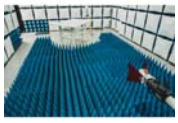
PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



MEASUREMENT REPORT
LTE

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

Date of Testing:
4/2/2018-4/16/2018
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1804030060-03.ZNF

FCC ID:	**ZNFG710TM**
APPLICANT:	**LG Electronics MobileComm U.S.A**

Application Type:	Class II Permissive Change
Model:	LM-G710TM
Additional Model(s):	LMG710TM, G710TM, LM-G710AWM, LMG710AWM, G710AWM, LM-G710RM, LMG710RM, G710RM
EUT Type:	Portable Handset
Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	22, 24, & 27
Test Procedure(s):	ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03, KDB 648474 D03 v01r04
Class II Permissive Change:	Please see 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.

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

ACCREDITED
TESTING CERT#2041.01

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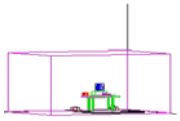
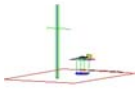


MEASUREMENT REPORT
Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	
LTE Band 71	27	665.5 - 695.5	0.074	18.70			QPSK
LTE Band 71	27	665.5 - 695.5	0.054	17.34			16QAM
LTE Band 71	27	665.5 - 695.5	0.042	16.26			64QAM
LTE Band 71	27	672 - 693	0.077	18.89			QPSK
LTE Band 71	27	672 - 693	0.056	17.47			16QAM
LTE Band 71	27	672 - 693	0.043	16.33			64QAM
LTE Band 71	27	670.5 - 690.5	0.073	18.66			QPSK
LTE Band 71	27	670.5 - 690.5	0.048	16.85			16QAM
LTE Band 71	27	670.5 - 690.5	0.040	16.02			64QAM
LTE Band 71	27	673 - 688	0.078	18.92			QPSK
LTE Band 71	27	673 - 688	0.057	17.55			16QAM
LTE Band 71	27	673 - 688	0.045	16.51			64QAM
LTE Band 12	27	699.7 - 715.3	0.085	19.29	0.139	21.44	QPSK
LTE Band 12	27	699.7 - 715.3	0.054	17.30	0.088	19.45	16QAM
LTE Band 12	27	699.7 - 715.3	0.049	16.90	0.080	19.05	64QAM
LTE Band 12	27	700.5 - 714.5	0.093	19.70	0.153	21.85	QPSK
LTE Band 12	27	700.5 - 714.5	0.068	18.30	0.111	20.45	16QAM
LTE Band 12	27	700.5 - 714.5	0.053	17.22	0.086	19.37	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.092	19.65	0.152	21.80	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.067	18.27	0.110	20.42	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.052	17.18	0.086	19.33	64QAM
LTE Band 12/17	27	704 - 711	0.096	19.81	0.157	21.96	QPSK
LTE Band 12/17	27	704 - 711	0.068	18.35	0.112	20.50	16QAM
LTE Band 12/17	27	704 - 711	0.053	17.21	0.086	19.36	64QAM
LTE Band 13	27	779.5 - 784.5	0.049	16.91	0.081	19.06	QPSK
LTE Band 13	27	779.5 - 784.5	0.036	15.51	0.058	17.66	16QAM
LTE Band 13	27	779.5 - 784.5	0.028	14.48	0.046	16.63	64QAM
LTE Band 13	27	782	0.049	16.93	0.081	19.08	QPSK
LTE Band 13	27	782	0.034	15.37	0.056	17.52	16QAM
LTE Band 13	27	782	0.028	14.41	0.045	16.56	64QAM
LTE Band 5	22H	824.7 - 848.3	0.080	19.04	0.131	21.19	QPSK
LTE Band 5	22H	824.7 - 848.3	0.056	17.51	0.092	19.66	16QAM
LTE Band 5	22H	824.7 - 848.3	0.044	16.42	0.072	18.57	64QAM
LTE Band 5	22H	825.5 - 847.5	0.082	19.15	0.135	21.30	QPSK
LTE Band 5	22H	825.5 - 847.5	0.057	17.54	0.093	19.69	16QAM
LTE Band 5	22H	825.5 - 847.5	0.045	16.52	0.074	18.67	64QAM
LTE Band 5	22H	826.5 - 846.5	0.082	19.16	0.135	21.31	QPSK
LTE Band 5	22H	826.5 - 846.5	0.060	17.79	0.099	19.94	16QAM
LTE Band 5	22H	826.5 - 846.5	0.047	16.76	0.078	18.91	64QAM
LTE Band 5	22H	829 - 844	0.080	19.05	0.132	21.20	QPSK
LTE Band 5	22H	829 - 844	0.053	17.28	0.088	19.43	16QAM
LTE Band 5	22H	829 - 844	0.041	16.17	0.068	18.32	64QAM

EUT Overview (<1GHz)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 4/66	27	1710.7 - 1779.3	0.209	23.20	QPSK
LTE Band 4/66	27	1710.7 - 1779.3	0.214	23.31	16QAM
LTE Band 4/66	27	1710.7 - 1779.3	0.170	22.29	64QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.210	23.23	QPSK
LTE Band 4/66	27	1711.5 - 1778.5	0.216	23.35	16QAM
LTE Band 4/66	27	1711.5 - 1778.5	0.175	22.43	64QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.207	23.15	QPSK
LTE Band 4/66	27	1712.5 - 1777.5	0.220	23.42	16QAM
LTE Band 4/66	27	1712.5 - 1777.5	0.172	22.36	64QAM
LTE Band 4/66	27	1715 - 1775	0.218	23.39	QPSK
LTE Band 4/66	27	1715 - 1775	0.235	23.71	16QAM
LTE Band 4/66	27	1715 - 1775	0.184	22.65	64QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.207	23.17	QPSK
LTE Band 4/66	27	1717.5 - 1772.5	0.213	23.28	16QAM
LTE Band 4/66	27	1717.5 - 1772.5	0.172	22.37	64QAM
LTE Band 4/66	27	1720 - 1770	0.212	23.26	QPSK
LTE Band 4/66	27	1720 - 1770	0.218	23.39	16QAM
LTE Band 4/66	27	1720 - 1770	0.175	22.42	64QAM
LTE Band 2/25	24E	1850.7 - 1914.3	0.145	21.62	QPSK
LTE Band 2/25	24E	1850.7 - 1914.3	0.153	21.83	16QAM
LTE Band 2/25	24E	1850.7 - 1914.3	0.123	20.91	64QAM
LTE Band 2/25	24E	1851.5 - 1913.5	0.145	21.61	QPSK
LTE Band 2/25	24E	1851.5 - 1913.5	0.150	21.76	16QAM
LTE Band 2/25	24E	1851.5 - 1913.5	0.120	20.79	64QAM
LTE Band 2/25	24E	1852.5 - 1912.5	0.148	21.71	QPSK
LTE Band 2/25	24E	1852.5 - 1912.5	0.152	21.82	16QAM
LTE Band 2/25	24E	1852.5 - 1912.5	0.123	20.89	64QAM
LTE Band 2/25	24E	1855 - 1910	0.147	21.66	QPSK
LTE Band 2/25	24E	1855 - 1910	0.150	21.77	16QAM
LTE Band 2/25	24E	1855 - 1910	0.121	20.83	64QAM
LTE Band 2/25	24E	1857.5 - 1907.5	0.159	22.01	QPSK
LTE Band 2/25	24E	1857.5 - 1907.5	0.164	22.14	16QAM
LTE Band 2/25	24E	1857.5 - 1907.5	0.131	21.18	64QAM
LTE Band 2/25	24E	1860 - 1905	0.157	21.95	QPSK
LTE Band 2/25	24E	1860 - 1905	0.162	22.09	16QAM
LTE Band 2/25	24E	1860 - 1905	0.131	21.16	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.064	18.06	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.049	16.93	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.041	16.14	64QAM
LTE Band 30	27	2310	0.069	18.37	QPSK
LTE Band 30	27	2310	0.055	17.39	16QAM
LTE Band 30	27	2310	0.036	15.52	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.218	23.38	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.214	23.31	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.184	22.65	64QAM
LTE Band 7	27	2505 - 2565	0.201	23.03	QPSK
LTE Band 7	27	2505 - 2565	0.211	23.24	16QAM
LTE Band 7	27	2505 - 2565	0.170	22.30	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.177	22.47	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.169	22.27	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.144	21.58	64QAM
LTE Band 7	27	2510 - 2560	0.178	22.51	QPSK
LTE Band 7	27	2510 - 2560	0.175	22.43	16QAM
LTE Band 7	27	2510 - 2560	0.191	22.82	64QAM
LTE Band 41	27	2498.5 - 2687.5	0.298	24.74	QPSK
LTE Band 41	27	2498.5 - 2687.5	0.251	24.00	16QAM
LTE Band 41	27	2498.5 - 2687.5	0.171	22.33	64QAM
LTE Band 41	27	2501 - 2685	0.288	24.60	QPSK
LTE Band 41	27	2501 - 2685	0.215	23.33	16QAM
LTE Band 41	27	2501 - 2685	0.150	21.77	64QAM
LTE Band 41	27	2503.5 - 2682.5	0.289	24.60	QPSK
LTE Band 41	27	2503.5 - 2682.5	0.235	23.71	16QAM
LTE Band 41	27	2503.5 - 2682.5	0.173	22.37	64QAM
LTE Band 41	27	2506 - 2680	0.243	23.86	QPSK
LTE Band 41	27	2506 - 2680	0.216	23.35	16QAM
LTE Band 41	27	2506 - 2680	0.171	22.33	64QAM

EUT Overview (>1GHz)

1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

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

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for and Innovation, Science, and Economic Development Canada rules.

- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of Rules and ISED Standards (RSS).

- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFG710TM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 09738, 09712

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n 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-E-2016 and KDB 971168 D01 v03. 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 an authorized wireless charging pad (WCP) ID: EP-PN920 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.

