

**Dynamic Spectrum Alliance Limited**

21 St Thomas Street  
Bristol BS1 6JS  
United Kingdom

<http://www.dynamicspectrumalliance.org>

3855 SW 153<sup>rd</sup> Drive  
Beaverton, OR 97006  
United States



January 26, 2016

Ms. Marlene Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

*Re: GN Docket No. 14-177: Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*

Dear Ms. Dortch:

The Dynamic Spectrum Alliance (DSA) applauds the Commission's groundbreaking efforts to enable greater use of spectrum resources for mobile services in frequencies above 24 GHz (collectively, the millimeter wave bands) through the above referenced proceeding.

The DSA is a global organization advocating for laws and regulations that will lead to more efficient and effective spectrum utilization. Our membership spans multinationals, small- and medium-sized enterprises, and academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the amount of available spectrum to the benefit of consumers and businesses alike. Our primary goals are to close the digital divide by reducing the cost of deploying last-mile wireless networks, enabling the Internet of Things, and alleviating the spectrum crunch.<sup>1</sup> We believe the Commission's focus on millimeter wave spectrum is in close alignment with our goals. Additional spectrum allocation will allow for 5G wireless services, increased in-room bandwidth, as well as low-cost last mile broadband access.

The DSA strongly supports the Commission's proposals to designate the 64-71 GHz band for unlicensed operations. The technical rules for this band should generally track the rules established for the frequencies between 57 and 64 GHz, creating one contiguous band between 57 and 71 GHz. In both sub-bands, the Commission should allow onboard airplane use and increase power emissions limits for lower power uses by 10 dB. In addition, the Commission should allow unlicensed use of the 71-76 GHz band and 81-86 GHz bands, so long as they do not interfere with lightly licensed operations.

---

<sup>1</sup> For more on the DSA, please visit [www.dynamicspectrumalliance.org](http://www.dynamicspectrumalliance.org).

## Designate the 64-71 GHz Band for Unlicensed Operations

The DSA strongly agrees with the Commission’s conclusion that allowing Part 15 operations in 64-71 GHz would allow intensive use of the band.<sup>2</sup> As the Commission noted, such designation would allow for an expansion of the 57-64 GHz band, which is already being used for innovative indoor and outdoor applications.<sup>3</sup> The 64-71 GHz band provides for significantly better outdoor range than the 57-64 GHz band because transmissions in the higher band experience more favorable oxygen attenuation (see Figure 1 below). The difference in attenuation between 60 GHz and 70 GHz could lead to more than four times greater range for line-of-sight applications, which will lead to new, lower cost, outdoor applications. These applications, in turn, could help expand last mile broadband access – a key goal for the DSA’s members and the Commission.<sup>4</sup>

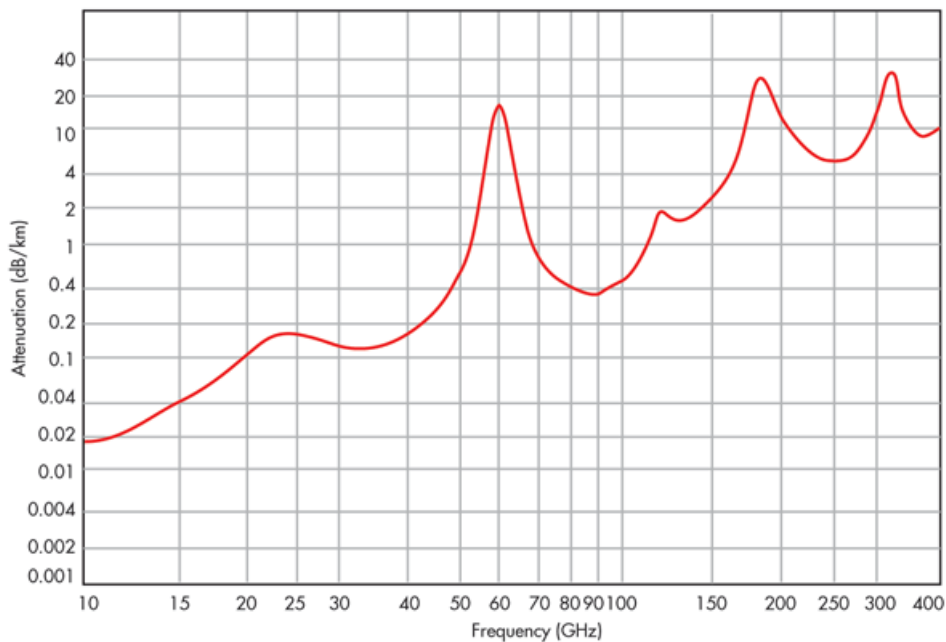


Figure 1. Millimeter Wave Signal Attenuation Characteristics Based on Oxygen and Water Absorption (Source: <http://electronicdesign.com/communications/millimeter-waves-will-expand-wireless-future>)

