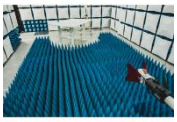
PCTEST
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



MEASUREMENT REPORT
LTE

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

Date of Testing:
5/6 - 6/11/2020
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M2004150063-03.ZNF

FCC ID:	**ZNFG900UM**
APPLICANT:	**LG Electronics USA, Inc.**

Application Type:	Class II Permissive Change
Model:	LM-G900UM
Additional Model(s):	LMG900UM, G900UM, LM-G900QM, LMG900QM, G900QM, LM-G901V, LMG901V, G901V
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
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.

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

Randy Ortanez
President

ACCREDITED
TESTING CERT#2041.01

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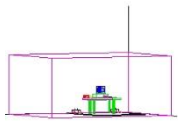
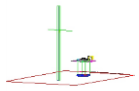


MEASUREMENT REPORT
FCC Part 22, 24, & 27



Mode	FCC Rule Part	Tx Frequency (MHz)	ERP		EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	Max. Power (W)	Max. Power (dBm)	
LTE Band 71	27	673 - 688	0.044	16.43			QPSK
LTE Band 12	27	704 - 711	0.033	15.24	0.055	17.39	QPSK
LTE Band 13	27	782	0.043	16.29	0.070	18.44	QPSK
LTE Band 5	22H	829 - 844	0.060	17.75	0.098	19.90	QPSK

EUT Overview (<1 GHz)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 66/4	27	1720 - 1770	0.144	21.58	QPSK
LTE Band 25/2	24E	1860 - 1905	0.204	23.10	QPSK

EUT Overview (Mid Bands)

Mode	FCC Rule Part	Tx Frequency (MHz)	EIRP		Modulation
			Max. Power (W)	Max. Power (dBm)	
LTE Band 30	27	2310	0.129	21.12	QPSK
LTE Band 7	27	2510 - 2560	0.147	21.67	QPSK
LTE Band 41 (PC3)	27	2506 - 2680	0.128	21.07	QPSK

EUT Overview (High Bands)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		ERP	
				Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]
NR Band n71	20 MHz	π/2 BPSK	673.0 - 688.0	0.064	18.080	0.039	15.930
		QPSK	673.0 - 688.0	0.064	18.050	0.039	15.900
		16QAM	673.0 - 688.0	0.048	16.850	0.030	14.700
		64QAM	673.0 - 688.0	0.034	15.300	0.021	13.150
		256QAM	673.0 - 688.0	0.022	13.380	0.013	11.230

EUT Overview (5G NR n71)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		EIRP	
				Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]
NR Band n5	20 MHz	π/2 BPSK	834.0 - 839.0	0.048	16.803	0.079	18.953
		QPSK	834.0 - 839.0	0.050	16.963	0.082	19.113
		16QAM	834.0 - 839.0	0.040	16.023	0.066	18.173
		64QAM	834.0 - 839.0	0.027	14.335	0.045	16.485
		256QAM	834.0 - 839.0	0.016	12.173	0.027	14.323

EUT Overview (5G NR n5)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP	
				Max. Power [W]	Max. Power [dBm]
NR Band n66	20 MHz	π/2 BPSK	1720 - 1770	0.148	21.70
		QPSK	1720 - 1770	0.144	21.58
		16QAM	1720 - 1770	0.119	20.75
		64QAM	1720 - 1770	0.085	19.30
		256QAM	1720 - 1770	0.057	17.59

EUT Overview (5G NR n66)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP	
				Max. Power [W]	Max. Power [dBm]
NR Band n25/2	20 MHz	π/2 BPSK	1860 - 1905	0.171	22.32
		QPSK	1860 - 1905	0.168	22.25
		16QAM	1860 - 1905	0.141	21.50
		64QAM	1860 - 1905	0.094	19.71
		256QAM	1860 - 1905	0.059	17.73

EUT Overview (5G NR n25/2)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP	
				Max. Power [W]	Max. Power [dBm]
NR Band n41	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.277	24.429
		QPSK	2546.0 - 2640.0	0.269	24.299
		16QAM	2546.0 - 2640.0	0.213	23.289
		64QAM	2546.0 - 2640.0	0.147	21.679
		256QAM	2546.0 - 2640.0	0.088	19.469

EUT Overview (5G NR n41)

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 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 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: ZNFG900UM**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function.

Test Device Serial No.: 05217, 05241

2.2 Device Capabilities

This device contains the following capabilities:

800/850/1900 CDMA/EvDO Rev0/A, 1x Advanced (BC0, BC1), 850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR, 802.11b/g/n WLAN, 802.11a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

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

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

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

This device supports dual display capability. Additional radiated emission measurements were performed having the dual display cover (Model: LM-G905N) installed with the EUT 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

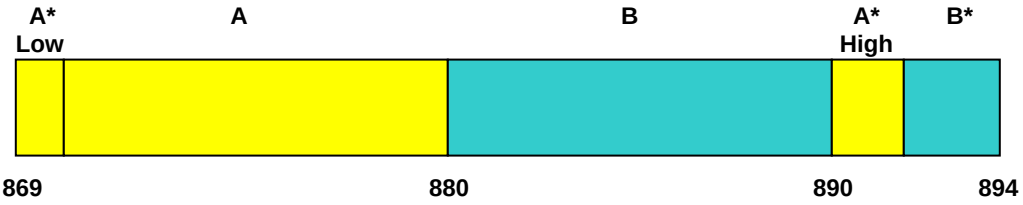
Two paired channels of 11 megahertz each are available for assignment in Block C in the 746-757 MHz and 776-787 MHz bands. In the event that no licenses for two channels in this Block C are assigned based on the results of the first auction in which such licenses were offered because the auction results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

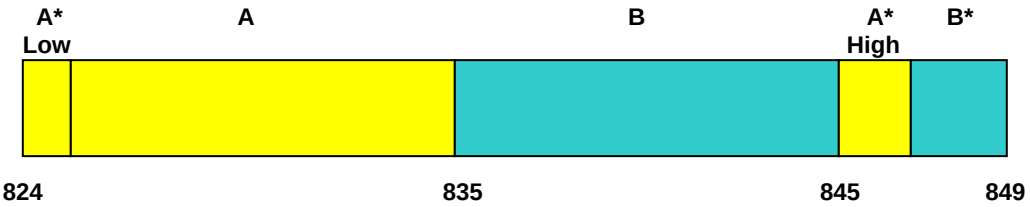
Block A: 698-704 MHz and 728-734 MHz;
Block B: 704-710 MHz and 734-740 MHz; and
Block C: 710-716 MHz and 740-746 MHz.

3.4 Cellular - Base Frequency Blocks



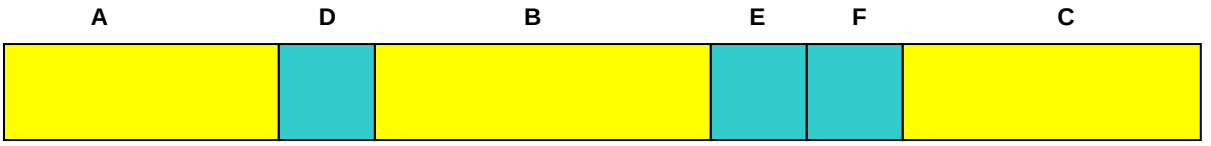
BLOCK 1: 869 – 880 MHz (A* Low + A)
BLOCK 2: 880 – 890 MHz (B)
BLOCK 3: 890 – 891.5 MHz (A* High)
BLOCK 4: 891.5 – 894 MHz (B*)

3.5 Cellular - Mobile Frequency Blocks



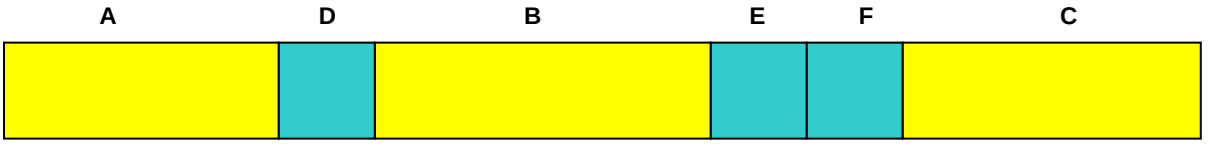
BLOCK 1: 824 – 835 MHz (A* Low + A)
BLOCK 2: 835 – 845 MHz (B)
BLOCK 3: 845 – 846.5 MHz (A* High)
BLOCK 4: 846.5 – 849 MHz (B*)

