

# JONES DAY

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June 21, 2019

## BY ELECTRONIC DELIVERY

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street S.W.  
Washington D.C. 20554

**Re: Permitted Oral *Ex Parte* Notice  
Wireless E911 Location Accuracy Requirements  
PS Docket No. 07-114**

Dear Ms. Dortch:

On June 14, 2019, representatives of NextNav, LLC (“NextNav”) participated in a meeting with Zenji Nakazawa, the Public Safety and Consumer Protection Advisor for Chairman Ajit Pai. Participating in the meeting on behalf of NextNav were Gary Parsons, Chairman; Bruce Cox, Senior Director, Regulatory & Public Safety; and the undersigned.

The primary purpose of the meeting was to emphasize the critical need for the Commission to move expeditiously in the adoption of a vertical location metric of +/-3 meters for 80% of wireless calls from z-axis capable handsets. The need to promptly adopt a 3 meter vertical metric is particularly important given the extremely poor test results that were recently documented by ATIS for the dispatchable location option using the National Emergency Address Database (“NEAD”). In order to ensure that the major wireless carriers have the ability to complete the deployment of vertical location solutions in the top 25 and 50 cellular market areas (“CMAs”) by the April 2021 and 2023 deadlines, the Commission needs to provide regulatory certainty that 3 meters is the vertical metric that must be achieved.

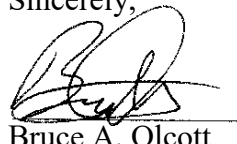
The NextNav representatives also discussed some of the mechanics of implementing a 3 meter vertical location metric. They expressed support for applying the requirement to all z-axis capable handsets, noting that barometric pressure sensors are already widely deployed in smartphones. Further, the software to calibrate these sensors can be uploaded to many smartphones as a part of an over-the-air update of the operating system. The parties also discussed the possibility of requiring that some percentage of handsets sold after the April 2021 deadline be z-axis compliant and some percentage of older handsets with barometric pressure sensors be made z-axis compliant with over-the-air updates.

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The NextNav representatives also noted the need to add a confidence and uncertainty (“C/U”) requirement for z-axis information, as highlighted by APCO. They also discussed the need to permit wireless carriers to provide z-axis data using height above ellipsoid, detailing the significant impediments that exist in converting such information into a reliable floor number. Finally, the NextNav representatives discussed the proposal of giving carriers the option to comply with the z-axis requirement by providing vertical location information for 80% of buildings in excess of 3 stories in the top 25 and 50 CMAs rather than for 80% of the population in those CMAs.

The attached presentation was distributed during the meeting and formed the basis for some of the discussion. Please contact the undersigned if you have any questions about this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce A. Olcott", written over a horizontal line.

Bruce A. Olcott

A large, light gray, stylized letter 'N' that serves as a background for the main text.

# NextNav, LLC

Position, Navigation and Timing Services

June 2019

# NextNav's Metropolitan Beacon System ("MBS")



- Overlay network dedicated to position, navigation and timing ("PNT")
  - Includes X,Y & Z axis and timing, with unique, proven floor-level vertical and horizontal accuracy
- Serves indoor and urban areas - complementary to GPS
- Wide-area coverage with unlimited capacity – can cover entire metro
- Long-range, low-cost broadcast beacons placed on cell towers and rooftops – not building specific
  - Similar to GPS in that it serves all applications
- Deployed and managed to deliver 'Mission Critical' location with multi-layer reliability and immune to GPS disruptions
  - Network & beacon redundancy
  - Battery backup to ensure continuity during power outage
  - Encrypted signal
  - Resistant to GPS outage
- Designed to be integrated into mass market devices
- Proven "best in class" in various CTIA/ATIS, FCC-sponsored trials

