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MEASUREMENT REPORT
FCC Part 15.225 / IC RSS-210 NFC

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

Date of Testing:
9/30 - 10/2/2013
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Test Report Serial No.:
0Y1309161891.ZNF

FCC ID:	**ZNFD959**
APPLICANT:	**LG Electronics MobileComm U.S.A**

Application Type:	Certification
Model(s):	LG-D959, D959, LGD959, LG-D959BK, D959BK, LGD959BK
EUT Type:	Portable Handset
Frequency:	13.56MHz
FCC Classification:	Low Power Communications Device Transmitter (DXX)
FCC Rule Part(s):	FCC Part 15 Subpart C (15.225)
IC Specification(s):	RSS-210 Issue 8
Test Procedure(s):	ANSI C63.10-2009

The device bearing the FCC Identifier specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and has been tested in accordance with the measurement procedures specified in ANSI C63.10-2009 (See Test Report). These measurements were performed with no deviation from the standards. Test results reported herein relate only to the item(s) tested.

I authorize and 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.

NVLAP accreditation does not constitute any product endorsement by NVLAP or any agency of the United States Government. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Randy Ortanez
President

NVLAP
Lab Code 100431-0

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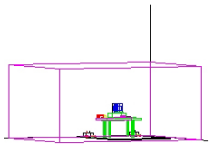


MEASUREMENT REPORT
FCC Part 15.225

§ 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:	6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S):	Part 15 Subpart C (15.225)
IC SPECIFICATION(S):	RSS-210 Issue 8
MODEL:	LG-D959
FCC ID:	ZNFD959
Test Device Serial No.:	RFID Radiated, Conducted ☐ Production ☒ Pre-Production ☐ Engineering
FCC CLASSIFICATION:	Low Power Communications Device Transmitter (DXX)
DATE(S) OF TEST:	9/30 - 10/2/2013
TEST REPORT S/N:	0Y1309161891.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. 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.

1.0 INTRODUCTION

1.1 Scope

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

1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, 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 C63.4-2009 on January 10, 2012.

