FCC PART 24/27 TEST REPORT

FCC Part 24/Part 27

Report Reference No.:	HK1811011422E	
FCC ID:	2ARILCM520-8AF	
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Date of issue :	Nov. 13, 2018	
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Applicant's name :	Xiamen Caimore Communication Technology Co.,Ltd.	
Address :	#2 of 302 Unit, 23# Wanghai Road, Xiamen Software Park II, Xiamen,China	
Standard :	FCC Part 24: PERSONAL COMMUNICATIONS SERVICES FCC Part 27: MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	

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Test item description :	Wireless Router
Brand Name :	CAIMORE
Model :	CM520-8AF
Serial Model	CM520-87F,CM520-86F,CM520-89F,CM520-91F,CM520-8VF,CM520-8BF,CM520-8CF, CM520-61F, CM520
Difference Description	The difference between the models is only to distinguish customer needs for customizing the product model, which has no effect on the judgment of product's safety and EMC.
Ratings :	DC 9V 1.5A
Modulation :	QPSK, 16QAM
Hardware version :	V12
Software version :	V3.3.5
Result :	PASS

TEST REPORT

Test Report No. : **HK1811011422E**	Nov. 13, 2018 Date of issue

Equipment under Test	:	Wireless Router
Model /Type	:	CM520-8AF
Applicant	:	Xiamen Caimore Communication Technology Co.,Ltd.
Address	:	#2 of 302 Unit, 23# Wanghai Road, Xiamen Software Park II, Xiamen,China
Manufacturer	:	Xiamen Caimore Communication Technology Co.,Ltd.
Address	:	#2 of 302 Unit, 23# Wanghai Road, Xiamen Software Park II, Xiamen,China

Date of Test

Date (s) of performance of tests..... **Oct. 12, 2018~Nov. 13, 2018**

Date of Issue ..... **Nov. 13, 2018**

Test Result..... **Pass**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision	Issue Date	Revisions	Revised By
V1.0	Nov. 13, 2018	Initial Issue	Jason Zhou

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1.TEST STANDARDS

The tests were performed according to following standards:

FCC Part 24(10-12-18 Edition): PRIVATE LAND MOBILE RADIO SERVICES
FCC Part 27(10-12-18 Edition): MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES
TIA/EIA 603 D June 2010:Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
FCC Part 2: FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS
KDB971168 D01:v03r01MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS
ANSI C63.26:2015: Compliance Testing of Transmitters Used in Licensed Radio Services

2. SUMMARY

2.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Radio System Type:	LTE	
Frequency Bands:	☒FDD Band 2 ☒FDD Band 4 ☐FDD Band 5 ☐FDD Band 7 ☒FDD Band 12 ☐FDD Band 14 ☐FDD Band 25 ☐FDD Band 26 ☐TDD Band 41 (U.S. Bands) ☒FDD Band 1 ☒FDD Band 3 ☒FDD Band 7 ☒FDD Band 8 ☒FDD Band 20 ☐TDD Band 33 ☐TDD Band 34 ☐TDD Band 38 ☐FDD Band 40 ☐FDD Band 42 ☐FDD Band 43 (Non-U.S. Bands)	
Frequency Range	LTE Band 2	Transmission (TX): 1850 to 1909.9 MHz
		Receiving (RX): 1930 to 1989.9 MHz
	LTE Band 4	Transmission (TX): 1710 to 1754.9 MHz
		Receiving (RX): 2110 to 2154.9 MHz
	LTE Band 12	Transmission (TX): 699 to 715.9MHz
		Receiving (RX): 729 to 745.9MHz
Supported Channel Bandwidth	LTE Band 2	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz ☒ 15 MHz ☒ 20 MHz
	LTE Band 4	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz ☒ 15 MHz ☒ 20 MHz
	LTE Band 12	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz
Antenna:	Monopole Antenna	
Type of Modulation	QPSK/16QAM	
Antenna gain:	1.34dBi(LTE band 2),1.28dBi (LTE band 4), 1.15dBi(Band 12)	
Power Supply:	DC 9V	
Single Card:	LTE Card Slot	
Power Class	3	
Extreme Vol. Limits:	DC7.65V to 10.35 V (Normal: 9 V)	
Temperature range	-10℃ to +50℃	
Note1: The High Voltage DC10.35V and Low Voltage DC7.65V were declared by manufacturer, The EUT couldn't be operating normally with higher or lower voltage..		

2.3 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2ARILCM520-8AF**, filing to comply with the Part 24 and Pant 27 requirements

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2.4 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI/TIA-603-E-2016, and FCC KDB 971168 D01 Power Means License Digital Systems V03R01.

2.5 TEST FACILITY

Site	Shenzhen HUAK Testing Technology Co., Ltd.
Location	1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China
Designation Number	CN1229
Test Firm Registration Number : 616276	

ALL TEST EQUIPMENT LIST

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	ENV216	R&S	HKE-059	2017/12/28	2018/12/27
LISN	R&S	ENV216	HKE-002	2017/12/28	2018/12/27
Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	2017/12/28	2019/12/26
Receiver	R&S	ESCI 7	HKE-010	2017/12/28	2018/12/27
Spectrum analyzer	Agilent	N9020A	HKE-048	2017/12/28	2018/12/27
RF automatic control unit	Tonscend	JS0806-2	HKE-060	2017/12/28	2018/12/27
Horn antenna	Schwarzbeck	9120D	HKE-013	2017/12/28	2019/12/26
Loop antenna	Schwarzbeck	FMZB 1519 B	HKE-014	2017/12/28	2019/12/26
Preamplifier	EMCI	EMC051845SE	HKE-015	2017/12/28	2018/12/27
Preamplifier	Agilent	83051A	HKE-016	2017/12/28	2018/12/27
Temperature and humidity meter	Boyang	HTC-1	HKE-075	2017/12/28	2018/12/27
High pass filter unit	Tonscend	JS0806-F	HKE-055	2017/12/28	2018/12/27
RF cable	Times	1-40G	HKE-034	2017/12/28	2018/12/27
Power meter	Agilent	E4419B	HKE-085	2017/12/28	2018/12/27
Power Sensor	Agilent	E9300A	HKE-086	2017/12/28	2018/12/27
Wireless Communication Test Set	R&S	CMU200	HKE-026	2017/12/28	2018/12/27

2.5 SPECIAL ACCESSORIES

The battery was supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

3.3 GENERAL TECHNICAL REQUIREMENTS

Item Number	Item Description		FCC Rules
1	Output Power	Conducted output power	2.1046/24.232(c)/27.50(d)(4)/ 27.50(h)(2)
		Radiated output power	
2	Peak-to-Average Ratio	Peak-to-Average Ratio	24.232(d)
3	Spurious Emission	Conducted spurious emission	2.1051/24.238(a)27.53(h)/27.53(g)
		Radiated spurious emission	
4	Frequency Stability		2.1055/24.235/27.54
5	Occupied Bandwidth		2.1049 (h)(i)
6	Band Edge		2.1051//24.238(a)27.53(h)/27.53(g)

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different.

3.4 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System

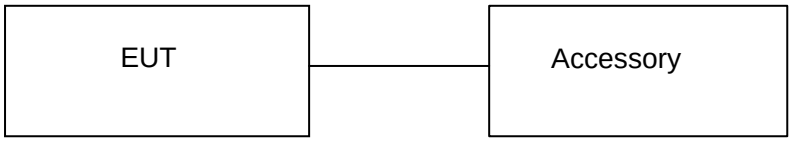

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Remark
1	Wireless Router	CM520-8AF	2ARILCM520-8AF	EUT
2	Adapter	CW0901500EU	DC 9.0V 1.5A	Accessory
3	Antenna	N/A	N/A	Accessory
4	Network Cable	N/A	N/A	Accessory
5	Network patch cable	N/A	N/A	Accessory

***Note: All the accessories have been used during the test. The following “EUT” in setup diagram means EUT system.

4. SUMMARY OF TEST RESULTS

Item Number	Item Description		FCC Rules	Result
1	Output Power	Conducted Output Power	2.1046/24.232(c)/27.50(d)(4)/27.50(h)(2)	Pass
		Radiated Output Power		
2	Peak-to-Average Ratio	Peak-to-Average Ratio	24.232(d)	Pass
3	Spurious Emission	Conducted Spurious Emission	2.1051/24.238(a) 27.53(h)/ 27.53(g)	Pass
		Radiated Spurious Emission		
4	Frequency Stability		2.1055/24.235/27.54	Pass
5	Occupied Bandwidth		2.1049 (h)(i)	Pass
6	Band Edge		2.1051/24.238(a) 27.53(h)/ 27.53(g)	Pass

5. DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMW 500) to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both LTE frequency band.
The worst condition was recorded in the test report if no other modes test data.

Test Mode	Test Modes Description
LTE	LTE system, QPSK modulation
LTE	LTE system, 16QAM modulation

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 2	TX (1.4M)	Channel 18607	Channel 18900	Channel 19193
		1850.7 MHz	1880 MHz	1909.3 MHz
	TX (3M)	Channel 18615	Channel 18900	Channel 19185
		1851.5 MHz	1880 MHz	1908.5 MHz
	TX (5M)	Channel 18625	Channel 18900	Channel 19175
		1852.5 MHz	1880 MHz	1907.5 MHz
	TX (10M)	Channel 18650	Channel 18900	Channel 19150
		1855.0 MHz	1880 MHz	1905.0 MHz
	TX (20M)	Channel 18700	Channel 18900	Channel 19100
		1860.0 MHz	1880 MHz	1900.0 MHz
	RX (1.4M)	Channel 607	Channel 900	Channel 1193
		1930.7 MHz	1960 MHz	1989.3 MHz
	RX (3M)	Channel 615	Channel 900	Channel 1185
		1931.5 MHz	1960 MHz	1988.5 MHz
	RX (5M)	Channel 625	Channel 900	Channel 1175
		1932.5 MHz	1960 MHz	1987.5 MHz
	RX (10M)	Channel 650	Channel 900	Channel 1150
		1935 MHz	1960 MHz	1985 MHz
	RX (20M)	Channel 700	Channel 900	Channel 1100
		1940.0 MHz	1960 MHz	1980 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 4	TX (1.4M)	Channel 19957	Channel 20175	Channel 20393
		1710.7 MHz	1732.5 MHz	1754.3 MHz
	TX (3M)	Channel 19965	Channel 20175	Channel 20385
		1711.5 MHz	1732.5 MHz	1753.5 MHz
	TX (5M)	Channel 19975	Channel 20175	Channel 20375
		1712.5 MHz	1732.5 MHz	1752.5 MHz
	TX (10M)	Channel 20000	Channel 20175	Channel 20350
		1715 MHz	1732.5 MHz	1750 MHz
	TX (15M)	Channel 20025	Channel 20175	Channel 20325
		1717.5 MHz	1732.5 MHz	1747.5 MHz
	TX (20M)	Channel 20050	Channel 20175	Channel 20300
		1720 MHz	1732.5 MHz	1745 MHz
	RX (1.4M)	Channel 1957	Channel 2175	Channel 2393
		2110.7 MHz	2132.5 MHz	2154.3 MHz
	RX (3M)	Channel 1965	Channel 2175	Channel 2385
		2111.5 MHz	2132.5 MHz	2153.5 MHz
	RX (5M)	Channel 1975	Channel 2175	Channel 2375
		2112.5 MHz	2132.5 MHz	2152.5 MHz
	RX (10M)	Channel 2000	Channel 2175	Channel 2350
		2115 MHz	2132.5 MHz	2150 MHz
	RX (15M)	Channel 2025	Channel 2175	Channel 2325
		2117.5 MHz	2132.5 MHz	2147.5 MHz
	RX (20M)	Channel 2050	Channel 2175	Channel 2300
		2120 MHz	2132.5 MHz	2145 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 12	TX (1.4M)	Channel 23017	Channel 23095	Channel 23173
		699.7 MHz	707.5 MHz	715.3 MHz
	TX (3M)	Channel 23025	Channel 23095	Channel 23165
		700.5 MHz	707.5 MHz	714.5 MHz
	TX (5M)	Channel 23035	Channel 23095	Channel 23155
		701.5 MHz	707.5 MHz	713.5 MHz
	TX (10M)	Channel 23060	Channel 23095	Channel 23130
		704.0 MHz	707.5 MHz	711.0 MHz
	RX (1.4M)	Channel 5017	Channel 5095	Channel 5173
		729.7 MHz	737.5 MHz	745.3 MHz
	RX (3M)	Channel 5025	Channel 5095	Channel 5165
		730.5 MHz	737.5 MHz	744.5 MHz
	RX (5M)	Channel 5035	Channel 5095	Channel 5155
		731.5 MHz	737.5 MHz	743.5 MHz
	RX (10M)	Channel 5060	Channel 5095	Channel 5130
		734.0 MHz	737.5 MHz	741.0 MHz

6. OUTPUT POWER

6.1 CONDUCTED OUTPUT POWER

6.1.1 MEASUREMENT METHOD

The EUT is coupled to the SS with attenuator through power splitter; the RF load attached to EUT antenna terminal is 50ohm, the path loss as the factor is calibrated to correct the reading. A system simulator was used to establish communication with the EUT , Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported. The measurements were performed on all modes at 3 typical channels (the Top Channel, the Middle Channel and the Bottom Channel) for each band.

6.1.2 MEASUREMENT RESULT

Conducted Output Power Limits		
Mode	**Average Power**	**Tolerance(dB)**
LTE	23 dBm (0.2W)	± 2.7

LTE Band 2

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	18700	1860.0	QPSK	1	0	0	22.40
				1	49	0	22.82
				1	99	0	22.63
				50	0	1	20.94
				50	25	1	20.70
				50	49	1	21.00
				100	0	1	21.10
			16QAM	1	0	1	21.31
				1	49	1	21.81
				1	99	1	21.30
				50	0	2	21.34
				50	25	2	20.91
				50	49	2	21.25
				100	0	2	21.19
	18900	1880.0	QPSK	1	0	0	20.27
				1	49	0	20.54
				1	99	0	20.76
				50	0	1	21.50
				50	25	1	21.96
				50	49	1	21.93
				100	0	1	21.72
			16QAM	1	0	1	21.55
				1	49	1	21.38
				1	99	1	22.54
				50	0	2	22.16
				50	25	2	22.18
				50	49	2	22.58
				100	0	2	22.35
	19100	1900.0	QPSK	1	0	0	21.04
				1	49	0	21.05
				1	99	0	21.59
				50	0	1	21.04
				50	25	1	21.10
				50	49	1	21.71
				100	0	1	21.37
			16QAM	1	0	1	21.06
				1	49	1	21.00
				1	99	1	21.07
				50	0	2	21.37
				50	25	2	21.40
				50	49	2	21.29
				100	0	2	20.64

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	18675	1857.5	QPSK	1	0	0	22.92
				1	37	0	22.23
				1	74	0	22.02
				36	0	1	20.40
				36	16	1	20.52
				36	35	1	20.47
				75	0	1	21.43
			16QAM	1	0	1	21.30
				1	37	1	21.09
				1	74	1	21.13
				36	0	2	22.71
				36	16	2	22.63
				36	35	2	22.23
				75	0	2	20.62
	18900	1880.0	QPSK	1	0	0	20.85
				1	37	0	20.82
				1	74	0	21.77
				36	0	1	21.13
				36	16	1	21.12
				36	35	1	21.58
				75	0	1	21.34
			16QAM	1	0	1	22.60
				1	37	1	22.12
				1	74	1	22.69
				36	0	2	22.04
				36	16	2	22.07
				36	35	2	22.78
				75	0	2	22.24
	19125	1902.5	QPSK	1	0	0	22.30
				1	37	0	22.20
				1	74	0	20.06
				36	0	1	20.47
				36	16	1	20.02
				36	35	1	20.72
				75	0	1	19.53
			16QAM	1	0	1	19.96
				1	37	1	19.42
				1	74	1	19.46
				36	0	2	21.54
				36	16	2	21.53
				36	35	2	21.86
				75	0	2	21.96