**MBS is essentially a network of low-cost terrestrial "satellites" broadcasting from roof-tops and towers**

# MBS Ecosystem



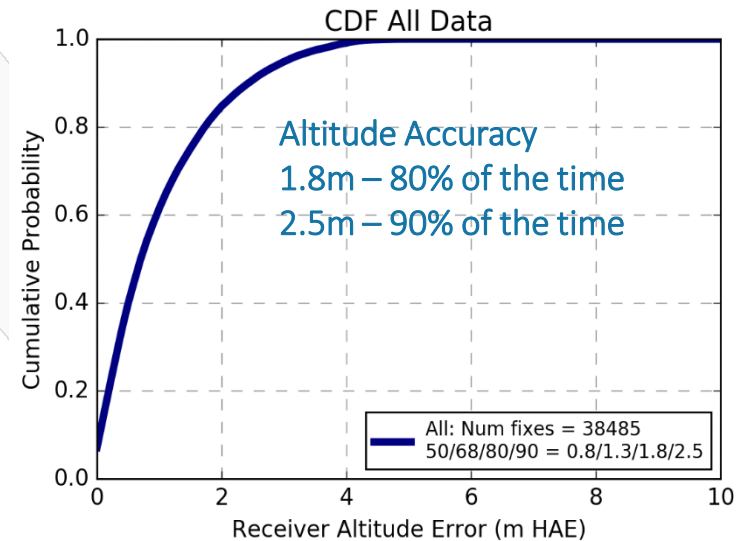
- MBS is a standards-based technology
  - Standards support in 3GPP (Rel. 13 and later) and OMA (SUPL 2.0.3)
  - CTIA OTA Test v 3.8 supports requirements for MBS
  - ICD available under FRAND terms, published with ATIS
- Technology licensed and implemented by multiple IC manufacturers
  - Licenses offered on a royalty-free basis
- Supported as another constellation on E-SMLC and SUPLC Servers; MBS capable servers developed by several Tier 1 eSMLC providers
- Leading mass-market barometric pressure sensors support altitude service
- Rhode & Schwarz test equipment supports MBS in latest software releases

# Independent Industry Validation



- MBS has undergone extensive indoor, blind independent tests both by the Government and Multiple Tier 1 US operators
- Tests conducted:
  - FCC/CSRIC tests in 2012/2013 – provided X-Y-Z results
  - CTIA/ATIS tests in Fall 2016 – validating Horizontal performance for 911 (also provided Z axis results)
  - CTIA/ATIS tests in Spring 2018 – validating Vertical performance
- Cumulatively more than 155,000 911 style test calls, spread across 300+ test points
- Commercial off-the-shelf phones were used for vertical tests, and commercial equivalent phones were used for horizontal tests
- In all tests MBS demonstrated to be best in class system that exceeded FCC's metrics on 911 and Public Safety's objective on 'Z'

*Vertical CDF Results based on latest CTIA Z-Axis Testbed*



# Vertical Location Rule – FCC Development

**FCC says wireless location rules should include vertical data. – NPRM, 1994**

**FCC proposes to require vertical data within 40 meters – FNPRM, Sept. 1996**

**NextNav demonstrates within 3 meter accuracy in CSRIC testing – CSRIC III Report, March 2013**

**FCC seeks comment on technical feasibility of vertical rule – FNPRM, Sept. 2010**

**Public safety describes “floor level” vertical data as valuable in urban conditions – CSRIC III Report, March 2013**

**Improved NextNav technology meets within 2 meter accuracy – NextNav ex parte Aug. 2013**

**FCC unanimously proposes 3 meter vertical accuracy by 2020 – 3<sup>rd</sup> FNPRM, Feb. 2014**

**Public safety calls vertical location data “imperative” – FCC E911 Workshop, Nov. 2013**

**NextNav again demonstrates within 2 meter vertical accuracy – Stage 2 test bed, Fall 2016**

**FCC adopts vertical location rule, confirms 3 meters is necessary, but does not set metric – 4<sup>th</sup> R&O, Feb. 2015**

**Carriers propose 5 meter metric, which public safety rejects – CTIA Letter, Aug. 2018**

**NextNav demonstrates within 1.8 meter vertical accuracy – Stage 2 Report, Aug. 2018**

**FCC again proposes 3 meter vertical location metric – 4<sup>th</sup> FNPRM, March 2019**

**Public safety reaffirms need for “true floor level accuracy, i.e., no more than 3 meters” – IAFF Comments, Oct. 2018**