



RF TEST REPORT

Applicant ZTE Corporation

FCC ID SRQ-ZTEBLADEA530

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

Model BLADE A530

Marketing BLADE A530, ZTE BLADE A530,
A530, ZTE Blade A530, Blade A530

Report No. R1801A0031-R3

Issue Date February 6, 2018

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

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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	42
5.5	Peak-to-Average Power Ratio (PAPR)	66
5.6	Frequency Stability.....	70
5.7	Spurious Emissions at Antenna Terminals	76
5.8	Radiates Spurious Emission	98
6	Main Test Instruments	122

Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	27.50(d)(4) /27.50(c)(10) /27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h) /27.53(g) /27.53(m)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 27.53(h) /27.53(g) /27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(g) /27.53(m)	PASS
Date of Testing: January 17, 2018~ February 2, 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.
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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.
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen.

General information

EUT Description			
Model	BLADE A530		
IMEI	867671030002083		
Hardware Version	uecB		
Software Version	TEL_MX_BLADE_A530V1.0.0		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	LTE Band 4; LTE Band 7, LTE Band 12		
Test Modulation	QPSK 16QAM;		
LTE Category	5		
Maximum E.I.R.P./ E.R.P.	LTE Band 4:	17.91dBm	
	LTE Band 7:	21.75dBm	
	LTE Band 12:	13.84dBm	
Rated Power Supply Voltage	4.0V		
Extreme Voltage	Minimum: 3.6V Maximum: 4.3V		
Extreme Temperature	Lowest: -10°C Highest: +55°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 12	699 ~ 716	729 ~ 746

EUT Accessory	
Adapter 1	Manufacturer: SHENZHEN RUIJING INDUSTRIAL CO LTD Model: STC-A51A-Z
Adapter 2	Manufacturer: DONGGUAN AOHA1 POWER TECHNOLOGY CO., LTD. Model: STC-A51A-Z
Adapter 3	Manufacturer: Jiangsu Chenyang Electron Co., Ltd. Model: STC-A51A-Z
Battery 1	Manufacturer: Zhongshan Tianmao Battery Co.,Ltd. Model: Li3826T43P4h705949
Battery 2	Manufacturer: Jade Energy Technology (Zhuhai) Co., Ltd. Model: Li3826T43P4h705949
Earphone 1	Manufacturer: Shenzhen FDC Electronics Co. ,Ltd. Model:DEM-53
Earphone 2	Manufacturer: SANGFAI ELECTRICAL MANUFACTURE LIMITED Model: SF-880KM-53
USB Cable	Manufacturer: kingpower-tech 100cm Cable, Shielded
Note: 1. The information of the EUT is declared by the manufacturer. 2. There is more than one Battery, each one should be applied throughout the compliance test respectively, and however, only the worst case (Battery 1) will be recorded in this report.	

3 Applied Standards

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

Test standards

FCC CFR47 Part 2 (2017)

FCC CFR47 Part 27C (2017)

ANSI/TIA-603-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 (X axis, horizontal polarization) and the worst case was recorded.

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

Subsequently, only the worst case emissions are reported.

The following testing in 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 LTE Band 4/7/12:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 7	-	-	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 12	O	O	O	O	-	-	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	O	O	O
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	-	O	-
	LTE 12	O	O	O	O	-	-	O	O	-	-	O	-	O	-
Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O



Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.
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5 Test Case Results

5.1 RF Power Output

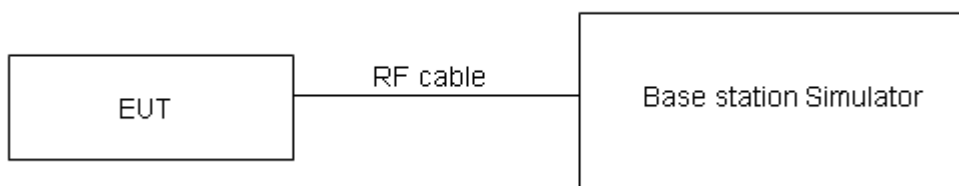
Ambient condition

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

LTE Band 4				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	22.98	22.94	23.07
		1	2	23.12	23.10	23.19
		1	5	22.95	22.94	22.85
		3	0	23.07	23.24	23.03
		3	2	23.07	23.17	23.07
		3	3	23.01	23.03	23.10
		6	0	22.06	22.17	22.19
	16QAM	1	0	22.21	22.11	22.24
		1	2	22.31	22.26	22.39
		1	5	22.15	22.14	22.11
		3	0	22.10	22.27	22.06
		3	2	22.14	22.27	22.14
		3	3	22.05	22.16	22.00
		6	0	21.02	21.27	21.19
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	23.00	22.98	23.10
		1	7	23.15	23.15	23.23
		1	14	22.98	22.99	22.89
		8	0	22.17	22.36	22.16
		8	4	22.19	22.27	22.19
		8	7	22.11	22.14	22.20
		15	0	22.09	22.21	22.22
	16QAM	1	0	22.24	22.13	22.27
		1	7	22.34	22.31	22.43
		1	14	22.17	22.18	22.14
		8	0	21.21	21.40	21.18
		8	4	21.25	21.40	21.26
		8	7	21.15	21.28	21.13
		15	0	21.05	21.31	21.22
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	22.97	22.96	23.06
		1	13	23.13	23.11	23.20
		1	24	22.95	22.94	22.85
		12	0	22.14	22.31	22.12
		12	6	22.17	22.23	22.14
		12	13	22.09	22.12	22.16
		25	0	22.07	22.20	22.20



	16QAM	1	0	22.21	22.09	22.24
		1	13	22.31	22.29	22.40
		1	24	22.14	22.16	22.10
		12	0	21.19	21.36	21.15
		12	6	21.22	21.35	21.22
		12	13	21.12	21.23	21.09
		25	0	21.03	21.27	21.17
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	22.99	22.97	23.09
		1	25	23.16	23.16	23.24
		1	49	22.97	22.98	22.88
		25	0	22.17	22.36	22.16
		25	13	22.20	22.28	22.18
		25	25	22.11	22.16	22.21
		50	0	22.15	22.22	22.24
	16QAM	1	0	22.23	22.12	22.26
		1	25	22.34	22.33	22.43
		1	49	22.17	22.18	22.13
		25	0	21.22	21.41	21.19
		25	13	21.24	21.39	21.25
		25	25	21.15	21.28	21.13
		50	0	21.06	21.32	21.21
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	22.98	22.93	23.07
		1	38	23.14	23.15	23.21
		1	74	22.94	22.93	22.84
		36	0	22.15	22.32	22.13
		36	18	22.17	22.23	22.14
		36	39	22.08	22.13	22.17
		75	0	22.13	22.18	22.19
	16QAM	1	0	22.18	22.10	22.24
		1	38	22.32	22.30	22.41
		1	74	22.14	22.14	22.10
		36	0	21.19	21.39	21.16
		36	18	21.21	21.34	21.21
		36	39	21.13	21.24	21.10
		75	0	21.03	21.27	21.17
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	22.95	22.89	23.04
		1	50	23.13	23.11	23.19



		1	99	22.92	22.92	22.81
		50	0	22.12	22.27	22.09
		50	25	22.15	22.19	22.11
		50	50	22.05	22.08	22.13
		100	0	22.10	22.13	22.15
	16QAM	1	0	22.16	22.06	22.19
		1	50	22.28	22.28	22.37
		1	99	22.12	22.11	22.08
		50	0	21.16	21.35	21.13
		50	25	21.18	21.32	21.18
		50	50	21.10	21.19	21.06
		100	0	21.01	21.23	21.14

LTE Band 7				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	22.77	22.74	23.15
		1	13	23.02	22.91	23.24
		1	24	22.79	22.85	23.01
		12	0	22.11	21.82	22.28
		12	6	22.08	21.93	22.22
		12	13	21.97	21.94	22.18
		25	0	21.94	22.01	22.25
	16QAM	1	0	22.03	21.96	22.12
		1	13	22.06	21.98	22.24
		1	24	22.04	21.94	22.13
		12	0	21.40	21.19	21.20
		12	6	21.37	21.36	21.19
		12	13	21.27	21.36	21.11
		25	0	21.37	21.34	21.15
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	22.79	22.75	23.18
		1	25	23.05	22.96	23.28
		1	49	22.81	22.89	23.04
		25	0	22.14	21.87	22.32
		25	13	22.11	21.98	22.26
		25	25	21.99	21.98	22.23
		50	0	22.02	22.03	22.29
	16QAM	1	0	22.05	21.99	22.14
		1	25	22.09	22.02	22.27
		1	49	22.07	21.96	22.16



		25	0	21.43	21.24	21.24
		25	13	21.39	21.40	21.22
		25	25	21.30	21.41	21.15
		50	0	21.40	21.39	21.19
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	22.78	22.71	23.16
		1	38	23.03	22.95	23.25
		1	74	22.78	22.84	23.00
		36	0	22.12	21.83	22.29
		36	18	22.08	21.93	22.22
		36	39	21.96	21.95	22.19
		75	0	22.00	21.99	22.24
	16QAM	1	0	22.00	21.97	22.12
		1	38	22.07	21.99	22.25
		1	74	22.04	21.92	22.13
		36	0	21.40	21.22	21.21
		36	18	21.36	21.35	21.18
		36	39	21.28	21.37	21.12
		75	0	21.37	21.34	21.15
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	22.75	22.67	23.13
		1	50	23.02	22.91	23.23
		1	99	22.76	22.83	22.97
		50	0	22.09	21.78	22.25
		50	25	22.06	21.89	22.19
		50	50	21.93	21.90	22.15
		100	0	21.97	21.94	22.20
	16QAM	1	0	21.98	21.93	22.07
		1	50	22.03	21.97	22.21
		1	99	22.02	21.89	22.11
		50	0	21.37	21.18	21.18
		50	25	21.33	21.33	21.15
		50	50	21.25	21.32	21.08
		100	0	21.35	21.30	21.12

LTE Band 12				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23017/699.7	23095/707.5	23173/715.3
1.4MHz	QPSK	1	0	22.97	22.93	22.85
		1	2	23.00	23.06	22.98
		1	5	22.96	22.98	22.93
		3	0	22.80	23.05	22.91
		3	2	22.91	23.05	22.98
		3	3	22.90	23.06	22.91
		6	0	21.87	22.13	22.03
	16QAM	1	0	22.12	22.11	22.07
		1	2	22.14	22.10	22.15
		1	5	22.23	21.96	22.08
		3	0	21.86	21.91	21.84
		3	2	21.85	21.96	21.91
		3	3	21.88	22.07	21.87
		6	0	20.90	21.09	21.03
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	22.98	22.96	22.87
		1	7	23.04	23.12	23.03
		1	14	22.98	23.02	22.96
		8	0	21.90	22.17	22.04
		8	4	22.04	22.16	22.09
		8	7	22.00	22.19	22.02
		15	0	21.96	22.18	22.08
	16QAM	1	0	22.14	22.12	22.09
		1	7	22.17	22.17	22.19
		1	14	22.25	22.00	22.10
		8	0	20.98	21.05	20.97
		8	4	20.95	21.08	21.02
		8	7	20.98	21.19	21.00
		15	0	20.94	21.14	21.05
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
5MHz	QPSK	1	0	22.97	22.92	22.85
		1	13	23.02	23.11	23.00
		1	24	22.95	22.97	22.92
		12	0	21.88	22.13	22.01
		12	6	22.01	22.11	22.05
		12	13	21.97	22.16	21.98
		25	0	21.94	22.14	22.03



	16QAM	1	0	22.09	22.10	22.07
		1	13	22.15	22.14	22.17
		1	24	22.22	21.96	22.07
		12	0	20.95	21.03	20.94
		12	6	20.92	21.03	20.98
		12	13	20.96	21.15	20.97
		25	0	20.91	21.09	21.01
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23060/704	23095/707.5	23130/711
10MHz	QPSK	1	0	22.94	22.88	22.82
		1	25	23.01	23.07	22.98
		1	49	22.93	22.96	22.89
		25	0	21.85	22.08	21.97
		25	13	21.99	22.07	22.02
		25	25	21.94	22.11	21.94
		50	0	21.91	22.09	21.99
	16QAM	1	0	22.07	22.06	22.02
		1	25	22.11	22.12	22.13
		1	49	22.20	21.93	22.05
		25	0	20.92	20.99	20.91
		25	13	20.89	21.01	20.95
		25	25	20.93	21.10	20.93
		50	0	20.89	21.05	20.98

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.

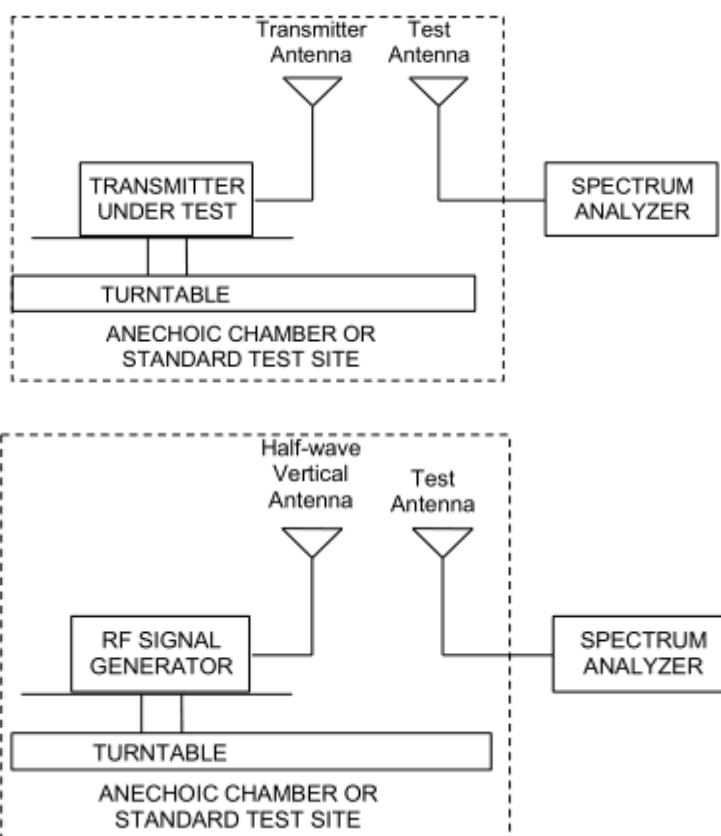
g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g. transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and 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(c) (10) specifies that “Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP”

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

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

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

Measurement Uncertainty

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

Test Results

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

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	-38.31	-54.30	1.44	17.43	30	Pass
	Mid	1732.5	Horizontal	-38.50	-54.32	1.57	17.38	30	Pass
	High	1754.3	Horizontal	-38.33	-54.10	1.72	17.49	30	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	-38.54	-54.35	1.44	17.25	30	Pass
	Mid	1732.5	Horizontal	-38.69	-54.41	1.57	17.29	30	Pass
	High	1753.5	Horizontal	-38.87	-54.48	1.72	17.32	30	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	-38.35	-54.34	1.44	17.43	30	Pass
	Mid	1732.5	Horizontal	-38.45	-54.32	1.57	17.43	30	Pass
	High	1752.5	Horizontal	-38.37	-54.13	1.72	17.47	30	Pass
10 MHz (QPSK)	Low	1715	Horizontal	-37.85	-54.32	1.44	17.91	30	Pass
	Mid	1732.5	Horizontal	-39.08	-54.41	1.57	16.90	30	Pass
	High	1750	Horizontal	-39.32	-54.52	1.66	16.86	30	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	-38.89	-54.35	1.49	16.95	30	Pass
	Mid	1732.5	Horizontal	-39.02	-54.32	1.57	16.86	30	Pass
	High	1747.5	Horizontal	-39.28	-54.17	1.66	16.55	30	Pass
20 MHz (QPSK)	Low	1720	Horizontal	-39.58	-54.44	1.49	16.35	30	Pass
	Mid	1732.5	Horizontal	-39.73	-54.41	1.57	16.25	30	Pass
	High	1745	Horizontal	-39.87	-54.59	1.63	16.35	30	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	-38.44	-54.30	1.44	17.29	30	Pass
	Mid	1732.5	Horizontal	-38.63	-54.32	1.57	17.25	30	Pass
	High	1754.3	Horizontal	-38.47	-54.10	1.72	17.35	30	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	-38.68	-54.35	1.44	17.11	30	Pass
	Mid	1732.5	Horizontal	-38.82	-54.41	1.57	17.15	30	Pass
	High	1753.5	Horizontal	-39.01	-54.48	1.72	17.19	30	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	-38.49	-54.34	1.44	17.29	30	Pass
	Mid	1732.5	Horizontal	-38.59	-54.32	1.57	17.29	30	Pass
	High	1752.5	Horizontal	-38.51	-54.13	1.72	17.34	30	Pass
10 MHz (16QAM)	Low	1715	Horizontal	-37.99	-54.32	1.44	17.77	30	Pass
	Mid	1732.5	Horizontal	-39.21	-54.41	1.57	16.76	30	Pass
	High	1750	Horizontal	-39.46	-54.52	1.66	16.72	30	Pass
15 MHz (16QAM)	Low	1717.5	Horizontal	-39.02	-54.35	1.49	16.81	30	Pass
	Mid	1732.5	Horizontal	-39.16	-54.32	1.57	16.72	30	Pass
	High	1747.5	Horizontal	-39.42	-54.17	1.66	16.41	30	Pass
20 MHz (16QAM)	Low	1720	Horizontal	-39.71	-54.44	1.49	16.21	30	Pass
	Mid	1732.5	Horizontal	-39.86	-54.41	1.57	16.11	30	Pass
	High	1745	Horizontal	-40.01	-54.59	1.63	16.21	30	Pass



LTE Band 7									
Band width	Channel	Frequency (MHz)	Polarization	Output Power (dBm)	Losses (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2502.5	Horizontal	-39.99	-59.64	1.81	21.46	33	Pass
	Mid	2535	Horizontal	-40.18	-59.72	1.81	21.35	33	Pass
	High	2567.5	Horizontal	-40.33	-59.98	1.83	21.48	33	Pass
10 MHz (QPSK)	Low	2505	Horizontal	-39.88	-59.61	1.82	21.55	33	Pass
	Mid	2535	Horizontal	-39.79	-59.72	1.81	21.74	33	Pass
	High	2565	Horizontal	-40.09	-60.02	1.81	21.74	33	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	-39.74	-59.29	1.80	21.35	33	Pass
	Mid	2535	Horizontal	-40.10	-59.72	1.81	21.43	33	Pass
	High	2562.5	Horizontal	-39.60	-59.46	1.82	21.68	33	Pass
20 MHz (QPSK)	Low	2510	Horizontal	-39.54	-59.52	1.77	21.75	33	Pass
	Mid	2535	Horizontal	-39.95	-59.72	1.81	21.58	33	Pass
	High	2560	Horizontal	-40.48	-60.01	1.82	21.35	33	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	-40.12	-59.64	1.81	21.33	33	Pass
	Mid	2535	Horizontal	-40.30	-59.72	1.81	21.23	33	Pass
	High	2567.5	Horizontal	-40.46	-59.98	1.83	21.35	33	Pass
10 MHz (16QAM)	Low	2505	Horizontal	-40.00	-59.61	1.82	21.43	33	Pass
	Mid	2535	Horizontal	-39.92	-59.72	1.81	21.61	33	Pass
	High	2565	Horizontal	-40.21	-60.02	1.81	21.62	33	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	-39.87	-59.29	1.80	21.22	33	Pass
	Mid	2535	Horizontal	-40.23	-59.72	1.81	21.30	33	Pass
	High	2562.5	Horizontal	-39.72	-59.46	1.82	21.56	33	Pass
20 MHz (16QAM)	Low	2510	Horizontal	-39.67	-59.52	1.77	21.62	33	Pass
	Mid	2535	Horizontal	-40.08	-59.72	1.81	21.45	33	Pass
	High	2560	Horizontal	-40.60	-60.01	1.82	21.23	33	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	-37.47	-49.12	2.04	13.69	34.77	Pass
	Mid	707.5	Horizontal	-38.16	-49.39	2.03	13.27	34.77	Pass
	High	715.3	Horizontal	-38.25	-49.76	1.99	13.50	34.77	Pass
3 MHz (QPSK)	Low	700.5	Horizontal	-37.45	-48.94	2.04	13.53	34.77	Pass
	Mid	707.5	Horizontal	-38.06	-49.12	2.03	13.09	34.77	Pass
	High	714.5	Horizontal	-37.57	-49.37	2.00	13.80	34.77	Pass
5 MHz (QPSK)	Low	701.5	Horizontal	-38.05	-49.17	2.04	13.17	34.77	Pass
	Mid	707.5	Horizontal	-38.46	-49.39	2.03	12.97	34.77	Pass
	High	713.5	Horizontal	-38.51	-49.72	2.01	13.21	34.77	Pass
10 MHz (QPSK)	Low	704	Horizontal	-37.31	-49.00	2.04	13.73	34.77	Pass
	Mid	707.5	Horizontal	-37.31	-49.12	2.03	13.84	34.77	Pass
	High	711	Horizontal	-38.14	-49.33	2.02	13.20	34.77	Pass
1.4 MHz (16QAM)	Low	699.7	Horizontal	-37.61	-49.12	2.04	13.55	34.77	Pass
	Mid	707.5	Horizontal	-38.30	-49.39	2.03	13.13	34.77	Pass
	High	715.3	Horizontal	-38.40	-49.76	1.99	13.35	34.77	Pass
3 MHz (16QAM)	Low	700.5	Horizontal	-37.59	-48.94	2.04	13.39	34.77	Pass
	Mid	707.5	Horizontal	-38.20	-49.12	2.03	12.95	34.77	Pass
	High	714.5	Horizontal	-37.72	-49.37	2.00	13.65	34.77	Pass
5 MHz (16QAM)	Low	701.5	Horizontal	-38.19	-49.17	2.04	13.03	34.77	Pass
	Mid	707.5	Horizontal	-38.60	-49.39	2.03	12.83	34.77	Pass
	High	713.5	Horizontal	-38.65	-49.72	2.01	13.07	34.77	Pass
10 MHz (16QAM)	Low	704	Horizontal	-37.46	-49.00	2.04	13.58	34.77	Pass
	Mid	707.5	Horizontal	-37.45	-49.12	2.03	13.70	34.77	Pass
	High	711	Horizontal	-38.29	-49.33	2.02	13.05	34.77	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 LTE Band 4/12 (1.4MHz).

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

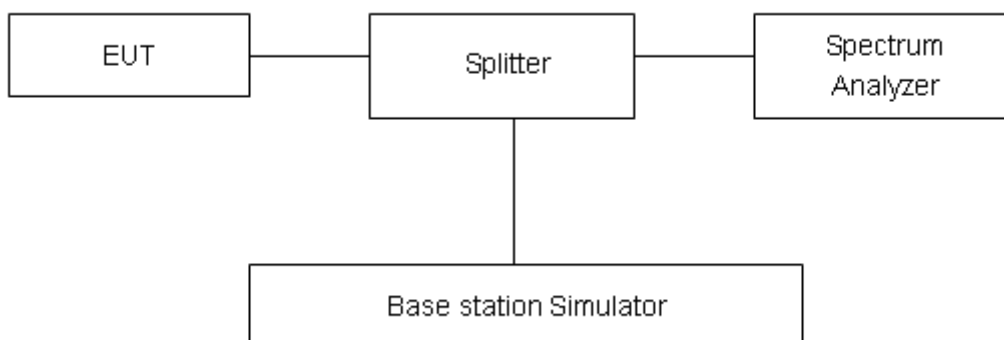
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/12 (5MHz).

