Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)	
	)	
Unlicensed Use of the 6 GHz Band	)	ET Docket No. 18-295
	)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz	)	GN Docket No. 17-183
	)	

COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

I. INTRODUCTION

The National Association of Broadcasters (NAB)[1] hereby submits comments in response to the Office of Engineering and Technology's (OET's) Public Notice seeking additional information to supplement the record on whether the Commission should permit direct communications between client devices in the 6 GHz band.[2] NAB appreciates OET's effort to seek further input from licensed incumbent users of 6 GHz spectrum in this proceeding. Because the Commission and other stakeholders do not yet have real-world experience with unlicensed operations in the 6 GHz band, and because the proposals to allow client-to-client communications in the band will fail to protect licensed operations, we urge the

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[1] The National Association of Broadcasters (NAB) is the nonprofit trade association that advocates on behalf of free local radio and television stations and broadcast networks before Congress, the Federal Communications Commission and other federal agencies, and the courts.

[2] *The Office of Engineering & Technology Seeks Additional Information Regarding Client-to-Client Device Communications in the 6 GHz Band*, Public Notice, ET Docket No. 18-295, GN Docket No. 17-183, DA 21-7 (Public Notice).

Commission not to allow client-to-client operations in the portions of the band authorized for mobile service at this time.

II. EXPANDING UNLICENSED ACCESS TO THE 6 GHZ BAND IS PREMATURE

The U-NII-6 and U-NII-8 bands are allocated to the mobile service on a primary basis and are routinely used by television broadcasters and related entities for electronic newsgathering (ENG) operations.[3] Broadcasters use this spectrum for both indoor and outdoor ENG operations.

In its order authorizing unlicensed operations in the 6 GHz band, the Commission attempted to protect licensed users in the U-NII-6 and U-NII-8 bands by including a number of restrictions on unlicensed operations.[4] Of particular relevance here, the Commission required that client devices operating in the U-NII-6 and -8 bands operate under control of a LPI access point to help ensure that client devices in those bands would operate in close proximity to those access points, in order to "prevent client devices from transmitting outdoors at locations where they may cause interference."[5] Additionally, in response to comments filed by NAB concerning the risk of unleashing a large number of "mobile hotspot" devices inside sports arenas and other large indoor venues, the Commission stated that such operations would not be permitted.[6] For similar reasons, client-to-client communications, which would operate similarly to "mobile hotspots," were explicitly prohibited.[7] Now, dissatisfied with the Commission's modest restrictions to protect licensed users, RLAN proponents seek to loosen

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3 47 CFR § 2.106.

4 *Unlicensed Use of the 6 GHz Band*, Report and Order, 35 FCC Rcd 3852 (2020) (6 GHz Order).

5 *Id.* at ¶ 199.

6 *Id.* at ¶ 168.

7 47 CFR §15.407(d)(5).

the LPI rules to permit client-to-client communications if the client devices are each enabled by an authorizing signal transmitted by an access point that is received by the client device at a power density of -99 dBm/MHz or greater.[8]

NAB has previously explained that ENG receivers are "hidden nodes" because ENG receivers are passive and therefore cannot be detected by unlicensed devices (whether LPI access points or client devices).[9] This "hidden node" problem would be exacerbated under the client-to-client proposal because the enabling access point may be located thousands of feet from a client device and will fail to detect a passive ENG receiver that may be located near a transmitting client device.

Under these circumstances, it would be grossly premature to reverse the FCC's previous conclusions regarding client-to-client communications. There are no 6 GHz unlicensed deployments that would provide real-world experience supporting the Commission's already tenuous conclusions about the likelihood of interference to licensed services. The Commission should wait until there is a record of practical experience demonstrating whether and under what conditions interference to incumbent users may occur before authorizing additional modes of operation. If the Commission nonetheless decides to permit client-to-client communications, it should prohibit them in a portion of the 6 GHz spectrum to provide a safe harbor for ENG mobile and portable operations.

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8 Public Notice at 2, n. 6

9 Letter from Patrick McFadden to Marlene H. Dortch at 3-4, ET Docket No. 18-295, GN Docket No. 17-183 (March 23, 2020).

III. THE COMMISSION SHOULD NOT EXTEND LESS PROTECTION TO LICENSED USERS THAN TO UNLICENSED OPERATIONS

The 6 GHz Order requires that LPI access points detect incumbent users by employing a contention-based protocol (CBP).[10] OET's Laboratory Division subsequently adopted a policy that specified that the CBP must include energy detection at a threshold level of -62 dBm/20 MHz, corresponding to a power density of -75 dBm/MHz.[11] Here, the RLAN proponents suggest a threshold for client-to-client communications devices of -99 dBm/MHz detection. This is a difference of 24 dB, meaning that the threshold for protection of licensed devices would be over 250 times higher than the detection threshold required for the authorizing signal of client-to-client devices. Stated differently, the RLAN proponents propose that client-to-client communications be subject to *far* stricter standards to prevent interference to *other unlicensed devices* than the Commission requires for protection of *licensed users*. It is difficult to read this as anything other than a concession that the energy detection threshold OET has adopted for the CBP is insufficiently sensitive to detect other operations, whether licensed or unlicensed. There is simply no reason why incumbent users should not be protected to the same degree as unlicensed users.

