



FCC TEST REPORT

**Test report
On Behalf of
Streamax Technology Co.,Ltd.
For
CAMERA
Model No.: C6D**

FCC ID: 2AM6L-C6D

Prepared for : Streamax Technology Co.,Ltd.
21-23/F, Building B1, Zhiyuan, No. 1001, Xueyuan Avenue, Nanshan District,
Shenzhen, Guangdong,P.R. China.

Prepared By : Shenzhen HUAK Testing Technology Co., Ltd.
1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street,
Bao'an District, Shenzhen City, China

Date of Test: Jul. 05, 2018 ~ Aug. 31, 2018

Date of Report: Aug. 31, 2018

Report Number: HUAK180823885E



TEST RESULT CERTIFICATION

Applicant's name : Streamax Technology Co.,Ltd.
Address : 21-23/F, Building B1, Zhiyuan, No. 1001, Xueyuan Avenue,
Nanshan District, Shenzhen, Guangdong,P.R. China.

Manufacture's Name..... : Streamax Electronics Co.,Ltd.
Address : 5th-6thFloor, West, Chuangxiang 2nd Building, Yanxiang
Technology Park, 11# High-tech West Road, Guangming District,
Shenzhen, Guangdong Province, P.R. China .

Product description

Trade Mark: Streamax
Product name..... : CAMERA
Model and/or type reference : C6D
FCC Part 22 Rules
Standards..... : FCC Part 24 Rules
FCC Part 27 Rules

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen HUAK Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen HUAK Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Date of Test..... :
Date (s) of performance of tests..... : **Jul. 05, 2018 ~ Aug. 31, 2018**
Date of Issue..... : **Aug. 31, 2018**
Test Result : **Pass**

Testing Engineer : 

(Gary Qian)

Technical Manager : 

(Eden Hu)

Authorized Signatory : 

(Jason Zhou)



Revision History

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 31, 2018	Valid	Initial Release



TABLE OF CONTENTS

1. GENERAL INFORMATION	6
1.1 PRODUCT DESCRIPTION	6
1.2 RELATED SUBMITTAL(S) / GRANT (S).....	7
1.3 TEST METHODOLOGY	7
1.4 TEST FACILITY	8
1.5 SPECIAL ACCESSORIES.....	9
1.6 EQUIPMENT MODIFICATIONS	9
2. SYSTEM TEST CONFIGURATION	10
2.1 EUT CONFIGURATION	10
2.2 EUT EXERCISE	10
2.3 GENERAL TECHNICAL REQUIREMENTS.....	10
2.4 CONFIGURATION OF EUT SYSTEM	11
3. SUMMARY OF TEST RESULTS.....	12
4. DESCRIPTION OF TEST MODES	13
5. OUTPUT POWER	17
5.1 CONDUCTED OUTPUT POWER	17
5.1.1 MEASUREMENT METHOD.....	17
5.2 RADIATED OUTPUT POWER.....	39
5.2.1 MEASUREMENT METHOD.....	39
5.3. PEAK-TO-AVERAGE RATIO	50
5.3.1 MEASUREMENT METHOD.....	50
6. SPURIOUS EMISSION.....	74
6.1 CONDUCTED SPURIOUS EMISSION	74
6.2 RADIATED SPURIOUS EMISSION	76
7. FREQUENCY STABILITY	83
7.1 MEASUREMENT METHOD.....	83
7.2 PROVISIONS APPLICABLE	84
7.3 MEASUREMENT RESULT (WORST)	85
8. OCCUPIED BANDWIDTH.....	87
8.1 MEASUREMENT METHOD.....	87
8.2 PROVISIONS APPLICABLE	87
8.3 MEASUREMENT RESULT	87
9. EMISSION BANDWIDTH	96
9.1 MEASUREMENT METHOD.....	96
9.2 PROVISIONS APPLICABLE	96



9.3 MEASUREMENT RESULT	96
10. BAND EDGE	105
10.1 MEASUREMENT METHOD.....	105
10.2 PROVISIONS APPLICABLE	105
10.3 MEASUREMENT RESULT	105
APPENDIX A TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION ..	106
APPENDIX B TEST PLOTS FOR OCCUPIED BANDWIDTH (99%).....	118
EMISSION BANDWIDTH (-26dBC)	118
APPENDIX C TEST PLOTS FOR BAND EDGES	138
APPENDIX D PHOTOGRAPHS OF TEST SETUP	158

**1. GENERAL INFORMATION****1.1 PRODUCT DESCRIPTION**

A major technical description of EUT is described as following:

Radio System Type:	LTE			
Hardware version:	1439.02			
Software version:	V232			
Frequency Bands:	☒ FDD Band 2 ☒ FDD Band 4 ☒ FDD Band 5 ☒ FDD Band 12			
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 5	Transmission (TX): 824 to 848.9 MHz		
		Receiving (RX): 869 to 893.9 MHz		
LTE Band 12	Transmission (TX): 699 to 715.9 MHz			
	Receiving (RX): 729 to 745.9 MHz			
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 5	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz			
	☒ 10 MHz			
LTE Band 12	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz			
	☒ 10 MHz			
Antenna:	External Antenna			
Type of Modulation	QPSK/16QAM			
Antenna gain:	Band 2: 0.60dBi; Band 4: 0.64dBi; Band 5: 0.75dBi; Band 12: 0.78dBi			
Diversity Antenna Gain	Band 2: 0.55dBi; Band 4: 0.59dBi; Band 5: 0.72dBi; Band 12: 0.76dBi			
Power Supply	DC 9~36V			
Test Power Supply	DC 12V			
Single Card:	WCDMA/LTE Card Slot			
Power Class	3			
Extreme Vol. Limits:	DC10.2 V to 13.8 V (Normal: DC12 V)			
Temperature range	-10℃ to +50℃			
Note1: The High Voltage DC13.8V and Low Voltage DC10.2V were declared by manufacturer, The EUT couldn't be operating normally with higher or lower voltage..				



1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AM6L-C6D**, filing to comply with the FCC Part 22, Part 24 and Part 27 requirements

1.3 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.

**1.4 TEST FACILITY**

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

ALL TEST EQUIPMENT LIST

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



1.5 SPECIAL ACCESSORIES

Refer to section 2.4.

1.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.



2. SYSTEM TEST CONFIGURATION

2.1 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.

2.2 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.

2.3 GENERAL TECHNICAL REQUIREMENTS

Item Number	Item Description		FCC Rules
1	Output Power	Conducted output power	2.1046/22.913(a)(2)/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	2.1051/22.917(a)/24.238(a) 27.53(h)/ 27.53(g)
		Radiated spurious emission	
4	Frequency Stability		2.1055/22.355/24.235/27.54
5	Occupied Bandwidth		2.1049 (h)(i)
6	Band Edge		2.1051/22.917(a)/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.



2.4 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System

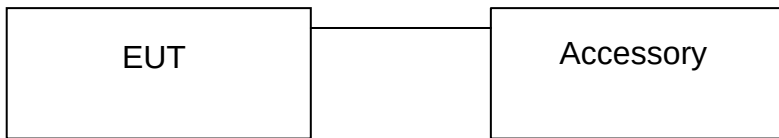


Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Remark
1	CAMERA	C6D	2AM6L-C6D	EUT
2	Antenna	N/A	N/A	Accessory

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

**3. SUMMARY OF TEST RESULTS**

Item Number	Item Description		FCC Rules	Result
1	Output Power	Conducted Output Power Radiated Output Power	2.1046/22.913(a)(2)/24.232(c)/ 27.50(d)(4)/ 27.50(h)(2)	Pass
2	Peak-to-Average Ratio	Peak-to-Average Ratio	24.232(d)	Pass
3	Spurious Emission	Conducted Spurious Emission Radiated Spurious Emission	2.1051/22.917(a)/24.238(a) 27.53(h)/ 27.53(g)	Pass
4	Frequency Stability		2.1055/22.355/24.235/27.54	Pass
5	Occupied Bandwidth		2.1049 (h)(i)	Pass
6	Band Edge		2.1051/22.917(a)/24.238(a) 27.53(h)/ 27.53(g)	Pass



4. 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 (15M)	Channel 18675	Channel 18900	Channel 19125
		1857.5 MHz	1880 MHz	1902.5 MHz
	TX (20M)	Channel 18700	Channel 18900	Channel 19100
		1860.0 MHz	1880 MHz	1900.0MHz
	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 (15M)	Channel 675	Channel 900	Channel 1125
		1937.5 MHz	1960 MHz	1982.5 MHz
	RX (20M)	Channel 700	Channel 900	Channel 1100
		1940.0 MHz	1960.0 MHz	1980.0 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 5	TX (1.4M)	Channel 20407	Channel 20525	Channel 20643
		824.7 MHz	836.5 MHz	848.3 MHz
	TX (3M)	Channel 20415	Channel 20525	Channel 20635
		825.5 MHz	836.5 MHz	847.5 MHz
	TX (5M)	Channel 20425	Channel 20525	Channel 20625
		826.5 MHz	836.5 MHz	846.5 MHz
	TX (10M)	Channel 20450	Channel 20525	Channel 20600
		829 MHz	836.5 MHz	844 MHz
	RX (1.4M)	Channel 2404	Channel 2525	Channel 2463
		869.4 MHz	881.5 MHz	893.3 MHz
	RX (3M)	Channel 2415	Channel 2525	Channel 2635
		870.5 MHz	881.5 MHz	892.5 MHz
	RX (5M)	Channel 2425	Channel 2525	Channel 2625
		871.5 MHz	881.5 MHz	891.5 MHz
	RX (10M)	Channel 2450	Channel 2525	Channel 2600
		874 MHz	881.5 MHz	889 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
		699.7MHz	707.5MHz	715.3MHz
	TX (3M)	Channel 23025	Channel 23095	Channel 23165
		700.5MHz	707.5MHz	714.5MHz
	TX (5M)	Channel 23035	Channel 23095	Channel 23155
		701.5MHz	707.5MHz	713.5MHz
	TX (10M)	Channel 23060	Channel 23095	Channel 23130
		704 MHz	707.5 MHz	711 MHz
	RX (1.4M)	Channel 5017	Channel 5095	Channel 5173
		729.7MHz	737.5MHz	745.3MHz
	RX (3M)	Channel 5025	Channel 5095	Channel 5165
		730.5MHz	737.5MHz	744.5MHz
	RX (5M)	Channel 5035	Channel 5095	Channel 5155
		731.5MHz	737.5MHz	743.5MHz
	RX (10M)	Channel 5060	Channel 5095	Channel 5130
		734MHz	737.5MHz	741MHz



5. OUTPUT POWER

5.1 CONDUCTED OUTPUT POWER

5.1.1 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.

5.1.2 MEASUREMENT RESULT

Conducted Output Power Limits		
Mode	Average Power	Tolerance(dB)
LTE	23dBm (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	23.08
				1	49	0	23.14
				1	99	0	23.35
				50	0	1	23.12
				50	25	1	23.15
				50	49	1	22.12
				100	0	1	22.01
			16QAM	1	0	1	21.59
				1	49	1	21.45
				1	99	1	21.91
				50	0	2	21.35
				50	25	2	21.24
				50	49	2	21.17
				100	0	2	21.14
	18900	1880.0	QPSK	1	0	0	22.97
				1	49	0	22.84
				1	99	0	22.79
				50	0	1	22.68
				50	25	1	22.57
				50	49	1	21.95
				100	0	1	21.98
			16QAM	1	0	1	21.76
				1	49	1	21.73
				1	99	1	21.67
				50	0	2	21.56
				50	25	2	21.57
				50	49	2	21.08
				100	0	2	21.08
	19100	1900.0	QPSK	1	0	0	22.94
				1	49	0	22.98
				1	99	0	23.25
				50	0	1	23.14
				50	25	1	23.18
				50	49	1	22.13
				100	0	1	22.04
			16QAM	1	0	1	21.39
				1	49	1	21.56
				1	99	1	21.72
				50	0	2	21.54
				50	25	2	21.33
				50	49	2	21.22
				100	0	2	21.08



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	18675	1857.5	QPSK	1	0	0	23.18
				1	37	0	23.21
				1	74	0	23.44
				36	0	1	23.32
				36	16	1	23.27
				36	35	1	22.03
				75	0	1	22.07
			16QAM	1	0	1	22.21
				1	37	1	22.36
				1	74	1	22.61
				36	0	2	22.35
				36	16	2	22.21
				36	35	2	21.08
				75	0	2	21.15
	18900	1880.0	QPSK	1	0	0	22.93
				1	37	0	22.85
				1	74	0	22.65
				36	0	1	22.94
				36	16	1	22.55
				36	35	1	21.94
				75	0	1	21.90
			16QAM	1	0	1	22.43
				1	37	1	22.32
				1	74	1	22.26
				36	0	2	22.23
				36	16	2	22.17
				36	35	2	21.04
				75	0	2	20.99
	19125	1902.5	QPSK	1	0	0	23.05
				1	37	0	23.11
				1	74	0	23.19
				36	0	1	23.21
				36	16	1	23.23
				36	35	1	22.25
				75	0	1	22.08
			16QAM	1	0	1	21.61
				1	37	1	21.75
				1	74	1	21.85
				36	0	2	21.56
				36	16	2	21.64
				36	35	2	21.35
				75	0	2	21.27



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	18650	1855.0	QPSK	1	0	0	23.27
				1	24	0	23.31
				1	49	0	23.35
				25	0	1	22.35
				25	12	1	22.24
				25	25	1	22.19
				50	0	1	22.16
			16QAM	1	0	1	22.36
				1	24	1	22.44
				1	49	1	22.54
				25	0	2	21.36
				25	12	2	21.44
				25	25	2	21.25
				50	0	2	21.25
	18900	1880.0	QPSK	1	0	0	23.35
				1	24	0	23.28
				1	49	0	23.22
				25	0	1	23.17
				25	12	1	23.12
				25	25	1	22.04
				50	0	1	21.92
			16QAM	1	0	1	22.55
				1	24	1	22.49
				1	49	1	22.34
				25	0	2	22.24
				25	12	2	22.13
				25	25	2	21.16
				50	0	2	21.05
	19150	1905.0	QPSK	1	0	0	23.31
				1	24	0	23.22
				1	49	0	23.28
				25	0	1	23.29
				25	12	1	22.31
				25	25	1	22.32
				50	0	1	22.16
			16QAM	1	0	1	22.07
				1	24	1	22.01
				1	49	1	21.82
				25	0	2	21.71
				25	12	2	21.66
				25	25	2	21.40
				50	0	2	21.37



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	18625	1852.5	QPSK	1	0	0	23.22
				1	12	0	23.17
				1	24	0	23.07
				12	0	1	22.56
				12	6	1	22.41
				12	11	1	22.06
				25	0	1	22.16
			16QAM	1	0	1	21.94
				1	12	1	21.75
				1	24	1	21.85
				12	0	2	21.56
				12	6	2	21.32
				12	11	2	21.16
				25	0	2	21.31
	18900	1880.0	QPSK	1	0	0	23.10
				1	12	0	23.12
				1	24	0	23.11
				12	0	1	21.89
				12	6	1	21.91
				12	11	1	21.92
				25	0	1	21.95
			16QAM	1	0	1	22.19
				1	12	1	21.56
				1	24	1	21.99
				12	0	2	21.84
				12	6	2	21.55
				12	11	2	21.12
				25	0	2	21.05
	19175	1907.5	QPSK	1	0	0	23.13
				1	12	0	23.11
				1	24	0	23.06
				12	0	1	22.87
				12	6	1	22.57
				12	11	1	22.16
				25	0	1	22.12
			16QAM	1	0	1	21.99
				1	12	1	21.53
				1	24	1	21.51
				12	0	2	21.34
				12	6	2	21.57
				12	11	2	21.23
				25	0	2	21.23



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	18615	1851.5	QPSK	1	0	0	23.22
				1	7	0	23.21
				1	14	0	23.33
				8	0	1	23.12
				8	4	1	23.14
				8	7	1	22.11
				15	0	1	22.07
			16QAM	1	0	1	22.46
				1	7	1	22.16
				1	14	1	22.18
				8	0	2	21.35
				8	4	2	21.24
				8	7	2	21.21
				15	0	2	21.12
	18900	1880.0	QPSK	1	0	0	23.09
				1	7	0	23.08
				1	14	0	23.10
				8	0	1	22.13
				8	4	1	22.15
				8	7	1	22.00
				15	0	1	22.05
			16QAM	1	0	1	22.43
				1	7	1	22.41
				1	14	1	22.37
				8	0	2	22.35
				8	4	2	22.14
				8	7	2	21.00
				15	0	2	21.15
	19185	1908.5	QPSK	1	0	0	23.33
				1	7	0	23.25
				1	14	0	23.09
				8	0	1	22.98
				8	4	1	22.84
				8	7	1	22.13
				15	0	1	22.22
			16QAM	1	0	1	22.24
				1	7	1	22.12
				1	14	1	21.73
				8	0	2	21.36
				8	4	2	21.54
				8	7	2	21.23
				15	0	2	21.31



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	23.32
				1	3	0	23.36
				1	5	0	23.23
				3	0	0	23.25
				3	2	0	23.19
				3	3	0	22.21
				6	0	1	22.66
			16QAM	1	0	1	22.56
				1	2	1	22.66
				1	5	1	22.54
				3	0	1	22.37
				3	1	1	22.45
				3	2	1	21.12
				6	0	2	22.66
	18900	1880.0	QPSK	1	0	0	22.96
				1	2	0	22.67
				1	5	0	22.91
				3	0	0	22.16
				3	1	0	22.31
				3	2	0	23.06
				6	0	1	21.96
			16QAM	1	0	1	22.24
				1	2	1	22.15
				1	5	1	22.14
				3	0	1	22.08
				3	1	1	22.01
				3	2	1	21.96
				6	0	2	21.07
	19193	1909.3	QPSK	1	0	0	23.25
				1	2	0	23.17
				1	5	0	23.13
				3	0	0	23.11
				3	1	0	23.15
				3	2	0	23.17
				6	0	1	22.65
			16QAM	1	0	1	22.50
				1	2	1	22.45
				1	5	1	22.24
				3	0	1	22.31
				3	1	1	22.12
				3	2	1	22.33
				6	0	2	21.29

**LTE Band 4**

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	20050	1720.0	QPSK	1	0	0	23.19
				1	49	0	23.11
				1	99	0	23.56
				50	0	1	23.12
				50	25	1	23.18
				50	49	1	22.38
				100	0	1	22.33
			16QAM	1	0	1	21.78
				1	49	1	21.89
				1	99	1	22.13
				50	0	2	22.11
				50	25	2	22.08
				50	49	2	21.44
				100	0	2	21.38
	20175	1732.5	QPSK	1	0	0	22.97
				1	49	0	22.88
				1	99	0	22.96
				50	0	1	22.58
				50	25	1	22.47
				50	49	1	22.09
				100	0	1	22.10
			16QAM	1	0	1	22.24
				1	49	1	22.19
				1	99	1	21.59
				50	0	2	21.45
				50	25	2	21.33
				50	49	2	21.18
				100	0	2	21.16
	20300	1745.0	QPSK	1	0	0	23.25
				1	49	0	23.43
				1	99	0	23.72
				50	0	1	23.45
				50	25	1	23.23
				50	49	1	22.21
				100	0	1	22.19
			16QAM	1	0	1	21.77
				1	49	1	21.68
				1	99	1	22.16
				50	0	2	22.13
				50	25	2	22.04
				50	49	2	21.28
				100	0	2	21.26



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	20025	1717.5	QPSK	1	0	0	23.81
				1	37	0	23.54
				1	74	0	23.36
				36	0	1	23.32
				36	16	1	23.25
				36	35	1	22.44
				75	0	1	22.35
			16QAM	1	0	1	22.52
				1	37	1	22.68
				1	74	1	23.18
				36	0	2	23.12
				36	16	2	23.11
				36	35	2	21.36
				75	0	2	21.41
	20175	1732.5	QPSK	1	0	0	22.96
				1	37	0	22.87
				1	74	0	22.74
				36	0	1	22.58
				36	16	1	22.43
				36	35	1	22.15
				75	0	1	22.19
			16QAM	1	0	1	22.77
				1	37	1	22.56
				1	74	1	22.39
				36	0	2	22.23
				36	16	2	22.17
				36	35	2	21.11
				75	0	2	21.26
	20325	1747.5	QPSK	1	0	0	23.29
				1	37	0	23.23
				1	74	0	23.72
				36	0	1	23.65
				36	16	1	23.54
				36	35	1	22.22
				75	0	1	22.12
			16QAM	1	0	1	21.64
				1	37	1	21.89
				1	74	1	22.43
				36	0	2	22.33
				36	16	2	22.27
				36	35	2	21.39
				75	0	2	21.18



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20000	1715.0	QPSK	1	0	0	23.53
				1	24	0	23.35
				1	49	0	23.66
				25	0	1	23.54
				25	12	1	23.57
				25	25	1	22.53
				50	0	1	22.41
			16QAM	1	0	1	22.19
				1	24	1	22.21
				1	49	1	22.75
				25	0	2	22.56
				25	12	2	22.42
				25	25	2	21.57
				50	0	2	21.45
	20175	1732.5	QPSK	1	0	0	23.21
				1	24	0	23.11
				1	49	0	22.91
				25	0	1	22.84
				25	12	1	22.75
				25	25	1	22.06
				50	0	1	22.20
			16QAM	1	0	1	22.47
				1	24	1	22.22
				1	49	1	21.95
				25	0	2	21.85
				25	12	2	21.63
				25	25	2	21.31
				50	0	2	21.30
	20350	1750.0	QPSK	1	0	0	23.15
				1	24	0	23.26
				1	49	0	23.52
				25	0	1	23.45
				25	12	1	23.31
				25	25	1	22.18
				50	0	1	22.17
			16QAM	1	0	1	21.95
				1	24	1	22.31
				1	49	1	22.35
				25	0	2	22.27
				25	12	2	22.23
				25	25	2	21.34
				50	0	2	21.16



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	19975	1712.5	QPSK	1	0	0	23.41
				1	12	0	23.35
				1	24	0	23.52
				12	0	1	22.56
				12	6	1	22.45
				12	11	1	22.29
				25	0	1	22.39
			16QAM	1	0	1	22.19
				1	12	1	22.34
				1	24	1	22.65
				12	0	2	22.31
				12	6	2	22.43
				12	11	2	21.47
				25	0	2	21.48
	20175	1732.5	QPSK	1	0	0	23.33
				1	12	0	23.13
				1	24	0	23.11
				12	0	1	22.25
				12	6	1	22.21
				12	11	1	22.19
				25	0	1	22.28
			16QAM	1	0	1	22.29
				1	12	1	22.25
				1	24	1	22.20
				12	0	2	22.13
				12	6	2	22.03
				12	11	2	21.35
				25	0	2	21.35
	20375	1752.5	QPSK	1	0	0	23.16
				1	12	0	23.33
				1	24	0	23.45
				12	0	1	23.41
				12	6	1	23.39
				12	11	1	22.45
				25	0	1	22.24
			16QAM	1	0	1	22.02
				1	12	1	21.94
				1	24	1	21.89
				12	0	2	21.65
				12	6	2	21.54
				12	11	2	21.44
				25	0	2	21.33



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	19965	1711.5	QPSK	1	0	0	23.50
				1	7	0	23.53
				1	14	0	23.55
				8	0	1	23.49
				8	4	1	22.35
				8	7	1	22.40
				15	0	1	22.37
			16QAM	1	0	1	22.50
				1	7	1	22.52
				1	14	1	22.53
				8	0	2	22.24
				8	4	2	22.15
				8	7	2	21.52
				15	0	2	21.39
	20175	1732.5	QPSK	1	0	0	23.44
				1	7	0	23.42
				1	14	0	23.40
				8	0	1	23.32
				8	4	1	23.31
				8	7	1	22.30
				15	0	1	22.21
			16QAM	1	0	1	22.72
				1	7	1	22.56
				1	14	1	22.40
				8	0	2	21.55
				8	4	2	21.35
				8	7	2	21.18
				15	0	2	21.25
	20385	1753.5	QPSK	1	0	0	23.19
				1	7	0	23.34
				1	14	0	23.48
				8	0	1	22.13
				8	4	1	22.24
				8	7	1	22.36
				15	0	1	22.28
			16QAM	1	0	1	22.15
				1	7	1	22.12
				1	14	1	22.07
				8	0	2	21.63
				8	4	2	21.52
				8	7	2	21.39
				15	0	2	21.35



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	23.29
				1	2	0	23.37
				1	5	0	23.45
				3	0	0	23.45
				3	1	0	23.49
				3	2	0	23.51
				6	0	1	22.32
			16QAM	1	0	1	22.33
				1	2	1	22.32
				1	5	1	22.31
				3	0	1	22.23
				3	1	1	22.25
				3	2	1	22.22
				6	0	2	21.61
	20175	1732.5	QPSK	1	0	0	23.44
				1	2	0	23.42
				1	5	0	23.39
				3	0	0	23.27
				3	1	0	23.33
				3	2	0	23.38
				6	0	1	22.25
			16QAM	1	0	1	22.73
				1	2	1	22.57
				1	5	1	22.72
				3	0	1	22.68
				3	1	1	22.57
				3	2	1	22.45
				6	0	2	21.39
	20393	1754.3	QPSK	1	0	0	23.53
				1	2	0	23.48
				1	5	0	23.23
				3	0	0	23.03
				3	1	0	22.89
				3	2	0	23.35
				6	0	1	22.42
			16QAM	1	0	1	22.74
				1	2	1	22.84
				1	5	1	22.56
				3	0	1	22.63
				3	1	1	22.57
				3	2	1	22.49
				6	0	2	21.34

**LTE Band 5**

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20450	829	QPSK	1	0	0	23.51
				1	24	0	23.42
				1	49	0	23.45
				25	0	1	22.51
				25	12	1	22.52
				25	25	1	22.72
				50	0	1	22.68
			16QAM	1	0	1	22.51
				1	24	1	22.29
				1	49	1	22.04
				25	0	2	21.97
				25	12	2	21.84
				25	25	2	21.69
				50	0	2	21.75
	20525	836.5	QPSK	1	0	0	23.83
				1	24	0	23.54
				1	49	0	23.27
				25	0	1	23.22
				25	12	1	23.10
				25	25	1	23.03
				50	0	1	22.95
			16QAM	1	0	1	22.88
				1	24	1	22.94
				1	49	1	23.15
				25	0	2	23.11
				25	12	2	23.03
				25	25	2	22.14
				50	0	2	22.12
	20600	844	QPSK	1	0	0	23.86
				1	24	0	23.81
				1	49	0	23.77
				25	0	1	23.22
				25	12	1	23.16
				25	25	1	23.02
				50	0	1	23.04
			16QAM	1	0	1	22.93
				1	24	1	22.72
				1	49	1	22.63
				25	0	2	22.52
				25	12	2	22.19
				25	25	2	22.02
				50	0	2	22.13



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	20425	826.5	QPSK	1	0	0	23.55
				1	12	0	23.47
				1	24	0	23.42
				12	0	1	22.54
				12	6	1	22.55
				12	11	1	22.74
				25	0	1	22.69
			16QAM	1	0	1	22.53
				1	12	1	22.32
				1	24	1	22.10
				12	0	2	22.03
				12	6	2	21.88
				12	11	2	21.73
				25	0	2	21.81
	20525	836.5	QPSK	1	0	0	23.85
				1	12	0	23.57
				1	24	0	23.31
				12	0	1	23.23
				12	6	1	23.12
				12	11	1	23.06
				25	0	1	23.00
			16QAM	1	0	1	22.92
				1	12	1	23.02
				1	24	1	23.17
				12	0	2	23.14
				12	6	2	23.06
				12	11	2	22.17
				25	0	2	22.14
	20625	846.5	QPSK	1	0	0	23.88
				1	12	0	23.84
				1	24	0	23.82
				12	0	1	23.23
				12	6	1	23.17
				12	11	1	23.04
				25	0	1	23.07
			16QAM	1	0	1	22.97
				1	12	1	22.74
				1	24	1	22.64
				12	0	2	22.55
				12	6	2	22.21
				12	11	2	22.06
				25	0	2	22.16



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	20415	825.5	QPSK	1	0	0	23.62
				1	7	0	23.59
				1	14	0	23.57
				8	0	1	23.21
				8	4	1	23.12
				8	7	1	22.74
				15	0	1	22.57
			16QAM	1	0	1	23.04
				1	7	1	22.99
				1	14	1	22.97
				8	0	2	21.63
				8	4	2	21.52
				8	7	2	21.63
				15	0	2	21.66
	20525	836.5	QPSK	1	0	0	23.93
				1	7	0	23.91
				1	14	0	23.01
				8	0	1	23.87
				8	4	1	23.54
				8	7	1	23.14
				15	0	1	22.99
			16QAM	1	0	1	23.20
				1	7	1	23.14
				1	14	1	23.15
				8	0	2	23.11
				8	4	2	22.96
				8	7	2	21.94
				15	0	2	22.18
	20635	847.5	QPSK	1	0	0	23.94
				1	7	0	23.93
				1	14	0	23.89
				8	0	1	23.66
				8	4	1	23.32
				8	7	1	22.99
				15	0	1	23.05
			16QAM	1	0	1	23.41
				1	7	1	23.39
				1	14	1	23.37
				8	0	2	23.34
				8	4	2	23.28
				8	7	2	22.01
				15	0	2	22.04



