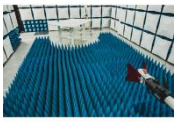
PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



MEASUREMENT REPORT
LTE

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

Date of Testing:
7/25/2018 - 8/8/2018
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1808070153-03-R2.ZNF

FCC ID:	**ZNFV405UA**
APPLICANT:	**LG Electronics USA, Inc.**

Application Type:	Class II Permissive Change
Model:	LM-V405UA
Additional Model(s):	LMV405UA, LM-V405TA, LMV405TA, LM-V405MA, LMV405MA, LM-V405QA, LMV405QA, LM-V405QA5, LMV405QA5, LM-V405QA6, LMV405QA6, LM-V405UAB, LMV405UAB, LM-V405UAL, LMV405UAL
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

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: 1M1808070153-03-R2.ZNF) supersedes and replaces the previously issued test report (S/N: 1M1808070153-03-R1.ZNF) 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

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez
President

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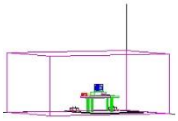
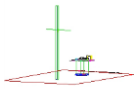


MEASUREMENT REPORT
FCC Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)		
LTE Band 71	27	665.5 - 695.5	0.050	17.03			4M55G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.040	16.06			4M51W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.031	14.93			4M53W7D	64QAM
LTE Band 71	27	668 - 693	0.056	17.46			9M01G7D	QPSK
LTE Band 71	27	668 - 693	0.041	16.09			9M01W7D	16QAM
LTE Band 71	27	668 - 693	0.031	14.95			9M00W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.045	16.49			13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.031	14.95			13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.022	13.47			13M5W7D	64QAM
LTE Band 71	27	673 - 688	0.046	16.62			18M0G7D	QPSK
LTE Band 71	27	673 - 688	0.035	15.49			18M0W7D	16QAM
LTE Band 71	27	673 - 688	0.028	14.41			17M9W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.064	18.03	0.104	20.18	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.039	15.95	0.065	18.10	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.028	14.49	0.046	16.64	1M10W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.064	18.06	0.105	20.21	2M72G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.046	16.61	0.075	18.76	2M72W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.036	15.54	0.059	17.69	2M72W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.060	17.77	0.098	19.92	4M52G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.048	16.78	0.078	18.93	4M52W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.040	15.97	0.065	18.12	4M52W7D	64QAM
LTE Band 12/17	27	704 - 711	0.059	17.68	0.096	19.83	9M01G7D	QPSK
LTE Band 12/17	27	704 - 711	0.049	16.89	0.080	19.04	9M02W7D	16QAM
LTE Band 12/17	27	704 - 711	0.040	16.00	0.065	18.15	9M01W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.052	17.15	0.085	19.30	4M53G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.037	15.65	0.060	17.80	4M52W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.030	14.77	0.049	16.92	4M52W7D	64QAM
LTE Band 13	27	782	0.041	16.18	0.068	18.33	9M00G7D	QPSK
LTE Band 13	27	782	0.030	14.83	0.050	16.98	8M97W7D	16QAM
LTE Band 13	27	782	0.023	13.55	0.037	15.70	9M01W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.063	17.98	0.103	20.13	1M09G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.044	16.46	0.073	18.61	1M09W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.034	15.37	0.056	17.52	1M09W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.066	18.17	0.108	20.32	2M71G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.046	16.63	0.076	18.78	2M71W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.035	15.48	0.058	17.63	2M72W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.067	18.24	0.109	20.39	4M58G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.046	16.61	0.075	18.76	4M52W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.034	15.35	0.056	17.50	4M55W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.064	18.04	0.104	20.19	9M02G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.045	16.54	0.074	18.69	9M02W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.037	15.71	0.061	17.86	9M02W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.065	18.14	0.107	20.29	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.046	16.63	0.076	18.78	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.035	15.47	0.058	17.62	13M5W7D	64QAM

EUT Overview (<1GHz)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 66/4	27	1710.7 - 1779.3	0.246	23.90	1M09G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.207	23.15	1M10W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.159	22.00	1M09W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.261	24.16	2M72G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.215	23.33	2M73W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.165	22.18	2M72W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.278	24.44	4M56G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.230	23.62	4M51W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.182	22.60	4M53W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.250	23.98	9M01G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.207	23.16	9M01W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.165	22.17	9M03W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.260	24.15	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.220	23.42	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.170	22.31	13M5W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.252	24.02	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.211	23.25	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.167	22.23	18M0W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.149	21.74	1M09G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.154	21.87	1M10W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.121	20.83	1M11W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.153	21.86	2M72G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.164	22.14	2M73W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.125	20.98	2M73W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.157	21.96	4M54G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.141	21.49	4M51W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.111	20.46	4M52W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.180	22.54	9M02G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.150	21.77	9M02W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.115	20.59	9M01W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.193	22.85	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.161	22.08	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.129	21.12	13M5W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.158	21.98	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.164	22.14	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.133	21.23	17M9W7D	64QAM
LTE Band 30	27	2307.5 - 2312.5	0.171	22.34	4M52G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.144	21.58	4M51W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.115	20.62	4M52W7D	64QAM
LTE Band 30	27	2310	0.176	22.45	9M00G7D	QPSK
LTE Band 30	27	2310	0.145	21.63	9M01W7D	16QAM
LTE Band 30	27	2310	0.115	20.62	9M01W7D	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.186	22.69	4M52G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.156	21.94	4M51W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.127	21.03	4M52W7D	64QAM
LTE Band 7	27	2505 - 2565	0.188	22.75	9M00G7D	QPSK
LTE Band 7	27	2505 - 2565	0.160	22.04	9M02W7D	16QAM
LTE Band 7	27	2505 - 2565	0.123	20.90	9M02W7D	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.192	22.83	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.145	21.62	13M5W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.112	20.51	13M5W7D	64QAM
LTE Band 7	27	2510 - 2560	0.181	22.58	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560	0.136	21.35	18M0W7D	16QAM
LTE Band 7	27	2510 - 2560	0.106	20.24	17M9W7D	64QAM
LTE Band 41	27	2498.5 - 2687.5	0.404	26.06	4M54G7D	QPSK
LTE Band 41	27	2498.5 - 2687.5	0.327	25.14	4M49W7D	16QAM
LTE Band 41	27	2498.5 - 2687.5	0.257	24.09	4M51W7D	64QAM
LTE Band 41	27	2501 - 2685	0.455	26.58	9M01G7D	QPSK
LTE Band 41	27	2501 - 2685	0.359	25.55	9M05W7D	16QAM
LTE Band 41	27	2501 - 2685	0.300	24.77	8M98W7D	64QAM
LTE Band 41	27	2503.5 - 2682.5	0.468	26.70	13M5G7D	QPSK
LTE Band 41	27	2503.5 - 2682.5	0.375	25.74	13M6W7D	16QAM
LTE Band 41	27	2503.5 - 2682.5	0.254	24.05	13M4W7D	64QAM
LTE Band 41	27	2506 - 2680	0.431	26.34	17M9G7D	QPSK
LTE Band 41	27	2506 - 2680	0.366	25.63	18M0W7D	16QAM
LTE Band 41	27	2506 - 2680	0.286	24.56	17M9W7D	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 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: ZNFV405UA**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 06507, 06531, 06705, 06515, 06523

2.2 Device Capabilities

This device contains the following capabilities:

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 (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 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.

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

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 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) 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 v03r01) were used in the measurement of the EUT.

3.2 Block C Frequency Range

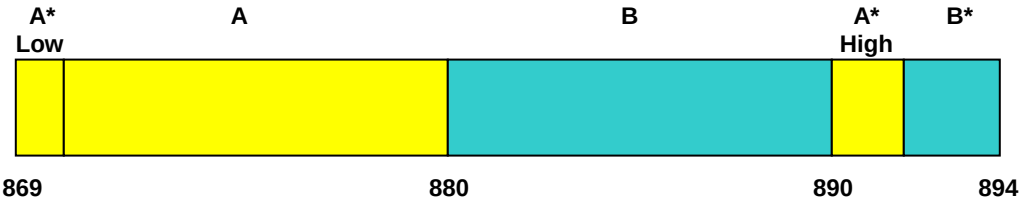
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results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

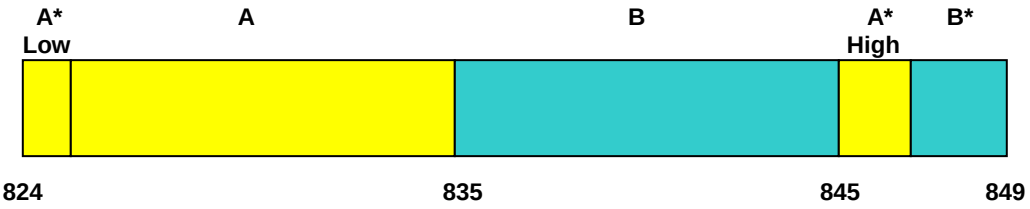
Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks



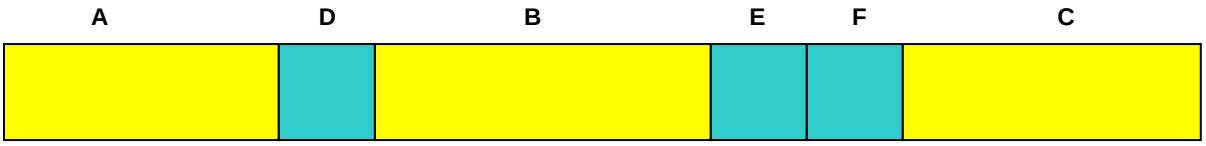
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.5 Cellular - Mobile Frequency Blocks



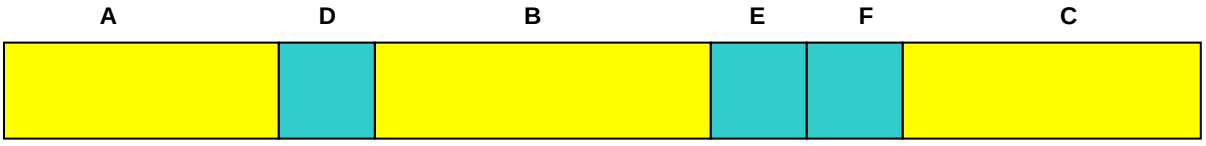
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.6 PCS - Base Frequency Blocks



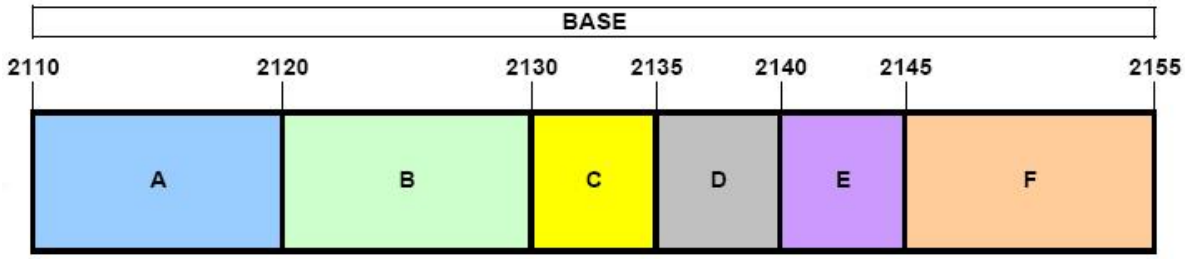
BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.7 PCS - Mobile Frequency Blocks



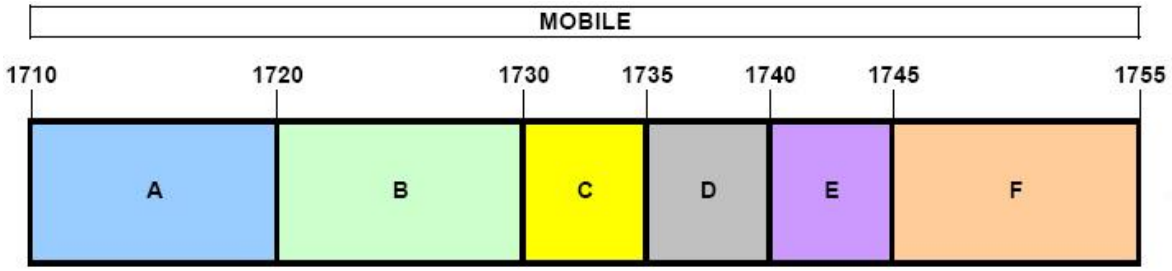
BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

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:

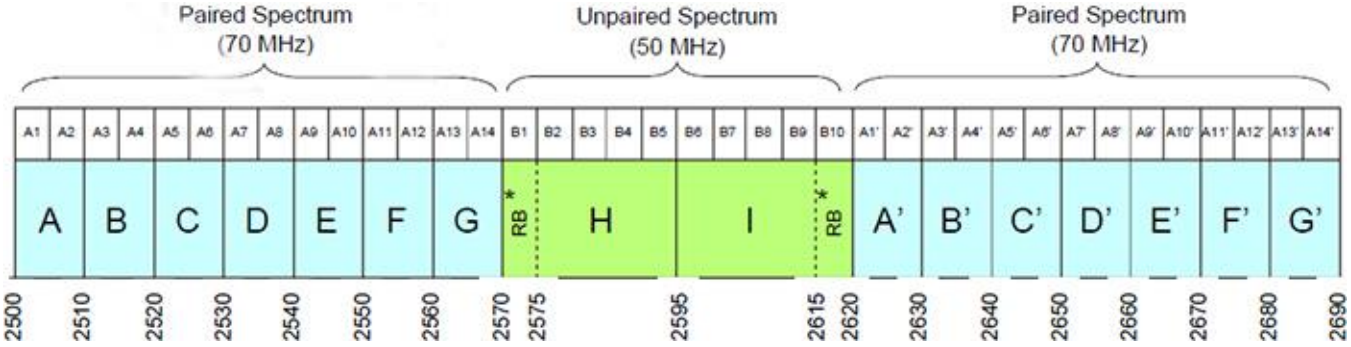
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

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 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 + 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)
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	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Anritsu	MT8820C	Radio Communication Analyzer	1/30/2018	Annual	1/30/2019	6201300731
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	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	12/1/2016	Biennial	12/1/2018	125518
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	1/24/2018	Annual	1/24/2019	100040
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Rohde & Schwarz	CMW500	Radio Communication Tester	11/3/2017	Annual	11/3/2018	100976
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
Sunol	JB6	Bi-Log Antenna (30M - 6GHz)	9/27/2016	Biennial	9/27/2018	A082816

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 USA, Inc.

FCC ID: ZNFV405UA

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, 12/17, 13)	< 3 Watts max. ERP		PASS	Section 7.2
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 7, 41)	< 2 Watts max. EIRP		PASS	Section 7.2
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP		PASS	Section 7.2
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP		PASS	Section 7.2
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + $10\log_{10}$ (P[Watts]) for all out-of-band emissions		PASS	Section 7.3
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz		PASS	Section 7.3
27.53(a)	Undesirable Emissions (Band 30)	> 70 + $10\log_{10}$ (P[Watts])		PASS	Section 7.3
27.53(m)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)		PASS	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.

2) The Class II Permissive Change test results reported herein are within the expected measurement tolerances of the original certification test results. It has been determined that the radiated powers did not change.

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". 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.

