



RF TEST REPORT

Applicant ZTE Corporation

FCC ID SRQ-ZTEBLADEA6MAX

Product LTE/WCDMA/GSM(GPRS)
Multi-Mode Digital Mobile Phone

Model ZTE BLADE A6 MAX、 ZTE BLADE
A0605、 BLADE A6 MAX

Report No. RXA1711-0356RF03

Issue Date November 24, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2017)/ FCC CFR47 Part 27C (2017)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Jiang peng Lan

Performed by: Jiangpeng Lan

Kai Xu

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

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
3	Applied Standards	8
4	Test Configuration	9
5	Test Case Results	11
5.1	RF Power Output	11
5.2	Effective Isotropic Radiated Power	19
5.3	Occupied Bandwidth	25
5.4	Band Edge Compliance	44
5.5	Peak-to-Average Power Ratio (PAPR)	67
5.6	Frequency Stability.....	71
5.7	Spurious Emissions at Antenna Terminals	77
5.8	Radiates Spurious Emission	99
6	Main Test Instruments	125
ANNEX A:	EUT Appearance and Test Setup	126
A.1	EUT Appearance.....	126
A.2	Test Setup.....	129

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: November 1, 2017~ November 23, 2017			
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 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 (Designation number: CN1179, Test Firm Registration Number: 446626)

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.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan 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.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

Client Information

Applicant	ZTE Corporation
Applicant address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

General information

EUT Description			
Model	ZTE BLADE A6 MAX、 ZTE BLADE A0605、 BLADE A6 MAX		
IMEI	867224030006579		
Hardware Version	tyuA		
Software Version	TEL_MX_P809F15V1.0.0		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	WCDMA Band IV; LTE Band 4; LTE Band 7; LTE Band 12;		
Test Modulation	(WCDMA)QPSK; (LTE)QPSK 16QAM;		
HSDPA UE Category	24		
HSUPA UE Category	6		
LTE Release	R10		
Maximum E.I.R.P./ E.R.P.	WCDMA Band IV:	22.31dBm	
	LTE Band 4:	24.18dBm	
	LTE Band 7:	24.64dBm	
	LTE Band 12:	16.55dBm	
Rated Power Supply Voltage:	3.85V		
Extreme Voltage	Minimum: 3.6V Maximum: 4.4V		
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 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 12	699 ~ 716	729 ~ 746
EUT Accessory			
Adapter	Manufacturer: SHENZHEN RUIJING INDUSTRIAL CO LTD Model: STC-A515A-Z		



Battery	Manufacturer: SCUD (FUJIAN) Electronics Co., Ltd. Model: Li3939T44P8h856743
Earphone	Manufacturer: GoerTek Inc Model: HA3-3
USB Cable 1	Manufacturer: Chuan electronics co., ltd USB length 70cm ,shielding cable
USB Cable 2	Manufacturer: KoEY Huaxing electronics co., ltd USB length 70cm ,shielding cable
Note: 1. The information of the EUT is declared by the manufacturer.	

3 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 (2017)

FCC CFR47 Part 27C (2017)

ANSI/TIA-603-D (2010)

KDB 971168 D01 Power Meas License Digital Systems v03

4 Test Configuration

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 (X axis, horizontal 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 4/7/12:

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 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	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 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	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 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	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 7	-	-	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 12	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 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	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 7	-	-	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	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 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	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 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	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.														

5 Test Case Results

5.1 RF Power Output

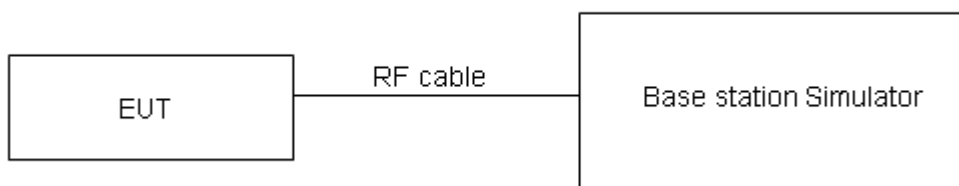
Ambient condition

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		23.34	23.47	23.43
HSDPA	Sub - Test 1	22.27	22.17	22.27
	Sub - Test 2	22.15	22.23	22.26
	Sub - Test 3	21.69	21.81	21.86
	Sub - Test 4	21.67	21.71	21.86
HSUPA	Sub - Test 1	22.15	22.26	22.26
	Sub - Test 2	21.72	21.88	21.81
	Sub - Test 3	22.22	22.22	22.35
	Sub - Test 4	22.17	22.36	22.32
	Sub - Test 5	22.20	22.21	22.30
DC-HSDPA	Sub - Test 1	22.13	22.11	22.14
	Sub - Test 2	22.09	22.11	22.10
	Sub - Test 3	21.61	21.66	21.70
	Sub - Test 4	21.51	21.54	21.72
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 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	23.19	23.34	23.25
		1	2	23.18	23.16	23.02
		1	5	23.00	23.21	23.08
		3	0	22.97	23.02	22.98
		3	2	22.88	22.83	22.86
		3	3	22.88	22.79	22.80
		6	0	21.87	22.00	21.95
	16QAM	1	0	22.16	22.06	22.00
		1	2	21.96	22.16	22.05
		1	5	22.04	22.07	22.10
		3	0	21.83	21.85	21.89
		3	2	21.88	21.76	21.84
		3	3	21.86	21.76	21.87
		6	0	20.91	20.91	21.09
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	23.21	23.38	23.28
		1	7	23.21	23.21	23.06
		1	14	23.03	23.26	23.12
		8	0	22.07	22.14	22.11
		8	4	22.00	21.93	21.98
		8	7	21.98	21.90	21.90
		15	0	21.90	22.04	21.98
	16QAM	1	0	22.19	22.08	22.03
		1	7	21.99	22.21	22.09
		1	14	22.06	22.11	22.13
		8	0	20.94	20.98	21.01
		8	4	20.99	20.89	20.96
		8	7	20.96	20.88	21.00
		15	0	20.94	20.95	21.12
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	23.18	23.36	23.24
		1	13	23.19	23.17	23.03
		1	24	23.00	23.21	23.08
		12	0	22.04	22.09	22.07
		12	6	21.98	21.89	21.93
		12	13	21.96	21.88	21.86
		25	0	21.88	22.03	21.96



	16QAM	1	0	22.16	22.04	22.00
		1	13	21.96	22.19	22.06
		1	24	22.03	22.09	22.09
		12	0	20.92	20.94	20.98
		12	6	20.96	20.84	20.92
		12	13	20.93	20.83	20.96
		25	0	20.92	20.91	21.07
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	23.20	23.37	23.27
		1	25	23.22	23.22	23.07
		1	49	23.02	23.25	23.11
		25	0	22.07	22.14	22.11
		25	13	22.01	21.94	21.97
		25	25	21.98	21.92	21.91
		50	0	21.96	22.05	22.00
	16QAM	1	0	22.18	22.07	22.02
		1	25	21.99	22.23	22.09
		1	49	22.06	22.11	22.12
		25	0	20.95	20.99	21.02
		25	13	20.98	20.88	20.95
		25	25	20.96	20.88	21.00
		50	0	20.95	20.96	21.11
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	23.19	23.33	23.25
		1	38	23.20	23.21	23.04
		1	74	22.99	23.20	23.07
		36	0	22.05	22.10	22.08
		36	18	21.98	21.89	21.93
		36	39	21.95	21.89	21.87
		75	0	21.94	22.01	21.95
	16QAM	1	0	22.13	22.05	22.00
		1	38	21.97	22.20	22.07
		1	74	22.03	22.07	22.09
		36	0	20.92	20.97	20.99
		36	18	20.95	20.83	20.91
		36	39	20.94	20.84	20.97
		75	0	20.92	20.91	21.07
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	23.16	23.29	23.22
		1	50	23.19	23.17	23.02



		1	99	22.97	23.19	23.04
		50	0	22.02	22.05	22.04
		50	25	21.96	21.85	21.90
		50	50	21.92	21.84	21.83
		100	0	21.91	21.96	21.91
	16QAM	1	0	22.11	22.01	21.95
		1	50	21.93	22.18	22.03
		1	99	22.01	22.04	22.07
		50	0	20.89	20.93	20.96
		50	25	20.92	20.81	20.88
		50	50	20.91	20.79	20.93
		100	0	20.90	20.87	21.04

Note:

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

LTE Band 7				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	23.12	23.13	23.01
		1	13	23.05	22.88	23.06
		1	24	23.11	22.99	22.97
		12	0	21.93	21.89	22.20
		12	6	21.91	21.98	22.10
		12	13	21.97	21.93	21.92
		25	0	21.84	21.89	21.98
	16QAM	1	0	22.06	22.05	22.13
		1	13	22.12	21.83	21.98
		1	24	21.96	21.93	22.05
		12	0	21.05	21.06	21.09
		12	6	21.11	20.96	21.03
		12	13	21.07	21.03	20.98
		25	0	20.95	20.94	21.08
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	23.14	23.14	23.04
		1	25	23.08	22.93	23.10
		1	49	23.13	23.03	23.00
		25	0	21.96	21.94	22.24
		25	13	21.94	22.03	22.14
		25	25	21.99	21.97	21.97
		50	0	21.92	21.91	22.02
	16QAM	1	0	22.08	22.08	22.15



		1	25	22.15	21.87	22.01
		1	49	21.99	21.95	22.08
		25	0	21.08	21.11	21.13
		25	13	21.13	21.00	21.06
		25	25	21.10	21.08	21.02
		50	0	20.98	20.99	21.12
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	23.13	23.10	23.02
		1	38	23.06	22.92	23.07
		1	74	23.10	22.98	22.96
		36	0	21.94	21.90	22.21
		36	18	21.91	21.98	22.10
		36	39	21.96	21.94	21.93
		75	0	21.90	21.87	21.97
	16QAM	1	0	22.03	22.06	22.13
		1	38	22.13	21.84	21.99
		1	74	21.96	21.91	22.05
		36	0	21.05	21.09	21.10
		36	18	21.10	20.95	21.02
		36	39	21.08	21.04	20.99
		75	0	20.95	20.94	21.08
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	23.10	23.06	22.99
		1	50	23.05	22.88	23.05
		1	99	23.08	22.97	22.93
		50	0	21.91	21.85	22.17
		50	25	21.89	21.94	22.07
		50	50	21.93	21.89	21.89
		100	0	21.87	21.82	21.93
	16QAM	1	0	22.01	22.02	22.08
		1	50	22.09	21.82	21.95
		1	99	21.94	21.88	22.03
		50	0	21.02	21.05	21.07
		50	25	21.07	20.93	20.99
		50	50	21.05	20.99	20.95
		100	0	20.93	20.90	21.05

LTE 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	22.47	22.55	22.70
		1	2	22.41	22.51	22.74
		1	5	22.61	22.48	22.60
		3	0	22.18	22.28	22.28
		3	2	22.05	22.31	22.15
		3	3	22.20	22.19	22.12
		6	0	21.23	21.20	21.26
	16QAM	1	0	21.46	21.33	21.54
		1	2	21.47	21.43	21.34
		1	5	21.23	21.39	21.52
		3	0	21.11	21.39	21.29
		3	2	21.41	21.34	21.45
		3	3	21.17	21.50	21.16
		6	0	20.40	20.25	20.30
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	22.49	22.59	22.73
		1	7	22.44	22.56	22.78
		1	14	22.64	22.53	22.64
		8	0	21.28	21.40	21.41
		8	4	21.17	21.41	21.27
		8	7	21.30	21.30	21.22
		15	0	21.26	21.24	21.29
	16QAM	1	0	21.49	21.35	21.57
		1	7	21.50	21.48	21.38
		1	14	21.25	21.43	21.55
		8	0	20.22	20.52	20.41
		8	4	20.52	20.47	20.57
		8	7	20.27	20.62	20.29
		15	0	20.43	20.29	20.33
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
5MHz	QPSK	1	0	22.46	22.57	22.69
		1	13	22.42	22.52	22.75
		1	24	22.61	22.48	22.60
		12	0	21.25	21.35	21.37
		12	6	21.15	21.37	21.22
		12	13	21.28	21.28	21.18
		25	0	21.24	21.23	21.27



	16QAM	1	0	21.46	21.31	21.54
		1	13	21.47	21.46	21.35
		1	24	21.22	21.41	21.51
		12	0	20.20	20.48	20.38
		12	6	20.49	20.42	20.53
		12	13	20.24	20.57	20.25
		25	0	20.41	20.25	20.28
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23060/704	23095/707.5	23130/711
10MHz	QPSK	1	0	22.44	22.50	22.67
		1	25	22.42	22.52	22.74
		1	49	22.58	22.46	22.56
		25	0	21.23	21.31	21.34
		25	13	21.13	21.33	21.19
		25	25	21.24	21.24	21.15
		50	0	21.27	21.16	21.22
	16QAM	1	0	21.41	21.28	21.49
		1	25	21.44	21.45	21.32
		1	49	21.20	21.36	21.49
		25	0	20.17	20.47	20.36
		25	13	20.45	20.39	20.49
		25	25	20.22	20.53	20.22
		50	0	20.39	20.21	20.25

5.2 Effective Isotropic Radiated Power

Ambient condition

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

Methods of Measurement

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI/TIA-603-D-2010.

a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.

b) Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).

c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.

d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading. $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$

e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation: $ERP \text{ (dBm)} = LVL \text{ (dBm)} + LOSS \text{ (dB)}$

f) The maximum ERP is the maximum value determined in the preceding step.

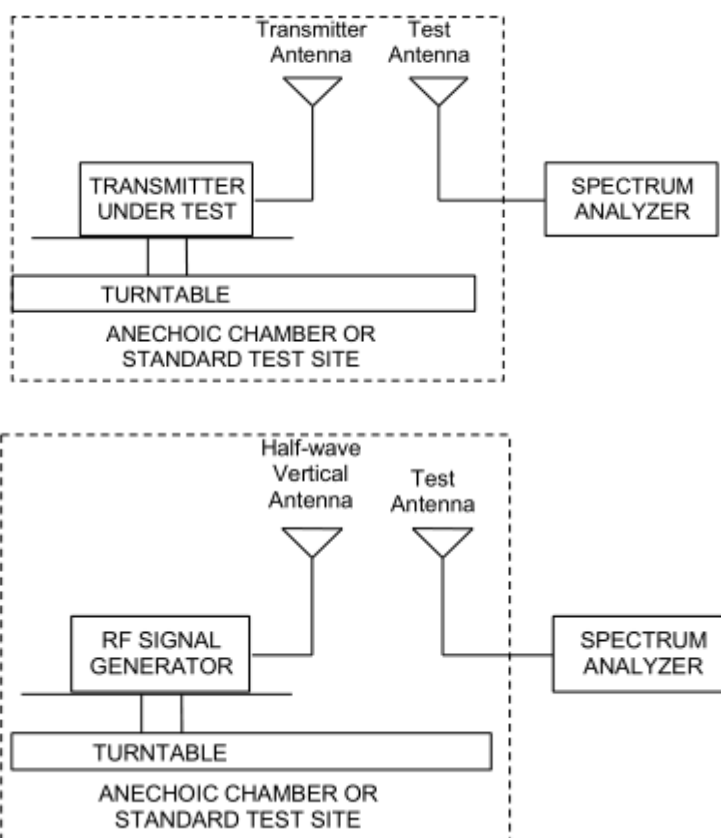
g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g.transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and the point where power is applied to the antenna. ERP can then be calculated as follows:

$$ERP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBd)}$$

where: dBd refers to gain relative to an ideal dipole.

$$EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB.)}$$

Test setup



Note: Area side:2.4mX3.6m

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Limits

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(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(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(c)(10)Limit (ERP) -LTE 12	$\leq 3 \text{ W}$ (34.77 dBm)
Part 27.50(d)(4)Limit (EIRP) -LTE 4	$\leq 1 \text{ W}$ (30 dBm)
Part 27.50(h)(2) Limit (EIRP)-LTE 7	$\leq 2 \text{ W}$ (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

The measurement is performed for both of horizontal and vertical antenna Polarization, and only the data of worst mode is recorded in this report.