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	18650	1855.0	QPSK	1	0	0	22.29
				1	24	0	22.19
				1	49	0	22.43
				25	0	1	20.43
				25	12	1	20.60
				25	25	1	20.46
				50	0	1	20.30
			16QAM	1	0	1	19.23
				1	24	1	19.58
				1	49	1	19.08
				25	0	2	20.15
				25	12	2	20.29
				25	25	2	20.55
				50	0	2	22.33
	18900	1880.0	QPSK	1	0	0	22.22
				1	24	0	22.05
				1	49	0	21.00
				25	0	1	21.08
				25	12	1	21.10
				25	25	1	21.02
				50	0	1	19.78
			16QAM	1	0	1	21.34
				1	24	1	21.51
				1	49	1	21.59
				25	0	2	20.47
				25	12	2	20.40
				25	25	2	20.97
				50	0	2	20.21
	19150	1905.0	QPSK	1	0	0	19.65
				1	24	0	19.31
				1	49	0	19.87
				25	0	1	20.72
				25	12	1	20.67
				25	25	1	20.82
				50	0	1	20.83
			16QAM	1	0	1	20.79
				1	24	1	20.27
				1	49	1	20.48
				25	0	2	21.46
				25	12	2	21.57
				25	25	2	21.06
				50	0	2	21.25

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	18625	1852.5	QPSK	1	0	0	22.85
				1	12	0	22.58
				1	24	0	22.63
				12	0	1	21.13
				12	6	1	21.24
				12	11	1	21.61
				25	0	1	20.18
			16QAM	1	0	1	20.00
				1	12	1	20.60
				1	24	1	20.43
				12	0	2	21.63
				12	6	2	21.08
				12	11	2	21.61
				25	0	2	21.44
	18900	1880.0	QPSK	1	0	0	22.19
				1	12	0	22.40
				1	24	0	22.58
				12	0	1	21.65
				12	6	1	21.70
				12	11	1	21.30
				25	0	1	20.96
			16QAM	1	0	1	22.08
				1	12	1	22.38
				1	24	1	22.05
				12	0	2	22.62
				12	6	2	22.41
				12	11	2	22.36
				25	0	2	22.31
	19175	1907.5	QPSK	1	0	0	22.11
				1	12	0	22.18
				1	24	0	22.20
				12	0	1	20.38
				12	6	1	20.29
				12	11	1	20.65
				25	0	1	20.78
			16QAM	1	0	1	20.95
				1	12	1	20.89
				1	24	1	20.25
				12	0	2	20.91
				12	6	2	20.97
				12	11	2	20.39
				25	0	2	20.35

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	18615	1851.5	QPSK	1	0	0	23.01
				1	7	0	23.11
				1	14	0	23.24
				8	0	1	22.71
				8	4	1	22.51
				8	7	1	22.14
				15	0	1	21.97
			16QAM	1	0	1	21.89
				1	7	1	21.50
				1	14	1	21.18
				8	0	2	22.97
				8	4	2	22.04
				8	7	2	22.00
				15	0	2	21.89
	18900	1880.0	QPSK	1	0	0	21.58
				1	7	0	21.99
				1	14	0	21.45
				8	0	1	20.59
				8	4	1	20.34
				8	7	1	20.08
				15	0	1	21.15
			16QAM	1	0	1	22.50
				1	7	1	22.53
				1	14	1	22.18
				8	0	2	22.11
				8	4	2	22.86
				8	7	2	22.29
				15	0	2	22.16
	19185	1908.5	QPSK	1	0	0	20.18
				1	7	0	20.82
				1	14	0	20.45
				8	0	1	19.39
				8	4	1	19.16
				8	7	1	19.25
				15	0	1	20.40
			16QAM	1	0	1	20.69
				1	7	1	20.60
				1	14	1	20.53
				8	0	2	21.19
				8	4	2	21.02
				8	7	2	21.77
				15	0	2	21.12

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	18607	1850.7	QPSK	1	0	0	22.63
				1	2	0	22.12
				1	5	0	22.90
				3	0	0	21.85
				3	1	0	21.82
				3	2	0	21.08
				6	0	1	20.16
			16QAM	1	0	1	20.87
				1	2	1	20.74
				1	5	1	20.45
				3	0	1	20.76
				3	1	1	20.03
				3	2	1	20.16
				6	0	2	21.82
	18900	1880.0	QPSK	1	0	0	21.95
				1	2	0	21.39
				1	5	0	21.98
				3	0	0	22.01
				3	1	0	22.20
				3	2	0	22.53
				6	0	1	21.01
			16QAM	1	0	1	21.22
				1	2	1	21.55
				1	5	1	21.17
				3	0	1	21.84
				3	1	1	21.01
				3	2	1	21.17
				6	0	2	22.08
	19193	1909.3	QPSK	1	0	0	20.57
				1	2	0	20.68
				1	5	0	20.84
				3	0	0	21.06
				3	1	0	21.44
				3	2	0	21.02
				6	0	1	21.79
			16QAM	1	0	1	19.83
				1	2	1	19.93
				1	5	1	19.66
				3	0	1	20.31
				3	1	1	20.81
				3	2	1	20.46
				6	0	2	20.86

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	20050	1720.0	QPSK	1	0	0	22.49
				1	49	0	22.52
				1	99	0	22.29
				50	0	1	20.28
				50	25	1	20.66
				50	49	1	20.09
				100	0	1	20.95
			16QAM	1	0	1	20.52
				1	49	1	20.79
				1	99	1	20.13
				50	0	2	19.77
				50	25	2	19.99
				50	49	2	19.87
				100	0	2	19.24
	20175	1732.5	QPSK	1	0	0	20.29
				1	49	0	20.32
				1	99	0	20.42
				50	0	1	21.01
				50	25	1	21.04
				50	49	1	21.26
				100	0	1	20.69
			16QAM	1	0	1	21.09
				1	49	1	21.31
				1	99	1	21.50
				50	0	2	21.09
				50	25	2	21.97
				50	49	2	21.28
				100	0	2	22.34
	20300	1745.0	QPSK	1	0	0	21.28
				1	49	0	21.91
				1	99	0	21.22
				50	0	1	21.44
				50	25	1	21.27
				50	49	1	21.83
				100	0	1	19.90
			16QAM	1	0	1	20.65
				1	49	1	20.50
				1	99	1	20.09
				50	0	2	22.04
				50	25	2	22.07
				50	49	2	22.12
				100	0	2	22.07

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	20025	1717.5	QPSK	1	0	0	22.56
				1	37	0	22.19
				1	74	0	22.12
				36	0	1	20.93
				36	16	1	20.02
				36	35	1	20.11
				75	0	1	19.14
			16QAM	1	0	1	19.80
				1	37	1	19.85
				1	74	1	20.24
				36	0	2	20.98
				36	16	2	20.38
				36	35	2	20.22
				75	0	2	21.74
	20175	1732.5	QPSK	1	0	0	21.46
				1	37	0	21.20
				1	74	0	21.56
				36	0	1	21.55
				36	16	1	21.27
				36	35	1	21.20
				75	0	1	20.00
			16QAM	1	0	1	20.75
				1	37	1	20.38
				1	74	1	20.19
				36	0	2	22.49
				36	16	2	22.20
				36	35	2	22.25
				75	0	2	22.18
	20325	1747.5	QPSK	1	0	0	21.59
				1	37	0	21.07
				1	74	0	21.88
				36	0	1	21.76
				36	16	1	21.75
				36	35	1	21.96
				75	0	1	21.60
			16QAM	1	0	1	22.38
				1	37	1	22.47
				1	74	1	21.60
				36	0	2	21.47
				36	16	2	21.32
				36	35	2	21.97
				75	0	2	21.07

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20000	1715.0	QPSK	1	0	0	22.90
				1	24	0	22.60
				1	49	0	22.49
				25	0	1	22.82
				25	12	1	22.13
				25	25	1	22.71
				50	0	1	21.72
			16QAM	1	0	1	21.73
				1	24	1	21.88
				1	49	1	21.18
				25	0	2	21.82
				25	12	2	21.18
				25	25	2	21.73
				50	0	2	20.66
	20175	1732.5	QPSK	1	0	0	20.04
				1	24	0	20.26
				1	49	0	20.69
				25	0	1	20.04
				25	12	1	20.86
				25	25	1	20.36
				50	0	1	20.11
			16QAM	1	0	1	21.40
				1	24	1	21.48
				1	49	1	21.34
				25	0	2	22.22
				25	12	2	22.52
				25	25	2	22.02
				50	0	2	22.70
	20350	1750.0	QPSK	1	0	0	21.37
				1	24	0	21.56
				1	49	0	21.20
				25	0	1	22.34
				25	12	1	22.16
				25	25	1	22.67
				50	0	1	21.02
			16QAM	1	0	1	21.19
				1	24	1	21.15
				1	49	1	22.23
				25	0	2	22.42
				25	12	2	22.42
				25	25	2	22.53
				50	0	2	21.10

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	19975	1712.5	QPSK	1	0	0	22.79
				1	12	0	22.81
				1	24	0	22.59
				12	0	1	21.84
				12	6	1	21.35
				12	11	1	21.09
				25	0	1	21.17
			16QAM	1	0	1	21.32
				1	12	1	22.56
				1	24	1	22.76
				12	0	2	22.34
				12	6	2	19.56
				12	11	2	19.52
				25	0	2	19.24
	20175	1732.5	QPSK	1	0	0	21.56
				1	12	0	21.92
				1	24	0	21.01
				12	0	1	21.37
				12	6	1	22.26
				12	11	1	22.04
				25	0	1	22.22
			16QAM	1	0	1	22.30
				1	12	1	22.46
				1	24	1	22.30
				12	0	2	22.61
				12	6	2	22.10
				12	11	2	22.52
				25	0	2	22.58
	20375	1752.5	QPSK	1	0	0	21.45
				1	12	0	21.65
				1	24	0	21.81
				12	0	1	20.47
				12	6	1	20.17
				12	11	1	20.73
				25	0	1	20.88
			16QAM	1	0	1	21.15
				1	12	1	21.04
				1	24	1	21.55
				12	0	2	20.07
				12	6	2	20.77
				12	11	2	20.12
				25	0	2	21.05

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	19965	1711.5	QPSK	1	0	0	22.50
				1	7	0	22.55
				1	14	0	22.15
				8	0	1	20.28
				8	4	1	20.08
				8	7	1	20.53
				15	0	1	20.11
			16QAM	1	0	1	19.37
				1	7	1	19.63
				1	14	1	19.85
				8	0	2	21.26
				8	4	2	21.28
				8	7	2	21.48
				15	0	2	20.51
	20175	1732.5	QPSK	1	0	0	20.45
				1	7	0	20.78
				1	14	0	21.81
				8	0	1	21.63
				8	4	1	21.19
				8	7	1	21.56
				15	0	1	19.60
			16QAM	1	0	1	22.09
				1	7	1	22.07
				1	14	1	22.14
				8	0	2	21.67
				8	4	2	21.07
				8	7	2	21.31
				15	0	2	21.73
	20385	1753.5	QPSK	1	0	0	21.49
				1	7	0	21.58
				1	14	0	21.35
				8	0	1	20.05
				8	4	1	20.25
				8	7	1	20.67
				15	0	1	21.28
			16QAM	1	0	1	21.21
				1	7	1	21.52
				1	14	1	20.59
				8	0	2	21.10
				8	4	2	21.29
				8	7	2	21.87
				15	0	2	20.79

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	19957	1710.7	QPSK	1	0	0	22.45
				1	2	0	22.79
				1	5	0	22.75
				3	0	0	22.27
				3	1	0	22.31
				3	2	0	22.36
				6	0	1	21.61
			16QAM	1	0	1	21.47
				1	2	1	21.14
				1	5	1	21.94
				3	0	1	20.48
				3	1	1	20.45
				3	2	1	20.40
				6	0	2	20.88
	20175	1732.5	QPSK	1	0	0	20.24
				1	2	0	20.75
				1	5	0	21.20
				3	0	0	21.32
				3	1	0	21.22
				3	2	0	21.07
				6	0	1	22.49
			16QAM	1	0	1	21.88
				1	2	1	21.70
				1	5	1	21.68
				3	0	1	21.23
				3	1	1	21.28
				3	2	1	21.81
				6	0	2	22.72
	20393	1754.3	QPSK	1	0	0	21.71
				1	2	0	21.25
				1	5	0	21.38
				3	0	0	21.25
				3	1	0	20.87
				3	2	0	20.73
				6	0	1	20.06
			16QAM	1	0	1	19.36
				1	2	1	19.85
				1	5	1	19.44
				3	0	1	20.13
				3	1	1	20.29
				3	2	1	20.30
				6	0	2	20.14

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	23060	704.0	QPSK	1	0	0	22.69
				1	24	0	22.67
				1	49	0	22.74
				25	0	1	21.74
				25	12	1	21.54
				25	25	1	21.95
				50	0	1	21.05
			16QAM	1	0	1	21.73
				1	24	1	21.42
				1	49	1	21.78
				25	0	2	20.31
				25	12	2	20.12
				25	25	2	20.06
				50	0	2	20.21
	23095	707.5	QPSK	1	0	0	20.93
				1	24	0	20.65
				1	49	0	20.32
				25	0	1	20.61
				25	12	1	21.86
				25	25	1	21.91
				50	0	1	21.53
			16QAM	1	0	1	22.36
				1	24	1	22.25
				1	49	1	22.13
				25	0	2	22.30
				25	12	2	22.24
				25	25	2	22.21
				50	0	2	22.00
	23130	711.0	QPSK	1	0	0	21.62
				1	24	0	21.11
				1	49	0	21.09
				25	0	1	21.75
				25	12	1	21.99
				25	25	1	21.34
				50	0	1	21.44
			16QAM	1	0	1	22.28
				1	24	1	22.15
				1	49	1	22.33
				25	0	2	21.09
				25	12	2	21.83
				25	25	2	21.90
				50	0	2	21.97

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	23035	701.5	QPSK	1	0	0	23.14
				1	12	0	23.43
				1	24	0	23.13
				12	0	1	22.56
				12	6	1	22.98
				12	13	1	22.61
				25	0	1	21.79
			16QAM	1	0	1	21.99
				1	12	1	21.44
				1	24	1	21.71
				12	0	2	20.60
				12	6	2	20.79
				12	13	2	20.71
				25	0	2	20.25
	23095	707.5	QPSK	1	0	0	22.64
				1	12	0	22.20
				1	24	0	22.35
				12	0	1	22.01
				12	6	1	22.12
				12	13	1	22.19
				25	0	1	21.88
			16QAM	1	0	1	21.33
				1	12	1	21.87
				1	24	1	21.78
				12	0	2	22.89
				12	6	2	22.95
				12	13	2	22.90
				25	0	2	21.55
	23155	713.5	QPSK	1	0	0	22.23
				1	12	0	22.52
				1	24	0	22.46
				12	0	1	21.93
				12	6	1	21.04
				12	13	1	21.14
				25	0	1	20.66
			16QAM	1	0	1	21.82
				1	12	1	21.84
				1	24	1	21.86
				12	0	2	21.89
				12	6	2	21.25
				12	13	2	21.75
				25	0	2	21.72

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	23025	700.5	QPSK	1	0	0	22.98
				1	7	0	22.66
				1	14	0	22.26
				8	0	1	21.50
				8	4	1	21.10
				8	7	1	21.39
				15	0	1	20.45
			16QAM	1	0	1	20.34
				1	7	1	20.71
				1	14	1	20.74
				8	0	2	21.27
				8	4	2	21.78
				8	7	2	21.51
				15	0	2	21.84
	23095	707.5	QPSK	1	0	0	21.44
				1	7	0	21.11
				1	14	0	21.34
				8	0	1	21.48
				8	4	1	21.25
				8	7	1	21.25
				15	0	1	21.82
			16QAM	1	0	1	21.58
				1	7	1	21.69
				1	14	1	21.23
				8	0	2	22.61
				8	4	2	22.53
				8	7	2	22.83
				15	0	2	22.44
	23165	714.5	QPSK	1	0	0	22.49
				1	7	0	22.63
				1	14	0	22.55
				8	0	1	22.49
				8	4	1	22.12
				8	7	1	22.03
				15	0	1	21.20
			16QAM	1	0	1	21.38
				1	7	1	21.65
				1	14	1	21.06
				8	0	2	21.60
				8	4	2	20.85
				8	7	2	20.66
				15	0	2	20.22

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	23017	699.7	QPSK	1	0	0	22.49
				1	2	0	22.93
				1	5	0	22.83
				3	0	0	21.71
				3	1	0	21.81
				3	2	0	21.68
				6	0	1	20.79
			16QAM	1	0	1	20.27
				1	2	1	20.90
				1	5	1	21.20
				3	0	1	21.25
				3	1	1	21.27
				3	2	1	21.48
				6	0	2	21.13
	23095	707.5	QPSK	1	0	0	22.20
				1	2	0	22.33
				1	5	0	22.29
				3	0	0	22.31
				3	1	0	22.06
				3	2	0	20.79
				6	0	1	20.00
			16QAM	1	0	1	20.27
				1	2	1	20.50
				1	5	1	20.46
				3	0	1	21.62
				3	1	1	21.63
				3	2	1	21.87
				6	0	2	20.15
	23173	715.3	QPSK	1	0	0	21.37
				1	2	0	21.38
				1	5	0	21.57
				3	0	0	21.89
				3	1	0	21.16
				3	2	0	21.22
				6	0	1	21.05
			16QAM	1	0	1	20.97
				1	2	1	20.18
				1	5	1	20.01
				3	0	1	21.36
				3	1	1	21.32
				3	2	1	21.17
				6	0	2	21.80

According to 3GPP 36.521 sub-clause 6.2.3.3, the maximum output power is allowed to be reduced by following the table.

