



# PCTEST ENGINEERING LABORATORY, INC.

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## MEASUREMENT REPORT FCC PART 15.247 / IC RSS-210 Bluetooth

**Applicant Name:**

LG Electronics USA  
1000 Sylvan Avenue  
Englewood Cliffs, NJ 07632  
United States

**Date of Testing:**

March 4-7, 2011

**Test Site/Location:**

PCTEST Lab. Columbia, MD, USA

**Test Report Serial No.:**

0Y1103020419.BEJ

**FCC ID:**

BEJLTGEN97L

**APPLICANT:**

LG Electronics USA

**Application Type:**

Certification

**Model(s):**

GEN97L

**EUT Type:**

Cellular/PCS CDMA/EvDO Transceiver with Bluetooth

**Max. RF Output Power:**

1.39 mW (1.43dBm) Conducted

**Frequency Range:**

2402 – 2480MHz (Bluetooth for US)

**Type of Modulation:**

GFSK,  $\pi/4$ -QPSK, 8DPSK

**FCC Classification:**

FCC Part 15 Spread Spectrum Transmitter (DSS)

**FCC Rule Part(s):**

Part 15 Subpart C (15.247)

**IC Specification(s):**

RSS-210 Issue 8

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

*Grant Conditions: Power output listed is conducted.*

*PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti -Drug Abuse Act of 1988, 21 U.S.C. 862.*

  
Randy Ortanez  
President



|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 1 of 33                    |

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| <b>FCC ID:</b> BEJLTGEN97L                  |  | <b>FCC Pt. 15.247 BLUETOOTH TEST REPORT<br/>(CERTIFICATION)</b>       |  | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>0Y1103020419.BEJ | <b>Test Dates:</b><br>March 4-7, 2011                                               | <b>EUT Type:</b><br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth | Page 2 of 33                                                                          |                                        |



## MEASUREMENT REPORT

### FCC Part 15.247



#### § 2.1033 General Information

**APPLICANT:** LG Electronics USA  
**APPLICANT ADDRESS:** 1000 Sylvan Avenue  
 Englewood Cliffs, NJ 07632, United States  
**TEST SITE:** PCTEST ENGINEERING LABORATORY, INC.  
**TEST SITE ADDRESS:** 6660-B Dobbin Road, Columbia, MD 21045 USA  
**FCC RULE PART(S):** Part 15 Subpart C (15.247)  
**IC SPECIFICATION(S):** RSS-210 Issue 8  
**BASE MODEL :** GEN97L  
**FCC ID:** BEJLTGEN97L  
**Test Device Serial No.:** A100001B5F0039 ☐ Production ☒ Pre-Production ☐ Engineering  
**FCC CLASSIFICATION:** FCC Part 15 Spread Spectrum Transmitter (DSS)  
**Method/System:** Frequency Hopping Spread Spectrum (FHSS)  
**DATE(S) OF TEST:** March 4-7, 2011  
**TEST REPORT S/N:** 0Y1103020419.BEJ

#### Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451A-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451A-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

### 1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity are, the Baltimore-Washington Intern't'l (BWI) airport, the city of Baltimore and the Washington, DC area. (see Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 28, 2009.



Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Cellular/PCS CDMA/EvDO Transceiver with Bluetooth FCC ID: BEJLTGEN97L**. The test data contained in this report pertains only to the emissions due to the EUT's Bluetooth transmitter.

- This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following:
  - A) The hopping sequence is pseudorandom
  - B) All channels are used equally on average
  - C) The receiver input bandwidth equals the transmit bandwidth
  - D) The receiver hops in sequence with the transmit signal
- 15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.
- 15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate its channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.
- The EUT consisted of the following component(s):

| Manufacturer / Base Model | FCC ID      | Description                                       |
|---------------------------|-------------|---------------------------------------------------|
| LG / Model: GEN97L        | BEJLTGEN97L | Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |

**Table 2-1. EUT Equipment Description**

### 2.2 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

### 2.3 Labeling Requirements

Per 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 3.0 DESCRIPTION OF TEST

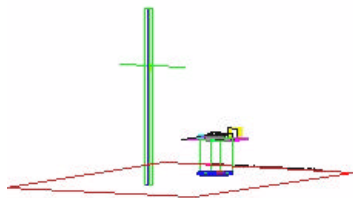
### 3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2003) and FCC Public Notice DA 00-705 dated March 30, 2000 entitled "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" were used in the measurement of the **LG Cellular/PCS CDMA/EvDO Transceiver with Bluetooth FCC ID: BEJLTGEN97L**.

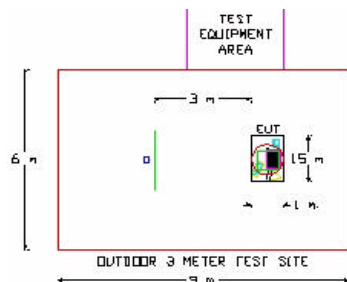
Deviation from measurement procedure.....None

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## 3.2 Radiated Emissions



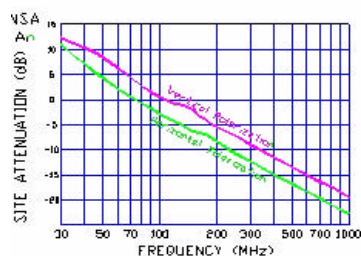
**Figure 3-1. 3-Meter Test Site**



**Figure 3-2. Dimensions of Outdoor Test Site**



**Figure 3-3. Turntable and System Setup**



**Figure 3-4. Normalized Site Attenuation Curves (H&V)**

Preliminary measurements were made indoors at 1-meter using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, and turntable azimuth with respect to the antenna was noted for each frequency found. The spectrum was scanned from 30 to 200 MHz using a bi-conical antenna and from 200 to 1000 MHz using a log-spiral antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used.

Final measurements were made outdoors at 3-meter test range using Roberts<sup>TM</sup> Dipole antennas or horn antennas (see Figure 3-1). The test equipment was placed on a wooden and plastic bench situated on a 1.5m x 2m area adjacent to the measurement area (see Figure 3-2). Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 100kHz for frequencies below 1GHz or 1MHz for frequencies above 1GHz. Above 1GHz the detector function was set to average mode (RBW = 1MHz, VBW = 10Hz).

The half-wave dipole antenna was tuned to the frequency found during preliminary radiated measurements. The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8-meter high non-metallic 1 x 1.5 meter table (see Figure 3-3). The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission. The turntable containing the system was rotated and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by: varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; and changing the polarity of the antenna, whichever determined the worst-case emission. Photographs of the worst-case emission can be seen in the test setup photographs. Each EME reported was calibrated using the Agilent E8257D (250kHz – 20GHz) PSG Signal Generator. The Theoretical Normalized Site Attenuation Curves for both horizontal and vertical polarization are shown in Figure 3-4.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 4.0 ANTENNA REQUIREMENTS

### Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the LG Cellular/PCS CDMA/EvDO Transceiver with Bluetooth are **permanently attached**.
- There are no provisions for connection to an external antenna.

### Conclusion:

The **LG Cellular/PCS CDMA/EvDO Transceiver with Bluetooth FCC ID: BEJLTGEN97L** unit complies with the requirement of §15.203.

| Ch. | Frequency (MHz) |
|-----|-----------------|
| 00  | 2402            |
| :   | :               |
| 39  | 2441            |
| :   | :               |
| 78  | 2480            |

**Table 4-1. Frequency/ Channel Operations**

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

| Manufacturer    | Model     | Description                        | Cal Date   | Cal Interval | Cal Due    | Serial Number |
|-----------------|-----------|------------------------------------|------------|--------------|------------|---------------|
| -               | 263-10dB  | (DC-18GHz) 10 dB Attenuator        | N/A        |              | N/A        | N/A           |
| -               | No.166    | (1000-26500MHz) Microwave RF Cable | N/A        |              | N/A        | N/A           |
| -               | No.167    | (100kHz - 100MHz) RG58 Coax Cable  | N/A        |              | N/A        | N/A           |
| Agilent         | 11713A    | Attenuation/Switch Driver          | 4/2/2010   | Annual       | 4/2/2011   | 3439A02645    |
| Agilent         | 8447D     | Broadband Amplifier                | 3/18/2010  | Annual       | 3/18/2011  | 1937A03348    |
| Agilent         | 8447D     | Broadband Amplifier                | 3/18/2010  | Annual       | 3/18/2011  | 2443A01900    |
| Agilent         | 85650A    | Quasi-Peak Adapter                 | 4/2/2010   | Annual       | 4/2/2011   | 3303A01872    |
| Agilent         | 85650A    | Quasi-Peak Adapter                 | 3/30/2010  | Annual       | 3/30/2011  | 2043A00301    |
| Agilent         | 8566B     | (100Hz-22GHz) Spectrum Analyzer    | 3/30/2010  | Annual       | 3/30/2011  | 2618A02866    |
| Agilent         | 8566B     | (100Hz-22GHz) Spectrum Analyzer    | 3/30/2010  | Annual       | 3/30/2011  | 2542A11898    |
| Agilent         | 8566B     | (100Hz-22GHz) Spectrum Analyzer    | 4/2/2010   | Annual       | 4/2/2011   | 3638A08713    |
| Agilent         | E4407B    | FSA Spectrum Analyzer              | 3/30/2010  | Annual       | 3/30/2011  | US39210313    |
| Agilent         | E4448A    | PSA (3Hz-50GHz) Spectrum Analyzer  | 11/30/2010 | Annual       | 11/30/2011 | US42510244    |
| Agilent         | E8257D    | (250kHz-20GHz) Signal Generator    | 3/30/2010  | Annual       | 3/30/2011  | MY45470194    |
| Agilent         | N9020A    | MXA Signal Analyzer                | 9/8/2010   | Annual       | 9/8/2011   | US46470561    |
| Agilent         | N4010A    | Wireless Connectivity Test Set     | 9/27/2010  | Annual       | 9/27/2011  | GB46170464    |
| Emco            | 3115      | Horn Antenna (1-18GHz)             | 10/14/2009 | Biennial     | 10/14/2011 | 9704-5182     |
| Emco            | 3115      | Horn Antenna (1-18GHz)             | 4/8/2010   | Biennial     | 4/8/2012   | 9205-3874     |
| Emco            | 3116      | Horn Antenna (18 - 40GHz)          | 9/9/2008   | Triennial    | 9/9/2011   | 9203-2178     |
| Emco            | 3816/2    | LISN                               | 11/5/2010  | Biennial     | 11/5/2012  | 9707-1077     |
| Emco            | 3816/2    | LISN                               | 11/3/2010  | Biennial     | 11/3/2012  | 9707-1079     |
| MiniCircuits    | VHF-3100+ | High Pass Filter                   | N/A        |              | N/A        | 30721         |
| Pasternack      | PE2209-10 | Bidirectional Coupler              | N/A        |              | N/A        | N/A           |
| Pasternack      | PE7000-6  | 6 dB Attenuator                    | N/A        |              | N/A        | N/A           |
| Rohde & Schwarz | CMU200    | Base Station Simulator             | 11/11/2010 | Annual       | 11/11/2011 | 836371/0079   |
| Rohde & Schwarz | CMU200    | Base Station Simulator             | 6/21/2010  | Annual       | 6/21/2011  | 833855/0010   |
| Sunol           | DRH-118   | Horn Antenna (1 - 18GHz)           | 5/14/2009  | Biennial     | 5/14/2011  | A050307       |
| Sunol           | JB5       | Bi-Log Antenna (30M - 5GHz)        | 7/17/2009  | Biennial     | 7/17/2011  | A051107       |
| Rohde & Schwarz | CMU200    | Base Station Simulator             | 6/17/2010  | Annual       | 6/17/2011  | 836536/0005   |
| Rohde & Schwarz | FSQ 26    | Spectrum Analyzer                  | 8/28/2010  | Annual       | 8/28/2011  | 200452        |
| Anritsu         | ML2495A   | Power Meter                        | 10/13/2010 | Annual       | 10/13/2011 | 941001        |

