



PUBLIC NOTICE

**Federal Communications
Commission**
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PUBLIC SAFETY AND HOMELAND SECURITY BUREAU SEEKS COMMENT ON VERTICAL (Z-AXIS) ACCURACY METRIC PROPOSED BY THE NATIONWIDE WIRELESS CARRIERS

PS Docket No. 07-114

Comments: October 1, 2018

Reply Comments: October 11, 2018

The Public Safety and Homeland Security Bureau (Bureau) seeks comment on the vertical accuracy (z-axis) test bed report (Report),¹ submitted by CTIA on behalf of the nationwide wireless carriers (AT&T Mobility, Sprint, T-Mobile USA, and Verizon) (the Carriers), and on the Carriers' proposal for a z-axis accuracy metric submitted with the Report.² The Carriers submitted the Report and their z-axis proposal to the Commission on August 3, 2018, pursuant to the Commission's 2015 *Wireless E911 Location Accuracy Fourth Report & Order*, which required the Carriers to establish a test bed process to develop a proposed z-axis accuracy metric and to submit the proposed metric to the Commission for approval.³

¹ 9-1-1 Location Technologies Test Bed, LLC, Report on Stage Z, <https://www.fcc.gov/ecfs/filing/10803074728956> (Report).

² Letter from Scott K. Bergmann, Senior Vice President of Regulatory Affairs, CTIA, et al., to Marlene H. Dortch, Secretary, FCC (Aug. 3, 2018), <https://www.fcc.gov/ecfs/filing/10803074728956> (Cover Letter).

³ *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, 30 FCC Rcd 1259, 1304, para. 116 (2015) (*Wireless E911 Location Accuracy Fourth Report & Order*). The Commission noted that it would seek public comment on the z-axis proposal. *Id.* Section 20.18 of the Commission's rules requires that the proposed metric be "validated" by the test bed, and that the Carriers submit the metric "supported by a report of the results of such development and testing, to the Commission for approval." 47 CFR § 20.18(i)(2)(ii)(B). Section 20.18 sets several benchmarks for z-axis technology. Within six years after the effective date of adoption of the rule, nationwide Commercial Mobile Radio Service (CMRS) providers shall deploy in each of the top 25 Cellular Market Areas (CMAs) either (1) dispatchable location, or (2) z-axis technology in compliance with the metric approved by the Commission and covering 80 percent of the CMA population. 47 CFR § 20.18(i)(2)(ii)(C). Within eight years, nationwide CMRS providers shall deploy dispatchable location or such z-axis technology in the top 50 CMAs. 47 CFR § 20.18(i)(2)(ii)(D). Non-nationwide CMRS providers that serve any of the top 25 or 50 CMAs have an additional year to meet these benchmarks. 47 CFR § 20.18(i)(2)(ii)(E).

The Report, prepared by 9-1-1 Location Technologies Test Bed, LLC, the test bed administrator,⁴ describes the testing process used to assess vertical location solutions (the Report refers to this testing process as “Stage Z”) and provides the results of the testing.⁵ The Report states that two technology vendors, NextNav LLC (NextNav) and Polaris Wireless, Inc. (Polaris), participated in Stage Z to test technologies “that rely on barometric pressure sensor information from mobile wireless handsets to determine an estimated altitude of an indoor wireless 9-1-1 call.”⁶ The Report contains more detailed information on test procedures, data collected, and location accuracy test results for NextNav and Polaris.⁷ The Report also identifies issues that could be addressed by additional testing,⁸ and recommends further focus on three issues: (1) examining barometric sensor performance in a larger and more diverse sample of mobile devices; (2) developing production architectures for commercial implementation of z-axis solutions; and (3) assessing the feasibility of converting z-axis data to floor-level identification.⁹

In their cover letter submitting the Report, the Carriers propose a z-axis accuracy metric of +/- 5 meters for 80 percent of fixes from mobile devices capable of delivering barometric pressure sensor-based altitude estimates.¹⁰ The Carriers contend that “Stage Z testing did not demonstrate that more accurate results can be consistently achieved across all testing regions, morphologies, weather conditions, and devices by the August 3rd, 2018 filing deadline.”¹¹

By this Public Notice, the Bureau solicits public comment on the Report and on the Carriers’ proposed z-axis accuracy metric. The purpose of the Public Notice is to gather information that will inform the Bureau’s recommendations to the Commission concerning next steps in the development of the z-axis accuracy metric contemplated by the *Wireless E911 Location Accuracy Fourth Report & Order*. The Bureau seeks specific comment on the following issues, but also invites more general comment:

1. What are commenters’ views on the Stage Z test process and test results described in the Report?
 - a. Does the Report provide sufficient information to assess the performance of the specific vendors, location technologies, and mobile devices that were tested in Stage Z?

