

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

In the Matter of	)	
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
E911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196
	)	

**REPLY COMMENTS OF CTIA – THE WIRELESS ASSOCIATION®**

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CTIA – The Wireless Association® (“CTIA”) respectfully submits these reply comments in response to the Federal Communication Commission’s (“FCC” or “Commission”) Further Notice of Proposed Rulemaking and Notice of Inquiry (“*E911 Notice*”) aimed at further improving the location capability of 911 and E911 services for existing and new voice communications technologies.<sup>1</sup>

First, the record developed in response to the *E911 Notice* demonstrates that additional E911 requirements are not warranted at this time, and that imposition of new regulations so soon after the establishment of new location accuracy requirements<sup>2</sup> would be premature and unduly burdensome to both PSAPs and the wireless industry. Second, opening comments provide support for the establishment of an industry-based stakeholder group on E911 issues. Indeed, the variety of proposed new technologies introduced in opening comments demonstrates the key role such a stakeholder group could play in the evaluation of new technical standards and the *E911 Notice*’s proposals. Third, CTIA urges the Commission to take a holistic approach to facilitating

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<sup>1</sup> *Wireless E911 Location Accuracy Requirements; E911 Requirements for IP-Enabled Service Providers*, PS Docket No. 07-114, WC Docket No. 05-196, Further Notice of Proposed Rulemaking and Notice of Inquiry, FCC 10-177 (2010) (“*E911 Notice*”).

<sup>2</sup> *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Second Report and Order, FCC 10-176 (2010) (“*Second Report and Order*”).

improved location accuracy, including encouraging PSAPs to upgrade their systems to support new E911 solutions. Finally, CTIA vigorously disagrees with the argument advanced by Wilson Electronics (“Wilson”) that the use of signal boosters can enhance wireless E911 location accuracy.<sup>3</sup> As the record has shown, the unauthorized use of signal boosters results in substantial harmful interference to wireless networks and risks undermining to the goals of this proceeding.

**I. THE RECORD AFFIRMS THE FACT THAT ADDITIONAL E911 REQUIREMENTS ARE NOT WARRANTED AT THIS TIME.**

As CTIA noted in its opening comments, the Commission has only recently adopted new E911 location accuracy standards, and these standards will require time for implementation. As such, imposing additional requirements at this stage would be premature. Commenters representing a broad cross-section of the wireless industry agreed with CTIA that additional regulation is inappropriate at this time.<sup>4</sup> As Motorola Mobility, Inc. and Motorola Solutions, Inc. observed in their joint comments, “the *Second Report and Order* represents a major upgrade to the E911 rules, and the industry needs time to incorporate these changes before taking on any new requirements.”<sup>5</sup> Further, the changes mandated by the *Second Report and Order* remain untested, and some issues raised by the Commission in the *E911 Notice* “will naturally be accomplished through implementation of the *Second Report and Order*.”<sup>6</sup> CTIA urges the

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<sup>3</sup> Comments of Wilson Electronics, Inc., PS Docket No. 07-114 (Jan. 19, 2011) (“Wilson Comments”).

<sup>4</sup> See, e.g., Comments of AT&T Inc., PS Docket No. 07-114, at 2-5 (Jan. 19, 2011) (“AT&T Comments”); Comments of Motorola Mobility, Inc. and Motorola Solutions, Inc., PS Docket No. 07-114, at 2 (Jan. 19, 2011) (“Motorola Joint Comments”); Comments of Sprint Nextel Corporation, PS Docket No. 07-114, at 3 (Jan. 19, 2011) (“Sprint Nextel Comments”); Comments of T-Mobile USA, Inc., PS Docket No. 07-114, at 4 (Jan. 19, 2011) (“T-Mobile Comments”); Comments of the Telecommunications Industry Association, PS Docket No. 07-114, at 5 (Jan. 19, 2011) (“TIA Comments”).

<sup>5</sup> Motorola Joint Comments at 2.

<sup>6</sup> T-Mobile Comments at 4.

