



RF TEST REPORT

Applicant ZTE Corporation
FCC ID SRQ-ZTEN9519
Product LTE/CDMA/WCDMA/GSM(GPRS)
Multi-Mode Digital Mobile Phone
Model N9519
Report No. RXA1601-0005RF03R3
Issue Date March 31, 2016

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2014)/ FCC CFR47 Part 27C (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Table of Contents

1	Test Laboratory.....	4
1.1	Notes of the Test Report	4
1.2	Test facility	4
1.3	Testing Location.....	5
2	General Description of Equipment under Test.....	6
2.1	Applied Standards.....	7
3	Test Configuration	8
4	Test Information.....	10
4.1	RF Power Output	10
4.2	Effective Isotropic Radiated Power	19
4.3	Occupied Bandwidth	26
4.4	Band Edge Compliance	45
4.5	Peak-to-Average Power Ratio (PAPR)	70
4.6	Frequency Stability.....	74
4.7	Spurious Emissions at Antenna Terminals	80
4.8	Radiates Spurious Emission	106
5	Main Test Equipment.....	131

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	27.50(d)(4)/ 27.50(c)(10)/ 27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h)/ 27.53(g)/ 27.53(m)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 / 27.53(h) / 27.53(g) / 27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) / 27.53(g) / 27.53(m)	PASS
Date of Testing: January 7, 2016~ March 31, 2016			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard.			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of TA technology (shanghai) co., Ltd. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2 Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

A2LA(Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
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2 General Description of Equipment under Test

Client Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District

General information

Model:	N9519		
Product MEID:	99000677000319		
Hardware Version:	cuhA		
Software Version:	N9519V1.0.0B01		
Power Supply:	Battery/AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	WCDMA Band IV; LTE Band 4; LTE Band 12, LTE Band 41;		
HSDPA UE Category:	24		
HSUPA UE Category:	4		
Maximum E.I.R.P./ E.R.P.	WCDMA Band IV: 24.17dBm LTE Band 4: 24.65dBm LTE Band 12: 16.01dBm LTE Band 41: 24.73dBm		
Rated Power Supply Voltage:	3.8V		
Extreme Voltage:	Minimum: 3.6V Maximum: 4.35V		
Extreme Temperature:	Lowest: -10°C Highest: +55°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 41	2496 ~ 2690	2496 ~ 2690
EUT Accessory			
Battery	Manufacturer: SCUD(FUJIAN)ELECTRONICS Model: Li3831T43P4h826247 Power Rating: DC 3.8V, Li-ion		
Adapter	Manufacturer: Salcomp Model: STC-A515A-Z		
Note: 1. The information of the EUT is declared by the manufacturer. Please refer to the specifications or user manual for details.			

2.1 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC CFR47 Part 2 (2014)

FCC CFR47 Part 27C (2014)

ANSI/TIA-603-D(2010)

KDB 971168 D01 Power Meas License Digital Systems v02r02

3 Test Configuration

There is more than one SIM card slot, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) will be recorded in this report

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in WCDMA/LTE is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for WCDMA Band IV:

	Test items	Modes	Modulation
Conducted Test cases	RF power output	WCDMA Band IV	RMC/HSDPA/HSUPA/DC-HSDPA
	Effective Isotropic Radiated power	WCDMA Band IV	RMC
	Occupied Bandwidth	WCDMA Band IV	RMC
	Band Edge Compliance	WCDMA Band IV	RMC
	Peak-to-Average Power Ratio	WCDMA Band IV	RMC
	Frequency Stability	WCDMA Band IV	RMC
	Spurious Emissions at Antenna Terminals	WCDMA Band IV	RMC
Radiated Test cases	Radiates Spurious Emission	WCDMA Band IV	RMC

Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/12/41:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	-	-	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 41	-	O	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 41	-	O	O	O	O	O	O	O	-	-	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 41	-	O	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 12	-	-	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 41	-	O	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	-	-	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 41	-	O	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	-	-	O	O	-	-	O	O	-	-	O	-	O	-
	LTE 41	-	O	O	O	O	O	O	O	-	-	O	-	O	-
Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 41	-	O	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	-	-	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 41	-	O	O	O	O	O	O	-	O	-	-	O	O	O
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.														

4 Test Information

4.1 RF Power Output

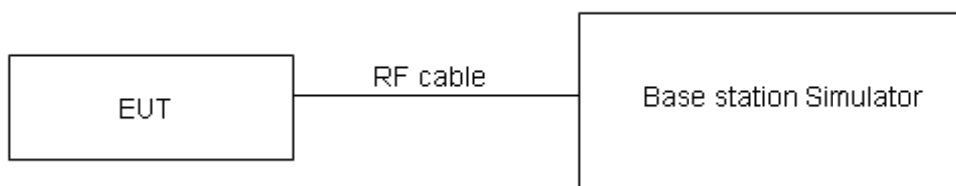
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=0.4$ dB.

Test Results

WCDMA Band IV		AV Conducted Power(dBm)		
		Channel 1312	Channel 1413	Channel 1513
		1712.4 (MHz)	1732.6 (MHz)	1752.6(MHz)
RMC		24.29	24.04	24.07
HSDPA	Sub - Test 1	23.93	23.88	23.91
	Sub - Test 2	23.94	23.87	23.93
	Sub - Test 3	23.54	23.45	23.51
	Sub - Test 4	23.53	23.47	23.50
HSUPA	Sub - Test 1	24.02	23.96	23.99
	Sub - Test 2	22.01	21.95	21.98
	Sub - Test 3	23.00	22.94	22.97
	Sub - Test 4	21.99	21.93	21.96
	Sub - Test 5	23.98	23.92	23.95
HSDPA+	Sub - Test 1	24.00	23.87	23.91
	Sub - Test 2	23.94	23.88	23.90
	Sub - Test 3	23.43	23.48	23.48
	Sub - Test 4	23.44	23.47	23.50
HSUPA+	Sub - Test 1	23.93	23.96	23.99
	Sub - Test 2	22.01	21.95	21.98
	Sub - Test 3	23.00	22.94	22.97
	Sub - Test 4	21.99	21.93	21.96
	Sub - Test 5	23.98	23.92	23.95
DC-HSDPA	Sub - Test 1	23.97	23.91	23.94
	Sub - Test 2	23.95	23.90	23.93
	Sub - Test 3	23.44	23.39	23.42
	Sub - Test 4	23.43	23.38	23.41
Note: 1) The maximum RF Output Power numbers are marks in bold. 2) The following testing in RMC based on the maximum RF Output Power.				

LTE TDD Band 4				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	23.02	23.93	23.44
		1	2	23.72	23.92	23.83
		1	5	23.57	23.60	23.69
		3	0	22.84	23.25	23.22
		3	2	23.29	23.15	23.24
		3	3	23.02	23.25	23.29
		6	0	22.66	22.70	22.74
	16QAM	1	0	22.90	23.06	22.23
		1	2	23.08	22.59	22.45
		1	5	22.58	22.35	22.36
		3	0	22.23	22.78	22.12
		3	2	22.75	22.28	22.23
		3	3	22.09	22.09	22.29
		6	0	21.55	21.61	21.74
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	22.91	23.82	23.34
		1	13	23.61	23.82	23.72
		1	24	23.46	23.49	23.58
		12	0	22.63	22.63	22.70
		12	6	22.57	22.63	22.62
		12	13	22.50	22.63	22.77
		25	0	22.55	22.60	22.63
	16QAM	1	0	22.79	22.95	22.12
		1	13	22.97	22.49	22.34
		1	24	22.47	22.24	22.26
		12	0	21.51	21.56	21.50
		12	6	21.53	21.46	21.61
		12	13	21.48	21.47	21.67
		25	0	21.44	21.50	21.63
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	22.93	23.85	23.36
		1	13	23.64	23.84	23.74
		1	24	23.48	23.52	23.60
		12	0	22.65	22.65	22.72
		12	6	22.59	22.65	22.64
		12	13	22.52	22.65	22.79
		25	0	22.57	22.62	22.66

	16QAM	1	0	22.81	22.97	22.15
		1	13	23.00	22.51	22.37
		1	24	22.49	22.26	22.28
		12	0	21.53	21.58	21.52
		12	6	21.55	21.48	21.63
		12	13	21.50	21.50	21.69
		25	0	21.46	21.52	21.65
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	22.95	23.87	23.38
		1	25	23.66	23.86	23.77
		1	49	23.50	23.54	23.62
		25	0	22.67	22.68	22.74
		25	13	22.62	22.68	22.66
		25	25	22.55	22.67	22.81
		50	0	22.60	22.64	22.68
	16QAM	1	0	22.84	23.00	22.17
		1	25	23.02	22.53	22.39
		1	49	22.51	22.29	22.30
		25	0	21.56	21.60	21.54
		25	13	21.58	21.50	21.65
		25	25	21.52	21.52	21.71
		50	0	21.48	21.55	21.67
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	22.99	23.90	23.41
		1	38	23.69	23.89	23.80
		1	74	23.53	23.57	23.66
		36	0	22.70	22.71	22.78
		36	18	22.65	22.71	22.69
		36	39	22.58	22.70	22.85
		75	0	22.63	22.67	22.71
	16QAM	1	0	22.87	23.03	22.20
		1	38	23.05	22.56	22.42
		1	74	22.54	22.32	22.33
		36	0	21.59	21.64	21.57
		36	18	21.61	21.53	21.68
		36	39	21.55	21.55	21.75
		75	0	21.51	21.58	21.70
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	23.01	23.92	23.43
		1	50	23.71	23.91	23.82

		1	99	23.55	23.59	23.68
		50	0	22.72	22.73	22.80
		50	25	22.67	22.73	22.71
		50	50	22.60	22.73	22.87
		100	0	22.65	22.69	22.73
	16QAM	1	0	22.89	23.05	22.22
		1	50	23.07	22.58	22.44
		1	99	22.56	22.34	22.35
		50	0	21.61	21.66	21.59
		50	25	21.63	21.55	21.71
		50	50	21.57	21.57	21.77
		100	0	21.54	21.60	21.72

Note:

1) The following testing in worst case based on the maximum RF Output Power.

LTE TDD Band 12				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23017/699.7	23095/707.5	23173/715.3
1.4MHz	QPSK	1	0	22.95	23.00	23.19
		1	2	23.17	23.21	23.17
		1	5	23.24	22.93	23.03
		3	0	22.40	22.44	22.80
		3	2	22.72	22.88	22.73
		3	3	22.89	22.43	22.89
		6	0	22.17	22.13	22.11
	16QAM	1	0	22.26	22.06	22.36
		1	2	22.12	22.29	22.12
		1	5	22.44	21.60	22.10
		3	0	21.90	21.86	21.88
		3	2	21.89	21.94	21.78
		3	3	21.99	21.47	21.79
		6	0	20.94	21.02	20.93
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	22.91	22.95	23.14
		1	7	23.13	23.16	23.12
		1	14	23.19	22.88	22.98
		8	0	22.04	22.08	22.24
		8	4	22.07	22.02	22.07
		8	7	22.03	22.07	22.13
		15	0	22.12	22.08	22.06
	16QAM	1	0	22.22	22.02	22.32
		1	7	22.07	22.24	22.07
		1	14	22.39	21.56	22.05
		8	0	21.01	21.07	21.29
		8	4	21.11	21.05	21.20
		8	7	21.01	20.88	21.00
		15	0	20.90	20.97	20.88
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
5MHz	QPSK	1	0	22.93	22.97	23.16
		1	13	23.15	23.18	23.14
		1	24	23.21	22.90	23.00
		12	0	22.07	22.10	22.26
		12	6	22.09	22.04	22.10
		12	13	22.05	22.09	22.15
		25	0	22.14	22.11	22.08
	16QAM	1	0	22.24	22.04	22.34

		1	13	22.09	22.26	22.09
		1	24	22.41	21.58	22.08
		12	0	21.03	21.09	21.31
		12	6	21.13	21.07	21.22
		12	13	21.03	20.90	21.02
		25	0	20.92	20.99	20.90
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23060/704	23095/707.5	23130/711
10MHz	QPSK	1	0	22.94	22.99	23.17
		1	25	23.16	23.20	23.15
		1	49	23.23	22.91	23.01
		25	0	22.08	22.11	22.28
		25	13	22.10	22.06	22.11
		25	25	22.07	22.11	22.17
		50	0	22.15	22.12	22.10
	16QAM	1	0	22.25	22.05	22.35
		1	25	22.10	22.28	22.10
		1	49	22.43	21.59	22.09
		25	0	21.04	21.10	21.32
		25	13	21.14	21.09	21.23
		25	25	21.04	20.91	21.03
		50	0	20.93	21.01	20.92

LTE TDD Band 41				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39675/2498.5	40620/2593	41565/2687.5
5MHz	QPSK	1	0	20.80	20.69	21.02
		1	13	20.80	20.63	21.19
		1	24	20.36	20.42	20.62
		12	0	19.65	19.41	19.71
		12	6	19.50	19.40	19.65
		12	13	19.47	19.31	19.57
		25	0	19.42	19.43	19.68
	16QAM	1	0	19.47	19.40	19.83
		1	13	19.71	19.54	19.86
		1	24	19.45	19.29	19.56
		12	0	18.71	18.55	18.84
		12	6	18.60	18.66	18.91
		12	13	18.41	18.47	18.70
		25	0	18.64	19.61	18.69
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39700/2501	40620/2593	41540/2685
10MHz	QPSK	1	0	21.01	20.90	21.23
		1	25	21.01	20.84	21.40
		1	49	20.57	20.63	20.83
		25	0	19.86	19.62	19.92
		25	13	19.71	19.62	19.86
		25	25	19.69	19.53	19.79
		50	0	19.63	19.64	19.89
	16QAM	1	0	19.69	19.62	20.05
		1	25	19.93	19.75	20.08
		1	49	19.67	19.50	19.78
		25	0	18.92	18.77	19.06
		25	13	18.82	18.88	19.12
		25	25	18.62	18.69	18.92
		50	0	18.85	19.82	18.91
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39725/2503.5	40620/2593	41515/2682.5
15MHz	QPSK	1	0	21.32	21.21	21.54
		1	38	21.32	21.16	21.72
		1	74	20.88	20.94	21.14
		36	0	20.17	19.93	20.24
		36	18	20.02	19.93	20.17



		36	39	20.00	19.84	20.10
		75	0	19.94	19.95	20.20
	16QAM	1	0	20.00	19.93	20.36
		1	38	20.24	20.07	20.39
		1	74	19.98	19.82	20.09
		36	0	19.23	19.08	19.37
		36	18	19.13	19.19	19.43
		36	39	18.93	19.00	19.23
		75	0	19.16	20.13	19.22
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				39750/2506	40620/2593	41490/2680
20MHz	QPSK	1	0	21.54	21.43	21.76
		1	50	21.53	21.37	21.93
		1	99	21.09	21.15	21.36
		50	0	20.39	20.15	20.45
		50	25	20.24	20.14	20.38
		50	50	20.21	20.05	20.31
		100	0	20.16	20.17	20.41
	16QAM	1	0	20.21	20.14	20.57
		1	50	20.45	20.28	20.60
		1	99	20.19	20.03	20.30
		50	0	19.44	19.29	19.58
		50	25	19.34	19.40	19.64
		50	50	19.15	19.21	19.44
		100	0	19.38	20.35	19.43

4.2 Effective Isotropic Radiated Power

Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

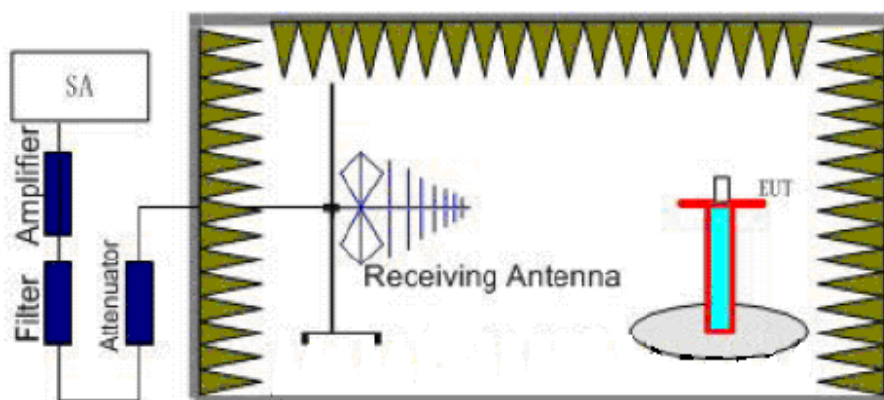
Methods of Measurement

The measurement procedures in TIA- 603-D are used.

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antennatower.
3. UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$
 P_s (dBm) : Input power to substitution antenna.
 G_s (dBi or dBd) : Substitution antenna Gain.
 $E_t = R_t + AF$
 $E_s = R_s + AF$
 AF (dB/m) : Receive antenna factor
 R_t : The highest received signal in spectrum analyzer for EUT.
 R_s : The highest received signal in spectrum analyzer for substitution antenna.

$$EIRP = E.R.P + 2.15$$

Test Setup



Limits

Rule Part 27.50(d)(4) specifies that " Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP",

Rule Part 27.50(c)(10) specifies that " Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP"

Rule Part 27.50(h)(2) specifies that " Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power."

Part 27.50(d)(4)Limit (EIRP)	$\leq 1 \text{ W}$ (30 dBm)
Part 27.50(c)(10)Limit (ERP)	$\leq 3 \text{ W}$ (34.77 dBm)
Part 27.50(h)(2) Limit (EIRP)	$\leq 2 \text{ W}$ (33 dBm)

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2, U = 1.19 \text{ dB}$

Test Results

WCDMA Band IV							
Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
1712.4	H	-33.29	-54.98	0	1.44	23.13	Pass
1732.6	H	-33.75	-55.10	0	1.63	22.98	Pass
1752.6	H	-34.74	-55.31	0	1.78	22.35	Pass
1712.4	V	-32.77	-55.50	0	1.44	24.17	Pass
1732.6	V	-32.78	-55.26	0	1.63	24.11	Pass
1752.6	V	-33.89	-55.65	0	1.78	23.54	Pass

LTE Band 4								
Bandwidth	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
1.4MHz (QPSK)	1710.7	H	-32.05	-54.30	0	1.41	23.66	Pass
	1732.5	H	-33.36	-54.32	0	1.56	22.52	Pass
	1754.3	H	-33.47	-54.10	0	1.67	22.30	Pass
	1710.7	V	-31.60	-54.35	0	1.41	24.16	Pass
	1732.5	V	-32.15	-54.41	0	1.56	23.82	Pass
	1754.3	V	-32.92	-54.52	0	1.67	23.27	Pass
1.4MHz (16QAM)	1710.7	H	-34.18	-54.30	0	1.41	21.53	Pass
	1732.5	H	-35.62	-54.32	0	1.56	20.26	Pass
	1754.3	H	-35.81	-54.10	0	1.67	19.96	Pass
	1710.7	V	-34.01	-54.35	0	1.41	21.75	Pass
	1732.5	V	-34.73	-54.41	0	1.56	21.24	Pass
	1754.3	V	-35.61	-54.52	0	1.67	20.58	Pass
3MHz (QPSK)	1711.5	H	-32.29	-54.33	0	1.38	23.42	Pass
	1732.5	H	-32.59	-54.32	0	1.56	23.29	Pass
	1753.5	H	-34.10	-54.11	0	1.69	21.70	Pass
	1711.5	V	-31.56	-54.35	0	1.38	24.17	Pass
	1732.5	V	-32.10	-54.41	0	1.56	23.87	Pass
	1753.5	V	-32.86	-54.48	0	1.69	23.31	Pass
3MHz (16QAM)	1711.5	H	-34.42	-54.33	0	1.38	21.29	Pass
	1732.5	H	-34.85	-54.32	0	1.56	21.03	Pass
	1753.5	H	-36.44	-54.11	0	1.69	19.36	Pass
	1711.5	V	-33.97	-54.35	0	1.38	21.76	Pass
	1732.5	V	-34.68	-54.41	0	1.56	21.29	Pass
	1753.5	V	-35.55	-54.48	0	1.69	20.62	Pass
5MHz (QPSK)	1712.5	H	-32.43	-54.34	0	1.40	23.31	Pass
	1732.5	H	-33.32	-54.32	0	1.56	22.56	Pass
	1752.5	H	-33.80	-54.13	0	1.70	22.03	Pass
	1712.5	V	-32.07	-54.38	0	1.40	23.71	Pass
	1732.5	V	-31.76	-54.41	0	1.56	24.21	Pass



