

**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
)	

**REPLY COMMENTS OF
THE NATIONAL ASSOCIATION OF BROADCASTERS**

I. INTRODUCTION

The National Association of Broadcasters (NAB)¹ hereby replies to comments submitted 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 does not oppose expanded unlicensed operations and spectrum sharing where there is a sufficient record to demonstrate compatibility with existing licensed users. However, the record in this proceeding falls well short of that benchmark. Until the Commission and other stakeholders have real-world experience with unlicensed operations in the 6 GHz band, the Commission should not alter its recent decision to prohibit client-to-client communications, particularly in the portions of the band authorized for mobile service. Fortunately, the Commission can

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).

revisit this decision 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.

II. IT IS PREMATURE TO EXPAND UNLICENSED OPERATIONS IN THE 6 GHz BAND

As NAB has previously explained, the U-NII-6 and U-NII-8 sub-bands are allocated to the mobile service on a primary basis and are routinely used for electronic newsgathering (ENG) operations, such as transporting video from courtside and in-audience portable cameras back to the studio. Because these cameras are battery-operated, they necessarily operate at low power levels – levels comparable to those authorized for LPI. The similarity in power levels magnifies the potential for interference when unlicensed and ENG systems are used in close proximity (such as inside a sports arena) and occupy the same spectrum.

In the original Notice of Proposed Rulemaking in this proceeding, the Commission sought comment on whether it should allow unlicensed “mobile hotspots” and “transportable device[s]” to operate in the 6 GHz band.³ The Commission ultimately concluded that prohibiting these operating modes was necessary to limit the potential for interference to licensed 6 GHz incumbents operating indoors and to avoid client devices associated with low-power indoor (“LPI”) access points from operating outdoors.⁴

The question before the Commission is what, if anything, has changed to warrant a reversal of that decision. The answer is nothing. No party has introduced new evidence in the

³ *Unlicensed Use of the 6 GHz Band*, Notice of Proposed Rulemaking, 33 FCC Rcd 10496, ¶ 76 (2018).

⁴ *Unlicensed Use of the 6 GHz Band*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 3852, ¶ 168 (2020) (6 GHz Order) (“We agree with NAB that such a scenario would present some risk of harmful interference without all of the constraints that we adopt today. However, we are not permitting client devices to be used as hotspots.”) See also 47 CFR 15.407(d)(5) (“Client devices are prohibited from connecting directly to another client device.”)

record of this proceeding that should lead the Commission to reverse its recent conclusion, particularly given that neither the Commission nor any stakeholder yet has any substantial real-world experience with unlicensed deployments in the 6 GHz band. Instead, proponents have focused on potential use cases, many of which could be accomplished in other unlicensed spectrum bands not shared with incumbents.

Although RLAN proponents argue that client-to-client operations should be allowed in the 6 GHz band because such operations are permitted in TV white spaces, that comparison is inapt. The interference protections afforded TV stations are not generally related to the detection of energy, which could be subject to shielding and hidden nodes.⁵ Rather, TVWS protections are based primarily on an exclusion zone formed by a contour surrounding a known TV transmitter site. Establishing such protection zones is simply not possible for ENG operations, which are itinerant and mobile.

NAB thus agrees with commenters stating that it would be premature to authorize client-to-client communications.⁶ In particular, NAB agrees that authorizing such communications at this point would undermine significant assumptions on which the 6 GHz Order relied, including by altering assumed usage characteristics, increasing duty cycles, and bringing devices into proximity of windows or other areas with limited building loss.⁷ NAB agrees with Southern Company that

⁵ NAB notes that the TVWS rules do provide for a sensing-based scheme similar to a CBP, but the threshold of detection of incumbent signals was set much lower than in the 6 GHz rules in order to protect passive TV receivers, and no TVWS devices have ever authorized under that decade-old rule.

⁶ See AAI comments at 7; Comments of the Association of American Railroads at 2, ET Docket No. 18-295, GN Docket No. 17-183 (Feb. 22, 2021).

⁷ Comments of the Fixed Wireless Communications Coalition at 3, ET Docket No. 18-295, GN Docket No. 17-183 (Feb. 22, 2021).

