

**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 AND SUMMARY**

The National Association of Broadcasters (NAB)<sup>1</sup> hereby submits the following reply to comments filed in response to the Commission’s Further Notice of Proposed Rulemaking concerning unlicensed operations in the 6 GHz band.<sup>2</sup> No party advocating for higher power indoor operation or low power outdoor operation without automatic frequency coordination (AFC) has provided information or evidence remotely sufficient information to justify any changes just months after the Commission’s initial order in this proceeding. Rather than proceed on the basis of incomplete and inadequate information, the Commission should wait

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<sup>1</sup> 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.

<sup>2</sup> *Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 3852 (April 23, 2020) (R&O and FNPRM).

for devices to actually be deployed in the market and for stakeholders to gain a better sense of whether the Commission's existing rules will actually work to protect licensed users.

With respect to increasing the power limits for low-power indoor (LPI) devices, no party has submitted a new study to justify higher levels than the Commission adopted earlier this year. It remains to be seen the extent to which unlicensed operation at the just-authorized power levels will cause interference to the Broadcast Auxiliary Service (BAS) and other licensed users in the 6 GHz band and the Commission should not double down on its already risky bet by authorizing increased power without any mechanism to mitigate interference after the devices are in the hands of individual consumers. The Commission thus simply has no justification to do so.

As to very low power devices (VLP), although multiple parties purport to have studies demonstrating a low risk of interference, there are serious flaws in each. The study submitted by Apple, Broadcom, *et al.* purports to show a low likelihood of interference to both Fixed Service (FS) and mobile BAS service, but the conclusions are so improbable as to call the entire study into doubt.<sup>3</sup> The study also makes overly aggressive assumptions about the impact of body loss that cannot be guaranteed. The Wireless Broadband Alliance, meanwhile, refers to a study conducted by the European Conference of Postal and Telecommunications Administration (CEPT).<sup>4</sup> That study is not relevant here as it both only considers interference

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<sup>3</sup> Comments of Apple Inc., Broadcom Inc., Cisco Systems, Inc., Facebook, Inc., Google LLC, Hewlett Packard Enterprise, Intel Corporation, Microsoft Corporation, NXN Semiconductors, Qualcomm Incorporated, and Ruckus Networks, A Business Segment of Commscope, ET Docket No. 18-295, GN Docket No. 17-183 (June 29, 2020).

<sup>4</sup> Comments of Wireless Broadband Association at 6 ET Docket No. 18-295, GN Docket No. 17-183 (June 29, 2020) (citing Electronic Communications Committee, ECC Report 316: Sharing studies assessing short-term interference from Wireless Access Systems including Radio Local Area Networks (WAS/RLAN) into Fixed Service in the frequency band 5925-6425 MHz (May 21, 2020)).

to FS operations and it permits interference far above the levels considered as harmful interference by the Commission (permitting an Interference to Noise ratio (I/N) of 19 dB on a short-term basis).

Other parties advocating for these rule changes do so not based on an analysis of the likelihood of interference, but rather on the potential economic benefits of new applications that can be offered on this spectrum. Such benefits cannot be the basis to authorize unlicensed services that have a likelihood of causing harmful interference with licensed spectrum users, particularly when there is no reasonable mechanism to stop such interference after devices are made available to the public. We urge the Commission not to exacerbate the already challenging situation it has created without substantial new evidence and real-world experience.