Table 6.2.3.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	**Channel bandwidth / Transmission bandwidth configuration [RB]**						**MPR (dB)**
	1.4 MHz	**3.0 MHz**	**5 MHz**	**10 MHz**	**15 MHz**	**20 MHz**	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (For PRACH, PUCCH and SRS transmission, the allowed MPR is according to that specified for PUSCH QPSK modulation for the corresponding transmission bandwidth.).

When PRACH, PUCCH are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

For each subframe, the MPR is evaluated per slot and given by the maximum value taken over the transmission(s) within the slot, the maximum MPR over the two slots is then applied for the entire subframe.

For the UE maximum output power modified by MPR, the power limits specified in subclause 6.2.5.3 apply. The normative reference for this requirement is TS 36.101 clause 6.2.3.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

6.2 RADIATED OUTPUT POWER

6.2.1 MEASUREMENT METHOD

The measurements procedures specified in ANSI/TIA-603-E-2016 were applied.

1 In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.

2 The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. The ARpl is the attenuation of “reference path loss”, and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl

3 The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.

4 From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.

5 The EUT is then put into continuously transmitting mode at its maximum power level.

6 Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 27.50(d)(4). The "reference path loss" from Step1 is added to this result.

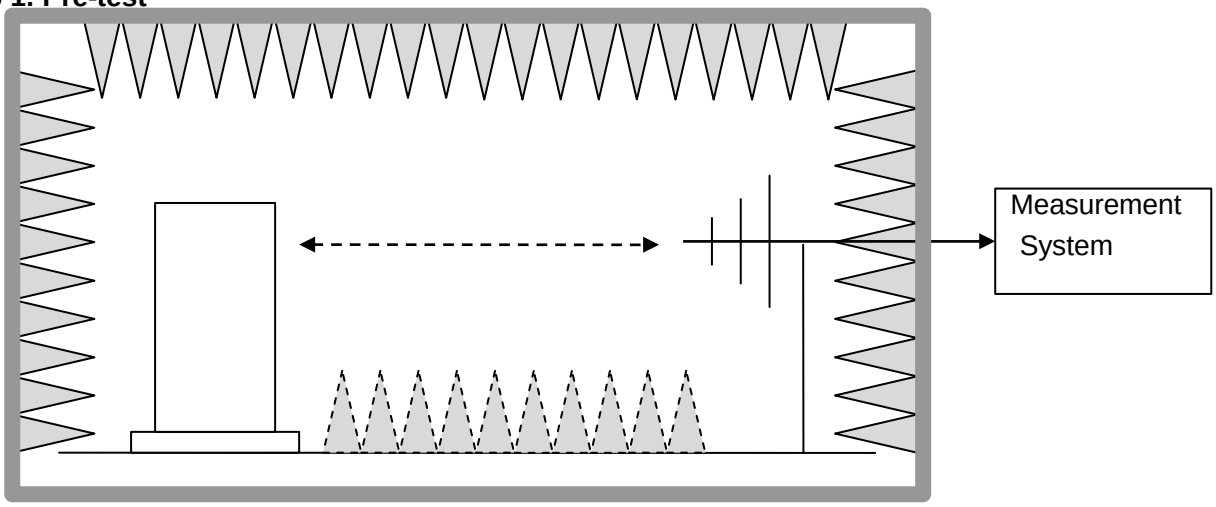
7 This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).

8 ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi..

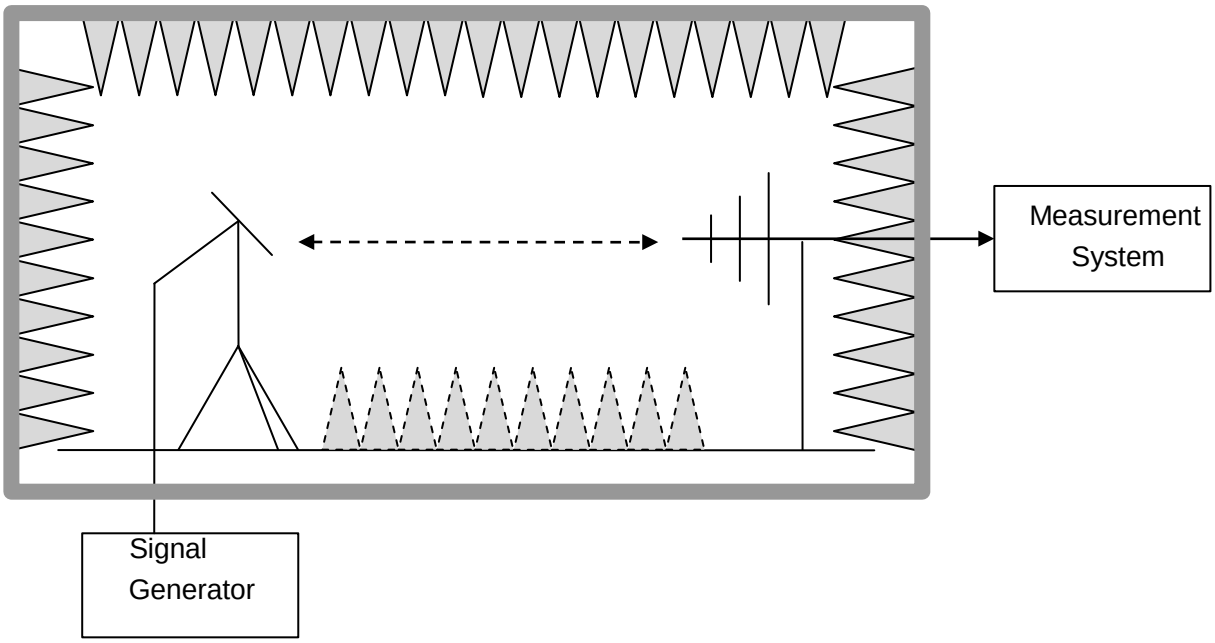
Test Setup

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

Step 1: Pre-test



Step 2: Substitution method to verify the maximum ERP



6.2.2 PROVISIONS APPLICABLE

This is the test for the maximum radiated power from the EUT. Rule Part 24.232(c) specifies, “Mobile/portable stations are limited to 2 watts e.i.r.p.

Mode	FCC Part Section(s)	Nominal Peak Power
LTE Band 2	24.232(c)	<=33dBm (2W)
LTE Band 4	27.50(d)(4)	<=30dBm (1W)
LTE Band 12	27.50(b)(10)	<=34.77dBm(3W)

6.2.3 MEASUREMENT RESULT

EIRP for LTE Band 2

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
1850.7	1.4	QPSK	1/0	11.81	V	7.95	0.79	18.97	33
1880.0	1.4	QPSK	1/0	8.39	V	7.95	0.79	15.55	33
1909.3	1.4	QPSK	1/0	9.89	V	7.95	0.79	17.05	33
1850.7	1.4	QPSK	1/0	9.46	H	7.95	0.79	16.62	33
1880.0	1.4	QPSK	1/0	8.36	H	7.95	0.79	15.52	33
1909.3	1.4	QPSK	1/0	10.16	H	7.95	0.79	17.32	33
1850.7	1.4	16-QAM	1/5	10.20	V	7.95	0.79	17.36	33
1880.0	1.4	16-QAM	1/0	7.32	V	7.95	0.79	14.48	33
1909.3	1.4	16-QAM	1/0	7.23	V	7.95	0.79	14.39	33
1850.7	1.4	16-QAM	1/5	9.33	H	7.95	0.79	16.49	33
1880.0	1.4	16-QAM	1/0	8.71	H	7.95	0.79	15.87	33
1909.3	1.4	16-QAM	1/0	6.76	H	7.95	0.79	13.92	33
1851.5	3	QPSK	1/0	7.69	V	7.95	0.79	14.85	33
1880.0	3	QPSK	1/0	10.80	V	7.95	0.79	17.96	33
1908.5	3	QPSK	1/0	10.91	V	7.95	0.79	18.07	33
1851.5	3	QPSK	1/0	10.24	H	7.95	0.79	17.40	33
1880.0	3	QPSK	1/0	6.84	H	7.95	0.79	14.00	33
1908.5	3	QPSK	1/0	9.25	H	7.95	0.79	16.41	33
1851.5	3	16-QAM	1/0	7.29	V	7.95	0.79	14.45	33
1880.0	3	16-QAM	1/0	9.03	V	7.95	0.79	16.19	33
1908.5	3	16-QAM	1/0	8.34	V	7.95	0.79	15.50	33
1851.5	3	16-QAM	1/0	9.19	H	7.95	0.79	16.35	33
1880.0	3	16-QAM	1/0	13.65	H	7.95	0.79	20.81	33
1908.5	3	16-QAM	1/0	17.04	H	7.95	0.79	24.20	33
1852.5	5	QPSK	1/0	16.25	V	7.95	0.79	23.41	33
1880.0	5	QPSK	1/0	14.44	V	7.95	0.79	21.60	33
1907.5	5	QPSK	1/24	14.88	V	7.95	0.79	22.04	33
1852.5	5	QPSK	1/0	16.26	H	7.95	0.79	23.42	33
1880.0	5	QPSK	1/0	9.45	H	7.95	0.79	16.61	33
1907.5	5	QPSK	1/24	10.42	H	7.95	0.79	17.58	33
1852.5	5	16-QAM	1/0	10.24	V	7.95	0.79	17.40	33
1880.0	5	16-QAM	1/0	10.30	V	7.95	0.79	17.46	33
1907.5	5	16-QAM	1/24	9.12	V	7.95	0.79	16.28	33

1852.5	5	16-QAM	1/0	8.20	H	7.95	0.79	15.36	33
1880.0	5	16-QAM	1/0	12.10	H	7.95	0.79	19.26	33
1907.5	5	16-QAM	1/24	8.60	H	7.95	0.79	15.76	33
1855	10	QPSK	1/0	9.76	V	7.95	0.79	16.92	33
1880	10	QPSK	1/49	9.20	V	7.95	0.79	16.36	33
1905	10	QPSK	1/0	9.60	V	7.95	0.79	16.76	33
1855	10	QPSK	1/0	9.37	H	7.95	0.79	16.53	33
1880	10	QPSK	1/49	9.85	H	7.95	0.79	17.01	33
1905	10	QPSK	1/0	9.30	H	7.95	0.79	16.46	33
1855	10	16-QAM	1/0	11.92	V	7.95	0.79	19.08	33
1880	10	16-QAM	1/49	8.79	V	7.95	0.79	15.95	33
1905	10	16-QAM	1/0	9.81	V	7.95	0.79	16.97	33
1855	10	16-QAM	1/0	11.07	H	7.95	0.79	18.23	33
1880	10	16-QAM	1/49	9.17	H	7.95	0.79	16.33	33
1905	10	16-QAM	1/0	8.57	H	7.95	0.79	15.73	33
1857.5	15	QPSK	1/0	12.72	V	7.95	0.79	19.88	33
1880	15	QPSK	1/74	13.05	V	7.95	0.79	20.21	33
1902.5	15	QPSK	1/0	12.75	V	7.95	0.79	19.91	33
1857.5	15	QPSK	1/0	11.13	H	7.95	0.79	18.29	33
1880	15	QPSK	1/74	12.09	H	7.95	0.79	19.25	33
1902.5	15	QPSK	1/0	10.02	H	7.95	0.79	17.18	33
1857.5	15	16-QAM	1/0	10.65	V	7.95	0.79	17.81	33
1880	15	16-QAM	1/74	13.35	V	7.95	0.79	20.51	33
1902.5	15	16-QAM	1/0	9.93	V	7.95	0.79	17.09	33
1857.5	15	16-QAM	1/0	9.30	H	7.95	0.79	16.46	33
1880	15	16-QAM	1/74	11.17	H	7.95	0.79	18.33	33
1902.5	15	16-QAM	1/0	9.84	H	7.95	0.79	17.00	33
1860	20	QPSK	1/99	10.41	V	7.95	0.79	17.57	33
1880	20	QPSK	1/99	10.94	V	7.95	0.79	18.10	33
1900	20	QPSK	1/0	12.02	V	7.95	0.79	19.18	33
1860	20	QPSK	1/99	11.23	H	7.95	0.79	18.39	33
1880	20	QPSK	1/99	11.06	H	7.95	0.79	18.22	33
1900	20	QPSK	1/0	10.79	H	7.95	0.79	17.95	33
1860	20	16-QAM	1/99	11.40	V	7.95	0.79	18.56	33
1880	20	16-QAM	1/99	11.84	V	7.95	0.79	19.00	33
1900	20	16-QAM	1/0	11.81	V	7.95	0.79	18.97	33
1860	20	16-QAM	1/99	11.59	H	7.95	0.79	18.75	33

1880	20	16-QAM	1/99	10.72	H	7.95	0.79	17.88	33
1900	20	16-QAM	1/0	10.36	H	7.95	0.79	17.52	33

EIRP for LTE Band 4

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
1710.7	1.4	QPSK	1/0	9.96	V	7.95	0.79	17.12	30
1732.5	1.4	QPSK	1/0	11.12	V	7.95	0.79	18.28	30
1754.3	1.4	QPSK	1/0	11.59	V	7.95	0.79	18.75	30
1710.7	1.4	QPSK	1/0	10.55	H	7.95	0.79	17.71	30
1732.5	1.4	QPSK	1/0	9.30	H	7.95	0.79	16.46	30
1754.3	1.4	QPSK	1/0	8.92	H	7.95	0.79	16.08	30
1710.7	1.4	16-QAM	1/5	10.56	V	7.95	0.79	17.72	30
1732.5	1.4	16-QAM	1/0	12.19	V	7.95	0.79	19.35	30
1754.3	1.4	16-QAM	1/0	9.94	V	7.95	0.79	17.10	30
1710.7	1.4	16-QAM	1/5	8.55	H	7.95	0.79	15.71	30
1732.5	1.4	16-QAM	1/0	9.26	H	7.95	0.79	16.42	30
1754.3	1.4	16-QAM	1/0	11.09	H	7.95	0.79	18.25	30
1711.5	3	QPSK	1/0	9.53	V	7.95	0.79	16.69	30
1732.5	3	QPSK	1/0	11.05	V	7.95	0.79	18.21	30
1753.5	3	QPSK	1/0	13.73	V	7.95	0.79	20.89	30
1711.5	3	QPSK	1/0	11.23	H	7.95	0.79	18.39	30
1732.5	3	QPSK	1/0	11.02	H	7.95	0.79	18.18	30
1753.5	3	QPSK	1/0	9.51	H	7.95	0.79	16.67	30
1711.5	3	16-QAM	1/0	10.05	V	7.95	0.79	17.21	30
1732.5	3	16-QAM	1/0	10.04	V	7.95	0.79	17.20	30
1753.5	3	16-QAM	1/0	10.11	V	7.95	0.79	17.27	30
1711.5	3	16-QAM	1/0	11.61	H	7.95	0.79	18.77	30
1732.5	3	16-QAM	1/0	17.88	H	7.95	0.79	25.04	30
1753.5	3	16-QAM	1/0	15.11	H	7.95	0.79	22.27	30
1712.5	5	QPSK	1/0	13.72	V	7.95	0.79	20.88	30
1732.5	5	QPSK	1/0	15.95	V	7.95	0.79	23.11	30
1752.5	5	QPSK	1/24	13.22	V	7.95	0.79	20.38	30
1712.5	5	QPSK	1/0	14.95	H	7.95	0.79	22.11	30
1732.5	5	QPSK	1/0	9.24	H	7.95	0.79	16.40	30
1752.5	5	QPSK	1/24	10.52	H	7.95	0.79	17.68	30
1712.5	5	16-QAM	1/0	10.50	V	7.95	0.79	17.66	30
1732.5	5	16-QAM	1/0	9.19	V	7.95	0.79	16.35	30
1752.5	5	16-QAM	1/24	9.51	V	7.95	0.79	16.67	30
1712.5	5	16-QAM	1/0	9.39	H	7.95	0.79	16.55	30
1732.5	5	16-QAM	1/0	8.14	H	7.95	0.79	15.30	30
1752.5	5	16-QAM	1/24	10.49	H	7.95	0.79	17.65	30
1715	10	QPSK	1/0	12.01	V	7.95	0.79	19.17	30

