

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
Petition for Waiver of Section 15.403) ET Docket No. 23-282
of the Commission's Rules)

To: Chief, Office of Engineering and Technology

**REPLY TO
EXTREME NETWORKS REQUEST
FOR
WAIVER OF FCC RULE SECTION 15.403**

The undersigned organizations represent incumbent licensees in the 6 GHz band (“Incumbents”) and previously submitted their Opposition to the waiver request (“Waiver Request”) filed by Extreme Networks (“Extreme”).¹ The Waiver Request seeks relief from one of the essential measures adopted in ET Docket No. 18-295² to protect incumbents from unlicensed operations in that band. It proposes to allow weatherized low-power indoor (“LPI”) access points (“APs”) to be installed in what Extreme describes as indoor-only sports venues.

The Incumbents have reviewed the Comments filed in support of the Waiver Request. Neither the Waiver Request itself nor the supporting Comments specify how the APs would be “weatherized.” If that means the APs themselves would be modified to become weather-resistant, the Incumbents submit the record fails to demonstrate that waiver relief is needed to serve the public interest, but rather is desired to reduce costs to the venues and to leapfrog the FCC’s process for approving standard power APs. A grant of this waiver would dramatically increase the number of LPI APs, devices that operate outside the Automated Frequency Coordination (“AFC”) process, even before the FCC has addressed multiple Incumbent field studies that have reported interference from LPI APs, and these weatherized devices could end up in the hands of consumers. If the intention is to place the APs inside fixed receptacles that are permanently installed in the arena without altering the devices themselves in any way, a waiver to permit that means of “weatherizing” would not present issues beyond those associated with all LPI operations. The record also includes troubling information that validates the Incumbents’ concern that if waiver relief is granted despite their objections,

¹ Petition of Extreme Networks for Waiver of Section 15.403 of Commission’s Rules, ET Docket No. 18-295 (filed Jul. 21, 2023).

² *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Report and Order and Further Notice of Proposed Rulemaking, ET Docket No. 18-295, 35 FCC Rcd 3852 (2020) (“6 GHz Order”).

these weatherized LPI APs will not be limited to the indoor sports venues referenced by Extreme.

A. Waiver Proponents Have Not Demonstrated that Relief is Needed to Serve the Public Unless the Devices are not Altered and Are Placed Inside Fixed Receptacles.

The arguments of unlicensed proponents that support the Waiver Request can be summarized as follows:

Network deployment in indoor sports venues calls for installation of APs near users, often under their seats, so the same channel can be used by many devices in different areas without unnecessary noise from other nearby access points.³ These optimal locations are susceptible to beverage spillage and cannot be protected adequately from venue “washing” so the APs must be weatherized.⁴

While standard power APs are permitted to be weatherized, it has been asserted that they are not reasonable substitutes for LPI APs because: (1) they are not yet approved; (2) they are only permitted in U-NII-5 and U-NII-7 bands (850 megahertz instead of 1200 megahertz); and (3) standard power APs are likely to be more costly and there will also be the cost of paying an AFC system operator.⁵

These arguments, no matter how often they are repeated by unlicensed proponents, do not satisfy the FCC’s test for granting waiver relief.

As an initial matter, the question before the FCC is not whether the public at these venues will or will not have ample Wi-Fi access. There already are multiple methods for delivering wireless fan experience via 2.4/5 GHz Wi-Fi and through nationwide carriers such as AT&T, Verizon, and T-Mobile. The unlicensed proponents take the position that, ipso facto, “more” Wi-Fi access is presumptively in the public interest. DSA states, without attribution, that “large public venues, such as indoor stadiums, require a minimum of 14 to more than 24 separate channels” and that “a network forced to operate Wi-Fi 7 in SP [standard power] mode would be limited to only 9 channels of 80 MHz and only twenty channels of 40 MHz.”⁶ Even if this claim were supported, it ignores the fact that 6 GHz will not be the only Wi-Fi delivery vehicle at these facilities. The venue will not be starting from scratch but will have existing Wi-Fi capability to which 6 GHz can be added. New facilities undoubtedly will be designed to take advantage of all wireless options. A denial of the Waiver Request would not be a

³ See, e.g., Broadcom, Inc. (“Broadcom”) Comments at 3; Comcast Corporation (“Comcast”) Comments at 3; Qualcomm Incorporated (“Qualcom”) Comments at 1-2.

