

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 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 Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva, 2007) (WRC-07), Other Allocation Issues, and Related Rule Updates	)	ET Docket No. 12-338 (Proceeding Terminated)
	)	
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
	)	

To: The Commission

**COMMENTS OF  
THE BOEING COMPANY**

The Boeing Company (“Boeing”) applauds the Commission on its adoption of the Report and Order, Order, and Notice of Proposed Rulemaking (“*Order*” or “*NPRM*”) implementing the allocation decisions of the World Radiocommunication Conferences of 2007 and 2012 (“WRC-07” and “WRC-12”).<sup>1</sup> Boeing participated in the deliberations at WRC-07 and WRC-

12 and believes that the process produced a well-considered outcome that will benefit the United

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<sup>1</sup> 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, Report and Order, Order, and Notice of Proposed Rulemaking, FCC 15-50 (rel. Nov. 19, 2012) (“*Order*” or “*NPRM*”).

States by simplifying and updating the Radio Regulations, promoting spectral efficiency, and protecting critical flight test operations. Boeing provides the following comments to restate its general support, with some cautions, for the rules adopted in the *Order* and proposed in the *NPRM*.

**I. THE COMMISSION SHOULD ADOPT THE FOLLOWING RECOMMENDATIONS TO BEST IMPLEMENT THE DECISIONS OF WRC-07 AND WRC-12 AND FURTHER COMMISSION POLICY OBJECTIVES**

As the world's largest aerospace company and a leading manufacturer of commercial aircraft and defense, space, and security systems, Boeing is constantly engaged in product development and flight testing. Flight test operations require sensitive receive antennas that are highly susceptible to harmful interference. Boeing makes the following recommendations to promote efficiency in the Commission's regulation of the spectrum while ensuring that critical aerospace services are protected.

**A. Boeing Supports Allocation of the 108-117.975 MHz Band for AM(R)S**

Boeing reaffirms its support for the Commission's decision to add footnote US197A to the U.S. Allocation Table in order to incorporate the text of RR 5.197A with respect to the 108-117.975 MHz band, thereby allocating this band to the Aeronautical Mobile (Route) Service ("AM(R)S") on a primary basis for Federal and non-Federal use.<sup>2</sup> Boeing supports the Commission's decision to limit the content of the footnote to the language agreed to in RR 5.197A. As the Commission notes, RR 5.197A is a carefully crafted compromise amongst the

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<sup>2</sup> *Order*, ¶ 50.

aviation industry, regulators, and the broadcast industry, and should not be unilaterally modified in a U.S. footnote.<sup>3</sup>

**B. Boeing Supports Adoption of Aeronautical Mobile Services in the 5091-5150 MHz Band**

Boeing supports adoption of a primary allocation for Aeronautical Mobile Services (“AMS”) in the 5091-5150 MHz band, and the limitation of this allocation as described in new footnote US444B.<sup>4</sup> Boeing notes that in lieu of requiring coordination between AM(R)S and Aeronautical Mobile Telemetry (“AMT”) systems, the Commission has elected to “urge operators...to cooperate with each other and exchange information about planned deployments of their respective systems.”<sup>5</sup> Boeing hopes such informal cooperation and information sharing is sufficient to ensure compatible spectrum sharing of the band.<sup>6</sup> Indeed, as Boeing has previously noted, good engineering practices by WiMax network operators should limit interference to AMT.<sup>7</sup> Should experience suggest that reliance on good engineering practices and informal cooperation is insufficient, however, Boeing recommends the Commission consider a more formal coordination requirement as an alternative.<sup>8</sup>

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<sup>3</sup> *Id.*, ¶ 49.

<sup>4</sup> *Id.*, ¶ 58-60.

<sup>5</sup> *Id.*, ¶ 60.

<sup>6</sup> *See* Comments of The Boeing Company, ET Docket No. 12-338, at 4 (Feb. 25, 2013) (“*Boeing Comments*”).

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

**C. Boeing Supports Deletion of the AMT Allocations from 2310-2320 MHz and 2345-2360 MHz**

As the Commission notes, citing comments from Boeing and the Aerospace and Flight Test Radio Coordinating Council (“AFTRCC”), the existing allocation for non-Federal AMT use of the 2310-2320 MHz band “is of limited utility due to its secondary status, which precludes its use for safety-related applications.”<sup>9</sup> Boeing supports deletion of this allocation, which increases spectrum efficiency by freeing up unused spectrum. The five year transition period will permit an orderly relocation of the few remaining AMT users of this band to other already heavily used AMT allocations.<sup>10</sup>

**D. Boeing Opposes Mandatory Out-of-Band Emissions Limits for AMT Operations in the 1452-1525 MHz Band**

Boeing supports the Commission’s adoption of footnote US338A to “encourage” operators of AMT stations in the 1435-1452 MHz band to “take all reasonable steps” to limit out of band emissions (“OOBE”) into the 1400-1427 MHz band to less than or equal to -28 dBW/27 MHz.<sup>11</sup> Boeing does not, however, see the justification in the Commission’s decision to adopt the additional step of requiring AMT operators that do not meet the WRC-07 recommended unwanted emissions limit of -28 dBW/27 MHz to first attempt to meet their spectrum needs in the 1452-1525 MHz band prior to accessing the 1435-1452 MHz sub-band.<sup>12</sup>

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<sup>9</sup> *Order*, ¶ 64 (citing Comments of AFTRCC, Docket No. 12-338 at 5 (Feb. 25, 2013) (“*AFTRCC Comments*”)).

