

July 9, 2018

BY EFILE

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W., Room TW-A325
Washington, DC 20554

Re: Ligado Network Subsidiary LLC, Amendment to License Modification Applications, IBFS File Nos. SAT-AMD-20180531-00045, SAT-AMD-20180531-00044, SES-AMD-20180531-00856; SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 (the “Modification Applications”); IB Docket Nos. 12-340, 11-109

Dear Ms. Dortch:

Iridium Communications Inc. (“Iridium”) hereby submits these comments in response to Ligado Networks Subsidiary LLC’s (“Ligado”) May 31, 2018 Amendment to its applications pending before the Federal Communications Commission (“Commission”) to provide a terrestrial service in frequency bands allocated for satellite operations. Specifically, on May 31, Ligado amended its applications to reduce the transmit power from its proposed terrestrial base stations in the 1526-1536 MHz band to “protect certified aviation GPS receivers.”¹

While the record reflects significant continued concerns from Ligado terrestrial operations at 1526-1536 MHz from entities that rely on GPS,² such operations would not directly

¹ Ligado Networks LLC, Amendment to License Modification Applications, IBFS File Nos. SAT-AMD-20180531-00045, SAT-AMD-20180531-00044, SES-AMD-20180531-00856; SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 (the “Modification Applications”); IB Docket Nos. 12-340, 11-109 (filed May 31, 2018) (“Ligado Amendment”).

² Letter from Eleven Aviation Organizations to Daniel K. Elwell, Acting Administrator, Federal Aviation Administration, IB Docket Nos. 12-340, 11-109 (filed June 18, 2018) (“Elwell Letter”); Letter from Edward A. Yorkgitis, Jr., Attorney for Aviation Spectrum Resources, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 (filed Aug. 4, 2017); Letter from Coalition of Aviation, SATCOM, and Weather Information Users to The Honorable Ajit Pai, Chairman, FCC, IB Docket No. 11-109; RM-11681; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091 (filed June 27, 2017) (“June 27, 2017 Coalition Letter”); Letter from ASRA, A4A, HAI, and AIA, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340;

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impact Iridium services. Iridium did, however, join a coalition of concerned organizations in a letter to the Commission reflecting the collective concerns of nearly two dozen organizations and companies concerned about harmful interference from Ligado in multiple bands, including 1526-1536 MHz.³ The Ligado Amendment implicitly acknowledges that its 2015 Modification Application is insufficient to protect certified aviation GPS receivers. The amendment thus claims to address outstanding objections from the aviation industry. Those claims appear misguided based on a recent letter from eleven well-respected aviation groups claiming that “concerns and safety issues of the industry have NOT been addressed.”⁴

Equally significant, Ligado’s amendment does not in any way resolve the interference concerns that Iridium has raised in response to Ligado’s proposed operations in the 1627.5-1637.5 MHz band. Nor does the Ligado Amendment address the concerns of the many groups that receive real-time weather and related environmental information from NOAA satellites who have expressed concerns about potential Ligado operations at 1675-1680 MHz.

In short, Ligado’s latest filing – and the eight years of filings before it – does not meaningfully address the harmful interference that its proposed terrestrial service will cause to numerous parties. As a result, Ligado’s application should be rejected.

The Ligado Amendment does nothing to address harmful interference to Iridium. As Iridium has made repeatedly clear, Ligado’s proposed operations immediately adjacent to Iridium’s Mobile Satellite Service (“MSS”) operations will produce harmful interference to Iridium devices, including those used for vital SATCOM aviation services. Iridium has demonstrated this threat of interference in numerous filings, including in-depth technical analyses that demonstrate the harmful interference Ligado’s proposed out-of-band emissions (“OOBE”) will cause to Iridium devices⁵ and aviation services.⁶ In particular, the OOBE limit

RM-11681; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091 (filed June 20, 2017) (“June 20, 2017 *ex parte* Letter”); Joint Aviation Reply Commenters, Reply Comments, IB Docket Nos. 11-109, 12-340, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, SES-MOD-20151231-00981, at 1 (filed Jun. 21, 2016) (“Joint Aviation Reply Comments”).

³ See June 27, 2017 Coalition Letter.

⁴ Elwell Letter at 2 (emphasis in original).

⁵ Technical Analysis of Ligado Interference Impact on Iridium User Links (filed Sept. 1, 2016) (attached to Letter from Bryan N. Tramont, Counsel, Iridium, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, SES-MOD-20151231-00981 (filed Sept. 1, 2016)); see also Letter from Bryan N. Tramont, Counsel, Iridium, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, SES-MOD-20151231-00981 (filed Dec. 14, 2016) (“Dec. 14, 2016 *ex parte* Letter”).