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

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

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

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

Test Result

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1183	1.334
			20175	1732.5	1.1210	1.356
			20393	1754.3	1.1274	1.336
		3	19965	1711.5	2.7212	3.001
			20175	1732.5	2.7209	2.999
			20385	1753.5	2.7337	3.096
		5	19975	1712.5	4.5398	5.189
			20175	1732.5	4.5271	5.219
			20375	1752.5	4.5211	5.115
		10	20000	1715	9.0494	10.18
			20175	1732.5	9.0951	10.30
			20350	1750	9.0762	10.21
		15	20025	1717.5	13.488	14.89
			20175	1732.5	13.514	15.04
			20325	1747.5	13.504	15.09
		20	20050	1720	17.896	19.4
			20175	1732.5	17.974	19.6
			20300	1745	17.976	19.82
	16QAM	1.4	19957	1710.7	1.1214	1.332
			20175	1732.5	1.1075	1.311
			20393	1754.3	1.1241	1.530
		3	19965	1711.5	2.7166	3.015
			20175	1732.5	2.7230	2.996
			20385	1753.5	2.7186	3.457
		5	19975	1712.5	4.5301	5.476
			20175	1732.5	4.5537	5.216
			20375	1752.5	4.5495	5.183
		10	20000	1715	9.0673	10.38
			20175	1732.5	9.0883	10.28
			20350	1750	9.0706	10.32
		15	20025	1717.5	13.444	14.95
			20175	1732.5	13.538	15.07
			20325	1747.5	13.499	15.13
		20	20050	1720	17.961	19.44
			20175	1732.5	17.988	19.67
			20300	1745	17.931	19.67

LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5402	5.250
			21100	2535	4.5296	5.177
			21425	2567.5	4.5200	5.187
		10	20800	2505	9.0685	10.36
			21100	2535	9.0562	10.22
			21400	2565	9.0998	10.27
		15	20825	2507.5	13.528	15.11
			21100	2535	13.481	15.21
			21375	2562.5	13.528	15.08
		20	20850	2510	17.938	19.64
			21100	2535	17.901	19.58
			21350	2560	17.950	19.73
	16QAM	5	20775	2502.5	4.5338	5.202
			21100	2535	4.5472	5.170
			21425	2567.5	4.5478	5.228
		10	20800	2505	9.0410	10.22
			21100	2535	9.0705	10.31
			21400	2565	9.0767	10.26
		15	20825	2507.5	13.516	15.08
			21100	2535	13.523	14.96
			21375	2562.5	13.529	15.07
		20	20850	2510	17.958	19.59
			21100	2535	17.922	19.57
			21350	2560	17.965	19.71

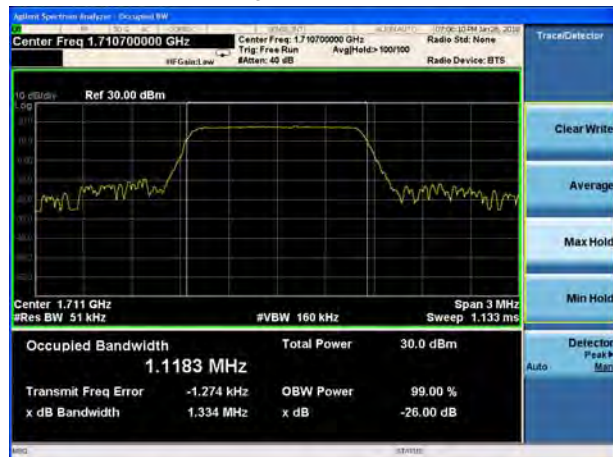
LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.1150	1.337
			23095	707.5	1.1192	1.339
			23173	715.3	1.1291	1.607
		3	23025	700.5	2.7255	3.017
			23095	707.5	2.7334	3.357
			23165	714.5	2.7287	2.998
		5	23035	701.5	4.5415	5.138
			23095	707.5	4.5285	5.167
			23155	713.5	4.5304	5.239



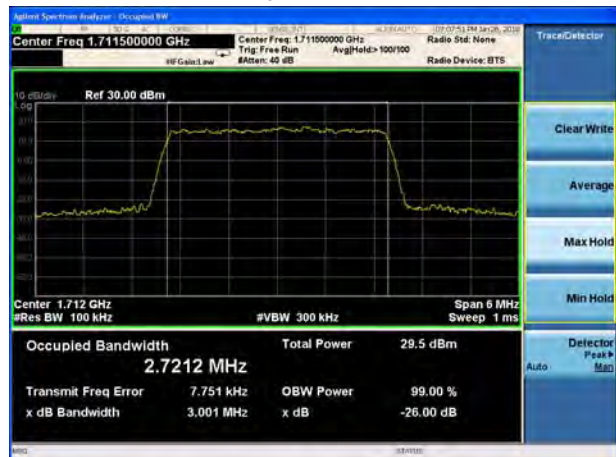
		10	23060	704	9.0628	10.19
			23095	707.5	9.0655	10.73
			23130	711	9.0878	10.39
	16QAM	1.4	23017	699.7	1.1263	1.345
			23095	707.5	1.1251	1.944
			23173	715.3	1.1140	1.475
		3	23025	700.5	2.7148	3.015
			23095	707.5	2.7365	4.169
			23165	714.5	2.7162	3.001
		5	23035	701.5	4.5339	5.151
			23095	707.5	4.5196	5.126
			23155	713.5	4.5398	6.020
		10	23060	704	9.0639	10.21
			23095	707.5	9.0846	10.28
			23130	711	9.0678	10.28



