



RF TEST REPORT

Applicant ZTE Corporation

FCC ID SRQ-DL2XLB28

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

Model ZTE BLADE A602、 ZTE Blade A602、
BLADE A602、 Blade A602、 DL2 XL、
Digicel DL2 XL、 DIGICEL DL2 XL

Report No. RXA1710-0351RF03R1

Issue Date November 28, 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

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Table of Contents

1	Test Laboratory.....	4
1.1	Notes of the Test Report	4
1.2	Test facility	4
1.3	Testing Location.....	5
2	General Description of Equipment under Test.....	6
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	17
5.3	Occupied Bandwidth	22
5.4	Band Edge Compliance	36
5.5	Peak-to-Average Power Ratio (PAPR)	52
5.6	Frequency Stability.....	55
5.7	Spurious Emissions at Antenna Terminals	60
5.8	Radiates Spurious Emission	75
6	Main Test Instruments	95
ANNEX A:	EUT Appearance and Test Setup	96
A.1	EUT Appearance.....	96
A.2	Test Setup.....	99

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: October 25, 2017~ November 14, 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.
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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 A602、ZTE Blade A602、BLADE A602、Blade A602、DL2 XL、Digicel DL2 XL、DIGICEL DL2 XL		
IMEI	866112030002964		
Hardware Version	MB V1.0		
Software Version	DIG_DL2XL_B28_V1.0		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	WCDMA Band IV; LTE Band 4; LTE Band 7;		
Test Modulation	(WCDMA)QPSK; (LTE)QPSK 16QAM;		
HSDPA UE Category	24		
HSUPA UE Category	7		
LTE Release	R9		
Maximum E.I.R.P./ E.R.P.	WCDMA Band IV:	21.48dBm	
	LTE Band 4:	21.67dBm	
	LTE Band 7:	21.65dBm	
Rated Power Supply Voltage:	4.0V		
Extreme Voltage	Minimum: 3.5V Maximum: 4.35V		
Extreme Temperature	Lowest: -10°C Highest: +55°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
EUT Accessory			
Adapter	Manufacturer: DOKOCOM Model: LPL-A008050150Z		
Battery	Manufacturer: ZHENGZHOU BAK BATTERY CO., LTD Model: Li3830T43P6h856337		
Earphone	Manufacturer: Shen zhen FDC Electronics Co.,Ltd. Model: DEM-93		
USB Extend Cable	71cm Cable, unshield		
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 (Z 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:

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.														

5 Test Case Results

5.1 RF Power Output

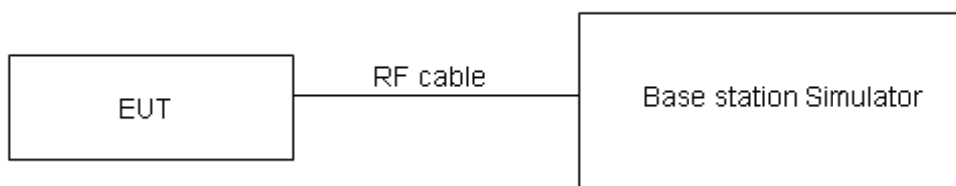
Ambient condition

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		23.13	23.19	23.12
HSDPA	Sub - Test 1	22.96	23.03	22.96
	Sub - Test 2	22.97	23.02	22.98
	Sub - Test 3	22.57	22.60	22.56
	Sub - Test 4	22.56	22.62	22.55
HSUPA	Sub - Test 1	23.05	23.11	23.04
	Sub - Test 2	21.21	21.27	21.20
	Sub - Test 3	22.03	22.09	22.02
	Sub - Test 4	21.22	21.28	21.21
	Sub - Test 5	23.01	23.07	23.00
DC-HSDPA	Sub - Test 1	23.00	23.06	22.99
	Sub - Test 2	22.98	23.05	22.98
	Sub - Test 3	22.47	22.54	22.47
	Sub - Test 4	22.46	22.53	22.46
HSPA+	16QAM	22.83	22.88	22.83
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	22.48	22.47	22.49
		1	2	22.27	22.36	22.38
		1	5	22.34	22.38	22.36
		3	0	22.38	22.39	22.41
		3	2	22.28	22.35	22.41
		3	3	22.30	22.31	22.39
		6	0	21.32	21.39	21.45
	16QAM	1	0	21.36	21.42	21.46
		1	2	21.36	21.24	21.32
		1	5	21.26	21.28	21.29
		3	0	21.34	21.31	21.37
		3	2	21.27	21.30	21.43
		3	3	21.26	21.38	21.31
		6	0	20.33	20.46	20.50
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	22.50	22.51	22.52
		1	7	22.30	22.41	22.42
		1	14	22.37	22.43	22.40
		8	0	21.48	21.51	21.54
		8	4	21.40	21.45	21.53
		8	7	21.40	21.42	21.49
		15	0	21.35	21.43	21.48
	16QAM	1	0	21.39	21.44	21.49
		1	7	21.39	21.29	21.36
		1	14	21.28	21.32	21.32
		8	0	20.45	20.44	20.49
		8	4	20.38	20.43	20.55
		8	7	20.36	20.50	20.44
		15	0	20.36	20.50	20.53
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	22.47	22.49	22.48
		1	13	22.28	22.37	22.39
		1	24	22.34	22.38	22.36
		12	0	21.45	21.46	21.50
		12	6	21.38	21.41	21.48
		12	13	21.38	21.40	21.45
		25	0	21.33	21.42	21.46



	16QAM	1	0	21.36	21.40	21.46
		1	13	21.36	21.27	21.33
		1	24	21.25	21.30	21.28
		12	0	20.43	20.40	20.46
		12	6	20.35	20.38	20.51
		12	13	20.33	20.45	20.40
		25	0	20.34	20.46	20.48
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	22.49	22.50	22.51
		1	25	22.31	22.42	22.43
		1	49	22.36	22.42	22.39
		25	0	21.48	21.51	21.54
		25	13	21.41	21.46	21.52
		25	25	21.40	21.44	21.50
		50	0	21.41	21.44	21.50
	16QAM	1	0	21.38	21.43	21.48
		1	25	21.39	21.31	21.36
		1	49	21.28	21.32	21.31
		25	0	20.46	20.45	20.50
		25	13	20.37	20.42	20.54
		25	25	20.36	20.50	20.44
		50	0	20.37	20.51	20.52
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	22.48	22.46	22.49
		1	38	22.29	22.41	22.40
		1	74	22.33	22.37	22.35
		36	0	21.46	21.47	21.51
		36	18	21.38	21.41	21.48
		36	39	21.37	21.41	21.46
		75	0	21.39	21.40	21.45
	16QAM	1	0	21.33	21.41	21.46
		1	38	21.37	21.28	21.34
		1	74	21.25	21.28	21.28
		36	0	20.43	20.43	20.47
		36	18	20.34	20.37	20.50
		36	39	20.34	20.46	20.41
		75	0	20.34	20.46	20.48
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	22.45	22.42	22.46
		1	50	22.28	22.37	22.38



