



PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT FCC Part 24 27 LTE

Applicant Name:
LG Electronics MobileComm U.S.A
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
11/6-11/14/2012
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0Y1211051593.ZNF

FCC ID :	ZNFMS870
APPLICANT:	LG ELECTRONICS MOBILECOMM U.S.A

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s): §2; §24; §27
EUT Type: Portable Handset
Model(s): MS870, LG-MS870, LGMS870, LG-LW870, LGLW870, LW870
Test Device Serial No.: identical prototype [S/N: EMC 1]

Mode	Tx Frequency (MHz)	Modulation	ERP/EIRP	
			Max. Power (W)	Max. Power (dBm)
LTE Band 4	1710.7 - 1754.3	QPSK	0.238	23.770
LTE Band 4	1710.7 - 1754.3	16QAM	0.233	23.680
LTE Band 4	1711.5 - 1753.5	QPSK	0.233	23.670
LTE Band 4	1711.5 - 1753.5	16QAM	0.199	22.980
LTE Band 4	1712.5 - 1752.5	QPSK	0.242	23.840
LTE Band 4	1712.5 - 1752.5	16QAM	0.209	23.210
LTE Band 4	1715 - 1750	QPSK	0.267	24.270
LTE Band 4	1715 - 1750	16QAM	0.238	23.770
LTE Band 2	1850.7 - 1909.3	QPSK	0.114	20.560
LTE Band 2	1850.7 - 1909.3	16QAM	0.108	20.350
LTE Band 2	1851.5 - 1908.5	QPSK	0.120	20.800
LTE Band 2	1851.5 - 1908.5	16QAM	0.098	19.930
LTE Band 2	1852.5 - 1907.5	QPSK	0.107	20.310
LTE Band 2	1852.5 - 1907.5	16QAM	0.091	19.590
LTE Band 2	1855 - 1905	QPSK	0.119	20.760
LTE Band 2	1855 - 1905	16QAM	0.097	19.880
LTE Band 25	1852.5 - 1912.5	QPSK	0.110	20.410
LTE Band 25	1852.5 - 1912.5	16QAM	0.094	19.730
LTE Band 25	1855 - 1910	QPSK	0.111	20.450
LTE Band 25	1855 - 1910	16QAM	0.093	19.710

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.

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 Ortañez
President

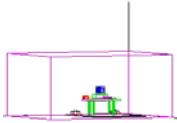


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T A B L E O F C O N T E N T S

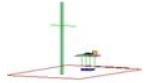
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MEASUREMENT REPORT

FCC Part 24 & 27

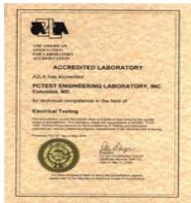


§2.1033 General Information



APPLICANT: LG Electronics MobileComm U.S.A
APPLICANT ADDRESS: 1000 Sylvan Avenue
 Englewood Cliffs, NJ 07632, United States
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 7185 Oakland Mills Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §24; §27
BASE MODEL: MS870
FCC ID: ZNFMS870
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE: ±0.00025 % (2.5 ppm)
Test Device Serial No.: EMC 1 Production Pre-Production Engineering
DATE(S) OF TEST: 11/6-11/14/2012
TEST REPORT S/N: 0Y1211051593.ZNF

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. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- 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.
- 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 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 (EME) 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 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, 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 located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. 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 February 15, 2012.