3.6 PCS - Base Frequency Blocks



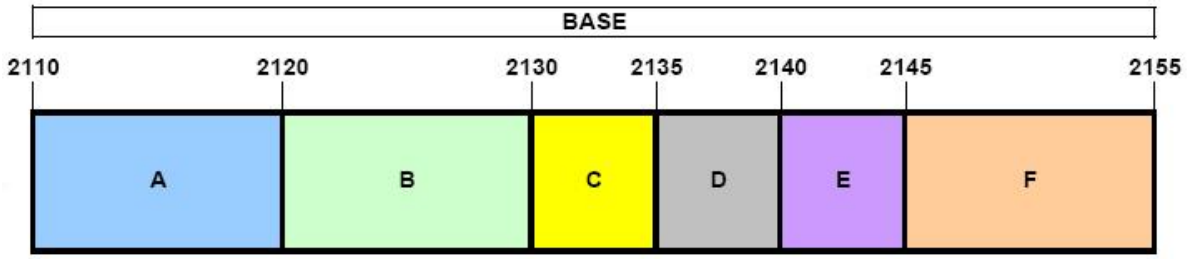
BLOCK 1: 1930 – 1945 MHz (A)
BLOCK 2: 1945 – 1950 MHz (D)
BLOCK 3: 1950 – 1965 MHz (B)
BLOCK 4: 1965 – 1970 MHz (E)
BLOCK 5: 1970 – 1975 MHz (F)
BLOCK 6: 1975 – 1990 MHz (C)

3.7 PCS - Mobile Frequency Blocks



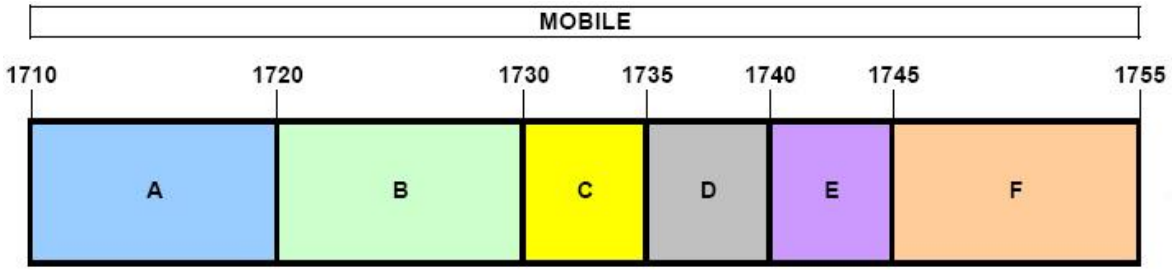
BLOCK 1: 1850 – 1865 MHz (A)
BLOCK 2: 1865 – 1870 MHz (D)
BLOCK 3: 1870 – 1885 MHz (B)
BLOCK 4: 1885 – 1890 MHz (E)
BLOCK 5: 1890 – 1895 MHz (F)
BLOCK 6: 1895 – 1910 MHz (C)

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:

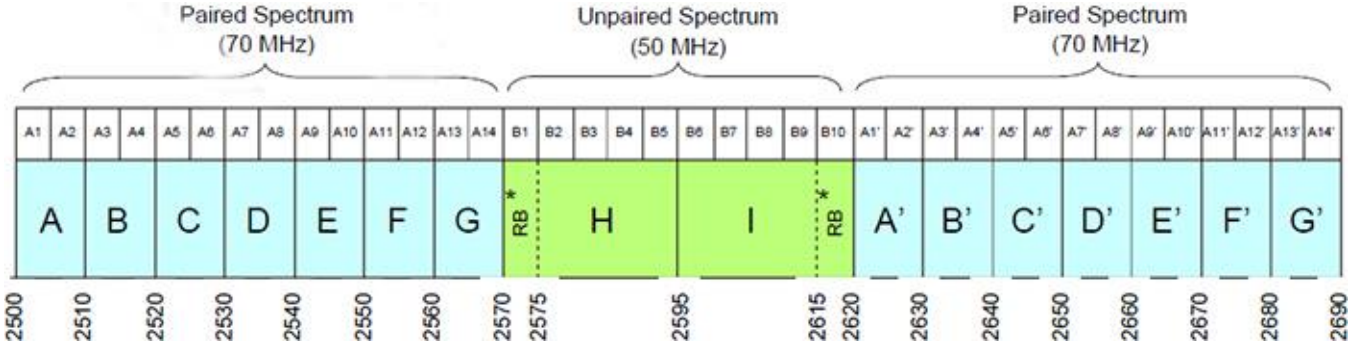
BLOCK 1: 2305-2310 and 2350-2355 MHz (A)

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 + 10 $\log_{10}$(Power $_{[Watts]}$). For Band 7 and 41, the calculated P_d levels are compared to the absolute spurious emission limit of -25dBm which is equivalent to the required minimum attenuation of 55 + 10 $\log_{10}$(Power $_{[Watts]}$). For Band 30, the calculated P_d levels are compared to the absolute spurious emission limit of -40dBm which is equivalent to the required minimum attenuation of 70 + 10 $\log_{10}$(Power $_{[Watts]}$).

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

4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
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
Agilent	N9030A	PXA Signal Analyzer (44GHz)	6/12/2019	Annual	6/12/2020	MY52350166
Emco	3115	Horn Antenna (1-18GHz)	3/28/2020	Biennial	3/28/2022	9704-5182
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/28/2020	Biennial	3/28/2022	128337
Mini Circuits	TVA-11-422	RF Power Amp	N/A			QA1317001
Mini Circuits	PWR-SEN-4GHS	USB Power Sensor	6/19/2019	Annual	6/19/2020	11401010036
Rohde & Schwarz	CMW500	Radio Communication Tester	8/26/2019	Annual	8/26/2020	100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	6/5/2019	Annual	6/5/2020	100342
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/11/2019	Annual	7/11/2020	102135
Rohde & Schwarz	SFUNIT-Rx	Shielded Filter Unit	7/8/2019	Annual	7/8/2020	102134
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	5/19/2018	Biennial	5/19/2020	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

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: ZNFG900UM

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

Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
22.913(a)(5)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 5)	< 7 Watts max. ERP	RADIATED	PASS	Section 7.2
27.50(b)(10) 27.50(c)(10)	Effective Radiated Power / Equivalent Isotropic Radiated Power (Band 71, 12, 13)	< 3 Watts max. ERP			Section 7.2
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 7, 41)	< 2 Watts max. EIRP			Section 7.2
27.50(d)(4)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts max. EIRP			Section 7.2
27.50(a)(3)	Equivalent Isotropic Radiated Power (Band 30)	< 0.25 Watts max. EIRP			Section 7.2
2.1053 22.917(a) 24.238(a) 27.53(c) 27.53(g) 27.53(h)	Undesirable Emissions (Band 12, 13, 5, 66/4, 25/2)	> 43 + 10 $\log_{10}$ (P[Watts]) for all out-of-band emissions			Section 7.3
27.53(f)	Undesirable Emissions (Band 13)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 – 1610 MHz			Section 7.3
27.53(a)	Undesirable Emissions (Band 30)	> 70 + 10 $\log_{10}$ (P[Watts])			Section 7.3
27.53(m)	Undesirable Emissions (Band 7, 41)	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3
27.53(m)	Uplink Carrier Aggregation	Undesirable emissions must meet the limits detailed in 27.53(m)			Section 7.3

Table 7-1. Summary of Radiated Test Results

Notes:

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

7.2 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

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

Test Setup

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

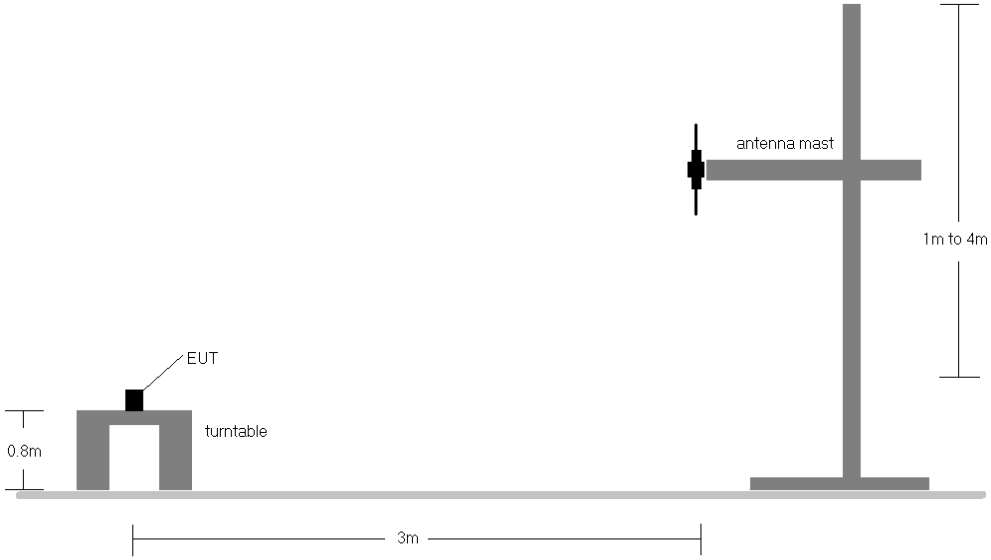


Figure 7-1. Radiated Test Setup <1GHz

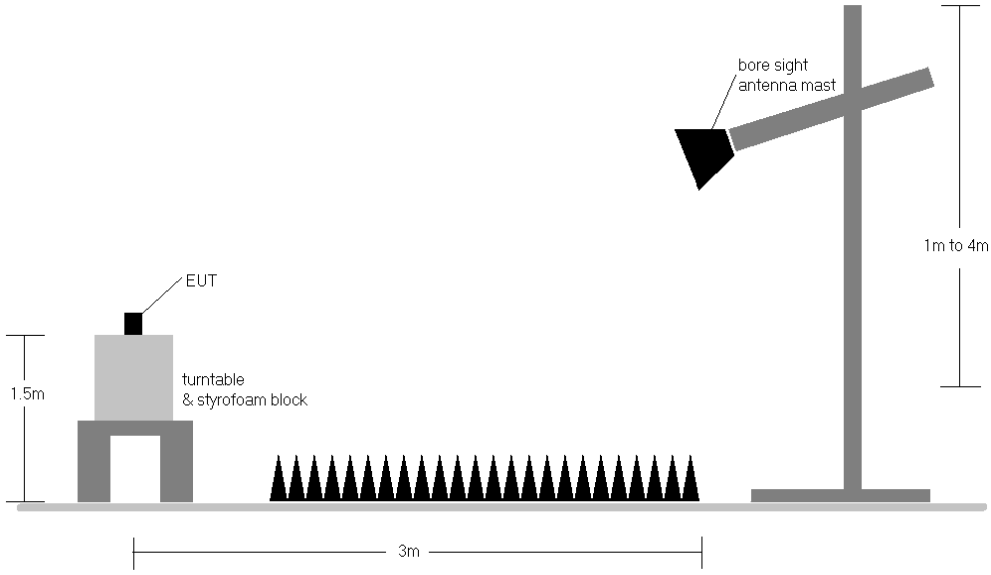


Figure 7-2. Radiated Test Setup >1GHz

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
673.00	20	QPSK	H	174	141	1 / 99	15.31	3.09	16.25	0.042	34.77	-18.52
680.50	20	QPSK	H	177	138	1 / 99	15.34	3.19	16.38	0.043	34.77	-18.40
688.00	20	QPSK	H	171	135	1 / 99	15.30	3.28	**16.43**	**0.044**	34.77	-18.34
688.00	20	QPSK	V	163	107	1 / 99	14.07	3.28	15.20	0.033	34.77	-19.57
688.00	20 (Dual Display)	QPSK	H	141	323	1 / 99	11.79	3.28	12.92	0.020	34.77	-21.85

Table 7-2. ERP Data (Band 71)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
704.00	10	QPSK	H	180	355	1 / 49	12.85	3.58	14.28	0.027	34.77	-20.49	16.43	0.044	36.99	-20.56
707.50	10	QPSK	H	177	356	1 / 49	13.34	3.72	14.91	0.031	34.77	-19.86	17.06	0.051	36.99	-19.93
711.00	10	QPSK	H	194	351	1 / 49	13.72	3.67	**15.24**	**0.033**	34.77	-19.53	**17.39**	**0.055**	36.99	-19.60
711.00	10	QPSK	V	193	114	1 / 49	10.68	3.67	12.20	0.017	34.77	-22.57	14.35	0.027	36.99	-22.64
711.00	10 (Dual Display)	QPSK	H	281	335	1 / 49	13.18	3.67	14.70	0.029	34.77	-20.07	16.85	0.048	36.99	-20.14

Table 7-3. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
782.00	10	QPSK	H	161	347	1 / 49	12.55	5.89	**16.29**	0.043	34.77	-18.48	**18.44**	0.070	36.99	-18.55
782.00	10	QPSK	V	158	329	1 / 49	12.95	5.89	16.69	0.047	34.77	-18.08	18.84	0.077	36.99	-18.15
782.00	10 (Dual Display)	QPSK	V	146	111	1 / 49	13.54	5.89	17.28	**0.053**	34.77	-17.49	19.43	**0.088**	36.99	-17.56

Table 7-4. ERP Data (Band 13)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
829.00	10	QPSK	V	134	114	1 / 49	12.95	6.40	17.20	0.052	38.45	-21.25	19.35	0.086	40.61	-21.26
836.50	10	QPSK	V	143	113	1 / 49	13.33	6.38	17.56	0.057	38.45	-20.89	19.71	0.094	40.61	-20.90
844.00	10	QPSK	V	149	116	1 / 49	13.44	6.46	**17.75**	**0.060**	38.45	-20.70	**19.90**	**0.098**	40.61	-20.71
844.00	10	QPSK	H	201	94	1 / 49	10.73	6.46	15.04	0.032	38.45	-23.41	17.19	0.052	40.61	-23.42
844.00	10 (Dual Display)	QPSK	V	100	76	1 / 49	11.25	6.46	15.56	0.036	38.45	-22.89	17.71	0.059	40.61	-22.90

Table 7-5. ERP Data (Band 5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1720.00	20	QPSK	H	124	181	1 / 99	12.17	9.41	**21.58**	0.144	30.00	-8.42
1745.00	20	QPSK	H	100	56	1 / 0	11.89	9.26	21.15	0.130	30.00	-8.85
1770.00	20	QPSK	H	101	184	1 / 0	11.88	9.27	21.15	0.130	30.00	-8.85
1720.00	20	QPSK	V	200	172	1 / 99	11.82	9.41	21.23	0.133	30.00	-8.77
1720.00	20 (Dual Display)	QPSK	H	137	348	1 / 99	12.42	9.41	21.83	**0.153**	30.00	-8.17

Table 7-6. 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]
1860.00	20	QPSK	H	115	13	1 / 99	12.39	9.98	22.37	0.173	33.01	-10.64
1882.50	20	QPSK	H	121	16	1 / 0	12.95	10.15	**23.10**	**0.204**	33.01	-9.91
1905.00	20	QPSK	H	150	2	1 / 0	11.55	10.31	21.86	0.154	33.01	-11.15
1882.50	20	QPSK	V	212	352	1 / 0	12.32	10.15	22.47	0.177	33.01	-10.54
1882.50	20 (Dual Display)	QPSK	H	113	9	1 / 0	12.63	10.15	22.78	0.190	33.01	-10.23

Table 7-7. 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]
2310.00	10	QPSK	H	121	213	1 / 0	10.78	10.34	**21.12**	**0.129**	23.98	-2.86
2310.00	10	QPSK	V	187	326	1 / 0	10.56	10.25	20.81	0.121	23.98	-3.17
2310.00	10 (Dual Display)	QPSK	H	119	202	1 / 0	9.01	10.34	19.35	0.086	23.98	-4.63

Table 7-8. 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]
2510.00	20	QPSK	V	147	6	1 / 0	11.44	9.42	20.86	0.122	33.01	-12.15
2535.00	20	QPSK	V	123	45	1 / 0	12.01	9.41	21.42	0.139	33.01	-11.59
2560.00	20	QPSK	V	131	310	1 / 99	12.22	9.45	**21.67**	**0.147**	33.01	-11.34
2560.00	20	QPSK	H	229	284	1 / 99	11.73	9.45	21.18	0.131	33.01	-11.83
2560.00	20 (Dual Display)	QPSK	V	201	264	1 / 99	10.92	9.45	20.37	0.109	33.01	-12.64

Table 7-9. 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]
2510.00	20	QPSK	V	107	117	1 / 99	11.65	9.42	**21.07**	**0.128**	33.01	-11.94
2593.00	20	QPSK	V	124	1	1 / 99	11.02	9.59	20.61	0.115	33.01	-12.40
2680.00	20	QPSK	V	112	189	100 / 0	8.09	9.71	17.80	0.060	33.01	-15.21
2510.00	20	QPSK	H	101	109	1 / 99	9.39	9.42	18.81	0.076	33.01	-14.20
2510.00	20 (Dual Display)	QPSK	V	227	273	1 / 99	11.28	9.42	20.70	0.118	33.01	-12.31