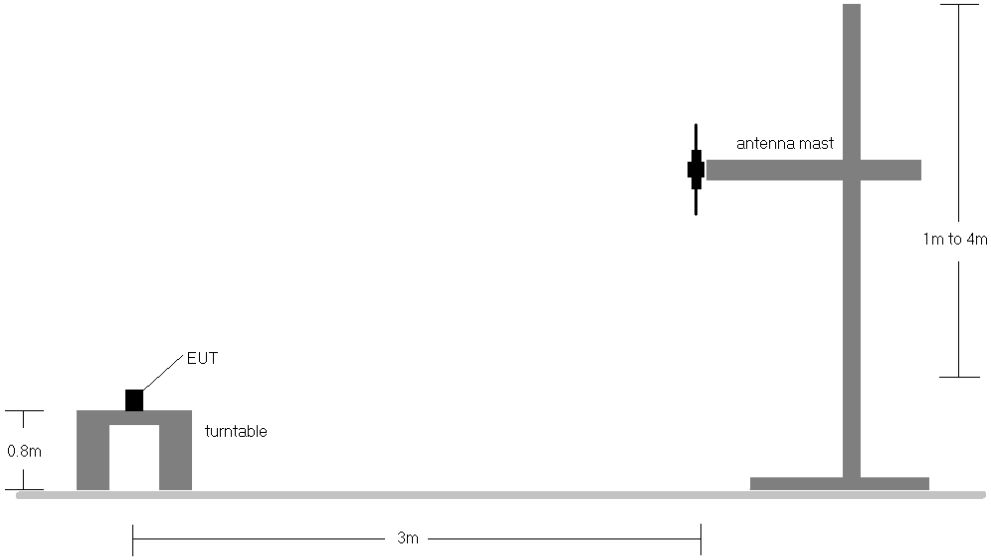


Figure 7-1. Radiated Test Setup <1GHz

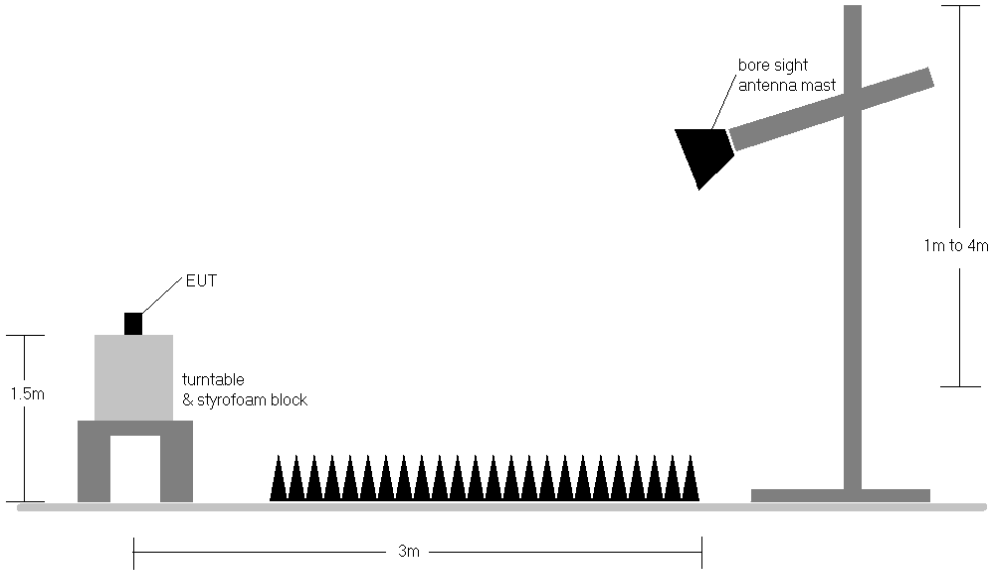


Figure 7-2. Radiated Test Setup >1GHz

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	106	1 / 0	17.07	1.10	16.02	0.040	34.77	-18.75
680.50	5	QPSK	H	150	100	1 / 24	17.69	1.10	16.64	0.046	34.77	-18.13
695.50	5	QPSK	H	150	108	1 / 0	18.08	1.10	**17.03**	0.050	34.77	-17.74
695.50	5	16-QAM	H	150	108	1 / 0	17.11	1.10	**16.06**	0.040	34.77	-18.71
695.50	5	64-QAM	H	150	108	1 / 0	15.98	1.10	**14.93**	0.031	34.77	-19.84
668.00	10	QPSK	H	150	96	1 / 49	16.72	1.10	15.67	0.037	34.77	-19.10
680.50	10	QPSK	H	150	99	1 / 49	17.94	1.10	16.89	0.049	34.77	-17.88
693.00	10	QPSK	H	150	110	1 / 0	18.51	1.10	**17.46**	**0.056**	34.77	-17.31
693.00	10	16-QAM	H	150	110	1 / 0	17.14	1.10	**16.09**	0.041	34.77	-18.68
693.00	10	64-QAM	H	150	110	1 / 0	16.00	1.10	**14.95**	0.031	34.77	-19.82
670.50	15	QPSK	H	150	116	1 / 74	16.45	1.10	15.40	0.035	34.77	-19.37
680.50	15	QPSK	H	150	106	1 / 74	16.93	1.10	15.88	0.039	34.77	-18.89
690.50	15	QPSK	H	150	99	1 / 36	17.54	1.10	**16.49**	0.045	34.77	-18.28
690.50	15	16-QAM	H	150	99	1 / 36	16.00	1.10	**14.95**	0.031	34.77	-19.82
690.50	15	64-QAM	H	150	99	1 / 36	14.52	1.10	**13.47**	0.022	34.77	-21.30
673.00	20	QPSK	H	150	102	1 / 50	17.41	1.10	16.36	0.043	34.77	-18.41
683.00	20	QPSK	H	150	102	1 / 99	17.66	1.10	16.61	0.046	34.77	-18.16
688.00	20	QPSK	H	150	109	1 / 50	17.67	1.10	**16.62**	0.046	34.77	-18.15
688.00	20	16-QAM	H	150	109	1 / 50	16.54	1.10	**15.49**	0.035	34.77	-19.28
688.00	20	64-QAM	H	150	109	1 / 50	15.46	1.10	**14.41**	0.028	34.77	-20.36
693.00	10	QPSK	V	150	82	1 / 0	15.92	1.10	14.87	0.031	34.77	-19.90
693.00	10 (WCP)	QPSK	H	150	106	1 / 0	18.29	1.10	17.24	0.053	34.77	-17.53

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	190	1 / 5	19.08	1.10	**18.03**	0.064	34.77	-16.74	**20.18**	0.104	36.99	-16.81
707.50	1.4	QPSK	H	150	190	1 / 5	18.47	1.13	17.45	0.056	34.77	-17.32	19.60	0.091	36.99	-17.39
715.30	1.4	QPSK	H	150	190	1 / 5	18.16	1.16	17.17	0.052	34.77	-17.60	19.32	0.086	36.99	-17.67
699.70	1.4	16-QAM	H	150	190	1 / 5	17.00	1.10	**15.95**	0.039	34.77	-18.82	**18.10**	0.065	36.99	-18.89
699.70	1.4	64-QAM	H	150	190	1 / 5	15.54	1.10	**14.49**	0.028	34.77	-20.28	**16.64**	0.046	36.99	-20.35
700.50	3	QPSK	H	150	187	1 / 14	19.11	1.10	**18.06**	**0.064**	34.77	-16.71	**20.21**	**0.105**	36.99	-16.78
707.50	3	QPSK	H	150	187	1 / 14	18.36	1.13	17.34	0.054	34.77	-17.43	19.49	0.089	36.99	-17.50
714.50	3	QPSK	H	150	187	1 / 14	18.62	1.16	17.63	0.058	34.77	-17.14	19.78	0.095	36.99	-17.21
700.50	3	16-QAM	H	150	187	1 / 14	17.66	1.10	**16.61**	0.046	34.77	-18.16	**18.76**	0.075	36.99	-18.23
700.50	3	64-QAM	H	150	187	1 / 14	16.59	1.10	**15.54**	0.036	34.77	-19.23	**17.69**	0.059	36.99	-19.30
700.50	3	QPSK	V	150	139	1 / 14	18.06	1.10	17.01	0.050	34.77	-17.76	19.16	0.082	36.99	-17.83
700.50	3 (WCP)	QPSK	H	150	186	1 / 14	19.05	1.10	18.00	0.063	34.77	-16.77	20.15	0.104	36.99	-16.84

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	194	1 / 0	18.63	1.11	17.59	0.057	34.77	-17.19	19.74	0.094	36.99	-17.25
707.50	5	QPSK	H	150	195	1 / 0	18.19	1.13	17.17	0.052	34.77	-17.60	19.32	0.086	36.99	-17.67
713.50	5	QPSK	H	150	194	1 / 24	18.77	1.15	**17.77**	0.060	34.77	-17.00	**19.92**	0.098	36.99	-17.07
701.50	5	16-QAM	H	150	194	1 / 0	17.82	1.11	**16.78**	0.048	34.77	-18.00	**18.93**	0.078	36.99	-18.06
701.50	5	64-QAM	H	150	194	1 / 0	17.01	1.11	**15.97**	0.040	34.77	-18.81	**18.12**	0.065	36.99	-18.87
704.00	10	QPSK	H	150	194	1 / 0	18.71	1.12	**17.68**	0.059	34.77	-17.09	**19.83**	0.096	36.99	-17.16
707.50	10	QPSK	H	150	201	1 / 0	18.07	1.13	17.05	0.051	34.77	-17.72	19.20	0.083	36.99	-17.79
711.00	10	QPSK	H	150	194	1 / 0	18.40	1.14	17.39	0.055	34.77	-17.38	19.54	0.090	36.99	-17.45
704.00	10	16-QAM	H	150	194	1 / 0	17.92	1.12	**16.89**	0.049	34.77	-17.88	**19.04**	0.080	36.99	-17.95
704.00	10	64-QAM	H	150	194	1 / 0	17.03	1.12	**16.00**	0.040	34.77	-18.77	**18.15**	0.065	36.99	-18.84

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	100	1 / 0	17.98	1.32	**17.15**	**0.052**	34.77	-17.62	**19.30**	**0.085**	36.99	-17.69
782.00	5	QPSK	H	150	107	1 / 12	17.75	1.33	16.93	0.049	34.77	-17.84	19.08	0.081	36.99	-17.91
784.50	5	QPSK	H	150	107	1 / 0	17.94	1.34	17.13	0.052	34.77	-17.64	19.28	0.085	36.99	-17.71
779.50	5	16-QAM	H	150	100	1 / 0	16.48	1.32	**15.65**	0.037	34.77	-19.12	**17.80**	0.060	36.99	-19.19
779.50	5	64-QAM	H	150	100	1 / 0	15.60	1.32	**14.77**	0.030	34.77	-20.00	**16.92**	0.049	36.99	-20.07
782.00	10	QPSK	H	150	113	1 / 49	17.00	1.33	**16.18**	0.041	34.77	-18.59	**18.33**	0.068	36.99	-18.66
782.00	10	16-QAM	H	150	113	1 / 49	15.65	1.33	**14.83**	0.030	34.77	-19.94	**16.98**	0.050	36.99	-20.01
782.00	10	64-QAM	H	150	113	1 / 49	14.37	1.33	**13.55**	0.023	34.77	-21.22	**15.70**	0.037	36.99	-21.29
779.50	5	QPSK	V	150	100	1 / 12	16.94	1.32	16.11	0.041	34.77	-18.66	18.26	0.067	36.99	-18.73
779.50	5 (WCP)	QPSK	H	150	96	1 / 0	17.78	1.32	16.95	0.050	34.77	-17.82	19.10	0.081	36.99	-17.89

Table 7-5. ERP Data (Band 13)

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]
1.4	QPSK	H	150	94	1 / 0	18.45	1.50	17.80	0.060	38.45	-20.65	19.95	0.099	40.61	-20.66
1.4	QPSK	H	150	342	1 / 5	18.33	1.50	17.68	0.059	38.45	-20.77	19.83	0.096	40.61	-20.78
1.4	QPSK	H	150	353	3 / 2	18.63	1.50	**17.98**	0.063	38.45	-20.47	**20.13**	0.103	40.61	-20.48
1.4	16-QAM	H	150	353	1 / 0	17.11	1.50	**16.46**	0.044	38.45	-21.99	**18.61**	0.073	40.61	-22.00
1.4	64-QAM	H	150	353	1 / 0	16.02	1.50	**15.37**	0.034	38.45	-23.08	**17.52**	0.056	40.61	-23.09
3	QPSK	H	150	105	1 / 7	18.41	1.50	17.76	0.060	38.45	-20.69	19.91	0.098	40.61	-20.70
3	QPSK	H	150	348	1 / 7	18.51	1.50	17.86	0.061	38.45	-20.59	20.01	0.100	40.61	-20.60
3	QPSK	H	150	352	1 / 0	18.82	1.50	**18.17**	0.066	38.45	-20.28	**20.32**	0.108	40.61	-20.29
3	16-QAM	H	150	352	1 / 0	17.28	1.50	**16.63**	0.046	38.45	-21.82	**18.78**	0.076	40.61	-21.83
3	64-QAM	H	150	352	1 / 0	16.13	1.50	**15.48**	0.035	38.45	-22.97	**17.63**	0.058	40.61	-22.98
5	QPSK	H	150	98	1 / 0	18.19	1.50	17.54	0.057	38.45	-20.91	19.69	0.093	40.61	-20.92
5	QPSK	H	150	342	1 / 24	18.57	1.50	17.92	0.062	38.45	-20.53	20.07	0.102	40.61	-20.54
5	QPSK	H	150	346	1 / 24	18.89	1.50	**18.24**	0.067	38.45	-20.21	**20.39**	**0.109**	40.61	-20.22
5	16-QAM	H	150	346	1 / 24	17.26	1.50	**16.61**	0.046	38.45	-21.84	**18.76**	0.075	40.61	-21.85
5	64-QAM	H	150	346	1 / 24	16.00	1.50	**15.35**	0.034	38.45	-23.10	**17.50**	0.056	40.61	-23.11
10	QPSK	H	150	90	1 / 0	18.62	1.50	17.97	0.063	38.45	-20.48	20.12	0.103	40.61	-20.49
10	QPSK	H	150	349	1 / 49	18.54	1.50	17.89	0.062	38.45	-20.56	20.04	0.101	40.61	-20.57
10	QPSK	H	150	335	1 / 25	18.69	1.50	**18.04**	0.064	38.45	-20.41	**20.19**	0.104	40.61	-20.42
10	16-QAM	H	150	335	1 / 25	17.19	1.50	**16.54**	0.045	38.45	-21.91	**18.69**	0.074	40.61	-21.92
10	64-QAM	H	150	335	1 / 25	16.36	1.50	**15.71**	0.037	38.45	-22.74	**17.86**	0.061	40.61	-22.75
5	QPSK	V	150	72	1 / 24	17.41	1.50	16.76	0.047	38.45	-21.69	18.91	0.078	40.61	-21.70
5 (WCP)	QPSK	H	150	335	1 / 24	17.90	1.50	17.25	0.053	38.45	-21.20	19.40	0.087	40.61	-21.21

Table 7-6. 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]
831.50	15	QPSK	H	150	87	1 / 0	18.79	1.50	**18.14**	0.065	38.45	-20.31	**20.29**	0.107	40.61
836.50	15	QPSK	H	150	345	1 / 74	18.67	1.50	18.02	0.063	38.45	-20.43	20.17	0.104	40.61
841.50	15	QPSK	H	150	349	1 / 36	18.68	1.50	18.03	0.064	38.45	-20.42	20.18	0.104	40.61
831.50	15	16-QAM	H	150	87	1 / 0	17.28	1.50	**16.63**	0.046	38.45	-21.82	**18.78**	0.076	40.61
831.50	15	64-QAM	H	150	87	1 / 0	16.12	1.50	**15.47**	0.035	38.45	-22.98	**17.62**	0.058	40.61

