

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Iridium Satellite LLC	)	IBFS File Nos. SES-MOD-20170413-00388
	)	and SES-AMD-20170726-00812
	)	
Iridium Carrier Services LLC	)	IBFS File Nos. SES-MOD-20170413-00389
	)	and SES-AMD-20170726-00813

**LIGADO COMMENTS**

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**LIGADO COMMENTS**

Ligado Networks Subsidiary LLC (“Ligado”) hereby comments on the above-captioned applications (the “Applications”) filed by Iridium Satellite LLC and Iridium Carrier Services LLC (collectively, “Iridium”) on April 13, 2017 and amended on July 26, 2017.<sup>1</sup>

**I. INTRODUCTION AND SUMMARY**

As explained below, the Applications raise material questions about the compatibility of Iridium’s proposed operations with those of its satellite neighbors. Furthermore, the Applications fail to provide essential information about the Certus mobile earth terminals (“METs”) for which Iridium seeks authority, and do not demonstrate how, or even whether, those METs would be capable of operating within the known and expected radiofrequency environment. Specifically, Iridium: (i) does not demonstrate that it would meet the Commission’s technical requirements for METs operating in the 1.6 GHz portion of the Big LEO Band<sup>2</sup>; and (ii) does not demonstrate that it would be capable of complying with the

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<sup>1</sup> See 47 U.S.C. § 309; 47 C.F.R. § 25.154.

<sup>2</sup> See *Flexibility for Delivery of Communications by Mobile Satellite Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band*, Report and Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962 (2003) (“2003 ATC Order”).

Commission's requirement that Iridium's mobile satellite service ("MSS") downlinks operate on an unprotected, secondary basis in accordance with the allocation for the 1.6 GHz portion of the Big LEO Band. In addition, the Applications introduce critical uncertainties with respect to Iridium's request for expanded authority to provide Aeronautical Mobile Satellite (Route) Service ("AMS(R)S") in that band segment.

Granting Iridium's Applications without resolving these questions could result in Iridium deploying up to 100,000 devices that are incapable of tolerating the lawful authorized operations of its satellite neighbors, thereby undermining the integrity of safety-of-life and other services and making inevitable costly and time-consuming interference disputes. The Commission should not take further action with respect to the Applications until Iridium has fully addressed these issues.

If the Commission does decide to grant the Applications, the Commission should mitigate the potential for harm by imposing appropriate conditions on such grant that: (i) explicitly affirm that all Iridium downlink operations must be compatible with Ligado's operations in the 1525-1559 MHz and 1626.5-1660 MHz bands (the "MSS L Band"), and the OOB envelope and in-band power limits approved by the Commission in the *2003 ATC Order*; (ii) require Iridium to successfully complete coordination with operators in adjacent spectrum—including Ligado—prior to deploying the earth stations proposed in the Applications; (iii) defer grant of Iridium's request for expanded AMS(R)S authority until critical uncertainties raised by that request are resolved; and (iv) confirm that any grant of AMS(R)S authority would not alter the secondary status of Certus terminal downlink (receive) operations as a general matter.

## II. BACKGROUND

**Ligado.** Ligado is authorized to provide MSS in the United States using spectrum in the MSS L Band. In addition to traditional satellite facilities, Ligado is authorized to operate ancillary terrestrial component (“ATC”) facilities as part of its MSS network and has pending applications to modify that authorization.<sup>3</sup> Ligado’s satellite operations in the MSS L Band are authorized as primary uses of spectrum under the United States Table of Frequency Allocations.<sup>4</sup> Ligado’s satellite network currently operates throughout North America, and the company plans to use its combined advanced satellite-terrestrial network to provide pervasive, highly secure and ultra-reliable connectivity to critical industries.

**The Iridium Network.** Iridium is authorized to operate in the 1617.775-1626.5 MHz band segment within the Big LEO Band, which is allocated for MSS space-to-Earth (*i.e.*, downlink) transmissions on a secondary basis.<sup>5</sup> The secondary nature of Iridium’s downlinks to other services is made clear in the space segment authority granted last year for the Iridium NEXT network: “MSS uplink operations in the 1617.775-1626.5 MHz band are allocated on a primary basis worldwide. *MSS downlinks in that band are secondary to other services.*”<sup>6</sup>

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<sup>3</sup> See generally *LightSquared Subsidiary LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, Order and Authorization, 26 FCC Rcd 566 (IB 2011); *Mobile Satellite Ventures Subsidiary LLC*, Order and Authorization, 19 FCC Rcd 22144 (IB 2004); Letter from New LightSquared LLC to FCC, IB Docket Nos. 12-340 and 11-109 (Dec. 31, 2015).

