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May 29, 2019

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: ET Docket No. 18-295, *Unlicensed Use of the 6 GHz Band*
GN Docket No. 17-183, *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*
***Ex Parte* Communication**

Dear Ms. Dortch:

The Fixed Wireless Communications Coalition (FWCC) responds to the *ex parte* filing in this docket by the Wi-Fi Alliance (WFA) on May 17, 2019.[1]

WFA misrepresents both the state of the record and the controlling law.

A. TAKING INTO ACCOUNT PROJECTED NUMBERS OF RLANS, THE RECORD PREDICTS SEVERE HARMFUL INTERFERENCE.

WFA favors deploying unlicensed 6 GHz RLAN devices indoors without automatic frequency coordination; and it contends the record shows "no significant potential" for their causing interference to Fixed Service (FS) operations.[2] Other parties argue similarly for uncontrolled

[1] Letter from Alex Roytblat, Senior Director of Regulatory Affairs, Wi-Fi Alliance to Marlene Dortch, Secretary, FCC (filed May 17, 2019) (WFA Letter).

[2] WFA Letter at 1.

RLANs outdoors at lower power levels.[3] Several RLAN proponents use a line of argument like this:

- building walls will probably block signals from an indoor RLAN;[4]
- even an inadequately-blocked indoor RLAN will probably lie below the FS receiver main beam;[5]
- an RLAN in an FS receiver main beam is probably too far away to cause interference;[6]
- ground clutter will probably attenuate signals from a nearby RLAN in the main beam;[7]
- even an interfering RLAN probably won't use up all of the FS receiver's fade margin;[8] and
- an RLAN that does use up all fade margin will probably just cause an FS slowdown, not a complete outage.[9]

This reasoning assesses harmful interference ***from a single RLAN***. We agree there are many scenarios where one RLAN would not cause FS interference. As shown in the record, however, there are also circumstances where a single RLAN device, even indoors, can cause harmful interference to the FS.[10]

The fact that RLAN interests project a device population of 958,062,017[11] drastically changes the outcome. ***Even if the probability of one RLAN causing harmful interference were as low as one in a trillion, the overall FS interference probability becomes a catastrophic 0.1%.***[12] Given

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[3] Comments of Apple, Inc. *et al*., at 35-36 (filed Feb. 15, 2019) (claiming a "vanishingly small" risk of harmful interference).

[4] *Id*. at 23.

[5] *Id*. at 20-21.

[6] *Id*. at 21.

[7] *Id*. at 27 (reference to WINNER II non-line-of-sight model).

[8] *Id*. at 15.

[9] *Id*.

[10] Letter from Jeffrey A. Marks, Esq., Nokia, to Marlene H. Dortch, Secretary, FCC at 1 (filed April 10, 2019).

[11] *Frequency Sharing for Radio Local Area Networks in the 6 GHz Band January 2018, attached to* Letter from Paul Margie, Counsel to Apple Inc., et al. to Marlene Dortch, Secretary, FCC, in GN Docket No. 17-183 at 12, Table 3-1 (filed Jan. 26, 2018) (RKF Study).

[12] Calculation: Assuming the probability of one RLAN causing harmful interference is 1 in a trillion (10^{-12}), the probability of one or more of 958,062,017 deployed RLANs causing

the 97,000 FS links in operation, many carrying critical services, this would mean, on average, harmful interference into almost one hundred links. WFA's claim of "no significant potential" for harmful interference cannot stand.

No interference prediction can be valid unless it takes into account the very large projected numbers of RLANs. The one study in the record that did factor in the numbers of RLANs showed they would exceed FS receiver interference thresholds in 0.209% of cases,[13] suggesting harmful interference into about 200 FS links.

B. CONTROLLING LAW BARS UNLICENSED DEVICES THAT HAVE A SIGNIFICANT POTENTIAL FOR HARMFUL INTERFERENCE.

WFA misreads the D.C. Circuit decision *ARRL v. FCC* as saying

> the Commission may permit the use of unlicensed devices when it finds there is not a "significant potential" for harmful interference to licensed operations.[14]

This omits a key word. The case arose from a challenge to unlicensed operation under Section 301 of the Communications Act, which on its face prohibits any radio transmission without a Commission license.[15] The court allowed an exception for unlicensed operation that the Commission has determined does not cause harmful interference. WFA's summary needs the additional word emphasized here:

> the Commission may permit the use of unlicensed devices ***only*** when it finds there is not a "significant potential" for harmful interference to licensed operations.