Table 7-7. 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	150	252	3 / 2	18.13	5.56	23.69	0.234	30.00	-6.31
1745.00	1.4	QPSK	V	150	252	1 / 0	18.58	5.32	**23.90**	0.246	30.00	-6.10
1779.30	1.4	QPSK	V	150	252	3 / 2	18.06	5.09	23.15	0.207	30.00	-6.85
1745.00	1.4	16-QAM	V	150	252	1 / 0	17.83	5.32	**23.15**	0.207	30.00	-6.85
1745.00	1.4	64-QAM	V	150	252	1 / 0	16.68	5.32	**22.00**	0.159	30.00	-8.00
1711.50	3	QPSK	V	150	252	1 / 0	18.08	5.55	23.63	0.231	30.00	-6.37
1745.00	3	QPSK	V	150	259	1 / 0	18.84	5.32	**24.16**	0.261	30.00	-5.84
1778.50	3	QPSK	V	150	252	1 / 0	18.10	5.10	23.20	0.209	30.00	-6.80
1745.00	3	16-QAM	V	150	259	1 / 0	18.01	5.32	**23.33**	0.215	30.00	-6.67
1745.00	3	64-QAM	V	150	259	1 / 0	16.86	5.32	**22.18**	0.165	30.00	-7.82
1712.50	5	QPSK	V	150	252	1 / 24	18.68	5.55	24.23	0.265	30.00	-5.77
1745.00	5	QPSK	V	150	256	1 / 0	19.12	5.32	**24.44**	**0.278**	30.00	-5.56
1777.50	5	QPSK	V	150	259	1 / 0	18.76	5.10	23.86	0.243	30.00	-6.14
1745.00	5	16-QAM	V	150	256	1 / 0	18.30	5.32	**23.62**	0.230	30.00	-6.38
1745.00	5	64-QAM	V	150	256	1 / 0	17.28	5.32	**22.60**	0.182	30.00	-7.40
1715.00	10	QPSK	V	150	255	1 / 49	18.24	5.53	23.77	0.238	30.00	-6.23
1745.00	10	QPSK	V	150	255	1 / 0	18.66	5.32	**23.98**	0.250	30.00	-6.02
1775.00	10	QPSK	V	150	255	1 / 49	18.30	5.12	23.42	0.220	30.00	-6.58
1745.00	10	16-QAM	V	150	255	1 / 0	17.84	5.32	**23.16**	0.207	30.00	-6.84
1745.00	10	64-QAM	V	150	255	1 / 0	16.85	5.32	**22.17**	0.165	30.00	-7.83
1717.50	15	QPSK	V	150	255	1 / 0	18.20	5.51	23.71	0.235	30.00	-6.29
1745.00	15	QPSK	V	150	255	1 / 74	18.83	5.32	**24.15**	0.260	30.00	-5.85
1772.50	15	QPSK	V	150	255	1 / 0	18.90	5.14	24.04	0.253	30.00	-5.96
1745.00	15	16-QAM	V	150	255	1 / 74	18.10	5.32	**23.42**	0.220	30.00	-6.58
1745.00	15	64-QAM	V	150	255	1 / 74	16.99	5.32	**22.31**	0.170	30.00	-7.69
1720.00	20	QPSK	V	150	258	1 / 0	17.89	5.49	23.38	0.218	30.00	-6.62
1745.00	20	QPSK	V	150	258	1 / 99	18.70	5.32	**24.02**	0.252	30.00	-5.98
1770.00	20	QPSK	V	150	258	1 / 0	18.59	5.15	23.74	0.237	30.00	-6.26
1745.00	20	16-QAM	V	150	258	1 / 99	17.93	5.32	**23.25**	0.211	30.00	-6.75
1745.00	20	64-QAM	V	150	258	1 / 99	16.91	5.32	**22.23**	0.167	30.00	-7.77
1745.00	5	QPSK	H	150	117	1 / 0	16.41	5.32	21.73	0.149	30.00	-8.27
1745.00	5 (WCP)	QPSK	V	150	120	1 / 0	15.98	5.32	21.30	0.135	30.00	-8.70

Table 7-8. 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	150	10	3 / 2	16.92	4.82	**21.74**	0.149	33.01	-11.27
1882.50	1.4	QPSK	H	150	10	3 / 2	16.38	4.73	21.11	0.129	33.01	-11.90
1914.30	1.4	QPSK	H	150	10	1 / 0	15.55	4.68	20.23	0.105	33.01	-12.78
1850.70	1.4	16-QAM	H	150	10	3 / 2	17.05	4.82	**21.87**	0.154	33.01	-11.14
1850.70	1.4	64-QAM	H	150	10	3 / 2	16.01	4.82	**20.83**	0.121	33.01	-12.18
1851.50	3	QPSK	H	150	11	15 / 0	17.04	4.82	**21.86**	0.153	33.01	-11.15
1882.50	3	QPSK	H	150	11	1 / 0	16.48	4.73	21.21	0.132	33.01	-11.80
1913.50	3	QPSK	H	150	11	1 / 0	15.84	4.68	20.52	0.113	33.01	-12.49
1851.50	3	16-QAM	H	150	11	1 / 0	17.32	4.82	**22.14**	0.164	33.01	-10.87
1851.50	3	64-QAM	H	150	11	1 / 0	16.16	4.82	**20.98**	0.125	33.01	-12.03
1852.50	5	QPSK	H	150	11	1 / 0	17.15	4.81	**21.96**	0.157	33.01	-11.05
1882.50	5	QPSK	H	150	11	1 / 0	16.55	4.73	21.28	0.134	33.01	-11.73
1912.50	5	QPSK	H	150	11	1 / 0	17.03	4.68	21.71	0.148	33.01	-11.30
1852.50	5	16-QAM	H	150	11	1 / 0	16.68	4.81	**21.49**	0.141	33.01	-11.52
1852.50	5	64-QAM	H	150	11	1 / 0	15.65	4.81	**20.46**	0.111	33.01	-12.55
1855.00	10	QPSK	H	150	286	1 / 0	16.94	4.81	21.75	0.149	33.01	-11.26
1882.50	10	QPSK	H	150	286	1 / 0	17.81	4.73	**22.54**	0.180	33.01	-10.47
1910.00	10	QPSK	H	150	286	1 / 0	16.89	4.68	21.57	0.144	33.01	-11.44
1882.50	10	16-QAM	H	150	286	1 / 0	17.04	4.73	**21.77**	0.150	33.01	-11.24
1882.50	10	64-QAM	H	150	286	1 / 0	15.86	4.73	**20.59**	0.115	33.01	-12.42
1857.50	15	QPSK	H	150	286	1 / 0	17.07	4.80	21.87	0.154	33.01	-11.14
1882.50	15	QPSK	H	150	286	1 / 0	18.12	4.73	**22.85**	**0.193**	33.01	-10.16
1907.50	15	QPSK	H	150	286	1 / 0	17.42	4.68	22.10	0.162	33.01	-10.91
1857.50	15	16-QAM	H	150	286	1 / 0	17.28	4.80	**22.08**	0.161	33.01	-10.93
1857.50	15	64-QAM	H	150	286	1 / 0	16.32	4.80	**21.12**	0.129	33.01	-11.89
1860.00	20	QPSK	H	150	14	1 / 0	17.19	4.79	**21.98**	0.158	33.01	-11.03
1882.50	20	QPSK	H	150	14	1 / 0	16.84	4.73	21.57	0.144	33.01	-11.44
1905.00	20	QPSK	H	150	14	1 / 0	16.70	4.68	21.38	0.138	33.01	-11.63
1860.00	20	16-QAM	H	150	14	1 / 0	17.35	4.79	**22.14**	0.164	33.01	-10.87
1882.50	20	16-QAM	H	150	14	1 / 0	17.05	4.73	21.78	0.151	33.01	-11.23
1860.00	20	64-QAM	H	150	14	1 / 0	16.44	4.79	**21.23**	0.133	33.01	-11.78
1882.50	20	64-QAM	H	150	14	1 / 0	16.03	4.73	20.76	0.119	33.01	-12.25
1882.50	15	QPSK	V	150	313	1 / 0	16.34	4.79	21.13	0.130	33.01	-11.88
1882.50	15 (WCP)	QPSK	H	150	353	1 / 0	14.98	4.79	19.77	0.095	33.01	-13.24

Table 7-9. 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	V	150	5	1 / 0	16.58	5.74	22.32	0.171	23.98	-1.66
2312.50	5	QPSK	V	150	5	1 / 0	16.60	5.74	**22.34**	0.171	23.98	-1.64
2312.50	5	16-QAM	V	150	5	1 / 0	15.84	5.74	**21.58**	0.144	23.98	-2.40
2312.50	5	64-QAM	V	150	5	1 / 0	14.88	5.74	**20.62**	0.115	23.98	-3.36
2310.00	10	QPSK	V	150	358	1 / 0	16.71	5.74	**22.45**	**0.176**	23.98	-1.53
2310.00	10	16-QAM	V	150	358	1 / 0	15.89	5.74	**21.63**	0.145	23.98	-2.35
2310.00	10	64-QAM	V	150	358	1 / 0	14.88	5.74	**20.62**	0.115	23.98	-3.36
2310.00	10	QPSK	H	150	1	1 / 0	15.05	5.74	20.79	0.120	23.98	-3.19
2310.00	10 (WCP)	QPSK	V	150	44	1 / 0	13.30	5.74	19.04	0.080	23.98	-4.94

Table 7-10. 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	V	150	5	1 / 0	16.23	5.74	21.97	0.157	33.01	-11.04
2535.00	5	QPSK	V	150	5	1 / 0	16.83	5.86	**22.69**	0.186	33.01	-10.32
2567.50	5	QPSK	V	150	5	1 / 0	16.27	5.98	22.25	0.168	33.01	-10.76
2535.00	5	16-QAM	V	150	5	1 / 0	16.08	5.86	**21.94**	0.156	33.01	-11.07
2535.00	5	64-QAM	V	150	5	1 / 0	15.17	5.86	**21.03**	0.127	33.01	-11.98
2505.00	10	QPSK	V	150	252	1 / 0	16.33	5.75	22.08	0.161	33.01	-10.93
2535.00	10	QPSK	V	150	252	1 / 0	16.89	5.86	**22.75**	0.188	33.01	-10.26
2565.00	10	QPSK	V	150	252	1 / 0	16.27	5.97	22.24	0.168	33.01	-10.77
2535.00	10	16-QAM	V	150	252	1 / 0	16.18	5.86	**22.04**	0.160	33.01	-10.97
2535.00	10	64-QAM	V	150	252	1 / 0	15.04	5.86	**20.90**	0.123	33.01	-12.11
2507.50	15	QPSK	V	150	249	1 / 0	16.60	5.76	22.36	0.172	33.01	-10.65
2535.00	15	QPSK	V	150	249	1 / 0	16.97	5.86	**22.83**	**0.192**	33.01	-10.18
2562.50	15	QPSK	V	150	249	1 / 74	16.47	5.96	22.43	0.175	33.01	-10.58
2535.00	15	16-QAM	V	150	249	1 / 74	15.76	5.86	**21.62**	0.145	33.01	-11.39
2535.00	15	64-QAM	V	150	249	1 / 74	14.65	5.86	**20.51**	0.112	33.01	-12.50
2510.00	20	QPSK	V	150	248	1 / 0	16.31	5.77	22.08	0.161	33.01	-10.93
2535.00	20	QPSK	V	150	248	1 / 0	16.68	5.86	22.54	0.179	33.01	-10.47
2560.00	20	QPSK	V	150	248	1 / 0	16.63	5.95	**22.58**	0.181	33.01	-10.43
2535.00	20	16-QAM	V	150	248	1 / 0	15.49	5.86	**21.35**	0.136	33.01	-11.66
2535.00	20	64-QAM	V	150	248	1 / 0	14.38	5.86	**20.24**	0.106	33.01	-12.77
2535.00	15	QPSK	H	150	314	1 / 0	16.92	5.86	22.78	0.190	33.01	-10.23
2535.00	15 (WCP)	QPSK	V	150	305	1 / 0	14.70	5.86	20.56	0.114	33.01	-12.45

Table 7-11. 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	150	8	1 / 0	19.61	5.73	25.34	0.342	33.01	-7.67
2593.00	5	QPSK	H	150	8	1 / 0	19.99	6.07	**26.06**	0.404	33.01	-6.95
2687.50	5	QPSK	H	150	8	1 / 0	18.22	6.48	24.70	0.295	33.01	-8.31
2593.00	5	16-QAM	H	150	8	1 / 0	19.07	6.07	**25.14**	0.327	33.01	-7.87
2593.00	5	64-QAM	H	150	8	1 / 0	18.02	6.07	**24.09**	0.257	33.01	-8.92
2501.00	10	QPSK	H	150	24	1 / 49	19.61	5.73	25.34	0.342	33.01	-7.67
2593.00	10	QPSK	H	150	24	1 / 0	20.51	6.07	**26.58**	0.455	33.01	-6.43
2685.00	10	QPSK	H	150	24	1 / 0	19.47	6.47	25.94	0.393	33.01	-7.07
2593.00	10	16-QAM	H	150	24	1 / 0	19.48	6.07	**25.55**	0.359	33.01	-7.46
2593.00	10	64-QAM	H	150	24	1 / 0	18.70	6.07	**24.77**	0.300	33.01	-8.24
2503.50	15	QPSK	H	150	37	1 / 0	19.72	5.74	25.46	0.352	33.01	-7.55
2593.00	15	QPSK	H	150	37	1 / 0	20.63	6.07	**26.70**	**0.468**	33.01	-6.31
2682.50	15	QPSK	H	150	37	1 / 74	19.48	6.46	25.94	0.393	33.01	-7.07
2593.00	15	16-QAM	H	150	37	1 / 0	19.67	6.07	**25.74**	0.375	33.01	-7.27
2593.00	15	64-QAM	H	150	37	1 / 0	17.98	6.07	**24.05**	0.254	33.01	-8.96
2506.00	20	QPSK	H	150	40	1 / 99	19.61	5.75	25.36	0.344	33.01	-7.65
2593.00	20	QPSK	H	150	40	1 / 0	20.27	6.07	**26.34**	0.431	33.01	-6.67
2680.00	20	QPSK	H	150	40	1 / 0	19.21	6.45	25.66	0.368	33.01	-7.35
2593.00	20	16-QAM	H	150	40	1 / 0	19.56	6.07	**25.63**	0.366	33.01	-7.38
2593.00	20	64-QAM	H	150	40	1 / 0	18.49	6.07	**24.56**	0.286	33.01	-8.45
2593.00	15	QPSK	V	150	100	1 / 0	20.28	6.07	26.35	0.432	33.01	-6.66
2593.00	15 (WCP)	QPSK	H	150	114	1 / 0	18.98	6.07	25.05	0.320	33.01	-7.96

Table 7-12. EIRP Data (Band 41 PC2)

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]
2593.00	20	QPSK	H	150	8	1 / 0	17.80	6.07	**23.87**	**0.244**	33.01	-9.14
2593.00	20	16-QAM	H	150	8	1 / 0	16.77	6.07	**22.84**	0.192	33.01	-10.17
2593.00	20	64-QAM	H	150	8	1 / 0	15.78	6.07	**21.85**	0.153	33.01	-11.16
2593.00	20	QPSK	V	150	270	1 / 0	17.38	6.07	23.45	0.221	33.01	-9.56
2593.00	20 (WCP)	QPSK	H	150	114	1 / 0	16.78	6.07	22.85	0.193	33.01	-10.16

Table 7-13. EIRP Data (Band 41 PC3)

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.

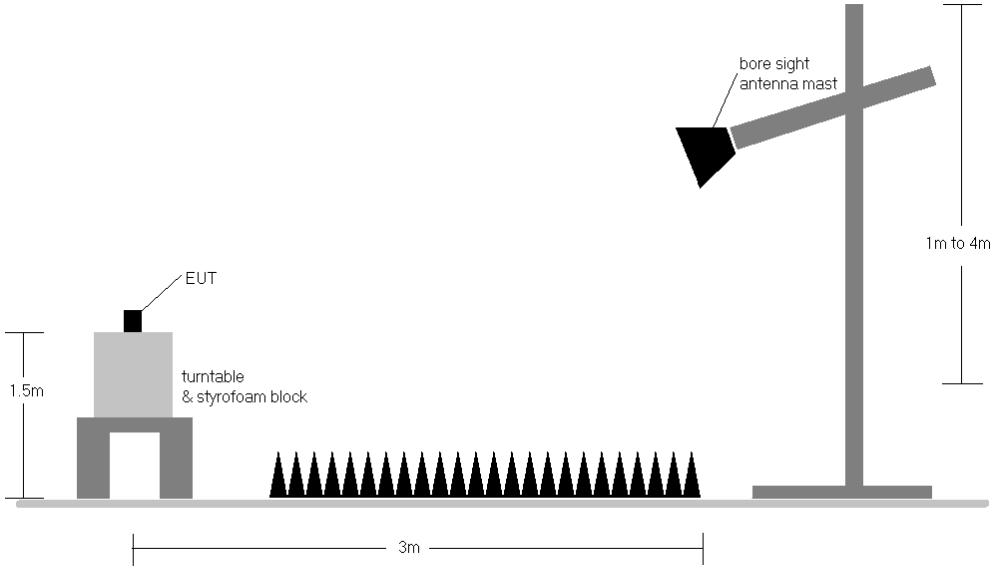


Figure 7-3. Test Instrument & Measurement Setup

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.

