph (d), and revise the caption and paragraph (c) to read as follows:

§ 25.135 Licensing provisions for earth station networks in the non-voice, non-geostationary Mobile-Satellite Service.

\* \* \* \* \*

(b) [Reserved]

(c) Transceiver units in this service are authorized to communicate with and through U.S.-authorized space stations only.

17. Remove and reserve § 25.136.

§ 25.136 [Reserved]

18. In § 25.138, the caption and paragraphs (a), (b), (d), (e), (f), and (g) are revised to read as follows:

§ 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.

(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 indicate that the following requirements will be met and include the information required by paragraph (d) of this section will be routinely processed:

(1) \* \* \*

(5) [Reserved]

\* \* \* \* \*

(b) An applicant proposing levels in excess of those specified in paragraph (a) of this section must certify that operators of all co-frequency GSO FSS space stations within 6 degrees of the proposed satellite point(s) of communication are aware of the applicant's proposal to operate with the higher power densities and have stated that they have no objection to such operation.

\* \* \* \* \*



- (d)(1) Except as provided in paragraph (d)(2) of this section, 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 in the E- and H- planes for linear-polarized antennas or in two orthogonal planes for circularly-polarized antennas:
    - (A) In the azimuth plane, plus and minus 10 degrees and plus and minus 180 degrees from beam peak.
    - (B) In the elevation plane, 0 to 30 degrees.
  - (ii) Cross-polarization patterns in the E- and H- planes for linear-polarized antennas or in two orthogonal planes for circularly-polarized antennas, plus and minus 10 degrees from beam peak.
  - (iii) Main beam gain.
- (2) For antennas more than 3 meters in diameter that will only be assembled on-site, on-site measurements may be submitted. If on-site data is to be submitted, 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. Certification that the on-site testing 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 service provided by that licensee or provided by another party with the blanket licensee's consent. Space station operators may not transmit communications to or from user transceivers in the United States in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, or 29.25-30.0 GHz band unless such communications are authorized under an FCC earth station license.
- (g) 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.

19. In § 25.140, revise the section heading and paragraph (a) to read as follows, remove and reserve paragraphs (b)(1) and (2), and remove the phrase "paragraph (b)(2)" in paragraphs (b)(3)-(5) and replace with the phrase "paragraph (a)":

§ 25.140 Further requirements for license applications for geostationary space stations in the Fixed-Satellite Service and the 17/24 GHz Broadcasting-Satellite Service.

(a) In addition to the information required by § 25.114, applicants for geostationary-orbit FSS space stations 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.)

(b) Each applicant for a license for a 17/24 GHz Broadcasting-Satellite Service space station must provide the following information, in addition to that required by § 25.114:

(1) [Reserved]

(2) [Reserved]

\* \* \* \* \*

20. In § 25.142, remove and reserve paragraph (c) and remove paragraph (e).

§ 25.142 [Amended]

21. In § 25.143, remove and reserve paragraphs (d) and (e); remove paragraphs (i), (j) and (k); and revise paragraph (b) to read as follows:

§ 25.143 Licensing provisions for the 1.6/2.4 GHz Mobile-Satellite Service and 2 GHz Mobile-Satellite Service.

\* \* \* \* \*

(b) (1) General Requirements. Each application for a space station system authorization in the 1.6/2.4 GHz Mobile-Satellite Service or 2 GHz Mobile-Satellite Service must include the information specified in § 25.114. Applications for non-U.S.-licensed systems must comply with the provisions of § 25.137.

(2) \* \* \*

\* \* \* \* \*

22. In § 25.144, remove paragraph (a)(3)(iii) and remove and reserve paragraph (c).

§ 25.144 [Amended]

23. In § 25.145, remove and reserve paragraphs (a) and (f)(1), remove paragraph (i), and revise paragraph (g) to read as follows:

§ 25.145 Licensing provisions for the Fixed-Satellite Service in the 20/30 GHz bands.

\* \* \* \* \*

(g) Protection from interference from terrestrial operation in the 18.3 to 19.3 GHz band. Fixed-Satellite Service operators are entitled to protection from harmful interference from terrestrial stations operating in this frequency band. See §§ 21.901(e), 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r) of this chapter.

24. In § 25.146, remove and reserve paragraphs (c), (k), and (l), remove paragraph (n), and revise the section heading to read as follows:

§ 25.146 Licensing and operating rules for the non-geostationary orbit Fixed-Satellite Service in the 10.7 GHz-14.5 GHz bands.

25. In § 25.153, revise paragraph (a) to read as follows:

§ 25.153 Repetitious applications.

(a) Where an application has been denied or dismissed with prejudice, the Commission will not consider a

like application involving service of the same kind to the same area by the same applicant, or by its successor or assignee, or on behalf of or for the benefit of any of the original parties in interest, until after the lapse of 12 months from the effective date of the Commission's action.

\* \* \* \* \*

26. In § 25.154, revise paragraphs (d) and (e) to read as follows:

§ 25.154 Opposition to applications and other pleadings.

\* \* \* \* \*

(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.

(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.

27. In § 25.161, paragraph (b) is revised to read as follows:

§ 25.161 Automatic termination of station authorization.

\* \* \* \* \*

(b) The expiration of the license term, unless, in the case of an earth station license, an application for renewal of the license has 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

\* \* \* \* \*

28. In § 25.164, add paragraph (h) and revise paragraphs (a), (b), (c), (d), (e), (f), and (g) to read as follows:

§ 25.164 Milestones.

