



REPORT No.: SZ15040195W02

# FCC RF TEST REPORT

APPLICANT : ZTE Corporation  
PRODUCT NAME : LTE Digital Mobile Phone Handset  
MODEL NAME : NX511J  
TRADE NAME : nubia  
BRAND NAME : nubia  
FCC ID : SRQ-NX511J  
STANDARD(S) : 47 CFR Part 22, Subpart H  
47 CFR Part 24, Subpart E  
47 CFR Part 27, Subpart L&M  
ISSUE DATE : 2015-6-11



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2015-6-11	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 Phone Handset
Model Name	NX511J
Brand Name	nubia
HW Version	NX511J_V2AMB_C
SW Version	NX511J_Z89_EN_CSXPK1JF00J102
Test Standards	47 CFR Part 22, Subpart H 47 CFR Part 24, Subpart E 47 CFR Part 27, Subpart L&M
Test Date	2015-5-12 to 2015-5-26
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 Phone Handset  
Serial No. .... (n.a, marked #1 by test site)  
Hardware Version..... NX511J\_V2AMB\_C  
Software Version..... NX511J\_Z89\_EN\_CSXPK1JF00J102  
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 2: QPSK, 16QAM  
LTE Band 4: QPSK, 16QAM  
LTE Band 5: QPSK, 16QAM  
LTE Band 7: QPSK, 16QAM  
Tx Frequency Range..... LTE Band 2: 1850MHz ~1910MHz  
LTE Band 4: 1710MHz ~1755MHz  
LTE Band 5: 824MHz ~ 849MHz  
LTE Band 7: 2502.5MHz ~ 2567.5MHz  
Rx Frequency Range ..... LTE Band 2: 1930MHz ~ 1990MHz  
LTE Band 4: 2110MHz ~ 2155MHz  
LTE Band 5: 869MHz ~ 894MHz  
LTE Band 7: 2622.5MHz ~ 2687.5MHz  
Emission Designator ..... 1M11G7D (LTE Band 2, QPSK, BW 1.4MHz)  
1M10W7D (LTE Band 2, 16QAM, BW 1.4MHz)  
2M72G7D (LTE Band 2, QPSK, BW 3MHz)  
2M71 W7D (LTE Band 2, 16QAM, BW 3MHz)  
4M53G7D (LTE Band 2, QPSK, BW 5MHz)  
4M54 W7D (LTE Band 2, 16QAM, BW 5MHz)  
9M03G7D (LTE Band 2, QPSK, BW 10MHz)  
9M02W7D (LTE Band 2, 16QAM, BW 10MHz)  
13M54G7D (LTE Band 2, QPSK, BW 15MHz)  
13M50W7D (LTE Band 2, 16QAM, BW 15MHz)  
18M01G7D (LTE Band 2, QPSK, BW 20MHz)  
18M01W7D (LTE Band 2, 16QAM, BW 20MHz)  
1M10G7D (LTE Band 4, QPSK, BW 1.4MHz)



- 1M10W7D (LTE Band 4, 16QAM, BW 1.4MHz)
- 2M72G7D (LTE Band 4, QPSK, BW 3MHz)
- 2M72W7D (LTE Band 4, 16QAM, BW 3MHz)
- 4M53G7D (LTE Band 4, QPSK, BW 5MHz)
- 4M52W7D (LTE Band 4, 16QAM, BW 5MHz)
- 9M03G7D (LTE Band 4, QPSK, BW 10MHz)
- 9M00W7D (LTE Band 4, 16QAM, BW 10MHz)
- 13M45G7D (LTE Band 4, QPSK, BW 15MHz)
- 13M52W7D (LTE Band 4, 16QAM, BW 15MHz)
- 17M91G7D (LTE Band 4, QPSK, BW 20MHz)
- 17M95W7D (LTE Band 4, 16QAM, BW 20MHz)
- 1M10G7D (LTE Band 5, QPSK, BW 1.4MHz)
- 1M10W7D (LTE Band 5, 16QAM, BW 1.4MHz)
- 2M71G7D (LTE Band 5, QPSK, BW 3MHz)
- 2M71W7D (LTE Band 5, 16QAM, BW 3MHz)
- 4M53G7D (LTE Band 5, QPSK, BW 5MHz)
- 4M53W7D (LTE Band 5, 16QAM, BW 5MHz)
- 9M01G7D (LTE Band 5, QPSK, BW 10MHz)
- 9M02W7D (LTE Band 5, 16QAM, BW 10MHz)
- 4M53G7D (LTE Band 7, QPSK, BW 5MHz)
- 4M53W7D (LTE Band 7, 16QAM, BW 5MHz)
- 9M00G7D (LTE Band 7, QPSK, BW 10MHz)
- 9M00W7D (LTE Band 7, 16QAM, BW 10MHz)
- 13M48G7D (LTE Band 7, QPSK, BW 15MHz)
- 13M50W7D (LTE Band 7, 16QAM, BW 15MHz)
- 18M02G7D (LTE Band 7, QPSK, BW 20MHz)
- 18M02W7D (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 22, Part 24, 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 22 (10-1-09 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-09 Edition)	Personal Communications Services
4	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	24.232(d), 27.50(d)(5)	Occupied Bandwidth	<u>PASS</u>
3	2.1049, 22.917 24.238, 27.53(g)	Frequency Stability	<u>PASS</u>
4	2.1055, 22.355 24.235, 27.54	Peak to Average Ratio	<u>PASS</u>
5	2.1051, 2.1057 24.238, 27.53(g)	Conducted Spurious Emissions	<u>PASS</u>
6	2.1051, 2.1057, 22.917, 24.238, 27.53(g)(h), 27.53(m)(4)	Band Edge	<u>PASS</u>
7	22.913, 24.232, 27.50(d)(4)	Equivalent Isotropic Radiated Power	<u>PASS</u>
8	2.1053, 2.1057, 22.917, 24.238, 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 22H & 24E & 27L REQUIREMENTS

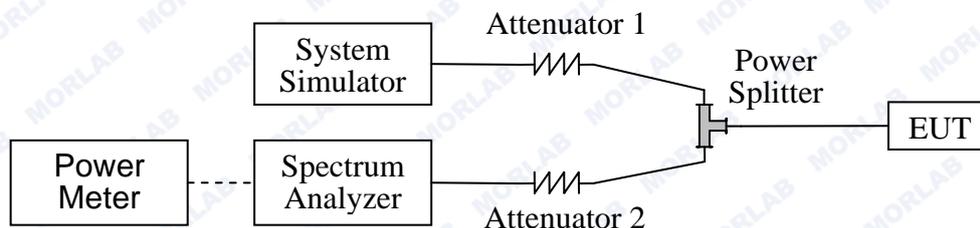
### 2.1 Transmitter Conducted Output Power

#### 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 2	20MHz	L 18700	1860	QPSK	1	0	22.24
					1	49	22.78
					1	99	22.29
					50	0	21.35
					50	25	21.39
					50	49	21.34
				16-QAM	100	0	21.35
					1	0	21.67
					1	49	20.64
					1	99	20.50
					50	0	20.41
					50	25	20.46
		M 18900	1880	QPSK	50	49	20.39
					100	0	20.21
					1	0	22.60
					1	49	22.83
					1	99	22.45
					50	0	21.40
				16-QAM	50	25	21.42
					50	49	21.22
					100	0	21.34
					1	0	21.06
					1	49	20.87
					1	99	21.48
		H 19100	1900	QPSK	50	0	21.29
					50	25	21.30
					50	49	21.33
					100	0	20.27
					1	0	22.46
					1	49	22.50
16-QAM	1			99	22.34		
	50			0	21.43		
	50			25	21.46		
	50			49	21.18		
	100			0	21.36		
	1			0	21.05		
1	49	20.90					
1	99	20.87					
50	0	20.56					
50	25	20.59					
50	49	20.51					
100	0	20.23					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 2	15MHz	L 18675	1857.5	QPSK	1	0	22.26
					1	37	22.29
					1	74	22.30
					36	0	21.20
					36	18	21.21
					36	35	21.25
				16-QAM	75	0	21.12
					1	0	21.38
					1	37	21.27
					1	74	21.82
					36	0	21.35
					36	18	21.29
		M 18900	1880	QPSK	36	35	21.39
					75	0	19.99
					1	0	22.43
					1	37	22.31
					1	74	22.40
					36	0	21.38
				16-QAM	36	18	21.12
					36	35	20.96
					75	0	21.16
					1	0	21.21
					1	37	21.11
					1	74	21.08
		H 19125	1902.5	QPSK	36	0	21.05
					36	18	20.98
					36	35	20.89
					75	0	20.30
					1	0	22.28
					1	37	22.46
16-QAM	1			74	22.49		
	36			0	21.31		
	36			18	21.22		
	36			35	21.28		
	75			0	21.16		
	1			0	21.12		
1	37	21.13					
1	74	21.18					
36	0	20.56					
36	18	20.61					
36	35	20.59					
75	0	20.13					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 2	10MHz	L 18650	1855	QPSK	1	0	22.19
					1	24	22.12
					1	49	22.18
					25	0	21.18
					25	12	21.19
					25	24	21.21
				50	0	21.26	
				16-QAM	1	0	21.60
					1	24	21.65
					1	49	21.83
					25	0	21.32
					25	12	21.28
		25	24		21.35		
		M 18900	1880	QPSK	1	0	22.35
					1	24	22.43
					1	49	22.26
					25	0	21.38
					25	12	21.31
					25	24	21.30
				50	0	21.27	
				16-QAM	1	0	21.37
					1	24	21.44
					1	49	21.14
					25	0	21.15
					25	12	21.08
		25	24		21.09		
		H 19150	1905	QPSK	1	0	22.27
					1	24	22.23
					1	49	22.21
					25	0	21.38
25	12				21.31		
25	24				21.33		
50	0			21.35			
16-QAM	1			0	21.26		
	1			24	21.16		
	1			49	21.13		
	25			0	20.89		
	25			12	20.80		
	25	24	20.76				
50	0	20.29					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 2	5MHz	L 18625	1852.5	QPSK	1	0	22.23
					1	12	22.28
					1	24	22.18
					12	0	21.77
					12	6	21.70
					12	11	21.69
				16-QAM	25	0	21.26
					1	0	20.86
					1	12	20.88
					1	24	20.76
					12	0	20.35
					12	6	20.29
		M 18900	1880	QPSK	12	11	20.31
					25	0	19.93
					1	0	22.16
					1	12	22.09
					1	24	22.13
					12	0	21.86
				16-QAM	12	6	21.79
					12	11	21.82
					25	0	21.32
					1	0	20.45
					1	12	20.49
					1	24	20.61
		H 19175	1907.5	QPSK	12	0	20.50
					12	6	20.45
					12	11	20.46
					25	0	20.39
					1	0	22.51
					1	12	22.15
				16-QAM	1	24	22.21
					12	0	21.76
					12	6	21.70
					12	11	21.81
					25	0	21.34
					1	0	21.83
1	12	21.64					
1	24	21.91					
12	0	21.52					
12	6	21.59					
12	11	21.61					
25	0	20.34					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 2	3MHz	L 18615	1851.5	QPSK	1	0	21.97
					1	7	21.87
					1	14	21.97
					8	0	21.59
					8	4	21.61
					8	7	21.55
				16-QAM	15	0	21.01
					1	0	21.74
					1	7	21.88
					1	14	21.73
					8	0	20.88
					8	4	20.86
		M 18900	1880	QPSK	8	7	20.79
					15	0	19.95
					1	0	22.58
					1	7	22.38
					1	14	22.04
					8	0	22.24
				16-QAM	8	4	21.29
					8	7	21.21
					15	0	21.19
					1	0	21.60
					1	7	21.56
					1	14	21.58
		H 19185	1908.5	QPSK	8	0	21.21
					8	4	21.18
					8	7	21.09
					15	0	20.15
					1	0	21.85
					1	7	21.83
16-QAM	1			14	21.77		
	8			0	21.35		
	8			4	21.28		
	8			7	21.30		
	15			0	20.98		
	1			0	21.44		
					1	7	21.23
					1	14	21.50
					8	0	21.28
					8	4	21.30
					8	7	21.34
					15	0	20.08



