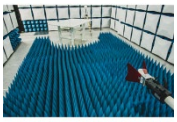
PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



MEASUREMENT REPORT
LTE

Applicant Name:
LG Electronics USA, Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:
8/19 - 9/4/2019
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1908190143-03-R1.ZNF

FCC ID:	**ZNFG850UM**
APPLICANT:	**LG Electronics USA, Inc.**

Application Type:	Class II Permissive Change
Model:	LM-G850UM
Additional Model(s):	LM-G850QM, LM-G850QM6, LM-G850V, LM-G850UM2, LM-G850UM2X, LMG850UM, LMG850QM, LMG850QM6, LMG850V, LMG850UM2, LMG850UM2X, G850UM, G850QM, G850QM6, G850V, G850UM2, G850UM2X
EUT Type:	Portable Handset
FCC 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 v03r01, KDB 648474 D03 v01r04
Class II Permissive Change:	Please see FCC change document
Original Grant Data:	9/18/2019

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: 1M1908190143-03-R1.ZNF) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

Randy Ortanez
President

ACCREDITED
TESTING CERT#2041.01

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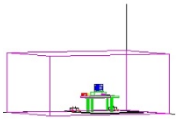
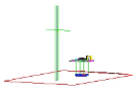


MEASUREMENT REPORT
FCC Part 22, 24, & 27



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	0.041	16.14			QPSK
LTE Band 71	27	665.5 - 695.5	0.033	15.17			16QAM
LTE Band 71	27	665.5 - 695.5	0.026	14.15			64QAM
LTE Band 71	27	668 - 693	0.040	15.97			QPSK
LTE Band 71	27	668 - 693	0.032	15.00			16QAM
LTE Band 71	27	668 - 693	0.025	13.98			64QAM
LTE Band 71	27	670.5 - 690.5	0.040	16.04			QPSK
LTE Band 71	27	670.5 - 690.5	0.032	15.07			16QAM
LTE Band 71	27	670.5 - 690.5	0.025	14.05			64QAM
LTE Band 71	27	673 - 688	0.040	16.05			QPSK
LTE Band 71	27	673 - 688	0.036	15.58			16QAM
LTE Band 71	27	673 - 688	0.031	14.89			64QAM
LTE Band 12	27	699.7 - 715.3	0.047	16.72	0.077	18.87	QPSK
LTE Band 12	27	699.7 - 715.3	0.035	15.47	0.058	17.62	16QAM
LTE Band 12	27	699.7 - 715.3	0.030	14.81	0.050	16.96	64QAM
LTE Band 12	27	700.5 - 714.5	0.046	16.64	0.076	18.79	QPSK
LTE Band 12	27	700.5 - 714.5	0.035	15.39	0.057	17.54	16QAM
LTE Band 12	27	700.5 - 714.5	0.030	14.73	0.049	16.88	64QAM
LTE Band 12	27	701.5 - 713.5	0.047	16.71	0.077	18.86	QPSK
LTE Band 12	27	701.5 - 713.5	0.035	15.46	0.058	17.61	16QAM
LTE Band 12	27	701.5 - 713.5	0.030	14.80	0.050	16.95	64QAM
LTE Band 12/17	27	704 - 711	0.046	16.60	0.075	18.75	QPSK
LTE Band 12/17	27	704 - 711	0.040	16.01	0.065	18.16	16QAM
LTE Band 12/17	27	704 - 711	0.029	14.67	0.048	16.82	64QAM
LTE Band 13	27	779.5 - 784.5	0.049	16.90	0.080	19.05	QPSK
LTE Band 13	27	779.5 - 784.5	0.039	15.93	0.064	18.08	16QAM
LTE Band 13	27	779.5 - 784.5	0.031	14.89	0.051	17.04	64QAM
LTE Band 13	27	782	0.056	17.50	0.092	19.65	QPSK
LTE Band 13	27	782	0.045	16.57	0.074	18.72	16QAM
LTE Band 13	27	782	0.038	15.83	0.063	17.98	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.055	17.38	0.090	19.53	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.041	16.08	0.067	18.23	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.035	15.42	0.057	17.57	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.055	17.38	0.090	19.53	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.041	16.08	0.067	18.23	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.035	15.42	0.057	17.57	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.053	17.28	0.088	19.43	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.040	15.98	0.065	18.13	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.034	15.32	0.056	17.47	64QAM
LTE Band 26/5	22H	829 - 844	0.053	17.23	0.087	19.38	QPSK
LTE Band 26/5	22H	829 - 844	0.039	15.93	0.064	18.08	16QAM
LTE Band 26/5	22H	829 - 844	0.034	15.27	0.055	17.42	64QAM
LTE Band 26	22H	831.5 - 841.5	0.054	17.30	0.088	19.45	QPSK
LTE Band 26	22H	831.5 - 841.5	0.046	16.59	0.075	18.74	16QAM
LTE Band 26	22H	831.5 - 841.5	0.033	15.20	0.054	17.35	64QAM

EUT Overview (<1 GHz)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 66/4	27	1710.7 - 1779.3	0.230	23.61	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.174	22.40	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.139	21.43	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.232	23.66	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.179	22.53	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.143	21.56	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.228	23.58	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.180	22.55	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.128	21.06	64QAM
LTE Band 66/4	27	1715 - 1775	0.231	23.63	QPSK
LTE Band 66/4	27	1715 - 1775	0.187	22.72	16QAM
LTE Band 66/4	27	1715 - 1775	0.150	21.76	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.231	23.63	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.169	22.29	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.147	21.68	64QAM
LTE Band 66/4	27	1720 - 1770	0.229	23.60	QPSK
LTE Band 66/4	27	1720 - 1770	0.192	22.83	16QAM
LTE Band 66/4	27	1720 - 1770	0.157	21.95	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.235	23.71	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.176	22.46	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.153	21.85	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.232	23.65	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.162	22.09	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.151	21.80	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.236	23.72	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.177	22.49	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.132	21.19	64QAM
LTE Band 25/2	24E	1855 - 1910	0.232	23.66	QPSK
LTE Band 25/2	24E	1855 - 1910	0.185	22.68	16QAM
LTE Band 25/2	24E	1855 - 1910	0.150	21.77	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.239	23.78	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.197	22.95	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.122	20.88	64QAM
LTE Band 25/2	24E	1860 - 1905	0.283	24.52	QPSK
LTE Band 25/2	24E	1860 - 1905	0.235	23.72	16QAM
LTE Band 25/2	24E	1860 - 1905	0.191	22.82	64QAM

EUT Overview (Mid Bands)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 30	27	2307.5 - 2312.5	0.092	19.64	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.073	18.66	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.060	17.80	64QAM
LTE Band 30	27	2310	0.092	19.63	QPSK
LTE Band 30	27	2310	0.073	18.65	16QAM
LTE Band 30	27	2310	0.052	17.15	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.145	21.62	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.113	20.52	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.090	19.55	64QAM
LTE Band 7	27	2505 - 2565	0.140	21.46	QPSK
LTE Band 7	27	2505 - 2565	0.109	20.36	16QAM
LTE Band 7	27	2505 - 2565	0.087	19.39	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.147	21.67	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.114	20.57	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.091	19.60	64QAM
LTE Band 7	27	2510 - 2560	0.145	21.62	QPSK
LTE Band 7	27	2510 - 2560	0.110	20.42	16QAM
LTE Band 7	27	2510 - 2560	0.083	19.21	64QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.249	23.96	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.184	22.64	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.129	21.09	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.246	23.91	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.187	22.73	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.139	21.42	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.252	24.02	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.181	22.57	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.146	21.65	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.257	24.09	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.220	23.43	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.147	21.67	64QAM

EUT Overview (High Bands)

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 FCC 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 FCC 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: ZNFG850UM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 03307, 03315, 03190, 02278, 02279

2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1, BC10), 850/1900 GSM/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 (699 - 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 26 (814.7 – 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz). Therefore, test data provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.

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 v03r01. See Section 7.0 of this test report for a description of the radiated 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) FCC ID: A3LEPPN920 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

During testing the EUT was installed onto the dual display cover and was set to operate in normal operation. The worst case radiated emission data with the dual display cover is included 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 v03r01) were used in the measurement of the EUT.

3.2 600 MHz Band Frequency Range

600 MHz band. The 600 MHz band (617-652 MHz and 663-698 MHz) has seven pairs of 5 megahertz channel blocks available for assignment on a Partial Economic Area basis as follows:

Block A: 617-622 MHz and 663-668 MHz;
Block B: 622-627 MHz and 668-673 MHz;
Block C: 627-632 MHz and 673-678 MHz;
Block D: 632-637 MHz and 678-683 MHz;
Block E: 637-642 MHz and 683-688 MHz;
Block F: 642-647 MHz and 688-693 MHz; and
Block G: 647-652 MHz and 693-698 MHz.

3.3 Block C Frequency Range

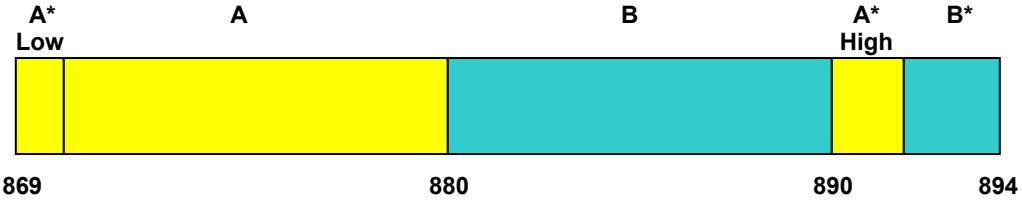
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results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

3.4 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:

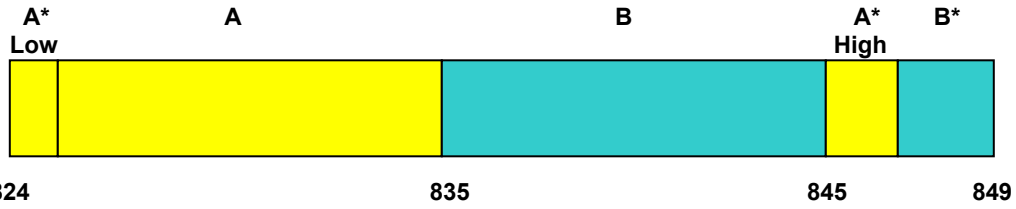
Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.5 Cellular - Base Frequency Blocks



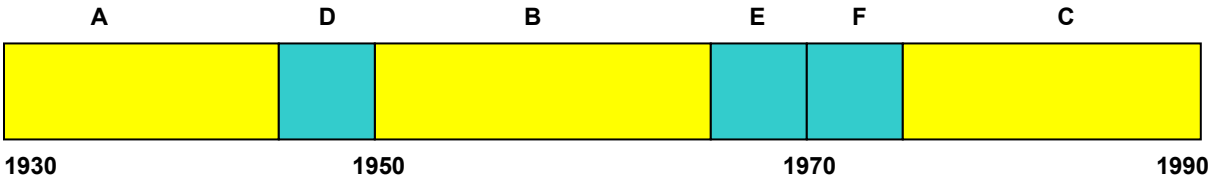
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.6 Cellular - Mobile Frequency Blocks



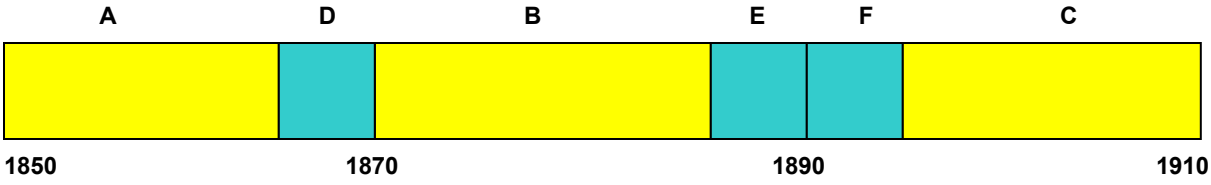
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.7 PCS - Base Frequency Blocks



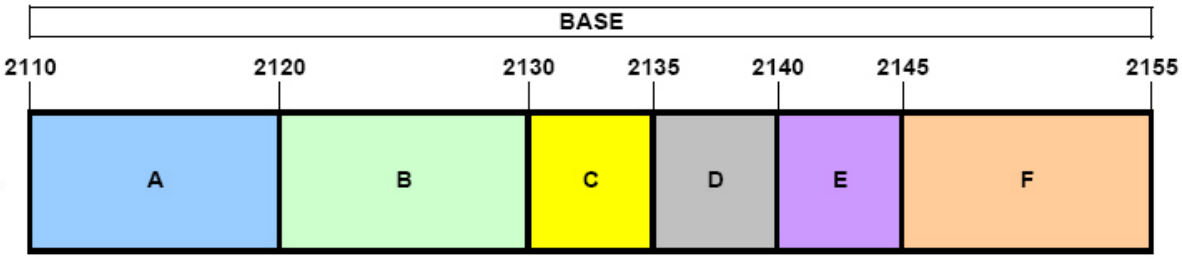
BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.8 PCS - Mobile Frequency Blocks



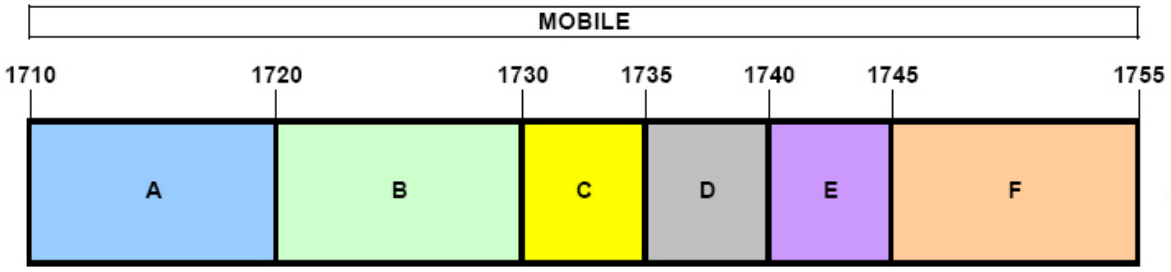
BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

3.9 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)

3.10 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)

3.11 WCS – Mobile/Base Frequency Blocks

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

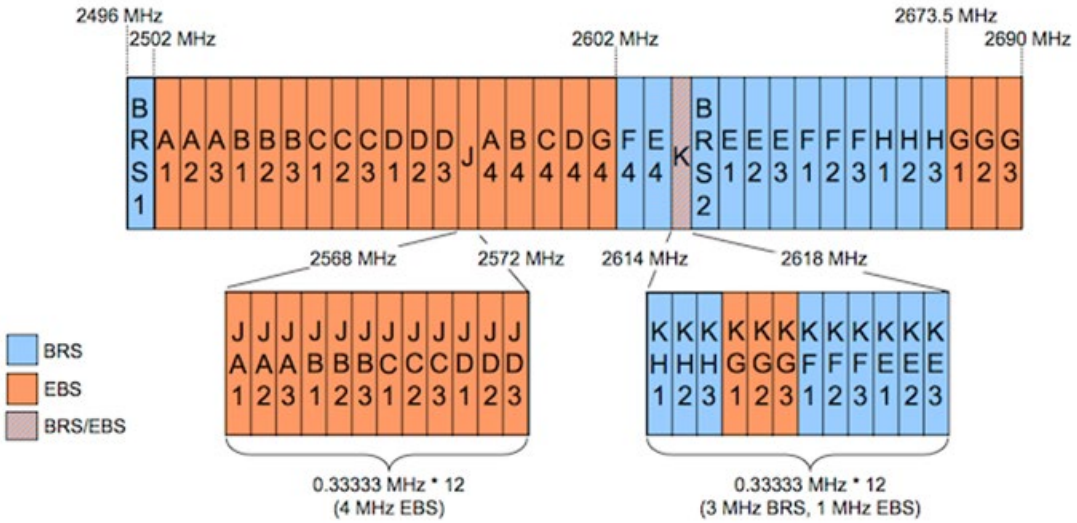
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

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

BLOCK 3: 2315-2320 MHz (C)

BLOCK 4: 2345-2350 MHz (D)

3.12 BRS/EBS Frequency Block



3.13 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 v03r01.

