

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

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

To: The Commission

**REPLY COMMENTS OF ECHOSTAR SATELLITE OPERATING CORPORATION
AND HUGHES NETWORK SYSTEMS, LLC**

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Executive Summary

EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC (collectively “EchoStar”) submit these reply comments in the above captioned proceeding. The record demonstrates broad support to streamline Part 25 of the Federal Communications Commission’s (“FCC” or “Commission”) rules that enable operator flexibility, regulatory certainty and a technology neutral environment where satellite operators are able to provide innovative and cost-effective service to consumers. Specifically, EchoStar urges the Commission to provide operators flexibility in making ITU filings through the United States with adequate protections against warehousing. In addition, the record supports the FCC revising its milestone compliance process in order to provide for increased clarity, as well as providing a milestone option that incentivizes licensees to surrender their licenses earlier in the milestone process, where appropriate. Further, the FCC should allow qualifying operators to utilize a corporate guarantee as opposed to a bond as part of the licensing process. Furthermore, the record supports maintaining the two-degree spacing policy as it provides for the most efficient use of spectrum.

In addition, the FCC should adopt rules that:

- allow licensees to increase the number of remote terminals authorized under a blanket license without prior authorization; and
- lower or eliminate the minimum earth station elevation angle in all bands except those shared with terrestrial systems or where satellites operate bidirectionally.

Finally, the FCC should not adopt its proposal to aggregate the interference of multiple interfering beams in a single victim beam.

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I. INTRODUCTION

EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC (collectively “EchoStar”) submit these reply comments in the above captioned proceeding.¹ The record demonstrates broad support to streamline Part 25 of the Federal Communications Commission’s (“FCC” or “Commission”) rules so that the rules that enable operator flexibility, regulatory certainty, and a technology neutral environment where satellite operators are able to provide innovative and cost-effective services to consumers.² Creating a regulatory framework that gives operators the tools to provide the most innovative services and better meet consumer

¹ See *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Further Notice of Proposed Rulemaking, 29 FCC Rcd 12116 (2014) (“FNPRM”).

² IB Dkt No. 12-267, Comments of EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC at 6-8 (filed Jan. 29, 2015) (“EchoStar Comments”).

demands will maximize “utilization of scarce orbital and spectrum resources” and best serve the public interest.³

Specifically, EchoStar urges the FCC to:

- allow operators to have a reasonable number of pending Advanced Publication Information (“API”) filings at the Commission before the application stage;
- not extend the three-strike rule to ITU filings;
- establish FCC priority based on the API filing date and permit two years from submitting the API for an applicant to apply for a space station authorization;
- incentivize licensees to surrender space station authorizations, where warranted, earlier in the milestone process by adopting an escalating bond or giving more money back the earlier licensees surrender a license
- streamline the milestone compliance review process by adopting clear criteria;
- maintain the two-degree spacing policy;
- allow licensees to increase the number of remote terminals authorized under a blanket license without prior authorization;
- lower or eliminate the minimum earth station elevation angle except in bands shared with terrestrial systems or in bands where satellites operate bidirectionally;
- not adopt the FCC’s proposal to aggregate the interference of multiple interfering beams in a single victim beam;
- adopt the proposal, with small revisions, to alternative licensing in the 20/30 GHz band;
- allow an alternative way to license lower EIRP earth stations

³ FNPRM, 29 FCC Rcd at 12124, ¶ 19. *See also* FNPRM, 29 FCC Rcd at 12235, Statement of Chairman Wheeler (rule changes are meant to increase “the speed and ease of introducing new satellite services, while promoting competition among service providers.”).

- increase downlink EIRP density values used as coordination triggers in Ku-band; and
- modify off-axis EIRP density levels in 25.138 so that the corresponding earth station antenna gain is constant from 19.1 to 48 degrees at a level of 0 dBi.⁴

II. DISCUSSION

A. The FCC Should Allow Operators to File a Reasonable Number of APIs in Advance of Applying for a Space Station Authorization

The FCC should provide satellite operators with the flexibility to file and have pending a reasonable number of APIs for space stations through the FCC before filing a space station application. Such an approach, which is common in many other countries, will provide operators with the ability to understand the ITU regulatory climate in terms of space station priority before having to move to the full licensing stage.⁵ At the ITU filing stage, there is uncertainty about whether the desired orbital location will have a favorable interference environment in which to provide satellite services. Consequently, operators are often unable to develop all of the orbital locations they file for at the ITU. Accordingly, common practice around the world is for satellite operators to file multiple APIs in order to properly plan operations that meet marketplace demands for existing and new satellite services.

While many countries currently allow an unlimited number of APIs to be filed by a satellite operator, such an unbridled approach may lead to spectrum warehousing and unnecessary hurdles for satellite operators to obtain access to the resources they require to meet

⁴ Appendix A provides certain proposed rule changes.