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 2	1.4MHz	L 18607	1850.7	QPSK	1	0	21.74
					1	2	21.89
					1	5	21.92
					3	0	22.03
					3	1	22.00
					3	2	21.99
				16-QAM	6	0	21.05
					1	0	21.11
					1	2	21.45
					1	5	21.33
					3	0	21.08
					3	1	21.18
		M 18900	1880	QPSK	3	2	21.12
					6	0	20.27
					1	0	22.20
					1	2	22.10
					1	5	22.16
					3	0	22.18
				16-QAM	3	1	22.16
					3	2	22.25
					6	0	21.18
					1	0	21.12
					1	2	21.25
					1	5	21.31
		H 19193	1909.3	QPSK	3	0	21.16
					3	2	21.18
					3	5	21.21
					6	0	20.21
					1	0	22.02
					1	2	22.28
16-QAM	1			5	22.08		
	3			0	22.19		
	3			1	22.18		
	3			2	22.06		
	6			0	21.15		
	1			0	21.24		
1	2	21.34					
1	5	21.20					
3	0	21.18					
3	1	21.20					
3	2	21.12					
6	0	20.32					



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	23.47
					1	49	23.38
					1	99	23.16
					50	0	22.30
					50	25	22.21
					50	49	22.12
				16-QAM	100	0	22.17
					1	0	21.91
					1	49	22.42
					1	99	22.14
					50	0	22.18
					50	25	22.08
		M 20175	1732.5	QPSK	50	49	22.10
					50	0	22.31
					50	25	22.22
					50	49	22.18
					100	0	22.19
					16-QAM	1	0
				1		49	22.68
				1		99	22.67
				50		0	22.25
				50		25	22.18
				50		49	22.21
				H 20300	1745.0	QPSK	100
1	0	23.12					
1	49	23.39					
1	99	23.36					
50	0	22.15					
50	25	22.08					
16-QAM	50	49	21.91				
	100	0	21.93				
	1	0	21.71				
	1	49	21.73				
	1	99	21.56				
	50	0	21.34				
50	25	21.28					
50	49	21.22					
100	0	20.78					



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	23.73
					1	37	23.44
					1	74	23.40
					36	0	22.37
					36	18	22.59
					36	35	22.41
				16-QAM	75	0	22.11
					1	0	22.39
					1	37	21.93
					1	74	21.97
					36	0	21.61
					36	18	21.58
		M 20175	1732.5	QPSK	36	35	21.55
					75	0	21.02
					1	0	23.51
					1	37	23.07
					1	74	23.27
					36	0	22.25
				16-QAM	36	18	22.29
					36	35	22.17
					75	0	22.10
					1	0	22.43
					1	37	22.35
					1	74	22.87
		H 20325	1747.5	QPSK	36	0	21.59
					36	18	21.50
					36	35	21.49
					75	0	21.06
					1	0	23.23
					1	37	22.96
				16-QAM	1	74	23.14
					36	0	22.02
					36	18	22.01
					36	35	21.98
					75	0	21.81
					1	0	22.08
					1	37	21.77
					1	74	21.88
					36	0	21.38
					36	18	21.29
					36	35	21.34
					75	0	20.82



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	23.69	
					1	24	23.30	
					1	49	23.24	
					25	0	22.33	
					25	12	22.31	
					25	24	22.28	
				16-QAM	50	0	22.25	
					1	0	22.22	
					1	24	22.56	
					1	49	22.27	
					25	0	21.85	
					25	12	21.81	
		M 20175	1732.5	QPSK	1732.5	25	24	21.86
						50	0	21.35
						1	0	23.27
						1	24	23.25
						1	49	23.32
						25	0	22.33
				16-QAM	25	12	22.31	
					25	24	22.30	
					50	0	22.27	
					1	0	21.80	
					1	24	22.24	
					1	49	22.35	
		H 20350	1750.0	QPSK	1750.0	25	0	21.84
						25	12	21.83
						25	24	21.76
						50	0	20.98
						1	0	22.98
						1	24	22.85
16-QAM	1			49	23.05			
	25			0	21.97			
	25			12	21.96			
	25			24	21.94			
	50			0	21.98			
	1			0	22.16			
					1	24	22.15	
					1	49	21.69	
					25	0	21.58	
					25	12	21.64	
					25	24	21.69	
					50	0	20.78	
					50	0	20.78	



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	23.58
					1	12	23.42
					1	24	23.36
					12	0	22.89
					12	6	22.95
					12	11	22.90
				16-QAM	25	0	22.33
					1	0	21.91
					1	12	21.86
					1	24	21.88
					12	0	21.59
					12	6	21.61
		M 20175	1732.5	QPSK	12	11	21.54
					25	0	21.33
					1	0	23.05
					1	12	22.98
					1	24	23.01
					12	0	22.78
				16-QAM	12	6	22.91
					12	11	22.81
					25	0	22.26
					1	0	21.61
					1	12	21.59
					1	24	21.55
		H 20375	1752.5	QPSK	12	0	21.34
					12	6	21.26
					12	11	21.18
					25	0	21.03
					1	0	23.28
					1	12	23.18
16-QAM	1			24	23.06		
	12			0	22.89		
	12			6	22.79		
	12			11	22.82		
	25			0	22.01		
	1			0	22.26		
1	12	22.18					
1	24	22.16					
12	0	21.24					
12	6	21.53					
12	11	21.43					
25	0	20.80					



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	23.36
					1	7	23.44
					1	14	23.30
					8	0	22.98
					8	4	22.81
					8	7	22.91
				16-QAM	15	0	22.39
					1	0	22.18
					1	7	22.20
					1	14	22.38
					8	0	22.31
					8	4	22.24
		M 20175	1732.5	QPSK	8	7	22.30
					15	0	21.19
					1	0	23.20
					1	7	23.18
					1	14	23.21
					8	0	22.91
				16-QAM	8	4	22.89
					8	7	22.76
					15	0	22.28
					1	0	21.89
					1	7	21.77
					1	14	21.78
		H 20385	1753.5	QPSK	8	0	21.56
					8	4	21.48
					8	7	21.39
					15	0	21.24
					1	0	22.98
					1	7	22.96
16-QAM	1			14	23.00		
	8			0	22.81		
	8			4	22.79		
	8			7	22.82		
	15			0	22.12		
	1			0	21.75		
16-QAM	1	7	21.69				
	1	14	21.72				
	8	0	21.52				
	8	4	21.39				
	8	7	21.42				
	15	0	21.03				



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	23.28
					1	2	23.34
					1	5	23.37
					3	0	23.41
					3	1	23.51
					3	2	23.45
				16-QAM	6	0	22.48
					1	0	22.51
					1	2	22.50
					1	5	22.44
					3	0	21.88
					3	1	21.80
		M 20175	1732.5	QPSK	3	2	21.76
					6	0	21.25
					1	0	23.13
					1	2	23.20
					1	5	23.11
					3	0	23.18
				16-QAM	3	1	23.15
					3	2	23.21
					6	0	22.21
					1	0	22.17
					1	2	22.07
					1	5	22.12
		H 20393	1754.3	QPSK	3	0	21.81
					3	2	21.76
					3	5	21.59
					6	0	21.27
					1	0	22.95
					1	2	22.89
16-QAM	1			5	22.99		
	3			0	23.12		
	3			1	23.08		
	3			2	23.00		
	6			0	22.16		
	1			0	22..01		
16-QAM	1	2	21.91				
	1	5	21.84				
	3	0	21.54				
	3	1	21.61				
	3	2	21.63				
	6	0	20.71				



