

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

In the Matter of)	
)	
Audacy Corporation)	IBFS File No. SAT-LOA-20161115-00117
)	Call Sign S2982
)	
Theia Holdings A, Inc.)	IBFS File No. SAT-AMD-20170301-00029
)	Call Sign S2986
)	
WorldVu Satellites Limited)	IBFS File No. SAT-LOI-20170301-00031
)	Call Sign S2994
)	

CONSOLIDATED COMMENTS OF VIASAT, INC.

ViaSat, Inc. (“ViaSat”) hereby comments on the above-captioned applications, which were filed by Audacy Corporation (“Audacy”), Theia Holdings A, Inc. (“Theia”) and WorldVu Satellites Limited (“OneWeb”) in the pending non-geostationary-satellite orbit (“NGSO”) processing round covering frequencies in the V band (the “Applications”).¹

Each of the Applications seeks authority to operate a NGSO system using the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz band segments (the “Applications”). The current international framework for FSS operations in these band segments requires NGSO systems to protect GSO networks from unacceptable interference, pursuant to Article 22.2 of the ITU’s Radio Regulations. While there are no equivalent power-flux density (“EPFD”) or other limits

¹ See *Satellite Policy Branch Information, Boeing Application Accepted for Filing in Part, IBFS File No. SAT-LOA-20160622-00058, Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz Bands*, Public Notice, DA 16-1244 (rel. Nov. 1, 2016). The Applications were placed on public notice on June 16, 2017, along with ViaSat’s market access application to serve the U.S. using those frequencies. See *Policy Branch Information, Satellite Space Applications Accepted for Filing*, Public Notice, Rept. No. SAT-01245 (rel. June 16, 2017). Other applications in that processing round have not yet been placed on public notice.

for V-band FSS operations—either in the Commission’s rules or internationally—that might provide a different sharing paradigm than that provided by Article 22.2, other parameters for NGSO-GSO coexistence in the V band are being studied for the 2019 World Radio Conference (“WRC-19”). Significantly, the Commission has recognized the need to accommodate both types of satellite networks in the same portions of the radio spectrum and has proposed modifications to its rules that would allow both types of systems to be authorized in the V band before the Commission adopts more specific NGSO-GSO sharing rules.

ViaSat also is an applicant in this processing round. ViaSat currently provides satellite broadband services using a fleet of Ka-band GSO satellites, and is expanding its existing capacity with additional GSO satellites featuring even more advanced capabilities and through different satellite technologies, including through its proposal to implement a new NGSO system, which would use spectrum in the Ka and V bands.² As demand for ViaSat’s satellite broadband technology continues to grow, particularly for bandwidth-intensive applications such as streamed video, and as consumers increasingly demand ubiquitous broadband connectivity, V-band spectrum has become a critical resource for expanding services to meet consumer needs.³ Thus, ViaSat anticipates utilizing V-band spectrum in its future systems—both for NGSO and GSO technologies—and other satellite operators have also expressed their expectation that V-band spectrum will be required for the continued growth of satellite capacity.⁴

² See ViaSat, Inc., IBFS File No. SAT-LOI-20161115-00120, Call Sign S2985 (filed Nov. 15, 2016).

³ See, e.g., Comments of ViaSat, Inc., GN Docket No. 14-177, *et al.*, at 3 (filed Sept. 30, 2016); Reply Comments of ViaSat, Inc., GN Docket No. 14-177, *et al.*, at 3 (filed Oct. 31, 2016).

⁴ See, e.g., Comments of the Satellite Industry Association, GN Docket No. 14-177, *et al.*, at 6 (filed Oct. 3, 2016); Comments of The Boeing Company, GN Docket No. 14-177, *et al.*, at 5

ViaSat urges the Commission to ensure that any grant of an Application, or of any other NGSO application in this processing round, does not preclude or impede deployment of GSO systems in the V band. Facilitating deployment of both NGSO and GSO systems in the V band would ensure efficient and intensive use of scarce satellite spectrum resources. Further, ViaSat requests that any grant of an Application, or of any other NGSO application in this processing round, be explicitly conditioned upon the outcome of the pending NGSO rulemaking proceeding, and any future proceeding that may specifically address V-band NGSO operations or sharing issues, in order to ensure that the authorized NGSO systems can coexist with future GSO systems, as well as with any future NGSO systems.

