Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 1, 2, 15, 25, 27, 74, 78, 80,	)	
87, 90, 97, and 101 of the Commission's Rules	)	ET Docket No. 12-338
Regarding Implementation of the Final Acts of the	)	(Proceeding Terminated)
World Radiocommunication Conference	)	
(Geneva, 2007) (WRC-07), Other Allocated Issues,	)	
and Related Rule Updates	)	
	)	
Amendment of Parts 2, 15, 80, 90, 97, and 101 of the	)	
Commission's Rules Regarding Implementation of	)	
the Final Acts of the World Radiocommunication	)	ET Docket No. 15-99
Conference (Geneva, 2012) (WRC-12), Other	)	
Allocation Issues, and Related Rule Updates	)	
	)	
	)	

To: The Commission

REPLY COMMENTS OF
THE BOEING COMPANY

The Boeing Company ("Boeing") provides these Reply Comments to reiterate its support for the Commission's allocation of much-needed new spectrum for use by Aeronautical Mobile Telemetry ("AMT") in the 4400-4940 MHz and 5925-6700 MHz bands.[1] These additional allocations will help address the "large and growing shortfall" in the spectrum available for

[1] Amendment of Parts 1, 2, 15, 74, 78, 87, 90 and 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07), Other Allocation Issues, and Related Rule Updates, Notice of Proposed Rulemaking and Order, ET Docket No. 12-338, Amendment of Parts 2, 15, 80, 90, 97, and 101 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2012) (WRC-12), Other Allocation Issues, and Related Rule Updates, ET Docket No. 15-99, Notice of Proposed Rulemaking, FCC 15-50, ¶ 208 (rel. Nov. 19, 2012) ("*NPRM*").

AMT, which the United States identified as a priority in its WRC-07 proposals,[2] and which is even more significant today. Nearly a decade has passed since the United States began advocating for an AMT allocation in the 4400-4940 MHz and 5925-6700 MHz bands. Once WRC-07 concurred with this allocation, it should have been adopted in the United States expeditiously, rather than languishing for years.

The introduction of AMT services need not, and, with careful cooperation, will not cause harmful interference to Fixed Service ("FS") operations. Boeing recognizes that such cooperation will require flexibility and innovation, particularly by AMT users, but Boeing believes AMT and FS operators are well prepared to resolve the compatibility challenges. Boeing therefore urges the Commission to proceed expeditiously with the proposed allocation of spectrum in the 4400-4940 MHz and 5925-6700 MHz bands for use of AMT radio frequency spectrum.

I. THE PROPOSED ALLOCATION OF THE 4400-4940 MHZ AND 5925-6700 MHZ BANDS FOR AMT OPERATIONS IS NECESSARY AND FEASIBLE

As a world leader in the development and manufacturer of aircraft, Boeing is at the forefront of aerospace research and development. Boeing has first-hand experience with the increasing demands placed upon aircraft testing capabilities, including the growing complexity of aircraft design, higher performance requirements, and pressure to shorten timescales, as well as existing AMT spectrum resources being diverted to other radio services.[3] Overcoming such challenging constraints requires highly reliable AMT operations and sufficient spectrum to ensure safe operation free from harmful interference.

---

[2] *Id.*, ¶ 207.

[3] *Id.*

A. Fixed Service Installations Can Permit Flight Testing in Discrete Geographic Areas and Frequencies

The comments of the Fixed Wireless Coordinating Council ("FWCC") and the National Spectrum Management Association ("NSMA") indicate the extent of use of FS in the United States, as well as providing an example of one of the many complex spectrum sharing scenarios that the Commission routinely addresses in overseeing the tremendous need for spectrum across a range of industries.[4] The FWCC and NSMA comments do not, however, demonstrate that sharing between FS and AMT is not possible. Instead, as noted in the comments of the Aerospace and Flight Test Radio Coordinating Council ("AFTRCC"), the comments of FWCC and NSMA appear to overgeneralize the sharing situation.[5] The relevant question is not whether FS use is widespread, but whether there are any geographic areas where at least one FS channel might be available for AMT use. Far from assuming a clean slate, the US proposal to WRC-07 anticipated that "the spectrum requirement for AMT would be satisfied using portions of each of the bands studied and deemed suitable for AMT implementation."[6] Analyzing sharing feasibility requires a more detailed and site-specific analysis, which Boeing expects will disclose far more opportunities for sharing than the Comsearch charts provided.

Indeed, the NPRM explicitly notes that the "underlying assumptions" of the US proposals to WRC-07 included "frequency avoidance or other measures to ensure compatible operations between AMT and incumbent services, such as requiring use of technical and/or operational

---

[4] Comments of the FWCC, ET Docket No. 15-99 (Aug. 28, 2015) ("*FWCC Comments*"); Comments of the NSMA, ET Docket No. 15-99 (Aug. 28, 2015) ("*NSMA Comments*").

