

PCTEST ENGINEERING LABORATORY, INC.

6660-B Dobbin Road, Columbia, MD 21045 USA Tel. 410.290.6652 / Fax 410.290.6654 http://www.pctestlab.com



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: 12/7 -12/10/2013 Test Site/Location: PCTEST Lab., Columbia, MD, USA Test Report Serial No.: 0Y1312022325.ZNF

ZNFD959

APPLICANT:

FCC ID:

LG ELECTRONICS MOBILECOMM U.S.A

FCC Classification:PCS Licensed Transmitter Held to Ear (PCE)FCC Rule Part(s):§2; §24; §27EUT Type:Portable HandsetModel(s):LG-D959, D959, LGD959, LG-D959BK, D959BK, LGD959BKTest Device Serial No.:identical prototype [S/N: EIRP #1]Class II Permissive Change:Please see FCC change documents.

Original Grant Date:

11/15/2013

			ERP/EIRP		
Mode	Tx Frequency (MHz)	Modulation	Max. Power (W)	Max. Power (dBm)	
LTE Band 17	706.5 - 713.5	QPSK	0.116	20.66	
LTE Band 17	706.5 - 713.5	16QAM	0.084	19.24	
LTE Band 17	709 - 711	QPSK	0.135	21.31	
LTE Band 17	709 - 711	16QAM	0.106	20.26	
LTE Band 4	1712.5 - 1752.5	QPSK	0.392	25.93	
LTE Band 4	1712.5 - 1752.5	16QAM	0.317	25.01	
LTE Band 4	1715 - 1750	QPSK	0.238	23.76	
LTE Band 4	1715 - 1750	16QAM	0.182	22.60	
LTE Band 4	1717.5 - 1747.5	QPSK	0.334	25.24	
LTE Band 4	1717.5 - 1747.5	16QAM	0.262	24.18	
LTE Band 4	1720 - 1745	QPSK	0.221	23.44	
LTE Band 4	1720 - 1745	16QAM	0.169	22.28	
LTE Band 2	1852.5 - 1907.5	QPSK	0.120	20.78	
LTE Band 2	1852.5 - 1907.5	16QAM	0.091	19.58	
LTE Band 2	1855 - 1905	QPSK	0.124	20.95	
LTE Band 2	1855 - 1905	16QAM	0.096	19.81	

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.

andy Ortanez



FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)		Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 1 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 1 01 24
© 2013 PCTEST Engineering	g Laboratory, Inc.			V4.5

04/15/2013

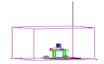


TABLE OF CONTENTS

FCC PA	ART 24	& 27 MEASUREMENT REPORT	3
1.0	INTRO	DDUCTION	4
	1.1	SCOPE	4
	1.2	TESTING FACILITY	4
2.0	PROD	DUCT INFORMATION	5
	2.1	EQUIPMENT DESCRIPTION	5
	2.2	DEVICE CAPABILITIES	5
	2.3	EMI SUPPRESSION DEVICE(S)/MODIFICATIONS	5
	2.4	LABELING REQUIREMENTS	5
3.0	DESC	RIPTION OF TESTS	6
	3.1	MEASUREMENT PROCEDURE	6
	3.2	BLOCK A FREQUENCY RANGE	6
	3.3	PCS - BASE FREQUENCY BLOCKS	6
	3.4	PCS - MOBILE FREQUENCY BLOCKS	6
	3.5	AWS - BASE FREQUENCY BLOCKS	7
	3.6	AWS - MOBILE FREQUENCY BLOCKS	
	3.7	RADIATED POWER AND RADIATED SPURIOUS EMISSIONS	8
4.0	TEST	EQUIPMENT CALIBRATION DATA	9
5.0	SAMF	PLE CALCULATIONS	10
6.0	TEST	RESULTS	11
	6.1	SUMMARY	11
	6.2	EFFECTIVE RADIATED POWER (ERP)	12
	6.3	EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)	13
	6.4	BAND 17 RADIATED SPURIOUS EMISSIONS	15
	6.5	BAND 4 RADIATED SPURIOUS EMISSIONS	18
	6.6	BAND 2 RADIATED SPURIOUS EMISSIONS	
7.0	CONC	CLUSION	24

