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PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA Tel. 410.290.6652 / Fax 410.290.6554 http://www.pctestlab.com



CERTIFICATE OF COMPLIANCE FCC Part 22 & 24 Certification

Applicant Name: LG Electronics USA 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 United States Date of Testing:
June 2 - 3, 2009
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0906021136.BEJ

FCC ID: BEJM13

APPLICANT: LG ELECTRONICS USA

Application Type: Certification

FCC Classification: PCS Licensed Transmitter (PCB)

FCC Rule Part(s): §2; §22(H), §24(E)

EUT Type: Cellular/PCS CDMA/EvDO and 700MHz LTE Device

Model(s): M13

Tx Frequency Range: 824.70 - 848.31MHz (Cell. CDMA) / 1851.25 - 1908.75MHz (PCS CDMA)

Max. RF Output Power: 0.115 W ERP Cell. CDMA (20.62 dBm)

0.385 W EIRP PCS CDMA (25.85 dBm)

Emission Designator(s): 1M27F9W (CDMA) / 1M27F9W (PCS)

Test Device Serial No.: identical prototype [S/N: FCC #5]

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 §2.947. 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 ERP for Part 22 and EIRP for Part 24.

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





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MEASUREMENT REPORT



FCC Part 22 & 24

§2.1033 General Information

APPLICANT: LG Electronics USA APPLICANT ADDRESS: 1000 Sylvan Avenue

Englewood Cliffs, NJ 07632

PCTEST ENGINEERING LABORATORY, INC. **TEST SITE: TEST SITE ADDRESS:** 6660-B Dobbin Road, Columbia, MD 21045 USA

FCC RULE PART(S): §2; §22(H), §24(E)

BASE MODEL: M13 FCC ID: BEJM13

FCC CLASSIFICATION: PCS Licensed Transmitter (PCB) 1M27F9W (CDMA) / 1M27F9W (PCS) **EMISSION DESIGNATOR(S):**

MODE: CDMA / EvDO

FREQUENCY TOLERANCE: ±0.00025 % (2.5 ppm)

☐ Production ☐ Pre-Production ☐ Engineering **Test Device Serial No.:** FCC #5

DATE(S) OF TEST: June 2 - 3, 2009 **TEST REPORT S/N:** 0906021136.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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INTRODUCTION

Scope 1.1

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

1.2 **Testing Facility**

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity are, the Baltimore-Washington Internt'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 27, 2006.

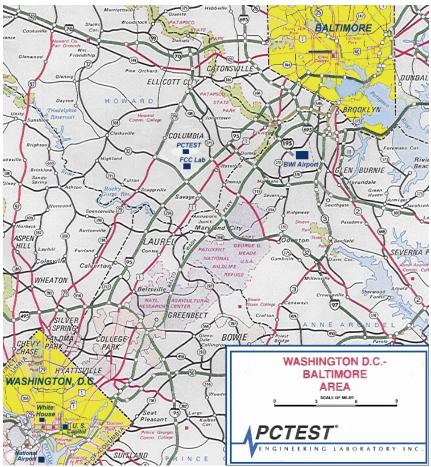


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the LGE Cellular/PCS CDMA/EvDO and 700MHz LTE Device FCC ID: BEJM13. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
LGE / Model: M13	BEJM13	Cellular/PCS CDMA/EvDO and 700MHz LTE Device

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 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase.

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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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DESCRIPTION OF TESTS

3.1 **Measurement Procedure**

The radiated spurious measurements were made outdoors at a 3-meter test range (See Figure 3-1). The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This power level was recorded using a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This level is recorded with the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

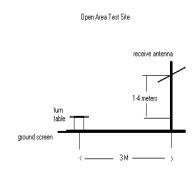


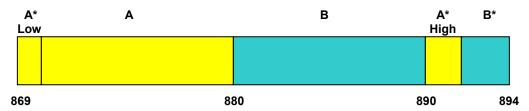
Figure 3-1. Diagram of 3-meter outdoor test range

Deviation from Measurement Procedure......None

3.2 **Occupied Bandwidth Emission Limits** §2.1049, 22.917(a), 24.238(a)

- On any frequency outside a licensee's frequency block, the power of any emission shall be a. attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB.
- b. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the C. licensee's frequency block edges, both upper and lower, as the design permits.
- The measurement of emission power can be expressed in peak or average values, provided they d. are expressed in the same parameters as the transmitter power.