Mode	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Conclusion
WCDMA Band IV	Low	1712.4	Horizontal	-24.95	-45.44	1.82	22.31	38.45	Pass
	Mid	1732.6	Horizontal	-25.15	-45.38	1.96	22.19	38.45	Pass
	High	1752.6	Horizontal	-25.07	-45.38	1.93	22.24	38.45	Pass

LTE Band 4								
Bandwidth	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	EIRP (dBm)	Conclusion
1.4 MHz (QPSK)	Low	1710.7	Horizontal	-32.18	-54.30	1.44	23.55	Pass
	Mid	1732.5	Horizontal	-32.43	-54.32	1.57	23.46	Pass
	High	1754.3	Horizontal	-32.50	-54.10	1.72	23.32	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	-32.21	-54.35	1.44	23.58	Pass
	Mid	1732.5	Horizontal	-32.48	-54.41	1.57	23.50	Pass
	High	1753.5	Horizontal	-32.52	-54.48	1.72	23.68	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	-32.27	-54.34	1.44	23.51	Pass
	Mid	1732.5	Horizontal	-32.54	-54.32	1.57	23.34	Pass
	High	1752.5	Horizontal	-32.08	-54.13	1.72	23.76	Pass
10 MHz (QPSK)	Low	1715	Horizontal	-32.16	-54.32	1.44	23.60	Pass
	Mid	1732.5	Horizontal	-32.30	-54.41	1.57	23.67	Pass
	High	1750	Horizontal	-32.00	-54.52	1.66	24.18	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	-32.06	-54.35	1.49	23.77	Pass
	Mid	1732.5	Horizontal	-31.88	-54.32	1.57	24.00	Pass
	High	1747.5	Horizontal	-31.82	-54.17	1.66	24.01	Pass
20 MHz (QPSK)	Low	1720	Horizontal	-32.15	-54.44	1.49	23.78	Pass
	Mid	1732.5	Horizontal	-32.07	-54.41	1.57	23.91	Pass
	High	1745	Horizontal	-32.66	-54.59	1.63	23.56	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	-32.42	-54.30	1.44	23.31	Pass
	Mid	1732.5	Horizontal	-32.67	-54.32	1.57	23.22	Pass
	High	1754.3	Horizontal	-32.63	-54.10	1.72	23.19	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	-32.30	-54.35	1.44	23.49	Pass
	Mid	1732.5	Horizontal	-32.60	-54.41	1.57	23.38	Pass
	High	1753.5	Horizontal	-32.60	-54.48	1.72	23.60	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	-32.39	-54.34	1.44	23.39	Pass
	Mid	1732.5	Horizontal	-32.73	-54.32	1.57	23.16	Pass
	High	1752.5	Horizontal	-32.25	-54.13	1.72	23.59	Pass



10 MHz (16QAM)	Low	1715	Horizontal	-32.27	-54.32	1.44	23.49	Pass
	Mid	1732.5	Horizontal	-32.48	-54.41	1.57	23.50	Pass
	High	1750	Horizontal	-32.30	-54.52	1.66	23.88	Pass
15 MHz (16QAM)	Low	1717.5	Horizontal	-32.28	-54.35	1.49	23.55	Pass
	Mid	1732.5	Horizontal	-32.20	-54.32	1.57	23.68	Pass
	High	1747.5	Horizontal	-31.96	-54.17	1.66	23.87	Pass
20 MHz (16QAM)	Low	1720	Horizontal	-32.26	-54.44	1.49	23.66	Pass
	Mid	1732.5	Horizontal	-32.13	-54.41	1.57	23.85	Pass
	High	1745	Horizontal	-33.06	-54.59	1.63	23.16	Pass

LTE Band 7								
Band width	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	EIRP (dBm)	Conclusion
5 MHz (QPSK)	Low	2502.5	Horizontal	-38.89	-59.64	1.81	22.56	Pass
	Mid	2535	Horizontal	-38.15	-59.72	1.81	23.38	Pass
	High	2567.5	Horizontal	-37.23	-59.98	1.83	24.58	Pass
10 MHz (QPSK)	Low	2505	Horizontal	-38.64	-59.61	1.82	22.79	Pass
	Mid	2535	Horizontal	-38.29	-59.72	1.81	23.24	Pass
	High	2565	Horizontal	-37.31	-60.02	1.81	24.52	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	-38.29	-59.29	1.80	22.80	Pass
	Mid	2535	Horizontal	-38.21	-59.72	1.81	23.32	Pass
	High	2562.5	Horizontal	-36.84	-59.46	1.82	24.44	Pass
20 MHz (QPSK)	Low	2510	Horizontal	-38.34	-59.52	1.77	22.95	Pass
	Mid	2535	Horizontal	-37.98	-59.72	1.81	23.55	Pass
	High	2560	Horizontal	-37.19	-60.01	1.82	24.64	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	-39.13	-59.64	1.81	22.32	Pass
	Mid	2535	Horizontal	-38.31	-59.72	1.81	23.22	Pass
	High	2567.5	Horizontal	-37.57	-59.98	1.83	24.24	Pass
10 MHz (16QAM)	Low	2505	Horizontal	-38.86	-59.61	1.82	22.57	Pass
	Mid	2535	Horizontal	-38.37	-59.72	1.81	23.16	Pass
	High	2565	Horizontal	-37.34	-60.02	1.81	24.49	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	-38.41	-59.29	1.80	22.68	Pass
	Mid	2535	Horizontal	-38.51	-59.72	1.81	23.02	Pass
	High	2562.5	Horizontal	-37.13	-59.46	1.82	24.15	Pass
20 MHz (16QAM)	Low	2510	Horizontal	-38.45	-59.52	1.77	22.84	Pass
	Mid	2535	Horizontal	-38.08	-59.72	1.81	23.45	Pass
	High	2560	Horizontal	-37.37	-60.01	1.82	24.47	Pass

LTE Band 12								
Bandwidth	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	ERP (dBm)	Conclusion
1.4 MHz (QPSK)	Low	699.7	Horizontal	-35.70	-49.12	2.04	15.46	Pass
	Mid	707.5	Horizontal	-35.11	-49.39	2.03	16.32	Pass
	High	715.3	Horizontal	-35.40	-49.76	1.99	16.35	Pass
3 MHz (QPSK)	Low	700.5	Horizontal	-35.41	-48.94	2.04	15.57	Pass
	Mid	707.5	Horizontal	-35.12	-49.12	2.03	16.03	Pass
	High	714.5	Horizontal	-34.82	-49.37	2.00	16.55	Pass
5 MHz (QPSK)	Low	701.5	Horizontal	-35.62	-49.17	2.04	15.60	Pass
	Mid	707.5	Horizontal	-35.25	-49.39	2.03	16.18	Pass
	High	713.5	Horizontal	-35.54	-49.72	2.01	16.18	Pass
10 MHz (QPSK)	Low	704	Horizontal	-35.26	-49.00	2.04	15.78	Pass
	Mid	707.5	Horizontal	-35.46	-49.12	2.03	15.69	Pass
	High	711	Horizontal	-34.97	-49.33	2.02	16.37	Pass
1.4 MHz (16QAM)	Low	699.7	Horizontal	-35.90	-49.12	2.04	15.26	Pass
	Mid	707.5	Horizontal	-35.33	-49.39	2.03	16.10	Pass
	High	715.3	Horizontal	-35.58	-49.76	1.99	16.17	Pass
3 MHz (16QAM)	Low	700.5	Horizontal	-35.58	-48.94	2.04	15.40	Pass
	Mid	707.5	Horizontal	-35.29	-49.12	2.03	15.86	Pass
	High	714.5	Horizontal	-34.97	-49.37	2.00	16.40	Pass
5 MHz (16QAM)	Low	701.5	Horizontal	-35.95	-49.17	2.04	15.27	Pass
	Mid	707.5	Horizontal	-35.44	-49.39	2.03	15.99	Pass
	High	713.5	Horizontal	-35.71	-49.72	2.01	16.01	Pass
10 MHz (16QAM)	Low	704	Horizontal	-35.51	-49.00	2.04	15.53	Pass
	Mid	707.5	Horizontal	-35.75	-49.12	2.03	15.40	Pass
	High	711	Horizontal	-35.32	-49.33	2.02	16.02	Pass

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

5.3 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).

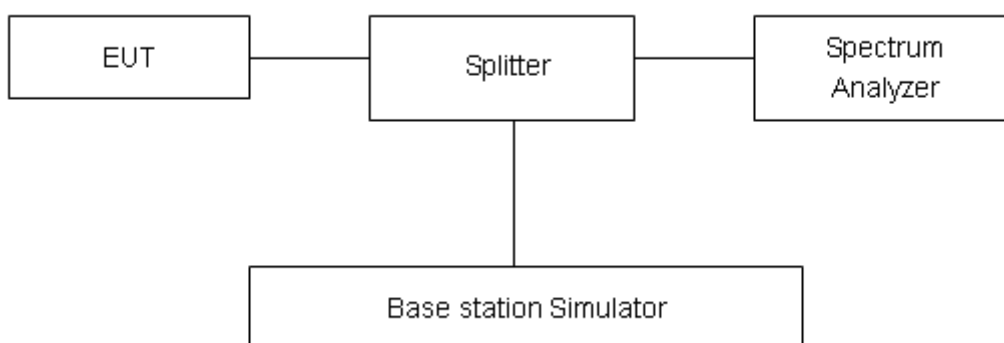
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/12 (5MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/12 (10MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7 (15MHz/20MHz).

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)	1537	2112.4	4.1665	4.716
	1638	2132.6	4.1550	4.719
	1738	2152.6	4.1629	4.717

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1284	1.355
			20175	1732.5	1.1249	1.346
			20393	1754.3	1.1387	1.336
		3	19965	1711.5	2.7528	3.056
			20175	1732.5	2.7463	3.080
			20385	1753.5	2.7429	3.067
		5	19975	1712.5	4.5196	5.025
			20175	1732.5	4.5352	5.039
			20375	1752.5	4.5128	5.025
		10	20000	1715	9.0243	10.100
			20175	1732.5	9.0545	10.130
			20350	1750	9.0521	10.140
		15	20025	1717.5	13.4770	14.810
			20175	1732.5	13.5030	14.850
			20325	1747.5	13.5160	14.830
		20	20050	1720	17.9010	19.350
			20175	1732.5	17.9110	19.290
			20300	1745	17.9240	19.560
	16QAM	1.4	19957	1710.7	1.1229	1.331
			20175	1732.5	1.1280	1.345
			20393	1754.3	1.1198	1.358
		3	19965	1711.5	2.7365	3.061
			20175	1732.5	2.7567	3.068
			20385	1753.5	2.7422	3.075
		5	19975	1712.5	4.5450	5.038
			20175	1732.5	4.5241	5.035
			20375	1752.5	4.5463	5.075
		10	20000	1715	9.0421	10.080
			20175	1732.5	9.0497	10.080



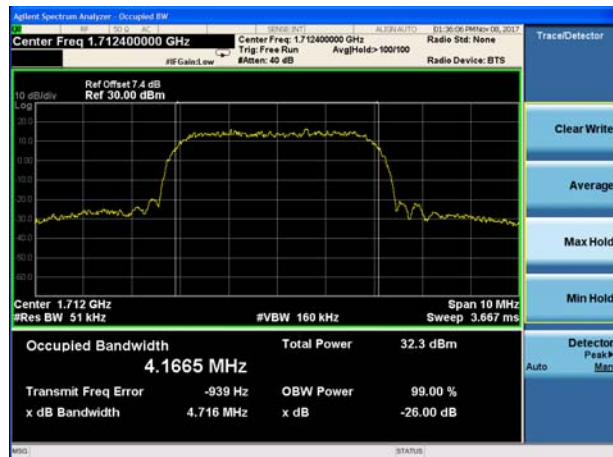
			20350	1750	9.0514	10.070
		15	20025	1717.5	13.5090	14.810
			20175	1732.5	13.5140	14.780
			20325	1747.5	13.5220	14.730
			20050	1720	17.9230	19.440
		20	20175	1732.5	17.9460	19.380
			20300	1745	17.9210	19.400

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5219	5.037
			21100	2535	4.5307	5.053
			21425	2567.5	4.5153	5.043
		10	20800	2505	9.0339	10.090
			21100	2535	9.0615	10.170
			21400	2565	9.0398	10.090
		15	20825	2507.5	13.4800	14.840
			21100	2535	13.5400	14.890
			21375	2562.5	13.4720	14.750
		20	20850	2510	17.9180	19.420
			21100	2535	17.9260	19.250
			21350	2560	17.9150	19.500
	16QAM	5	20775	2502.5	4.5493	5.076
			21100	2535	4.5225	5.033
			21425	2567.5	4.5465	5.074
		10	20800	2505	9.0493	10.170
			21100	2535	9.0641	10.090
			21400	2565	9.0323	10.030
		15	20825	2507.5	13.5230	14.780
			21100	2535	13.5070	14.740
			21375	2562.5	13.4980	14.800
		20	20850	2510	17.9440	19.540
			21100	2535	17.9650	19.420
			21350	2560	17.8870	19.410

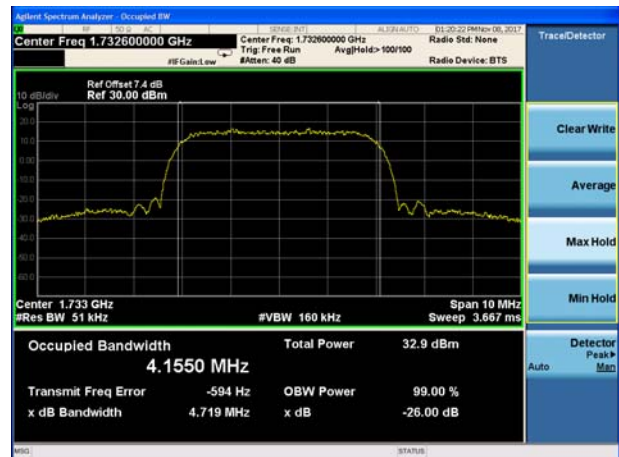
LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.1294	1.356
			23095	707.5	1.1236	1.339
			23173	715.3	1.1371	1.332
		3	23025	700.5	2.7473	3.057
			23095	707.5	2.7497	3.082
			23165	714.5	2.7472	3.069
		5	23035	701.5	4.5196	5.014
			23095	707.5	4.5480	5.054
			23155	713.5	4.5106	5.018
		10	23060	704	9.0540	10.100
			23095	707.5	9.0868	10.160
			23130	711	9.0199	10.040
	16QAM	1.4	23017	699.7	1.1230	1.324
			23095	707.5	1.1335	1.339
			23173	715.3	1.1205	1.347
		3	23025	700.5	2.7347	3.059
			23095	707.5	2.7651	3.077
			23165	714.5	2.7418	3.080
		5	23035	701.5	4.5389	5.039
			23095	707.5	4.5249	5.044
			23155	713.5	4.5343	5.048
		10	23060	704	9.0651	10.140
			23095	707.5	9.0922	10.120
			23130	711	9.0228	10.030