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 2 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 2 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.	·		V4.5





MEASUREMENT REPORT FCC Part 24 & 27



§2.1033 General Information

APPLICANT:	LG Electronics Mobile	Comm U.S.A		
APPLICANT ADDRESS:	1000 Sylvan Avenue			
	Englewood Cliffs, NJ	07632, United St	ates	
TEST SITE:	PCTEST ENGINEER	ING LABORATO	RY, INC.	
TEST SITE ADDRESS:	6660-B Dobbin Road	, Columbia, MD 2	1045 USA	
FCC RULE PART(S):	§2; §24; §27			
BASE MODEL:	LG-D959			
FCC ID:	ZNFD959			
FCC CLASSIFICATION:	PCS Licensed Transr	nitter Held to Ear	(PCE)	
FREQUENCY TOLERANCE:	±0.00025 % (2.5 ppm)		
Test Device Serial No.:	EIRP #1	Production	Pre-Production	Engineering
DATE(S) OF TEST:	12/7 -12/10/2013			
TEST REPORT S/N:	0Y1312022325.ZNF			

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, 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.

FCC ID: ZNFD959	<u>PCTEST</u>	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)		Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 2 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Page 3 of 24
© 2013 PCTEST Engineering	Laboratory, Inc.			V4.5





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'I (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.

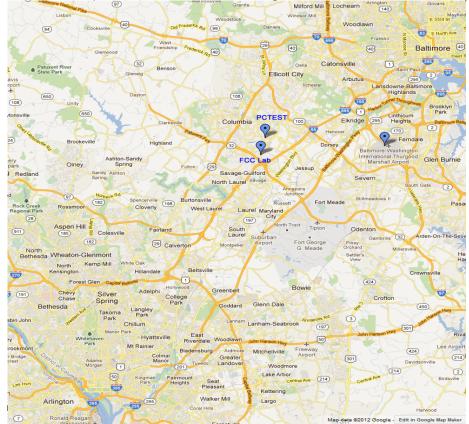


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 4 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 4 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.	·		V4.5



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 EUT's LTE function.

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Band 2 (5 and 10MHz 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 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.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 5 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 5 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.			V4.



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) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168) were used in the measurement of the LGE Portable Handset FCC ID: ZNFD959.

3.2 Block A Frequency Range §27.5(c)

<u>698-746 MHz band</u>. The following frequencies are available for licensing pursuant to this part in the 698-746 MHz band: (1) Three paired channel blocks of 12 megahertz each are available for assignment as follows:

Block A: 698-704 MHz and 728-734 MHz; Block B: 704-710 MHz and 734-740 MHz; and Block C: 710-716 MHz and 740-746 MHz.

<u>§24.229</u> A		D	В	Е	F	С	
1930		19	50	19	70		1990
	BLOCK 2:	1945 –	1945 MHz (A) 1950 MHz (D) 1965 MHz (B)	BLOC	K 5: 19	65 – 1970 MHz (E) 70 – 1975 MHz (F) 75 – 1990 MHz (C)	
3.4	PCS - Mob	oile Fre	equency Blocks				
<u>§24.229</u> A		D	В	Е	F	С	
1850		18	70	189	0		1910
	BLOCK 2:	1865 –	1865 MHz (A) 1870 MHz (D) 1885 MHz (B)	BLOC	K 5: 18	35 – 1890 MHz (E) 90 – 1895 MHz (F) 95 – 1910 MHz (C)	

3.3 PCS - Base Frequency Blocks

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 6 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 0 01 24
© 2013 PCTEST Engineering	g Laboratory, Inc.	•		V4.5



AWS - Base Frequency Blocks 3.5

<u>§27.5</u>

<u>7.5(h)</u>					
		BA	SE		
2110	2120	2130	2135	2140	

А	В	с	D	E	F
BLOCK 1: 21 BLOCK 2: 21 BLOCK 3: 21		BLOCK	(5: 2140 –	- 2140 MHz (D) - 2145 MHz (E) - 2155 MHz (E)	

BLOCK 3: 2130 – 2135 MHz (C)

