

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of

LeoSat MA, Inc.

Petition for Declaratory Ruling to Permit U.S.  
Market Access for the LeoSat Ka-band Low-  
Earth Orbit Satellite System

File No. \_\_\_\_\_

Call Sign \_\_\_\_\_

**PETITION FOR DECLARATORY RULING**

**I. INTRODUCTION**

Pursuant to Sections 25.114 and 25.137 of the Commission’s rules, the Commission’s *DISCO II* licensing framework, and the *July 15 Public Notice*,<sup>1</sup> LeoSat MA, Inc. (with its commonly owned and controlled affiliates, “LeoSat”) submits this petition for declaratory ruling (“PDR”) to permit U.S. market access using its Ka-band low-Earth orbit (“LEO”), non-geostationary satellite orbit (“NGSO”) system (the “LeoSat System”) to provide new broadband fixed satellite services (“FSS”) to the United States. LeoSat further requests Commission consideration of this PDR together with the OneWeb petition for declaratory ruling (“OneWeb Petition”) in the same processing round, pursuant to the *July 15 Public Notice*.<sup>2</sup> As demonstrated

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<sup>1</sup> See 47 C.F.R. §§ 25.114, 25.137; *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 (1997) (“*DISCO II Order*”), *on recon.*, 15 FCC Rcd 7207 (1999) (“*DISCO II First Reconsideration*”), *recon. denied*, 16 FCC Rcd 19794 (2001); *Satellite Policy Branch Information: OneWeb Petition Accepted for Filing*, Public Notice, 31 FCC Rcd 7666 (IB 2016) (“*July 15 Public Notice*”).

<sup>2</sup> See *July 15 Public Notice* at 2.

herein, grant of this PDR will result in substantial public interest benefits and is consistent with the Commission's prior approvals of U.S. market access for other Ka-band systems.<sup>3</sup>

Notably, grant of this PDR will allow LeoSat to offer new and innovative satellite broadband services to the United States, including enterprise-to-enterprise communications, Internet and 5G/4G cellular backhaul, video content delivery, oil field services and operations, and maritime communications. Commission grant also will allow LeoSat to provide high-throughput space segment capacity that will address currently unmet demand for ubiquitous, high-bandwidth, low-latency, high-security data communications from commercial and government customers in the United States. LeoSat's proposed network solution will ultimately deliver premise-to-premise high-speed data (*i.e.*, greater than 1 Gbps) to any location in the world. Further, the introduction of new high-speed data transmissions services will promote creation of new information and communications technology jobs and promote competition and investment. Additionally, by deploying resilient satellite infrastructure with global coverage, LeoSat will offer critical communications support for emergency response, homeland defense, and military and other government operations. This next-generation satellite network also will unlock broadband access for telemedicine, remote learning, and other applications that will significantly benefit rural and remote communities.

## **II. LEOSAT'S PROPOSED SERVICE OFFERINGS WILL PROVIDE UBIQUITOUS, SECURE, LOW-LATENCY BROADBAND CONNECTIVITY**

The planned LeoSat System consists of (i) a constellation of approximately 78 high-throughput, Ka-band LEO satellites (plus six in-orbit spare satellites);<sup>4</sup> (ii) gateway earth stations

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<sup>3</sup> See, e.g., O3b Limited, Stamp Grant, IBFS File Nos. SAT-LOI-20141029-00118 *et al.* (granted Jan. 22, 2015) ("*O3b LOI Grant*").

around the world; and (iii) an initial mix of large and small user terminals at fixed locations in the United States and abroad. The LeoSat satellite constellation is registered pursuant to filings with the International Telecommunication Union (“ITU”) by France for the “MCSAT-2 LEO-2” satellite network, and is expected to be licensed by France for launch and operation.<sup>5</sup> Under the French filings, the LeoSat constellation has ITU date priority over other Ka-band systems, such as OneWeb, that are under consideration in the current FCC processing round.<sup>6</sup>

Using optical inter-satellite links and operating in polar orbits at an altitude five times closer to the Earth than medium Earth orbit satellites and 25 times closer than geostationary orbit (“GSO”) satellites, the LeoSat System offers numerous advantages with respect to high throughput, low latency, full global coverage, and high security and resiliency.

