

QUALCOMM 3550-3650 GHz MHz Experiment Proposal

1 Introduction

Qualcomm Incorporated (NASDAQ:QCOM - News) is the world leader in 3G and next-generation mobile technologies. For 25 years, Qualcomm ideas and inventions have driven the evolution of wireless communications, connecting people more closely to information, entertainment and each other. Today, Qualcomm technologies are powering the convergence of mobile communications and consumer electronics, making wireless devices and services more personal, affordable and accessible to people everywhere. For more information, please visit www.qualcomm.com.

2 Experiment Description

Qualcomm currently has a LTE test bed operating on the main Qualcomm campus at 5775 Morehouse Drive, San Diego CA and the surrounding area of Sorrento Valley. The test bed includes LTE-based small cells.

Qualcomm would like to setup LTE-based small cells (<500mW EIRP) using a frequency range of 3550-3650 MHz in Qualcomm's existing LTE test bed. Qualcomm's testing utilizes custom experimental equipment capable of turning to the desired operational frequency ranges on both the uplink and downlink. Given the flexibility of the experimental equipment, the channelization for the fixed (downlink) and mobile (uplink) equipment is not specifically defined in this application. The channels used within the requested frequency range can be shared with interested parties as part of a coordination process if requested.

The maximum LTE bandwidth testing will be a 20MHz channel for the uplink and downlink. Smaller channel bandwidths, such as 10 MHz, may also be tested.

Qualcomm's intent is to operate the small cell network 24 hours per day 7 days per week. The downlink transmits continuously whereas mobile transmitter (uplink) activity is dominant during testing. When mobiles are not actively being tested, mobile transmitters connected to the small cell network in an idle state may occasionally transmit for short periods of time as part of standard LTE network activity.

The small cell uplink and downlink operational parameters are listed in Table 1. The proposed small cell fixed sites will be located at the sites listed in Table 2. Up to 20 mobile units will be operated within a 5 mile radius of the fixed sites in a mixture of test locations such as fixed indoor locations, fixed outdoor locations and within vehicles completing testing while driving.

3 Interference Coordination

Immediate requests for Qualcomm to stop transmission should be emailed to 3.5Ghz.shutdown@qualcomm.com. Alternatively, a shutdown may be requested through John Forrester who can be contacted at 858-845-7428 or jforrest@qti.qualcomm.

In addition, Qualcomm is interested in working with the FCC, NTIA, and other interested federal entities to develop a scheduling and/or notification process using authorized shared access methodology, as described in the Comments of Qualcomm filed on February 20, 2013 in Gen. Docket 12-354, to mitigate interference concerns that may exist quickly and effectively.

Links to Qualcomm Docket 12-354 comments;

Qualcomm comments 2/20/2012: <http://apps.fcc.gov/ecfs/document/view?id=7022123527>

Qualcomm reply to comments 4/5/2013: <http://apps.fcc.gov/ecfs/document/view?id=7022138113>

4 Transmitter Information

The maximum output power for mobile units and the fixed site is listed in Table 1. A single RF channel with a maximum transmission bandwidth of 20 MHz will be operated within the requested frequency range at any one time.

Table 2 lists the fixed site location and operational radius where mobiles will be operated. The actual fixed site ERP deployed may be lower than the power listed after the network design has been finalized.

Table 1 Transmitter Information

Type	Transmit Frequency (MHz)	Conducted TX Power (dBm)	Maximum Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	ERP (dBm)	ERP (W)	Maximum Transmission Bandwidth (MHz)	Emissions Designator
Uplink	3560-3650	23	3	26	0.398	23.83	0.242	20	20M00W7W
Fixed	3560-3650	23	3	26	0.398	23.83	0.242	20	20M00W7W

Table 2 Fixed Transmitter Locations

Type	Qualcomm Building Name	Address	Lat (North)	Long (West)	AMSL(m)	AGL(m)	RC-AMSL(m)	Antenna Azimuth
Fixed	T	5565 Morehouse Dr San Diego, CA 92121	32 53 42	117 11 46	93	35	128	341
Fixed	QRC	5665 Morehouse Dr. San Diego, CA 92121	32 53 42	117 11 42	94	40	134	Omni
Fixed	AM	9940 Barnes Canyon Rd San Diego, CA 92121	32 53 58	117 12 10	91.4	9.1	100.5	Omni
Fixed	AI	6262 Lusk Blvd San Diego, CA 92121	32 54 1	117 11 49	96.6	9.1	105.7	Omni
Fixed	R	10185 McKellar Ct San Diego, CA 92121	32 54 15	117 12 8.34	95.7	18.6	114.3	Omni