



PCTEST ENGINEERING LABORATORY, INC.

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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:
7/20 - 8/11/2017
Test Site/Location:
PCTEST Lab., Columbia, MD, USA
Test Report Serial No.:
1M1707180221-03-R1.ZNF

FCC ID :	ZNFV30A
APPLICANT:	LG ELECTRONICS MOBILECOMM U.S.A

Application Type: Class II Permissive Change
Models: LG-H931
Additional Model(s): LGH931, H931, H933, LG-H933, LGH933, LG-VS996, LGVS996, VS996, LG-US998, LGUS998, US998
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s): §2; §22; §24; §27
Test Procedure(s): ANSI/TIA-603-D-2010, KDB 971168 D01 v02r02, KDB 648474 D03 v01r04
EUT Type: Portable Handset
Test Device Serial No.: *identical prototype* [S/N: 15334, 15342]
Class II Permissive Change: Please see FCC change document

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.

This revised Test Report (S/N: 1M1707180221-03-R1.ZNF) supersedes and replaces the previously issued test report (S/N: 1M1707180221-03.ZNF) on the same subject device for the same type of testing as indicated. Please discard the previously issued test report(s).

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

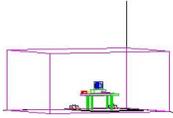


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T A B L E O F C O N T E N T S

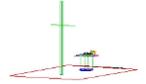
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MEASUREMENT REPORT

FCC Part



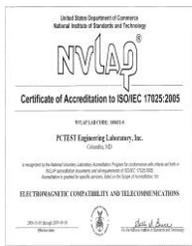
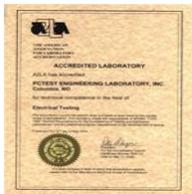
§2.1033 General Information

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-H931
FCC ID: ZNFV30A
FCC CLASSIFICATION: PCS Licensed Transmitter Held to Ear (PCE)
FREQUENCY TOLERANCE: ±0.00025 % (2.5 ppm)
Test Device Serial No.: 15334, 15342 Production Pre-Production Engineering
DATE(S) OF TEST: 7/20 - 8/11/2017
TEST REPORT S/N: 1M1707180221-03-R1.ZNF

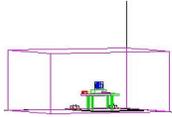
Test Facility / Accreditations

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 Industry 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 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 (2451B-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.



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MEASUREMENT REPORT

FCC Part



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP/EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 12	27	699.7 - 715.3	0.043	16.29	QPSK
LTE Band 12	27	699.7 - 715.3	0.044	16.41	16QAM
LTE Band 12	27	699.7 - 715.3	0.042	16.26	64QAM
LTE Band 12	27	700.5 - 714.5	0.044	16.44	QPSK
LTE Band 12	27	700.5 - 714.5	0.042	16.21	16QAM
LTE Band 12	27	700.5 - 714.5	0.041	16.11	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.041	16.13	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.046	16.59	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.045	16.50	64QAM
LTE Band 12/17	27	704 - 711	0.043	16.34	QPSK
LTE Band 12/17	27	704 - 711	0.045	16.50	16QAM
LTE Band 12/17	27	704 - 711	0.044	16.39	64QAM
LTE Band 13	27	779.5 - 784.5	0.055	17.40	QPSK
LTE Band 13	27	779.5 - 784.5	0.055	17.39	16QAM
LTE Band 13	27	779.5 - 784.5	0.053	17.26	64QAM
LTE Band 13	27	782	0.052	17.19	QPSK
LTE Band 13	27	782	0.052	17.19	16QAM
LTE Band 13	27	782	0.051	17.09	64QAM
LTE Band 5	22H	824.7 - 848.3	0.041	16.13	QPSK
LTE Band 5	22H	824.7 - 848.3	0.034	15.33	16QAM
LTE Band 5	22H	824.7 - 848.3	0.027	14.33	64QAM
LTE Band 5	22H	825.5 - 847.5	0.042	16.26	QPSK
LTE Band 5	22H	825.5 - 847.5	0.034	15.31	16QAM
LTE Band 5	22H	825.5 - 847.5	0.030	14.71	64QAM
LTE Band 5	22H	826.5 - 846.5	0.048	16.78	QPSK
LTE Band 5	22H	826.5 - 846.5	0.041	16.16	16QAM
LTE Band 5	22H	826.5 - 846.5	0.033	15.22	64QAM
LTE Band 5	22H	829 - 844	0.041	16.13	QPSK
LTE Band 5	22H	829 - 844	0.033	15.25	16QAM
LTE Band 5	22H	829 - 844	0.028	14.41	64QAM
LTE Band 4/66	27	1710.7 - 1779.3	0.404	26.06	QPSK
LTE Band 4/66	27	1710.7 - 1779.3	0.394	25.96	16QAM
LTE Band 4/66	27	1710.7 - 1779.3	0.401	26.03	64QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.416	26.20	QPSK
LTE Band 4/66	27	1711.5 - 1778.5	0.442	26.46	16QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.437	26.41	64QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.447	26.50	QPSK
LTE Band 4/66	27	1712.5 - 1777.5	0.462	26.65	16QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.454	26.57	64QAM
LTE Band 4/66	27	1715 - 1775	0.537	27.30	QPSK
LTE Band 4/66	27	1715 - 1775	0.410	26.13	16QAM
LTE Band 4/66	27	1715 - 1775	0.401	26.03	64QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.506	27.04	QPSK
LTE Band 4/66	27	1717.5 - 1772.5	0.481	26.82	16QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.479	26.80	64QAM
LTE Band 4/66	27	1720 - 1770	0.505	27.03	QPSK
LTE Band 4/66	27	1720 - 1770	0.404	26.07	16QAM
LTE Band 4/66	27	1720 - 1770	0.390	25.91	64QAM

EUT Overview

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Mode	FCC Rule Part	Tx Frequency (MHz)	ERP/EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 2/25	24E	1850.7 - 1914.3	0.273	24.36	QPSK
LTE Band 2/25	24E	1850.7 - 1914.3	0.221	23.45	16QAM
LTE Band 2/25	24E	1850.7 - 1914.3	0.178	22.51	64QAM
LTE Band 2/25	24E	1851.5 - 1913.5	0.269	24.30	QPSK
LTE Band 2/25	24E	1851.5 - 1913.5	0.221	23.45	16QAM
LTE Band 2/25	24E	1851.5 - 1913.5	0.188	22.74	64QAM
LTE Band 2/25	24E	1852.5 - 1912.5	0.245	23.89	QPSK
LTE Band 2/25	24E	1852.5 - 1912.5	0.210	23.22	16QAM
LTE Band 2/25	24E	1852.5 - 1912.5	0.171	22.32	64QAM
LTE Band 2/25	24E	1855 - 1910	0.250	23.98	QPSK
LTE Band 2/25	24E	1855 - 1910	0.227	23.57	16QAM
LTE Band 2/25	24E	1855 - 1910	0.182	22.59	64QAM
LTE Band 2/25	24E	1857.5 - 1907.5	0.247	23.94	QPSK
LTE Band 2/25	24E	1857.5 - 1907.5	0.226	23.54	16QAM
LTE Band 2/25	24E	1857.5 - 1907.5	0.175	22.43	64QAM
LTE Band 2/25	24E	1860 - 1905	0.253	24.04	QPSK
LTE Band 2/25	24E	1860 - 1905	0.234	23.69	16QAM
LTE Band 2/25	24E	1860 - 1905	0.183	22.62	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.113	20.52	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.092	19.64	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.072	18.56	64QAM
LTE Band 30	27	2310	0.121	20.81	QPSK
LTE Band 30	27	2310	0.105	20.21	16QAM
LTE Band 30	27	2310	0.081	19.06	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.065	18.16	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.068	18.30	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.052	17.19	64QAM
LTE Band 7	27	2505 - 2565	0.076	18.83	QPSK
LTE Band 7	27	2505 - 2565	0.076	18.83	16QAM
LTE Band 7	27	2505 - 2565	0.074	18.72	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.075	18.73	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.068	18.34	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.067	18.25	64QAM
LTE Band 7	27	2510 - 2560	0.074	18.71	QPSK
LTE Band 7	27	2510 - 2560	0.073	18.65	16QAM
LTE Band 7	27	2510 - 2560	0.071	18.51	64QAM
LTE Band 41	27	2498.5 - 2687.5	0.062	17.92	QPSK
LTE Band 41	27	2498.5 - 2687.5	0.051	17.04	16QAM
LTE Band 41	27	2498.5 - 2687.5	0.041	16.16	64QAM
LTE Band 41	27	2501 - 2685	0.086	19.37	QPSK
LTE Band 41	27	2501 - 2685	0.067	18.28	16QAM
LTE Band 41	27	2501 - 2685	0.058	17.61	64QAM
LTE Band 41	27	2503.5 - 2682.5	0.075	18.77	QPSK
LTE Band 41	27	2503.5 - 2682.5	0.059	17.68	16QAM
LTE Band 41	27	2503.5 - 2682.5	0.047	16.72	64QAM
LTE Band 41	27	2506 - 2680	0.058	17.63	QPSK
LTE Band 41	27	2506 - 2680	0.039	15.96	16QAM
LTE Band 41	27	2506 - 2680	0.035	15.42	64QAM

