# 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 Class II Permissive Change

**Applicant Name:** LG Electronics USA 1000 Sylvan Avenue Englewood Cliffs, NJ 07632 **United States** 0Y100

Date of Testing: January 11, 2010 **Test Site/Location:** PCTEST Lab, Columbia, MD, USA **Test Report Serial No.:** 1060022.BEJ

FCC ID: BEJLG320G

APPLICANT: LG ELECTRONICS USA

Application Type: Class II Permissive Change

**FCC Classification:** PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s): §2; §22(H), §24(E) **EUT Type:** 850/1900 GSM Phone

LG320G Model(s):

824.20 - 848.80MHz (Cell. GSM) / 1850.20 - 1909.80MHz (PCS GSM) Tx Frequency Range:

Max. RF Output Power: 1.618 W ERP Cell. GSM (32.09 dBm) / 1.977 W EIRP PCS GSM (32.96 dBm)

247KGXW (Cellular GSM), 245KGXW (PCS GSM) Emission Designator(s):

**Test Device Serial No.:** identical prototype [S/N: 912KPRW140486]

**Class II Permissive Change:** Please see change document.

Original Grant Date: April 06, 2010

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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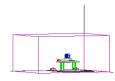


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# MEASUREMENT REPORT FCC Part 22 & 24



## §2.1033 General Information

APPLICANT: LG Electronics USA **APPLICANT ADDRESS:** 1000 Sylvan Avenue

Englewood Cliffs, NJ 07632

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

FCC RULE PART(S): §2; §22(H), §24(E)

**BASE MODEL:** LG320G FCC ID: BEJLG320G

**FCC CLASSIFICATION:** PCS Licensed Transmitter Held to Ear (PCE) **EMISSION DESIGNATOR(S):** 247KGXW (Cellular GSM), 245KGXW (PCS GSM)

MODE: **GSM** 

FREQUENCY TOLERANCE: ±0.00025 % (2.5 ppm)

**Test Device Serial No.:** 912KPRW140486 ☐ Production □ Pre-Production ☐ Engineering

DATE(S) OF TEST: January 11, 2010 **TEST REPORT S/N:** 0Y1001060022.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 a ccredited to ISO 17 025 by U.S. Nation al In stitute of Stand ards and Technology (NIST) un der the National Vol untary Lab oratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST La b is accredi ted to ISO 17025-2005 by the American Asso 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 re cognized U.S. Conformity As sessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunic ation Certification Body (T CB) a ccredited 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 Auth orized Test Labo ratory (CATL) for A MPS, CDMA, and Ev DO wireless d evices and for Over-the-Air (OTA) Ante nna Perfo rmance te sting for AMPS. CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.



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### INTRODUCTION

#### 1.1 Scope

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.

#### **Testing Facility** 1.2

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 an d 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 te st site i s on e of the hig hest points i n 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 i s 1.5 miles North of t he FCC la boratory, and the am bient signal and ambient signal st rength are approximately equ al to those of the FCC laboratory. There a re n o FM o r 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.

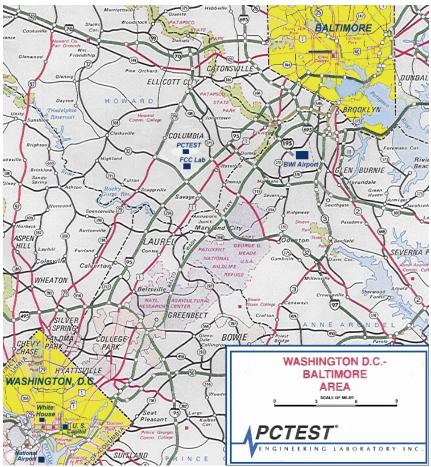


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

•	•	•	•	
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### 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the LG 850/1900 GSM Phone FCC ID: BEJLG320G. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
LG / Model: LG320G	BEJLG320G	850/1900 GSM Phone

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 F CC id entifier shall be p ermanently 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 lab el sh all be pe rmanently affixed at a con spicuous location on the d evice; in struction manu al 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 TESTS

### 3.1 Measurement Procedure

The radiated sp urious m easurements we re made outdo ors at a 3 - meter te st range (Se e F igure 3 -1). The equipment und er test i s placed on a woo den tu rntable 80 cm a bove the gro und plane and 3 meters from the receive antenna. The receive a ntennaheight and turntable rot ations were adjusted for the highe st reading on the receive spectrum an alyzer. This power level was recorded u sing a broadband average power meter. Ahalf-wave dipole was substituted in place of the EUT. The is 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.

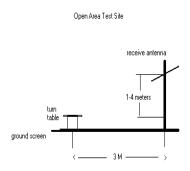


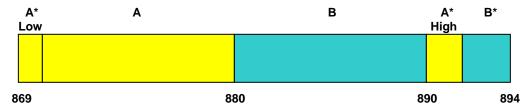
Figure 3-1. Diagram of 3-meter outdoor test range

Deviation from Measurement Procedure.....None

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

- a. On any frequency outside a licensee's frequency block, the power of any emission shall be 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.