3.3 Cellular - Base Frequency Blocks



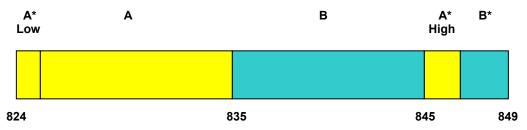
BLOCK 1: 869 - 880 MHz (A* Low + A) BLOCK 3: 890 - 891.5 MHz (A* High)

BLOCK 2: 880 - 890 MHz (B) BLOCK 4: 891.5 - 894 MHz (B*)

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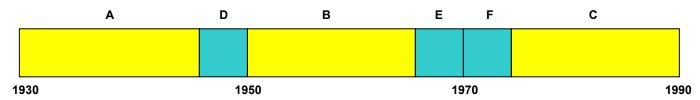
3.4 Cellular - Mobile Frequency Blocks



BLOCK 1: 824 – 835 MHz (A* Low + A) BLOCK 3: 845 – 846.5 MHz (A* High)

BLOCK 2: 835 – 845 MHz (B) BLOCK 4: 846.5 – 849 MHz (B*)

3.5 PCS - Base Frequency Blocks

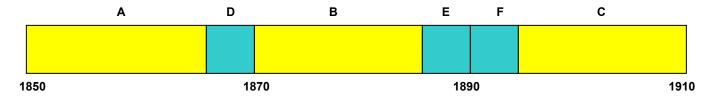


BLOCK 1: 1930 - 1945 MHz (A) BLOCK 4: 1965 - 1970 MHz (E)

BLOCK 2: 1945 - 1950 MHz (D) BLOCK 5: 1970 - 1975 MHz (F)

BLOCK 3: 1950 - 1965 MHz (B) BLOCK 6: 1975 - 1990 MHz (C)

3.6 PCS - Mobile Frequency Blocks



BLOCK 1: 1850 – 1865 MHz (A) BLOCK 4: 1885 – 1890 MHz (E)

BLOCK 2: 1865 – 1870 MHz (D) BLOCK 5: 1890 – 1895 MHz (F)

BLOCK 3: 1870 - 1885 MHz (B) BLOCK 6: 1895 - 1910 MHz (C)

3.7 Spurious and Harmonic Emissions at Antenna Terminal §2.1051, 22.917(a), 24.238(a)

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.

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Radiated Spurious and Harmonic Emissions 3.8 §2.1053, 22.917(a), 24.238(a)

Spurious and harmonic radiated emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This level is then measured with a broadband average power meter. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive average power meter reading. This spurious level is recorded with the power meter. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration. This device was tested under all R.C.s and S.O.s and the worst case is reported with EvDO Rev. 0 FTAP with "All Up" power control bits.

3.9 Peak-Average Ratio §24.232(d)

A peak to average ratio measurement is performed at the conducted port of the EUT. For CDMA and WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth.

Frequency Stability / Temperature Variation §2.1055, 22.355, 24.235

The frequency stability of the transmitter is measured by:

- Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an a.) environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

Time Period and Procedure:

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A sufficient stabilization period at each temperature shall be used prior to each frequency requirement.

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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.165	(30MHz - 1000MHz) RG58 Coax Cable	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	12/4/2008	Annual	12/4/2009	3439A02645
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	12/4/2008	Annual	12/4/2009	3008A00985
Agilent	8495A	(0-70dB) DC-4GHz Attenuator	N/A		N/A	N/A
Agilent	85650A	Quasi-Peak Adapter	12/4/2008	Annual	12/4/2009	3303A01872
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	12/5/2008	Annual	12/5/2009	3638A08713
Agilent	8591A	(9kHz-1.8GHz) Spectrum Analyzer	8/19/2008	Annual	8/19/2009	3144A02458
Agilent	E5515C	Wireless Communications Test Set	6/8/2007	Biennial	6/8/2009	GB46110872
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/25/2009	Biennial	3/25/2011	MY45470194
Agilent	N9020A	MXA Signal Analyzer	9/17/2008	Annual	9/17/2009	US46470561
Emco	3115	Horn Antenna (1-18GHz)	9/24/2007	Biennial	9/24/2009	9704-5182
Emco	3115	Horn Antenna (1-18GHz)	10/4/2007	Biennial	10/4/2009	9205-3874
Espec	ESX-2CA	Environmental Chamber	3/30/2009	Annual	3/30/2010	17620
Gigatronics	80701A	(0.05-18GHz) Power Sensor	8/18/2008	Annual	8/18/2009	1833460
Gigatronics	8651A	Universal Power Meter	8/18/2008	Annual	8/18/2009	1835299
MiniCircuits	VHF-1300+	High Pass Filter	N/A		N/A	30716
MiniCircuits	VHF-3100+	High Pass Filter	N/A		N/A	30721
Pasternack	PE2208-6	Bidirectional Coupler	N/A		N/A	N/A
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Rx	6/19/2007	Biennial	6/18/2009	9105-2404
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Tx	6/19/2007	Biennial	6/18/2009	9105-2403
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	5/14/2009	Biennial	5/14/2011	A050307

Table 4-1. Test Equipment

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SAMPLE CALCULATIONS

Emission Designator

Emission Designator = 1M25F9W

CDMA BW = 1.25 MHz F = Frequency Modulation 9 = Composite Digital Info

W = Combination (Audio/Data) (Measured at the 99.75% power bandwidth)

Spurious Radiated Emission - PCS Band

Example: Channel 25 PCS Mode 2nd Harmonic (3702.50 MHz)

The average receive power meter reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the power meter. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3702.50 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm – (-24.80) = 50.3 dBc.