		1	99	22.31	22.36	22.32
		50	0	21.43	21.42	21.47
		50	25	21.36	21.37	21.45
		50	50	21.34	21.36	21.42
		100	0	21.36	21.35	21.41
	16QAM	1	0	21.31	21.37	21.41
		1	50	21.33	21.26	21.30
		1	99	21.23	21.25	21.26
		50	0	20.40	20.39	20.44
		50	25	20.31	20.35	20.47
		50	50	20.31	20.41	20.37
		100	0	20.32	20.42	20.45

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	22.38	22.51	22.45
		1	13	22.26	22.52	22.28
		1	24	22.32	22.53	22.34
		12	0	21.46	21.61	21.48
		12	6	21.48	21.63	21.37
		12	13	21.47	21.67	21.34
		25	0	21.42	21.66	21.36
	16QAM	1	0	21.48	21.54	21.52
		1	13	21.41	21.60	21.38
		1	24	21.49	21.50	21.45
		12	0	20.42	20.55	20.39
		12	6	20.45	20.61	20.36
		12	13	20.37	20.65	20.33
		25	0	20.35	20.61	20.35
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	22.40	22.52	22.48
		1	25	22.29	22.57	22.32
		1	49	22.34	22.57	22.37
		25	0	21.49	21.66	21.52
		25	13	21.51	21.68	21.41
		25	25	21.49	21.71	21.39
		50	0	21.50	21.68	21.40
	16QAM	1	0	21.50	21.57	21.54



		1	25	21.44	21.64	21.41
		1	49	21.52	21.52	21.48
		25	0	20.45	20.60	20.43
		25	13	20.47	20.65	20.39
		25	25	20.40	20.70	20.37
		50	0	20.38	20.66	20.39
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	22.39	22.48	22.46
		1	38	22.27	22.56	22.29
		1	74	22.31	22.52	22.33
		36	0	21.47	21.62	21.49
		36	18	21.48	21.63	21.37
		36	39	21.46	21.68	21.35
		75	0	21.48	21.64	21.35
	16QAM	1	0	21.45	21.55	21.52
		1	38	21.42	21.61	21.39
		1	74	21.49	21.48	21.45
		36	0	20.42	20.58	20.40
		36	18	20.44	20.60	20.35
		36	39	20.38	20.66	20.34
		75	0	20.35	20.61	20.35
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	22.36	22.44	22.43
		1	50	22.26	22.52	22.27
		1	99	22.29	22.51	22.30
		50	0	21.44	21.57	21.45
		50	25	21.46	21.59	21.34
		50	50	21.43	21.63	21.31
		100	0	21.45	21.59	21.31
	16QAM	1	0	21.43	21.51	21.47
		1	50	21.38	21.59	21.35
		1	99	21.47	21.45	21.43
		50	0	20.39	20.54	20.37
		50	25	20.41	20.58	20.32
		50	50	20.35	20.61	20.30
		100	0	20.33	20.57	20.32

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.

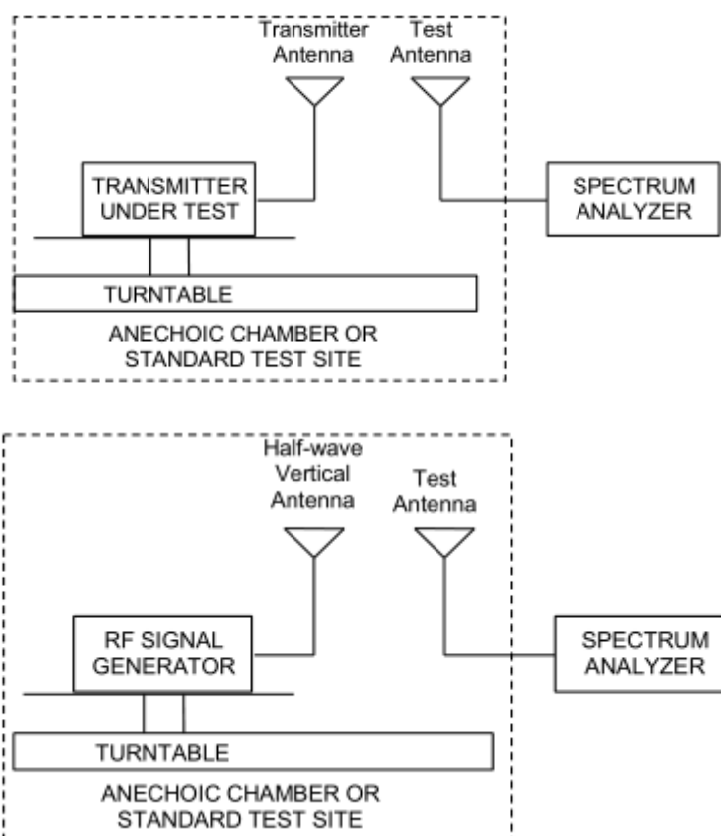
g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g.transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and 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(b) (10) specifies that “Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP”

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(d)(4)Limit (EIRP) -LTE 4	$\leq$ 1 W (30 dBm)
Part 27.50(h)(2) Limit (EIRP)-LTE 7	$\leq$ 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

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	-26.19	-45.44	1.82	21.07	38.45	Pass
	Mid	1732.6	Horizontal	-25.86	-45.38	1.96	21.48	38.45	Pass
	High	1752.6	Horizontal	-26.07	-45.38	1.93	21.24	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	-35.16	-54.30	1.44	20.58	Pass
	Mid	1732.5	Horizontal	-34.66	-54.32	1.57	21.22	Pass
	High	1754.3	Horizontal	-34.58	-54.10	1.72	21.24	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	-35.16	-54.35	1.44	20.63	Pass
	Mid	1732.5	Horizontal	-34.67	-54.41	1.57	21.30	Pass
	High	1753.5	Horizontal	-34.84	-54.48	1.72	21.36	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	-36.96	-54.34	1.44	18.82	Pass
	Mid	1732.5	Horizontal	-36.43	-54.32	1.57	19.45	Pass
	High	1752.5	Horizontal	-36.17	-54.13	1.72	19.67	Pass
10 MHz (QPSK)	Low	1715	Horizontal	-35.16	-54.32	1.44	20.60	Pass
	Mid	1732.5	Horizontal	-34.72	-54.41	1.57	21.25	Pass
	High	1750	Horizontal	-34.51	-54.52	1.66	21.67	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	-35.00	-54.35	1.49	20.84	Pass
	Mid	1732.5	Horizontal	-34.52	-54.32	1.57	21.36	Pass
	High	1747.5	Horizontal	-34.18	-54.17	1.66	21.65	Pass
20 MHz (QPSK)	Low	1720	Horizontal	-35.07	-54.44	1.49	20.86	Pass
	Mid	1732.5	Horizontal	-34.63	-54.41	1.57	21.34	Pass
	High	1745	Horizontal	-34.64	-54.59	1.63	21.58	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	-35.27	-54.30	1.44	20.47	Pass
	Mid	1732.5	Horizontal	-34.77	-54.32	1.57	21.11	Pass
	High	1754.3	Horizontal	-34.69	-54.10	1.72	21.13	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	-35.27	-54.35	1.44	20.52	Pass
	Mid	1732.5	Horizontal	-34.78	-54.41	1.57	21.19	Pass
	High	1753.5	Horizontal	-34.95	-54.48	1.72	21.25	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	-37.07	-54.34	1.44	18.71	Pass
	Mid	1732.5	Horizontal	-36.54	-54.32	1.57	19.34	Pass
	High	1752.5	Horizontal	-36.28	-54.13	1.72	19.56	Pass
10 MHz	Low	1715	Horizontal	-35.28	-54.32	1.44	20.48	Pass