⁵ IB Dkt No. 12-267, Comment of DIRECTV, LLC at 4 (filed Jan. 29, 2015) (“DIRECTV Comments”) (requesting that “Consistent with the current limits in Section 25.159 of the Commission’s rules, no party may have a combination of more than five: (1) APIs, pending applications, and licensed but unbuilt authorizations for GSO-like space stations in a particular frequency band; or (2) APIs, pending applications, and licensed but unbuilt authorizations for non-GSO-like space stations in a particular frequency band.”).

consumer demands. Yet, not allowing multiple filings by a satellite operator could result in the operator not having access to the spectrum and orbital resources it requires to meet market demands. The FCC should adopt a balanced rule that provides for a reasonable limit on the number of APIs that a single operator may have pending at any one time in a particular frequency band.⁶ A number, such as five in each band, would be reasonable at least for larger spacecraft operators who may need access to several new orbital locations.⁷

B. The Three-Strike Rule is Unnecessary at the ITU Stage

The FCC, in enabling flexibility for operators to meet increasing demands for satellite capability through the API filing process, must not be compromised by imposing the three-strike rule that exists for satellite licensing.⁸ Spectrum warehousing will be prevented if the FCC limits the number of APIs an operator can have on file in any one frequency band. Imposing unnecessary hurdles, such as a three-strike rule, would eliminate the benefits of having the ability of filing at the API stage and would discourage operators from utilizing the United States as a space station filing administration. Furthermore, the three-strike rule is a substantial disincentive to an early surrender of unused API. Accordingly, the FCC should not apply the three-strike rule to the ITU process.⁹

⁶ The Commission should allow submission of the Coordination Request (“CR”) any time after API and before the two-year deadline to submit a full application. However, submission of the CR should have no bearing on priority for the orbital location at the FCC.

⁷ Furthermore, this approach will still advance the goal of making the United States a more attractive filing administration.

⁸ See IB Dkt No. 12-267, Comments of Intelsat License LLC at 10-11 (filed Jan. 29, 2015) (“Intelsat Comments”), and EchoStar Comments at 23-24.

⁹ IB Dkt No. 12-267, Comments of SES Americom, Inc. and New Skies Satellites B.V. at 13 (filed Jan. 29, 2015) (“SES Comments”) (suggesting the FCC impose the three-strike rule or similar alternative); FNPRM 29 FCC Rcd at 12123 ¶ 18.

C. The FCC Should Impose a Two-Year Deadline for an Operator to File a Space Station Application after the API Stage

The record supports the FCC adopting a process whereby operators can make initial ITU filings through the FCC before submitting a space station license application. As EchoStar explained in its comments, two years is a reasonable time period to provide an API filer before requiring them to file an application for a space station license because it gives them time to determine if the ITU filing will offer sufficient protections to advance to a space station authorization for that satellite network.¹⁰ The FCC should reject calls for shorter time periods because they fail to provide sufficient time to fully evaluate whether the operator will have access to the protection it will need to operate its proposed satellite network.¹¹ Accordingly, the FCC should provide a two-year period from the filing of an API to file a space station license application.

D. The Record Supports Streamlining the Milestone Process

EchoStar supports the FCC's proposal to make all interim milestones optional and that licensees "could volunteer for Commission review of any interim milestone at any time as a means of reducing its surety bond" or corporate guarantee or, in the alternative, preventing the bond or corporate guarantee from escalating.¹² The only true indicator of a space station

¹⁰ See EchoStar Comments at 19-20.

¹¹ See IB Dkt No. 12-267, Comments of Iridium Constellation LLC at 6 (filed Jan. 29, 2015 ("Iridium Comments")), SES Comments at 12, and DIRECTV Comments at 4-5. At the ITU filing stage, at six months from API, another operator can still jump in front of a proposed filing by submitting a CR, which would negate priority for an orbital location. In addition, with the backlog at the ITU, it can take up to over a year before the ITU has reviewed the CR and published its results. Furthermore, this proposed approach will align the FCC's process with the ITU's process in terms of timing.

¹² See FNPRM, 29 FCC Rcd at 12128 ¶ 30; IB Dkt No. 12-267, Comments of The Boeing Company at 7 (filed Jan. 29, 2015) ("Boeing Comments"), and EchoStar Comments at 26-28. See also *infra* Section II.E.

authorization being put to use is the actual launch and placement in commercial service of the satellite. Accordingly, adoption of a single milestone at launch and placement in commercial service would be an elegant, simple, and non-burdensome solution to milestones that provides sufficient protection against warehousing.¹³ However, to address the preference by several commenters to keep milestones in place,¹⁴ the FCC could provide space station license applicants with the ability to state their agreed to milestone approach (i.e., single or multiple) in their authorization and make this a condition of the license.

In terms of the current milestone approach, the FCC must eliminate its Critical Design Review (“CDR”) milestone because of its very real administrative burdens and the subjective review process it entails.¹⁵ Elimination of this milestone will not increase the risks of spectrum warehousing as the remaining milestones provide this protection. If, however, the FCC determines that the CDR milestone should remain in place, the FCC should streamline this requirement to a certification from the manufacturer that this requirement has been met and the date of the completion of CDR. Anything further would impose unnecessary burdens. Further, for any other milestones the FCC chooses to keep, the FCC should allow the use of a certification to demonstrate milestone compliance in order to simplify the process and reduce administrative burdens, including the cost of compliance.

¹³ See FNPRM, 29 FCC Rcd at 12127 ¶ 28 (FCC “believe[s] it is worthwhile to consider whether alternative approaches might shorten review periods, reduce administrative burdens, and increase certainty for licensees.”).

¹⁴ See Intelsat Comments at 13, DIRECTV Comments at 6.

¹⁵ EchoStar Comments at 26.

E. The FCC Should Adopt a Milestone Approach that Incentivizes Operators to Surrender, as Appropriate, Authorizations that Will Not Be Used Sooner

The record supports the FCC adopting a milestone approach that incentivizes licensees to surrender authorizations that will not be used sooner.¹⁶ Accordingly, the FCC should adopt a bond and corporate guarantee that escalates in value over time or where the licensee gets more money back the earlier it surrenders its license.¹⁷ Creating such a mechanism incentivizes satellite operators to surrender licenses to spectrum and orbital locations that will go unused on the soonest date possible. This benefits the public interest because earlier surrender of scarce resources makes them available for another to use on a faster basis.