(a) \* \* \*

(4) Five years: Launch the space station, position it in its assigned orbital location, and operate it in accordance with the station authorization.

(b) \* \* \*

(4) Three years, six months: Launch the first space station, place it in the authorized orbit, and operate it in accordance with the station authorization.

\* \* \* \* \*

(c) Licensees of all satellite systems, other than DBS and DARS satellite systems, must either submit a

copy of a binding non-contingent satellite construction contract with the Commission or notify the Commission in writing that they have not entered into such a contract, no later than 15 days after the milestone date for entering into such a contract.

(d) Licensees of all satellite systems, other than DBS and DARS satellite systems, must either submit information to the Commission sufficient to demonstrate that the licensee has completed the critical design review of the licensed satellite system or notify the Commission in writing that critical design review has not been completed, no later than 15 days after the milestone date for completion of such design review.

(e) Licensees of all satellite systems, other than DBS and DARS satellite systems, must either submit information to the Commission sufficient to demonstrate that the licensee has commenced physical construction of its licensed spacecraft or notify the Commission in writing that such construction has not commenced, no later than 15 days after the milestone date for such commencement.

(f) Licensees of all satellite systems, other than DBS and SDARS systems, must either demonstrate compliance with an applicable deadline for operation or launch and operation specified in paragraph (a) or (b) of this section or notify the Commission in writing that launch and commencement of operation has not occurred, no later than 15 days after the deadline. Compliance with a milestone requirement in paragraph (a)(4), (b)(4), or (b)(5) of this section may be demonstrated by certifying pursuant to § 25.121(d) that the space station, or stations, has, or 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.

(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 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-geostationary orbit satellites.

(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.

29. Amend Subpart B – Applications and Licenses by adding subtitle REPORTING REQUIREMENTS FOR SPACE STATION OPERATORS after § 25.165.

30. Add § 25.170 to read as follows:

§ 25.170 Annual Reporting Requirements.

All operators of U.S.-licensed space stations and operators of non-U.S.-licensed space stations granted U.S. market access must, on June 30 of each year, file a report with the International Bureau containing the following information:

(a) Identification of any space station(s) not available for service or otherwise not performing to specifications as of May 31 of the current year, 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 when the space station was taken out of service or the malfunction was identified; and

(b) 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 emergency 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.

(c) Construction progress and anticipated launch dates for authorized replacement satellites.

NOTE TO § 25.170: Space station operators may also be subject to outage reporting requirements in Part 4 of this chapter.

31. Add § 25.171 to read as follows:

§ 25.171 Contact Information Reporting Requirements.

If contact information filed in space station application or pursuant to § 25.170(b) or § 25.172(a)(1) changes, the operator must file corrected information electronically in the Commission's International Bureau Filing System (IBFS), in the "Other Filings" tab of the station's current authorization file. The operator must file the updated information within 10 days.

32. Add § 25.172 to read as follows:

§ 25.172 Requirements for Reporting Space Station Control Arrangements.

(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 operation with the space station, or, in the case of a non-U.S.-licensed space station, prior to commencing operation with U.S. earth stations.

- 1) The information required by § 25.170(b).
- 2) The call signs of any telemetry, tracking, and command 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 command earth station that communicates with the space station from any point outside the United States.
- 4) Alternatively, instead of listing the call signs and/or locations of earth stations currently used for telemetry, tracking, and command, the space station operator may provide 24/7 contact information for a satellite control center and a list of the call signs of any U.S. earth stations, and the locations of any non-U.S. earth stations, that are used or may be used for telemetry, tracking, and command communication with the space station(s) in question.

(b) The information required by paragraph (a) of this section must be filed electronically in the Commission's International Bureau Filing System (IBFS), in the "Other Filings" tab of the space station's current authorization file. If call sign or location information provided pursuant to paragraph (a) of this section becomes invalid due to a change of circumstances, the space station operator must file updated information in the same manner within 30 days, except with respect to changes less than 30 days in duration, for which no update is necessary.

33. Add § 25.173 to read as follows:

§ 25.173 Results of in-orbit testing.

(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.

(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 and that the station's measured performance is consistent with the station authorization.

34. Remove and reserve § 25.201:

§ 25.201 [Reserved]

35. In § 25.202, revise the section caption, remove and reserve paragraph (c), and revise the first sentence in paragraph (g) to read as follows:

§ 25.202 Frequencies, frequency tolerance, and emission limits.

\* \* \* \* \*

(c) [Reserved]

\* \* \* \* \*

(g) Telemetry, tracking and command functions must be conducted at either or both edges of the allocated band(s). \* \* \*

36. In § 25.203, revise the first sentence in paragraph (f), the first sentence of the introductory text of paragraph (i), and the second sentence of paragraph (i)(1) to read as follows:

§ 25.203 Choice of sites and frequencies.