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6.0 TEST RESULTS

6.1 **Summary**

Company Name: LG Electronics USA

FCC ID: BEJM13

PCS Licensed Transmitter (PCB) FCC Classification:

Mode(s): CDMA / EvDO

FCC Part Section(s)	Test Description	·		Test Result	Reference
TRANSMITTER MODE (TX)				
2.1049, 22.917(a), 24.238(a)	Occupied Bandwidth	N/A		PASS	Section 7.0
2.1051, 22.917(a), 24.238(a)	Band Edge / Conducted Spurious Emissions	< 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions		PASS	Section 7.0
24.232(d)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.0
2.1046	Transmitter Conducted Output Power	N/A		PASS	Section 6.2
2.1055, 22.355, 24.235	Frequency Stability	< 2.5 ppm		PASS	Sections 6.7, 6.8
22.913(a)(2)	Effective Radiated Power	< 7 Watts max. ERP		PASS	Section 6.3
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.4
2.1053, 22.917(a), 24.238(a)	Undesirable Emissions	< 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Sections 6.5, 6.6

Table 6-1. Summary of Test Results

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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6.2 **Transmitter Conducted Output Power** §2.1046

The LGE Cellular/PCS CDMA/EvDO and 700MHz LTE Device FCC ID: BEJM13 was connected to an Agilent Wireless Communications Test Set Model: E5515C to establish an RF link. The Agilent test set was used to change the operation mode of the LGE device using several configurations in CDMA and EvDO modes. This device was tested under all R.C.s and S.O.s and the worst case is reported with EvDO Rev. 0 FTAP with "All Up" power control bits.

CDMA 2000	Channel	SO55	TDSO SO32	EvDO Rev. 0	EvDO Rev. 0	EvDO Rev. A	EvDO Rev. A
Band	F-RC	RC3 [dBm]	RC3 [dBm]	RTAP [dBm]	FTAP [dBm]	RETAP [dBm]	FETAP [dBm]
	1013	24.91	24.98	25.16	25.04	25.03	25.15
Cellular	384	24.80	25.02	25.14	25.05	24.97	25.14
	777	24.82	24.66	25.12	25.21	25.08	25.18
	25	24.86	24.86	25.17	25.19	25.02	25.24
PCS	600	24.62	24.67	24.91	24.98	24.92	24.96
	1175	24.83	24.83	25.07	25.26	25.22	25.03

Table 6-2. CDMA/EvDO Maximum Conducted Output Power



Figure 6-1. Test Setup Diagram

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6.3 **Effective Radiated Power Output Data** §22.913(a)(2)

POWER: "All Up" Bits (Cellular CDMA Mode)

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
824.70	EvDO Rev. 0	-18.220	20.28	0.00	Н	20.28	0.107	Standard
836.52	EvDO Rev. 0	-17.880	20.62	0.00	Н	20.62	0.115	Standard
848.31	EvDO Rev. 0	-18.390	20.11	0.00	Н	20.11	0.103	Standard

Table 6-3. Effective Radiated Power Output Data

NOTES:

Effective Radiated Power Output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This level is recorded using the power meter. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

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Equivalent Isotropic Radiated Power Output Data §24.232(c)

POWER: "All Up" Bits (PCS CDMA Mode)

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1851.25	EvDO Rev. 0	-16.860	17.29	8.00	Н	25.29	0.338	Standard
1880.00	EvDO Rev. 0	-16.300	17.85	8.00	Н	25.85	0.385	Standard
1908.75	EvDO Rev. 0	-16.890	17.26	8.00	Н	25.26	0.336	Standard

Table 6-4. Equivalent Isotropic Radiated Power Output Data

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This level is recorded using the power meter. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

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Cellular CDMA Radiated Measurements 6.5 §2.1053, 22.917(a)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.70 MHz

1013 CHANNEL:

MEASURED OUTPUT POWER: 20.620 dBm 0.115 W

MODULATION SIGNAL: CDMA (Internal)

DISTANCE:

LIMIT: $43 + 10 \log 10 (W) =$ 33.62

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1649.40	-39.08	6.08	-32.99	Н	53.6
2474.10	-48.48	6.08	-42.39	Н	63.0
3298.80	-54.77	6.53	-48.23	Н	68.9
4123.50	-67.64	6.87	-60.77	H	81.4
4948.20	-91.07	7.21	-83.85	Н	104.5

Table 6-5. Radiated Spurious Data (Cellular CDMA Mode - Ch. 1013)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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Cellular CDMA Radiated Measurements (Cont'd) §2.1053, 22.917(a)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.52 MHz

> 384 CHANNEL:

MEASURED OUTPUT POWER: 20.620 dBm 0.115 W

MODULATION SIGNAL: CDMA (Internal)

DISTANCE:

LIMIT: $43 + 10 \log 10 (W) =$ 33.62 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.04	-46.99	6.09	-40.91	Н	61.5
2509.56	-46.44	6.55	-39.88	Н	60.5
3346.08	-59.90	6.89	-53.01	Н	73.6
4182.60	-65.33	7.43	-57.90	Н	78.5
5019.12	-89.90	8.35	-81.55	Н	102.2