F. The Two-Degree Spacing Policy Must Be Retained in Order to Enable the Most Efficient Use of the Spectrum Resources

The record demonstrates that the FCC should retain its two-degree spacing policy because it makes the most efficient use of spectrum and creates certainty as to the level of service that operators are able to provide at a particular orbital location.¹⁸ Suggestions of abandoning two-degree spacing should be rejected as they will not result in efficient use of spectrum and could result in an uncertain interference environment.¹⁹ Even if the FCC adopts a requirement to coordinate, eliminating two-degree spacing requirements will not properly incentivize the existing operator to reach an agreement with the lower priority new entrant.

¹⁶ See SES Comments at 13, Boeing Comments at 8-9.

¹⁷ See 29 FCC Rcd at 12129 ¶ 32; EchoStar Comments at 28-30, SES Comments at 13, Boeing Comments at 6, 8-9. In other words, the licensee does not have to pay the full amount of the bond or corporate guarantee at the time it surrenders the license.

¹⁸ See SES Comments at 2-6. DIRECTV Comments at 6. Furthermore, as the Commission noted, the policy creates efficiencies because it eliminates the need for an “interference analysis, facilitates expeditious application processing and reduces cost and paperwork burdens for applicants willing to operate within the constraints of those criteria.” See FNPRM, 29 FCC Rcd at 12132-33 ¶ 44.

¹⁹ See Intelsat Comments at 19-20.

Rather, the operator with the priority is incentivized to maintain status quo, which means new entrants are kept out and consumers suffer from a less competitive marketplace. Retaining the two-degree spacing requirement is warranted to incent competition because it better enables new entrants and provides clear certainty as to: (1) the allowed operating level of the new entrant's service; and (2) the interference environment from neighboring licensees.²⁰

While EchoStar understands that operators may want to provide higher-powered services than current two-degree spacing rules allow, such services should not come at a cost of increased uncertainty of the interference environment for service providers, which would harm the public interest by decreasing competition. However, EchoStar is open to possible ways to improve the two-degree spacing policy. For example, DIRECTV has proposed altering the policy so that operators that have “coordinated the use of parameters in excess of those allowed under the two-degree spacing policy with existing operators/licensees should not have to modify its operations to protect a later-licensed, two-degree compliant space station,” but would have to accept additional interference “from a two-degree compliant system.”²¹ EchoStar is sympathetic to the goals of DIRECTV's proposal but is concerned that new entrants who come in later will have no actual knowledge of the interference environment in which they will have to operate. The Commission has to fully address this concern in a way that provides clarity and certainty to later entrants before the proposal could be workable. Accordingly, until such time as the Commission is able to fully address both the flexibility for existing licensees to use “coordinated parameters”

²⁰ While licensees may ultimately deviate from two-degree spacing parameters through coordination, that is not enough of a reason to eliminate the rule altogether because all parties benefit from that initial level of certainty.

²¹ DIRECTV Comments at 7.

and give later entrants the ability to still operate as a two-degree compliant space station without imposed constraints from existing licensees, it should maintain two-degree spacing as is.

G. Section 25.205 - Minimum Earth Station Elevation Angle

Outside of frequency bands where satellite networks operate bidirectionally (e.g. 17.3-17.8 GHz), the FCC should at least reduce the minimum elevation angle in bands that are not shared with terrestrial radio systems and should consider elimination of such minimum altogether.²² A reduction in the minimum elevation angle would serve the public interest by allowing satellite operators to extend their service area in northern regions such as Alaska, which typically have very low elevation angles toward all geostationary satellites. Moreover, since no terrestrial service would be impacted, the proposed reduction in elevation angle would not create interference to any third parties.

Elimination of this requirement in bands where satellite networks do not operate bidirectionally and outside of bands shared with terrestrial systems, would be an even more appropriate approach. Since there is no impact to other parties from operations at lower angles in such bands, eliminating the rule altogether would allow satellite operators to deploy services to northern communities where the elevation angles are low, even below three degrees. Earth stations can operate successfully even at very low angles, and the ability to provide services to northern communities is undoubtedly in the public interest.²³ Accordingly, the Commission should remove the minimum elevation angle requirement altogether outside of frequency bands

²² FNPRM, 29 FCC Rcd at 12171 ¶ 192.

²³ Skull Point and Upper Paradise earth stations located in Eureka, Canada forming part of the “High Arctic Data Communications System” have operated successfully for decades with an elevation angle less than 1 degree. See: <http://jproc.ca/rrp/alert.html> (last visited Feb. 25, 2015).

where satellite networks operate bidirectionally and outside of bands shared with terrestrial systems.

As stated above, the FCC should not permit the reduction in the minimum earth station elevation angle in frequency bands where satellite networks operate bidirectionally. In such bands, a reduction in the elevation angle would result in potentially higher EIRP densities being radiated toward the horizon. Higher EIRP density levels toward the horizon will extend the distance at which an earth station that receives in the same band can safely be deployed. The consequential impact on the coordination distance around a transmitting station would thus adversely impact licensees deploying earth station receivers in the band. Therefore, the elevation angle limit should remain the same in satellite bands that are used bidirectionally (e.g., 17.3-17.8 GHz).

In summary, EchoStar supports the Commission's proposal to reduce the minimum elevation angle in frequency bands that are not operated bidirectionally or shared with terrestrial services, and in such bands, the Commission should consider removing the minimum earth station elevation angle altogether.

H. Alternative Routine Licensing Criteria for 20/30 GHz Earth Station

Licensing under Sections 25.134 or 25.212 of the FCC's rules is based on a certification of compliance with an antenna performance mask and a flange power density.²⁴ However, in Sections 25.138 and 25.218 of the FCC's rules, licensing is authorized based on a demonstration of compliance with the off-axis power density mask.²⁵ While C- and Ku-band licensees have access to both these methods, only one such method is available for Ka-band licensees. There

²⁴ See 47 C.F.R. §§ 25.134 and 25.212.

