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July 31, 2017

Michael Wilhelm, Acting Division Chief
Policy and Licensing Division
Public Safety and Homeland Security Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

      Re: PS Docket No. 07-114
             Wireless E911 Location Accuracy Requirements
             Implementation Plan and Progress Report
             SI Wireless, LLC d/b/a MobileNation

Dear Mr. Wilhelm:

      Pursuant to 47 C.F.R. § 20.18(i)(4)(i)-(ii), submitted herewith on behalf of SI Wireless, LLC d/b/a MobileNation, a non-nationwide Commercial Mobile Radio Service provider, is the company's indoor location accuracy Implementation Plan and Progress Report.

      If questions arise the Commission is welcome to contact the undersigned.

                  Very truly yours,

                  Pamela L. Gist

SI Wireless, LLC d/b/a MobileNation
P.O. Box 1359
Mt. Vernon, Illinois 62864

E911 Location Accuracy Implementation Plan and Progress Report
47 C.F.R. § 20.18(i)(4)(i) and (ii)
PS Docket No. 07-114

Set forth below is SI Wireless, LLC d/b/a MobileNation's progress toward meeting compliance deadlines prescribed by the Federal Communications Commission in *Wireless E911 Location Accuracy Requirements*, Fourth Report and Order, PS Docket No. 07-114, FCC 15-9 (released Fed. 3, 2015) (*Fourth Report and Order*), and codified in 47 CFR § 20.18(i), *et seq.* Also provided is MobileNation's Implementation Plan for continuing to meet the Commission's indoor location accuracy requirements.

Progess Report

MobileNation has worked diligently and covered costs necessary to provide public safety with accurate location data for emergency callers. To date, MobileNation has timely performed its *Fourth Report and Order* location accuracy obligations and has submitted compliance documentation to the FCC by the following deadlines:

February 3, 2017

The Non-Nationwide Carrier Live 911 Call Report was submitted to the FCC in PS Docket No. 07-114, providing aggregate live 911 call data covering reporting period October through December 2016. As a non-nationwide CMRS provider that does not provide coverage in any of the six Test Cities, and in accordance with 47 CFR § 20.18(i)(3)(ii)(E), MobileNation's 911 live call data was collected and reported based on the largest county its service area footprint. The report was sent to the National Emergency Number Association (NENA), the Association of Public-Safety Communications Officials (APCO) and the National Association of State 911 Administrators (NASNA).

April 3, 2017

In accordance with 47 CFR § 20.18(i)(2)(i)(B)(1), MobileNation had begun to provide dispatchable location or x/y location information within 50 meters for 40 percent of all wireless 911 calls.

June 2, 2017

As a non-nationwide CMRS provider that does not provide coverage in any of the six Test Cities, and in accordance with 47 CFR § 20.18(i)(2)(iii), MobileNation submitted to

the FCC certification that as of April 3, 2017, it did not provide service or report live call data in one or more of the Test Cities, was providing dispatchable location or x/y location information within 50 meters for 40 percent of all wireless 911 calls, had deployed the indoor location technology or technologies used in its networks consistently with the manner in which such technologies have been tested in the test bed, and had verified based on its own live call data that it was in compliance with the two-year benchmark set forth at 47 CFR § 20.18(i)(2)(i)(B)(1).

<u>August 1, 2017</u>

MobileNation's second Non-Nationwide Carrier Live 911 Call Report was submitted to the FCC in PS Docket No. 07-114 on or before August 1, 2017, providing aggregate live 911 call data covering reporting period April through June 2017, with copies sent to NENA, APCO and NASNA.

MobileNation has adopted procedures that comply with FCC indoor accuracy requirements:

MobileNation retains for two years all testing and live call data gathered for Non-Nationwide Carrier Live 911 Call Reports, pursuant to 47 C.F.R. § 20.18(i)(3)(iii).

MobileNation delivers x- and y-axis (latitude, longitude) confidence and uncertainty (C/U) data for all wireless 911 calls - whether placed from indoors or outdoors - at the request of a Public Safety Answering Point (PSAP), on a per-call basis, with a uniform confidence level of 90 percent, per 47 CFR § 20.18(j).

MobileNation collects and retains for two years information on all wireless 911 calls placed on its network, including the positioning source method used to provide a location fix associated with the call, The data is made available to PSAPs upon request in accordance with 47 CFR § 20.18(k).

