



Federal Communications Commission  
Washington, D.C. 20554

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DA 15-433

## **Small Entity Compliance Guide**

### **Wireless E911 Location Accuracy Requirements**

*Fourth Report and Order*

**FCC No. 15-9**

**PS Docket No. 07-114**

**Released February 3, 2015**

This Guide is prepared in accordance with the requirements of Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996. It is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the new rules adopted in the above-referenced FCC rulemaking docket(s). This Guide is not intended to replace the rules and, therefore, final authority rests solely with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. This Guide may, perhaps, not apply in a particular situation based upon the circumstances, and the FCC retains the discretion to adopt approaches on a case-by-case basis that may differ from this Guide, where appropriate. Any decisions regarding a particular small entity will be based on the statute and regulations.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages. Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation; the FCC will consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or to clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

**1-888-CALL-FCC (1-888-225-5322)**

**TTY: 1-888-TELL-FCC (1-888-835-5322)**

**Fax: 1-866-418-0232**

## **Objectives of the Proceeding**

In the *Fourth Report and Order*, the Commission adopts measures designed to significantly enhance the ability of Public Safety Answering Points (PSAPs) to identify accurately the location of wireless 911 callers when the caller is located indoors, and to strengthen existing E911 location accuracy rules for outdoor as well as indoor calls. As consumers increasingly replace traditional landline telephony (*i.e.*, wireline) with wireless phones, a majority of wireless calls are now made indoors, and a majority of 911 calls are from wireless phones. Current location technology is optimized for outdoor calls, and may not work nearly as well for indoor wireless calls. A significant objective of the Commission in adopting these measures is to close the gap between the performances of outdoor versus indoors wireless 911 calls.

The rules allow sufficient time for development of applicable standards, establishment of testing mechanisms, and deployment of new location technology in both handsets and networks. Moreover, the requirements apply only to the extent that the PSAP has requested the required services and has a mechanism for recovering its costs associated with them.

The Commission gave significant weight to the “Roadmap for Improving E911 Location Accuracy” that was agreed to in November 2014 (amended January 2015) by the Association of Public Safety Communications Officials, the National Emergency Number Association, and the four national wireless commercial mobile radio service (CMRS) providers (“Amended Roadmap”), as well as the “Parallel Path for Competitive Carriers’ Improvement of E911 Location Accuracy Standards” that was submitted by the Competitive Carriers Association to address the considerations faced by the non-nationwide (regional, small, and rural) CMRS providers. At the same time, the rules incorporate “backstop” requirements derived from the Commission’s original proposals in the *Third Further Notice*.

The rules are in addition to, not a replacement of, the existing E911 location accuracy rules applicable to outdoor calls, which remain in effect.<sup>1</sup> In establishing these requirements, the Commission’s objective is that all Americans using mobile phones – whether they are calling from urban or rural areas, from indoors or outdoors – have technology that is functionally capable of providing accurate location information so that they receive the prompt support they need in times of emergency.

Finally, we note that many of the rules require covered entities to collect and submit information to the Commission. Notwithstanding the deadlines set forth below, those aspects of the rules do not become effective until the Office of Management and Budget (OMB) issues a control number for that information collection. The Commission will issue a public notice notifying the public of OMB action, and of the date on which the information collection aspects of the rules will become effective assuming OMB approval.

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<sup>1</sup> 47 C.F.R. § 20.18(h).

## **Key Definitions**

*Dispatchable location:* A location delivered to the PSAP by the CMRS provider with a 911 call that consists of the street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party. The street address of the calling party must be validated and, to the extent possible, corroborated against other location information prior to delivery of dispatchable location information by the CMRS provider to the PSAP.

*Media Access Control (MAC) Address:* A location identifier of a Wi-Fi access point.

*National Emergency Address Database (NEAD):* A database that utilizes MAC address information to identify a dispatchable location for nearby wireless devices within the CMRS provider's coverage footprint.

*Nationwide CMRS provider:* A CMRS provider whose service extends to a majority of the population and land area of the United States.

*Non-nationwide CMRS provider:* Any CMRS provider other than a nationwide CMRS provider.

*Test Cities:* The six cities (San Francisco, Chicago, Atlanta, Denver/Front Range (Colorado), Philadelphia, and Manhattan Borough (New York City)) and surrounding geographic areas that correspond to the six geographic regions specified by the February 7, 2014 ATIS Document, "Considerations in Selecting Indoor Test Regions," for testing of indoor location technologies.

