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

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| 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 | ) ) ) ) | 10-4 |

To: The Commission

## COMMENTS OF THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

The Telecommunications Industry Association (TIA) responds to the Commission's *Notice of Proposed Rulemaking* in the above-referenced proceeding.[1] TIA is the leading trade association for the information and communications technology (ICT) industry, with 600 member companies that manufacture or supply the products and services used in global communications across all technology platforms. TIA represents its members on the full range of public policy issues affecting the ICT industry and forges consensus on industry standards. For over 80 years, TIA has enhanced the business environment for broadband, mobile wireless, information technology, networks, cable, satellite, and unified communications. TIA is accredited by the American National Standards Institute (ANSI). As discussed below, TIA supports the Commission's efforts to facilitate the deployment of well-designed signal boosters which do not interfere with

[1] *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*, Notice of Proposed Rulemaking, WT Docket No. 10-4, FCC 11-53 (rel. Apr. 6, 2011) (*NPRM*).

wireless networks. Furthermore, TIA is able to provide the Commission with the unique perspective of a developer of standards for public safety boosters.[2]

## I. RULES SHOULD BE ADOPTED PERMITTING THE DEPLOYMENT OF SIGNAL BOOSTERS THAT DO NOT INTERFERE WITH WIRELESS NETWORKS

TIA agrees with the Commission that consumers should be permitted to purchase and operate well designed, properly operating signal boosters in order to improve wireless coverage.[3] Signal boosters also can improve public safety by improving the coverage of public safety wireless systems or by expanding the area within which emergency calls can be placed over commercial networks.[4] These benefits cannot be realized, however, if signal boosters interfere with network operations – whether the interference is caused to the network with which the booster is associated or an adjacent (from either a geographic or frequency perspective) network. As noted by the Commission, the best approach is "to create appropriate incentives for carriers and manufacturers to collaboratively develop robust signal boosters *that do not harm wireless networks*."[5] The record demonstrates that carriers and manufacturers already are working cooperatively toward this end.[6]

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[2] TIA has developed TIA-156-A, *Land Mobile Radio Antenna Systems Minimum Standards for RF Signal Boosters*, which defines critical specifications, terms and conditions of measurement used in the development and specification of Signal Booster products to be used in Government and Private Radio Systems which includes Public Safety Radio Systems. These requirements make possible a direct comparison of the resulting specifications, eliminating misunderstandings or confusion when comparing products from different manufacturers. The terms, definitions, and conditions of measurement in TIA-156-A allow for typical tests as well as acceptance tests. *See* http://standardsdocuments.tiaonline.org/tia-156-a.htm.

[3] *NPRM* at ¶¶ 1, 27.

[4] *See NPRM* at ¶¶ 1, 12.

[5] *Id*. at ¶ 2 (emphasis added).

[6] *See* Joint Motion for Extension of Time filed by Verizon Wireless and Wilson Electronics, WT Docket No. 10-4 (filed Jun. 16, 2011).

TIA nevertheless supports the Commission's proposal to only permit the sale and operation of boosters that meet strict technical criteria designed to prevent interference.[7] To minimize the potential for interference, signal boosters must be required to incorporate technology designed to eliminate interference caused by adjacent channel noise, oscillation, and base station receiver overload.[8] Poorly designed signal boosters can cause these types of interference.

TIA also supports the Commission's proposal to require *consumer* signal boosters to automatically shut down within ten seconds if the device begins operating outside of applicable technical parameters.[9] This requirement should not extend, however, to signal boosters utilized by public safety entities pursuant to Part 90.[10]

One of the key benefits of signal boosters is their ability to improve public safety. A requirement that boosters used by public safety must automatically shut down if they begin operating outside applicable technical parameters would significantly undermine this benefit. First responders and emergency service personnel rely on boosters to ensure reliable service. If a malfunctioning booster is required to automatically shut off, communications between emergency personnel would be jeopardized. In-progress calls could be dropped once the booster shuts down and new dead spots would be created within the network where emergency personnel would be unable to initiate or receive calls. In these instances, it would be preferable to allow the malfunctioning

[7] *See NPRM* at ¶ 28.

[8] *See NPRM* at ¶¶ 14-17, 33-38.

[9] *See NPRM* at ¶ 37. This proposal was included in the section entitled "General Requirements for All *Consumer* Signal Boosters." *See NPRM,* Section IV.B.2 (emphasis added).

[10] *See id.* at ¶ 93.

booster to continue operating until the Part 90 network operator can identify the source of the problem and fix or replace the booster.

## II. SIGNAL BOOSTERS SHOULD NOT BE SUBJECT TO BURDENSOME LICENSING AND CERTIFICATION RULES

Given the recognized benefits of signal boosters, these devices should not be subject to burdensome licensing and certification rules that would needlessly delay their deployment. The process for licensing and certifying these devices should not differ significantly from the process used for handsets and other consumer devices that operate on wireless networks. As the Commission recognizes, this approach can be easily accomplished by modifying Section 1.903(c) of its rules.[11] Additionally, TIA supports appropriate measures to reduce interference to public safety operations.

*Part 2 Certification.* Signal booster manufacturers should be required to obtain Part 2 certifications for new signal booster models before they can be sold to the public. This certification process should largely mirror the process used for wireless handsets. Existing signal boosters that have already obtained Part 2 certification under the current rules should be grandfathered.