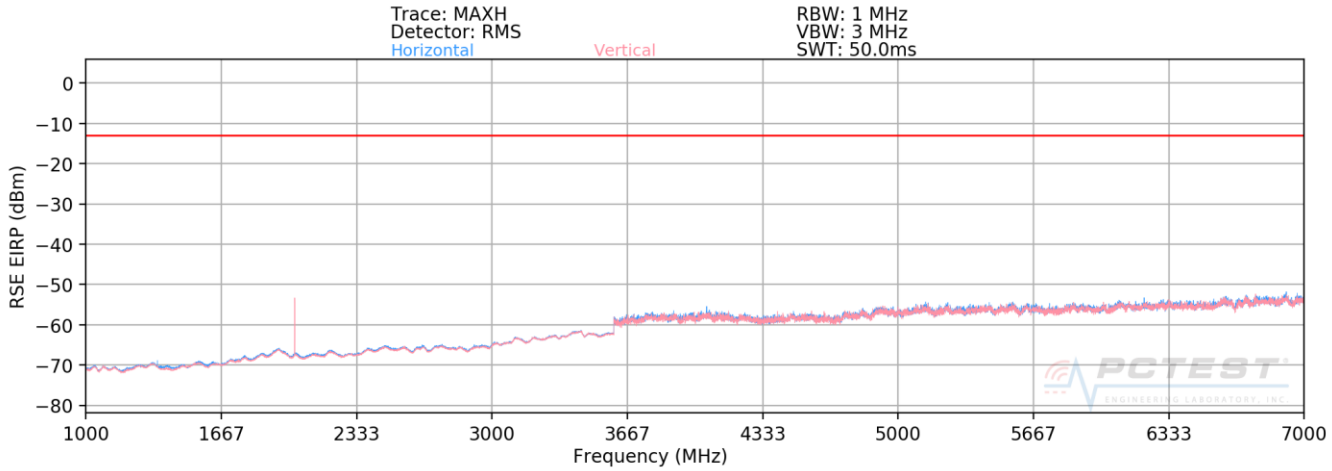
2) This unit was tested with its standard battery.

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:	668.00	MHz
CHANNEL:	133172	
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]
1336.00	V	150	129	-71.51	3.88	-67.63	-54.6
2004.00	V	150	279	-60.67	4.74	-55.93	-42.9
2672.00	V	-	-	-68.19	5.36	-62.83	-49.8
3340.00	V	-	-	-67.71	6.25	-61.46	-48.5

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

OPERATING FREQUENCY:	680.50	MHz
CHANNEL:	133297	
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]
1361.00	V	150	281	-67.47	3.90	-63.57	-50.6
2041.50	V	150	288	-54.63	4.78	-49.85	-36.9
2722.00	V	-	-	-68.21	5.49	-62.72	-49.7
3402.50	V	150	277	-68.05	6.41	-61.64	-48.6
4083.00	V	-	-	-67.58	7.47	-60.11	-47.1

Table 7-15. Radiated Spurious Data (Band 71 – Mid Channel)

OPERATING FREQUENCY:	693.00	MHz
CHANNEL:	133422	
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]
1386.00	V	150	92	-69.20	3.82	-65.38	-52.4
2079.00	V	150	303	-57.99	4.80	-53.19	-40.2
2772.00	V	-	-	-68.70	5.66	-63.04	-50.0
3465.00	V	150	291	-64.27	6.56	-57.71	-44.7
4158.00	V	-	-	-68.89	7.64	-61.25	-48.2

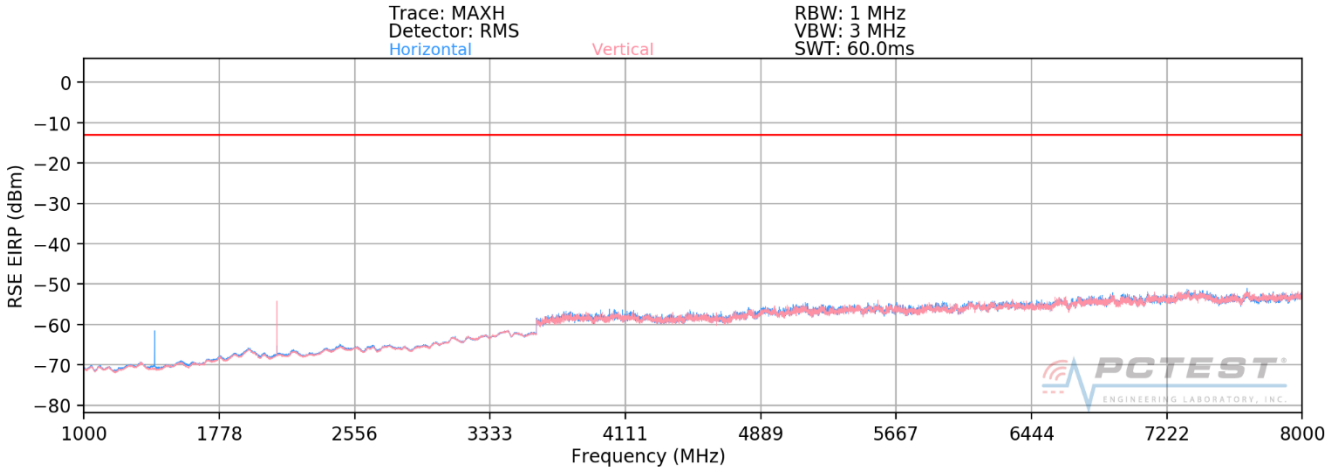
Table 7-16. Radiated Spurious Data (Band 71 – High Channel)

OPERATING FREQUENCY:	680.50	MHz
CHANNEL:	133297	
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]
1361.00	V	150	277	-68.81	3.90	-64.91	-51.9
2041.50	V	150	298	-57.59	4.78	-52.81	-39.8
2722.00	V	-	-	-68.23	5.49	-62.74	-49.7
3402.50	V	-	-	-67.95	6.41	-61.53	-48.5

Table 7-17. Radiated Spurious Data with WCP (Band 71 – Mid Channel)

Band 12/17



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

OPERATING FREQUENCY:	700.50	MHz
CHANNEL:	23025	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	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]
1401.00	V	-	-	-70.11	3.78	-66.33	-53.3
2101.50	V	150	41	-60.26	4.80	-55.46	-42.5
2802.00	V	-	-	-67.91	5.64	-62.26	-49.3

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

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	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	-	-	-70.08	3.90	-66.17	-53.2
2122.50	V	150	2	-61.47	4.78	-56.69	-43.7
2830.00	V	-	-	-68.03	5.73	-62.30	-49.3

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

OPERATING FREQUENCY:	714.50	MHz
CHANNEL:	23165	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	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]
1429.00	V	-	-	-69.06	4.03	-65.03	-52.0
2143.50	V	150	309	-61.46	4.77	-56.69	-43.7
2858.00	V	-	-	-68.37	5.79	-62.58	-49.6

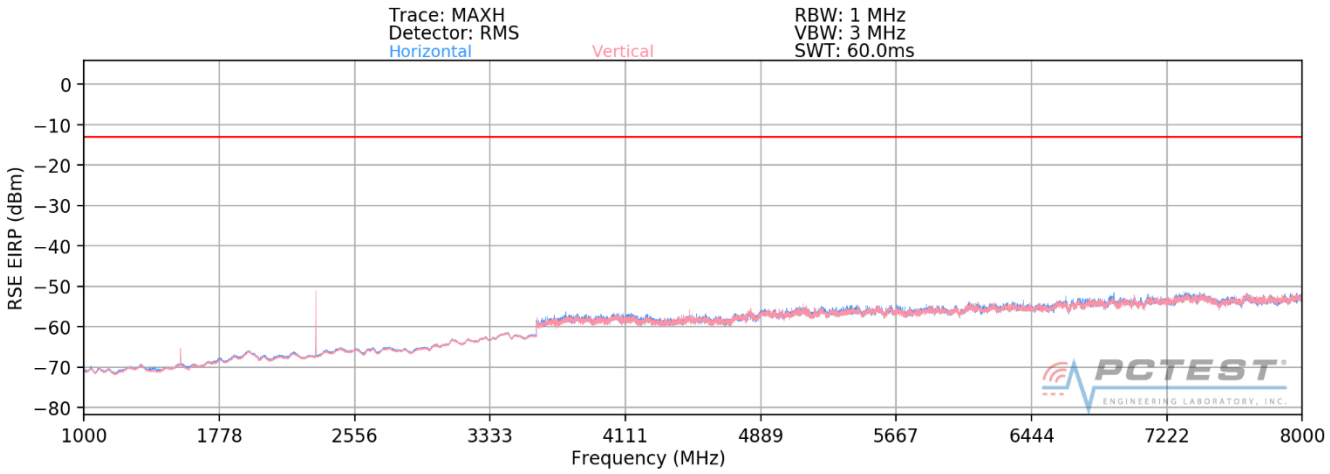
Table 7-20. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY:	700.50	MHz
CHANNEL:	23025	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	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]
1401.00	V	150	194	-69.70	3.78	-65.92	-52.9
2101.50	V	150	323	-61.37	4.80	-56.57	-43.6
2802.00	V	-	-	-68.82	5.64	-63.17	-50.2

Table 7-21. Radiated Spurious Data with WCP (Band 12/17 – Low Channel)

Band 13



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

OPERATING FREQUENCY:	779.50	MHz
CHANNEL:	23205	
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]
2338.50	V	150	8	-61.11	4.86	-56.25	-43.3
3118.00	V	-	-	-64.97	5.99	-58.98	-46.0
3897.50	V	-	-	-65.13	7.26	-57.87	-44.9

Table 7-22. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY:	782.00	MHz
CHANNEL:	23230	
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]
2346.00	V	150	8	-59.64	4.88	-54.76	-41.8
3128.00	V	-	-	-67.72	6.02	-61.71	-48.7
3910.00	V	-	-	-67.78	7.25	-60.53	-47.5

Table 7-23. Radiated Spurious Data (Band 13 – Mid Channel)

OPERATING FREQUENCY:	784.50	MHz
CHANNEL:	23255	
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]
2353.50	V	150	359	-61.19	4.90	-56.29	-43.3
3138.00	V	-	-	-67.92	6.05	-61.87	-48.9
3922.50	V	-	-	-68.53	7.22	-61.31	-48.3

Table 7-24. Radiated Spurious Data (Band 13 – High Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	V	150	8	-68.33	4.47	-63.87	-23.9
1564.00	V	150	358	-70.55	4.50	-66.06	-26.1
1569.00	V	-	-	-72.60	4.53	-68.08	-28.1

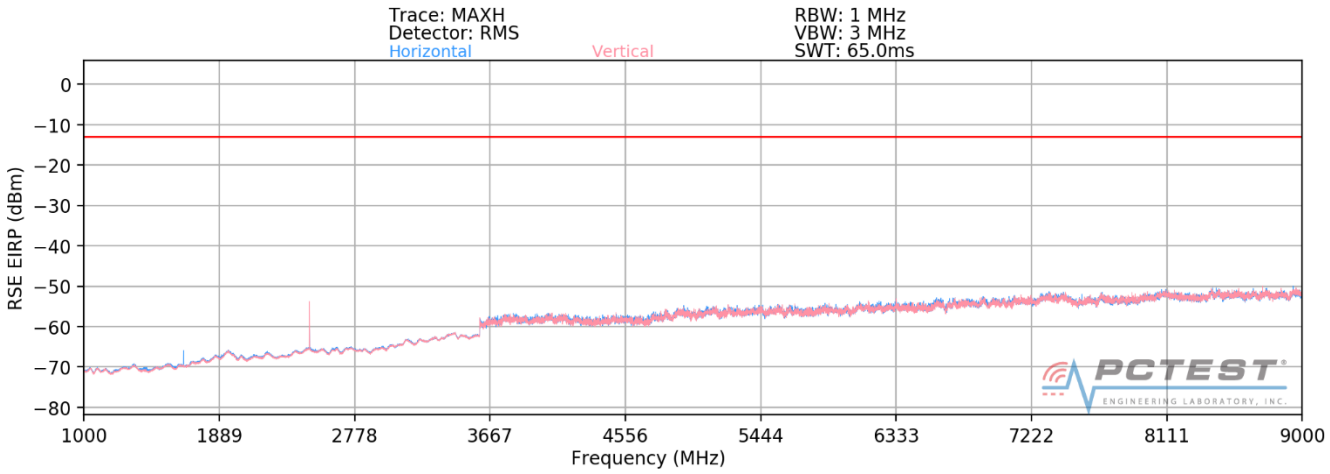
Table 7-25. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	779.50	MHz
CHANNEL:	23205	
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]
1559.00	V	-	-	-71.71	4.47	-67.24	-54.2
2338.50	V	150	265	-67.15	4.86	-62.29	-49.3
3118.00	V	-	-	-67.92	5.99	-61.93	-48.9

Table 7-26. Radiated Spurious Data with WCP (Band 13 – Low Channel)

Band 26/5



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

OPERATING FREQUENCY:	826.50	MHz
CHANNEL:	26815	
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	V	150	220	-69.02	4.82	-64.20	-51.2
2479.50	V	150	35	-52.34	5.01	-47.33	-34.3
3306.00	V	-	-	-67.00	6.25	-60.75	-47.8

Table 7-27. Radiated Spurious Data (Band 26/5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	26915	
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	V	150	224	-67.92	4.86	-63.06	-50.1
2509.50	V	150	43	-54.66	5.10	-49.56	-36.6
3346.00	V	-	-	-68.28	6.25	-62.02	-49.0

Table 7-28. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	846.50	MHz
CHANNEL:	27015	
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	V	150	220	-62.79	4.90	-57.88	-44.9
2539.50	V	150	38	-57.12	5.25	-51.87	-38.9
3386.00	V	-	-	-67.21	6.36	-60.85	-47.9

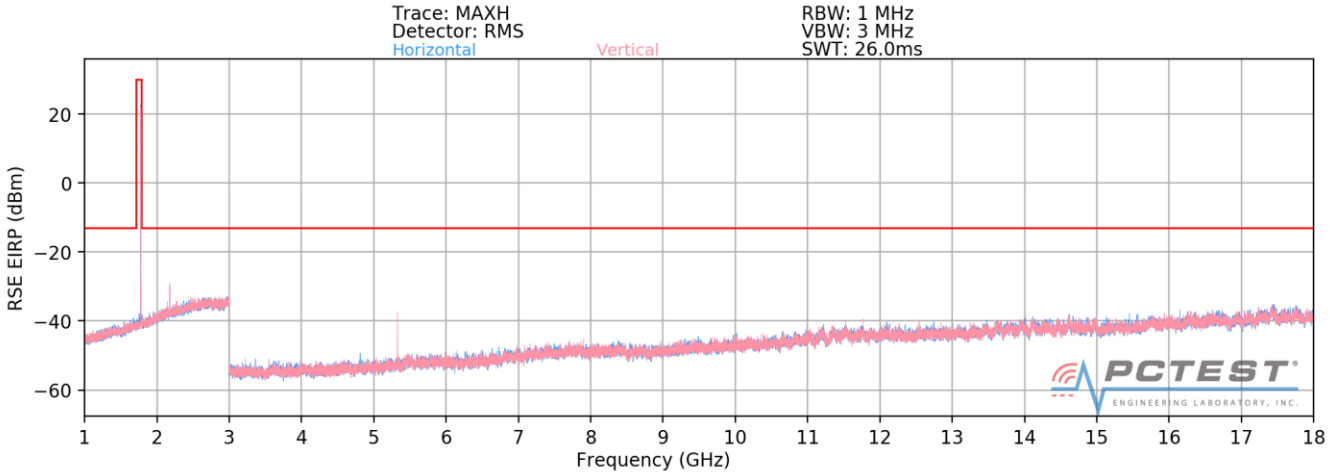
Table 7-29. Radiated Spurious Data (Band 26/5 – High Channel)

OPERATING FREQUENCY:	826.50	MHz
CHANNEL:	26815	
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	V	150	227	-69.33	4.82	-64.52	-51.5
2479.50	V	150	62	-61.68	5.01	-56.67	-43.7
3306.00	V	-	-	-68.42	6.25	-62.17	-49.2