	1752.5	V	-33.18	-54.47	0	1.70	22.99	Pass
5MHz (16QAM)	1712.5	H	-34.56	-54.34	0	1.40	21.18	Pass
	1732.5	H	-35.58	-54.32	0	1.56	20.30	Pass
	1752.5	H	-36.14	-54.13	0	1.70	19.69	Pass
	1712.5	V	-34.48	-54.38	0	1.40	21.30	Pass
	1732.5	V	-34.34	-54.41	0	1.56	21.63	Pass
	1752.5	V	-35.87	-54.47	0	1.70	20.30	Pass
10MHz (QPSK)	1715	H	-32.25	-54.33	0	1.45	23.53	Pass
	1732.5	H	-31.98	-54.32	0	1.56	23.90	Pass
	1750	H	-33.40	-54.12	0	1.65	22.37	Pass
	1715	V	-31.21	-54.32	0	1.45	24.56	Pass
	1732.5	V	-30.59	-54.41	0	1.56	25.38	Pass
	1750	V	-32.91	-54.52	0	1.65	23.26	Pass
10MHz (16QAM)	1715	H	-34.38	-54.33	0	1.45	21.40	Pass
	1732.5	H	-34.24	-54.32	0	1.56	21.64	Pass
	1750	H	-35.74	-54.12	0	1.65	20.03	Pass
	1715	V	-33.62	-54.32	0	1.45	22.15	Pass
	1732.5	V	-33.17	-54.41	0	1.56	22.80	Pass
	1750	V	-35.60	-54.52	0	1.65	20.57	Pass
15MHz (QPSK)	1717.5	H	-32.48	-54.35	0	1.42	23.29	Pass
	1732.5	H	-32.47	-54.32	0	1.56	23.41	Pass
	1747.5	H	-33.20	-54.17	0	1.68	22.65	Pass
	1717.5	V	-31.58	-54.39	0	1.42	24.23	Pass
	1732.5	V	-31.76	-54.41	0	1.56	24.21	Pass
	1747.5	V	-32.60	-54.51	0	1.68	23.59	Pass
15MHz (16QAM)	1717.5	H	-34.61	-54.35	0	1.42	21.16	Pass
	1732.5	H	-34.73	-54.32	0	1.56	21.15	Pass
	1747.5	H	-35.54	-54.17	0	1.68	20.31	Pass
	1717.5	V	-33.99	-54.39	0	1.42	21.82	Pass
	1732.5	V	-34.34	-54.41	0	1.56	21.63	Pass
	1747.5	V	-35.29	-54.51	0	1.68	20.90	Pass
20MHz (QPSK)	1720	H	-32.43	-54.37	0	1.43	23.37	Pass
	1732.5	H	-33.33	-54.32	0	1.56	23.85	Pass
	1745	H	-33.34	-54.23	0	1.66	22.55	Pass
	1720	V	-32.10	-54.44	0	1.43	23.77	Pass
	1732.5	V	-32.36	-54.41	0	1.56	24.65	Pass
	1745	V	-32.64	-54.59	0	1.66	23.61	Pass
20MHz (16QAM)	1720	H	-34.56	-54.37	0	1.43	21.24	Pass
	1732.5	H	-34.29	-54.32	0	1.56	21.59	Pass
	1745	H	-35.68	-54.23	0	1.66	20.21	Pass
	1720	V	-34.51	-54.44	0	1.43	21.36	Pass
	1732.5	V	-33.90	-54.41	0	1.56	22.07	Pass
	1745	V	-35.33	-54.59	0	1.66	20.92	Pass

LTE Band 12								
Bandwidth	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	ERP (dBm)	Conclusion
1.4MHz (QPSK)	699.7	H	-34.33	-49.12	0	2.04	14.68	Pass
	707.5	H	-33.27	-49.39	0	2.03	16.01	Pass
	715.3	H	-33.78	-49.76	0	1.99	15.82	Pass
	699.7	V	-40.86	-48.91	0	2.04	7.95	Pass
	707.5	V	-39.88	-49.12	0	2.03	9.12	Pass
	715.3	V	-39.55	-49.43	0	1.99	9.73	Pass
1.4MHz (16QAM)	699.7	H	-36.46	-49.12	0	2.04	12.55	Pass
	707.5	H	-35.53	-49.39	0	2.03	13.75	Pass
	715.3	H	-36.12	-49.76	0	1.99	13.48	Pass
	699.7	V	-43.27	-48.91	0	2.04	5.54	Pass
	707.5	V	-42.46	-49.12	0	2.03	6.54	Pass
	715.3	V	-42.24	-49.43	0	1.99	7.04	Pass
3MHz (QPSK)	700.5	H	-33.97	-49.15	0	2.04	15.07	Pass
	707.5	H	-35.62	-49.39	0	2.03	13.66	Pass
	714.5	H	-35.85	-49.73	0	2.00	13.73	Pass
	700.5	V	-40.30	-48.94	0	2.04	8.53	Pass
	707.5	V	-38.77	-49.12	0	2.03	10.23	Pass
	714.5	V	-38.75	-49.37	0	2.00	10.47	Pass
3MHz (16QAM)	700.5	H	-36.10	-49.15	0	2.04	12.94	Pass
	707.5	H	-37.88	-49.39	0	2.03	11.4	Pass
	714.5	H	-38.19	-49.73	0	2.00	11.39	Pass
	700.5	V	-42.71	-48.94	0	2.04	6.12	Pass
	707.5	V	-41.35	-49.12	0	2.03	7.65	Pass
	714.5	V	-41.44	-49.37	0	2.00	7.78	Pass
5MHz (QPSK)	701.5	H	-35.26	-49.17	0	2.04	13.81	Pass
	707.5	H	-34.01	-49.39	0	2.03	15.27	Pass
	713.5	H	-33.76	-49.72	0	2.01	15.81	Pass
	701.5	V	-39.19	-48.95	0	2.04	9.65	Pass
	707.5	V	-37.68	-49.12	0	2.03	11.32	Pass
	713.5	V	-38.70	-49.35	0	2.01	10.51	Pass
5MHz (16QAM)	701.5	H	-37.39	-49.17	0	2.04	11.68	Pass
	707.5	H	-36.27	-49.39	0	2.03	13.01	Pass
	713.5	H	-36.10	-49.72	0	2.01	13.47	Pass
	701.5	V	-41.60	-48.95	0	2.04	7.24	Pass
	707.5	V	-40.26	-49.12	0	2.03	8.74	Pass
	713.5	V	-41.39	-49.35	0	2.01	7.82	Pass
10MHz	704	H	-33.91	-49.25	0	2.04	15.23	Pass



(QPSK)	707.5	H	-34.08	-49.39	0	2.03	15.20	Pass
	711	H	-34.31	-49.65	0	2.02	15.21	Pass
	704	V	-37.92	-49.00	0	2.04	10.97	Pass
	707.5	V	-37.71	-49.12	0	2.03	11.29	Pass
	711	V	-37.45	-49.33	0	2.02	11.74	Pass
10MHz (16QAM)	704	H	-36.04	-49.25	0	2.04	13.1	Pass
	707.5	H	-36.34	-49.39	0	2.03	12.94	Pass
	711	H	-36.65	-49.65	0	2.02	12.87	Pass
	704	V	-40.33	-49.00	0	2.04	8.56	Pass
	707.5	V	-40.29	-49.12	0	2.03	8.71	Pass
	711	V	-40.14	-49.33	0	2.02	9.05	Pass

LTE Band 41								
Band width	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	EIRP (dBm)	Conclusion
5MHz (QPSK)	2498.5	H	-38.07	-59.39	0	1.80	23.12	Pass
	2593	H	-39.11	-60.57	0	1.85	23.31	Pass
	2687.5	H	-38.64	-60.01	0	2.02	23.39	Pass
	2498.5	V	-37.70	-59.08	0	1.80	23.18	Pass
	2593	V	-40.64	-60.20	0	1.85	21.41	Pass
	2687.5	V	-39.46	-61.58	0	2.02	24.14	Pass
5MHz (16QAM)	2498.5	H	-40.20	-59.39	0	1.80	20.99	Pass
	2593	H	-41.37	-60.57	0	1.85	21.05	Pass
	2687.5	H	-40.98	-60.01	0	2.02	21.05	Pass
	2498.5	V	-40.11	-59.08	0	1.80	20.77	Pass
	2593	V	-43.22	-60.20	0	1.85	18.83	Pass
	2687.5	V	-42.15	-61.58	0	2.02	21.45	Pass
10MHz (QPSK)	2501	H	-37.30	-59.44	0	1.81	23.95	Pass
	2593	H	-37.89	-60.57	0	1.85	24.53	Pass
	2685	H	-38.41	-60.08	0	1.99	23.66	Pass
	2501	V	-39.08	-59.12	0	1.81	21.85	Pass
	2593	V	-39.18	-60.20	0	1.85	22.87	Pass
	2685	V	-40.66	-61.69	0	1.99	23.02	Pass
10MHz (16QAM)	2501	H	-39.43	-59.44	0	1.81	21.82	Pass
	2593	H	-40.15	-60.57	0	1.85	22.27	Pass
	2685	H	-40.75	-60.08	0	1.99	21.32	Pass
	2501	V	-41.49	-59.12	0	1.81	19.44	Pass
	2593	V	-41.76	-60.20	0	1.85	20.29	Pass
	2685	V	-43.35	-61.69	0	1.99	20.33	Pass



15MHz (QPSK)	2503.5	H	-38.22	-59.36	0	1.81	22.95	Pass
	2593	H	-40.77	-60.57	0	1.85	21.65	Pass
	2682.5	H	-39.60	-60.11	0	2.00	22.51	Pass
	2503.5	V	-37.46	-59.26	0	1.81	23.61	Pass
	2593	V	-39.06	-60.20	0	1.85	22.99	Pass
	2682.5	V	-40.23	-61.77	0	2.00	23.54	Pass
15MHz (16QAM)	2503.5	H	-40.35	-59.36	0	1.81	20.82	Pass
	2593	H	-43.03	-60.57	0	1.85	19.39	Pass
	2682.5	H	-41.94	-60.11	0	2.00	20.17	Pass
	2503.5	V	-39.87	-59.26	0	1.81	21.20	Pass
	2593	V	-41.64	-60.20	0	1.85	20.41	Pass
	2682.5	V	-42.92	-61.77	0	2.00	20.85	Pass
20MHz (QPSK)	2506	H	-37.75	-59.48	0	1.81	23.54	Pass
	2593	H	-37.69	-60.57	0	1.85	24.73	Pass
	2680	H	-38.70	-59.89	0	2.02	23.21	Pass
	2506	V	-38.11	-59.25	0	1.81	22.95	Pass
	2593	V	-38.48	-60.20	0	1.85	23.57	Pass
	2680	V	-42.11	-61.77	0	2.02	21.68	Pass
20MHz (16QAM)	2506	H	-39.88	-59.48	0	1.81	21.41	Pass
	2593	H	-39.95	-60.57	0	1.85	22.47	Pass
	2680	H	-41.04	-59.89	0	2.02	20.87	Pass
	2506	V	-40.52	-59.25	0	1.81	20.54	Pass
	2593	V	-41.06	-60.20	0	1.85	20.99	Pass
	2680	V	-44.80	-61.77	0	2.02	18.99	Pass

Note: 1. EIRP= E.R.P+2.15

4.3 Occupied Bandwidth

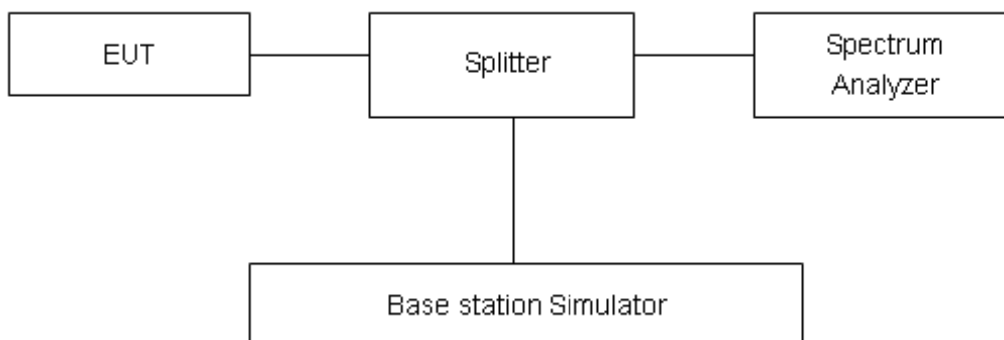
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band IV. RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/12 (1.4MHz). RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/12 (3MHz). RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/12/41 (5MHz). RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/12/41 (10MHz). RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/41 (15MHz/20MHz) on spectrum analyzer. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2, U=624\text{Hz}$.

Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
WCDMA Band IV (RMC)	1312	1712.4	4.1798	4.660
	1413	1732.6	4.1638	4.631
	1513	1752.6	4.1831	4.611

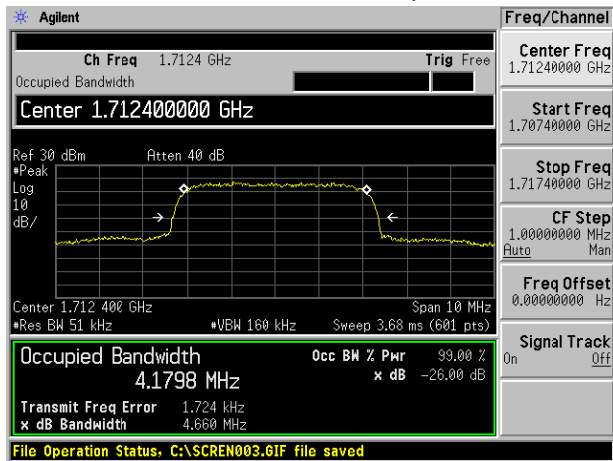
LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(kHz)	-26dBc Bandwidth(kHz)
100%	QPSK	1.4	19957	1710.7	1.1160	1.338
			20175	1732.5	1.1106	1.366
			20393	1754.3	1.1160	1.324
		3	19965	1711.5	2.7475	3.054
			20175	1732.5	2.7506	3.074
			20385	1753.5	2.7553	3.051
		5	19975	1712.5	4.5237	5.004
			20175	1732.5	4.5370	5.015
			20375	1752.5	4.5286	5.044
		10	20000	1715	9.0570	10.10
			20175	1732.5	9.0686	10.15
			20350	1750	9.0728	9.965
		15	20025	1717.5	13.476	14.58
			20175	1732.5	13.524	14.78
			20325	1747.5	13.487	14.78
		20	20050	1720	17.912	19.43
			20175	1732.5	17.935	19.32
			20300	1745	17.864	19.16
	16QAM	1.4	19957	1710.7	1.1169	1.338
			20175	1732.5	1.1184	1.347
			20393	1754.3	1.1152	1.330
		3	19965	1711.5	2.7347	3.025
			20175	1732.5	2.7514	3.065
			20385	1753.5	2.7461	3.061
		5	19975	1712.5	4.5458	5.008
			20175	1732.5	4.5182	4.991
			20375	1752.5	4.5304	5.005
		10	20000	1715	9.0565	9.958

			20175	1732.5	9.0430	10.01
			20350	1750	9.0586	10.08
		15	20025	1717.5	13.449	14.59
			20175	1732.5	13.531	14.69
			20325	1747.5	13.501	14.72
		20	20050	1720	17.904	19.26
			20175	1732.5	17.936	19.28
			20300	1745	17.886	19.11

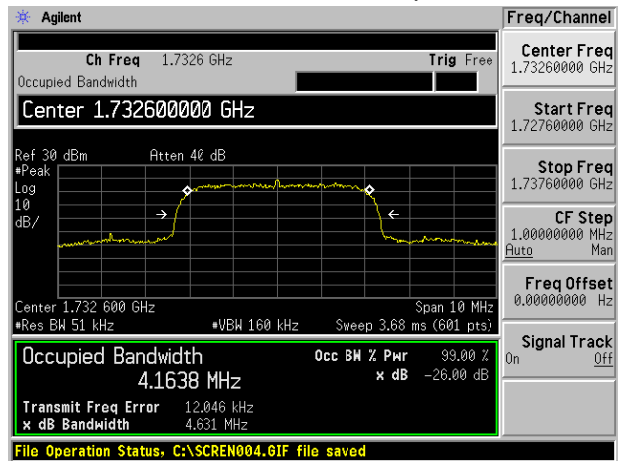
LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(kHz)	-26dBc Bandwidth(kHz)
100%	QPSK	1.4	23017	699.7	1.1208	1.353
			23095	707.5	1.1152	1.328
			23173	715.3	1.1142	1.324
		3	23025	700.5	2.7437	3.063
			23095	707.5	2.7439	3.028
			23165	714.5	2.7451	3.064
		5	23035	701.5	4.5320	5.005
			23095	707.5	4.5411	5.040
			23155	713.5	4.5485	5.022
		10	23060	704	9.1223	10.07
			23095	707.5	9.0335	9.953
			23130	711	9.0337	10.09
	16QAM	1.4	23017	699.7	1.1218	1.319
			23095	707.5	1.1198	1.335
			23173	715.3	1.1227	1.342
		3	23025	700.5	2.7296	3.037
			23095	707.5	2.7543	3.055
			23165	714.5	2.7418	3.074
		5	23035	701.5	4.5386	5.077
			23095	707.5	4.5112	4.972
			23155	713.5	4.5258	4.989
		10	23060	704	9.1160	10.03
			23095	707.5	9.0447	9.914
			23130	711	9.0128	9.943

LTE Band 41						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(kHz)	-26dBc Bandwidth(kHz)
100%	QPSK	5	39675	2498.5	4.5207	5.098
			40620	2593	4.5200	5.167
			41565	2687.5	4.5314	5.243
		10	39700	2501	9.0593	10.10
			40620	2593	9.0701	10.27
			41540	2685	9.1016	9.990
		15	39725	2503.5	13.475	14.70
			40620	2593	13.544	14.89
			41515	2682.5	13.488	15.37
		20	39750	2506	17.890	19.16
			40620	2593	17.911	19.28
			41490	2680	17.882	19.20
	16QAM	5	39675	2498.5	4.5189	4.985
			40620	2593	4.5458	4.983
			41565	2687.5	4.5146	4.948
		10	39700	2501	9.0174	9.946
			40620	2593	9.0939	10.06
			41540	2685	9.0839	10.35
		15	39725	2503.5	13.512	15.13
			40620	2593	13.515	15.53
			41515	2682.5	13.503	14.73
		20	39750	2506	17.947	19.12
			40620	2593	17.920	19.43
			41490	2680	17.901	19.28

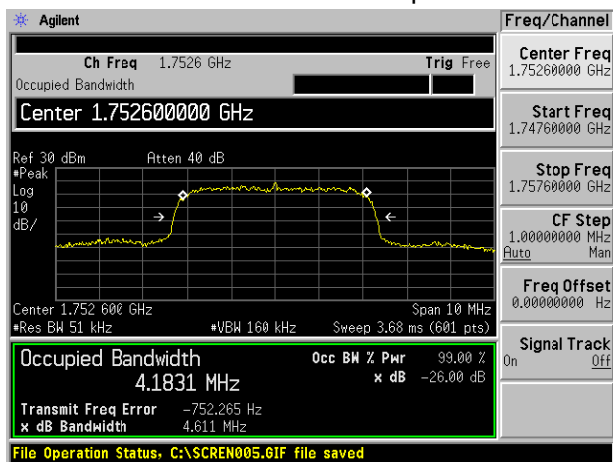
WCDMA Band IV CH1312 Occupied Bandwidth



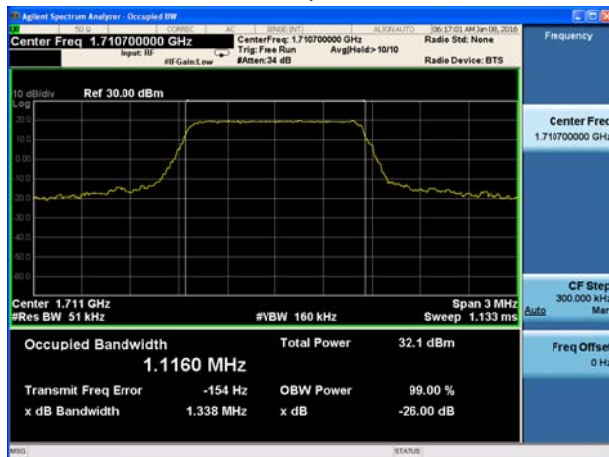
WCDMA Band IV CH1413 Occupied Bandwidth



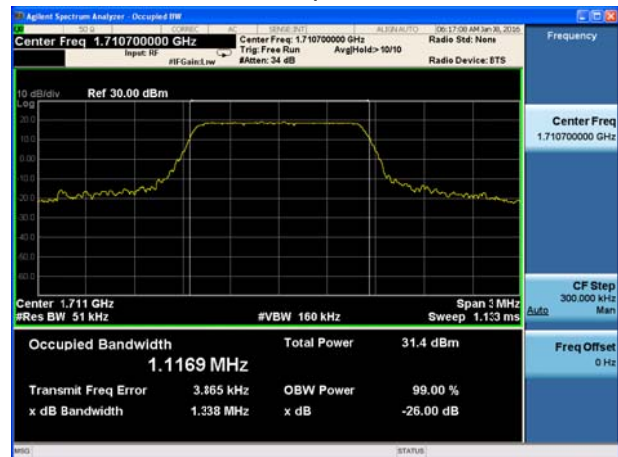
WCDMA Band IV CH1513 Occupied Bandwidth



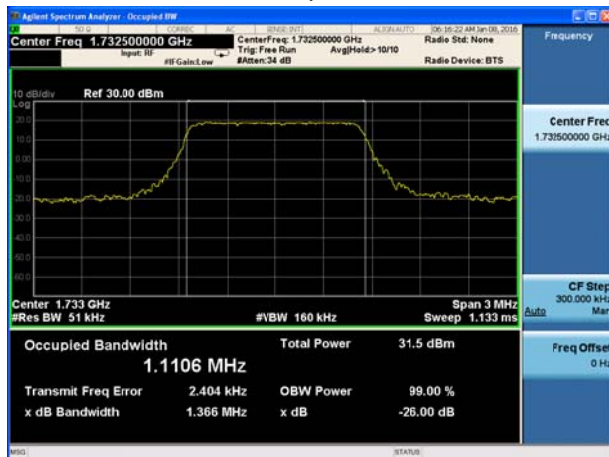
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH19957 Occupied Bandwidth