²⁵ See 47 C.F.R. §§ 25.138 and 25.218.

are benefits with both methods, and EchoStar supports proposed changes to the rules that will reflect this concept.

EchoStar urges the FCC to adopt three changes to the FCC's proposal on this subject. First, the FCC should not include in the rules a minimum antenna diameter for routine processing of applications in the Ka-band.²⁶ All applications for which the antenna is compliant with Section 25.209 and which meet the power density limits at the antenna flange should be eligible for routine processing, regardless of the antenna diameter. Accordingly, it is the licensee's responsibility to confirm and certify compliance with Section 25.209 of the FCC's rules. There is no public interest reason that antennas with diameters less than a certain arbitrary number should be subjected to additional scrutiny, thereby requiring additional Commission resources and processing delay. Accordingly, the Commission should not establish a minimum antenna diameter in the Ka-band.²⁷

Second, the new method that the FCC proposes in this section, as well as the existing method included in Section 25.138, should be made applicable through the entire Ka-band (27.5-30.0 GHz), not just the 28.35-28.6 GHz and 29.25-30.0 GHz bands.²⁸ Geostationary ("GSO") satellite operators that make use of parts of the Ka-band where GSO satellites do not operate on a primary basis need to be able to share among themselves, and applying two-degree spacing rules between GSO networks of equal status will provide clarity and certainty. Accordingly, the FCC's proposal should be adopted and applied in the entire Ka-band.

²⁶ See 29 FCC Rcd at 12143-44 ¶ 81.

²⁷ Furthermore, the FCC should remove antenna diameters from the Commission's rules in C- and Ku-bands.

²⁸ See 29 FCC Rcd at 12143-44 ¶¶ 80-81. If two-degree spacing rules are made to apply through the entire Ka-band, then GSO licensees should have access to both methods.

Third, the actual technical values that the FCC adopts in the Ka-band for two-degree spacing should reflect the updated antenna mask gain in Section 25.209 as explained in the record.²⁹ Accordingly, the FCC's proposal of an additional method for routine licensing in 20/30 GHz band but with the changes proposed above incorporated should be adopted.

I. Section 25.118 - Modifications Not Requiring Prior Authorization

EchoStar supports allowing licensees to increase the number of remote terminals authorized under a blanket license pursuant to Section 25.118 of the Commission's rules regardless of the status of the licensed operations in the band. This change is in the public interest because it will further streamline the FCC's rules and reduce administrative burdens. A new interference analysis is not needed in bands where operations are on a secondary or a non-conforming basis because harmful interference is not permitted.³⁰ Blanket licensed systems divide space segment resources into a number of channels and alternatively assign users the opportunity to transmit in those channels. When using a channel, an individual terminal will comply with the transmission characteristics relating to that satellite channel. Those terminals that do not have access to a channel at a specific point in time do not transmit and therefore, cannot cause interference. An increase in the number of terminals authorized under a blanket license simply represents a change in the ratio of transmitting to non-transmitting terminals. Accordingly, the FCC should adopt a rule that allows the increase of the number of remote terminals authorized under a blanket license.

²⁹ IB Dkt No. 12-267, Comments of the Satellite Industry Association at 15 (filed Jan. 29, 2015) ("SIA Comments"), IB Dkt No. 12-267, Comments of Kymeta Corporation at 7-8 (filed Jan. 29, 2015) ("Kymeta Comments").

³⁰ Iridium Comments at 5 ("Iridium supports the changes to Sections 25.118(a)(3) and 25.115(e) and (f) that are discussed in the FNPRM in the case of licensed operations for which there is a primary allocation and opposes the changes in the case of licensed operations for which there is only a secondary allocation or no allocation.").

J. Criteria for Downlink Transmission

EchoStar supports SES's proposal to increase the downlink EIRP density values, which are currently used as coordination triggers for both the Ku-band and extended Ku-band.³¹ The proposal will reduce administrative burdens. The values in Sections 25.134 (g)(3) and 25.212(c)(2) of the Commission's Rules allow operators to transmit at EIRP density levels up to +10 dBW/4 kHz without requiring coordination with adjacent satellite operators.³² SES proposes that for the Ku-band and extended Ku-band, this value could be increased to +13 dBW/4kHz.³³ EchoStar supports this change as it better reflects EchoStar's operations in the Ku-band. This change would also reduce administrative burdens by sparing earth station licensees from obtaining coordination letters from satellite operators when operations by these earth stations are essentially of a routine nature. More importantly, making this change will allow earth stations, which operate at these slightly higher downlink levels, eligible to access all satellites on the Permitted Space Station List, eliminating unnecessary future license modifications. Accordingly, the FCC should adopt SES's proposal to increase the downlink EIRP density values currently used as coordination triggers for both Ku-band and extended Ku-band.

K. EchoStar Supports Kymeta's Proposal to Modify the Off-axis EIRP Density Levels in Section 25.138

EchoStar supports Kymeta Corporation's ("Kymeta") proposal that the FCC modify the off-axis EIRP density levels in Section 25.138 so that the corresponding earth station antenna

³¹ SES Comments at 7.

³² 47 C.F.R. §§ 25.134 (g)(3) and 25.212(c)(2).