Note:

Class II Permissive Change test samples were used for ERP/EIRP measurements. It has been determined that radiated powers were not changed for the ZNFV30A. Differences in radiated powers from the original certification ERP/EIRP that are reported herein are within expected measurement tolerances.

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1.0 INTRODUCTION

1.1 Scope

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

1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington 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.

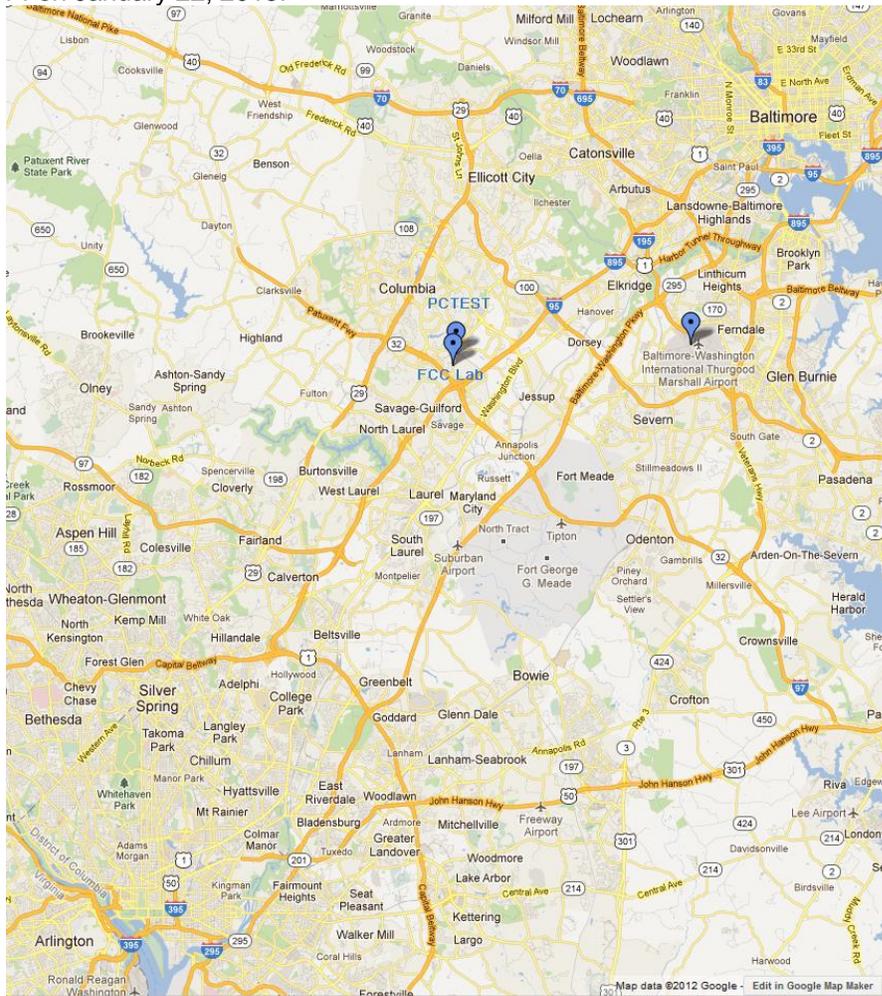


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFV30A**. 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, 1x Advanced (BC0, BC1), 850/1900 GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n/ac WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

LTE Band 12 (698 – 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 – 716 MHz). Therefore, test data provided in this report covers Band 17 as well as Band 12.

LTE Band 66 (1710 – 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 – 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

LTE Band 25 (1850 – 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 – 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-D-2010 and KDB 971168 D01 v02r02. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on a certified wireless charging pad (WCP) while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

2.4 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI/TIA-603-D-2010) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems” (KDB 971168 D01 v02r02) were used in the measurement of the EUT.

3.1 Block C Frequency Range §27.5(b)(3)

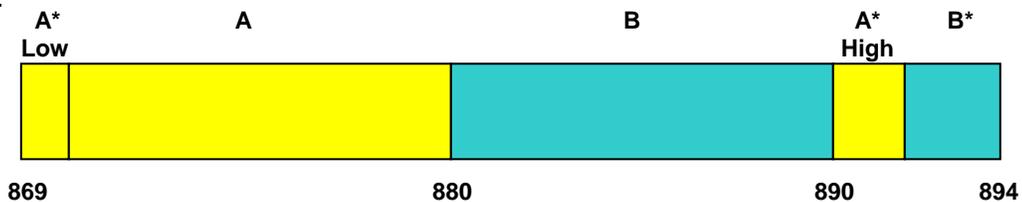
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results 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 Block A Frequency Range §27.5(c)

698-746 MHz band. 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.

3.3 Cellular - Base Frequency Blocks §22.905



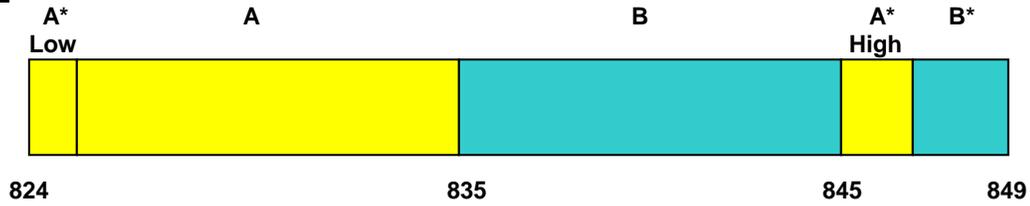
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)

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

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3.4 Cellular - Mobile Frequency Blocks

