

**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	)	

**COMMENTS OF CTIA**

Thomas C. Power  
Senior Vice President and General Counsel

Scott K. Bergmann  
Senior Vice President, Regulatory Affairs

Krista L. Witanowski  
Assistant Vice President, Regulatory Affairs

**CTIA**  
1400 Sixteenth Street, NW  
Suite 600  
Washington, DC 20036  
(202) 785-0081

May 18, 2018

## **TABLE OF CONTENTS**

<b>I.</b>	<b>INTRODUCTION AND SUMMARY. ....</b>	<b>1</b>
<b>II.</b>	<b>SIGNAL BOOSTER DEPLOYMENT HAS BEEN SUCCESSFUL DUE TO THE COMMISSION’S CAREFUL APPROACH FOR PUBLIC USE. ....</b>	<b>2</b>
<b>III.</b>	<b>CTIA SUPPORTS EXPANSION OF CONSUMER SIGNAL BOOSTERS TO OTHER SPECTRUM BANDS AS LONG AS PROPER TECHNICAL PROTECTIONS ARE ADOPTED. ....</b>	<b>3</b>
<b>IV.</b>	<b>EMBEDDED CONSUMER SIGNAL BOOSTERS HIGHLIGHT THE DIFFICULTIES ASSOCIATED WITH LABELING AND REGISTRATION. ....</b>	<b>4</b>
	A. Manufacturers, Not Consumers, Should Be Required To Register Embedded Consumer Signal Boosters. ....	5
	B. Embedded Consumer Signal Boosters Should Have Clear Labeling Requirements. ....	6
	C. Embedded Boosters Should Have A Shutdown Function And Consumer Education Should Be Required Prior To Sale. ....	7
	D. Entities With Existing Waivers Should Be Required To Comply With Any New Commission Requirements Within A Year. ....	8
<b>V.</b>	<b>WIDEBAND AND MOBILE CONSUMER SIGNAL BOOSTERS SHOULD ONLY BE PERMITTED WITH ROBUST REGISTRATION REQUIREMENTS. ....</b>	<b>9</b>
<b>VI.</b>	<b>CONCLUSION. ....</b>	<b>11</b>

**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	)	

**COMMENTS OF CTIA**

CTIA<sup>1</sup> respectfully submits these comments in response to the Second Further Notice of Proposed Rulemaking issued by the Federal Communications Commission ("Commission") seeking input on use of signal boosters to improve access to wireless service while preventing unacceptable interference to the operations of wireless providers.<sup>2</sup>

**I. INTRODUCTION AND SUMMARY.**

In the *Signal Boosters Second FNPRM*, the Commission proposes modifications to the well-established regulatory framework that has proven reliable for both signal booster users and wireless providers. CTIA generally supports the Commission's efforts, but urges it to maintain the same model of careful consideration of the potential harmful effects to wireless consumers prior to allowing increased flexibility for these devices.

---

<sup>1</sup> CTIA® (www.ctia.org) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st century connected life. The association's members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry's voluntary best practices, hosts educational events that promote the wireless industry and co-produces the industry's leading wireless tradeshow. CTIA was founded in 1984 and is based in Washington, D.C.

<sup>2</sup> *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*, Second Report and Order and Second Further Notice of Proposed Rulemaking, WT Docket No. 10-4, FCC 18-35 (rel. Mar. 23, 2018) ("*Signal Boosters Second FNPRM*").

For example, the Commission should continue its practice of initiating notice and comment rulemaking proceedings when considering expansion of the service bands on which Consumer Signal Boosters can operate. Doing so enables the Commission to gather important information from licensees regarding the technical specifications and requirements for operations in these bands that will enable it to identify the potential harmful interference that introducing signal boosters into these bands may cause.

The Commission also should ensure that any modifications to the established framework not inhibit the ability of wireless providers to identify sources of harmful interference to their operations. As a result, the Commission should refrain from rolling back labeling and registration requirements for Consumer Signal Boosters. Similarly, CTIA proposes that the Commission examine establishing a database or similar registration framework for Wideband and Mobile Consumer Signal Boosters that would facilitate the identification of these devices by wireless providers.

## **II. SIGNAL BOOSTER DEPLOYMENT HAS BEEN SUCCESSFUL DUE TO THE COMMISSION'S CAREFUL APPROACH FOR PUBLIC USE.**

The Commission's rules governing the deployment and use of Consumer Signal Boosters have been successful largely due to the measured rollout of these products and the established framework designed to allow consumers to use and register these products without causing harmful interference to wireless networks. Specifically, parties utilizing signal boosters are required to obtain licensee consent prior to operation, through registration with their wireless provider, to ensure that any harmful interference caused by a booster could be readily discovered and expeditiously eliminated.<sup>3</sup>

---

<sup>3</sup> 47 C.F.R. § 20.21(a)(1).