Trying to show the Commission allows harmful interference from unlicensed devices, WFA relies on a supposed distinction between unlicensed devices that "will not" cause harmful

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harmful interference is

$$[1-(1-10^{-12})^{958,062,017}] = 0.00096$$

The calculation makes the reasonable assumption that the probabilities of RLANs causing interference are independent of one another.

13 RKF Study at 45.

14 WFA Letter at 2, *citing American Radio Relay League, Inc. v. FCC*, 524 F.3d 227 (D.C. Cir. 2008).

15 "No person shall use or operate any apparatus for the transmission of energy or communications or signals by radio … except under and in accordance with this chapter and with a license in that behalf granted under the provisions of this chapter." 47 U.S.C. § 301.

interference, and those that present "no significant potential" for harmful interference.[16] This is counting angels on the head of a pin. The FWCC would not object to RLANs that presented no significant potential for harmful interference. We do object here because, as we showed above, the uncontrolled RLANs that WFA seeks to deploy are likely to cause widespread harmful interference.[17]

WFA cites three Commission decisions that it says focus on reducing, but not eliminating, harmful interference.[18] Two of the three predate the 2008 *ARRL v. FCC* holding, and so provide no guidance in applying it. That aside, WFA's reliance on these cases is puzzling. In one, the Commission affirmed a finding that newly permitted unlicensed devices "will not increase the interference potential" to licensed services.[19] In the other, the Commission similarly found that new devices "will not result in an interference risk" to licensed services.[20] Neither case advances WFA's position.

WFA's treatment of its third case is misleadingly brief. The question was whether unlicensed TV White Space devices would cause harmful interference to nearby LTE handsets. The Commission noted that handsets a very few meters from a TVWS device might experience "some" interference, and went on:

> [W]e do not believe this rises to the level of harmful interference as the LTE handset will continue to function, just at a slightly slower data rate, which we believe in the vast majority of instances would not be perceptible to the user as that user would likely experience similar fluctuations in data rates under normal usage conditions.[21]

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16 WFA Letter at 3.

17 WFA incorrectly says the *ARRL v. FCC* decision supported the Commission's expectation that licensed users must change location to avoid harmful interference. WFA Letter at 3. To the contrary, the court held the Commission "did not impose a new burden on mobile operators but simply recognized the nature of mobile use[.]"*American Radio Relay League, Inc. v. FCC*, 524 F.3d at 235 (citations omitted). In any event, FS towers do not have the option of moving to avoid RLAN interference.

18 WFA Letter at 3.

19 *Certification of Equipment in the 24.05-24.25 GHz Band at Field Strengths up to 2500 mV/m*, Memorandum Opinion and Order, 18 FCC Rcd 15944 at ¶ 8 (2003).

20 *Review of Part 15*, Third Report and Order, 19 FCC Rcd 7484 at ¶ 26 (2004).

21 *Unlicensed Operations in the Television Bands*, Report and Order, 30 FCC 9551 at ¶ 131 (2015). The Commission added: "[W]e nonetheless remind parties that our rules prohibit unlicensed devices from causing harmful interference. ***This is true even for unlicensed devices that comply with our technical rules.***" *Id*. at. ¶ 133 (emphasis added).

As shown in Part A, above, RLANs' threat to the FS would be far more severe than "fluctuations" similar to those in normal usage.

CONCLUSION

WFA wants to argue that unlicensed devices need not prevent all interference and, therefore, that interference from RLANs into the FS is acceptable. The D.C. Circuit upheld the Commission's reading of the Communications Act as allowing unlicensed devices that lack a "significant potential for causing harmful interference."[22] RLANs, in the numbers projected, are certain to cause far more severe interference to the FS, unless under the control of a properly designed and operated automatic frequency coordination system. Both the law and the facts in the record require such a system for all RLANs.

Respectfully submitted,

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22 *American Radio Relay League, Inc. v. FCC*, 524 F.3d at 234 (citations omitted).