§22.905

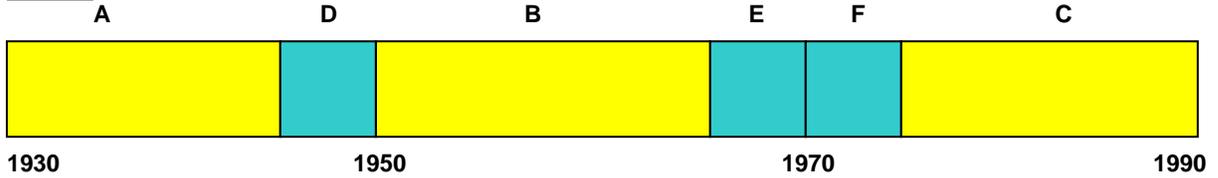


BLOCK 1: 824 – 835 MHz (A* Low + A)
 BLOCK 2: 835 – 845 MHz (B)

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

3.5 PCS - Base Frequency Blocks

§24.229

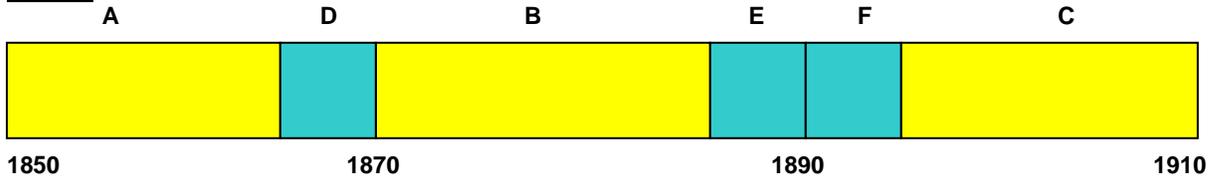


BLOCK 1: 1930 – 1945 MHz (A)
 BLOCK 2: 1945 – 1950 MHz (D)
 BLOCK 3: 1950 – 1965 MHz (B)

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

3.6 PCS - Mobile Frequency Blocks

§24.229

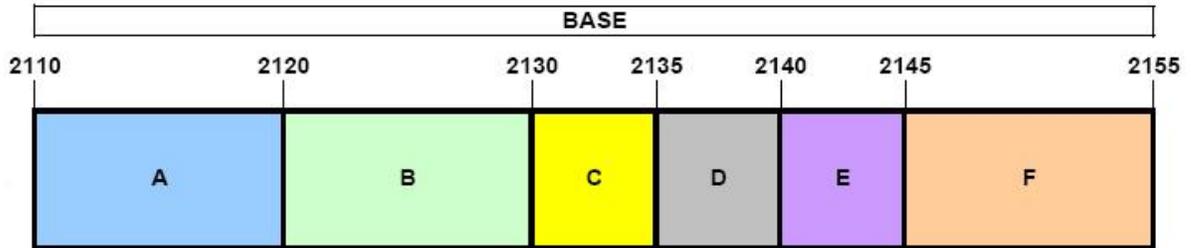


BLOCK 1: 1850 – 1865 MHz (A)
 BLOCK 2: 1865 – 1870 MHz (D)
 BLOCK 3: 1870 – 1885 MHz (B)

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

3.7 AWS - Base Frequency Blocks

§27.5(h)



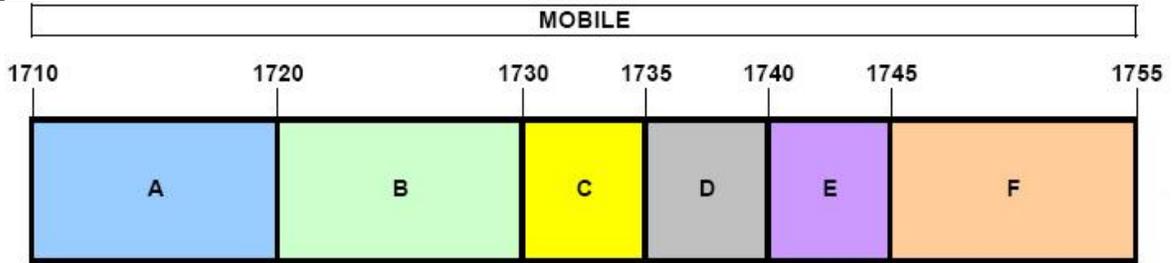
BLOCK 1: 2110 – 2120 MHz (A)
 BLOCK 2: 2120 – 2130 MHz (B)
 BLOCK 3: 2130 – 2135 MHz (C)

BLOCK 4: 2135 – 2140 MHz (D)
 BLOCK 5: 2140 – 2145 MHz (E)
 BLOCK 6: 2145 – 2155 MHz (F)

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3.8 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)

3.9 WCS – Mobile/Base Frequency Blocks

§27.5(a)

The following frequencies are available for WCS in the 2305-2320 MHz and 2345-2360 MHz bands:

BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

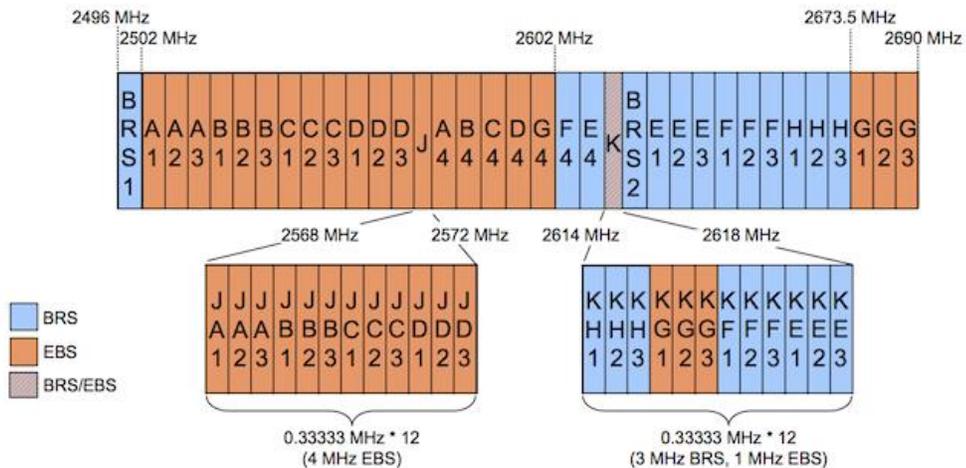
BLOCK 2: 2310-2315 and 2355-236 MHz (B)

BLOCK 3: 2315-2320 MHz (C)

BLOCK 4: 2345-2350 MHz (D)

3.10 BRS/EBS Frequency Block

§27.5



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3.11 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(c.10) §27.50(d.4) §27.53(a.4) §27.53(f) §27.53(g) §27.53(h) §27.53(m)

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 Figure 5.7 of Clause 5 in ANSI C63.4-2014. 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 above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table 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 72.4cm high PVC support structure is placed on top of the turntable. A 3" (~7.6cm) sheet of high density polystyrene 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 D01 v02r02.

Per the guidance of ANSI/TIA-603-D-2010, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

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

The calculated P_d levels are then compared to the absolute spurious emission limit of -13dBm which is equivalent to the required minimum attenuation of $43 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$. For Band 7, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of $55 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$. For Band 30, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of $70 + 10\log_{10}(\text{Power}_{\text{[Watts]}})$.

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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 uncertainty shown below 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

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2006.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	6/21/2017	Annual	6/21/2018	RE1
Agilent	N9020A	MXA Signal Analyzer	10/28/2016	Annual	10/28/2017	US46470561
Emco	6502	Active Loop Antenna (10k - 30 MHz)	8/9/2016	Biennial	8/9/2018	2936
Emco	3115	Horn Antenna (1-18GHz)	3/10/2016	Biennial	3/10/2018	9704-5182
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/26/2016	Biennial	4/26/2018	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	4/26/2016	Biennial	4/26/2018	128337
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	8/23/2016	Biennial	8/23/2018	135427
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/24/2017	Annual	3/24/2018	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-400HP	Synthesized Signal Generator	N/A			11208010032
PCTEST	-	EMC Switch System	6/21/2017	Annual	6/21/2018	NM1
PCTEST	-	EMC Switch System	6/21/2017	Annual	6/21/2018	NM2
Rohde & Schwarz	CMW500	Radio Communication Tester	10/20/2016	Annual	10/20/2017	100976
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/31/2017	Annual	7/31/2018	100348
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	5/11/2017	Annual	5/11/2018	100040
Schwarzbeck	UHA 9105	Dipole Antenna (400 - 1GHz) Rx	11/18/2015	Biennial	11/18/2017	91052523RX
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.