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	20407	824.7	QPSK	1	0	0	23.70
				1	2	0	23.68
				1	5	0	23.64
				3	0	0	23.54
				3	1	0	23.27
				3	2	0	23.75
				6	0	1	22.64
			16QAM	1	0	1	23.02
				1	2	1	22.95
				1	5	1	22.93
				3	0	1	22.84
				3	1	1	22.82
				3	2	1	22.78
				6	0	2	21.74
	20525	836.5	QPSK	1	0	0	23.95
				1	2	0	23.91
				1	5	0	23.12
				3	0	0	23.05
				3	1	0	23.07
				3	2	0	23.06
				6	0	1	23.17
			16QAM	1	0	1	23.31
				1	2	1	23.29
				1	5	1	23.28
				3	0	1	23.18
				3	1	1	23.14
				3	2	1	23.05
				6	0	2	21.86
	20643	848.3	QPSK	1	0	0	23.73
				1	2	0	23.77
				1	5	0	23.82
				3	0	0	23.84
				3	1	0	23.86
				3	2	0	23.90
				6	0	1	23.00
			16QAM	1	0	1	22.82
				1	2	1	22.78
				1	5	1	22.72
				3	0	1	22.75
				3	1	1	22.78
				3	2	1	22.74
				6	0	2	22.05

**LTE Band 12**

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	23060	704	QPSK	1	0	0	23.85
				1	24	0	23.93
				1	49	0	23.94
				25	0	1	23.91
				25	12	1	23.82
				25	25	1	23.11
				50	0	1	23.19
			16QAM	1	0	1	22.84
				1	24	1	22.88
				1	49	1	22.87
				25	0	2	22.82
				25	12	2	22.31
				25	25	2	22.21
				50	0	2	22.19
	23095	707.5	QPSK	1	0	0	23.05
				1	24	0	23.08
				1	49	0	23.24
				25	0	1	23.53
				25	12	1	23.48
				25	25	1	22.99
				50	0	1	23.14
			16QAM	1	0	1	23.11
				1	24	1	23.13
				1	49	1	23.12
				25	0	2	22.25
				25	12	2	22.11
				25	25	2	22.14
				50	0	2	22.08
	23130	711	QPSK	1	0	0	23.77
				1	24	0	23.71
				1	49	0	23.64
				25	0	1	23.49
				25	12	1	23.45
				25	25	1	22.83
				50	0	1	22.82
			16QAM	1	0	1	22.71
				1	24	1	22.61
				1	49	1	22.36
				25	0	2	22.32
				25	12	2	22.17
				25	25	2	21.74
				50	0	2	22.05



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	23035	701.5	QPSK	1	0	0	23.89
				1	12	0	23.96
				1	24	0	23.05
				12	0	1	23.94
				12	6	1	23.86
				12	11	1	23.15
				25	0	1	23.21
			16QAM	1	0	1	22.89
				1	12	1	22.92
				1	24	1	22.90
				12	0	2	22.85
				12	6	2	22.34
				12	11	2	22.23
				25	0	2	22.23
	23095	707.5	QPSK	1	0	0	23.08
				1	12	0	23.11
				1	24	0	23.27
				12	0	1	23.58
				12	6	1	23.51
				12	11	1	23.01
				25	0	1	23.17
			16QAM	1	0	1	23.13
				1	12	1	23.15
				1	24	1	23.16
				12	0	2	22.28
				12	6	2	22.16
				12	11	2	22.15
				25	0	2	22.11
	23155	713.5	QPSK	1	0	0	23.81
				1	12	0	23.74
				1	24	0	23.67
				12	0	1	23.52
				12	6	1	23.47
				12	11	1	22.86
				25	0	1	22.85
			16QAM	1	0	1	22.74
				1	12	1	22.63
				1	24	1	22.40
				12	0	2	22.34
				12	6	2	22.23
				12	11	2	21.76
				25	0	2	22.11



BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	23025	700.5	QPSK	1	0	0	23.81
				1	7	0	23.88
				1	14	0	23.02
				8	0	1	23.94
				8	4	1	23.87
				8	7	1	23.21
				15	0	1	23.06
			16QAM	1	0	1	23.18
				1	7	1	23.27
				1	14	1	23.33
				8	0	2	23.26
				8	4	2	23.18
				8	7	2	22.32
				15	0	2	22.07
	23095	707.5	QPSK	1	0	0	23.23
				1	7	0	23.26
				1	14	0	23.32
				8	0	1	23.57
				8	4	1	23.36
				8	7	1	23.28
				15	0	1	23.18
			16QAM	1	0	1	23.52
				1	7	1	23.49
				1	14	1	23.43
				8	0	2	22.65
				8	4	2	22.54
				8	7	2	22.28
				15	0	2	22.09
	23165	714.5	QPSK	1	0	0	23.05
				1	7	0	23.14
				1	14	0	23.91
				8	0	1	23.84
				8	4	1	23.75
				8	7	1	22.73
				15	0	1	22.95
			16QAM	1	0	1	22.95
				1	7	1	22.63
				1	14	1	22.50
				8	0	2	22.45
				8	4	2	22.27
				8	7	2	21.83
				15	0	2	21.89



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	23.14
				1	2	0	23.17
				1	5	0	23.22
				3	0	0	23.84
				3	1	0	23.76
				3	2	0	23.93
				6	0	1	23.03
			16QAM	1	0	1	23.26
				1	2	1	23.37
				1	5	1	23.42
				3	0	1	23.24
				3	1	1	23.18
				3	2	1	23.12
				6	0	2	22.01
	23095	707.5	QPSK	1	0	0	23.29
				1	2	0	23.25
				1	5	0	23.21
				3	0	0	23.16
				3	1	0	23.21
				3	2	0	23.24
				6	0	1	23.19
			16QAM	1	0	1	23.07
				1	2	1	23.06
				1	5	1	23.05
				3	0	1	23.12
				3	1	1	23.15
				3	2	1	23.05
				6	0	2	22.27
	23173	715.3	QPSK	1	0	0	23.91
				1	2	0	23.85
				1	5	0	23.75
				3	0	0	23.63
				3	1	0	23.87
				3	2	0	23.75
				6	0	1	22.87
			16QAM	1	0	1	22.62
				1	2	1	22.69
				1	5	1	22.77
				3	0	1	22.86
				3	1	1	22.96
				3	2	1	22.89
				6	0	2	21.88



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.



5.2 RADIATED OUTPUT POWER

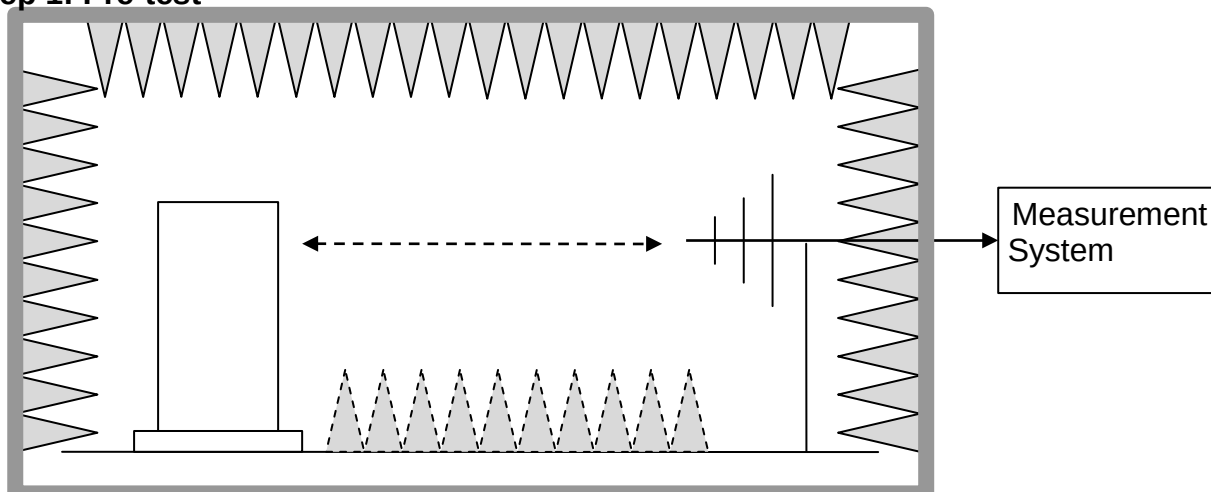
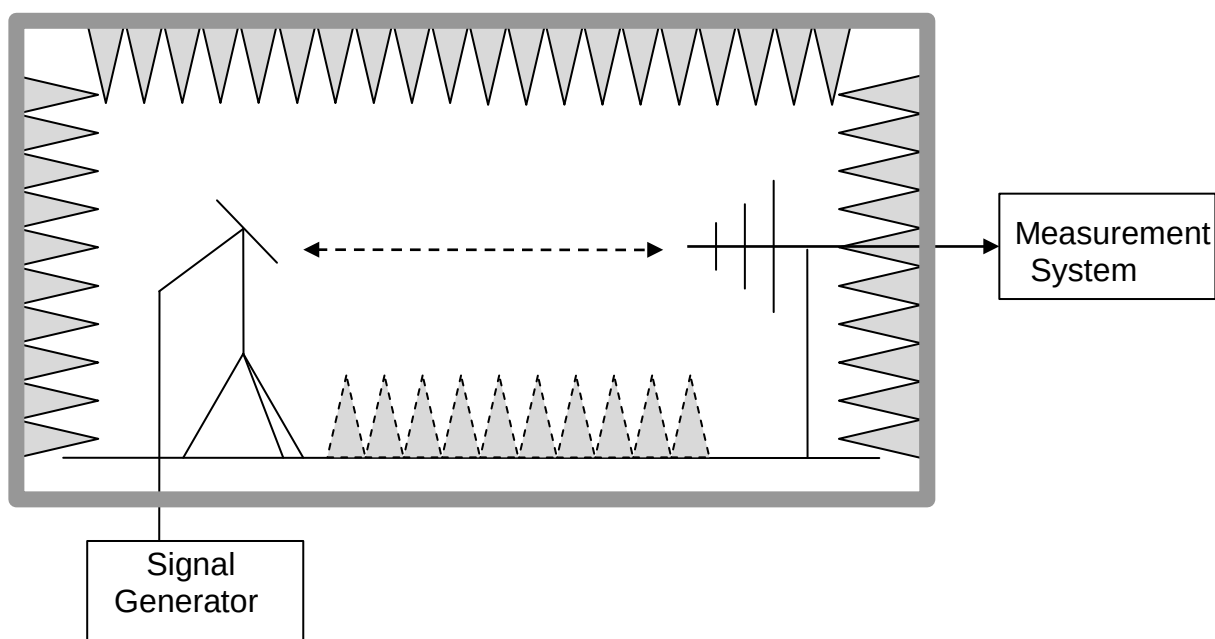
5.2.1 MEASUREMENT METHOD

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 (P_{in}) is applied to the input of the dipole, and the power received (P_r) 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 $AR_{pl} = P_{in} + 2.15 - P_r$. The AR_{pl} 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:
 $Power = P_{Mea} + AR_{pl}$
- 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 Step 1 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 (P_{in}).
- 8 ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15 \text{ dBi}$.

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**



5.2.2 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)	$\leq 33\text{dBm}$ (2W)
LTE Band 4	27.50(d)(4)	$\leq 30\text{dBm}$ (1W)
LTE Band 5	22.913(a)(2)	$\leq 38.45\text{dBm}$ (7W)
LTE Band 12	27.50(b)(10)	$\leq 34.77\text{dBm}$ (3W)

**5.2.3 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	12.05	V	7.95	0.79	19.21	33
1880.0	1.4	QPSK	1/0	12.54	V	7.95	0.79	19.7	33
1909.3	1.4	QPSK	1/0	11.98	V	7.95	0.79	19.14	33
1850.7	1.4	QPSK	1/0	12.51	H	7.95	0.79	19.67	33
1880.0	1.4	QPSK	1/0	12.71	H	7.95	0.79	19.87	33
1909.3	1.4	QPSK	1/0	12.91	H	7.95	0.79	20.07	33
1850.7	1.4	16-QAM	1/5	12.26	V	7.95	0.79	19.42	33
1880.0	1.4	16-QAM	1/0	12.15	V	7.95	0.79	19.31	33
1909.3	1.4	16-QAM	1/0	10.81	V	7.95	0.79	17.97	33
1850.7	1.4	16-QAM	1/5	12.53	H	7.95	0.79	19.69	33
1880.0	1.4	16-QAM	1/0	11.5	H	7.95	0.79	18.66	33
1909.3	1.4	16-QAM	1/0	11.32	H	7.95	0.79	18.48	33
1851.5	3	QPSK	1/0	11.26	V	7.95	0.79	18.42	33
1880.0	3	QPSK	1/0	12.11	V	7.95	0.79	19.27	33
1908.5	3	QPSK	1/0	12.15	V	7.95	0.79	19.31	33
1851.5	3	QPSK	1/0	12.57	H	7.95	0.79	19.73	33
1880.0	3	QPSK	1/0	11.03	H	7.95	0.79	18.19	33
1908.5	3	QPSK	1/0	10.55	H	7.95	0.79	17.71	33
1851.5	3	16-QAM	1/0	11.47	V	7.95	0.79	18.63	33
1880.0	3	16-QAM	1/0	11.03	V	7.95	0.79	18.19	33
1908.5	3	16-QAM	1/0	11.36	V	7.95	0.79	18.52	33
1851.5	3	16-QAM	1/0	11.42	H	7.95	0.79	18.58	33
1880.0	3	16-QAM	1/0	12.31	H	7.95	0.79	19.47	33
1908.5	3	16-QAM	1/0	12.61	H	7.95	0.79	19.77	33
1852.5	5	QPSK	1/0	12.45	V	7.95	0.79	19.61	33
1880.0	5	QPSK	1/0	12.81	V	7.95	0.79	19.97	33
1907.5	5	QPSK	1/24	12.11	V	7.95	0.79	19.27	33
1852.5	5	QPSK	1/0	12.09	H	7.95	0.79	19.25	33
1880.0	5	QPSK	1/0	12.13	H	7.95	0.79	19.29	33
1907.5	5	QPSK	1/24	12.15	H	7.95	0.79	19.31	33
1852.5	5	16-QAM	1/0	12.4	V	7.95	0.79	19.56	33
1880.0	5	16-QAM	1/0	12.53	V	7.95	0.79	19.69	33
1907.5	5	16-QAM	1/24	10.97	V	7.95	0.79	18.13	33
1852.5	5	16-QAM	1/0	11.35	H	7.95	0.79	18.51	33
1880.0	5	16-QAM	1/0	12.37	H	7.95	0.79	19.53	33
1907.5	5	16-QAM	1/24	11.42	H	7.95	0.79	18.58	33



1855	10	QPSK	1/0	11.48	V	7.95	0.79	18.64	33
1880	10	QPSK	1/49	11.21	V	7.95	0.79	18.37	33
1905	10	QPSK	1/0	11.54	V	7.95	0.79	18.7	33
1855	10	QPSK	1/0	11.46	H	7.95	0.79	18.62	33
1880	10	QPSK	1/49	12.42	H	7.95	0.79	19.58	33
1905	10	QPSK	1/0	12.06	H	7.95	0.79	19.22	33
1855	10	16-QAM	1/0	12.89	V	7.95	0.79	20.05	33
1880	10	16-QAM	1/49	11.74	V	7.95	0.79	18.9	33
1905	10	16-QAM	1/0	12.58	V	7.95	0.79	19.74	33
1855	10	16-QAM	1/0	12.14	H	7.95	0.79	19.3	33
1880	10	16-QAM	1/49	12.74	H	7.95	0.79	19.9	33
1905	10	16-QAM	1/0	12.71	H	7.95	0.79	19.87	33
1920	15	QPSK	1/0	10.83	V	7.95	0.79	17.23	33
1950	15	QPSK	1/74	11.48	V	7.95	0.79	16.88	33
1920	15	QPSK	1/0	11.72	V	7.95	0.79	17.94	33
1920	15	QPSK	1/0	11.67	H	7.95	0.79	16.47	33
1950	15	QPSK	1/74	12.1	H	7.95	0.79	15.94	33
1920	15	QPSK	1/0	12.12	H	7.95	0.79	16.78	33
1920	15	16-QAM	1/0	11.74	V	7.95	0.79	17.2	33
1950	15	16-QAM	1/74	11.89	V	7.95	0.79	16.29	33
1920	15	16-QAM	1/0	12.09	V	7.95	0.79	16.39	33
1920	15	16-QAM	1/0	12.11	H	7.95	0.79	16.77	33
1950	15	16-QAM	1/74	11.54	H	7.95	0.79	17.38	33
1920	15	16-QAM	1/0	11.59	H	7.95	0.79	18.19	33
1930	20	QPSK	1/99	11.51	V	7.95	0.79	18.37	33
1950	20	QPSK	1/99	11.71	V	7.95	0.79	18.01	33
1970	20	QPSK	1/0	12.16	V	7.95	0.79	15.96	33
1930	20	QPSK	1/99	11.57	H	7.95	0.79	17.45	33
1950	20	QPSK	1/99	11.91	H	7.95	0.79	17.93	33
1970	20	QPSK	1/0	11.64	H	7.95	0.79	16.88	33
1930	20	16-QAM	1/99	12.08	V	7.95	0.79	17.9	33
1950	20	16-QAM	1/99	12.35	V	7.95	0.79	16.51	33
1970	20	16-QAM	1/0	12.65	V	7.95	0.79	14.75	33
1930	20	16-QAM	1/99	12.29	H	7.95	0.79	15.71	33
1950	20	16-QAM	1/99	13.04	H	7.95	0.79	16.24	33
1970	20	16-QAM	1/0	12.68	H	7.95	0.79	16.1	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	11.36	V	7.95	0.79	18.52	30
1732.5	1.4	QPSK	1/0	11.24	V	7.95	0.79	18.4	30
1754.3	1.4	QPSK	1/0	11.41	V	7.95	0.79	18.57	30
1710.7	1.4	QPSK	1/0	11.39	H	7.95	0.79	18.55	30
1732.5	1.4	QPSK	1/0	11.38	H	7.95	0.79	18.54	30
1754.3	1.4	QPSK	1/0	11.1	H	7.95	0.79	18.26	30
1710.7	1.4	16-QAM	1/5	11.38	V	7.95	0.79	18.54	30
1732.5	1.4	16-QAM	1/0	11.23	V	7.95	0.79	18.39	30
1754.3	1.4	16-QAM	1/0	11.31	V	7.95	0.79	18.47	30
1710.7	1.4	16-QAM	1/5	11.09	H	7.95	0.79	18.25	30
1732.5	1.4	16-QAM	1/0	11.34	H	7.95	0.79	18.5	30
1754.3	1.4	16-QAM	1/0	11.27	H	7.95	0.79	18.43	30
1711.5	3	QPSK	1/0	11.29	V	7.95	0.79	18.45	30
1732.5	3	QPSK	1/0	11.33	V	7.95	0.79	18.49	30
1753.5	3	QPSK	1/0	11.37	V	7.95	0.79	18.53	30
1711.5	3	QPSK	1/0	11.16	H	7.95	0.79	18.32	30
1732.5	3	QPSK	1/0	11.26	H	7.95	0.79	18.42	30
1753.5	3	QPSK	1/0	10.91	H	7.95	0.79	18.07	30
1711.5	3	16-QAM	1/0	11.21	V	7.95	0.79	18.37	30
1732.5	3	16-QAM	1/0	11.1	V	7.95	0.79	18.26	30
1753.5	3	16-QAM	1/0	11.35	V	7.95	0.79	18.51	30
1711.5	3	16-QAM	1/0	11.56	H	7.95	0.79	18.72	30
1732.5	3	16-QAM	1/0	11.29	H	7.95	0.79	18.45	30
1753.5	3	16-QAM	1/0	11.04	H	7.95	0.79	18.2	30
1712.5	5	QPSK	1/0	10.68	V	7.95	0.79	17.84	30
1732.5	5	QPSK	1/0	10.83	V	7.95	0.79	17.99	30
1752.5	5	QPSK	1/24	11.28	V	7.95	0.79	18.44	30
1712.5	5	QPSK	1/0	10.72	H	7.95	0.79	17.88	30
1732.5	5	QPSK	1/0	10.67	H	7.95	0.79	17.83	30
1752.5	5	QPSK	1/24	11.1	H	7.95	0.79	18.26	30
1712.5	5	16-QAM	1/0	11.12	V	7.95	0.79	18.28	30
1732.5	5	16-QAM	1/0	10.74	V	7.95	0.79	17.9	30
1752.5	5	16-QAM	1/24	10.89	V	7.95	0.79	18.05	30
1712.5	5	16-QAM	1/0	11.09	H	7.95	0.79	18.25	30
1732.5	5	16-QAM	1/0	11.11	H	7.95	0.79	18.27	30
1752.5	5	16-QAM	1/24	11.32	H	7.95	0.79	18.48	30
1715	10	QPSK	1/0	11.34	V	7.95	0.79	18.5	30
1732.5	10	QPSK	1/49	11.11	V	7.95	0.79	18.27	30
1750	10	QPSK	1/0	10.71	V	7.95	0.79	17.87	30
1715	10	QPSK	1/0	11.16	H	7.95	0.79	18.32	30
1732.5	10	QPSK	1/49	11.29	H	7.95	0.79	18.45	30
1750	10	QPSK	1/0	11.31	H	7.95	0.79	18.47	30
1715	10	16-QAM	1/0	11.24	V	7.95	0.79	18.4	30
1732.5	10	16-QAM	1/49	11.11	V	7.95	0.79	18.27	30
1750	10	16-QAM	1/0	11.35	V	7.95	0.79	18.51	30



1715	10	16-QAM	1/0	10.65	H	7.95	0.79	17.81	30
1732.5	10	16-QAM	1/49	11.29	H	7.95	0.79	18.45	30
1750	10	16-QAM	1/0	11.04	H	7.95	0.79	18.2	30
1717.5	15	QPSK	1/0	10.68	V	7.95	0.79	17.84	30
1732.5	15	QPSK	1/74	10.83	V	7.95	0.79	17.99	30
1747.5	15	QPSK	1/0	11.38	V	7.95	0.79	18.54	30
1717.5	15	QPSK	1/0	10.72	H	7.95	0.79	17.88	30
1732.5	15	QPSK	1/74	10.67	H	7.95	0.79	17.83	30
1747.5	15	QPSK	1/0	11.1	H	7.95	0.79	18.26	30
1717.5	15	16-QAM	1/0	11.12	V	7.95	0.79	18.28	30
1732.5	15	16-QAM	1/74	10.74	V	7.95	0.79	17.9	30
1747.5	15	16-QAM	1/0	10.89	V	7.95	0.79	18.05	30
1717.5	15	16-QAM	1/0	11.09	H	7.95	0.79	18.25	30
1732.5	15	16-QAM	1/74	11.11	H	7.95	0.79	18.27	30
1747.5	15	16-QAM	1/0	11.14	H	7.95	0.79	18.3	30
1720	20	QPSK	1/99	11.39	V	7.95	0.79	18.55	30
1732.5	20	QPSK	1/99	11.31	V	7.95	0.79	18.47	30
1745	20	QPSK	1/0	10.71	V	7.95	0.79	17.87	30
1720	20	QPSK	1/99	11.16	H	7.95	0.79	18.32	30
1732.5	20	QPSK	1/99	11.25	H	7.95	0.79	18.41	30
1745	20	QPSK	1/0	10.91	H	7.95	0.79	18.07	30
1720	20	16-QAM	1/99	10.64	V	7.95	0.79	17.8	30
1732.5	20	16-QAM	1/99	11.08	V	7.95	0.79	18.24	30
1745	20	16-QAM	1/0	10.35	V	7.95	0.79	17.51	30
1720	20	16-QAM	1/99	10.65	H	7.95	0.79	17.81	30
1732.5	20	16-QAM	1/99	11.29	H	7.95	0.79	18.45	30
1745	20	16-QAM	1/0	11.04	H	7.95	0.79	18.2	30

**EIRP for LTE Band 5**

Frequency	Channel Bandwidth	Mode.	RB	Substituted level	Antenna Polarization	Antenna Gain correction	Cable Loss	Absolute Level	Limit (dBm)
824.7	1.4	QPSK	1/0	14.65	V	6.7	0.49	20.86	38.45
836.5	1.4	QPSK	1/0	13.8	V	6.7	0.49	20.01	38.45
848.3	1.4	QPSK	1/0	14.45	V	6.7	0.49	20.66	38.45
824.7	1.4	QPSK	1/0	13.69	H	6.7	0.49	19.9	38.45
836.5	1.4	QPSK	1/0	13.64	H	6.7	0.49	19.85	38.45
848.3	1.4	QPSK	1/0	12.07	H	6.7	0.49	18.28	38.45
824.7	1.4	16-QAM	1/0	13.09	V	6.7	0.49	19.3	38.45
836.5	1.4	16-QAM	1/0	14.71	V	6.7	0.49	20.92	38.45
848.3	1.4	16-QAM	1/0	12.86	V	6.7	0.49	19.07	38.45
824.7	1.4	16-QAM	1/0	12.06	H	6.7	0.49	18.27	38.45
836.5	1.4	16-QAM	1/0	14.08	H	6.7	0.49	20.29	38.45
848.3	1.4	16-QAM	1/0	12.51	H	6.7	0.49	18.72	38.45
825.5	3	QPSK	1/0	12.56	V	6.7	0.49	18.77	38.45
836.5	3	QPSK	1/0	13.48	V	6.7	0.49	19.69	38.45
847.5	3	QPSK	1/0	13.68	V	6.7	0.49	19.89	38.45
825.5	3	QPSK	1/0	13.13	H	6.7	0.49	19.34	38.45
836.5	3	QPSK	1/0	13.54	H	6.7	0.49	19.75	38.45
847.5	3	QPSK	1/0	12.88	H	6.7	0.49	19.09	38.45
825.5	3	16-QAM	1/0	12.61	V	6.7	0.49	18.82	38.45
836.5	3	16-QAM	1/0	14.07	V	6.7	0.49	20.28	38.45
847.5	3	16-QAM	1/0	14.32	V	6.7	0.49	20.53	38.45
825.5	3	16-QAM	1/0	13.62	H	6.7	0.49	19.83	38.45
836.5	3	16-QAM	1/0	13.26	H	6.7	0.49	19.47	38.45
847.5	3	16-QAM	1/0	13.01	H	6.7	0.49	19.22	38.45
826.5	5	QPSK	1/0	14.65	V	6.7	0.49	20.86	38.45
836.5	5	QPSK	1/0	13.8	V	6.7	0.49	20.01	38.45
846.5	5	QPSK	1/0	14.45	V	6.7	0.49	20.66	38.45
826.5	5	QPSK	1/0	13.69	H	6.7	0.49	19.9	38.45
836.5	5	QPSK	1/0	13.64	H	6.7	0.49	19.85	38.45
846.5	5	QPSK	1/0	12.07	H	6.7	0.49	18.28	38.45
826.5	5	16-QAM	1/0	13.09	V	6.7	0.49	19.3	38.45
836.5	5	16-QAM	1/0	14.71	V	6.7	0.49	20.92	38.45
846.5	5	16-QAM	1/0	12.86	V	6.7	0.49	19.07	38.45
826.5	5	16-QAM	1/0	12.06	H	6.7	0.49	18.27	38.45
836.5	5	16-QAM	1/0	14.08	H	6.7	0.49	20.29	38.45
846.5	5	16-QAM	1/0	12.51	H	6.7	0.49	18.72	38.45
829	10	QPSK	1/0	12.56	V	6.7	0.49	18.77	38.45
836.5	10	QPSK	1/0	13.48	V	6.7	0.49	19.69	38.45
844	10	QPSK	1/0	13.68	V	6.7	0.49	19.89	38.45
829	10	QPSK	1/0	13.13	H	6.7	0.49	19.34	38.45
836.5	10	QPSK	1/0	13.54	H	6.7	0.49	19.75	38.45
844	10	QPSK	1/0	12.88	H	6.7	0.49	19.09	38.45
829	10	16-QAM	1/0	12.61	V	6.7	0.49	18.82	38.45
836.5	10	16-QAM	1/0	14.07	V	6.7	0.49	20.28	38.45
844	10	16-QAM	1/0	14.32	V	6.7	0.49	20.53	38.45



829	10	16-QAM	1/0	13.62	H	6.7	0.49	19.83	38.45
836.5	10	16-QAM	1/0	13.26	H	6.7	0.49	19.47	38.45
844	10	16-QAM	1/0	13.01	H	6.7	0.49	19.22	38.45

**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	13.71	V	6.7	0.49	19.92	34.77
707.5	1.4	QPSK	1/0	12.86	V	6.7	0.49	19.07	34.77
715.3	1.4	QPSK	1/0	13.51	V	6.7	0.49	19.72	34.77
699.7	1.4	QPSK	1/0	12.75	H	6.7	0.49	18.96	34.77
707.5	1.4	QPSK	1/0	12.7	H	6.7	0.49	18.91	34.77
715.3	1.4	QPSK	1/0	11.13	H	6.7	0.49	17.34	34.77
699.7	1.4	16-QAM	1/0	12.15	V	6.7	0.49	18.36	34.77
707.5	1.4	16-QAM	1/0	13.77	V	6.7	0.49	19.98	34.77
715.3	1.4	16-QAM	1/0	11.92	V	6.7	0.49	18.13	34.77
699.7	1.4	16-QAM	1/0	11.12	H	6.7	0.49	17.33	34.77
707.5	1.4	16-QAM	1/0	13.14	H	6.7	0.49	19.35	34.77
715.3	1.4	16-QAM	1/0	11.57	H	6.7	0.49	17.78	34.77
700.5	3	QPSK	1/0	11.62	V	6.7	0.49	17.83	34.77
707.5	3	QPSK	1/0	12.54	V	6.7	0.49	18.75	34.77
714.5	3	QPSK	1/0	12.74	V	6.7	0.49	18.95	34.77
700.5	3	QPSK	1/0	12.19	H	6.7	0.49	18.4	34.77
707.5	3	QPSK	1/0	12.6	H	6.7	0.49	18.81	34.77
714.5	3	QPSK	1/0	11.94	H	6.7	0.49	18.15	34.77
700.5	3	16-QAM	1/0	11.67	V	6.7	0.49	17.88	34.77
707.5	3	16-QAM	1/0	13.13	V	6.7	0.49	19.34	34.77
714.5	3	16-QAM	1/0	13.38	V	6.7	0.49	19.59	34.77
700.5	3	16-QAM	1/0	12.68	H	6.7	0.49	18.89	34.77
707.5	3	16-QAM	1/0	12.32	H	6.7	0.49	18.53	34.77
714.5	3	16-QAM	1/0	12.07	H	6.7	0.49	18.28	34.77
701.5	5	QPSK	1/0	13.71	V	6.7	0.49	19.92	34.77
707.5	5	QPSK	1/0	12.86	V	6.7	0.49	19.07	34.77
713.5	5	QPSK	1/0	13.51	V	6.7	0.49	19.72	34.77
701.5	5	QPSK	1/0	12.75	H	6.7	0.49	18.96	34.77
707.5	5	QPSK	1/0	12.7	H	6.7	0.49	18.91	34.77
713.5	5	QPSK	1/0	11.13	H	6.7	0.49	17.34	34.77
701.5	5	16-QAM	1/0	12.15	V	6.7	0.49	18.36	34.77
707.5	5	16-QAM	1/0	13.77	V	6.7	0.49	19.98	34.77
713.5	5	16-QAM	1/0	11.92	V	6.7	0.49	18.13	34.77
701.5	5	16-QAM	1/0	11.12	H	6.7	0.49	17.33	34.77
707.5	5	16-QAM	1/0	13.14	H	6.7	0.49	19.35	34.77
713.5	5	16-QAM	1/0	11.57	H	6.7	0.49	17.78	34.77
704	10	QPSK	1/0	11.62	V	6.7	0.49	17.83	34.77
707.5	10	QPSK	1/0	12.54	V	6.7	0.49	18.75	34.77
711	10	QPSK	1/0	12.74	V	6.7	0.49	18.95	34.77
704	10	QPSK	1/0	12.19	H	6.7	0.49	18.4	34.77
707.5	10	QPSK	1/0	12.6	H	6.7	0.49	18.81	34.77
711	10	QPSK	1/0	11.94	H	6.7	0.49	18.15	34.77
704	10	16-QAM	1/0	11.67	V	6.7	0.49	17.88	34.77
707.5	10	16-QAM	1/0	13.13	V	6.7	0.49	19.34	34.77
711	10	16-QAM	1/0	13.38	V	6.7	0.49	19.59	34.77



704	10	16-QAM	1/0	12.68	H	6.7	0.49	18.89	34.77
707.5	10	16-QAM	1/0	12.32	H	6.7	0.49	18.53	34.77
711	10	16-QAM	1/0	12.07	H	6.7	0.49	18.28	34.77

Note: Above is the worst mode data.