\* \* \* \* \*

(f) Notification to the National Radio Astronomy Observatory: In order to minimize possible harmful interference at the National Radio Astronomy Observatory site at Green Bank, Pocahontas County, W. Va., and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, W. Va., any applicant for operating authority under this part for a new station, other than a mobile or temporary fixed station, within the area bounded by 39°15' N. on the north, 78°30' W. on the east, 37°30' N. on the south and 80°30' W. on the west or for modification of an existing license for such station to change the station's frequency, power, antenna height or directivity, or location must, when filing the application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box No. 2, Green Bank, W. Va. 24944, in writing, of the technical particulars of the proposed station. \* \* \*

\* \* \* \* \*

(i) Any applicant for a new permanent transmitting fixed earth station to be located on the island of Puerto Rico, Desecheo, Mona, Vieques, or Culebra, or for modification of an existing authorization to change the frequency, power, antenna height, directivity, or location of such a station on one of these islands in a way that would increase the likelihood of causing interference, must notify the Interference Office, Arecibo Observatory, HC3 Box 53995, Arecibo, Puerto Rico 00612, in writing or electronically, of the technical parameters of the proposal. \* \* \*

(1) \* \* \* The notification must specify the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency, relevant FCC rule part, type of emission, effective radiated power, and whether the proposed use is itinerant. \* \* \*

\* \* \* \* \*

37. In § 25.204, remove and reserve paragraph (g) and revise the caption and paragraphs (e) and (f) to read as follows:

§ 25.204 Power limits for earth stations.

\* \* \* \* \*

(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.

(1) Except when subparagraphs (2)-(4) below apply, transmissions from FSS earth stations in frequencies above 10 GHz may exceed the uplink EIRP and EIRP density limits specified in the station authorization under conditions of uplink fading due to precipitation by an amount not to exceed 1 dB above the actual amount of monitored excess attenuation over clear sky propagation conditions. EIRP levels must be returned to normal as soon as the attenuating weather pattern subsides. The maximum power level for power control purposes must be coordinated with adjacent satellite operators.

(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 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.

(3) FSS earth stations transmitting to geostationary space stations in the 28.35-28.6 GHz and/or 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.

(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.

(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.

(g) [Reserved.]

\* \* \* \* \*

38. Revise § 25.206 to read as follows:

§ 25.206 Station identification.

The requirement to transmit station identification is waived for all radio stations licensed under this part with the exception of earth stations subject to the requirements of § 25.281 of this chapter.

39. In § 25.208, revise paragraph (w) to read as follows:

§ 25.208 Power flux density limits.

\* \* \* \* \*

(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.

(1) \* \* \*

(2) \* \* \*

(3) \* \* \*

(4) \* \* \*

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

40. In § 25.209, revise the introductory text in paragraphs (a) and (b) to read as follows, remove "Ka-band" from paragraphs (a)(1) through (a)(4) and replace with the phrase "20/30 GHz band"; remove and reserve paragraphs (d) and (g); revise the first and seventh sentences in paragraph (f) to read as follows; and revise paragraph (h) to read as follows:

§ 25.209 Earth station antenna performance standards.

(a) Except as provided in paragraph (f) of this section, the gain of any antenna to be employed in transmission from an earth station in the Fixed-Satellite Service shall lie below the relevant envelope defined in paragraphs (a)(1) through (4) below:

\* \* \* \* \*

(b) Except as provided in paragraph (f) of this section, the off-axis cross-polarization gain of any antenna to be employed in transmission from an earth station to a space station in the Fixed-Satellite Service shall be defined as follows:

\* \* \* \* \*

(d) [Reserved]

\* \* \* \* \*

(f) An earth station with an antenna not conforming to relevant standards in paragraphs (a) and (b) of this section will be authorized only if the applicant demonstrates that the antenna will not cause unacceptable interference. \* \* \* For other FSS earth stations, this demonstration must comply with the requirements in §§ 25.138, 25.218, or 25.220. \* \* \*

(g) [Reserved]

(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 defined as follows:



$29-25\log_{10}(\theta)$  dBi for  $1^\circ \leq \theta \leq 36^\circ$

-10 dBi for  $36^\circ < \theta \leq 180^\circ$

Where:  $\theta$  is the angle in degrees from the axis of the main lobe, and dBi means dB relative to an isotropic radiator.

(2) \* \* \*

41. In § 25.210, remove and reserve paragraph (b), remove paragraphs (k) and (l), revise paragraph (c) to read as follows, and add a sentence in paragraph (f) to read as follows:

§ 25.210 Technical requirements for space stations.

\* \* \* \* \*

(b) [Reserved]

(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 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 is at least 27 dB within the primary coverage area.

\* \* \* \* \*

(f) \* \* \* This requirement does not apply to telemetry, tracking, and command operation.

42. In § 25.211, remove paragraph (f) and revise paragraphs (d) and (e) to read as follows:

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

\* \* \* \* \*

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

(1) the application includes certification, 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.

(e) Applications for authority for analog video uplink transmission in the Fixed-Satellite Service not eligible for routine licensing under paragraph (d) of this section are subject to the provisions of § 25.220.

43. In § 25.212, revise paragraphs (c) and (d) to read as follows:

§ 25.212 Narrowband analog transmissions and digital transmissions in the GSO Fixed-Satellite Service.

\* \* \* \* \*

(c) (1) An earth station that is not subject to licensing under § 25.134, § 25.222, § 25.226, or § 25.227 of this chapter may be routinely licensed for analog transmissions in the 14.0-14.5 GHz band with bandwidths up to 200 kHz (or up to 1 MHz for command carriers at the band edge) 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).

(2) An earth station that is not subject to licensing under § 25.134, § 25.222, § 25.226, or § 25.227 of this chapter 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).

(d) An earth station that is not subject to licensing under § 25.134 or § 25.221 of this chapter may be routinely licensed for digital transmission in the 5925-6425 MHz band or analog transmission in that band with carrier bandwidths up to 200 kHz (or up to 1 MHz for command carriers at the band edge) 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 density into the antenna will not exceed  $+0.5$  dBW/4 kHz for analog carriers 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.