# 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



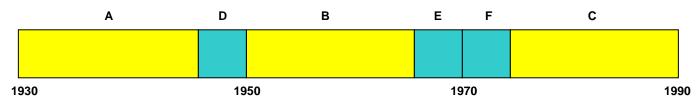
BLOCK 1: 824 – 835 MHz (A\* Low + A)

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)

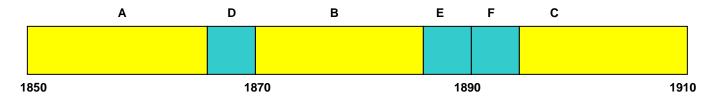
BLOCK 2: 1945 - 1950 MHz (D)

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 vario us 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 10<sup>th</sup> harmonic.

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# 3.8 Radiated Power and Radiated Spurious Emissions §2.1053, 22.917(a), 22.913(a), 24.232(c), 24.238(a)

Radiated power and radiated spurious emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 80 cm 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 10<sup>th</sup> harmonic. A half-wave dip ole 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 in all configurations and the highest power is reported in GSM voice mode while using a Power Control Level of "5" in the Cellular band and "0" in the PCS band.

# 3.9 Peak-Average Ratio §24.232(d)

A peak to average ratio measurement is performed at the conducted port of the EUT. 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.

# **3.10** Frequency Stability / Temperature Variation §2.1055, 22.355, 24.235

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an 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 of perating 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  $\pm 0.00025\%$  ( $\pm 2.5$  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 e quipment is turned on in a "stand by" condition for one minute before applying power to the transmitter. Mea surement 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 period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

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# 4.0 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 11	713A	Attenuation/Switch Driver	12/2/2009	Annual	12/2/2010	3439A02645
Agilent 84	49B	(1-26.5GHz) Pre-Amplifier	12/2/2009	Annual	12/2/2010	3008A00985
Agilent 84	95A	(0-70dB) DC-4GHz Attenuator	N/A		N/A	N/A
Agilent 85	650A	Quasi-Peak Adapter	12/2/2009	Annual	12/2/2010	3303A01872
Agilent 85	650A	Quasi-Peak Adapter	3/24/2009	Annual	3/24/2010	2043A00301
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	12/2/2009	Annual	12/2/2010	3638A08713
Agilent	8648D	(9kHz-4GHz) Signal Generator	9/19/2009	Biennial	9/19/2011	3613A00315
Agilent	E4407B	ESA Spectrum Analyzer	9/28/2009	Annual	9/28/2010	US39210313
Agilent	E4432B	ESG-D Series Signal Generator	9/10/2009	Annual	9/10/2010	US40053896
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	10/1/2009	Annual	10/1/2010	US42510244
Agilent	E5515C	Wireless Communications Test Set	9/10/2009	Annual	9/10/2010	GB46110872
Agilent	E5515C	Wireless Communications Test Set	9/11/2009	Annual	9/11/2010	GB46310798
Agilent	E5515C	Wireless Communications Test Set	8/25/2009	Annual	8/25/2010	GB41450275
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/25/2009	Biennial	3/25/2011	MY45470194
Agilent	E8267C	Vector Signal Generator	9/29/2009	Biennial	9/29/2011	US42340152
Agilent N902	0A	MXA Signal Analyzer	10/22/2009	Annual	10/22/2010	US46470561
Anritsu ML	2495A	Power Meter	10/12/2009	Annual	10/12/2010	941001
Emco 311	5	Horn Antenna (1-18GHz)	10/14/2009	Biennial	10/14/2011	9704-5182
Espec E	SX-2CA	Environmental Chamber	3/30/2009	Annual	3/30/2010	17620
Gigatronics 80	701A	(0.05-18GHz) Power Sensor	9/9/2009	Annual	9/9/2010	1833460
Gigatronics 86	51A	Universal Power Meter	9/9/2009	Annual	9/9/2010	8650319
K&L	11SH10	Band Pass Filter	N/A	Annual	N/A	1300/4000
K&L	11SH10	Band Pass Filter	N/A	Annual	N/A	4000/12000
MiniCircuits VHF	13 00+	High Pass Filter	N/A		N/A	30716
MiniCircuits VHF-	31 00+	High Pass Filter	N/A		N/A	30721
Pasternack P	E2208-6	Bidirectional Coupler	N/A		N/A	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	9/11/2009	Annual	9/11/2010	836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	9/4/2009	Annual	9/4/2010	109892
Rohde & Schwarz	CMU200	Base Station Simulator	6/12/2009	Annual	6/12/2010	836536/0005
Rohde & Schwarz	FSQ 26	Spectrum Analyzer	9/19/2009	Annual	9/19/2010	200452
Rohde & Schwarz	CMW500	LTE Base Station Simulator	8/25/2009	Annual	8/25/2010	100976
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Rx	7/17/2009	Biennial	7/17/2011	9105-2404
Schwarzbeck	UHA9105	Dipole Antenna (400 - 1GHz) Tx	7/17/2009	Biennial	7/17/2011	9105-2403
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

Table 4-1. Test Equipment

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# 5.0 SAMPLE CALCULATIONS

## **Emission Designator**

Emission Designator = 250KGXW

GSM BW = 250 kHz G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data)

# **Spurious Radiated Emission - PCS Band**

Example: Channel 512 PCS Mode 2<sup>nd</sup> Harmonic (3700.40 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 an tenna is 8.1 dBi. The signal generator connected to the substituted an tenna 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 3700.40 MHz. So 6.1 dB is ad ded 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.