5.3. PEAK-TO-AVERAGE RATIO

5.3.1 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 $\geq$ 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%

5.3.2 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.

**5.3.3 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	4.41	<13	PASS
		1	3	4.43	<13	PASS
		1	5	4.49	<13	PASS
		3	0	4.26	<13	PASS
		3	2	4.34	<13	PASS
		3	3	4.55	<13	PASS
		6	0	4.97	<13	PASS
	MCH	1	0	3.91	<13	PASS
		1	3	3.87	<13	PASS
		1	5	3.82	<13	PASS
		3	0	3.86	<13	PASS
		3	2	3.94	<13	PASS
		3	3	4.02	<13	PASS
		6	0	4.55	<13	PASS
	HCH	1	0	3.8	<13	PASS
		1	3	3.87	<13	PASS
		1	5	3.91	<13	PASS
		3	0	3.90	<13	PASS
		3	2	3.89	<13	PASS
		3	3	3.88	<13	PASS
		6	0	4.4	<13	PASS
16QAM	LCH	1	0	5.12	<13	PASS
		1	3	5.18	<13	PASS
		1	5	5.23	<13	PASS
		3	0	5.27	<13	PASS
		3	2	5.29	<13	PASS
		3	3	5.31	<13	PASS
		6	0	5.67	<13	PASS
	MCH	1	0	4.69	<13	PASS
		1	3	4.75	<13	PASS
		1	5	4.87	<13	PASS
		3	0	4.56	<13	PASS
		3	2	4.37	<13	PASS
		3	3	4.93	<13	PASS
		6	0	5.36	<13	PASS
	HCH	1	0	4.84	<13	PASS
		1	3	4.86	<13	PASS
		1	5	4.87	<13	PASS
		3	0	4.55	<13	PASS
		3	2	4.67	<13	PASS
		3	3	4.78	<13	PASS
		6	0	5.23	<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	4.25	<13	PASS
		1	7	4.33	<13	PASS
		1	14	4.37	<13	PASS
		8	0	4.57	<13	PASS
		8	4	4.74	<13	PASS
		8	7	4.82	<13	PASS
		15	0	4.94	<13	PASS
	MCH	1	0	3.94	<13	PASS
		1	7	3.96	<13	PASS
		1	14	3.98	<13	PASS
		8	0	4.12	<13	PASS
		8	4	4.35	<13	PASS
		8	7	4.45	<13	PASS
		15	0	4.58	<13	PASS
	HCH	1	0	3.74	<13	PASS
		1	7	3.82	<13	PASS
		1	14	3.92	<13	PASS
		8	0	4.21	<13	PASS
		8	4	4.29	<13	PASS
		8	7	4.35	<13	PASS
		15	0	4.41	<13	PASS
16QAM	LCH	1	0	5.14	<13	PASS
		1	7	5.15	<13	PASS
		1	14	5.16	<13	PASS
		8	0	5.44	<13	PASS
		8	4	5.52	<13	PASS
		8	7	5.61	<13	PASS
		15	0	5.79	<13	PASS
	MCH	1	0	4.76	<13	PASS
		1	7	4.77	<13	PASS
		1	14	4.78	<13	PASS
		8	0	5.02	<13	PASS
		8	4	5.07	<13	PASS
		8	7	5.24	<13	PASS
		15	0	5.4	<13	PASS
	HCH	1	0	4.89	<13	PASS



		1	7	4.88	<13	PASS
		1	14	4.87	<13	PASS
		8	0	5.12	<13	PASS
		8	4	5.17	<13	PASS
		8	7	5.19	<13	PASS
		15	0	5.34	<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	4.11	<13	PASS
		1	12	4.06	<13	PASS
		1	24	3.99	<13	PASS
		12	0	4.65	<13	PASS
		12	6	4.73	<13	PASS
		12	13	4.79	<13	PASS
		25	0	5.06	<13	PASS
	MCH	1	0	3.91	<13	PASS
		1	12	3.95	<13	PASS
		1	24	3.98	<13	PASS
		12	0	4.22	<13	PASS
		12	6	4.35	<13	PASS
		12	13	4.38	<13	PASS
		25	0	4.67	<13	PASS
	HCH	1	0	3.9	<13	PASS
		1	12	3.86	<13	PASS
		1	24	3.81	<13	PASS
		12	0	4.12	<13	PASS
		12	6	4.23	<13	PASS
		12	13	4.27	<13	PASS
		25	0	4.65	<13	PASS
16QAM	LCH	1	0	4.98	<13	PASS
		1	12	5.08	<13	PASS
		1	24	5.12	<13	PASS
		12	0	5.24	<13	PASS
		12	6	5.39	<13	PASS
		12	13	5.6	<13	PASS
		25	0	5.82	<13	PASS
	MCH	1	0	4.87	<13	PASS
		1	12	4.86	<13	PASS
		1	24	4.84	<13	PASS
		12	0	5.12	<13	PASS
		12	6	5.22	<13	PASS
		12	13	5.24	<13	PASS
		25	0	5.45	<13	PASS
	HCH	1	0	4.84	<13	PASS



		1	12	4.75	<13	PASS
		1	24	4.66	<13	PASS
		12	0	5.07	<13	PASS
		12	6	5.17	<13	PASS
		12	13	5.23	<13	PASS
		25	0	5.42	<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	4.41	<13	PASS
		1	24	4.55	<13	PASS
		1	49	4.65	<13	PASS
		25	0	4.78	<13	PASS
		25	12	4.83	<13	PASS
		25	25	4.92	<13	PASS
		50	0	5.12	<13	PASS
	MCH	1	0	3.79	<13	PASS
		1	24	3.85	<13	PASS
		1	49	3.98	<13	PASS
		25	0	4.13	<13	PASS
		25	12	4.29	<13	PASS
		25	25	4.47	<13	PASS
		50	0	4.62	<13	PASS
	HCH	1	0	4.34	<13	PASS
		1	24	4.23	<13	PASS
		1	49	4.03	<13	PASS
		25	0	4.11	<13	PASS
		25	12	4.23	<13	PASS
		25	25	4.27	<13	PASS
		50	0	4.63	<13	PASS
16QAM	LCH	1	0	5.21	<13	PASS
		1	24	5.33	<13	PASS
		1	49	5.46	<13	PASS
		25	0	5.52	<13	PASS
		25	12	5.65	<13	PASS
		25	25	5.86	<13	PASS
		50	0	5.84	<13	PASS
	MCH	1	0	4.68	<13	PASS
		1	24	4.69	<13	PASS
		1	49	4.71	<13	PASS
		25	0	5.1	<13	PASS
		25	12	5.2	<13	PASS
		25	25	5.3	<13	PASS
		50	0	5.46	<13	PASS
	HCH	1	0	5.49	<13	PASS



		1	24	5.21	<13	PASS
		1	49	4.82	<13	PASS
		25	0	4.99	<13	PASS
		25	12	5.08	<13	PASS
		25	25	5.15	<13	PASS
		50	0	5.45	<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	4.46	<13	PASS
		1	37	4.48	<13	PASS
		1	74	4.51	<13	PASS
		37	0	4.62	<13	PASS
		37	18	4.78	<13	PASS
		37	38	4.99	<13	PASS
		75	0	5.21	<13	PASS
	MCH	1	0	3.99	<13	PASS
		1	37	4.14	<13	PASS
		1	74	4.18	<13	PASS
		37	0	4.23	<13	PASS
		37	18	4.36	<13	PASS
		37	38	4.49	<13	PASS
		75	0	4.95	<13	PASS
	HCH	1	0	4.4	<13	PASS
		1	37	4.23	<13	PASS
		1	74	3.82	<13	PASS
		37	0	3.67	<13	PASS
		37	18	3.56	<13	PASS
		37	38	4.36	<13	PASS
		75	0	4.75	<13	PASS
16QAM	LCH	1	0	5.24	<13	PASS
		1	37	5.16	<13	PASS
		1	74	5.02	<13	PASS
		37	0	5.36	<13	PASS
		37	18	5.48	<13	PASS
		37	38	5.78	<13	PASS
		75	0	5.93	<13	PASS
	MCH	1	0	4.78	<13	PASS
		1	37	4.86	<13	PASS
		1	74	4.92	<13	PASS
		37	0	4.98	<13	PASS
		37	18	5.22	<13	PASS
		37	38	5.31	<13	PASS
		75	0	5.67	<13	PASS
	HCH	1	0	5.28	<13	PASS
		1	37	5.14	<13	PASS
		1	74	4.76	<13	PASS
		37	0	4.65	<13	PASS
		37	18	4.55	<13	PASS
		37	38	5.32	<13	PASS
		75	0	5.63	<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	4.58	<13	PASS
		1	49	4.36	<13	PASS
		1	99	4.2	<13	PASS
		50	0	4.27	<13	PASS
		50	25	4.65	<13	PASS
		50	50	4.84	<13	PASS
		100	0	5.13	<13	PASS
	MCH	1	0	4.14	<13	PASS
		1	49	4.21	<13	PASS
		1	99	4.24	<13	PASS
		50	0	4.35	<13	PASS
		50	25	4.57	<13	PASS
		50	50	4.6	<13	PASS
		100	0	4.94	<13	PASS
	HCH	1	0	4.29	<13	PASS
		1	49	4.11	<13	PASS
		1	99	3.85	<13	PASS
		50	0	3.96	<13	PASS
		50	25	4.15	<13	PASS
		50	50	4.48	<13	PASS
		100	0	4.76	<13	PASS
16QAM	LCH	1	0	5.35	<13	PASS
		1	49	5.22	<13	PASS
		1	99	5.05	<13	PASS
		50	0	2.32	<13	PASS
		50	25	5.64	<13	PASS
		50	50	5.71	<13	PASS
		100	0	5.92	<13	PASS
	MCH	1	0	4.78	<13	PASS
		1	49	4.85	<13	PASS
		1	99	4.96	<13	PASS
		50	0	5.12	<13	PASS
		50	25	5.34	<13	PASS
		50	50	5.44	<13	PASS
		100	0	5.67	<13	PASS
	HCH	1	0	5.23	<13	PASS
		1	49	4.97	<13	PASS
		1	99	4.83	<13	PASS
		50	0	4.99	<13	PASS
		50	25	5.13	<13	PASS
		50	50	5.37	<13	PASS
		100	0	5.71	<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	4.5	<13	PASS
		1	3	4.48	<13	PASS
		1	5	4.45	<13	PASS
		3	0	4.47	<13	PASS
		3	2	4.51	<13	PASS
		3	3	4.53	<13	PASS
		6	0	4.94	<13	PASS
	MCH	1	0	4.47	<13	PASS
		1	3	4.49	<13	PASS
		1	5	4.53	<13	PASS
		3	0	4.55	<13	PASS
		3	2	4.54	<13	PASS
		3	3	4.56	<13	PASS
		6	0	4.92	<13	PASS
	HCH	1	0	3.92	<13	PASS
		1	3	3.89	<13	PASS
		1	5	3.87	<13	PASS
		3	0	3.88	<13	PASS
		3	2	3.93	<13	PASS
		3	3	3.96	<13	PASS
		6	0	4.42	<13	PASS
16QAM	LCH	1	0	5.37	<13	PASS
		1	3	5.41	<13	PASS
		1	5	5.43	<13	PASS
		3	0	5.44	<13	PASS
		3	2	5.49	<13	PASS
		3	3	5.52	<13	PASS
		6	0	5.89	<13	PASS
	MCH	1	0	5.42	<13	PASS
		1	3	5.41	<13	PASS
		1	5	5.43	<13	PASS
		3	0	5.27	<13	PASS
		3	2	5.33	<13	PASS
		3	3	5.36	<13	PASS
		6	0	5.74	<13	PASS
	HCH	1	0	4.95	<13	PASS
		1	3	4.82	<13	PASS
		1	5	4.79	<13	PASS
		3	0	4.83	<13	PASS
		3	2	4.87	<13	PASS
		3	3	4.91	<13	PASS
		6	0	5.3	<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	4.47	<13	PASS
		1	7	4.49	<13	PASS
		1	14	4.5	<13	PASS
		8	0	4.63	<13	PASS
		8	4	4.77	<13	PASS
		8	7	4.87	<13	PASS
		15	0	5.09	<13	PASS
	MCH	1	0	4.32	<13	PASS
		1	7	4.28	<13	PASS
		1	14	4.25	<13	PASS
		8	0	4.36	<13	PASS
		8	4	4.56	<13	PASS
		8	7	4.81	<13	PASS
		15	0	5.04	<13	PASS
	HCH	1	0	4.11	<13	PASS
		1	7	4.07	<13	PASS
		1	14	3.95	<13	PASS
		8	0	4.12	<13	PASS
		8	4	4.23	<13	PASS
		8	7	4.49	<13	PASS
		15	0	4.75	<13	PASS
16QAM	LCH	1	0	5.35	<13	PASS
		1	7	5.33	<13	PASS
		1	14	5.32	<13	PASS
		8	0	5.54	<13	PASS
		8	4	5.68	<13	PASS
		8	7	5.73	<13	PASS
		15	0	5.92	<13	PASS
	MCH	1	0	5.13	<13	PASS
		1	7	5.24	<13	PASS
		1	14	5.33	<13	PASS
		8	0	5.41	<13	PASS
		8	4	5.53	<13	PASS
		8	7	5.61	<13	PASS
		15	0	5.72	<13	PASS
	HCH	1	0	5.11	<13	PASS
		1	7	5.02	<13	PASS
		1	14	4.96	<13	PASS
		8	0	5.06	<13	PASS
		8	4	5.23	<13	PASS
		8	7	5.43	<13	PASS
		15	0	5.59	<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	4.57	<13	PASS
		1	12	4.54	<13	PASS
		1	24	4.52	<13	PASS
		12	0	4.63	<13	PASS
		12	6	4.85	<13	PASS
		12	13	4.97	<13	PASS
		25	0	5.26	<13	PASS
	MCH	1	0	4.49	<13	PASS
		1	12	4.55	<13	PASS
		1	24	4.61	<13	PASS
		12	0	4.68	<13	PASS
		12	6	4.84	<13	PASS
		12	13	4.92	<13	PASS
		25	0	5.24	<13	PASS
	HCH	1	0	4.19	<13	PASS
		1	12	4.12	<13	PASS
		1	24	3.99	<13	PASS
		12	0	4.23	<13	PASS
		12	6	4.33	<13	PASS
		12	13	4.46	<13	PASS
		25	0	4.88	<13	PASS
16QAM	LCH	1	0	5.34	<13	PASS
		1	12	5.42	<13	PASS
		1	24	5.46	<13	PASS
		12	0	5.55	<13	PASS
		12	6	5.78	<13	PASS
		12	13	5.82	<13	PASS
		25	0	5.97	<13	PASS
	MCH	1	0	5.31	<13	PASS
		1	12	5.41	<13	PASS
		1	24	5.43	<13	PASS
		12	0	5.54	<13	PASS
		12	6	5.69	<13	PASS
		12	13	5.83	<13	PASS
		25	0	6.06	<13	PASS
	HCH	1	0	4.99	<13	PASS
		1	12	4.94	<13	PASS
		1	24	4.9	<13	PASS
		12	0	5.12	<13	PASS
		12	6	5.27	<13	PASS
		12	13	5.34	<13	PASS
		25	0	5.69	<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	4.48	<13	PASS
		1	49	4.45	<13	PASS
		1	99	4.39	<13	PASS
		50	0	4.56	<13	PASS
		50	25	4.77	<13	PASS
		50	50	4.8	<13	PASS
		100	0	5.19	<13	PASS
	MCH	1	0	4.44	<13	PASS
		1	49	4.53	<13	PASS
		1	99	4.67	<13	PASS
		50	0	4.87	<13	PASS
		50	25	4.96	<13	PASS
		50	50	5.06	<13	PASS
		100	0	5.33	<13	PASS
	HCH	1	0	4.24	<13	PASS
		1	49	4.11	<13	PASS
		1	99	3.87	<13	PASS
		50	0	4.13	<13	PASS
		50	25	4.28	<13	PASS
		50	50	4.57	<13	PASS
		100	0	4.82	<13	PASS
16QAM	LCH	1	0	5.52	<13	PASS
		1	49	5.21	<13	PASS
		1	99	4.97	<13	PASS
		50	0	5.27	<13	PASS
		50	25	5.46	<13	PASS
		50	50	5.74	<13	PASS
		100	0	5.97	<13	PASS
	MCH	1	0	5.48	<13	PASS
		1	49	5.59	<13	PASS
		1	99	5.65	<13	PASS
		50	0	5.76	<13	PASS
		50	25	5.89	<13	PASS
		50	50	5.92	<13	PASS
		100	0	6.1	<13	PASS
	HCH	1	0	5.32	<13	PASS
		1	49	5.13	<13	PASS
		1	99	4.98	<13	PASS
		50	0	5.06	<13	PASS
		50	25	5.29	<13	PASS
		50	50	5.46	<13	PASS
		100	0	5.82	<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	4.39	<13	PASS
		1	37	4.35	<13	PASS
		1	74	4.32	<13	PASS
		37	0	4.27	<13	PASS
		37	18	4.55	<13	PASS
		37	38	4.71	<13	PASS
		75	0	5.28	<13	PASS
	MCH	1	0	4.4	<13	PASS
		1	37	4.46	<13	PASS
		1	74	4.58	<13	PASS
		37	0	4.67	<13	PASS
		37	18	4.89	<13	PASS
		37	38	5.01	<13	PASS
		75	0	5.42	<13	PASS
	HCH	1	0	4.4	<13	PASS
		1	37	3.89	<13	PASS
		1	74	3.75	<13	PASS
		37	0	4.17	<13	PASS
		37	18	4.23	<13	PASS
		37	38	4.58	<13	PASS
		75	0	5.12	<13	PASS
16QAM	LCH	1	0	5.26	<13	PASS
		1	37	5.14	<13	PASS
		1	74	4.72	<13	PASS
		37	0	5.22	<13	PASS
		37	18	5.45	<13	PASS
		37	38	5.62	<13	PASS
		75	0	6.04	<13	PASS
	MCH	1	0	5.17	<13	PASS
		1	37	5.29	<13	PASS
		1	74	5.5	<13	PASS
		37	0	5.62	<13	PASS
		37	18	5.76	<13	PASS
		37	38	5.89	<13	PASS
		75	0	6.15	<13	PASS
	HCH	1	0	5.59	<13	PASS
		1	37	5.33	<13	PASS
		1	74	4.99	<13	PASS
		37	0	5.02	<13	PASS
		37	18	5.22	<13	PASS
		37	38	5.4	<13	PASS
		75	0	5.86	<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	4.48	<13	PASS
		1	49	4.35	<13	PASS
		1	99	4.32	<13	PASS
		50	0	4.55	<13	PASS
		50	25	4.66	<13	PASS
		50	50	4.77	<13	PASS
		100	0	5.08	<13	PASS
	MCH	1	0	4.39	<13	PASS
		1	49	4.44	<13	PASS
		1	99	4.49	<13	PASS
		50	0	4.57	<13	PASS
		50	25	4.95	<13	PASS
		50	50	5.03	<13	PASS
		100	0	5.24	<13	PASS
	HCH	1	0	4.46	<13	PASS
		1	49	4.23	<13	PASS
		1	99	3.78	<13	PASS
		50	0	4.11	<13	PASS
		50	25	4.36	<13	PASS
		50	50	4.63	<13	PASS
		100	0	5.02	<13	PASS
16QAM	LCH	1	0	5.25	<13	PASS
		1	49	5.19	<13	PASS
		1	99	5.16	<13	PASS
		50	0	5.24	<13	PASS
		50	25	5.47	<13	PASS
		50	50	5.63	<13	PASS
		100	0	5.92	<13	PASS
	MCH	1	0	5.09	<13	PASS
		1	49	5.34	<13	PASS
		1	99	5.46	<13	PASS
		50	0	5.55	<13	PASS
		50	25	5.69	<13	PASS
		50	50	5.9	<13	PASS
		100	0	6.02	<13	PASS
	HCH	1	0	5.44	<13	PASS
		1	49	5.21	<13	PASS
		1	99	4.92	<13	PASS
		50	0	5.26	<13	PASS
		50	25	5.34	<13	PASS
		50	50	5.56	<13	PASS
		100	0	5.9	<13	PASS