(e) An applicant for authority for an earth station in the Fixed-Satellite Service proposing to transmit digital signals or analog signals in bandwidths up to 200 kHz (or up to 1 MHz for command carriers at the band edge) 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, § 25.226, or § 25.227.

\* \* \* \* \*

44. In § 25.214, remove and reserve paragraph (a) and revise paragraph (c)(1) to read as follows:

§ 25.214 Technical requirements for space stations in the Satellite Digital Audio Radio Service and associated terrestrial repeaters.

(a) [Reserved]

\* \* \* \* \*

(c) \* \* \*

(1) Exclusive SDARS licenses are limited to the 2320-2345 MHz segment of the 2310-2360 MHz allocated bandwidth for SDARS;

\* \* \* \* \*

45. Remove and reserve § 25.215.

§ 25.215 [Reserved]

46. In § 25.217, revise paragraph (b)(1), the first sentence of paragraph (b)(3), and paragraph (c)(1) to read as follows:

§ 25.217 Default service rules.

\* \* \* \* \*

(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(e), 25.210(d), 25.210(f), and 25.210(i).

(2) \* \* \*

(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 those sections. \* \* \*

(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(e), 25.210(d), 25.210(f), 25.210(i), and 25.210(j).

\* \* \* \* \*

47. In § 25.218, remove the phrase “peak EIRP” in paragraphs (c)(1), (d)(1), (e)(1), (f)(1), (g)(1), and (h)(1) and replace with “peak EIRP density” and revise the section heading and paragraphs (a) and (b) to read as follows:

§ 25.218 Off-axis EIRP density envelopes for FSS earth stations transmitting in certain frequency bands.

(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:

- (1) ESV, VMES, and ESAA applications, and
- (2) Analog video earth station applications.

(b) Earth station applications subject to this section are eligible for routine processing if they meet the applicable off-axis EIRP density envelope set forth in this section below. The terms “conventional Ku band” and “extended Ku band” are defined in § 25.103 of this chapter.

\* \* \* \* \*

48. In § 25.220, revise paragraph (a)(1) to read as follows:

§ 25.220 Non-conforming transmit/receive earth station operations.

(a)(1) The requirements in this section apply to earth station applications of the types to which § 25.218 applies but that propose operation outside of relevant off-axis EIRP density envelopes specified in § 25.218. This section also applies to applications for full-transponder analog video earth stations that are ineligible for routine licensing under § 25.211(d).

\* \* \* \* \*

49. In § 25.221, revise the caption, remove “EIRP” in paragraph (b)(1)(i) introductory text and (b)(1)(i)(A)-(C) and replace with the phrase “EIRP density,” remove “ALSAT” in paragraph (b)(7) and replace with the term “Permitted List,” and revise paragraph (a)(12) by revising the last sentence and adding two sentences at the end of the paragraph, to read as follows:

§ 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.

(a) \* \* \*

(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.

\* \* \* \* \*

50. In § 25.222, remove “EIRP” in paragraph (b)(1)(i) introductory text and (b)(1)(i)(A)-(C) and replace with the phrase “EIRP density and remove “ALSAT” from paragraph (b)(7) and replace with “Permitted List.”

§ 25.222 [amended]

51. In § 25.223, remove paragraph (e) and revise the caption and paragraphs (a) and (c) to read as follows:

§ 25.223 Alternative licensing rules for feeder-link earth stations in the 17/24 GHz BSS.

(a) This section applies to license applications for earth stations that transmit to 17/24 GHz Broadcasting-Satellite Service space stations that are not eligible for routine processing under Section 25.212(f).

\* \* \* \* \*

(c) Each earth station license applicant that proposes levels in excess of those defined in paragraph (b) of this section must certify that all potentially affected parties acknowledge and do not object to the use of the applicant’s higher power densities. For proposed power density 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 operators of co-frequency U.S.-authorized 17/24 GHz BSS satellites at angular separations of up to  $\pm 6^\circ$  from the proposed satellite points of communication; for power density 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 operators of co-frequency U.S.-authorized satellites up to  $\pm 10^\circ$  from the proposed satellite points of communication. Power density levels greater than 6 dB in excess of the limits defined in paragraph (b) of this section will not be permitted.

\* \* \* \* \*

52. In § 25.226, remove “EIRP” in paragraph (b)(1)(i) introductory text and (b)(1)(i)(A)-(C) and replace with the phrase “EIRP density” and remove “ALSAT” in paragraph (b)(9) and replace with the phrase “Permitted List.”

§ 25.226 [amended]

53. In § 25.227, remove “ALSAT” from paragraph (a)(12) and replace with the phrase “Permitted List.”

§ 25.227 [amended]

54. In § 25.259, revise paragraph (b) to read as follows:

§ 25.259 Time sharing between NOAA meteorological satellite systems and non-voice, non-geostationary satellite systems in the 137-138 MHz band.

\* \* \* \* \*

(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.

\* \* \* \* \*

55. In § 25.260, revise paragraph (b) to read as follows:

§ 25.260 Time sharing between DoD meteorological satellite systems and non-voice, non-geostationary satellite systems in the 400.15-401 MHz band.

\* \* \* \* \*

(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.

\* \* \* \* \*

56. In § 25.271, add paragraph (f) to read as follows:

§ 25.271 Control of transmitting stations.

