

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of

EOS DEFENSE SYSTEMS USA, INC.

Modification of Authorization for Audacy
NGSO Satellite System

File No. SAT-MOD-20200526-00057
Call Sign S2982

CONSOLIDATED OPPOSITION AND RESPONSE OF
EOS DEFENSE SYSTEMS USA, INC.

No credible policy or technical basis exists for the Federal Communications Commission (“FCC” or “Commission”) to delay the grant of EOS Defense Systems USA, Inc.’s (“EOS”) modification application (“Application”) to its previously authorized non-geostationary satellite-orbit (“NGSO”) Fixed-Satellite Service (“FSS”) system adding supplemental enhanced feeder links and service links.¹ EOS herein addresses the discrete objections raised by Iridium Constellation LLC (“Iridium”), O3b Limited (“O3b”), and Telesat Canada (“Telesat”) (collectively, “the Petitioners”), which can be promptly resolved without delaying favorable action on the Application.²

¹ See *EOS Defense Systems USA, Inc.*, Call Sign S2982, IBFS File No. SAT-MOD-20200526-00057 (“Modification Application”). The International Bureau previously authorized Electro Optic Systems Holdings Ltd, EOS’ parent company, to acquire control of the Audacy Space NGSO License. See *Electro Optics Systems Ltd.*, Call Sign S2982, File No. SAT-T/C-20200124-00013, granted March 5, 2020.

² See Petition to Deny in Part of Iridium Constellation LLC, IBFS File No. SAT-MOD-20200526-00057 (filed Aug. 31, 2020) (“Iridium Petition”); Petition to Deny or Condition of O3b Limited, IBFS File No. SAT-MOD-20200526-00057 (filed Aug. 31, 2020) (“O3b Petition”); Comments of Telesat Canada, IBFS File No. SAT-MOD-20200526-00057 (filed Aug. 31, 2020) (“Telesat Comments”).

The merits of EOS’ proposed satellite data relay system (“SpaceLink”)³ remain compelling and serve the public interest. Specifically, SpaceLink is an innovative and spectrally efficient three spacecraft constellation that will establish a space-based data relay platform to provide always-on, high bandwidth, low latency connectivity. Among other benefits, SpaceLink will alleviate the growing space-based spectrum crunch, improve situational awareness in space, and facilitate orbital debris mitigation efforts. Participation in the instant processing round through the Application will give SpaceLink additional capacity to provide complementary one-stop-shopping and end-to-end service for users who want to retrieve information from their space assets and subsequently deliver it to their end users with airborne, marine and terrestrial terminals.

EOS addresses the Petitioners’ objections to the Application below.

I. EOS WILL REMEDY CONCERNS REGARDING INTERFERENCE TO MSS FEEDER LINKS

Iridium asserts that EOS’ proposed use of the 19.4-19.6 GHz and 29.1-29.3 GHz bands for FSS service links conflicts with the Commission’s current limitation on these bands for MSS feeder links.⁴ O3b argues that the 19.4-19.6 GHz and 29.1-29.5 GHz can only be used for MSS feeder links, and that absent a showing of how EOS “would prevent interference to the conforming operations of O3b in these band segments or commit to accepting any interference from the O3b operations,” the Commission should deny the portion of the Application involving these frequencies.⁵

EOS appreciates that while the Public Notice initiating the instant Ka-band processing round solicited applications for the 19.4-19.6 and 29.1-29.5 GHz, the Commission’s Rules and

³ The legacy Audacy system owned by EOS is now commercialized under the name SpaceLink.

⁴ See *Iridium Petition* at 3.

⁵ *O3b Petition* at 4.

U.S. Table of Radiofrequency Allocations establish additional guardrails for these specific sub-bands.⁶ Given these additional limitations, EOS will take appropriate steps to demonstrate that its proposed use of these sub-bands protects incumbent NGSO systems whose operations conform to the current FCC Rules, which would necessitate both preventing interference into these systems and accepting interference from them. Alternatively, if unable to do so in short order, EOS will amend and seek to remove these frequencies from the Application.⁷

II. EOS’ APPLICATION INVOLVES A SUPPLEMENTAL PAYLOAD SEEKING AUTHORITY AS A 2020 PROCESSING ROUND APPLICANT

O3b takes the position that given the addition of new frequencies in the Application, the Commission “must consider the system as newly filed.”⁸ Telesat similarly argues that “[s]ince EOS filed its Application well after the deadline for the initial Ku/Ka-band processing round and did not seek a waiver of the deadline, Telesat assumes the Application will be considered in the second Ku/Ka-band processing round.”⁹

EOS clarifies that enhanced feeder links and service links in the Application are a supplemental payload, for which EOS seeks authority pursuant to the Commission’s 2020 Processing Round Notice.¹⁰ As an applicant in the Commission’s 2020 processing round, EOS will coordinate the aforementioned enhanced feeder links and service links consistent with FCC

⁶ See *Cut-Off Established For Additional NGSO FSS Applications or Petitions for Operations in the 10.7-12.7 GHz, 12.75-13.25 GHz, 13.8-14.5 GHz, 17.7-18.6 GHz, 18.8-20.2 GHz, And 27.5-30 GHz Bands, Satellite Policy Branch Information, Report No. SPB-279, DA 20-325* (rel. March 24, 2020) (the “2020 Processing Round Notice”); see also 47 C.F.R. § 2.106, NG166 and NG535A, which authorize use of the 19.4-19.6 and 29.1-29.5 GHz for MSS feeder links.