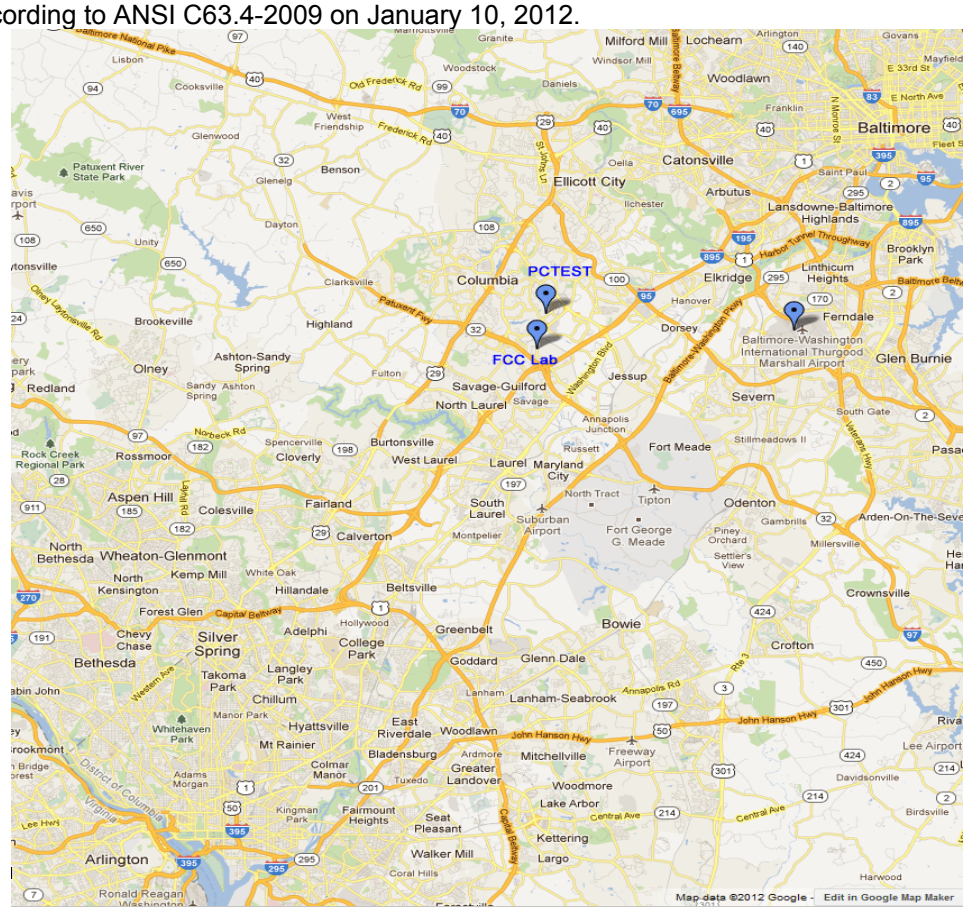


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LGE Portable Handset FCC ID: ZNFD959**. The test data contained in this report pertains only to the emissions due to the NFC transmitter of the EUT.

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Band 2 (5, 10, 15, and 20MHz BW), 4 (5, 10, 15, and 20MHz BW), and 17 (5 and 10MHz BW) LTE, 802.11a/b/g/n/ac WLAN (DTS/NII), Bluetooth (1x,EDR, LE), NFC

2.3 Test Configuration

The LGE Portable Handset FCC ID: ZNFD959 was set to continuously transmit at 13.56MHz. This was performed using manufacturer software loaded on the phone and a passive RFID tag to allow for continuous transmission. This device was tested in accordance with the guidance of ANSI C63.10-2009. See Sections 3.2 and 3.3 of this test report for a description of the AC line conducted emissions and radiated emissions test setups, respectively.

2.4 EMI Suppression Device(s)/Modifications

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

2.5 Labeling Requirements

Per 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

3.0 DESCRIPTION OF TEST

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009) was used in the measurement of the **LGE Portable Handset FCC ID: ZNFD959.**

Deviation from measurement procedure…….....None

3.2 AC Line Conducted Emissions

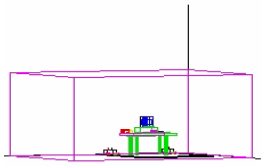


Figure 3-1. Shielded Enclosure Line-Conducted Test Facility

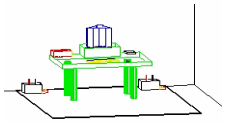


Figure 3-2. Line Conducted Emission Test Set-Up

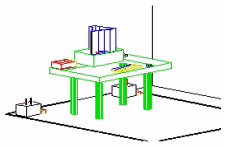


Figure 3-3. Wooden Table & Bonded LISNs

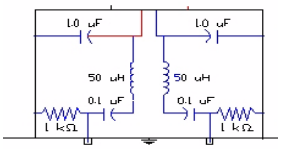


Figure 3-4. LISN Schematic Diagram

The line-conducted facility is located inside a 16'x20'x10' shielded enclosure, manufactured by Ray Proof Series 81 (*see Figure 3-1*). The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 1.5m away from the sidewall of the shielded room (*see Figure 3-2*). Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room (*see Figure 3-3).* Power to the LISNs are filtered by a high-current high-insertion loss Ray Proof power line filter (100dB 14Hz-10GHz). The purpose of the filter is to attenuate ambient signal interference and this filter is also bonded to the shielded enclosure. All electrical cables are shielded by braided tinned copper zipper tubing with an inner diameter of ½".

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the Solar LISN. The LISN schematic diagram is shown (*see Figure 3-4*). All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements. The bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission emission. Each emission was maximized by varying: power lines, the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz bandwidth for final measurements. Each emission reported was calibrated using a signal generator.

Line conducted emissions test results are shown in Section 8.6. Automated test software was used to perform the AC line conducted emissions testing. Automated measurement software utilized is the PCTEST Conduction Automatic Measurement, Version 2.7.

3.3 Radiated Emissions

The radiated test facilities consisted of an indoor semi-anechoic chamber used for exploratory measurements and an open area test site (OATS) used for final measurements. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies higher than the upper frequency range of the broadband antenna used for testing, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used.

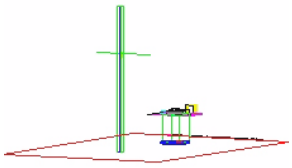


Figure 3-5. 3-Meter Test Site

Exploratory measurements were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of a 0.8 meter high non-metallic 1 x 1.5 meter table (*see Figure 3-7*). The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, turntable azimuth, and receive antenna height was noted for each frequency found. To record the exploratory measurements, the analyzers' detector function was set to peak mode and the bandwidth was set to 100kHz.

