Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
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Amendment of Parts 2 and 101 of the Commission's Rules to Provide for Federal and Non-Federal Sharing in the 7125-8500 MHz Band	))))	RM No. 11605

To: The Consumer and Government Affairs Bureau

COMMENTS OF THE BOEING COMPANY

The Boeing Company ("Boeing"), by its attorneys and in response to the Consumer and Government Affairs Bureau's ("Bureau's") Public Notice,[1] hereby files these comments addressing the petition for rulemaking of the Fixed Wireless Communications Coalition ("FWCC").[2] Boeing supports the Commission's overarching goal of identifying spectrum suitable for mobile wireless broadband services and recognizes the resulting increased need for fixed wireless backhaul services. Therefore, Boeing does not oppose FWCC's petition for a rulemaking regarding use of the 7125-8500 MHz band for fixed wireless backhaul services, provided that the incumbent government operations are protected.

The introduction of new commercial services to the band, however, should avoid impacting government-mandated testing of commercial and military aircraft and satellites

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[1] *See* Public Notice, Rep. No. 2908 (June 4, 2010) ("Public Notice").

[2] *See* Petition for Rulemaking of the Fixed Wireless Communications Coalition, RM No. 11605 (filed Mar. 16, 2010).

in the band. Therefore, a decision to introduce fixed wireless backhaul services in the band should also provide that experimental licenses granted for testing in the band do not require the experimental licensees to secure the consent of fixed wireless providers before conducting short term government-mandated transmissions.

Boeing is responding to the Public Notice as the global leader in the design and manufacture of commercial and military aircraft and as a leader in the manufacture and launch of commercial and government satellites. Boeing employs more than 155,000 people in the United States, and is one of the leading U.S. exporters with total revenue in 2009 of $63.8 billion.

I. BOEING IS LICENSED BY THE COMMISSION ON AN EXPERIMENTAL BASIS AND USES NTIA ASSIGNMENTS IN THE 7125-8500 MHZ BAND FOR PROGRAMS REQUIRING GOVERNMENT-MANDATED TESTING

Boeing holds several Office of Engineering and Technology ("OET") experimental licenses and operates under additional NTIA assignments authorizing the use of spectrum in the 7125-8500 MHz band at sites throughout the United States.[3] Boeing uses these licenses and assignments to test and certify wireless communications systems installed on the commercial and governmental aircraft and satellites it manufactures. Boeing is required to test and certify such communication systems using the 7125-8500 MHz band by the Federal Aviation Administration ("FAA") for

[3] *See* ELS Call Signs WE9XDN, WE2XSN, KC2XAT, WE2XCB, WA2XQQ, WD2XNX, KB2XEU and WC2XVZ; Air Force Materiel Command authorizations AFMC 2009-1387, AFMC 2009-1729 and AFMC 2009-1336; DoD U.S. Naval Electromagnetic Spectrum Center authorizations TPUG 080003 and TPUG080021; and DoD U.S. Air Force Frequency Management Agency authorization SPC 2007-408.

commercial aircraft and by government contract with the Department of Defense ("DoD") for military aircraft.

For example, the federal government requires Boeing to perform testing on aircraft and satellites to determine susceptibility to radiated fields. The FAA requires Boeing to perform High Intensity Radiated Field ("HIRF") testing on commercial aircraft to ensure that aircraft flight systems are not disrupted by spurious emissions of electromagnetic energy. The DoD also often mandates the completion of these same tests for government aircraft. HIRF testing involves the use of electromagnetic radiation beam sweeps of target aircraft and aircraft components over a range of spectrum bands. Because the radar beam sweeps move rapidly through each of the spectrum bands, a HIRF test device will usually radiate in any one frequency for only a millisecond at a time. Boeing conducts these tests pursuant to experimental licenses issued by the OET and assignments issued by NTIA.[4] Boeing and its predecessor companies have no records of complaints regarding harmful interference resulting from testing of aircraft in this manner.

In seeking to introduce fixed wireless backhaul services in the 7125-8500 MHz band, the Commission should therefore take steps to ensure that existing short term government-mandated safety testing in the band is not disrupted by burdensome and unnecessary consent requirements.

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[4] *See* ELS File Nos. WE2XSN and WE9XDN.

II. EXPERIMENTAL LICENSES GRANTED IN THE 7125-8500 MHZ BAND SHOULD NOT BE CONDITIONED ON PRIOR CONSENT FROM FIXED WIRELESS BACKHAUL PROVIDERS

Boeing supports the Commission's broadband goals and believes that the Commission, if it so determines, may be able to introduce fixed wireless backhaul services into the 7125-8500 MHz band to support increased demand due to additional wireless broadband uses. This should be done, however, without harming critical, safety-related experimental test operations in the band. The addition of commercial fixed wireless applications to the band should have little actual impact on co-frequency government-mandated aircraft and satellite testing. Further, the continued operation of government-mandated testing of aircraft and satellite systems would not cause harmful (or even perceptible) interference to fixed wireless backhaul services in the same spectrum. Therefore, the OET should not require experimental license holders to secure the consent of commercial fixed wireless providers before conducting experimental operations.

