Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amending the Definition of Interconnected VoIP Service in Section 9.3 of the Commission's Rules	)	GN Docket No. 11-117
	)	PS Docket No. 07-114
Wireless E911 Location Accuracy Requirements	)	WC Docket No. 05-196
	)	
E911 Requirements for IP-Enabled Service Providers	)	

REPLY COMMENTS OF
COMMLABS, INC.

Commlabs, Inc. ("Commlabs"), by its attorneys and pursuant to Section 1.415 of the Commission's rules, 47 C.F.R. §1.415, hereby submits its reply comments in response to the comments that were filed addressing the above-captioned proceeding.[1]

Commlabs is one of several companies that are developing near term technical solutions to the problem of securing accurate location information for individuals in indoor environments that use wireless devices to contact E911 emergency services. Commlabs has already constructed a prototype multilateration network in the San Francisco Bay Area and is finalizing arrangements to construct additional networks in numerous other major cities. Commlabs is also working with major carriers, handset and chip manufacturers, and the public safety community on the implementation and adoption of its position location service.

[1] *See Amending the Definition of Interconnected VoIP Service in Section 9.3 of the Commission's Rules,* GN Docket No. 11-117, *Wireless E911 Location Accuracy Requirements;* PS Docket No. 07-114, *E911 Requirements for IP-Enabled Service Providers,* WC Docket No. 05-196, Notice of Proposed Rulemaking, Third Report and Order, and Second Further Notice of Proposed Rulemaking, FCC 11-107 (July 13, 2011) ("*Second FNPRM*").

The Commission's ongoing attention to the E911 indoor location accuracy problem is perhaps the single most effective driver in maintaining the focus of the wireless industry on implementing a solution to this major public safety concern. Commlabs therefore urges the Commission to continue its efforts in this area by initiating the next step in the development of regulatory requirements for indoor wireless location capabilities.

I. THE COMMISSION SHOULD HEED THE CONTINUED URGING OF THE PUBLIC SAFETY COMMUNITY TO MOVE FORWARD WITH THE DEVELOPMENT OF INDOOR LOCATION ACCURACY REQUIREMENTS

The comments that were filed in response to the *Second FNPRM* reflect a continuing divide between the public safety community and wireless carriers regarding whether it is necessary for the Commission to adopt indoor location accuracy standards and testing rules to ensure the long term efficacy of E911 emergency services. As emphasized by a coalition of public safety leaders, "[t]he gap in the Commission's current rules between outdoor and indoor location requirements creates a large and real risk that the location of 911 callers is not available to large portions of the population and emergency responders. . . . It is vital that the Commission pursue without delay indoor accuracy rules and protocols to ensure compliance."[2]

In contrast, some within the wireless industry apparently still hold to the position that the indoor location problem is insubstantial or, at least, unproven. For example, TeleCommunication Systems, Inc. argued that "it is not currently possible to automatically determine whether an E9-1-1 call is made from an indoor or outdoor location. Thus, the

[2] Comments of the International Association of Chiefs of Police, International Association of Fire Chiefs, National Sheriffs' Association, Joint National EMS Leadership Conference, Docket Nos. 11-117, 05-196 & 07-114, at 2 (Oct. 3, 2011).

magnitude of any potential indoor location accuracy problem is hard to estimate."[3] AT&T similarly asserts that "[t]he Commission should not impose any new specific testing regulations before it has been shown that the technical and practical constraints have been addressed and that the burden of imposing such regulations is justified by proven public safety benefits."[4]

The Commission, however, has already concluded that indoor E911 location accuracy is needed and some form of verification testing is required to ensure compliance. As the Commission explained in its *Second FNPRM*, "we consider indoor location accuracy to be a significant public safety concern that *requires* development of indoor technical solutions and testing methodologies to verify the effectiveness of such solutions.[5]

Given the Commission's conclusion in this regard, and the seriousness of the public safety concern, no appreciable value would be achieved by attempting to ascertain the specific percentage of emergency E911 calls that are made using wireless handsets from indoor locations, or the rate at which the percentage of such calls is increasing. Instead, it is sufficient to conclude that the scope of the problem is substantial and growing, and it poses a legitimate threat to public safety. Indeed, although some respondents note the lack of indoor calling data, no party challenges the fact that indoor wireless calling represents a substantial portion of call volume and that the portion is rapidly expanding. The major leadership organizations in the public safety community have also reached this conclusion and the Commission has agreed.

Commlabs therefore urges the Commission to initiate without delay the next step in the regulatory development process. Specifically, the Commission – directly or through its re-

[3] *Comments of TeleCommunication Systems, Inc.*, Docket Nos. 11-117, 05-196 & 07-114, at 12 (Oct. 3, 2011).

[4] *Comments of AT&T Inc.*, Docket Nos. 11-117, 05-196 & 07-114, at 7 (Oct. 3, 2011).

