



REPORT No.: SZ15110010W02

FCC RF TEST REPORT

APPLICANT : ZTE Corporation
PRODUCT NAME : LTE Digital Mobile Handset
MODEL NAME : NX512J
TRADE NAME : ZTE
BRAND NAME : ZTE
FCC ID : SRQ-NX512J
STANDARD(S) : 47 CFR Part 27, Subpart L&M
ISSUE DATE : 2015-11-30



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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DIRECTORY

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Change History		
Issue	Date	Reason for change
1.0	2015-11-30	First edition

**TEST REPORT DECLARATION**

Applicant	ZTE Corporation
Applicant Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Manufacturer	ZTE Corporation
Manufacturer Address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Product Name	LTE Digital Mobile Handset
Model Name	NX512J
Brand Name	ZTE
HW Version	NX512JMB_E
SW Version	NX512J_VeCommon_V1.01
Test Standards	47 CFR Part 27, Subpart L&M
Test Date	2015-11-10 to 2015-11-25
Test Result	PASS

Tested by : Zou Jian
Zou Jian (Test Engineer)

Reviewed by : Qiu Xiaojun
Qiu Xiaojun (RF Manager)

Approved by : Zeng Dexin
Zeng Dexin (Chief Engineer)



1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: LTE Digital Mobile Handset
Serial No.: (n.a, marked #1 by test site)
Hardware Version.....: NX512JMB_E
Software Version..... NX512J_VeCommon_V1.01
Applicant: ZTE Corporation
ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,Nanshan
District,Shenzhen,Guangdong,P.R.China
Manufacturer: ZTE Corporation
ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,Nanshan
District,Shenzhen,Guangdong,P.R.China
Modulation Type.....: LTE Band 4: QPSK, 16QAM
LTE Band 7: QPSK, 16QAM
Tx Frequency Range.....: LTE Band 4: 1710MHz ~1755MHz
LTE Band 7: 2500MHz ~ 2570MHz
Rx Frequency Range: LTE Band 4: 2110MHz ~ 2155MHz
LTE Band 7: 2620MHz ~ 2690MHz
Emission Designator: 1M11G7D (LTE Band 4, QPSK, BW 1.4MHz)
1M11W7D (LTE Band 4, 16QAM, BW 1.4MHz)
2M71G7D (LTE Band 4, QPSK, BW 3MHz)
2M71W7D (LTE Band 4, 16QAM, BW 3MHz)
4M53G7D (LTE Band 4, QPSK, BW 5MHz)
4M53W7D (LTE Band 4, 16QAM, BW 5MHz)
9M03G7D (LTE Band 4, QPSK, BW 10MHz)
9M01W7D (LTE Band 4, 16QAM, BW 10MHz)
13M5G7D (LTE Band 4, QPSK, BW 15MHz)
13M5W7D (LTE Band 4, 16QAM, BW 15MHz)
18M0G7D (LTE Band 4, QPSK, BW 20MHz)
18M1W7D (LTE Band 4, 16QAM, BW 20MHz)
4M53G7D (LTE Band 7, QPSK, BW 5MHz)
4M53W7D (LTE Band 7, 16QAM, BW 5MHz)
9M01G7D (LTE Band 7, QPSK, BW 10MHz)
9M02W7D (LTE Band 7, 16QAM, BW 10MHz)
13M5G7D (LTE Band 7, QPSK, BW 15MHz)
13M5W7D (LTE Band 7, 16QAM, BW 15MHz)
18M0G7D (LTE Band 7, QPSK, BW 20MHz)



18M0W7D (LTE Band 7, 16QAM, BW 20MHz)

Antenna Type.....: PIFA Antenna

Power Supply..... 3.8V DC Power

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2 and Part 27 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 27	Miscellaneous Wireless Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	2.1046	Transmitter Conducted Output Power	<u>PASS</u>
2	2.1049,27.50(d)(5)	Occupied Bandwidth	<u>PASS</u>
3	2.1055,27.54	Frequency Stability	<u>PASS</u>
4	2.1050, 27.54	Peak to Average Ratio	<u>PASS</u>
5	2.1051,2.1057,27.53(g)	Conducted Spurious Emissions	<u>PASS</u>
6	2.1051,2.1057, 27.53(g)(h),27.53(m)(4)	Band Edge	<u>PASS</u>
7	27.50(d)(4)	Equivalent Isotropic Radiated Power	<u>PASS</u>
8	2.1053, 2.1057,27.53(g)	Radiated Spurious Emissions	<u>PASS</u>

1.3 Facilities and Accreditations

1.3.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.1, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China 518101. The test site is constructed in conformance with the requirements of TIA/EIA 603.D: 2010, ANSI C63.4: 2009 and CISPR Publication 22: 2010. The FCC registration number is 695796.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

2. 47 CFR PART 2, PART 27L REQUIREMENTS

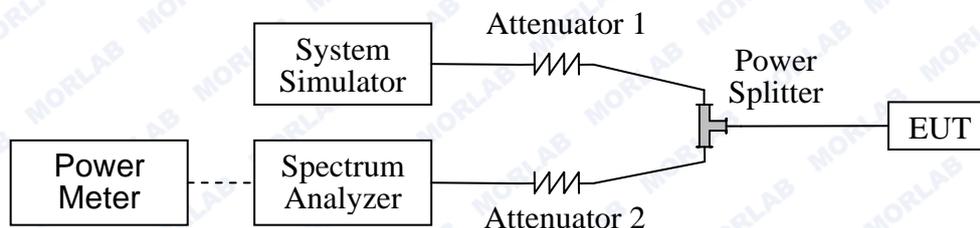
2.1 Transmitter Conducted Output Power

2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2 Test Description

Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Rohde& Schwarz	CMW500	1201.0002k5 0/124534/wk	2015.02.26	2016.02.25
Spectrum Analyzer	Rohde& Schwarz	FSL	10246	2015.02.26	2016.02.25
Spectrum Analyzer	Agilent	E4445A	MY44200685	2015.02.26	2016.02.25
Power Meter	Agilent	E4418B	GB43318055	2015.02.26	2016.02.25
Power Meter	Agilent	E4418B	GB43318055	2015.02.26	2016.02.25
Power Sensor	Agilent	8482A	MY41091706	2015.02.26	2016.02.25
Power Splitter	Weinschel	1506A	NW521	2015.02.26	2016.02.25
Attenuator 1	Resnet	20dB	(n.a.)	2015.02.26	2016.02.25
Attenuator 2	Resnet	3dB	(n.a.)	2015.02.26	2016.02.25

2.1.3 Test Results



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 4	20MHz	L 20050	1720.0	QPSK	1	0	22.82
					1	49	22.97
					1	99	22.66
					50	0	21.82
					50	25	21.96
					50	49	21.88
				16-QAM	100	0	21.79
					1	0	22.08
					1	49	21.87
					1	99	21.70
					50	0	21.05
					50	25	20.88
		M 20175	1732.5	QPSK	50	49	20.75
					100	0	20.67
					1	0	22.40
					1	49	22.50
					1	99	22.53
					50	0	21.77
				16-QAM	50	25	21.53
					50	49	21.79
					100	0	21.70
					1	0	21.57
					1	49	22.08
					1	99	21.86
		H 20300	1745.0	QPSK	50	0	20.58
					50	25	21.04
					50	49	20.85
					100	0	20.78
					1	0	22.62
					1	49	22.67
16-QAM	1			99	22.52		
	50			0	21.71		
	50			25	21.65		
	50			49	21.75		
	100			0	21.69		
	1			0	22.91		
	1	49	22.87				
	1	99	22.73				
	50	0	21.93				
	50	25	21.88				
	50	49	21.81				
	100	0	20.76				



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 4	15MHz	L 20025	1717.5	QPSK	1	0	22.70
					1	37	22.62
					1	74	22.65
					36	0	21.71
					36	18	21.65
					36	35	21.74
				16-QAM	75	0	21.63
					1	0	21.68
					1	37	22.33
					1	74	21.57
					36	0	20.65
					36	18	21.32
		M 20175	1732.5	QPSK	36	35	20.74
					75	0	20.68
					1	0	22.91
					1	37	22.71
					1	74	22.76
					36	0	21.80
				16-QAM	36	18	21.75
					36	35	21.85
					75	0	21.71
					1	0	22.78
					1	37	21.59
					1	74	21.50
		H 20325	1747.5	QPSK	36	0	21.74
					36	18	20.56
					36	35	20.79
					75	0	20.65
					1	0	22.59
					1	37	22.57
16-QAM	1			74	22.83		
	36			0	21.69		
	36			18	21.56		
	36			35	21.77		
	75			0	21.63		
	1			0	21.73		
1	37	21.03					
1	74	21.60					
36	0	20.77					
36	18	20.01					
36	35	20.84					
75	0	20.75					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 4	10MHz	L 20000	1715.0	QPSK	1	0	22.60
					1	24	22.60
					1	49	22.50
					25	0	21.61
					25	12	21.55
					25	24	21.67
				16-QAM	50	0	21.64
					1	0	22.14
					1	24	22.09
					1	49	22.03
					25	0	21.15
					25	12	21.06
		M 20175	1732.5	QPSK	25	24	21.11
					50	0	20.52
					1	0	22.65
					1	24	22.56
					1	49	22.45
					25	0	21.73
				16-QAM	25	12	21.56
					25	24	21.68
					50	0	21.65
					1	0	21.69
					1	24	21.57
					1	49	21.40
		H 20350	1750.0	QPSK	25	0	20.66
					25	12	20.64
					25	24	20.85
					50	0	20.72
					1	0	22.52
					1	24	22.51
16-QAM	1			49	22.49		
	25			0	21.70		
	25			12	21.55		
	25			24	21.66		
	50			0	21.65		
	1			0	21.52		
1	24	21.47					
1	49	21.17					
25	0	20.66					
25	12	20.58					
25	24	20.78					
50	0	20.67					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 4	5MHz	L 19975	1712.5	QPSK	1	0	22.71
					1	12	22.87
					1	24	22.74
					12	0	21.70
					12	6	21.75
					12	11	21.76
				25	0	21.65	
				16-QAM	1	0	22.26
					1	12	22.30
					1	24	22.10
					12	0	21.22
					12	6	21.35
		12	11		21.16		
		M 20175	1732.5	QPSK	1	0	22.46
					1	12	22.38
					1	24	22.23
					12	0	21.59
					12	6	21.45
					12	11	21.79
				25	0	21.67	
				16-QAM	1	0	21.13
					1	12	21.07
					1	24	20.92
					12	0	20.21
					12	6	20.13
		12	11		20.91		
		25	0	20.88			
		H 20375	1752.5	QPSK	1	0	22.57
					1	12	22.68
					1	24	22.50
					12	0	21.56
					12	6	21.66
					12	11	21.78
				25	0	21.68	
				16-QAM	1	0	20.62
					1	12	20.58
1	24				20.54		
12	0				19.69		
12	6				20.49		
12	11	20.69					
25	0	20.99					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 4	3MHz	L 19965	1711.5	QPSK	1	0	22.52
					1	7	22.44
					1	14	22.42
					8	0	21.51
					8	4	21.58
					8	7	21.69
				16-QAM	15	0	21.66
					1	0	22.13
					1	7	22.21
					1	14	21.41
					8	0	21.15
					8	4	21.22
		M 20175	1732.5	QPSK	8	7	21.31
					15	0	20.81
					1	0	22.69
					1	7	22.58
					1	14	22.64
					8	0	21.66
				16-QAM	8	4	21.54
					8	7	21.88
					15	0	21.72
					1	0	21.37
					1	7	21.53
					1	14	21.51
		H 20385	1753.5	QPSK	8	0	20.45
					8	4	20.59
					8	7	20.88
					15	0	20.74
					1	0	22.41
					1	7	22.30
16-QAM	1			14	22.40		
	8			0	21.56		
	8			4	21.29		
	8			7	21.64		
	15			0	21.59		
	1			0	20.70		
16-QAM	1	7	20.86				
	1	14	20.64				
	8	0	20.65				
	8	4	20.74				
	8	7	20.64				
	15	0	20.53				



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 4	1.4MHz	L 19957	1710.7	QPSK	1	0	22.45
					1	2	22.53
					1	5	22.59
					3	0	22.44
					3	1	22.51
					3	2	22.63
				6	0	21.60	
				16-QAM	1	0	21.89
					1	2	21.92
					1	5	21.77
					3	0	20.87
					3	1	20.96
		3	2		20.84		
		M 20175	1732.5	QPSK	1	0	22.73
					1	2	22.76
					1	5	22.48
					3	0	22.75
					3	1	22.72
					3	2	22.71
				6	0	21.66	
				16-QAM	1	0	21.42
					1	2	21.62
					1	5	21.80
					3	0	20.48
					3	2	20.78
		3	5		20.83		
		H 20393	1754.3	QPSK	1	0	22.41
					1	2	22.45
					1	5	22.50
					3	0	22.44
3	1				22.43		
3	2				22.48		
6	0			21.61			
16-QAM	1			0	21.15		
	1			2	21.24		
	1			5	21.38		
	3			0	20.24		
	3			1	20.46		
	3	2	20.97				
6	0	20.83					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)	
					RB Size	RB Offset		
LTE Band 7	20MHz	L 20850	2510	QPSK	1	0	22.32	
					1	49	22.44	
					1	99	22.06	
					50	0	21.62	
					50	25	21.44	
					50	49	21.40	
				16-QAM	100	0	21.43	
					1	0	20.95	
					1	49	20.70	
					1	99	20.57	
					50	0	20.94	
					50	25	20.74	
		M 21100	2535	QPSK	2535	50	49	20.65
						100	0	20.38
						1	0	22.88
						1	49	22.87
						1	99	22.59
						50	0	21.55
				16-QAM	50	25	21.54	
					50	49	21.43	
					100	0	21.51	
					1	0	21.07	
					1	49	21.68	
					1	99	21.60	
		H 21350	2560	QPSK	2560	50	0	20.88
						50	25	20.96
						50	49	20.75
						100	0	20.43
						1	0	22.62
						1	49	22.64
16-QAM	1			99	22.39			
	50			0	21.56			
	50			25	21.69			
	50			49	21.37			
	100			0	21.54			
	1			0	21.81			
1	49	21.41						
1	99	21.59						
50	0	20.84						
50	25	20.49						
50	49	20.65						
100	0	20.55						



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)	
					RB Size	RB Offset		
LTE Band 7	15MHz	L 20825	2507.5	QPSK	1	0	22.64	
					1	37	22.53	
					1	74	22.28	
					36	0	21.61	
					36	18	21.69	
					36	35	21.48	
				16-QAM	75	0	21.49	
					1	0	22.28	
					1	37	22.11	
					1	74	22.10	
					36	0	21.25	
					36	18	21.13	
		M 21100	2535	QPSK	2535	36	35	21.11
						75	0	20.59
						1	0	22.71
						1	37	22.49
						1	74	22.48
						36	0	21.55
				16-QAM	36	18	21.45	
					36	35	21.38	
					75	0	21.52	
					1	0	21.39	
					1	37	21.28	
					1	74	21.20	
		H 21375	2562.5	QPSK	2562.5	36	0	20.45
						36	18	20.36
						36	35	20.69
						75	0	20.60
						1	0	22.64
						1	37	22.20
16-QAM	1			74	22.15			
	36			0	21.58			
	36			18	21.13			
	36			35	21.50			
	75			0	21.53			
	1			0	22.16			
1	37	22.06						
1	74	21.91						
36	0	21.11						
36	18	21.05						
36	35	21.06						
75	0	20.53						



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 7	10MHz	L 20800	2505	QPSK	1	0	22.28
					1	24	22.35
					1	49	22.42
					25	0	21.50
					25	12	21.39
					25	24	21.54
				50	0	21.51	
				16-QAM	1	0	22.03
					1	24	22.05
					1	49	22.20
					25	0	21.01
					25	12	21.05
		25	24		21.12		
		M 21100	2535	QPSK	1	0	22.45
					1	24	22.64
					1	49	22.27
					25	0	21.47
					25	12	21.51
					25	24	21.36
				50	0	21.53	
				16-QAM	1	0	21.58
					1	24	21.66
					1	49	21.91
					25	0	20.69
					25	12	20.75
		25	24		20.56		
		50	0	20.48			
		H 21400	2565	QPSK	1	0	22.48
					1	24	22.43
					1	49	22.19
25	0				21.57		
25	12				21.66		
25	24				21.38		
50	0			21.53			
16-QAM	1			0	21.61		
	1			24	21.53		
	1			49	20.98		
	25			0	20.53		
	25			12	20.49		
	25	24	20.56				
50	0	20.32					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)	
					RB Size	RB Offset		
LTE Band 7	5MHz	L 20775	2502.5	QPSK	1	0	22.52	
					1	12	22.70	
					1	24	22.50	
					12	0	21.56	
					12	6	21.55	
					12	11	21.64	
				16-QAM	25	0	21.34	
					1	0	21.58	
					1	12	21.41	
					1	24	21.90	
					12	0	20.53	
					12	6	20.56	
		M 21100	2535	QPSK	2535	12	11	20.95
						25	0	20.36
						1	0	22.14
						1	12	22.12
						1	24	22.11
						12	0	21.19
				16-QAM	12	6	21.25	
					12	11	21.37	
					25	0	21.36	
					1	0	21.24	
					1	12	21.59	
					1	24	21.08	
		H 21425	2567.5	QPSK	2567.5	12	0	20.22
						12	6	20.65
						12	11	20.61
						25	0	20.57
						1	0	22.38
						1	12	22.42
				16-QAM	1	24	22.27	
					12	0	21.39	
					12	6	21.46	
					12	11	21.56	
					25	0	21.48	
					1	0	21.18	
16-QAM	1	12	21.74					
	1	24	21.29					
	12	0	20.22					
	12	6	20.79					
	12	11	20.33					
	25	0	20.13					



2.2 Occupied Bandwidth

2.2.1 Definition

According to FCC section 2.1049 and 27.50(d)(5), the occupied bandwidth 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.

Occupied bandwidth is also known as the 99% emission bandwidth.

2.2.2 Test Description

See section 2.1.2 of this report.