# 6.0 TEST RESULTS

# 6.1 Summary

Company Name: <u>LG Electronics USA</u>

FCC ID: BEJLG320G

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): GSM

FCC Part Section(s)	Test Description	Test Limit	Test Condition	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 + log <sub>10</sub> (P[Watts]) at Band Edge and for all out-of-band emissions		PASS Sec	tion 7.0			
24.232(d)	Peak-Average Ratio	< 13 dB	CONDUCTED	PASS	Section 7.0			
2.1046	Transmitter Conducted Output Power	N/A		PASS	RF Exposure Report			
22.913(a)(2)	Effective Radiated Power	< 7 Watts max. ERP (<6.3 Watts max. ERP (IC))		PASS Sec	tion 6.2			
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.3			
2.1053, 22.917(a), 24.238(a)	Undesirable Emissions	< 43 + log <sub>10</sub> (P[Watts]) for all out-of- band emissions		PASS	Sections 6.4, 6.5			
2.1055, 22.355, 24.235	Frequency Stability	< 2.5 ppm		PASS	Sections 6.6, 6.7			

Table 6-1. Summary of Test Results

FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# 6.2 Effective Radiated Power Output Data §22.913(a)(2)

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Battery Type
824.20	GSM850	-9.030	31.15	0.00	Н	31.15	1.303	Standard
836.60	GSM850	-8.090	32.09	0.00	Н	32.09	1.618	Standard
848.80	GSM850	-9.740	30.44	0.00	Η	30.44	1.107	Standard

Table 6-2. Effective Radiated Power Output Data

### **NOTES:**

Effective Ra diated P ower Output Measurements by S ubstitution Method acc ording t o 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 po wer 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 a djusted 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)

Frequency [MHz]	Mode	Measured Level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Battery Type
1850.20	GSM1900	-9.200	24.51	8.00	Н	32.51	1.782	Standard
1880.00	GSM1900	-8.900	24.81	8.00	Н	32.81	1.910	Standard
1909.80	GSM1900	-8.750	24.96	8.00	Н	32.96	1.977	Standard

Table 6-3. Equivalent Isotropic Radiated Power Output Data

### NOTES:

Equivalent I sotropic Rad iated Po wer Mea surements by Su bstitution Met hod 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 met er. The conducted power at the terminals of the Ho rn 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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# 6.4 Cellular GSM Radiated Measurements §2.1053, 22.917(a); RSS-132 (4.5.1)

## Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 824.20 MHz

CHANNEL: 128

MEASURED OUTPUT POWER: 32.090 dBm = 1.618 W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT:  $\overline{43 + 10 \log_{10} (W)} = 45.09$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1648.40	-56.47	6.08	-50.39	Н	82.5
2472.60	-60.66	6.53	-54.13	Н	86.2
3296.80	-59.32	6.87	-52.45	Н	84.5
4121.00	-91.53	7.21	-84.33	Ι	116.4
4945.20	-90.35	8.37	-81.97	Ι	114.1

Table 6-4. Radiated Spurious Data (Cellular GSM Mode – Ch. 128)

#### NOTES:

Radiated S purious Em ission Measurements by Sub stitution Meth od a ccording 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 po wer 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 a djusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1G Hz, the above procedure is repeated using horn antennas and the difference be tween the grain of the horn and dan isotropic or dipole antenna are taken into consideration.

FCC ID: BEJLG320G	PCTEST'	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# Cellular GSM Radiated Measurements (Cont'd)

§2.1053, 22.917(a); RSS-132 (4.5.1)

# Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 836.60 MHz

CHANNEL: 190

MEASURED OUTPUT POWER: 32.090 dBm = 1.618 W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT:  $\overline{43 + 10 \log_{10} (W)} = 45.09$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1673.20	-60.47	6.09	-54.39	Н	86.5
2509.80	-57.12	6.55	-50.56	Н	82.7
3346.40	-58.63	6.89	-51.74	Н	83.8
4183.00	-91.74	7.43	-84.30	Н	116.4
5019.60	-89.99	8.35	-81.65	Н	113.7

Table 6-5. Radiated Spurious Data (Cellular GSM Mode – Ch. 190)

### NOTES:

Radiated S purious Em ission Measurements by Sub stitution Meth od a ccording 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 po wer 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 a djusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1G Hz, the above procedure is repeated using horn antennas and the difference be tween the grain of the horn and dan isotropic or dipole antenna are taken into consideration.