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-E-2016) and "Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems" (KDB 971168 D01 v03) were used in the measurement of the EUT.

3.2 Block C Frequency Range

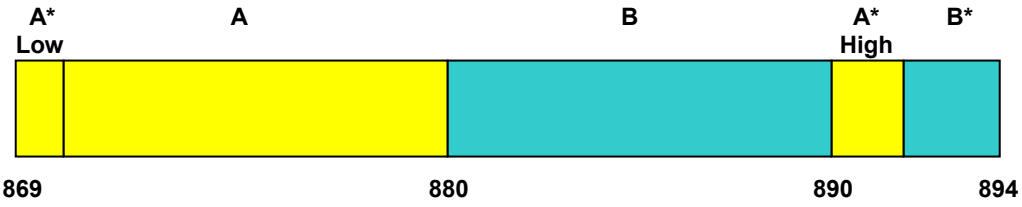
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results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

3.3 Block A Frequency Range

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:

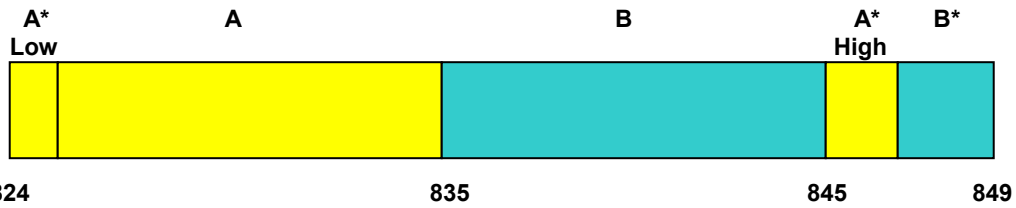
Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks



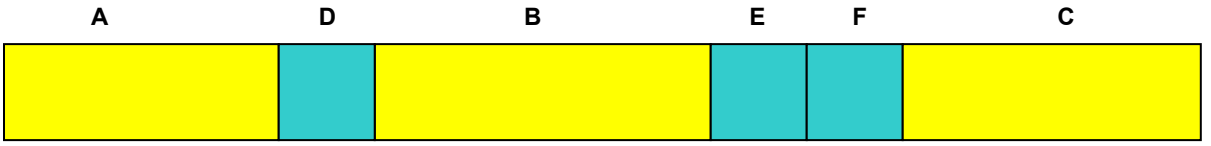
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.5 Cellular - Mobile Frequency Blocks



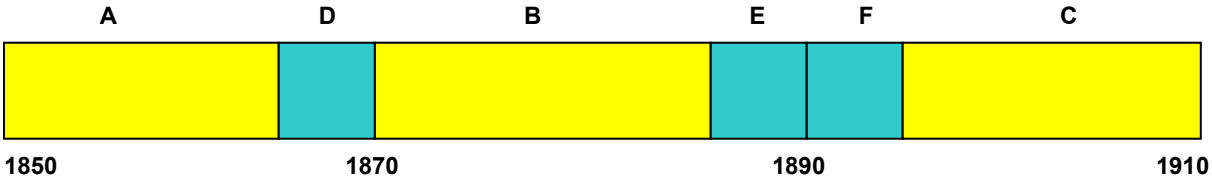
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.6 PCS - Base Frequency Blocks



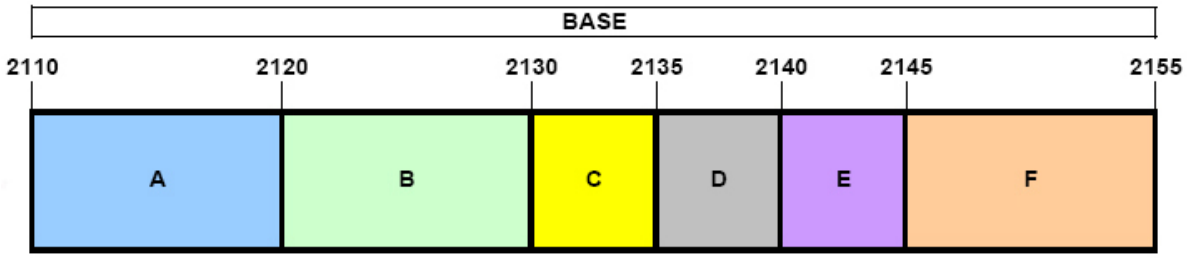
BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.7 PCS - Mobile Frequency Blocks



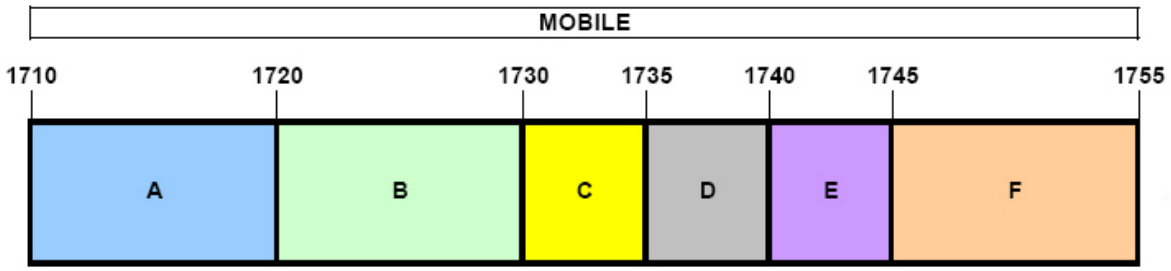
BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

3.8 AWS - Base Frequency Blocks



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)

3.9 AWS - Mobile Frequency Blocks



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)

3.10 WCS – Mobile/Base Frequency Blocks

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

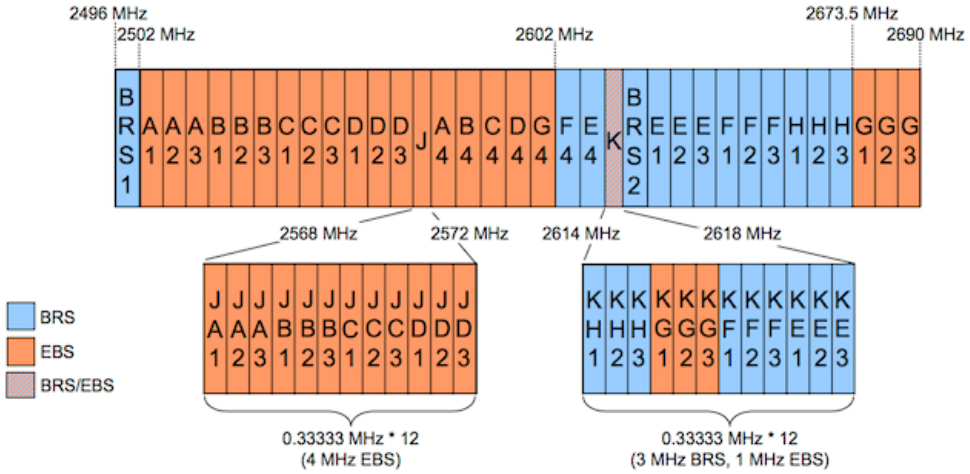
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

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

BLOCK 3: 2315-2320 MHz (C)

BLOCK 4: 2345-2350 MHz (D)

3.11 BRS/EBS Frequency Block



3.12 Radiated Power and Radiated Spurious Emissions

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. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

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 v03.

Per the guidance of ANSI/TIA-603-E-2016, 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 $P_{g\ [dBm]}$ – 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 + 10log$_{10}$(Power $_{[Watts]}$). For Band 7 and 41, 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 + 10log$_{10}$(Power $_{[Watts]}$). 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 + 10log$_{10}$(Power $_{[Watts]}$).

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 (±dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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 C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/23/2016	Biennial	8/23/2018	135427
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	4/26/2016	Biennial	4/26/2018	128337
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	7/31/2017	Annual	7/31/2018	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/11/2017	Annual	8/11/2018	103200
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102135
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/3/2017	Annual	7/3/2018	102133
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	1/22/2018	Annual	1/22/2019	N/A
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307

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.

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 analzyer. 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).

7.0 TEST RESULTS

7.1 Summary

Company Name: LG Electronics MobileComm U.S.A

ID: ZNFG710TM

Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): LTE

Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.2
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12/17, 13)	< 3 Watts max. ERP			Section 7.2
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 7, 41)	< 2 Watts max. EIRP			Section 7.2
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP			Section 7.2
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			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			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			Section 7.3
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10log$_{10}$ (P[Watts])			Section 7.3
27.53(m)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3

Table 7-1. Summary of Radiated 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.