## **Steps a Small Entity Must Take to Comply With The Final Rules**

A number of the rules provide less restrictive requirements or extended compliance periods for non-nationwide CMRS providers. This summary extends only to the requirements as they apply to such non-nationwide CMRS providers.

### *Indoor Location Accuracy Standards*

Regarding horizontal location, non-nationwide CMRS providers shall provide (1) dispatchable location or (2) x/y location within 50 meters, for the following percentages of wireless 911 calls within the following timeframes, measured from the effective date of adoption of this rule:

- (1) Within 2 years: 40 percent of all wireless 911 calls.
- (2) Within 3 years: 50 percent of all wireless 911 calls.
- (3) Within 5 years or within six months of deploying a commercially-operating Voice over Long-Term Evolution (VoLTE) platform in their network, whichever is later: 70 percent of all wireless 911 calls.
- (4) Within 6 years or within one year of deploying a commercially-operating VoLTE platform in their network, whichever is later: 80 percent of all wireless 911 calls.

Regarding vertical location, non-nationwide CMRS providers shall provide vertical location information with wireless 911 calls within the following timeframes, measured from the effective date of this rule:

- (1) Within 3 years: *all* CMRS providers shall make uncompensated barometric data available to PSAPs with respect to any 911 call placed from any handset that has the capability to deliver barometric sensor information.
- (2) Within 7 years: non-nationwide CMRS providers that serve any of the top 25 cellular market areas (CMAs) must deploy either (1) dispatchable location, or (2) z-axis technology in compliance with any z-axis accuracy metric that has been approved by the Commission. In those CMAs where dispatchable location is used, non-nationwide CMRS providers must ensure that the NEAD is populated with a sufficient number of total dispatchable location reference points to equal 25 percent of the CMA population. In those CMAs where z-axis technology is used, non-nationwide CMRS providers must deploy z-axis technology to cover 80 percent of the CMA population.
- (3) Within 9 years, non-nationwide CMRS providers that serve any of the top 50 CMAs must deploy either (1) dispatchable location or (2) such z-axis technology in compliance with any z-axis accuracy metric that has been approved by the Commission.

#### *Indoor Location Accuracy Testing and Live Call Data Reporting*

CMRS providers must establish an indoor location accuracy test bed within 12 months of the rules becoming effective. Subsequently, CMRS providers must validate technologies intended for indoor location (including dispatchable location technologies and technologies that deliver horizontal and/or vertical coordinates) through an independently administered and transparent test bed process, in order for such technologies to be presumed to comply with the location accuracy requirements.

To be considered valid and compliant, the test bed must, at a minimum:

- include testing in representative indoor environments, including dense urban, urban, suburban and rural morphologies;
- test for performance attributes including location accuracy (ground truth as measured in the test bed), latency (Time to First Fix), and reliability (yield);
- make each test call (or equivalent) independent from prior calls, and base accuracy on the first location delivered after the call is initiated;
- measure yield separately for each individual indoor location morphology (dense urban, urban, suburban, and rural) in the test bed, and based upon the specific type of location technology that the provider intends to deploy in real-world areas represented by that particular morphology.
  - Providers must base the yield percentage based on the number of test calls that deliver a location in compliance with any applicable indoor location accuracy

- requirements, compared to the total number of calls that successfully connect to the testing network.
- Providers may exclude test calls that are dropped or otherwise disconnected in 10 seconds or less from calculation of the yield percentage (both the denominator and numerator).

Any CMRS providers, including non-nationwide providers, providing service in any of the Test Cities or portions thereof must collect and report aggregate data on the location technologies used for live 911 calls in those areas. Those providers shall identify and collect information regarding the location technology or technologies used for each 911 call in the reporting area during the calling period, and shall report Test City call location data on a quarterly basis to the Commission, the National Emergency Number Association, the Association of Public Safety Communications Officials, and the National Association of State 911 Administrators, with the first report due 18 months from the effective date of rules adopted in this proceeding.

For non-nationwide CMRS providers that do not provide service in any of the Test Cities or portions thereof, and thus cannot participate directly in the test bed, the test bed administrator must make the data from the test bed available to such non-nationwide CMRS providers under confidentiality requirements that will later be established by the test bed administrator. Enabling non-nationwide CMRS providers to access test data under the same confidentiality conditions as participating CMRS providers enables smaller CMRS providers to demonstrate compliance at reasonable cost.

Except as noted in the next paragraph, CMRS providers shall also provide quarterly live call data on a more granular basis that allows evaluation of the performance of individual location technologies within different morphologies (*e.g.*, dense urban, urban, suburban, rural). To the extent available, live call data shall delineate based on a per technology basis accumulated and so identified for: (1) each of the Alliance for Telecommunications Industry Solutions Emergency Services Interconnection Forum (ATIS ESIF) morphologies; (2) on a reasonable community level basis; or (3) by census block.