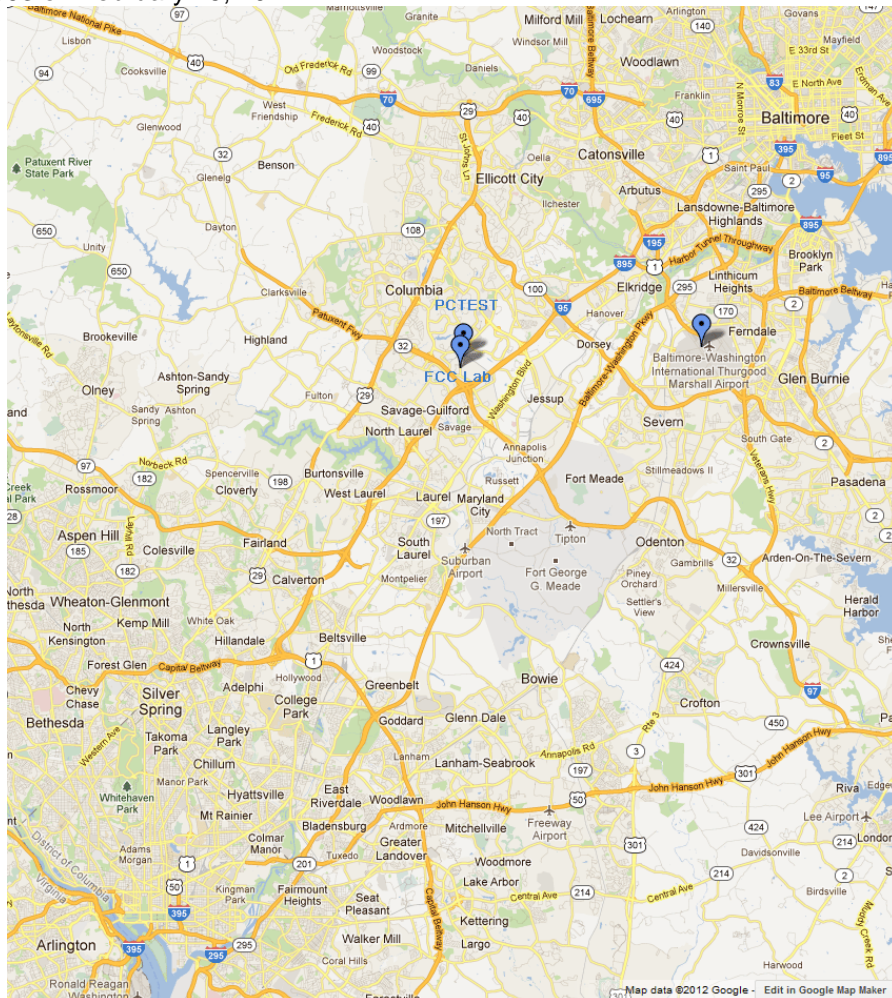




Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFMS870**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 CDMA/EvDO Rev0/A (BC0, BC15, BC1), Band 2 (1.4, 3, 5, 10 Mhz), Band 4 (1.4, 3, 5, 10 Mhz), Band 25 (5, 10 Mhz) LTE, 802.11b/g/n WLAN, Bluetooth (1x, EDR, LE)

2.3 EMI Suppression Device(s)/Modifications

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

2.4 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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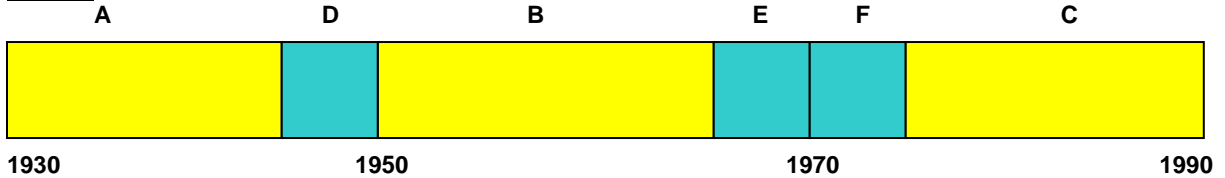
3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI/TIA-603-C-2004) was used in the measurement of the **LG Portable Handset FCC ID: ZNFMS870**.

3.2 PCS - Base Frequency Blocks

§24.229

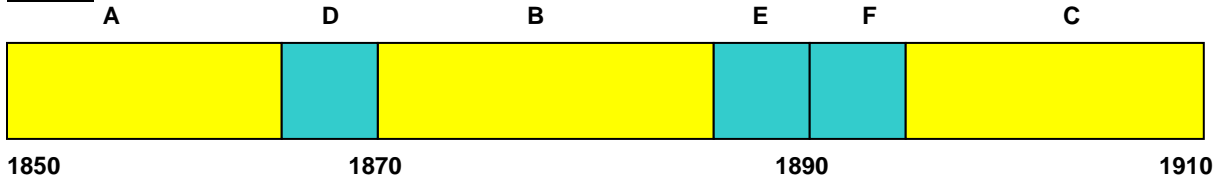


BLOCK 1: 1930 – 1945 MHz (A)
 BLOCK 2: 1945 – 1950 MHz (D)
 BLOCK 3: 1950 – 1965 MHz (B)