Commission to evaluate the impact of the newly-adopted requirements before imposing additional E911 regulations on the wireless industry.

Indeed, these new regulations present a significant challenge to the industry, and “represent the limits of what can be accomplished with current and near-term wireless technology.”<sup>7</sup> AT&T observes that “there is no location technology available to improve accuracy that does not require further research and development and that can be implemented in a timely, cost effective manner.”<sup>8</sup> In particular, commenters stress the fact that “development and implementation of a single location accuracy standard cannot be accomplished in the near term.”<sup>9</sup> Rather, the development of a single location accuracy standard requires further technological evolution and additional research and development to overcome “inherent limitations in wireless technology.”<sup>10</sup> CTIA agrees with these commenters that the current rules reflect the limits of current technology, and that the Commission will best achieve its policy objectives through promoting continued research and innovation.

By refraining from additional regulation at this time, the Commission will give all stakeholders the flexibility and resources they need to develop and deploy innovative E911 solutions. Currently the industry is “working to improve location accuracy technologies and

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<sup>7</sup> Motorola Joint Comments at 4. *See also* Sprint Nextel Comments at 3 (“There is certainly no evidence that an increase in these standards is technically or economically feasible.”).

<sup>8</sup> AT&T Comments at 7.

<sup>9</sup> Motorola Joint Comments at 6. *See also, e.g.,* AT&T Comments at 5 (stating that the use of a single location accuracy standard or the new technologies described in the *E911 Notice* is not technically or economically feasible at this time); Comments of the Alliance for Telecommunications Industry Solutions, PS Docket No. 07-114, at 3-4 (“ATIS Comments”).

<sup>10</sup> ATIS Comments at 4. *See also* Sprint Nextel Comments at 4 (“Given the current technologies in use by carriers and the varied nature of carriers’ networks and technologies, it is reasonable to have different standards at this time”).

applications to more quickly and accurately locate persons in crisis.”<sup>11</sup> To promote this continued innovation, the Commission “should focus on investigating continuing challenges to the provision of E911 location information, supporting the ongoing research and development efforts in this area, and fostering industry-led standards setting.”<sup>12</sup> To do otherwise “risks misallocating resources that could yield more public safety benefit when applied elsewhere”<sup>13</sup> and places burdens on the industry that “will divert focus from developing new life-saving, advanced location accuracy techniques and instead place focus on regulatory compliance.”<sup>14</sup> In sum, CTIA believes that the Commission will best promote advances in E911 technology by “empower[ing] industry to do what it does best: develop innovative market solutions.”<sup>15</sup>

## **II. OPENING COMMENTS DEMONSTRATE THE NEED FOR A STAKEHOLDER GROUP ON E911 ISSUES.**

As CTIA has consistently stated, including in its opening comments, development of E911 location accuracy standards would greatly benefit from the creation of a diverse stakeholder group that would recommend next steps to the Commission. As PSAPs and the wireless industry evolve toward next-generation networks and as new products and services are proposed, the input of such a group will become increasingly important to the development of standards that are both technologically feasible and consistent with the public interest.

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<sup>11</sup> TIA Comments at 4.

<sup>12</sup> Motorola Joint Comments at 2.

<sup>13</sup> AT&T Comments at 3-4.

<sup>14</sup> TIA Comments at 5.

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

The record developed in this proceeding demonstrates the widespread support for a stakeholder group on E911 issues.<sup>16</sup> This stakeholder group should consist of experts representing network operators, device manufacturers, network manufacturers, the public safety community, and other interested parties. Formation of such a group “will help to ensure that cross-industry and public safety concerns and expertise are considered and will encourage continued dialogue on how best to empower carriers, vendors, and other stakeholders to provide further advanced E911 technologies.”<sup>17</sup> The stakeholder group could conduct various real world tests that would enable it to make recommendations and decisions based on hard data.<sup>18</sup> Indeed, the members of this group can leverage their collective expertise to create testing conditions with specific utility to E911 location accuracy testing.<sup>19</sup> A stakeholder group also will be able to