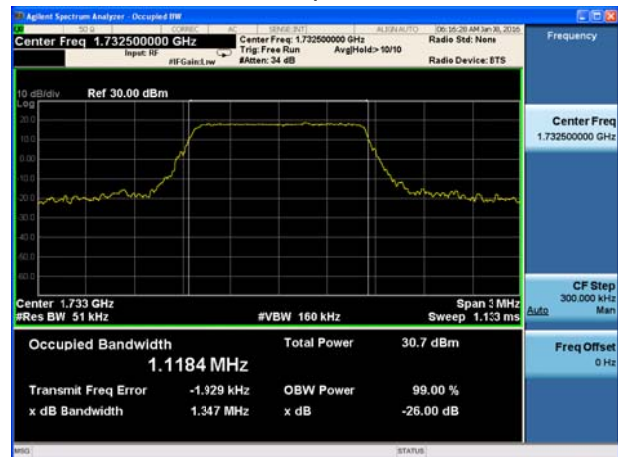
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH19957 Occupied Bandwidth



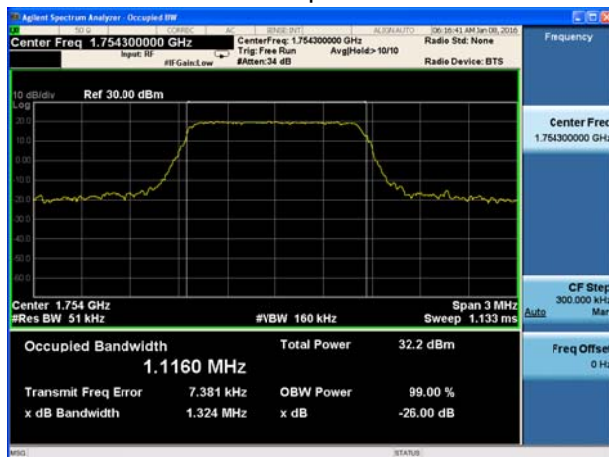
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH20175 Occupied Bandwidth



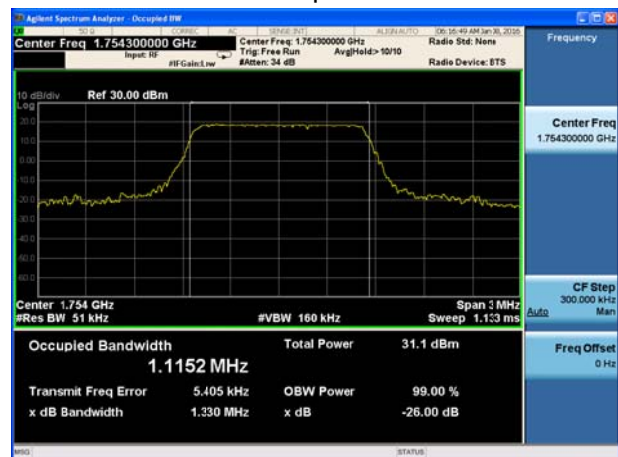
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH20175 Occupied Bandwidth



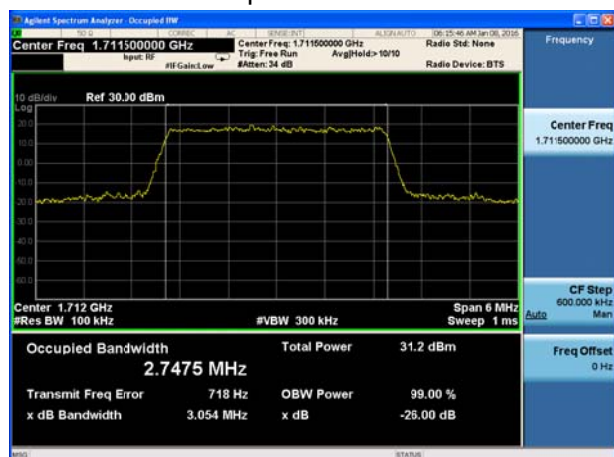
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH20393 Occupied Bandwidth



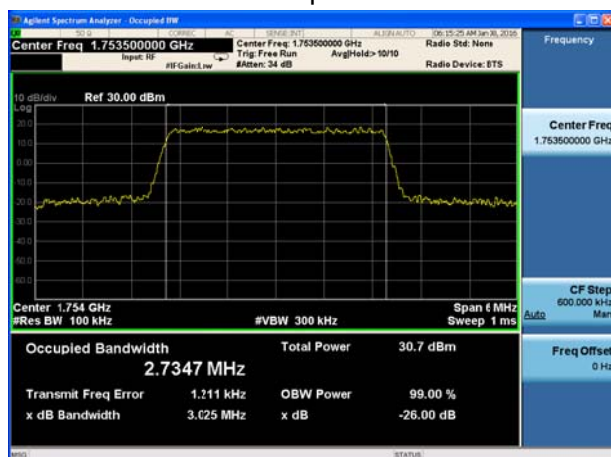
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH20393 Occupied Bandwidth



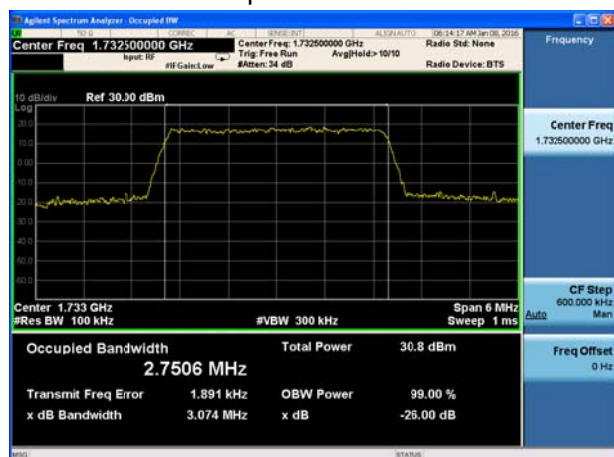
LTE Band 4 QPSK Bandwidth = 3MHz CH19965
Occupied Bandwidth



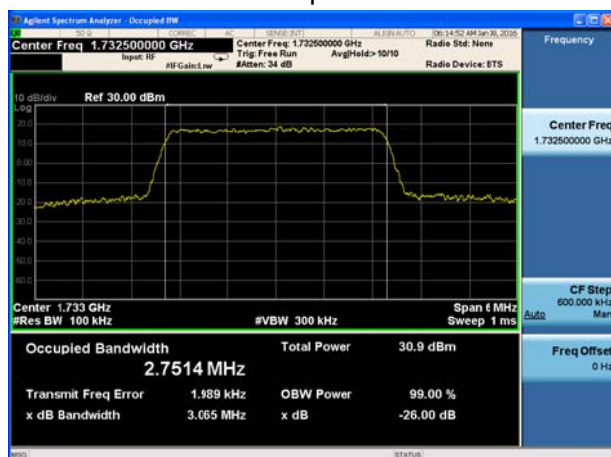
LTE Band 4 16QAM Bandwidth = 3MHz
CH19965 Occupied Bandwidth



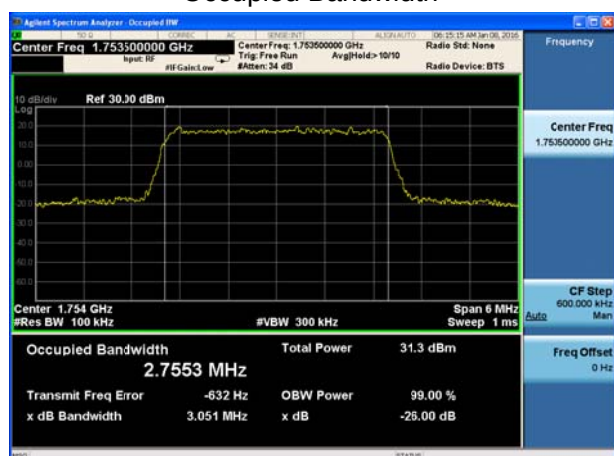
LTE Band 4 QPSK Bandwidth = 3MHz CH20175
Occupied Bandwidth



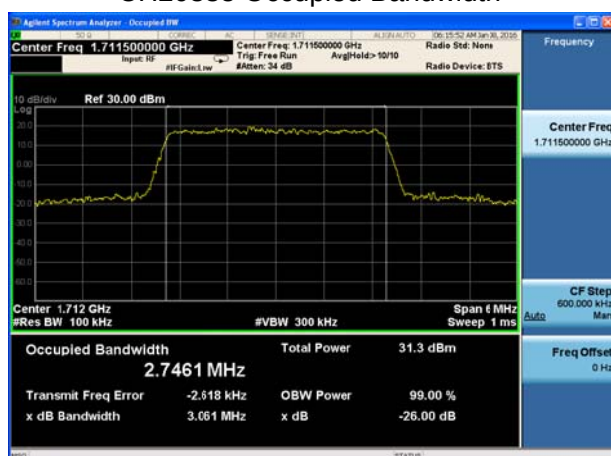
LTE Band 4 16QAM Bandwidth = 3MHz
CH20175 Occupied Bandwidth



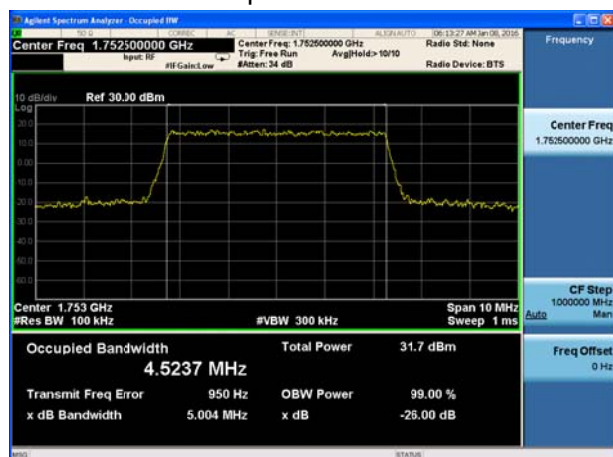
LTE Band 4 QPSK Bandwidth = 3MHz CH20385
Occupied Bandwidth



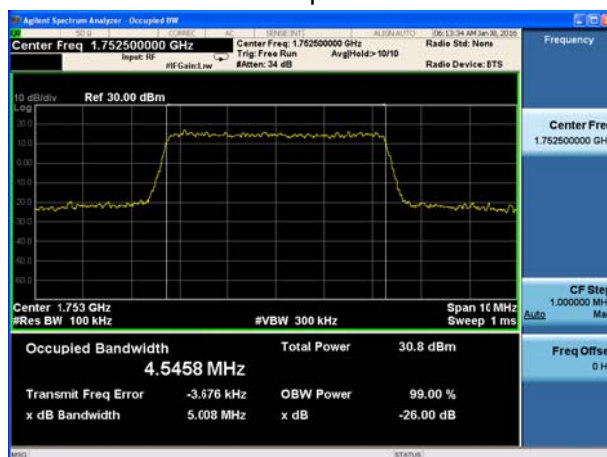
LTE Band 4 16QAM Bandwidth = 3MHz
CH20385 Occupied Bandwidth



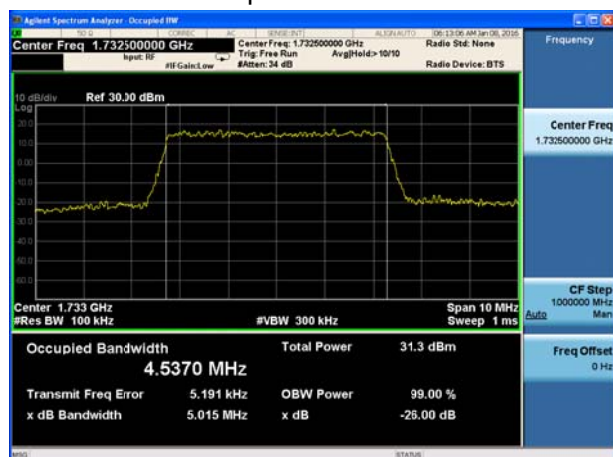
LTE Band 4 QPSK Bandwidth = 5MHz CH19975
Occupied Bandwidth



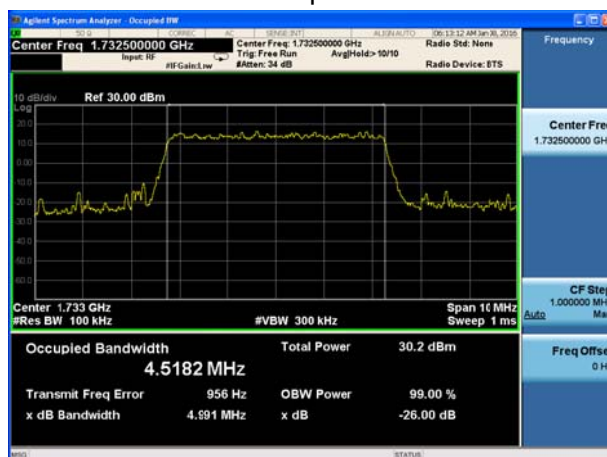
LTE Band 4 16QAM Bandwidth = 5MHz
CH19975 Occupied Bandwidth



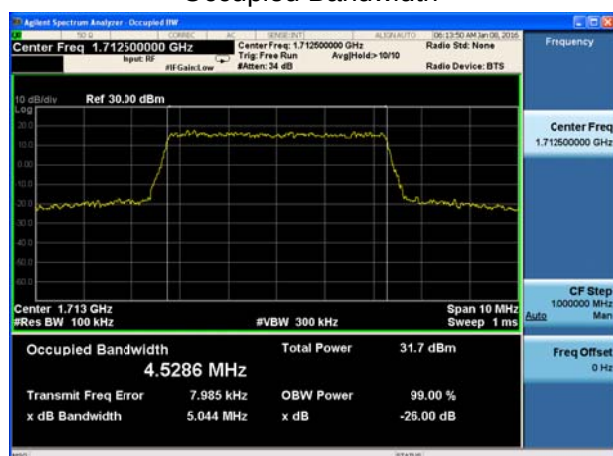
LTE Band 4 QPSK Bandwidth = 5MHz CH20175
Occupied Bandwidth



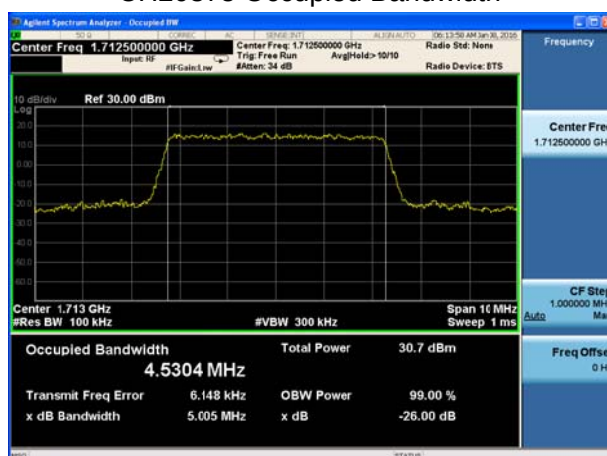
LTE Band 4 16QAM Bandwidth = 5MHz
CH20175 Occupied Bandwidth



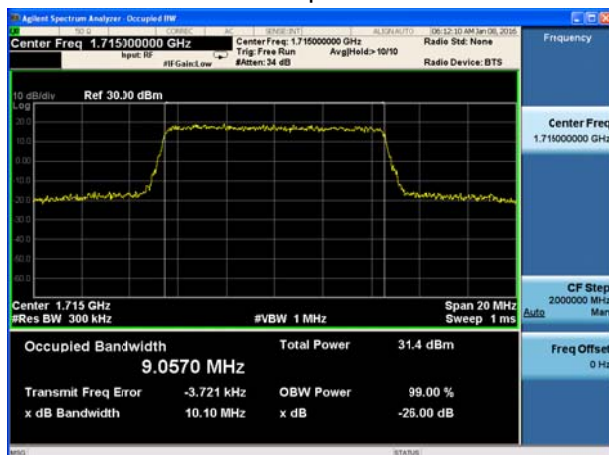
LTE Band 4 QPSK Bandwidth = 5MHz CH20375
Occupied Bandwidth



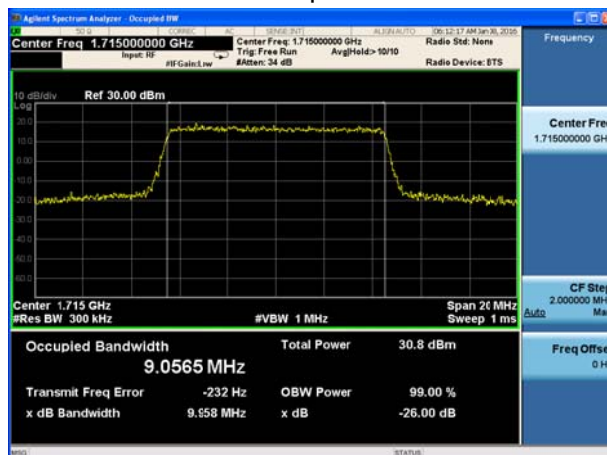
LTE Band 4 16QAM Bandwidth = 5MHz
CH20375 Occupied Bandwidth



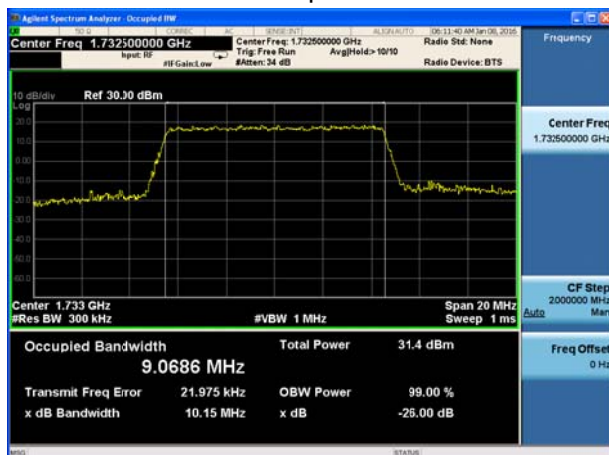
LTE Band 4 QPSK Bandwidth = 10MHz
CH20000 Occupied Bandwidth



