

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters	)	WT Docket No. 10–4
	)	
Wireless Telecommunications Bureau Seeks Comment on the Current State of Consumer Signal Boosters	)	DA 16–221
	)	

To: Chief, Wireless Telecommunications Bureau

**COMMENTS OF T-MOBILE USA, INC.**

T-Mobile USA, Inc. (“T-Mobile”)<sup>1</sup> hereby responds to the Wireless Telecommunications Bureau’s Public Notice seeking comment on the current state of consumer signal boosters.<sup>2</sup>

**BACKGROUND**

T-Mobile has participated actively in the Commission’s wireless signal booster proceeding from the outset. In both its initial and reply comments, T-Mobile supported the concept of authorizing signal boosters but emphasized the need to tailor the rules carefully to protect wireless networks from interference.<sup>3</sup> In response to stakeholders who had framed an initial joint proposal to facilitate booster deployment while protecting against interference,<sup>4</sup> T-

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<sup>1</sup> T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly-traded company.

<sup>2</sup> Public Notice, *Wireless Telecommunications Bureau Seeks Comment on the Current State of Consumer Signal Boosters*, DA 16–221 (Feb. 29, 2016) (“Public Notice”).

<sup>3</sup> See generally T-Mobile USA, Inc. Comments (filed July 25, 2011); T-Mobile USA, Inc. Reply Comments (filed Aug. 24, 2011) (“Reply Comments”).

<sup>4</sup> See written *ex parte* submission from Verizon Wireless and Wilson Electronics, Inc. (filed July 25, 2011).

Mobile pointed out the need for some refinements,<sup>5</sup> and subsequently worked with the other stakeholders to develop a revised “Consolidated Proposal” that was filed jointly by T-Mobile, Nextivity, V-COMM, Verizon Wireless, and Wilson Electronics<sup>6</sup> and was endorsed by the two other national carriers, more than 90 small rural providers, and other participants.<sup>7</sup> The Commission incorporated this Consolidated Proposal, which included the flexibility in approach advocated by T-Mobile, directly into its Network Protection Standard,<sup>8</sup> which is at the core of the booster rules.

In short, T-Mobile has strongly supported rules that would protect networks from interference but, at the same time, allow for the development and use of a variety of types of signal boosters. The Commission’s adoption of this approach appears to be a success. The lack of any known serious widespread incidents demonstrates that the process has worked well and generally prevented poorly designed consumer devices from entering the market, while making signal boosters widely available and easily usable by consumers. As the Public Notice observes, “consumers now have access to a wide range of consumer signal boosters that satisfy the technical protections adopted in the *Signal Boosters Report and Order*.”<sup>9</sup>

As requested by the Public Notice, T-Mobile hereby provides information to update the record regarding the state of booster technology.<sup>10</sup>

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<sup>5</sup> See Reply Comments at 8-12; written *ex parte* submission from Nextivity and T-Mobile (filed Feb. 17, 2012).

<sup>6</sup> See written *ex parte* submission from Verizon Wireless *et al.* (filed June 8, 2012) (“Consolidated Proposal”).

<sup>7</sup> See *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, WT Docket No. 10–4, *Report and Order*, 28 FCC Rcd 1663, 1684 (2013) (“*Signal Boosters Report and Order*”).

<sup>8</sup> *Id.*

<sup>9</sup> Public Notice at 1.

<sup>10</sup> Public Notice at 2; see *Signal Boosters Report and Order*, 28 FCC Rcd at 1677.

## DISCUSSION

### I. THE COMMISSION SHOULD CONCLUDE ITS FURTHER RULEMAKING PROPOSING TO ELIMINATE THE PERSONAL USE RESTRICTION FOR PROVIDER-SPECIFIC BOOSTERS

In September 2014, the Commission issued a Further Notice of Proposed Rulemaking seeking comment on whether to retain the “personal use” restriction for provider-specific consumer signal boosters.<sup>11</sup> Under the current rules, a subscriber may operate such a booster only for *personal use*.<sup>12</sup> As T-Mobile pointed out in its comments on the *FNPRM*, the personal use restriction was not included in the Consolidated Proposal submitted by T-Mobile and the other stakeholders; it was added in the *Signal Booster Report and Order* without explanation.<sup>13</sup>

T-Mobile strongly supported removal of the personal use restriction, which it said “appears to serve no purpose in the context of these [provider-specific] devices.”<sup>14</sup> Moreover, allowing provider-specific consumer boosters to be used outside the personal-use context would allow usage by small businesses, where industrial signal boosters may not be appropriate or practical.<sup>15</sup> The elimination of the personal use restriction was supported by all of the other commenters.<sup>16</sup>

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<sup>11</sup> See *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, WT Docket No. 10–4, *Order on Reconsideration and Further Notice of Proposed Rulemaking*, 29 FCC Rcd 11563 (1994) (“*FNPRM*”)

<sup>12</sup> See 47 C.F.R. § 20.219a).

<sup>13</sup> See Comments of T-Mobile USA, Inc. at 2 (filed Dec. 29, 2014) (“*FNPRM* Comments”).

<sup>14</sup> *Id.* at 3.

<sup>15</sup> *Id.* at 3-4.

<sup>16</sup> See Comments of CellAntenna Corp. at 3 (filed Dec. 29, 2014); Comments of the Association for College & University Technology Advancement at 2-5 (filed Dec. 29, 2014); Comments of Nextivity, Inc. at 1-8 (filed Dec. 29, 2014); Comments of the Enterprise Wireless Alliance at 1-2 (filed Dec. 29, 2014). AT&T and Verizon filed reply comments addressing other issues but took no position on the personal use restriction.