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6.0 SAMPLE CALCULATIONS

Spurious Radiated Emission – LTE Band

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

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm $- (-24.80)$.

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7.0 TEST RESULTS

7.1 Summary

Company Name: LG Electronics MobileComm U.S.A
 FCC ID: ZNFV30A
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Result	Reference
22.913(a.2)	Effective Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.2
27.50(b.10) 27.50(c.10)	Effective Radiated Power (Band 12/17 13)	< 3 Watts max. ERP		PASS	Section 7.2
24.232(c) 27.50(h.2)	Equivalent Isotropic Radiated Power (Band 25 7)	< 2 Watts max. EIRP		PASS	Section 7.2
27.50(d.4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP		PASS	Section 7.2
27.50(a.3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP		PASS	Section 7.2
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 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
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10log ₁₀ (P[Watts])		PASS	Section 7.3
27.53(m)	Undesirable Emissions	> 43 + 10log ₁₀ (P[Watts]) at channel edges > 55 + 10log ₁₀ (P[Watts]) at 5.5MHz away and beyond channel edges		PASS	Section 7.3

Table 7-1. Summary of Test Results

Notes:

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

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7.2 Radiated Power (ERP/EIRP)

§22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(b.10) §27.50(c.10) §27.50(d.4) §27.50(a.3)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 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 D01 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – 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

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Test Setup

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

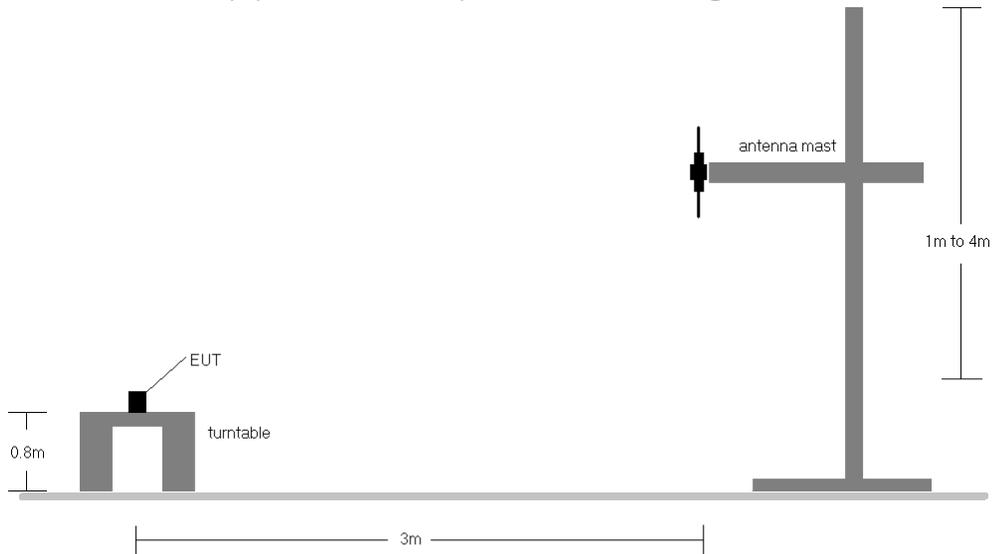


Figure 7-1. Radiated Test Setup <1GHz

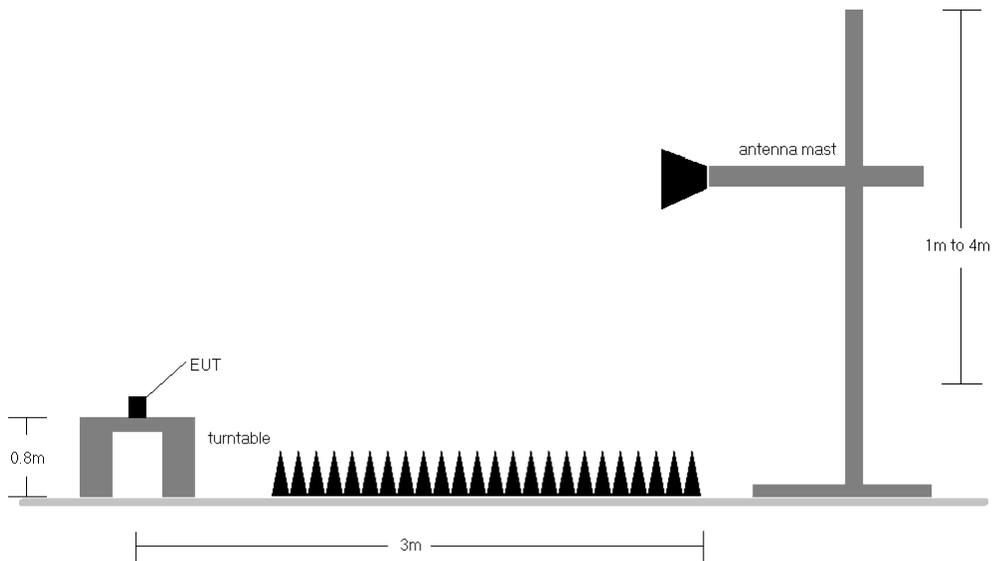


Figure 7-2. Radiated Test Setup >1GHz

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.

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turtable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	358	3 / 2	16.12	-1.05	15.07	34.77	-19.70
707.50	1.4	QPSK	H	150	0	3 / 2	16.70	-1.02	15.68	34.77	-19.09
715.30	1.4	QPSK	H	150	361	1 / 5	17.28	-0.99	16.29	34.77	-18.48
715.30	1.4	16-QAM	H	150	361	1 / 5	17.40	-0.99	16.41	34.77	-18.36
715.30	1.4	64-QAM	H	150	361	1 / 5	17.25	-0.99	16.26	34.77	-18.51
700.50	3	QPSK	H	150	167	1 / 14	16.41	-1.05	15.36	34.77	-19.41
707.50	3	QPSK	H	150	2	1 / 14	16.87	-1.02	15.85	34.77	-18.92
714.50	3	QPSK	H	150	356	1 / 14	17.43	-0.99	16.44	34.77	-18.33
714.50	3	16-QAM	H	150	356	1 / 14	17.20	-0.99	16.21	34.77	-18.56
714.50	3	64-QAM	H	150	356	1 / 14	17.10	-0.99	16.11	34.77	-18.66