1732.5	10	QPSK	1/49	9.25	V	7.95	0.79	16.41	30
1750	10	QPSK	1/0	9.67	V	7.95	0.79	16.83	30
1715	10	QPSK	1/0	11.17	H	7.95	0.79	18.33	30
1732.5	10	QPSK	1/49	12.38	H	7.95	0.79	19.54	30
1750	10	QPSK	1/0	9.48	H	7.95	0.79	16.64	30
1715	10	16-QAM	1/0	11.50	V	7.95	0.79	18.66	30
1732.5	10	16-QAM	1/49	10.44	V	7.95	0.79	17.60	30
1750	10	16-QAM	1/0	8.83	V	7.95	0.79	15.99	30
1715	10	16-QAM	1/0	10.42	H	7.95	0.79	17.58	30
1732.5	10	16-QAM	1/49	10.25	H	7.95	0.79	17.41	30
1750	10	16-QAM	1/0	10.75	H	7.95	0.79	17.91	30
1717.5	15	QPSK	1/0	10.89	V	7.95	0.79	18.05	30
1732.5	15	QPSK	1/74	9.24	V	7.95	0.79	16.40	30
1747.5	15	QPSK	1/0	9.01	V	7.95	0.79	16.17	30
1717.5	15	QPSK	1/0	9.86	H	7.95	0.79	17.02	30
1732.5	15	QPSK	1/74	11.28	H	7.95	0.79	18.44	30
1747.5	15	QPSK	1/0	8.93	H	7.95	0.79	16.09	30
1717.5	15	16-QAM	1/0	10.84	V	7.95	0.79	18.00	30
1732.5	15	16-QAM	1/74	9.16	V	7.95	0.79	16.32	30
1747.5	15	16-QAM	1/0	8.98	V	7.95	0.79	16.14	30
1717.5	15	16-QAM	1/0	7.54	H	7.95	0.79	14.70	30
1732.5	15	16-QAM	1/74	9.63	H	7.95	0.79	16.79	30
1747.5	15	16-QAM	1/0	9.98	H	7.95	0.79	17.14	30
1720	20	QPSK	1/99	10.21	V	7.95	0.79	17.37	30
1732.5	20	QPSK	1/99	11.70	V	7.95	0.79	18.86	30
1745	20	QPSK	1/0	11.84	V	7.95	0.79	19.00	30
1720	20	QPSK	1/99	8.53	H	7.95	0.79	15.69	30
1732.5	20	QPSK	1/99	9.88	H	7.95	0.79	17.04	30
1745	20	QPSK	1/0	11.26	H	7.95	0.79	18.42	30
1720	20	16-QAM	1/99	8.32	V	7.95	0.79	15.48	30
1732.5	20	16-QAM	1/99	10.44	V	7.95	0.79	17.60	30
1745	20	16-QAM	1/0	10.13	V	7.95	0.79	17.29	30
1720	20	16-QAM	1/99	11.26	H	7.95	0.79	18.42	30
1732.5	20	16-QAM	1/99	9.66	H	7.95	0.79	16.82	30
1745	20	16-QAM	1/0	10.65	H	7.95	0.79	17.81	30

EIRP for LTE Band 12

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
699.7	1.4	QPSK	1/0	9.67	V	6.6	0.47	16.09	34.77
707.5	1.4	QPSK	1/0	7.86	V	6.6	0.47	17.25	34.77
715.3	1.4	QPSK	1/24	8.00	V	6.6	0.47	17.72	34.77
699.7	1.4	QPSK	1/0	7.90	H	6.6	0.47	16.68	34.77
707.5	1.4	QPSK	1/0	8.37	H	6.6	0.47	15.43	34.77
715.3	1.4	QPSK	1/24	4.95	H	6.6	0.47	15.05	34.77
699.7	1.4	16-QAM	1/0	8.72	V	6.6	0.47	16.69	34.77
707.5	1.4	16-QAM	1/0	11.05	V	6.6	0.47	18.32	34.77
715.3	1.4	16-QAM	1/24	8.47	V	6.6	0.47	16.07	34.77
699.7	1.4	16-QAM	1/0	8.79	H	6.6	0.47	14.68	34.77
707.5	1.4	16-QAM	1/0	7.87	H	6.6	0.47	15.39	34.77
715.3	1.4	16-QAM	1/24	9.79	H	6.6	0.47	17.22	34.77
700.5	3	QPSK	1/0	7.29	V	6.6	0.47	15.66	34.77
707.5	3	QPSK	1/49	9.12	V	6.6	0.47	17.18	34.77
714.5	3	QPSK	1/0	10.01	V	6.6	0.47	19.86	34.77
700.5	3	QPSK	1/0	9.04	H	6.6	0.47	17.36	34.77
707.5	3	QPSK	1/49	10.32	H	6.6	0.47	17.15	34.77
714.5	3	QPSK	1/0	6.84	H	6.6	0.47	15.64	34.77
700.5	3	16-QAM	1/0	7.05	V	6.6	0.47	16.18	34.77
707.5	3	16-QAM	1/49	8.45	V	6.6	0.47	16.17	34.77
714.5	3	16-QAM	1/0	8.89	V	6.6	0.47	16.24	34.77
700.5	3	16-QAM	1/0	8.90	H	6.6	0.47	17.74	34.77
707.5	3	16-QAM	1/49	20.90	H	6.6	0.47	24.01	34.77
714.5	3	16-QAM	1/0	17.15	H	6.6	0.47	21.24	34.77
701.5	5	QPSK	1/0	16.88	V	6.6	0.47	19.85	34.77
707.5	5	QPSK	1/74	19.23	V	6.6	0.47	22.08	34.77
713.5	5	QPSK	1/0	14.39	V	6.6	0.47	19.35	34.77
701.5	5	QPSK	1/0	18.54	H	6.6	0.47	21.08	34.77
707.5	5	QPSK	1/74	8.34	H	6.6	0.47	15.37	34.77
713.5	5	QPSK	1/0	7.75	H	6.6	0.47	16.65	34.77
701.5	5	16-QAM	1/0	8.59	V	6.6	0.47	16.63	34.77
707.5	5	16-QAM	1/74	7.64	V	6.6	0.47	15.32	34.77
713.5	5	16-QAM	1/0	8.50	V	6.6	0.47	15.64	34.77
701.5	5	16-QAM	1/0	8.00	H	6.6	0.47	15.52	34.77
707.5	5	16-QAM	1/74	5.74	H	6.6	0.47	14.27	34.77
713.5	5	16-QAM	1/0	6.63	H	6.6	0.47	16.62	34.77
704.0	10	QPSK	1/99	8.44	V	6.6	0.47	18.14	34.77

707.5	10	QPSK	1/99	6.21	V	6.6	0.47	15.38	34.77
711.0	10	QPSK	1/0	7.52	V	6.6	0.47	15.80	34.77
704.0	10	QPSK	1/99	8.09	H	6.6	0.47	17.30	34.77
707.5	10	QPSK	1/99	8.78	H	6.6	0.47	18.51	34.77
711.0	10	QPSK	1/0	9.60	H	6.6	0.47	15.61	34.77
704.0	10	16-QAM	1/99	9.14	V	6.6	0.47	17.63	34.77
707.5	10	16-QAM	1/99	7.01	V	6.6	0.47	16.57	34.77
711.0	10	16-QAM	1/0	7.36	V	6.6	0.47	14.96	34.77
704.0	10	16-QAM	1/99	8.01	H	6.6	0.47	16.55	34.77
707.5	10	16-QAM	1/99	9.96	H	6.6	0.47	16.38	34.77
711.0	10	16-QAM	1/0	8.08	H	6.6	0.47	16.88	34.77

Note: Above is the worst mode data.

6.3. PEAK-TO-AVERAGE RATIO

6.3.1 MEASUREMENT METHOD

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

According to KDB 971168 D01v03 - Section 5.7:

a)Refer to instrument’s analyzer instruction manual for details on how to use the power statistics /CCDF function;

b) Set resolution/measurement bandwidth ≥ signal’s occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval to 1 ms

e) Record the maximum PAPR level associated with a probability of 0.1%

6.3.2 PROVISIONS APPLICABLE

This is the test for the Peak-to-Average Ratio from the EUT.

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument’s resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

6.3.3 MEASUREMENT RESULT

LTE Band 2

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.67	<13	PASS
		1	3	3.25	<13	PASS
		1	5	3.71	<13	PASS
		3	0	3.59	<13	PASS
		3	2	4.00	<13	PASS
		3	3	3.75	<13	PASS
		6	0	4.29	<13	PASS
	MCH	1	0	4.22	<13	PASS
		1	3	4.12	<13	PASS
		1	5	4.18	<13	PASS
		3	0	4.00	<13	PASS
		3	2	4.63	<13	PASS
		3	3	4.36	<13	PASS
		6	0	8.38	<13	PASS
	HCH	1	0	3.91	<13	PASS
		1	3	4.03	<13	PASS
		1	5	3.59	<13	PASS
		3	0	4.05	<13	PASS
		3	2	3.96	<13	PASS
		3	3	3.66	<13	PASS
		6	0	4.46	<13	PASS
16QAM	LCH	1	0	4.39	<13	PASS
		1	3	4.11	<13	PASS
		1	5	4.57	<13	PASS
		3	0	4.21	<13	PASS
		3	2	4.36	<13	PASS
		3	3	4.68	<13	PASS
		6	0	5.06	<13	PASS
	MCH	1	0	5.03	<13	PASS
		1	3	5.12	<13	PASS
		1	5	5.16	<13	PASS
		3	0	5.02	<13	PASS
		3	2	4.26	<13	PASS
		3	3	5.19	<13	PASS

		6	0	5.74	<13	PASS
	HCH	1	0	4.54	<13	PASS
		1	3	4.36	<13	PASS
		1	5	4.54	<13	PASS
		3	0	4.25	<13	PASS
		3	2	4.36	<13	PASS
		3	3	4.72	<13	PASS
		6	0	4.51	<13	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.69	<13	PASS
		1	7	4.11	<13	PASS
		1	14	3.67	<13	PASS
		8	0	4.36	<13	PASS
		8	4	4.28	<13	PASS
		8	7	4.18	<13	PASS
		15	0	4.38	<13	PASS
	MCH	1	0	4.28	<13	PASS
		1	7	4.12	<13	PASS
		1	14	4.21	<13	PASS
		8	0	4.10	<13	PASS
		8	4	4.26	<13	PASS
		8	7	4.72	<13	PASS
		15	0	5.04	<13	PASS
	HCH	1	0	3.81	<13	PASS
		1	7	3.15	<13	PASS
		1	14	3.64	<13	PASS
		8	0	3.12	<13	PASS
		8	4	4.01	<13	PASS
		8	7	4.39	<13	PASS
		15	0	4.61	<13	PASS
16QAM	LCH	1	0	4.63	<13	PASS
		1	7	4.23	<13	PASS
		1	14	4.65	<13	PASS

		8	0	4.36	<13	PASS
		8	4	4.11	<13	PASS
		8	7	5.07	<13	PASS
		15	0	5.27	<13	PASS
	MCH	1	0	5.01	<13	PASS
		1	7	4.35	<13	PASS
		1	14	4.75	<13	PASS
		8	0	5.12	<13	PASS
		8	4	5.36	<13	PASS
		8	7	5.56	<13	PASS
		15	0	5.89	<13	PASS
	HCH	1	0	4.49	<13	PASS
		1	7	4.36	<13	PASS
		1	14	4.49	<13	PASS
		8	0	5.25	<13	PASS
		8	4	5.31	<13	PASS
		8	7	5.13	<13	PASS
		15	0	5.55	<13	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.74	<13	PASS
		1	12	4.23	<13	PASS
		1	24	3.78	<13	PASS
		12	0	4.21	<13	PASS
		12	6	4.13	<13	PASS
		12	13	4.28	<13	PASS
		25	0	4.53	<13	PASS
	MCH	1	0	4.38	<13	PASS
		1	12	4.36	<13	PASS
		1	24	4.29	<13	PASS
		12	0	4.25	<13	PASS
		12	6	4.36	<13	PASS
		12	13	4.7	<13	PASS
		25	0	5.05	<13	PASS

	HCH	1	0	3.97	<13	PASS
		1	12	4.02	<13	PASS
		1	24	3.76	<13	PASS
		12	0	4.11	<13	PASS
		12	6	4.36	<13	PASS
		12	13	4.41	<13	PASS
		25	0	4.76	<13	PASS
16QAM	LCH	1	0	4.62	<13	PASS
		1	12	4.23	<13	PASS
		1	24	4.77	<13	PASS
		12	0	4.15	<13	PASS
		12	6	4.23	<13	PASS
		12	13	5.12	<13	PASS
		25	0	5.32	<13	PASS
	MCH	1	0	5.22	<13	PASS
		1	12	5.23	<13	PASS
		1	24	5.21	<13	PASS
		12	0	4.15	<13	PASS
		12	6	5.13	<13	PASS
		12	13	5.52	<13	PASS
		25	0	5.75	<13	PASS
	HCH	1	0	5.02	<13	PASS
		1	12	4.26	<13	PASS
		1	24	4.79	<13	PASS
		12	0	5.12	<13	PASS
		12	6	5.36	<13	PASS
		12	13	5.26	<13	PASS
		25	0	5.55	<13	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.62	<13	PASS
		1	24	4.12	<13	PASS
		1	49	4.25	<13	PASS

		25	0	4.36	<13	PASS
		25	12	4.28	<13	PASS
		25	25	4.53	<13	PASS
		50	0	4.62	<13	PASS
	MCH	1	0	4.41	<13	PASS
		1	24	4.33	<13	PASS
		1	49	4.19	<13	PASS
		25	0	4.36	<13	PASS
		25	12	4.29	<13	PASS
		25	25	4.76	<13	PASS
		50	0	5.06	<13	PASS
	HCH	1	0	4.16	<13	PASS
		1	24	3.66	<13	PASS
		1	49	3.84	<13	PASS
		25	0	4.11	<13	PASS
		25	12	4.29	<13	PASS
		25	25	4.58	<13	PASS
		50	0	4.66	<13	PASS
16QAM	LCH	1	0	4.51	<13	PASS
		1	24	4.69	<13	PASS
		1	49	4.87	<13	PASS
		25	0	5.12	<13	PASS
		25	12	5.36	<13	PASS
		25	25	5.33	<13	PASS
		50	0	5.44	<13	PASS
	MCH	1	0	5.34	<13	PASS
		1	24	5.11	<13	PASS
		1	49	5.07	<13	PASS
		25	0	5.25	<13	PASS
		25	12	5.39	<13	PASS
		25	25	5.55	<13	PASS
		50	0	5.81	<13	PASS
	HCH	1	0	5.24	<13	PASS
		1	24	5.27	<13	PASS
		1	49	4.91	<13	PASS
		25	0	4.28	<13	PASS
		25	12	5.11	<13	PASS