Table 7-30. Radiated Spurious Data with WCP (Band 26/5 – Low Channel)

Band 66/4



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

OPERATING FREQUENCY:	1712.50	MHz
CHANNEL:	131997	
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]
3425.00	V	150	50	-62.93	8.11	-54.82	-41.8
5137.50	V	150	20	-61.90	10.24	-51.66	-38.7
6850.00	V	-	-	-67.80	11.36	-56.44	-43.4

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

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
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]
3490.00	V	150	46	-65.28	8.46	-56.82	-43.8
5235.00	V	150	335	-50.72	10.28	-40.43	-27.4
6980.00	V	-	-	-67.04	11.47	-55.57	-42.6

Table 7-32. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY:	1777.50	MHz
CHANNEL:	132647	
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]
3555.00	V	150	1	-69.27	8.52	-60.75	-47.8
5332.50	V	150	328	-62.45	10.36	-52.09	-39.1
7110.00	V	-	-	-68.01	11.62	-56.39	-43.4

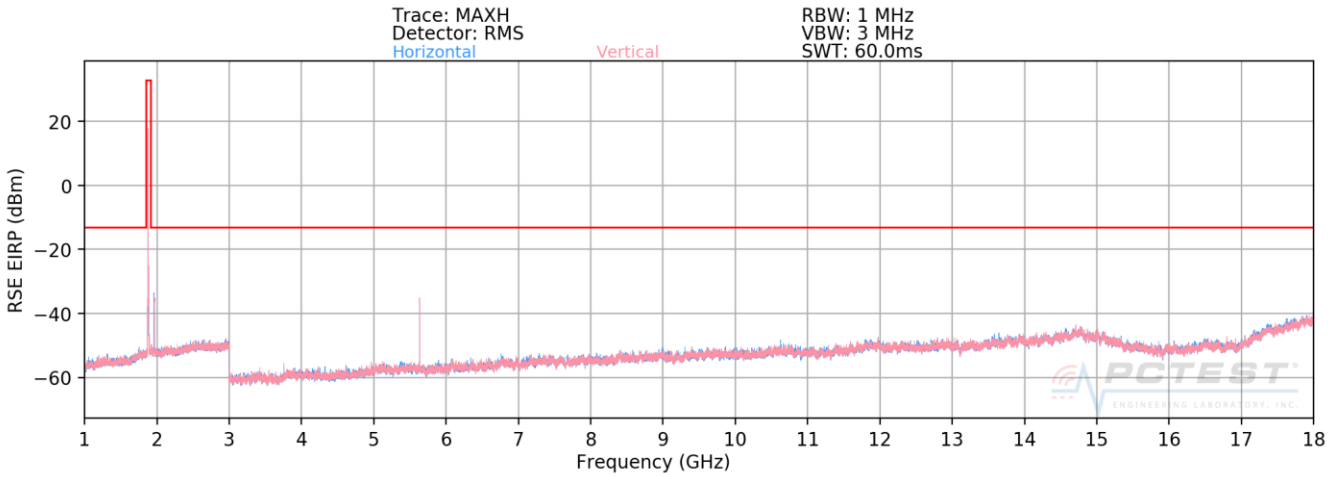
Table 7-33. Radiated Spurious Data (Band 66/4 – High Channel)

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
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]
3490.00	V	150	179	-67.28	8.46	-58.82	-45.8
5235.00	V	150	238	-51.03	10.28	-40.74	-27.7
6980.00	V	-	-	-65.79	11.47	-54.33	-41.3

Table 7-34. Radiated Spurious Data with WCP (Band 66/4 – Mid Channel)

Band 25/2



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

OPERATING FREQUENCY:	1857.50	MHz
CHANNEL:	26115	
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]
3715.00	V	340	113	-70.90	9.53	-61.38	-48.4
5572.50	V	184	347	-57.72	10.97	-46.75	-33.7
7430.00	V	-	-	-71.01	10.98	-60.03	-47.0
9287.50	V	-	-	-70.17	11.61	-58.56	-45.6

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

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
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]
3765.00	V	387	129	-72.26	9.36	-62.91	-49.9
5647.50	V	128	358	-58.16	11.19	-46.96	-34.0
7530.00	V	-	-	-70.98	11.13	-59.85	-46.8
9412.50	V	-	-	-68.35	11.57	-56.78	-43.8

Table 7-36. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	1907.50	MHz
CHANNEL:	26615	
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]
3815.00	V	396	127	-73.53	9.30	-64.23	-51.2
5722.50	V	186	353	-59.96	11.37	-48.59	-35.6
7630.00	V	-	-	-71.65	11.31	-60.34	-47.3

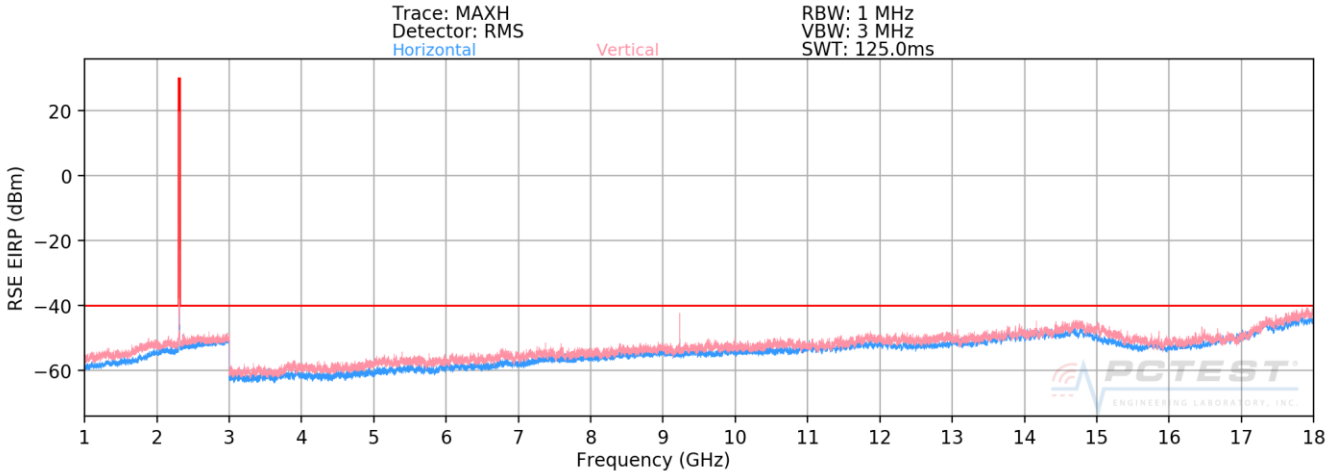
Table 7-37. Radiated Spurious Data (Band 25/2 – High Channel)

OPERATING FREQUENCY:	1857.50	MHz
CHANNEL:	26115	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

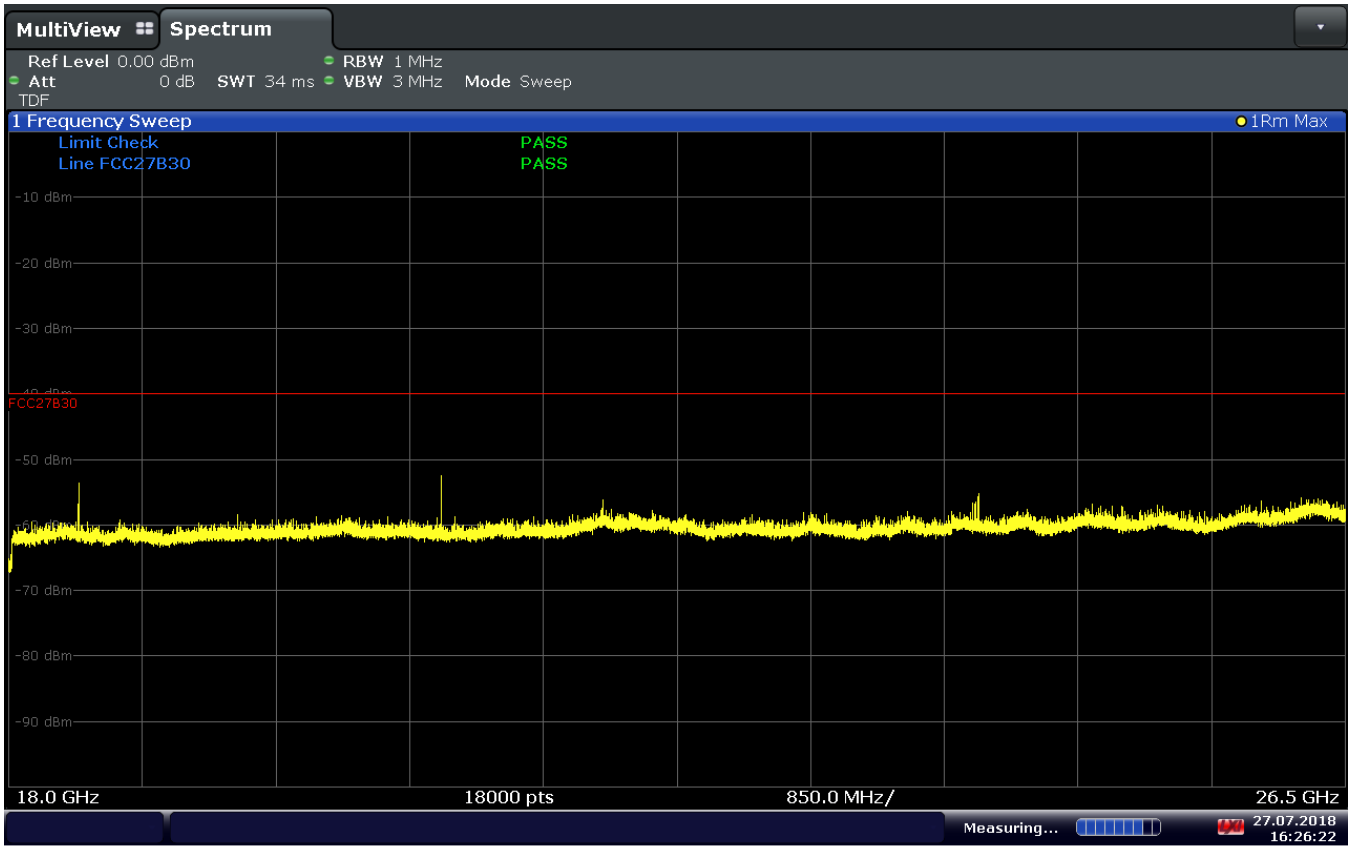
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	V	366	251	-72.63	9.53	-63.11	-50.1
5572.50	V	208	22	-60.41	10.97	-49.43	-36.4
7430.00	V	-	-	-70.71	10.98	-59.74	-46.7

Table 7-38. Radiated Spurious Data with WCP (Band 25/2 – Low Channel)

Band 30

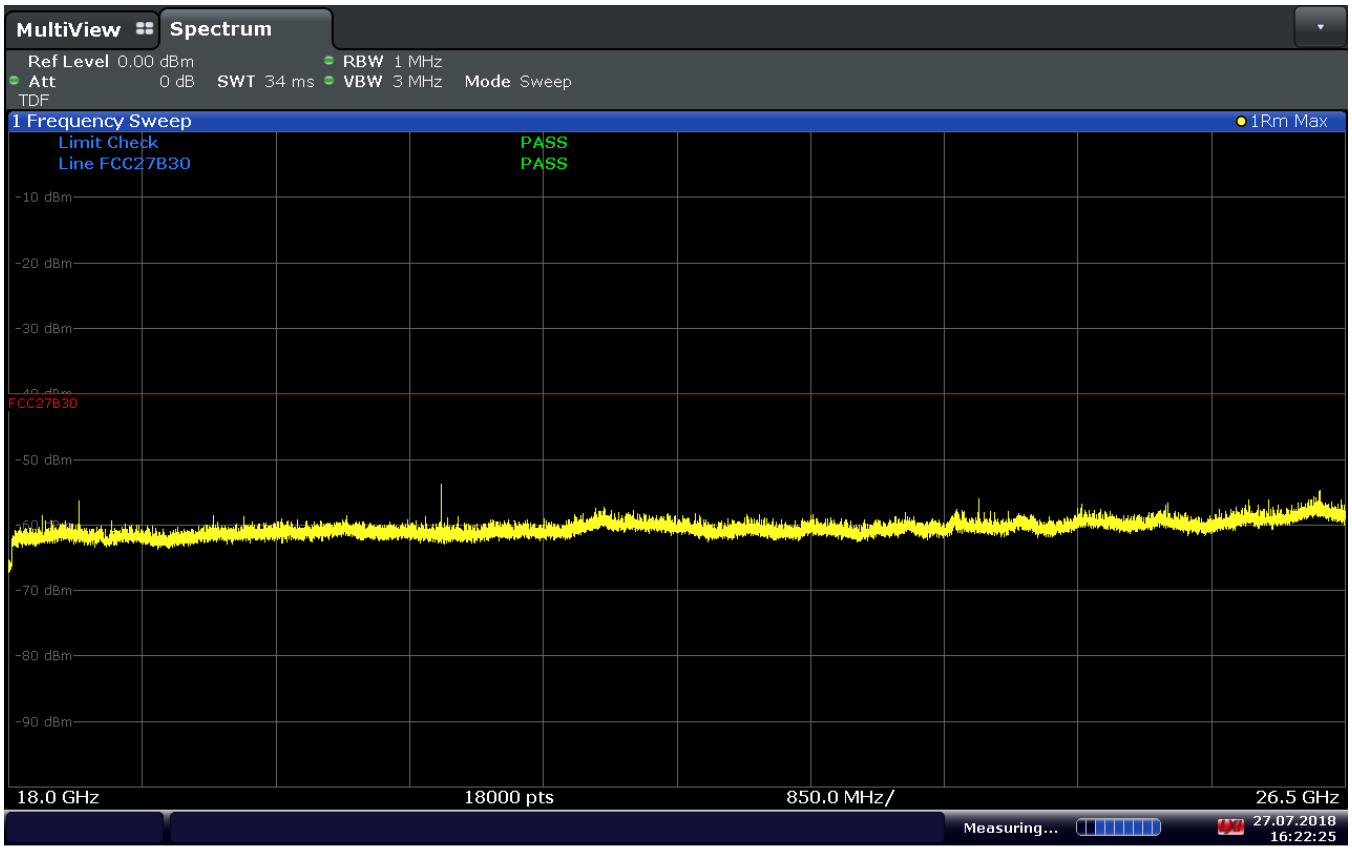


Plot 7-7. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



16:26:23 27.07.2018

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



16:22:26 27.07.2018

Plot 7-9. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30), V Pol.

