

**Before The
Federal Communications Commission
Washington, DC 20554**

In the Matter of)
Wireless E911 Location Accuracy Requirements) **PS Docket No. 07-114**
)
)

**INITIAL COMMENTS OF
TELECOMMUNICATION SYSTEMS, INC.**

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TELECOMMUNICATION SYSTEMS, INC.**

TeleCommunication Systems, Inc. (“TCS”) hereby submits its initial comments in response to the Public Notice (“Notice”) released by the Federal Communications Commission (“Commission” or “FCC”) in the above-referenced proceeding.¹ The Notice seeks comments on the proposals outlined in a series of industry *ex parte* filings that attempt to resolve various issues involved with setting appropriate location accuracy standards for wireless E911 calls.² This matter is timely because the FCC has recently regained this matter from the D.C. Circuit Court.³

First, TCS notes that members of the public service community as well as the wireless carriers deserve substantial credit for their willingness to tackle the important and complex issues involved in setting meaningful and achievable E911 location accuracy standards. The differences in network technologies, business plans, handset capabilities, the topography calls are initiated from, and a variety of other issues make the crafting of measurable standards a formidable task. The progress noted in the *ex parte* filings testifies to the skill, tenacity, and public service spirit of all those involved in the discussions.

¹*Public Notice in Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, (Released September 22, 2008) (“Notice”)

² On July 14, 2008, the Association of Public-Safety Communications Officials, International (APCO) and the National Emergency Number Association (NENA) filed an *ex parte* letter in PS Docket No. 07-14 addressing handset-based and network-based location accuracy criteria. Other *ex parte* filings soon followed: NENA, APCO, and Verizon Wireless on August 20, 2008; NENA, APCO and Sprint Nextel Corporation on August 21, 2008; NENA, APCO, and AT&T Mobility on August 25, 2008; and on September 5, 2008 AT&T filed a supplement to its original letter. *Notice* at pp. 1-2.

³ *Motion of Federal Communications Commission for Voluntary Remand and Vacatur, Rural Cellular Association and T-Mobile et al v. Federal Communications Commission and United States of America*, No. 08-1069 (D.C. Cir. July 31, 2008). On September 17, 2008, the Court granted the Commission’s request. Order Granting Mot. Rem. (Sept. 17, 2008).

Second, it is clear that while the task is not complete, all parties are seeking the same outcome, reliable location information for wireless E911 calls. While TCS enthusiastically shares this goal, it is concerned that efforts to enforce accuracy standards based primarily on an administrative benchmark may lead to the inefficient distribution of scarce resources and limited capital, and may subject wireless carriers to inappropriate or erroneous non-compliance determinations. As an alternative, TCS suggests that the Commission reject the unspoken mandate to require extensive initial baseline ground truth testing⁴ and examine the benefits of using horizontal uncertainty⁵ (“HUNC”) as the initial and primary criteria for meeting location accuracy standards and the location information provided to Public Service Answering Points (“PSAPs”). It is TCS’s belief that HUNC will provide PSAPs with useful and reliable E911 location information quickly and cost effectively while simultaneously allowing wireless carriers to focus their expenditures on improving location technology rather than on expensive ground truth testing to demonstrate the accuracy of deployed technologies.

It should be noted that the parties to this proceeding have acknowledged the value of HUNC. In several of the *ex parte* filings, there have been proposals to provide confidence and uncertainty data on a per call basis to PSAPs, and to use ongoing HUNC

⁴ Ground truth testing is a process of comparing GPS location information with carrier network based location information so as to gage the accuracy of the latter.

⁵ A publication for the National Geodetic Survey offer this definition of ‘horizontal uncertainty’ (using a 95% confidence level): “The reporting standard in the horizontal component is the radius of a circle of uncertainty, such that the true or theoretical location of the point falls within that circle 95-percent of the time.” *NOAA Draft Guidelines for Geospatial Positioning Using GPS* (published June 10, 2001), at p. 5. <http://www.ngs.noaa.gov/PROJECTS/GPSmanual/GPSguide.pdf> An additional discussion of uncertainty and its use in wireless networks can be found in the NENA “Wireless Location Accuracy Issues” white paper published November 18, 2005 and located on the NENA website at: <http://www.nena.org/media/File/FinalDoTWhitePaperonWirelessLocationAccuracyIssues.pdf> .The terms “horizontal uncertainty,” “location accuracy,” and “confidence and uncertainty” are used interchangeably.