(16QAM)	Mid	1732.5	Horizontal	-34.83	-54.41	1.57	21.14	Pass
	High	1750	Horizontal	-34.62	-54.52	1.66	21.56	Pass
15 MHz (16QAM)	Low	1717.5	Horizontal	-35.11	-54.35	1.49	20.72	Pass
	Mid	1732.5	Horizontal	-34.63	-54.32	1.57	21.25	Pass
	High	1747.5	Horizontal	-34.29	-54.17	1.66	21.54	Pass
20 MHz (16QAM)	Low	1720	Horizontal	-35.18	-54.44	1.49	20.75	Pass
	Mid	1732.5	Horizontal	-34.74	-54.41	1.57	21.23	Pass
	High	1745	Horizontal	-34.75	-54.59	1.63	21.47	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	-41.97	-59.64	1.81	19.48	Pass
	Mid	2535	Horizontal	-40.61	-59.72	1.81	20.92	Pass
	High	2567.5	Horizontal	-40.33	-59.98	1.83	21.48	Pass
10 MHz (QPSK)	Low	2505	Horizontal	-42.84	-59.61	1.82	18.59	Pass
	Mid	2535	Horizontal	-42.64	-59.72	1.81	18.89	Pass
	High	2565	Horizontal	-42.17	-60.02	1.81	19.66	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	-41.47	-59.29	1.80	19.62	Pass
	Mid	2535	Horizontal	-40.73	-59.72	1.81	20.80	Pass
	High	2562.5	Horizontal	-39.63	-59.46	1.82	21.65	Pass
20 MHz (QPSK)	Low	2510	Horizontal	-42.55	-59.52	1.77	18.74	Pass
	Mid	2535	Horizontal	-42.55	-59.72	1.81	18.98	Pass
	High	2560	Horizontal	-42.01	-60.01	1.82	19.82	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	-42.09	-59.64	1.81	19.36	Pass
	Mid	2535	Horizontal	-40.72	-59.72	1.81	20.81	Pass
	High	2567.5	Horizontal	-40.44	-59.98	1.83	21.37	Pass
10 MHz (16QAM)	Low	2505	Horizontal	-42.95	-59.61	1.82	18.48	Pass
	Mid	2535	Horizontal	-42.75	-59.72	1.81	18.78	Pass
	High	2565	Horizontal	-42.28	-60.02	1.81	19.55	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	-41.58	-59.29	1.80	19.51	Pass
	Mid	2535	Horizontal	-40.84	-59.72	1.81	20.69	Pass
	High	2562.5	Horizontal	-39.74	-59.46	1.82	21.54	Pass
20 MHz (16QAM)	Low	2510	Horizontal	-42.66	-59.52	1.77	18.63	Pass
	Mid	2535	Horizontal	-42.66	-59.72	1.81	18.87	Pass
	High	2560	Horizontal	-42.12	-60.01	1.82	19.71	Pass

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 (1.4MHz).

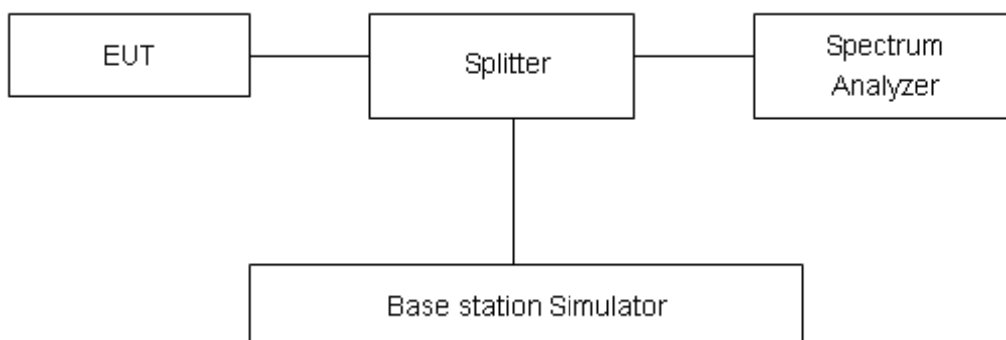
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4 (3MHz).

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 $k = 2$, $U=624\text{Hz}$.

Test Result



Mode	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
WCDMA Band IV (RMC)	1537	2112.4	4.2050	4.868
	1638	2132.6	4.2234	4.847
	1738	2152.6	4.2140	4.865

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1113	1.273
			20175	1732.5	1.1125	1.272
			20393	1754.3	1.1109	1.277
		3	19965	1711.5	2.7370	2.975
			20175	1732.5	2.7323	2.973
			20385	1753.5	2.7355	3.049
		5	19975	1712.5	4.5144	4.900
			20175	1732.5	4.5084	4.930
			20375	1752.5	4.5125	4.919
		10	20000	1715	9.0567	9.737
			20175	1732.5	9.0684	9.773
			20350	1750	9.0573	9.776
		15	20025	1717.5	13.4990	14.300
			20175	1732.5	13.5010	14.360
			20325	1747.5	13.4810	14.320
		20	20050	1720	17.9340	18.830
			20175	1732.5	17.9370	18.800
			20300	1745	17.9200	19.360
	16QAM	1.4	19957	1710.7	1.1113	1.250
			20175	1732.5	1.1125	1.254
			20393	1754.3	1.1115	1.250
		3	19965	1711.5	2.7355	2.966
			20175	1732.5	2.7301	2.988
			20385	1753.5	2.7480	3.060
		5	19975	1712.5	4.5162	4.886
			20175	1732.5	4.5140	4.908
			20375	1752.5	4.5132	4.983
		10	20000	1715	9.0566	9.775
			20175	1732.5	9.0385	9.756
			20350	1750	9.0601	9.746
		15	20025	1717.5	13.4930	14.310

