



RF TEST REPORT

Applicant ZTE Corporation
FCC ID SRQ-Z6400C
Product WCDMA/LTE Multi-mode Digital Mobile Phone
Model Z6400C
Report No. R1801A0019-R3
Issue Date March 19, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2017)/ FCC CFR47 Part 27 (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.....	18
5.3	Occupied Bandwidth.....	24
5.4	Band Edge Compliance.....	41
5.5	Peak-to-Average Power Ratio (PAPR).....	62
5.6	Frequency Stability.....	66
5.7	Spurious Emissions at Antenna Terminals.....	72
5.8	Radiates Spurious Emission.....	92
6	Main Test Instruments.....	115

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	27.50(d)(4) /27.50(c)(10) /27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h) /27.53(g) /27.53(i)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 /27.53(h) /27.53(g) /27.53(i)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(g) /27.53(i)	PASS
Date of Testing: January 13, 2018~ March 10, 2018			
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.

1.2 Test facility

CNAS (accreditation number: L2264)

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

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

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

IC (recognition number is 8510A)

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

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

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

A2LA (Certificate Number: 3857.01)

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

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
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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	Z6400C		
IMEI	867466030005743		
Hardware Version	Z6400CHW1.0		
Software Version	Z6400CV1.0.1		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	WCDMA Band IV; LTE Band 4; LTE Band 12, LTE Band 30;		
Test Modulation	(WCDMA)QPSK; (LTE)QPSK 16QAM;		
HSDPA UE Category	14		
HSUPA UE Category	6		
LTE Category	4		
Maximum E.I.R.P./ E.R.P.	WCDMA Band IV:	21.92dBm	
	LTE Band 4:	24.62dBm	
	LTE Band 12:	17.72dBm	
	LTE Band 30:	23.41dBm	
Rated Power Supply Voltage:	3.85V		
Extreme Voltage	Minimum: 3.6V Maximum: 4.4V		
Extreme Temperature	Lowest: -10°C Highest: +55°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 12	699 ~ 716	729 ~ 746
	LTE Band 30	2305 ~ 2315	2350 ~ 2360



EUT Accessory	
Adapter	Manufacturer: Salcomp (Shenzhen) Co., Ltd. Model: STC-A5915A-Z
Battery	Model: Li3940T44P8h937238
USB Cable	100cm Cable, Shielded
Note: 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 27 (2017)

ANSI/TIA-603-E (2016)

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 4/12/30:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	O	O	O	O	O	O
	LTE 30	-	-	O	O	-	-	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 30	-	-	O	O	-	-	O	O	-	-	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 30	-	-	O	O	-	-	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 12	O	O	O	O	-	-	O	O	O	-	O	O	-	O
	LTE 30	-	-	O	O	-	-	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
	LTE 30	-	-	O	O	-	-	O	O	-	-	O	O	O	O
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	-	O	-
	LTE 30	-	-	O	O	-	-	O	O	-	-	O	-	O	-
Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 30	-	-	O	O	-	-	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
	LTE 30	-	-	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

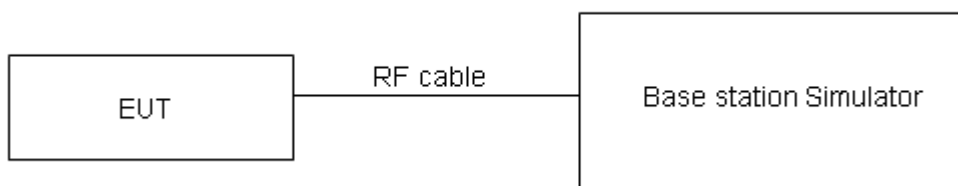
Ambient condition

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		23.70	23.72	23.65
HSDPA	Sub - Test 1	23.53	23.56	23.49
	Sub - Test 2	23.54	23.55	23.51
	Sub - Test 3	23.14	23.13	23.09
	Sub - Test 4	23.13	23.15	23.08
HSUPA	Sub - Test 1	23.62	23.64	23.57
	Sub - Test 2	21.78	21.80	21.73
	Sub - Test 3	22.60	22.62	22.55
	Sub - Test 4	21.79	21.81	21.74
	Sub - Test 5	23.58	23.60	23.53
DC-HSDPA	Sub - Test 1	23.57	23.59	23.52
	Sub - Test 2	23.55	23.58	23.51
	Sub - Test 3	23.04	23.07	23.00
	Sub - Test 4	23.03	23.06	22.99
Note:1) The following testing in RMC based on the maximum RF Output Power.				

LTE Band 4				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	23.24	23.24	22.98
		1	2	23.46	23.33	23.23
		1	5	23.28	23.20	23.16
		3	0	23.37	23.34	23.10
		3	2	23.26	23.26	23.19
		3	3	23.23	23.28	23.22
		6	0	22.34	22.38	22.19
	16QAM	1	0	22.64	22.77	22.26
		1	2	22.79	22.83	22.43
		1	5	22.50	22.72	22.37
		3	0	22.42	22.34	22.19
		3	2	22.25	22.22	22.21
		3	3	22.19	22.36	22.15
		6	0	21.48	21.35	21.29
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	23.26	23.28	23.01
		1	7	23.49	23.38	23.27
		1	14	23.31	23.25	23.20
		8	0	22.47	22.46	22.23
		8	4	22.38	22.36	22.31
		8	7	22.33	22.39	22.32
		15	0	22.37	22.42	22.22
	16QAM	1	0	22.67	22.79	22.29
		1	7	22.82	22.88	22.47
		1	14	22.52	22.76	22.40
		8	0	21.53	21.47	21.31
		8	4	21.36	21.35	21.33
		8	7	21.29	21.48	21.28
		15	0	21.51	21.39	21.32
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	23.23	23.26	22.97
		1	13	23.47	23.34	23.24
		1	24	23.28	23.20	23.16
		12	0	22.44	22.41	22.19
		12	6	22.36	22.32	22.26
		12	13	22.31	22.37	22.28
		25	0	22.35	22.41	22.20



Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
	16QAM	1	0	22.64	22.75	22.26
		1	13	22.79	22.86	22.44
		1	24	22.49	22.74	22.36
		12	0	21.51	21.43	21.28
		12	6	21.33	21.30	21.29
		12	13	21.26	21.43	21.24
		25	0	21.49	21.35	21.27
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
10MHz	QPSK	1	0	23.25	23.27	23.00
		1	25	23.50	23.39	23.28
		1	49	23.30	23.24	23.19
		25	0	22.47	22.46	22.23
		25	13	22.39	22.37	22.30
		25	25	22.33	22.41	22.33
		50	0	22.43	22.43	22.24
	16QAM	1	0	22.66	22.78	22.28
		1	25	22.82	22.90	22.47
		1	49	22.52	22.76	22.39
		25	0	21.54	21.48	21.32
		25	13	21.35	21.34	21.32
		25	25	21.29	21.48	21.28
		50	0	21.52	21.40	21.31
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
15MHz	QPSK	1	0	23.24	23.23	22.98
		1	38	23.48	23.38	23.25
		1	74	23.27	23.19	23.15
		36	0	22.45	22.42	22.20
		36	18	22.36	22.32	22.26
		36	39	22.30	22.38	22.29
		75	0	22.41	22.39	22.19
	16QAM	1	0	22.61	22.76	22.26
		1	38	22.80	22.87	22.45
		1	74	22.49	22.72	22.36
		36	0	21.51	21.46	21.29
		36	18	21.32	21.29	21.28
		36	39	21.27	21.44	21.25
		75	0	21.49	21.35	21.27
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	23.21	23.19	22.95
		1	50	23.47	23.34	23.23



		1	99	23.25	23.18	23.12
		50	0	22.42	22.37	22.16
		50	25	22.34	22.28	22.23
		50	50	22.27	22.33	22.25
		100	0	22.38	22.34	22.15
	16QAM	1	0	22.59	22.72	22.21
		1	50	22.76	22.85	22.41
		1	99	22.47	22.69	22.34
		50	0	21.48	21.42	21.26
		50	25	21.29	21.27	21.25
		50	50	21.24	21.39	21.21
		100	0	21.47	21.31	21.24

LTE Band 12				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23017/699.7	23095/707.5	23173/715.3
1.4MHz	QPSK	1	0	23.58	23.62	23.61
		1	2	23.25	23.28	23.31
		1	5	23.44	23.46	23.52
		3	0	23.29	23.40	23.43
		3	2	23.24	23.46	23.27
		3	3	23.32	23.40	23.39
	16QAM	6	0	22.31	22.43	22.47
		1	0	23.18	22.62	22.84
		1	2	22.90	22.24	22.53
		1	5	22.96	22.50	22.82
		3	0	22.43	22.34	22.44
		3	2	22.33	22.44	22.43
		3	3	22.36	22.53	22.46
		6	0	21.37	21.42	21.51
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	23.60	23.66	23.64
		1	7	23.28	23.33	23.35
		1	14	23.47	23.51	23.56
		8	0	22.39	22.52	22.56
		8	4	22.36	22.56	22.39
		8	7	22.42	22.51	22.49
		15	0	22.34	22.47	22.50
	16QAM	1	0	23.21	22.64	22.87
		1	7	22.93	22.29	22.57



Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
		1	14	22.98	22.54	22.85
		8	0	21.54	21.47	21.56
		8	4	21.44	21.57	21.55
		8	7	21.46	21.65	21.59
		15	0	21.40	21.46	21.54
5MHz	QPSK	1	0	23.57	23.64	23.60
		1	13	23.26	23.29	23.32
1		24	23.44	23.46	23.52	
12		0	22.36	22.47	22.52	
12		6	22.34	22.52	22.34	
12		13	22.40	22.49	22.45	
25		0	22.32	22.46	22.48	
16QAM		1	0	23.18	22.60	22.84
		1	13	22.90	22.27	22.54
		1	24	22.95	22.52	22.81
		12	0	21.52	21.43	21.53
		12	6	21.41	21.52	21.51
		12	13	21.43	21.60	21.55
		25	0	21.38	21.42	21.49
10MHz	QPSK	1	0	23.55	23.57	23.58
		1	25	23.26	23.29	23.31
1		49	23.41	23.44	23.48	
25		0	22.34	22.43	22.49	
25		13	22.32	22.48	22.31	
25		25	22.36	22.45	22.42	
50		0	22.35	22.39	22.43	
16QAM		1	0	23.13	22.57	22.79
		1	25	22.87	22.26	22.51
		1	49	22.93	22.47	22.79
		25	0	21.49	21.42	21.51
		25	13	21.37	21.49	21.47
		25	25	21.41	21.56	21.52
		50	0	21.36	21.38	21.46

LTE Band 30				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				27685/2307.5	27710/2310	27735/2312.5
5MHz	QPSK	1	0	23.77	23.78	23.74
		1	13	23.72	23.73	23.66
		1	24	23.54	23.56	23.59
		12	0	22.79	22.68	22.74
		12	6	22.74	22.65	22.77
		12	13	22.68	22.75	22.81
		25	0	22.75	22.69	22.61
	16QAM	1	0	22.95	22.49	22.59
		1	13	22.86	22.46	22.65
		1	24	22.83	22.42	22.51
		12	0	21.75	21.66	21.62
		12	6	21.67	21.57	21.71
		12	13	21.66	21.63	21.68
		25	0	21.59	21.63	21.71
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
10MHz	QPSK	1	0	/	23.86	/
		1	25	/	23.79	/
		1	49	/	23.81	/
		25	0	/	22.69	/
		25	13	/	22.74	/
		25	25	/	22.86	/
		50	0	/	22.81	/
	16QAM	1	0	/	22.99	/
		1	25	/	22.81	/
		1	49	/	22.98	/
		25	0	/	21.79	/
		25	13	/	21.81	/
		25	25	/	21.85	/
		50	0	/	21.77	/

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

5.2 Effective Isotropic Radiated Power

Ambient condition

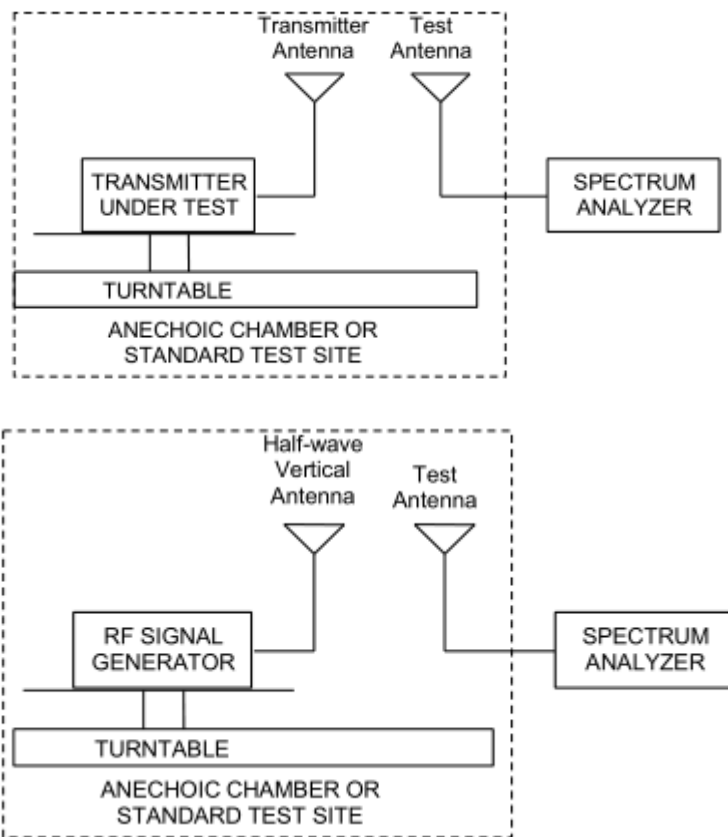
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

1. The testing follows FCC KDB 971168 v03 Section 5.8 and ANSI/TIA-603-E (2016).

- 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(a) (3) specifies that “(i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. ”

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(a)(3)Limit (ERP)	≤ 250 mW (24 dBm)
Part 27.50(c)(10)Limit (ERP)	≤ 3 W (34.77 dBm)
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

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)	EIRP (dBm)	Limit (dBm)	Conclusion
WCDMA Band IV	Low	1712.4	Horizontal	-25.64	-45.44	1.82	21.62	30	Pass
	Mid	1732.6	Horizontal	-26.11	-45.38	1.96	21.23	30	Pass
	High	1752.6	Horizontal	-25.39	-45.38	1.93	21.92	30	Pass

LTE Band 4									
Bandwidth	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	1710.7	Horizontal	-32.18	-54.30	1.44	23.56	30	Pass
	Mid	1732.5	Horizontal	-32.52	-54.32	1.57	23.36	30	Pass
	High	1754.3	Horizontal	-32.00	-54.10	1.72	23.81	30	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	-32.14	-54.35	1.44	23.65	30	Pass
	Mid	1732.5	Horizontal	-31.74	-54.41	1.57	24.24	30	Pass
	High	1753.5	Horizontal	-31.72	-54.48	1.72	24.47	30	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	-31.15	-54.34	1.44	24.62	30	Pass
	Mid	1732.5	Horizontal	-31.52	-54.32	1.57	24.36	30	Pass
	High	1752.5	Horizontal	-32.00	-54.13	1.72	23.84	30	Pass
10 MHz (QPSK)	Low	1715	Horizontal	-31.87	-54.32	1.44	23.89	30	Pass
	Mid	1732.5	Horizontal	-31.64	-54.41	1.57	24.34	30	Pass
	High	1750	Horizontal	-31.69	-54.52	1.66	24.49	30	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	-32.22	-54.35	1.49	23.61	30	Pass
	Mid	1732.5	Horizontal	-31.87	-54.32	1.57	24.01	30	Pass
	High	1747.5	Horizontal	-31.63	-54.17	1.66	24.20	30	Pass
20 MHz (QPSK)	Low	1720	Horizontal	-32.31	-54.44	1.49	23.61	30	Pass
	Mid	1732.5	Horizontal	-32.02	-54.41	1.57	23.96	30	Pass
	High	1745	Horizontal	-32.37	-54.59	1.63	23.85	30	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	-32.32	-54.30	1.44	23.41	30	Pass
	Mid	1732.5	Horizontal	-32.67	-54.32	1.57	23.21	30	Pass
	High	1754.3	Horizontal	-32.15	-54.10	1.72	23.67	30	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	-32.28	-54.35	1.44	23.51	30	Pass
	Mid	1732.5	Horizontal	-31.89	-54.41	1.57	24.09	30	Pass
	High	1753.5	Horizontal	-31.87	-54.48	1.72	24.33	30	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	-31.30	-54.34	1.44	24.48	30	Pass
	Mid	1732.5	Horizontal	-31.67	-54.32	1.57	24.21	30	Pass
	High	1752.5	Horizontal	-32.15	-54.13	1.72	23.69	30	Pass
10 MHz	Low	1715	Horizontal	-32.02	-54.32	1.44	23.74	30	Pass



(16QAM)	Mid	1732.5	Horizontal	-31.78	-54.41	1.57	24.19	30	Pass
	High	1750	Horizontal	-31.84	-54.52	1.66	24.34	30	Pass
15 MHz (16QAM)	Low	1717.5	Horizontal	-32.37	-54.35	1.49	23.46	30	Pass
	Mid	1732.5	Horizontal	-32.02	-54.32	1.57	23.86	30	Pass
	High	1747.5	Horizontal	-31.78	-54.17	1.66	24.05	30	Pass
20 MHz (16QAM)	Low	1720	Horizontal	-32.46	-54.44	1.49	23.47	30	Pass
	Mid	1732.5	Horizontal	-32.16	-54.41	1.57	23.81	30	Pass
	High	1745	Horizontal	-32.52	-54.59	1.63	23.70	30	Pass

LTE Band 12									
Bandwidth	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	699.7	Horizontal	-33.70	-49.12	2.04	17.47	34.77	Pass
	Mid	707.5	Horizontal	-34.14	-49.39	2.03	17.28	34.77	Pass
	High	715.3	Horizontal	-34.03	-49.76	1.99	17.72	34.77	Pass
3 MHz (QPSK)	Low	700.5	Horizontal	-33.48	-48.94	2.04	17.50	34.77	Pass
	Mid	707.5	Horizontal	-34.07	-49.12	2.03	17.08	34.77	Pass
	High	714.5	Horizontal	-34.27	-49.37	2.00	17.10	34.77	Pass
5 MHz (QPSK)	Low	701.5	Horizontal	-33.60	-49.17	2.04	17.61	34.77	Pass
	Mid	707.5	Horizontal	-34.31	-49.39	2.03	17.12	34.77	Pass
	High	713.5	Horizontal	-34.11	-49.72	2.01	17.61	34.77	Pass
10 MHz (QPSK)	Low	704	Horizontal	-33.82	-49.00	2.04	17.22	34.77	Pass
	Mid	707.5	Horizontal	-33.87	-49.12	2.03	17.28	34.77	Pass
	High	711	Horizontal	-33.86	-49.33	2.02	17.48	34.77	Pass
1.4 MHz (16QAM)	Low	699.7	Horizontal	-33.86	-49.12	2.04	17.30	34.77	Pass
	Mid	707.5	Horizontal	-34.31	-49.39	2.03	17.12	34.77	Pass
	High	715.3	Horizontal	-34.19	-49.76	1.99	17.56	34.77	Pass
3 MHz (16QAM)	Low	700.5	Horizontal	-33.64	-48.94	2.04	17.34	34.77	Pass
	Mid	707.5	Horizontal	-34.23	-49.12	2.03	16.92	34.77	Pass
	High	714.5	Horizontal	-34.44	-49.37	2.00	16.93	34.77	Pass
5 MHz (16QAM)	Low	701.5	Horizontal	-33.77	-49.17	2.04	17.45	34.77	Pass
	Mid	707.5	Horizontal	-34.47	-49.39	2.03	16.95	34.77	Pass
	High	713.5	Horizontal	-34.28	-49.72	2.01	17.44	34.77	Pass
10 MHz (16QAM)	Low	704	Horizontal	-33.98	-49.00	2.04	17.06	34.77	Pass
	Mid	707.5	Horizontal	-34.03	-49.12	2.03	17.12	34.77	Pass
	High	711	Horizontal	-34.03	-49.33	2.02	17.31	34.77	Pass



LTE Band 30									
Bandwidth	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Conclusion
5MHz (QPSK)	Low	2307.5	Horizontal	-37.61	-59.78	1.13	23.31	24	Pass
	Mid	2310	Horizontal	-37.49	-59.48	1.24	23.23	24	Pass
	High	2312.5	Horizontal	-37.35	-59.36	1.38	23.40	24	Pass
10MHz (QPSK)	Mid	2310	Horizontal	-37.46	-59.48	1.13	23.15	24	Pass
5MHz (16QAM)	Low	2307.5	Horizontal	-37.79	-59.78	1.13	23.12	24	Pass
	Mid	2310	Horizontal	-37.60	-59.48	1.24	23.11	24	Pass
	High	2312.5	Horizontal	-37.52	-59.36	1.38	23.22	24	Pass
10MHz (16QAM)	Mid	2310	Horizontal	-37.20	-59.48	1.13	23.41	24	Pass

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

5.3 Occupied Bandwidth

Ambient condition

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

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band IV.

RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/12 (1.4MHz).

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/12 (3MHz).

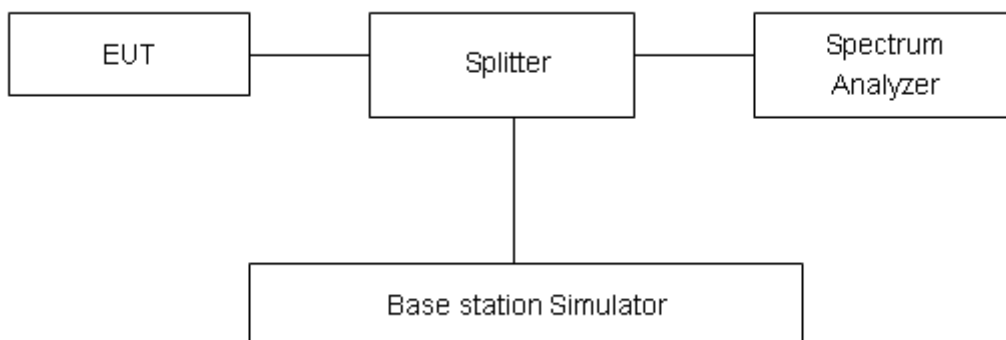
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/12/30 (5MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/12/30 (10MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4 (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)	1312	1712.4	4.1330	4.719
	1413	1732.6	4.1272	4.686
	1513	1752.6	4.1407	4.701

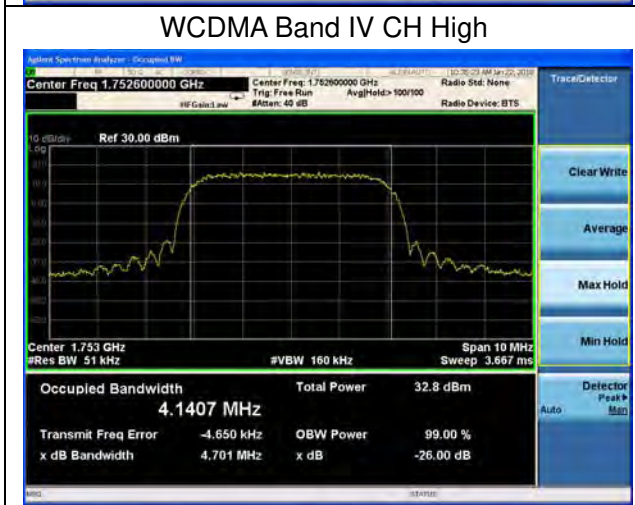
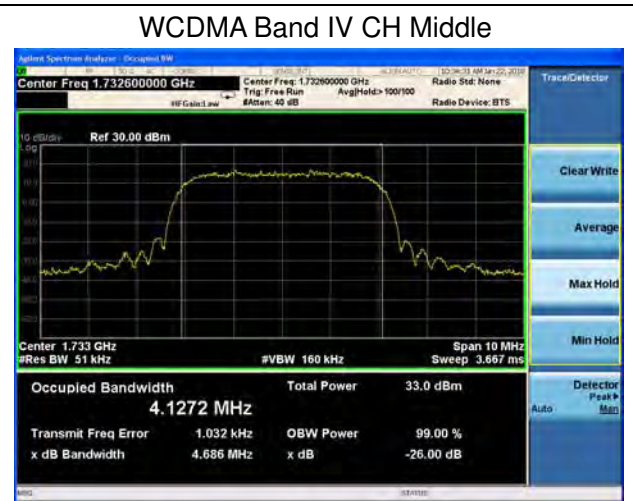
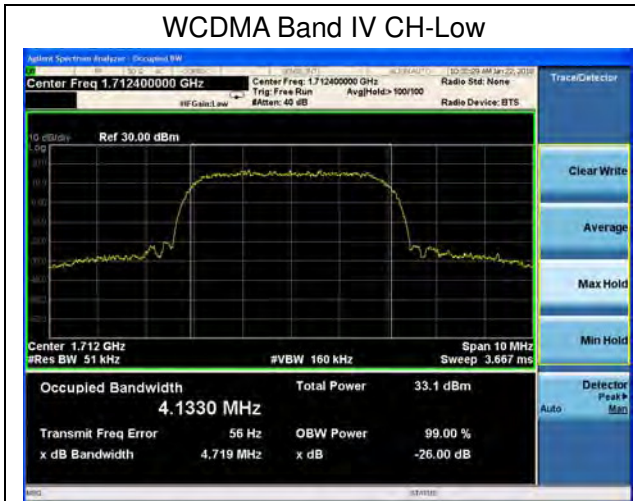
LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1291	1.395
			20175	1732.5	1.1215	1.393
			20393	1754.3	1.1277	1.373
		3	19965	1711.5	2.7432	3.077
			20175	1732.5	2.7460	3.072
			20385	1753.5	2.7388	3.062
		5	19975	1712.5	4.5287	5.047
			20175	1732.5	4.5015	5.042
			20375	1752.5	4.5019	5.018
		10	20000	1715	9.0540	10.220
			20175	1732.5	9.0164	10.130
			20350	1750	9.0459	10.140
		15	20025	1717.5	13.5260	14.840
			20175	1732.5	13.4330	14.810
			20325	1747.5	13.4910	14.830
		20	20050	1720	17.9260	19.330
			20175	1732.5	17.8690	19.390
			20300	1745	17.9150	19.550
	16QAM	1.4	19957	1710.7	1.1283	1.356
			20175	1732.5	1.1221	1.349
			20393	1754.3	1.1172	1.379
		3	19965	1711.5	2.7633	3.071
			20175	1732.5	2.7461	3.065
			20385	1753.5	2.7353	3.081
5		19975	1712.5	4.5181	5.044	
		20175	1732.5	4.5356	5.004	
		20375	1752.5	4.5395	5.048	
10		20000	1715	9.0332	10.060	
	20175	1732.5	9.0176	10.150		

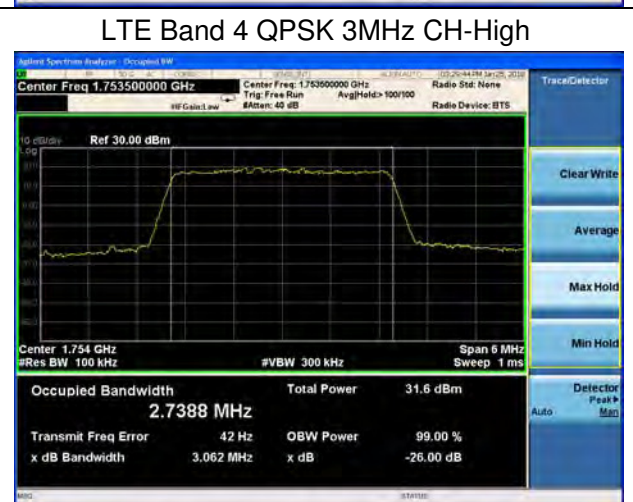
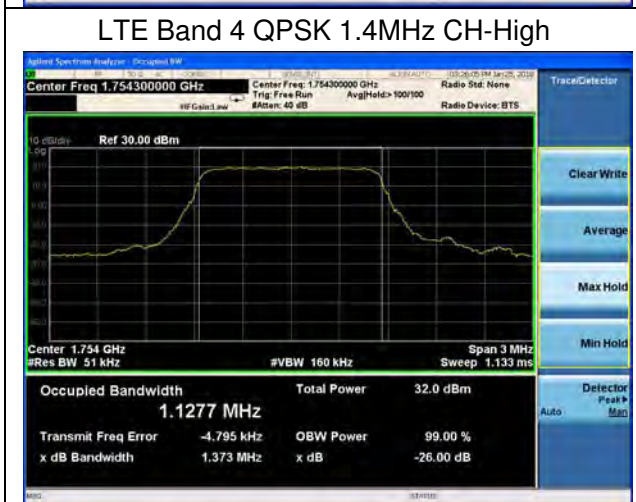
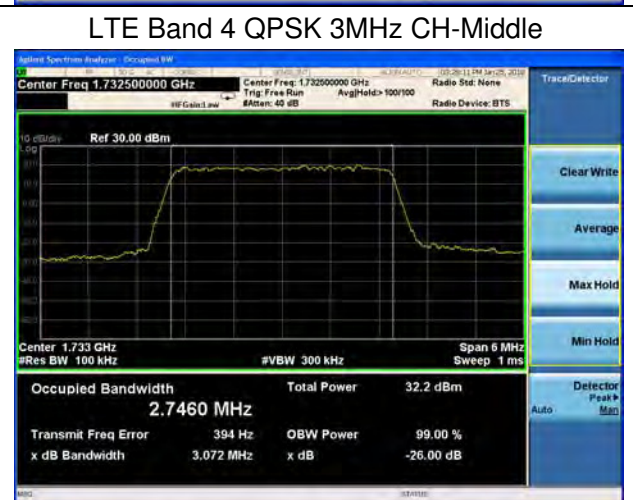
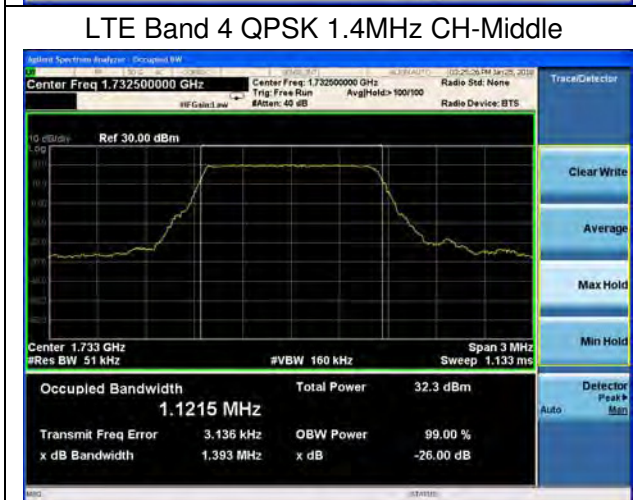
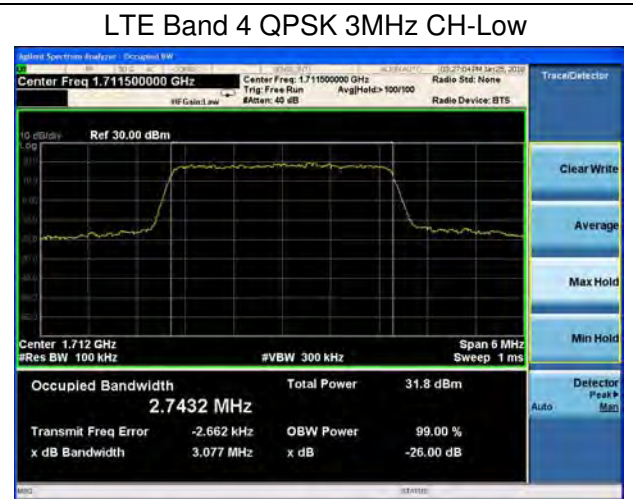
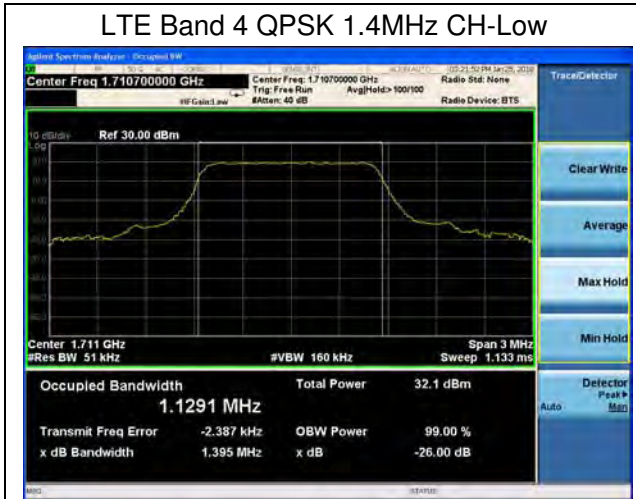