**II. THE RECORD PROVIDES NO JUSTIFICATION FOR ANY INCREASE IN POWER LIMITS BEFORE MORE REAL-WORLD DATA CAN BE GATHERED**

**A. The Purported Benefits of Higher Power Cannot Legally Justify the Substantial Risk of Harmful Interference that Cannot Be Remediated**

As an initial matter, while multiple parties to this proceeding have provided eloquent explanations of how increased power levels could enable new applications in this band, they have offered little or no justification as to how increased power would satisfy the core obligation of any unlicensed service – to avoid causing harmful interference to licensed users.<sup>5</sup> This immutable requirement is the key distinction between uses that must be subject to licensing and coordination procedures under Sections 301 and 302 of the Communications Act as well as Part 15 of the Commission’s rules, and those which may be

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<sup>5</sup> See, e.g., Comments of Apple, et al. at 4-6, 7-9.

authorized absent a license.<sup>6</sup> Under this framework, the Commission may not weigh the potential economic benefits of increased unlicensed operation against the harm to licensed users. An unlicensed device is *not* permitted to cause interference to licensed services, and if it causes such interference it *must* cease operation.

Moreover, one of the fundamental challenges with implementation of the Commission’s recently adopted rules is that they provide no workable mechanism for resolving interference in the event the Commission’s predictions concerning the likelihood of interference prove unreasonably optimistic. Once devices are widely deployed, there will be no way to force a shutdown of individual devices that are causing interference in a timely manner.

NCTA seeks to solve this fundamental problem with the puzzling claim that licensed 6 GHz users could “contact the relevant network operator with interference concerns that arise from the operation of devices deployed by the operator.”<sup>7</sup> But NCTA provides no explanation for how this could work in the real world. In reality, itinerant BAS use cases generally do not allow for the kind of lengthy set-up time that would be required to pinpoint interference to a specific source, particularly during breaking news or emergencies. Further, NCTA overlooks the substantial likelihood that a wireless router would be installed by an individual consumer or business, hardly the kind of “network operator” that NCTA seems to envision. It is highly unlikely that a typical purchaser of a Wi-Fi router would have any idea that their device could cause interference to licensed users of spectrum, notwithstanding the Commission’s device

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<sup>6</sup> 47 U.S.C. § 301; 47 C.F.R. §15.5.

<sup>7</sup> Comments of NCTA – the Internet & Television Association at 26, ET Docket No. 18-295, GN Docket No. 17-183 (June 29, 2020).

labeling requirements, and licensed users will have no way of contacting such individual users and compelling them to turn off their devices.

Absent some kind of remote deactivation mechanism that the Commission has not contemplated for this band, if unlicensed 6 GHz devices do cause harmful interference, it will be the licensed users who will need to work around such interference. As NAB has repeatedly noted, and as the Commission has steadfastly ignored, broadcasters have already seen this scenario play out in the 2.5 GHz BAS band. Portions of that band are now considered unusable for most BAS use cases precisely because there is no fast and reliable means for identifying the cause of harmful interference and shutting it down. The Commission has already introduced a substantial risk of harmful interference to licensed users in this band; it should not compound that error by increasing power limits at this time.

**B. No Party Has Provided Additional Evidence to Justify Increasing the LPI Thresholds Adopted in the Report and Order**

Although NCTA describes a study conducted by CableLabs, it has still not placed the study on the record for other parties to review.<sup>8</sup> Based on the description of the study provided in the NCTA comments, it appears that CableLabs studied one particular use case of BAS, involving a particular event in New York City, occurring very close to the BAS central receive site.<sup>9</sup> Notably, the CableLabs study looks to Signal to Noise plus Interference Ratio (SINR), rather than the more appropriate Interference to Noise ratio (I/N). The SINR metric is highly dependent on a properly engineered link such as is typical in the fixed service, including the particular location and conditions of the transmitter, and is therefore *not* appropriate for evaluating potential for interference in a mobile service such as electronic

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<sup>8</sup> NCTA Comments at 21.

<sup>9</sup> *Id.*

newsgathering, where conditions could require “bouncing” a signal off of a building. Because these devices will be deployed to consumers without any mechanism for frequency coordination, any study must consider reasonable worst-case interference to licensed services, which the CableLabs study does not appear to do.