AWS - Mobile Frequency Blocks

3.6 <u>§27.5(h)</u>

		MOBILE				
17	20 17	30 17	35 17	40 17	745	1755
A	в	с	D	E	F	
			1720 1730 17	1720 1730 1735 17	1720 1730 1735 1740 17	1720 1730 1735 1740 1745

BLOCK 1: 1710 – 1720 MHz (A) BLOCK 2: 1720 – 1730 MHz (B) BLOCK 3: 1730 – 1735 MHz (C)

BLOCK 4: 1735 – 1740 MHz (D) BLOCK 5: 1740 – 1745 MHz (E) BLOCK 6: 1745 – 1755 MHz (F)

2145

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	LG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 7 of 24	
0Y1312022325.ZNF 12/7 -12/10/2013		Portable Handset		Page 7 of 24	
© 2013 PCTEST Engineering	Laboratory, Inc.	•		V4.5	

2155



3.7 Radiated Power and Radiated Spurious Emissions §2.1053 §24.232(c) §24.238(a) §27.50(c.10) §27.50(d.4) §27.53(g) 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.

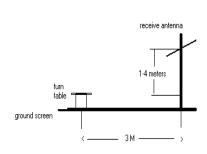
A half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously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

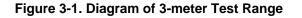
$$P_{d [dBm]} = P_{g [dBm]} - cable loss_{[dB]} + antenna gain_{[dBd/dBi]}$$

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 $P_{g [dBm]}$ – 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 + 10log₁₀(Power _[Watts]) specified in 24.238(a) and 27.53(g)(h).

Open Area Test Site





FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 9 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset	Page 8 of 24	
© 2013 PCTEST Engineering	Laboratory, Inc.			V4.5





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)	3/29/2013	Annual	3/29/2014	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	3/29/2013	Annual	3/29/2014	N/A
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	4/17/2013	Annual	4/17/2014	3008A00985
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/28/2013	Annual	10/28/2014	3613A00315
Agilent	N9030A	PXA Signal Analyzer (44GHz)	1/11/2013	Annual	1/11/2014	MY52350166
Agilent	8447D	Broadband Amplifier	5/31/2013	Annual	5/31/2014	1937A03348
Anritsu	MA2411B	Pulse Sensor	11/13/2013	Annual	11/13/2014	846215
Anritsu	ML2495A	Power Meter	10/31/2013	Annual	10/31/2014	1039008
Emco	6502	Active Loop Antenna (10k - 30 MHz)	5/31/2012	Biennial	5/31/2014	267
Mini-Circuits	VHF-1300+	High Pass Filter	1/21/2013	Annual	1/21/2014	30716
Mini-Circuits	VHF-3100+	High Pass Filter	1/21/2013	Annual	1/21/2014	31144
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/4/2013	Biennial	10/4/2015	103962
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Tx	11/1/2013	Biennial	11/1/2015	91052522TX
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/1/2013	Biennial	11/1/2015	91052523RX
Schwarzbeck	VULB-9161SE	Trilog Super Broadband Test Antenna	10/23/2013	Biennial	10/23/2015	9161-4075
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	6/19/2013	Biennial	6/19/2015	A050307
Sunol	DRH-118	Horn Antenna (1-18 GHz)	6/19/2013	Biennial	6/19/2015	A042511

Table 4-1. Test Equipment

FCC ID: ZNFD959	PCTEST	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 9 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 9 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.			V4.5



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).

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 10 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 10 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.			V4.5



6.0 **TEST RESULTS**

6.1 Summary

Company Name:	LG Electronics MobileComm U.S.A
FCC ID:	ZNFD959
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
TRANSMITTER MC					
27.50(c.10)	Effective Radiated Power (Band 17)	< 3 Watts max. ERP		PASS	Section 6.2
24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP		PASS	Section 6.3
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP	RADIATED	PASS	Section 6.3
2.1053 24.238(a) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 6.4, 6.5, 6.6

Table 6-1. Summary of Test Results

Notes:
All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

FCC ID: ZNFD959	<u>PCTEST</u>	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 11 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 11 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.			V4.5