[5] *AFTRCC Comments* at 2-3 (citing *FWCC Comments* at 7).

[6] *Id.*, n.466 (citing United States of America Proposals for the Work of the Conference, plenary meeting, Document 5-E, Feb. 9, 2007, Agenda Item 1.5 at 10).

measures on AMT."[7] Through collaboration among the Department of Defense ("DOD"), the National Aeronautic and Space Administration ("NASA"), Fixed-Satellite Service ("FSS") and FS industry representatives, the United States developed the operational restrictions found in Resolution 416 (WRC-07), which the United States actively supported and agreed would enable sharing between AMT and FS users in the band.[8] Boeing is well prepared to implement the technical and operational measures necessary to ensure successful sharing and efficient spectrum use.

B. The Proposed Allocation Will Serve the Public Interest

Commercial aviation is safer, cheaper, and more energy efficient than ever before, in part because of the voluminous record of second-to-second data developed through AMT testing. Although not a safety of life service directly, AMT lays the foundation for the impeccable safety record that the commercial aviation sector maintains. The increasingly complex airframe, engine, and electronics systems of modern aircraft must be tested extensively both individually and together, under real world conditions, to achieve this performance. Such testing adds up to thousands of hours of flight testing per year, necessitating a concerted effort to ensure that sufficient AMT spectrum is available. The proposed allocation of the 4400-4940 MHz and 5925-6700 MHz bands will help offset the increasing demand for AMT testing as well as the loss of AMT spectrum in other bands.[9]

---

[7] *NPRM*, ¶ 216.

[8] *Id.*, ¶ 208 n.44.

[9] *Id.*, ¶ 207; *see also id.*, ¶¶ 65 (proposing deletion of the AMT allocation in the 2310-2320 MHz and 2345-2360 MHz bands).

The allocation will also promote efficient use of the spectrum. AMT operations are by their nature scheduled, rigorously controlled, and intermittent. These factors allow AMT users to carefully design their spectrum usage to take advantage of "gaps" of unused frequency bands and geographic areas to provide high reliability service without raising the risk of causing or receiving harmful interference. As demonstrated above and in the AFTRCC comments, FS, although intensively using the band, provides identifiable geographic and spectrum gaps that can be effectively used by AMT rather than being allowed to lie fallow.

C. Growth of FS Usage Should Not Prevent Fast Action on AMT

The comments of the FWCC and NSMA assert that FS use continues to increase, implying that even if sharing were feasible under current circumstances, greater FS use in the future may render it impractical.[10] Usage of spectrum by nearly all communications services is growing, however, and spectrum use is always in flux. This truism should not hold up good spectrum management decisions. As long as the AMT community can identify spectrum within the 4400-4940 MHz and 5925-6700 MHz bands that is suitable for AMT operations in a given location, the Commission should permit such use.

Therefore, the Commission should move forward immediately to adopt an AMT allocation across the entire the 4400-4940 MHz and 5925-6700 MHz bands in order to address the critical need for AMT spectrum that exists today. The United States first recognized the need for this allocation in its preparations for WRC-07, and the international community concurred. Since that time, the demand for AMT spectrum has only continued to grow. The Commission should expeditiously finalize this effort by adopting the proposed allocation without delay.

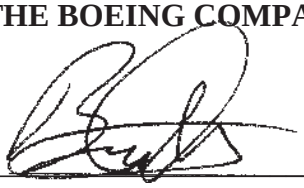
[10] *FWCC Comments* at 2, *NSMA Comments* at 2.

II. CONCLUSION

New AMT allocations in the 4400-4940 MHz and 5925-6700 MHz bands will help address the critical need for new AMT spectrum, which the United States identified as a priority in its WRC-07 proposals.[11] Through the technical and operational restrictions discussed above, as well as careful cooperation between the AMT and FS communities, flight testing can be conducted in at least portions of the 4400-4940 MHz and 5925-6700 MHz bands without causing harmful interference to FS operations. Boeing recognizes that such cooperation will require flexibility and innovation, particularly by AMT users, but Boeing believes the AMT and FS industries are well prepared to resolve the compatibility challenges. Boeing therefore urges the Commission to proceed as quickly as possible with the proposed allocation.

Respectfully submitted,

THE BOEING COMPANY

By: 

Audrey L. Allison
Senior Director, Frequency Management Services
The Boeing Company
929 Long Bridge Drive
Arlington, VA 22202
(703) 465-3215

Bruce A. Olcott
Preston N. Thomas
Jones Day
51 Louisiana Ave. NW
Washington, D.C. 20001
(202) 879-3630

Its Attorneys

September 30, 2015

[11] *Id.*, ¶ 207.