

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Facilitating the Communications of Earth Stations)	IB Docket No. 18-315
in Motion with Non-Geostationary Orbit Space)	
Stations)	
)	

**COMMENTS OF ECHOSTAR SATELLITE OPERATING CORPORATION AND
HUGHES NETWORK SYSTEMS, LLC**

I. INTRODUCTION

EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC (“Hughes”) (together with their affiliates, “EchoStar”) submit these comments in the above-captioned proceeding in response to the Federal Communications Commission’s (“Commission”) Notice of Proposed Rulemaking to expand the scope of the Commission’s rules to permit Earth Stations in Motion (“ESIMs”) to communicate with non-geostationary orbit (“NGSO”) satellites operating in the fixed-satellite service (“FSS”).¹

With its fleet of predominantly U.S.-licensed satellites and U.S.-based ground network facilities, EchoStar is the largest U.S.—and fourth largest worldwide—commercial geostationary orbit (“GSO”) satellite operator providing broadband, video, and other services to meet the needs of small and large customers, including internet service providers, media and broadcast organizations, direct-to-home providers, enterprise customers, government service providers, and

¹ See *Facilitating the Communications of Earth Stations in Motion with Non-Geostationary Orbit Space Stations*, Notice of Proposed Rulemaking, FCC 18-160 (rel. Nov. 16, 2018) (“*NGSO ESIMs NPRM*”).

residential consumers in the United States and abroad. Additionally, Hughes is the nation's largest provider of satellite broadband services, with approximately 1.3 million subscribers in the Americas.² Hughes offers Commission-defined broadband speeds of over 25 Mbps down and 3 Mbps up for residential customers, and 55 Mbps down and 5 Mbps up for enterprise users, across the continental United States, southern Alaska and Puerto Rico. In 2018, Hughes obtained Commission authority to launch and operate its next-generation satellite, JUPITER 3, to provide state-of-the-art satellite broadband services to consumers across the United States.³ As the first-of-its-kind ultra-high density satellite, JUPITER 3 is designed to provide two-way internet access throughout the United States at speeds at speeds up to an estimated 100 Mbps down and 10 Mbps up.⁴

An important part of the Hughes broadband business is ensuring that its broadband service reaches mobile consumers. Hughes has deployed Ka-band ESIMs operating with its GSO satellites for more than a decade,⁵ and its technology is currently powering broadband services to aircraft around the world.⁶ ESIM services, such as those that Hughes provides, are increasingly important to

² Press Release, EchoStar, EchoStar Announces Financial Results for Three and Nine Months Ended September 30, 2018 (Nov. 8, 2018), <https://www.echostar.com/Press/Newsandmedia/-EchoStar%20Announces%20Financial%20Results%20for%20Three%20and%20Nine%20Months%20Ended%20September%2030%202018.aspx>.

³ See Hughes Network Systems, LLC Application for Satellite Space Station Authorizations, IBFS File No. SAT-LOA-20170621-00092 (Mar. 20, 2018) (granted in part, deferred in part). The satellite is under construction and planned for launch in 2021.

⁴ See Press Release, EchoStar, Hughes Selects Space Systems Loral to Build Next-Generation Ultra High Density Satellite (Aug. 9, 2017), <http://ir.echostar.com/news-releases/news-release-details/hughes-selects-space-systems-loral-build-next-generation-ultra>.

⁵ HNS License Sub, LLC, IBFS File No. SES-RWL-20170905-00976, Call Sign E020205 (granted Sept. 5, 2017).

⁶ See, e.g., Press Release, Hughes, Hughes Demonstrates High Definition Video Over Satellite from Rotary Wing Aircraft (July 19, 2015), <https://government.hughes.com/who-we-are/resources/press-releases/hughes-demonstrates-high-definition-video-over-satellite-rotary>;

consumers across the United States, as the demand for anytime, anywhere broadband connectivity continues to proliferate. Hughes has forged a partnership with OneWeb, which plans to deploy provide high-speed, low latency service to even the most remote and rural locations with its NGSO constellation.⁷ As the Commission notes, OneWeb’s plans involve the use of ESIMs for the provision of broadband communications to airplanes.⁸ Accordingly, as both a leading GSO network operator and a partner with an NGSO operator launching new ESIM services, Hughes supports the adoption of rules facilitating NGSO ESIM deployment while ensuring sufficient interference protection of incumbent GSO operations.

