

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

In the Matter of:)	
)	
Amendment of Parts 1, 2, 22, 24, 27, 90 and 95)	WT Docket No. 10-4
of the Commission's Rules to Improve Wireless)	
Coverage Through the Use of Signal Boosters)	

To: The Commission

REPLY COMMENTS OF WILSON ELECTRONICS, LLC

Wilson Electronics, LLC (“Wilson”), by its attorney, hereby replies to the comments that were submitted in response to the Commission’s Second Report and Order and Second Further Notice of Proposed Rulemaking (“Second FNPRM”) proposing to amend § 20.21 of the Commission’s rules (“Rules”) to expand the service bands on which Consumer Signal Boosters (“CSBs”) may operate, to permit enterprise use of Wideband Consumer Signal Boosters (“WCSBs”), to accommodate signal boosters embedded in vehicles, and to allow non-subscriber signal booster operators to register with wireless providers.¹

INTRODUCTION

In its Second FNPRM, the Commission found that its regulatory framework for CSBs, especially its Network Protection Standard (“NPS”), has “functioned as designed”² and “achieved the Commission’s goals of expanding Americans’ access to well-designed boosters that do not harm wireless providers’ networks.”³ Its proposal to lift the personal use restriction on WCSBs,

¹ 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*, FCC 18-35, at 2 (¶ 2) (Mar. 23, 2018).

² *Id.* at 4 (¶ 8).

³ *Id.* at 5 (¶ 9).

thereby permitting enterprise and non-subscriber use of these devices, was premised in large part on the fact that its NPS has succeeded in protecting wireless networks from harmful interference.⁴ Comments filed in response to the Second FNPRM should bolster the Commission's confidence that it can repeal the restriction without running any risk of harmful interference.

In Verizon's view, the Commission's regulatory framework for CSBs has "proved to be a success story in enhancing wireless service for thousands of consumers," and has "worked as intended to improve coverage for wireless customers while protecting wireless networks from interference."⁵ That view was shared by CTIA, which noted that the framework has "proven reliable for both signal booster users and wireless providers."⁶ Adding to the regulatory success story, Wilson and Surecall reported that they have sold more than 1.1 million NPS-compliant CSBs since 2013 without receiving a complaint that any of their CSBs caused harmful interference to a wireless network.⁷ Based upon such comments, the Commission can confidently conclude that it can permit the personal use of WCSBs without fear that such use will adversely affect wireless operations.

The Commission should not be concerned by the report that AT&T Services, Inc. ("AT&T") investigated approximately 1,100 instances of interference caused by signal boosters in the past 14 months.⁸ AT&T did not report that it found a single instance of interference that

⁴ See *id.* at 15-16 (¶¶ 40, 41).

⁵ Comments of Verizon, WT Docket No. 10-4, at 1 (May 18, 2018) ("Verizon Comments").

⁶ Comments of CTIA, WT Docket No. 10-4, at 1 (May 18, 2018) ("CTIA Comments").

⁷ Wilson represented that "it has shipped more than 1,000,000 Commission-approved CSBs since the NPS went into effect, and it has yet to receive a report that one of its boosters caused interference to a wireless network." Comments of Wilson, WT Docket No. 10-4, at 2 (May 18, 2018) ("Wilson Comments"). Surecall disclosed that it has sold more than 30,000 CSBs each year for the past five years without receiving an interference complaint. See Comments of Surecall, WT Docket No. 10-4, at 1-2 (May 18, 2018) ("Surecall Comments").