In addition, the Commission requires manufacturers to meet the Network Protection Standard (“NPS”) as part of the equipment certification process, providing safeguards to protect wireless networks from harmful interference, and to label boosters prominently to inform consumers of the requirements related to operation.<sup>4</sup> By permitting incremental booster use by the public, the Commission has allowed for the adoption of these devices and improvements in signal coverage without harming the service provided to other wireless consumers.

### **III. CTIA SUPPORTS EXPANSION OF CONSUMER SIGNAL BOOSTERS TO OTHER SPECTRUM BANDS AS LONG AS PROPER TECHNICAL PROTECTIONS ARE ADOPTED.**

The Commission proposes to authorize the operation of Consumer Signal Boosters in the 600 MHz (617-652 MHz and 663-698 MHz), Wireless Communications Service (“WCS”) (2305-2320 MHz and 2345-2360 MHz), and Broadband Radio Service (“BRS”) and Education Broadband Service (“EBS”) (2495-2690 MHz) bands.<sup>5</sup> CTIA commends the Commission for following a careful approach and engaging in a full notice and comment rulemaking prior to making these additional bands available for Consumer Signal Boosters.

CTIA generally supports the Commission’s proposal, provided consideration is given to the practical realities for each spectrum band. For example, the WCS spectrum surrounds the satellite radio service spectrum band and must also protect adjacent use by aeronautical radio service operations. Similarly, the BRS/EBS spectrum band has both commercial and educational users and must co-exist with Mobile-Satellite Service licensee Globalstar.<sup>6</sup> Additionally, there is

---

<sup>4</sup> 47 C.F.R. § 20.21(e).

<sup>5</sup> *Signal Boosters Second FNPRM* ¶ 24.

<sup>6</sup> Additionally, the Commission has recently initiated a proceeding for the EBS spectrum that could modify the parameters for operations in this spectrum. *See, Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile*

a spectrum repacking process ongoing in the 600 MHz band, during which carriers should be permitted to reject booster requests to avoid interference to broadcasters. The Commission should recognize that introduction of signal boosters into new spectrum bands may disrupt the careful interference balance that the affected parties have established within these bands.

In the future, the Commission should continue to provide wireless operators the opportunity to comment on the authorization of signal boosters, particularly in the bands within which they operate, and any operation of a booster should continue to require prior consent from an affected licensee. Closer examination also is needed to determine if technical restrictions on noise and gain limits require adjustment depending on the spectrum band or use by the licensee within band. Similarly, if a band cannot be added within the existing NPS, licensees should have the opportunity to object or propose any necessary modifications. For instance, design of equipment for use of the millimeter wave spectrum bands is different from other wireless spectrum bands and may not fit neatly within the existing NPS framework.

In short, while CTIA generally agrees with the Commission's proposal to authorize Consumer Signal Boosters in additional bands, the agency should ensure that proper consideration is given to the impact of booster operations on these bands, and it should not foreclose the opportunity for public comment on any future proposed authorizations.

#### **IV. EMBEDDED CONSUMER SIGNAL BOOSTERS HIGHLIGHT THE DIFFICULTIES ASSOCIATED WITH LABELING AND REGISTRATION.**

The Commission proposes to remove restrictions from the use of embedded signal boosters within vehicles such as cars, boats, and recreational vehicles and to allow use of

---

*Broadband Access, Educational and other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Notice of Proposed Rulemaking, WT Docket No. 18-120, (rel. May 10, 2018).

alternative advisory language in materials provided at vehicle delivery.<sup>7</sup> While not opposed to the use of embedded Consumer Signal Boosters, CTIA observes that the use of these products demonstrates the significant complications inherent in the Commission's labeling and registration processes.<sup>8</sup> When these requirements are followed, wireless operators have not observed significant issues with resolving interference; however, in instances where products sold have been either uncertified or unregistered, operators have had great difficulties resolving harmful interference. Therefore, it is critically important to guard against additional consumer products that may either be uncertified or unregistered by applying the affirmative obligations discussed in detail below on product manufacturers, distributors, and retailers to label and register embedded Consumer Signal Boosters.

**A. Manufacturers, Not Consumers, Should Be Required To Register Embedded Consumer Signal Boosters.**

The Commission suggests that vehicle manufacturers, distributors, and retailers would remain responsible only for informing consumers at point of purchase of the registration obligation.<sup>9</sup> At time of purchase, however, consumers will be inundated with a variety of information, including the operation manual, warranty requirements, and payment information, in addition to the signal booster registration obligation. It is highly unlikely, therefore, that a customer will appreciate or fully understand that his or her vehicle is equipped with an embedded Consumer Signal Booster and will register it properly. As a result, imposing a

---

<sup>7</sup> *Signal Boosters Second FNPRM* ¶ 29.