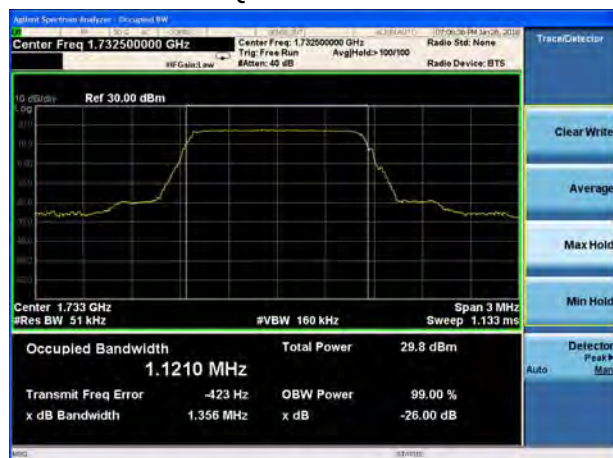
LTE Band 4 QPSK 1.4MHz CH-Low



LTE Band 4 QPSK 3MHz CH-Low



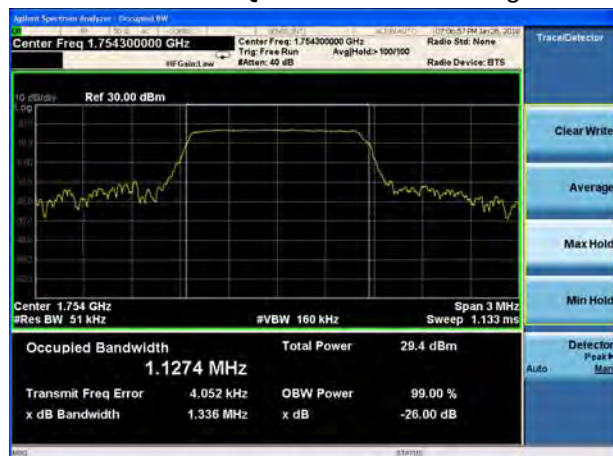
LTE Band 4 QPSK 1.4MHz CH-Middle



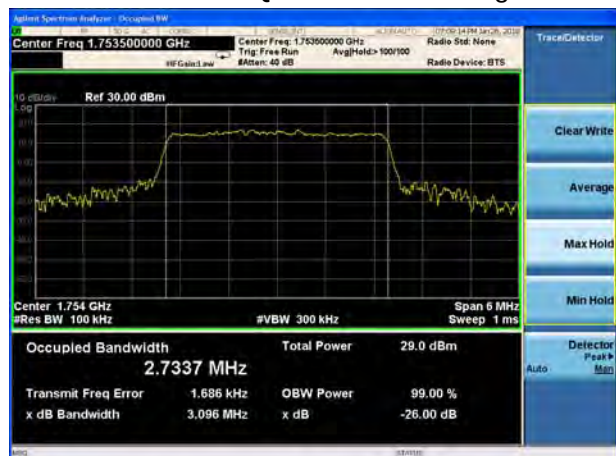
LTE Band 4 QPSK 3MHz CH-Middle



LTE Band 4 QPSK 1.4MHz CH-High

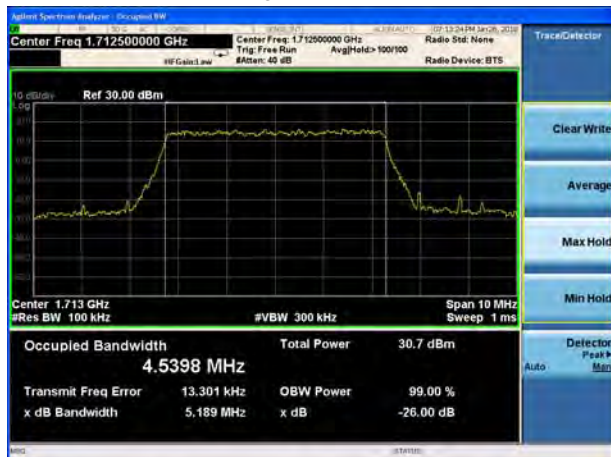


LTE Band 4 QPSK 3MHz CH-High





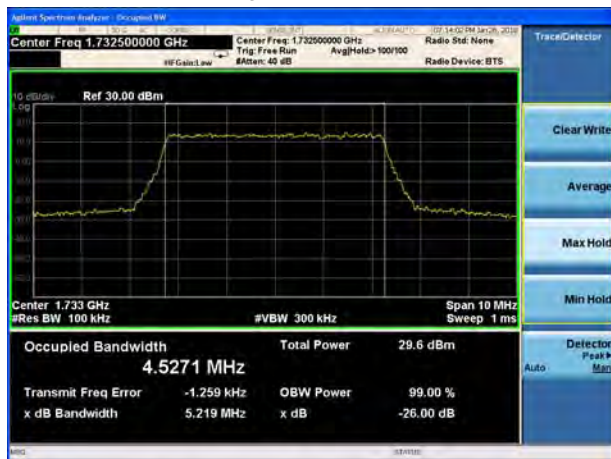
LTE Band 4 QPSK 5MHz CH-Low



LTE Band 4 QPSK 10MHz CH-Low



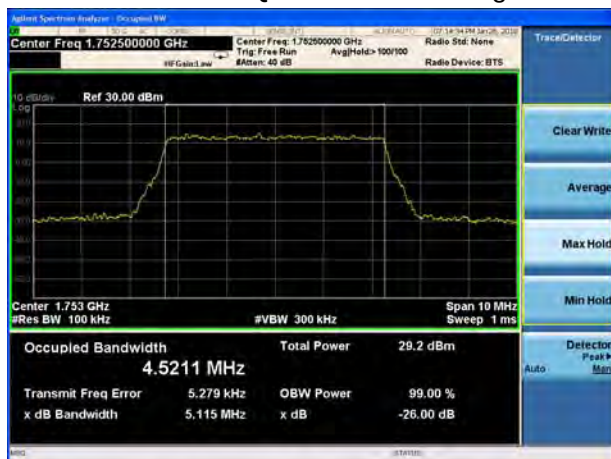
LTE Band 4 QPSK 5MHz CH-Middle



LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High

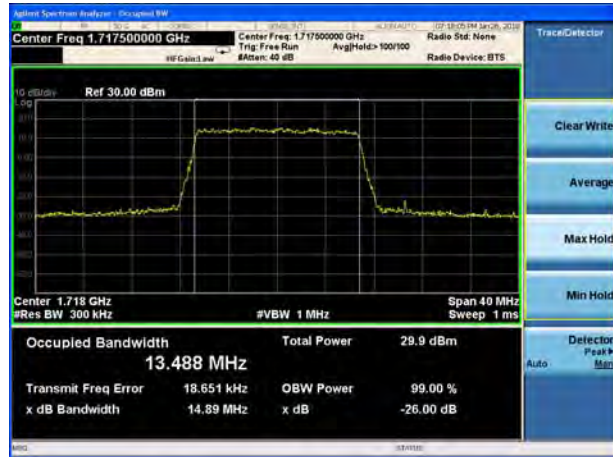


LTE Band 4 QPSK 10MHz CH-High

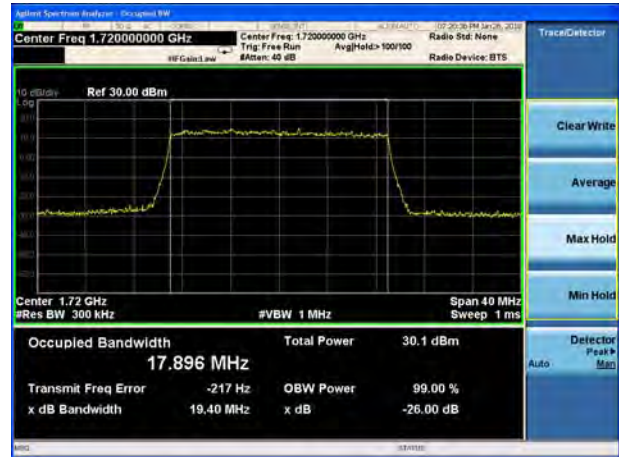




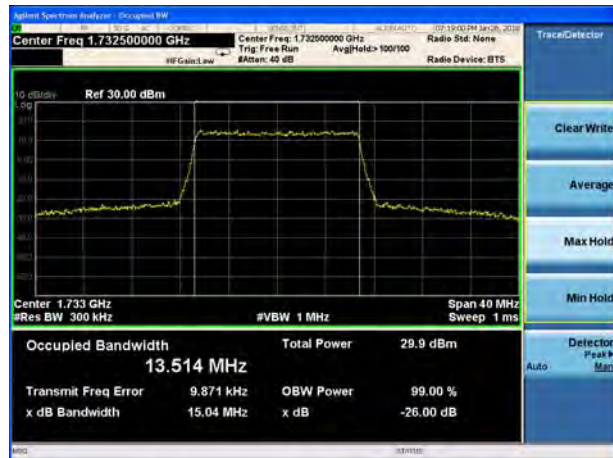
LTE Band 4 QPSK 15MHz CH-Low



LTE Band 4 QPSK 20MHz CH-Low



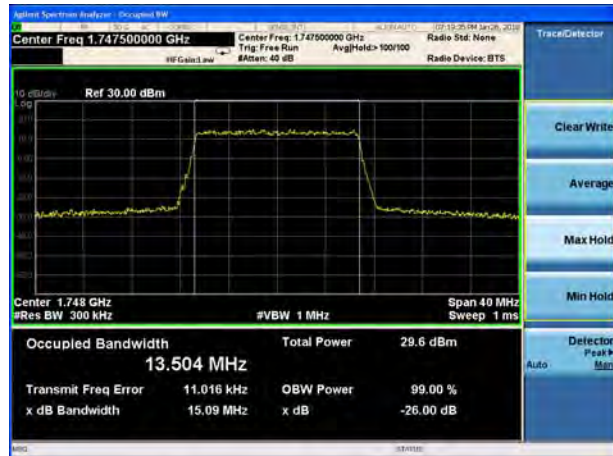
LTE Band 4 QPSK 15MHz CH-Middle



LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High

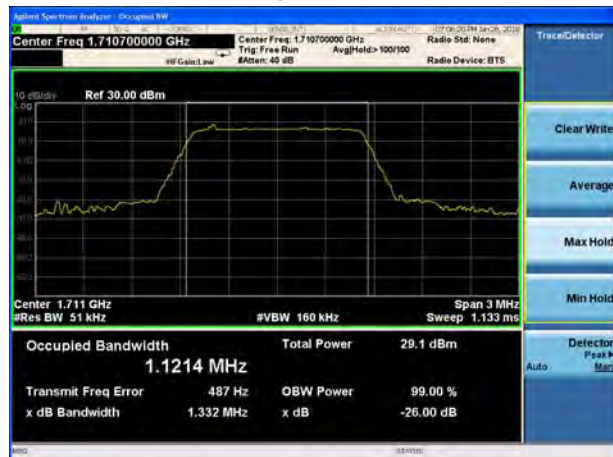


LTE Band 4 QPSK 20MHz CH-High

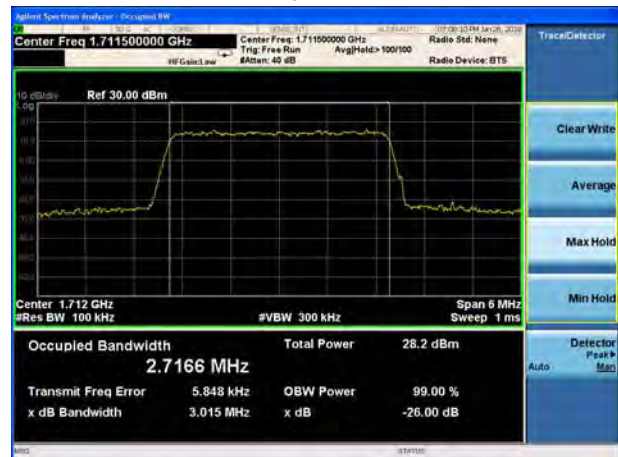




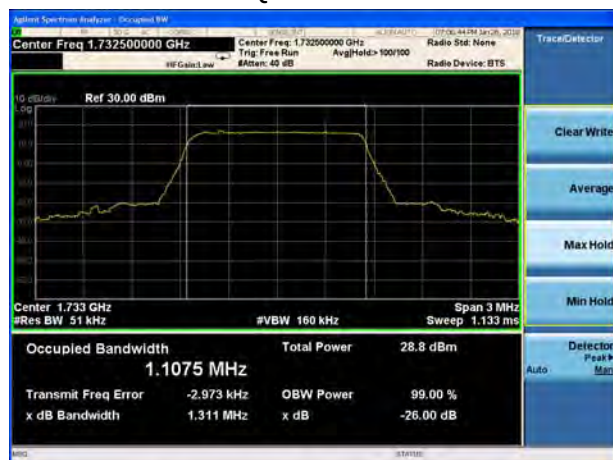
LTE Band 4 16QAM 1.4MHz CH-Low



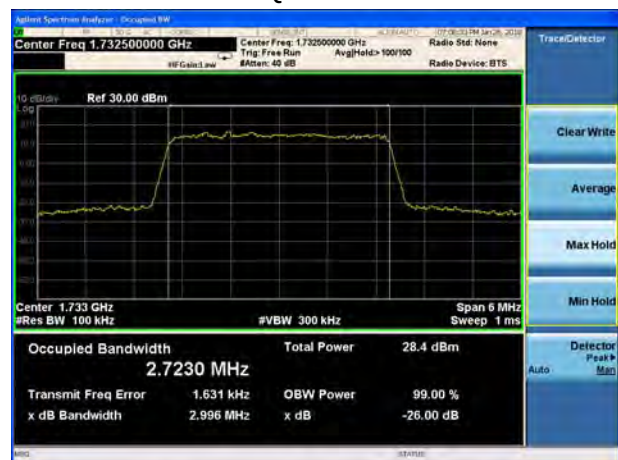
LTE Band 4 16QAM 3MHz CH-Low



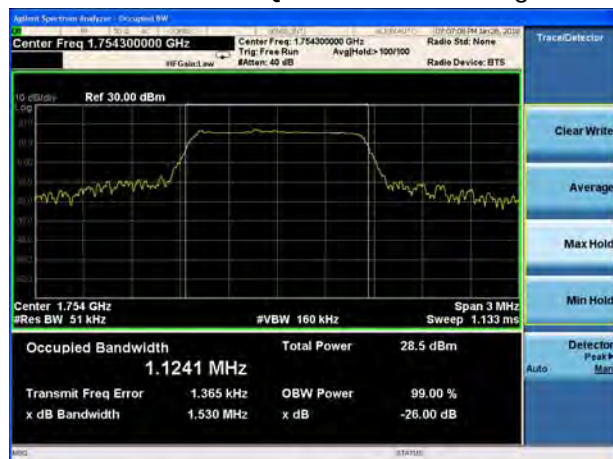
LTE Band 4 16QAM 1.4MHz CH-Middle



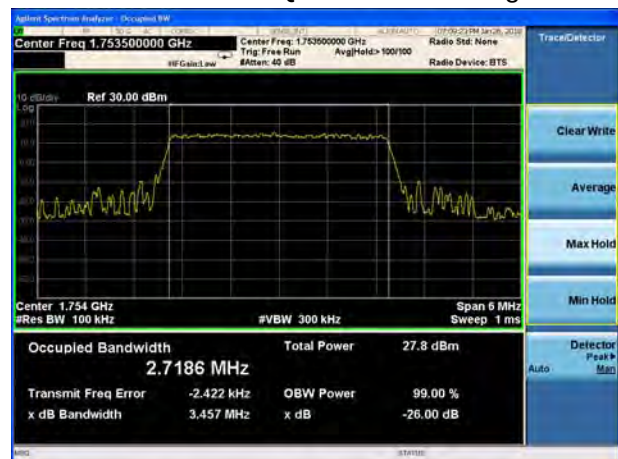
LTE Band 4 16QAM 3MHz CH-Middle



LTE Band 4 16QAM 1.4MHz CH-High



LTE Band 4 16QAM 3MHz CH-High





LTE Band 4 16QAM 5MHz CH-Low



LTE Band 4 16QAM 10MHz CH-Low



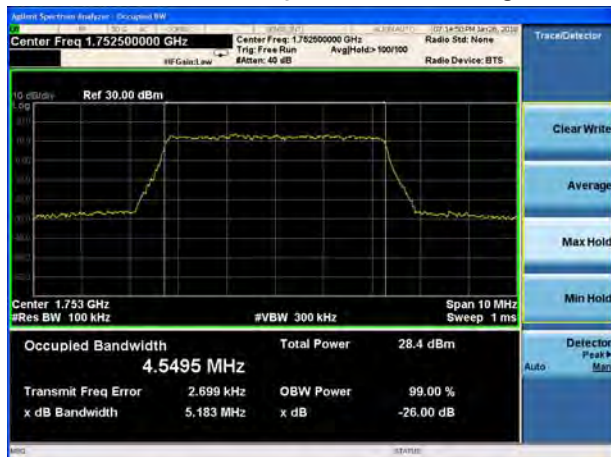
LTE Band 4 16QAM 5MHz CH-Middle



LTE Band 4 16QAM 10MHz CH-Middle



LTE Band 4 16QAM 5MHz CH-High

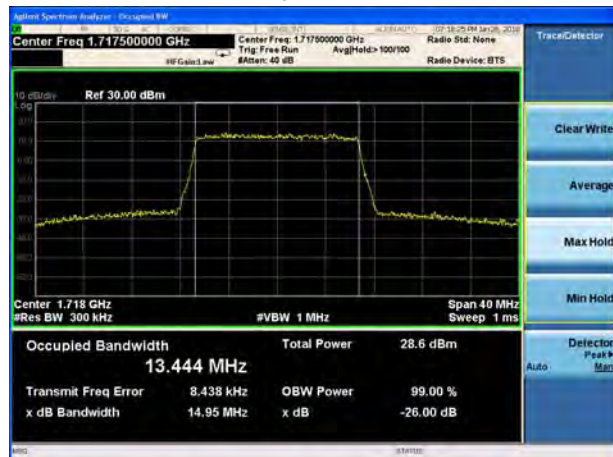


LTE Band 4 16QAM 10MHz CH-High

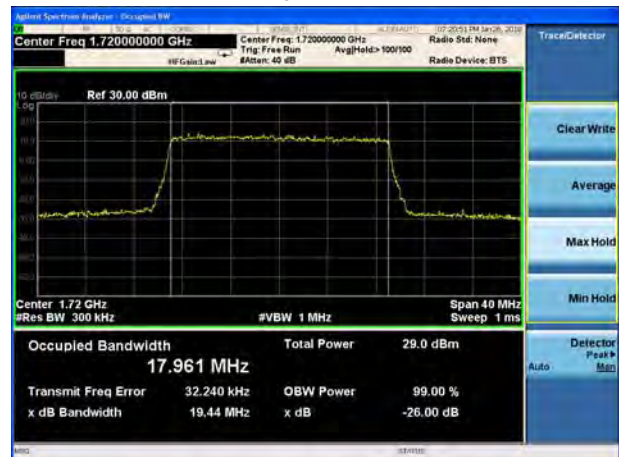




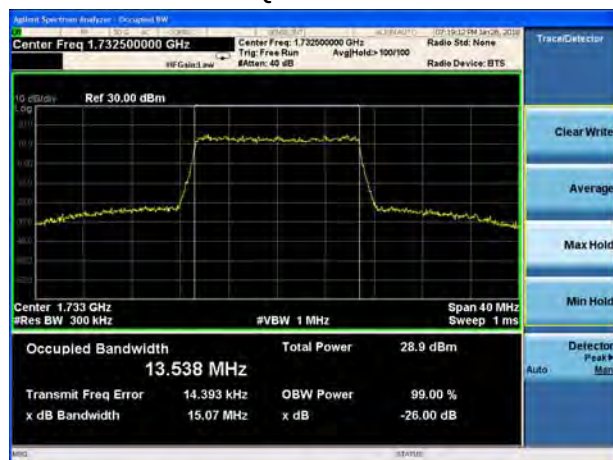
LTE Band 4 16QAM 15MHz CH-Low



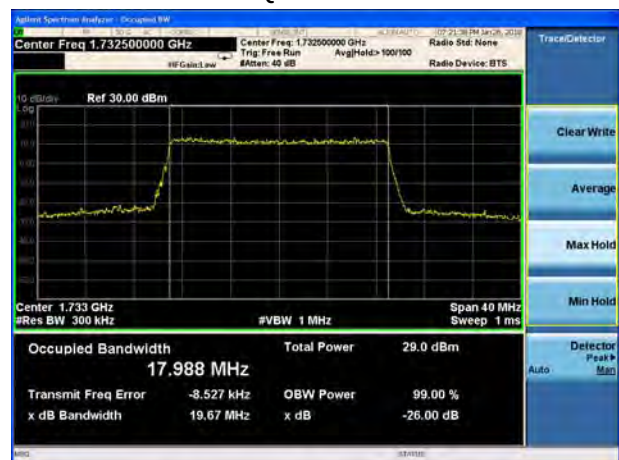
LTE Band 4 16QAM 20MHz CH-Low



LTE Band 4 16QAM 15MHz CH-Middle



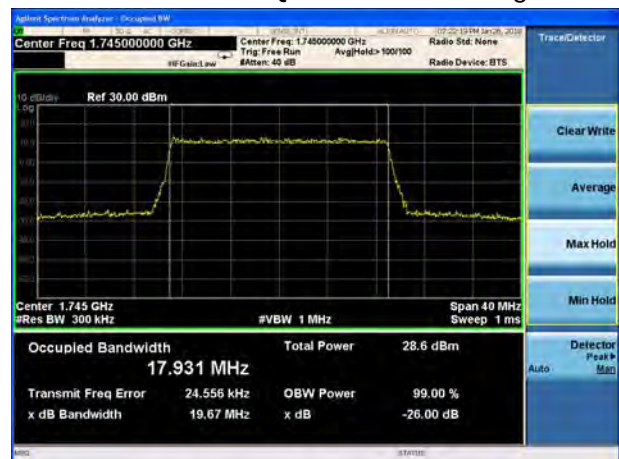
LTE Band 4 16QAM 20MHz CH-Middle



LTE Band 4 16QAM 15MHz CH-High



LTE Band 4 16QAM 20MHz CH-High





LTE Band 7 QPSK 5MHz CH-Low



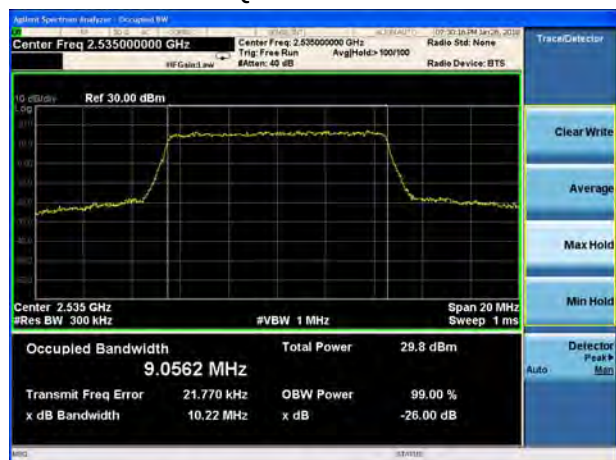
LTE Band 7 QPSK 10MHz CH-Low



LTE Band 7 QPSK 5MHz CH-Middle



LTE Band 7 QPSK 10MHz CH-Middle



LTE Band 7 QPSK 5MHz CH-High

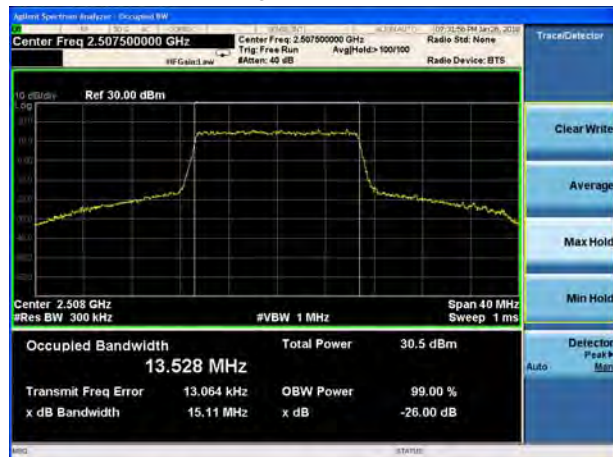


LTE Band 7 QPSK 10MHz CH-High

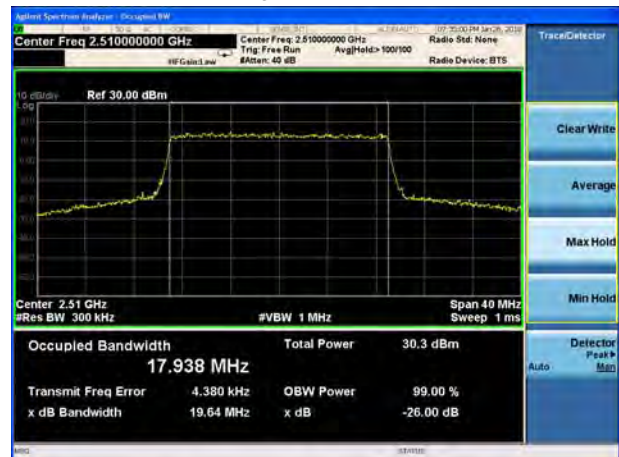




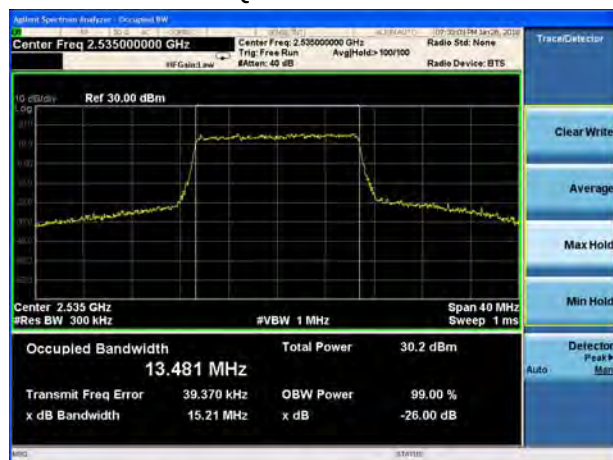
LTE Band 7 QPSK 15MHz CH-Low



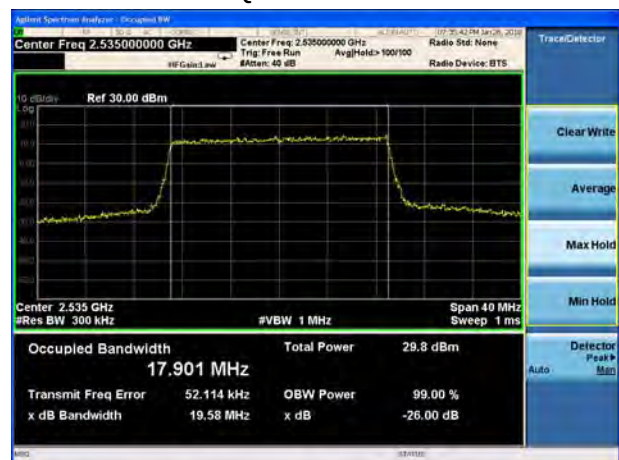
LTE Band 7 QPSK 20MHz CH-Low



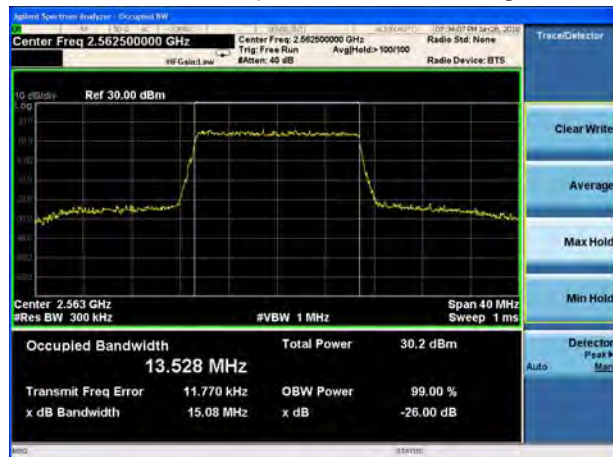
LTE Band 7 QPSK 15MHz CH-Middle



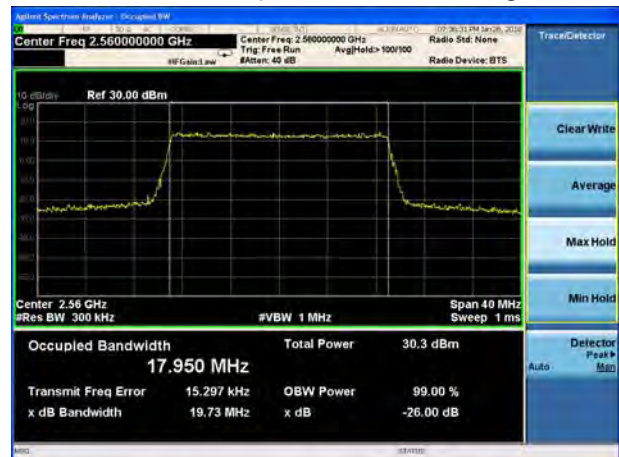
LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High

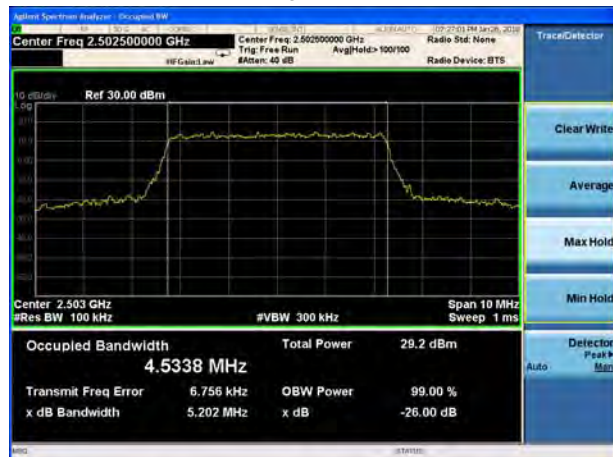


LTE Band 7 QPSK 20MHz CH-High





LTE Band 7 16QAM 5MHz CH-Low



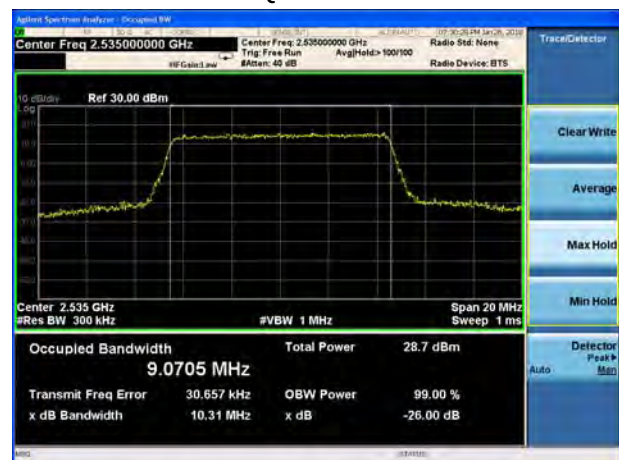
LTE Band 7 16QAM 10MHz CH-Low



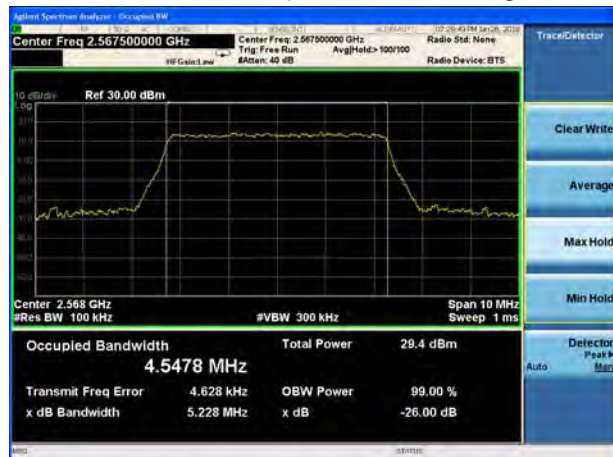
LTE Band 7 16QAM 5MHz CH-Middle



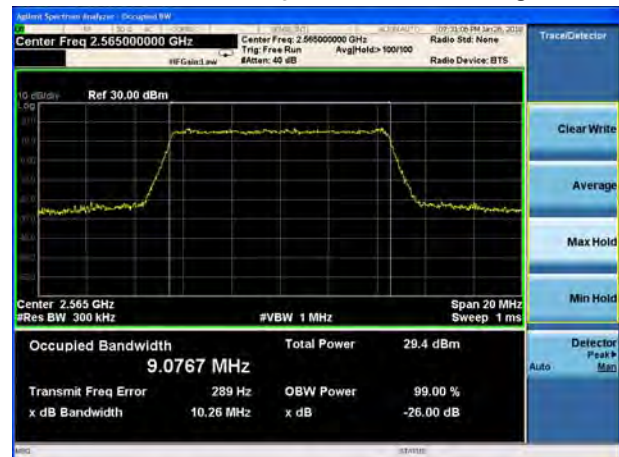
LTE Band 7 16QAM 10MHz CH-Middle



LTE Band 7 16QAM 5MHz CH-High

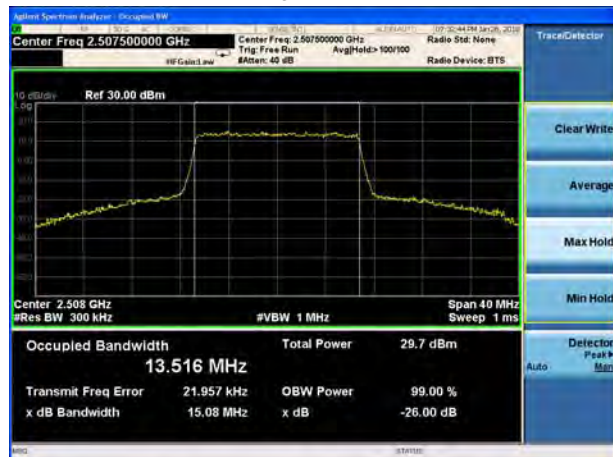


LTE Band 7 16QAM 10MHz CH-High





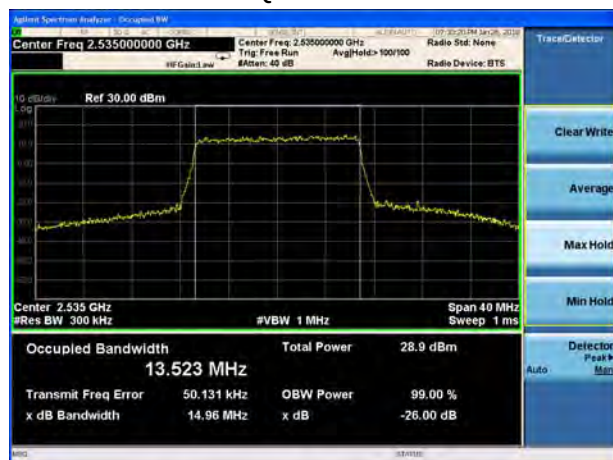
LTE Band 7 16QAM 15MHz CH-Low



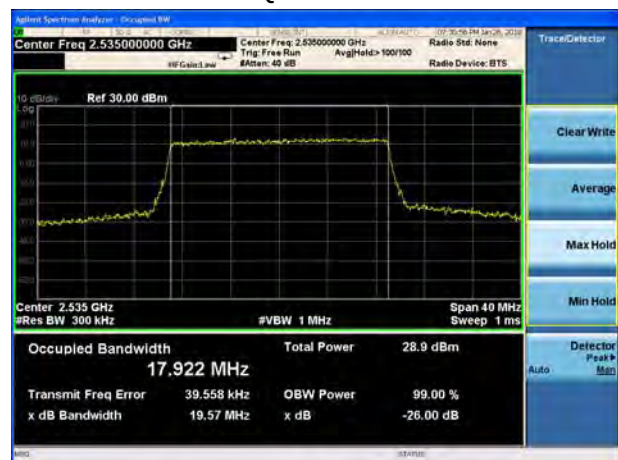
LTE Band 7 16QAM 20MHz CH-Low



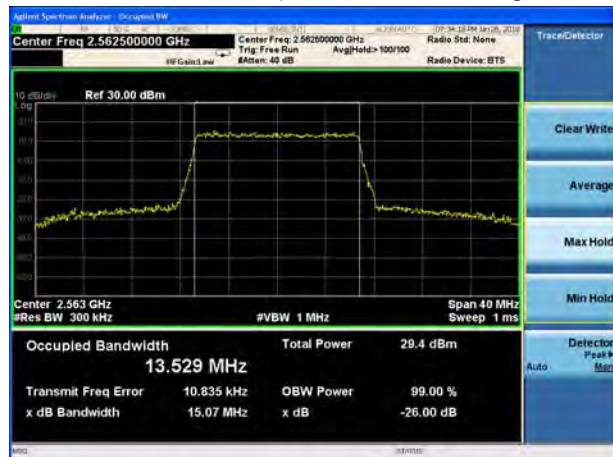
LTE Band 7 16QAM 15MHz CH-Middle



LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High





LTE Band 12 QPSK 1.4MHz CH-Low



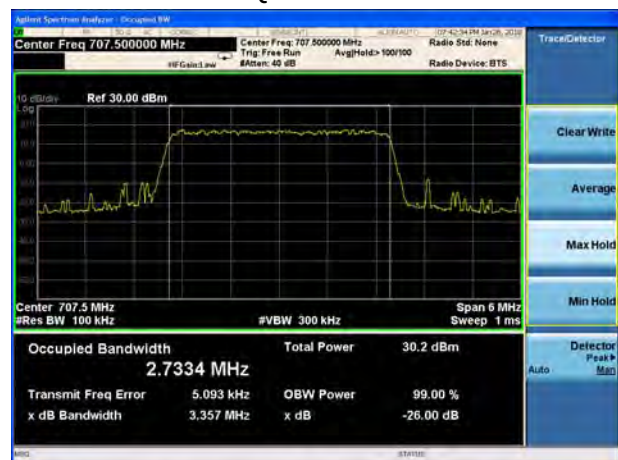
LTE Band 12 QPSK 3MHz CH-Low



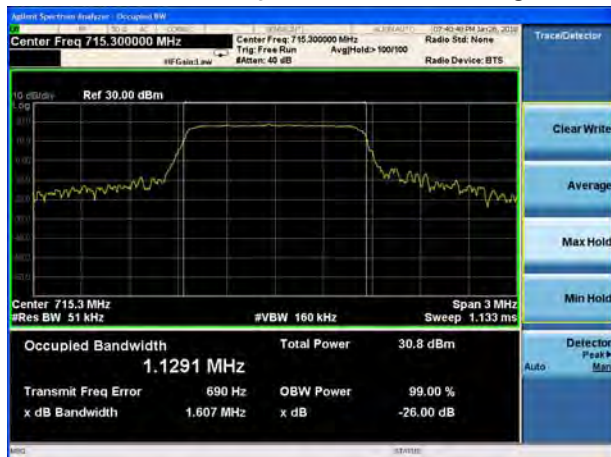
LTE Band 12 QPSK 1.4MHz CH-Middle



LTE Band 12 QPSK 3MHz CH-Middle



LTE Band 12 QPSK 1.4MHz CH-High

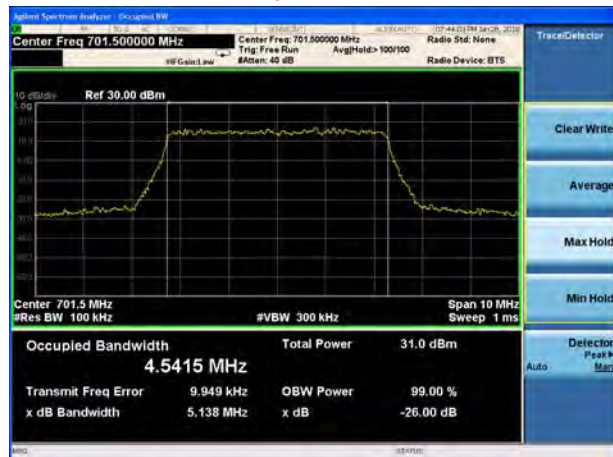


LTE Band 12 QPSK 3MHz CH-High

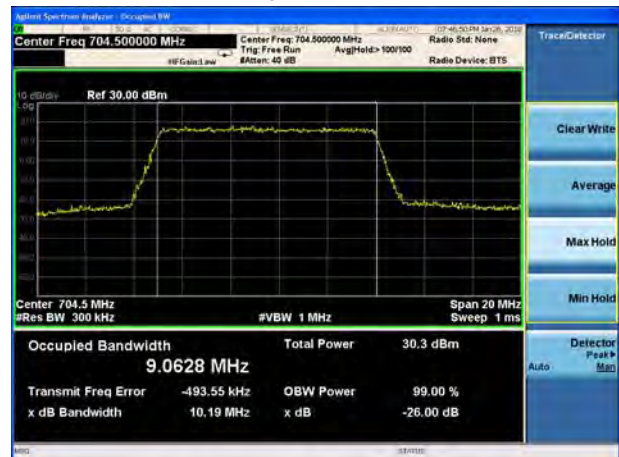




LTE Band 12 QPSK 5MHz CH-Low



LTE Band 12 QPSK 10MHz CH-Low



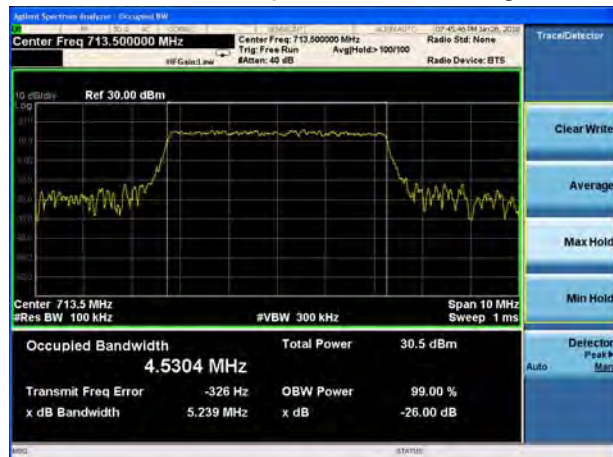
LTE Band 12 QPSK 5MHz CH-Middle



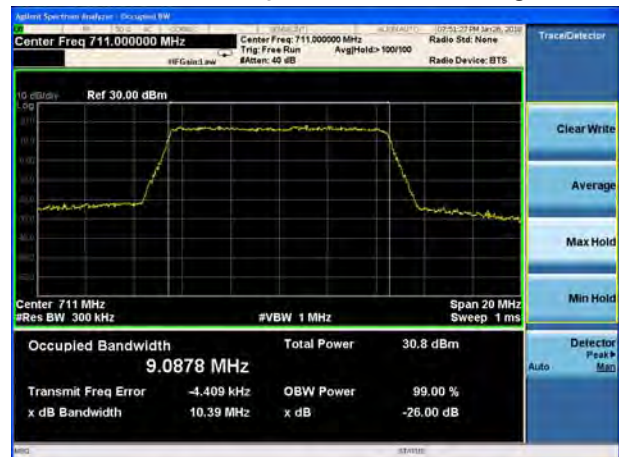
LTE Band 12 QPSK 10MHz CH-Middle



LTE Band 12 QPSK 5MHz CH-High



LTE Band 12 QPSK 10MHz CH-High





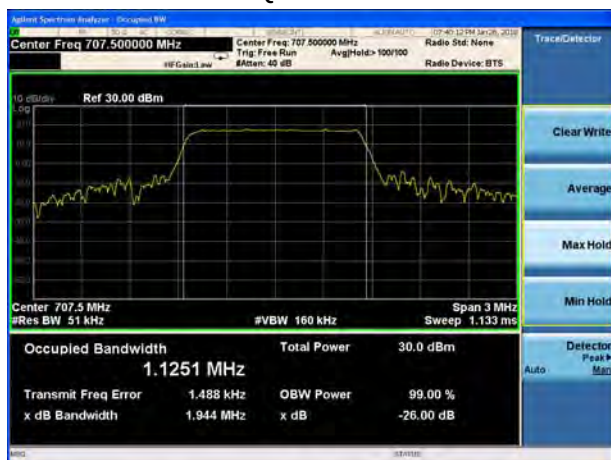
LTE Band 12 16QAM 1.4MHz CH-Low



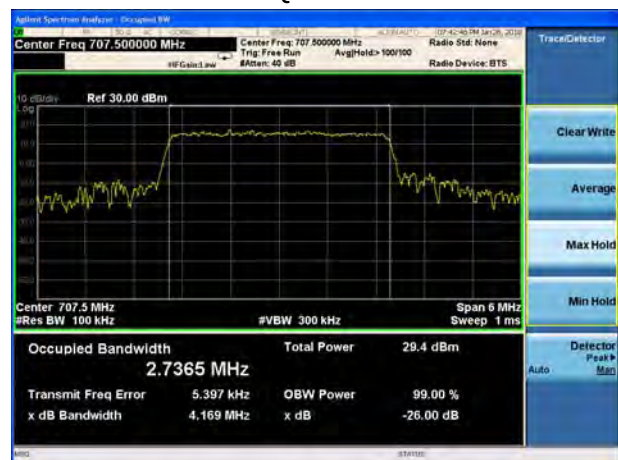
LTE Band 12 16QAM 3MHz CH-Low



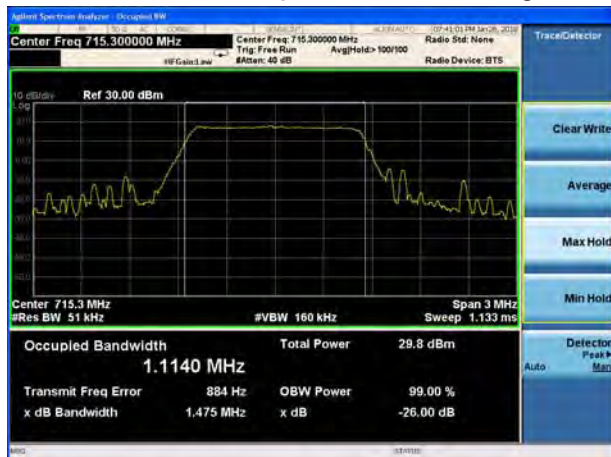
LTE Band 12 16QAM 1.4MHz CH-Middle



LTE Band 12 16QAM 3MHz CH-Middle



LTE Band 12 16QAM 1.4MHz CH-High

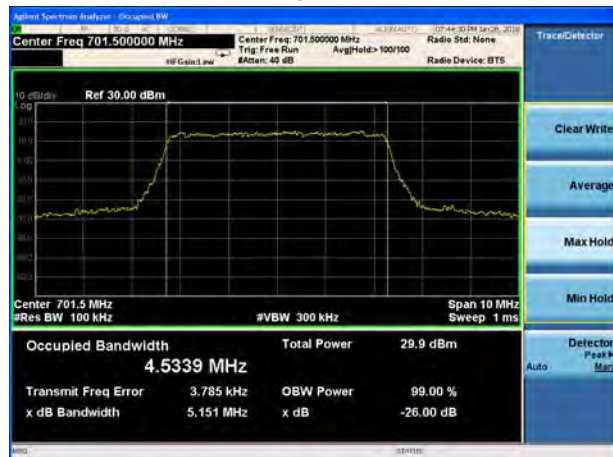


LTE Band 12 16QAM 3MHz CH-High

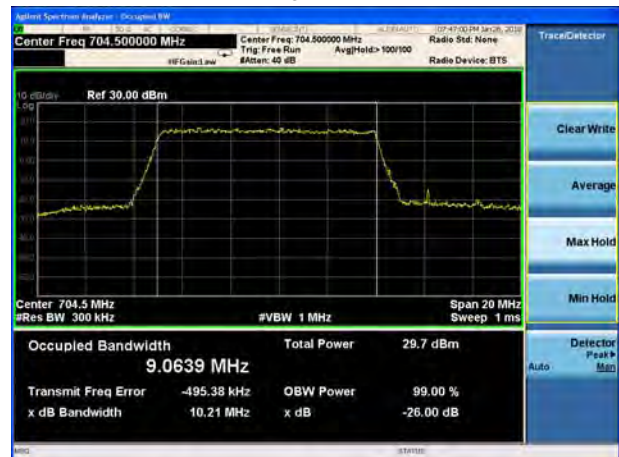




LTE Band 12 16QAM 5MHz CH-Low



LTE Band 12 16QAM 10MHz CH-Low



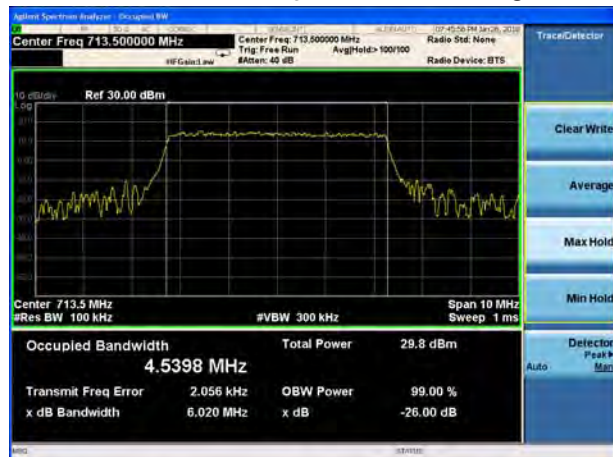
LTE Band 12 16QAM 5MHz CH-Middle



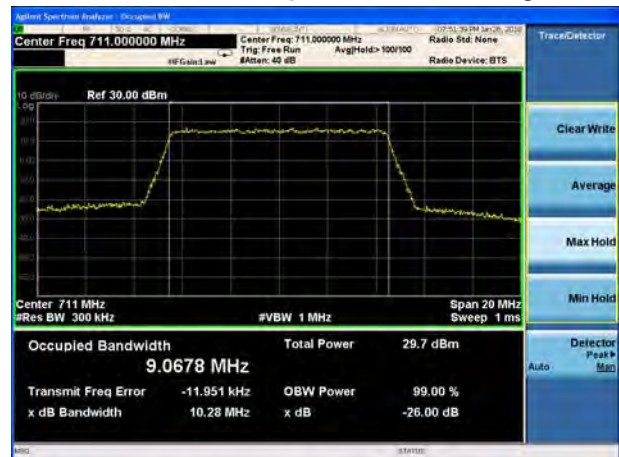
LTE Band 12 16QAM 10MHz CH-Middle



LTE Band 12 16QAM 5MHz CH-High



LTE Band 12 16QAM 10MHz CH-High



5.4 Band Edge Compliance

Ambient condition

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

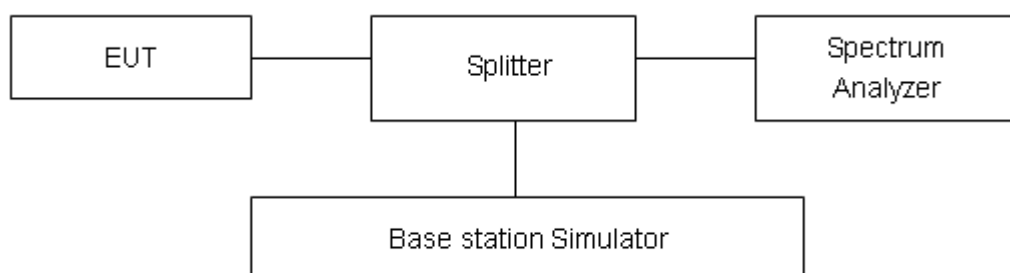
Method of Measurement

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

The testing follows KDB 971168 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.
3. RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 4 (1.4MHz).
RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4 (3MHz).
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/7 (5MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4/7 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4/7 (20MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 12 on spectrum analyzer.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

Test Setup



Limits

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



Part 27.53(g) 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.

