December 5, 2019

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

Dear Ms. Dortch:

Throughout this proceeding, NAB has emphasized the critical importance of portions of the 6 GHz band to electronic newsgathering (ENG) services.[1] Parties advocating in favor of deploying unlicensed Radio Local Area Network (RLAN) Wi-Fi-type devices across the band have suggested that such deployment would have little or no impact on ENG.[2] Past experience and common sense, however, make clear that, at least for two sub-bands within 6 GHz that are allocated for mobile use on a primary basis (specifically 6425–6525 and 6875–7125 MHz),[3] the Commission should not permit uncoordinated unlicensed operations, whether indoors or outdoors.[4]

[1] Comments of the National Association of Broadcasters, ET Docket No. 18-295, GN Docket No. 17-183 (Feb. 15, 2019); Reply Comments of the National Association of Broadcasters, ET Docket No. 18-295, GN Docket No. 17-183 (March 18, 2019); Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 18-295, GN Docket No. 17-183 (Oct. 10, 2018); Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 18-295, GN Docket No. 17-183 (Oct. 17, 2018); Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 18-295, GN Docket No. 17-183 (Nov. 7, 2019).

[2] Letter from Paul Margie to Marlene H. Dortch, Attachment at 59, GN Docket No. 17-183, (Jan. 26, 2018) (RKF Study).

[3] 47 CFR § 2.106.

[4] NAB notes that mobile (including airborne) use of certain 6 GHz spectrum is not limited to broadcast ENG and includes numerous public safety licensees.

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In prior proceedings, the Commission has recognized that it is feasible for fixed point-to-point microwave systems to share in bands only where mobile operations do not occur.[5] Fixed point-to-point microwave systems are authorized only after rigorous frequency coordination. ENG systems are often operated indoors in close proximity to thousands or tens of thousands of potential Wi-Fi access points and devices, which makes such coordination impractical and unworkable.

Recognizing the distinction between fixed and mobile operations is critical to protecting mobile operations. Accordingly, NAB retained an engineering firm to conduct a thorough analysis to substantiate the likelihood and extent of interference to ENG systems, specifically non-common carrier mobile operations, from unlicensed operations in the 6 GHz band.[6] A copy of that analysis is attached.[7] The report confirms that uncoordinated unlicensed operations in the band are predicted to cause harmful interference to non-common carrier mobile uses of the 6 GHz band, specifically ENG services. In many cases, the predicted interference was continuous or nearly so, and at high signal levels.

Briefly, the Alion Report's authors constructed computer models of three typical types of ENG deployment use cases:

- Indoor Camera to Indoor Receiver
- Outdoor Camera to News Truck
- Outdoor News Truck to Central Receive Site

For each scenario, Alion ran at least 10,000 Monte Carlo iterations ("snapshots") to develop statistics of the magnitude and likelihood of interference. Alion used high-resolution LIDAR data to determine the presence of line-of-sight. In many cases, the parameters of the simulations were the same as those used by RKF, and efforts were made to avoid "worst case" assumptions. For example, buildings having low-emissivity windows were assumed to provide perfect shielding that blocked all RLAN signals from leaving the building and any

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[5] *See*, *e.g.*, *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operation Fixed Microwave Licensees*, Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order, 26 FCC Rcd 11614, ¶¶ 19-22 (2011).

[6] A search of the Commission's engineering database lists 142 public safety entities licensed to operate in the lower band and 55 public safety entities licensed to operate in the upper band. May or most of these authorizations are for mobile use (including airborne).

[7] Alion Consulting Report RESED-20-002, "Analysis of Interference to Electronic News Gathering Receivers from Proposed 6 GHz RLAN Transmitters," October 2019 (Alion Report).

paths that did not have line-of-sight were similarly assumed to be completely blocked with respect to all RLAN interfering signals.

