

June 27, 2017

The Honorable Ajit Pai
Chairman
Federal Communications Commission
445 12th Street S.W.
Washington, DC 20554

Re: *Ex parte letter*
IB Dockets No. 11-109, 12-340; RM-11681; IBFS File Nos. SES-MOD-
20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091

Dear Chairman Pai:

The undersigned organizations, representing entities that provide and rely upon critical GPS, satellite communications (“SATCOM”) services, and essential weather and other environmental data, write to reiterate that the threat of harmful interference from Ligado’s proposed ancillary terrestrial component (“ATC”) service remain real and persistent. We have read with interest recent FCC filings and statements in the press from Ligado claiming that virtually all of the opposition to its pending license modification application and request for rulemaking to utilize spectrum at 1675-1680 MHz have been resolved. Contrary to the assertions in Ligado’s FCC advocacy and recent media blitz, its proposed terrestrial operations continue to pose a significant interference risk to numerous parties that receive real-time weather and related environmental information from the National Oceanic and Atmospheric Administration (“NOAA”), certified GPS receivers and aeronautical safety SATCOM relied upon by the aviation industry, and Iridium’s 869,000 government and commercial subscribers.

The risks to these critical services are very real and, consistent with the public interest, cannot be brushed aside. This is particularly true when contrasting the impact of interference on the services provided and/or depended on by the undersigned organizations with the highly uncertain benefits of Ligado’s proposal. For example, while Ligado is currently portraying itself as a hybrid satellite-terrestrial Internet of Things (“IoT”) service provider, a recently released Ligado-commissioned economic analysis suggests that Ligado seeks the ability to sell its spectrum to the highest bidder, underscoring the uncertainty of any prospective value of the services it has on previous occasions suggested it may provide.¹ As stated in the analysis, “Ligado and similarly-situated entities should be able to transfer spectrum interests in such a manner that entities that value spectrum more than Ligado can acquire it. ... Clearer property

¹ Harold Furtchgott-Roth, Economic Analysis of the Ligado Petitions to the Federal Communications Commission Regarding Spectrum Flexibility and Spectrum Allocations, (filed as ex parte presentation in IB Docket No. 11-109; RM-11681; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091 (filed May 25, 2017) (Furtchgott-Roth Paper).

rights [achieved by granting Ligado’s application] for spectrum would benefit not just Ligado but all parties with economic interests in spectrum.”²

Given the persistent and unresolved concerns that each of our organizations have raised, it was surprising to learn that Ligado’s Chief Technology Officer apparently believes “[a]ll the technical obstacles have been cleared and [the FCC] is dotting the i’s and crossing the t’s.”³ It was also confounding to read in the aforementioned economic analysis that the author “understand[s] that most allegations of harmful interference regarding the Ligado business have been resolved.”⁴ Unfortunately, these comments are inaccurate, although consistent with Ligado’s broader campaign to gloss over the many filings in the record demonstrating the potential for harmful interference of Ligado’s proposed terrestrial operations. It is also consistent with an apparent effort to discount the import and validity of the ongoing Department of Transportation Adjacent Band Compatibility (“ABC”) evaluation.⁵ To be clear, there remain significant concerns that need to be addressed, whether they are found in formal oppositions or comments in the record. The Commission cannot ignore our legitimate technical concerns.

Whether as a result of pressure from investors or regulatory fatigue, there is a clear effort by Ligado to downplay the significance of the technical concerns it continues to receive from numerous directions. Multiple parties have made it clear to the Commission that they continue to have serious concerns about the potential for significant interference. We will not describe in detail each of our concerns raised in opposition here, but wish to make clear that any Commission action without successful resolution of the concerns we have raised would be premature. For example, recently representatives from industry and academia of the weather,

² *Id.* at 4-5; Liana B. Baker, *Exclusive: Ligado Networks hires banks to explore options – sources*, Reuters (Mar. 13, 2017), <http://www.reuters.com/article/us-ligadonetworks-m-a-idUSKBN16K2GR>; see also Shirley Pelts, *Could AT&T’s Bid for Straight Path Ignite Dish’s Bid for Ligado Networks?*, Market Realist (Apr. 26, 2017), http://marketrealist.com/2017/04/could-atts-bid-for-straight-path-ignite-dishs-bid-for-ligado-networks/?utm_source=yahoo&utm_medium=feed&yptr=yahoo; Chris Nolter, *AT&T’s Spectrum Spree Draws Attention to Globalstar, Ligado and Dish*, TheStreet (Apr. 12, 2017), <https://www.thestreet.com/story/14082995/1/at-amp-t-s-spectrum-spre-draws-attention-to-globalstar-ligado-and-dish.html>.

³ LightSquared Successor Fuses Space and Ground Networks for UAS, Aviation Week & Space Technology (Apr. 18, 2017), <http://aviationweek.com/connected-aerospace/lightsquared-successor-fuses-space-and-ground-networks-uas>.

⁴ Furtchgott-Roth Paper at 9.