7.2 Radiated Power (ERP/EIRP)

§22.913(a)(5) 27.50(b)(10) 27.50(c)(10) 24.232(c) 27.50(h)(2) 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-E-2016 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 v03 – Section 5.2.1

ANSI/TIA-603-E-2016 – 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. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 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". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

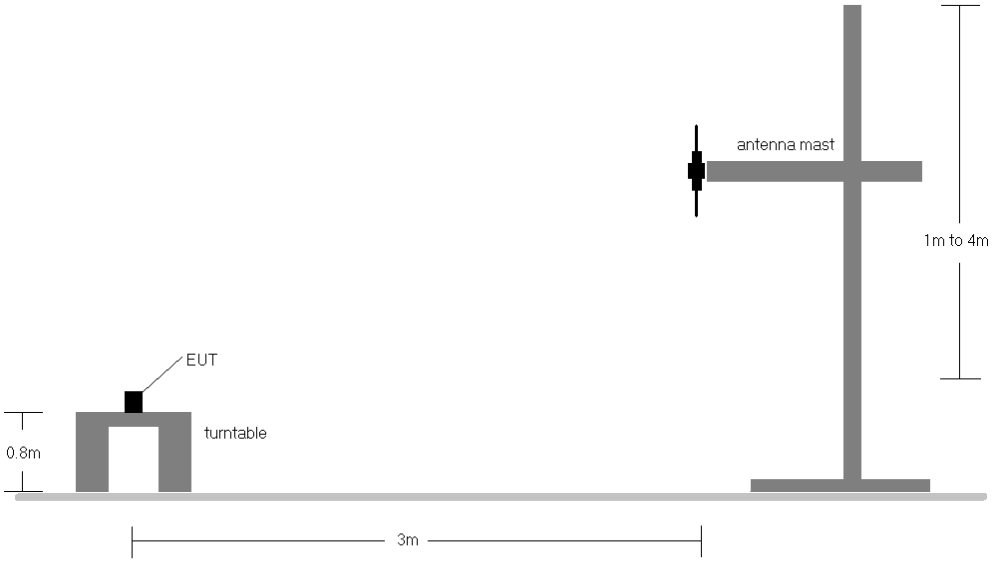


Figure 7-1. Radiated Test Setup <1GHz

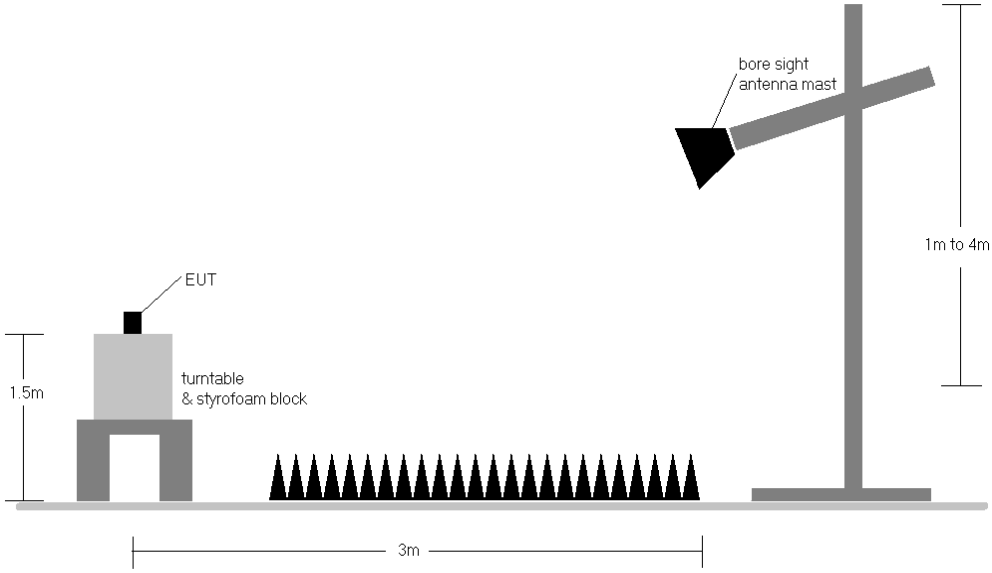


Figure 7-2. Radiated Test Setup >1GHz

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.

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	H	150	356	1 / 0	19.17	1.10	18.12	0.065	34.77	-16.65
680.50	5	QPSK	H	150	356	1 / 0	19.75	1.10	**18.70**	0.074	34.77	-16.07
695.50	5	QPSK	H	150	356	1 / 0	18.82	1.10	17.77	0.060	34.77	-17.00
680.50	5	16-QAM	H	150	356	1 / 0	18.39	1.10	**17.34**	0.054	34.77	-17.43
680.50	5	64-QAM	H	150	356	1 / 0	17.31	1.10	**16.26**	0.042	34.77	-18.51
668.00	10	QPSK	H	150	356	1 / 0	19.21	1.10	18.16	0.065	34.77	-16.61
680.50	10	QPSK	H	150	356	1 / 0	19.94	1.10	**18.89**	0.077	34.77	-15.88
693.00	10	QPSK	H	150	356	1 / 0	19.39	1.10	18.34	0.068	34.77	-16.43
680.50	10	16-QAM	H	150	356	1 / 0	18.52	1.10	**17.47**	0.056	34.77	-17.30
680.50	10	64-QAM	H	150	356	1 / 0	17.38	1.10	**16.33**	0.043	34.77	-18.44
670.50	15	QPSK	H	150	347	1 / 0	19.71	1.10	**18.66**	0.073	34.77	-16.11
680.50	15	QPSK	H	150	347	1 / 0	19.42	1.10	18.37	0.069	34.77	-16.40
690.50	15	QPSK	H	150	347	1 / 0	19.41	1.10	18.36	0.069	34.77	-16.41
680.50	15	16-QAM	H	150	347	1 / 0	17.90	1.10	**16.85**	0.048	34.77	-17.92
680.50	15	64-QAM	H	150	347	1 / 0	17.07	1.10	**16.02**	0.040	34.77	-18.75
673.00	20	QPSK	H	150	352	1 / 0	19.97	1.10	**18.92**	**0.078**	34.77	-15.85
680.50	20	QPSK	H	150	352	1 / 0	19.58	1.10	18.53	0.071	34.77	-16.24
688.00	20	QPSK	H	150	352	1 / 0	19.33	1.10	18.28	0.067	34.77	-16.49
673.00	20	16-QAM	H	150	352	1 / 0	18.60	1.10	**17.55**	0.057	34.77	-17.22
673.00	20	64-QAM	H	150	352	1 / 0	17.56	1.10	**16.51**	0.045	34.77	-18.26
673.00	20	QPSK	V	150	250	1 / 0	17.63	1.10	16.58	0.045	34.77	-18.19
673.00	20 (WCP)	QPSK	H	150	329	1 / 0	19.35	1.10	18.30	0.068	34.77	-16.47

Table 7-2. ERP Data (Band 71)

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	11	1 / 0	19.90	1.10	18.85	0.077	34.77	-15.92	21.00	0.126	36.99	-15.99
707.50	1.4	QPSK	H	150	11	1 / 0	20.05	1.13	19.03	0.080	34.77	-15.74	21.18	0.131	36.99	-15.81
715.30	1.4	QPSK	H	150	11	1 / 0	20.28	1.16	**19.29**	0.085	34.77	-15.48	**21.44**	0.139	36.99	-15.55
715.30	1.4	16-QAM	H	150	11	1 / 0	18.29	1.16	**17.30**	0.054	34.77	-17.47	**19.45**	0.088	36.99	-17.54
715.30	1.4	64-QAM	H	150	11	1 / 0	17.89	1.16	**16.90**	0.049	34.77	-17.87	**19.05**	0.080	36.99	-17.94
700.50	3	QPSK	H	150	10	1 / 0	20.45	1.10	19.40	0.087	34.77	-15.37	21.55	0.143	36.99	-15.44
707.50	3	QPSK	H	150	10	1 / 14	20.67	1.13	19.65	0.092	34.77	-15.12	21.80	0.151	36.99	-15.19
714.50	3	QPSK	H	150	10	1 / 0	20.69	1.16	**19.70**	0.093	34.77	-15.07	**21.85**	0.153	36.99	-15.14
714.50	3	16-QAM	H	150	10	1 / 0	19.29	1.16	**18.30**	0.068	34.77	-16.47	**20.45**	0.111	36.99	-16.54
714.50	3	64-QAM	H	150	10	1 / 0	18.21	1.16	**17.22**	0.053	34.77	-17.55	**19.37**	0.086	36.99	-17.62

Table 7-3. ERP Data (Band 12)

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	150	4	1 / 24	20.47	1.11	19.43	0.088	34.77	-15.35	21.58	0.144	36.99	-15.41
707.50	5	QPSK	H	150	4	1 / 24	20.61	1.13	19.59	0.091	34.77	-15.18	21.74	0.149	36.99	-15.25
713.50	5	QPSK	H	150	4	1 / 0	20.65	1.15	**19.65**	0.092	34.77	-15.12	**21.80**	0.152	36.99	-15.19
713.50	5	16-QAM	H	150	4	1 / 0	19.27	1.15	**18.27**	0.067	34.77	-16.50	**20.42**	0.110	36.99	-16.57
713.50	5	64-QAM	H	150	4	1 / 0	18.18	1.15	**17.18**	0.052	34.77	-17.59	**19.33**	0.086	36.99	-17.66
704.00	10	QPSK	H	150	329	1 / 0	20.54	1.12	19.51	0.089	34.77	-15.26	21.66	0.146	36.99	-15.33
707.50	10	QPSK	H	150	329	1 / 49	20.83	1.13	**19.81**	**0.096**	34.77	-14.96	**21.96**	**0.157**	36.99	-15.03
711.00	10	QPSK	H	150	329	1 / 49	20.77	1.14	19.76	0.095	34.77	-15.01	21.91	0.155	36.99	-15.08
707.50	10	16-QAM	H	150	329	1 / 0	19.37	1.13	**18.35**	0.068	34.77	-16.42	**20.50**	0.112	36.99	-16.49
707.50	10	64-QAM	H	150	329	1 / 0	18.23	1.13	**17.21**	0.053	34.77	-17.56	**19.36**	0.086	36.99	-17.63
707.50	10	QPSK	V	150	329	1 / 49	20.60	1.13	19.58	0.091	34.77	-15.19	21.73	0.149	36.99	-15.26
707.50	10 (WCP)	QPSK	H	150	14	1 / 49	20.35	1.13	19.33	0.086	34.77	-15.44	21.48	0.141	36.99	-15.51

Table 7-4. ERP Data (Band 12/17)