Table 6-6. Radiated Spurious Data (Cellular CDMA Mode – Ch. 384)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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Cellular CDMA Radiated Measurements (Cont'd) §2.1053, 22.917(a)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: MHz

CHANNEL:

MEASURED OUTPUT POWER: 20.620 dBm 0.115

MODULATION SIGNAL: CDMA (Internal)

DISTANCE:

LIMIT: $43 + 10 \log 10 (W) =$ 33.62 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1696.62	-49.26	6.09	-43.17	Н	63.8
2544.93	-46.37	6.57	-39.80	Н	60.4
3393.24	-62.36	6.91	-55.45	Н	76.1
4241.55	-65.75	7.65	-58.11	Н	78.7
5089.86	-89.61	8.33	-81.28	Н	101.9

Table 6-7. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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6.6 PCS CDMA Radiated Measurements §2.1053, 24.238(a)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1851.25 MHz

CHANNEL: 25

MEASURED OUTPUT POWER: ______ 25.850 _____ dBm = _____ 0.385 _ W

MODULATION SIGNAL: CDMA (Internal)

DISTANCE: _____ meters

LIMIT: 43 + 10 log10 (W) = 38.85 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi) SPURIOUS EMISSION LEVEL (dBm)		POL (H/V)	(dBc)
3702.50	-47.79	9.02	-38.78	Н	64.6
5553.75	-61.71	10.40	-51.31	Н	77.2
7405.00	-58.14	10.51	-47.63	Н	73.5
9256.25	-85.04	11.84	-73.20	Н	99.1
11107.50	-82.56	12.76	-69.81	Ι	95.7

Table 6-8. Radiated Spurious Data (PCS CDMA Mode - Ch. 25)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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PCS CDMA Radiated Measurements (Cont'd) §2.1053, 24.238(a)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz

CHANNEL: 600

MEASURED OUTPUT POWER: 25.850 dBm = 0.385 W

MODULATION SIGNAL: CDMA (Internal)

DISTANCE: _____ meters

LIMIT: $43 + 10 \log 10 (W) = 38.85$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi) SPURIOUS EMISSION LEVEL (dBm)		POL (H/V)	(dBc)
3760.00	-54.43	8.99	-45.43	Н	71.3
5640.00	-59.68	10.40	-49.28	Н	75.1
7520.00	-58.59	10.62	-47.97	Н	73.8
9400.00	-84.87	11.70	-73.17	Н	99.0
11280.00	-81.79	12.69	-69.10	Н	94.9

Table 6-9. Radiated Spurious Data (PCS CDMA Mode - Ch. 600)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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PCS CDMA Radiated Measurements (Cont'd) §2.1053, 24.238(a)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1908.75 MHz

CHANNEL: 1175

MEASURED OUTPUT POWER: 25.850 dBm = 0.385 W

MODULATION SIGNAL: CDMA (Internal)

DISTANCE: _____ meters

LIMIT: $43 + 10 \log 10 (W) = 38.85$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi) SPURIOUS EMISSION LEVEL (dBm)		POL (H/V)	(dBc)
3817.50	-45.12	8.97	-36.15	Н	62.0
5726.25	-58.51	10.40	-48.11	Н	74.0
7635.00	-58.43	10.71	-47.72	Н	73.6
9543.75	-84.71	11.64	-73.08	Н	98.9
11452.50	-81.02	12.62	-68.40	Н	94.3

Table 6-10. Radiated Spurious Data (PCS CDMA Mode - Ch. 1175)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

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6.7 Cellular CDMA Frequency Stability Measurements §2.1055, 22.355

OPERATING FREQUENCY: 836,520,000 Hz

CHANNEL: ______384

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	836,519,995	-5	-0.000001
100 %		- 30	836,519,988	-12	-0.000001
100 %		- 20	836,519,991	-9	-0.000001
100 %		- 10	836,520,006	6	0.000001
100 %		0	836,519,984	-16	-0.000002
100 %		+ 10	836,520,004	4	0.000000
100 %		+ 20	836,519,980	-20	-0.000002
100 %		+ 30	836,519,985	-15	-0.000002
100 %		+ 40	836,519,986	-14	-0.000002
100 %		+ 50	836,520,017	17	0.000002
115 %	4.26	+ 20	836,520,010	10	0.000001
BATT. ENDPOINT	3.42	+ 20	836,519,993	-7	-0.000001

Table 6-11. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Cellular CDMA Frequency Stability Measurements (Cont'd) §2.1055, 22.355