<sup>4</sup> See 47 C.F.R. § 2.106 & n.US380 (n.US380 also references Ligado’s ATC authority).

<sup>5</sup> See 47 C.F.R. § 2.106.

<sup>6</sup> See *Iridium Constellation LLC*, Order and Authorization, 31 FCC Rcd 8675, at ¶ 3 n.9 (IB/OET 2016) (emphasis added) (“*Iridium NEXT Order*”); *Iridium Constellation LLC et al.*, *Modification of Authority to Operate a Mobile Satellite System in the 1.6 GHz Frequency Band*, Order of Modifications, 23 FCC Rcd 15207, at ¶ 46 (2008) (cited in *Iridium NEXT Order*); see also *Motorola Satellite Communications, Inc.*, Order and Authorization, 10 FCC Rcd 2268, at ¶ 16 (IB 1995) (confirming that Iridium downlinks

*The Iridium Applications.* On April 13, 2017, Iridium filed the Applications and sought to modify its existing blanket earth station licenses to add authority to operate Iridium Certus METs. According to Iridium, “[t]hese next generation earth stations are designed to make use of the enhanced operational characteristics of the Iridium NEXT satellites” and “consist[] of a single ‘one size fits all’ terminal that will be used to provide enhanced service . . . for land, air, and sea.”<sup>7</sup>

### **III. IRIDIUM’S APPLICATIONS DO NOT ADDRESS HOW CERTUS EARTH STATIONS WOULD SATISFY ESTABLISHED TECHNICAL REQUIREMENTS FOR BIG LEO BAND EARTH STATIONS**

Iridium’s Applications do not answer key questions about how its Certus METs would: (i) operate within the known and expected radiofrequency environment; (ii) impact their satellite neighbors’ operations; or (iii) satisfy longstanding Commission requirements. Consequently, the Commission does not have enough information to responsibly determine whether the “proposed facilities and operations comply with all applicable rules, regulations and policies,” or that granting the Applications would serve the public interest.<sup>8</sup> The Commission should require Iridium to address these deficiencies *prior* to ruling on the company’s Applications.<sup>9</sup>

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are secondary in nature regardless of whether that condition appears explicitly on the face of Iridium’s license).

<sup>7</sup> Application Narrative at 1.

<sup>8</sup> See 47 C.F.R. § 25.156(a) (“Applications . . . for modification . . . of an authorization, will be granted if, upon examination of the application, any pleadings or objections filed, and upon consideration of such other matters as it may officially notice, the Commission finds that the applicant is legally, technically, and otherwise qualified, that the proposed facilities and operations comply with all applicable rules, regulations, and policies, and that grant of the application will serve the public interest, convenience and necessity.”).

<sup>9</sup> See 47 C.F.R. § 25.112(a)(1) (“An application will be unacceptable for filing . . . if . . . [t]he application is defective with respect to completeness of answers to questions, informational showings, internal inconsistencies, execution, or other matters of a formal character”); see also, e.g., *MTN License Corp.*, Letter, DA 16-1156 (Oct. 7, 2016);

Nearly 15 years ago, the Commission established technical requirements for METs operating in the Big LEO Band to ensure that those METs can operate in the known and expected radiofrequency environment in and around that band. Specifically, the *2003 ATC Order* establishes technical requirements with respect to the level of emissions that METs operating in the Big LEO Band—including those operated by Iridium—must be capable of tolerating. The Commission determined that “Big LEO systems *must be capable* of tolerating MET emissions in the 1610-1626.5 MHz band that range from -47 dBW/4KHz to -58 dBW/4kHz.”<sup>10</sup> The Commission arrived at this range after evaluating domestic and international rules applicable to the Big LEO Band and considering the radiofrequency environment arising as a result of those rules; essentially, the Commission recognized that Iridium would have to operate within this range to enable coexistence with other operators.<sup>11</sup>

Iridium’s Chief Executive Officer has stated that the company expects Certus devices to be commercially available in early 2018.<sup>12</sup> The Commission’s rules demand that Iridium

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*TelAlaska Cellular, Inc.*, Letter, DA 16-321 (Mar. 25, 2016); *AT&T Corp.*, Letter, DA 16-300 (Mar. 22, 2016) (dismissing earth station license applications as substantially incomplete and thus unacceptable for filing).