³³ SES Comments at 7.

gain is constant from 19.1 to 48 degrees at a level of 0 dBi.³⁴ The short angular range over which Kymeta proposes to relax the current mask would be by no more than 10 dB. This change would allow a more sensible mask that would use an antenna gain of 0 dBi from 19.1 degrees all the way to 180 degrees. The resulting mask is in the public interest as it would simplify antenna design and testing, resulting in cost savings that can be passed through to consumers. While the change proposed by Kymeta could result in an increase in the interference received by and transmitted toward adjacent satellite networks, this increase would be imperceptible to any operational system. Accordingly, EchoStar supports this proposal and encourages uniform adoption throughout the Commission's Rules.³⁵

L. Streamlined Processing for Low EIRP Earth Stations

The Commission should adopt an *alternative* means of demonstrating two-degree compliance for low EIRP earth stations that should apply to all frequency bands, including the 29.25-29.5 GHz band. No staff review of terminals for two-degree compliance is necessary because compliance can be demonstrated through certification by an equipment certification body. Moreover, manufacturers of small stations already have terminals certified for international sales, so this will not increase administrative burdens. The Commission should also look to the European Commission's example as an experience that has significantly simplified licensing of low power earth stations.³⁶ The Commission should build on this successful experience to streamline its own process accordingly.

³⁴ Kymeta Comments at 8, Exhibit 2 at 4 (filed Jan. 29, 2015).

³⁵ This change would impact 47 C.F.R. §§25.209, 25.138, 25.218, 25.221, 25.222, 25.223, 25.226 and 25.227.

³⁶ See FRNPM, 29 FCC Rcd at 12145 ¶ 87 (citing Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive); Electronic Communications

In their comments, both AVL and Iridium indicate concerns with regard to the licensing of low-power terminals by means of an equipment certification.³⁷ AVL's concern about "the absence of any explicit mention of density limits in association with the stated EIRP limit" is misplaced.³⁸ EIRP level is solely a criterion for eligibility for this method of licensing. All current technical rules regarding two-degree spacing, including the off axis EIRP density levels specified in Section 25.218 would still apply to low-power terminals licensed under this approach. The only difference is that a certification laboratory would confirm equipment compliance to the rules instead of Commission staff. This would reduce administrative burdens on International Bureau Staff, saving scarce staff resources.

In addition, Iridium's concern about the impact of this proposal on case-by-case coordination is also misplaced.³⁹ GSO licensees are required to coordinate with incumbent non-geostationary satellite operator ("NGSO") licensees in the 29.25-29.5 GHz band, and this requirement would remain if this alternative approach is adopted.⁴⁰

M. Limits on Aggregate EIRP Density

The record does not support the Commission's proposal to aggregate the interference of multiple interfering beams in a single victim beam.⁴¹ The record demonstrates that the

Committee, ECC Decision of 24 March 2006 on Exemption from Individual Licensing of high e.i.r.p. satellite terminals (HEST) operating within the frequency bands 10.70-12.75 GHz or 19.70-20.20 GHz space-to Earth and 14.00-14.25 GHz or 29.50-30.00 GHz Earth-to-space, ECC/DEC/(06)03).

³⁷ Iridium Comments at 8-9, IB Dkt No. 12-267, Comments of AvL Technologies, Inc. at 3 (Jan. 28, 2015) ("AvL Comments").

³⁸ AvL Comments at 3.

³⁹ Iridium Comments at 9.

⁴⁰ See 47 C.F.R. § 25.258.

⁴¹ EchoStar Comments at 35-41, IB Dkt No. 12-267, Comments of ViaSat, Inc. at 1-6 (filed Jan. 29, 2015) ("ViaSat Comments"), SIA Comments at 10-12.

Commission's proposal would lead to disastrous consequences as operators would have to greatly reduce power levels that would lead to diminished services for consumers.⁴²

Beyond the consequences of this proposal, the record also shows that there is no technical foundation.⁴³ SIA and ViaSat's filings make clear that the lower antenna G/T of a wider beamwidth victim antenna offset the aggregation of multiple interfering beams from the adjacent satellite.⁴⁴ This analysis demonstrates that the Commission lacks a technical basis on which to adopt this rule. Accordingly, EchoStar recommends that the Commission limit its changes to the "log N" rule as proposed in EchoStar's comments.⁴⁵

⁴² *Id.*

⁴³ *See* ViaSat Comments at Exhibit A, SIA Comments at 24-28.

⁴⁴ *Id.*

⁴⁵ EchoStar Comments at 35-40. In EchoStar's comments on the proposed addition to Section 25.115 of the FCC's rules, *see* EchoStar Comments at 40, EchoStar inadvertently labeled this a paragraph (j). In addition, in Appendix A, EchoStar does not propose to add the language "carrying the service" to the new subsection. *See* Appendix A at 3.

III. CONCLUSION

The record supports continued streamlining of the FCC's Part 25 rules to achieve operator flexibility and regulatory certainty. As discussed herein, the FCC should move forward to make the United States a more attractive location for satellite space station licensing by providing increased flexibility and certainty to satellite operators, incenting the most efficient use of the satellite spectrum and orbital resource and otherwise streamlining the Part 25 rules. By taking such action, the public interest will be best served by enabling increased innovation and efficient use of the spectrum and orbital resources.

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Appendix A
Proposed Rule Changes

1

EchoStar supports the rule changes provided in the comments of the Satellite Industry Association (“SIA”) and incorporates them herein by reference except as noted herein in rule Section 25.103.⁴⁶

EchoStar proposes that the Commission delete Section 25.134 and all references thereto in part 25. In addition, EchoStar proposes that the Commission delete all references to “10 log N” in part 25.

§ 25.103 Definitions.

20/30 GHz bands. The 18.3-20.2 GHz Fixed-Satellite Service space-to-Earth band and the ~~27.5-28.35-~~30.0 GHz Fixed-Satellite Service Earth-to-space band.

