

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of)	
)	
Ligado Networks LLC)	IB Docket No. 11-109
Application to Modify its Ancillary)	IB Docket No. 12-340
Terrestrial Component Authorization)	
)	IBFS File No. SAT-MOD-20151231-00090
)	IBFS File No. SAT-MOD-20151231-00091
)	IBFS File No. SES-MOD-20151231-00981

To: The Commission

REPLY COMMENTS OF IRIDIUM COMMUNICATIONS INC.

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I. INTRODUCTION AND SUMMARY

Iridium Communications Inc. (“Iridium”) hereby submits these Reply Comments on Ligado’s pending applications to modify its ancillary terrestrial component (“ATC”) authorization to provide terrestrial mobile service in portions of the L-band pursuant to a new set of operational parameters (the “Modification Applications”).¹ Iridium does not oppose Ligado’s plans *per se*; indeed, we express no view on the majority of the spectrum that Ligado seeks to use for terrestrial operations. Ligado’s proposed deployment at 1627.5-1637.5 MHz, however, would result in harmful interference to Iridium’s current and future operations, which offer important, valuable services to the public and are entitled to sufficient interference protection from other authorized operations pursuant to clear FCC rules.

¹ See *Comment Sought on Ligado’s Modification Applications*, Public Notice, IB Docket No. 11-109, IB Docket No. 12-340, DA 16-442 (rel. Apr. 22, 2016) (“Public Notice”).

Ligado recently noted that it is “highly motivated to develop and solve any and all potential interference problems.”² Iridium appreciates Ligado’s willingness to work with the GPS industry, the FAA, and the aviation industry to resolve potential interference concerns. However, like other commenters,³ Iridium continues to have significant concerns about harmful interference that will be created by Ligado’s proposed stand-alone terrestrial network operating at 1627.5-1637.5 MHz, and asks the Commission to hold the Modification Applications in abeyance until Ligado successfully resolves these issues through mutual agreement with Iridium. In the absence of an agreement between the parties, Iridium asks the Commission to adopt additional license conditions to ensure sufficient interference protection from Ligado’s proposed

² See Tamara Casey, *Ligado Networks Underscores Commitment to Aviation Safety*, LIGADO NETWORKS BLOG (June 6, 2016), <http://ligado.com/blog/ligado-networks-underscores-commitment-aviation-safety/>.

³ See, e.g., Comments of Aircraft Owners and Pilots Association, Airlines for America, Aviation Spectrum Resources, Inc., Bristow U.S., LLC, Cargo Airline Association, Delta Airlines, Helicopter Association International, International Air Transport Association, National Air Transportation Association, Rockwell Collins IMS, Southwest Airlines, and United Parcel Service (the “Joint Aviation Parties”), IB Docket No. 11-109 *et al.* (filed May 23, 2016), at i (“There remain too many unresolved issues to alleviate the aviation sector’s concerns that Ligado’s proposed operations will present an unacceptable threat of harmful interference to the aviation GPS receivers.”); Comments of the Aerospace Industries Association, IB Docket No. 11-109 *et al.* (filed May 23, 2016), at 1 (“As explained below, it would be premature to grant the Applications at this time, as there are substantial concerns regarding the adequacy of the proposed conditions to protect the GPS receivers and other avionics used by the aerospace and defense industries, including but not limited to certified aviation receivers, other GPS devices, and satellite communications.”); Comments of Airlines for America, IB Docket No. 11-109 *et al.* (filed May 23, 2016), at 3 (“Specifically, we urge the Federal Communications Commission (FCC) to delay action on the Ligado proposals because serious safety questions must first be resolved.”); Letter from Nikolaos Papadopoulos, President of u-blox America, Inc., to FCC Secretary, IB Docket No. 11-109 *et al.* (filed May 20, 2016), at 1 (“We have a major concern that the receivers out in the field will be affected by the Ligado signals close to L1 band as they are from our receiver point-of-view in-band interference, especially where no SAW-filtering is used in the devices.”); Letter from Timothy St. J. Ellam, Counsel to NovAtel Inc., to Marlene H. Dortch, FCC Secretary, IB Docket No. 11-109 *et al.* (filed May 19, 2016), at 4 (“NovAtel submits that the foregoing concerns with respect to potential harmful interference to GPS receivers have not yet been addressed by Ligado and represent a legitimate and ongoing concern should Ligado operate a terrestrial mobile network in the referenced MSS L-band frequencies.”).