Table 7-10. EIRP Data (Band 41 – PC3)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	673.0	V	179.0	370.0	3.09	1 / 0	14.99	**18.08**	0.064	36.99	-18.91	**15.93**	0.039	34.77	-18.84
		680.5	V	182.0	368.0	3.19	1 / 0	14.68	17.87	0.061	36.99	-19.12	15.72	0.037	34.77	-19.06
		688.0	V	179.0	364.0	3.28	1 / 0	13.75	17.03	0.050	36.99	-19.96	14.88	0.031	34.77	-19.89
	QPSK	673.0	V	179.0	370.0	3.09	1 / 0	14.96	**18.05**	0.064	36.99	-18.94	**15.90**	0.039	34.77	-18.87
		680.5	V	182.0	368.0	3.19	1 / 0	14.58	17.77	0.060	36.99	-19.22	15.62	0.036	34.77	-19.16
		688.0	V	179.0	364.0	3.28	1 / 0	13.74	17.02	0.050	36.99	-19.97	14.87	0.031	34.77	-19.90
	16-QAM	673.0	V	179.0	370.0	3.09	1 / 0	13.76	**16.85**	0.048	36.99	-20.14	**14.70**	0.030	34.77	-20.07
	64-QAM	673.0	V	179.0	370.0	3.09	1 / 0	12.21	**15.30**	0.034	36.99	-21.69	**13.15**	0.021	34.77	-21.62
	256-QAM	673.0	V	179.0	370.0	3.09	1 / 0	10.29	**13.38**	0.022	36.99	-23.61	**11.23**	0.013	34.77	-23.54
	QPSK (Opposite Pol.)	673.0	H	319.0	87.0	3.09	1 / 0	13.52	16.61	0.046	36.99	-20.38	14.46	0.028	34.77	-20.31

Table 7-11. ERP Data (5G sub6 n71)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	834.0	V	145.0	89.0	6.35	1 / 50	12.60	**16.80**	0.048	38.45	-21.65	**18.95**	0.079	40.61	-21.65
		836.5	V	139.0	88.0	6.38	1 / 50	12.47	16.70	0.047	38.45	-21.75	18.85	0.077	40.61	-21.76
		839.0	V	139.0	85.0	6.40	1 / 50	12.50	16.75	0.047	38.45	-21.70	18.90	0.078	40.61	-21.70
	QPSK	834.0	V	145.0	89.0	6.35	1 / 50	12.76	**16.96**	0.050	38.45	-21.49	**19.11**	0.082	40.61	-21.49
		836.5	V	139.0	88.0	6.38	1 / 50	12.48	16.71	0.047	38.45	-21.74	18.86	0.077	40.61	-21.75
		839.0	V	139.0	85.0	6.40	1 / 50	12.57	16.82	0.048	38.45	-21.63	18.97	0.079	40.61	-21.63
	16-QAM	834.0	V	145.0	89.0	6.35	1 / 50	11.82	**16.02**	0.040	38.45	-22.43	**18.17**	0.066	40.61	-22.43
	64-QAM	839.0	V	139.0	85.0	6.40	1 / 50	10.08	**14.33**	0.027	38.45	-24.12	**16.48**	0.045	40.61	-24.12
	256-QAM	834.0	V	145.0	89.0	6.35	1 / 50	7.97	**12.17**	0.016	38.45	-26.28	**14.32**	0.027	40.61	-26.28
	QPSK (Opposite Pol.)	834.0	H	221.0	91.0	6.35	1 / 50	8.16	14.51	0.028	38.45	-23.94	16.66	0.046	40.61	-23.94

Table 7-12. ERP Data (5G sub6 n5)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	1720.0	H	100.0	330.0	9.41	1 / 50	11.00	20.41	0.110	30.00	-9.59
		1745.0	H	140.0	331.0	9.26	1 / 50	11.69	20.95	0.124	30.00	-9.05
		1770.0	H	177.0	326.0	9.27	1 / 50	12.43	**21.70**	0.148	30.00	-8.30
	QPSK	1720.0	H	100.0	330.0	9.41	1 / 50	10.83	20.24	0.106	30.00	-9.76
		1745.0	H	140.0	331.0	9.26	1 / 50	11.48	20.74	0.119	30.00	-9.26
		1770.0	H	177.0	326.0	9.27	1 / 50	12.31	**21.58**	0.144	30.00	-8.42
	16-QAM	1770.0	H	177.0	326.0	9.27	1 / 50	11.48	**20.75**	0.119	30.00	-9.25
	64-QAM	1770.0	H	177.0	326.0	9.27	1 / 50	10.03	**19.30**	0.085	30.00	-10.70
	256-QAM	1770.0	H	177.0	326.0	9.27	1 / 50	8.32	**17.59**	0.057	30.00	-12.41
	QPSK (Opposite Pol.)	1770.0	V	129.0	266.0	9.26	1 / 50	8.77	18.03	0.064	30.00	-11.97

Table 7-13. EIRP Data (5G sub6 n66)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	π/2 BPSK	1860.0	H	117.0	332.0	9.98	1 / 50	12.34	**22.32**	0.171	33.01	-10.69
		1880.0	H	149.0	340.0	10.15	1 / 50	11.51	21.66	0.147	33.01	-11.35
		1900.0	H	104.0	328.0	10.31	1 / 50	11.33	21.64	0.146	33.01	-11.37
	QPSK	1860.0	H	117.0	332.0	9.98	1 / 50	12.27	**22.25**	0.168	33.01	-10.76
		1880.0	H	149.0	340.0	10.15	1 / 50	11.44	21.59	0.144	33.01	-11.42
		1900.0	H	104.0	328.0	10.31	1 / 50	11.29	21.60	0.145	33.01	-11.41
	16-QAM	1860.0	H	117.0	332.0	9.98	1 / 50	11.52	**21.50**	0.141	33.01	-11.51
	64-QAM	1860.0	H	117.0	332.0	9.98	1 / 50	9.73	**19.71**	0.094	33.01	-13.30
	256-QAM	1860.0	H	117.0	332.0	9.98	1 / 50	7.75	**17.73**	0.059	33.01	-15.28
	QPSK (Opposite Pol.)	1860.0	V	253.0	102.0	10.15	1 / 50	12.58	22.73	0.188	33.01	-10.28

Table 7-14. EIRP Data (5G sub6 n25/2)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2546.0	V	290.0	329.0	9.41	1 / 137	9.06	18.47	0.070	33.01	-14.54
		2593.0	V	257.0	338.0	9.59	1 / 137	11.78	21.37	0.137	33.01	-11.64
		2640.0	V	291.0	350.0	9.68	1 / 137	14.75	**24.43**	0.277	33.01	-8.58
	QPSK	2546.0	V	290.0	329.0	9.41	1 / 137	9.04	18.45	0.070	33.01	-14.56
		2593.0	V	257.0	338.0	9.59	1 / 137	11.21	20.80	0.120	33.01	-12.21
		2640.0	V	291.0	350.0	9.68	1 / 137	14.62	**24.30**	0.269	33.01	-8.71
	16-QAM	2640.0	V	291.0	350.0	9.68	1 / 137	13.61	**23.29**	0.213	33.01	-9.72
	64-QAM	2640.0	V	291.0	350.0	9.68	1 / 137	12.00	**21.68**	0.147	33.01	-11.33
	256-QAM	2640.0	V	291.0	350.0	9.68	1 / 137	9.79	**19.47**	0.088	33.01	-13.54
	QPSK (Opposite Pol.)	2640.0	H	164.0	25.0	9.59	1 / 137	13.26	22.85	0.193	33.01	-10.16

Table 7-15. EIRP Data (5G sub6 n41 – PC3)

7.3 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

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

Test Setup

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

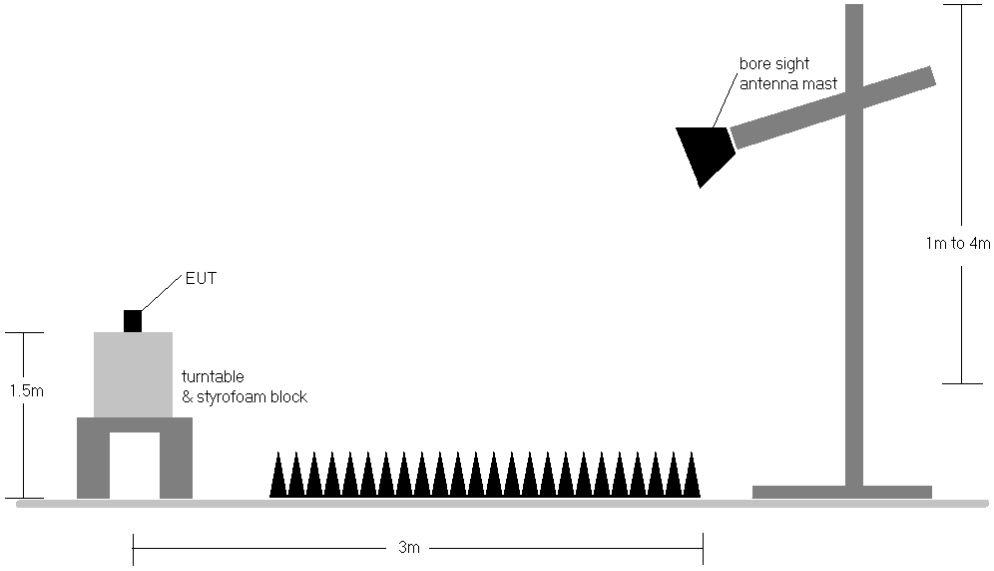


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

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

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

5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Band 71

OPERATING FREQUENCY:	680.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	V	-	-	-69.42	7.51	-61.91	-48.9
2041.50	V	-	-	-63.23	8.79	-54.44	-41.4
2722.00	V	-	-	-62.75	10.11	-52.64	-39.6