BLOCK 4: 1965 – 1970 MHz (E)
 BLOCK 5: 1970 – 1975 MHz (F)
 BLOCK 6: 1975 – 1990 MHz (C)



3.3 PCS - Mobile Frequency Blocks

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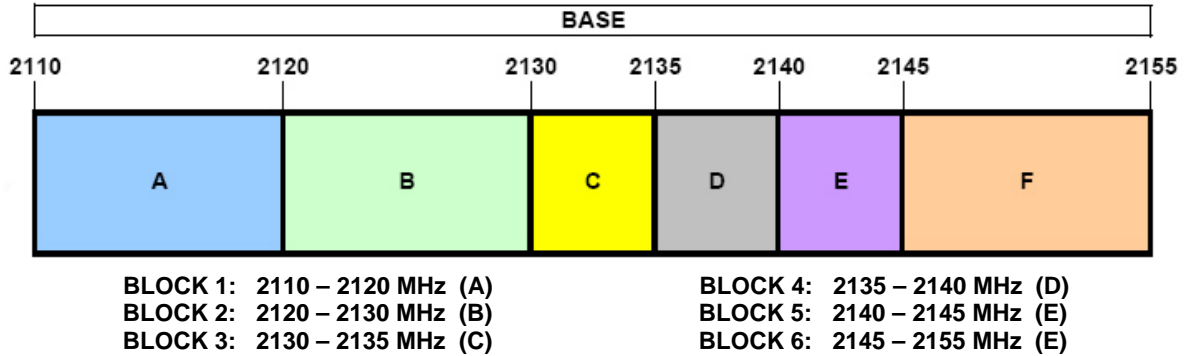
BLOCK 1: 1850 – 1865 MHz (A)
 BLOCK 2: 1865 – 1870 MHz (D)
 BLOCK 3: 1870 – 1885 MHz (B)

BLOCK 4: 1885 – 1890 MHz (E)
 BLOCK 5: 1890 – 1895 MHz (F)
 BLOCK 6: 1895 – 1910 MHz (C)

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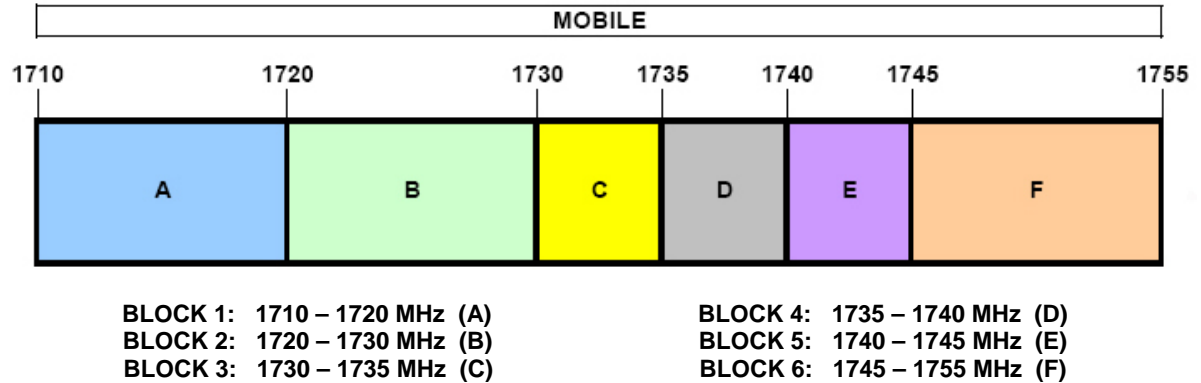
3.4 AWS - Base Frequency Blocks



§27.5(h)



3.5 AWS - Mobile Frequency Blocks

§27.5(h)



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3.6 SVLTE

§2.1053 §22.917(a) §24.238(a) §27.53(h) RSS-132(4.5.1) RSS-133 (6.5.1) RSS-139 (6.5.1)