operations by requiring the following: (i) reduced out-of-band emissions from Ligado's mobile terminals into Iridium's spectrum in the adjacent band at 1616-1626.5 MHz.; and (ii) exclusion zones around airport facilities where operation of Ligado user terminals would be prohibited to protect vital Aeronautical Mobile-Satellite (Route) Service ("AMS(R)S") communications at or near airports.

Iridium will continue to work together in good faith with Ligado to resolve potential harmful interference from Ligado's proposed operations to Iridium mobile terminals.⁴ Ligado's recent public pronouncements suggest a resolution is possible. According to Ligado, it has "taken a number of steps to ensure satellites using other mid-band spectrum can still successfully send signals to smartphones, GPS devices and specialized industrial equipment that rely on that data."⁵ Although Iridium hopes these issues can be resolved without requiring Commission intervention, it is providing these Reply Comments in the record to apprise the Commission of these important remaining issues, which should be resolved (*i.e.*, through either mutual agreement between the parties or Commission adoption of additional license conditions) prior to or upon Commission action on the Modification Applications.

II. BACKGROUND

A. The U.S. Government, U.S. Military, and First Responders Depend on Critical National Security and Public Safety Services Provided by Iridium's Satellite Network.

The Iridium constellation consists of 66 cross-linked, non-geostationary orbit satellites. Operating as a fully meshed network, Iridium's constellation is the only truly global mobile

⁴ See Comments of Iridium Communications Inc., IB Docket No. 11-109 *et al.* (filed May 23, 2016), at 2-3.

⁵ See Doug Smith, *Looking Forward to a 5G Future for the U.S. Wireless Industry*, LIGADO NETWORKS BLOG (May 23, 2016), <http://ligado.com/blog/looking-forward-5g-future-u-s-wireless-industry/>.

satellite system. The proven resilience of the Iridium network makes it ideal for critical national security and public safety applications. Iridium provides the U.S. military with a number of essential capabilities, including tactical communications (push-to-talk broadcasts to a flexible and unlimited number of users); transmission of mission-critical voice and data through a secure Department of Defense gateway; tracking of personnel, aircraft, vehicles, and equipment; and instant communications infrastructure in conflict zones.

Complementing these traditional voice and data offerings, Iridium also operates a global machine-to-machine (“M2M”) network. The Iridium M2M network allows Iridium’s customers to track inventory and assets in real time and more effectively manage their infrastructure. For example, Iridium’s low-latency Short Burst Data service allows customers – including the U.S. government and military – to track in real time everything from shipping containers to trucks and aircraft. The Iridium M2M network is a critical part of Iridium’s expanding portfolio of intelligent data applications. As a result of the proliferation of Iridium’s M2M network, Iridium’s user base and user profiles have dramatically changed since Iridium’s initial inception.

Given the characteristics of this robust and reliable mobile satellite service (“MSS”) network, Iridium is often the sought-after communications provider for not only the U.S. government and the U.S. military, but also first responders, international disaster-relief organizations, and other federal and state agencies. During several international disasters – including the 2011 Fukushima, Japan earthquake and Hurricane Katrina – Iridium’s network served as an essential telecommunications backbone for coordinated relief efforts. Indeed, in 2012, the International Telecommunication Union honored Iridium with its Humanitarian

Award, recognizing the lives saved by information and communications technology Iridium provides in times of crisis.⁶

Iridium's network also helps government users identify disasters before they occur. The Deep-Ocean Assessment and Reporting of Tsunamis, a tsunami-detection system operated by the National Oceanic and Atmospheric Administration ("NOAA"), relies on Iridium to connect remote sensors to NOAA labs and centers, where scientists can monitor the oceans for tsunami waves and determine whether, where, and when they might hit shore. Iridium also supports other scientific applications that serve critical public needs. For example, Iridium enables government-supported research by the Johns Hopkins University Applied Physics Laboratory to monitor and forecast solar storms, which threaten widespread disruptions of power and communications networks.