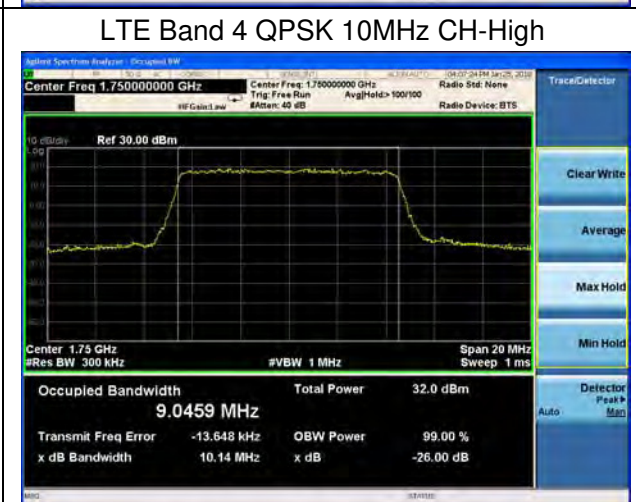
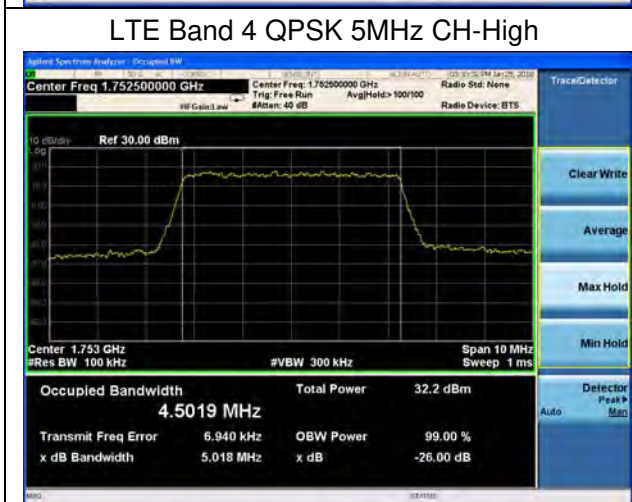
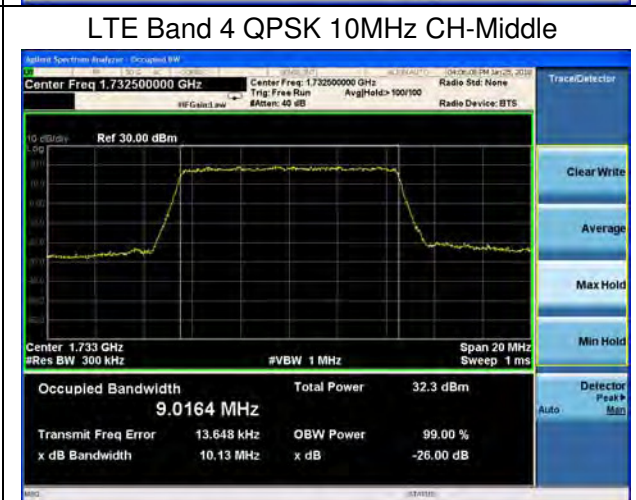
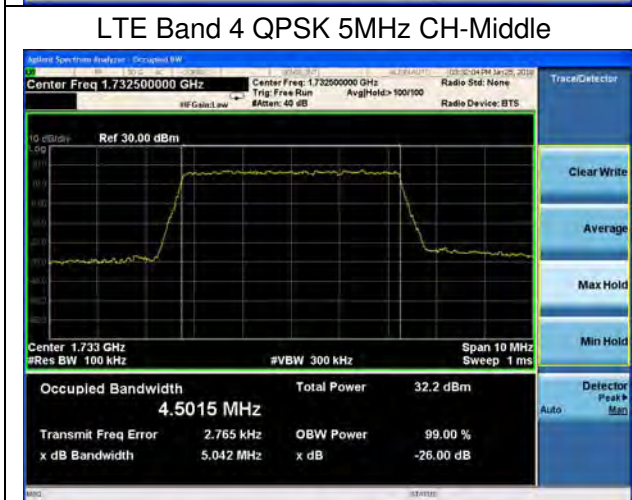
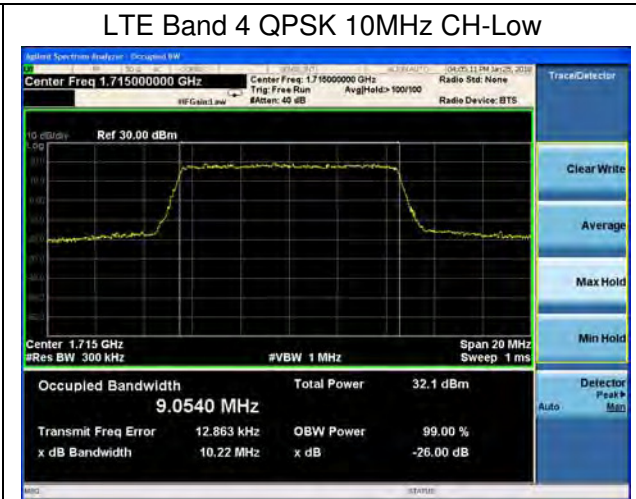
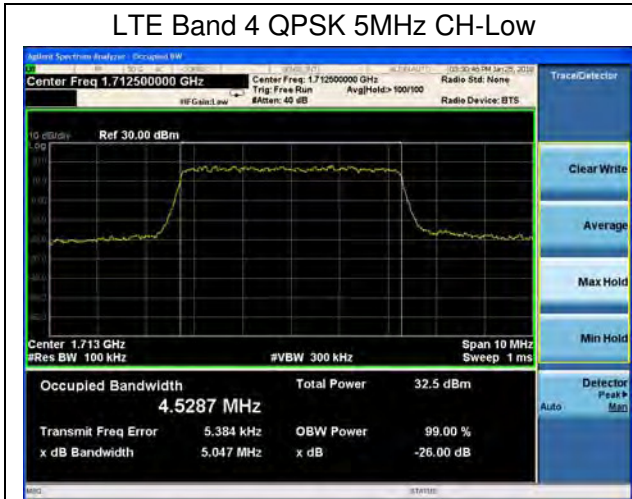
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			20025	1717.5	13.5030	14.810
			20175	1732.5	13.4870	14.740
		20	20325	1747.5	13.4790	14.860
			20050	1720	17.9610	19.580
			20175	1732.5	17.8970	19.550
			20300	1745	17.9100	19.500

LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.1205	1.332
			23095	707.5	1.1168	1.332
			23173	715.3	1.1069	1.328
		3	23025	700.5	2.7447	3.064
			23095	707.5	2.7445	3.050
			23165	714.5	2.7457	3.061
		5	23035	701.5	4.5240	5.024
			23095	707.5	4.5207	5.012
			23155	713.5	4.5120	4.956
		10	23060	704	9.0564	10.140
			23095	707.5	9.0457	10.100
			23130	711	9.0288	10.090
	16QAM	1.4	23017	699.7	1.1157	1.328
			23095	707.5	1.1119	1.342
			23173	715.3	1.1274	1.323
		3	23025	700.5	2.7380	3.035
			23095	707.5	2.7401	3.070
			23165	714.5	2.7343	3.057
		5	23035	701.5	4.5074	5.035
			23095	707.5	4.5097	5.049
			23155	713.5	4.5200	5.068
		10	23060	704	9.0399	10.050
			23095	707.5	9.0524	10.130
			23130	711	9.0648	10.020

LTE Band 30							
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)	
100%	QPSK	5	27685	2307.5	4.5055	5.028	
			27710	2310	4.5214	5.008	
			27735	2312.5	4.5299	5.032	
	16QAM	10	5	27710	2310	9.0489	10.010
				27685	2307.5	4.5298	5.008
				27710	2310	4.0581	5.020
		10	5	27735	2312.5	4.5140	5.012
				27710	2310	9.0400	9.940
				27710	2310	9.0400	9.940

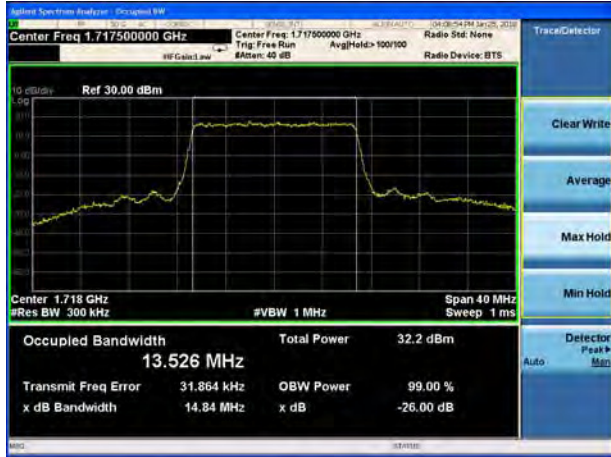








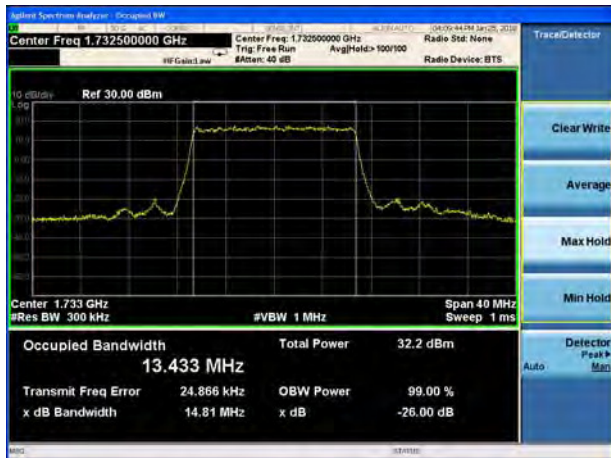
LTE Band 4 QPSK 15MHz CH-Low



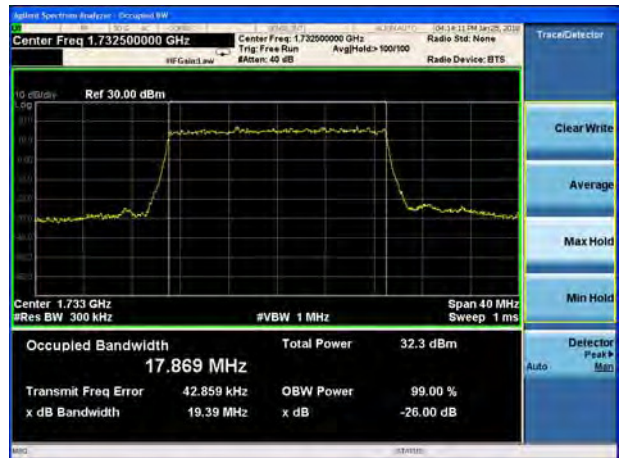
LTE Band 4 QPSK 20MHz CH-Low



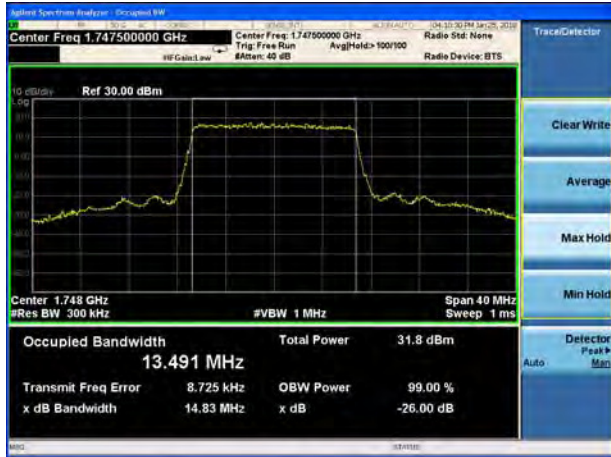
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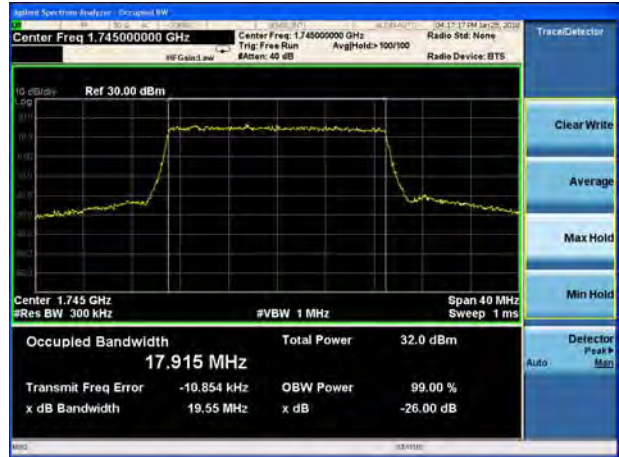
LTE Band 4 QPSK 20MHz CH-Middle

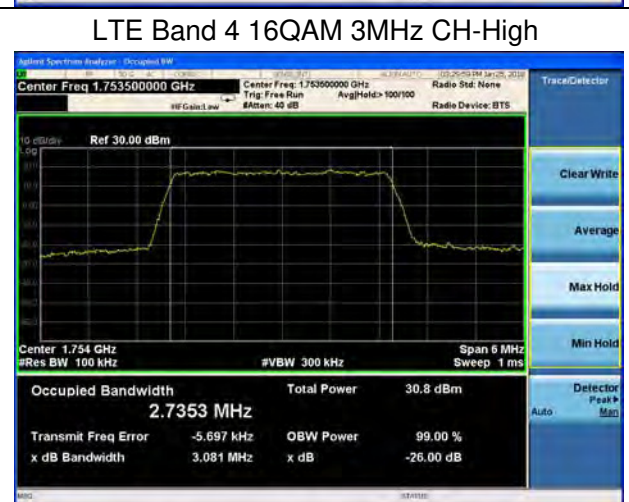
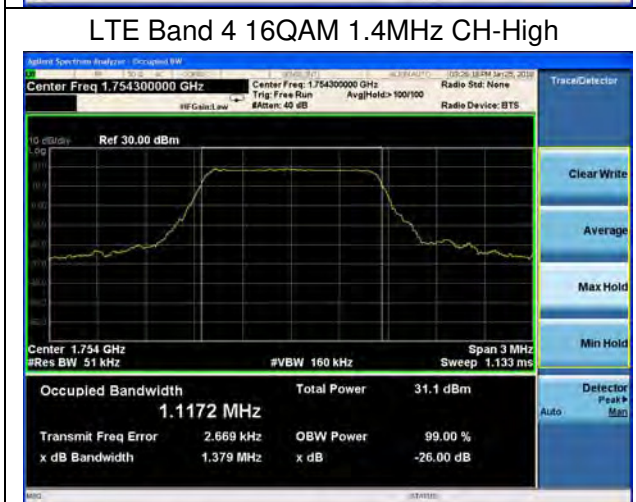
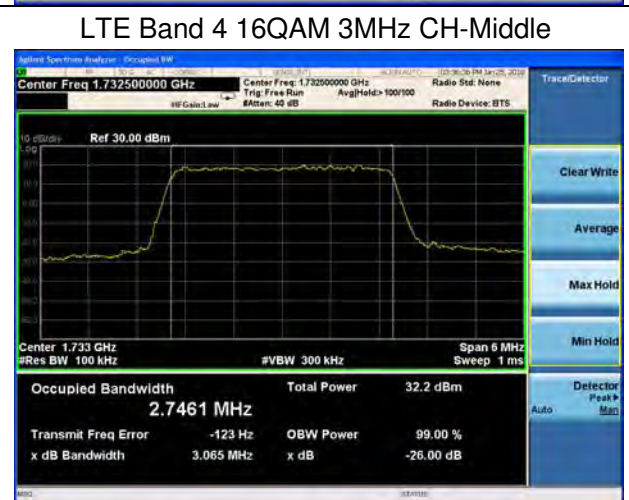
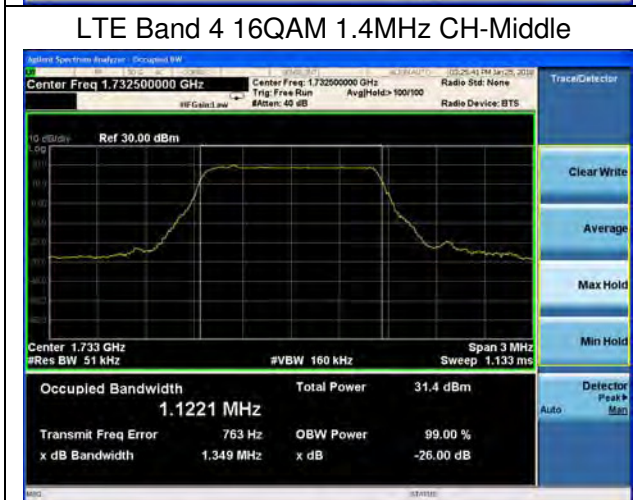
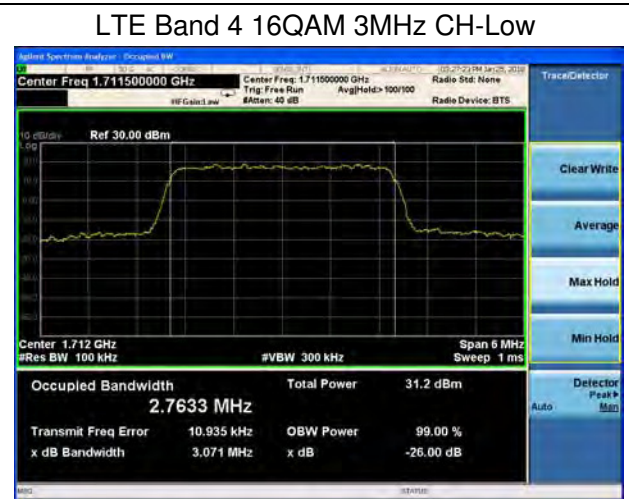
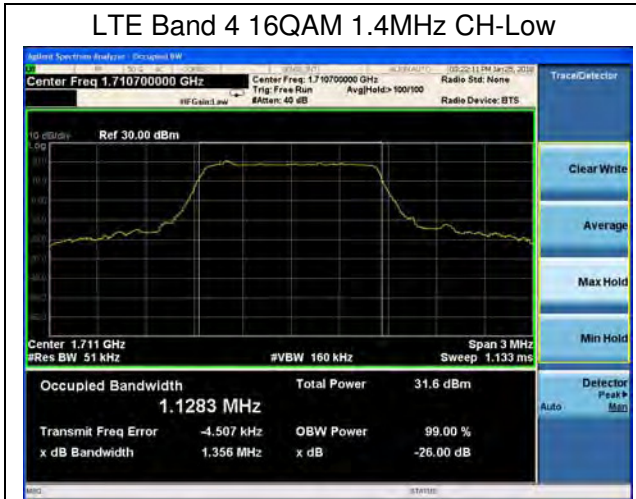


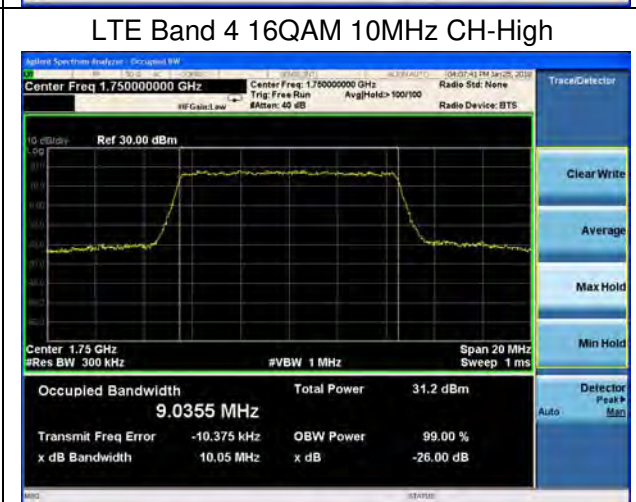
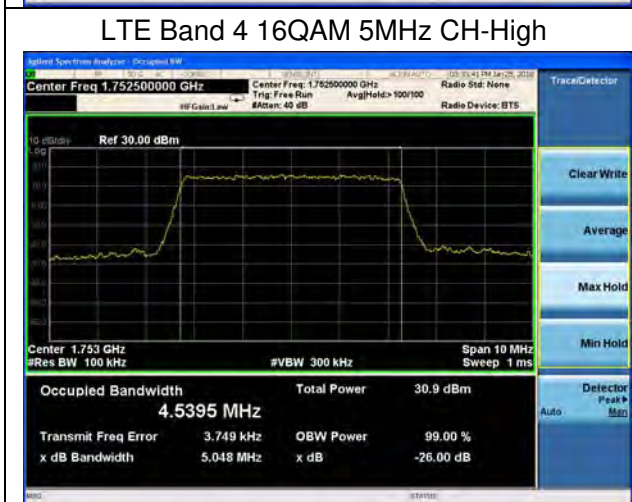
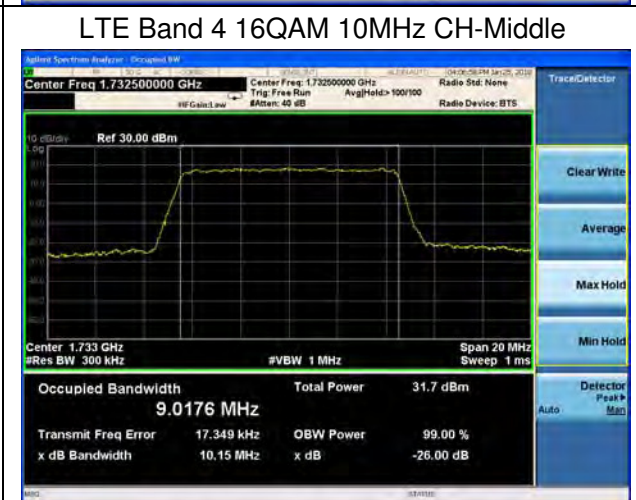
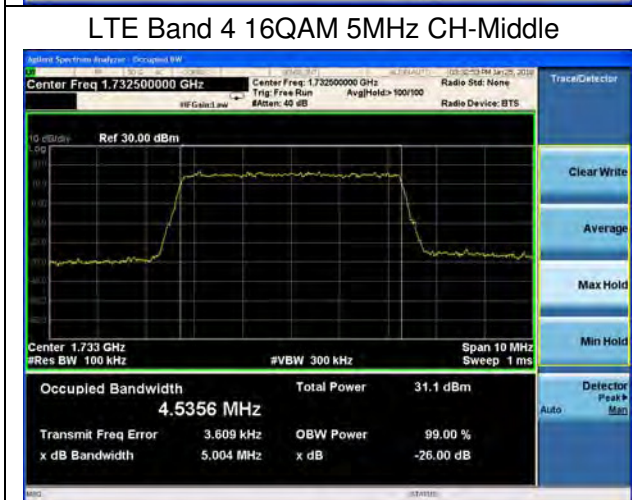
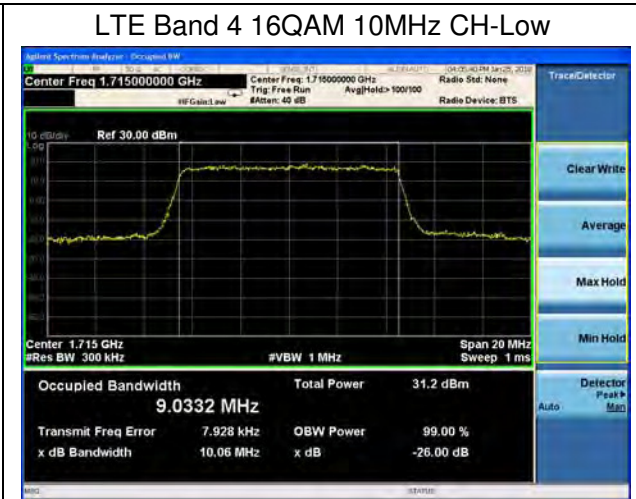
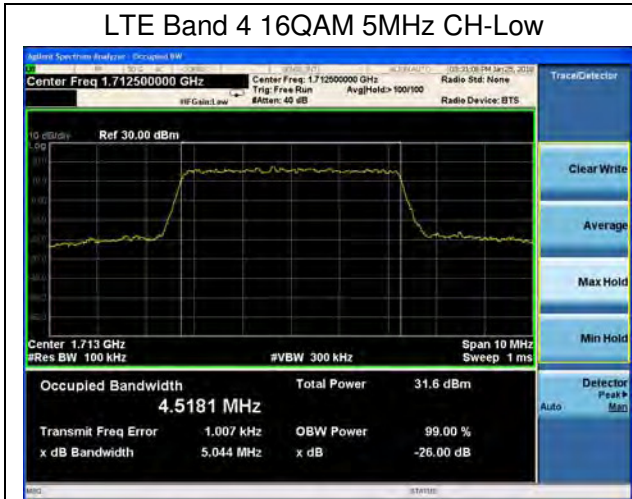
LTE Band 4 QPSK 15MHz CH-High

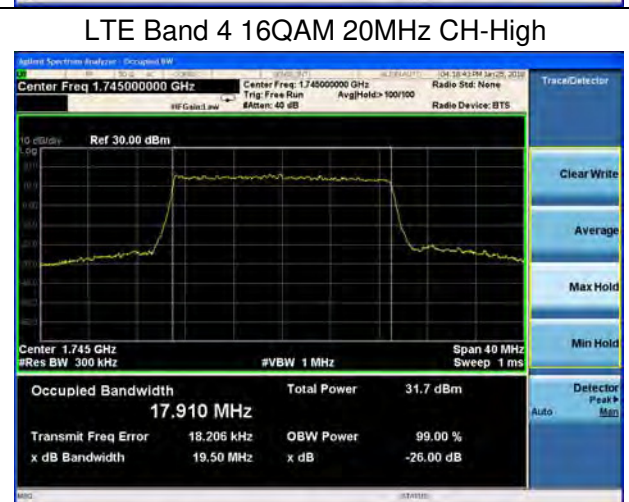
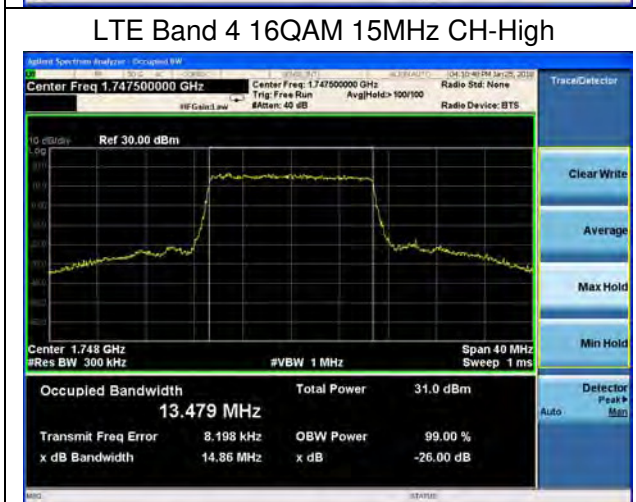
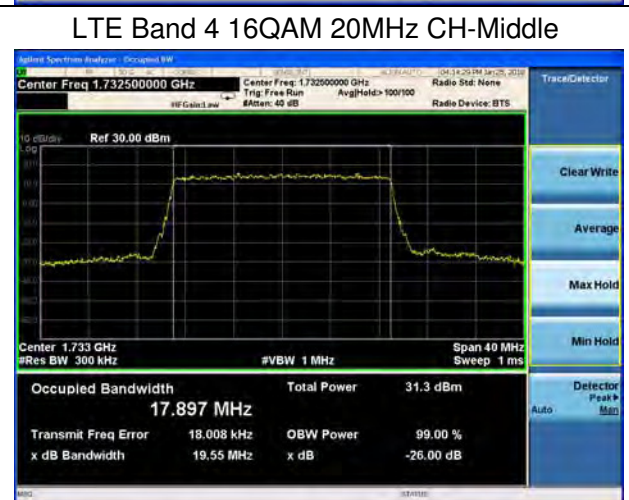
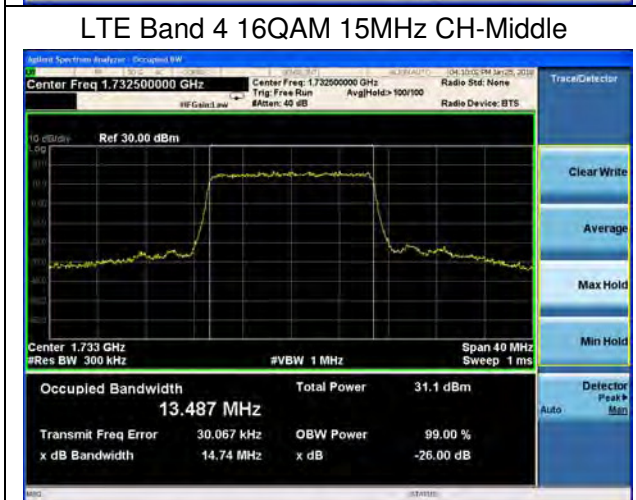
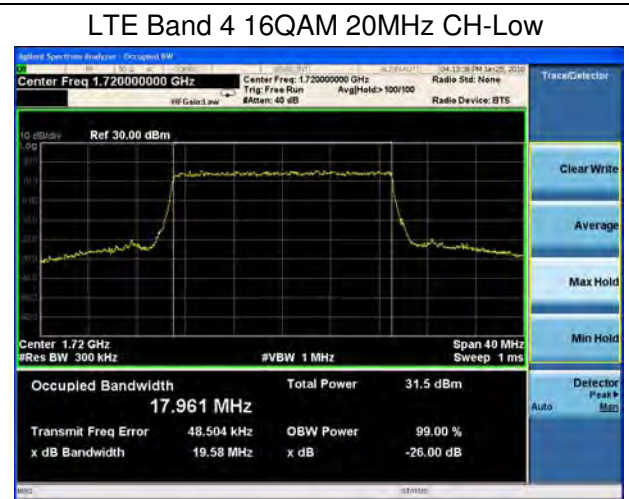
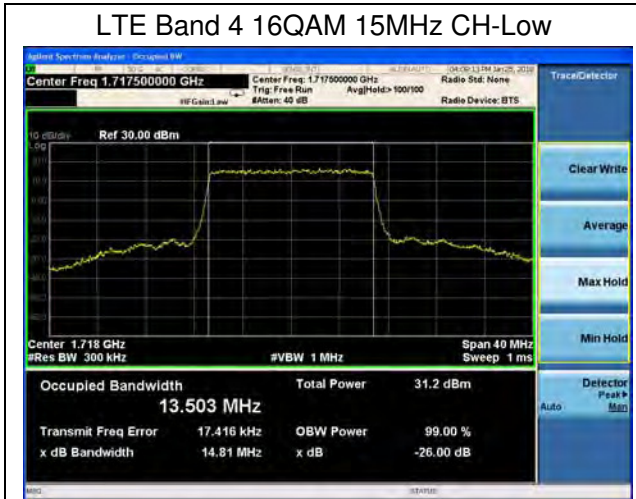


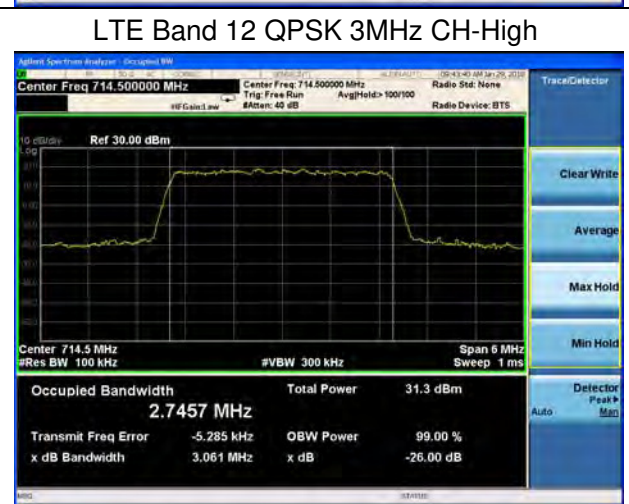
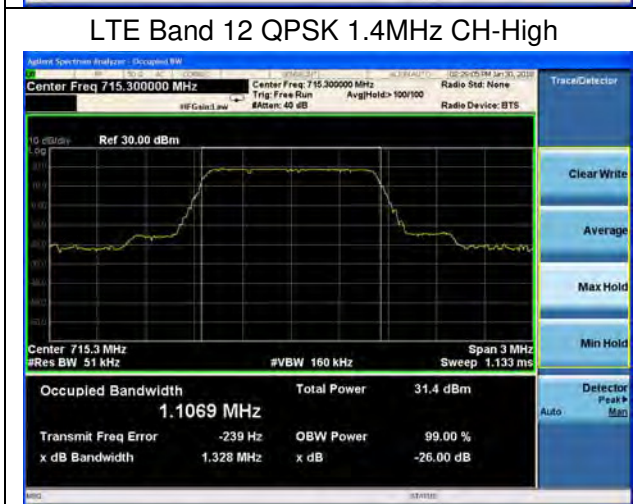
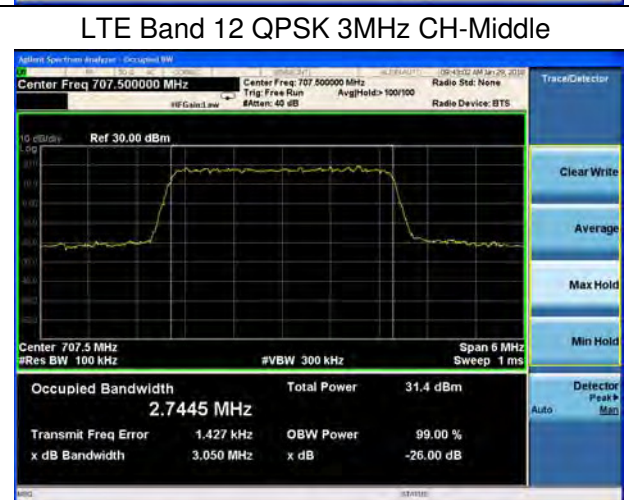
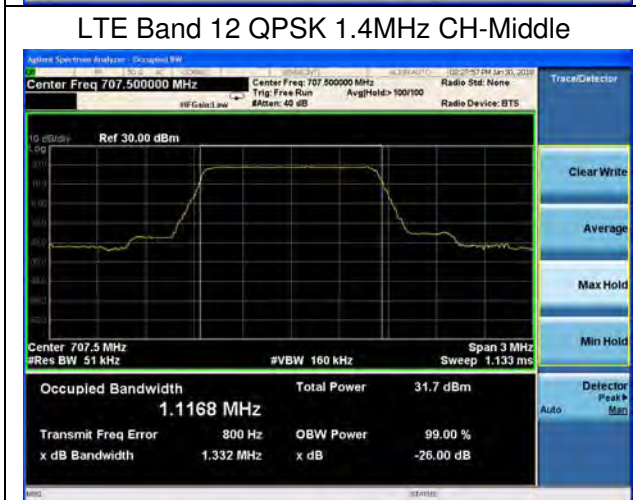
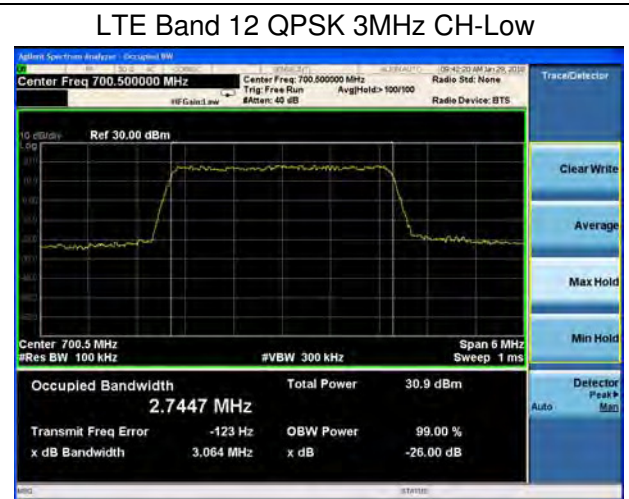
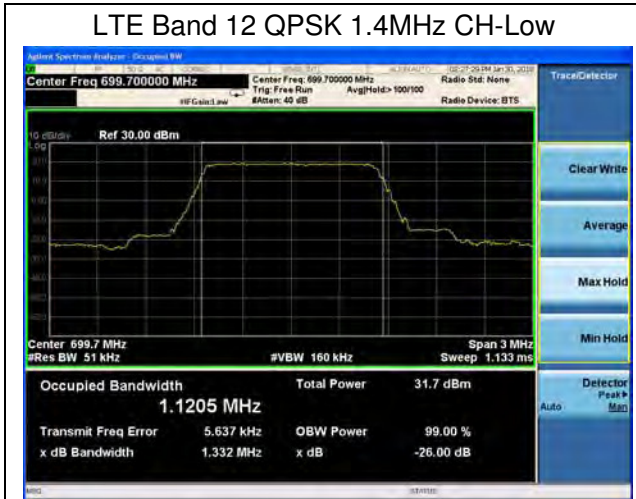
LTE Band 4 QPSK 20MHz CH-High