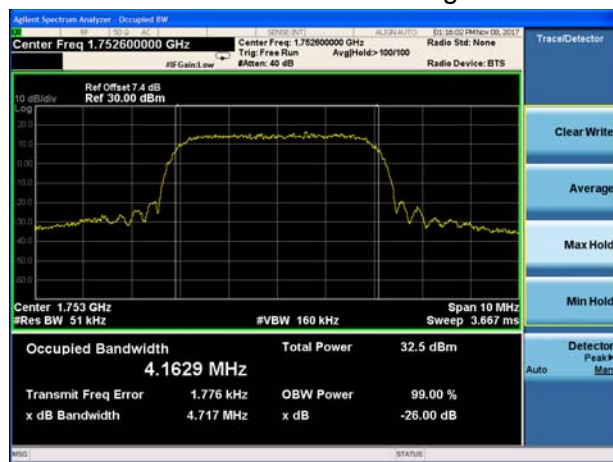
WCDMA Band IV CH-Low



WCDMA Band IV CH Middle

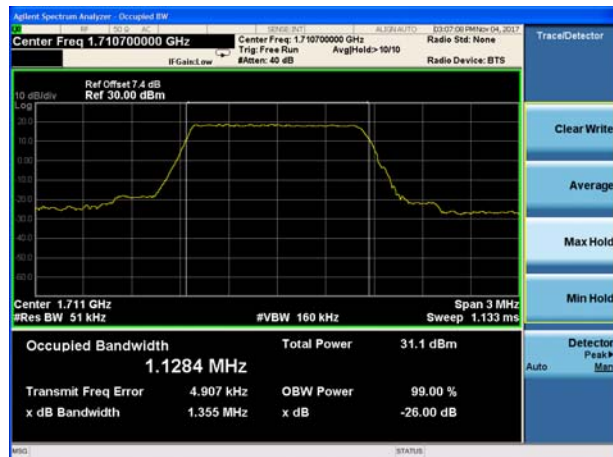


WCDMA Band IV CH High

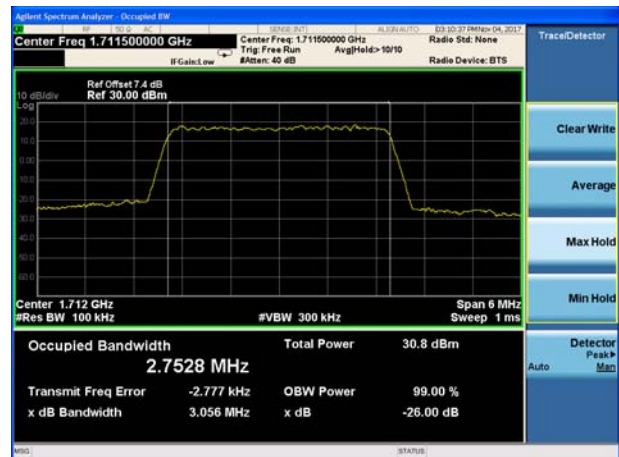




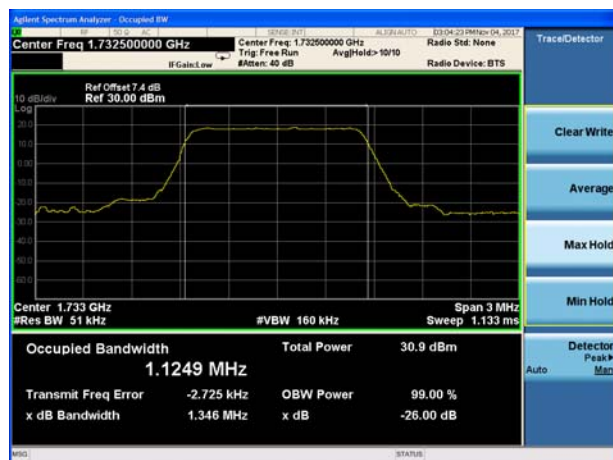
LTE Band 4 QPSK 1.4MHz CH-Low



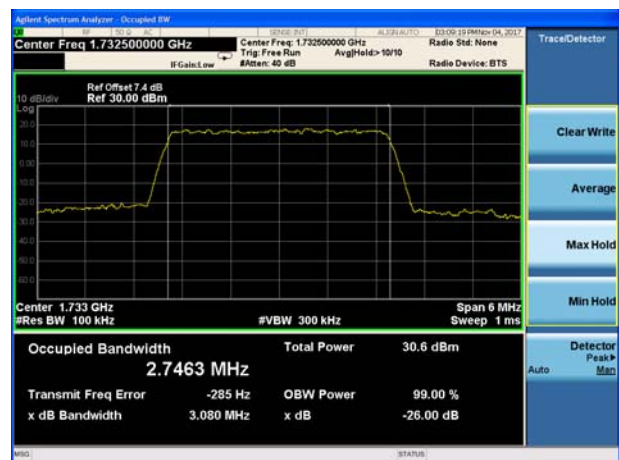
LTE Band 4 QPSK 3MHz CH-Low



LTE Band 4 QPSK 1.4MHz CH-Middle



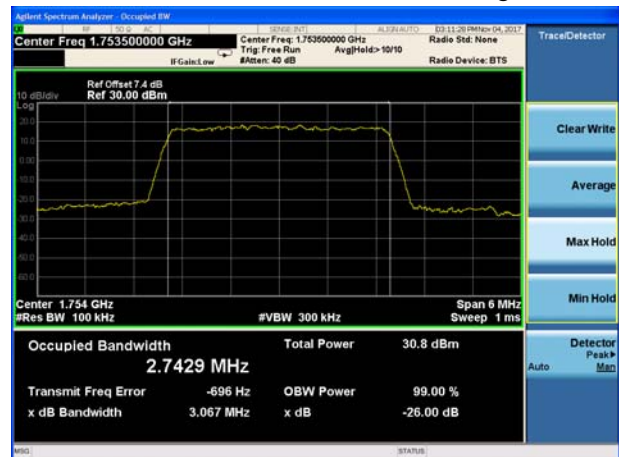
LTE Band 4 QPSK 3MHz CH-Middle



LTE Band 4 QPSK 1.4MHz CH-High



LTE Band 4 QPSK 3MHz CH-High

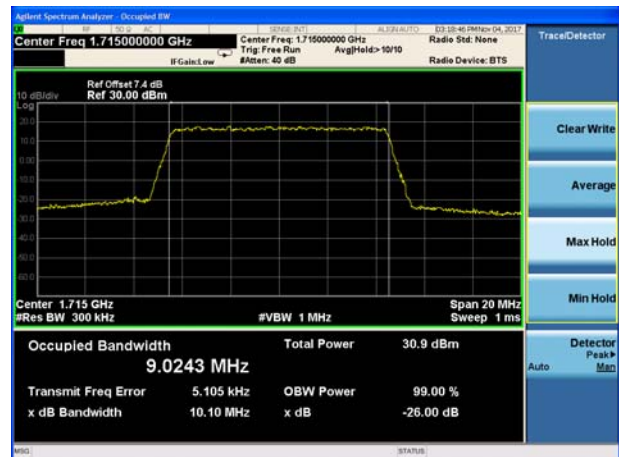




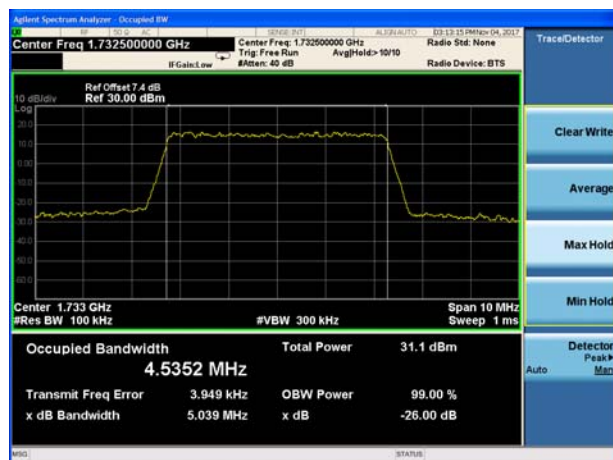
LTE Band 4 QPSK 5MHz CH-Low



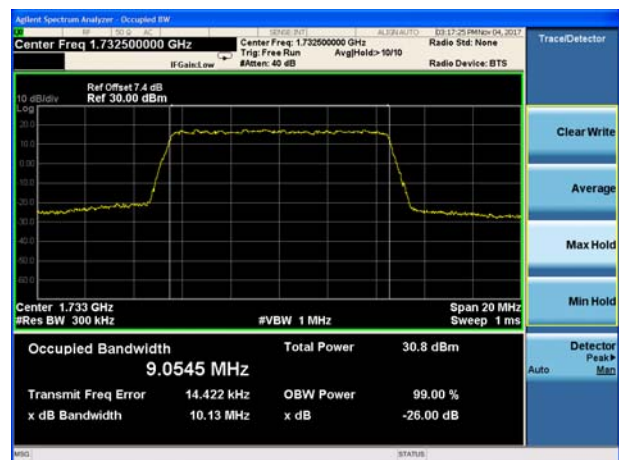
LTE Band 4 QPSK 10MHz CH-Low



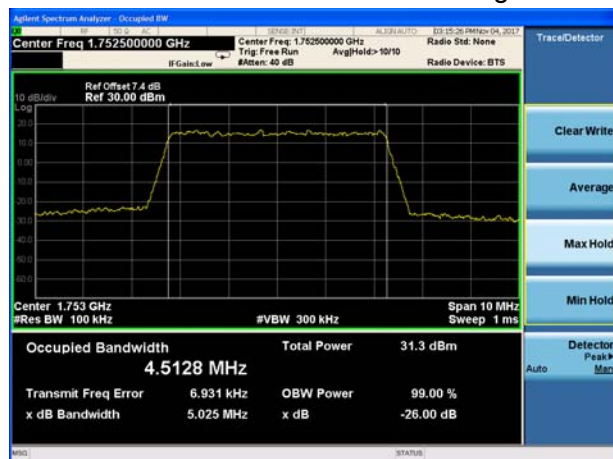
LTE Band 4 QPSK 5MHz CH-Middle



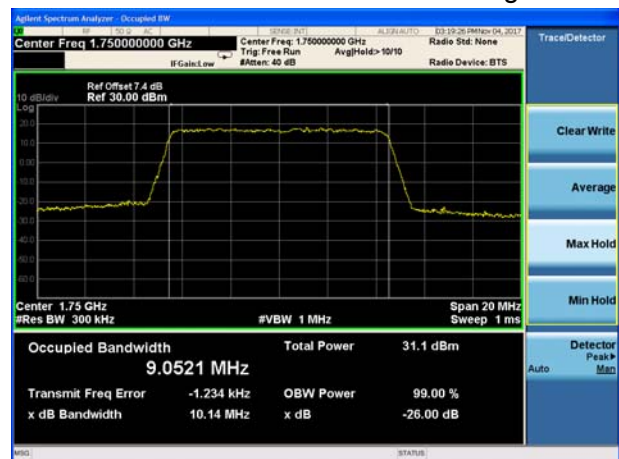
LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High

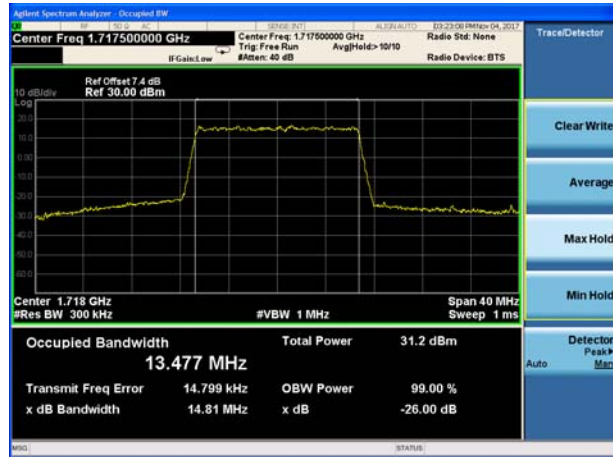


LTE Band 4 QPSK 10MHz CH-High

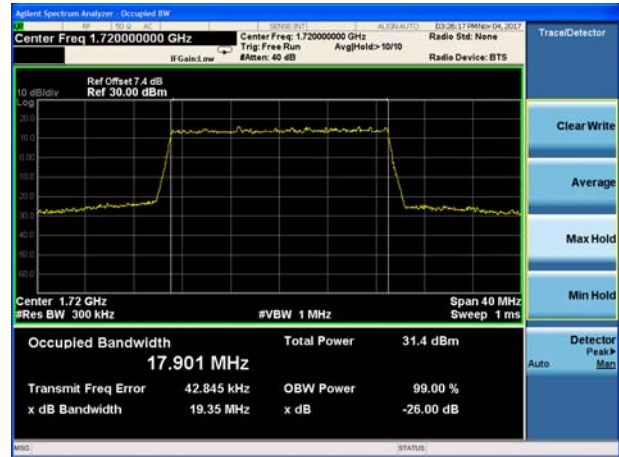




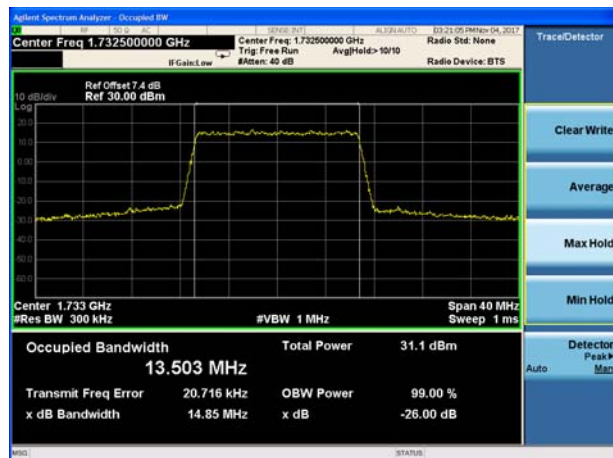
LTE Band 4 QPSK 15MHz CH-Low



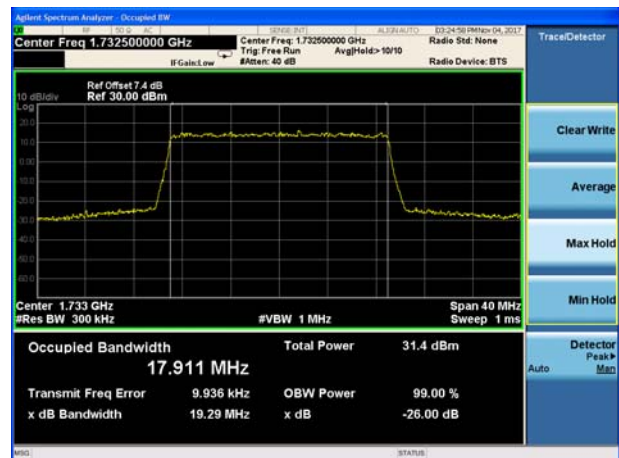
LTE Band 4 QPSK 20MHz CH-Low



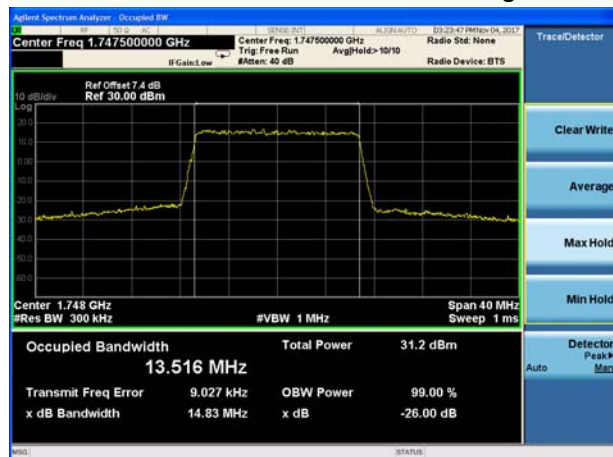
LTE Band 4 QPSK 15MHz CH-Middle



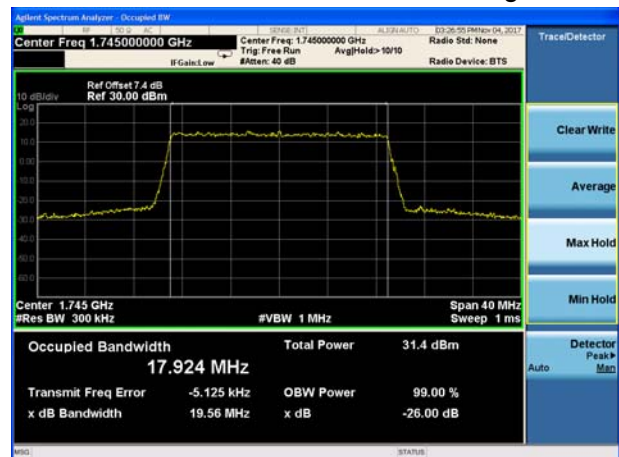
LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High

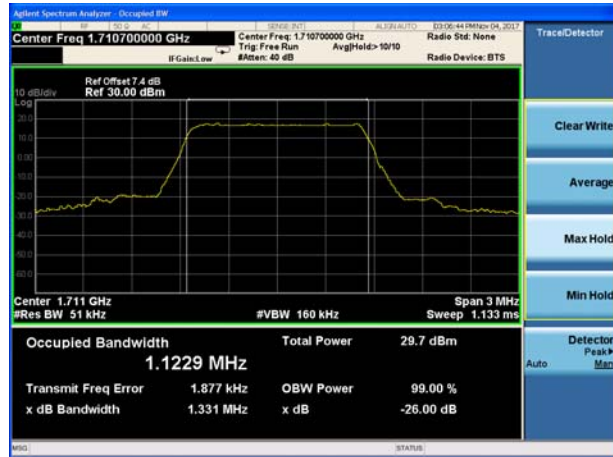


LTE Band 4 QPSK 20MHz CH-High

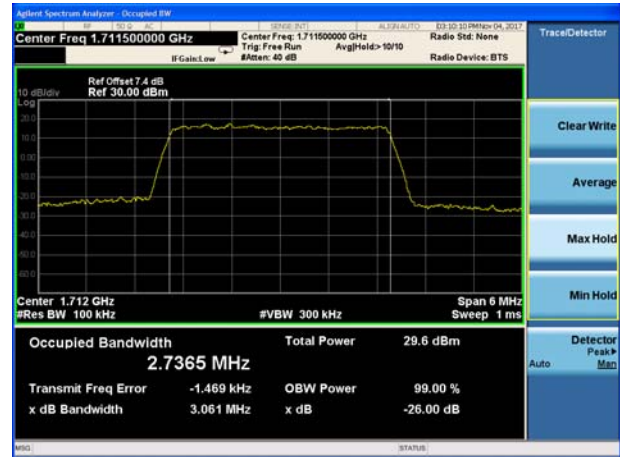




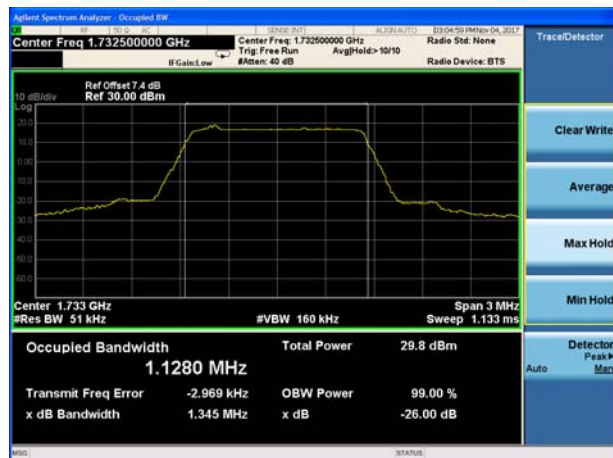
LTE Band 4 16QAM 1.4MHz CH-Low



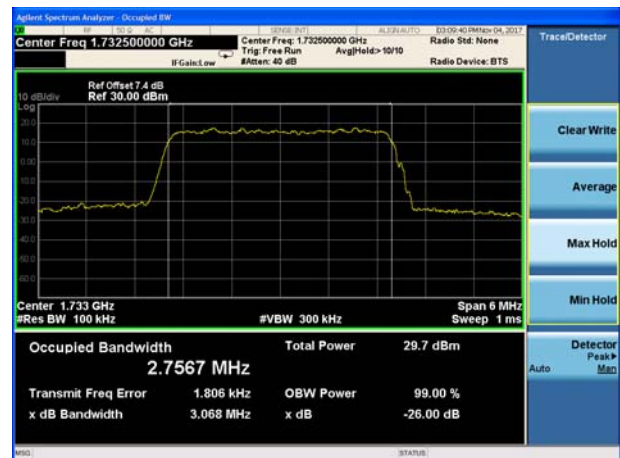
LTE Band 4 16QAM 3MHz CH-Low



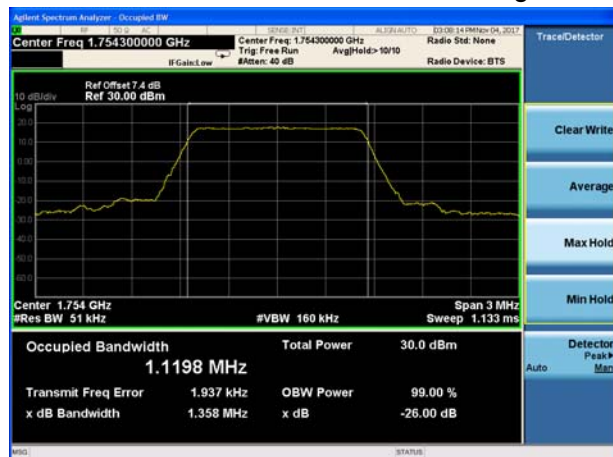
LTE Band 4 16QAM 1.4MHz CH-Middle



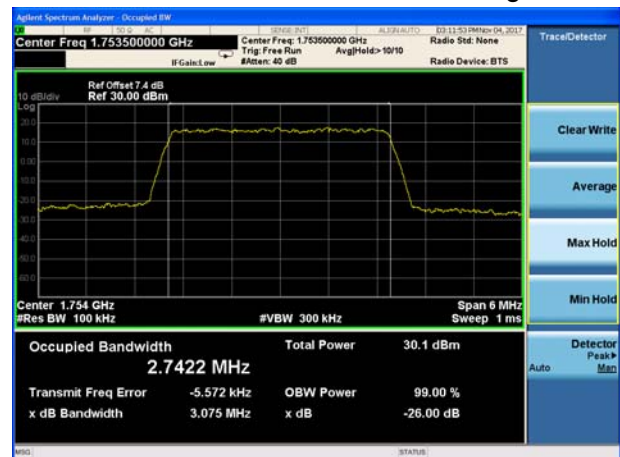
LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High



