Description of Application

In this application, Viasat seeks authority to operate a 1.8 meter individually licensed earth station located in Leeds, AL. This earth station will operate in the fixed-satellite service ("FSS") in the 17.7-18.3 GHz and 27.5-28.35 GHz band segments, and will communicate with the ViaSat-3 satellite at 88.9º W.L. Grant of this application is in the public interest because it will allow the deployment of an earth station that will serve as an interconnection point for the ViaSat-3 network (which the Commission has already authorized to serve the United States and thus found to be in the public interest).

I. COMPATIBILITY WITH CO-FREQUENCY OPERATIONS

The proposed operations are compatible with co-frequency operations—including adjacent geostationary orbit ("GSO") systems, Upper Microwave Flexible Use Service ("UMFUS") operations, fixed service operations, and broadcasting-satellite service ("BSS") feeder link Earth-to-space transmissions.[1]

A. GSO Operations

In seeking authority for the ViaSat-3 satellite, Viasat demonstrated two-degree compatibility in the 17.7-18.3 GHz and 27.5-28.35 GHz band segments.[2]

The antenna gain patterns with the Section 25.209 limits superimposed are included as Exhibit B. The proposed 1.8 meter earth station complies with the antenna performance standards in Sections 25.209(a) and (b) for all off-axis angles out to ±155 degrees.

Recognizing that backlobes are not directed toward adjacent satellites, the Commission has relaxed the limits at off-axis angles in the ±155-180 range in the conventional FSS frequency bands, including the 28.35-30 GHz band segment.[3] Moreover, the Commission has proposed to extend the Section 25.209(a)(3) antenna gain limits and the Section 25.218 off-axis EIRP density envelope that currently apply to the 28.35-30 GHz band segment to the 27.5-28.35 GHz band segment.[4] The proposed earth station complies with the Section 25.209(a)(3) limits, as well as

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[1] NGSO systems in the 27.5-28.35 GHz band segment operate on an unprotected, non-interference basis with respect to GSO FSS. *See Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, 32 FCC Rcd 7809, at ¶ 23 (2017). In the 17.7-18.3 GHz band segments, NGSO systems may not claim interference protection from the GSO FSS. *See* 47 C.F.R. § 25.289.

[2] Viasat, Inc., IBFS File No. SAT-MOD-20190617-00047, Call Sign S2917, Attachment A, at 7-8 (granted May 28, 2020) ("ViaSat-3 Technical Attachment").

[3] *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, Second Report and Order, 30 FCC Rcd 14713, at ¶ 157 (2015); *see also* 47 C.F.R. § 25.209(a)(3).

[4] *Amendment of Parts 2 and 25 of the Commission's Rules to Enable GSO Fixed-Satellite Service (Space-to-Earth) Operations in the 17.3-18.8 GHz Band, to Modernize Certain Rules*

the Section 25.218 off-axis EIRP density envelope. In the ±155-180 range, gain patterns exceed the Section 25.209(a)(1) limits that the Commission has proposed to relax in the 27.5-28.35 GHz band segment and conform with those of Section 25.209(a)(3).[5] Notably, at the operating elevation angle of this earth station, these backlobes are directed into the ground and thus will not have any impact on adjacent GSO[6] or terrestrial operations.[7]

Therefore, Viasat's proposed earth station operations would be compatible with a two-degree-spaced environment

B. UMFUS

Viasat will operate the earth station in the 27.5-28.35 GHz band segment consistent with the provisions of Section 25.136 regarding compatibility with UMFUS operations. Specifically, the proposed earth station meets the criteria for protection under Section 25.136(a)(4). The attached Technical Analysis in Exhibit A details the earth station's compliance with these criteria. Therefore, the earth station qualifies to operate without providing interference protection to any UMFUS stations.

C. Fixed Service and BSS

The 17.7-18.3 GHz band segment is allocated on a primary basis for fixed services. The 17.8-18.3 GHz portion of this band segment is allocated for FSS on a secondary basis with respect to fixed services. The 17.7-17.8 GHz portion of the band segment is allocated to FSS on a co-primary basis, but this FSS allocation is limited by footnote US271 to broadcasting-satellite service ("BSS") feeder links in the Earth-to-space direction.[8]

In seeking market access for ViaSat-3, Viasat demonstrated that its FSS downlinks in the 17.7-18.3 GHz band segment are compatible with primary fixed service operations and neighboring BSS operations.[9] More specifically, Viasat demonstrated that downlink transmissions from ViaSat-3 will be within the power-flux density limits at the earth's surface set forth in Article 21 of the ITU Radio Regulations and would not cause harmful interference into

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Applicable to 17/24 GHz BSS Space Stations, and to Establish Off-Axis Uplink Power Limits for Extended Ka-Band FSS Operations, Notice of Proposed Rulemaking, 35 FCC Rcd 13239, at ¶ 64 (2020) ("*2020 Part 25 NPRM*").

[5] *See* Viasat, Inc., IBFS File No. SES-LIC-20200811-00852, Call Sign E202143, Narrative, at 1 & Declaration (filed Aug. 11, 2020).

[6] *See* n.3, *supra*.

[7] Viasat requests a waiver of Section 25.209(a)(3) to the extent necessary. There is "good cause" for such waiver as it would facilitate ViaSat-3 operations without posing any risk of harmful interference (as noted above, any exceedances in the relevant angular region point toward the ground).

[8] *See* 47 C.F.R. § 2.106 n.US271.

[9] *See* ViaSat-3 Technical Attachment at 13-16.

primary fixed service operations throughout the 17.7-18.3 GHz band segment.[10] In addition, the half-power beam width of the subject earth station in the 17.8-18.3 GHz band is 0.57 degrees.[11]

Because the 17.7-17.8 GHz band segment is not allocated for the FSS downlinks proposed in the application, Viasat requests a waiver of the U.S. Table to the extent necessary to permit communications in this band segment on a non-conforming basis.[12] Viasat notes that the Commission has sought comment on a proposal to adopt an allocation for GSO FSS (space-to-Earth) in the 17.7-17.8 GHz band on a secondary basis with respect to fixed services,[13] and requests authority to operate in this band consistent with any allocation that the Commission may adopt for GSO FSS in that proceeding.

II. RADIATION HAZARD ANALYSIS

A radiation hazard analysis for the proposed antenna is attached hereto as Exhibit D. As demonstrated in Exhibit D, the general population will not be exposed to RF levels in excess of the Commission's standard, and the antenna does not present a risk to trained personnel in the controlled area in the immediate vicinity of the antenna.

III. FAA NOTIFICATION

The proposed 1.8 meter antenna is exempt from notification to the FAA under Section 17.7(e)(3) of the Commission's rules because the height of the antenna is less than 6.1 meters above ground level.

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[10] *See id.* at 6-7.

[11] *See* 47 C.F.R. § 25.115(a)(9).

[12] The Commission granted a similar waiver in authorizing ViaSat-3 after Viasat demonstrated that the ViaSat-3 downlinks at 17.7-17.8 GHz would not cause harmful interference into primary fixed service operations or neighboring BSS spacecraft. There is "good cause" for a corresponding waiver to allow the earth station at issue here to *receive* those same downlinks, as such waiver would have no impact on the authorized RF environment and otherwise would be consistent with the Commission's prior decision. *See* 47 C.F.R. § 1.3; *Fugro-Chance, Inc.*, 10 FCC Rcd 2860, at ¶ 2 (1995) (waiver of U.S. Table appropriate "when there is little potential for interference" into conforming services and "the non-conforming operator accepts any interference from [such] services").

[13] *See 2020 Part 25 NPRM* at ¶ 20.