

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
Update to Parts 2 and 25 Concerning) IB Docket No. 16-408
Non-Geostationary, Fixed-Satellite Service)
Systems and Related Matters)

COMMENTS OF THE SATELLITE INDUSTRY ASSOCIATION

The Satellite Industry Association (“SIA”)¹ submits these comments in response to the Notice of Proposed Rulemaking in the above-captioned proceeding,² which seeks input on possible changes to the rules governing non-geostationary-satellite orbit (“NGSO”) and geostationary-satellite orbit (“GSO”) fixed-satellite service (“FSS”) networks. Because of their broad coverage and distance-insensitive cost structure, FSS networks are ideally suited to help the Commission achieve its objective of bridging the “digital divide.”³ Accordingly, for the

¹ SIA is a U.S.-based trade association providing representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers. For more than two decades, SIA has advocated on behalf of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. For more information, visit www.sia.org. SIA Executive Members include: The Boeing Company; AT&T Services, Inc.; EchoStar Corporation; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Northrop Grumman Corporation; OneWeb; SES Americom, Inc.; Space Exploration Technologies Corp.; SSL; and ViaSat, Inc. SIA Associate Members include: ABS US Corp.; Artel, LLC; Blue Origin: DigitalGlobe Inc.; DRS Technologies, Inc.; Eutelsat America Corp.; Global Eagle Entertainment; Glowlink Communications Technology, Inc.; Hughes; Inmarsat, Inc.; Kymeta Corporation; L-3 Electron Technologies, Inc.; O3b Limited; Panasonic Avionics Corporation; Planet; Semper Fortis Solutions; Spire Global Inc.; TeleCommunication Systems, Inc.; Telesat Canada; TrustComm, Inc.; Ultisat, Inc.; and XTAR, LLC.

² *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Notice of Proposed Rulemaking, IB Docket No. 16-408, FCC 16-170 (rel. Dec. 15, 2016) (“Notice”).

³ Chairman Pai recently emphasized that closing the digital gap between those who have access to cutting-edge communications services and those who do not is a “core priority,” and indicated that the Commission must “help the private sector build networks, send signals, and distribute information to [all] American consumers.” Remarks of Ajit Pai, Chairman, FCC

reasons discussed herein, SIA urges the Commission to proceed with specific regulatory revisions that will facilitate expanded spectrum use by satellite systems and pave the way for continued technological innovations by the satellite industry.

I. INTRODUCTION

SIA strongly supports Commission efforts to modernize the regulatory structure for NGSO operations and provide broader access to spectrum for both GSO and NGSO satellite networks. Satellites play an essential role in the U.S. broadband infrastructure and can ensure that all Americans have access to high quality, affordable, and competitive communications services. The changes set forth in the Notice are needed to keep pace with industry developments and to allow satellites to make more intensive use of available spectrum.

As the Notice observes, updating Commission rules for NGSO systems is timely given the “new generation” of planned constellations, including some with large numbers of satellites.⁴ The Commission goes on to note that these NGSO networks can help the Commission fulfill its public interest objectives because they “have the capability to provide services, including Internet access, to underserved communities worldwide.”⁵

Indeed, recent years have seen exponential growth in the number of NGSO system proposals intended to address requirements for communications capacity that are not being adequately met by terrestrial alternatives. SIA member O3b Limited (“O3b”) deployed a Ka-band NGSO system that began operations in 2013 and is already taking steps to significantly increase capacity to accommodate growing customer demand for high-throughput, high-

(Jan. 24, 2017), available at <https://www.fcc.gov/document/chairman-pai-remarks-federal-communications-commission>.

⁴ Notice, ¶ 1.

⁵ *Id.*

performance connectivity. Many more constellations are in the works as well – a dozen applicants, including Boeing, OneWeb, SpaceX, Telesat, and ViaSat, have made filings that are being considered as part of the processing round the Commission opened last year for NGSO networks in Ku- and Ka-band spectrum.⁶ These proposals are concrete evidence that companies are willing to make substantial investments in NGSO satellite facilities that can help bring advanced communications services to additional markets and customers.

Simultaneously with this renewed interest in NGSO systems, GSO space station operators have experienced burgeoning demand for their services and increased congestion in lower frequency bands designated for their operations. As a result, these networks are pursuing additional spectrum that can accommodate satellite requirements, including Ka-band frequencies that are not designated for GSO operations today. GSO network operators have requested and received Commission authority to use certain of these frequencies pursuant to waivers of the existing Ka-band spectrum plan and are using this capacity to offer advanced broadband satellite services without any reports of harmful interference to other systems.

In the Notice, the Commission proposes regulatory changes to facilitate the deployment of additional NGSO constellations and to make additional spectrum available to both GSO and NGSO satellite networks. SIA encourages the Commission to expeditiously adopt the rule revisions discussed below in order to enhance satellite operators' ability to provide technically advanced offerings for the benefit of consumers in the United States and around the globe.

⁶ See *OneWeb Petition Accepted for Filing; IBFS File No. SAT-LOI-20160428-00041; Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 10.7-12.7 GHz, 14.0-14.5 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 27.5-28.35 GHz, 28.35-29.1 GHz, and 29.5-30.0 GHz Bands*, Public Notice, DA 16-804 (July 15, 2016).