[Note: This is a slight deviation from SIA’s comments. EchoStar urges the Commission to adopt a definition that encompasses the entire Ka-band, whether satellite is primary or secondary.]

Corporate Guarantee. A guarantee provided by a corporation or other business entity whereby the corporation or other business entity agrees to be held responsible for paying the amount the licensee owes to the United States Treasury in the event that the licensee fails to fulfill the terms of milestones, as required, under Section 25.164.

Permitted Space Station List. A list of all U.S.-licensed geostationary-orbit space stations providing Fixed-Satellite Service in the conventional C band, ~~extended C band,~~ the conventional Ku band, ~~the extended Ku band (10.7-11.7 GHz, 12.75-13.25 GHz, and 13.75-14.0 GHz), or the 20/30 GHz band~~ ~~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, ~~the extended C band,~~ conventional Ku band, ~~extended Ku band (10.7-11.7 GHz, 12.75-13.25 GHz, and 13.75-14.0 GHz), or the 20/30 GHz band.~~ ~~18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands.~~

§ 25.110 Filing of applications, fees, and number of copies.

(b) Submitting the application. ~~All space station applications and all earth station applications must be filed electronically on Form 312. In this part, any party permitted or required to file information on Form 312 must file that information electronically through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter.~~

- (1) All earth station license applications, except as provided in 25.118(a), must be filed electronically on Form 312 in accordance with the applicable provisions of part 1, subpart Y of this chapter.

⁴⁶ SIA Comments at Annex B (filed Jan. 29, 2015).

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(2) Except as provided in paragraph (b)(3) of this section and Sections 25.118(e),(f), applications for space station licenses must be filed electronically on Form 312 in accordance with the applicable provisions of part 1, subpart Y of this chapter and include all information required by § 25.114.

(3) A license application for a GSO FSS space station not subject to the provisions in Appendix 30A or 30B of the ITU's Radio Regulations may be submitted in two steps, as follows:

(i) Such an application may be initiated by filing, in accordance with the applicable provisions of part 1, subpart Y of this chapter, a draft API for proposed space station operation in specified frequency bands at a specified orbital location with a letter signed by the party in interest or a designated representative requesting that the draft API be submitted to the ITU and a declaration of acceptance of ITU cost-recovery responsibility in accordance with § 25.111(d). Such a filing need not include a completed Form 312.

(ii) The Applicant may submit the Coordination Request at any time after submission of the API under subsection (b)(3)(i) and prior to the two-year deadline to submit the application under (b)(3)(iii)

(iii) An application initiated pursuant to paragraph (b)(3)(i) of this section may be completed by filing a complete Form 312 for the proposed space station and any other information required by § 25.114 within two years of the date of filing of the API. Failure to complete the application under this subsection will result in loss of priority.

§ 25.112 Defective applications

(d) Applicants will have 60 days from the date it is notified of a defect to make the correction. Only after the 60 day time period is completed can the Commission dismiss the application without prejudice.

§ 25.113 Station construction, launch authority, and operation of spare satellites.

~~(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 Reserved~~

§ 25.114 Applications for space station authorizations

(e) Applications for geostationary orbit satellite systems other than DBS and DARS satellite systems, including GSO MSS satellite systems, shall include a statement whether the applicant will comply with all milestones in Section 25.164(a)(3)(i)-(iii) *** and the timeframe for meeting the milestones, or whether

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the applicant elects to make the milestones in Section 25.164(a)(3)(i)-(iii) *** optional. The Commission will condition the grant of a space station authorization in accordance with the applicant's statement under this paragraph.

25.115.

~~(a)(2)(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;~~

(l) Licensees operating multiple earth stations within the same receive beam of at a satellite that simultaneously overlap in frequency shall ensure that the aggregate adjacent GSO satellite interference is no greater than that caused by a single terminal compliant with two degree rules in the band in which it operates. This rule does not apply to simultaneous overlapping transmissions occurring while using contention protocols.

§ 25.118 Modifications not requiring prior authorization.

(a) Earth station license modifications, notification required. Authorized earth station operators may make the following modifications to their licenses without prior Commission authorization, provided that the operators notify the Commission, using FCC Form 312 and Schedule B **or submitting a letter to the Commission via IBFS describing the changes**, within 30 days of the modification. This notification 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:

(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:

(3) Authorized ~~VSAT earth station operators blanket licenses~~ may add **VSAT** remote terminals without prior authorization, provided that they have complied with all applicable frequency coordination procedures in accordance with § 25.251.

(e) Relocation of GSO space stations. A space station operator may modify its license without prior authorization, but upon 30 days prior notice to the Commission and any potentially affected licensed spectrum user, provided that the operator meets the following requirements. This notification must be filed electronically on Form 312 through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter **or the licensee may submit a letter via IBFS to the International Bureau describing the planned changes:**

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- (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 **or the licensee may submit a letter via IBFS to the International Bureau describing the planned changes.** The notification must specify all changes in previously authorized parameters and must certify the following:

§ 25.119 Assignment or transfer of control of station authorization.

(h) Procedures for Pro Forma Transactions. Applications for non-substantial (*pro forma*) transfers of control and assignments of non-common carrier space station and earth stations authorizations will be deemed granted by the Commission one (1) day after filing the application

§ 25.131 Filing requirements and registration for receive-only earth stations. [Alternative 1]

(2) Operators of receive-only earth stations **do not need to apply for license authority 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.~~

§ 25.131 Filing requirements and registration for receive-only earth stations. [Alternative 2]

(j)

~~(1) Except as set forth in paragraph (j)(2) of this section, receive-only earth stations operating with non-U.S. licensed space stations shall file an FCC Form 312 requesting a license or modification to operate such station.~~

~~(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. Reserved~~

§ 25.151 Public notice period

- (a) At ~~weekly regular~~ intervals, the Commission will issue public notices listing:

(7) Information which the Commission in its discretion believes to be of public significance; ~~and~~

(9) Submission of APIs to the ITU in response to requests filed pursuant to § 25.110(b)(3)(i).