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<sup>16</sup> AT&T Comments at 4 (“The ETAG concept—which interested stakeholders have championed for several years—offers the best and most constructive path towards improved E911 accuracy.”); Motorola Joint Comments at 2-3; Comments of Verizon and Verizon Wireless, PS Docket No. 07-114, at 12 (Jan. 19, 2011) (“The Commission could later seek comment on the recommendations from CSRIC, or a similar or successor technical group); Sprint Nextel Comments at 1-2; ATIS Comments at 4; TIA Comments at 10.

<sup>17</sup> TIA Comments at 10.

<sup>18</sup> AT&T Comments at 5.

<sup>19</sup> To that end, CTIA notes that the comments of Yi Zhang, Andrea Forte and Henning Schulzrinne provide findings on the accuracy of GPS location estimates in various settings. *See* Comments of Yi Zhang, Andrea Forte and Henning Schulzrinne, PS Docket No. 07-114 (Jan. 20, 2011) (“Zhang *et al.* Comments”). The measurements discussed in the Zhang *et al.* Comments do not appear to have been taken under the same conditions as those required for wireless E911 measurements. Wireless E911 A-GPS location estimates typically must be returned within 30 seconds, limiting the pseudo-range integration time and therefore the achievable accuracy in challenging conditions. The measurements described in the Zhang *et al.* Comments appear to have been averaged over much longer periods of time, which can improve accuracy in challenging conditions, but the resulting accuracy figures are of little practical relevance to wireless E911 location estimates. These tests demonstrate the utility of convening a stakeholder group with particular expertise and focus on E911 issues. For example, ATIS’ Emergency Services Interconnection Forum (“ESIF”) has developed and published several industry-accepted testing methodologies that were adopted through a consensus-driven standards development process and reflect the random distribution of actual 911 calls. *See generally* ATIS Comments.

“develop location accuracy solutions in a uniform and organized way.”<sup>20</sup> And a stakeholder group could have particular utility with regard to developing standards for 4G technologies.<sup>21</sup>

To that end, CTIA notes that several participants in this proceeding have highlighted new products and technologies that could advance the Commission’s E911 objectives. For example, Qualcomm has indicated that it is studying a number of technologies aimed at improving location accuracy indoors as well as in challenging outdoor settings.<sup>22</sup> Other commenters have highlighted solutions that they have developed or are developing to address E911 issues.<sup>23</sup> A stakeholder group could play an important role in evaluating these new technologies. Moreover, such a group of experts can evaluate whether the proposed technologies are based on open standards and are not subject to non-disclosed patent claims.<sup>24</sup> As Sprint Nextel cautioned in its comments, the Commission should not proceed with additional regulation based on new location technologies without undertaking a careful evaluation of such proposed solutions.<sup>25</sup> Participants

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<sup>20</sup> Motorola Joint Comments at 3.

<sup>21</sup> AT&T Comments at 12 (stating that the Commission “should have the [stakeholder group] partner with the existing 4G working groups to continue to test and evaluate” technologies developed by 4G standards groups”); ATIS Comments at 5 (“ATIS believes that only a consensus-based, standards-driven solution can effectively promote continued evolution of specifications such as LTE and allow truly global specifications to emerge that can incorporate a wide variety of location enhancement technologies.”).

<sup>22</sup> Comments of Qualcomm Incorporated, PS Docket No. 07-114, at 12 (Jan. 19, 2011).

<sup>23</sup> *See, e.g.*, Comments of Polaris Wireless, Inc., PS Docket No. 07-114 (Jan. 19, 2011).

<sup>24</sup> *See The National Technology Transfer and Advancement Act of 1995* (“NTTAA”), Pub. L. No. 104-113 (1996) (directing all federal government agencies to use, wherever feasible, standards and conformity assessment solutions developed or adopted by voluntary consensus standards bodies in lieu of developing government-unique standards or regulations. The NTTAA also requires government agencies to participate in standards development processes, given that such involvement is in keeping with an agency’s mission and budget priorities.).