[T]he Commission [should] not implement client-to-client operations or any other measures to further expand unlicensed operations in the 6 GHz band until: (1) systematic testing between incumbent licensed operations and unlicensed devices, including LPI devices, has been completed under the existing technical rules; and (2) testing of other devices, parameters, or proposals for unlicensed operations has been undertaken to evaluate the effect any such measures may have on incumbent licensed operations.⁸

Critically, the 6 GHz multistakeholder group has been wholly unsuccessful in reducing the potential for interference to ENG operations. RLAN proponents have refused to participate in field testing or to provide devices for inspection and have blocked discussion of the contention-based protocol the Commission prescribed to protect indoor incumbent users. Given such a complete lack of cooperation, the only option for the Commission is to give stakeholders a reasonable opportunity to evaluate the practical impacts of unlicensed 6 GHz devices as they come to market before expanding unlicensed access to the 6 GHz band.

III. CLIENT-TO-CLIENT COMMUNICATIONS CREATE UNIQUE RISKS

Under the present unlicensed rules, LPI access points can communicate with client devices over a distance of about 290 meters (951 feet).⁹ In area terms, a single LPI access point can communicate with client devices over an area of 1,822 square meters (19,611 square feet). In contrast, a LPI access point can detect a typical ENG camera transmitter over a distance of just 120 meters (390 feet) corresponding to an area of 754 square meters (8116 square feet).¹⁰ Thus, the distance over which licensed transmitters can be detected is

⁸ Comments of Southern Company Services, Inc. at 7, ET Docket No. 18-295, GN Docket No. 17-183 (Feb. 22, 2021).

⁹ Assuming client device operating at -1 dBm/MHz EIRP and access point sensitivity of -99 dBm/MHz under free-space conditions.

¹⁰ Assuming ENG camera operating at 0.25 watts/8 MHz EIRP and access point sensitivity of -62 dBm/20 MHz under free space conditions.

less than half the distance over which clients can communicate with an access point. Additionally, LPI access points can cause interference to ENG receivers over a much larger distance of about 1030 meters (3379 feet),¹¹ which is almost *nine times* the distance over which they can detect an ENG transmitters. LPI access points effectively operate as “alligators” – all “mouth” (casting a large transmitter interference distance) with almost no “ears” (having a much smaller incumbent detection distance). This creates a risky interference environment in venues where ENG and 6 GHz Wi-Fi both operate.