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	V	-	-	-70.13	10.92	-59.21	-19.2
6930.00	V	-	-	-68.96	11.74	-57.22	-17.2
9240.00	V	150	169	-59.92	11.62	-48.30	-8.3
11550.00	V	-	-	-62.56	12.72	-49.84	-9.8
13860.00	V	-	-	-61.38	11.99	-49.39	-9.4
16170.00	V	-	-	-64.76	16.59	-48.16	-8.2

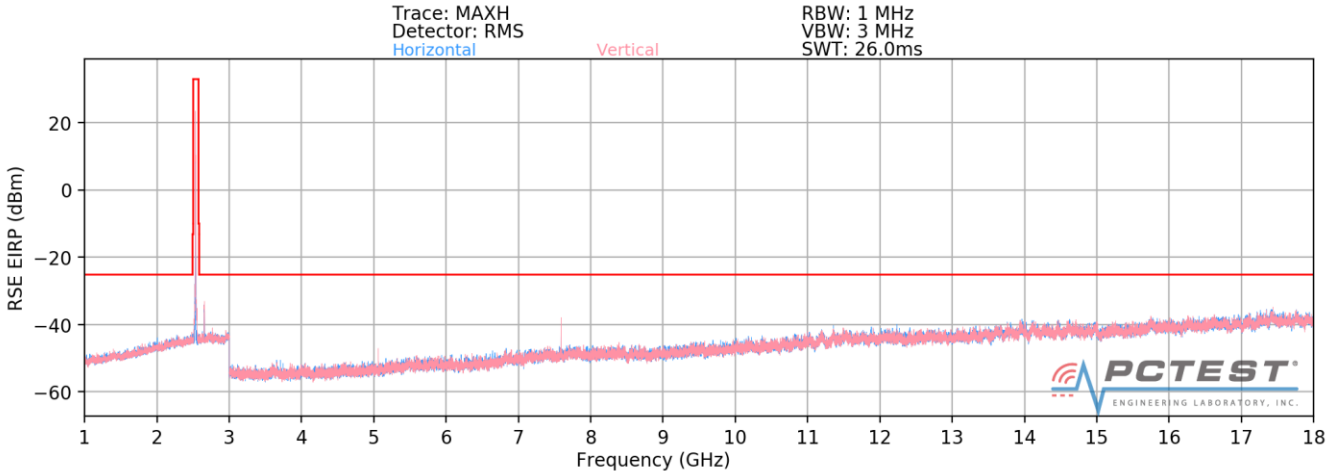
Table 7-39. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY:	2310.00	MHz
CHANNEL:	27710	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

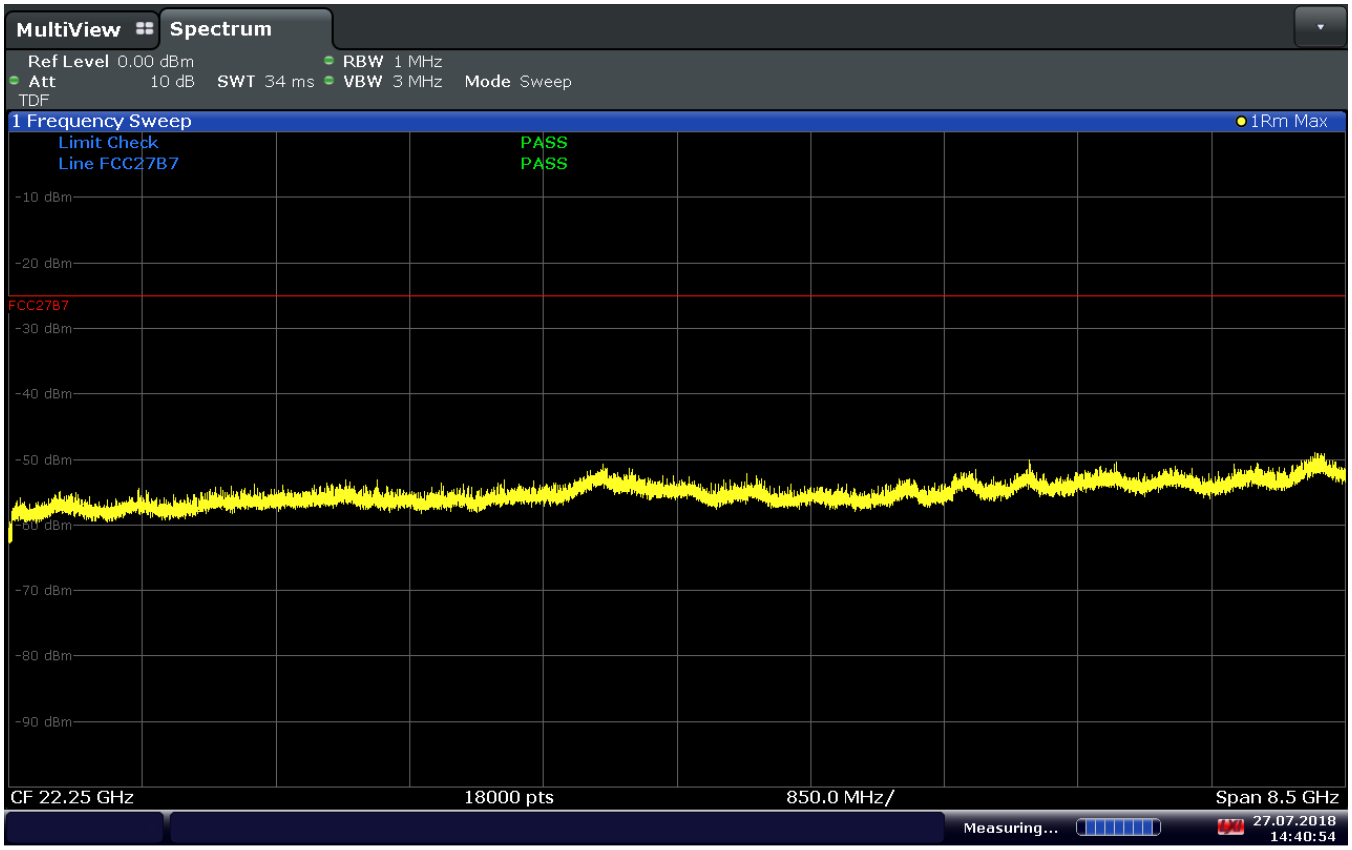
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	V	150	156	-67.30	10.92	-56.39	-16.4
6930.00	V	-	-	-68.85	11.74	-57.11	-17.1
9240.00	V	150	245	-56.10	11.62	-44.48	-4.5
11550.00	V	-	-	-61.99	12.72	-49.28	-9.3
13860.00	V	-	-	-61.41	11.99	-49.42	-9.4
16170.00	V	-	-	-63.65	16.59	-47.05	-7.1

Table 7-40. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

Band 7

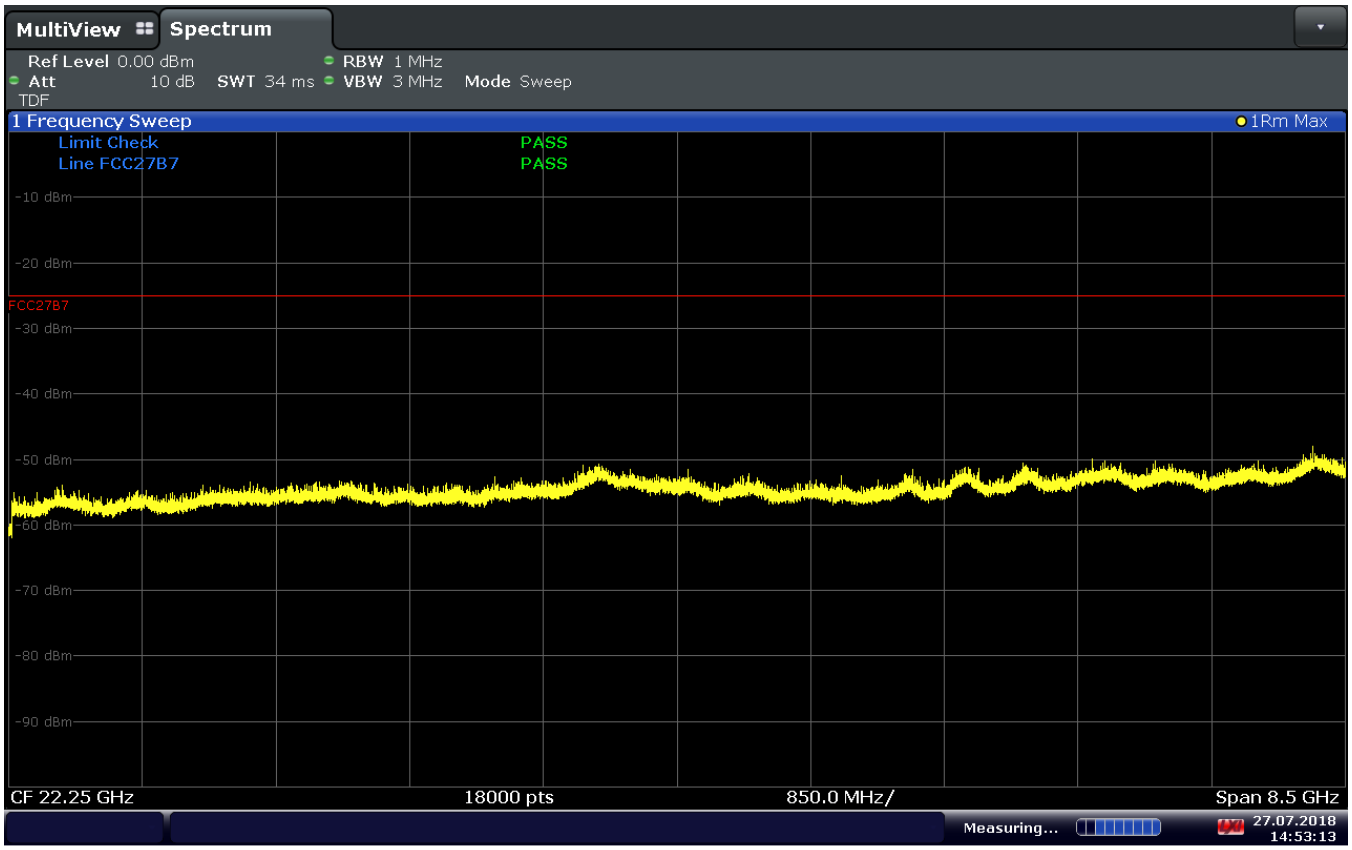


Plot 7-10. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



14:40:55 27.07.2018

Plot 7-11. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7), H Pol.



14:53:13 27.07.2018

Plot 7-12. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7), V Pol.

OPERATING FREQUENCY:	2507.50	MHz
CHANNEL:	20825	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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]
5015.00	V	150	50	-57.36	10.10	-47.25	-22.3
7522.50	V	150	86	-62.68	12.11	-50.57	-25.6
10030.00	V	-	-	-65.72	13.17	-52.56	-27.6

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

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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	V	150	60	-65.69	10.18	-55.51	-30.5
7605.00	V	150	303	-65.67	12.15	-53.52	-28.5
10140.00	V	-	-	-65.11	13.11	-52.00	-27.0

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

OPERATING FREQUENCY:	2562.50	MHz
CHANNEL:	21375	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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]
5125.00	V	150	82	-68.65	10.23	-58.42	-33.4
7687.50	V	150	124	-63.39	12.27	-51.12	-26.1
10250.00	V	-	-	-65.87	13.12	-52.75	-27.8

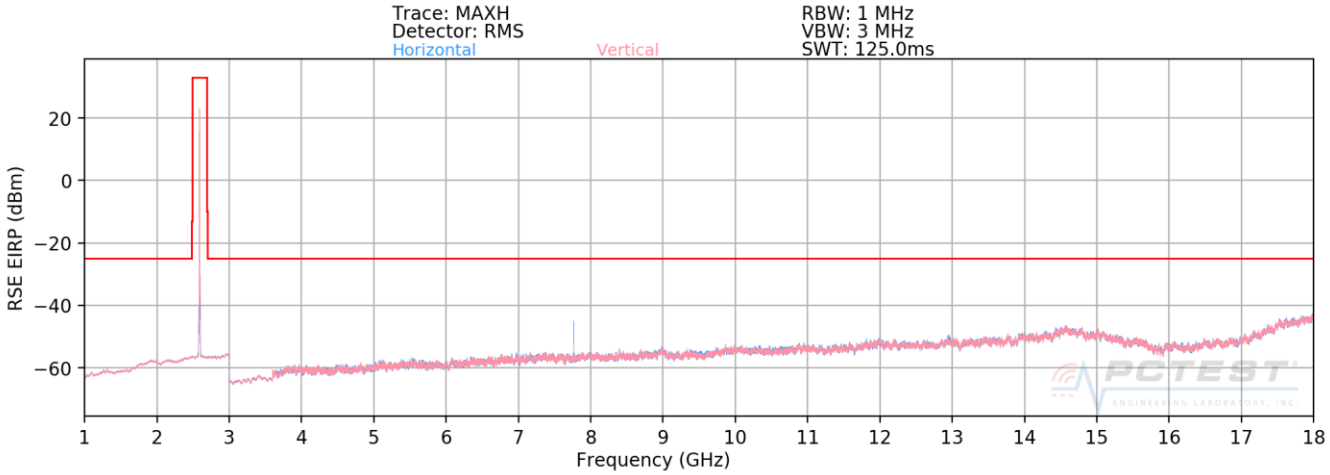
Table 7-43. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

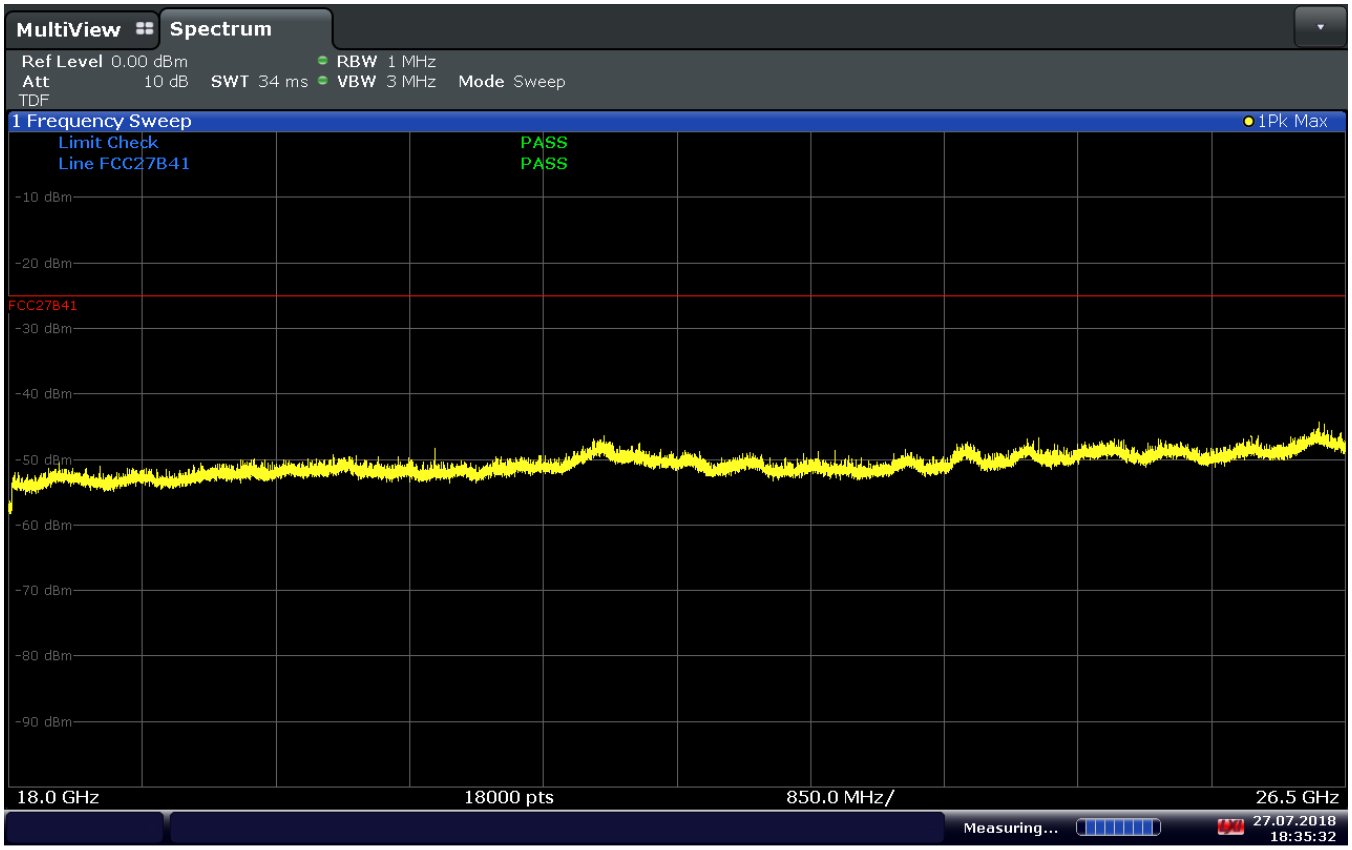
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	150	68	-62.99	8.39	-54.60	-29.6
7605.00	H	150	300	-60.68	8.51	-52.17	-27.2
10140.00	H	-	-	-61.89	9.70	-52.19	-27.2

Table 7-44. Radiated Spurious Data with WCP (Band 7 – Mid Channel)

