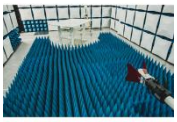
PCTEST ENGINEERING LABORATORY, INC.
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



MEASUREMENT REPORT
LTE

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

Date of Testing:
1/15/2019 - 2/7/2019
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M1901080002-03-R1.ZNF

FCC ID:	**ZNFG820UM**
APPLICANT:	**LG Electronics USA, Inc.**

Application Type:	Class II Permissive Change
Model:	LM-G820UM
Additional Model(s):	LM-G820UM, LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM, LM-G820QM, LMG820QM, G820QM, LM-G820QM5, LMG820QM5, G820QM5, LM-G820QM6, LMG820QM6, G820QM6
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: 1M1901080002-03-R1.ZNF) supersedes and replaces the previously issued test report (S/N: 1M1901080002-03.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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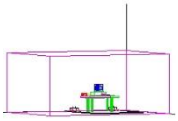
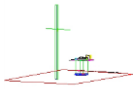


MEASUREMENT REPORT
FCC Part 22, 24, & 27



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	0.055	17.41			4M51G7D	QPSK
LTE Band 71	27	665.5 - 695.5	0.048	16.78			4M52W7D	16QAM
LTE Band 71	27	665.5 - 695.5	0.039	15.95			4M52W7D	64QAM
LTE Band 71	27	668 - 693	0.056	17.45			9M05G7D	QPSK
LTE Band 71	27	668 - 693	0.047	16.69			9M01W7D	16QAM
LTE Band 71	27	668 - 693	0.038	15.85			9M05W7D	64QAM
LTE Band 71	27	670.5 - 690.5	0.058	17.62			13M5G7D	QPSK
LTE Band 71	27	670.5 - 690.5	0.049	16.90			13M5W7D	16QAM
LTE Band 71	27	670.5 - 690.5	0.040	16.04			13M5W7D	64QAM
LTE Band 71	27	673 - 688	0.055	17.44			18M0G7D	QPSK
LTE Band 71	27	673 - 688	0.046	16.59			18M0W7D	16QAM
LTE Band 71	27	673 - 688	0.036	15.61			18M1W7D	64QAM
LTE Band 12	27	699.7 - 715.3	0.095	19.80	0.157	21.95	1M10G7D	QPSK
LTE Band 12	27	699.7 - 715.3	0.059	17.69	0.096	19.84	1M10W7D	16QAM
LTE Band 12	27	699.7 - 715.3	0.045	16.49	0.073	18.64	1M10W7D	64QAM
LTE Band 12	27	700.5 - 714.5	0.093	19.68	0.152	21.83	2M70G7D	QPSK
LTE Band 12	27	700.5 - 714.5	0.064	18.08	0.105	20.23	2M71W7D	16QAM
LTE Band 12	27	700.5 - 714.5	0.049	16.90	0.080	19.05	2M70W7D	64QAM
LTE Band 12/17	27	701.5 - 713.5	0.103	20.12	0.169	22.27	4M51G7D	QPSK
LTE Band 12/17	27	701.5 - 713.5	0.071	18.49	0.116	20.64	4M51W7D	16QAM
LTE Band 12/17	27	701.5 - 713.5	0.057	17.56	0.093	19.71	4M52W7D	64QAM
LTE Band 12/17	27	704 - 711	0.099	19.94	0.162	22.09	9M04G7D	QPSK
LTE Band 12/17	27	704 - 711	0.068	18.32	0.111	20.47	9M01W7D	16QAM
LTE Band 12/17	27	704 - 711	0.053	17.25	0.087	19.40	9M04W7D	64QAM
LTE Band 13	27	779.5 - 784.5	0.106	20.25	0.174	22.40	4M57G7D	QPSK
LTE Band 13	27	779.5 - 784.5	0.080	19.01	0.130	21.16	4M57W7D	16QAM
LTE Band 13	27	779.5 - 784.5	0.065	18.13	0.107	20.28	4M59W7D	64QAM
LTE Band 13	27	782	0.104	20.19	0.171	22.34	9M05G7D	QPSK
LTE Band 13	27	782	0.071	18.49	0.116	20.64	9M08W7D	16QAM
LTE Band 13	27	782	0.058	17.61	0.095	19.76	9M05W7D	64QAM
LTE Band 26/5	22H	824.7 - 848.3	0.053	17.26	0.087	19.41	1M10G7D	QPSK
LTE Band 26/5	22H	824.7 - 848.3	0.035	15.45	0.058	17.60	1M11W7D	16QAM
LTE Band 26/5	22H	824.7 - 848.3	0.029	14.63	0.048	16.78	1M10W7D	64QAM
LTE Band 26/5	22H	825.5 - 847.5	0.052	17.19	0.086	19.34	2M72G7D	QPSK
LTE Band 26/5	22H	825.5 - 847.5	0.037	15.65	0.060	17.80	2M72W7D	16QAM
LTE Band 26/5	22H	825.5 - 847.5	0.029	14.67	0.048	16.82	2M71W7D	64QAM
LTE Band 26/5	22H	826.5 - 846.5	0.051	17.07	0.084	19.22	4M57G7D	QPSK
LTE Band 26/5	22H	826.5 - 846.5	0.034	15.32	0.056	17.47	4M54W7D	16QAM
LTE Band 26/5	22H	826.5 - 846.5	0.027	14.36	0.045	16.51	4M53W7D	64QAM
LTE Band 26/5	22H	829 - 844	0.057	17.55	0.093	19.70	9M04G7D	QPSK
LTE Band 26/5	22H	829 - 844	0.038	15.76	0.062	17.91	9M03W7D	16QAM
LTE Band 26/5	22H	829 - 844	0.030	14.83	0.050	16.98	9M02W7D	64QAM
LTE Band 26	22H	831.5 - 841.5	0.056	17.49	0.092	19.64	13M5G7D	QPSK
LTE Band 26	22H	831.5 - 841.5	0.037	15.69	0.061	17.84	13M5W7D	16QAM
LTE Band 26	22H	831.5 - 841.5	0.029	14.69	0.048	16.84	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	0.192	22.82	1M11G7D	QPSK
LTE Band 66/4	27	1710.7 - 1779.3	0.125	20.98	1M09W7D	16QAM
LTE Band 66/4	27	1710.7 - 1779.3	0.103	20.11	1M10W7D	64QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.192	22.82	2M71G7D	QPSK
LTE Band 66/4	27	1711.5 - 1778.5	0.125	20.96	2M71W7D	16QAM
LTE Band 66/4	27	1711.5 - 1778.5	0.099	19.97	2M71W7D	64QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.196	22.91	4M58G7D	QPSK
LTE Band 66/4	27	1712.5 - 1777.5	0.127	21.05	4M52W7D	16QAM
LTE Band 66/4	27	1712.5 - 1777.5	0.103	20.14	4M53W7D	64QAM
LTE Band 66/4	27	1715 - 1775	0.193	22.86	9M03G7D	QPSK
LTE Band 66/4	27	1715 - 1775	0.128	21.06	9M00W7D	16QAM
LTE Band 66/4	27	1715 - 1775	0.102	20.09	9M02W7D	64QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.200	23.00	13M5G7D	QPSK
LTE Band 66/4	27	1717.5 - 1772.5	0.130	21.14	13M5W7D	16QAM
LTE Band 66/4	27	1717.5 - 1772.5	0.104	20.17	13M5W7D	64QAM
LTE Band 66/4	27	1720 - 1770	0.207	23.15	18M0G7D	QPSK
LTE Band 66/4	27	1720 - 1770	0.134	21.27	18M0W7D	16QAM
LTE Band 66/4	27	1720 - 1770	0.110	20.40	18M0W7D	64QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.152	21.83	1M10G7D	QPSK
LTE Band 25/2	24E	1850.7 - 1914.3	0.100	20.00	1M10W7D	16QAM
LTE Band 25/2	24E	1850.7 - 1914.3	0.080	19.05	1M10W7D	64QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.154	21.89	2M72G7D	QPSK
LTE Band 25/2	24E	1851.5 - 1913.5	0.101	20.06	2M71W7D	16QAM
LTE Band 25/2	24E	1851.5 - 1913.5	0.081	19.10	2M71W7D	64QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.156	21.93	4M54G7D	QPSK
LTE Band 25/2	24E	1852.5 - 1912.5	0.101	20.03	4M52W7D	16QAM
LTE Band 25/2	24E	1852.5 - 1912.5	0.082	19.13	4M53W7D	64QAM
LTE Band 25/2	24E	1855 - 1910	0.158	21.99	9M02G7D	QPSK
LTE Band 25/2	24E	1855 - 1910	0.103	20.14	9M01W7D	16QAM
LTE Band 25/2	24E	1855 - 1910	0.083	19.20	9M02W7D	64QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.167	22.24	13M5G7D	QPSK
LTE Band 25/2	24E	1857.5 - 1907.5	0.109	20.39	13M5W7D	16QAM
LTE Band 25/2	24E	1857.5 - 1907.5	0.088	19.44	13M5W7D	64QAM
LTE Band 25/2	24E	1860 - 1905	0.165	22.18	18M0G7D	QPSK
LTE Band 25/2	24E	1860 - 1905	0.109	20.37	18M0W7D	16QAM
LTE Band 25/2	24E	1860 - 1905	0.087	19.38	18M0W7D	64QAM

EUT Overview (Mid Bands)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Emission Designator	Modulation
			Max. Power (W)	Max. Power (dBm)		
LTE Band 30	27	2307.5 - 2312.5	0.059	17.74	4M56G7D	QPSK
LTE Band 30	27	2307.5 - 2312.5	0.038	15.77	4M52W7D	16QAM
LTE Band 30	27	2307.5 - 2312.5	0.031	14.98	4M52W7D	64QAM
LTE Band 30	27	2310	0.056	17.51	9M03G7D	QPSK
LTE Band 30	27	2310	0.037	15.66	9M00W7D	16QAM
LTE Band 30	27	2310	0.029	14.69	9M03W7D	64QAM
LTE Band 7	27	2502.5 - 2567.5	0.055	17.39	4M58G7D	QPSK
LTE Band 7	27	2502.5 - 2567.5	0.034	15.38	4M58W7D	16QAM
LTE Band 7	27	2502.5 - 2567.5	0.028	14.43	4M52W7D	64QAM
LTE Band 7	27	2505 - 2565	0.055	17.39	9M03G7D	QPSK
LTE Band 7	27	2505 - 2565	0.036	15.51	9M05W7D	16QAM
LTE Band 7	27	2505 - 2565	0.028	14.54	9M01W7D	64QAM
LTE Band 7	27	2507.5 - 2562.5	0.056	17.51	13M5G7D	QPSK
LTE Band 7	27	2507.5 - 2562.5	0.037	15.63	13M5W7D	16QAM
LTE Band 7	27	2507.5 - 2562.5	0.029	14.63	13M9W7D	64QAM
LTE Band 7	27	2510 - 2560	0.057	17.55	18M0G7D	QPSK
LTE Band 7	27	2510 - 2560	0.038	15.80	18M0W7D	16QAM
LTE Band 7	27	2510 - 2560	0.031	14.93	18M0W7D	64QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.087	19.41	4M52G7D	QPSK
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.085	19.29	4M53W7D	16QAM
LTE Band 41 (PC2)	27	2498.5 - 2687.5	0.069	18.37	4M52W7D	64QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.095	19.76	8M99G7D	QPSK
LTE Band 41 (PC2)	27	2501 - 2685	0.093	19.70	8M99W7D	16QAM
LTE Band 41 (PC2)	27	2501 - 2685	0.076	18.82	9M01W7D	64QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.096	19.84	13M5G7D	QPSK
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.093	19.69	13M5W7D	16QAM
LTE Band 41 (PC2)	27	2503.5 - 2682.5	0.077	18.89	13M4W7D	64QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.102	20.11	18M0G7D	QPSK
LTE Band 41 (PC2)	27	2506 - 2680	0.102	20.09	18M0W7D	16QAM
LTE Band 41 (PC2)	27	2506 - 2680	0.081	19.10	18M0W7D	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: ZNFG820UM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 03864, 03856

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 (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.

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) Model: PWMA-W815A 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

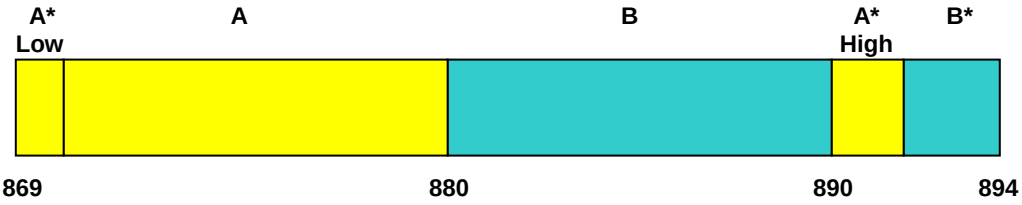
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results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

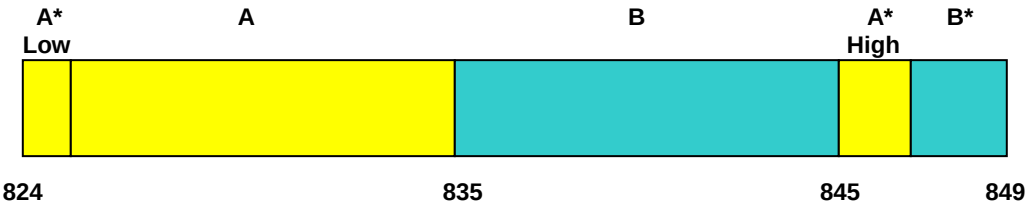
Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks



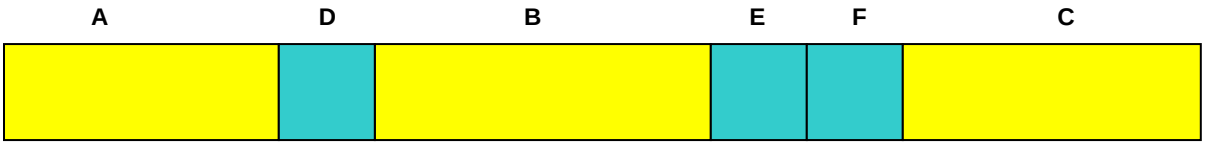
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.5 Cellular - Mobile Frequency Blocks



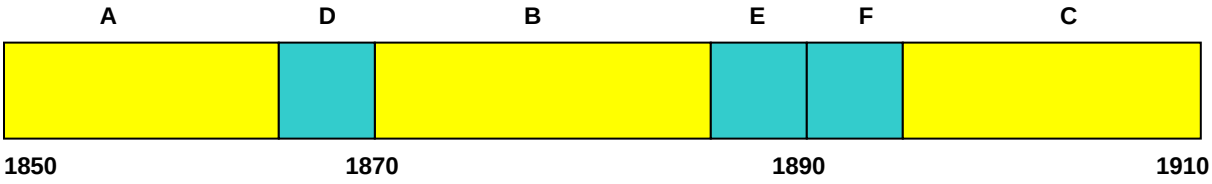
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.6 PCS - Base Frequency Blocks



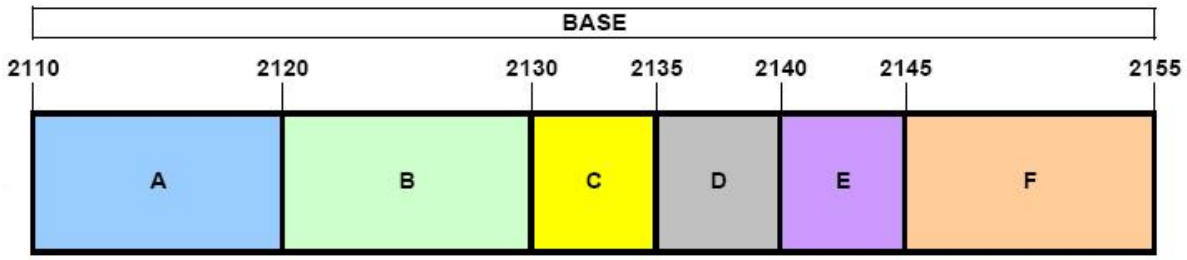
BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.7 PCS - Mobile Frequency Blocks



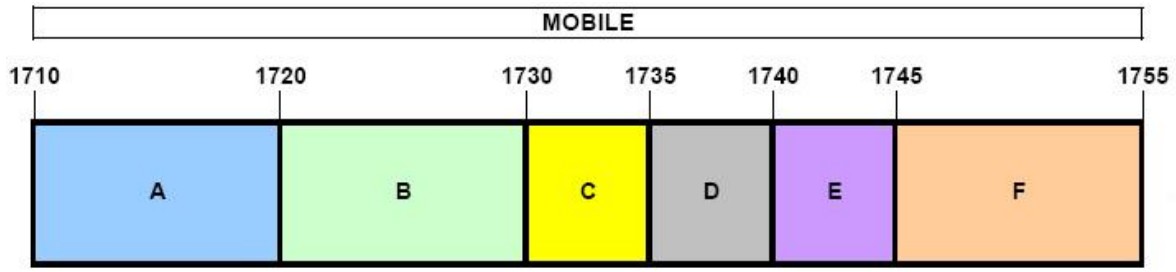
BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

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:

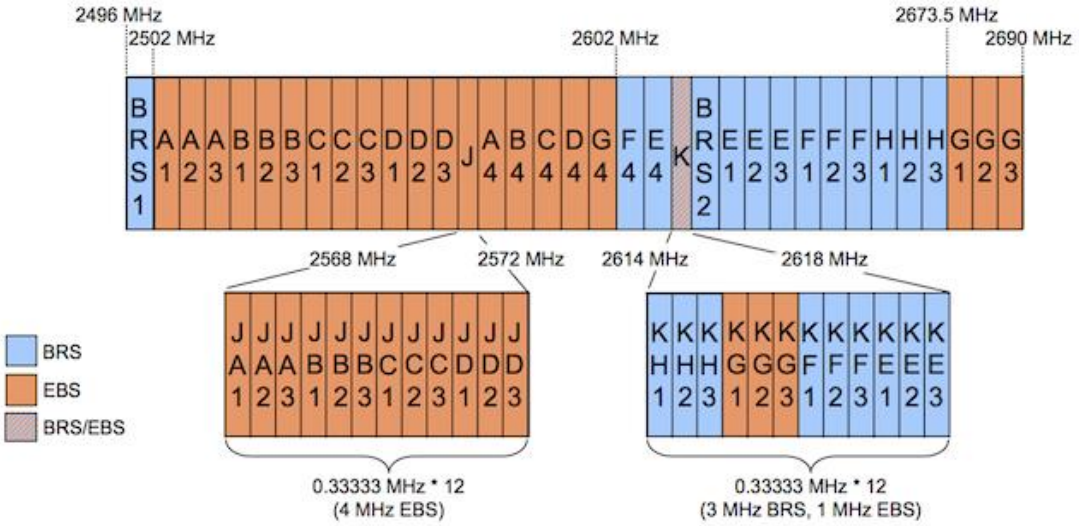
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

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 and 48, 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 $_{[Watts]}$).