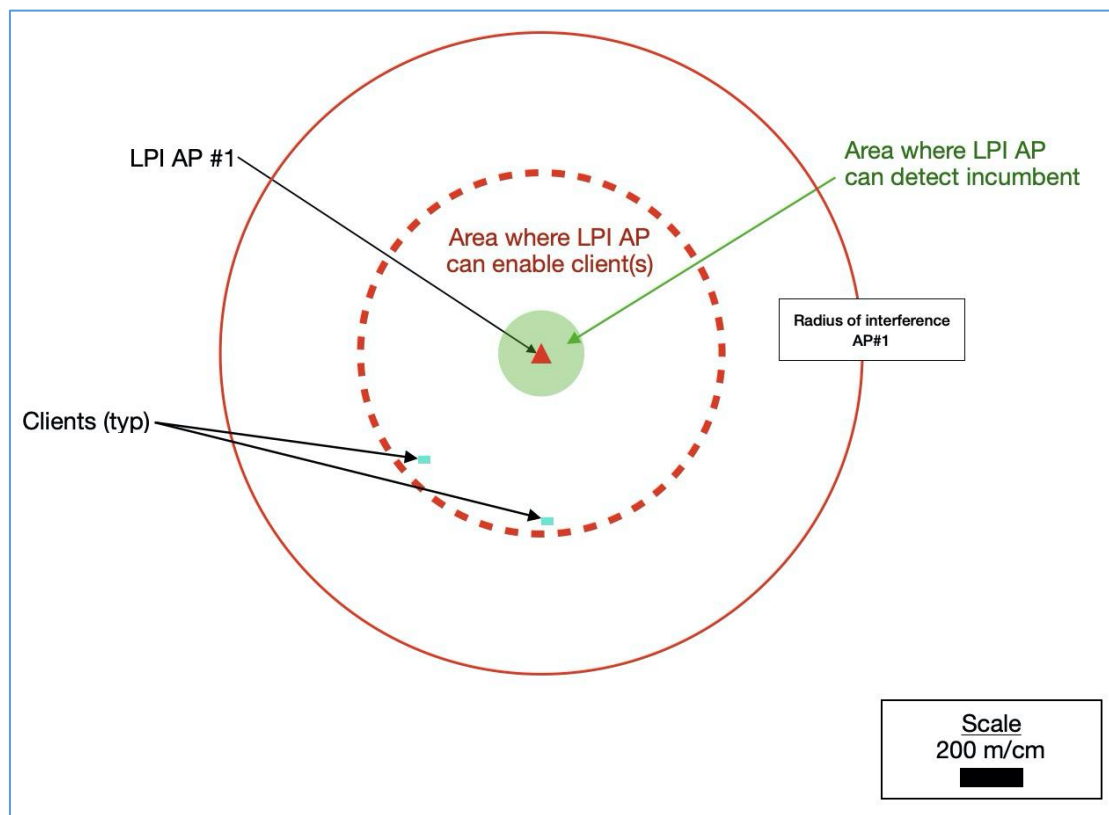


Figure 1.

Authorizing client-to-client communications only exacerbates this challenge by adding an additional interference zone around each client. Although clients will also presumably be

¹¹ Assuming LPI access point operating at +5 dBm/MHz EIRP and ENG receiver threshold of interference is -93 dBm/12 MHz.

able to detect nearby incumbent operations, the extent to which the client may cause interference is again much greater than its ability to protect incumbents. That is, instead of just one alligator (the access point), client-to-client will create a congregation of alligators with each one taking a bite out of the interference-free area for ENG operations. Specifically, each client can cause interference to ENG receivers over a distance of about 520 meters (1706 feet),¹² which is over *four times* the distance over which it may be able to detect an ENG transmitter. Client-to-client communications creates new areas of interference as shown.