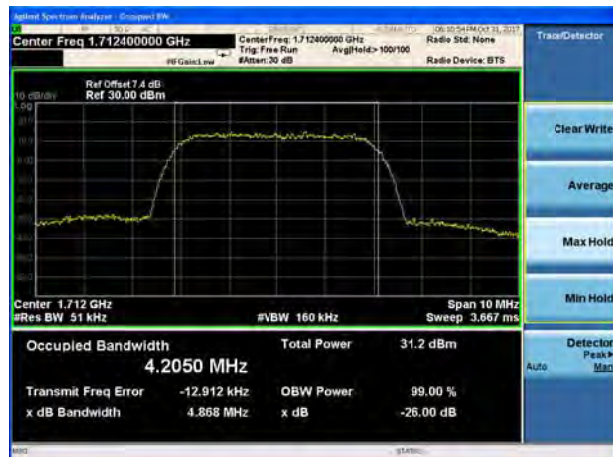


			20175	1732.5	13.4870	14.320
			20325	1747.5	13.4850	14.340
		20	20050	1720	17.9570	18.890
			20175	1732.5	17.9280	18.790
			20300	1745	17.9500	19.320

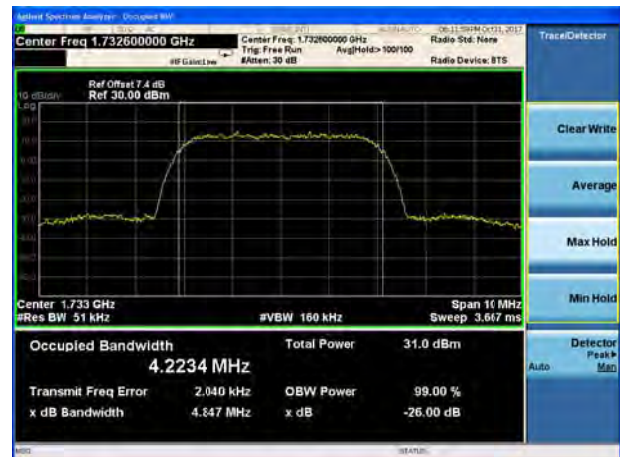
LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5419	5.025
			21100	2535	4.5267	5.060
			21425	2567.5	4.5225	5.084
		10	20800	2505	9.0674	10.200
			21100	2535	9.0426	10.090
			21400	2565	9.0374	10.120
		15	20825	2507.5	13.5390	14.950
			21100	2535	13.4800	14.840
			21375	2562.5	13.5210	14.860
		20	20850	2510	17.9260	19.180
			21100	2535	17.9140	19.310
			21350	2560	17.9840	19.630
	16QAM	5	20775	2502.5	4.5095	5.041
			21100	2535	4.5240	5.044
			21425	2567.5	4.5464	5.093
		10	20800	2505	9.0435	10.110
			21100	2535	9.0513	10.010
			21400	2565	9.0430	10.100
		15	20825	2507.5	13.4950	14.810
			21100	2535	13.5520	14.930
			21375	2562.5	13.4760	14.860
		20	20850	2510	17.9620	19.360
			21100	2535	17.9440	19.580
			21350	2560	17.9440	19.450



