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15 June 2018

Daniel K. Elwell, Acting Administrator  
Federal Aviation Administration  
800 Independence Avenue, SW  
Washington, DC 20591

Subj: Industry Safety-of-Flight Concerns Related to GPS Interference from Ligado Networks Proposal

Dear Administrator Elwell,

On behalf of the undersigned organizations, we write to bring to your attention an issue of importance to the aviation industry which, if not fully and independently tested, may impact aviation safety systems. Specifically, we remain concerned with the continued push of an initiative by Ligado Networks (previously "LightSquared") to establish a terrestrial cellular network within what is a satellite frequency band. Interference issues that have the potential to negatively impact the operational aviation environment remain unresolved, and require definitive testing and evaluation before any system deployment.

We fully recognize the value that robust connectivity systems offer during aviation operations. Enhanced communications, real-time data exchange and flight tracking, as examples, can all benefit from such systems. However, we cannot ignore the risk potential that the Ligado Networks proposal presents to aviation operations. There 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.

Except for a few individual stakeholders, the aviation industry has overwhelmingly opposed the Ligado proposal, due to safety concerns, since its introduction in 2011. Although the proposal has been modified since 2011, there remain provisions that continue to raise concerns regarding impacts the proposed system will have on the accuracy and reliability of aviation GPS receivers/systems and satellite communications. Whether it be a simple satellite phone that provides basic GPS aircraft position reports and distress messages, or enhanced technologies providing ACARS and ATC datalinks, these are all critical safety services that should not be negatively impacted by Ligado's proposal.

In Ligado Networks' latest proposal, the interference to GPS navigation and GPS-dependent systems is stated to be limited to a 500-foot diameter around their transmission towers and, as such, they believe the aviation industry's concerns have been addressed. The concerns and safety issues of the industry have NOT been addressed, particularly when considering the lack of testing in key areas. This point is specifically highlighted in the "United States Department of Transportation Global Positioning (GPS) Adjacent Band Compatibility Assessment" published in April 2018:

*"The FAA has not completed an exhaustive evaluation of the operational scenarios in developing this assessment zone. Further, the current analyses do not include an operational assessment of the impact of the assessment zone in densely populated areas, which may present additional variables, including the risk posed to people and property for operations such as UAS using certified avionics which may be required to operate within the assessment zone."*

From the perspective of operators that conduct a variety of missions in the low altitude environment, including unmanned operations, often in close proximity to flight obstructions, a loss of navigational accuracy/reliability would produce distractions for operators, unnecessarily increase crew workloads, and could have adverse impacts on the ability to safely navigate. Additionally, within areas of high density tower deployment, operators could potentially experience repeated loss of GPS.

Additionally, the operational impact to receivers that are not aviation certified, but are still used in existing and future aviation operations, must be fully understood. Per the DoT report referenced above:

*"based on the results of the OST-R testing and analysis of the other categories of receivers, the transmitter power level that can be tolerated by certified aviation may cause interference with, or degradation to, most other categories of GPS/GNSS receivers including those used for General Aviation and drones, as detailed in the results set forth in this report."*

Understanding the above operational impacts through thorough assessment and necessary testing is essential to address these issues. Empirical data, obtained from credible industry-accepted standards, that quantitatively and qualitatively identify interference impacts must be obtained. Only with such data can the full extent of impacts to navigation and safety systems (including TAWS, ADS-B OUT) be understood.

We urge the FAA to support the testing and evaluation of this proposed system by an impartial third-party organization, that we may fully understand the impacts to GPS-dependent systems and to ensure no degradation of safety within the NAS.

We thank you for your attention on this issue.

Sincerely,

Capt Tim Canoll  
President  
Air Line Pilots Association, International

Matthew S. Zuccaro  
President & CEO  
Helicopter Association International

Dan Schwarzbach  
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