2.2.3 Test Results

LTE Band 4

Low channel:

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	1.1071	1.0968	19965	1711.5	2.7111	2.7086
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	1.368	1.309	19965	1711.5	3.002	3.010

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.5233	4.5267	20000	1715.0	8.9869	9.0103
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	5.044	5.051	20000	1715.0	9.829	9.904



Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	13.443	13.498	20050	1720.0	17.953	17.957
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	14.67	14.79	20050	1720.0	19.49	19.52

Middle channel:

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20175	1732.5	1.0993	1.1053	20175	1732.5	2.7143	2.7050
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20175	1732.5	1.337	1.309	20175	1732.5	3.001	3.012

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20175	1732.5	4.5247	4.5266	20175	1732.5	9.0345	9.0055
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20175	1732.5	4.990	5.017	20175	1732.5	9.997	9.887

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20175	1732.5	13.521	13.505	20175	1732.5	18.013	18.064
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20175	1732.5	14.92	14.82	20175	1732.5	19.53	19.50



High channel:

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20392	1754.2	1.1005	1.1025	20384	1753.4	2.7090	2.7063

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20392	1754.2	1.305	1.308	20384	1753.4	2.984	3.009

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20375	1752.5	4.5310	4.5341	20350	1750.0	9.0099	9.0035

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20375	1752.5	5.049	5.039	20350	1750.0	9.916	9.969

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20325	1747.5	13.486	13.499	20300	1745.0	17.987	18.001

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20325	1747.5	14.87	14.74	20300	1745.0	19.80	19.60

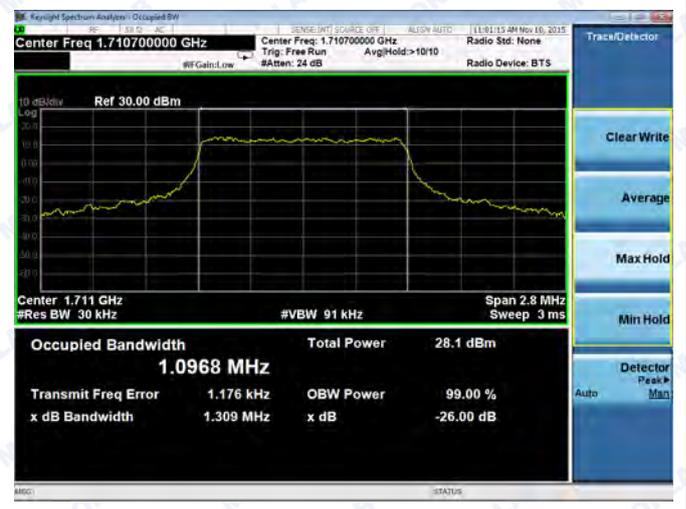


Low channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

1.4MHz/16QAM



Spectrum Plot of Worst Value

3MHz/QPSK

3MHz/16QAM

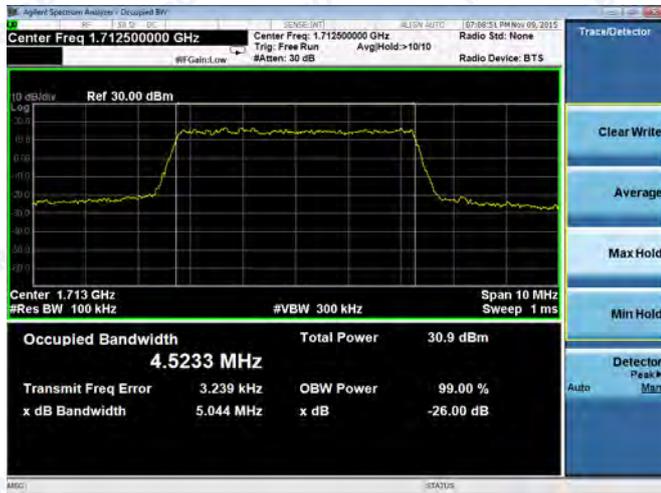




Spectrum Plot of Worst Value

5MHz/QPSK

5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM

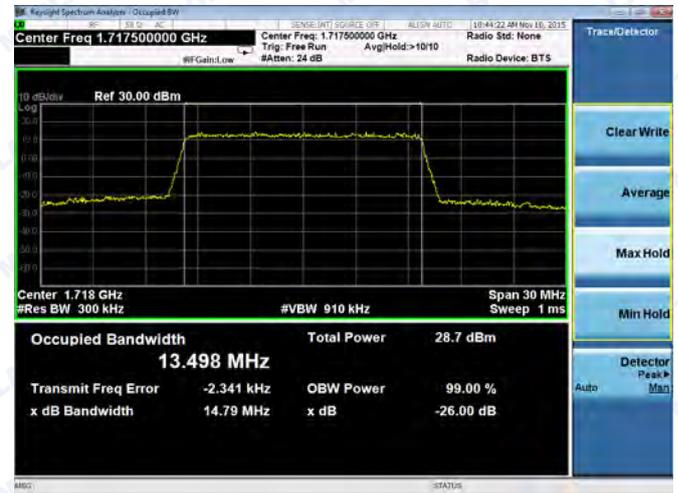




Spectrum Plot of Worst Value

15MHz/QPSK

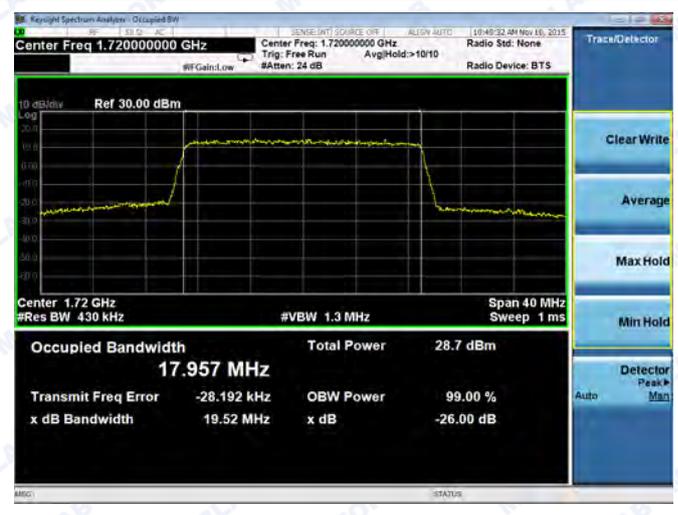
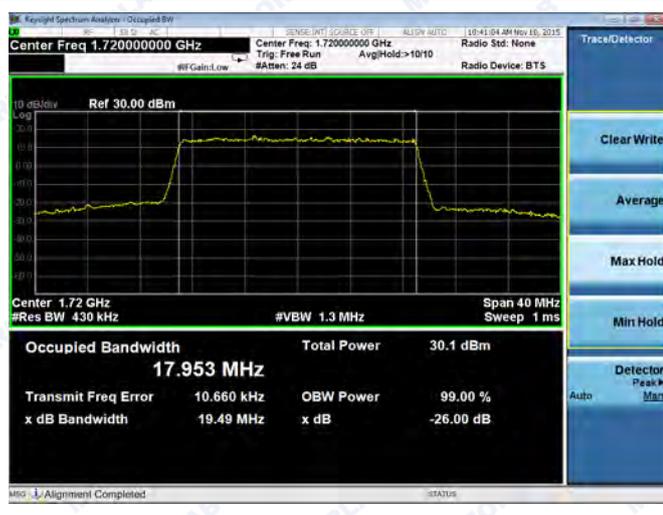
15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM





Middle channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

1.4MHz/16QAM



Spectrum Plot of Worst Value

3MHz/QPSK

3MHz/16QAM





Spectrum Plot of Worst Value

5MHz/QPSK

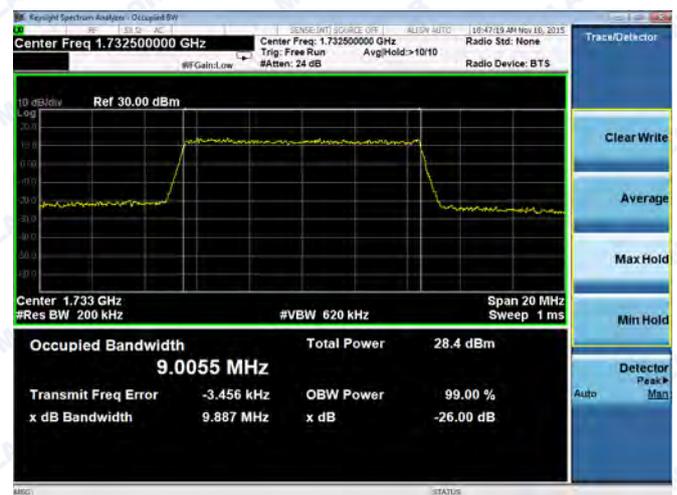
5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM

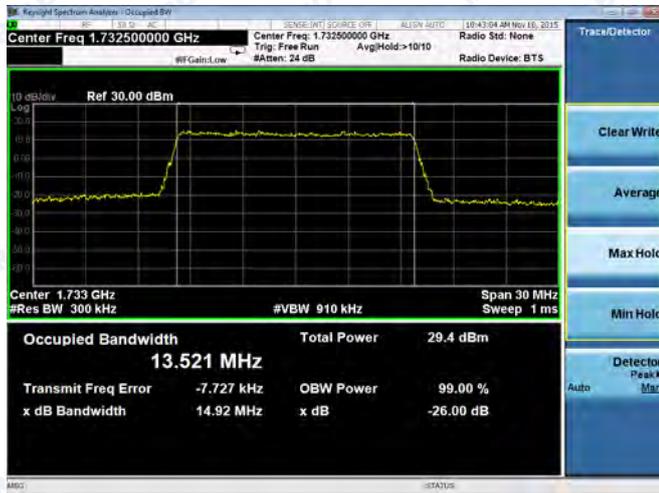




Spectrum Plot of Worst Value

15MHz/QPSK

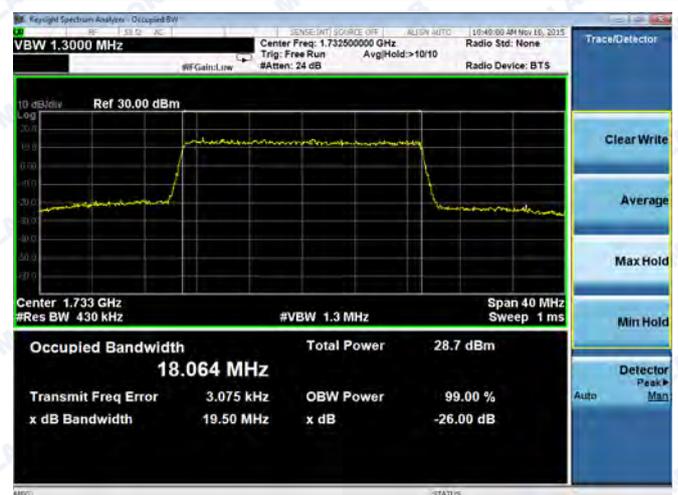
15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM





High channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

1.4MHz/16QAM



Spectrum Plot of Worst Value

3MHz/QPSK

3MHz/16QAM





Spectrum Plot of Worst Value

5MHz/QPSK

5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM





Spectrum Plot of Worst Value

15MHz/QPSK

15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM





LTE Band 7

Low channel:

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20775	2502.5	4.5295	4.5289	20800	2505.0	9.0003	9.0144

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20775	2502.5	5.052	5.051	20800	2505.0	9.978	9.998

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20825	2507.5	13.469	13.508	20850	2510.0	18.000	17.995

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20825	2507.5	14.84	14.76	20850	2510.0	19.57	19.72

Middle channel:

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21100	2535.0	4.5258	4.5211	21100	2535.0	9.0114	9.0214

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21100	2535.0	4.982	5.035	21100	2535.0	9.970	9.890



Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21100	2535.0	13.515	13.498	21100	2535.0	17.970	17.974
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21100	2535.0	14.90	14.70	21100	2535.0	19.50	19.53

High channel:

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21425	2567.5	4.5216	4.5314	21400	2565.0	8.9944	8.9897
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21425	2567.5	4.989	5.041	21400	2565.0	9.963	9.965

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21375	2562.5	13.470	13.475	21350	2560.0	17.962	17.944
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
21375	2562.5	14.73	14.65	21350	2560.0	19.63	19.55

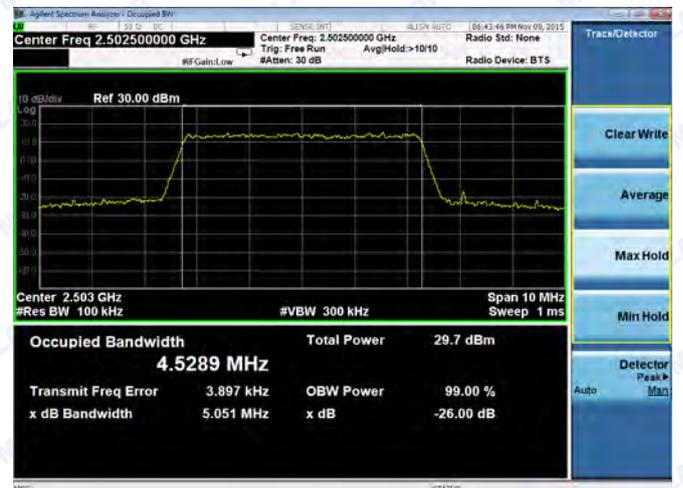


Low channel:

Spectrum Plot of Worst Value

5MHz/QPSK

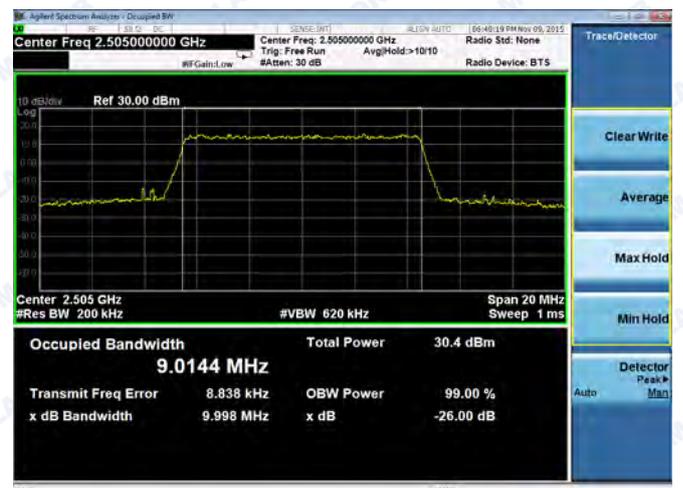
5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM

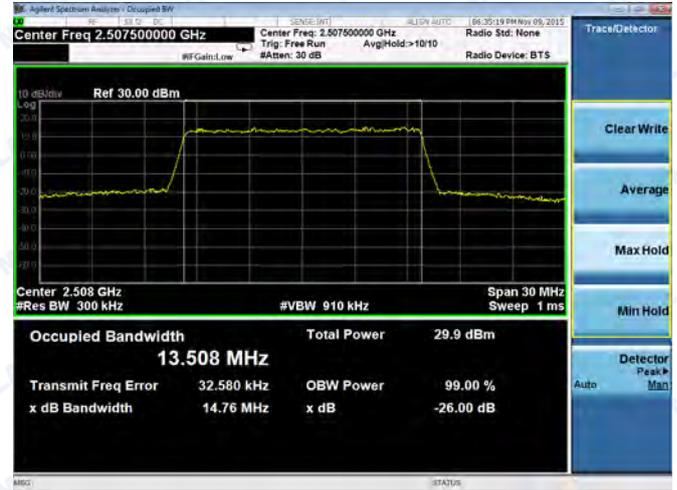




Spectrum Plot of Worst Value

15MHz/QPSK

15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM





Middle channel:

Spectrum Plot of Worst Value

5MHz/QPSK

5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM

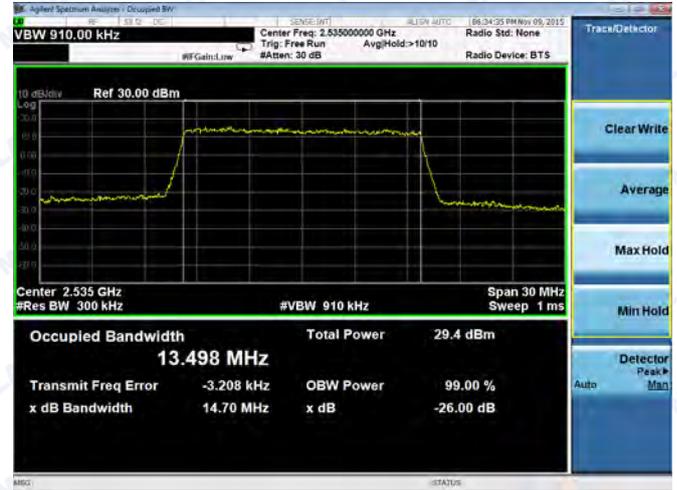
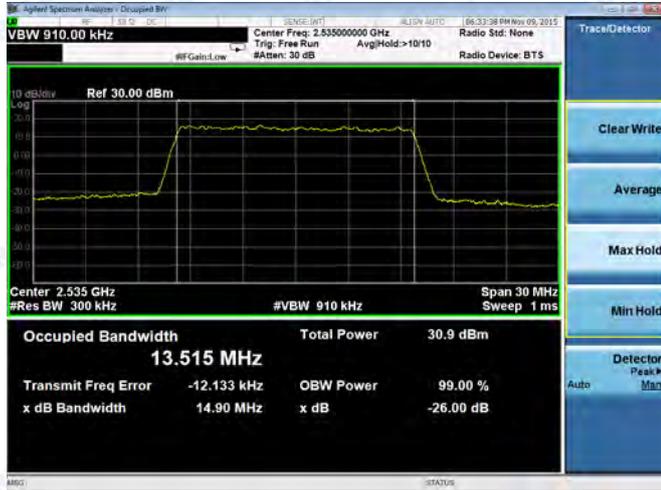




Spectrum Plot of Worst Value

15MHz/QPSK

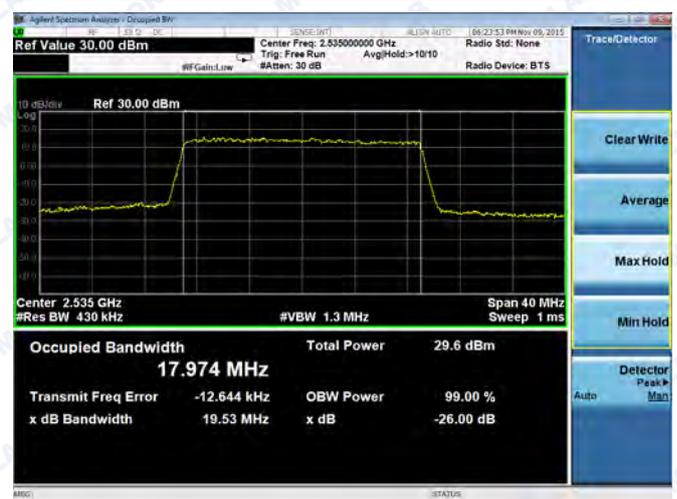
15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM





High channel:

Spectrum Plot of Worst Value

5MHz/QPSK

5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM

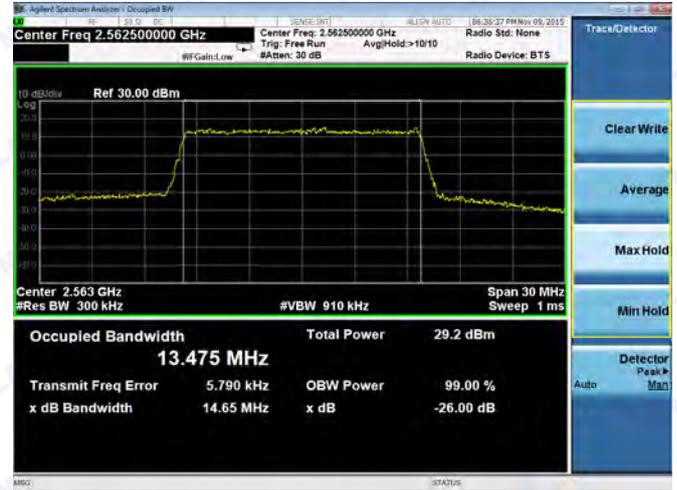




Spectrum Plot of Worst Value

15MHz/QPSK

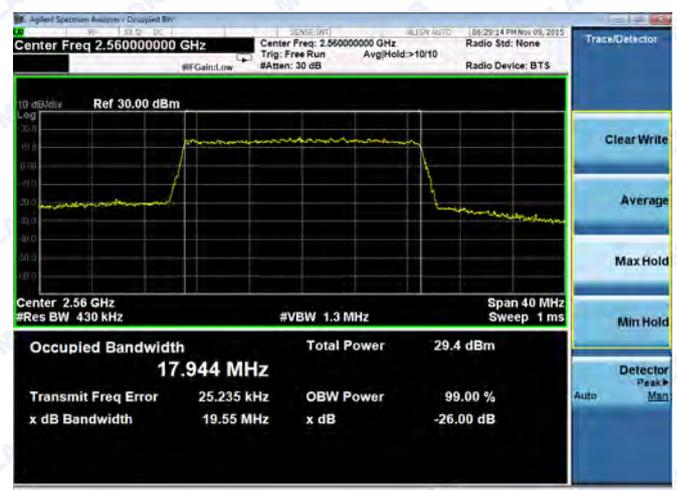
15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM



2.3 Frequency Stability

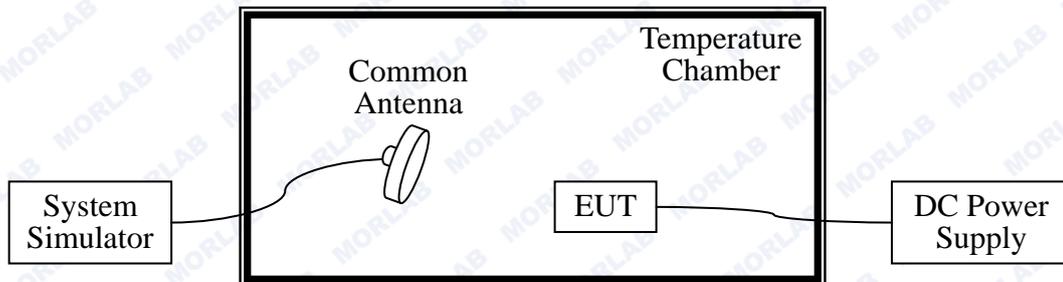
2.3.1 Requirement

According to FCC section 2.1055 and FCC section 27.54, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.3.2 Test Description

Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power. A call is established between the EUT and the SS via a Common Antenna.

Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Rohde& Schwarz	CMW500	1201.0002k5 0/124534/wk	2015.02.26	2016.02.25
DC Power Supply	Good Will	GPS-3030DD	EF920938	2015.02.26	2016.02.25
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2015.02.26	2016.02.25



2.3.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.45VDC, which are specified by the applicant; the normal temperature here used is 20°C. The frequency deviation limit is ±2.5ppm.

The testing was performed using one RB and Bandwidth setting for each band.

LTE Band 4 – QPSK - Channel 20175 – Frequency 1732.5MHz – RB 6/0				
Limit: 1732.5MHz*2.5ppm=4331.25Hz				
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Result
100	3.84	-30	11.22	PASS
100		-20	-11	
100		-10	8.49	
100		0	10.4	
100		+10	9.22	
100		+20	8.14	
100		+30	-12.23	
100		+40	9.49	
100		+50	8.44	
115	4.4	+20	10.22	
85	3.45	+20	11.57	

TE Band 7 – QPSK - Channel 21100 – Frequency 2535MHz – RB 25/0				
Limit: 2535MHz*2.5ppm=6337.5Hz				
Voltage (%)	Power (VDC)	Temp (°C)	Fre. Dev. (Hz)	Result
100	3.84	-30	16.31	PASS
100		-20	-5.91	
100		-10	13.58	
100		0	15.49	
100		+10	14.31	
100		+20	13.23	
100		+30	-7.14	
100		+40	14.58	
100		+50	13.53	
115	4.4	+20	15.31	
85	3.45	+20	16.66	



2.4 Peak to Average Ratio

2.4.1 Requirement

According to FCC section 2.1050 and FCC section 27.54, the peak to average ratio (PAR) of the transmission may not exceed 13dB.

2.4.2 Test Description

See section 2.1.2 of this report.

2.4.3 Test Result

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

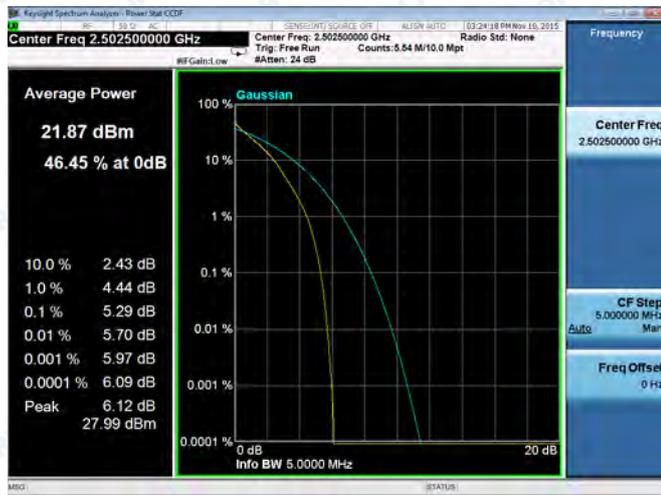


LTE Band 7 Low channel							
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20775	2502.5	5.29	6.09	20800	2505	6.03	6.79

Spectrum Plot of Worst Value

5MHz/QPSK

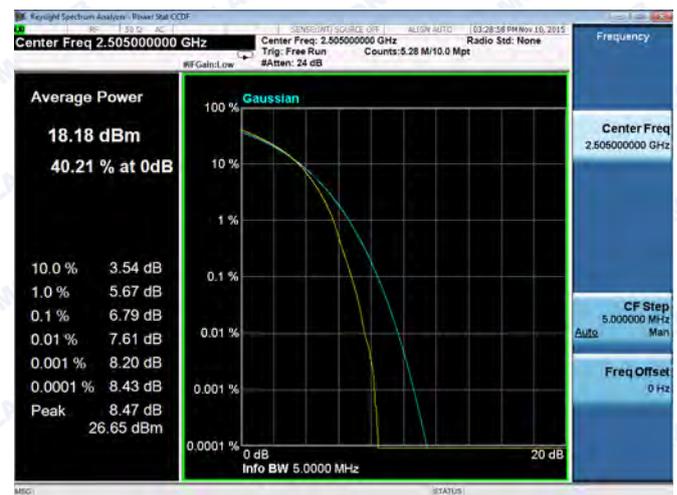
5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM



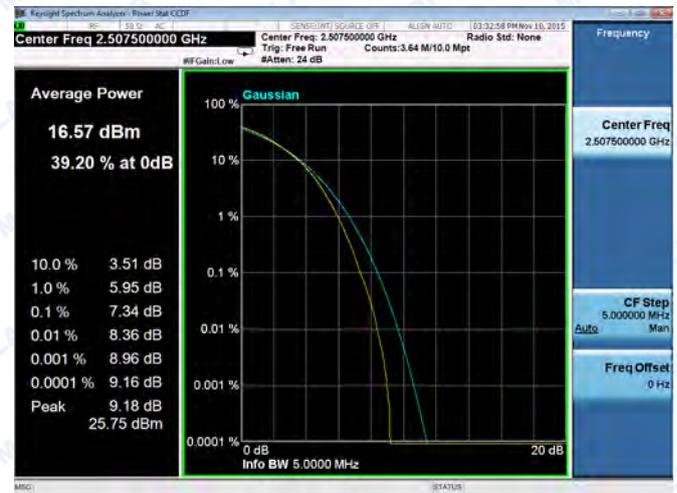
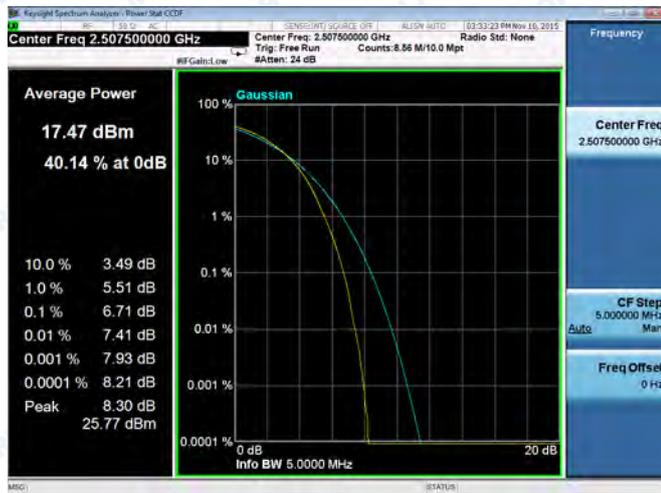


LTE Band 7 Low channel							
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20825	2507.5	6.71	7.34	20850	2510	7.18	7.56

Spectrum Plot of Worst Value

15MHz/QPSK

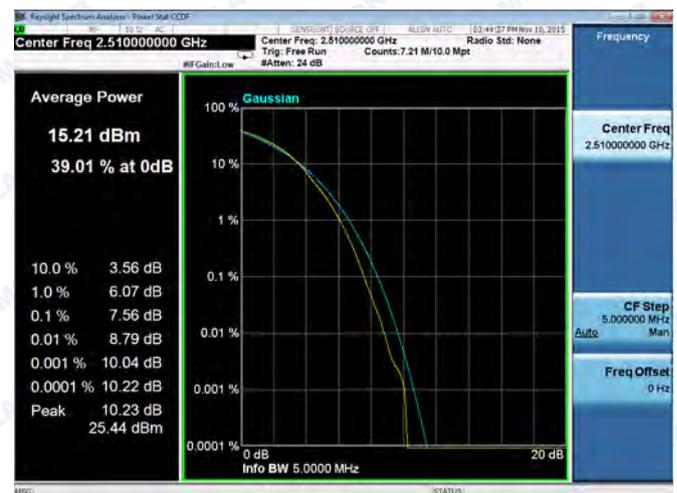
15MHz/16QAM



Spectrum Plot of Worst Value

20MHz/QPSK

20MHz/16QAM



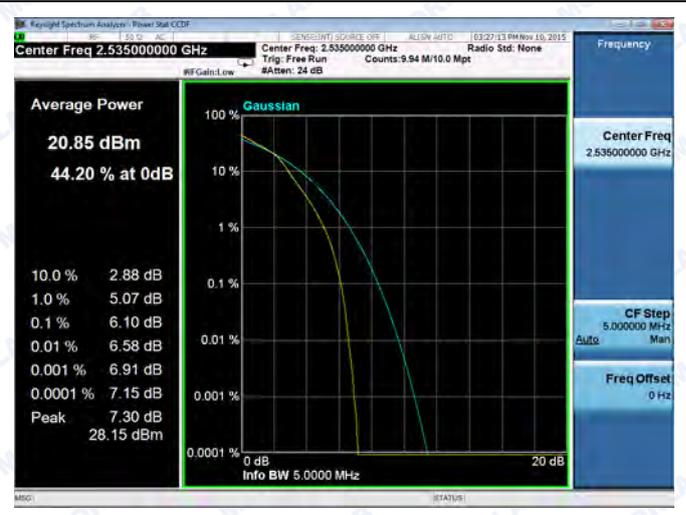


LTE Band 7 Middle channel							
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
21100	2535	5.27	6.10	21100	2535	6.07	6.86

Spectrum Plot of Worst Value

5MHz/QPSK

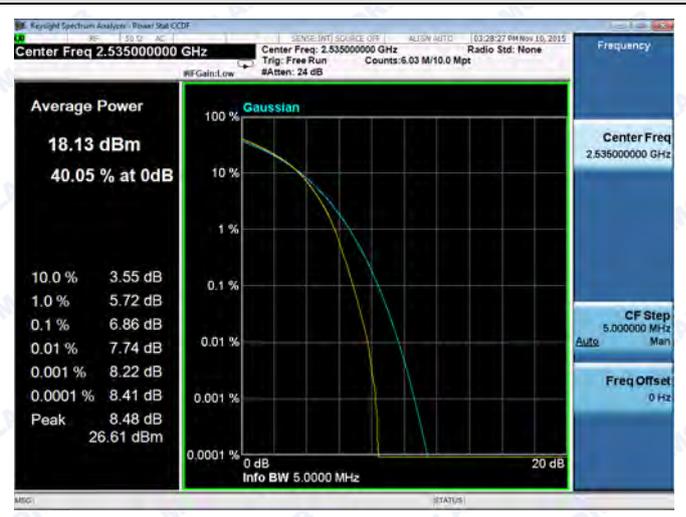
5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

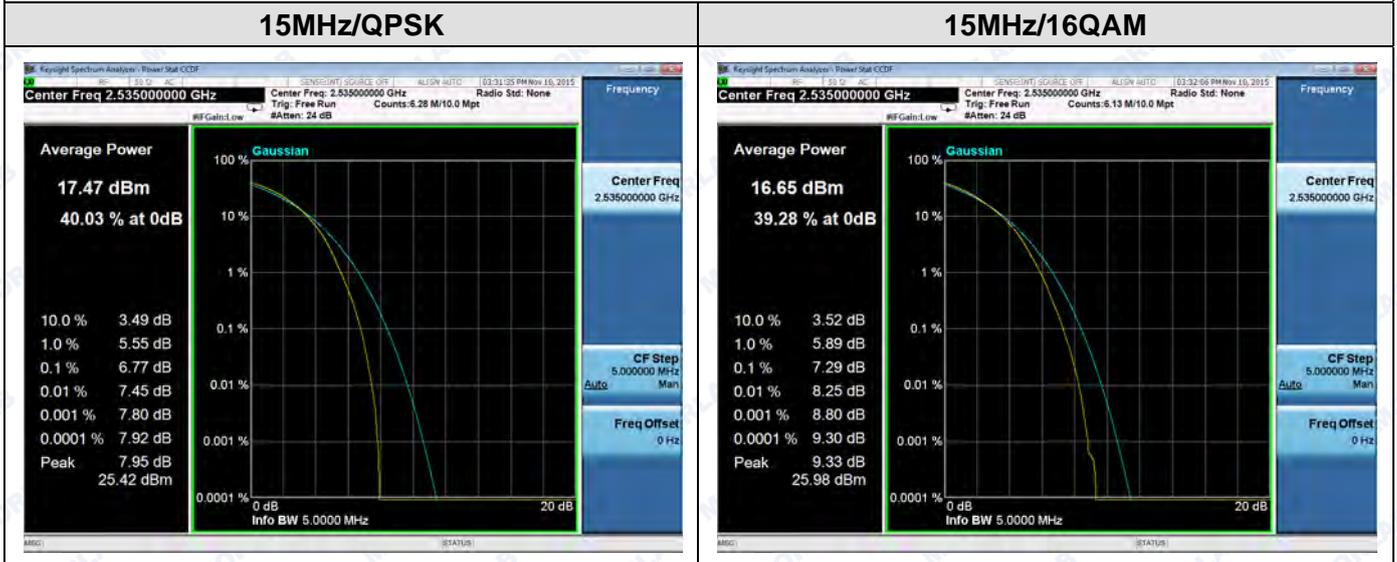
10MHz/16QAM



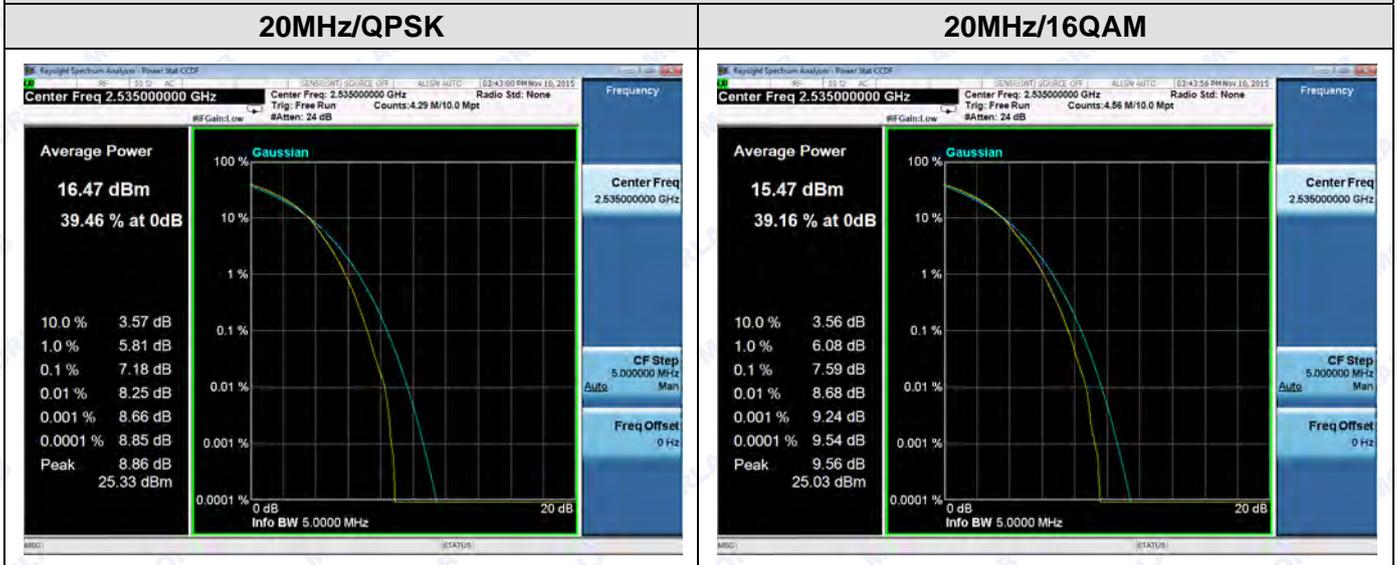


LTE Band 7 Middle channel							
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
21100	2535	6.77	7.29	21100	2535	7.18	7.59