This device is capable of operating in SVLTE mode in the following cases:

No.	Capable TX Configuration	Head SAR	Body SAR	Hotspot SAR	Power Reduction (LTE)	Note
1	CDMA BC0 Voice + WiFi data	O	O	X	X	
2	CDMA BC1 Voice + WiFi data	O	O	X	X	
3	CDMA BC15 Voice + WiFi data	O	O	X	X	
4	CDMA BC0 1X DATA + WiFi data	X	O	O	X	CDMA Hotspot
5	CDMA BC1 1X Data/EVDO + WiFi data	X	O	O	X	CDMA Hotspot
6	CDMA BC15 1X Data/EVDO+ WiFi data	X	O	O	X	CDMA Hotspot
7	LTE B2 + WiFi data	X	O	O	X	LTE Hotspot
8	LTE B4 + WiFi data	X	O	O	X	LTE Hotspot
9	LTE B25 + WiFi data	X	O	O	X	LTE Hotspot
10	CDMA BC0 Voice + LTE B2	O	O	X	O	SVLTE
11	CDMA BC0 Voice + LTE B4	O	O	X	O	SVLTE
12	CDMA BC0 Voice + LTE B25	O	O	X	O	SVLTE
13	CDMA BC1 Voice + LTE B2	O	O	X	O	SVLTE
14	CDMA BC1 Voice + LTE B4	O	O	X	O	SVLTE
15	CDMA BC1 Voice + LTE B25	O	O	X	O	SVLTE
16	CDMA BC15 Voice + LTE B2	O	O	X	O	SVLTE
17	CDMA BC15 Voice + LTE B4	O	O	X	O	SVLTE
18	CDMA BC15 Voice + LTE B25	O	O	X	O	SVLTE
19	CDMA BC0 Voice + LTE B2 + WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
20	CDMA BC0 Voice + LTE B4 + WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
21	CDMA BC0 Voice + LTE B25 + WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
22	CDMA BC1 Voice + LTE B2+ WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
23	CDMA BC1 Voice + LTE B4+ WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
24	CDMA BC1 Voice + LTE B25+ WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
25	CDMA BC15 Voice + LTE B2 + WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
26	CDMA BC15 Voice + LTE B4 + WLAN	O	O	O	O	WiFi Hotspot (SVLTE)
27	CDMA BC15 Voice + LTE B25 + WLAN	O	O	O	O	WiFi Hotspot (SVLTE)

* BT and WLAN are not simultaneous transmission.
 * CDMA EVDO and LTE are not simultaneous transmission.
 * CDMA BC0 EVDO is not supported.
 * VoLTE is supported.
 * SVLTE is supported.
 * Power reduction for SVLTE mode is supported.
 * 1X Advanced capability for CDMA BC0/BC1/BC15 is supported.
 * EVDO VoIP is supported.

Table 3-1. SVLTE Transmit Configurations

All modes of SVLTE operation were investigated. It was determined that this device did not produce any intermodulation products that were within 25dB of the spurious emission limit so the emissions are not reported herein.

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3.7 Radiated Power and Radiated Spurious Emissions

§2.1053 §24.232(c) §24.238(a) §27.50(d.4) RSS-133 (6.4) RSS-133 (6.5.1) RSS-139 (6.5.1)

Radiated spurious emissions are investigated indoors in a semi-anechoic chamber to determine the frequencies producing the worst case emissions. Final measurements for radiated power and radiated spurious emissions are performed on the 3 meter OATS per the guidelines of ANSI/TIA-603-C-2004. The measurement area is situated on an 18 meter x 20 meter galvanized 1/2" hardware cloth as the conducting ground plane. This material is sewn together in sections 4 feet wide and 60 feet long. A total of eighteen sections are required to cover the entire measurement area. Sections are laid across the width of the pad, overlapped 1" and sewn and soldered together at intervals of 3" (7.6 cm.) The terrain of the test site is reasonably flat and level. Power and cable to the test site are buried 18" deep into the ground outside the perimeter of the site. An all-weather non-metallic housing is situated on a 2 x 3 meter area adjacent to the measurement area to house the test equipment. The equipment under test was transmitting while connected to its integral antenna and is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. Emissions are also investigated with the receive antenna horizontally and vertically polarized. The level of the maximized emission is recorded with the spectrum analyzer using a peak detector with RBW = 1MHz, VBW = 3MHz for emissions greater than 1GHz. For emissions below 1GHz, the spectrum analyzer is set to RBW = 100kHz and VBW = 300kHz.

