RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-ZTEBLADEV8
Product	LTE/WCDMA/GSM(GPRS)
	Multi-Mode Digital Mobile Phone
Model	ZTE BLADE V8/ZTE BLADE V0800
Report No.	RXA1707-0240RF03R2
Issue Date	August 18, 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.

Jiangpeng Lan

Performed by: Jiangpeng Lan

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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(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h) /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(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(m)	PASS
Date of Testing: August 4, 2017~ August 9, 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.			

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1 Test Laboratory

1.1 Notes of the Test Report

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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.

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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
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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 V8/ZTE BLADE V0800		
IMEI:	SIM1:862121030072285 SIM2:862121030073788		
Hardware Version:	us9B		
Software Version:	ENT_CL_BLADE_V8V1.0.0B01		
Power Supply:	Battery/AC adapter		
Antenna Type:	Internal Antenna		
Test Mode(s):	WCDMA Band IV; LTE Band 4; LTE Band 7		
HSDPA UE Category:	24		
HSUPA UE Category:	6		
Maximum E.I.R.P.	WCDMA Band IV:	18.64dBm	
	LTE Band 4:	22.4dBm	
	LTE Band 7:	22.26dBm	
Rated Power Supply Voltage:	3.87V		
Extreme Voltage:	Minimum: 3.65V Maximum: 4.40V		
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
EUT Accessory			
Battery	Manufacturer: HARBIN COSLIGHT POWER CO LTD Model: Li3927T44P8h786035 Ratings:3.87Vdc,2730mAh,10.6Wh		
Adapter	Manufacturer: DOKOCOM Model: STC-A515A-Z Input power:100-240 VAC 50-60Hz 300mA		

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	Output power:5V DC 1500mA
Earphone	Manufacturer: GoerTek Model: HA3-3
USB Cable	100cm Cable, Shielded
Note：1. The information of the EUT is declared by the manufacturer.	

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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 (2017)

FCC CFR47 Part 27C (2017)

ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v02r02

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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 detailin 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	RMC/HSDPA/HSUPA/DC-HSDPA
	Effective Isotropic Radiated power	RMC
	Occupied Bandwidth	RMC
	Band Edge Compliance	RMC
	Peak-to-Average Power Ratio	RMC
	Frequency Stability	RMC
	Spurious Emissions at Antenna Terminals	RMC
Radiated Test cases	Radiates Spurious Emission	RMC

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Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7

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
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
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
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
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
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 7	-	-	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
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
Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.														

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4 Test Information

4.1 RF Power Output

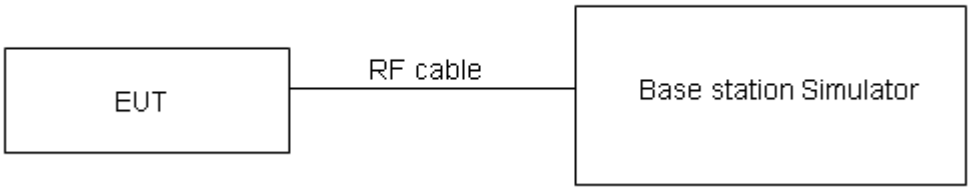
Ambient condition

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.

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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	12.2k	22.02	22.07	22.26
	64k	21.88	22.01	22.13
	144k	21.87	21.91	22.12
	384k	21.86	21.90	22.11
HSDPA	Sub - Test 1	21.85	21.91	22.10
	Sub - Test 2	21.86	21.90	22.12
	Sub - Test 3	21.46	21.48	21.70
	Sub - Test 4	21.45	21.50	21.69
HSUPA	Sub - Test 1	21.94	21.99	22.18
	Sub - Test 2	20.10	20.15	20.34
	Sub - Test 3	20.92	20.97	21.16
	Sub - Test 4	20.11	20.16	20.35
	Sub - Test 5	21.90	21.95	22.14
DC-HSDPA	Sub - Test 1	21.89	21.94	22.13
	Sub - Test 2	21.87	21.93	22.12
	Sub - Test 3	21.36	21.42	21.61
	Sub - Test 4	21.35	21.41	21.60

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.

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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	22.62	22.83	22.77
		1	2	22.45	22.67	22.63
		1	5	22.45	22.49	22.71
		3	0	22.51	22.53	22.65
		3	2	22.35	22.55	22.45
		3	3	22.41	22.43	22.33
		6	0	21.52	21.57	21.72
	16QAM	1	0	21.43	21.50	21.61
		1	2	21.33	21.35	21.46
		1	5	21.25	21.37	21.37
		3	0	21.39	21.36	21.71
		3	2	21.33	21.48	21.56
		3	3	21.38	21.45	21.28
		6	0	20.45	20.53	20.64
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	22.64	22.87	22.80
		1	7	22.48	22.72	22.67
		1	14	22.48	22.54	22.75
		8	0	21.61	21.65	21.78
		8	4	21.47	21.65	21.57
		8	7	21.51	21.54	21.43
		15	0	21.55	21.61	21.75
	16QAM	1	0	21.46	21.52	21.64
		1	7	21.36	21.40	21.50
		1	14	21.27	21.41	21.40
		8	0	20.50	20.49	20.83
		8	4	20.44	20.61	20.68
		8	7	20.48	20.57	20.41
		15	0	20.48	20.57	20.67
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	22.61	22.85	22.76
		1	13	22.46	22.68	22.64
		1	24	22.45	22.49	22.71
		12	0	21.58	21.60	21.74
		12	6	21.45	21.61	21.52
		12	13	21.49	21.52	21.39
		25	0	21.53	21.60	21.73

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	16QAM	1	0	21.43	21.48	21.61
		1	13	21.33	21.38	21.47
		1	24	21.24	21.39	21.36
		12	0	20.48	20.45	20.80
		12	6	20.41	20.56	20.64
		12	13	20.45	20.52	20.37
		25	0	20.46	20.53	20.62
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	22.63	22.86	22.79
		1	25	22.49	22.73	22.68
		1	49	22.47	22.53	22.74
		25	0	21.61	21.65	21.78
		25	13	21.48	21.66	21.56
		25	25	21.51	21.56	21.44
		50	0	21.61	21.62	21.77
	16QAM	1	0	21.45	21.51	21.63
		1	25	21.36	21.42	21.50
		1	49	21.27	21.41	21.39
		25	0	20.51	20.50	20.84
		25	13	20.43	20.60	20.67
		25	25	20.48	20.57	20.41
		50	0	20.49	20.58	20.66
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	22.62	22.82	22.77
		1	38	22.47	22.72	22.65
		1	74	22.44	22.48	22.70
		36	0	21.59	21.61	21.75
		36	18	21.45	21.61	21.52
		36	39	21.48	21.53	21.40
		75	0	21.59	21.58	21.72
	16QAM	1	0	21.40	21.49	21.61
		1	38	21.34	21.39	21.48
		1	74	21.24	21.37	21.36
		36	0	20.48	20.48	20.81
		36	18	20.40	20.55	20.63
		36	39	20.46	20.53	20.38
		75	0	20.46	20.53	20.62
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	22.59	22.78	22.74
		1	50	22.46	22.68	22.63

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		1	99	22.42	22.47	22.67
		50	0	21.56	21.57	21.71
		50	25	21.43	21.51	21.49
		50	50	21.45	21.48	21.36
		100	0	21.56	21.53	21.48
	16QAM	1	0	21.38	21.45	21.56
		1	50	21.30	21.37	21.44
		1	99	21.22	21.34	21.34
		50	0	20.45	20.44	20.78
		50	25	20.37	20.53	20.60
		50	50	20.43	20.48	20.34
		100	0	20.44	20.49	20.59

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

LTE FDD 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	23.47	23.29	23.52
		1	13	23.51	23.60	23.98
		1	24	23.62	23.51	23.48
		12	0	22.47	22.40	22.50
		12	6	22.46	22.37	22.46
		12	13	22.39	22.38	22.53
		25	0	22.41	22.39	22.50
	16QAM	1	0	22.40	22.24	22.41
		1	13	22.45	22.40	22.46
		1	24	22.34	22.32	22.18
		12	0	21.44	21.28	21.43
		12	6	21.43	21.40	21.51
		12	13	21.49	21.32	21.45
		25	0	21.28	21.28	21.37
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	23.49	23.30	23.55
		1	25	23.54	23.65	24.02
		1	49	23.64	23.55	23.51
		25	0	22.50	22.45	22.54
		25	13	22.49	22.42	22.50
		25	25	22.41	22.42	22.58
		50	0	22.49	22.41	22.54
	16QAM	1	0	22.42	22.27	22.43

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		1	25	22.48	22.44	22.49
		1	49	22.37	22.34	22.21
		25	0	21.47	21.33	21.47
		25	13	21.45	21.44	21.54
		25	25	21.52	21.37	21.49
		50	0	21.31	21.33	21.41
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	23.48	23.26	23.53
		1	38	23.52	23.64	23.99
		1	74	23.61	23.50	23.47
		36	0	22.48	22.41	22.51
		36	18	22.46	22.37	22.46
		36	39	22.38	22.39	22.54
		75	0	22.47	22.37	22.49
	16QAM	1	0	22.37	22.25	22.41
		1	38	22.46	22.41	22.47
		1	74	22.34	22.30	22.18
		36	0	21.44	21.31	21.44
		36	18	21.42	21.39	21.50
		36	39	21.50	21.33	21.46
		75	0	21.28	21.28	21.37
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	23.45	23.22	23.50
		1	50	23.51	23.60	23.97
		1	99	23.59	23.49	23.44
		50	0	22.45	22.36	22.47
		50	25	22.44	22.33	22.43
		50	50	22.35	22.34	22.50
		100	0	22.44	22.32	22.45
	16QAM	1	0	22.35	22.21	22.36
		1	50	22.42	22.39	22.43
		1	99	22.32	22.27	22.16
		50	0	21.41	21.27	21.41
		50	25	21.39	21.37	21.47
		50	50	21.47	21.28	21.42
		100	0	21.26	21.24	21.34

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4.2 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 ANSI C63.26 (2015) Section 5.5.2.3.
2. Above 30MHz：The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + Ga
The measurement results are amend as described below:
Power(EIRP)=PMea- Pcl + Ga
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

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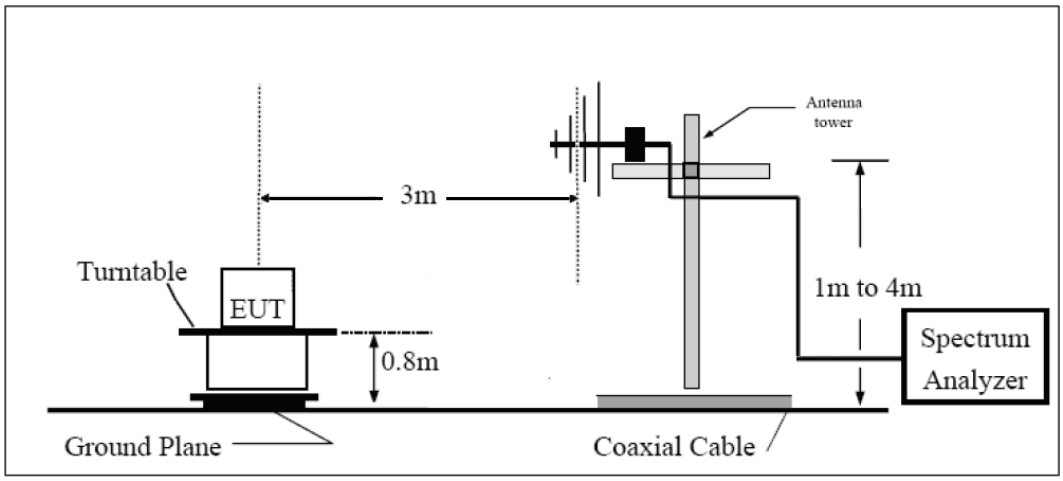
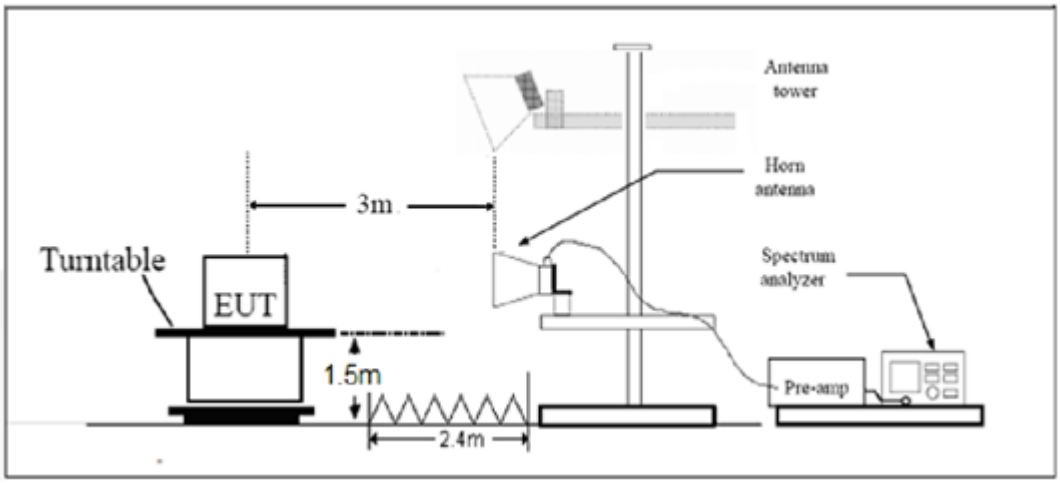
Test setup

30MHz~~~ 1GHz



Above 1GHz



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.

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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(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)	⩽ 1 W (30 dBm)
Part 27.50(h)(2) Limit (EIRP)	⩽ 2 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 dB

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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	-29.26	-45.44	0.00	1.82	18.00	Pass
1732.6	H	-28.70	-45.38	0.00	1.96	18.64	Pass
1752.6	H	-29.48	-45.38	0.00	1.93	17.83	Pass
1712.4	V	-30.68	-45.54	0.00	1.82	16.68	Pass
1732.6	V	-29.87	-45.46	0.00	1.96	17.55	Pass
1752.6	V	-30.50	-45.49	0.00	1.93	16.92	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	-55.59	-54.30	0.00	1.44	21.59	Pass
	1732.5	H	-55.73	-54.32	0.00	1.57	21.97	Pass
	1754.3	H	-55.68	-54.10	0.00	1.72	21.40	Pass
	1710.7	V	-55.69	-54.35	0.00	1.44	20.08	Pass
	1732.5	V	-55.86	-54.41	0.00	1.57	20.70	Pass
	1754.3	V	-56.12	-54.52	0.00	1.72	20.64	Pass
3MHz (QPSK)	1711.5	H	-55.63	-54.33	0.00	1.44	21.70	Pass
	1732.5	H	-55.71	-54.32	0.00	1.57	22.40	Pass
	1753.5	H	-55.68	-54.11	0.00	1.72	21.51	Pass
	1711.5	V	-55.69	-54.35	0.00	1.44	19.88	Pass
	1732.5	V	-55.86	-54.41	0.00	1.57	20.67	Pass
	1753.5	V	-56.09	-54.48	0.00	1.72	20.18	Pass
5MHz (QPSK)	1712.5	H	-55.62	-54.34	0.00	1.44	22.03	Pass
	1732.5	H	-55.72	-54.32	0.00	1.57	22.22	Pass
	1752.5	H	-55.70	-54.13	0.00	1.72	21.49	Pass
	1712.5	V	-55.73	-54.38	0.00	1.44	19.53	Pass
	1732.5	V	-55.87	-54.41	0.00	1.57	20.23	Pass
	1752.5	V	-56.07	-54.47	0.00	1.72	20.46	Pass
10MHz (QPSK)	1715	H	-55.61	-54.33	0.00	1.44	22.07	Pass
	1732.5	H	-55.71	-54.32	0.00	1.57	22.39	Pass
	1750	H	-55.62	-54.12	0.00	1.66	22.08	Pass
	1715	V	-55.66	-54.32	0.00	1.44	19.99	Pass
	1732.5	V	-55.86	-54.41	0.00	1.57	20.49	Pass
	1750	H	-56.06	-54.52	0.00	1.66	20.69	Pass
15MHz (QPSK)	1717.5	H	-55.67	-54.35	0.00	1.49	21.99	Pass
	1732.5	H	-55.72	-54.32	0.00	1.57	22.15	Pass
	1747.5	H	-55.66	-54.17	0.00	1.66	22.26	Pass
	1717.5	V	-55.78	-54.39	0.00	1.49	19.82	Pass
	1732.5	V	-55.87	-54.41	0.00	1.57	20.32	Pass