Implementation Plan

MobileNation plans to continue to meet FCC indoor location accuracy requirements of 47 CFR § 20.18, including subsections (i)(2)(i) and (i)(2)(ii), *i.e.*, horizontal and vertical location. The plan will evolve according to the capabilities and advancements of critical vendors. To this end, MobileNation utilizes the expertise of highly qualified providers of E911 technology services.

West Safety Services ("West") provides MobileNation with Location Performance Management summarized in an attachment hereto. For thirty years, West has offered the industry reliable, high-quality, voice and data and network infrastructure services. More than 1,000 organizations work with West to access over 6,000 public safety answering points (PSAPs). West helps ensure that wireless callers have unrestricted access to emergency services, regardless of their location.

MobileNation participates in West's Accuracy Compliance Testing program, wherein West performs testing, conducts test calls and updates BSA information. West's accuracy compliance testing capabilities include:

Test existing PSAP or county locations
Ensure FCC compliance and reporting
Achieve BSA optimization
Measure accuracy drive testing
Perform BSA generation and calibration
Perform BSA optimization and maintenance
Generate calibration test points

Location accuracy data reports provided by West align with ATIS' 05000031 recommendation, which provides the option to blend outdoor accuracy test data with indoor test bed data and live 9-1-1 call data. The reports weight Indoor Test Bed data from Test Bed, LLC by the reporting area's live 9-1-1 call distribution to determine a final location accuracy metric. Sector Morphology assignments are based on the greatest percentage of morphology present in a sector which is then assigned to all 9-1-1 calls from that sector. The data selected for the reporting area's 9-1-1 call distribution utilizes the best final fix for the call, which includes using the first fix when the PSAP did not perform a rebid. This data excludes known test calls. Uninitialized calls, short calls or aborted calls may be excluded in the manual report.

Looking ahead, West expects that advancements in Wireless Location Accuracy will provide cost-effective strategies to provide dispatchable addresses to PSAPs. Technologies installed by a carrier or the customer will help deliver a physical address. For example, residential femtocells provide real time geo-validation of the address and can detect femtocell movement. This dispatchable location and the X/Y location of the femtocell or handset is delivered to the PSAP and displayed on the call taker's console. Enterprise femtocells, which cover definable indoor spaces such as offices and public structures, can provide a level of accuracy comparable to wireline with a dispatchable address. Devices with GPS can reliably validate the address.

Using existing technology, geo-relevant wireless automatic location identification (ALI) provides a dispatchable location associated with the emergency caller. The ALI address data is collected from multiple sources including a user-provided address, public records databases and, potentially, a billing address. An associated nearby address (of a relative or a previously provided address) can provide PSAPs a starting point of investigation. Potentially 15-30% of all wireless 9-1-1 calls using this solution can deliver a dispatchable location.

Bluetooth Low Energy (BLE) Beacons and WiFi already exist in most new smartphones. Dedicated 9-1-1 beacons can provide highly accurate and manageable dispatchable locations. BLE beacon or WiFi addresses can be stored in the National Emergency Address Database (NEAD) and passed to the PSAP at the time of the call. Finally, "Handset Assisted Indoor Location," or "Location Fusion," is being tested in smartphones to sense satellite signals along with nearby WiFi access points and BLE beacon locations to narrow the location of callers using enabled devices. This solution blends location technologies (such as commercial location

detection used by retail stores) in a secure, always-on mode. Implementation of this technology could potentially support VoIP, Voice over Wireless LAN, VoLTE, and CDMA/UMTS voice.

MobileNation and West will work to incorporate technological advancements to deliver accurate and useful location information to emergency dispatch personnel. In keeping with FCC timelines, MobileNation expects to comply with the following requirements:

2018

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

April 3 - deliver to PSAPs either "dispatchable location" or "x/y location within 50 meters," for 50 percent of 911 calls

April 3 - provide with wireless 911 calls that have a dispatchable location, upon the request of a PSAP, x- and y-axis (latitude, longitude) confidence and uncertainty information (C/U data) on a per-call basis, specifying the caller's location and the radius in meters from the reported position with a uniform confidence level of 90 percent, per 47 CFR § 20.18(j)(2). Collect and retain the data for two years, and make the data available to PSAPs upon request, per 47 CFR § 20.18(k).

June 2 - submit 911 location accuracy certification to FCC

August 3 - deliver to PSAPs uncompensated barometric data from any handset that has the capability to deliver barometric sensor data

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

August 3 - submit implementation plan and progress report to FCC

October 2 - submit 911 location accuracy certification to FCC

2019

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

2020

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

April 3 - provide to PSAPs either "dispatchable location" or "x/y location within 50 meters," for 70 percent of 911 calls, or extend the deadline based on the timing of Voice over LTE (VoLTE) deployment in the provider's network.