⁵ Letter from Gerard Waldron, Counsel to Ligado Networks, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 1-2, *ex parte* presentation in IB Docket No. 11-109, RM-11681; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 (filed Feb. 24, 2017); “Ligado Says Testing Shows that LTE Network Won’t Interfere with GPS,” TRDaily, Feb. 27, 2017, quoting Ligado’s statement that “the metric the DoT has proposed to use in its testing of adjacent bands—a 1dB rise in the carrier to noise ratio (the ‘1 dB proposal’) is fatally flawed because it does not accurately predict impact of adjacent band signals on GPS device positioning performance.”

environmental satellite, satellite ground systems and transportation communities (collectively, the “real-time environmental satellite data community”) filed an *ex parte* letter documenting the detrimental impact Ligado’s proposed operations in the 1675-1680 MHz band would have on diverse users that rely on real-time information from NOAA’s GOES satellites.⁶ The GOES satellites provide real-time environmental data via its direct broadcast and data collection systems, which provide important early-warning to numerous industries, academia and state/local emergency officials who inform citizens of major weather hazards.⁷ Additionally, Iridium has filed several *ex parte* letters and engineering analyses detailing the impact Ligado’s proposed services in the 1627.5-1637.5 MHz band will have on its customers, including the operations of the aviation community, federal government agencies and commercial subscribers.⁸ Iridium’s technical studies also indicate that Ligado’s proposed operations would result in significant harmful interference to terminals used for vital SATCOM aviation services.⁹ The Joint Aviation Parties have stated repeatedly that Ligado’s proposed operations also present troubling interference risks to certified aviation GPS receivers and “would have serious implications for aviation safety and the reliability of airline operations.”¹⁰ Iridium is also a resource for the maritime community supporting real-time relay of ocean buoy information to users, and other data. Interference to both GOES and Iridium could have severe consequences for the hydrologic and maritime communities.

Each of the undersigned organizations has serious unresolved concerns with Ligado’s proposed operations for different reasons. What we each have in common is the shared belief

⁶ Industry and Academic Partners of the hydrometeorological community, *ex Parte* letter, IB Docket Nos. 12-340, 11-109; RM-11681 (filed May 9, 2017).

⁷ Hydrometeorological Parties, *ex Parte* letter, IB Docket Nos. 12-340, 11-109; RM-11681 (filed October 11, 2016) (describing how interference that would result from Ligado’s operations could also have a major impact on flood prediction by state and local government agencies, and the monitoring of dangerous volcanic ash clouds and detection of turbulence by the aviation industry.)

⁸ Letter from Bryan N. Tramont, Patrick R. Halley, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, IB Docket Nos. 12-340, 11-109; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 (filed Mar. 27, 2017); Letter from Bryan N. Tramont, Patrick R. Halley, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, IB Docket Nos. 12-340, 11-109; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, and SAT-MOD-20151231-00091 (filed Dec. 14, 2016).

⁹ *Id.*

¹⁰ The Joint Aviation Reply Commenters note that the “SATCOM interference issue is completely independent of the outcome of the substantial remaining GPS interference issues.” Reply comments of Aircraft Owners and Pilots Assoc., Airlines for America, Aviation Spectrum Resources, Inc., Bristow Group, Inc., Helicopter Assoc. Int’l, Int’l Air Transport Assoc., National Air Transportation Assoc., National Business Aviation Assoc., Southwest Airlines, United Parcel Service (“Joint Aviation Reply Commenters”), IB Docket Nos. 11-109, 12-340; IBFS File Nos. SES-MOD-20151231-00981, SAT-MOD-20151231-00090, SAT-MOD-20151231-00091, at i, 18 (filed Jun. 21, 2016).

that the Commission cannot act on Ligado's requests until the Commission has sufficiently studied and addressed the many interference issues still outstanding, including the receipt of input from the affected federal agencies who are also studying these issues. In the event that a satisfactory agreement cannot be reached between Ligado and the aviation community (concerning GPS and SATCOM services), Iridium, and the real-time environmental satellite data community, the Commission should deny Ligado's pending license modification application and reject Ligado's proposal to share the 1675-1680 MHz band spectrum with NOAA. The existing services provided by the SATCOM, aviation and real-time environmental satellite data communities, which depend upon interference-free operations in spectrum adjacent to or co-channel to spectrum central to Ligado's plans, are too important to jeopardize, especially for the speculative benefits of Ligado's constantly evolving proposals.

Sincerely,

//s//
Dr. Joel N. Myers
Founder, President and Chairman
AccuWeather

//s//
Ali Bahrami
Vice President, Civil Aviation
Aerospace Industries Association

//s//
Mark Baker
President
Aircraft Owners and Pilots Association

//s//
Captain Billy Nolen
Senior Vice President, Safety, Security, and
Operations
Airlines for America

//s//
Ronald Marotto P.H.
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ALERT Users Group

//s//
Christine McEntee
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American Geophysical Union

//s//
Keith L. Seitter
Executive Director
American Meteorological Society

//s//
Steven A. Root, CCM
President
American Weather and Climate Industry
Association

//s//
Kris Hutchison
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Aviation Spectrum Resources, Inc.

//s//
James H. Block
Chief Meteorological Officer
DTN (formerly Schneider Electric)

//s//

Jens C. Hennig
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//s//

Sergio Aguirre
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Gogo Business Aviation

//s//

Matthew S. Zuccaro
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Steven A. Ackerman
Interim Director
University of Wisconsin, Space Science and
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cc: The Honorable Mignon Clyburn
The Honorable Michael O’Rielly