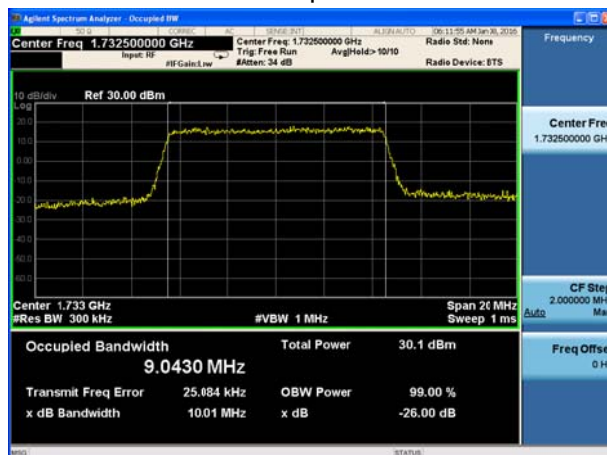
LTE Band 4 16QAM Bandwidth = 10MHz
CH20000 Occupied Bandwidth



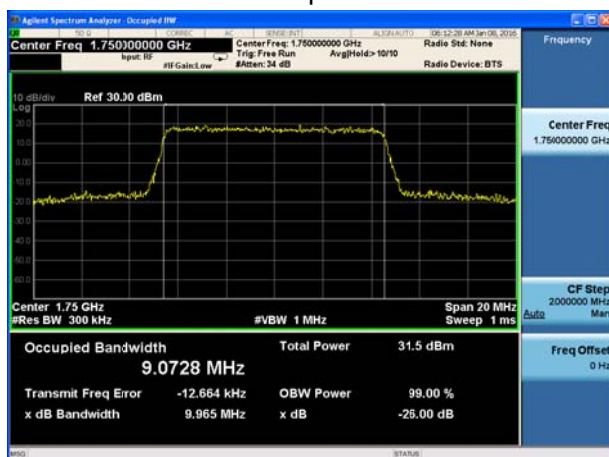
LTE Band 4 QPSK Bandwidth = 10MHz
CH20175 Occupied Bandwidth



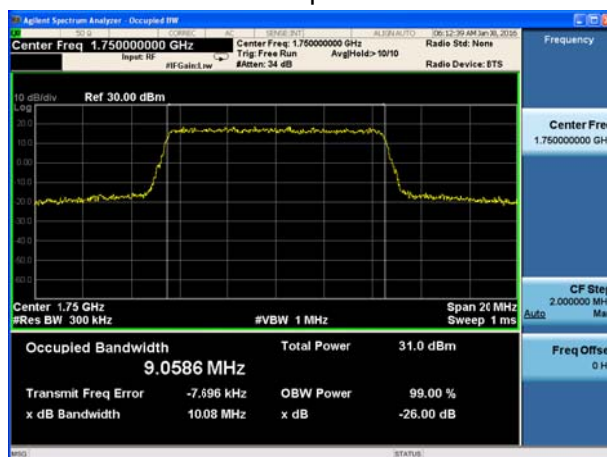
LTE Band 4 16QAM Bandwidth = 10MHz
CH20175 Occupied Bandwidth



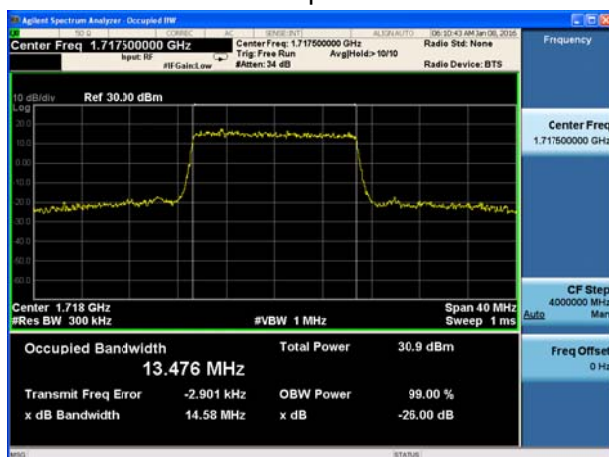
LTE Band 4 QPSK Bandwidth = 10MHz
CH20350 Occupied Bandwidth



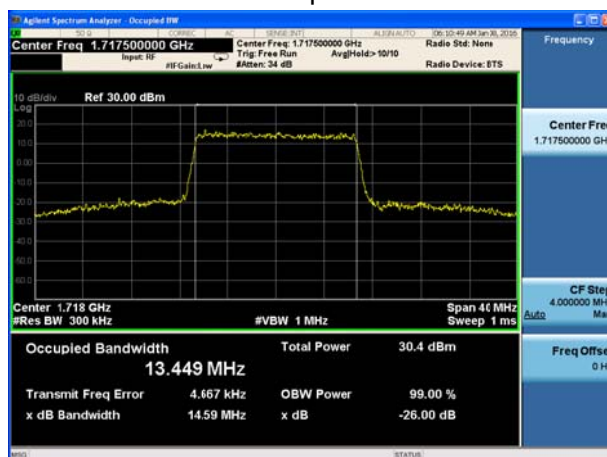
LTE Band 4 16QAM Bandwidth = 10MHz
CH20350 Occupied Bandwidth



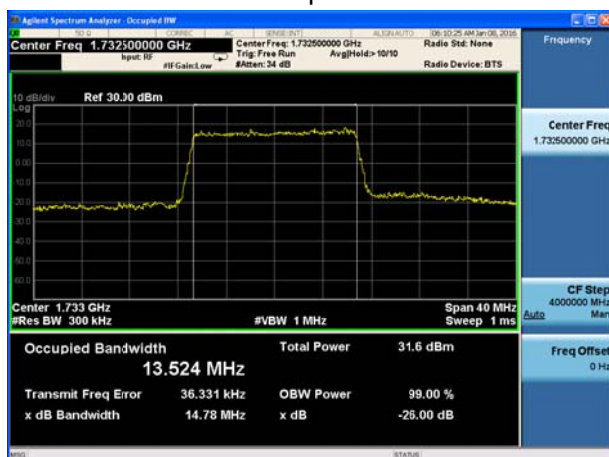
LTE Band 4 QPSK Bandwidth = 15MHz
CH20025 Occupied Bandwidth



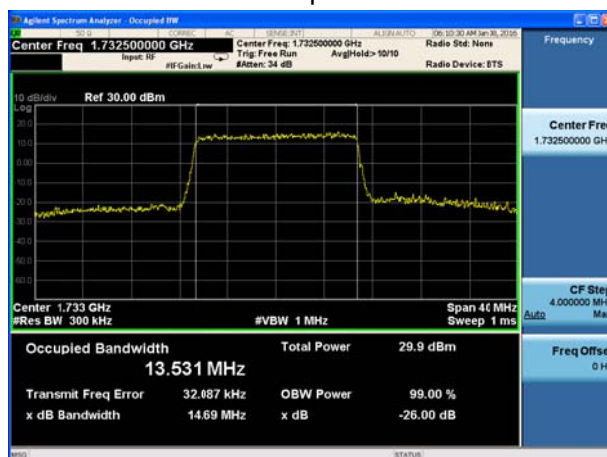
LTE Band 4 16QAM Bandwidth = 15MHz
CH20025 Occupied Bandwidth



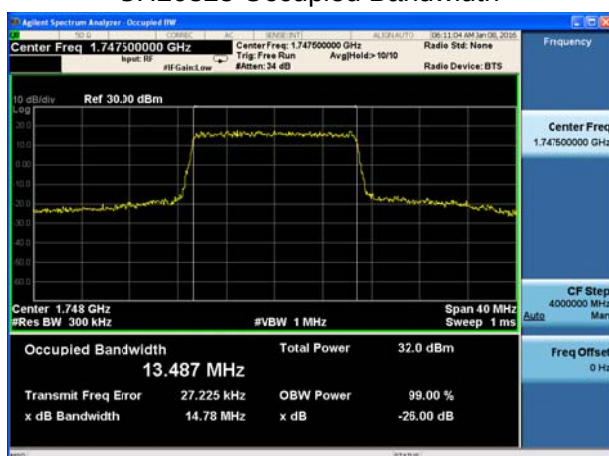
LTE Band 4 QPSK Bandwidth = 15MHz
CH20175 Occupied Bandwidth



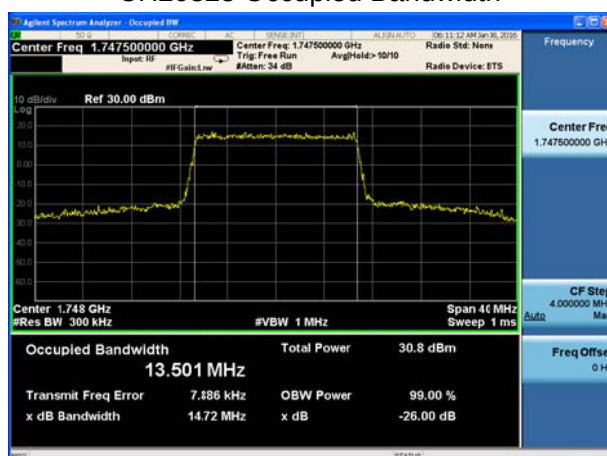
LTE Band 4 16QAM Bandwidth = 15MHz
CH20175 Occupied Bandwidth



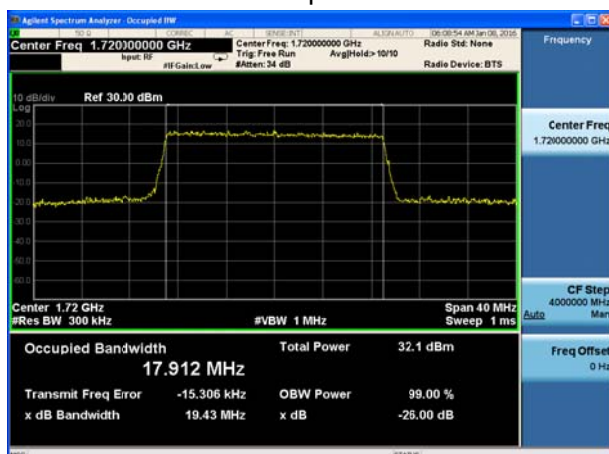
LTE Band 4 QPSK Bandwidth = 15MHz
CH20325 Occupied Bandwidth



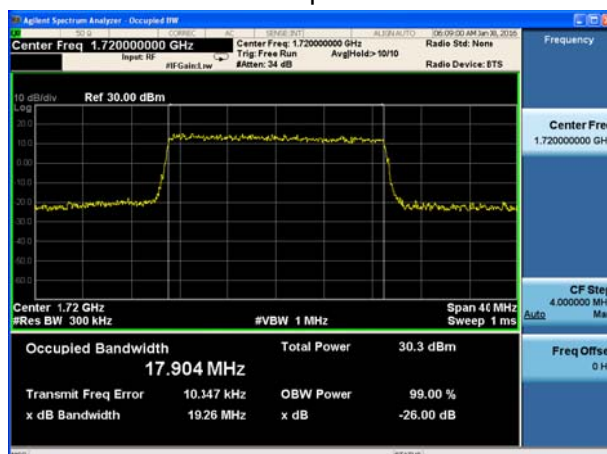
LTE Band 4 16QAM Bandwidth = 15MHz
CH20325 Occupied Bandwidth



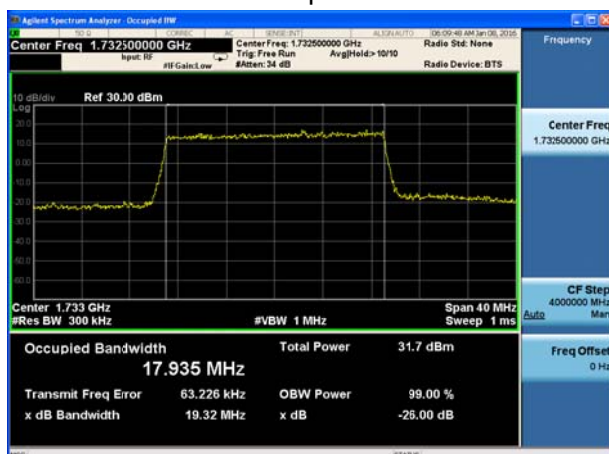
LTE Band 4 QPSK Bandwidth = 20MHz
CH20050 Occupied Bandwidth



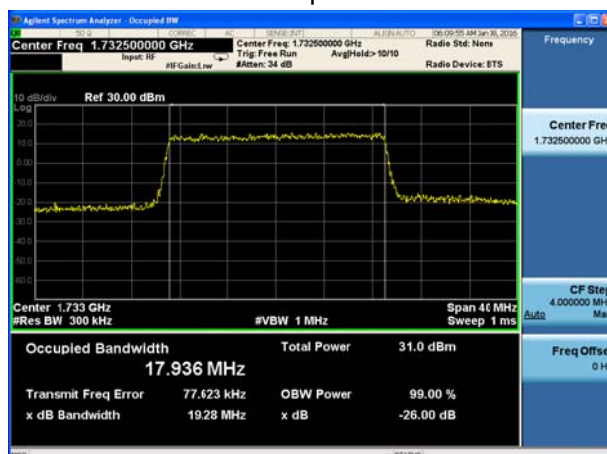
LTE Band 4 16QAM Bandwidth = 20MHz
CH20050 Occupied Bandwidth



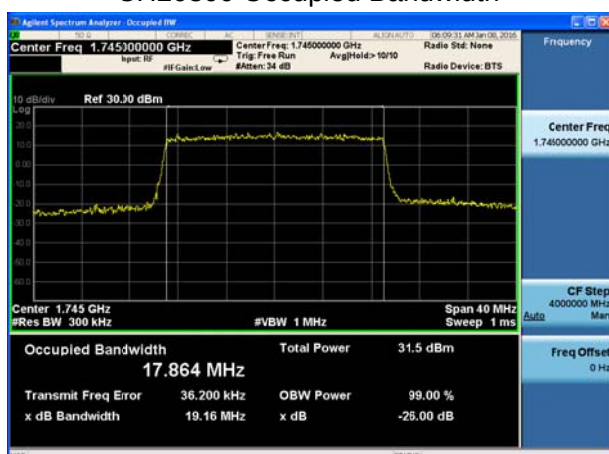
LTE Band 4 QPSK Bandwidth = 20MHz
CH20175 Occupied Bandwidth



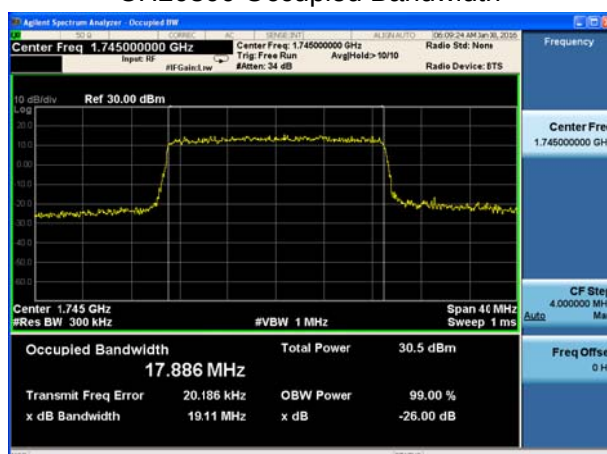
LTE Band 4 16QAM Bandwidth = 20MHz
CH20175 Occupied Bandwidth



LTE Band 4 QPSK Bandwidth = 20MHz
CH20300 Occupied Bandwidth



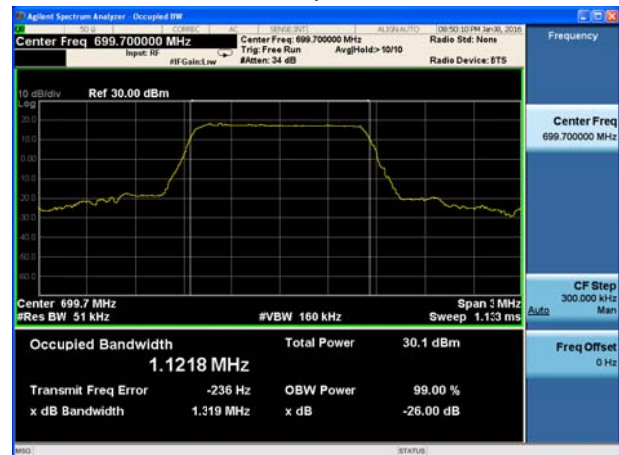
LTE Band 4 16QAM Bandwidth = 20MHz
CH20300 Occupied Bandwidth



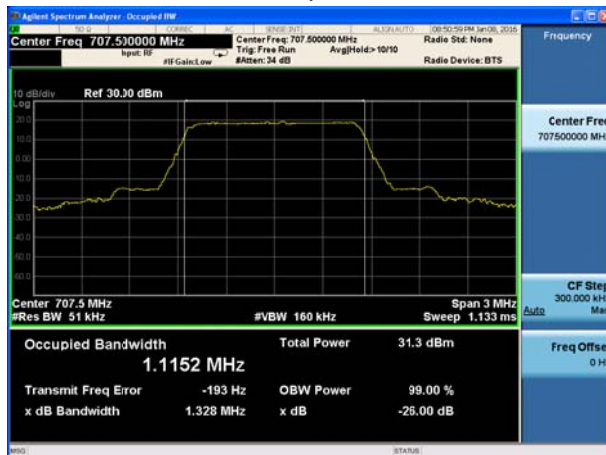
LTE Band 12 QPSK Bandwidth = 1.4MHz
CH23017 Occupied Bandwidth



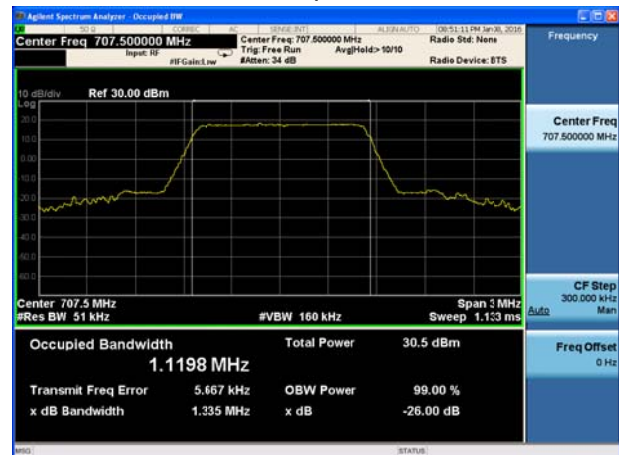
LTE Band 12 16QAM Bandwidth = 1.4MHz
CH23017 Occupied Bandwidth



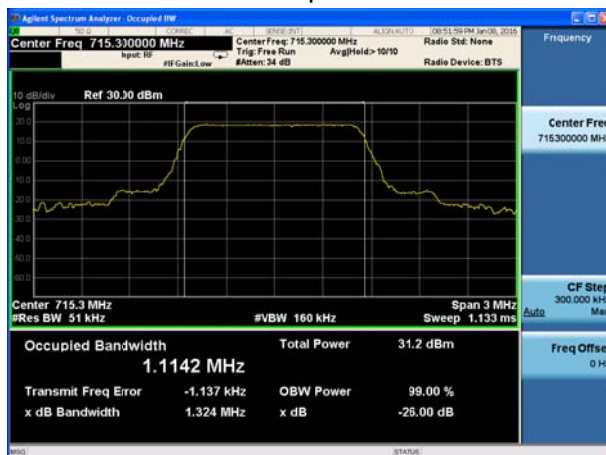
LTE Band 12 QPSK Bandwidth = 1.4MHz
CH23095 Occupied Bandwidth



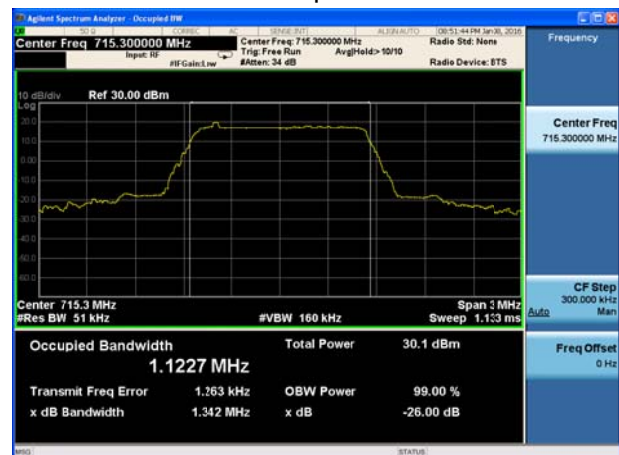
LTE Band 12 16QAM Bandwidth = 1.4MHz
CH23095 Occupied Bandwidth