Numerous other federal agencies, including the Department of Homeland Security, the Drug Enforcement Administration, and U.S. Border Patrol, also rely on Iridium products to carry out their missions. In short, the public interest, public safety, and national security benefits of the Iridium system are substantial, proven, and increasing.

B. The Aviation Industry Depends on Iridium's AMS(R)S Operations.

Iridium's public safety services are not limited to supporting critical U.S. government operations and disaster relief missions, but also include AMS(R)S provided via a portion of its

⁶ See, e.g. *Iridium Receives Prestigious ITU Humanitarian Award for Work on Emergency Communications*, IRIDIUM BLOG (Oct. 19, 2012), <http://www.iridium360.com/2012/10/19/iridium-receives-prestigious-itu-humanitarian-award-for-work-on-emergency-communications/>; *Emergency Communications: Saving Lives With ICT*, ITUNews (Dec. 2012), <https://itunews.itu.int/En/3342-Emergency-communications.note.aspx>; see also *Hurricane Katrina: Managing the Crisis and Evacuating New Orleans: Hearing Before the U.S. Senate Comm. on Homeland Security and Governmental Affairs*, 109th Cong. 37-40 (2006) (testimony of Brigadier General Mark A. Graham).

“Big LEO” MSS network. AMS(R)S is a critical aviation service that facilitates air traffic and operational control communications via mobile earth station terminals installed onboard domestic and international aircraft. Consistent with its status as an essential aviation service, AMS(R)S is designated as a “primary” service allocation in the 1610-1626.5 MHz band in which Iridium operates.⁷

The use of Iridium’s aviation safety services continues to expand. In 2014, Iridium’s provision of future air navigation systems (“FANS”) – an AMS(R)S service that provides a data link between the cockpit and air traffic control – has increased by 25%.⁸ Similarly, today thousands of aircraft rely on Iridium’s AMS(R)S network for critical cockpit and cabin communications while in flight. As the Joint Aviation Parties noted in their Comments, AMS(R)S has “become a critical function to meet long-range aviation requirements, and [is] used regularly in flight, including oceanic air traffic control voice messages. In addition, the increased bandwidth available from new SATCOM constellations . . . will allow for further flight-critical services in supporting [*sic*] of operations and safety, such as Electronic Flight Bags (‘EFB’), Flight Management System (‘FMS’) updates, and datalink frequency table modifications, among others,” which contribute to flight and passenger safety by automating and streamlining in-flight tasks and reducing the in-flight workload of the cockpit crew.⁹

Both the Commission and the Federal Aviation Administration (“FAA”) have acknowledged the importance of facilitating the increased utilization of AMS(R)S networks such

⁷ See 47 C.F.R. § 2.106, n.5.367.

⁸ Mike Hooper, Senior Business Manager – Aviation, Iridium, *Iridium Update: Cross Polar Working Group* (May 12, 2015), available at https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/ato_intl/documents/cross_polar/CPWG19/CPWG19_Iridium_Update.pdf, at 5.

⁹ Comments of Joint Aviation Parties at 19.

as Iridium’s. The FAA has noted that FANS offerings have “proven benefits in operational efficiency, environmental impact, and safety” and that Iridium’s provision of AMS(R)S would “promote FANS 1/A expansion.”¹⁰ The FAA thus accepted the Iridium AMS(R)S network “as a viable means for air traffic service (ATS) communications.”¹¹ Unsurprisingly, many of the passenger airlines regulated by the FAA have expressed support for Iridium’s AMS(R)S network deployment.¹²

The Commission has also recognized that AMS(R)S communications “relate to the safe, efficient and economical operation of aircraft, such as fuel, weather, position reports, aircraft performance, essential services and supplies.”¹³ The Commission further highlighted that AMS(R)S “may convey information critical to aviation.”¹⁴ Consequently, Iridium’s AMS(R)S operations are supported by the FAA and licensed by the FCC, and directly contribute to the safety, reliability, and efficiency of the aviation industry.