Table 5-1. Annual Test Equipment Calibration Schedule

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 6.0 TEST RESULTS

### 6.1 Summary

Company Name: LG Electronics USA  
 FCC ID: BEJLTGEN97L  
 Method/System: Frequency Hopping Spread Spectrum (FHSS)  
 Number of Channels: 79

| FCC Part Section(s)          | RSS Section(s)    | Test Description                                                              | Test Limit                                                                                              | Test Condition | Test Result | Reference                 |
|------------------------------|-------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------|-------------|---------------------------|
| <b>TRANSMITTER MODE (Tx)</b> |                   |                                                                               |                                                                                                         |                |             |                           |
| 15.247(a)(1)(iii)            | RSS-210 [A8.1]    | 20dB Bandwidth                                                                | < 1 MHz only if using less than 15 non-overlapping channels                                             | CONDUCTED      | PASS        | Section 6.2               |
| 15.247(b)(1)                 | RSS-210 [A8.4(2)] | Peak Transmitter Output Power                                                 | < 1 Watt if $\geq 75$ non-overlapping channels used                                                     |                | PASS        | Section 6.3               |
| 15.247(a)(1)                 | RSS-210 [A8.1(2)] | Channel Separation                                                            | > 2/3 of 20 dB BW for systems with Output Power < 125mW                                                 |                | PASS        | Section 6.5               |
| 15.247(a)(1)(iii)            | RSS-210 [A8.1(4)] | Number of Channels                                                            | > 15 Channels                                                                                           |                | PASS        | Section 6.7               |
| 15.247(a)(1)(iii)            | RSS-210 [A8.1(4)] | Time of Occupancy                                                             | < 0.4 sec in 31.6 sec period                                                                            |                | PASS        | Section 6.6               |
| 15.247(d)                    | RSS-210 [A8.5]    | Band Edge / Out-of-Band Emissions                                             | Conducted < 20dBc                                                                                       |                | PASS        | Section 6.4, Section 6.8  |
| 15.205<br>15.209             | RSS-210 [A8.5]    | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-210 table 3 limits) | RADIATED       | PASS        | Section 6.9, Section 6.10 |

**Table 6-1. Summary of Test Results**

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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## 6.2 20dB Bandwidth Measurement

### §15.247 (a)(1)(iii); RSS-210 (A8.1)

The bandwidth at 20dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies. **The maximum permissible 20dB bandwidth is 1 MHz, unless more than 15 non-overlapping channels are employed.**

| Frequency [MHz] | Data Rate [Mbps] | Channel No. | 20dB Bandwidth Test Results |           |
|-----------------|------------------|-------------|-----------------------------|-----------|
|                 |                  |             | [kHz]                       | Pass/Fail |
| 2402            | 1.0              | 0           | 949                         | Pass      |
| 2441            | 1.0              | 39          | 939                         | Pass      |
| 2480            | 1.0              | 78          | 939                         | Pass      |
| 2402            | 2.0              | 0           | 1227                        | Pass      |
| 2441            | 2.0              | 39          | 1231                        | Pass      |
| 2480            | 2.0              | 78          | 1237                        | Pass      |
| 2402            | 3.0              | 0           | 1261                        | Pass      |
| 2441            | 3.0              | 39          | 1259                        | Pass      |
| 2480            | 3.0              | 78          | 1267                        | Pass      |

Table 6-2. Conducted 20dB Bandwidth Measurements

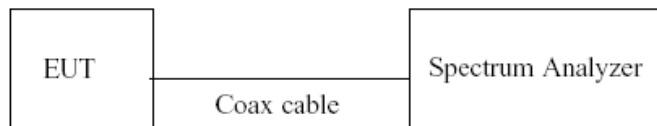
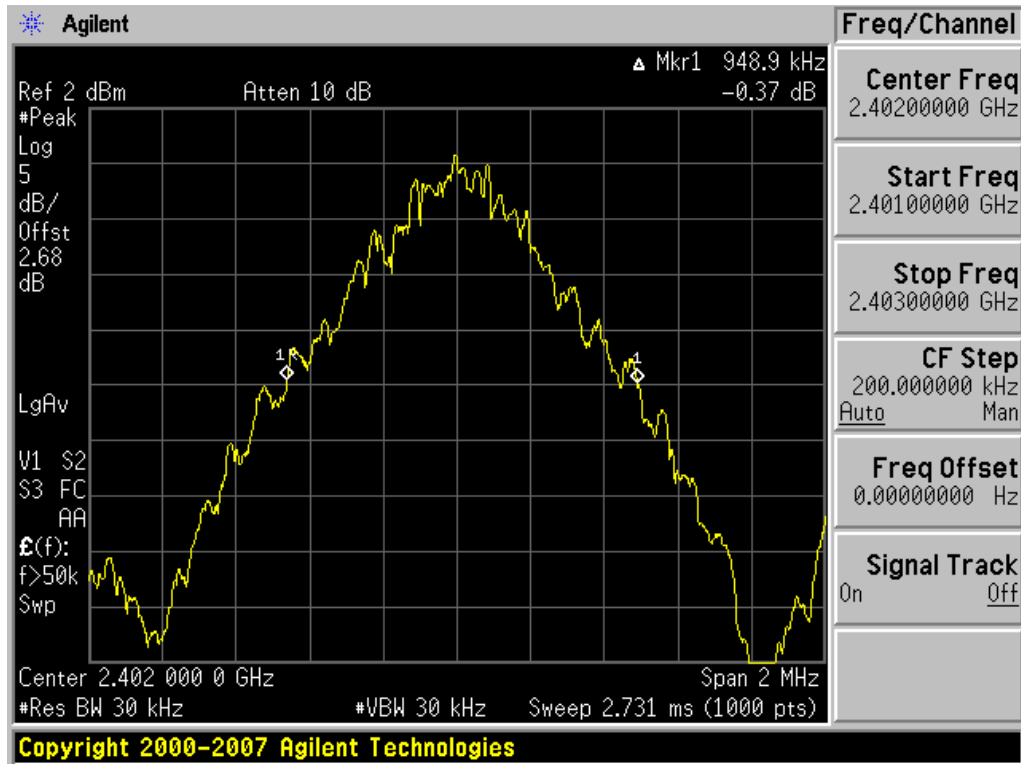
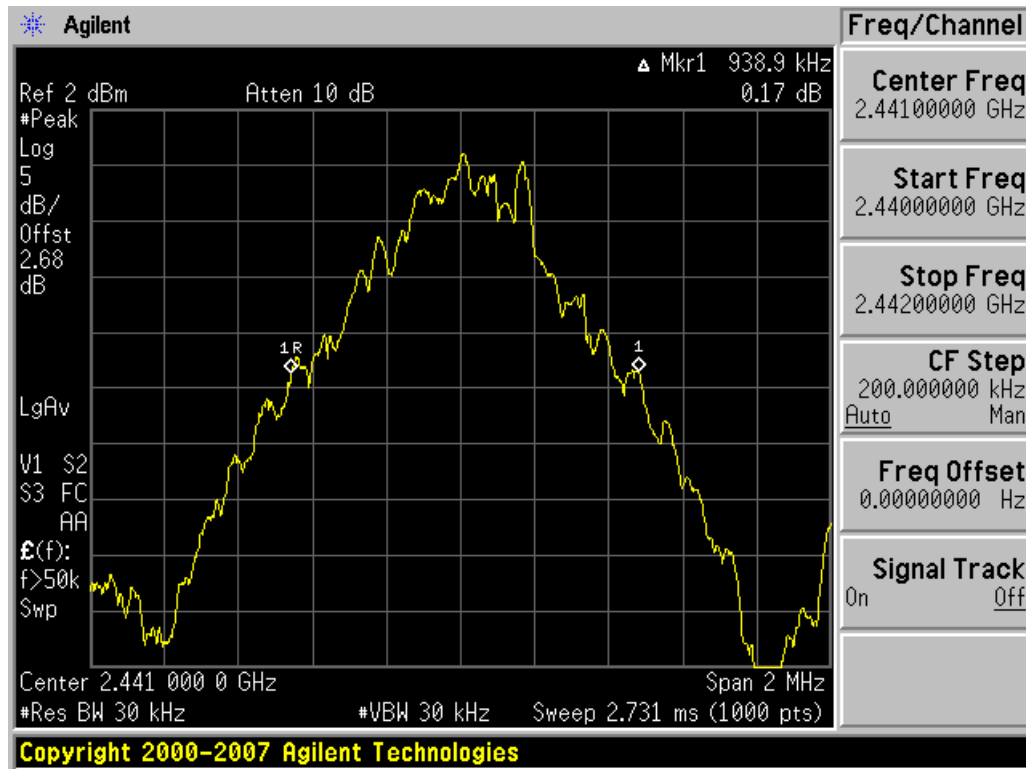


Figure 6-1. Test Instrument & Measurement Setup

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 11 of 33                   |

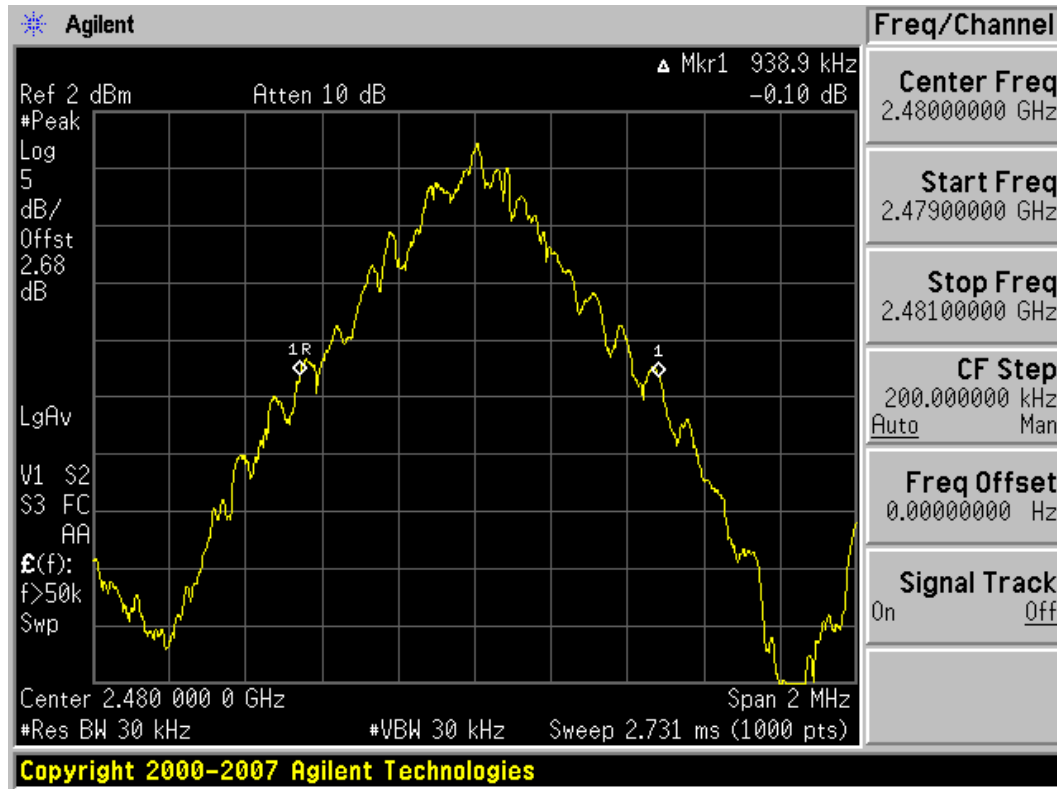


Plot 6-1. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 0)