\* \* \* \* \*

(f) The licensee of any transmitting earth station licensed under this part must update the contact information provided in the most recent license application for the station within 10 days of any change therein. The updated information must be filed electronically in the “Other Filings” tab of the station’s current authorization file in the International Bureau Filing System.

57. In § 25.272, remove and reserve paragraph (b).

§ 25.272 [Amended]

58. In § 25.276, remove and reserve paragraph (b) and revise paragraph (a) to read as follows:

§ 25.276 Points of communication.

(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.

(b) [Reserved]

59. Revise the caption and body of § 25.281 to read as follows:

§ 25.281 Transmitter identification requirements for video uplink transmissions.

(a) Earth-to-space transmissions carrying video information with analog modulation must be identified through use of an Automatic Transmitter Identification System (ATIS) with an analog identifier or a direct sequence spread spectrum signal.

(1) Use of an analog identifier must be in accordance with the following requirements:

(i) The ATIS signal must be a separate subcarrier that is automatically activated whenever any radio frequency signal is transmitted.

(ii) The ATIS message must continuously repeat.

(iii) The ATIS subcarrier signal must be generated at a frequency of 7.1 MHz  $\pm$ 25 kHz and modulate the uplink radio frequency carrier at a level no less than -26 dB (referenced to the unmodulated carrier).

(iv) ATIS subcarrier deviation must not exceed 25 kHz.

(v) The ATIS message protocol must be International Morse Code keyed by a 1200 Hz  $\pm$ 800 Hz tone representing a mark and a message rate of 15 to 25 words per minute. The tone must frequency-modulate the subcarrier signal with the ATIS message.

(vi) The ATIS message must include the FCC-assigned call sign of the transmitting earth station, a telephone number providing immediate access to personnel capable of resolving interference or coordination problems, and a unique serial number of ten or more digits programmed into the ATIS message in a permanent manner so that it cannot be readily changed by the operator on duty. Additional information may be included in the ATIS data stream provided the total ATIS message length does not exceed 30 seconds.

(2) Use of a direct sequence spread spectrum ATIS signal must be in accordance with the requirements in paragraphs (b)(1) and (2) of this section.

(b) As of [specify future date], transmissions of fixed-frequency, digitally modulated video signals with a symbol rate of 128,000/s or more from Satellite News Gathering vehicles or other temporary-fixed earth stations must be identified through use of an ATIS in accordance with the following requirements:

(1) The ATIS message must be modulated onto a direct sequence spread spectrum signal in accordance with the DVB-CID standard (ETSI TS 103 129).

(2) The ATIS message must continuously repeat.

(c) ATIS equipment must be integrated into the uplink transmitter chain with a method that cannot easily be defeated.

60. Add § 25.285 to Part 25, Subpart D, to read as follows:

§ 25.285 Operation of MSS and ATC transmitters or transceivers on board civil aircraft.

(a) Operation of any of the following devices aboard civil aircraft is prohibited, unless the device is installed in a manner approved by the Federal Aviation Administration or is used by the pilot or with the pilot's consent:

- (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;
- (2) ATC terminals capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS bands;
- (3) Earth stations used for non-voice, non-geostationary Mobile-Satellite Service communication that can emit radiation in the 108-137 MHz band.

(b) No portable device of any type identified in paragraph (a) of this section (including transmitter or transceiver units installed in other devices that are themselves portable) may be sold or distributed to users unless it conspicuously bears the following warning: "This device must be turned off at all times while on board aircraft." For purposes of this section, a device is portable if it is a "portable device" as defined in § 2.1093(b) of this chapter or is designed to be carried by hand.

61. Add § 25.286 to Part 25, Subpart D, to read as follows:

§ 25.286 Antenna painting and lighting

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.

62. Add § 25.287 to Part 25, Subpart D, to read as follows:

§ 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.

(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.

- (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:
  - (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.

## APPENDIX C

## Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA),<sup>1</sup> an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Notice of Proposed Rulemaking in the Matter of Comprehensive Review of Licensing and Operating Rules for Satellite Services.<sup>2</sup> The Commission sought written public comment on the proposals in the *Notice*, including comment on the IRFA. No comments were received on the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.<sup>3</sup>

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

This Order adopts comprehensive changes to Part 25 of the Commission's rules, which governs licensing and operation of space stations and earth stations for the provision of satellite communication services.<sup>4</sup> We revise the rules to better reflect evolving technology; eliminate unnecessary information filing requirements for licensees and applicants; eliminate unnecessary technical restrictions; reorganize existing requirements; eliminate redundancy and unnecessary verbiage; clarify vague, confusing, or ambiguous provisions; resolve inconsistencies; and codify existing policies to improve transparency. These changes will better enable the Commission to assess the interference potential of proposed operations; afford more operational flexibility for satellite licensees; enable applicants and licensees to conserve time, effort, and expense in preparing applications and reports; ease administrative burdens for the Commission; and make the rules easier to understand. As a result, we anticipate that these rule changes will facilitate greater investment and further innovation in satellite services and more rapid deployment of new satellite services to the public.