I. BACKGROUND

In their respective Applications, each of Audacy, Theia and OneWeb seeks authority to operate a NGSO system in the 37.5-42 GHz, 47.2-50.2 GHz and 50.4-51.4 GHz band segments, in addition to other spectrum. Section 25.156(d)(5) of the Commission's rules provides that where the Commission has not yet adopted band-specific satellite service rules—which is the case in the V-band frequencies at issue here—the Commission will not consider an application seeking authority to operate a NGSO-like satellite network after it has granted an application for GSO-like operations in the same band segment, unless and until the Commission establishes NGSO-GSO sharing criteria for that frequency band segment, or vice versa.⁵ Under this rule, priority would be established for the type of service (GSO-like or NGSO-like) that is filed first.⁶ The Commission has previously granted GSO authorizations in portions of these bands; thus, the

(filed Sept. 30, 2016); Comments of the Global VSAT Forum, GN Docket No. 14-177, *et al.*, at 3 (filed Sept. 30, 2016).

⁵ 47 C.F.R. § 25.156(d)(5).

⁶ *See Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order, 18 FCC Rcd 10760, at ¶ 58 (2003).

restriction on NGSO applications potentially applies. Accordingly, each of the applicants seeks a waiver of this restriction out of an abundance of caution, and indicates that it intends to coordinate or take other measures to coexist with future GSO systems.⁷

Notably, the Commission has proposed to delete this restriction in its pending rulemaking proceeding where it is considering the licensing framework for new NGSO FSS technologies that have been proposed in the currently pending Ka and V band processing rounds.⁸ The Commission's proposed revision of the underlying rule recognizes the need to accommodate both NGSO and GSO systems and would allow both types of systems to continue to be licensed in bands where the Commission has not yet adopted specific service rules. In addition, the Commission proposes as a default sharing rule a provision similar to Article 22.2 of the ITU Radio Regulations, under which NGSO systems "must not cause unacceptable interference to, and must not claim protection from, GSO FSS networks."⁹

The *NGSO NPRM* also proposes other licensing and service rules for NGSO systems, including rules to facilitate sharing among NGSO systems operating on a co-frequency basis. Although the *NGSO NPRM* does not address EPFD limits that might be appropriate for the V band, aspects of the *NGSO NPRM* dealing with NGSO-NGSO sharing, including avoidance of

⁷ See Audacy Corporation, IBFS File No. SAT-LOA-20161115-00117, Call Sign S2982, Application at 45, 68, 70 (filed Nov. 15, 2016); Theia Holdings A., Inc., IBFS File No. SAT-AMD-20170301-00029, Call Sign S2986, Application Amendment at 19-20 and Technical Narrative at 18 (filed Mar. 1, 2017); WorldVu Satellites Limited, IBFS File No. SAT-LOI-20170301-00031, Call Sign S2994, Petition for Declaratory Ruling at 26 and Attachment A Technical Information to Supplement Schedule S at 35 (filed Mar. 1, 2017).

⁸ See *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, IB Docket No. 16-408, Notice of Proposed Rulemaking, FCC 16-170, at ¶ 21 (Dec. 14, 2016) ("*NGSO NPRM*").

⁹ *Id.*; see also ITU Rad. Reg. Art. 22.2 (WRC-07).

in-line events, as well as modified milestones and geographic coverage requirements, could potentially apply to the V band.

II. ANY GRANT OF AN APPLICATION SHOULD BE CONDITIONED UPON A REQUIREMENT TO ADEQUATELY PROTECT GSO NETWORKS

ViaSat urges the Commission to ensure that future licensing and operation of GSO networks in the V band would not be adversely affected by the NGSO systems that may be authorized in this processing round. Given the scarcity of spectrum resources, and the exploding demand for broadband services, efficient and intensive use of spectrum is critical. Enabling coexistence between NGSO and GSO technologies in the V band would promote these goals.

Significantly, the Commission has tentatively concluded in the *NGSO NPRM* that there is no need to defer licensing of GSO or NGSO systems in the V band until band-specific service rules are adopted,¹⁰ and ViaSat agrees that it is feasible for NGSO and GSO systems to operate compatibility. Indeed, under the existing international framework, Article 22.2 of the ITU Radio Regulations already applies in the V band and requires that NGSO systems not cause unacceptable interference to, or claim protection from, GSO systems. Under this framework, NGSO systems need to be coordinated with GSO networks unless and until the ITU adopts EPFD limits at WRC-19 that provide different sharing parameters. By way of example, modulating unwanted energy emitted in the direction of GSO networks, and/or maintaining adequate angular isolation, are ways such sharing could be accomplished during coordination.