<sup>25</sup> Sprint Nextel Comments at 2 (“Sprint Nextel supports the Commission’s efforts to gain a better awareness of new location technologies that are currently or soon may become available. Sprint Nextel would caution the Commission, however, to carefully evaluate claims made by vendors, who stand to benefit greatly from any further regulations that may be developed.”).

in this proceeding raise important issues that are best evaluated by a stakeholder group with technical expertise that represents a broad cross-section of the wireless industry and the public safety community. Further, such a stakeholder group “would not be invested in the success or failure of a particular technology”<sup>26</sup> and could objectively and comprehensively test various E911 solutions.

### **III. PSAP READINESS IS CRITICAL TO ENSURING OPTIMAL UTILIZATION OF LOCATION ACCURACY INFORMATION.**

In determining how best to facilitate improved E911 location accuracy, the Commission should take a holistic approach in evaluating all elements necessary to achieve its objectives, including PSAP operations, funding, and maintenance of up-to-date, accurate mapping solutions. The record developed in opening comments makes clear that for any additional E911 regulations to be meaningful, PSAP upgrades – including considerable mapping and GIS updating efforts – will be necessary.

One of the lessons learned over nearly fifteen years of E911 deployment is the critical importance for PSAPs to undertake the efforts necessary to enhance their systems so that data supplied by carriers can be used in a meaningful way. For example, going forward PSAPs will need to “work with municipalities and others to develop hyper-accurate base maps for use with X/Y/Z information” and take steps so that they can display street address information, incorporate Z locations, and/or identify both carrier and customer names.<sup>27</sup> CTIA agrees with Intrado that it is “critical” for PSAPs to enhance their systems in parallel with carrier

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<sup>26</sup> AT&T Comments at 8.

<sup>27</sup> Comments of Intrado Inc. and Intrado Communications Inc., PS Docket No. 07-114, at 6 (Jan. 19, 2011) (“Intrado Comments”).

undertakings.<sup>28</sup> This is no small undertaking, as continual updating of maps is necessary to ensure accuracy.

As ATIS correctly explained in its comments, “[r]equiring industry to develop a capability that is not useful in the PSAP would clearly be unreasonable.”<sup>29</sup> The record demonstrates that even today, not all PSAPs are properly equipped to receive location information. Indeed, a recent survey conducted by the National Emergency Number Association (“NENA”) revealed that many states contain large geographic areas that are not Phase II ready.<sup>30</sup> Further, various commenters from St. Louis County, Missouri note that the county is still in the process of obtaining the software and hardware needed to properly outfit its PSAPs.<sup>31</sup> Imposition of additional requirements on the wireless industry will have no practical benefit if PSAPs are not equipped to work with the information provided; accordingly, the Commission also should take steps to promote PSAP readiness. It is key that the Commission’s E911 efforts are focused on ensuring that all parties responsible for achieving location accuracy are taking the measures necessary to improve their technology. As the Commission does on other public safety issues, it should engage the relevant federal and state entities responsible for PSAPs to address technical and operational readiness as the new location accuracy rules are implemented.

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<sup>28</sup>

*Id.*

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ATIS Comments at 9.

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National Emergency Number Association, United States E9-1-1 Deployment, <http://nena.ddti.net/Documents/NENA%20Wireless%20E911%20deployment%20map.pdf> (October 28, 2010).

<sup>31</sup>

*See, e.g.*, Comments of the St. Louis County Municipal League, PS Docket No. 07-114 (Jan. 7, 2011) (“We are currently investigating the software and hardware needed to properly outfit PSAPs, using voter approved funds.”).