*High-Bandwidth Services.* The LeoSat System will provide high-throughput enterprise-grade services. The LeoSat satellites will each have 10 steerable user antennas, each of which is capable of providing 50 Mbps to 1.2 Gbps of full-duplex connectivity per link to user terminals. In addition, each satellite will have two steerable gateway/enterprise user antennas that are

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<sup>4</sup> Although the LeoSat constellation later may be expanded to a total of approximately 108 operational satellites (plus six in-orbit spares), LeoSat is seeking U.S. market access for the smaller constellation of 78 satellites (plus six in-orbit spares) at this time. LeoSat will seek additional FCC authorization for the larger constellation at a later time as appropriate.

<sup>5</sup> Because the LeoSat satellite constellation will be submitted for international coordination under the French ITU filings and is expected to be licensed by France, this PDR for U.S. market access qualifies for consideration in the current processing round with other Ka-band NGSO proposals, consistent with Section 25.137(c) of the FCC’s rules and the Commission’s *DISCO II* policies. See 47 C.F.R. § 25.137(c)(2)-(3); *DISCO II Order* ¶ 196 (“we will not require a license as a prerequisite to participating in a U.S. space station processing round”); see also *ICO Satellite Services G.P.*, 20 FCC Rcd 9797 ¶ 33 (IB 2005) (applicant may seek U.S. market access for non-U.S.-licensed system registered under U.K. filings with the ITU).

<sup>6</sup> The French ITU filings for LeoSat’s Ka-band MCSAT-2 LEO-2 network date back to November 25, 2014. By contrast, the earliest ITU filing date for OneWeb’s Ka-band L5 network is January 18, 2015. See OneWeb Petition, IBFS File No. SAT-LOI-20160428-00041, Attachment A (Technical Information to Supplement Schedule S), at 44 (Apr. 28, 2016) (noting January 18, 2015 ITU filing date for Ka-band L5 network published as CR/C/3413 MOD-6).

capable of individually providing throughput of 5.2 Gbps for an aggregate throughput of up to 10 Gbps. These antennas may be used to provide (i) broadband connectivity, including Internet access, through a LeoSat gateway and/or (ii) very high-throughput premises-to-premises communications for enterprise-level customers with high bandwidth needs.

*Low Latency.* The LeoSat System will offer very low latency as a result of two primary features. First, as a result of the low 1,400 km. altitude of LeoSat's constellation, communications between two user terminals directly under a LeoSat satellite may take approximately 16 ms. (versus approximately 480 ms. for user terminals under a GSO satellite). Second, using four optical inter-satellite links per satellite to pass communications between satellites at the speed of light, LeoSat may deliver communications from premises-to-premises anywhere in the world without relying upon a gateway or terrestrial wireline network and without using protocol conversions while en route. These laser inter-satellite links create an optical backbone that is approximately 1.5 times faster than terrestrial fiber networks. For example, the LeoSat System will be able to send data between New York City and Tokyo in approximately 100 ms., rather than the 175 ms. typically required for terrestrial fiber networks.

*Ubiquity.* As a result of its inter-satellite links, the LeoSat System will be able to maintain communications links between any two locations on the globe. In addition, due to its polar orbits, the LeoSat System will offer superior coverage of the currently underserved polar regions. Moreover, the LeoSat System's U.S. coverage capabilities on a continuous basis will ensure access to new broadband services for remote and underserved communities in Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands.

*Security and Resilience.* The LeoSat System will offer exceptionally secure and resilient communications capabilities. Encrypted communications can be provided on a premises-to-

premises basis without traversing less secure terrestrial networks. In addition, the LeoSat System will be more resilient than both terrestrial networks and satellite networks that rely on terrestrial gateways, both of which can be adversely affected by natural disasters and other operational issues, such as fiber cuts. Further, the LeoSat System has a high level of built-in redundancy resulting from a mesh network architecture that allows communications to be routed along multiple inter-satellite paths in the event of failure of one or more satellites.

