

Verizon 3.5 GHz Experiment Proposal

1. Introduction

Verizon Communications Inc. (Verizon or the Company) is a holding company that, acting through its subsidiaries, is one of the world's leading providers of communications, information and entertainment products and services to consumers, businesses and governmental agencies. With a presence around the world, we offer voice, data and video services and solutions on our wireless and wireline networks that are designed to meet customers' demand for mobility, reliable network connectivity, security and control. We have two reportable segments, Wireless and Wireline. Our wireless business, operating as Verizon Wireless, provides voice and data services and equipment sales across the United States (U.S.) using one of the most extensive and reliable wireless networks.

2. Experiment Description

Verizon is working with partner companies to develop equipment that will use LTE technologies, using Citizens Band Radio Service (CBRS) spectrum [3550 – 3700 MHz], also known as Band 48, using 3GPP terminology. As part of the technology validation, Verizon plans to conduct a series of field tests with both category A and category B Citizen Band Service Devices (CBSDs) at one or more locations.

The purpose of the proposed tests is:

- 1) Evaluation of the radio propagation characteristics of 3.5 GHz for indoor and outdoor installations
- 2) Evaluation of end-to-end CBRS architecture
- 3) Evaluation of coexistence mechanisms with shared spectrum (GAA) and PAL spectrum
- 4) Overall evaluation of TDD-LTE using 3.5 GHz

Field tests will be conducted in highly controlled field environment, in order to assist in the development of commercial products. The testing will benefit the public interest by enabling the pre-commercial testing of new products outside of a lab environment but in a controlled and managed manner.

In addition to the product development testing described above, Verizon and partner companies intend to conduct separate and independent lab testing in a real-world environment at a Verizon facility or at a vendor's facility using specifications developed by the WINN Forum and CBRS Alliance.

This trial will consist of an aggregate of up to **8** category B CBSDs, for the trial locations. The CBSDs will use the transmission parameters and operate inside the geographic regions defined below. These tests will use base stations and user equipment operating in CBRS spectrum only or a combination of CBRS plus legacy (licensed by Verizon) spectrum.

Mobile units will also operate within the RF coverage area of the small cell devices. The tests with mobile stations will be using CBRS spectrum only or a combination of CBRS plus legacy (licensed by Verizon) spectrum.

Although the mobile devices are either prototypes or pre-commercial devices, and have not completed formal equipment authorization, the equipment used in these trials will be compliant with FCC rules, per 2nd Order Report and Order. Equipment from multiple equipment manufacturers will be used in the evaluation testing. Verizon has the ability to shut down all transmissions operated under the experimental license in the unlikely event any interference occurs.

3. Hours of operation and equipment shut down

The intent is to operate the evaluation devices, both small cells and mobile units, 24 hours per day, 7 days per week, during the test period. Equipment can be shut down speedily, if the need arises, by contacting one or more of the interference coordinators identified in the section “Interference Coordination”

4. Interference Coordination

Immediate requests to stop transmissions under this STA can be communicated to Bill Johnson, Verizon, at 210-823-5901 or by email at william.johnson@verizonwireless.com, or Mahmood Al Masqati, Verizon, at 817-357-2416 or by email at mahmood.almasqati@verizonwireless.com

5. Trial Duration

Approximately 12 months, beginning approximately on October 22nd, 2018

6. Evaluation Equipment Transmitter Information

Small cells supporting TDD-LTE will be operating with the transmitter parameters defined in the main application. Both directional and omni-directional antennas will be used with the small cell systems

Mobile devices will operate near the small cell sites with the transmitter parameters defined in Table 1. LTE mobile devices support TDD-LTE operation with an LTE uplink in band 48 (3550 – 3700 MHz) and receive in the same band.

- Up to 8 category B CBSDs using Band 48– *Outdoor installations. EIRP will strictly comply with FCC Part 96 for intended transmission bandwidths, i.e., <50dBm/20MHz.* This may require attenuation of the ERP levels, for certain transmission bandwidths, described in the main application
- Multiple mobile terminals (approximately an aggregate of up to 32 test or pre-commercial mobile terminals) will be used throughout the test areas. Mobile terminals support either band 48 (per 3GPP) only, using LTE-TDD or a combination of band 48 plus legacy bands (licensed by Verizon) in Carrier aggregation mode. Maximum transmitted power per mobile terminal = 27 dBm.