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	1747.5	V	-56.05	-54.51	0.00	1.66	20.72	Pass
20MHz (QPSK)	1720	H	-55.70	-54.37	0.00	1.49	21.79	Pass
	1732.5	H	-55.72	-54.32	0.00	1.57	21.98	Pass
	1745	H	-55.70	-54.23	0.00	1.63	22.12	Pass
	1720	V	-55.83	-54.44	0.00	1.49	19.60	Pass
	1732.5	V	-55.88	-54.41	0.00	1.57	19.97	Pass
	1745	V	-56.11	-54.59	0.00	1.63	20.35	Pass
1.4MHz (16QAM)	1710.7	H	-55.60	-54.30	0.00	1.44	21.30	Pass
	1732.5	H	-55.74	-54.32	0.00	1.57	21.62	Pass
	1754.3	H	-55.69	-54.10	0.00	1.72	21.10	Pass
	1710.7	V	-55.70	-54.35	0.00	1.44	19.78	Pass
	1732.5	V	-55.86	-54.41	0.00	1.57	20.50	Pass
	1754.3	V	-56.13	-54.52	0.00	1.72	20.43	Pass
3MHz (16QAM)	1711.5	H	-55.63	-54.33	0.00	1.44	21.50	Pass
	1732.5	H	-55.72	-54.32	0.00	1.57	22.05	Pass
	1753.5	H	-55.69	-54.11	0.00	1.72	21.25	Pass
	1711.5	V	-55.70	-54.35	0.00	1.44	19.66	Pass
	1732.5	V	-55.86	-54.41	0.00	1.57	20.46	Pass
	1753.5	V	-56.10	-54.48	0.00	1.72	19.85	Pass
5MHz (16QAM)	1712.5	H	-55.63	-54.34	0.00	1.44	21.80	Pass
	1732.5	H	-55.72	-54.32	0.00	1.57	22.01	Pass
	1752.5	H	-55.71	-54.13	0.00	1.72	21.23	Pass
	1712.5	V	-55.73	-54.38	0.00	1.44	19.33	Pass
	1732.5	V	-55.88	-54.41	0.00	1.57	20.01	Pass
	1752.5	V	-56.08	-54.47	0.00	1.72	20.05	Pass
10MHz (16QAM)	1715	H	-55.68	-54.33	0.00	1.44	19.85	Pass
	1732.5	H	-55.72	-54.32	0.00	1.57	22.01	Pass
	1750	H	-55.69	-54.12	0.00	1.66	19.75	Pass
	1715	V	-55.67	-54.32	0.00	1.44	19.65	Pass
	1732.5	V	-55.87	-54.41	0.00	1.57	20.15	Pass
	1750	V	-56.07	-54.52	0.00	1.66	20.30	Pass
15MHz (16QAM)	1717.5	H	-55.68	-54.35	0.00	1.49	21.75	Pass
	1732.5	H	-55.78	-54.32	0.00	1.57	19.90	Pass
	1747.5	H	-55.67	-54.17	0.00	1.66	22.06	Pass
	1717.5	V	-55.78	-54.39	0.00	1.49	19.62	Pass
	1732.5	V	-55.87	-54.41	0.00	1.57	20.02	Pass
	1747.5	V	-56.06	-54.51	0.00	1.66	20.50	Pass
20MHz (16QAM)	1720	H	-55.71	-54.37	0.00	1.49	21.55	Pass
	1732.5	H	-55.73	-54.32	0.00	1.57	21.70	Pass
	1745	H	-55.70	-54.23	0.00	1.63	21.90	Pass
	1720	V	-55.84	-54.44	0.00	1.49	19.30	Pass
	1732.5	V	-55.88	-54.41	0.00	1.57	19.66	Pass
	1745	V	-56.12	-54.59	0.00	1.63	20.15	Pass

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LTE Band 7								
Band width	Frequency (MHz)	Ant Pot (H/V)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	Conclusion
5MHz (QPSK)	2502.5	H	-61.34	-59.64	0.00	1.81	20.38	Pass
	2535	H	-61.44	-59.72	0.00	1.81	19.70	Pass
	2567.5	H	-61.73	-59.98	0.00	1.83	18.92	Pass
	2502.5	V	-61.05	-59.31	0.00	1.81	18.47	Pass
	2535	V	-60.84	-59.11	0.00	1.81	19.14	Pass
	2567.5	V	-61.34	-59.59	0.00	1.83	19.01	Pass
10MHz (QPSK)	2505	H	-61.31	-59.61	0.00	1.82	20.68	Pass
	2535	H	-61.44	-59.72	0.00	1.81	19.77	Pass
	2565	H	-61.73	-60.02	0.00	1.81	20.07	Pass
	2505	V	-61.07	-59.33	0.00	1.82	19.24	Pass
	2535	V	-60.84	-59.11	0.00	1.81	19.20	Pass
	2565	V	-61.30	-59.59	0.00	1.81	19.81	Pass
15MHz (QPSK)	2507.5	H	-61.43	-59.71	0.00	1.80	19.03	Pass
	2535	H	-61.44	-59.72	0.00	1.81	19.58	Pass
	2562.5	H	-61.81	-60.08	0.00	1.82	19.39	Pass
	2507.5	V	-61.01	-59.29	0.00	1.80	19.21	Pass
	2535	V	-61.45	-59.72	0.00	1.81	19.08	Pass
	2562.5	V	-61.20	-59.46	0.00	1.82	19.24	Pass
20MHz (QPSK)	2510	H	-61.18	-59.52	0.00	1.77	20.36	Pass
	2535	H	-61.42	-59.72	0.00	1.81	20.35	Pass
	2560	H	-61.74	-60.01	0.00	1.82	19.70	Pass
	2510	V	-60.78	-59.09	0.00	1.77	19.07	Pass
	2535	V	-61.44	-59.72	0.00	1.81	19.50	Pass
	2560	V	-61.25	-59.52	0.00	1.82	19.50	Pass
5MHz (16QAM)	2502.5	H	-61.35	-59.64	0.00	1.81	20.05	Pass
	2535	H	-61.44	-59.72	0.00	1.81	19.50	Pass
	2567.5	H	-61.74	-59.98	0.00	1.83	18.61	Pass
	2502.5	V	-61.06	-59.31	0.00	1.81	18.05	Pass
	2535	V	-60.84	-59.11	0.00	1.81	18.90	Pass
	2567.5	V	-61.35	-59.59	0.00	1.83	18.75	Pass
10MHz (16QAM)	2505	H	-61.32	-59.61	0.00	1.82	20.42	Pass
	2535	H	-61.44	-59.72	0.00	1.81	19.55	Pass
	2565	H	-61.73	-60.02	0.00	1.81	19.80	Pass
	2505	V	-61.07	-59.33	0.00	1.82	19.00	Pass
	2535	V	-60.84	-59.11	0.00	1.81	18.96	Pass
	2565	V	-61.31	-59.59	0.00	1.81	19.60	Pass
15MHz (16QAM)	2507.5	H	-61.43	-59.71	0.00	1.80	18.80	Pass
	2535	H	-61.44	-59.72	0.00	1.81	19.32	Pass
	2562.5	H	-61.82	-60.08	0.00	1.82	19.02	Pass

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	2507.5	V	-61.01	-59.29	0.00	1.80	19.00	Pass
	2535	V	-61.45	-59.72	0.00	1.81	18.76	Pass
	2562.5	V	-61.20	-59.46	0.00	1.82	19.01	Pass
20MHz (16QAM)	2510	H	-61.19	-59.52	0.00	1.77	20.05	Pass
	2535	H	-61.43	-59.72	0.00	1.81	20.08	Pass
	2560	H	-61.74	-60.01	0.00	1.82	19.50	Pass
	2510	V	-60.78	-59.09	0.00	1.77	18.79	Pass
	2535	V	-61.45	-59.72	0.00	1.81	19.25	Pass
	2560	V	-61.26	-59.52	0.00	1.82	19.20	Pass

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

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4.3 Occupied Bandwidth

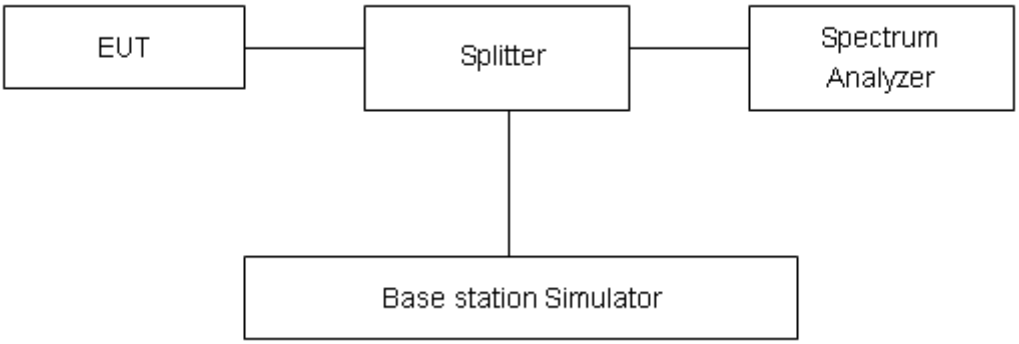
Ambient condition

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 (1.4MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4 (3MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7 (5MHz).
RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/ (10MHz/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=624Hz.

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Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
WCDMA Band IV (RMC)	1312	1712.4	4.1179	4.681
	1413	1732.6	4.1111	4.669
	1513	1752.6	4.1166	4.677

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1253	1.361
			20175	1732.5	1.1166	1.349
			20393	1754.3	1.1278	1.346
		3	19965	1711.5	2.7420	3.056
			20175	1732.5	2.7430	3.053
			20385	1753.5	2.7412	3.048
		5	19975	1712.5	4.5110	5.007
			20175	1732.5	4.5040	5.007
			20375	1752.5	4.5025	5.016
		10	20000	1715	9.0464	10.170
			20175	1732.5	9.0133	10.020
			20350	1750	9.0366	10.040
		15	20025	1717.5	13.4500	14.750
			20175	1732.5	13.3900	14.610
			20325	1747.5	13.4410	14.770
		20	20050	1720	17.9030	19.290
			20175	1732.5	17.8220	19.120
			20300	1745	17.8730	19.360
	16QAM	1.4	19957	1710.7	1.1288	1.341
			20175	1732.5	1.1178	1.327
			20393	1754.3	1.1202	1.363
		3	19965	1711.5	2.7525	3.036
			20175	1732.5	2.7346	3.053
			20385	1753.5	2.7267	3.064
		5	19975	1712.5	4.5078	4.994
			20175	1732.5	4.5233	5.033
			20375	1752.5	4.5390	5.039
		10	20000	1715	9.0118	9.987
			20175	1732.5	9.0105	9.919

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			20350	1750	9.0254	10.060
		15	20025	1717.5	13.4510	14.690
			20175	1732.5	13.4250	14.690
			20325	1747.5	13.4520	14.590
		20	20050	1720	17.8600	19.350
			20175	1732.5	17.8370	19.290
			20300	1745	17.8860	19.330

LTE Band 7						
RB	**Modulation**	**Bandwidth (MHz)**	**Channel**	**Frequency (MHz)**	**99% Power Bandwidth(MHz)**	**-26dBc Bandwidth(MHz)**
100%	QPSK	5	20775	2502.5	4.5254	4.985
			21100	2535	4.5107	5.018
			21425	2567.5	4.5009	5.019
		10	20800	2505	9.0075	10.010
			21100	2535	9.0418	9.957
			21400	2565	9.0396	10.030
		15	20825	2507.5	13.4580	14.770
			21100	2535	13.4000	14.600
			21375	2562.5	13.4520	14.670
		20	20850	2510	17.8810	19.230
			21100	2535	17.8480	19.540
			21350	2560	17.8950	19.350
	16QAM	5	20775	2502.5	4.4932	5.009
			21100	2535	4.5111	5.001
			21425	2567.5	4.5265	4.966
		10	20800	2505	9.0155	9.936
			21100	2535	9.0305	9.972
			21400	2565	9.0130	10.060
		15	20825	2507.5	13.4590	14.710
			21100	2535	13.4600	14.590
			21375	2562.5	13.4770	14.740
		20	20850	2510	17.8220	19.230
			21100	2535	17.8530	19.160
			21350	2560	17.9330	19.340

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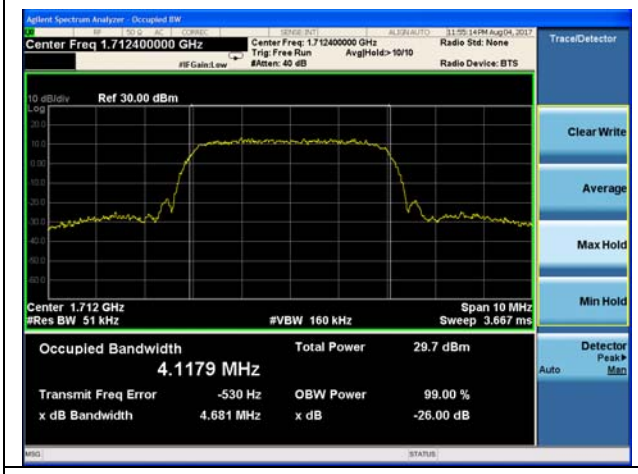
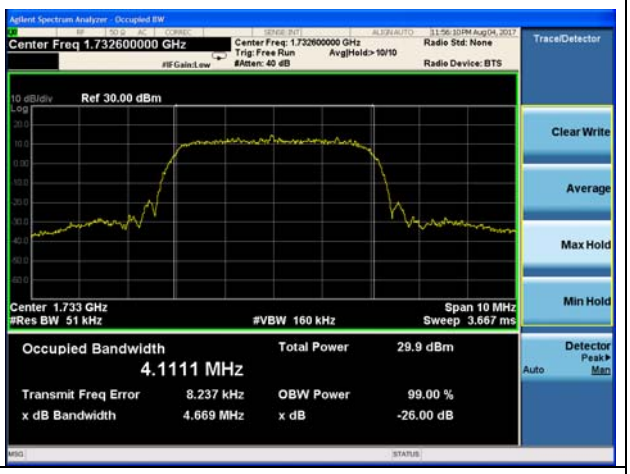
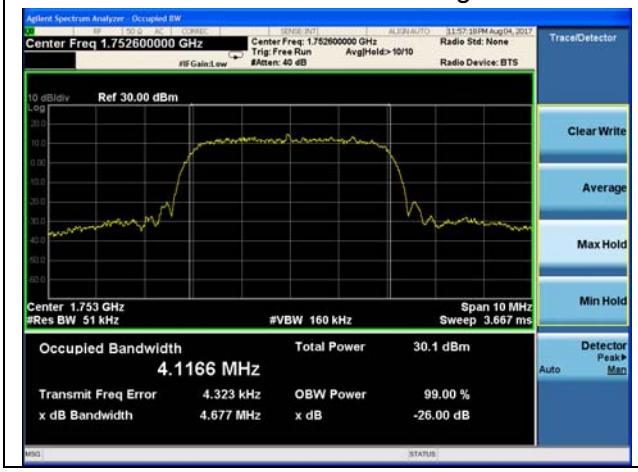
WCDMA Band IV CH-Low



WCDMA Band IV CH Middle



WCDMA Band IV CH High



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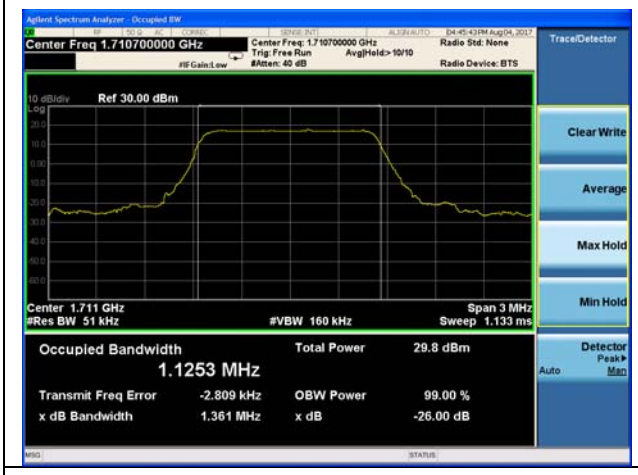
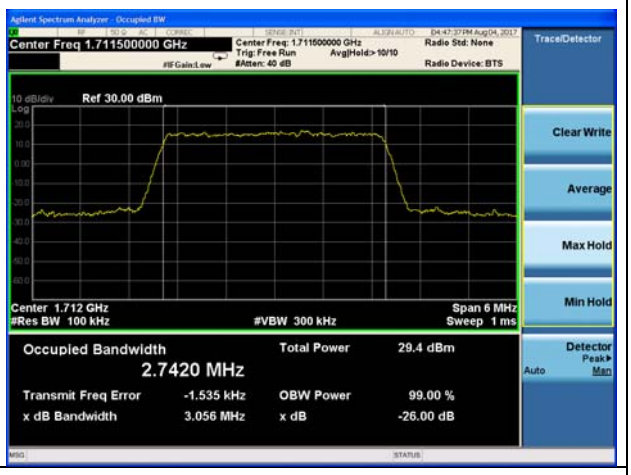
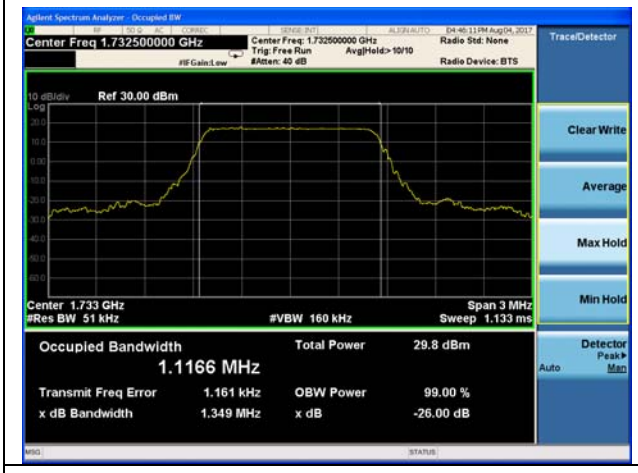
LTE Band 4 QPSK 1.4MHz CH-Low