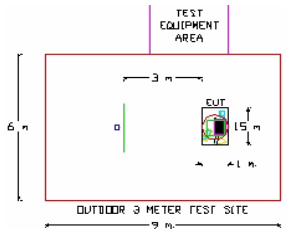


Figure 3-6. Dimensions of Outdoor Test Site

Final measurements were made on the OATS at 3 meter test range using calibrated, linearly polarized broadband or horn antennas (*see Figure 3-5*). 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 (*see Figure 3-6*). The test set-up was again placed on top of the same a 0.8 meter high non-metallic 1 x 1.5 meter table on the OATS as used for exploratory measurements in the indoor chamber. The test set-up was re-configured to the same setup that was previously determined through exploratory measurements to have produced the worst case emissions. The spectrum analyzer was set to the frequencies found to have caused the highest radiated disturbances with respect to the limit during preliminary radiated measurements. The turntable containing the system was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. For the EUT positioning, "H" is defined with the EUT lying flat on the test surface, "H2" is defined with the EUT standing up on its side, and "V" is defined with the EUT standing upright.

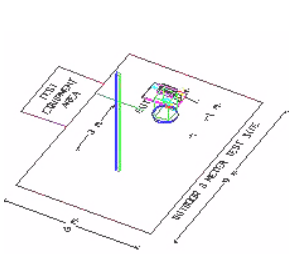


Figure 3-7. Turntable and System Setup

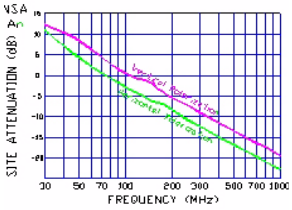


Figure 3-8. Normalized Site Attenuation Curves (H&V)

Each emission reported was calibrated using a signal generator. The Theoretical Normalized Site Attenuation Curves for both horizontal and vertical polarization are shown in Figure 3-8.

4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the LGE Portable Handset are **permanently attached,** and the NFC antenna is embedded in the back cover used for testing.
- There are no provisions for connection to an external antenna.

Conclusion:

The **LGE Portable Handset FCC ID: ZNFD959** unit complies with the requirement of §15.203.

5.0 SAMPLE CALCULATIONS

5.1 Conducted Emission Measurement Sample Calculation

@ 20.3 MHz

Class B limit	**= 60.0 dBμV (Quasi-peak limit)**
Reading	= - 57.8 dBm (calibrated quasi-peak level)
Convert to dbμV	= - 57.8 + 107 = 49.2 dBμV
Margin	= 49.2 - 60.0 = - 10.8 dB
	= 10.8 dB below limit

5.2 Radiated Emission Measurement Sample Calculation

@ 66.7 MHz

Class B limit	**= 100 μV/m = 40.0 dBμV/m**
Reading	= - 76.0 dBm (calibrated level)
Convert to dbμV	= - 76.0 + 107 = 31.0 dBμV
Antenna Factor + Cable Loss	= 5.8 dB/m
Total	= 36.8 dBμV/m
Margin	= 36.8 - 40.0 = - 3.2 dB
	= 3.2 dB below limit

Note:

Level [dBμV] = 20 $\log_{10}$ (Level [μV/m])

Level [dBμV] = Level [dBm] + 107

6.0 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)	3/29/2013	Annual	3/29/2014	N/A
Agilent	8447D	Broadband Amplifier	5/31/2013	Annual	5/31/2014	1937A03348
Agilent	85650A	Quasi-Peak Adapter	4/17/2013	Annual	4/17/2014	2043A00301
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	4/17/2013	Annual	4/17/2014	2542A11898
Agilent	N9038A	MXE EMI Receiver	12/8/2012	Annual	12/8/2013	MY51210133
Emco	6502	Active Loop Antenna (10k - 30 MHz)	5/31/2012	Biennial	5/31/2014	267
Emco	3816/2	LISN	2/12/2013	Biennial	2/12/2015	9707-1077
Emco	3816/2	LISN	2/12/2013	Biennial	2/12/2015	9707-1079
Schwarzbeck	VULB-9161SE	Trilog Super Broadband Test Antenna	11/8/2011	Biennial	11/8/2013	9161-4075

Table 6-1. Annual Test Equipment Calibration Schedule

7.0 ENVIRONMENTAL CONDITIONS

The temperature is controlled within range of 15°C to 35°C.