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	150	347	1 / 0	17.74	1.32	**16.91**	0.049	34.77	-17.86	**19.06**	0.081	36.99	-17.93
782.00	5	QPSK	H	150	347	1 / 0	17.69	1.33	16.87	0.049	34.77	-17.90	19.02	0.080	36.99	-17.97
784.50	5	QPSK	H	150	347	1 / 0	17.60	1.34	16.79	0.048	34.77	-17.98	18.94	0.078	36.99	-18.05
779.50	5	16-QAM	H	150	347	1 / 0	16.34	1.32	**15.51**	0.036	34.77	-19.26	**17.66**	0.058	36.99	-19.33
779.50	5	64-QAM	H	150	347	1 / 0	15.31	1.32	**14.48**	0.028	34.77	-20.29	**16.63**	0.046	36.99	-20.36
782.00	10	QPSK	H	150	349	1 / 0	17.75	1.33	**16.93**	**0.049**	34.77	-17.84	**19.08**	**0.081**	36.99	-17.91
782.00	10	16-QAM	H	150	349	1 / 0	16.19	1.33	**15.37**	0.034	34.77	-19.40	**17.52**	0.056	36.99	-19.47
782.00	10	64-QAM	H	150	349	1 / 0	15.23	1.33	**14.41**	0.028	34.77	-20.36	**16.56**	0.045	36.99	-20.43
782.00	10	QPSK	V	150	349	1 / 0	17.74	1.33	16.92	0.049	34.77	-17.85	19.07	0.081	36.99	-17.92
782.00	10 (WCP)	QPSK	H	150	15	1 / 0	16.82	1.33	16.00	0.040	34.77	-18.77	18.15	0.065	36.99	-18.84

Table 7-5. ERP Data (Band 13)

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	150	10	1 / 0	19.69	1.50	**19.04**	0.080	38.45	-19.41	**21.19**	0.131	40.61	-19.42
836.50	1.4	QPSK	H	150	10	1 / 0	19.42	1.50	18.77	0.075	38.45	-19.68	20.92	0.124	40.61	-19.69
848.30	1.4	QPSK	H	150	10	1 / 0	19.37	1.50	18.72	0.074	38.45	-19.73	20.87	0.122	40.61	-19.74
824.70	1.4	16-QAM	H	150	10	1 / 0	18.16	1.50	**17.51**	0.056	38.45	-20.94	**19.66**	0.092	40.61	-20.95
824.70	1.4	64-QAM	H	150	10	1 / 0	17.07	1.50	**16.42**	0.044	38.45	-22.03	**18.57**	0.072	40.61	-22.04
825.50	3	QPSK	H	150	11	1 / 0	19.80	1.50	**19.15**	0.082	38.45	-19.30	**21.30**	0.135	40.61	-19.31
836.50	3	QPSK	H	150	11	1 / 0	19.53	1.50	18.88	0.077	38.45	-19.57	21.03	0.127	40.61	-19.58
847.50	3	QPSK	H	150	11	1 / 0	19.19	1.50	18.54	0.071	38.45	-19.91	20.69	0.117	40.61	-19.92
825.50	3	16-QAM	H	150	11	1 / 0	18.19	1.50	**17.54**	0.057	38.45	-20.91	**19.69**	0.093	40.61	-20.92
825.50	3	64-QAM	H	150	11	1 / 0	17.17	1.50	**16.52**	0.045	38.45	-21.93	**18.67**	0.074	40.61	-21.94
826.50	5	QPSK	H	150	10	1 / 0	19.81	1.50	**19.16**	**0.082**	38.45	-19.29	**21.31**	**0.135**	40.61	-19.30
836.50	5	QPSK	H	150	10	1 / 0	19.25	1.50	18.60	0.072	38.45	-19.85	20.75	0.119	40.61	-19.86
846.50	5	QPSK	H	150	10	1 / 0	18.94	1.50	18.29	0.067	38.45	-20.16	20.44	0.111	40.61	-20.17
826.50	5	16-QAM	H	150	10	1 / 0	18.44	1.50	**17.79**	0.060	38.45	-20.66	**19.94**	0.099	40.61	-20.67
826.50	5	64-QAM	H	150	10	1 / 0	17.41	1.50	**16.76**	0.047	38.45	-21.69	**18.91**	0.078	40.61	-21.70
829.00	10	QPSK	H	150	5	1 / 0	19.70	1.50	**19.05**	0.080	38.45	-19.40	**21.20**	0.132	40.61	-19.41
836.50	10	QPSK	H	150	5	1 / 0	19.69	1.50	19.04	0.080	38.45	-19.41	21.19	0.132	40.61	-19.42
844.00	10	QPSK	H	150	5	1 / 0	19.24	1.50	18.59	0.072	38.45	-19.86	20.74	0.119	40.61	-19.87
829.00	10	16-QAM	H	150	5	1 / 0	17.93	1.50	**17.28**	0.053	38.45	-21.17	**19.43**	0.088	40.61	-21.18
829.00	10	64-QAM	H	150	5	1 / 0	16.82	1.50	**16.17**	0.041	38.45	-22.28	**18.32**	0.068	40.61	-22.29
826.50	5	QPSK	V	150	96	1 / 0	14.46	1.50	13.81	0.024	38.45	-24.64	15.96	0.039	40.61	-24.65
826.50	5 (WCP)	QPSK	H	150	2	1 / 0	19.75	1.50	19.10	0.081	38.45	-19.35	21.25	0.133	40.61	-19.36

Table 7-6. ERP Data (Band 5)

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 [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	150	353	1 / 0	16.63	5.56	22.19	0.165	30.00	-7.81
1745.00	1.4	QPSK	H	150	353	1 / 5	17.06	5.32	22.38	0.173	30.00	-7.62
1779.30	1.4	QPSK	H	150	353	1 / 5	18.11	5.09	**23.20**	0.209	30.00	-6.80
1779.30	1.4	16-QAM	H	150	353	1 / 5	18.22	5.09	**23.31**	0.214	30.00	-6.69
1779.30	1.4	64-QAM	H	150	353	1 / 5	17.20	5.09	**22.29**	0.170	30.00	-7.71
1711.50	3	QPSK	H	150	353	1 / 0	16.66	5.55	22.21	0.166	30.00	-7.79
1745.00	3	QPSK	H	150	353	1 / 14	17.13	5.32	22.45	0.176	30.00	-7.55
1778.50	3	QPSK	H	15	353	1 / 14	18.13	5.10	**23.23**	0.210	30.00	-6.77
1778.50	3	16-QAM	H	15	353	1 / 14	18.25	5.10	**23.35**	0.216	30.00	-6.65
1778.50	3	64-QAM	H	15	353	1 / 14	17.33	5.10	**22.43**	0.175	30.00	-7.57
1712.50	5	QPSK	H	150	353	1 / 24	16.68	5.55	22.23	0.167	30.00	-7.77
1745.00	5	QPSK	H	150	353	1 / 24	17.08	5.32	22.40	0.174	30.00	-7.60
1777.50	5	QPSK	H	150	353	1 / 24	18.05	5.10	**23.15**	0.207	30.00	-6.85
1777.50	5	16-QAM	H	150	353	1 / 24	18.32	5.10	**23.42**	0.220	30.00	-6.58
1777.50	5	64-QAM	H	150	353	1 / 24	17.26	5.10	**22.36**	0.172	30.00	-7.64
1715.00	10	QPSK	H	150	356	1 / 0	16.68	5.53	22.21	0.166	30.00	-7.79
1745.00	10	QPSK	H	150	356	1 / 49	17.39	5.32	22.71	0.187	30.00	-7.29
1775.00	10	QPSK	H	150	356	1 / 49	18.27	5.12	**23.39**	0.218	30.00	-6.61
1775.00	10	16-QAM	H	150	356	1 / 49	18.59	5.12	**23.71**	**0.235**	30.00	-6.29
1775.00	10	64-QAM	H	150	356	1 / 49	17.53	5.12	**22.65**	0.184	30.00	-7.35
1717.50	15	QPSK	H	150	0	1 / 0	16.99	5.51	22.50	0.178	30.00	-7.50
1745.00	15	QPSK	H	150	0	1 / 74	17.45	5.32	22.77	0.189	30.00	-7.23
1772.50	15	QPSK	H	150	0	1 / 0	18.03	5.14	**23.17**	0.207	30.00	-6.83
1772.50	15	16-QAM	H	150	0	1 / 0	18.14	5.14	**23.28**	0.213	30.00	-6.72
1772.50	15	64-QAM	H	150	0	1 / 0	17.23	5.14	**22.37**	0.172	30.00	-7.63
1720.00	20	QPSK	H	150	356	1 / 0	16.81	5.49	22.30	0.170	30.00	-7.70
1745.00	20	QPSK	H	150	356	1 / 99	17.52	5.32	22.84	0.192	30.00	-7.16
1770.00	20	QPSK	H	150	356	1 / 0	18.11	5.15	**23.26**	0.212	30.00	-6.74
1770.00	20	16-QAM	H	150	356	1 / 0	18.24	5.15	**23.39**	0.218	30.00	-6.61
1770.00	20	64-QAM	H	150	356	1 / 0	17.27	5.15	**22.42**	0.175	30.00	-7.58
1775.00	10	16-QAM	V	150	249	1 / 49	12.25	5.32	17.57	0.057	30.00	-12.43
1775.00	10 (WCP)	16-QAM	H	150	275	1 / 49	15.74	5.12	20.86	0.122	30.00	-9.14

