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

Re: Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters (IB Docket No. 16-408)

Space Norway AS, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the Arctic Satellite Broadband Mission (IBFS File No. SAT-PDR-20161115-00111)

Dear Ms. Dortch:

Space Norway AS ("Space Norway"), by its attorneys, submits this *ex parte* letter in response to a letter submitted by Space Exploration Technologies Corp. ("SpaceX")¹ in the currently ongoing rulemaking proceeding relating to the rules and policies governing non-

¹ Letter from William M. Wiltshire, Counsel to SpaceX, to Marlene H. Dortch, Secretary, FCC, Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters (IB Docket No. 16-408) (Aug. 17, 2017) (the "SpaceX Letter").

geostationary satellite orbit (“NGSO”), Fixed-Satellite Service (“FSS”) systems.² The SpaceX Letter summarized a meeting that representatives of SpaceX held with the Federal Communications Commission’s (“FCC” or the “Commission”) International Bureau staff on August 15, 2017.

Throughout the NPRM proceeding, Space Norway has consistently supported proposals to enhance the regulatory framework in order to promote a robust and competitive NGSO environment. In this spirit, Space Norway supports SpaceX’s view that the current spectrum sharing regime, based on coordination in good faith among satellite operators, regardless of International Telecommunication Union filing date of receipt, should be applied to all relevant frequency bands. Band segmentation should be the “fallback” solution in those instances where no coordination agreement can be reached regarding in-line events,³ as such a band segmentation requirement will serve as an incentive for satellite operators to reach coordination agreements.

As stated in its comments to the NPRM, Space Norway supports the Commission’s proposal to adapt geostationary-satellite orbit (“GSO”) FSS equivalent isotropically radiated power (“EIRP”) density limits to NGSO FSS uplinks and GSO downlink power limitation and receive antenna gain requirements to NGSO FSS downlinks.⁴

Space Norway opposes the low EIRP density limits proposed by SpaceX, as these low limits would effectively exclude the operation of satellite systems at orbital altitudes above low Earth orbit (“LEO”) in the same frequency bands. Were the Commission to adopt the EIRP density limits proposed by SpaceX, all satellite operators would be forced to design LEO systems similar to that of SpaceX, which would obviously be undesirable, limiting innovation and competition among the various system designs.

Satellite systems operating at higher orbital altitudes naturally require higher uplink EIRP densities than LEO systems, because the distance from the Earth to these satellites is much greater than for LEO systems. With regard to Space Norway’s proposed highly elliptical orbit (“HEO”) system, the Arctic Satellite Broadband Mission (“ASBM”), the distance between user terminals and the ASBM satellites is similar to that between a GSO satellite and its user terminals. The difference in free space loss is around 30 dB between the ASBM system and the SpaceX system. Between the ASBM and a GSO system the difference is less than 2 dB.

HEO systems such as the ASBM operate with power levels similar to GSO systems. Therefore, if LEO systems can co-exist with uplinks in GSO systems, then they should also be capable of co-existing with the other types of satellite systems operating with the same power levels.

² *Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters*, 31 FCC Rcd. 13651 (2016) (“NPRM”).

³ *Id.* at ¶¶ 22-23.

⁴ *See Comments of Space Norway AS*, IB Docket No. 16-408, at 13 (Feb. 27, 2017).

For the foregoing reasons, the Commission should reject the proposal made by SpaceX relating to low EIRP density limits for all NGSO systems.

Respectfully submitted,

/s/ Phillip L. Spector

Phillip L. Spector
Attorney for Space Norway AS

cc: William M. Wiltshire, Attorney for SpaceX