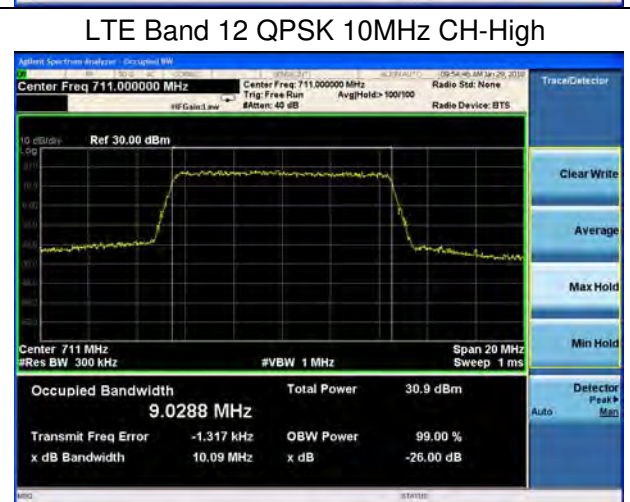
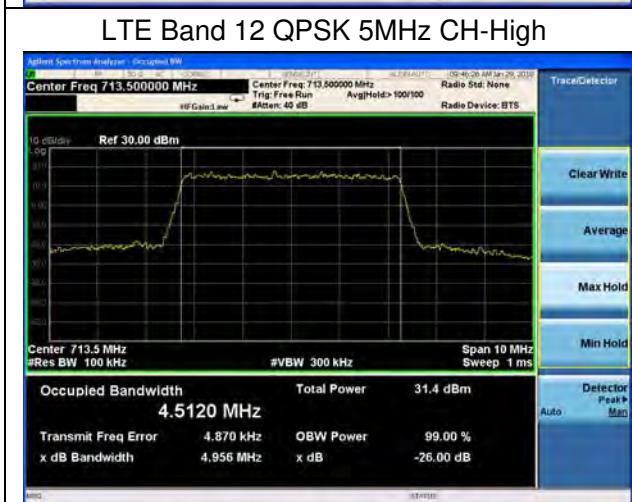
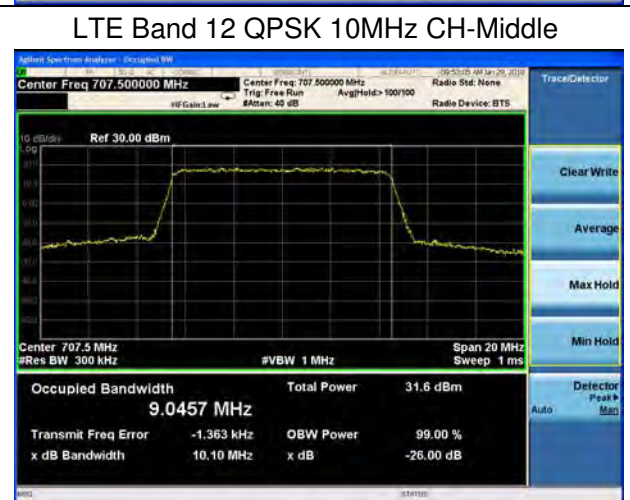
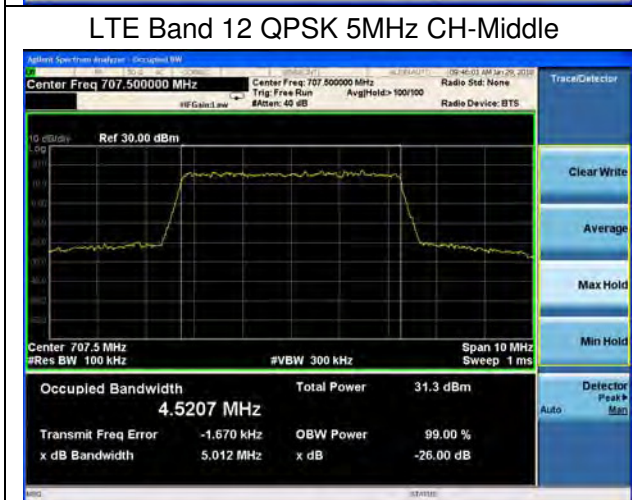
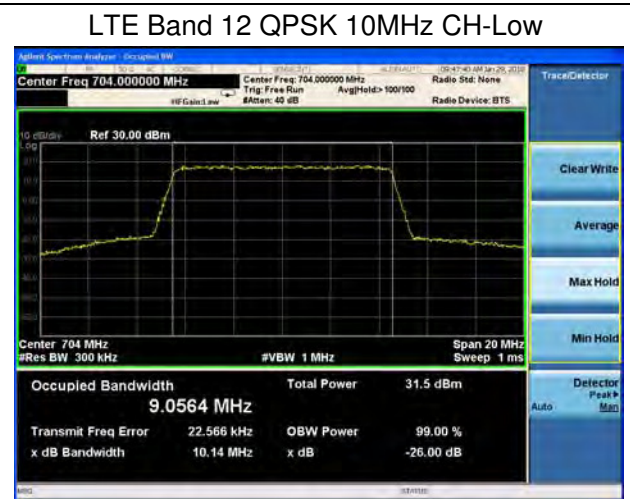
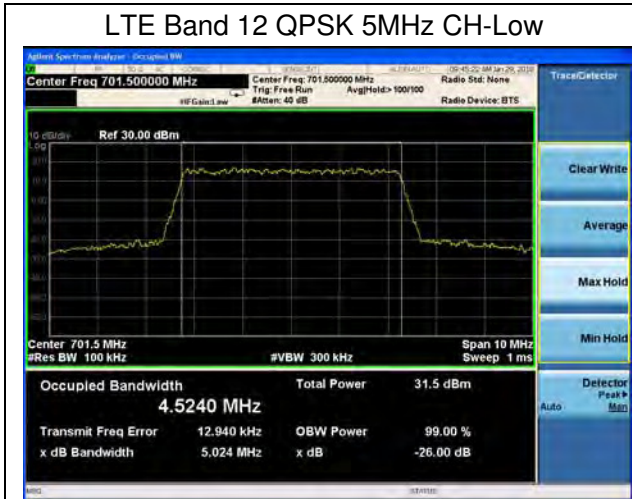


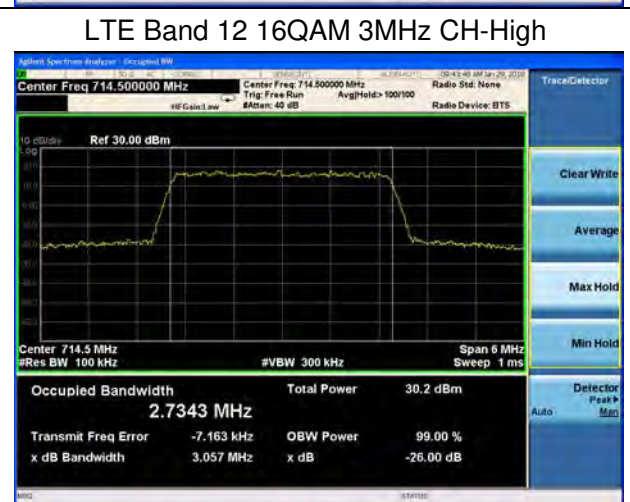
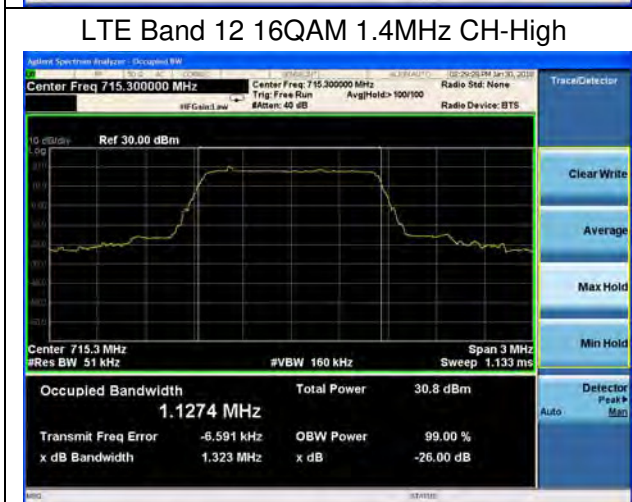
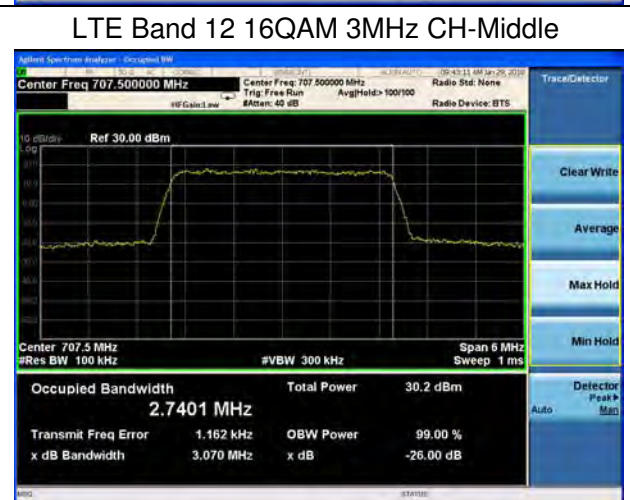
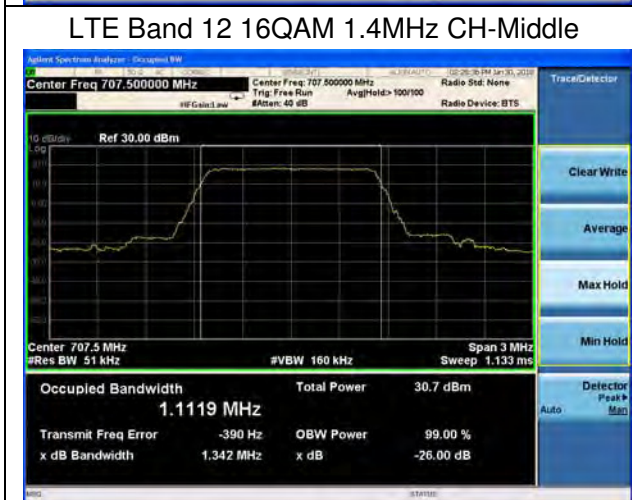
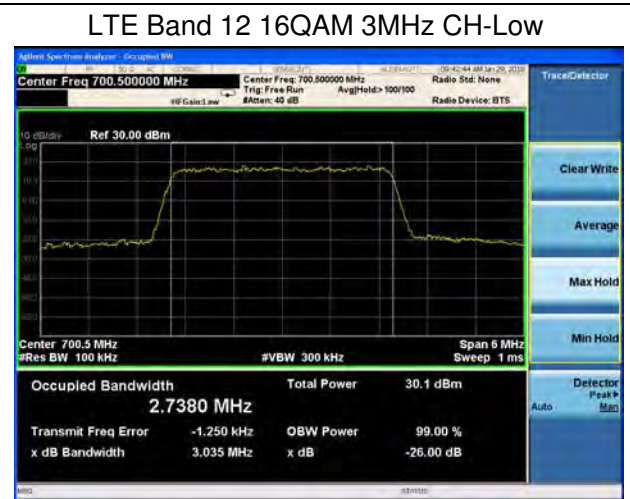
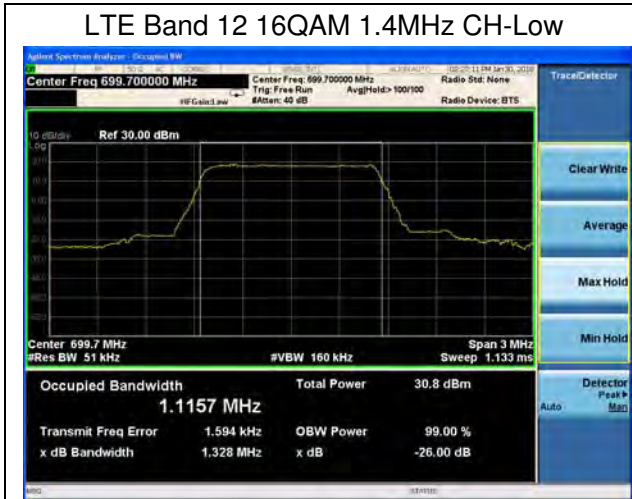












LTE Band 12 16QAM 5MHz CH-Low



LTE Band 12 16QAM 10MHz CH-Low



LTE Band 12 16QAM 5MHz CH-Middle



LTE Band 12 16QAM 10MHz CH-Middle

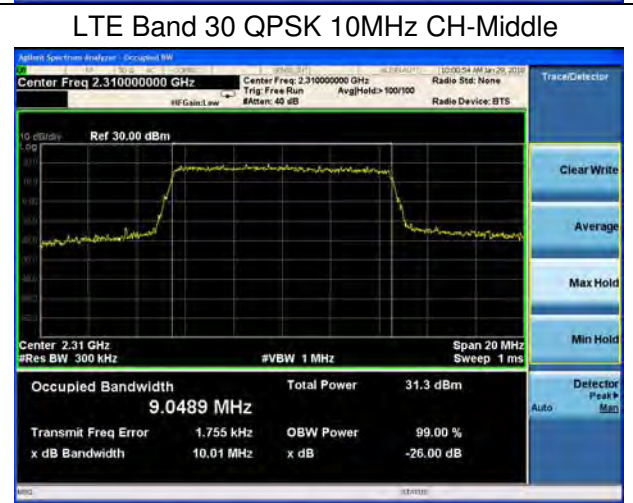
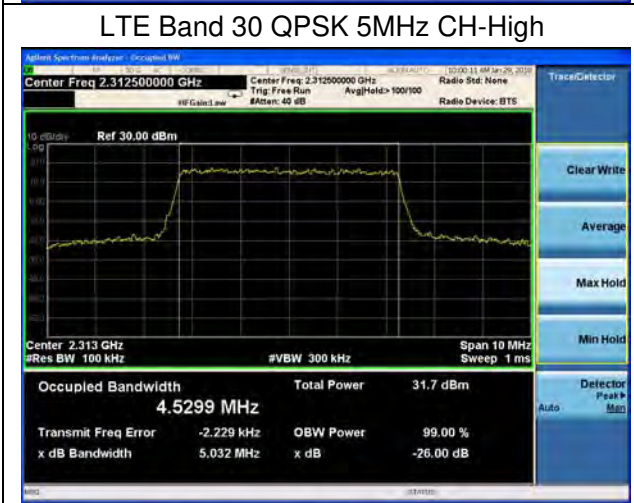
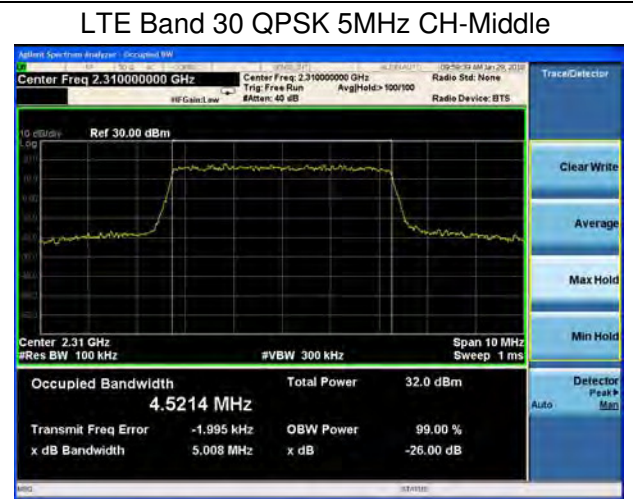
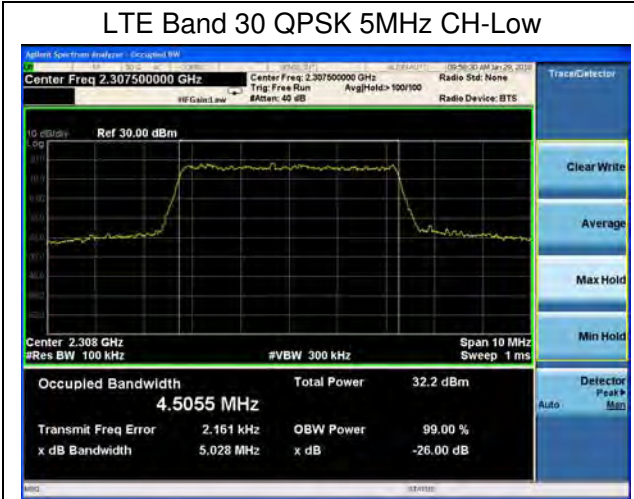


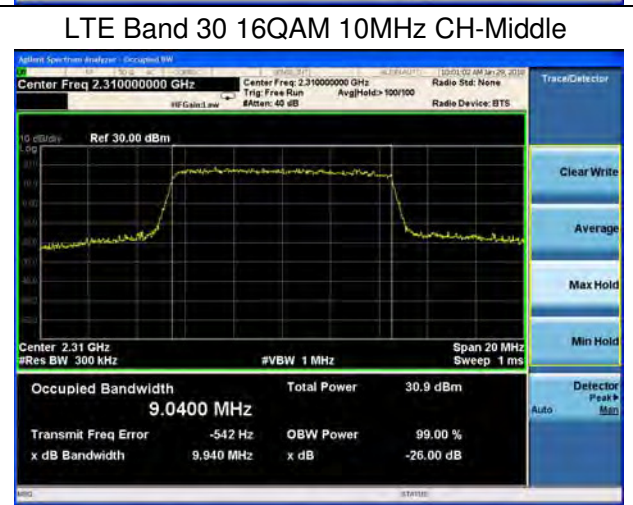
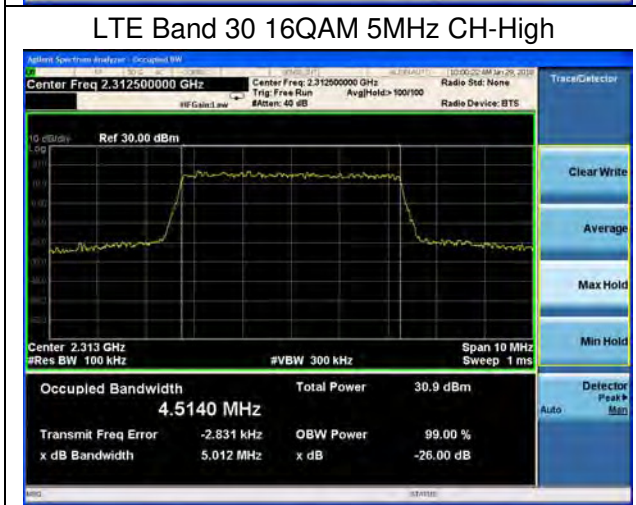
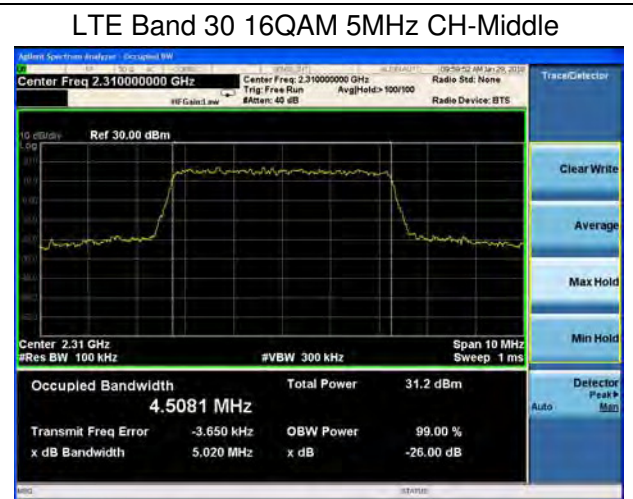
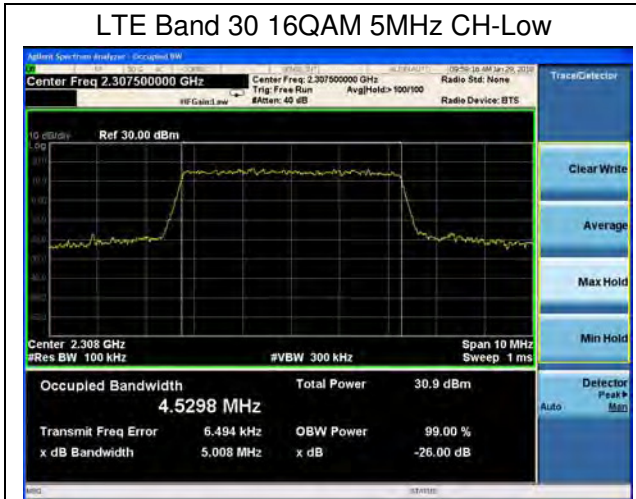
LTE Band 12 16QAM 5MHz CH-High



LTE Band 12 16QAM 10MHz CH-High







5.4 Band Edge Compliance

Ambient condition

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

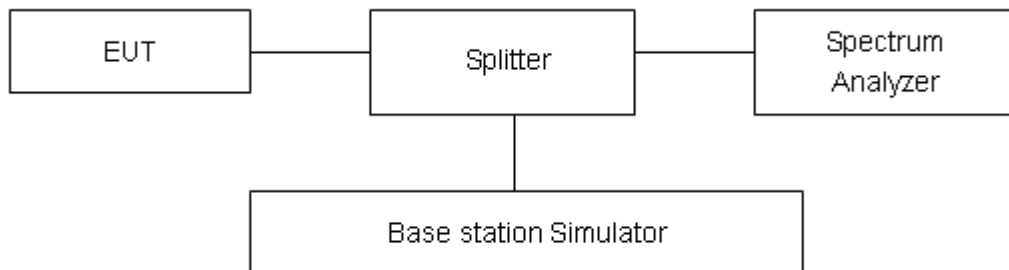
Method of Measurement

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

The testing follows KDB 971168 v03 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.
 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 15 kHz, VBW is set to 51 kHz for LTE Band 4 (3MHz, Ch Low).
 RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4 (3MHz, Ch High).
 RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/30 (5MHz).
 RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4/30 (10MHz).
 RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4 (15MHz).
 RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4 (20MHz)
 RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 12 (1.4MHz/3MHz/5MHz/10MHz).
 on spectrum analyzer.
3. Set spectrum analyzer with RMS detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
5. Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(a) (4) (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

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) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

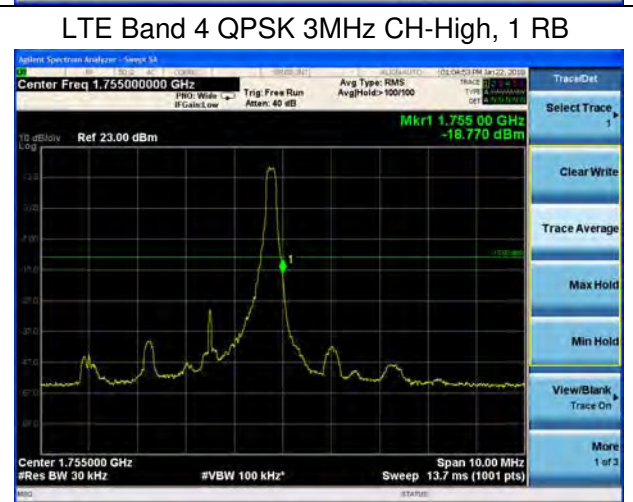
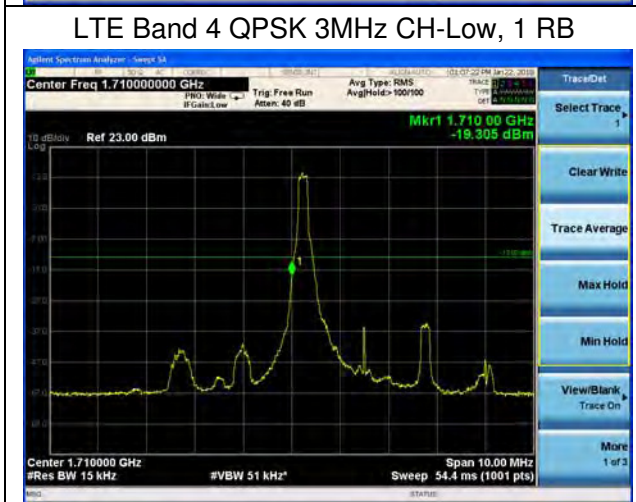
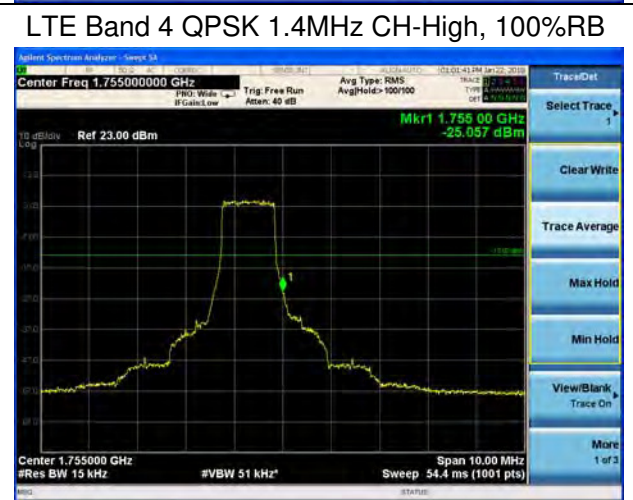
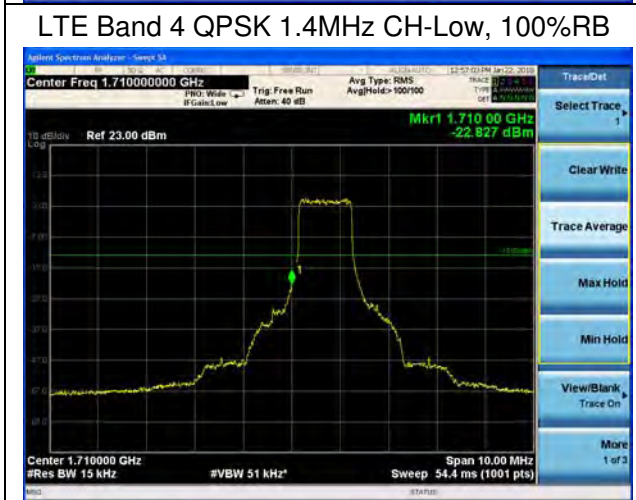
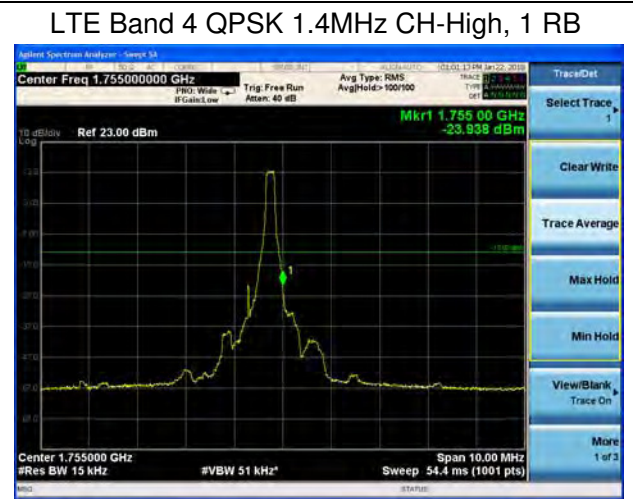
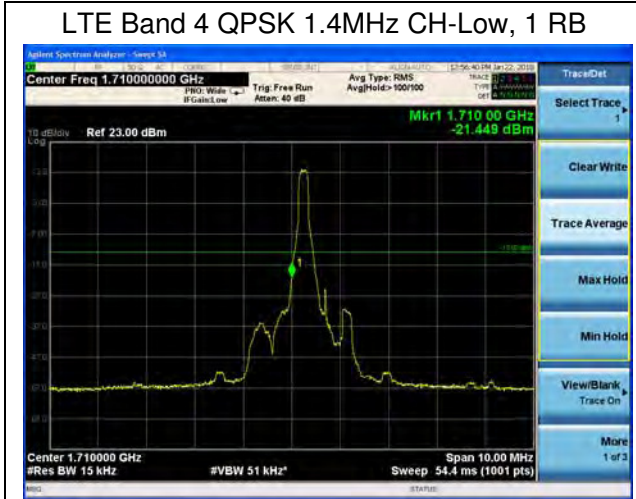
Measurement Uncertainty

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

Test Result

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







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



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



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



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



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



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

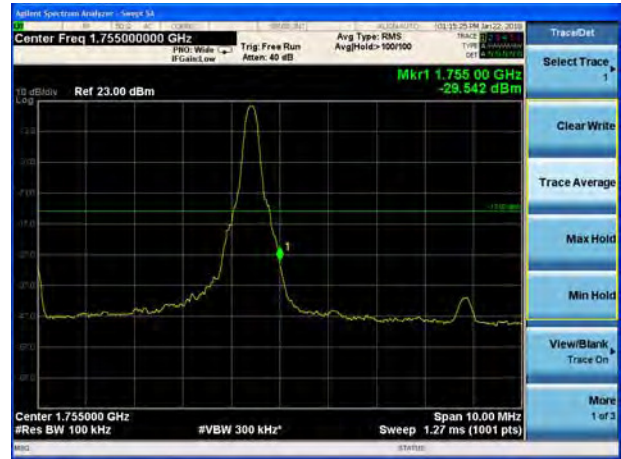




LTE Band 4 QPSK 10MHz CH-Low, 1 RB



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



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



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



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



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





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



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



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



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



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



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





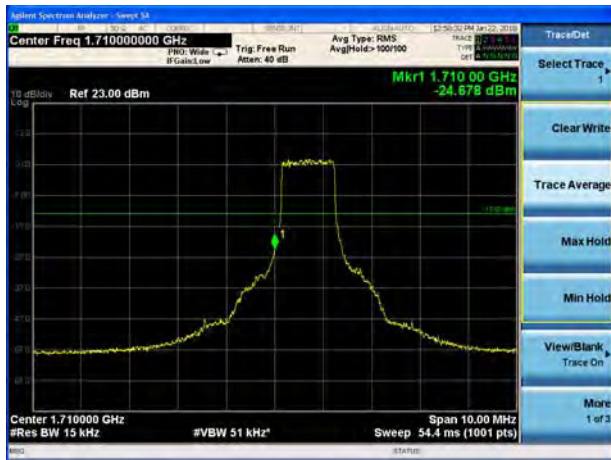
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



