

October 20, 2017

Mr. Jose P. Albuquerque  
Chief, Satellite Division, International Bureau  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20010

Re: *LeoSat MA, Inc., Petition for Declaratory Ruling to Permit U.S. Market Access for the LeoSat Ka-Band Low-Earth Orbit Satellite System; Call Sign S2979, IBFS File No. SAT-PDR-20161115-00112*

Dear Mr. Albuquerque:

LeoSat MA, Inc. (“LeoSat”), through its counsel, provides the information set forth in this letter to supplement its pending Petition for Declaratory Ruling (“PDR”) seeking market access to the United States for LeoSat’s proposed Ka-band non-geostationary orbit (“NGSO”) fixed-satellite service (“FSS”) constellation (“LeoSat System”).<sup>1</sup> LeoSat is filing this letter in response to inquiries from Satellite Division Staff (“Division”) during a telephone conversation between the Division and the undersigned on September 14, 2017. During that call, the Division inquired about the following subjects: (i) the status of LeoSat’s efforts to secure a satellite license from the Radiocommunications Agency Netherlands (“RA”), as well as which administration will register LeoSat’s system with the U.N.’s Register of Objects Launched into Outer Space as per the Convention of Objects Launched into Outer Space; (ii) the status of LeoSat’s development of an orbital debris mitigation plan; and (iii) certain technical information about the optical inter-satellite links (“ISLs”) that will be used by the LeoSat System.

*LeoSat Will Seek a Space Station Authorization from Radiocommunications Agency Netherlands.*

LeoSat has initiated discussions with the RA regarding filing an application to launch and operate the LeoSat System, but has not yet filed its application with RA.<sup>2</sup> Although LeoSat

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<sup>1</sup> LeoSat MA, Inc., Petition for Declaratory Ruling To Permit U.S. Market for the LeoSat Ka-Band Low-Earth Orbit Satellite System, Call Sign S2979, IBFS File No. SAT-PDR-20161115-00112 (filed Nov. 15, 2016) (“PDR”).

<sup>2</sup> See Letter from Phillip R. Marchesiello and Lynne Montgomery, Counsel to LeoSat MA, Inc., to Jose P. Albuquerque, Chief, Satellite Division, International Bureau, Federal Communications

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initially expected to file the application in June 2017, the RA suggested that LeoSat refrain from filing its application until the final design of the LeoSat System is complete, which will occur in 2018. As part of the license application review process, the RA retains outside consultants to conduct a comprehensive three-month audit of the technical design and business plans of a license applicant, and it is not possible to effectively conduct this audit until the applicant's design and plans are finalized. Therefore, according to RA, it is typical for prospective satellite applicants to file applications with RA to launch and operate their systems six to eight months prior to the applicants' anticipated launch date. In preparation for LeoSat's submittal of its application with RA, LeoSat continues to meet with RA personnel to keep them abreast of LeoSat's progress.<sup>3</sup> LeoSat anticipates that RA will register the LeoSat System with the U.N.'s Register of Objects Launched into Outer Space.

The prior issuance of a satellite license by RA should not be a precondition to action by the Commission on LeoSat's PDR. Section 25.137 of the Commission's rules permits a non-U.S.-licensed NGSO-like satellite system to participate in a processing round if it (i) is in orbit and operating, (ii) has a license from another administration, or (iii) has been submitted for coordination to the International Telecommunication Union ("ITU").<sup>4</sup> LeoSat satisfies the third option under Section 25.137(c) because the LeoSat System has been submitted to the ITU for coordination.<sup>5</sup>

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Commission, IBFS File No. SAT-PDR-20161115-00112 (filed May 15, 2017) ("May 15 Letter"); *see also* Letter from Phillip R. Marchesiello and Lynne Montgomery, Counsel to LeoSat MA, Inc., to Jose P. Albuquerque, Chief, Satellite Division, International Bureau, Federal Communications Commission, IBFS File No. SAT-PDR-20161115-00112 (filed May 22, 2017) ("May 22 Letter") (filing a supplemental letter to submit signed RA letter confirming conversations with LeoSat about its upcoming application).

<sup>3</sup> LeoSat met with the RA in July 2017 and again earlier this month to discuss the LeoSat System and the appropriate timeline for LeoSat to file its satellite application with RA.