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# Cellular GSM Radiated Measurements (Cont'd)

§2.1053, 22.917(a); RSS-132 (4.5.1)

# Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 848.80 MHz

CHANNEL: 251

MEASURED OUTPUT POWER: \_\_\_\_\_ 32.090 \_\_\_\_ dBm = \_\_\_\_ 1.618 \_ W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT:  $43 + 10 \log_{10} (W) = 45.09$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1697.60	-59.17	6.09	-53.08	Н	85.2
2546.40	-57.50	6.57	-50.93	Н	83.0
3395.20	-56.94	6.91	-50.03	Н	82.1
4244.00	-91.93	7.65	-84.28	Н	116.4
5092.80	-89.71	8.33	-81.38	Н	113.5

Table 6-6. Radiated Spurious Data (Cellular GSM Mode – Ch. 251)

### NOTES:

Radiated S purious Em ission Measurements by Sub stitution Meth od a ccording 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 po wer 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 a djusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1G Hz, the above procedure is repeated using horn antennas and the difference be tween the grain of the horn and dan isotropic or dipole antenna are talken into consideration.

FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# 6.5 PCS GSM Radiated Measurements

§2.1053, 24.238(a); RSS-133 (6.5.1)

## Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1850.20 MHz

CHANNEL: 512

MEASURED OUTPUT POWER: \_\_\_\_\_ 32.960 \_\_\_\_ dBm = \_\_\_\_ 1.977 \_ W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT:  $\overline{43 + 10 \log_{10} (W)} = 45.96$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-52.56	9.02	-43.55	Н	76.5
5550.60	-54.19	10.40	-43.79	Н	76.7
7400.80	-86.54	10.50	-76.04	Н	109.0
9251.00	-86.24	11.85	-74.39	Н	107.4
11101.20	-83.76	12.76	-71.00	Ι	104.0

Table 6-7. Radiated Spurious Data (PCS GSM Mode – Ch. 512)

#### NOTES:

Radiated S purious Em ission Measurements by Sub stitution Meth od a ccording 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 po wer 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 a djusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1G Hz, the above procedure is repeated using horn antennas and the difference be tween the grain of the horn and dan isotropic or dipole antenna are taken into consideration.

FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# PCS GSM Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

## Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz

CHANNEL: 661

MEASURED OUTPUT POWER: 32.960 dBm = 1.977 W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT:  $\overline{43 + 10 \log_{10} (W)} = 45.96$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-50.67	8.99	-41.68	Н	74.6
5640.00	-52.45	10.40	-42.05	Н	75.0
7520.00	-86.58	10.62	-75.96	Н	108.9
9400.00	-86.05	11.70	-74.35	Η	107.3
11280.00	-82.98	12.69	-70.29	Н	103.3

Table 6-8. Radiated Spurious Data (PCS GSM Mode – Ch. 661)

#### NOTES:

Radiated S purious Em ission Measurements by Sub stitution Meth od a ccording 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 po wer 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 a djusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1G Hz, the above procedure is repeated using horn antennas and the difference be tween the grain of the horn and dan isotropic or dipole antenna are taken into consideration.

FCC ID: BEJLG320G	PCTEST INGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# PCS GSM Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

# Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1909.80 MHz

CHANNEL: 810

MEASURED OUTPUT POWER: \_\_\_\_\_\_ 32.960 \_\_\_\_ dBm = \_\_\_\_\_1.977 \_ W

MODULATION SIGNAL: GSM (Internal)

DISTANCE: 3 meters

LIMIT:  $\overline{43 + 10 \log_{10} (W)} = 45.96$  dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-53.44	8.97	-44.47	Н	77.4
5729.40	-53.86	10.40	-43.46	Н	76.4
7639.20	-50.84	10.71	-40.13	Н	73.1
9549.00	-85.88	11.64	-74.24	Н	107.2
11458.80	-82.21	12.62	-69.60	Н	102.6

Table 6-9. Radiated Spurious Data (PCS GSM Mode - Ch. 810)

### NOTES:

Radiated S purious Em ission Measurements by Sub stitution Meth od a ccording 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 po wer 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 a djusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1G Hz, the above procedure is repeated using horn antennas and the difference be tween the grain of the horn and dan isotropic or dipole antenna are taken into consideration.

FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# 6.6 Cellular GSM Frequency Stability Measurements §2.1055, 22.355; RSS-132 (4.3)