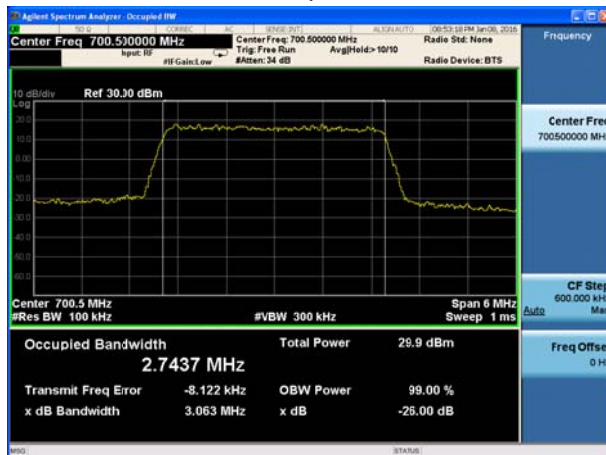
LTE Band 12 QPSK Bandwidth = 1.4MHz
CH23173 Occupied Bandwidth



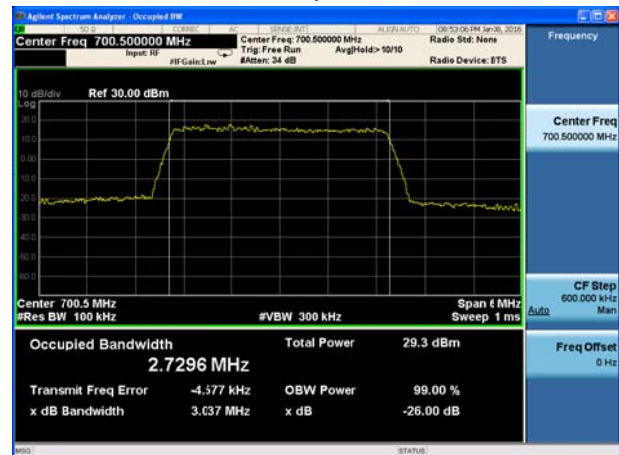
LTE Band 12 16QAM Bandwidth = 1.4MHz
CH23173 Occupied Bandwidth



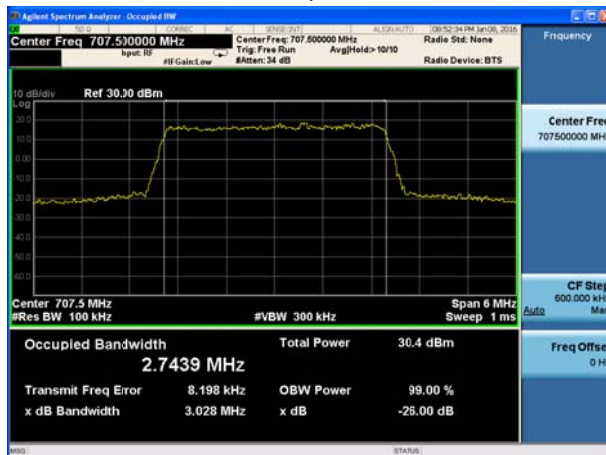
LTE Band 12 QPSK Bandwidth = 3MHz
CH23025 Occupied Bandwidth



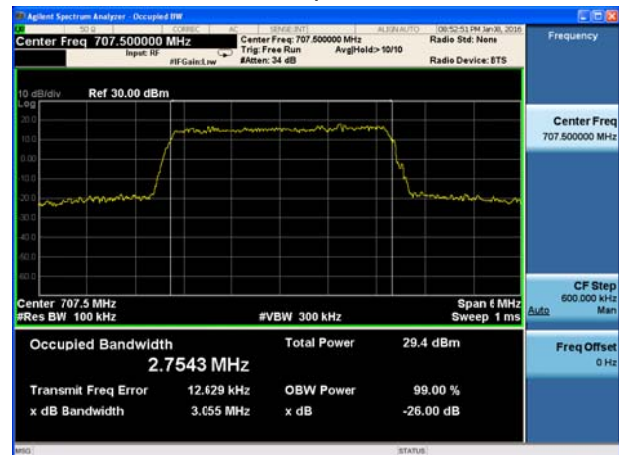
LTE Band 12 16QAM Bandwidth = 3MHz
CH23025 Occupied Bandwidth



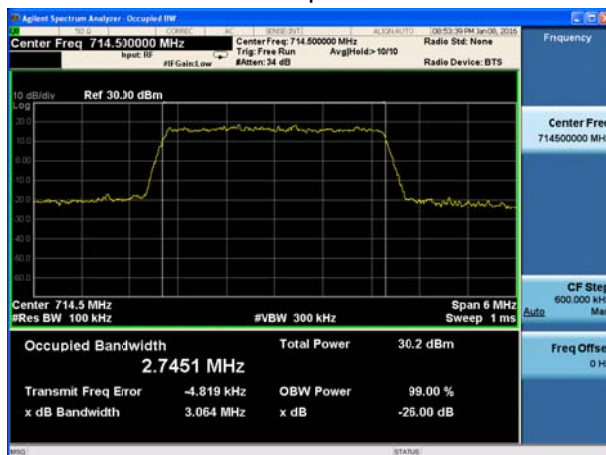
LTE Band 12 QPSK Bandwidth = 3MHz
CH23095 Occupied Bandwidth



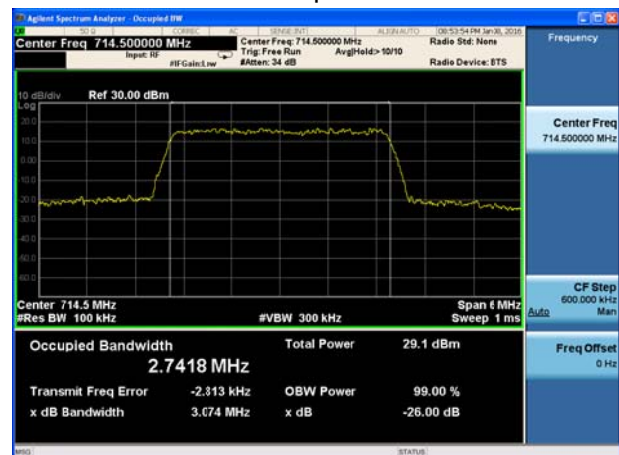
LTE Band 12 16QAM Bandwidth = 3MHz
CH23095 Occupied Bandwidth



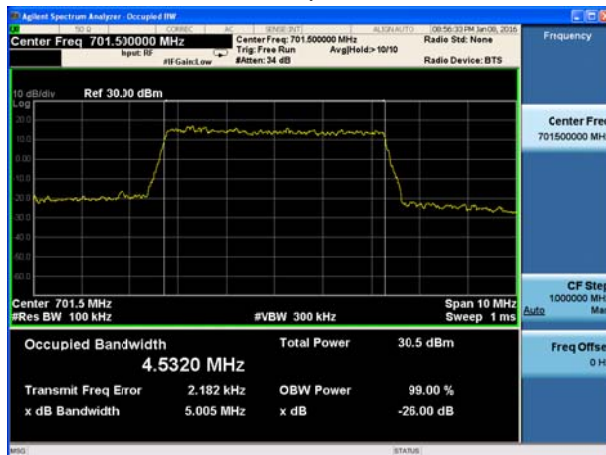
LTE Band 12 QPSK Bandwidth = 3MHz
CH23165 Occupied Bandwidth



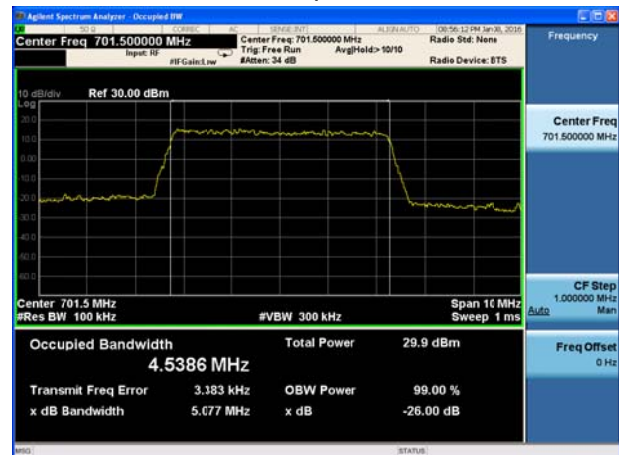
LTE Band 12 16QAM Bandwidth = 3MHz
CH23165 Occupied Bandwidth



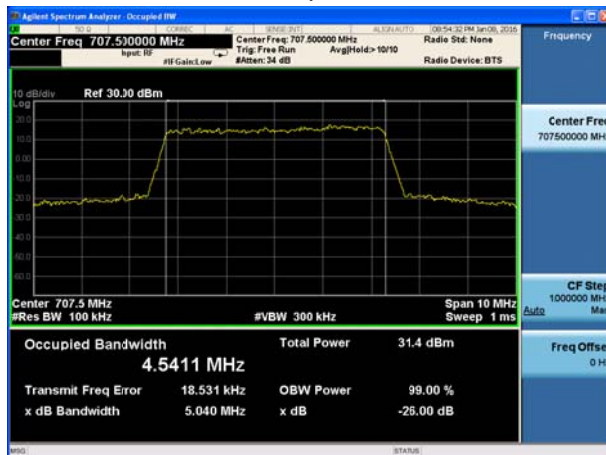
LTE Band 12 QPSK Bandwidth = 5MHz
CH23035 Occupied Bandwidth



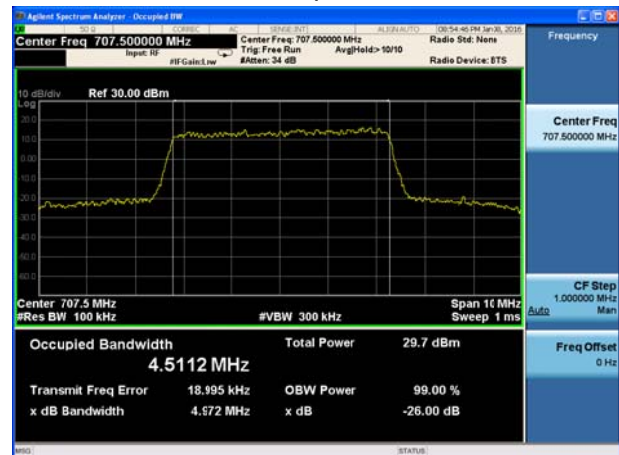
LTE Band 12 16QAM Bandwidth = 5MHz
CH23035 Occupied Bandwidth



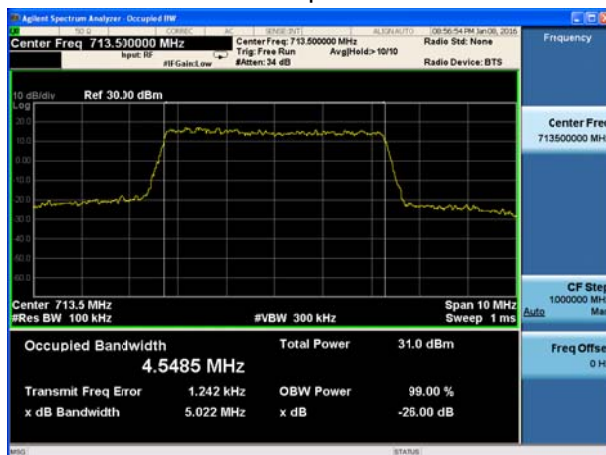
LTE Band 12 QPSK Bandwidth = 5MHz
CH23095 Occupied Bandwidth



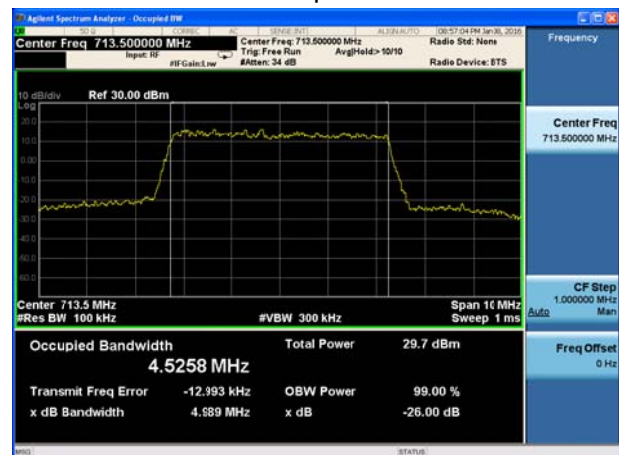
LTE Band 12 16QAM Bandwidth = 5MHz
CH23095 Occupied Bandwidth



LTE Band 12 QPSK Bandwidth = 5MHz
CH23155 Occupied Bandwidth



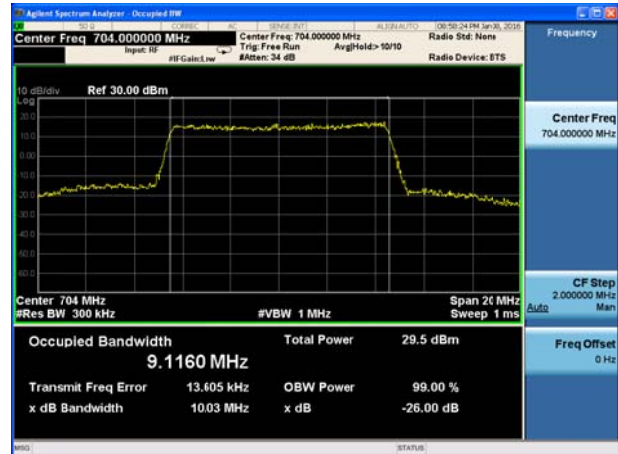
LTE Band 12 16QAM Bandwidth = 5MHz
CH23155 Occupied Bandwidth



LTE Band 12 QPSK Bandwidth =10MHz
CH23060 Occupied Bandwidth



LTE Band 12 16QAM Bandwidth =10MHz
CH23060 Occupied Bandwidth



LTE Band 12 QPSK Bandwidth = 10MHz
CH23095 Occupied Bandwidth



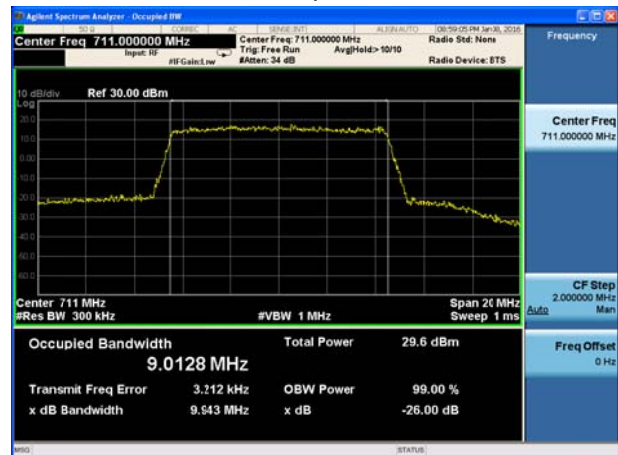
LTE Band 12 16QAM Bandwidth = 10MHz
CH23095 Occupied Bandwidth



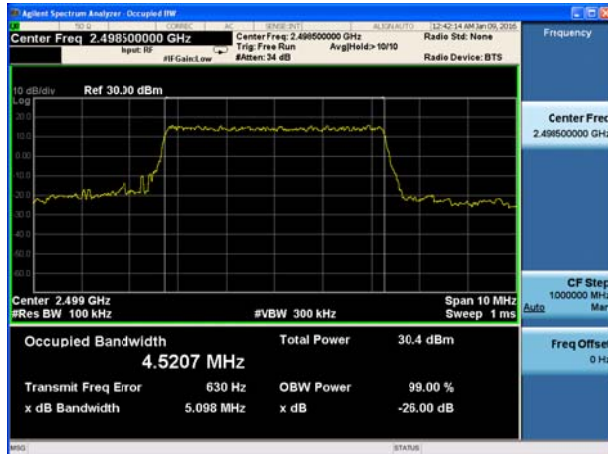
LTE Band 12 QPSK Bandwidth = 10MHz
CH23130 Occupied Bandwidth



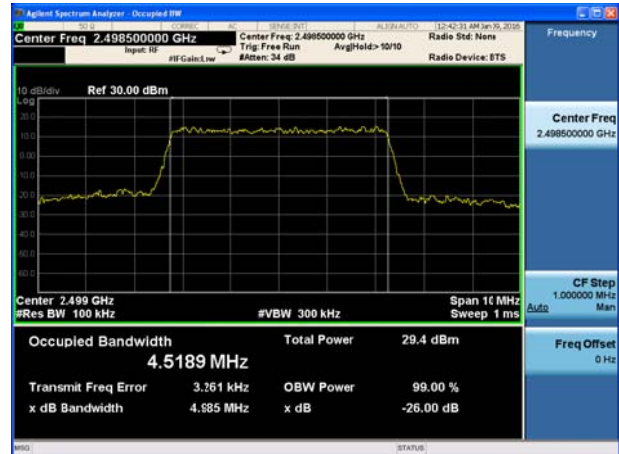
LTE Band 12 16QAM Bandwidth = 10MHz
CH23130 Occupied Bandwidth



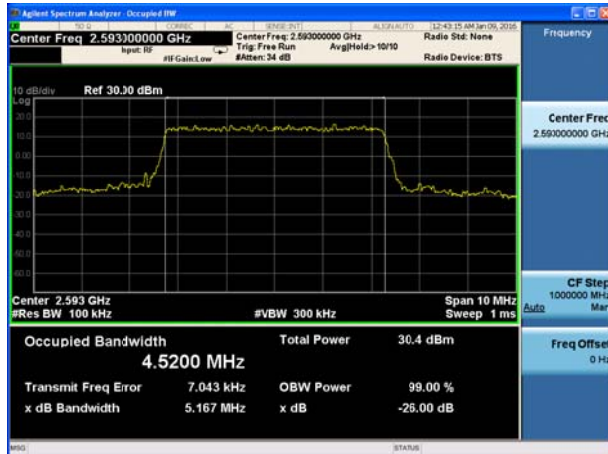
LTE Band 41 QPSK Bandwidth = 5MHz
CH39675 Occupied Bandwidth



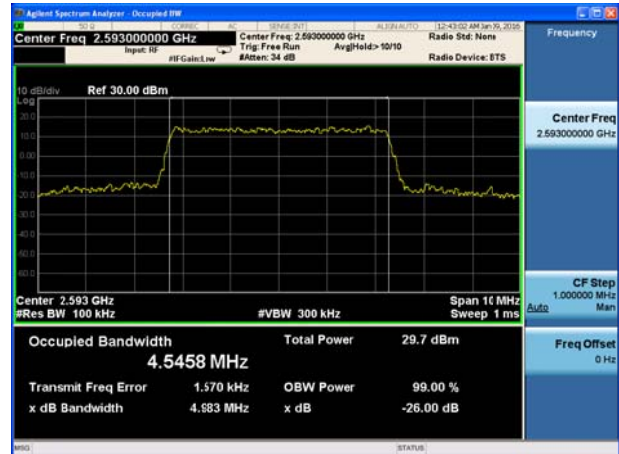
LTE Band 41 16QAM Bandwidth = 5MHz
CH39675 Occupied Bandwidth



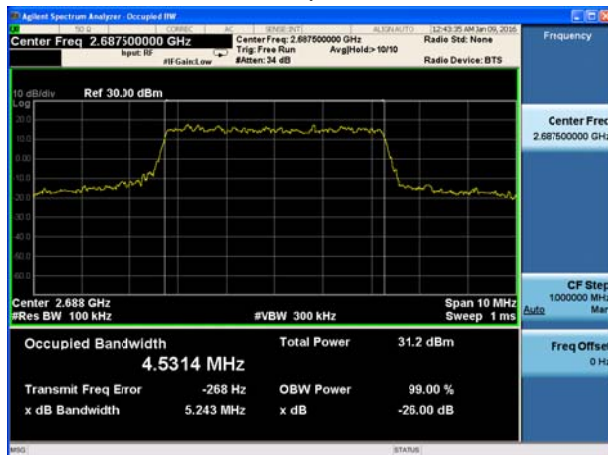
LTE Band 41 QPSK Bandwidth = 5MHz
CH40620 Occupied Bandwidth



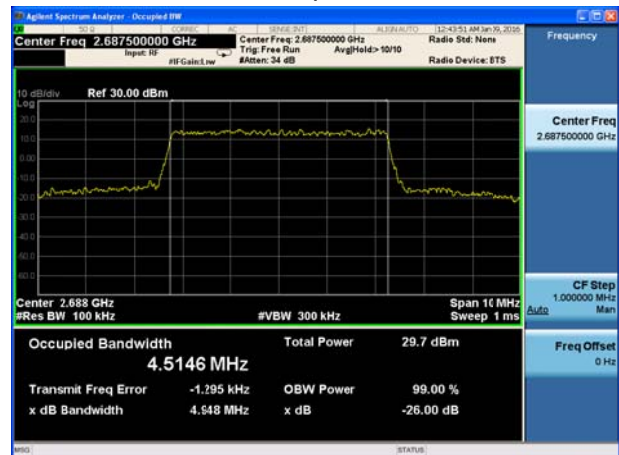
LTE Band 41 16QAM Bandwidth = 5MHz
CH40620 Occupied Bandwidth