<sup>4</sup> *See* 47 C.F.R. § 25.137(c). Moreover, the Commission expressly has stated that it will "not require a license as a prerequisite to participating in a U.S. space station processing round." *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States*, Report and Order, 12 FCC Rcd 24094, 24178 ¶196 (1997) ("Requiring the foreign entrant to secure a license from another administration *before* it can participate in a U.S. processing round, however, would place a burden on the foreign operator not placed on U.S. applicants. Instead, we will require a potential foreign entrant to submit, as part of its application to the Commission, proof that it is pursuing a license from a foreign administration.").

<sup>5</sup> The LeoSat satellite system is registered with the ITU as the MCSAT-2 LEO-2 satellite network. *See* PDR, Attachment A (Technical Annex to Supplement Schedule S), § 7 at 21-22

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Further, the Commission has granted other satellite applications, including OneWeb's application that initiated the instant processing round, on the condition that the applicant obtain an authorization for deployment and space operations from a foreign administration prior to providing service to the United States.<sup>6</sup> Consistent with this precedent, LeoSat requests that the Commission condition grant of LeoSat's PDR upon obtaining RA authorization for the LeoSat System prior to LeoSat's provision of service in the United States.

*LeoSat Will Demonstrate its Compliance with the Commission's Orbital Debris Rules Upon Completion of Phase B of the Design of the LeoSat System.*

LeoSat and its space station design partner Thales Alenia Space ("TAS") have completed the preliminary design of the critical elements of the LeoSat System (Phase A), but have not yet completed the final design of the system (Phase B). Pursuant to its contract with TAS, LeoSat expects to commence Phase B in 2017 and complete Phase B in 2018. The orbital debris plan for the LeoSat System, including its end-of-life satellite disposal plan, will be finalized as part of the Phase B final design for the system, and LeoSat will file comprehensive information with the Commission about its orbital debris plan at that time. However, at this stage, LeoSat is unable to provide the Commission with additional information regarding the approach to orbital debris and end-of-life satellite disposal that will be used by the LeoSat System. Nevertheless, LeoSat commits that its orbital debris plan will comply with all orbital debris requirements set forth in

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(describing ITU coordination filings and other ITU filings in connection with the MCSAT-2 LEO-2 satellite network).

<sup>6</sup> See *WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System*, Order and Declaratory Ruling, 32 FCC Rcd 5366, 5378 ¶ 24 (2017) ("Prior to initiation of service, OneWeb must obtain from the United Kingdom Space Agency an authorization for deployment and space operations under the United Kingdom Outer Space Act."); See also *Spectrum Five LLC, Petition for a Declaratory Ruling Regarding 17/24 GHz Broadcasting-Satellite Service to the U.S. Market from the 119.25° W.L. Orbital Location*, Declaratory Ruling, 27 FCC Rcd 13129, 13137, ¶ 26 (IB 2012) ("It is further ordered that this Declaratory Ruling will become effective and remain effective only to the extent that launch and space operations are authorized by the Radiocommunications Agency Netherlands under the Netherlands Space Activities Law."); See *Hughes Network Systems, LLC, Letter of Intent Seeking Access to the United States Market*, Declaratory Ruling, 26 FCC Rcd 8521, 8531 ¶ 30 (IB 2011) ("It is further ordered that this grant shall become effective upon Hughes filing a copy of an authorization under the United Kingdom Outer Space Act for the space operations of [its satellite] in the public record in this proceeding"); See *Globalstar Licensee LLC, Application for Modification of Non-geostationary Mobile Satellite Service Space Station License*, Order, 26 FCC Rcd 3948, 3962 ¶ 35 (IB 2011) (granting Globalstar's space station application on the condition that Globalstar obtain an authorization to operate from France).

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Section 25.114(d)(14) of the Commission's rules,<sup>7</sup> as well as all orbital debris requirements imposed by RA.<sup>8</sup>

In light of the foregoing and consistent with Commission precedent,<sup>9</sup> LeoSat has requested for the Commission to grant LeoSat's PDR conditioned on LeoSat's demonstration of compliance with the Commission's orbital debris requirements prior to providing service in the United States.<sup>10</sup> Pursuant to such a condition, prior to serving the U.S. market, LeoSat would be required to demonstrate to the Commission's satisfaction either (i) the full compliance of the LeoSat System with the Commission's orbital debris mitigation requirements through one or more supplemental filings in connection with the PDR or (ii) that RA provides "direct and effective regulatory oversight" of orbital debris mitigation.<sup>11</sup>

*LeoSat Submits Additional Information About its ISLs and Affirms its Willingness to Coordinate With Other Systems.*

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<sup>7</sup> See 47 C.F.R. §25.114(d)(14); May 15 Letter at 5.

