April 16, 2020

BY ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW, 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-MOD20151231-00090, and SAT-MOD-20151231-00091 (the "Modification Applications"); IB Docket Nos. 12-340, 11-109, 19-116; RM-11681

Dear Ms. Dortch:

The undersigned stakeholders of the hydrometeorological community, from industry, academia and scientific and professional associations, continue to be concerned about Ligado Network LLC's ("Ligado" - formerly LightSquared) proposals to share L-Band spectrum, including the subject of this proceeding, but especially 1675-1680 MHz in WT Docket No. 19-116, but also 1526-1536 MHz, 1627.5-1637.5 MHz and 1646.5-1656.5 MHz. The interference that will be caused by sharing spectrum with NOAA's Geostationary Operational Environmental Satellites (GOES) will prevent meteorologists from getting the information they need to help save lives in severe weather.

At least 30 people were killed and dozens were injured after a swarm of destructive tornadoes and damaging winds tore across the southern and eastern U.S. on 12-13 April 2020. Meteorologists issued hundreds of warnings for the violent storms that brought more than 400 reports of severe weather, including 360 reports of wind damage and dozens of tornadoes associated with a powerful storm system barreling across the country[1]. In order to provide severe storm warning information, meteorologists rely on real-time information collected with GOES to track the movement and intensity of storms. GOES is one of the primary tools that both federal and industry meteorologists use to make live-saving predictions for storms that are all-too-common across the U.S. each year. The public and numerous industries rely on timely and accurate predictions to make critical decisions about life and property. Any degradation to the data used for these forecasts reduces the ability for people and industries to stay safe in severe weather.

The advanced imagery and space-based lightning detection information that GOES provides[2] has improved the quality and specificity of advanced warnings. This has contributed to increases in lead time for severe weather warnings and increased accuracy of severe storm forecasts. Studies have shown that the use of next-generation GOES satellites have contributed substantially to accurate

[1] Violent storms, tornadoes shift to East Coast after leaving at least 30 dead, 1.3 million without power. Washington Post. 13 April 2020. https://www.washingtonpost.com/weather/2020/04/13/tornado-severe-weather-east-coast/

[2] The specific systems on GOES, including GOES Re-broadcast (GRB) and Data Collection System (DCS) are detailed in this filing. https://ecfsapi.fcc.gov/file/10510188670049/Final_Ex%20Parte_OET-WB%20Staff_4May17_submit%209May17.pdf.

severe storm forecasting, increasing lead time on average by 10-15 minutes (from approximately 17 minutes to at least 29 minutes)[3]. In addition, the prediction of flood conditions are crucial to life and safety in communities enduring the precipitation from these storms, and the stream gauge data that is relayed by GOES in real-time is critical to accurate predictions both for federal forecasters as well as state and local water agencies.

As weather forecasts were emerging about these major storms, the hydrometeorological community was concerned that Ligado continues to push their oft-evolving proposals to use satellite-allocated L-band spectrum that would disrupt the life-saving, real-time information that is the basis for accurate predictions.

The undersigned comprise critical contributors to and supporters of the weather forecasts and water predictions that the nation relies upon to save lives and sustain the economy. Relying on the facts and incontrovertible evidence of interference with GOES transmissions, more than 80 stakeholders from across this diverse community have provided input to the FCC opposing Ligado's proposals during past proceedings.

Filings from members of the weather and water enterprise and other concerned parties that use or benefit from the L-Band spectrum have repeatedly highlighted Ligado's failure to meaningfully address the harmful interference that its proposed operations will cause to critical services in the shared and adjacent frequency bands.[4] Recent filings from the Department of Defense and the National Telecommunications and Information Administration ("NTIA") express similar concerns about harmful interference from Ligado's operations to the adjacent MSS bands, and make it clear that granting Ligado's applications will have substantial, costly, and far-reaching implications for federal and non-federal operations alike.[5]

While the current discussions involved in the NTIA's April 10, 2020 filings involve Ligado's proposal in frequency bands outside 1675-1680 MHz (where the weather and water communities are most concerned), we are filing this letter recognizing that Ligado's disparate proposals are inherently connected. Any operating constraints Ligado implements to protect GPS will require it to operate at higher power in the so-called proposed L-Band upper downlink frequencies, in and immediately adjacent to 1675-1680 MHz. This will cause harmful interference with federal and non-federal users of GOES satellite data.

---

[3] Cintineo et al. 2018. The NOAA/CIMSS ProbSevere Model: Incorporation of Total Lightning and Validation. *Weather and Forecasting*. https://journals.ametsoc.org/doi/full/10.1175/WAF-D-17-0099.1.

