

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

In the Matter of)	
)	
Amendment of Parts 2 and 25 of the)	
Commission's Rules to Facilitate the Use)	
of Earth Stations in Motion)	IB Docket No. 17-95
Communicating with Geostationary Orbit)	
Space Stations in Frequency Bands)	
Allocated to the Fixed Satellite Service)	
)	

COMMENTS TO FURTHER NOTICE OF VIASAT, INC.

Viasat, Inc. ("Viasat") submits these comments in support of the proposals in the Further Notice of Proposed Rulemaking in the above-captioned proceeding to allow the operation of earth stations in motion ("ESIMs") with geostationary orbit ("GSO") satellites operating in the fixed-satellite service ("FSS") in all of the frequency bands in which GSO FSS earth stations at fixed locations can be blanket licensed.¹

Viasat applauds the Commission's recent actions aimed at facilitating and expediting the deployment of ESIMs, which will enable satellite operators to meet the growing consumer demands for satellite broadband services while on the move.² Most notably, the Commission's adoption of rules in the *Report and Order* in this proceeding, allowing GSO FSS ESIMs to

¹ *Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed Satellite Service*, IB Docket No. 17-95, Report and Order and Further Notice of Proposed Rulemaking, FCC 18-138 ¶ 91 (rel. Sept. 27, 2018) ("*Report and Order*" or "*Further Notice*").

² See generally *Report and Order*; see also *Facilitating the Communications of Earth Stations in Motion with Non-Geostationary Orbit Space Stations*, IB Docket No. 18-315, Notice of Proposed Rulemaking, FCC 18-160 (rel. Nov. 16, 2018) ("*NGSO ESIM NPRM*").

operate in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz and 29.25-30 GHz portions of the Ka band, promises to expedite consumer access to mobile applications of satellite broadband services technologies. In addition, the *Report and Order* was accompanied by the *Further Notice*, which seeks to expand the GSO ESIM rules to allow operations in: (i) the 18.8-19.3 GHz and 28.6-29.1 GHz bands on a secondary basis with respect to NGSO FSS systems; (ii) the 17.8-18.3 GHz on a secondary basis with respect to terrestrial fixed services (“FS”); (iii) the 19.3-19.4 GHz and 19.6-19.7 GHz bands on a co-primary basis with FS; and (iv) the 10.7-10.95 GHz and 11.2-11.45 GHz bands on a unprotected basis with respect to FS.

Viasat has made significant advances in the provision of satellite broadband services, including revolutionary Ka band satellite technologies that have made it possible to provide high-speed broadband connections that are comparable to what consumers have come to expect for terrestrial broadband services. Viasat’s aeronautical mobile applications of this satellite technology deliver Wi-Fi connectivity on airplanes that supports video streaming and downloads—currently the highest demanded consumer services. Today, Viasat supports over 100 million connections on airplanes annually. This number is growing fast with the introduction of satellite-powered Wi-Fi on additional aircraft and increasing adoption by passengers and crew members for gate-to-gate connectivity. Viasat also is developing additional mobile applications to provide this same Wi-Fi connectivity to emergency response vehicles, as well as other motor vehicles, trains, and ships.

Critically, satellite networks require access to additional spectrum to satisfy growing consumer demand for broadband services, as well as the higher speeds and throughput necessary to accommodate high-bandwidth applications, including video streaming, by multiple devices. In response to these increasing capacity needs, the Commission has expanded satellite access,

including blanket licensing, to allow flexible use of the portions of the Ka band identified in the *Further Notice*, in which the Commission has recognized that GSO FSS operations are compatible with NGSO FSS and terrestrial fixed services.³ The Commission now seeks to open these bands for ESIM operations—both in GSO FSS networks in this proceeding, and NGSO FSS networks in a separate proceeding.⁴

Viasat fully supports the Commission’s proposals in the *Further Notice* to expand access by ESIMs into these bands as an application of the FSS. It is well-established that ESIMs can perform within the same technical envelope as fixed earth stations through highly accurate antenna pointing mechanisms and compliance with appropriate power limits. In the *Report and Order*, the Commission allowed GSO ESIM operations in the Ka band based on their ability to operate without introducing a material change to the interference environment within which fixed earth stations already operate.⁵ Therefore, in the 18.8-19.3 GHz and 28.6-29.1 GHz bands, where the Commission has determined that the GSO FSS successfully can operate on a secondary basis to the NGSO FSS,⁶ adding ESIMs would not change this conclusion.

