



February 11, 2019

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Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: *Hughes, File Nos. SAT-LOA-20170621-00092 & SAT-AMD-20170908-00128; Viasat, File Nos. SAT-PDR-20161115-00120 & SAT-APL-20180927-00076; Boeing, File Nos. SAT-LOA-20170301-00028, SAT-AMD-20170929-00137, & SAT-AMD-20180131-00013*

Dear Ms. Dortch:

Pursuant to 47 C.F.R. § 1.1206, Hughes Network Systems, LLC (together with its affiliates, “Hughes”) submits this *ex parte* letter summarizing its *ex parte* meeting on February 7, 2019, regarding the above-captioned proceedings. Present at the meeting on behalf of Hughes were Jennifer A. Manner, Senior Vice President, Regulatory Affairs; Brennan Price, Senior Principal Engineer, Regulatory Affairs; and Fernando Carrillo, Senior Principal Engineer, Regulatory Affairs, along with outside counsel Lynne Montgomery. Also present were the following International Bureau, Satellite Division staff: Jose Albuquerque, Karl Kensinger, Kerry Murray, Stephen Duall, Paul Blais, Kal Krautkramer, Joseph Hill, Alan Thomas, and Jennifer Balatan. At the meeting, Hughes discussed the points set forth in the attached presentation. In addition to the points raised in the presentation, Hughes raised two additional points regarding the operation of inter-satellite links (“ISLs”) in frequency bands allocated for the Fixed Satellite Service (“FSS”). Hughes emphasized the difference between the operations of the ISLs proposed by Viasat and Boeing and Earth Stations in Motion.¹ Hughes also suggested that the Commission complete a rulemaking establishing rules for ISLs operating in frequency bands allocated for Fixed Satellite Service prior to authorizing such operations.

¹ See e.g., Letter from Jennifer A. Manner and Brennan T. Price, Hughes Network Systems, LLC, to Marlene H. Dortch, Secretary, FCC, IBFS File Nos. SAT-PDR-20161115-00120 & SAT-APL-20180927-00076); *Streamlined Licensing Procedures for Small Satellites*, IB Dkt. No. 18-86 (Oct. 11, 2018).

Please direct any questions regarding this matter to the undersigned.

Respectfully submitted,

/s/ Jennifer A. Manner
Jennifer A. Manner
Senior Vice President, Regulatory Affairs

Attachment

cc: Jose Albuquerque
Karl Kensinger
Stephen Duall
Paul Blais
Kerry Murray
Kal Krautkramer

Joseph Hill
Jennifer Balatan
Alan Thomas
John P. Janka (Counsel to Viasat, Inc.)
Bruce Olcott (Counsel to The Boeing Company)



FCC ACTIONS ESSENTIAL FOR DEPLOYMENT OF NEW JUPITER 3 SATELLITE SYSTEM AND FOR INTERFERENCE PROTECTION FROM PROPOSED NGSO/ISL OPERATIONS

(Hughes, File Nos. SAT-LOA-20170621-00092 & SAT-AMD-20170908-00128; Viasat, File Nos. SAT-PDR-20161115-00120 & SAT-APL-20180927-00076; Boeing, File Nos. SAT-LOA-20170301-00028, SAT-AMD-20170929-00137, & SAT-AMD-20180131-00013)

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Hughes Is Seeking to Modify Its Jupiter 3 (“J3”) Space Station License and Marking Corresponding Amendments to Its J3 Gateway Applications; The FCC Should Act Expeditiously on these requests and Hughes’ Pending Request for Use of the 50.4-51.4 GHz (50 GHz) Band