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

Band 12

OPERATING FREQUENCY:	707.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	H	-	-	-69.23	7.66	-61.57	-48.6
2122.50	H	-	-	-66.29	8.89	-57.40	-44.4

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

Band 13

OPERATING FREQUENCY:	782.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	-	-	-66.95	9.46	-57.49	-44.5
3128.00	H	-	-	-64.98	9.37	-55.61	-42.6
3910.00	H	-	-	-64.85	9.40	-55.45	-42.4

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

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	-	-	-69.06	8.56	-60.50	-20.5

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

OPERATING FREQUENCY:	782.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	398	369	-74.83	9.44	-65.40	-52.4
3128.00	H	-	-	-75.44	9.48	-65.96	-53.0

Table 7-20. Radiated Spurious Data (Band 13 – Mid Channel) with Dual Display Cover

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	359	123	-79.58	8.74	-70.84	-30.8

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

Band 5

OPERATING FREQUENCY:	844.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	H	397	225	-72.08	8.98	-63.10	-50.1
2532.00	H	112	233	-68.18	9.78	-58.40	-45.4
3376.00	H	-	-	-68.36	9.74	-58.63	-45.6
4220.00	H	-	-	-69.40	10.51	-58.88	-45.9

Table 7-22. Radiated Spurious Data (Band 26 – Mid Channel)

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	H	-	-	-74.52	8.98	-65.54	-52.5
2532.00	H	144	180	-70.86	9.78	-61.08	-48.1
3376.00	H	-	-	-71.41	9.74	-61.68	-48.7

Table 7-23. Radiated Spurious Data (Band 26 – Mid Channel) with Dual Display Cover

Band 66/4

OPERATING FREQUENCY:	1770.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	120	34	-43.53	9.92	-33.60	-20.6
5310.00	H	396	345	-55.31	10.72	-44.60	-31.6
7080.00	H	112	31	-53.91	11.82	-42.09	-29.1
8850.00	H	391	19	-55.29	11.02	-44.26	-31.3
10620.00	H	118	297	-61.53	12.62	-48.91	-35.9
12390.00	H	126	355	-53.39	13.39	-40.00	-27.0
14160.00	H	-	-	-62.59	11.58	-51.00	-38.0
15930.00	H	-	-	-70.27	16.80	-53.46	-40.5

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

Band 25/2

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	V	395	330	-60.20	9.32	-50.87	-37.9
5715.00	V	112	206	-62.30	11.38	-50.92	-37.9
7620.00	V	114	357	-58.16	11.32	-46.85	-33.8
9525.00	V	112	151	-67.03	11.76	-55.27	-42.3
11430.00	V	112	48	-66.31	12.87	-53.44	-40.4
13335.00	V	265	240	-63.39	12.84	-50.55	-37.5
15240.00	V	-	-	-68.05	14.83	-53.22	-40.2
17145.00	V	-	-	-63.37	13.45	-49.92	-36.9

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

Band 30

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	207	347	-66.90	10.95	-55.95	-16.0
6930.00	H	120	319	-65.21	11.77	-53.44	-13.4
9240.00	H	123	352	-65.19	11.65	-53.53	-13.5
11550.00	H	115	19	-63.80	12.76	-51.04	-11.0
13860.00	H	109	27	-56.03	12.04	-43.99	-4.0
16170.00	H	-	-	-59.86	16.64	-43.21	-3.2

Table 7-26. Radiated Spurious Data (Band 30 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	H	161	355	-70.57	10.95	-59.62	-19.6
6930.00	H	201	313	-72.12	11.77	-60.35	-20.4
9240.00	H	125	356	-68.75	11.65	-57.09	-17.1
11550.00	H	-	-	-66.66	12.76	-53.90	-13.9
13860.00	H	-	-	-61.39	12.04	-49.35	-9.4

Table 7-27. Radiated Spurious Data (Band 30 – Mid Channel) with Dual Display

Band 7

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	400	140	-69.53	10.71	-58.82	-33.8
7680.00	H	400	345	-60.67	11.42	-49.25	-24.3
10240.00	H	294	204	-57.72	12.23	-45.49	-20.5
12800.00	H	227	28	-61.62	13.53	-48.09	-23.1
15360.00	H	201	28	-54.46	15.33	-39.12	-14.1
17920.00	H	-	-	-52.97	9.43	-43.54	-18.5

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

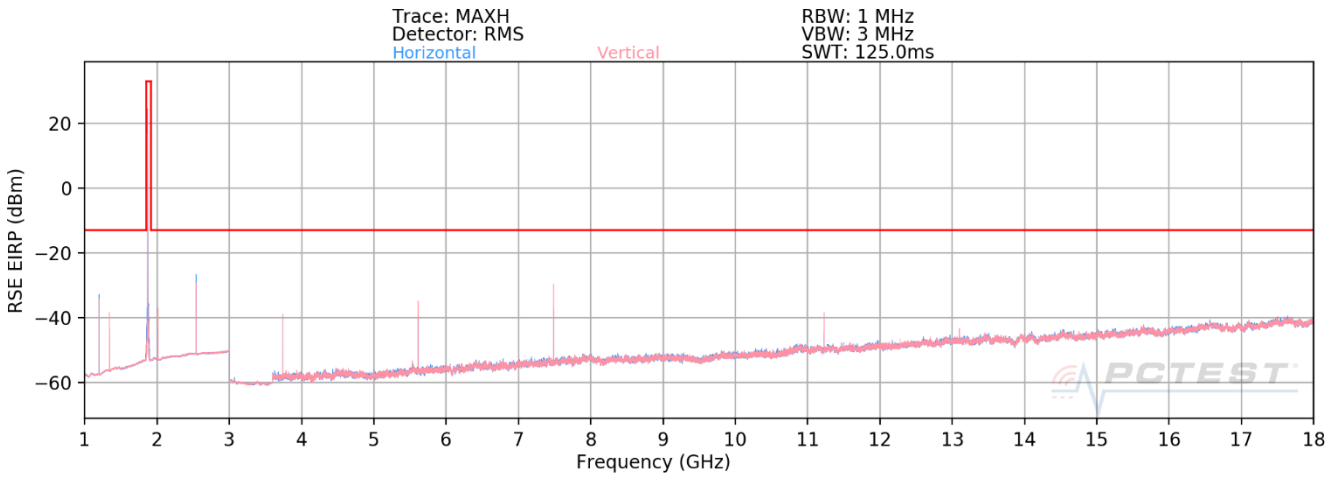
Band 41

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	-	-	-61.61	10.73	-50.89	-25.9
8040.00	H	-	-	-59.71	11.19	-48.52	-23.5
10720.00	H	111	316	-57.93	12.63	-45.30	-20.3
13400.00	H	-	-	-51.88	12.62	-39.26	-14.3
16080.00	H	-	-	-54.70	16.73	-37.97	-13.0

Table 7-29. Radiated Spurious Data (Band 41 – Mid Channel)

5G sub6 EN-DC n71 + LTE B2



Plot 7-1. Radiated Spurious Plot above 1GHz (5G sub6 n71)

5G OPERATING FREQUENCY:	673.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1860	
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	H	400	98	-80.37	7.92	-72.45	-59.5
2019.00	H	-	-	-78.56	8.86	-69.69	-56.7
2692.00	H	-	-	-77.05	9.63	-67.42	-54.4
3365.00	H	-	-	-74.62	9.48	-65.14	-52.1

Table 7-30. Radiated Spurious Data (5G sub6 n71 – Low Channel)

5G OPERATING FREQUENCY:	680.50	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1880	
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	H	400	108	-80.33	7.93	-72.40	-59.4
2041.50	H	-	-	-79.13	8.98	-70.15	-57.2
2722.00	H	-	-	-77.53	9.77	-67.75	-54.8
3402.50	H	-	-	-74.98	9.57	-65.41	-52.4