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

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 [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	150	4	1 / 0	16.77	4.82	21.59	0.144	33.01	-11.42
1882.50	1.4	QPSK	H	150	4	1 / 0	16.89	4.73	**21.62**	0.145	33.01	-11.39
1914.30	1.4	QPSK	H	150	4	1 / 0	16.15	4.68	20.83	0.121	33.01	-12.18
1882.50	1.4	16-QAM	H	150	4	1 / 0	17.10	4.73	**21.83**	0.153	33.01	-11.18
1882.50	1.4	64-QAM	H	150	4	1 / 0	16.18	4.73	**20.91**	0.123	33.01	-12.10
1851.50	3	QPSK	H	150	1	1 / 0	16.79	4.82	**21.61**	0.145	33.01	-11.40
1882.50	3	QPSK	H	150	1	1 / 0	16.87	4.73	21.60	0.145	33.01	-11.41
1913.50	3	QPSK	H	150	1	1 / 0	16.17	4.68	20.85	0.122	33.01	-12.16
1882.50	3	16-QAM	H	150	1	1 / 0	17.03	4.73	**21.76**	0.150	33.01	-11.25
1882.50	3	64-QAM	H	150	1	1 / 0	16.06	4.73	**20.79**	0.120	33.01	-12.22
1852.50	5	QPSK	H	150	3	1 / 0	16.89	4.81	21.70	0.148	33.01	-11.31
1882.50	5	QPSK	H	150	3	1 / 0	16.98	4.73	**21.71**	0.148	33.01	-11.30
1912.50	5	QPSK	H	150	3	1 / 0	16.36	4.68	21.04	0.127	33.01	-11.97
1882.50	5	16-QAM	H	150	3	1 / 0	17.09	4.73	**21.82**	0.152	33.01	-11.19
1882.50	5	64-QAM	H	150	3	1 / 0	16.16	4.73	**20.89**	0.123	33.01	-12.12
1855.00	10	QPSK	H	150	358	1 / 0	16.74	4.81	21.55	0.143	33.01	-11.46
1882.50	10	QPSK	H	150	358	1 / 0	16.93	4.73	**21.66**	0.147	33.01	-11.35
1910.00	10	QPSK	H	150	358	1 / 0	16.46	4.68	21.14	0.130	33.01	-11.87
1882.50	10	16-QAM	H	150	358	1 / 0	17.04	4.73	**21.77**	0.150	33.01	-11.24
1882.50	10	64-QAM	H	150	358	1 / 0	16.10	4.73	**20.83**	0.121	33.01	-12.18
1857.50	15	QPSK	H	150	2	1 / 0	17.16	4.80	21.96	0.157	33.01	-11.05
1882.50	15	QPSK	H	150	2	1 / 0	17.28	4.73	**22.01**	0.159	33.01	-11.00
1907.50	15	QPSK	H	150	2	1 / 0	16.95	4.68	21.63	0.146	33.01	-11.38
1882.50	15	16-QAM	H	150	2	1 / 0	17.41	4.73	**22.14**	**0.164**	33.01	-10.87
1882.50	15	64-QAM	H	150	2	1 / 0	16.45	4.73	**21.18**	0.131	33.01	-11.83
1860.00	20	QPSK	H	150	0	1 / 0	17.01	4.79	21.80	0.151	33.01	-11.21
1882.50	20	QPSK	H	150	0	1 / 0	17.22	4.73	**21.95**	0.157	33.01	-11.06
1905.00	20	QPSK	H	150	0	1 / 0	17.05	4.68	21.73	0.149	33.01	-11.28
1882.50	20	16-QAM	H	150	0	1 / 0	17.36	4.73	**22.09**	0.162	33.01	-10.92
1882.50	20	64-QAM	H	150	0	1 / 0	16.43	4.73	**21.16**	0.131	33.01	-11.85
1882.50	15	16-QAM	V	150	132	1 / 0	15.43	4.73	20.17	0.104	33.01	-12.84
1882.50	15 (WCP)	16-QAM	H	150	0	1 / 0	15.41	4.73	20.14	0.103	33.01	-12.87

Table 7-8. EIRP Data (Band 2/25)

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 [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	150	2	1 / 24	12.14	4.78	16.92	0.049	23.98	-7.06
2312.50	5	QPSK	H	150	8	1 / 0	13.27	4.79	**18.06**	0.064	23.98	-5.92
2312.50	5	16-QAM	H	150	8	1 / 0	12.14	4.79	**16.93**	0.049	23.98	-7.05
2312.50	5	64-QAM	H	150	8	1 / 0	11.35	4.79	16.14	0.041	23.98	-7.84
2310.00	10	QPSK	H	150	355	1 / 0	13.58	4.79	**18.37**	**0.069**	23.98	-5.61
2310.00	10	16-QAM	H	150	355	1 / 49	12.60	4.79	17.39	0.055	23.98	-6.59
2310.00	10	64-QAM	H	150	355	1 / 49	10.73	4.79	15.52	0.036	23.98	-8.46
2310.00	10	QPSK	V	150	320	1 / 0	11.00	4.79	15.79	0.038	23.98	-8.19
2310.00	10 (WCP)	QPSK	H	150	254	1 / 0	11.39	4.79	16.18	0.041	23.98	-7.80

Table 7-9. EIRP Data (Band 30)

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 [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	150	355	1 / 0	16.92	5.74	22.66	0.184	33.01	-10.35
2535.00	5	QPSK	H	150	358	1 / 0	17.52	5.86	**23.38**	**0.218**	33.01	-9.63
2567.50	5	QPSK	H	150	0	1 / 0	17.04	5.98	23.02	0.200	33.01	-9.99
2535.00	5	16-QAM	H	150	358	1 / 0	17.45	5.86	**23.31**	0.214	33.01	-9.70
2502.50	5	64-QAM	H	150	355	1 / 0	16.91	5.74	**22.65**	0.184	33.01	-10.36
2505.00	10	QPSK	H	150	265	1 / 0	17.28	5.75	**23.03**	0.201	33.01	-9.98
2535.00	10	QPSK	H	150	265	1 / 0	16.99	5.86	22.85	0.193	33.01	-10.16
2565.00	10	QPSK	H	150	265	1 / 0	16.10	5.97	22.07	0.161	33.01	-10.94
2505.00	10	16-QAM	H	150	265	1 / 0	17.49	5.75	**23.24**	0.211	33.01	-9.77
2505.00	10	64-QAM	H	150	265	1 / 0	16.55	5.75	**22.30**	0.170	33.01	-10.71
2507.50	15	QPSK	H	150	0	1 / 0	16.01	5.76	21.77	0.150	33.01	-11.24
2535.00	15	QPSK	H	150	358	1 / 0	16.50	5.86	22.36	0.172	33.01	-10.65
2562.50	15	QPSK	H	150	5	1 / 0	16.51	5.96	**22.47**	0.177	33.01	-10.54
2535.00	15	16-QAM	H	150	358	1 / 0	16.41	5.86	**22.27**	0.169	33.01	-10.74
2535.00	15	64-QAM	H	150	358	1 / 0	15.72	5.86	**21.58**	0.144	33.01	-11.43
2510.00	20	QPSK	H	150	357	1 / 0	15.92	5.77	21.69	0.147	33.01	-11.32
2535.00	20	QPSK	H	150	359	1 / 0	16.65	5.86	**22.51**	0.178	33.01	-10.50
2560.00	20	QPSK	H	150	356	1 / 0	16.47	5.95	22.42	0.175	33.01	-10.59
2535.00	20	16-QAM	H	150	359	1 / 0	16.57	5.86	**22.43**	0.175	33.01	-10.58
2510.00	20	64-QAM	H	150	357	1 / 0	17.05	5.77	**22.82**	0.191	33.01	-10.19
2535.00	5	QPSK	V	150	125	1 / 0	15.16	5.86	21.02	0.126	33.01	-11.99
2535.00	5 (WCP)	QPSK	H	150	233	1 / 0	16.00	5.77	21.77	0.150	33.01	-11.24

Table 7-10. EIRP Data (Band 7)

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 [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	150	244	1 / 0	18.99	5.73	24.72	0.296	33.01	-8.29
2502.50	5	QPSK	V	150	244	1 / 0	19.00	5.74	**24.74**	**0.298**	33.01	-8.27
2593.00	5	QPSK	V	150	244	1 / 0	17.53	6.07	23.60	0.229	33.01	-9.41
2687.50	5	QPSK	V	150	244	1 / 0	16.83	6.48	23.31	0.215	33.01	-9.70
2593.00	5	16-QAM	V	150	244	1 / 0	17.93	6.07	**24.00**	0.251	33.01	-9.01
2593.00	5	64-QAM	V	150	244	1 / 0	16.26	6.07	**22.33**	0.171	33.01	-10.68
2501.00	10	QPSK	V	150	244	1 / 0	18.78	5.73	24.51	0.283	33.01	-8.50
2505.00	10	QPSK	V	150	244	1 / 0	18.85	5.75	**24.60**	0.288	33.01	-8.41
2593.00	10	QPSK	V	150	244	1 / 0	17.40	6.07	23.47	0.222	33.01	-9.54
2685.00	10	QPSK	V	150	244	1 / 0	16.27	6.47	22.74	0.188	33.01	-10.27
2593.00	10	16-QAM	V	150	244	1 / 0	17.26	6.07	**23.33**	0.215	33.01	-9.68
2593.00	10	64-QAM	V	150	244	1 / 0	15.70	6.07	**21.77**	0.150	33.01	-11.24
2503.50	15	QPSK	V	150	40	1 / 0	18.86	5.74	**24.60**	0.289	33.01	-8.41
2507.50	15	QPSK	V	150	40	1 / 0	18.84	5.76	24.60	0.288	33.01	-8.41
2593.00	15	QPSK	V	150	40	1 / 0	17.58	6.07	23.65	0.232	33.01	-9.36
2682.50	15	QPSK	V	150	40	1 / 0	16.31	6.46	22.77	0.189	33.01	-10.24
2593.00	15	16-QAM	V	150	40	1 / 0	17.64	6.07	**23.71**	0.235	33.01	-9.30
2593.00	15	64-QAM	V	150	40	1 / 0	16.30	6.07	**22.37**	0.173	33.01	-10.64
2506.00	20	QPSK	V	150	42	1 / 0	18.05	5.75	23.80	0.240	33.01	-9.21
2510.00	20	QPSK	V	150	42	1 / 0	18.09	5.77	**23.86**	0.243	33.01	-9.15
2593.00	20	QPSK	V	150	42	1 / 0	16.61	6.07	22.68	0.185	33.01	-10.33
2680.00	20	QPSK	V	150	42	1 / 0	14.80	6.45	21.25	0.133	33.01	-11.76
2593.00	20	16-QAM	V	150	42	1 / 0	17.28	6.07	**23.35**	0.216	33.01	-9.66
2593.00	20	64-QAM	V	150	42	1 / 0	16.26	6.07	**22.33**	0.171	33.01	-10.68
2502.50	5	QPSK	H	150	37	1 / 0	14.96	6.07	21.03	0.127	33.01	-11.98
2502.50	5 (WCP)	QPSK	H	150	258	1 / 0	18.61	6.07	24.68	0.294	33.01	-8.33