<sup>10</sup> *2003 ATC Order* ¶ 178 (emphasis added).

<sup>11</sup> *See id.* & n.471. Critically, the technical requirements for Big LEO Band METs established by the Commission in the *2003 ATC Order* were and are unrelated to the nature of operations in adjacent bands—including the MSS L-Band. In other words, those technical requirements are not limited to any particular use of the adjacent L-Band spectrum. Rather, those requirements simply establish the level of emissions that METs operating in the Big LEO Band should reasonably be expected to tolerate.

<sup>12</sup> *See As NEXT Rolls Out, Iridium Vows It Will Never Compete with Partners*, available at <https://runwaygirlnetwork.com/2017/08/24/as-next-rolls-out-iridium-vows-it-will-never-compete-with-partners/> (Aug. 24, 2017) (quoting Iridium CEO Matthew Desch’s statement that “[t]here will be beta trials, live trials of the underlying tech soon in the maritime market – which will get it first due to the regulatory environment being easier there – so Certus will be commercially available early in 2018 even before our [full NEXT] network is up”).

establish that its proposed METs can tolerate the emissions level established by the Commission *before* the agency grants the Applications and allows Iridium to market potentially flawed services to unsuspecting customers (particularly given the secondary status of Iridium’s proposed operations, as discussed in the next section).<sup>13</sup> But the Applications make no attempt to satisfy this requirement. Iridium’s failure in this respect is especially troubling for the following reasons:

*First*, as noted above, Iridium’s proposed Certus METs consist of a “single ‘one size fits all’ terminal” that would serve terrestrial, maritime and aeronautical operations. Given the significant differences in how these varied use cases could impact the radiofrequency environment, the Commission should require Iridium to provide technical information and analysis with respect to how Certus METs would operate in each use case. Iridium should be required to describe the use case for each operation with enough specificity to identify how the terminals would be installed (*e.g.*, on aircraft, motor vehicles, marine vehicles, etc.), the antennas and other equipment that would be used, and how such equipment would operate in the presence of various levels of emissions from MSS terminals in adjacent bands. To permit other parties to conduct independent analysis, Iridium should be required to provide—at the least—fulsome information with respect to relevant equipment, including but not limited to antenna parameters such as gain and pattern. For each such use case, Iridium should also be required to explain how Certus METs would be capable of tolerating: (i) in-band emissions of up to -47 dBW/4KHz, as specified in the *2003 ATC Order*; and (ii) OOB levels from the METs of other MSS operators at various authorized EIRP levels.

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<sup>13</sup> See 47 C.F.R. § 25.156(a).

*Second*, the Commission should require Iridium to explain additional technical gaps in its Applications. For example, maximum EIRP is traditionally calculated by adding maximum antenna gain and power into the antenna (where power is specified either in dBW or dBm and antenna gain is in dBi). Iridium’s Applications, however, assume a fixed EIRP value specified in dBW and calculate the power at the antenna flange by subtracting minimum antenna gain. Iridium states that the antenna would be active but fails to explain why peak antenna gain should not be used to calculate the EIRP or how the Certus terminal would maintain a fixed transmit EIRP over the variable gain of the antenna. The Commission should require Iridium to explain why it has departed from traditional practice with respect to such engineering analysis, as well as how the Certus METs would meet applicable EIRP limits. Iridium should also explain why it needs to operate at an EIRP value of 27.7 dBW, which is 74 times higher than its current authorization.