II. THE COMMISSION SHOULD ALLOW ESIM OPERATIONS WITH NGSO SATELLITES WHILE ENSURING SUFFICIENT INTERFERENCE PROTECTION OF GSO SYSTEMS

Hughes supports the Commission’s proposal to allow ESIM operations with NGSO FSS systems in the following Ku- and Ka-band spectrum on a secondary (*i.e.*, unprotected, non-harmful interference) basis with respect to GSO FSS networks: 11.7-12.2 GHz (space-to-Earth); 14.0-14.5 GHz (Earth-to-space); 18.3-18.6 GHz (space-to-Earth); 19.7-20.2 GHz (space-to-Earth); 28.35-28.6 GHz (Earth-to-space); and 29.5-30.0 GHz (Earth-to-space).⁹ To ensure sufficient interference

Press Release, Hughes, Global Eagle Entertainment and Hughes Expand 10-Year Relationship to Bring High-Throughput Ka-band Connectivity Services to North American Airlines (Mar. 21, 2016), <https://www.hughes.com/who-we-are/resources/press-releases/global-eagle-entertainment-and-hughes-expand-10-year>; Press Release, Thales, Thales and SES Select Hughes for Next-Generation Aviation Connectivity Network to Provide Increased Capacity, Coverage and Redundancy Over the Americas (Mar. 8, 2017), <https://www.thalesgroup.com/en/worldwide/aerospace/press-release/thales-and-ses-select-hughes-next-generation-aviation-connectivity>.

⁷ Press Release, EchoStar, Hughes Ships First Gateways for the Ground Network to Support OneWeb’s Low Earth Orbit Constellation (Mar. 13, 2018), <https://www.echostar.com/Press/Newsandmedia/Hughes%20Ships%20First%20Gateways%20for%20the%20Ground%20Network.aspx>.

⁸ *NGSO ESIM NPRM* ¶ 22.

⁹ *Id.* ¶ 9.

protection of GSO FSS operations in these frequency bands, the Commission should adopt its proposal requiring the following: (i) NGSO FSS earth station compliance with the EPFD requirements as specified under Article 22, Section 11 and Resolution 76 of the ITU Radio Regulations;¹⁰ and, (ii) monitoring and control of each ESIM terminal by a network control and monitoring center that can disable ESIM operations in the event of harmful interference to GSO operations.¹¹ In addition, the Commission should require the cessation or reduction of ESIM emissions to prevent harmful interference to GSO FSS systems.

NGSO ESIM operation in the 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 GHz (Earth-to-space) bands may also be permitted. However, such operation should not be permitted on a primary basis as the Commission proposes,¹² but with a status equal to that of any GSO operation that takes place in the band. To date, the Commission has authorized the use of these bands by GSO FSS systems on a secondary basis, but only with respect to NGSO systems with fixed earth stations.¹³ Hughes has successfully entered into coordination agreements with several NGSO system operators to utilize these frequency bands in its GSO satellite networks, with the expectation that coordination would require analysis only of networks with fixed earth stations. Allowing NGSO ESIMs to operate on a primary basis would complicate the ability of GSO licensees to seek coordination agreements with NGSO systems that will allow these bands to be used with maximum efficiency. Therefore, the Commission should permit GSO and NGSO ESIMs to operate on a co-equal basis with each other and on a secondary basis with respect to fixed earth stations communicating with NGSO satellites in

¹⁰ See *id.* Appendix A; 47 C.F.R. §§ 25.146(a)(6), 25.289.

¹¹ *NGSO ESIM NPRM* Appendix A

¹² See *id.* ¶ 10.

¹³ *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 7809, 7814-15, ¶¶ 14-16 (2017).

these bands. Finally, Hughes supports the Commission’s proposal to allow ESIMs to receive signals from NGSO FSS systems on an unprotected basis in the 10.7-11.7 frequency bands, including the 10.7-10.95 GHz and 11.2-11.45 GHz bands.¹⁴

III. CONCLUSION

As the Commission seeks to extend its rules to allow ESIM operators needed flexibility to communicate with NGSO constellations, it is important for the FCC protect the operations of GSO FSS operators. Accordingly, Hughes supports the Commission’s proposal to extend its rules to permit communication between ESIMs and NGSO constellations provided the Commission protects GSO FSS operations from interference as proposed above. By taking these actions, the Commission will protect GSO FSS operations while extending the reach of ESIM operators which will further enable the availability of broadband service anywhere, any time.

Respectfully submitted,

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¹⁴ *NGSO ESIM NPRM* ¶ 11. Although Hughes objected to a SES/O3b proposal to allow ESIMs to receive signals from GSO FSS in the 10.7-10.95 GHz and 11.2-11.45 GHz bands, that objection was on a procedural and not a technical basis. Letter from Jodi Goldberg, Associate Corporate Counsel, EchoStar Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No.17-95, at Att. p. 3 (filed Mar. 8, 2018) (“EchoStar Ex Parte”); *see also 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*, Notice of Proposed Rulemaking, 32 FCC Rcd 4239 (2017) (“*GSO ESIM NPRM*”). Hughes objected to the proposal because the Commission did not propose to permit operations in these bands in the *GSO ESIM NPRM*. EchoStar Ex Parte at Att. p. 3.