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 5	10MHz	L 20450	829	QPSK	1	0	23.59
					1	24	23.63
					1	49	23.83
					25	0	22.52
					25	12	22.58
					25	24	22.66
		50	0	22.57			
		16-QAM	1	0	22.78		
			1	24	22.68		
			1	49	22.79		
			25	0	21.89		
			25	12	21.76		
	25		24	21.91			
	M 20525	836.5	QPSK	1	0	23.65	
				1	24	23.73	
				1	49	23.57	
				25	0	22.55	
				25	12	22.58	
				25	24	22.64	
	16-QAM	50	0	22.66			
		1	0	22.62			
		1	24	22.51			
		1	49	22.23			
		25	0	21.81			
25		12	21.76				
H 20600	844	QPSK	25	24	21.58		
			25	0	21.56		
			50	0	21.56		
			1	0	23.67		
			1	24	23.62		
			1	49	23.58		
16-QAM	25	0	22.61				
	25	12	22.58				
	25	24	22.62				
	50	0	22.59				
	1	0	22.30				
	1	24	22.28				
1	49	22.22					
25	0	21.76					
25	12	21.81					
25	24	21.86					
50	0	21.43					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 5	5MHz	L 20425	826.5	QPSK	1	0	23.61
					1	12	23.65
					1	24	23.60
					12	0	23.12
					12	6	23.08
					12	11	23.21
				16-QAM	25	0	22.58
					1	0	22.14
					1	12	22.18
					1	24	22.08
					12	0	21.91
					12	6	21.85
		M 20525	836.5	QPSK	12	11	21.76
					25	0	21.56
					1	0	23.57
					1	12	23.56
					1	24	23.43
					12	0	22.89
				16-QAM	12	6	22.91
					12	11	22.76
					25	0	22.67
					1	0	22.31
					1	12	22.25
					1	24	22.27
		H 20625	846.5	QPSK	12	0	21.88
					12	6	21.79
					12	11	21.69
					25	0	21.62
					1	0	23.67
					1	12	23.60
16-QAM	1			24	23.55		
	12			0	22.85		
	12			6	22.86		
	12			11	22.71		
	25			0	22.53		
	1			0	22.72		
1	12	22.68					
1	24	22.63					
12	0	21.88					
12	6	21.76					
12	11	21.60					
25	0	21.43					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 5	3MHz	L 20415	825.5	QPSK	1	0	23.38
					1	7	23.60
					1	14	23.55
					8	0	23.48
					8	4	23.50
					8	7	23.41
				16-QAM	15	0	22.57
					1	0	22.63
					1	7	22.60
					1	14	22.61
					8	0	22.51
					8	4	22.58
		M 20525	836.5	QPSK	8	7	22.46
					8	0	21.77
					1	0	23.73
					1	7	23.58
					1	14	23.55
					8	0	22.98
				16-QAM	8	4	22.85
					8	7	22.90
					15	0	22.79
					1	0	22.53
					1	7	22.50
					1	14	22.43
		H 20635	847.5	QPSK	8	0	22.23
					8	4	22.18
					8	7	22.34
					15	0	21.60
					1	0	23.48
					1	7	23.51
				16-QAM	1	14	23.42
					8	0	22.91
					8	4	22.90
					8	7	22.84
					15	0	22.69
					1	0	22.43
1	7	22.50					
1	14	22.56					
8	0	22.25					
8	4	22.18					
8	7	22.16					
15	0	21.42					



Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		Average Power (dBm)
					RB Size	RB Offset	
LTE Band 5	1.4MHz	L 20407	824.7	QPSK	1	0	23.35
					1	2	23.59
					1	5	23.41
					3	0	23.48
					3	1	23.51
					3	2	23.46
				6	0	22.52	
				16-QAM	1	0	22.68
					1	2	22.83
					1	5	22.70
					3	0	22.34
					3	1	22.28
		3	2		22.12		
		M 20525	836.5	QPSK	1	0	23.76
					1	2	23.68
					1	5	23.55
					3	0	23.64
					3	1	23.81
					3	2	23.67
				6	0	22.73	
				16-QAM	1	0	22.6
					1	2	22.70
					1	5	22.65
					3	0	22.25
3	2				22.08		
3	5	22.12					
H 20643	848.3	QPSK	1	0	23.52		
			1	2	23.59		
			1	5	23.49		
			3	0	23.67		
			3	1	23.54		
			3	2	23.12		
		6	0	22.57			
		16-QAM	1	0	22.33		
			1	2	22.46		
			1	5	22.45		
			3	0	22.21		
			3	1	22.15		
3	2		22.02				
6	0	21.62					



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	22.03	
					1	49	21.94	
					1	99	21.98	
					50	0	21.11	
					50	25	21.08	
					50	49	21.10	
				16-QAM	100	0	20.85	
					1	0	21.46	
					1	49	21.30	
					1	99	21.31	
					50	0	20.58	
					50	25	20.45	
		M 21100	2535	QPSK	2535	50	49	20.48
						100	0	19.93
						1	0	22.32
						1	49	22.26
						1	99	22.28
						50	0	21.22
				16-QAM	50	25	21.18	
					50	49	21.20	
					100	0	20.78	
					1	0	20.28	
					1	49	20.35	
					1	99	20.96	
		H 21350	2560	QPSK	2560	50	0	20.88
						50	25	20.91
						50	49	20.86
						100	0	19.85
						1	0	22.07
						1	49	21.85
16-QAM	1			99	21.99			
	50			0	21.15			
	50			25	21.08			
	50			49	21.10			
	100			0	20.82			
	1			0	21.31			
1	49	21.49						
1	99	20.58						
50	0	20.61						
50	25	20.56						
50	49	20.48						
100	0	19.76						



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	22.35	
					1	37	22.21	
					1	74	22.06	
					36	0	20.81	
					36	18	20.92	
					36	35	20.88	
				16-QAM	75	0	20.94	
					1	0	21.05	
					1	37	20.98	
					1	74	20.88	
					36	0	20.56	
					36	18	20.37	
		M 21100	2535	QPSK	2535	36	35	20.49
						75	0	19.89
						1	0	22.51
						1	37	22.26
						1	74	22.10
						36	0	21.03
				16-QAM	36	18	21.08	
					36	35	21.12	
					75	0	20.77	
					1	0	20.78	
					1	37	20.61	
					1	74	20.43	
		H 21375	2562.5	QPSK	2562.5	36	0	20.28
						36	18	20.20
						36	35	20.15
						75	0	19.99
						1	0	22.32
						1	37	22.08
16-QAM	1			74	21.98			
	36			0	20.99			
	36			18	21.01			
	36			35	21.15			
	75			0	20.88			
	1			0	21.08			
1	37	21.00						
1	74	20.97						
36	0	20.22						
36	18	20.31						
36	35	20.15						
75	0	19.71						



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	22.34
					1	24	22.47
					1	49	22.46
					25	0	21.05
					25	12	21.11
					25	24	20.98
				50	0	21.11	
				16-QAM	1	0	21.61
					1	24	21.58
					1	49	21.47
					25	0	21.23
					25	12	21.15
		25	24		21.01		
		M 21100	2535	QPSK	1	0	22.21
					1	24	21.98
					1	49	21.92
					25	0	20.77
					25	12	20.81
					25	24	20.79
				50	0	20.87	
				16-QAM	1	0	21.01
					1	24	20.81
					1	49	20.60
					25	0	20.15
					25	12	20.35
		25	24		20.21		
		H 21400	2565	QPSK	1	0	22.05
					1	24	21.94
					1	49	21.80
					25	0	20.95
25	12				20.81		
25	24				20.78		
50	0			20.88			
16-QAM	1			0	20.49		
	1			24	20.46		
	1			49	20.33		
	25			0	20.35		
	25			12	20.24		
	25	24	20.15				
50	0	19.84					



Band	Band Width	Channel	Freq.(MHz)		RB Configuration		Average Power
					RB Size	RB Offset	(dBm)
LTE Band 7	5MHz	L 20775	2502.5	QPSK	1	0	22.16
					1	12	22.08
					1	24	22.18
					12	0	21.25
					12	6	21.59
					12	11	21.37
				25	0	20.94	
				16-QAM	1	0	21.01
					1	12	20.98
					1	24	20.63
					12	0	20.71
					12	6	20.67
		12	11		20.15		
		M 21100	2535	QPSK	1	0	21.93
					1	12	21.89
					1	24	21.67
					12	0	20.56
					12	6	20.76
					12	11	20.61
				25	0	20.86	
				16-QAM	1	0	20.56
					1	12	20.46
					1	24	20.71
					12	0	20.59
					12	6	20.46
		12	11		20.48		
		25	0	19.78			
		H 21425	2567.5	QPSK	1	0	21.93
					1	12	21.88
					1	24	21.84
12	0				21.53		
12	6				21.49		
12	11				21.35		
25	0			20.92			
16-QAM	1			0	20.81		
	1			12	20.76		
	1			24	20.66		
	12			0	20.59		
	12			6	20.71		
	12	11	20.66				
25	0	19.89					



## 2.2 Occupied Bandwidth

### 2.2.1 Definition

According to FCC section 2.1049 and 27.53(g), 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 2

##### 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
18607	1850.7	1.1012	1.099	18615	1851.5	2.7194	2.707
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18607	1850.7	1.319	1.303	18615	1851.5	3.003	3.005

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18625	1852.5	4.5144	4.5218	18650	1855.0	8.9953	9.0065
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18625	1852.5	5.049	5.039	18650	1855.0	9.965	9.914

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18675	1857.5	13.434	13.478	18700	1860.0	17.96	17.943
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18675	1857.5	14.68	14.76	18700	1860.0	19.54	19.53



**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
18900	1880.0	1.098	1.1018	18900	1880.0	2.7138	2.7130

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18900	1880.0	1.300	1.303	18900	1880.0	2.985	2.995

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18900	1880.0	4.5302	4.5241	18900	1880.0	9.0282	9.0173

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18900	1880.0	5.003	5.054	18900	1880.0	10.06	9.903

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18900	1880.0	13.543	13.504	18900	1880.0	18.014	18.009

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
18900	1880.0	14.90	14.77	18900	1880.0	19.58	19.67



**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
19192	1909.2	1.1058	1.0994	19184	1908.4	2.7117	2.7114
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19192	1909.2	1.294	1.301	19184	1908.4	2.996	3.009

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19175	1907.5	4.5226	4.5362	19150	1905.0	9.0191	9.0082
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19175	1907.5	5.011	5.038	19150	1905.0	9.922	9.965

Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19125	1902.5	13.478	13.460	19100	1900.0	17.923	17.985
Channel Bandwidth: 15MHz				Channel Bandwidth: 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
19125	1902.5	14.83	14.70	19100	1900.0	19.48	19.43