Furthermore, for the frequency bands in which ESIMs are proposed to operate alongside fixed services and in which ESIMs would only be *receiving* transmissions from GSO FSS satellites (*i.e.*, in the space-to-Earth direction)—10.7-10.95 GHz, 11.2-11.45 GHz, 17.8-18.3 GHz, 19.3-19.4 GHz and 19.6-19.7 GHz—it makes little difference whether the receiving earth

³ See *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order, 32 FCC Rcd 7809 ¶¶ 7, 14, 21, 25 (2017) (“*NGSO Order*”).

⁴ See *NGSO ESIM NPRM* at ¶¶ 10-13. In the frequency bands addressed in the *Further Notice* that are allocated for FSS and FS, the Commission proposes that NGSO FSS ESIM operations be required to protect GSO FSS operations in these bands.

⁵ See *Report and Order* at ¶ 51 & n.118; *id.* at ¶ 66.

⁶ See *NGSO Order* at ¶ 14.

station is fixed or mobile. Satellite downlinks that comply with the applicable power-flux density limits at the earth's surface established to protect terrestrial services would not cause harmful interference into primary fixed service operations throughout these bands. In addition, an earth station in motion will by its nature move away from any terrestrial interference source, so any interference that is seen will be short term.

In the *Further Notice*, the Commission asks whether widely deployed ESIMs receiving in these frequency bands can avoid interference from widely deployed FS, and whether customers would be impacted by interference from FS into FSS earth stations not entitled to protection.⁷ All earth stations within Viasat's networks, including ESIMs, are capable of dynamically changing frequencies as needed to avoid interference. When a particular earth station experiences interference or a loss of signal, it is switched to receive frequencies designated on a primary basis to GSO FSS operations. Therefore, interference from co-frequency operations is substantially mitigated. Moreover, as noted above, ESIMs by definition are transient, and any potential interference from FS operations in these bands would be fleeting. Because this potential for interference can be effectively managed, allowing ESIMs to utilize these frequencies significantly expands satellite network capacity, thereby improving service to customers.

Finally, the Commission seeks comment on any possible effects that expanding the frequencies available to ESIMs communicating with GSO FSS satellite networks may have on other services in these bands or adjacent frequency bands in the United States.⁸ As discussed above, GSO ESIM operations would be capable of coexisting with other authorized services in

⁷ *Further Notice* at ¶ 91.

⁸ *Id.*

each of the bands identified in the *Further Notice*. With respect to any adjacent frequency bands, the Commission has already concluded in this proceeding that operations in any adjacent bands would be protected by the existing out-of-band emission limits that already apply to any earth stations operating with GSO FSS systems, whether fixed or mobile.⁹

Therefore, allowing GSO ESIMs to operate under the conditions discussed above in the band segments identified in the *Further Notice* would ensure that scarce spectrum resources in the United States are used to the fullest extent possible and would further the advancement of broadband solutions to enable ubiquitous connectivity through mobile applications.

For the foregoing reasons, Viasat supports the Commission's proposals to expand its GSO ESIM rules to allow operations in each of the bands identified in the *Further Notice*. Expanding the GSO ESIM rules to include these bands would ensure that satellite operators have access to additional spectrum to satisfy the growing demand for mobile broadband connectivity. Therefore, Viasat urges the Commission to adopt the proposals in the *Further Notice*.

Respectfully submitted,

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⁹ See *Report and Order* at ¶ 62.