

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of )  
 )  
Revision of Part 15 of the Commission’s )  
Rules to Permit Unlicensed National ) ET Docket No. 13-49  
Information Infrastructure (U-NII) Devices in )  
the 5 GHz Band )

**COMMENTS OF THE UTILITIES TELECOM COUNCIL**

Pursuant to Section 1.429 of the Commission’s Rules, the Utilities Telecom Council (“UTC”) hereby files its comments in support of the Petitions for Reconsideration of the Commission’s decision to adopt more stringent out-of-band emission limits for operations in the 5.8 GHz band.<sup>1</sup> UTC agrees that the out-of-band emission limits will require licensees to reduce output power, which in turn will impair the performance of point-to-point and point-to-multipoint operations in the band, including those by utilities and other critical infrastructure industries (CII). In addition, the more stringent out-of-band emission limits are not necessary to prevent interference to federal systems, as more fully described below. Therefore, UTC joins the petitioners in urging the Commission to continue to allow point-to-point systems in the 5.8 GHz U-NII-3<sup>2</sup> band to use the out-of-band emission limits, as provided by Section 15.247 of the Commission’s Rules.

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<sup>1</sup> In the Matter of Revision of Part 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band, *First Report and Order*, ET Docket No. 13-49 (rel. April 1, 2014) (“First R&O”). See also Petition for Partial Reconsideration of the Wireless Internet Service Providers Association, ET Docket No. 13-49 (June 2, 2014) (“WISPA Petition”); Petition for Reconsideration of Cambium Networks, Ltd, ET Docket No. 13-49 (June 2, 2014) (“Cambium Petition”); Mimosa Networks, Inc. Petition for Partial Reconsideration, ET Docket No. 13-49 (June 2, 2014) (“Mimosa Petition”); and Petition for Partial Reconsideration of the JAB Wireless, Inc., ET Docket No. 13-49 (June 2, 2014) (“JAB Petition”)(collectively “Petitions for Reconsideration”).

<sup>2</sup> The U-NII-3 band refers to the spectrum at 5.725 – 5.85 GHz, under Section 15.247 of the Commission’s Rules. .

**I. The Commission Should Reconsider its Decision to Adopt the Out-of-Band Emission Limits Under Section 15.407 in the U-NII 3 Band.**

When the Commission adopted its Report and Order, it decided to “adopt [its] proposal to apply the more restrictive unwanted emissions limits in Section 15.407 for the combined new rule, rather than the more lenient unwanted emissions limit currently in Section 15.247.”<sup>3</sup> In reaching this decision, the Commission found that it would be “consistent with [its] decision to apply the 15.407 out-of-band emission levels in the U-NII-2 bands and having a single limit for devices that operate in any U-NII band [would] provide clarity and simplicity, while providing appropriate protection to incumbent services.”<sup>4</sup> While it “recognize[d] that high gain point-to-point systems certified under Section 15.247 may have to be modified to comply with the lower out-of-band emissions limit from Section 15.407,” it reasoned that “[m]anufacturers have the flexibility to determine how they should meet the lower out-of-band emissions limit whether by reducing power, decreasing antenna gain, or utilizing tighter filters.”<sup>5</sup>

In doing so, the Commission failed to address important issues raised by comments on the record that opposed these out-of-band emission limits. Specifically, it failed to address concerns that “[t]he additional complexity [of transmitters designed to comply with the out-of-band emission limits] would result in higher manufacturing costs, increasing the selling price of unlicensed devices to the extent that many existing applications for lower-tier U-NII band devices may well cease to be cost effective.”<sup>6</sup> Nor did it address arguments that questioned

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<sup>3</sup> Report and Order at ¶119.

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> *Id.* at ¶116, *citing* Comments of Cambium in ET Docket 13-49 at 3-4. *See also* Comments of Exalt Communications Inc., ET Docket No. I 3-49 at 3 (May 28, 2013) (“Exalt Comments”)(stating “The proposed change will likely result in a more restrictive tuning range, and/or significantly higher manufacturing costs for more stringent filtering. If the restrictive tuning approach is deployed, then there will be increasing interference potential

whether there was any evidence that connected out-of-band emissions with interference to Terminal Doppler Weather Radar systems operating at 5.6 GHz to 5.650 GHz. Instead of out-of-band emissions, these comments suggested that “incumbent systems in the U-NII 2C band are more likely to be affected by the fundamental emission from unlicensed devices in the same band than from unwanted out of band radiation from devices in the U-NII 3 band.”<sup>7</sup>