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

5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	LTx2	Licensed Transmitter Cable Set	8/23/2018	Annual	8/23/2019	LTx2
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	2/24/2019	US46470561
Agilent	N9030A	PXA Signal Analyzer (44GHz)	5/25/2018	Annual	5/25/2019	MY52350166
Anritsu	MT8821C	Radio Communication Analyzer	11/6/2018	Annual	11/6/2019	6200901190
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
Emco	3115	Horn Antenna (1-18GHz)	3/28/2018	Biennial	3/28/2020	9704-5182
Espec	ESX-2CA	Environmental Chamber	3/28/2018	Annual	3/28/2019	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2018	Biennial	3/28/2020	128337
Huber + Suhner	Sucoflex 102A	40GHz Radiated Cable Set	8/23/2018	Annual	8/23/2019	251425001
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	3/20/2018	Annual	3/20/2019	MY49430494
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	3/30/2018	Annual	3/30/2019	11401010036
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	11/14/2018	Annual	11/14/2019	100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	5/21/2018	Annual	5/21/2019	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	8/9/2018	Annual	8/9/2019	100348
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	6/18/2018	Annual	6/18/2019	102134
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	7/16/2018	Biennial	7/16/2020	101073
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	9/19/2018	Annual	9/19/2019	100040
Seekonk	NC-100	Torque Wrench (8" lb)	5/10/2018	Biennial	5/10/2020	N/A
Sunol	DRH-118	Horn Antenna (1-18GHz)	8/11/2017	Biennial	8/11/2019	A050307
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: ZNFG820UM

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
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)	CONDUCTED	PASS	Section 7.5

Table 7-1. Summary of Conducted Test Results

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 7.3.
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12/17, 13)	< 3 Watts max. ERP			Section 7.3
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 25/2, 7, 41)	< 2 Watts max. EIRP			Section 7.3
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 66/4)	< 1 Watts max. EIRP			Section 7.3
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.3
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions	> 43 + 10log$_{10}$ (P[Watts]) for all out-of-band emissions			Section 7.4
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 7.4
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10log$_{10}$ (P[Watts])			Section 7.4
27.53(m)	Undesirable Emissions	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.4
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.5

Table 7-2. 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 analyzer plots (Sections 7.2, 7.3, 7.4, 7.5) were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "LTE Automation," Version 4.8.
5) For operation <1GHz, the EIRP limits in the table above are referenced to the specifications written in the relevant Radio Standards Specifications for Innovation, Science, and Economic Development Canada.

7.2 Uplink Carrier Aggregation

§27.53(m)

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

For Band 38/41, the minimum permissible attenuation level of any spurious emission is 55 + 10log$_{10}$(P$_{[Watts]}$).

For Band 5 and 66, the minimum permissible attenuation level of any spurious emission is 43 + 10log$_{10}$(P$_{[Watts]}$).

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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

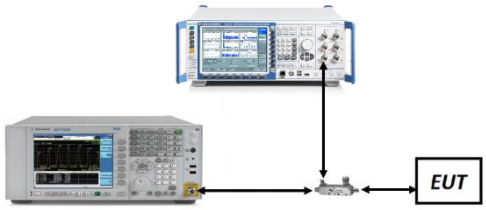


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 2 and 3.

2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-4 and 7-5 below, with both carriers set to transmit using 1RB.

3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

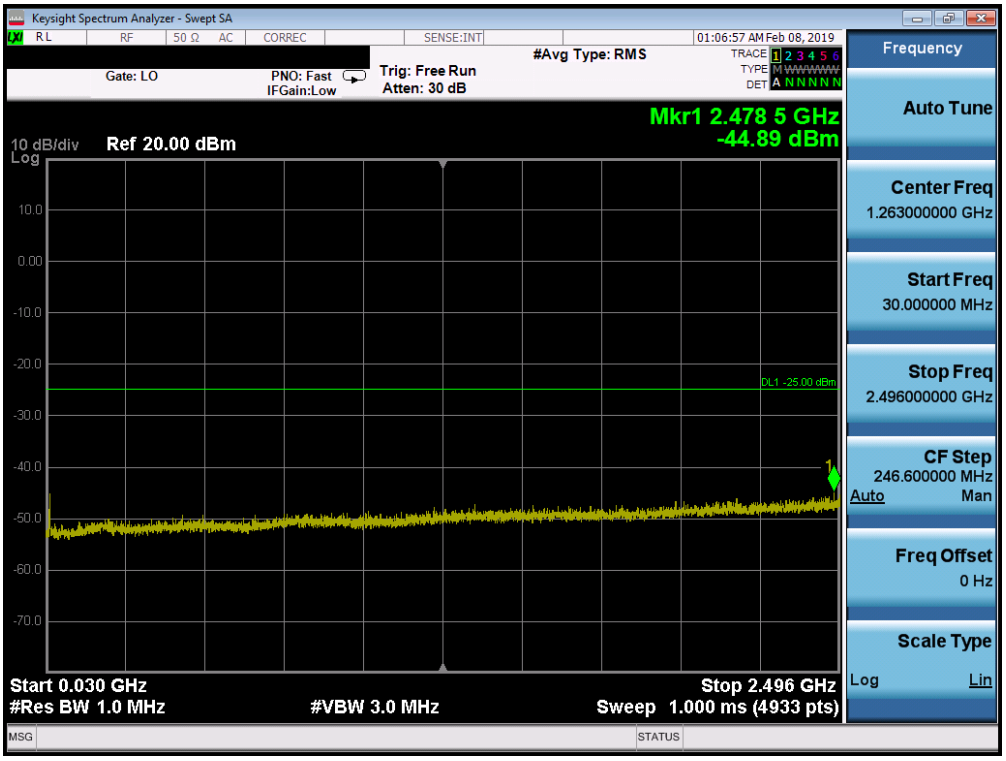
Uplink CA Cofiguration 41C

PCC							SCC							Power
PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
LTE B41	10	39700	2501	QPSK	1	49	LTE B41	15	39820	2513	QPSK	1	0	27.16
LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	10	39845	2515.5	QPSK	1	0	27.33
LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	27.41
LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	27.41
LTE B41	20	39750	2506	QPSK	1	99	LTE B41	5	39867	2517.7	QPSK	1	0	27.42
LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	27.38
LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	27.40
LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	27.57
LTE B41	10	40620	2593	QPSK	1	49	LTE B41	15	40740	2605	QPSK	1	0	27.50
LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	27.55
LTE B41	15	40620	2593	QPSK	1	74	LTE B41	10	40740	2605	QPSK	1	0	27.50
LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	27.51
LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	27.62
LTE B41	20	40620	2593	QPSK	1	99	LTE B41	5	40737	2604.7	QPSK	1	0	27.60
LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	27.47
LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	27.50
LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	27.51
LTE B41	5	41565	2687.5	QPSK	1	0	LTE B41	20	41448	2675.8	QPSK	1	99	27.66
LTE B41	10	41540	2685	QPSK	1	0	LTE B41	15	41420	2673	QPSK	1	74	27.57
LTE B41	10	41540	2685	QPSK	1	0	LTE B41	20	41396	2670.6	QPSK	1	99	27.62
LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	10	41395	2670.5	QPSK	1	49	27.62
LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	15	41365	2667.5	QPSK	1	74	27.63
LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	20	41344	2665.4	QPSK	1	99	27.66
LTE B41	20	41490	2680	QPSK	1	0	LTE B41	5	41373	2668.3	QPSK	1	24	27.48
LTE B41	20	41490	2680	QPSK	1	0	LTE B41	10	41346	2665.6	QPSK	1	49	27.44
LTE B41	20	41490	2680	QPSK	1	0	LTE B41	15	41319	2662.9	QPSK	1	74	27.55
LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	27.63

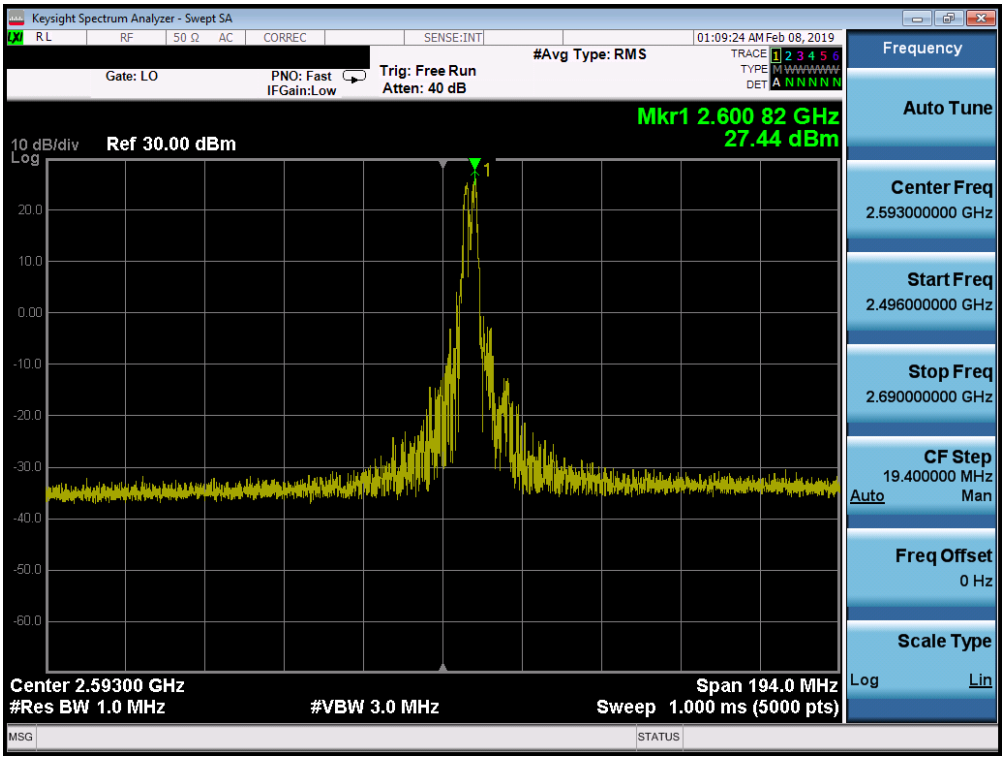
Table 7-3. Conducted Powers (B41 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	22.60
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	22.17
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	19.18
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	23.42
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	27.53
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	25.00
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	24.22

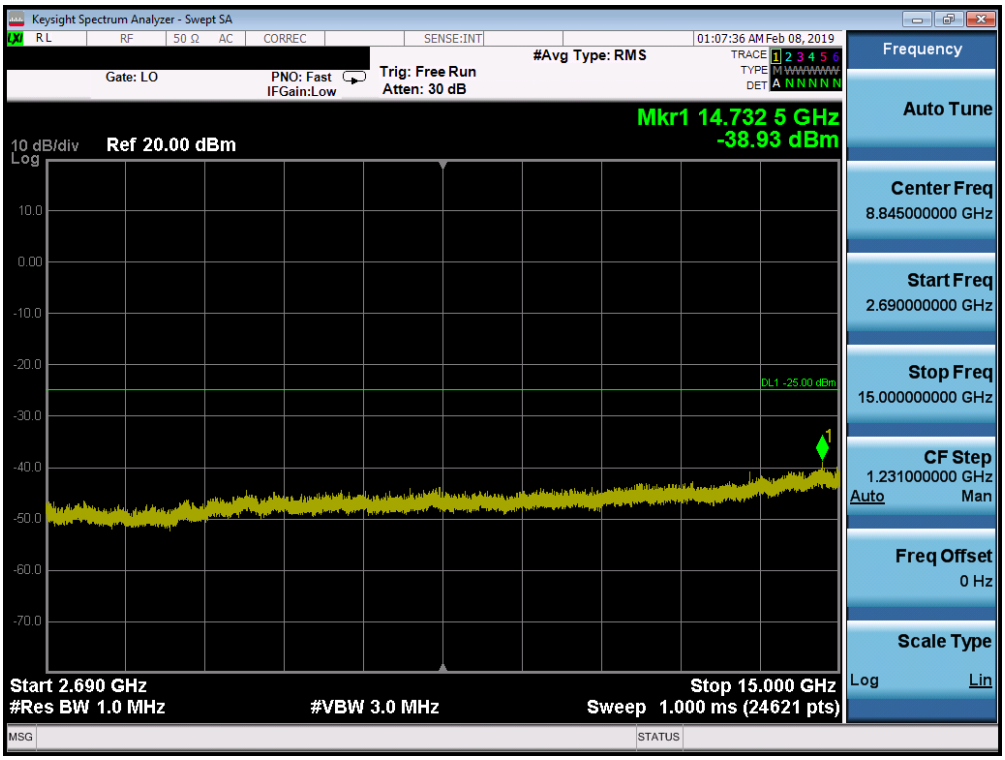
Table 7-4. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)



Plot 7-1. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

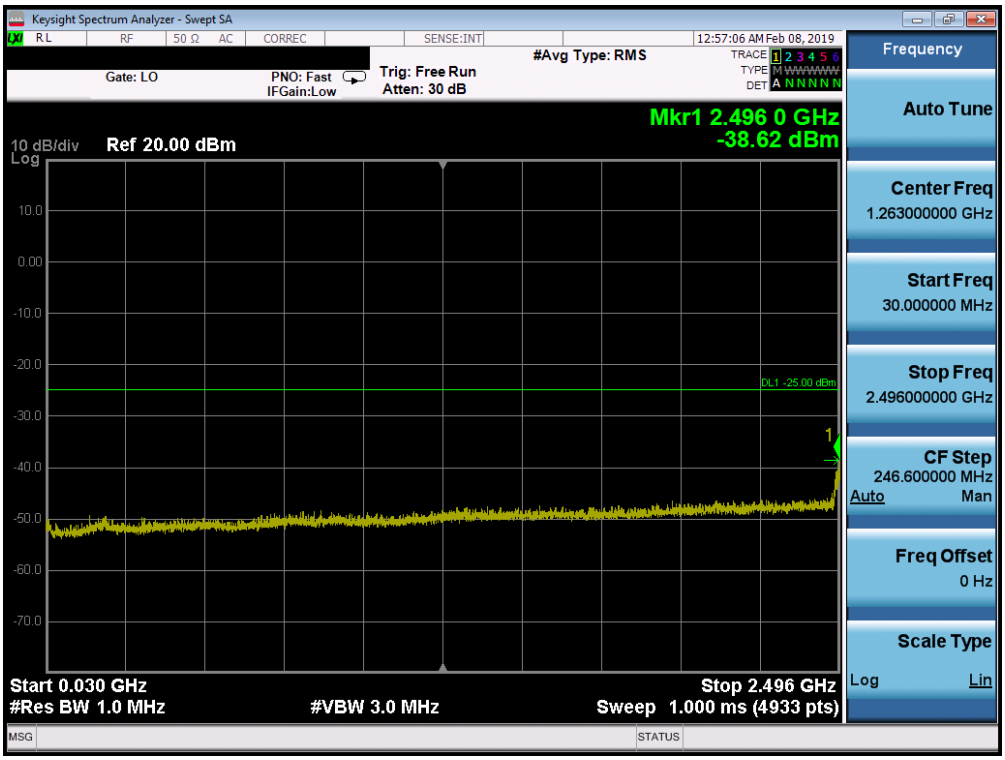


Plot 7-2. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

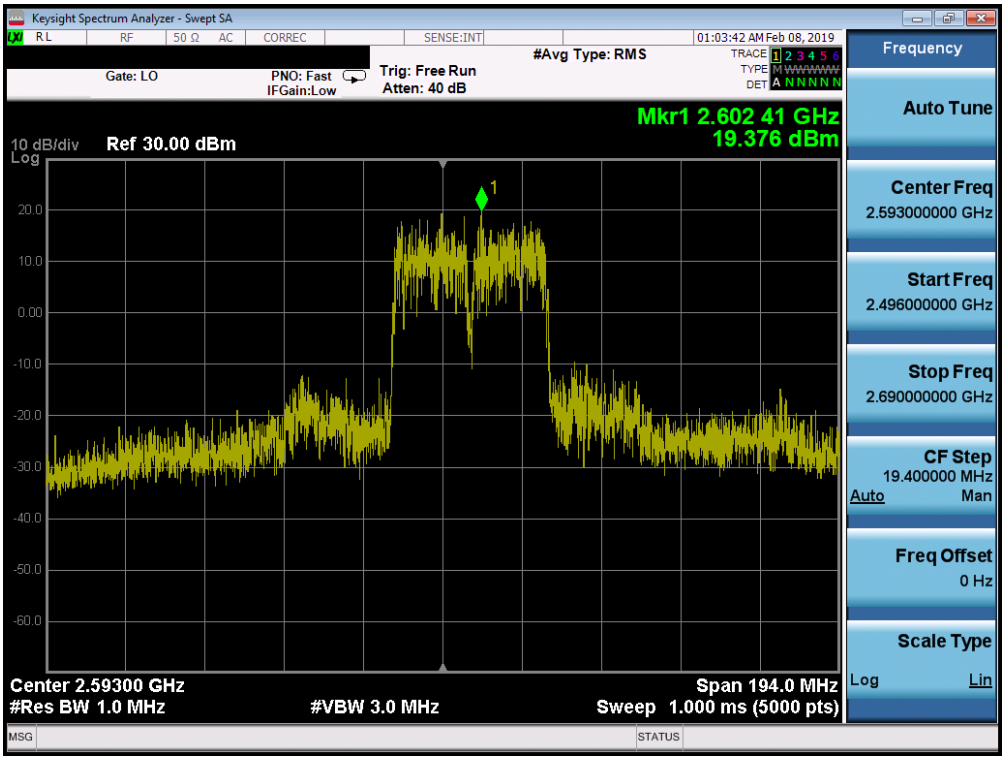


Plot 7-3. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

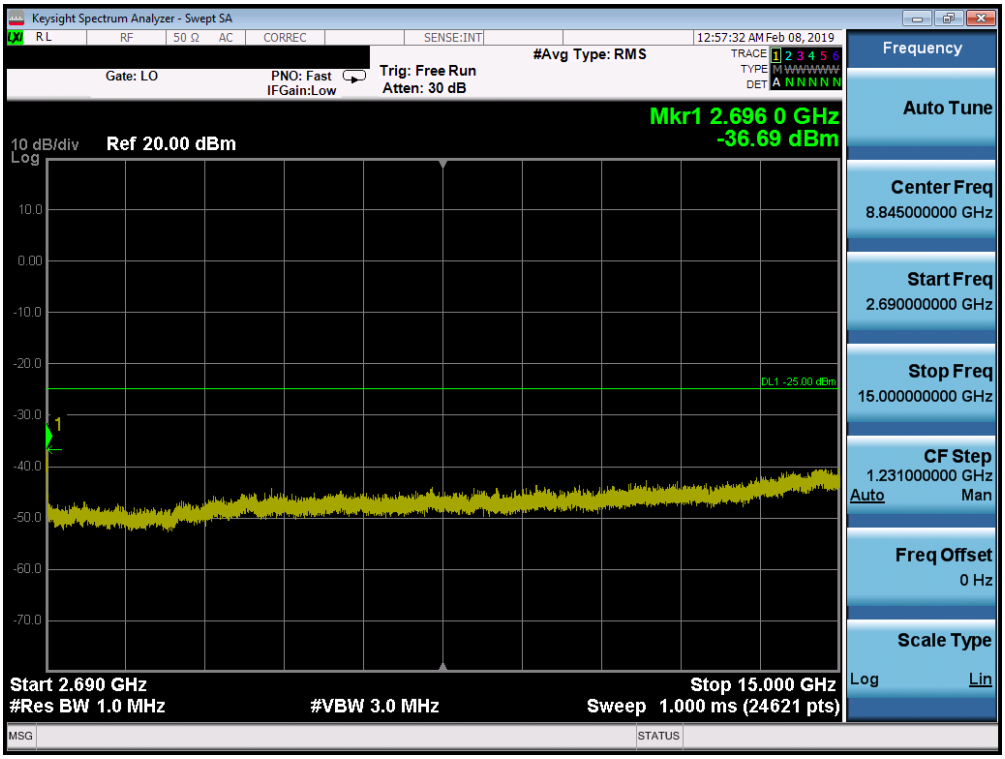
Plot 7-4. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