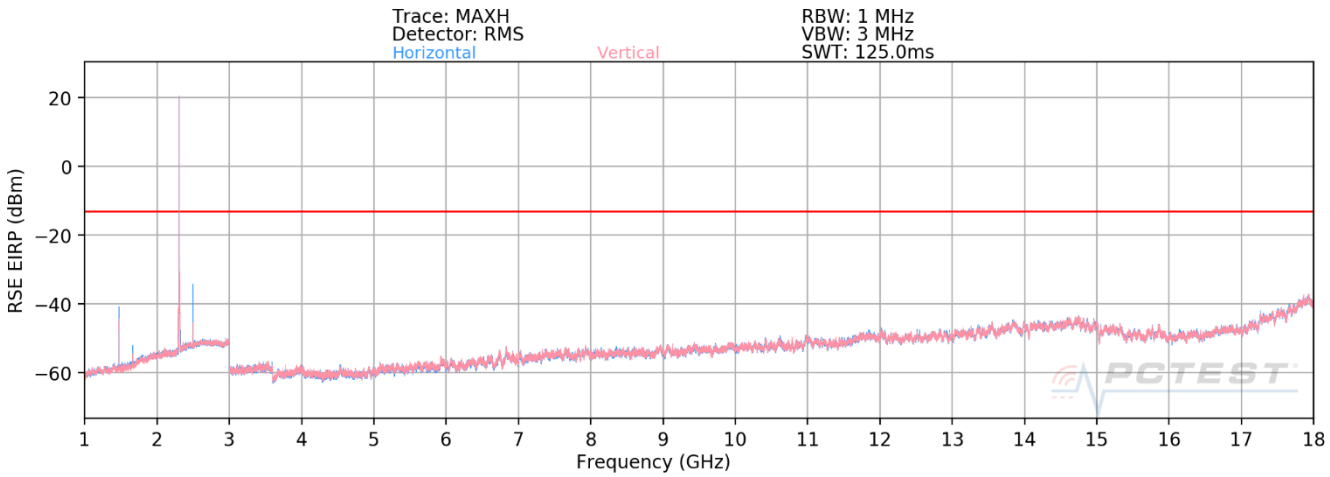
Table 7-31. Radiated Spurious Data (5G sub6 n71 – Mid Channel)

5G OPERATING FREQUENCY:	688.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1900	
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	H	400	93	-80.10	7.91	-72.19	-59.2
2064.00	H	-	-	-78.90	9.05	-69.85	-56.8
2752.00	H	-	-	-77.73	9.92	-67.81	-54.8
3440.00	H	-	-	-75.56	9.65	-65.91	-52.9

Table 7-32. Radiated Spurious Data (5G sub6 n71 – High Channel)

5G sub6 EN-DC n5 + B30



Plot 7-2. Radiated Spurious Plot above 1GHz (5G sub6 n5)

Note:

The wide spectrum spurious emissions plot above shown is used only for the purpose of emission identification for this ENDC mode.

5G OPERATING FREQUENCY:	829.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	10.0	MHz
LTE OPERATING FREQUENCY:	2310.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40 / -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	-	-	-80.71	8.88	-71.83	-58.8
2487.00	H	-	-	-77.39	9.23	-68.16	-55.2
3316.00	H	398	258	-74.85	9.43	-65.42	-52.4
4145.00	H	-	-	-75.13	10.13	-65.01	-52.0

Table 7-33. Radiated Spurious Data (5G sub6 n5 – Low Channel)

5G OPERATING FREQUENCY:	836.50	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	10.0	MHz
LTE OPERATING FREQUENCY:	2310.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40 / -13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	-	-	-80.47	8.78	-71.69	-58.7
2509.50	H	-	-	-76.84	9.27	-67.56	-54.6
3346.00	H	400	213	-75.17	9.44	-65.73	-52.7
4182.50	H	-	-	-75.79	10.34	-65.44	-52.4

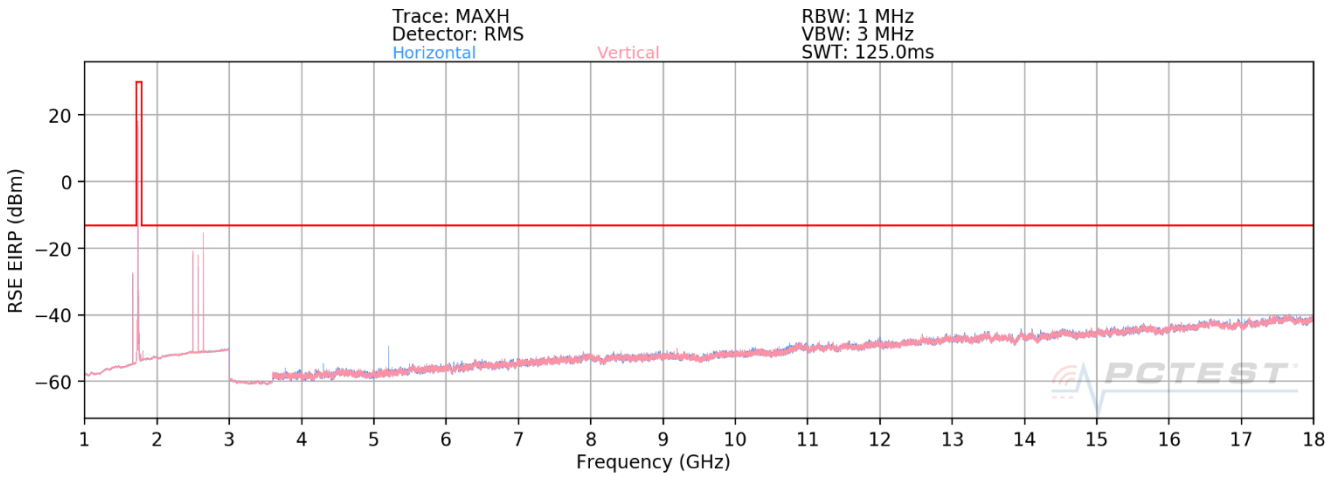
Table 7-34. Radiated Spurious Data (5G sub6 n5 – Mid Channel)

5G OPERATING FREQUENCY:	844.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	10.0	MHz
LTE OPERATING FREQUENCY:	2310.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-40 / -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	H	-	-	-79.97	8.68	-71.30	-58.3
2532.00	H	-	-	-76.52	9.28	-67.24	-54.2
3376.00	H	-	-	-75.20	9.50	-65.70	-52.7
4220.00	H	-	-	-76.15	10.53	-65.62	-52.6

Table 7-35. Radiated Spurious Data (5G sub6 n5 – High Channel)

5G sub6 EN-DC n66 + LTE B5



Plot 7-3. Radiated Spurious Plot above 1GHz (5G sub6 n66)

5G OPERATING FREQUENCY:	1720.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	829.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE 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]
3440.00	H	-	-	-75.84	9.65	-66.19	-53.2
5160.00	H	-	-	-75.95	11.03	-64.92	-51.9
6880.00	H	-	-	-72.75	10.99	-61.77	-48.8
2611.00	H	198	351	-46.02	9.33	-36.68	-23.7
2735.00	H	-	-	-57.57	9.84	-47.73	-34.7

Table 7-36. Radiated Spurious Data (5G sub6 n66 – Low Channel)

5G OPERATING FREQUENCY:	1745.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	836.50	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	112	96	-69.30	6.32	-62.98	-50.0
5235.00	H	-	-	-73.11	8.71	-64.39	-51.4
6980.00	H	-	-	-70.93	8.74	-62.19	-49.2
2653.50	H	238	341	-42.57	9.44	-33.14	-20.1
2797.50	H	-	-	-59.22	10.07	-49.16	-36.2

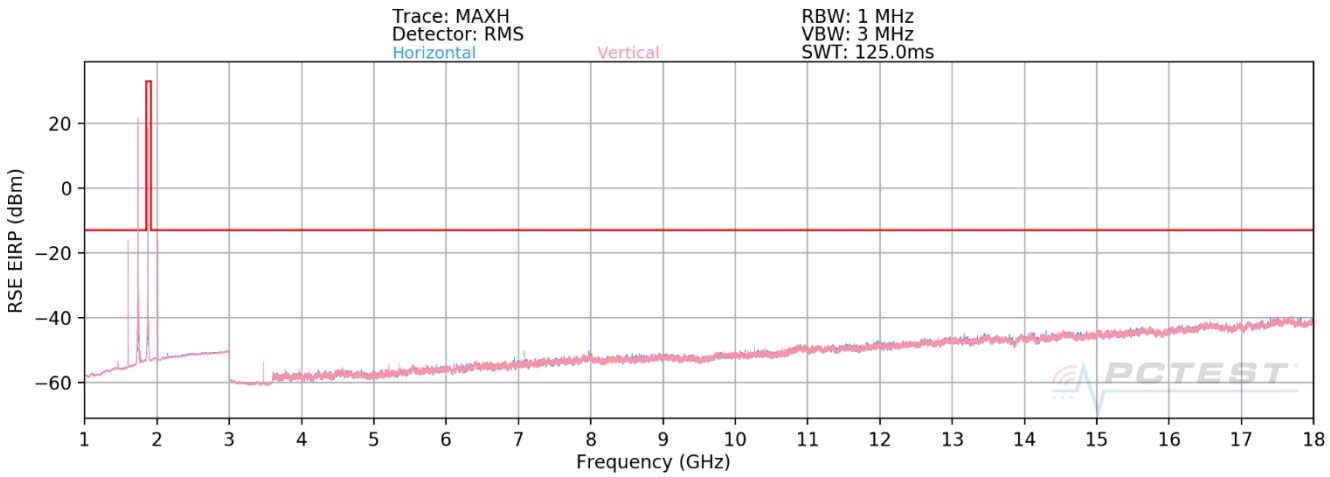
Table 7-37. Radiated Spurious Data (5G sub6 n66 – Mid Channel)