6.2 Effective Radiated Power (ERP) §27.50(c.10)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Antenna Gain [dBd]	Pol [H/V]	ERP [dBm]	ERP [Watts]	Margin [dB]
706.50	5	QPSK	Standard	1/24	19.29	0.87	V	20.16	0.104	-14.61
710.00	5	QPSK	Standard	1/0	19.80	0.86	V	20.66	0.116	-14.11
713.50	5	QPSK	Standard	1/0	19.51	0.85	V	20.36	0.109	-14.41
706.50	5	16-QAM	Standard	1/24	18.01	0.87	V	18.88	0.077	-15.89
710.00	5	16-QAM	Standard	1/0	18.38	0.86	V	19.24	0.084	-15.53
713.50	5	16-QAM	Standard	1/0	18.20	0.85	V	19.05	0.080	-15.72
709.00	10	QPSK	Standard	1/49	19.63	0.87	V	20.50	0.112	-14.27
710.00	10	QPSK	Standard	1/49	19.80	0.86	V	20.66	0.116	-14.11
711.00	10	QPSK	Standard	1/49	20.46	0.85	V	21.31	0.135	-13.46
709.00	10	16-QAM	Standard	1/49	18.60	0.87	V	19.47	0.089	-15.30
710.00	10	16-QAM	Standard	1/49	18.66	0.86	V	19.52	0.090	-15.25
711.00	10	16-QAM	Standard	1/49	19.41	0.85	V	20.26	0.106	-14.51

Table 6-2. ERP Data (Band 17)

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959	PCTEST	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 12 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 12 01 24
© 2013 PCTEST Engineering	Laboratory, Inc.	•		V4.5



6.3 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]
1712.50	5	QPSK	Standard	1/0	17.13	8.21	H2	25.34	0.342	-4.66
1732.50	5	QPSK	Standard	1/24	17.27	8.13	H2	25.40	0.347	-4.60
1752.50	5	QPSK	Standard	1/0	17.88	8.05	H2	25.93	0.392	-4.07
1712.50	5	16-QAM	Standard	1/0	15.81	8.21	H2	24.02	0.252	-5.98
1732.50	5	16-QAM	Standard	1/24	15.88	8.13	H2	24.01	0.252	-5.99
1752.50	5	16-QAM	Standard	1/0	16.96	8.05	H2	25.01	0.317	-4.99
1715.00	10	QPSK	Standard	1/0	15.19	8.21	H2	23.40	0.219	-6.60
1732.50	10	QPSK	Standard	1/0	15.63	8.13	H2	23.76	0.238	-6.24
1750.00	10	QPSK	Standard	1/0	15.49	8.05	H2	23.54	0.226	-6.46
1715.00	10	16-QAM	Standard	1/0	14.33	8.21	H2	22.54	0.180	-7.46
1732.50	10	16-QAM	Standard	1/0	14.47	8.13	H2	22.60	0.182	-7.40
1750.00	10	16-QAM	Standard	1/0	14.22	8.05	H2	22.27	0.169	-7.73
1717.50	15	QPSK	Standard	1/0	17.03	8.21	H2	25.24	0.334	-4.76
1732.50	15	QPSK	Standard	1/0	15.50	8.13	H2	23.63	0.231	-6.37
1747.50	15	QPSK	Standard	1/74	16.02	8.05	H2	24.07	0.255	-5.93
1717.50	15	16-QAM	Standard	1/0	15.97	8.21	H2	24.18	0.262	-5.82
1732.50	15	16-QAM	Standard	1/0	14.35	8.13	H2	22.48	0.177	-7.52
1747.50	15	16-QAM	Standard	1/74	14.94	8.05	H2	22.99	0.199	-7.01
1720.00	20	QPSK	Standard	1/0	15.23	8.21	H2	23.44	0.221	-6.56
1732.50	20	QPSK	Standard	1/99	14.68	8.13	H2	22.81	0.191	-7.19
1745.00	20	QPSK	Standard	1/0	15.11	8.05	H2	23.16	0.207	-6.84
1720.00	20	16-QAM	Standard	1/0	14.07	8.21	H2	22.28	0.169	-7.72
1732.50	20	16-QAM	Standard	1/99	13.46	8.13	H2	21.59	0.144	-8.41
1745.00	20	16-QAM	Standard	1/0	14.16	8.05	H2	22.21	0.166	-7.79