Spectrum Plot of Worst Value



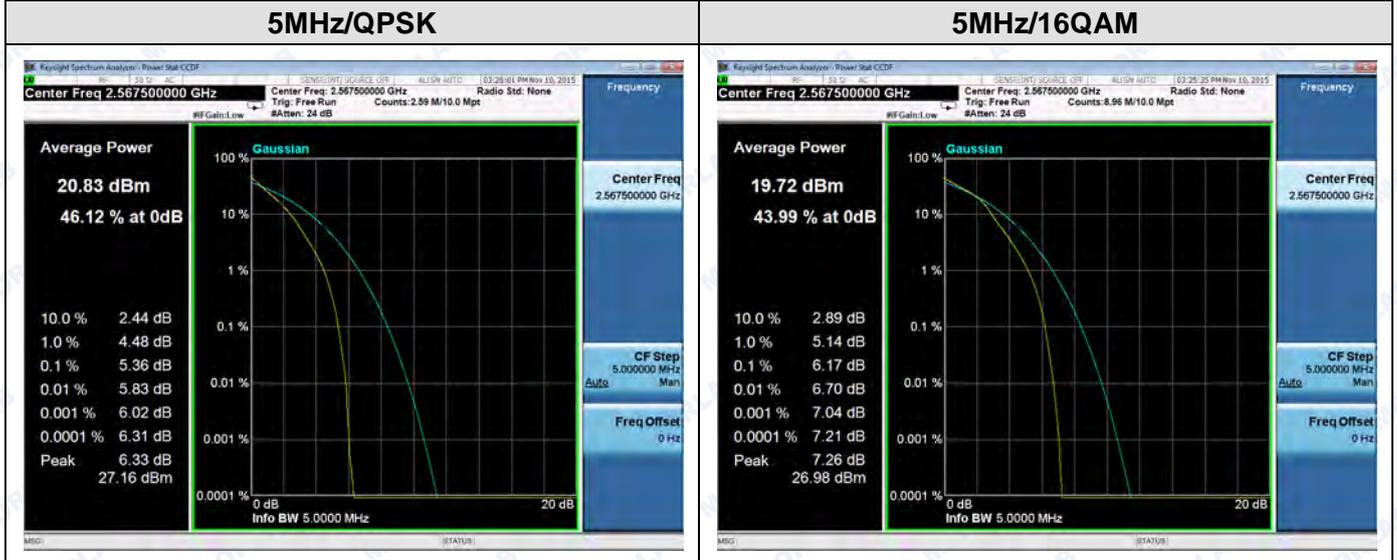
Spectrum Plot of Worst Value



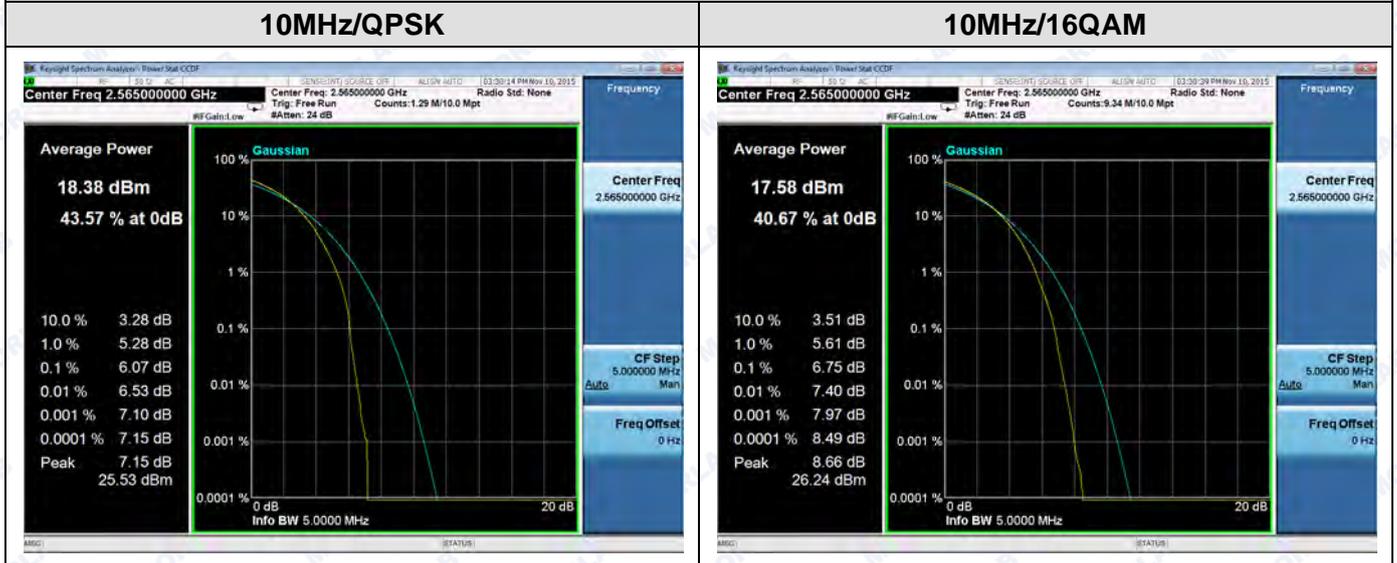


LTE Band 7 High channel							
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
21425	2567.5	5.36	6.17	21400	2565	6.07	6.75

Spectrum Plot of Worst Value



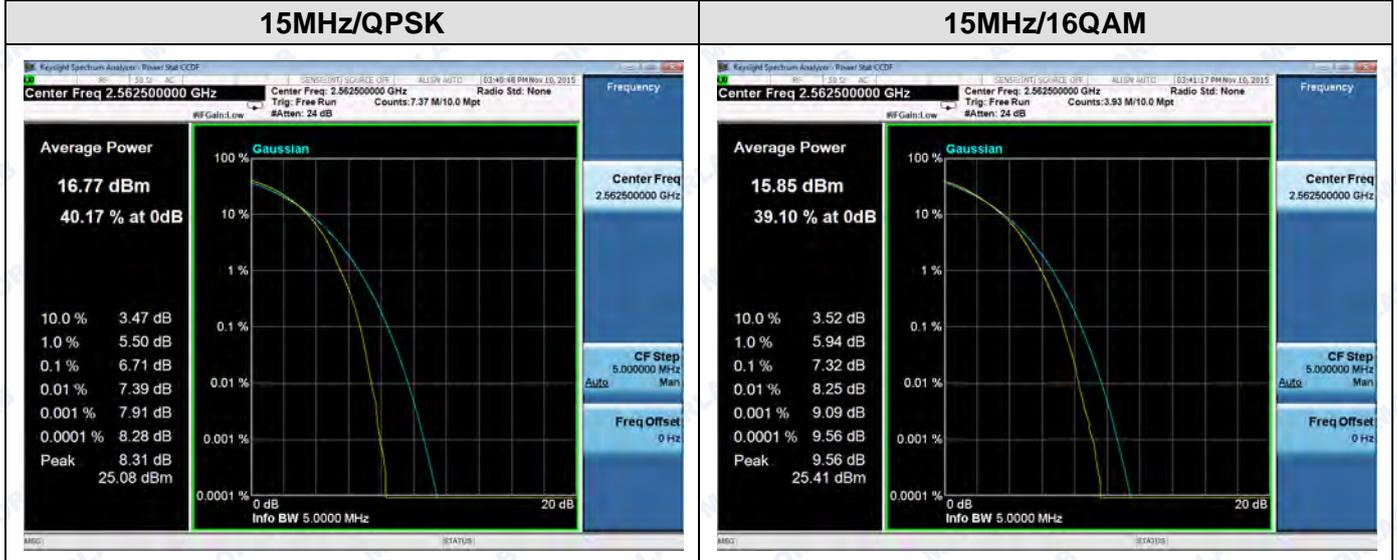
Spectrum Plot of Worst Value



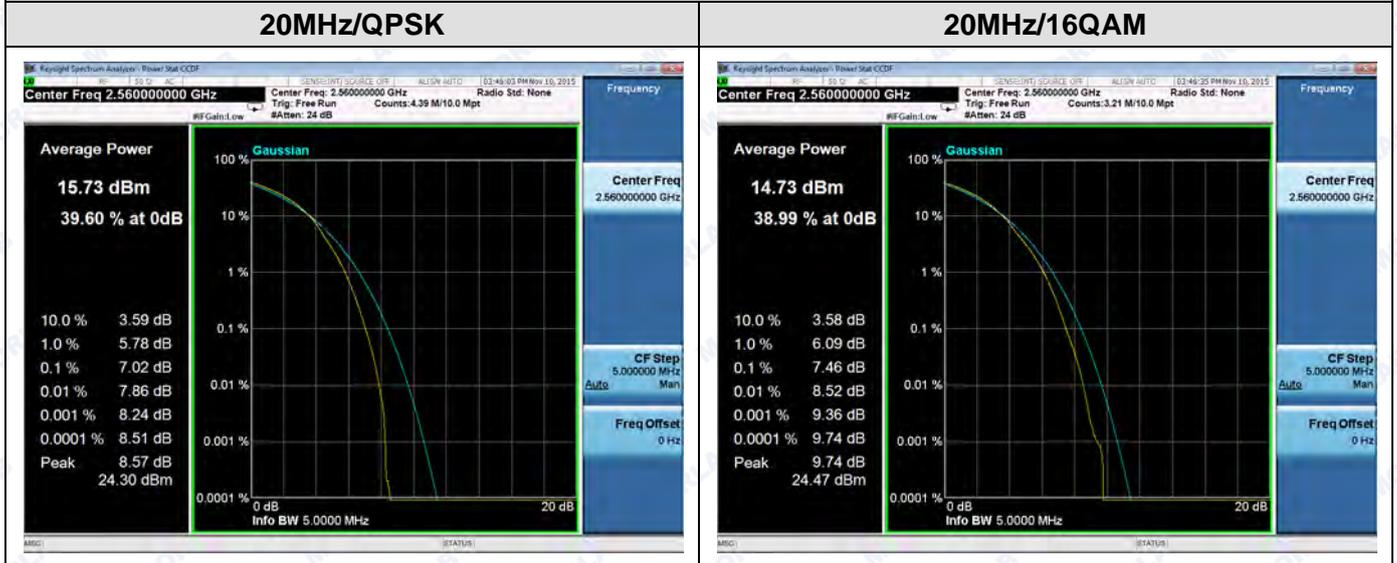


LTE Band 7 High channel							
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
21375	2562.5	6.71	7.32	21350	2560	7.02	7.46

Spectrum Plot of Worst Value



Spectrum Plot of Worst Value





2.5 Conducted Spurious Emissions

2.5.1 Test Requirement

According to FCC section 2.1051,2.1057 and FCC section 27.53(g), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43+10*\log(P)$ dB. This calculated to be -13dBm.

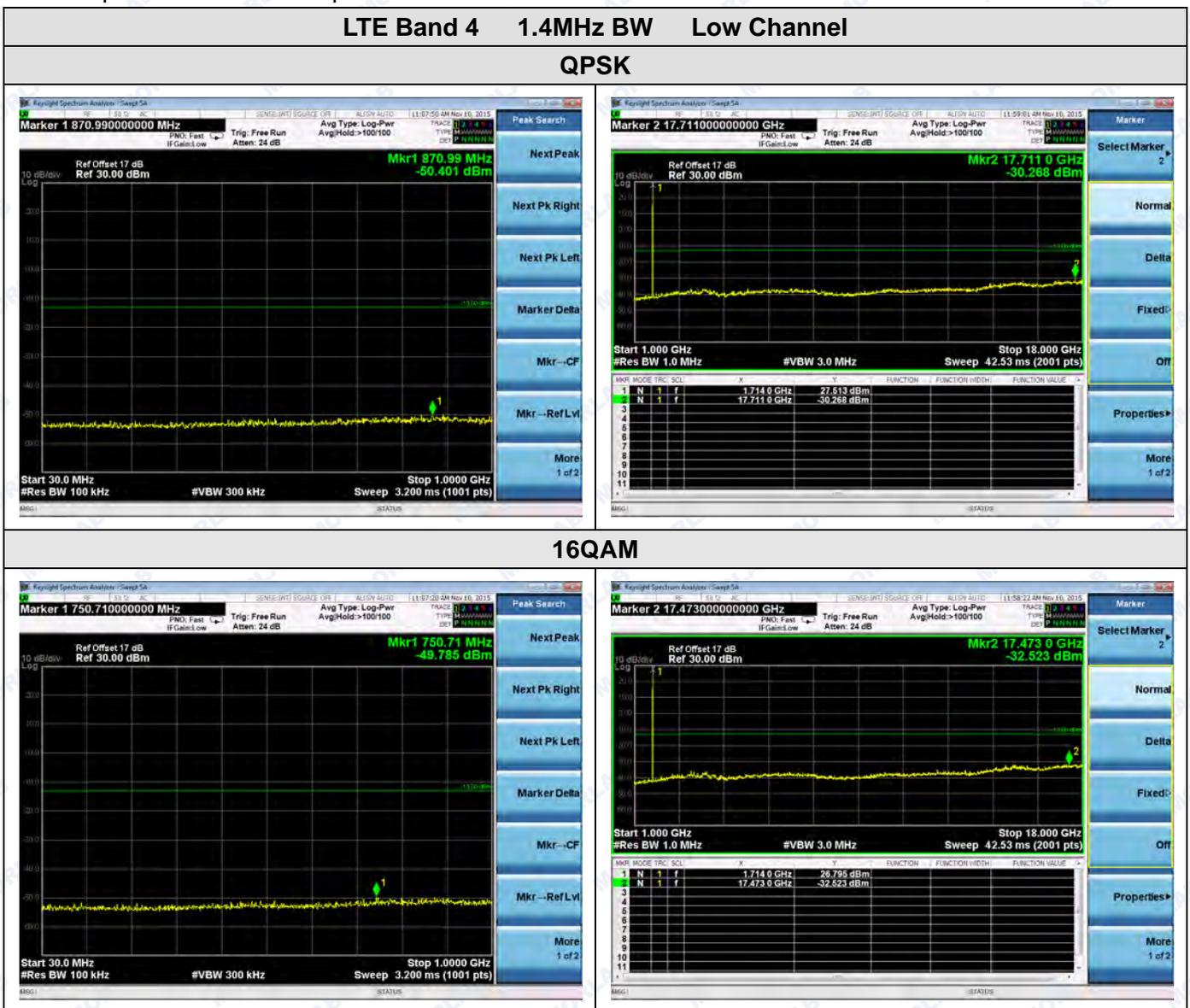
2.5.2 Test Procedure

See section 2.1.2 of this report.

Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

2.5.3 Test Result

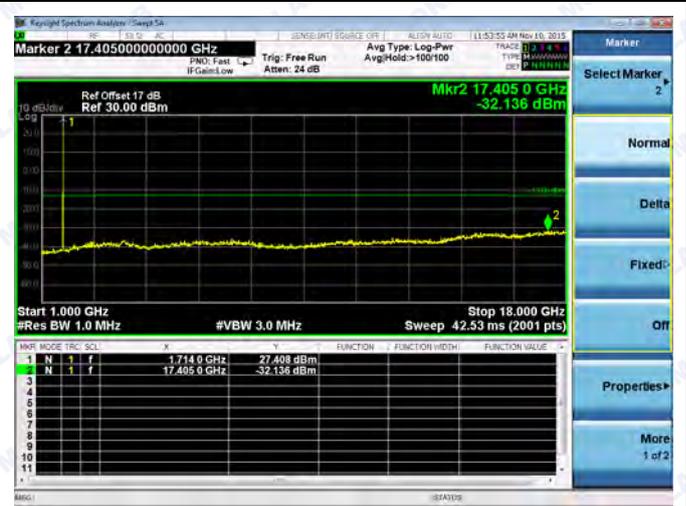
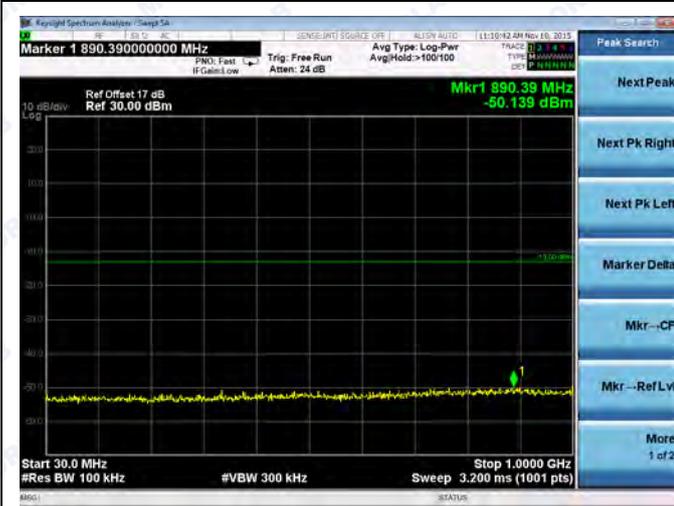
Compliant. See attached pots.



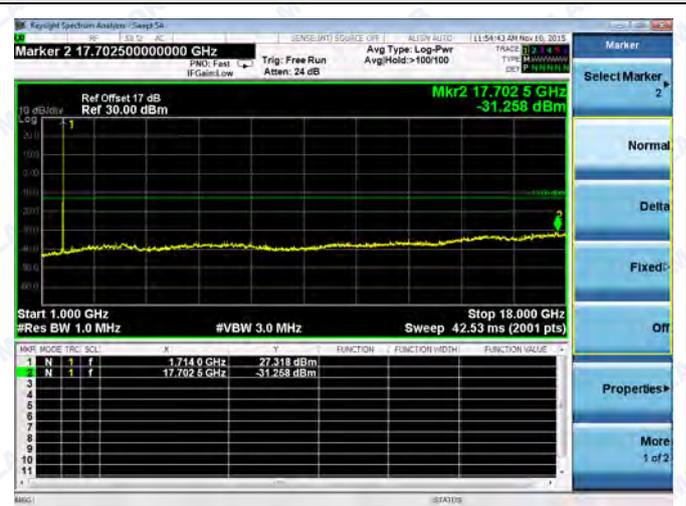


LTE Band 4 3MHz BW Low Channel

QPSK



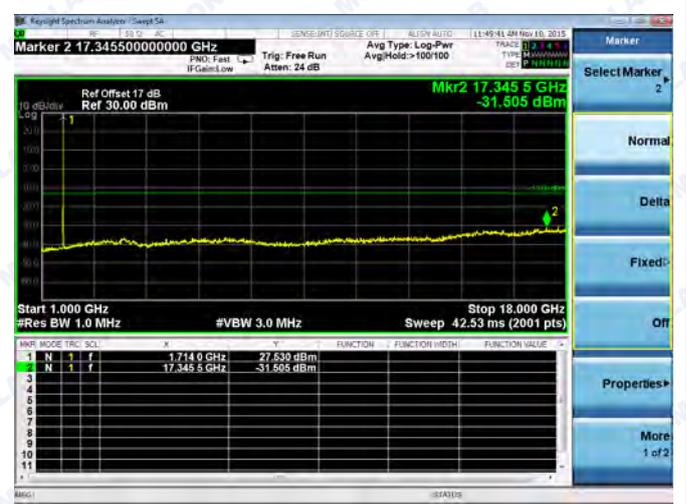
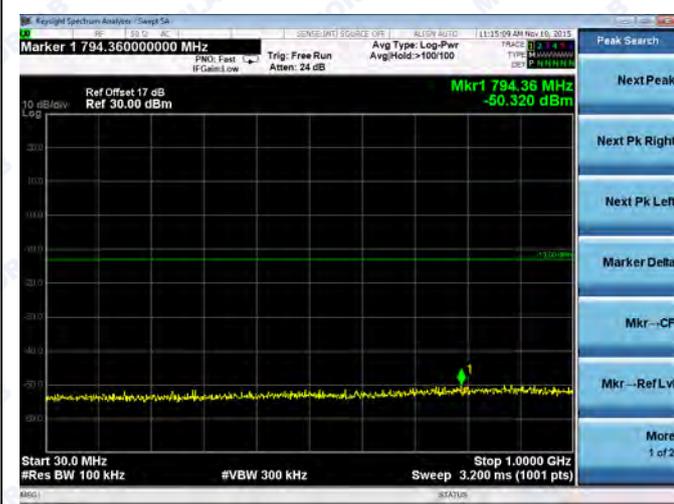
16QAM



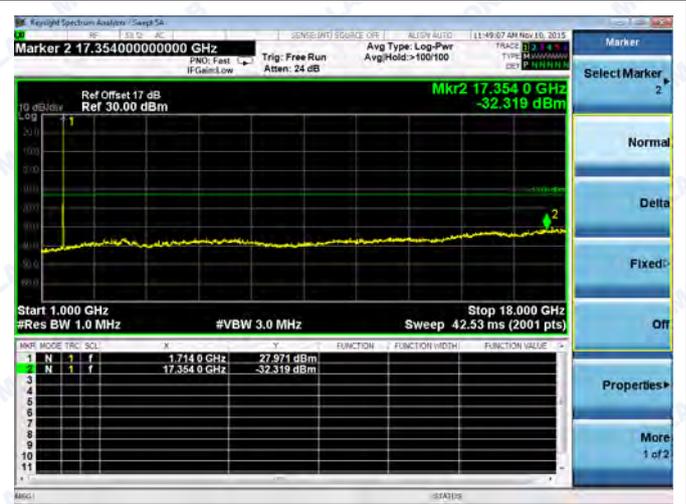
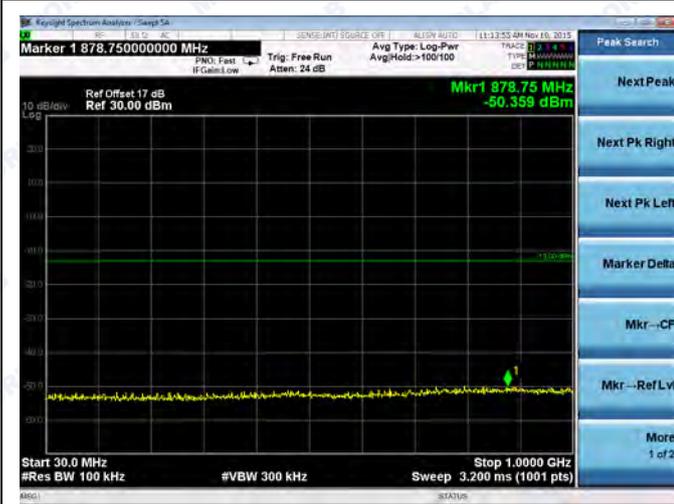