¹⁰ Letter from Margaret Gilligan, Associate Administrator for Aviation Safety, FAA, to Dave Nakamura, The Boeing Company (June 27, 2011), *available at* http://www.icao.int/APAC/Meetings/2012SOCM2/WP04_USA%20AI.2.1%20-%20FANS%201A%20over%20Iridium%20Status.pdf.

¹¹ *Id.*

¹² *See, e.g.*, Letter from Steve Dickson, Senior Vice President Flight Operations, Delta Air Lines, to Marlene H. Dortch, FCC Secretary, File Nos. SAT-MOD-19961204-00139 *et al.* (Jan. 12, 2012); Letter from Capt. Ken Rewick, Vice President, Flight Operations, Hawaiian Airlines, to Marlene H. Dortch, FCC Secretary, File Nos. SAT-MOD-19961204-00139 *et al.* (Jan. 10, 2012); Letter from Capt. Joe Burns, Managing Director, Technology and Flight Test, United Airlines, to Marlene H. Dortch, FCC Secretary, File Nos. SAT-MOD-19961204-00139 *et al.* (Dec. 29, 2011).

¹³ *In re Review of Part 87 of the Commission’s Rules Concerning the Aviation Radio Service*, Notice of Proposed Rulemaking, 16 FCC Rcd 19005, 19008 ¶ 5 (2001).

¹⁴ *In re Review of Part 87 of the Commission’s Rules Concerning the Aviation Radio Service*, Report & Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 21432, 21436 ¶ 6 (2003).

C. Iridium NEXT Satellites Will Enhance the Benefits of the Iridium MSS Network.

Iridium's \$3 billion, second-generation "Iridium NEXT" constellation of satellites is scheduled for first launch in September 2016. Iridium NEXT will offer a robust MSS network providing high-speed connectivity to the U.S. government, military, and first responders as well as a diverse group of commercial partners, including the maritime, land mobile, M2M, and aviation industries. The Iridium NEXT constellation will unlock a suite of innovative new services and provide enhanced connectivity for Iridium's customers. For example, Iridium NEXT will facilitate the Iridium CertusSM service, which will provide high-speed broadband access to any location in the world. Iridium NEXT will allow Iridium to better meet the dramatically expanding consumer demand for increased bandwidth and higher speeds for a variety of MSS applications.

The launch of Iridium NEXT will provide the aviation sector – including private and commercial aircraft, as well as fixed-wing, rotary aircraft operators – with a cutting-edge, innovative platform for AMS(R)S communications. In particular, Iridium NEXT will expand Iridium's portfolio of critical services provided to the aviation community.

Separately, earlier this month, Iridium announced its new Satellite Time and Location ("STL") service, which provides end users with access to resilient position, navigation and timing technology from any location. STL technology can verify GPS and other navigation services, and substitute, as needed, for these services if they become unavailable or compromised. Iridium currently is the only network able to provide this highly unique, robust, and cost-effective solution to the aviation community.

III. LIGADO’S STAND-ALONE TERRESTRIAL NETWORK WOULD CAUSE SIGNIFICANT HARMFUL INTERFERENCE TO IRIDIUM’S USER TERMINALS AND AMS(R)S OPERATIONS.

A. Out-of-Band Emissions from Ligado’s Widely Deployed 5G-Enabled Mobile Terminals Will Cause Interference to Iridium’s User Terminals in the Adjacent Big LEO Band.