		25	25	5.45	<13	PASS
		50	0	5.51	<13	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.71	<13	PASS
		1	37	3.25	<13	PASS
		1	74	4.29	<13	PASS
		37	0	4.16	<13	PASS
		37	18	4.16	<13	PASS
		37	38	4.65	<13	PASS
		75	0	4.89	<13	PASS
	MCH	1	0	4.36	<13	PASS
		1	37	4.33	<13	PASS
		1	74	4.24	<13	PASS
		37	0	4.12	<13	PASS
		37	18	4.36	<13	PASS
		37	38	4.48	<13	PASS
		75	0	5.18	<13	PASS
	HCH	1	0	4.34	<13	PASS
		1	37	6.12	<13	PASS
		1	74	3.78	<13	PASS
		37	0	5.12	<13	PASS
		37	18	4.12	<13	PASS
		37	38	4.66	<13	PASS
		75	0	4.94	<13	PASS
16QAM	LCH	1	0	4.45	<13	PASS
		1	37	5.11	<13	PASS
		1	74	5.08	<13	PASS
		37	0	5.13	<13	PASS
		37	18	5.19	<13	PASS
		37	38	5.49	<13	PASS
		75	0	5.61	<13	PASS
	MCH	1	0	5.25	<13	PASS
		1	37	5.11	<13	PASS
		1	74	5.13	<13	PASS
		37	0	4.99	<13	PASS
		37	18	5.11	<13	PASS

		37	38	5.53	<13	PASS
		75	0	5.87	<13	PASS
	HCH	1	0	5.06	<13	PASS
		1	37	4.12	<13	PASS
		1	74	4.33	<13	PASS
		37	0	4.69	<13	PASS
		37	18	5.12	<13	PASS
		37	38	5.49	<13	PASS
		75	0	5.70	<13	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.78	<13	PASS
		1	49	4.13	<13	PASS
		1	99	4.39	<13	PASS
		50	0	4.36	<13	PASS
		50	25	4.11	<13	PASS
		50	50	4.76	<13	PASS
		100	0	4.94	<13	PASS
	MCH	1	0	4.46	<13	PASS
		1	49	5.11	<13	PASS
		1	99	4.28	<13	PASS
		50	0	5.23	<13	PASS
		50	25	5.28	<13	PASS
		50	50	4.73	<13	PASS
		100	0	5.05	<13	PASS
	HCH	1	0	4.12	<13	PASS
		1	49	4.28	<13	PASS
		1	99	3.75	<13	PASS
		50	0	4.16	<13	PASS
		50	25	4.33	<13	PASS
		50	50	4.71	<13	PASS
		100	0	4.99	<13	PASS
16QAM	LCH	1	0	4.51	<13	PASS
		1	49	4.36	<13	PASS
		1	99	5.07	<13	PASS
		50	0	5.22	<13	PASS
		50	25	5.13	<13	PASS

		50	50	5.59	<13	PASS
		100	0	5.71	<13	PASS
	MCH	1	0	5.11	<13	PASS
		1	49	5.26	<13	PASS
		1	99	5.07	<13	PASS
		50	0	5.46	<13	PASS
		50	25	5.12	<13	PASS
		50	50	5.55	<13	PASS
		100	0	5.82	<13	PASS
	HCH	1	0	5.11	<13	PASS
		1	49	4.12	<13	PASS
		1	99	4.61	<13	PASS
		50	0	5.11	<13	PASS
		50	25	5.16	<13	PASS
		50	50	5.62	<13	PASS
		100	0	5.85	<13	PASS

LTE Band 4

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.02	<13	PASS
		1	3	4.11	<13	PASS
		1	5	4.05	<13	PASS
		3	0	4.13	<13	PASS
		3	2	4.33	<13	PASS
		3	3	4.14	<13	PASS
		6	0	4.69	<13	PASS
	MCH	1	0	4.33	<13	PASS
		1	3	4.31	<13	PASS
		1	5	4.26	<13	PASS
		3	0	4.15	<13	PASS
		3	2	4.28	<13	PASS
		3	3	4.33	<13	PASS
		6	0	4.68	<13	PASS
	HCH	1	0	3.82	<13	PASS
		1	3	3.15	<13	PASS
		1	5	3.55	<13	PASS
		3	0	4.13	<13	PASS
		3	2	3.55	<13	PASS
		3	3	3.71	<13	PASS
		6	0	4.43	<13	PASS
16QAM	LCH	1	0	4.89	<13	PASS
		1	3	4.13	<13	PASS
		1	5	4.81	<13	PASS
		3	0	4.00	<13	PASS
		3	2	3.16	<13	PASS
		3	3	5.08	<13	PASS
		6	0	5.67	<13	PASS
	MCH	1	0	5.13	<13	PASS
		1	3	5.00	<13	PASS
		1	5	5.08	<13	PASS
		3	0	5.12	<13	PASS
		3	2	4.13	<13	PASS
		3	3	5.17	<13	PASS
		6	0	5.54	<13	PASS

	HCH	1	0	4.67	<13	PASS
		1	3	4.62	<13	PASS
		1	5	4.44	<13	PASS
		3	0	4.33	<13	PASS
		3	2	4.25	<13	PASS
		3	3	4.62	<13	PASS
		6	0	5.33	<13	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.98	<13	PASS
		1	7	4.12	<13	PASS
		1	14	4.15	<13	PASS
		8	0	4.36	<13	PASS
		8	4	4.39	<13	PASS
		8	7	4.66	<13	PASS
		15	0	4.81	<13	PASS
	MCH	1	0	4.27	<13	PASS
		1	7	4.36	<13	PASS
		1	14	4.18	<13	PASS
		8	0	4.28	<13	PASS
		8	4	4.13	<13	PASS
		8	7	4.65	<13	PASS
		15	0	4.71	<13	PASS
	HCH	1	0	4.24	<13	PASS
		1	7	3.89	<13	PASS
		1	14	3.77	<13	PASS
		8	0	4.12	<13	PASS
		8	4	4.13	<13	PASS
		8	7	4.36	<13	PASS
		15	0	4.59	<13	PASS
16QAM	LCH	1	0	4.98	<13	PASS
		1	7	4.36	<13	PASS
		1	14	4.98	<13	PASS
		8	0	4.12	<13	PASS
		8	4	4.21	<13	PASS
		8	7	5.49	<13	PASS
		15	0	5.77	<13	PASS

	MCH	1	0	4.71	<13	PASS
		1	7	4.25	<13	PASS
		1	14	4.88	<13	PASS
		8	0	4.26	<13	PASS
		8	4	4.13	<13	PASS
		8	7	5.31	<13	PASS
		15	0	5.53	<13	PASS
	HCH	1	0	5.18	<13	PASS
		1	7	4.01	<13	PASS
		1	14	4.82	<13	PASS
		8	0	4.39	<13	PASS
		8	4	4.12	<13	PASS
		8	7	5.23	<13	PASS
		15	0	5.54	<13	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.05	<13	PASS
		1	12	3.59	<13	PASS
		1	24	4.25	<13	PASS
		12	0	4.12	<13	PASS
		12	6	4.33	<13	PASS
		12	13	4.68	<13	PASS
		25	0	4.94	<13	PASS
	MCH	1	0	4.11	<13	PASS
		1	12	3.19	<13	PASS
		1	24	3.83	<13	PASS
		12	0	4.13	<13	PASS
		12	6	4.28	<13	PASS
		12	13	4.47	<13	PASS
		25	0	4.81	<13	PASS
	HCH	1	0	4.25	<13	PASS
		1	12	4.12	<13	PASS
		1	24	3.61	<13	PASS
		12	0	3.22	<13	PASS
		12	6	4.28	<13	PASS
		12	13	4.39	<13	PASS
		25	0	4.83	<13	PASS

16QAM	LCH	1	0	4.93	<13	PASS
		1	12	4.23	<13	PASS
		1	24	5.10	<13	PASS
		12	0	4.25	<13	PASS
		12	6	4.36	<13	PASS
		12	13	5.54	<13	PASS
		25	0	5.66	<13	PASS
	MCH	1	0	5.16	<13	PASS
		1	12	4.59	<13	PASS
		1	24	4.97	<13	PASS
		12	0	4.55	<13	PASS
		12	6	4.13	<13	PASS
		12	13	5.38	<13	PASS
		25	0	5.65	<13	PASS
	HCH	1	0	5.03	<13	PASS
		1	12	5.00	<13	PASS
		1	24	4.65	<13	PASS
		12	0	4.11	<13	PASS
		12	6	4.51	<13	PASS
		12	13	5.31	<13	PASS
		25	0	5.56	<13	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.02	<13	PASS
		1	49	3.16	<13	PASS
		1	99	4.38	<13	PASS
		50	0	4.28	<13	PASS
		50	25	4.58	<13	PASS
		50	50	4.75	<13	PASS
		100	0	5.11	<13	PASS
	MCH	1	0	4.42	<13	PASS
		1	49	4.13	<13	PASS
		1	99	4.18	<13	PASS
		50	0	4.23	<13	PASS
		50	25	4.18	<13	PASS
		50	50	4.55	<13	PASS

		100	0	4.77	<13	PASS
	HCH	1	0	4.12	<13	PASS
		1	49	3.29	<13	PASS
		1	99	3.62	<13	PASS
		50	0	3.15	<13	PASS
		50	25	4.12	<13	PASS
		50	50	4.53	<13	PASS
		100	0	4.86	<13	PASS
16QAM	LCH	1	0	4.78	<13	PASS
		1	49	3.56	<13	PASS
		1	99	4.94	<13	PASS
		50	0	4.13	<13	PASS
		50	25	4.12	<13	PASS
		50	50	5.62	<13	PASS
		100	0	5.78	<13	PASS
	MCH	1	0	5.12	<13	PASS
		1	49	4.11	<13	PASS
		1	99	5.03	<13	PASS
		50	0	4.13	<13	PASS
		50	25	4.25	<13	PASS
		50	50	5.47	<13	PASS
		100	0	5.62	<13	PASS
	HCH	1	0	5.05	<13	PASS
		1	49	4.13	<13	PASS
		1	99	4.54	<13	PASS
		50	0	4.13	<13	PASS
		50	25	4.15	<13	PASS
		50	50	5.44	<13	PASS
		100	0	5.67	<13	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.23	<13	PASS
		1	37	4.11	<13	PASS
		1	74	4.38	<13	PASS
		37	0	4.16	<13	PASS
		37	18	4.15	<13	PASS
		37	38	4.75	<13	PASS

		75	0	5.23	<13	PASS
	MCH	1	0	4.42	<13	PASS
		1	37	4.28	<13	PASS
		1	74	4.18	<13	PASS
		37	0	4.25	<13	PASS
		37	18	4.13	<13	PASS
		37	38	4.55	<13	PASS
		75	0	4.77	<13	PASS
	HCH	1	0	4.12	<13	PASS
		1	37	3.56	<13	PASS
		1	74	3.62	<13	PASS
		37	0	4.13	<13	PASS
		37	18	4.18	<13	PASS
		37	38	4.53	<13	PASS
		75	0	4.86	<13	PASS
16QAM	LCH	1	0	4.78	<13	PASS
		1	37	5.12	<13	PASS
		1	74	4.94	<13	PASS
		37	0	5.11	<13	PASS
		37	18	5.13	<13	PASS
		37	38	5.62	<13	PASS
		75	0	5.78	<13	PASS
	MCH	1	0	5.16	<13	PASS
		1	37	4.15	<13	PASS
		1	74	5.03	<13	PASS
		37	0	5.23	<13	PASS
		37	18	4.15	<13	PASS
		37	38	5.47	<13	PASS
		75	0	5.62	<13	PASS
	HCH	1	0	5.05	<13	PASS
		1	37	5.12	<13	PASS
		1	74	4.54	<13	PASS
		37	0	4.13	<13	PASS
		37	18	4.26	<13	PASS
		37	38	5.44	<13	PASS
		75	0	5.67	<13	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			

QPSK	LCH	1	0	4.08	<13	PASS
		1	49	4.12	<13	PASS
		1	99	4.49	<13	PASS
		50	0	5.00	<13	PASS
		50	25	4.26	<13	PASS
		50	50	4.73	<13	PASS
		100	0	5.06	<13	PASS
	MCH	1	0	4.46	<13	PASS
		1	49	4.22	<13	PASS
		1	99	4.05	<13	PASS
		50	0	4.26	<13	PASS
		50	25	4.13	<13	PASS
		50	50	4.51	<13	PASS
		100	0	4.76	<13	PASS
	HCH	1	0	4.05	<13	PASS
		1	49	3.92	<13	PASS
		1	99	3.84	<13	PASS
		50	0	4.26	<13	PASS
		50	25	4.11	<13	PASS
		50	50	4.66	<13	PASS
		100	0	5.09	<13	PASS
16QAM	LCH	1	0	5.15	<13	PASS
		1	49	5.33	<13	PASS
		1	99	5.33	<13	PASS
		50	0	5.12	<13	PASS
		50	25	5.11	<13	PASS
		50	50	5.57	<13	PASS
		100	0	5.89	<13	PASS
	MCH	1	0	5.33	<13	PASS
		1	49	5.11	<13	PASS
		1	99	4.86	<13	PASS
		50	0	4.59	<13	PASS
		50	25	4.13	<13	PASS
		50	50	5.45	<13	PASS
		100	0	5.64	<13	PASS
	HCH	1	0	4.81	<13	PASS
		1	49	4.25	<13	PASS
		1	99	4.71	<13	PASS
		50	0	4.16	<13	PASS
		50	25	4.25	<13	PASS

		50	50	5.50	<13	PASS
		100	0	5.82	<13	PASS

LTE BAND 12

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.33	<13	PASS
		1	3	4.25	<13	PASS
		1	5	4.23	<13	PASS
		3	0	4.12	<13	PASS
		3	2	4.36	<13	PASS
		3	3	4.33	<13	PASS
		6	0	4.89	<13	PASS
	MCH	1	0	4.01	<13	PASS
		1	3	3.96	<13	PASS
		1	5	4.05	<13	PASS
		3	0	4.61	<13	PASS
		3	2	4.12	<13	PASS
		3	3	3.93	<13	PASS
		6	0	4.66	<13	PASS
	HCH	1	0	4.45	<13	PASS
		1	3	4.13	<13	PASS
		1	5	4.21	<13	PASS
		3	0	3.66	<13	PASS
		3	2	4.21	<13	PASS
		3	3	4.37	<13	PASS
		6	0	5.01	<13	PASS
16QAM	LCH	1	0	5.24	<13	PASS
		1	3	4.39	<13	PASS
		1	5	5.04	<13	PASS
		3	0	4.13	<13	PASS
		3	2	4.19	<13	PASS
		3	3	5.25	<13	PASS
		6	0	5.53	<13	PASS
	MCH	1	0	5.12	<13	PASS
		1	3	4.29	<13	PASS
		1	5	5.21	<13	PASS
		3	0	4.28	<13	PASS
		3	2	4.11	<13	PASS
		3	3	4.97	<13	PASS
		6	0	5.35	<13	PASS

	HCH	1	0	5.41	<13	PASS
		1	3	4.12	<13	PASS
		1	5	5.29	<13	PASS
		3	0	5.12	<13	PASS
		3	2	4.11	<13	PASS
		3	3	5.27	<13	PASS
		6	0	5.65	<13	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	4.22	<13	PASS
		1	7	4.13	<13	PASS
		1	14	4.12	<13	PASS
		8	0	3.12	<13	PASS
		8	4	4.13	<13	PASS
		8	7	4.74	<13	PASS
		15	0	4.87	<13	PASS
	MCH	1	0	3.91	<13	PASS
		1	7	4.12	<13	PASS
		1	14	4.03	<13	PASS
		8	0	4.36	<13	PASS
		8	4	4.25	<13	PASS
		8	7	4.57	<13	PASS
		15	0	4.69	<13	PASS
	HCH	1	0	4.33	<13	PASS
		1	7	5.13	<13	PASS
		1	14	4.01	<13	PASS
		8	0	4.33	<13	PASS
		8	4	4.12	<13	PASS
		8	7	4.87	<13	PASS
		15	0	5.06	<13	PASS
16QAM	LCH	1	0	4.99	<13	PASS
		1	7	4.36	<13	PASS
		1	14	4.83	<13	PASS
		8	0	4.25	<13	PASS
		8	4	4.13	<13	PASS
		8	7	5.6	<13	PASS

		15	0	5.63	<13	PASS
	MCH	1	0	4.75	<13	PASS
		1	7	4.26	<13	PASS
		1	14	4.85	<13	PASS
		8	0	5.12	<13	PASS
		8	4	5.13	<13	PASS
		8	7	5.44	<13	PASS
		15	0	5.42	<13	PASS
	HCH	1	0	5.37	<13	PASS
		1	7	5.11	<13	PASS
		1	14	5.16	<13	PASS
		8	0	4.26	<13	PASS
		8	4	4.13	<13	PASS
		8	7	5.72	<13	PASS
		15	0	5.86	<13	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	3.42	<13	PASS
		1	12	3.16	<13	PASS
		1	24	2.98	<13	PASS
		12	0	2.69	<13	PASS
		12	6	4.22	<13	PASS
		12	13	4.44	<13	PASS
		25	0	4.81	<13	PASS
	MCH	1	0	3.16	<13	PASS
		1	12	4.12	<13	PASS
		1	24	3.02	<13	PASS
		12	0	3.11	<13	PASS
		12	6	4.36	<13	PASS
		12	13	4.34	<13	PASS
		25	0	4.64	<13	PASS
	HCH	1	0	3.53	<13	PASS
		1	12	4.13	<13	PASS
		1	24	3.99	<13	PASS
		12	0	4.00	<13	PASS
		12	6	4.12	<13	PASS