⁸ See Comments of AT&T, WT Docket No. 10-4, at 2 (May 18, 2018) ("AT&T Comments").

was caused by a NPS-compliant CSB. As AT&T suggested, the interference was likely caused by the operation of non-compliant boosters manufactured prior to the adoption of the NPS.⁹ In any event, it is highly unlikely that Commission-certified, NPS-compliant CSBs caused interference to AT&T's network. Otherwise, AT&T would have reported the interference, and it certainly would not have supported the Commission's proposals to expand the use of CSBs.¹⁰

We turn first to the overriding question of whether the personal use restriction on WCSBs should be lifted. In doing so, we will treat issues pertaining to the enterprise use of WCSBs, embedded CSBs, and non-subscriber use of WCSBs as largely intertwined. As the Commission recognized, if enterprises are to enjoy the use of WCSBs, it must both eliminate the personal use restriction and "prescribe a method for non-subscribers to register a [WCSB] with and receive the consent of all relevant wireless providers."¹¹ Moreover, because an embedded CSB will undoubtedly be a mobile WCSB,¹² a Commission-prescribed registration system should be designed to register fixed, mobile, and embedded WCSBs alike.

DISCUSSION

I. NO PARTY HAS OPPOSED THE ELIMINATION OF THE PERSONAL USE RESTRICTION ON WCSBs

The elimination of the personal use restriction on WCSBs has been at issue in this rulemaking proceeding since December 29, 2014, when ACUTA, The Association for College &

⁹ See *id.* at 2 n.3. It is possible that interference to AT&T's networks was caused by Industrial Signal Boosters.

¹⁰ See *id.* at 14 ("AT&T respectfully requests that the Commission: (1) proceed carefully in considering new bands for [CSBs], (2) adopt rules for embedded [CSBs] that encourage responsible operation by consumers, and (3) simplify as much as possible the process of registering a [WCSB]").

¹¹ Second FNPRM at 14-15 (¶ 38).

¹² A vehicle manufacturer will embed a WCSB rather than a Provider-Specific Consumer Signal Booster ("PSCSB") to attract a "broad customer base." Verizon Comments at 11.

University Technology Advancement (“ACUTA”) filed comments urging the Commission to lift the restriction with respect to both PSCSBs and WCSBs.¹³ To date, and by our count, the issue has undergone three rounds of comments in which 19 parties participated.¹⁴ While some commenters have been noncommittal, no party has yet to oppose the elimination of the restriction.

As the Commission noted, commenters responding to the *Wilson Public Notice* “almost uniformly” supported the repeal of the restriction on WCSBs.¹⁵ Three of those commenters – Surecall, the Ad Hoc Telecommunications Users Committee (“Ad Hoc Committee”), and the Enterprise Wireless Alliance (“EWA”) – have now renewed their support.¹⁶ For instance, the Ad

¹³ See Comments of ACUTA, WT Docket No. 10-4, at 1 (Dec. 29, 2014).

¹⁴ The first two rounds of comments were filed in response to Wilson’s Petition for Further Rulemaking. See *Wireless Telecommunications Bureau Seeks Comment on Wilson Electronics Petition for Rulemaking To Eliminate the Personal Use Restriction on WCSBs, Public Notice*, 32 FCC Rcd 1553 (WTB 2017) (“*Wilson Public Notice*”). Nineteen (19) parties filed comments and/or reply comments in response to the *Wilson Public Notice*. See Second FNPRM at 44-45. Six (6) new parties filed comments in response to the Second FNPRM: AT&T Services, Inc. (“AT&T”), Verizon, Volkswagen Group of America, Inc., Sirius XM Radio, Inc. (“Sirius XM”), CTIA, and Aerospace and Flight Test Radio Coordinating Council, Inc. (“AFTRCC”).