LTE Band 4 16QAM 3MHz CH-High

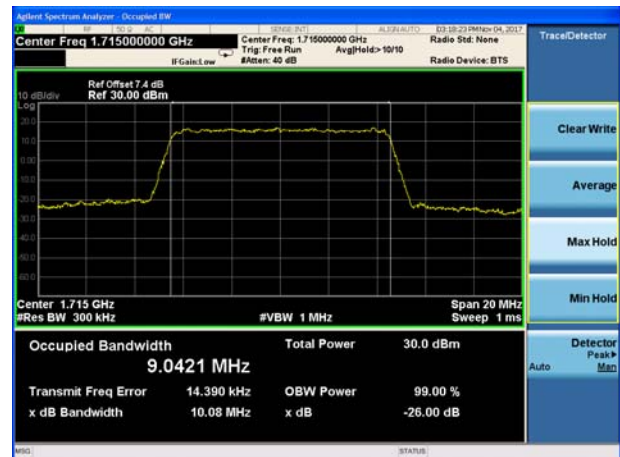




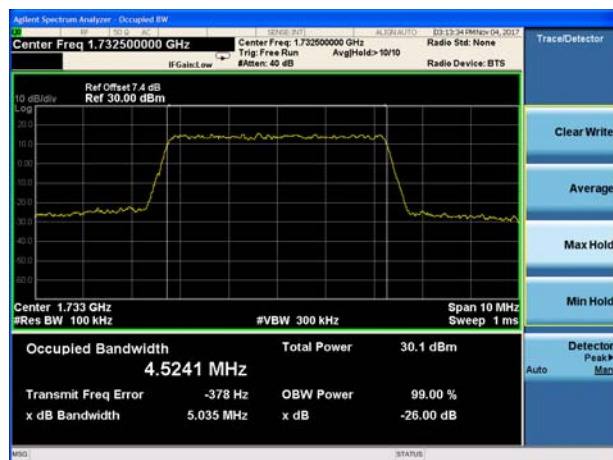
LTE Band 4 16QAM 5MHz CH-Low



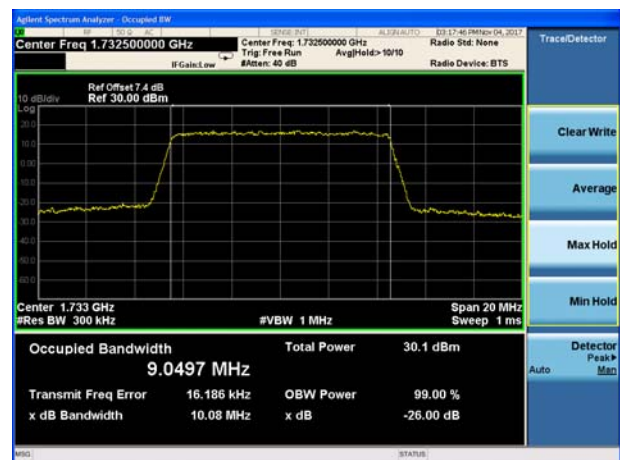
LTE Band 4 16QAM 10MHz CH-Low



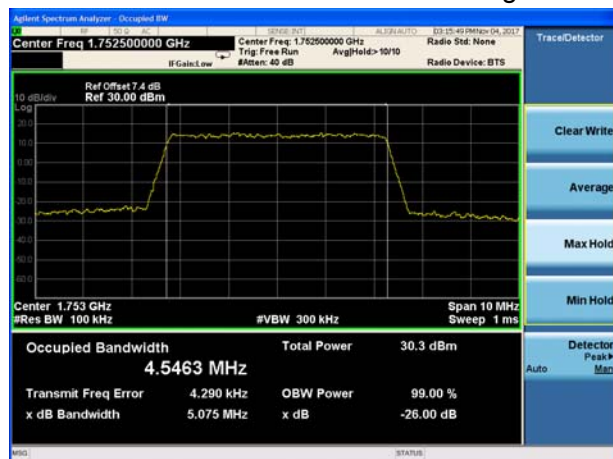
LTE Band 4 16QAM 5MHz CH-Middle



LTE Band 4 16QAM 10MHz CH-Middle



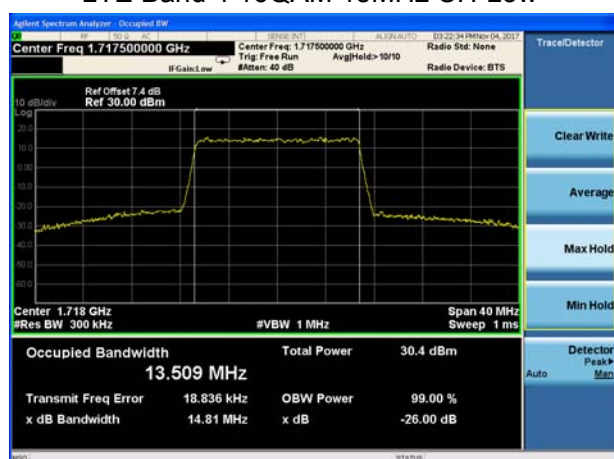
LTE Band 4 16QAM 5MHz CH-High



LTE Band 4 16QAM 10MHz CH-High



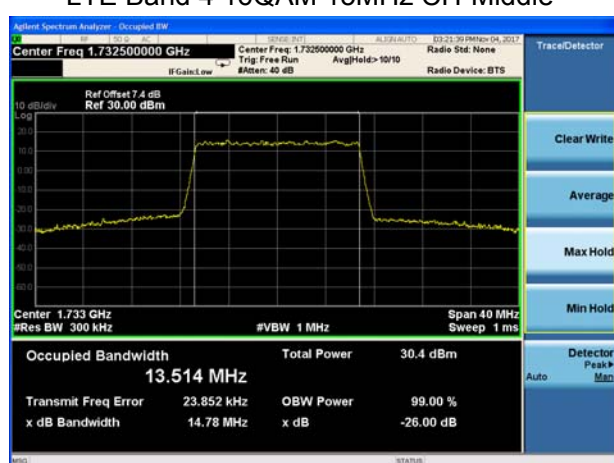
LTE Band 4 16QAM 15MHz CH-Low



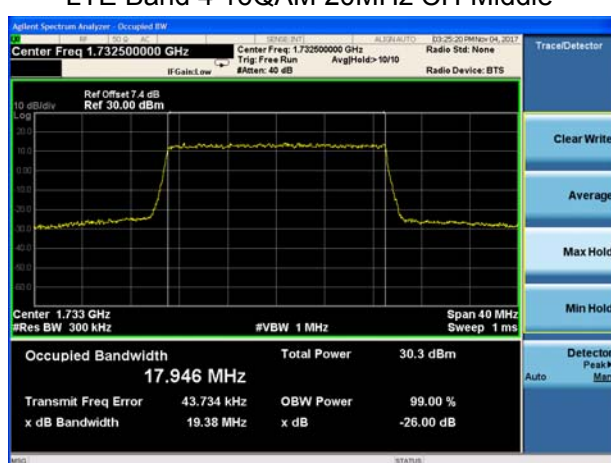
LTE Band 4 16QAM 20MHz CH-Low



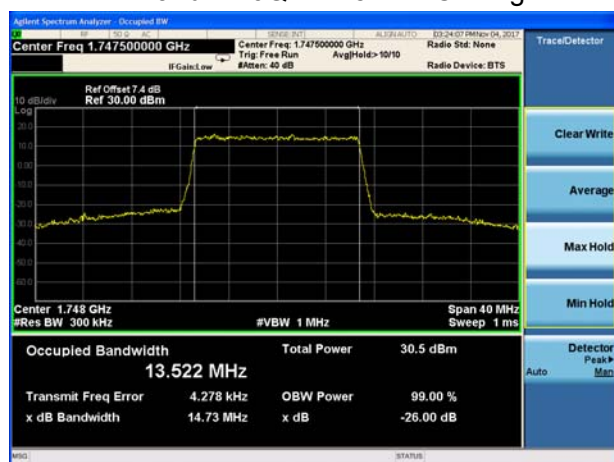
LTE Band 4 16QAM 15MHz CH-Middle



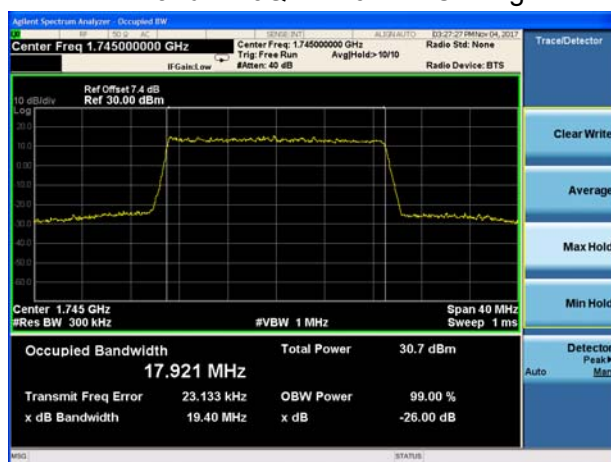
LTE Band 4 16QAM 20MHz CH-Middle



LTE Band 4 16QAM 15MHz CH-High



LTE Band 4 16QAM 20MHz CH-High

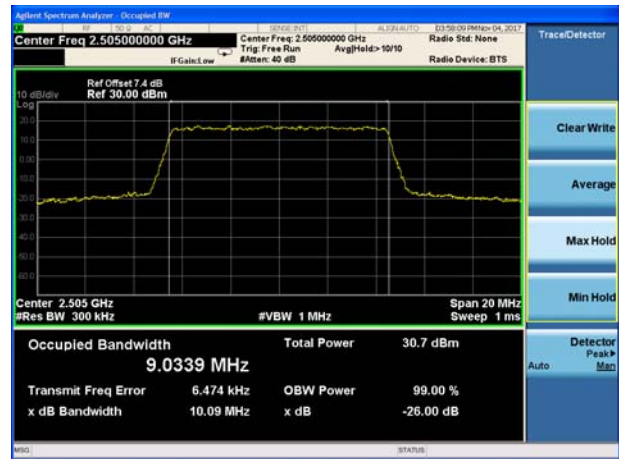




LTE Band 7 QPSK 5MHz CH-Low



LTE Band 7 QPSK 10MHz CH-Low



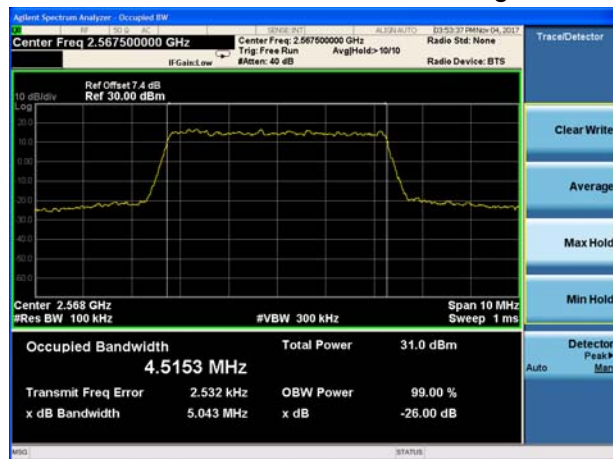
LTE Band 7 QPSK 5MHz CH-Middle



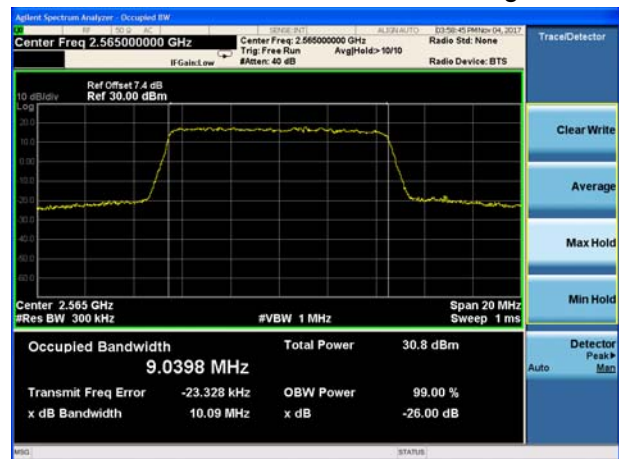
LTE Band 7 QPSK 10MHz CH-Middle



LTE Band 7 QPSK 5MHz CH-High

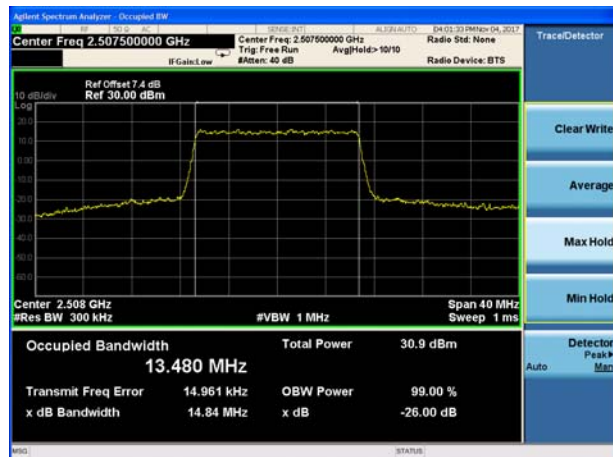


LTE Band 7 QPSK 10MHz CH-High

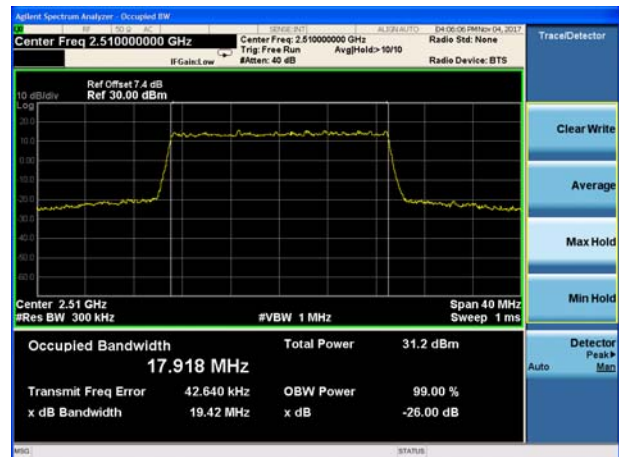




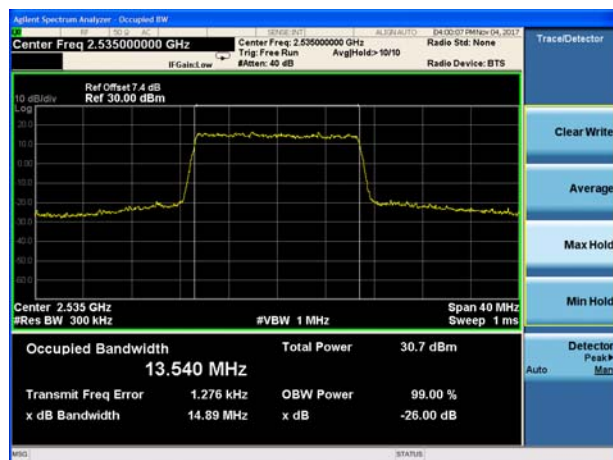
LTE Band 7 QPSK 15MHz CH-Low



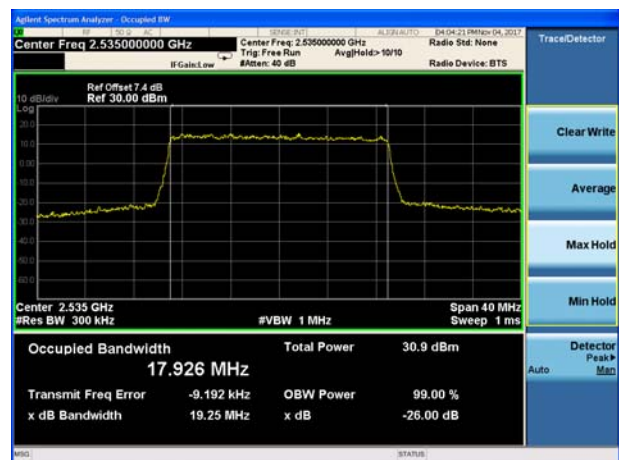
LTE Band 7 QPSK 20MHz CH-Low



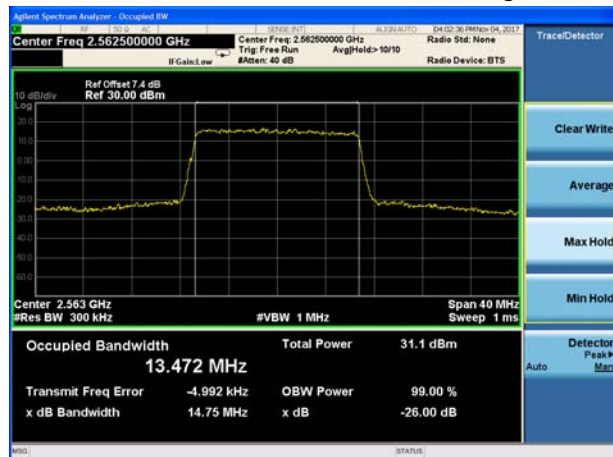
LTE Band 7 QPSK 15MHz CH-Middle



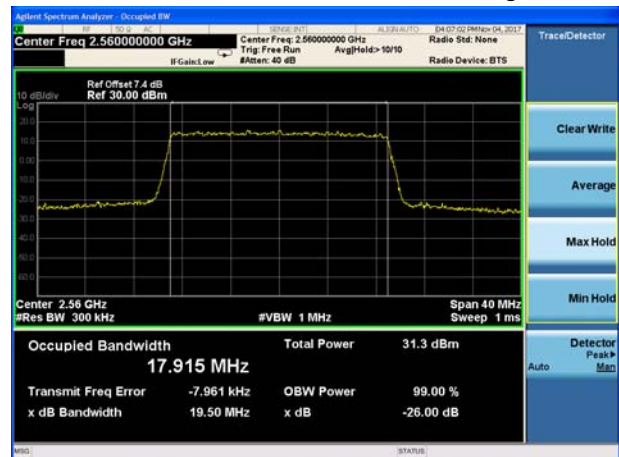
LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High