LTE BAND 5
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	3.41	<13	PASS
		1	3	3.40	<13	PASS
		1	5	3.41	<13	PASS
		3	0	3.33	<13	PASS
		3	2	3.35	<13	PASS
		3	3	3.41	<13	PASS
		6	0	3.99	<13	PASS
	MCH	1	0	4.87	<13	PASS
		1	3	4.82	<13	PASS
		1	5	4.76	<13	PASS
		3	0	4.79	<13	PASS
		3	2	4.83	<13	PASS
		3	3	4.88	<13	PASS
		6	0	5.27	<13	PASS
	HCH	1	0	4.02	<13	PASS
		1	3	4.09	<13	PASS
		1	5	4.14	<13	PASS
		3	0	4.03	<13	PASS
		3	2	4.08	<13	PASS
		3	3	4.13	<13	PASS
		6	0	4.65	<13	PASS
16QAM	LCH	1	0	4.18	<13	PASS
		1	3	4.16	<13	PASS
		1	5	4.15	<13	PASS
		3	0	4.18	<13	PASS
		3	2	4.19	<13	PASS
		3	3	4.24	<13	PASS
		6	0	5	<13	PASS
	MCH	1	0	5.79	<13	PASS
		1	3	5.64	<13	PASS
		1	5	5.56	<13	PASS
		3	0	5.59	<13	PASS
		3	2	5.62	<13	PASS
		3	3	5.65	<13	PASS
		6	0	6.19	<13	PASS
	HCH	1	0	5.04	<13	PASS
		1	3	5.02	<13	PASS
		1	5	5	<13	PASS
		3	0	5.03	<13	PASS
		3	2	5.06	<13	PASS
		3	3	5.08	<13	PASS
		6	0	5.61	<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	3.4	<13	PASS
		1	7	3.32	<13	PASS
		1	14	3.27	<13	PASS
		8	0	3.65	<13	PASS
		8	4	3.74	<13	PASS
		8	7	3.87	<13	PASS
		15	0	3.94	<13	PASS
	MCH	1	0	4.68	<13	PASS
		1	7	4.52	<13	PASS
		1	14	4.37	<13	PASS
		8	0	4.68	<13	PASS
		8	4	4.97	<13	PASS
		8	7	5.15	<13	PASS
		15	0	5.32	<13	PASS
	HCH	1	0	3.61	<13	PASS
		1	7	3.72	<13	PASS
		1	14	3.88	<13	PASS
		8	0	4.01	<13	PASS
		8	4	4.28	<13	PASS
		8	7	4.62	<13	PASS
		15	0	4.49	<13	PASS
16QAM	LCH	1	0	4	<13	PASS
		1	7	3.92	<13	PASS
		1	14	3.89	<13	PASS
		8	0	4.23	<13	PASS
		8	4	4.35	<13	PASS
		8	7	4.64	<13	PASS
		15	0	4.83	<13	PASS
	MCH	1	0	5.6	<13	PASS
		1	7	5.44	<13	PASS
		1	14	5.35	<13	PASS
		8	0	5.68	<13	PASS
		8	4	5.97	<13	PASS
		8	7	6	<13	PASS
		15	0	6.21	<13	PASS
	HCH	1	0	4.53	<13	PASS
		1	7	4.65	<13	PASS
		1	14	4.95	<13	PASS
		8	0	5.03	<13	PASS
		8	4	5.23	<13	PASS
		8	7	5.47	<13	PASS
		15	0	5.33	<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	3.32	<13	PASS
		1	12	3.27	<13	PASS
		1	24	3.1	<13	PASS
		12	0	3.24	<13	PASS
		12	6	3.56	<13	PASS
		12	13	3.86	<13	PASS
		25	0	4.14	<13	PASS
	MCH	1	0	4.32	<13	PASS
		1	12	4.11	<13	PASS
		1	24	3.7	<13	PASS
		12	0	3.98	<13	PASS
		12	6	4.29	<13	PASS
		12	13	4.96	<13	PASS
		25	0	5.26	<13	PASS
	HCH	1	0	3.26	<13	PASS
		1	12	3.21	<13	PASS
		1	24	3.16	<13	PASS
		12	0	3.87	<13	PASS
		12	6	4.11	<13	PASS
		12	13	4.31	<13	PASS
		25	0	4.45	<13	PASS
16QAM	LCH	1	0	4.36	<13	PASS
		1	12	4.29	<13	PASS
		1	24	4.27	<13	PASS
		12	0	4.36	<13	PASS
		12	6	4.64	<13	PASS
		12	13	4.73	<13	PASS
		25	0	4.84	<13	PASS
	MCH	1	0	5.15	<13	PASS
		1	12	4.88	<13	PASS
		1	24	4.59	<13	PASS
		12	0	4.98	<13	PASS
		12	6	5.24	<13	PASS
		12	13	5.87	<13	PASS
		25	0	6.11	<13	PASS
	HCH	1	0	4.09	<13	PASS
		1	12	4.12	<13	PASS
		1	24	4.15	<13	PASS
		12	0	4.87	<13	PASS
		12	6	5.05	<13	PASS
		12	13	5.18	<13	PASS
		25	0	5.19	<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	3.45	<13	PASS
		1	24	3.56	<13	PASS
		1	49	4.84	<13	PASS
		25	0	4.75	<13	PASS
		25	12	4.72	<13	PASS
		25	25	4.63	<13	PASS
		50	0	4.47	<13	PASS
	MCH	1	0	4.48	<13	PASS
		1	24	4.12	<13	PASS
		1	49	3.72	<13	PASS
		25	0	4.11	<13	PASS
		25	12	4.56	<13	PASS
		25	25	4.77	<13	PASS
		50	0	5.40	<13	PASS
	HCH	1	0	4.15	<13	PASS
		1	24	4.13	<13	PASS
		1	49	3.91	<13	PASS
		25	0	4.05	<13	PASS
		25	12	4.15	<13	PASS
		25	25	4.24	<13	PASS
		50	0	4.60	<13	PASS
16QAM	LCH	1	0	4.16	<13	PASS
		1	24	5.34	<13	PASS
		1	49	5.60	<13	PASS
		25	0	5.59	<13	PASS
		25	12	5.60	<13	PASS
		25	25	5.61	<13	PASS
		50	0	5.30	<13	PASS
	MCH	1	0	5.37	<13	PASS
		1	24	4.88	<13	PASS
		1	49	4.64	<13	PASS
		25	0	4.89	<13	PASS
		25	12	5.23	<13	PASS
		25	25	5.64	<13	PASS
		50	0	6.24	<13	PASS
	HCH	1	0	4.21	<13	PASS
		1	24	4.15	<13	PASS
		1	49	4.11	<13	PASS
		25	0	4.83	<13	PASS
		25	12	5.01	<13	PASS
		25	25	5.16	<13	PASS
		50	0	5.14	<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	3.40	<13	PASS
		1	3	3.39	<13	PASS
		1	5	3.38	<13	PASS
		3	0	3.31	<13	PASS
		3	2	3.32	<13	PASS
		3	3	3.38	<13	PASS
		6	0	3.96	<13	PASS
	MCH	1	0	4.84	<13	PASS
		1	3	4.78	<13	PASS
		1	5	4.73	<13	PASS
		3	0	4.74	<13	PASS
		3	2	4.79	<13	PASS
		3	3	4.85	<13	PASS
		6	0	5.22	<13	PASS
	HCH	1	0	3.97	<13	PASS
		1	3	4.04	<13	PASS
		1	5	4.11	<13	PASS
		3	0	4.02	<13	PASS
		3	2	4.05	<13	PASS
		3	3	4.12	<13	PASS
		6	0	4.59	<13	PASS
16QAM	LCH	1	0	4.15	<13	PASS
		1	3	4.12	<13	PASS
		1	5	4.11	<13	PASS
		3	0	4.15	<13	PASS
		3	2	4.12	<13	PASS
		3	3	4.22	<13	PASS
		6	0	4.98	<13	PASS
	MCH	1	0	5.72	<13	PASS
		1	3	5.59	<13	PASS
		1	5	5.53	<13	PASS
		3	0	5.52	<13	PASS
		3	2	5.58	<13	PASS
		3	3	5.62	<13	PASS
		6	0	6.14	<13	PASS
	HCH	1	0	4.99	<13	PASS
		1	3	54.96	<13	PASS
		1	5	4.97	<13	PASS
		3	0	5.01	<13	PASS
		3	2	5.04	<13	PASS
		3	3	5.06	<13	PASS
		6	0	5.58	<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	3.39	<13	PASS
		1	7	3.28	<13	PASS
		1	14	3.25	<13	PASS
		8	0	3.63	<13	PASS
		8	4	3.72	<13	PASS
		8	7	3.84	<13	PASS
		15	0	3.90	<13	PASS
	MCH	1	0	4.64	<13	PASS
		1	7	4.48	<13	PASS
		1	14	4.34	<13	PASS
		8	0	4.65	<13	PASS
		8	4	4.96	<13	PASS
		8	7	5.12	<13	PASS
		15	0	5.29	<13	PASS
	HCH	1	0	3.57	<13	PASS
		1	7	3.70	<13	PASS
		1	14	3.85	<13	PASS
		8	0	3.99	<13	PASS
		8	4	4.24	<13	PASS
		8	7	4.59	<13	PASS
		15	0	4.51	<13	PASS
16QAM	LCH	1	0	3.98	<13	PASS
		1	7	3.90	<13	PASS
		1	14	3.84	<13	PASS
		8	0	4.22	<13	PASS
		8	4	4.32	<13	PASS
		8	7	4.61	<13	PASS
		15	0	4.80	<13	PASS
	MCH	1	0	5.57	<13	PASS
		1	7	5.43	<13	PASS
		1	14	5.33	<13	PASS
		8	0	5.64	<13	PASS
		8	4	5.95	<13	PASS
		8	7	5.98	<13	PASS
		15	0	6.19	<13	PASS
	HCH	1	0	4.48	<13	PASS
		1	7	4.62	<13	PASS
		1	14	4.92	<13	PASS
		8	0	5.01	<13	PASS
		8	4	5.21	<13	PASS
		8	7	5.44	<13	PASS
		15	0	5.28	<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	3.34	<13	PASS
		1	12	3.225	<13	PASS
		1	24	3.12	<13	PASS
		12	0	3.23	<13	PASS
		12	6	3.54	<13	PASS
		12	13	3.83	<13	PASS
		25	0	4.12	<13	PASS
	MCH	1	0	4.32	<13	PASS
		1	12	4.13	<13	PASS
		1	24	3.72	<13	PASS
		12	0	3.96	<13	PASS
		12	6	4.25	<13	PASS
		12	13	4.94	<13	PASS
		25	0	5.22	<13	PASS
	HCH	1	0	3.23	<13	PASS
		1	12	3.19	<13	PASS
		1	24	3.15	<13	PASS
		12	0	3.85	<13	PASS
		12	6	4.08	<13	PASS
		12	13	4.28	<13	PASS
		25	0	4.44	<13	PASS
16QAM	LCH	1	0	4.35	<13	PASS
		1	12	4.31	<13	PASS
		1	24	4.28	<13	PASS
		12	0	4.34	<13	PASS
		12	6	4.62	<13	PASS
		12	13	4.72	<13	PASS
		25	0	4.81	<13	PASS
	MCH	1	0	5.12	<13	PASS
		1	12	4.86	<13	PASS
		1	24	4.62	<13	PASS
		12	0	4.95	<13	PASS
		12	6	5.22	<13	PASS
		12	13	5.84	<13	PASS
		25	0	6.06	<13	PASS
	HCH	1	0	4.04	<13	PASS
		1	12	4.16	<13	PASS
		1	24	4.12	<13	PASS
		12	0	4.84	<13	PASS
		12	6	5.01	<13	PASS
		12	13	5.12	<13	PASS
		25	0	5.17	<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	3.42	<13	PASS
		1	24	3.54	<13	PASS
		1	49	4.83	<13	PASS
		25	0	4.74	<13	PASS
		25	12	4.69	<13	PASS
		25	25	4.62	<13	PASS
		50	0	4.45	<13	PASS
	MCH	1	0	4.43	<13	PASS
		1	24	4.08	<13	PASS
		1	49	3.69	<13	PASS
		25	0	4.07	<13	PASS
		25	12	4.54	<13	PASS
		25	25	4.75	<13	PASS
		50	0	5.38	<13	PASS
	HCH	1	0	4.12	<13	PASS
		1	24	4.09	<13	PASS
		1	49	3.93	<13	PASS
		25	0	4.08	<13	PASS
		25	12	4.17	<13	PASS
		25	25	4.22	<13	PASS
		50	0	4.62	<13	PASS
16QAM	LCH	1	0	4.13	<13	PASS
		1	24	5.31	<13	PASS
		1	49	5.62	<13	PASS
		25	0	5.54	<13	PASS
		25	12	5.58	<13	PASS
		25	25	5.59	<13	PASS
		50	0	5.32	<13	PASS
	MCH	1	0	5.34	<13	PASS
		1	24	4.86	<13	PASS
		1	49	4.62	<13	PASS
		25	0	4.84	<13	PASS
		25	12	5.25	<13	PASS
		25	25	5.63	<13	PASS
		50	0	6.18	<13	PASS
	HCH	1	0	4.19	<13	PASS
		1	24	4.12	<13	PASS
		1	49	3.98	<13	PASS
		25	0	4.78	<13	PASS
		25	12	4.99	<13	PASS
		25	25	5.13	<13	PASS
		50	0	5.17	<13	PASS



6. SPURIOUS EMISSION

6.1 CONDUCTED SPURIOUS EMISSION

6.1.1 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 $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

Test Procedure Used

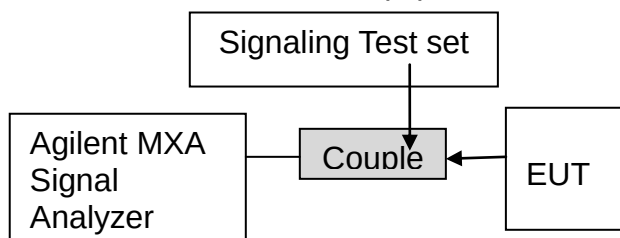
KDB 971168 D01v03 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least $10 \times$ 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 $43 + 10\log(P)$ dB. For all power levels +30dBm to 0dBm, this becomes a constant specification limit of -13dBm.



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.

6.1.2 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.



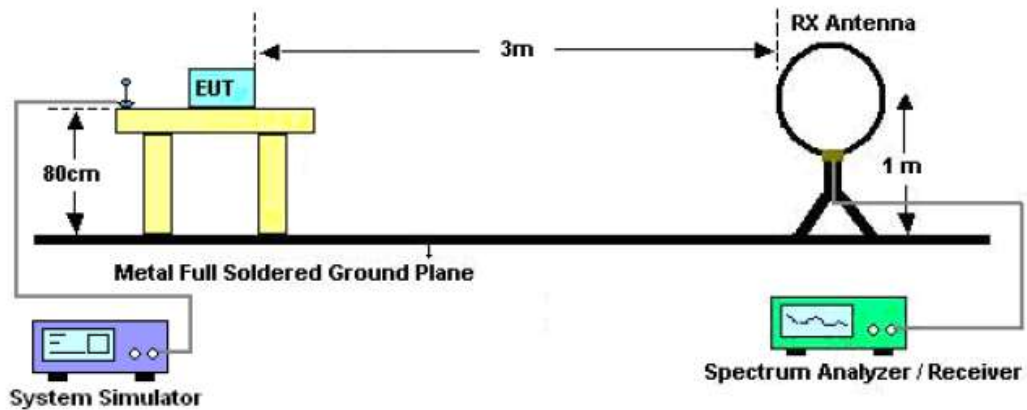
6.2 RADIATED SPURIOUS EMISSION

6.2.1. MEASUREMENT PROCEDURE

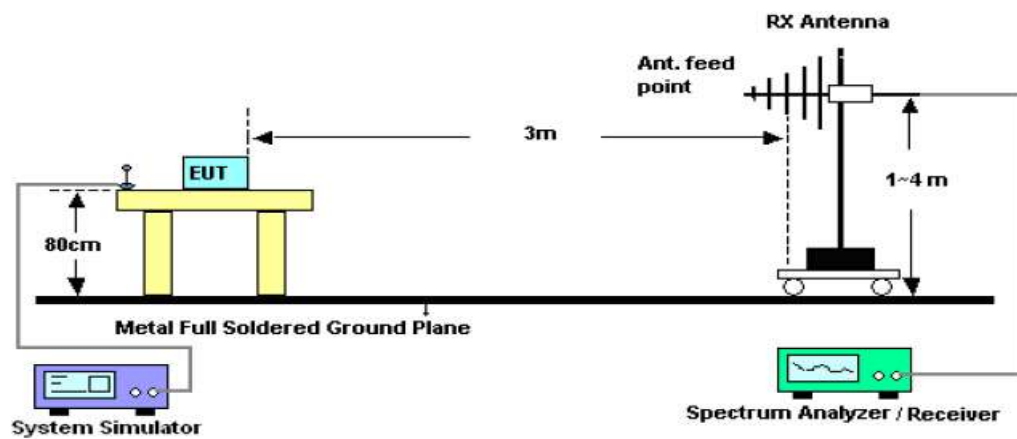
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated 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.

6.2.2. TEST SETUP

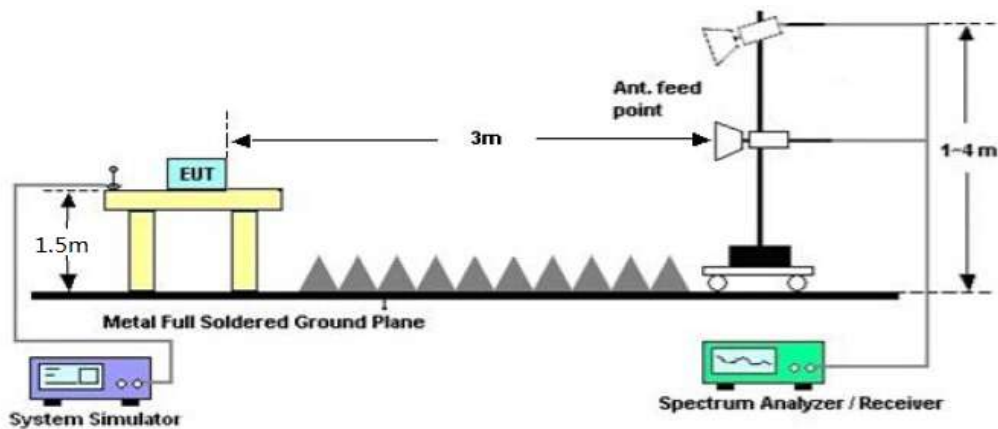
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz





6.2.3 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 $43 + 10 \log(P)$ 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 -13dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30dBm (1 W) carrier becomes a limit of -13dBm. At 0.001 W (0dBm) the minimum attenuation is 13 dB, which again yields a limit of -13dBm. 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:

**6.2.4 MEASUREMENT RESULT****LTE Band 2
Low channel**

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3720	V	-47.65	-13	-34.65
748.3	V	-34.91	-13	-21.91
257.2	V	-37.58	-13	-24.58
3720	H	-48.55	-13	-35.55
640.2	H	-36.63	-13	-23.63
221.4	H	-37.5	-13	-24.50

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3760	V	-47.75	-13	-34.75
533.1	V	-34.96	-13	-21.96
256.5	V	-37.6	-13	-24.60
3760	H	-48.51	-13	-35.51
850.2	H	-36.66	-13	-23.66
451.4	H	-37.59	-13	-24.59

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3800	V	-47.81	-13	-34.81
611.1	V	-34.9	-13	-21.90
256.5	V	-37.54	-13	-24.54
3800	H	-48.55	-13	-35.55
586.2	H	-36.62	-13	-23.62
351.4	H	-37.73	-13	-24.73

**LTE Band 4
Low channel**

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3440	V	-47.67	-13	-34.67
896.6	V	-34.87	-13	-21.87
487.5	V	-37.39	-13	-24.39
3440	H	-48.41	-13	-35.41
789.3	H	-36.54	-13	-23.54
545.6	H	-37.66	-13	-24.66

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3465	V	-47.65	-13	-34.65
859.4	V	-34.83	-13	-21.83
765.9	V	-37.34	-13	-24.34
3465	H	-48.4	-13	-35.40
564.5	H	-36.52	-13	-23.52
265.9	H	-37.63	-13	-24.63

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
3490	V	-47.72	-13	-34.72
687.4	V	-34.94	-13	-21.94
586.4	V	-37.44	-13	-24.44
3490	H	-48.49	-13	-35.49
489.5	H	-36.62	-13	-23.62
357.1	H	-37.71	-13	-24.71

**LTE Band 5**
Low channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1658	V	-47.88	-13	-34.88
564.5	V	-35.1	-13	-22.10
364.3	V	-37.61	-13	-24.61
1658	H	-48.65	-13	-35.65
578.3	H	-36.74	-13	-23.74
354.1	H	-37.86	-13	-24.86

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1673	V	-47.95	-13	-34.95
896.3	V	-35.14	-13	-22.14
784.1	V	-37.66	-13	-24.66
1673	H	-48.72	-13	-35.72
564.1	H	-36.81	-13	-23.81
285.6	H	-37.93	-13	-24.93

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1688	V	-47.98	-13	-34.98
563.5	V	-35.21	-13	-22.21
345.1	V	-37.69	-13	-24.69
1688	H	-48.74	-13	-35.74
354.1	H	-36.83	-13	-23.83
253.6	H	-37.95	-13	-24.95

**LTE Band 12****Low channel**

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1408	V	-47.68	-13	-34.68
715.2	V	-34.88	-13	-21.88
684.5	V	-37.34	-13	-24.34
1408	H	-48.36	-13	-35.36
476.3	H	-36.54	-13	-23.54
359.6	H	-37.65	-13	-24.65

Middle channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1415	V	-47.74	-13	-34.74
712.4	V	-34.94	-13	-21.94
694.7	V	-37.38	-13	-24.38
1415	H	-48.4	-13	-35.40
489.2	H	-36.61	-13	-23.61
364.8	H	-37.73	-13	-24.73

High channel

Frequency (MHz)	Polarity (H/V)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1422	V	-47.81	-13	-34.81
724.9	V	-34.97	-13	-21.97
695.8	V	-37.41	-13	-24.41
1422	H	-48.42	-13	-35.42
487.5	H	-36.65	-13	-23.65
364.8	H	-37.76	-13	-24.76

Note: 1. Margin = Emission Level -Limit
2. (30MHz-26GHz) Below 30MHZ no Spurious found and above is the worst mode data



7. FREQUENCY STABILITY

7.1 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°C. 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°C increments from -10°C to +50°C. 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°C.
- 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°C increments from +50°C to -10°C. 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°C during the measurement procedure.



7.2 PROVISIONS APPLICABLE

7.2.1 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 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5

ppm) of the center frequency. For Part 24 and Part 27, the frequency stability shall be sufficient to

ensure that the fundamental emission stays within the authorized frequency block.

7.2.2 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.

**7.3 MEASUREMENT RESULT (WORST)****LTE Band 2**

Middle Channel, $f_0 = 1880$ MHz				
Temperature (°C)	Power Supplied (dBm)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	12.0	-0.26	-0.000139	± 2.5
0		-0.66	-0.000356	± 2.5
10		0.57	0.000309	± 2.5
20		-0.36	-0.000193	± 2.5
30		-3.60	-0.001917	± 2.5
40		-3.49	-0.001857	± 2.5
50		-5.08	-0.002701	± 2.5
25	13.8	-3.63	-0.001933	± 2.5
	10.2	0.82	0.000427	± 2.5

LTE Band 4

Middle Channel, $f_0 = 1732.5$ MHz				
Temperature (°C)	Power Supplied (dBm)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	12.0	0.37	0.000217	± 2.5
0		1.40	0.000819	± 2.5
10		1.99	0.001162	± 2.5
20		2.46	0.001438	± 2.5
30		-0.01	-0.000008	± 2.5
40		0.16	0.000091	± 2.5
50		0.50	0.000289	± 2.5
25	13.8	-0.29	-0.000165	± 2.5
	10.2	-1.77	-0.001011	± 2.5

**LTE Band 5**

Middle Channel, $f_0 = 836.5$ MHz				
Temperature (°C)	Power Supplied (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	12.0	-1.07	-0.001301	±2.5
0		-1.56	-0.001891	±2.5
10		-2.15	-0.002602	±2.5
20		-0.83	-0.001006	±2.5
30		0.36	0.000428	±2.5
40		-1.26	-0.001505	±2.5
50		-0.23	-0.000274	±2.5
25	13.8	-0.87	-0.001043	±2.5
	10.2	0.09	0.000101	±2.5

LTE Band 12

Middle Channel, $f_0 = 707.5$ MHz				
Temperature (°C)	Power Supplied (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-10	12.0	-0.16	-0.000225	±2.5
0		0.24	0.000348	±2.5
10		-1.27	-0.001820	±2.5
20		-1.09	-0.001554	±2.5
30		-0.09	-0.000121	±2.5
40		-0.14	-0.000202	±2.5
50		-1.13	-0.001597	±2.5
25	13.8	0.93	0.001314	±2.5
	10.2	-0.66	-0.000920	±2.5

Note: The EUT doesn't work below -10°C



8. OCCUPIED BANDWIDTH

8.1 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.

8.2 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

8.3 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	1.0784	PASS
	MCH	6	0	1.0782	PASS
	HCH	6	0	1.0754	PASS
16QAM	LCH	6	0	1.0777	PASS
	MCH	6	0	1.0796	PASS
	HCH	6	0	1.0782	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation n	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6854	PASS
	MCH	15	0	2.6844	PASS
	HCH	15	0	2.6796	PASS
16QAM	LCH	15	0	2.6852	PASS
	MCH	15	0	2.6871	PASS
	HCH	15	0	2.6797	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation n	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4786	PASS
	MCH	25	0	4.4730	PASS
	HCH	25	0	4.4719	PASS
16QAM	LCH	25	0	4.4763	PASS
	MCH	25	0	4.4754	PASS
	HCH	25	0	4.4695	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9406	PASS
	MCH	50	0	8.9209	PASS
	HCH	50	0	8.9203	PASS
16QAM	LCH	50	0	8.9270	N/A
	MCH	50	0	8.9269	N/A
	HCH	50	0	8.8948	N/A

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.388	PASS
	MCH	75	0	13.377	PASS
	HCH	75	0	13.344	PASS
16QAM	LCH	75	0	13.377	N/A
	MCH	75	0	13.369	N/A
	HCH	75	0	13.342	N/A

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.821	PASS
	MCH	100	0	17.831	PASS
	HCH	100	0	17.788	PASS
16QAM	LCH	100	0	17.819	N/A
	MCH	100	0	17.811	N/A
	HCH	100	0	17.759	N/A



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	1.0747	PASS
	MCH	6	0	1.0785	PASS
	HCH	6	0	1.0785	PASS
16QAM	LCH	6	0	1.0779	PASS
	MCH	6	0	1.0779	PASS
	HCH	6	0	1.0809	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6881	PASS
	MCH	15	0	2.6876	PASS
	HCH	15	0	2.6824	PASS
16QAM	LCH	15	0	2.6864	PASS
	MCH	15	0	2.6832	PASS
	HCH	15	0	2.6818	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4737	PASS
	MCH	25	0	4.4758	PASS
	HCH	25	0	4.4758	PASS
16QAM	LCH	25	0	4.4738	PASS
	MCH	25	0	4.4692	PASS
	HCH	25	0	4.4652	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9319	PASS
	MCH	50	0	8.9245	PASS
	HCH	50	0	8.9265	PASS
16QAM	LCH	50	0	8.9192	PASS
	MCH	50	0	8.9302	PASS
	HCH	50	0	8.8988	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.369	PASS
	MCH	75	0	13.389	PASS
	HCH	75	0	13.360	PASS
16QAM	LCH	75	0	13.362	PASS
	MCH	75	0	13.379	PASS
	HCH	75	0	13.356	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.804	PASS
	MCH	100	0	17.830	PASS
	HCH	100	0	17.823	PASS
16QAM	LCH	100	0	17.824	PASS
	MCH	100	0	17.839	PASS
	HCH	100	0	17.791	PASS



LTE Band 5
Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.0986	PASS
	MCH	6	0	1.0818	PASS
	HCH	6	0	1.0770	PASS
16QAM	LCH	6	0	1.0928	PASS
	MCH	6	0	1.0787	PASS
	HCH	6	0	1.0802	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	2.6857	PASS
	HCH	15	0	2.6817	PASS
16QAM	LCH	15	0	2.6796	PASS
	MCH	15	0	2.6848	PASS
	HCH	15	0	2.6810	PASS

**Channel Bandwidth: 5 MHz**

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4797	PASS
	MCH	25	0	4.4799	PASS
	HCH	25	0	4.4710	PASS
16QAM	LCH	25	0	4.4795	PASS
	MCH	25	0	4.4822	PASS
	HCH	25	0	4.4779	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9391	PASS
	MCH	50	0	8.9265	PASS
	HCH	50	0	8.9243	PASS
16QAM	LCH	50	0	8.9111	PASS
	MCH	50	0	8.9451	PASS
	HCH	50	0	8.8990	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	1.0754	PASS
	MCH	6	0	1.0796	PASS
	HCH	6	0	1.0790	PASS
16QAM	LCH	6	0	1.0782	PASS
	MCH	6	0	1.0774	PASS
	HCH	6	0	1.0799	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6832	PASS
	MCH	15	0	2.6863	PASS
	HCH	15	0	2.6847	PASS
16QAM	LCH	15	0	2.6814	PASS
	MCH	15	0	2.6876	PASS
	HCH	15	0	2.6797	PASS

**Channel Bandwidth: 5 MHz**

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4722	PASS
	MCH	25	0	4.4741	PASS
	HCH	25	0	4.4668	PASS
16QAM	LCH	25	0	4.4717	PASS
	MCH	25	0	4.4760	PASS
	HCH	25	0	4.4631	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9239	PASS
	MCH	50	0	8.9213	PASS
	HCH	50	0	8.9082	PASS
16QAM	LCH	50	0	8.9282	PASS
	MCH	50	0	8.9421	PASS
	HCH	50	0	8.8853	PASS

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



9. EMISSION 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		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.211	PASS
	MCH	6	0	1.258	PASS
	HCH	6	0	1.215	PASS
16QAM	LCH	6	0	1.235	PASS
	MCH	6	0	1.245	PASS
	HCH	6	0	1.225	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.883	PASS
	MCH	15	0	2.901	PASS
	HCH	15	0	2.891	PASS
16QAM	LCH	15	0	2.889	PASS
	MCH	15	0	2.895	PASS
	HCH	15	0	2.898	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.826	PASS
	MCH	25	0	4.809	PASS
	HCH	25	0	4.779	PASS
16QAM	LCH	25	0	4.789	PASS
	MCH	25	0	4.757	PASS
	HCH	25	0	4.827	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.465	PASS
	MCH	50	0	9.486	PASS
	HCH	50	0	9.432	PASS
16QAM	LCH	50	0	9.454	PASS
	MCH	50	0	9.424	PASS
	HCH	50	0	9.407	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.04	PASS
	MCH	75	0	13.93	PASS
	HCH	75	0	13.94	PASS
16QAM	LCH	75	0	14.00	PASS
	MCH	75	0	14.02	PASS
	HCH	75	0	14.02	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.63	PASS
	MCH	100	0	18.60	PASS
	HCH	100	0	18.57	PASS
16QAM	LCH	100	0	18.59	PASS
	MCH	100	0	18.56	PASS
	HCH	100	0	18.51	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	1.235	PASS
	MCH	6	0	1.222	PASS
	HCH	6	0	1.255	PASS
16QAM	LCH	6	0	1.238	PASS
	MCH	6	0	1.221	PASS
	HCH	6	0	1.233	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.886	PASS
	MCH	15	0	2.920	PASS
	HCH	15	0	2.871	PASS
16QAM	LCH	15	0	2.912	PASS
	MCH	15	0	2.892	PASS
	HCH	15	0	2.895	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.850	PASS
	MCH	25	0	4.801	PASS
	HCH	25	0	4.819	PASS
16QAM	LCH	25	0	4.852	PASS
	MCH	25	0	4.806	PASS
	HCH	25	0	4.834	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.490	PASS
	MCH	50	0	9.403	PASS
	HCH	50	0	9.435	PASS
16QAM	LCH	50	0	9.476	PASS
	MCH	50	0	9.386	PASS
	HCH	50	0	9.422	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.04	PASS
	MCH	75	0	14.05	PASS
	HCH	75	0	13.98	PASS
16QAM	LCH	75	0	14.00	PASS
	MCH	75	0	14.01	PASS
	HCH	75	0	14.04	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.55	PASS
	MCH	100	0	18.56	PASS
	HCH	100	0	18.57	PASS
16QAM	LCH	100	0	18.59	PASS
	MCH	100	0	18.56	PASS
	HCH	100	0	18.53	PASS



LTE Band 5
Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.933	PASS
	MCH	6	0	1.277	PASS
	HCH	6	0	1.221	PASS
16QAM	LCH	6	0	1.791	PASS
	MCH	6	0	1.233	PASS
	HCH	6	0	1.235	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.907	PASS
	MCH	15	0	2.891	PASS
	HCH	15	0	2.884	PASS
16QAM	LCH	15	0	2.908	PASS
	MCH	15	0	2.904	PASS
	HCH	15	0	2.888	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.835	PASS
	MCH	25	0	4.811	PASS
	HCH	25	0	4.787	PASS
16QAM	LCH	25	0	4.792	PASS
	MCH	25	0	4.787	PASS
	HCH	25	0	4.819	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.445	PASS
	MCH	50	0	9.458	PASS
	HCH	50	0	9.421	PASS
16QAM	LCH	50	0	9.459	PASS
	MCH	50	0	9.452	PASS
	HCH	50	0	9.408	PASS



LTE Band 12
Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.266	PASS
	MCH	6	0	1.244	PASS
	HCH	6	0	1.228	PASS
16QAM	LCH	6	0	1.229	PASS
	MCH	6	0	1.234	PASS
	HCH	6	0	1.258	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.870	PASS
	MCH	15	0	2.886	PASS
	HCH	15	0	2.862	PASS
16QAM	LCH	15	0	2.907	PASS
	MCH	15	0	2.887	PASS
	HCH	15	0	2.867	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.790	PASS
	MCH	25	0	4.818	PASS
	HCH	25	0	4.772	PASS
16QAM	LCH	25	0	4.839	PASS
	MCH	25	0	4.761	PASS
	HCH	25	0	4.804	PASS

**Channel Bandwidth: 10 MHz**

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.434	PASS
	MCH	50	0	9.443	PASS
	HCH	50	0	9.376	PASS
16QAM	LCH	50	0	9.453	PASS
	MCH	50	0	9.441	PASS
	HCH	50	0	9.357	PASS

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



10. BAND EDGE

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

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

10.3 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 $43 + \log_{10}(P[\text{Watts}])$, where P

is the transmitter power in Watts.