¹⁵ Second FNPRM at 14 (¶ 37). In addition to Wilson, 16 commenters urged the Commission to eliminate the restriction on wideband boosters. See Letter from Deborah Miley, Executive Director, The National Wildfire Suppression Association, WT Docket No. 10-4, at 1-2 (Mar. 8, 2017); Comments of the Enterprise Wireless Alliance, WT Docket No. 10-4, at 1-4 (Mar. 23, 2017); Comments of Sprint, WT Docket No. 10-4, at 1 (Mar. 22, 2017); Comments of the Telecommunications Industry Association, WT Docket No. 10-4, at 1-2 (Mar. 23, 2017); Comments of United Parcel Service, Inc., WT Docket No. 10-4, at 2-5 (Mar. 23, 2017); Comments of Surecall, WT Docket No. 10-4, at 4-13 (Mar. 23, 2017); Comments of the Ad Hoc Telecommunications Users Committee, WT Docket No. 10-4, at 2-5 (Mar. 23, 2017); Comments of the National Public Safety Telecommunications Council, WT Docket No. 10-4 & RM-11784, at 3-7 (Mar. 23, 2017); Comments of Staircase 3, Inc. d/b/a RepeaterStore and RSRF, WT Docket No. 10-4, at 1-2 (Mar. 24, 2017) (“*Staircase 3 Comments*”); Reply Comments of Steve Klingensmith, GetaBetterSignal.com, WT Docket No. 10-4, at 2-3 (Apr. 3, 2017); Letter from Steve Miller, Vice President of Field Sales, Global Convergence, Inc., WT Docket No. 10-4, at 1-2 (Mar. 21, 2017); Letter from Sadruddin Currimbhoy, CEO, SignalBoosters.com, WT Docket No. 10-4, at 1 (Mar. 23, 2017); Letter from Rhonda Thomas-Whitley, Assistant Vice President & Regulatory Counsel, Independent Community Bankers of America, WT Docket No. 10-4, at 1 (Mar. 23, 2017); Letter from Michael Cammisa, Vice President, Safety Policy & Connectivity, American Trucking Associations, WT Docket No. 10-4, at 1-2 (Mar. 31, 2017); Reply Comments of the Utilities Technology Council, WT Docket No. 10-4, at 2-4 (Apr. 3, 2017); Letter from Stephen Comstock, Director of Tax and Accounting Policy, American Petroleum Institute, WT Docket No. 10-4, at 1-2 (Apr. 3, 2017).

¹⁶ See Surecall Comments at 3; Comments of the Ad Hoc Committee, WT Docket No. 10-4, at 2 (May 18,

Hoc Committee urged the Commission to eliminate the restriction for WCSBs “so that consumers of all types, including enterprise consumers, can deploy these simple and cost-effective devices to improve access to wireless services.”¹⁷

Tellingly, no wireless carrier has come forward to oppose the repeal of the personal use restriction. AT&T, Verizon, T-Mobile USA, Inc. (“T-Mobile”), as well as CTIA, voiced at least tacit support for the repeal either by “generally” supporting the Commission’s proposals,¹⁸ or by urging the Commission to adopt a central, one-stop registration system that would facilitate the non-subscriber use of WCSBs by allowing operators to register their WCSBs with multiple wireless carriers.¹⁹ If the Commission agrees to adopt such a system, as it should, the personal use restriction will be rendered obsolete.²⁰

No commenter, and particularly no wireless carrier, objected to the paradigm under which a non-subscriber registrant could operate a WCSB under a carrier’s blanket license, if the registrant agrees to accept the carrier’s presumably reasonable terms.²¹ Wilson suggests that a non-subscriber registrant could operate a fixed, mobile, or embedded WCSB *anywhere* under the blanket licenses of *all* wireless carriers, if the registrant agrees to accept terms and conditions

2018) (“Ad Hoc Committee Comments”); Comments of the EWA, WT Docket No. 10-4, at 2-3 (May 18, 2018) (“EWA Comments”).

¹⁷ Ad Hoc Committee Comments at 1.

¹⁸ CTIA Comments at 1; Comments of T-Mobile, WT Docket No. 10-4, at 2 (May 18, 2018).

¹⁹ See AT&T Comments at 10 (“AT&T believes the Commission can best promote its twin objectives of enabling [WCSB] use and maximizing compliance with registration requirements by adopting a centralized, one-step registration system for [WCSBs]”); Verizon Comments at 12 (“the Commission should host an online registry and database” that “would allow for one-time registration of a [WCSB], without the need for the user to research which operators to register with and then register with multiple operators”).

