

Description of Proposed Experimental Operations

Pursuant to Sections 5.3(j) and Section 5.54(a)(1) of the Federal Communications Commission’s rules, 47 C.F.R. §§ 5.3(j) and 5.54(a)(1), Comcast CBRS, LLC (“Comcast”), a subsidiary of Comcast Cable Communications, LLC, requests authorization to conduct experimental operations under a conventional radio experimental license issued by the Commission for a term of one year commencing on March 1, 2018.

Comcast seeks authorization to conduct pre-commercial outdoor field trials in the 3650–3700 MHz Citizens Broadband Radio Service (“CBRS”) band. The field test will evaluate coverage, throughput, and mobility of equipment and facilities operating in the CBRS band to obtain data and advance Comcast’s understanding of the full potential of the technology and equipment utilized in these experimental operations. The field testing will also evaluate the performance of pre-commercial equipment in the CBRS band. To ensure full compliance with the operational restrictions in the NTIA’s 3.5 GHz exclusion zone, all experimental testing subject to this application will be limited to the 3650–3700 MHz band.

Location of Testing

Comcast will conduct outdoor and indoor fixed and mobile testing in a small targeted portion of the Philadelphia, Pennsylvania market within its service territory. Specifically, testing will be conducted within a 7 km radius of the following location:

Locality	Latitude	Longitude
Philadelphia, PA	39°56'31.3"N	75°09'32.9"W

Description of Testing

The experimental operations will [REDACTED] within the 7 km radius of the location set forth above. The first type of transmitter will consist of rooftop-mounted sectorized base stations located at current or former cell sites. The [REDACTED]. The second type of transmitter will consist of [REDACTED]. The third type of transmitter will consist of [REDACTED].

Through the use of mobile test devices and commercial handsets (i.e. “End User Equipment”), Comcast will evaluate propagation characteristics for model verification, data throughput performance, inter-cell interference, and advanced Spectrum Access System (“SAS”) functionality.

All testing will be conducted within [REDACTED].

Radio Equipment Description

The radio equipment that will be used in the proposed experiment will consist of a mix of Category A and Category B transmitters (as those terms are defined in Sections 96.3 and 96.41 of the Commission’s rules).¹ Any [REDACTED] will be a Category B transmitter with the technical characteristics shown below. Comcast will utilize lower power Category A radios mounted on [REDACTED], and Category A femto radios for [REDACTED]. All of these proposed radios are prototypes not available in the commercial market.

Comcast will utilize [REDACTED] different types of End User Equipment to receive signals from the transmitters in order to evaluate performance of the equipment described above. Specifically, Comcast will utilize the following types of End User Equipment: [REDACTED].

The tables below summarize the technical characteristics of each piece of equipment described above.

Fixed Equipment (3 Models)

Transmitter	Category	Tx Power (W)	EIRP (dBm)	ERP (Watts)	Mean or Peak	Emissions Designator	Frequency Tolerance	Modulation
Prototype 1 ²	B	N/A	50	61	Mean	20M0W7W	0.00000005	256QAM/64QAM/16QAM/QPSK
Prototype 2	A	0.250	30	0.6	Mean	20M0W7W	0.00000002	256QAM/64QAM/16QAM/QPSK
Prototype 3	A	0.250	30	0.6	Mean	20M0W7W	0.00000002	256QAM/64QAM/16QAM/QPSK

End User Equipment (3 Types)

Transmitter Type	Category	Tx Power (mW)	EIRP (dBm)	ERP (Watts)	Mean or Peak	Emissions Designator	Frequency Tolerance	Modulation
LG V30 or equivalent	EUD	200	23	0.2	Mean	20M0W7W	0.00000001	64QAM/ 16QAM/QPSK
Dongle	EUD	200	23	0.2	Mean	20M0W7W	0.00000001	64QAM/ 16QAM/QPSK
MIFI	EUD	200	23	0.2	Mean	20M0W7W	0.00000001	64QAM/ 16QAM/QPSK

¹ See 47 C.F.R. §§ 96.3 and 96.41.

² This transmitter is a directional antenna. The width of the beam at the half-power point is 65.00 degrees. When installed in the testing location described above, three separate antennas will be oriented in the horizontal plane at 0 degrees, 120 degrees, and 240 degrees. All three antennas will be oriented in the vertical plane at 6.80 degrees from horizontal.

Protection Against Interference

Pursuant to the Commission's experimental licensing rules,³ Comcast understands that, for purposes of the experimental operations described in this application, it must accept interference from any federal and non-federal incumbent users of the 3650–3700 MHz band and that Comcast's experimental operation will be conducted on a secondary basis.

Comcast's experimental operations will be conducted in cooperation with two leading SAS vendors that the Commission has already authorized to operate. Comcast will employ the vendors' SAS databases when conducting experimental operations to avoid interfering with incumbent users. As previously noted above, although Philadelphia is located within the NTIA's coastal exclusion zone for operations in the 3550-3650 MHz band, this application only seeks authority to test operations in the 3650-3700 MHz band.

To ensure prompt resolution of any potential interference events, Comcast will establish a point of contact, available 24/7 during the time when all experiments are conducted. This person will have authority and the ability to disable all transmissions when notified that interference is impacting primary-licensed services. Should interference occur during these testing periods, Comcast will take immediate steps to resolve the interference, including discontinuing operations, or, if appropriate, moving operations to a different channel.

Comcast will coordinate all testing with other wireless broadband licensees holding grandfathered licenses in the 3.65 GHz band. Coordination with the grandfathered wireless broadband licensees with registered locations will occur via Federated's developmental SAS to coordinate channel assignments. Where the SAS is not capable of coordinating channel assignments via automated systems, Comcast will manually coordinate operations.

Additionally, Comcast confirms that it has not identified any Fixed Satellite Service ("FSS") earth stations operating in the 3650-3700 MHz band in the area of the experimental test bed.

Restrictions on Operation

Comcast does not seek authority to perform a commercial market study under the requested experimental license. Comcast will retain control over all of the prototype equipment utilized in the testing at all times.

Contact Information

FCC licensing issues:

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³ See 47 C.F.R Part 5.

Test Bed Operations:

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Field Test Manager (* available at all times for all issues and requests to cease transmissions)

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