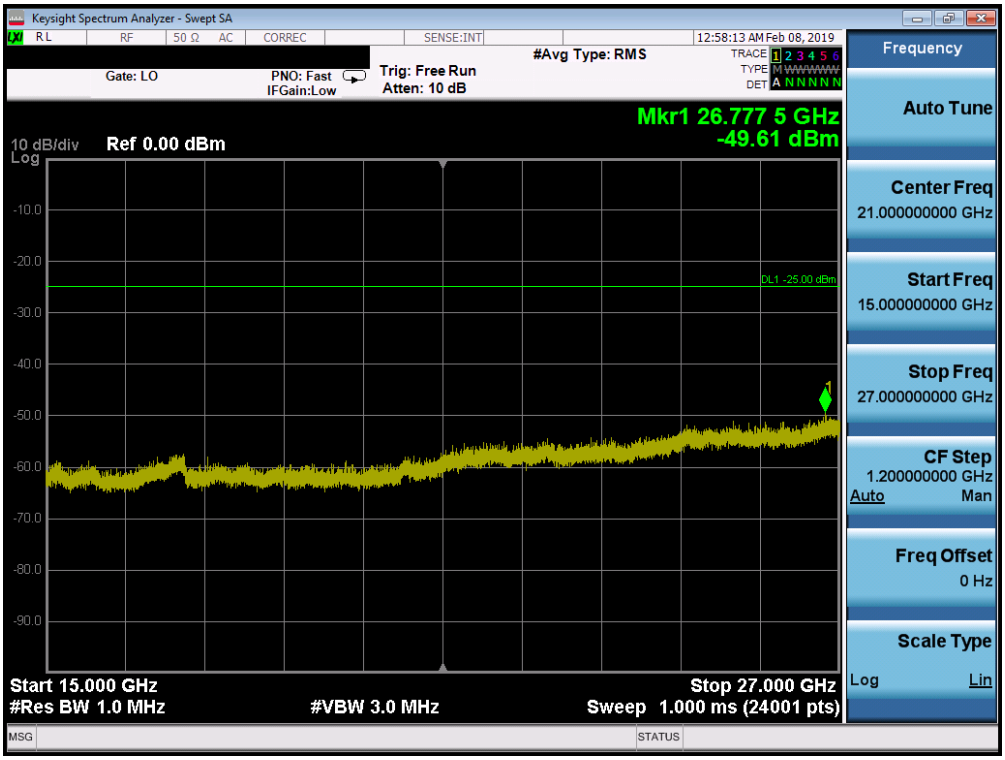
Plot 7-5. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



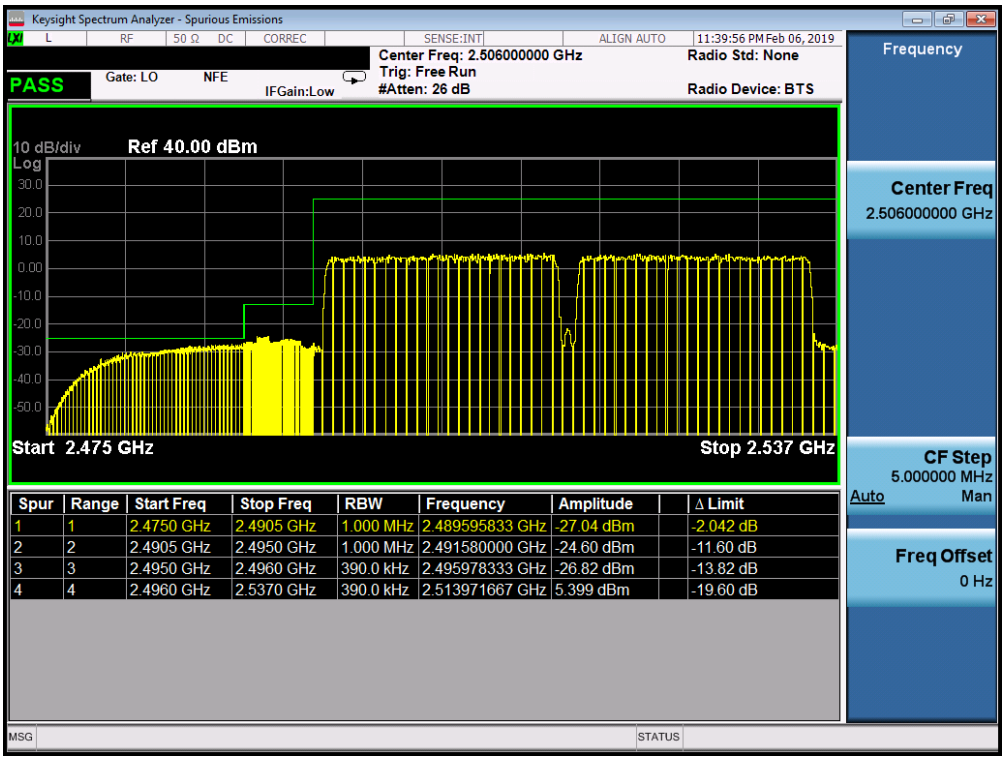
Plot 7-6. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



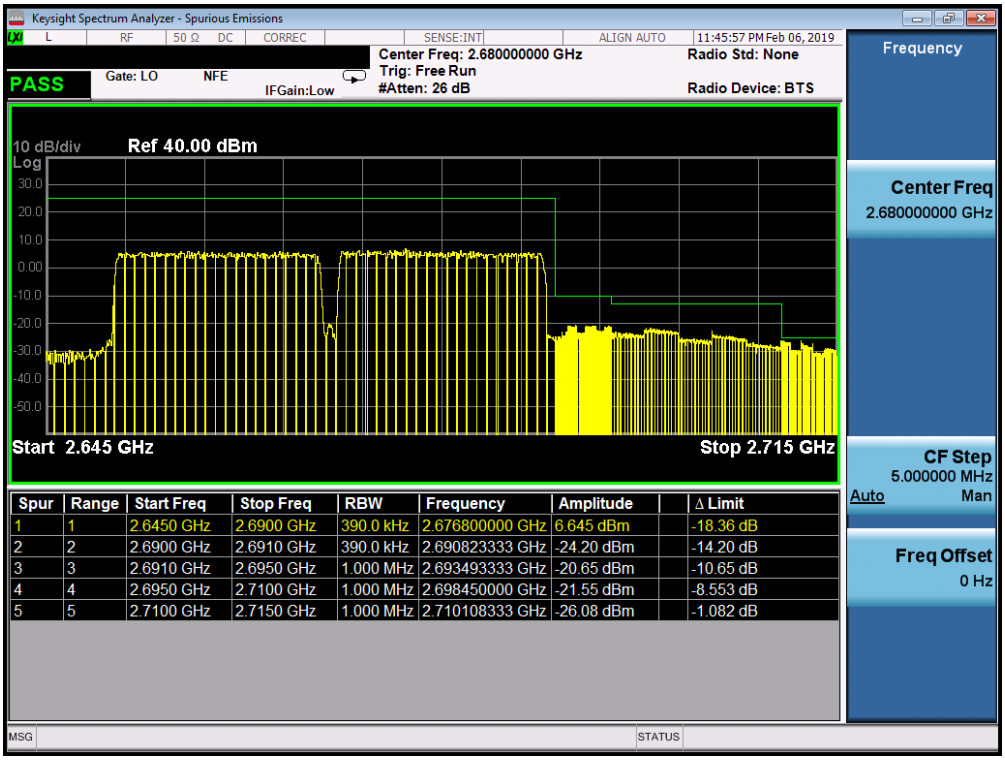
Plot 7-7. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-8. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-9. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6450 GHz	2.6900 GHz	390.0 kHz	2.676800000 GHz	6.645 dBm	-18.36 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690823333 GHz	-24.20 dBm	-14.20 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.693493333 GHz	-20.65 dBm	-10.65 dB
4	4	2.6950 GHz	2.7100 GHz	1.000 MHz	2.698450000 GHz	-21.55 dBm	-8.553 dB
5	5	2.7100 GHz	2.7150 GHz	1.000 MHz	2.710108333 GHz	-26.08 dBm	-1.082 dB

Plot 7-10. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

7.3 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.

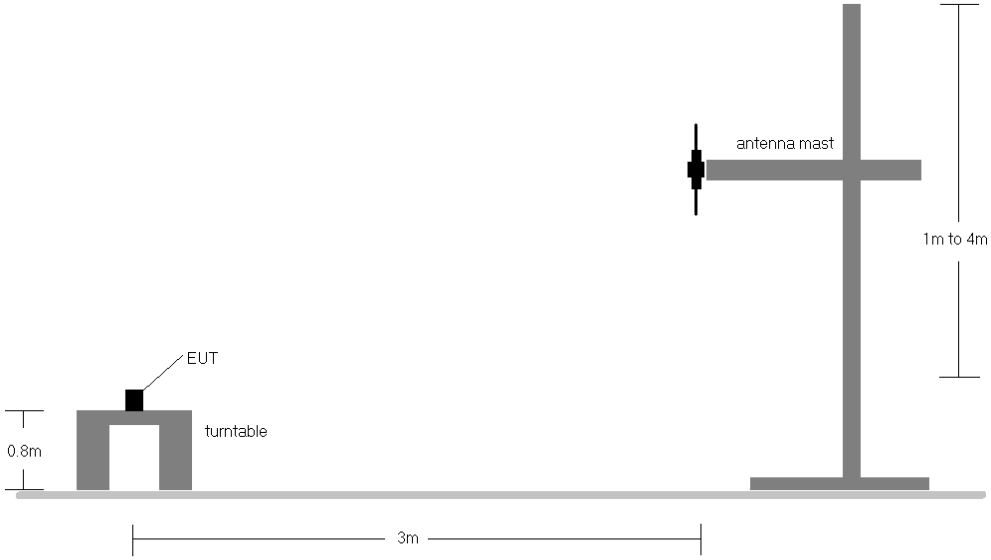


Figure 7-2. Radiated Test Setup <1GHz

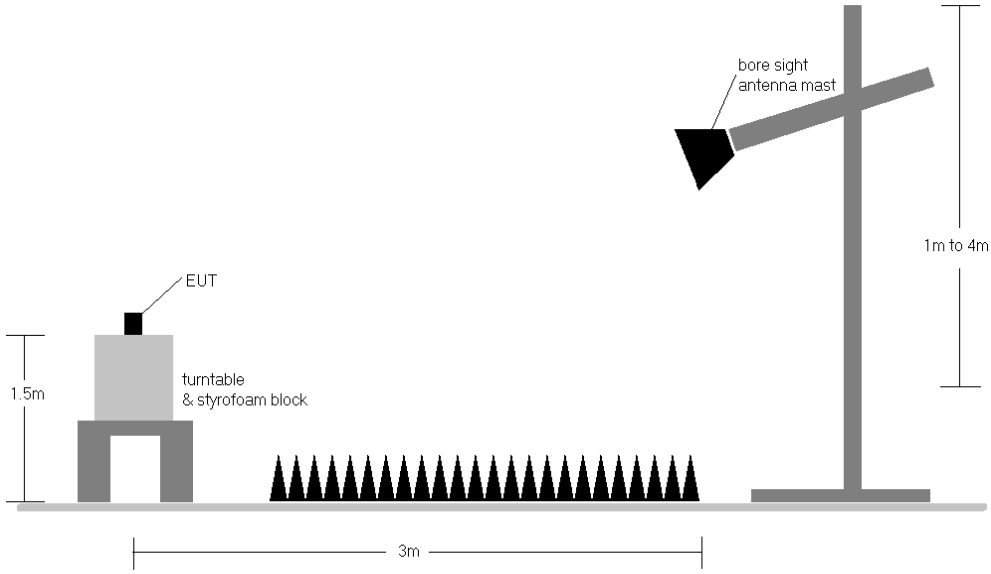


Figure 7-3. Radiated Test Setup >1GHz

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	153	119	1 / 0	15.33	3.84	17.02	0.050	34.77	-17.76
680.50	5	QPSK	H	139	105	1 / 24	15.65	3.91	**17.41**	0.055	34.77	-17.36
695.50	5	QPSK	H	151	113	1 / 24	14.65	3.98	16.48	0.044	34.77	-18.29
680.50	5	16-QAM	H	139	105	1 / 24	15.02	3.91	**16.78**	0.048	34.77	-17.99
680.50	5	64-QAM	H	139	105	1 / 0	14.19	3.91	**15.95**	0.039	34.77	-18.82
668.00	10	QPSK	H	131	117	1 / 49	15.53	3.85	17.23	0.053	34.77	-17.54
680.50	10	QPSK	H	136	108	1 / 0	15.69	3.91	**17.45**	0.056	34.77	-17.32
693.00	10	QPSK	H	146	104	1 / 0	14.75	3.97	16.57	0.045	34.77	-18.20
680.50	10	16-QAM	H	136	108	1 / 0	14.93	3.91	**16.69**	0.047	34.77	-18.08
680.50	10	64-QAM	H	136	108	1 / 0	14.09	3.91	**15.85**	0.038	34.77	-18.92
670.50	15	QPSK	H	134	108	1 / 74	15.37	3.86	17.08	0.051	34.77	-17.69
680.50	15	QPSK	H	139	106	1 / 0	15.86	3.91	**17.62**	**0.058**	34.77	-17.15
690.50	15	QPSK	H	149	107	1 / 0	15.30	3.96	17.11	0.051	34.77	-17.67
680.50	15	16-QAM	H	139	106	1 / 0	15.14	3.91	**16.90**	0.049	34.77	-17.87
680.50	15	64-QAM	H	139	106	1 / 0	14.28	3.91	**16.04**	0.040	34.77	-18.73
673.00	20	QPSK	H	144	102	1 / 99	15.54	3.87	17.26	0.053	34.77	-17.51
680.50	20	QPSK	H	100	110	1 / 0	15.68	3.91	**17.44**	0.055	34.77	-17.33
688.00	20	QPSK	H	148	105	1 / 0	15.62	3.94	17.41	0.055	34.77	-17.36
680.50	20	16-QAM	H	100	110	1 / 0	14.83	3.91	**16.59**	0.046	34.77	-18.18
680.50	20	64-QAM	H	100	110	1 / 0	13.85	3.91	**15.61**	0.036	34.77	-19.16
680.50	15	QPSK	V	102	124	1 / 0	12.11	3.61	13.57	0.023	34.77	-21.20
680.50	15 (WCP)	QPSK	H	168	13	1 / 0	11.94	3.91	13.70	0.023	34.77	-21.07

Table 7-5. 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	261	108	1 / 0	17.49	4.00	19.34	0.086	34.77	-15.43	21.49	0.141	36.99	-15.50
707.50	1.4	QPSK	H	261	105	1 / 5	17.73	4.22	**19.80**	0.095	34.77	-14.98	**21.95**	0.157	36.99	-15.04
715.30	1.4	QPSK	H	262	110	1 / 5	17.15	4.44	19.44	0.088	34.77	-15.33	21.59	0.144	36.99	-15.40
707.50	1.4	16-QAM	H	261	105	1 / 5	15.62	4.22	**17.69**	0.059	34.77	-17.09	**19.84**	0.096	36.99	-17.15
707.50	1.4	64-QAM	H	261	105	1 / 5	14.42	4.22	**16.49**	0.045	34.77	-18.29	**18.64**	0.073	36.99	-18.35
700.50	3	QPSK	H	262	98	1 / 0	17.47	4.01	19.33	0.086	34.77	-15.44	21.48	0.141	36.99	-15.51
707.50	3	QPSK	H	260	96	1 / 14	17.61	4.22	**19.68**	0.093	34.77	-15.10	**21.83**	0.152	36.99	-15.16
714.50	3	QPSK	H	265	101	1 / 0	17.13	4.41	19.39	0.087	34.77	-15.38	21.54	0.143	36.99	-15.45
707.50	3	16-QAM	H	260	96	1 / 0	16.01	4.22	**18.08**	0.064	34.77	-16.70	**20.23**	0.105	36.99	-16.76
707.50	3	64-QAM	H	260	96	1 / 0	14.83	4.22	**16.90**	0.049	34.77	-17.88	**19.05**	0.080	36.99	-17.94

Table 7-6. 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	262	99	1 / 24	17.53	4.04	19.42	0.088	34.77	-15.35	21.57	0.144	36.99	-15.42
707.50	5	QPSK	H	266	109	1 / 24	17.94	4.22	20.01	0.100	34.77	-14.77	22.16	0.164	36.99	-14.83
713.50	5	QPSK	H	264	105	1 / 0	17.88	4.39	**20.12**	**0.103**	34.77	-14.65	**22.27**	**0.169**	36.99	-14.72
713.50	5	16-QAM	H	264	105	1 / 0	16.25	4.39	**18.49**	0.071	34.77	-16.28	**20.64**	0.116	36.99	-16.35
707.50	5	64-QAM	H	266	109	1 / 24	15.49	4.22	**17.56**	0.057	34.77	-17.22	**19.71**	0.093	36.99	-17.28
704.00	10	QPSK	H	262	104	1 / 49	17.72	4.12	19.69	0.093	34.77	-15.09	21.84	0.153	36.99	-15.15
707.50	10	QPSK	H	264	105	1 / 49	17.64	4.22	19.71	0.093	34.77	-15.07	21.86	0.153	36.99	-15.13
711.00	10	QPSK	H	265	108	1 / 0	17.77	4.32	**19.94**	0.099	34.77	-14.84	**22.09**	0.162	36.99	-14.90
711.00	10	16-QAM	H	265	108	1 / 0	16.15	4.32	**18.32**	0.068	34.77	-16.46	**20.47**	0.111	36.99	-16.52
711.00	10	64-QAM	H	265	108	1 / 0	15.08	4.32	**17.25**	0.053	34.77	-17.53	**19.40**	0.087	36.99	-17.59
713.50	5	QPSK	V	157	120	1 / 0	16.28	4.06	18.19	0.066	34.77	-16.58	20.34	0.108	36.99	-16.65
713.50	5 (WCP)	QPSK	H	155	144	1 / 0	11.40	4.39	13.64	0.023	34.77	-21.13	15.79	0.038	36.99	-21.20

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

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]
779.50	5	QPSK	H	234	98	1 / 24	16.14	6.18	20.17	0.104	34.77	-14.61	22.32	0.170	36.99	-14.67
782.00	5	QPSK	H	234	110	1 / 0	16.16	6.24	**20.25**	**0.106**	34.77	-14.52	**22.40**	**0.174**	36.99	-14.59
784.50	5	QPSK	H	234	98	1 / 24	16.06	6.30	20.21	0.105	34.77	-14.56	22.36	0.172	36.99	-14.63
779.50	5	16-QAM	H	234	98	1 / 24	14.98	6.18	**19.01**	0.080	34.77	-15.77	**21.16**	0.130	36.99	-15.83
779.50	5	64-QAM	H	234	98	1 / 24	14.10	6.18	**18.13**	0.065	34.77	-16.65	**20.28**	0.107	36.99	-16.71
782.00	10	QPSK	H	217	105	1 / 49	16.10	6.24	**20.19**	0.104	34.77	-14.58	**22.34**	0.171	36.99	-14.65
782.00	10	16-QAM	H	217	105	1 / 49	14.40	6.24	**18.49**	0.071	34.77	-16.28	**20.64**	0.116	36.99	-16.35
782.00	10	64-QAM	H	217	105	1 / 49	13.52	6.24	**17.61**	0.058	34.77	-17.16	**19.76**	0.095	36.99	-17.23
782.00	5	QPSK	V	141	130	1 / 0	15.19	5.77	18.81	0.076	34.77	-15.96	20.96	0.125	36.99	-16.03
782.00	5 (WCP)	QPSK	H	149	45	1 / 0	11.14	6.24	15.23	0.033	34.77	-19.54	17.38	0.055	36.99	-19.61