The Petitions for Reconsideration reiterate that “there is no factual evidence in the record demonstrating that tighter out-of-band emission limits will have any effect whatsoever in eliminating interference to Terminal Doppler Weather Radar Systems operating in the 5600-5650 MHz band.”<sup>8</sup> Moreover, they expand on the technical impact that the new limits will have on the operation of incumbent systems. These increased costs and decreased performance impacts would have a profoundly negative effect on existing systems and would have the ancillary effect of preventing the deployment of new and expanded systems to provide service into other unserved areas.<sup>9</sup>

Specifically, Cambium submitted a Report that showed the predicted impact on a WISP in the band. In order to comply with the new limits, power would need to be reduced to 33 dBm, which would reduce the link budget for the uplink by 15 dB, and this power reduction would disconnect 65 percent of the subscribers on the system and leave the remaining subscribers with shared access to 20 Mbps instead of 70 Mbps.<sup>10</sup> Further, the system would need to add hundreds

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within the operating band, as more devices will need to be tuned to a more restrictive spectrum.”)

<sup>7</sup> *Id.*

<sup>8</sup> WISPA Petition at 4.

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

<sup>10</sup> JAB Petition at 6.

of additional sites at a cost of \$50,000 each.<sup>11</sup> Cambium estimated that it would cost \$3 million per production line of product to bring its equipment into compliance with the out-of-band emission limits of Section 15.407, and that those manufacturers that claim they can “adapt” to the new rules are making low-power, short-range equipment rather than long-range equipment that is particularly needed to serve rural America.<sup>12</sup>

This last point is particularly important because the Commission based its decision to adopt the tighter out-of-band emission limits in part on its observation that “[t]he majority of commenters support the Commission’s proposal to apply the more restrictive unwanted emissions limits from Section 15.407 of our rules to the new consolidated rule section.”<sup>13</sup> But, the Commission’s reliance on these comments is misplaced, because these comments were filed a) manufacturers of wireless LAN and Wi-Fi equipment (or their associations); b) users of wireless LAN or Wi-Fi networks (or their associations); or c) those who use wire/fiber/cable to provide internet service, in competition with WISPs. As Cambium shows, these comments were misleading, because they come from parties whose products and services are distinct in as much that they are intended for indoor/urban rather than outdoor/rural use.

More importantly, the tighter emission limits are not necessary to protect TVDRs from interference. The source of the interference problem is devices that have been modified to operate out of compliance with the equipment certification requirements. Out-of-band emissions are not the cause of the interference. There is no evidence to suggest that it is a cause of interference, and the fact that the U-NII 3 band is at least 75 MHz separated from the TVDR band practically rules out the possibility that there would be any interference that would result

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<sup>11</sup> *Id.*

<sup>12</sup> Cambium Petition at 9.

<sup>13</sup> Report and Order at ¶116.

from out-of-band emissions. It is also important to note that most TVDRs are geographically separate from U-NII 3 systems that would operate in rural areas, which would also mitigate the potential for out-of-band interference from U-NII 3 systems to impact TVDR systems. As such, there is no technical basis for adopting stricter out-of-band emission limits under 15.407.

## **II. Out-of-Band Emission Limits Threaten Utility Systems in the U-NII 3 Band.**

UTC believes that the Commission should reconsider and reject the tighter out-of-band emission limits for many of the same reasons that it chose not to adopt the limits on antenna gain under Section 15.407 of the Commission's Rules.<sup>14</sup> Specifically, the Commission stated:

Proposals in the NPRM were not intended to reduce the capabilities of any of the equipment previously certified under either rule. We are persuaded that revising those gain requirements as we proposed would be inconsistent with that goal. Instead, we modify Section 15.407 to permit point-to-point operation under the same gain requirements currently in Section 15.247. The current rules allow service providers to deploy cost-effective wireless links in what would otherwise be considered high cost areas, and allow for the quick setup and transitioning of unlicensed and licensed microwave links. There were no harmful interference cases caused by compliant high-gain point-to-point systems; rather harmful interference was caused by high-gain systems that were illegally modified.<sup>15</sup>

Likewise, the Commission should reject the tighter out-of-band emission limits here because they would impair performance of equipment that was previously certified under Section 15.247, which would allow service providers to deploy cost-effective wireless links in what would otherwise be considered high-cost areas, and allow for the quick setup and transitioning of unlicensed and licensed microwave links. In addition, there were no cases of interference caused by out-of-band emissions; instead, interference was caused by equipment that was illegally modified.

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<sup>14</sup> Report and Order ¶112.

<sup>15</sup> *Id.*

UTC is concerned that the tighter out-of-band emission limits of Section 15.407 threaten to impact utility systems in the band the same way that the proposed antenna gain limits would have impaired those systems. The new out-of-band emission limits would reduce power and create gaps in coverage between existing links and would prevent utilities from upgrading their existing systems in the future. Simply stated, it would wipe out hundreds of utility 5.8 GHz systems across the United States, if this proposed rule change was adopted. Therefore, UTC urges the Commission to retain the out-of-band emission limits of Section 15.247 of the Commission's Rules for point-to-point and point-to-multipoint systems in the U-NII 3 band.