In the case of indoor ENG operations, Alion used the Main House Chamber of the U.S. Capitol as an example. The Main House Chamber is the typical location of the State of the Union address and is commonly covered by broadcasters using portable cameras operating in the 6 GHz band.[8] Similar results would be expected in sports arenas, concert venues and theaters. As noted in the Alion Report, interference was predicted at least 0.9 percent of the time in the "best case" and 95.3 percent of the time in the "worst case."[9] Even the best case represents multiple potential interruptions of video coverage each minute, which falls far short of the broadcast quality demanded by broadcasters and expected by viewers. The level of interference is also high in many cases, with the strength of the RLAN signal being equal to the "noise floor" of the portable camera receiver in over one-half of the Monte Carlo "snapshots" in one scenario with out-of-channel emissions being a significant contributor to the interference in many cases.[10]

As for outdoor ENG operations involving a portable camera transmitting to a news truck, Alion evaluated two locations: one near the National Mall and a second near the Prince Georges (MD) County Courthouse. Similar results would be expected at other breaking news locations where it is necessary to use a portable 6 GHz camera to follow the action. Except in the unusual case of an ENG receiver located very near the ground and the RLANs limited to an activity factor of just 0.44 percent, interference was predicted at least 0.4 and up to 66.9 percent of the time.[11] The level of interference was also high in many cases, with the strength of the RLAN signal being equal to that of the noise floor of the ENG receiver in almost 40 percent of the Monte Carlo "snapshots" in a typical scenario.[12]

Finally, in the case of ENG operations involving a news truck transmitting to a central receive site, Alion evaluated two additional locations: the Old Post Office building near the National Mall and Cowles Mountain (CA) near San Diego. Similar results would be expected at other breaking news locations. At both of these sites, interference was predicted in every single scenario.[13] In many cases, thousands of RLANs, both indoor and outdoor, contributed to the predicted aggregate interference.[14] Significantly, the level of interference was so high in all

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[8] Alion Report at p. 16.
[9] *Id*. at 45.

[10] *Id.* at 120, Figure 188.

[11] *Id.* at 44.

[12] *Id.* at 103, Figure 154.

[13] *Id.* at 44.

[14] *Id.* at 48, Figures 43 and 44.

cases, that the RLAN signals were always equal to or greater than the noise floor of the ENG receiver.[15]

ENG systems are a critical component to public warning, newsgathering and content generation. Broadcasters have already lost access to three ENG channels at 2.5 GHz due in large part to interference from 2.4 GHz Wi-Fi Systems.[16] Based on that experience, we are certain that uncoordinated RLANs will cause interference to 6 GHz ENG systems. Broadcasters are willing to work with others to allow coordinated sharing of our ENG spectrum. Indeed, we are already doing so with the Department of Defense in the 2025-2110 MHz band. In view of this analysis and our prior experience, however, the claims of "no harm" by the RLAN group are simply not credible. NAB believes that Commission may have the opportunity to provide significant additional spectrum for Wi-Fi use at 6 GHz that can protect fixed point-to-point links with appropriate coordination protocols.[17] However, it must not risk eliminating the non-common carrier mobile uses in the spectrum by allowing unrestricted, uncoordinated use, even if limited to indoor locations.

Respectfully Submitted,

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General Counsel and Executive Vice President,
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National Association of Broadcasters

[15] *Id.* at 44

[16] Comments of EIBASS at 8-9, ET Docket No. 18-295, GN Docket No. 17-283 (Feb. 15, 2019); *see also* Comments of the Society of Broadcast Engineers at 4, ET Docket No. 18-295, GN Docket No. 17-283 (Feb. 15, 2019).

[17] We agree with the Fixed Wireless Communications Coalition and others that all RLANs, including those located indoors, must be carefully coordinated under a system that can immediately shut down individual devices in case of interference. Letter from Donald J. Evans, Mitchell Lazarus to Marlene H. Dortch, ET Docket No. 18-295, GN Docket No. 17-283 (Oct. 31, 2019). Further, the parameters of that frequency management system must consider the impact of RLAN devices through evaluation of I/N degradation, not C/I degradation.