Table 7-8. 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	148	123	1 / 0	13.11	6.30	**17.26**	0.053	38.45	-21.19	**19.41**	0.087	40.61	-21.19
836.50	1.4	QPSK	V	146	122	1 / 5	12.29	6.35	16.49	0.045	38.45	-21.96	18.64	0.073	40.61	-21.97
848.30	1.4	QPSK	V	144	128	1 / 0	12.17	6.40	16.42	0.044	38.45	-22.03	18.57	0.072	40.61	-22.04
824.70	1.4	16-QAM	V	148	123	1 / 0	11.30	6.30	**15.45**	0.035	38.45	-23.00	**17.60**	0.058	40.61	-23.00
848.30	1.4	64-QAM	V	144	128	1 / 0	10.38	6.40	**14.63**	0.029	38.45	-23.82	**16.78**	0.048	40.61	-23.83
825.50	3	QPSK	V	156	126	1 / 14	13.03	6.31	**17.19**	0.052	38.45	-21.26	**19.34**	0.086	40.61	-21.27
836.50	3	QPSK	V	146	133	1 / 14	12.23	6.35	16.43	0.044	38.45	-22.02	18.58	0.072	40.61	-22.03
847.50	3	QPSK	V	152	125	1 / 0	12.24	6.40	16.49	0.045	38.45	-21.97	18.64	0.073	40.61	-21.97
825.50	3	16-QAM	V	156	126	1 / 0	11.49	6.31	**15.65**	0.037	38.45	-22.80	**17.80**	0.060	40.61	-22.81
825.50	3	64-QAM	V	156	126	1 / 0	10.51	6.31	**14.67**	0.029	38.45	-23.78	**16.82**	0.048	40.61	-23.79
826.50	5	QPSK	V	144	118	1 / 0	12.91	6.31	**17.07**	0.051	38.45	-21.38	**19.22**	0.084	40.61	-21.39
836.50	5	QPSK	V	142	117	1 / 0	12.26	6.35	16.46	0.044	38.45	-21.99	18.61	0.073	40.61	-22.00
846.50	5	QPSK	V	144	117	1 / 0	12.13	6.39	16.37	0.043	38.45	-22.08	18.52	0.071	40.61	-22.09
826.50	5	16-QAM	V	144	118	1 / 0	11.16	6.31	**15.32**	0.034	38.45	-23.13	**17.47**	0.056	40.61	-23.14
836.50	5	16-QAM	V	142	117	1 / 0	10.58	6.35	14.78	0.030	38.45	-23.67	16.93	0.049	40.61	-23.68
846.50	5	16-QAM	V	144	117	1 / 0	10.33	6.39	14.57	0.029	38.45	-23.88	16.72	0.047	40.61	-23.89
826.50	5	64-QAM	V	144	118	1 / 0	10.20	6.31	**14.36**	0.027	38.45	-24.09	**16.51**	0.045	40.61	-24.10
829.00	10	QPSK	V	140	122	1 / 0	13.38	6.32	**17.55**	0.057	38.45	-20.90	**19.70**	**0.093**	40.61	-20.91
836.50	10	QPSK	V	142	128	1 / 0	13.24	6.35	17.44	0.055	38.45	-21.01	19.59	0.091	40.61	-21.02
844.00	10	QPSK	V	152	137	1 / 0	11.96	6.38	16.19	0.042	38.45	-22.26	18.34	0.068	40.61	-22.27
829.00	10	16-QAM	V	140	122	1 / 0	11.59	6.32	**15.76**	0.038	38.45	-22.69	**17.91**	0.062	40.61	-22.70
829.00	10	64-QAM	V	140	122	1 / 0	10.66	6.32	**14.83**	0.030	38.45	-23.62	**16.98**	0.050	40.61	-23.63
829.00	10	QPSK	H	102	71	1 / 0	12.42	6.32	16.59	0.046	38.45	-21.86	18.74	0.075	40.61	-21.87
829.00	10 (WCP)	QPSK	V	157	101	1 / 0	8.84	6.32	13.01	0.020	38.45	-25.44	15.16	0.033	40.61	-25.45

Table 7-9. 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	154	115	1 / 0	13.31	6.33	**17.49**	0.056	38.45	-20.96	**19.64**	0.092	40.61	-20.97
836.50	15	QPSK	V	139	125	1 / 0	13.14	6.35	17.34	0.054	38.45	-21.11	19.49	0.089	40.61	-21.12
841.50	15	QPSK	V	143	116	1 / 0	12.59	6.37	16.81	0.048	38.45	-21.64	18.96	0.079	40.61	-21.65
831.50	15	16-QAM	V	154	115	1 / 0	11.51	6.33	**15.69**	0.037	38.45	-22.76	**17.84**	0.061	40.61	-22.77
831.50	15	64-QAM	V	154	115	1 / 0	10.51	6.33	**14.69**	0.029	38.45	-23.76	**16.84**	0.048	40.61	-23.77
829.00	10	QPSK	H	102	71	1 / 0	12.42	6.32	16.59	0.046	38.45	-21.86	18.74	0.075	40.61	-21.87
829.00	10 (WCP)	QPSK	V	157	101	1 / 0	8.84	6.32	13.01	0.020	38.45	-25.44	15.16	0.033	40.61	-25.45

Table 7-10. 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	H	102	227	1 / 5	14.63	8.16	22.79	0.190	30.00	-7.21
1745.00	1.4	QPSK	H	126	220	1 / 5	14.63	8.19	**22.82**	0.192	30.00	-7.18
1779.30	1.4	QPSK	H	100	242	1 / 0	11.69	8.25	19.94	0.099	30.00	-10.06
1745.00	1.4	16-QAM	H	126	220	1 / 0	12.79	8.19	**20.98**	0.125	30.00	-9.02
1745.00	1.4	64-QAM	H	126	220	1 / 5	11.92	8.19	**20.11**	0.103	30.00	-9.89
1711.50	3	QPSK	H	104	196	1 / 14	14.63	8.16	22.79	0.190	30.00	-7.21
1745.00	3	QPSK	H	123	216	1 / 14	14.63	8.19	**22.82**	0.192	30.00	-7.18
1778.50	3	QPSK	H	111	205	1 / 0	11.95	8.25	20.20	0.105	30.00	-9.80
1745.00	3	16-QAM	H	123	216	1 / 14	12.77	8.19	**20.96**	0.125	30.00	-9.04
1745.00	3	64-QAM	H	123	216	1 / 14	11.78	8.19	**19.97**	0.099	30.00	-10.03
1712.50	5	QPSK	H	106	208	1 / 24	14.38	8.16	22.54	0.179	30.00	-7.46
1745.00	5	QPSK	H	119	221	1 / 24	14.72	8.19	**22.91**	0.196	30.00	-7.09
1777.50	5	QPSK	H	16	215	1 / 0	12.08	8.25	20.33	0.108	30.00	-9.67
1745.00	5	16-QAM	H	119	221	1 / 24	12.86	8.19	**21.05**	0.127	30.00	-8.95
1745.00	5	64-QAM	H	119	221	1 / 24	11.95	8.19	**20.14**	0.103	30.00	-9.86
1715.00	10	QPSK	H	136	223	1 / 49	14.57	8.16	22.73	0.188	30.00	-7.27
1745.00	10	QPSK	H	145	243	1 / 49	14.67	8.19	**22.86**	0.193	30.00	-7.14
1775.00	10	QPSK	H	134	236	1 / 0	12.54	8.24	20.78	0.120	30.00	-9.22
1745.00	10	16-QAM	H	145	243	1 / 49	12.87	8.19	**21.06**	0.128	30.00	-8.94
1745.00	10	64-QAM	H	145	243	1 / 49	11.90	8.19	**20.09**	0.102	30.00	-9.91
1717.50	15	QPSK	H	102	218	1 / 0	14.84	8.16	**23.00**	0.200	30.00	-7.00
1745.00	15	QPSK	H	112	230	1 / 74	14.40	8.19	22.59	0.182	30.00	-7.41
1772.50	15	QPSK	H	100	230	1 / 0	13.97	8.24	22.21	0.166	30.00	-7.79
1717.50	15	16-QAM	H	102	218	1 / 0	12.98	8.16	**21.14**	0.130	30.00	-8.86
1717.50	15	64-QAM	H	102	218	1 / 0	12.01	8.16	**20.17**	0.104	30.00	-9.83
1720.00	20	QPSK	H	132	224	1 / 0	14.58	8.17	22.75	0.188	30.00	-7.25
1745.00	20	QPSK	H	123	220	1 / 99	14.96	8.19	**23.15**	**0.207**	30.00	-6.85
1770.00	20	QPSK	H	119	219	1 / 0	14.39	8.23	22.62	0.183	30.00	-7.38
1745.00	20	16-QAM	H	123	220	1 / 99	13.08	8.19	**21.27**	0.134	30.00	-8.73
1745.00	20	64-QAM	H	123	220	1 / 99	12.21	8.19	**20.40**	0.110	30.00	-9.60
1745.00	20	QPSK	V	208	45	1 / 99	11.09	8.00	19.09	0.081	30.00	-10.91
1745.00	20 (WCP)	QPSK	H	155	206	1 / 99	10.15	8.19	18.34	0.068	30.00	-11.66

Table 7-11. 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	121	238	1 / 5	12.96	8.37	21.33	0.136	33.01	-11.68
1882.50	1.4	QPSK	H	108	237	1 / 5	13.41	8.42	**21.83**	0.152	33.01	-11.18
1914.30	1.4	QPSK	H	133	237	1 / 0	11.85	8.47	20.32	0.108	33.01	-12.69
1882.50	1.4	16-QAM	H	108	237	1 / 0	11.58	8.42	**20.00**	0.100	33.01	-13.01
1882.50	1.4	64-QAM	H	108	237	1 / 5	10.63	8.42	**19.05**	0.080	33.01	-13.96
1851.50	3	QPSK	H	121	237	1 / 14	13.12	8.37	21.49	0.141	33.01	-11.52
1882.50	3	QPSK	H	111	235	1 / 14	13.47	8.42	**21.89**	0.154	33.01	-11.12
1913.50	3	QPSK	H	131	238	1 / 14	11.76	8.47	20.23	0.105	33.01	-12.78
1851.50	3	16-QAM	H	121	237	1 / 0	11.23	8.37	19.60	0.091	33.01	-13.41
1882.50	3	16-QAM	H	111	235	1 / 14	11.64	8.42	**20.06**	0.101	33.01	-12.95
1882.50	3	64-QAM	H	111	235	1 / 14	10.68	8.42	**19.10**	0.081	33.01	-13.91
1852.50	5	QPSK	H	121	236	1 / 24	13.14	8.37	21.51	0.142	33.01	-11.50
1882.50	5	QPSK	H	108	234	1 / 24	13.51	8.42	**21.93**	0.156	33.01	-11.08
1912.50	5	QPSK	H	132	232	1 / 24	12.03	8.47	20.50	0.112	33.01	-12.51
1882.50	5	16-QAM	H	108	234	1 / 24	11.61	8.42	**20.03**	0.101	33.01	-12.98
1882.50	5	64-QAM	H	108	234	1 / 24	10.71	8.42	**19.13**	0.082	33.01	-13.88
1855.00	10	QPSK	H	165	236	1 / 49	12.94	8.37	21.31	0.135	33.01	-11.70
1882.50	10	QPSK	H	155	235	1 / 0	13.57	8.42	**21.99**	0.158	33.01	-11.02
1910.00	10	QPSK	H	176	230	1 / 0	12.04	8.46	20.50	0.112	33.01	-12.51
1882.50	10	16-QAM	H	155	235	1 / 0	11.72	8.42	**20.14**	0.103	33.01	-12.87
1882.50	10	64-QAM	H	155	235	1 / 0	10.78	8.42	**19.20**	0.083	33.01	-13.81
1857.50	15	QPSK	H	121	236	1 / 74	13.26	8.38	21.64	0.146	33.01	-11.37
1882.50	15	QPSK	H	111	235	1 / 0	13.82	8.42	**22.24**	**0.167**	33.01	-10.77
1907.50	15	QPSK	H	133	232	1 / 74	11.98	8.46	20.44	0.111	33.01	-12.57
1882.50	15	16-QAM	H	111	235	1 / 0	11.97	8.42	**20.39**	0.109	33.01	-12.62
1882.50	15	64-QAM	H	111	235	1 / 0	11.02	8.42	**19.44**	0.088	33.01	-13.57
1882.50	20	QPSK	H	108	231	1 / 0	13.76	8.42	**22.18**	0.165	33.01	-10.83
1882.50	20	16-QAM	H	108	231	1 / 0	11.95	8.42	**20.37**	0.109	33.01	-12.64
1882.50	20	64-QAM	H	108	231	1 / 0	10.96	8.42	**19.38**	0.087	33.01	-13.63
1882.50	15	QPSK	V	144	312	1 / 0	12.91	8.60	21.51	0.142	33.01	-11.50
1882.50	15 (WCP)	QPSK	H	102	225	1 / 0	9.03	8.42	17.45	0.056	33.01	-15.56

Table 7-12. 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	153	337	1 / 24	9.51	8.23	**17.74**	**0.059**	23.98	-6.24
2312.50	5	QPSK	V	149	34	1 / 24	8.92	8.22	17.14	0.052	23.98	-6.84
2312.50	5	16-QAM	V	149	34	1 / 0	7.55	8.22	**15.77**	0.038	23.98	-8.21
2307.50	5	64-QAM	V	153	337	1 / 24	6.75	8.23	**14.98**	0.031	23.98	-9.00
2310.00	10	QPSK	V	153	337	1 / 0	9.28	8.23	**17.51**	0.056	23.98	-6.47
2310.00	10	16-QAM	V	153	337	1 / 0	7.43	8.23	**15.66**	0.037	23.98	-8.32
2310.00	10	64-QAM	V	153	337	1 / 49	6.46	8.23	**14.69**	0.029	23.98	-9.29
2307.50	5	QPSK	H	180	21	1 / 24	8.77	7.90	16.67	0.046	23.98	-7.31
2307.50	5 (WCP)	QPSK	H	142	187	1 / 24	8.76	8.23	16.99	0.050	23.98	-6.99

Table 7-13. 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	115	228	1 / 24	8.33	7.89	16.22	0.042	33.01	-16.79
2535.00	5	QPSK	H	119	221	1 / 24	9.56	7.83	**17.39**	0.055	33.01	-15.62
2567.50	5	QPSK	H	121	224	1 / 24	9.37	7.76	17.13	0.052	33.01	-15.88
2535.00	5	16-QAM	H	119	221	1 / 24	7.55	7.83	**15.38**	0.034	33.01	-17.63
2535.00	5	64-QAM	H	119	221	1 / 24	6.60	7.83	**14.43**	0.028	33.01	-18.58
2505.00	10	QPSK	H	129	224	1 / 49	8.71	7.89	16.60	0.046	33.01	-16.41
2535.00	10	QPSK	H	115	222	1 / 49	9.56	7.83	**17.39**	0.055	33.01	-15.62
2565.00	10	QPSK	H	118	220	1 / 49	9.62	7.77	17.39	0.055	33.01	-15.62
2565.00	10	16-QAM	H	118	220	1 / 49	7.74	7.77	**15.51**	0.036	33.01	-17.50
2535.00	10	64-QAM	H	115	222	1 / 49	6.71	7.83	**14.54**	0.028	33.01	-18.47
2507.50	15	QPSK	H	125	196	1 / 74	9.29	7.88	17.17	0.052	33.01	-15.84
2535.00	15	QPSK	H	119	206	1 / 0	9.68	7.83	**17.51**	0.056	33.01	-15.50
2562.50	15	QPSK	H	125	206	1 / 74	9.10	7.77	16.87	0.049	33.01	-16.14
2535.00	15	16-QAM	H	119	206	1 / 0	7.80	7.83	**15.63**	0.037	33.01	-17.38
2535.00	15	64-QAM	H	119	206	1 / 0	6.80	7.83	**14.63**	0.029	33.01	-18.38
2510.00	20	QPSK	H	110	228	1 / 99	8.71	7.88	16.59	0.046	33.01	-16.42
2535.00	20	QPSK	H	119	224	1 / 99	9.66	7.83	17.49	0.056	33.01	-15.52
2560.00	20	QPSK	H	106	222	1 / 0	9.77	7.78	**17.55**	**0.057**	33.01	-15.46
2560.00	20	16-QAM	H	106	222	1 / 0	8.02	7.78	**15.80**	0.038	33.01	-17.21
2560.00	20	64-QAM	H	106	222	1 / 0	7.15	7.78	**14.93**	0.031	33.01	-18.08
2560.00	20	QPSK	V	113	230	1 / 0	9.09	7.83	16.92	0.049	33.01	-16.09
2560.00	20 (WCP)	QPSK	H	111	207	1 / 0	9.17	7.83	17.00	0.050	33.01	-16.01

Table 7-14. 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	158	334	1 / 0	10.30	7.90	18.20	0.066	33.01	-14.81
2593.00	5	QPSK	H	152	344	1 / 24	10.96	7.71	18.67	0.074	33.01	-14.34
2687.50	5	QPSK	H	160	345	1 / 24	11.89	7.52	**19.41**	0.087	33.01	-13.60
2687.50	5	16-QAM	H	160	345	1 / 24	11.77	7.52	**19.29**	0.085	33.01	-13.72
2687.50	5	64-QAM	H	160	345	1 / 24	10.85	7.52	**18.37**	0.069	33.01	-14.64
2501.00	10	QPSK	H	148	328	1 / 49	10.60	7.90	18.50	0.071	33.01	-14.51
2593.00	10	QPSK	H	152	338	1 / 49	11.41	7.71	19.12	0.082	33.01	-13.89
2685.00	10	QPSK	H	166	344	1 / 49	12.23	7.53	**19.76**	0.095	33.01	-13.25
2685.00	10	16-QAM	H	166	344	1 / 49	12.17	7.53	**19.70**	0.093	33.01	-13.31
2685.00	10	64-QAM	H	166	344	1 / 49	11.29	7.53	**18.82**	0.076	33.01	-14.19
2503.50	15	QPSK	H	149	346	1 / 74	10.62	7.89	18.51	0.071	33.01	-14.50
2593.00	15	QPSK	H	147	350	1 / 74	11.30	7.71	19.01	0.080	33.01	-14.00
2682.50	15	QPSK	H	135	354	1 / 0	12.31	7.53	**19.84**	0.096	33.01	-13.17
2682.50	15	16-QAM	H	135	354	1 / 0	12.16	7.53	**19.69**	0.093	33.01	-13.32
2682.50	15	64-QAM	H	135	354	1 / 0	11.36	7.53	**18.89**	0.077	33.01	-14.12
2506.00	20	QPSK	H	146	333	1 / 0	9.66	7.89	17.55	0.057	33.01	-15.46
2593.00	20	QPSK	H	150	342	1 / 99	11.31	7.71	19.02	0.080	33.01	-13.99
2680.00	20	QPSK	H	135	346	1 / 0	12.57	7.54	**20.11**	**0.102**	33.01	-12.91
2680.00	20	16-QAM	H	135	346	1 / 0	12.55	7.54	**20.09**	0.102	33.01	-12.93
2680.00	20	64-QAM	H	135	346	1 / 0	11.56	7.54	**19.10**	0.081	33.01	-13.92
2680.00	20	QPSK	V	108	278	1 / 0	10.75	7.63	18.38	0.069	33.01	-14.63
2680.00	20 (WCP)	QPSK	H	117	227	1 / 0	10.88	7.54	18.42	0.069	33.01	-14.60

Table 7-15. EIRP Data (Band 41 PC2)

7.4 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.

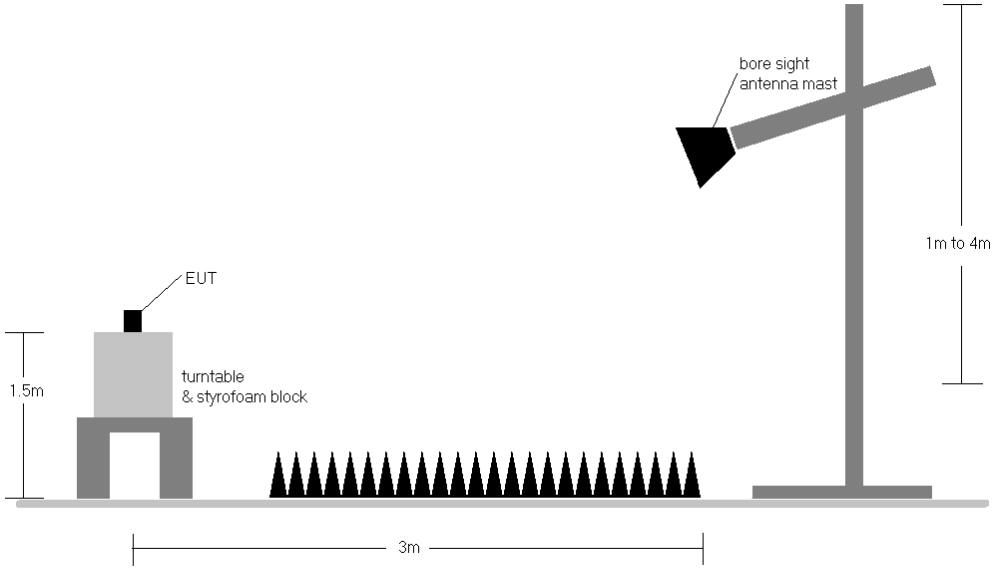


Figure 7-4. Test Instrument & Measurement Setup

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.