Band 41

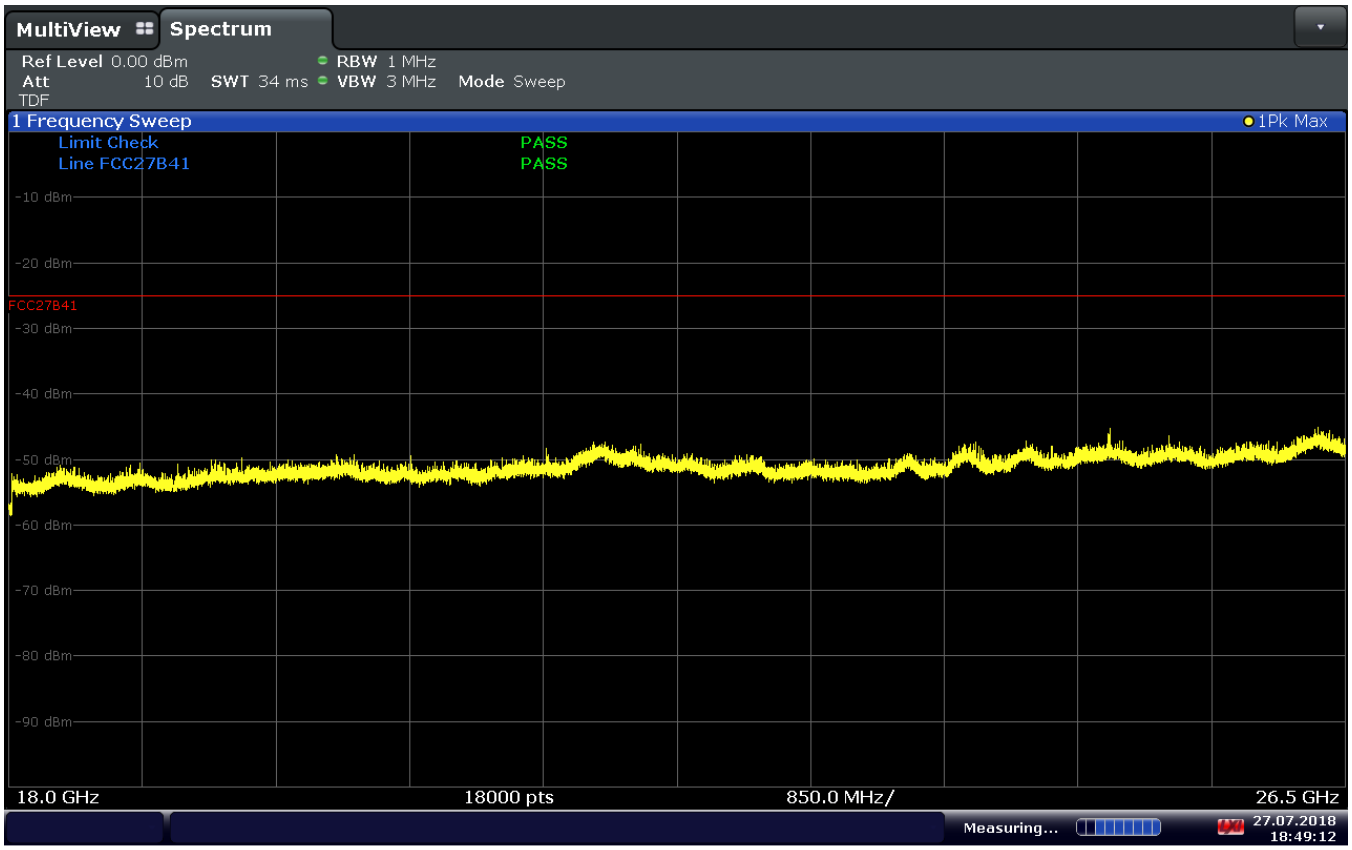


Plot 7-13. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2)



18:35:32 27.07.2018

Plot 7-14. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC2), H Pol.



18:49:13 27.07.2018

Plot 7-15. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41 PC2), V Pol.

OPERATING FREQUENCY:	2507.50	MHz
CHANNEL:	39765	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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]
5015.00	H	245	153	-67.95	10.90	-57.06	-32.1
7522.50	H	400	191	-63.35	11.12	-52.24	-27.2
10030.00	H	212	175	-64.17	11.99	-52.17	-27.2
12537.50	H	365	125	-60.74	13.56	-47.18	-22.2
15045.00	H	342	143	-60.71	13.53	-47.18	-22.2
17552.50	H	150	205	-56.72	11.65	-45.06	-20.1

Table 7-45. Radiated Spurious Data (Band 41 PC2 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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	158	49	-61.72	10.74	-50.98	-26.0
7779.00	H	191	53	-54.17	11.44	-42.72	-17.7
10372.00	H	209	356	-62.97	12.42	-50.55	-25.6
12965.00	H	205	342	-56.79	13.29	-43.50	-18.5
15558.00	H	182	15	-65.93	16.33	-49.61	-24.6

Table 7-46. Radiated Spurious Data (Band 41 PC2– Mid Channel)

OPERATING FREQUENCY:	2682.50	MHz
CHANNEL:	41515	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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]
5365.00	H	167	235	-66.47	10.69	-55.77	-30.8
8047.50	H	311	175	-61.68	11.16	-50.52	-25.5
10730.00	H	-	-	-66.39	12.60	-53.78	-28.8
13412.50	H	130	137	-61.00	12.59	-48.41	-23.4
16095.00	H	-	-	-69.44	16.67	-52.78	-27.8

Table 7-47. Radiated Spurious Data (Band 41 PC2 – High Channel)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	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	119	293	-61.01	10.74	-50.27	-25.3
7779.00	H	329	15	-66.42	11.44	-54.98	-30.0
10372.00	H	-	-	-66.14	12.42	-53.72	-28.7

Table 7-48. Radiated Spurious Data with WCP (Band 41 PC2 – Mid Channel)

OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	39790	
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	V	150	213	-68.05	10.11	-57.94	-32.9
7527.50	V	150	43	-63.65	12.11	-51.54	-26.5
10035.00	V	-	-	-65.24	13.16	-52.08	-27.1

Table 7-49. Radiated Spurious Data (Band 41 PC3 – Low 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 = Max Hold
6. The trace was allowed to stabilize

Test Setup

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

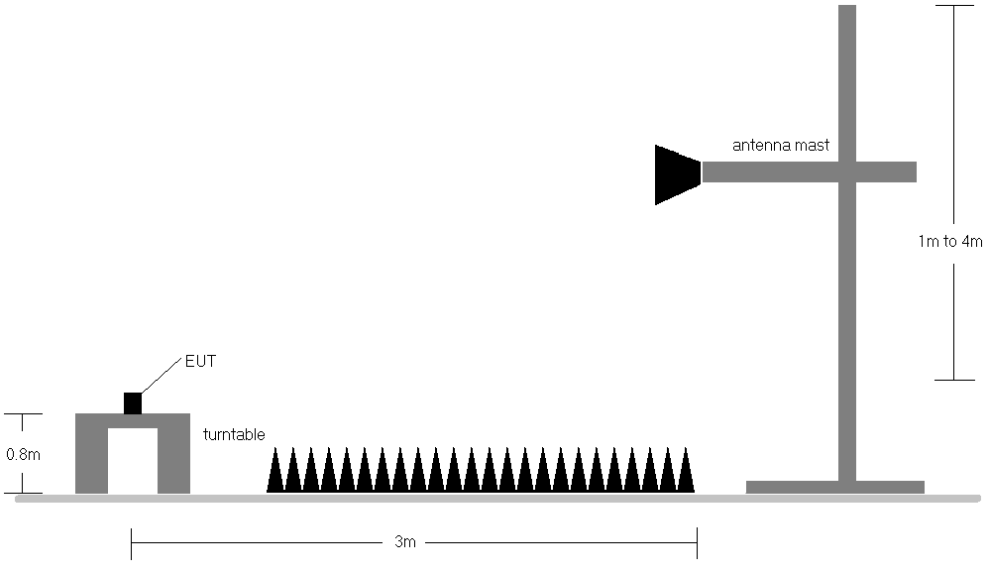


Figure 7-4. Test Instrument & Measurement Setup

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.

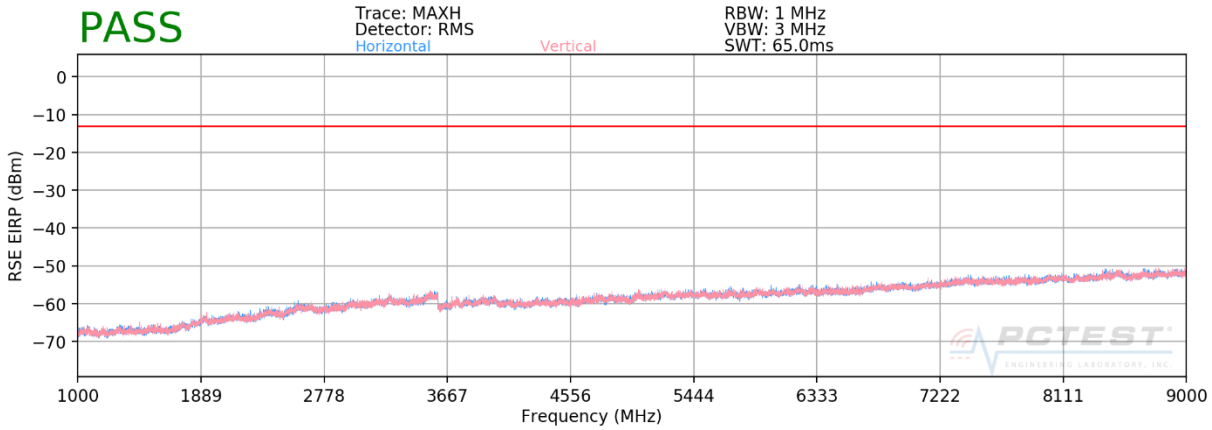
2) This unit was tested with its standard battery.

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.

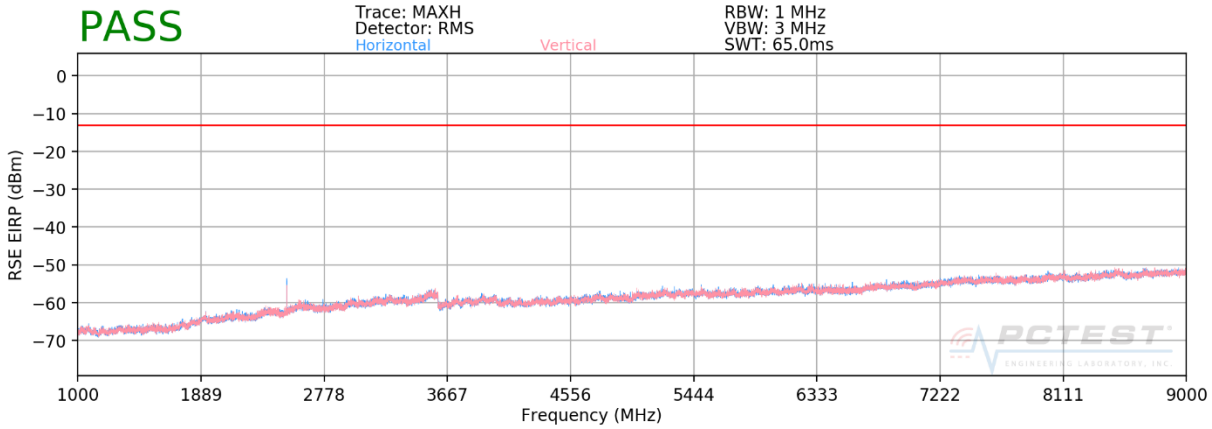
4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

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.

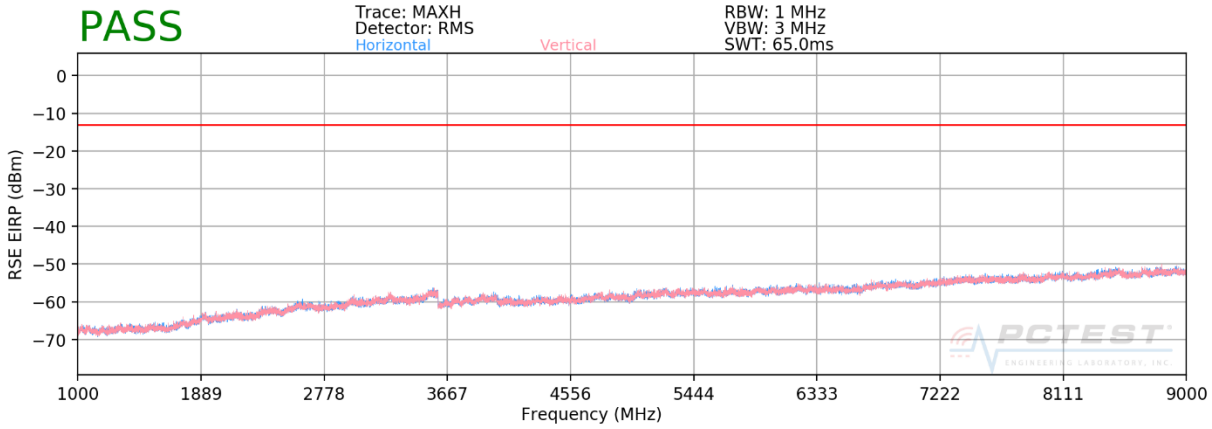
6) No significant emissions were found as a result of two uplink carriers operating contiguously.



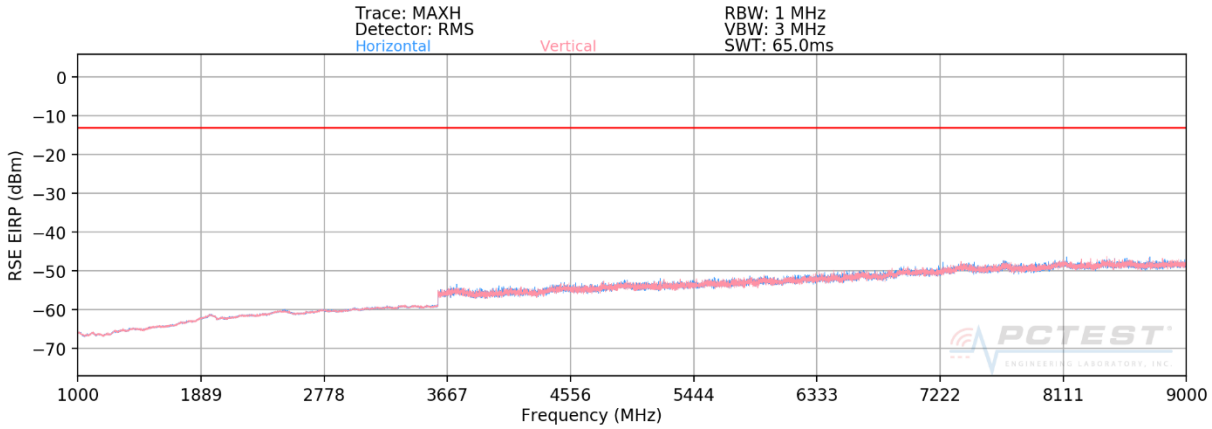
Plot 7-50. Radiated Spurious Plot (ULCA B5 – 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)



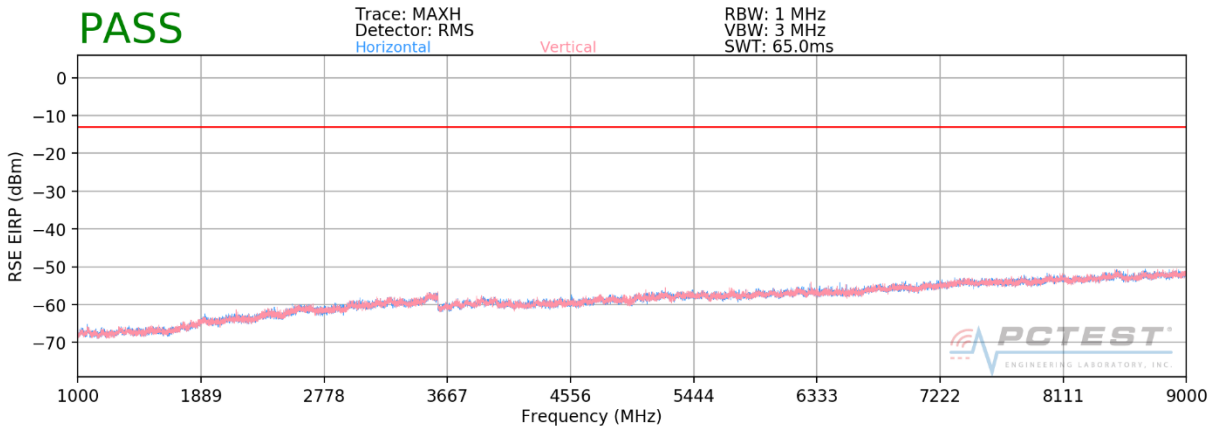
Plot 7-51. Radiated Spurious Plot (ULCA B5 – 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)