Table 7-11. EIRP Data (Band 41)

7.3 Radiated Spurious Emissions Measurements

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

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 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 v03 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

Test Setup

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

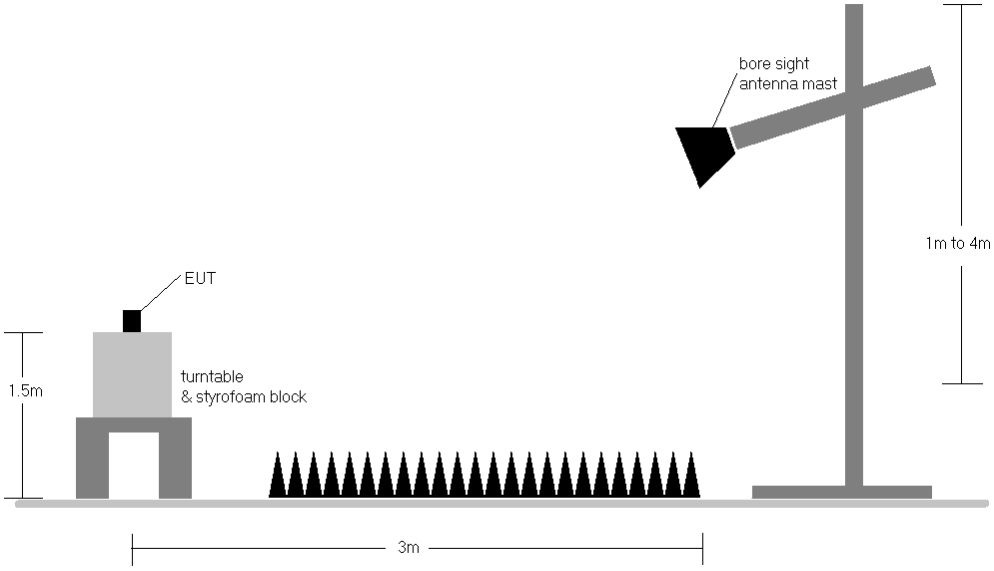


Figure 7-3. Test Instrument & Measurement Setup

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.

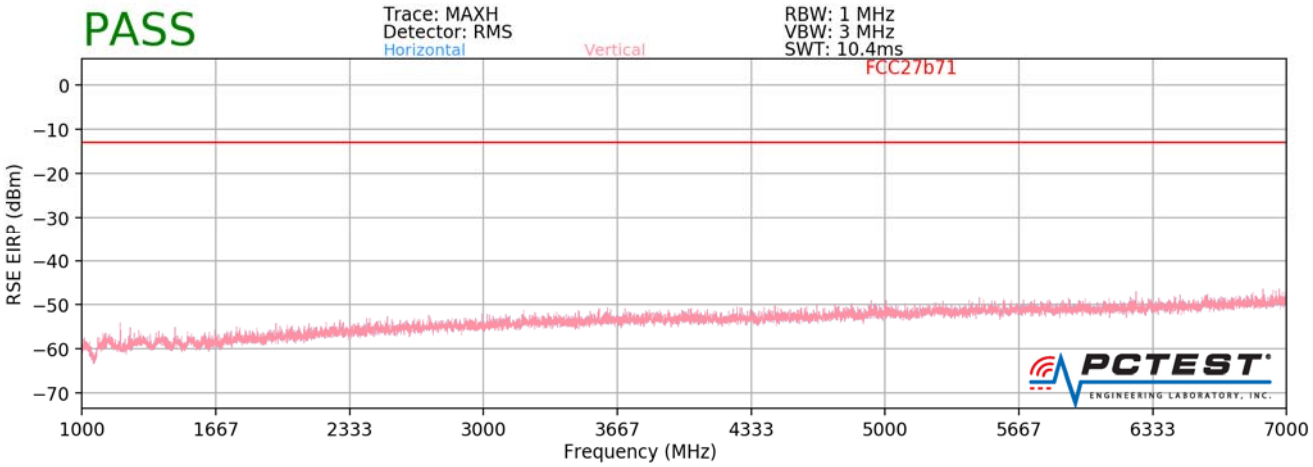
2) This unit was tested with its standard battery.

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.

Band 71



Plot 7-1. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY:	673.00	MHz
CHANNEL:	133222	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	H	-	-	-69.44	3.92	-65.52	-52.5
2019.00	H	-	-	-67.85	4.75	-63.09	-50.1

Table 7-12. Radiated Spurious Data (Band 71 – Low Channel)

OPERATING FREQUENCY:	680.50	MHz
CHANNEL:	133297	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	H	-	-	-68.96	3.90	-65.06	-52.1
2041.50	H	-	-	-68.20	4.78	-63.43	-50.4

Table 7-13. Radiated Spurious Data (Band 71 – Mid Channel)

OPERATING FREQUENCY:	688.00	MHz
CHANNEL:	133372	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	-	-	-67.93	3.85	-64.08	-51.1
2064.00	H	-	-	-67.26	4.79	-62.47	-49.5

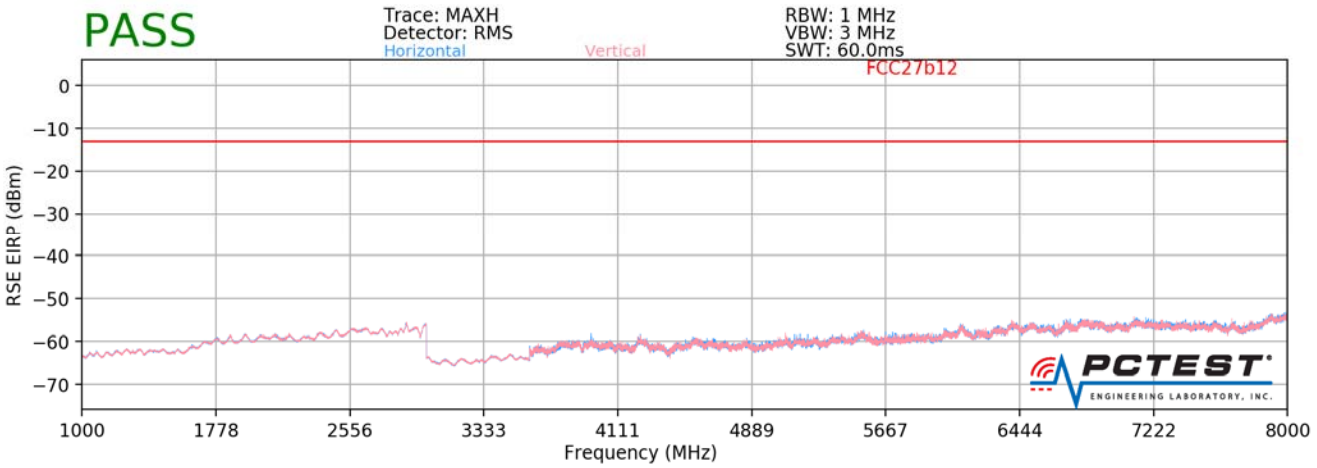
Table 7-14. Radiated Spurious Data (Band 71 – High Channel)

OPERATING FREQUENCY:	673.00	MHz
CHANNEL:	0	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	H	-	-	-69.33	3.92	-65.41	-52.4
2019.00	H	-	-	-68.18	4.75	-63.42	-50.4

Table 7-15. Radiated Spurious Data with WCP (Band 71 – Low Channel)

Band 12/17



Plot 7-2. Radiated Spurious Plot above 1GHz (Band 12/17)

OPERATING FREQUENCY:	704.00	MHz
CHANNEL:	23060	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	-	-	-79.59	3.84	-75.75	-62.8
2112.00	H	131	352	-71.69	4.79	-66.89	-53.9
2816.00	H	-	-	-74.58	5.69	-68.89	-55.9

Table 7-16. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	-	-	-78.64	3.90	-74.73	-61.7
2122.50	H	190	369	-69.53	4.78	-64.75	-51.7
2830.00	H	-	-	-73.99	5.73	-68.26	-55.3

Table 7-17. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
CHANNEL:	23130	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	H	-	-	-79.32	3.97	-75.35	-62.3
2133.00	H	125	361	-69.92	4.78	-65.15	-52.1
2844.00	H	-	-	-75.41	5.77	-69.63	-56.6

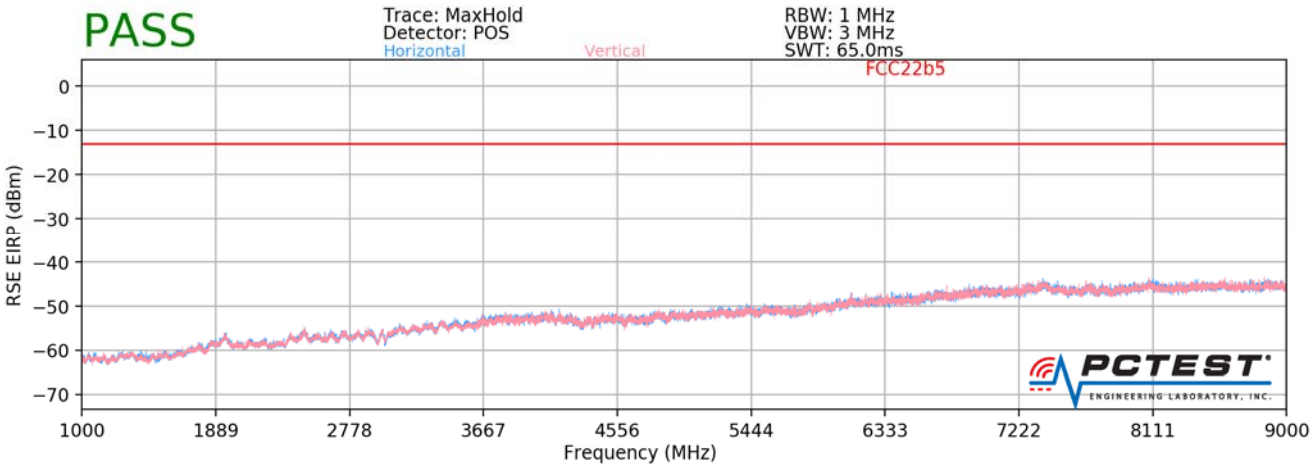
Table 7-18. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	-	-	-79.12	3.90	-75.21	-62.2
2122.50	H	118	238	-73.21	4.78	-68.43	-55.4
2830.00	H	-	-	-74.29	5.73	-68.56	-55.6

