October 29, 2014

FILED ELECTRONICALLY

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Expanding Access to Broadband and Encouraging Innovation through Establishment of an Air-Ground Mobile Broadband Secondary Service for Passengers Aboard Aircraft in the 14.0-14.5 GHz Band; GN Docket No. 13-114, RM-11640

Dear Ms. Dortch:

On October 27, 2014, representatives of the Satellite Industry Association ("SIA") met with members of the FCC International Bureau (IB), Wireless Bureau (WTB), and Office of Engineering and Technology (OET) to discuss the satellite industry's views on the above-captioned proceeding. SIA was represented by: Sam Black, SIA; Daniel Mah, SES; Cynthia Grady and Alex Epshteyn, Intelsat; Alan Rinker, Boeing; David Keir, representing Lockheed Martin; and Chris Hofer, ViaSat (by phone). The following FCC staff attended the meeting: Jose Albuquerque, Chip Fleming, Howard Griboff, and Sean O'More, IB; Linda Chang, Melissa Conway, and Tim Maguire, WTB; and Navid Golshahi and Jamison Prime, OET.

Irregular FSS Operations. The SIA representatives primarily discussed the need to protect irregular FSS operations – such as satellite launches, relocations, and de-orbiting – from any new secondary service such as the proposed Air-Ground Mobile Broadband Service ("AMS"). Such irregular FSS operations, which are often conducted under Special Temporary Authorizations ("STAs"), are essential parts of a satellite's life cycle. Geostationary satellites cannot be launched directly into their ultimate destination, and must instead spend a period of time maneuvering from a geostationary transfer orbit (GTO) to their authorized orbital location or an interim location used to conduct In-Orbit Testing ("IOT"). This period of maneuvering and testing is referred to as the satellite's launch and early orbit phase, or "LEOP," during which the satellite will be in a non-geostationary orbit. During LEOP operations, earth station antennas

communicating with the satellite in GTO transmit ranging and telecommand signals regularly throughout the day (at least a few times per hour). In addition, during various stages of a satellite launch these ranging and telecommand signals need to be virtually continuous and can last for hours or days at a time. Both types of communications are critical – near-continuous range-finding is essential for satellite operators to determine the position of the satellite accurately and to perform collision avoidance, whereas command transmissions are necessary for orbit-raising, deployments, and spacecraft health.[1]

Today, a typical LEOP operation can take a several weeks, depending on the launch vehicle and mass of the satellite. However, recent technological innovations in the satellite industry – most notably satellites with all-electric propulsion that promise to improve satellite economics – will result in LEOP operations being conducted over a period of many months (early plans indicate that the LEOP for all-electric propulsion satellites may take between 200 and 320 days). The first satellites with all-electric propulsion are scheduled to be launched in early 2015, and many more have been ordered for delivery in the following years. While firm orders for at least seven all-electric propulsion satellites have been awarded to U.S. manufacturers, several U.S. companies offer LEOP services to satellites licensed by other administrations, which may also employ all-electric propulsion.

LEOP is not the only kind of irregular operation necessary during a satellite's life. Other examples of irregular operations include satellite relocations, satellite de-orbiting, and temporary operations pending grant of regular authority. While irregular, these kinds of operations are essential and are in the public interest. Satellite relocations conducted under STAs or Section 25.118(e) of the Commission's rules are necessary to enable operators to redeploy satellite capacity in response to market demand. Satellite de-orbiting under Section 25.283(b) of the Commission's rules or under STAs is essential for the environmental preservation of the geostationary arc for future use, and the minimization of orbital debris. Temporary operations under an STA prior to grant of regular authority enable satellite operators to timely meet demand for FSS capacity in response to market conditions. Such operations should not be placed in jeopardy or precluded by the need to protect a secondary AMS.

The SIA representatives urged the Commission to ensure that the presence of the proposed secondary AMS would not have the practical effect of curtailing the future growth and flexibility of the primary FSS in the 14.0-14.5 GHz band by constraining the irregular activities of FSS satellite operators, including the safe conduct of satellite

[1] To illustrate how often telecommand and ranging transmissions are sent during LEOPs, Attachment A contains telemetry plots showing the signal levels received by an SES satellite during LEOP on each of three different telecommand/ranging frequencies over a 15- and 25-day period. For some periods, a telecommand/ranging carrier is up continuously, while at other times such signals are being brought up and down multiple times per hour every day.

LEOP, relocation, and de-orbit operations.[2] SIA continues to believe that irregular FSS operations of any kind should be able to take place without interference from or the need to protect the proposed secondary AMS. The fact that FSS operations may be conducted under an STA does not change their fundamental nature as "FSS" that must be accorded primary status vis-a-vis the proposed secondary AMS under the U.S. Table of Allocations.

Other Matters. The SIA representatives reviewed other aspects of the satellite industry's position. In particular, SIA noted that the parties had joined issue on the question of the appropriate "average G/T" to be used in deriving interference protection criteria. Qualcomm has proposed 4 dB/K while SIA has shown that 6 dB/K is more appropriate based on a comprehensive survey of satellite G/T's filed with the FCC. SIA also noted that while all parties agreed that secondary services must not cause more than a 1% $\Delta T/T$ into FSS operations, the parties remained apart on the question of apportionment between multiple secondary services. Qualcomm's technical analysis purports to show that its proposed system would limit the $\Delta T/T$ increase to 0.5%, while SIA proposed that the limit be 0.33% $\Delta T/T$ to account for two other secondary services.

The SIA representatives also stressed the importance of having enforceable standards for protecting the primary FSS from any new secondary service. It is not enough to have a $\Delta T/T$ limit without any guidance as to how that limit is to be met. SIA noted the benefits of translating a $\Delta T/T$ standard into system design criteria, including enforceable power limits for any future AMS system's ground and aircraft stations. Without establishing such criteria or limits *ex ante*, the ability of each AMS applicant to comply with any $\Delta T/T$ limit for FSS would have to be reviewed and analyzed anew during the license application process.

Respectfully submitted,

/s/
SATELLITE INDUSTRY ASSOCIATION

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[2] *See* Comments of the Satellite Industry Association, *filed in* GN Docket No. 13-114, RM-11650 (filed Aug. 26, 2013) at ¶¶ 22-23.

cc: (via e-mail)

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