Ligado’s recent public statements make clear that it intends to use its ATC authority to deploy a ubiquitous, 5G network across 40 MHz of spectrum in four bands, including spectrum directly adjacent to Iridium’s 8.725 MHz of spectrum between 1617.775 and 1626.5 MHz. In particular, Ligado stated that “[t]he Modification Applications present the Commission with a rare opportunity to unlock a greenfield of mid-band spectrum that can fill a vital role in the future of next-generation wireless networks, including 5G.”¹⁵ Ligado also “expects to offer capabilities and services to and with the wireless industry that make full use of the unique advantages of mid-band spectrum.”¹⁶

Ligado thus seeks to deploy a robust, high power, widespread 5G network operating directly adjacent to the small portion of spectrum that Iridium uses for low-power satellite transmissions. Far from a “greenfield” deployment, Ligado’s 5G network will be the first commercial, nationwide terrestrial deployment in the L-band, with potentially millions of 5G mobile devices transmitting just 1 MHz away from the spectrum that Iridium utilizes for all of its critical uplink and downlink satellite services to more than 750,000 customers.

Although discussions remain ongoing, Iridium’s technical analysis indicates that Ligado’s proposed terrestrial use of 10 MHz at 1627.5-1637.5 MHz will cause significant harmful interference to adjacent-band Iridium terminals. Specifically, Iridium terminals will

¹⁵ Comments of Ligado Networks LLC, IB Docket No. 11-109 (filed May 23, 2016) (“Comments of Ligado”), at 5.

¹⁶ *Id.* at 6.

suffer harmful interference as a result of out-of-band emissions from potentially millions of Ligado 5G mobile devices. For example, at the out-of-band emission limits proposed in the Modification Applications, Iridium user terminals operated in the adjacent Big LEO band will receive harmful interference from Ligado mobile terminals. Thus, Ligado's proposed compliance with a substantially relaxed out-of-band emission limit of -58 dBW/4 kHz at 1626.5 MHz offers insufficient interference protection, particularly compared to the more stringent out-of-band emission limits that the Commission has adopted for ATC operations in Iridium's MSS frequency band and other terrestrial operations in nearby frequency bands.¹⁷ When the Commission adopted ATC rules in 2003, it simply could not anticipate the evolution of 5G wireless networks that present more dramatic interference issues than the previously contemplated terrestrial networks.

As a result, Ligado's proposed use of 1627.5-1637.5 MHz will compromise Iridium's ability to provide the seamless, global connectivity that its customers expect and have come to rely upon. At precisely the moment when Iridium is poised to deliver the substantial and immediate benefits of its second-generation MSS constellation to its customers – many of whom provide mission-critical national security or public safety services – the benefits of Iridium NEXT will be negatively impacted by Ligado's proposed operation of a 5G ATC terrestrial network directly adjacent to Iridium's L-band spectrum. Moreover, the adverse impact on Iridium's MSS operations stands in marked contrast to the interference protection benefits that

¹⁷ See 47 C.F.R. § 25.254(b)(3) (applying out-of-channel EIRP limit of -57.1 dBW/30 kHz at the assigned band edge to ATC operations in the 1610-1626.5 MHz band); *In re Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Report & Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16125 ¶ 59 (requiring fixed and mobile AWS-4 transmitters operating in the 2000-2020 MHz and 2180-2200 MHz bands to attenuate out-of-band emissions by $43 + 10 \log_{10}(P)$ dB, and noting that this limit is consistent with those applicable to AWS-1 and other terrestrial mobile operations).

Ligado's proposed 5G operations will receive from the more restrictive out-of-band emission limits applicable to Iridium's user terminals.¹⁸

B. Ligado's Proposed Stand-Alone Terrestrial Network Also Threatens to Disrupt Iridium's Current and Future AMS(R)S Operations.

As the Joint Aviation Parties pointed out, the Modification Applications "raise unresolved concerns regarding the potential harmful interference critical to AMS(R)S satellite communications ('SATCOM') provided by Inmarsat (downlink in 1525-1559 MHz and uplink in 1626.5-1660.5 MHz) and Iridium (uplink *and* downlink in 1616-1626.5 MHz) that should be fully evaluated before acting on the [Modification] Applications."¹⁹ Despite assurances to the contrary, Ligado's proposed terrestrial operations at 1627.5-1637.5 MHz would significantly impact Iridium's current and future AMS(R)S operations.