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

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

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)
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
Agilent	N9020A	MXA Signal Analyzer	4/20/2019	Annual	4/20/2020	US46470561
Agilent	N9038A	MXE EMI Receiver	7/17/2019	Annual	7/17/2020	MY51210133
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	10/10/2017	Biennial	10/10/2019	121034
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	9/17/2018	Annual	9/17/2019	441119
Com-Power	PAM-103	Pre-Amplifier (1-1000MHz)	5/10/2019	Annual	5/10/2020	441112
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
EMCO	3160-09	Small Horn (18 - 26.5GHz)	8/9/2018	Biennial	8/9/2020	135427
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/14/2019	Biennial	2/14/2021	125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	2/22/2019	Biennial	2/22/2021	128338
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	4/19/2019	Annual	4/19/2020	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Mini-Circuits	PWR-SEN-4RMS	USB Power Sensor	4/20/2019	Annual	4/20/2020	11210140001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			102060
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	9/19/2018	Annual	9/19/2019	100040
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	4/19/2018	Biennial	4/19/2020	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.

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

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

QAM Modulation

Emission Designator = 8M45W7D

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

Spurious Radiated Emission – LTE Band

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

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was –81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of –81.0 dBm on the spectrum 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 USA, Inc.

FCC ID: ZNFG850UM

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 26/5)	< 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, 13)	< 3 Watts max. ERP			Section 7.2
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 71, 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 (Band 12, 26/5, 66/4, 25/2)	> 43 + 10 $\log_{10}$ (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 + 10 $\log_{10}$ (P[Watts])			Section 7.3
27.53(m)	Undesirable Emissions (Band 7, 41)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3

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)

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 v03r01 – 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".
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.

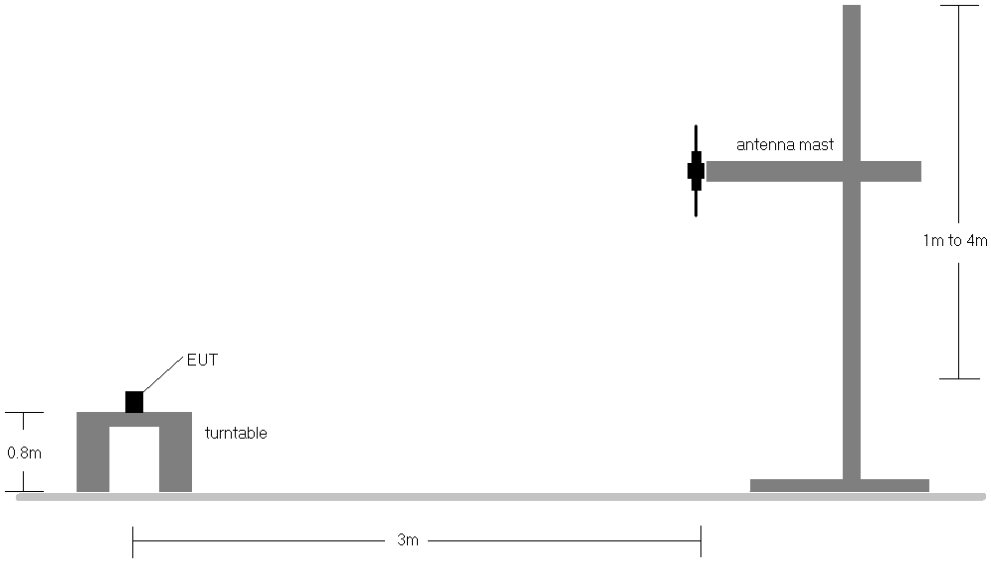


Figure 7-1. Radiated Test Setup <1GHz

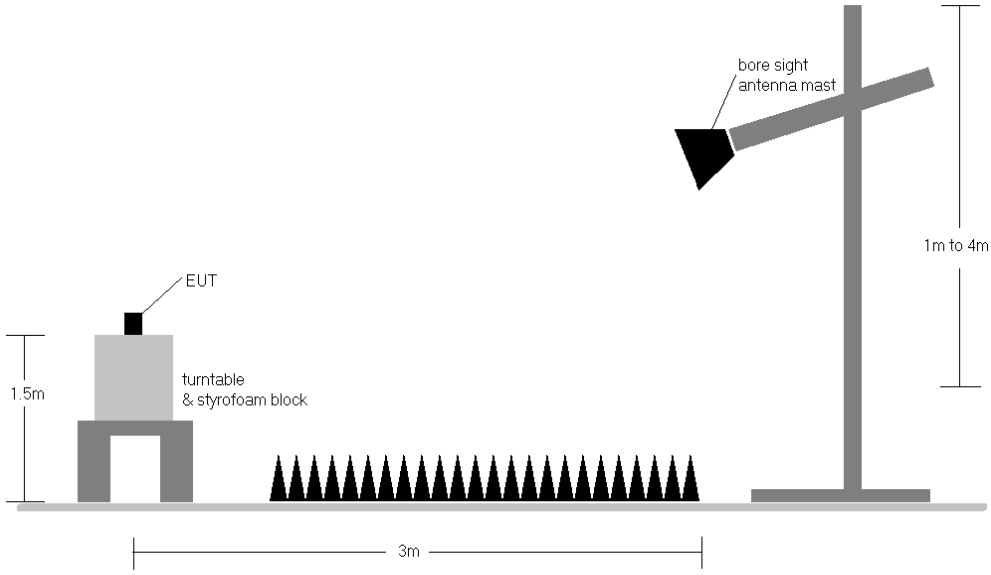


Figure 7-2. Radiated Test Setup >1GHz

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	111	245	1 / 24	13.17	2.90	16.07	0.040	34.77	-18.70
680.50	5	QPSK	H	110	316	1 / 24	12.94	3.20	**16.14**	**0.041**	34.77	-18.63
695.50	5	QPSK	H	167	302	1 / 24	12.64	3.30	15.94	0.039	34.77	-18.83
680.50	5	16-QAM	H	110	316	1 / 24	11.97	3.20	**15.17**	0.033	34.77	-19.60
680.50	5	64-QAM	H	110	316	1 / 24	10.95	3.20	**14.15**	0.026	34.77	-20.62
668.00	10	QPSK	H	108	274	1 / 49	12.90	2.90	15.80	0.038	34.77	-18.97
680.50	10	QPSK	H	164	297	1 / 49	12.77	3.20	**15.97**	0.040	34.77	-18.80
693.00	10	QPSK	H	177	289	1 / 49	12.58	3.30	15.88	0.039	34.77	-18.89
680.50	10	16-QAM	H	164	297	1 / 49	11.80	3.20	**15.00**	0.032	34.77	-19.77
680.50	10	64-QAM	H	164	297	1 / 49	10.78	3.20	**13.98**	0.025	34.77	-20.79
670.50	15	QPSK	H	100	290	1 / 74	13.00	3.00	16.00	0.040	34.77	-18.77
680.50	15	QPSK	H	110	316	1 / 74	12.84	3.20	**16.04**	0.040	34.77	-18.73
690.50	15	QPSK	H	188	298	1 / 74	12.54	3.30	15.84	0.038	34.77	-18.93
680.50	15	16-QAM	H	110	316	1 / 74	11.87	3.20	**15.07**	0.032	34.77	-19.70
680.50	15	64-QAM	H	110	316	1 / 74	10.85	3.20	**14.05**	0.025	34.77	-20.72
673.00	20	QPSK	H	100	290	1 / 99	14.89	3.10	15.84	0.038	34.77	-18.93
680.50	20	QPSK	H	110	316	1 / 99	15.00	3.20	**16.05**	0.040	34.77	-18.72
688.00	20	QPSK	H	188	298	1 / 99	14.86	3.30	16.01	0.040	34.77	-18.76
680.50	20	16-QAM	H	110	316	1 / 99	14.53	3.20	**15.58**	0.036	34.77	-19.19
680.50	20	64-QAM	H	110	316	1 / 99	13.84	3.20	**14.89**	0.031	34.77	-19.88
680.50	5	QPSK	V	143	316	1 / 99	14.31	3.20	15.36	0.034	34.77	-19.41
680.50	5 (WCP)	QPSK	H	179	298	1 / 99	12.96	3.30	14.11	0.026	34.77	-20.66
680.50	5 (DD - 180)	QPSK	H	297	336	1 / 99	14.60	3.30	15.75	**0.038**	34.77	-19.02
680.50	15 (DD - 180 & WCP)	QPSK	H	100	118	1 / 99	14.71	3.30	15.86	**0.039**	34.77	-18.91

Table 7-1. 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]
699.70	1.4	QPSK	V	184	274	1 / 5	11.95	4.50	16.45	0.044	34.77	-18.32
707.50	1.4	QPSK	V	168	290	1 / 5	12.07	4.60	16.67	0.046	34.77	-18.10
715.30	1.4	QPSK	V	165	287	1 / 0	12.09	4.63	**16.72**	**0.047**	34.77	-18.05
715.30	1.4	16-QAM	V	165	287	1 / 0	10.84	4.63	**15.47**	0.035	34.77	-19.30
715.30	1.4	64-QAM	V	165	287	1 / 0	10.18	4.63	**14.81**	0.030	34.77	-19.96
700.50	3	QPSK	V	184	274	1 / 14	11.90	4.55	16.45	0.044	34.77	-18.32
707.50	3	QPSK	V	168	290	1 / 14	12.04	4.60	**16.64**	0.046	34.77	-18.13
714.50	3	QPSK	V	165	287	1 / 0	12.00	4.60	16.60	0.046	34.77	-18.17
707.50	3	16-QAM	V	168	290	1 / 14	10.79	4.60	**15.39**	0.035	34.77	-19.38
707.50	3	64-QAM	V	168	290	1 / 14	10.13	4.60	**14.73**	0.030	34.77	-20.04

Table 7-2. 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]
701.50	5	QPSK	V	184	274	1 / 24	12.11	4.60	**16.71**	**0.047**	34.77	-18.06
707.50	5	QPSK	V	168	290	1 / 24	11.98	4.60	16.58	0.045	34.77	-18.19
713.50	5	QPSK	V	165	287	1 / 0	12.01	4.60	16.61	0.046	34.77	-18.16
701.50	5	16-QAM	V	184	274	1 / 24	10.86	4.60	**15.46**	0.035	34.77	-19.31
701.50	5	64-QAM	V	184	274	1 / 24	10.20	4.60	**14.80**	0.030	34.77	-19.97
704.00	10	QPSK	V	193	304	1 / 49	14.25	4.50	**16.60**	0.046	34.77	-18.17
707.50	10	QPSK	V	178	319	1 / 49	14.07	4.60	16.52	0.045	34.77	-18.25
711.00	10	QPSK	V	180	295	1 / 0	14.08	4.60	16.53	0.045	34.77	-18.24
704.00	10	16-QAM	V	193	304	1 / 49	13.66	4.50	**16.01**	0.040	34.77	-18.76
707.50	10	64-QAM	V	178	319	1 / 49	12.22	4.60	**14.67**	0.029	34.77	-20.10
701.50	5	QPSK	H	105	110	1 / 24	13.12	4.60	15.57	0.036	34.77	-19.20
701.50	5 (WCP)	QPSK	H	264	308	1 / 24	12.88	4.60	15.33	0.034	34.77	-19.44
701.50	5 (DD)	QPSK	V	102	118	1 / 24	13.30	4.60	15.75	**0.038**	34.77	-19.02
701.50	5 (DD & WCP)	QPSK	H	154	302	1 / 24	13.85	4.60	16.30	**0.043**	34.77	-18.47

