

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

In the Matter of)	
)	
Streamlined Licensing Procedures for Small)	IB Docket No. 18-86
Satellites)	
)	

REPLY COMMENTS OF VIASAT, INC.

Viasat, Inc. submits these reply comments in connection with the above-captioned proceeding, in which the Commission seeks to facilitate the use of “small satellites” to enable more efficient use of the radiofrequency spectrum.¹ Viasat submits these reply comments to address a single, relatively narrow issue—namely, the potential use of small satellites in connection with satellite-to-satellite communications. Although the *Notice of Proposed Rulemaking* (“*NPRM*”) appropriately highlights the benefits that could flow from satellite-to-satellite communications using small satellites, EchoStar and Hughes have submitted comments asking the Commission to sharply limit such use, for reasons that are less than clear.²

For its part, Viasat agrees with the Commission that small satellites, operating within appropriate technical parameters, have the “ability to share and not preclude other operations in a particular frequency band.”³ Viasat also agrees that the additional flexibility contemplated by the *NPRM* has the potential to allow mobile-satellite service (“MSS”) and fixed-satellite service (“FSS”) operators to make more efficient use of spectrum while providing innovative services to

¹ *Streamlined Licensing Procedures for Small Satellites*, Notice of Proposed Rulemaking, FCC 18-44, IB Docket No. 18-86 (rel. Apr. 17, 2018) (“*NPRM*”).

² Comments of EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC, IB Docket No. 18-86, at 6-8 (Jul. 9, 2018) (“EchoStar/Hughes Comments”).

³ *NPRM* ¶ 26.

the public. Viasat believes that communications between small satellites and other satellites will be a particularly important part of this story. Indeed, the satellite-to-satellite links contemplated by the *NPRM* (connecting small satellites and geostationary orbit (“GSO”) satellites) would increase spectrum efficiency by enabling new types of nongeostationary orbit (“NGSO”) connectivity and allowing the real-time offloading of data-intensive traffic that can be carried more efficiently to and from Earth over GSO systems (operating in existing allocations) with inherently greater available throughput.

Yet EchoStar and Hughes seek to stifle that potential by unnecessarily constraining the spectrum that would otherwise be available for such communications. EchoStar and Hughes first assert, without foundation or support, that “[t]he Commission should not permit [inter-satellite links (ISLs)] to operate in spectrum that is not allocated for Inter-Satellite Service (ISS) use.”⁴ This position is flatly inconsistent with decades of Commission policy—including Section 25.279 of the Commission’s rules, which explicitly provides that the availability of the inter-satellite service for inter-satellite links “*does not preclude the use of other frequencies for such purposes as provided for in several service definitions, e.g., FSS.*”⁵

Stated differently, and as Viasat has explained previously, “inter-satellite links” (or, more generically, “satellite-to-satellite links”—a term that avoids any suggestion that such links must be operated within the inter-satellite *service*) can be operated within the FSS instead of the ISS, depending on the frequency band chosen. Notably, Sections 2.1 and 25.103 of the Commission’s rules explicitly define the FSS to include satellite-to-satellite links,⁶ and ITU Radio Regulation

⁴ EchoStar/Hughes Comments at 6.

⁵ 47 C.F.R. § 25.279(a) (emphasis added).

⁶ 47 C.F.R. §§ 2.1 and 25.103.

1.21 does the same at the international level.⁷ In short, it is absolutely clear that satellites—including small satellites—can operate satellite-to-satellite links (or “inter-satellite links” in the parlance of Hughes and EchoStar) within existing domestic and international frequency allocations for the FSS.

EchoStar and Hughes next suggest that satellite-to-satellite links should not be permitted to operate in the FSS unless a parenthetical to the relevant allocation description in the Table of Frequency Allocations specifies “space-to-space” communications.⁸ As Viasat has noted previously, such parentheticals are properly understood to refer to the *direction* of permissible communications—in the words of the *NPRM*, each such parenthetical describes a “directional limitation.”⁹ Thus, satellite-to-satellite transmissions are fully consistent with the relevant FSS allocation as long as they “point” in the direction suggested by the relevant parenthetical (*i.e.*, away from the Earth and toward outer space in the case of an “Earth-to-space” allocation, and away from outer space and toward the Earth in the case of a “space-to-Earth” allocation).¹⁰ Notably, other aspects of the Commission’s rules operate in similar fashion—*e.g.*, many technical limits are based on the *direction* of contemplated transmissions, as opposed to the

⁷ ITU RR 1.21.