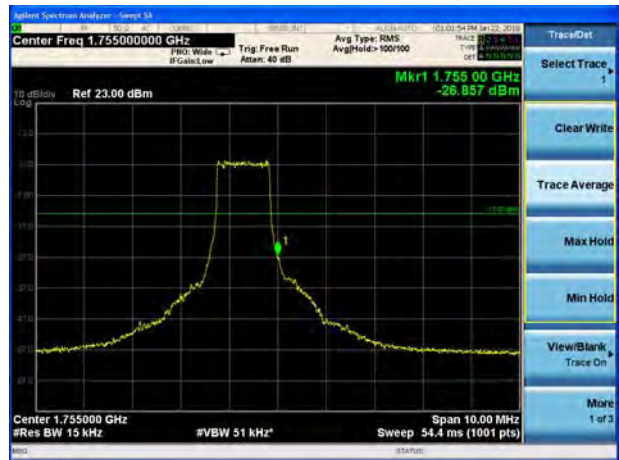
LTE Band 4 16QAM 1.4MHz CH-High, 1 RB



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



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



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



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





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



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



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



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



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



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





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



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



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



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



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



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





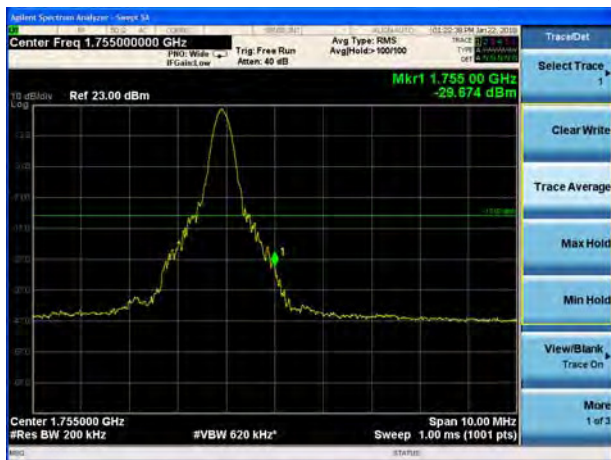
LTE Band 4 16QAM 15MHz CH-Low, 100%RB



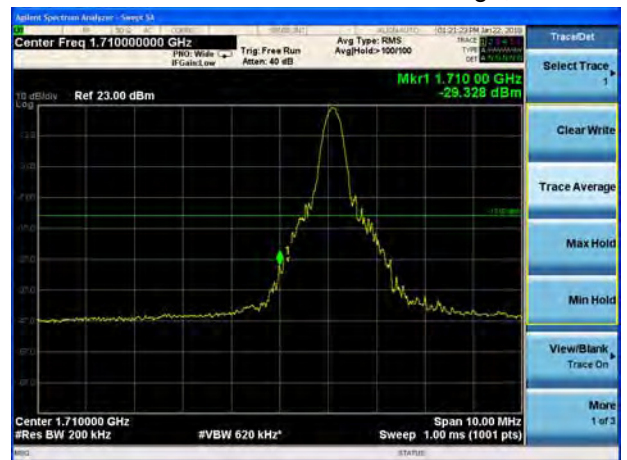
LTE Band 4 16QAM 15MHz CH-High, 100%RB



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



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

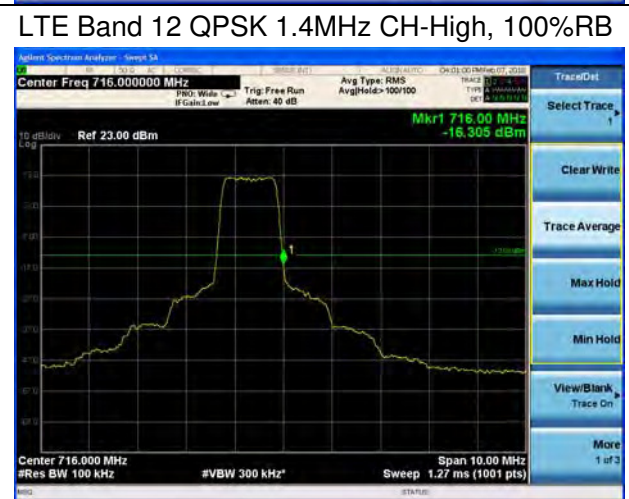
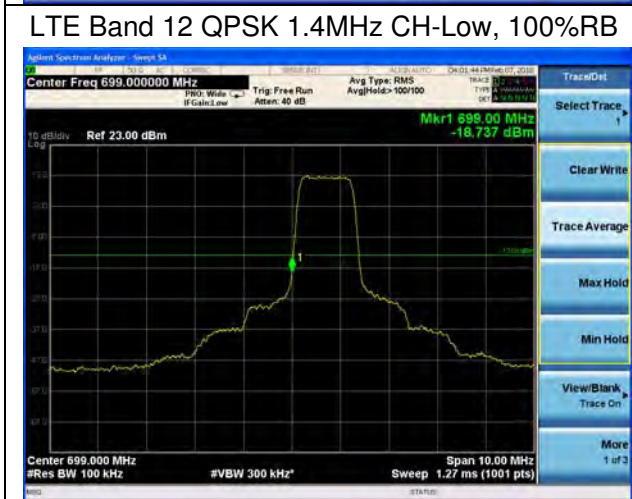
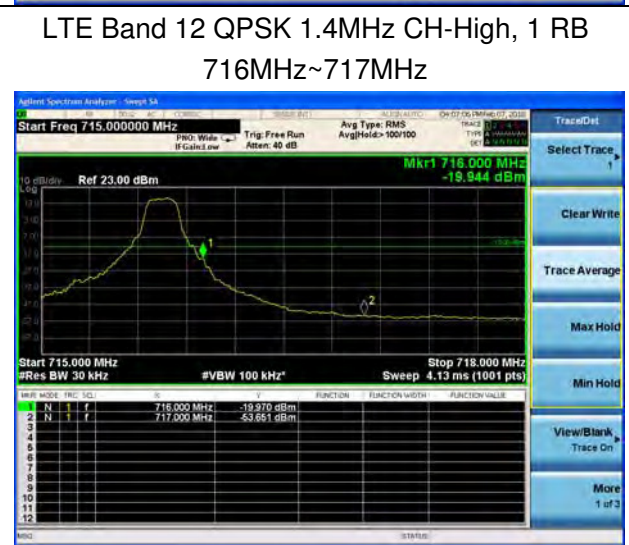
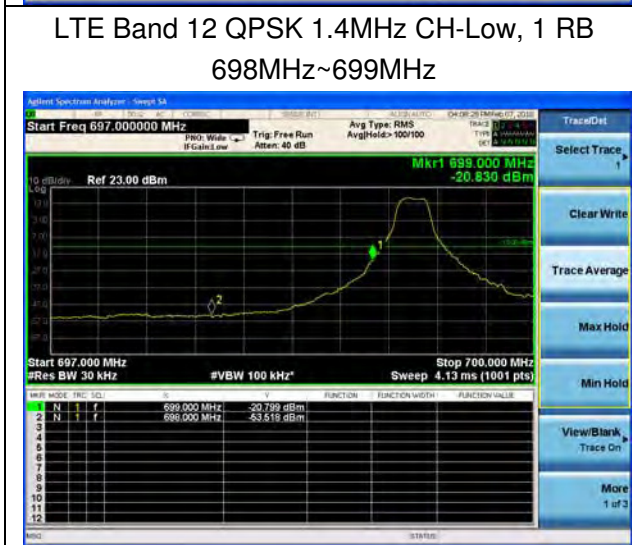
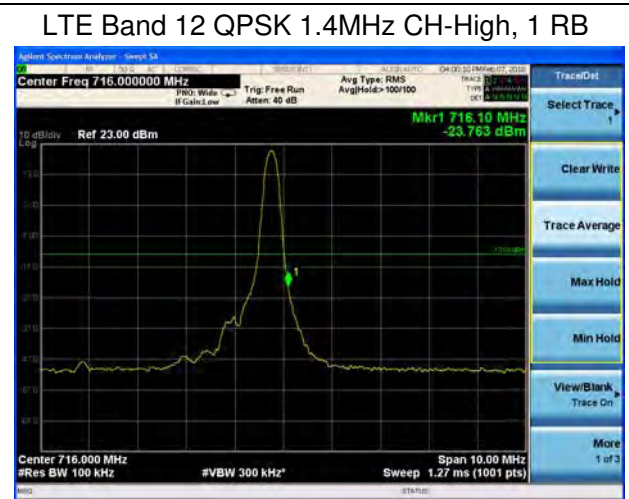
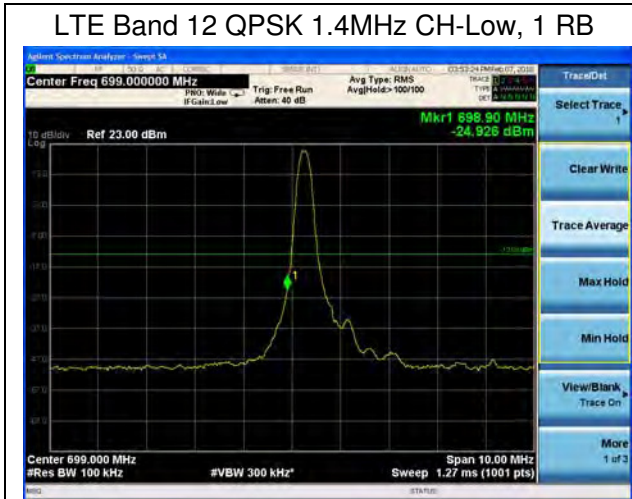


LTE Band 4 16QAM 20MHz CH-Low, 100%RB



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



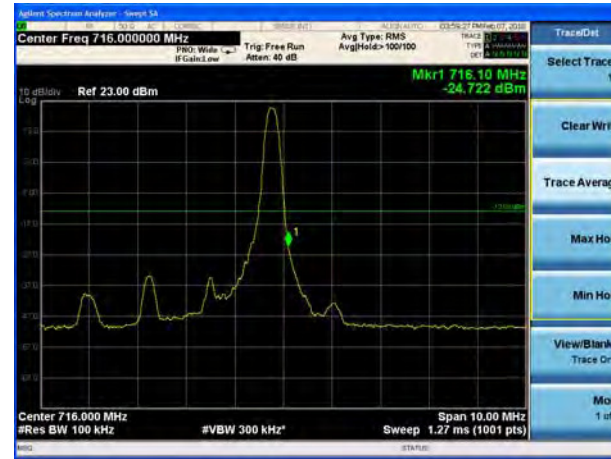




LTE Band 12 QPSK 3MHz CH-Low, 1 RB



LTE Band 12 QPSK 3MHz CH-High, 1 RB



LTE Band 12 QPSK 3MHz CH-Low 698MHz~699MHz, 1 RB



LTE Band 12 QPSK 3MHz CH-High 716MHz~717MHz, 1 RB



LTE Band 12 QPSK 3MHz CH-Low, 100%RB

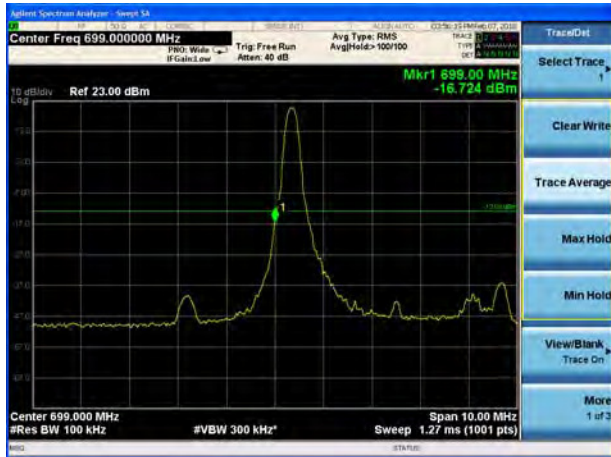


LTE Band 12 QPSK 3MHz CH-High, 100%RB

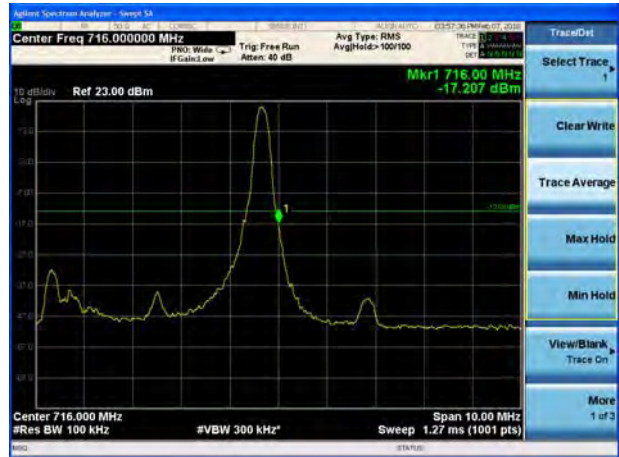




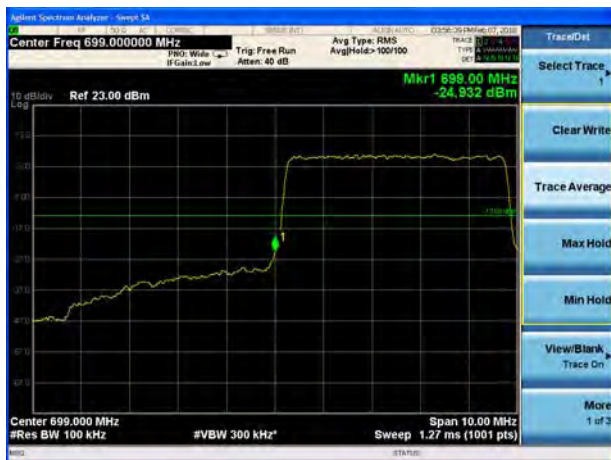
LTE Band 12 QPSK 5MHz CH-Low, 1 RB



LTE Band 12 QPSK 5MHz CH-High, 1 RB



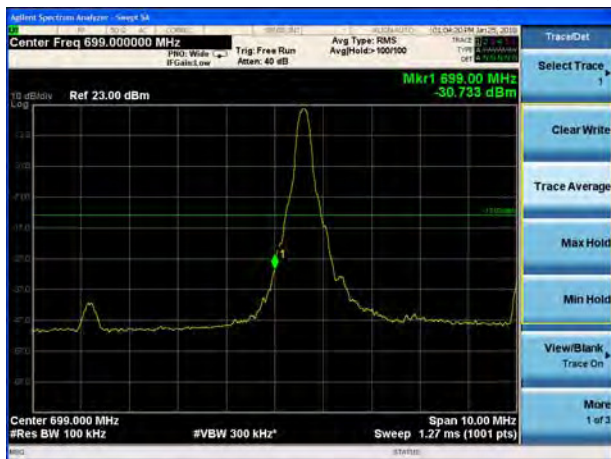
LTE Band 12 QPSK 5MHz CH-Low, 100%RB



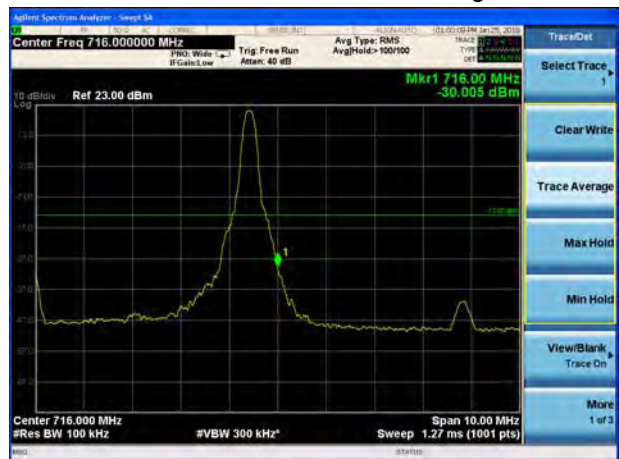
LTE Band 12 QPSK 5MHz CH-High, 100%RB



LTE Band 12 QPSK 10MHz CH-Low, 1 RB



LTE Band 12 QPSK 10MHz CH-High, 1 RB





LTE Band 12 QPSK 10MHz CH-Low, 100%RB



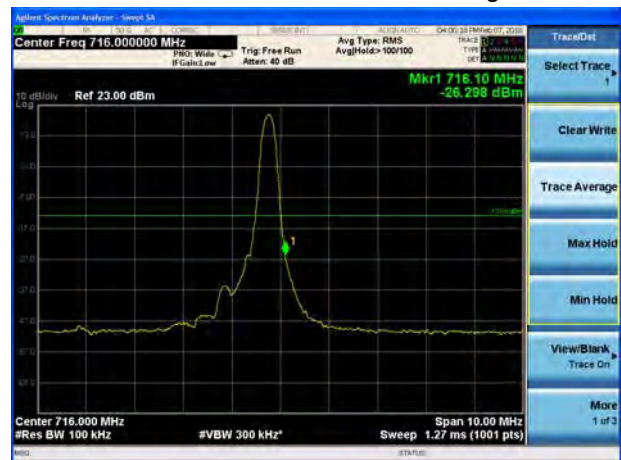
LTE Band 12 QPSK 10MHz CH-High, 100%RB



LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB



LTE Band 12 16QAM 1.4MHz CH-High, 1 RB



LTE Band 12 16QAM 1.4MHz CH-Low
698MHz~699MHz, 1 RB

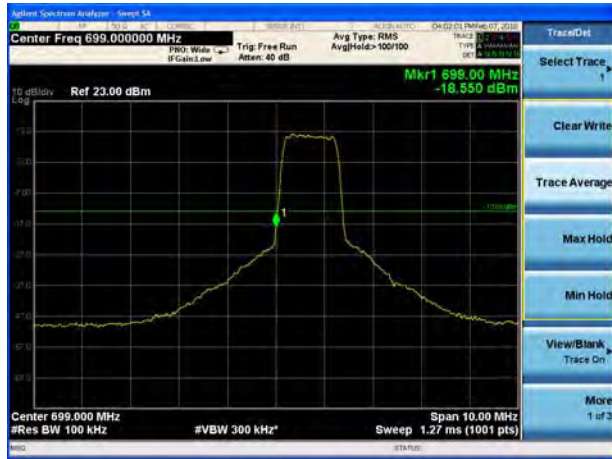


LTE Band 12 16QAM 1.4MHz CH-High
716MHz~717MHz, 1 RB





LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB



LTE Band 12 16QAM 1.4MHz CH-High, 100%RB



LTE Band 12 16QAM 3MHz CH-Low, 1 RB



LTE Band 12 16QAM 3MHz CH-High, 1 RB



LTE Band 12 16QAM 3MHz CH-Low 698MHz~699MHz, 1 RB



LTE Band 12 16QAM 3MHz CH-High 716MHz~717MHz, 1 RB





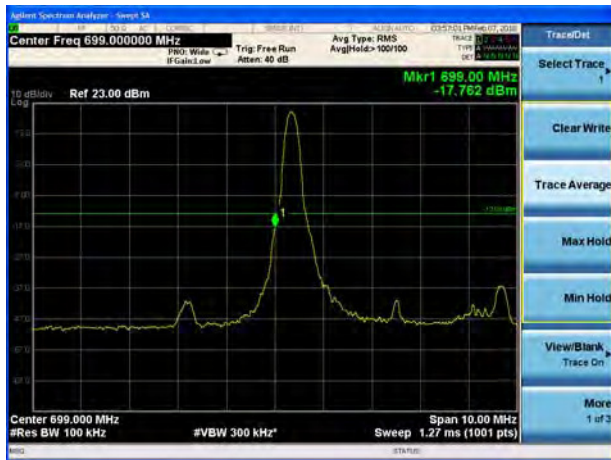
LTE Band 12 16QAM 3MHz CH-Low, 100%RB



LTE Band 12 16QAM 3MHz CH-High, 100%RB



LTE Band 12 16QAM 5MHz CH-Low, 1 RB



LTE Band 12 16QAM 5MHz CH-High, 1 RB



LTE Band 12 16QAM 5MHz CH-Low, 100%RB

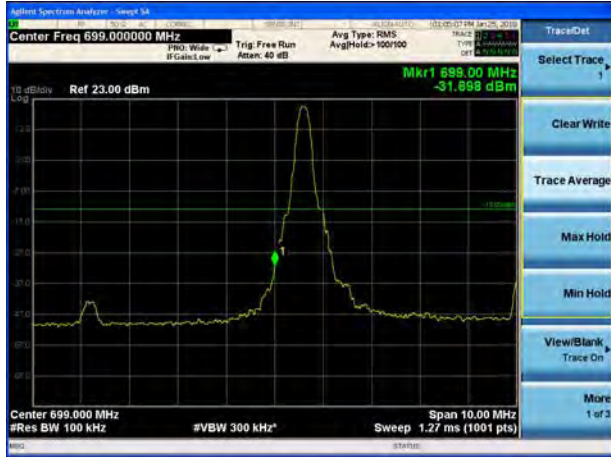


LTE Band 12 16QAM 5MHz CH-High, 100%RB

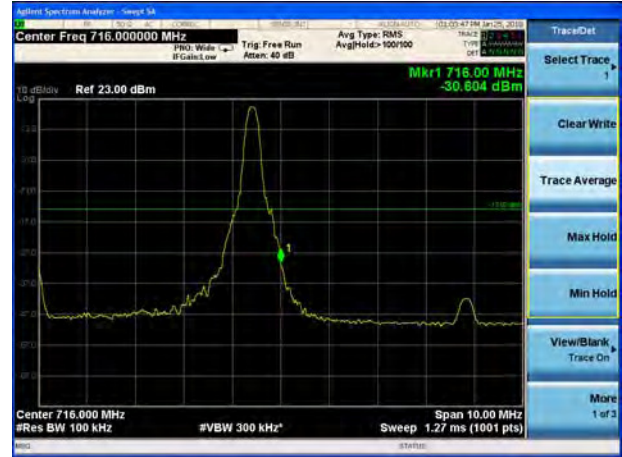




LTE Band 12 16QAM 10MHz CH-Low, 1 RB



LTE Band 12 16QAM 10MHz CH-High, 1 RB



LTE Band 12 16QAM 10MHz CH-Low, 100%RB



LTE Band 12 16QAM 10MHz CH-High, 100%RB





LTE Band 30 QPSK 5MHz CH-Low, 1 RB



LTE Band 30 QPSK 5MHz CH-High, 1 RB



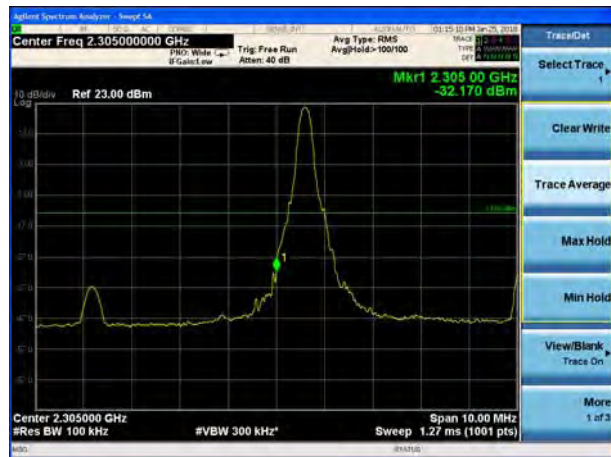
LTE Band 30 QPSK 5MHz CH-Low, 100%RB



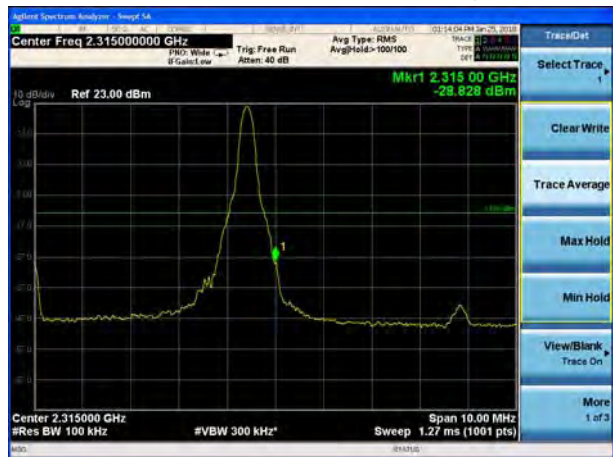
LTE Band 30 QPSK 5MHz CH-High, 100%RB



LTE Band 30 QPSK 10MHz CH-Low, 1 RB



LTE Band 30 QPSK 10MHz CH-High, 1 RB





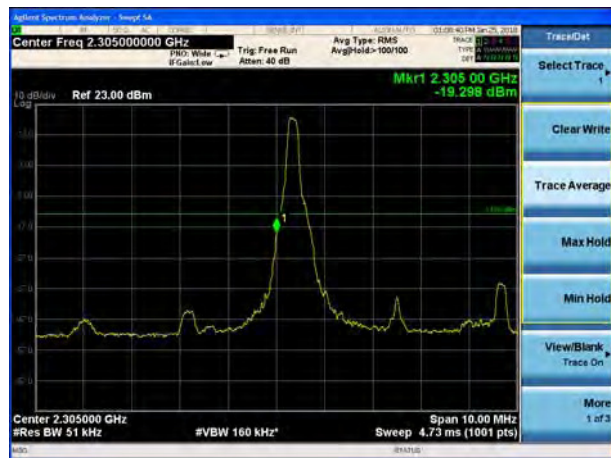
LTE Band 30 QPSK 10MHz CH-Low, 100%RB



LTE Band 30 QPSK 10MHz CH-High, 100%RB



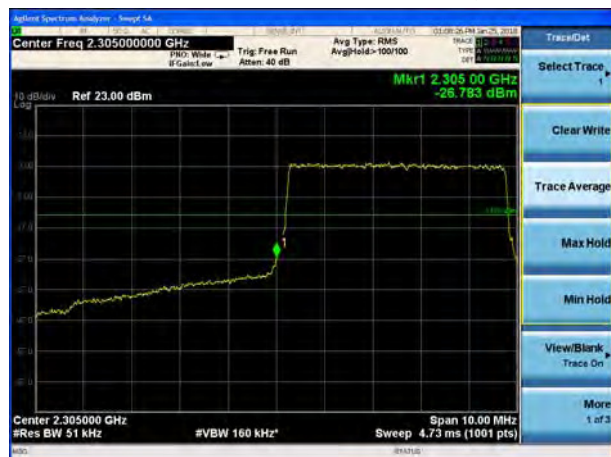
LTE Band 30 16QAM 5MHz CH-Low, 1 RB



LTE Band 30 16QAM 5MHz CH-High, 1 RB



LTE Band 30 16QAM 5MHz CH-Low, 100%RB

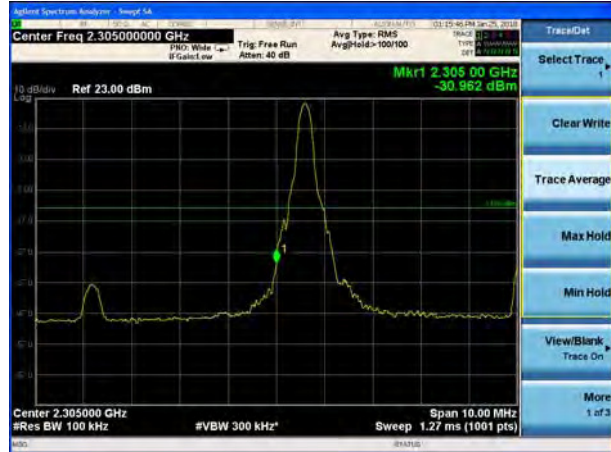


LTE Band 30 16QAM 5MHz CH-High, 100%RB

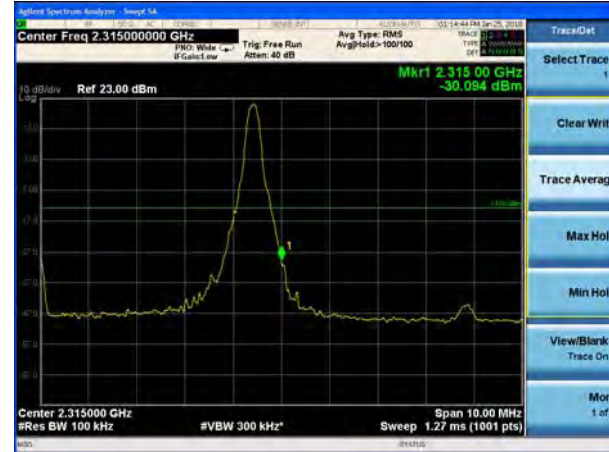




LTE Band 30 16QAM 10MHz CH-Low, 1 RB



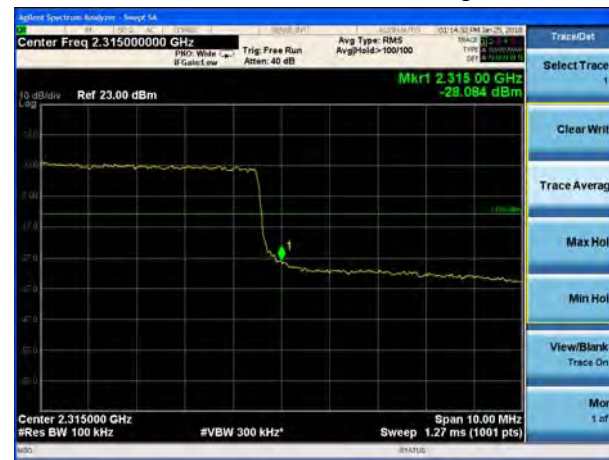
LTE Band 30 16QAM 10MHz CH-High, 1 RB



LTE Band 30 16QAM 10MHz CH-Low, 100%RB



LTE Band 30 16QAM 10MHz CH-High, 100%RB



5.5 Peak-to-Average Power Ratio (PAPR)

Ambient condition

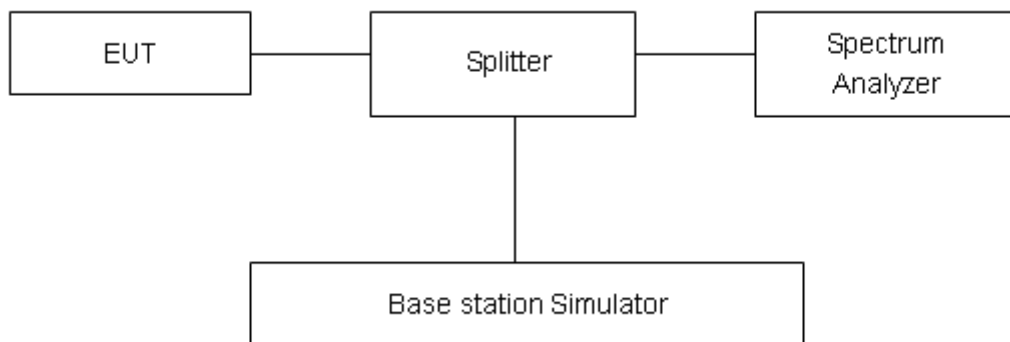
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 the normal distribution is with the coverage factor $k = 2$, $U = 0.4$ dB.

Test Results

WCDMA Band IV	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
RMC	1312	1712.4	26.63	23.70	2.93	≤13	PASS
	1413	1732.6	26.65	23.72	2.93	≤13	PASS
	1513	1752.6	26.60	23.65	2.95	≤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	27.86	22.34	5.52	≤13	PASS
		20175	1732.5	28.38	22.38	6.00	≤13	PASS
		20393	1754.3	27.74	22.19	5.55	≤13	PASS
	3	19965	1711.5	27.98	22.37	5.61	≤13	PASS
		20175	1732.5	28.44	22.42	6.02	≤13	PASS
		20385	1753.5	27.86	22.22	5.64	≤13	PASS
	5	19975	1712.5	27.94	22.35	5.59	≤13	PASS
		20175	1732.5	28.40	22.41	5.99	≤13	PASS
		20375	1752.5	27.78	22.20	5.58	≤13	PASS
	10	20000	1715	28.08	22.43	5.65	≤13	PASS
		20175	1732.5	28.33	22.43	5.90	≤13	PASS
		20350	1750	27.86	22.24	5.62	≤13	PASS
	15	20025	1717.5	28.24	22.41	5.83	≤13	PASS
		20175	1732.5	28.48	22.39	6.09	≤13	PASS
		20325	1747.5	28.01	22.19	5.82	≤13	PASS
	20	20050	1720	28.15	22.38	5.77	≤13	PASS
		20175	1732.5	28.23	22.34	5.89	≤13	PASS
		20300	1745	27.88	22.15	5.73	≤13	PASS
16QAM	1.4	19957	1710.7	27.85	21.48	6.37	≤13	PASS
		20175	1732.5	28.22	21.35	6.87	≤13	PASS
		20393	1754.3	27.67	21.29	6.38	≤13	PASS
	3	19965	1711.5	27.99	21.51	6.48	≤13	PASS
		20175	1732.5	28.28	21.39	6.89	≤13	PASS
		20385	1753.5	27.78	21.32	6.46	≤13	PASS
	5	19975	1712.5	27.91	21.49	6.42	≤13	PASS
		20175	1732.5	28.16	21.35	6.81	≤13	PASS
		20375	1752.5	27.67	21.27	6.40	≤13	PASS
	10	20000	1715	28.00	21.52	6.48	≤13	PASS
		20175	1732.5	28.15	21.40	6.75	≤13	PASS
		20350	1750	27.78	21.31	6.47	≤13	PASS



	15	20025	1717.5	28.10	21.49	6.61	≤13	PASS
		20175	1732.5	28.19	21.35	6.84	≤13	PASS
		20325	1747.5	27.86	21.27	6.59	≤13	PASS
	20	20050	1720	28.04	21.47	6.57	≤13	PASS
		20175	1732.5	28.04	21.31	6.73	≤13	PASS
		20300	1745	27.82	21.24	6.58	≤13	PASS

LTE Band 12								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	23017	699.7	27.98	22.31	5.67	≤13	PASS
		23095	707.5	27.81	22.43	5.38	≤13	PASS
		23173	715.3	27.65	22.47	5.18	≤13	PASS
	3	23025	700.5	28.00	22.34	5.66	≤13	PASS
		23095	707.5	27.98	22.47	5.51	≤13	PASS
		23165	714.5	27.91	22.50	5.41	≤13	PASS
	5	23035	701.5	27.80	22.32	5.48	≤13	PASS
		23095	707.5	27.98	22.46	5.52	≤13	PASS
		23155	713.5	27.87	22.48	5.39	≤13	PASS
	10	23060	704	28.12	22.35	5.77	≤13	PASS
		23095	707.5	27.91	22.39	5.52	≤13	PASS
		23130	711	27.85	22.43	5.42	≤13	PASS
16QAM	1.4	23017	699.7	27.91	21.37	6.54	≤13	PASS
		23095	707.5	27.57	21.42	6.15	≤13	PASS
		23173	715.3	27.55	21.51	6.04	≤13	PASS
	3	23025	700.5	27.93	21.40	6.53	≤13	PASS
		23095	707.5	27.78	21.46	6.32	≤13	PASS
		23165	714.5	27.74	21.54	6.20	≤13	PASS
	5	23035	701.5	27.69	21.38	6.31	≤13	PASS
		23095	707.5	27.69	21.42	6.27	≤13	PASS
		23155	713.5	27.71	21.49	6.22	≤13	PASS
	10	23060	704	27.56	21.36	6.20	≤13	PASS
		23095	707.5	27.66	21.38	6.28	≤13	PASS
		23130	711	27.74	21.46	6.28	≤13	PASS

LTE Band 30								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	27685	2307.5	27.89	22.85	5.04	≤13	PASS
		27710	2310	27.89	22.79	5.10	≤13	PASS
		27735	2312.5	27.79	22.71	5.08	≤13	PASS
	10	27710	2310	29.14	22.91	6.23	≤13	PASS
16QAM	5	27685	2307.5	27.83	21.79	6.04	≤13	PASS
		27710	2310	27.98	21.83	6.15	≤13	PASS
		27735	2312.5	28.00	21.91	6.09	≤13	PASS
	10	27710	2310	27.71	21.87	5.84	≤13	PASS

5.6 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)

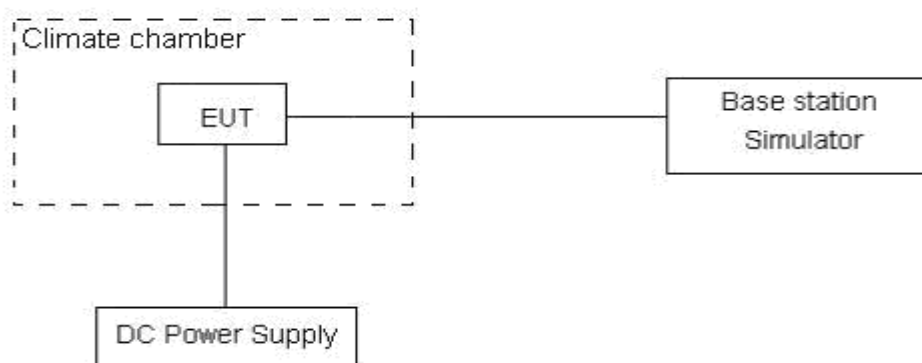
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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 3.6 V and 4.4V, with a nominal voltage of 3.85V.