<sup>8</sup> 47 C.F.R. §§ 20.21(f)(1)(A), (h).

<sup>9</sup> *Signal Boosters Second FNPRM* ¶ 29. *See also* 47 C.F.R. § 20.21(f)(1)(i)-(ii).

registration obligation on the consumer will increase the chances that registration of the booster will not occur.

The Commission should instead require that vehicle manufacturers, distributors, and retailers be responsible for registering embedded Consumer Signal Boosters.<sup>10</sup> As the Commission is already responsible for a Part 90 booster registration database, it could easily be reconfigured to include registration of embedded Consumer Signal Boosters.<sup>11</sup> Moreover, parties selling vehicles with embedded Consumer Signal Boosters should be directly responsible for educating consumers about the embedded booster as well as registering the product itself, rather than simply informing the consumer. By placing the responsibility on manufacturers, distributors, and retailers, the Commission can ensure that these devices – which will not be readily visible to consumers – are registered so that wireless providers can access the necessary data if an interference event occurs.

**B. Embedded Consumer Signal Boosters Should Have Clear Labeling Requirements.**

The Commission also has proposed that any alternative advisory be inserted within the written materials given to customers at the point of sale.<sup>12</sup> While CTIA supports this step, it alone is unlikely to be effective. To ensure compliance, the Commission should also maintain

---

<sup>10</sup> Under the current Commission rules, the operator of the booster is required to register any booster. Under CTIA's suggested approach, the vehicle manufacturer would be responsible for collecting information from the party buying the vehicle needed for registration and then register the booster.

<sup>11</sup> See 47 C.F.R. § 90.219(d)(5).

<sup>12</sup> *Signal Boosters Second FNPRM* ¶ 29.



the labeling requirement for the booster itself.<sup>13</sup> Particularly in the context of such complex products, consumers are much more likely to read and take note of a warning label on a product than a short statement buried within an operating manual. Moreover, in the event the booster is removed from a vehicle and resold, it will carry the applicable warnings even though it has been separated from the initial vehicle warning and paperwork. As noted above, vehicle manufacturers, to the extent that they employ embedded Consumer Signal Boosters, should have an affirmative obligation to review the advisory language with the customer.

The Commission also should consider whether to require labels on the actual vehicle in which the booster is embedded, for example, on the inside door jamb of a car or inside the glove compartment. The label could include all the information and warnings, as well as a website to access further information. Consumers are much more likely to notice a label that is on the vehicle itself, and as a result, will be much more likely to comply with the Commission's carefully crafted regulatory regime to avoid interference to wireless networks. CTIA proposes the following potential language for a vehicle label:

“By operating the signal booster embedded in this vehicle, you agree to comply with the FCC’s regulations for operation of the signal booster, including the obligation, if you sell or otherwise transfer the vehicle, to transfer the information on the embedded signal booster to the person who takes possession of the vehicle from you.”

**C. Embedded Boosters Should Have A Shutdown Function And Consumer Education Should Be Required Prior To Sale.**

In addition, the Commission seeks comment on whether customers should have a method to disable the device in a straightforward fashion.<sup>14</sup> CTIA supports a “shutdown” requirement

---

<sup>13</sup> 47 C.F.R. § 20.21(f). Although CTIA has generally supported electronic labeling of wireless products, in this unique circumstance, a physical label is recommended.

<sup>14</sup> *Signal Boosters Second FNPRM* ¶ 30.

and the need for detailed instructions within the owner's manual to facilitate this process.

However, vehicle manufacturers, distributors, or retailers should be required to make consumers aware of and to demonstrate this capability at the time of purchase.

Similarly, once an individual party takes ownership of a vehicle, these affirmative obligations should be applied to any future private transactions – an individual should be required to provide the same information and training to the next owner. Additionally, as suggested above, vehicles should be equipped with a conspicuous label that identifies a website with additional information on the shutdown requirement. In the event a vehicle owner does not comply with the requirement to provide information and training to the next owner, this label will inform future owners of the vehicle of the specific requirements and process for disabling the booster.

**D. Entities With Existing Waivers Should Be Required To Comply With Any New Commission Requirements Within A Year.**

The Commission seeks comment on how to treat previously granted Labeling Waivers following the adoption of any rule changes in this proceeding.<sup>15</sup> Specifically, the Commission suggests it could require compliance by the production year following the rules' adoption.<sup>16</sup> CTIA supports the Commission's proposal to allow booster manufacturers with existing Labeling Waivers one year to fully comply with any new requirements promulgated by the Commission in this proceeding.

---

<sup>15</sup> *Signal Boosters Second FNPRM* ¶ 33.