The relative humidity is controlled within range of 10% to 75%.

The atmospheric pressure is controlled within the range 86-106kPa (860-1060mbar).

8.0 TEST DATA

8.1 Summary

Company Name: LG Electronics MobileComm U.S.A

FCC ID: ZNFD959

Frequencies Examined: 13.56MHz

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (Tx)						
2.1049	N/A	20 dB Bandwidth	N/A	RADIATED	PASS	Section 8.2
15.225 (a)(b)(c)	RSS-210 [A2.6]	In-Band Emissions	15,848µV/m @ 30m 13.553 – 13.567 MHz 334µV/m @ 30m 13.410 – 13.553 MHz 13.567 – 13.710 MHz 106µV/m @ 30m 13.110 – 13.410 MHz 13.710 – 14.010 MHz		PASS	Section 8.4
15.225 (d) 15.209	RSS-210 [A2.6]	Out-of-Band Emissions	Emissions outside of the specified band (13.110 – 14.010 MHz) must meet the radiated limits detailed in 15.209		PASS	Section 8.5
15.225 (e)	RSS-210 [A2.6]	Frequency Stability Tolerance	± 0.01% of Operating Frequency	Temperature Chamber	PASS	Section 8.3
15.207	RSS-Gen [7.2.2]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits or < RSS-Gen table 2 limits	LINE CONDUCTED	PASS	Section 8.6
RECEIVER MODE (Rx) / DIGITAL DEVICE						
15.107	RSS-Gen [7.2.2]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.107 limits or < RSS-Gen table 2 limits	LINE CONDUCTED	PASS	Part 15B Test Report

Table 8-1. Summary of Test Results

Note:

This unit was tested with its standard battery (BL-T8).