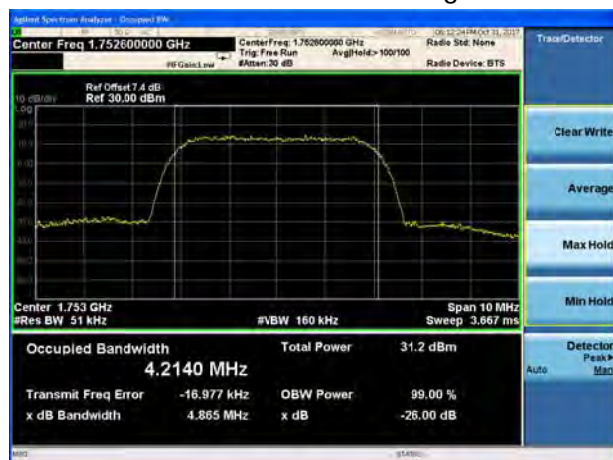
WCDMA Band IV CH-Low



WCDMA Band IV CH Middle

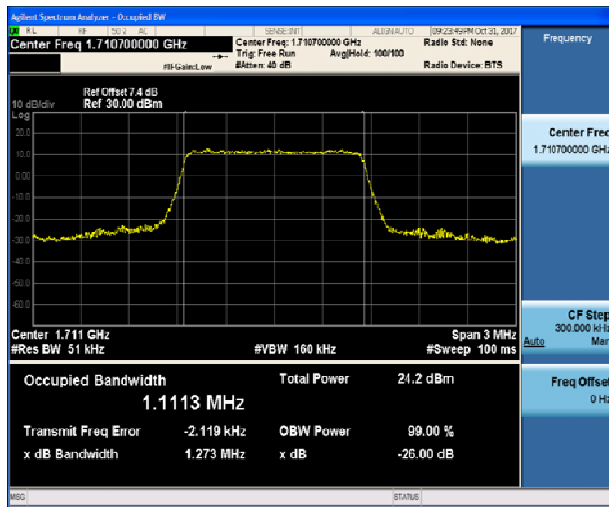


WCDMA Band IV CH High

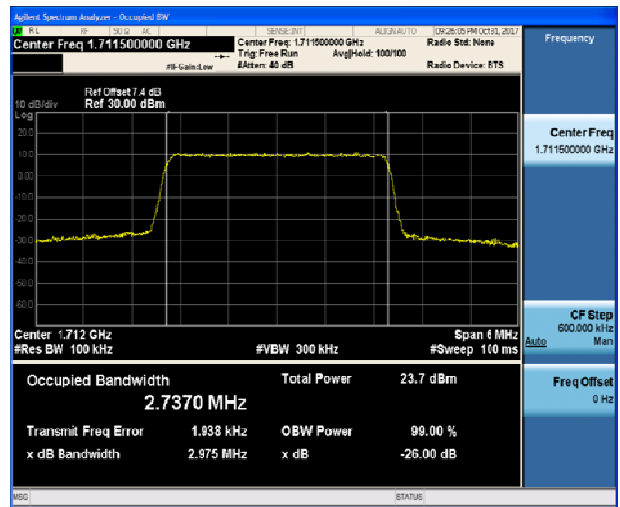




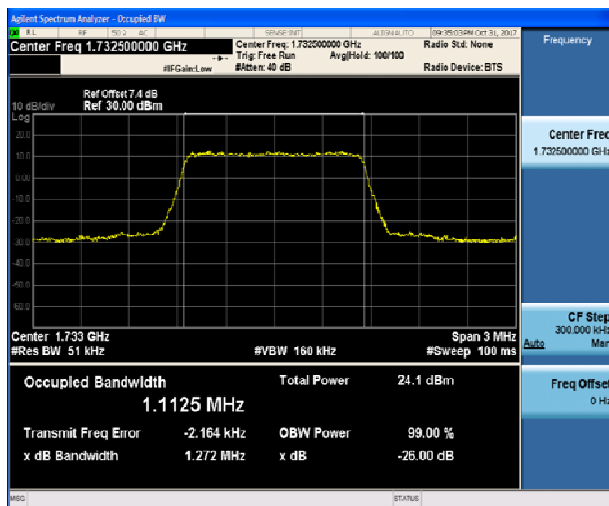
LTE Band 4 QPSK 1.4MHz CH-Low



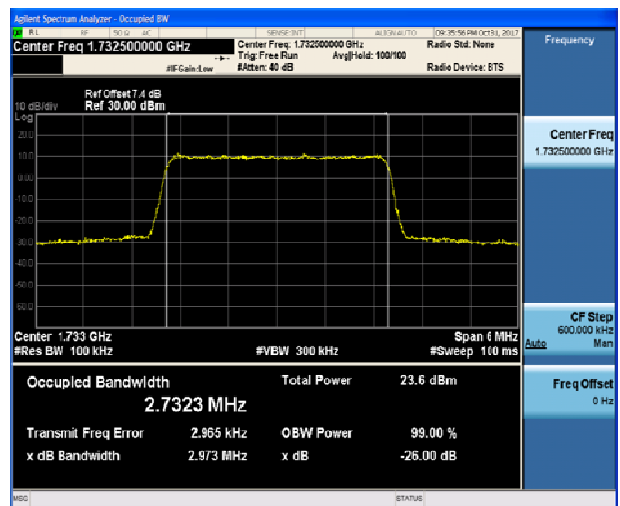
LTE Band 4 QPSK 3MHz CH-Low



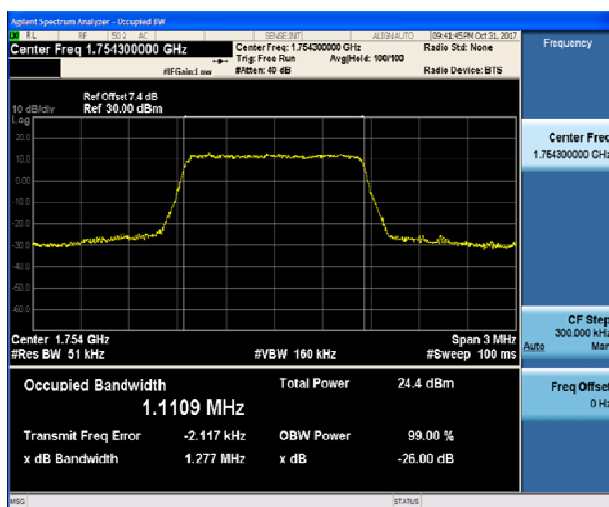
LTE Band 4 QPSK 1.4MHz CH-Middle



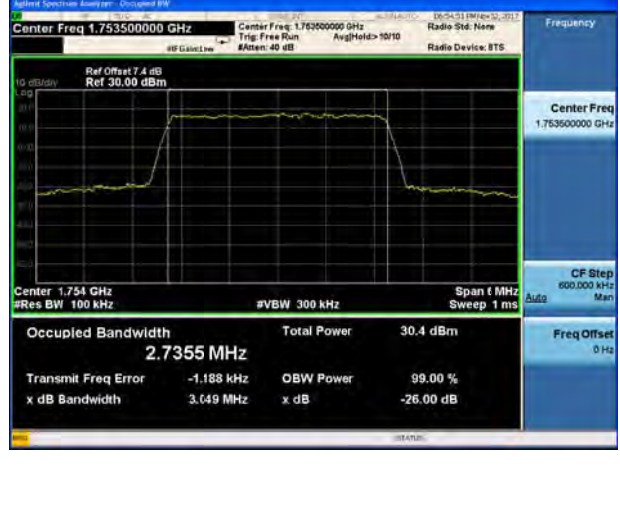
LTE Band 4 QPSK 3MHz CH-Middle