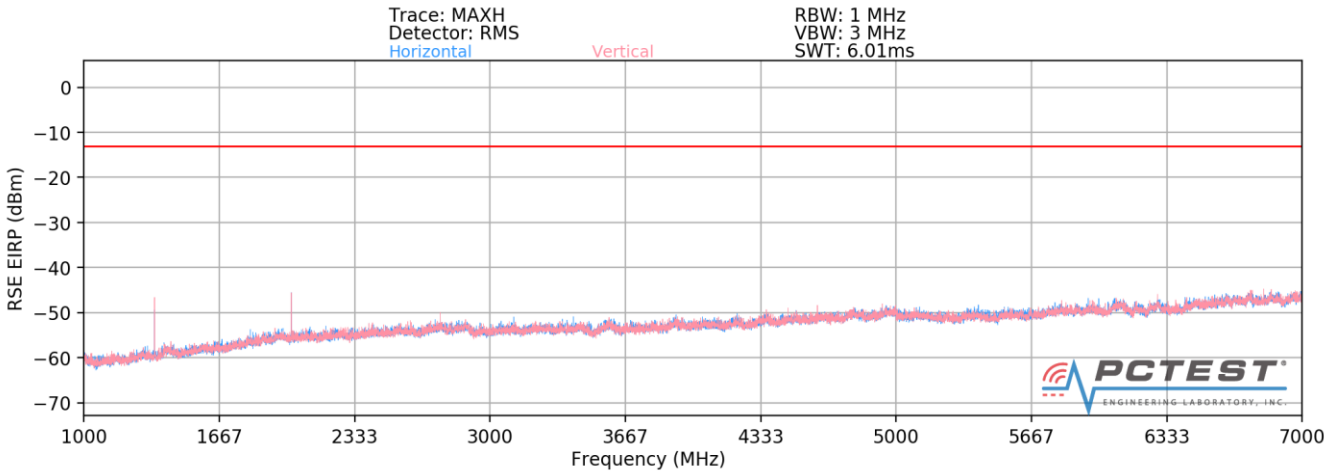
2) This unit was tested with its standard battery.

3) 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 7-11. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY:	670.50	MHz
CHANNEL:	133197	
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]
1341.00	V	156	180	-68.38	2.88	-65.51	-52.5
2011.50	V	148	17	-61.66	2.71	-58.94	-45.9
2682.00	V	-	-	-67.27	4.50	-62.77	-49.8
3352.50	V	-	-	-68.02	6.04	-61.98	-49.0

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

OPERATING FREQUENCY:	680.50	MHz
CHANNEL:	133297	
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]
1361.00	V	102	169	-68.15	2.88	-65.27	-52.3
2041.50	V	173	43	-60.25	2.73	-57.52	-44.5
2722.00	V	-	-	-66.91	4.63	-62.28	-49.3
3402.50	V	-	-	-67.94	6.26	-61.68	-48.7

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

OPERATING FREQUENCY:	690.50	MHz
CHANNEL:	133397	
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]
1381.00	V	163	4	-68.21	2.60	-65.61	-52.6
2071.50	V	127	10	-62.33	2.85	-59.47	-46.5
2762.00	V	-	-	-66.64	4.55	-62.08	-49.1
3452.50	V	-	-	-67.89	6.30	-61.60	-48.6

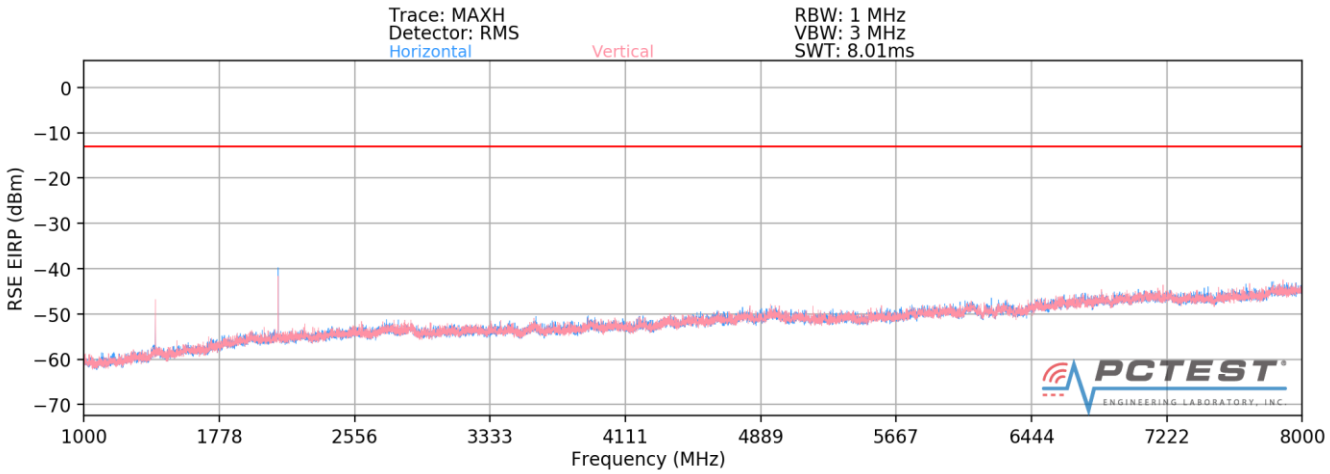
Table 7-18. Radiated Spurious Data (Band 71 – High Channel)

OPERATING FREQUENCY:	680.50	MHz
CHANNEL:	133297	
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]
1361.00	V	106	323	-57.84	2.88	-54.96	-42.0
2041.50	V	121	183	-52.50	2.73	-49.77	-36.8
2722.00	V	-	-	-66.79	4.63	-62.16	-49.2
3402.50	V	-	-	-67.74	6.26	-61.48	-48.5

Table 7-19. Radiated Spurious Data with WCP (Band 71 –133297 Channel)

Band 17/12



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

OPERATING FREQUENCY:	701.50	MHz
CHANNEL:	23035	
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]
1403.00	V	165	10	-67.56	2.27	-65.28	-52.3
2104.50	V	152	48	-61.91	3.04	-58.88	-45.9
2806.00	V	-	-	-67.59	4.79	-62.80	-49.8
3507.50	V	-	-	-69.33	6.50	-62.83	-49.8

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

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
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]
1415.00	V	-	-	-68.33	2.39	-65.93	-52.9
2122.50	V	186	86	-56.51	3.14	-53.37	-40.4
2830.00	V	-	-	-67.55	4.87	-62.69	-49.7
3537.50	V	-	-	-68.48	6.45	-62.03	-49.0

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

OPERATING FREQUENCY:	713.50	MHz
CHANNEL:	23155	
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]
1427.00	V	144	358	-66.77	2.66	-64.12	-51.1
2140.50	V	176	121	-62.23	3.14	-59.09	-46.1
2854.00	V	-	-	-67.80	4.94	-62.86	-49.9
3567.50	V	-	-	-68.07	6.51	-61.55	-48.6

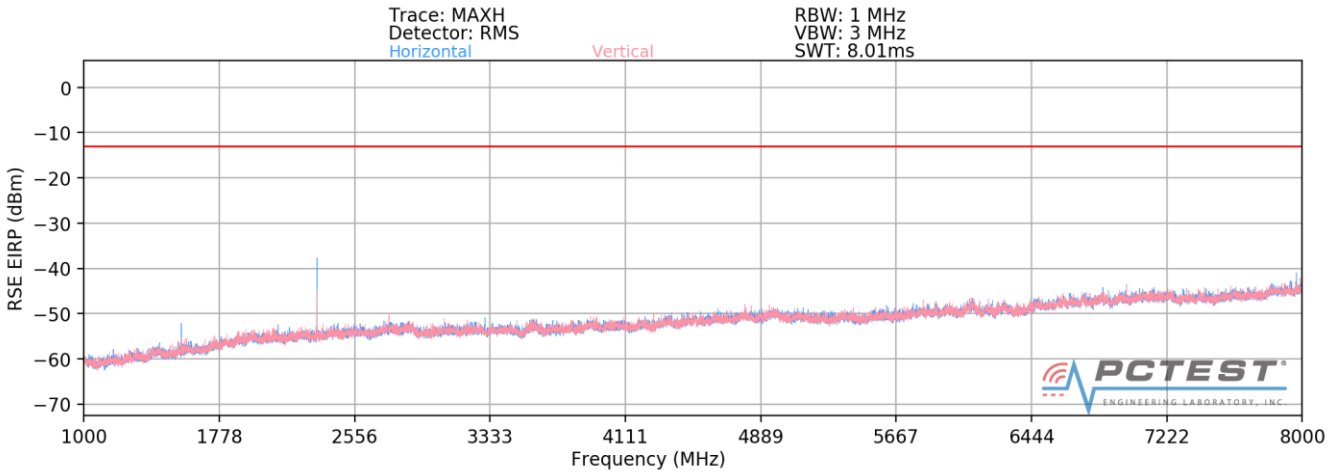
Table 7-22. Radiated Spurious Data (Band 17/12 – High Channel)

OPERATING FREQUENCY:	713.50	MHz
CHANNEL:	23155	
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]
1427.00	H	144	198	-60.21	2.66	-57.56	-44.6
2140.50	H	127	178	-48.28	3.14	-45.14	-32.1
2854.00	H	-	-	-67.44	4.94	-62.50	-49.5
3567.50	H	-	-	-67.87	6.51	-61.35	-48.4

Table 7-23. Radiated Spurious Data with WCP (Band 17/12 – 23155 Channel)

Band 13



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

OPERATING FREQUENCY:	790.50	MHz
CHANNEL:	23305	
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]
2371.50	H	104	307	-61.40	3.81	-57.59	-44.6
3162.00	H	-	-	-68.61	5.83	-62.78	-49.8
3952.50	H	-	-	-68.86	7.27	-61.59	-48.6

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

OPERATING FREQUENCY:	793.00	MHz
CHANNEL:	23330	
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]
2379.00	H	170	356	-61.24	3.77	-57.48	-44.5
3172.00	H	-	-	-68.55	5.86	-62.69	-49.7
3965.00	H	-	-	-69.26	7.29	-61.97	-49.0

Table 7-25. Radiated Spurious Data (Band 13 – Mid Channel)

OPERATING FREQUENCY:	795.50	MHz
CHANNEL:	2335	
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]
2386.50	H	100	358	-61.04	3.78	-57.26	-44.3
3182.00	H	-	-	-68.23	5.88	-62.35	-49.4

Table 7-26. 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]
1581.00	H	167	290	-67.30	2.70	-64.61	-24.6
1586.00	H	167	219	-66.94	2.68	-64.26	-24.3
1591.00	H	163	214	-66.59	2.67	-63.91	-23.9

Table 7-27. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	795.50	MHz
CHANNEL:	23355	
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]
2386.50	H	165	129	-57.12	3.78	-53.34	-40.3
3182.00	H	-	-	-67.90	5.88	-62.02	-49.0
3977.50	H	-	-	-69.68	7.32	-62.36	-49.4

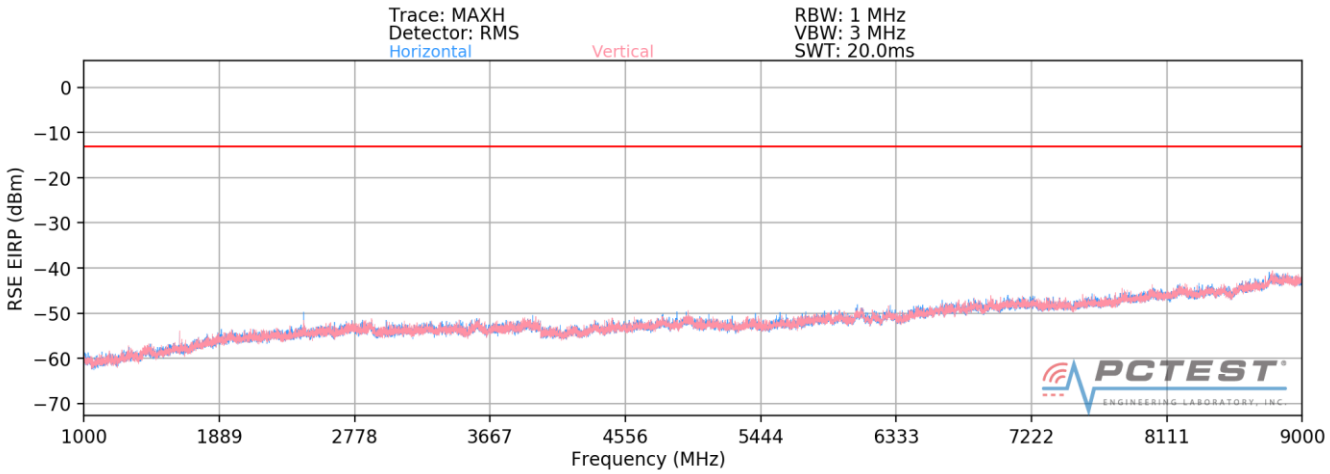
Table 7-28. Radiated Spurious Data with WCP (Band 13 – 23205 Channel)

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]
1591.00	H	282	29	-63.34	2.67	-60.66	-20.7

Table 7-29. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

Band 26/5



Plot 7-14. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY:	829.00	MHz
CHANNEL:	26840	
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	165	273	-66.80	3.12	-63.68	-50.7
2487.00	V	188	203	-64.50	3.87	-60.63	-47.6
3316.00	V	-	-	-68.51	6.01	-62.50	-49.5
4145.00	V	-	-	-69.72	7.77	-61.95	-48.9

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

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	26915	
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]
1673.00	V	308	235	-64.40	3.10	-61.30	-48.3
2509.50	V	161	199	-54.86	4.02	-50.84	-37.8
3346.00	V	-	-	-67.91	6.03	-61.88	-48.9
4182.50	V	-	-	-69.26	7.79	-61.47	-48.5

Table 7-31. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	844.00	MHz
CHANNEL:	26990	
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	101	103	-65.75	3.18	-62.58	-49.6
2532.00	V	251	269	-60.24	4.10	-56.15	-43.1
3376.00	V	-	-	-68.42	6.15	-62.27	-49.3
4220.00	V	-	-	-69.59	7.88	-61.71	-48.7

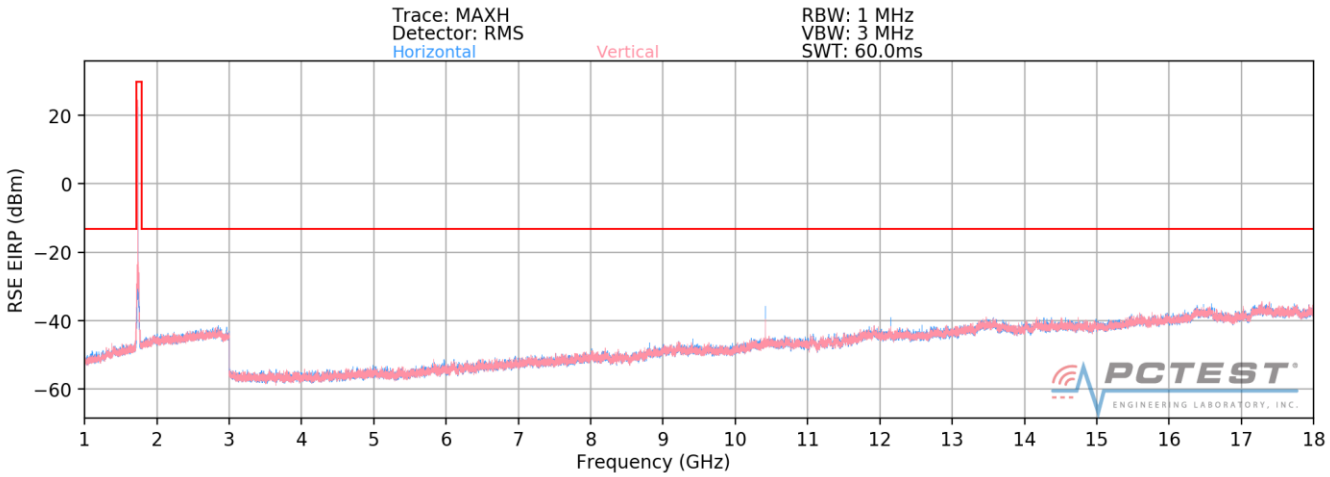
Table 7-32. Radiated Spurious Data (Band 26/5 – High Channel)

OPERATING FREQUENCY:	829.00	MHz
CHANNEL:	26840	
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	H	144	38	-62.24	3.12	-59.12	-46.1
2487.00	H	125	15	-61.06	3.87	-57.19	-44.2
3316.00	H	-	-	-68.69	6.01	-62.68	-49.7
4145.00	H	-	-	-69.65	7.77	-61.88	-48.9

Table 7-33. Radiated Spurious Data with WCP (Band 26/5 –26185 Channel)

Band 66/4



Plot 7-15. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY:	1720.00	MHz
CHANNEL:	132072	
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	125	27	-71.86	9.84	-62.02	-49.0
5160.00	H	164	353	-63.42	10.71	-52.71	-39.7
6880.00	H	-	-	-72.10	11.68	-60.41	-47.4
8600.00	H	397	339	-66.07	11.08	-54.99	-42.0
10320.00	H	113	65	-50.08	12.38	-37.70	-24.7
12040.00	H	116	361	-53.65	12.71	-40.94	-27.9
13760.00	H	-	-	-64.34	11.99	-52.36	-39.4
15480.00	H	-	-	-71.00	15.88	-55.12	-42.1
17200.00	H	-	-	-63.75	13.05	-50.70	-37.7

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

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
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	197	14	-72.10	9.91	-62.19	-49.2
5235.00	H	144	351	-67.54	10.73	-56.81	-43.8
6980.00	H	-	-	-72.33	11.82	-60.51	-47.5
8725.00	H	-	-	-69.22	11.00	-58.22	-45.2
10470.00	H	130	62	-50.22	12.58	-37.63	-24.6
12215.00	H	176	6	-56.44	13.11	-43.33	-30.3
13960.00	H	398	281	-63.97	11.85	-52.12	-39.1
15705.00	H	145	14	-70.12	16.63	-53.49	-40.5
17450.00	H	-	-	-61.76	12.24	-49.52	-36.5

Table 7-35. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY:	1770.00	MHz
CHANNEL:	132572	
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	235	21	-74.15	9.89	-64.26	-51.3
5310.00	H	116	0	-68.44	10.69	-57.75	-44.7
7080.00	H	-	-	-72.65	11.79	-60.87	-47.9
8850.00	H	-	-	-68.63	11.00	-57.64	-44.6
10620.00	H	132	61	-52.58	12.58	-40.00	-27.0
12390.00	H	156	0	-55.89	13.33	-42.55	-29.6
14160.00	H	-	-	-63.52	11.53	-51.99	-39.0
15930.00	H	150	358	-71.28	16.76	-54.52	-41.5
17700.00	H	-	-	-58.10	10.54	-47.57	-34.6