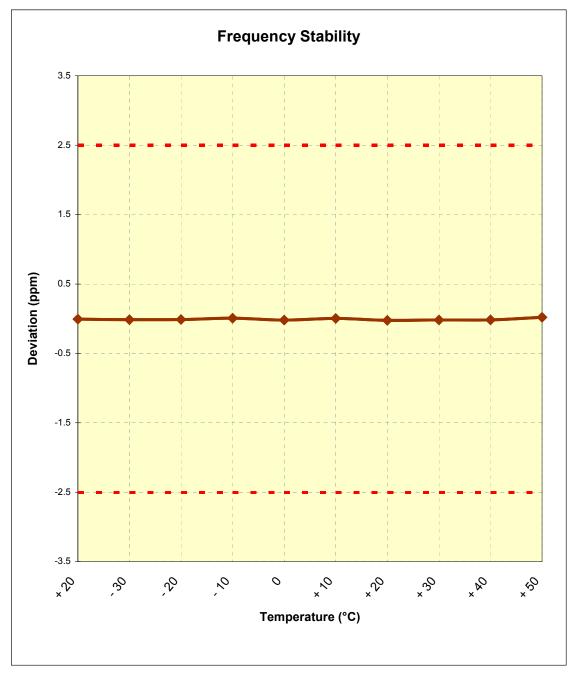


Figure 6-2. Frequency Stability Graph (Cellular CDMA Mode - Ch. 384)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.8 PCS CDMA Frequency Stability Measurements §2.1055, 24.235

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: ______600

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,880,000,006	6	0.000000
100 %		- 30	1,879,999,987	-13	-0.000001
100 %		- 20	1,880,000,003	3	0.000000
100 %		- 10	1,880,000,015	15	0.000001
100 %		0	1,880,000,006	6	0.000000
100 %		+ 10	1,880,000,007	7	0.000000
100 %		+ 20	1,880,000,019	19	0.000001
100 %		+ 30	1,879,999,988	-12	-0.000001
100 %		+ 40	1,879,999,992	-8	0.000000
100 %		+ 50	1,879,999,996	-4	0.000000
115 %	4.26	+ 20	1,880,000,005	5	0.000000
BATT. ENDPOINT	3.42	+ 20	1,880,000,011	11	0.000001

Table 6-12. Frequency Stability Data (PCS CDMA Mode - Ch. 600)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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PCS CDMA Frequency Stability Measurements (Cont'd) §2.1055, 24.235

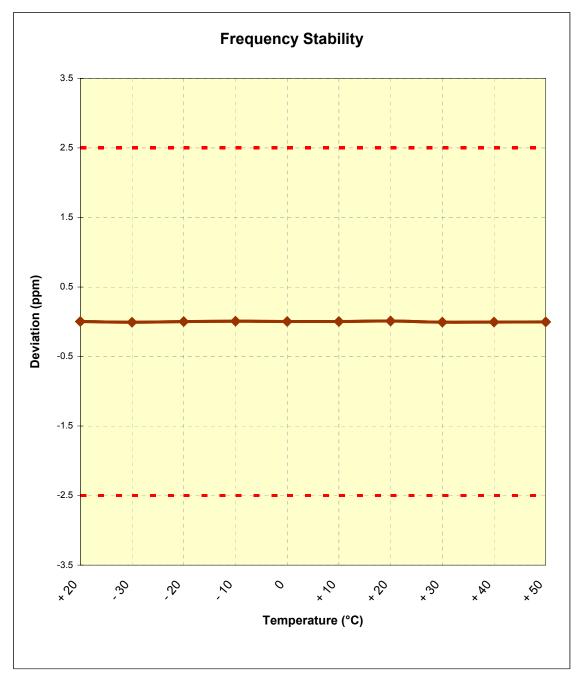
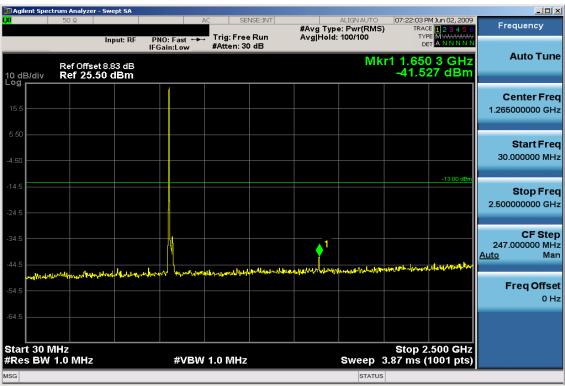


Figure 6-3. Frequency Stability Graph (PCS CDMA Mode - Ch. 600)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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7.0 PLOT(S) OF EMISSIONS



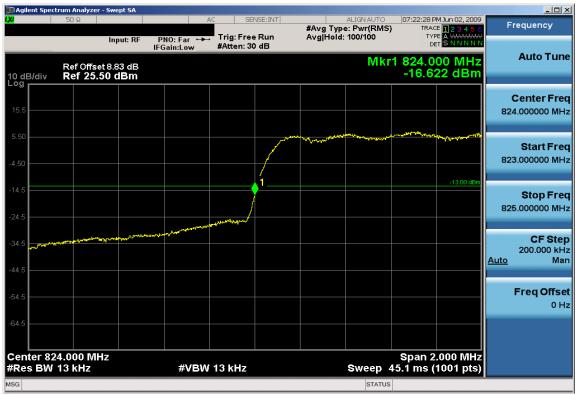
Plot 7-1. Conducted Spurious Plot (Cellular CDMA Mode - Ch. 1013)



Plot 7-2. Conducted Spurious Plot (Cellular CDMA Mode - Ch. 1013)