Table 6-3. EIRP Data (Band 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]
1852.50	5	QPSK	Standard	1/0	11.20	7.98	V	19.18	0.083	-13.83
1880.00	5	QPSK	Standard	1/24	12.76	8.02	V	20.78	0.120	-12.23
1907.50	5	QPSK	Standard	1/0	9.93	8.08	V	18.01	0.063	-15.00
1852.50	5	16-QAM	Standard	1/0	10.30	7.98	V	18.28	0.067	-14.73
1880.00	5	16-QAM	Standard	1/24	11.56	8.02	V	19.58	0.091	-13.43
1907.50	5	16-QAM	Standard	1/0	8.92	8.08	V	17.00	0.050	-16.01
1855.00	10	QPSK	Standard	1/49	12.22	7.98	V	20.20	0.105	-12.81
1880.00	10	QPSK	Standard	1/49	12.93	8.02	V	20.95	0.124	-12.06
1905.00	10	QPSK	Standard	1/0	9.59	8.08	V	17.67	0.058	-15.34
1855.00	10	16-QAM	Standard	1/49	11.30	7.98	V	19.28	0.085	-13.73
1880.00	10	16-QAM	Standard	1/49	11.79	8.02	V	19.81	0.096	-13.20
1905.00	10	16-QAM	Standard	1/0	8.51	8.08	V	16.59	0.046	-16.42

Table 6-4. EIRP Data (Band 2)

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 12 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Page 13 of 24
© 2013 PCTEST Engineerin	g Laboratory, Inc.			V4.5



- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 14 of 24	
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset			
© 2013 PCTEST Engineering	2013 PCTEST Engineering Laboratory, Inc.				



6.4 Band 17 Radiated Spurious Emissions §2.1053 §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:		00	MHz
MEASURED OUTPUT POWER:	20.50	dBm =	<u>0.112</u> W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10 MHz		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	33.50	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1418.00	-58.47	8.25	-50.23	V	70.73
2127.00	-58.63	9.05	-49.58	V	70.08
2836.00	-133.03	10.23	-122.79	V	143.29
3545.00	-129.41	9.83	-119.58	V	140.08
4254.00	-128.25	10.40	-117.85	V	138.35

Table 6-5. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959	PCTEST.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 15 of 24	
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 15 01 24	
© 2013 PCTEST Engineering	2013 PCTEST Engineering Laboratory, Inc.				



Band 17 Radiated Spurious Measurements (continued) §2.1053 §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	710.00)	MHz	
MEASURED OUTPUT POWER:	20.66	dBm =	0.116	W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10 MHz	_		
DISTANCE:	3	meters		
LIMIT:	$43 + 10 \log_{10} (W) =$	33.66	dBc	

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1420.00	-59.01	8.26	-50.75	V	71.41
2130.00	-58.69	9.05	-49.64	V	70.30
2840.00	-87.19	10.24	-76.95	V	97.61
3550.00	-83.90	9.90	-74.00	V	94.66
4260.00	-82.48	10.48	-72.00	V	92.66
4200.00		6-6 Radiated Spuric		v	52.00

Table 6-6. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959	PCTEST.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 16 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Page 16 of 24
0 2013 PCTEST Engineering Laboratory, Inc.				



Band 17 Radiated Spurious Measurements (continued) §2.1053 §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	711.	00	MHz
MEASURED OUTPUT POWER:	21.31	dBm =	<u>0.135</u> W
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10 MHz		
DISTANCE:	3	meters	
LIMIT:	$43 + 10 \log_{10} (W) =$	34.31	dBc

LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
-60.55	8.28	-52.27	V	73.58
-87.71	9.04	-78.67	V	99.99
-87.15	10.25	-76.91	V	98.22
-83.98	9.98	-74.00	V	95.32
-82.56	10.56	-72.01	V	93.32
	ANTENNA TERMINALS (dBm) -60.55 -87.71 -87.15 -83.98 -82.56	ANTENNA TERMINALS (dBm) SUBSTITUTE ANTENNA GAIN (dBd) -60.55 8.28 -87.71 9.04 -87.15 10.25 -83.98 9.98 -82.56 10.56	ANTENNA TERMINALS (dBm) SUBSTITUTE ANTENNA GAIN (dBd) EMISSION LEVEL (dBm) -60.55 8.28 -52.27 -87.71 9.04 -78.67 -87.15 10.25 -76.91 -83.98 9.98 -74.00	ANTENNA TERMINALS (dBm) SUBSTITUTE ANTENNA GAIN (dBd) EMISSION LEVEL (dBm) POL (H/V) -60.55 8.28 -52.27 V -87.71 9.04 -78.67 V -87.15 10.25 -76.91 V -83.98 9.98 -74.00 V -82.56 10.56 -72.01 V

Table 6-7. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 17 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 17 01 24
© 2013 PCTEST Engineering	2013 PCTEST Engineering Laboratory, Inc.			



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

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1712.50		MHz
MEASURED OUTPUT POWER:	25.34	dBm =	<u>0.342</u> W
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5 MHz		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	38.34	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3425.00	-47.77	9.56	-38.21	H2	63.55
5137.50	-54.95	10.96	-43.99	H2	69.34
6850.00	-76.79	10.78	-66.00	H2	91.34
8562.50	-73.78	11.22	-62.57	H2	87.91
10275.00	-73.31	12.51	-60.81	H2	86.15

Table 6-8. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959	PCTEST.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 18 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 10 01 24
© 2013 PCTEST Engineering	2013 PCTEST Engineering Laboratory, Inc.			



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

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1732.5	0		MHz	
MEASURED OUTPUT POWER:	25.40	dBm	=	0.347	W
MODULATION SIGNAL:	QPSK				
BANDWIDTH:	5 MHz	_			
DISTANCE:	3	meters			
LIMIT:	43 + 10 log ₁₀ (W) =	38.40)	dBc	

LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
-49.94	9.63	-40.31	H2	65.71
-54.90	10.93	-43.97	H2	69.37
-76.68	10.88	-65.80	H2	91.20
-74.05	11.45	-62.60	H2	88.00
-73.20	12.58	-60.62	H2	86.02
	ANTENNA TERMINALS (dBm) -49.94 -54.90 -76.68 -74.05 -73.20	ANTENNA TERMINALS (dBm) SUBSTITUTE ANTENNA GAIN (dBi) -49.94 9.63 -54.90 10.93 -76.68 10.88 -74.05 11.45 -73.20 12.58	ANTENNA TERMINALS (dBm) SUBSTITUTE ANTENNA GAIN (dBi) EMISSION LEVEL (dBm) -49.94 9.63 -40.31 -54.90 10.93 -43.97 -76.68 10.88 -65.80 -74.05 11.45 -62.60	ANTENNA TERMINALS (dBm) SUBSTITUTE ANTENNA GAIN (dBi) EMISSION LEVEL (dBm) POL (H/V) -49.94 9.63 -40.31 H2 -54.90 10.93 -43.97 H2 -76.68 10.88 -65.80 H2 -74.05 11.45 -62.60 H2 -73.20 12.58 -60.62 H2

Table 6-9. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 19 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 19 01 24
© 2013 PCTEST Engineering Laboratory, Inc.				



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

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1752.50		MHz
MEASURED OUTPUT POWER:	25.93	dBm =	0.392 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5 MHz		
DISTANCE:	3	meters	
LIMIT:	$43 + 10 \log_{10} (W) =$	38.93	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3505.00	-48.20	9.73	-38.47	H2	64.41
5257.50	-55.06	11.00	-44.06	H2	69.99
7010.00	-76.78	11.06	-65.72	H2	91.65
8762.50	-74.21	11.62	-62.58	H2	88.52
10515.00	-73.09	12.63	-60.46	H2	86.39

Table 6-10. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959	PCTEST.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 20 of 24	
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset	Fage 20 01 24	
© 2013 PCTEST Engineering	2013 PCTEST Engineering Laboratory, Inc.			