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

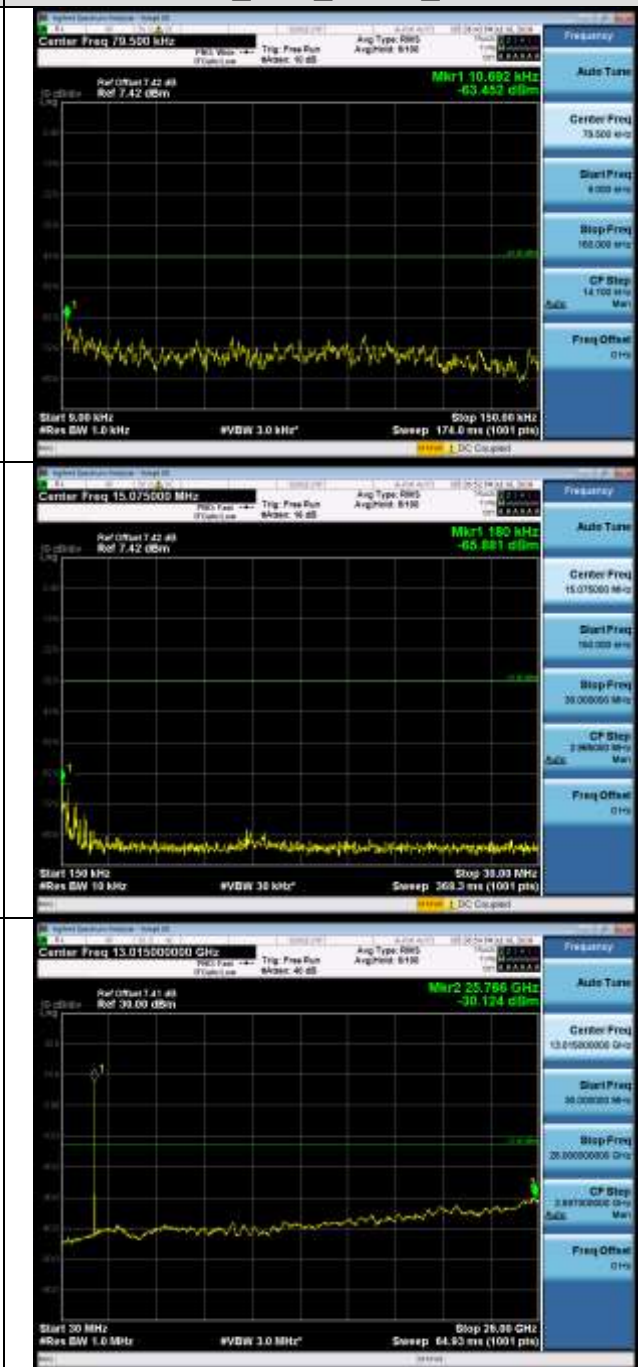


APPENDIX A TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION LTE BAND 2

1.4MHz_LCH_QPSK_1RB#0



20MHz_LCH_QPSK_1RB#0





1.4MHz_MCH_QPSK_1RB#0

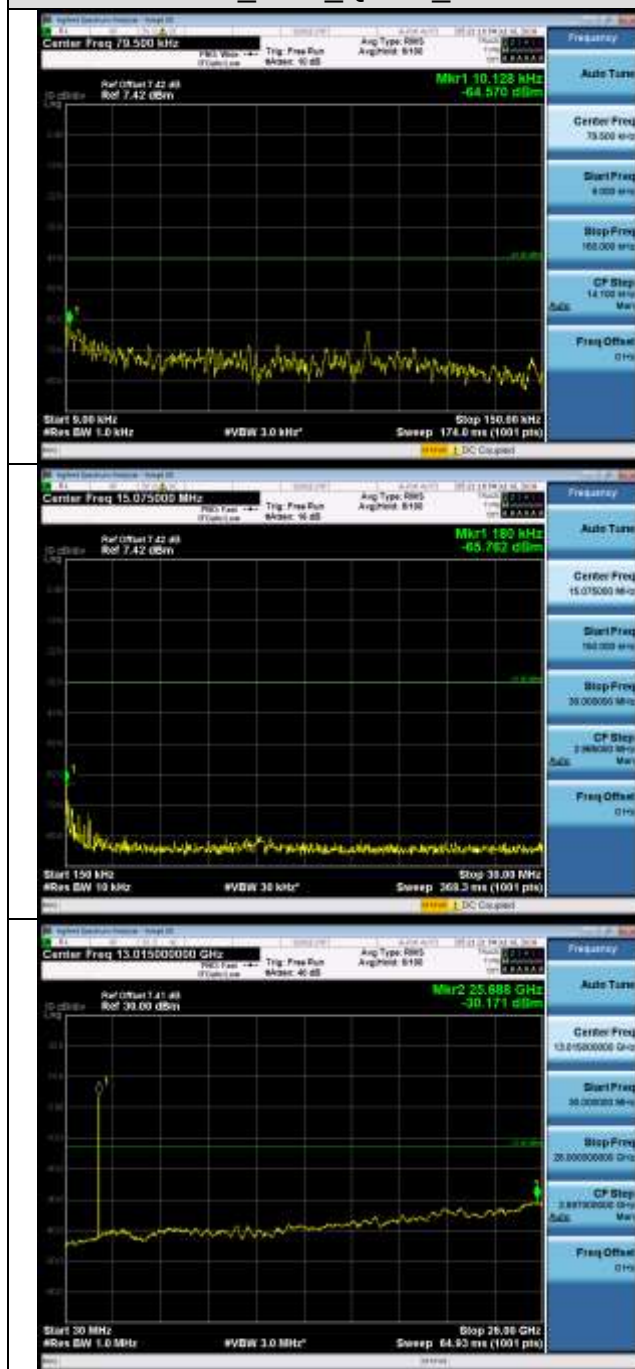


20MHz_MCH_QPSK_1RB#0

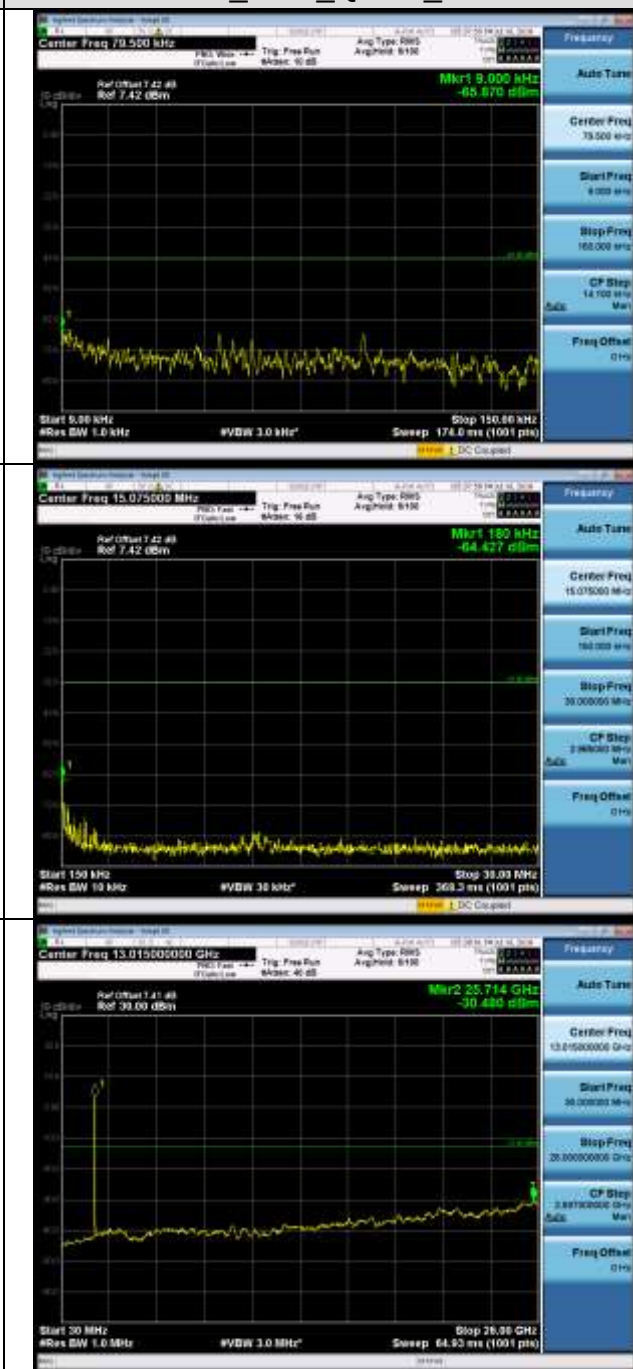




1.4MHz_HCH_QPSK_1RB#0



20MHz_HCH_QPSK_1RB#0





LTE BAND 4

1.4MHz_LCH_QPSK_1RB#0

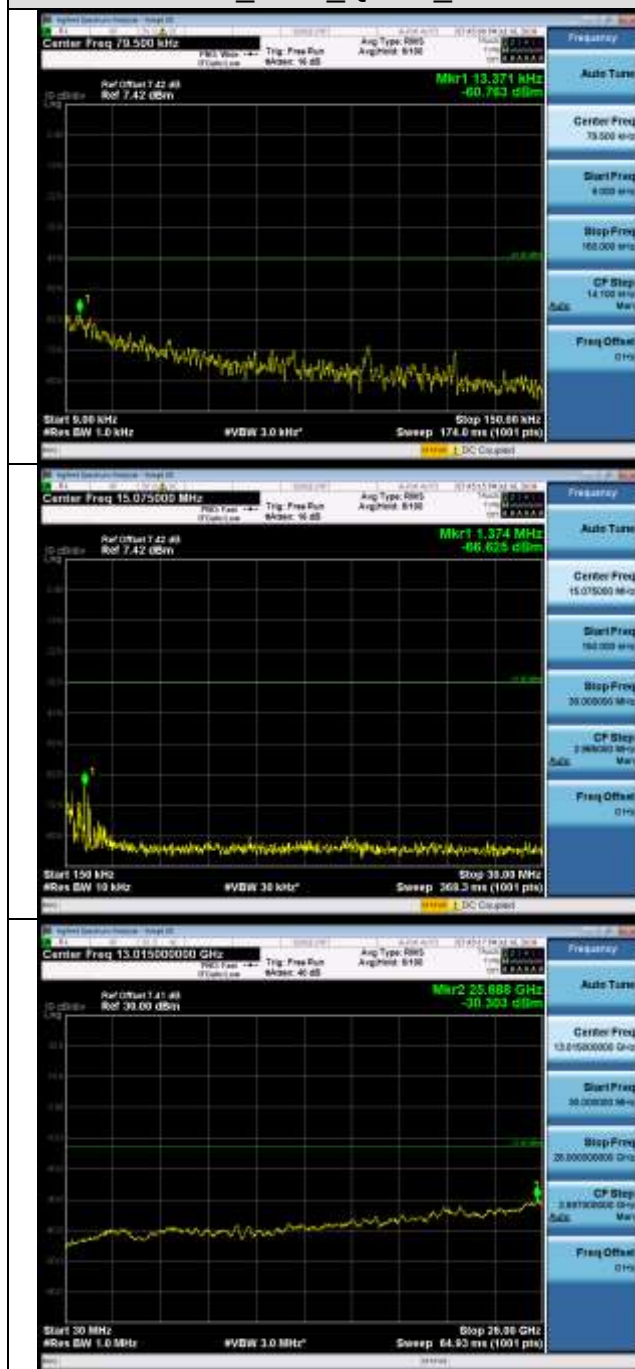


20MHz_LCH_QPSK_1RB#0

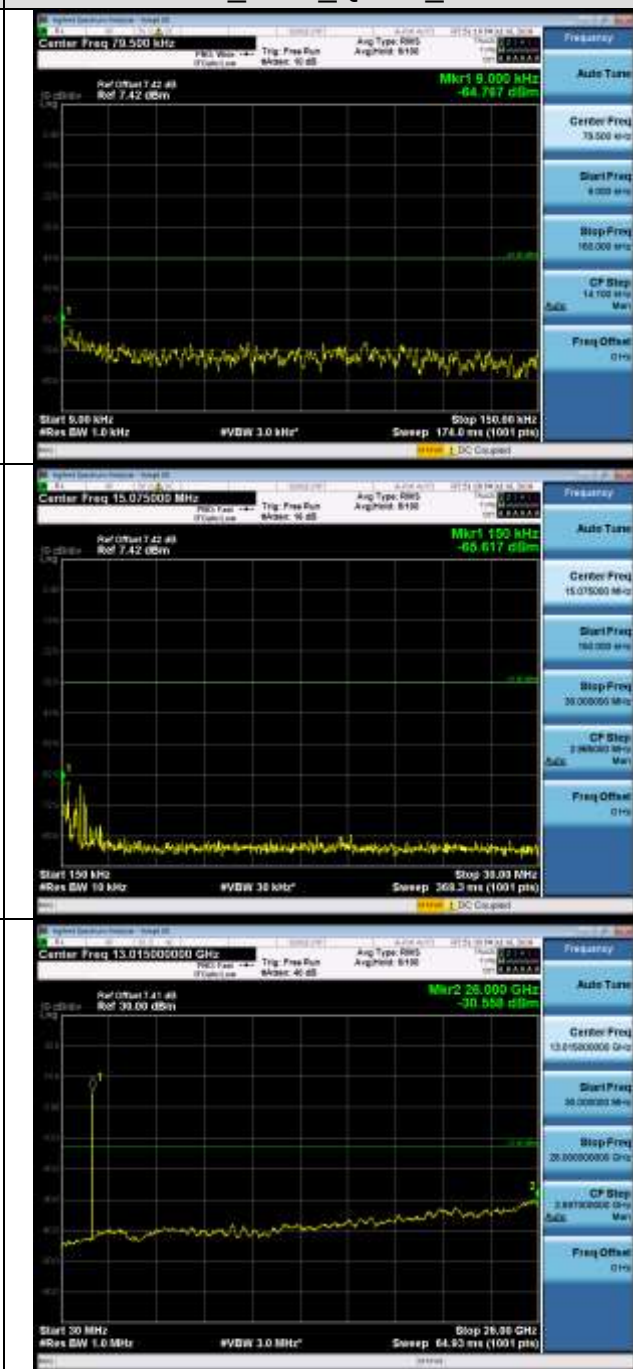




1.4MHz_MCH_QPSK_1RB#0



20MHz_MCH_QPSK_1RB#0

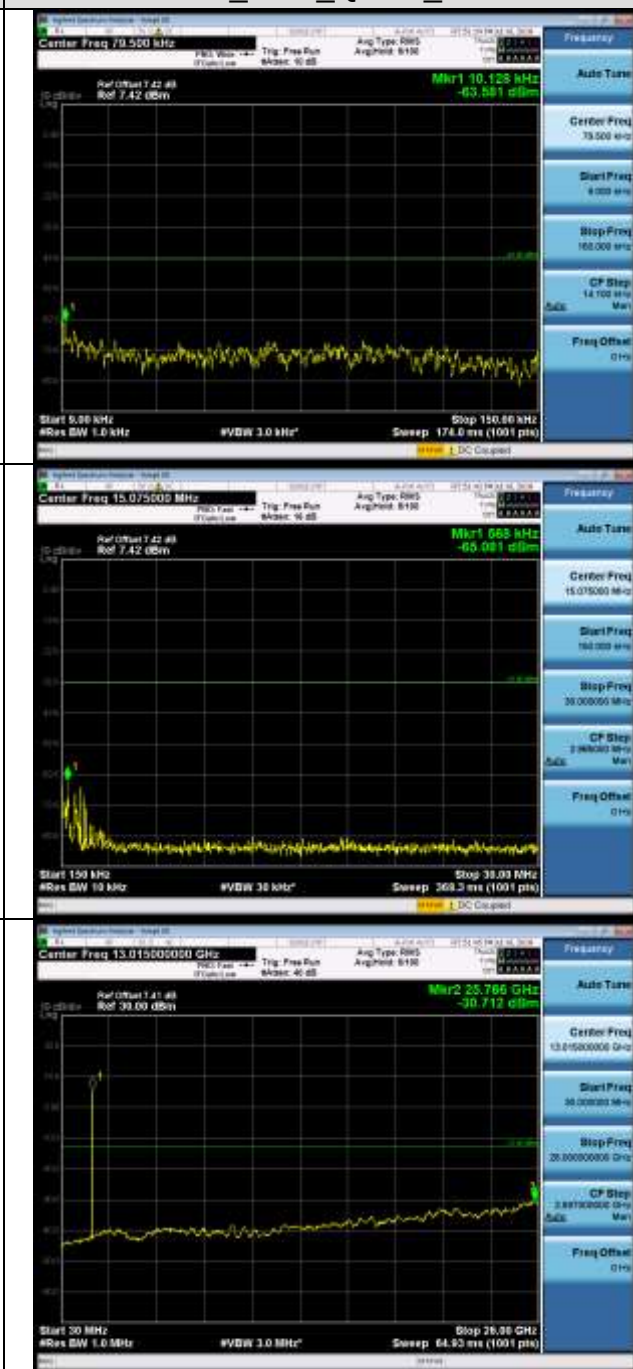




1.4MHz_HCH_QPSK_1RB#0



20MHz_HCH_QPSK_1RB#0





LTE BAND 5

1.4MHz_LCH_QPSK_1RB#0



10MHz_LCH_QPSK_1RB#0





1.4MHz_MCH_QPSK_1RB#0

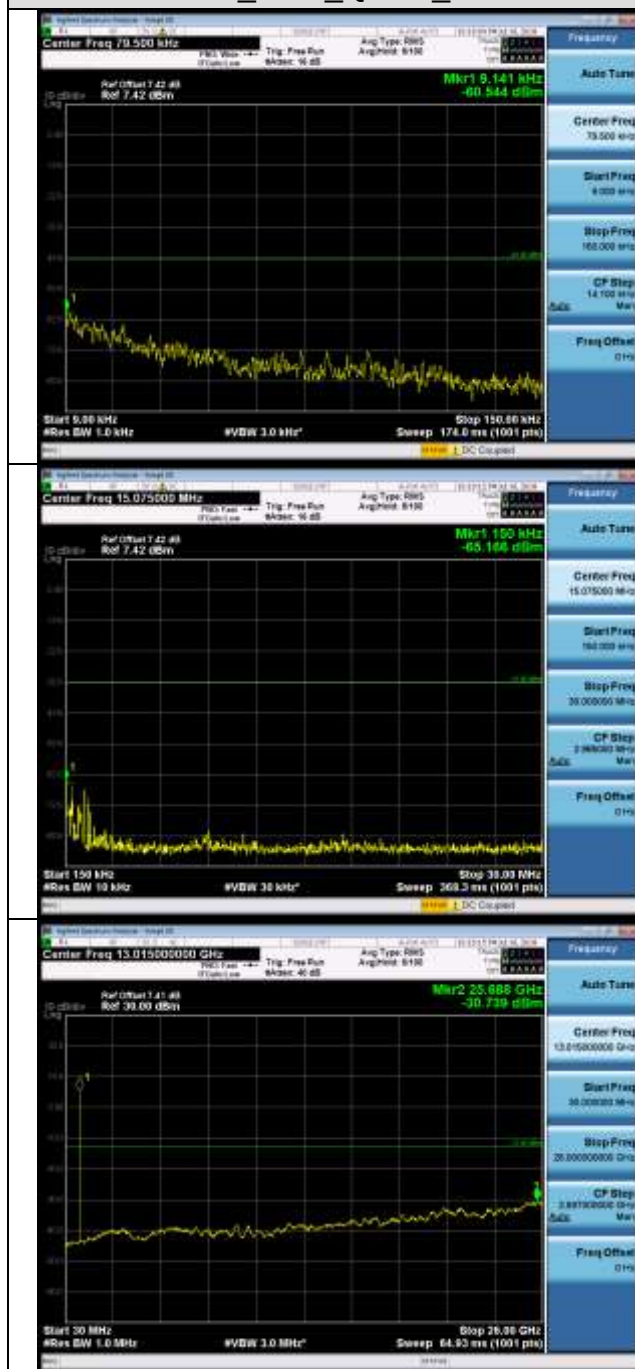


10MHz_MCH_QPSK_1RB#0

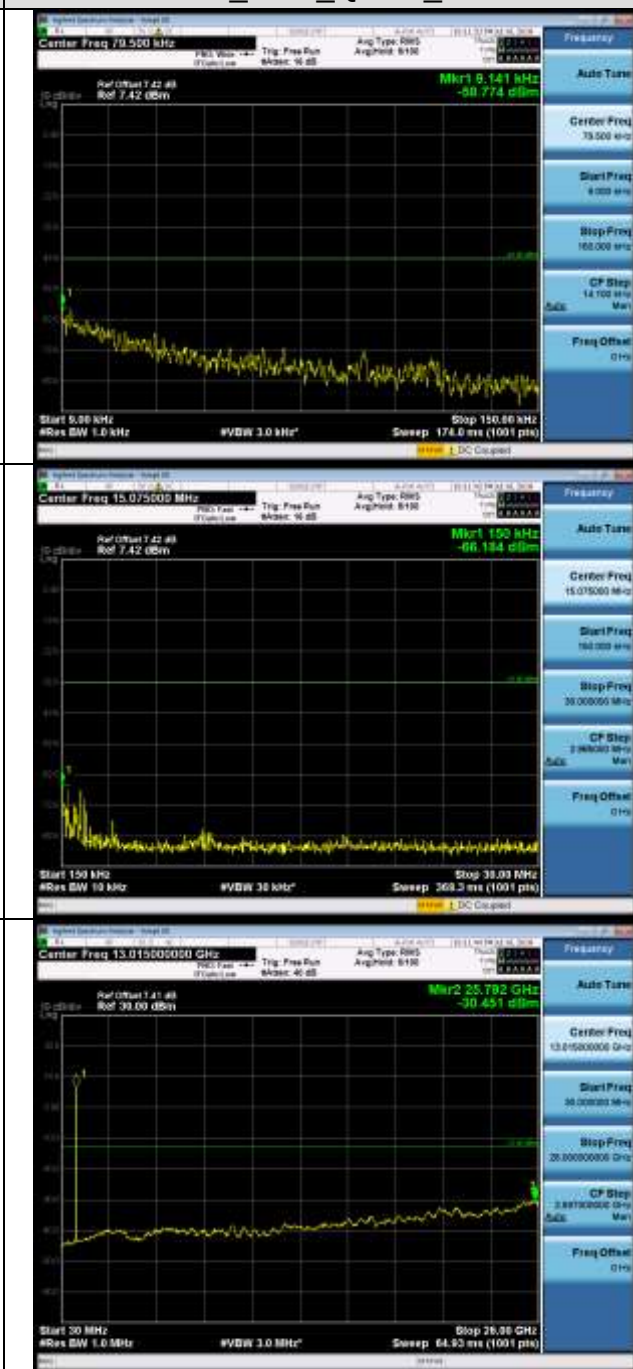




1.4MHz_HCH_QPSK_1RB#0



10MHz_HCH_QPSK_1RB#0





LTE BAND 12

1.4MHz_LCH_QPSK_1RB#0

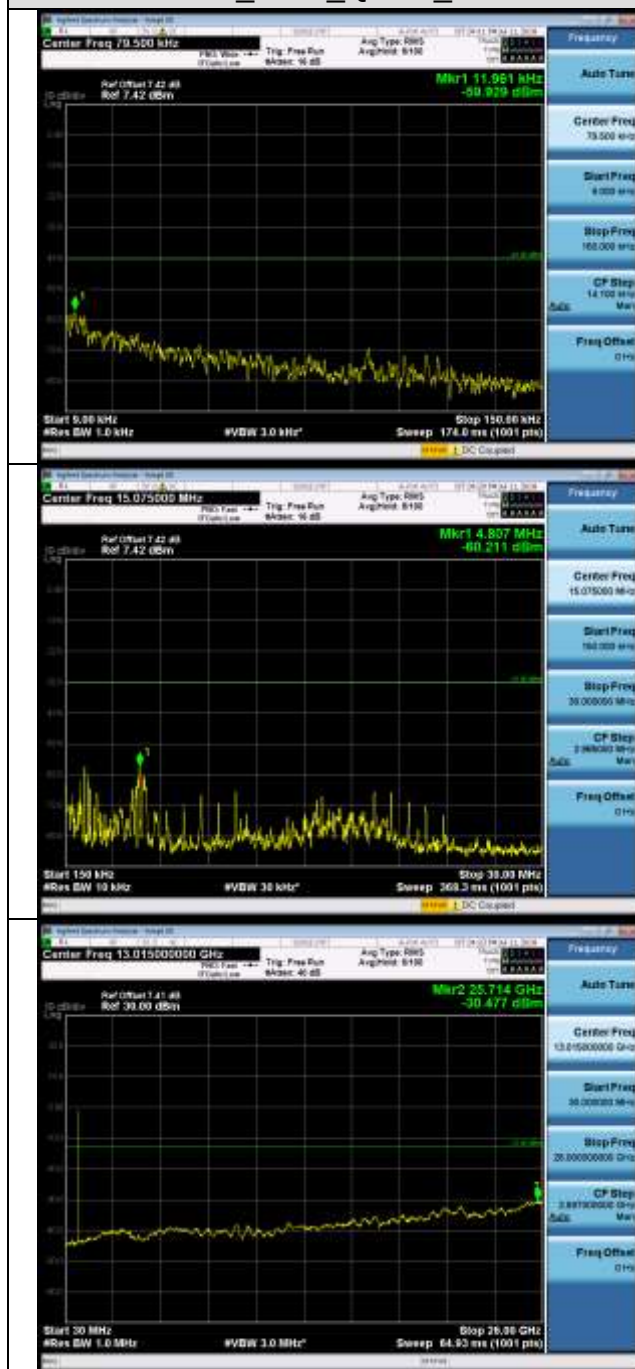


10MHz_LCH_QPSK_1RB#0

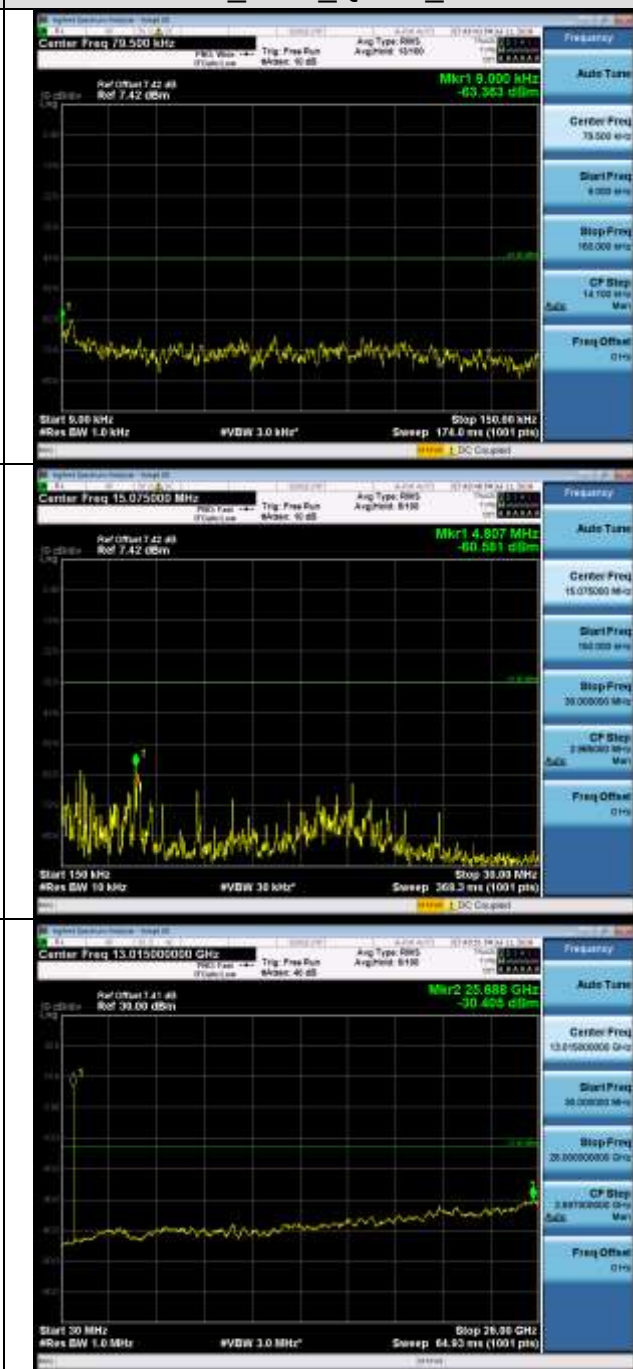




1.4MHz_MCH_QPSK_1RB#0



10MHz_MCH_QPSK_1RB#0





1.4MHz_HCH_QPSK_1RB#0

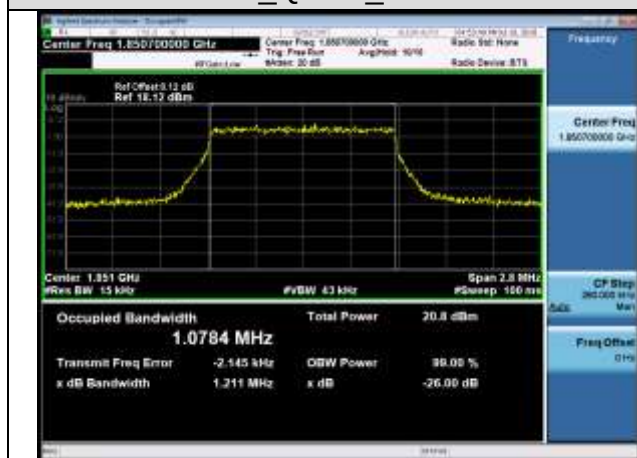


10MHz_HCH_QPSK_1RB#0





APPENDIX B TEST PLOTS FOR OCCUPIED BANDWIDTH (99%)
EMISSION BANDWIDTH (-26dBC)
LTE Band 2 Channel Bandwidth: 1.4 MHz