A half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]}$$

Where, P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g \text{ [dBm]} - \text{cable loss [dB]}$.

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$ specified in 22.917(a), 24.238(a), and 27.53(g)(h).

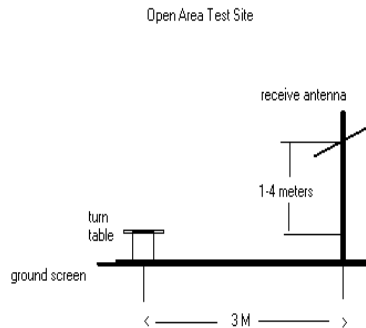




Figure 3-1. Diagram of 3-meter Test Range

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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
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	7/10/2012	Annual	7/10/2013	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	2/13/2012	Annual	2/13/2013	N/A
Agilent	8447D	Broadband Amplifier	5/8/2012	Annual	5/8/2013	1937A03348
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/5/2012	Annual	4/5/2013	MY45470194
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Biennial	7/22/2013	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	5/30/2012	Biennial	5/30/2014	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	12/1/2010	Biennial	12/1/2012	128337
Mini-Circuits	VHF-1200+	High Pass Filter	1/15/2012	Annual	1/15/2013	30923
Mini-Circuits	VHF-3100+	High Pass Filter	1/15/2012	Annual	1/15/2013	30841
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	N/A		N/A	100976
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	6/26/2012	Annual	6/26/2013	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	5/30/2012	Annual	5/30/2013	100040
Rohde & Schwarz	ESU26	EMI Test Receiver	12/15/2011	Annual	12/15/2012	100342
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/14/2011	Biennial	11/14/2013	9105-2404
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/26/2012	Biennial	1/26/2014	A051107

Table 4-1. Test Equipment

Note:

Equipment used for signaling with a calibration date of "N/A" shown in this list was only used for maintaining a link between the piece of equipment and the EUT. This equipment was not used to make direct calibrated measurements.



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5.0 SAMPLE CALCULATIONS

Spurious Radiated Emission – LTE Band

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The average spectrum analyzer 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 spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 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 $- (-24.80)$.

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6.0 TEST RESULTS

6.1 Summary



Company Name: LG Electronics MobileComm U.S.A
 FCC ID: ZNFMS870
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
TRANSMITTER MODE (TX)						
24.232(c)	RSS-133 (6.4) [SRSP-510 (5.1.2)]	Equivalent Isotropic Radiated Power (Band 2 25)	< 2 Watts max. EIRP	RADIATED	PASS	Section 6.2
27.50(d.4)	RSS-139 (6.4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 6.2
2.1053 24.238(a) 27.53(h)	RSS-133 (6.5.1) RSS-139 (6.5.1)	Undesirable Emissions	< 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 6.3 6.4 6.5

Table 6-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.



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6.2 Equivalent Isotropic Radiated Power (EIRP)