*Third*, Iridium suggests that its Certus METs would be of particular value for “mission-critical satellite communications to public safety and government users”<sup>14</sup> and would support “vital communications links to the U.S. military, to first responders, to those on the high seas, and to those in remote locations”<sup>15</sup>—critical operations like these require highly reliable and robust receivers that are properly designed if they are to function safely within the known and expected radiofrequency environment. And, as noted above, Iridium plans to make its Certus devices commercially available in early 2018.<sup>16</sup> As a result, granting the Applications would

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<sup>14</sup> See IBFS File No. File Nos. SAT-MOD-20131227-00148 and SAT-AMD-20151022-00074, Legal Narrative at 6-8 (2013).

<sup>15</sup> See Letter from Iridium Constellation, LLC to FCC, IBFS File No. SAT-MOD-20131227-00148 (Mar. 28, 2016).

<sup>16</sup> See *supra* note 12.

leave very little time to resolve the myriad interference issues that would inevitably arise if the Applications are granted “as is”—including issues impacting critical communications needs.<sup>17</sup>

In short, under these circumstances, as well as for the reasons in the following section, it would be premature for the Commission to grant the Applications at this time.

#### **IV. IRIDIUM’S APPLICATIONS DO NOT ADDRESS HOW CERTUS EARTH STATIONS WOULD EFFECTIVELY OPERATE ON A SECONDARY BASIS**

Iridium’s Applications also fail to answer key questions about how its Certus METs would effectively operate on a secondary basis. For more than 20 years, the Commission has made clear that MSS downlink operations in the 1.6 GHz portion of the Big LEO Band—including Iridium’s downlink operations in the 1617.775-1626.5 MHz band segment—are secondary in nature, and thus are not entitled to protection from other services. This conclusion flows directly from the United States Table of Frequency Allocations, which allocates the 1617.775-1626.5 MHz to MSS downlinks on a secondary basis,<sup>18</sup> and was reinforced when the Commission adopted service rules for Big LEO Band MSS operations in 1994<sup>19</sup> and when the Commission authorized Iridium NEXT last year.<sup>20</sup>

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<sup>17</sup> These potential interference issues are not limited to how the Certus METs would tolerate operations in other bands. Given the substantially higher EIRP of the Certus METs compared to their predecessors, the Commission may also wish to examine how the emissions of Certus devices could impact devices in adjacent bands, including the GNSS band.

<sup>18</sup> See 47 C.F.R. § 2.106; see also 47 C.F.R. § 2.105(c) (explaining that “secondary” allocations allow operations only on a “non-interference” basis with respect to primary operations and later-in-time authorized secondary operations).

<sup>19</sup> See generally *Amendment of the Commission’s Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Bands*, Report and Order, 9 FCC Rcd 5936 (1994).

<sup>20</sup> See *Iridium NEXT Order* ¶ 3 n.9.

The grant of authority for Iridium NEXT last year reflects that the secondary status of MSS downlinks in the 1.6 GHz portion of the Big LEO Band has not changed since service rules were first adopted in the early 1990s.<sup>21</sup> Other licensing decisions since then have only reinforced the secondary nature of those MSS downlinks with respect to both in-band and adjacent-band operations. For example, in 2013 the Commission modified Iridium’s earth station licenses to facilitate the provision of AMS(R)S over Iridium METs. In the underlying proceeding, several parties expressed concerns that because the 1.6 GHz portion of the Big LEO Band is allocated to AMS(R)S on a primary basis in both directions, Iridium could use any AMS(R)S authority to achieve *de facto* “super-primary” status for its secondary MSS downlinks. To address these concerns, the Commission clarified that grant of Iridium’s applications would not alter the secondary status of those downlinks or “require new restrictions on already licensed operations

