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MEASUREMENT REPORT FCC Part 22, 24, & 27 LTE

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

Date of Testing:
3/28 - 4/12/2016
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
0Y1604010655.ZNF

FCC ID :	ZNFVS500
APPLICANT:	LG ELECTRONICS MOBILECOMM U.S.A

Application Type: Class II Permissive Change
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s): §2; §22; §24; §27
Test Procedure(s): ANSI/TIA-603-C-2004, KDB 971168 v02r02
EUT Type: Portable Handset
Model(s): LG-VS500, LGVS500, VS500, LG-RS500, LGRS500, RS500
Test Device Serial No.: identical prototype [S/N: 7490]
Class II Permissive Change: Please see FCC change document
Original Grant Date: April 12, 2016

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	ERP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 13	779.5 - 784.5	4M57G7D	QPSK	0.111	20.46
LTE Band 13	779.5 - 784.5	4M52W7D	16QAM	0.094	19.74
LTE Band 13	782	9M00G7D	QPSK	0.095	19.76
LTE Band 13	782	8M99W7D	16QAM	0.076	18.79
LTE Band 5	824.7 - 848.3	1M12G7D	QPSK	0.110	20.42
LTE Band 5	824.7 - 848.3	1M12W7D	16QAM	0.080	19.04
LTE Band 5	825.5 - 847.5	2M71G7D	QPSK	0.113	20.52
LTE Band 5	825.5 - 847.5	2M72W7D	16QAM	0.083	19.20
LTE Band 5	826.5 - 846.5	4M50G7D	QPSK	0.119	20.76
LTE Band 5	826.5 - 846.5	4M50W7D	16QAM	0.087	19.38
LTE Band 5	829 - 844	8M96G7D	QPSK	0.118	20.72
LTE Band 5	829 - 844	8M96W7D	16QAM	0.086	19.33

Mode	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
LTE Band 4	1710.7 - 1754.3	1M12G7D	QPSK	0.161	22.06
LTE Band 4	1710.7 - 1754.3	1M11W7D	16QAM	0.121	20.84
LTE Band 4	1711.5 - 1753.5	2M73G7D	QPSK	0.157	21.97
LTE Band 4	1711.5 - 1753.5	2M72W7D	16QAM	0.119	20.76
LTE Band 4	1712.5 - 1752.5	4M50G7D	QPSK	0.156	21.93
LTE Band 4	1712.5 - 1752.5	4M51W7D	16QAM	0.138	21.41
LTE Band 4	1715 - 1750	9M01G7D	QPSK	0.160	22.04
LTE Band 4	1715 - 1750	8M96W7D	16QAM	0.142	21.52
LTE Band 4	1717.5 - 1747.5	13M5G7D	QPSK	0.151	21.79
LTE Band 4	1717.5 - 1747.5	13M5W7D	16QAM	0.124	20.93
LTE Band 4	1720 - 1745	18M0G7D	QPSK	0.147	21.66
LTE Band 4	1720 - 1745	17M9W7D	16QAM	0.118	20.72
LTE Band 2	1850.7 - 1909.3	1M12G7D	QPSK	0.152	21.82
LTE Band 2	1850.7 - 1909.3	1M12W7D	16QAM	0.143	21.56
LTE Band 2	1851.5 - 1908.5	2M72G7D	QPSK	0.149	21.74
LTE Band 2	1851.5 - 1908.5	2M72W7D	16QAM	0.140	21.47
LTE Band 2	1852.5 - 1907.5	4M50G7D	QPSK	0.183	22.63
LTE Band 2	1852.5 - 1907.5	4M52W7D	16QAM	0.144	21.57
LTE Band 2	1855 - 1905	8M97G7D	QPSK	0.176	22.45
LTE Band 2	1855 - 1905	8M97W7D	16QAM	0.141	21.49
LTE Band 2	1857.5 - 1902.5	13M5G7D	QPSK	0.178	22.50
LTE Band 2	1857.5 - 1902.5	13M5W7D	16QAM	0.138	21.38
LTE Band 2	1860 - 1900	17M9G7D	QPSK	0.175	22.44
LTE Band 2	1860 - 1900	18M0W7D	16QAM	0.133	21.24

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.



Randy Ortanez
President

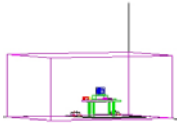


FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 1 of 28

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

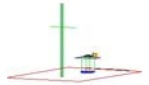
FCC PART 22, 24, & 27 MEASUREMENT REPORT		3
1.0 INTRODUCTION		4
1.1 Scope.....		4
1.2 Testing Facility.....		4
2.0 PRODUCT INFORMATION.....		5
2.1 Equipment Description.....		5
2.2 Device Capabilities		5
2.3 Test Configuration.....		5
2.4 EMI Suppression Device(s)/Modifications.....		5
3.0 DESCRIPTION OF TESTS		6
3.1 Measurement Procedure.....		6
3.1 Block C Frequency Range		6
3.2 Cellular - Base Frequency Blocks		6
3.3 Cellular - Mobile Frequency Blocks.....		6
3.4 PCS - Base Frequency Blocks.....		7
3.5 PCS - Mobile Frequency Blocks		7
3.6 AWS - Base Frequency Blocks		7
3.7 AWS - Mobile Frequency Blocks.....		7
3.8 Radiated Power and Radiated Spurious Emissions.....		8
4.0 MEASUREMENT UNCERTAINTY		9
5.0 TEST EQUIPMENT CALIBRATION DATA		10
6.0 SAMPLE CALCULATIONS		11
7.0 TEST RESULTS		12
7.1 Summary.....		12
7.2 Radiated Power (ERP/EIRP)		13
7.3 Radiated Spurious Emissions Measurements.....		19
8.0 CONCLUSION.....		28