Table 7-3. 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	V	136	122	1 / 0	12.87	5.80	16.52	0.045	34.77	-18.25	18.67	0.074	36.99	-18.32
782.00	5	QPSK	V	126	144	1 / 0	13.25	5.80	**16.90**	0.049	34.77	-17.87	**19.05**	0.080	36.99	-17.94
784.50	5	QPSK	V	166	200	1 / 0	12.80	5.90	16.55	0.045	34.77	-18.22	18.70	0.074	36.99	-18.29
782.00	5	16-QAM	V	126	144	1 / 0	12.28	5.80	**15.93**	0.039	34.77	-18.84	**18.08**	0.064	36.99	-18.91
782.00	5	64-QAM	V	126	144	1 / 0	11.24	5.80	**14.89**	0.031	34.77	-19.88	**17.04**	0.051	36.99	-19.95
782.00	10	QPSK	V	144	120	1 / 0	13.85	5.80	**17.50**	**0.056**	34.77	-17.27	**19.65**	**0.092**	36.99	-17.34
782.00	10	16-QAM	V	144	120	1 / 0	12.92	5.80	**16.57**	0.045	34.77	-18.20	**18.72**	0.074	36.99	-18.27
782.00	10	64-QAM	V	144	120	1 / 0	12.18	5.80	**15.83**	0.038	34.77	-18.94	**17.98**	0.063	36.99	-19.01
782.00	10	QPSK	H	215	106	1 / 0	13.60	5.80	17.25	0.053	34.77	-17.52	19.40	0.087	36.99	-17.59
782.00	10 (WCP)	QPSK	V	215	106	1 / 0	8.24	5.80	11.89	0.015	34.77	-22.88	14.04	0.025	36.99	-22.95
782.00	10 (DD)	QPSK	V	170	109	1 / 0	13.57	5.80	17.22	**0.053**	34.77	-17.55	19.37	**0.086**	36.99	-17.62
782.00	10 (DD & WCP)	QPSK	V	215	106	1 / 0	12.96	5.80	16.61	**0.046**	34.77	-18.16	18.76	**0.075**	36.99	-18.23

Table 7-4. 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	V	137	91	1 / 5	13.09	6.30	17.24	0.053	38.45	-21.21	19.39	0.087	40.61	-21.22
836.50	1.4	QPSK	V	144	353	1 / 5	13.13	6.40	**17.38**	**0.055**	38.45	-21.07	**19.53**	**0.090**	40.61	-21.08
848.30	1.4	QPSK	V	130	100	1 / 5	12.84	6.50	17.19	0.052	38.45	-21.26	19.34	0.086	40.61	-21.27
836.50	1.4	16-QAM	V	144	353	1 / 5	11.83	6.40	**16.08**	0.041	38.45	-22.37	**18.23**	0.067	40.61	-22.38
836.50	1.4	64-QAM	V	144	353	1 / 5	11.17	6.40	**15.42**	0.035	38.45	-23.03	**17.57**	0.057	40.61	-23.04
825.50	3	QPSK	V	137	91	1 / 14	13.06	6.30	17.21	0.053	38.45	-21.24	19.36	0.086	40.61	-21.25
836.50	3	QPSK	V	144	353	1 / 14	13.13	6.40	**17.38**	**0.055**	38.45	-21.07	**19.53**	**0.090**	40.61	-21.08
847.50	3	QPSK	V	130	100	1 / 14	12.95	6.50	17.30	0.054	38.45	-21.15	19.45	0.088	40.61	-21.16
836.50	3	16-QAM	V	144	353	1 / 14	11.83	6.40	**16.08**	0.041	38.45	-22.37	**18.23**	0.067	40.61	-22.38
836.50	3	64-QAM	V	144	353	1 / 14	11.17	6.40	**15.42**	0.035	38.45	-23.03	**17.57**	0.057	40.61	-23.04
826.50	5	QPSK	V	137	91	1 / 24	13.13	6.30	**17.28**	0.053	38.45	-21.17	**19.43**	0.088	40.61	-21.18
836.50	5	QPSK	V	144	353	1 / 24	13.03	6.40	**17.28**	0.053	38.45	-21.17	**19.43**	0.088	40.61	-21.18
846.50	5	QPSK	V	130	100	1 / 24	12.86	6.50	17.21	0.053	38.45	-21.24	19.36	0.086	40.61	-21.25
836.50	5	16-QAM	V	144	353	1 / 24	11.73	6.40	**15.98**	0.040	38.45	-22.47	**18.13**	0.065	40.61	-22.48
836.50	5	64-QAM	V	144	353	1 / 24	11.07	6.40	**15.32**	0.034	38.45	-23.13	**17.47**	0.056	40.61	-23.14
829.00	10	QPSK	V	137	91	1 / 49	13.05	6.30	17.20	0.052	38.45	-21.25	19.35	0.086	40.61	-21.26
836.50	10	QPSK	V	144	353	1 / 49	12.98	6.40	**17.23**	0.053	38.45	-21.22	**19.38**	0.087	40.61	-21.23
844.00	10	QPSK	V	130	100	1 / 49	12.96	6.40	17.21	0.053	38.45	-21.24	19.36	0.086	40.61	-21.25
836.50	10	16-QAM	V	144	353	1 / 49	11.68	6.40	**15.93**	0.039	38.45	-22.52	**18.08**	0.064	40.61	-22.53
836.50	10	64-QAM	V	144	353	1 / 49	11.02	6.40	**15.27**	0.034	38.45	-23.18	**17.42**	0.055	40.61	-23.19

Table 7-5. ERP Data (Band 26/5)

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	137	91	1 / 74	12.80	6.35	17.00	0.050	38.45	-21.45	19.15	0.082	40.61	-21.46
836.50	15	QPSK	V	144	353	1 / 74	13.05	6.40	**17.30**	**0.054**	38.45	-21.15	**19.45**	**0.088**	40.61	-21.16
841.50	15	QPSK	V	130	100	1 / 74	12.25	6.40	16.50	0.045	38.45	-21.95	18.65	0.073	40.61	-21.96
836.50	15	16-QAM	V	144	353	1 / 0	12.34	6.40	**16.59**	0.046	38.45	-21.86	**18.74**	0.075	40.61	-21.87
836.50	15	64-QAM	V	144	353	1 / 0	10.95	6.40	**15.20**	0.033	38.45	-23.25	**17.35**	0.054	40.61	-23.26
836.50	15	QPSK	H	207	95	1 / 74	11.05	6.35	15.25	0.033	38.45	-23.20	17.40	0.055	40.61	-23.21
836.50	15 (WCP)	QPSK	H	187	349	1 / 74	12.59	6.35	16.79	0.048	38.45	-21.66	18.94	0.078	40.61	-21.67
836.50	15 (Dual Display)	QPSK	H	135	109	1 / 74	11.96	7.35	17.16	0.052	38.45	-21.29	19.31	**0.085**	40.61	-21.30
836.50	15 (Dual Display & WCP)	QPSK	H	185	289	1 / 74	9.91	7.35	15.11	**0.032**	38.45	-23.34	17.26	0.053	40.61	-23.35

Table 7-6. ERP Data (Band 26)

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	V	161	144	1 / 5	14.26	9.35	**23.61**	0.230	30.00	-6.39
1745.00	1.4	QPSK	V	171	143	1 / 0	14.46	9.11	23.57	0.228	30.00	-6.43
1779.30	1.4	QPSK	V	173	143	1 / 5	14.17	9.17	23.34	0.216	30.00	-6.66
1710.70	1.4	16-QAM	V	161	144	1 / 5	13.05	9.35	**22.40**	0.174	30.00	-7.60
1710.70	1.4	64-QAM	V	161	144	1 / 5	12.08	9.35	**21.43**	0.139	30.00	-8.57
1711.50	3	QPSK	V	161	144	1 / 14	14.32	9.34	**23.66**	**0.232**	30.00	-6.34
1745.00	3	QPSK	V	171	143	1 / 0	14.42	9.11	23.53	0.225	30.00	-6.47
1778.50	3	QPSK	V	173	143	1 / 14	14.25	9.17	23.42	0.220	30.00	-6.58
1711.50	3	16-QAM	V	161	144	1 / 14	13.19	9.34	**22.53**	0.179	30.00	-7.47
1711.50	3	64-QAM	V	161	144	1 / 14	12.22	9.34	**21.56**	0.143	30.00	-8.44
1712.50	5	QPSK	V	161	144	1 / 24	14.24	9.34	**23.58**	0.228	30.00	-6.42
1745.00	5	QPSK	V	171	143	1 / 0	14.43	9.11	23.54	0.226	30.00	-6.46
1777.50	5	QPSK	V	173	143	1 / 24	14.16	9.16	23.32	0.215	30.00	-6.68
1712.50	5	16-QAM	V	161	144	1 / 24	13.21	9.34	**22.55**	0.180	30.00	-7.45
1712.50	5	64-QAM	V	161	144	1 / 24	11.72	9.34	**21.06**	0.128	30.00	-8.94
1715.00	10	QPSK	V	161	144	1 / 49	14.31	9.32	**23.63**	0.231	30.00	-6.37
1745.00	10	QPSK	V	171	143	1 / 0	14.50	9.11	23.61	0.230	30.00	-6.39
1775.00	10	QPSK	V	173	143	1 / 49	14.32	9.16	23.48	0.223	30.00	-6.52
1715.00	10	16-QAM	V	161	144	1 / 49	13.40	9.32	**22.72**	0.187	30.00	-7.28
1715.00	10	64-QAM	V	161	144	1 / 49	12.44	9.32	**21.76**	0.150	30.00	-8.24
1717.50	15	QPSK	V	157	155	1 / 74	14.26	9.30	23.56	0.227	30.00	-6.44
1745.00	15	QPSK	V	182	150	1 / 0	14.52	9.11	**23.63**	0.231	30.00	-6.37
1772.50	15	QPSK	V	169	159	1 / 74	14.27	9.15	23.42	0.220	30.00	-6.58
1745.00	15	16-QAM	V	182	150	1 / 0	13.18	9.11	**22.29**	0.169	30.00	-7.71
1745.00	15	64-QAM	V	182	150	1 / 0	12.57	9.11	**21.68**	0.147	30.00	-8.32
1720.00	20	QPSK	V	161	144	1 / 99	13.90	9.28	23.18	0.208	30.00	-6.82
1745.00	20	QPSK	V	171	143	1 / 0	14.49	9.11	**23.60**	0.229	30.00	-6.40
1770.00	20	QPSK	V	173	143	1 / 99	13.42	9.14	22.56	0.180	30.00	-7.44
1745.00	20	16-QAM	V	171	143	1 / 0	13.72	9.11	**22.83**	0.192	30.00	-7.17
1745.00	20	64-QAM	V	171	143	1 / 0	12.84	9.11	**21.95**	0.157	30.00	-8.05
1711.50	3	QPSK	H	299	203	1 / 14	13.43	9.34	22.77	0.189	30.00	-7.23
1711.50	3 (WCP)	QPSK	H	294	195	1 / 14	14.25	9.34	23.59	0.229	30.00	-6.41
1711.50	3 (DD)	QPSK	V	255	226	1 / 14	11.96	9.34	21.30	**0.135**	30.00	-8.70
1711.50	3 (DD & WCP)	QPSK	H	294	195	1 / 14	13.20	9.34	22.54	**0.180**	30.00	-7.46

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

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	117	161	1 / 0	14.14	9.48	23.62	0.230	33.01	-9.39
1882.50	1.4	QPSK	H	126	172	1 / 5	13.77	9.94	**23.71**	0.235	33.01	-9.30
1914.30	1.4	QPSK	H	133	184	1 / 0	13.13	10.29	23.42	0.220	33.01	-9.59
1882.50	1.4	16-QAM	H	126	172	1 / 5	12.52	9.94	**22.46**	0.176	33.01	-10.55
1882.50	1.4	64-QAM	H	126	172	1 / 5	11.91	9.94	**21.85**	0.153	33.01	-11.16
1851.50	3	QPSK	H	121	159	1 / 0	14.09	9.50	23.59	0.229	33.01	-9.42
1882.50	3	QPSK	H	100	166	1 / 14	13.71	9.94	**23.65**	0.232	33.01	-9.36
1913.50	3	QPSK	H	113	200	1 / 0	13.19	10.29	23.48	0.223	33.01	-9.53
1882.50	3	16-QAM	H	100	166	1 / 14	12.15	9.94	**22.09**	0.162	33.01	-10.92
1882.50	3	64-QAM	H	100	166	1 / 14	11.86	9.94	**21.80**	0.151	33.01	-11.21
1852.50	5	QPSK	H	111	162	1 / 0	14.21	9.51	**23.72**	0.236	33.01	-9.29
1882.50	5	QPSK	H	129	180	1 / 24	13.67	9.94	23.61	0.230	33.01	-9.40
1912.50	5	QPSK	H	136	158	1 / 0	13.29	10.28	23.57	0.228	33.01	-9.44
1852.50	5	16-QAM	H	111	162	1 / 0	12.98	9.51	**22.49**	0.177	33.01	-10.52
1852.50	5	64-QAM	H	111	162	1 / 0	11.68	9.51	**21.19**	0.132	33.01	-11.82
1855.00	10	QPSK	H	109	152	1 / 0	14.11	9.55	**23.66**	0.232	33.01	-9.35
1882.50	10	QPSK	H	130	200	1 / 49	13.72	9.94	**23.66**	0.232	33.01	-9.35
1910.00	10	QPSK	H	110	157	1 / 0	13.30	10.26	23.56	0.227	33.01	-9.45
1855.00	10	16-QAM	H	109	152	1 / 0	13.13	9.55	**22.68**	0.185	33.01	-10.33
1855.00	10	64-QAM	H	109	152	1 / 0	12.22	9.55	**21.77**	0.150	33.01	-11.24
1857.50	15	QPSK	H	110	168	1 / 0	14.18	9.58	23.76	0.238	33.01	-9.25
1882.50	15	QPSK	H	126	170	1 / 74	10.93	9.94	20.87	0.122	33.01	-12.14
1907.50	15	QPSK	H	117	162	1 / 0	13.54	10.24	**23.78**	0.239	33.01	-9.23
1907.50	15	16-QAM	H	117	162	1 / 0	12.71	10.24	**22.95**	0.197	33.01	-10.06
1907.50	15	64-QAM	H	117	162	1 / 0	10.64	10.24	**20.88**	0.122	33.01	-12.13
1860.00	20	QPSK	H	103	174	1 / 0	13.59	9.62	23.21	0.209	33.01	-9.80
1882.50	20	QPSK	H	116	172	1 / 99	13.48	9.94	23.42	0.220	33.01	-9.60
1905.00	20	QPSK	H	108	178	1 / 0	14.30	10.22	**24.52**	**0.283**	33.01	-8.49
1905.00	20	16-QAM	H	108	178	1 / 0	13.50	10.22	**23.72**	0.235	33.01	-9.29
1905.00	20	64-QAM	H	108	178	1 / 0	12.60	10.22	**22.82**	0.191	33.01	-10.19
1905.00	20	QPSK	V	110	62	1 / 0	13.19	10.22	23.41	0.219	33.01	-9.60
1905.00	20 (WCP)	QPSK	H	110	62	1 / 0	13.59	10.22	23.81	0.240	33.01	-9.20
1905.00	20 (DD)	QPSK	H	110	180	1 / 0	9.94	10.22	20.16	**0.104**	33.01	-12.85
1905.00	20 (WCP + DD)	QPSK	H	233	239	1 / 0	11.59	10.22	21.81	**0.152**	33.01	-11.20

