

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

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| In the Matter of                                                                    | ) |                      |
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| Extreme Networks’ Request for Waiver of<br>Section 15.403 of the Commission’s Rules | ) | ET Docket No. 23-282 |
|                                                                                     | ) |                      |
| Unlicensed Use of the 6 GHz Band                                                    | ) | ET Docket No. 18-295 |
|                                                                                     | ) |                      |

**COMMENTS OF THE DYNAMIC SPECTRUM ALLIANCE**

The Dynamic Spectrum Alliance (“DSA”)<sup>1</sup> submits these comments in response to the Commission’s Public Notice<sup>2</sup> seeking comment on Extreme Network's Request for Waiver of Section 15.403 of the Commission's Rules.<sup>3</sup> The DSA believes that Extreme Networks (“Extreme”) has clearly demonstrated “good cause” and that the public interest will be served by

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<sup>1</sup> The Dynamic Spectrum Alliance is a global, cross-industry alliance focused on increasing dynamic access to unused radio frequencies. The membership spans multinational companies, small- and medium-sized enterprises, academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the utilization of available spectrum to the benefit of consumers and businesses alike. A full list of the DSA members is available on the DSA’s website at [www.dynamicspectrumalliance.org/members/](http://www.dynamicspectrumalliance.org/members/).

<sup>2</sup> F.C.C., Public Notice, *In the Matter of Office of Engineering and Technology Seeks Comment on Extreme Network's Request for Waiver of Section 15.403 of the Commission's Rules*, ET Docket No. 23-282 (rel. Aug. 16, 2023), <https://docs.fcc.gov/public/attachments/DA-23-707A1.pdf>.

<sup>3</sup> Extreme Networks, “Request for Waiver of Section of 15.403 of Commission’s Rules,” ET Docket No. 18-295, ET Docket No. 23-282 (filed July 21, 2023), <https://www.fcc.gov/ecfs/document/107211224907036/1> (“waiver”).

waiving one of the multiple form factor requirements that govern the authorization of low-power, indoor-only (“LPI”) access points. This limited waiver is necessary to avoid frustrating the enormous public interest benefits that access to next generation Wi-Fi 7 across the full 1,200 MHz of the band can bring to the fan experience at indoor arenas. Indoor arenas and other very crowded venues are among the locations where fans and other consumers can benefit the most from next generation Wi-Fi technology that takes advantage of very wide contiguous channels, as well as the sort of spectrum re-use that is achieved through the network configuration proposed by Extreme.

The DSA and its members have actively participated in the 6 GHz proceeding since it began. One of the DSA’s primary goals is to increase spectrum access through shared and more efficient use. Achievement of this goal is possible through the introduction of dynamic shared access – either using an automated Dynamic Spectrum Management System (“DSMS”) that actively manages new entrants’ access to maximize use of spectrum while ensuring protection of incumbents, or through a carefully crafted set of rules that allow new unlicensed or licensed-by-rule operations under specific circumstances and operating parameters. Such dynamic shared access approaches can help achieve the Commission’s goals of connecting everyone, stimulating innovation for next-generation broadband, and accelerating an inclusive digital economy. As the Commission looks to solve challenges of underserved communities, dynamic shared access can enable higher-capacity and lower-cost deployments in both urban and rural underserved areas.

## I. The Limited Waiver Requested by Extreme Serves the Public Interest

The Commission’s rules allow the agency to grant a waiver “at any time...for good cause.”<sup>4</sup> Good cause exists where, as here, “special circumstances warrant a deviation from the general rule and such deviation will serve the public interest.”<sup>5</sup> Extreme requests a limited waiver of one of the multiple form factor requirements that condition authorization of low-power, indoor-only (“LPI”) devices operating in the 6 GHz band. The DSA supports this limited waiver because it is necessary to achieve the public interest purposes of authorizing 1,200 MHz of unlicensed spectrum access for use inside congested indoor venues, such as crowded indoor sporting arenas in particular, while posing no significant risk of harmful interference to incumbent fixed wireless licensees.

There are two primary reasons why the DSA believes Extreme meets the ‘good cause’ standard for a waiver and why failure to grant a waiver would undermine the public interest benefits the Commission intended to achieve for indoor public venues and sports fans:

First, facilitating the operation of dense deployments of LPI access points in high-congestion, indoor environments advances the public interest by making 1,200 MHz of contiguous bandwidth available, and at lower power, thereby maximizing the connectivity made

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<sup>4</sup> 47 C.F.R. § 1.3.

<sup>5</sup> *Northeast Cellular Telephone Co., L.P., et al. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990); *see also*, e.g., *Schlage Lock Company LLC’s Request for Waiver of Section 15.519(a) and 15.519(a)(2) of the Commission’s Rules*, Order, DA No. 23-442, ET Docket No. 22-248, ¶ 6 (rel. May 24, 2023) (good cause “may be found and a waiver granted ‘where particular facts would make strict compliance inconsistent with the public interest’”) (citation omitted).

possible by next generation Wi-Fi technologies. The waiver aligns precisely with the public interest goals articulated by the Commission in 2020 when it unanimously authorized all 1,200 MHz for low-power, indoor use without the cost of AFC coordination needed for standard power operations.