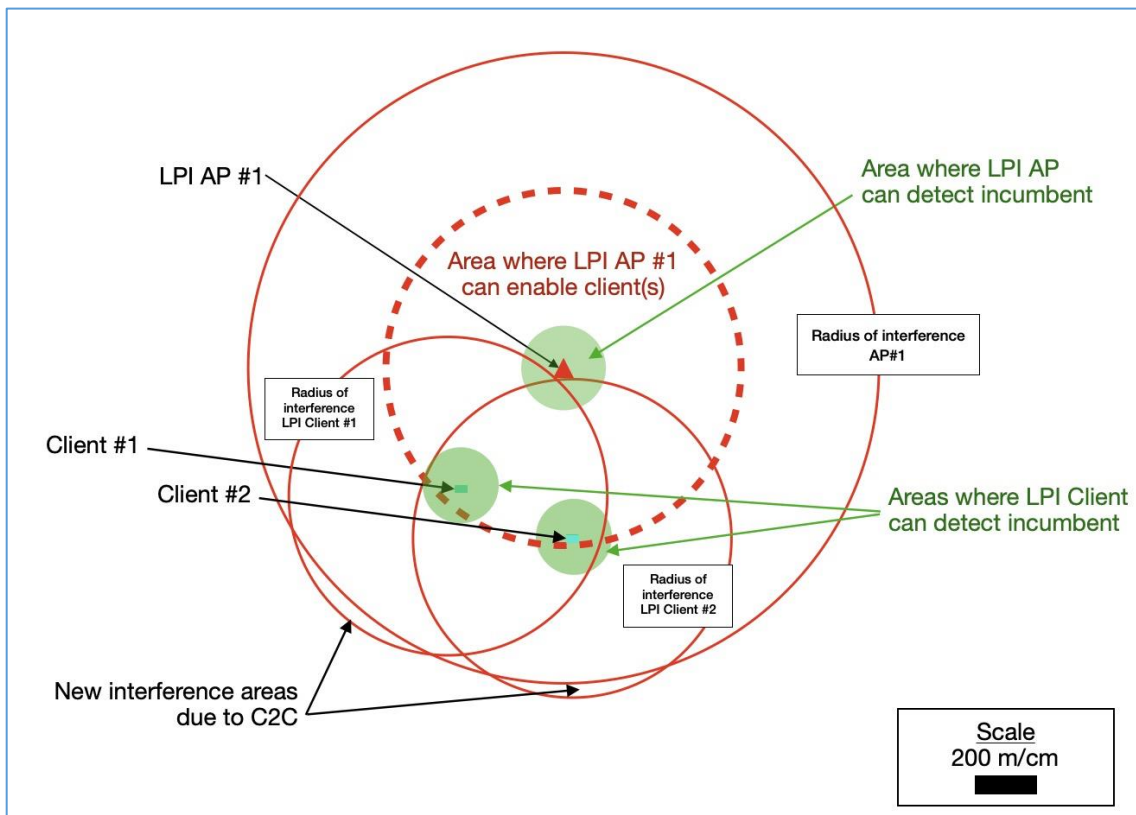


Figure 2.

¹² Assuming LPI access point operating at +5 dBm/MHz EIRP and ENG receiver threshold of interference is -93 dBm/12 MHz.

IV. ALLOWING CLIENT-TO-CLIENT COMMUNICATIONS FROM DIFFERENT ACCESS POINTS OR ON DIFFERENT CHANNELS FROM THE AUTHORIZING ACCESS POINT FURTHER INCREASES THE RISK OF INTERFERENCE

Client-to-client operations should not be authorized at all in the U-NII-6 and U-NII-8 sub-bands because the increased density of transmitters unacceptably increases the likelihood and extent of interference. At a minimum, however, the Commission must restrict client-to-client communications to clients authorized by a common LPI access point. Permitting client-to-client communications between clients involving more than one LPI access point will have precisely the same effect. As illustrated in Figure 3, allowing clients tied to different LPI access points will expand substantially the areas of potential interference beyond that of a single access point, potentially including outdoors.

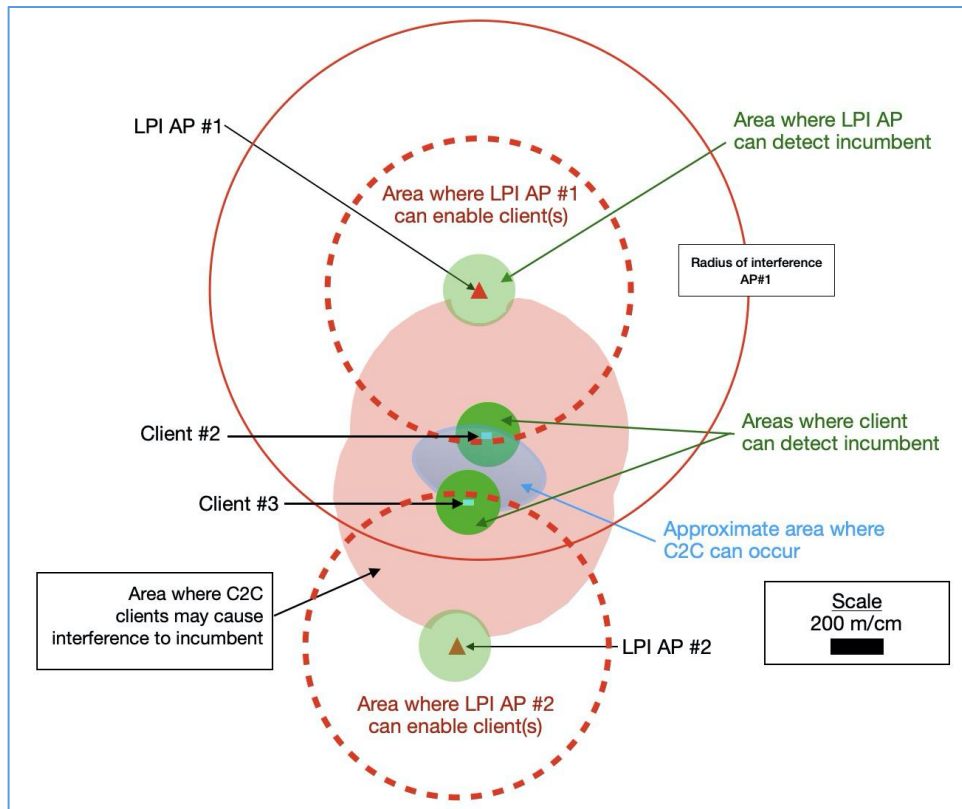


Figure 3.

