

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of)	
)	
Ligado Request to Modify its)	IB Docket No. 12-340
ATC Authorization)	IB Docket No. 11-109
)	

COMMENTS

The Aerospace Industries Association (AIA) hereby submits its comments in this proceeding. The nation’s most authoritative and influential voice of the aerospace and defense industry, AIA represents more than 100 leading aerospace and defense manufacturers, along with a supplier base of nearly 200 associate members, representing over one million direct U.S. aerospace and defense jobs. Our members are directly interested in contributing their expertise to the issues raised in this proceeding, specifically addressing both aviation safety and space weather operations. 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.

The AIA is committed to engaging with the Federal Communications Commission (FCC) to ensure that America’s significant investment in critical, spectrum-dependent systems and communications infrastructure, both federal and non-federal, is adequately safeguarded. The pending public notices addressing the Ligado petitions draw our attention due to the many implications its revised proposals will likely have on existing aviation equipment. Moreover, Ligado’s own proposed operations depends upon access to the 1675 MHz spectrum in combination with the FCC modification of its existing license as proposed, therefore, a single integrated proceeding reflects that fact. For that reason, AIA requests that the FCC consolidate the two petitions in this proceeding as the resolution of the issues are inextricably linked to the overall technical regulatory viability of Ligado’s proposal.¹

In its newest proposal, Ligado seeks to modify the ancillary terrestrial component (ATC) of its L-band mobile satellite service (MSS) networks. In the applications, Ligado concedes to accept certain license conditions be placed on its modified ATC authorization to address interference concerns tailored specifically to protect the use of

¹ AIA finds Ligado’s separate proposal to share the 1675.0 – 1680.0 MHz band (as part of docket RM-11681) concerning due to how it will impact weather information provision for all aviation users who depend on this National Oceanic and Atmospheric Administration service.

the Global Positioning System (GPS) by the civil aviation sector, in addition to conditions intended to address interference concerns of the broader GPS industry and the public's interest in aviation safety.

AIA appreciates Ligado's stated recognition of "the need to operate in a manner that is compatible with the aviation sector's use of GPS and respects vital safety of life issues." Ligado's ATC Modification request seeks a reduction in the maximum transmit power level in the lower band (1526-1536 MHz) to 32 dBW. However, in light of recent Adjacent Band Compatibility Studies, feedback from the RTCA has indicated that a 32 dBW power level in the lower Ligado band is still incompatible with certified safety of life GPS applications.

AIA believes that additional work between Ligado, FAA, RTCA and GPS manufacturers is needed to ensure that there are no impacts to certified civil aviation GPS receivers. If FCC authorization were given now, prior to achieving consensus with the FAA on maximum power levels, this could lead to additional future complexity in achieving agreement on what would be a suitable power level for different aviation safety-of-life systems.

As a result, AIA maintains substantial concerns regarding the adequacy of the voluntary conditions Ligado offers to ensure adequate protection of avionics and GPS aviation safety equipment manufactured and used by the aviation sector, including but not limited to certified aviation receivers, other GPS devices, and satellite communications. It is critical that further evaluation of the Ligado proposed modified deployment plan be performed across the spectrum of GPS user equipment categories, for all stakeholders – civil, commercial and military – and that the FCC ensure that all aviation safety and certification stakeholders' views are addressed.

In addition, GPS is only one Global Navigation Satellite System (GNSS) used by civil aviation for safety-of-life purposes. Understanding potential interference to all GNSS services, such as Galileo, GLONASS, and Beidou used by aircraft is also an issue potentially impacting the safety of air travel and should be studied; and if harmful interference is found, addressed. These other GNSS systems utilize signals with significantly different signal structures, bandwidth, and interference susceptibility characteristics than the current GPS L1 C/A (carrier/acquisition) code. Ongoing modernization of GPS will also introduce wider bandwidth signals (i.e. L1c) the structure of which has been coordinated internationally. Similarly, Satellite Based Augmentation Systems (SBAS) are defined to be a part of GNSS and are already extensively used in the U.S. in the form of the FAA's Wide Area Augmentation System (WAAS). The potential impact of Ligado transmissions on SBAS performance must be considered in any potential allocation given these systems provide precision approach guidance to aircraft.

Moreover, to ensure the necessary high level of reliability and safety across all phases of flight, certified aviation GNSS receivers have FAA-specified, globally harmonized interference rejection requirements supporting navigation, surveillance, and terrain awareness. In the case of a probability of interference conclusion as a result of studies,

the FAA has previously noted that both the timing and investment in the multi-billion dollar aviation infrastructure transformation from ground-based to space-based, GPS-dependent technologies (FAA's NextGen) could be seriously impacted.

AIA urges the FCC to defer to the FAA, the agency responsible for the reliability of civil GPS signals, the determination of whether the specific set of potentially lower Ligado downlink (1526-1536 MHz) power levels are able to support safety-of-life applications prior to the FCC's acting on Ligado's requested FCC modification. Moreover, the FAA process for making its determination should be broader than using RTCA, but expanded to encompass a public notice and comment cycle to ensure full stakeholder visibility and opportunity for participation.

Furthermore, AIA urges the FCC to seek inputs from all government stakeholders, including the Department of Defense, through NTIA before acting on the proposed license modifications. While AIA recognizes the benefits of broadband technology, it is critical that further evaluation of the Ligado proposed modified deployment plan be performed across the spectrum of GPS user equipment categories, including the military. There are tens of thousands of currently-fielded GPS receivers under DoD control. As such, Ligado's request to modify its licenses must be thoroughly evaluated by the government user community, whose inputs should be given appropriate deference.

It is critical that the effects of Ligado's missions on safety related AMS(R)S satellite communications ("SATCOM") systems also be addressed before proceeding further, given aviation use of AMS(R)S SATCOM systems for both air traffic control purposes and additional operational connectivity. The Iridium and Inmarsat MSS systems have become a critical element to long range aviation requirements, and are used regularly in flight, including oceanic air traffic control voice and messages. We are unaware of any studies pertaining to Iridium, and we simply note that there is a recent Inmarsat technical submission to OFCOM, in which it raises questions about the potential effects to aviation receivers of emissions of personal microphones for special events, which operate at much lower powers, and which are standardized worldwide. We expect that this Inmarsat submission will be studied both in the UK process and by the aviation industry. We urge the FCC to ensure that all SATCOM interference potential be fully addressed before taking further action on the Ligado proposal.

While Ligado has provided data from its own studies, AIA urges the FCC to defer action on this application to ensure the public's interest in aviation safety is protected; that can best be accomplished by ensuring that the aviation industry has the opportunity to evaluate and provide comment on all of the relevant studies, especially that of the Department of Transportation-sponsored Volpe study; its completion and analytical review by the aviation equipment safety community is essential before any FCC consideration or action.

AIA and its member companies will continue to engage in discussions with Ligado and the FCC concerning the associated Public Notices. However, for the reasons set forth

above, AIA urges the FCC to consolidate both Public Notices into one proceeding. In addition, AIA urges further evaluation of Ligado's proposals to ensure there is no harmful interference into GPS receivers and other avionic systems, or critical satellite communications links. For all the reasons above, AIA submits these comments to ensure the protection of our national infrastructure.

Respectfully submitted,

/s/ Ali Bahrami

Ali Bahrami
Vice President, Civil Aviation
Aerospace Industries Association
1000 Wilson Blvd., Suite 1700
Arlington, VA 22209
(703) 358-1000

May 23, 2016