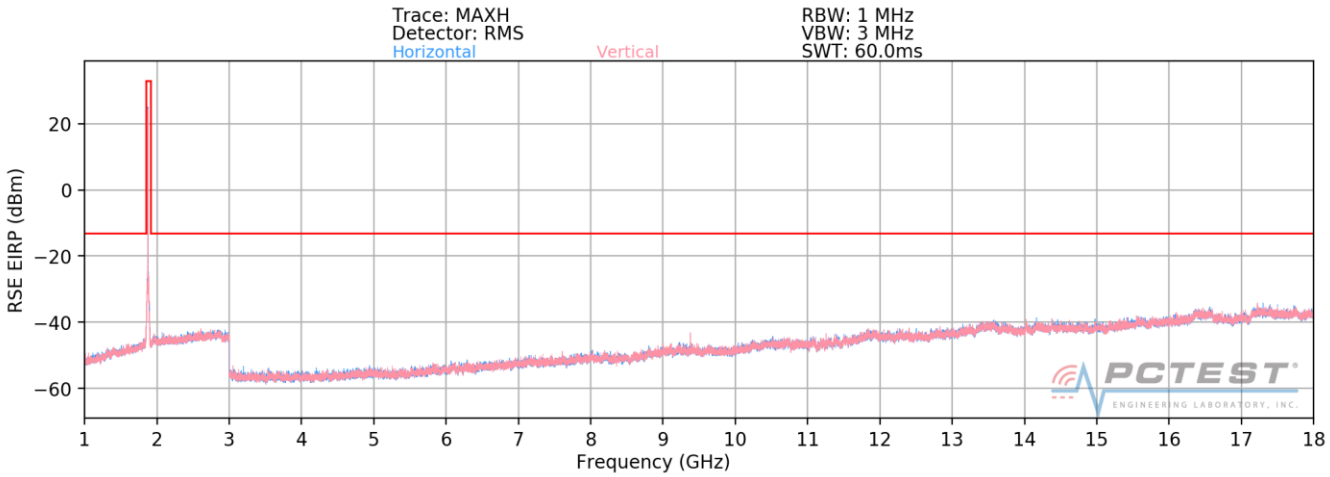
Table 7-36. Radiated Spurious Data (Band 66/4 – High Channel)

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
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	-	-	-76.84	9.91	-66.93	-53.9
5235.00	H	-	-	-75.85	10.73	-65.12	-52.1
6980.00	H	-	-	-75.55	11.82	-63.73	-50.7

Table 7-37. Radiated Spurious Data with WCP (Band 66/4 – 132072 Channel)

Band 25/2



Plot 7-16. 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	H	-	-	-73.20	9.53	-63.67	-50.7
5572.50	H	-	-	-73.31	10.97	-62.33	-49.3
7430.00	H	-	-	-70.55	10.98	-59.57	-46.6

Table 7-38. 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	H	-	-	-72.72	9.36	-63.37	-50.4
5647.50	H	-	-	-72.68	11.19	-61.48	-48.5
7530.00	H	-	-	-70.72	11.13	-59.59	-46.6

Table 7-39. 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	H	-	-	-72.32	9.30	-63.02	-50.0
5722.50	H	-	-	-74.02	11.37	-62.65	-49.6
7630.00	H	-	-	-71.00	11.31	-59.69	-46.7

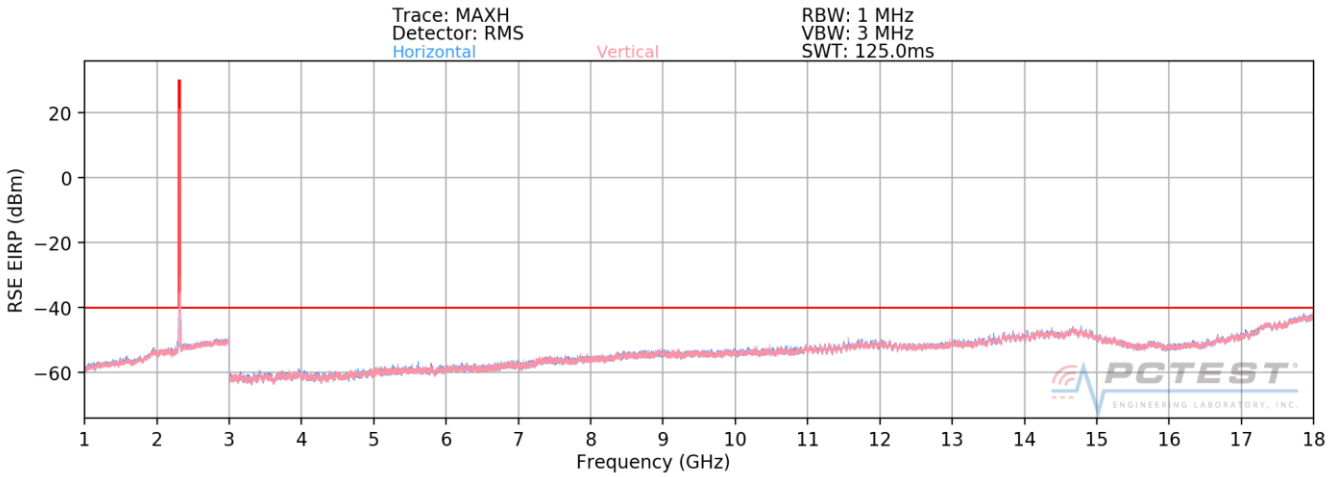
Table 7-40. Radiated Spurious Data (Band 25/2 – High Channel)

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

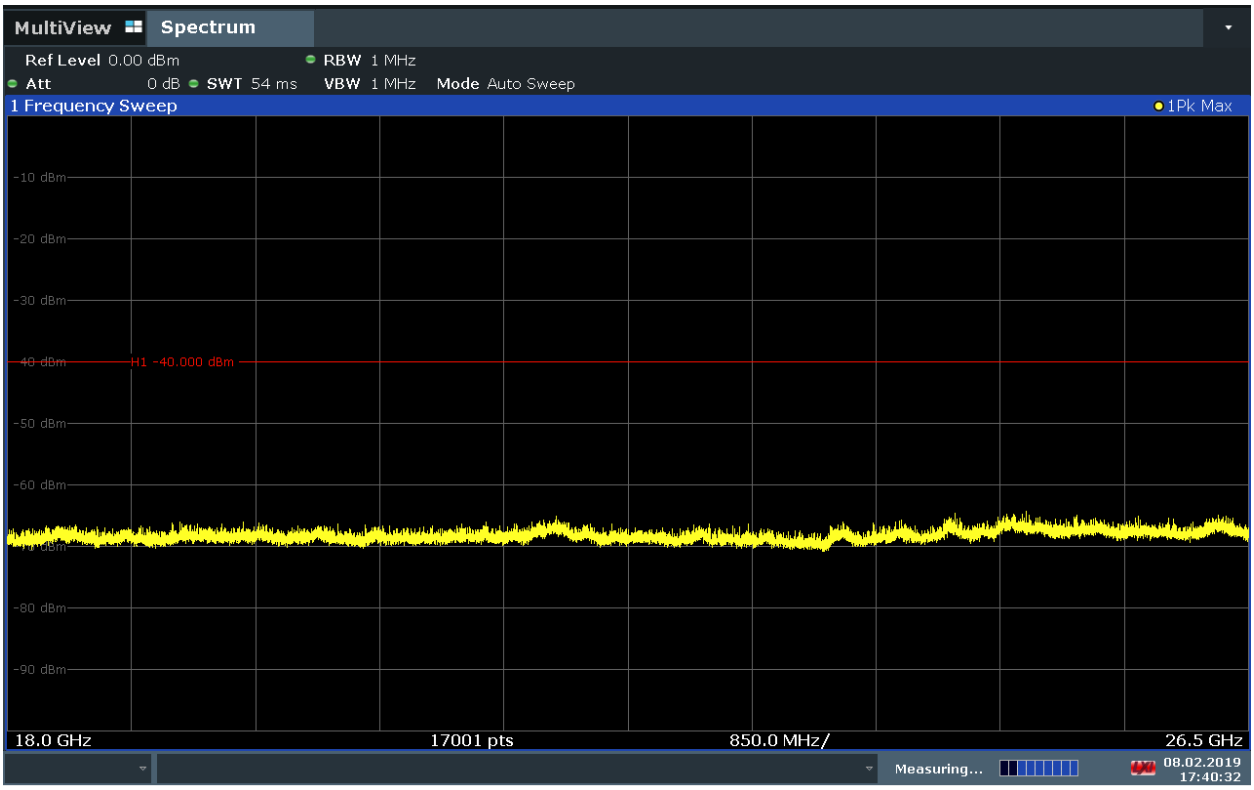
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	-	-	-72.91	6.94	-65.97	-53.0
5647.50	H	-	-	-73.68	9.17	-64.51	-51.5
7530.00	H	-	-	-71.46	9.31	-62.16	-49.2

Table 7-41. Radiated Spurious Data with WCP (Band 25/2 – 26055 Channel)

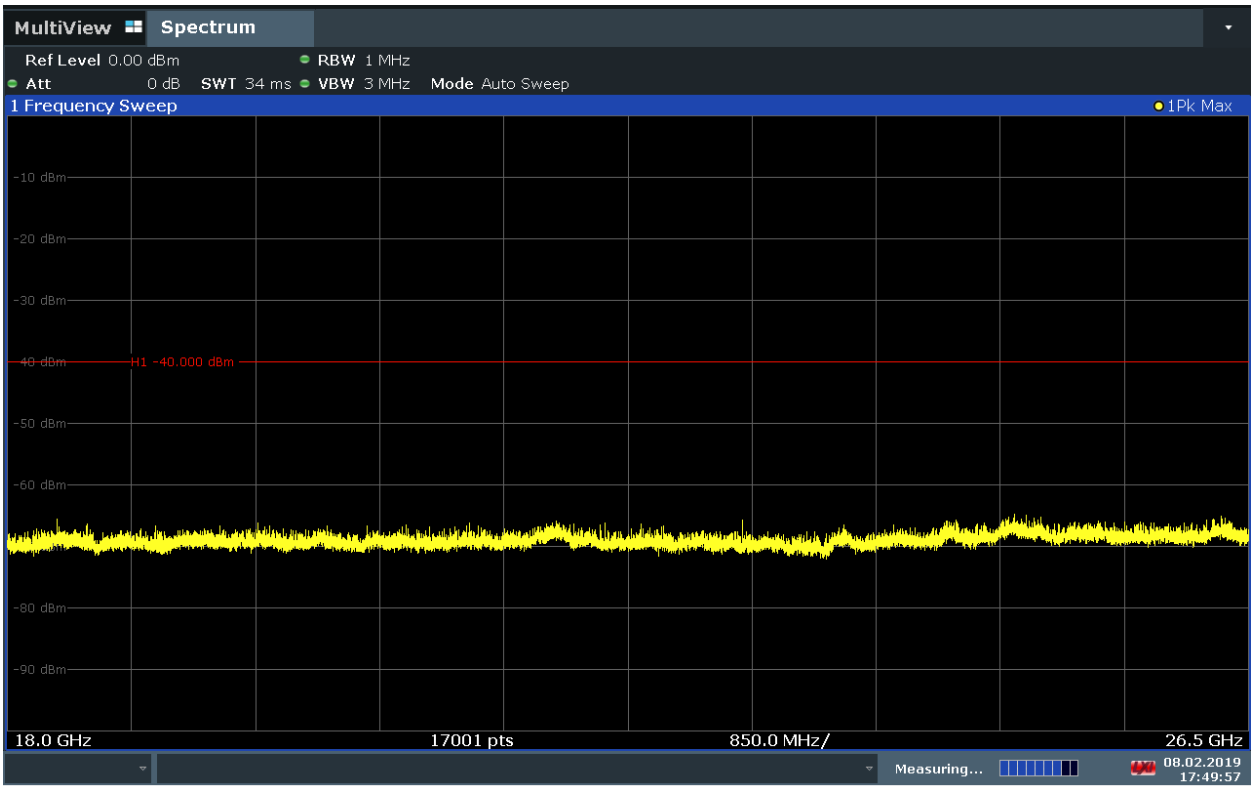
Band 30



Plot 7-17. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



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



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Plot 7-19. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30) - V

OPERATING FREQUENCY:	2307.50	MHz
CHANNEL:	27685	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	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]
4615.00	V	112	232	-73.88	10.91	-62.97	-23.0
6922.50	V	-	-	-72.47	11.73	-60.74	-20.7
9230.00	V	-	-	-69.22	11.61	-57.61	-17.6

Table 7-42. Radiated Spurious Data (Band 30 – Low Channel)

OPERATING FREQUENCY:	2312.50	MHz
CHANNEL:	27735	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	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]
4625.00	V	111	322	-73.53	10.92	-62.61	-22.6
6937.50	V	-	-	-72.03	11.75	-60.28	-20.3
9250.00	V	-	-	-69.07	11.63	-57.44	-17.4

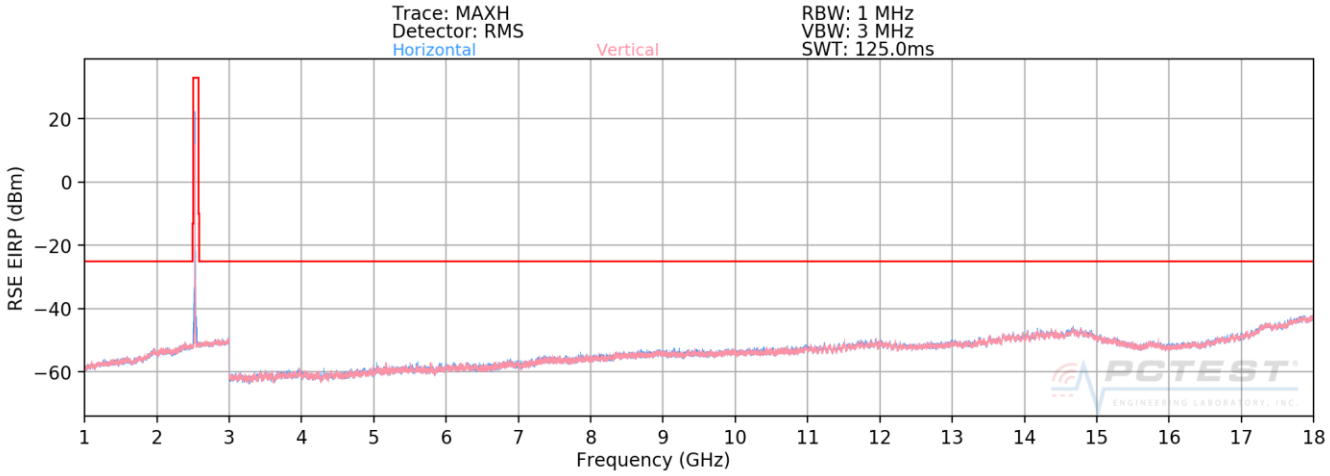
Table 7-43. Radiated Spurious Data (Band 30 – High Channel)

OPERATING FREQUENCY:	2307.50	MHz
CHANNEL:	27685	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

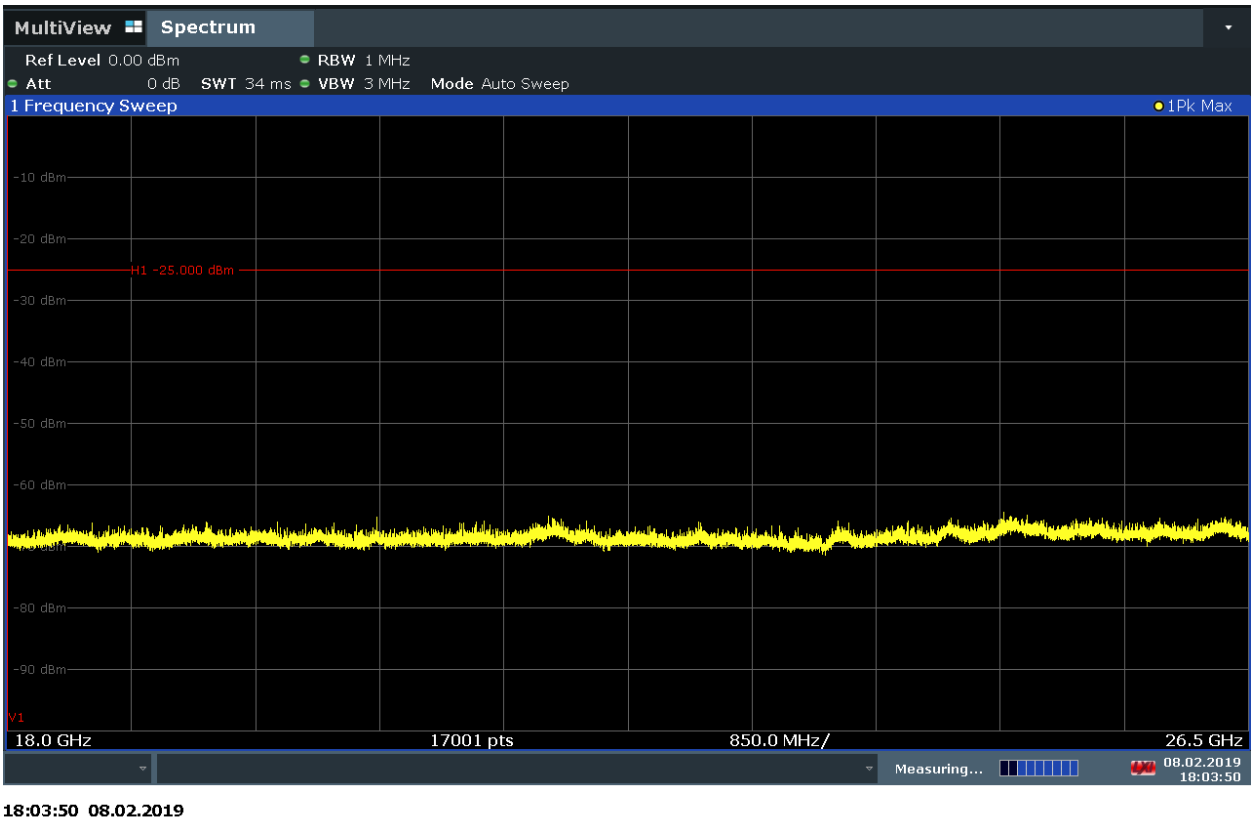
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	H	400	17	-74.57	10.91	-63.66	-23.7
6922.50	H	-	-	-72.09	11.73	-60.36	-20.4
9230.00	H	-	-	-68.88	11.61	-57.27	-17.3

Table 7-44. Radiated Spurious Data with WCP (Band 30 – 27685 Channel)

Band 7



Plot 7-20. Radiated Spurious Plot 1GHz - 18GHz (Band 7)



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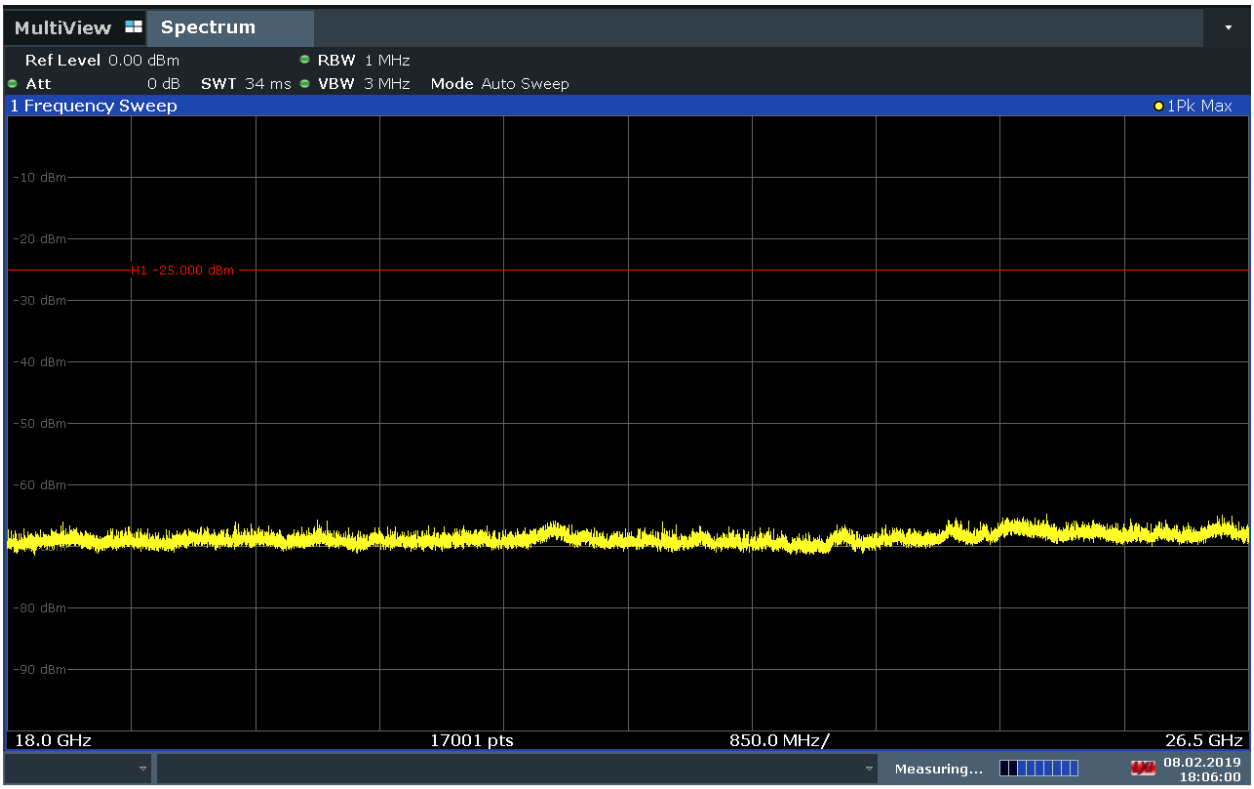
Plot 7-21. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7) - H