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: \_\_\_\_\_\_190

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

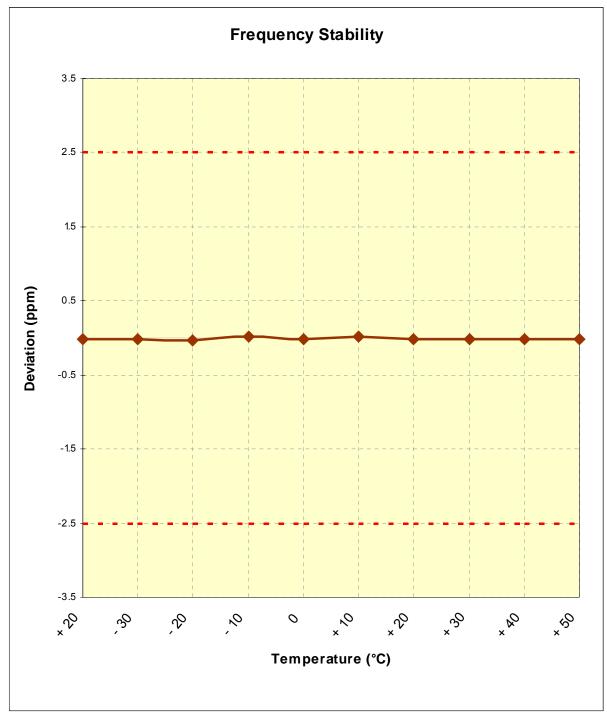
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	836,599,990	-10	-0.000001
100 %		- 30	836,599,984	-16	-0.000002
100 %		- 20	836,599,976	-24	-0.000003
100 %		- 10	836,600,012	12	0.000001
100 %		0	836,599,982	-18	-0.000002
100 %		+ 10	836,600,019	19	0.000002
100 %		+ 20	836,599,990	-10	-0.000001
100 %		+ 30	836,599,987	-13	-0.000002
100 %		+ 40	836,599,982	-18	-0.000002
100 %		+ 50	836,599,981	-19	-0.000002
115 %	4.26	+ 20	836,599,976	-24	-0.000003
BATT. ENDPOINT	3.20	+ 20	836,599,968	-32	-0.000004

Table 6-10. Frequency Stability Data (Cellular GSM Mode – Ch. 190)

FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# Cellular GSM Frequency Stability Measurements (Cont'd) §2.1055, 22.355; RSS-132 (4.3)



Plot 6-1. Frequency Stability Graph (Cellular GSM Mode – Ch. 190)

FCC ID: BEJLG320G	PETEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# 6.7 PCS GSM Frequency Stability Measurements §2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: \_\_\_\_\_\_\_\_661

REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

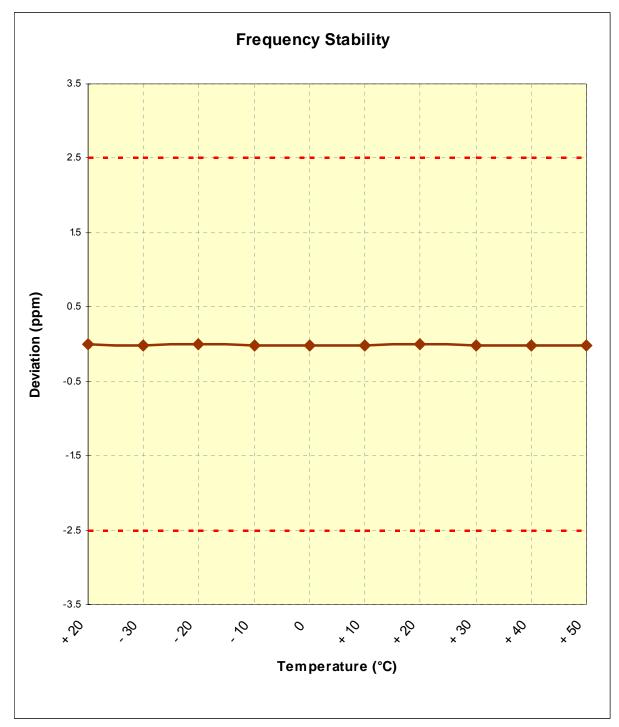
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,879,999,985	-15	-0.000001
100 %		- 30	1,879,999,981	-19	-0.000001
100 %		- 20	1,879,999,987	-13	-0.000001
100 %		- 10	1,879,999,983	-17	-0.000001
100 %		0	1,879,999,978	-22	-0.000001
100 %		+ 10	1,879,999,976	-24	-0.000001
100 %		+ 20	1,879,999,985	-15	-0.000001
100 %		+ 30	1,879,999,982	-18	-0.000001
100 %		+ 40	1,879,999,976	-24	-0.000001
100 %		+ 50	1,879,999,974	-26	-0.000001
115 %	4.26	+ 20	1,879,999,971	-29	-0.000002
BATT. ENDPOINT	3.20	+ 20	1,879,999,968	-32	-0.000002

Table 6-11. Frequency Stability Data (PCS GSM Mode - Ch. 661)

FCC ID: BEJLG320G	PCTEST INGINEERING LARDRATORY, INC.	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# PCS GSM Frequency Stability Measurements (Cont'd) §2.1055, 24.235; RSS-133 (6.3)