FCC ID: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	 LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	
			Page 2 of 28



MEASUREMENT REPORT

FCC Part 22, 24, & 27



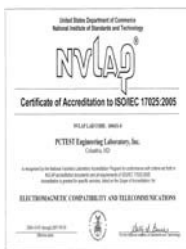
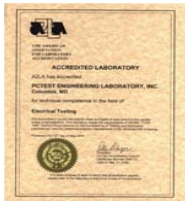
§2.1033 General Information



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; §22; §24; §27
BASE MODEL: LG-VS500
FCC ID: ZNFVS500
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE: ±0.00025 % (2.5 ppm)
Test Device Serial No.: 7490 Production Pre-Production Engineering
DATE(S) OF TEST: 3/28 - 4/12/2016
TEST REPORT S/N: 0Y1604010655.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. 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 and Innovation, Science, and Economic Development Canada (2451B-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 Innovation, Science, and Economic Development 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 Innovation, Science, and Economic Development Canada Standards (RSS).
- PCTEST facility is an ISED registered (2451B-1) test laboratory with the site description on file at Innovation, Science, and Economic Development 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: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 3 of 28

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 Innovation, Science, and Economic Development 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 Intern't'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 C63.4-2014 on January 22, 2015.

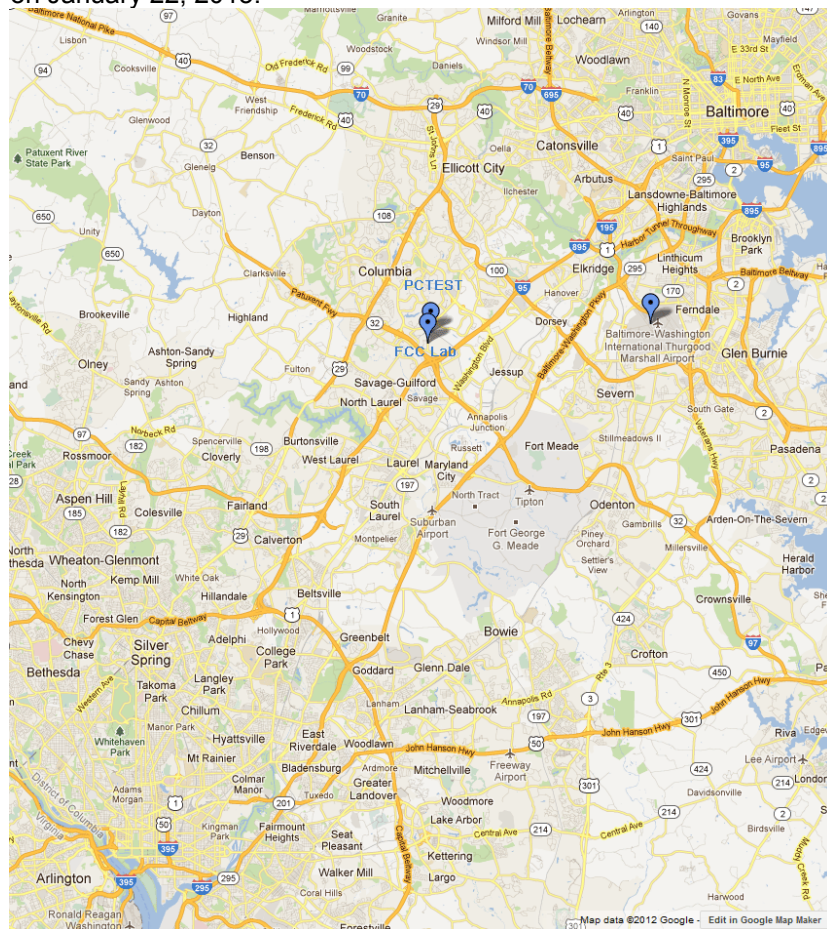


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

FCC ID: ZNFV5500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 4 of 28

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFVS500**. 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 CDMA/EvDO Rev0/A (BC0, BC1), 850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, Bluetooth (1x, EDR, LE)

2.3 Test Configuration

The LG Portable Handset FCC ID: ZNFVS500 was tested per the guidance of ANSI/TIA-603-C-2004 and KDB 971168 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

2.4 EMI Suppression Device(s)/Modifications

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

FCC ID: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 5 of 28	

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 v02r02) were used in the measurement of the **LG Portable Handset FCC ID: ZNFVS500**.

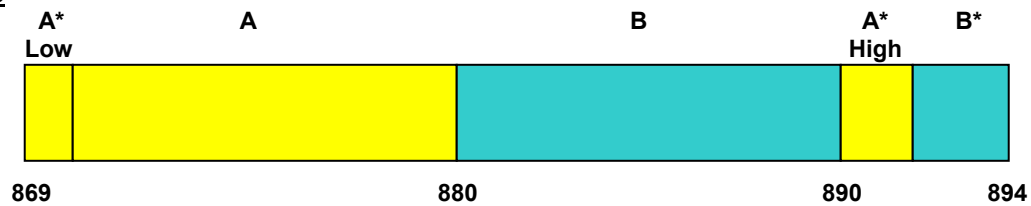
3.1 Block C Frequency Range

§27.5(b)(3)

Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results do not satisfy the applicable reserve price, the spectrum in the 746-757 MHz and 776-787 MHz bands will instead be made available for assignment at a subsequent auction as follows: (i) Two paired channels of 6 megahertz each available for assignment in Block C1 in the 746-752 MHz and 776-782 MHz bands. (ii) Two paired channels of 5 megahertz each available for assignment in Block C2 in the 752-757 MHz and 782-787 MHz bands.