LTE Band 4 5MHz BW Low Channel

QPSK



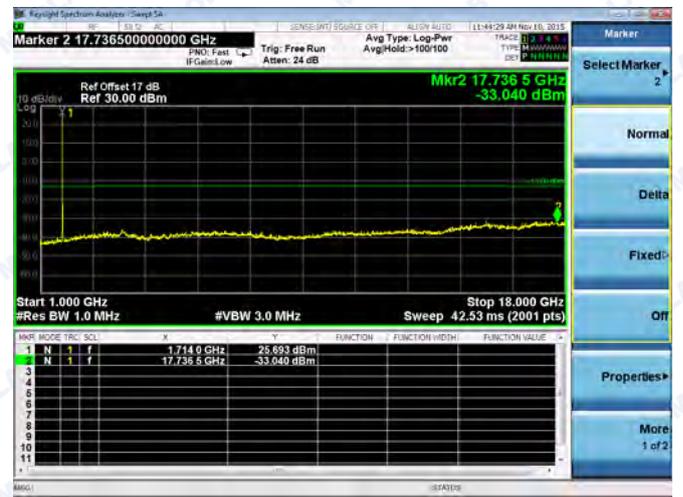
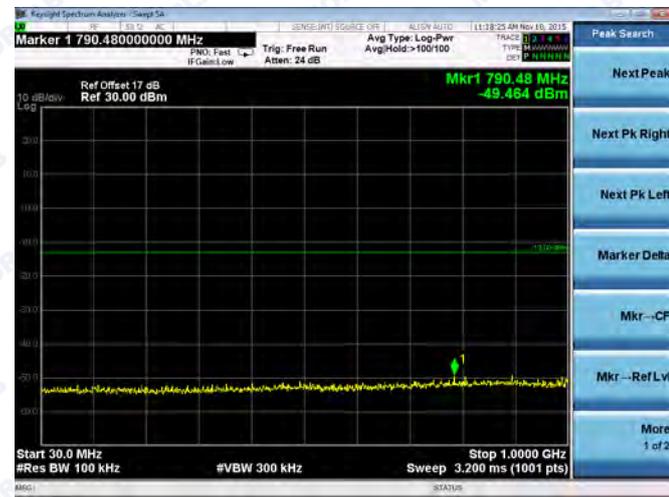
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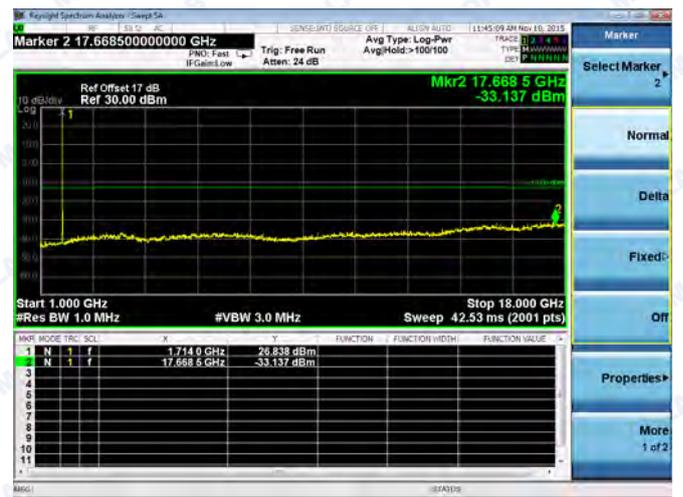
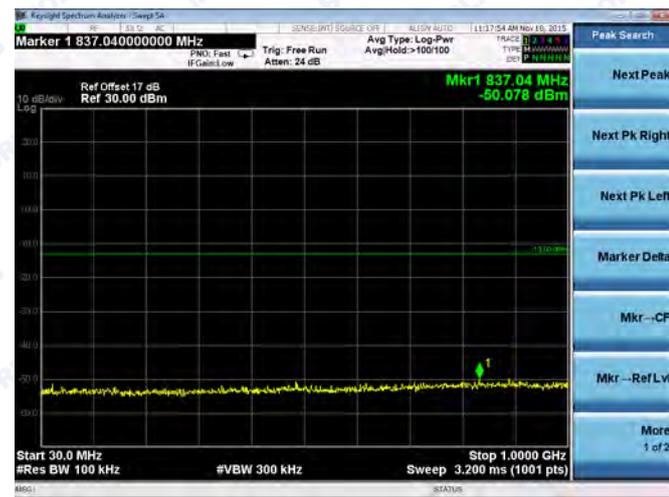


LTE Band 4 10MHz BW Low Channel

QPSK



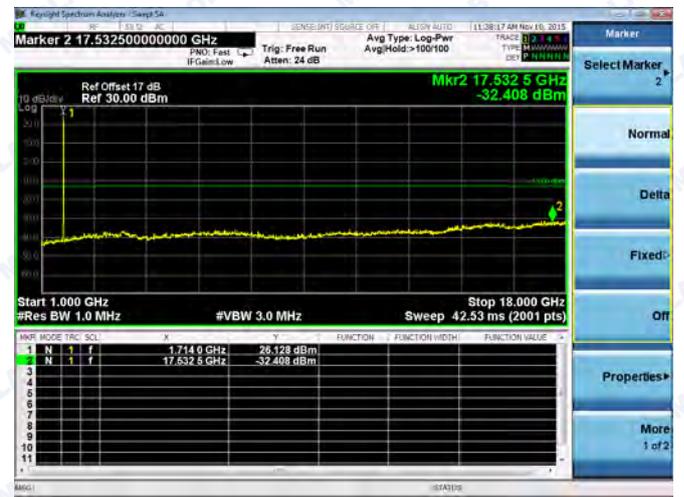
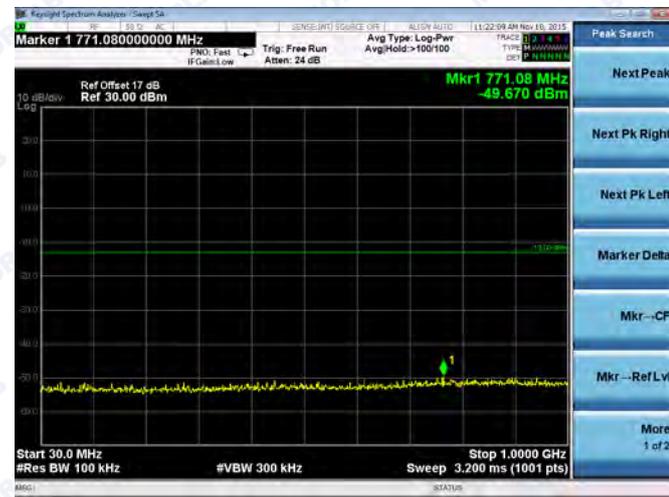
16QAM



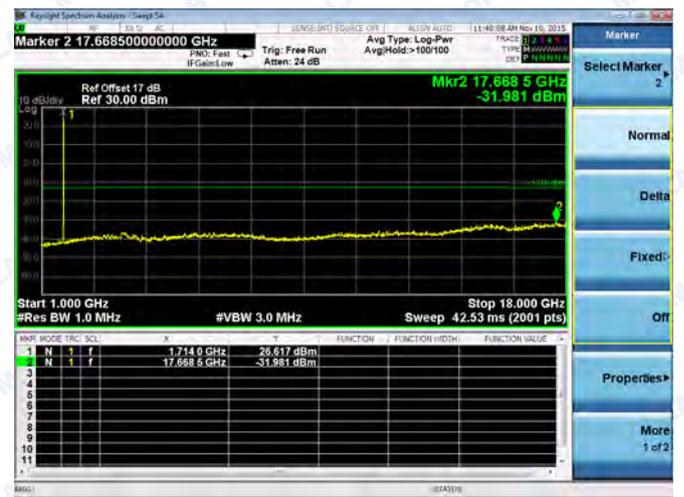
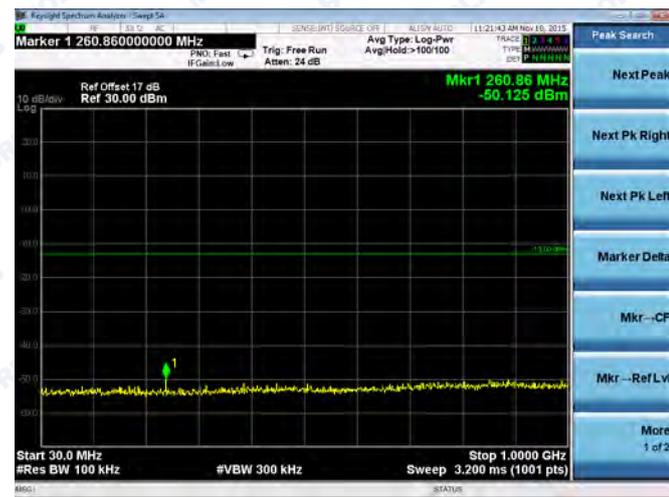


LTE Band 4 15MHz BW Low Channel

QPSK



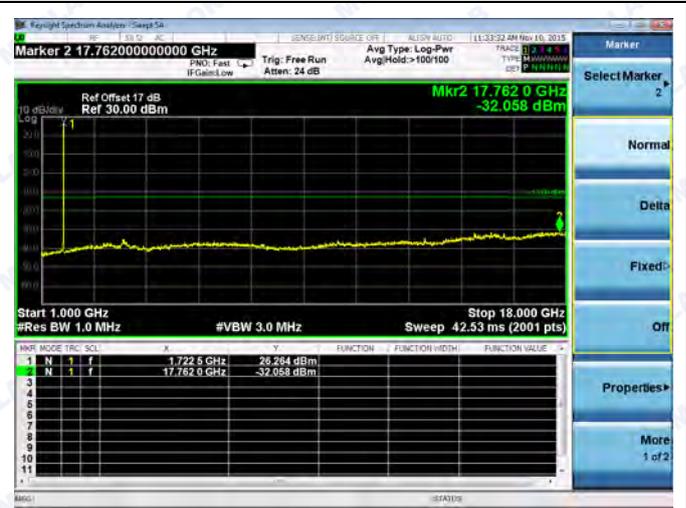
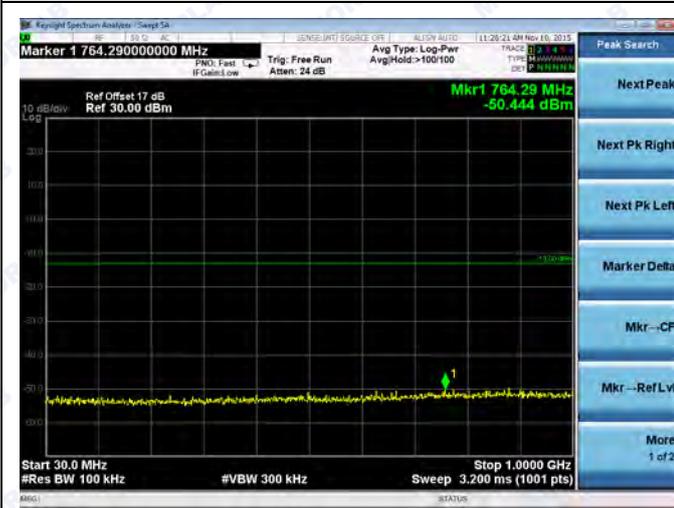
16QAM



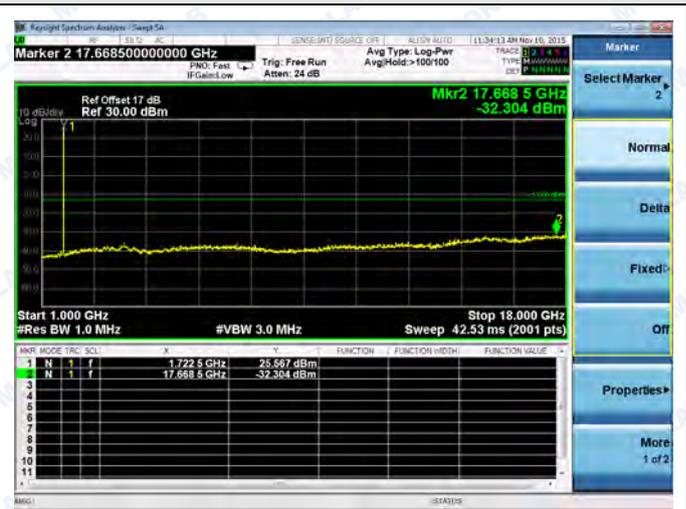
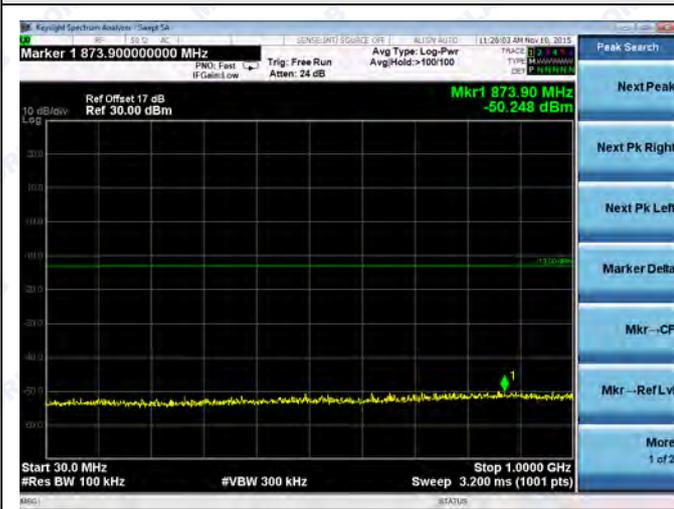


LTE Band 4 20MHz BW Low Channel

QPSK



16QAM

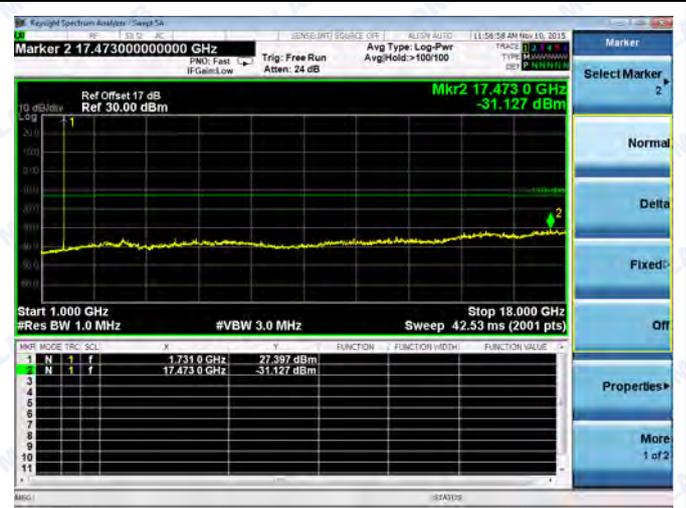
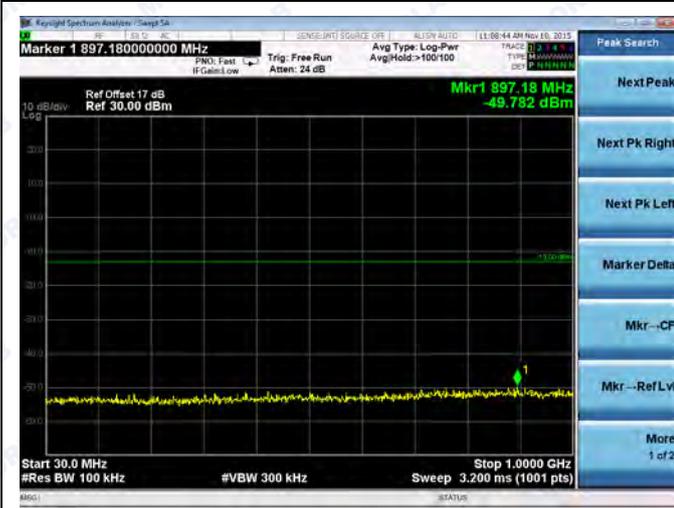




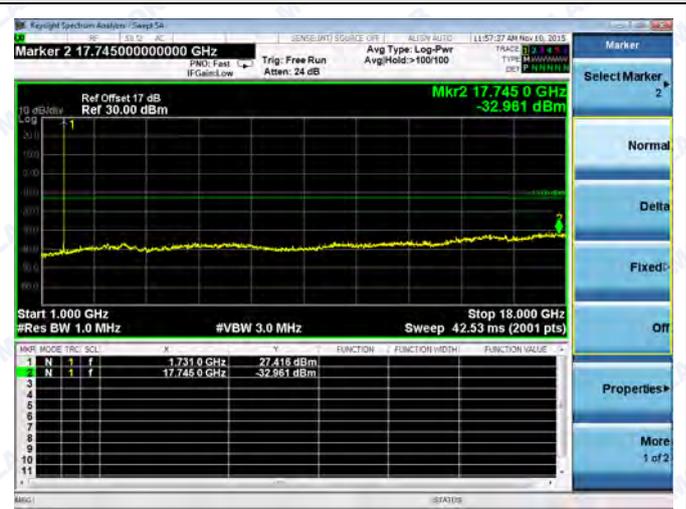
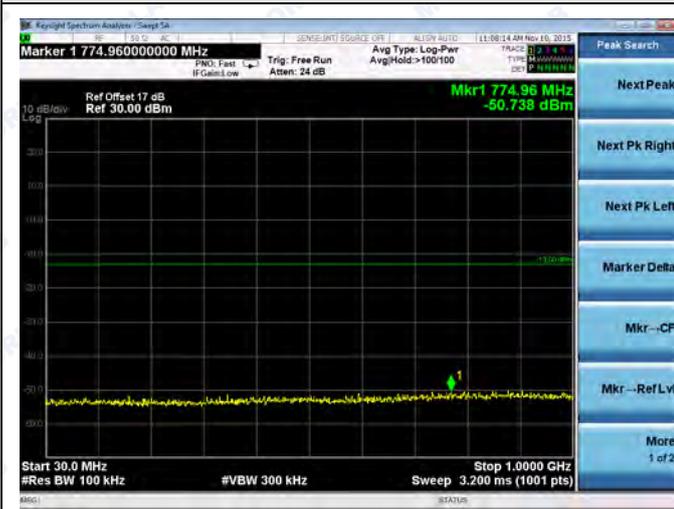
Middle channel:

LTE Band 4 1.4MHz BW Mid Channel

QPSK



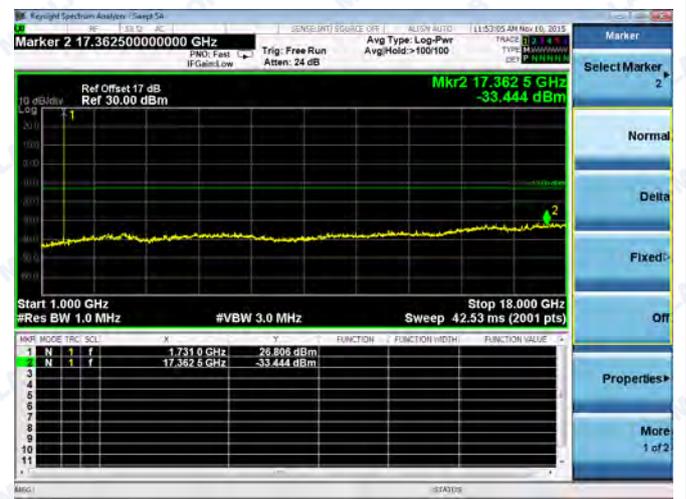
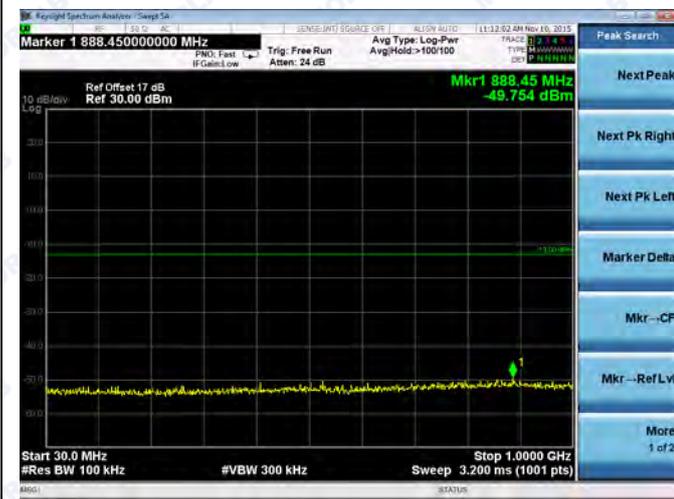
16QAM



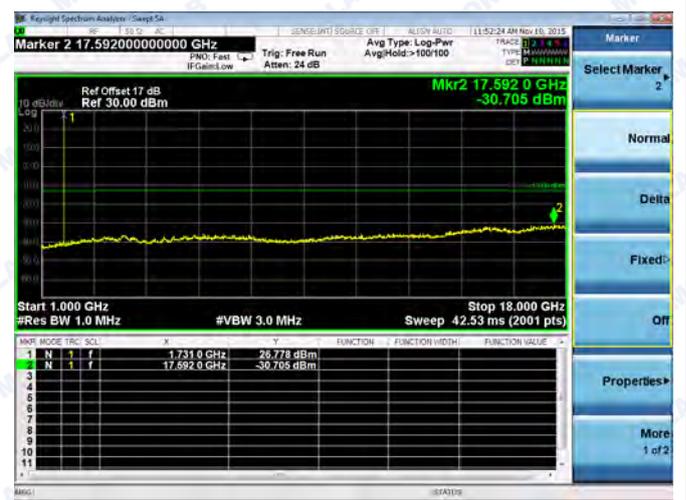
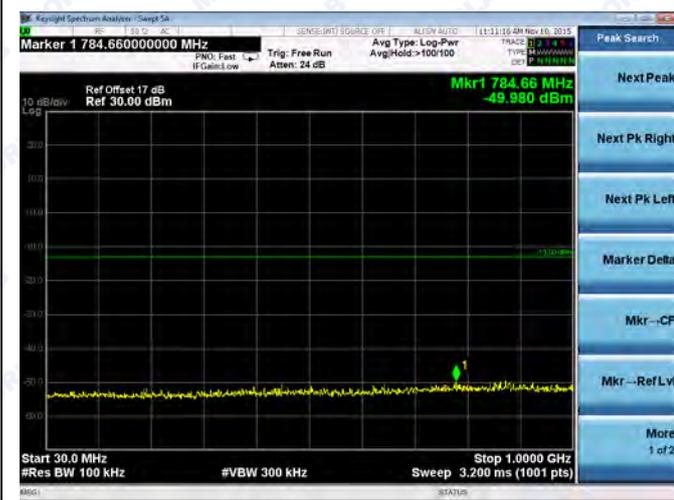


LTE Band 4 3MHz BW Mid Channel

QPSK



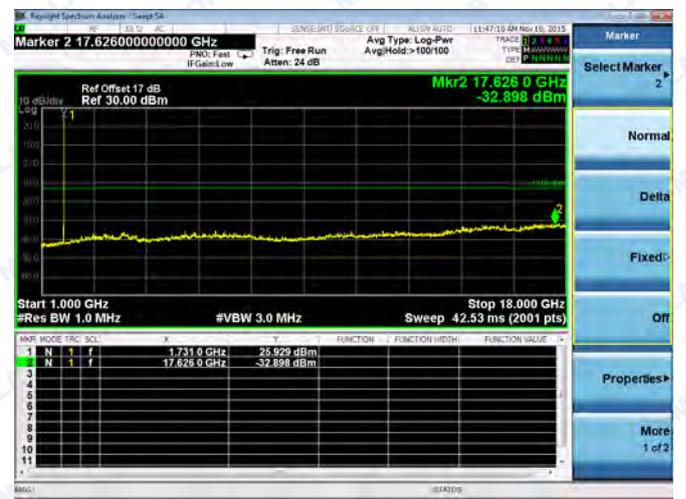
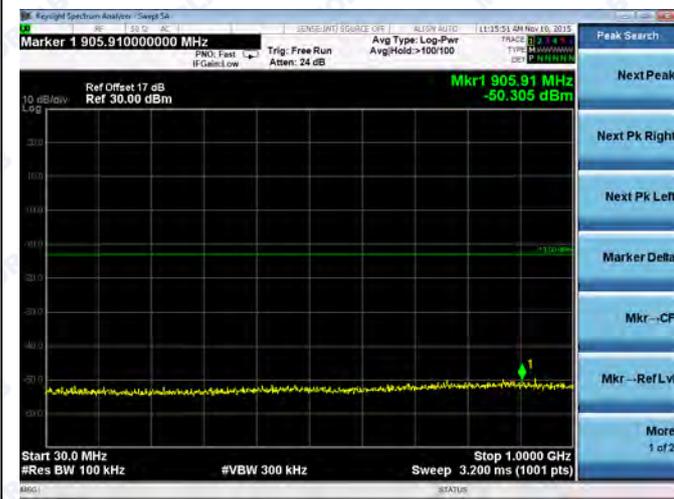
16QAM



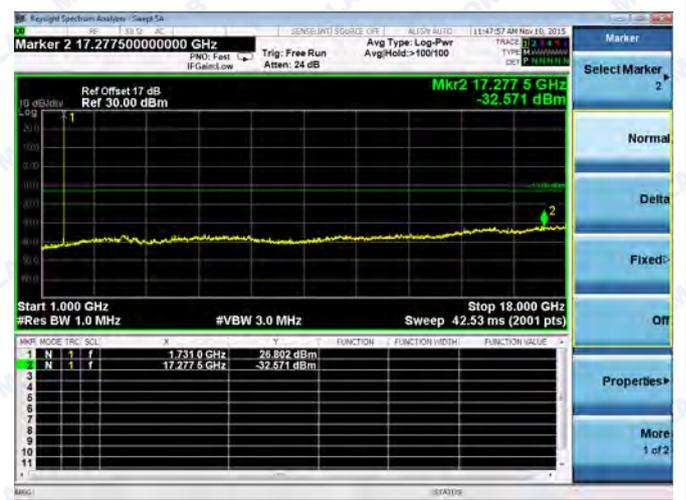
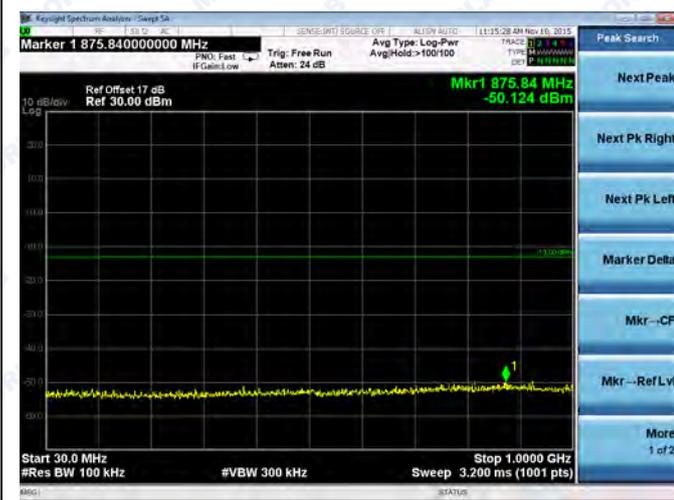


LTE Band 4 5MHz BW Mid Channel

QPSK



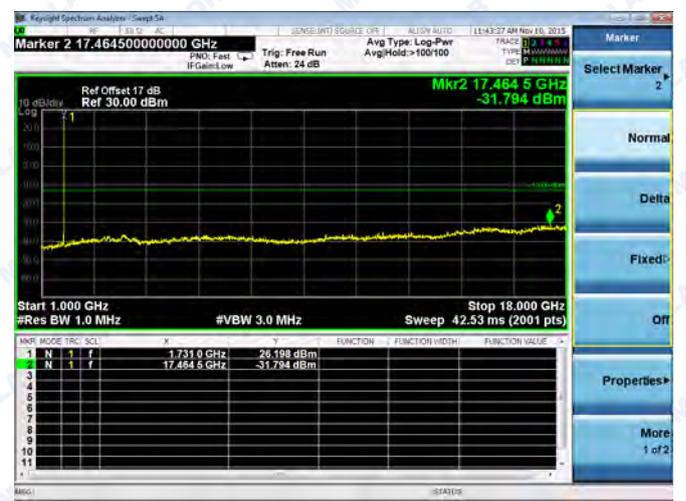
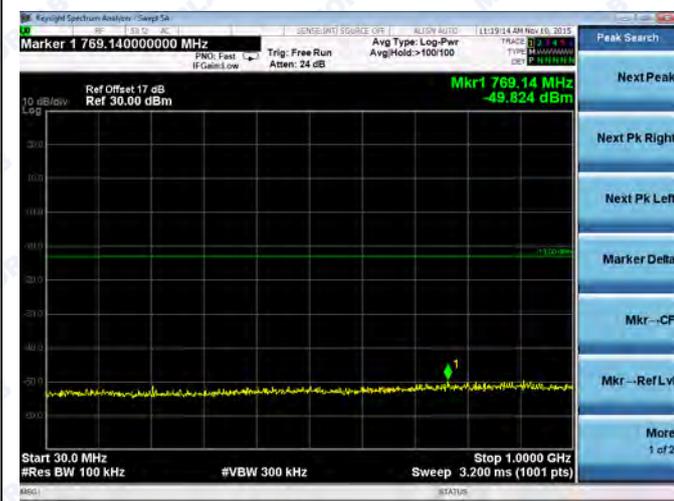
16QAM



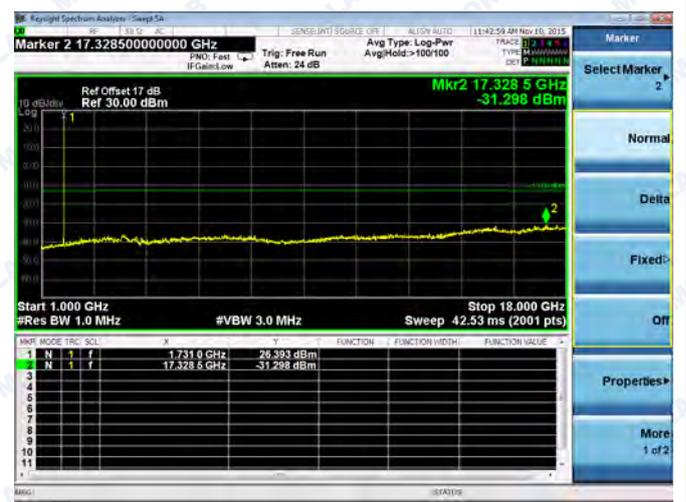
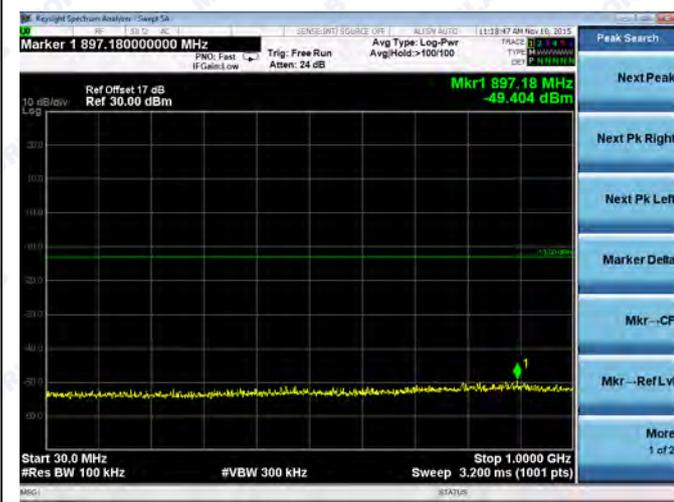


LTE Band 4 10MHz BW Mid Channel

QPSK



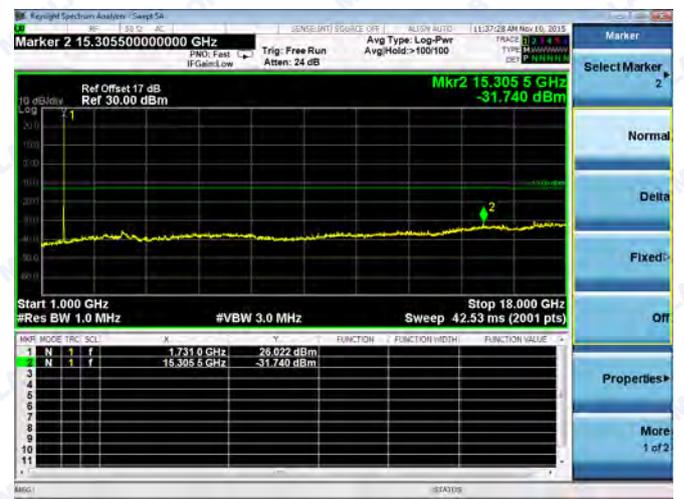
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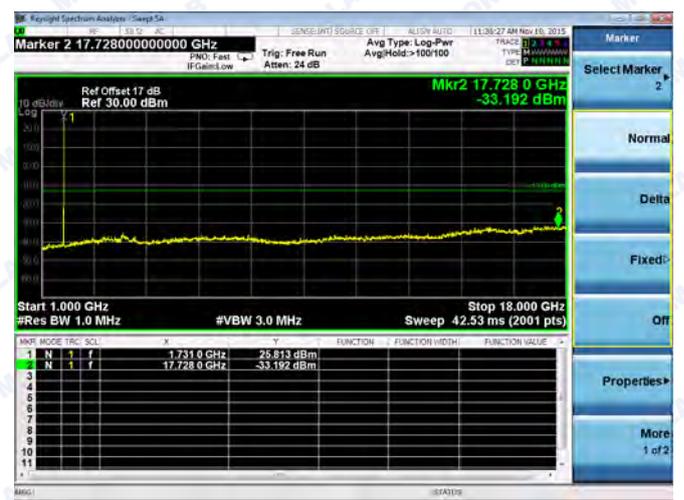
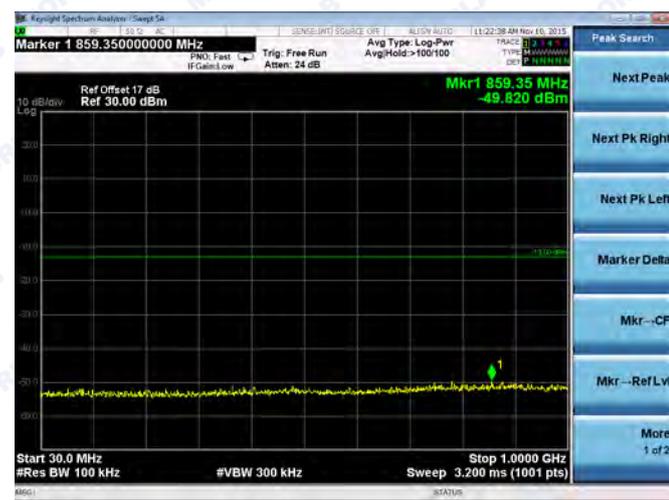


LTE Band 4 15MHz BW Mid Channel

QPSK



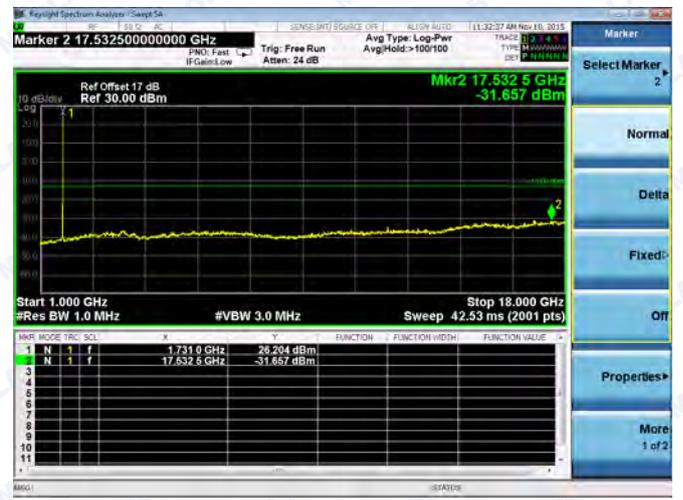
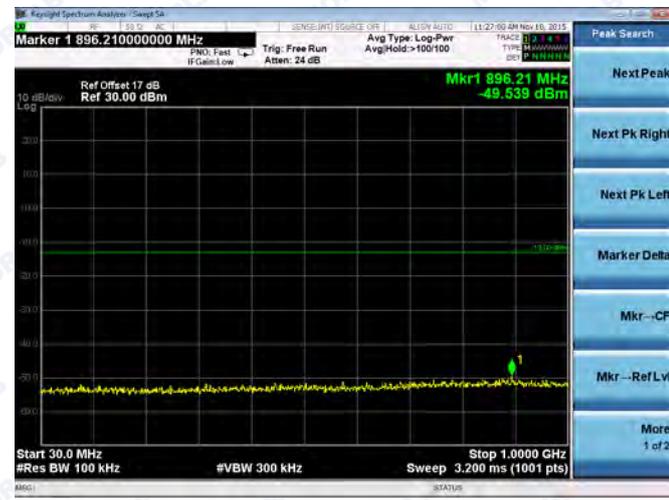
16QAM



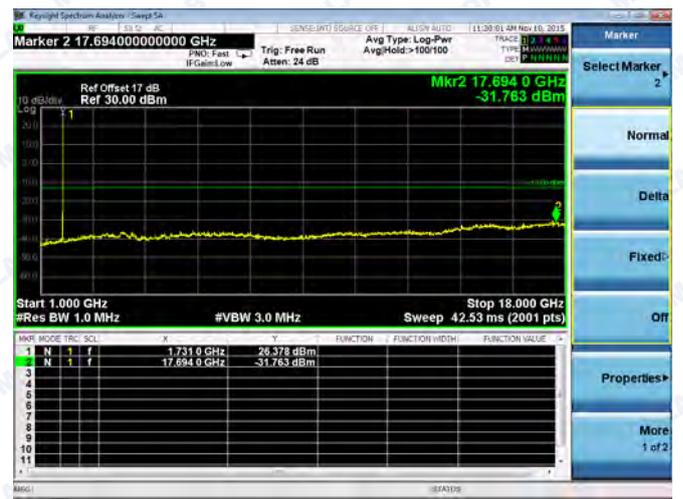
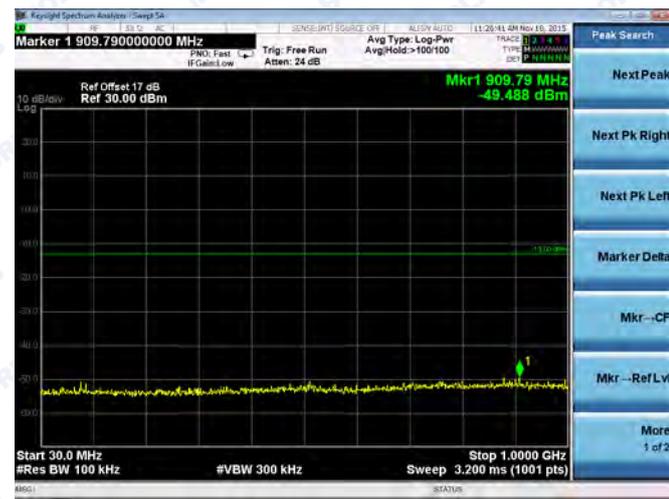