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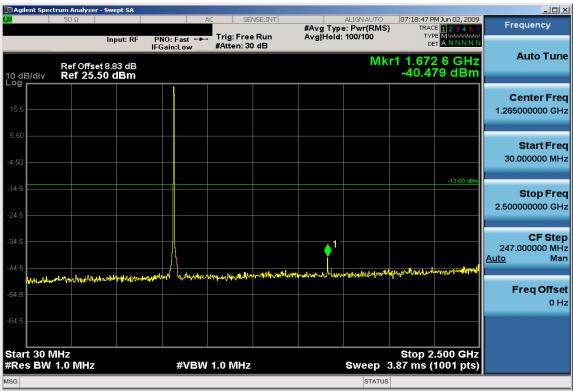
Plot 7-3. Band Edge Plot (Cellular CDMA Mode – Ch. 1013)



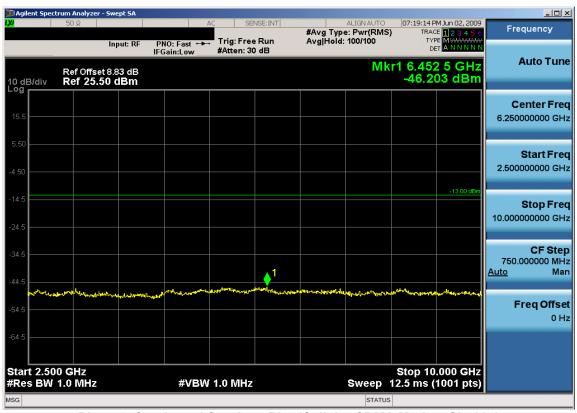
Plot 7-4. 4MHz Span Plot (Cellular CDMA Mode - Ch. 1013)

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Plot 7-5. Conducted Spurious Plot (Cellular CDMA Mode - Ch. 384)



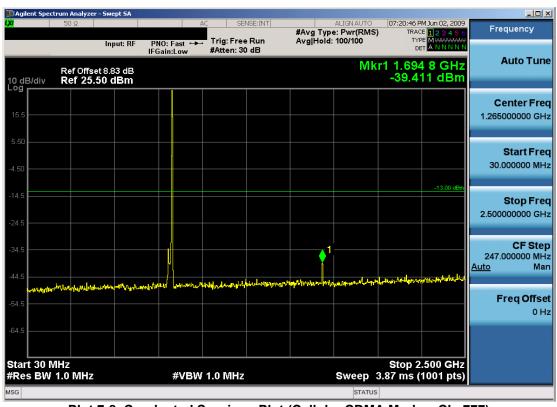
Plot 7-6. Conducted Spurious Plot (Cellular CDMA Mode - Ch. 384)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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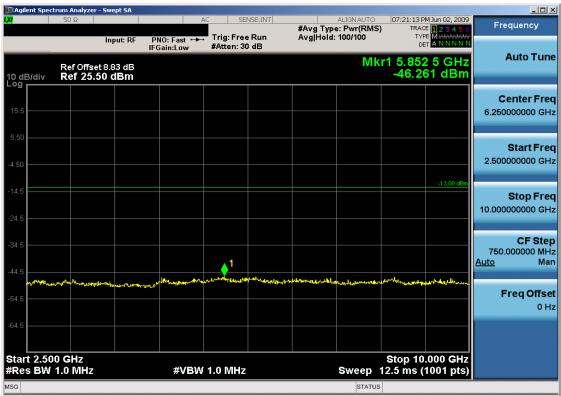
Plot 7-7. Occupied Bandwidth Plot (Cellular CDMA Mode - Ch. 384)



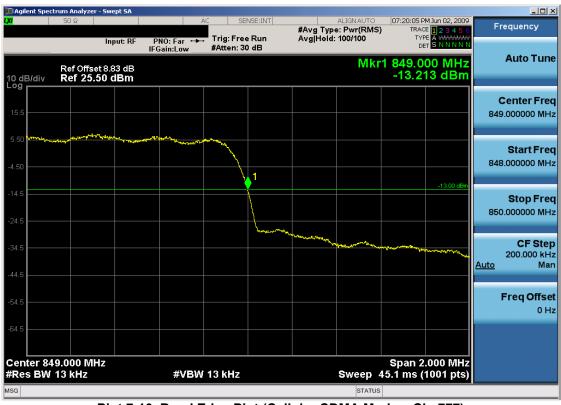
Plot 7-8. Conducted Spurious Plot (Cellular CDMA Mode – Ch. 777)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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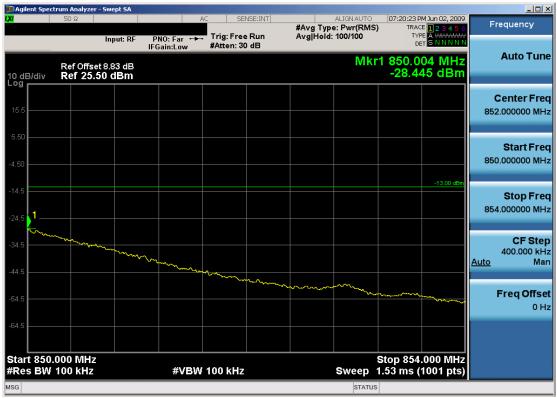
Plot 7-9. Conducted Spurious Plot (Cellular CDMA Mode - Ch. 777)