LTE Band 4 QPSK 1.4MHz CH-High

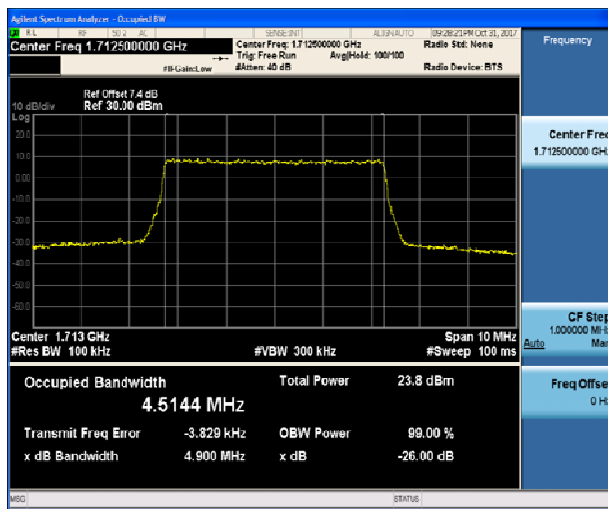


LTE Band 4 QPSK 3MHz CH-High

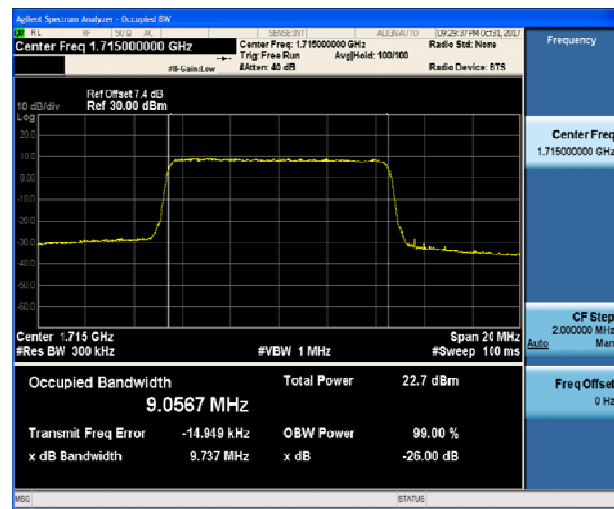




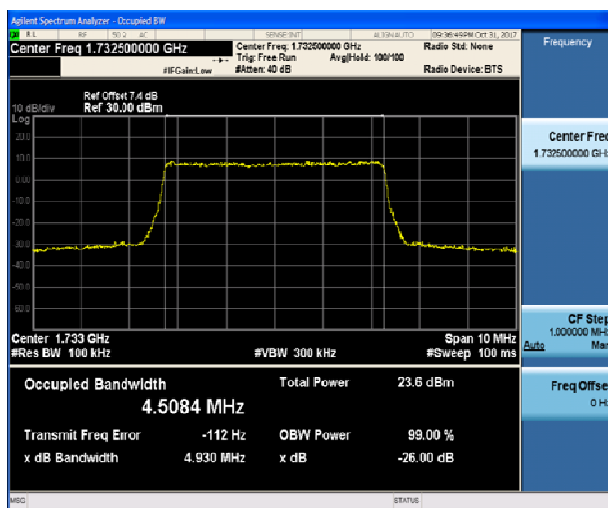
LTE Band 4 QPSK 5MHz CH-Low



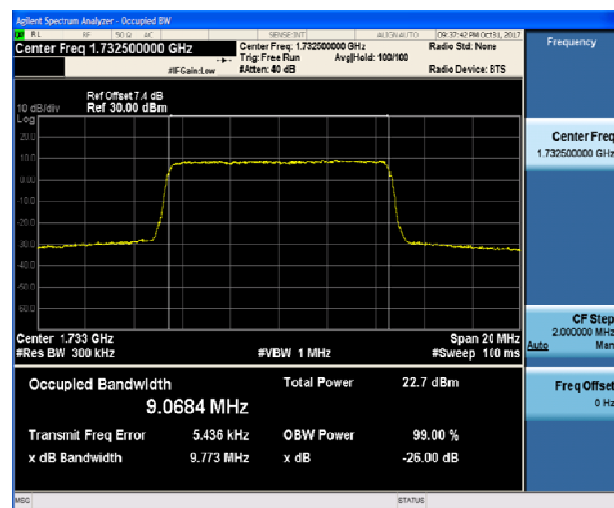
LTE Band 4 QPSK 10MHz CH-Low



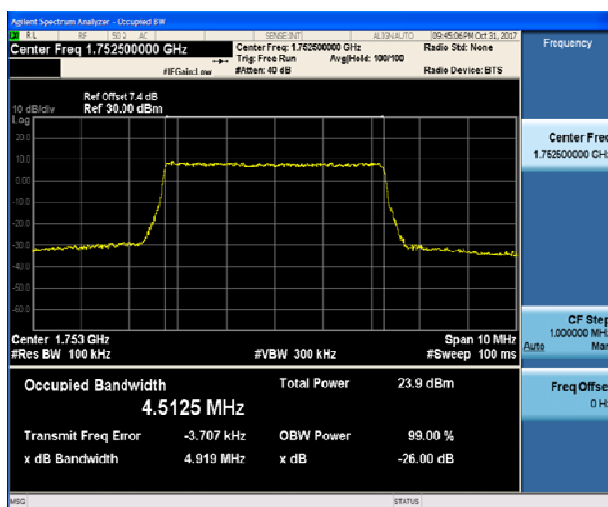
LTE Band 4 QPSK 5MHz CH-Middle



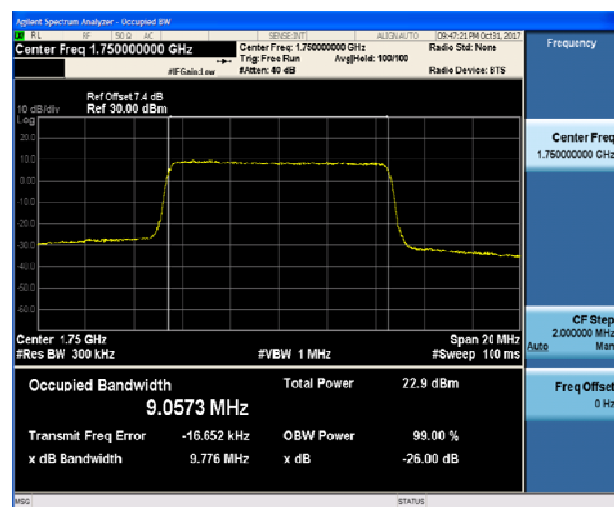
LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High