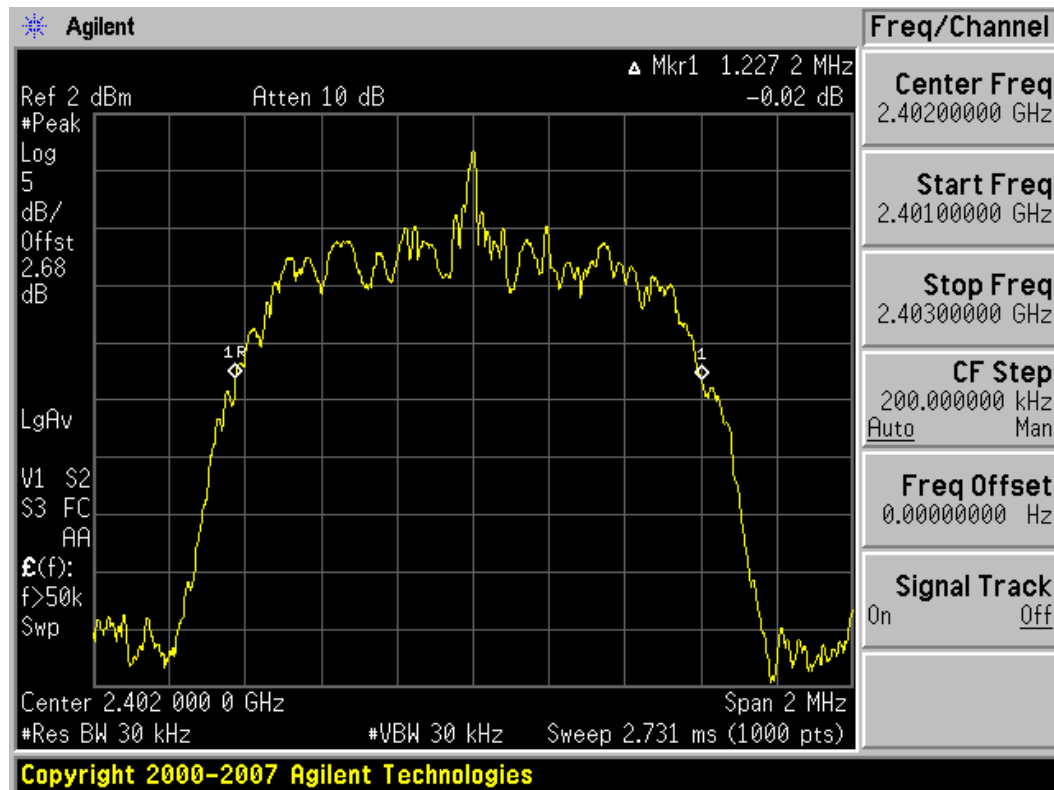


Plot 6-2. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 39)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 12 of 33                   |

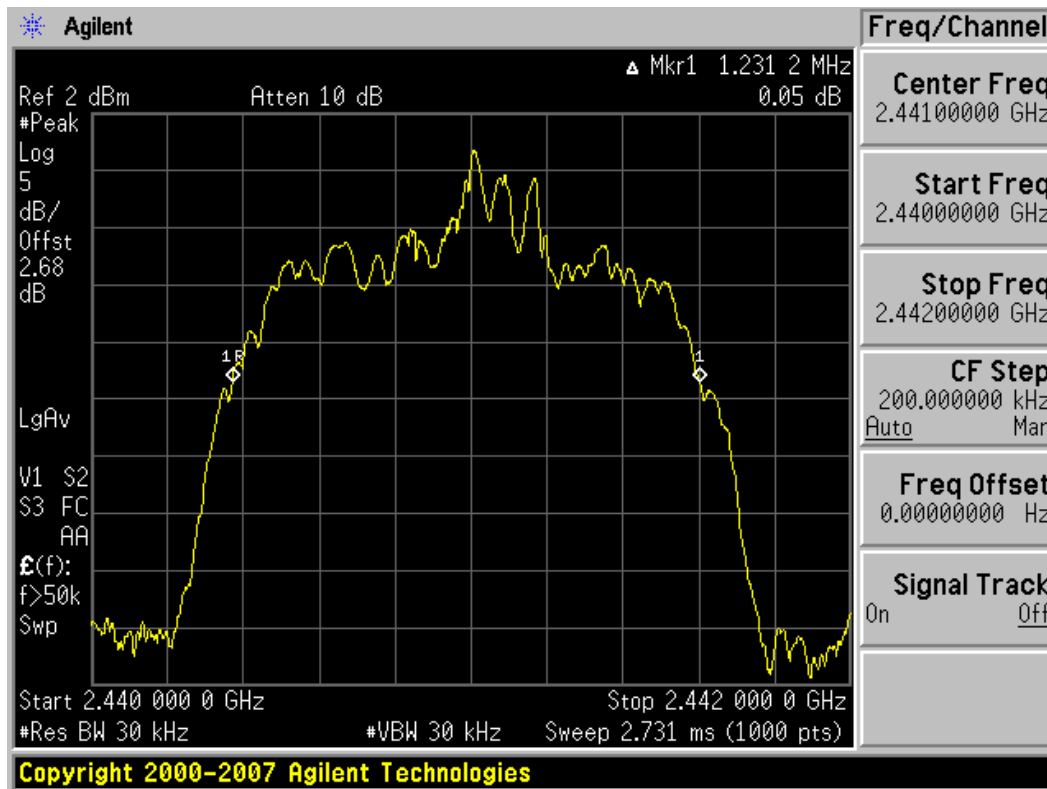


Plot 6-3. 20dB Bandwidth Plot (Bluetooth, 1Mbps – Ch. 78)

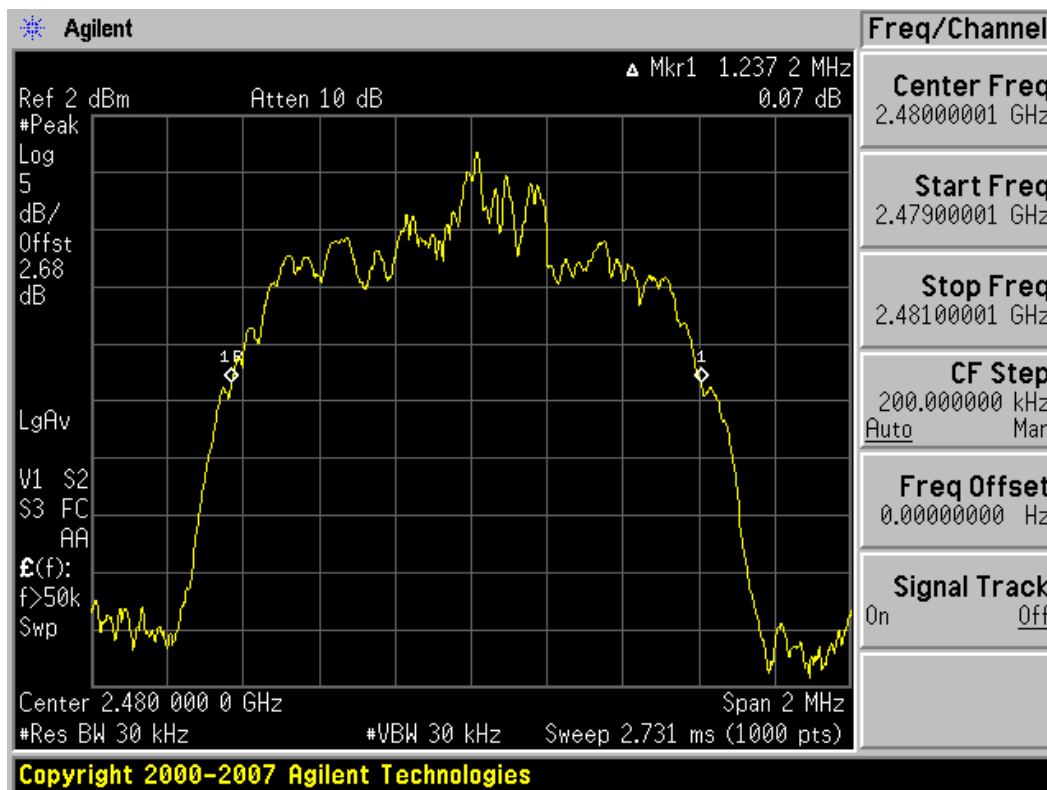


Plot 6-4. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 0)

|                                      |                                               |                                                                |    |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | LG | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |    | Page 13 of 33                   |

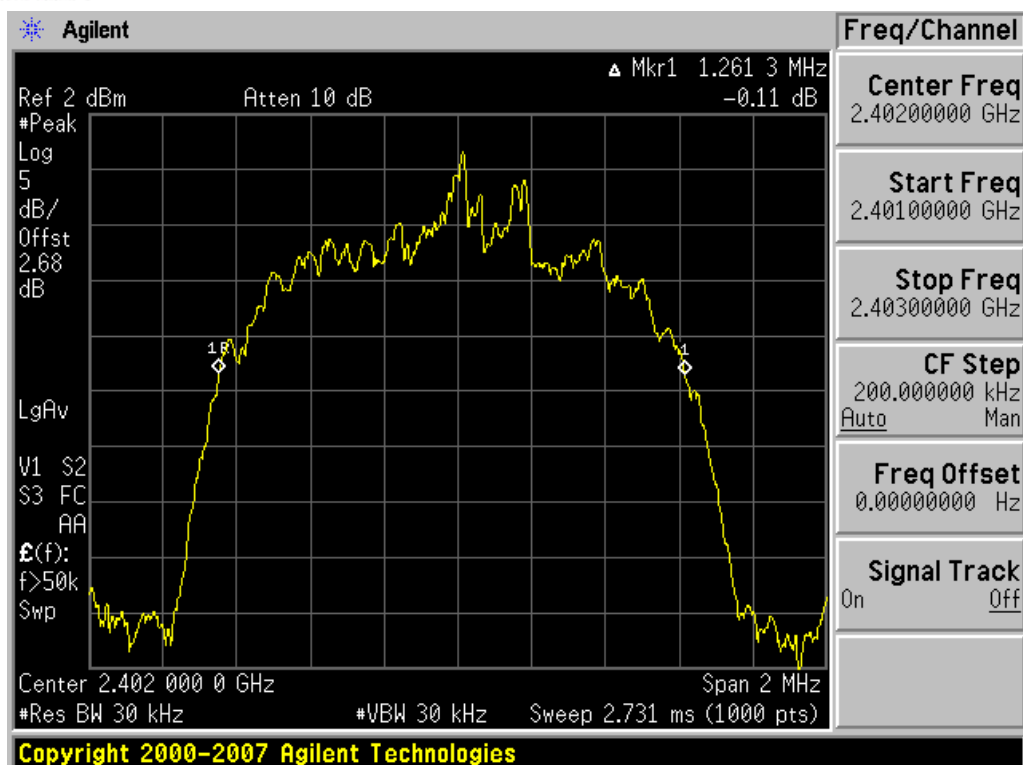


Plot 6-5. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 39)