trending as a substitute for repeated ground testing.⁶ TCS's suggestion is to move HUNC to the forefront as the solution of choice for measuring initial location accuracy compliance. Should a carrier not be able to meet a benchmark, then ground truth testing could be used for secondary qualification, if necessary. TCS acknowledges the significant contributions of other vendors in this discussion.⁷

The ultimate goal of deploying quality location technologies is to provide an accurate location fix for every 9-1-1 call. Unfortunately, the practical limitations of current wireless location technology make attaining this goal a long process. Moving from a presumably nationwide measure of location accuracy to a County level measure is clearly meant to positively advance this process. But by putting the emphasis on smaller geographies, a question arises about how to measure whether wireless carriers are meeting the mandated accuracy at the County geographic level.

There are many advantages to using HUNC to measure location accuracy for this purpose: 1) the currently negotiated industry location parameters outlined in the *ex parte* filings, such as implementation timelines, could be retained or even simplified; 2) most PSAPs so equipped⁸ are already receiving HUNC; 3) a robust and almost 100% complete database of relevant E911 calls with HUNC could be collected over a test period (for further analysis); and 4) HUNC holds the promise of being a more economical approach than an industry-wide endless ground testing regime. Over time, HUNC analysis would focus network refinements on those areas where actual E911 calls with sub-optimal

⁶ July 14, 2008 *Ex Parte* of NENA and APCO, at p. 2; August 25, 2008 *Ex Parte* of NENA, APCO, and AT&T Mobility at p. 4; and September 9, 2008 *Ex Parte* letter of NENA and APCO at p. 2.

⁷ *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114; *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, *Ex Parte* Filing of True Position, Inc., September 11, 2008,

⁸ Assuming, of course, that relevant carriers are providing horizontal confidence information, and there are no issues with LECs or other parties passing the data to the PSAPs.

location accuracy are being made, and this, in turn, will lead more to greater E911 location accuracy than would other approaches. Equally as important, PSAPs would gain experience and confidence in the HUNC scheme so as to make better dispatching decisions on every E911 call, thus more quickly increasing responsiveness and public satisfaction with the E911 system.

Unfortunately, the lack of experience with HUNC is one of the major factors that has impeded its prominence in this application, and TCS is mindful that further cooperative study is absolutely necessary for all parties to take full advantage of HUNC technology. For example, setting a confidence interval is vital to the analysis of HUNC data. Also, a waiver process for carriers with unique circumstances or technological challenges, akin to what has already been discussed in the *ex partes*, should be retained in any final plan. TCS's suggests that the industry taskforce contemplated by several of the *ex parte* commenters would be an excellent vehicle for refinement of the HUNC standards.⁹

In some ways, this recommendation is a return to methods already suggested by the Commission. The value of statistical analysis in determining location accuracy was recommended with the FCC's E911 testing guidelines.¹⁰ This plan notes a preference for using wireless 911 call information, if available.¹¹ TCS suggests it is appropriate to return to this principle and gain "confidence in uncertainty".

⁹ July 14, 2008 *Ex Parte* of NENA and APCO at p. 2, and August 25, 2008 *Ex Parte* of NENA, APCO, and AT&T Mobility at p. 3 suggesting an "E911 Technical Advisory Group" to explore update accuracy methods, in addition to other issues.

¹⁰ OET BULLETIN No. 71, *Guidelines for Testing and Verifying the Accuracy of Wireless E911 Location Systems* (Office of Engineering Technology published April 12, 2000) ("Guidelines")

http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet71/oet71.doc

¹¹ *Guidelines* at p. 2.

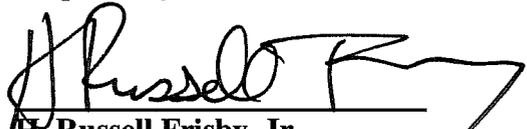
Conclusion

In summary, the FCC should address the issues raised by the various *ex parte* filings in this case by accepting them as an important first step in a plan to adopt horizontal uncertainty technologies for the development of wireless carrier E911 location accuracy rules. HUNC provides a cost effective market-based solution for carriers while potentially giving PSAPs useful information about caller locations on every E911 call received. The enthusiasm and determination already displayed by the parties to this proceeding, if focused on the task of collecting and analyzing HUNC measurements, would quickly lead to a “win-win” HUNC scenario for the public service community, carriers, and wireless E911 callers.

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Respectfully submitted,


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