		12	13	4.81	<13	PASS
		25	0	5.03	<13	PASS
16QAM	LCH	1	0	4.26	<13	PASS
		1	12	3.45	<13	PASS
		1	24	3.71	<13	PASS
		12	0	4.13	<13	PASS
		12	6	4.00	<13	PASS
		12	13	5.25	<13	PASS
		25	0	5.54	<13	PASS
	MCH	1	0	4.12	<13	PASS
		1	12	4.25	<13	PASS
		1	24	4.05	<13	PASS
		12	0	4.36	<13	PASS
		12	6	4.12	<13	PASS
		12	13	5.19	<13	PASS
		25	0	5.55	<13	PASS
	HCH	1	0	4.75	<13	PASS
		1	12	5.23	<13	PASS
		1	24	5.01	<13	PASS
		12	0	4.26	<13	PASS
		12	6	4.53	<13	PASS
		12	13	5.71	<13	PASS
		25	0	5.86	<13	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz						
Modulation	Channel	RB Configuration		Peak-to-Average Ratio [dB]	Limit [dB]	Verdict
		Size	Offset			
QPSK	LCH	1	0	5.12	<13	PASS
		1	49	4.25	<13	PASS
		1	99	4.23	<13	PASS
		50	0	5.11	<13	PASS
		50	25	5.25	<13	PASS
		50	50	5.36	<13	PASS
		100	0	4.13	<13	PASS
	MCH	1	0	5.13	<13	PASS
		1	49	5.18	<13	PASS
		1	99	5.26	<13	PASS
		50	0	4.28	<13	PASS

		50	25	5.13	<13	PASS
		50	50	4.39	<13	PASS
		100	0	4.11	<13	PASS
	HCH	1	0	5.12	<13	PASS
		1	49	4.12	<13	PASS
		1	99	5.12	<13	PASS
		50	0	4.11	<13	PASS
		50	25	4.13	<13	PASS
		50	50	4.22	<13	PASS
		100	0	5.11	<13	PASS
16QAM	LCH	1	0	5.23	<13	PASS
		1	49	4.11	<13	PASS
		1	99	3.23	<13	PASS
		50	0	4.11	<13	PASS
		50	25	3.19	<13	PASS
		50	50	4.23	<13	PASS
		100	0	4.11	<13	PASS
	MCH	1	0	4.23	<13	PASS
		1	49	4.16	<13	PASS
		1	99	4.19	<13	PASS
		50	0	4.23	<13	PASS
		50	25	4.19	<13	PASS
		50	50	5.11	<13	PASS
		100	0	5.18	<13	PASS
	HCH	1	0	5.29	<13	PASS
		1	49	5.22	<13	PASS
		1	99	4.16	<13	PASS
		50	0	4.19	<13	PASS
		50	25	4.02	<13	PASS
		50	50	4.00	<13	PASS
		100	0	3.98	<13	PASS

7. SPURIOUS EMISSION

7.1 CONDUCTED SPURIOUS EMISSION

7.1.1 MEASUREMENT METHOD

The level of the carrier 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.

The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

For Band 7:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

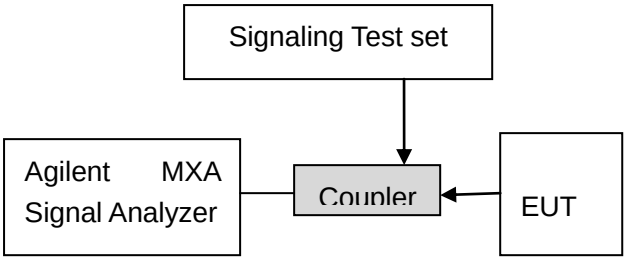
Test Procedure Used
KDB 971168 D01v03 – Section 6.0

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 = max hold
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.



Test Instrument & Measurement Setup

shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

Test Note

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. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

7.1.2 MEASUREMENT RESULT

PLEASE REFER TO: APPENDIX A TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

Note: 1. No emission found in standby or receive mode, no recording in this report.

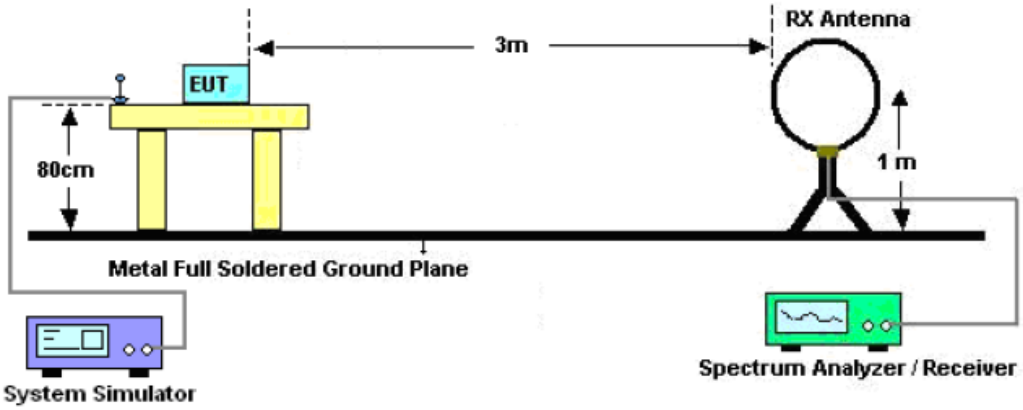
7.2 RADIATED SPURIOUS EMISSION

7.2.1. MEASUREMENT PROCEDURE

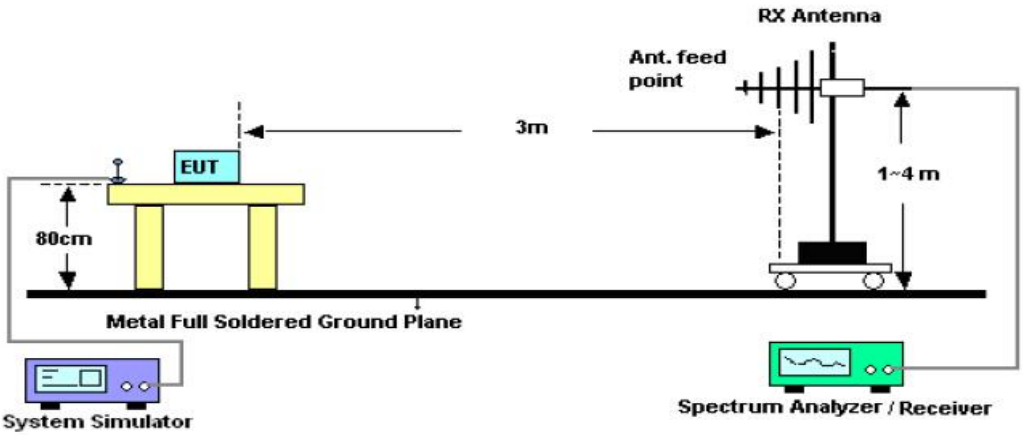
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

7.2.2. TEST SETUP

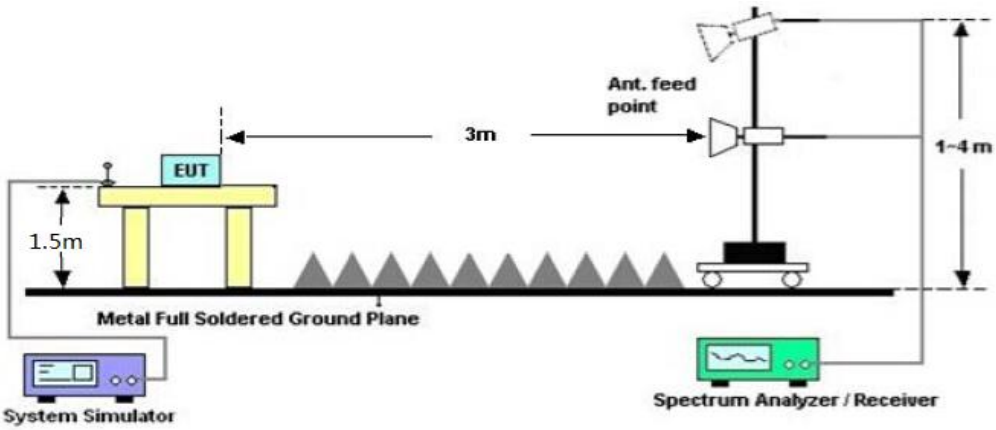
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



7.2.3 PROVISIONS APPLICABLE

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Note: Only record the worst condition of each test mode:

7.2.4 MEASUREMENT RESULT

LTE Band 2
Low channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3720	V	-46.40	-13	-33.40
746.5	V	-41.19	-13	-28.19
266.7	V	-45.38	-13	-32.38
3720	H	-34.72	-13	-21.72
656.1	H	-45.40	-13	-32.40
241.6	H	-34.26	-13	-21.26

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3760	V	-36.24	-13	-23.24
654.1	V	-42.15	-13	-29.15
341.5	V	-41.75	-13	-28.75
3760	H	-36.90	-13	-23.90
794.2	H	-43.02	-13	-30.02
459.4	H	-43.18	-13	-30.18

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3800	V	-35.59	-13	-22.59
569.1	V	-42.26	-13	-29.26
364.5	V	-42.91	-13	-29.91
3800	H	-35.09	-13	-22.09
641.2	H	-40.30	-13	-27.30
423.4	H	-42.53	-13	-29.53

LTE Band 4

Low channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3440	V	-35.88	-13	-22.88
745.1	V	-43.19	-13	-30.19
337.5	V	-44.03	-13	-31.03
3440	H	-36.90	-13	-23.90
699.3	H	-41.36	-13	-28.36
425.6	H	-40.97	-13	-27.97

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3465	V	-35.41	-13	-22.41
758.3	V	-41.75	-13	-28.75
694.2	V	-43.86	-13	-30.86
3465	H	-35.65	-13	-22.65
664.1	H	-41.95	-13	-28.95
334.1	H	-42.73	-13	-29.73

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3490	V	-35.44	-13	-22.44
745.4	V	-43.38	-13	-30.38
633.1	V	-43.42	-13	-30.42
3490	H	-36.54	-13	-23.54
512.4	H	-41.89	-13	-28.89
357.1	H	-41.73	-13	-28.73

LTE Band 12

Low channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1408	V	-36.17	-13	-23.17
421.1	V	-42.06	-13	-29.06
361.7	V	-44.44	-13	-31.44
1408	H	-36.13	-13	-23.13
536.1	H	-41.28	-13	-28.28
356.2	H	-41.62	-13	-28.62

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1415	V	-37.45	-13	-24.45
511.4	V	-42.34	-13	-29.34
364.7	V	-42.35	-13	-29.35
1415	H	-35.87	-13	-22.87
614.4	H	-42.11	-13	-29.11
356.67	H	-42.27	-13	-29.27

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1422	V	-36.33	-13	-24.22
564.1	V	-41.98	-13	-30.14
364.6	V	-43.01	-13	-30.76
1422	H	-35.12	-13	-23.18
425.7	H	-39.75	-13	-27.31
342.5	H	-42.44	-13	-29.57

Note: 1. Margin = Emission Level -Limit

2. (30MHz-26GHz) Below 30MHZ no Spurious found and above is the worst mode data

8. FREQUENCY STABILITY

8.1 MEASUREMENT METHOD

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1 Measure the carrier frequency at room temperature.

2 Subject the EUT to overnight soak at -10℃. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on channel 20175 for LTE band 4 measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

3 Repeat the above measurements at 10℃ increments from -10℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

4 Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.

5 Subject the EUT to overnight soak at +50℃.

6 With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.

7 Repeat the above measurements at 10℃ increments from +50℃ to -10℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.

8 At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

8.2 PROVISIONS APPLICABLE

8.2.1 For Hand carried battery powered equipment

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

a.) Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 24 and Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

8.2.2 For equipment powered by primary supply voltage

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

8.3 MEASUREMENT RESULT (WORST)

LTE Band 2

Middle Channel, f_O = 1880 MHz				
Temperature (℃)	Power Supplied (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	3.7	-2.96	-0.002	±1
0		-2.57	-0.001	±1
10		-2.39	-0.001	±1
20		-2.00	-0.001	±1
30		-1.95	-0.001	±1
40		-3.99	-0.002	±1
50		-2.80	-0.001	±1
25	4.2	-3.98	-0.002	±1
	3.5	-3.98	-0.002	±1

LTE Band 4

Middle Channel, f_O = 1732.5 MHz			
Temperature (℃)	Power Supplied (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
-10	3.7	-2.69	-0.002
0		1.89	0.001
10		1.24	0.001
20		0.99	0.001
30		-1.99	-0.001
40		-3.82	-0.002
50		-2.35	-0.001
25	4.2	-1.53	-0.001
	3.5	1.92	0.001

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very samll. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted duing the frequency stability tests is applied. Therefore the device is detemined to remain operating in band over the temperture and voltage range as tested.

LTE Band 12

Middle Channel, f_O = 1882.5 MHz			
Temperature (℃)	Power Supplied (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
-10	3.7	-1.76	-0.003
0		-1.09	-0.002
10		-1.27	-0.002
20		-1.22	-0.002
30		-2.12	-0.003
40		-1.76	-0.003
50		-1.99	-0.003
25	4.2	-1.80	-0.003
	3.5	-1.36	-0.002

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very samll. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted duing the frequency stability tests is applied. Therefore the device is detemined to remain operating in band over the temperture and voltage range as tested.