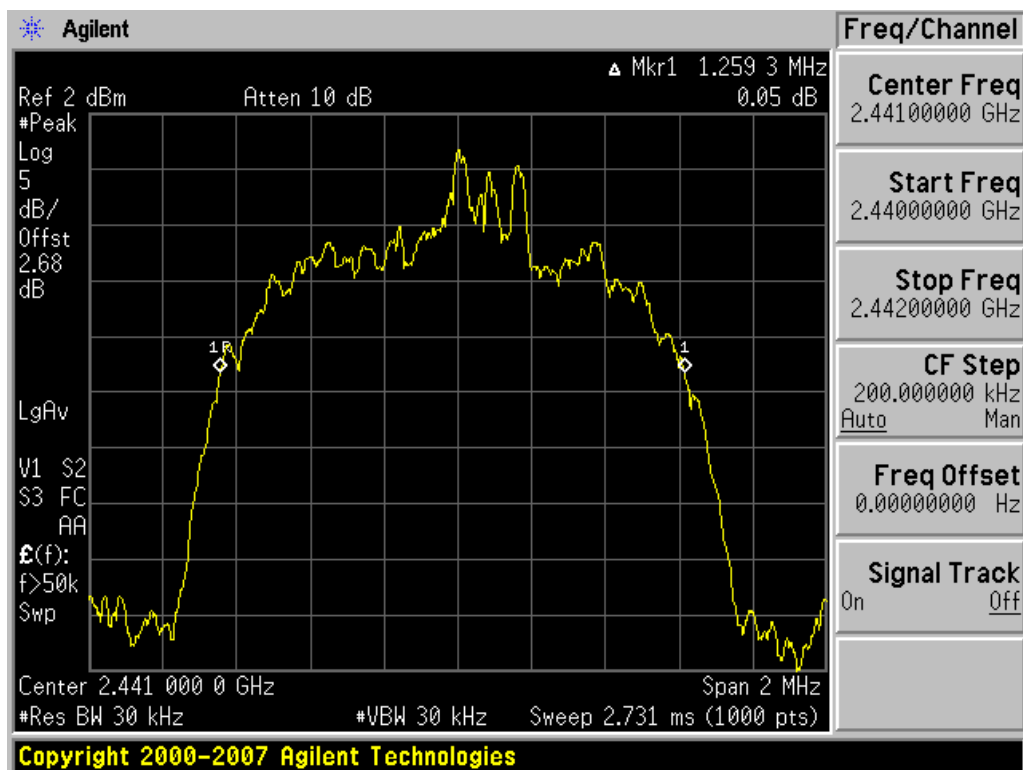


Plot 6-6. 20dB Bandwidth Plot (Bluetooth, 2Mbps – Ch. 78)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 14 of 33                   |

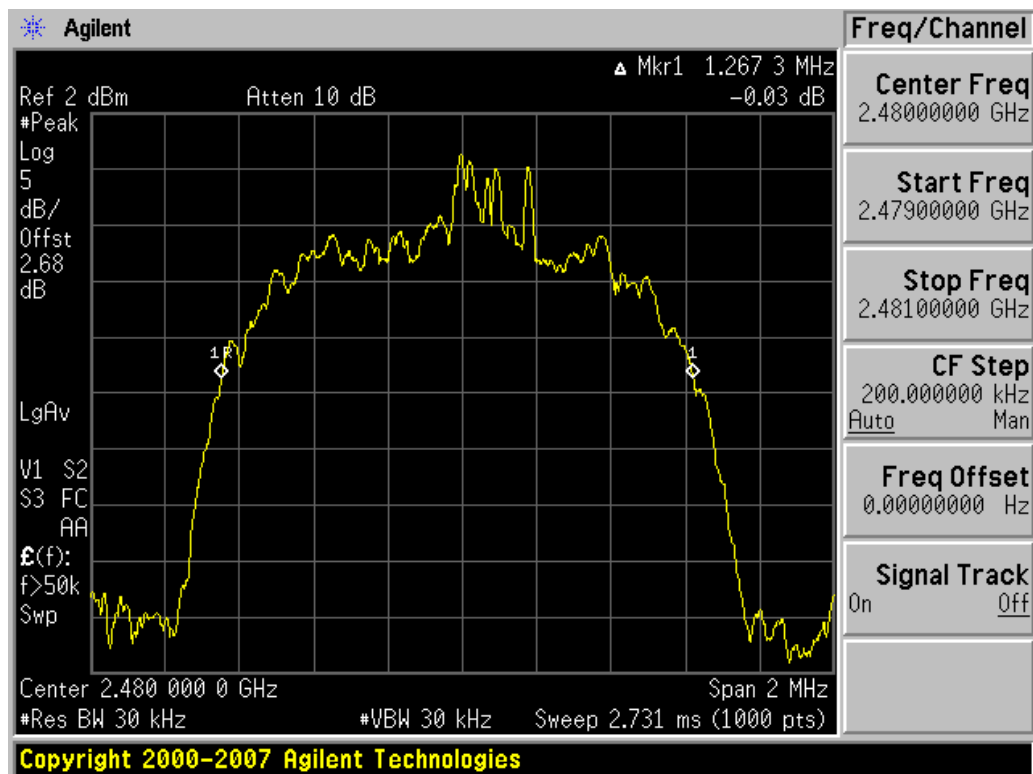


Plot 6-7. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 0)



Plot 6-8. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 39)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 15 of 33                   |



Plot 6-9. 20dB Bandwidth Plot (Bluetooth, 3Mbps – Ch. 78)

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 16 of 33                   |

### 6.3 Output Power Measurement

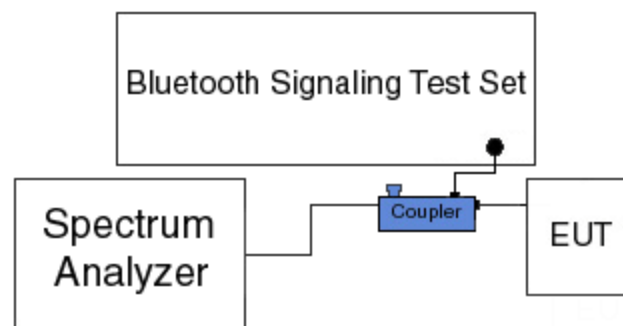
§15.247 (b)(1); RSS-210 (A8.4 (2))

Measurement is made while the EUT is operating in non-hopping transmission mode. The powers shown below are peak powers measured using a Bluetooth signaling test set (Agilent Model: N4010A) and a spectrum analyzer set to peak detector with RBW = VBW = 3MHz. **The maximum permissible output power is 1 Watt.**

This unit was tested with all possible data rates and the highest power is reported with the unit transmitting at 3Mbps.

| Frequency [MHz] | Data Rate [Mbps] | Channel No. | Peak Conducted Power |       |
|-----------------|------------------|-------------|----------------------|-------|
|                 |                  |             | [dBm]                | [mW]  |
| 2402            | 1.0              | 0           | -1.08                | 0.780 |
| 2441            | 1.0              | 39          | -1.69                | 0.678 |
| 2480            | 1.0              | 78          | -0.72                | 0.847 |
| 2402            | 2.0              | 0           | 0.89                 | 1.227 |
| 2441            | 2.0              | 39          | 0.41                 | 1.099 |
| 2480            | 2.0              | 78          | 1.11                 | 1.291 |
| 2402            | 3.0              | 0           | 1.14                 | 1.300 |
| 2441            | 3.0              | 39          | 0.70                 | 1.175 |
| 2480            | 3.0              | 78          | 1.43                 | 1.390 |

**Table 6-3. Conducted Output Power Measurements**



**Figure 6-2. Test Instrument & Measurement Setup**

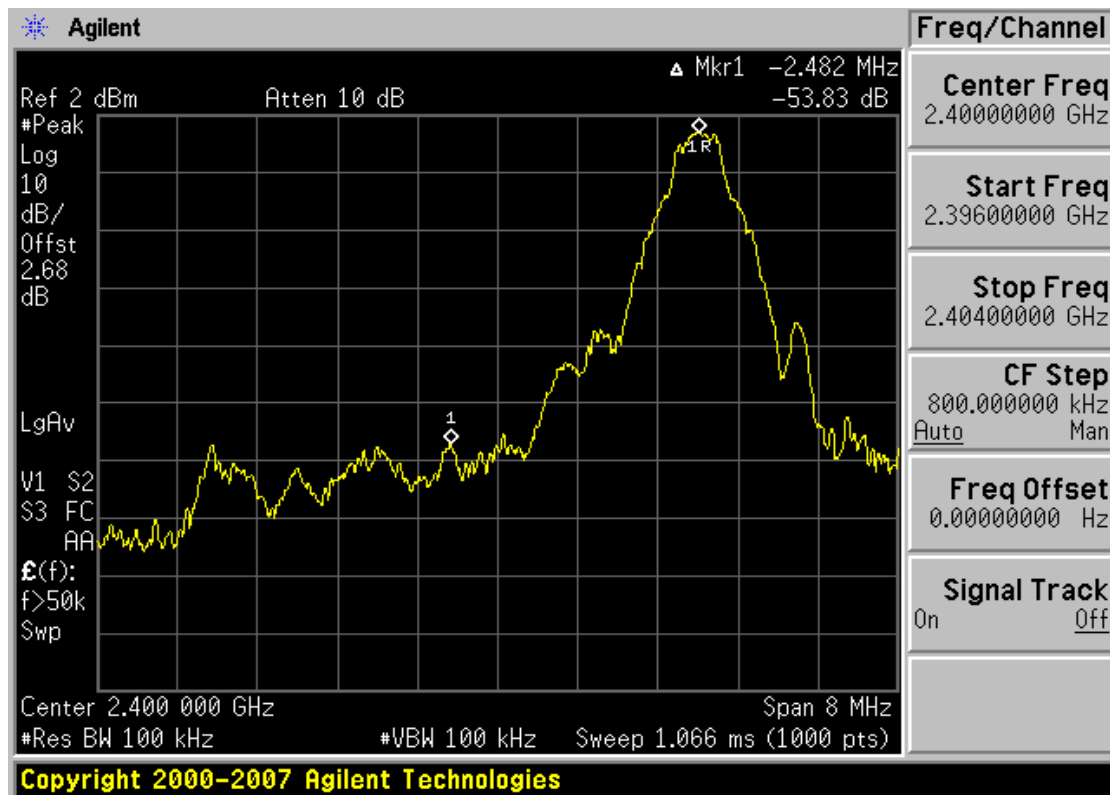
|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 17 of 33                   |

## 6.4 Band Edge Compliance

### §15.247 (d); RSS-210 (A8.5)

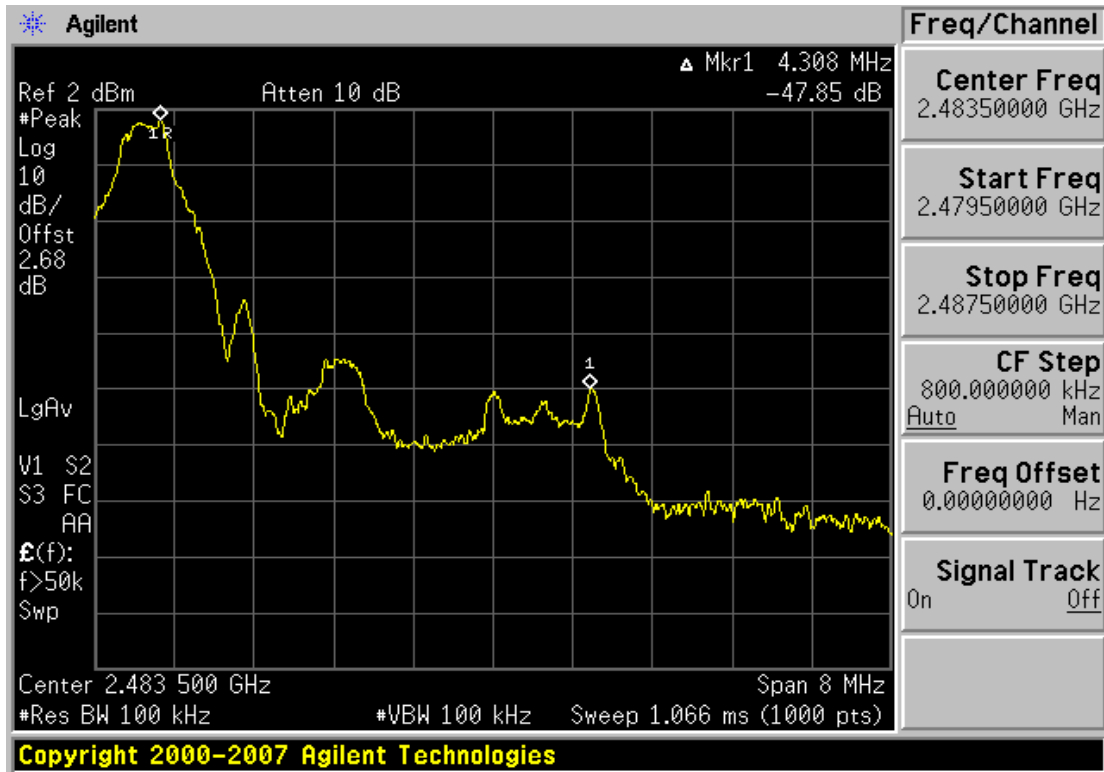
Measurement is taken at the highest point located outside of the emission bandwidth. **The maximum permissible emission level is 20 dBc. Any emission lying outside of the emission bandwidth and in a restricted band is subject to a field strength limit specified in Section 15.209 of the Title 47 CFR.**

Out of band conducted spurious emissions at the band edge were investigated for all data rates and the worst case emissions were found with the EUT transmitting at 3Mbps. Band edge emissions were also investigated with the EUT transmitting in all data rates. The worst case emissions for EDR transmission was found at 3Mbps. Plots of the worst case emissions are shown below.

