

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

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

COMMENTS OF CTIA

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CTIA submits these comments in response to the *Fourth Further Notice of Proposed Rulemaking*¹ (*Fourth FNPRM*) in the above-captioned proceeding proposing to incorporate a vertical, or z-axis, location accuracy metric of ± 3 meters into the Commission's 9-1-1 wireless location accuracy rules.

I. INTRODUCTION AND SUMMARY.

CTIA and its member companies are committed to enhancing 9-1-1 location accuracy for indoor wireless calls using the most technologically feasible and effective approach. In 2015, the Commission adopted a new framework for 9-1-1 location accuracy that would serve to leverage the increasing utility and accuracy of commercial location solutions. In particular, in the context of horizontal (x,y) location requirements, the Commission recognized that solutions already available in the wireless market and refined over the preceding decade could be harnessed to provide public safety with more accurate location information. Today, wireless providers are harnessing existing commercial technologies for 9-1-1 Device Based Hybrid (DBH) solutions that, together with technologies such as Assisted GPS (A-GPS), meet the Commission's enhanced horizontal location accuracy requirements with very positive results.

¹ *Wireless E911 Location Accuracy Requirements*, Fourth Further Notice of Proposed Rulemaking, PS Docket No. 07-114, FCC 19-20 (rel. Mar. 18, 2019) (*Fourth FNPRM*).

In the vertical location context, however, technology solutions are not similarly commercially and widely available today on the scale that horizontal location solutions were available back in 2015. Instead, the Commission's proceeding is now driving the development of wholly new vertical location solutions, as reflected in the August 2018 Z-Axis Test Bed Report. Thus, CTIA shares the Commission's view that its proposal to adopt a z-axis metric of ± 3 meters establishes a "focal point" that will help drive further testing, development, and implementation of emerging vertical location technologies that offer the promise of enhancing public safety professionals' ability to locate wireless 9-1-1 callers indoors.

As further technology development and testing remain necessary to validate that vertical location technology solutions can consistently meet the metric, as well as achieve the scalability necessary to meet the Commission's existing deployment benchmarks, CTIA's 9-1-1 Location Technologies Test Bed LLC (Test Bed) has scheduled another round of vertical location technology testing, Stage Za, for 2019. CTIA encourages participation by all vertical location vendors in Stage Za, and is hopeful that emerging vertical location technology solutions tested in Stage Za will demonstrate the ability to deliver ± 3 meters for 80 percent of wireless calls in the Test Bed across all of the test regions and morphologies. To date, however, no solutions have yet been validated to achieve this performance.

In the *Fourth FNPRM*, the Commission rightly observed that compliance is evaluated based on performance "as measured in the test bed" for z-axis technologies. In these comments, CTIA encourages the Commission to make conforming modifications to the final rules by adding the language "as measured in the test bed" at the end of the proposed Sections 20.18(i)(2)(ii)(C)&(D) to reflect this compliance regime. The Commission also asks if the z-axis metric should apply to wireless calls from all mobile devices. As discussed below, vertical

location technologies will only be capable of providing z-axis location information that meets the proposed ± 3 meter metric if the tested device has the specific capabilities necessary to support that vertical location technology.

The Commission also rightly noted that a z-axis metric more targeted than ± 3 meters is not technically feasible at this time, and it was correct to refrain from requiring that wireless providers identify the floor level derived from z-axis information when delivering vertical location information to public safety answering points (PSAPs). At this time, CTIA is not aware of any z-axis technology solutions that can produce specific floor level information. As technologies continue to evolve, new solutions may be able to provide more enhanced location information, but the Commission is right to conclude that a ± 3 meter metric would provide actionable vertical location information.

Finally, CTIA supports the Commission's proposal to recognize that z-axis data generated as part of a 9-1-1 call should only be used for 9-1-1 purposes, except as otherwise required by law. The wireless industry previously supported the Commission's position that wireless providers may only use NEAD-associated information for 9-1-1 purposes. This policy – that data derived from a wireless 9-1-1 call can only be used for 9-1-1 purposes, and not for commercial aims – should extend to z-axis location data.

By adopting the proposed ± 3 -meter z-axis metric and accompanying rules with CTIA's suggestions described herein, the Commission will advance the development of z-axis solutions that can enable wireless providers to provide public safety professionals with actionable vertical location information to respond to indoor wireless 9-1-1 calls. CTIA looks forward to Stage Za testing and continuing to work with the Commission and other stakeholders to enhance wireless 9-1-1 location accuracy.