[4] *See* Letter from Bryan N. Tramont & Patrick R. Halley, Counsel to Iridium Communications, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340 (filed Jul. 9, 2019); Letter from Bryan N. Tramont, Counsel to Iridium Communications Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340, at 2 (filed Aug. 26, 2019); Letter from Bryan N. Tramont, Counsel to Iridium Communications Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket Nos. 11-109 and 12-340, at 2 (filed Oct. 2, 2019).

[5] *See* Letter from Douglas W. Kinkoph, Associate Administrator, Performing the Delegated Duties of the Assistant Secretary for Communications and Information, National Telecommunications and Information Administration, United States Department of Commerce, to Ajit Pai, Chairman, FCC at 2 (Apr. 10, 2020) ("We believe that the Commission cannot reasonably reach … a conclusion [that the harmful interference concerns have been resolved]"); Letter from Douglas W. Kinkoph, Deputy Assistant Secretary for Communications and Information (Acting), National Telecommunications and Information Administration, United States Department of Commerce, to Ajit Pai, Chairman, FCC at 2 (Dec. 6, 2019) ("[d]espite the considerable efforts [of federal agencies] to find a satisfactory solution, NTIA, on behalf of the executive branch, is unable to recommend the Commission's approval of the Ligado applications.").

As noted in a December 2019 *ex parte* presentation[6], Ligado had agreed to operate with 10 watts (9.8 dBW) for the 1526-1536 MHz band, leaving no alternative but to operate at high power in their other proposed downlink band 1670-1680 MHz. It will be financially impractical to put many towers in the lower spectrum, when building far fewer towers using the higher allowed power is more likely in 1670-1680 MHz. This would place the worst-case interference in band, and immediately adjacent to, the GOES spectrum.

We are concerned about the potential for interference in the L-band spectrum that includes the critical water and weather data, as well as the nearby spectrum that includes complementary GPS and aviation functions that are similarly crucial to life and safety. More fundamentally, it is important that this area of spectrum remain focused centrally on satellite operations that sustainably operate next to one another, unlike the disparate and unproven terrestrial operations plans proposed by Ligado that will produce dangerous interference to vital satellite signals.

Ligado repeatedly modifying its proposals does not mitigate against the science and technical shortcomings of their plans. A federal study funded by the Spectrum Pipeline Fund called the NOAA Spectrum Pipeline Reallocation Engineering Study (SPRES) is scheduled to be released in the coming weeks following more than 18 months of studies, at the direction of FCC, NTIA, and OMB. Those study recommendations will be important for the Commission to consider before making any approvals of Ligado's proposals, even elsewhere in the L-Band.

In the short term, the weather and water enterprise recommend that no further decision on any of Ligado's proposals be made until the NOAA SPRES study is released to the public and both the Commission and interested parties have the opportunity to review and respond to it.

Given the frequently shifting proposals coming from Ligado and their insufficient response to technical concerns[7], the Commission and all parties concerned would be best served by starting with a clean slate. The dockets related to the Ligado proceeding should be closed and Ligado's pending applications should be dismissed. Should Ligado desire to file new applications, it should proceed by engaging in a collaborative scientific and technical dialogue that has been insufficient in proposals thus far.

The Commission should consider the critical economic and societal benefits from accurate weather forecasting and water prediction that save lives, minimize damage to property, and assist U.S. weather-sensitive businesses large and small to be more profitable. Approving Ligado's proposals will negatively impact real-time environmental and storm forecasts and will have direct consequences on the safety and well-being of the American people.

---

[6] See Letter from Gerard J. Waldron, Counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 11-109 (filed Dec. 13, 2019) https://ecfsapi.fcc.gov/file/1213258091568/Ligado%20Ex%20Parte%20Re%20Dec.%2011%20&%2013%20Meetings%20%5B12.13.19%5D.pdf.

[7] See Letter from Industry and Academic Partners for Sound Forecasting, to Marlene H. Dortch, Secretary, FCC, RM-11681. (Filed May 9, 2017) https://ecfsapi.fcc.gov/file/10510106612652/Final_Ex%20Parte_Pai%20Staff_4May17_submit%209May17.pdf.

Sincerely,

AccuWeather, Inc.
ALERT Users Group
American Geophysical Union
American Meteorological Society
American Weather and Climate Industry Association
DTN Weather
Microcom Environmental
National Weather Association
Narayan Strategy
Semaphore Group
Space Science and Engineering Center at University of Wisconsin-Madison