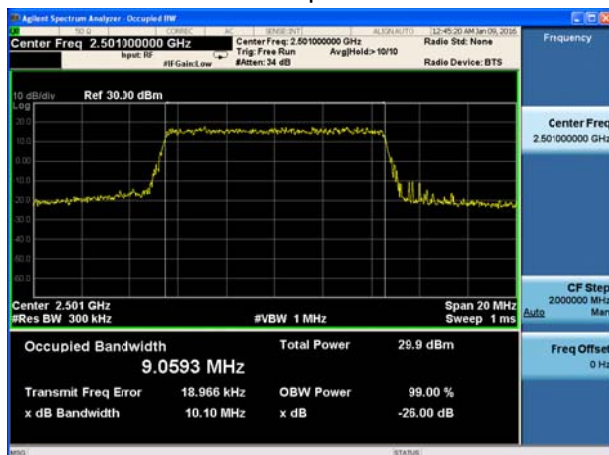
LTE Band 41 QPSK Bandwidth = 5MHz
CH41565 Occupied Bandwidth



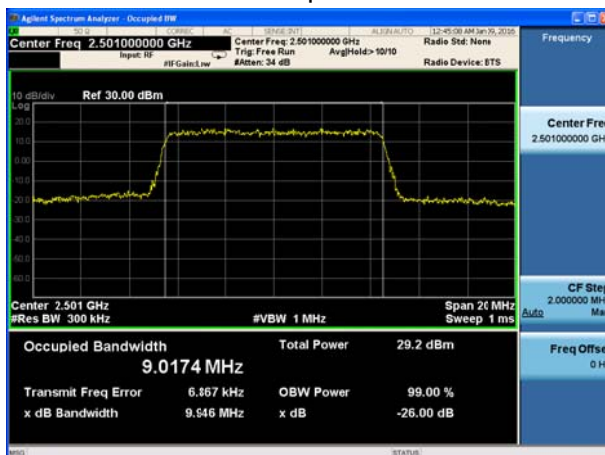
LTE Band 41 16QAM Bandwidth = 5MHz
CH41565 Occupied Bandwidth



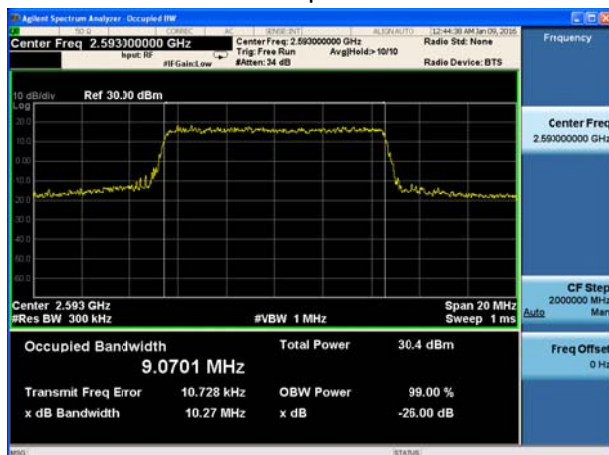
LTE Band 41 QPSK Bandwidth = 10MHz
CH39700 Occupied Bandwidth



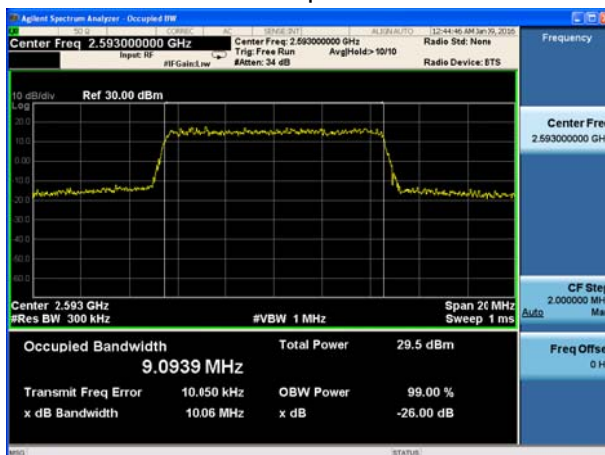
LTE Band 41 16QAM Bandwidth = 10MHz
CH39700 Occupied Bandwidth



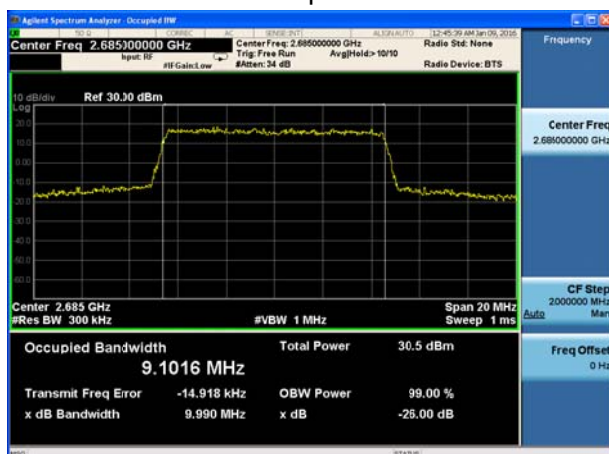
LTE Band 41 QPSK Bandwidth = 10MHz
CH40620 Occupied Bandwidth



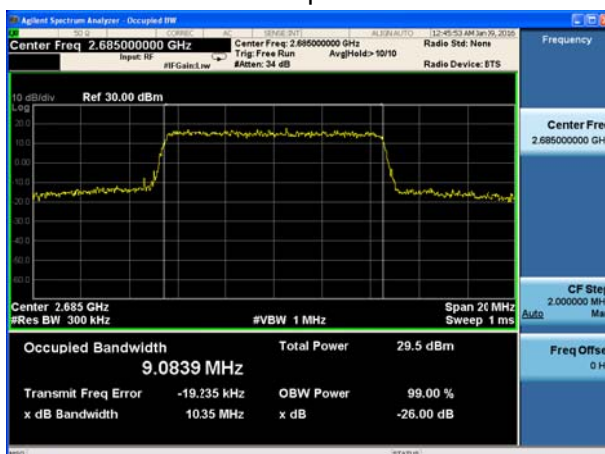
LTE Band 41 16QAM Bandwidth = 10MHz
CH40620 Occupied Bandwidth



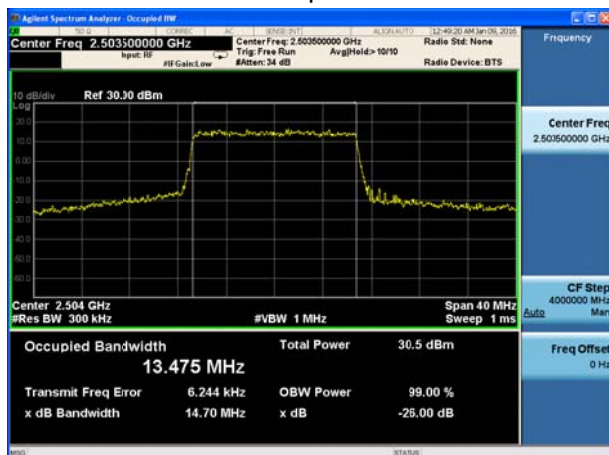
LTE Band 41 QPSK Bandwidth = 10MHz
CH41540 Occupied Bandwidth



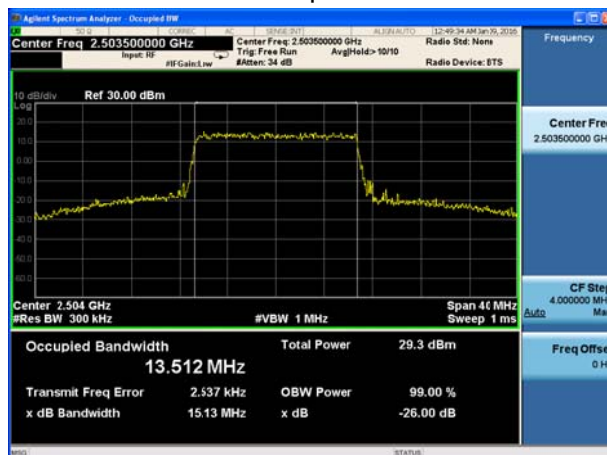
LTE Band 41 16QAM Bandwidth = 10MHz
CH41540 Occupied Bandwidth



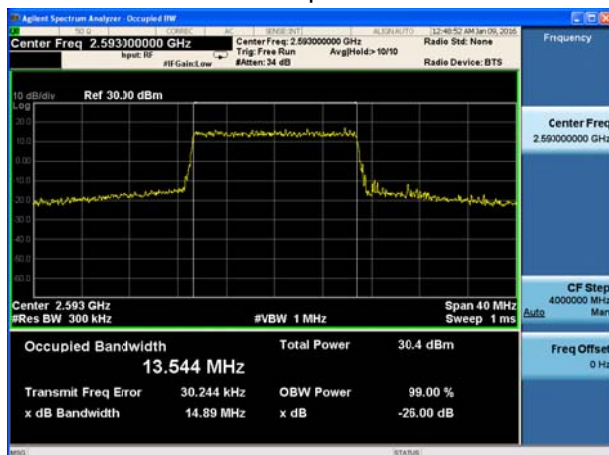
LTE Band 41 QPSK Bandwidth = 15MHz
CH39725 Occupied Bandwidth



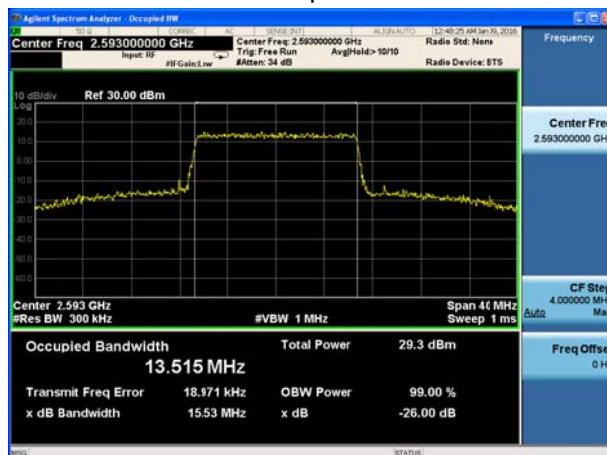
LTE Band 41 16QAM Bandwidth = 15MHz
CH39725 Occupied Bandwidth



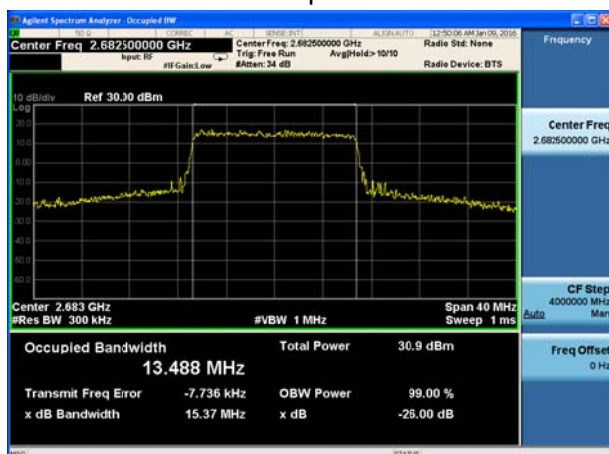
LTE Band 41 QPSK Bandwidth = 15MHz
CH40620 Occupied Bandwidth



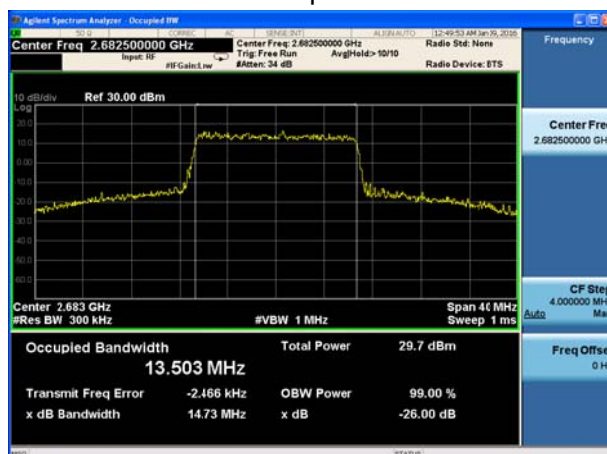
LTE Band 41 16QAM Bandwidth = 15MHz
CH40620 Occupied Bandwidth



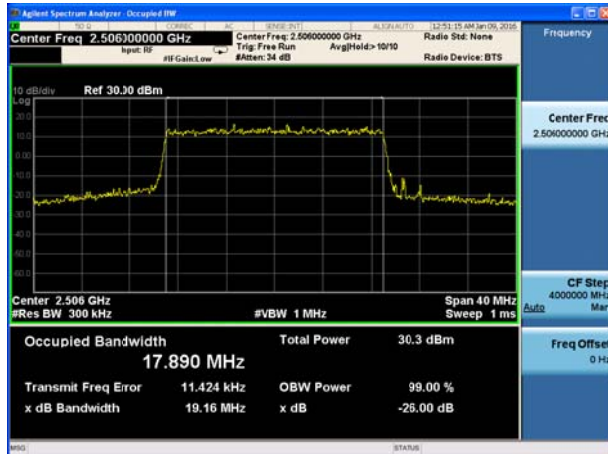
LTE Band 41 QPSK Bandwidth = 15MHz
CH41515 Occupied Bandwidth



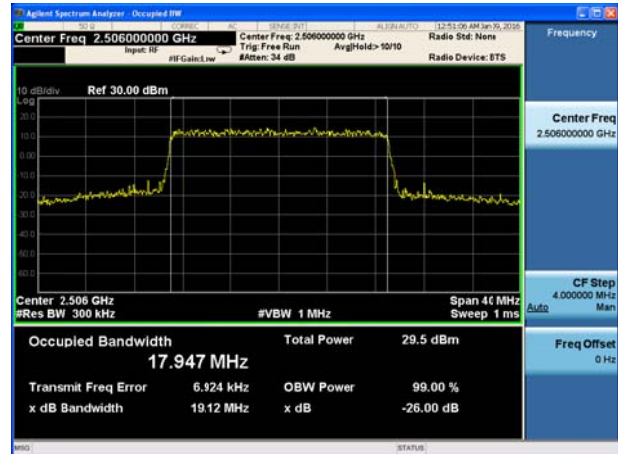
LTE Band 41 16QAM Bandwidth = 15MHz
CH41515 Occupied Bandwidth



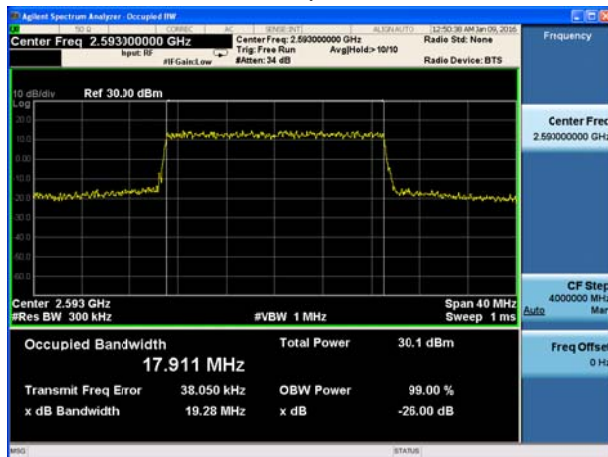
LTE Band 41 QPSK Bandwidth = 20MHz
CH39750 Occupied Bandwidth



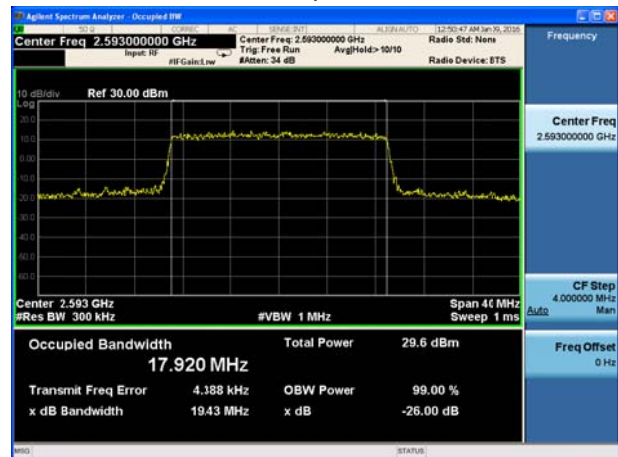
LTE Band 41 16QAM Bandwidth = 20MHz
CH39750 Occupied Bandwidth



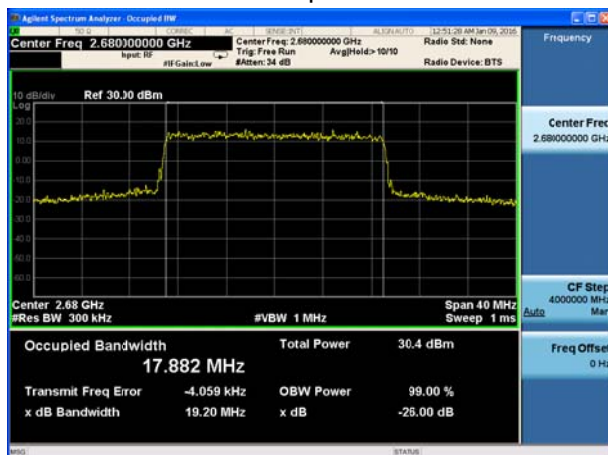
LTE Band 41 QPSK Bandwidth = 20MHz
CH40620 Occupied Bandwidth



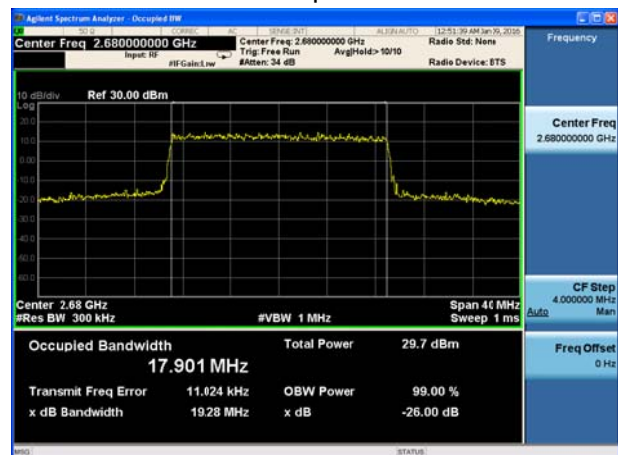
LTE Band 41 16QAM Bandwidth = 20MHz
CH40620 Occupied Bandwidth



LTE Band 41 QPSK Bandwidth = 20MHz
CH41490 Occupied Bandwidth



LTE Band 41 16QAM Bandwidth = 20MHz
CH41490 Occupied Bandwidth



4.4 Band Edge Compliance

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.

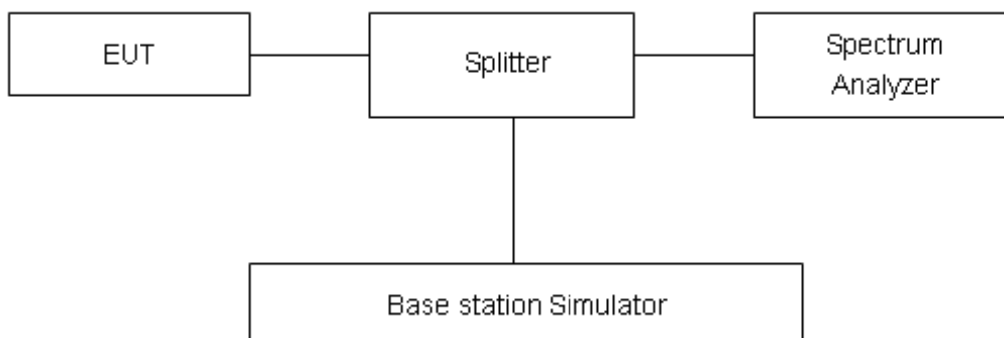
The testing follows KDB 971168 v02r02 Section 6.0

- 1.The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. For LTE Band 41 Set RBW $\geq$ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.