#### **IV. THE USE OF UNAUTHORIZED SIGNAL BOOSTERS IS EXTREMELY HARMFUL TO WIRELESS CALLING, INCLUDING 911 CALLS.**

In its Comments, Wilson Electronics suggests that mobile signal boosters improve E911 location accuracy and asks that the Commission undertake efforts to promote their use.<sup>32</sup> The Commission should reject this argument. Indeed, as noted by AT&T in its comments, “the harmful interference caused by the illegal sale, marketing, and use of unauthorized signal boosters degrades and blocks 911 calls.”<sup>33</sup> Because the unauthorized use of signal boosters results in harmful interference to wireless calling, including 911 calls, their use risks undermining the goals of this proceeding.

In the Commission’s ongoing proceeding regarding signal boosters, CTIA and others have called for the Commission to promptly enforce its existing rules, which dictate that such devices be operated only by FCC licensees or with the consent of Commission licensees. The Communications Act mandates that transmitting equipment operating on licensed spectrum be licensed by the Commission.<sup>34</sup> Commission rules require a CMRS licensee to maintain control over all devices operating on its network.<sup>35</sup>

The detrimental impact of unauthorized signal booster use on wireless calling, including calls to 911, is well-documented. For example, AT&T recorded 83 separate interference incidents caused by signal boosters in south Florida alone,<sup>36</sup> while Verizon Wireless logged 71

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<sup>32</sup> See Wilson Comments.

<sup>33</sup> AT&T Comments at 14.

<sup>34</sup> See 47 U.S.C. § 301.

<sup>35</sup> See 47 C.F.R. § 22.927.

<sup>36</sup> Letter from Jeanine Poltronieri, AT&T to Marlene Dortch, Federal Communications Commission, WT Docket No. 10-4, at 2 (May 28, 2010) (“AT&T May 2010 Booster Ex Parte Letter”).

reported interference events in the Pacific Northwest region, the vast majority of which were caused by unauthorized signal boosters, including many incidents caused by mobile signal boosters.<sup>37</sup> The Massachusetts State Police recorded 54 signal booster interference events prior to filing comments to the Commission in February 2010.<sup>38</sup> In fact, several public safety agencies, including the Association of Public-Safety Communications Officials-International, have expressed frustration regarding the difficulty of resolving interference incidents caused by unauthorized signal booster operation.<sup>39</sup> And, as NENA has noted, it is clear that this “can be a significant source of interference that impairs public safety networks and commercial wireless networks used for emergency 9-1-1 calls.”<sup>40</sup>

In its comments, Wilson argues that “[w]ell-designed mobile signal boosters, such as those sold by Wilson, will improve E911 location accuracy” and that the application of technical standards prohibiting the use of “poorly-designed” signal boosters can enhance wireless E911 calling systems.<sup>41</sup> As an initial matter, any time a device operates as an intermediary between a wireless handset and the network, there is a risk that data transmitted by the handset will not be

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<sup>37</sup> Comments of Verizon Wireless, WT Docket No. 10-4, at 7 (Feb. 4, 2010) (“Verizon Wireless Signal Booster Comments”).

<sup>38</sup> Comments of the Massachusetts State Police, WT Docket No. 10-4, at 1 (Feb. 4, 2010).

<sup>39</sup> See Comments of Association of Public-Safety Communications Officials-International, WT Docket No. 10-4, at 2 (“Many public safety agencies have been frustrated by interference from unauthorized signal boosters, and the difficulty of locating the interfering devices.”); Comments of the County of San Bernardino Information Services Department Telecommunications Services Division, WT Docket No. 10-4, at 1 (Feb. 5, 2010) (“Fortunately, in this case, the owner was cooperative and turned the system off when confronted with the reality that they were disrupting radio communications for police and fire agencies. Approximately 80 hours of staff time was expended in first identifying the source, and then working with the homeowner to solve the problem.”).

<sup>40</sup> Comments of the National Emergency Number Association, WT Docket No. 10-4, at 1 (Feb. 5, 2010).