LTE Band 4 20MHz BW Mid Channel

QPSK



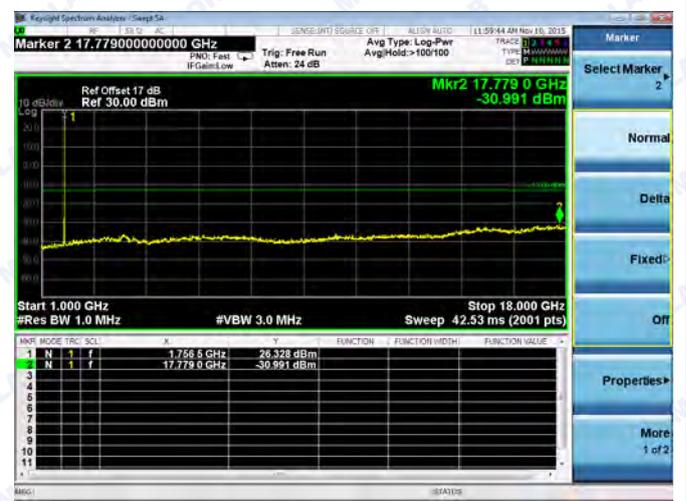
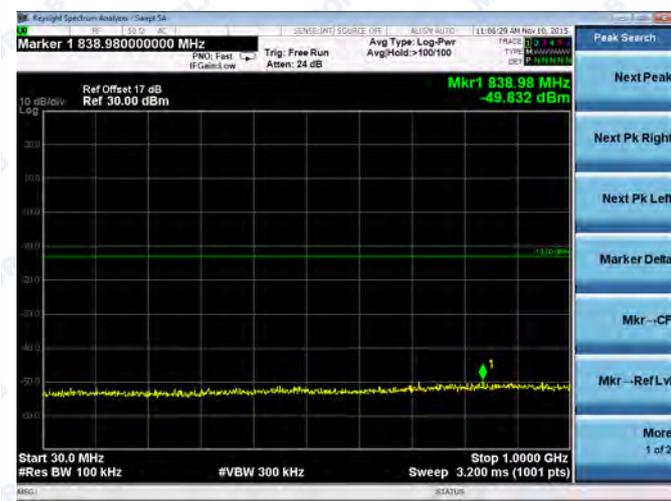
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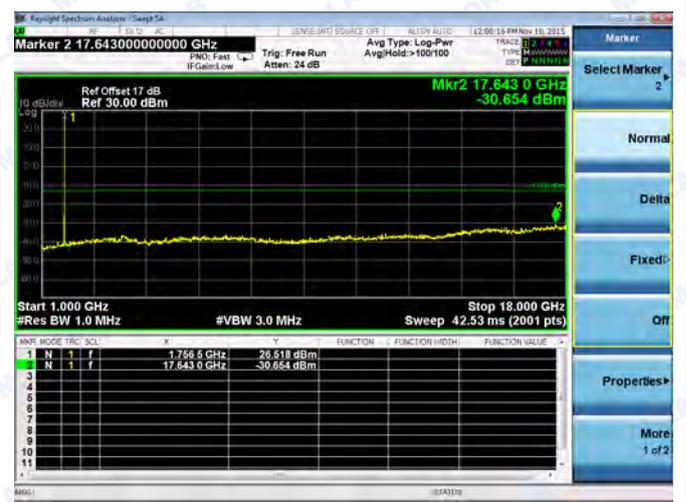
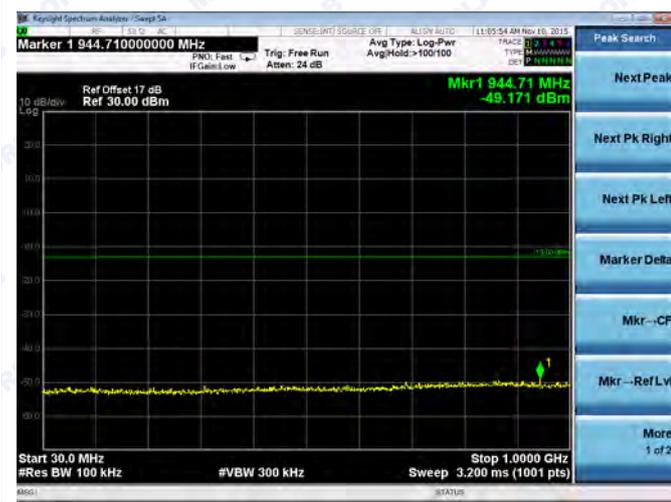


LTE Band 4 1.4MHz BW High Channel

QPSK



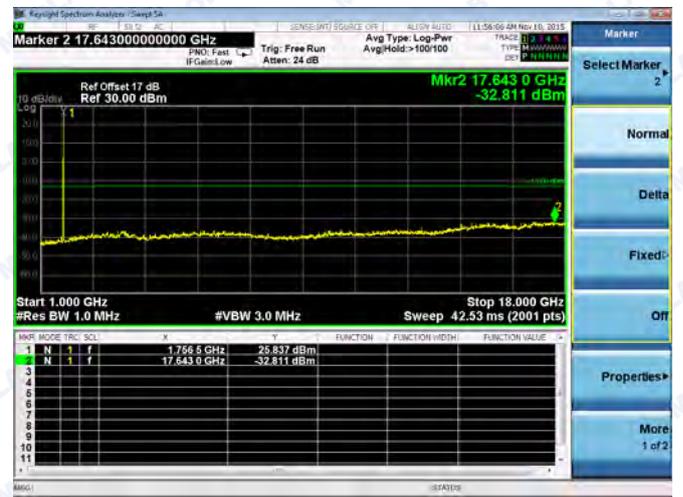
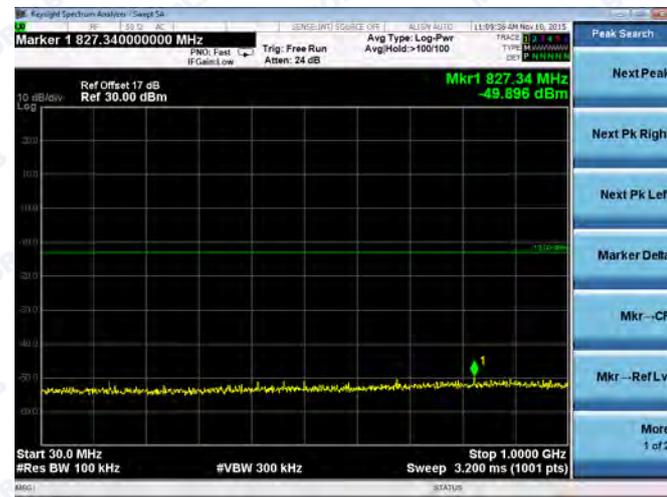
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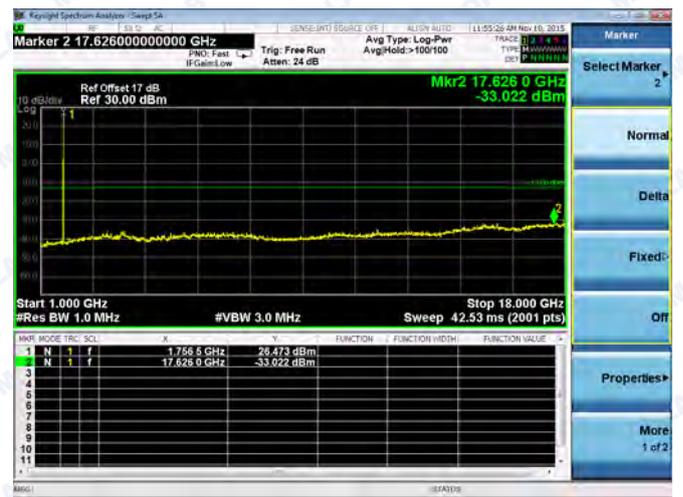
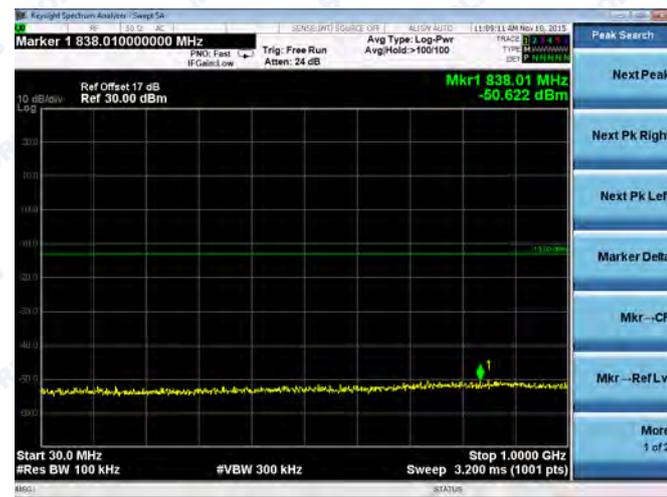


LTE Band 4 3MHz BW High Channel

QPSK



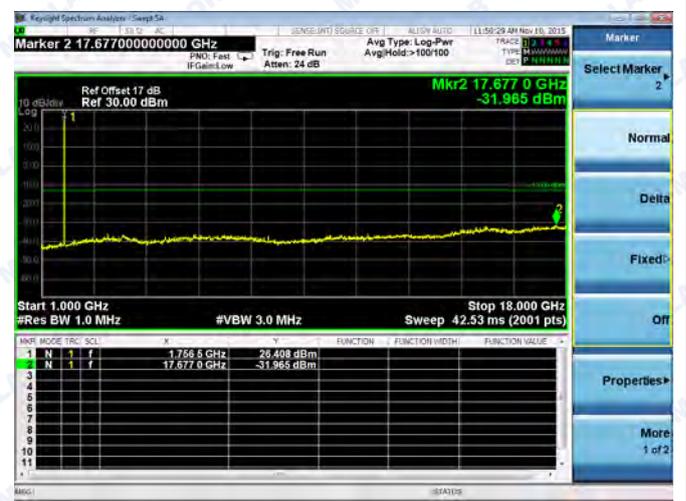
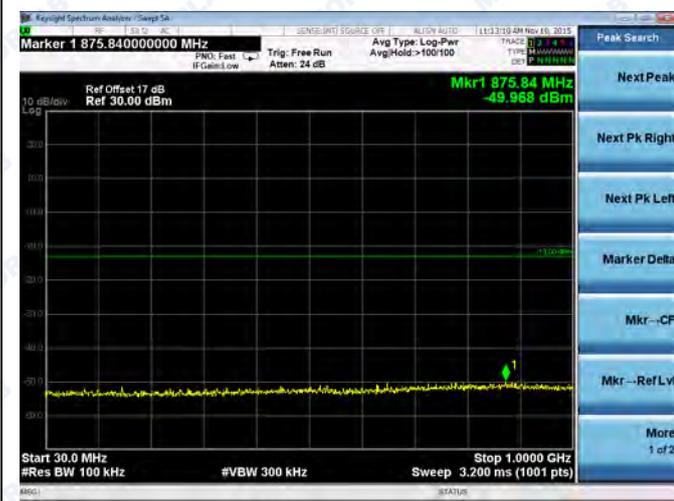
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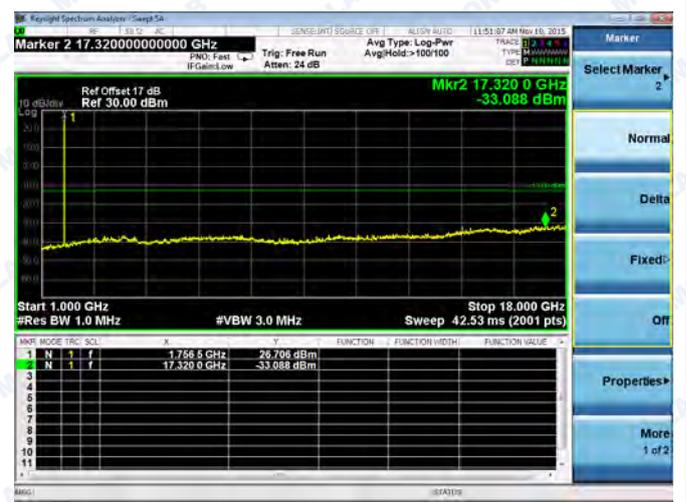
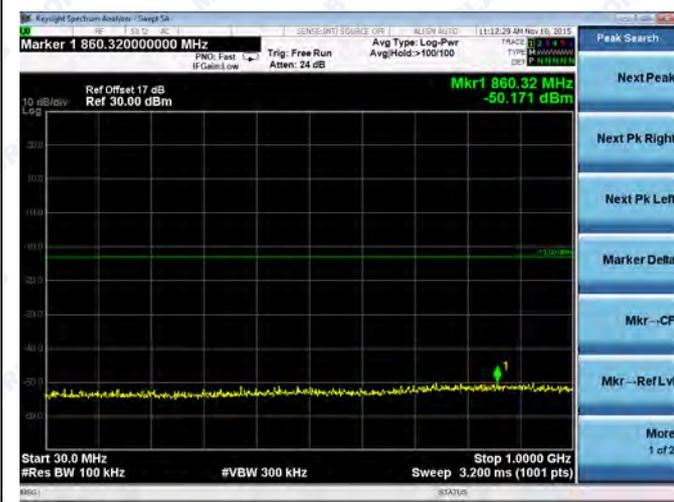


LTE Band 4 5MHz BW High Channel

QPSK



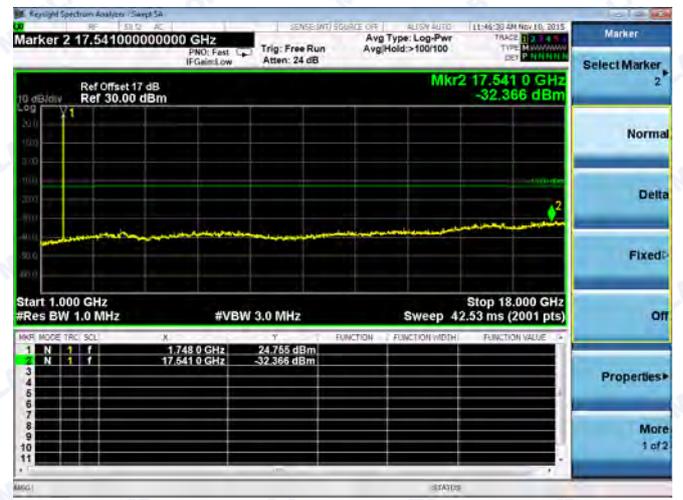
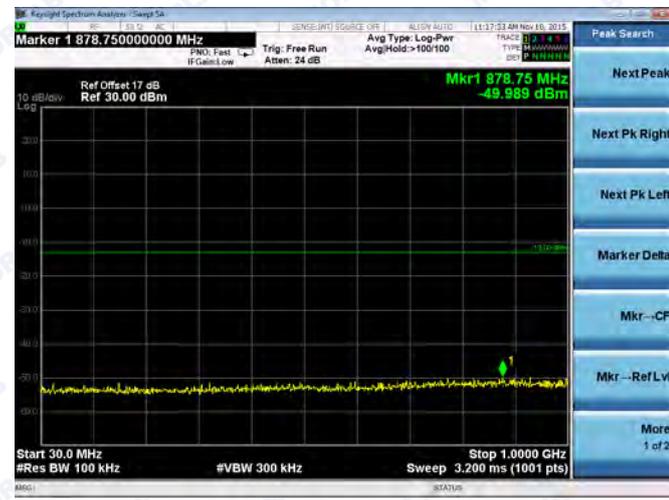
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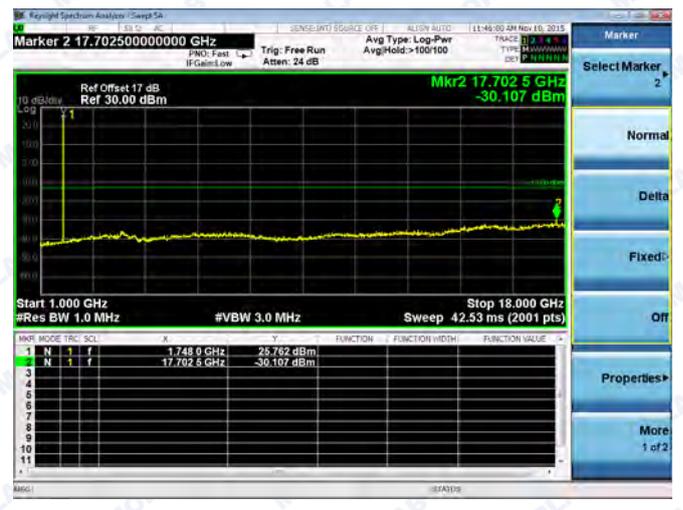
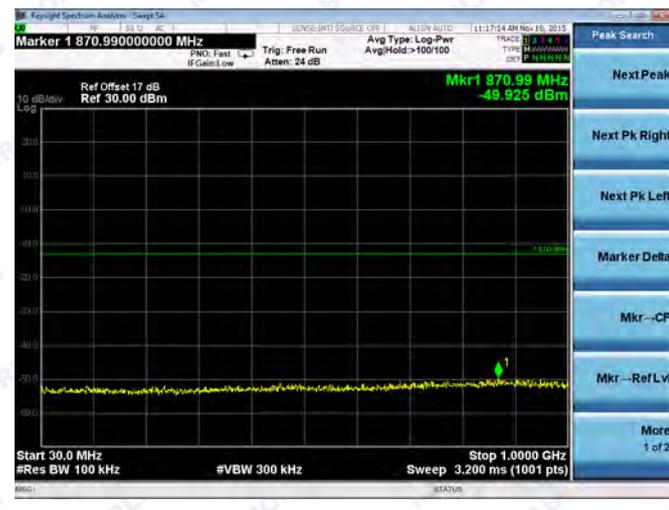