5G OPERATING FREQUENCY:	1770.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	844.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE 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]
3540.00	H	-	-	-74.42	9.76	-64.66	-51.7
5310.00	H	-	-	-74.51	11.12	-63.39	-50.4
7080.00	H	-	-	-72.63	11.08	-61.54	-48.5
2696.00	H	111	345	-38.84	9.64	-29.19	-16.2
2860.00	H	-	-	-59.30	10.18	-49.12	-36.1

Table 7-38. Radiated Spurious Data (5G sub6 n66 – High Channel)

5G sub6 EN-DC n25 + LTE B66



Plot 7-4. Radiated Spurious Plot above 1GHz (5G sub6 n25)

5G OPERATING FREQUENCY:	1860.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1720.00	MHz
LTEMODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	V	-	-	-74.27	9.77	-64.50	-51.5
5580.00	V	-	-	-74.21	11.21	-63.00	-50.0
7440.00	V	-	-	-71.04	10.94	-60.10	-47.1
1580.00	V	144	149	-52.72	8.78	-43.94	-30.9
2000.00	V	138	335	-49.07	8.76	-40.30	-27.3

Table 7-39. Radiated Spurious Data (5G sub6 n25 – Low Channel)

5G OPERATING FREQUENCY:	1882.50	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1745.00	MHz
LTEMODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	V	-	-	-74.87	9.55	-65.32	-52.3
5647.50	V	-	-	-74.98	11.32	-63.66	-50.7
7530.00	V	-	-	-71.37	11.09	-60.28	-47.3
1607.00	V	153	122	-53.07	8.84	-44.23	-31.2
2020.00	V	204	112	-50.30	8.87	-41.44	-28.4

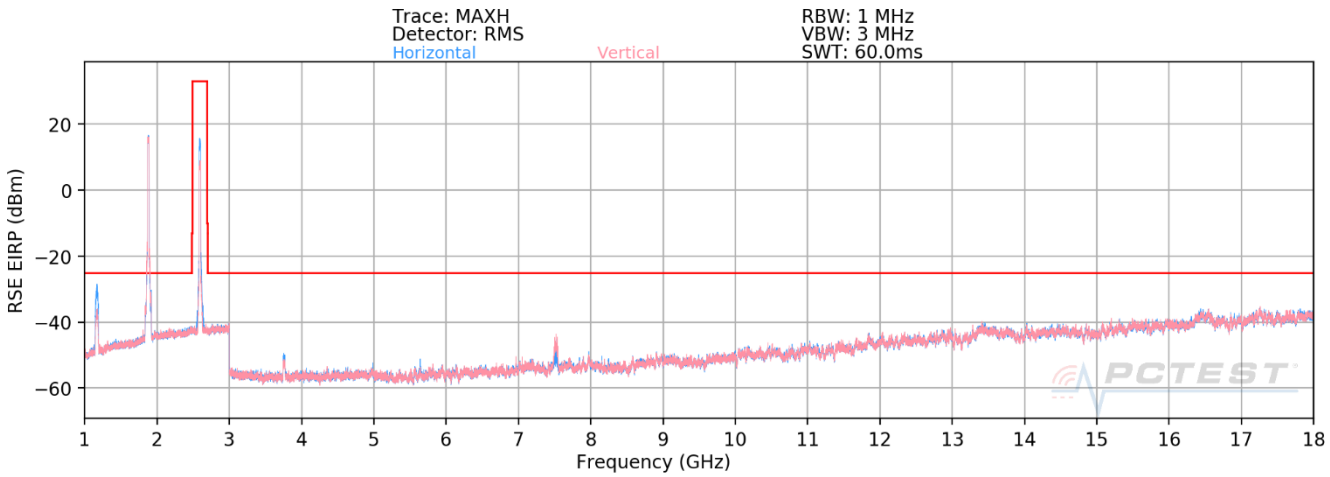
Table 7-40. Radiated Spurious Data (5G sub6 n25 – Mid Channel)

5G OPERATING FREQUENCY:	1905.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1770.00	MHz
LTEMODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	V	-	-	-74.83	9.29	-65.54	-52.5
5715.00	V	-	-	-74.97	11.39	-63.58	-50.6
7620.00	V	-	-	-72.89	11.31	-61.57	-48.6
1635.00	V	168	62	-53.62	8.90	-44.72	-31.7
2040.00	V	111	85	-55.41	8.97	-46.44	-33.4

Table 7-41. Radiated Spurious Data (5G sub6 n25 – High Channel)

5G sub6 EN-DC n41 + LTE B2



Plot 7-5. Radiated Spurious Plot 1GHz - 18GHz (5G sub6 n41)

5G OPERATING FREQUENCY:	2506.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1860.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13 / -25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	H	115	262	-69.41	11.39	-58.03	-33.0
7518.00	H	119	31	-56.15	11.08	-45.07	-20.1
3720.00	H	101	205	-46.47	9.77	-36.70	-23.7
5580.00	H	118	36	-51.09	11.21	-39.88	-26.9
1205.00	H	155	194	-49.72	7.15	-42.57	-17.6
3143.00	H	-	-	-57.62	9.44	-48.18	-23.2

Table 7-42. Radiated Spurious Data (5G sub6 n41 – Low Channel)

5G OPERATING FREQUENCY:	2593.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1880.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13 / -25	dBm

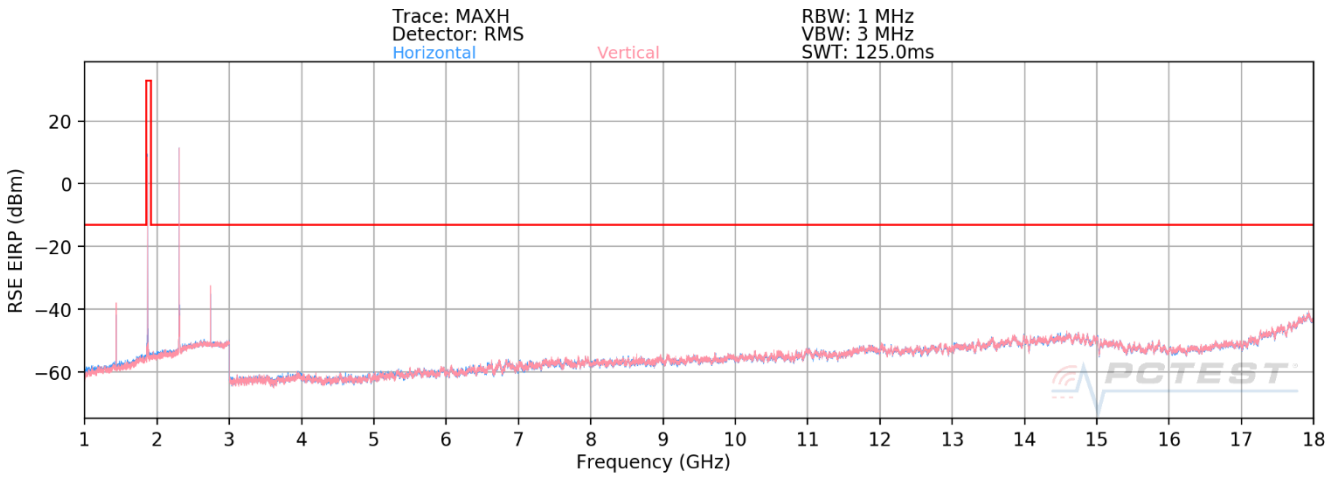
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	-	-	-70.07	11.02	-59.05	-34.0
7779.00	H	-	-	-66.52	11.49	-55.03	-30.0
3760.00	H	101	211	-47.97	9.59	-38.38	-25.4
5640.00	H	104	37	-53.27	11.30	-41.96	-29.0
1160.00	H	16-	190	-38.90	7.30	-31.60	-6.6
3296.00	H	-	-	-58.51	9.43	-49.08	-24.1

Table 7-43. Radiated Spurious Data (5G sub6 n41 – Mid Channel)

5G OPERATING FREQUENCY:	2680.00	MHz
5G MODULATION SIGNAL:	QPSK	
5G BANDWIDTH:	20.0	MHz
LTE OPERATING FREQUENCY:	1900.00	MHz
LTE MODULATION SIGNAL:	QPSK	
LTE BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13 / -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	-	-	-68.69	11.15	-57.53	-32.5
8040.00	H	107	42	-59.87	11.42	-48.45	-23.5
3800.00	H	113	210	-49.24	9.31	-39.93	-26.9
5700.00	H	112	33	-51.01	11.38	-39.64	-26.6
1111.00	H	147	249	-41.17	6.83	-34.35	-9.3
1229.00	H	-	-	-62.88	7.23	-55.65	-30.6

Table 7-44. Radiated Spurious Data (5G sub6 n41 – High Channel)



Plot 7-6. Radiated Spurious Plot above 1GHz (5G sub6 n2)

Note:

The wide spectrum spurious emissions plot above shown is used used only for the purpose of emission identification for this ENDC mode.