This Order revises multiple sections of Part 25 of the rules. Specifically, it revises the rules to:

- Update the information requirements for space and earth station applications to reflect evolving technology and eliminate information that is no longer needed.
- Consolidate annual reporting requirements and delete reporting requirements that are not necessary; reinforce reporting requirements for 24/7 contact points in cases of interference or emergency situations.
- Increase the number of earth station applications eligible for routine processing.
- Clarify the criteria for using Form 312EZ and related autogrant procedure for earth station applications.
- Eliminate certain restrictive elements of rules related to transponder saturation flux density settability requirements and cross-polarization isolation requirements.
- Harmonize rules concerning rain fade mitigation and eliminate certain mandated requirements.
- Clarify the requirements for routine processing of 12/14 GHz Very Small Aperture Terminals (VSAT) networks.

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<sup>1</sup> See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, IB Docket No. 12-267, Notice of Proposed Rulemaking, 27 FCC Rcd 11619 (2012) (*Notice*) at 11699 (Appendix B).

<sup>3</sup> See 5 U.S.C. § 604.

<sup>4</sup> 47 C.F.R. Part 25, Satellite Communications.

- Allow earth station applicants to certify antenna performance rather than requiring them to submit a certificate from the manufacturer.
- Adopt the industry standard for Automatic Transmitter Identification System (ATIS) signals for digital video uplinks for temporary-fixed earth stations.
- Relax telemetry, tracking, and command (TT&C) reporting requirements.
- Consolidate use restrictions and labeling requirements for MSS and ATC terminals aboard civil aircraft.
- Codify Commission practice of granting a single earth station license covering multiple antennas located close to each other.
- Update, improve, and consolidate definitions.

**B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA**

No party filing comments in this proceeding responded to the IRFA, and no party filing comments in this proceeding otherwise argued that the policies and rules proposed in this proceeding would have a significant economic impact on a substantial number of small entities. The Commission has, nonetheless, considered any potential significant economic impact that the rule changes may have on the small entities which are impacted. On balance, the Commission believes that the economic impact on small entities will be positive rather than negative, and that the rule changes move to streamline the Part 25 requirements.

**C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration.**

Pursuant to the Small Business Jobs Act of 2010, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration, and to provide a detailed statement of any change made to the proposed rules as a result of those comments. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

**D. Description and Estimate of the Number of Small Entities to Which the Rules May Apply**

The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.<sup>5</sup> The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."<sup>6</sup> In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.<sup>7</sup> A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).<sup>8</sup> Below, we describe and estimate the number of small entity licensees that may be affected by the adopted rules.

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<sup>5</sup> 5 U.S.C. § 604(a)(3).

<sup>6</sup> 5 U.S.C. § 601(6).

<sup>7</sup> 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

<sup>8</sup> Small Business Act, 15 U.S.C. § 632 (1996).

***Satellite Telecommunications and All Other Telecommunications***

The rules adopted in this Order will affect some providers of satellite telecommunications services, if adopted. Satellite telecommunications service providers include satellite and earth station operators. Since 2007, the SBA has recognized two census categories for satellite telecommunications firms: “Satellite Telecommunications” and “Other Telecommunications.” Under the “Satellite Telecommunications” category, a business is considered small if it had \$15 million or less in average annual receipts.<sup>9</sup> Under the “Other Telecommunications” category, a business is considered small if it had \$25 million or less in average annual receipts.<sup>10</sup>

The first category of Satellite Telecommunications “comprises establishments primarily engaged in providing point-to-point telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.”<sup>11</sup> For this category, Census Bureau data for 2007 show that there were a total of 512 satellite communications firms that operated for the entire year.<sup>12</sup> Of this total, 464 firms had annual receipts of under \$10 million, and 18 firms had receipts of \$10 million to \$24,999,999.<sup>13</sup>

The second category of Other Telecommunications is comprised of entities “primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.”<sup>14</sup> For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.<sup>15</sup> Of this total, 2,346 firms had annual receipts of under \$25 million.<sup>16</sup> We anticipate that some of these “Other Telecommunications firms,” which are small entities, are earth station applicants/licensees that might be affected if our proposed rule changes are adopted.

We anticipate that our proposed rule changes may have an impact on earth and space station applicants and licensees. Space station applicants and licensees, however, rarely qualify under the definition of a small entity. Generally, space stations cost hundreds of millions of dollars to construct, launch and operate. Consequently, we do not anticipate that any space station operators are small entities that will be affected by our proposed actions.

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<sup>9</sup> See 13 C.F.R. § 121.201, NAICS code 517410.

<sup>10</sup> See 13 C.F.R. § 121.201, NAICS code 517919.

<sup>11</sup> U.S. Census Bureau, 2007 NAICS Definitions, “517410 Satellite Telecommunications.”

<sup>12</sup> See [http://factfinder.census.gov/servlet/IBQTable?\\_bm=y&-geo\\_id=&-\\_skip=900&-ds\\_name=EC0751SSSZ4&-lang=en](http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-lang=en).

<sup>13</sup> *Id.*

<sup>14</sup> U.S. Census Bureau, 2007 NAICS Definitions, “517919 Other Telecommunications,” <http://www.census.gov/naics/2007/def/ND517919.HTM>.

<sup>15</sup> See 13 C.F.R. § 121.201, NAICS code 517919.

<sup>16</sup> U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517919” (issued Nov. 2010).

### **E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities**

The rule changes adopted in this Order will affect reporting, recordkeeping and other compliance requirements for earth and space station operators. Most proposed changes, as described below, will decrease the regulatory burden for all businesses operators in the affected industries, especially firms that hold licenses to operate earth stations. Therefore, small entities in these industries will experience a decrease in regulatory burden of reporting, recordkeeping, and compliance as a result of most of the changes adopted in this Order.