The record also underscores the concern that no studies have been conducted with respect to the compatibility of Ligado's proposed stand-alone terrestrial network with Iridium's network.²⁰ Indeed, "the risk of a premature decision on Ligado's proposal may have multiple effects on aviation SATCOM systems and further studies of the compatibility with both Iridium and Inmarsat is required."²¹ Accordingly, the Commission should hold the Modification Applications in abeyance until further studies are conducted and the aviation community's concerns with respect to potential interference into AMS(R)S systems are successfully resolved.

¹⁸ See 47 C.F.R. § 2.106, n.5.364 (limiting emissions from mobile earth terminals operating in the 1610-1626.5 MHz band to an EIRP density of -15 dB(W/4 kHz) in parts of the band used by airborne electronic aids to navigation, and to -3 dB(W/4 kHz) elsewhere in the band); see also 47 C.F.R. 25.202(f) (specifying out-of-band emission mask for satellite earth stations generally).

¹⁹ Comments of Joint Aviation Parties at ii.

²⁰ See *id.*; Comments of Aerospace Industry Association at 3.

²¹ Comments of Joint Aviation Parties at 19.

In addition, any grant of the Modification Applications should include an exclusion zone around any airport facility to ensure that Iridium's critical AMS(R)S operations do not suffer any harmful interference. Such a condition would allow the Commission to properly manage and allocate access to spectrum while also recognizing the FAA's critical role in overseeing the functioning and implementation of aviation safety applications, including AMS(R)S.

C. FAA Approval of the Impact of Ligado's Proposed Terrestrial Network on Iridium's AMS(R)S Operations Must Be a Precondition to Granting the Modification Applications.

The Commission has long recognized the FAA's central role in Commission proceedings that assess the interference impact of its decisions on aviation safety. Ligado has appropriately recognized the "vital role" that the FAA and the aviation industry must play in this proceeding.²² Iridium agrees with Ligado that "the Commission would benefit from the FAA's specialized expertise and authority in ensuring the safety of critical aviation operations."²³

As the Joint Aviation Parties pointed out, "the whole of Ligado's licensed emission profile should be considered under the same concept of FAA oversight to ensure safety of aviation and the flying public, including out-of-band emission ('OOBE') limits that incorporate all unwanted *and* spurious emissions."²⁴ Of course, as Ligado notes, the "evaluation of interference must be based upon technical determinations by the very competent FAA aviation safety experts as well as the industry experts assembled by RTCA Inc."²⁵ The Commission should refrain from granting the Modification Applications until such time as additional studies have been completed regarding the impact of Ligado's proposed terrestrial operations on the

²² Comments of Ligado at 4.

²³ *Id.* at 32.

²⁴ Comments of Joint Aviation Parties at 12.

²⁵ Casey, *Ligado Networks Underscores Commitment to Aviation Safety*.

Iridium AMS(R)S system *and* the FAA has concluded that such terrestrial operations will not result in harmful interference to AMS(R)S operations.

IV. THE COMMISSION’S RULES UNAMBIGUOUSLY PLACE RESPONSIBILITY FOR RESOLVING INTERFERENCE CONCERNS ON LIGADO.

A. The Commission Adopted Section 25.255 to Ensure that MSS/ATC Operators Adequately Address Harmful Interference.

To protect other MSS spectrum users from harmful interference, the Commission’s rules place responsibility on the MSS ATC operator to resolve such interference.²⁶ The text is unambiguous: “If harmful interference is caused to other services by ancillary MSS ATC operations, either from ATC base stations or mobile terminals, *the MSS ATC operator must resolve any such interference.*”²⁷ Accordingly, the Commission has explained that the rule imposes an “absolute obligation on the MSS/ATC operator to resolve any harmful interference to other services.”²⁸

As proposed, Ligado’s operations at 1627.5-1637.5 MHz will cause significant harmful interference to current and future Iridium terminals. Ligado’s resulting obligations under the Commission’s rules are therefore clear: as the MSS/ATC operator responsible for causing harmful interference, it must take any and all actions necessary to resolve such interference.²⁹ Consistent with the Commission’s longstanding goal of fostering cooperation and discussion

²⁶ 47 C.F.R. § 25.255.