[5] *Second FNPRM*, ¶ 86 (*emphasis added*).

chartered Communications Security, Reliability, and Interoperability Council ("CSRIC III") – should focus on the questions pertinent to the development and implementation of indoor location accuracy capabilities. These questions include:

- whether the indoor requirements will mirror outdoor requirements,
- whether minimum yield requirements will be imposed,
- whether elevation accuracy will be required,
- whether indoor accuracy compliance will be on a county, PSAP or other basis,
- whether rules will be phased in by geography or population density, and
- whether the rules will also be phased in by gradually tightening the required accuracy and yield over time.

Resolution of these questions may require substantial study and deliberation before rules for indoor location accuracy can be adopted. Therefore, even though technical issues continue to exist with respect to implementing indoor location accuracy capabilities, efforts by the wireless industry to address these issues should take place concurrently with the Commission's deliberative process. The Commission can also help to facilitate the development and deployment of technical solutions for indoor location accuracy by adopting regulations in the near term that embody the Commission's goals and expectations for the future.

The Commission should move forward with the development of indoor location accuracy requirements in one of two manners. Optimally, the Commission could adopt a third further notice of proposed rulemaking seeking comment on the appropriate framework for indoor location accuracy rules. Alternatively, the Commission could refer such questions to CSRIC Working Group 3 with instructions to investigate and report back on the specific requirements that would adequately address the needs of public safety and an anticipated timeline for developing and deploying technologies that can satisfy the requirements.[6]

[6] The Commission could submit its further questions to Working Group 3 as a replacement for questions that are currently assigned to Working Group 3, but have become arguably less relevant in light of conclusions already reached by the Commission. For example, the Working Group 3

It is unlikely that the CSRIC Working Group 3 will address the questions listed above on indoor location accuracy without specific instructions from the Commission to do so. Given the inherent nature of the federal advisory committee process, CSRIC Working Group 3 is unlikely to reach significantly beyond the description of work to which it was assigned. Although that description of work includes a number of questions regarding indoor location accuracy, all of the questions focus on methods for testing of indoor location capabilities, and none dealt with the questions noted above nor sought recommendations on indoor location accuracy standards which would address the needs of the public safety community. This omission is arguably unfortunate given the specific request of the CSRIC II Final Report that an "in-depth analysis of Z-height capability" in indoor environments should be conducted.[7] It is also unfortunate given the ongoing and strongly articulated need of the public safety community for improved indoor location accuracy and Phase II location yield in indoor environments.

Absent such a referral, the Commission should address these questions directly through the issuance of a third further notice that is focused on these issues. Further, if the Commission does decide to issue a third further notice, the Commission should not wait until the completion of the Working Group 3 study process before seeking specific comment on indoor location accuracy requirements.

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description of work includes instructions to verify whether the Commission's Public Safety and Homeland Security Bureau has been presented with reliable statistics on the percentage of 911 calls that are made indoors, the number of emergency calls that are placed within different types of indoor structures, and their displacement within the structure. Given the conclusions that have already been made by the Commission regarding the significance of the problem and the need for a solution, the resources of Working Group 3 could arguably be better spent on other issues.

[7] Final Report of Working Group 4C, Technical Options for E9-1-1 Location Accuracy, Communications Security, Reliability, and Interoperability Council at 28, dated March 14, 2011.

II. THE COMMISSION SHOULD MOVE FORWARD WITH THE DEVELOPMENT OF INDOOR LOCATION ACCURACY RULES CONCURRENT WITH THE CSRIC III STUDY PROCESS

Numerous parties in this proceeding, including carriers and public safety organizations, have expressed support for the Commission's decision in the *Second FNPRM* to seek guidance from CSRIC on technical recommendations for testing of E911 location accuracy in indoor environments.[8] The CSRIC's Working Group 3 is scheduled to report back to the Commission on possible methods for indoor location accuracy testing on June 6, 2012.

As discussed above, however, there are important measures that the Commission should undertake concurrent with the Working Group 3 efforts to ensure that the Commission is able to utilize the information that will be provided by the new CSRIC report in a prompt and effective manner, including developing and adopting specific requirements for indoor location accuracy.

No reason exists for the Commission to wait for the completion of the CSRIC Working Group 3 report on indoor testing methodologies before addressing these questions. Granted, the Working Group 3 report will likely be informative and highly relevant to the overall process. Given the limited time that is available to Working Group 3 to complete its investigation, however, it is likely that much of the information that will be provided in the report will not deviate significantly from the information that has already been made available though recent

[8] *See, e.g., Comments of APCO* International, Docket Nos. 11-117, 05-196 & 07-114, at 8 (Oct. 3, 2011) ("*APCO Comments*"); *Comments of CTIA – The Wireless Association*, Docket Nos. 11-117, 05-196 & 07-114, at 1-4 (Oct. 3, 2011); *Comments of Motorola Mobility, Inc.*, Docket Nos. 11-117, 05-196 & 07-114, at 9 (Oct. 3, 2011) ("*Motorola Comments*"); *Comments of Sprint Nextel Corporation*, Docket Nos. 11-117, 05-196 & 07-114, at 9 (Oct. 3, 2011); *Comments of the Telecommunications Industry Association*, Docket Nos. 11-117, 05-196 & 07-114, at 11 (Oct. 3, 2011); *Comments of Qualcomm* Incorporation, Docket Nos. 11-117, 05-196 & 07-114, at 10-11 (Oct. 3, 2011); Comments *of Verizon and Verizon Wireless*, Docket Nos. 11-117, 05-196 & 07-114, at 28 (Oct. 3, 2011) ("Verizon Comments").

studies by other industry organizations, many of which are compromised of the same member companies, and even the same individuals, that are preparing the CSRIC Working Group 3 report.