LTE Band 7 QPSK 20MHz CH-High

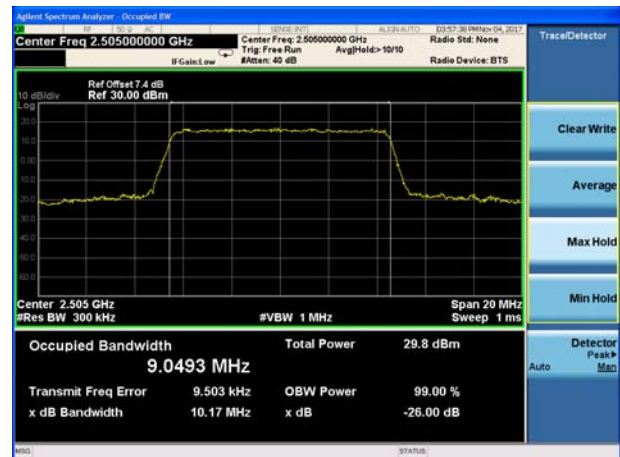




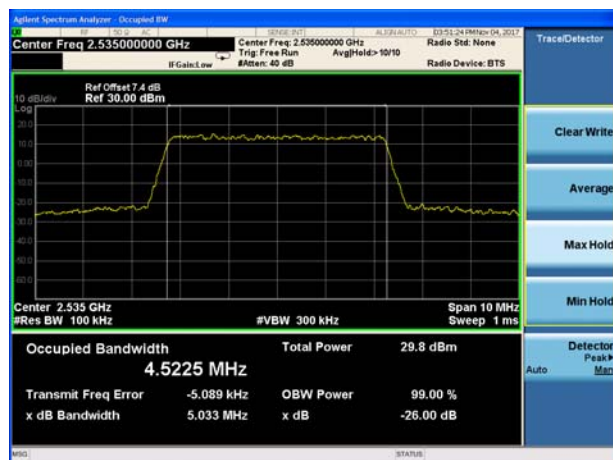
LTE Band 7 16QAM 5MHz CH-Low



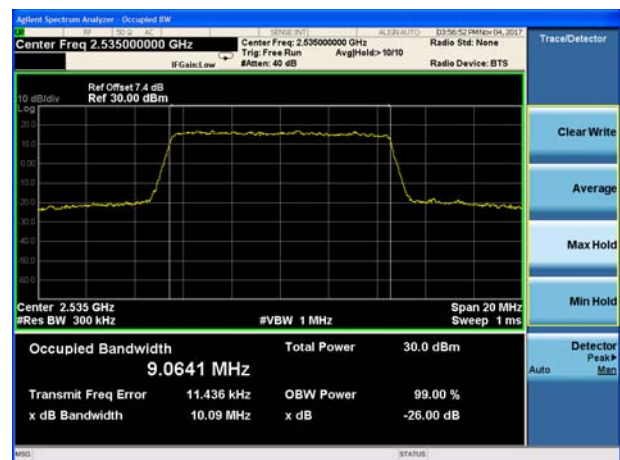
LTE Band 7 16QAM 10MHz CH-Low



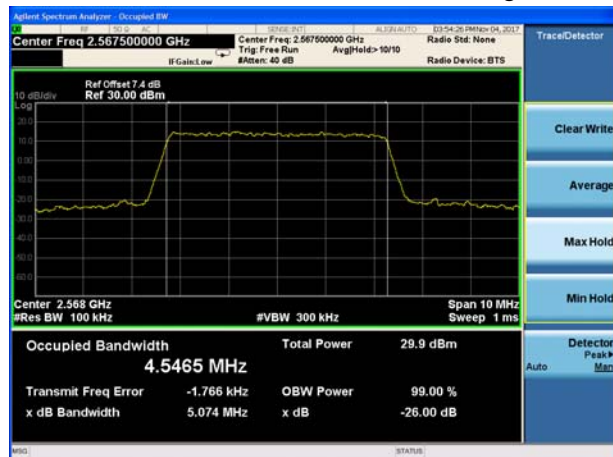
LTE Band 7 16QAM 5MHz CH-Middle



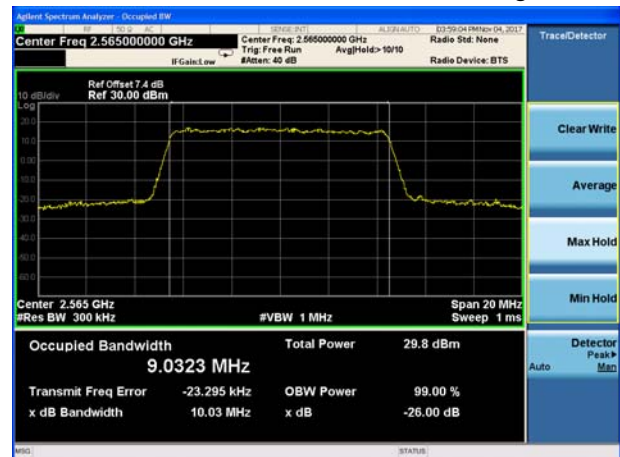
LTE Band 7 16QAM 10MHz CH-Middle



LTE Band 7 16QAM 5MHz CH-High

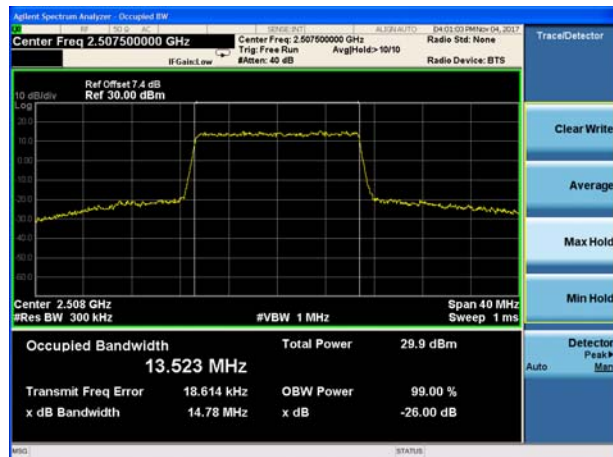


LTE Band 7 16QAM 10MHz CH-High

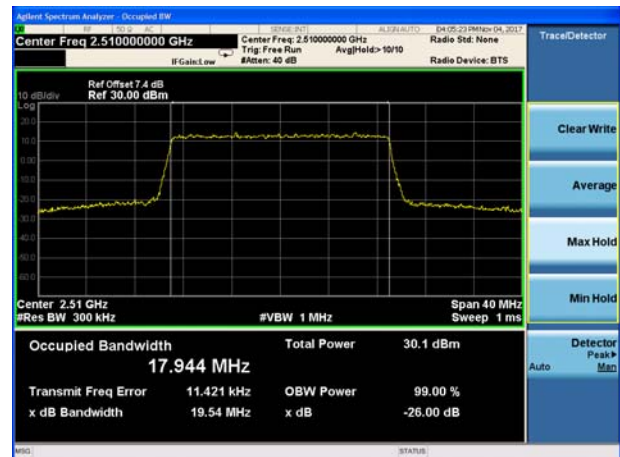




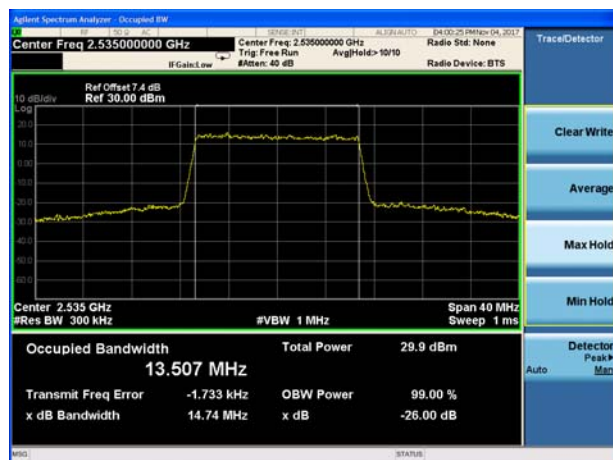
LTE Band 7 16QAM 15MHz CH-Low



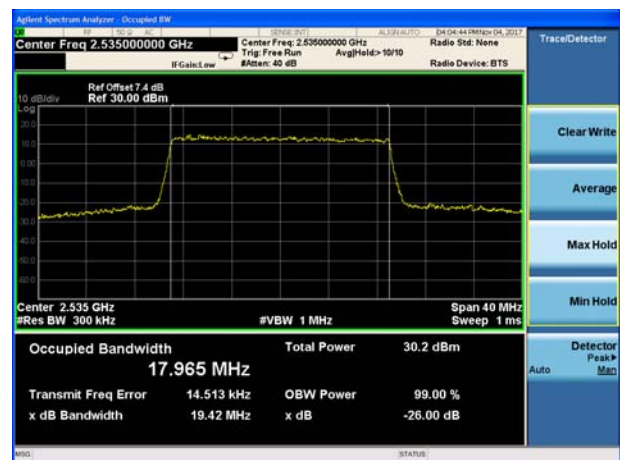
LTE Band 7 16QAM 20MHz CH-Low



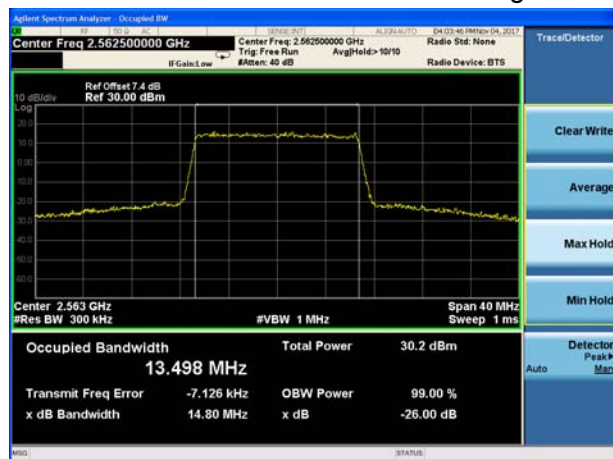
LTE Band 7 16QAM 15MHz CH-Middle



LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High

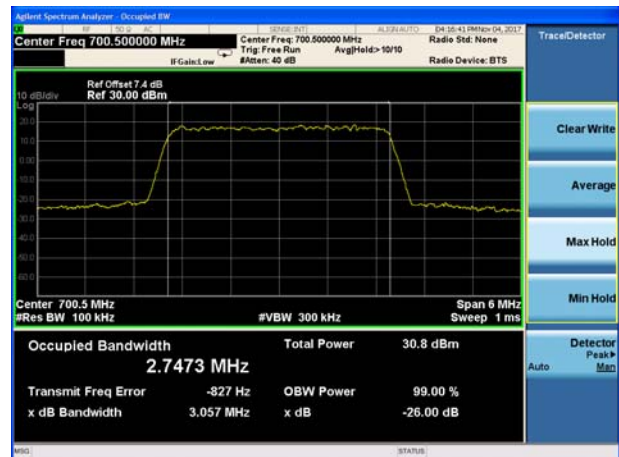




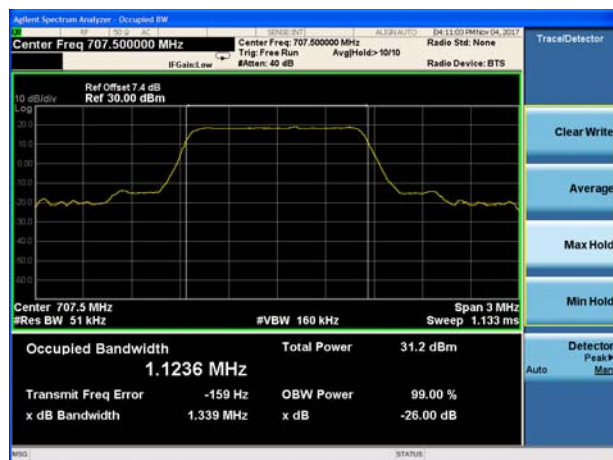
LTE Band 12 QPSK 1.4MHz CH-Low



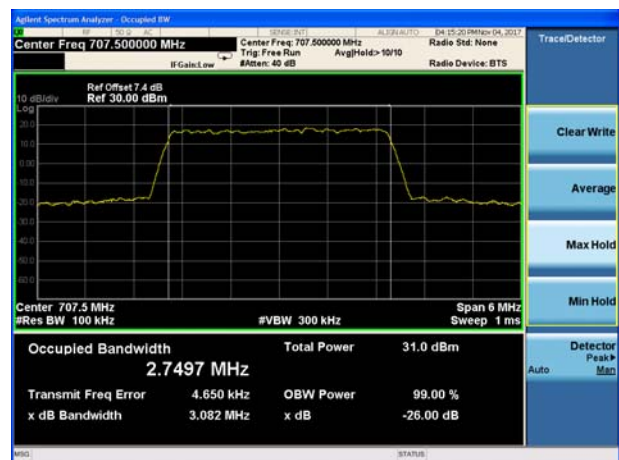
LTE Band 12 QPSK 3MHz CH-Low



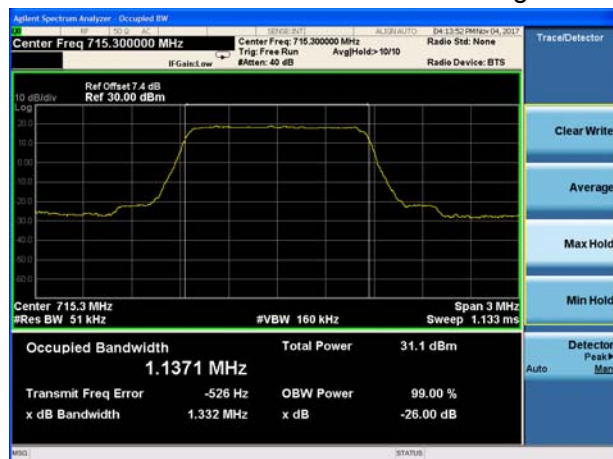
LTE Band 12 QPSK 1.4MHz CH-Middle



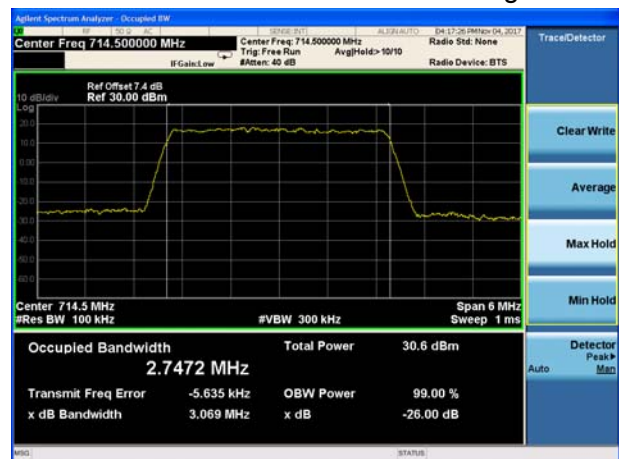
LTE Band 12 QPSK 3MHz CH-Middle



LTE Band 12 QPSK 1.4MHz CH-High



LTE Band 12 QPSK 3MHz CH-High

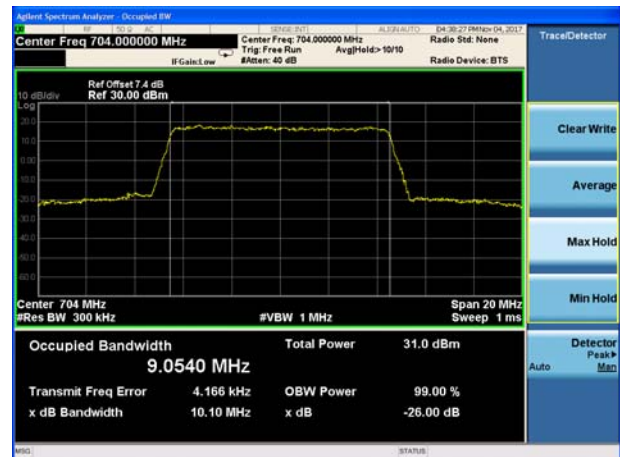




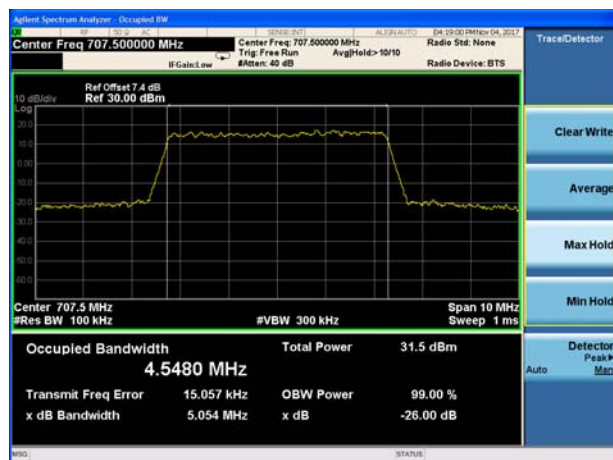
LTE Band 12 QPSK 5MHz CH-Low



LTE Band 12 QPSK 10MHz CH-Low



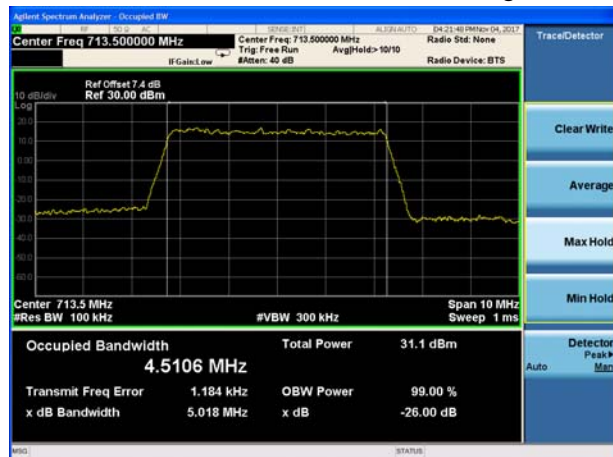
LTE Band 12 QPSK 5MHz CH-Middle



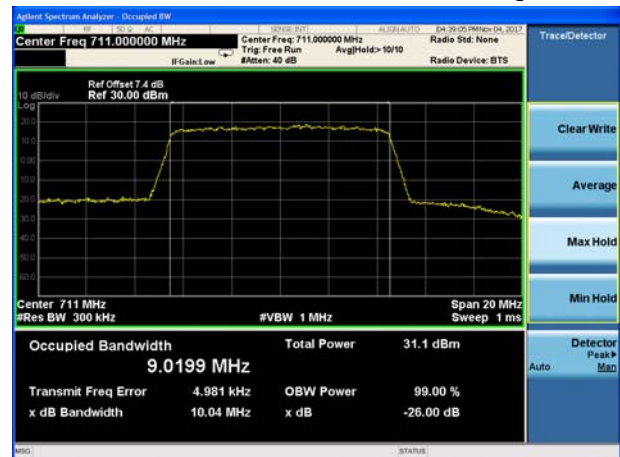
LTE Band 12 QPSK 10MHz CH-Middle



LTE Band 12 QPSK 5MHz CH-High



LTE Band 12 QPSK 10MHz CH-High

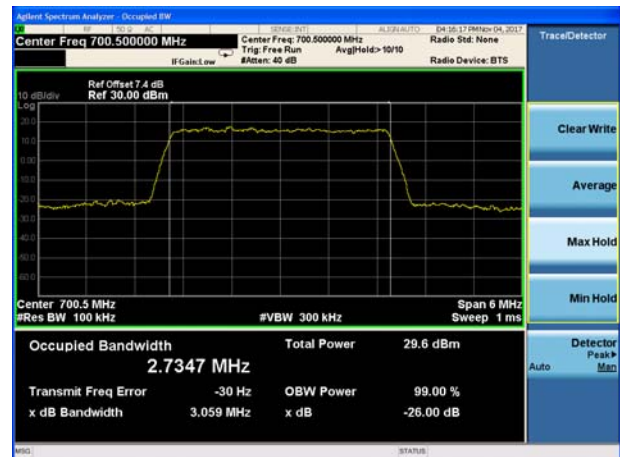