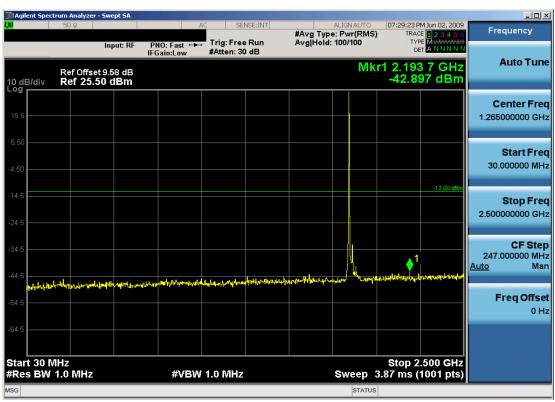
Plot 7-10. Band Edge Plot (Cellular CDMA Mode – Ch. 777)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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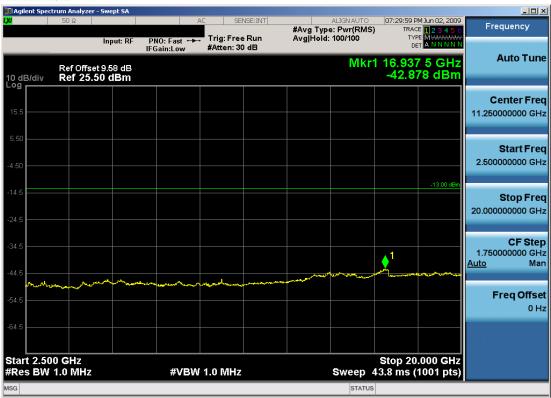
Plot 7-11. 4MHz Span Plot (Cellular CDMA Mode - Ch. 777)



Plot 7-12. Conducted Spurious Plot (PCS CDMA Mode - Ch. 25)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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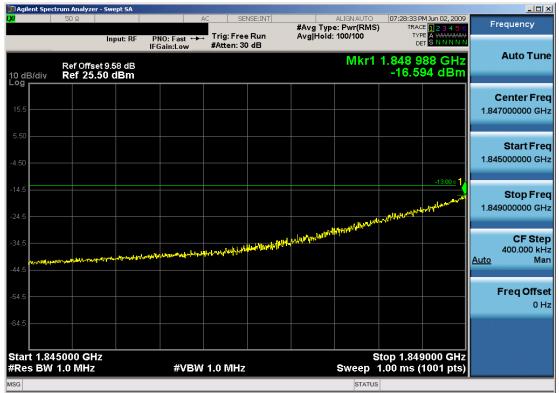
Plot 7-13. Conducted Spurious Plot (PCS CDMA Mode - Ch. 25)



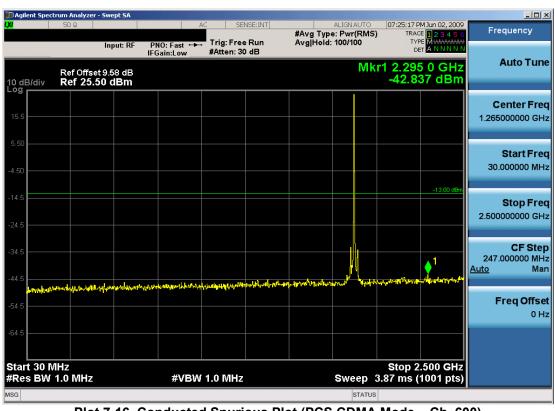
Plot 7-14. Band Edge Plot (PCS CDMA Mode - Ch. 25)

FCC ID: BEJM13	PCTEST* ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EVDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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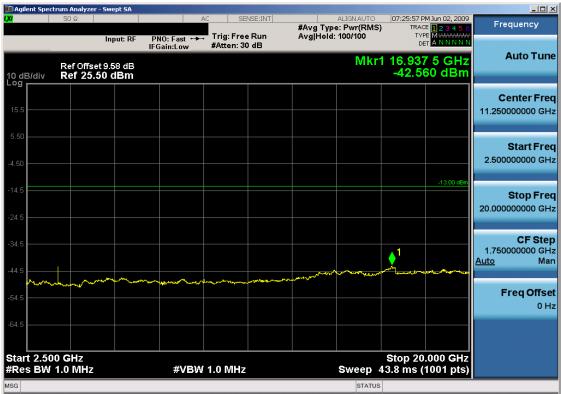
Plot 7-15. 4MHz Span Plot (PCS CDMA Mode - Ch. 25)