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Plot 7-22. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7) - V

OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	20850	
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	-	-	-73.75	10.88	-62.87	-37.9
7530.00	V	115	51	-64.14	11.13	-53.01	-28.0
10040.00	V	-	-	-68.81	11.99	-56.83	-31.8
12550.00	V	-	-	-68.31	13.56	-54.75	-29.7
15060.00	V	112	188	-64.17	13.58	-50.60	-25.6
17570.00	V	-	-	-60.82	11.59	-49.22	-24.2

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

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
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	V	400	73	-71.93	10.75	-61.18	-36.2
7605.00	V	112	45	-63.93	11.25	-52.68	-27.7
10140.00	V	116	268	-68.06	12.07	-55.99	-31.0
12675.00	V	-	-	-68.20	13.66	-54.54	-29.5
15210.00	V	116	188	-66.88	14.71	-52.17	-27.2
17745.00	V	-	-	-57.24	10.38	-46.86	-21.9

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

OPERATING FREQUENCY:	2560.00	MHz
CHANNEL:	21350	
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	V	-	-	-73.67	10.68	-62.99	-38.0
7680.00	V	113	91	-65.95	11.39	-54.56	-29.6
10240.00	V	115	269	-66.59	12.18	-54.40	-29.4
12800.00	V	-	-	-68.11	13.50	-54.61	-29.6
15360.00	V	-	-	-68.22	15.29	-52.94	-27.9
17920.00	V	-	-	-56.30	9.40	-46.90	-21.9

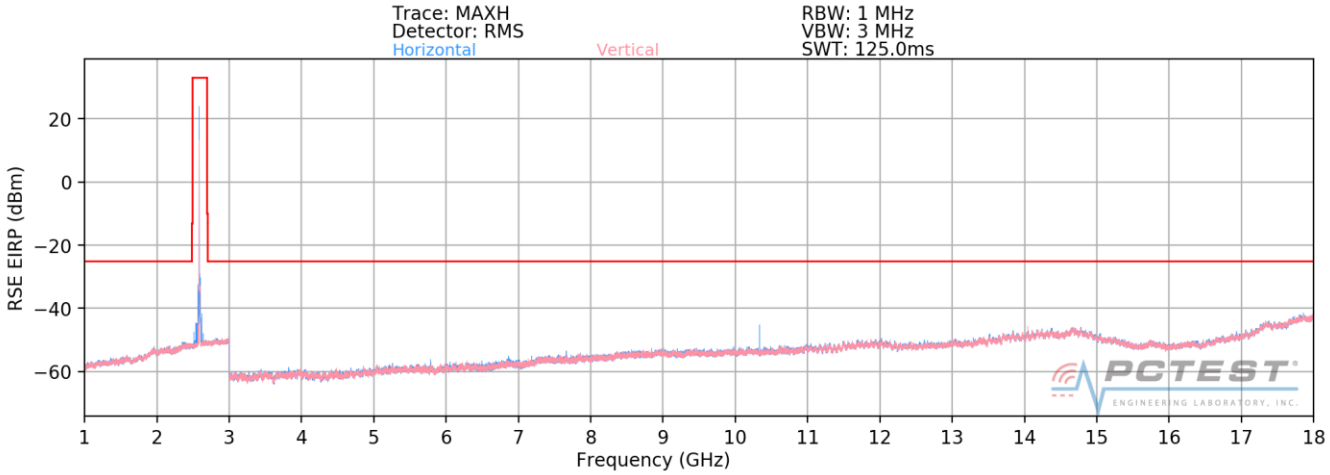
Table 7-47. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY:	2560.00	MHz
CHANNEL:	21350	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

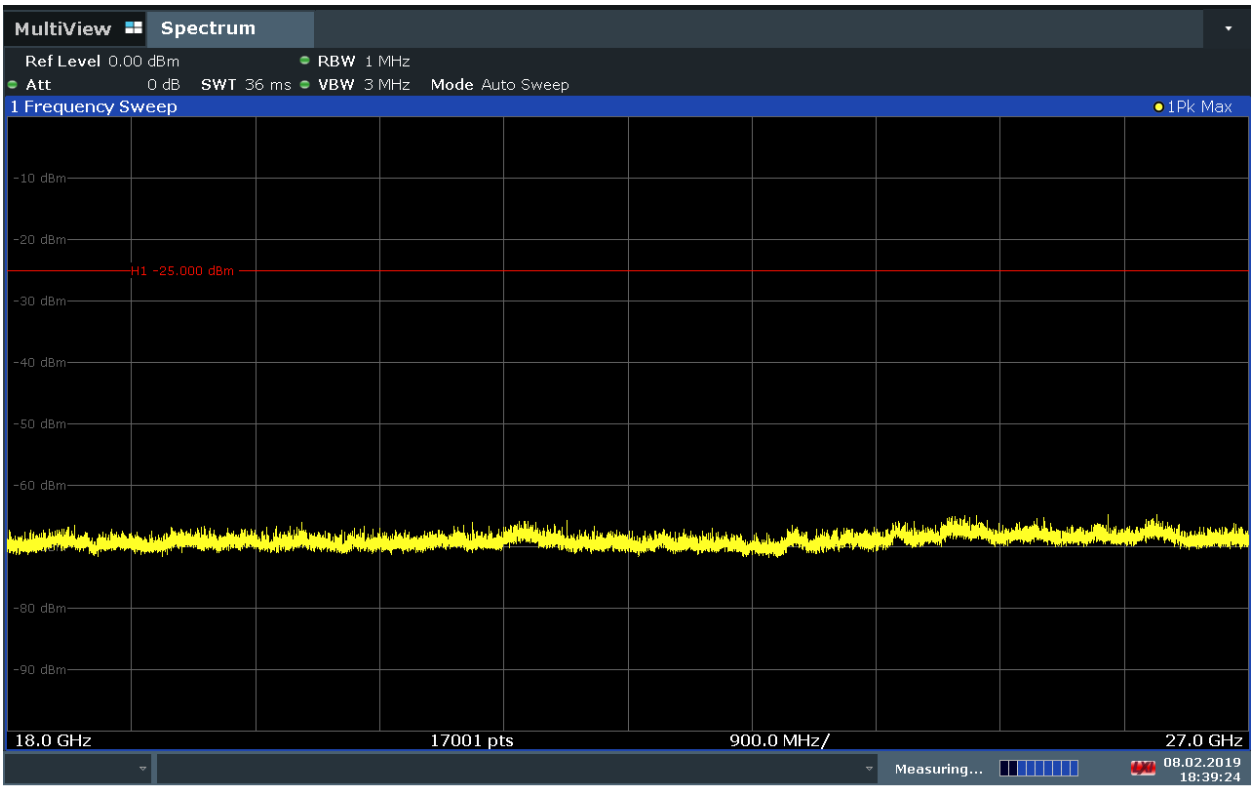
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	-	-	-73.62	10.68	-62.94	-37.9
7680.00	H	182	328	-65.90	11.39	-54.51	-29.5
10240.00	H	150	317	-67.32	12.18	-55.13	-30.1
12800.00	H	123	344	-68.09	13.50	-54.59	-29.6
15360.00	H	151	340	-68.72	15.29	-53.44	-28.4
17920.00	H	-	-	-56.26	9.40	-46.86	-21.9

Table 7-48. Radiated Spurious Data with WCP (Band 7 – 21100 Channel)

Band 41 PC2



Plot 7-23. Radiated Spurious Plot 1GHz - 18GHz (Band 41 PC2)



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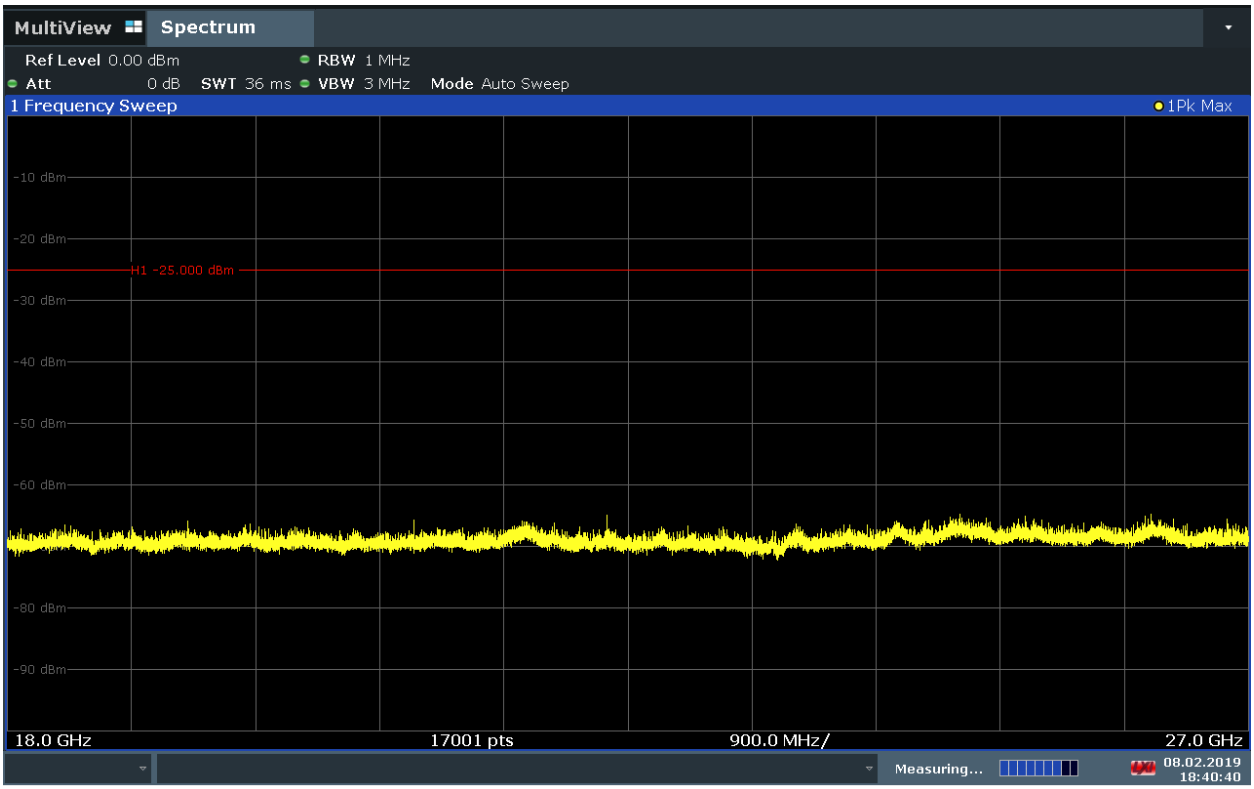
Plot 7-24. Radiated Spurious Plot 18GHz – 27GHz (Band 41 PC2) - H



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Plot 7-25. Radiated Spurious Plot 18GHz – 27GHz (Band 41 PC2) - V

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	H	400	222	-67.74	10.88	-56.86	-31.9
7530.00	H	124	54	-62.96	11.13	-51.83	-26.8
10040.00	H	225	359	-56.92	11.99	-44.94	-19.9
12550.00	H	400	233	-65.91	13.56	-52.35	-27.3
15060.00	H	151	330	-62.46	13.58	-48.89	-23.9

Table 7-49. Radiated Spurious Data (Band 41 PC2 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
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	138	227	-66.52	10.74	-55.78	-30.8
7779.00	H	267	25	-64.77	11.44	-53.33	-28.3
10372.00	H	220	1	-55.87	12.42	-43.44	-18.4
12965.00	H	185	33	-65.80	13.29	-52.50	-27.5
15558.00	H	141	18	-69.15	16.33	-52.83	-27.8

Table 7-50. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

OPERATING FREQUENCY:	2680.00	MHz
CHANNEL:	41490	
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	129	7	-68.66	10.70	-57.96	-33.0
8040.00	H	135	347	-64.94	11.16	-53.78	-28.8
10720.00	H	125	357	-55.23	12.59	-42.63	-17.6
13400.00	H	-	-	-64.67	12.59	-52.08	-27.1
16080.00	H	-	-	-70.10	16.68	-53.42	-28.4

Table 7-51. Radiated Spurious Data (Band 41 PC2 – High Channel)

OPERATING FREQUENCY:	2680.00	MHz
CHANNEL:	41490	
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	-	-	-71.00	10.70	-60.30	-35.3
8040.00	H	-	-	-67.50	11.16	-56.34	-31.3
10720.00	H	140	1	-63.49	12.59	-50.89	-25.9
13400.00	H	-	-	-64.45	12.59	-51.86	-26.9
16080.00	H	-	-	-70.22	16.68	-53.54	-28.5

Table 7-52. Radiated Spurious Data with WCP (Band 41 PC2 – 41490 Channel)

7.5 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.

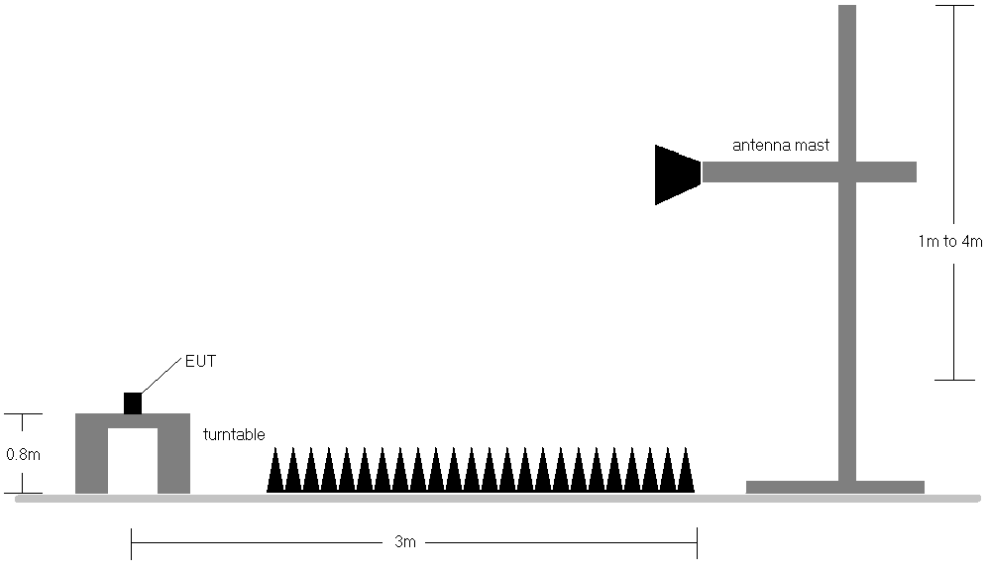


Figure 7-5. Test Instrument & Measurement Setup

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.

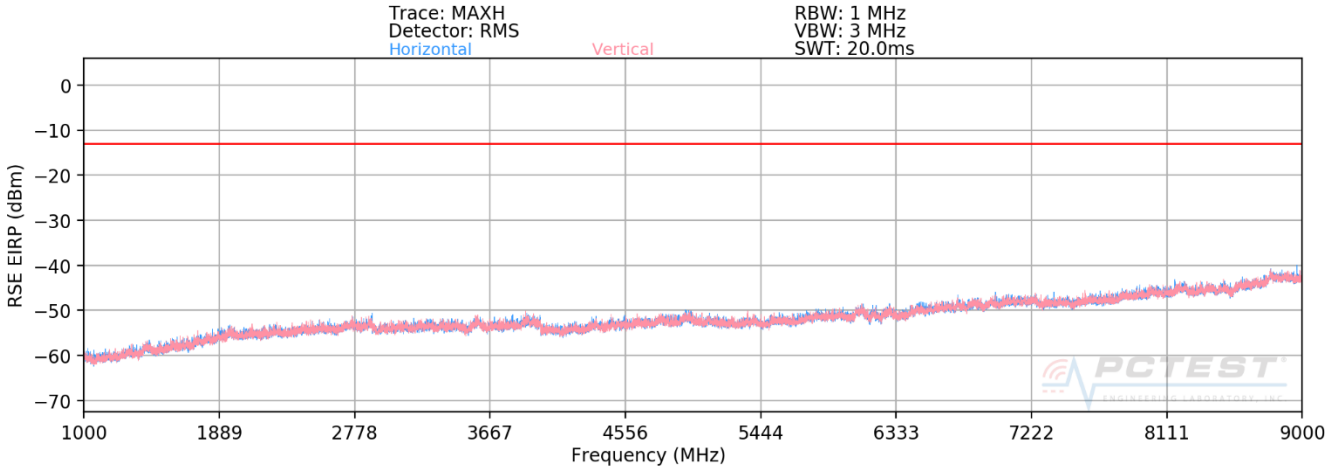
3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.