(10) Submission Coordination Requests to the ITU in response to requests filed under to § 25.110(b)(3)(ii).

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(11) Receipt of information filed pursuant to § 25.110(b)(3)(iii).

(12) Orbital slots that are available under first-come, first served; and

(13) Orbital slots that reserved for federal government use

§ 25.159 Limits on pending applications and unbuilt satellite systems.

~~(a) Applicants with a total of five applications for GSO-like space station licenses on file with the Commission in a particular frequency band, or a total of five licensed but unbuilt GSO-like space stations in a particular frequency band, or a combination of pending GSO-like applications and licensed but unbuilt GSO-like space stations in a particular frequency band that equals five, will not be permitted to apply for another GSO-like space station license in that frequency band. Reserved~~

~~(d) In the event that a licensee misses three or more milestones within any three year period, the Commission will presume that the licensee obtained one or more of those licenses for speculative purposes. Unless the licensee rebuts this presumption, it will not be permitted to apply for a GSO-like satellite or an NGSO-like satellite system in any frequency band if it has two or more satellite applications pending, or two licensed but unbuilt satellite systems of any kind. This limit will remain in effect until the licensee provides adequate information to demonstrate that it is very likely to construct its licensed facilities if it were allowed to file more applications. Reserved~~

§ 25.161 Automatic termination of station authorization.

A station authorization shall be automatically terminated in whole or in part without further notice to the licensee upon:

(a)

(1) Failure to meet any applicable milestone for implementation of the licensed satellite system specified as a condition on the license or in §§ 25.164(a)(1) *** without demonstrating that the failure was caused by circumstances beyond the licensee's control, or

§ 25.164 Milestones.

~~(a) (1) The recipient of an initial license for a GSO space station, other than DBS or SDARS space stations, granted on or after [INSERT EFFECTIVE DATE] must operate the space station in accordance with the station authorization no later than five years after the grant of the license, unless a different schedule is established by Title 47, Chapter I, or by order of the Commission or order adopted pursuant to delegated authority.~~

~~(2) A licensee is not required to construct a new space station in order to meet this milestone, and the licensee may use an existing satellite whether or not already in orbit or another newly constructed satellite.~~

~~(3) Milestones: Licensees of geostationary orbit satellite systems other than DBS and DARS satellite systems, including GSO MSS satellite systems, licensed on or after August 27, 2003 will~~

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~~be required to comply with the schedule set forth in paragraphs (a)(1) through (a)(4) of this section in implementing their satellite systems, unless a different schedule is established by Title 47, Chapter I, or by Commission Order, or by Order adopted pursuant to delegated authority. These dates are to be measured from the date the license is issued.~~

~~(1i) One year:~~ Enter into a binding non-contingent contract to construct the licensed satellite system.

~~(2ii) Two years:~~ Complete the critical design review of the licensed satellite system.

~~(3iii) Three years:~~ Begin the construction of the satellite.

~~(4) Five years:~~ Launch the space station, position it in its assigned orbital location, and operate it in accordance with the station authorization.

- (c) ~~In order to demonstrate compliance with paragraph (a)(3)(i) ***~~, Licensees of all satellite systems, other than DBS and DARS satellite systems, must ~~submit a certification with the Commission that they have either submit a copy of a entered into 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) ~~In order to demonstrate compliance with paragraph (a)(3)(ii) ***~~, Licensees of all satellite systems, other than DBS and DARS satellite systems, must ~~submit certification from the licensee and satellite manufacturer that either submit information to the Commission sufficient to demonstrate that the licensee has completed the critical design review of the licensed satellite system has been completed 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) ~~In order to demonstrate compliance with paragraph (a)(3)(iii) ***~~, Licensees of all satellite systems, other than DBS and DARS satellite systems, must ~~submit a certification from the licensee and the satellite manufacturer that the manufacturer either submit information to the Commission sufficient to demonstrate that the licensee has commenced physical construction of its licensed spacecraft and payment has been made 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)(41), (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 milestones set for as a condition on the space station authorization ~~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 licensee will be required to~~

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~~comply with the milestones set for as a condition on the space station authorization the earliest of the milestone schedules will be applied to the entire satellite system.~~

§ 25.165 Posting of bonds.