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

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	172	340	1 / 0	9.01	10.31	19.32	0.085	23.98	-4.66
2312.50	5	QPSK	H	160	353	1 / 24	9.33	10.31	**19.64**	**0.092**	23.98	-4.34
2312.50	5	16-QAM	H	160	353	1 / 24	8.35	10.31	**18.66**	0.073	23.98	-5.32
2312.50	5	64-QAM	H	160	353	1 / 24	7.49	10.31	17.80	0.060	23.98	-6.18
2310.00	10	QPSK	H	125	309	1 / 49	9.32	10.31	**19.63**	0.092	23.98	-4.35
2310.00	10	16-QAM	H	125	309	1 / 49	8.34	10.31	18.65	0.073	23.98	-5.33
2310.00	10	64-QAM	H	125	309	1 / 49	6.84	10.31	17.15	0.052	23.98	-6.83
2312.50	5	QPSK	V	368	332	1 / 24	8.93	10.31	19.24	0.084	23.98	-4.74
2312.50	5 (WCP)	QPSK	H	128	309	1 / 24	9.01	10.31	19.32	0.085	23.98	-4.66
2312.50	5 (DD)	QPSK	H	119	321	1 / 24	9.51	10.31	19.82	**0.096**	23.98	-4.16
2312.50	5 (DD + WCP)	QPSK	H	124	306	1 / 49	7.32	10.31	17.63	**0.058**	23.98	-6.35

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	107	288	1 / 0	11.95	9.43	21.38	0.137	33.01	-11.63
2535.00	5	QPSK	H	109	316	1 / 14	12.19	9.39	21.58	0.144	33.01	-11.43
2567.50	5	QPSK	H	121	9	1 / 14	12.17	9.45	**21.62**	0.145	33.01	-11.39
2567.50	5	16-QAM	H	121	9	1 / 14	11.07	9.45	**20.52**	0.113	33.01	-12.49
2567.50	5	64-QAM	H	121	9	1 / 14	10.10	9.45	**19.55**	0.090	33.01	-13.46
2505.00	10	QPSK	H	105	277	1 / 0	12.03	9.43	**21.46**	0.140	33.01	-11.55
2535.00	10	QPSK	H	101	318	1 / 49	12.00	9.39	21.39	0.138	33.01	-11.62
2565.00	10	QPSK	H	118	317	1 / 49	11.84	9.44	21.28	0.134	33.01	-11.73
2505.00	10	16-QAM	H	105	277	1 / 0	10.93	9.43	**20.36**	0.109	33.01	-12.65
2505.00	10	64-QAM	H	105	277	1 / 0	9.96	9.43	**19.39**	0.087	33.01	-13.62
2507.50	15	QPSK	H	102	310	1 / 0	12.25	9.42	**21.67**	**0.147**	33.01	-11.34
2535.00	15	QPSK	H	100	323	1 / 74	11.91	9.39	21.30	0.135	33.01	-11.71
2562.50	15	QPSK	H	116	322	1 / 74	11.81	9.43	21.24	0.133	33.01	-11.77
2507.50	15	16-QAM	H	102	310	1 / 0	11.15	9.42	**20.57**	0.114	33.01	-12.44
2507.50	15	64-QAM	H	102	310	1 / 0	10.18	9.42	**19.60**	0.091	33.01	-13.41
2510.00	20	QPSK	H	102	310	1 / 0	12.14	9.42	21.56	0.143	33.01	-11.45
2535.00	20	QPSK	H	100	323	1 / 99	12.23	9.39	**21.62**	0.145	33.01	-11.39
2560.00	20	QPSK	H	116	322	1 / 99	11.99	9.42	21.41	0.138	33.01	-11.60
2535.00	20	16-QAM	H	100	323	1 / 99	11.03	9.39	**20.42**	0.110	33.01	-12.59
2560.00	20	64-QAM	H	116	322	1 / 99	9.79	9.42	**19.21**	0.083	33.01	-13.80
2507.50	20	QPSK	V	105	338	1 / 0	10.04	9.39	19.43	0.088	33.01	-13.58
2507.50	20 (WCP)	QPSK	H	117	319	1 / 0	12.19	9.39	21.58	0.144	33.01	-11.43
2507.50	20 (DD)	QPSK	H	124	315	1 / 0	13.83	9.39	23.22	**0.210**	33.01	-9.79
2507.50	20 (DD + WCP)	QPSK	H	149	311	1 / 0	12.00	9.39	21.39	**0.138**	33.01	-11.62

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	H	126	25	1 / 0	14.40	9.43	23.83	0.242	33.01	-9.18
2593.00	5	QPSK	H	156	299	1 / 0	14.31	9.55	23.86	0.243	33.01	-9.15
2687.50	5	QPSK	H	132	301	1 / 24	14.14	9.82	**23.96**	0.249	33.01	-9.05
2687.50	5	16-QAM	H	132	301	1 / 24	12.82	9.82	**22.64**	0.184	33.01	-10.37
2687.50	5	64-QAM	H	132	301	1 / 24	11.27	9.82	**21.09**	0.129	33.01	-11.92
2501.00	10	QPSK	H	140	9	1 / 0	14.28	9.43	23.71	0.235	33.01	-9.30
2593.00	10	QPSK	H	130	298	1 / 0	14.27	9.55	23.82	0.241	33.01	-9.19
2685.00	10	QPSK	H	111	311	1 / 49	14.09	9.82	**23.91**	0.246	33.01	-9.10
2685.00	10	16-QAM	H	111	311	1 / 49	12.91	9.82	**22.73**	0.187	33.01	-10.28
2685.00	10	64-QAM	H	111	311	1 / 49	11.60	9.82	**21.42**	0.139	33.01	-11.59
2503.50	15	QPSK	H	120	21	1 / 0	14.54	9.43	23.97	0.249	33.01	-9.04
2593.00	15	QPSK	H	136	305	1 / 0	14.45	9.55	24.00	0.251	33.01	-9.01
2682.50	15	QPSK	H	104	317	1 / 74	14.19	9.83	**24.02**	0.252	33.01	-8.99
2682.50	15	16-QAM	H	104	317	1 / 74	12.74	9.83	**22.57**	0.181	33.01	-10.44
2682.50	15	64-QAM	H	104	317	1 / 74	11.82	9.83	**21.65**	0.146	33.01	-11.36
2506.00	20	QPSK	H	123	17	1 / 0	13.08	9.42	22.50	0.178	33.01	-10.51
2593.00	20	QPSK	H	124	323	1 / 0	14.54	9.55	**24.09**	**0.257**	33.01	-8.92
2680.00	20	QPSK	H	108	315	1 / 99	13.56	9.83	23.39	0.219	33.01	-9.62
2593.00	20	16-QAM	H	124	323	1 / 0	13.88	9.55	**23.43**	0.220	33.01	-9.58
2593.00	20	64-QAM	H	124	323	1 / 0	12.12	9.55	**21.67**	0.147	33.01	-11.34
2593.00	20	QPSK	V	400	15	1 / 0	12.25	9.55	21.80	0.151	33.01	-11.21
2593.00	20 (WCP)	QPSK	H	117	322	1 / 0	14.17	9.55	23.72	0.236	33.01	-9.29
2593.00	20 (DD)	QPSK	H	136	210	1 / 0	13.92	9.55	23.47	**0.223**	33.01	-9.54
2593.00	20 (WCP + DD)	QPSK	H	140	244	1 / 0	13.46	9.55	23.01	**0.200**	33.01	-10.00

Table 7-11. EIRP Data (Band 41 – PC2)

7.3 Radiated Spurious Emissions Measurements

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 v03r01 – 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.

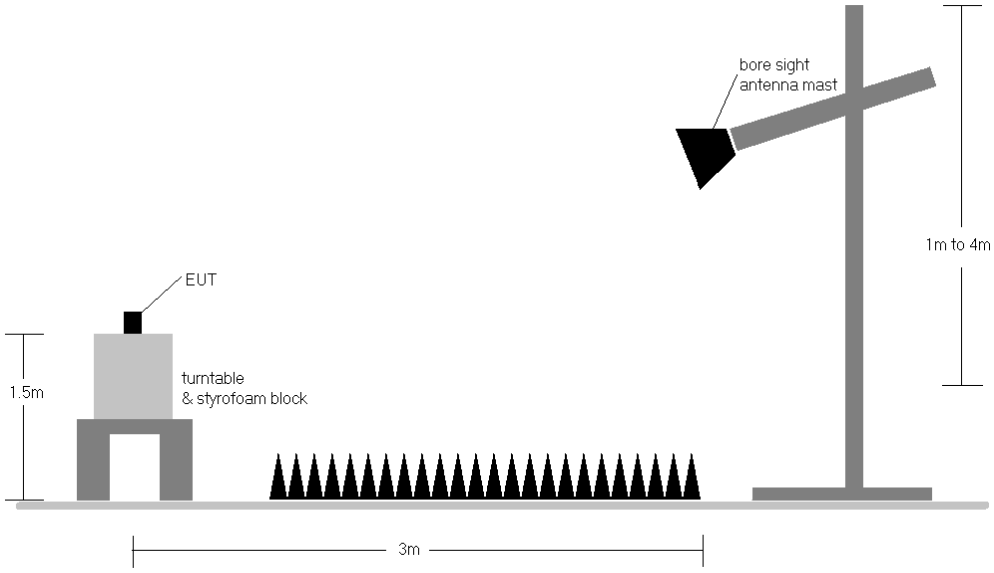


Figure 7-3. Test Instrument & Measurement Setup

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.

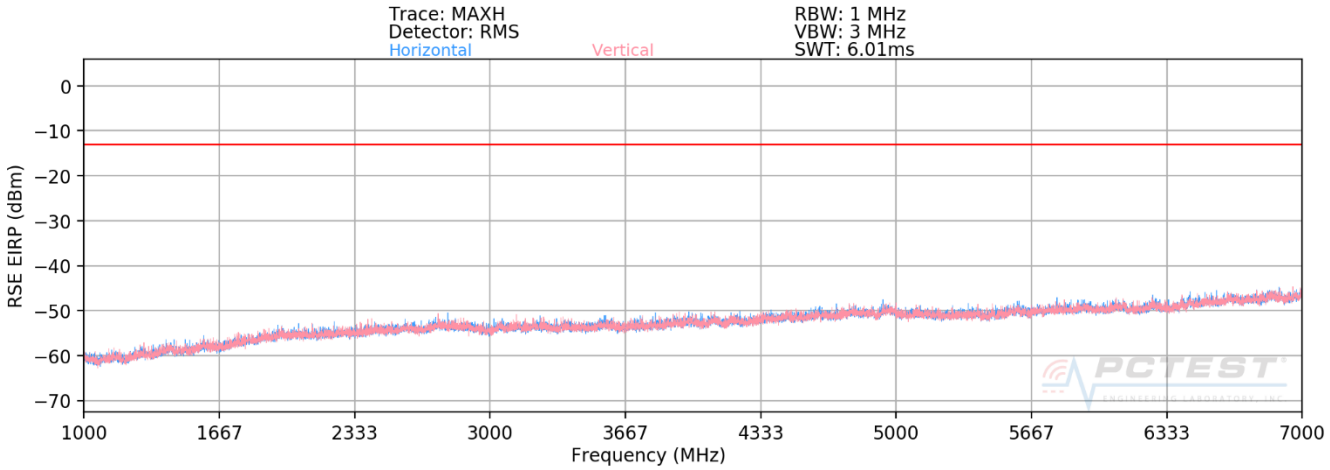
2) This unit was tested with its standard battery.

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
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	V	398	6	-73.00	7.47	-65.53	-52.5
2019.00	V	-	-	-72.23	8.68	-63.55	-50.5
2692.00	V	-	-	-72.37	9.99	-62.38	-49.4

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

OPERATING FREQUENCY:	680.50	MHz
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	V	400	77	-72.54	7.48	-65.05	-52.1
2041.50	V	-	-	-72.06	8.76	-63.30	-50.3
2722.00	V	-	-	-71.93	10.08	-61.85	-48.8

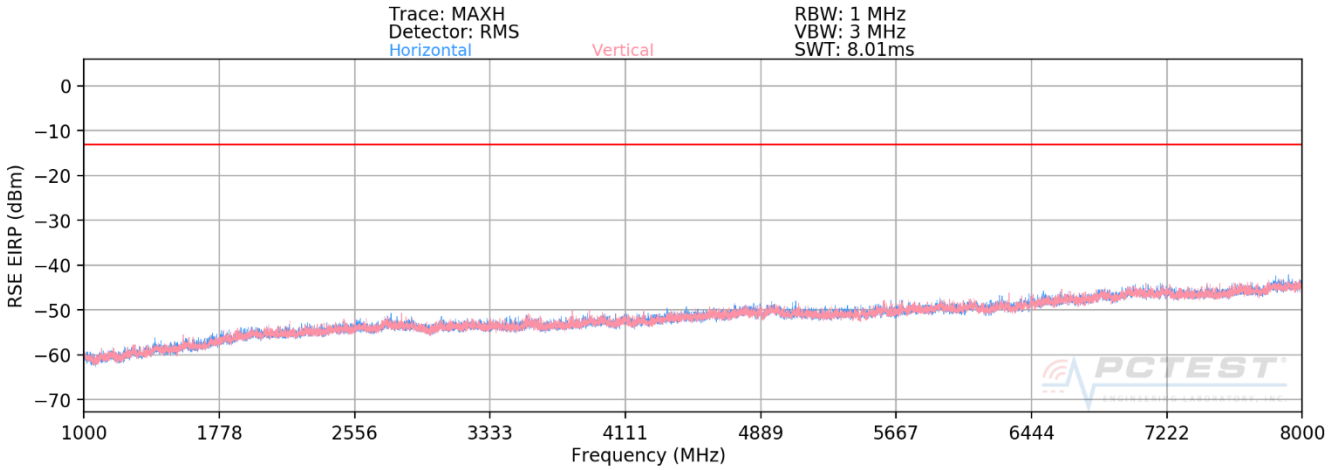
Table 7-13. Radiated Spurious Data (Band 71 – Mid Channel)