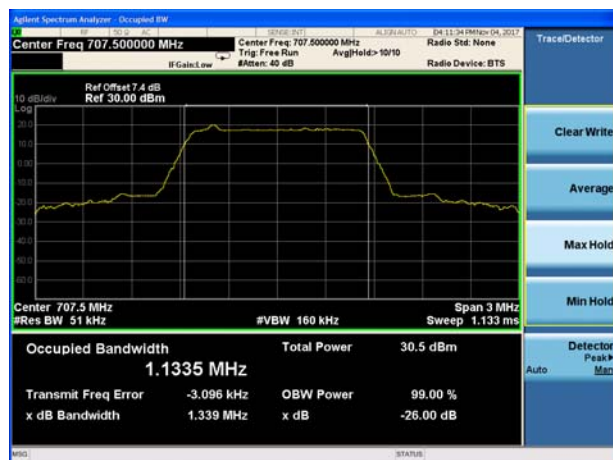
LTE Band 12 16QAM 1.4MHz CH-Low



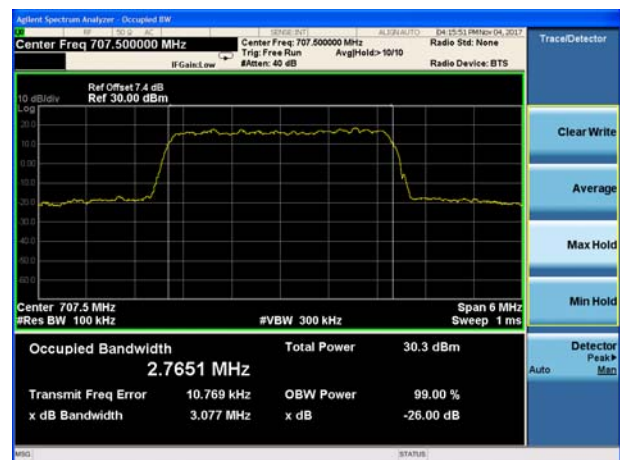
LTE Band 12 16QAM 3MHz CH-Low



LTE Band 12 16QAM 1.4MHz CH-Middle



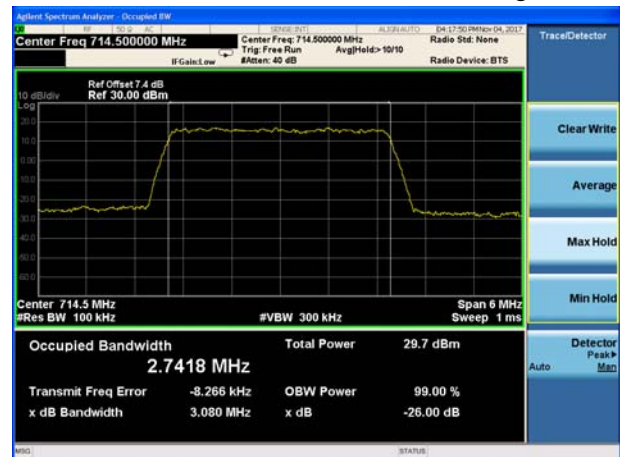
LTE Band 12 16QAM 3MHz CH-Middle



LTE Band 12 16QAM 1.4MHz CH-High

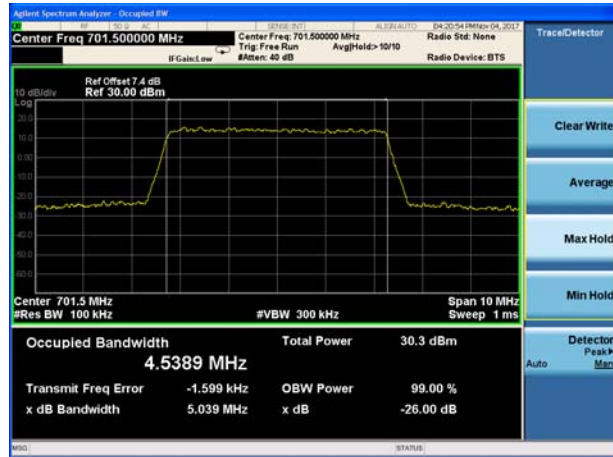


LTE Band 12 16QAM 3MHz CH-High

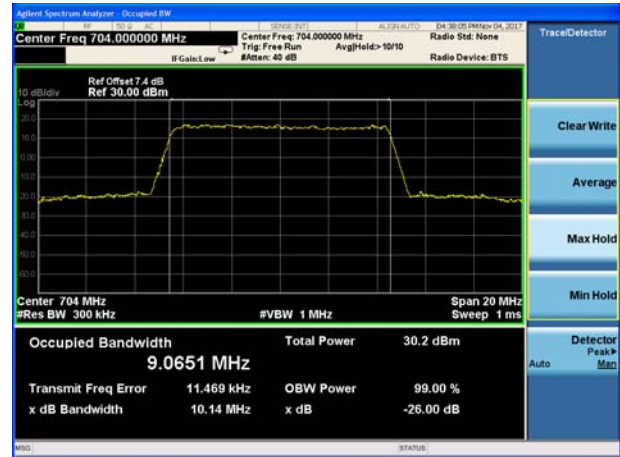




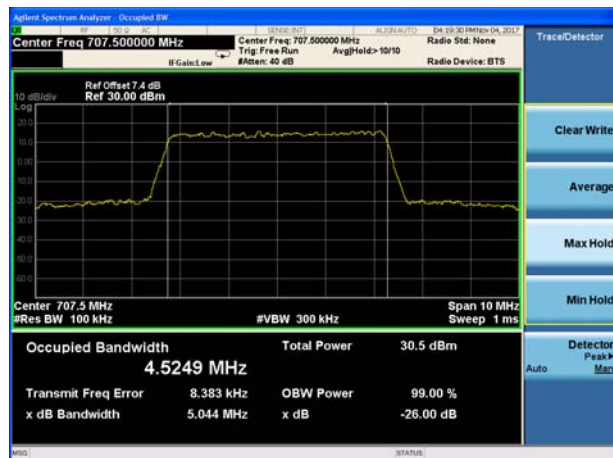
LTE Band 12 16QAM 5MHz CH-Low



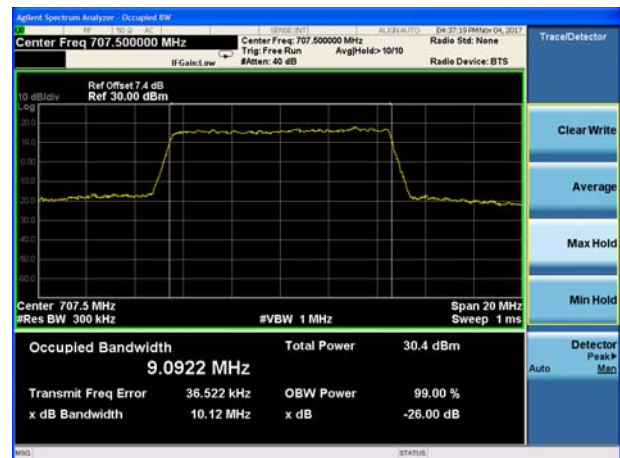
LTE Band 12 16QAM 10MHz CH-Low



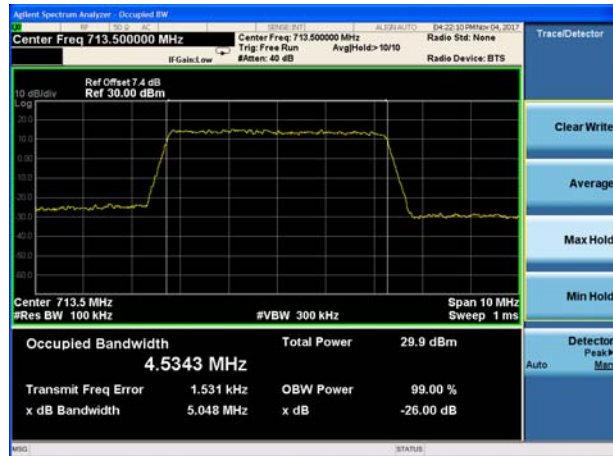
LTE Band 12 16QAM 5MHz CH-Middle



LTE Band 12 16QAM 10MHz CH-Middle



LTE Band 12 16QAM 5MHz CH-High



LTE Band 12 16QAM 10MHz CH-High



5.4 Band Edge Compliance

Ambient condition

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

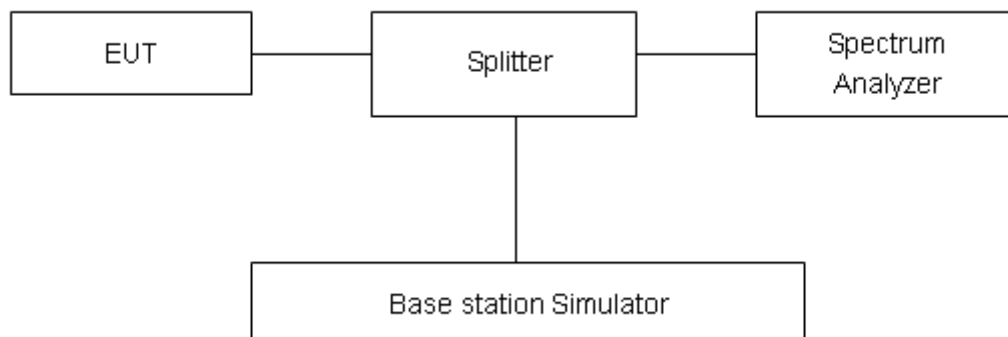
Method of Measurement

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.
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 4/7/12 (5MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/12 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4/7 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4/7 (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)- $[43 + 10 \log (P)]$ (dB)

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

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.

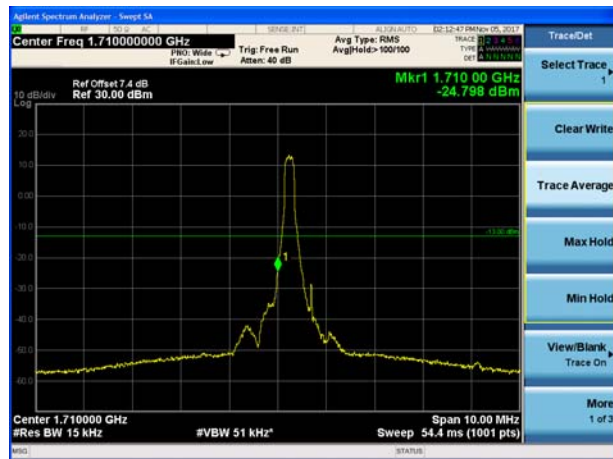
Test Result

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

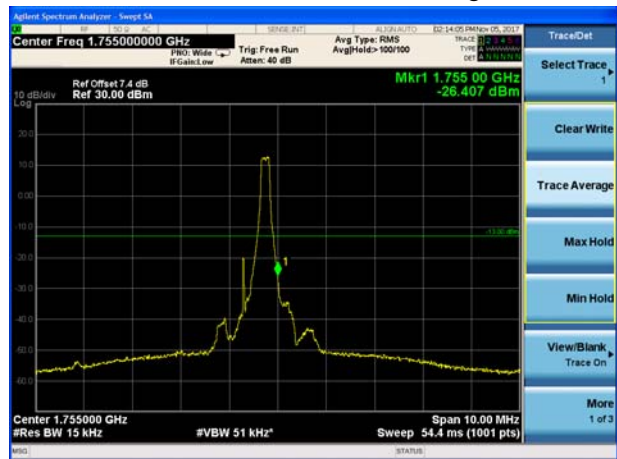




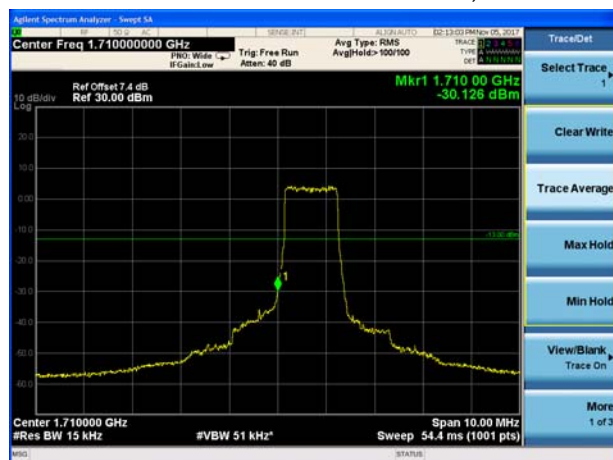
LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB



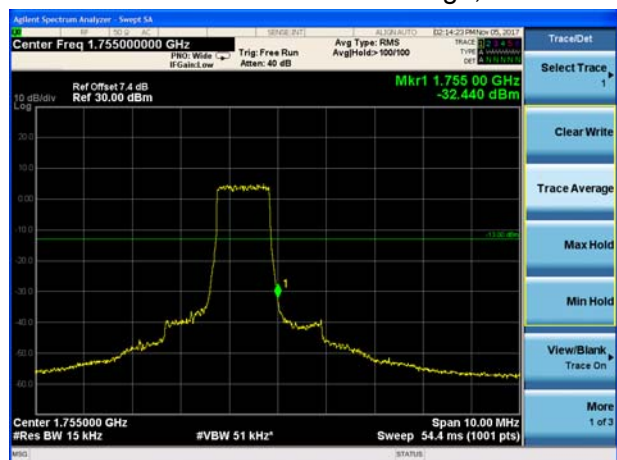
LTE Band 4 QPSK 1.4MHz CH-High, 1 RB



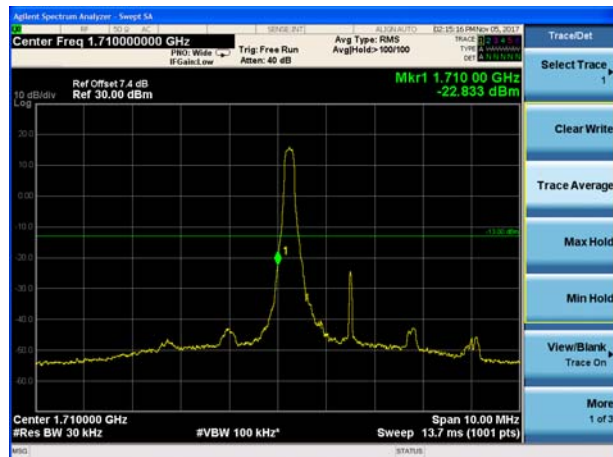
LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB



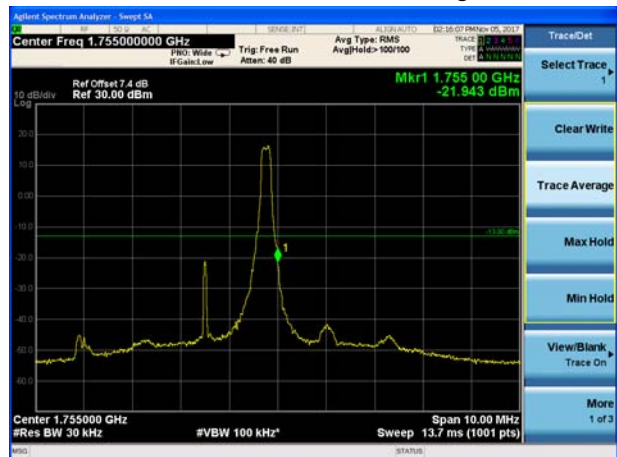
LTE Band 4 QPSK 1.4MHz CH-High, 100%RB



LTE Band 4 QPSK 3MHz CH-Low, 1 RB



LTE Band 4 QPSK 3MHz CH-High, 1 RB





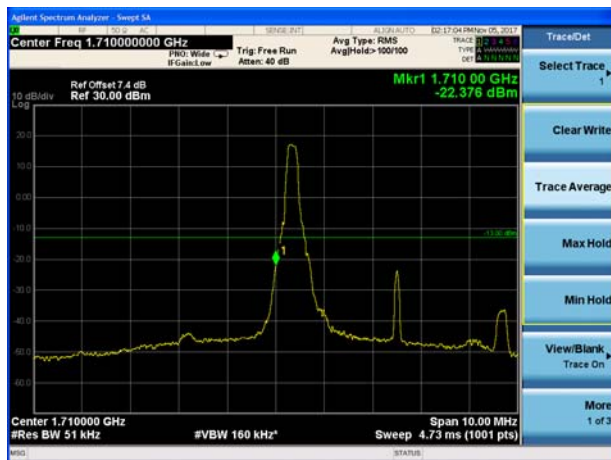
LTE Band 4 QPSK 3MHz CH-Low, 100%RB



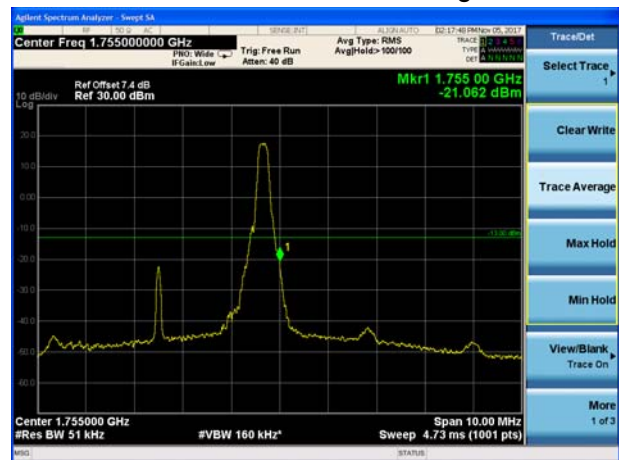
LTE Band 4 QPSK 3MHz CH-High, 100%RB



LTE Band 4 QPSK 5MHz CH-Low, 1 RB



LTE Band 4 QPSK 5MHz CH-High, 1 RB



LTE Band 4 QPSK 5MHz CH-Low, 100%RB

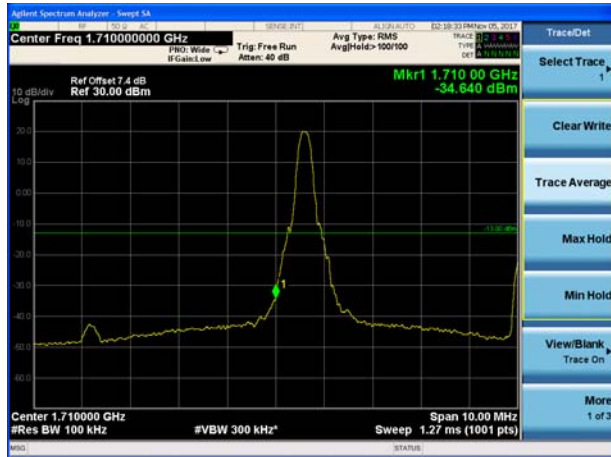


LTE Band 4 QPSK 5MHz CH-High, 100%RB

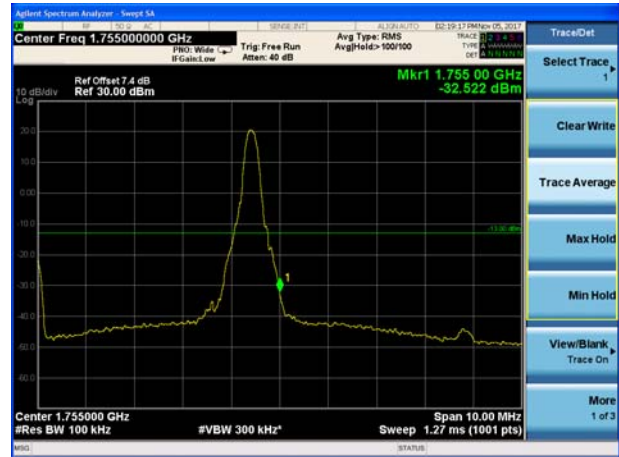




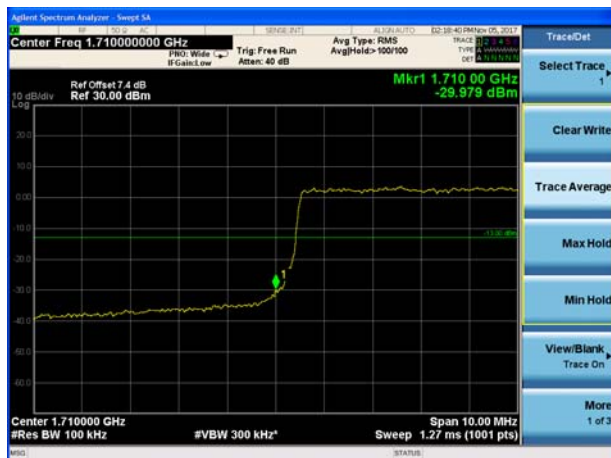
LTE Band 4 QPSK 10MHz CH-Low, 1 RB



LTE Band 4 QPSK 10MHz CH-High, 1 RB



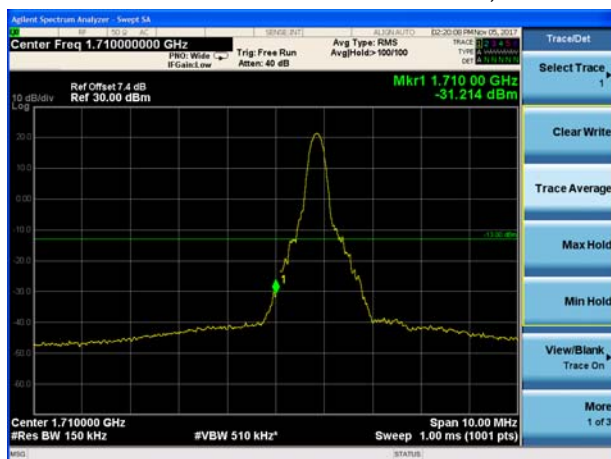
LTE Band 4 QPSK 10MHz CH-Low, 100%RB



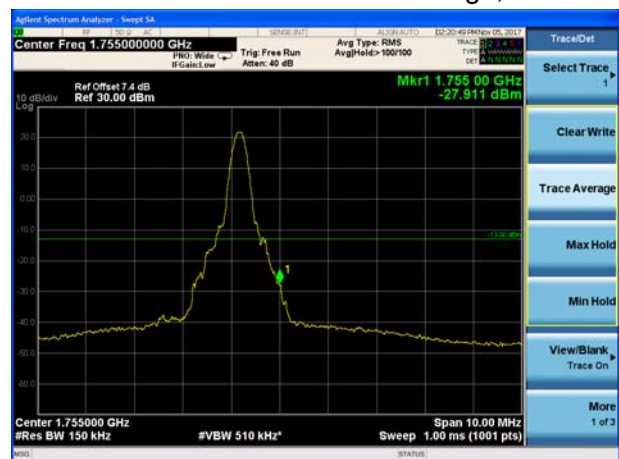
LTE Band 4 QPSK 10MHz CH-High, 100%RB



LTE Band 4 QPSK 15MHz CH-Low, 1 RB



LTE Band 4 QPSK 15MHz CH-High, 1 RB





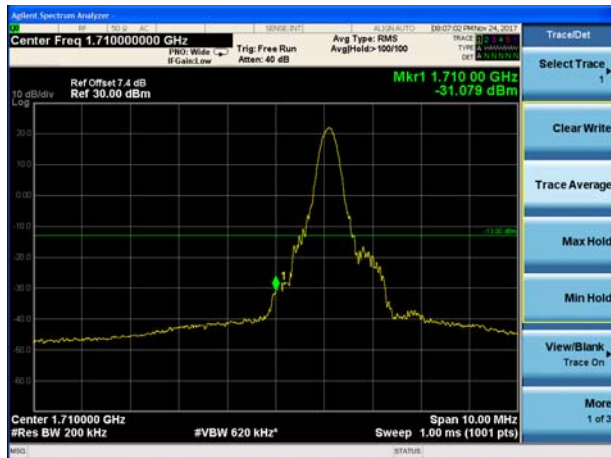
LTE Band 4 QPSK 15MHz CH-Low, 100%RB



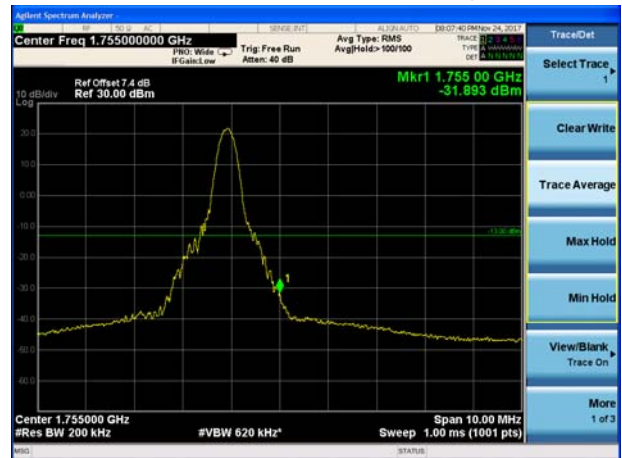
LTE Band 4 QPSK 15MHz CH-High, 100%RB



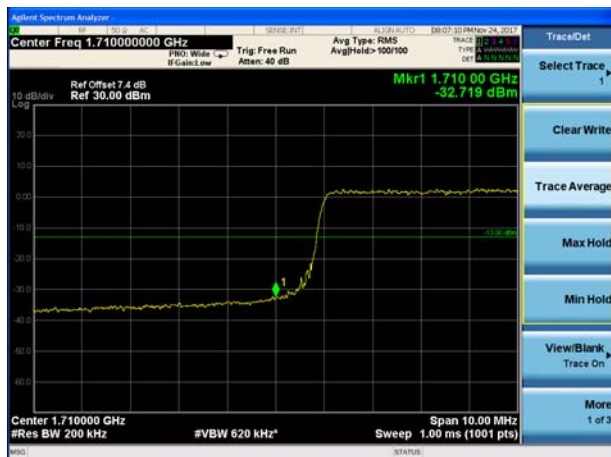
LTE Band 4 QPSK 20MHz CH-Low, 1 RB



LTE Band 4 QPSK 20MHz CH-High, 1 RB



LTE Band 4 QPSK 20MHz CH-Low, 100%RB

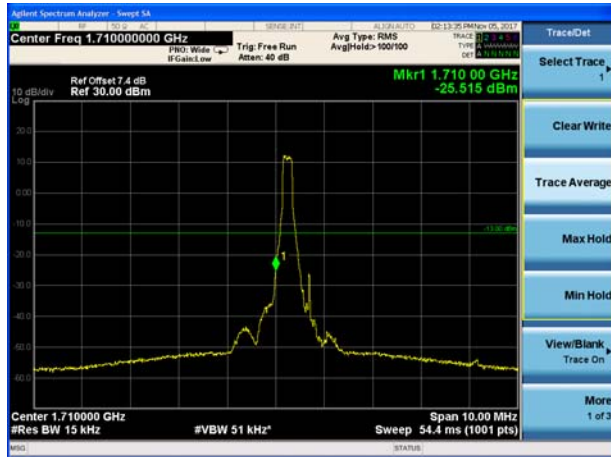


LTE Band 4 QPSK 20MHz CH-High, 100%RB

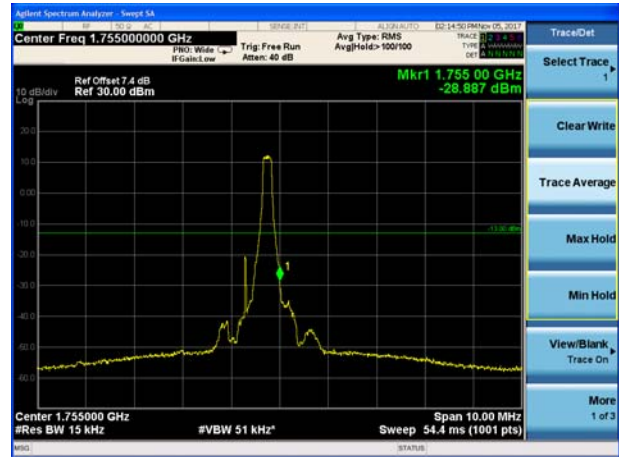




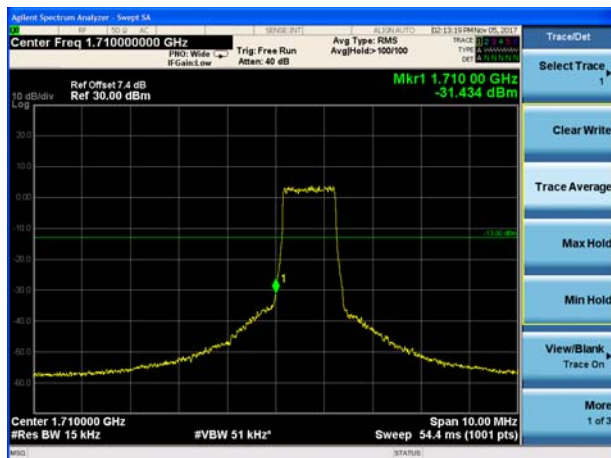
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