II. THE WIRELESS INDUSTRY SHARES THE GOALS OF THE COMMISSION AND PUBLIC SAFETY TO ENHANCE WIRELESS 9-1-1 LOCATION ACCURACY THROUGH VERTICAL LOCATION TECHNOLOGIES, PARTICULARLY INDOORS.

A. The Proposal for a Z-Axis Metric of ± 3 Meters Will Help to Advance the Development of Vertical Location Technologies, But Further Testing is Necessary to Validate Technology That Can Meet the Metric.

CTIA and its member companies are committed to providing the public safety community with accurate and actionable vertical location information to respond to wireless 9-1-1 calls, especially indoors. As the Commission recognizes in the *Fourth FNPRM*, the proposed metric of ± 3 meters “establish[es] a focal point for further testing, development, and implementation of evolving z-axis location technologies.”² We share this view, but we note that further technology development and testing remain necessary to validate the ability of vertical location technology solutions to meet the proposed ± 3 meter metric, as well as the scalability necessary to meet the Commission’s deployment benchmarks.

In 2015, the Commission adopted a new framework for 9-1-1 location accuracy that would serve to leverage the increasing utility and accuracy of commercial location solutions.³ In particular, in the context of horizontal (x,y) location requirements, the Commission recognized that solutions already available in the wireless market and refined over the preceding decade could be harnessed to provide public safety with more accurate location information. In revising its horizontal location rules, the Commission emphasized that “CMRS providers will be able to choose from a variety of technology solutions that are either already commercially available or

² *Fourth FNPRM* at ¶ 10.

³ See *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, 30 FCC Rcd 1259 (2015) (*Fourth Report & Order*).

close to commercial availability....”⁴ The *Fourth Report and Order*’s process for enhancing the accuracy of horizontal location information worked as it should: the Test Bed provided an opportunity to examine and validate that new horizontal location technologies, such as device-based hybrid location solutions, can meet the Commission’s 9-1-1 location accuracy requirements.⁵ And today, wireless providers are harnessing existing commercial technologies for 9-1-1 DBH solutions that, together with technologies such as A-GPS, meet the Commission’s enhanced horizontal location accuracy requirements with very positive results.⁶

In the vertical location context, however, technology solutions are not similarly commercially and widely available today on the scale that horizontal location solutions were available back in 2015. Instead, the Commission’s proceeding is now driving the development of wholly new vertical location solutions. This reality is reflected in the August 2018 Z-Axis Test Bed Report that CTIA submitted on behalf of the nationwide wireless providers.⁷ As CTIA stated, “[w]hile Stage Z results provide support for a metric of ± 5 meters for 80% of fixes, additional testing may yield results that validate adoption of a more accurate metric.”⁸

⁴ *Fourth Report & Order* at ¶ 95. The Commission similarly recognized the import of commercial technologies in the development of dispatchable location, noting that existing technology “could be used to implement various dispatchable location solutions in the near term” and that “commercial location systems will continue to proliferate, providing additional resources that could be leveraged.” *Id.* at ¶ 62.

⁵ Press Release, *Wireless Industry Announces Development in Improving 9-1-1 Location Accuracy*, CTIA (Sept. 5, 2018), <https://www.ctia.org/news/wireless-industry-announces-development-in-improving-9-1-1-location-accuracy>.

⁶ *See id.* (“DBH solutions have produced a reliable and accurate horizontal location in various types of buildings and across all morphologies during testing”).

⁷ Letter from Scott K. Bergmann, CTIA et al., to Marlene H. Dortch, FCC, PS Docket No. 07-114 (filed Aug. 3, 2018) (CTIA Z-Axis Letter) and Attachment, 911 Location Test Bed, LLC, Report on Stage Z (Test Bed Report).

⁸ CTIA Z-Axis Letter at 6.

CTIA and the nationwide wireless providers have accelerated their plans to stand up another round of testing in 2019, Stage Za, to assess the current state of vertical location technologies for 9-1-1 calls.⁹ CTIA commends the Commission for “encourage[ing] all technology vendors that are developing potential z-axis solutions to participate in Stage Za.”¹⁰ The *Fourth FNPRM* observes that “new or emerging vertical location solutions” present the *potential* to meet the proposed metric.¹¹ These new technologies may harness capabilities within the device – for example, a barometer sensor and the ability to perform background calibration – and capabilities of device operating systems or external network elements. While CTIA is hopeful that emerging vertical location technology solutions tested in Stage Za will demonstrate the ability to deliver ± 3 meters for 80 percent of wireless calls in the Test Bed across all of the test regions and morphologies, the fact remains that no solutions have yet been validated. CTIA welcomes participation by all vertical location vendors, including those that tested in Stage Z, and expects results of Stage Za before the end of this year.¹²

The *Fourth FNPRM* also asks whether the Commission should consider “accelerating or otherwise altering the deployment timelines.”¹³ For the foregoing reasons, there is no reasonable basis to accelerate the timelines for compliance. The Commission’s proposal for a ± 3 meter metric serves as a goal for emerging vertical location technologies to strive for, but further

⁹ See Press Release, *CTIA’s 9-1-1 Location Accuracy Technologies Test Bed Opens for Additional Testing*, CTIA (Feb. 26, 2019), <https://www.ctia.org/news/ctias-9-1-1-location-accuracy-technologies-test-bed-opens-for-additional-testing> (Stage Za Announcement).