Table 7-2. ERP Data (Band 12)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	150	171	1 / 24	16.78	-1.04	15.74	34.77	-19.04
707.50	5	QPSK	H	150	354	1 / 24	16.91	-1.02	15.89	34.77	-18.88
713.50	5	QPSK	H	150	168	1 / 24	17.13	-1.00	16.13	34.77	-18.64
713.50	5	16-QAM	H	150	168	1 / 24	17.59	-1.00	16.59	34.77	-18.18
713.50	5	64-QAM	H	150	168	1 / 24	17.50	-1.00	16.50	34.77	-18.27
704.00	10	QPSK	H	150	167	1 / 49	16.80	-1.03	15.77	34.77	-19.00
707.50	10	QPSK	H	150	167	1 / 49	16.89	-1.02	15.87	34.77	-18.90
711.00	10	QPSK	H	150	168	1 / 49	17.35	-1.01	16.34	34.77	-18.43
711.00	10	16-QAM	H	150	168	1 / 49	17.51	-1.01	16.50	34.77	-18.27
711.00	10	64-QAM	H	150	168	1 / 49	17.40	-1.01	16.39	34.77	-18.38
713.50	5	16-QAM	V	150	95	1 / 24	17.14	-1.00	16.14	34.77	-18.63
713.50	5 (WCP)	16-QAM	H	150	171	1 / 24	17.00	-1.00	16.00	34.77	-18.77

Table 7-3. ERP Data (Band 12/17)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	150	160	1 / 0	18.18	-0.83	17.35	34.77	-17.42
782.00	5	QPSK	H	150	161	1 / 0	18.22	-0.82	17.40	34.77	-17.37
784.50	5	QPSK	H	150	179	1 / 0	17.88	-0.81	17.07	34.77	-17.70
782.00	5	16-QAM	H	150	161	1 / 0	18.21	-0.82	17.39	34.77	-17.38
782.00	5	64-QAM	H	150	161	1 / 0	18.08	-0.82	17.26	34.77	-17.51
782.00	10	QPSK	H	150	164	1 / 0	18.01	-0.82	17.19	34.77	-17.58
782.00	10	16-QAM	H	150	164	1 / 0	18.01	-0.82	17.19	34.77	-17.58
782.00	10	64-QAM	H	150	164	1 / 0	17.91	-0.82	17.09	34.77	-17.68
782.00	5	QPSK	V	150	100	1 / 0	17.01	-0.82	16.19	34.77	-18.58
782.00	5 (WCP)	QPSK	H	150	170	1 / 0	17.79	-0.82	16.97	34.77	-17.80

Table 7-4. ERP Data (Band 13)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	359	71	1 / 5	16.75	-0.65	16.10	38.45	-22.35
836.50	1.4	QPSK	H	348	84	3 / 2	16.78	-0.65	16.13	38.45	-22.32
848.30	1.4	QPSK	H	355	107	1 / 0	16.68	-0.65	16.03	38.45	-22.42
836.50	1.4	16-QAM	H	348	84	1 / 0	15.98	-0.65	15.33	38.45	-23.12
836.50	1.4	64-QAM	H	348	84	1 / 0	14.98	-0.65	14.33	38.45	-24.12
825.50	3	QPSK	H	345	102	1 / 0	16.58	-0.65	15.93	38.45	-22.52
836.50	3	QPSK	H	356	108	1 / 14	16.91	-0.65	16.26	38.45	-22.19
847.50	3	QPSK	H	342	103	1 / 0	16.84	-0.65	16.19	38.45	-22.26
836.50	3	16-QAM	H	356	108	1 / 14	15.96	-0.65	15.31	38.45	-23.14
836.50	3	64-QAM	H	356	108	1 / 14	15.36	-0.65	14.71	38.45	-23.74
826.50	5	QPSK	H	349	86	1 / 0	16.67	-0.65	16.02	38.45	-22.43
836.50	5	QPSK	H	348	101	1 / 0	17.43	-0.65	16.78	38.45	-21.67
846.50	5	QPSK	H	346	77	1 / 0	16.70	-0.65	16.05	38.45	-22.40
836.50	5	16-QAM	H	348	101	1 / 0	16.81	-0.65	16.16	38.45	-22.29
836.50	5	64-QAM	H	348	101	1 / 0	15.87	-0.65	15.22	38.45	-23.23
829.00	10	QPSK	H	353	60	1 / 49	16.59	-0.65	15.94	38.45	-22.51
836.50	10	QPSK	H	0	62	1 / 0	16.72	-0.65	16.07	38.45	-22.38
844.00	10	QPSK	H	338	65	1 / 0	16.78	-0.65	16.13	38.45	-22.32
844.00	10	16-QAM	H	338	65	1 / 0	15.90	-0.65	15.25	38.45	-23.20
844.00	10	64-QAM	H	338	65	1 / 0	15.06	-0.65	14.41	38.45	-24.04
836.50	5	QPSK	V	352	104	1 / 0	16.15	-0.65	15.50	38.45	-22.95
836.50	5 (WCP)	QPSK	H	17	9	1 / 0	15.59	-0.65	14.94	38.45	-23.51

Table 7-5. ERP Data (Band 5)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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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]
1710.70	1.4	QPSK	H	130	299	3 / 2	16.44	9.62	26.06	30.00	-3.94
1745.00	1.4	QPSK	H	119	312	1 / 0	15.68	9.43	25.11	30.00	-4.89
1779.30	1.4	QPSK	H	109	107	3 / 2	15.64	9.25	24.89	30.00	-5.11
1710.70	1.4	16-QAM	H	130	299	3 / 2	16.34	9.62	25.96	30.00	-4.04
1710.70	1.4	64-QAM	H	130	299	3 / 2	16.41	9.62	26.03	30.00	-3.97
1711.50	3	QPSK	H	117	126	15 / 0	16.58	9.62	26.20	30.00	-3.80
1745.00	3	QPSK	H	119	192	1 / 0	15.64	9.43	25.07	30.00	-4.93
1778.50	3	QPSK	H	110	122	1 / 0	15.54	9.26	24.80	30.00	-5.20
1711.50	3	16-QAM	H	117	126	1 / 0	16.84	9.62	26.46	30.00	-3.54
1711.50	3	64-QAM	H	117	126	1 / 0	16.79	9.62	26.41	30.00	-3.59
1712.50	5	QPSK	H	127	306	1 / 0	16.89	9.61	26.50	30.00	-3.50
1745.00	5	QPSK	H	120	314	1 / 0	16.34	9.43	25.77	30.00	-4.23
1777.50	5	QPSK	H	117	300	12 / 6	15.38	9.26	24.64	30.00	-5.36
1712.50	5	16-QAM	H	127	306	1 / 0	17.04	9.61	26.65	30.00	-3.35
1712.50	5	64-QAM	H	127	306	1 / 0	16.96	9.61	26.57	30.00	-3.43
1715.00	10	QPSK	H	118	300	1 / 49	17.70	9.60	27.30	30.00	-2.70
1745.00	10	QPSK	H	122	311	1 / 0	16.40	9.43	25.83	30.00	-4.17
1775.00	10	QPSK	H	114	98	1 / 49	16.18	9.28	25.46	30.00	-4.54
1715.00	10	16-QAM	H	118	300	1 / 49	16.53	9.60	26.13	30.00	-3.87
1715.00	10	64-QAM	H	118	300	1 / 49	16.43	9.60	26.03	30.00	-3.97
1717.50	15	QPSK	H	117	290	36 / 18	17.46	9.58	27.04	30.00	-2.96
1745.00	15	QPSK	H	310	119	1 / 0	16.60	9.43	26.03	30.00	-3.97
1772.50	15	QPSK	H	113	102	1 / 74	16.10	9.29	25.39	30.00	-4.61
1717.50	15	16-QAM	H	117	290	1 / 74	17.24	9.58	26.82	30.00	-3.18
1717.50	15	64-QAM	H	117	290	1 / 74	17.22	9.58	26.80	30.00	-3.20
1720.00	20	QPSK	H	118	302	50 / 25	17.46	9.57	27.03	30.00	-2.97
1745.00	20	QPSK	H	122	313	1 / 0	15.93	9.43	25.36	30.00	-4.64
1770.00	20	QPSK	H	114	289	50 / 25	14.43	9.30	23.73	30.00	-6.27
1720.00	20	16-QAM	H	118	302	50 / 25	16.50	9.57	26.07	30.00	-3.93
1720.00	20	64-QAM	H	118	302	50 / 25	16.34	9.57	25.91	30.00	-4.09
1715.00	10	QPSK	V	112	300	1 / 99	17.27	9.43	26.70	30.00	-3.30
1715.00	10 (WCP)	QPSK	H	119	124	1 / 0	16.10	9.60	25.70	30.00	-4.30