⁸ EchoStar/Hughes Comments at 7.

⁹ *See NPRM* ¶ 70.

¹⁰ As sole support of their contrary position, EchoStar and Hughes cite a broad statement in the *NPRM* in which the Commission tentatively suggests that “inter-satellite communications” would not be consistent with an allocation for FSS that is “limited by parenthetical to the space-to-Earth direction” *See id.* Viasat respectfully disagrees with this statement for the reasons set forth herein. In any event, it is telling that the *NPRM* also tentatively concludes that it would be desirable for the Commission to facilitate additional “inter-satellite communications,” including through potential adjustments to applicable allocations to the extent necessary. *See id.* ¶ 72.

location of end points.¹¹ Importantly, satellite-to-satellite communications that are consistent with the “directionality” of the relevant FSS allocation are unlikely to pose any threat of harmful interference because the lower-altitude satellite effectively acts as an earth station on an airplane would.¹²

Finally, EchoStar and Hughes suggest that inter-satellite links should not be permitted to operate in additional bands “until the proper study is undertaken at the ITU.”¹³ EchoStar and Hughes characterize the completion of such studies as “standard procedure” before allocations are changed in the United States. But this line of argument is inapposite; as discussed above, satellite-to-satellite communications are entirely consistent with the *existing* definition of the FSS, and thus with *existing* allocations for the FSS. As such, there is absolutely no need for the unduly conservative, dilatory steps suggested by EchoStar and Hughes with respect to satellite-to-satellite links.

Furthermore, the Commission frequently alters domestic allocations in ways that may be inconsistent with allocations at the international level. The case for doing so (if it were necessary) would be particularly compelling here given strong record evidence suggesting that satellite-to-satellite operations would *not* pose any risk of interference into GSO operations where one satellite operates in a manner similar to an earth station on an airplane. Notably, in previous filings Viasat has demonstrated that orbiting NGSO FSS spacecraft would be able to communicate with higher-altitude GSO FSS spacecraft without posing any risk of interference

¹¹ See, e.g., 47 C.F.R. § 25.202 (specifying EPFD limits for the space-to-Earth and Earth-to-space directions).

¹² See, e.g., Consolidated Opposition and Reply Comments of Viasat, Inc., IBFS File No. SAT-PDR-20161115-00120, at Exh. A (July 7, 2017).

¹³ EchoStar/Hughes Comments at 7.

into other satellite operations.¹⁴ The same analysis can be extended to demonstrate the viability of the small satellite concept and satellite-to-satellite links involving such satellites. As such, the case for expeditious action in this proceeding is even more compelling than that presented in other proceedings in which the Commission permitted innovative satellite operations without fully resolving broad technical questions relevant to such operations.¹⁵ In contrast, EchoStar and Hughes have submitted *no* evidence whatsoever to suggest that satellite-to-satellite links would pose any risk of interference whatsoever.

For the reasons set forth herein, Viasat urges the Commission to ensure that its small satellite rules and policies harness, rather than stifle, the use of satellite-to-satellite links.

Respectfully submitted,

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¹⁴ See n.12, *supra*.

¹⁵ See, e.g., *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, 32 FCC Rcd 7809, at ¶ 35 (2017) (adopting ITU EPFD limits in the 17.8-30 GHz frequency range while acknowledging that such limits may not be appropriate for “most advanced modern GSO networks”); *WorldVu Satellites Limited*, 32 FCC Rcd 5366, at ¶¶ 11-12 (2017) (authorizing OneWeb’s NGSO network prior to the resolution of sharing issues in the then-pending NGSO Rulemaking proceeding).