

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Recommendations of the Advisory)	IB Docket No. 04-286
Committee for the 2007)	
World Radiocommunication)	
Conference)	

**COMMENTS OF
THE BOEING COMPANY**

The Boeing Company (“Boeing”), by its attorneys, hereby comments on the recommendations of the Federal Communications Commission’s Advisory Committee for the 2007 World Radiocommunication Conference (“WRC-07”).¹ Boeing is limiting these comments to the Advisory Committee’s Preliminary Views on Agenda Item 1.5, addressing spectrum requirements and possible additional spectrum allocations for aeronautical telecommand and high bit-rate aeronautical telemetry services.

Boeing is submitting these comments as a global leader in the design and manufacture of commercial and military aircraft. Boeing relies on spectrum resources for a variety of manufacturing, operational and flight test purposes. Flight test and aeronautical telemetry spectrum is utilized to ensure the safety and reliability of new aircraft. Boeing installs and conducts flight tests on numerous communications and navigation systems in each aircraft in

¹ See Public Notice, *The FCC’s Advisory Committee for the 2007 World Radiocommunication Conference Approves Recommendations on WRC-07 Issues*, DA 05-2481 (Sept. 21, 2005) (“*Preliminary Views*”).

order to make them compliant with the regulations of the Federal Aviation Administration (“FAA”) and international and foreign aeronautical regulatory agencies.

Boeing strongly supports the identification and allocation of additional spectrum bands that are suitable for aeronautical mobile telemetry testing. This spectrum should be made available for flight telemetry operations through the adoption of footnotes in the International Table of Frequency Allocations that identify existing Mobile Service (“MS”) allocations that are globally available for flight telemetry. Boeing also supports the adoption of new allocations to the MS, to the extent that they are necessary to support the aviation industry’s aeronautical telemetry requirements.

I. AN INCREASING NEED EXISTS FOR ADDITIONAL SPECTRUM THAT IS GLOBALLY AVAILABLE FOR AERONAUTICAL TELEMETRY OPERATIONS

Boeing strongly agrees with the findings and positions that are included in the Advisory Committee’s Preliminary View for Agenda Item 1.5.² As the Preliminary View acknowledges, there is a “large and growing shortfall in spectrum available to conduct aeronautical telemetry.”³ The amount of bandwidth required for aeronautical flight test telemetry has increased exponentially in recent decades as a result of the increased complexity of aircraft, the inclusion of additional electronics and communications systems, and the need for more in depth testing to ensure that various new components can operate compatibly with existing equipment, without resulting in harmful electromagnetic interference or otherwise inhibiting the safe and efficient operation of aircraft.

² *See id.* at 8-9.

³ *Id.* at 8.

The flight testing that was required in 1995 to complete the FAA certification process for Boeing's 777 aircraft included the electronic monitoring of approximately 64,000 test points. The flight testing that will be required to certify Boeing's new 787 aircraft is expected to include the electronic monitoring of well over 100,000 test points. In contrast, the certification process that was required in 1954 for Boeing's 707 aircraft included the monitoring of only about 300 electronic test points.

Not only has the total number of measurements vastly increased, but these measurements must also be undertaken with much greater frequency and precision. As a consequence, the data rates required by each individual sensor have increased several fold, often requiring digital outputs of 12, 16 and sometimes 32 bits per sample.⁴

At the same time that spectrum demands have been increasing for aeronautical telemetry operations, there has been significant erosion in the amount of spectrum available for flight test and telemetry operations. As a result, commercial and governmental flight test operations are confined to very limited spectrum segments. The erosion in flight test and telemetry spectrum could compromise critical testing that is necessary to validate new and derivative aircraft to meet certification requirements, as well as the timely delivery of U.S. defense systems.