The record to date unanimously favors removing the personal use restriction. Given that the record compiled in response to the *FNPRM* has been complete for over a year, the Commission should proceed to finalize the rulemaking and eliminate the restriction as soon as possible. This will serve the public interest by facilitating the use of provider-specific boosters in small businesses or in specific areas with coverage problems that are not appropriate places for installation of industrial boosters.

**II. THE COMMISSION SHOULD ENSURE THERE ARE SUFFICIENT RESOURCES TO ENSURE THE CONTINUED SUCCESS OF THE CURRENT PROCEDURES FOR RESOLVING BOOSTER INTERFERENCE ISSUES**

T-Mobile resolves interference issues resulting from boosters the same way it and other licensees resolve other interference issues—by working privately as a first resort, and turning to the FCC for assistance where needed. When a suspected source of booster interference is identified, T-Mobile’s local personnel attempt to work out the issues with the booster owner. In many cases, this approach resolves the interference.

To the extent a private resolution cannot be achieved, T-Mobile will bring the matter to the attention of the FCC by filing a complaint and eventually FCC field personnel with responsibility for the geographic area where the interference is occurring are made aware of the issue. While the FCC’s rules concerning signal boosters are theoretically self-enforcing— “[f]ailure to comply with all applicable rules voids the authority to operate a signal booster”<sup>17</sup>— the user of a booster must cooperate with the licensee and, if necessary, deactivate the booster.<sup>18</sup> In some cases, however, we get either a negative or no response from the offender and the persuasive authority of an FCC representative is needed to ensure compliance.

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<sup>17</sup> 47 C.F.R. §§ 22.9, 24.9, 27.9

<sup>18</sup> 47 C.F.R. § 20.21(d)(2)

When the FCC's field personnel are finally involved, they have been very helpful in resolving interference cases; the typical resolution generally involves the booster operator either bringing the device into compliance or turning it off. However, in T-Mobile's experience, it generally takes 7-10 days after a complaint is filed for FCC field engineers to get to a site where interference is occurring. During that time and until resolution, T-Mobile will continue to suffer interference that in many cases degrades service from multiple cell sites.<sup>19</sup> That said, once FCC field agents become involved, resolution is generally swift.

Interference from boosters appears to be most common in dense urban areas, where businesses attempt to improve in-building coverage by using industrial signal boosters – the only option due to the personal use limitation on consumer boosters. Although the elimination of the personal use restriction may ameliorate urban interference issues by making compliant consumer boosters available for business use, the fact remains that higher-powered industrial boosters will inherently have a greater potential for interference. For example, over the last nine months in T-Mobile's New York region, 24% of all interference cases were attributed to boosters, with a majority being industrial boosters. The most egregious cases involved industrial boosters used with external antennas.

While the process of involving the FCC field offices when necessary has generally worked well, T-Mobile is concerned as to whether this can be expected to continue. The Commission is in the process of reorganizing its field operations, with 24 field offices being reduced to just 13.<sup>20</sup> Under these circumstances, T-Mobile is concerned about the Commission's

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<sup>19</sup> It should be noted that an FCC complaint is not filed until after private resolution proves unsuccessful. Therefore, T-Mobile may actually suffer from harmful interference for several weeks before the issue is resolved.

<sup>20</sup> *Reorganization of the Enforcement Bureau's Field Operations*, 30 FCC Rcd 7649, 7650 (2015).

continued ability to provide adequate field assistance in booster interference cases. The reorganization will no doubt have the effect over time of stretching Commission resources in the field more thinly and reducing field engineers' ability to respond quickly to an interference situation that cannot be privately resolved. As a result, it may take even more time to resolve interference cases. The Commission should take steps to ensure that the field offices that remain have sufficient staffing and other resources to handle interference complaints—regarding boosters or otherwise—no less promptly than in the past, even when the affected location is no longer local to a field office.

### **III. PROVIDING MORE DETAIL IN LISTS OF BOOSTERS WOULD BE BENEFICIAL TO CONSUMERS AND THE WIRELESS INDUSTRY**

The February 8, 2016, Public Notice calling for providers to report on their consents to signal booster usage listed 76 separate booster models in a four-page chart.<sup>21</sup> The information provided was not sufficient as it required more carrier research on each individual booster and did not offer information that could be helpful to consumers. The list did not provide information on the frequency bands and modulation schemes or technologies that would allow consumers and carriers to identify boosters that could be used on particular networks. In addition, in order to determine whether to consent to a booster, any booster list should include information regarding network monitoring capabilities, and whether the device can accept instructions from the network regarding use of nominal uplink bands for supplemental downlink operations.

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<sup>21</sup> Public Notice, *Wireless Telecommunications Bureau Reminds Nationwide Wireless Service Providers of Obligation to Release Information Regarding Consumer Signal Boosters*, DA 16-137 (WTB Feb. 28, 2016).

Although there is no need to revise the February 8 chart now that the annual reporting obligation is now complete,<sup>22</sup> it would be helpful for both consumers and carriers if such a list was maintained by the Commission and included the information identified above. Such a list would allow a consumer to narrow down the devices to those that are applicable to their own wireless service provider and facilitate the carrier consent process. Given that this information comes from the FCC's equipment authorization database, providing a more detailed, informational chart should not be a difficult or time-consuming process.

Respectfully submitted,

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<sup>22</sup> To the extent the Commission contemplates gathering similar information at some point in the future, T-Mobile urges it to reach out to network operators in advance to determine the types of information that can facilitate quick and accurate preparation of responses.