LCH_QPSK_6RB#0**LCH_16QAM_6RB#0****MCH_QPSK_6RB#0****MCH_16QAM_6RB#0****HCH_QPSK_6RB#0****HCH_16QAM_6RB#0**



Channel Bandwidth: 3 MHz

LCH_QPSK_15RB#0



LCH_16QAM_15RB#0



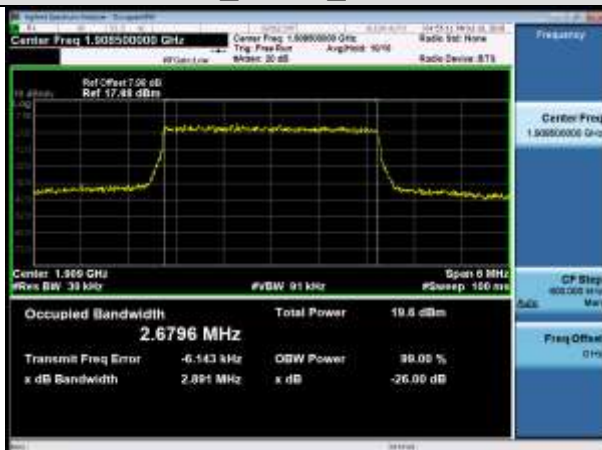
MCH_QPSK_15RB#0



MCH_16QAM_15RB#0



HCH_QPSK_15RB#0



HCH_16QAM_15RB#0





Channel Bandwidth: 5 MHz

LCH_QPSK_25RB#0



LCH_16QAM_25RB#0



MCH_QPSK_25RB#0



MCH_16QAM_25RB#0



HCH_QPSK_25RB#0



HCH_16QAM_25RB#0





Channel Bandwidth: 10 MHz

LCH_QPSK_50RB#0



LCH_16QAM_50RB#0



MCH_QPSK_50RB#0



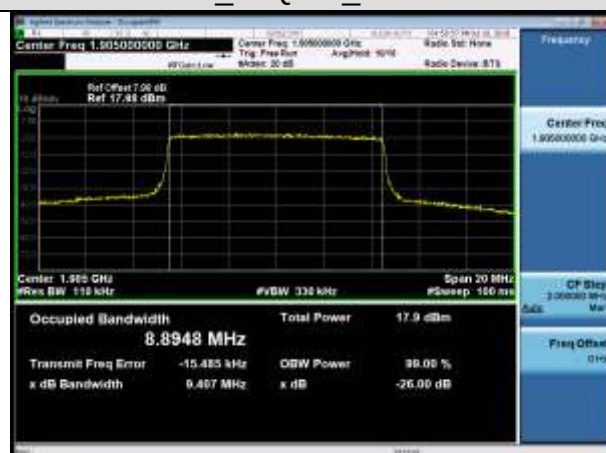
MCH_16QAM_50RB#0



HCH_QPSK_50RB#0



HCH_16QAM_50RB#0





Channel Bandwidth: 15 MHz

LCH_QPSK_75RB#0



LCH_16QAM_75RB#0



MCH_QPSK_75RB#0



MCH_16QAM_75RB#0



HCH_QPSK_75RB#0



HCH_16QAM_75RB#0





Channel Bandwidth: 20 MHz

LCH_QPSK_100RB#0



LCH_16QAM_100RB#0



MCH_QPSK_100RB#0



MCH_16QAM_100RB#0



HCH_QPSK_100RB#0

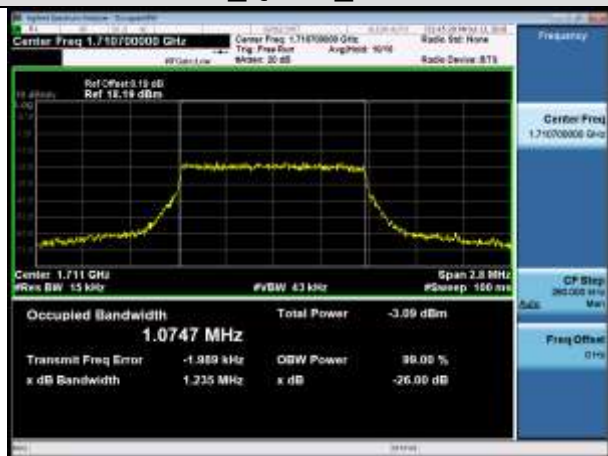
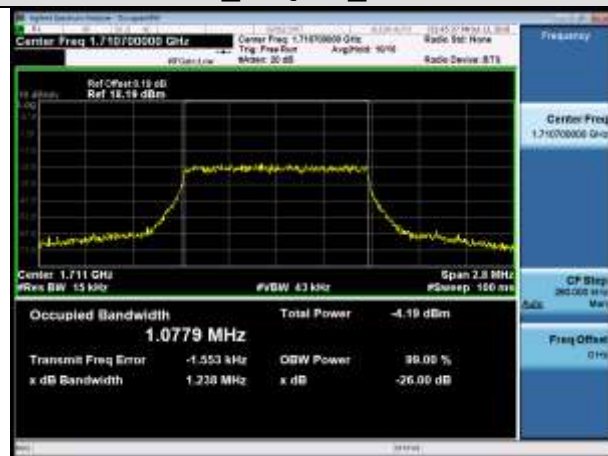
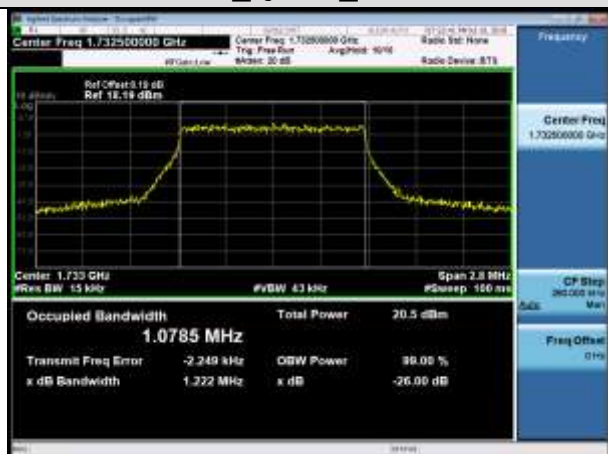


HCH_16QAM_100RB#0



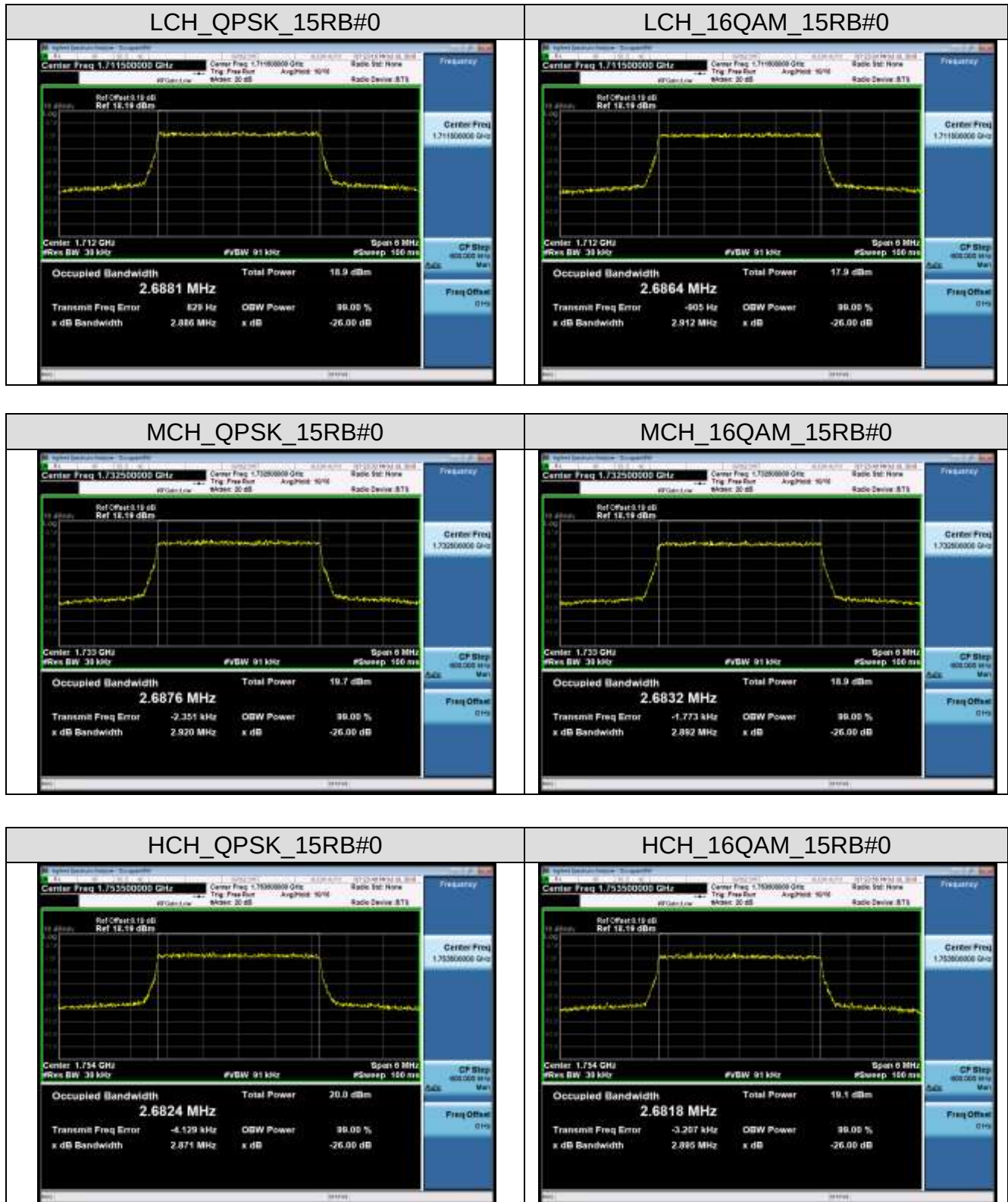


LTE Band 4
Channel Bandwidth: 1.4 MHz

LCH_QPSK_6RB#0**LCH_16QAM_6RB#0****MCH_QPSK_6RB#0****MCH_16QAM_6RB#0****HCH_QPSK_6RB#0****HCH_16QAM_6RB#0**



Channel Bandwidth: 3 MHz





Channel Bandwidth: 5 MHz

LCH_QPSK_25RB#0



LCH_16QAM_25RB#0



MCH_QPSK_25RB#0



MCH_16QAM_25RB#0



HCH_QPSK_25RB#0

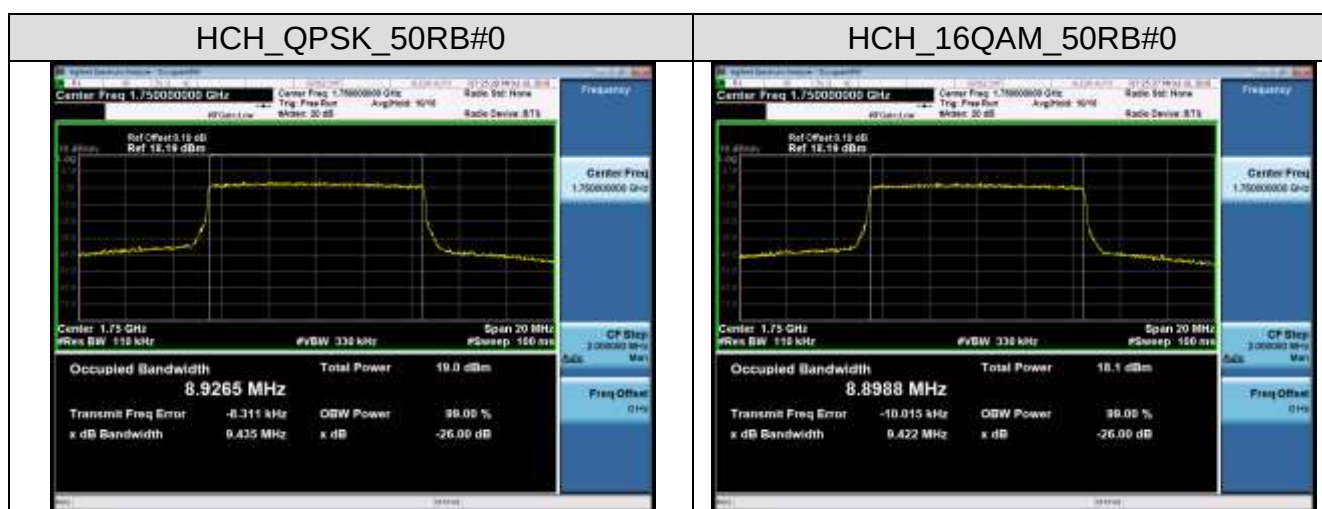
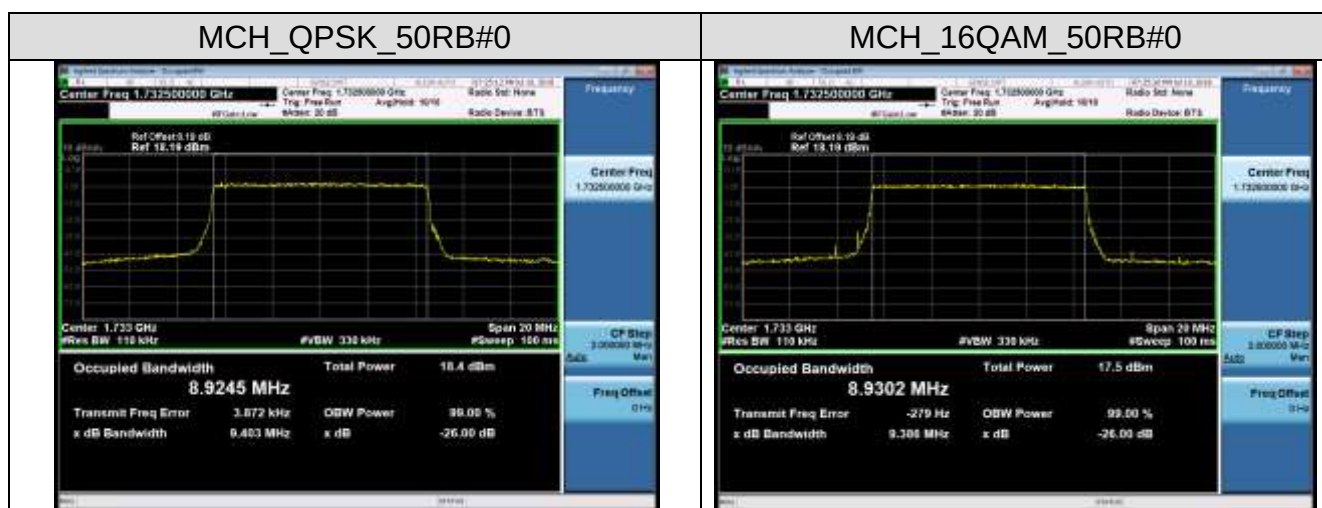
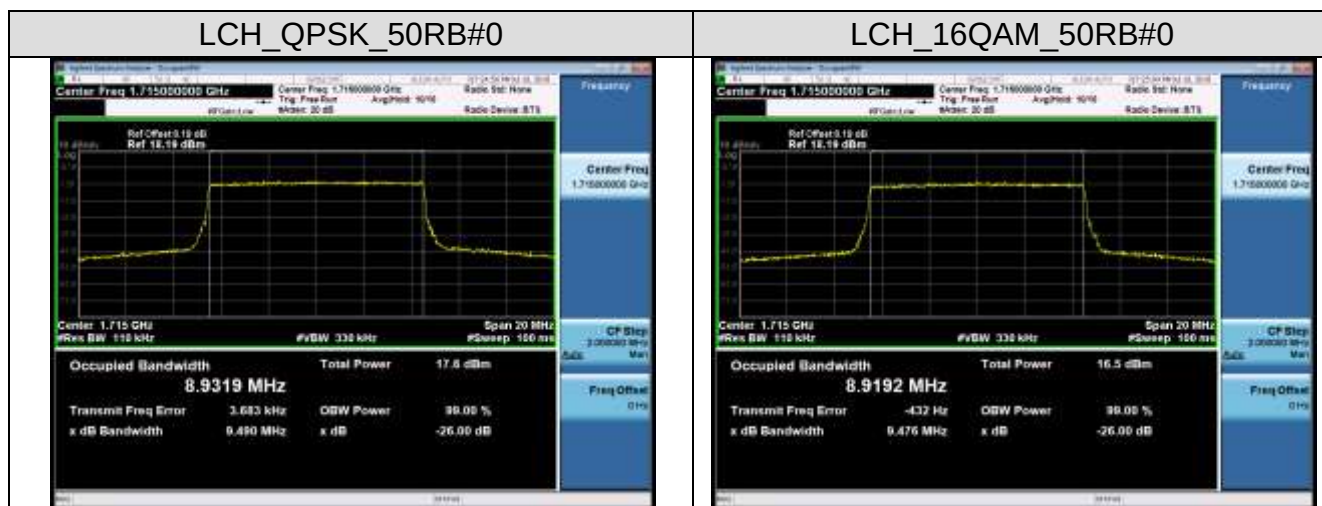


HCH_16QAM_25RB#0





Channel Bandwidth: 10 MHz





Channel Bandwidth: 15 MHz

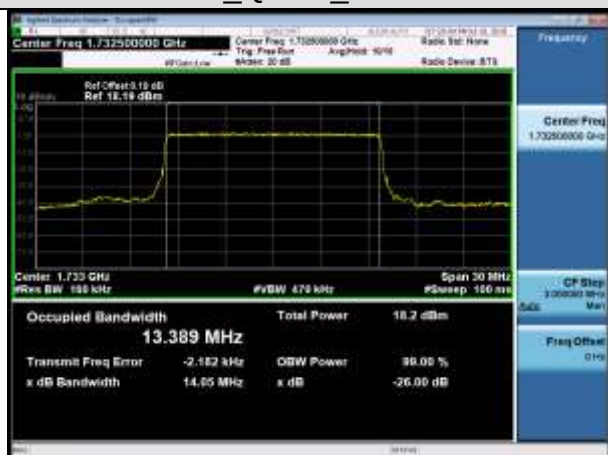
LCH_QPSK_75RB#0



LCH_16QAM_75RB#0



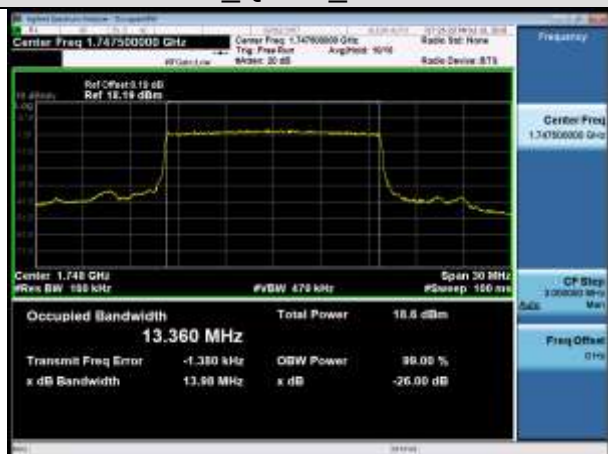
MCH_QPSK_75RB#0



MCH_16QAM_75RB#0



HCH_QPSK_75RB#0



HCH_16QAM_75RB#0





Channel Bandwidth: 20 MHz

LCH_QPSK_100RB#0



LCH_16QAM_100RB#0



MCH_QPSK_100RB#0



MCH_16QAM_100RB#0



HCH_QPSK_100RB#0

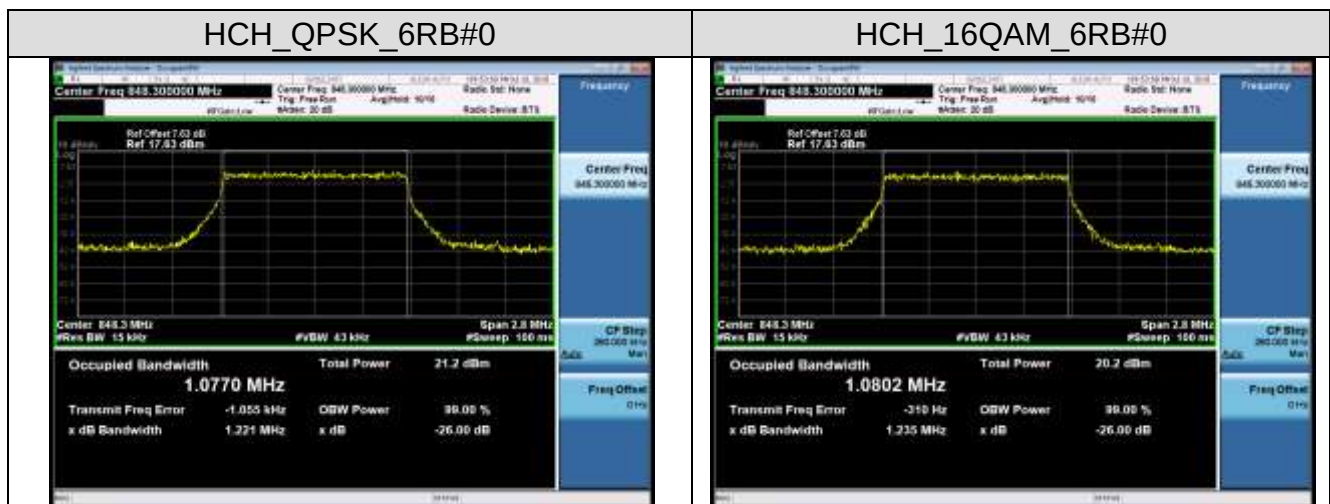
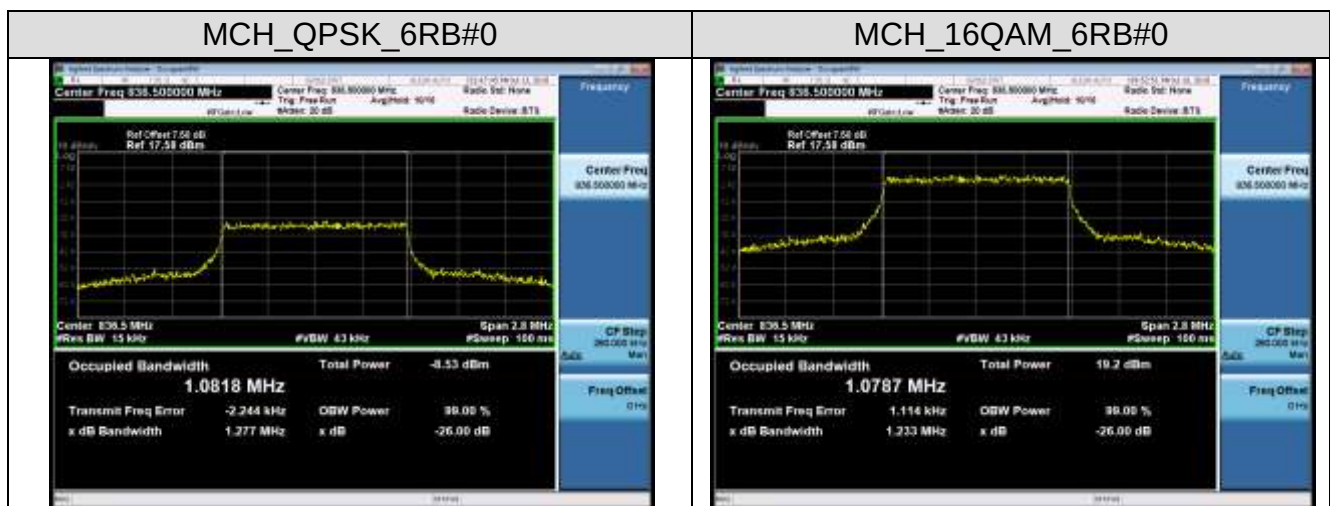
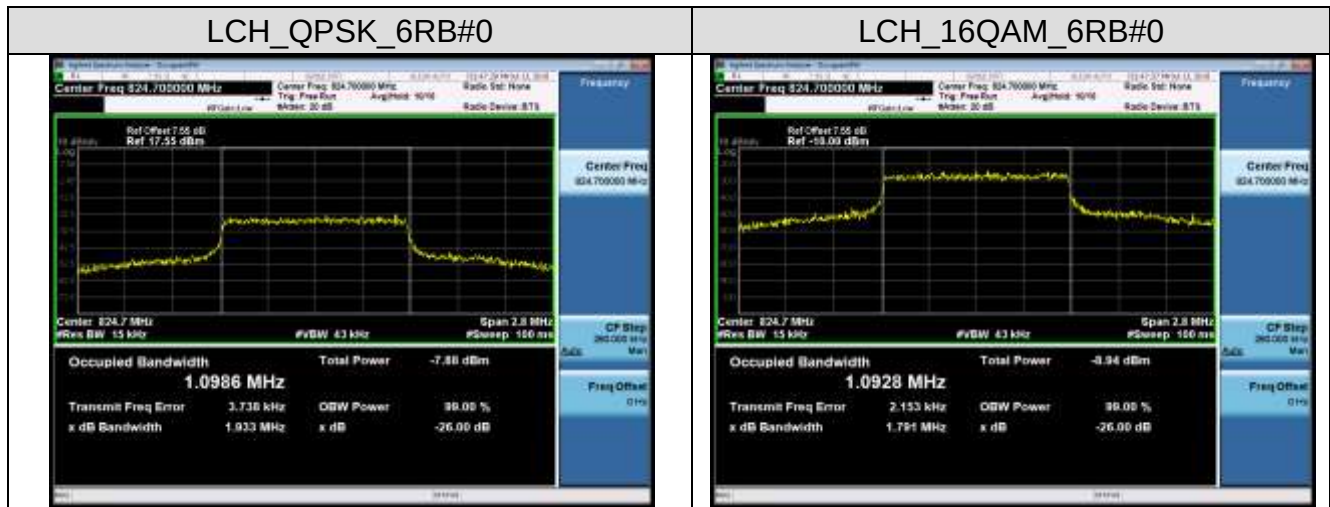