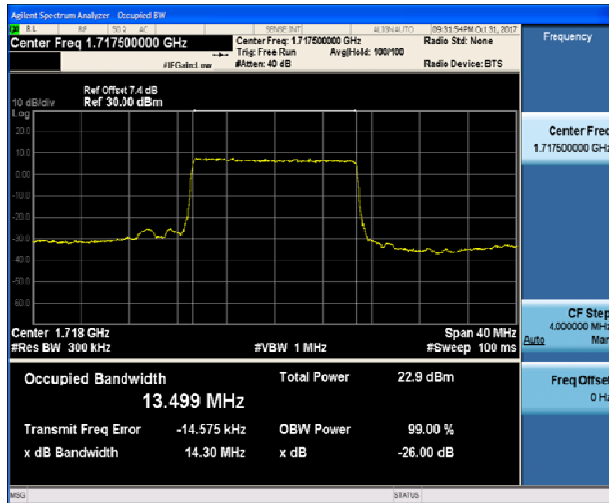


LTE Band 4 QPSK 10MHz CH-High

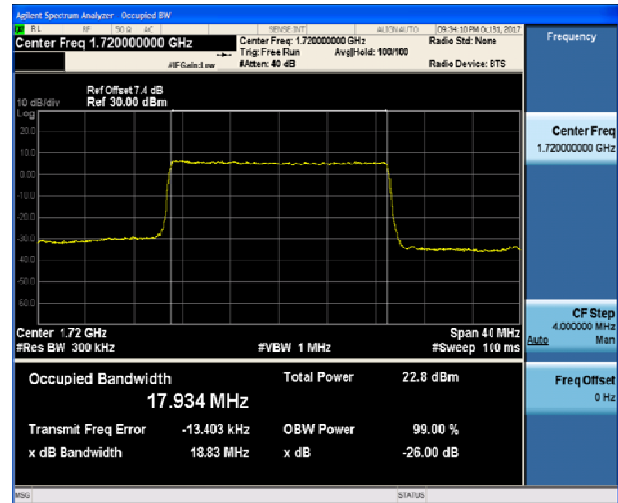




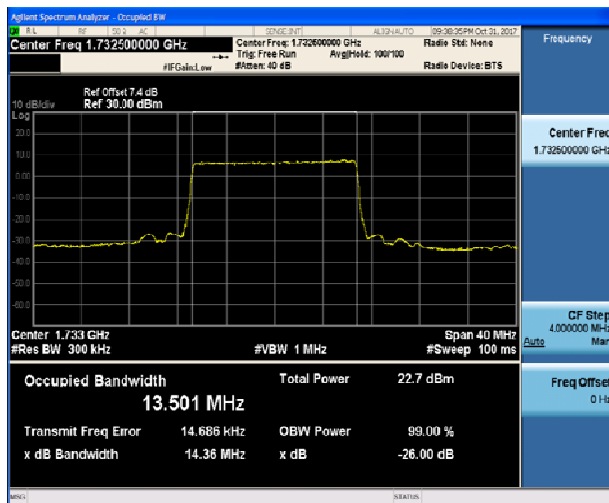
LTE Band 4 QPSK 15MHz CH-Low



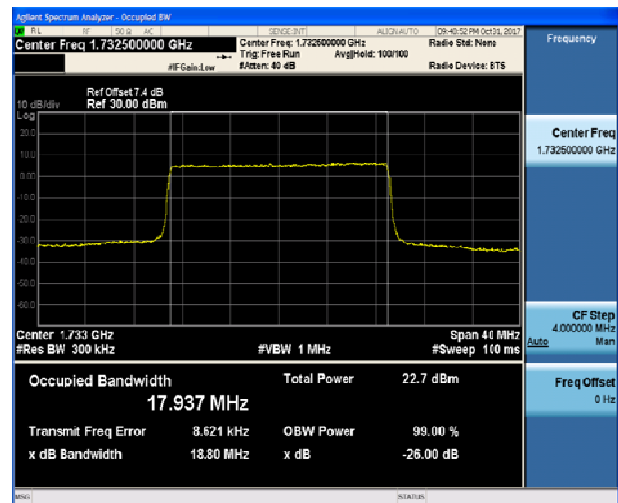
LTE Band 4 QPSK 20MHz CH-Low



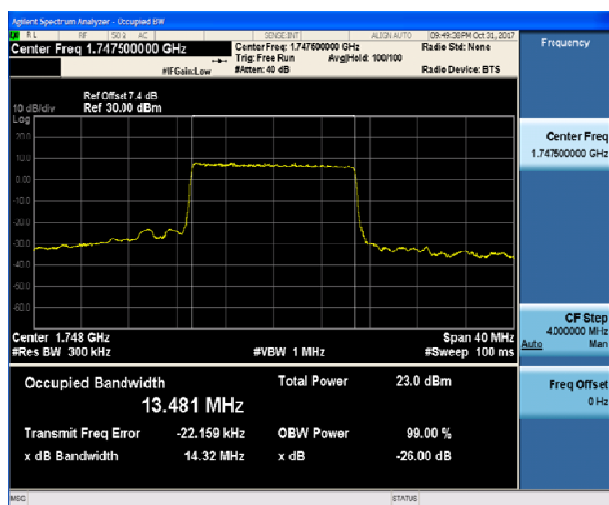
LTE Band 4 QPSK 15MHz CH-Middle



LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High

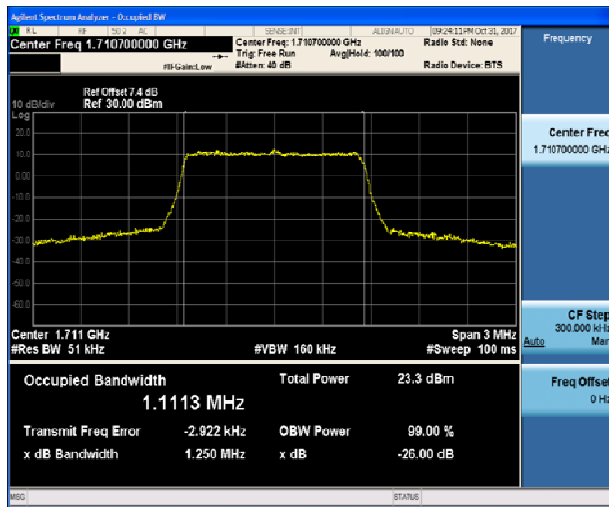


LTE Band 4 QPSK 20MHz CH-High

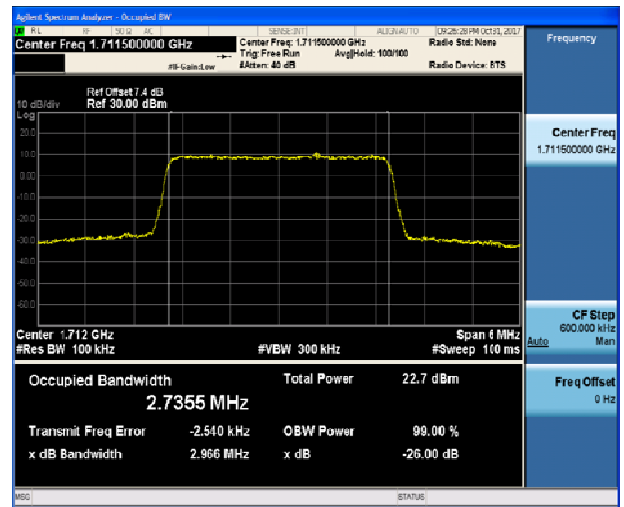




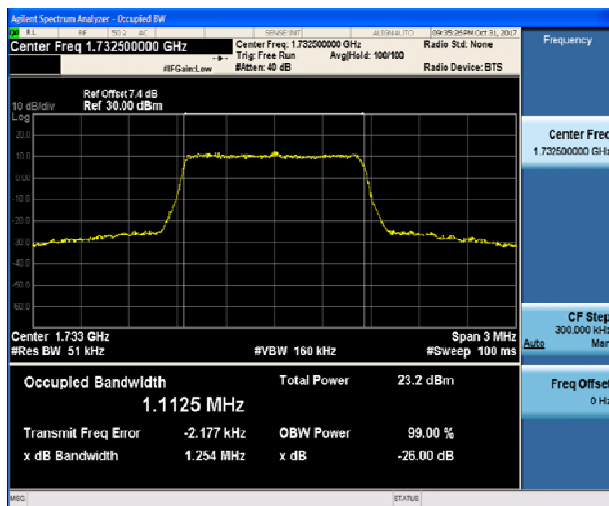
LTE Band 4 16QAM 1.4MHz CH-Low



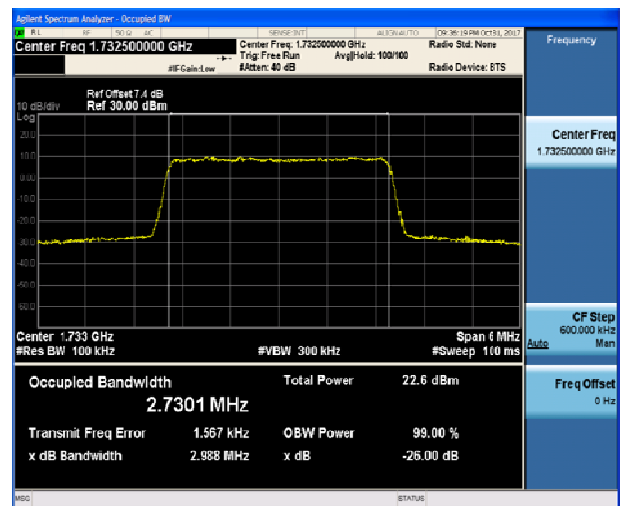