As the Alliance for Automotive Innovation correctly notes, because client-to-client communications could easily extend signals to outdoor environments, “[t]he Commission should not remove the prohibition on client-to-client communications unless there is sound assurance that such communications will not interfere with incumbent users.”¹³

NAB understands that enterprise-class LPI access points can be configured to exclude certain 6 GHz channels in specific venues, such as sports arenas, which can then be used for ENG operations without risk of interference from LPI operations. Under the current rules, a client device must operate on the same channel as its associated access point, so this enterprise frequency planning also effectively prevents interference to ENG operations from client devices. In contrast, client devices cannot be configured ahead of time to avoid certain channels in a particular venue. While venue frequency coordination of this type is not common or reliable enough to ensure interference-free operation of licensed 6 GHz ENG operations in all cases, it is essential to ensure that client-to-client operations do not undermine one of the only interference mitigation tools for indoor ENG operations. At a minimum, devices that engage in client-to-client communications must be under the control of the same LPI access point and must use the same channels as that access point.

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

RLAN proponents maintain that “the -99 dBm/MHz threshold is strong enough to ensure a stable connection even in a real-world channel with strong multipath (frequency

¹³ Comments of the Alliance for Automotive Innovation at 3, ET Docket No. 18-295, GN Docket No. 17-183 (Feb. 22, 2021) (AAI Comments).

selective) fading.”¹⁴ If that is the case, then both LPI access points and client devices, particularly those operating in client-to-client mode, should be required to detect energy from licensed incumbent users at or below that same level rather than at -62 dBm/20 MHz, a signal level some 250 times stronger. As NAB has previously noted, the 6 GHz Order required only that LPI access points detect incumbent users by employing a contention-based protocol (CBP).¹⁵ It did not specify the detection threshold. OET’s Laboratory Division subsequently adopted a policy that specified that the CBP must include energy detection at a power density of -75 dBm/MHz.¹⁶ 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 incumbent operations. There is simply no reason why incumbent users should not be protected to the same degree as unlicensed users

VI. CONCLUSION

The Commission should focus on ensuring that unlicensed 6 GHz devices as currently authorized will not causing harmful interference to 6 GHz incumbents. Stakeholders have had no real-world experience with unlicensed use in the band that would confirm the FCC’s recent conclusions regarding the likelihood of interference, and RLAN proponents have been reticent to cooperate in any testing that would validate those conclusions. This proposal will expand the area over which client devices will be able to communicate, thereby increasing the area over which interference to incumbents may occur, increase the duty cycles of such devices,

¹⁴ Comments of Apple Inc., Broadcom Inc., Commscope, Inc., Facebook, Inc., Google LLC, Hewlett Packard Enterprise, Intel Corporation, Microsoft Corporation, and Qualcomm Incorporated at 12, ET Docket No. 18-295, GN Docket No. 17-183 (Feb. 22, 2021).

¹⁵ 6 GHz Order at ¶ 168.

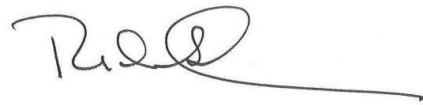
¹⁶ KDB 987594, p. 22. The adopted threshold level of -62 dBm/20 MHz corresponding to a power density of -75 dBm/MHz

and increase the potential for harmful interference. The Commission should not authorize client-to-client communications in the 6 GHz band or, at a minimum, not in the U-NII-6 or U-NII-8 bands.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Rick Kaplan', with a long horizontal line extending to the right from the end of the signature.

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March 23, 2021