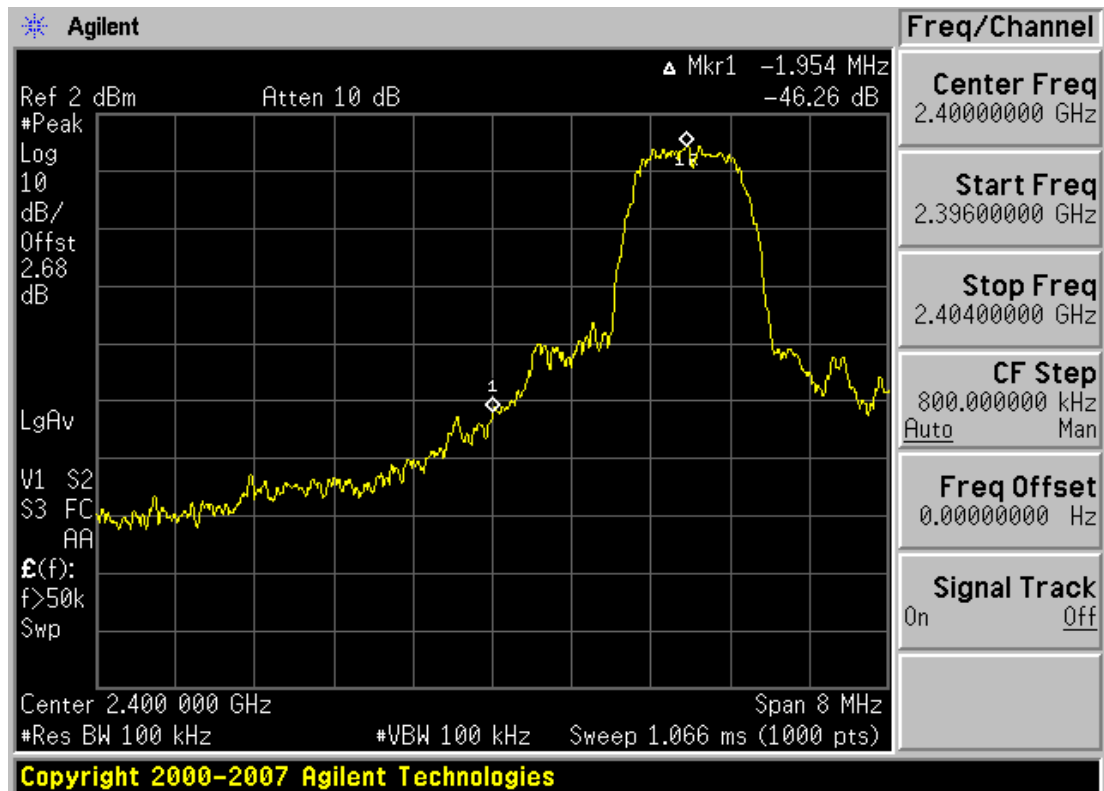


Plot 6-10. Band Edge Plot (Bluetooth, 1Mbps – Ch. 0)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 18 of 33                   |

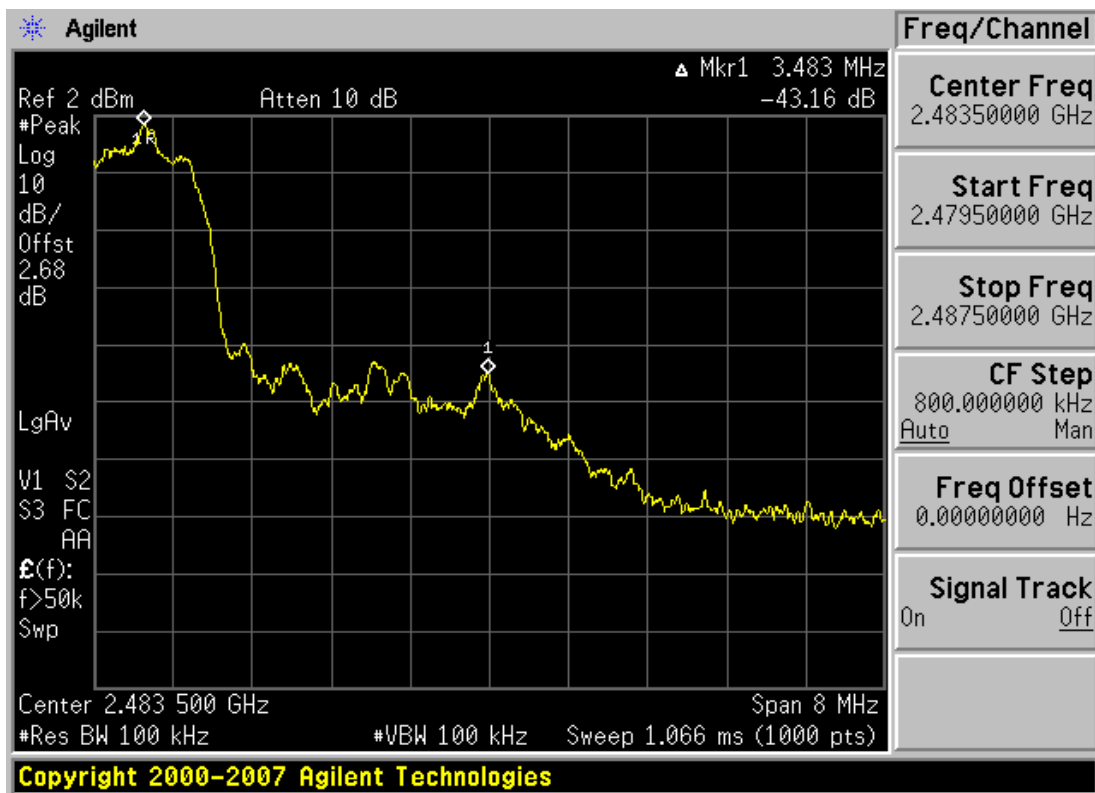


Plot 6-11. Band Edge Plot (Bluetooth, 1Mbps - Ch. 78)



Plot 6-12. Band Edge Plot (Bluetooth, 3Mbps - Ch. 0)

|                                      |                                        |                                                                |    |                                 |
|--------------------------------------|----------------------------------------|----------------------------------------------------------------|----|---------------------------------|
| FCC ID: BEJLTGEN97L                  | PCTEST<br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | LG | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011         | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |    | Page 19 of 33                   |



Plot 6-13. Band Edge Plot (Bluetooth, 3Mbps – Ch. 78)

|                                      |                                               |                                                                |    |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | LG | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |    | Page 20 of 33                   |

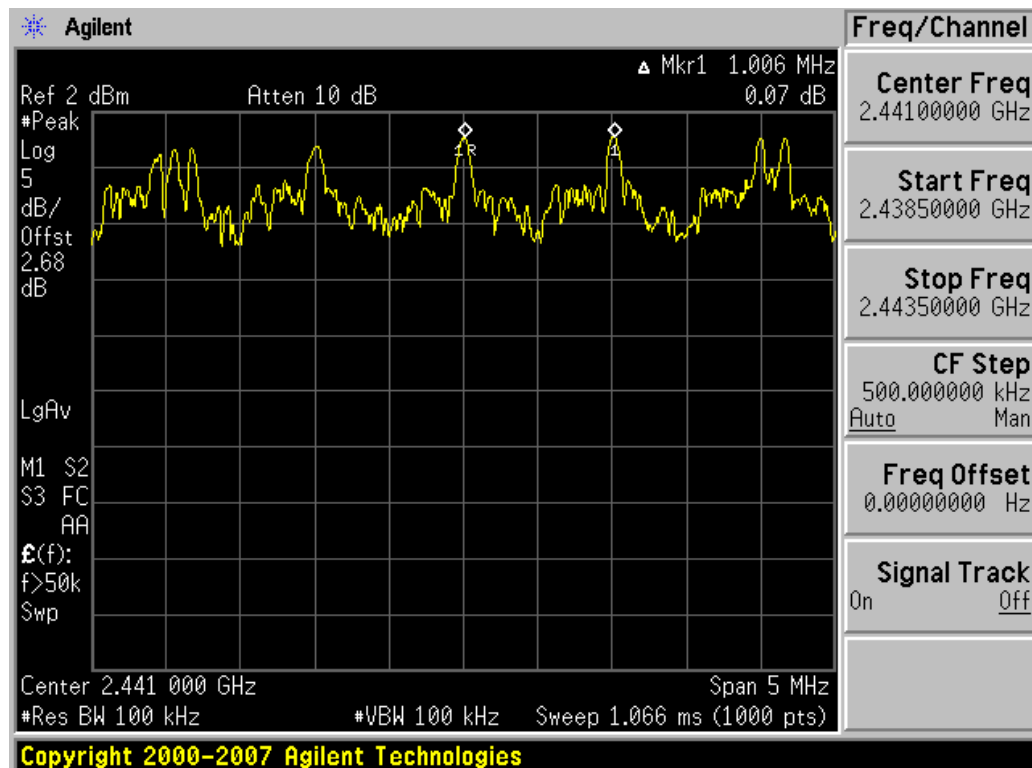
## 6.5 Carrier Frequency Separation

§15.247 (a)(1); RSS-210 (A8.1 (2))

Measurement is made with EUT operating in hopping mode. *The minimum permissible channel separation for this system is 2/3 the value of the 20dB BW.*

| Frequency [MHz] | Data Rate [Mbps] | Channel No. | Min. Channel Separation [MHz] |
|-----------------|------------------|-------------|-------------------------------|
| 2402            | 1.0              | 0           | 0.630                         |
| 2441            | 1.0              | 39          | 0.626                         |
| 2480            | 1.0              | 78          | 0.626                         |
| 2402            | 2.0              | 0           | 0.818                         |
| 2441            | 2.0              | 39          | 0.821                         |
| 2480            | 2.0              | 78          | 0.825                         |
| 2402            | 3.0              | 0           | 0.841                         |
| 2441            | 3.0              | 39          | 0.839                         |
| 2480            | 3.0              | 78          | 0.845                         |