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<sup>21</sup> The record reflects that Iridium’s predecessor-in-interest—Motorola—fully understood and accepted that Iridium’s secondary MSS downlinks would not be entitled to protection from other services in the Big LEO Band and adjacent bands. *See, e.g.*, Memorandum of Understanding between Motorola Satellite Communications, Inc. and the National Radio Astronomy Observatory, at 1 (June 30, 1994), *attached to* Motorola Satellite Communications, Inc., Ex Parte Notice, CC Docket 92-166 (Oct. 4, 1994) (acknowledging that the radioastronomy service “is entitled to protection from harmful interference from other communications services”—including Iridium downlink operations in the adjacent 1616-1626.5 MHz band); Jointly Filed Comments, submitted by Motorola Satellite Communications, Inc. and Loral Qualcomm Satellite Services, Inc., CC Docket No. 92-166, at ii (Oct. 7, 1993) (urging the Commission to allocate the 1613.8-1626.5 MHz band for secondary MSS use and recognizing the importance of allocation priority matters both within and across particular spectrum bands by emphasizing that secondary MSS downlinks should operate “without causing unacceptable levels of interference to other services in, *and adjacent to*” that band) (emphasis added); Motorola Satellite Communications, Inc., Petition for Rulemaking, RM No. \_\_\_\_\_, at 7 (Oct. 16, 1991) (arguing that the Commission should elevate the allocation for MSS downlinks in the 1.6 GHz band from secondary to primary status so that Iridium downlinks would not be “required to accept interference from new MSS/RDSS systems in other bands”).

of earth stations *in adjacent frequency bands.*”<sup>22</sup> The secondary status of Iridium’s existing and proposed MSS downlinks—and the implications of that status—is clear.

For the same reasons set forth above in connection with the discussion of the technical requirements for Big LEO-band METs, the Commission should require Iridium to establish that its proposed METs are capable of operating effectively on a secondary basis *before* its Applications are further processed.

## **V. IRIDIUM’S APPLICATIONS PROVIDE INSUFFICIENT INFORMATION WITH RESPECT TO PROPOSED AMS(R)S OPERATIONS**

In addition to the overarching concerns expressed above, Ligado has particular concerns related to Iridium’s request for AMS(R)S authority in connection with its proposed Certus METs. Significant uncertainty exists with respect to key aspects of the contemplated AMS(R)S operations, including the reliability of contemplated safety-of-life services, preventing stakeholders from evaluating whether grant of the requested AMS(R)S authority would serve *or rather would endanger* the public interest. The Commission should require Iridium to resolve this uncertainty before taking any further action on Iridium’s request for new AMS(R)S authority.

*First*, the Applications acknowledge significant uncertainty as to whether and when Iridium will receive civil aviation approvals in connection with its Certus terminal types. The Applications explain that Iridium is separately pursuing civil aviation approvals, under the auspices of RTCA and the Federal Aviation Administration, that would allow the use of Iridium

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<sup>22</sup> *Iridium Constellation LLC, Application for Authority to Modify License for a Low Earth Orbit Mobile Satellite System*, Memorandum Opinion and Order, 28 FCC Rcd 964, at ¶ 11 (IB 2013) (emphasis added) (“*Iridium AMS(R)S Order*”).

Certus terminals in connection with AMS(R)S.<sup>23</sup> Iridium’s recent amendments clarify that it is only in the nascent stages of pursuing these approvals. In Iridium’s words:

DO-262 [, the relevant RTCA standard,] establishes an RTCA review process for new equipment such as the Iridium Certus terminals. Iridium *will be submitting* technical studies to RTCA as part of the review process, and Inmarsat and other interested parties will have an opportunity to submit comments addressing interference or other concerns. The FAA will not issue a Technical Standard Order or allow a Supplemental Type Certification for the Iridium Certus terminals until the RTCA review process has been successfully completed.<sup>24</sup>

The Applications provide no further information with respect to the status of these separate reviews, when certifications can reasonably be expected to issue, or the likelihood of success.

Moreover, the Applications also do not provide any information with respect to the status of *international* certification efforts—including but not limited to any actions that may be necessary with or through the International Civil Aviation Organization (“ICAO”). Among other things, the Applications do not address whether the AMS(R)S modifications contemplated by the Applications are consistent with existing standards and recommended practices (“SARPs”) established by ICAO in connection with the Iridium network. As Iridium knows well, it can and has taken years to complete these steps at the international and domestic levels. Notably, the Commission has previously declined to issue AMS(R)S authorizations to Iridium in the face of such uncertainty, and has treated the successful completion of the international certification process as a prerequisite to domestic radiofrequency licensing.<sup>25</sup> Iridium provides no basis for

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<sup>23</sup> Application Narrative at 4.

<sup>24</sup> Application Amendment at 7 (emphasis added).