Part 27.53(m) (4)/ specifies that "for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Example:

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

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

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

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Measurement Uncertainty

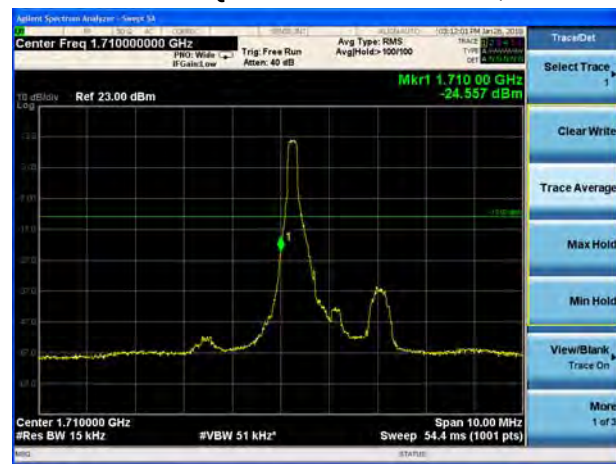
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 0.684 \text{ dB}$.



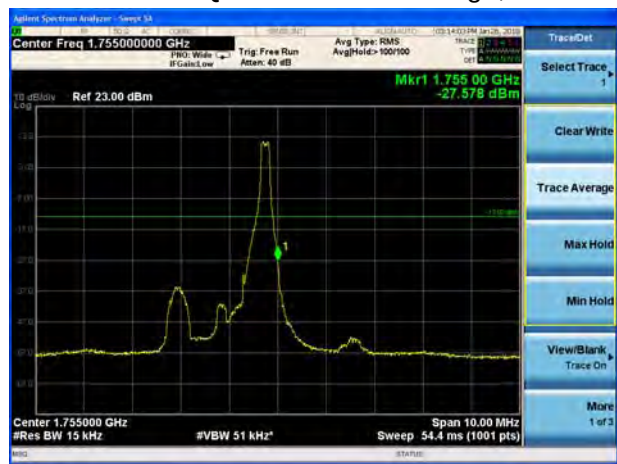
Test Result

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

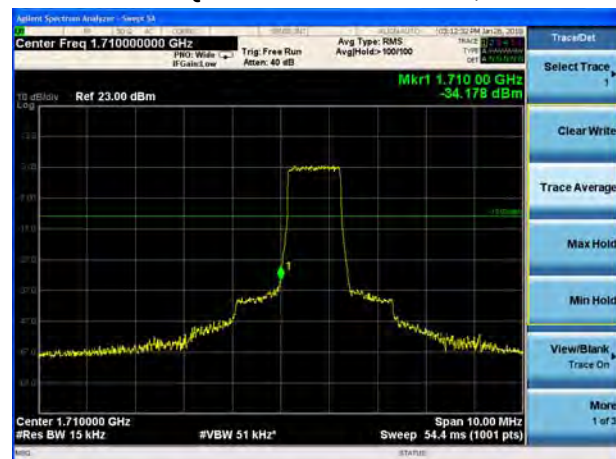
LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB



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



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



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



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



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



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



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



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



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



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

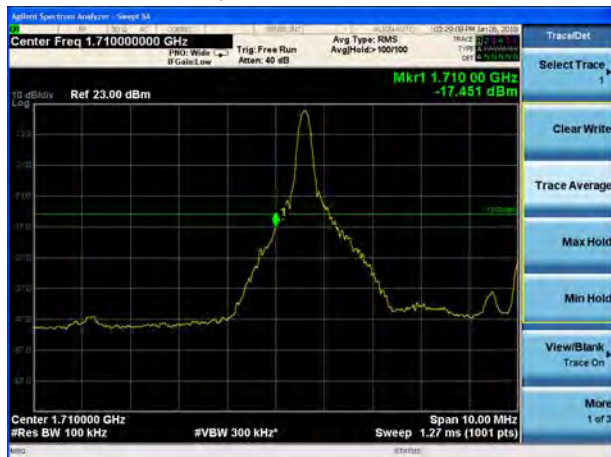


LTE Band 4 QPSK 5MHz CH-High, 100%RB





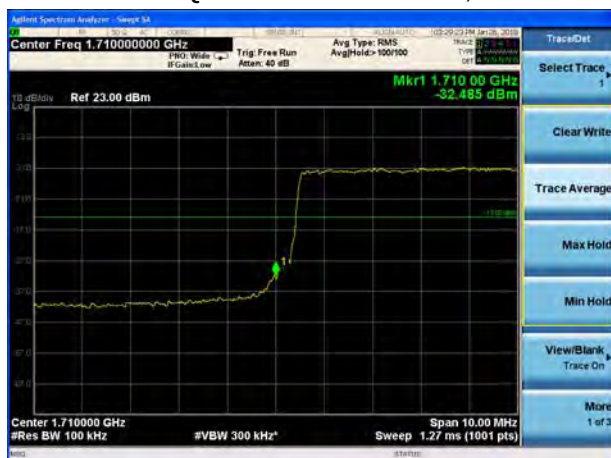
LTE Band 4 QPSK 10MHz CH-Low, 1 RB



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



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



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



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



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





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



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



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



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



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



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





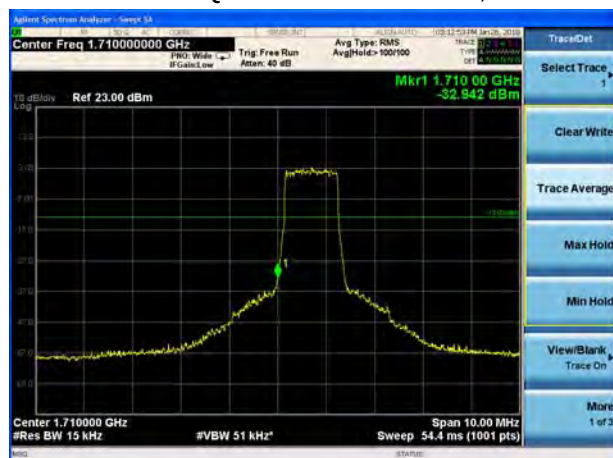
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



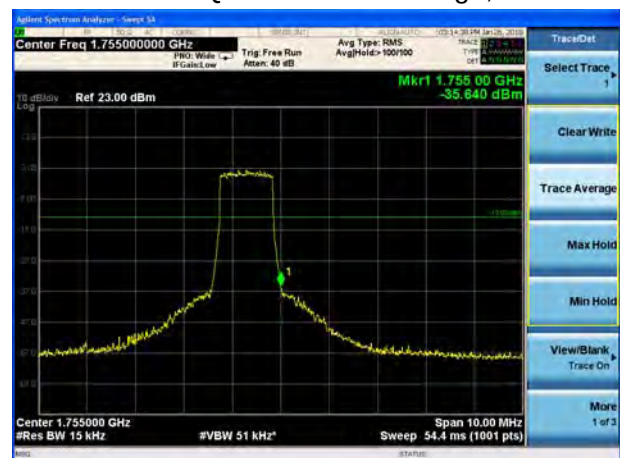
LTE Band 4 16QAM 1.4MHz CH-High, 1 RB



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



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



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



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





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



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



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



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



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

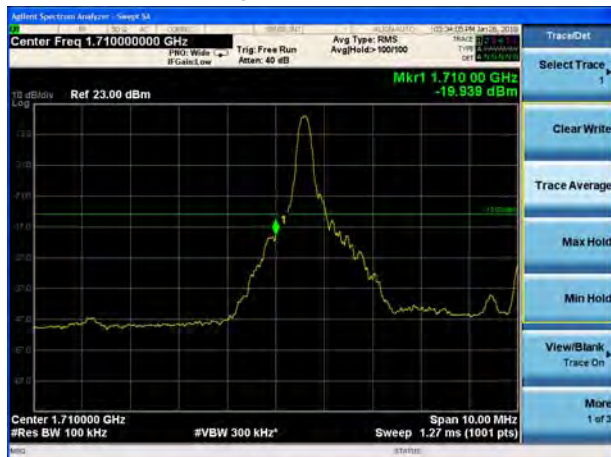


LTE Band 4 16QAM 5MHz CH-High, 100%RB





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



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



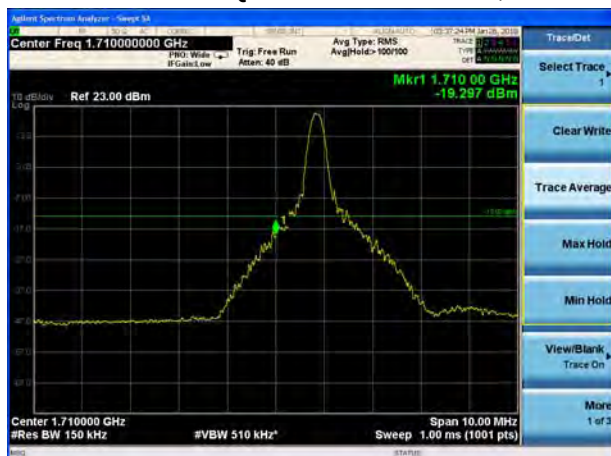
LTE Band 4 16QAM 10MHz CH-Low, 100%RB



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



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



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





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



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



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



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



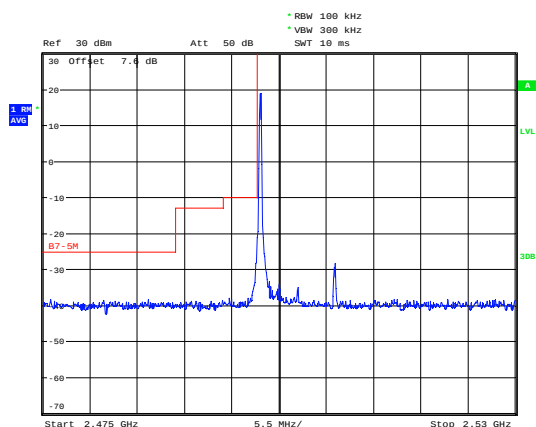
LTE Band 4 16QAM 20MHz CH-Low, 100%RB



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

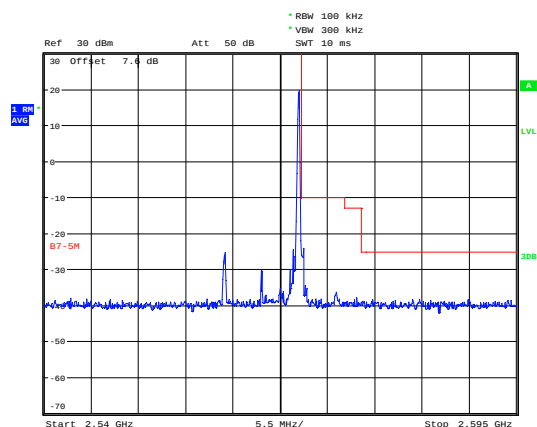


LTE Band 7 QPSK 5MHz CH-Low, 1 RB



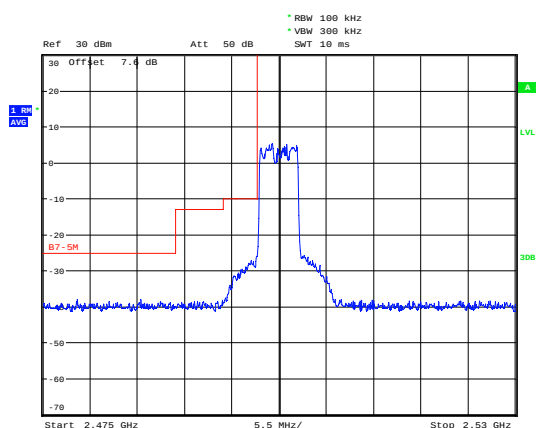
Date: 26.JAN.2018 21:16:08

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



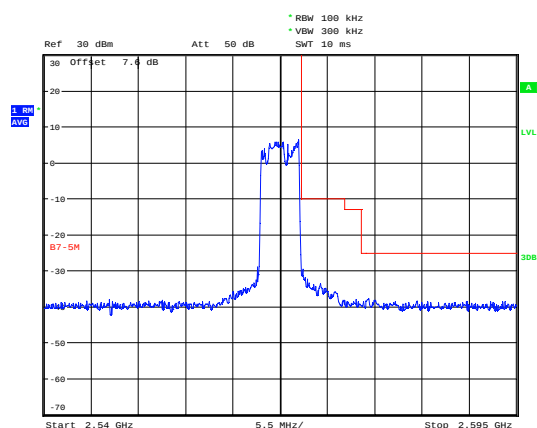
Date: 26.JAN.2018 21:17:44

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



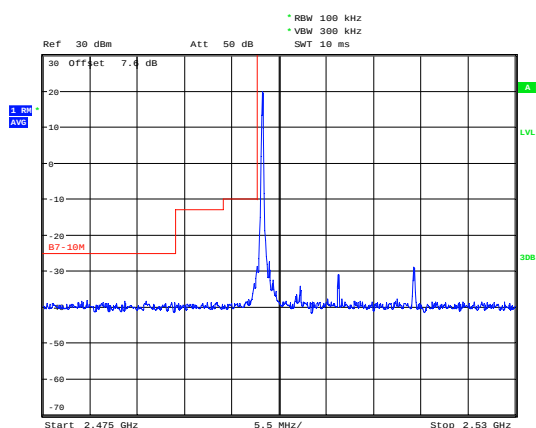
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LTE Band 7 QPSK 5MHz CH-High, 100%RB



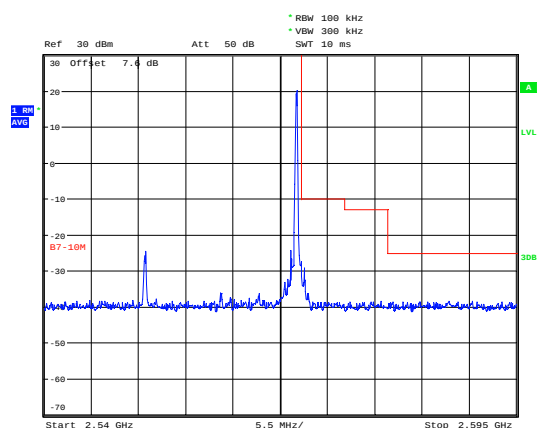
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LTE Band 7 QPSK 10MHz CH-Low, 1 RB