Table 6-4. Minimum Channel Separation



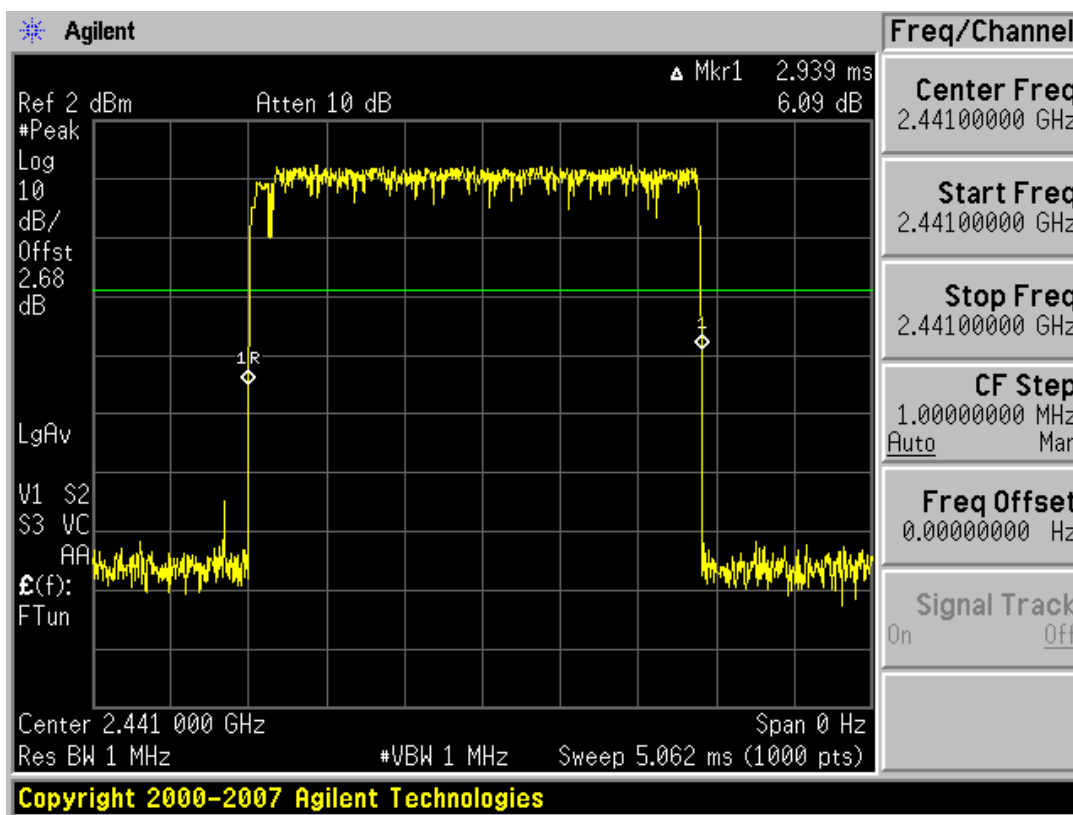
Plot 6-14. Channel Spacing Plot (Bluetooth)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 21 of 33                   |

## 6.6 Time of Occupancy

**§15.247 (a)(1)(iii); RSS-210 (A8.1 (4))**

Measurement is made while EUT is operating in hopping mode with the spectrum analyzer set to zero span. **The maximum permissible time of occupancy is 400 ms within a period of 400ms multiplied by the number of hopping channels employed.**



**Plot 6-15. Time of Occupancy Plot (Bluetooth)**

### Sample Calculation

Time of Occupancy for one pulse width = 2ms.

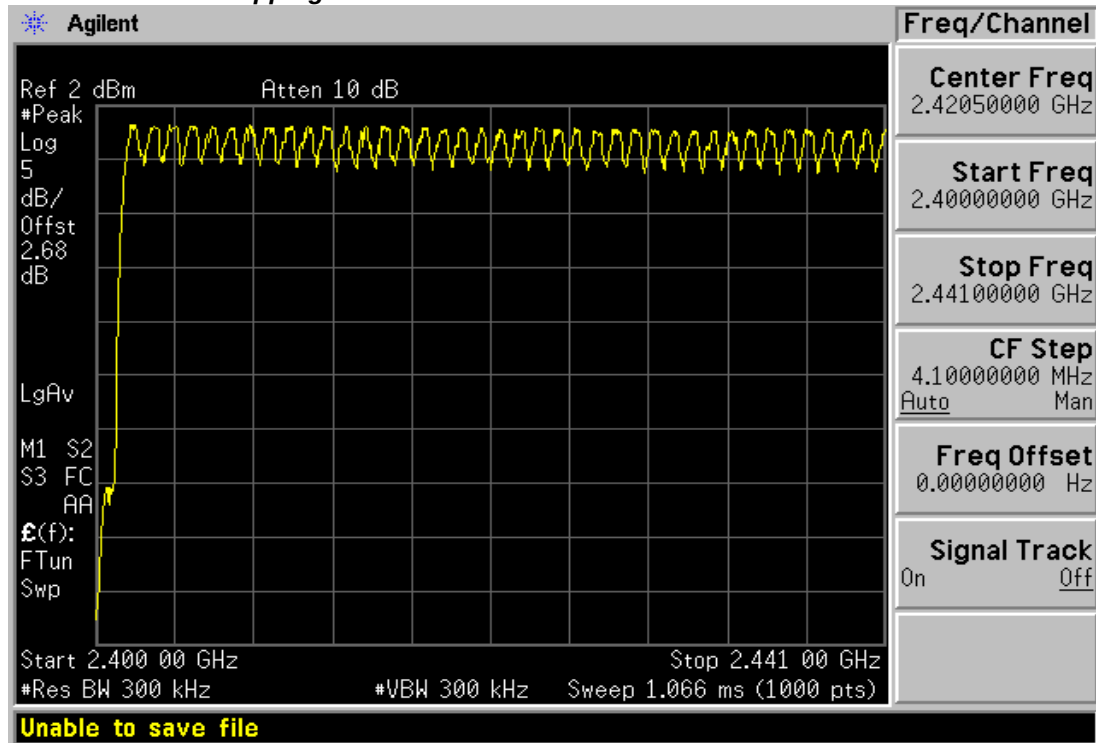
- o 400ms x 79 hopping channels = 31.6sec
- o 2ms x 79 hopping channels = 158ms (total duration of all channels)
- o 31.6sec / 158ms = 200 (number of times one channel transmits within a 31.6sec time frame)
- o 200 x 2ms = 400ms (total duration of time that one channel transmits within a 31.6sec time frame)

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 22 of 33                   |

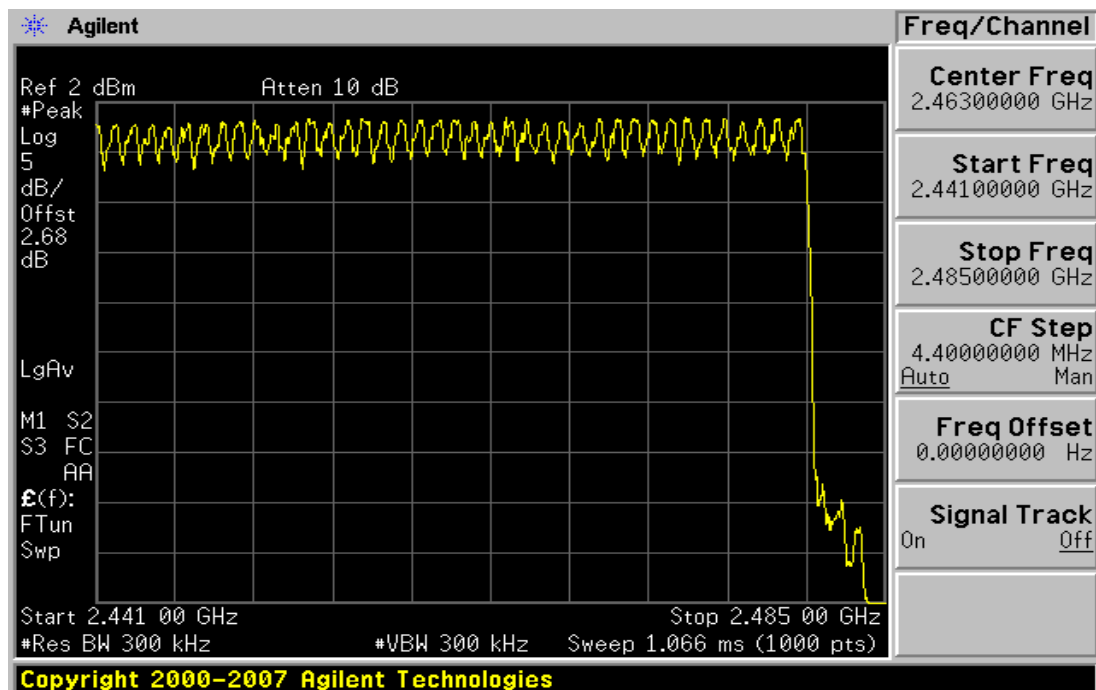
## 6.7 Number of Hopping Channels

§15.247 (a)(1)(iii); RSS-210 (A8.1 (4))

Measurement is made while EUT is operating in hopping mode. *This frequency hopping system must employ a minimum of 15 hopping channels.*



Plot 6-16. Low End Spectrum Channel Hopping Plot (Bluetooth)



Plot 6-17. High End Spectrum Channel Hopping Plot (Bluetooth)

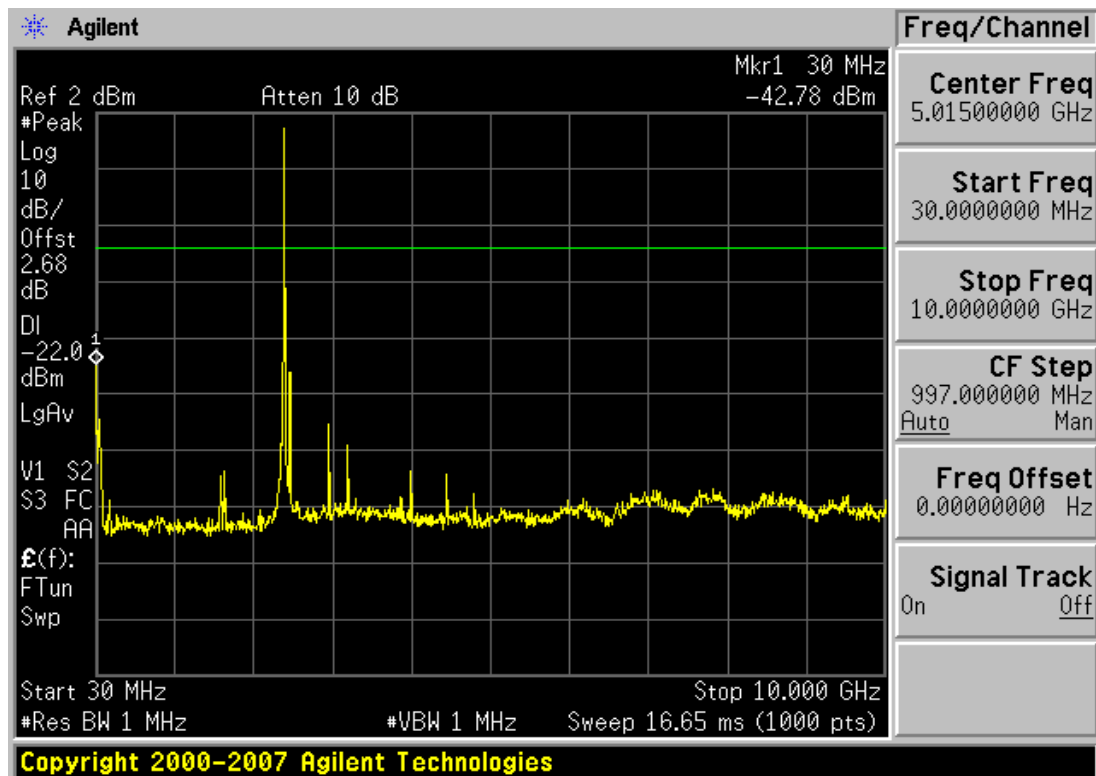
|                                   |                                                                                     |                                                             |                                                                                       |                              |
|-----------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------|
| FCC ID: BEJLTGEN97L               |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT (CERTIFICATION)        |  | Reviewed by: Quality Manager |
| Test Report S/N: 0Y1103020419.BEJ | Test Dates: March 4-7, 2011                                                         | EUT Type: Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 23 of 33                |