⁴ See, e.g., Dynamic Spectrum Alliance (“DSA”) Comments at 4; NCTA - The Internet & Televisions Association (“NCTA”) Comments at 2; Comcast Comments at 2.

⁵ See e.g., DSA Comments at 3-4; Wi-Fi Alliance Comments at 3-4.

⁶ DSA Comments at 4.

denial of the public's demand for connectivity in sports arenas, as demonstrated at facilities around the country every day.

Assuming that Wi-Fi6E is actually needed for indoor sports venues, it is unclear if the "waterproof enclosures" Extreme proposes to use are those already employed at many sports venues for other Wi-Fi devices. These enclosures are placed at ground level, which would address proponents' arguments that they need to place LPI devices near the fans in order to promote frequency reuse in these venues. Not only would using enclosures protect LPI devices from liquids, doing so would avoid the potential for LPI devices being operated outdoors where they would cause harmful interference to licensed microwave systems if the devices themselves were weatherized.

Second, Standard Power Access Points ("SP") could be used instead of LPI devices. Although SP devices are limited to certain sub-bands and require automated frequency coordination ("AFC"), there is no disputing that these are reasonable alternatives and there are no unique circumstances that would make using them inequitable, unduly burdensome or contrary to the public interest. They would provide additional capacity for Wi-Fi, and any delays associated with certification of AFC systems are likely to be limited. Conversely, the public interest would not be served by a waiver of the weatherproofing restrictions other than as needed to allow the devices to be placed in separate weatherized enclosures, because it would likely result in LPI devices being used outdoors where they would cause interference to licensed microwave operations, notwithstanding certain voluntary, opaque, unenforceable, and ineffective conditions proposed by Extreme.

Even if there are increased installation and ongoing AFC costs associated with standard power APs (which Incumbents do not believe there will be) this is not a basis for granting waiver relief. These costs would not impose an "undue financial burden" on equipment vendors such as Extreme or on the arena owners/managers or on the many thousands of fans at each event from whom at least some of those costs presumably would be recouped.⁷ If this capability is as essential to fans as proponents of the Waiver Request claim, they will not hesitate to finance it.

B. Lumen Field's Supporting Comments Raise Serious Concerns about Where Weatherized LPI APs Would Be Deployed.

Chip Suttles, Vice President, Seattle Seahawks & Lumen Field Stadium ("Lumen Field"), filed comments supporting the Waiver Request. That letter states they want "weatherized enclosures to support indoor areas of our venue."⁸ It goes on to explain "we have strategically placed our access points on the seats affixed to the concrete to help propagate a better signal in this dense environment." The Wi-Fi Alliance cites approvingly to Lumen's positioning of those APs, stating "Sports venues like arenas are generally massive concrete structures, and propagation characteristics dictate that

⁷ See, e.g., *Implementation of Video Description of Video Programming*, Memorandum Opinion and Order on Reconsideration, MM Docket No. 99-339, 16 FCC Rcd 1251 at ¶ 23 (2001).

⁸ Lumen Field Letter.

placement of access points nearest to where user devices are located best assures connectivity.”⁹

The Lumen Field Stadium is indeed a large concrete structure with concrete seating. But it would not qualify to deploy “Sports Venue Indoor Access Point[s]” which Extreme states would only be installed in inside sports venues, defined by Extreme as “enclosed buildings, rather than having an open or retractable roof.”¹⁰ Both photographs of the Stadium and its website make clear that there is “roof protection for 70 percent of seats.”¹¹ The adjacent Lumen Field Event Center used for trade shows and similar events has no fixed seating, certainly no concrete seats, and cannot be the facility at which Lumen is eager to install weatherized LPI APs.

The Incumbents do not know if Lumen was misinformed or if Extreme and its supporters consider a venue that is 30% unroofed, and therefore effectively open, nonetheless an “inside sports venue.” The Incumbents assume it must be the former and that Extreme will advise Lumen that the waiver relief it was enlisted to support, if granted, would not be available to it. However, the fact that this issue has arisen in regard to the very first sports venue identified in this matter has reinforced the Incumbents’ position that any waiver relief granted must be subject to conditions beyond those suggested by Extreme.

C. If Waiver Relief is Granted, the Incumbents Recommend the Following Additional, More Enforceable Conditions.

While supporters of the Extreme Waiver Request suggest that the proposed conditions offered by Extreme are enforceable and sufficient, none of these waiver conditions provide OET or the Commission any ability to monitor or police violations. The Incumbents therefore recommend that the following additional conditions be placed on any waiver grant, should OET inadvisably approve this Waiver Request:

A list of all devices with the unique stock keeping unit (“SKU”) should be maintained by Extreme and provided to the Commission on a monthly basis and made available to the public so potentially affected parties know which such devices are in the stream of commerce. A list of all indoor sports venues that install devices with this SKU should be provided to the Commission on a monthly basis and made available to the public so OET and potentially affected parties know where the devices are being installed.