8.2 20dB Bandwidth Measurement

§2.1049

The 20dB bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

Frequency	Occupied Bandwidth
13.56MHz	34kHz

Table 8-2. 20dB Bandwidth Measurement

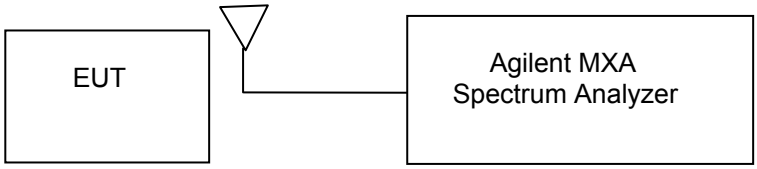


Figure 8-1. Test Instrument & Measurement Setup

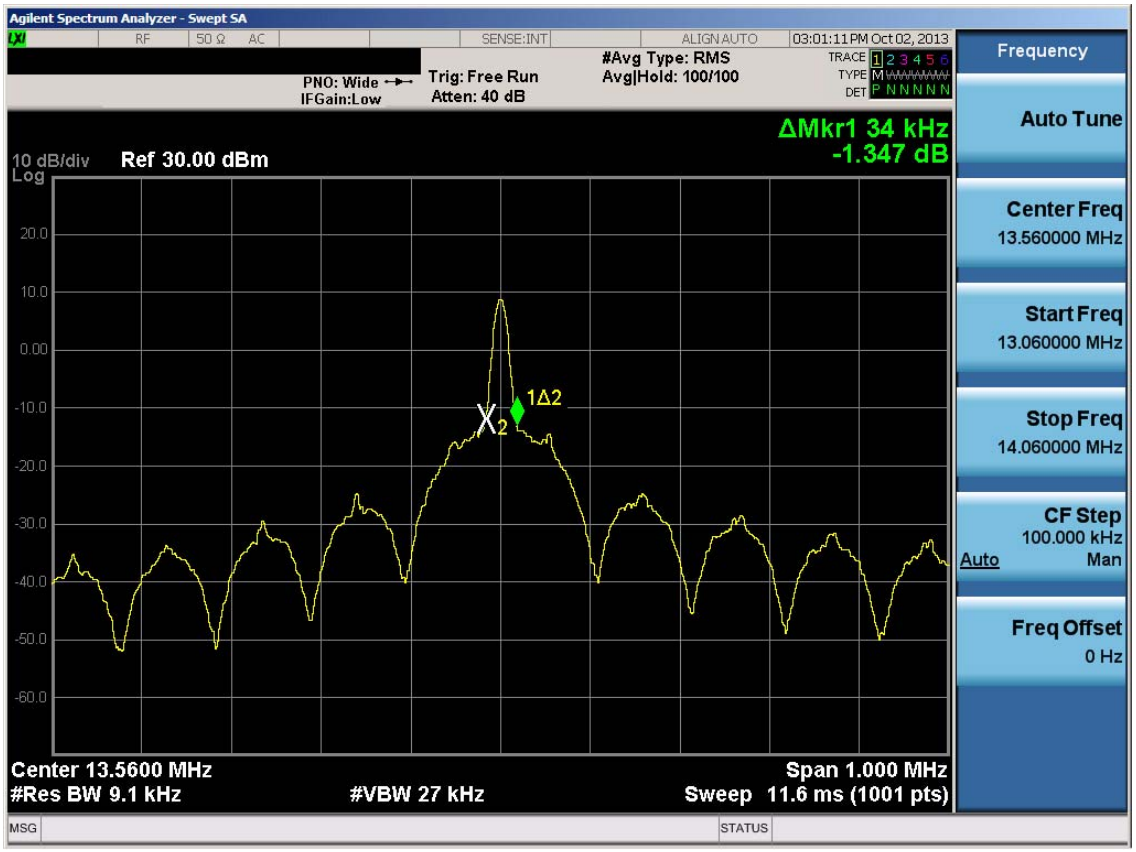


Figure 8-2. 20dB Bandwidth Plot

8.3 Frequency Stability Test Data

§15.225; RSS-210 [A2.6]

Part 15.225 requires that devices operating in the 13.553 – 13.567 MHz shall maintain the carrier frequency within 0.01% of the operating frequency over the temperature variation of −20 degrees to +50 degrees C at normal supply voltage.

OPERATING FREQUENCY: 13,560,000 Hz

REFERENCE VOLTAGE: 3.8 Vdc

DEVIATION LIMIT: ± 0.01 % = 1356Hz

VOLTAGE (%)	POWER Battery	TEMP (ºC)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	13,559,985	-15	-0.000109
100 %		- 20	13,559,991	-9	-0.000066
100 %		- 10	13,559,991	-9	-0.000068
100 %		0	13,559,999	-1	-0.000005
100 %		+ 10	13,559,996	-4	-0.000027
100 %		+ 20	13,559,985	-15	-0.000109
100 %		+ 25	13,559,987	-13	-0.000098
100 %		+ 30	13,559,994	-6	-0.000043
100 %		+ 40	13,559,990	-10	-0.000071
100 %		+ 50	13,559,984	-16	-0.000120
Battery End Point	3.40	+ 20	13,559,991	-9	-0.000066
115 %	4.37	+ 20	13,560,000	0	0.000000

Table 8-3. Frequency Stability Test Data

Frequency Stability Test Data (Cont'd)

§15.225; RSS-210 [A2.6]