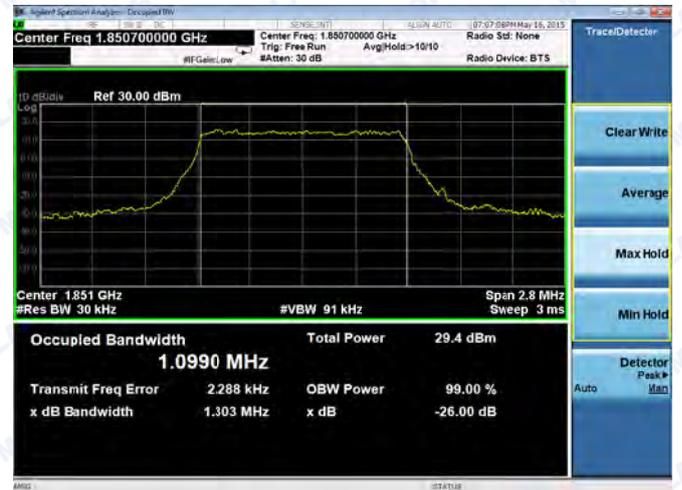
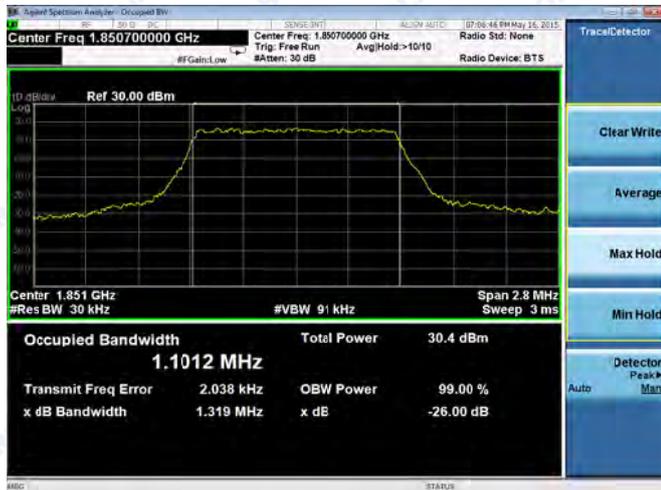


Low channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

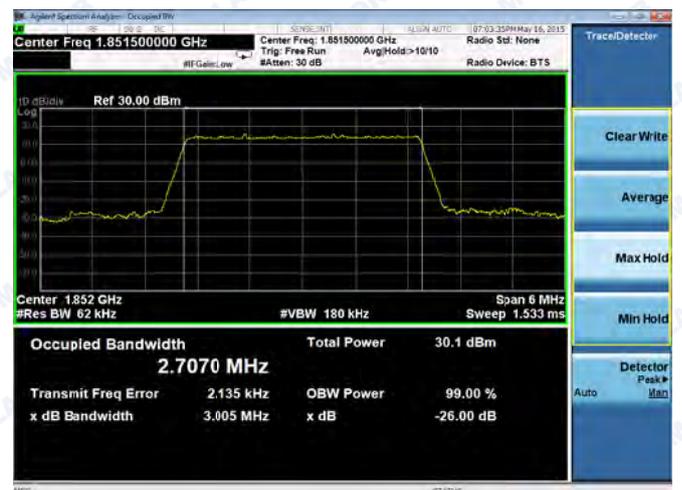
1.4MHz/16QAM



Spectrum Plot of Worst Value

3MHz/QPSK

3MHz/16QAM

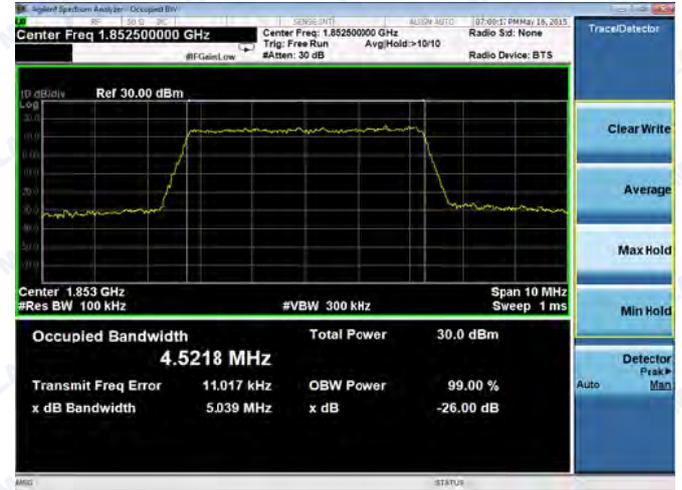
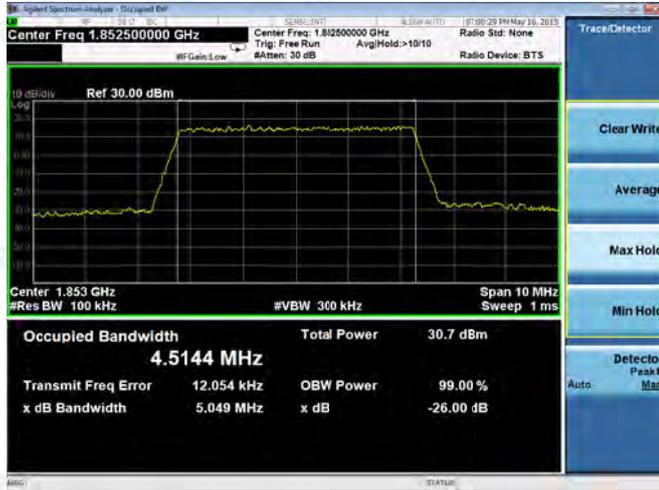




**Spectrum Plot of Worst Value**

**5MHz/QPSK**

**5MHz/16QAM**



**Spectrum Plot of Worst Value**

**10MHz/QPSK**

**10MHz/16QAM**

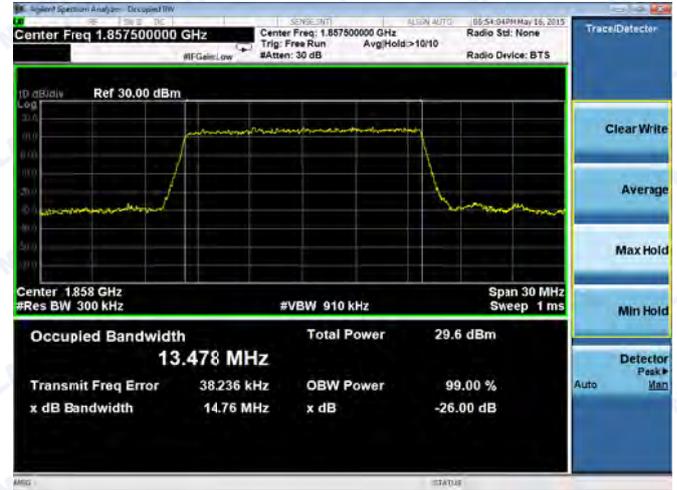
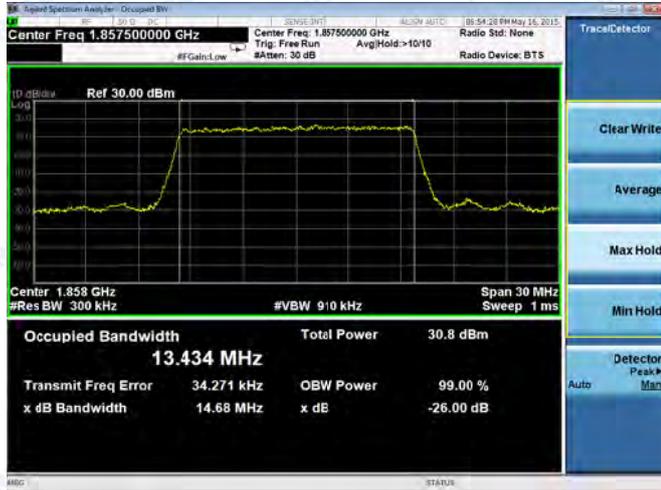




**Spectrum Plot of Worst Value**

**15MHz/QPSK**

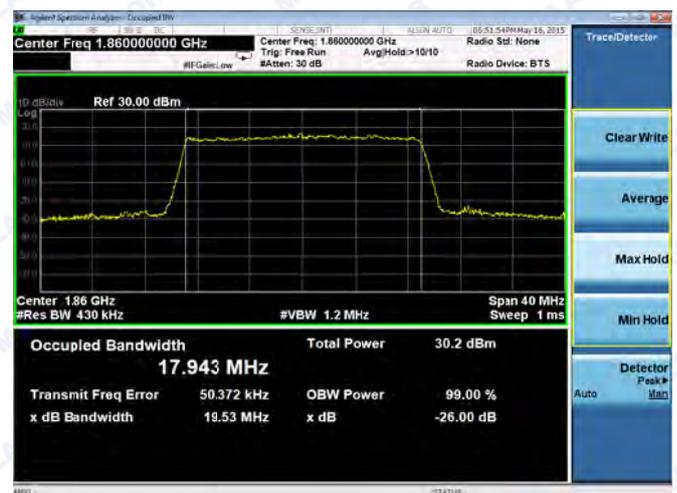
**15MHz/16QAM**



**Spectrum Plot of Worst Value**

**20MHz/QPSK**

**20MHz/16QAM**



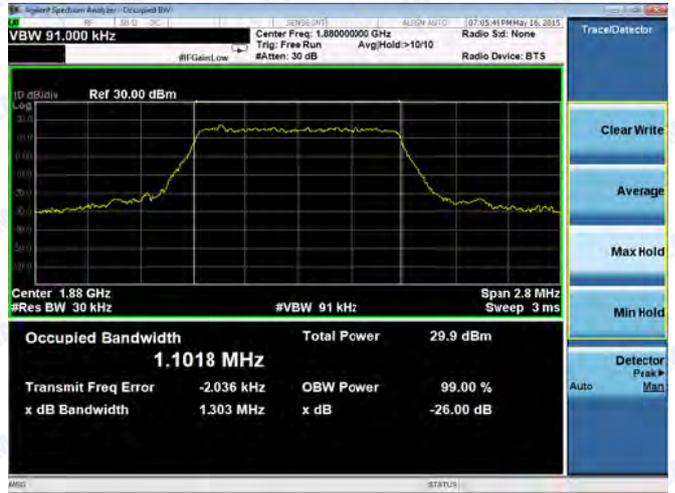
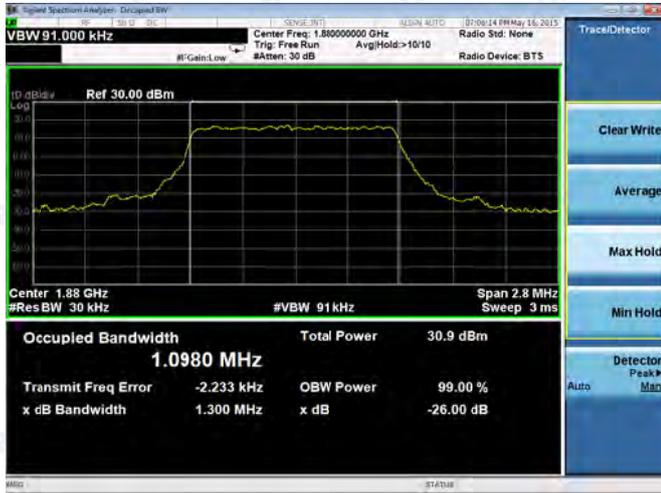