OPERATING FREQUENCY:	1860.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
OPERATING FREQUENCY:	2310.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	V	-	-	-74.19	9.77	-64.42	-51.4
5580.00	V	-	-	-73.86	11.21	-62.65	-49.7
7440.00	V	-	-	-70.67	10.94	-59.73	-46.7
1394.00	V	175	97	-36.87	7.89	-28.98	-16.0

Table 7-45. Radiated Spurious Data (5G sub6 n2 – Low Channel)

OPERATING FREQUENCY:	1880.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
OPERATING FREQUENCY:	2310.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	-	-	-73.99	9.59	-64.40	-51.4
5640.00	V	-	-	-73.54	11.30	-62.24	-49.2
7520.00	V	-	-	-70.64	11.08	-59.56	-46.6
1434.00	V	187	104	-38.88	8.35	-30.54	-17.5

Table 7-46. Radiated Spurious Data (5G sub6 n2 – Mid Channel)

OPERATING FREQUENCY:	1900.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
OPERATING FREQUENCY:	2310.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1490.00	V	143	107	-56.13	8.74	-47.39	-34.4
2720.00	V	112	335	-48.51	9.76	-38.75	-25.7
3800.00	V	-	-	-73.37	9.31	-64.06	-51.1
5700.00	V	-	-	-73.76	11.38	-62.38	-49.4
7600.00	V	-	-	-72.03	11.28	-60.75	-47.7

Table 7-47. Radiated Spurious Data (5G sub6 n2 – High Channel)

7.4 Uplink Carrier Aggregation Radiated Measurements

§2.1053,

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. No. of sweep points ≥ 2 x span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

Test Setup

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

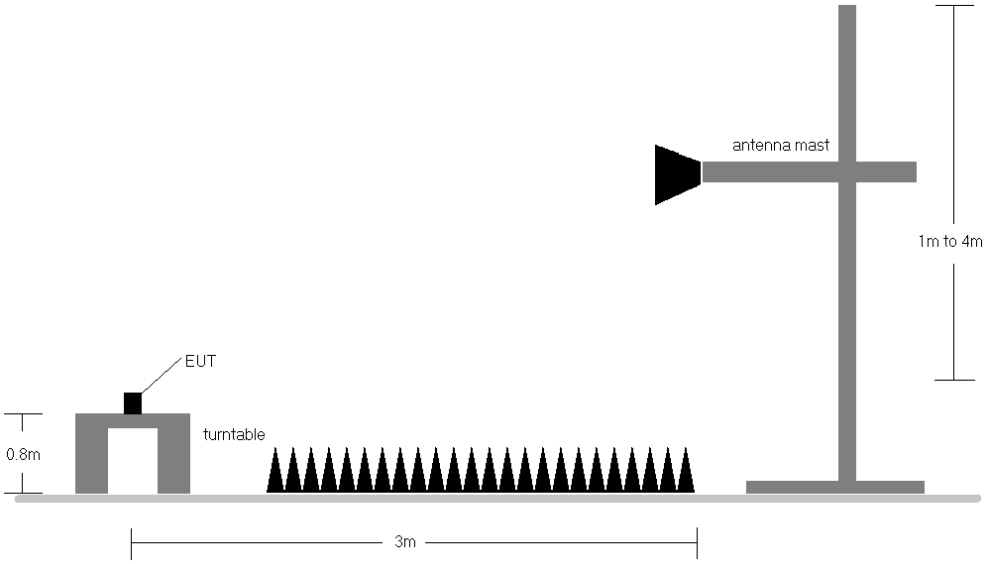


Figure 7-4. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

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

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

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

OPERATING FREQUENCY (PCC):	829.00	MHz
OPERATING FREQUENCY (SCC):	838.90	MHz
CHANNEL (PCC):	20450	
CHANNEL (SCC):	20549	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	H	-	-	-80.58	8.98	-71.60	-58.6
2487.00	H	114	233	-75.49	9.73	-65.76	-52.8
3316.00	H	-	-	-75.19	9.62	-65.57	-52.6

Plot 7-48. Radiated Spurious Data – Low (ULCA B5 PCC: RB 1 Offset 49, SCC: RB 1 Offset 0)

OPERATING FREQUENCY (PCC):	1900.00	MHz
OPERATING FREQUENCY (SCC):	844.00	MHz
CHANNEL (PCC):	19100	
CHANNEL (SCC):	20600	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 MHz / 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]
1268.00	H	-	-	-73.56	7.03	-66.53	-53.5
1688.00	H	111	315	-74.75	8.98	-65.77	-52.8
2324.00	H	-	-	-72.56	9.58	-62.98	-50.0
2532.00	H	-	-	-72.24	9.78	-62.46	-49.5
3800.00	V	107	338	-69.94	9.31	-60.63	-47.6
5700.00	V	-	-	-72.32	11.34	-60.98	-48.0

Plot 7-49. Radiated Spurious Data – High (ULCA 2A-5A PCC: RB 100 Offset 0, SCC: RB 50 Offset 0)

OPERATING FREQUENCY (PCC):	1880.00	MHz
OPERATING FREQUENCY (SCC):	707.50	MHz
CHANNEL (PCC):	18900	
CHANNEL (SCC):	23095	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 MHz / 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]
1415.00	H	-	-	-73.46	7.66	-65.80	-52.8
1637.50	V	-	-	-74.44	8.91	-65.53	-52.5
2122.50	H	-	-	-72.25	8.89	-63.36	-50.4
2810.00	V	-	-	-72.33	10.16	-62.17	-49.2
3052.50	V	-	-	-71.34	9.52	-61.82	-48.8
3760.00	V	111	299	-60.32	9.40	-50.92	-37.9
5640.00	V	100	321	-69.29	11.20	-58.09	-45.1
7520.00	V	104	357	-57.88	11.14	-46.74	-33.7
9400.00	V	-	-	-69.05	11.60	-57.45	-44.4

Plot 7-50. Radiated Spurious Data – Mid (ULCA 2A-12A PCC: RB 100 Offset 0, SCC: RB 50 Offset 0)

OPERATING FREQUENCY (PCC):	704.00	MHz
OPERATING FREQUENCY (SCC):	1770.00	MHz
CHANNEL (PCC):	23060	
CHANNEL (SCC):	132572	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 MHz / 20 MHz	
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	H	-	-	-70.99	7.57	-63.42	-50.4
1428.00	H	-	-	-71.86	7.83	-64.03	-51.0
2112.00	H	-	-	-69.78	8.88	-60.90	-47.9
2494.00	H	-	-	-58.69	9.76	-48.93	-35.9
3540.00	H	-	-	-68.57	9.92	-58.64	-45.6
5310.00	H	-	-	-68.31	10.72	-57.59	-44.6

Plot 7-51. Radiated Spurious Data – Low (ULCA 12A-66A PCC: RB 50 Offset 0, SCC: RB 100 Offset 0)

OPERATING FREQUENCY (PCC):	1880.00	MHz
OPERATING FREQUENCY (SCC):	1745.00	MHz
CHANNEL (PCC):	18900	
CHANNEL (SCC):	132322	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20 MHz / 20 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]
1205.00	H	-	-	-64.73	6.72	-58.01	-45.0
1340.00	H	-	-	-64.86	7.46	-57.39	-44.4
1475.00	H	-	-	-65.12	8.35	-56.77	-43.8
3490.00	H	-	-	-71.81	9.94	-61.87	-48.9
3760.00	V	109	301	-67.19	9.40	-57.79	-44.8
5235.00	H	-	-	-72.04	10.76	-61.27	-48.3
5640.00	V	101	322	-69.94	11.20	-58.74	-45.7
7520.00	V	104	352	-57.69	11.14	-46.55	-33.5
9400.00	V	-	-	-69.30	11.60	-57.70	-44.7

Plot 7-52. Radiated Spurious Data – Mid (ULCA 2A-66A PCC: RB 100 Offset 0, SCC: RB 100 Offset 0)

OPERATING FREQUENCY (PCC):	844.00	MHz
OPERATING FREQUENCY (SCC):	1770.00	MHz
CHANNEL (PCC):	20600	
CHANNEL (SCC):	132572	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 MHz / 20 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]
1008.00	H	-	-	-65.18	5.90	-59.28	-46.3
1688.00	H	-	-	-72.47	8.98	-63.49	-50.5
1934.00	H	-	-	-62.28	8.22	-54.06	-41.1
2532.00	H	-	-	-72.87	9.78	-63.09	-50.1
3540.00	H	-	-	-72.08	9.92	-62.15	-49.2
5310.00	H	-	-	-72.18	10.72	-61.46	-48.5

Plot 7-53. Radiated Spurious Data – High (ULCA 5A-66A PCC: RB 50 Offset 0, SCC: RB 100 Offset 0)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG900UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE/Sub6 operation only.