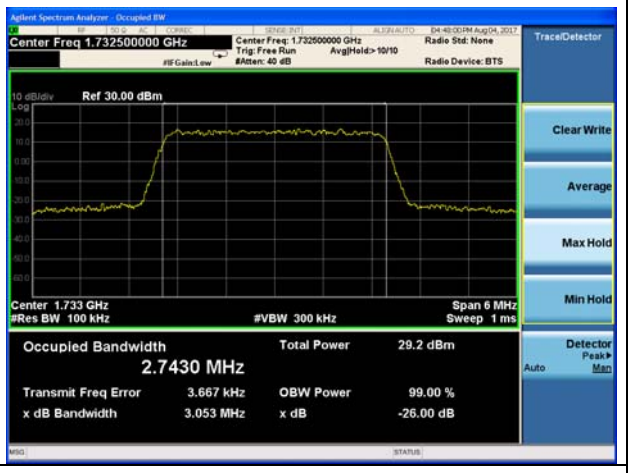
LTE Band 4 QPSK 3MHz CH-Low



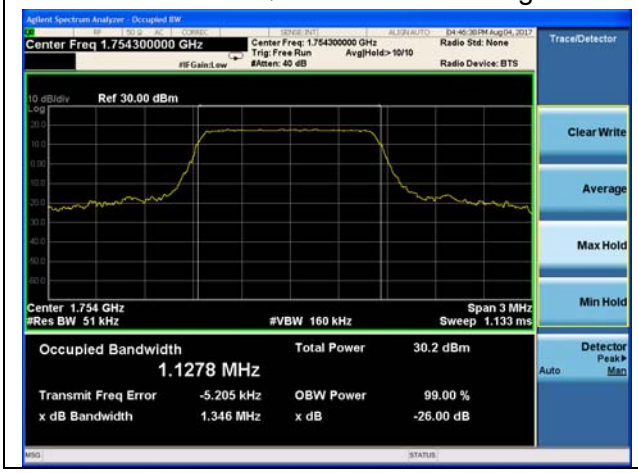
LTE Band 4 QPSK 1.4MHz CH-Middle



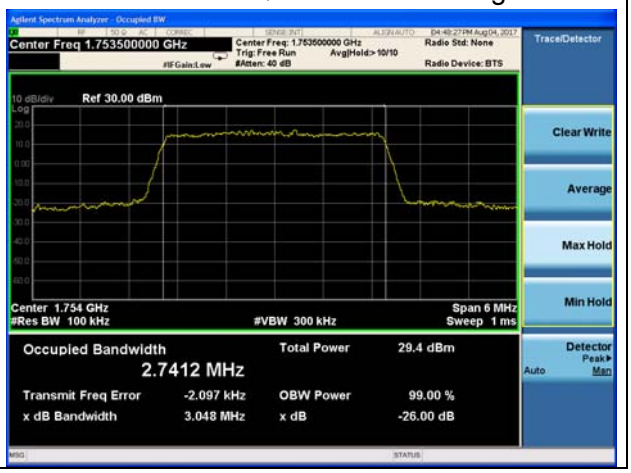
LTE Band 4 QPSK 3MHz CH-Middle



LTE Band 4 QPSK 1.4MHz CH-High



LTE Band 4 QPSK 3MHz CH-High



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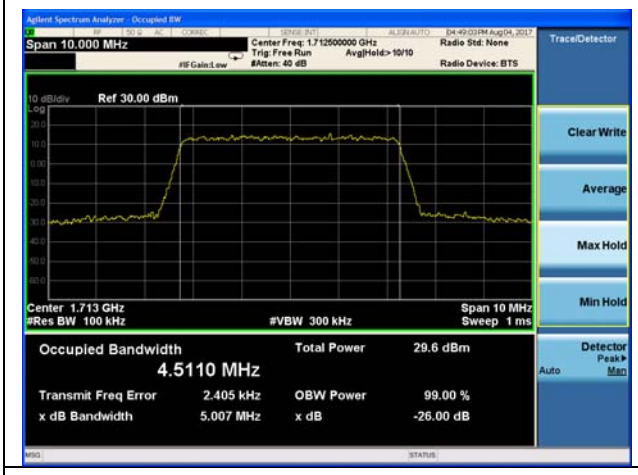
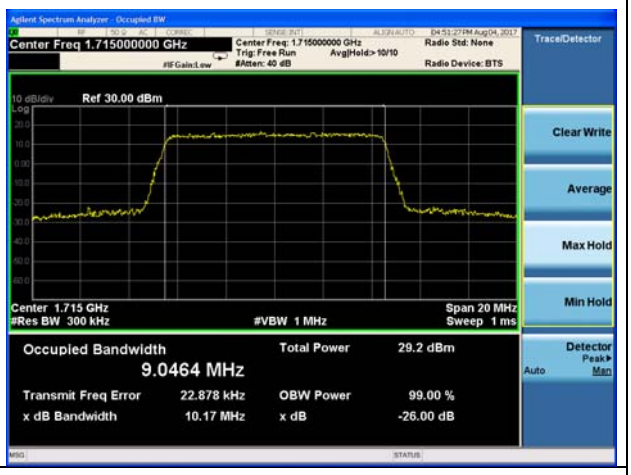
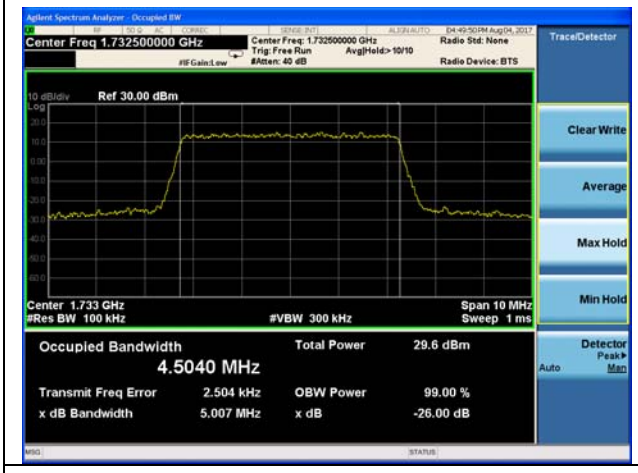
LTE Band 4 QPSK 5MHz CH-Low



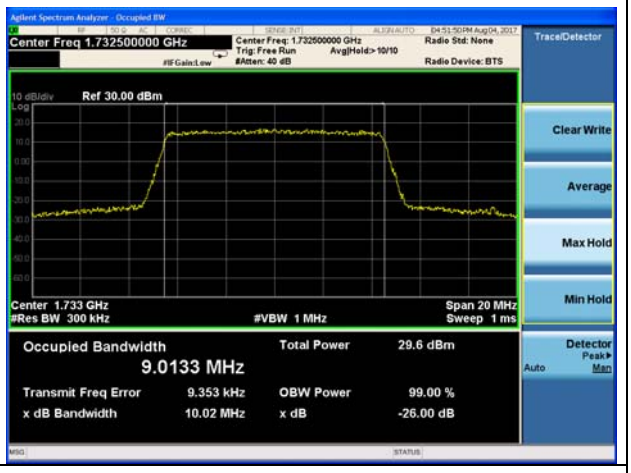
LTE Band 4 QPSK 10MHz CH-Low



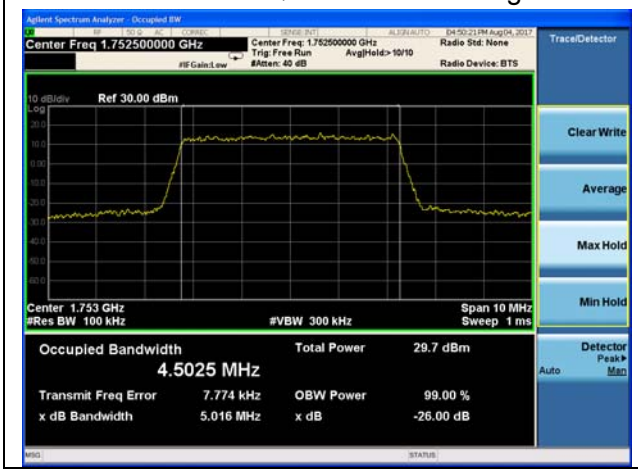
LTE Band 4 QPSK 5MHz CH-Middle



LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High



LTE Band 4 QPSK 10MHz CH-High

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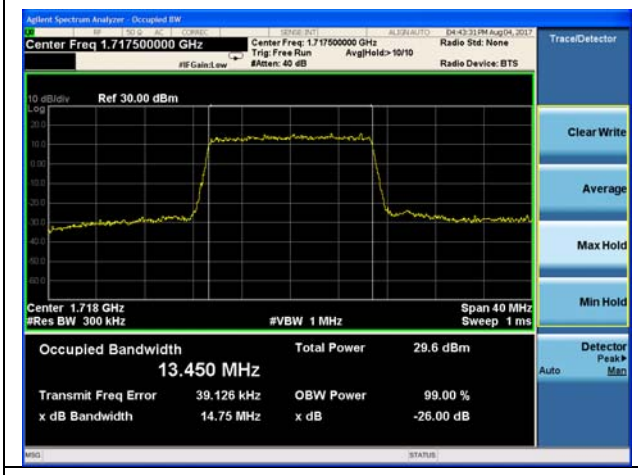
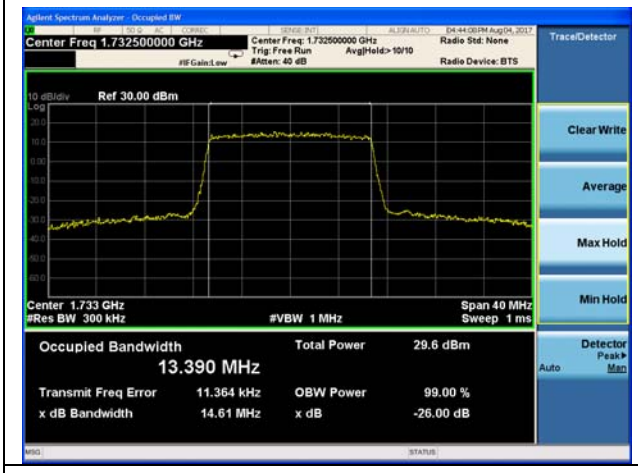
LTE Band 4 QPSK 15MHz CH-Low

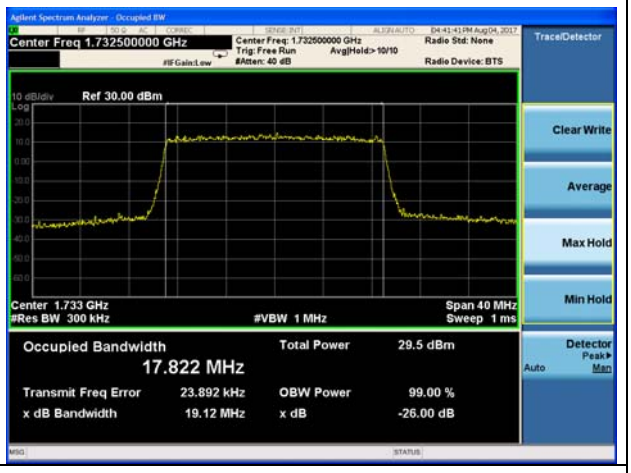


LTE Band 4 QPSK 20MHz CH-Low

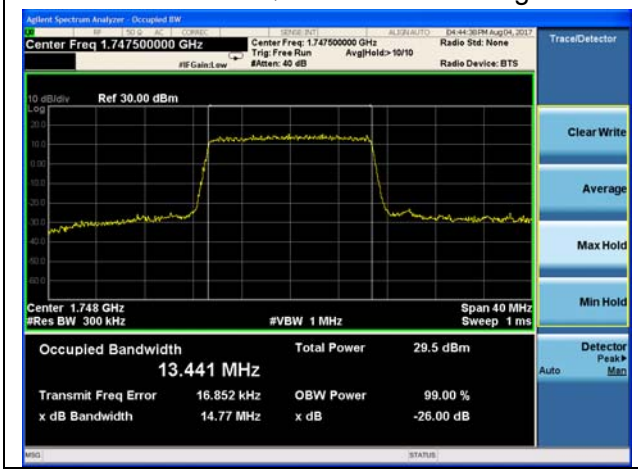
LTE Band 4 QPSK 15MHz CH-Middle



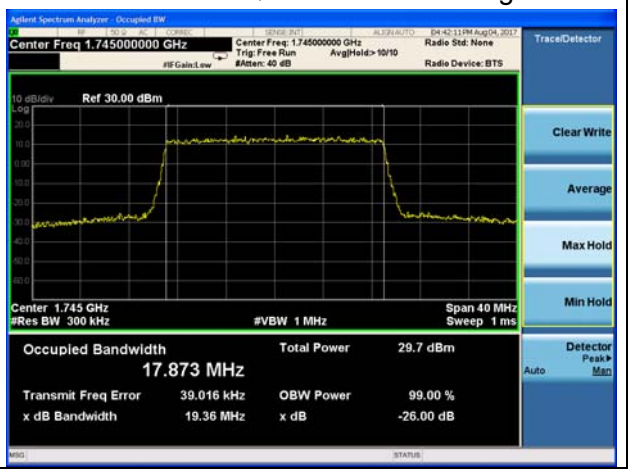
LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High



LTE Band 4 QPSK 20MHz CH-High



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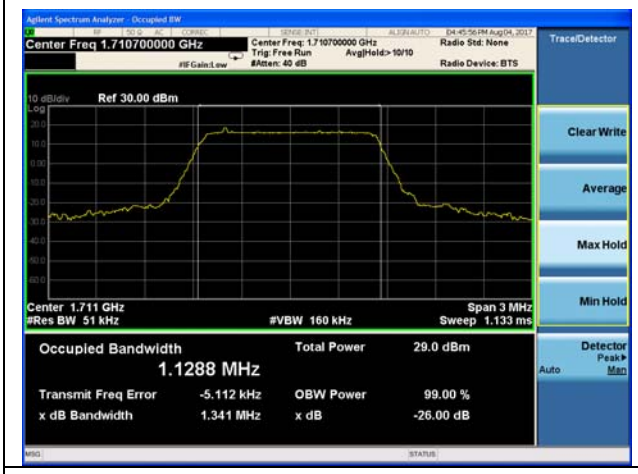
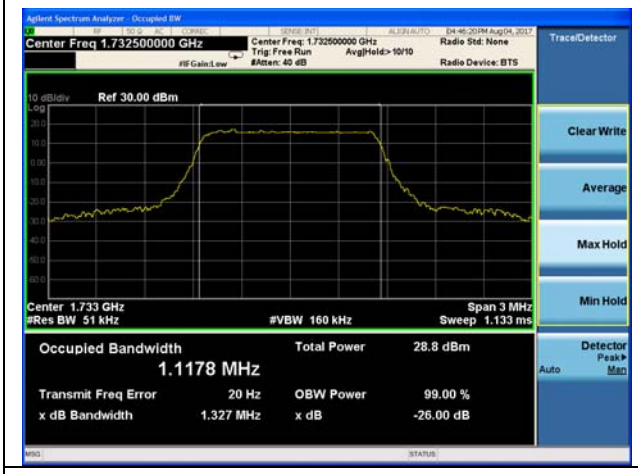
LTE Band 4 16QAM 1.4MHz CH-Low

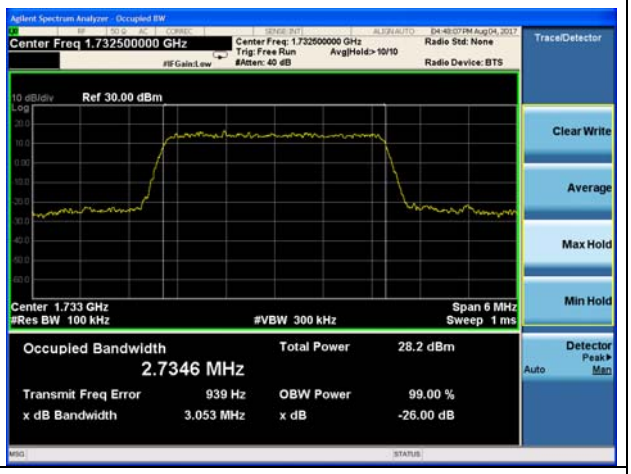


LTE Band 4 16QAM 3MHz CH-Low

LTE Band 4 16QAM 1.4MHz CH-Middle

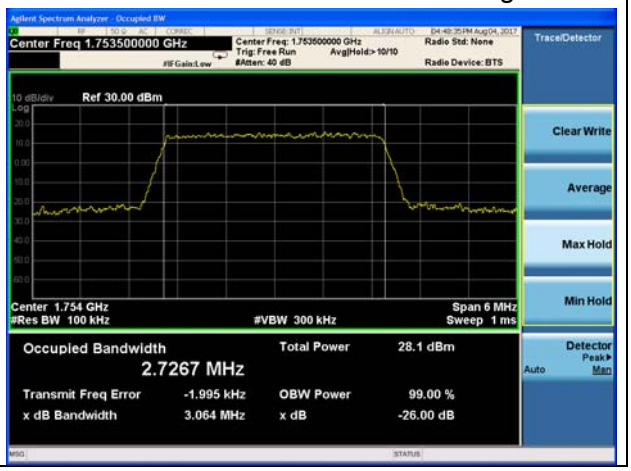


LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High

LTE Band 4 16QAM 3MHz CH-High



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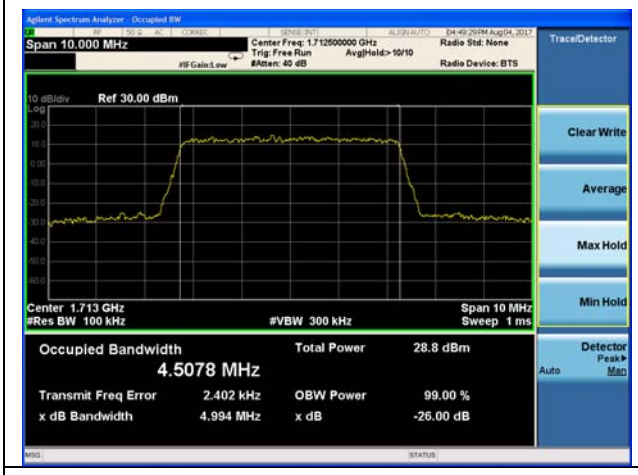
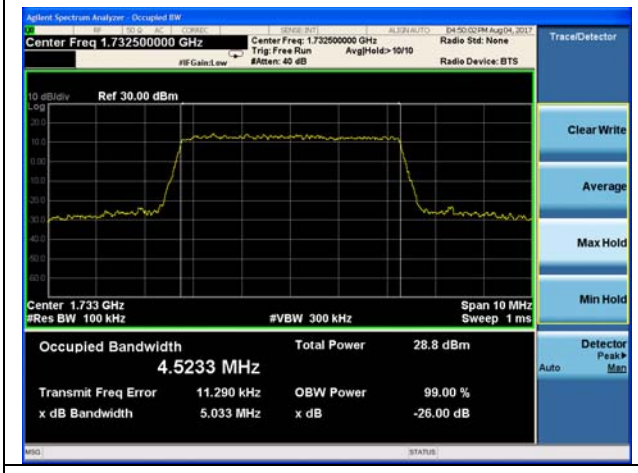
LTE Band 4 16QAM 5MHz CH-Low