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

**V. WIDEBAND AND MOBILE CONSUMER SIGNAL BOOSTERS SHOULD ONLY BE PERMITTED WITH ROBUST REGISTRATION REQUIREMENTS.**

The Commission proposes to eliminate the personal use restriction on Wideband Consumer Signal Boosters and proposes a method for non-subscribers to register with and receive consent from providers to which they do not subscribe.<sup>17</sup> Additionally, the Commission proposes that enterprises, such as commercial bus or train lines, be required to register their Mobile Consumer Signal Boosters with all providers within range of the signal booster.<sup>18</sup>

Unlike existing Consumer Signal Boosters, enterprise use of Wideband and Mobile Consumer Signal Boosters will transmit on spectrum licensed to multiple wireless providers.<sup>19</sup> The Commission suggests that an operator of a Wideband or Mobile Consumer Signal Booster would be required to receive consent of all providers operating in the range of the signal booster.<sup>20</sup> However, this proposal is impractical at best and more likely infeasible. The consumer, enterprise, or the booster manufacturer will not be in a position of determining the “operating range of the signal booster” without sophisticated testing and cooperation with all the licensed providers in the area of operation. There would be no effective method of accurately making this determination unless a robust and precise database of information was created by the booster manufacturer for each installation use case and topology throughout the country that the signal booster might be installed.

---

<sup>17</sup> *Id.* ¶¶ 42-44.

<sup>18</sup> *Id.* ¶ 51.

<sup>19</sup> *Signal Boosters Second FNPRM* ¶ 36.

<sup>20</sup> *Id.* ¶ 37, 51.

Therefore, should the Commission move forward with allowing enterprise use of both Wideband Consumer Signal Boosters and Mobile Consumer Signal Boosters, it must develop a methodology that ensures that *all* affected wireless licensees and their customers are protected from potential harmful interference prior to the operation of the device. For example, while installation for a customer may work well and not interfere with one wireless operator, there is no guarantee that it would not harm another system.

CTIA suggests two options for Commission consideration. First, the Commission could require that the operator of a Wideband or Mobile Consumer Signal Booster be obligated to register the booster in a centralized, one-step registration system administered by the Commission, similar to that suggested above for embedded Consumer Signal Boosters. The fact that Wideband and Mobile Consumer Signal Boosters will require use of spectrum by consumers that are *not* subscribers for portions of the operation should compel the Commission to be involved in the registration process. In this way, all operators will have a single entity to register any potential Wideband or Mobile Consumer Signal Booster and carriers could access the data if and when interference occurs.

Alternatively, the Commission could enable operators of Wideband and Mobile Consumer Signal Boosters to identify potentially affected providers and require them to register with these providers. For example, the Commission could utilize the Universal Licensing System (“ULS”) to develop a list of wireless providers operating in a certain area, facilitating the ability of operators of fixed Wideband Consumer Signal Boosters in those areas to identify the specific providers with which they should register. The operator of the fixed Wideband Consumer Signal Booster would be required to register with all potentially affected wireless providers in the area, as identified by the Commission’s online database. In contrast, Mobile

Consumer Signal Boosters could operate anywhere in the United States at any time – meaning that the registration should be required for all affected wireless providers. Utilizing the same Commission-managed database, operators of Mobile Consumer Signal Boosters could either: (1) register with any wireless provider in the areas that they will operate (for commercial parties such as train and bus operations, the route traveled should be well-defined and could be true for many consumer uses as well) or (2) the operator could simply register a Mobile Consumer Signal Booster with every wireless provider in the country, obviating the need to determine the route (or routes) that may occur during use of the booster. Either of these possible approaches would provide notice to providers and allow them to identify the specific source of any potential interference that may occur as a result of the use of the Wideband or Mobile Consumer Signal Booster.

## **VI. CONCLUSION.**

CTIA appreciates the Commission’s efforts to advance the use of Consumer Signal Boosters. The Commission should be careful, however, about changes that may result in unintended consequences for wireless providers and their consumers. As the Commission itself recognized, the current regulatory framework “allows consumers to realize the benefits of using Consumer Signal Boosters while preventing, controlling, and, if necessary, resolving interference to wireless networks.”<sup>21</sup> Consequently, the Commission should carefully consider any proposed modifications to the signal booster rules to ensure that the principles of the existing framework, which balances both consumer and wireless provider interests, are incorporated into these changes.

---

<sup>21</sup> *Id.* ¶ 4.

Respectfully Submitted,

/s/ Krista L. Witanowski

Krista L. Witanowski  
Assistant Vice President, Regulatory Affairs

Thomas C. Power  
Senior Vice President and General Counsel

Scott K. Bergmann  
Senior Vice President, Regulatory Affairs

**CTIA**  
1400 Sixteenth Street, NW  
Suite 600  
Washington, DC 20036  
(202) 785-0081

Dated: May 18, 2018