Table 7-6. EIRP Data (Band 4/66)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 22 of 45	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [HV]	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	150	3	1 / 0	18.99	4.79	23.78	33.01	-9.23
1882.50	1.4	QPSK	V	150	10	1 / 0	18.63	4.85	23.48	33.01	-9.53
1914.30	1.4	QPSK	V	150	5	1 / 0	19.51	4.85	24.36	33.01	-8.65
1914.30	1.4	16-QAM	V	150	5	1 / 0	18.60	4.85	23.45	33.01	-9.56
1914.30	1.4	64-QAM	V	150	5	1 / 0	17.66	4.85	22.51	33.01	-10.50
1851.50	3	QPSK	V	150	2	1 / 0	18.78	4.79	23.57	33.01	-9.44
1882.50	3	QPSK	V	150	7	1 / 0	18.78	4.85	23.63	33.01	-9.38
1913.50	3	QPSK	V	150	6	1 / 0	19.45	4.85	24.30	33.01	-8.71
1913.50	3	16-QAM	V	150	6	1 / 0	18.60	4.85	23.45	33.01	-9.56
1913.50	3	64-QAM	V	150	6	1 / 0	17.89	4.85	22.74	33.01	-10.27
1852.50	5	QPSK	V	150	6	1 / 0	19.10	4.79	23.89	33.01	-9.12
1882.50	5	QPSK	V	150	14	1 / 0	18.06	4.85	22.91	33.01	-10.10
1912.50	5	QPSK	V	150	359	1 / 0	18.97	4.85	23.82	33.01	-9.19
1852.50	5	16-QAM	V	150	6	1 / 0	18.43	4.79	23.22	33.01	-9.79
1852.50	5	64-QAM	V	150	6	1 / 0	17.53	4.79	22.32	33.01	-10.69
1855.00	10	QPSK	V	150	13	1 / 0	18.31	4.80	23.11	33.01	-9.90
1882.50	10	QPSK	V	150	11	1 / 0	18.60	4.85	23.45	33.01	-9.56
1910.00	10	QPSK	V	150	6	1 / 49	19.12	4.86	23.98	33.01	-9.03
1910.00	10	64-QAM	V	150	6	1 / 49	18.71	4.86	23.57	33.01	-9.44
1910.00	10	16-QAM	V	150	6	1 / 49	17.73	4.86	22.59	33.01	-10.42
1857.50	15	QPSK	V	150	4	1 / 0	19.04	4.80	23.84	33.01	-9.17
1882.50	15	QPSK	V	150	6	1 / 74	18.60	4.85	23.45	33.01	-9.56
1907.50	15	QPSK	V	150	8	1 / 0	19.07	4.87	23.94	33.01	-9.07
1907.50	15	16-QAM	V	150	8	1 / 0	18.67	4.87	23.54	33.01	-9.47
1907.50	15	64-QAM	V	150	8	1 / 0	17.56	4.87	22.43	33.01	-10.58
1860.00	20	QPSK	V	150	5	1 / 0	19.23	4.81	24.04	33.01	-8.98
1882.50	20	QPSK	V	150	10	1 / 0	18.43	4.85	23.28	33.01	-9.73
1905.00	20	QPSK	V	150	3	1 / 0	19.10	4.87	23.97	33.01	-9.04
1860.00	20	16-QAM	V	150	5	1 / 0	18.88	4.81	23.69	33.01	-9.33
1860.00	20	64-QAM	V	150	5	1 / 0	17.81	4.81	22.62	33.01	-10.40
1914.30	1.4	QPSK	H	150	219	1 / 0	16.70	4.85	21.55	33.01	-11.46
1914.30	1.4 (WCP)	QPSK	V	150	3	1 / 0	16.16	4.85	21.01	33.01	-12.00

Table 7-7. EIRP Data (Band 2/25)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 23 of 45	

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]
2307.50	5	QPSK	V	150	4	1 / 0	14.96	5.56	20.52	23.98	-3.46
2312.50	5	QPSK	V	150	7	1 / 0	14.83	5.59	20.42	23.98	-3.56
2307.50	5	16-QAM	V	150	4	1 / 0	14.08	5.56	19.64	23.98	-4.34
2307.50	5	64-QAM	V	150	4	1 / 0	13.00	5.56	18.56	23.98	-5.42
2310.00	10	QPSK	V	150	5	1 / 0	15.24	5.57	20.81	23.98	-3.17
2310.00	10	16-QAM	V	150	5	1 / 0	14.64	5.57	20.21	23.98	-3.77
2310.00	10	64-QAM	V	150	5	1 / 0	13.49	5.57	19.06	23.98	-4.92
2310.00	10	QPSK	H	150	358	1 / 0	13.23	5.74	18.97	23.98	-5.01
2310.00	10 (WCP)	QPSK	V	150	7	1 / 0	14.53	5.57	20.10	23.98	-3.88

Table 7-8. EIRP Data (Band 30)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 24 of 45	

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]
2502.50	5	QPSK	H	111	334	1 / 24	9.77	8.39	18.16	33.01	-14.85
2535.00	5	QPSK	H	111	337	1 / 0	9.07	8.52	17.59	33.01	-15.42
2567.50	5	QPSK	H	110	336	1 / 0	8.32	8.64	16.96	33.01	-16.05
2502.50	5	16-QAM	H	111	334	1 / 24	9.91	8.39	18.30	33.01	-14.71
2535.00	5	64-QAM	H	111	337	1 / 0	8.67	8.52	17.19	33.01	-15.82
2505.00	10	QPSK	H	130	100	1 / 0	10.43	8.40	18.83	33.01	-14.18
2535.00	10	QPSK	H	129	100	1 / 0	9.78	8.52	18.30	33.01	-14.71
2565.00	10	QPSK	H	121	102	1 / 0	8.50	8.63	17.13	33.01	-15.88
2505.00	10	16-QAM	H	130	100	1 / 0	10.43	8.40	18.83	33.01	-14.18
2505.00	10	64-QAM	H	130	100	1 / 0	10.32	8.40	18.72	33.01	-14.29
2507.50	15	QPSK	H	129	99	1 / 0	10.32	8.41	18.73	33.01	-14.28
2535.00	15	QPSK	H	127	99	1 / 0	9.84	8.52	18.36	33.01	-14.65
2562.50	15	QPSK	H	125	103	36 / 18	8.31	8.62	16.93	33.01	-16.08
2535.00	15	16-QAM	H	127	99	1 / 0	9.82	8.52	18.34	33.01	-14.67
2535.00	15	64-QAM	H	127	99	1 / 0	9.73	8.52	18.25	33.01	-14.76
2510.00	20	QPSK	H	132	99	1 / 0	10.29	8.42	18.71	33.01	-14.30
2535.00	20	QPSK	H	127	99	50 / 25	9.72	8.52	18.24	33.01	-14.77
2560.00	20	QPSK	H	123	101	1 / 0	8.35	8.61	16.96	33.01	-16.05
2510.00	20	16-QAM	H	132	99	1 / 0	10.23	8.42	18.65	33.01	-14.36
2510.00	20	64-QAM	H	132	99	1 / 0	10.09	8.42	18.51	33.01	-14.50
2505.00	10	QPSK	V	118	79	50/0	6.15	8.42	14.57	33.01	-18.44
2505.00	10 (WCP)	QPSK	H	240	197	1 / 0	9.39	8.40	17.79	33.01	-15.22