Date: 26.JAN.2018 21:19:49

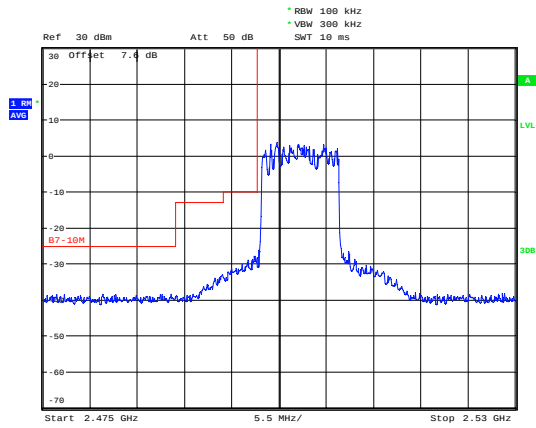
LTE Band 7 QPSK 10MHz CH-High, 1 RB



Date: 26.JAN.2018 21:18:44

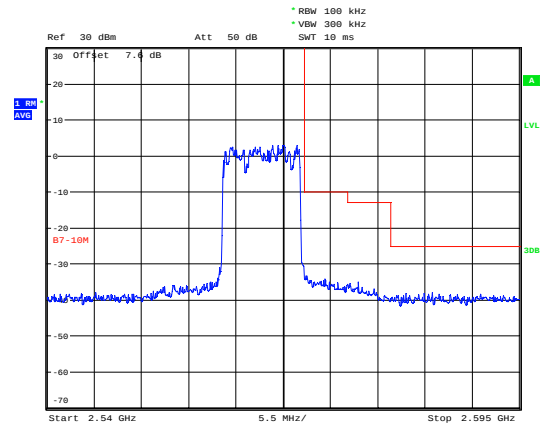


LTE Band 7 QPSK 10MHz CH-Low, 100%RB



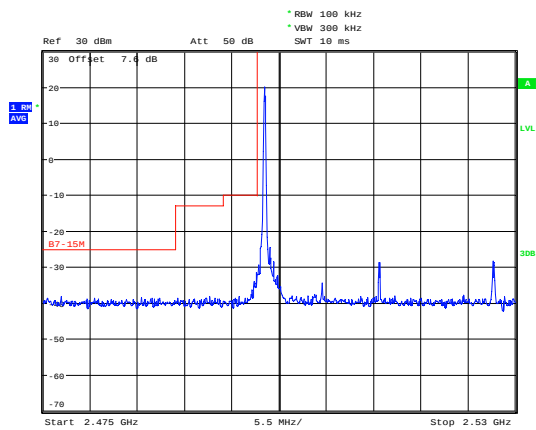
Date: 26.JAN.2018 21:20:01

LTE Band 7 QPSK 10MHz CH-High, 100%RB



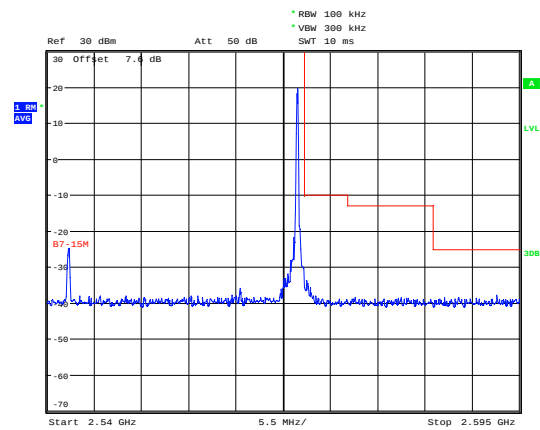
Date: 26.JAN.2018 21:18:55

LTE Band 7 QPSK 15MHz CH-Low, 1 RB



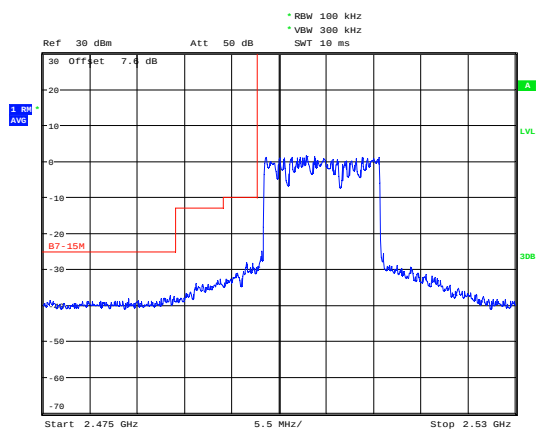
Date: 26.JAN.2018 21:20:43

LTE Band 7 QPSK 15MHz CH-High, 1 RB



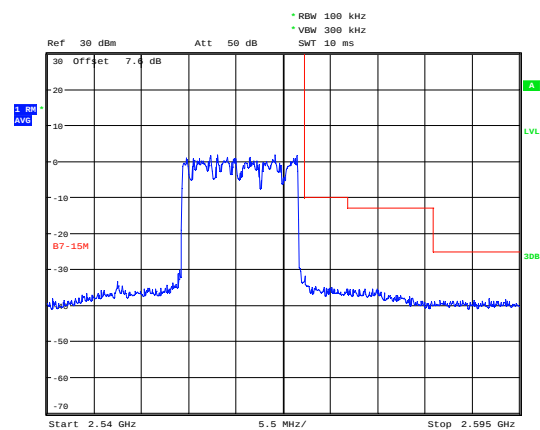
Date: 26.JAN.2018 21:22:00

LTE Band 7 QPSK 15MHz CH-Low, 100%RB



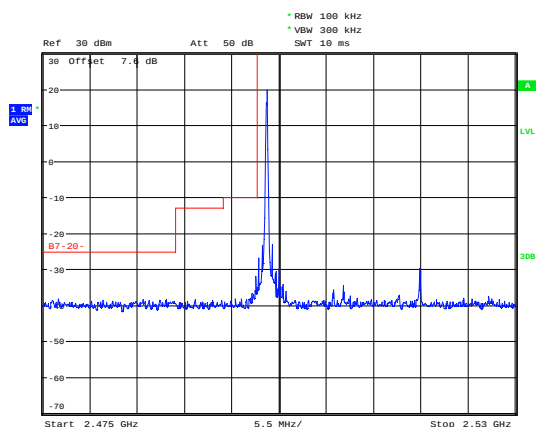
Date: 26.JAN.2018 21:21:13

LTE Band 7 QPSK 15MHz CH-High, 100%RB



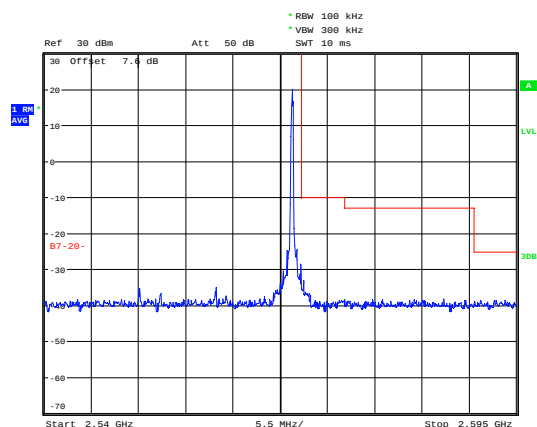
Date: 26.JAN.2018 21:22:11

LTE Band 7 QPSK 20MHz CH-Low, 1 RB



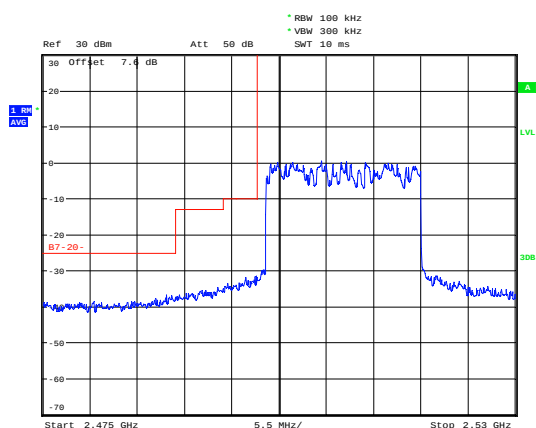
Date: 26.JAN.2018 21:24:09

LTE Band 7 QPSK 20MHz CH-High, 1 RB



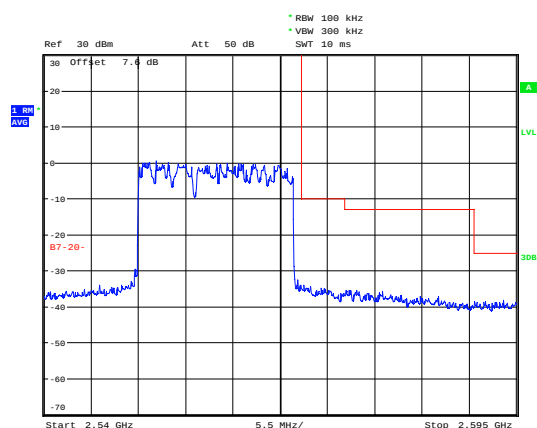
Date: 26.JAN.2018 21:23:24

LTE Band 7 QPSK 20MHz CH-Low, 100%RB



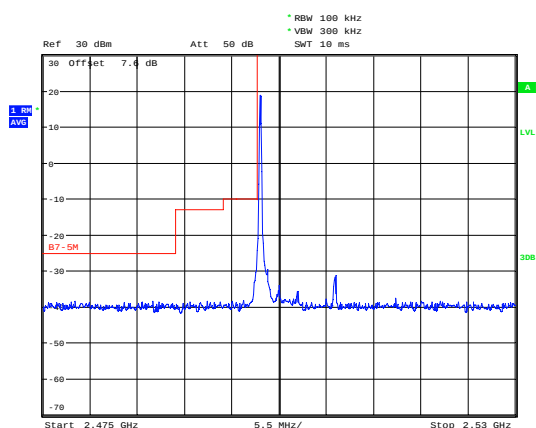
Date: 26.JAN.2018 21:24:17

LTE Band 7 QPSK 20MHz CH-High, 100%RB



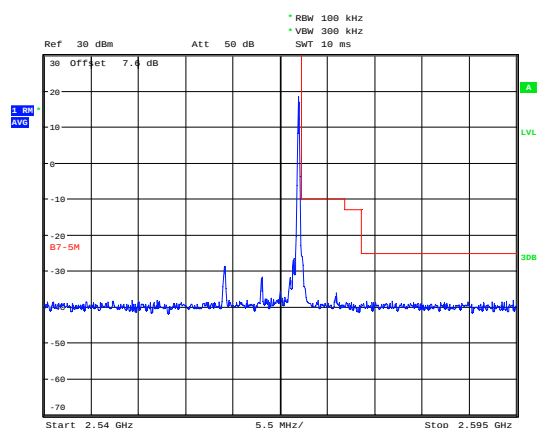
Date: 26.JAN.2018 21:23:30

LTE Band 7 16QAM 5MHz CH-Low, 1 RB



Date: 26.JAN.2018 21:16:46

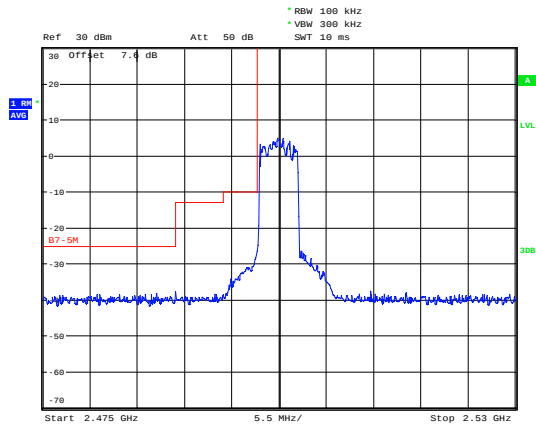
LTE Band 7 16QAM 5MHz CH-High, 1 RB



Date: 26.JAN.2018 21:18:08

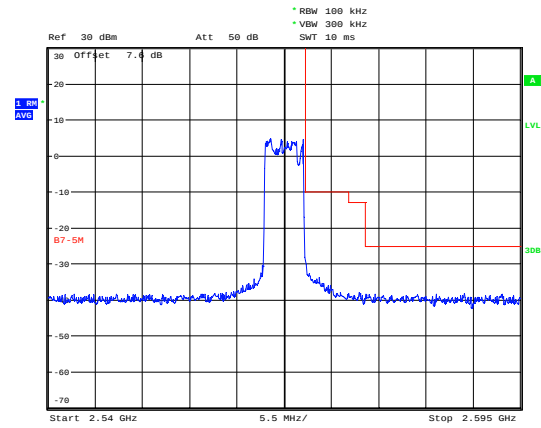


LTE Band 7 16QAM 5MHz CH-Low, 100%RB



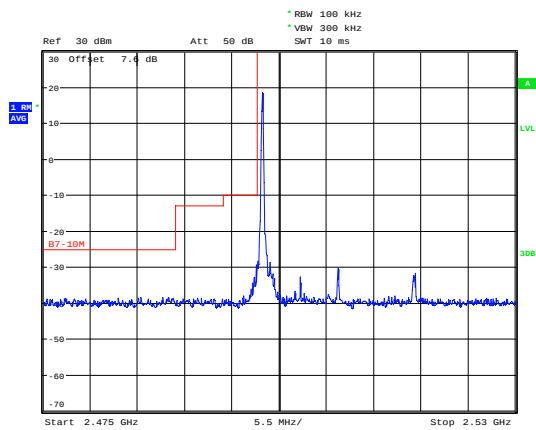
Date: 26.JAN.2018 21:16:37

LTE Band 7 16QAM 5MHz CH-High, 100%RB



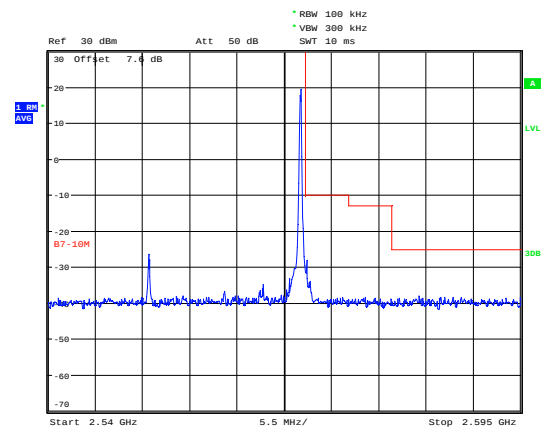
Date: 26.JAN.2018 21:18:02

LTE Band 7 16QAM 10MHz CH-Low, 1 RB



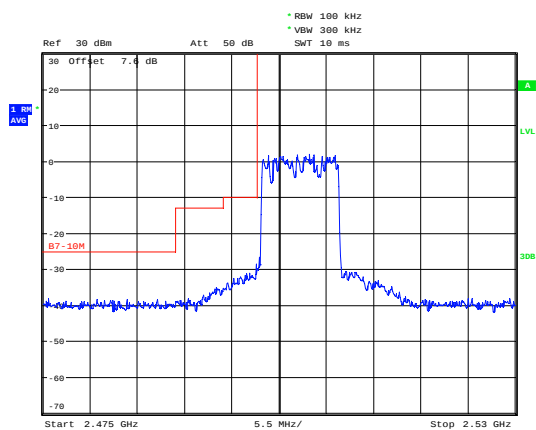
Date: 26.JAN.2018 21:20:17

LTE Band 7 16QAM 10MHz CH-High, 1 RB



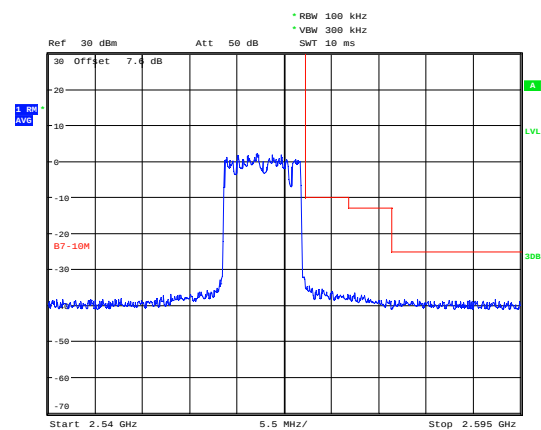
Date: 26.JAN.2018 21:19:13

LTE Band 7 16QAM 10MHz CH-Low, 100%RB



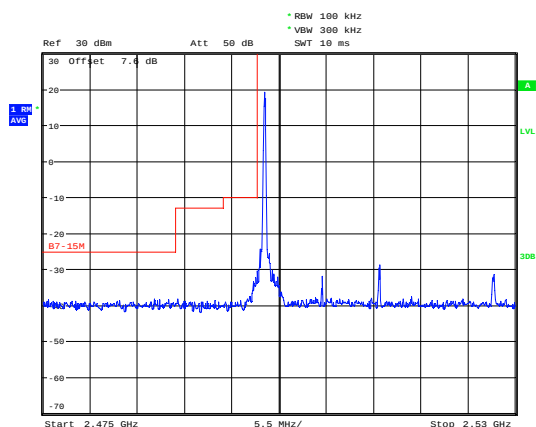
Date: 26.JAN.2018 21:20:08

LTE Band 7 16QAM 10MHz CH-High, 100%RB



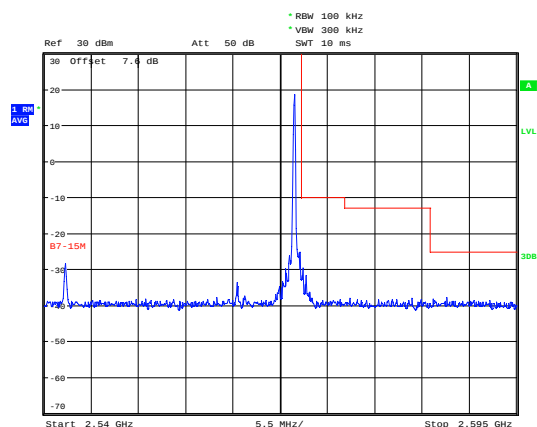
Date: 26.JAN.2018 21:19:03

LTE Band 7 16QAM 15MHz CH-Low, 1 RB



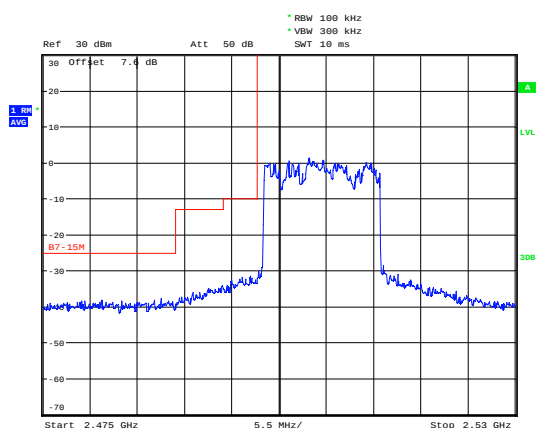
Date: 26.JAN.2018 21:21:27

LTE Band 7 16QAM 15MHz CH-High, 1 RB



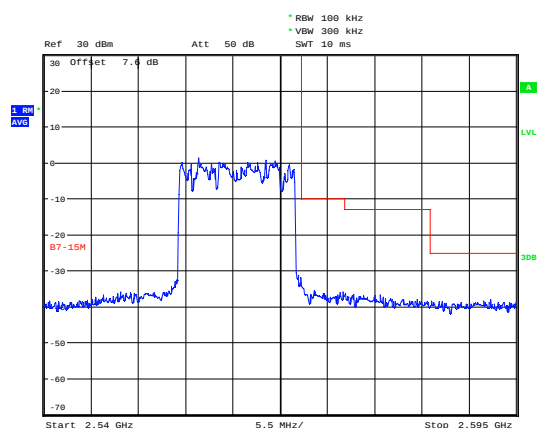
Date: 26.JAN.2018 21:22:24

LTE Band 7 16QAM 15MHz CH-Low, 100%RB



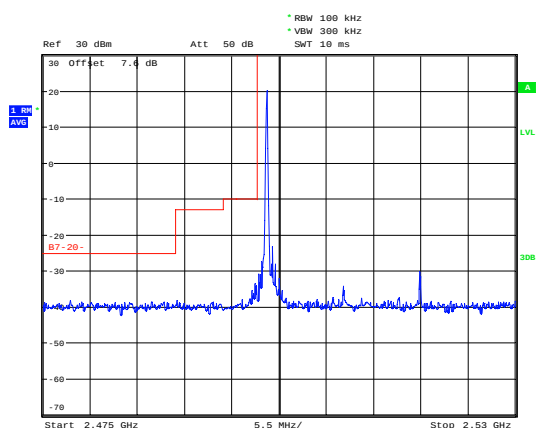
Date: 26.JAN.2018 21:21:19

LTE Band 7 16QAM 15MHz CH-High, 100%RB



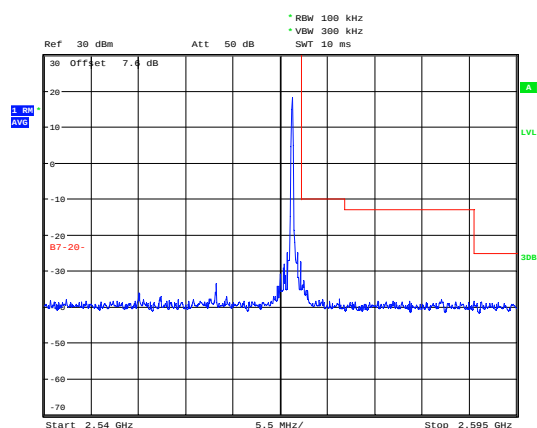
Date: 26.JAN.2018 21:22:17

LTE Band 7 16QAM 20MHz CH-Low, 1 RB



Date: 26.JAN.2018 21:24:30

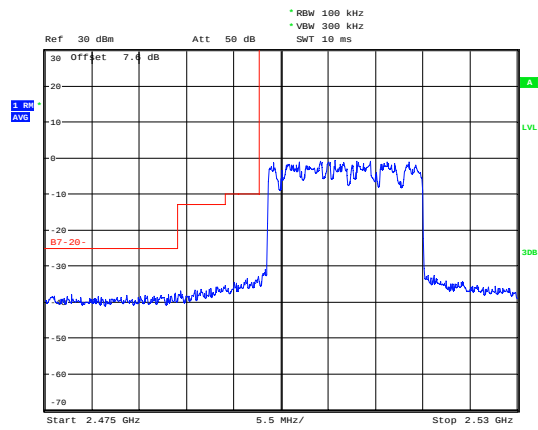
LTE Band 7 16QAM 20MHz CH-High, 1 RB



Date: 26.JAN.2018 21:23:44

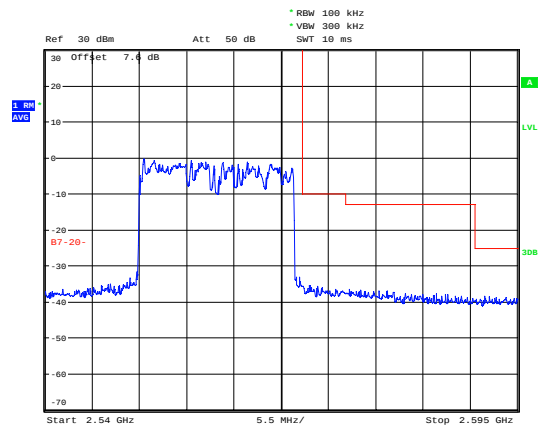


LTE Band 7 16QAM 20MHz CH-Low, 100%RB



Date: 26.JAN.2018 21:24:24

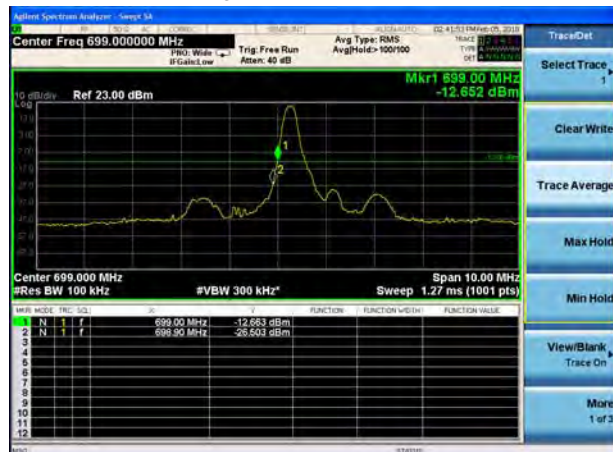
LTE Band 7 16QAM 20MHz CH-High, 100%RB



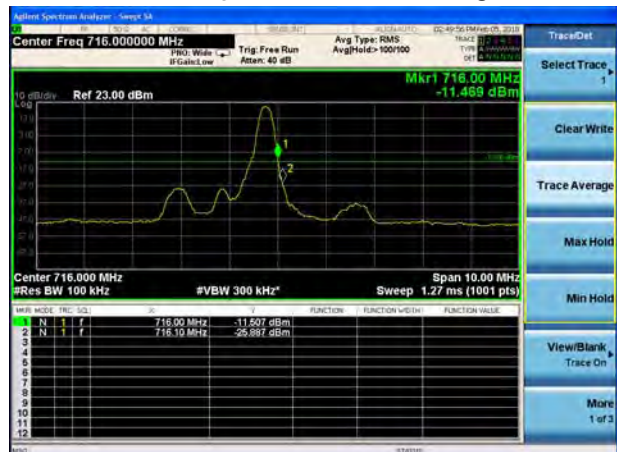
Date: 26.JAN.2018 21:23:38



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



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



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



LTE Band 12 QPSK 1.4MHz 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, 100%RB

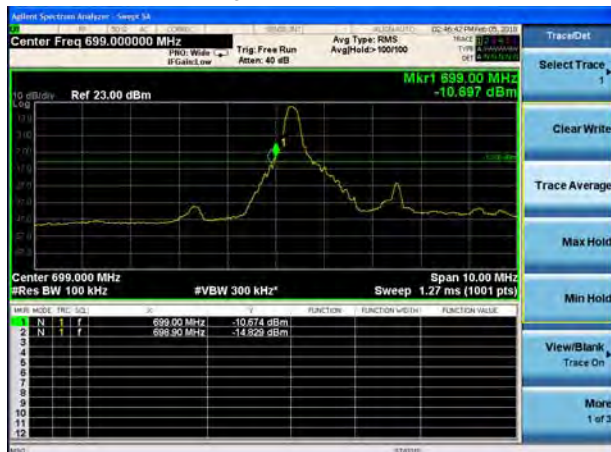


LTE Band 12 QPSK 3MHz CH-High, 100%RB





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

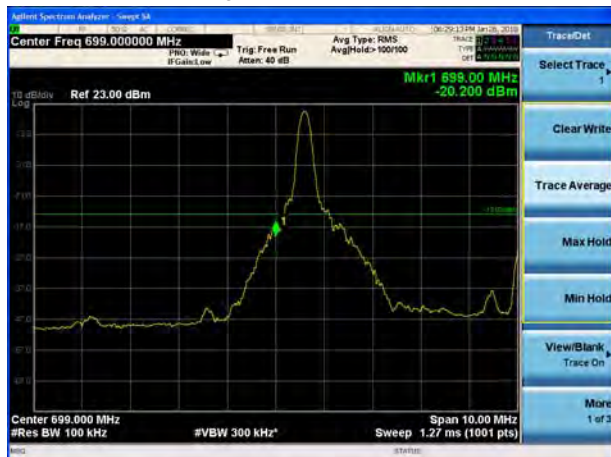


LTE Band 12 QPSK 5MHz CH-High, 100%RB





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, 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, 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

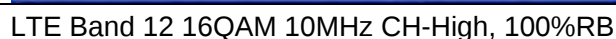
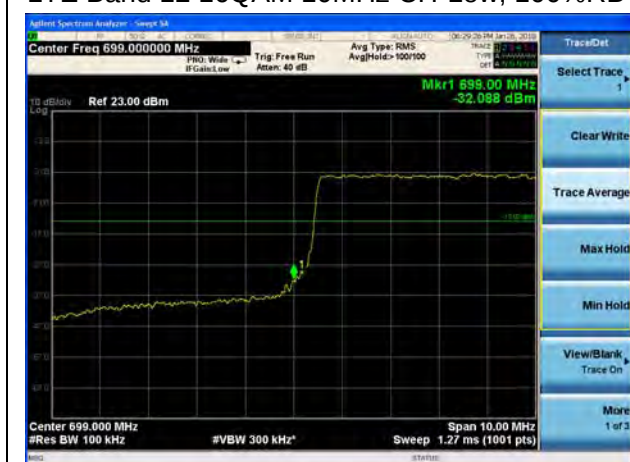
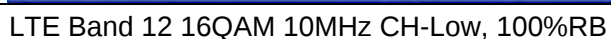
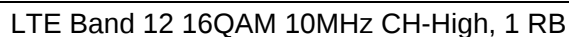
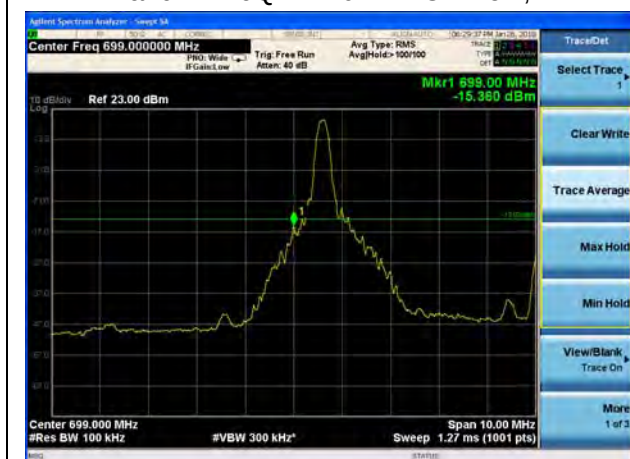
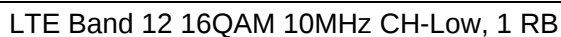


LTE Band 12 16QAM 5MHz CH-Low, 100%RB



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





5.5 Peak-to-Average Power Ratio (PAPR)

Ambient condition

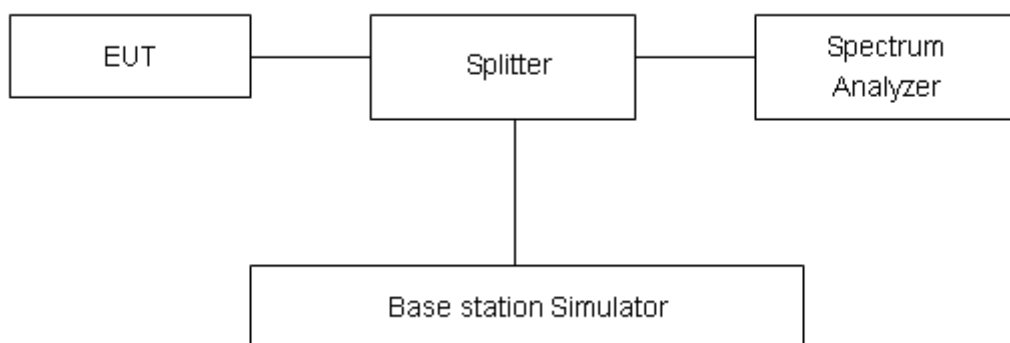
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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:

$$\text{PAPR (dB)} = \text{PPk (dBm)} - \text{PAvg (dBm)}.$$

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

LTE Band 4								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	19957	1710.7	27.00	22.06	4.94	≤13	PASS
		20175	1732.5	25.90	22.17	3.73	≤13	PASS
		20393	1754.3	26.31	22.19	4.12	≤13	PASS
	3	19965	1711.5	27.03	22.09	4.94	≤13	PASS
		20175	1732.5	27.74	22.21	5.53	≤13	PASS
		20385	1753.5	26.95	22.22	4.73	≤13	PASS
	5	19975	1712.5	26.57	22.07	4.50	≤13	PASS
		20175	1732.5	27.46	22.20	5.26	≤13	PASS
		20375	1752.5	27.37	22.20	5.17	≤13	PASS
	10	20000	1715	26.46	22.15	4.31	≤13	PASS
		20175	1732.5	27.05	22.22	4.83	≤13	PASS
		20350	1750	27.91	22.24	5.67	≤13	PASS
	15	20025	1717.5	27.37	22.13	5.24	≤13	PASS
		20175	1732.5	26.65	22.18	4.47	≤13	PASS
		20325	1747.5	26.43	22.19	4.24	≤13	PASS
	20	20050	1720	27.18	22.10	5.08	≤13	PASS
		20175	1732.5	27.70	22.13	5.57	≤13	PASS
		20300	1745	26.89	22.15	4.74	≤13	PASS
16QAM	1.4	19957	1710.7	25.66	21.02	4.64	≤13	PASS
		20175	1732.5	26.74	21.27	5.47	≤13	PASS
		20393	1754.3	26.36	21.19	5.17	≤13	PASS
	3	19965	1711.5	25.61	21.05	4.56	≤13	PASS
		20175	1732.5	26.00	21.31	4.69	≤13	PASS
		20385	1753.5	26.72	21.22	5.50	≤13	PASS
	5	19975	1712.5	26.54	21.03	5.51	≤13	PASS
		20175	1732.5	26.01	21.27	4.74	≤13	PASS
		20375	1752.5	25.84	21.17	4.67	≤13	PASS
	10	20000	1715	26.56	21.06	5.50	≤13	PASS
		20175	1732.5	25.61	21.32	4.29	≤13	PASS
		20350	1750	25.73	21.21	4.52	≤13	PASS
	15	20025	1717.5	25.75	21.03	4.72	≤13	PASS
		20175	1732.5	26.86	21.27	5.59	≤13	PASS
		20325	1747.5	26.67	21.17	5.50	≤13	PASS
	20	20050	1720	25.64	21.01	4.63	≤13	PASS
		20175	1732.5	25.76	21.23	4.53	≤13	PASS
		20300	1745	26.41	21.14	5.27	≤13	PASS

LTE Band 7								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	20775	2502.5	27.80	21.94	5.86	≤13	PASS
		21100	2535	27.11	22.01	5.10	≤13	PASS
		21425	2567.5	27.56	22.25	5.31	≤13	PASS
	10	20800	2505	28.12	22.02	6.10	≤13	PASS
		21100	2535	27.86	22.03	5.83	≤13	PASS
		21400	2565	27.30	22.29	5.01	≤13	PASS
	15	20825	2507.5	27.16	22.00	5.16	≤13	PASS
		21100	2535	27.96	21.99	5.97	≤13	PASS
		21375	2562.5	28.39	22.24	6.15	≤13	PASS
	20	20850	2510	27.30	21.97	5.33	≤13	PASS
		21100	2535	27.03	21.94	5.09	≤13	PASS
		21350	2560	28.14	22.20	5.94	≤13	PASS
16QAM	5	20775	2502.5	27.36	21.37	5.99	≤13	PASS
		21100	2535	26.56	21.34	5.22	≤13	PASS
		21425	2567.5	26.53	21.15	5.38	≤13	PASS
	10	20800	2505	27.53	21.40	6.13	≤13	PASS
		21100	2535	27.36	21.39	5.97	≤13	PASS
		21400	2565	26.36	21.19	5.17	≤13	PASS
	15	20825	2507.5	26.51	21.37	5.14	≤13	PASS
		21100	2535	27.31	21.34	5.97	≤13	PASS
		21375	2562.5	27.24	21.15	6.09	≤13	PASS
	20	20850	2510	26.65	21.35	5.30	≤13	PASS
		21100	2535	26.48	21.30	5.18	≤13	PASS
		21350	2560	27.16	21.12	6.04	≤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	28.06	21.87	6.19	≤13	PASS
		23095	707.5	27.49	22.13	5.36	≤13	PASS
		23173	715.3	27.44	22.03	5.41	≤13	PASS
	3	23025	700.5	28.26	21.96	6.30	≤13	PASS
		23095	707.5	28.28	22.18	6.10	≤13	PASS
		23165	714.5	27.31	22.08	5.23	≤13	PASS
	5	23035	701.5	27.39	21.94	5.45	≤13	PASS
		23095	707.5	28.41	22.14	6.27	≤13	PASS
		23155	713.5	28.38	22.03	6.35	≤13	PASS
	10	23060	704	27.41	21.91	5.50	≤13	PASS
		23095	707.5	27.34	22.09	5.25	≤13	PASS
		23130	711	28.09	21.99	6.10	≤13	PASS
16QAM	1.4	23017	699.7	27.09	20.90	6.19	≤13	PASS
		23095	707.5	26.48	21.09	5.39	≤13	PASS
		23173	715.3	26.35	21.03	5.32	≤13	PASS
	3	23025	700.5	27.11	20.94	6.17	≤13	PASS
		23095	707.5	27.09	21.14	5.95	≤13	PASS
		23165	714.5	26.21	21.05	5.16	≤13	PASS
	5	23035	701.5	26.43	20.91	5.52	≤13	PASS
		23095	707.5	27.39	21.09	6.30	≤13	PASS
		23155	713.5	27.11	21.01	6.10	≤13	PASS
	10	23060	704	26.16	20.89	5.27	≤13	PASS
		23095	707.5	26.18	21.05	5.13	≤13	PASS
		23130	711	26.97	20.98	5.99	≤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)

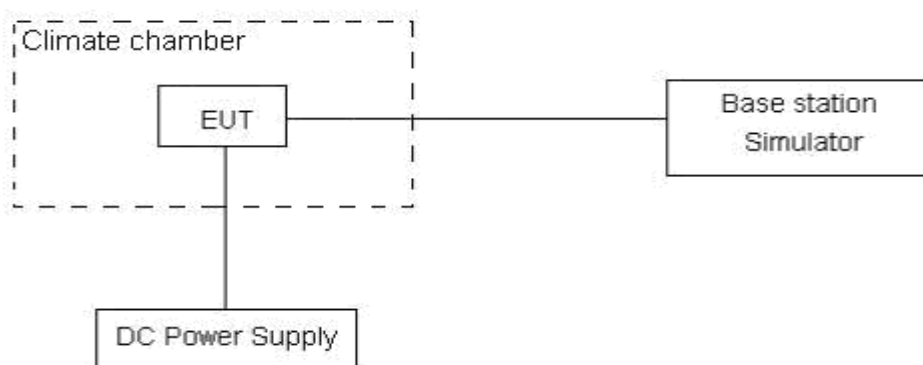
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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 3.6V and 4.3V, with a nominal voltage of 4.00V.