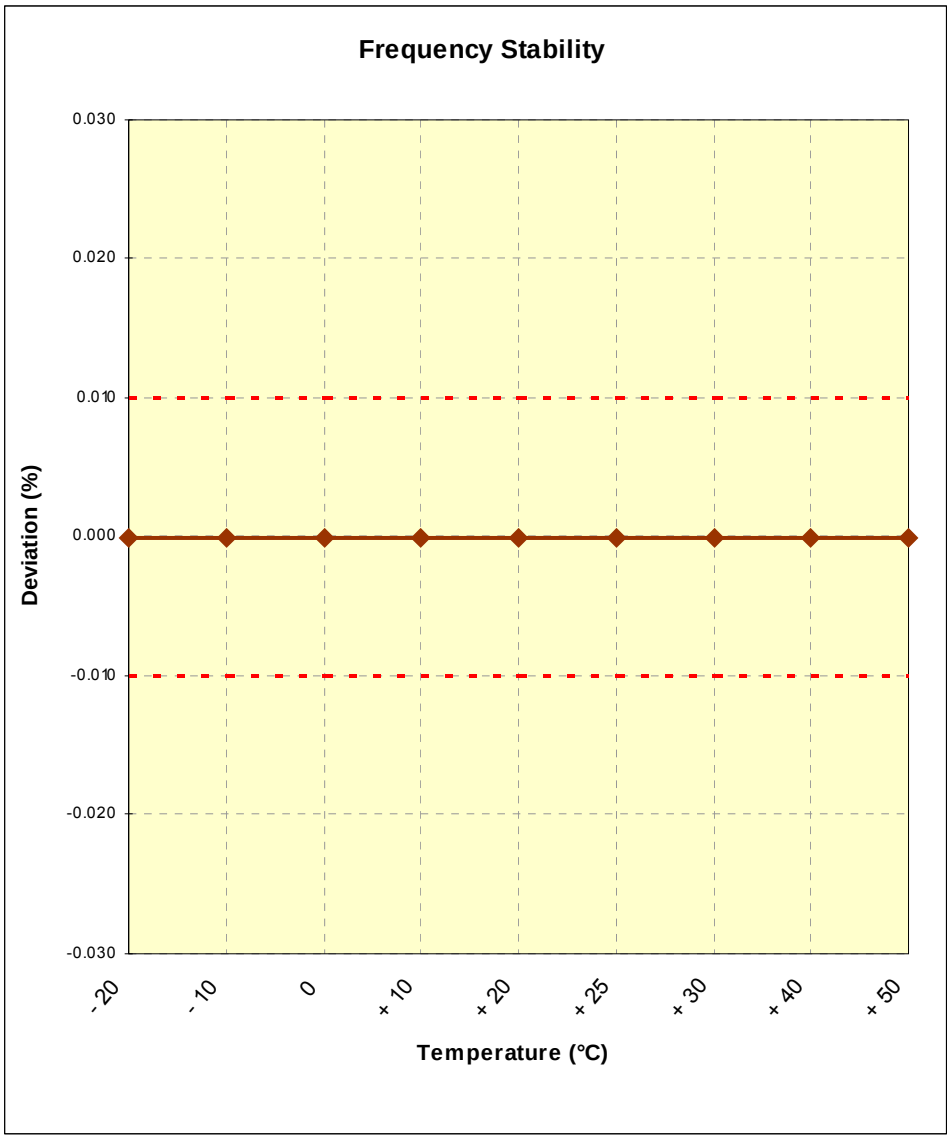


Figure 8-3. Frequency Stability Plot

8.4 In-Band Radiated Spurious Emission Measurements

§15.225(a), (b), (c); RSS-210 [A2.6]

Radiated emission testing was performed in the band 13.110 – 14.010 MHz.

Frequency: 13.56MHz

Measurement Distance: 3 Meters

Frequency [MHz]	Level [dBm]	AFCL [dB/m]	Antenna Position	EUT Pol. [H/V]	3m Field Strength [dBµV/m]	30m Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
13.425	-94.13	10.14	Y	V	23.00	-17.00	50.47	-67.47
13.518	-90.51	10.13	Y	V	26.62	-13.38	50.47	-63.85
13.547	-85.77	10.13	Y	V	31.36	-8.64	50.47	-59.11
13.560	-70.63	10.13	Y	V	46.51	6.51	84.00	-77.49
13.573	-85.76	10.13	Y	V	31.37	-8.63	50.47	-59.11
13.616	-92.18	10.13	Y	V	24.95	-15.05	50.47	-65.53
13.831	-94.28	10.12	Y	V	22.84	-17.16	40.51	-57.67

Table 8-4. In-Band Radiated Measurements

NOTES:

1. All measurements were performed using a loop antenna. The antenna was positioned in three orthogonal positions (X front, Y side, Z top) and the position with the highest emission level was recorded.
2. The EUT was positioned in three orthogonal planes to determine the orientation resulting in the worst case emissions.
3. Measurements were performed at 3m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor = 20 $\log_{10}(30/3)^2$ = 40dB.
4. The spectrum was investigated from 9kHz up to 30MHz using the loop antenna. Only the emissions shown in the table above were found to be significant.
5. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector.
6. Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
7. AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
8. Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

8.5 Radiated Spurious Emission Measurements, Out-of-Band

§15.209, §15.225(d); RSS-210 [A2.6]

The EUT was tested from 9kHz up to the 1GHz excluding the band 13.110 – 14.010 MHz. All measurements up to 960MHz were recorded with a spectrum analyzer employing a quasi-peak detector. All out-of-band emissions must not exceed the limits shown in Table 8-5 per Section 15.209. A loop antenna was used to investigate emissions below 30MHz.