3.2 Cellular - Base Frequency Blocks

§22.905

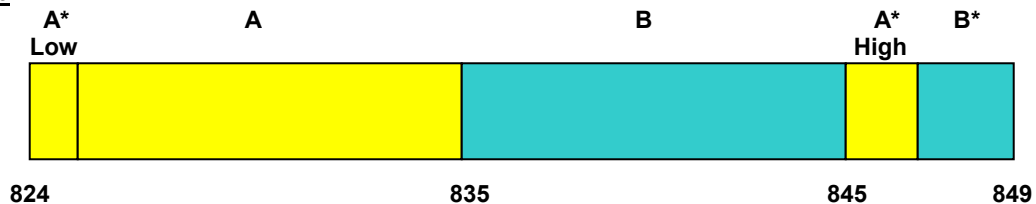


BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)

BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)



3.3 Cellular - Mobile Frequency Blocks

§22.905



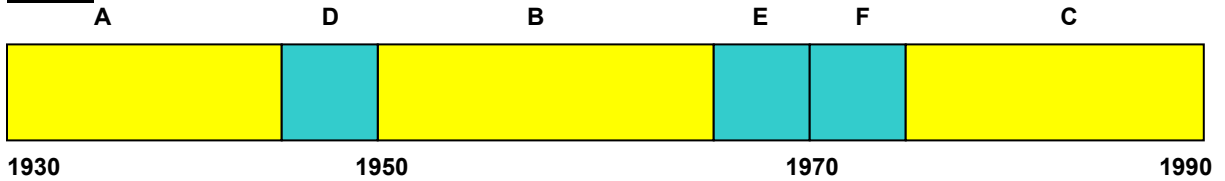
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)

BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 6 of 28

3.4 PCS - Base Frequency Blocks

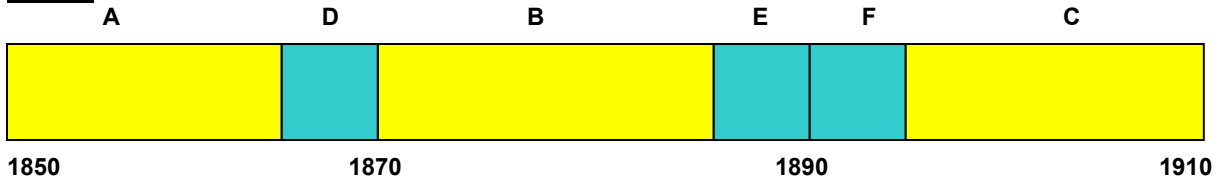
§24.229



- 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)

3.5 PCS - Mobile Frequency Blocks

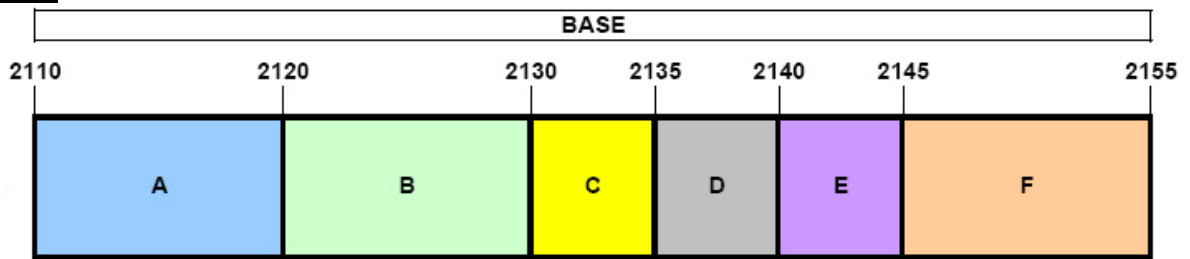
§24.229



- 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)

3.6 AWS - Base Frequency Blocks

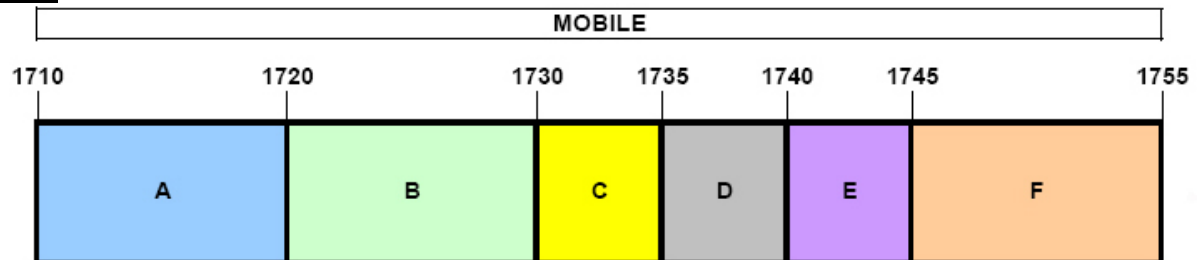
§27.5(h)



- BLOCK 1: 2110 – 2120 MHz (A)
- BLOCK 2: 2120 – 2130 MHz (B)
- BLOCK 3: 2130 – 2135 MHz (C)
- BLOCK 4: 2135 – 2140 MHz (D)
- BLOCK 5: 2140 – 2145 MHz (E)
- BLOCK 6: 2145 – 2155 MHz (F)

3.7 AWS - Mobile Frequency Blocks

§27.5(h)



- 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)

FCC ID: ZNFVS500	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 7 of 28

3.8 Radiated Power and Radiated Spurious Emissions

§2.1053 §22.913(a.2) §22.917(a) §24.232(c) §24.238(a) §27.50(b.10) §27.50(d.4) §27.53(f) §27.53(h)

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2009. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A 3/4" (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.