First, the revisions simplify information collections in applications for earth station licensees, and increase the number of earth station applications eligible for routine processing. For example, we extend eligibility to use the simplified Form 312EZ and the autogrant procedure to routine applications for 20/30 GHz earth stations that will communicate via geostationary satellites previously coordinated with Federal-government systems pursuant to Footnote US334.<sup>17</sup> The revised rules further allow routine licensing of earth stations transmitting analog command signals of up to one megahertz in bandwidth. The revision also eliminates requirements to submit certain technical information in space station applications, to provide technical interference analysis, and to submit information to both the International Bureau and the Columbia Operations Center. These changes reduce the burden of compliance.

We codify Commission practice of granting a single earth station license covering multiple antennas located close to each other. Additionally, we revise the rules to allow earth station applicants to certify antenna performance, rather than having to submit a certificate from the manufacturer. We also clarify that routine blanket earth station licensing requirements apply to individual earth station applications. We clarify the requirements for routine processing of 12/14 GHz Very Small Aperture Terminals (VSAT) networks. Finally, we adopt the industry-developed standard for Automatic Transmitter Identification System (ATIS) signals for digital video uplinks, while allowing analog uplink operators a choice of methods for ATIS signals.

The revisions also streamline and reorganize the rules to facilitate improved compliance. For example, we replace the various band-specific use restrictions and labeling requirements for Mobile-Satellite Service transceivers or Ancillary Terrestrial Component (ATC) terminals aboard civil aircraft with a uniform aircraft-use restriction and associated warning-label requirement. We also combine definitions currently scattered throughout Part 25 into a consolidated definitions section, we add definitions for previously undefined terms, and we clarify the text of many definitions and standardize their use. Throughout Part 25, we improve the language and organization of the rules to ease compliance.

Together, these changes reduce the reporting and recordkeeping burden, and make the rules easier to understand and follow. These changes will decrease compliance costs for all businesses in the affected industries, including the small entities regulated under Part 25.

### **F. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered**

The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rules for such small entities; (3) the

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<sup>17</sup> 47 C.F.R. § 2.106, Footnote US334 requires coordination between Federal space and terrestrial systems and non-Federal space and terrestrial systems operating in certain frequency bands.

use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.<sup>18</sup>

The Commission is aware that some of the revisions may impact small entities. The *Notice* sought comment from all interested parties, and small entities were encouraged to bring to the Commission's attention any specific concerns they may have with the proposals outlined in the *Notice*. No commenters raised any specific concerns about the impact of the revisions on small entities. This order adopts rule revisions to modernize the rules and advance the satellite industry. The revisions eliminate unnecessary technical and information filing requirements, and reorganize and simplify existing requirements to make them easier to understand and follow. All of these revisions lessen the burden of compliance on small entities with more limited resources than larger entities.

The changes for earth station licensing will create more opportunities for routine licensing and allow for more liberal blanket licensing of earth stations. Each of these changes will lessen the burden in the licensing process. Earth station operators may experience an additional burden from reinforced reporting requirements for 24/7 contact points for interference or emergency situations, a burden that was always required, but is more clearly articulated. However, the revisions also allow this requirement to replace a requirement for more specific TT&C information, so some of that additional burden is offset. Earth station operators may also experience increased burden from revisions to rules concerning ATIS requirements. Specifically, the transition to the newly adopted ATIS standard could impose burdens. However, the uniform ATIS format will also reduce the costs, by modernizing the standard governing ATIS signals, making it appropriate for more spectrum-efficient digital transmissions, and by standardizing ATIS signals and reducing the burden imposed by having to cope with multiple formats. Thus, the proposed revisions will ultimately lead to benefits for small earth station operators in the long-term.

**Report to Congress:** The Commission will send a copy of this Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.<sup>19</sup> In addition, the Commission will send a copy of this Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of this Report and Order and FRFA (or summaries thereof) will also be published in the Federal Register.<sup>20</sup>

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<sup>18</sup> 5 U.S.C. § 603(c)(1)-(c)(4).

<sup>19</sup> See 5 U.S.C. § 801(a)(1)(A).

<sup>20</sup> See 5 U.S.C. § 604(b).

**STATEMENT OF  
ACTING CHAIRWOMAN MIGNON L. CLYBURN**

***Re: Comprehensive Review of Licensing and Operating Rules for Satellite Services, IB Docket No. 12-267***

It may not get the press attention of 4G LTE wireless services or Gigabit fiber networks, but the satellite industry is a \$190-billion-a-year business and an important part of the communications sector. Satellite service can be offered in areas where there is no terrestrial infrastructure and the costs of deploying a fiber or microwave network are prohibitive. It can also provide additional bandwidth in areas where existing infrastructure is outdated, heavily congested, or damaged by natural disasters. Fixed and mobile satellite services offered important temporary solutions in the immediate aftermath of the 9/11 attacks and for weeks after Hurricane Katrina.