Non-nationwide CMRS providers that operate in a single Test City need only report live 911 call data from that city or portion thereof that they cover, while such providers operating in more than one Test City must report live 911 call data only in half of the regions (as selected by the provider). If a non-nationwide CMRS provider begins coverage in a Test City it previously did not serve, it must update its certification to reflect this change in its network and begin reporting data from the appropriate areas. All non-nationwide CMRS providers must report their Test City live call data every 6 months, beginning 18 months from when the rules become effective.

Non-nationwide CMRS providers *not* providing coverage in any of the Test Cities can satisfy the collection and reporting requirement by collecting and reporting data based on the largest county within their footprints. Further, where a non-nationwide CMRS provider serves more than one of the ATIS ESIF morphologies, it must include a sufficient number of representative counties to cover each morphology.

### *Submission of Plans and Reports*

No later than 24 months from the effective date of these rules, non-nationwide CMRS providers shall report to the Commission on their initial plans for meeting the indoor location accuracy requirements, and further shall file a progress report on implementation of indoor location accuracy requirements; these plans and reports can be submitted in the same filing in PS Docket No. 07-114. At 36 months, *all* CMRS providers shall provide additional progress reports, indicating what progress they have made consistent with their implementation plans.

For any CMRS provider participating in the development of the NEAD database, the 36-month progress report must include detail as to the implementation of the NEAD database. The four nationwide CMRS providers committed to creating and populating the NEAD in the Amended Roadmap agreement. For any CMRS provider that chooses to utilize the NEAD to comply with the Commission's requirements, prior to accessing and using the NEAD, it must certify to the Commission that it will not use the NEAD for any non-911 purpose, except as otherwise required by law. Additionally, should aspects of a CMRS provider's dispatchable location operations not be covered by the four nationwide providers' privacy and security plan for the NEAD, the provider should file an addendum to ensure that the protections outlined in the NEAD plan will cover the provider's dispatchable location transactions end-to-end.

### *Confidence and uncertainty data*

CMRS providers shall provide for all wireless 911 calls (indoor and outdoor), x- and y-axis (latitude, longitude) confidence and uncertainty information (C/U data) on a per-call basis upon the request of a PSAP. The data shall specify the caller's location with a uniform confidence level of 90 percent, and the radius in meters from the reported position also with a uniform confidence level of 90 percent. All entities responsible for transporting confidence and uncertainty between CMRS providers and PSAPs, including LECs, CLECs, owners of E911 networks, and emergency service providers, must enable the transmission of confidence and uncertainty data provided by CMRS providers to the requesting PSAP.

Upon meeting the 3-year and 6-year horizontal location benchmarks, CMRS providers shall provide with wireless 911 calls that have a dispatchable location the C/U data for the x- and y-axis (latitude, longitude) at the uniform 90 percent confidence level. Please note that the 6-year horizontal location benchmark may be extended by later VoLTE deployment by non-nationwide providers (*i.e.*, dispatchable location or x/y location within 50 meters for 80 percent of all wireless 911 calls).

### *Latency Requirements for Outdoor 911 Calls*

For outdoor calls only, the rules now require that, to be compliant, a call must provide the specified degree of location accuracy within a maximum latency period of 30 seconds, as measured from the time the user initiates the 911 call to the time the location fix appears at the location information center. The CMRS provider may elect not to include for purposes of measuring compliance any calls lasting less than 30 seconds.

## **Recordkeeping Requirements**

The rules require that all CMRS providers, including non-nationwide providers, collect and retain for two years 911 call tracking data for all wireless 911 calls placed on their networks. Specifically, they must record information on all live 911 calls, including, but not limited to, the positioning source method used to provide a location fix associated with the call, and record the confidence and uncertainty data that they provide. This information must be made available to PSAPs upon request. As noted above, these recordkeeping requirements are subject to OMB approval.

## **Internet Links**

[https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-332342A1\\_Erratum.docx](https://apps.fcc.gov/edocs_public/attachmatch/DOC-332342A1_Erratum.docx)

[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A1.docx](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A1.docx)

[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A2.docx](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A2.docx) (Wheeler Statement)

[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A3.doc](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A3.doc) (Clyburn Statement)

[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A4.docx](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A4.docx) (Rosenworcel Statement)

[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A5.docx](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A5.docx) (Pai Statement)

[https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-9A6.docx](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A6.docx) (O’Rielly Statement)