The LeoSat System will be used to offer high-speed data transmission services to at least five market segments with communications requirements that currently are not sufficiently met. First, the LeoSat System is ideally suited to provide enterprise-level domestic and international customers with secure, high-throughput and low-latency data services, including mesh and star topology<sup>7</sup> networks with global coverage. Second, the LeoSat System will be able to provide 4G and 5G backhaul services to wireless carriers without requiring protocol conversions. By using small, flat-panel antennas with low-latency transmissions, LeoSat will provide a backhaul solution that is competitive with fiber in many instances.

Third, with its premises-to-premises global coverage, the LeoSat System will be ideally suited to provide services to U.S. government agencies, including secure communications between U.S. embassies, first responder and public safety communications in remote locations and during disasters and emergencies, and robust and secure military communications. Fourth, LeoSat's high-throughput, low-latency transmissions will permit new video delivery services. The LeoSat System will be particularly suited to provide high-definition video delivery from remote locations that are not adequately served by fiber networks, such as for news-gathering

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<sup>7</sup> The LeoSat System offers both a mesh network topology created by its optical inter-satellite links and a star, or hub-and-spoke, topology in which communications between user terminals may be routed through a central hub location.

purposes, and to enable coverage of remote sporting events, such as off-road racing. Fifth, the LeoSat System will serve industries with remote locations that cannot be served by terrestrial networks and that currently do not have access to adequate satellite bandwidth, such as cruise lines, mining, commercial shipping companies, and offshore oil rigs.

*Space Segment.* LeoSat will deploy the LeoSat System in conjunction with Thales Alenia Space (“TAS”), which has unmatched expertise in developing and manufacturing large constellations of NGSO satellites.<sup>8</sup> The LEO satellites will operate at an altitude of approximately 1,400 km, using six orbital planes, each consisting of approximately 13 satellites and one in-orbit spare, with a 90° inclination of the orbital plane. This satellite constellation will have the capability of providing full global coverage, with most locations covered at minimum elevation angles of 10° to 15°, as well as capabilities for on-board processing and inter-satellite link communications. The LeoSat System will provide enterprise-grade, highly secure data transmissions with up to 1.2 Gbps of full-duplex connectivity per link (and 5.2 Gbps where needed), along with low latency. Further, the use of spot beams and alternate polarizations by LeoSat’s satellites will allow reuse of the same Ka-band frequencies multiple times.

*Ground Segment.* The LEO satellites will operate with a network of gateway earth stations that will be strategically located around the world.<sup>9</sup> The satellites also will be used to provide service initially to a mix of large and small fixed user terminals in the United States and

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<sup>8</sup> With 7,500 employees at 13 sites in 7 countries, TAS designs, builds and delivers end-to end turn-key space system solutions for telecommunications, observation, navigation, and exploration. TAS had more than €2 billion in 2015 sales, making it the largest industrial space system provider after Boeing. TAS’ satellite constellation customers include Globalstar 2 (24 satellites ordered), O3b Networks (20 satellites ordered), and Iridium NEXT (81 satellites ordered).

<sup>9</sup> LeoSat expects to deploy up to two gateways in the United States.

abroad. LeoSat separately will seek additional authorizations to operate user terminals and any gateways in the United States, as required under the Commission’s rules.<sup>10</sup>

*Operating Frequencies.* The LeoSat System will operate on Ka-band frequencies, as follows:

<b>Frequencies (GHz)</b>	<b>Proposed U.S. Operations</b>	<b>U.S./FCC Band Plan<sup>11</sup></b>
17.8-18.3	Service and gateway downlinks (non-conforming)	Fixed service (primary)
18.3-18.6	Service and gateway downlinks (non-conforming)	GSO FSS downlink (primary) Fixed service (primary at 18.3-18.58 GHz)
18.8-19.3	Service and gateway (including TT&C) downlinks (primary)	<i>NGSO FSS downlink (primary)</i>
19.3-19.7	Service and gateway downlinks (non-conforming)	MSS feeder downlink (primary) Fixed service (primary)
19.7-20.2	Service and gateway downlinks (non-conforming)	GSO FSS downlink (primary)
27.5-28.35	Service and gateway uplinks (secondary)	Fixed and mobile services (primary) <i>NGSO and GSO FSS uplink (secondary)</i>
28.35-28.6	Service and gateway uplinks (secondary)	GSO FSS uplink (primary) <i>NGSO FSS uplink (secondary)</i>
28.6-29.1	Service and gateway (including TT&C) uplinks (primary)	<i>NGSO FSS uplink (primary)</i> GSO FSS uplink (secondary)
29.5-30.0	Service and gateway uplinks (secondary)	GSO FSS uplink (primary) <i>NGSO FSS uplink (secondary)</i>