For example, the Alliance for Telecommunications Industry Solutions ("ATIS") recommended in its comments that, rather than require wide scale indoor testing, verification should be conducted through "testing of representative samples of indoor environments" including different "classes of buildings in the test area."[9] In recommending such an approach, ATIS referenced detailed guidelines that were developed by its member companies through a rigorous study process, which resulted in the publication of the ATIS paper, *Approaches to Wireless E9-1-1 Indoor Location Performance Testing*.[10] The ATIS paper recommends the use of "empirical testing methods" by first establishing the "environment or morphology" of a tested area (*i.e.*, "sky visibility, building height, building construction type and material, density of neighboring buildings, as well as cell site densities and their relative geometries") and then conducting representative testing, the results of which "can be extrapolated to local indoor environments with similar characteristics."[11]

Other parties have also express support for such an approach. APCO referenced the ATIS guidelines in its comments and encouraged the Commission to consider their use.[12] Verizon also argued that "it makes more sense to measure indoor accuracy based on representative locations," noting that carriers "can apply accuracy metrics and results for

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[9] *Comments of the Alliance for Telecommunications Industry Solutions*, Docket Nos. 11-117, 05-196 & 07-114, at 6 (Oct. 3, 2011)

[10] *Approaches to Wireless E9-1-1 Indoor Location Performance Testing*, ATIS-0500013 (Feb. 2010).

[11] *Id.* at 6-7.

[12] *See APCO Comments* at 8.

representative indoor environments universally across jurisdictions, without the need for costly and time-consuming testing."[13]

Given these converging views, it is likely that the report of Working Group 3 will focus significant attention on an approach that involves some form of empirical testing using representative test locations. Such an outcome appears to be facilitated by the description of work for Working Group 3, which requests guidance on whether the Commission should "establish a set of typical indoor scenarios and test each handset model, or class, in one or more model environments?"[14]

Again, in making these observations regarding the Working Group 3 study process, Commlabs is not suggesting that the June 6, 2012 report may be unimportant. Commlabs fully supports the CSRIC study process and recognizes that achieving industry consensus regarding testing methodologies that are technically achievable (and economically feasible) is an important step in the identification and implementation of one or more solutions for indoor E911 location accuracy, and the Working Group appears well on its way to achieving such a consensus.

For the reasons discussed above, however, that the Commission need not, and should not, wait until the Working Group 3 report has been published before initiating the next step in the regulatory development process. For example, regardless of the indoor verification method (or

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[13] *Verizon Comments* at 29. Others have suggested a combination of modeling and occasional indoor testing, explaining that once a statistical relationship is established for a given area "indoor accuracy can be extrapolated from the observed outdoor accuracy using the previously established statistical relationship." *Comments of TruePosition, Inc.*, Docket Nos. 11-117, 05-196 & 07-114, at 2-3 and 15 (Oct. 3, 2011). Another proposed approach would be to require carriers to conduct indoor testing on a "pilot" basis using a portion of their network coverage areas and using the test results to determine whether standards can be based on such sampling. *See Comments of the National Emergency Number Association*, Docket Nos. 11-117, 05-196 & 07-114, at 2-3 and 13 (Oct. 3, 2011).

[14] The CSRIC III, Working Group 3 description of work to be completed is available at http://transition.fcc.gov/pshs/advisory/csric3/wg-descriptions_v1.pdf.

methods) that is eventually employed (whether involving field testing, analytical modeling, statistical sampling, or some combination), the Commission must still establish the underlying indoor accuracy thresholds that will be the target of such testing, including whether the thresholds will be the same as the outdoor requirements, whether they will be more stringent, whether they must be met on an individual county or PSAP basis, and during what period of time or over what population densities they will be implemented. The Commission should initiate the process of identifying answers to these critical questions immediately either through the initiation of a third further notice or by specifically referring these questions to CSRIC Working Group 3 with a request for technical guidance on these issues.

III. CONCLUSION

The Commission has already concluded that indoor location accuracy is a significant public safety concern that requires development of technical solutions. The Commission should now move forward with the development of regulations addressing such requirements. Specifically, the Commission should adopt a third further notice seeking comment on possible indoor location accuracy requirements. Alternatively, the Commission should further task CSRIC III Working Group 3 to study and develop recommendations on these important issues.

Respectfully submitted,

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