- Hughes is filing an application to modify its J3 authorization to: 1) add spectrum at 28.6-29.1 GHz (Earth-to-space) for FSS feeder uplinks; 2) add spectrum at 18.8-19.3 GHz (space-to-Earth) for FSS downlinks to user terminals in the United States; and 3) to provide an updated description of the orbital debris mitigation plan.
- Although prior application filings for J3 indicated that the 40.5-41.0 GHz band will be used for downlinks to gateways only, Hughes is submitting additional technical information to clarify that the spectrum will be used for downlinks to both gateways and user terminals, consistent with the terms of the Commission’s license grant and its allocations rules.
- Hughes is concurrently filing applications to amend its pending gateway earth station applications to: 1) add spectrum at 28.6-29.1 GHz (Earth-to-space) for FSS feeder uplinks; 2) add spectrum at 18.8-19.3 GHz (space-to-Earth) for FSS downlinks to user terminals in the United States.
- J3 will enhance Hughes’s critical role in bridging the digital divide by delivering high-speed broadband satellite services to areas unserved by terrestrial networks. Hughes broadband satellite services, including service currently provided by Jupiter 1 and Jupiter 2 ensure that there are no unserved areas for broadband services across the continental United States, Puerto Rico, the Virgin Islands and southern Alaska.
- J3, and the associated gateway locations are under construction, and J3 is planned to be launched and placed into commercial service in 2021. Hughes needs certainty on both the space station and the gateway authorizations, including frequency bands, as soon as possible. This includes the requested 1 GHz of spectrum at the 50 GHz band which is essential to provide Hughes with sufficient capacity to meet demand. This proposed use of the 50 GHz band is consistent with the FCC’s proposal in its *Spectrum Frontiers* proceeding and no oppositions have been filed.

- Accordingly, the FCC should act expeditiously on the applications and modifications pending, including grant access to the 50 GHz band on the space station and for gateway use.

The Commission Should Dismiss Boeing’s and Viasat’s Requests for Ka- and V-band Inter-satellite Links.

- The FCC’s rules require dismissal of a request for “authority to operate a space station in a frequency band that is not allocated internationally for such operations under the Radio Regulations of the International Telecommunication Union.”² In adopting this rule, the FCC stated that it “will dismiss applications for NGSO-like satellite systems without prejudice as premature [in cases where there is no international frequency allocation].”³ The FCC further noted that “[o]nce there is an international frequency allocation ... [but] before a domestic allocation is adopted,” an applicant may request a waiver of the *domestic* allocations to permit a non-conforming use of spectrum.⁴
- Neither the International Table nor U.S. Table of Frequency Allocations provides any allocation for Viasat’s or Boeing’s proposed inter-satellite link (“ISL”) use of Ka- and V-band spectrum.
- The FCC has found that “ISLs are communication links between in-orbit satellites [and] operate in spectrum *allocated to the inter-satellite service* [“ISS”].”⁵ The FCC has deferred licensing of ISLs when the spectrum is not internationally allocated or otherwise available for ISS use.⁶
- Viasat fails to cite to any FCC precedent finding that ISLs qualify as FSS and may be authorized consistent with an international FSS allocation. Moreover, the FCC has noted in the *Small Satellites* proceeding, “an allocation for FSS may be limited by parenthetical to the space-to-Earth direction. In that instance, inter-satellite communications would *not* be in accordance with the Table of Allocations.”⁷
- Viasat’s argument that inter-satellite transmissions are consistent with an FSS allocation if they merely “point” in the direction suggested by the relevant parenthetical (*e.g.*, space-

² 47 C.F.R. § 25.112(a)(3).

³ See *Amendment of the Commission’s Space Station Licensing Rules and Policies*, 18 FCC Rcd 10760, ¶ 49 (2003).

⁴ See *id.* ¶ 50.

⁵ See *Teledesic*, Order and Authorization, DA 01-229, ¶ 1 n.3 (IB 2001) (emphasis added) (citing International Telecommunication Union (“ITU”) Radio Regulation § 1.22).

⁶ See, *e.g.*, *Teledesic*, 12 FCC Rcd 3154, ¶ 21 (1997).

⁷ See *Streamlining Licensing Procedures for Small Satellites*, Notice of Proposed Rulemaking, FCC 18-44, ¶ 70 (2018) (“*Small Satellites NPRM*”) (emphasis added).

to-Earth),⁸ is a novel interpretation and is contrary to the FCC's own finding that inter-satellite transmissions would be in accordance with an FSS allocation only "[w]here a parenthetical to the FSS allocation specified 'space-to-space' communications."⁹

- Accordingly, in the absence of an international allocation for ISS use of the requested Ka- and V-band spectrum, the FCC lacks authority to waive ITU allocation rules or Section 25.112 to permit non-conforming ISL use, and consequently should dismiss Viasat's and Boeing's requests for use of Ka- and V-band ISLs.