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

Bandwidth	Test status	LTE Band 4 Channel 20175 Test Results (ppm)	
		QPSK	16QAM
1.4MHz	-30°C/Normal Voltage	0.00034	-0.00035
	-20°C/Normal Voltage	0.00002	-0.00403
	-10°C/Normal Voltage	0.00266	0.00177
	0°C/Normal Voltage	-0.00151	-0.00205
	10°C/Normal Voltage	0.00077	-0.00301
	20°C/Normal Voltage	-0.00038	-0.00226
	30°C/Normal Voltage	0.00139	-0.00125
	40°C/Normal Voltage	0.00220	-0.00152
	50°C/Normal Voltage	0.00095	0.00032
	55°C/Normal Voltage	0.00277	0.00019
	20°C/Min Voltage	0.00227	-0.00115
	20°C/Max Voltage	-0.00026	0.00003
3MHz	-30°C/Normal Voltage	0.00222	0.00235
	-20°C/Normal Voltage	0.00076	-0.00031
	-10°C/Normal Voltage	-0.00013	0.00044
	0°C/Normal Voltage	-0.00315	0.00045
	10°C/Normal Voltage	-0.00114	-0.00057
	20°C/Normal Voltage	-0.00130	0.00173
	30°C/Normal Voltage	-0.00226	0.00032
	40°C/Normal Voltage	0.00147	0.00009
	50°C/Normal Voltage	-0.00018	0.00184
	55°C/Normal Voltage	-0.00083	-0.00018
	20°C/Min Voltage	-0.00139	-0.00085
	20°C/Max Voltage	-0.00144	0.00019
5MHz	-30°C/Normal Voltage	0.00047	0.00017
	-20°C/Normal Voltage	-0.00083	0.00155
	-10°C/Normal Voltage	0.00169	0.00192
	0°C/Normal Voltage	-0.00069	0.00142
	10°C/Normal Voltage	0.00128	0.00178
	20°C/Normal Voltage	0.00022	-0.00059
	30°C/Normal Voltage	0.00199	-0.00031
	40°C/Normal Voltage	-0.00083	0.00178
	50°C/Normal Voltage	0.00392	0.00005
	55°C/Normal Voltage	0.00156	0.00174
	20°C/Min Voltage	0.00103	0.00104
	20°C/Max Voltage	0.00184	0.00142



10MHz	-30°C/Normal Voltage	-0.00164	0.00117
	-20°C/Normal Voltage	-0.00028	0.00259
	-10°C/Normal Voltage	0.00025	-0.00002
	0°C/Normal Voltage	-0.00180	0.00117
	10°C/Normal Voltage	-0.00211	0.00233
	20°C/Normal Voltage	-0.00149	-0.00096
	30°C/Normal Voltage	0.00081	0.00051
	40°C/Normal Voltage	-0.00067	0.00106
	50°C/Normal Voltage	-0.00118	0.00169
	55°C/Normal Voltage	-0.00102	-0.00038
	20°C/Min Voltage	-0.00223	0.00070
	20°C/Max Voltage	-0.00211	-0.00010
15MHz	-30°C/Normal Voltage	-0.00334	0.00222
	-20°C/Normal Voltage	-0.00161	-0.00005
	-10°C/Normal Voltage	-0.00053	0.00115
	0°C/Normal Voltage	-0.00193	0.00092
	10°C/Normal Voltage	-0.00200	-0.00016
	20°C/Normal Voltage	-0.00369	-0.00053
	30°C/Normal Voltage	-0.00326	-0.00031
	40°C/Normal Voltage	-0.00022	0.00177
	50°C/Normal Voltage	-0.00059	0.00049
	55°C/Normal Voltage	-0.00063	-0.00049
	20°C/Min Voltage	0.00182	-0.00012
	20°C/Max Voltage	0.00066	-0.00094
20MHz	-30°C/Normal Voltage	-0.00210	-0.00063
	-20°C/Normal Voltage	-0.00251	0.00050
	-10°C/Normal Voltage	-0.00020	-0.00077
	0°C/Normal Voltage	0.00132	-0.00178
	10°C/Normal Voltage	-0.00226	-0.00168
	20°C/Normal Voltage	-0.00322	-0.00121
	30°C/Normal Voltage	0.00012	0.00005
	40°C/Normal Voltage	-0.00322	0.00148
	50°C/Normal Voltage	0.00339	-0.00070
	55°C/Normal Voltage	0.00062	-0.00076
	20°C/Min Voltage	0.00109	0.00040
	20°C/Max Voltage	0.00229	0.00199

Bandwidth	Test status	LTE Band 7 Channel 21100 Test Results (ppm)	
		QPSK	16QAM
5MHz	-30°C/Normal Voltage	0.00099	-0.00127
	-20°C/Normal Voltage	0.00100	-0.00447
	-10°C/Normal Voltage	-0.00221	0.00284
	0°C/Normal Voltage	0.00510	-0.00403
	10°C/Normal Voltage	-0.00176	-0.00222
	20°C/Normal Voltage	0.00004	-0.00203
	30°C/Normal Voltage	0.00023	-0.00245
	40°C/Normal Voltage	-0.00019	-0.00102
	50°C/Normal Voltage	0.00124	0.00031
	55°C/Normal Voltage	0.00257	-0.00023
	20°C/Min Voltage	0.00203	-0.00154
	20°C/Max Voltage	0.00073	-0.00252
10MHz	-30°C/Normal Voltage	-0.00025	-0.00271
	-20°C/Normal Voltage	-0.00044	-0.00290
	-10°C/Normal Voltage	-0.00063	-0.00380
	0°C/Normal Voltage	-0.00154	0.00007
	10°C/Normal Voltage	0.00233	-0.00290
	20°C/Normal Voltage	0.00141	-0.00109
	30°C/Normal Voltage	0.00086	-0.00090
	40°C/Normal Voltage	0.00040	-0.00132
	50°C/Normal Voltage	0.00036	0.00011
	55°C/Normal Voltage	-0.00004	0.00144
	20°C/Min Voltage	-0.00139	0.00090
	20°C/Max Voltage	-0.00061	-0.00041
15MHz	-30°C/Normal Voltage	0.00116	-0.00138
	-20°C/Normal Voltage	0.00087	-0.00157
	-10°C/Normal Voltage	-0.00214	-0.00176
	0°C/Normal Voltage	0.00073	-0.00267
	10°C/Normal Voltage	0.00124	0.00120
	20°C/Normal Voltage	-0.00058	0.00028
	30°C/Normal Voltage	0.00009	-0.00028
	40°C/Normal Voltage	0.00001	-0.00073
	50°C/Normal Voltage	-0.00137	-0.00078
	55°C/Normal Voltage	0.00032	-0.00118
	20°C/Min Voltage	-0.00095	-0.00252
	20°C/Max Voltage	-0.00026	-0.00174
20MHz	-30°C/Normal Voltage	0.00192	0.00003



	-20°C/Normal Voltage	0.00172	-0.00026
	-10°C/Normal Voltage	0.00076	-0.00327
	0°C/Normal Voltage	-0.00137	-0.00041
	10°C/Normal Voltage	0.00032	0.00011
	20°C/Normal Voltage	-0.00095	-0.00171
	30°C/Normal Voltage	-0.00026	-0.00104
	40°C/Normal Voltage	0.00192	-0.00112
	50°C/Normal Voltage	0.00172	-0.00250
	55°C/Normal Voltage	0.00076	-0.00081
	20°C/Min Voltage	0.00113	-0.00209
	20°C/Max Voltage	0.00192	-0.00140

Bandwidth	Test status	LTE Band 12 Channel 23095 Test Results (ppm)	
		QPSK	16QAM
1.4M	-30°C/Normal Voltage	0.01310	-0.00702
	-20°C/Normal Voltage	-0.01261	-0.00695
	-10°C/Normal Voltage	0.01589	-0.00914
	0°C/Normal Voltage	0.01867	0.00068
	10°C/Normal Voltage	0.00883	-0.00096
	20°C/Normal Voltage	-0.01078	-0.00252
	30°C/Normal Voltage	0.00510	-0.00085
	40°C/Normal Voltage	0.00235	-0.00734
	50°C/Normal Voltage	0.01430	-0.01203
	55°C/Normal Voltage	0.00024	-0.00182
	20°C/Min Voltage	-0.00079	-0.00530
	20°C/Max Voltage	-0.01002	-0.00250
3M	-30°C/Normal Voltage	-0.00167	0.00338
	-20°C/Normal Voltage	-0.00609	-0.00406
	-10°C/Normal Voltage	-0.00496	-0.00256
	0°C/Normal Voltage	-0.00712	-0.00300
	10°C/Normal Voltage	-0.00339	0.01374
	20°C/Normal Voltage	0.00753	-0.00286
	30°C/Normal Voltage	-0.00228	-0.00595
	40°C/Normal Voltage	0.00222	-0.01541
	50°C/Normal Voltage	-0.00092	-0.00120
	55°C/Normal Voltage	-0.00683	-0.00702
	20°C/Min Voltage	-0.00322	-0.01305
	20°C/Max Voltage	0.01339	0.00293
5MHz	-30°C/Normal Voltage	0.01170	-0.00741



	-20°C/Normal Voltage	0.01138	0.00239
	-10°C/Normal Voltage	0.01049	0.00295
	0°C/Normal Voltage	0.00334	-0.00081
	10°C/Normal Voltage	0.01317	-0.00441
	20°C/Normal Voltage	-0.00440	-0.00274
	30°C/Normal Voltage	-0.00485	-0.00256
	40°C/Normal Voltage	-0.00175	-0.00171
	50°C/Normal Voltage	-0.00100	-0.01237
	55°C/Normal Voltage	-0.01234	-0.00434
	20°C/Min Voltage	-0.00849	0.00622
	20°C/Max Voltage	0.00184	-0.01216
10MHz	-30°C/Normal Voltage	-0.01125	-0.00161
	-20°C/Normal Voltage	-0.00989	-0.00093
	-10°C/Normal Voltage	-0.00271	-0.00824
	0°C/Normal Voltage	-0.01117	-0.02106
	10°C/Normal Voltage	-0.01045	0.00437
	20°C/Normal Voltage	-0.00208	-0.01949
	30°C/Normal Voltage	-0.01173	0.00266
	40°C/Normal Voltage	-0.01445	-0.01919
	50°C/Normal Voltage	-0.00514	0.00895
	55°C/Normal Voltage	-0.00008	-0.00674
	20°C/Min Voltage	0.00011	0.00066
	20°C/Max Voltage	0.00182	0.00404

5.7 Spurious Emissions at Antenna Terminals

Ambient condition

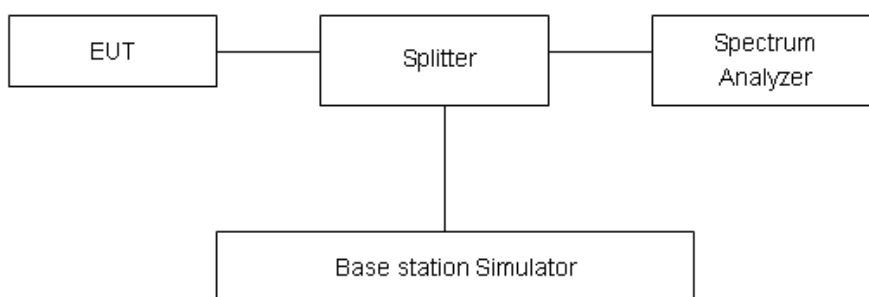
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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(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.

Rule Part 27.53(m) $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Part 27.53(h)/(g) Limit	-13 dBm
Part 27.53(m) Limit	-25 dBm

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-2GHz	0.684 dB
2GHz-18GHz	1.407 dB

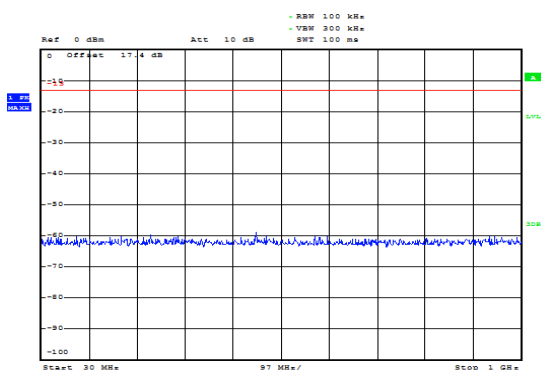
Test Result

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

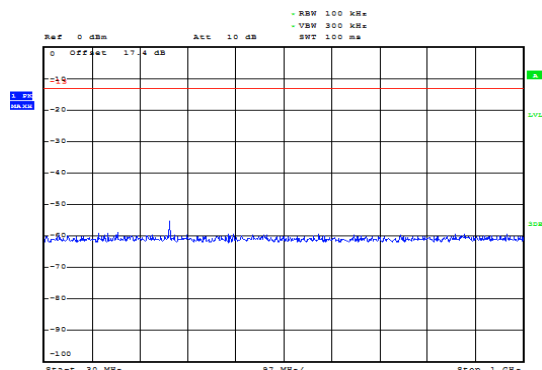
If disturbances were found more than 20dB below limit line, the mark is not required for the EUT.

The signal beyond the limit is carrier.