<sup>8</sup> The RA also requires its authorization holders to adhere to the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space and the Inter-Agency Debris Coordination Space Debris Mitigation Guidelines as well as the Inter-Agency Debris Coordination Space Debris Mitigation Guidelines, ITU Recommendation ITU-R S.1003. See May 22 Letter, Attachment. The LeoSat System will comply with each of these standards.

<sup>9</sup> The Commission previously has granted space station authorizations conditioned on later compliance with Commission requirements, including orbital debris mitigation requirements. For example, the International Bureau ("Bureau") separately issued conditional grants to Northrop Grumman and contactMEO, both of which applied to launch NGSO constellations. See *Northrop Grumman Space & Mission Systems Corporation, Applications for Authority to Operate a Global Satellite System Employing Geostationary Satellite Orbit and Non-Geostationary Satellite Orbit Satellites in the Fixed-Satellite Service in the Ka-band and V-band*, Order and Authorization, 24 FCC Rcd 2330, 2363-64, ¶ 102 (IB 2009); *contactMEO Communications, LLC, For Authority to Launch and Operate a Non-Geostationary Orbit Fixed-Satellite System in the Ka-band Frequencies*, Order and Authorization, 21 FCC Rcd 4035, 4052-53 ¶ 47 (IB 2006). In each case, the Bureau required the applicants to file their final orbital debris plans following the issuance of the Bureau's conditional grant and within thirty days of the plans' completion. The Bureau conditioned the applicants' launch and operational authority upon that showing. LeoSat believes that a similar approach is appropriate here to prevent the Commission's processing round timing, over which LeoSat had no control, from prejudicing LeoSat's equal access to the U.S. market.

<sup>10</sup> See May 15 Letter at 5-6.

<sup>11</sup> See 47 C.F.R. § 25.114(d)(14)(v); see also May 15 Letter at 5-6.

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Given the design parameters of LeoSat's ISLs, LeoSat does not anticipate that the LeoSat System will cause interference to other NGSO systems utilizing optical ISLs. In addition, it is highly unlikely that the LeoSat System will receive interference from other systems' use of optical ISLs. This is because LeoSat's ISLs were designed to avoid such interference by using a narrow divergence beam. Consequently, LeoSat does not expect to seek any type of protection for its ISLs and does not believe that it will be necessary to coordinate its ISLs with other NGSO operators. However, LeoSat is glad to participate in any coordination discussions regarding optical ISLs requested by any other NGSO (or GSO) operator.

At the request of the Division, LeoSat provides the following information about its optical ISLs:

1. Wavelength: ~1064nm or ~1550nm Data + 808nm beacon
2. Transmit Power at Aperture: 1.4W
3. Duty Cycle: 100% - Our OISLs operate continuously
4. Beam Diameter at Emitter: 50-130mm
5. Beam Divergence: 30 micro-radians
6. Power Margin of Receiver at Maximum Operating Distance: 1.2-1.5dB at end-of-life

The Division also asked whether LeoSat has interacted with the Department of Defense's ("DoD") Laser Clearinghouse ("Clearinghouse"). LeoSat has not done so and understands that it is not required to do so as a non-DoD, commercial laser operator.<sup>12</sup> However, if LeoSat incorporates DoD payloads in the future, it will register with the Clearinghouse. In addition, LeoSat intends to review the efficacy of voluntarily registering with the Clearinghouse to benefit from the prevention and avoidance and satellite deconfliction services that the Clearinghouse provides to registrants.<sup>13</sup>

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<sup>12</sup> Office of the Under Secretary of Defense for Policy, *DoD Instructions 3100.11: Management of Laser Illumination of Objects in Space*, § 1.1 at 3 (Oct. 24, 2016) (explaining that the Laser Clearinghouse is mandatory for DoD owned or operated lasers).

<sup>13</sup> *Id.*, § 2.10(i) at 9 (stating that the Clearinghouse provides non-DoD laser owners and operators with notification and coordination services for illumination above the horizon by space-based lasers "as resources allow").

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Should the Commission require additional information about the foregoing or otherwise in connection with the PDR, please contact the undersigned.

Sincerely,

/s/ Phillip R. Marchesiello

Phillip R. Marchesiello

Lynne M. Montgomery

*Counsel to LeoSat MA, Inc.*

cc: Joseph (Cliff) Anders, Founder and President, LeoSat