## Apply Most of Section 15.255’s Technical Requirements for the 57-64 GHz Band to the 64-71 GHz Band, With a Few Minor Changes

The DSA encourages the Commission to harmonize rules for the 64-71 GHz band with the rules for the 57-64 GHz band. Such harmonization benefits the industry and consumers by creating efficiencies and economies of scale. The DSA believes that such harmonization can largely be

<sup>2</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, GN Docket No. 14-77, Notice of Proposed Rulemaking, 2015 FCC LEXIS 3256, ¶ 300 (rel. Oct. 23, 2015) (NPRM).

<sup>3</sup> *Id.*

<sup>4</sup> *Id.*

done by applying the existing rules from the 57-64 GHz band, which a few notable exceptions as specified below.

### **Remove ban of inflight mmW Part 15 use on at least some of the 57-71 GHz bands**

The DSA encourages the Commission to lift the ban on mmW operations on airplanes for at least some of the 57-71 GHz band. As the Commission knows, passengers are increasingly bringing their devices on airplanes and connecting on airline provided Wi-Fi. The typical application for such devices is streaming video, which is ideal use for mmW Wi-Fi. The DSA believes that the ban can be lifted on the entire 57-64 GHz band because, as the Commission noted in the NPRM, there are no radio astronomy allocations in these bands, and there are limited applications that operate in an unprotected basis. Initial interference analysis of WiGig radios operating in the 64-71 GHz band has demonstrated no harmful interference to incumbent users (both satellite and radio astronomy). Furthermore, the oxygen attenuation characteristics of this band are very high, and therefore mmW Wi-Fi operating inside an airplane thousands of feet above the ground is unlikely to interfere with any ground based use.

### **Apply 57-64 GHz Power Emissions for Very High Gain Antennas, but Increase Power Emissions For Lower Power Uses by 10 dB for the Entire 57-71 GHz Bands**

The Commission should allow higher power transmissions from low gain antennas across the 57-71 GHz band. Currently, the Commission's rules require that the average power of any emission in the 57-64 GHz band shall not exceed 40 dBm and the peak power of any emission shall not exceed 43 dBm.<sup>5</sup> Operations using higher gain antennas may exceed these power limits and may transmit at power levels up to 82 dBm (average) and 85 dBm (peak) EIRP.<sup>6</sup> While the DSA agrees that the power limits for high-gain antennas remain sufficient for the contemplated point-to-point, and point-to-multipoint outdoor applications, it encourages the Commission to raise the emissions limits on lower power indoor and outdoor uses by 10 dB for the entire 57-71 GHz band, from 40 dBm average EIRP and peak 43 dBm EIRP to 50 dBm average EIRP and peak 53 dBm EIRP. Raising these power levels would greatly expand the number of indoor use cases.

### **Allow Part 15 Operations in the 71-76 GHz Band**

In the NPRM, the Commission also sought comments on whether it should revisit its decision to limit Part 15 operations in the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands.<sup>7</sup> As indicated in Figure 1 above, the 71-76 GHz band also is ideal for outdoor applications based on the oxygen absorption in this frequency range, and it is situated adjacent to other bands that may permit use under Part 15 rules. The DSA strongly encourages the Commission to make it a priority to open 71-76 GHz band for Part 15 operations, provided that such use can coexist with lightly licensed operations on a non-interfering basis.

---

<sup>5</sup> 47 C.F.R. § 15.255(b)(1)(i).

<sup>6</sup> 47 C.F.R. § 15.255(b)(1)(ii).

<sup>7</sup> NPRM ¶ 87.

In conclusion, the DSA strongly supports the NPRM, and recommends only minor changes to greatly enhance the value created by enabling access to the under-utilized spectrum between 64 and 76 GHz.

Respectfully submitted,



H. Nwana

Executive Director