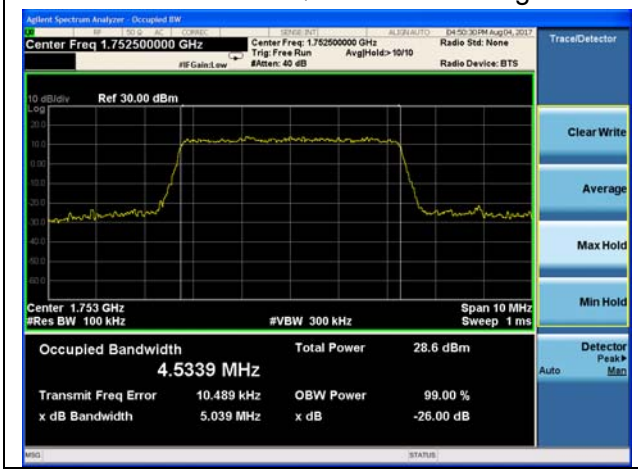
LTE Band 4 16QAM 10MHz CH-Low

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

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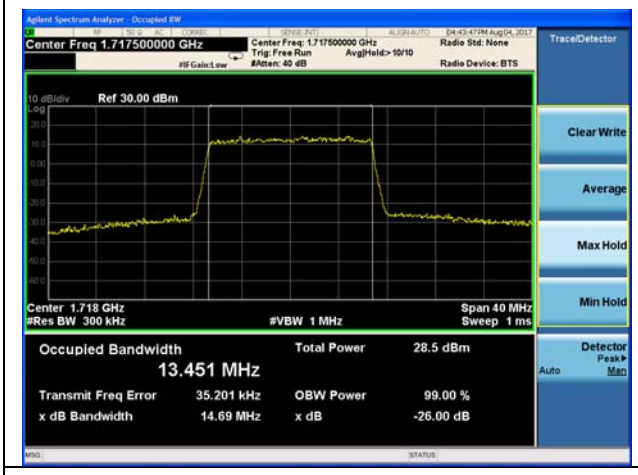
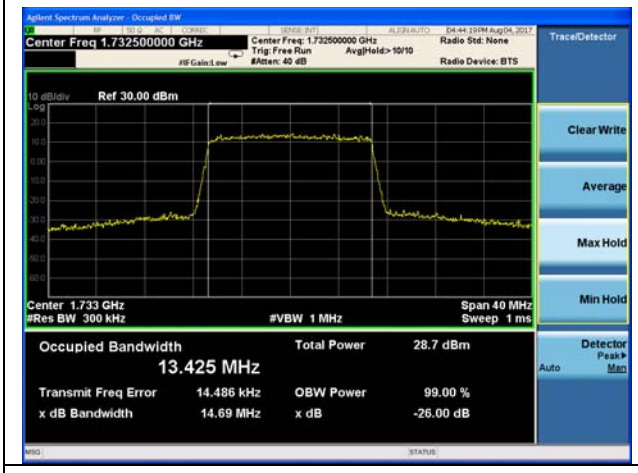
LTE Band 4 QPSK 15MHz CH-Low

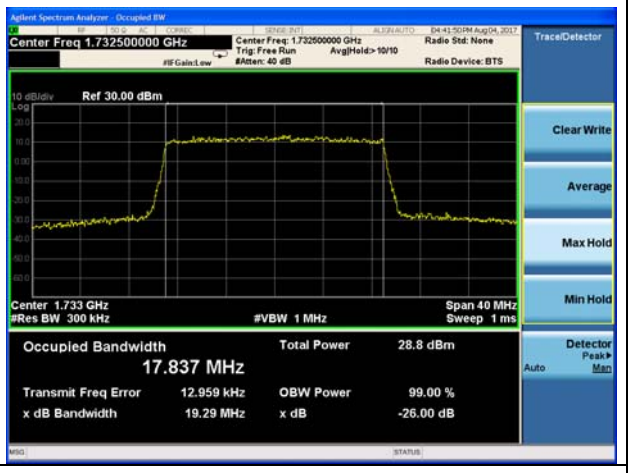


LTE Band 4 QPSK 20MHz CH-Low

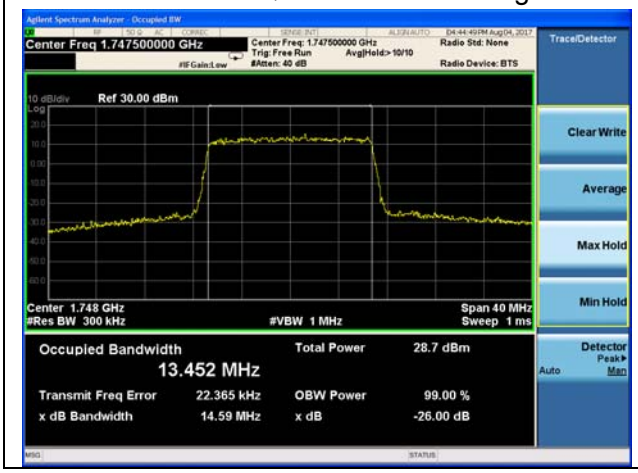
LTE Band 4 QPSK 15MHz CH-Middle



LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High



LTE Band 4 QPSK 20MHz CH-High

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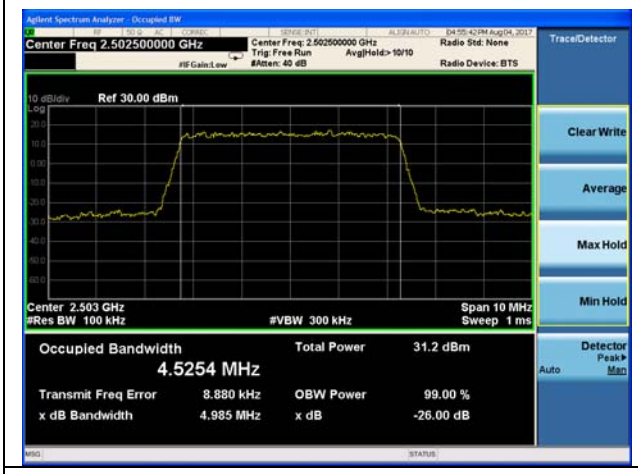
LTE Band 7 QPSK 5MHz CH-Low



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

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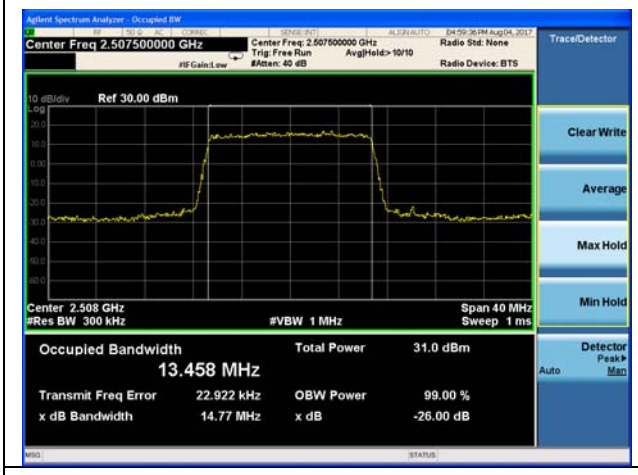
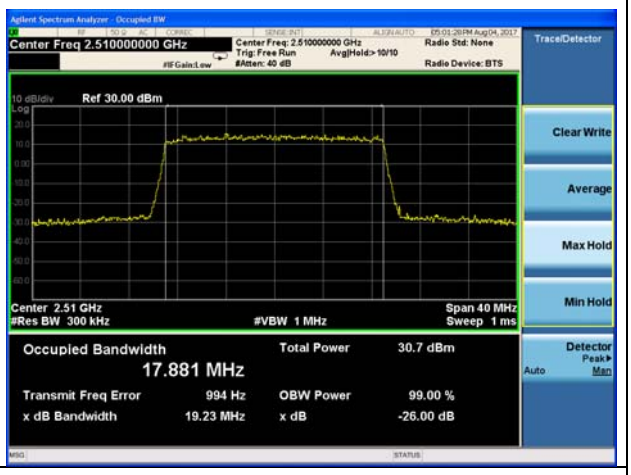
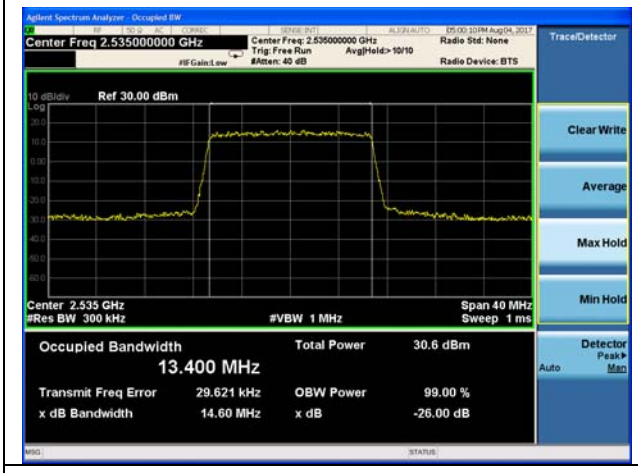
LTE Band 7 QPSK 15MHz CH-Low



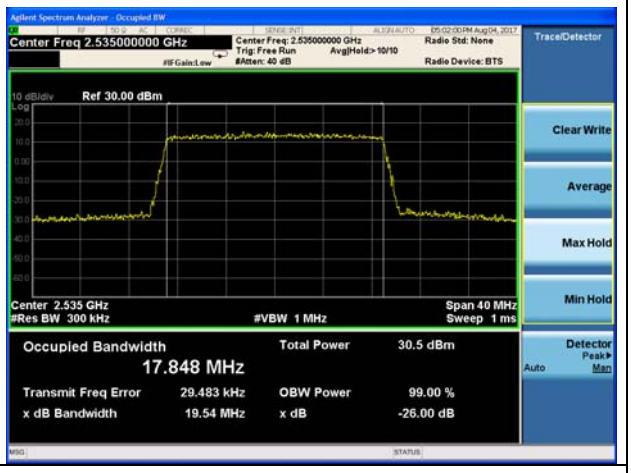
LTE Band 7 QPSK 20MHz CH-Low



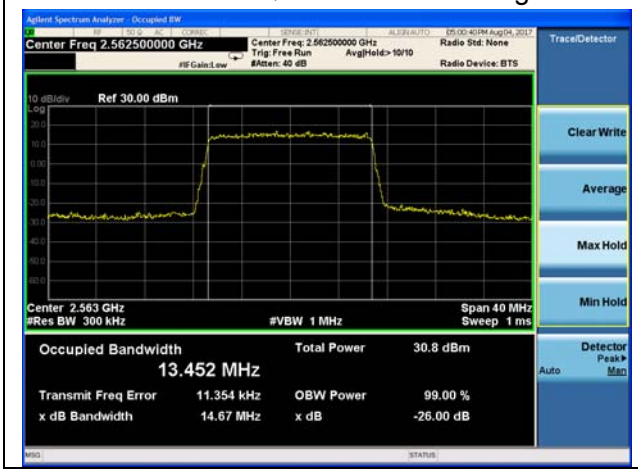
LTE Band 7 QPSK 15MHz CH-Middle



LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High



LTE Band 7 QPSK 20MHz CH-High

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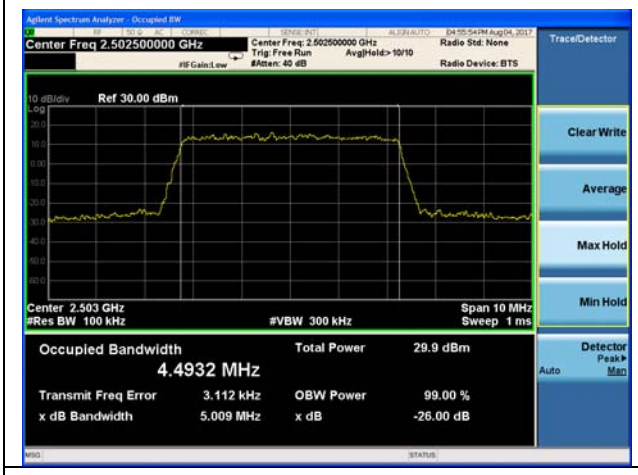
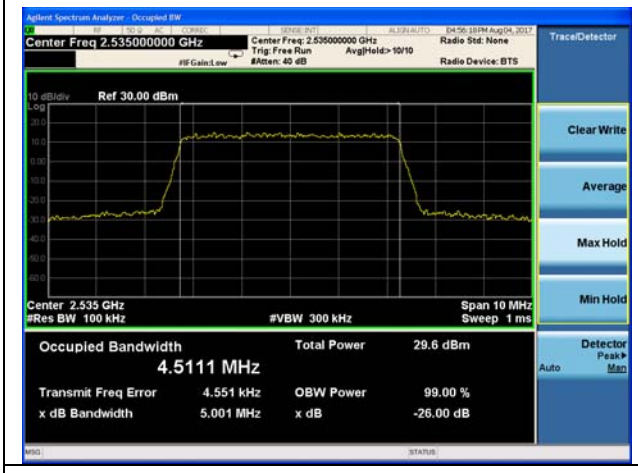
LTE Band 7 16QAM 5MHz CH-Low



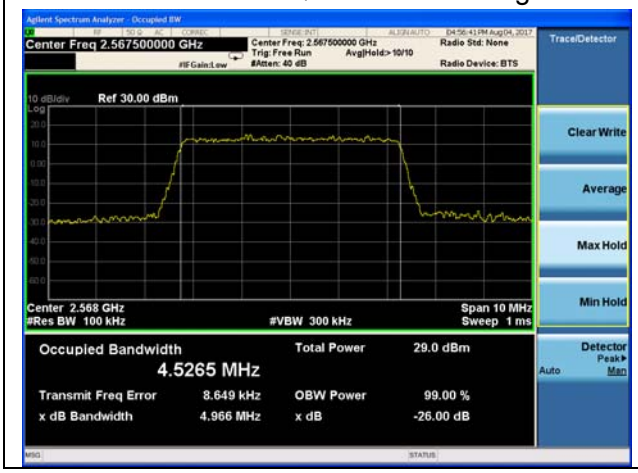
LTE Band 7 16QAM 10MHz CH-Low

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

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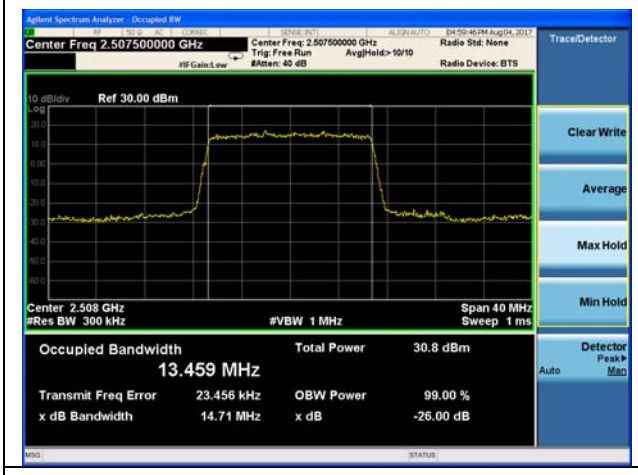
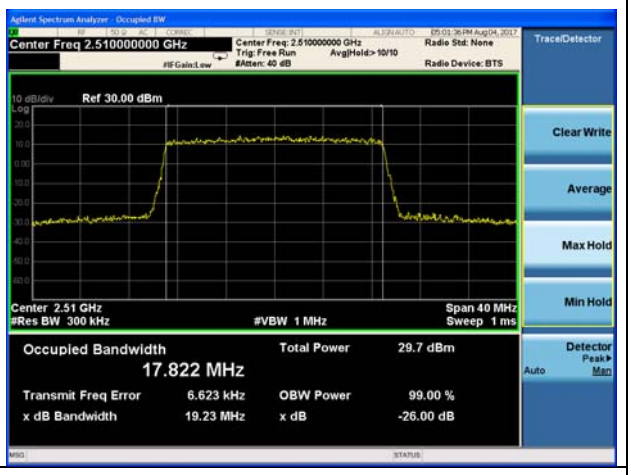
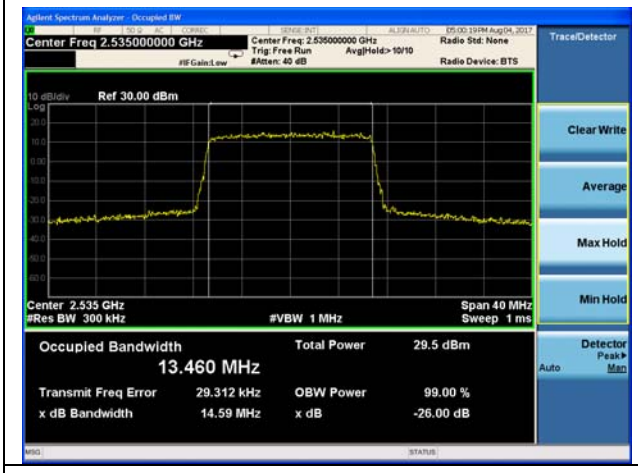
LTE Band 7 16QAM 15MHz CH-Low