- (a) For all satellite licenses issued after ~~September 20, 2004~~[INSERT EFFECTIVE DATE], other than DBS licenses, DARS licenses, and replacement satellite licenses as defined in paragraph (e), the licensee is required to **either** post a bond within 30 days of the grant of its license **or comply with paragraphs (f)-(j) below.** ~~Failure to post a bond will render the license null and void automatically.~~
- (1) NGSO licensees are required to post a bond in the amount of \$ 5 million.
 - (2) GSO licensees are required to post a bond in the amount of \$ 3 million.
- (3) Licensees of satellite systems including both NGSO satellites and GSO satellites that operate in the same frequency bands as the NGSO satellites are required to post a bond in the amount of \$ 5 million. **(b) If the satellite licensee elects to post a bond pursuant to paragraph (a),** ~~the~~ licensee must use a surety company deemed acceptable within the meaning of [31 U.S.C. 9304](#) et seq. (See, e.g., Department of Treasury Fiscal Service, Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and As Acceptable Reinsurance Companies, [57 FR 29356](#), July 1, 1992.) The bond must name the U.S. Treasury as beneficiary in the event of the licensee's default. The licensee must provide the Commission with a copy of the performance bond, including all details and conditions.
- (c) A licensee will be considered to be in default if it fails to meet ~~any milestone~~ the deadline set forth in § 25.164(a)(1) ~~*** or has not satisfied the milestone condition on its license as indicated under 25.114(e), and, at the time of milestone deadline, the licensee has not provided a sufficient basis for extending the milestone.~~
- (d) A GSO licensee will ~~not be required to pay any amount owed under the bond or corporate guarantee upon meeting the requirement in 25.164(a)(1). A GSO licensee will be permitted to reduce the amount of the bond or corporate guarantee by \$ 750,000 upon successfully meeting a milestone~~ ~~deadline~~ set forth as a condition on its license or in section 25.164(a)(3)(i)-(iii) of this chapter ~~***.~~
- (f) For all satellite licenses issued after [INSERT EFFECTIVE DATE], other than DBS licenses, DARS licenses, and replacement satellite licenses as defined in paragraph (e), a licensee may elect to use a Corporate Guarantee. The company providing the Corporate Guarantee must pay the U.S. Treasury in the event of the licensee's default, as defined in paragraph (c).
- (1) NGSO licensees are required to provide a Corporate Guarantee in the amount of \$5 million
 - (2) GSO licensees are required to provide a Corporate Guarantee in the amount of \$3 million
 - (3) Licensees of satellite systems including both NGSO satellites and GSO satellites that operate in the same frequency bands as the NGSO satellites are required to provide a Corporate Guarantee in the amount of \$ 5 million
- (g) In order to be eligible to use a Corporate Guarantee, within 30 days of the grant of its license, the licensee must notify the International Bureau that it will use a Corporate Guarantee.

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(h) Within 30 days of the grant of the license, the company providing Corporate Guarantee must submit to the International Bureau a copy of the Corporate Guarantee including all details and conditions, and a certification, signed by the chief financial officer or equivalent, which certifies to the following:

(1) The company is solvent and not in bankruptcy

(2) The company files financials with the Security Exchange Commission

(3) The company has five times the amount that would be owed to the FCC in the event of default under paragraph (c) in reserve in unrestricted cash or cash equivalents

(4) The Corporate Guarantee was approved by the board of directors or other governing body of the company providing the Corporate Guarantee pursuant to company's charter or other governing documents.

(i) Within 60 days of the yearly anniversary of the license grant and until the satellite licensee operates all space stations under the license in accordance with the station authorization, the chief financial officer or equivalent of the company providing the Corporate Guarantee, must certify to the Commission via IBFS that the company meets the requirements in subsections (h)(1)-(3).

(j) The company providing the Corporate Guarantee must notify the Commission within 60 days if, at any time after the certification under subsection (h) is submitted and prior the satellite licensee operating all space stations under the license in accordance with the station authorization, it no longer meets the criteria in subsections (h)(1)-(3). Within 30 days of a notification under this subsection, a licensee must post a bond pursuant to subsections (a) and (b) or its license will be null and void automatically.

(k) Failure to post a bond pursuant to subsections (a) and (b), or comply with subsections (g)-(i) will render the license null and void automatically.

§ 25.205 Minimum antenna elevation angle ~~of antenna elevation~~. [Alternative 1]

(a) Earth station antennas ~~shall~~ may not transmit ~~normally be authorized for transmission at angles~~ less than 5 degrees measured from the horizontal plane to the direction of maximum radiation in a frequency band where satellites operate bi-directionally or in a frequency band shared with terrestrial radio services or at elevation angles less than 3 degrees in other frequency bands. In some instances, it may be necessary to specify greater minimum elevation angles because of interference considerations. ~~However, upon a showing that the transmission path will be seaward and away from land masses or upon special showing of need for lower angles by the applicant, the Commission will consider authorizing transmissions at angles between 3 [degrees] and 5 [degrees] in the pertinent directions. In certain instances, it may be necessary to specify minimum angles greater than 5 [degrees] because of interference considerations.~~

§ 25.205 Minimum antenna elevation angle ~~of antenna elevation~~. [Alternative 2]

(a) Earth station antennas ~~shall~~ may not transmit ~~normally be authorized for transmission~~ at elevation angles less than 5 degrees measured from the horizontal plane to the direction of maximum radiation in a frequency band where satellites operate bi-directionally or in a frequency band shared with terrestrial radio services. In other frequency bands there is no minimum antenna elevation angle. ~~However, upon a showing that the transmission path will be seaward and away from land masses or upon special showing of need for lower angles by the applicant, the Commission will consider authorizing transmissions at angles between 3 [degrees] and 5 [degrees] in the pertinent~~

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~~directions. In certain instances, it may be necessary to specify minimum angles greater than 5 [degrees] because of interference considerations.~~

§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 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 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~~13.0 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 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 - 10log(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.

§ 25.258 Sharing between NGSO MSS Feeder links Stations and GSO FSS services in the 29.25-29.5 GHz Bands.

(b) Licensed GSO FSS systems shall, to the maximum extent possible, operate with frequency/polarization selections, in the vicinity of operational ~~or planned~~ NGSO MSS feeder link earth station complexes, that will minimize instances of unacceptable interference to the GSO FSS space stations. Earth station licensees operating with GSO FSS systems shall be capable of providing earth station locations to support coordination of NGSO MSS feeder link stations under paragraphs (a) and (c) of this section. Operation of ubiquitously deployed GSO FSS earth stations in the 29.25-29.5 GHz frequency band shall conform to the rules contained in § 25.138.