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 $k = 3, U = 0.01\text{ppm}$.

Test Result

WCDMA Band IV

Test status	WCDMA Band IV Channel 1413 RMC
	Test Results (ppm)
-30°C/Normal Voltage	0.00140
-20°C/Normal Voltage	0.00233
-10°C/Normal Voltage	0.00212
0°C/Normal Voltage	0.00118
10°C/Normal Voltage	0.00170
20°C/Normal Voltage	0.00111
30°C/Normal Voltage	0.00189
40°C/Normal Voltage	0.00156
50°C/Normal Voltage	0.00180
55°C/Normal Voltage	0.00182
20°C/Min Voltage	0.00156
20°C/Max Voltage	0.00168

Bandwidth	Test status	LTE Band 4 Channel 20175 Test Results (ppm)	
		QPSK	16QAM
1.4MHz	-30°C/Normal Voltage	-0.00070	-0.00024
	-20°C/Normal Voltage	-0.00102	0.00136
	-10°C/Normal Voltage	0.00162	-0.00078
	0°C/Normal Voltage	-0.00255	-0.00339
	10°C/Normal Voltage	-0.00027	0.00018
	20°C/Normal Voltage	-0.00141	-0.00231
	30°C/Normal Voltage	0.00035	-0.00263
	40°C/Normal Voltage	0.00117	-0.00431
	50°C/Normal Voltage	-0.00009	0.00529
	55°C/Normal Voltage	0.00173	0.00293
	20°C/Min Voltage	0.00124	0.00312
	20°C/Max Voltage	-0.00130	0.00457
3MHz	-30°C/Normal Voltage	0.00118	0.00140
	-20°C/Normal Voltage	-0.00028	0.00149
	-10°C/Normal Voltage	-0.00117	0.00110
	0°C/Normal Voltage	-0.00418	0.00143
	10°C/Normal Voltage	-0.00218	0.00117
	20°C/Normal Voltage	-0.00234	0.00667
	30°C/Normal Voltage	-0.00330	-0.00648



	40°C/Normal Voltage	0.00043	-0.00208
	50°C/Normal Voltage	-0.00122	0.00227
	55°C/Normal Voltage	-0.00186	0.00161
	20°C/Min Voltage	-0.00243	0.00977
	20°C/Max Voltage	-0.00248	0.00189
5MHz	-30°C/Normal Voltage	-0.00057	-0.00042
	-20°C/Normal Voltage	-0.00186	0.00565
	-10°C/Normal Voltage	0.00065	-0.00084
	0°C/Normal Voltage	-0.00173	0.00477
	10°C/Normal Voltage	0.00024	0.00335
	20°C/Normal Voltage	-0.00082	0.00515
	30°C/Normal Voltage	0.00095	0.00443
	40°C/Normal Voltage	-0.00187	0.00458
	50°C/Normal Voltage	0.00288	0.00481
	55°C/Normal Voltage	0.00053	0.00243
	20°C/Min Voltage	-0.00001	0.00520
	20°C/Max Voltage	0.00080	0.00066
10MHz	-30°C/Normal Voltage	-0.00037	0.00375
	-20°C/Normal Voltage	0.00099	0.00075
	-10°C/Normal Voltage	0.00152	0.00086
	0°C/Normal Voltage	-0.00053	0.00357
	10°C/Normal Voltage	-0.00084	0.00148
	20°C/Normal Voltage	-0.00022	0.00441
	30°C/Normal Voltage	0.00208	-0.00010
	40°C/Normal Voltage	0.00060	0.00167
	50°C/Normal Voltage	0.00009	0.00334
	55°C/Normal Voltage	0.00025	0.00199
	20°C/Min Voltage	-0.00096	0.00322
	20°C/Max Voltage	-0.00084	-0.00049
15MHz	-30°C/Normal Voltage	-0.00207	0.00143
	-20°C/Normal Voltage	-0.00034	0.00067
	-10°C/Normal Voltage	0.00074	-0.00210
	0°C/Normal Voltage	-0.00066	0.00145
	10°C/Normal Voltage	-0.00073	0.00010
	20°C/Normal Voltage	-0.00242	-0.00042
	30°C/Normal Voltage	-0.00199	0.01303
	40°C/Normal Voltage	0.00105	0.00121
	50°C/Normal Voltage	0.00068	0.00298
	55°C/Normal Voltage	0.00064	-0.00589
	20°C/Min Voltage	0.00309	0.01445



	20°C/Max Voltage	0.00193	0.00790
20MHz	-30°C/Normal Voltage	-0.00083	0.00272
	-20°C/Normal Voltage	-0.00124	0.00341
	-10°C/Normal Voltage	0.00107	0.00121
	0°C/Normal Voltage	0.00259	-0.00029
	10°C/Normal Voltage	-0.00099	0.00008
	20°C/Normal Voltage	-0.00195	-0.00003
	30°C/Normal Voltage	-0.00210	-0.00193
	40°C/Normal Voltage	0.00145	-0.00877
	50°C/Normal Voltage	0.00227	0.00063
	55°C/Normal Voltage	0.00161	0.00133
	20°C/Min Voltage	0.00035	-0.00263
	20°C/Max Voltage	0.00117	-0.00431

Bandwidth	Test status	LTE Band 12 Channel 23095 Test Results (ppm)	
		QPSK	16QAM
1.4M	-30°C/Normal Voltage	0.00831	0.00038
	-20°C/Normal Voltage	-0.01740	0.00045
	-10°C/Normal Voltage	0.01110	-0.00174
	0°C/Normal Voltage	0.01388	0.00808
	10°C/Normal Voltage	0.00404	0.00645
	20°C/Normal Voltage	-0.01558	0.00489
	30°C/Normal Voltage	0.00031	0.00656
	40°C/Normal Voltage	-0.00245	0.00007
	50°C/Normal Voltage	0.00951	-0.00462
	55°C/Normal Voltage	-0.00455	0.00558
	20°C/Min Voltage	-0.00558	0.00211
	20°C/Max Voltage	-0.01481	0.00490
3M	-30°C/Normal Voltage	-0.00646	0.01078
	-20°C/Normal Voltage	-0.01088	0.00335
	-10°C/Normal Voltage	-0.00975	0.00485
	0°C/Normal Voltage	-0.01192	0.00441
	10°C/Normal Voltage	-0.01295	0.02114
	20°C/Normal Voltage	-0.00202	0.00455
	30°C/Normal Voltage	-0.01183	0.00146
	40°C/Normal Voltage	-0.00257	-0.00800
	50°C/Normal Voltage	-0.00571	0.00620
	55°C/Normal Voltage	-0.01162	0.00038



	20°C/Min Voltage	-0.00801	-0.00564	
	20°C/Max Voltage	0.00859	0.01033	
5MHz	-30°C/Normal Voltage	0.00691	0.00000	
	-20°C/Normal Voltage	0.00659	0.00980	
	-10°C/Normal Voltage	0.00570	0.01036	
	0°C/Normal Voltage	-0.00146	0.00660	
	10°C/Normal Voltage	0.00838	0.00300	
	20°C/Normal Voltage	0.00034	0.00466	
	30°C/Normal Voltage	-0.00011	0.00485	
	40°C/Normal Voltage	0.00298	0.00570	
	50°C/Normal Voltage	0.00373	-0.00496	
	55°C/Normal Voltage	-0.00760	0.00307	
	20°C/Min Voltage	-0.00376	0.01363	
	20°C/Max Voltage	0.00657	-0.00475	
	10MHz	-30°C/Normal Voltage	-0.00652	0.00580
		-20°C/Normal Voltage	-0.00516	0.00647
-10°C/Normal Voltage		0.00202	-0.00083	
0°C/Normal Voltage		-0.00643	-0.01365	
10°C/Normal Voltage		-0.00571	0.01177	
20°C/Normal Voltage		0.00266	-0.01208	
30°C/Normal Voltage		-0.00700	0.01006	
40°C/Normal Voltage		-0.00971	-0.01179	
50°C/Normal Voltage		-0.01429	0.01635	
55°C/Normal Voltage		0.01124	0.00066	
20°C/Min Voltage		0.00620	0.00807	
20°C/Max Voltage		0.00623	0.01145	

Bandwidth	Test status	LTE Band 30 Channel 27710 Test Results (ppm)	
		QPSK	16QAM
5MHz	-30°C/Normal Voltage	-0.00179	0.00390
	-20°C/Normal Voltage	-0.00174	0.00052
	-10°C/Normal Voltage	-0.00062	0.00507
	0°C/Normal Voltage	0.00025	0.00020
	10°C/Normal Voltage	0.00037	0.00441
	20°C/Normal Voltage	0.00037	0.00239
	30°C/Normal Voltage	0.00507	0.00469
	40°C/Normal Voltage	0.00117	0.00415
	50°C/Normal Voltage	0.00378	0.00352
	55°C/Normal Voltage	-0.00045	0.00444



	20°C/Min Voltage	0.00320	-0.00364
	20°C/Max Voltage	0.00239	0.00077
10MHz	-30°C/Normal Voltage	0.00137	0.00188
	-20°C/Normal Voltage	0.00354	0.00088
	-10°C/Normal Voltage	0.00229	0.00302
	0°C/Normal Voltage	0.00393	0.00220
	10°C/Normal Voltage	0.00171	0.00318
	20°C/Normal Voltage	0.00145	0.00426
	30°C/Normal Voltage	-0.00214	0.00275
	40°C/Normal Voltage	0.00026	0.00055
	50°C/Normal Voltage	0.00194	0.00394
	55°C/Normal Voltage	-0.00110	0.00066
	20°C/Min Voltage	-0.00042	0.00355
	20°C/Max Voltage	0.00055	0.00334

5.7 Spurious Emissions at Antenna Terminals

Ambient condition

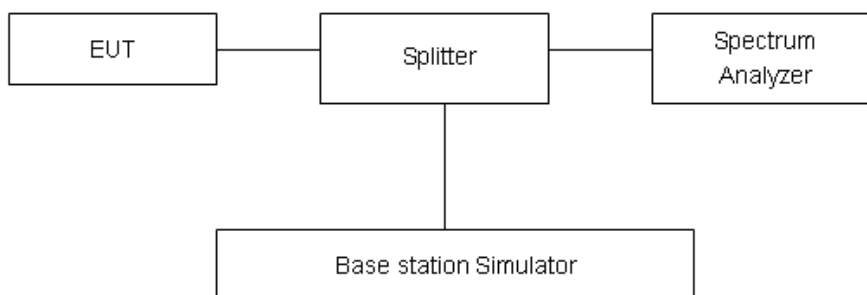
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW 1MHz and VBW 3MHz, Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

Test setup



Limits

Rule Part 27.53(a) (4) (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

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..”

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Measurement Uncertainty

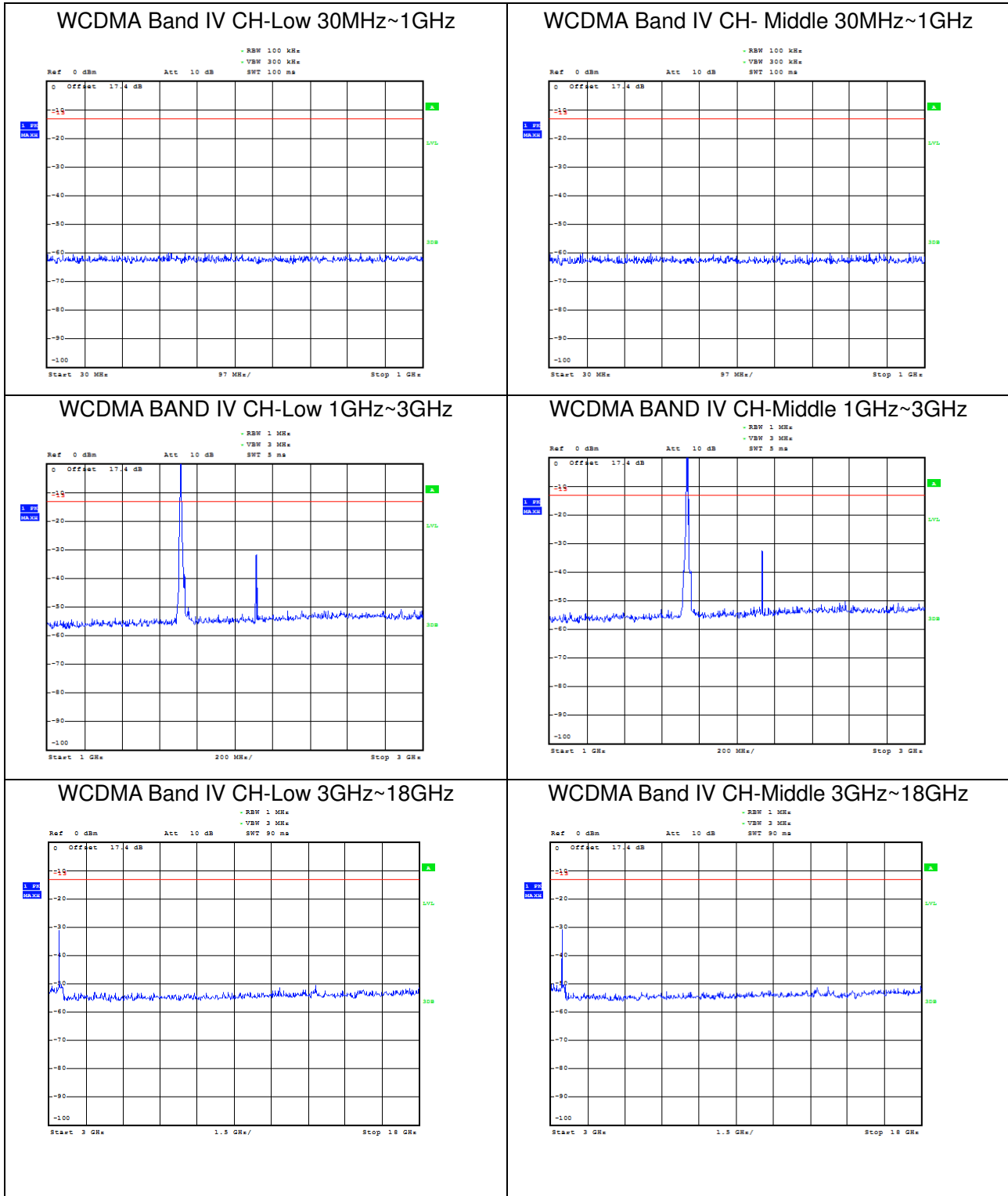
The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
100kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

Test Result

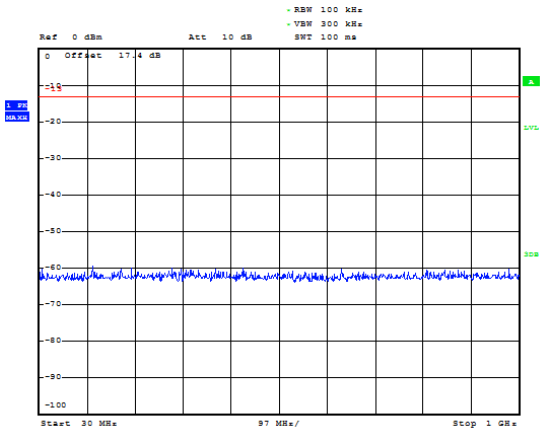
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

If disturbances were found more than 20dB below limit line, the mark is not required for the EUT. The signal beyond the limit is carrier.