OPERATING FREQUENCY:	688.00	MHz
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	V	395	102	-73.68	7.46	-66.22	-53.2
2064.00	V	-	-	-72.75	8.80	-63.94	-50.9
2752.00	V	-	-	-72.06	10.17	-61.89	-48.9

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

Band 12/17



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

OPERATING FREQUENCY:	704.00	MHz
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	V	-	-	-73.25	7.54	-65.71	-52.7
2112.00	V	-	-	-72.42	8.85	-63.57	-50.6

Table 7-15. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
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	V	-	-	-73.28	7.63	-65.65	-52.6
2122.50	V	-	-	-72.18	8.86	-63.32	-50.3

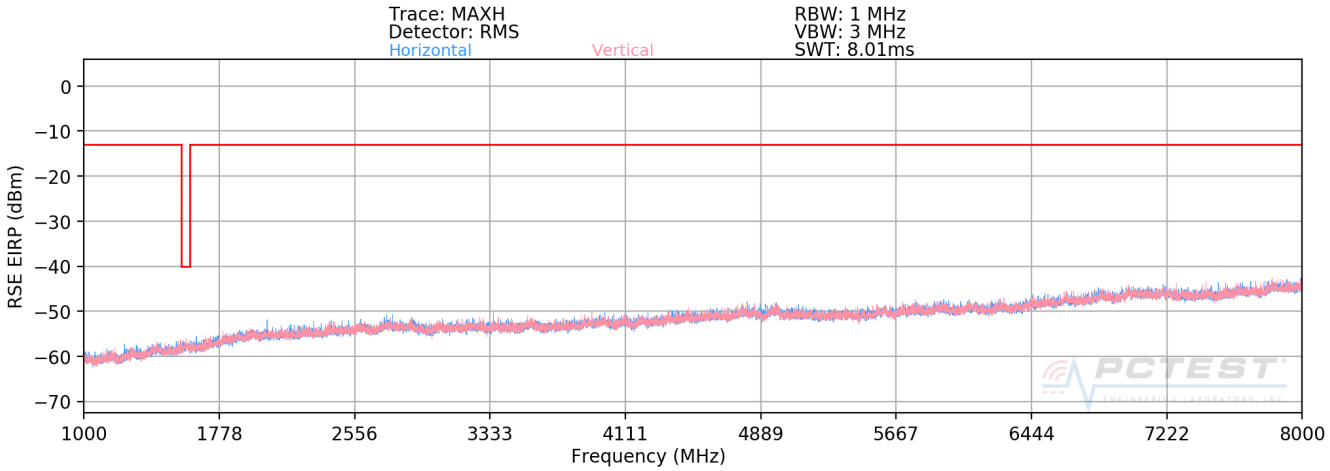
Table 7-16. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
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	V	-	-	-73.97	7.72	-66.25	-53.2
2133.00	V	-	-	-72.61	8.87	-63.74	-50.7

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

Band 13



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

OPERATING FREQUENCY:	782.00	MHz
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	133	131	-69.45	9.43	-60.02	-47.0
3128.00	H	-	-	-69.19	9.34	-59.84	-46.8
3910.00	H	-	-	-67.60	9.37	-58.23	-45.2

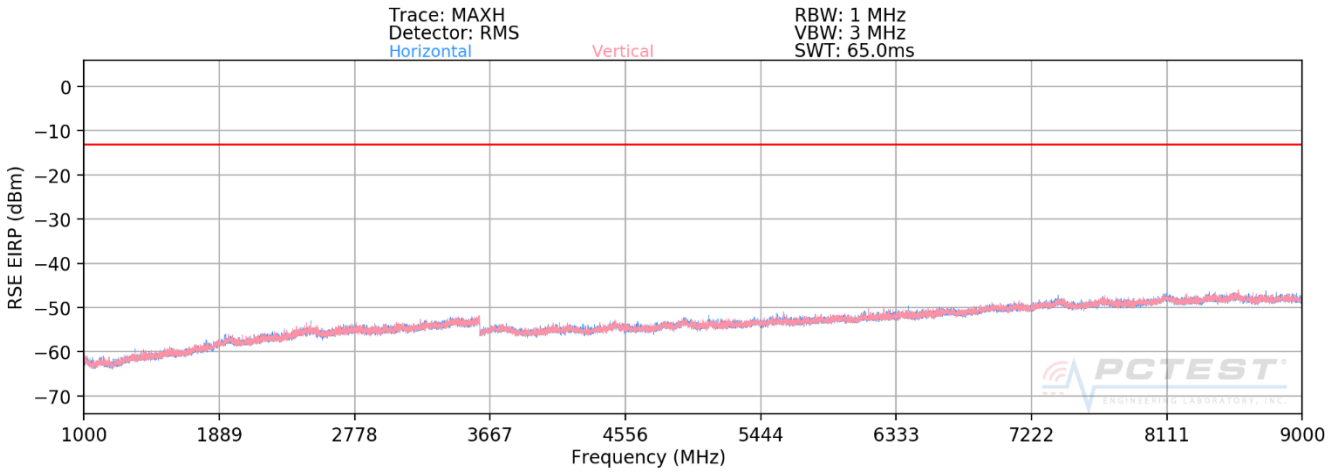
Table 7-18. Radiated Spurious Data (Band 13 – Mid Channel)

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	126	265	-73.10	8.53	-64.57	-24.6

Table 7-19. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

Band 26/5



Plot 7-4. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY:	831.50	MHz
MODULATION SIGNAL:	QPSK	
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]
1663.00	H	174	220	-73.82	3.61	-70.20	-57.2
2494.50	H	113	48	-52.86	4.26	-48.60	-35.6
3326.00	H	-	-	-70.72	5.86	-64.86	-51.9

Table 7-20. Radiated Spurious Data (Band 26/5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
MODULATION SIGNAL:	QPSK	
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]
1673.00	H	151	227	-73.81	3.62	-70.20	-57.2
2509.50	H	115	42	-50.70	4.33	-46.36	-33.4
3346.00	H	-	-	-70.05	5.92	-64.13	-51.1

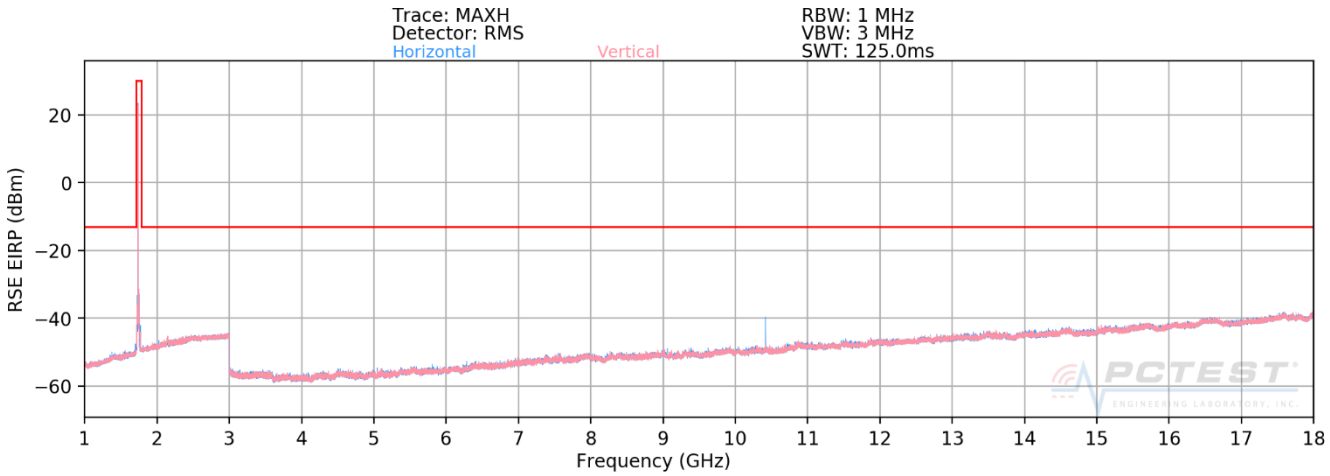
Table 7-21. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	841.50	MHz
MODULATION SIGNAL:	QPSK	
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]
1683.00	H	151	142	-72.98	3.62	-69.36	-56.4
2524.50	H	116	52	-51.69	4.42	-47.26	-34.3
3366.00	H	-	-	-70.15	6.00	-64.14	-51.1

Table 7-22. Radiated Spurious Data (Band 26/5 – High Channel)

Band 66/4



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

OPERATING FREQUENCY:	1720.00	MHz
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]
3440.00	H	133	8	-30.52	6.22	-24.30	-11.3
5160.00	H	392	324	-45.42	8.68	-36.74	-23.7
6880.00	H	328	352	-46.93	8.76	-38.17	-25.2
8600.00	H	298	3	-49.50	9.17	-40.33	-27.3
10320.00	H	168	333	-59.45	9.64	-49.81	-36.8
12040.00	H	314	354	-55.31	9.23	-46.07	-33.1
13760.00	H	-	-	-58.72	9.01	-49.72	-36.7

Table 7-23. Radiated Spurious Data (Band 66/4 – Low Channel)

OPERATING FREQUENCY:	1745.00	MHz
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]
3490.00	H	132	340	-36.79	6.32	-30.47	-17.5
5235.00	H	135	246	-54.73	8.71	-46.01	-33.0
6980.00	H	397	353	-50.04	8.74	-41.31	-28.3
8725.00	H	317	356	-51.91	9.42	-42.50	-29.5
10470.00	H	112	342	-58.59	9.62	-48.97	-36.0
12215.00	H	304	354	-57.14	9.09	-48.05	-35.1
13960.00	H	-	-	-59.75	8.90	-50.84	-37.8

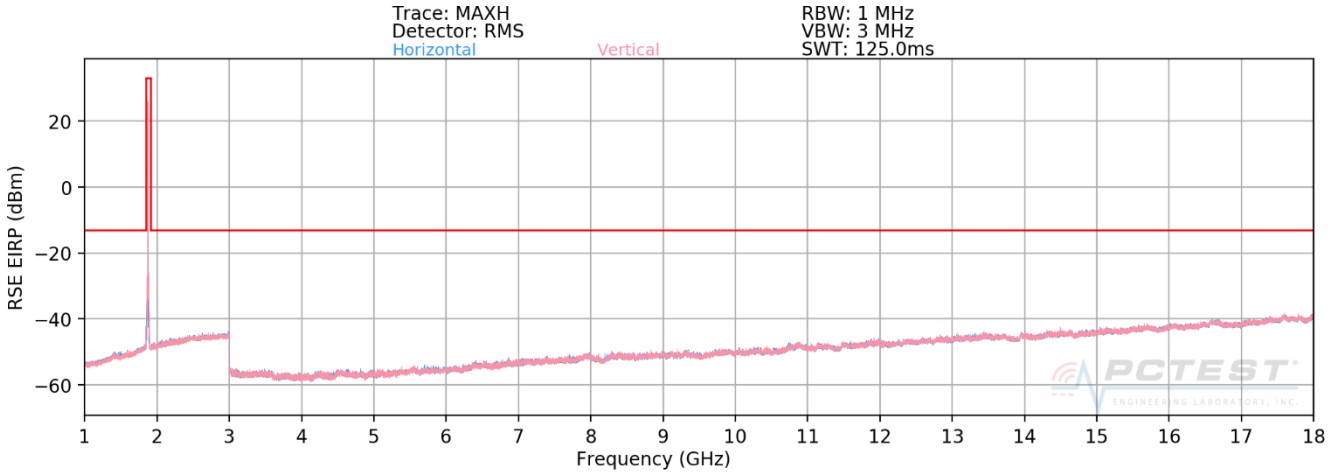
Table 7-24. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY:	1770.00	MHz
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]
3540.00	H	173	335	-39.88	6.31	-33.58	-20.6
5310.00	H	339	321	-59.14	8.74	-50.40	-37.4
7080.00	H	113	37	-56.15	8.66	-47.49	-34.5
8850.00	H	337	359	-55.35	9.53	-45.82	-32.8
10620.00	H	113	10	-58.48	9.50	-48.97	-36.0
12390.00	H	400	82	-59.66	9.12	-50.53	-37.5
14160.00	H	-	-	-59.08	8.85	-50.23	-37.2

Table 7-25. Radiated Spurious Data (Band 66/4 – High Channel)

Band 25/2



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

OPERATING FREQUENCY:	1860.00	MHz
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]
3720.00	V	285	348	-56.70	6.58	-50.12	-37.1
5580.00	V	-	-	-68.02	8.74	-59.29	-46.3
7440.00	V	-	-	-64.87	8.41	-56.46	-43.5

Table 7-26. Radiated Spurious Data (Band 25/2 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz
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]
3765.00	V	294	331	-59.14	6.70	-52.44	-39.4
5647.50	V	-	-	-68.18	8.83	-59.36	-46.4

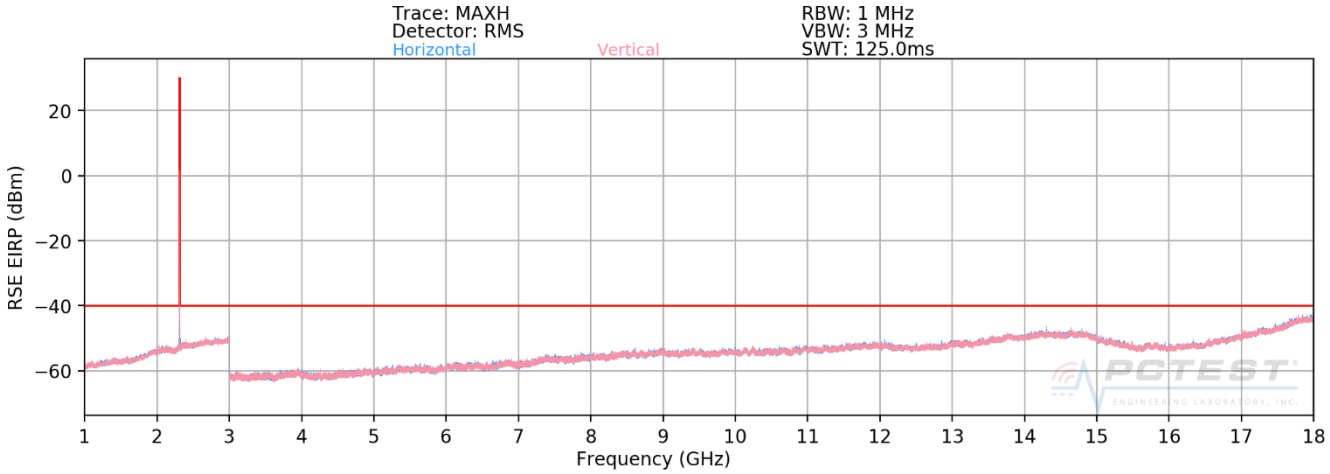
Table 7-27. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	1905.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