*Blanket Authorization.* Rather than create a new Part 95 Citizens Band Radio Service that would be unfamiliar to manufacturers and carriers alike, the Commission should declare that properly

[11] *Id.* at ¶ 32.

certified boosters may operate on wireless networks pursuant to the blanket authorization granted the network operator.[12]

*Registration of Signal Boosters with the Carrier.* As the Commission notes, several commenters have provided examples of signal boosters having caused interference to public safety operations.[13] Furthermore, commercial operators have documented the same complaint to the Commission in this proceeding.[14] Knowledge of the location of signal boosters would serve as an effective tool in quickly discovering and eliminating harmful interference. For this reason, TIA encourages the Commission to require non-licensee customers of commercial mobile radio service providers may only deploy signal boosters with the express written permission of the licensee, and that the maintenance of a list of all signal boosters in use by the provider, as well as signal boosters which the licensee has authorized by non-licensees.[15]

## III. THE IMPACT OF SIGNAL BOOSTERS ON E911 LOCATION ACCURACY SHOULD BE ADDRESSED IN THE E911 ACCURACY DOCKET

TIA supports the efforts of the CMRS industry – vendors and carriers alike – to develop new products and technologies designed to improve the accuracy of locating CMRS subscribers, especially those calling 911. In this regard, the Commission should ensure that its efforts to facilitate signal booster deployment do not undermine these accuracy improvement efforts. As

[12] *See Amendment of Sections of Part 21 (now Part 22) of the Commission's rules*, CC Docket No. 79-259, *Report and Order*, 77 FCC 2d 84, ¶ 5 (1980) (*Part 22 Order*); *see also* 47 C.F.R. §§ 1.903(c), 22.3(b).

[13] NPRM at ¶ 20.

[14] *Id.* at ¶ 21.

[15] Bird Technologies Group Petition for Rulemaking, filed Aug. 18, 2005, at 9 (Bird Technologies Petition).

the Commission recognizes, the "use of signal boosters also presents challenges for certain network-based Enhanced 911 ("E911") systems."[16]

Network-based E911 systems generally rely on the measured time-of-arrival to determine a caller's location. Current signal boosters introduce significant delay that dramatically alters the measured time-of-arrival and therefore the ability of the E911 system to locate the caller. The delay from a signal booster can cause a network-based location estimate to deviate by thousands of meters from the location that would have been generated in the absence of the booster.

Signal boosters also present challenges, however, for handset-based E-911 systems. These systems generally rely on GPS to generate location information for a caller and require visibility of the GPS satellites to do so. Signal boosters may allow 911 calls to be placed from areas with no satellite visibility and therefore no precise location information. As the number of signal boosters proliferate and the percentage of in-building calls increases, carriers may have difficulty satisfying E911 accuracy requirements.

The impact of signal boosters on E911 location accuracy should be addressed expeditiously. Rather than address E-911 accuracy issues here, however, the Commission should evaluate the issues in the pending Wireless E911 Accuracy docket.[17] There, the Commission should consider the impact of signal boosters on E911 accuracy, how this impact should factor into carrier

[16] *NPRM* at ¶ 19.

[17] *See Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Further Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 18957 (2010).

compliance with E911 accuracy requirement, and whether carriers should be insulated from liability arising from location inaccuracies caused by signal booster deployment.

As TIA noted in the E911 accuracy proceeding,[18] the Commission should not adopt new, mandatory accuracy requirements. New accuracy standards will chill the development of innovative location accuracy technologies, industry standards, and best practices that are well underway. If the Commission nevertheless moves forward and modifies its accuracy requirements, it should not adopt a single location accuracy standard for both network and device location technologies. Such an approach would disregard the significant technological and network design differences associated with the various CMRS networks. TIA urges the Commission to rely on market forces to drive accuracy improvements. As noted above, these forces already are driving the development of new technologies, industry standards, and best practices designed to improve E911 accuracy.

TIA agrees that that all Part 90 signal boosters should be affixed with a warning label indicating that (1) non-licensees may only deploy signal boosters with the express written consent of a licensee; (2) such written consent must include the specific location(s) of the signal booster equipment; (3) only certified equipment may be used; (4) FCC regulations regarding RF levels at antennas, power levels and antenna locations must be met; and (5) failure to comply may result in a fine pursuant to 18 U.S.C. § 1001.[19] Such a label should also address E911 location accuracy capabilities. This will help ensure that consumers may still make use of signal boosters

[18] Comments of TIA, PS Docket No. 07-114, 2-7 (Jan. 19, 2011).

[19] Bird Technologies Petition at 9.

while protecting the mission critical communications of public safety professionals from unwarranted interference.

## IV. CONCLUSION

Signal boosters have the potential to expand wireless coverage and improve public safety, provided such devices do not otherwise interfere with wireless networks. Accordingly, for the reasons set forth above, the Commission should authorize the use of signal boosters provided strict technical requirements are adopted to prevent interference to wireless licensees, that non-licensee customers of commercial mobile radio service providers only be allowed to deploy boosters with the express written permission of the licensee, and that a list of all signal boosters be maintained by the provider. These devices should be authorized in the same manner as wireless handsets – devices that are properly certified would be authorized to operate pursuant to the blanket license of the carrier. The Commission should acknowledge the problems signal boosters pose problems for 911 location accuracy and address that issue expeditiously in the E911 docket, and appropriate warning labels should be required to the boosters.

Respectfully submitted,

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