<sup>10</sup> See 47 C.F.R. §§ 25.115, 25.137.

<sup>11</sup> See *id.* § 2.106; *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, ¶¶ 27, 72 (2016) (“*Spectrum Frontiers Order*”); *Redesignation of the 17.7-19.7 GHz Frequency Band*, Report and Order, 15 FCC Rcd 13430, ¶ 28 (2000); *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band*, Third Report and Order, 12 FCC Rcd 22310, ¶¶ 39-49 (1997).

A more detailed description of the channel plan for the LeoSat System is included in the accompanying Schedule S and Technical Annex. As shown in the table above, the proposed operations of the LeoSat System will be consistent with the U.S. table of allocations and the Commission's Ka-band plan, except with respect to the 17.8-18.6 GHz and 19.3-20.2 GHz bands, which LeoSat proposes to use on a non-conforming basis pursuant to a waiver, which is further discussed in Section III(D) below.

### **III. THE LEOSAT SYSTEM SATISFIES FCC REQUIREMENTS FOR U.S. MARKET ACCESS**

#### **A. Legal Qualifications**

The accompanying FCC Form 312 sets forth information establishing LeoSat's legal qualifications to provide service to the United States. Additionally, LeoSat highlights below its compliance with certain FCC licensing and service requirements.

*Milestone schedule.* LeoSat expects to launch and operate its NGSO system within six years after grant of this PDR, in compliance with Section 25.164(b)'s milestone requirement.<sup>12</sup>

*Escalating bond.* LeoSat will post an initial bond amount of \$1 million within 30 days of grant of this PDR, and will ensure that the bond amount will increase during the six-year milestone period, as required under Section 25.165(a).<sup>13</sup>

*Prohibition on exclusive arrangements.* Consistent with Section 25.145(e), LeoSat (including its affiliates under common ownership and control) has not and will not acquire any

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<sup>12</sup> See 47 C.F.R. § 25.164(b). LeoSat's first two satellites will be launched in 2018 to demonstrate the effectiveness of the advanced technologies employed by the LeoSat System. LeoSat has entered into a memorandum of understanding with the National Science Foundation ("NSF") for these satellites to collect and deliver data from an NSF outpost in Antarctica to a scientific station in Norway.

<sup>13</sup> See *id.* § 25.165(a).

exclusive right, for purposes of handling traffic to or from the United States or its territories or possessions, to construct or operate space segment or earth stations, or to interchange traffic, if such right is denied to a U.S. company pursuant to any concession, contract, understanding, or working arrangement to which LeoSat (including its affiliates under common ownership and control) is a party.

## **B. Technical Qualifications**

The accompanying Schedule S and Technical Annex set forth information establishing LeoSat's technical qualifications to operate the LeoSat System for service to the United States. Additionally, LeoSat highlights below its compliance with certain FCC technical requirements.

*Geographic coverage.* As demonstrated in the accompanying Schedule S and Technical Annex, and in compliance with Section 25.145(c),<sup>14</sup> the LeoSat System will be capable of providing FSS (i) to all locations as far north as 70° N.L. and as far south as 55° S.L. for at least 75 percent of every 24-hour period; and (ii) throughout the United States, Puerto Rico, and the U.S. Virgin Islands on a continuous basis.