<sup>25</sup> See *Iridium AMS(R)S Order* ¶ 7 (recounting history of Iridium’s efforts to obtain civil aviation certifications and noting Iridium’s renewed request for FCC authority once such certifications had been obtained).

the Commission to take a different approach here by granting it radiofrequency authority now, without knowing the outcome of established domestic and international civil aviation certification procedures.

*Second*, the Applications suggest that significant uncertainty exists as to whether and how the civil aviation approval process may result in changes in the required performance characteristics of Iridium’s Certus receivers and the technical parameters set forth in the Applications. Those processes are not expected to be ministerial in nature or involve a straightforward “rubber stamp” from the relevant reviewing organization. For example, as Iridium acknowledges in its amendment, the RTCA approval process will afford “interested parties . . . an opportunity to submit comments addressing interference or other concerns.”<sup>26</sup> More broadly, Iridium acknowledges that the civil aviation approvals sought “may include performance requirements that would necessitate operating Iridium Certus terminals at levels below the maximum levels specified in this application when they are used to provide AMS(R)S.”<sup>27</sup>

But those approvals could very well require Iridium Certus terminals to operate differently in other respects. For example, a responsible civil aviation authority could require Iridium Certus terminals to tolerate a level of emissions consistent with the Commission technical requirements for Big LEO Band METs established in the *2003 ATC Order*, so as to ensure that those terminals can reliably provide critical AMS(R)S functions within the known and expected radiofrequency environment. Similarly, a responsible civil aviation authority could require Iridium to modify its proposed AMS(R)S operations to ensure that they are compatible

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<sup>26</sup> Application Amendment at 7.

<sup>27</sup> *Id.*

with the AMS(R)S operations of Inmarsat. While these types of changes may be foreseeable, the civil aviation approval process could also result in other requirements that are *unforeseen*. This is yet another compelling reason for the Commission not to act on the Applications until the completion of the civil aviation approval process.

*Third*, the Applications raise but do not resolve significant questions about how Iridium and other operators would distinguish between AMS(R)S and non-AMS(R)S operations conducted over any given Certus MET. Whereas Iridium's first-generation METs used different terminal types for different AMS(R)S and MSS operations, Iridium's Applications explain that its second-generation Certus METs consist of "a single 'one size fits all' terminal that will be used to provide enhanced service . . . for land, air, and sea." Iridium's Applications do not address a host of critical issues, including: (i) how Iridium plans to differentiate between these different modes of operations; (ii) how Iridium plans to signal to other operators when a given MET is conducting protected AMS(R)S operations, as opposed to unprotected MSS downlink operations; (iii) how Iridium would ensure that non-AMS(R)S traffic is not carried over an "AMS(R)S" terminal, and *vice versa*; and (iv) how Iridium would ensure that necessary adjustments to operating parameters are made when AMS(R)S is transmitted or received (*e.g.*, power reductions that may be required by civil aviation authorities, as discussed above).

Iridium's plan to use a single terminal type for AMS(R)S and non-AMS(R)S traffic would also exacerbate the legitimate concern, recognized by the Commission and discussed above, that Iridium could attempt to use AMS(R)S authority as a way of obtaining *de facto* "super-primary" status for its non-AMS(R)S operations. This was a significant danger in the case of Iridium's first-generation METs, which "come in multiple varieties" and thus allow other MSS operators and the Commission to determine the type of traffic at issue based on the terminal

being used. But the danger is exponentially greater in the case of Iridium's Certus terminals, which come in "a single 'one size fits all' terminal," frustrating the ability of other operators to determine the nature of relevant traffic in this fashion.

In light of these concerns, the Commission should not grant the AMS(R)S authority requested in the Applications until the civil aviation approval processes described above have been favorably concluded, and Iridium has provided detailed responses sufficient to favorably resolve the other issues raised by its Applications.