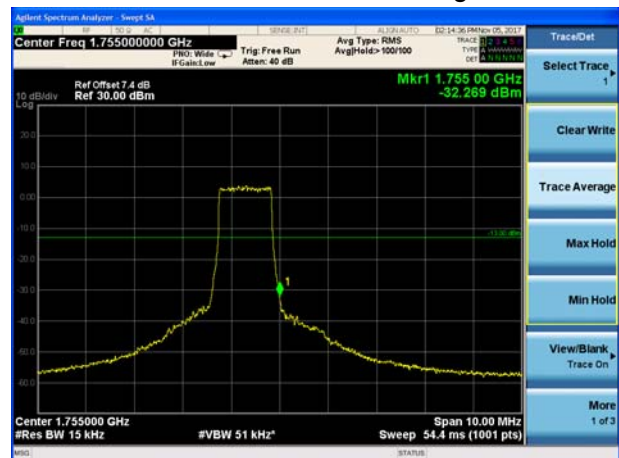
LTE Band 4 16QAM 1.4MHz CH-High, 1 RB



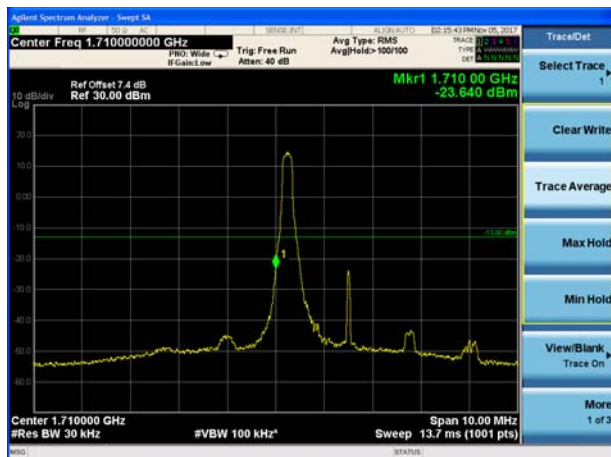
LTE Band 4 16QAM 1.4MHz CH-Low, 100%RB



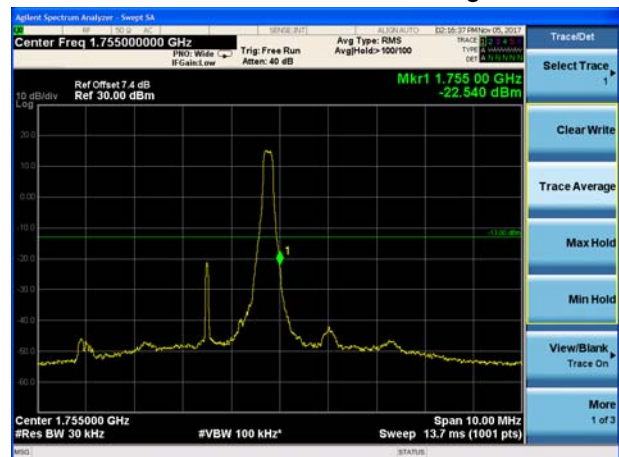
LTE Band 4 16QAM 1.4MHz CH-High, 100%RB



LTE Band 4 16QAM 3MHz CH-Low, 1 RB



LTE Band 4 16QAM 3MHz CH-High, 1 RB





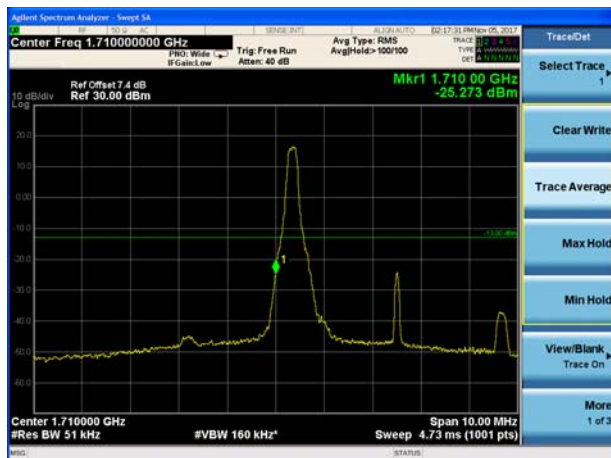
LTE Band 4 16QAM 3MHz CH-Low, 100%RB



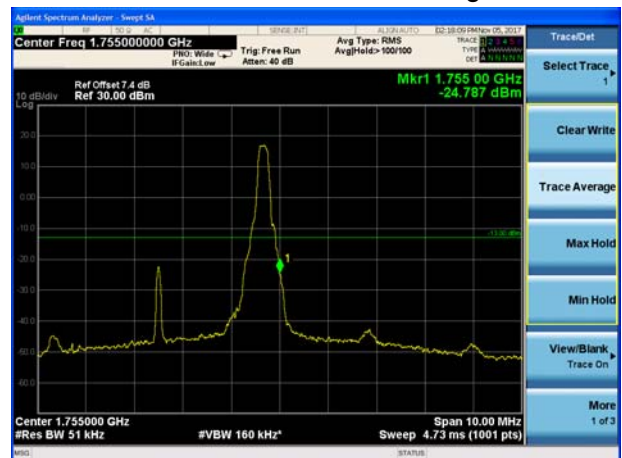
LTE Band 4 16QAM 3MHz CH-High, 100%RB



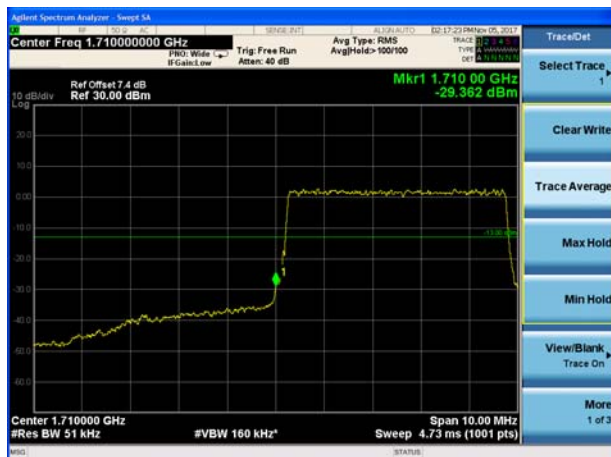
LTE Band 4 16QAM 5MHz CH-Low, 1 RB



LTE Band 4 16QAM 5MHz CH-High, 1 RB



LTE Band 4 16QAM 5MHz CH-Low, 100%RB

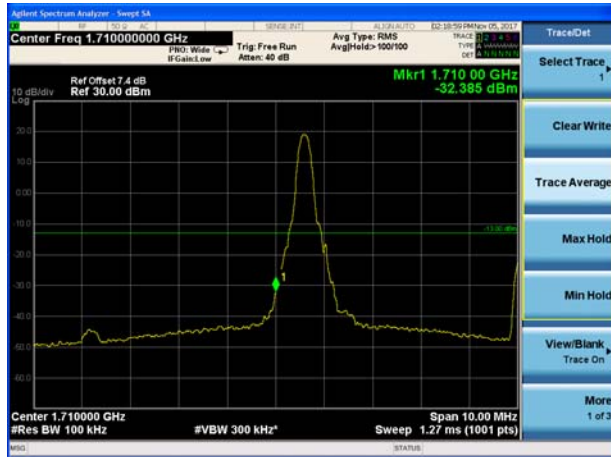


LTE Band 4 16QAM 5MHz CH-High, 100%RB

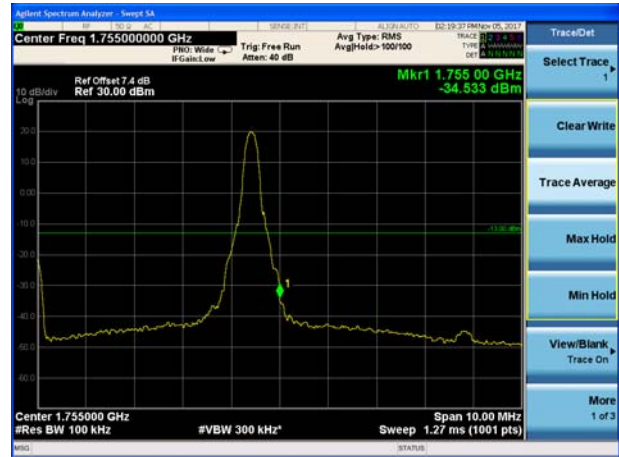




LTE Band 4 16QAM 10MHz CH-Low, 1 RB



LTE Band 4 16QAM 10MHz CH-High, 1 RB



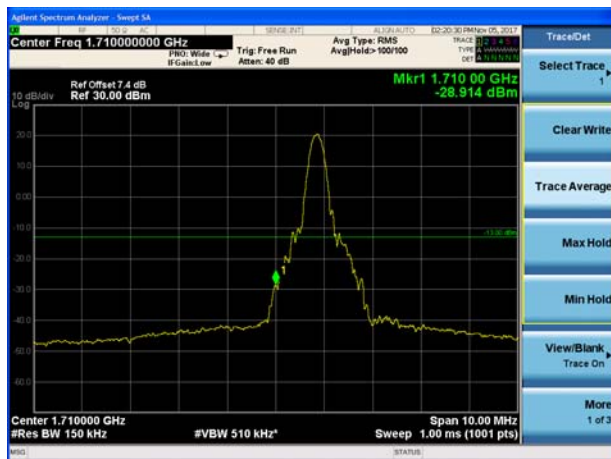
LTE Band 4 16QAM 10MHz CH-Low, 100%RB



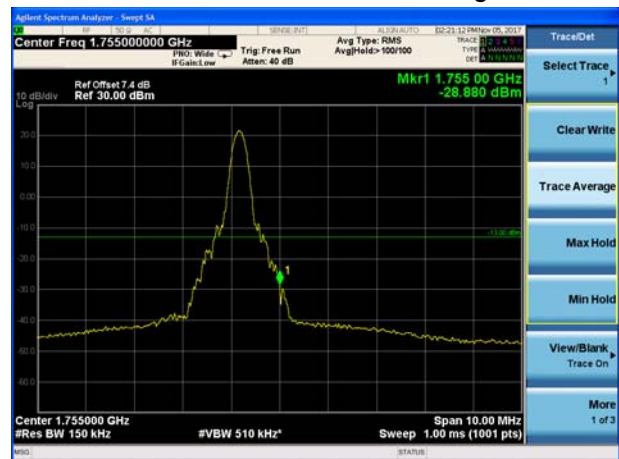
LTE Band 4 16QAM 10MHz CH-High, 100%RB



LTE Band 4 16QAM 15MHz CH-Low, 1 RB



LTE Band 4 16QAM 15MHz CH-High, 1 RB





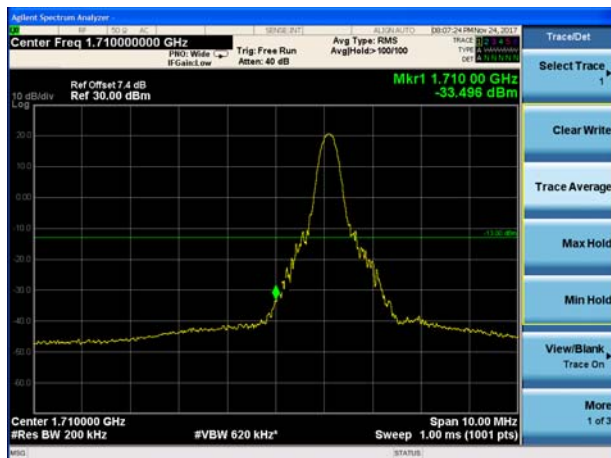
LTE Band 4 16QAM 15MHz CH-Low, 100%RB



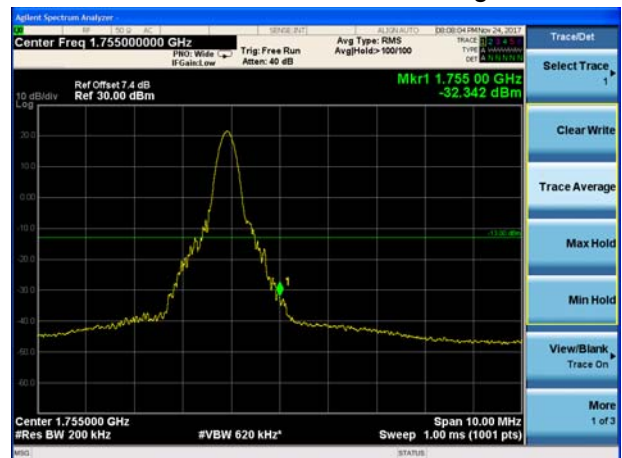
LTE Band 4 16QAM 15MHz CH-High, 100%RB



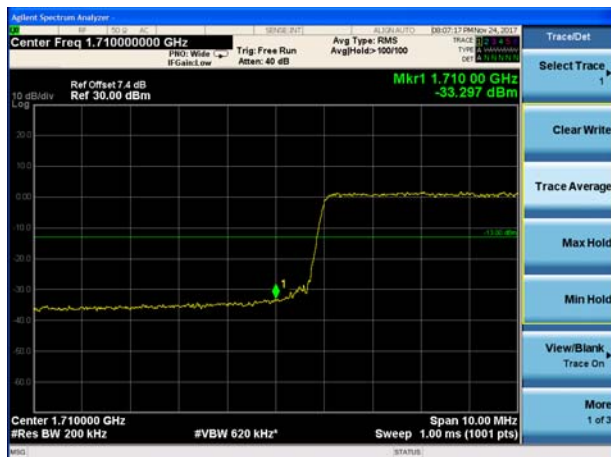
LTE Band 4 16QAM 20MHz CH-Low, 1 RB



LTE Band 4 16QAM 20MHz CH-High, 1 RB



LTE Band 4 16QAM 20MHz CH-Low, 100%RB

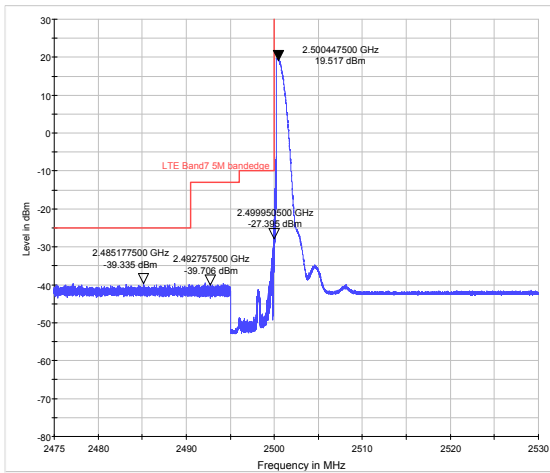


LTE Band 4 16QAM 20MHz CH-High, 100%RB

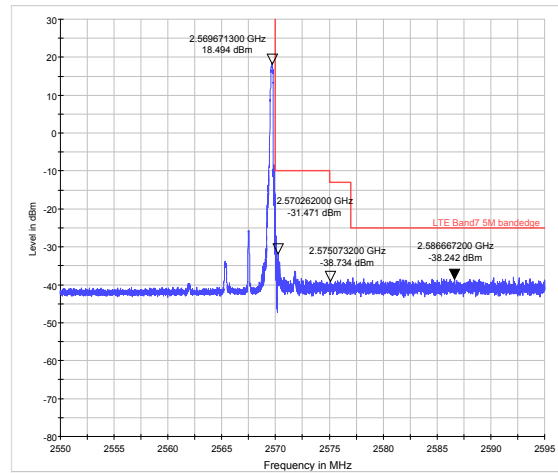




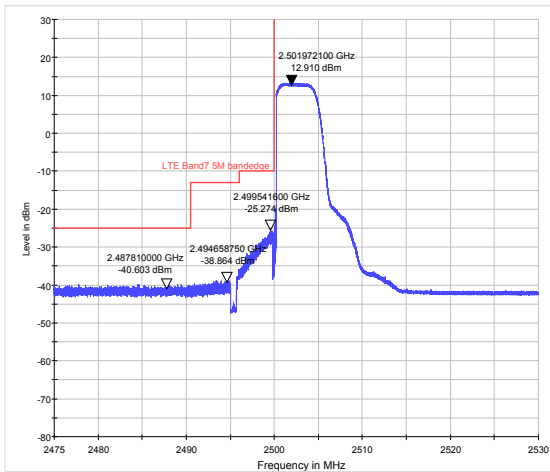
LTE Band 7 QPSK 5MHz CH-Low, 1 RB



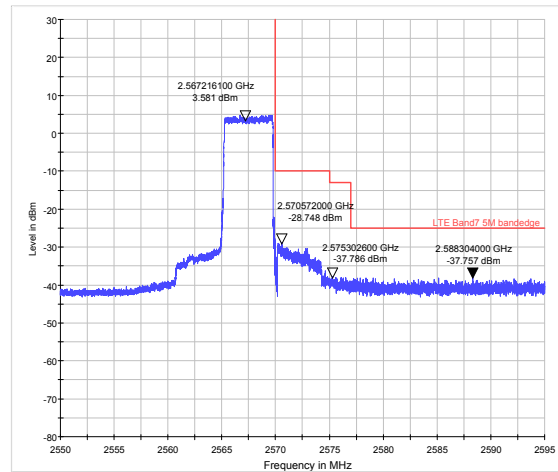
LTE Band 7 QPSK 5MHz CH-High, 1 RB



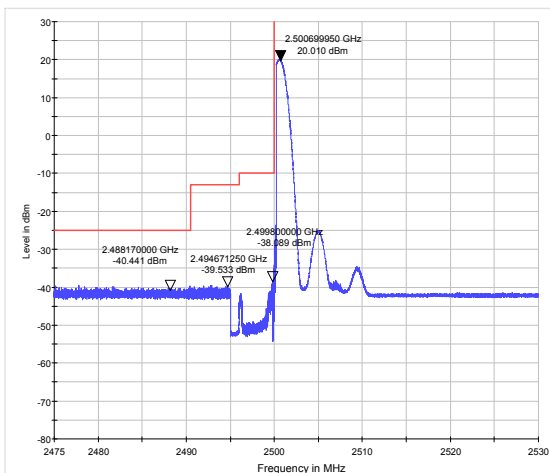
LTE Band 7 QPSK 5MHz CH-Low, 100%RB



LTE Band 7 QPSK 5MHz CH-High, 100%RB



LTE Band 7 QPSK 10MHz CH-Low, 1 RB



LTE Band 7 QPSK 10MHz CH-High, 1 RB