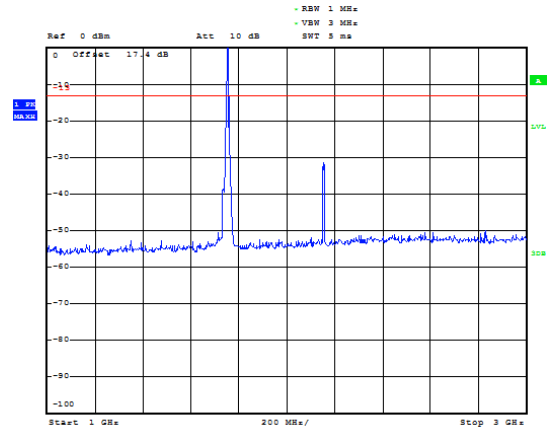




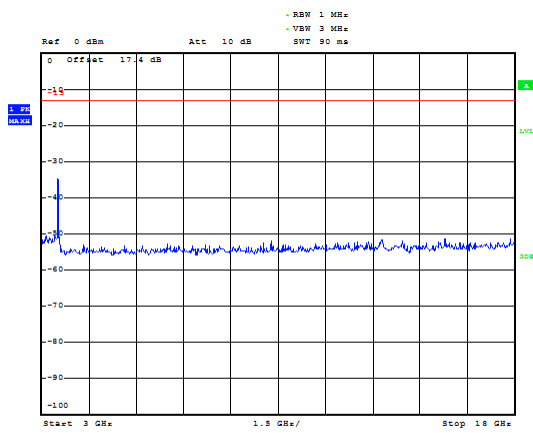
WCDMA Band IV CH- High 30MHz~1GHz



WCDMA BAND IV CH-High 1GHz~3GHz

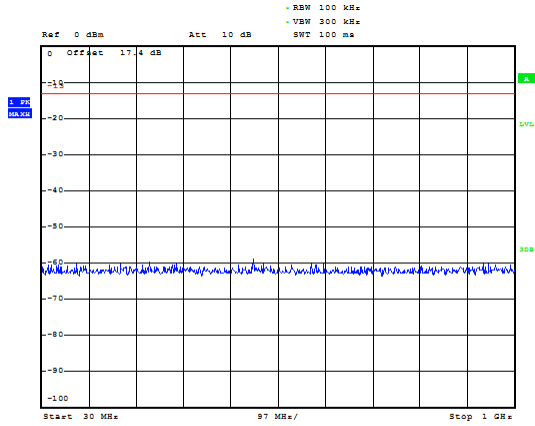


WCDMA Band IV CH-High 3GHz~18GHz

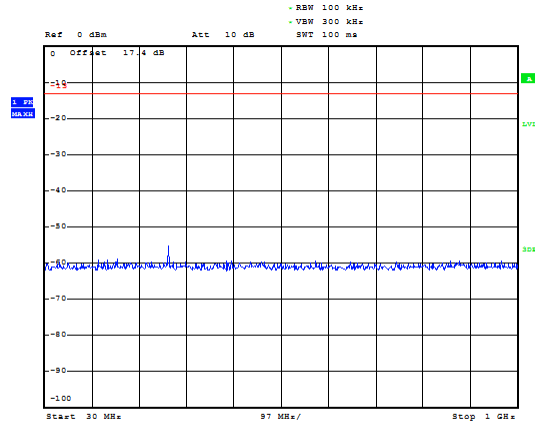




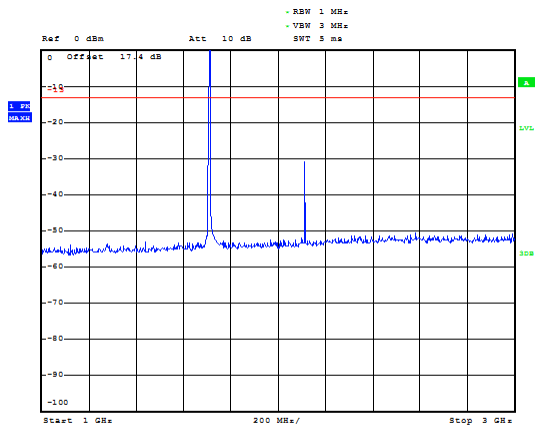
LTE Band 4 1.4MHz CH-Low 30MHz~1GHz



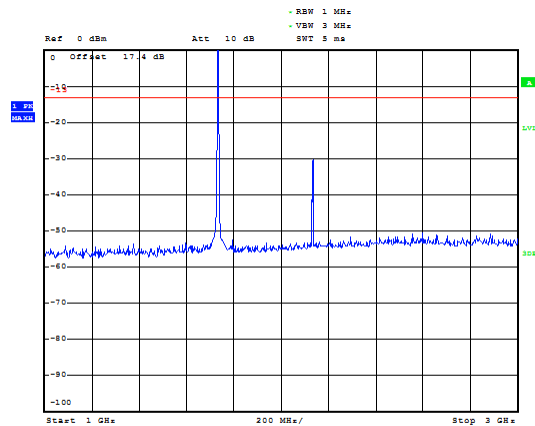
LTE Band 4 1.4MHz CH-Middle 30MHz~1GHz



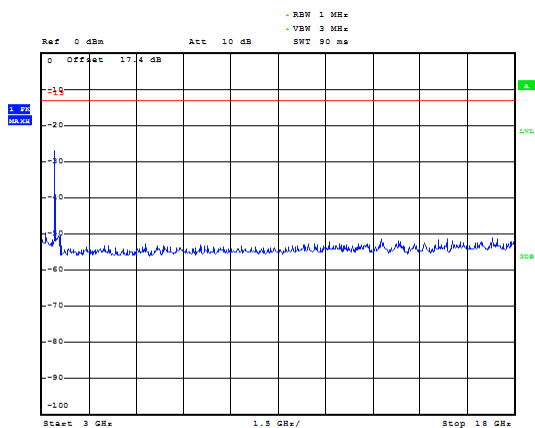
LTE Band 4 1.4MHz CH-Low 1GHz~3GHz



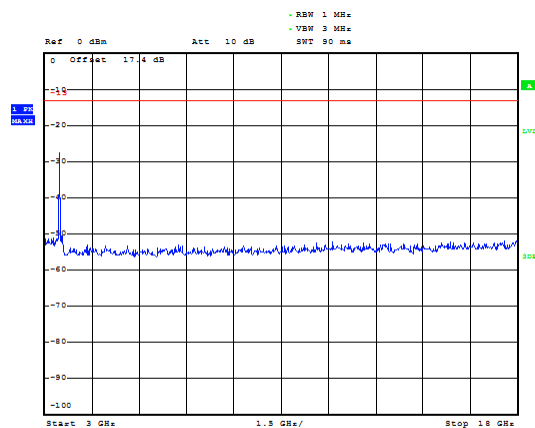
LTE Band 4 1.4MHz CH-Middle 1GHz~3GHz



LTE Band 4 1.4MHz CH-Low 3GHz~18GHz

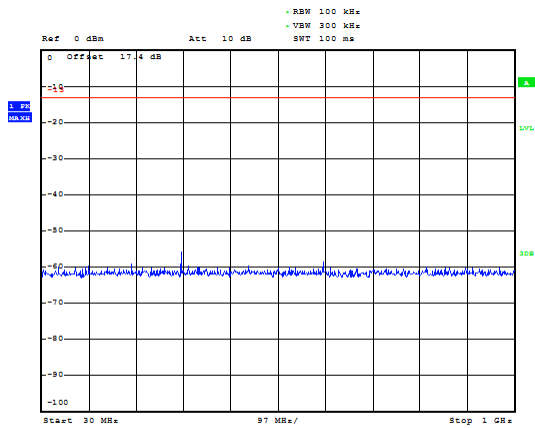


LTE Band 4 1.4MHz CH-Middle 3GHz~18GHz

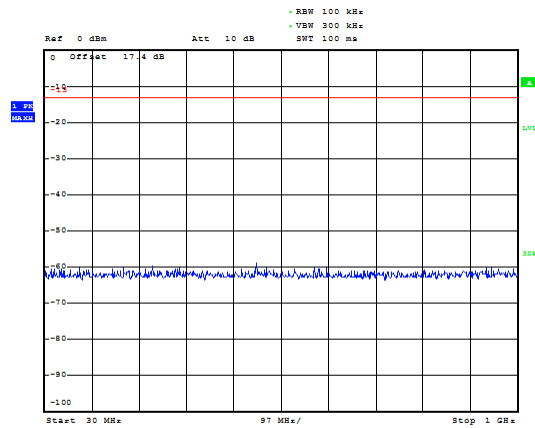




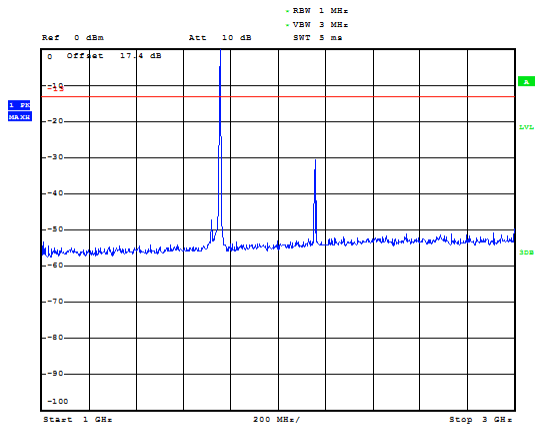
LTE Band 4 1.4MHz CH-High 30MHz~1GHz



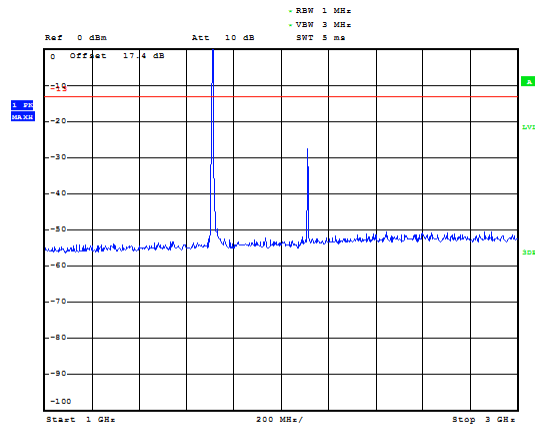
LTE Band 4 3MHz CH-Low 30MHz~1GHz



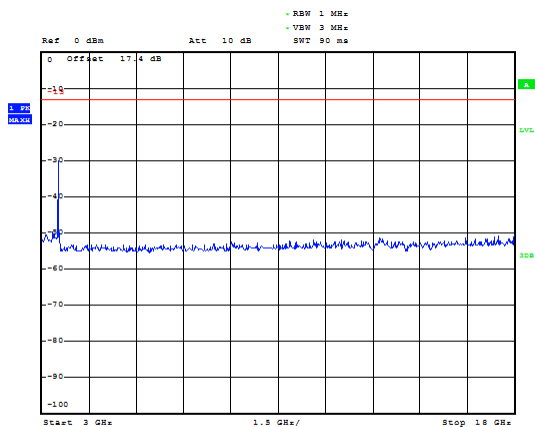
LTE Band 4 1.4MHz CH-High 1GHz~3GHz



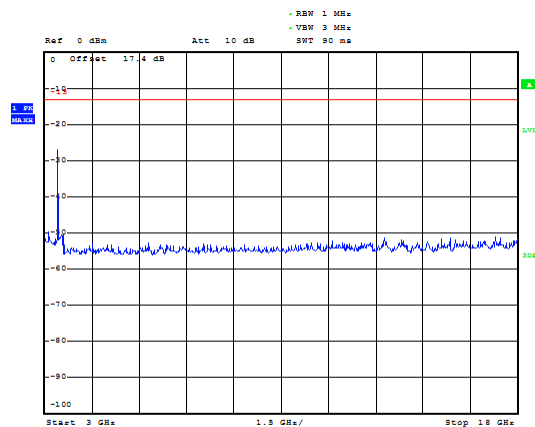
LTE Band 4 3MHz CH-Low 1GHz~3GHz



LTE Band 4 1.4MHz CH-High 3GHz~18GHz

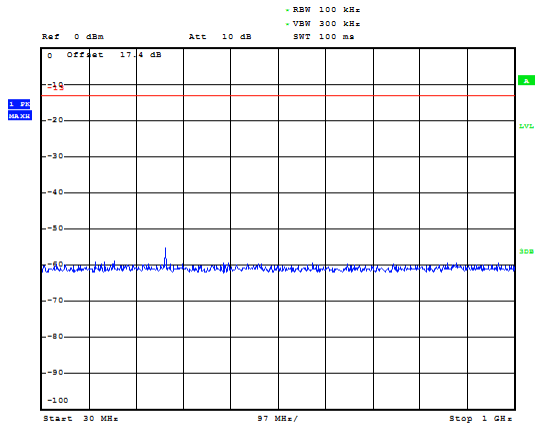


LTE Band 4 3MHz CH-Low 3GHz~18GHz

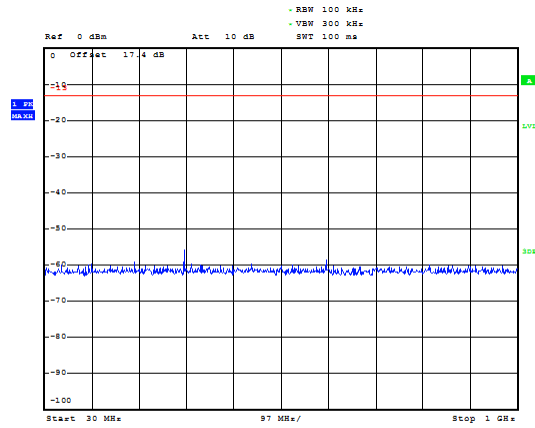




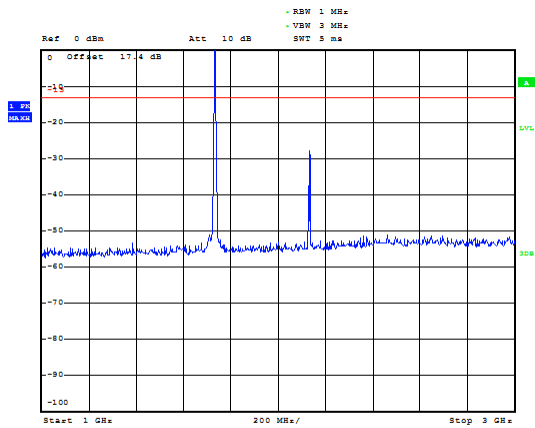
LTE Band 4 3MHz CH-Middle 30MHz~1GHz



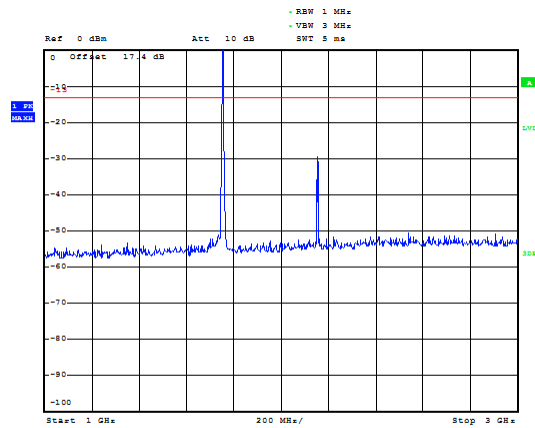
LTE Band 4 3MHz CH-High 30MHz~1GHz



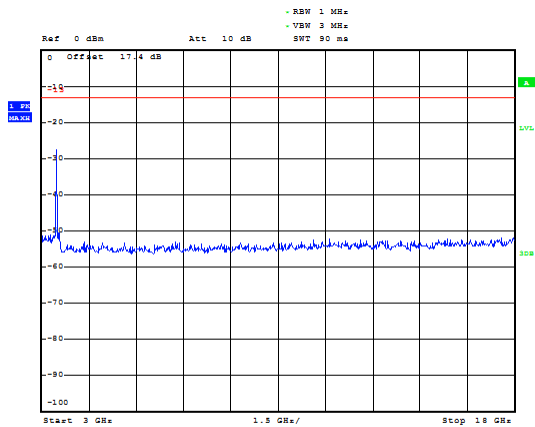
LTE Band 4 3MHz CH-Middle 1GHz~3GHz



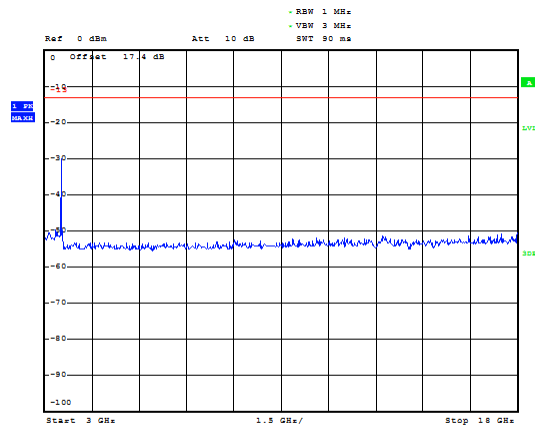
LTE Band 4 3MHz CH-High 1GHz~3GHz



LTE Band 4 3MHz CH-Middle 3GHz~18GHz

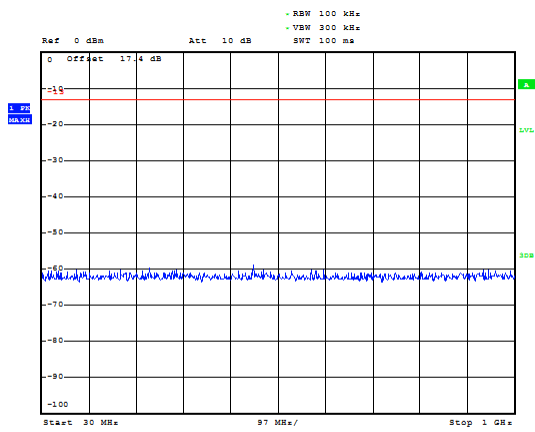


LTE Band 4 3MHz CH-High 3GHz~18GHz

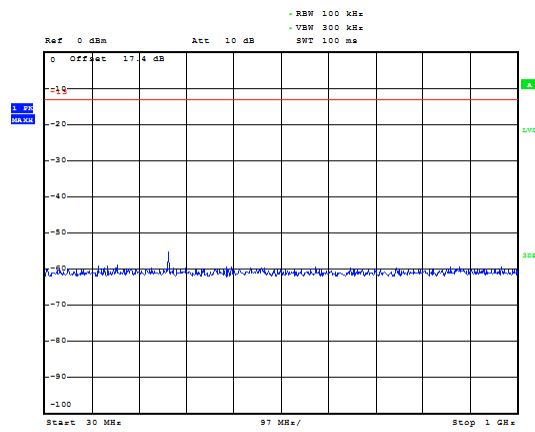




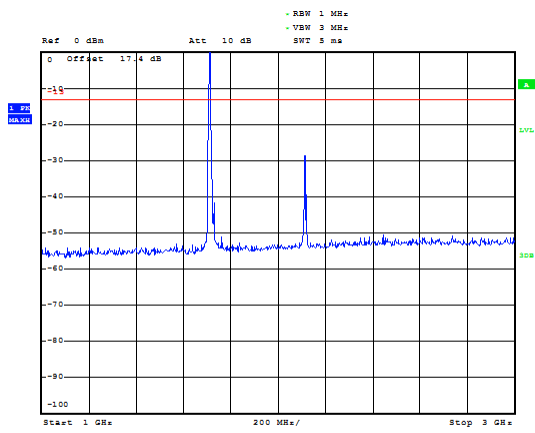
LTE Band 4 5MHz CH-Low 30MHz~1GHz



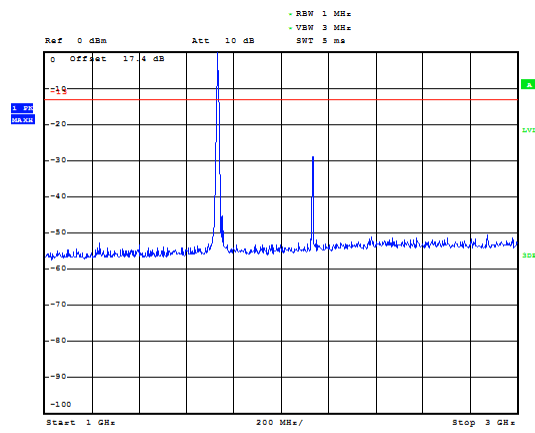
LTE Band 4 5MHz CH-Middle 30MHz~1GHz



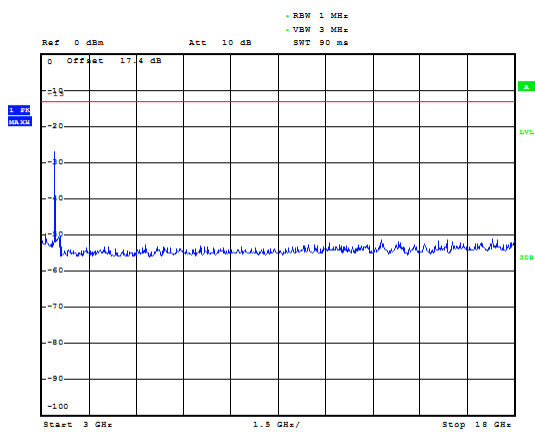
LTE Band 4 5MHz CH-Low 1GHz~3GHz



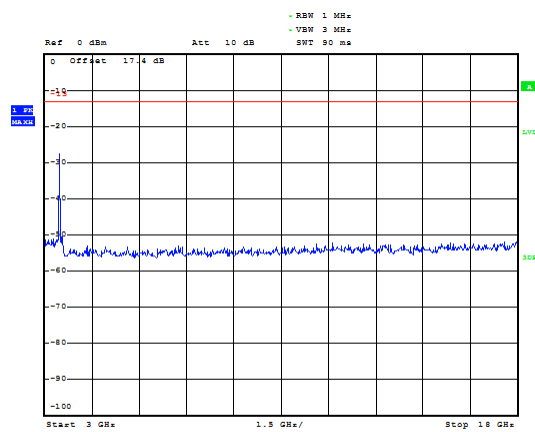
LTE Band 4 5MHz CH-Middle 1GHz~3GHz



LTE Band 4 5MHz CH-Low 3GHz~18GHz

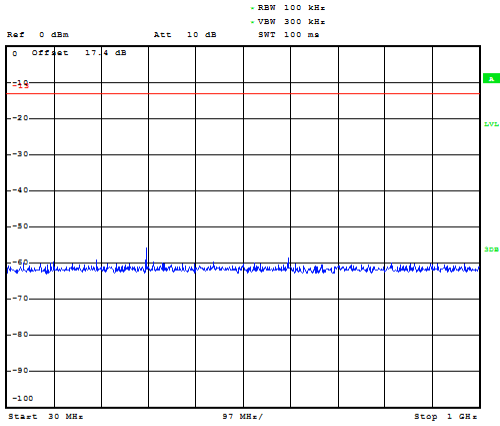


LTE Band 4 5MHz CH-Middle 3GHz~18GHz

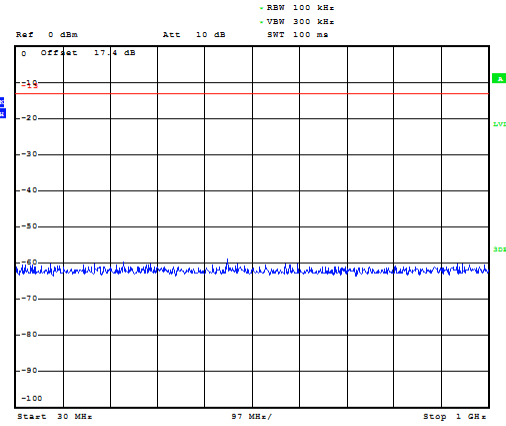




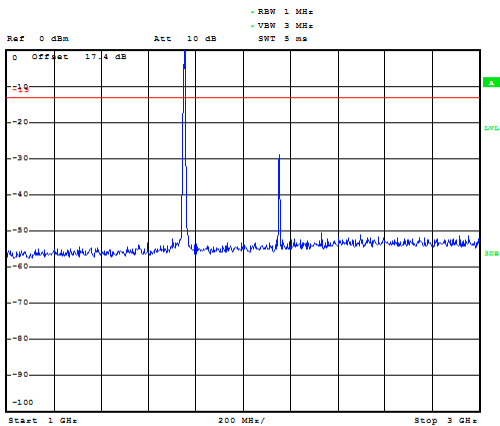
LTE Band 4 5MHz CH-High 30MHz~1GHz



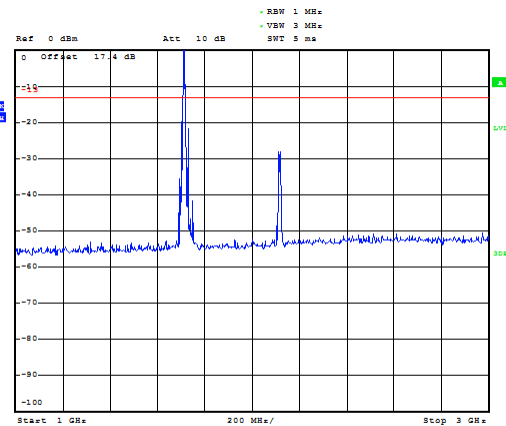
LTE Band 4 10MHz CH-Low 30MHz~1GHz



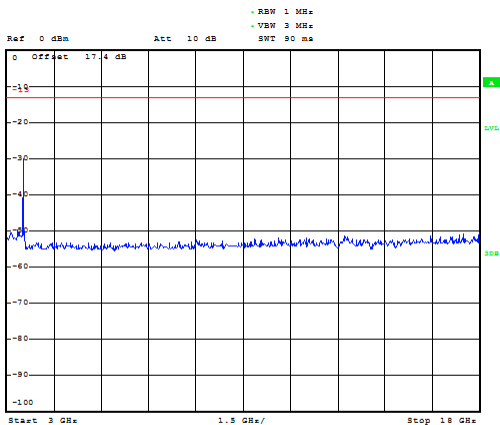
LTE Band 4 5MHz CH-High 1GHz~3GHz



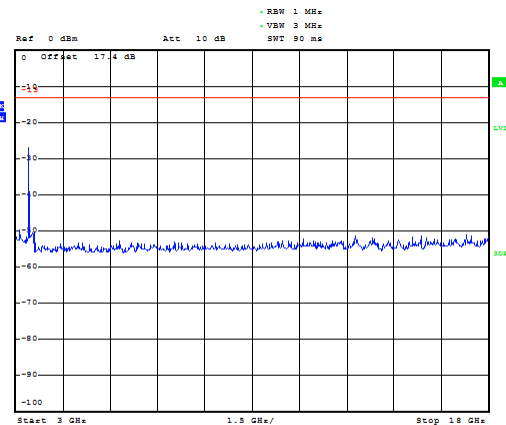
LTE Band 4 10MHz CH-Low 1GHz~3GHz



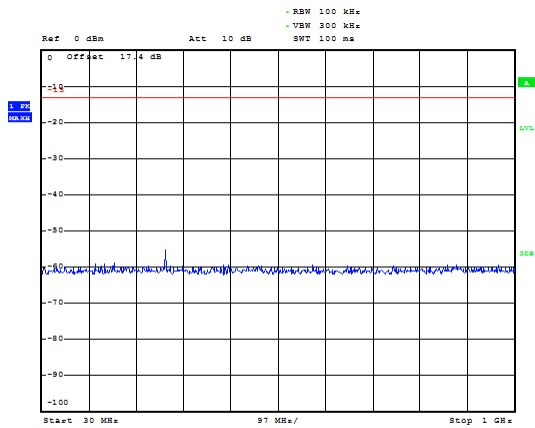
LTE Band 4 5MHz CH-High 3GHz~18GHz



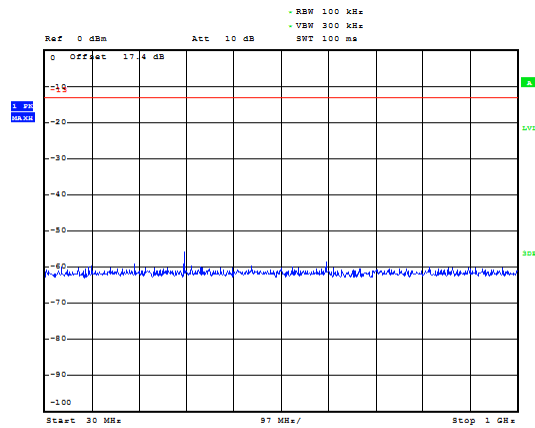
LTE Band 4 10MHz CH-Low 3GHz~18GHz



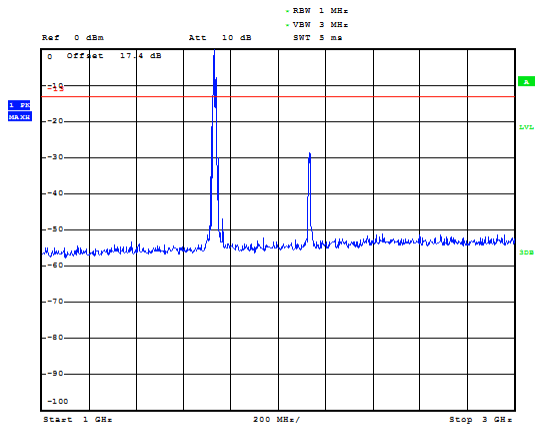
LTE Band 4 10MHz CH-Middle 30MHz~1GHz



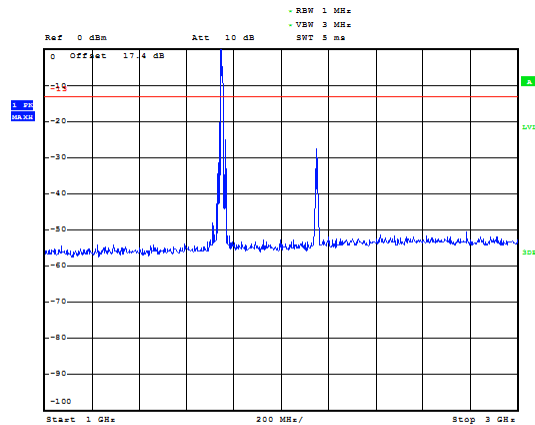
LTE Band 4 10MHz CH-High 30MHz~1GHz



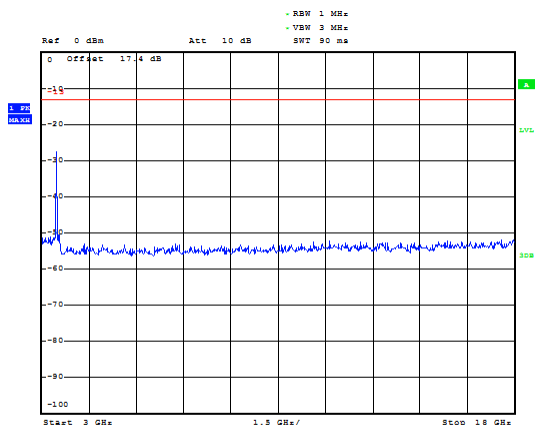
LTE Band 4 10MHz CH-Middle 1GHz~3GHz



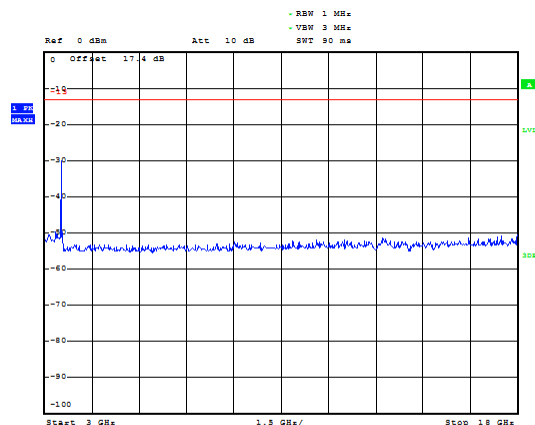
LTE Band 4 10MHz CH-High 1GHz~3GHz



LTE Band 4 10MHz CH-Middle 3GHz~18GHz

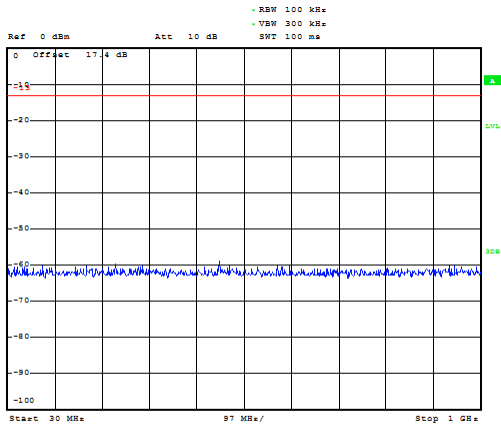


LTE Band 4 10MHz CH-High 3GHz~18GHz

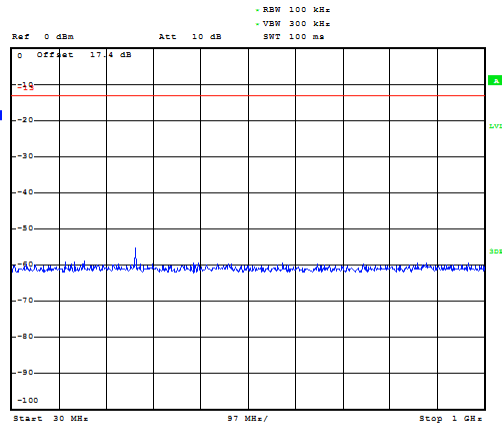




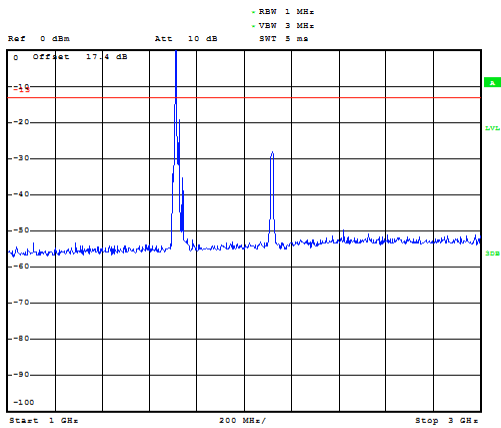
LTE Band 4 15MHz CH-Low 30MHz~1GHz



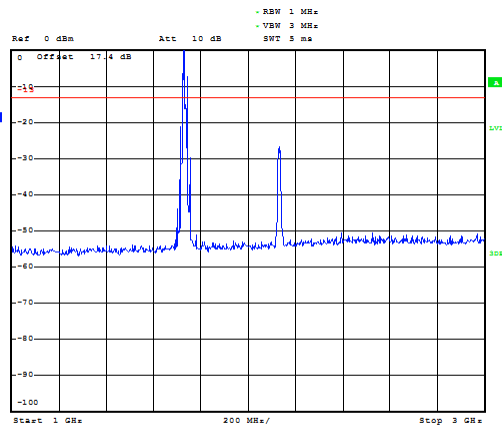
LTE Band 4 15MHz CH-Middle 30MHz~1GHz



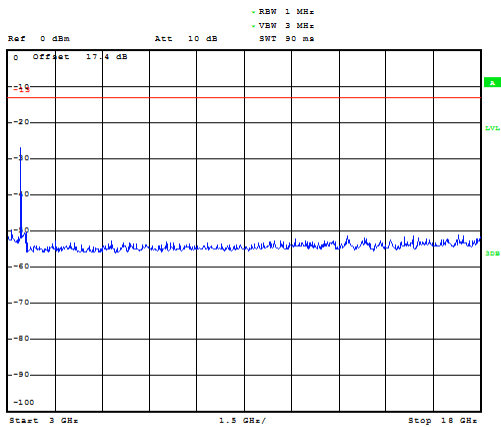
LTE Band 4 15MHz CH-Low 1GHz~3GHz



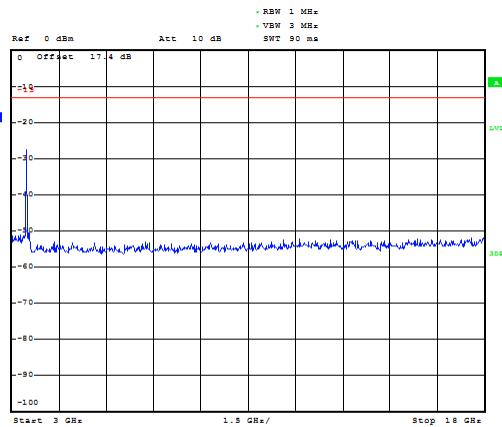
LTE Band 4 15MHz CH-Middle 1GHz~3GHz



LTE Band 4 15MHz CH-Low 3GHz~18GHz

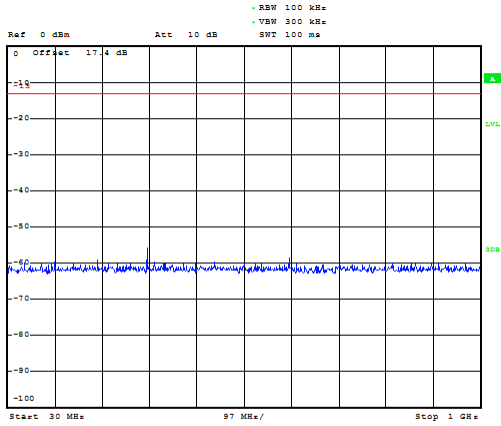


LTE Band 4 15MHz CH-Middle 3GHz~18GHz

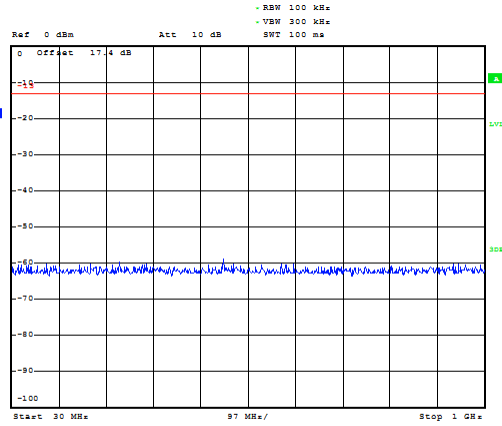




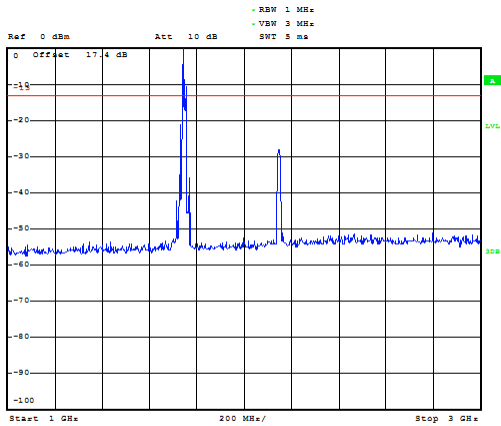
LTE Band 4 15MHz CH-High 30MHz~1GHz



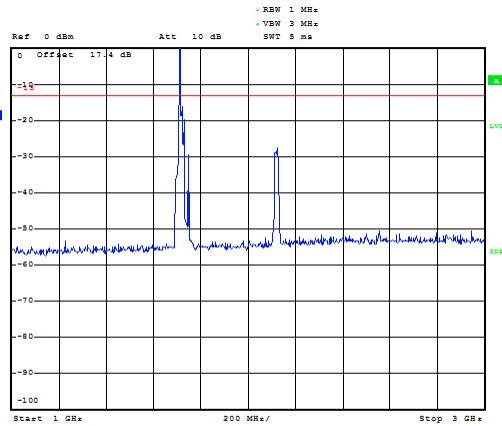
LTE Band 4 20MHz CH-Low 30MHz~1GHz



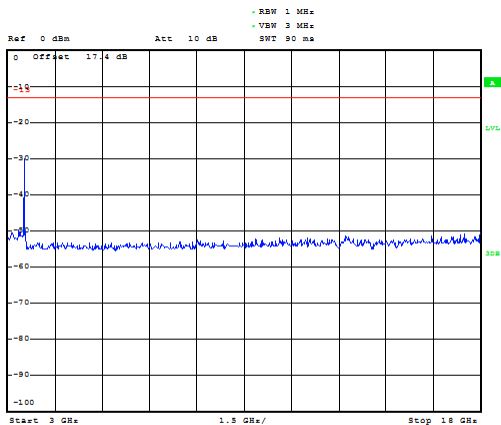
LTE Band 4 15MHz CH-High 1GHz~3GHz



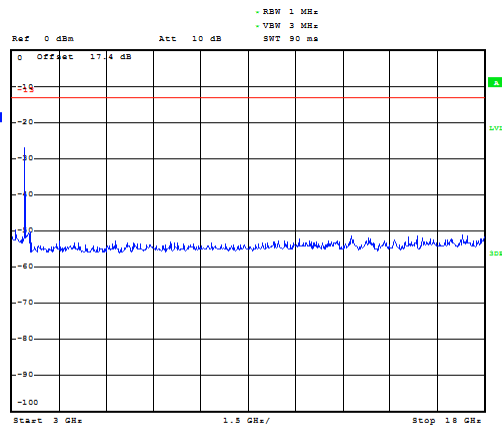
LTE Band 4 20MHz CH-Low 1GHz~3GHz



LTE Band 4 15MHz CH-High 3GHz~18GHz

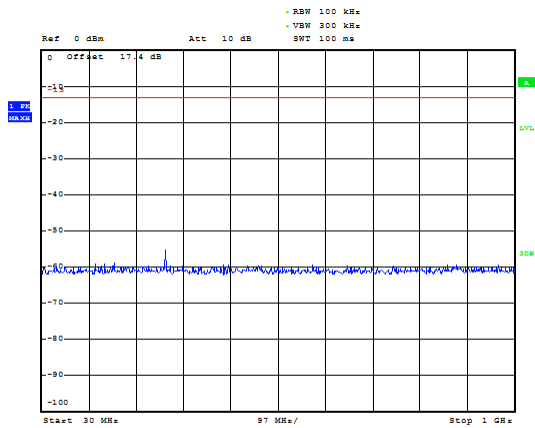


LTE Band 4 20MHz CH-Low 3GHz~18GHz

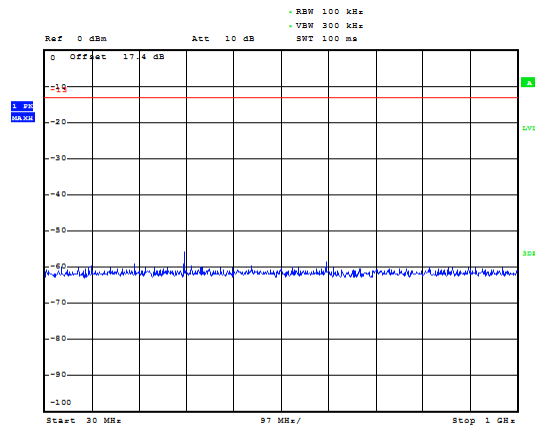




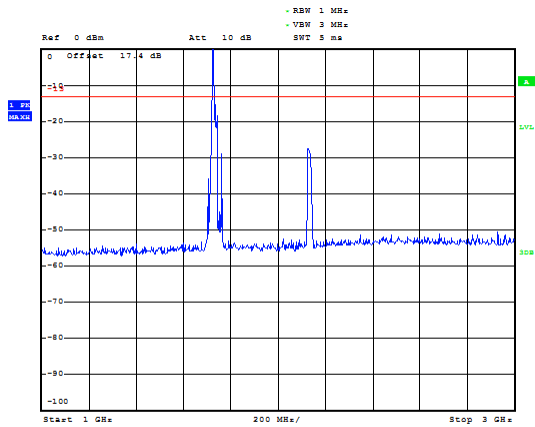
LTE Band 4 20MHz CH-Middle 30MHz~1GHz



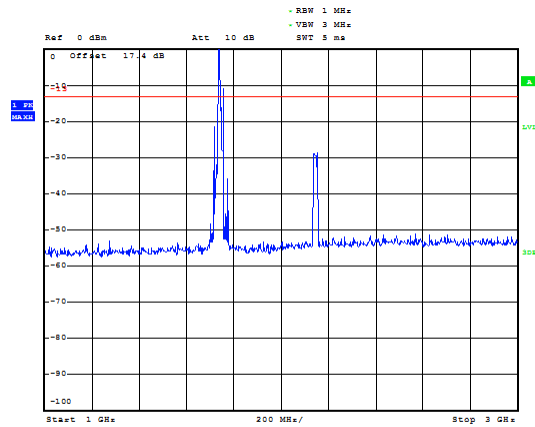
LTE Band 4 20MHz CH-High 30MHz~1GHz



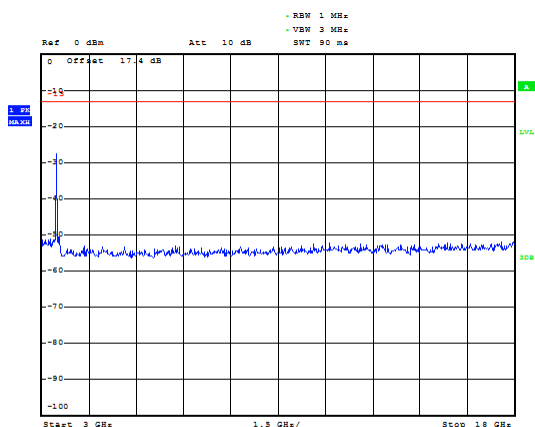
LTE Band 4 20MHz CH-Middle 1GHz~3GHz



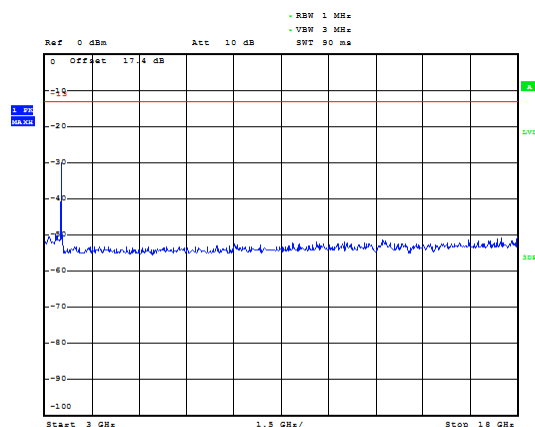
LTE Band 4 20MHz CH-High 1GHz~3GHz



LTE Band 4 20MHz CH-Middle 3GHz~18GHz

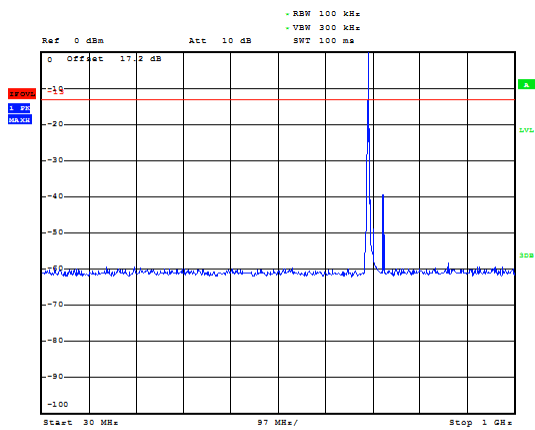


LTE Band 4 20MHz CH-High 3GHz~18GHz

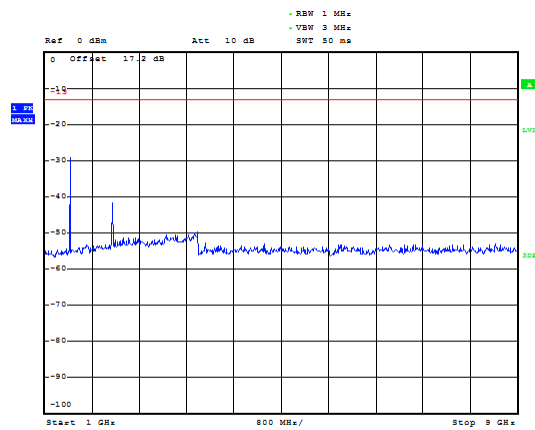




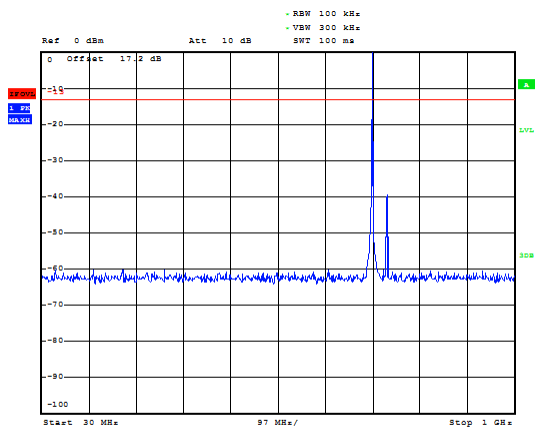
LTE Band 12 1.4MHz CH-Low 30MHz~1GHz



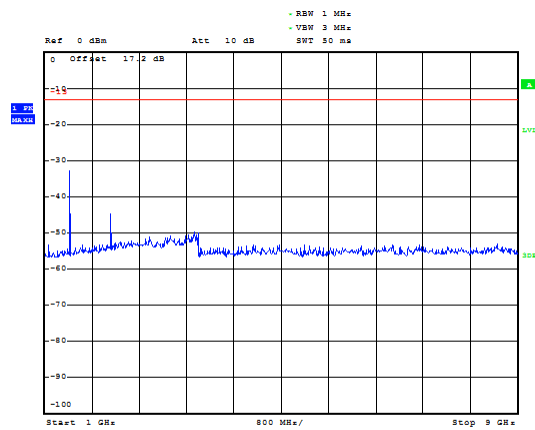
LTE Band 12 1.4MHz CH-Low 1GHz~9GHz



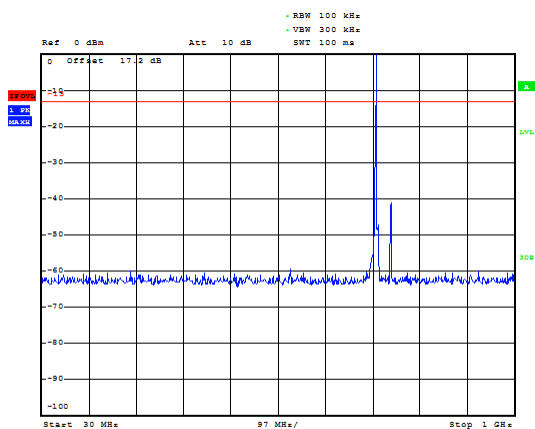
LTE Band 12 1.4MHz CH- Middle 30MHz~1GHz