LTE Band 4 10MHz BW High Channel

QPSK



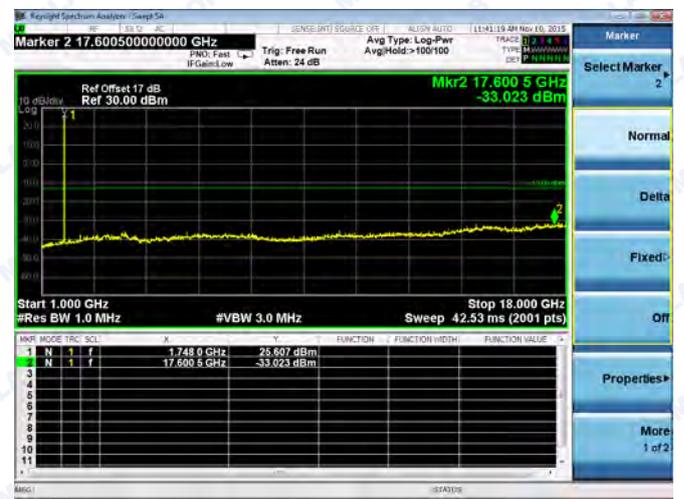
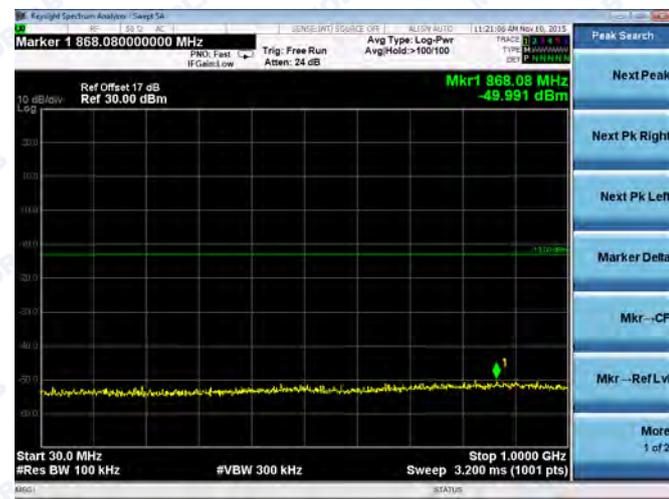
16QAM



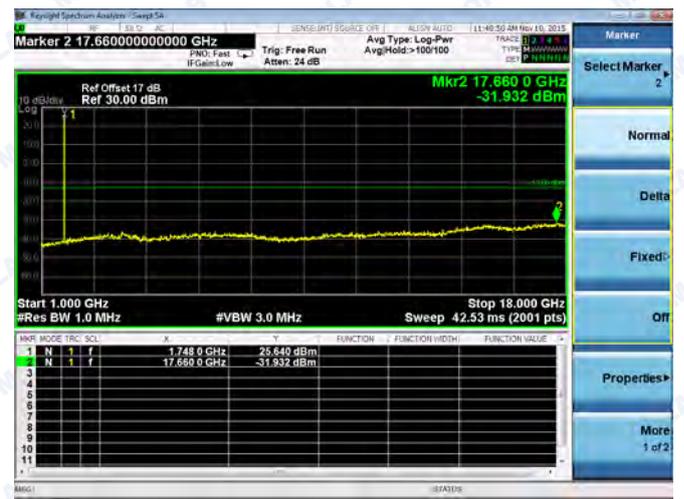
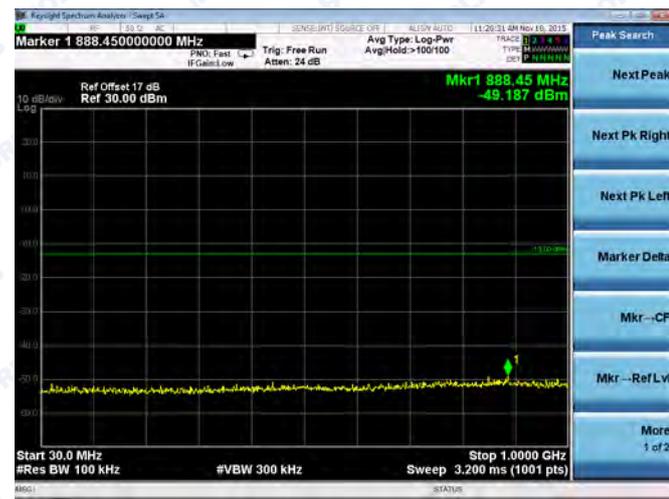


LTE Band 4 15MHz BW High Channel

QPSK



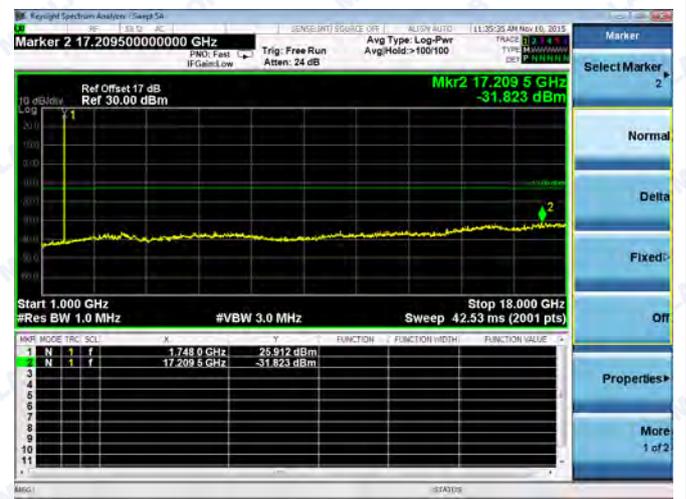
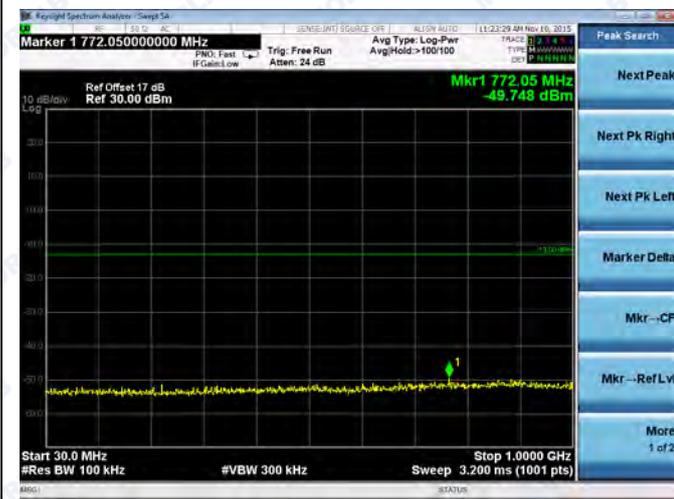
16QAM



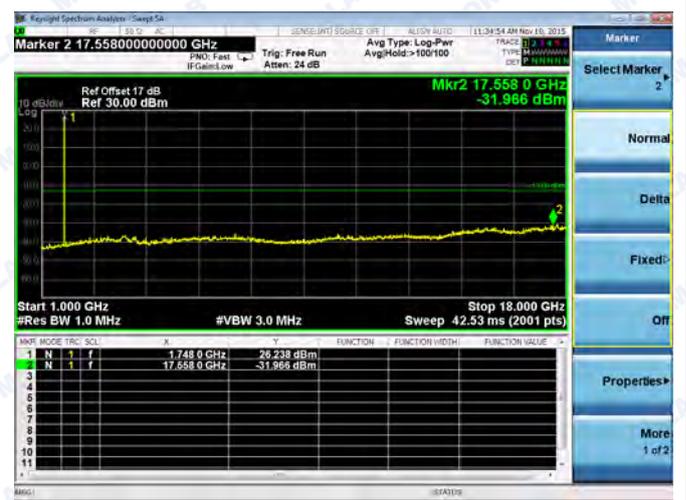
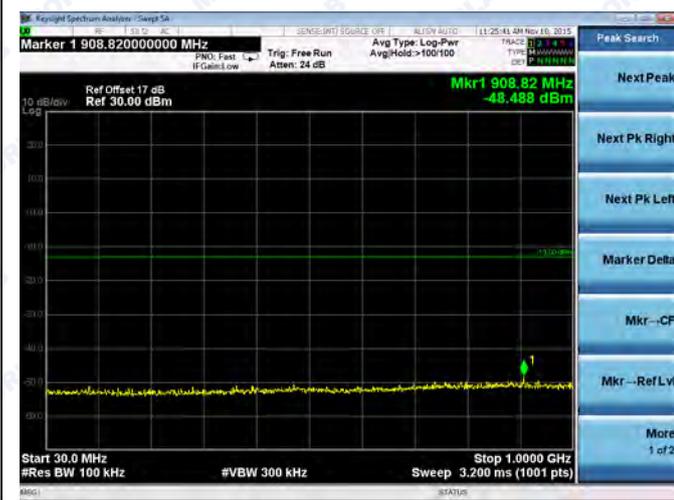


LTE Band 4 20MHz BW High Channel

QPSK



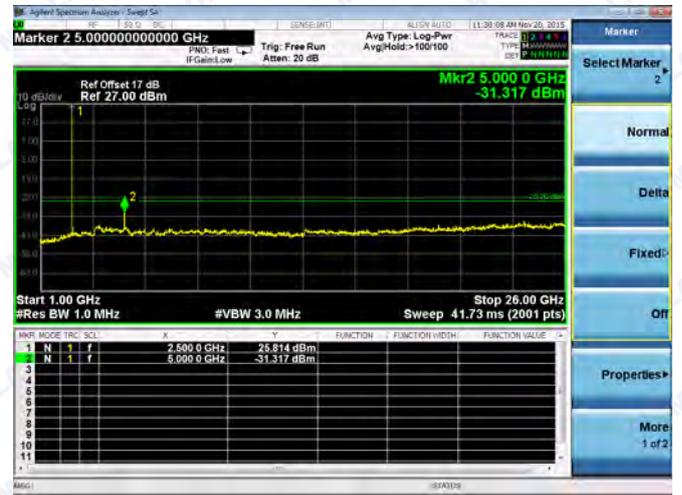
16QAM



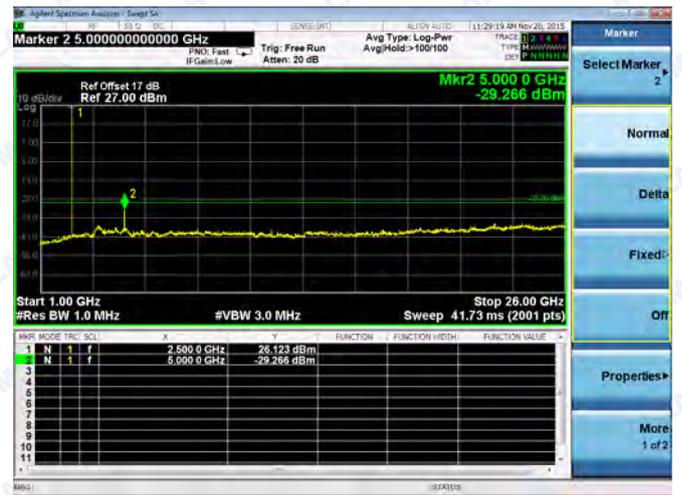


LTE Band 7 5MHz BW Low Channel

QPSK



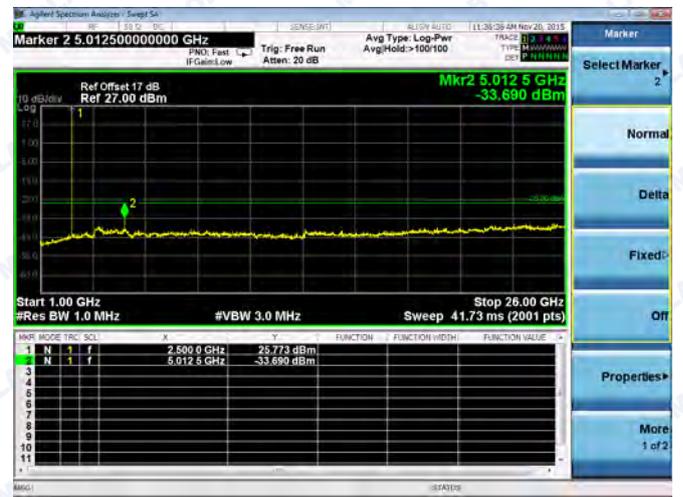
16QAM



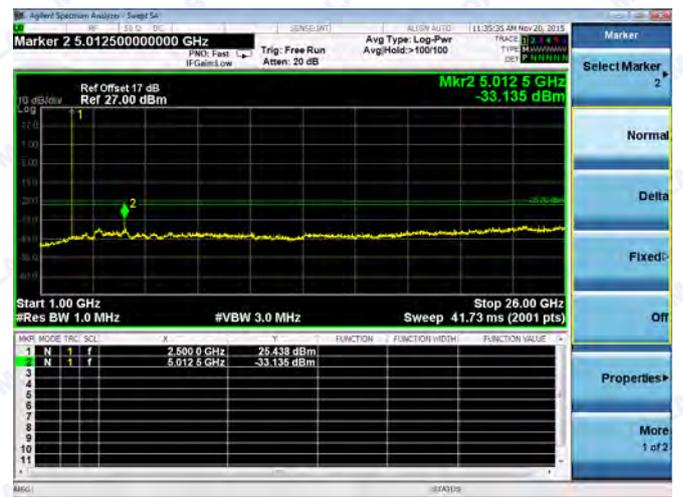


LTE Band 7 10MHz BW Low Channel

QPSK



16QAM





LTE Band 7 15MHz BW Low Channel

QPSK



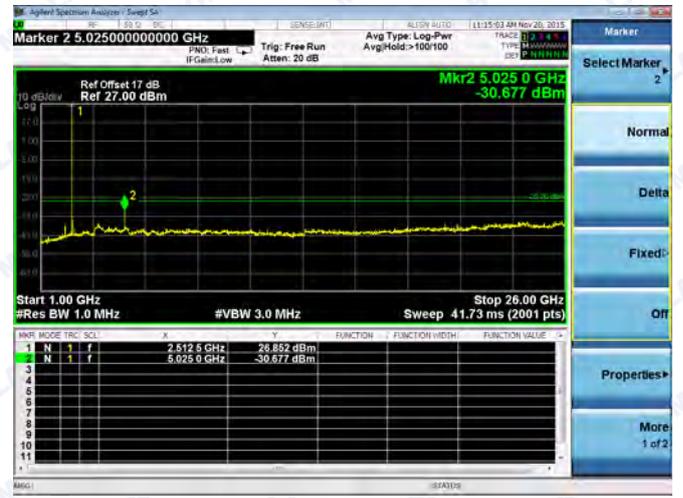
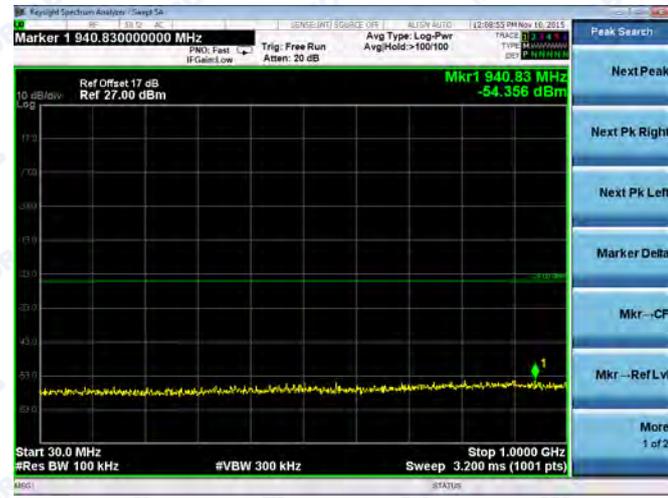
16QAM



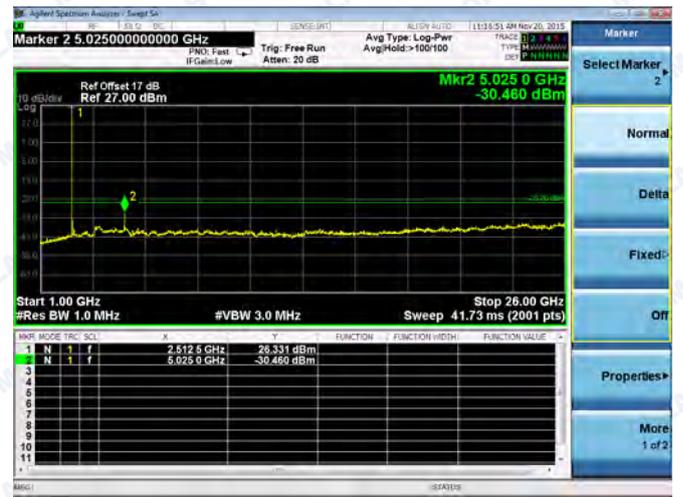


LTE Band 7 20MHz BW Low Channel

QPSK



16QAM

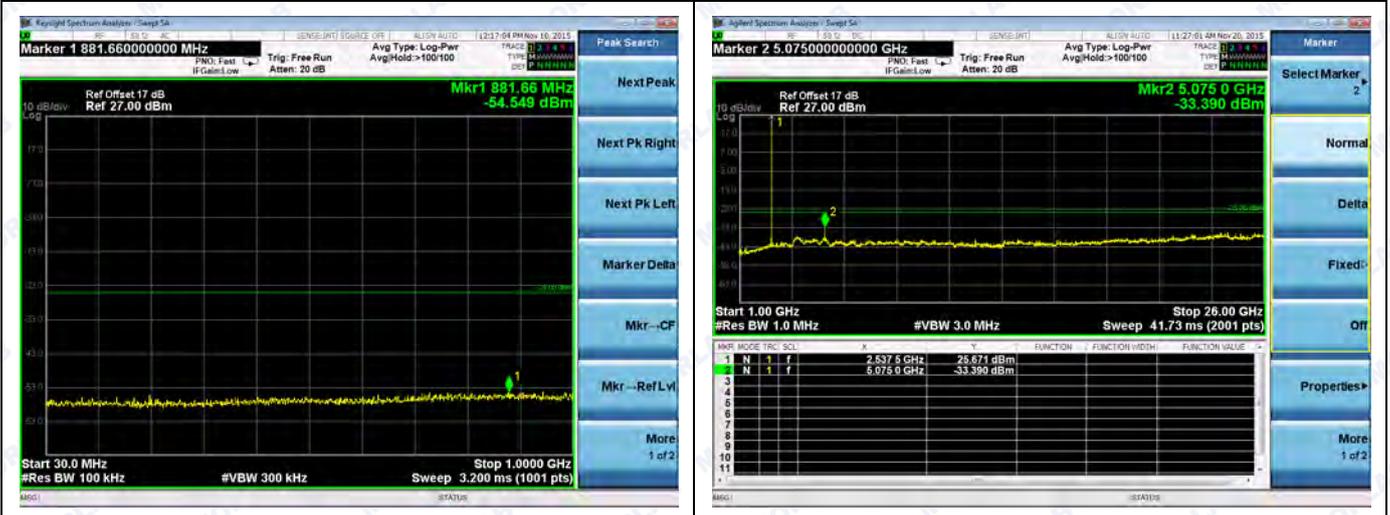




Middle channel:

LTE Band 7 5MHz BW Mid Channel

QPSK



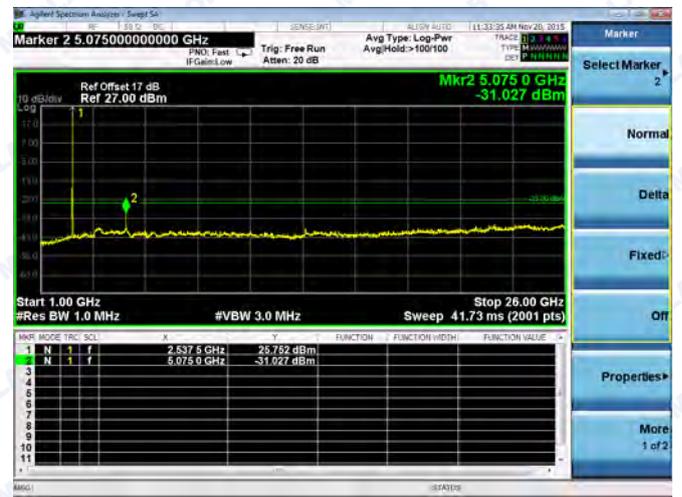
16QAM





LTE Band 7 10MHz BW Mid Channel

QPSK



16QAM