Table 7-19. Radiated Spurious Data with WCP (Band 12/17 – Mid Channel)

Band 13



Plot 7-3. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY:	782.00	MHz
CHANNEL:	23230	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	125	6	-64.56	4.88	-59.68	-46.7
3128.00	H	-	-	-74.30	6.02	-68.29	-55.3

Table 7-20. Radiated Spurious Data (Band 13 – Mid Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	-	-	-77.98	4.50	-73.49	-33.5

Table 7-21. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	782.00	MHz
CHANNEL:	23230	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	154	304	-65.18	4.88	-60.30	-47.3
3128.00	H	-	-	-74.08	6.02	-68.07	-55.1

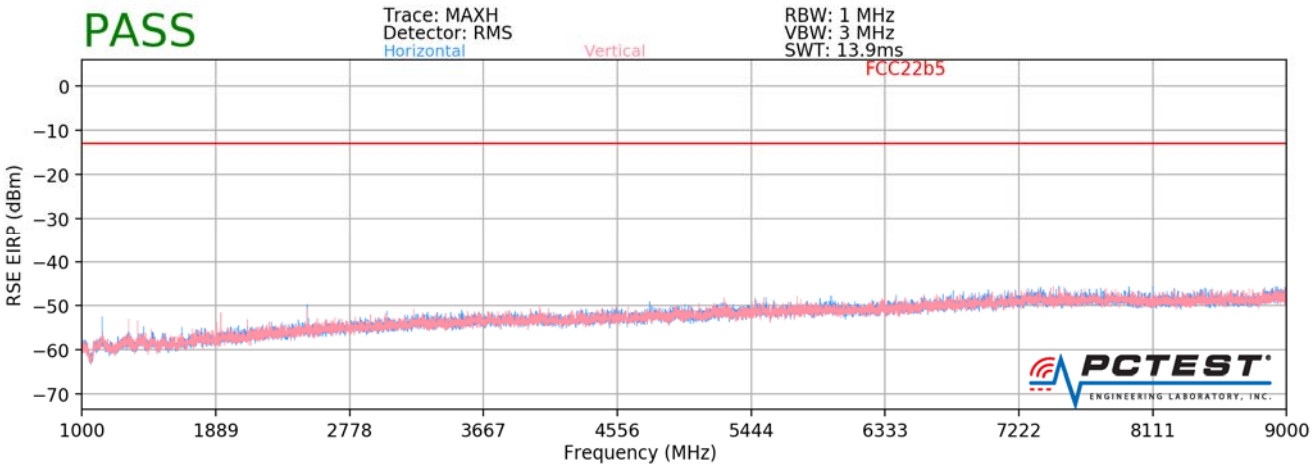
Table 7-22. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	-	-	-77.91	4.50	-73.42	-33.4

Table 7-23. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

Band 5



Plot 7-4. Radiated Spurious Plot above 1GHz (Band 5)

OPERATING FREQUENCY:	826.50	MHz
CHANNEL:	20425	
MODULATION SIGNAL:	QPSK	
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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1653.00	H	150	356	-66.70	4.82	-61.88	-48.9
2479.50	H	150	355	-56.22	5.01	-51.21	-38.2
3306.00	H	-	-	-66.54	6.25	-60.28	-47.3

Table 7-24. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	20525	
MODULATION SIGNAL:	QPSK	
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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	150	1	-64.39	4.86	-59.52	-46.5
2509.50	H	150	355	-57.12	5.10	-52.02	-39.0
3346.00	H	-	-	-65.97	6.25	-59.71	-46.7

Table 7-25. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	846.50	MHz
CHANNEL:	20625	
MODULATION SIGNAL:	QPSK	
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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.00	H	150	355	-64.20	4.90	-59.29	-46.3
2539.50	H	150	353	-57.25	5.25	-52.01	-39.0
3386.00	H	-	-	-66.48	6.36	-60.11	-47.1

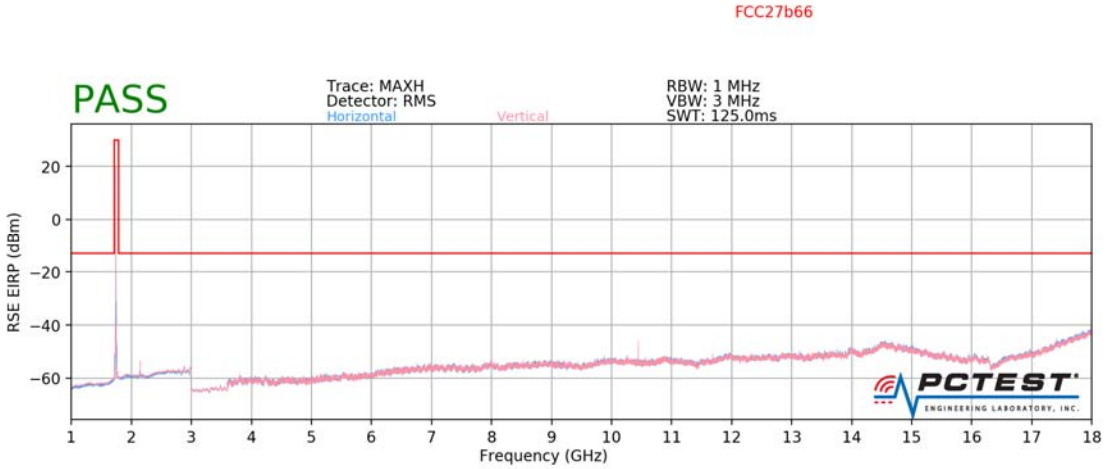
Table 7-26. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY:	826.50	MHz
CHANNEL:	20425	
MODULATION SIGNAL:	QPSK	
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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1653.00	H	150	128	-77.83	4.82	-73.01	-60.0
2479.50	H	150	286	-55.13	5.01	-50.12	-37.1
3306.00	H	-	-	-65.88	6.25	-59.62	-46.6

Table 7-27. Radiated Spurious Data with WCP (Band 5 – Low Channel)

Band 4/66



Plot 7-5. Radiated Spurious Plot above 1GHz (Band 4/66)

OPERATING FREQUENCY:	1715.00	MHz
CHANNEL:	132022	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3430.00	V	159	258	-71.01	6.49	-64.52	-51.5
5145.00	V	-	-	-71.76	8.43	-63.33	-50.3
6860.00	V	-	-	-67.52	8.71	-58.81	-45.8
8575.00	V	100	195	-65.08	9.64	-55.44	-42.4
10290.00	V	100	195	-54.78	9.72	-45.07	-32.1
12005.00	V	-	-	-63.88	9.37	-54.50	-41.5

Table 7-28. Radiated Spurious Data (Band 4/66 – Low Channel)

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	100	338	-70.95	6.59	-64.36	-51.4
5235.00	V	-	-	-72.74	8.42	-64.32	-51.3
6980.00	V	-	-	-67.62	8.60	-59.02	-46.0
8725.00	V	100	195	-63.42	9.88	-53.54	-40.5
10470.00	V	104	198	-57.46	9.76	-47.70	-34.7
12215.00	V	-	-	-64.31	9.33	-54.97	-42.0

Table 7-29. Radiated Spurious Data (Band 4/66 – Mid Channel)

OPERATING FREQUENCY:	1775.00	MHz
CHANNEL:	132622	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3550.00	V	159	1	-71.36	6.53	-64.83	-51.8
5325.00	V	-	-	-72.60	8.41	-64.19	-51.2
7100.00	V	-	-	-67.16	8.46	-58.69	-45.7
8875.00	V	109	180	-63.17	10.00	-53.17	-40.2
10650.00	V	100	193	-58.56	9.61	-48.95	-36.0
12425.00	V	-	-	-64.33	9.37	-54.96	-42.0

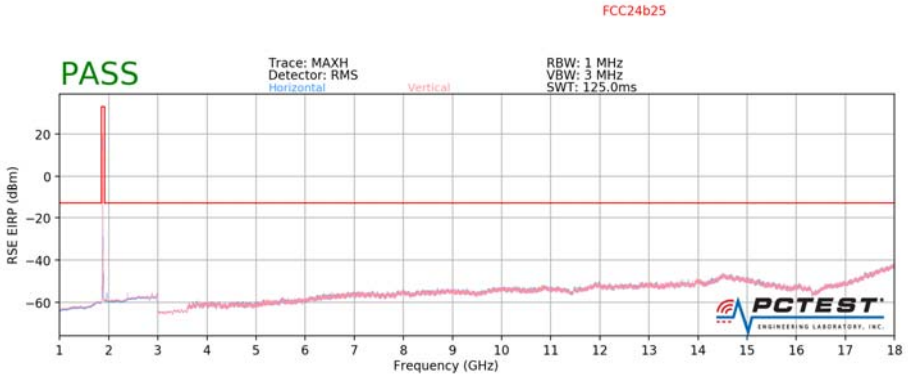
Table 7-30. Radiated Spurious Data (Band 4/66 – High Channel)

OPERATING FREQUENCY:	1775.00	MHz
CHANNEL:	132622	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	10.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3550.00	H	159	38	-71.71	6.53	-65.18	-52.2
5325.00	H	-	-	-72.29	8.41	-63.89	-50.9
7100.00	H	-	-	-67.15	8.46	-58.68	-45.7
8875.00	H	115	304	-62.31	10.00	-52.31	-39.3
10650.00	H	112	287	-57.20	9.61	-47.59	-34.6
12425.00	H	-	-	-65.40	9.37	-56.03	-43.0