## 6.8 Conducted Spurious Emissions

### §15.247 (d)

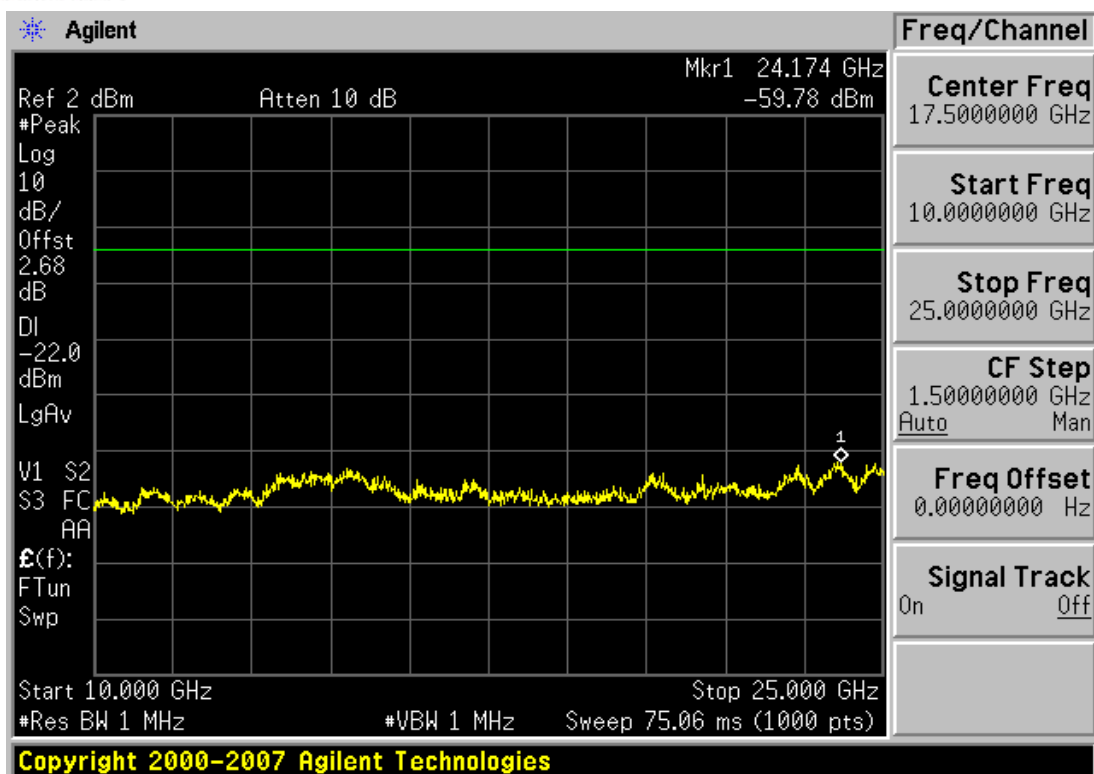
Out of band conducted spurious emissions were investigated for all data rates and the worst case emissions were found with the EUT transmitting at 3Mbps. Plots of the worst case emissions are shown below.

The display line shown in the following plots denotes the limit at 20dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1MHz bandwidth.

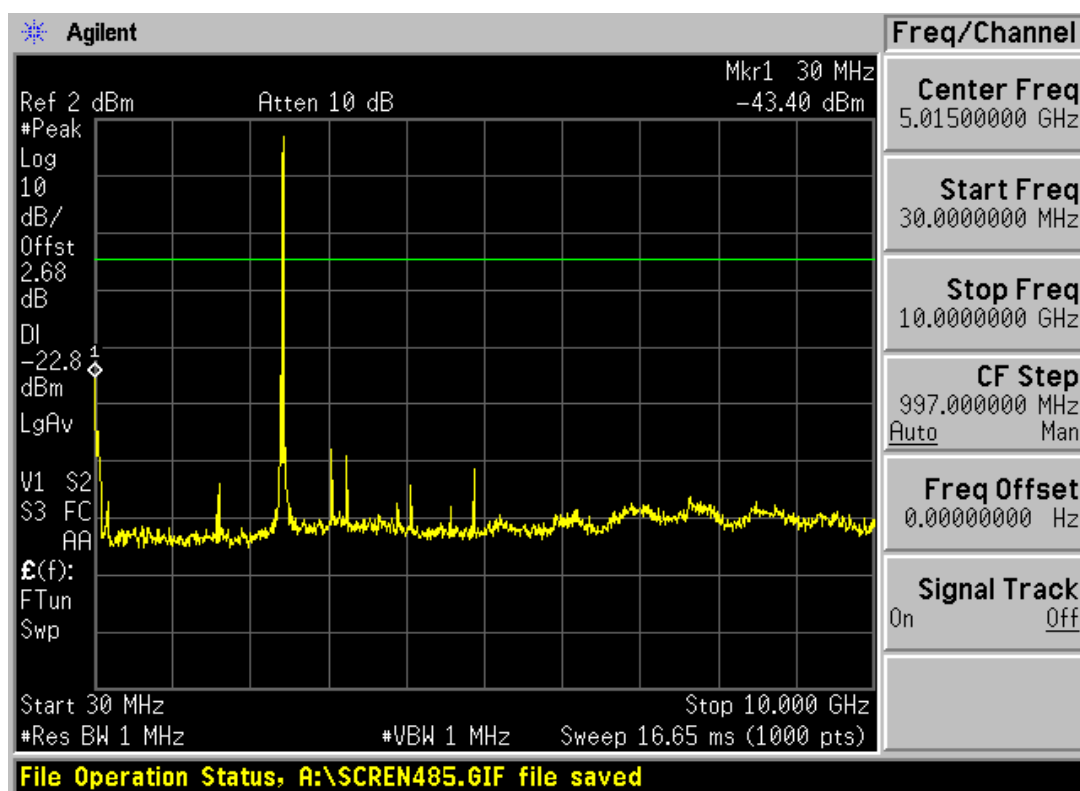


Plot 6-18. Conducted Spurious Plot (Bluetooth, 3Mbps – Ch. 0)

|                                   |                                                                                     |                                                             |                                                                                       |                              |
|-----------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------|
| FCC ID: BEJLTGEN97L               |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT (CERTIFICATION)        |  | Reviewed by: Quality Manager |
| Test Report S/N: 0Y1103020419.BEJ | Test Dates: March 4-7, 2011                                                         | EUT Type: Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 24 of 33                |

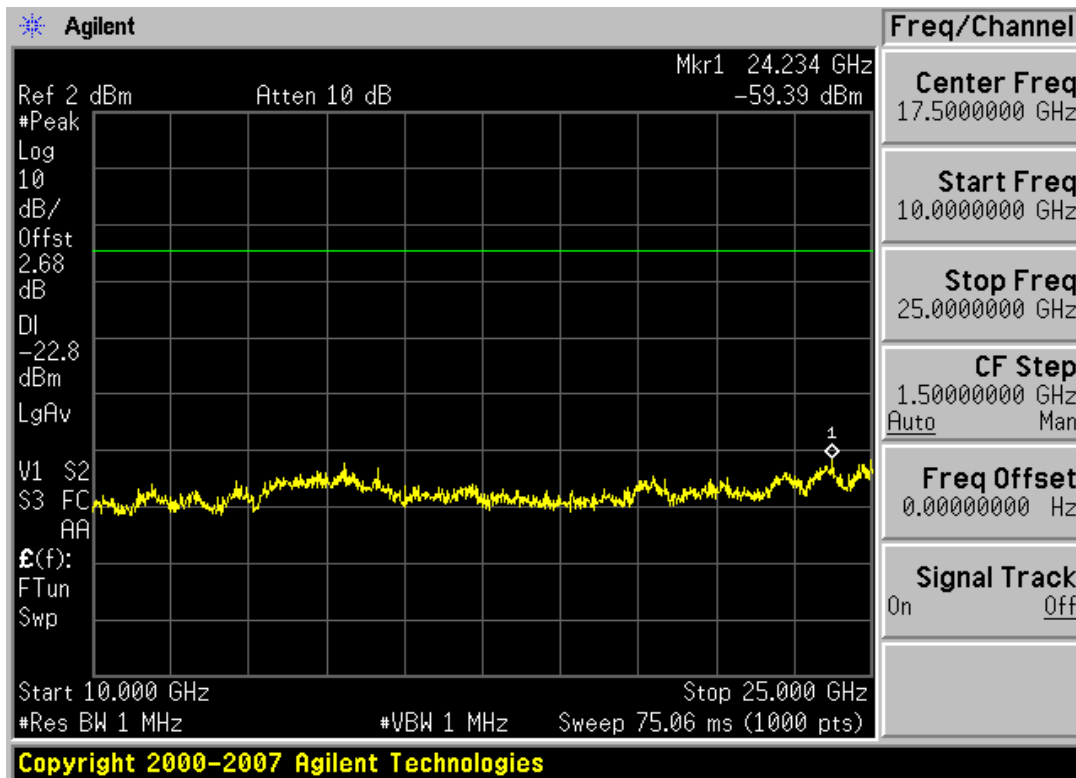


Plot 6-19. Conducted Spurious Plot (Bluetooth, 3Mbps - Ch. 0)

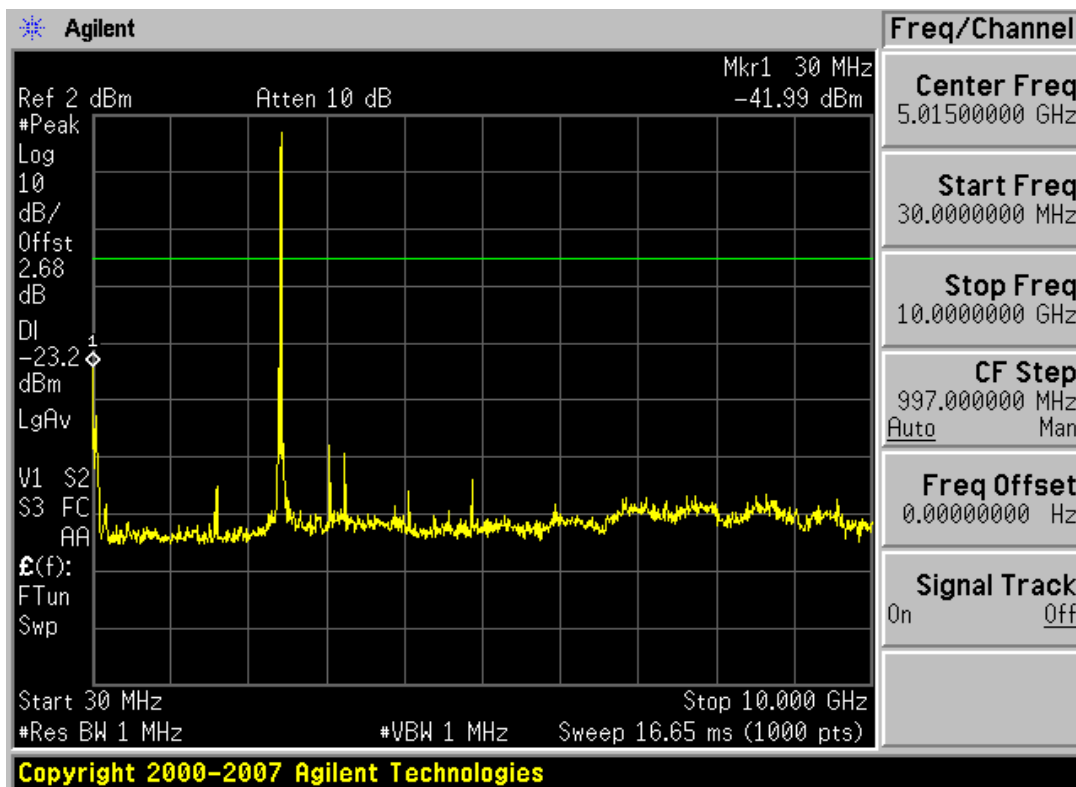


Plot 6-20. Conducted Spurious Plot (Bluetooth, 3Mbps - Ch. 39)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 25 of 33                   |