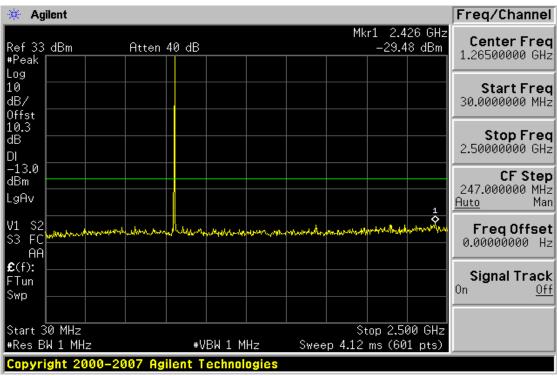


Plot 6-2. Frequency Stability Graph (PCS GSM Mode - Ch. 661)

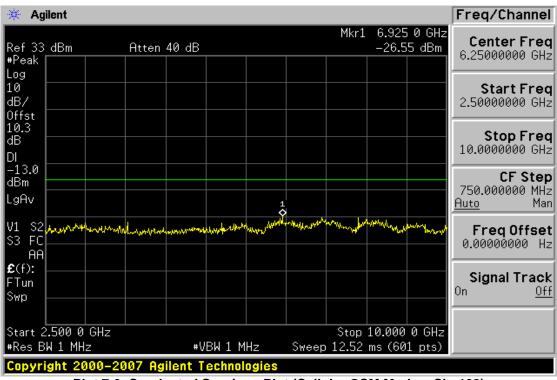
FCC ID: BEJLG320G	PCTEST LING LABORATORY, INC.	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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# 7.0 PLOTS OF EMISSIONS



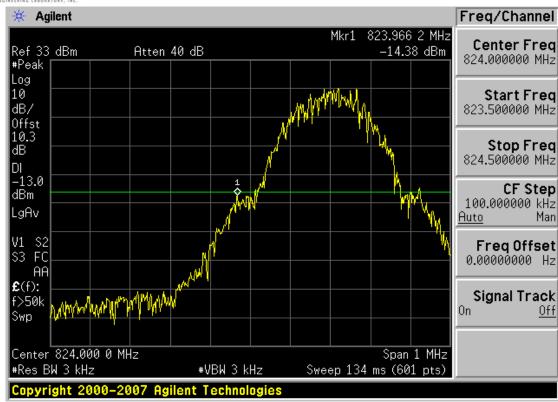
Plot 7-1. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)



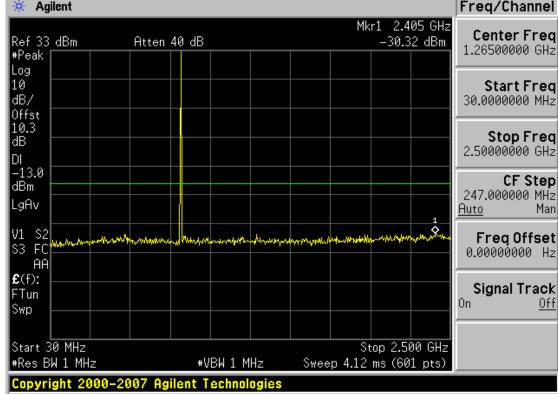
Plot 7-2. Conducted Spurious Plot (Cellular GSM Mode – Ch. 128)

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FOO ID: DE II 00000	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT		Reviewed by:
FCC ID: BEJLG320G	TENGINEERING LABORATORY, INC.	(CLASS II PERMISSIVE CHANGE)	G LG	Quality Manager
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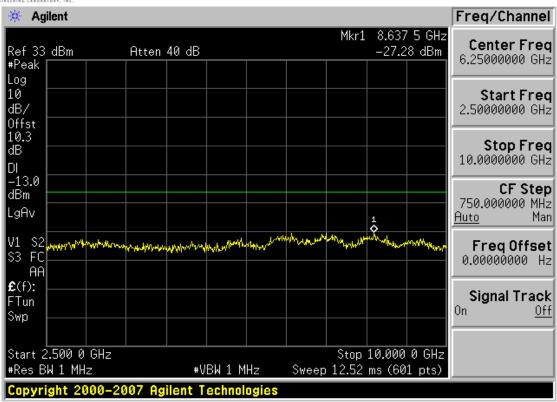
Plot 7-3. Band Edge Plot (Cellular GSM Mode - Ch. 128)



Plot 7-4. Conducted Spurious (Cellular GSM Mode – Ch. 190)

FCC ID: BEJLG320G	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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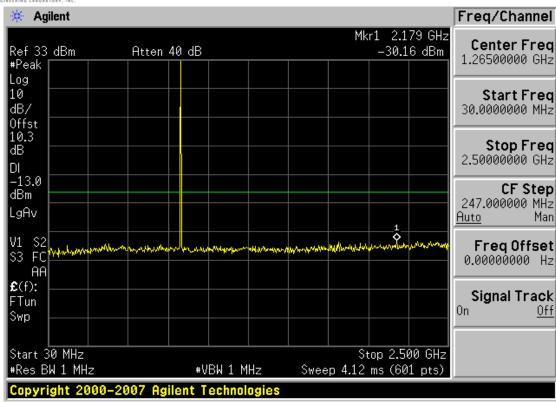
Plot 7-5. Conducted Spurious Plot (Cellular GSM Mode – Ch. 190)