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Ligado proposed in its 2015 Modification Application offers Iridium insufficient protection and the Ligado Amendment in no way addresses this serious problem. Due to fundamental technical differences between satellite and terrestrial broadband operations, the interference caused by Ligado's terrestrial operations will greatly surpass any interference that would be caused by current and future satellite operations in the same band. Importantly, as the Commission has found, it is Ligado's obligation to resolve any harmful interference concerns from their proposed terrestrial operations, under Section 25.255⁷ of the Commission's rules.⁸

Iridium also demonstrated through thorough technical analyses that Ligado's proposed operations will have a negative impact on Iridium's aviation services.⁹ This includes situations when the Ligado user terminal is located on the same aircraft as an Iridium terminal and when the terminals are operating from within the same airport. The excessive levels of interference caused by operations of Ligado terminals would prevent Iridium aeronautical terminals from conducting Aeronautical Operational Communications transmissions or passing pre-flight Aeronautical Mobile (Route) Satellite Service (AMS(R)S) system checks at the airport as well as inhibit communications while the aircraft is approaching or taking off from the airport.¹⁰ There is also potential for significant interference from Ligado terminals into Iridium-equipped rotorcraft.¹¹

⁶ Technical Analysis of Ligado Interference Impact on Iridium Aviation Interests, IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091, IB Docket Nos. 11-109 and 12-340 (filed Dec. 14, 2016) ("Aviation Technical Analysis") (attached to Letter from Bryan N. Tramont and Patrick R. Halley, Counsel, Iridium, to Marlene H. Dortch, Secretary, FCC, IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091, IB Docket Nos. 11-109 and 12-340) (filed Dec. 14, 2016)).

⁷ 47 C.F.R. § 25.255.

⁸ *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 and Order and Order Proposing Modification, 23 FCC Rcd 7210, 7223 ¶ 35 (2008). See also Iridium Reply Comments, IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091, IB Docket Nos. 11-109 and 12-340, at 13 (filed June 21, 2016); Dec. 14, 2016 *ex parte* Letter at 6-11; Letter from Bryan N. Tramont, Counsel, Iridium, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340, at 12-13 (filed Mar. 27, 2017); Letter from Bryan N. Tramont, Counsel, Iridium, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340, IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, at 7 (filed Aug. 3, 2017).

⁹ See Aviation Technical Analysis.

¹⁰ *Id.* at 17.

¹¹ *Id.* at 10-15.

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Other parties have recognized the substantial interference that Ligado's proposed operations will cause to Iridium and have supported Iridium's technical conclusions on the record. NENA – The 911 Association – told the Commission that “the importance of protecting responder access to [SATCOM] services cannot be overstated” and “urge[d] the Commission to proceed again with extreme caution, only after careful consideration of all potential impacts that could result from approving Ligado's application.”¹² In a June 15, 2018 letter, eleven aviation companies emphasized that “[t]here remain outstanding issues that call into question the impacts such a system would have on airspace safety, specifically as it relates to both certified and uncertified GPS systems, continuity of navigational accuracy at low levels, and effects on other safety of flight systems to include satellite communications.”¹³ Additionally, in a multi-association filing, four national aviation associations noted that they “generally support the concerns raised by Iridium in these proceedings and its conclusion that Ligado's Ancillary Terrestrial Component (“ATC”) handsets present a real danger of out of band interference to SATCOM.”¹⁴ An earlier Joint Aviation filing noted that Ligado had “overlook[ed] the concerns raised with respect to potential interference to satellite communications (“SATCOM”) by several parties.” The commenters implored the Commission to fully resolve the aviation and SATCOM interference issues before acting on Ligado's Applications.¹⁵

In addition to the interference concerns at 1526-1536 MHz that the Ligado Amendment seeks to address, it remains critically important that the Commission also carefully consider the concerns raised by Iridium and the aviation community about the interference that will be caused by Ligado's proposed operations in the 1627.5-1637.5 GHz band. Iridium's critical MSS operations must be protected in accordance with the Commission's rules and the public interest. The Ligado Amendment fails on all of these fronts.

¹² Letter from Telford E. Forgety, III, Director of Government Affairs & Regulatory Counsel, to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 12-340 & 11-109, at 1 (filed Dec. 6, 2017).

¹³ Elwell Letter at 1 (emphasis added).

¹⁴ June 20, 2017 *ex parte* Letter at 4.

¹⁵ Joint Aviation Reply Comments at 19.

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Please direct any questions concerning this submission to the undersigned.

Respectfully submitted,

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