As Wi-Fi 7 becomes commercially available next year, indoor venues will begin upgrading their Wi-Fi networks to take advantage of the tremendous new capabilities that will be enabled with access to 1,200 contiguous megahertz across the 6 GHz band. Large public venues, such as indoor stadiums, require a minimum of 14 to more than 24 separate channels. An indoor stadium network operating in LPI mode will therefore have access to at least fourteen channels of 80 MHz and twenty-eight channels of 40 MHz, with possibly more in the future if LPI unlicensed use is extended above 7125 MHz. In contrast, a network forced to operate Wi-Fi 7 in SP mode would be limited to only nine channels of 80 MHz and only twenty channels of 40 MHz. This difference in the number of 40 and 80 MHz channels will have a dramatic effect on overall wireless broadband capacity in stadiums and will make an enormous difference for the fan experience.

Second, the network configuration proposed by Extreme for sports stadia is far more spectrum efficient and actually reduces the possibility that any signal will escape the building. It is crucial to note that Extreme needs water-resistant containers because they plan to locate APs close to ground level, beneath seats, which is within the reach of fans, beverage spills, and the unavoidable risk of power washing. By installing (bolted down) its Wi-Fi APs in the clutter of seating – rather than by mounting them high up on pylons or new poles that would obstruct fans’

views – Extreme can achieve far greater spectrum re-use, thereby greatly boosting capacity for fans and other users. Bolted under seats, in the clutter, with Wi-Fi 7 and 1,200 MHz of bandwidth, each Wi-Fi AP can give potentially hundreds of fans enormous throughput and low latency. In contrast, mounting APs high on poles would limit the number of APs to avoid interference.<sup>6</sup> And, although most stadia are fairly isolated, keeping the APs in the clutter further reduces the risk that any signal will escape the building and cause harmful interference to any nearby incumbent fixed link.

## **II. Extreme’s Waiver Request Proposes Protections that Will Ensure No Increased Risk of Harmful Interference to Band Incumbents**

The Sports Stadium Indoor APs proposed by Extreme pose no increased risk of harmful interference considering the many protections that would be integral to this waiver. The DSA believes it is very significant that Extreme is not simply requesting the waiver of a form factor that discourages outdoor deployment; the company is proposing multiple new protections that will more than offset any possible risk that stems from making the APs water-resistant. In addition to requiring plug-in power (no battery power), integrated antennas and obtrusive labeling (the other requirements intended to keep LPI devices indoors), Extreme proposes further conditions that include: professional installation under Extreme’s control, enclosures bolted to the floor (or seat), a separate sales channel (with a unique SKU to track these devices),

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<sup>6</sup> Mounting the APs below seats further reduces interference considering that the 6 GHz Order “require(s) that the indoor low-power devices, both access points and their associated client devices, employ a contention-based protocol.” 6 GHz Order at ¶ 101.

contractual obligations by the venue to prohibit use in any outdoor location. If the Commission adopts these measures as conditions of the waiver, it is likely that Extreme’s Sports Stadium Indoor APs may be the LPI devices *least likely* to end up operating outdoors or causing interference to band incumbents.

Moreover, with respect to the multiple form factor requirements that govern LPI device authorization, the Commission’s framework does not rely entirely on the prohibition against a weather-proof encasement to keep the devices indoors. Three additional design limitations will remain in place to prevent outdoor operation of these devices. The Commission “require[s] that the low-power access points have integrated antennas and prohibit[s] the capability of connecting other antennas.”<sup>7</sup> The Commission agreed with the WiFi Alliance that this rule “could make it ineffective to use low power indoor devices for those purposes” because “outdoor deployments typically rely on directional antennas to cover specific areas, such as restaurant patios, parking lots, and common areas.”<sup>8</sup>

In addition, the Commission “prohibit[s] these low-power access points from operating on battery power.”<sup>9</sup> As Extreme Networks notes, its water-resistant LPI access points will still rely on plug-in electric power (what it calls “mains power”).<sup>10</sup> This by itself will significantly

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<sup>7</sup> Report & Order, *Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 GHz and 24 GHz*, 35 FCC Rcd. 3852, ¶ 107 (2020) (“6 GHz R&O”).

<sup>8</sup> 6 GHz R&O at ¶107, n. 267 (citing WiFi Alliance Comments at 18).

<sup>9</sup> 6 GHz R&O at ¶107.

<sup>10</sup> Extreme Waiver Request at 3.

limit the viability of any outdoor use-cases – and is likely to frustrate any ‘rogue’ attempt to uninstall and reinstall a device outdoors. And, finally, Extreme proposes to prominently display the FCC label and warning that these devices are prohibited from operation outdoors.

The DSA appreciates this opportunity to support this important waiver request. We look forward to working with the Commission and industry to finalize rules and implementations of the Commission’s historic initiative to exponentially increase the benefits of new Wi-Fi technologies and connectivity for consumers and the economy more broadly.

Respectfully submitted,

**/s/ Martha SUAREZ**

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September 15, 2023