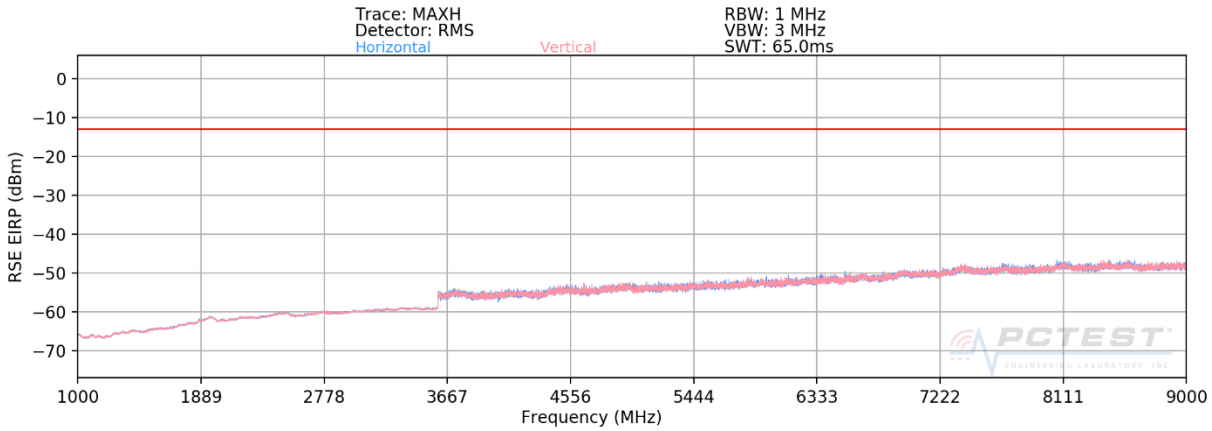
Plot 7-52. Radiated Spurious Plot (ULCA B5 – 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)



Plot 7-53. Radiated Spurious Plot (ULCA B5– 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 – Low Channel)



Plot 7-54. Radiated Spurious Plot (ULCA B5– 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 – Mid Channel)



Plot 7-55. Radiated Spurious Plot (ULCA B5– 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	829.00	MHz
OPERATING FREQUENCY (SCC):	838.90	
CHANNEL (PCC):	20450	
CHANNEL (SCC):	20549	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	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	145	140	-79.39	8.95	-70.44	-57.4
2487.00	V	116	138	-70.29	9.70	-60.58	-47.6
3316.00	V	-	-	-75.60	9.59	-66.01	-53.0

Table 7-56. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	831.50	MHz
OPERATING FREQUENCY (SCC):	841.50	
CHANNEL (PCC):	20600	
CHANNEL (SCC):	20575	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	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	V	144	147	-79.88	8.95	-70.93	-57.9
2494.50	V	130	144	-72.59	9.73	-62.86	-49.9
3326.00	V	-	-	-75.44	9.59	-65.84	-52.8

Table 7-57. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)

OPERATING FREQUENCY (PCC):	834.10	MHz
OPERATING FREQUENCY (SCC):	844.00	
CHANNEL (PCC):	20501	
CHANNEL (SCC):	20600	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

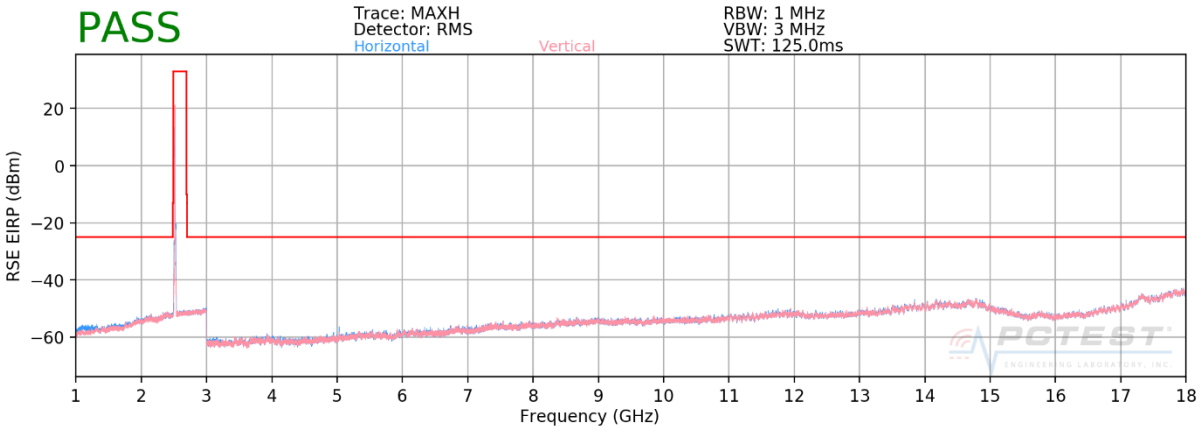
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1668.20	V	136	141	-78.10	8.95	-69.15	-56.1
2502.30	V	111	138	-69.65	9.75	-59.90	-46.9
3336.40	V	-	-	-75.54	9.60	-65.94	-52.9

Table 7-58. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

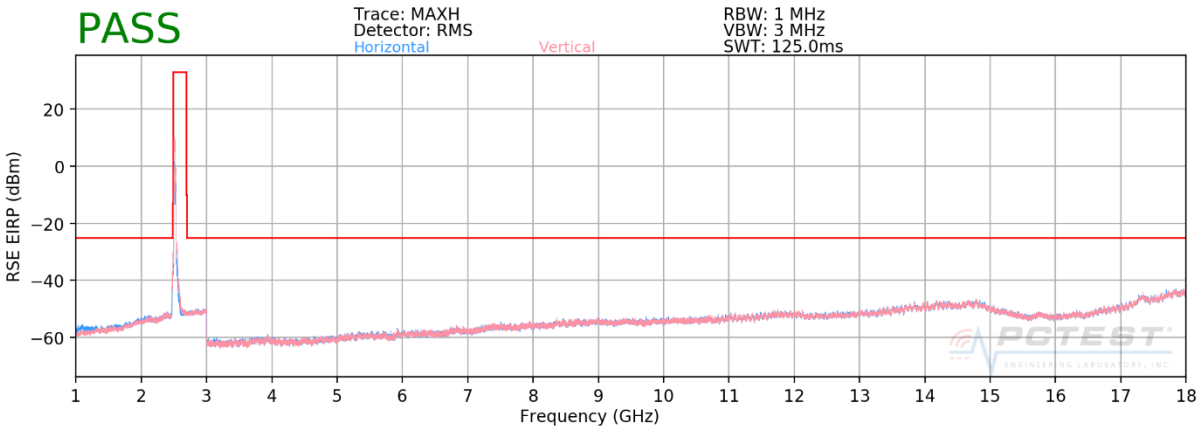
OPERATING FREQUENCY (PCC):	834.10	MHz
OPERATING FREQUENCY (SCC):	844.00	
CHANNEL (PCC):	20501	
CHANNEL (SCC):	20600	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

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	V	271	131	-74.48	5.76	-68.72	-55.7
2494.50	V	157	11	-69.70	5.75	-63.95	-51.0
3326.00	V	-	-	-73.93	7.91	-66.03	-53.0

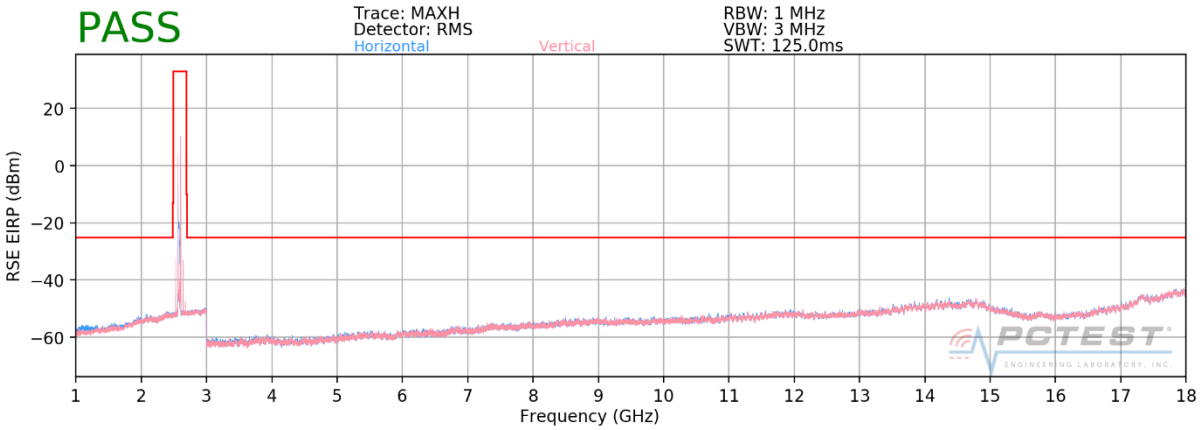
Table 7-59. Radiated Spurious Data with WCP (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)



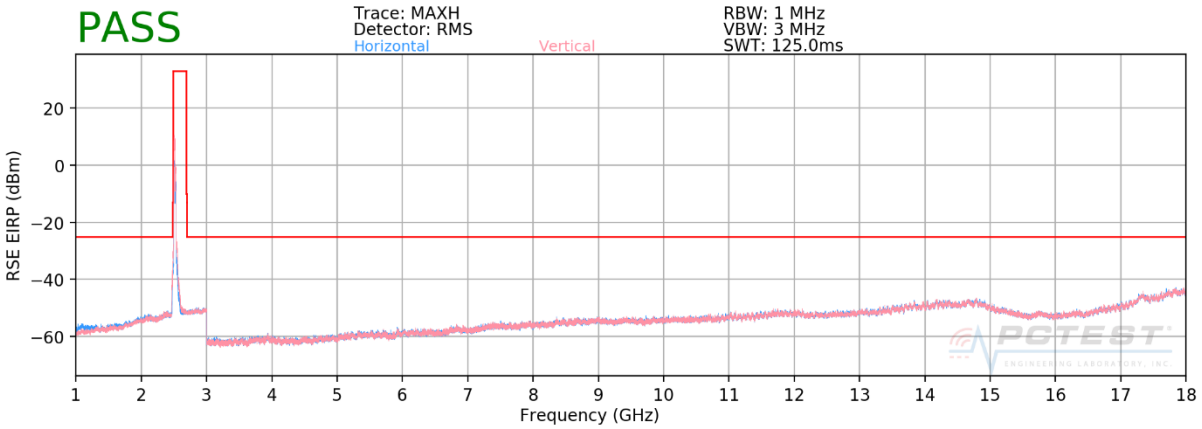
Plot 7-60. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – Low Channel)



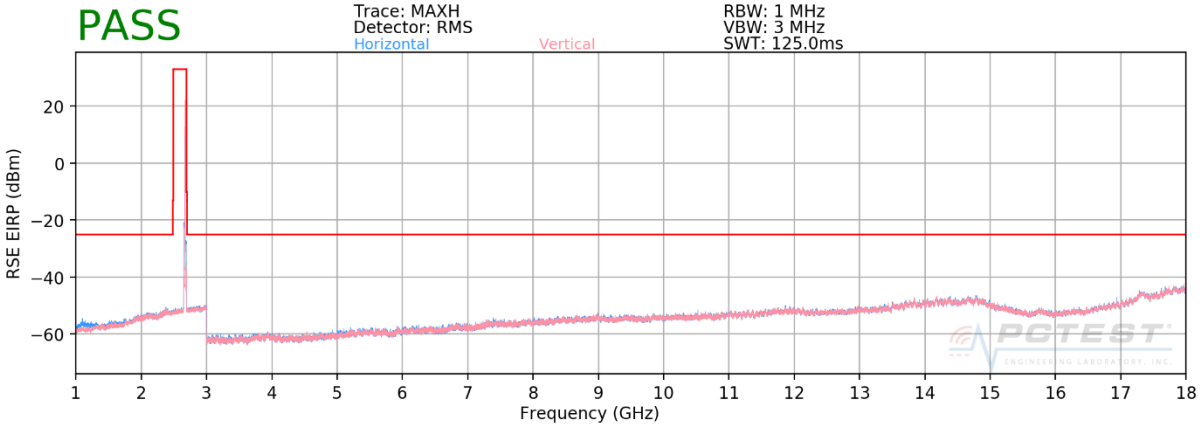
Plot 7-61. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)



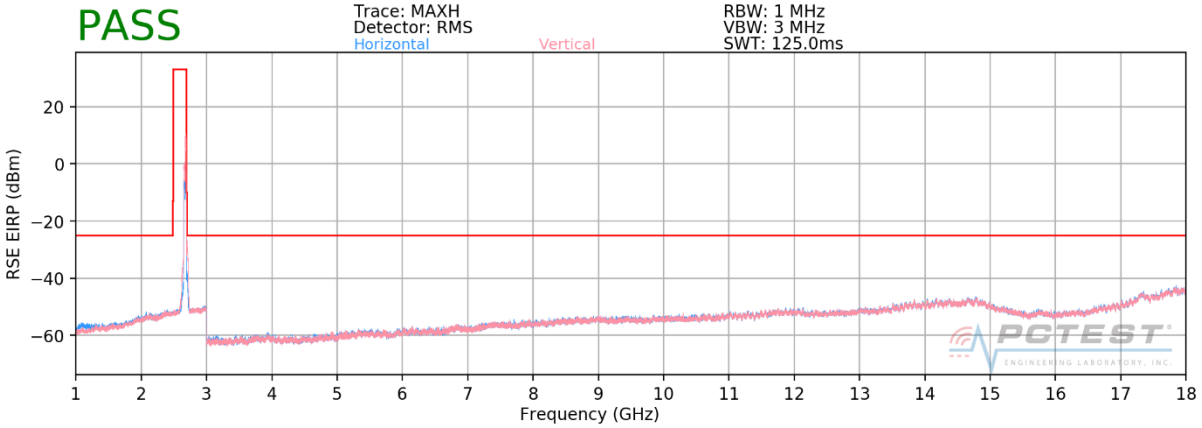
Plot 7-62. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – Mid Channel)



Plot 7-63. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)



Plot 7-64. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – High Channel)



Plot 7-65. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	2506.00	MHz
OPERATING FREQUENCY (SCC):	2525.80	
CHANNEL (PCC):	39750	
CHANNEL (SCC):	39948	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 20	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	316	30	-66.78	10.90	-55.88	-30.9
7518.00	H	181	10	-65.49	11.11	-54.39	-29.4
10024.00	H	-	-	-65.78	11.99	-53.78	-28.8

Table 7-66. Radiated Spruious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2612.80	
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40818	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 20	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	400	35	-69.40	10.75	-58.65	-33.6
7779.00	H	178	14	-66.77	11.40	-55.37	-30.4
10372.00	H	-	-	-66.38	12.59	-53.79	-28.8

Table 7-67. Radiated Spruious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0)

OPERATING FREQUENCY (SCC):	2680.00	MHz
OPERATING FREQUENCY (PCC):	2660.20	
CHANNEL (SCC):	41490	
CHANNEL (PCC):	41292	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 20	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	196	43	-68.87	10.70	-58.17	-33.2
8040.00	H	382	24	-66.39	11.16	-55.23	-30.2
10720.00	H	-	-	-65.77	12.59	-53.18	-28.2

Table 7-68. Radiated Spruious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 + 20	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	-	-	-70.55	10.74	-59.81	-34.8
7779.00	H	355	56	-67.03	11.44	-55.59	-30.6
10372.00	H	-	-	-66.33	12.42	-53.91	-28.9

Table 7-69. Radiated Spruious Plot with WCP (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFV405UA** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.