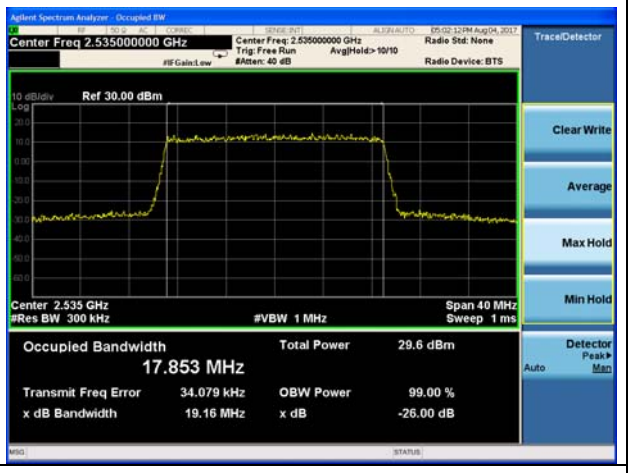
LTE Band 7 16QAM 20MHz CH-Low



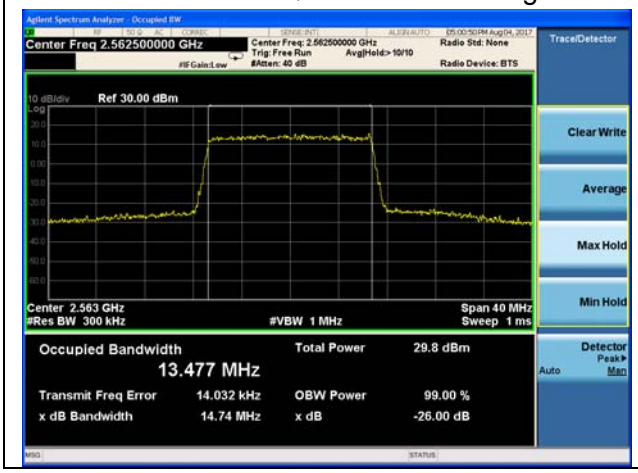
LTE Band 7 16QAM 15MHz CH-Middle



LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High

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4.4 Band Edge Compliance

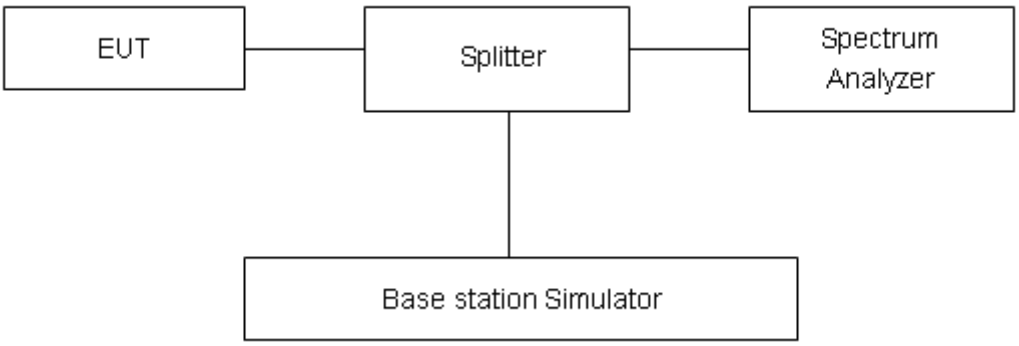
Ambient condition

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 >= 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 (1.4MHz).
RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4 (3MHz).
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/7 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4/7 (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



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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 log10 (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 + 10log (P) dB below the transmitter power P(Watts)

= P(W)- [43 + 10log(P)] (dB)

= [30 + 10log (P)] (dBm) - [43 + 10log(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*=0.684dB.

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Test Result

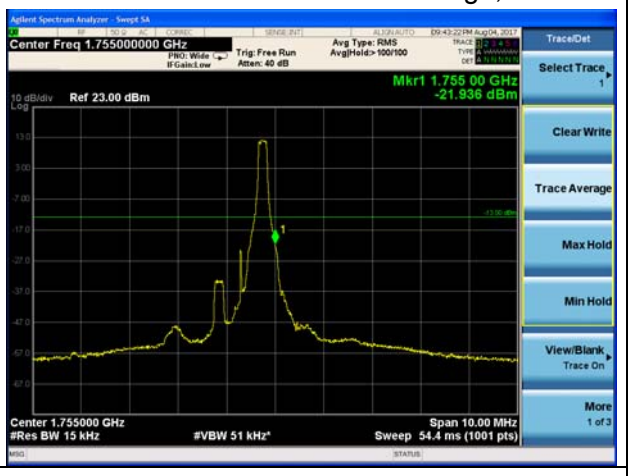
All the test traces in the plots shows the test results clearly.

WCDMA Band IV CH-Low

WCDMA Band IV CH-High

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

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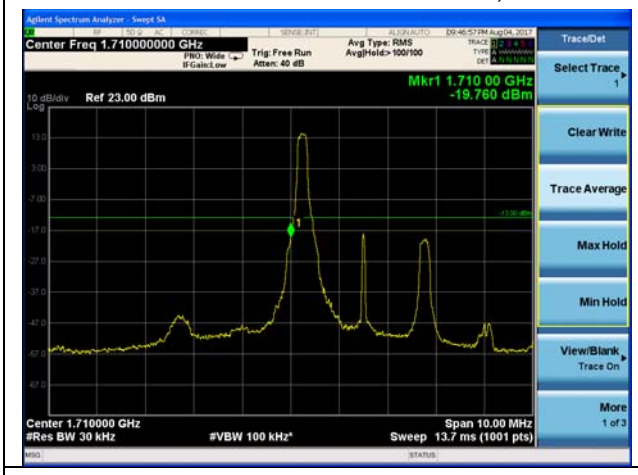
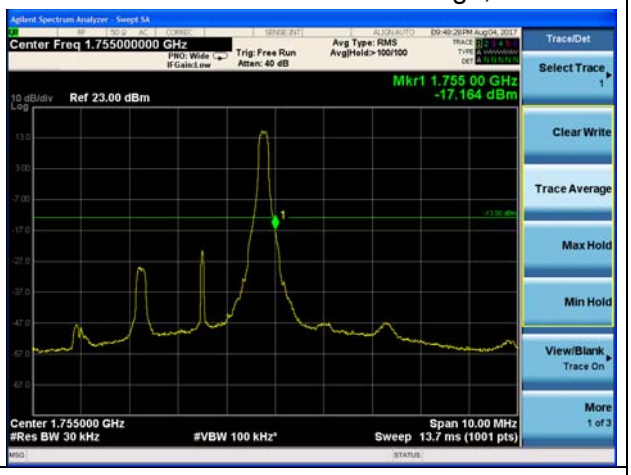
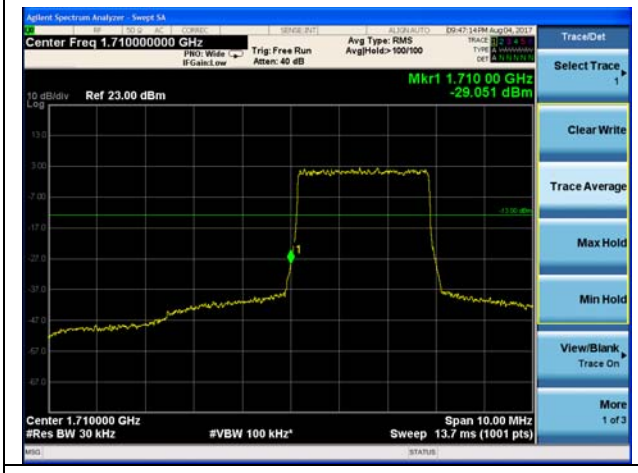
LTE Band 4 QPSK 3MHz CH-Low, 1 RB



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

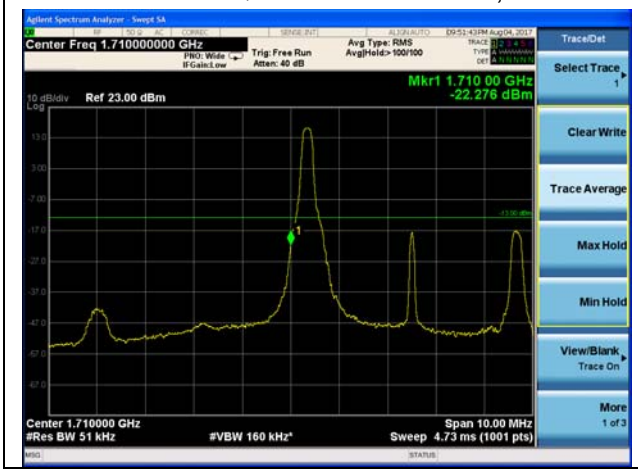


LTE Band 4 QPSK 3MHz CH-Low, 100%RB

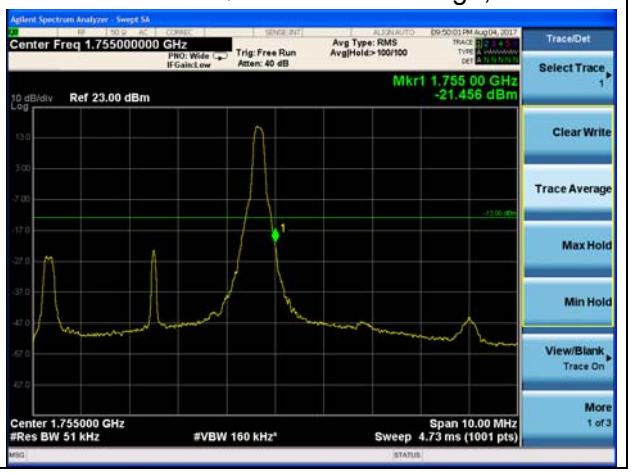


LTE Band 4 QPSK 3MHz CH-High, 100%RB

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



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



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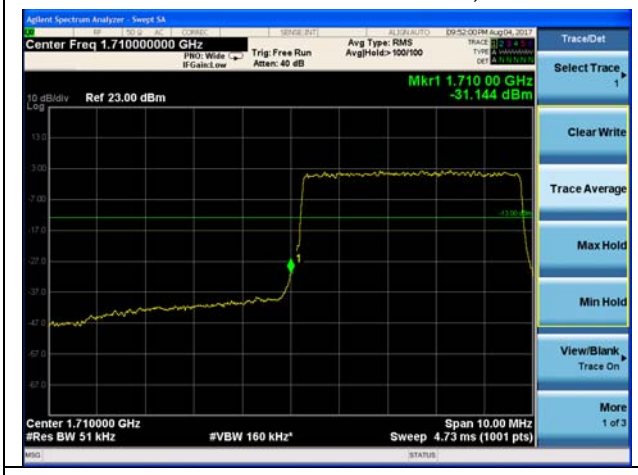
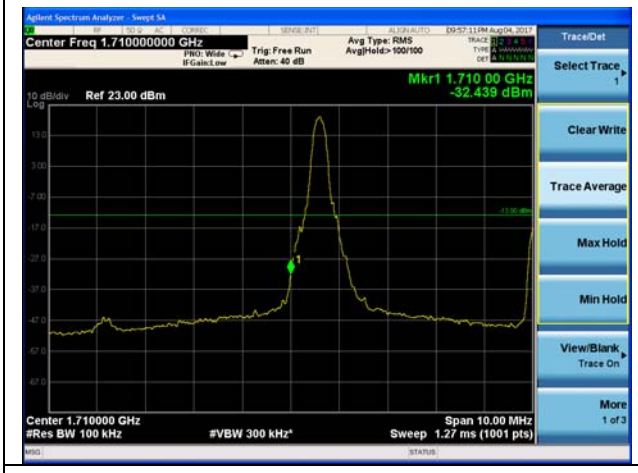
LTE Band 4 QPSK 5MHz CH-Low, 100%RB

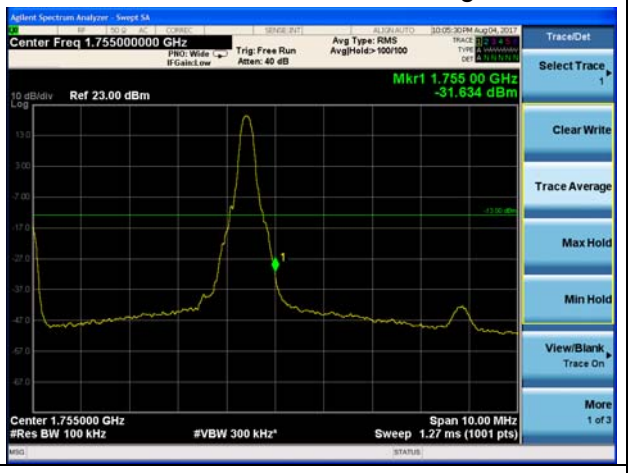


LTE Band 4 QPSK 5MHz CH-High, 100%RB

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

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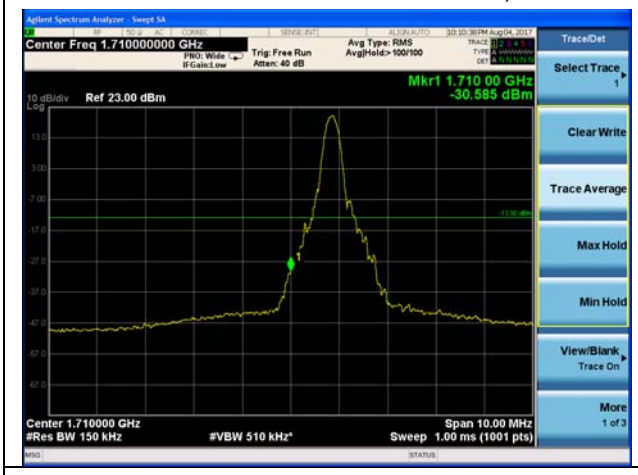
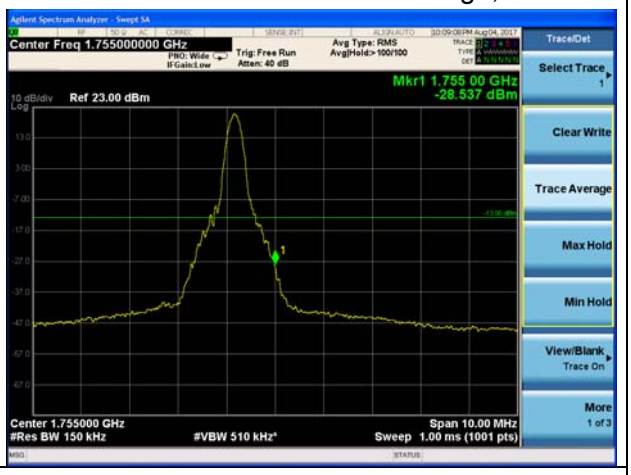
LTE Band 4 QPSK 15MHz CH-Low, 1 RB



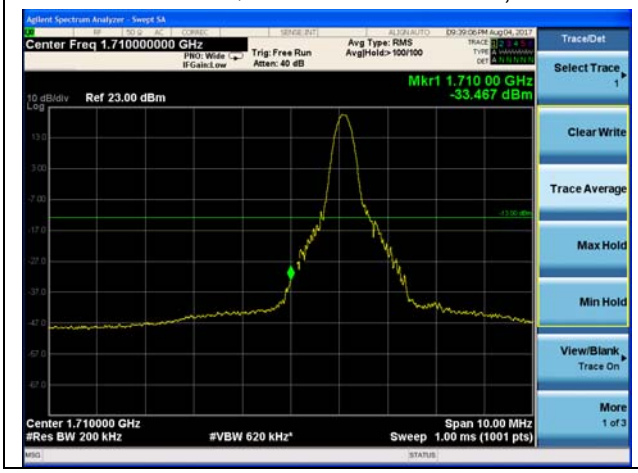
LTE Band 4 QPSK 15MHz CH-High, 1 RB



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

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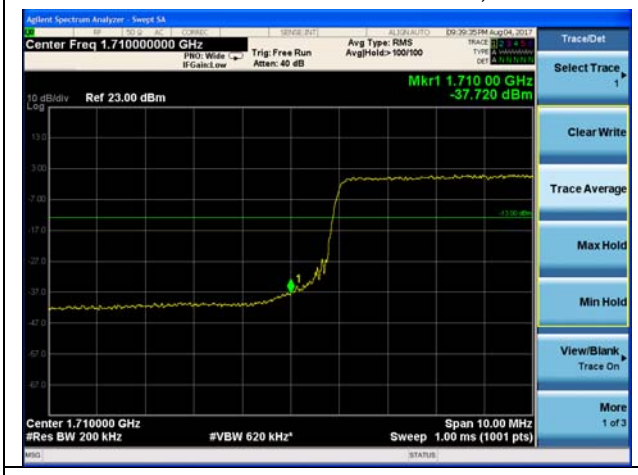
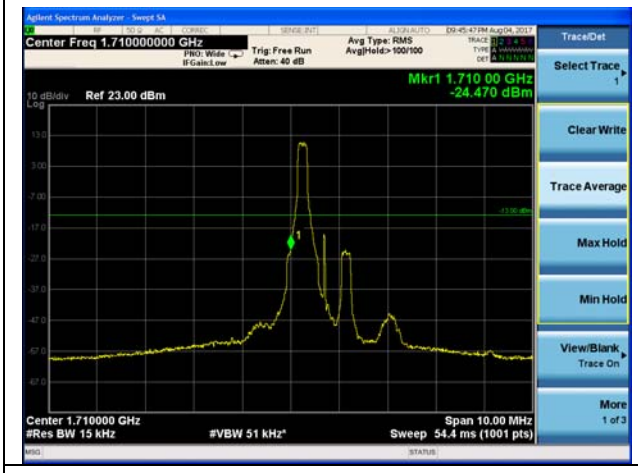
LTE Band 4 QPSK 20MHz CH-Low, 100%RB