June 2 - submit 911 location accuracy certification with FCC

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

2021

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

April 3 - provide to PSAPs either "dispatchable location" or "x/y location within 50 meters," for 80 percent of 911 calls, or extend the deadline based on the timing of VoLTE deployment in the provider's network.

April 3 - provide with wireless 911 calls that have a dispatchable location, upon the request of a PSAP, x- and y-axis (latitude, longitude) confidence and uncertainty information (C/U data) on a per-call basis, specifying the caller's location and the radius in meters from the reported position with a uniform confidence level of 90 percent, per 47 CFR § 20.18(j)(3). Collect and retain the data for two years, and make the data available to PSAPs upon request, per 47 CFR § 20.18(k).

June 2 - submit 911 location accuracy certification to FCC

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

2022

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

April 3 - If service is provided to any portion of the top 25 Cellular Market Areas (CMAs), deploy in that area either (1) dispatchable location, or (2) z-axis technology that achieves the Commission-approved z-axis metric:

- Where "dispatchable location" is used, populate the National Emergency Address Database (NEAD) with a total number of dispatchable location reference points in the CMA equal to 25 percent of the CMA population.

- Where z-axis technology is used, deploy z-axis technology to cover 80 percent of the CMA population.

June 2 - submit 911 location accuracy certification to FCC

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August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

2023

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

2024

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

April 3 - If service is provided to any portion of the top 50 CMAs, deploy in that area dispatchable location, or deploy z-axis technology in compliance with any accuracy metric that has been approved by the Commission.

June 2 - submit 911 location accuracy certification to FCC

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

2025

February 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

August 1 - submit live 911 call location data report to FCC, NENA, APCO and NASNA

MobileNation will continue to achieve location accuracy progress as technology permits, and it will pursue its plans in future years to enhance the safety of emergency callers inside its service area.

If additional information is required, MobileNation will be pleased to provide it upon the Commission's request.

Michael Jaksich
Chief Technical Officer

Date: 7/31/2017

West Safety Services

Executive Summary

Location Performance Management

West Safety Services' Location Performance Management (LPM) compiles and aggregates complex data sets to help proactively manage and report location accuracy and network performance. LPM arms carriers with key insights to help manage emergency 9-1-1 call locations so it is easier to identify areas for improvement.

With LPM carriers can optimize their networks to the highest accuracy and fastest time-to-first-location fix available and report compliance with accuracy requirements of the Federal Communications Commission (FCC).

LPM consists of two main modules: PERFORMANCE MONITORING TOOL and ACCURACY ANALYSIS REPORTING

LPM'S PERFORMANCE MONITORING TOOL provides a set features that enables the user to perform the following:

- Pinpoint location performance issues
- Optimize network functionality to certify and trust location performance
- Perform proactive risk management of position determination issues
- Provide reports to allow auditing key performance indicators and call results, and analyzing location server performance

LPM'S ACCURACY ANALYSIS REPORTING provides a suite of reports that enables the user to perform the following:

- Report compliance with the FCC's location accuracy rules (Drive testing calls are needed to do this)
- Increase location accuracy across the network
- Generate visual, data-rich, customizable reports
- Measure baseline accuracy results in test areas

West Safety Services' Location Performance Management tool suite also supports cellular network optimization and provides reporting data for Phase II Location Accuracy requirements set forth by the FCC's Fourth Report and Order on E9-1-1 Location Accuracy Requirements[1].

LPM provides three reports utilized to assess FCC compliance.

- **Live Call Data Report** – This report is provided on a semi-annual basis and provides Live Call Data yields by technology and morphology for any reporting county identified by MobileNation.

- **50m Accuracy Report** – This report provides data for the largest county in MobileNation's wireless network footprint. Additionally, this report weights the Indoor Test Bed data derived from Test Bed, LLC against MobileNation's live 9-1-1 call distribution within the reporting area to determine a final location accuracy metric.

- **PSAP Report** – This Report provides the total number of calls delivered to a specific Public Safety Answering Point and can be generated on demand for a given period as needed.

The compiled data aligns with ATIS' 05000031 recommendation, whereby the option is exercised to blend outdoor accuracy test data with indoor test bed data and MobileNation's live 9-1-1 call data.

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[1] PS Docket No. 07-114, Wireless E911 Location Accuracy Requirements, Fourth Report & Order.