¹⁰ *Fourth FNPRM* at ¶ 20.

¹¹ *Id.* at ¶ 27.

¹² See Stage Za Announcement; see also 9-1-1 Location Technologies Test Bed Seeks Vendor Participants for 2019 Stage Za Campaign, 911 Location Technologies Test Bed LLC, http://www.911locationtestbed.org/Stage_z.html (last visited May 20, 2019).

¹³ *Fourth FNPRM* at ¶ 28.

testing remains necessary to validate such technologies. As the August 2018 Z-Axis Test Bed Report demonstrated, some z-axis technology solutions may require a barometric sensor in the device and the capability to calibrate the barometric sensor information, along with the means to transmit the z-axis data from a wireless handset to a wireless provider's 9-1-1 location solution in order to deliver such information to a PSAP.¹⁴ As Stage Za will help determine whether a ± 3 meter metric can be validated for tested technologies, CTIA does not expect that any solution can be deployed with the scale necessary any sooner than the Commission's current benchmarks require (i.e., covering 80 percent of the population of the Top 25 cellular market areas (CMAs) by April 2021).

Finally, the *Fourth FNPRM* seeks comment on whether devices provided as part of the Lifeline program will have the z-axis capability.¹⁵ CTIA appreciates the interest of the Commission, and Commissioner Starks in particular,¹⁶ in the broad distribution of innovative location technologies, such as z-axis, that will enhance public safety's ability to respond to wireless 9-1-1 calls. Although the capabilities that may be necessary to support a ± 3 -meter metric may vary across devices, CTIA expects that consumer demand for innovative location solutions, such as z-axis, will create the appropriate incentives to ensure devices with z-axis capabilities are increasingly and widely available to consumers calling 9-1-1.

¹⁴ See generally CTIA Z-Axis Letter and Test Bed Report.

¹⁵ *Fourth FNPRM* at ¶ 25.

¹⁶ See Statement of Commissioner Geoffrey Starks, FCC 19-20 (Mar. 18, 2019) (addressing the importance of location accuracy for Lifeline subscribers).

B. The *Fourth FNPRM* Appropriately Recognizes that Compliance With the Z-Axis Metric Must Be Demonstrated in the Test Bed.

The *Fourth FNPRM* is right to propose that, “[t]o certify compliance with this proposed requirement, the caller’s handset should be located within 3 meters above or below the vertical location provided by the phone for 80% of indoor wireless calls to 911, *as demonstrated in the test bed.*”¹⁷ As the *Fourth FNPRM* envisions, the proposed z-axis metric would fit into the Commission’s existing 9-1-1 vertical location accuracy compliance regime in Section 20.18 as follows: the Test Bed would validate that a given technology solution can meet the proposed z-axis metric of ± 3 meters for 80 percent of indoor wireless calls in the Test Bed, and a wireless provider would then certify that the z-axis technology in its network is deployed consistently with how it was tested in the Test Bed and that it covers 80 percent of the population of the top 25 CMAs and the top 50 CMAs in the applicable timeframes.¹⁸ In adopting the final order, the Commission should ensure the final rules reflect this approach by adding the language “as measured in the test bed” at the end of the proposed Sections 20.18(i)(2)(ii)(C)&(D), thus making explicit in the rules what is in the *Fourth FNPRM*.

The Commission also asks if the z-axis metric should apply to wireless calls from all mobile devices and notes alternatives, including that the metric could apply to mobile devices “capable of delivering barometric pressure sensor-based altitude estimates” or that the metric apply to devices manufactured after a date certain.¹⁹ Vertical location technologies will only be capable of providing z-axis location information that meets the proposed ± 3 meter metric if the tested device has the specific capabilities necessary to support that vertical location technology.

¹⁷ *Fourth FNPRM* at ¶ 11 (emphasis added).

¹⁸ *Id.* at Appendix A (proposing to amend 47 C.F.R. §§ 20.18(i)(2)(ii)(C)-(D) & 20.18(i)(2)(iii)(A)).

¹⁹ *Id.* at ¶ 14.