The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. 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. Radiated power levels are also investigated with the receive antenna horizontally and vertically polarized. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions' occupied bandwidth, a RMS detector, RBW = 100kHz, VBW = 300kHz, and a 1 second sweep time over a minimum of 10 sweeps, per the guidelines of KDB 971168.

Per the guidance of ANSI/TIA-603-C-2004, 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:

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

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 $P_g [dBm] - \text{cable loss} [dB]$.



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 $43 + 10\log_{10}(\text{Power} [Watts])$.

FCC ID: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 8 of 28

4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (\pm dB)
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 9 of 28

5.0 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)	4/28/2015	Annual	4/28/2016	RE1
-	LTx3	Licensed Transmitter Cable Set	6/12/2015	Annual	6/12/2016	LTx3
Agilent	8447D	Broadband Amplifier	6/12/2015	Annual	6/12/2016	2443A01900
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	2/26/2016	Annual	2/26/2017	441119
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
Emco	6502	Active Loop Antenna (10k - 30 MHz)	6/24/2014	Biennial	6/24/2016	267
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	6/17/2014	Biennial	6/17/2016	135427
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	10/22/2014	Biennial	10/22/2016	128338
K & L	13SH10-1000/U1000	N Type High Pass Filter	7/18/2015	Annual	7/18/2016	13SH10-1000/U1000-1
K & L	11SH10-3075/U18000	High Pass Filter	7/18/2015	Annual	7/18/2016	11SH10-3075/U18000-2
Mini-Circuits	PWR-SENS-4RMS	USB Power Sensor	3/4/2016	Annual	3/4/2017	11210140001
Mini-Circuits	TVA-11-422	RF Power Amp	N/A			QA1303002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	3/7/2016	Annual	3/7/2017	100040
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/17/2015	Annual	7/17/2016	100348
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	3/30/2016	Biennial	3/30/2018	9105-2404
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/2/2016	Biennial	3/2/2018	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/14/2016	Biennial	3/14/2018	A051107

Table 5-1. Test Equipment

Notes:

1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 10 of 28	

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz
 G = Phase Modulation
 7 = Quantized/Digital Info
 D = Data transmission, telemetry, telecommand

16QAM Modulation



Emission Designator = 8M45W7D

LTE BW = 8.45 MHz
 W = Amplitude/Angle Modulated
 7 = Quantized/Digital Info
 D = Data transmission, telemetry, telecommand

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: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 11 of 28	



7.0 TEST RESULTS

7.1 Summary

Company Name: LG Electronics MobileComm U.S.A
 FCC ID: ZNFVS500
 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 MODE (TX)					
22.913(a.2)	Effective Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.2
27.50(b.10)	Effective Radiated Power (Band 13)	< 3 Watts max. ERP		PASS	Section 7.2
24.232(c)	Equivalent Isotropic Radiated Power (Band 2)	< 2 Watts max. EIRP		PASS	Section 7.2
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 4)	< 1 Watts max. EIRP		PASS	Section 7.2
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(h)	Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) for all out-of-band emissions		PASS	Section 7.3
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz		PASS	Section 7.3

Table 7-1. Summary of Test Results

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 12 of 28	

7.2 Radiated Power (ERP/EIRP)
§22.913(a.2) §24.232(c.2) §27.50(b.10) §27.50(d.4)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-C-2004 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using horizontally and vertically polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.



Test Procedures Used

KDB 971168 v02r02 – Section 5.2.1

ANSI/TIA-603-C-2004 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer’s “channel power” measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW \geq 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points \geq 2 x span / RBW
6. Detector = RMS
7. Trigger is set to “free run” for signals with continuous operation with the sweep times set to “auto”.
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