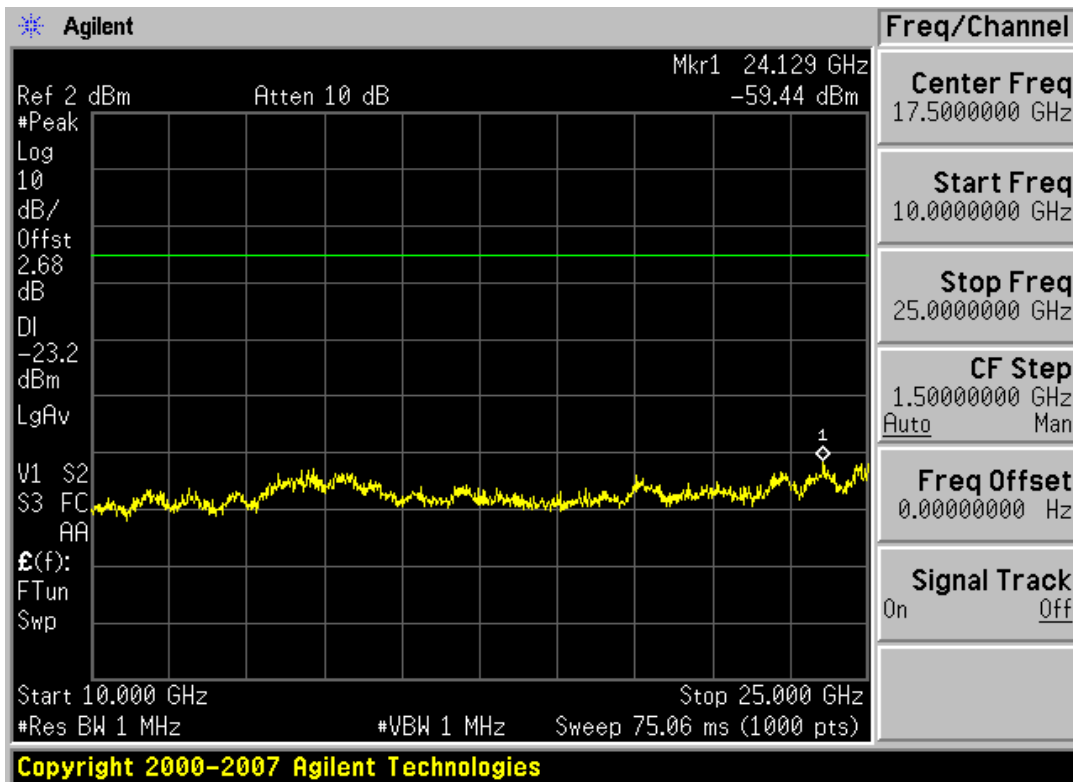


Plot 6-21. Conducted Spurious Plot (Bluetooth, 3Mbps – Ch. 39)



Plot 6-22. Conducted Spurious Plot (Bluetooth, 3Mbps – Ch. 78)

|                                      |                                               |                                                                |    |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|----|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | LG | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |    | Page 26 of 33                   |



Plot 6-23. Conducted Spurious Plot (Bluetooth, 3Mbps – Ch. 78)

|                                      |                                               |                                                                |           |                                 |
|--------------------------------------|-----------------------------------------------|----------------------------------------------------------------|-----------|---------------------------------|
| FCC ID: BEJLTGEN97L                  | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        | <b>LG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |           | Page 27 of 33                   |

## 6.9 Radiated Spurious Emission Measurements

### §15.205 & §15.209, §15.247 (d); RSS-210 (A8.5)

The EUT was tested from 9kHz and up to the 10<sup>th</sup> harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average measurement was used, using RBW = 1MHz, VBW = 1/τ Hz, where τ is the Bluetooth pulse width in seconds, and linearly polarized horn antennas. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-5 per Section 15.209. This unit was tested with all possible data rates and the highest power is reported with the unit transmitting at 3Mbps. No significant radiated emissions were found in the 2310 - 2390MHz restricted band.

| Frequency         | Field Strength<br>[mV/m] | Measured Distance<br>[Meters] |
|-------------------|--------------------------|-------------------------------|
| 0.009 – 0.490 MHz | 2400/F (kHz)             | 300                           |
| 0.490 – 1.705 MHz | 24000/F (kHz)            | 30                            |
| 1.705 – 30.00 MHz | 30                       | 30                            |
| 30.00 – 88.00 MHz | 100                      | 3                             |
| 88.00 – 216.0 MHz | 150                      | 3                             |
| 216.0 – 960.0 MHz | 200                      | 3                             |
| Above 960.0 MHz   | 500                      | 3                             |

**Table 6-5. Radiated Limits**

### Sample Calculation

- Field Strength Level  $_{[dB\mu V/m]} = \text{Analyzer Level }_{[dBm]} + 107 + \text{AFCL }_{[dB]} + \text{Duty Cycle Correction }_{[dB]}$

### Notes:

- AFCL = Antenna Factor  $_{[dB]} + \text{Cable Loss }_{[dB]}$
- Duty Cycle Correction Factor Calculation:
  - Time to cycle through all channels =  $\Delta t = \tau_{[ms]} \times 79 \text{ channels} = 232.181\text{ms}$ , where  $\tau$  = pulse width
  - $100\text{ms} / \Delta t_{[ms]} = H \rightarrow$  Round up to next highest integer, to account for worst case,  $H' = 1$
  - Worst Case Dwell Time =  $\tau_{[ms]} \times H' = 2.939\text{ms}$
  - Duty Cycle Correction =  $20\log(\text{Worst Case Dwell Time}/100\text{ms})_{[dB]} = -30.636\text{dB}$

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 28 of 33                   |

## Radiated Spurious Emission Measurements (Cont'd)

§15.205 & §15.209, §15.247 (d); RSS-210 (A8.5)

Mode: Bluetooth

Measurement Distance: 3 Meters

Operating Frequency: 2402MHz

Channel: 0

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBmV/m] | Limit [dBmV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|----------------------------|-------------------------|----------------|-------------|
| 4804.00         | -99.54               | Avg      | H         | 41.90     | -30.64                     | 18.72                   | 53.98          | -35.25      |
| 4804.00         | -93.68               | Peak     | H         | 41.90     | 0.00                       | 55.22                   | 73.98          | -18.76      |
| 12010.00        | -135.00              | Avg      | H         | 59.36     | 0.00                       | 31.36                   | 53.98          | -22.62      |
| 12010.00        | -125.00              | Peak     | H         | 59.36     | 0.00                       | 41.36                   | 73.98          | -32.62      |

**Table 6-6. Radiated Measurements**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and are below the limit shown in Table 6-5.
2. Average measurements > 1GHz using RBW = 1MHz and VBW =  $1/\tau$  Hz, where  $\tau$  = pulse width in seconds. Peak measurements > 1GHz using RBW = VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500  $\mu$ V/m (54dB $\mu$ /m) at 3 meters radiated.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 29 of 33                   |

## Radiated Spurious Emission Measurements (Cont'd)

§15.205 & §15.209, §15.247 (d); RSS-210 (A8.5)

Mode: Bluetooth

Measurement Distance: 3 Meters

Operating Frequency: 2441MHz

Channel: 39

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBmV/m] | Limit [dBmV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|----------------------------|-------------------------|----------------|-------------|
| 4882.00         | -95.61               | Avg      | H         | 42.10     | -30.64                     | 22.85                   | 53.98          | -31.13      |
| 4882.00         | -92.15               | Peak     | H         | 42.10     | 0.00                       | 56.95                   | 73.98          | -17.03      |
| 7323.00         | -108.84              | Avg      | H         | 48.42     | -30.64                     | 15.94                   | 53.98          | -38.03      |
| 7323.00         | -98.24               | Peak     | H         | 48.42     | 0.00                       | 57.18                   | 73.98          | -16.80      |
| 12205.00        | -135.00              | Avg      | H         | 59.88     | 0.00                       | 31.88                   | 53.98          | -22.10      |
| 12205.00        | -125.00              | Peak     | H         | 59.88     | 0.00                       | 41.88                   | 73.98          | -32.10      |

**Table 6-7. Radiated Measurements**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and are below the limit shown in Table 6-5.
2. Average measurements > 1GHz using RBW = 1MHz and VBW =  $1/\tau$  Hz, where  $\tau$  = pulse width in seconds. Peak measurements > 1GHz using RBW = VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500  $\mu$ V/m (54dB $\mu$ /m) at 3 meters radiated.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
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| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 30 of 33                   |

## Radiated Spurious Emission Measurements (Cont'd)

§15.205 & §15.209, §15.247 (d); RSS-210 (A8.5)

Mode: Bluetooth

Measurement Distance: 3 Meters

Operating Frequency: 2480MHz

Channel: 78

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBmV/m] | Limit [dBmV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|----------------------------|-------------------------|----------------|-------------|
| 4960.00         | -95.82               | Avg      | H         | 42.30     | -30.64                     | 22.84                   | 53.98          | -31.14      |
| 4960.00         | -91.42               | Peak     | H         | 42.30     | 0.00                       | 57.88                   | 73.98          | -16.10      |
| 7440.00         | -106.89              | Avg      | H         | 48.57     | -30.64                     | 18.05                   | 53.98          | -35.93      |
| 7440.00         | -97.42               | Peak     | H         | 48.57     | 0.00                       | 58.16                   | 73.98          | -15.82      |
| 12400.00        | -135.00              | Avg      | H         | 60.39     | 0.00                       | 32.39                   | 53.98          | -21.59      |
| 12400.00        | -125.00              | Peak     | H         | 60.39     | 0.00                       | 42.39                   | 73.98          | -31.59      |

**Table 6-8. Radiated Measurements**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and are below the limit shown in Table 6-5.
2. Average measurements > 1GHz using RBW = 1MHz and VBW =  $1/\tau$  Hz, where  $\tau$  = pulse width in seconds. Peak measurements > 1GHz using RBW = VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500  $\mu$ V/m (54dB $\mu$ /m) at 3 meters radiated.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: BEJLTGEN97L                  |  | FCC Pt. 15.247 BLUETOOTH TEST REPORT<br>(CERTIFICATION)        |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 31 of 33                   |

## 6.10 Radiated Restricted Band Edge Measurements

§15.205 & §15.209, §15.247 (d); RSS-210 (A8.5)

Mode: Bluetooth

Measurement Distance: 3 Meters

Operating Frequency: 2480MHz

Channel: 78

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol [H/V] | AFCL [dB] | Duty Cycle Correction [dB] | Field Strength [dBmV/m] | Limit [dBmV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------|-----------|----------------------------|-------------------------|----------------|-------------|
| 2483.50         | -81.50               | Avg      | H         | 35.93     | -30.64                     | 30.79                   | 53.98          | -23.19      |
| 2483.50         | -78.02               | Peak     | H         | 35.93     | 0.00                       | 64.91                   | 73.98          | -9.07       |
| 2485.30         | -94.56               | Avg      | H         | 35.93     | -30.64                     | 17.73                   | 53.98          | -36.25      |
| 2485.30         | -94.32               | Peak     | H         | 35.93     | 0.00                       | 48.61                   | 73.98          | -25.37      |
| 2486.22         | -101.43              | Avg      | H         | 35.94     | -30.64                     | 10.87                   | 53.98          | -43.11      |
| 2486.22         | -95.43               | Peak     | H         | 35.94     | 0.00                       | 47.51                   | 73.98          | -26.47      |

**Table 6-9. Radiated Restricted Band Edge Measurements at 3-meters**

### NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and are below the limit shown in Table 6-5.
2. Average measurements > 1GHz using RBW = 1MHz and VBW =  $1/\tau$  Hz, where  $\tau$  = pulse width in seconds. Peak measurements > 1GHz using RBW = VBW = 1MHz.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500  $\mu$ V/m (54dB $\mu$ /m) at 3 meters radiated.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 32 of 33                   |

## 7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Cellular/PCS CDMA/EvDO Transceiver with Bluetooth FCC ID: BEJLTGEN97L** is in compliance with Part 15 Subpart C (15.247) of the FCC Rules and RSS-210 of the Industry Canada Rules.

|                                      |                                                                                     |                                                                |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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| Test Report S/N:<br>0Y1103020419.BEJ | Test Dates:<br>March 4-7, 2011                                                      | EUT Type:<br>Cellular/PCS CDMA/EvDO Transceiver with Bluetooth |                                                                                       | Page 33 of 33                   |