The devices themselves may not be modified to repel inclement weather but must be installed in a fixed waterproof enclosure to protect them from beverage spillage and venue washing.

⁹ Wi-Fi Alliance Comments at 7.

¹⁰ Waiver Request at 4.

¹¹ <https://www.lumenfield.com/event-spaces/event-center>.

Extreme must be responsible for rendering any uninstalled equipment inoperable and it must certify this action to the Commission to ensure that such devices are not resold into the stream of commerce.

Prior to grant of the waiver, Extreme should be required to provide to the Commission the material used to train the professionals who are installing these waiver-approved APs in such a way to prevent removal and reinstallation. To prevent inadvertent placement of the devices outdoors where they would pose an increased threat to incumbents, the training material should include a clear description of what constitutes an acceptable placement of the weatherized devices pursuant to the waiver. The Commission should make that material available for public review and comment.

Extreme should be required to submit a “stop buzzer” contact for each venue where weatherized LPI APs are installed so that OET and potentially affected parties can be certain that should interference arise, it will be expeditiously resolved to protect public safety and critical infrastructure communications.

As for the final condition, the Incumbents strongly disagree with the Wi-Fi Alliance’s position that the FCC has rejected the very concept of specific mediation measures for 6 GHz interference situations.¹² In fact, the FCC stated:

“We encourage the multi-stakeholder group [“MSG”] to address any issues it deems appropriate regarding interference detection and mitigation in the event that an incumbent licensee believes it may be experiencing harmful interference from standard-power or indoor low-power operations. These issues would include procedures and processes that could be followed if an incumbent licensee has, or potentially has, an interference complaint.”¹³

The fact that the unlicensed proponents rejected all such efforts during the MSG process does not mean that there is no need for such procedures.

While the Incumbents assume the FCC would attempt to address such situations even without a defined process, its ability to do so too often is limited. Two recent examples of interference, one to Sirius XM Radio, Inc. service and one to T-Mobile USA, Inc., highlight the fact that even when the FCC finds the interfering source and notifies the interfering party, a year later the interference may continue unabated.¹⁴ This does not offer reassurance to those operating facilities essential to public safety and to the delivery of critical infrastructure services to the American public. Any party seeking

¹² Wi-Fi Alliance Comments at 5.

¹³ 6 GHz Order at ¶ 176.

¹⁴ See Sonia P. Spencer, Citation and Order, DA 23-870 (rel. Sept. 19, 2023); see *also* Jesse Coppage, Citation and Order, DA 23-907 (rel. Sept. 28, 2023).

waiver of a rule specifically intended to prevent interference must accept responsibility if interference results.

Respectfully submitted,

UTILITIES TECHNOLOGY COUNCIL

/s/ Brett Kilbourne

Brett Kilbourne
Senior Vice President Policy and
General Counsel
Utilities Technology Council
2550 South Clark St., Ste. 960
Arlington, VA 22202
(202) 872-0030

EDISON ELECTRIC INSTITUTE

/s/ Aryeh Fishman

Aryeh Fishman
Associate General Counsel,
Regulatory Legal Affairs
Edison Electric Institute
701 Pennsylvania Ave., N.W.
Washington, D.C. 20004
(202) 508-5000

**NATIONAL RURAL ELECTRIC
COOPERATIVE ASSOCIATION**

/s/ Brian M. O'Hara

Brian M. O'Hara
Senior Director Regulatory Issues –
Telecom & Broadband
National Rural Electric Cooperative
Association
4301 Wilson Blvd.
Arlington, VA 22203
(703) 907-5798

APCO INTERNATIONAL

/s/ Jeffrey S. Cohen

Jeffrey S. Cohen
Chief Counsel and
Director of Government Relations
APCO International
1426 Prince St.
Alexandria, VA 22314
(571) 312-4400 ext. 7005

ENTERPRISE WIRELESS ALLIANCE

/s/ Robin J. Cohen

Robin J. Cohen
President/CEO
Enterprise Wireless Alliance
13221 Woodland Park Rd., Ste. 410
Herndon, VA 20171
(703) 528-5115

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