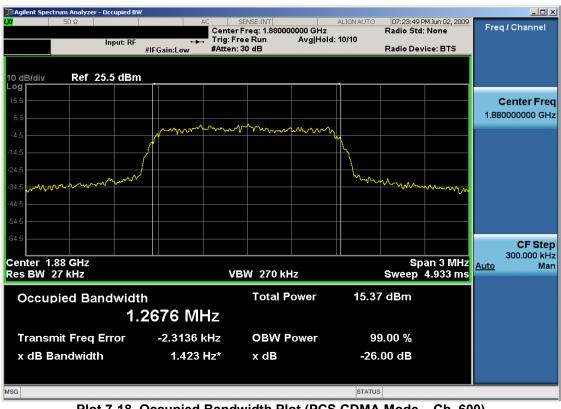
Plot 7-16. Conducted Spurious Plot (PCS CDMA Mode - Ch. 600)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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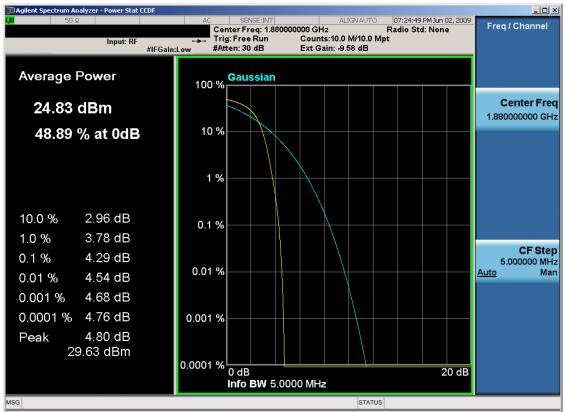
Plot 7-17. Conducted Spurious Plot (PCS CDMA Mode - Ch. 600)



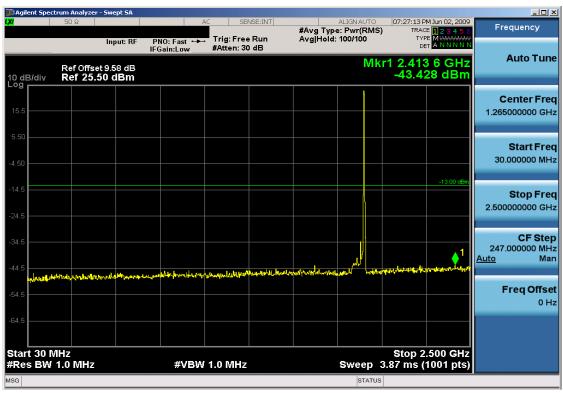
Plot 7-18. Occupied Bandwidth Plot (PCS CDMA Mode - Ch. 600)

FCC ID: BEJM13	PCTEST* ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EVDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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Plot 7-19. Peak-Average Ratio Plot (PCS CDMA Mode - Ch. 600)



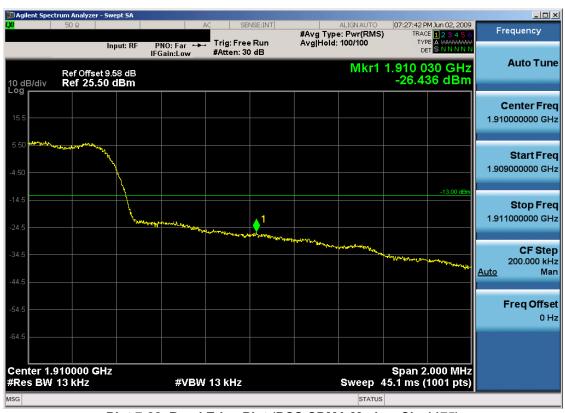
Plot 7-20. Conducted Spurious Plot (PCS CDMA Mode - Ch. 1175)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager	
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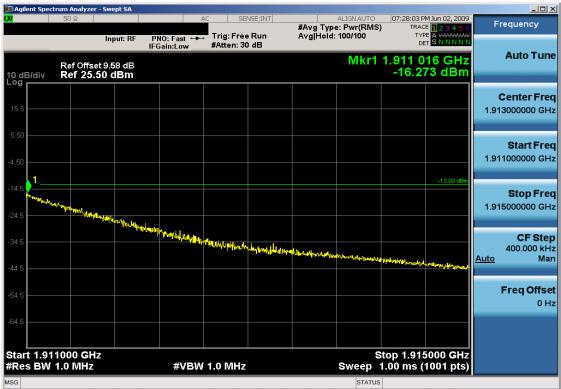
Plot 7-21. Conducted Spurious Plot (PCS CDMA Mode - Ch. 1175)



Plot 7-22. Band Edge Plot (PCS CDMA Mode - Ch. 1175)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EVDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager		
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Plot 7-23. 4MHz Span Plot (PCS CDMA Mode - Ch. 1175)

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EvDO MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager	
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CONCLUSION 8.0

The data collected relate only to the item(s) tested and show that the LGE Cellular/PCS CDMA/EvDO and 700MHz LTE Device FCC ID: BEJM13 complies with all the requirements of Parts 2, 22, and 24 of the FCC rules.

FCC ID: BEJM13	PCTEST° ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 CDMA / EVDO MEASUREMENT REPORT (CERTIFICATION)	⊕ LG	Reviewed by: Quality Manager	
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