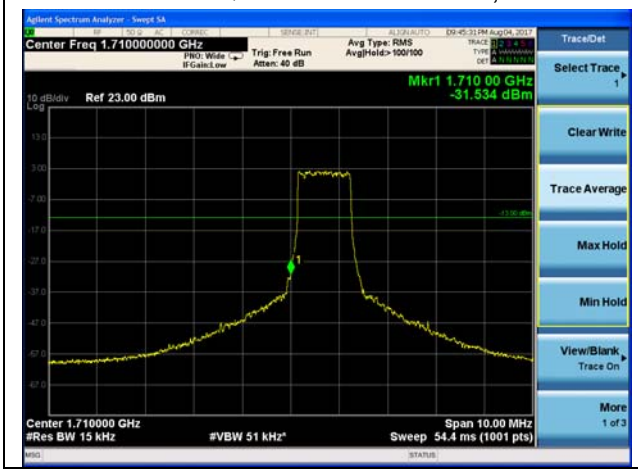
LTE Band 4 QPSK 20MHz CH-High, 100%RB

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

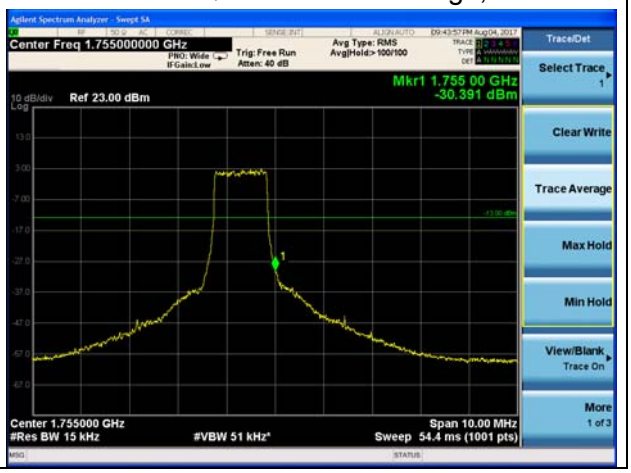


LTE Band 4 16QAM 1.4MHz CH-High, 1 RB

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



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



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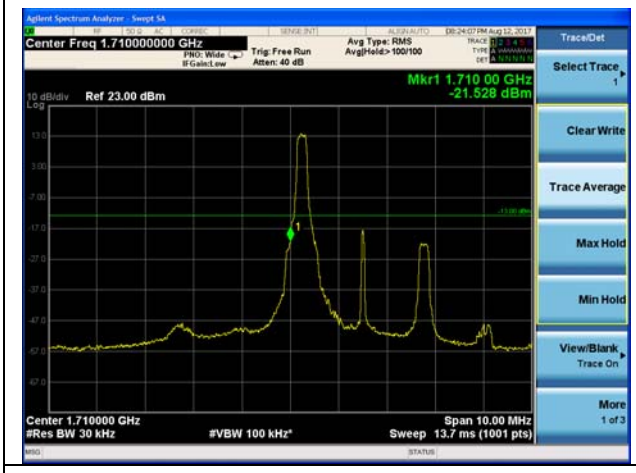
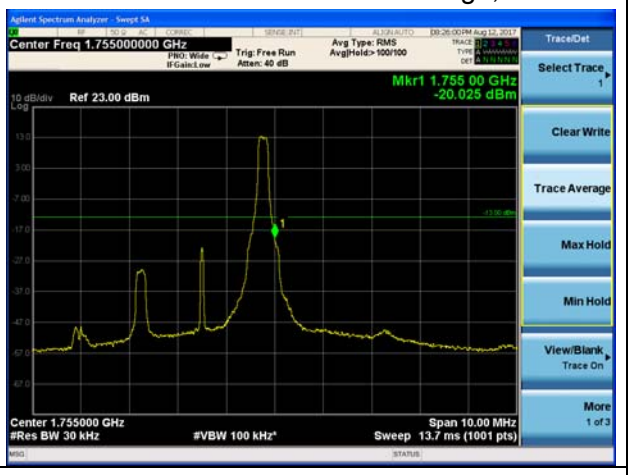
LTE Band 4 16QAM 3MHz CH-Low, 1 RB



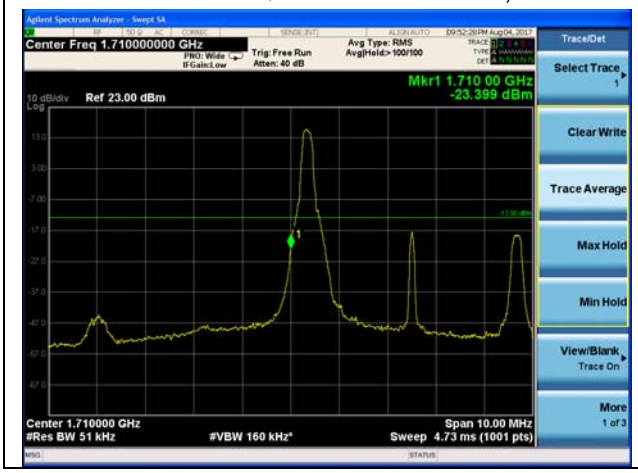
LTE Band 4 16QAM 3MHz CH-High, 1 RB



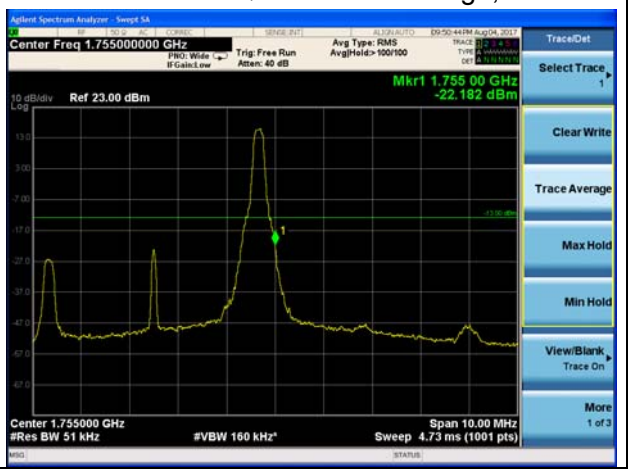
LTE Band 4 16QAM 3MHz CH-Low, 100%RB

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



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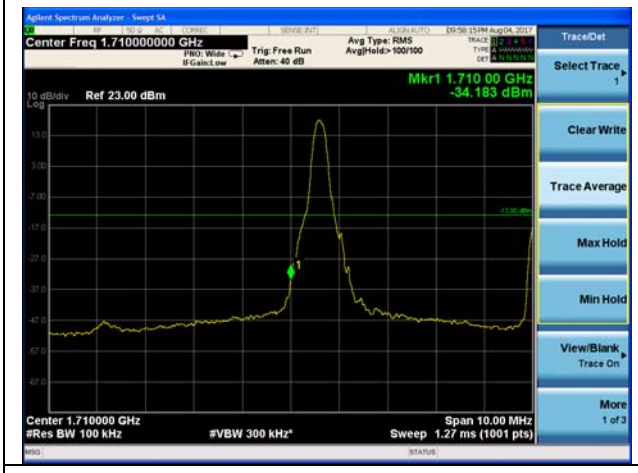
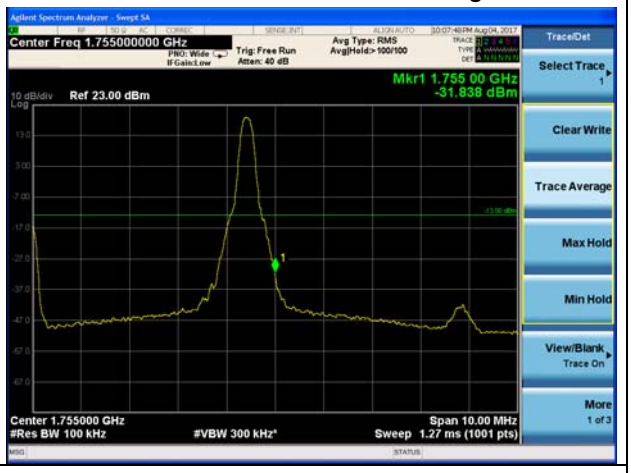
LTE Band 4 16QAM 5MHz CH-Low, 100%RB

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

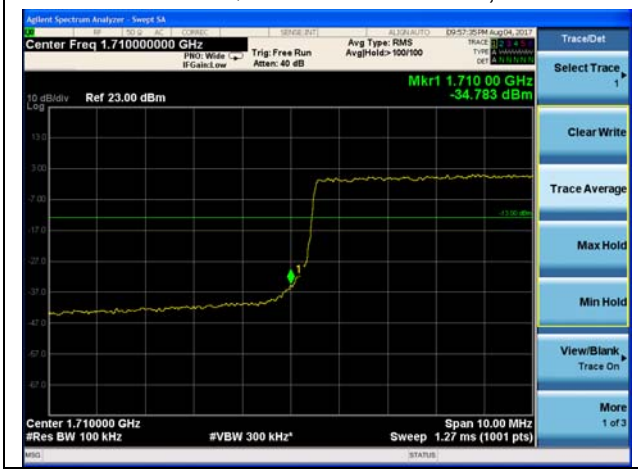
LTE Band 4 16QAM 10MHz CH-Low, 1 RB



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

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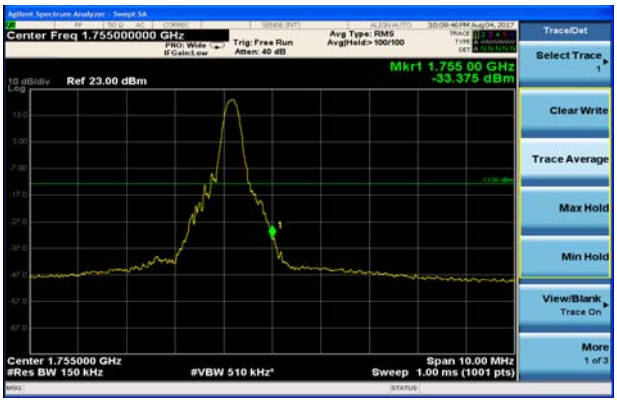
LTE Band 4 16QAM 15MHz CH-Low, 1 RB

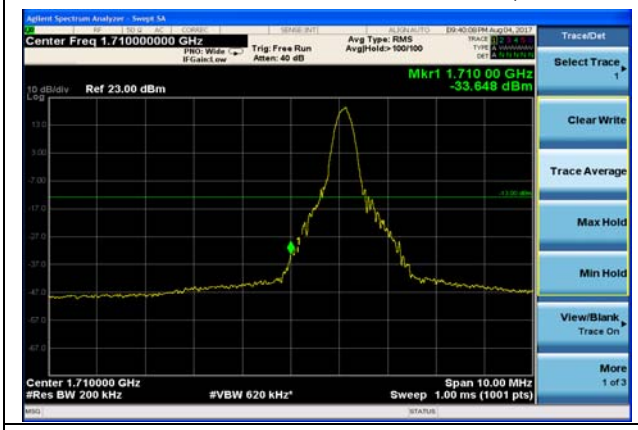
LTE Band 4 16QAM 15MHz CH-High, 1 RB



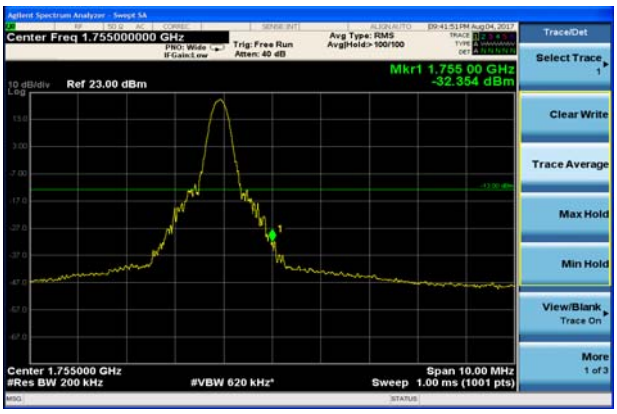
LTE Band 4 16QAM 15MHz CH-Low, 100%RB

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

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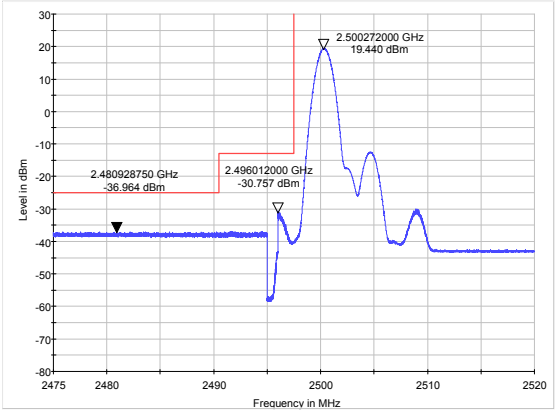
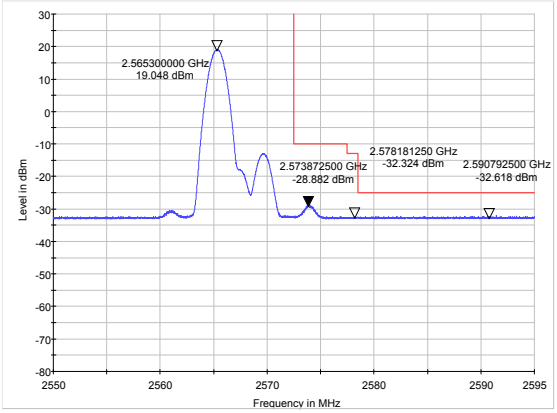
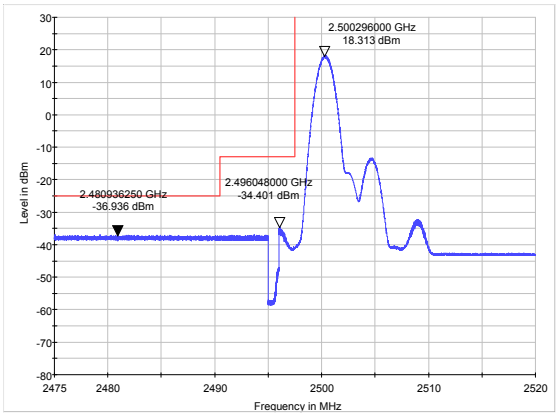
LTE Band 7 QPSK Bandwidth = 5MHz
CH20775, RB 1



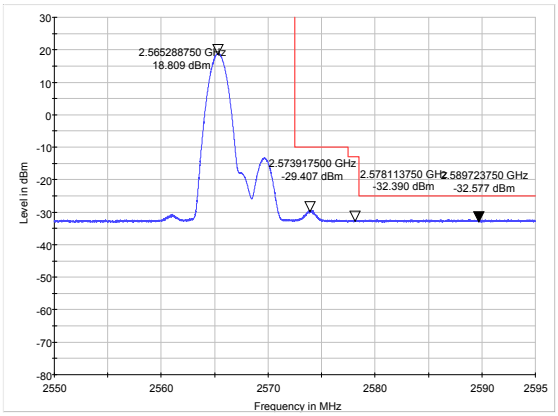
LTE Band 7 QPSK Bandwidth = 5MHz
CH21425, RB 1



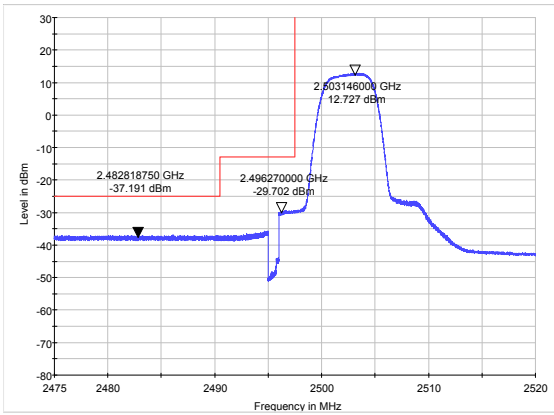
LTE Band 7 16QAM Bandwidth = 5MHz
CH20775, RB 1



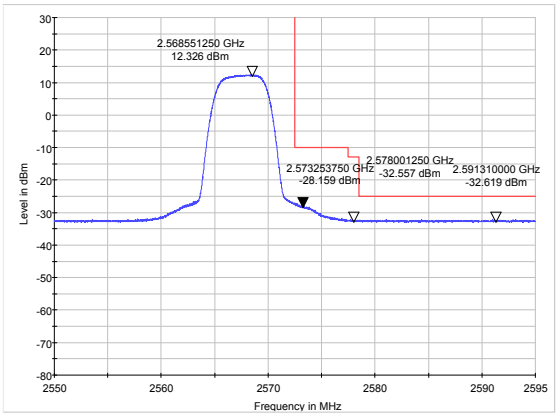
LTE Band 7 16QAM Bandwidth = 5MHz
CH21425, RB 1