II. SIA SUPPORTS CHANGES TO COMMISSION RULES TO FACILITATE GREATER SATELLITE USE OF KA-BAND SPECTRUM

SIA agrees with the Commission that an update of the Commission’s Ka-band plan would serve the public interest by promoting more robust use of this important spectrum. In particular, NGSO and GSO networks should be granted access to additional frequencies subject to necessary and appropriate constraints to protect other services.

A. The Commission Should Allocate the 17.8-18.3 GHz Band as Available for FSS Use (Notice, ¶ 9)

The Commission should add an FSS allocation to the 17.8-18.3 GHz band.⁷ As the Notice points out, both GSO and NGSO satellite systems are already using this spectrum pursuant to waivers of the Table of Allocations.⁸ Because this is a downlink band for satellite services, earth stations cannot cause harmful interference to terrestrial systems using these frequencies.

SIA is not taking a position regarding whether the new allocation for FSS should be secondary or whether the Commission should “limit this allocation to individually licensed earth stations,” as proposed in the Notice.⁹ SIA members will address these matters in their separate comments.

SIA concurs with the Commission’s observation that existing power flux density (“PFD”) limits established by the International Telecommunication Union (“ITU”) and applied under the Commission’s rules to adjacent frequency bands will adequately protect terrestrial fixed service (“FS”) networks from harmful interference due to space station transmissions in the

⁷ See Notice, ¶ 9.

⁸ *Id.*, ¶ 6 & n.18.

⁹ *Id.*, ¶ 9.

17.8-18.3 GHz spectrum.¹⁰ As the Notice observes, these limits were adopted with significant input from the United States, including U.S. terrestrial operators. Moreover, there are satellites operating in these bands today, and no harmful interference to FS networks has been reported. Accordingly, the record supports the Commission’s view that ITU PFD limits are effective and should be applied to FSS operations in the 17.8-18.3 GHz band.

B. The 18.3-18.6 GHz and 19.7-20.2 GHz Bands Should Be Designated for NGSO Operations (Notice, ¶ 10)

SIA also supports allowing NGSO FSS networks to operate on an unprotected basis with respect to GSO systems in the 18.3-18.6 GHz and 19.7-20.2 GHz bands, as proposed in the Notice.¹¹ As the Commission is aware, a variety of equivalent power flux density (“EPFD”) limits have been adopted internationally to govern the use of this spectrum. The Commission has granted waivers permitting NGSO use of this spectrum on a case-by-case basis subject to compliance with these EPFD limits, and the O3b system uses these frequencies today pursuant to such a waiver.¹² SIA agrees with the Commission that compliance with all downlink EPFD limits applicable internationally in the 18.3-18.6 GHz and 19.7-20.2 GHz bands (including the aggregate limits)¹³ “will be sufficient to protect GSO FSS networks from unacceptable interference, by generally limiting NGSO FSS operations near the geostationary arc.”¹⁴

¹⁰ *Id.*, ¶ 9 & n.26, *citing* PFD limits set forth in Article 21, Table 21-4 of the ITU Radio Regulations and incorporated in Section 25.208(c) of the Commission’s rules.

¹¹ *See* Notice, ¶ 10.

¹² *Id.*, ¶ 6 & n.21.

¹³ The applicable EPFD(down) limits that must be met in these bands include single entry, operational and aggregate limits. The same EPFD(down) limits applicable to 18.3-18.6 GHz also apply in the adjacent 17.8-18.3 GHz band.

¹⁴ Notice, ¶ 10.

**C. 18.8-19.3 GHz Frequencies Should Be Designated for GSO Use
(Notice, ¶¶ 11-12)**

SIA endorses the proposal in the Notice to add a designation for GSO FSS use in the 18.8-19.3 GHz frequencies currently allocated on a primary basis for NGSO FSS systems.¹⁵ As the Notice points out, a number of GSO FSS systems are using this band currently under waivers of the Commission’s Ka-band plan.¹⁶

SIA is not taking a position regarding whether GSO FSS should be permitted to use this spectrum only on an unprotected, non-interference basis, as suggested in paragraph 11 of the Notice, or be accorded co-primary status, as discussed in paragraph 12. Instead, SIA member companies will address this issue in their individual comments.

**D. SIA Supports Codification of the Relevant Spectrum Designations
(Notice, ¶ 14)**

The Commission should adopt its proposal to incorporate into footnotes to the Table of Allocations the relevant Ka-band satellite service designations in the Ka-band plan, including as revised in the course of this proceeding.¹⁷ In addition, SIA supports modifying the language in note 6 of Section 25.202(a)(1) of the Commission’s rules to replace the term “gateway earth stations” with “individually-licensed earth stations” for the reasons expressed in the Notice.¹⁸

SIA disagrees, however, with the Commission’s apparent intention to remove from Section 25.202(a)(1) the list of frequency bands available for FSS.¹⁹ Although it is true

¹⁵ *Id.*, ¶ 11.

¹⁶ *Id.*, ¶ 6 & n.19.