The shortage of spectrum is already causing delays in the testing of some new aircraft and aircraft components, resulting in significant expense to aircraft manufacturers and their customers. The magnitude of this problem was detailed by the United States in its submissions to ITU-R Working Party 8B ("WP 8B"), which is considering the issue in advance of WRC-07. Boeing contributed to the U.S. submissions to WP 8B. The U.S. contributions observe that

⁴ See *Spectrum Requirement for Aeronautical Mobile Telemetry*, United States of America, Document 8B/143-E at 2 (31 March 2005).

between 15 and 20 percent of all aeronautical test flights are delayed or cancelled as a result of shortages in telemetry spectrum availability.⁵ Such delays can result in tremendous costs for aircraft development programs, costs that must be assumed by commercial and governmental purchasers of aircraft and, indirectly, the flying public. In order to avoid these significant costs and delays, additional spectrum should be made available on a global basis for aeronautical telemetry.

II. THE UNITED STATES SHOULD ADOPT A SPECIFIC PROPOSAL FOR SUBMISSION TO THE WRC-07 CONFERENCE PREPARATORY MEETING ADDRESSING THE SHORTFALL IN AERONAUTICAL TELEMETRY SPECTRUM

In addition to acknowledging the growing need for additional aeronautical telemetry spectrum, the Preliminary Views of the FCC's Advisory Committee conclude that further studies should be conducted to identify additional spectrum for aeronautical telemetry and that the United States should adopt a specific proposal to meet growing aeronautical telemetry spectrum requirements.⁶ Boeing supports these conclusions. Boeing further believes that the necessary studies can be completed well in advance of the Conference Preparatory Meeting ("CPM") in March 2007. Boeing therefore supports the adoption by the United States of a specific proposal to address the shortfall in aeronautical telemetry spectrum for submission and consideration by the WRC-07 CPM.

The recent September 2005 meeting of WP 8B considered four studies that were submitted by the United States, which closely examined the primary candidate bands that may be

⁵ *See id.* at 3.

⁶ *See Preliminary Views* at 9.

available for co-primary aeronautical telemetry use.⁷ WP 8B is sharing its technical studies and findings with other relevant ITU working parties and the results of these liaisons should be completed early next year. WP 8B has another meeting scheduled in March 2006, during which it may be possible to identify specific spectrum bands that can accommodate aeronautical telemetry. This spectrum could be specified in draft CPM text that could be prepared by WP 8B for submission to the CPM. Boeing therefore believes that additional aeronautical telemetry spectrum can be identified and adopted by WRC-07. Boeing urges the United States to work actively towards this result to ensure the near term availability of additional aeronautical telemetry spectrum to support the U.S. aviation industry and important U.S. government operations.

III. CONCLUSION

Boeing supports the Preliminary Views that were adopted by the FCC Advisory Committee with respect to Agenda Item 1.5. The United States should continue to support the identification of additional spectrum bands that are available for use for aeronautical mobile telemetry testing. This spectrum should be made available for flight telemetry operations through the international adoption of footnotes in the International Table of Frequency

⁷ See *Working Document Supporting Agenda Item 1.5: Aeronautical Mobile Telemetry Compatibility with FSS Downlinks in the 4,500-4,800 MHz Band and with Radio Astronomy Operations in the 4,825-4,835 MHz Band*, United States of America, Document 8B/217-E (7 Sept. 2005); *Working Document Supporting Agenda Item 1.5: Aeronautical Mobile Telemetry Operational Compatibility with FSS Uplinks in the 5,925-6,700 MHz Band and FSS Downlinks in the 4,500-4,800 MHz Band*, United States of America, Document 8B/224-E (7 Sept. 2005); *Preliminary Report on Compatibility Studies Between Aeronautical Mobile Telemetry and FSS and AMS(R)S Services in the 5,091-5,150 MHz Band*, United States of America, Document 8B/225-E (8 Sept. 2005); *Working Document Regarding WRC-07 Agenda Item 1.5: Frequency Sharing Between Aeronautical Mobile Telemetry Stations and Systems in the Fixed and Mobile Services*, United States of America, Document 8B/252-E (12 Sept. 2005).

Allocations that identify existing MS allocations that are globally available for flight telemetry. The United States should also continue to support the possible adoption of new allocations to the MS, to the extent that they are necessary to support the aviation industry's long-term aeronautical telemetry requirements.

Respectfully submitted,

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