Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules to Establish a Next-Generation Air-Ground Communications Service on a Secondary Licensed Basis in the 14.0-14.5 GHz Band	)	RM-11640
	)	
Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service	)	IB Docket No. 05-20

To: The Commission

COMMENTS OF THE BOEING COMPANY

The Boeing Company ("Boeing"), by its attorneys, hereby submits the following comments on the petition for rulemaking of Qualcomm, Incorporated ("Qualcomm") to establish a terrestrial air-to-ground ("ATG") communications service on a secondary basis in the heavily used 14.0-14.5 GHz band.[1] Boeing is a world leader in the aviation industry, manufacturing next-generation government and commercial aircraft and providing broadband communications capabilities to aircraft in flight. Boeing is also a global leader in satellite manufacturing and satellite communications services.

As a major proponent of spectrum allocations and service rules enabling the introduction of aeronautical mobile VSAT technologies in Ku-band Fixed-Satellite

[1] *See* Public Notice, Report No. 2933 (Aug. 30, 2011) (seeking comments on the Petition for Rulemaking of Qualcomm, Incorporated regarding Amendment of the Commission's Rules to Establish a Next-Generation Air Ground Communications Service on a Secondary Licensed Basis in the 14.0-14.5 GHz Band, RM No. 11640 (filed Jul. 7, 2011) ("Petition")).

Service ("FSS") frequencies, Boeing is concerned that the Petition does not address adequately the potential impact of the proposed ATG service on existing and future use of the 14.0-14.5 GHz band. Boeing also believes that the Petition has not demonstrated that the new service could operate effectively in an environment with primary FSS and mobile VSATs operations. Accordingly, Boeing believes that it is not in the public interest to initiate a rulemaking proceeding at this time.

I. THE PETITION DOES NOT PROVIDE AN ADEQUATE BASIS TO CONSIDER THE SIGNIFICANT INTERFERENCE AND REGULATORY POLICY ISSUES RAISED IN THE 14.0-14.5 GHz BAND

The Petition proposes to introduce a new service to support passenger communications onboard aircraft in flight in a band that is already used intensively by the satellite industry, including Boeing, to provide a broad range of critical communications services. The well-defined operating environment in the 14.0-14.5 GHz band facilitates spectrum sharing, re-use and continuing technological innovation that has enabled the satellite industry to provide communications connectivity virtually everywhere in a wide variety of fixed and mobile applications.

Introduction of a new, terrestrial ATG service in the band could significantly impact this operating environment and ATG interference into GSO FSS satellite receivers may be significantly worse than that assumed in the Petition. For example, the Petition assumes uniformity of coverage by satellite receive beams rather than increasingly more common, focused spot beams over areas with higher population density, and uniformity of aircraft distribution throughout the United States rather than the more accurate concentration of aircraft along flight routes (again typically over and between areas with higher population density). As a result, it is not at all clear that the Petition presents an

accurate assessment of potential interference into primary FSS operations necessary for the Commission and interested parties to begin considering the establishment of a secondary service in the band.

Similarly, the Petition does not adequately establish that a new secondary service could tolerate interference from primary Ku-band gateway and VSAT uplink transmissions.[2] Continuing VSAT terminal and gateway deployment could adversely affect terrestrial ATG ground station operations, particularly given the ubiquitous nature of Ku-band VSAT service. A Ku-band earth station antenna transmitted southward (as it must) could completely overwhelm a northward-pointing ATG ground station, with absolutely no recourse for an ATG licensee with secondary status.

The impact of mobile VSAT operations in the band is also uncertain. Increasing deployment of Ku-band earth stations onboard vessels ("ESVs") and vehicle-mounted earth stations ("VMESs") could affect ground-based components in the proposed ATG system, and Ku-band aeronautical mobile-satellite service ("AMSS") transmissions on an increasing number of commercial, government and private aircraft could have an adverse impact on the equipped aircraft in the proposed system. It is difficult to know exactly how the interference environment in which a secondary ATG licensee might operate will evolve given the growth and development of new ESV, VMES and AMSS services.