6.6 Band 2 Radiated Spurious Emissions §2.1053 §24.238(a) RSS-133(6.5.1)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1855	MHz	
MEASURED OUTPUT POWER:	20.20	dBm =	<u>0.105</u> W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10 MHz		
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	33.20	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3710.00	-40.88	9.89	-30.99	V	51.19
5565.00	-54.03	11.14	-42.89	V	63.09
7420.00	-75.44	10.78	-64.66	V	84.86
9275.00	-74.68	12.30	-62.38	V	82.58
11130.00	-71.89	12.89	-59.00	V	79.20

Table 6-11. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959	PCTEST.	FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 21 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 21 01 24
© 2013 PCTEST Engineering	2013 PCTEST Engineering Laboratory, Inc.			



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	0	MHz
MEASURED OUTPUT POWER:	20.95	dBm =	<u>0.124</u> W
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10 MHz	_	
DISTANCE:	3	meters	
LIMIT:	$43 + 10 \log_{10} (W) =$	33.95	dBc

ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
-50.27	9.70	-40.57	V	61.52
-54.01	11.25	-42.76	V	63.71
-75.49	10.99	-64.51	V	85.45
-74.45	12.26	-62.19	V	83.14
-71.45	12.95	-58.49	V	79.44
	TERMINALS (dBm) -50.27 -54.01 -75.49 -74.45 -71.45	ANTENNA TERMINALS (dBm)ANTENNA GAIN (dBi)-50.279.70-54.0111.25-75.4910.99-74.4512.26-71.4512.95	ANTENNA TERMINALS (dBm) ANTENNA GAIN (dBi) EMISSION LEVEL (dBm) -50.27 9.70 -40.57 -54.01 11.25 -42.76 -75.49 10.99 -64.51 -74.45 12.26 -62.19 -71.45 12.95 -58.49	ANTENNA TERMINALS (dBm) ANTENNA GAIN (dBi) EMISSION LEVEL (dBm) POL (H/V) -50.27 9.70 -40.57 V -54.01 11.25 -42.76 V -75.49 10.99 -64.51 V -74.45 12.26 -62.19 V -71.45 12.95 -58.49 V

Table 6-12. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 22 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 22 01 24
© 2013 PCTEST Engineering Laboratory, Inc.			V4.5	



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

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	1905.00		MHz
MEASURED OUTPUT POWER:	17.67	dBm =	<u>0.058</u> W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10 MHz		
DISTANCE:	3	meters	
LIMIT:	$43 + 10 \log_{10} (W) =$	30.67	dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
3810.00	-47.27	9.51	-37.76	V	55.42
5715.00	-53.75	11.29	-42.46	V	60.13
7620.00	-75.78	11.20	-64.59	V	82.26
9525.00	-74.34	12.30	-62.04	V	79.71
11430.00	-71.04	13.08	-57.96	V	75.63

Table 6-13. Radiated Spurious Data

- 1. This device was tested under all bandwidths, and RB configurations, and modulations. This device was tested under all modulations, RB sizes and offsets, and channel bandwidth configurations and the worst case emissions are reported in the table above.
- 2. This unit was tested with its standard battery.
- 3. The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The "H" positioning is defined with the EUT lying flat on the test surface, the "H2" positioning is defined with the EUT standing up on its side, and the "V" positioning is defined with the EUT standing upright. The worst case test configurations were found with the EUT in the V positioning for Bands 17 and 2, and H2 positioning for Band 4. The data reported in the table above was measured in this test setup.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 23 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 23 01 24
© 2013 PCTEST Engineering Laboratory, Inc.			V4.5	



7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the LGE Portable Handset FCC ID: ZNFD959 complies with all the requirements of Parts 2, 24, 27 of the FCC rules for LTE operation only.

FCC ID: ZNFD959		FCC Pt. 24 & 27 LTE MEASUREMENT REPORT (Class II Permissive Change)	🕑 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 24 of 24
0Y1312022325.ZNF	12/7 -12/10/2013	Portable Handset		Fage 24 01 24
© 2013 PCTEST Engineering Laboratory, Inc.				V4.5