The primary rule governing experimental authorizations is that testing must be performed on a non-interference basis.[5] Therefore, if experimental operations result in harmful interference to any other authorized spectrum use, the experimental operation must shut down immediately. In order to facilitate the experimental process, Boeing often conducts its government-mandated testing in remote locations or in RF shielded facilities, generally at relatively low power levels and for brief periods of time. Experimental licensees such as Boeing also often agree to provide contact information, such as a toll free telephone number, which is staffed throughout the testing process by

[5] *See* 47 C.F.R. § 5.85(c).

employees that have the authority to implement emergency "cease buzzer" procedures to ensure that any complaints of suspected harmful interference are immediately addressed by the cessation of testing.

Despite these extensive precautions, the OET's Experimental Licensing Branch has been increasingly mandating that holders of experimental licenses secure the express consent of all other licensees authorized to use the same spectrum in a given geographical region. Such requirements have been imposed even in cases where the nature of the proposed testing (*i.e.*, the planned power levels, shielding, and other means of attenuation) generally ensures that other licensees in the region will be unable to detect the presence of the experimental signals (much less suffer harmful interference).

Such coordination and consent requirements are extremely burdensome to holders of experimental licenses given the fact that primary users have no incentive to even discuss experimental requirements, let alone furnish their consent to such testing. Some wireless service providers that have not even built out their wireless networks continue to refuse to work with Boeing on coordination and consent requirements.

As an example, in a recent experimental license grant, coordination conditions were placed on Boeing's HIRF testing authorization in Glasgow, Montana. Operation in the 824-849 MHz and 869-894 MHz bands required "consent of local cellular licensee(s)" and operation in the 1850-1910 MHz and 1930-1990 MHz bands required the "consent of PCS licensees."[6] Boeing was also required to obtain consent from Advanced Wireless Service and Broadband Radio Service/Educational Broadband

[6] *See* ELS File No. 0089-EX-ST-2009 (Call Sign WD9XHD).

Service licensees.[7] Boeing continues to experience difficulty in obtaining consent from these licensees, even though some of them have not constructed their networks, and those networks that have been constructed would not suffer harmful interference from Boeing's HIRF tests. If the Commission introduces wireless backhaul services to the 7125-8500 MHz band, the OET should not impose such unnecessary coordination requirements on experimental licensees.

In addition, Boeing is currently attempting to coordinate its testing of a software synthesized base station for CMRS protocols in multiple frequency bands, as well as transmitters and vehicle mounted directional receiver equipment between 20-6000 MHz (notched to bypass critical government bands), with co-frequency fixed microwave licensees. Boeing's experimental authorizations require prior coordination with fixed microwave licensees, among others, as a special condition.[8] This coordination process is especially difficult given the fact that Boeing's experimental licenses are site-based and most fixed microwave licenses are granted on a point-to-point basis.

The Commission has acknowledged that experimentation is a key element of wireless innovation.[9] Wireless innovation leads to more efficient use of spectrum, which, in turn, furthers the Commission's goal of identifying and freeing spectrum for wireless broadband services. Therefore, it would be counterproductive for the Commission to allocate the 7125-8500 MHz band for fixed wireless backhaul to support additional

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[7] *See id.* at 2.

[8] *See* ELS File Nos. WF2XEX and WF2XFY.

[9] *See Fostering Innovation and Investment in the Wireless Communications Market, A National Broadband Plan For Our Future*, GN Docket No. 09-57, Notice of Inquiry, FCC 09-66, ¶ 65 (Aug. 27, 2009).

wireless broadband, but in the process hinder experimentation in the band. Fortunately, the Commission can promote the use of the 7125-8500 MHz band for experimental testing and for fixed wireless backhaul by not unnecessarily requiring experimental licensees to secure consent from commercial wireless backhaul providers before operating.

III. CONCLUSION

Boeing uses OET experimental licenses and NTIA assignments in the 7125-8500 MHz band to perform government-mandated testing of commercial and military aircraft and satellite communications systems. Boeing does not object to the commencement of a rulemaking proceeding to introduce commercial fixed wireless backhaul applications into the band, but such introduction must have as little impact as possible on experimental licensees. Therefore, the OET should not require experimental license holders to secure the consent of any commercial fixed wireless backhaul providers that are introduced into the band before operating.

Respectfully submitted,

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Certificate of Service

I, Joshua T. Guyan, hereby certify that on this 6th day of July, 2010, I caused a copy of the Comments of The Boeing Company on the Fixed Wireless Communications Coalition Petition for Rulemaking for Amendment of Parts 2 and 101 of the Commission's Rules to Provide for Federal and Non-Federal Sharing in the 7125-8500 MHz Band to be served via U.S. first class mail on the parties listed below.

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