Middle channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

1.4MHz/16QAM



Spectrum Plot of Worst Value

3MHz/QPSK

3MHz/16QAM

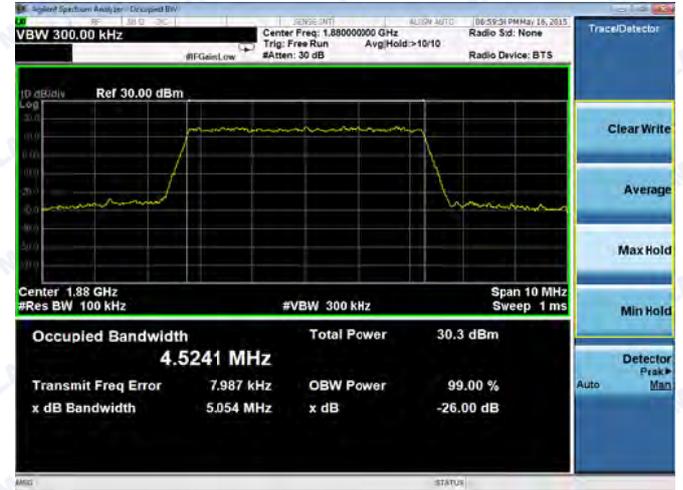
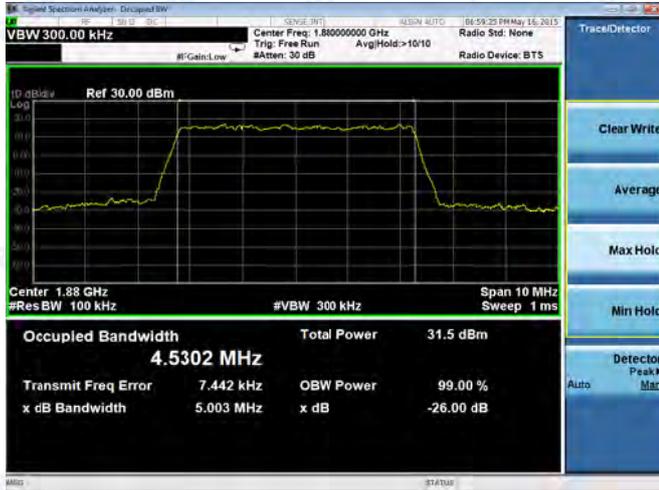




Spectrum Plot of Worst Value

5MHz/QPSK

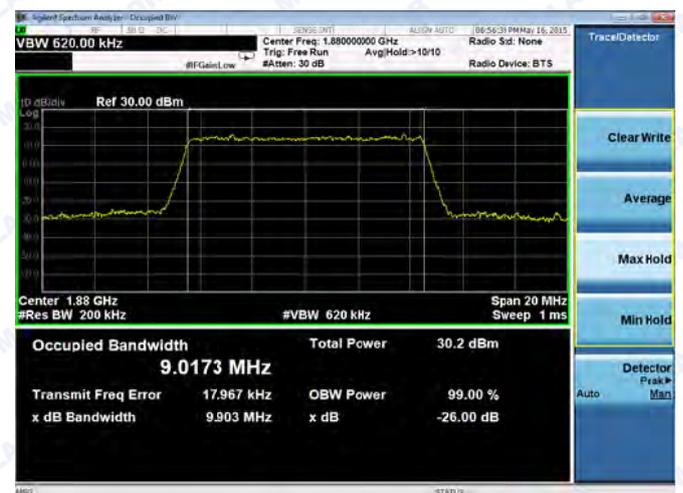
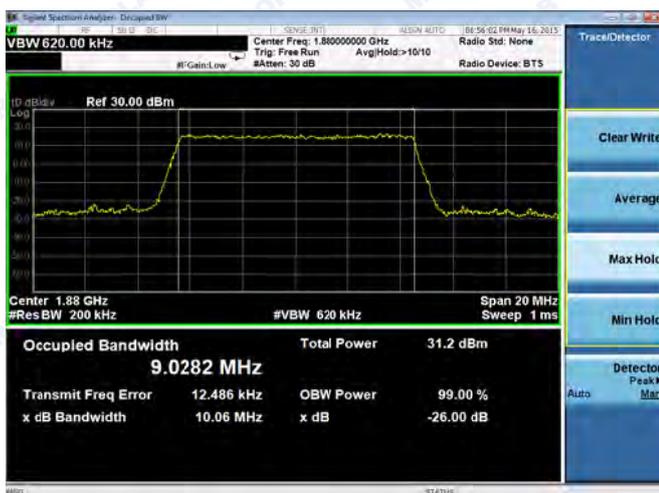
5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

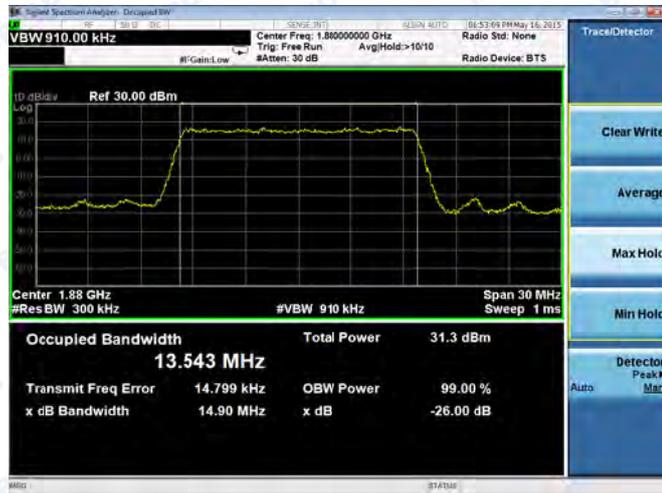
10MHz/16QAM



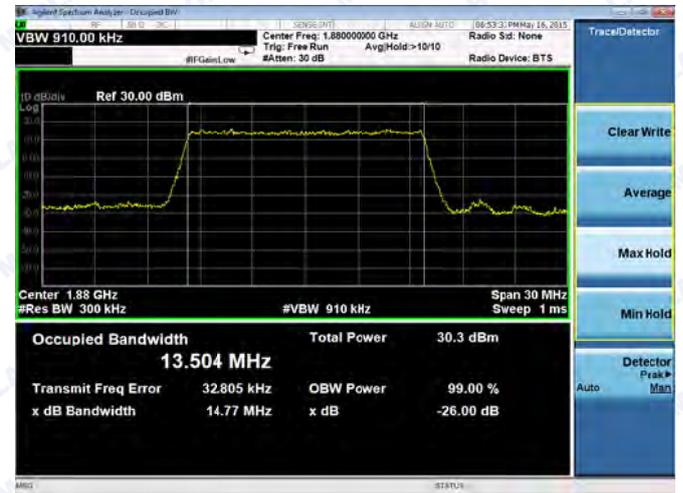


**Spectrum Plot of Worst Value**

**15MHz/QPSK**



**15MHz/16QAM**



**Spectrum Plot of Worst Value**

**20MHz/QPSK**



**20MHz/16QAM**





High channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

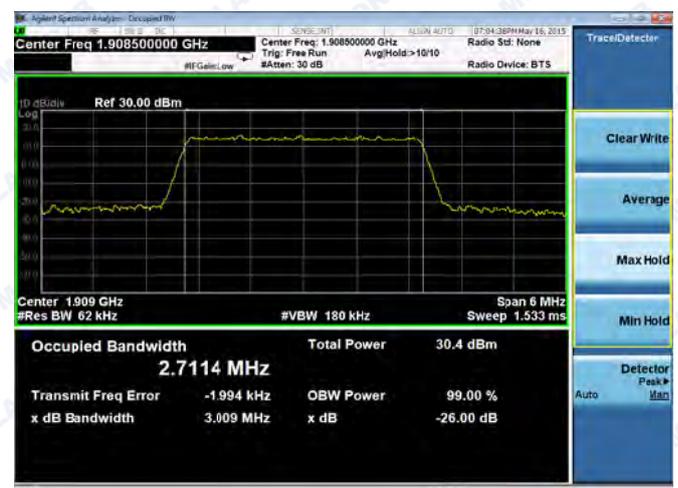
1.4MHz/16QAM



Spectrum Plot of Worst Value

3MHz/QPSK

3MHz/16QAM

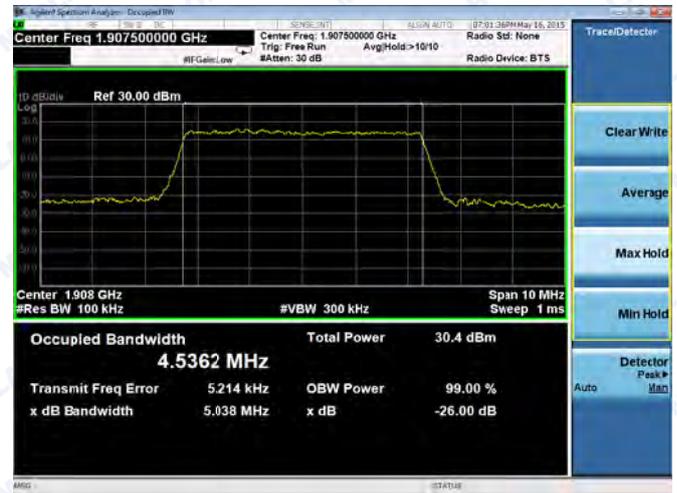




Spectrum Plot of Worst Value

5MHz/QPSK

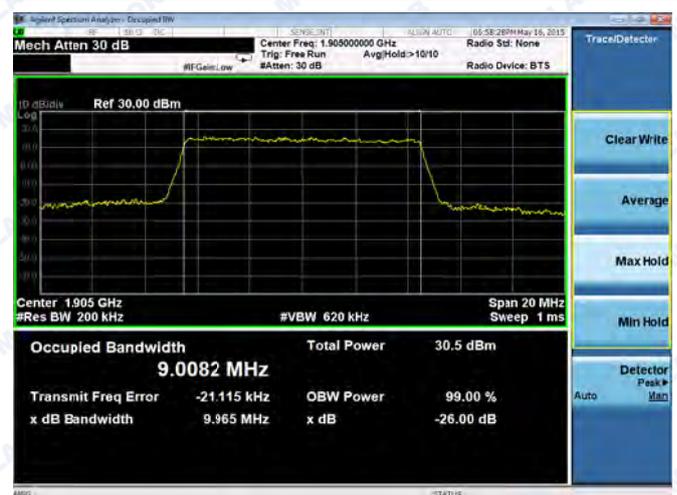
5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK

10MHz/16QAM

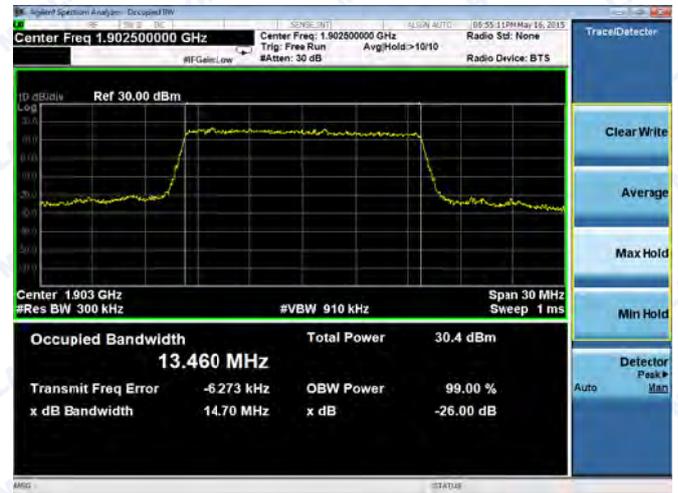
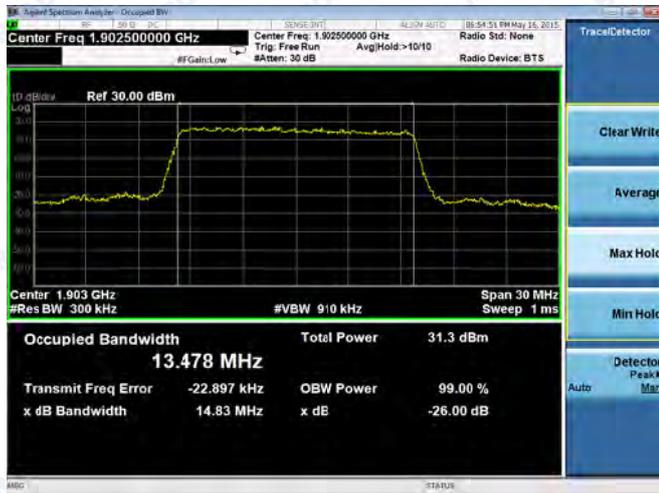




**Spectrum Plot of Worst Value**

**15MHz/QPSK**

**15MHz/16QAM**



**Spectrum Plot of Worst Value**

**20MHz/QPSK**

**20MHz/16QAM**





**LTE Band 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	1.1039	1.0968	19965	1711.5	2.7190	2.7054

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	1.340	1.286	19965	1711.5	3.000	3.011

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	4.5280	4.5218	20000	1715.0	8.9912	9.0004

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	5.061	2.018	20000	1715.0	9.938	9.932

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	13.446	13.483	20050	1720.0	17.906	17.945

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	14.70	14.75	20050	1720.0	19.47	19.64



**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	1.0976	1.1010	20175	1732.5	2.7147	2.7204
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	1.306	1.298	20175	1732.5	3.018	3.023

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	4.5306	4.5254	20175	1732.5	9.0337	9.0050
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	5.010	5.058	20175	1732.5	10.06	9.896

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	13.534	13.515	20175	1732.5	18.017	18.067
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	14.73	14.81	20175	1732.5	19.51	19.62



**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	1.1073	1.0978	20384	1753.4	2.7138	2.7059

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	1.283	1.316	20384	1753.4	3.006	3.012

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	4.5247	4.5326	20350	1750.0	9.0080	9.0042

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	5.007	5.043	20350	1750.0	9.916	9.971

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	13.460	13.488	20300	1745.0	17.971	17.967

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	14.82	14.75	20300	1745.0	19.67	19.55