§24.232(c) §27.50(d.4) RSS-133 (6.4) RSS-139 (6.4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1710.70	1.4	QPSK	Standard	3 / 2	14.62	8.47	H	23.09	0.204	-6.91
1732.50	1.4	QPSK	Standard	3 / 2	15.23	8.54	H	23.77	0.238	-6.23
1754.30	1.4	QPSK	Standard	3 / 2	14.69	8.60	H	23.29	0.213	-6.71
1710.70	1.4	16-QAM	Standard	3 / 2	14.08	8.47	H	22.55	0.180	-7.45
1732.50	1.4	16-QAM	Standard	3 / 2	15.14	8.54	H	23.68	0.233	-6.32
1754.30	1.4	16-QAM	Standard	3 / 2	14.63	8.60	H	23.23	0.210	-6.77
1711.50	3	QPSK	Standard	8 / 4	14.11	8.47	H	22.58	0.181	-7.42
1732.50	3	QPSK	Standard	8 / 4	15.13	8.54	H	23.67	0.233	-6.33
1753.50	3	QPSK	Standard	8 / 4	14.55	8.60	H	23.15	0.206	-6.85
1711.50	3	16-QAM	Standard	8 / 4	13.57	8.47	H	22.04	0.160	-7.96
1732.50	3	16-QAM	Standard	8 / 4	14.44	8.54	H	22.98	0.199	-7.02
1753.50	3	16-QAM	Standard	8 / 4	13.91	8.60	H	22.51	0.178	-7.49
1712.50	5	QPSK	Standard	1 / 0	13.93	8.47	H	22.40	0.174	-7.60
1732.50	5	QPSK	Standard	12 / 6	15.30	8.54	H	23.84	0.242	-6.16
1752.50	5	QPSK	Standard	1 / 0	14.51	8.60	H	23.11	0.205	-6.89
1712.50	5	16-QAM	Standard	1 / 0	13.59	8.47	H	22.06	0.161	-7.94
1732.50	5	16-QAM	Standard	12 / 6	14.67	8.54	H	23.21	0.209	-6.79
1752.50	5	16-QAM	Standard	1 / 0	14.36	8.60	H	22.96	0.198	-7.04
1715.00	10	QPSK	Standard	1 / 49	14.31	8.47	H	22.78	0.190	-7.22
1732.50	10	QPSK	Standard	1 / 0	15.73	8.54	H	24.27	0.267	-5.73
1750.00	10	QPSK	Standard	1 / 0	15.50	8.60	H	24.10	0.257	-5.90
1715.00	10	16-QAM	Standard	1 / 49	14.15	8.47	H	22.62	0.183	-7.38
1732.50	10	16-QAM	Standard	1 / 0	15.23	8.54	H	23.77	0.238	-6.23
1750.00	10	16-QAM	Standard	1 / 0	15.12	8.60	H	23.72	0.235	-6.28

Table 6-2. EIRP Data (Band 4)

FCC ID: ZNFMS870	 FCC Pt. 22-24-27 LTE MEASUREMENT REPORT (Class II Permissive Change)			Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1850.70	1.4	QPSK	Standard	3 / 2	12.00	8.56	H	20.56	0.114	-12.45
1880.00	1.4	QPSK	Standard	3 / 2	10.45	8.55	H	19.00	0.079	-14.01
1909.30	1.4	QPSK	Standard	3 / 2	11.03	8.54	H	19.57	0.090	-13.44
1850.70	1.4	16-QAM	Standard	3 / 2	11.79	8.56	H	20.35	0.108	-12.66
1880.00	1.4	16-QAM	Standard	3 / 2	10.34	8.55	H	18.89	0.077	-14.12
1909.30	1.4	16-QAM	Standard	3 / 2	10.92	8.54	H	19.46	0.088	-13.55
1851.50	3	QPSK	Standard	1 / 14	12.24	8.56	H	20.80	0.120	-12.21
1880.00	3	QPSK	Standard	1 / 0	10.50	8.55	H	19.05	0.080	-13.96
1908.50	3	QPSK	Standard	1 / 0	11.12	8.54	H	19.66	0.092	-13.35
1851.50	3	16-QAM	Standard	1 / 14	11.37	8.56	H	19.93	0.098	-13.08
1880.00	3	16-QAM	Standard	1 / 0	10.36	8.55	H	18.91	0.078	-14.10
1908.50	3	16-QAM	Standard	1 / 0	11.00	8.54	H	19.54	0.090	-13.47
1852.50	5	QPSK	Standard	1 / 0	11.75	8.56	H	20.31	0.107	-12.70
1880.00	5	QPSK	Standard	1 / 0	10.27	8.55	H	18.82	0.076	-14.19
1907.50	5	QPSK	Standard	1 / 0	10.62	8.54	H	19.16	0.082	-13.85
1852.50	5	16-QAM	Standard	1 / 0	11.03	8.56	H	19.59	0.091	-13.42
1880.00	5	16-QAM	Standard	1 / 0	10.23	8.55	H	18.78	0.075	-14.23
1907.50	5	16-QAM	Standard	1 / 0	10.43	8.54	H	18.97	0.079	-14.04
1855.00	10	QPSK	Standard	1 / 49	12.20	8.56	H	20.76	0.119	-12.25
1880.00	10	QPSK	Standard	1 / 0	11.01	8.55	H	19.56	0.090	-13.45
1905.00	10	QPSK	Standard	1 / 49	10.93	8.54	H	19.47	0.088	-13.54
1855.00	10	16-QAM	Standard	1 / 49	11.32	8.56	H	19.88	0.097	-13.13
1880.00	10	16-QAM	Standard	1 / 0	10.67	8.55	H	19.22	0.083	-13.79
1905.00	10	16-QAM	Standard	1 / 49	10.43	8.54	H	18.97	0.079	-14.04