Table 7-31. Radiated Spurious Data with WCP (Band 4/66 – High Channel)

Band 2/25



Plot 7-6. Radiated Spurious Plot above 1GHz (Band 2/25)

OPERATING FREQUENCY:	1857.50	MHz
CHANNEL:	26115	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	15.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	H	140	52	-69.27	6.78	-62.49	-49.5
5572.50	H	154	341	-68.87	8.44	-60.42	-47.4
7430.00	H	-	-	-67.02	8.31	-58.70	-45.7

Table 7-32. Radiated Spurious Data (Band 2/25 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	15.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	109	338	-69.76	6.85	-62.91	-49.9
5647.50	H	158	337	-68.40	8.53	-59.87	-46.9
7530.00	H	-	-	-66.63	8.45	-58.18	-45.2

Table 7-33. Radiated Spurious Data (Band 2/25 – Mid Channel)

OPERATING FREQUENCY:	1907.50	MHz
CHANNEL:	26615	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	15.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.00	H	244	338	-68.79	6.98	-61.81	-48.8
5722.50	H	158	336	-69.24	8.58	-60.67	-47.7
7630.00	H	-	-	-66.11	8.55	-57.56	-44.6

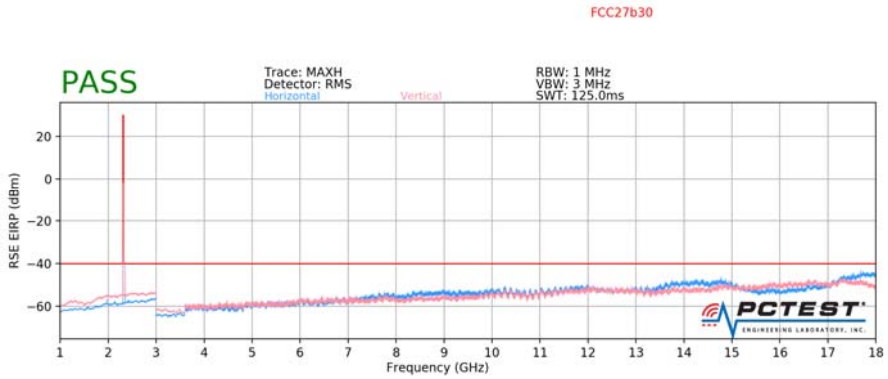
Table 7-34. Radiated Spurious Data (Band 2/25 – High Channel)

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
MODULATION SIGNAL:	16-QAM	
BANDWIDTH:	15.0	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 [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	204	138	-70.18	6.85	-63.33	-50.3
5647.50	H	114	30	-71.32	8.53	-62.79	-49.8
7530.00	H	-	-	-66.60	8.45	-58.16	-45.2

Table 7-35. Radiated Spurious Data with WCP (Band 2/25 – Mid Channel)

Band 30



Plot 7-7. Radiated Spurious Plot 1GHz - 18GHz (Band 30)

OPERATING FREQUENCY:	2310.00	MHz
CHANNEL:	27710	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	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]	Margin [dB]
4620.00	H	-	-	-65.30	8.10	-57.20	-17.2
6930.00	H	-	-	-61.36	8.67	-52.69	-12.7

Table 7-36. Radiated Spurious Data (Band 30 – Low Channel)

OPERATING FREQUENCY:	2310.00	MHz
CHANNEL:	27710	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	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]	Margin [dB]
4620.00	H	-	-	-65.42	8.10	-57.32	-17.3
6930.00	H	-	-	-61.03	8.67	-52.36	-12.4

Table 7-37. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY:	2310.00	MHz
CHANNEL:	27710	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	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]	Margin [dB]
4620.00	H	-	-	-65.12	8.10	-57.02	-17.0
6930.00	H	-	-	-61.88	8.67	-53.21	-13.2

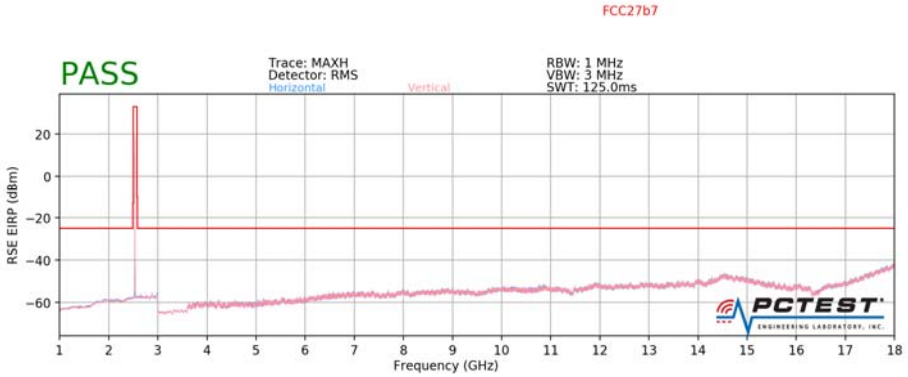
Table 7-38. Radiated Spurious Data (Band 30 – High Channel)

OPERATING FREQUENCY:	2310.00	MHz
CHANNEL:	27710	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	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]	Margin [dB]
4620.00	H	-	-	-64.98	8.10	-56.88	-16.9
6930.00	H	-	-	-62.05	8.67	-53.38	-13.4

Table 7-39. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

Band 7



Plot 7-8. Radiated Spurious Plot 1GHz - 18GHz (Band 7)

OPERATING FREQUENCY:	2502.50	MHz
CHANNEL:	20775	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5005.00	H	204	33	-71.03	8.33	-62.70	-37.7
7507.50	H	186	310	-66.53	8.43	-58.10	-33.1
10010.00	H	213	62	-52.02	9.88	-42.15	-17.1
12512.50	H	400	61	-57.22	9.37	-47.85	-22.8
15015.00	H	-	-	-62.36	9.41	-52.95	-28.0

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

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5070.00	H	104	316	-70.45	8.39	-62.06	-37.1
7605.00	H	186	305	-66.22	8.51	-57.71	-32.7
10140.00	H	228	321	-54.93	9.70	-45.23	-20.2
12675.00	H	177	34	-56.39	9.24	-47.15	-22.2
15210.00	H	-	-	-63.11	9.31	-53.79	-28.8

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

OPERATING FREQUENCY:	2567.50	MHz
CHANNEL:	21425	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5135.00	H	232	34	-69.83	8.43	-61.40	-36.4
7702.50	H	186	60	-63.47	8.67	-54.80	-29.8
10270.00	H	232	318	-53.80	9.72	-44.08	-19.1
12837.50	H	189	341	-59.02	9.21	-49.81	-24.8
15405.00	H	-	-	-64.59	9.16	-55.43	-30.4

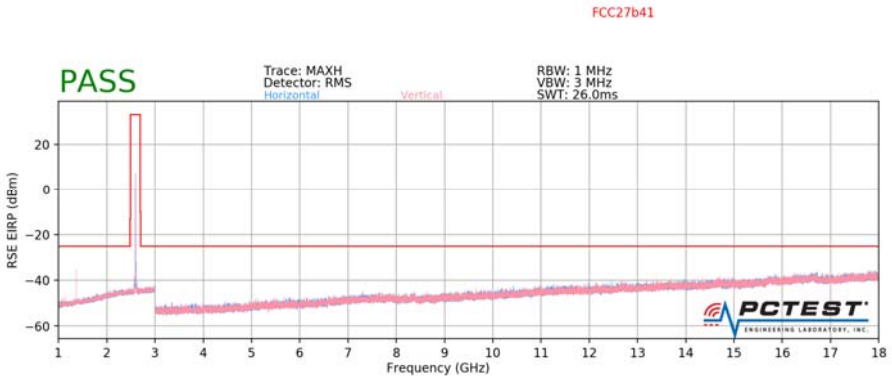
Table 7-42. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5070.00	H	112	304	-71.25	8.39	-62.86	-37.9
7605.00	H	198	34	-63.88	8.51	-55.37	-30.4
10140.00	H	258	0	-55.76	9.70	-46.06	-21.1
12675.00	H	100	32	-58.14	9.24	-48.90	-23.9
15210.00	H	-	-	-62.00	9.31	-52.68	-27.7

Table 7-43. Radiated Spurious Data with WCP (Band 7 – Mid Channel)

Band 41



Plot 7-9. Radiated Spurious Plot 1GHz - 18GHz (Band 41)

OPERATING FREQUENCY:	2502.50	MHz
CHANNEL:	39715	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5005.00	V	150	262	-64.97	8.33	-56.64	-31.6
7507.50	V	-	-	-61.84	8.43	-53.41	-28.4
10010.00	V	-	-	-61.03	9.88	-51.15	-26.2

Table 7-44. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5186.00	V	-	-	-63.91	8.45	-55.46	-30.5
7779.00	V	-	-	-61.72	8.75	-52.97	-28.0
10372.00	V	-	-	-60.52	9.73	-50.79	-25.8

Table 7-45. Radiated Spurious Data (Band 41 – Mid Channel)

OPERATING FREQUENCY:	2687.50	MHz
CHANNEL:	41565	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5375.00	V	-	-	-63.49	8.41	-55.08	-30.1
8062.50	V	-	-	-61.51	9.22	-52.29	-27.3
10750.00	V	-	-	-59.41	9.51	-49.90	-24.9

Table 7-46. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY:	2502.50	MHz
CHANNEL:	39715	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	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]	Margin [dB]
5005.00	H	-	-	-63.76	8.33	-55.43	-30.4
7507.50	H	-	-	-60.13	8.43	-51.70	-26.7
10010.00	H	-	-	-60.64	9.88	-50.76	-25.8

Table 7-47. Radiated Spurious Data with WCP (Band 41 – Low Channel)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG710TM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.