²⁰ Obviously, if the personal use restriction “guards against unauthorized operation of a [WCSB] on a wireless provider’s network,” Second FNPRM at 14 (¶ 36), there would be no need for the restriction if the Commission authorizes non-subscribers to operate WCSBs on such networks.

²¹ See *id.* at 17-18 (¶¶ 46, 47).

established by the Commission and incorporated into the one-step registration system favored by AT&T and Verizon.²²

Obviously, wireless carriers are the stakeholders most interested in protecting wireless networks from harmful interference and preventing unauthorized network operations. Thus, the Commission should accord great weight to the fact that wireless carriers are not opposed to lifting the personal use restriction on WCSBs and permitting non-subscribers to operate such devices on their networks. Little deference should be afforded Nextivity, Inc. (“Nextivity”), a manufacturer of PSCSBs with an obvious interest in prolonging the personal use restriction on WCSBs.

II. THE COMMISSION SHOULD REJECT NEXTIVITY’S REQUEST TO “BIFURCATE” THIS PROCEEDING

Last year, Nextivity maintained that it did not “oppose” Wilson’s petition for a further rulemaking to eliminate the personal use restriction on WCSBs,²³ but it insisted that the Commission had to consider the matter “in a separate rulemaking in which potential technical harm issues, including impact on interference and network capacity, and any appropriate testing, can be fully considered.”²⁴ Wilson responded at length, showing that there was no need for a separate rulemaking to reexamine the operating characteristics of WCSBs.²⁵ Nevertheless, the Commission granted Nextivity’s wish. It initiated a separate rulemaking and asked for comments specifically on Nextivity’s “technical and performance” claims.²⁶

Given a second chance to raise technical and performance issues, Nextivity did no such

²² See *supra* note 19.

²³ Reply Comments of Nextivity, WT Docket No. 10-4, at 2 (Apr. 3, 2017).

²⁴ *Id.* at 7; Letter from Catherine Wang to Marlene H. Dortch, Docket No. 10-2, at 1 (Mar. 22, 2017).

²⁵ See Reply Comments of Wilson, WT Docket No. 10-4, at 6-9 (Apr. 3, 2017) (“Wilson 2017 Reply Comments”).

²⁶ Second FNPRM at 16 (¶ 42).

thing. Instead, it asked the Commission to “bifurcate” this proceeding²⁷ by considering “the complex interference issues raised by enterprise use of [WCSBs] separately from the other issues in this proceeding that can be resolved expeditiously.”²⁸ It claimed that bifurcation “would give the Commission and outside parties adequate opportunity for discussion and technical analysis necessary to reach a reasoned conclusion on the record while enabling other booster proposals and applications to proceed without undue delay.”²⁹ Needless to say, the Second FNPRM already gave outside parties 56 days to consider Nextivity’s claims, and only Surecall saw fit to comment on them.³⁰

Surecall correctly pointed out that WCSBs “are already being used simultaneously by subscribers of multiple carriers without resulting in harmful interference to wireless networks or to the communications of individual subscribers.”³¹ With respect to Nextivity’s claims concerning the effect of intermodulation on the quality of the downlink signal of a WCSB, Surecall calculated that the chances that there will be significant interference to the downlink output of a WCSB “are on the order of 0.0000945 percent or 1 out of every 1,058,201 call combinations using a [WCSB].”³² If such a rare “intermodulation event” actually occurred, Surecall showed that the resulting interference “would be extremely brief and likely unnoticeable to the end user.”³³ In short, Surecall agreed with Wilson’s assessment when Nextivity first raised the specter of

²⁷ Comments of Nextivity, WT Docket No. 10-4, at 7 (May 18, 2018) (“Nextivity Comments”).

²⁸ *Id.* at 8.