The EUT doesn't work below -10℃

9. OCCUPIED BANDWIDTH

9.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

9.2 PROVISIONS APPLICABLE

The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power

9.3 MEASUREMENT RESULT

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

LTE Band 2

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.0785	PASS
	MCH	6	0	1.0757	PASS
	HCH	6	0	1.0783	PASS
16QAM	LCH	6	0	1.0795	PASS
	MCH	6	0	1.0788	PASS
	HCH	6	0	1.0786	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6812	PASS
	MCH	15	0	2.6863	PASS
	HCH	15	0	2.6835	PASS
16QAM	LCH	15	0	2.6836	PASS
	MCH	15	0	2.6831	PASS
	HCH	15	0	2.6872	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4770	PASS
	MCH	25	0	4.4765	PASS
	HCH	25	0	4.4711	PASS
16QAM	LCH	25	0	4.4806	PASS
	MCH	25	0	4.4735	PASS
	HCH	25	0	4.4706	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9387	PASS
	MCH	50	0	8.9235	PASS
	HCH	50	0	8.9174	PASS
16QAM	LCH	50	0	8.9306	PASS
	MCH	50	0	8.9326	PASS
	HCH	50	0	8.9040	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.385	PASS
	MCH	75	0	13.368	PASS
	HCH	75	0	13.356	PASS
16QAM	LCH	75	0	13.396	PASS
	MCH	75	0	13.370	PASS
	HCH	75	0	13.357	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.830	PASS
	MCH	100	0	17.820	PASS
	HCH	100	0	17.813	PASS
16QAM	LCH	100	0	17.818	PASS
	MCH	100	0	17.827	PASS
	HCH	100	0	17.780	PASS

LTE Band 4

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.0784	PASS
	MCH	6	0	1.0759	PASS
	HCH	6	0	1.0783	PASS
16QAM	LCH	6	0	1.0811	PASS
	MCH	6	0	1.0784	PASS
	HCH	6	0	1.0776	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6831	PASS
	MCH	15	0	2.6874	PASS
	HCH	15	0	2.6819	PASS
16QAM	LCH	15	0	2.6840	PASS
	MCH	15	0	2.6858	PASS
	HCH	15	0	2.6843	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4743	PASS
	MCH	25	0	4.4748	PASS
	HCH	25	0	4.4746	PASS
16QAM	LCH	25	0	4.4814	PASS
	MCH	25	0	4.4749	PASS
	HCH	25	0	4.4732	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9334	PASS
	MCH	50	0	8.9341	PASS
	HCH	50	0	8.9165	PASS
16QAM	LCH	50	0	8.9450	PASS
	MCH	50	0	8.9101	PASS
	HCH	50	0	8.9290	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.393	PASS
	MCH	75	0	13.338	PASS
	HCH	75	0	13.402	PASS
16QAM	LCH	75	0	13.382	PASS
	MCH	75	0	13.332	PASS
	HCH	75	0	13.383	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.808	PASS
	MCH	100	0	17.757	PASS
	HCH	100	0	17.882	PASS
16QAM	LCH	100	0	17.823	PASS
	MCH	100	0	17.750	PASS
	HCH	100	0	17.878	PASS

LTE Band 12

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.0774	PASS
	MCH	6	0	1.0740	PASS
	HCH	6	0	1.0795	PASS
16QAM	LCH	6	0	1.0798	PASS
	MCH	6	0	1.0774	PASS
	HCH	6	0	1.0784	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth:3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6833	PASS
	MCH	15	0	2.6782	PASS
	HCH	15	0	2.6808	PASS
16QAM	LCH	15	0	2.6837	PASS
	MCH	15	0	2.6862	PASS
	HCH	15	0	2.6843	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4724	PASS
	MCH	25	0	4.4716	PASS
	HCH	25	0	4.4760	PASS
16QAM	LCH	25	0	4.4783	PASS
	MCH	25	0	4.4744	PASS
	HCH	25	0	4.4769	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9175	PASS
	MCH	50	0	8.9056	PASS
	HCH	50	0	8.9041	PASS
16QAM	LCH	50	0	8.9171	PASS
	MCH	50	0	8.9202	PASS
	HCH	50	0	8.8960	PASS

Note: Please refers to Appendix B for compliance test plots for Occupied Bandwidth (99%)

10. EMISSION BANDWIDTH

10.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

10.2 PROVISIONS APPLICABLE

The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

10.3 MEASUREMENT RESULT

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

LTE Band 2

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.244	PASS
	MCH	6	0	1.224	PASS
	HCH	6	0	1.245	PASS
16QAM	LCH	6	0	1.220	PASS
	MCH	6	0	1.232	PASS
	HCH	6	0	1.250	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.898	PASS
	MCH	15	0	2.902	PASS
	HCH	15	0	2.876	PASS
16QAM	LCH	15	0	2.887	PASS
	MCH	15	0	2.900	PASS
	HCH	15	0	2.871	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.863	PASS
	MCH	25	0	4.823	PASS
	HCH	25	0	4.784	PASS
16QAM	LCH	25	0	4.855	PASS
	MCH	25	0	4.754	PASS
	HCH	25	0	4.851	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.497	PASS
	MCH	50	0	9.370	PASS
	HCH	50	0	9.420	PASS
16QAM	LCH	50	0	9.511	PASS
	MCH	50	0	9.511	PASS
	HCH	50	0	9.537	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.10	PASS
	MCH	75	0	13.99	PASS
	HCH	75	0	13.98	PASS
16QAM	LCH	75	0	14.12	PASS
	MCH	75	0	14.02	PASS
	HCH	75	0	13.97	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.59	PASS
	MCH	100	0	18.61	PASS
	HCH	100	0	18.52	PASS
16QAM	LCH	100	0	18.59	PASS
	MCH	100	0	18.63	PASS
	HCH	100	0	18.55	PASS

LTE Band 4

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.229	PASS
	MCH	6	0	1.222	PASS
	HCH	6	0	1.242	PASS
16QAM	LCH	6	0	1.252	PASS
	MCH	6	0	1.246	PASS
	HCH	6	0	1.251	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.893	PASS
	MCH	15	0	2.874	PASS
	HCH	15	0	2.858	PASS
16QAM	LCH	15	0	2.882	PASS
	MCH	15	0	2.899	PASS
	HCH	15	0	2.889	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.838	PASS
	MCH	25	0	4.781	PASS
	HCH	25	0	4.831	PASS
16QAM	LCH	25	0	4.825	PASS
	MCH	25	0	4.799	PASS
	HCH	25	0	4.805	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.438	PASS
	MCH	50	0	9.588	PASS
	HCH	50	0	9.435	PASS
16QAM	LCH	50	0	9.512	PASS
	MCH	50	0	9.387	PASS
	HCH	50	0	9.459	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.393	PASS
	MCH	75	0	14.05	PASS
	HCH	75	0	14.02	PASS
16QAM	LCH	75	0	13.98	PASS
	MCH	75	0	13.97	PASS
	HCH	75	0	14.12	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.53	PASS
	MCH	100	0	18.53	PASS
	HCH	100	0	18.66	PASS
16QAM	LCH	100	0	18.57	PASS
	MCH	100	0	18.60	PASS
	HCH	100	0	18.63	PASS

LTE Band 12

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.227	PASS
	MCH	6	0	1.221	PASS
	HCH	6	0	1.249	PASS
16QAM	LCH	6	0	1.240	PASS
	MCH	6	0	1.235	PASS
	HCH	6	0	1.228	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.896	PASS
	MCH	15	0	2.883	PASS
	HCH	15	0	2.887	PASS
16QAM	LCH	15	0	2.877	PASS
	MCH	15	0	2.906	PASS
	HCH	15	0	2.880	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.797	PASS
	MCH	25	0	4.790	PASS
	HCH	25	0	4.774	PASS
16QAM	LCH	25	0	4.804	PASS
	MCH	25	0	4.820	PASS
	HCH	25	0	4.820	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.470	PASS
	MCH	50	0	9.411	PASS
	HCH	50	0	9.405	PASS
16QAM	LCH	50	0	9.477	PASS
	MCH	50	0	9.372	PASS
	HCH	50	0	9.365	PASS

Note: Please refers to Appendix B for compliance test plots for emission bandwidth (-26dBc)

11. BAND EDGE

11.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

11.2 PROVISIONS APPLICABLE

As Specified in FCC rules of §2.1051 §24.238(a) §27.53(g) §27.53(h) §27.53(m)
KDB 971168 D01v03 – Section 6.0

11.3 MEASUREMENT RESULT

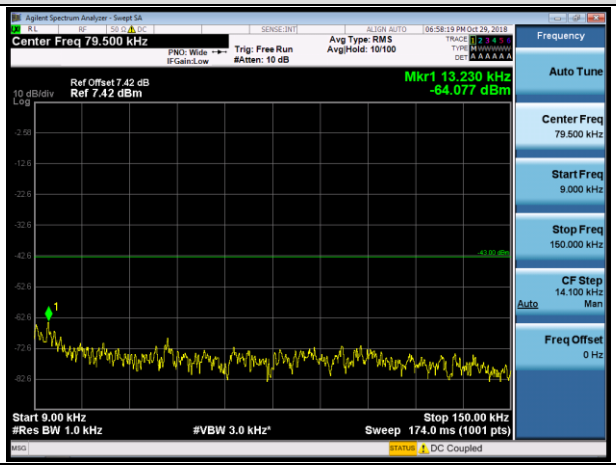
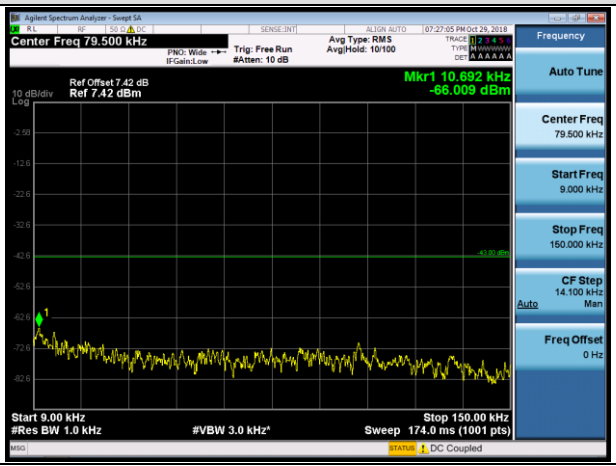
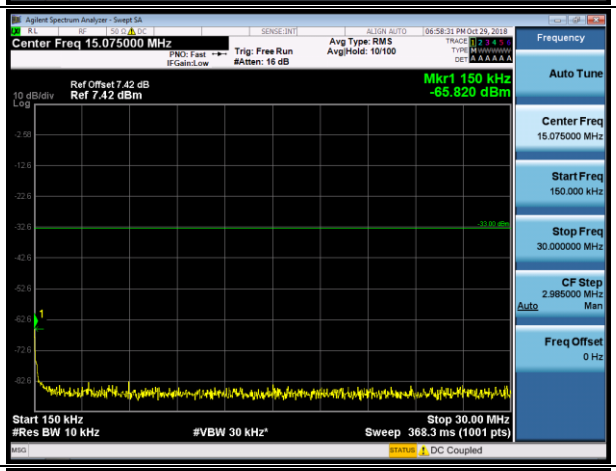
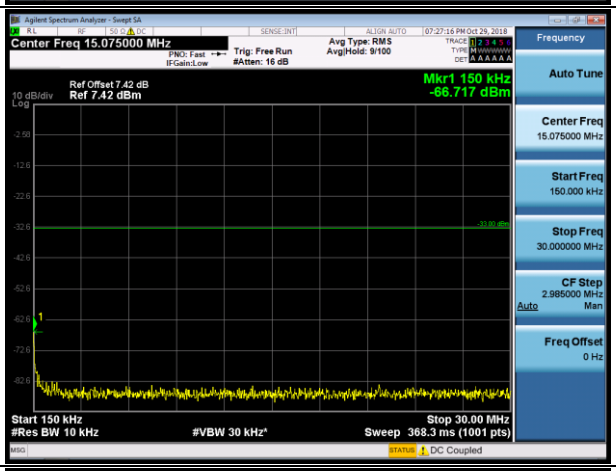
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequency. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.
The minimum permissible attenuation level of any spurious emission is 43 + log10(P[Watts]), where P is the transmitter power in Watts.

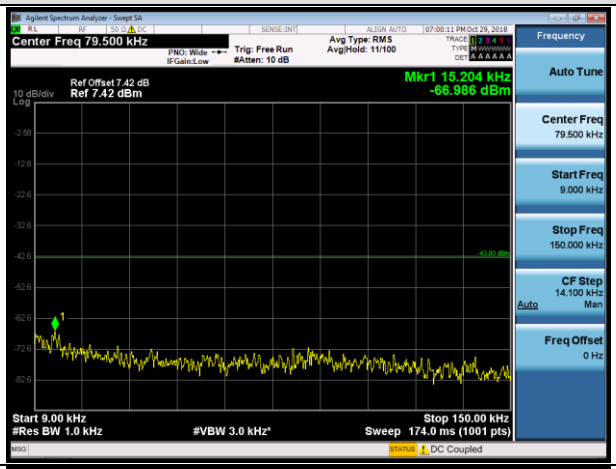
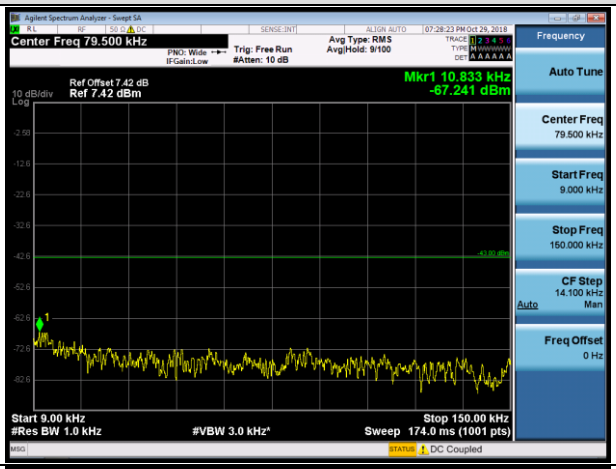
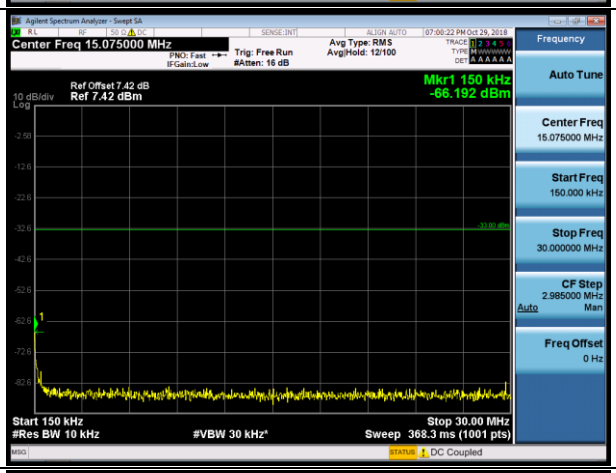
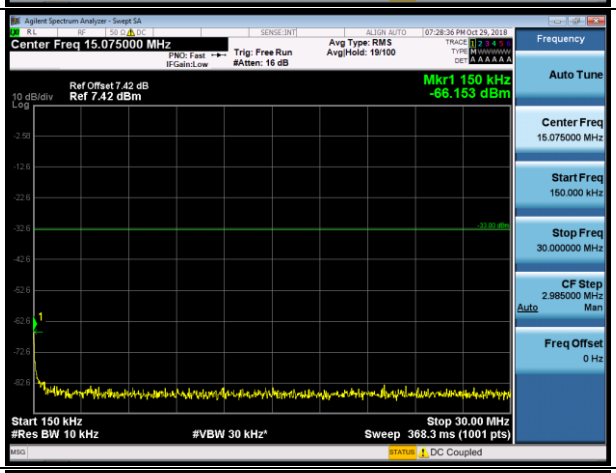
For Band 7:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

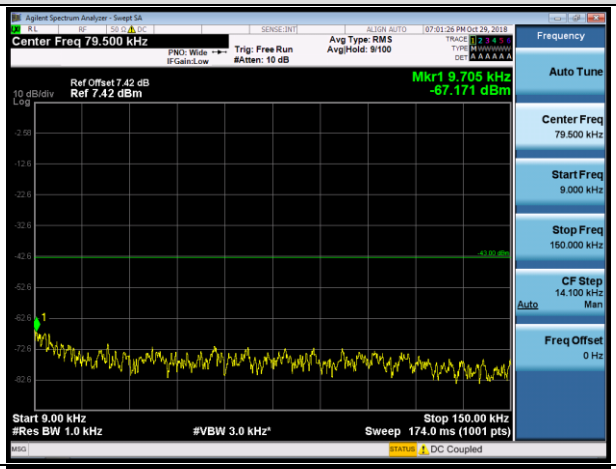
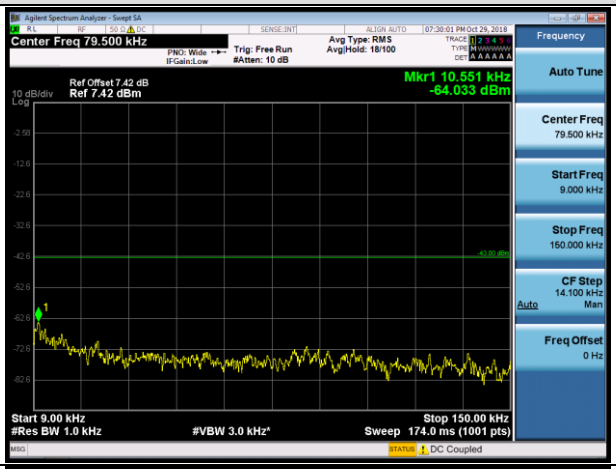
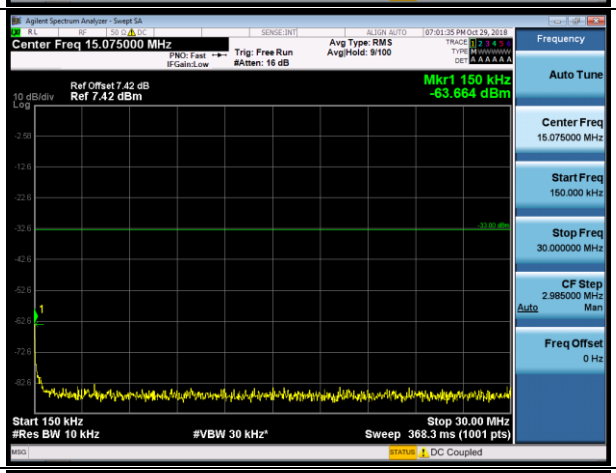
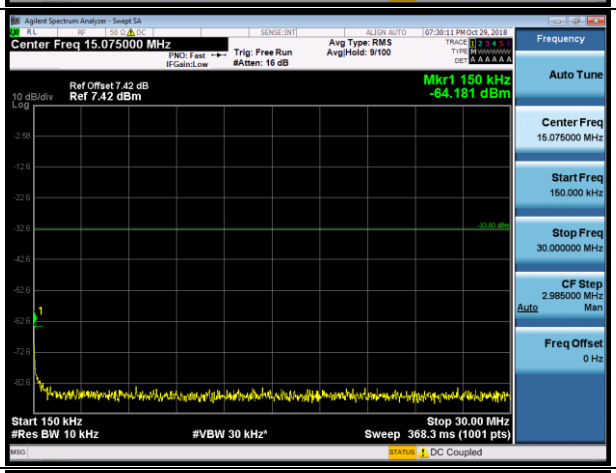
Please refers to Appendix C for compliance test plots for band edge