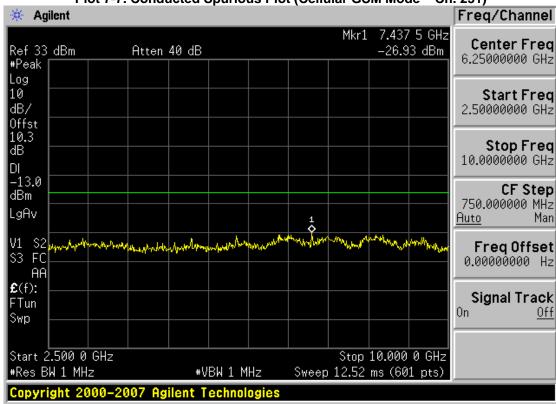
Plot 7-6. Occupied Bandwidth Plot (Cellular GSM Mode – Ch. 190)

FCC ID: BEJLG320G	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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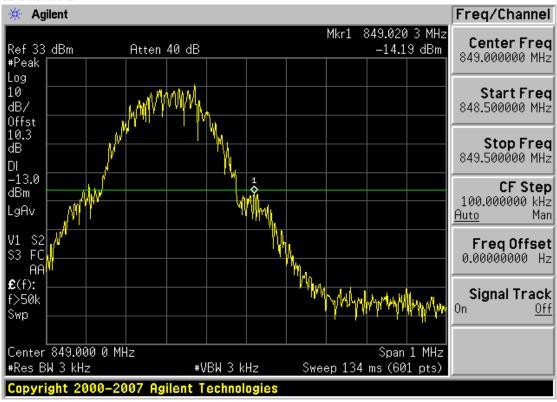
Plot 7-7. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)



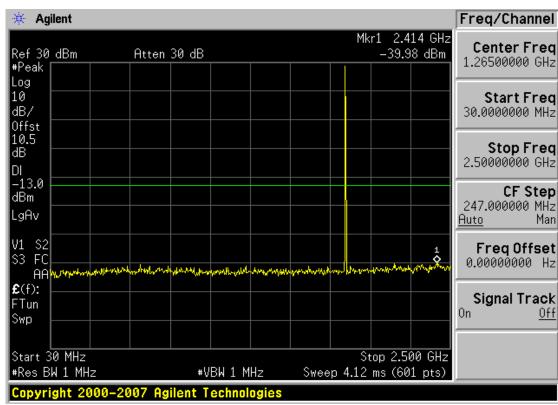
Plot 7-8. Conducted Spurious Plot (Cellular GSM Mode – Ch. 251)

FCC ID: BEJLG320G	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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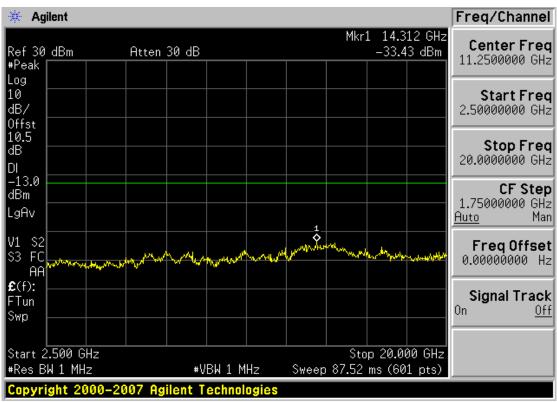
Plot 7-9. Band Edge Plot (Cellular GSM Mode - Ch. 251)



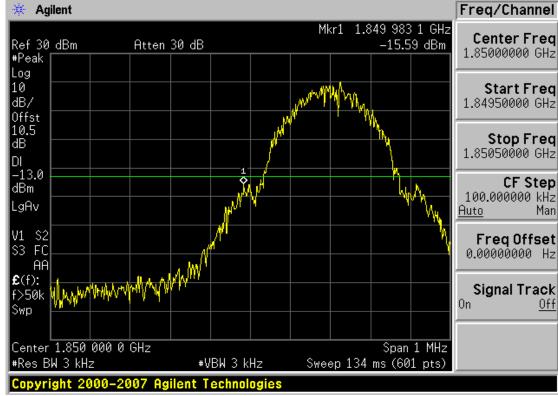
Plot 7-10. Conducted Spurious Plot (PCS GSM Mode - Ch. 512)

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FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by:
				Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 28 of 33
0Y1001060022.BEJ	January 11, 2010	850/1900 GSM Phone		Fage 20 01 33
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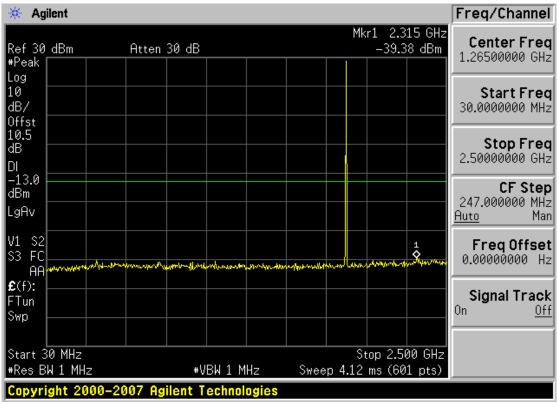
Plot 7-11. Conducted Spurious Plot (PCS GSM Mode - Ch. 512)