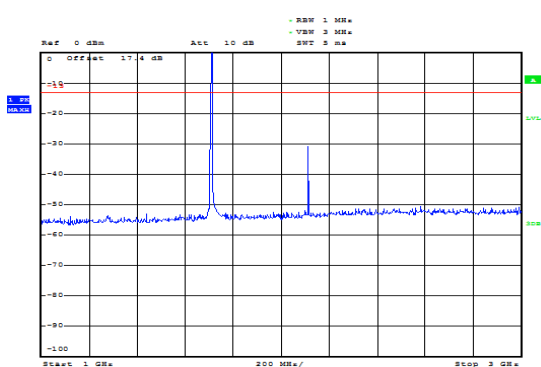
LTE Band 4 1.4MHz CH-Low 30MHz~1GHz



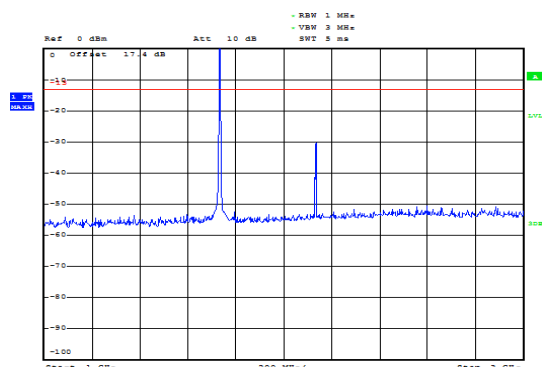
LTE Band 4 1.4MHz CH- Middle 30MHz~1GHz



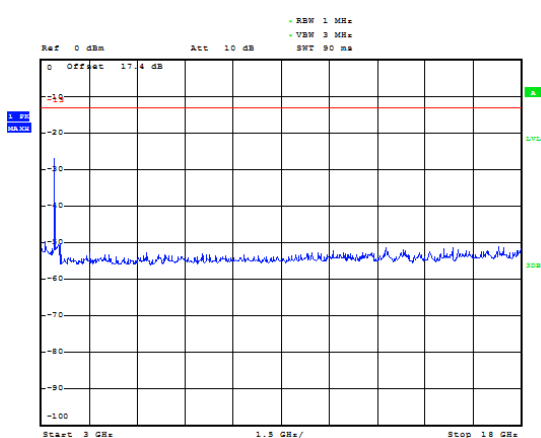
LTE Band 4 1.4MHz CH-Low 1GHz~3GHz



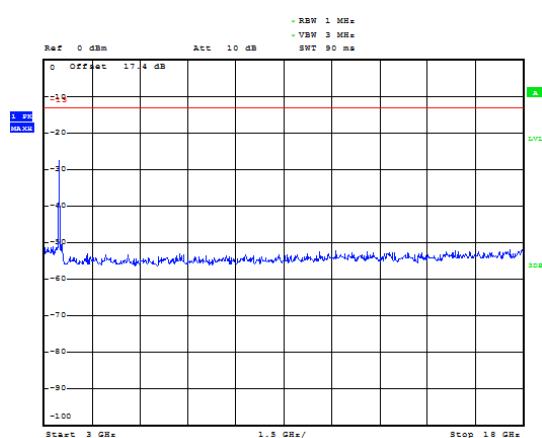
LTE Band 4 1.4MHz CH- Middle 1GHz~3GHz



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

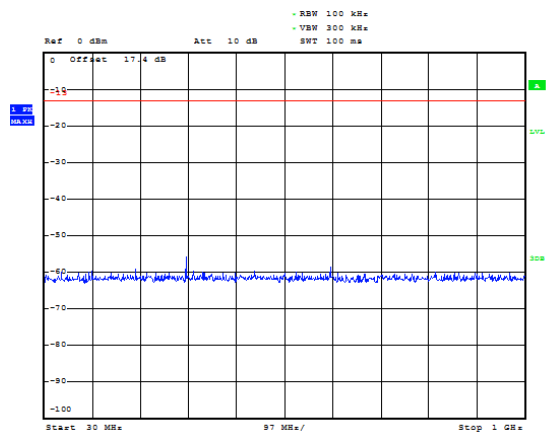


LTE Band 4 1.4MHz CH- Middle 3GHz~18GHz

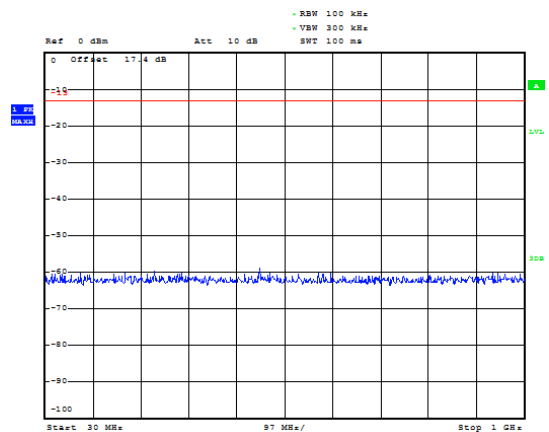




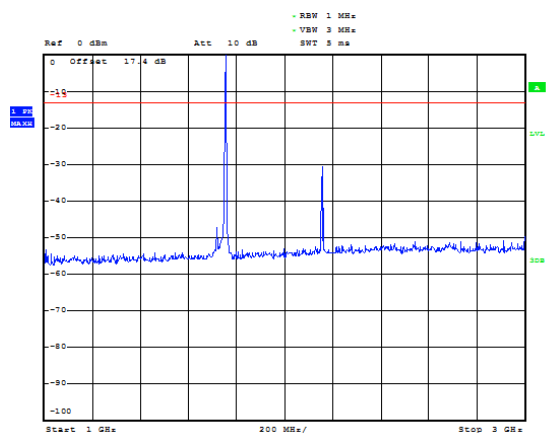
LTE Band 4 1.4MHz CH- High 30MHz~1GHz



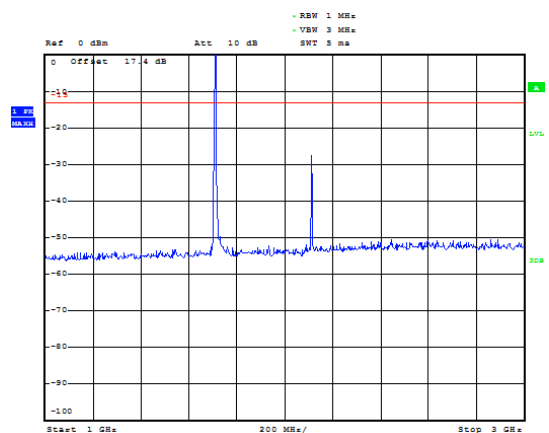
LTE Band 4 3MHz CH-Low 30MHz~1GHz



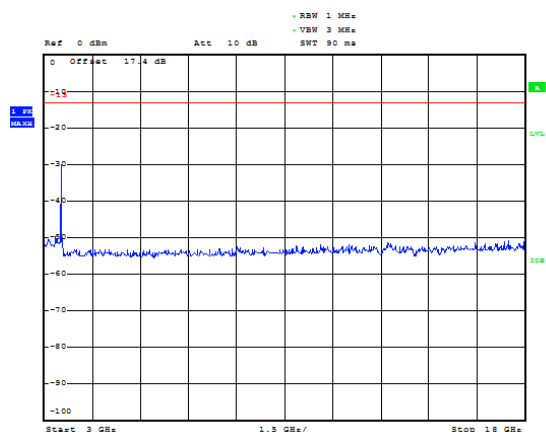
LTE Band 4 1.4MHz CH- High 1GHz~3GHz



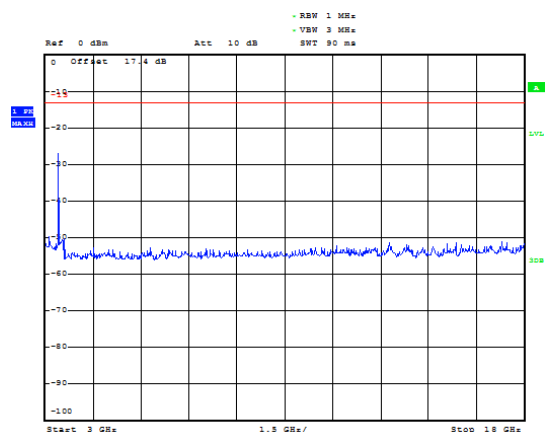
LTE Band 4 3MHz CH Low 1GHz~3GHz



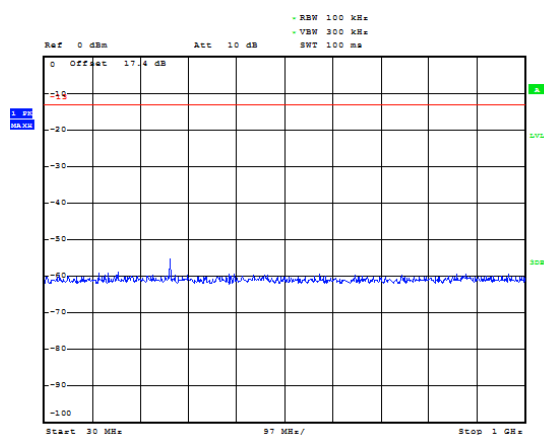
LTE Band 4 1.4MHz CH- High 3GHz~18GHz



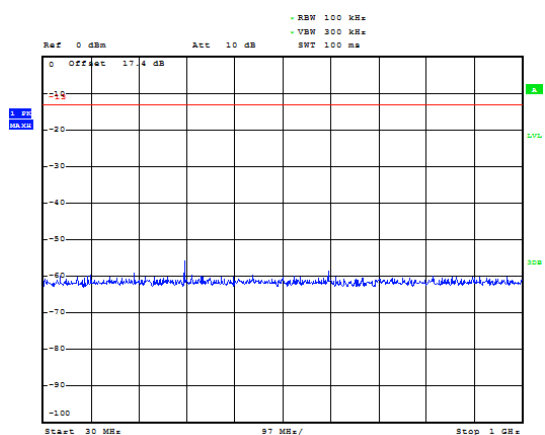
LTE Band 4 3MHz CH- Low 3GHz~18GHz



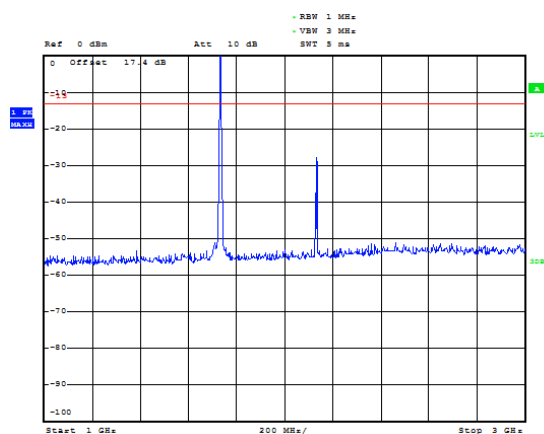
LTE Band 4 3MHz CH- Middle 30MHz~1GHz



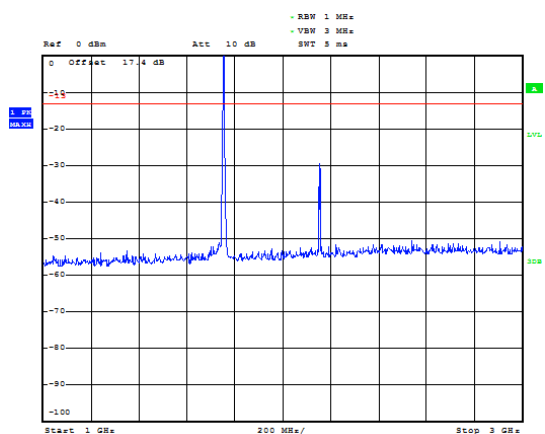
LTE Band 4 3MHz CH- High 30MHz~1GHz



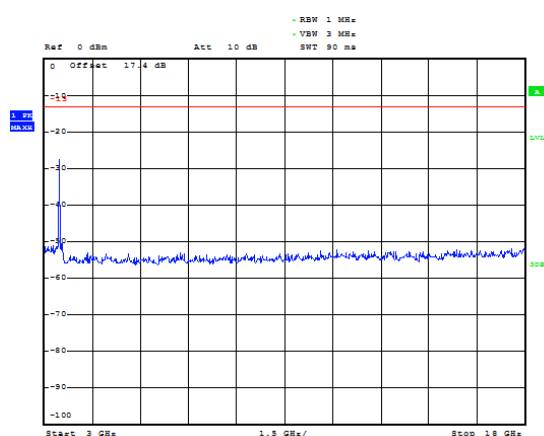
LTE Band 4 3MHz CH Middle 1GHz~3GHz



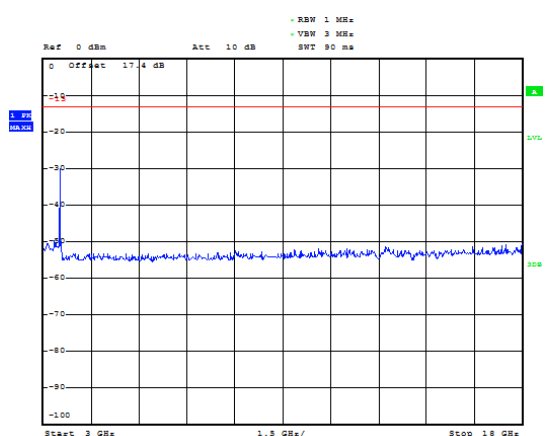
LTE Band 4 3MHz CH High 1GHz~3GHz



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

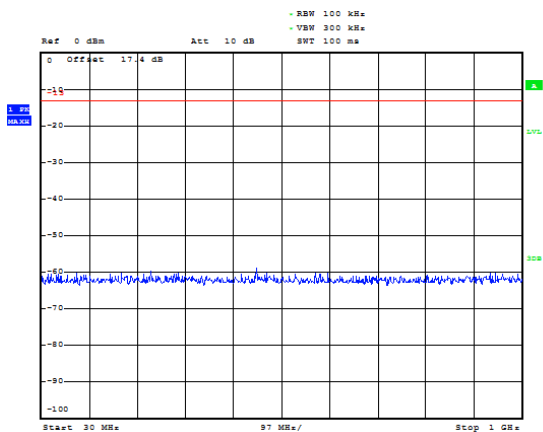


LTE Band 4 3MHz CH- High 3GHz~18GHz

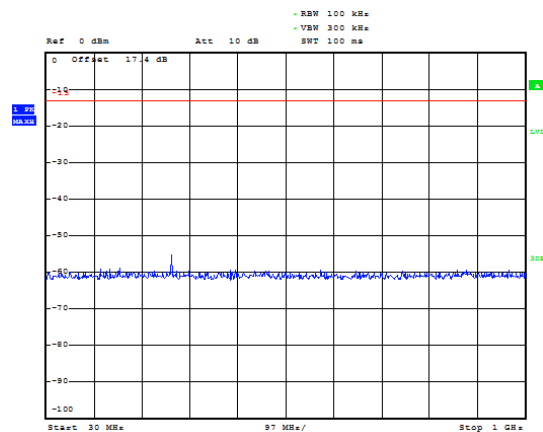




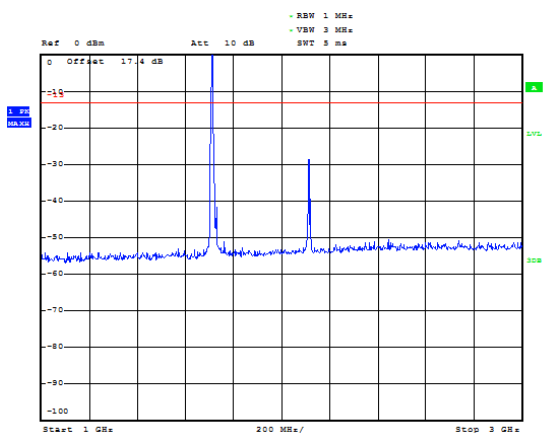
LTE Band 4 5MHz CH-Low 30MHz~1GHz



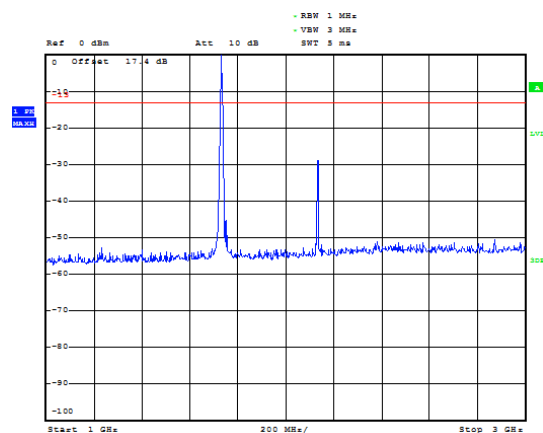
LTE Band 4 5MHz CH- Middle 30MHz~1GHz



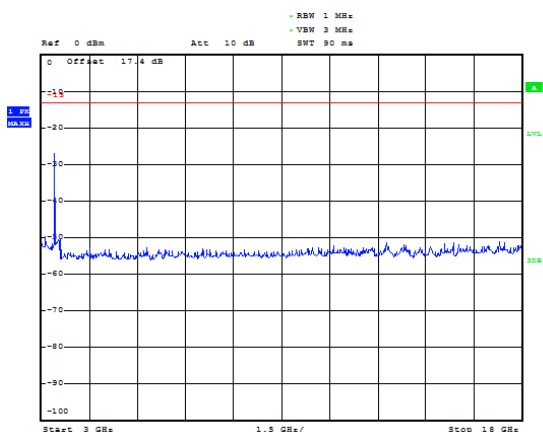
LTE Band 4 5MHz CH- Low 1GHz ~3GHz



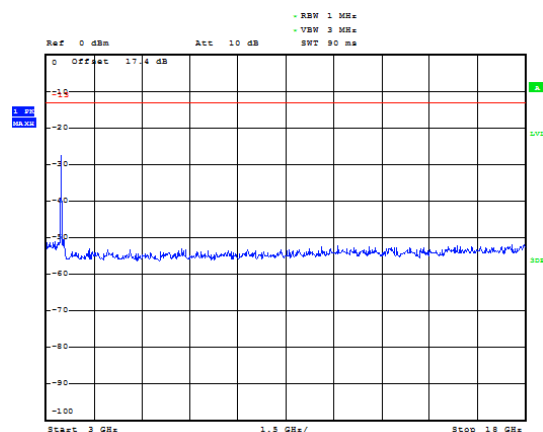
LTE Band 4 5MHz CH- Middle 1GHz ~3GHz



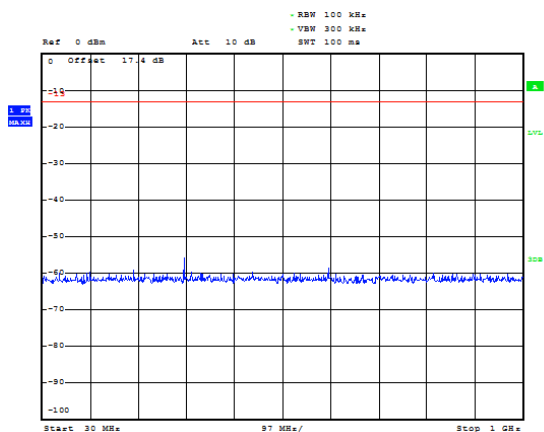
LTE Band 4 5MHz CH- Low 3GHz ~18GHz



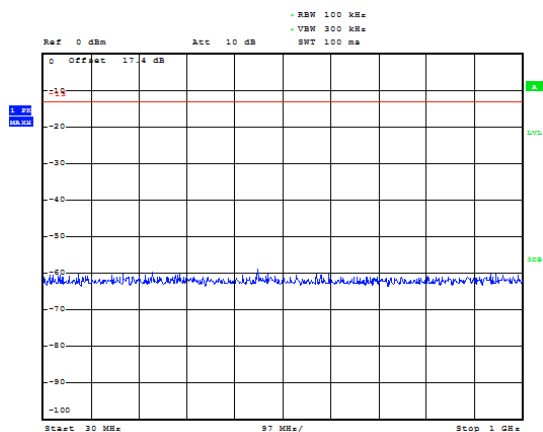
LTE Band 4 5MHz CH- Middle 3GHz ~18GHz



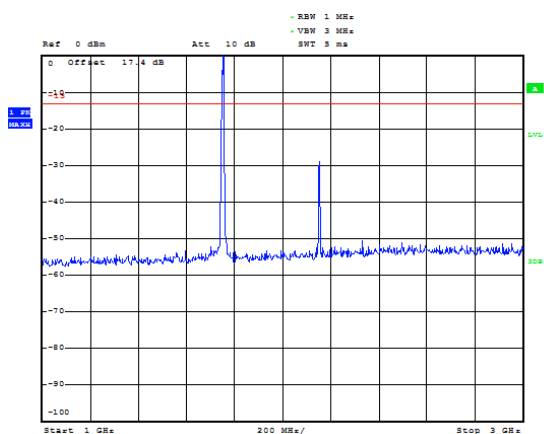
LTE Band 4 5MHz CH- High 30MHz~1GHz



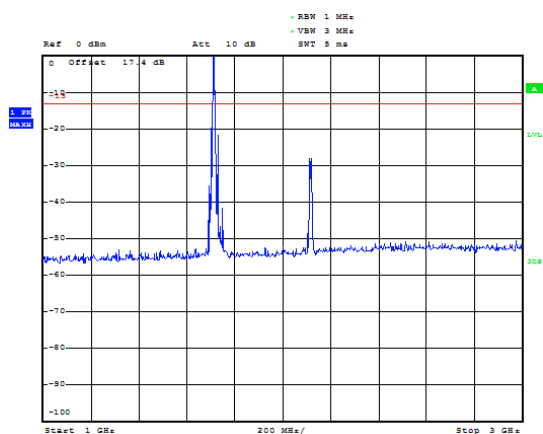
LTE Band 4 10MHz CH-Low 30MHz~1GHz



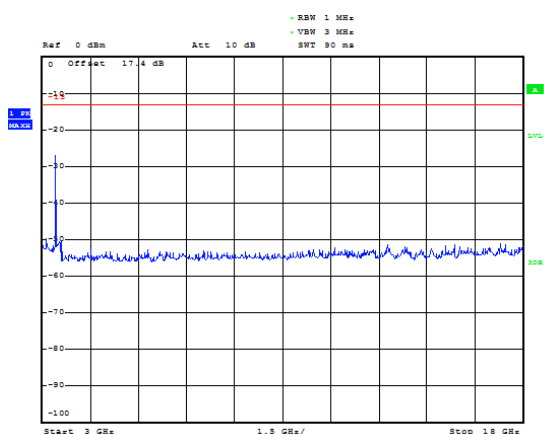
LTE Band 4 5MHz CH- High 1GHz ~3GHz



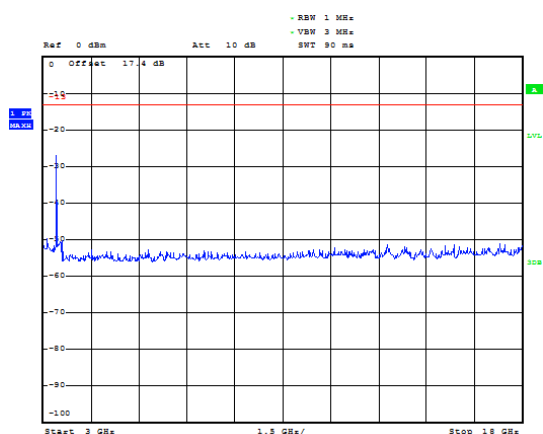
LTE Band 4 10MHz CH- Low 1GHz ~3GHz



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

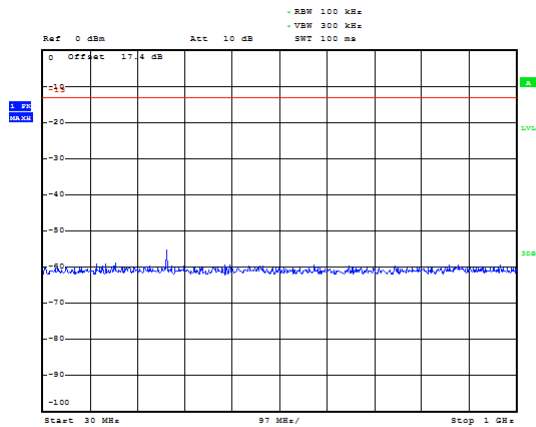


LTE Band 4 10MHz CH- Low 3GHz ~18GHz

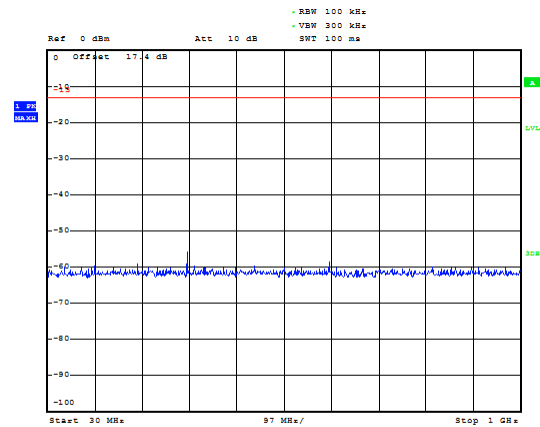




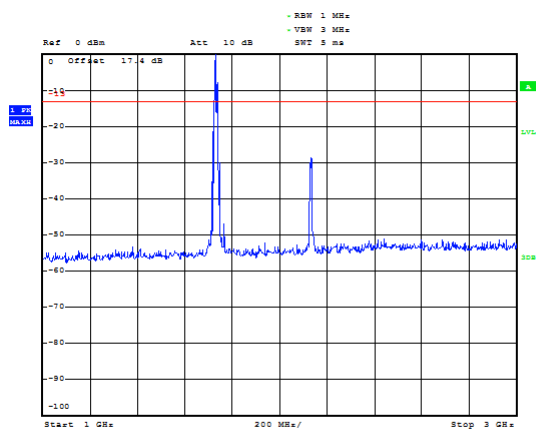
LTE Band 4 10MHz CH- Middle 30MHz~1GHz



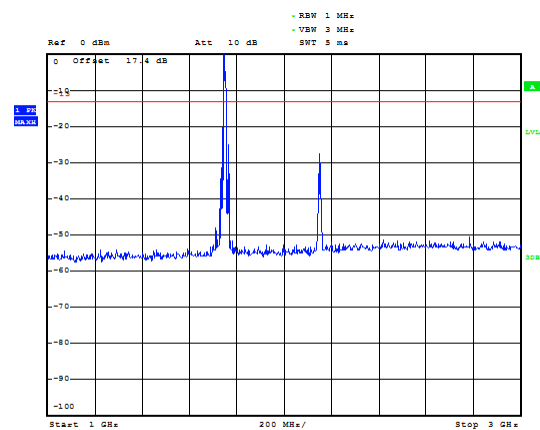
LTE Band 4 10MHz CH- High 30MHz~1GHz



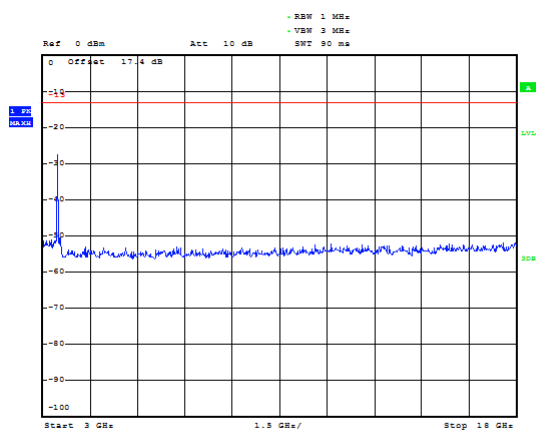
LTE Band 4 10MHz CH- Middle 1GHz ~3GHz



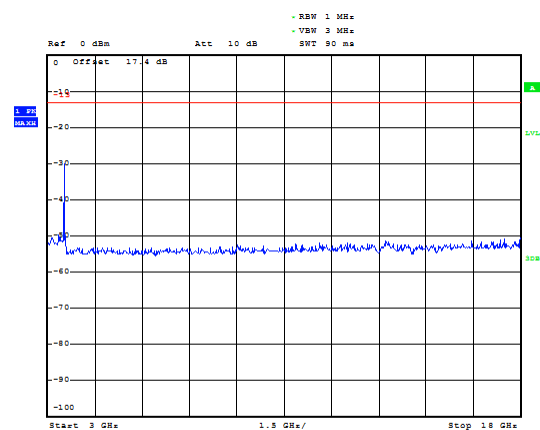
LTE Band 4 10MHz CH- High 1GHz ~3GHz



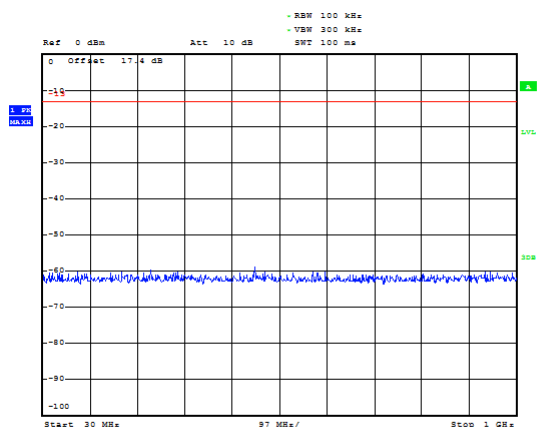
LTE Band 4 10MHz CH- Middle 3GHz ~18GHz



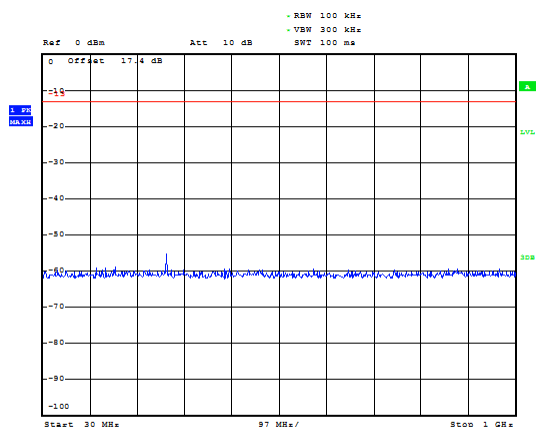
LTE Band 4 10MHz CH- High 3GHz ~18GHz



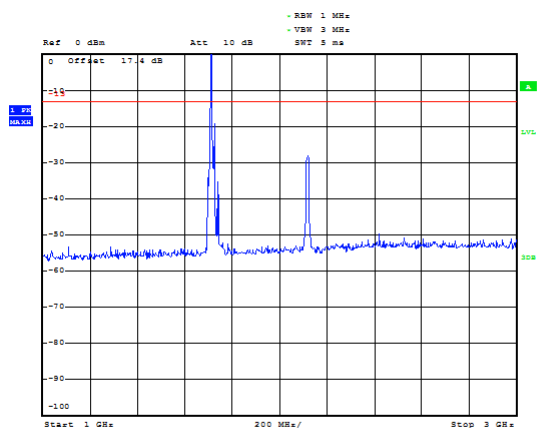
LTE Band 4 15MHz CH- Low 30MHz~1GHz



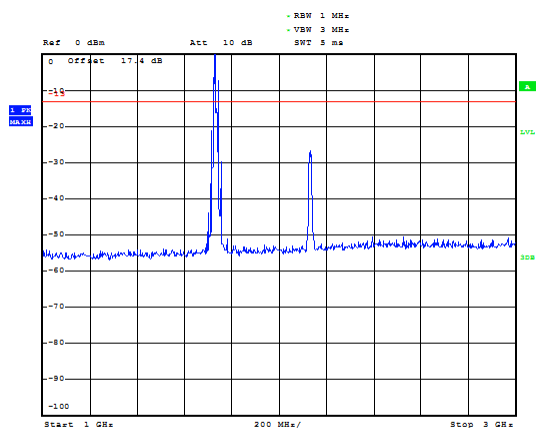
LTE Band 4 15MHz CH- Middle 30MHz~1GHz



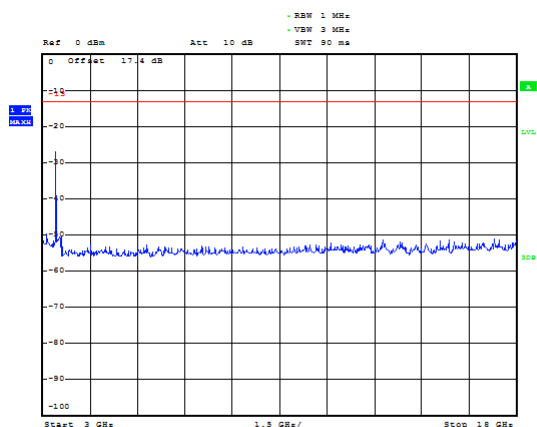
LTE Band 4 15MHz CH- Low 1GHz ~3GHz



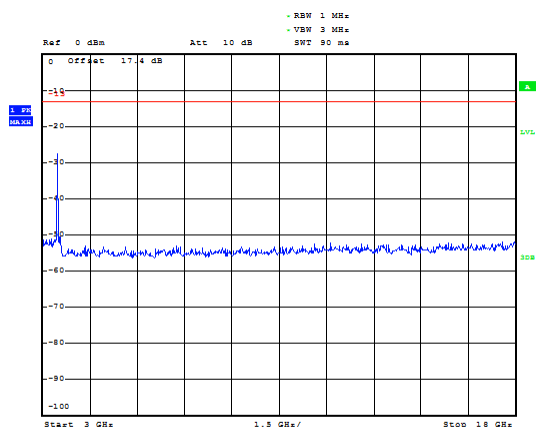
LTE Band 4 15MHz CH- Middle 1GHz ~3GHz