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

Table 8-5. Radiated Limits – Out of band

Sample Calculation

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

Radiated Spurious Emission Measurements, Out-of-Band (Cont'd)

§15.209, §15.225(d); RSS-210 [A2.6]

Tx Frequency 13.56MHz

Measurement Distance: 3 Meters

Frequency [MHz]	Level [dBm]	AFCL [dB/m]	Bilog Ant. Position [H/V] / Loop Ant Position [X/Y/Z]	3m Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
27.12	-119.65	11.54	Y	-1.11	69.54	-70.65
40.68	-87.74	12.93	V	32.19	40.00	-7.81
54.24	-94.96	12.15	V	24.19	40.00	-15.81
67.80	-96.36	9.77	V	20.41	40.00	-19.59
81.36	-92.43	8.52	V	23.08	40.00	-16.92
94.92	-99.02	11.90	V	19.88	43.52	-23.64

Table 8-6. Radiated Measurements

NOTES:

1. All measurements were recorded using a spectrum analyzer employing a quasi-peak detector for emissions below 960MHz.

2. Both Vertical and Horizontal polarities of the receive antenna were evaluated with the worst case emissions being reported. Below 30MHz the loop antenna was positioned in 3 orthogonal planes (X front, Y side, Z top) to determine the orientation resulting in the worst case emissions.

3. The EUT was positioned in three orthogonal planes to determine the orientation resulting in the worst case emissions.

4. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.