Of course, an ATG system operator that won and paid for a license at auction, implemented its ground network, and secured large commercial airline customers may

[2] *See, e.g.*, In the Matter of Amendment of the Commission's Rules to Provide Ancillary Services in the 849-851 and 894-896 MHz Bands, RM No. 7871, *Order*, 8 FCC Rcd 3920 (2004) (petition for rulemaking is premature where limited experience with recently established services created uncertainty whether new secondary service could operate effectively on shared frequencies and not adversely impact growth and development of the primary service).

not share the view that it has no recourse to address interference caused by primary earth station uplink operations in the 14.0-14.5 GHz band. This suggests that ATG operators ultimately might seek something other than the secondary status proposed in Petition. This prospect, in turn, raises significant doubts about the basic assumptions underpinning the ATG proposal. In Boeing's view, these and other substantial uncertainties preclude moving forward with a rulemaking at this time.

II. THE COMMISSION SHOULD ALSO REFRAIN FROM ANY CONSIDERATION OF NON-SATELLITE USES OF THE Ku-BAND UNTIL THE REGULATORY STATUS OF AERONAUTICAL SATELLITE SERVICES IS FINALIZED

The uncertainty regarding the potential availability of the 14.0-14.5 GHz band for a new secondary terrestrial service is heightened by the evolving regulatory status of Ku-band satellite services provided to aircraft. Although VMES and ESV services have been formally designated as primary applications of the Ku-band FSS, the often technically-identical satellite services that are provided to aircraft exist only on a non-interference/non-protected basis.[3]

The creation of a secondary terrestrial service in the Ku-band could have substantial adverse impacts on broadband satellite services provided to aircraft, which could not be remedied adequately pursuant to a secondary or non-interference/non-protected regulatory designation. For example, significant questions exist regarding whether VMES, ESV and AMSS networks operating in the Ku-band would cause harmful interference to Qualcomm's proposed ATG service. Although ATG licensees would presumably have no regulatory recourse against primary VMES and ESV

[3] *See* 47 C.F.R. § 5.111(a)(2).

licensees, ATG licensees operating on a secondary basis could arguably demand the cessation of interfering transmissions from AMSS networks operating on a non-interference/non-protected basis.

Such an outcome would be untenable given the critical importance of the broadband communications services that are provided to aircraft passengers and flight crews. For example, Boeing is under contract with the U.S. Air Force Materiel Command to provide advanced broadband services to more than a dozen Very Important Personnel/Special Air Mission aircraft operated by the U.S. Air Force Air Mobility Command to transport senior leadership of the U.S. Government and Department of Defense.[4]

Further, the number of companies that are providing (or are authorized to provide) broadband satellite services to aircraft and the number of airlines that are utilizing these services has been steadily increasing. For example, AMSS network licenses have been issued by the Commission to ARINC, Row 44, Viasat and Panasonic Avionics.

Each of these companies has employed its own technological approach to enable the provision of broadband communications services to aircraft without causing or receiving interference from primary FSS transmissions in the band. These various technical solutions were developed without any consideration of whether they could protect secondary terrestrial ATG operations. It would therefore be particularly disruptive to interpose a new secondary spectrum use in the 14.0-14.5 GHz band while

[4] Typical applications for this contract include Internet, email, video teleconferencing, server access, and access to Direct Broadcast Satellite television service compatible with the Boeing system.

the regulatory status, commercial scope, and technological characteristics of broadband services provided to aircraft are still evolving.