<sup>10</sup> *Id.*, ¶ 65.

<sup>11</sup> *Id.*, ¶ 79.

<sup>12</sup> *Id.*

Boeing acknowledges that NTIA ultimately decided to recommend this requirement,<sup>13</sup> but Boeing does not believe that such a rule is necessary. As Boeing and AFTRCC explained in response to the Commission’s 2013 Notice of Proposed Rulemaking regarding implementation of the WRC-07 decisions, the NTIA recommendation is “intended to provide greater protection for passive services” but in fact most AMT equipment in the field already provides this additional attenuation.<sup>14</sup> The relevant industry standard for aeronautical telemetry applications, IRIG 106, specifies a “hard-limit” of -25 dBm per MHz, equivalent to an OOB limit for AMT transmitters of  $55 + 10 \log(P)$  per MHz.<sup>15</sup> As a result, most equipment can be expected to provide sufficient protection for passive services, and there is little value gained from imposing restrictions on AMT use of the 1435-1452 MHz sub-band.

**E. Boeing Supports Adoption of Additional Coordination Areas for Meteorological Satellite Use of 17.7-19.7 GHz in California and Guam**

Boeing concurs with the Commission’s proposed addition of San Miguel, California and Guam as coordination areas in the 17.7-19.7 MHz band.<sup>16</sup> Boeing also supports the decision to preserve non-Federal use of the 17.8-20.2 MHz band by formalizing the longstanding policy of limiting the number of Federal receiving Earth stations in this band to the Denver, Washington, DC, San Miguel, and Guam coordination areas.<sup>17</sup>

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<sup>13</sup> *Id.*, ¶ 78.

<sup>14</sup> *AFTRCC Comments* at 6.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*, ¶ 120.

<sup>17</sup> *Id.* Boeing of course has no objection to the identification of additional sites if required to support critical national security requirements. Boeing urges careful coordination of any such additional sites to ensure that non-Federal use of the band is preserved. *See id.*

**F. Boeing Cautiously Supports Allocating Additional Spectrum for AMT in the 4400-4940 MHz and 5925-6700 MHz Bands**

Boeing applauds the Commission for recognizing the “large and growing” need for access to reliable, high-bandwidth AMT spectrum to support increasingly complex aeronautical test operations.<sup>18</sup> Boeing concurs that any sharing of the 4400-4940 MHz and 5925-6700 MHz bands between incumbent users and the AMT community would require careful coordination and/or technical measures to avoid harmful interference to existing stations.<sup>19</sup> Boeing believes that such measures will be achievable, and agrees that as a general matter such sharing is feasible.<sup>20</sup> Therefore, the Commission should proceed with the allocation of spectrum in the 4400-4940 MHz and 5925-6700 MHz bands for AMT operations.

**G. Boeing Supports Use of the 5030-5091 MHz band for Unmanned Aircraft Systems**

Boeing supports the Commission’s proposal to add a primary AM(R)S allocation in the 5030-5091 MHz band for Federal and non-Federal use to support line-of-sight control links for unmanned aircraft that are compliant with international standards.<sup>21</sup>

As the United States noted at WRC-12, the use of Unmanned Aircraft Systems (“UAS”) is expected to grow substantially in the coming years, and will undoubtedly begin to include flight operations that will take place outside of segregated airspace.<sup>22</sup> Boeing concurs with this assessment, and is in fact a major manufacturer and developer of UAS for the United States

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<sup>18</sup> *Id.*, ¶ 207.

<sup>19</sup> *Id.*, ¶ 216.

<sup>20</sup> *Id.*

<sup>21</sup> *Order*, ¶ 229.

<sup>22</sup> *Order*, ¶ 225.

government. Boeing agrees that the 5030-5091 MHz band is well suited for line-of-sight control links for UAS because it remains relatively unused.<sup>23</sup>

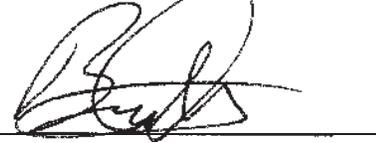
## II. CONCLUSION

Adopting the above recommendations will promote spectral and administrative efficiency while also ensuring that adequate spectrum is allocated and protected for critical flight testing and other aerospace operations. For these reasons, Boeing supports the rules as adopted in the *Order* and proposed in the *NPRM*.

Respectfully submitted,

**THE BOEING COMPANY**

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<sup>23</sup> *Id.*