<sup>41</sup> Wilson Comments at 8, 10.

relayed properly. And with regard to interference, “[t]he harmful interference caused by signal boosters cannot be remedied solely by better technology or the creation of additional certification processes.”<sup>42</sup> In fact, Verizon Wireless has found that “[t]he features Wilson touts as means of preventing interference do not reliably work,” citing to at least four interference incidents caused by Wilson bi-directional amplifiers using “Smart Tech” technology.<sup>43</sup> AT&T also experienced interference to its network caused by a Wilson broadband signal booster being used to amplify frequencies licensed to Verizon Wireless.<sup>44</sup> It is clear, therefore, that the Commission must reject Wilson’s argument that properly-designed mobile signal boosters can promote the FCC’s E911 policies and should be permitted. Instead, the Commission should affirm that signal booster use is only authorized when conducted by a licensee or with licensee consent.

Further, signal boosters may also decrease the effectiveness of E911 accuracy for the person being served by a booster.<sup>45</sup> AT&T and other carriers employ Uplink Time Difference of Arrival (“U-TDOA”) as their network-based E911 positioning technology, and AT&T has determined that handsets operating with signal boosters transmit inaccurate timing information to Location Measurement Units relative to the original handset signal.<sup>46</sup> The result is that inaccurate location estimates “can be skewed by as much as thousands of meters.”<sup>47</sup> AT&T further notes that for boosters it installs or sanctions, AT&T has established engineering guidelines that limit signal booster operation to applications where the distance between the

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<sup>42</sup> AT&T May 2010 Booster Ex Parte Letter at n. 2.

<sup>43</sup> Verizon Wireless Signal Booster Comments at 14.

<sup>44</sup> AT&T May 2010 Booster Ex Parte Letter at n. 34.

<sup>45</sup> AT&T Comments at 15.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

booster and the handset is no more than 100 meters.<sup>48</sup> These efforts further demonstrate the danger of unauthorized signal booster use, particularly mobile boosters, to E911 location accuracy and will make it impossible for wireless carriers to engineer their networks to provide the location accuracy required by the Commission's rules.

Finally, CTIA notes that the Commission's recent actions with regard to wireless jamming devices underscores the threat posed by unauthorized signal booster operation. While signal boosters and cellular jammers have different purposes, they can cause the same catastrophic result: harmful interference to wireless communications, including calls to 911. The Enforcement Bureau recently announced new efforts to step up education and enforcement efforts against cell phone and GPS jamming, noting that such devices could prevent 911 calls and block critical public safety and emergency communications.<sup>49</sup> Similarly, GPS jammers can "disable the E911 function in certain cell phones that allows emergency services to home in on 9-1-1 callers who are injured or otherwise unable to provide their location."<sup>50</sup> Rejection of Wilson's arguments regarding unauthorized signal boosters is therefore consistent with the Commission's broader policy of prohibiting devices that block calls or cause harmful interference to authorized wireless communications and the Communications Act's mandate that no person "cause interference to any radio communications of any station licensed or authorized by or under [the Communications Act] or operated by the United States Government."<sup>51</sup>

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<sup>48</sup> *Id.*

<sup>49</sup> FCC Enforcement Bureau Steps Up Education and Enforcement Efforts Against Cellphone and GPS Jamming, Public Notice (Feb. 9, 2011).

<sup>50</sup> "Jammin' – A Hit for Bob Marley, A Miss for Communications," posting of Michele Ellison to the Official Blog of the Federal Communications Commission (Feb. 9, 2011), <http://reboot.fcc.gov/blog?entryId=1255443>.

<sup>51</sup> 47 U.S.C. § 333.

## V. CONCLUSION

CTIA and its members remain supportive of the Commission's efforts to strengthen E911 location accuracy. However, given that the Commission has only recently adopted new location accuracy standards, the risks outweigh the benefits of imposing additional requirements at this time. CTIA instead encourages the Commission to take other steps to promote location accuracy including convening a stakeholder group on E911 issues, engaging PSAPs to ensure their E911 readiness, and taking action against the unauthorized use of signal boosters that inhibit 911 calling and E911 location accuracy.

Respectfully submitted,

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