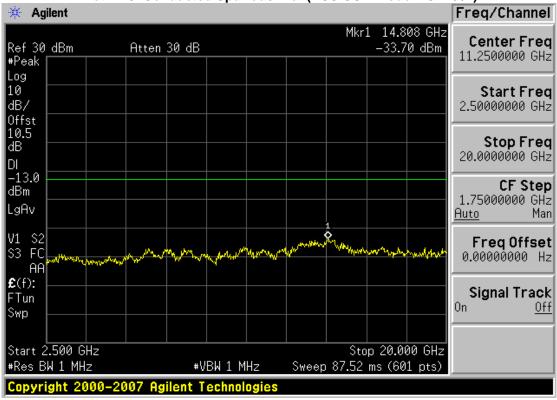
Plot 7-12. Band Edge Plot (PCS GSM Mode - Ch. 512)

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FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by:
				Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 29 of 33
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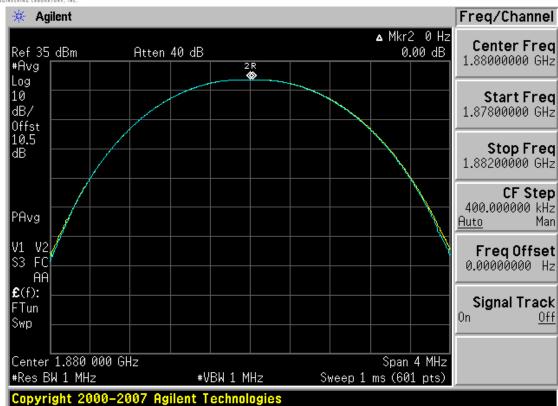
Plot 7-13. Conducted Spurious Plot (PCS GSM Mode - Ch. 661)



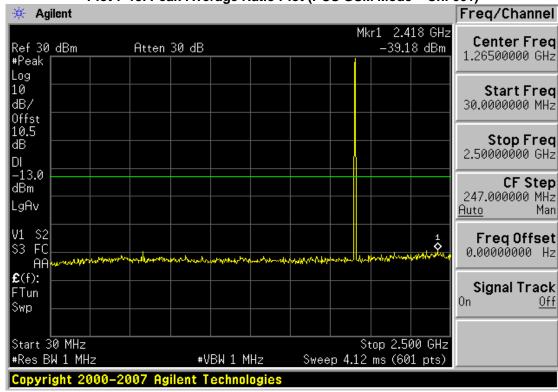
Plot 7-14. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)

FCC ID: BEJLG320G	PCTEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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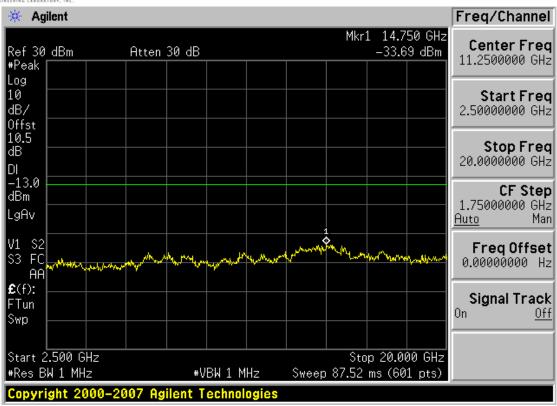
Plot 7-15. Peak-Average Ratio Plot (PCS GSM Mode - Ch. 661)



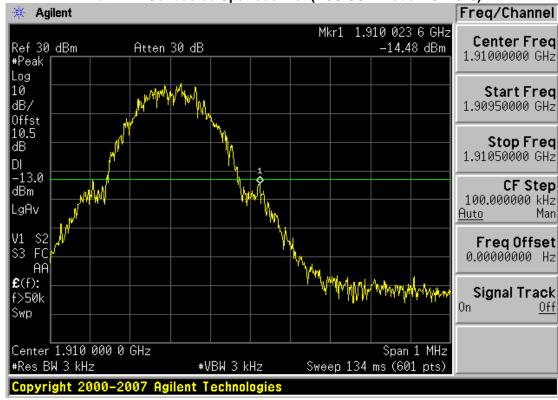
Plot 7-16. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)

FCC ID: BEJLG320G	PETEST	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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Plot 7-17. Conducted Spurious Plot (PCS GSM Mode - Ch. 810)



Plot 7-18. Band Edge Plot (PCS GSM Mode - Ch. 810)

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#### 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the LG 850/1900 GSM Phone FCC ID: BEJLG320G complies with all the requirements of Parts 2, 22, and 24 of the FCC rules.

FCC ID: BEJLG320G	PCTEST'	FCC Pt. 22/24 GSM MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	<b>⊕</b> LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 33 of 33
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