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

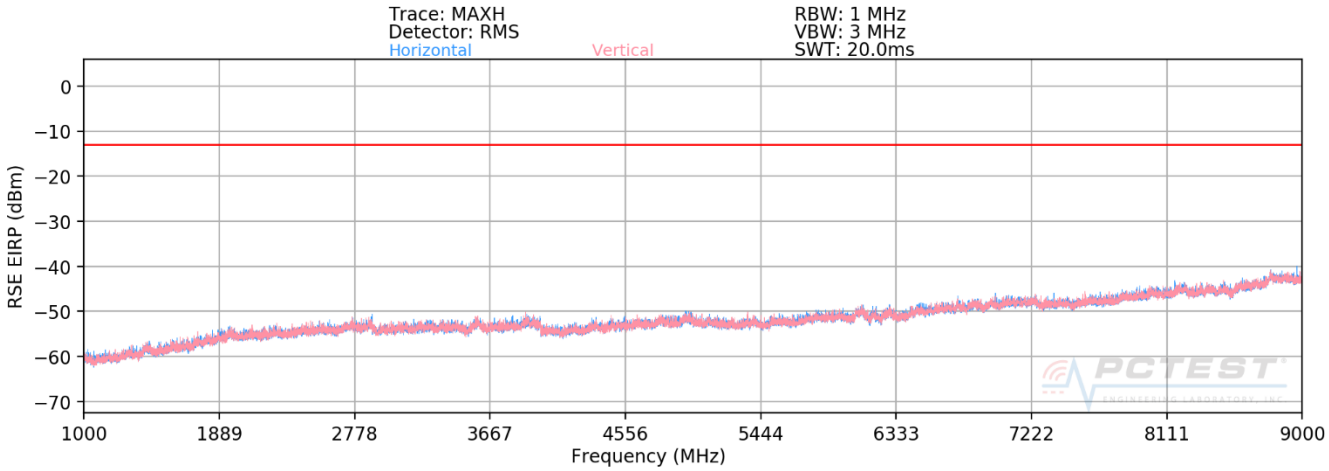
5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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

Uplink CA Configuration 5B



Plot 7-26. Radiated Spurious Plot (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)



Plot 7-27. Radiated Spurious Plot (ULCA B5 PCC: RB 50 Offset 0, SCC: RB 50 Offset 0 – Low Channel)

PCC OPERATING FREQUENCY:	829.00	MHz
SCC OPERATING FREQUENCY:	838.90	MHz
PCC CHANNEL:	20450	
SCC CHANNEL:	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	193	197	-60.81	8.95	-51.86	-38.9
2487.00	V	151	302	-61.49	9.70	-51.79	-38.8
3316.00	V	-	-	-76.64	9.59	-67.05	-54.1
4145.00	V	-	-	-77.23	10.22	-67.01	-54.0

Table 7-53. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

PCC OPERATING FREQUENCY:	844.00	MHz
SCC OPERATING FREQUENCY:	834.10	MHz
PCC CHANNEL:	20600	
SCC CHANNEL:	20501	
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]
1688.00	V	115	205	-72.06	8.95	-63.11	-50.1
2532.00	V	159	131	-60.20	9.75	-50.45	-37.5
3376.00	V	-	-	-77.20	9.71	-67.49	-54.5
4220.00	V	-	-	-76.91	10.48	-66.43	-53.4

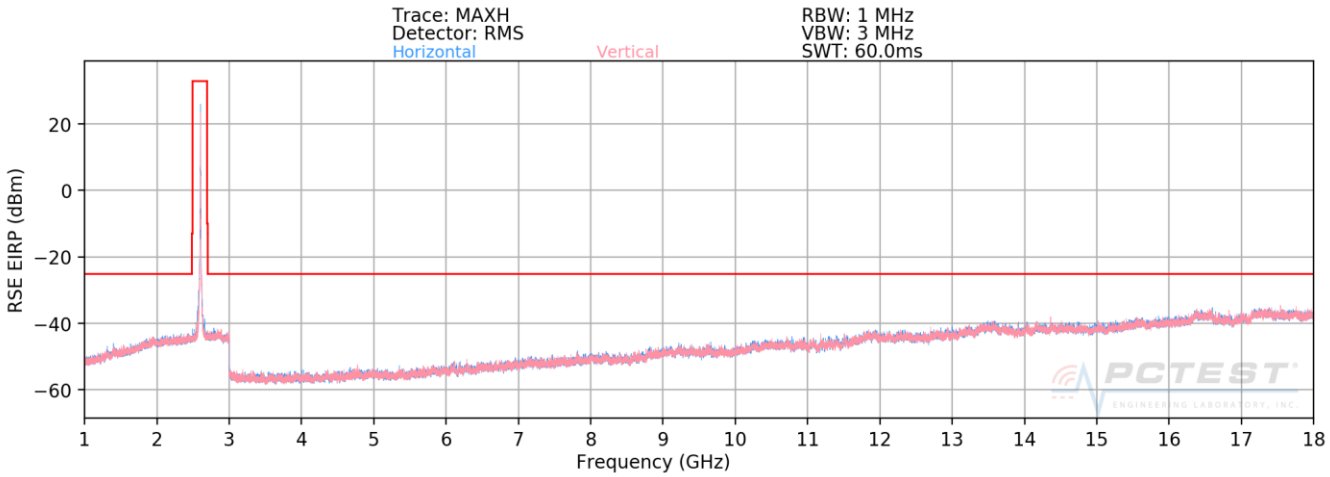
Table 7-54. Radiated Spurious Data (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

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

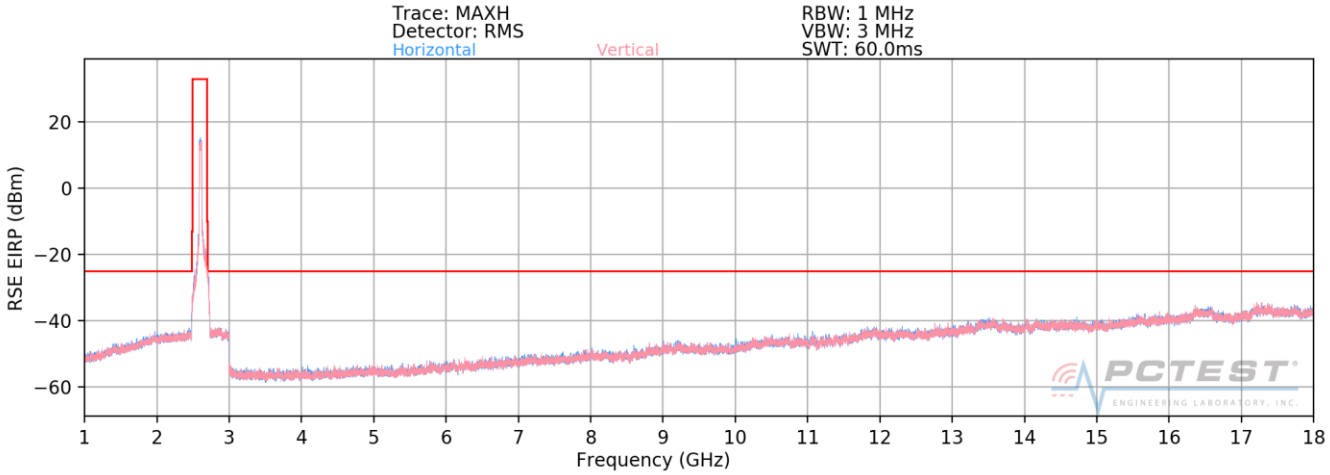
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	131	349	-77.81	8.95	-68.86	-55.9
2532.00	V	-	-	-78.03	9.75	-68.28	-55.3
3376.00	V	-	-	-76.52	9.71	-66.81	-53.8
4220.00	V	-	-	-75.96	10.48	-65.48	-52.5

Table 7-55. Radiated Spurious Data with WCP (ULCA B5 PCC: RB 1 Offset 0, SCC: RB 1 Offset 49 – High Channel)

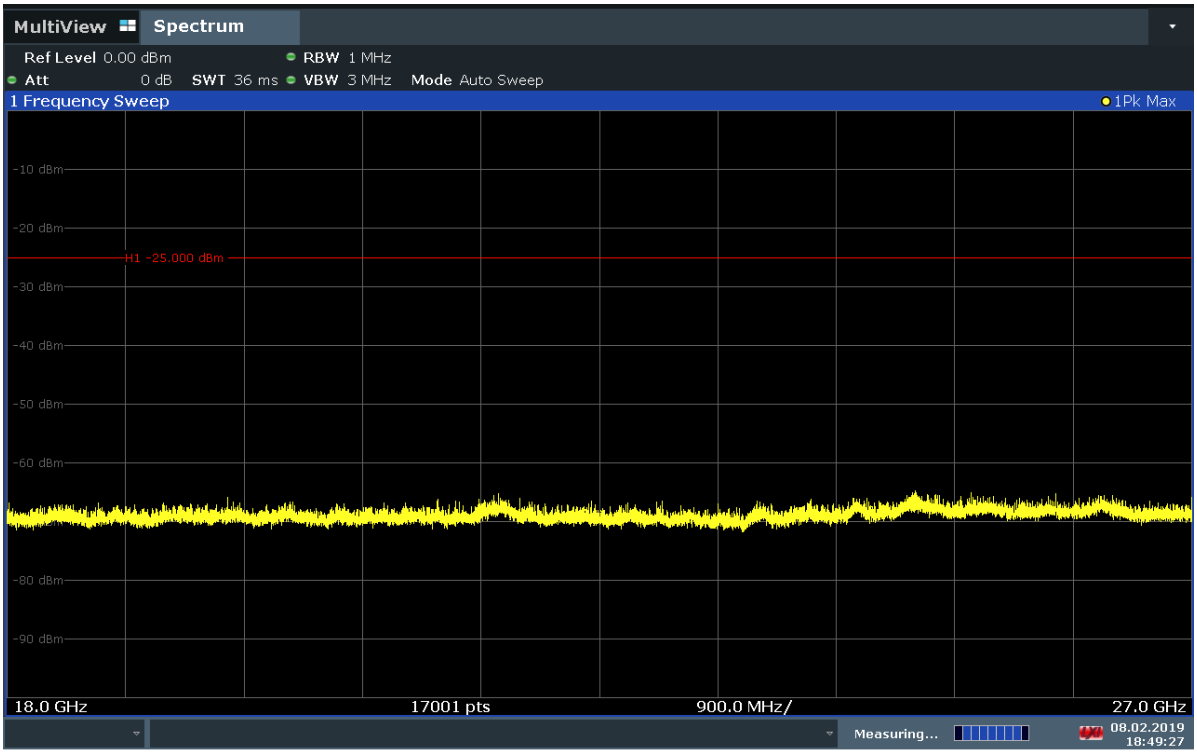
Uplink CA Configuration 41C



Plot 7-56. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0)



Plot 7-57. Radiated Spurious Plot (ULCA B41 PC2 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0)



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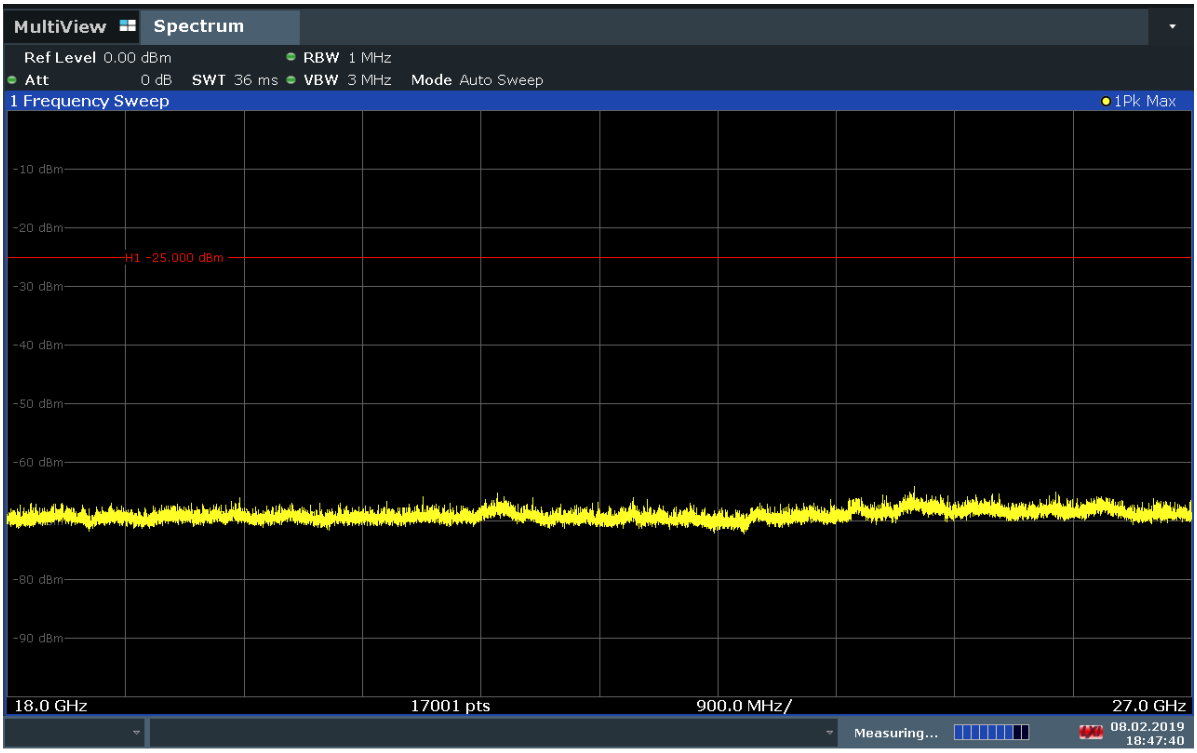
Plot 7-28. Radiated Spurious Plot 18GHz – 27GHz (Band 41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0) – H



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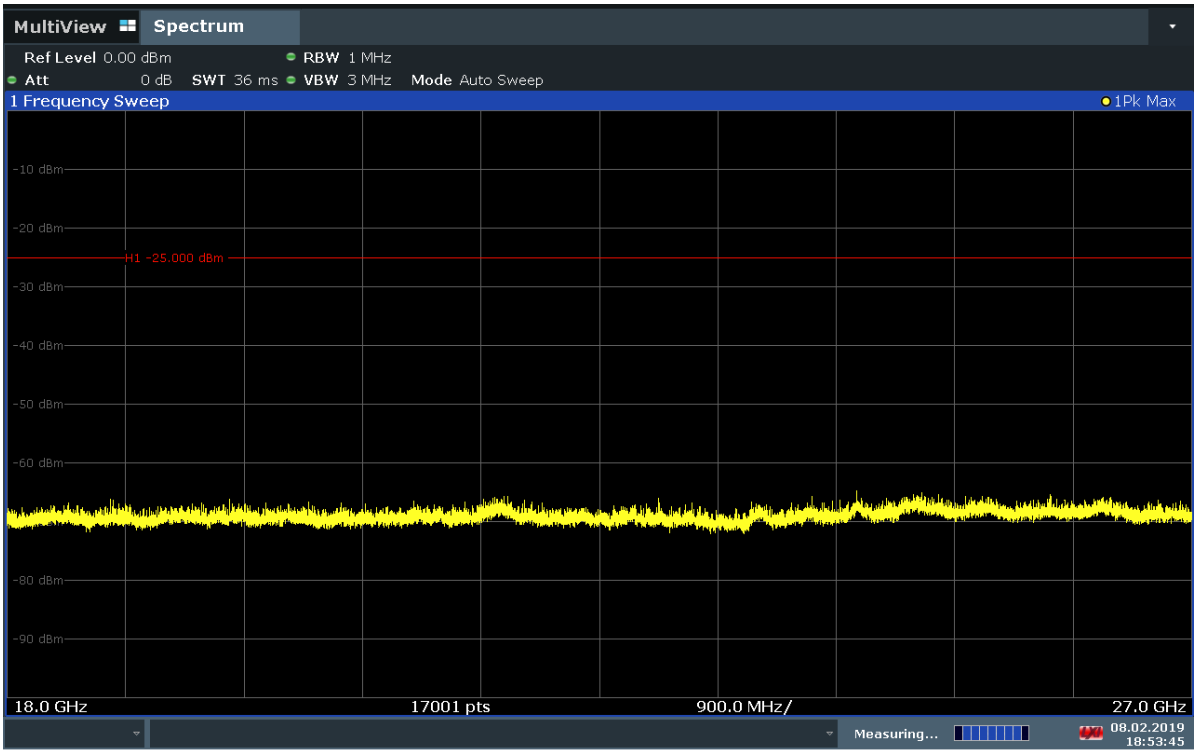
Plot 7-29. Radiated Spurious Plot 18GHz – 27GHz (Band 41 PC2 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0) - V



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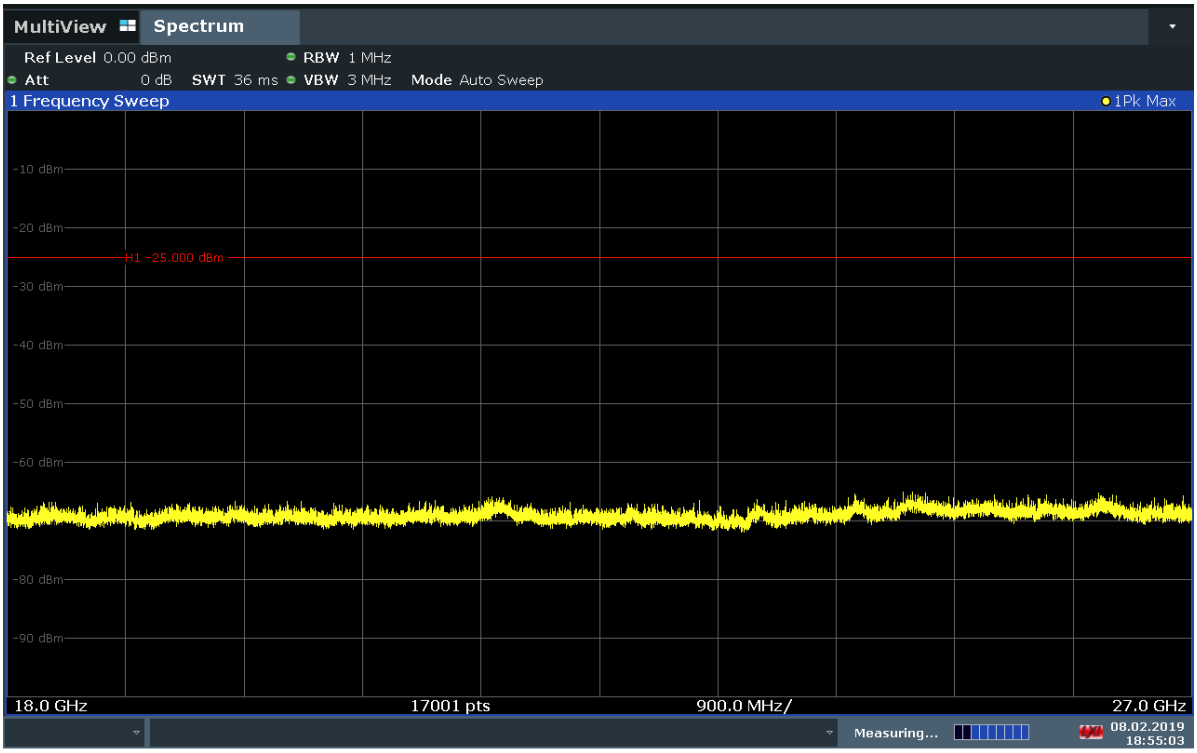
Plot 7-30. Radiated Spurious Plot 18GHz – 27GHz (Band 41 PC2 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0) – H



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Plot 7-31. Radiated Spurious Plot 18GHz – 27GHz (Band 41 PC2 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0) - V

OPERATING FREQUENCY:	2506.00	MHz
OPERATING FREQUENCY:	2525.80	MHz
CHANNEL:	39750	
CHANNEL:	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	V	-	-	-63.09	10.88	-52.21	-27.2
7518.00	V	-	-	-59.21	11.13	-48.08	-23.1
10024.00	V	252	334	-51.02	11.99	-39.04	-14.0
12530.00	V	-	-	-54.75	13.56	-41.19	-16.2
15036.00	V	-	-	-51.30	13.58	-37.72	-12.7

Plot 7-58. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
OPERATING FREQUENCY:	2612.80	MHz
CHANNEL:	40620	
CHANNEL:	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	V	104	300	-61.24	10.74	-50.50	-25.5
7779.00	V	226	48	-57.11	11.44	-45.67	-20.7
10372.00	V	177	12	-54.57	12.42	-42.15	-17.1
12965.00	V	-	-	-53.32	13.29	-40.03	-15.0
15558.00	V	-	-	-53.77	16.33	-37.44	-12.4

Plot 7-59. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 - Mid Channel)

OPERATING FREQUENCY:	2680.00	MHz
OPERATING FREQUENCY:	2660.20	MHz
CHANNEL:	41490	
CHANNEL:	4129	
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	V	-	-	-62.02	10.70	-51.32	-26.3
8040.00	V	101	139	-55.87	11.16	-44.71	-19.7
10720.00	V	212	365	-54.07	12.59	-41.48	-16.5
13400.00	V	-	-	-52.31	12.59	-39.72	-14.7
16080.00	V	-	-	-53.51	16.68	-36.84	-11.8

Plot 7-60. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 - High Channel)

OPERATING FREQUENCY:	2506.00	MHz
OPERATING FREQUENCY:	2525.80	MHz
CHANNEL:	39750	
CHANNEL:	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	V	-	-	-62.04	10.92	-51.12	-26.1
7518.00	V	274	340	-56.62	11.08	-45.54	-20.5
10024.00	V	178	304	-53.94	12.00	-41.94	-16.9
12530.00	V	-	-	-54.53	13.56	-40.97	-16.0
15036.00	V	-	-	-52.11	13.44	-38.66	-13.7

Plot 7-61. Radiated Spurious Data with WCP (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG820UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.