Low channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK



1.4MHz/16QAM

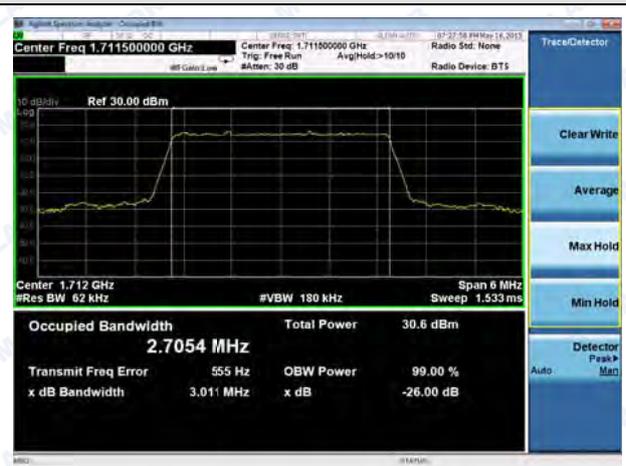


Spectrum Plot of Worst Value

3MHz/QPSK



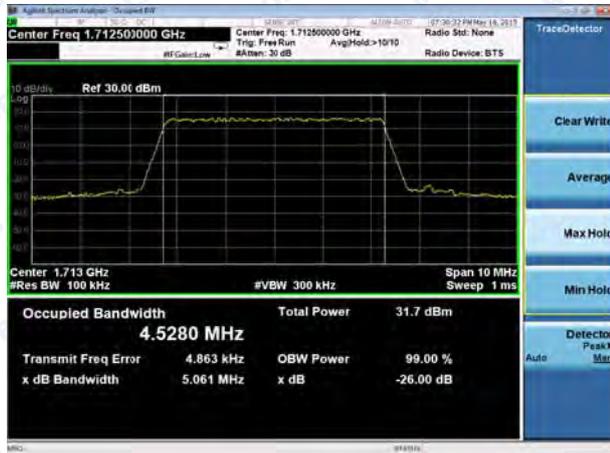
3MHz/16QAM





**Spectrum Plot of Worst Value**

**5MHz/QPSK**



**5MHz/16QAM**

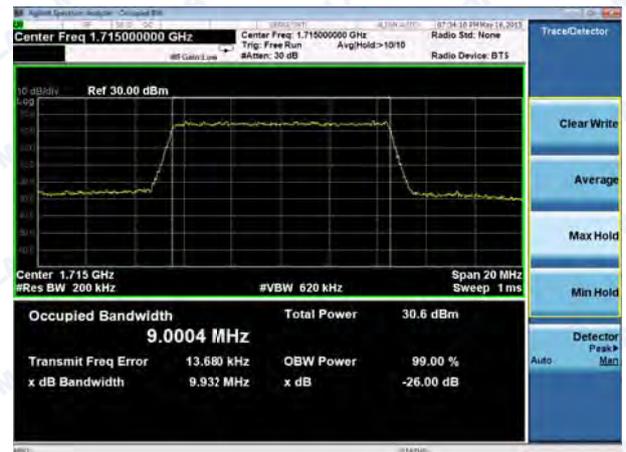


**Spectrum Plot of Worst Value**

**10MHz/QPSK**



**10MHz/16QAM**





**Spectrum Plot of Worst Value**

**15MHz/QPSK**



**15MHz/16QAM**

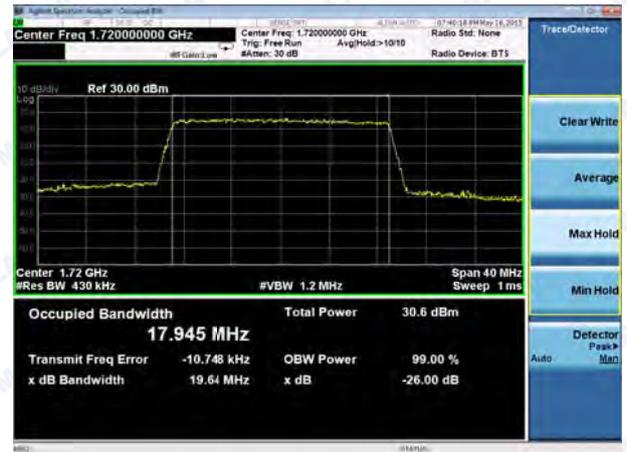


**Spectrum Plot of Worst Value**

**20MHz/QPSK**



**20MHz/16QAM**





Middle channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK

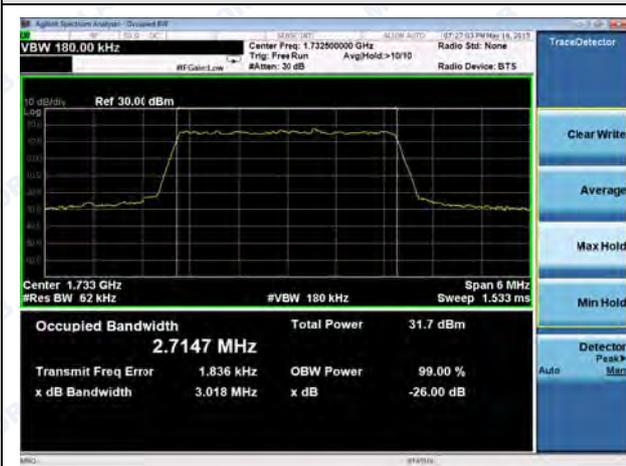


1.4MHz/16QAM

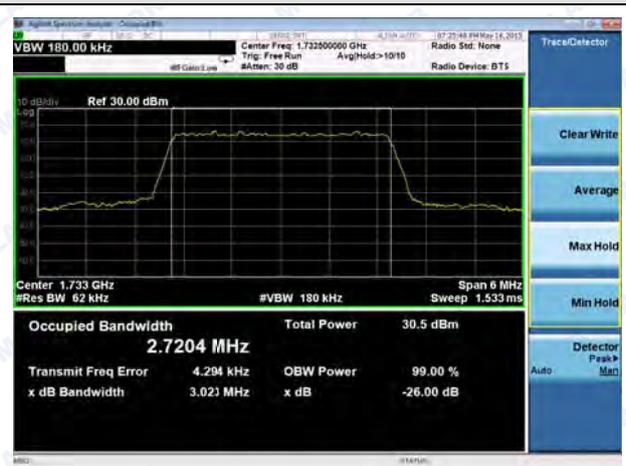


Spectrum Plot of Worst Value

3MHz/QPSK



3MHz/16QAM



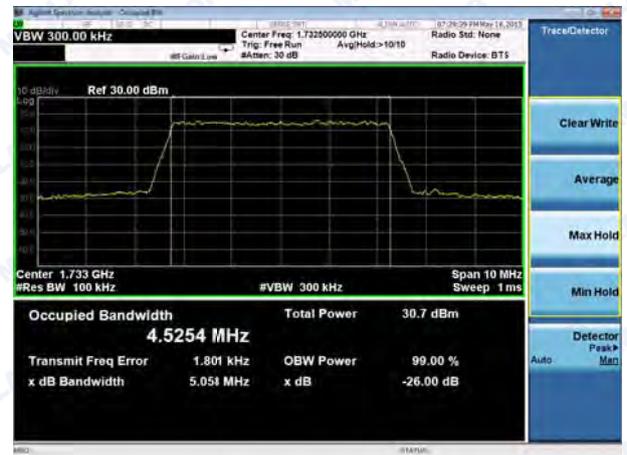


**Spectrum Plot of Worst Value**

**5MHz/QPSK**



**5MHz/16QAM**

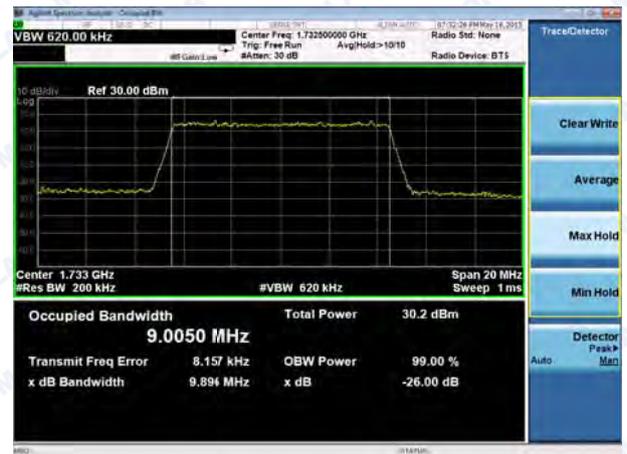


**Spectrum Plot of Worst Value**

**10MHz/QPSK**



**10MHz/16QAM**

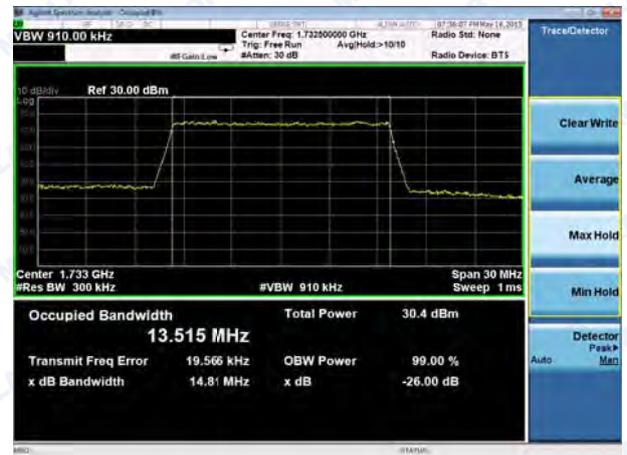
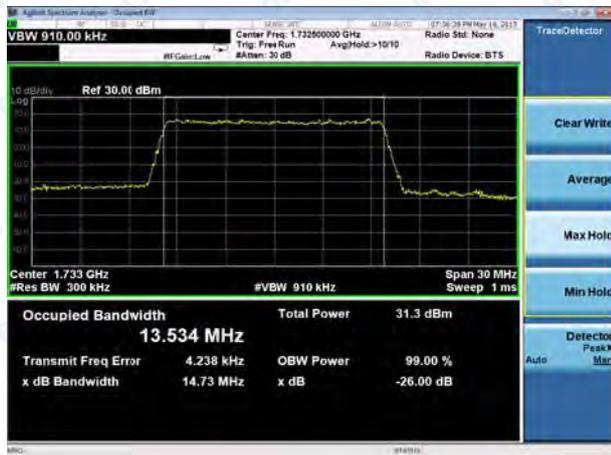




**Spectrum Plot of Worst Value**

**15MHz/QPSK**

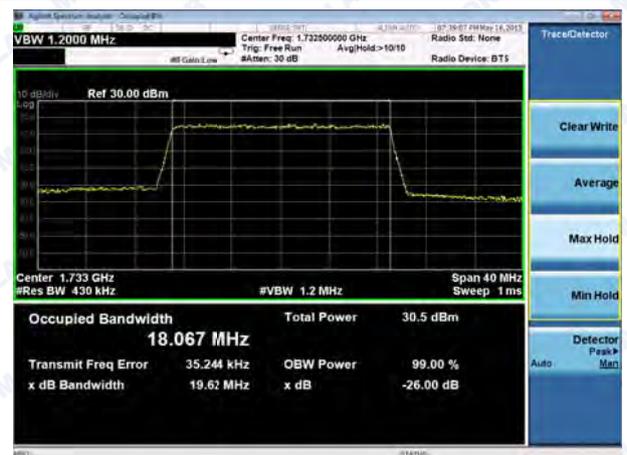
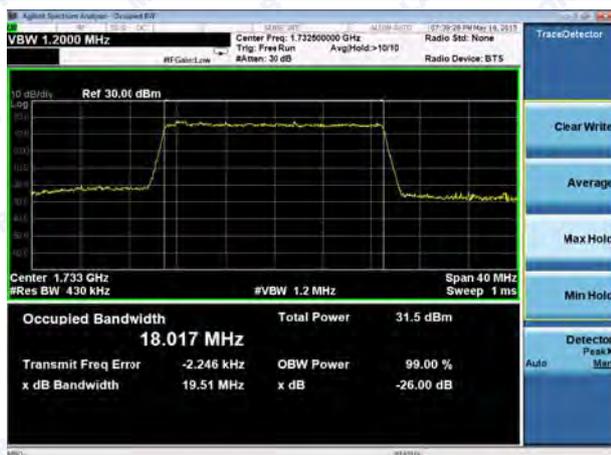
**15MHz/16QAM**



**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



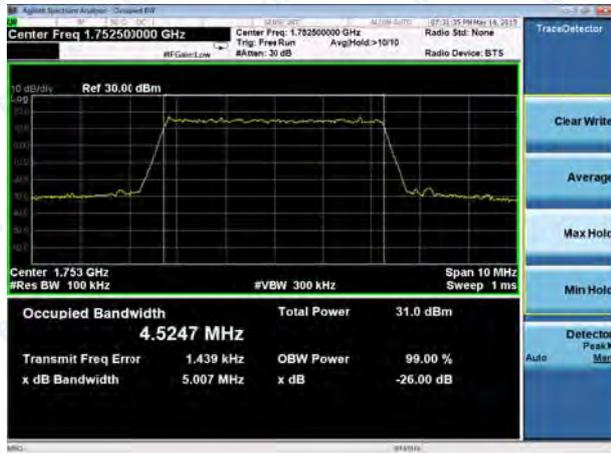
3MHz/16QAM



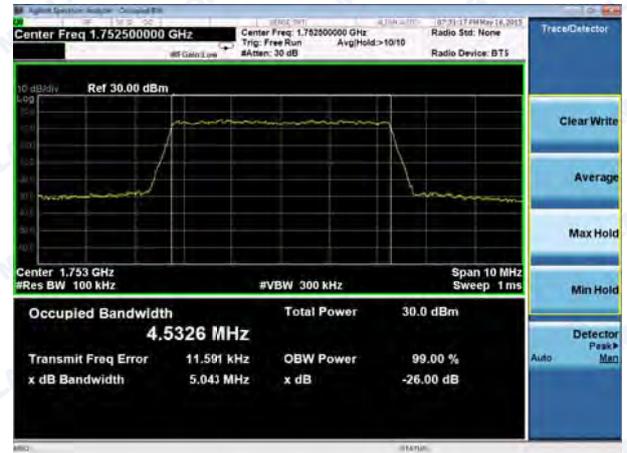


**Spectrum Plot of Worst Value**

**5MHz/QPSK**



**5MHz/16QAM**



**Spectrum Plot of Worst Value**

**10MHz/QPSK**



**10MHz/16QAM**





**Spectrum Plot of Worst Value**

**15MHz/QPSK**



**15MHz/16QAM**

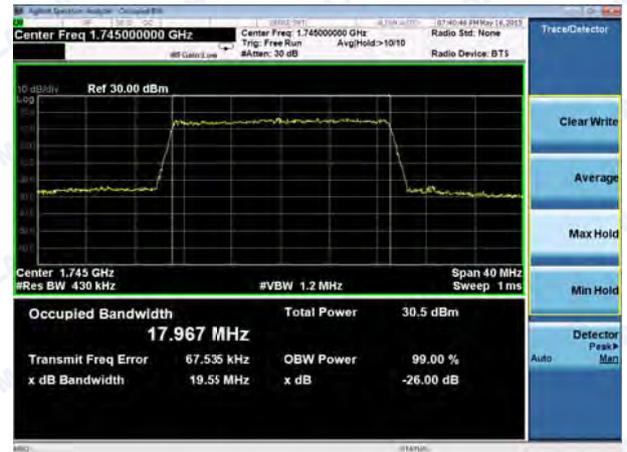


**Spectrum Plot of Worst Value**

**20MHz/QPSK**



**20MHz/16QAM**





**LTE Band 5**

**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
20407	824.7	1.1031	1.1011	20415	825.5	2.7223	2.7124

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	1.308	1.293	20415	825.5	3.011	3.014

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	4.5384	4.5422	20450	829.0	8.9999	9.0158

Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	5.065	5.046	20450	829.0	10.00	9.961

**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
20525	836.5	1.0978	1.1022	20525	836.5	2.7126	2.7267

Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20525	836.5	1.299	1.305	20525	836.5	3.009	3.015



Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20525	836.5	4.5341	4.5283	20525	836.5	9.0138	9.0078
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20525	836.5	4.984	5.055	20525	836.5	10.02	9.887

**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
20643	848.3	1.1074	1.0985	20635	847.5	2.7169	2.7073
Channel Bandwidth: 1.4MHz				Channel Bandwidth: 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20643	848.3	1.284	1.306	20635	847.5	3.009	2.993