FCC ID: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 13 of 28	

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

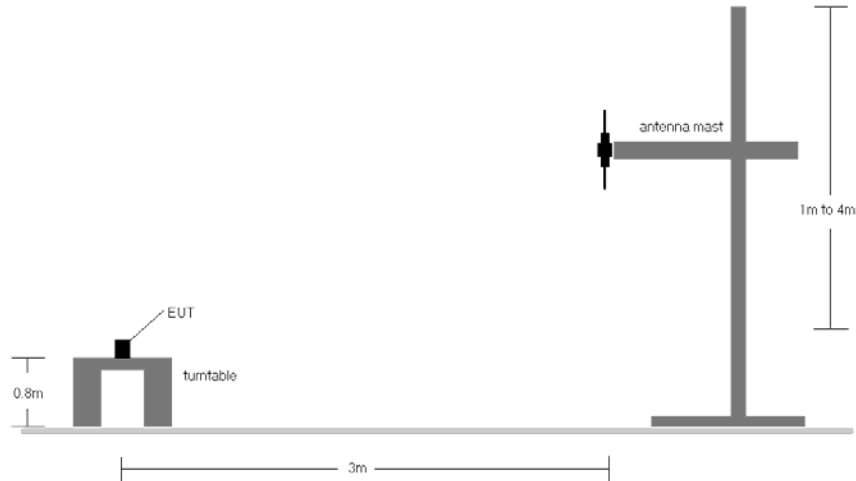


Figure 7-1. Radiated Test Setup <1GHz

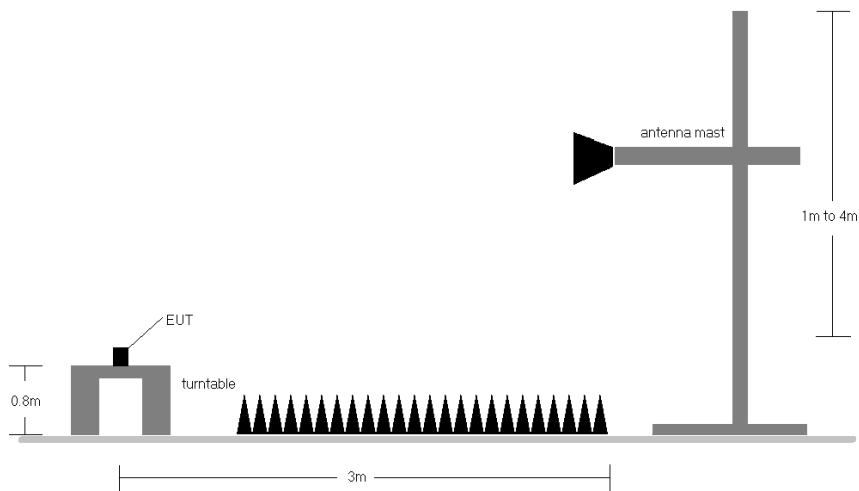




Figure 7-2. Radiated Test Setup >1GHz



Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The ERP's and EIRP's listed were measured using the Class II Permissive change sample, and were found to be within the measurement tolerances of the original certification samples for radiated power. Side by side comparisons have determined that the output power was not changed for these Class II Permissive Change samples.

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 14 of 28



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	V	1.47	63	1 / 0	16.82	3.64	20.46	34.77	-14.31
782.00	5	QPSK	V	1.49	60	1 / 0	16.14	3.67	19.81	34.77	-14.96
784.50	5	QPSK	V	1.46	67	1 / 12	16.03	3.70	19.73	34.77	-15.04
779.50	5	16QAM	V	1.47	63	1 / 0	16.10	3.64	19.74	34.77	-15.03
782.00	5	16QAM	V	1.49	60	1 / 0	15.24	3.67	18.91	34.77	-15.86
784.50	5	16QAM	V	1.46	67	1 / 12	14.89	3.70	18.59	34.77	-16.18
782.00	10	QPSK	V	1.48	67	1 / 0	16.09	3.67	19.76	34.77	-15.01
782.00	10	16QAM	V	1.48	67	1 / 0	15.12	3.67	18.79	34.77	-15.98

Table 7-2. ERP Data (Band 13)

FCC ID: ZNFVS500	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	 LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 15 of 28	



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	1.39	190	1 / 0	16.15	4.27	20.42	38.45	-18.03
836.50	1.4	QPSK	V	1.42	262	1 / 0	15.38	4.46	19.84	38.45	-18.61
848.30	1.4	QPSK	V	1.34	241	1 / 5	14.71	4.65	19.36	38.45	-19.09
824.70	1.4	16-QAM	V	1.39	190	1 / 0	14.77	4.27	19.04	38.45	-19.41
836.50	1.4	16-QAM	V	1.42	262	1 / 0	14.00	4.46	18.46	38.45	-19.99
848.30	1.4	16-QAM	V	1.34	241	1 / 5	13.53	4.65	18.18	38.45	-20.27
825.50	3	QPSK	V	1.39	190	1 / 0	16.23	4.29	20.52	38.45	-17.93
836.50	3	QPSK	V	1.42	262	1 / 0	15.47	4.46	19.93	38.45	-18.52
847.50	3	QPSK	V	1.34	241	1 / 14	14.78	4.64	19.42	38.45	-19.03
825.50	3	16-QAM	V	1.39	190	1 / 0	14.91	4.29	19.20	38.45	-19.25
836.50	3	16-QAM	V	1.42	262	1 / 0	14.03	4.46	18.49	38.45	-19.96
847.50	3	16-QAM	V	1.34	241	1 / 14	13.60	4.64	18.24	38.45	-20.21
826.50	5	QPSK	V	1.39	190	1 / 12	16.46	4.30	20.76	38.45	-17.69
836.50	5	QPSK	V	1.42	262	1 / 12	15.50	4.46	19.96	38.45	-18.49
846.50	5	QPSK	V	1.34	241	1 / 24	14.95	4.62	19.57	38.45	-18.88
826.50	5	16-QAM	V	1.39	190	1 / 12	15.08	4.30	19.38	38.45	-19.07
836.50	5	16-QAM	V	1.42	262	1 / 12	14.16	4.46	18.62	38.45	-19.83
846.50	5	16-QAM	V	1.34	241	1 / 24	13.79	4.62	18.41	38.45	-20.04
829.00	10	QPSK	V	1.39	190	1 / 25	16.38	4.34	20.72	38.45	-17.73
836.50	10	QPSK	V	1.42	262	1 / 25	15.45	4.46	19.91	38.45	-18.54
844.00	10	QPSK	V	1.34	241	1 / 25	14.90	4.58	19.48	38.45	-18.97
829.00	10	16-QAM	V	1.39	190	1 / 25	14.99	4.34	19.33	38.45	-19.12
836.50	10	16-QAM	V	1.42	262	1 / 25	14.10	4.46	18.56	38.45	-19.89
844.00	10	16-QAM	V	1.34	241	1 / 25	13.70	4.58	18.28	38.45	-20.17