For WCDMA Band IV and LTE Band 4/12, RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band IV. RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 4/12 (1.4MHz). RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4/12 (3MHz). RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/12 (5MHz). RBW is set to 100kHz, VBW is set to 300kHz for LTE Band 4/12 (10MHz). RBW is set to 150kHz, VBW is set to 510 kHz for LTE Band 4 (15MHz). RBW is set to 200kHz, VBW is set to 620 kHz for LTE Band 4 (20MHz) on spectrum analyzer.

4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(h)/ specifies that “ for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB”

Part 27.53(g) specifies that “ For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log_{10} (P)$ dB.”

Part 27.53(m)(4) / specifies that “ For BRS and EBS stations.

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Example:

The limit line is derived from $43 + 10 \log(P)$ dB below the transmitter power P(Watts)

$$= P(W) - [43 + 10 \log(P)] \text{ (dB)}$$

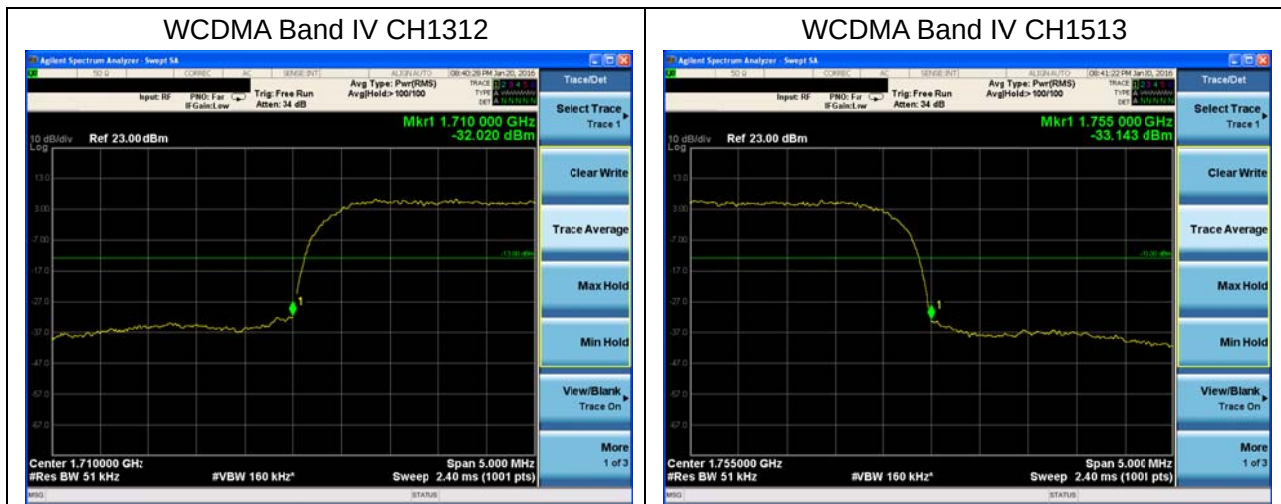
$$= [30 + 10 \log(P)] \text{ (dBm)} - [43 + 10 \log(P)] \text{ (dB)} = -13 \text{ dBm.}$$

Measurement Uncertainty

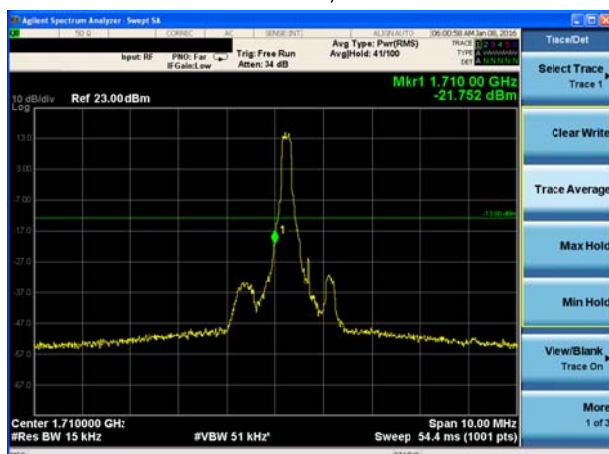
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U=0.684$ dB.

Test Result

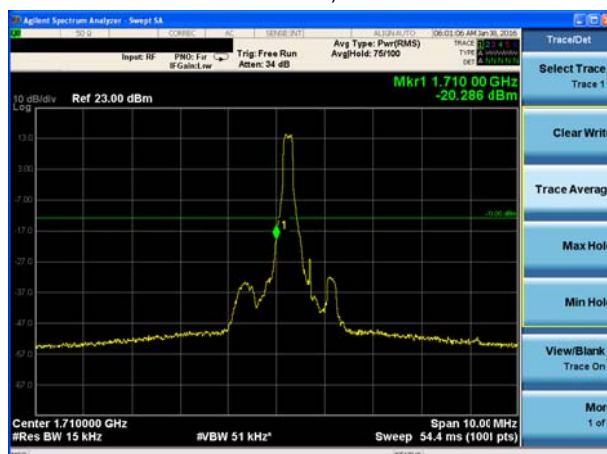
All the test traces in the plots shows the test results clearly.



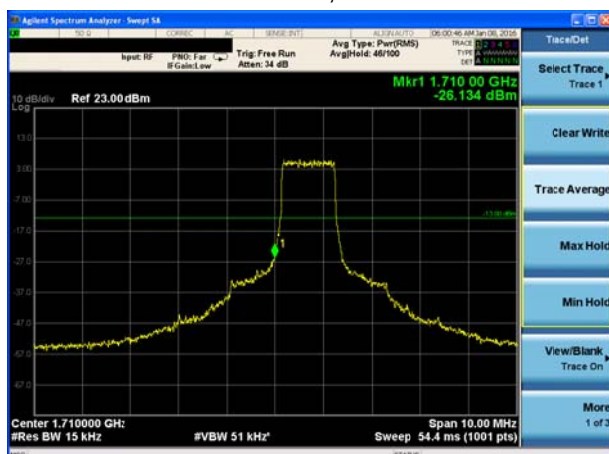
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH19957, RB 1



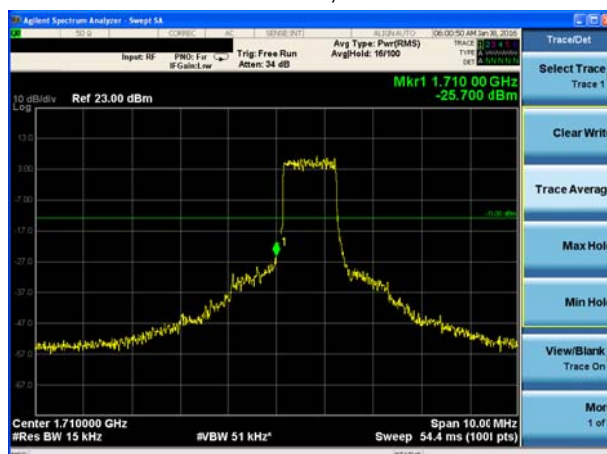
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH19957, RB 1



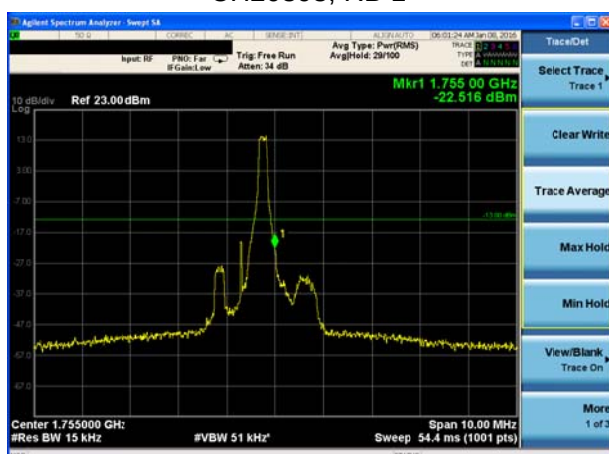
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH19957, RB 6



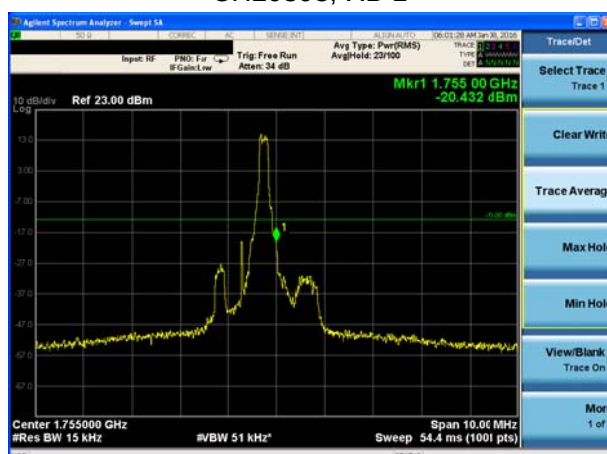
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH19957, RB 6



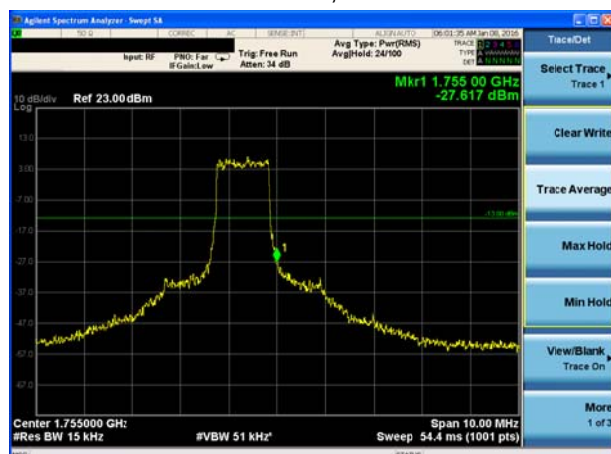
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH20393, RB 1



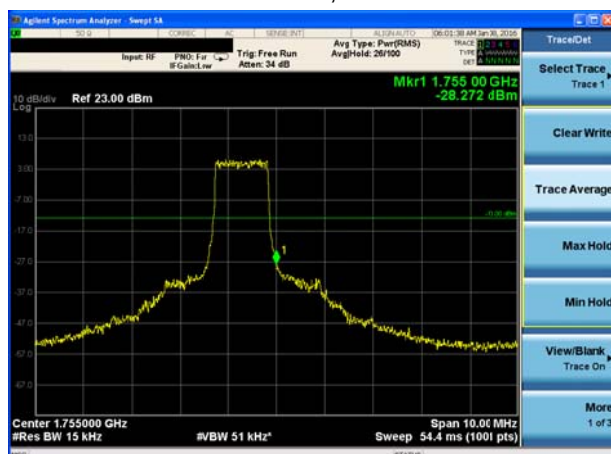
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH20393, RB 1



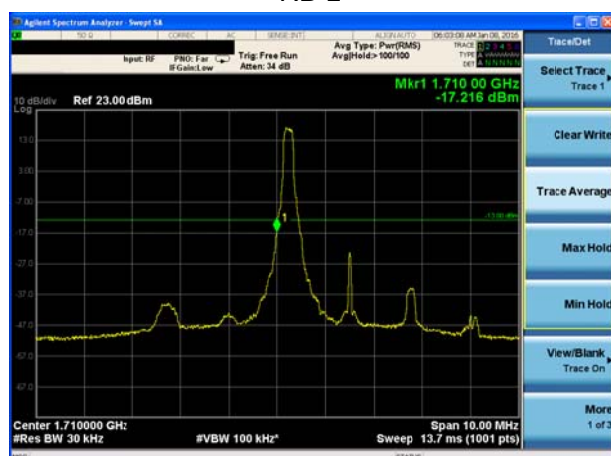
LTE Band 4 QPSK Bandwidth = 1.4MHz
CH20393, RB 6



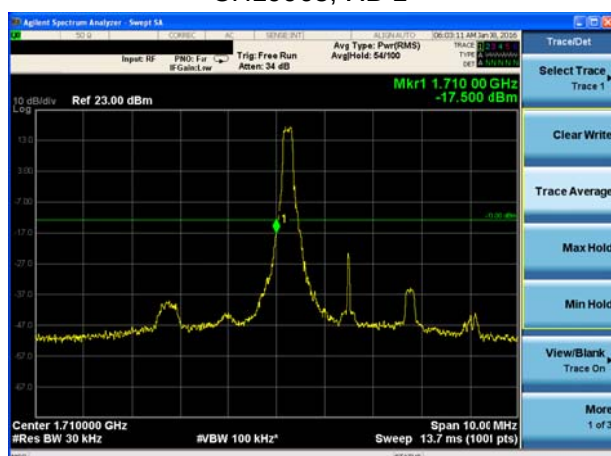
LTE Band 4 16QAM Bandwidth = 1.4MHz
CH20393, RB 6



LTE Band 4 QPSK Bandwidth = 3MHz CH19965,
RB 1



LTE Band 4 16QAM Bandwidth = 3MHz
CH19965, RB 1



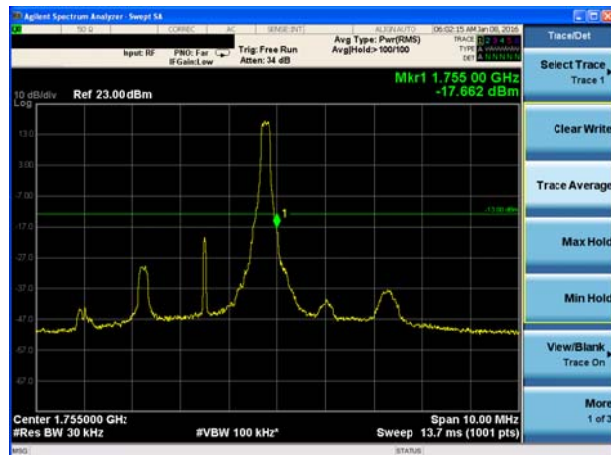
LTE Band 4 QPSK Bandwidth = 3MHz CH19965,
RB 15



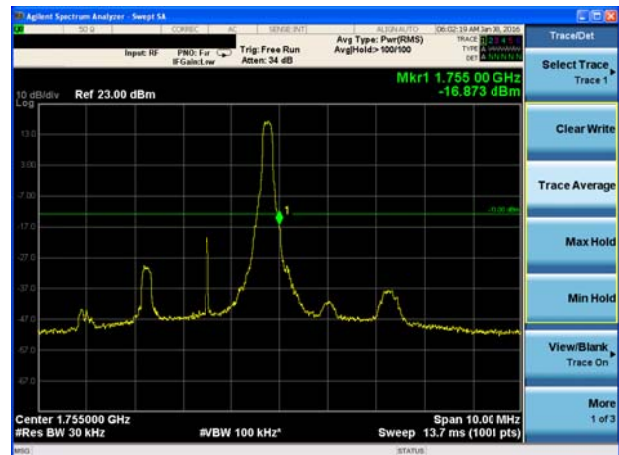
LTE Band 4 16QAM Bandwidth = 3MHz
CH19965, RB 15



LTE Band 4 QPSK Bandwidth = 3MHz CH20385,
RB 1



LTE Band 4 16QAM Bandwidth = 3MHz
CH20385, RB 1



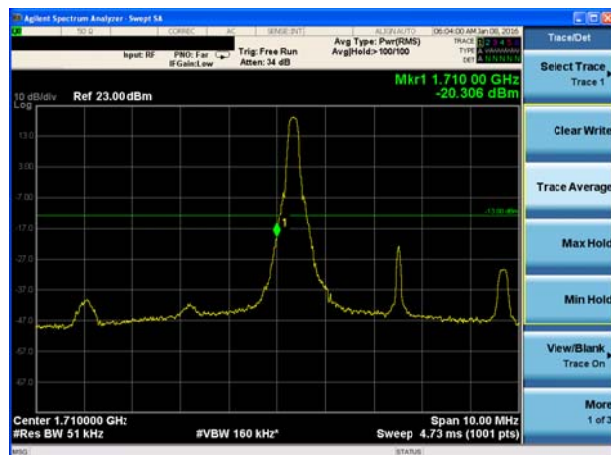
LTE Band 4 QPSK Bandwidth = 3MHz CH20385,
RB 15



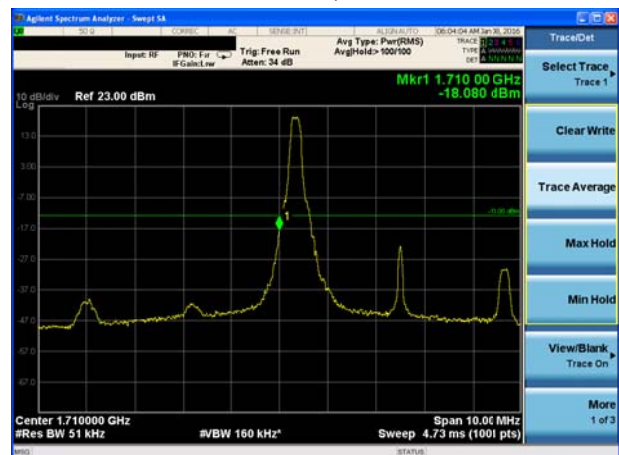
LTE Band 4 16QAM Bandwidth = 3MHz
CH20385, RB 15



LTE Band 4 QPSK Bandwidth = 5MHz CH19975,
RB 1



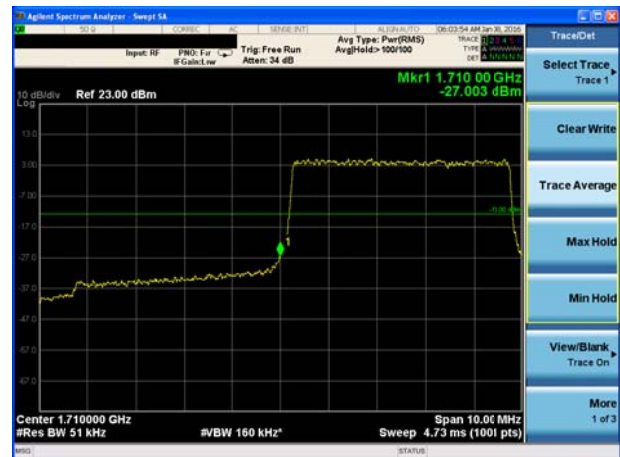
LTE Band 4 16QAM Bandwidth = 5MHz
CH19975, RB 1



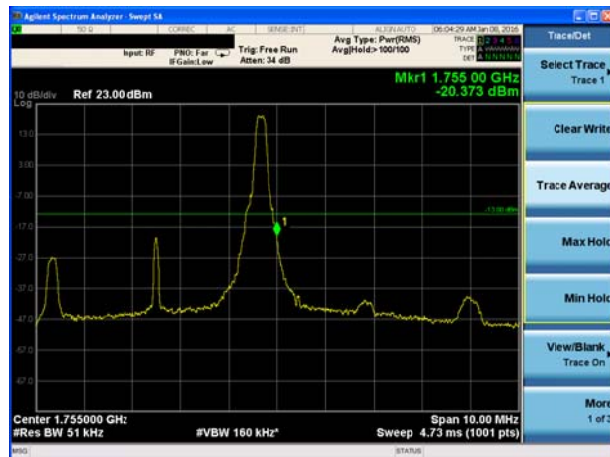
LTE Band 4 QPSK Bandwidth = 5MHz CH19975,
RB 25



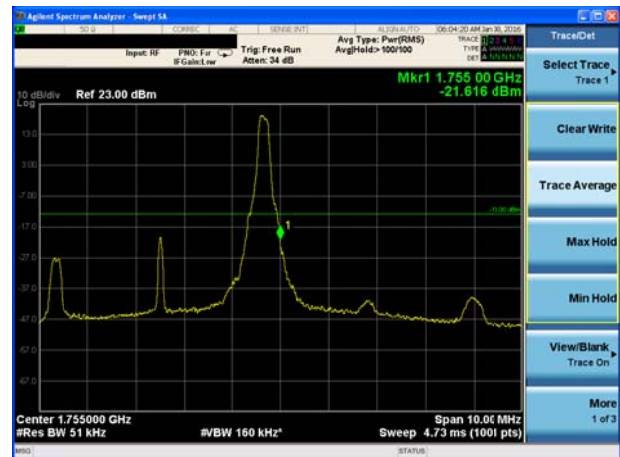
LTE Band 4 16QAM Bandwidth = 5MHz
CH19975, RB 25