For example, if a z-axis technology can meet the proposed ± 3 meter metric for 80 percent of wireless calls in the Test Bed only if the tested device contains a barometric sensor of adequate quality with the ability to appropriately calibrate the barometric sensor information, then the Commission should recognize that compliance with the rule as measured in the Test Bed is met with respect to those tested devices. Thus, the Commission should not modify the proposed rules to require that all devices produce z-axis information or adopt other device-specific rules.

C. The *Fourth FNPRM* Properly Recognizes that the Proposed Z-Axis Metric Would Provide Vertical Location Information that Achieves Actionable Floor Level Accuracy.

The *Fourth FNPRM* offers a reasoned approach to the definition of floor level accuracy as part of the proposed z-axis metric: within 3 meters above or below the vertical location provided by the phone.²⁰ This is what technology vendors are striving to achieve.

The Commission was right to note that a z-axis metric more targeted than ± 3 meters is not technically feasible at this time, and similarly it was correct to refrain from requiring that wireless providers identify the floor level when reporting vertical location information.²¹ While we recognize and share public safety's desire for the most actionable information,²² CTIA is not aware of any z-axis technology solutions that can produce specific floor level information. For this reason, the Commission appropriately recognizes that a ± 3 meter metric can provide public safety with actionable vertical location information. As vertical location technologies continue

²⁰ *Id.* at ¶ 11.

²¹ *Id.* at ¶¶ 14, 19 (“We recognize that some public safety commenters urge us to adopt a 2-meter metric. ... [W]e believe it is not yet established that such a metric is technically achievable on a consistent basis, although it may become achievable in the long term as technology continues to evolve.”).

²² *See, e.g.*, Letter from Matthew Gerst, CTIA, to Marlene H. Dortch, FCC, PS Docket No. 07-114, at 1 (Mar. 5, 2019); Letter from Matthew Gerst, CTIA, to Marlene H. Dortch, FCC, PS Docket No. 07-114, at 1 (Dec. 19, 2018); Letter from Matthew Gerst, CTIA, to Marlene H. Dortch, FCC, PS Docket No. 07-114, at 2 (Oct. 1, 2018).

to evolve, CTIA expects that wireless providers will seek out and evaluate through testing any technology solutions that can provide the public safety community with the most accurate, actionable location information with wireless 9-1-1 calls.

III. LOCATION INFORMATION DERIVED FOR 9-1-1 CALLS SHOULD BE USED ONLY FOR 9-1-1 PURPOSES.

The Communications Act of 1934, as amended, recognizes that the sharing and disclosure of consumer's location information with public safety is essential to public safety's ability to respond to consumer's emergency 9-1-1 calls from wireless devices.²³ In accordance with Commission requirements, wireless providers have developed location technologies and solutions for the purpose of collecting, processing and disclosing location information of a wireless handset as part of the 9-1-1 call process. While some technologies that underlie the 9-1-1 location capability may also be used for commercial location services, CTIA shares the Commission's view that location information derived from wireless 9-1-1 calls, including z-axis location data, should be used only for 9-1-1 purposes, except as otherwise required by law.²⁴

The wireless industry supported the position in the *Fourth Report and Order* that wireless providers may only use NEAD-associated information for 9-1-1 purposes.²⁵ This policy – that data derived from a wireless 9-1-1 call can only be used for 9-1-1 purposes, and not for commercial aims – should extend to z-axis location data. Thus, CTIA supports the position that

²³ 47 U.S.C. §§ 222(d)(4)(A) & 222(f).

²⁴ See *Fourth FNPRM* ¶ 29.

²⁵ See, e.g., Letter from Thomas C. Power and Thomas K. Sawanobori of NEAD LLC, Joan Marsh of AT&T, Charles W. McKee of Sprint, Steve Sharkey of T-Mobile and William H. Johnson of Verizon, to Marlene H. Dortch, FCC, PS Docket No. 07-114, at 2-3 (filed Feb. 3, 2017) (NEAD Privacy Plan); *Wireless E911 Location Accuracy Requirements*, Memorandum Opinion and Order, 32 FCC Rcd 9699 (2017) (approving the NEAD Privacy Plan).

z-axis data generated in response to a 9-1-1 call should only be used for 9-1-1 purposes, except as otherwise required by law.

IV. CONCLUSION.

CTIA and its member companies remain committed to delivering the most accurate, actionable location information, including vertical information, to help our public safety partners respond to wireless 9-1-1 calls. CTIA believes that the Commission's proposed z-axis metric is a positive step and looks forward to Stage Za testing and continuing to work with all stakeholders to ensure the continued development of advanced technology solutions.

Respectfully submitted,

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