**VI. ANY GRANT OF AUTHORITY SHOULD INCLUDE APPROPRIATE CONDITIONS TO SAFEGUARD AUTHORIZED OPERATIONS IN NEIGHBORING BANDS AND AVOID FUTURE INTERFERENCE DISPUTES**

In light of the concerns discussed above, the Commission should require Iridium to provide the information necessary to resolve these issues. If the Commission is inclined to grant the Applications, it should only do so subject to the following conditions:

*First*, the Commission should explicitly affirm that all Iridium downlink operations must be compatible with Ligado's operations in the MSS L Band, and the OOB envelope and in-band power limits approved by the Commission in the *2003 ATC Order*. Relatedly, the Commission should explicitly affirm that Iridium must accept any and all interference from other services, regardless of whether such operations are based in the Big LEO Band or adjacent bands (such as, but not limited to, the MSS L Band). For the avoidance of doubt, the Commission should clarify and confirm that such operations include Ligado's operations in the MSS L Band.

*Second*, the Commission should condition any grant of Iridium's Applications on the successful completion of coordination with operators in the Big LEO Band and adjacent bands (such as, but not limited to, the MSS L Band) prior to the initiation of service over newly licensed facilities. Given the secondary status of MSS downlinks in the 1.6 GHz portion of the Big LEO Band, coordination is likely to be critical to enable Iridium to function in a manner that

protects its customers' interests and enables those customers to safely depend on Iridium to provide reliable service. Ligado expects that most operators would be receptive to coordination requests.

*Third*, the Commission should defer grant of the AMS(R)S authority requested by Iridium in connection with the Applications until completion of both the domestic and international civil aviation certification processes for Certus terminals. This would provide greater certainty as to the nature, technical parameters, and reliability of the expanded AMS(R)S operations that Iridium would implement. At the same time, the successful completion of these certification processes would help to resolve many of the uncertainties discussed above.

*Fourth*, the Commission should confirm that any grant of AMS(R)S authority would not alter the secondary status of MSS downlink operations in the 1.6 GHz portion of the Big LEO Band, as reflected in the Iridium NEXT authorization. Stated differently, the Commission should explicitly carry forward the condition imposed when the Commission first granted AMS(R)S authority to Iridium, and again when the Commission authorized the satellite system on which the proposed AMS(R)S services would be provided.

## **VII. CONCLUSION**

For the reasons discussed above, it would be premature for the Commission to grant the Applications at this time. The Applications do not establish that Iridium's devices are capable of tolerating the lawful operations of its satellite neighbors. For example, the Applications do not explain how the proposed METs would meet the Commission's technical requirements for Big LEO Band METs established in the *2003 ATC Order*, or otherwise be capable of operating on an unprotected, secondary basis. This raises serious concerns about Iridium's ability to effectively support critical public safety communications needs, which Iridium states it would target if the Applications are granted. At the same time, the Applications raise—but fail to resolve—critical

uncertainties with respect to expanded AMS(R)S authority requested by Iridium. Ligado therefore urges the Commission not to grant the Applications until Iridium has provided additional information sufficient to favorably resolve these questions.

If the Commission is inclined to grant the Applications, it should impose appropriate conditions on such grant that: (i) explicitly affirm that all Iridium downlink operations must be compatible with Ligado's operations in the MSS L Band, and the OOB envelope and in-band power limits approved by the Commission in the *2003 ATC Order*; (ii) require Iridium to successfully complete coordination with adjacent operators—including Ligado—prior to deployment of the earth stations proposed in the Applications; (iii) defer its grant of Iridium's request for expanded AMS(R)S authority until critical uncertainties raised by that request are resolved; and (iv) confirm that any grant of AMS(R)S authority would not alter the secondary status of Certus terminal receive (downlink) operations as a general matter.

Respectfully submitted,

/s/

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September 8, 2017

**DECLARATION**

I hereby certify that I am the technically qualified person responsible for reviewing the engineering information contained in the foregoing submission, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this pleading, and that it is complete and accurate to the best of my knowledge and belief.

\_\_\_\_\_  
/s/

Maqbool Aliani  
Senior Vice President, Spectrum Standards &  
Technology  
LIGADO NETWORKS SUBSIDIARY LLC  
10802 Parkridge Boulevard  
Reston, VA 20191

September 8, 2017

**CERTIFICATE OF SERVICE**

I, Kayla Ernst, hereby certify that on this 8th day of September, 2017, I served true and correct copies of the foregoing Ligado Comments via first-class mail upon the following:

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\_\_\_\_\_/s/\_\_\_\_\_  
Kayla Ernst