Going forward, appropriate single-entry and aggregate EPFD limits, in both the uplink and downlink directions, also could be an effective means to protect GSO systems in the V band. While no such limits currently exist, either in the Commission's rules or internationally, EPFD

¹⁰ See *NGSO NPRM* at ¶ 21.

limits are being studied at the ITU for certain portions of the V band, as part of WRC-19 preparations. Such limits could serve as the basis for U.S. rules in a future proceeding. That said, any such EPFD limits should include both single-entry and aggregate limits in each of the uplink and downlink directions, and should include a suitable mechanism for enforcement and ensuring compliance.

Pending the Commission's adoption of appropriate limits to afford adequate protection to GSO systems in the V band, ViaSat urges the Commission to condition the grant of the Applications, and any other NGSO systems authorized in this processing round, on compliance with Article 22.2 and the results of international coordination. In addition, as discussed below, the grants should be subject to the outcome of the *NGSO NPRM* proceeding and any future proceeding in which the Commission may adopt specific service or other sharing rules for the V band.

III. ANY GRANT OF AN APPLICATION SHOULD BE SUBJECT TO THE OUTCOME OF THE PENDING NGSO RULEMAKING AND ANY FUTURE PROCEEDING REGARDING V-BAND NGSO OPERATIONS

Although much of the focus of the *NGSO NPRM* is on Ka-band NGSO service rules, the Commission initiated the proceeding to address more broadly the “new generation of NGSO FSS systems [that] have emerged and initiated the international coordination process for constellations of hundreds or thousands of satellites,” including Boeing's V-band NGSO application, which is the lead application in the V-band processing round.¹¹ Therefore, in addition to the issue of NGSO-GSO sharing discussed above, the outcome of the rulemaking proceeding would potentially apply to V-band NGSO-NGSO sharing, including those that are the subject of the Applications.

¹¹ *Id.* at ¶ 3.

For instance, certain aspects of the *NGSO NPRM* deal with sharing among co-frequency NGSO systems. The Commission seeks comment on whether the proposed avoidance of in-line interference mechanism should apply in frequency bands other than the Ku and Ka bands.¹² In addition, its proposals regarding milestone and geographic coverage requirements are not limited to any particular frequency band.

ViaSat does not take a position in these comments on the feasibility of allowing co-frequency operations among multiple NGSO systems in the V band using the in-line avoidance mechanism proposed in the pending NGSO rulemaking proceeding. Instead, ViaSat requests that the Commission condition any grant of an Application, or any other application in this processing round, on the outcome of the NGSO rulemaking proceeding.

As noted above, the NGSO rulemaking proceeding does not address any EIRP limits for V-band NGSO operations, and technical studies are underway at the ITU to develop such limits. Once suitable limits are established internationally (including aggregate limits in all directions and suitable enforcement mechanisms), the Commission may consider in the future whether specific EIRP limits for V band should be adopted in the United States. Therefore, any grant of an Application, or any other application in this processing round, should also be conditioned upon a requirement to comply with any technical rules that the Commission may adopt for V-band NGSO operations in a future rulemaking proceeding.

IV. CONCLUSION

For the reasons provided above, ViaSat urges the Commission to ensure that any grant of an Application, or any other NGSO applications in this processing round, is conditioned upon compliance with Article 22.2 of the ITU's Radio Regulations. Until different sharing criteria for

¹² *Id.* at ¶ 23.

the V band are developed and adopted by the Commission, NGSO systems should be required to protect GSO systems from unacceptable interference and should not be allowed to claim protection from GSO systems, all subject to the results of coordination. Such a condition would ensure that any NGSO systems authorized do not impede the deployment of GSO systems in the V band. In addition, ViaSat respectfully requests that any grant of an application in this processing round be explicitly conditioned upon the outcome of the pending NGSO rulemaking proceeding, and any future proceeding that may specifically address V-band NGSO operations, in order to ensure that the authorized NGSO systems can coexist with future GSO systems, as well as with other NGSO systems that may be approved in this processing round.

Respectfully submitted,

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July 17, 2017

CERTIFICATE OF SERVICE

I, Kayla Ernst, hereby certify that on this 17th day of July, 2017, I served a true copy of the foregoing Consolidated Comments of ViaSat, Inc. via first-class mail upon the following:

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