⁴ 9-1-1 Location Technologies Test Bed, LLC is a non-profit entity established by CTIA to administer the Commission’s location accuracy testing operations through a test bed process. See Report at 12.

⁵ Cover Letter at 1, Report at 3.

⁶ Report at 3.

⁷ *Id.* at Section 9.2 (NextNav Z-Axis location accuracy test results) and Section 9.3 (Polaris Z-Axis location accuracy test results).

⁸ *Id.* at 122.

⁹ *Id.* at 122-123.

¹⁰ Cover Letter at 4.

¹¹ *Id.*

- b. To what degree can the test data from the Report be used to assess the potential performance of vendors, location technologies, or mobile devices that were not tested?
 - c. Does the Report provide useful information regarding the likely performance of barometric sensor technologies in real world environments? Why or why not?
 - d. What is the commercial availability of the barometric sensor technologies that were tested in the Report? Are there alternative vertical location technologies that are commercially available or will be in the near term?
2. What are commenters' views on the Carriers' proposed z-axis accuracy metric of +/- 5 meters for 80 percent of fixes from mobile devices capable of delivering barometric pressure sensor-based altitude estimates?
 - a. Would the proposed z-axis accuracy metric support a sufficient level of accuracy to meet public safety E911 location needs?
 - b. If not, do commenters recommend any alternative metric(s) for the Commission to consider? To what degree are such alternatives supported by the test results in the Report or other available data?
 3. Should additional testing be conducted as part of the Commission's process for determining a z-axis accuracy metric? If so, how should such testing be configured and administered?
 - a. When should additional testing commence and how much time should be allowed for tests?
 - b. Should additional parameters (e.g., extreme weather conditions, various device types and/or various operating systems) be tested?
 - c. Should testing sites be limited to the sites used in previous Stage Z testing, or should other sites be used?
 - d. Should testing be expanded to include vertical location technologies that do not rely on barometric pressure sensors?
 4. What other information, if any, would help the Commission proceed with considering and adopting a Z-axis standard as contemplated by the *Wireless E911 Location Accuracy Fourth Report & Order*?

To facilitate review of all comments, we request that parties commenting on the Report identify the specific recommendations and findings in the Report on which they are providing comment. With respect to the Bureau's questions listed above, commenters should identify the number of the question to which they are responding.

Procedural Matters

Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document and must reference **PS Docket No. 07-114**. Comments may be filed using the FCC's Electronic Comment Filing System (ECFS). See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

Commenting parties may file comments in response to this Notice in PS Docket No. 07-114.

Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.

- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the FCC's Secretary, Office of the Secretary, Federal Communications Commission.
 - All hand-delivered or messenger-delivered paper filings for the FCC's Secretary must be delivered to FCC Headquarters at 445 12th Street, SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
 - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
 - U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington, DC 20554.

People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (tty).

Parties wishing to file materials with a claim of confidentiality should follow the procedures set forth in Section 0.459 of the Commission's rules. Casual claims of confidentiality are not accepted. Confidential submissions may not be filed via ECFS but rather should be filed with the Secretary's Office following the procedures set forth in 47 CFR § 0.459. Redacted versions of confidential submissions may be filed via ECFS. Parties are advised that the FCC looks with disfavor on claims of confidentiality for entire documents. When a claim of confidentiality is made, a public, redacted version of the document should also be filed.

The proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.¹² Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are

¹² 47 CFR §§ 1.1200 *et seq.*

deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

For further information, contact Nellie Foosaner, Attorney-Advisor, Policy and Licensing Division, Public Safety and Homeland Security Bureau, (202) 418-2925, nellie.foosaner@fcc.gov.

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