LTE Band 7 QPSK Bandwidth = 5MHz
CH20775, RB 25



LTE Band 7 QPSK Bandwidth = 5MHz
CH21425, RB 25



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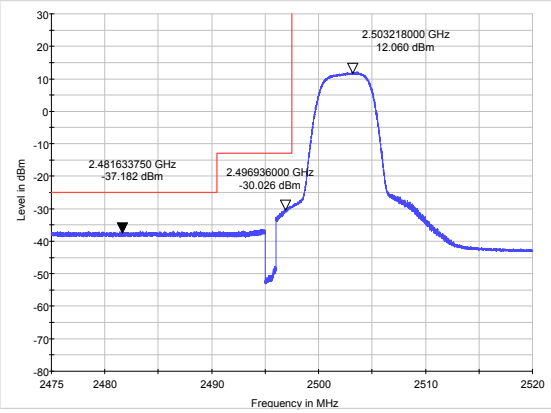
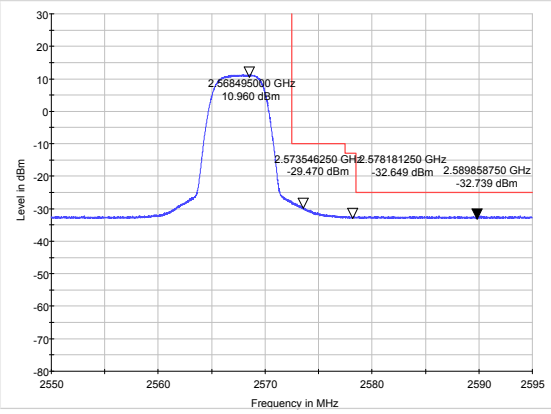
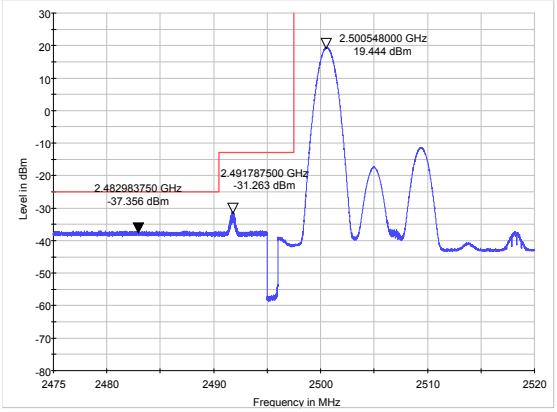
LTE Band 7 16QAM Bandwidth = 5MHz
CH20775, RB 25



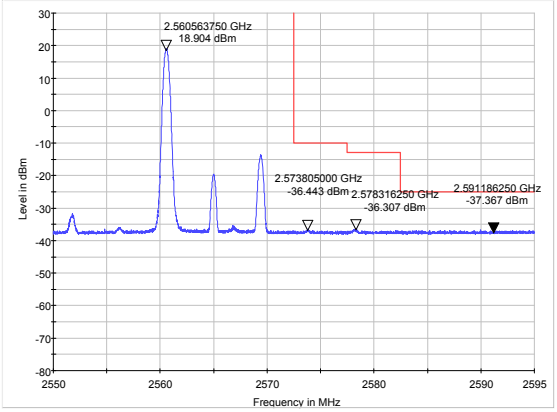
LTE Band 7 16QAM Bandwidth = 5MHz
CH21425, RB 25



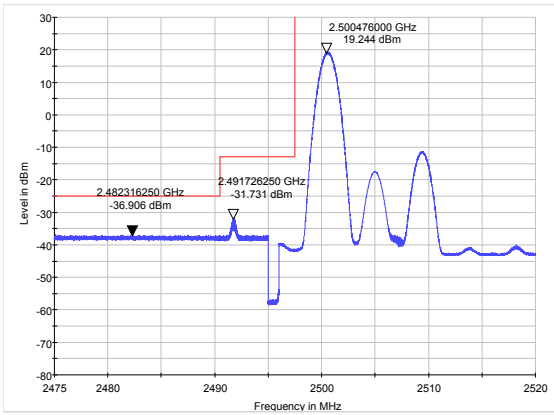
LTE Band 7 QPSK Bandwidth = 10MHz
CH20800, RB 1



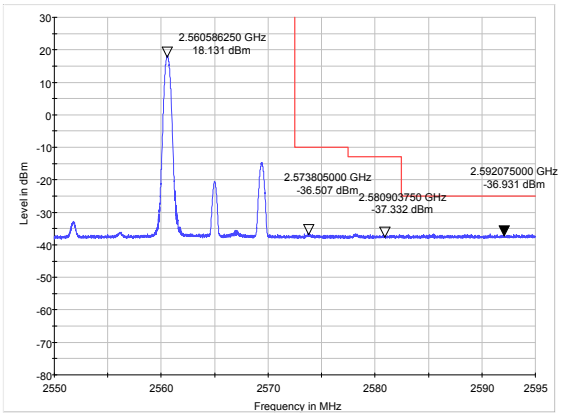
LTE Band 7 QPSK Bandwidth = 10MHz
CH21400, RB 1



LTE Band 7 16QAM Bandwidth = 10MHz
CH20800, RB 1



LTE Band 7 16QAM Bandwidth = 10MHz
CH21400, RB 1



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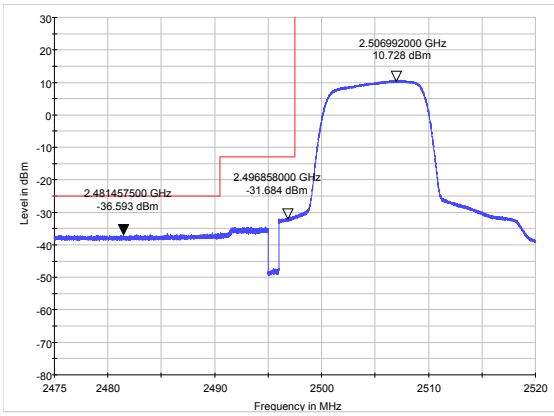
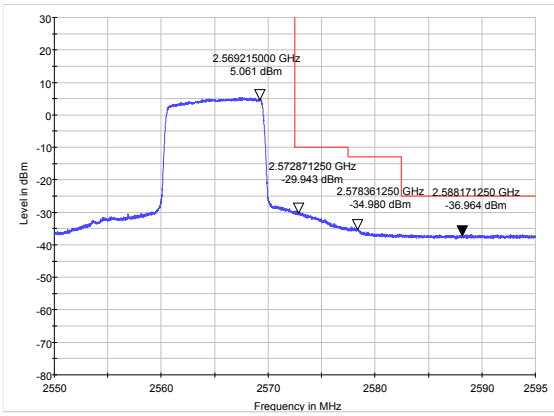
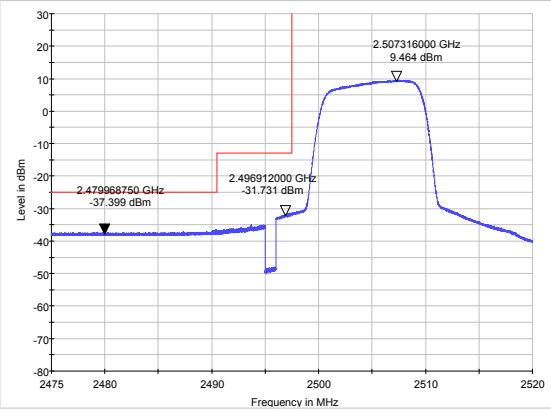
LTE Band 7 QPSK Bandwidth = 10MHz
CH20800, RB 50



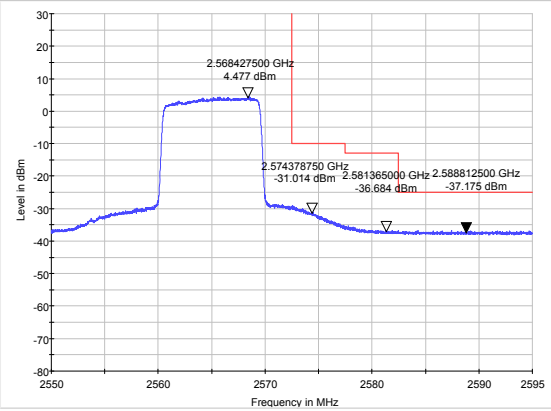
LTE Band 7 QPSK Bandwidth = 10MHz
CH21400, RB 50



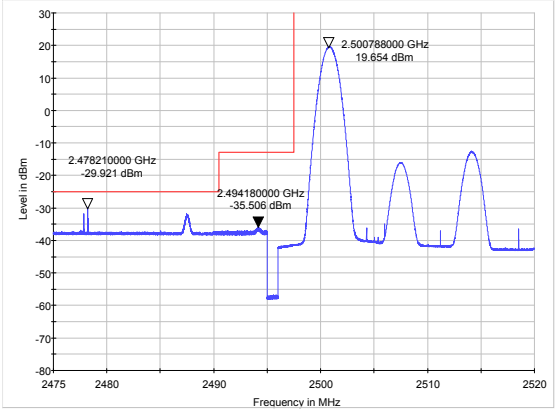
LTE Band 7 16QAM Bandwidth = 10MHz
CH20800, RB 50



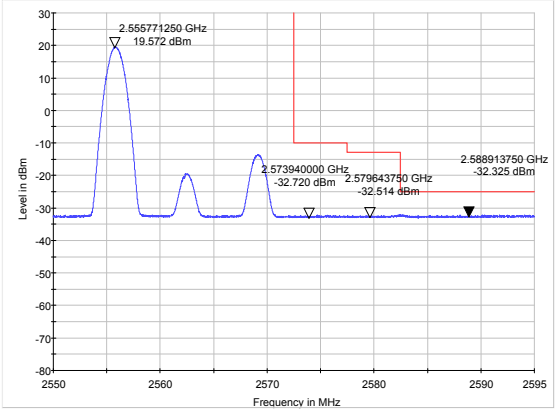
LTE Band 7 16QAM Bandwidth = 10MHz
CH21400, RB 50



LTE Band 7 QPSK Bandwidth = 15MHz
CH20825, RB 1



LTE Band 7 QPSK Bandwidth = 15MHz
CH21375, RB 1



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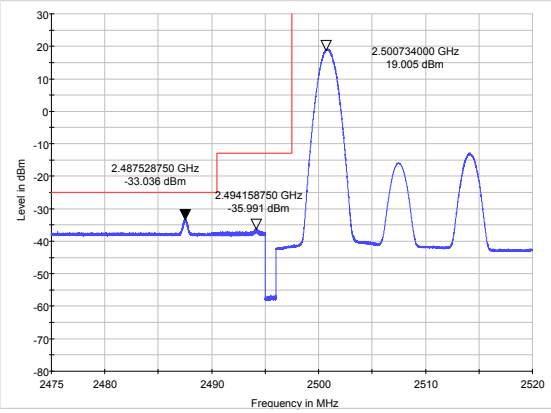
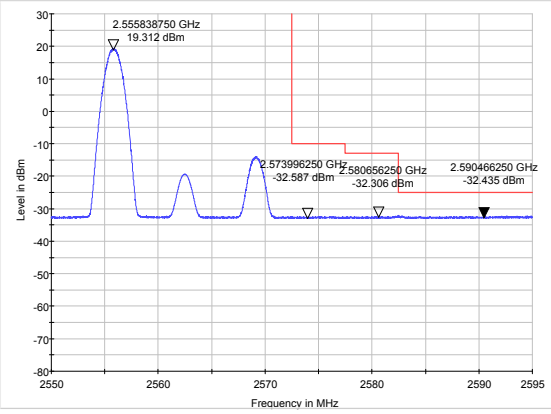
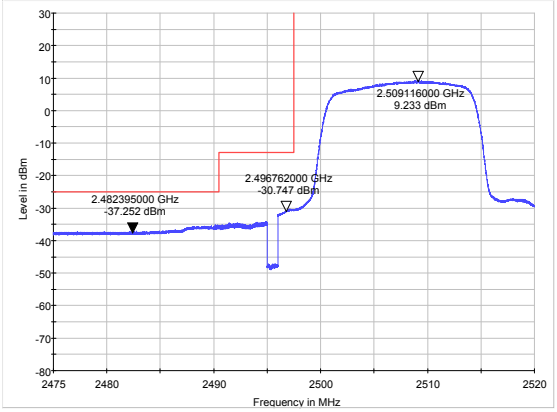
LTE Band 7 16QAM Bandwidth = 15MHz
CH20825, RB 1



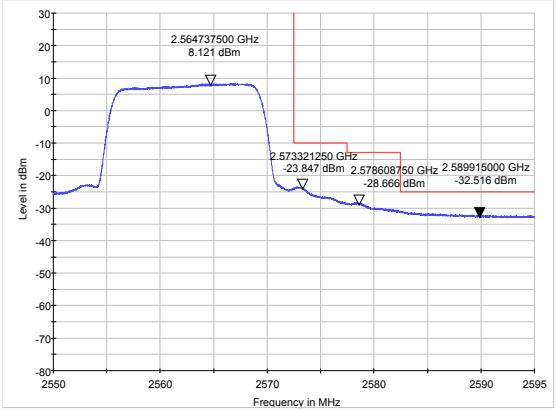
LTE Band 7 16QAM Bandwidth = 15MHz
CH21375, RB 1



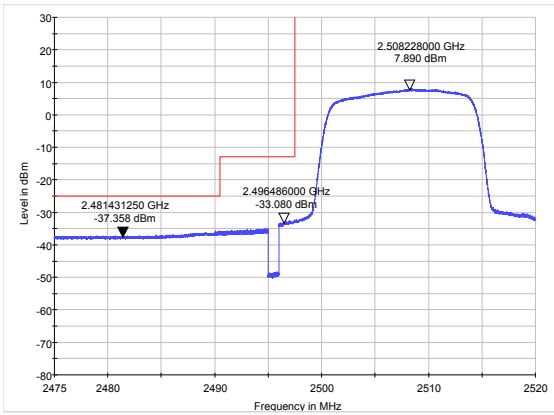
LTE Band 7 QPSK Bandwidth = 15MHz
CH20825, RB 75



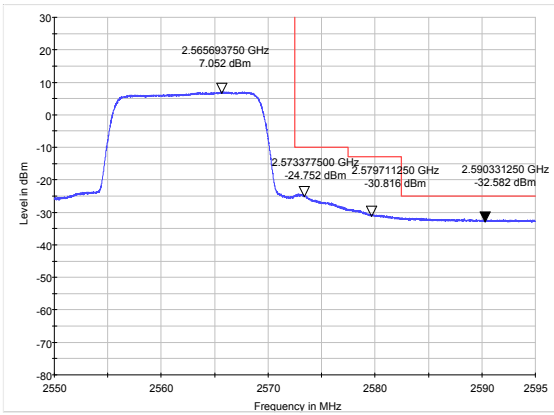
LTE Band 7 QPSK Bandwidth = 15MHz
CH21375, RB 75



LTE Band 7 16QAM Bandwidth = 15MHz
CH20825, RB 75



LTE Band 7 16QAM Bandwidth = 15MHz
CH21375, RB 75



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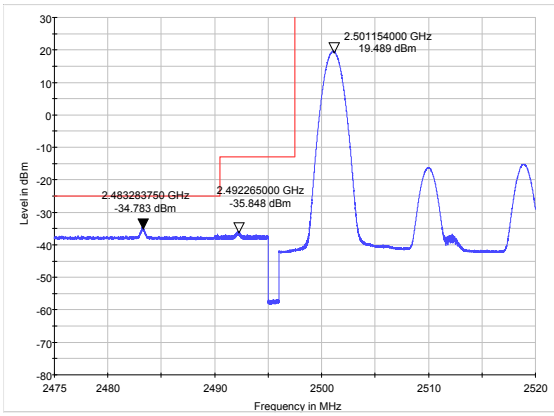
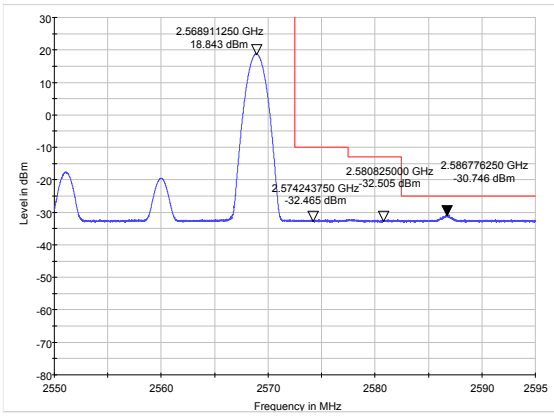
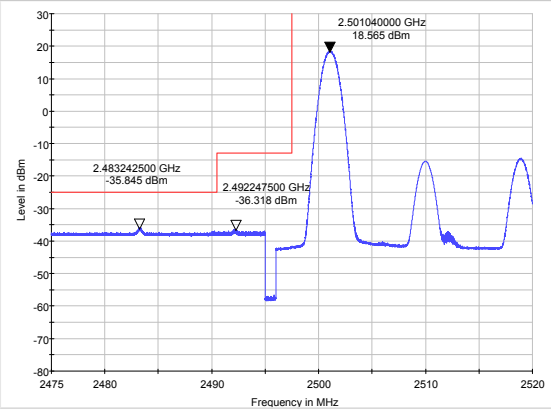
LTE Band 7 QPSK Bandwidth = 20MHz
CH20850, RB 1



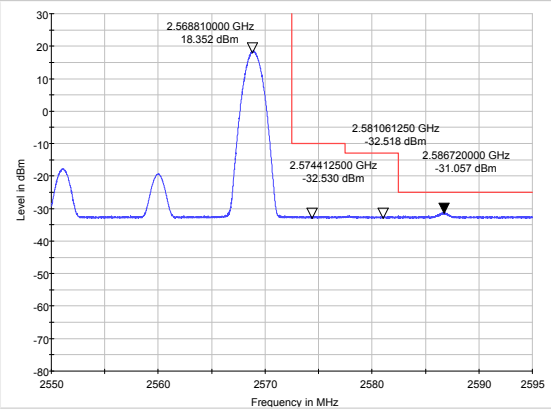
LTE Band 7 QPSK Bandwidth = 20MHz
CH21350, RB 1