²⁹ *Id.*

³⁰ *See* Surecall Comments at 4-6.

³¹ *Id.* at 4.

³² *Id.* at 6.

³³ *Id.*

intermittent downlink intermodulation – the matter is of no consequence in this proceeding.³⁴

The fact that Nextivity abandoned its claims, and no other commenter expressed any concern about “possibly more extensive technical and performance issues,”³⁵ shows that the Commission need not consider such possibilities at all, much less bifurcate this proceeding to “consider the complex interference issues raised by enterprise use of [WCSBs] separately.”³⁶ Moreover, Nextivity’s obvious attempts to delay the repeal of the personal use restriction on WCSBs, all the while preparing to market PSCSBs to enterprises, suggests that Staircase 3, Inc. was right to allege that Nextivity was acting anti-competitively last year.³⁷ The Commission should not delay competition in the enterprise marketplace by acceding to Nextivity’s latest request for more time for needless “discussion and technical analysis.”³⁸

III. THE COMMISSION MAY AUTHORIZE WILSON TO HOST AN ONLINE WCSB REGISTRATION DATABASE

The Commission’s proposal to require a WCSB operator “to register with each and every provider on whose network the signal booster might operate” garnered little support.³⁹ In Verizon’s view, the Commission’s registration proposal is “impractical at best and more likely infeasible.”⁴⁰ Commenters preferred a centralized one-step registration system, but they disagreed

³⁴ See *id.* (“no legitimate technical impediment exists to the immediate removal of the personal use restriction for [WCSBs]”). The issue that Nextivity raised in 2017 is actually a WCSB performance issue rather than a network interference issue. As Wilson suggested in 2017, “the Commission should just leave it to the manufacturers to deal with the problem.” Wilson 2017 Reply Comments at 9.

³⁵ Second FNPRM at 16 (¶ 42).

³⁶ Nextivity Comments at 8.

³⁷ See Staircase 3 Comments at 2 (urging the Commission to “recognize and reject” Nextivity’s anti-competitive attempt to give its “signal booster technology an unfair regulatory advantage in the market”).

³⁸ Nextivity Comments at 8.

³⁹ Second FNPRM at 19 (¶ 49). Only EWA supported the Commission’s registration proposal. See EWA Comments at 3 (the Commission’s proposed registration system “seems ... to be a reasonable, minimally burdensome solution”).

⁴⁰ Verizon Comments at 9.

as to the entity that would host the system.⁴¹ Although it was the original proponent of a multi-provider registration system similar to that proposed by the Commission,⁴² Wilson is now persuaded that the Commission should put a centralized one-step registration system in place for fixed, mobile, and embedded WCSBs.

Wilson agrees with Verizon that the personal use restriction on WCSBs cannot be lifted until the Commission has implemented an “online registry ... and the registry is accessible and usable by consumers and mobile operators.”⁴³ Aware that enterprises would deploy WCSBs immediately upon the repeal of the restriction, and therefore anxious to be free of the restriction, Wilson would like to see an online registration system implemented at the earliest practicable date. To that end, and if neither the Commission nor CTIA agrees to host such a system, Wilson is willing to incur the cost of hosting and administering an online registry of the Commission’s design and at the Commission’s direction.

IV. THE COMMISSION SHOULD AUTHORIZE CSB OPERATIONS IN THE 600 MHZ AND BRS/EBS BANDS

Ten commenters weighed in on the question of whether the Commission should authorize the operation of CSBs in the 600 MHz (617-652 MHz and 663-698 MHz), WCS (2305-2320 MHz and 2345-2360 MHz), and BRS/EBS (2495-2690 MHz) bands.⁴⁴ No commenter objected to the

⁴¹ See *supra* note 19. See also AT&T Comments at 10 (proposes a one-step registration system where purchasers of WCSBs would be directed to register their devices at a “single website” this is either hosted by the Commission or maintained by signal booster manufacturers); Ad Hoc Committee Comments at 6 (the Commission should require wireless licensees to develop and operate “a single, unified database that permits operators of [WCSBs] to register their NPS-compliant devices in a single instance”); CTIA Comments at 10 (“the Commission could require that the operator of a [WCSB or mobile CSB] be obligated to register the booster in a centralized, one-step registration system administered by the Commission”); Surecall Comments at 7 (WCSBs should be registered in a database administered by “an organization representing the wireless carriers, such as CTIA”).