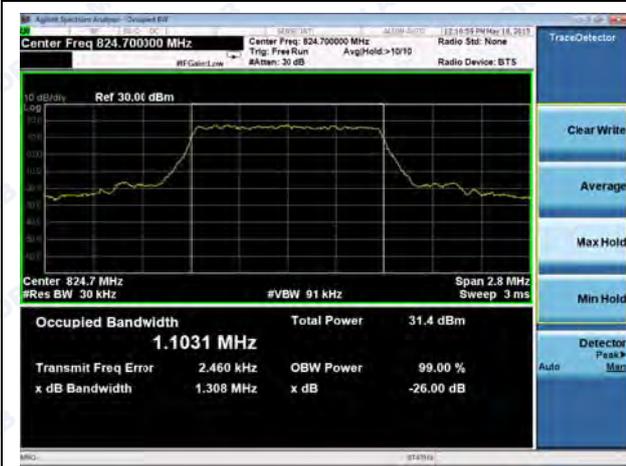
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	99% Bandwidth (MHz)		Channel	Frequency (MHz)	99% Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20625	846.5	4.5301	4.5373	20600	844.0	9.0315	9.0249
Channel Bandwidth: 5MHz				Channel Bandwidth: 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		Channel	Frequency (MHz)	26dB Bandwidth(MHz)	
		QPSK	16QAM			QPSK	16QAM
20625	846.5	5.015	5.029	20600	844.0	9.995	10.00



Low channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK



1.4MHz/16QAM

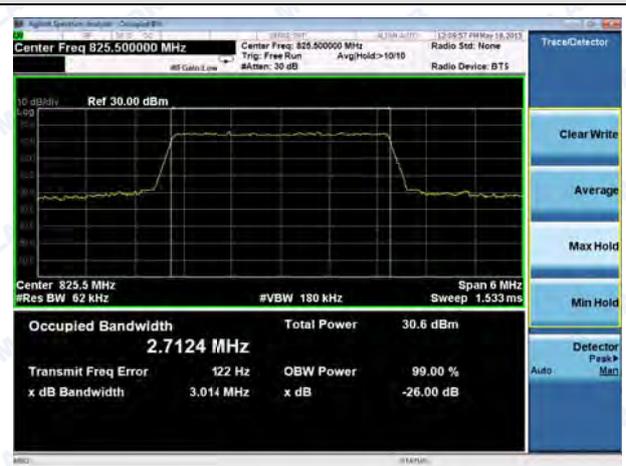


Spectrum Plot of Worst Value

3MHz/QPSK



3MHz/16QAM





**Spectrum Plot of Worst Value**

**5MHz/QPSK**



**5MHz/16QAM**



**Spectrum Plot of Worst Value**

**10MHz/QPSK**



**10MHz/16QAM**





Middle channel:

Spectrum Plot of Worst Value

1.4MHz/QPSK



1.4MHz/16QAM

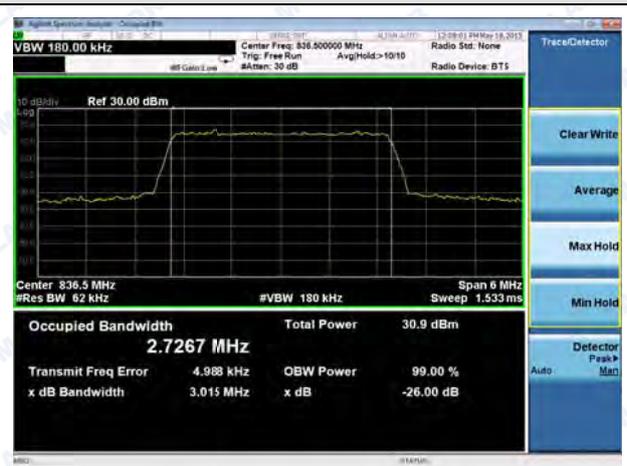


Spectrum Plot of Worst Value

3MHz/QPSK



3MHz/16QAM





**Spectrum Plot of Worst Value**

**5MHz/QPSK**



**5MHz/16QAM**



**Spectrum Plot of Worst Value**

**10MHz/QPSK**



**10MHz/16QAM**





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**





**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	4.5339	4.5249	20800	2505.0	8.9976	9.0024
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	5.054	5.054	20800	2505.0	9.895	9.824

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	13.475	13.508	20850	2510.0	18.011	18.016
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	14.63	14.80	20850	2510.0	19.56	19.53

**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	4.5260	4.5261	21100	2535.0	9.0259	9.0176
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	5.002	5.029	21100	2535.0	10.03	9.911



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	13.516	13.500	21100	2535.0	17.954	18.035
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	14.89	14.71	21100	2535.0	19.49	19.54

**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	4.5256	4.5297	21400	2565.0	9.0160	9.0113
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	5.025	5.011	21400	2565.0	10.01	9.979

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	13.505	13.499	21350	2560.0	18.022	17.999
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	14.81	14.70	21350	2560.0	19.71	19.63



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**

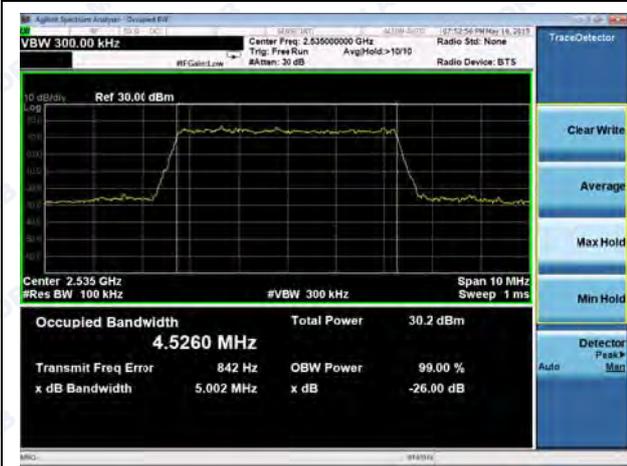




Middle channel:

Spectrum Plot of Worst Value

5MHz/QPSK



5MHz/16QAM



Spectrum Plot of Worst Value

10MHz/QPSK



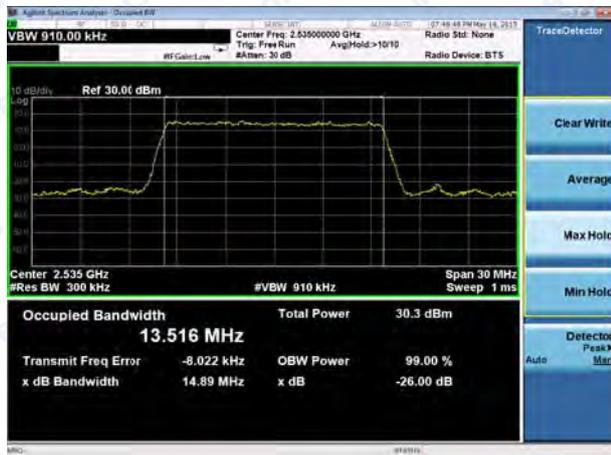
10MHz/16QAM



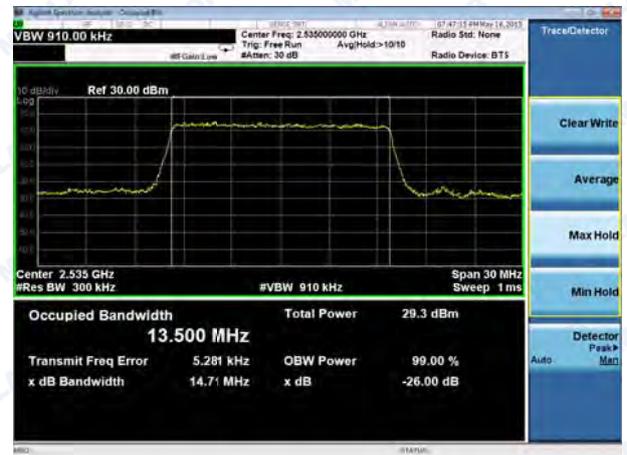


**Spectrum Plot of Worst Value**

**15MHz/QPSK**



**15MHz/16QAM**



**Spectrum Plot of Worst Value**

**20MHz/QPSK**



**20MHz/16QAM**





High channel:

Spectrum Plot of Worst Value

5MHz/QPSK



5MHz/16QAM

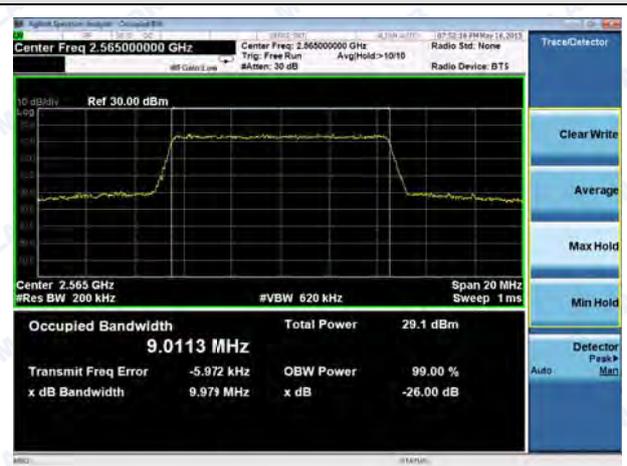


Spectrum Plot of Worst Value

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

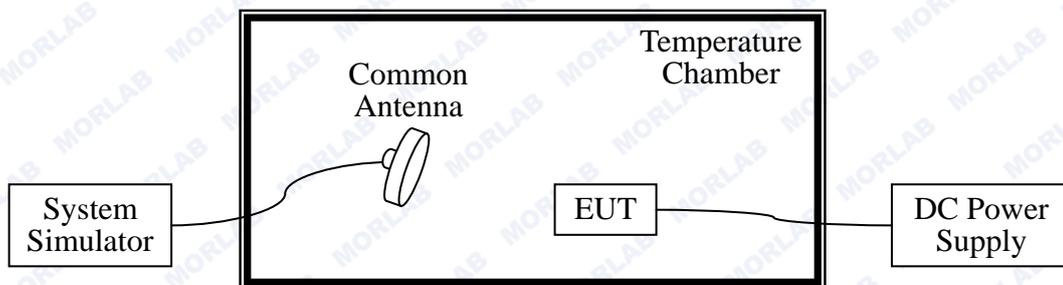
### 2.3.1 Requirement

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