⁷ Specifically, EOS contemplates a minor modification requesting the deletion of the 19.4-19.6 and 29.1-29.5 GHz from its pending FCC application.

⁸ *O3b Petition* at 5. EOS does not take a position at this time with respect to the calculations and measurements O3b provides regarding G/T for uplink beams and EIRP downlink.

⁹ *Telesat Comments* at 2.

¹⁰ See generally, *2020 Processing Round Notice*.

Rules and policies.¹¹ Accordingly, EOS will (i) coordinate such links in good faith with applicants from the prior processing round; (ii) expect such earlier applicants to strive towards accommodating later-filed systems; and (iii) seek FCC intervention should an earlier applicant withhold information necessary for coordination or otherwise act in a manner inconsistent with a good faith coordination.¹² Consistent with prior Commission guidance, EOS appreciates that absent coordination, applicants in the 2020 Ka-band processing round may be required to make a showing demonstrating to the Commission that operations will not cause harmful interference to any operational system licensed or granted U.S. market access in a prior processing round.

EOS remains confident that the unique characteristics of its SpaceLink NGSO system will facilitate successful coordination of the proposed enhanced feeder links and service links in the Application. The SpaceLink NGSO system shares more characteristics with a geostationary system vis-à-vis the larger NGSO constellations contemplated by many of the applicants in the FCC's prior and current processing rounds. Specifically, the SpaceLink NGSO system involves only three spacecraft in a high Medium Earth Orbit ("MEO") orbit, and the system's primary mission remains providing relay network services for spacecraft in Low Earth Orbit ("LEO"). Such operations will involve the use of narrowly tailored inter-satellite links, and feeder links communicating with gateway ground stations at a handful of discrete locations, anticipated to be in isolated, lightly populated, and dry locations to maintain a low ambient noise floor and minimize rain attenuation. In addition, and as previously described to the Commission, the SpaceLink NGSO

¹¹ See 47 C.F.R. § 25.261, which requires good faith coordination between NGSO FSS systems employing directional antennas and default resolution procedures in the event of interference.

¹² The FCC reaffirmed expectations with respect to coordination obligations between NGSO systems in separately filed processing rounds, *see Kuiper Systems, LLC, Application for Authority to Deploy and Operate a Ka-band Non-Geostationary Satellite Order System*, Order and Authorization, IBFS File No. SAT-LOA-20190704-00057, ¶¶ 48-50 (rel. July 30, 2020) ("Kuiper Order").

system has unique technical capabilities to help avoid in-line interference events involving feeder links, including the ability to dynamically re-route feeder link traffic to alternative gateways via inter-satellite links between the relay spacecraft.¹³

With respect to its proposed service links, EOS also expects its SpaceLink NGSO architecture to prove advantageous in coordinating with other space networks. EOS is not attempting to build a network that will involve hundreds or thousands of satellites delivering broadband to small, inexpensive end user terminals manufactured en masse. Instead, EOS intends to provide service links as a supplemental offering largely to high-value, large bandwidth government-oriented customers. The smaller scale and narrower scope of EOS' service link offering should reduce in-line events and make coordination less complicated relative to resolving issues between large constellations.

III. CONCLUSION

SpaceLink will deliver much needed high bandwidth, low latency connectivity which will provide clients with one-stop-shopping for a secure turn-key service for relaying commands and communications between users in the field and client communications centers. While EOS appreciates that there are existing guardrails established in the 19.4-19.6 and 29.1-29.5 GHz bands, it remains confident that the smaller scale architecture of SpaceLink and its proposed use of feeder and service links to serve discrete customers in low-population areas minimizes interference risks while streamlining coordination efforts. EOS remains committed to coordinating such links in good faith and looks forward to mutual good faith cooperation from earlier processing round applicants as required by the Commission rules.

¹³ See, e.g., Response of Audacy Corporation, IBFS File No. SAT-LOA-20161115-00117, pg. 4-5 (filed July 27, 2017).

/s/ Timothy L. Bransford

Anthony Colucci
General Manager
Space Communications
EOS Defense Systems USA, Inc.

Larry Rubin
Founder and Principal
LRC Consulting

Karl Clausing
Principal
K spaCe Consulting
2865 Wall Triana Highway SW
Huntsville, AL 35824

Ulises R. Pin
Timothy L. Bransford
MORGAN, LEWIS & BOCKIUS LLP
1111 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
Tel: 202-739-3000
Fax: 202-739-3001

Counsel to EOS Defense Systems USA, Inc.

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served via first class mail on the following on September 10:

Suzanne Malloy
Vice President, Legal and Regulatory
O3b Limited
1129 20th Street, NW, Suite 1000
Washington, DC 20036
(202) 813-4026

Elisabeth Neasmith
Director, Spectrum Management and
Development
160 Elgin Street, Suite 2100
Ottawa, Ontario
Canada K2P 2P7
(613) 748-8700

Maureen C. McLaughlin
Vice President, Public Policy
Iridium Constellation LLC
1750 Tysons Boulevard, Suite 1400
McLean, VA 22102
(703) 287-7518

Karis A. Hastings
SatCom Law LLC
1317 F Street, N.W., Suite 400
Washington, D.C. 20004
karis@satcomlaw.com

Joseph A. Godles
Goldberg, Godles, Wiener & Wright LLP
1025 Connecticut Avenue, N.W.
Suite 1000
Washington, DC 20036
(202) 429-4900

/s/ Timothy Bransford

Timothy Bransford