Providing far greater protection to unlicensed devices than licensed devices would turn the entire premise of Part 15 of the Commission's rules on its head. If the Commission does move forward with authorization of client-to-client communications in this proceeding, it should revise the energy detection threshold for the CBP to match the threshold proposed for client-to-client communications. The Commission must not adopt requirements that afford a

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[10] 6 GHz Order at ¶ 168.

[11] KDB 987594 at p. 22.

greater degree of interference protection to unlicensed services than is provided to licensed operations.

IV. THE CLIENT-TO-CLIENT PROPOSAL WILL FAIL TO PROTECT LICENSED ELECTRONIC NEWSGATHERING OPERATIONS

The 6 GHz Order adopted a 5 dBm/MHz EIRP limit for LPI access points and a -1 dBm/MHz EIRP limit for client devices communicating with an LPI access point.[12] These radiated power levels were chosen to confine LPI operations, and interference, to indoor locations, based in part on an assumed building loss of 20.5 dB.[13] While NAB continues to believe that assuming a single building loss value for all interference situations is improper, that median value can be used to calculate the distance at which an LPI access point might authorize client-to-client communications at locations both indoors and outdoors.

Under the RLAN proponent's proposal, an LPI access point transmitting indoors at 5 dBm/MHz would be detectable by a client device at a distance of about 580 meters (over 2,800 feet) indoors, and at about 55 meters (about 180 feet) outdoors (accounting for building loss) if the client device is located outdoors.[14] Thus, a *single* LPI access point could authorize client-to-client operations across the vast interior spaces of most of the buildings in the world.[15] LPI access points could also authorize outdoor clients at a distance of 180 feet beyond the exterior building walls, based on the parameters of the RLAN proponent's proposal.

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[12] 6 GHz Order at ¶¶ 110, 218.

[13] *Id.* at ¶ 218.

[14] These distances assume the client device has an antenna with 0 dBi gain. If the client device uses beamforming or otherwise has greater gain, then the distances would be larger.

[15] Worldwide, only the Boeing Everett Factory appears to have an interior floor area that may exceed 580 meters. *See* https://en.wikipedia.org/wiki/List_of_largest_buildings.

Client devices under control of an LPI access point are limited to an EIRP of -1 dBm/MHz. Typical ENG receivers may experience harmful interference (uncorrectable errors) when interference signal levels exceed -93 dBm. Thus, client devices within about 150 meters (500 feet) of an ENG receiver may cause harmful interference.[16] A typical indoor sports venue, such as the Capital One Arena in Washington, DC, has a maximum interior dimension of about 611 feet (neglecting ceiling height). Even a handful of client devices operating in client-to-client mode inside a typical sports arena would be virtually certain to cause interference to an ENG receiver.

Similarly, a client device under control of an LPI access point but located outdoors may cause interference over a distance of 500 feet or more, depending upon the gain of the ENG receiving antenna. ENG trucks are often located just outside sports venues during major events. There is thus considerable risk of interference occurring outdoors from client-to-client communications even considering building loss.

While it may be possible to adjust the authorizing signal detection threshold of the client device to a more appropriate value that would reduce the potential for interference, it is impossible to speculate on an appropriate threshold at this time and it is unclear what other restrictions might be required. Potential additional restrictions could include requiring that all client-to-client communications to be authorized by the same LPI access point, operate on the same frequencies as the access point, and requiring frequent re-authorization signals. Actual experience with deployments in the band could shed light on whether these or other restrictions are required to protect licensed operations.

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[16] A 0 dBi antenna is assumed for the ENG receiver. The interference distance would be greater in the usual case where the ENG antenna has greater gain.

In the meantime, rather than simply guess at the appropriate technical specifications, NAB recommends reserving a portion of U-NII-6 or U-NII-8 spectrum in which client-to-client communications would not be permitted – at least until stakeholders better understand the interference potential of such communications in the 6 GHz band. NAB previously suggested that the upper 80 MHz of U-NII-8 (7045–7125 MHz) could be preserved for incumbent mobile operations, which would still preserve seven 160 MHz-wide channels in the 6 GHz band.[17] We are more than willing to consider alternative locations for a small amount of spectrum in which client-to-client communications would not be permitted.

V. CONCLUSION

Less than one year after the Commission adopted rules permitting unlicensed operations across the 6 GHz band, stakeholders have had no real-world experience with unlicensed use in the band that would confirm the FCC's conclusions regarding the likelihood of interference. Permitting client-to-client communications across the band now will only increase the potential for interference. If the FCC does choose to authorize such operations in this proceeding, it should preserve some measure of mobile spectrum in which client-to-client communications remain prohibited for the time being. The Commission can always revisit this reservation as users gain more experience with 6 GHz deployments and authorize client-to-client use across the entire band if that proves warranted and sustainable.

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[17] Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 18-295, GN Docket No. 17-183 (April 10, 2020).

Respectfully submitted,

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