*Orbital debris mitigation.* The LeoSat System is expected to be authorized under a space operations license issued pursuant to the French Space Operations Act of 2008 (the "Act"). France has adopted a comprehensive legal framework to regulate the space activities of its satellite licensees. In fact, the Commission has found that the Act and related technical regulations "provide for direct and effective [French] regulation of debris mitigation measures."<sup>15</sup> These regulations include the attached Decree Concerning Technical Regulation, which specifies

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<sup>14</sup> See *id.* § 25.145(c).

<sup>15</sup> See *Globalstar Licensee LLC*, 26 FCC Rcd 3948, ¶ 32 (IB 2011). The Commission further found that licenses issued under the Act "may include requirements set forth for the safety of persons and property, protection of public health and the environment, and in particular to limit risks related to space debris." *Id.* ¶ 31.

detailed debris mitigation requirements for French satellite licensees.<sup>16</sup> LeoSat expects to demonstrate compliance with these requirements as part of the French licensing process.<sup>17</sup> Accordingly, consistent with Section 25.114(d)(14)(v),<sup>18</sup> LeoSat is not required to submit a debris mitigation showing here. Nonetheless, to facilitate Commission review of this PDR, the attached Technical Annex contains additional information regarding LeoSat’s proposed debris mitigation strategy.<sup>19</sup>

### C. Public Interest Considerations

Under the Commission’s *DISCO II* policies and Section 25.137(a)(2) of its rules, U.S. market access requests for satellites licensed by World Trade Organization (“WTO”) member countries to provide WTO-covered services, including FSS, to the United States are presumed to enhance competition and thus serve the public interest.<sup>20</sup> Here, the LeoSat System will be authorized to operate pursuant to ITU filings by France, a WTO member country, and will be

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<sup>16</sup> See attached Exhibit 2 (Decree Concerning Technical Regulations Implementing Decree No. 2009-643 of 9<sup>th</sup> June 2009 Concerning Licenses Issued Pursuant to Act No. 2008-518 of 3<sup>rd</sup> June 2008 Relating to Space Operations) (unofficial English translation copy).

<sup>17</sup> Additionally, the LeoSat System will comply with Inter-Agency Space Debris Coordination Committee (“IADC”) Space Debris Mitigation Guidelines, which were approved by the United Nations (“UN”) in 2007 following approval by the United Nations Committee for Peaceful Uses of Outer Space, consisting of 69 member states, including France. See attached Exhibit 3 (IADC Space Debris Mitigation Guidelines, IADC-02-01, Revision 1, Sept. 2007).

<sup>18</sup> See 47 C.F.R. § 25.114(d)(14)(v).

<sup>19</sup> The FCC has not required detailed debris mitigation information from other non-U.S.-licensed NGSO applicants such as OneWeb. See, e.g., Letter from Jose P. Albuquerque, Chief, Satellite Division, International Bureau, FCC, to Kalpak S. Gude, WorldVu Satellites Limited (OneWeb), IBFS File No. SAT-LOI-20160428-00041, at 2 (June 10, 2016) (requesting “publicly available materials discussing the criteria applied by the United Kingdom to assess the debris mitigation plans of NGSO satellite systems”). The attached Technical Annex nonetheless provides additional information regarding LeoSat’s debris mitigation strategy, beyond what is required under Section 25.114(d)(14)(v).

<sup>20</sup> See *id.* § 25.137(a)(2); *DISCO II Order* ¶ 39.

used to provide FSS, a WTO-covered service, to the United States. Thus, grant of this PDR is presumed to be pro-competitive and in the public interest.

Indeed, Commission grant will allow LeoSat to introduce new commercial broadband services to American consumers, including enterprise-to-enterprise communications, Internet and 5G/4G cellular backhaul, video content delivery, and cruise line, commercial cargo shipping, and oil field services and operations. These services, in turn, offer substantial public interest benefits, including addressing currently unmet demand for ubiquitous, high-bandwidth, low-latency, high-security data communications, as well as facilitating creation of new U.S. jobs and investment in the information and communications technology sectors.