Table 7-9. EIRP Data (Band 7)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 25 of 45	

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]
2498.50	5	QPSK	H	213	7	1 / 0	9.50	8.42	17.92	33.01	-15.09
2593.00	5	QPSK	H	125	158	1 / 0	8.21	8.65	16.86	33.01	-16.15
2687.50	5	QPSK	H	115	165	1 / 0	4.56	8.44	13.00	33.01	-20.01
2498.50	5	16-QAM	H	213	7	1 / 0	8.62	8.42	17.04	33.01	-15.97
2498.50	5	64-QAM	H	213	7	1 / 0	7.74	8.42	16.16	33.01	-16.85
2501.00	10	QPSK	H	127	197	1 / 49	10.96	8.41	19.37	33.01	-13.64
2593.00	10	QPSK	H	156	298	1 / 0	9.72	8.65	18.37	33.01	-14.64
2685.00	10	QPSK	H	119	198	1 / 0	5.34	8.45	13.79	33.01	-19.22
2501.00	10	16-QAM	H	127	197	1 / 49	9.87	8.41	18.28	33.01	-14.73
2501.00	10	64-QAM	H	127	197	1 / 49	9.20	8.41	17.61	33.01	-15.40
2503.50	15	QPSK	H	159	328	1 / 0	10.35	8.42	18.77	33.01	-14.24
2593.00	15	QPSK	H	160	194	1 / 0	9.45	8.65	18.10	33.01	-14.91
2682.50	15	QPSK	H	116	322	1 / 0	3.70	8.46	12.16	33.01	-20.85
2503.50	15	16-QAM	H	159	328	1 / 0	9.26	8.42	17.68	33.01	-15.33
2503.50	15	64-QAM	H	159	328	1 / 0	8.30	8.42	16.72	33.01	-16.29
2506.00	20	QPSK	H	213	19	1 / 0	8.18	8.42	16.60	33.01	-16.41
2593.00	20	QPSK	H	123	145	1 / 0	8.98	8.65	17.63	33.01	-15.38
2680.00	20	QPSK	H	115	170	1 / 0	5.74	8.46	14.20	33.01	-18.81
2506.00	20	16-QAM	H	213	19	1 / 0	7.54	8.42	15.96	33.01	-17.05
2506.00	20	64-QAM	H	213	19	1 / 0	7.00	8.42	15.42	33.01	-17.59
2501.00	10	QPSK	V	110	271	1 / 0	9.05	8.41	17.46	33.01	-15.55
2501.00	10 (WCP)	QPSK	H	186	263	1 / 0	8.48	8.41	16.89	33.01	-16.12

Table 7-10. EIRP Data (Band 41)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 26 of 45	

7.3 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §27.53(g) §27.53(h) §27.53(m) §27.53(a.4)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – 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 = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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The EUT and measurement equipment were set up as shown in the diagram below.

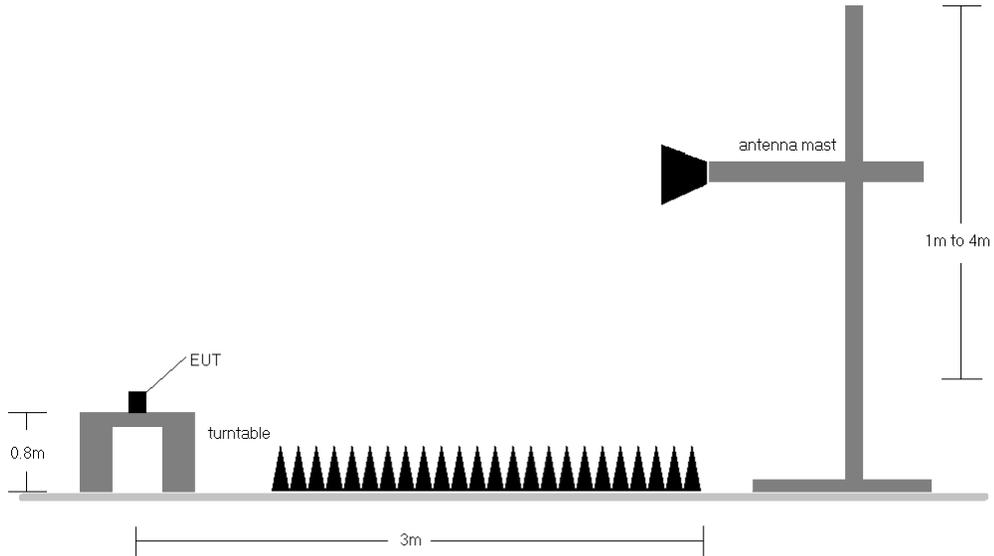


Figure 7-3. Test Instrument & Measurement Setup

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: ZNFV30A	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	 LG	Approved by: Quality Manager
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OPERATING FREQUENCY: 701.50 MHz
 CHANNEL: 23035
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1403.00	H	146.00	343.00	-74.16	5.60	-68.56	-55.6
2104.50	H	131.00	310.00	-62.27	6.67	-55.60	-42.6
2806.00	H	-	-	-71.55	7.92	-63.63	-50.6

Table 7-11. Radiated Spurious Data (Band 12 – Low Channel)

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1415.00	H	155.00	222.00	-73.58	5.69	-67.88	-54.9
2122.50	H	212.00	306.00	-61.77	6.75	-55.03	-42.0
2830.00	H	-	-	-71.43	7.90	-63.53	-50.5

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

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 29 of 45	

OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23155
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1427.00	H	306.00	80.00	-75.22	5.79	-69.43	-56.4
2140.50	H	124.00	301.00	-61.14	6.82	-54.32	-41.3
2854.00	H	-	-	-70.94	7.88	-63.07	-50.1

Table 7-13. Radiated Spurious Data (Band 12 – High Channel)

OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23155
 MODULATION SIGNAL: 16-QAM
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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]
1427.00	H	110.00	78.00	-75.96	5.79	-70.17	-57.2
2140.50	H	118.00	305.00	-62.79	6.82	-55.97	-43.0
2854.00	H	-	-	-74.72	7.88	-66.85	-53.8

Table 7-14. Radiated Spurious Data with WCP (Band 12 – High Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
Test Report S/N: 1M1707180221-03-R1.ZNF	Test Dates: 7/20 - 8/11/2017	EUT Type: Portable Handset	Page 30 of 45	

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 17.35 dBm = 0.054 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.35 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	218	65	-67.98	7.35	-60.63	78.0
3118.00	H	-	-	-72.33	7.19	-65.14	82.5

Table 7-15. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 17.40 dBm = 0.055 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.40 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	-	-	-68.97	7.33	-61.64	79.0
3128.00	H	-	-	-70.48	7.20	-63.28	80.7

Table 7-16. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MEASURED OUTPUT POWER: 17.07 dBm = 0.051 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.07 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	115	271	-67.68	7.30	-60.38	77.4
3138.00	H	-	-	-70.38	7.21	-63.16	80.2

Table 7-17. 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	117	370	-73.99	6.55	-67.44	-27.4
1564.00	H	-	-	-76.05	6.57	-69.48	-29.5
1569.00	H	110	118	-74.96	6.59	-68.38	-28.4

Table 7-18. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 16.97 dBm = 0.050 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 29.97 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	181	364	-69.08	7.33	-61.75	78.7
3128.00	H	-	-	-70.42	7.20	-63.22	80.2