⁴² See Wilson, Petition for Further Rulemaking, WT Docket No. 10-4, at 19-20 (Dec. 21, 2016).

⁴³ Verizon Comments at 12.

⁴⁴ See AT&T Comments at 2-3; Surecall Comments at 9-10; Verizon Comments at 3-5; Nextivity

operation of CSBs in the 600 MHz and BRS/EBS bands, while seven commenters supported the Commission’s proposal to authorize CSBs to operate in these bands.⁴⁵ However, the Commission’s proposal with respect to the WCS band ran into strong opposition.⁴⁶ Based on the comments filed, the Commission should authorize individuals, businesses, public safety entities, educational institutions, and other enterprise users to operate CSBs in the 600 MHz and BRS/EBS bands, and leave the question of whether they can operate such devices in the WCS band for a future rulemaking.

To be clear, Wilson supports CSB use in the 600 MHz and BRS/EBS bands subject to the existing NPS and a revised regulatory framework for CSBs. Thus, Wilson envisions that consumers and enterprise entities will be able obtain licensee consent to operate fixed, mobile, and embedded WCSBs in the 600 MHz and BRS/EBS bands by accessing an online registration system and agreeing to terms and conditions set by the Commission. Wilson agrees with T-Mobile that under the new regulatory scheme 600 MHz and BRS/EBS licensees should be able to “withhold

Comments at 4-7; Comments of Sirius XM., WT Docket No. 10-4, at 3-7 (May 18, 2018) (“Sirius XM Comments”); CTIA Comments at 3-4; T-Mobile Comments at 2-3; EWA Comments at 3-5; Comments of AFTRCC, WT Docket No. 10-4, at 2-3 (May 18, 2018); Wilson Comments at 2-3.

⁴⁵ See Surecall Comments at 9 (“Surecall urges the Commission to create a blanket rule that [CSBs] are authorized to operate using any frequency bands that are authorized for use by CMRS providers”); Verizon Comments at 3 (“Verizon supports extending the [CSB] rules to additional spectrum bands, as long as the specific band can work in harmony with the current NPS paradigm,” and it “has no objection to modifying the [CSB] rules to include 600 MHz, WCS, and BRS/EBS because the current NPS is sufficient to ensure safe operations in those bands”); Nextivity Comments at 4 (“Nextivity strongly supports the immediate authorization of signal boosters in the 600 MHz and WCS bands, and to a more limited extent, in the BRS/EBS (2495-2690 MHz) bands”); CTIA Comments at 3 (“CTIA generally supports the Commission’s proposal, provided consideration is given to the practical realities for each spectrum band”); T-Mobile Comments at 2 (“T-Mobile generally supports the Commission’s proposal to permit the operation of Consumer Signal Boosters in the 600 MHz, WCS, and BRS/EBS bands”); EWA Comments at 3 (CSBs should be permitted on all commercial wireless spectrum); Wilson Comments at 2 (“Wilson supports the Commission’s proposal to authorize the operation of CSBs in the [600 MHz, WCS and BRS/EBS bands]”).

⁴⁶ See, e.g., Sirius XM Comments at 3 (“Given the significant challenges inherent in WCS band operations—and especially the risk of interference with satellite radio—it would be unthinkable to allow [CSB] use in the WCS band at this time”).

consent for signal booster deployments where there are genuine interference concerns.”⁴⁷

Respectfully submitted,

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⁴⁷ T-Mobile Comments at 4.