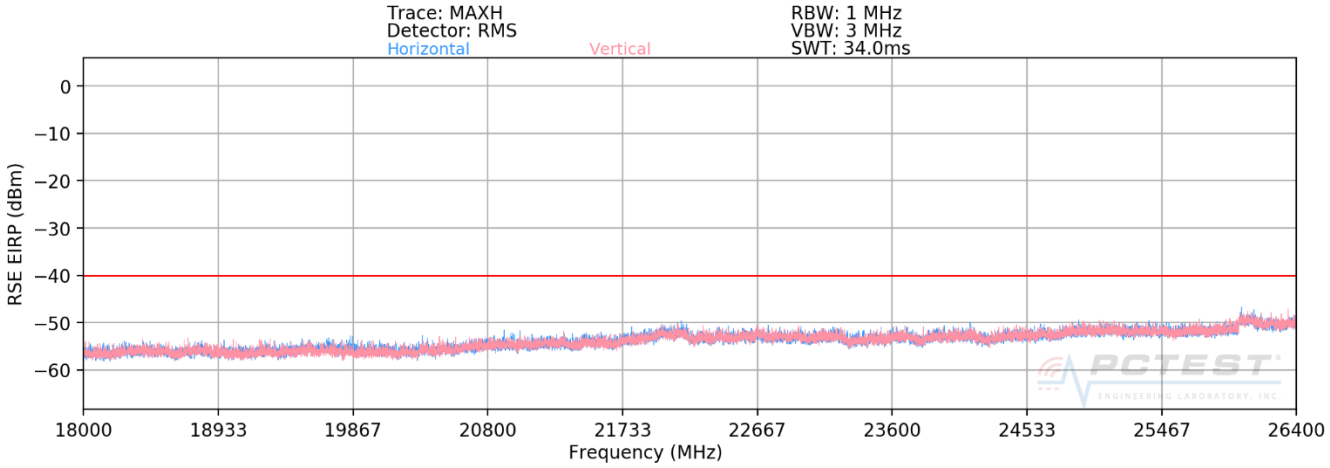
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	V	305	328	-61.84	6.94	-54.90	-41.9
5715.00	V	-	-	-68.26	8.77	-59.50	-46.5

Table 7-28. Radiated Spurious Data (Band 25/2 – High Channel)

Band 30



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



Plot 7-8. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30)

OPERATING FREQUENCY:	2310.00	MHz
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	321	20	-71.37	8.26	-63.11	-23.1
6930.00	H	311	112	-68.23	8.72	-59.51	-19.5
9240.00	H	-	-	-67.03	9.49	-57.54	-17.5

Table 7-29. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY:	2310.00	MHz
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	-	-	-71.35	8.26	-63.09	-23.1
6930.00	H	-	-	-68.34	8.72	-59.62	-19.6

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

OPERATING FREQUENCY:	2310.00	MHz
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	-	-	-66.95	8.26	-58.69	-18.7
6930.00	H	-	-	-62.98	8.72	-54.26	-14.3

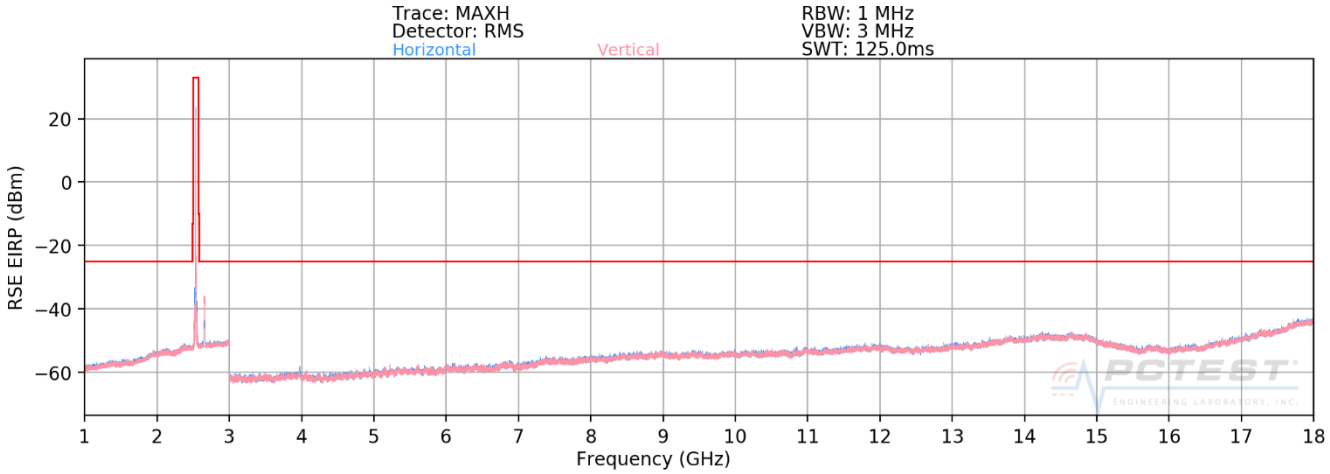
Table 7-31. Radiated Spurious Data with Dual Display (Band 30 – Mid Channel)

OPERATING FREQUENCY:	2310.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

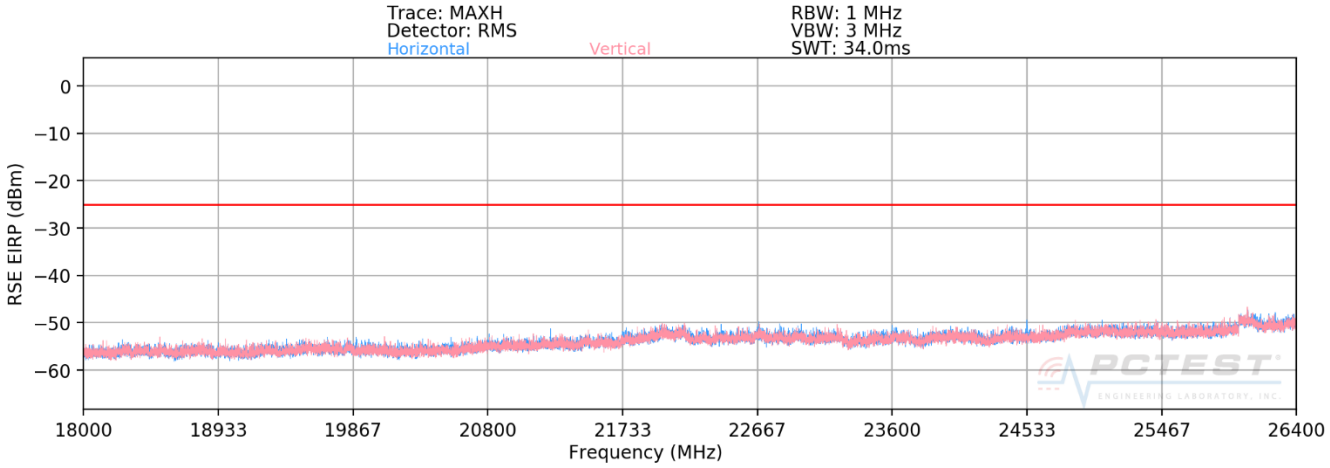
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	-	-	-66.69	8.26	-58.43	-18.4
6930.00	H	-	-	-62.43	8.72	-53.71	-13.7

Table 7-32. Radiated Spurious Data with Dual Display and WCP (Band 30 – Mid Channel)

Band 7



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



Plot 7-10. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7)

OPERATING FREQUENCY:	2510.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5020.00	H	245	39	-70.79	8.56	-62.22	-37.2
7530.00	H	-	-	-67.73	8.46	-59.28	-34.3

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

OPERATING FREQUENCY:	2535.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	138	142	-71.24	8.60	-62.64	-37.6
7605.00	H	-	-	-66.98	8.48	-58.50	-33.5

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

OPERATING FREQUENCY:	2560.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5120.00	H	245	343	-70.77	8.66	-62.11	-37.1
7680.00	H	-	-	-67.53	8.58	-58.95	-33.9

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

OPERATING FREQUENCY:	2535.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	123	315	-70.52	8.60	-61.92	-36.9
7605.00	H	-	-	-66.00	8.48	-57.52	-32.5

Table 7-36. Radiated Spurious Data with WCP (Band 7 – High Channel)

OPERATING FREQUENCY:	2535.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	119	231	-66.67	8.89	-57.78	-32.8
7605.00	H	-	-	-60.51	9.25	-51.26	-26.3

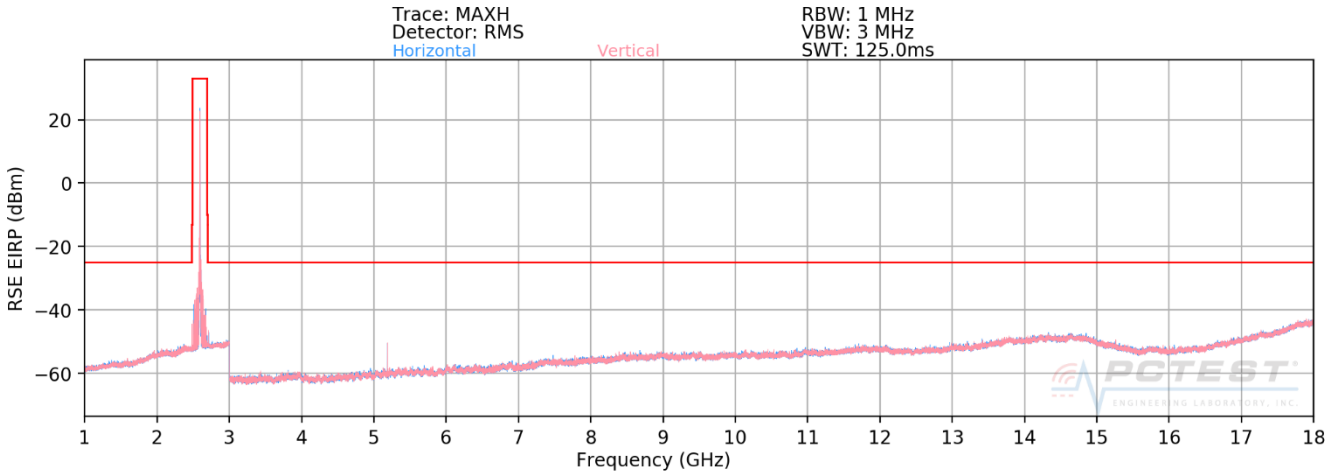
Table 7-37. Radiated Spurious Data with Dual Display (Band 7 – High Channel)

OPERATING FREQUENCY:	2535.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

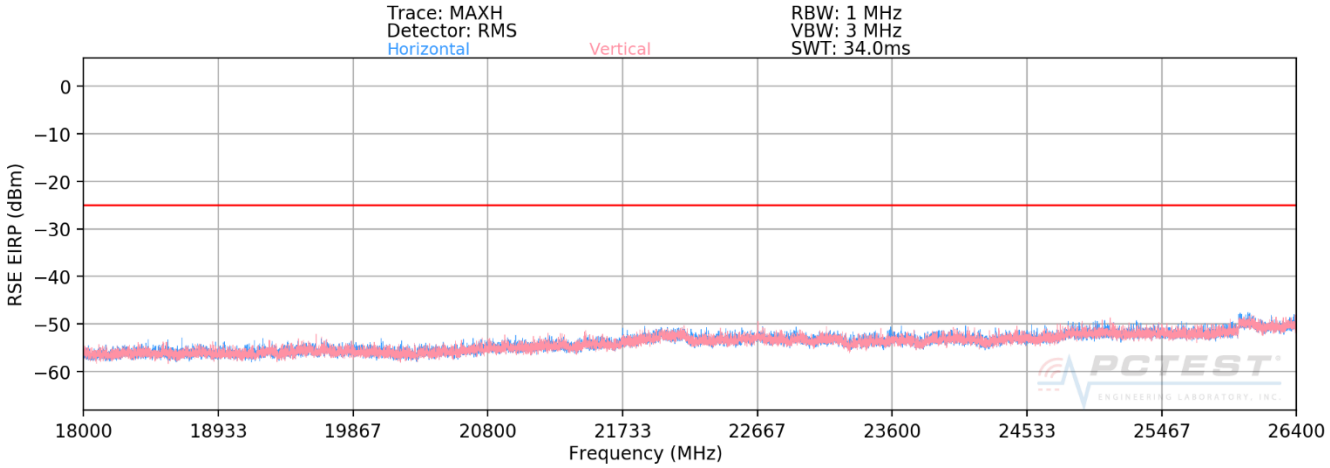
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	120	305	-65.37	8.89	-56.48	-31.5
7605.00	H	-	-	-60.08	9.25	-50.83	-25.8

Table 7-38. Radiated Spurious Data with Dual Display WCP (Band 7 – High Channel)

Band 41 (PC2)



Plot 7-11. Radiated Spurious Plot 1GHz - 18GHz (Band 41 (PC2))



Plot 7-12. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 (PC2))

OPERATING FREQUENCY:	2510.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5020.00	H	225	30	-66.06	8.56	-57.49	-32.5
7530.00	H	146	326	-62.10	8.46	-53.65	-28.6
10040.00	H	-	-	-64.49	9.85	-54.64	-29.6