Table 7-19. Radiated Spurious Data with WCP (Band 13 – Mid 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]
1564.00	H	142	367	-74.20	6.57	-67.63	-27.6

Table 7-20. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 826.50 MHz
 CHANNEL: 20425
 MEASURED OUTPUT POWER: 16.02 dBm = 0.040 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 29.02 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	110	216	-69.05	6.70	-62.35	78.4
2479.50	H	110	119	-67.12	7.54	-59.58	75.6
3306.00	H	-	-	-69.62	7.38	-62.24	78.3

Table 7-21. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 16.78 dBm = 0.048 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 29.78 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	120	211	-70.29	6.70	-63.59	80.4
2509.50	H	202	126	-65.26	7.63	-57.63	74.4
3346.00	H	-	-	-70.09	7.51	-62.58	79.4

Table 7-22. Radiated Spurious Data (Band 5 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 20625
 MEASURED OUTPUT POWER: 16.05 dBm = 0.040 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 29.05 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	170	209	-68.90	6.70	-62.21	78.3
2539.50	H	116	200	-64.51	7.60	-56.91	73.0
3386.00	H	-	-	-69.75	7.65	-62.10	78.2

Table 7-23. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 14.94 dBm = 0.031 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 27.94 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	100	192	-71.83	6.70	-65.13	80.1
2509.50	H	123	125	-66.64	7.63	-59.01	74.0
3346.00	H	-	-	-70.11	7.51	-62.60	77.5

Table 7-24. Radiated Spurious Data with WCP (Band 5 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1715.00 MHz
 CHANNEL: 132022
 MEASURED OUTPUT POWER: 27.30 dBm = 0.537 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 40.30 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]
3430.00	H	-	-	-70.54	9.87	-60.66	88.0

Table 7-25. Radiated Spurious Data (Band 66 – Low Channel)

OPERATING FREQUENCY: 1715.00 MHz
 CHANNEL: 132022
 MEASURED OUTPUT POWER: 27.30 dBm = 0.537 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 40.30 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]
3430.00	H	-	-	-70.54	9.87	-60.66	88.0

Table 7-26. Radiated Spurious Data (Band 66 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1775.00 MHz
 CHANNEL: 132622
 MEASURED OUTPUT POWER: 25.46 dBm = 0.351 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 38.46 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]
3550.00	H	-	-	-69.86	9.96	-59.89	85.3

Table 7-27. Radiated Spurious Data (Band 66 – High Channel)

OPERATING FREQUENCY: 1715.00 MHz
 CHANNEL: 132022
 MEASURED OUTPUT POWER: 25.70 dBm = 0.371 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 38.70 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]
3430.00	H	-	-	-70.25	9.87	-60.37	86.1

Table 7-28. Radiated Spurious Data with WCP (Band 66 – Low Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1850.70 MHz
 CHANNEL: 26047
 MEASURED OUTPUT POWER: 23.78 dBm = 0.239 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.78 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]
3701.40	H	-	-	-68.78	9.53	-59.25	83.0

Table 7-29. Radiated Spurious Data (Band 25 – Low Channel)

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MEASURED OUTPUT POWER: 23.48 dBm = 0.223 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.48 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]
3765.00	H	-	-	-68.07	9.37	-58.70	82.2

Table 7-30. Radiated Spurious Data (Band 25 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1914.30 MHz
 CHANNEL: 26683
 MEASURED OUTPUT POWER: 24.36 dBm = 0.273 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.36 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]
3828.60	H	-	-	-68.23	9.34	-58.89	83.3

Table 7-31. Radiated Spurious Data (Band 25 – High Channel)

OPERATING FREQUENCY: 1914.30 MHz
 CHANNEL: 26683
 MEASURED OUTPUT POWER: 21.01 dBm = 0.126 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.01 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]
3828.60	H	-	-	-68.24	9.34	-58.90	79.9

Table 7-32. Radiated Spurious Data with WCP (Band 25 – High Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 20.81 dBm = 0.121 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10}(W) =$ 60.81 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]
4620.00	H	353	313	-68.75	10.25	-58.50	79.3
6930.00	H	12	79	-57.16	9.60	-47.56	68.4
9240.00	H	-	-	-64.26	10.70	-53.57	74.4
11550.00	H	-	-	-65.17	12.70	-52.47	73.3

Table 7-33. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 20.10 dBm = 0.102 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -40.00 dBm

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]
4620.00	H	-	-	-71.35	10.25	-61.11	81.2
6930.00	H	350	347	-58.23	9.60	-48.63	68.7
9240.00	H	-	-	-64.05	10.70	-53.36	73.5
11550.00	H	-	-	-65.21	12.70	-52.51	72.6

Table 7-34. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2505.00 MHz
 CHANNEL: 20800
 MEASURED OUTPUT POWER: 18.83 dBm = 0.076 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 43.83 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]
5010.00	H	226	131	-68.19	11.17	-57.02	75.8
7515.00	H	-	-	-60.20	11.20	-49.00	67.8

Table 7-35. Radiated Spurious Data (Band 7 – Low Channel)

OPERATING FREQUENCY: 2535.00 MHz
 CHANNEL: 21100
 MEASURED OUTPUT POWER: 18.30 dBm = 0.068 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 43.30 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]
5070.00	H	146	337	-65.74	11.04	-54.70	73.0
7605.00	H	-	-	-60.58	11.47	-49.11	67.4

Table 7-36. Radiated Spurious Data (Band 7 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2565.00 MHz
 CHANNEL: 21400
 MEASURED OUTPUT POWER: 17.13 dBm = 0.052 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 42.13 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]
5130.00	H	137	331	-67.19	10.92	-56.26	73.4
7695.00	H	-	-	-59.53	11.55	-47.98	65.1

Table 7-37. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY: 2505.00 MHz
 CHANNEL: 20800
 MEASURED OUTPUT POWER: 17.79 dBm = 0.060 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 42.79 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]
5010.00	H	-	-	-68.27	11.17	-57.10	74.9

Table 7-38. Radiated Spurious Data with WCP (Band 7 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2501.00 MHz
 CHANNEL: 39700
 MEASURED OUTPUT POWER: 19.37 dBm = 0.087 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 44.37 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]
5002.00	H	-	-	-64.48	10.09	-54.39	73.8
7503.00	H	-	-	-61.00	12.10	-48.90	68.3

Table 7-39. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 18.37 dBm = 0.069 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 43.37 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]
5186.00	H	179	229	-60.10	10.27	-49.84	68.2
7779.00	H	-	-	-60.23	12.28	-47.95	66.3
10372.00	H	-	-	-58.91	13.12	-45.79	64.2

Table 7-40. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2685.00 MHz
 CHANNEL: 41540
 MEASURED OUTPUT POWER: 13.79 dBm = 0.024 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 38.79 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]
5370.00	H	104	197	-46.95	10.42	-36.53	50.3
8055.00	H	178	200	-53.93	12.60	-41.33	55.1
10740.00	H	-	-	-59.44	13.12	-46.32	60.1

Table 7-41. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY: 2501.00 MHz
 CHANNEL: 39700
 MEASURED OUTPUT POWER: 16.89 dBm = 0.049 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 41.89 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]
5002.00	H	-	-	-80.39	10.09	-70.30	87.2
7503.00	H	-	-	-75.94	12.10	-63.84	80.7

Table 7-42. Radiated Spurious Data with WCP (Band 41 – Mid Channel)

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFV30A** complies with all the requirements of Parts of the FCC rules for LTE operation only.

FCC ID: ZNFV30A		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Approved by: Quality Manager
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