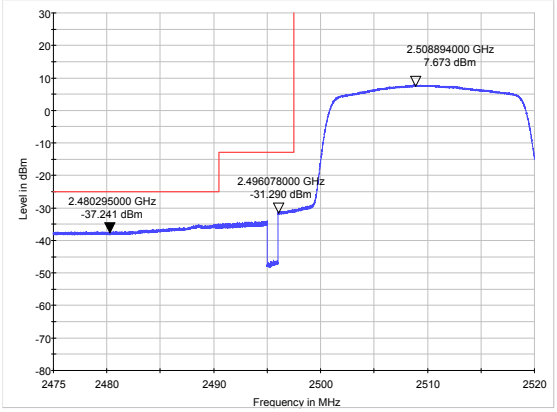
LTE Band 7 16QAM Bandwidth = 20MHz
CH20850, RB 1



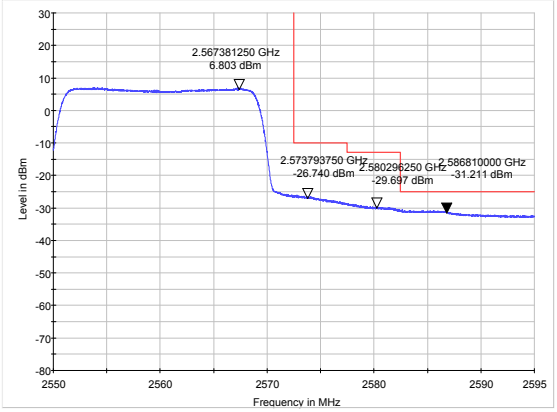
LTE Band 7 16QAM Bandwidth = 20MHz
CH21350, RB 1



LTE Band 7 QPSK Bandwidth = 20MHz
CH20850, RB 100



LTE Band 7 QPSK Bandwidth = 20MHz
CH21350, RB 100



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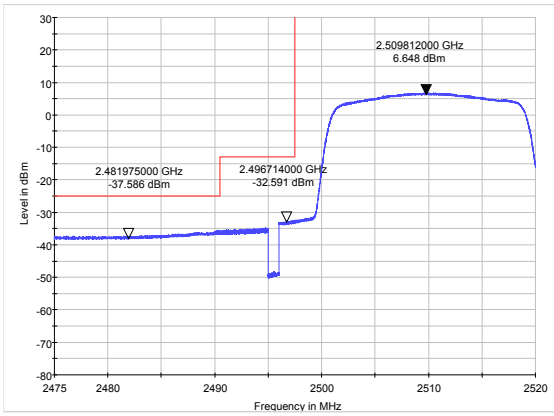
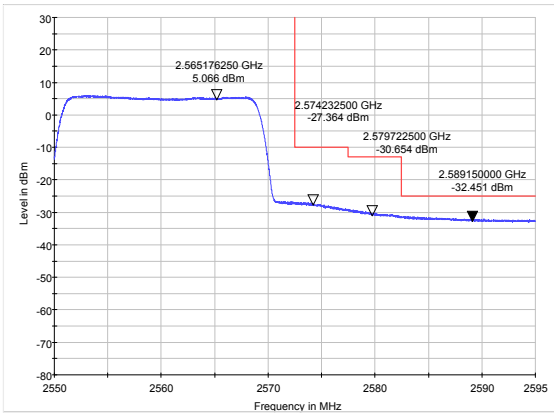
LTE Band 7 16QAM Bandwidth = 20MHz CH20850, RB 100	LTE Band 7 16QAM Bandwidth = 20MHz CH21350, RB 100
	

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4.5 Peak-to-Average Power Ratio (PAPR)

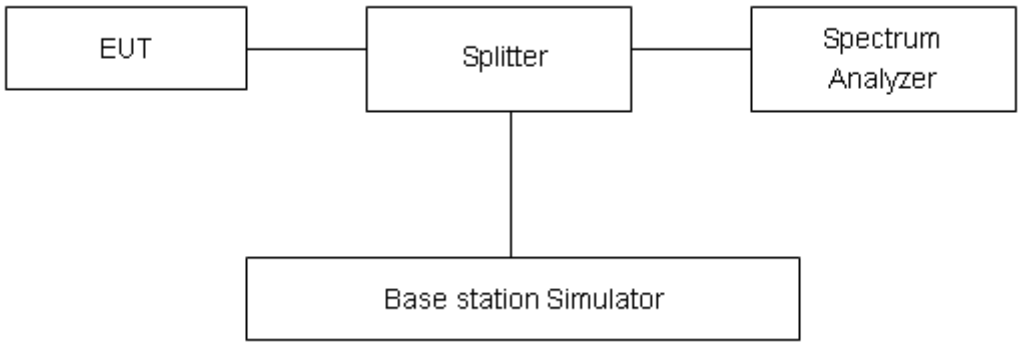
Ambient condition

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

Methods of Measurement

Measure the total peak power and record as PPk. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (*e.g.*, dBm). Determine the PAPR from:
PAPR (dB) = PPk (dBm) - PAvg (dBm).

Test Setup



Limits

Rule Part 27.50(d)(5) Equipment employed must be authorized in accordance with the provisions of 24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Measurement Uncertainty

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

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Test Results

WCDMA Band IV	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
RMC	1312	1712.4	25.32	22.02	3.30	≤13	PASS
	1413	1732.6	25.28	22.07	3.21	≤13	PASS
	1513	1752.6	25.37	22.26	3.11	≤13	PASS

LTE Band 4								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	19957	1710.7	26.49	21.52	4.97	≤13	PASS
		20175	1732.5	26.37	21.57	4.80	≤13	PASS
		20393	1754.3	26.32	21.72	4.60	≤13	PASS
	3	19965	1711.5	26.59	21.55	5.04	≤13	PASS
		20175	1732.5	26.53	21.61	4.92	≤13	PASS
		20385	1753.5	26.54	21.75	4.79	≤13	PASS
	5	19975	1712.5	26.96	21.53	5.43	≤13	PASS
		20175	1732.5	26.86	21.60	5.26	≤13	PASS
		20375	1752.5	26.85	21.73	5.12	≤13	PASS
	10	20000	1715	26.65	21.61	5.04	≤13	PASS
		20175	1732.5	26.53	21.62	4.91	≤13	PASS
		20350	1750	26.66	21.77	4.89	≤13	PASS
	15	20025	1717.5	26.70	21.59	5.11	≤13	PASS
		20175	1732.5	26.54	21.58	4.96	≤13	PASS
		20325	1747.5	26.69	21.72	4.97	≤13	PASS
	20	20050	1720	26.52	21.56	4.96	≤13	PASS
		20175	1732.5	26.39	21.53	4.86	≤13	PASS
		20300	1745	26.44	21.48	4.96	≤13	PASS
16QAM	1.4	19957	1710.7	26.22	20.45	5.77	≤13	PASS
		20175	1732.5	26.22	20.53	5.69	≤13	PASS
		20393	1754.3	26.03	20.64	5.39	≤13	PASS
	3	19965	1711.5	26.35	20.48	5.87	≤13	PASS
		20175	1732.5	26.29	20.57	5.72	≤13	PASS
		20385	1753.5	26.30	20.67	5.63	≤13	PASS
	5	19975	1712.5	26.26	20.46	5.80	≤13	PASS
		20175	1732.5	26.18	20.53	5.65	≤13	PASS
		20375	1752.5	26.19	20.62	5.57	≤13	PASS
	10	20000	1715	26.32	20.49	5.83	≤13	PASS
		20175	1732.5	26.26	20.58	5.68	≤13	PASS
		20350	1750	26.33	20.66	5.67	≤13	PASS

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	15	20025	1717.5	26.27	20.46	5.81	≤13	PASS
		20175	1732.5	26.22	20.53	5.69	≤13	PASS
		20325	1747.5	26.31	20.62	5.69	≤13	PASS
	20	20050	1720	26.19	20.44	5.75	≤13	PASS
		20175	1732.5	26.19	20.49	5.70	≤13	PASS
		20300	1745	26.30	20.59	5.71	≤13	PASS

LTE Band 7								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	20775	2502.5	27.52	22.41	5.11	≤13	PASS
		21100	2535	27.59	22.39	5.20	≤13	PASS
		21425	2567.5	27.58	22.50	5.08	≤13	PASS
	10	20800	2505	27.60	22.49	5.11	≤13	PASS
		21100	2535	27.59	22.41	5.18	≤13	PASS
		21400	2565	27.67	22.54	5.13	≤13	PASS
	15	20825	2507.5	27.69	22.47	5.22	≤13	PASS
		21100	2535	27.69	22.37	5.32	≤13	PASS
		21375	2562.5	27.74	22.49	5.25	≤13	PASS
	20	20850	2510	27.51	22.44	5.07	≤13	PASS
		21100	2535	27.44	22.32	5.12	≤13	PASS
		21350	2560	27.60	22.45	5.15	≤13	PASS
16QAM	5	20775	2502.5	27.25	21.28	5.97	≤13	PASS
		21100	2535	27.30	21.28	6.02	≤13	PASS
		21425	2567.5	27.37	21.37	6.00	≤13	PASS
	10	20800	2505	27.26	21.31	5.95	≤13	PASS
		21100	2535	27.36	21.33	6.03	≤13	PASS
		21400	2565	27.44	21.41	6.03	≤13	PASS
	15	20825	2507.5	27.30	21.28	6.02	≤13	PASS
		21100	2535	27.36	21.28	6.08	≤13	PASS
		21375	2562.5	27.44	21.37	6.07	≤13	PASS
	20	20850	2510	27.19	21.26	5.93	≤13	PASS
		21100	2535	27.24	21.24	6.00	≤13	PASS
		21350	2560	27.34	21.34	6.00	≤13	PASS

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4.6 Frequency Stability

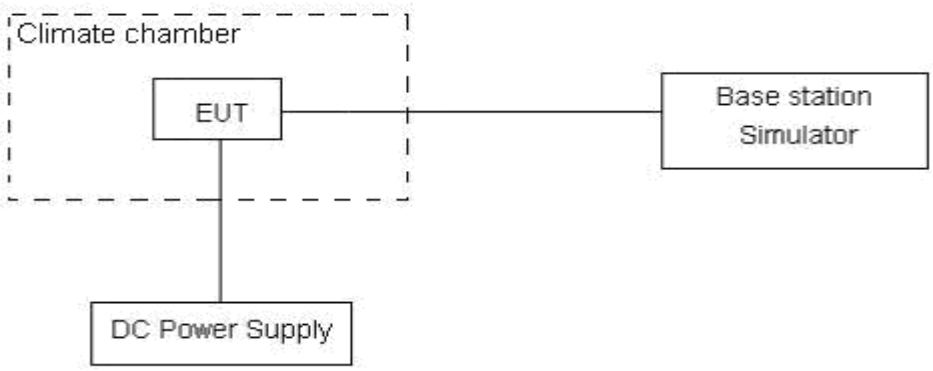
Ambient condition

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

Method of Measurement

1. Frequency Stability (Temperature Variation)The temperature inside the climate chamber is varied from -30°C to +55°C in 10°C step size.
   (1)With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.
   (2)Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.
   (3) Repeat the above measurements at 10°C increments from -30°C to +55°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.
2. Frequency Stability (Voltage Variation)
   The frequency stability shall be measured with variation of primary supply voltage as follows:
   (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
   (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.
   This transceiver is specified to operate with an input voltage of between 3.65 V and 4.40 V, with a nominal voltage of 3.87V.

Test setup



Limits

No specific frequency stability requirements in part 27.54

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75％ confidence level for the normal distribution is with the coverage factor k = 3,U=0.01ppm.

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Test Result

Test status	WCDMA Band IV Channel 1413 RMC
	Test Results (ppm)
-30°C/Normal Voltage	0.00386
-20°C/Normal Voltage	0.00377
-10°C/Normal Voltage	0.00381
0°C/Normal Voltage	0.00349
10°C/Normal Voltage	0.00357
20°C/Normal Voltage	0.00345
30°C/Normal Voltage	0.00365
40°C/Normal Voltage	0.00266
55°C/Normal Voltage	0.00261
20°C/Min Voltage	-0.00041
20°C/Max Voltage	0.00259

Bandwidth	Test status	LTE Band 4 Channel 20175 Test Results (ppm)	
		QPSK	16QAM
1.4MHz	-30°C/Normal Voltage	-0.00226	0.00032
	-20°C/Normal Voltage	0.00252	0.00035
	-10°C/Normal Voltage	-0.00104	-0.00054
	0°C/Normal Voltage	-0.00627	0.00347
	10°C/Normal Voltage	-0.00156	0.00280
	20°C/Normal Voltage	0.00288	0.00216
	30°C/Normal Voltage	-0.00135	0.00285
	40°C/Normal Voltage	0.00222	0.00020
	55°C/Normal Voltage	0.00190	-0.00172
	20°C/Min Voltage	0.00231	-0.00129
	20°C/Max Voltage	0.00764	0.00103
3MHz	-30°C/Normal Voltage	0.00191	0.00217
	-20°C/Normal Voltage	-0.00100	0.00457
	-10°C/Normal Voltage	0.00367	0.00154
	0°C/Normal Voltage	0.00293	0.00215
	10°C/Normal Voltage	-0.00029	0.00197
	20°C/Normal Voltage	0.00185	0.00880
	30°C/Normal Voltage	0.00210	0.00203
	40°C/Normal Voltage	-0.00109	0.00076
	55°C/Normal Voltage	0.00381	-0.00310
	20°C/Min Voltage	0.00304	-0.00027

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	20°C/Max Voltage	0.00190	0.00032
5MHz	-30°C/Normal Voltage	0.00368	-0.00214
	-20°C/Normal Voltage	0.00266	0.00439
	-10°C/Normal Voltage	0.00289	0.00017
	0°C/Normal Voltage	0.00358	0.00417
	10°C/Normal Voltage	-0.00343	0.00440
	20°C/Normal Voltage	-0.00755	0.00286
	30°C/Normal Voltage	-0.00522	0.00139
	40°C/Normal Voltage	-0.00616	0.00207
	55°C/Normal Voltage	-0.00610	0.00215
	20°C/Min Voltage	-0.00241	0.00842
	20°C/Max Voltage	-0.00377	-0.00186
10MHz	-30°C/Normal Voltage	-0.00059	0.00142
	-20°C/Normal Voltage	-0.00155	0.00573
	-10°C/Normal Voltage	0.00154	-0.00177
	0°C/Normal Voltage	0.00032	0.00253
	10°C/Normal Voltage	-0.00414	0.00281
	20°C/Normal Voltage	0.00158	-0.00017
	30°C/Normal Voltage	-0.00061	-0.00541
	40°C/Normal Voltage	0.00661	0.00498
	55°C/Normal Voltage	0.00715	-0.00477
	20°C/Min Voltage	0.00673	-0.00205
	20°C/Max Voltage	0.00270	-0.00465
15MHz	-30°C/Normal Voltage	-0.00006	0.00685
	-20°C/Normal Voltage	0.00154	0.00044
	-10°C/Normal Voltage	-0.00061	0.00346
	0°C/Normal Voltage	-0.00321	0.00484
	10°C/Normal Voltage	0.00036	-0.00120
	20°C/Normal Voltage	-0.00213	0.00393
	30°C/Normal Voltage	-0.00245	-0.00010
	40°C/Normal Voltage	-0.00416	0.00614
	55°C/Normal Voltage	0.00492	-0.00567
	20°C/Min Voltage	0.00163	-0.00106
	20°C/Max Voltage	0.00399	0.00270
20MHz	-30°C/Normal Voltage	-0.00670	0.00271
	-20°C/Normal Voltage	-0.00273	0.00486
	-10°C/Normal Voltage	-0.00267	0.00035
	0°C/Normal Voltage	-0.00118	0.00641
	10°C/Normal Voltage	-0.00002	-0.00008
	20°C/Normal Voltage	0.00014	0.00553

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	30°C/Normal Voltage	0.00014	0.00285
	40°C/Normal Voltage	0.00642	0.00591
	55°C/Normal Voltage	0.00121	0.00519
	20°C/Min Voltage	0.00380	0.00534
	20°C/Max Voltage	-0.00094	0.00557

Bandwidth	Test status	LTE Band 7 Channel 21100 Test Results (ppm)	
		QPSK	16QAM
5MHz	-30°C/Normal Voltage	-0.00047	0.00114
	-20°C/Normal Voltage	-0.00120	-0.00174
	-10°C/Normal Voltage	-0.00189	0.00207
	0°C/Normal Voltage	0.00115	-0.00127
	10°C/Normal Voltage	-0.00190	-0.00222
	20°C/Normal Voltage	-0.00176	-0.00144
	30°C/Normal Voltage	-0.00055	-0.00139
	40°C/Normal Voltage	-0.00077	-0.00107
	55°C/Normal Voltage	-0.00352	0.00297
	20°C/Min Voltage	0.00274	-0.00062
	20°C/Max Voltage	-0.00181	-0.00426
10MHz	-30°C/Normal Voltage	0.00159	0.00191
	-20°C/Normal Voltage	0.00166	-0.00068
	-10°C/Normal Voltage	-0.00267	0.00180
	0°C/Normal Voltage	0.00124	0.00008
	10°C/Normal Voltage	-0.00170	0.00139
	20°C/Normal Voltage	0.00127	0.00152
	30°C/Normal Voltage	0.00214	-0.00095
	40°C/Normal Voltage	0.00116	-0.00123
	55°C/Normal Voltage	0.00127	0.00002
	20°C/Min Voltage	-0.00187	0.00064
	20°C/Max Voltage	-0.00190	0.00090
15MHz	-30°C/Normal Voltage	0.00060	-0.00111
	-20°C/Normal Voltage	0.00088	0.00278
	-10°C/Normal Voltage	0.00253	0.00232
	0°C/Normal Voltage	0.00213	-0.00092
	10°C/Normal Voltage	0.00136	0.00069
	20°C/Normal Voltage	0.00027	0.00105
	30°C/Normal Voltage	0.00198	0.00071
	40°C/Normal Voltage	0.00316	0.00312
	55°C/Normal Voltage	0.00286	0.00048
	20°C/Min Voltage	0.00206	-0.00285

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