Table 7-39. Radiated Spurious Data (Band 41 (PC2) – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	H	206	341	-65.64	8.70	-56.94	-31.9
7779.00	H	171	14	-60.91	8.69	-52.23	-27.2
10372.00	H	-	-	-64.00	9.62	-54.37	-29.4

Table 7-40. Radiated Spurious Data (Band 41 (PC2) – Mid Channel)

OPERATING FREQUENCY:	2680.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5360.00	H	291	0	-65.64	8.70	-56.94	-31.9
8040.00	H	182	61	-63.20	8.95	-54.25	-29.3
10720.00	H	171	302	-62.77	9.32	-53.45	-28.4
13400.00	H	-	-	-60.62	8.77	-51.84	-26.8

Table 7-41. Radiated Spurious Data (Band 41 (PC2) – High Channel)

OPERATING FREQUENCY:	2593.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	H	134	342	-67.90	8.70	-59.20	-34.2
7779.00	H	346	45	-58.56	8.69	-49.88	-24.9
10372.00	H	-	-	-63.75	9.62	-54.12	-29.1

Table 7-42. Radiated Spurious Data with WCP (Band 41 (PC2) – Mid Channel)

OPERATING FREQUENCY:	2593.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	H	100	139	-66.15	8.70	-57.45	-32.4
7779.00	H	101	234	-58.59	8.69	-49.91	-24.9
10372.00	H	-	-	-60.89	9.62	-51.26	-26.3

Table 7-43. Radiated Spurious Data with Dual Display (Band 41 (PC2) – Mid Channel)

OPERATING FREQUENCY:	2593.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	H	134	342	-66.94	8.70	-58.24	-33.2
7779.00	H	346	45	-59.59	8.69	-50.91	-25.9
10372.00	H	-	-	-61.07	9.62	-51.44	-26.4

Table 7-44. Radiated Spurious Data with and Dual Display WCP (Band 41 (PC2) – Mid Channel)

7.4 Uplink Carrier Aggregation Radiated Measurements

§2.1053, §27.53(m)

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. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 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 ≥ 3 x RBW
3. No. of sweep points ≥ 2 x span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

Test Setup

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

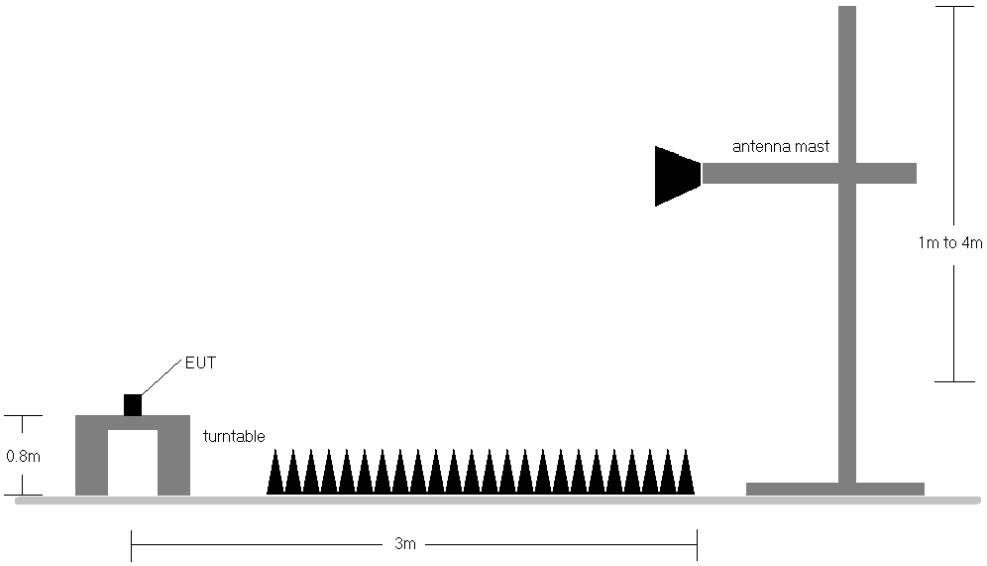


Figure 7-4. Test Instrument & Measurement Setup

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.

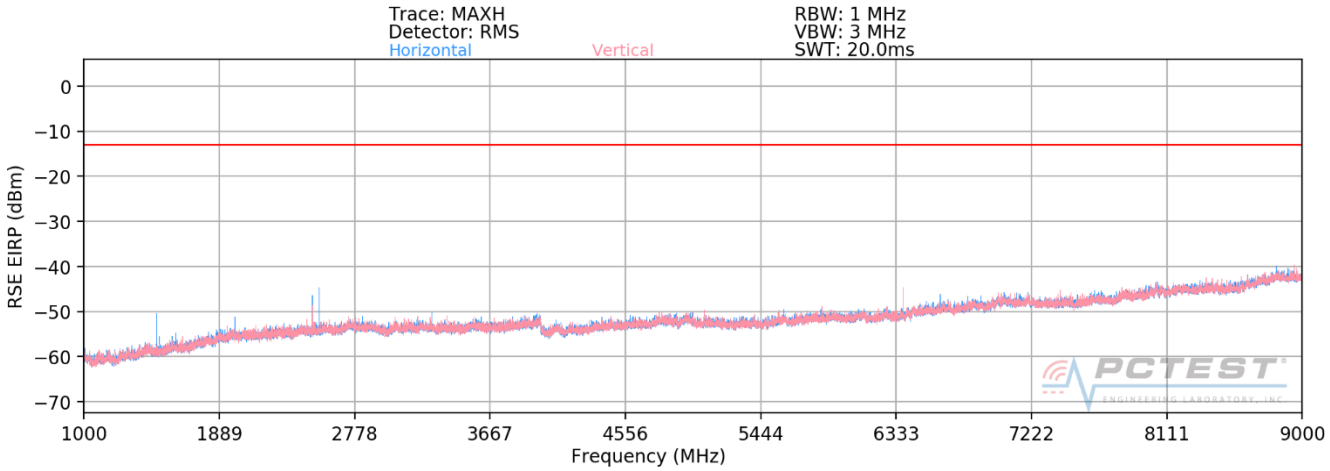
3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.

4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

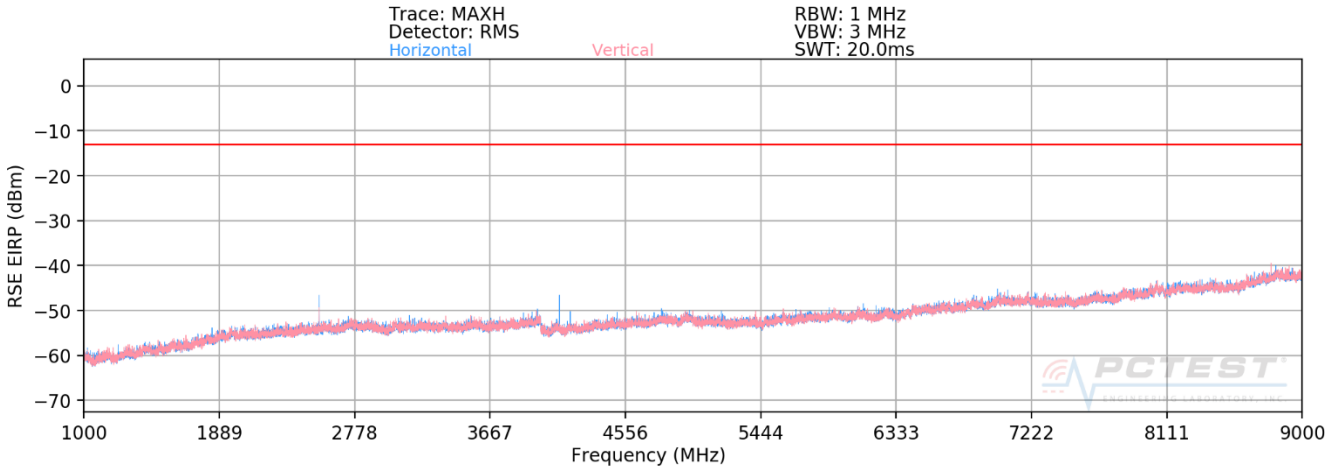
5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

6) No significant emissions were found as a result of two uplink carriers operating contiguously.

ULCA Band 5



Plot 7-13. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Low Channel – PCC/SCC: 1RB)



Plot 7-14. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 High Channel – PCC/SCC: 1RB)

OPERATING FREQUENCY (PCC):	829.00	MHz
OPERATING FREQUENCY (SCC):	838.90	MHz
CHANNEL (PCC):	20450	
CHANNEL (SCC):	20549	
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]
1658.00	V	140	218	-75.80	8.95	-66.85	-66.8
2487.00	V	-	-	-72.96	9.70	-63.26	-63.3

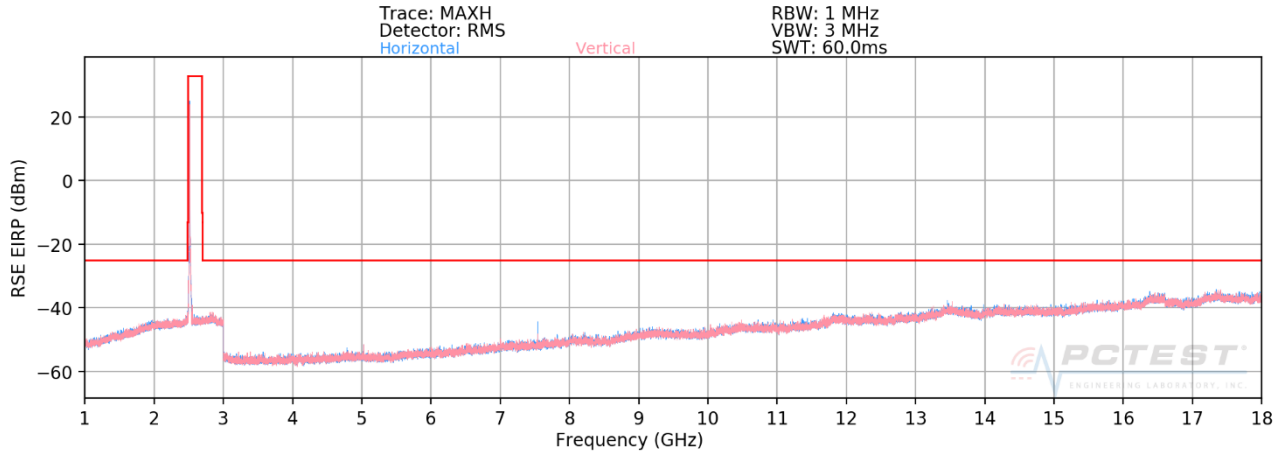
Plot 7-45. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	844.00	MHz
OPERATING FREQUENCY (SCC):	834.10	MHz
CHANNEL (PCC):	20600	
CHANNEL (SCC):	20501	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

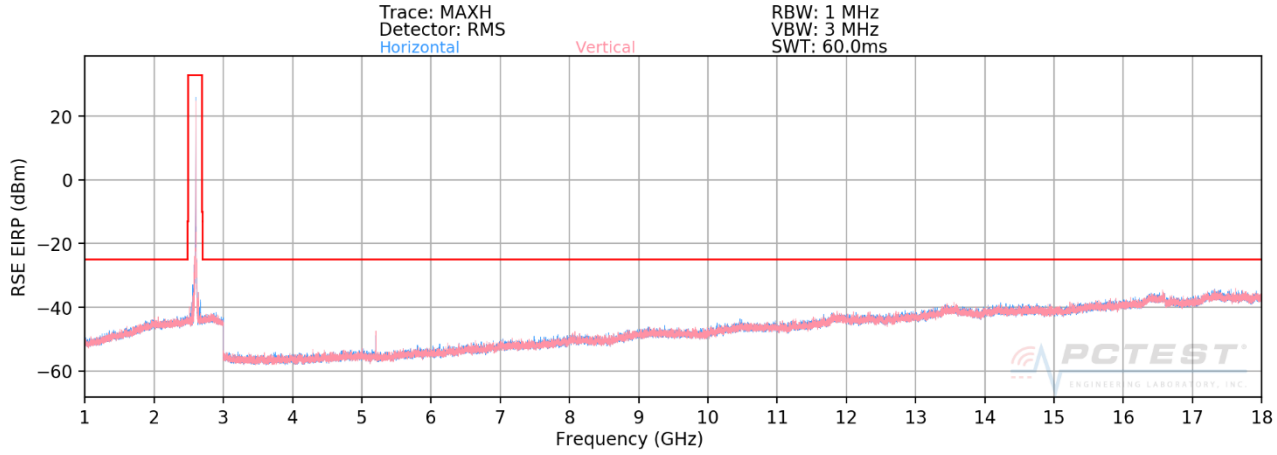
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	-	-	-74.81	8.95	-65.86	-65.9
2532.00	V	-	-	-72.55	9.75	-62.81	-62.8

Plot 7-46. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

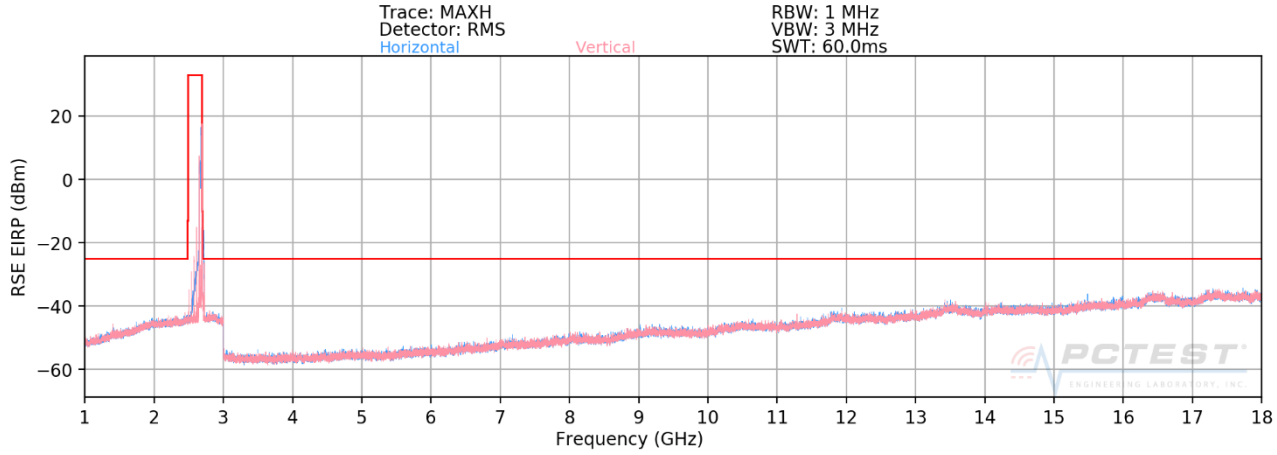
ULCA Band 41 (PC2)