Given these factors, the Commission should refrain from any consideration of a secondary terrestrial use of the 14.0-14.5 GHz band until the regulatory status of aeronautical satellite services is finalized as a primary application of the Ku-band FSS spectrum allocation. To this end, the Commission has a proceeding in place that is considering the designation of AMSS as a secondary service in the Ku-band FSS band.[5] Boeing has advocated that, regardless of whether AMSS is designated as a secondary service, steps should be taken to elevate the regulatory status of aeronautical satellite services to the same regulatory designation as VMES and ESV.

As discussed above, the designation of aeronautical satellite services as a primary application of the Ku-band FSS service is warranted to protect the critically-important broadband communications services that are provided to aircraft in the United States. Further, given the repeated efforts by various parties to secure allocations for secondary terrestrial spectrum uses in Ku-band FSS frequencies, the Commission should expedite the completion of its long pending AMSS proceeding. The Commission should also ensure that any future consideration of secondary terrestrial spectrum uses in the Ku-band do not impair the continued growth and technical evolution of these important broadband satellite services.

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[5] *See* Amendment of Parts 2 and 25 of the Commission's Rules to Allocate Spectrum in the 14-14.5 GHz Band to the Aeronautical Mobile-Satellite Service ("AMSS") and To Adopt Licensing and Service Rules for AMSS Operations in the Ku-Band, The Boeing Company, *Petition for Rulemaking*, IB Docket No. 05-20 (filed July 21, 2003).

III. THE PETITION DOES NOT OTHERWISE ESTABLISH AN ADEQUATE BASIS TO INITIATE A RULEMAKING

The Petition cites market statistics regarding sales and usage of mobile broadband services by consumers on the ground, but makes no attempt to link such usage to the need for a new terrestrial ATG service. As a global innovator of in-flight communications services to passengers, Boeing can confirm that there are many factors that affect passenger demand for in-flight connectivity (a direct driver for communications service off the aircraft) and the Petition is silent with respect to such issues. It is also silent with respect to the ability of existing terrestrial and satellite networks to meet current and anticipated demand for such off-board connectivity.[6]

In the absence of an affirmative public interest showing, the uncertainties and potential adverse affects of the proposal counsel against initiating a rulemaking at this time. Failure to consider potential interference into or constraint of important government and commercial service provided in the 14.0-14.5 GHz band and the adverse consequences of altering an operating environment that has fostered competition, innovation and efficient spectrum use, could threaten not only important existing uses but also growth and innovation in the future. In balancing the absence of a public benefit against the significant potential for public harm, it seems difficult to conclude that initiating a rulemaking at this time to establish a secondary ATG service in the 14.0-14.5 GHz band would further the public interest.

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[6] In the Matter of Industrial Telecommunications Association, Inc.; Amendment of Part 95 of the Commission's Rules to Establish a Very Short Distance Two-Way Radio Service, RM-10564, *Order*, 19 FCC Rcd 6988, 6991 (2004)(petition for rulemaking denied where hypothetical scenarios and not factual data and evidence used to support claims of need for rulemaking).

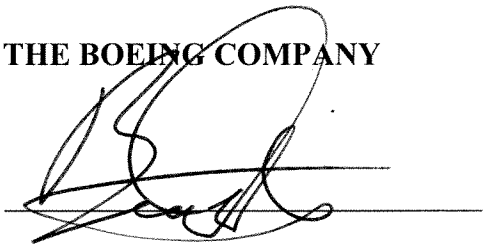
IV. CONCLUSION

The Commission should not move forward with a rulemaking at this time because it would not be in the public interest and is premature. The Petition does not establish that the proposed ATG service would further public interest, has not adequately addressed its impact on existing and future uses of the 14.0-14.5 GHz band, and has not established that a such a secondary service could be viable in the face of unconstrained deployment of Ku-band fixed and mobile earth stations.

In any event, because it could have a material impact on service viability, the Commission should not initiate a rulemaking on a proposed new service in the 14.0-14.5 GHz band until the issue of Ku-band AMSS regulatory status is resolved.

Respectfully submitted,

THE BOEING COMPANY

By: 

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