By using resilient satellite infrastructure with global coverage, these services also offer critical communications support for governmental entities in emergency response, homeland defense, and military and other government operations. As the Commission has noted, “in remote areas or in the case of major disasters such as Hurricane Katrina or the Haitian earthquake, [satellite networks are] often the only reliable method of communication available when terrestrial facilities are either non-existent, destroyed or rendered inoperable.”<sup>21</sup> The LeoSat System will continue the vital roles that satellite networks serve during natural and man-made disasters. The LeoSat System also will unlock broadband access for telemedicine, remote learning, and other applications of particular importance to rural and remote communities, including in Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands, and abroad.

Additionally, grant of this PDR satisfies other public interest considerations, including spectrum availability, national security, law enforcement, and foreign and trade policy

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<sup>21</sup> See *SkyTerra Communications, Inc.*, Memorandum Opinion and Order and Declaratory Ruling, 25 FCC Rcd 3059, ¶ 30 (IB, OET & WTB 2010).

concerns.<sup>22</sup> As noted in Section II above, LeoSat’s proposed operations are consistent with the U.S. table of allocations and the Commission’s Ka-band plan, except with respect to the 17.8-18.6 GHz and 19.3-20.2 GHz bands, which LeoSat proposes to use on a non-harmful interference basis pursuant to waiver requested in Section III(D) below. Moreover, as demonstrated in the accompanying Schedule S and Technical Annex, the LeoSat System will share Ka-band spectrum with other NGSO and GSO systems in accordance with applicable FCC and ITU technical limits and sharing requirements.<sup>23</sup> Thus, grant of this PDR will have no adverse impact on spectrum availability or potential for harmful interference to other authorized services.

This PDR on its face raises no national security, law enforcement, or foreign and trade policy concerns that would warrant special consideration. Indeed, the Commission has noted that such issues are likely to arise only in rare circumstances.<sup>24</sup> Moreover, the Commission found no such issues in granting similar U.S. market access requests for other Ka-band satellite systems, including O3b,<sup>25</sup> and similarly should find no such issues here.

Furthermore, as noted in Section II above, the LeoSat System has higher ITU date priority than other Ka-band NGSO systems, such as OneWeb, that are under consideration in the current Ka-band NGSO processing round. Accordingly, consistent with FCC precedent and

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<sup>22</sup> See *DISCO II Order* ¶¶ 146-82.

<sup>23</sup> See, e.g., *The Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-Band*, Report and Order, 18 FCC Rcd 14708, ¶¶ 18-21 (2003) (“*Ka-band Sharing Order*”) (adopting Ka-band sharing requirements for NGSO FSS licensees).

<sup>24</sup> See *DISCO II Order* ¶ 180.

<sup>25</sup> See, e.g., *O3b LOI Grant*.

policy,<sup>26</sup> LeoSat requests that the Commission condition any grant of the OneWeb Petition or other filings in this processing round upon compliance with (i) international coordination obligations and (ii) a requirement to cease U.S. service immediately upon launch and operation of a non-U.S.-licensed system with ITU date priority, in the absence of successful coordination with such system.<sup>27</sup>

#### **D. Requested Waivers**

LeoSat requests waivers of certain FCC requirements, as set forth below. The Commission may waive its rules upon a showing of good cause,<sup>28</sup> which may be found when a waiver would not undermine the underlying purposes of the rule and otherwise would serve the public interest.<sup>29</sup> As demonstrated below and in the accompanying Technical Annex, good cause exists for granting the requested waivers.

*U.S. allocations of the 17.8-18.6 GHz and 19.3-20.2 GHz bands.* As noted in Section II above, LeoSat proposes non-conforming use of the 17.8-18.6 GHz and 19.3-20.2 GHz downlink bands. Accordingly, LeoSat requests a waiver of the U.S. table of allocations and FCC Ka-band plan to permit such non-conforming use on a non-harmful interference, unprotected basis with respect to other services allocated in the bands. The Commission has found that similar non-conforming NGSO FSS use of Ka-band spectrum meets the waiver standard where such use is

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<sup>26</sup> See *Amendment of the Commission's Space Station Licensing Rules and Policies*, Second Order on Reconsideration, 31 FCC Rcd 9398, ¶ 32 (2016) (“Absent such coordination, a U.S.-licensed satellite making use of an ITU filing with a later protection date would be required to cease service to the U.S. market immediately upon launch and operation of a non-U.S.-licensed satellite with an earlier protection date, or be subject to further conditions.”).