In contrast, Nokia submitted technical studies demonstrating that there remains a potential for interference from LPI devices even at the 5 dBm/MHz PSD EIRP limit already adopted, and that risk is substantially increased with an increase to 8 dBm/MHz PSD EIRP. Nokia therefore recommends an AFC system to prevent interference to FS links.<sup>10</sup> While NAB does not disagree that an AFC system should be required to protect FS links, an AFC system is not a practical solution for mobile service such as BAS. Accordingly, the Commission should not raise power limits for any unlicensed operations at this time, and in particular in the portions of the 6 GHz band used for BAS.

**C. Outdoor Operation of Very Low Power Devices Poses a Significant Risk of Interference to Incumbent 6 GHz users**

The justification to permit LPI devices to operate at 5 dBm/MHz PSD EIRP relies heavily on predictions of building entry loss of 17 dB or greater. VLP devices, on the other hand, are contemplated to be used in a variety of situations, particularly outdoors, where that building entry loss is nonexistent. To justify outdoor operation at power levels just 4 dB below that allowed indoors, proponents of LPI devices rely on body loss of at least 4 dB and 14.3 dB on average as the primary means of reducing the risk of interference.<sup>11</sup>

These values are derived from a study evaluating on-body link loss (*i.e.*, loss between an Augmented Reality headset and a smartphone in the user’s pocket), rather than path loss

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<sup>10</sup> Comments of Nokia at 4, ET Docket No. 18-295, GN Docket No. 17-183 (June 29, 2020).

<sup>11</sup> Apple, Broadcom, *et al* Comments at Technical Appendix, p. 17.

between such devices and 6 GHz receiver. But in reality, there will be many cases where a VLP transmitter suffers no body loss depending on application and orientation. Indeed, there is a fundamental difference between ensuring an on-body system is fully reliable, accounting for body losses and ensuring an on-body system does not interfere with another system. The goal of the former is satisfied by increasing power to overcome losses over a particular path through the human body until the desired level of reliability is reached. There is no consideration whatsoever as to how that increased power, which is not subject to any loss away from the body, may impact licensed services, particularly mobile services.

Even if the Commission were to accept the body loss estimates that the Apple, Broadcom, *et al* study uses, that study predicts no devices with line of sight to the Cowles Mountain BAS receive site – a result that is so extraordinarily unlikely as to call the entire study into question. While NAB has not replicated the particular paths studied, that site is used for BAS precisely because of its superior line of sight to a large geographical area near San Diego. That area includes numerous homes within one kilometer of the site. A study claiming zero probability of line of sight to a simulated VLP transmitter is simply not credible. If there were VLP devices at that range with line of sight to the Cowles Mountain site, we would expect a prediction of interference at levels tens of decibels above the ENG receiver noise floor. Simply stated, this result cannot be correct.

Further, Nokia's study demonstrates that, depending on the relative locations of the licensed 6 GHz receiver and the VLP transmitter, an unrealistic amount of body loss (up to 30 dB) may be necessary to reduce the likelihood of interference.<sup>12</sup> Nokia thus proposes that VLP devices may be able to operate on a shared basis with FS links with under the control of an

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<sup>12</sup> Nokia Comments at Technical Appendix, p. 3.

AFC system. Again, however, this is not a practical protection for mobile BAS applications. If the Commission does authorize VLP transmitters in this proceeding, it should do so only under the control of an AFC system, and only in the sub-bands reserved for FS links that can readily be protected by such an AFC system. Under no circumstances should the Commission authorize VLP use in the portions of the band allocated for mobile operations at this time.

### III. CONCLUSION

The Broadcast Auxiliary Service is essential to enable broadcasters to continue to provide the highest quality live news coverage of breaking events. We urge the Commission to delay any increase in power for LPI devices until such time as the likelihood of interference can be tested in the market and is determined to not cause harm to license services. Further, we urge the Commission not to permit VLP outdoor operations in the U-NII-6 or U-NII-8 bands at this time, as unlicensed users cannot operate without significant risk of harmful interference to BAS operations in these bands.

Respectfully submitted,

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