²⁷ *Id.* (emphasis added). Similarly, Section 25.202(f)(4) states that “when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.” 47 C.F.R. § 25.202(f)(4).

²⁸ *In the Matter of Spectrum & Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands; Globalstar Licensee LLC, Auth. to Implement an Ancillary Terrestrial Component*, Report & Order and Order Proposing Modification, 23 FCC Rcd 7210, 7223 ¶ 35 (2008).

²⁹ *See* 47 C.F.R. § 25.255.

between MSS operators, Iridium will continue its ongoing discussions with Ligado in hopes of resolving these interference issues. But regardless of the resolution of those discussions, the regulatory obligation to eliminate the potential for harmful interference to the Iridium MSS network rests solely with Ligado.

B. Harmful Out-of-Band Emissions into an Adjacent MSS Band Are Precisely the Kind of Interference that Section 25.255 Is Designed to Address.

The potential for harmful interference into Iridium’s MSS network is precisely the type of situation that Section 25.255 was adopted to address. When it authorized the provision of ATC, the Commission noted that “in the unlikely event that an *adjacent MSS or other operator does receive harmful interference from ATC operations*, either from ATC base stations or mobile terminals, the ATC operator must resolve such interference.”³⁰ The scenario that the Commission imagined possible in 2003 is exactly where Ligado could place Iridium in 2016: experiencing harmful interference into its MSS terminals from the network of an adjacent band MSS/ATC operator.

Of course, as the name implies, the Commission never intended for the operation of an “ancillary” terrestrial network to come at the expense of an incumbent MSS network’s viability. Indeed, the Commission has explicitly stated that “ATC enjoys no rights *vis-à-vis* other primary services in the same or adjacent bands.”³¹ Ligado is therefore obligated to eliminate such interference before providing its proposed ATC service.

³⁰ *In re Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands; Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, Report & Order and Notice of Proposed Rulemaking, 18 FCC Rcd 1962, 2017 ¶104 (2003) (emphasis added).

³¹ *In re Spectrum & Service Rules*, 23 FCC Rcd at 7223 ¶ 35.

Finally, Iridium notes that Ligado appears to rely on the waiver of the integrated service rule granted to LightSquared in 2011.³² Given the significant changes to Ligado’s business and technical plans and the variety of regulatory, legal, and marketplace shifts since 2011, it is not clear the extent to which Ligado may continue to rely on the 2011 Conditional Waiver in order to launch a new stand-alone terrestrial service today.³³

³² See Letter from Gerard J. Waldron, Counsel to New LightSquared, to Marlene H. Dortch, FCC Secretary, *Re: Ex parte presentation in IB Docket No. 12-340 et al.* (filed Dec. 31, 2015).

³³ See *id.* In granting LightSquared a waiver of the “integrated service” gating criteria, the Commission emphasized that its decision was based on the “specific totality of the facts” before the agency in 2011. *In re LightSquared Subsidiary LLC Request for Modification of its Authority for an Ancillary Terrestrial Component*, Order & Authorization, DA 11-133 at n.133 (2011).

V. CONCLUSION

For the foregoing reasons, the Ligado Modification Applications, if not altered, would result in significant harmful interference to Iridium's MSS network. Accordingly, the Commission should continue to hold the Modification Applications in abeyance until such time as Ligado demonstrates that its ATC operations at 1627.5-1637.5 MHz will not cause interference to the Iridium MSS network, or in the event the parties do not reach an agreement, to condition the grant of the Modification Applications on adoption of the requested exclusion zones and an appropriate out-of-band emissions limit.

Respectfully submitted,

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June 21, 2016

CERTIFICATE OF SERVICE

I, Douglas Svor, an attorney in the law office of Sheppard Mullin Richter & Hampton, LLP, hereby certify that I have on this 21st day of June 2016 caused a copy of the foregoing Reply Comments of Iridium Communications Inc. to be delivered by first-class mail to the following:

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