Table 6-3. EIRP Data (Band 2)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBi]	Pol [H/V]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1852.50	5	QPSK	Standard	12 / 6	11.85	8.56	H	20.41	0.110	-12.60
1882.50	5	QPSK	Standard	1 / 0	10.11	8.55	H	18.66	0.073	-14.35
1912.50	5	QPSK	Standard	1 / 0	10.57	8.53	H	19.10	0.081	-13.91
1852.50	5	16-QAM	Standard	12 / 6	11.17	8.56	H	19.73	0.094	-13.28
1882.50	5	16-QAM	Standard	1 / 0	9.95	8.55	H	18.50	0.071	-14.51
1912.50	5	16-QAM	Standard	1 / 0	10.50	8.53	H	19.03	0.080	-13.98
1855.00	10	QPSK	Standard	1 / 0	11.89	8.56	H	20.45	0.111	-12.56
1882.50	10	QPSK	Standard	1 / 0	10.44	8.55	H	18.99	0.079	-14.02
1910.00	10	QPSK	Standard	1 / 0	10.74	8.53	H	19.27	0.085	-13.74
1855.00	10	16-QAM	Standard	1 / 0	11.15	8.56	H	19.71	0.093	-13.30
1882.50	10	16-QAM	Standard	1 / 0	10.05	8.55	H	18.60	0.072	-14.41
1910.00	10	16-QAM	Standard	1 / 0	10.26	8.53	H	18.79	0.076	-14.22

Table 6-4. EIRP Data (Band 25)

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.3 Band 4 Radiated Spurious Emissions §2.1053 §27.53(h) RSS-139 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1710.70 MHz
 CHANNEL: 19957
 MEASURED OUTPUT POWER: 23.09 dBm = 0.204 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.09 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3421.40	-45.43	8.09	-37.34	H	60.99
5132.10	-51.16	10.21	-40.95	H	64.60
6842.80	-50.84	11.31	-39.53	H	63.18
8553.50	-44.74	13.02	-31.72	H	55.37
10264.20	-52.00	13.01	-38.99	H	62.64
11974.90	-76.91	13.21	-63.70	H	87.35

Table 6-5. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 4 Radiated Spurious Measurements (continued)
§2.1053 §27.53(h) RSS-139 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 23.77 dBm = 0.238 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.77 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3465.00	-47.87	8.26	-39.60	H	63.93
5197.50	-48.01	10.26	-37.75	H	62.09
6930.00	-50.73	11.42	-39.31	H	63.64
8662.50	-45.67	13.07	-32.60	H	56.93
10395.00	-51.90	13.12	-38.79	H	63.12
12127.50	-76.41	13.25	-63.16	H	87.49

Table 6-6. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 4 Radiated Spurious Measurements (continued)
§2.1053 §27.53(h) RSS-139 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1754.30 MHz
 CHANNEL: 20393
 MEASURED OUTPUT POWER: 23.29 dBm = 0.213 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.29 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3508.60	-49.83	8.40	-41.43	H	65.28
5262.90	-48.92	10.32	-38.60	H	62.45
7017.20	-52.24	11.51	-40.73	H	64.57
8771.50	-47.86	13.11	-34.75	H	58.60
10525.80	-53.95	13.20	-40.75	H	64.60
12280.10	-75.91	13.31	-62.60	H	86.45