¹⁷ *Id.*, ¶ 14.

¹⁸ *Id.*, ¶ 14 & n.42.

¹⁹ *Id.*, ¶ 14 and proposed revised Section 25.202(a)(1).

that these designations are also contained in the Table of Allocations, SIA members find the enumeration of available bands in Section 25.202(a)(1) to be useful. The rule section consolidates the information in the Table of Allocations regarding available satellite frequencies and relevant band-specific restrictions in a single location for ease of reference. SIA requests that the Commission retain this listing and keep it updated.

E. The Commission Should Adopt Appropriate Technical Limits for Ka-band FSS Operations (Notice, ¶¶ 15-16)

SIA endorses the Notice's proposal to extend the applicability of the PFD limits in Section 25.208(c) to operation of GSO FSS space stations in the 17.7-19.7 GHz frequency band and to all FSS operations in the 22.55-23.55 GHz and 24.45-24.75 GHz bands.²⁰ As the Notice indicates, these limits have proven to be effective when incorporated into waivers authorizing satellite system use of the 17.7-19.7 GHz band.²¹

SIA also recognizes that the Commission will need to prescribe appropriate limits on NGSO FSS systems to protect terrestrial use of the 17.8-18.6 GHz and 18.8-19.7 GHz frequency bands.²² Individual SIA members will separately submit proposals relating to this issue.

F. NGSO Systems Have a Proven Ability to Share Ka-Band Spectrum with Non-Satellite Uses (Notice, ¶ 17)

The Notice seeks input on the ability of NGSO networks to successfully share spectrum with non-satellite networks.²³ SIA member O3b has had an NGSO system in operation since early 2013 and has demonstrated that it can co-exist with terrestrial systems in shared

²⁰ *Id.*, ¶ 15.

²¹ *Id.*

²² *Id.*, ¶ 16.

²³ *Id.*, ¶ 17.

frequencies. Other SIA members are proposing technical approaches that similarly will facilitate robust spectrum use by satellite networks without impeding terrestrial operations. This evidence confirms the wisdom of the Commission's proposals enabling additional satellite uses of spectrum while continuing to support the growth and development of terrestrial services.

III. THE COMMISSION SHOULD REPLACE ITS DEFAULT RULE ON NGSO-GSO SHARING (NOTICE, ¶ 21)

SIA agrees that Section 25.156(d)(5) should be replaced. The rule specifies that date priority determines whether GSO or NGSO operations will be permitted in a band where the Commission has not yet established criteria for NGSO-GSO sharing. As the Notice observes, the Commission has not followed this approach in the Ka-band spectrum but has instead authorized both GSO and NGSO operations, even though to date there are no formal rules for NGSO-GSO sharing in those frequencies.²⁴ The proven success of co-frequency GSO and NGSO operations in the Ka-band demonstrates that the Section 25.156(d)(5) framework is not necessary to enable sharing. In short, precluding one type of operation after an applicant has filed a proposal for the other type cannot be justified.

SIA urges the Commission to delete not just the first sentence of Section 25.156(d)(5),²⁵ but the provision as a whole. Both sentences of the current rule reflect a default sharing approach based on time of filing. The first sentence explains the implications if either an NGSO application or a GSO application is granted first – the Commission will not consider an application for the other type of system pending adoption of sharing rules. The second sentence addresses a situation in which NGSO and GSO applications are filed

²⁴ *Id.*, ¶ 21.

²⁵ Only the first sentence of the rule is mentioned in the Notice. *See id.*, ¶ 21 and proposed revisions to Section 25.156(d)(5).

simultaneously, specifying that in that event the Commission will divide the spectrum proportionally between the qualified NGSO and GSO applicants.²⁶ The Commission's experience with Ka-band spectrum demonstrates that sharing between NGSO and GSO systems is feasible even if the Commission has not yet adopted sharing rules, and that dividing the spectrum up among applicants is simply unnecessary. As a result, SIA urges the Commission to delete both sentences of Section 25.156(d)(5).

SIA is not taking a position with respect to whether the Commission should rely on No. 22.2 of the ITU Radio Regulations as a default NGSO-GSO sharing framework in lieu of Section 25.156(d)(5). SIA members will address this matter in their individual filings.

IV. REPLACEMENT SATELLITES SHOULD NOT BE SUBJECT TO MILESTONE REQUIREMENTS (NOTICE, ¶ 34)

SIA strongly supports the Commission's proposal to clarify that the milestone requirements set forth in Section 25.164 do not apply in the case of a replacement satellite brought into operation prior to the retirement of the previous spacecraft.²⁷ In practice, the Commission has not imposed milestones when granting authority for replacement satellites. SIA agrees that the rule should be updated to explicitly recognize this exemption.

²⁶ See 47 C.F.R. § 25.156(d)(5).

²⁷ Notice, ¶ 34.

V. CONCLUSION

SIA commends the Commission for undertaking this review of its rules to promote enhanced use of spectrum by both NGSO and GSO systems. SIA requests that the Commission expeditiously move forward with the rule revisions discussed herein to facilitate the growth and development of satellite networks.

Respectfully submitted,

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February 27, 2017