LTE Band 4 16QAM 3MHz CH-Low



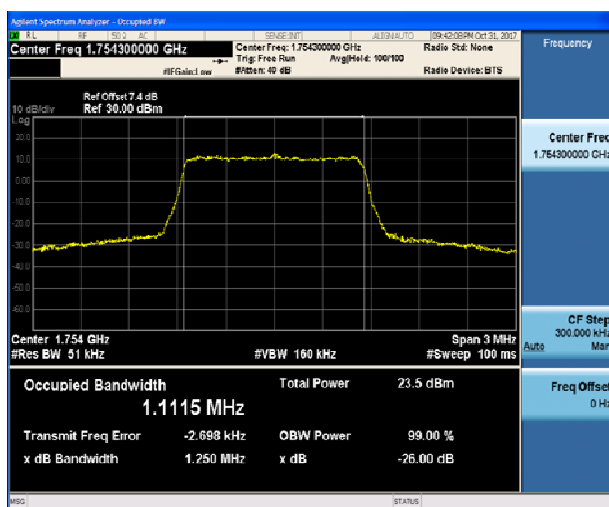
LTE Band 4 16QAM 1.4MHz CH-Middle



LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High

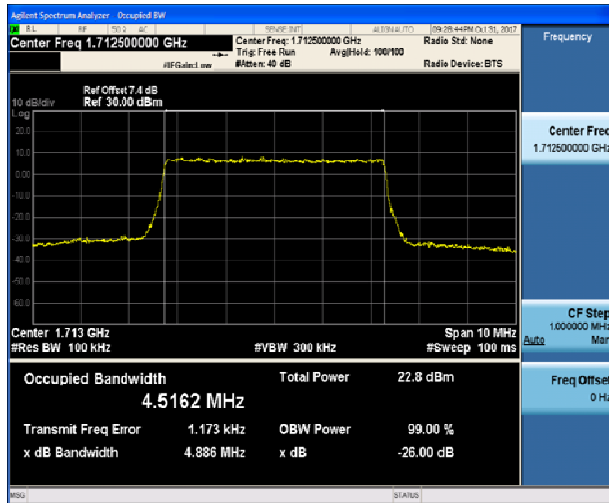


LTE Band 4 16QAM 3MHz CH-High

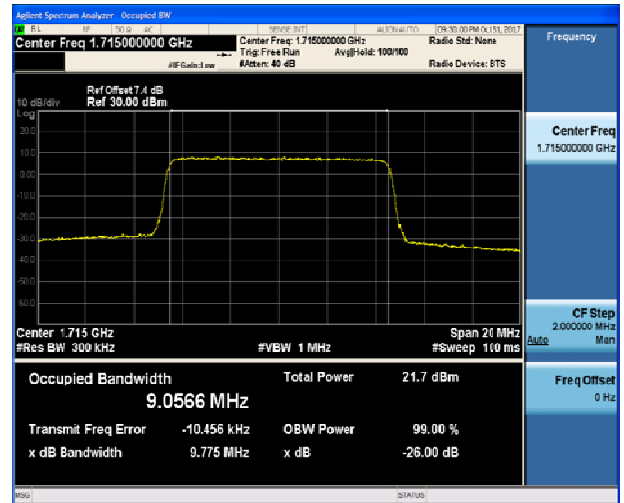




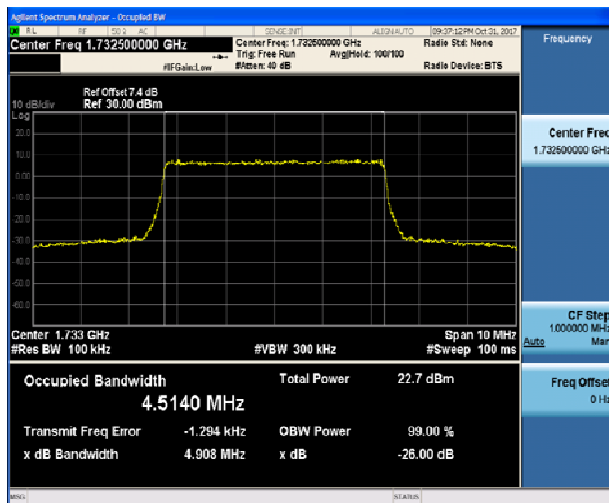
LTE Band 4 16QAM 5MHz CH-Low



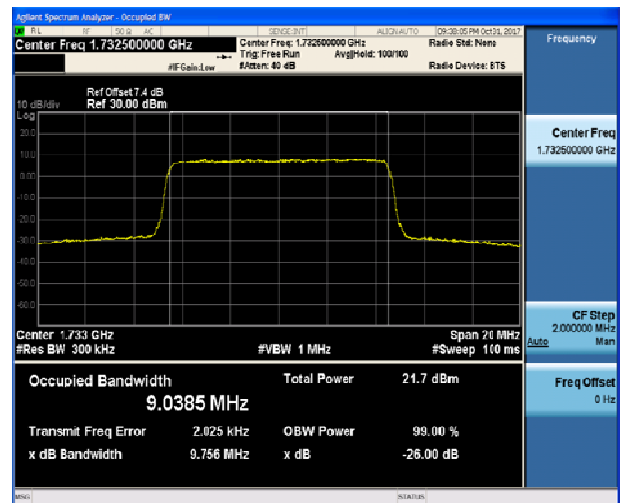
LTE Band 4 16QAM 10MHz CH-Low



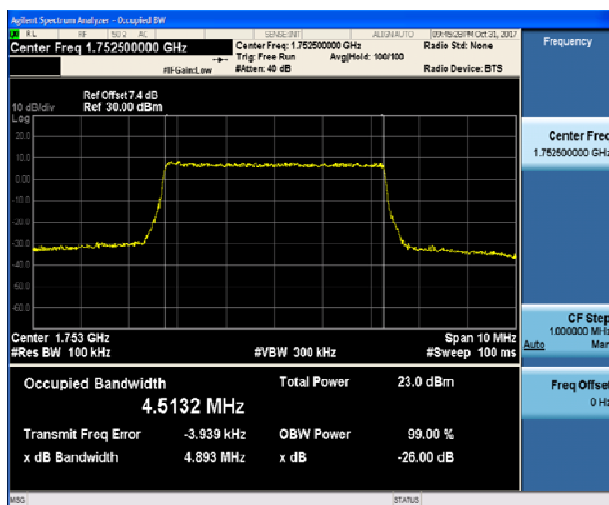
LTE Band 4 16QAM 5MHz CH-Middle



LTE Band 4 16QAM 10MHz CH-Middle



LTE Band 4 16QAM 5MHz CH-High



LTE Band 4 16QAM 10MHz CH-High