APPENDIX A TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

LTE BAND 2

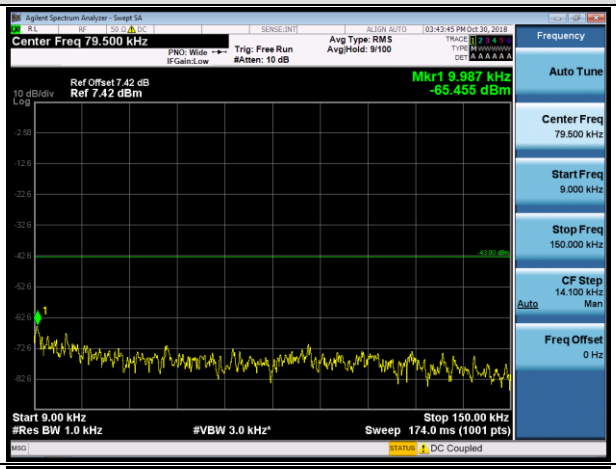
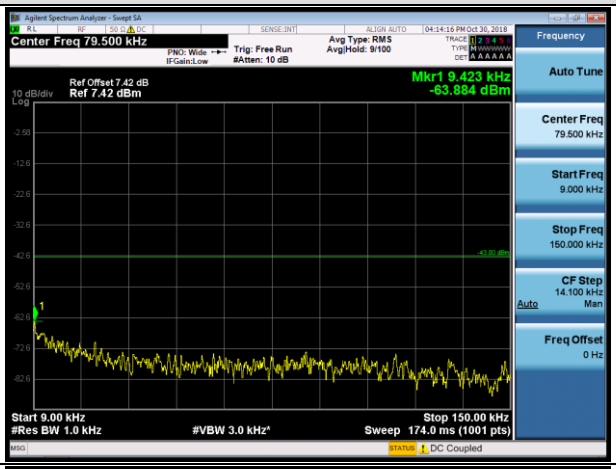
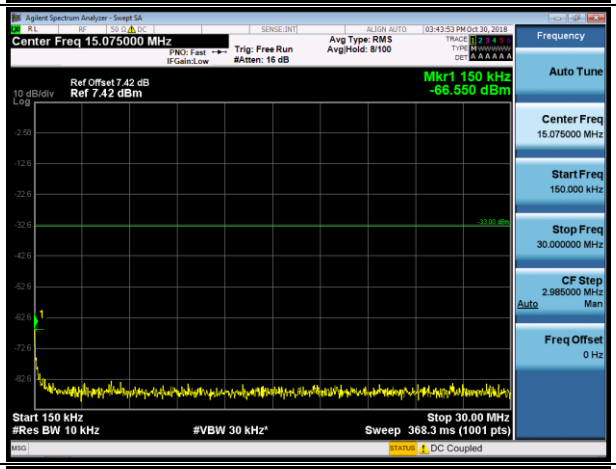
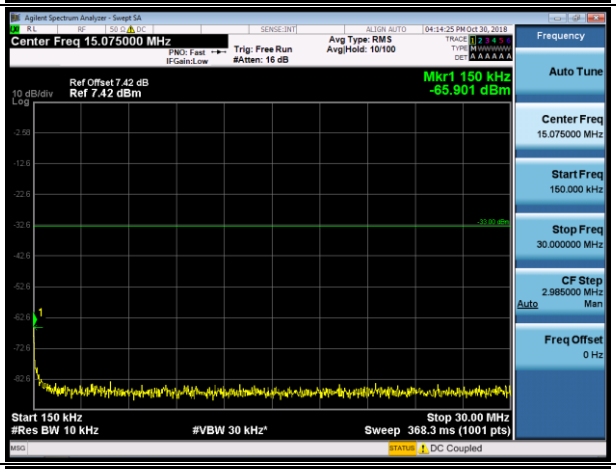
1.4MHz_LCH_QPSK_1RB#0	20MHz_LCH_QPSK_1RB#0
	
	

1.4MHz_MCH_QPSK_1RB#0	20MHz_MCH_QPSK_1RB#0
	
	

1.4MHz_HCH_QPSK_1RB#0	20MHz_HCH_QPSK_1RB#0
	
	

TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

LTE BAND 4

1.4MHz_LCH_QPSK_1RB#0	20MHz_LCH_QPSK_1RB#0
	
	

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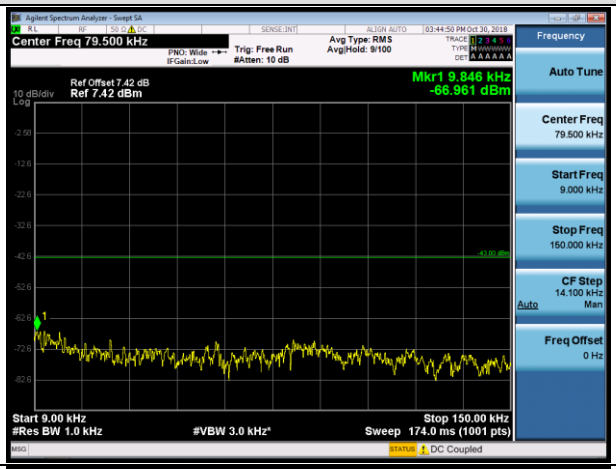	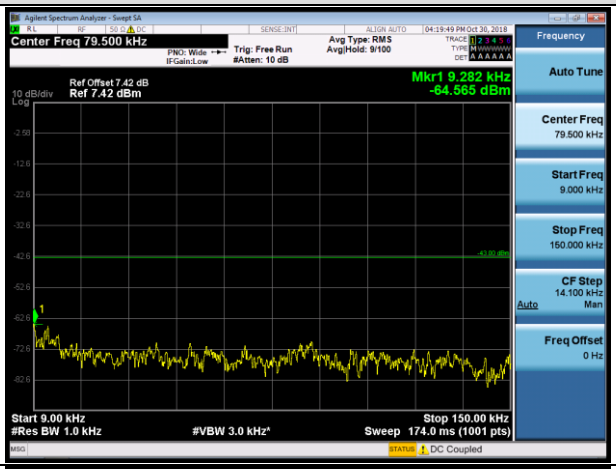
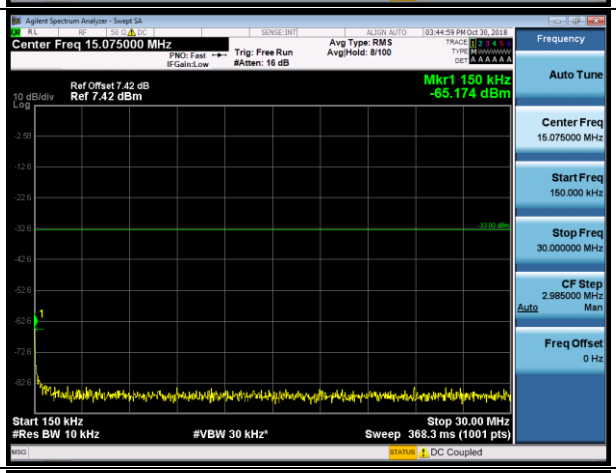	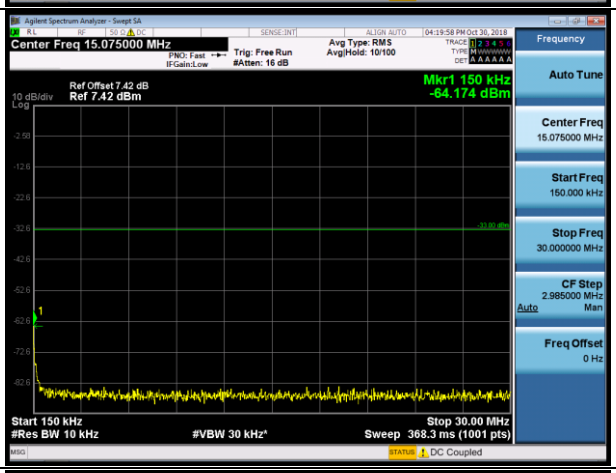

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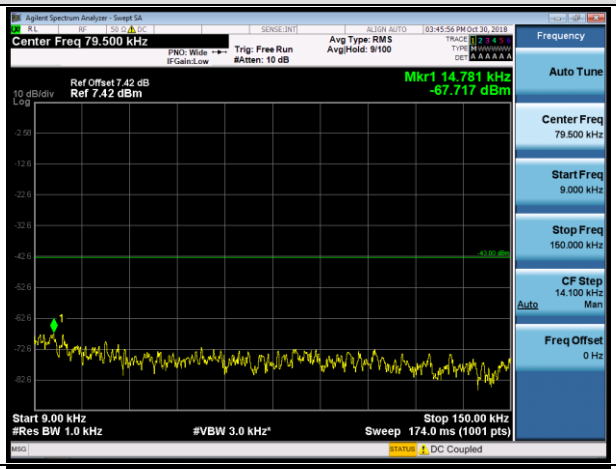
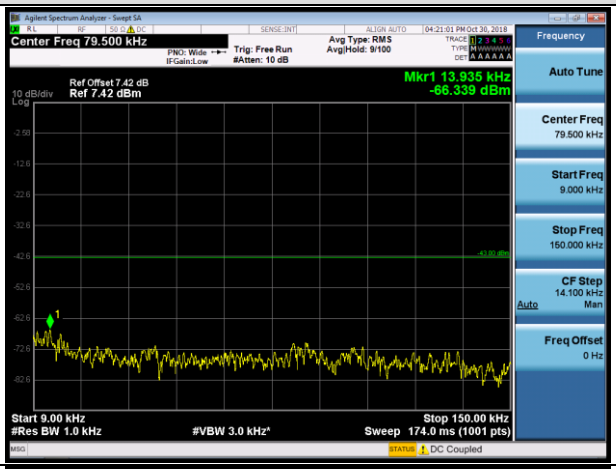
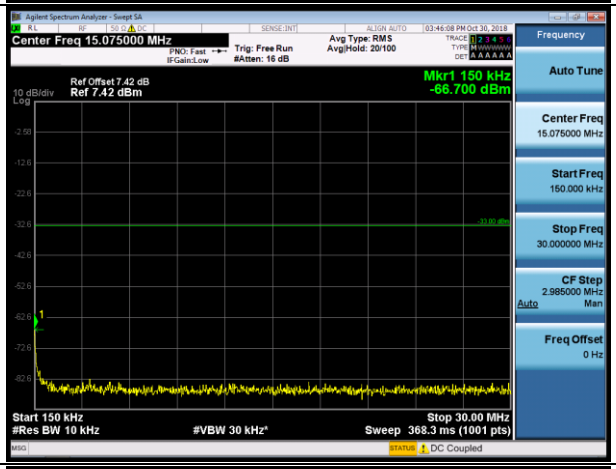
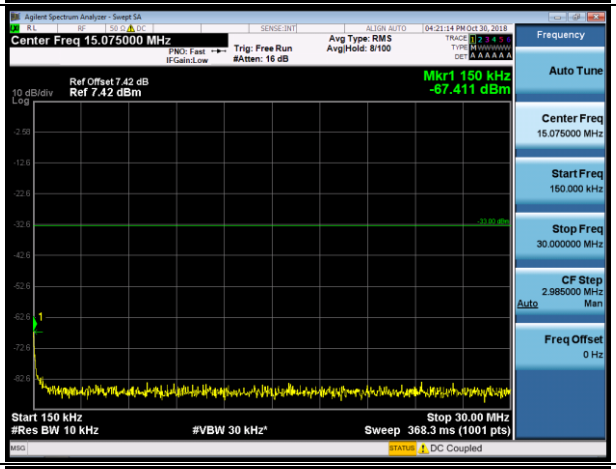
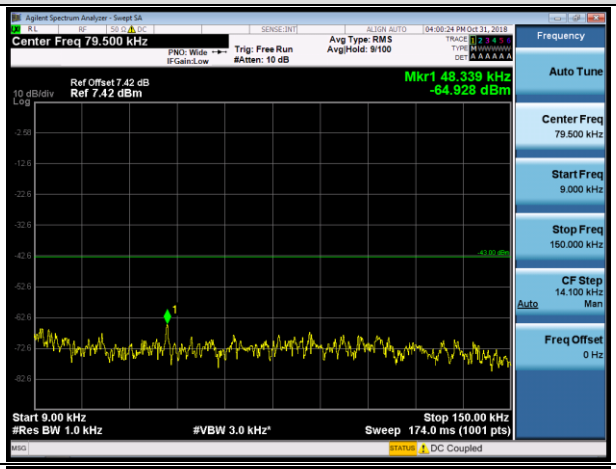
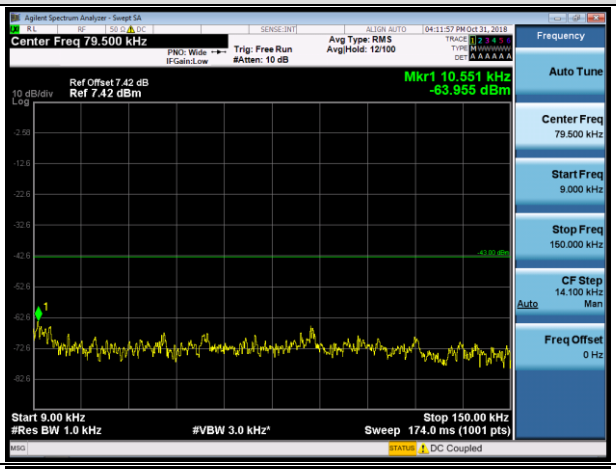
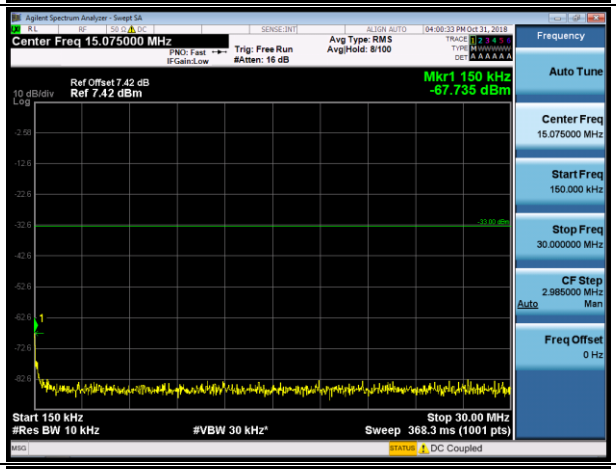
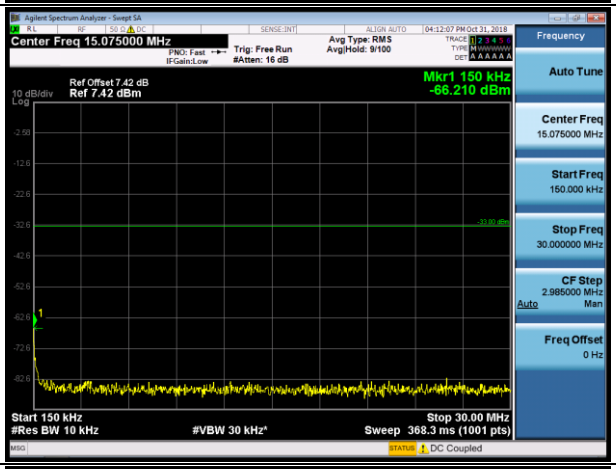
	
	

TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

LTE BAND 12

1.4MHz_LCH_QPSK_1RB#0	10MHz_LCH_QPSK_1RB#0