Utilities use the 5.8 GHz band for a variety of reasons. As the FWCC explained, “commercial providers and professional users of licensed fixed service facilities [like utilities] sometimes must operate a link immediately, without waiting for Part 101 frequency coordination and license application.”<sup>16</sup> Utilities also use the 5.8 GHz band on a permanent basis, as well as for temporary authorization to operate fixed links during the pendency of their application for a license. Thus, utilities may need to deploy a permanent fixed 5.8 GHz link in a short timeframe where projects require communications fast. Utilities may also use a permanent 5.8 GHz link to overbuild an existing licensed link to provide added capacity and network redundancy. It is also less costly to install 5.8 GHz systems instead of licensed 6 GHz systems,<sup>17</sup> and there may be facility restrictions that make it technically infeasible to install larger microwave dishes. For

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<sup>16</sup> *Id.* at 3.

<sup>17</sup> One major utility reported to UTC that it plans to replace the legacy 5.8GHz system with a new standard 5.8GHz system, and that if it has to convert from unlicensed 5.8GHz to licensed 6 GHz links in order to traverse the established path lengths, the cost would be conservatively ~\$47,000 per hop, including equipment and labor. This would equate to \$7.2 million dollars. In addition, if the utility used its new licensed 6 GHz microwave standard which includes monitor hot-standby (MHSB) configuration it would increase each hop cost another \$25,000. In summary, the utility would spend between \$7.2 to \$11.5 million dollars to migrate grandfathered 5.8GHz systems at end-of-life to licensed 6 GHz band. Therefore, where interference is a non-issue and its utility requirements do not dictate licensed microwave, it is much more economical to deploy unlicensed 5.8GHz with the same level of reliability (five-nines or 99.999%).

example, utilities may install a smaller 5.8 GHz dish at one of their substations, where space is limited and to reduce wind loading. Similarly, 5.8 GHz systems provide utilities with greater flexibility than licensed systems. For example, it may be more efficient to deploy a 5.8 GHz system where capacity for only one T1 at a substation is needed (rather than installing a licensed 6 GHz system with higher capacity); and then upgrade that link as needed going forward. In sum, the impact on utilities from the tighter out-of-band emission limits could be significant and would extend beyond just temporary facilities.

Utilities need to be able to continue to use the 5.8 GHz band for fixed point-to-point links in compliance with the out-of-band emission limits of Section 15.247. They use this band to support a variety of applications, some of which are mission critical, such as SCADA. It is uniquely suited to support utilities' functional requirements, including capacity and coverage. That is why utilities have deployed many systems in this band. If they are forced to reduce power in order to comply with Section 15.407, they will need to reengineer their systems and reduce the distance of their links. Alternatively, they may be forced to abandon the systems altogether. This would strand significant investments that utilities have made in the band, while undermining the reliability of the applications that these critical infrastructure communications systems support.

Utilities will need to reengineer their systems and reduce the distance of their links in order to meet the new out-of-band emission limits. As the Commission is well aware, there are significant practical and regulatory barriers with deploying wireless infrastructure, particularly in urban areas. The cost alone could prove prohibitive for many utilities. In addition, adding hops increases latency, which could impair performance to meet utility functional requirements for certain applications. As such, the Commission should retain the out-of-band emission limits of

Section 15.247 and reconsider its decision to adopt the out-of-band emission limits in Section 15.407 for point-to-point systems in the U-NII 3 band.

## **Conclusion**

In conclusion, the Utilities Telecom Council supports the Petition for Reconsideration and urges the Commission to continue to allow point-to-point systems in the 5.8 GHz U-NII-3 band to use the out-of-band emission limits, as provided by Section 15.247 of the Commission's Rules. The Commission should reconsider its decision because it did not adequately account for the impact that the new rules would have on systems and equipment in the U-NII 3 band. Moreover, the tighter out-of-band emission limits are not necessary to protect TVDR systems, and there is no evidence on the record that out-of-band emission limits caused any interference to TVDR systems. Instead, the Commission's new rules that protect against illegal modification of equipment will protect TVDR systems from interference. Finally, the new rule would threaten utility communications systems which are needed to support the safe, reliable and efficient delivery of essential electric, gas and water services to the public at large. For all of these reasons, UTC supports the Petitions for Reconsideration, and submits that it would be contrary to the public interest for the Commission to apply the tighter out-of-band emission limits of Section 15.407 in the U-NII 3 Band.

Respectfully submitted,

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August 14, 2014