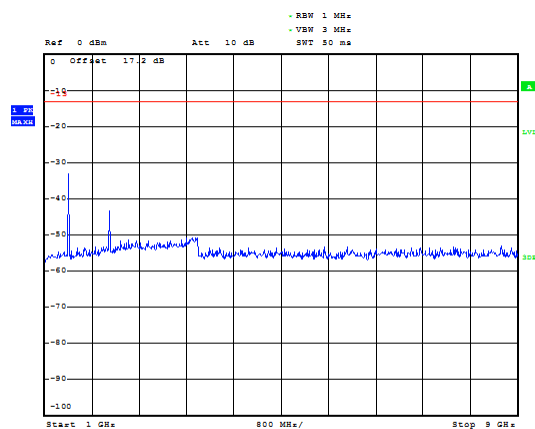
LTE Band 12 1.4MHz CH- Middle 1GHz~9GHz



LTE Band 12 1.4MHz CH-High 30MHz~1GHz

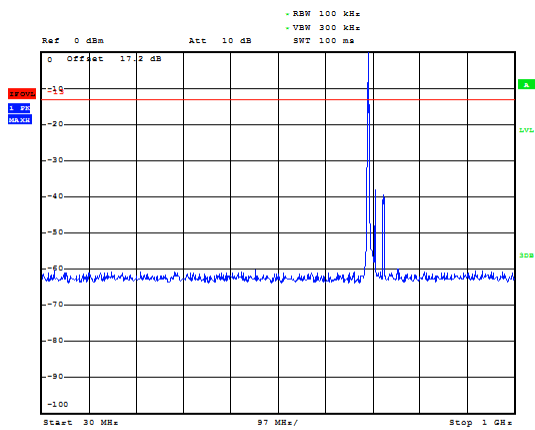


LTE Band 12 1.4MHz CH-High 1GHz~9GHz

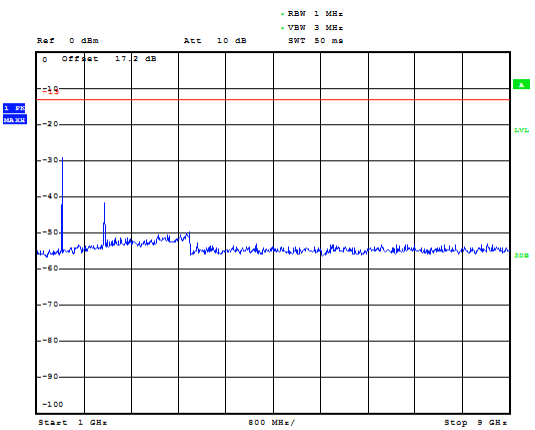




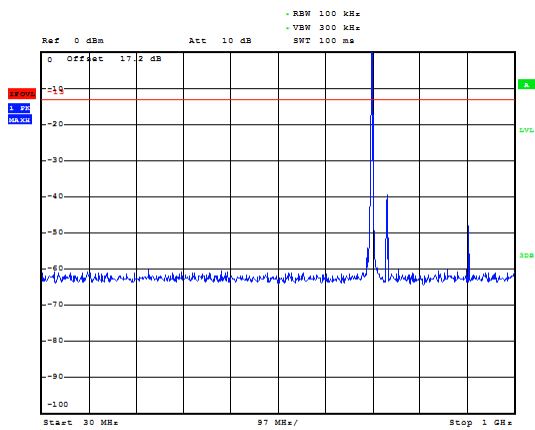
LTE Band 12 3MHz CH-Low 30MHz~1GHz



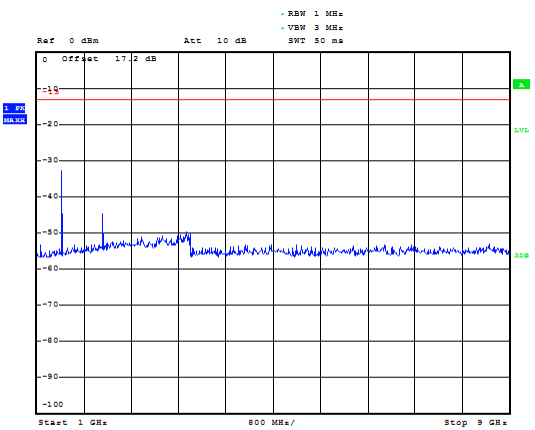
LTE Band 12 3MHz CH-Low 1GHz~9GHz



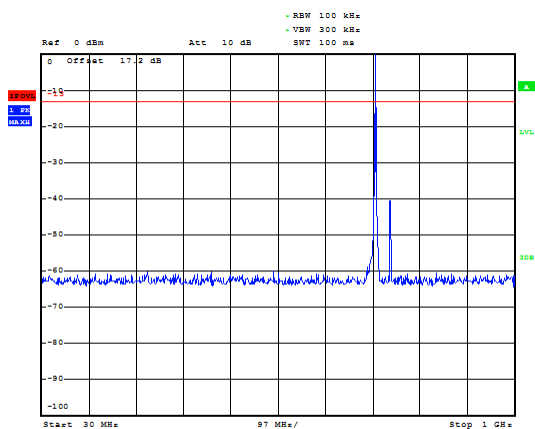
LTE Band 12 3MHz CH- Middle 30MHz~1GHz



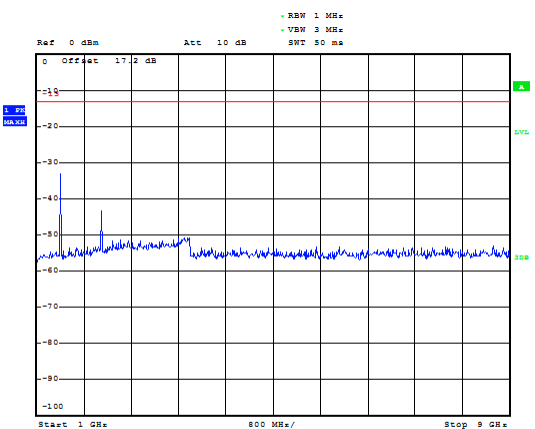
LTE Band 12 3MHz CH- Middle 1GHz~9GHz



LTE Band 12 3MHz CH-High 30MHz~1GHz

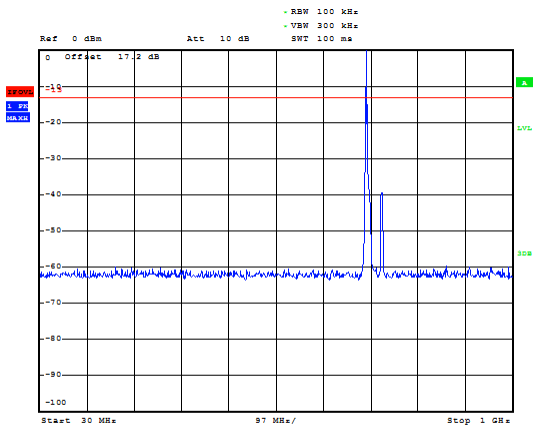


LTE Band 12 3MHz CH-High 1GHz~9GHz

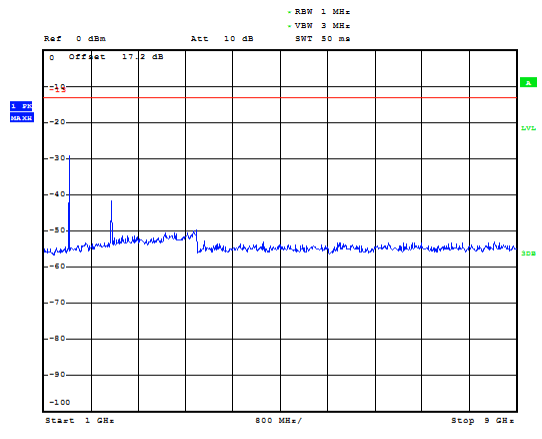




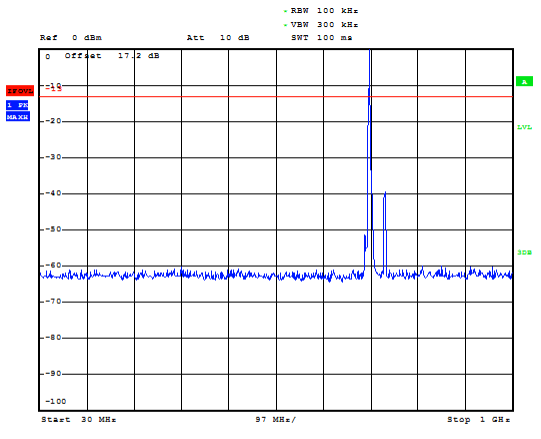
LTE Band 12 5MHz CH-Low 30MHz~1GHz



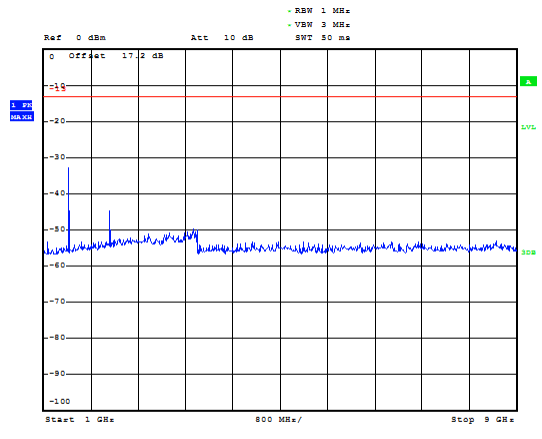
LTE Band 12 5MHz CH-Low 1GHz~9GHz



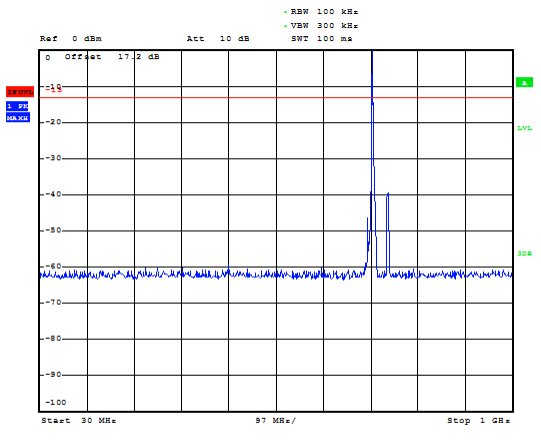
LTE Band 12 5MHz CH- Middle 30MHz~1GHz



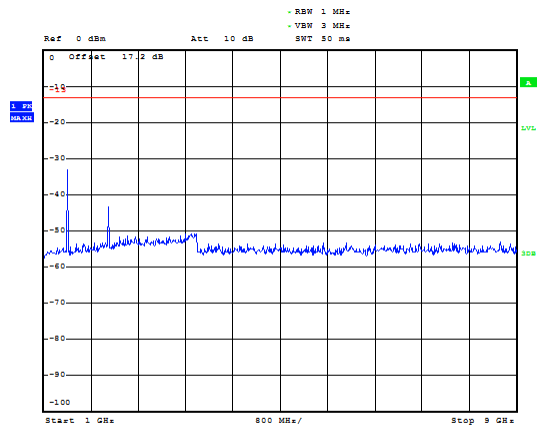
LTE Band 12 5MHz CH- Middle 1GHz~9GHz



LTE Band 12 5MHz CH-High 30MHz~1GHz

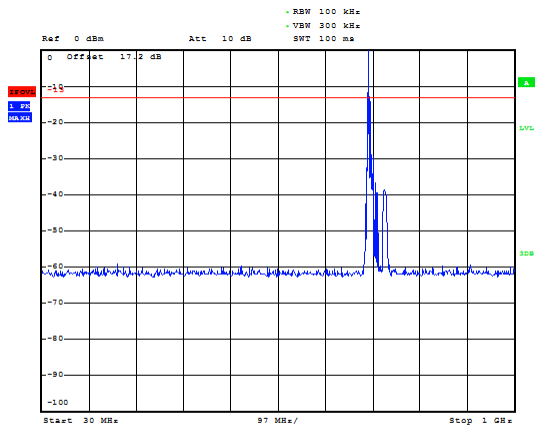


LTE Band 12 5MHz CH-High 1GHz~9GHz

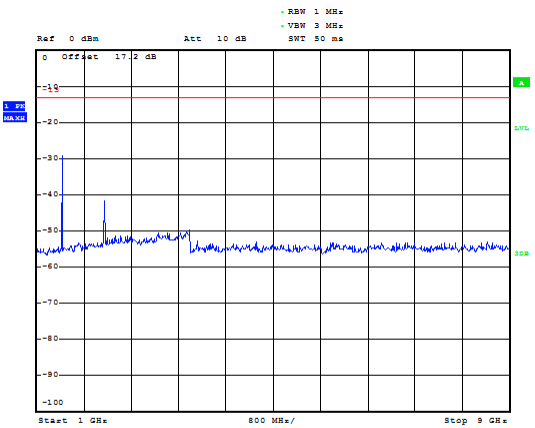




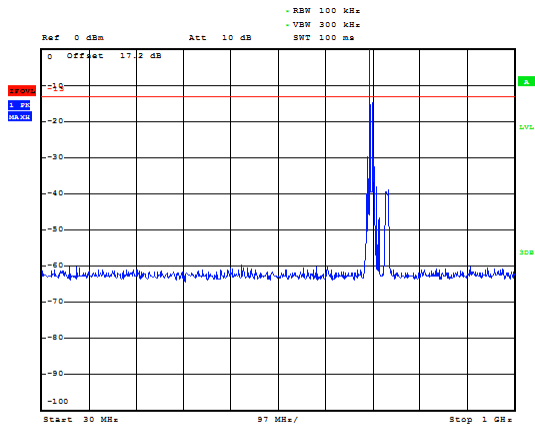
LTE Band 12 10MHz CH-Low 30MHz~1GHz



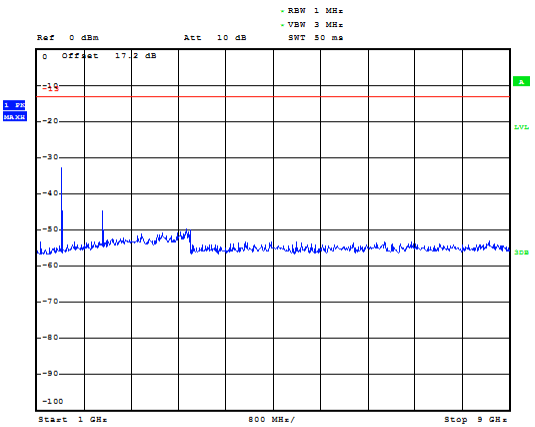
LTE Band 12 10MHz CH-Low 1GHz~9GHz



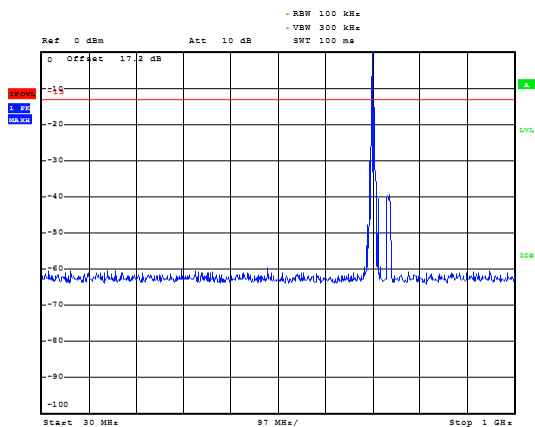
LTE Band 12 10MHz CH- Middle 30MHz~1GHz



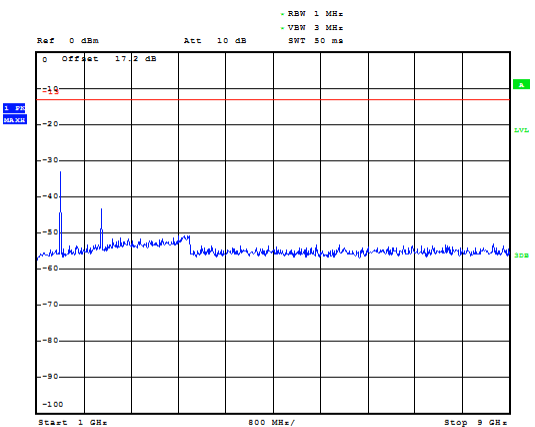
LTE Band 12 10MHz CH- Middle 1GHz~9GHz



LTE Band 12 10MHz CH-High 30MHz~1GHz

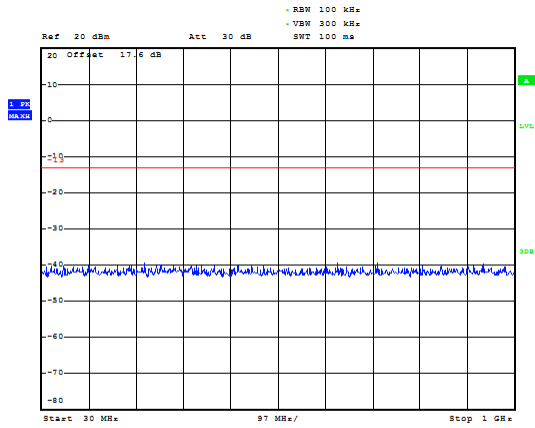


LTE Band 12 10MHz CH-High 1GHz~9GHz

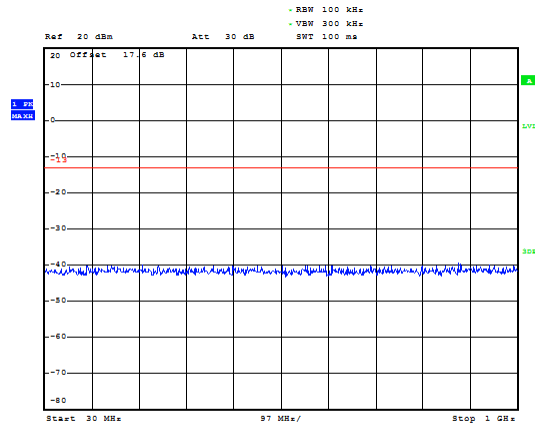




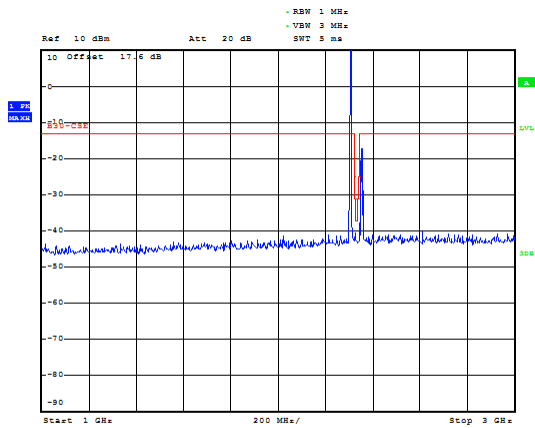
LTE Band 30 5MHz CH-Low 30MHz~1GHz



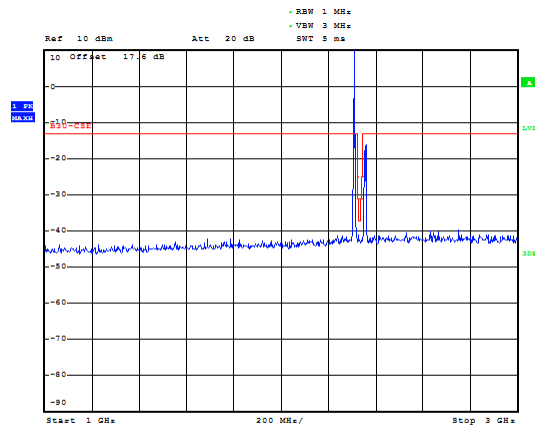
LTE Band 30 5MHz CH-Middle 30MHz~1GHz



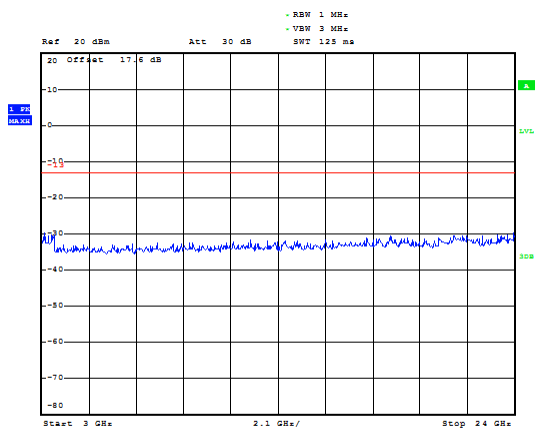
LTE Band 30 5MHz CH-Low 1GHz~3GHz



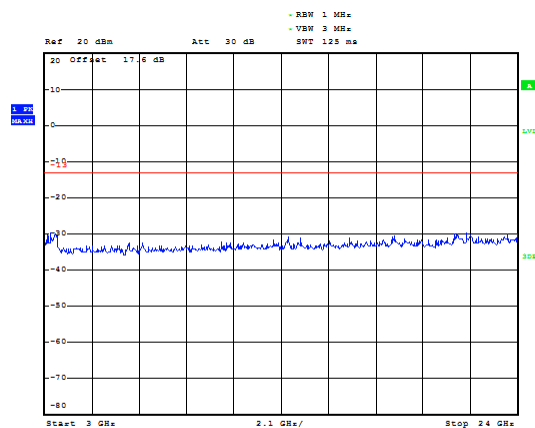
LTE Band 30 5MHz CH-Middle 1GHz~3GHz



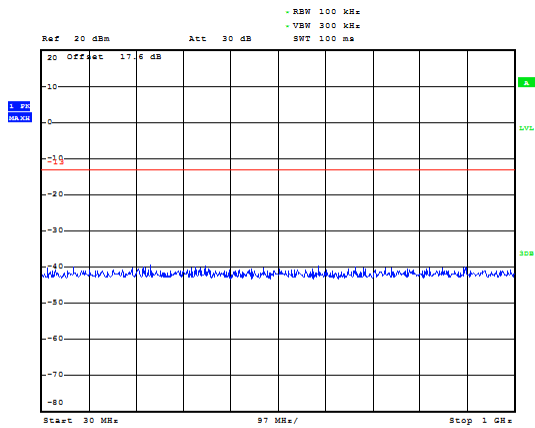
LTE Band 30 5MHz CH-Low 3GHz~24GHz



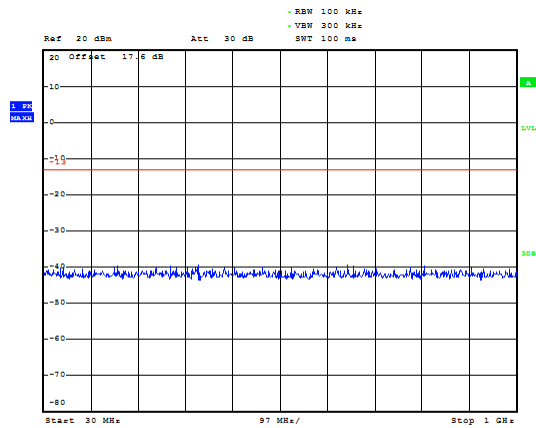
LTE Band 30 5MHz CH-Middle 3GHz~24GHz



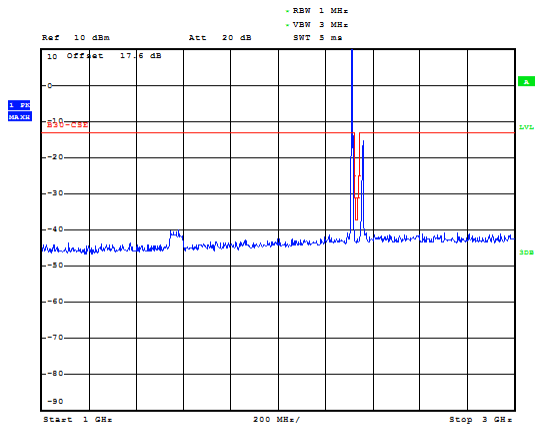
LTE Band 30 5MHz CH-High 30MHz~1GHz



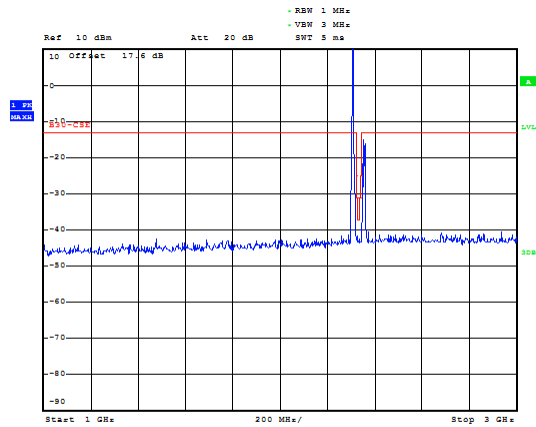
LTE Band 30 10MHz CH- Middle 30MHz~1GHz



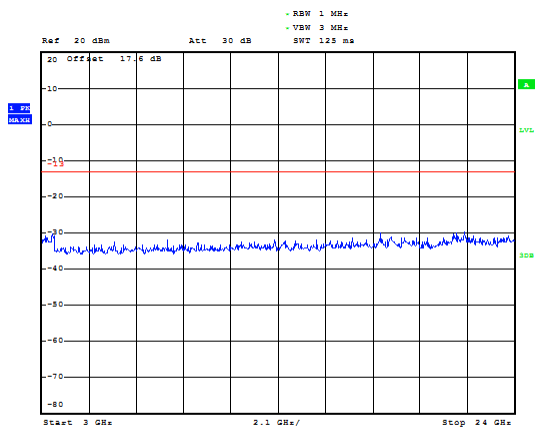
LTE Band 30 5MHz CH-High 1GHz~3GHz



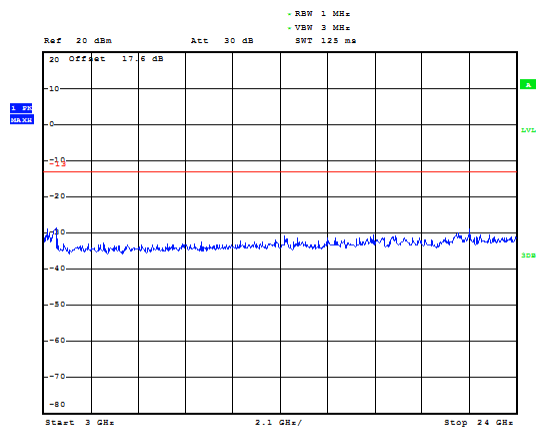
LTE Band 30 10MHz CH- Middle 1GHz~3GHz



LTE Band 30 5MHz CH-High 3GHz~24GHz



LTE Band 30 10MHz CH Middle 3GHz~24GHz



If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.

The signal beyond the limit is carrier in the following plots.

Test Data File Name	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
WCDMA B4_CHLOW_3-18GHz	3425.0	-30.551	-13	17.551
WCDMA B4_CHMID_3-18GHz	3468.4	-30.274	-13	17.274
B4_CHLOW_1.4M_RB1_1-3GHz	2113.1	-29.954	-13	16.954
B4_CHMID_1.4M_RB1_1-3GHz	2131.6	-30.341	-13	17.341
B4_CHHIGH_1.4M_RB1_1-3GHz	2150.9	-29.847	-13	16.847
B4_CHLOW_3M_RB1_1-3GHz	2109.3	-28.261	-13	15.261
B4_CHMID_3M_RB1_1-3GHz	2130.0	-27.294	-13	14.294
B4_CHHIGH_3M_RB1_1-3GHz	2154.2	-29.597	-13	16.597
B4_CHLOW_5M_RB1_1-3GHz	2115.4	-28.661	-13	15.661
B4_CHMID_5M_RB1_1-3GHz	2139.1	-28.606	-13	15.606
B4_CHHIGH_5M_RB1_1-3GHz	2151.8	-29.68	-13	16.68
B4_CHLOW_10M_RB1_1-3GHz	2112.8	-29.33	-13	16.33
B4_CHMID_10M_RB1_1-3GHz	2132.1	-29.559	-13	16.559
B4_CHHIGH_10M_RB1_1-3GHz	2153.8	-28.361	-13	15.361
B4_CHLOW_15M_RB1_1-3GHz	2120.0	-28.057	-13	15.057
B4_CHMID_15M_RB1_1-3GHz	2134.5	-27.85	-13	14.85
B4_CHHIGH_15M_RB1_1-3GHz	2144.4	-28.325	-13	15.325
B4_CHLOW_20M_RB1_1-3GHz	2121.1	-29.038	-13	16.038
B4_CHMID_20M_RB1_1-3GHz	2136.4	-28.959	-13	15.959
B4_CHHIGH_20M_RB1_1-3GHz	2146.7	-29.418	-13	16.418
B12_CHLOW_1.4M_RB1_1-9GHz	1353.8	-29.342	-13	16.342
B12_CHMID_1.4M_RB1_1-9GHz	1363.5	-32.16	-13	19.16
B12_CHHIGH_1.4M_RB1_1-9GHz	1375.6	-33.044	-13	20.044
B12_CHLOW_3M_RB1_1-9GHz	1359.6	-29.342	-13	16.342
B12_CHMID_3M_RB1_1-9GHz	1365.5	-32.027	-13	19.027
B12_CHHIGH_3M_RB1_1-9GHz	1384.6	-32.757	-13	19.757
B12_CHLOW_5M_RB1_1-9GHz	1366.1	-29.084	-13	16.084
B12_CHMID_5M_RB1_1-9GHz	1375.8	-31.902	-13	18.902
B12_CHHIGH_5M_RB1_1-9GHz	1387.9	-32.786	-13	19.786
B12_CHLOW_10M_RB1_1-9GHz	1371.9	-29.077	-13	16.077
B12_CHMID_10M_RB1_1-9GHz	1377.8	-31.769	-13	18.769
B12_CHHIGH_10M_RB1_1-9GHz	1396.9	-32.487	-13	19.487
B30_CHLOW_5M_RB1_1-9GHz	3624.5	-28.313	-13	15.313
B30_CHMID_5M_RB1_1-9GHz	1561.1	-30.85	-13	17.85
B30_CHHIGH_5M_RB1_1-9GHz	1576.7	-27.683	-13	14.683
B30_10M_RB1_1-9GHz	1555.3	-29.193	-13	16.193

5.8 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

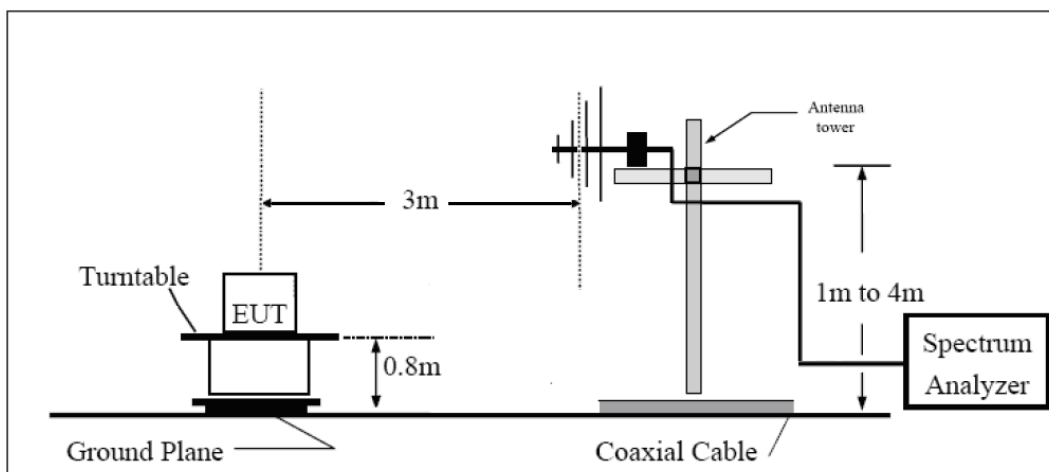
1. The testing follows FCC KDB 971168 v03 Section 5.8 and ANSI/TIA-603-E (2016).
2. The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, 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).
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:

$$\text{Power(EIRP)} = \text{PMea} - \text{PAg} - \text{Pcl} + \text{Ga}$$
 The measurement results are amend as described below:

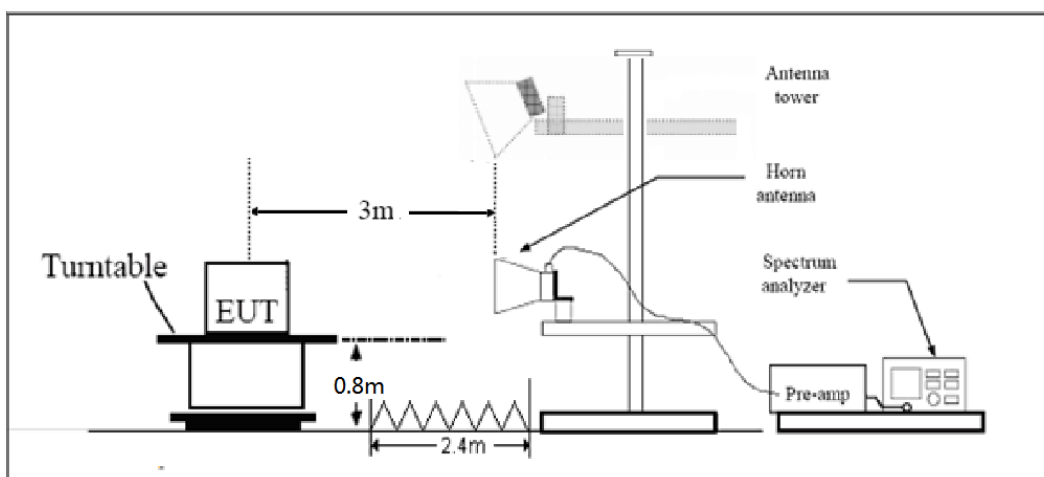
$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dBi}$.

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.

Limits

Rule Part 27.53(a) (4) (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

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) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.