Table 7-3. ERP Data (Band 5)

FCC ID: ZNFV500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 16 of 28



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [m]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	1.43	97	1 / 0	11.70	9.45	21.15	30.00	-8.85
1732.50	1.4	QPSK	V	1.45	99	1 / 3	11.86	9.41	21.27	30.00	-8.73
1754.30	1.4	QPSK	V	1.38	93	1 / 0	12.68	9.38	22.06	30.00	-7.94
1710.70	1.4	16-QAM	V	1.43	97	1 / 0	10.58	9.45	20.03	30.00	-9.97
1732.50	1.4	16-QAM	V	1.45	99	1 / 3	11.43	9.41	20.84	30.00	-9.16
1754.30	1.4	16-QAM	V	1.38	93	1 / 0	11.38	9.38	20.76	30.00	-9.24
1711.50	3	QPSK	V	1.43	93	1 / 0	11.61	9.45	21.06	30.00	-8.94
1732.50	3	QPSK	V	1.44	94	1 / 0	11.78	9.41	21.19	30.00	-8.81
1753.50	3	QPSK	V	1.39	95	1 / 0	12.59	9.38	21.97	30.00	-8.03
1711.50	3	16-QAM	V	1.43	93	1 / 0	10.71	9.45	20.16	30.00	-9.84
1732.50	3	16-QAM	V	1.44	94	1 / 0	11.35	9.41	20.76	30.00	-9.24
1753.50	3	16-QAM	V	1.39	95	1 / 0	11.37	9.38	20.75	30.00	-9.25
1712.50	5	QPSK	V	1.42	90	1 / 0	12.38	9.45	21.83	30.00	-8.17
1732.50	5	QPSK	V	1.47	95	1 / 0	12.31	9.41	21.72	30.00	-8.28
1752.50	5	QPSK	V	1.48	88	1 / 0	12.55	9.38	21.93	30.00	-8.07
1712.50	5	16-QAM	V	1.42	90	1 / 0	11.88	9.45	21.33	30.00	-8.67
1732.50	5	16-QAM	V	1.47	95	1 / 0	11.26	9.41	20.67	30.00	-9.33
1752.50	5	16-QAM	V	1.48	88	1 / 0	12.03	9.38	21.41	30.00	-8.59
1715.00	10	QPSK	V	1.49	96	1 / 0	12.45	9.44	21.89	30.00	-8.11
1732.50	10	QPSK	V	1.42	93	1 / 0	12.37	9.41	21.78	30.00	-8.22
1750.00	10	QPSK	V	1.40	94	1 / 25	12.66	9.38	22.04	30.00	-7.96
1715.00	10	16-QAM	V	1.49	96	1 / 0	11.99	9.44	21.43	30.00	-8.57
1732.50	10	16-QAM	V	1.42	93	1 / 0	11.34	9.41	20.75	30.00	-9.25
1750.00	10	16-QAM	V	1.40	94	1 / 25	12.14	9.38	21.52	30.00	-8.48
1717.50	15	QPSK	V	1.49	93	1 / 74	11.82	9.44	21.26	30.00	-8.74
1732.50	15	QPSK	V	1.38	98	1 / 0	12.38	9.41	21.79	30.00	-8.21
1747.50	15	QPSK	V	1.47	89	1 / 0	12.31	9.39	21.70	30.00	-8.30
1717.50	15	16-QAM	V	1.49	93	1 / 74	10.81	9.44	20.25	30.00	-9.75
1732.50	15	16-QAM	V	1.38	98	1 / 0	11.43	9.41	20.84	30.00	-9.16
1747.50	15	16-QAM	V	1.47	89	1 / 0	11.54	9.39	20.93	30.00	-9.07
1720.00	20	QPSK	V	1.44	95	1 / 99	11.78	9.44	21.22	30.00	-8.78
1732.50	20	QPSK	V	1.40	93	1 / 0	12.25	9.41	21.66	30.00	-8.34
1745.00	20	QPSK	V	1.44	95	1 / 50	12.27	9.39	21.66	30.00	-8.34
1720.00	20	16-QAM	V	1.44	95	1 / 99	10.68	9.44	20.12	30.00	-9.88
1732.50	20	16-QAM	V	1.40	93	1 / 0	11.28	9.41	20.69	30.00	-9.31
1745.00	20	16-QAM	V	1.44	95	1 / 50	11.33	9.39	20.72	30.00	-9.28

Table 7-4. EIRP Data (Band 4)