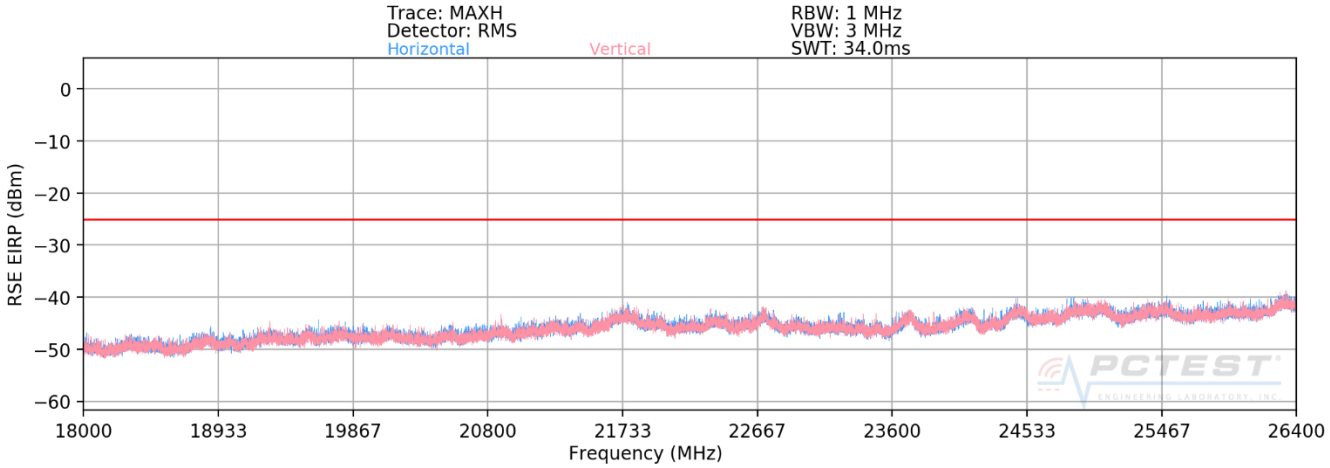
Plot 7-15. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) Low Channel – PCC/SCC: 1RB)



Plot 7-16. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) Mid Channel – PCC/SCC: 1RB)



Plot 7-17. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC2) High Channel – PCC/SCC: 1RB)



Plot 7-18. Radiated Spurious Plot 18GHz – 26.5GHz (ULCA Band 41 (PC2))

OPERATING FREQUENCY (PCC):	2506.00	MHz
OPERATING FREQUENCY (SCC):	2525.80	MHz
CHANNEL (PCC):	39750	
CHANNEL (SCC):	39948	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5012.00	H	117	160	-68.30	10.90	-57.39	-57.4
7518.00	H	113	173	-64.00	11.11	-52.90	-52.9
10024.00	H	-	-	-67.39	11.99	-55.39	-55.4

Plot 7-47. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2612.80	MHz
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40818	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	H	136	52	-64.65	10.74	-53.91	-53.9
7779.00	H	141	358	-59.39	11.44	-47.95	-47.9
10372.00	H	246	322	-60.79	12.42	-48.36	-48.4
12965.00	H	234	222	-62.20	13.29	-48.90	-48.9
15558.00	H	-	-	-71.03	16.33	-54.70	-54.7

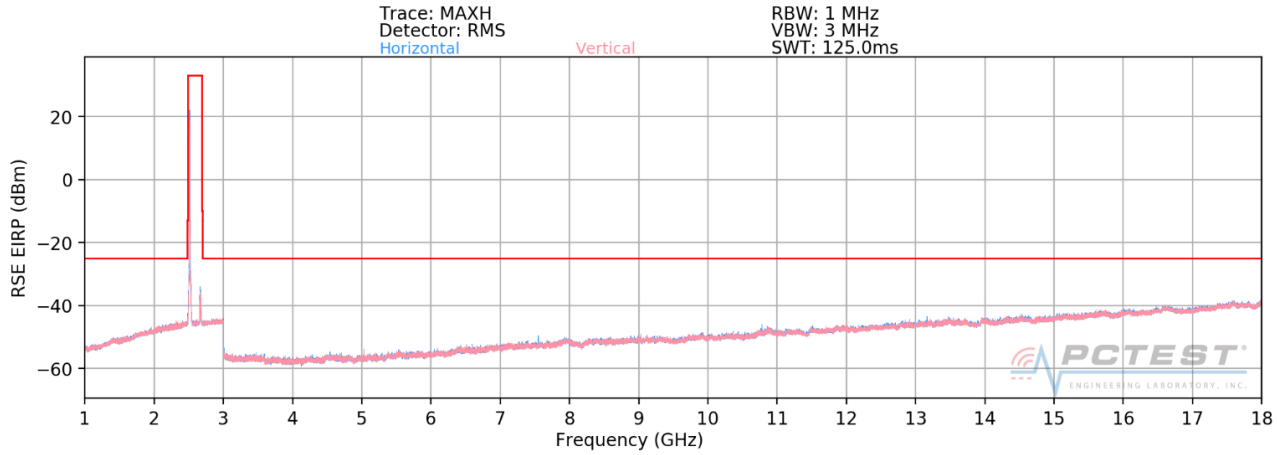
Plot 7-48. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

OPERATING FREQUENCY (PCC):	2680.00	MHz
OPERATING FREQUENCY (SCC):	2660.20	MHz
CHANNEL (PCC):	41490	
CHANNEL (SCC):	41292	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

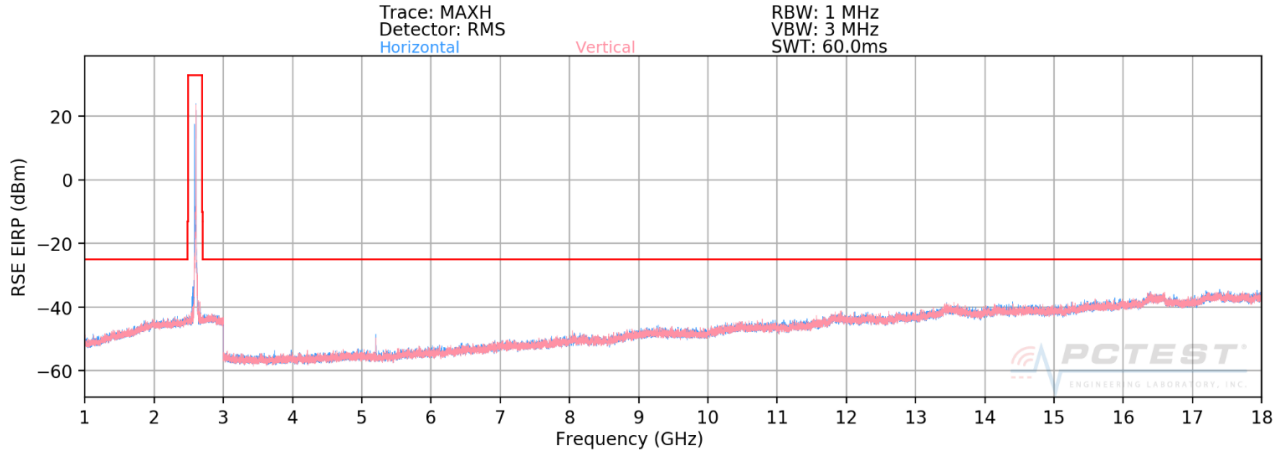
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	140	340	-64.19	10.70	-53.49	-53.5
8040.00	H	-	-	-62.53	11.16	-51.37	-51.4

Plot 7-49. Radiated Spurious Data (ULCA B41 (PC2) PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

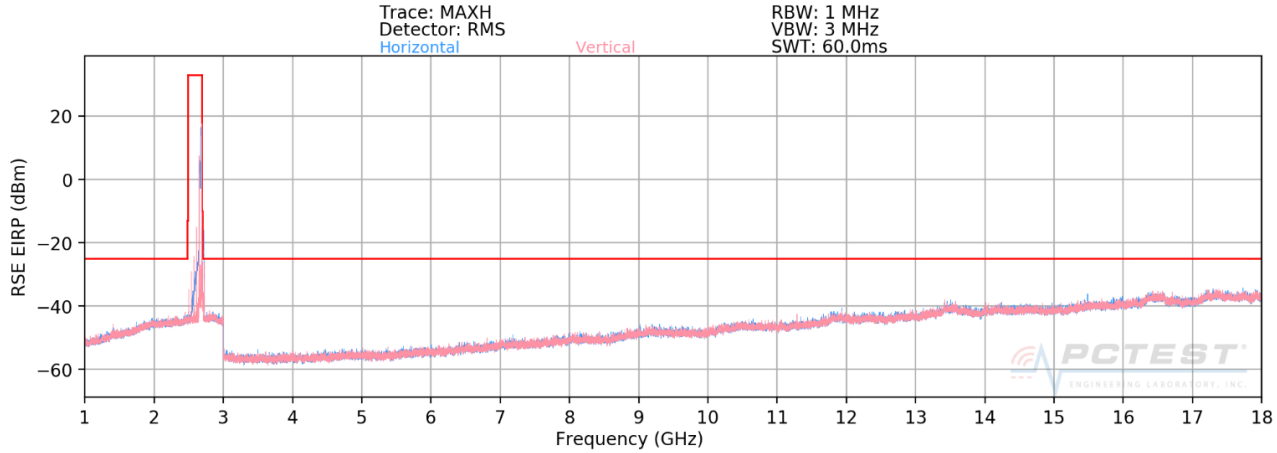
ULCA Band 41 (PC3)



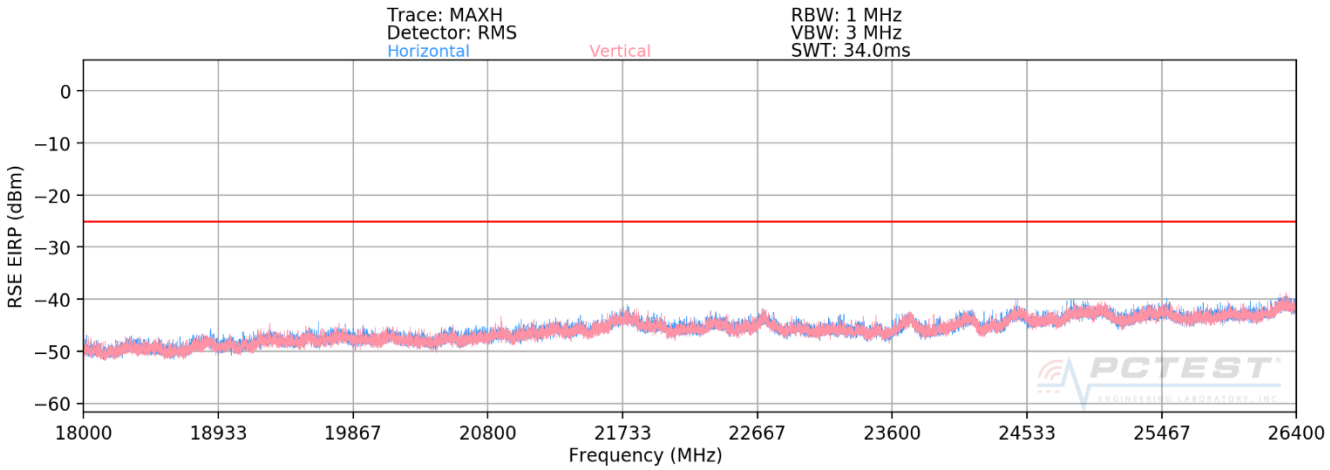
Plot 7-19. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC3) Low Channel – PCC/SCC: 1RB)



Plot 7-20. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC3) Mid Channel – PCC/SCC: 1RB)



Plot 7-21. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 41 (PC3) High Channel – PCC/SCC: 1RB)



Plot 7-22. Radiated Spurious Plot 18GHz – 26.5GHz (ULCA Band 41 (PC3))

OPERATING FREQUENCY (PCC):	2506.00	MHz
OPERATING FREQUENCY (SCC):	2525.80	MHz
CHANNEL (PCC):	39750	
CHANNEL (SCC):	39948	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5012.00	H	278	283	-67.74	10.90	-56.84	-56.8
7518.00	H	278	285	-60.93	11.11	-49.82	-49.8
10024.00	H	116	154	-66.17	11.99	-54.17	-54.2
12530.00	H	116	154	-66.15	13.56	-52.59	-52.6
15036.00	H	117	142	-63.75	13.51	-50.24	-50.2
17542.00	H	-	-	-57.67	11.69	-45.98	-46.0

Plot 7-50. Radiated Spurious Data (ULCA B41 (PC3) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2612.80	MHz
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40818	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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	H	131	155	-66.80	10.74	-56.06	-56.1
7779.00	H	131	170	-62.15	11.44	-50.71	-50.7
10372.00	H	153	321	-66.73	12.42	-54.31	-54.3
12965.00	H	151	309	-65.42	13.29	-52.13	-52.1
15558.00	H	-	-	-68.98	16.33	-52.65	-52.7

Plot 7-51. Radiated Spurious Data (ULCA B41 (PC3) PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

OPERATING FREQUENCY (PCC):	2680.00	MHz
OPERATING FREQUENCY (SCC):	2660.20	MHz
CHANNEL (PCC):	41490	
CHANNEL (SCC):	41292	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	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]
5360.00	H	226	212	-66.01	10.70	-55.31	-55.3
8040.00	H	216	199	-56.50	11.16	-45.34	-45.3
10720.00	H	221	214	-66.85	12.59	-54.26	-54.3
13400.00	H	230	229	-63.45	12.59	-50.86	-50.9
16080.00	H	-	-	-69.39	16.68	-52.72	-52.7

Plot 7-52. Radiated Spurious Data (ULCA B41 (PC3) PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – High Channel)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG850UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.