So it is with this Order, that the International Bureau continues its excellent work to update and streamline the Part 25 rules to facilitate rapid deployment of new commercial satellite services to the public. We began the process of updating Part 25, in January of 2010, by issuing a Public Notice seeking comment on changes that would merely clarify rules or make corrections and in 2012, we adopted those modest changes. But building upon the recommendations of the industry, we also issued a Notice of Proposed Rulemaking that set forth comprehensive changes to Part 25's rules. Today, I am pleased that we are revising more than 150 rule sections and these changes include: updating filing requirements for space and earth stations to reflect evolving technology; eliminating filing requirements that are no longer needed; increasing the number of earth station applications eligible for streamlined processing; and providing greater flexibility to earth station applicants in complying with rules on antenna performance. Overhauling these requirements for annual reporting, licensing, and filing, should lead to substantial reductions in the administrative costs necessary to offer satellite services. This, in turn, should lead to greater investment in enhanced benefits for consumers.

I thank Mindel De La Torre and the International Bureau for their outstanding work throughout this proceeding.

**STATEMENT OF  
COMMISSIONER JESSICA ROSENWORCEL**

***Re: Comprehensive Review of Licensing and Operating Rules for Satellite Services, IB Docket No. 12-267***

Satellite services provide vital communications links to the most remote parts of this country. They connect our troops around the world. They are an important backstop for public safety communications when our terrestrial networks fail.

That is why I am pleased to support today's Report and Order, which cleans up and updates more than 150 provisions in Part 25 of our rules governing satellite services. These changes eliminate outdated requirements and restrictions. They increase transparency. But above all, they simplify our satellite operating policies. That should mean more speed with applications before this agency, swifter deployment of new services to the public, and greater opportunities for innovation and investment in the satellite industry. That is something I am pleased to support.

Thank you to the International Bureau and great universe of Commission experts who worked on today's decision.



STATEMENT OF  
COMMISSIONER AJIT PAI***Re: Comprehensive Review of Licensing and Operating Rules for Satellite Services, IB Docket No. 12-267***

The longest journey begins with a single step, but one step is never enough. Take today's proceeding. It began more than a decade ago, when the staff of the International Bureau first identified the need to streamline and revise our satellite rules as part of our biennial regulatory review process.<sup>1</sup> After years of fits and starts, including staff's reiteration of the need for reform in 2005 and 2007,<sup>2</sup> the Commission finally heeded those calls last September, when it commenced this rulemaking process.<sup>3</sup>

Today, just 11 months later, we act on that Notice of Proposed Rulemaking. The sheer breadth of our satellite rules suggests what a striking accomplishment this is. Part 25, which covers satellite communications, has 114 rules spanning 7 subparts and 157 pages. With today's order, we amend the majority of those rules, eliminating some, clarifying others, and consolidating a few more. The end result is a modernized framework that better reflects today's technology and marketplace. That's yeoman's work, and the staff of the International Bureau, as well as their colleagues throughout the Commission that aided in the task, should be proud.

But our labors don't end with today's order. Last September, I called on satellite communications providers and other stakeholders to tell us "not only about the modifications proposed in [the] Notice but also about larger-scale reforms to our satellite licensing and operating rules."<sup>4</sup> They obliged—I gave up counting the number of proposals proffered once it hit 50. And today, we follow suit. Indeed, we commit to moving forward with a Further Notice to explore more far-reaching changes to our rules, such as EchoStar's recommendation to expand the scope of our rain-fade rules<sup>5</sup> and SIA's suggestion to target our coordination requirements to those satellites actually affected by an earth station.<sup>6</sup> And I hope the Further Notice will consider other forward-looking proposals, such as ORBCOMM's recommendation to let the Federal Aviation Administration determine whether certain cargo-tracking devices can be safely operated aboard civil aircraft<sup>7</sup> and Boeing's recommendation to reduce the burden

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<sup>1</sup> Federal Communications Commission, Biennial Regulatory Review 2000 Updated Staff Report at paras. 76–77 (Jan. 17, 2000), available at <http://go.usa.gov/jvpQ>. The Commission promptly followed up on this recommendation, but did not comprehensively revise its rules. 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*, IB Docket No. 00-248, Notice of Proposed Rulemaking, 15 FCC Rcd 25128 (2000).

<sup>2</sup> *2004 Biennial Review*, IB Docket No. 04-177, International Bureau Staff Report, 20 FCC Rcd 343 (2005); *2006 Biennial Regulatory Review*, IB Docket No. 06-154, International Bureau Staff Report, 22 FCC Rcd 3138 (2007).

<sup>3</sup> *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, IB Docket No. 12-267, Notice of Proposed Rulemaking, 27 FCC Rcd 11619 (2012).

<sup>4</sup> *Id.* at 11709 (Statement of Commissioner Ajit Pai).

<sup>5</sup> EchoStar Comments at 6–7; *Order* at para. 59. Our rain-fade rules allow certain satellite and earth station operators to increase the power of their uplink transmissions when it rains to compensate for increased signal attenuation.

<sup>6</sup> SIA Comments at 47, 61–62 (discussing modifications to rules 25.138 and 25.223); *Order* at notes 324 and 443.

<sup>7</sup> See ORBCOMM Comments at 11 (proposing to amend rule 25.285 to replace "installed" with "operated"). Absent such a change, a device covered by rule 25.285 but not installed in the aircraft (such as cargo-tracking devices) could not be used even if the Federal Aviation Administration approved it as safe for aircraft use.

of our milestone review process.<sup>8</sup> We should commence that rulemaking in the near term, move forward with similar speed, and continue our efforts to make the United States the most desirable country in the world for licensing and operating satellites.

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<sup>8</sup> See Boeing Comments at 4–10; *see also* ORBCOMM Comments at 12; EchoStar Reply at 5–6; Inmarsat Reply at 3; Intelsat Reply at 3–6.