HCH_16QAM_100RB#0



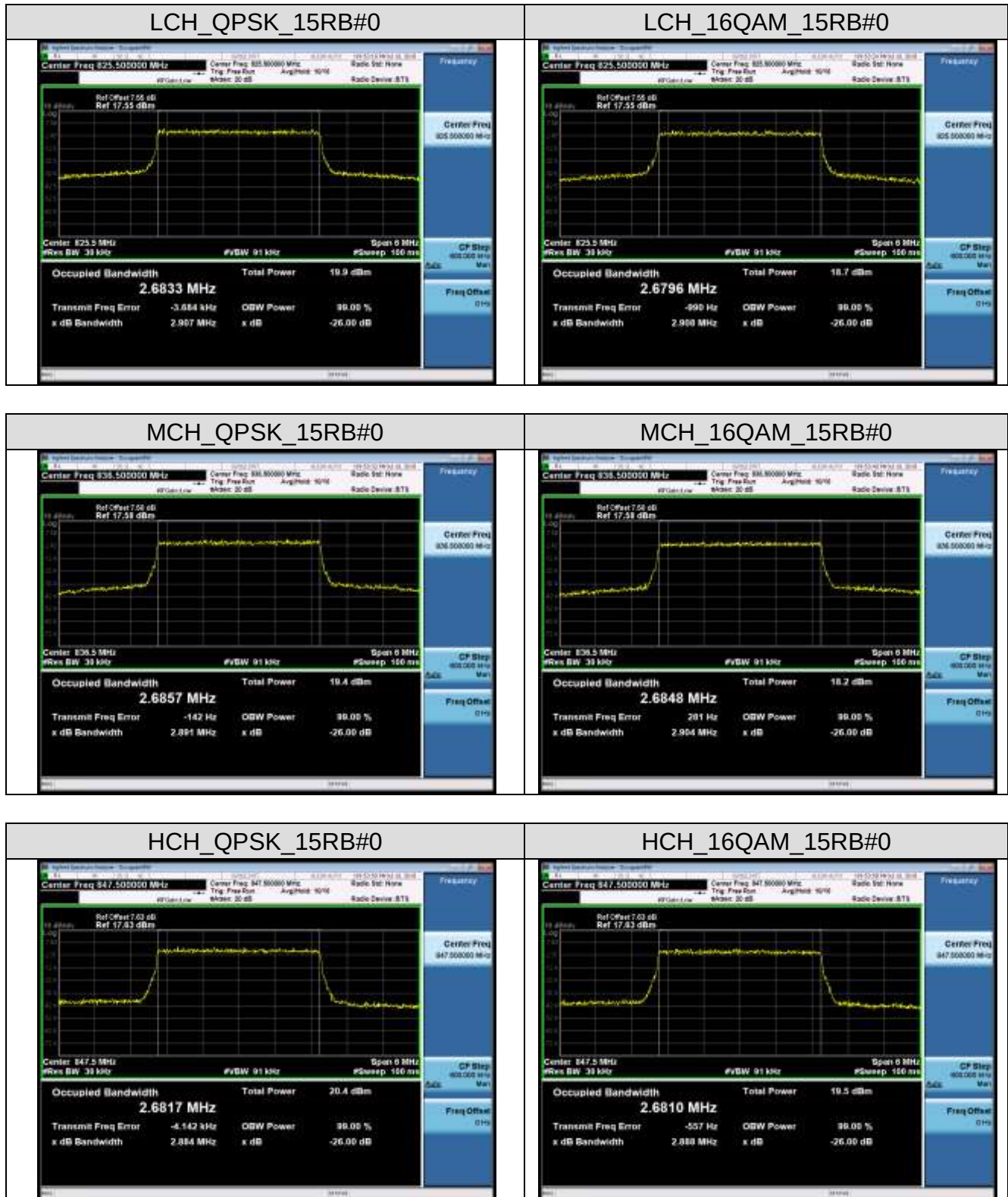


LTE Band 5
Channel Bandwidth: 1.4 MHz



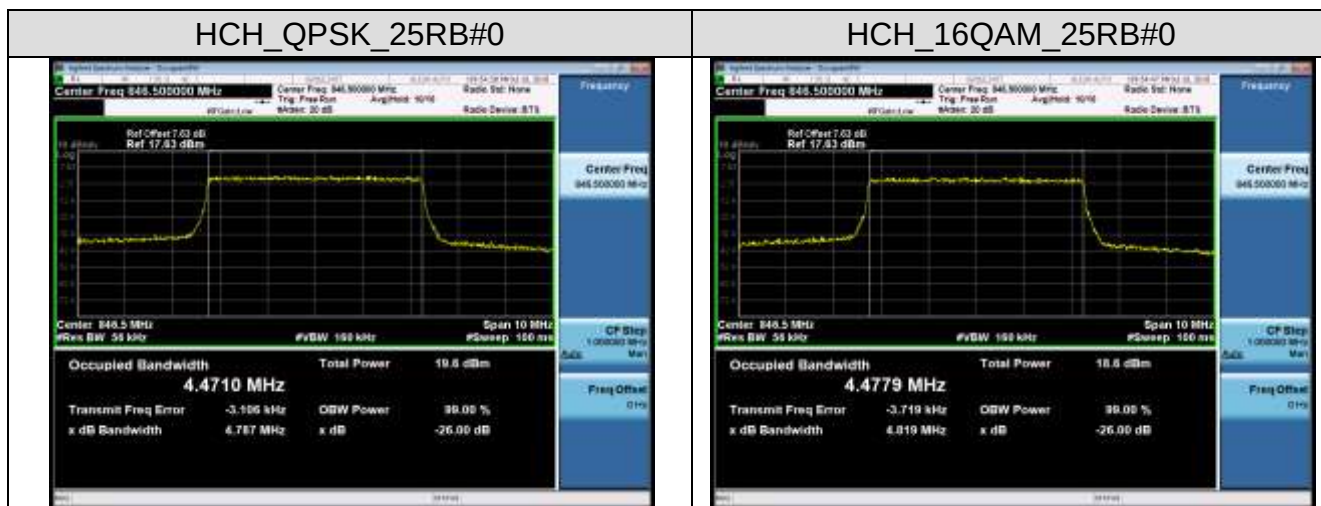
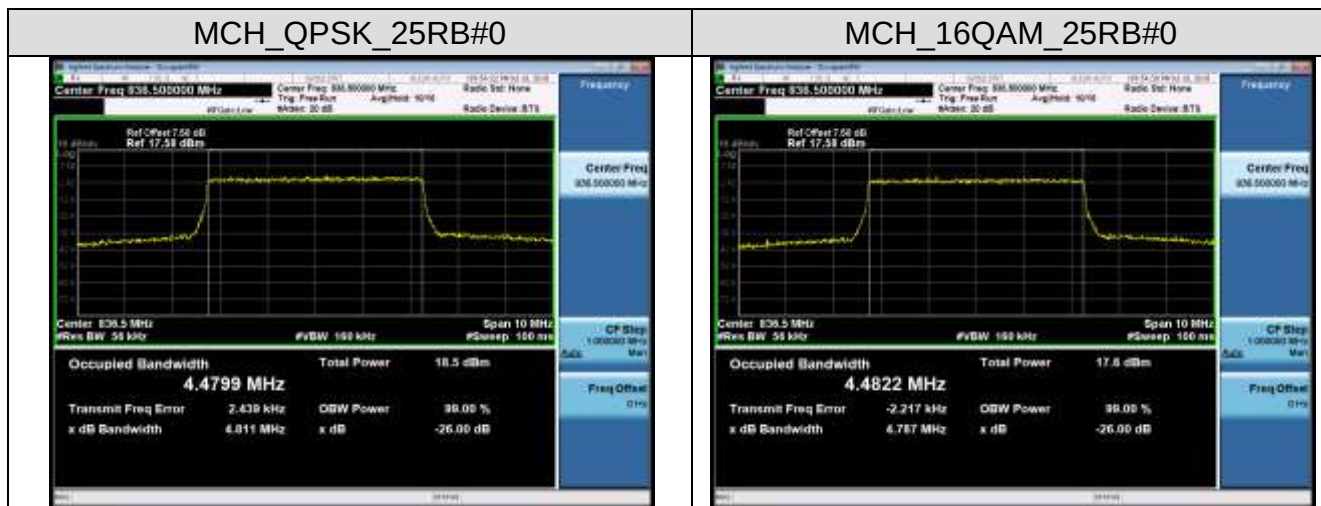
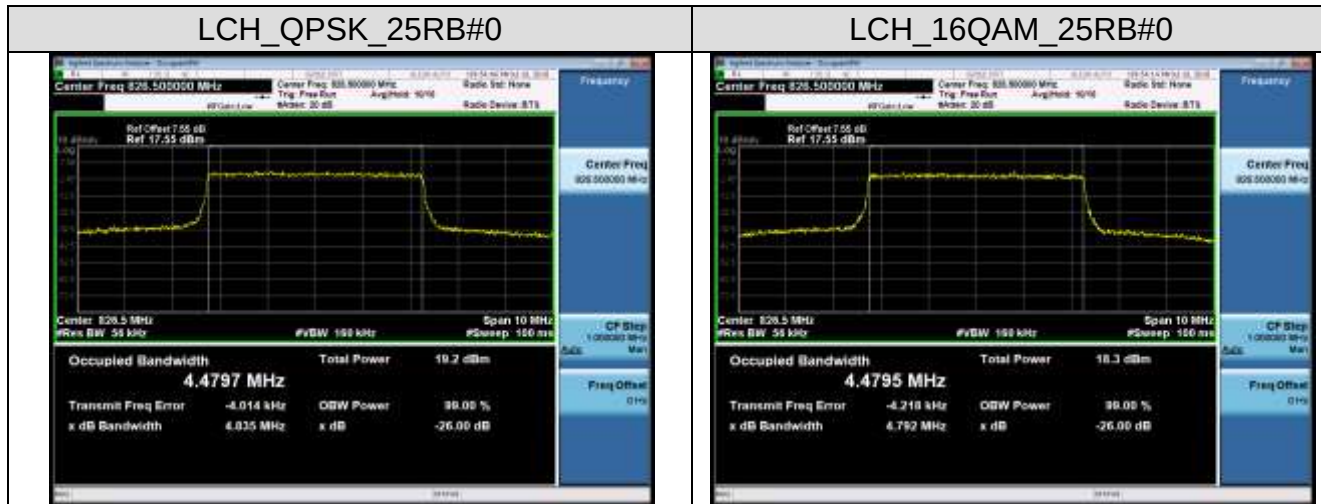