At a Minimum the FCC Should Defer Authorizing Use of Ka- and V-Band FSS Spectrum for ISLs Until Technical Studies Are Completed to Ensure Interference Protection to GSO Operations.

- Use of Ka- and V-band FSS spectrum for ISLs has not been subject to completed technical studies to ensure interference protection to GSO operations. Even though Viasat has submitted a technical analysis purportedly showing no harmful interference, the analysis has not been fully vetted or supported domestically or internationally. Further, Boeing has submitted no such analysis.
- Since the existing allocations are not consistent with the existing FSS definition or FSS allocations, studies are necessary. Specific allocations of frequency bands for use as ISLs are traditionally made by competent World Radiocommunication Conferences ("WRC") based on study contributions and analyses that guarantee the safe use of those frequency bands for such service. If necessary, an agenda item could be proposed at WRC-19 for consideration at WRC-23.
- In any event, Viasat has recognized the importance of protecting GSO operations from harmful interference caused by NGSO systems and has supported conditioning grants of market access on the adoption of suitable aggregate interference limits.¹⁰ As with the concerns over aggregate EPFD limits, the impact of multiple, large-scale NGSO constellations using ISLs to interconnect orbital arcs in FSS Ka-band spectrum has not been sufficiently quantified in order to fashion adequate protections for existing GSO networks. Unlike the concern over aggregate EPFD limits, there are no baseline interference standards to which operators can comport their NGSO-to-GSO FSS Ka-band ISL transmissions. Moreover, no studies have been conducted to determine whether use of FSS Ka-band spectrum for ISLs will contribute to aggregate EPFD limits, further exacerbating the issue for which Viasat has itself demanded action.

⁸ See Reply Comments of Viasat, IB Dkt. No. 18-86, at 3 (Aug. 7, 2018).

⁹ See *Small Satellites NPRM*, ¶ 70.

¹⁰ Reply Comments of ViaSat, IBFS File No. SAT-PDR-20161115-00120, (July 14, 2017).

- Without further analysis being performed and appropriate rules being adopted domestically and internationally, there is a risk that Viasat's and Boeing's proposals could result in harmful interference to other satellite systems (both GSO and NGSO) in the Ka band. It is imperative then that further action on Viasat's NGSO-to-GSO ISL proposal be deferred until standards for antenna pointing accuracy, performance standards, and interference avoidance can be addressed internationally and domestically.
- At a minimum, any grant of Viasat's and Boeing's amended applications should be subject to Viasat and Boeing receiving a "favorable" or "qualified favorable" ITU finding regarding compliance with applicable ITU EPFD limits, as required under Section 25.146(c) of the FCC's rules.

The Commission Should Find That Viasat's Amendment Qualifies as a Major Amendment and Should Be Considered as Newly Filed Outside of the Current Ku/Ka-Band NGSO Processing Round.

- Viasat's proposed use of an additional orbital plane, on its face, results in either a change in orbital locations or an increase in interference potential, thus qualifying as a major amendment under 47 C.F.R. § 25.116(b)(1).
- Contrary to Viasat's assertion, the Commission has not found that an increase in orbital planes categorically qualifies as a change with no increase in interference potential.
- Viasat's technical demonstration and revised calculations demonstrate *increases* in uplink and downlink EPFD levels, thus indicating that the changes will impact the spectrum shared with other satellite systems.
- Contrary to SpaceX's mischaracterization, the FCC did not find in *Orbcomm*,¹¹ that an increase in the number of orbital planes qualifies as a minor amendment. There, the FCC found that Orbcomm's amendments "propose minor frequency changes."¹² The FCC stated that "any discussion of orbit locations is inapposite here, as LEO systems operate in orbital planes,"¹³ but none of Orbcomm's amendments involved an increase in the number of orbital planes, and the FCC did not rule that increasing the number of orbital planes categorically qualifies as a minor amendment.

¹¹ *Orbcomm*, Order and Authorization, 9 FCC Rcd 6476 (1994).

¹² *See id.* ¶ 26.

¹³ *See id.*