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 17 of 28	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	1.63	70	1 / 0	12.55	9.24	21.79	33.01	-11.22
1880.00	1.4	QPSK	V	1.63	68	1 / 3	12.58	9.21	21.79	33.01	-11.22
1909.30	1.4	QPSK	V	1.31	85	1 / 0	12.58	9.24	21.82	33.01	-11.19
1850.70	1.4	16-QAM	V	1.63	70	1 / 0	12.32	9.24	21.56	33.01	-11.45
1880.00	1.4	16-QAM	V	1.63	68	1 / 3	11.72	9.21	20.93	33.01	-12.08
1909.30	1.4	16-QAM	V	1.31	85	1 / 0	11.99	9.24	21.23	33.01	-11.78
1851.50	3	QPSK	V	1.61	77	1 / 0	12.47	9.24	21.71	33.01	-11.30
1880.00	3	QPSK	V	1.64	69	1 / 0	12.53	9.21	21.74	33.01	-11.27
1908.50	3	QPSK	V	1.35	86	1 / 0	12.46	9.24	21.70	33.01	-11.31
1851.50	3	16-QAM	V	1.61	77	1 / 0	12.23	9.24	21.47	33.01	-11.54
1880.00	3	16-QAM	V	1.64	69	1 / 0	11.61	9.21	20.82	33.01	-12.19
1908.50	3	16-QAM	V	1.35	86	1 / 0	11.85	9.24	21.09	33.01	-11.92
1852.50	5	QPSK	V	1.32	99	1 / 24	12.94	9.24	22.18	33.01	-10.83
1880.00	5	QPSK	V	1.61	61	1 / 0	12.50	9.21	21.71	33.01	-11.30
1907.50	5	QPSK	V	1.62	95	1 / 12	13.40	9.23	22.63	33.01	-10.38
1852.50	5	16-QAM	V	1.32	99	1 / 24	12.26	9.24	21.50	33.01	-11.51
1880.00	5	16-QAM	V	1.61	61	1 / 0	11.28	9.21	20.49	33.01	-12.52
1907.50	5	16-QAM	V	1.62	95	1 / 12	12.34	9.23	21.57	33.01	-11.44
1855.00	10	QPSK	V	1.35	94	1 / 49	12.90	9.24	22.14	33.01	-10.87
1880.00	10	QPSK	V	1.66	66	1 / 0	12.44	9.21	21.65	33.01	-11.36
1905.00	10	QPSK	V	1.63	97	1 / 0	13.23	9.22	22.45	33.01	-10.56
1855.00	10	16-QAM	V	1.35	94	1 / 49	12.17	9.24	21.41	33.01	-11.60
1880.00	10	16-QAM	V	1.66	66	1 / 0	11.09	9.21	20.30	33.01	-12.71
1905.00	10	16-QAM	V	1.63	97	1 / 0	12.27	9.22	21.49	33.01	-11.52
1857.50	15	QPSK	V	1.30	98	1 / 74	12.83	9.24	22.07	33.01	-10.94
1880.00	15	QPSK	V	1.63	65	1 / 0	12.35	9.21	21.56	33.01	-11.45
1902.50	15	QPSK	V	1.63	96	1 / 0	13.30	9.20	22.50	33.01	-10.51
1857.50	15	16-QAM	V	1.30	98	1 / 74	12.08	9.24	21.32	33.01	-11.69
1880.00	15	16-QAM	V	1.63	65	1 / 0	11.19	9.21	20.40	33.01	-12.61
1902.50	15	16-QAM	V	1.63	96	1 / 0	12.18	9.20	21.38	33.01	-11.63
1860.00	20	QPSK	V	1.36	92	1 / 99	12.87	9.23	22.10	33.01	-10.91
1880.00	20	QPSK	V	1.66	63	1 / 0	12.29	9.21	21.50	33.01	-11.51
1900.00	20	QPSK	V	1.67	90	1 / 0	13.25	9.19	22.44	33.01	-10.57
1860.00	20	16-QAM	V	1.36	92	1 / 99	11.99	9.23	21.22	33.01	-11.79
1880.00	20	16-QAM	V	1.66	63	1 / 0	11.13	9.21	20.34	33.01	-12.67
1900.00	20	16-QAM	V	1.67	90	1 / 0	12.05	9.19	21.24	33.01	-11.77

Table 7-5. EIRP Data (Band 2)

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 18 of 28	

7.3 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §27.53(h)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-C-2004 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.



Test Procedures Used

KDB 971168 v02r02 – Section 5.8

ANSI/TIA-603-C-2004 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW \geq 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points \geq 2 x span / RBW
5. Detector = Peak
6. Trace mode = max hold
7. The trace was allowed to stabilize

FCC ID: ZNFVS500	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)			Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 19 of 28	

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

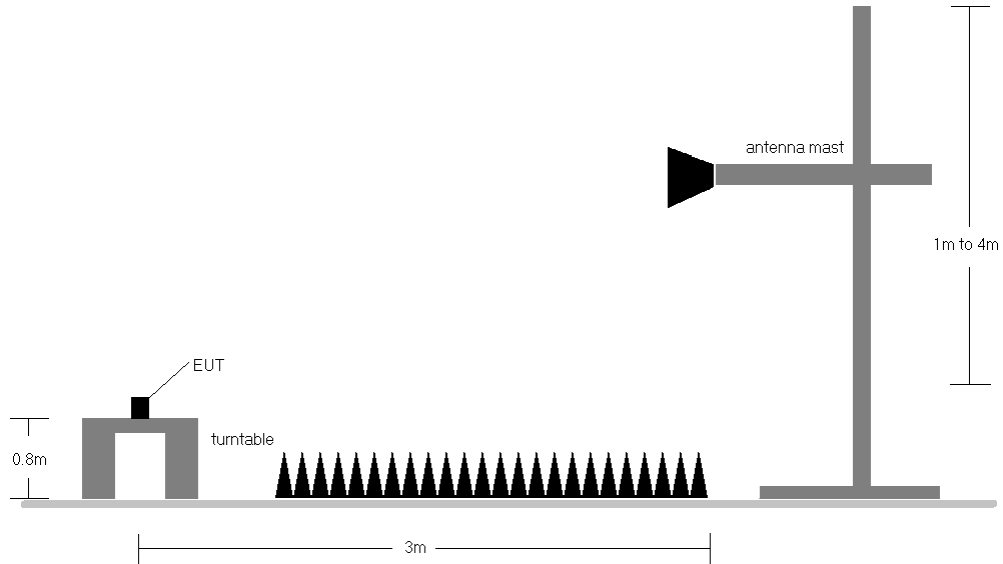




Figure 7-3. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The “-“ shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset		Page 20 of 28