Test Result
WCDMA Band IV CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3424.8	-58.75	2.6	10.15	Horizontal	-51.20	-13.00	38.20	180
3	5137.2	-53.25	2.4	11.35	Horizontal	-44.30	-13.00	31.30	270
4	6849.6	-50.26	4.5	10.85	Horizontal	-43.91	-13.00	30.91	135
5	8562.0	-49.36	5.1	11.35	Horizontal	-43.11	-13.00	30.11	45
6	10274.4	-47.63	5.3	11.95	Horizontal	-40.98	-13.00	27.98	270
7	11986.8	-47.43	5.5	13.55	Horizontal	-39.38	-13.00	26.38	180
8	13699.2	-43.66	6.3	13.75	Horizontal	-36.21	-13.00	23.21	270
9	15411.6	-46.37	6.7	13.85	Horizontal	-39.22	-13.00	26.22	135
10	17124.0	-42.13	6.8	14.25	Horizontal	-34.68	-13.00	21.68	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

WCDMA Band IV CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.2	-58.60	2.6	10.75	Horizontal	-50.45	-13.00	37.45	270
3	5197.8	-54.75	2.4	11.05	Horizontal	-46.10	-13.00	33.10	135
4	6930.4	-51.09	4.5	11.15	Horizontal	-44.44	-13.00	31.44	45
5	8663.0	-48.31	5.1	11.35	Horizontal	-42.06	-13.00	29.06	270
6	10395.6	-46.35	5.3	11.95	Horizontal	-39.70	-13.00	26.70	180
7	12128.2	-46.15	5.5	13.55	Horizontal	-38.10	-13.00	25.10	270
8	13860.8	-44.15	6.3	13.75	Horizontal	-36.70	-13.00	23.70	135
9	15593.4	-46.85	6.7	13.85	Horizontal	-39.70	-13.00	26.70	180
10	17326.0	-43.85	6.8	14.25	Horizontal	-36.40	-13.00	23.40	270

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

WCDMA Band IV CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3505.2	-57.45	2.6	10.15	Horizontal	-49.90	-13.00	36.90	135
3	5257.8	-55.55	2.4	11.05	Horizontal	-46.90	-13.00	33.90	45
4	7010.4	-49.71	4.5	11.15	Horizontal	-43.06	-13.00	30.06	270
5	8763.0	-48.46	5.1	11.35	Horizontal	-42.21	-13.00	29.21	180
6	10515.6	-45.53	5.3	11.95	Horizontal	-38.88	-13.00	25.88	270
7	12268.2	-46.25	5.5	13.55	Horizontal	-38.20	-13.00	25.20	135
8	14020.8	-43.01	6.3	13.75	Horizontal	-35.56	-13.00	22.56	225
9	15773.4	-45.77	6.7	13.85	Horizontal	-38.62	-13.00	25.62	90
10	17526.0	-43.90	6.8	14.25	Horizontal	-36.45	-13.00	23.45	315

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.4	-60.15	2.6	10.15	Horizontal	-52.60	-13.00	39.60	270
3	5131.1	-55.65	2.4	11.35	Horizontal	-46.70	-13.00	33.70	180
4	6842.8	-51.15	4.5	10.85	Horizontal	-44.80	-13.00	31.80	135
5	8553.5	-78.35	5.1	11.35	Horizontal	-72.10	-13.00	59.10	270
6	10264.2	-47.85	5.3	11.95	Horizontal	-41.20	-13.00	28.20	180
7	11974.9	-47.25	5.5	13.55	Horizontal	-39.20	-13.00	26.20	225
8	13685.6	-44.75	6.3	13.75	Horizontal	-37.30	-13.00	24.30	45
9	15396.3	-46.75	6.7	13.85	Horizontal	-39.60	-13.00	26.60	270
10	17107.0	-43.55	6.8	14.25	Horizontal	-36.10	-13.00	23.10	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3464.3	-60.05	2.6	10.75	Horizontal	-51.90	-13.00	38.90	135
3	5197.5	-56.35	2.4	11.05	Horizontal	-47.70	-13.00	34.70	270
4	6930.0	-50.05	4.5	11.15	Horizontal	-43.40	-13.00	30.40	180
5	8662.5	-47.65	5.1	11.35	Horizontal	-41.40	-13.00	28.40	225
6	10395.0	-46.25	5.3	11.95	Horizontal	-39.60	-13.00	26.60	270
7	12127.5	-48.05	5.5	13.55	Horizontal	-40.00	-13.00	27.00	180
8	13860.0	-43.75	6.3	13.75	Horizontal	-36.30	-13.00	23.30	135
9	15592.5	-46.85	6.7	13.85	Horizontal	-39.70	-13.00	26.70	270
10	17325.0	-42.75	6.8	14.25	Horizontal	-35.30	-13.00	22.30	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3507.8	-57.55	2.6	10.15	Horizontal	-50.00	-13.00	37.00	225
3	5261.6	-54.05	2.4	11.05	Horizontal	-45.40	-13.00	32.40	45
4	7017.2	-51.65	4.5	11.15	Horizontal	-45.00	-13.00	32.00	270
5	8771.5	-47.95	5.1	11.35	Horizontal	-41.70	-13.00	28.70	180
6	10525.8	-45.75	5.3	11.95	Horizontal	-39.10	-13.00	26.10	135
7	12280.1	-47.65	5.5	13.55	Horizontal	-39.60	-13.00	26.60	270
8	14034.4	-44.05	6.3	13.75	Horizontal	-36.60	-13.00	23.60	180
9	15788.7	-45.55	6.7	13.85	Horizontal	-38.40	-13.00	25.40	225
10	17543.0	-44.55	6.8	14.25	Horizontal	-37.10	-13.00	24.10	45

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3423.0	-59.35	2.6	10.15	Horizontal	-51.80	-13.00	38.80	90
3	5134.5	-55.15	2.4	11.35	Horizontal	-46.20	-13.00	33.20	270
4	6846.0	-51.55	4.5	10.85	Horizontal	-45.20	-13.00	32.20	180
5	8557.5	-48.25	5.1	11.35	Horizontal	-42.00	-13.00	29.00	135
6	10269.0	-47.95	5.3	11.95	Horizontal	-41.30	-13.00	28.30	270
7	11980.5	-47.55	5.5	13.55	Horizontal	-39.50	-13.00	26.50	180
8	13692.0	-44.95	6.3	13.75	Horizontal	-37.50	-13.00	24.50	225
9	15403.5	-46.75	6.7	13.85	Horizontal	-39.60	-13.00	26.60	45
10	17115.0	-45.25	6.8	14.25	Horizontal	-37.80	-13.00	24.80	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-58.95	2.6	10.75	Horizontal	-50.80	-13.00	37.80	180
3	5197.5	-55.35	2.4	11.05	Horizontal	-46.70	-13.00	33.70	270
4	6930.0	-51.65	4.5	11.15	Horizontal	-45.00	-13.00	32.00	45
5	8662.5	-47.35	5.1	11.35	Horizontal	-41.10	-13.00	28.10	90
6	10395.0	-47.15	5.3	11.95	Horizontal	-40.50	-13.00	27.50	135
7	12127.5	-46.85	5.5	13.55	Horizontal	-38.80	-13.00	25.80	225
8	13860.0	-44.85	6.3	13.75	Horizontal	-37.40	-13.00	24.40	180
9	15592.5	-47.85	6.7	13.85	Horizontal	-40.70	-13.00	27.70	270
10	17325.0	-44.25	6.8	14.25	Horizontal	-36.80	-13.00	23.80	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3504.8	-58.35	2.6	10.15	Horizontal	-50.80	-13.00	37.80	270
3	5256.8	-56.65	2.4	11.05	Horizontal	-48.00	-13.00	35.00	180
4	7014.0	-52.55	4.5	11.15	Horizontal	-45.90	-13.00	32.90	225
5	8767.5	-48.65	5.1	11.35	Horizontal	-42.40	-13.00	29.40	45
6	10521.0	-46.55	5.3	11.95	Horizontal	-39.90	-13.00	26.90	90
7	12274.5	-48.05	5.5	13.55	Horizontal	-40.00	-13.00	27.00	180
8	14028.0	-44.15	6.3	13.75	Horizontal	-36.70	-13.00	23.70	270
9	15781.5	-46.25	6.7	13.85	Horizontal	-39.10	-13.00	26.10	135
10	17535.0	-44.55	6.8	14.25	Horizontal	-37.10	-13.00	24.10	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3425.0	-58.65	2.6	10.15	Horizontal	-51.10	-13.00	38.10	225
3	5131.1	-56.15	2.4	11.35	Horizontal	-47.20	-13.00	34.20	45
4	6850.0	-49.85	4.5	10.85	Horizontal	-43.50	-13.00	30.50	90
5	8562.5	-49.05	5.1	11.35	Horizontal	-42.80	-13.00	29.80	180
6	10275.0	-47.55	5.3	11.95	Horizontal	-40.90	-13.00	27.90	270
7	11987.5	-47.05	5.5	13.55	Horizontal	-39.00	-13.00	26.00	180
8	13700.0	-45.65	6.3	13.75	Horizontal	-38.20	-13.00	25.20	225
9	15412.5	-46.75	6.7	13.85	Horizontal	-39.60	-13.00	26.60	45
10	17125.0	-44.45	6.8	14.25	Horizontal	-37.00	-13.00	24.00	90

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3460.5	-60.15	2.6	10.75	Horizontal	-52.00	-13.00	39.00	180
3	5191.5	-55.25	2.4	11.05	Horizontal	-46.60	-13.00	33.60	135
4	6930.0	-52.05	4.5	11.15	Horizontal	-45.40	-13.00	32.40	270
5	8662.5	-47.15	5.1	11.35	Horizontal	-40.90	-13.00	27.90	180
6	10395.0	-46.85	5.3	11.95	Horizontal	-40.20	-13.00	27.20	225
7	12127.5	-47.05	5.5	13.55	Horizontal	-39.00	-13.00	26.00	45
8	13860.0	-44.45	6.3	13.75	Horizontal	-37.00	-13.00	24.00	90
9	15592.5	-47.35	6.7	13.85	Horizontal	-40.20	-13.00	27.20	270
10	17325.0	-43.75	6.8	14.25	Horizontal	-36.30	-13.00	23.30	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3500.6	-59.85	2.6	10.15	Horizontal	-52.30	-13.00	39.30	225
3	5251.1	-54.25	2.4	11.05	Horizontal	-45.60	-13.00	32.60	45
4	7010.0	-52.35	4.5	11.15	Horizontal	-45.70	-13.00	32.70	135
5	8762.5	-48.55	5.1	11.35	Horizontal	-42.30	-13.00	29.30	180
6	10515.0	-46.55	5.3	11.95	Horizontal	-39.90	-13.00	26.90	225
7	12267.5	-46.85	5.5	13.55	Horizontal	-38.80	-13.00	25.80	45
8	14020.0	-44.25	6.3	13.75	Horizontal	-36.80	-13.00	23.80	90
9	15772.5	-45.55	6.7	13.85	Horizontal	-38.40	-13.00	25.40	270
10	17525.0	-44.75	6.8	14.25	Horizontal	-37.30	-13.00	24.30	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3430.0	-59.95	2.6	10.15	Horizontal	-52.40	-13.00	39.40	225
3	5131.9	-55.65	2.4	11.35	Horizontal	-46.70	-13.00	33.70	45
4	6860.0	-51.25	4.5	10.85	Horizontal	-44.90	-13.00	31.90	90
5	8575.0	-48.05	5.1	11.35	Horizontal	-41.80	-13.00	28.80	180
6	10290.0	-47.65	5.3	11.95	Horizontal	-41.00	-13.00	28.00	270
7	12005.0	-47.25	5.5	13.55	Horizontal	-39.20	-13.00	26.20	135
8	13720.0	-44.85	6.3	13.75	Horizontal	-37.40	-13.00	24.40	180
9	15435.0	-46.35	6.7	13.85	Horizontal	-39.20	-13.00	26.20	225
10	17150.0	-43.95	6.8	14.25	Horizontal	-36.50	-13.00	23.50	45

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3456.0	-60.25	2.6	10.75	Horizontal	-52.10	-13.00	39.10	90
3	5184.4	-55.65	2.4	11.05	Horizontal	-47.00	-13.00	34.00	180
4	6930.0	-52.15	4.5	11.15	Horizontal	-45.50	-13.00	32.50	270
5	8662.5	-49.15	5.1	11.35	Horizontal	-42.90	-13.00	29.90	180
6	10395.0	-46.65	5.3	11.95	Horizontal	-40.00	-13.00	27.00	225
7	12127.5	-45.65	5.5	13.55	Horizontal	-37.60	-13.00	24.60	45
8	13860.0	-45.45	6.3	13.75	Horizontal	-38.00	-13.00	25.00	90
9	15592.5	-47.55	6.7	13.85	Horizontal	-40.40	-13.00	27.40	180
10	17325.0	-43.55	6.8	14.25	Horizontal	-36.10	-13.00	23.10	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3490.9	-59.05	2.6	10.15	Horizontal	-51.50	-13.00	38.50	270
3	5236.9	-54.35	2.4	11.05	Horizontal	-45.70	-13.00	32.70	180
4	7000.0	-51.95	4.5	11.15	Horizontal	-45.30	-13.00	32.30	225
5	8750.0	-47.55	5.1	11.35	Horizontal	-41.30	-13.00	28.30	45
6	10500.0	-46.45	5.3	11.95	Horizontal	-39.80	-13.00	26.80	90
7	12250.0	-46.55	5.5	13.55	Horizontal	-38.50	-13.00	25.50	180
8	14000.0	-45.58	6.3	13.75	Horizontal	-38.13	-13.00	25.13	270
9	15750.0	-46.95	6.7	13.85	Horizontal	-39.80	-13.00	26.80	45
10	17500.0	-44.75	6.8	14.25	Horizontal	-37.30	-13.00	24.30	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 4 QPSK 15MHz CH Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3435.0	-58.95	2.6	10.15	Horizontal	-51.40	-13.00	38.40	45
3	5132.6	-55.55	2.4	11.35	Horizontal	-46.60	-13.00	33.60	90
4	6870.0	-51.25	4.5	10.85	Horizontal	-44.90	-13.00	31.90	90
5	8587.5	-48.95	5.1	11.35	Horizontal	-42.70	-13.00	29.70	45
6	10305.0	-47.75	5.3	11.95	Horizontal	-41.10	-13.00	28.10	135
7	12022.5	-48.55	5.5	13.55	Horizontal	-40.50	-13.00	27.50	225
8	13740.0	-45.65	6.3	13.75	Horizontal	-38.20	-13.00	25.20	45
9	15457.5	-47.15	6.7	13.85	Horizontal	-40.00	-13.00	27.00	90
10	17175.0	-44.85	6.8	14.25	Horizontal	-37.40	-13.00	24.40	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-59.95	2.6	10.75	Horizontal	-51.80	-13.00	38.80	135
3	5197.5	-55.55	2.4	11.05	Horizontal	-46.90	-13.00	33.90	45
4	6930.0	-51.85	4.5	11.15	Horizontal	-45.20	-13.00	32.20	90
5	8662.5	-48.05	5.1	11.35	Horizontal	-41.80	-13.00	28.80	180
6	10395.0	-46.05	5.3	11.95	Horizontal	-39.40	-13.00	26.40	270
7	12127.5	-47.75	5.5	13.55	Horizontal	-39.70	-13.00	26.70	225
8	13860.0	-44.35	6.3	13.75	Horizontal	-36.90	-13.00	23.90	135
9	15592.5	-45.95	6.7	13.85	Horizontal	-38.80	-13.00	25.80	225
10	17325.0	-43.95	6.8	14.25	Horizontal	-36.50	-13.00	23.50	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3481.5	-59.25	2.6	10.15	Horizontal	-51.70	-13.00	38.70	90
3	5222.3	-55.65	2.4	11.05	Horizontal	-47.00	-13.00	34.00	135
4	6990.0	-52.55	4.5	11.15	Horizontal	-45.90	-13.00	32.90	225
5	8737.5	-49.35	5.1	11.35	Horizontal	-43.10	-13.00	30.10	45
6	10485.0	-47.05	5.3	11.95	Horizontal	-40.40	-13.00	27.40	90
7	12232.5	-47.65	5.5	13.55	Horizontal	-39.60	-13.00	26.60	135
8	13980.0	-45.85	6.3	13.75	Horizontal	-38.40	-13.00	25.40	135
9	15727.5	-46.65	6.7	13.85	Horizontal	-39.50	-13.00	26.50	90
10	17475.0	-45.05	6.8	14.25	Horizontal	-37.60	-13.00	24.60	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3440.0	-59.55	2.6	10.15	Horizontal	-52.00	-13.00	39.00	135
3	5133.4	-55.15	2.4	11.35	Horizontal	-46.20	-13.00	33.20	90
4	6880.0	-51.85	4.5	10.85	Horizontal	-45.50	-13.00	32.50	45
5	8600.0	-48.65	5.1	11.35	Horizontal	-42.40	-13.00	29.40	90
6	10320.0	-47.75	5.3	11.95	Horizontal	-41.10	-13.00	28.10	90
7	12040.0	-46.95	5.5	13.55	Horizontal	-38.90	-13.00	25.90	135
8	13760.0	-44.85	6.3	13.75	Horizontal	-37.40	-13.00	24.40	225
9	15480.0	-47.55	6.7	13.85	Horizontal	-40.40	-13.00	27.40	135
10	17200.0	-44.35	6.8	14.25	Horizontal	-36.90	-13.00	23.90	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-59.56	2.6	10.75	Horizontal	-51.41	-13.00	38.41	90
3	5170.9	-54.82	2.4	11.05	Horizontal	-46.17	-13.00	33.17	45
4	6930.0	-52.45	4.5	11.15	Horizontal	-45.80	-13.00	32.80	45
5	8662.5	-48.65	5.1	11.35	Horizontal	-42.40	-13.00	29.40	180
6	10395.0	-46.55	5.3	11.95	Horizontal	-39.90	-13.00	26.90	270
7	12127.5	-46.95	5.5	13.55	Horizontal	-38.90	-13.00	25.90	225
8	13860.0	-44.55	6.3	13.75	Horizontal	-37.10	-13.00	24.10	135
9	15592.5	-46.95	6.7	13.85	Horizontal	-39.80	-13.00	26.80	180
10	17325.0	-44.95	6.8	14.25	Horizontal	-37.50	-13.00	24.50	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3490.0	-58.25	2.6	10.15	Horizontal	-50.70	-13.00	37.70	45
3	5208.4	-54.85	2.4	11.05	Horizontal	-46.20	-13.00	33.20	225
4	6980.0	-52.05	4.5	11.15	Horizontal	-45.40	-13.00	32.40	135
5	8725.0	-48.85	5.1	11.35	Horizontal	-42.60	-13.00	29.60	90
6	10470.0	-45.65	5.3	11.95	Horizontal	-39.00	-13.00	26.00	45
7	12215.0	-47.55	5.5	13.55	Horizontal	-39.50	-13.00	26.50	90
8	13960.0	-44.75	6.3	13.75	Horizontal	-37.30	-13.00	24.30	45
9	15705.0	-45.85	6.7	13.85	Horizontal	-38.70	-13.00	25.70	135
10	17450.0	-44.45	6.8	14.25	Horizontal	-37.00	-13.00	24.00	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 1.4MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1398.3	-54.53	2.00	10.15	Horizontal	-48.53	-13.00	35.53	135
3	2097.8	-56.17	2.50	11.35	Horizontal	-49.47	-13.00	36.47	180
4	2798.8	-54.01	4.20	10.85	Horizontal	-49.51	-13.00	36.51	90
5	3498.5	-54.26	5.20	11.35	Horizontal	-50.26	-13.00	37.26	135
6	4198.2	-52.44	5.50	11.95	Horizontal	-48.14	-13.00	35.14	270
7	4897.9	-53.97	5.70	13.55	Horizontal	-48.27	-13.00	35.27	315
8	5597.6	-51.88	6.30	13.75	Horizontal	-46.58	-13.00	33.58	315
9	6297.3	-49.14	6.80	13.85	Horizontal	-44.24	-13.00	31.24	270
10	6997.0	-48.23	6.90	14.25	Horizontal	-43.03	-13.00	30.03	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1414.0	-56.20	2.00	10.75	Horizontal	-49.60	-13.00	36.60	135
3	2120.8	-54.03	2.51	11.05	Horizontal	-47.64	-13.00	34.64	225
4	2836.0	-54.29	4.20	11.15	Horizontal	-49.49	-13.00	36.49	270
5	3537.5	-53.41	5.20	11.15	Horizontal	-49.61	-13.00	36.61	315
6	4245.0	-52.98	5.50	11.95	Horizontal	-48.68	-13.00	35.68	90
7	4952.5	-52.14	5.70	13.55	Horizontal	-46.44	-13.00	33.44	225
8	5660.0	-51.82	6.30	13.75	Horizontal	-46.52	-13.00	33.52	180
9	6367.5	-49.81	6.80	13.85	Horizontal	-44.91	-13.00	31.91	45
10	7075.0	-47.33	6.90	14.25	Horizontal	-42.13	-13.00	29.13	315

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 1.4MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1429.5	-51.62	2.00	10.15	Horizontal	-45.62	-13.00	32.62	135
3	2144.8	-43.02	2.51	11.05	Horizontal	-36.63	-13.00	23.63	135
4	2861.2	-55.10	4.20	11.15	Horizontal	-50.30	-13.00	37.30	315
5	3576.5	-52.99	5.20	11.15	Horizontal	-49.19	-13.00	36.19	0
6	4291.8	-52.04	5.50	11.95	Horizontal	-47.74	-13.00	34.74	135
7	5007.1	-51.32	5.70	13.55	Horizontal	-45.62	-13.00	32.62	270
8	5722.4	-50.06	6.30	13.75	Horizontal	-44.76	-13.00	31.76	135
9	6437.7	-49.24	6.80	13.85	Horizontal	-44.34	-13.00	31.34	225
10	7153.0	-45.25	6.90	14.25	Horizontal	-40.05	-13.00	27.05	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 3MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1398.5	-54.55	2.00	10.15	Horizontal	-48.55	-13.00	35.55	135
3	2204.3	-54.04	2.51	11.35	Horizontal	-47.35	-13.00	34.35	180
4	2802.0	-55.14	4.20	10.85	Horizontal	-50.64	-13.00	37.64	315
5	3502.5	-53.37	5.20	11.35	Horizontal	-49.37	-13.00	36.37	45
6	4203.0	-53.07	5.50	11.95	Horizontal	-48.77	-13.00	35.77	90
7	4903.5	-52.92	5.70	13.55	Horizontal	-47.22	-13.00	34.22	225
8	5604.0	-51.41	6.30	13.75	Horizontal	-46.11	-13.00	33.11	180
9	6304.5	-49.45	6.80	13.85	Horizontal	-44.55	-13.00	31.55	45
10	7005.0	-48.89	6.90	14.25	Horizontal	-43.69	-13.00	30.69	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 3MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1412.5	-58.45	2.00	10.75	Horizontal	-51.85	-13.00	38.85	90
3	2118.3	-54.33	2.51	11.05	Horizontal	-47.94	-13.00	34.94	225
4	2830.0	-55.10	4.20	11.15	Horizontal	-50.30	-13.00	37.30	225
5	3537.5	-53.78	5.20	11.15	Horizontal	-49.98	-13.00	36.98	270
6	4245.0	-53.14	5.50	11.95	Horizontal	-48.84	-13.00	35.84	45
7	4952.5	-53.08	5.70	13.55	Horizontal	-47.38	-13.00	34.38	315
8	5660.0	-52.46	6.30	13.75	Horizontal	-47.16	-13.00	34.16	90
9	6367.5	-48.86	6.80	13.85	Horizontal	-43.96	-13.00	30.96	225
10	7075.0	-47.07	6.90	14.25	Horizontal	-41.87	-13.00	28.87	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 3MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1426.8	-55.20	2.00	10.15	Horizontal	-49.20	-13.00	36.20	180
3	2139.8	-39.18	2.51	11.05	Horizontal	-32.79	-13.00	19.79	135
4	2858.0	-55.41	4.20	11.15	Horizontal	-50.61	-13.00	37.61	315
5	3572.5	-53.27	5.20	11.15	Horizontal	-49.47	-13.00	36.47	45
6	4287.0	-52.61	5.50	11.95	Horizontal	-48.31	-13.00	35.31	315
7	5001.5	-51.36	5.70	13.55	Horizontal	-45.66	-13.00	32.66	270
8	5716.0	-50.91	6.30	13.75	Horizontal	-45.61	-13.00	32.61	135
9	6430.5	-49.18	6.80	13.85	Horizontal	-44.28	-13.00	31.28	270
10	7145.0	-45.99	6.90	14.25	Horizontal	-40.79	-13.00	27.79	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 5MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1398.3	-53.95	2.00	10.15	Horizontal	-47.95	-13.00	34.95	135
3	2147.3	-56.07	2.50	11.35	Horizontal	-49.37	-13.00	36.37	135
4	2806.0	-54.85	4.20	10.85	Horizontal	-50.35	-13.00	37.35	270
5	3507.5	-53.51	5.20	11.35	Horizontal	-49.51	-13.00	36.51	135
6	4209.0	-53.00	5.50	11.95	Horizontal	-48.70	-13.00	35.70	270
7	4910.5	-53.74	5.70	13.55	Horizontal	-48.04	-13.00	35.04	315
8	5612.0	-51.40	6.30	13.75	Horizontal	-46.10	-13.00	33.10	315
9	6313.5	-49.96	6.80	13.85	Horizontal	-45.06	-13.00	32.06	270
10	7015.0	-48.17	6.90	14.25	Horizontal	-42.97	-13.00	29.97	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1410.5	-59.13	2.00	10.75	Horizontal	-52.53	-13.00	39.53	315
3	2122.5	-55.82	2.51	11.05	Horizontal	-49.43	-13.00	36.43	135
4	2830.0	-55.39	4.20	11.15	Horizontal	-50.59	-13.00	37.59	270
5	3537.5	-54.31	5.20	11.15	Horizontal	-50.51	-13.00	37.51	315
6	4245.0	-52.90	5.50	11.95	Horizontal	-48.60	-13.00	35.60	90
7	4952.5	-53.06	5.70	13.55	Horizontal	-47.36	-13.00	34.36	225
8	5660.0	-52.15	6.30	13.75	Horizontal	-46.85	-13.00	33.85	270
9	6367.5	-49.89	6.80	13.85	Horizontal	-44.99	-13.00	31.99	315
10	7075.0	-47.52	6.90	14.25	Horizontal	-42.32	-13.00	29.32	315

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 5MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1422.5	-53.25	2.00	10.15	Horizontal	-47.25	-13.00	34.25	135
3	2134.0	-41.96	2.51	11.05	Horizontal	-35.57	-13.00	22.57	135
4	2854.0	-54.69	4.20	11.15	Horizontal	-49.89	-13.00	36.89	270
5	3567.5	-52.74	5.20	11.15	Horizontal	-48.94	-13.00	35.94	270
6	4281.0	-52.51	5.50	11.95	Horizontal	-48.21	-13.00	35.21	45
7	4994.5	-52.11	5.70	13.55	Horizontal	-46.41	-13.00	33.41	315
8	5708.0	-50.43	6.30	13.75	Horizontal	-45.13	-13.00	32.13	315
9	6421.5	-49.26	6.80	13.85	Horizontal	-44.36	-13.00	31.36	90
10	7135.0	-46.26	6.90	14.25	Horizontal	-41.06	-13.00	28.06	225

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 10MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1399.3	-54.71	2.00	10.15	Horizontal	-48.71	-13.00	35.71	135
3	2098.5	-56.18	2.51	11.35	Horizontal	-49.49	-13.00	36.49	90
4	2816.0	-53.41	4.20	10.85	Horizontal	-48.91	-13.00	35.91	315
5	3520.0	-54.30	5.20	11.35	Horizontal	-50.30	-13.00	37.30	180
6	4224.0	-52.50	5.50	11.95	Horizontal	-48.20	-13.00	35.20	225
7	4928.0	-52.50	5.70	13.55	Horizontal	-46.80	-13.00	33.80	180
8	5632.0	-50.60	6.30	13.75	Horizontal	-45.30	-13.00	32.30	45
9	6336.0	-49.50	6.80	13.85	Horizontal	-44.60	-13.00	31.60	315
10	7040.0	-48.30	6.90	14.25	Horizontal	-43.10	-13.00	30.10	270

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

LTE Band 12 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1406.0	-57.00	2.00	10.75	Horizontal	-50.40	-13.00	37.40	135
3	2129.5	-56.58	2.51	11.05	Horizontal	-50.19	-13.00	37.19	225
4	2830.0	-53.85	4.20	11.15	Horizontal	-49.05	-13.00	36.05	135
5	3537.5	-54.00	5.20	11.15	Horizontal	-50.20	-13.00	37.20	315
6	4245.0	-52.00	5.50	11.95	Horizontal	-47.70	-13.00	34.70	270
7	4952.5	-51.70	5.70	13.55	Horizontal	-46.00	-13.00	33.00	135
8	5660.0	-50.20	6.30	13.75	Horizontal	-44.90	-13.00	31.90	270
9	6367.5	-48.90	6.80	13.85	Horizontal	-44.00	-13.00	31.00	315
10	7075.0	-47.80	6.90	14.25	Horizontal	-42.60	-13.00	29.60	315

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.



LTE Band 12 QPSK 10MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1412.8	-58.46	2.00	10.15	Horizontal	-52.46	-13.00	39.46	135
3	2120.0	-54.09	2.51	11.05	Horizontal	-47.70	-13.00	34.70	315
4	2844.0	-55.54	4.20	11.15	Horizontal	-50.74	-13.00	37.74	315
5	3555.0	-53.80	5.20	11.15	Horizontal	-50.00	-13.00	37.00	90
6	4266.0	-51.60	5.50	11.95	Horizontal	-47.30	-13.00	34.30	225
7	4977.0	-51.50	5.70	13.55	Horizontal	-45.80	-13.00	32.80	180
8	5688.0	-49.80	6.30	13.75	Horizontal	-44.50	-13.00	31.50	45
9	6399.0	-48.60	6.80	13.85	Horizontal	-43.70	-13.00	30.70	315
10	7110.0	-47.50	6.90	14.25	Horizontal	-42.30	-13.00	29.30	270

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 30 QPSK 5MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4615.0	-56.05	2.6	10.15	Horizontal	-48.50	-13.00	35.50	225
3	6922.5	-54.29	2.4	11.35	Horizontal	-45.34	-13.00	32.34	45
4	9230.0	-45.60	4.5	10.85	Horizontal	-39.25	-13.00	26.25	90
5	11537.5	-41.35	5.1	11.35	Horizontal	-35.10	-13.00	22.10	180
6	13845.0	-41.55	5.3	11.95	Horizontal	-34.90	-13.00	21.90	270
7	16152.5	-46.75	5.5	13.55	Horizontal	-38.70	-13.00	25.70	180
8	18460.0	-43.55	6.3	13.75	Horizontal	-36.10	-13.00	23.10	225
9	20767.5	-42.95	6.7	13.85	Horizontal	-35.80	-13.00	22.80	45
10	23075.0	-40.65	6.8	14.25	Horizontal	-33.20	-13.00	20.20	90

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 30 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4620.0	-55.60	2.6	10.75	Horizontal	-47.45	-13.00	34.45	180
3	6930.0	-54.99	2.4	11.05	Horizontal	-46.34	-13.00	33.34	135
4	9240.0	-44.90	4.5	11.15	Horizontal	-38.25	-13.00	25.25	270
5	11550.0	-41.95	5.1	11.35	Horizontal	-35.70	-13.00	22.70	180
6	13860.0	-42.23	5.3	11.95	Horizontal	-35.58	-13.00	22.58	225
7	16170.0	-46.95	5.5	13.55	Horizontal	-38.90	-13.00	25.90	45
8	18480.0	-43.45	6.3	13.75	Horizontal	-36.00	-13.00	23.00	90
9	20790.0	-42.75	6.7	13.85	Horizontal	-35.60	-13.00	22.60	270
10	23100.0	-41.65	6.8	14.25	Horizontal	-34.20	-13.00	21.20	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 30 QPSK 5MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4625.0	-56.00	2.6	10.15	Horizontal	-48.45	-13.00	35.45	225
3	6937.5	-55.99	2.4	11.05	Horizontal	-47.34	-13.00	34.34	45
4	9250.0	-45.15	4.5	11.15	Horizontal	-38.50	-13.00	25.50	135
5	11562.5	-42.05	5.1	11.35	Horizontal	-35.80	-13.00	22.80	180
6	13875.0	-41.85	5.3	11.95	Horizontal	-35.20	-13.00	22.20	225
7	16187.5	-47.05	5.5	13.55	Horizontal	-39.00	-13.00	26.00	45
8	18500.0	-43.95	6.3	13.75	Horizontal	-36.50	-13.00	23.50	90
9	20812.5	-43.05	6.7	13.85	Horizontal	-35.90	-13.00	22.90	270
10	23125.0	-42.55	6.8	14.25	Horizontal	-35.10	-13.00	22.10	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 30 QPSK 10MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4620.0	-55.13	2.6	10.15	Horizontal	-47.58	-13.00	34.58	225
3	6930.0	-53.19	2.4	11.35	Horizontal	-44.24	-13.00	31.24	45
4	9240.0	-45.56	4.5	10.85	Horizontal	-39.21	-13.00	26.21	90
5	11550.0	-43.92	5.1	11.35	Horizontal	-37.67	-13.00	24.67	180
6	13860.0	-43.23	5.3	11.95	Horizontal	-36.58	-13.00	23.58	270
7	16170.0	-47.35	5.5	13.55	Horizontal	-39.30	-13.00	26.30	135
8	18480.0	-43.65	6.3	13.75	Horizontal	-36.20	-13.00	23.20	180
9	20790.0	-42.25	6.7	13.85	Horizontal	-35.10	-13.00	22.10	225
10	23100.0	-41.35	6.8	14.25	Horizontal	-33.90	-13.00	20.90	45

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 30 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4620.0	-55.73	2.6	10.75	Horizontal	-47.58	-13.00	34.58	90
3	6930.0	-52.89	2.4	11.05	Horizontal	-44.24	-13.00	31.24	180
4	9240.0	-45.86	4.5	11.15	Horizontal	-39.21	-13.00	26.21	270
5	11550.0	-43.92	5.1	11.35	Horizontal	-37.67	-13.00	24.67	180
6	13860.0	-43.23	5.3	11.95	Horizontal	-36.58	-13.00	23.58	225
7	16170.0	-47.35	5.5	13.55	Horizontal	-39.30	-13.00	26.30	45
8	18480.0	-43.65	6.3	13.75	Horizontal	-36.20	-13.00	23.20	90
9	20790.0	-42.25	6.7	13.85	Horizontal	-35.10	-13.00	22.10	180
10	23100.0	-41.35	6.8	14.25	Horizontal	-33.90	-13.00	20.90	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 30 QPSK 10MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4620.0	-55.13	2.6	10.15	Horizontal	-47.58	-13.00	34.58	270
3	6930.0	-52.89	2.4	11.05	Horizontal	-44.24	-13.00	31.24	180
4	9240.0	-45.86	4.5	11.15	Horizontal	-39.21	-13.00	26.21	225
5	11550.0	-43.92	5.1	11.35	Horizontal	-37.67	-13.00	24.67	45
6	13860.0	-43.23	5.3	11.95	Horizontal	-36.58	-13.00	23.58	90
7	16170.0	-47.35	5.5	13.55	Horizontal	-39.30	-13.00	26.30	180
8	18480.0	-43.65	6.3	13.75	Horizontal	-36.20	-13.00	23.20	270
9	20790.0	-42.25	6.7	13.85	Horizontal	-35.10	-13.00	22.10	45
10	23100.0	-41.35	6.8	14.25	Horizontal	-33.90	-13.00	20.90	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113645	2017-05-14	2018-05-13
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	2017-05-14	2018-05-13
Spectrum Analyzer	Agilent	N9010A	MY47191109	2017-05-14	2018-05-13
Signal Analyzer	R&S	FSV30	100815	2017-12-17	2018-12-16
Signal generator	R&S	SMB 100A	102594	2017-05-14	2018-05-13
EMI Test Receiver	R&S	ESCI	100948	2017-05-20	2018-05-19
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2014-12-06	2019-12-05
Horn Antenna	ETS-Lindgren	3160-09	00102643	2015-01-30	2020-01-29
Climatic Chamber	Re Ce	PT-30B	20101891	2015-07-18	2018-07-17
RF Cable	Agilent	SMA 15cm	0001	2018-02-03	2018-08-02
Preamplifier	R&S	SCU18	102327	2017-06-18	2018-06-17
Software	R&S	EMC32	V 8.52.0	NA	NA