LTE Band 4 QPSK Bandwidth = 5MHz CH20375,
RB 1



LTE Band 4 16QAM Bandwidth = 5MHz
CH20375, RB 1



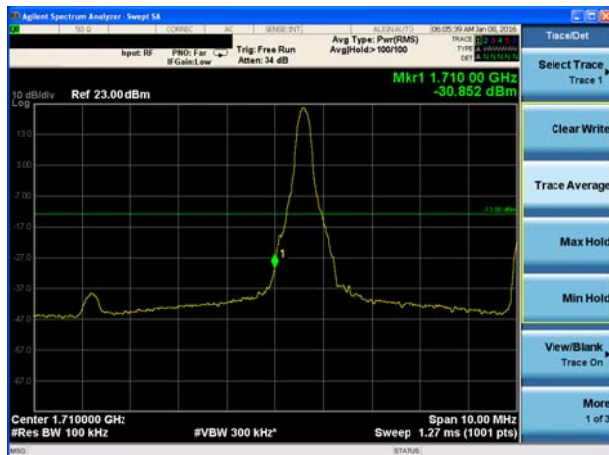
LTE Band 4 QPSK Bandwidth = 5MHz CH20375,
RB 25



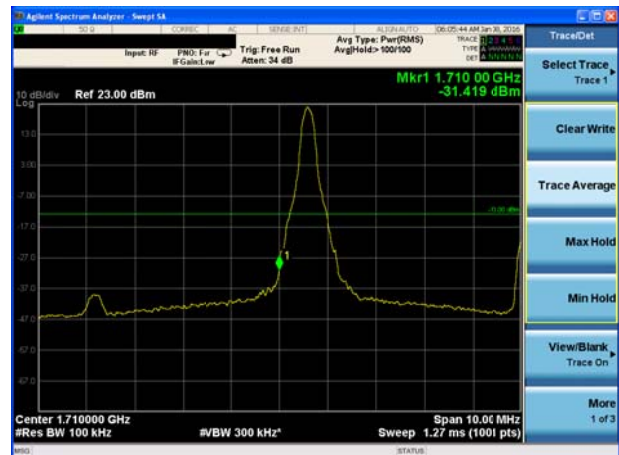
LTE Band 4 16QAM Bandwidth = 5MHz
CH20375, RB 25



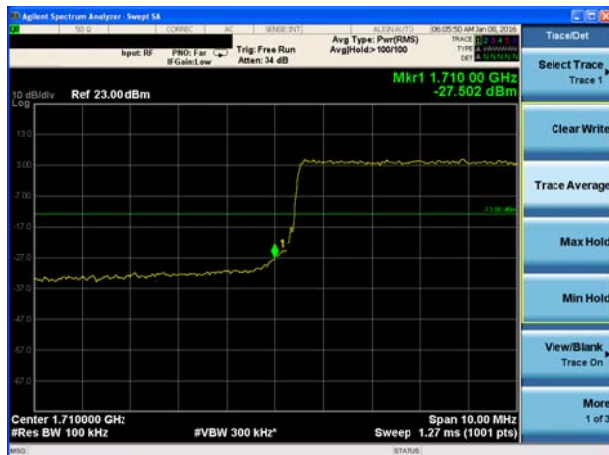
LTE Band 4 QPSK Bandwidth = 10MHz
CH20000, RB 1



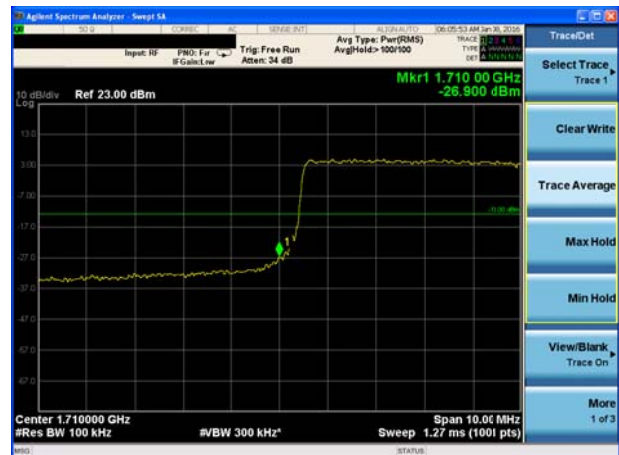
LTE Band 4 16QAM Bandwidth = 10MHz
CH20000, RB 1



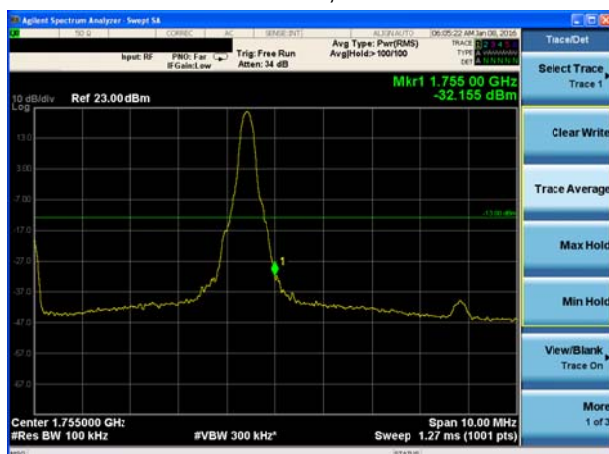
LTE Band 4 QPSK Bandwidth = 10MHz
CH20000, RB 50



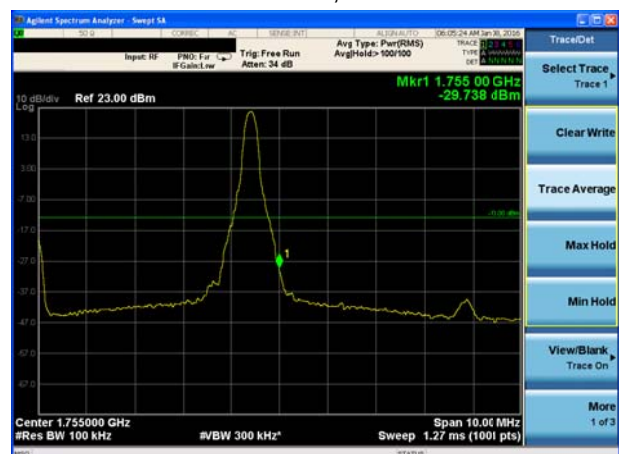
LTE Band 4 16QAM Bandwidth = 10MHz
CH20000, RB 50



LTE Band 4 QPSK Bandwidth = 10MHz
CH20350, RB 1



LTE Band 4 16QAM Bandwidth = 10MHz
CH20350, RB 1



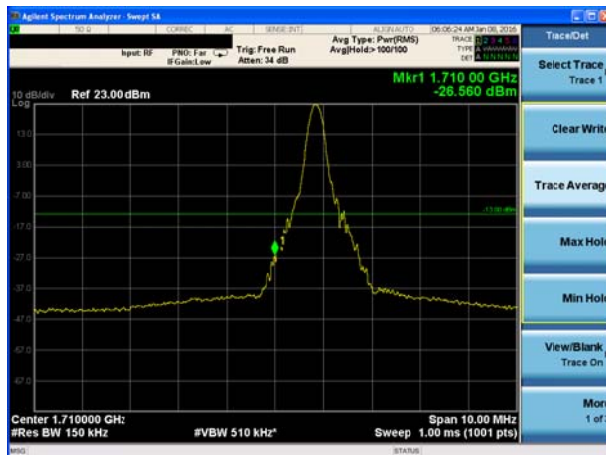
LTE Band 4 QPSK Bandwidth = 10MHz
CH20350, RB 50



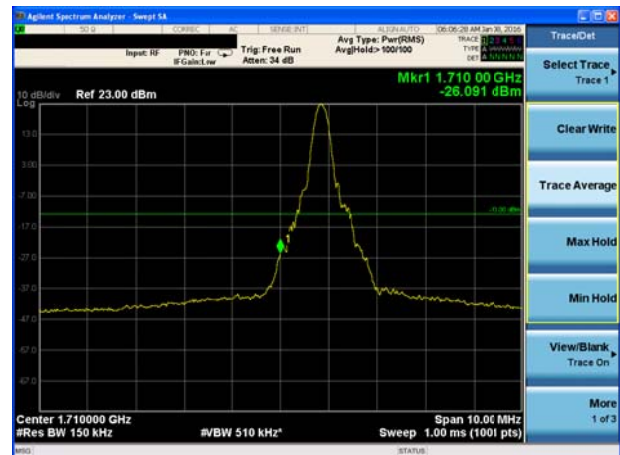
LTE Band 4 16QAM Bandwidth = 10MHz
CH20350, RB 50



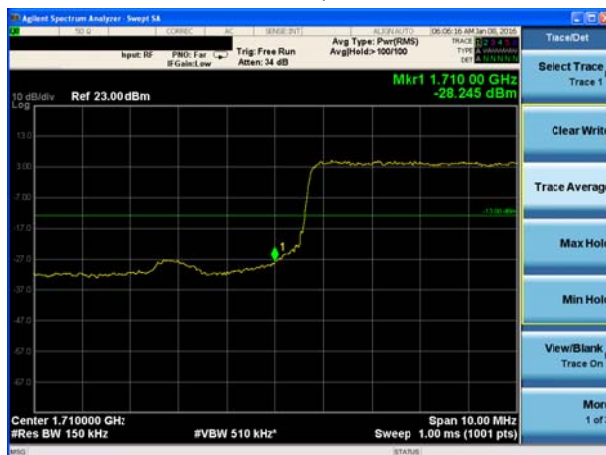
LTE Band 4 QPSK Bandwidth = 15MHz
CH20025, RB 1



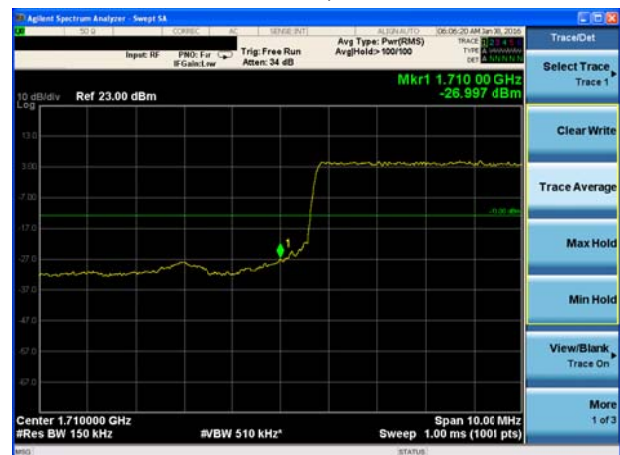
LTE Band 4 16QAM Bandwidth = 15MHz
CH20025, RB 1



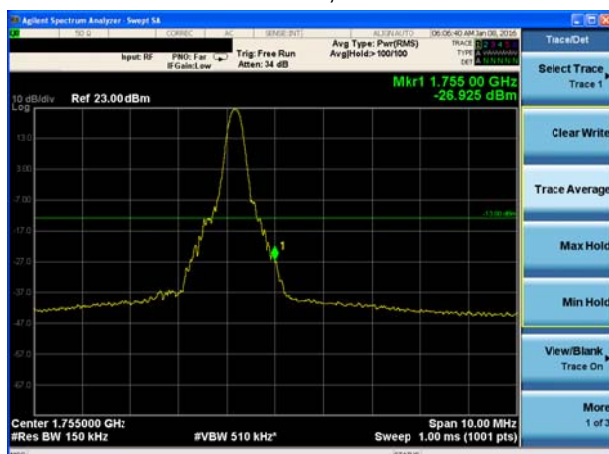
LTE Band 4 QPSK Bandwidth = 15MHz
CH20025, RB 75



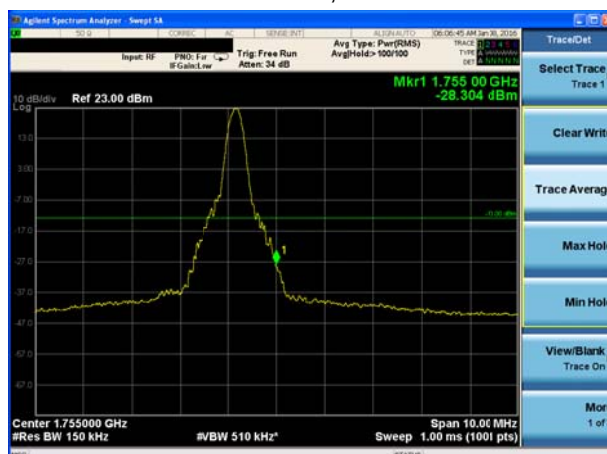
LTE Band 4 16QAM Bandwidth = 15MHz
CH20025, RB 75



LTE Band 4 QPSK Bandwidth = 15MHz
CH20325, RB 1



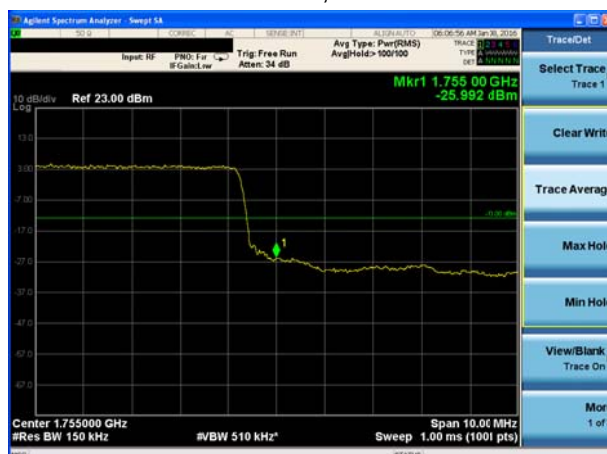
LTE Band 4 16QAM Bandwidth = 15MHz
CH20325, RB 1



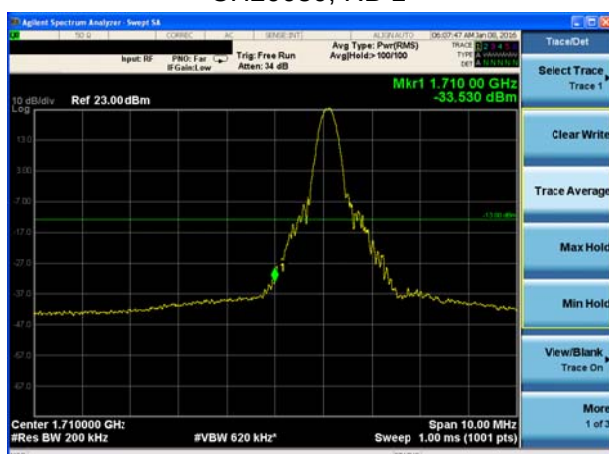
LTE Band 4 QPSK Bandwidth = 15MHz
CH20325, RB 75



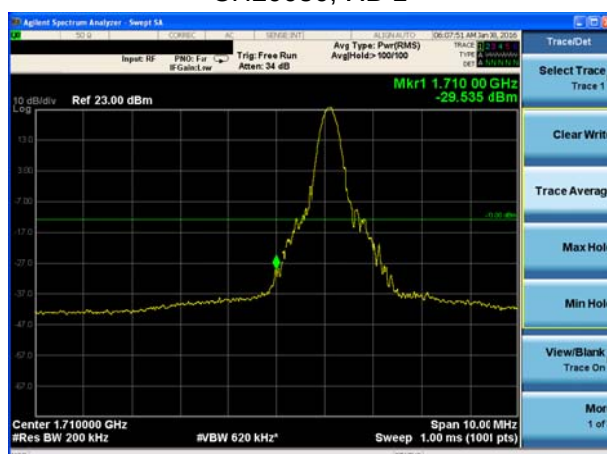
LTE Band 4 16QAM Bandwidth = 15MHz
CH20325, RB 75



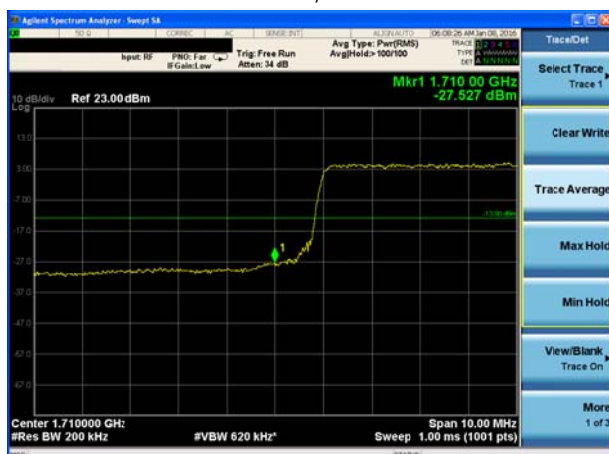
LTE Band 4 QPSK Bandwidth = 20MHz
CH20050, RB 1



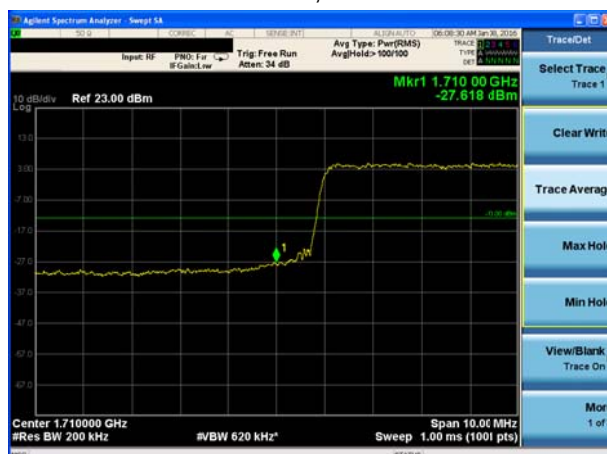
LTE Band 4 16QAM Bandwidth = 20MHz
CH20050, RB 1



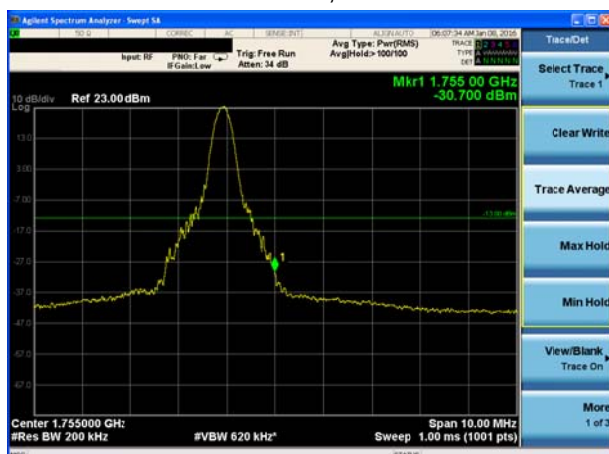
LTE Band 4 QPSK Bandwidth = 20MHz
CH20050, RB 100



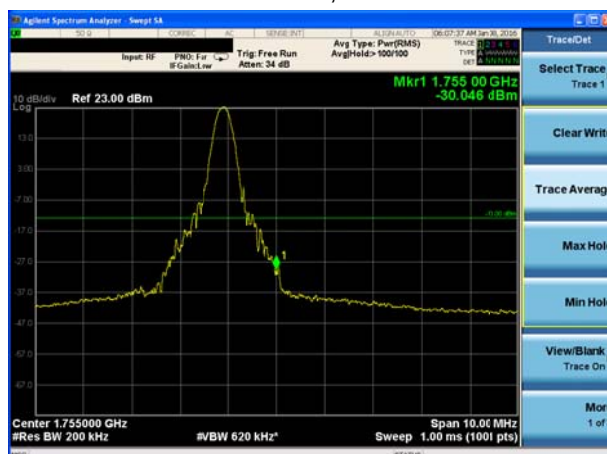
LTE Band 4 16QAM Bandwidth = 20MHz
CH20050, RB 100



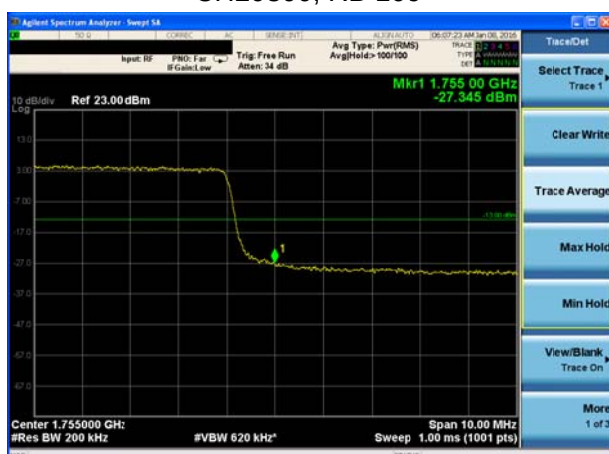
LTE Band 4 QPSK Bandwidth = 20MHz
CH20300, RB 1



LTE Band 4 16QAM Bandwidth = 20MHz
CH20300, RB 1



LTE Band 4 QPSK Bandwidth = 20MHz
CH20300, RB 100



LTE Band 4 16QAM Bandwidth = 20MHz
CH20300, RB 100