<sup>27</sup> See *supra* note 6.

<sup>28</sup> 47 C.F.R. § 1.3.

<sup>29</sup> See *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972); *Northeast Cellular Tel. Co., L.P. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990).

unlikely to cause harmful interference and the licensee is prepared to accept interference from other services.<sup>30</sup>

As demonstrated in the accompanying Technical Annex, the LeoSat System will comply with (i) power flux density (“PFD”) limits specified in the FCC’s and ITU’s rules to protect terrestrial fixed services in the 17.8-18.6 GHz and 19.3-19.7 GHz bands; and (ii) the ITU’s equivalent PFD (“EPFD”) limits for the 17.8-18.6 GHz and 19.7-20.2 GHz bands, as well as apply those same EPFD limits to the 19.3-19.7 GHz band, to protect GSO FSS and MSS feeder link operations in those frequency bands. As further demonstrated in the Technical Annex, LeoSat will use geostationary arc avoidance mechanisms to coordinate its operations with licensed GSO FSS systems in the 19.3-19.7 GHz band, and other measures to protect NGSO MSS feeder links in the band. LeoSat also will accept interference from other authorized services to any U.S. gateway or user terminal operations in the 17.8-18.6 GHz and 19.3-20.2 GHz bands. Thus, grant of the requested waiver is warranted, serves the public interest, and is consistent with FCC precedent.<sup>31</sup>

*NGSO band segmentation.* LeoSat further requests a waiver, to the extent required, of Section 25.157(e)’s band segmentation requirement in the event there is insufficient spectrum to

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<sup>30</sup> See *Northrop Grummam Space & Missions Systems Corp.*, 24 FCC Rcd 2330, ¶¶ 74-75 (IB 2009); *contactMEO Communications, LLC*, 21 FCC Rcd 4035, ¶¶ 25-26 (IB 2006); see also *O3b LOI Grant* at 1-2.

<sup>31</sup> LeoSat will seek authorization for secondary use of the 27.5-28.6 GHz and 29.5-30.0 GHz uplink bands in future U.S. earth station applications, as appropriate. Moreover, as demonstrated in the attached Technical Annex, LeoSat’s proposed secondary use of these uplink bands in the U.S. will not cause harmful interference to other authorized satellite systems as a result of its compliance with ITU EPFD limits for the 27.5-28.6 GHz and 29.5-30.0 GHz bands, international coordination procedures, and/or FCC NGSO sharing rules. See Technical Annex, §§ 6.1-6.4. LeoSat also will comply with FCC rules requiring interference protection and coordination with terrestrial operations in the 27.5-28.35 GHz uplink band, to the extent that it seeks future FCC licensing of any U.S. user terminals or gateways in the band on a secondary basis. See Technical Annex § 6.5 (citing *Spectrum Frontiers Order* ¶¶ 43-69).

accommodate multiple NGSO systems.<sup>32</sup> Under the Commission's Ka-band sharing requirements,<sup>33</sup> multiple NGSO systems can share Ka-band spectrum without requiring band segmentation. Compliance with these sharing requirements effectively ensures that there will be sufficient Ka-band spectrum to accommodate multiple NGSO systems. Accordingly, grant of the requested waiver serves the public interest by permitting full, efficient use of Ka-band spectrum, and is consistent with prior FCC waivers of Section 25.157(e).<sup>34</sup>

#### **IV. CONCLUSION**

Based upon the foregoing, grant of this PDR serves the public interest and is consistent with the Commission's Ka-band plan and *DISCO II* policies permitting U.S. market access. Accordingly, LeoSat urges expeditious Commission approval to allow prompt commencement of new satellite broadband services to meet U.S. enterprise and other customer requirements that are not sufficiently met by existing satellite and terrestrial networks.

Respectfully submitted,

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<sup>32</sup> See 47 C.F.R. § 25.157(e).

<sup>33</sup> See *Ka-band Sharing Order* ¶¶ 18-21.

<sup>34</sup> See, e.g., *O3b LOI Grant* at 3.