Table 6-7. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.4 Band 2 Radiated Spurious Emissions

§2.1053 §24.238(a) RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1850.70 MHz
 CHANNEL: 18607
 MEASURED OUTPUT POWER: 20.56 dBm = 0.114 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.56 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3701.40	-53.77	8.40	-45.37	H	71.84
5552.10	-39.50	10.63	-28.87	H	55.34
7402.80	-55.95	11.84	-44.12	H	70.58
9253.50	-47.70	13.29	-34.41	H	60.87
11104.20	-44.49	13.50	-30.99	H	57.45
12954.90	-74.83	13.68	-61.15	H	87.62

Table 6-8. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 2 Radiated Spurious Measurements (continued)
§2.1053 §24.238(a) RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 19.00 dBm = 0.079 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.00 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-54.47	8.42	-46.05	H	70.96
5640.00	-43.06	10.66	-32.40	H	57.31
7520.00	-56.26	11.92	-44.34	H	69.24
9400.00	-49.32	13.24	-36.08	H	60.99
11280.00	-49.30	13.49	-35.81	H	60.72
13160.00	-74.53	13.83	-60.70	H	85.60

Table 6-9. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 2 Radiated Spurious Measurements (continued)
§2.1053 §24.238(a) RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1909.30 MHz
 CHANNEL: 19193
 MEASURED OUTPUT POWER: 19.57 dBm = 0.090 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.57 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3818.60	-44.84	8.55	-36.29	H	61.77
5727.90	-45.09	10.69	-34.40	H	59.88
7637.20	-53.99	12.05	-41.94	H	67.42
9546.50	-47.75	13.20	-34.55	H	60.02
11455.80	-50.77	13.43	-37.34	H	62.82
13365.10	-74.25	14.00	-60.25	H	85.73

Table 6-10. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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6.5 Band 25 Radiated Spurious Emissions

§2.1053 §24.238(a) RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1852.50 MHz
 CHANNEL: 26065
 MEASURED OUTPUT POWER: 20.41 dBm = 0.110 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.41 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3705.00	-54.65	8.40	-46.25	H	63.72
5557.50	-41.22	10.63	-30.59	H	48.06
7410.00	-57.09	11.84	-45.26	H	62.73
9262.50	-48.08	13.29	-34.79	H	52.26
11115.00	-45.72	13.50	-32.22	H	49.69
12967.50	-106.87	13.68	-93.20	H	110.67

Table 6-11. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 25 Radiated Spurious Measurements (continued)
§2.1053 §24.238(a) RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MEASURED OUTPUT POWER: 18.66 dBm = 0.073 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.66 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3765.00	-49.03	8.44	-40.59	H	59.31
5647.50	-42.57	10.66	-31.91	H	50.63
7530.00	-56.14	11.94	-44.20	H	62.92
9412.50	-49.17	13.23	-35.94	H	54.66
11295.00	-49.45	13.48	-35.97	H	54.69
13177.50	-106.13	13.84	-92.29	H	111.01

Table 6-12. Radiated Spurious Data

NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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Band 25 Radiated Spurious Measurements (continued)
§2.1053 §24.238(a) RSS-133 (6.5.1)

Field Strength of SPURIOUS Radiation



OPERATING FREQUENCY: 1912.50 MHz
 CHANNEL: 26665
 MEASURED OUTPUT POWER: 19.10 dBm = 0.081 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.10 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3825.00	-49.10	8.57	-40.52	H	60.13
5737.50	-44.92	10.69	-34.22	H	53.83
7650.00	-54.38	12.07	-42.31	H	61.92
9562.50	-50.47	13.20	-37.27	H	56.88
11475.00	-51.53	13.42	-38.11	H	57.72
13387.50	-106.07	14.04	-92.02	H	111.63

Table 6-13. Radiated Spurious Data



NOTES:

1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations and channel bandwidth configurations and the worst case emissions are reported at the maximum channel BW and respective settings for QPSK for all bands.
2. This unit was tested with its standard battery.
3. The worst case test configuration was found in the horizontal setup.

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7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFMS870** complies with all the requirements of Parts 2, 24, 27 of the FCC rules for LTE operation only.

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