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 20.46 dBm = 0.111 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.46 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2338.50	H	1.22	294	-60.74	7.35	-53.40	73.9
3118.00	H	-	-	-64.66	7.19	-57.47	77.9

Table 7-6. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 19.81 dBm = 0.096 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.81 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	H	1.21	294	-59.59	7.33	-52.27	72.1
3128.00	H	-	-	-62.46	7.20	-55.26	75.1

Table 7-7. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 21 of 28	

OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MEASURED OUTPUT POWER: 19.73 dBm = 0.094 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.73 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2353.50	H	1.14	315	-61.27	7.30	-53.97	73.7
3138.00	H	-	-	-61.90	7.21	-54.69	74.4

Table 7-8. Radiated Spurious Data (Band 13 – High Channel)

MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	1.48	288	-60.97	6.55	-54.42	-14.4
1564.00	H	1.27	288	-60.45	6.57	-53.88	-13.9
1569.00	H	1.37	296	-62.04	6.59	-55.45	-15.5

Table 7-9. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 22 of 28	

OPERATING FREQUENCY: 826.50 MHz
 CHANNEL: 20425
 MEASURED OUTPUT POWER: 20.76 dBm = 0.119 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.76 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1653.00	H	1.25	68	-57.59	6.70	-50.89	71.7
2479.50	H	1.25	68	-40.37	7.54	-32.83	53.6
3306.00	H	1.25	68	-62.31	7.38	-54.92	75.7
4132.50	H	1.25	68	-56.16	8.10	-48.06	68.8
4959.00	H	-	-	-58.21	8.75	-49.46	70.2

Table 7-10. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 19.96 dBm = 0.099 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.96 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	H	1.20	48	-57.82	6.70	-51.12	71.1
2509.50	H	1.20	48	-40.03	7.63	-32.40	52.4
3346.00	H	1.20	48	-61.05	7.51	-53.53	73.5
4182.50	H	1.20	48	-55.21	8.23	-46.98	66.9
5019.00	H	-	-	-58.36	8.75	-49.61	69.6

Table 7-11. Radiated Spurious Data (Band 5 – Mid Channel)

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 23 of 28	

OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 20625
 MEASURED OUTPUT POWER: 19.57 dBm = 0.091 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.57 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	H	1.27	25	-58.80	6.70	-52.10	71.7
2539.50	H	1.27	25	-43.66	7.60	-36.06	55.6
3386.00	H	1.27	25	-61.00	7.65	-53.36	72.9
4232.50	H	1.27	25	-56.48	8.37	-48.11	67.7
5079.00	H	-	-	-58.26	8.65	-49.61	69.2

Table 7-12. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY: 1710.70 MHz
 CHANNEL: 19957
 MEASURED OUTPUT POWER: 21.15 dBm = 0.130 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.15 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3421.40	H	1.45	55	-56.13	9.86	-46.26	67.4
5132.10	H	1.45	55	-52.19	10.76	-41.43	62.6
6842.80	H	-	-	-56.95	11.66	-45.28	66.4

Table 7-13. Radiated Spurious Data (Band 4 – Low Channel)

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 24 of 28	

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 21.27 dBm = 0.134 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.27 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3465.00	H	1.28	33	-56.53	9.91	-46.62	67.9
5197.50	H	1.28	33	-51.56	10.75	-40.82	62.1
6930.00	H	-	-	-57.78	11.76	-46.02	67.3

Table 7-14. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY: 1754.30 MHz
 CHANNEL: 20393
 MEASURED OUTPUT POWER: 22.06 dBm = 0.161 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.06 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3508.60	H	1.68	68	-57.28	9.95	-47.33	69.4
5262.90	H	1.68	68	-54.05	10.71	-43.34	65.4
7017.20	H	-	-	-57.33	11.82	-45.51	67.6

Table 7-15. Radiated Spurious Data (Band 4 – High Channel)

FCC ID: ZNFV500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 25 of 28	

OPERATING FREQUENCY: 1852.50 MHz
 CHANNEL: 18625
 MEASURED OUTPUT POWER: 22.18 dBm = 0.165 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.18 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3705.00	H	1.25	341	-42.84	9.52	-33.32	55.5
5557.50	H	1.25	341	-53.66	11.03	-42.63	64.8
7410.00	H	-	-	-54.09	10.95	-43.14	65.3

Table 7-16. Radiated Spurious Data (Band 2 – Low Channel)

OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 21.71 dBm = 0.148 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.71 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	H	1.66	359	-42.80	9.39	-33.42	55.1
5640.00	H	1.66	359	-54.43	11.22	-43.20	64.9
7520.00	H	-	-	-55.69	11.10	-44.59	66.3



Table 7-17. Radiated Spurious Data (Band 2 – Mid Channel)

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 26 of 28	

OPERATING FREQUENCY: 1907.50 MHz
 CHANNEL: 19175
 MEASURED OUTPUT POWER: 22.63 dBm = 0.183 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.63 dBc



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3815.00	H	1.14	340	-43.27	9.32	-33.95	56.6
5722.50	H	1.14	340	-53.78	11.35	-42.43	65.1
7630.00	H	-	-	-55.62	11.32	-44.30	66.9

Table 7-18. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 27 of 28	

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFVS500** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: ZNFVS500		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1604010655.ZNF	Test Dates: 3/28 - 4/12/2016	EUT Type: Portable Handset	Page 28 of 28	