5. No spurious emissions levels were found to be greater than the level of the fundamental.

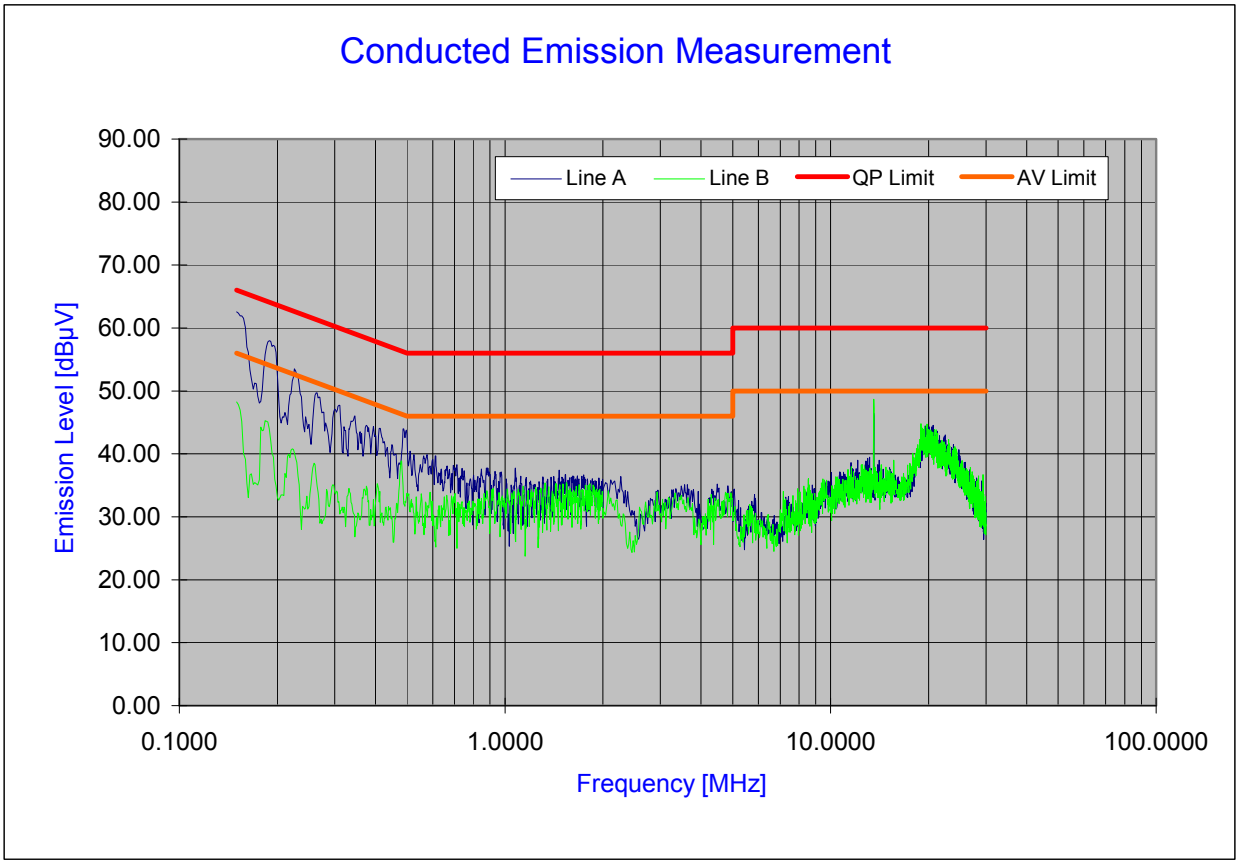
8.6 Line Conducted Measurement Data

§15.207; RSS-Gen (7.2.2)

PCTEST Engineering Laboratory Inc.

Company : LG Electronics MobileComm U.S.A
Model Number : LG-D959
FCC ID Code : ZNFD959
Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz
Tested Date : 09/30/2013
Note : Tested with RFID On



Ver.1.1 ©PCTEST 2006.08

Plot 8-1. Line-Conducted Test Plot

Notes:

1. All Modes of operation were investigated and the worst-case emissions are reported.
2. The limit for intentional radiator devices from 150k to 30MHz is specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot are made using a peak detector.
1. 5. Deviations to the Specifications: None.

Line Conducted Measurement Data (Cont'd)

§15.207; RSS-Gen (7.2.2)

No.	Line	Frequency [MHz]	Factor [dB]	QP [dBµV]	Limit [dBµV]	Margin [dB]	Average [dBµV]	Limit [dBµV]	Margin [dB]
1	A	0.157	6.85	58.54	65.63	-7.09	44.90	55.63	-10.73
2	A	0.194	6.87	53.74	63.85	-10.11	41.72	53.85	-12.13
3	A	0.231	6.89	48.75	62.40	-13.65	37.29	52.40	-15.11
4	A	0.268	6.90	44.83	61.17	-16.34	33.80	51.17	-17.37
5	A	0.305	6.91	42.11	60.10	-17.99	31.95	50.10	-18.15
6	A	0.342	6.93	40.15	59.15	-19.00	30.57	49.15	-18.58
7	A	0.380	6.94	38.67	58.29	-19.62	26.32	48.29	-21.97
8	A	0.416	6.95	39.18	57.52	-18.34	28.50	47.52	-19.02
9	A	0.493	6.97	39.34	56.12	-16.78	30.54	46.12	-15.58
10	A	13.569	7.95	44.41	60.00	-15.59	41.59	50.00	-8.41
11	B	0.487	6.96	36.63	56.21	-19.58	29.56	46.21	-16.65
12	B	13.569	7.99	47.70	60.00	-12.30	45.29	50.00	-4.71
13	B	19.042	8.48	38.71	60.00	-21.29	32.16	50.00	-17.84
14	B	19.114	8.48	38.86	60.00	-21.14	32.57	50.00	-17.43
15	B	19.881	8.54	38.67	60.00	-21.33	32.34	50.00	-17.66
16	B	20.368	8.60	38.48	60.00	-21.52	32.16	50.00	-17.84
17	B	20.790	8.67	37.45	60.00	-22.55	31.21	50.00	-18.79
18	B	20.988	8.69	37.69	60.00	-22.31	31.22	50.00	-18.78
19	B	21.053	8.70	37.73	60.00	-22.27	31.08	50.00	-18.92
20	B	21.318	8.74	36.92	60.00	-23.08	30.50	50.00	-19.50

Table 8-7. Line-Conducted Test Data

Notes:

1. All Modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBµV) – QP/AV Limit (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None..

9.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LGE Portable Handset FCC ID: ZNFD959** has been tested to show compliance with the requirements specified in §15.225 of the FCC Rules and RSS-210 of the Industry Canada rules.