Channel Bandwidth: 3 MHz





Channel Bandwidth: 5 MHz





Channel Bandwidth: 10 MHz

LCH_QPSK_50RB#0



LCH_16QAM_50RB#0



MCH_QPSK_50RB#0



MCH_16QAM_50RB#0



HCH_QPSK_50RB#0



HCH_16QAM_50RB#0



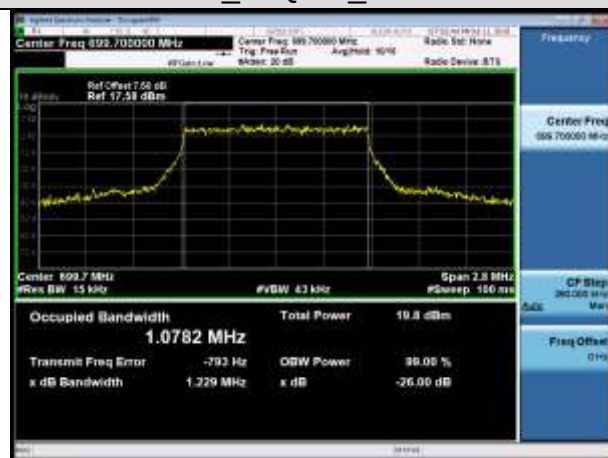


LTE Band 12
Channel Bandwidth: 1.4 MHz

LCH_QPSK_6RB#0



LCH_16QAM_6RB#0



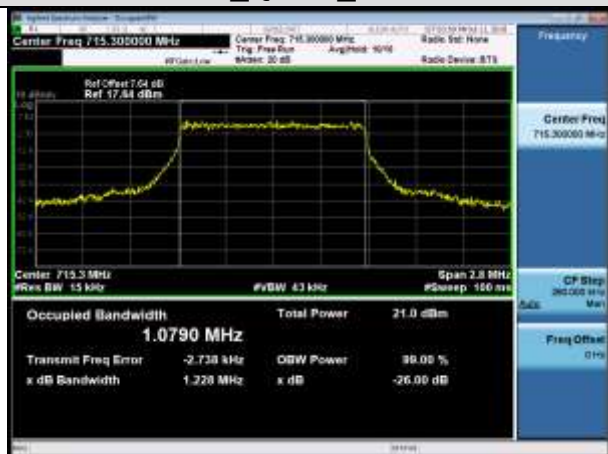
MCH_QPSK_6RB#0



MCH_16QAM_6RB#0



HCH_QPSK_6RB#0

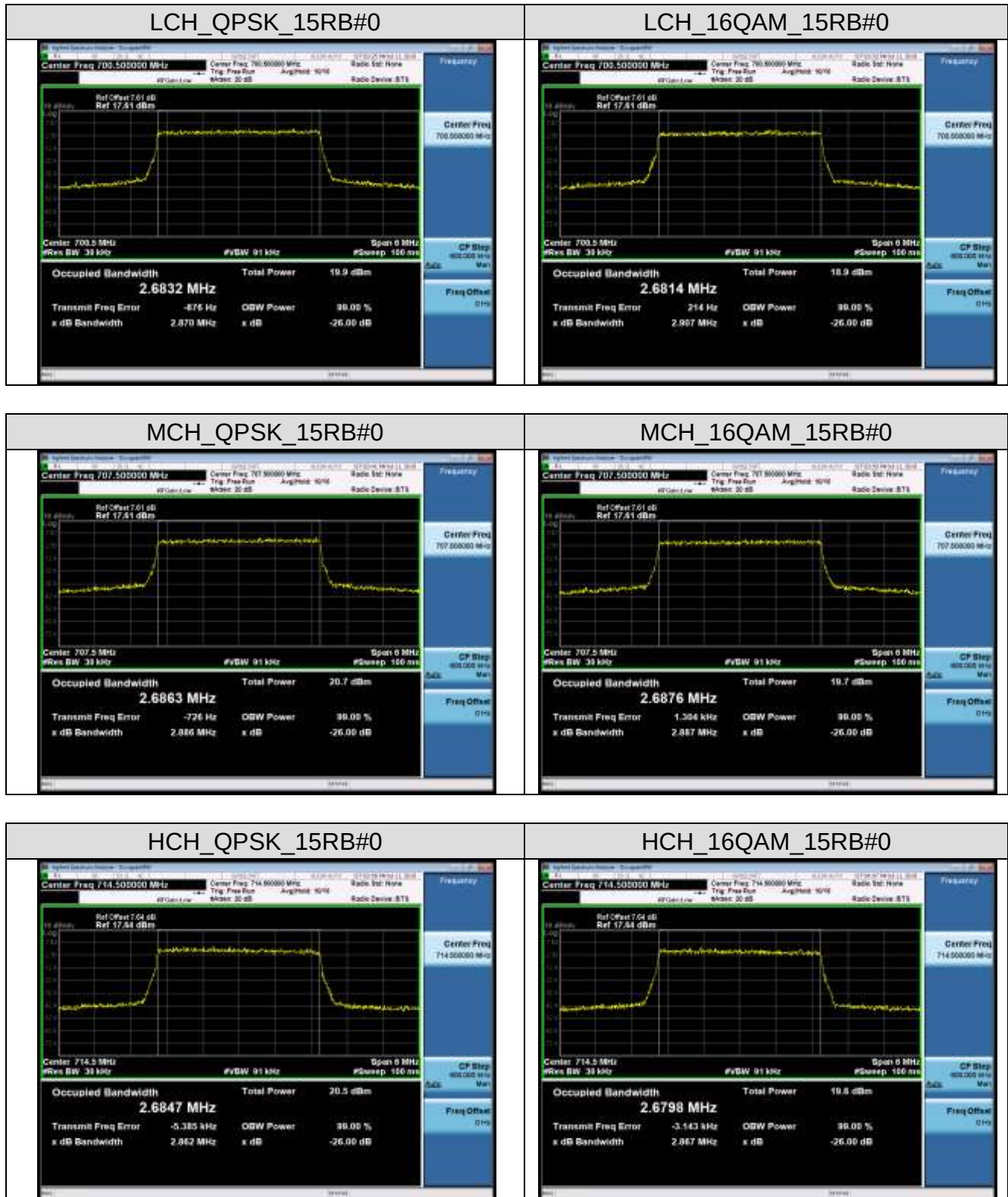


HCH_16QAM_6RB#0





Channel Bandwidth: 3 MHz





Channel Bandwidth: 5 MHz

LCH_QPSK_25RB#0



LCH_16QAM_25RB#0



MCH_QPSK_25RB#0



MCH_16QAM_25RB#0



HCH_QPSK_25RB#0



HCH_16QAM_25RB#0





Channel Bandwidth: 10 MHz

LCH_QPSK_50RB#0



LCH_16QAM_50RB#0



MCH_QPSK_50RB#0



MCH_16QAM_50RB#0



HCH_QPSK_50RB#0



HCH_16QAM_50RB#0

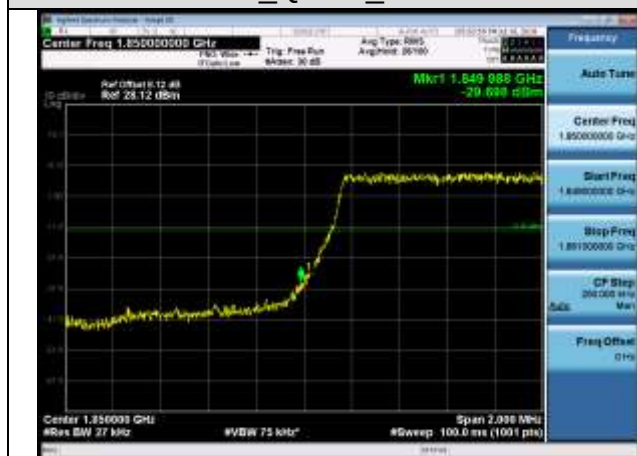




APPENDIX CTEST PLOTS FOR BAND EDGES LTE BAND 2

Channel Bandwidth: 1.4 MHz

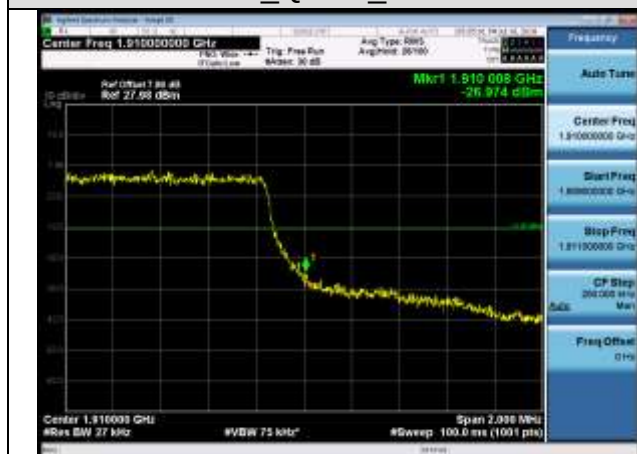
LCH_QPSK_6RB#0



LCH_16QAM_6RB#0



HCH_QPSK_6RB#0



HCH_16QAM_6RB#0





LCH_QPSK_15RB#0





Channel Bandwidth: 5 MHz

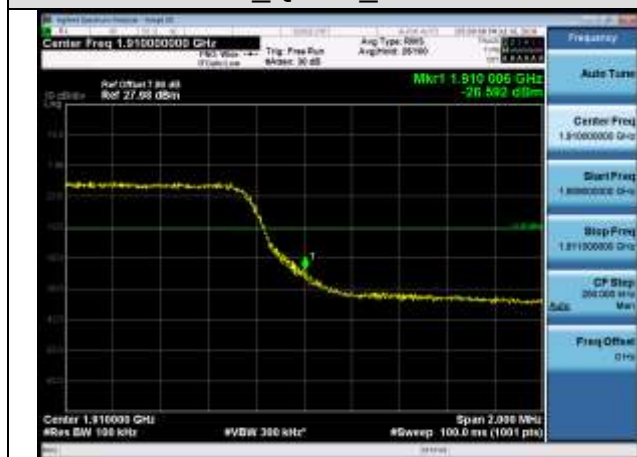
LCH_QPSK_25RB#0



LCH_16QAM_25RB#0



HCH_QPSK_25RB#0



HCH_16QAM_25RB#0





Channel Bandwidth: 10 MHz

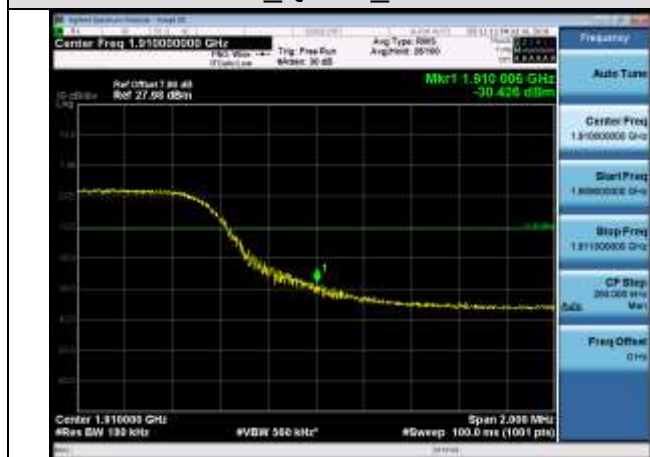
LCH_QPSK_50RB#0



LCH_16QAM_50RB#0



HCH_QPSK_50RB#0

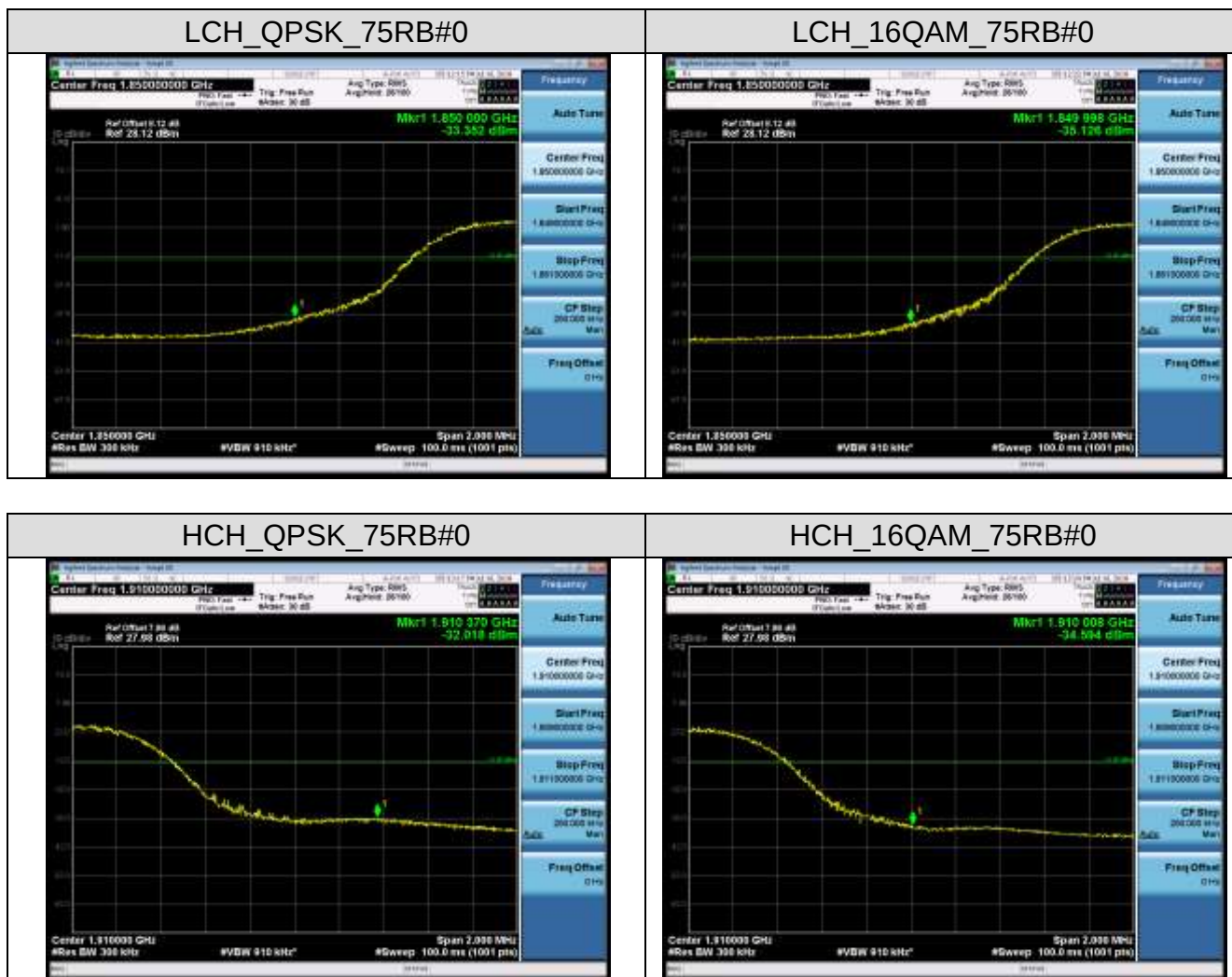


HCH_16QAM_50RB#0





Channel Bandwidth: 15 MHz



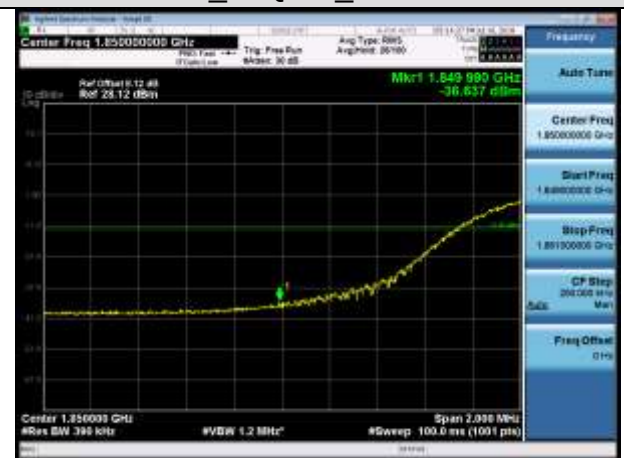


Channel Bandwidth: 20 MHz

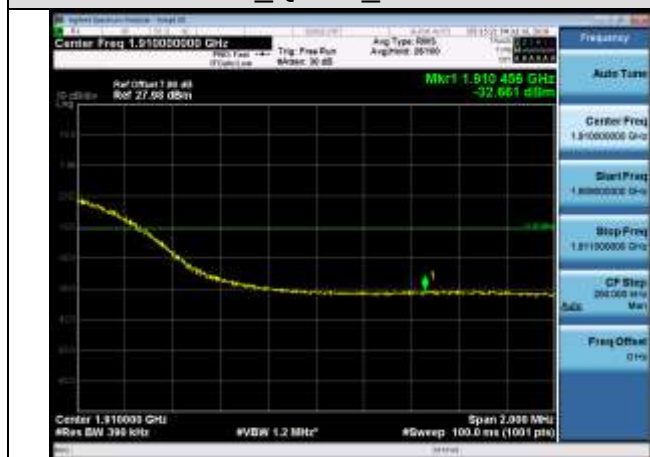
LCH_QPSK_100RB#0



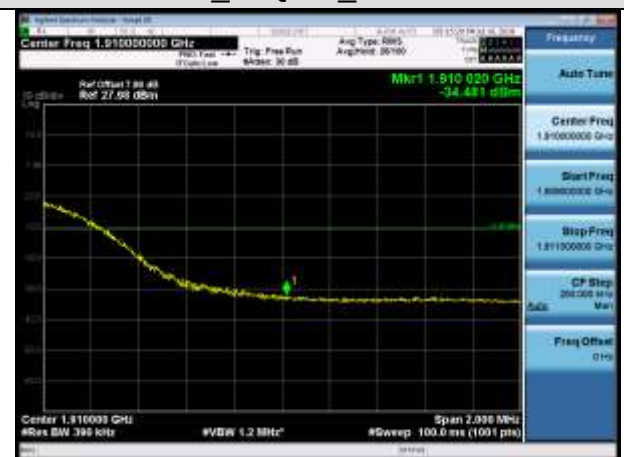
LCH_16QAM_100RB#0



HCH_QPSK_100RB#0

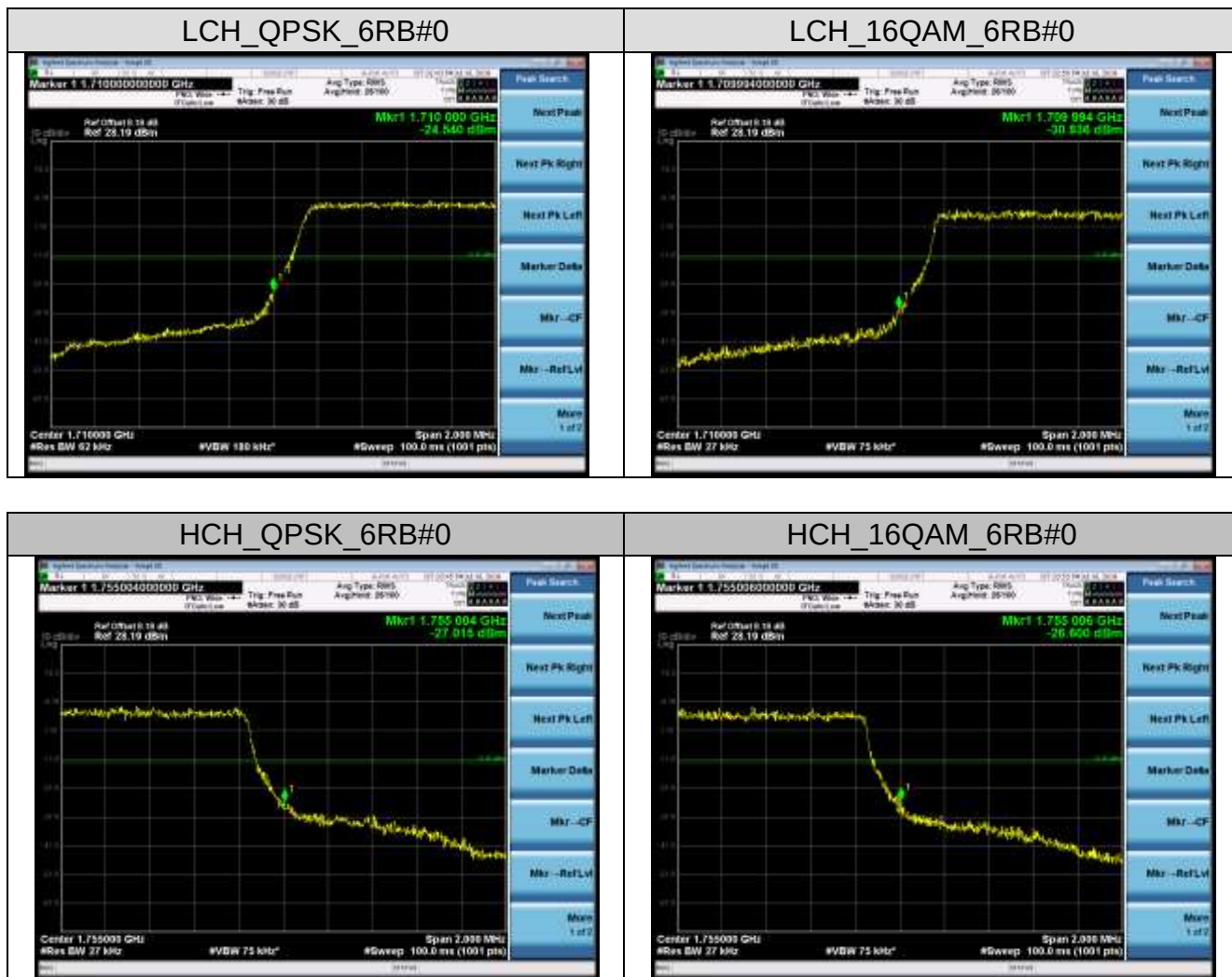


HCH_16QAM_100RB#0





LTE BAND 4
Channel Bandwidth: 1.4 MHz





Channel Bandwidth: 3 MHz

LCH_QPSK_15RB#0



LCH_16QAM_15RB#0



HCH_QPSK_15RB#0

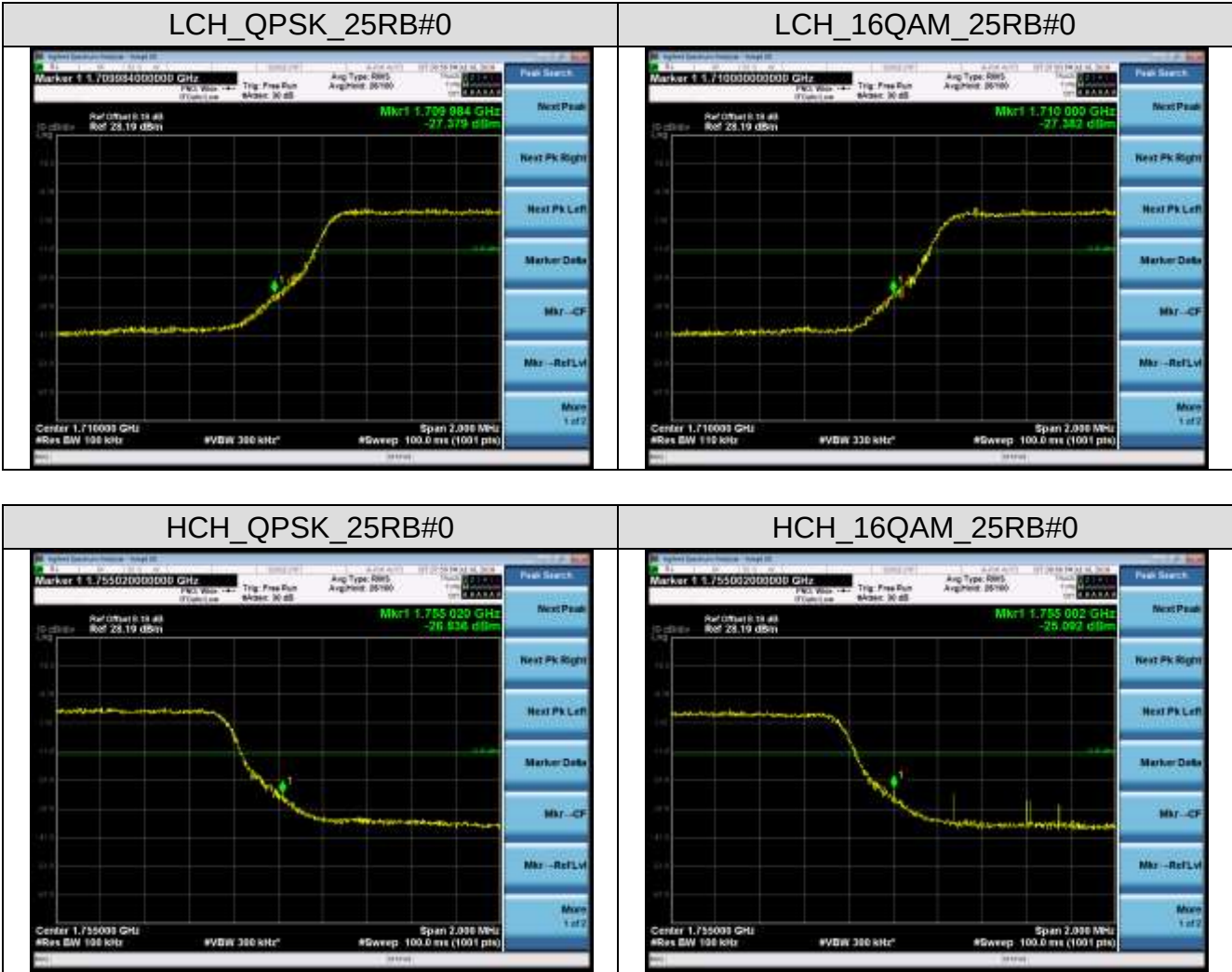


HCH_16QAM_15RB#0



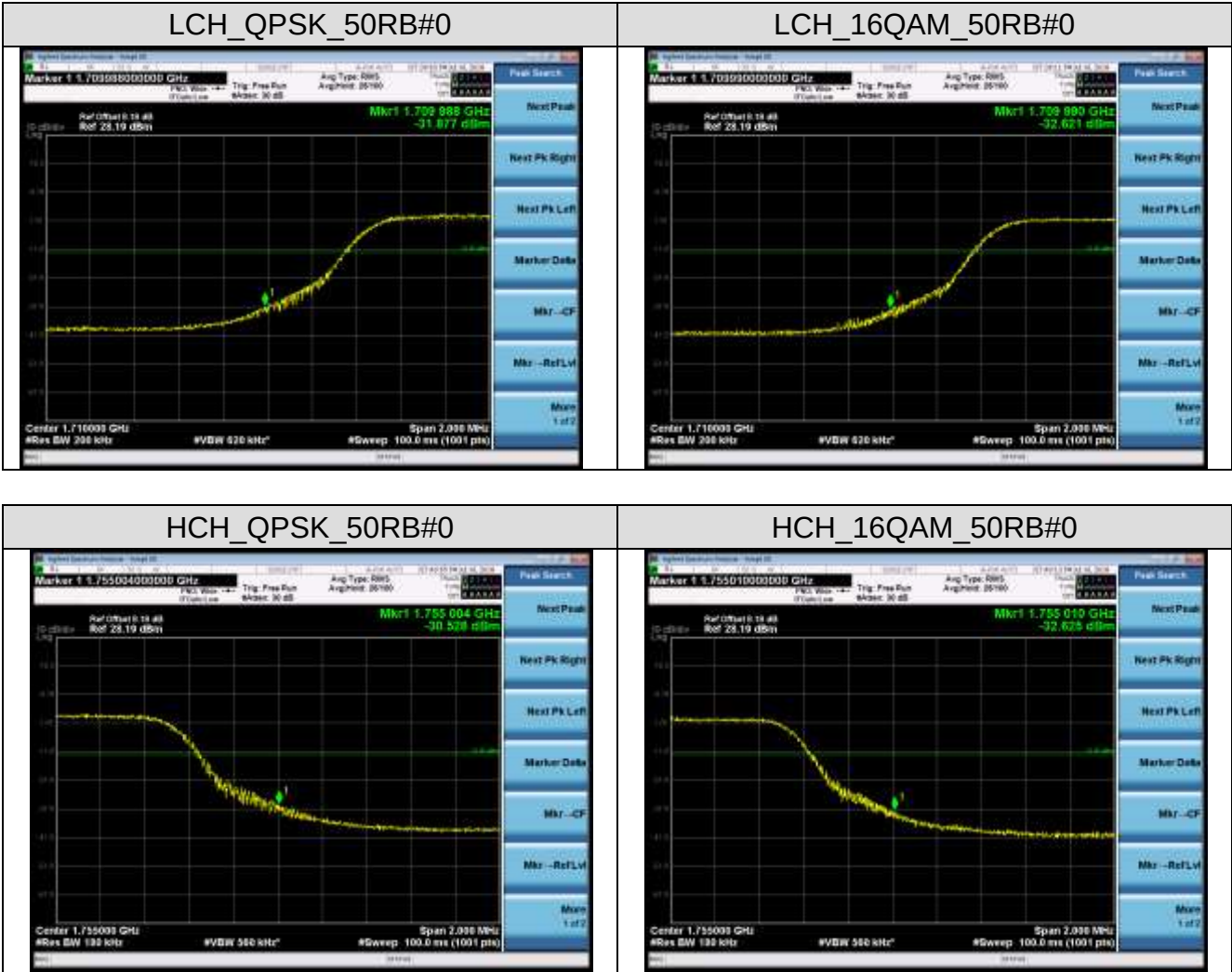


Channel Bandwidth: 5 MHz



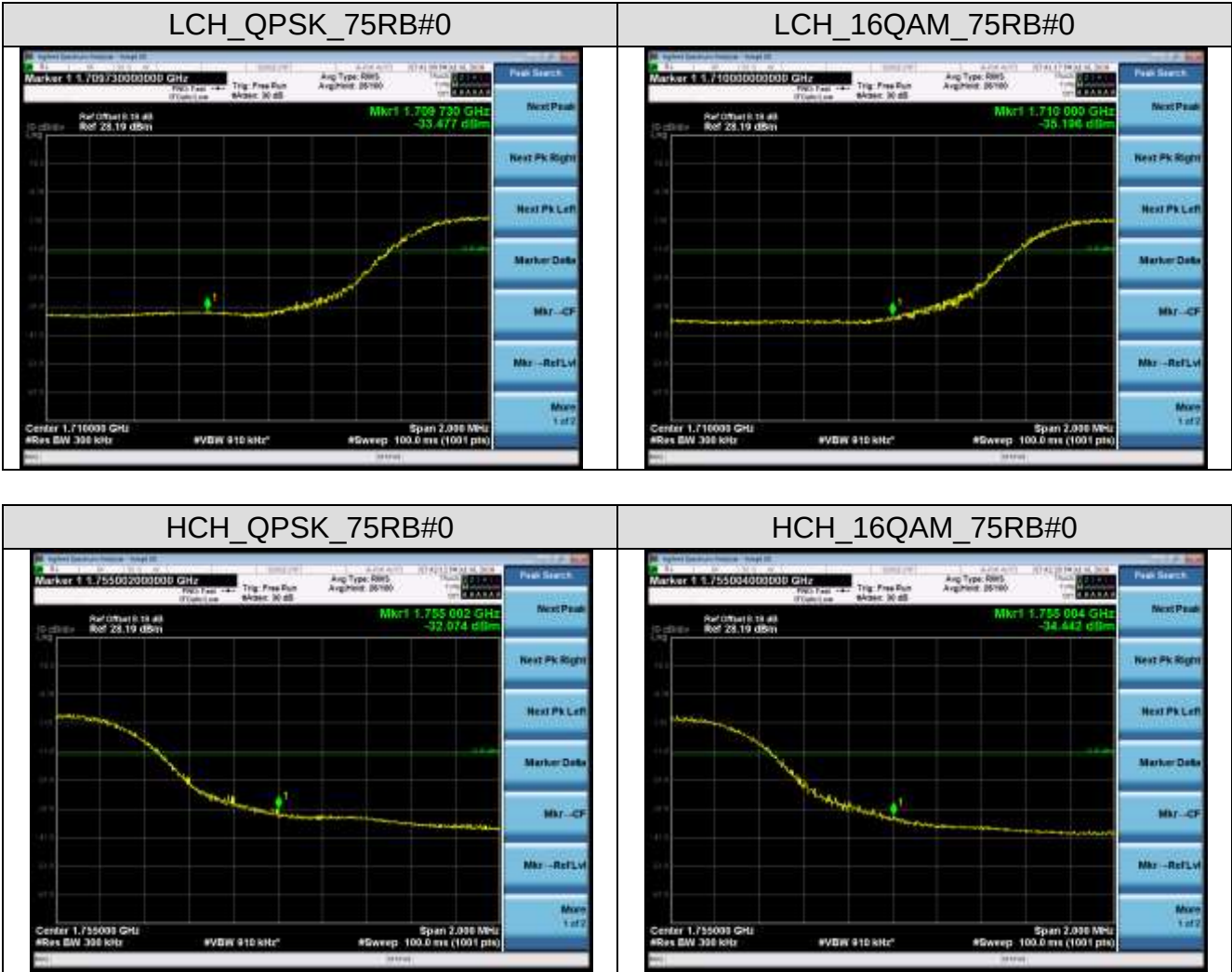


Channel Bandwidth: 10 MHz





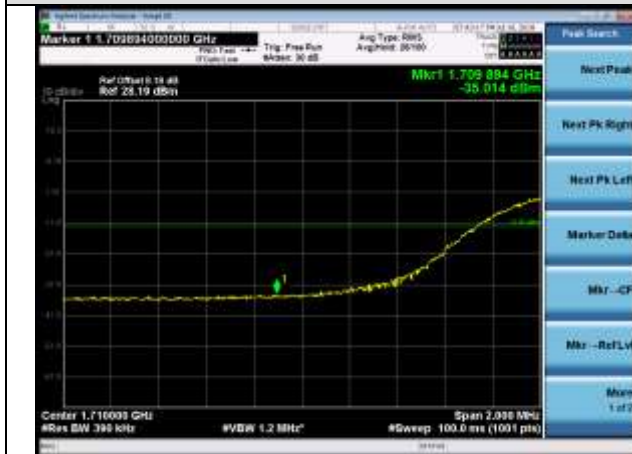
Channel Bandwidth: 15 MHz





Channel Bandwidth: 20 MHz

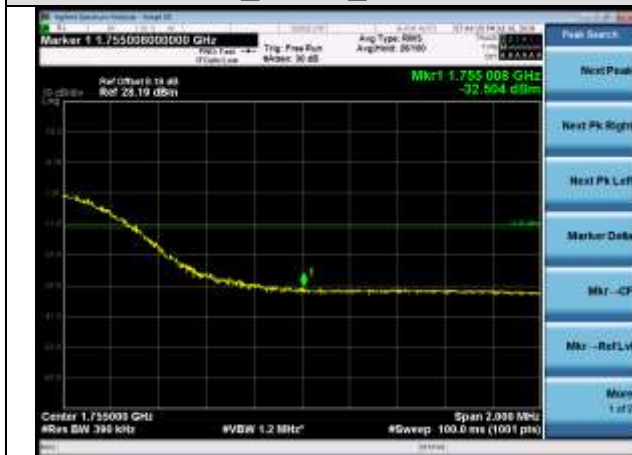
LCH_QPSK_100RB#0



LCH_16QAM_100RB#0



HCH_QPSK_100RB#0

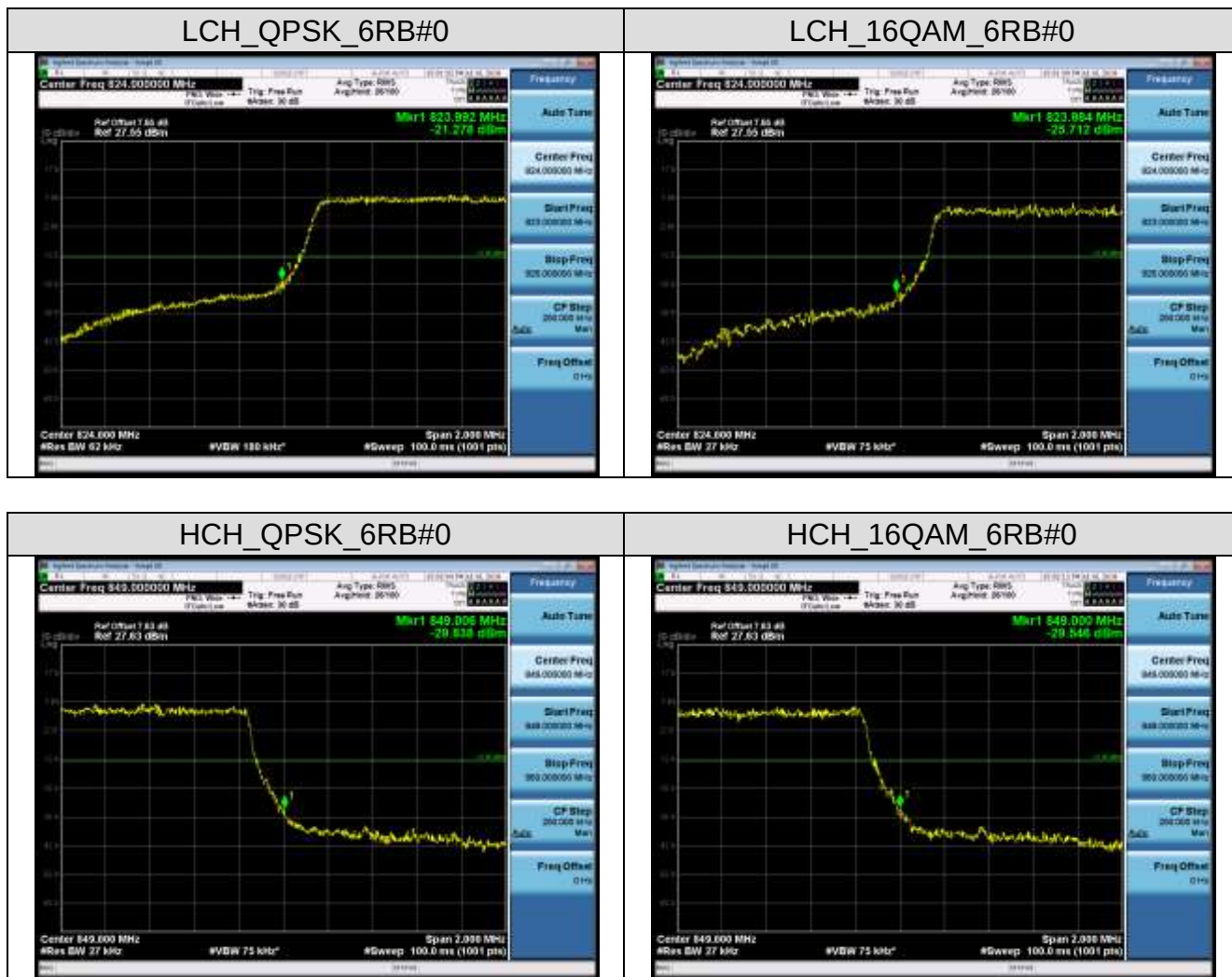


HCH_16QAM_100RB#0



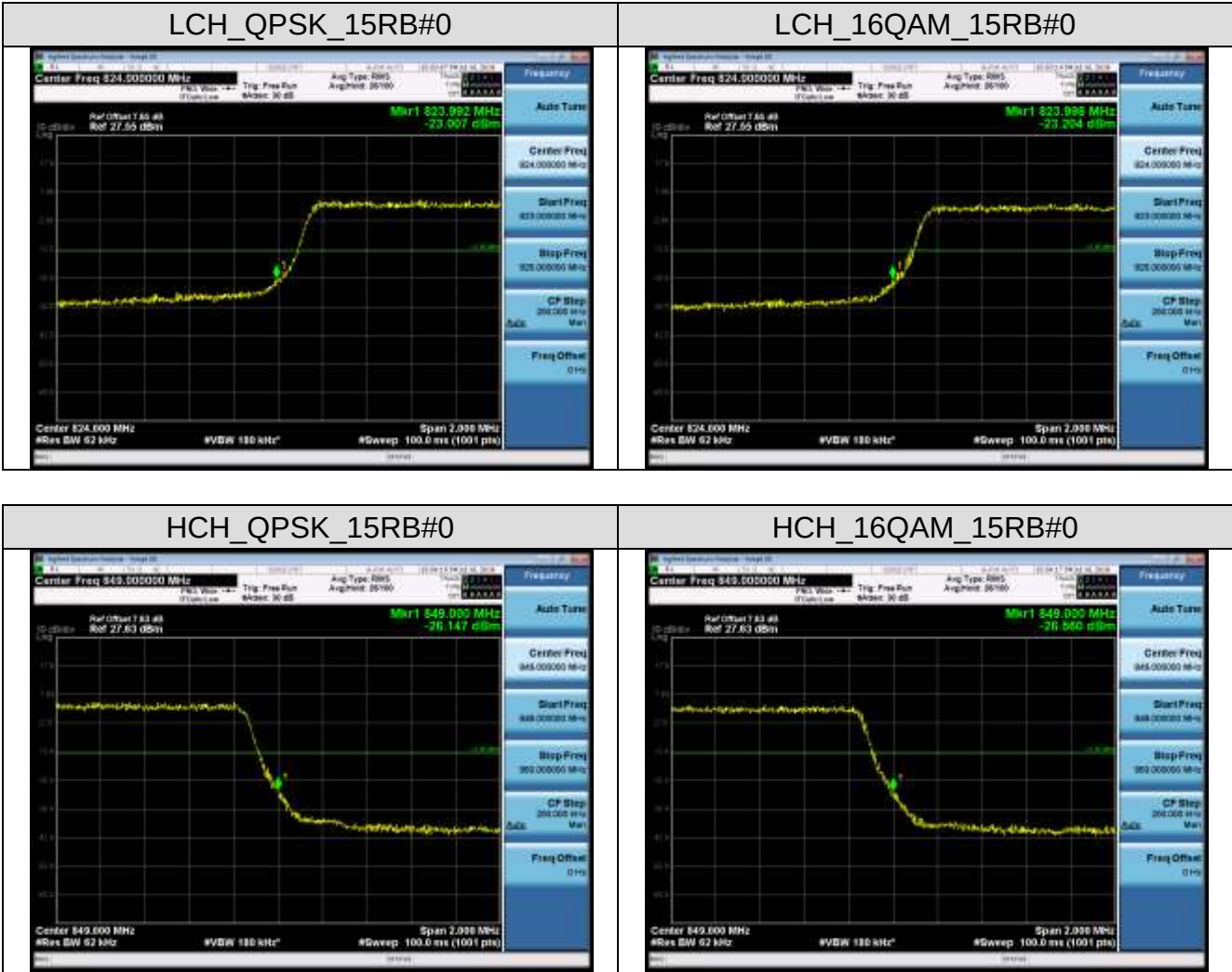


LTE BAND 5
Channel Bandwidth: 1.4 MHz





Channel Bandwidth: 3 MHz



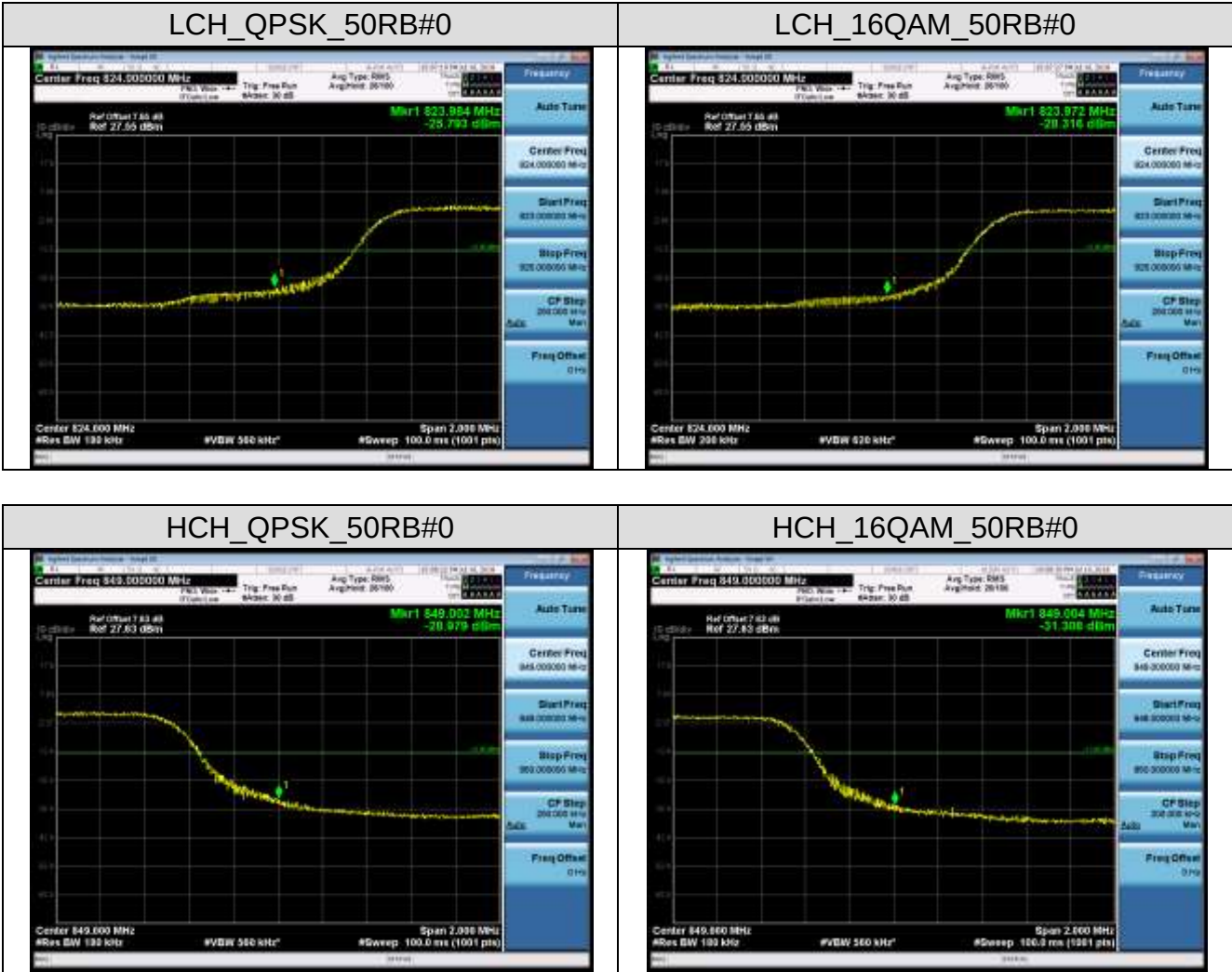


LCH_QPSK_25RB#0



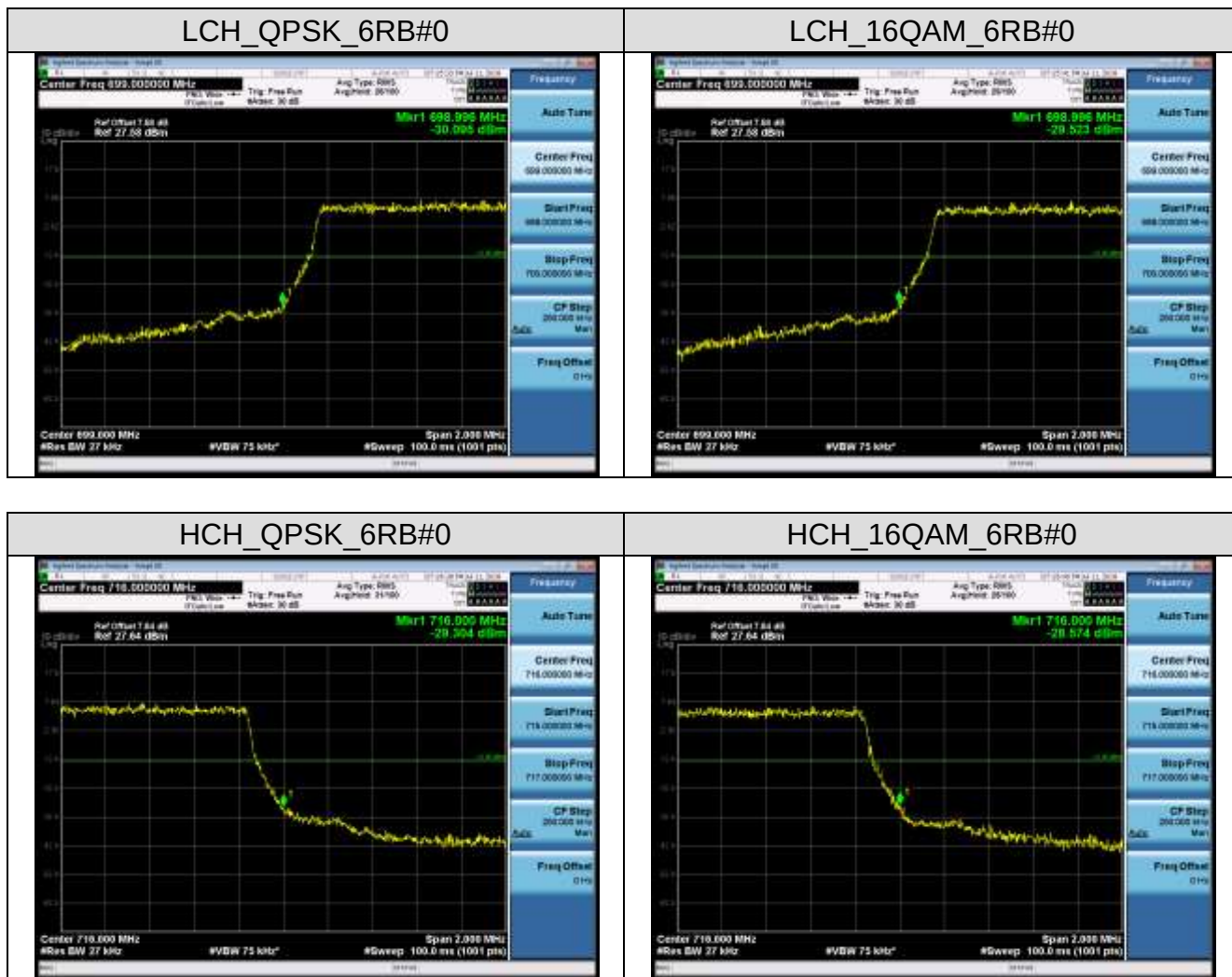


Channel Bandwidth: 10 MHz





LTE BAND 12
Channel Bandwidth: 1.4 MHz





LCH_QPSK_15RB#0





LCH_QPSK_25RB#0

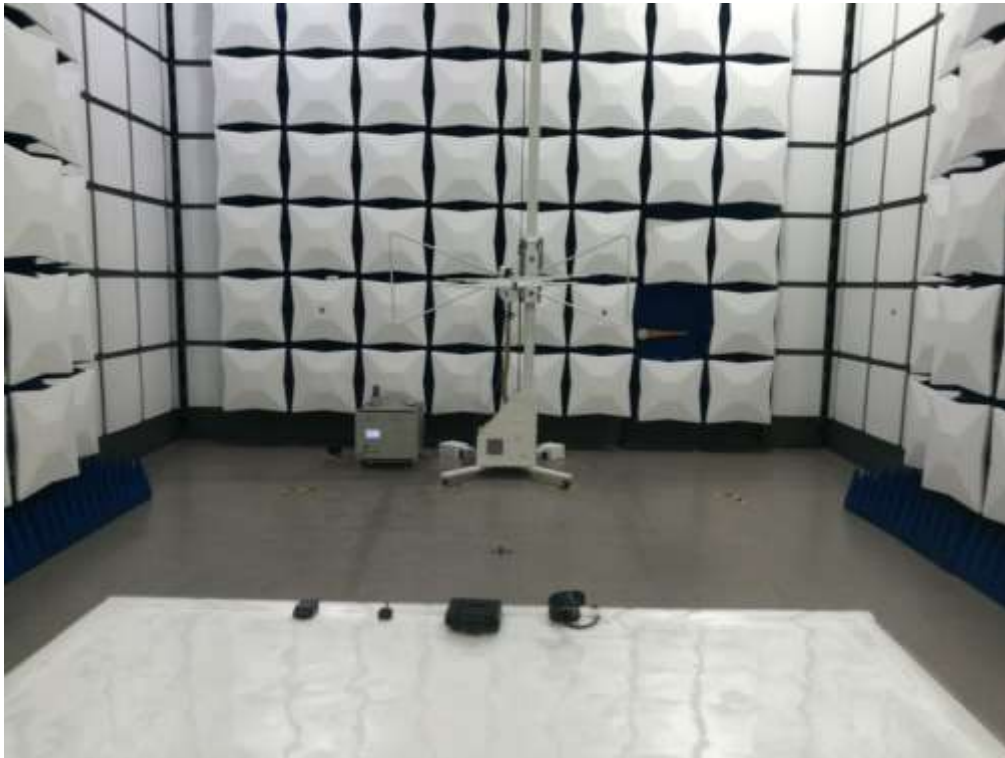




LCH_QPSK_50RB#0



APPENDIX D PHOTOGRAPHS OF TEST SETUP RADIATED SPURIOUS EMISSION



RADIATED SPURIOUS ABOVE 1G EMISSION



----END OF REPORT----