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

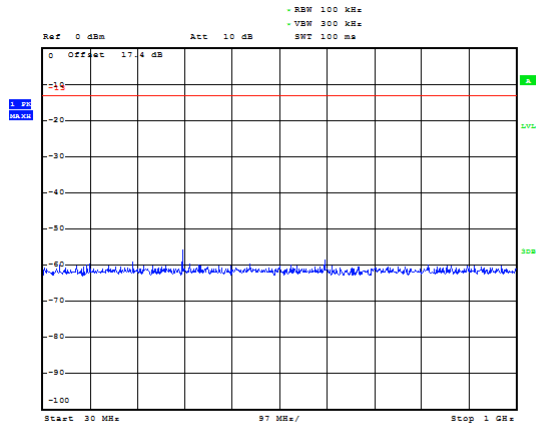


LTE Band 4 15MHz CH- Middle 3GHz ~18GHz

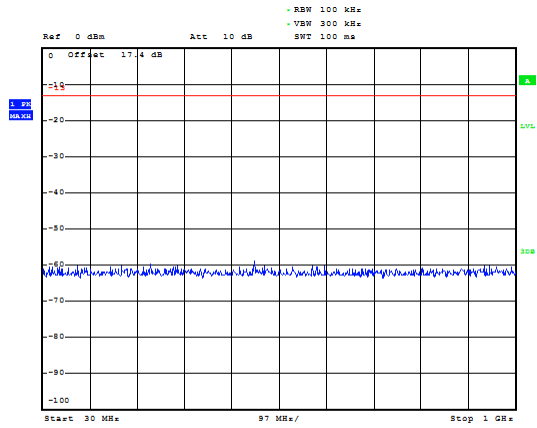




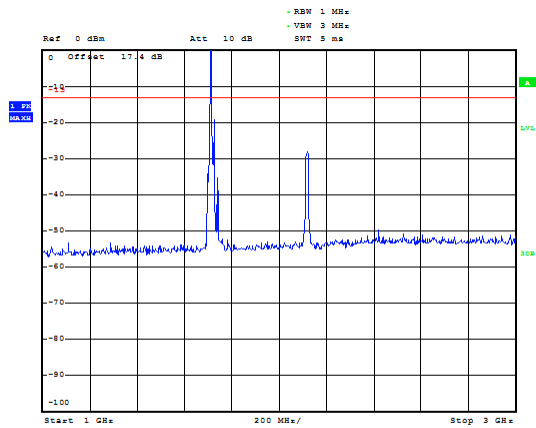
LTE Band 4 15MHz CH- High 30MHz~1GHz



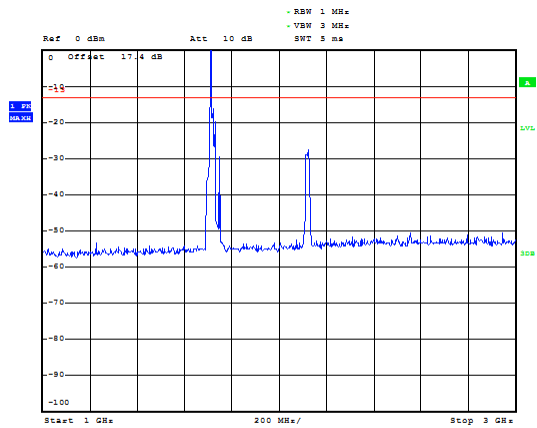
LTE Band 4 20MHz CH-Low 30MHz~1GHz



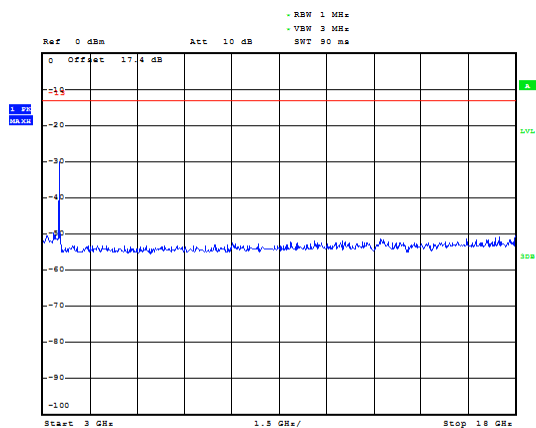
LTE Band 4 15MHz CH- High 1GHz ~3GHz



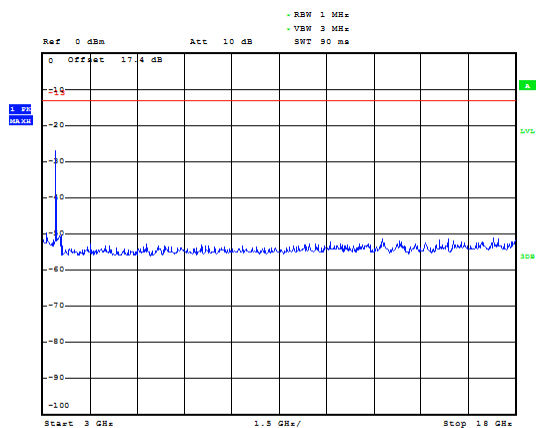
LTE Band 4 20MHz CH-Low 1GHz~3GHz



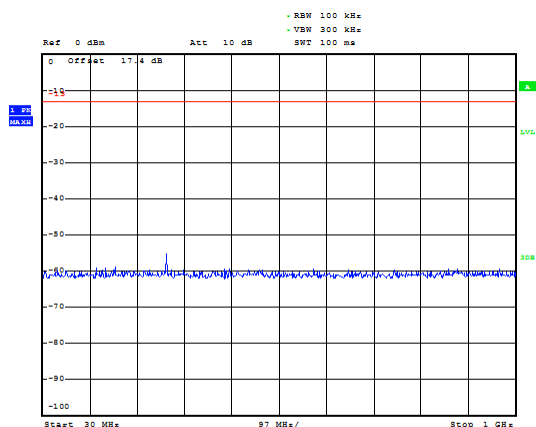
LTE Band 4 15MHz CH- High 1GHz ~3GHz



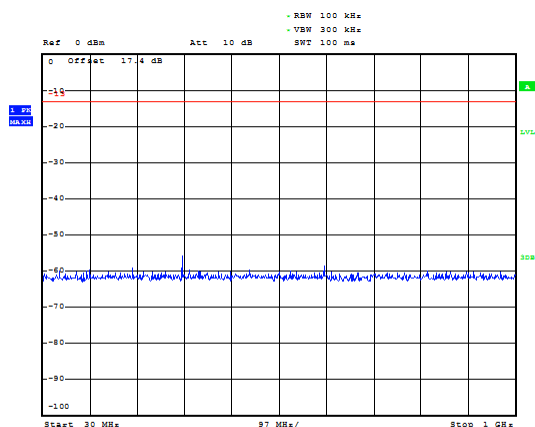
LTE Band 4 20MHz CH-Low 3GHz~18GHz



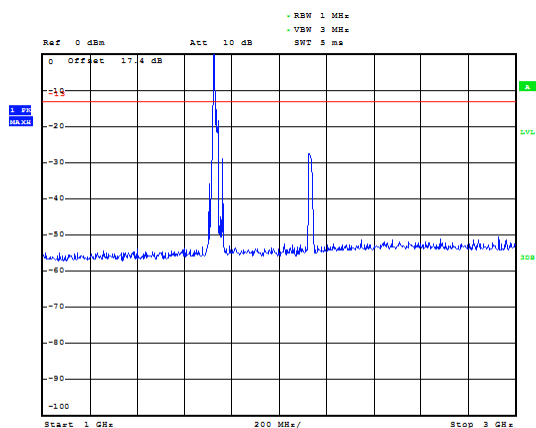
LTE Band 4 20MHz CH- Middle 30MHz~1GHz



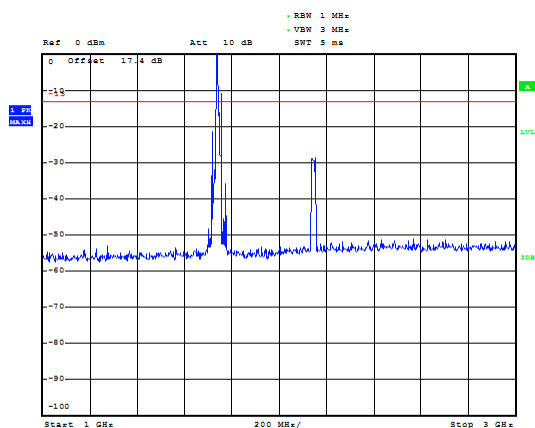
LTE Band 4 20MHz CH- High 30MHz~1GHz



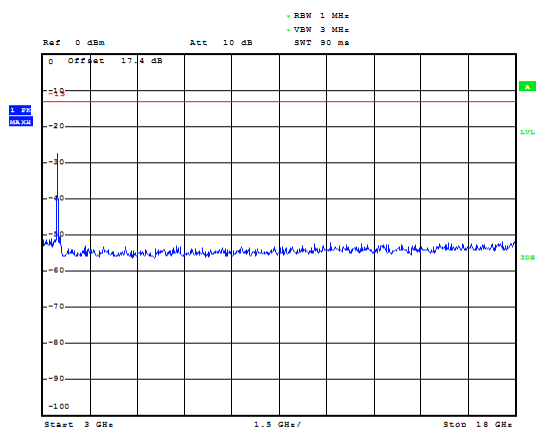
LTE Band 4 20MHz CH- Middle 1GHz ~3GHz



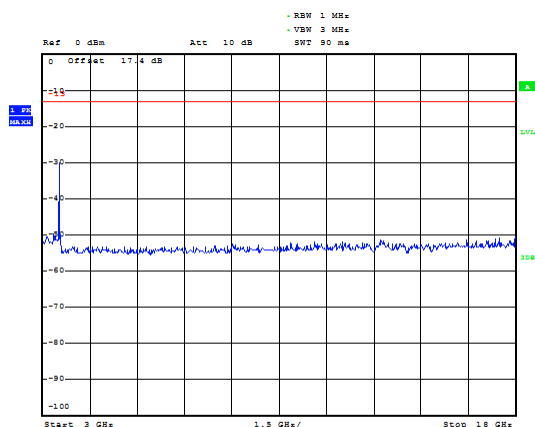
LTE Band 4 20MHz CH- High 1GHz~3GHz



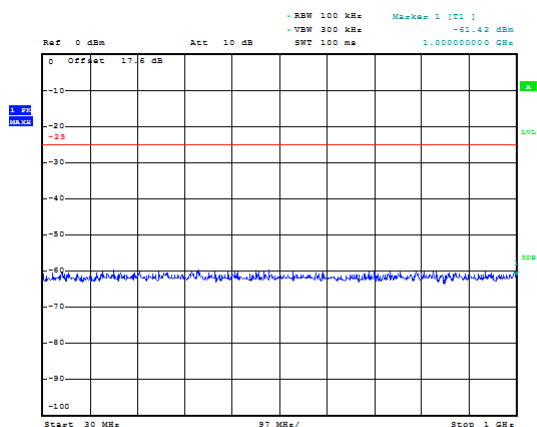
LTE Band 4 20MHz CH- Middle 1GHz ~3GHz



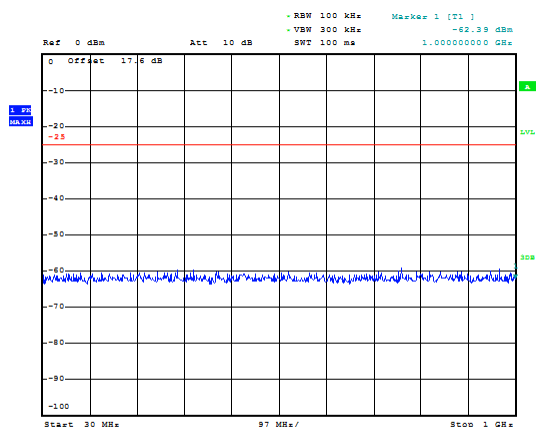
LTE Band 4 20MHz CH- High 3GHz~18GHz



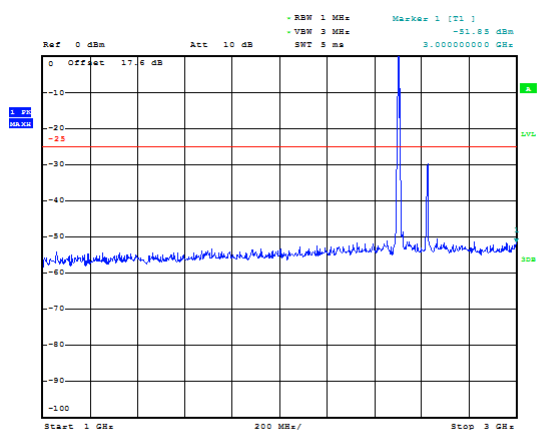
LTE Band 7 5MHz CH- Low 30MHz~1GHz



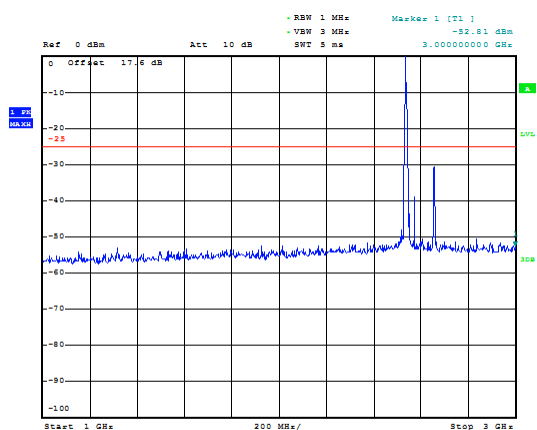
LTE Band 7 5MHz CH-Middle 30MHz~1GHz



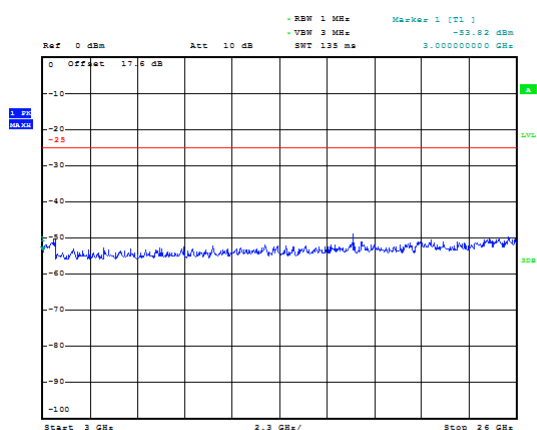
LTE Band 7 5MHz CH- Low 1GHz~3GHz



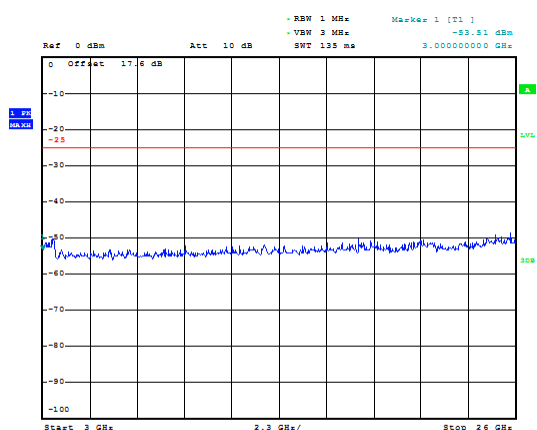
LTE Band 7 5MHz CH-Middle 1GHz~3GHz



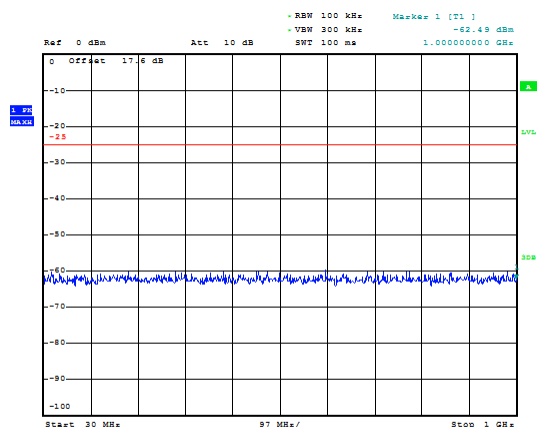
LTE Band 7 5MHz CH- Low 3GHz~26GHz



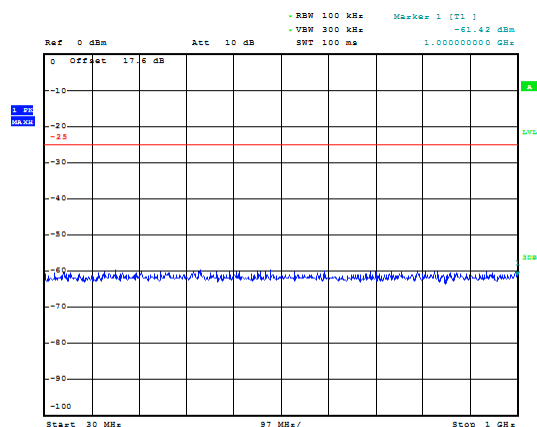
LTE Band 7 5MHz CH-Middle 3GHz~26GHz



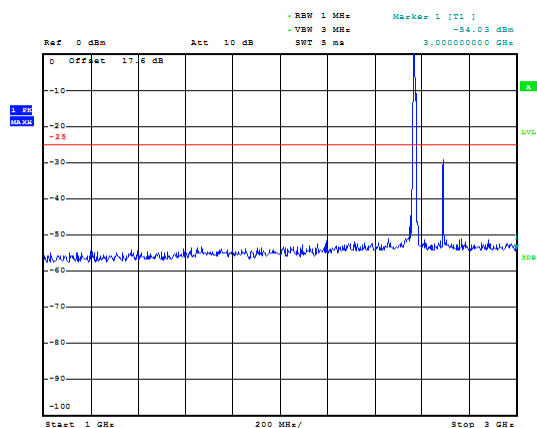
LTE Band 7 5MHz CH-High 30MHz~1GHz



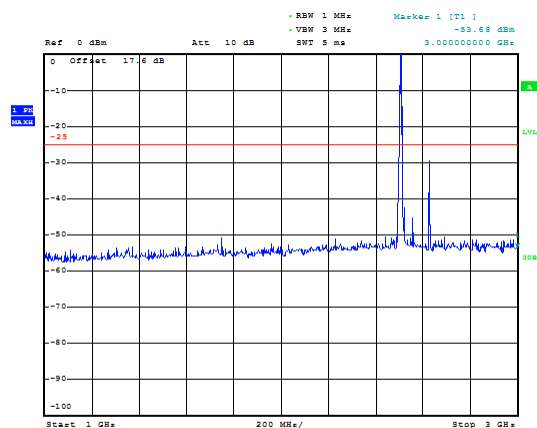
LTE Band 7 10MHz CH-Low 30MHz~1GHz



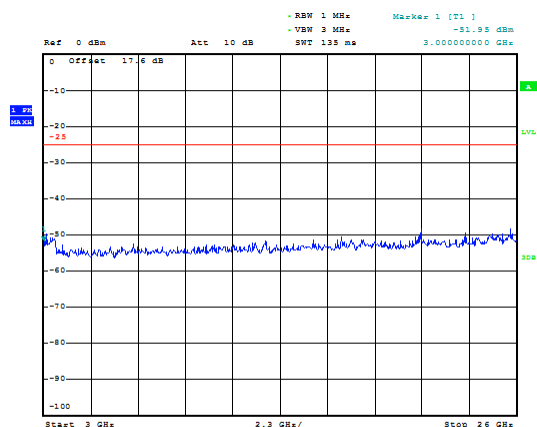
LTE Band 7 5MHz CH-High 1GHz~3GHz



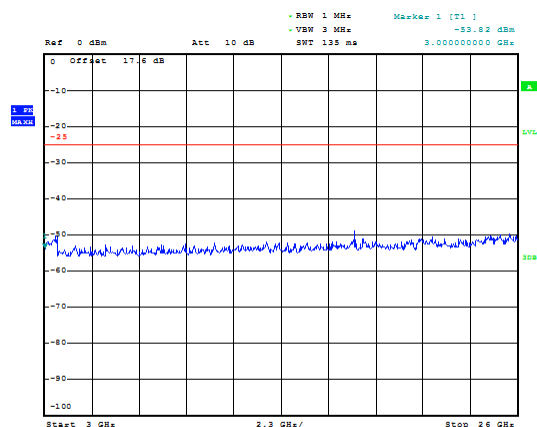
LTE Band 7 10MHz CH-Low 1GHz~3GHz



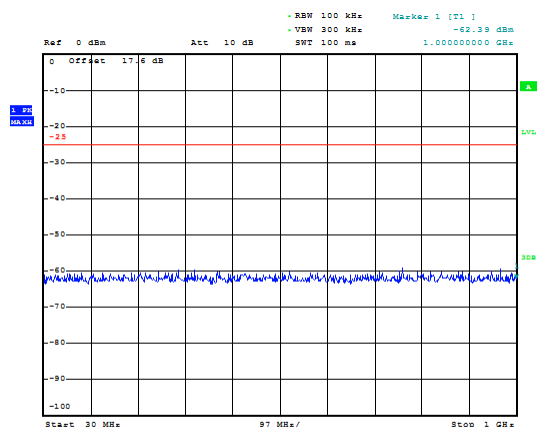
LTE Band 7 5MHz CH-High 3GHz~26GHz



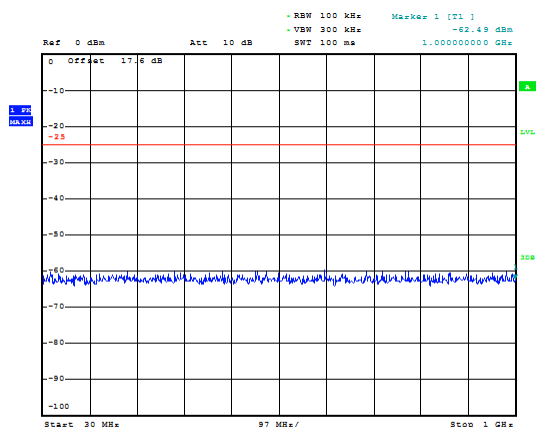
LTE Band 7 10MHz C CH-Low 3GHz~26GHz



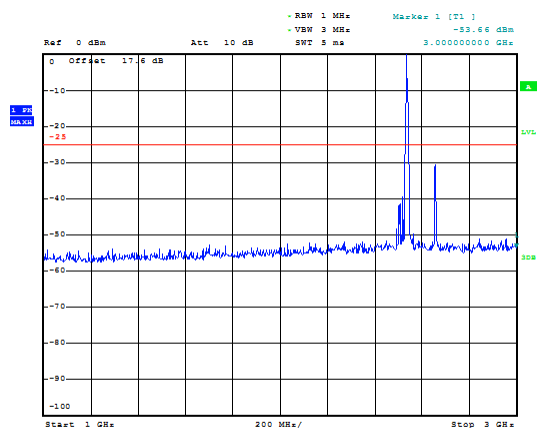
LTE Band 7 10MHz CH-Middle 30MHz~1GHz



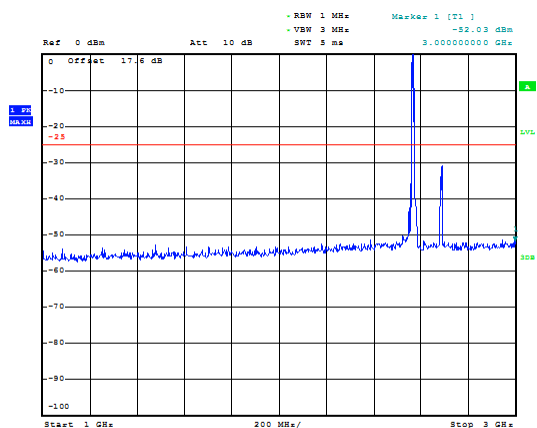
LTE Band 7 10MHz CH-High 30MHz~1GHz



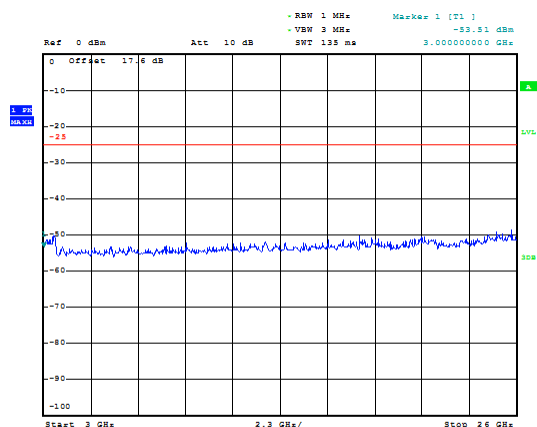
LTE Band 7 10MHz CH-Middle 1GHz~3GHz



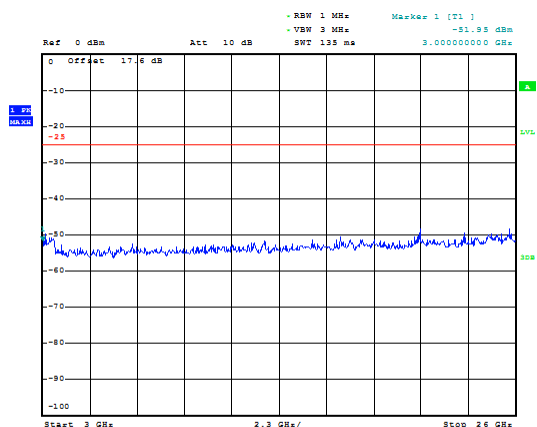
LTE Band 7 10MHz CH-High 1GHz~3GHz



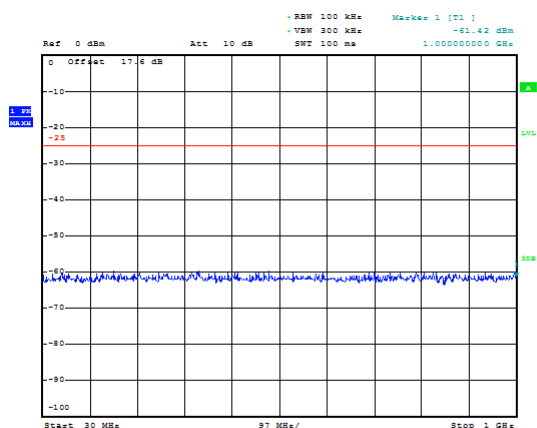
LTE Band 7 10MHz CH-Middle 3GHz~26GHz



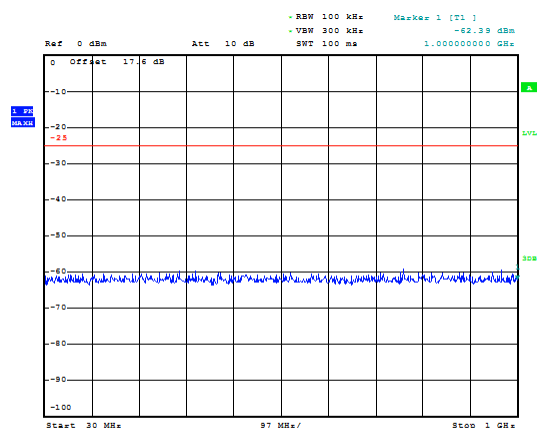
LTE Band 7 10MHz CH-High 3GHz~26GHz



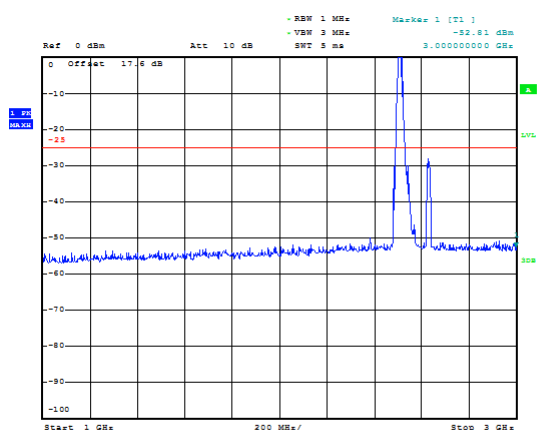
LTE Band 7 15MHz CH-Low 30MHz~1GHz



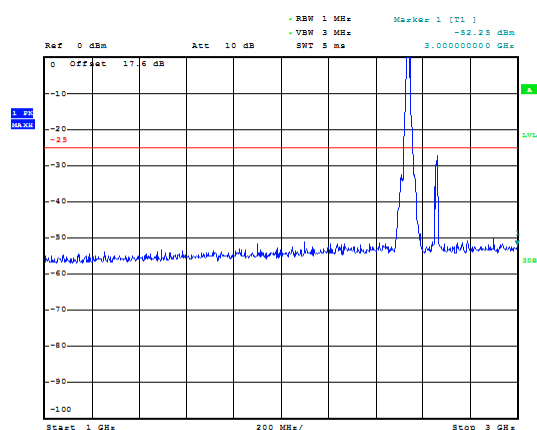
LTE Band 7 15 MHz CH- Middle 30MHz~1GHz



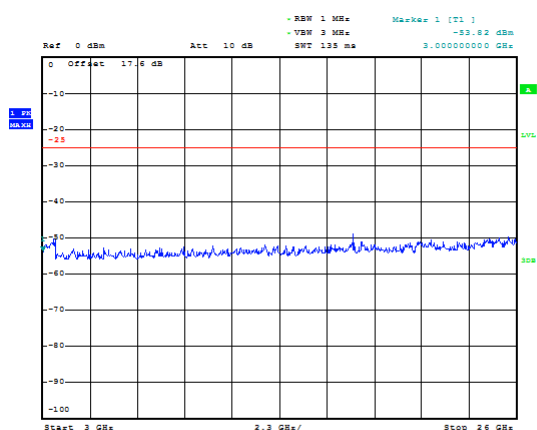
LTE Band 7 15MHz CH-Low 1GHz~3GHz



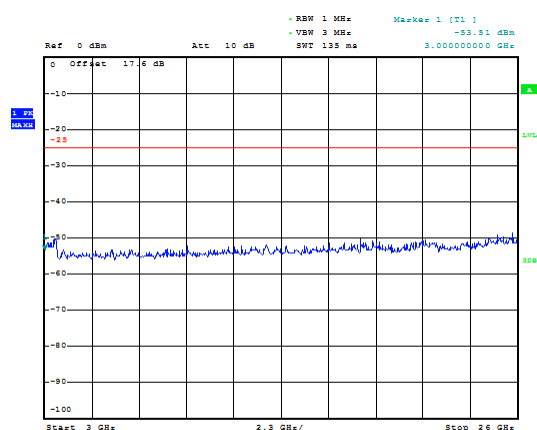
LTE Band 7 15MHz CH- Middle 1GHz~3GHz



LTE Band 7 15MHz CH-Low 3GHz~26GHz

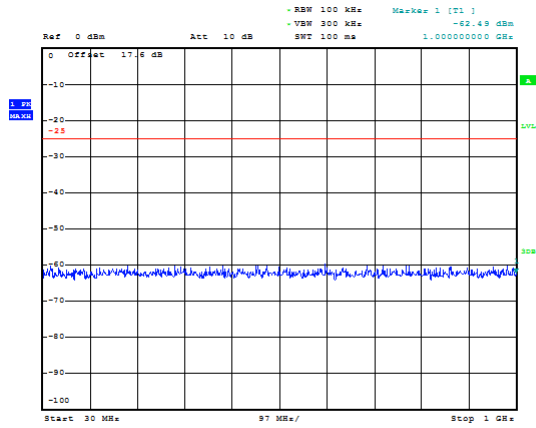


LTE Band 715MHz CH-H Middle 3GHz~26GHz

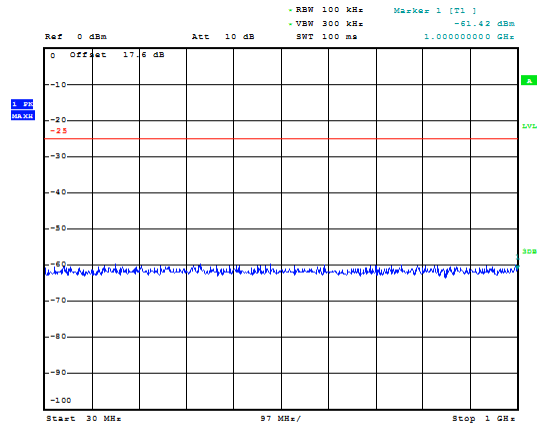




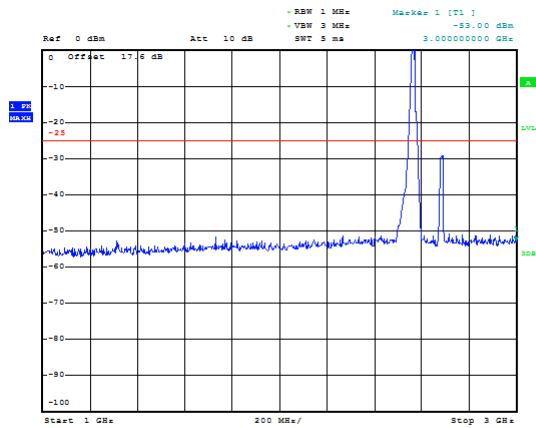
LTE Band 7 15MHz CH-High 30MHz~1GHz



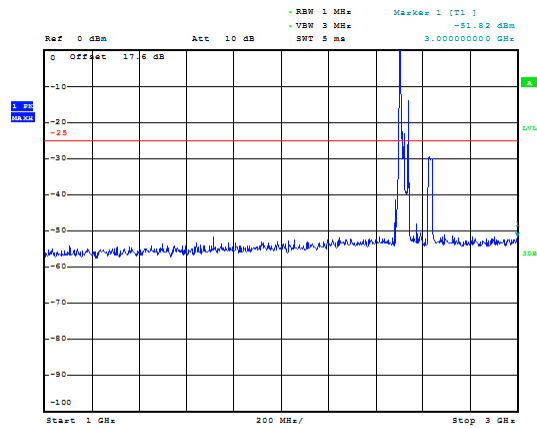
LTE Band 7 20MHz CH-Low 30MHz~1GHz



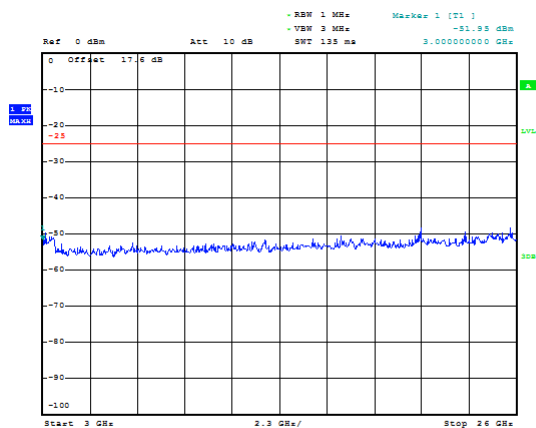
LTE Band 7 15MHz CH-High 1GHz~3GHz



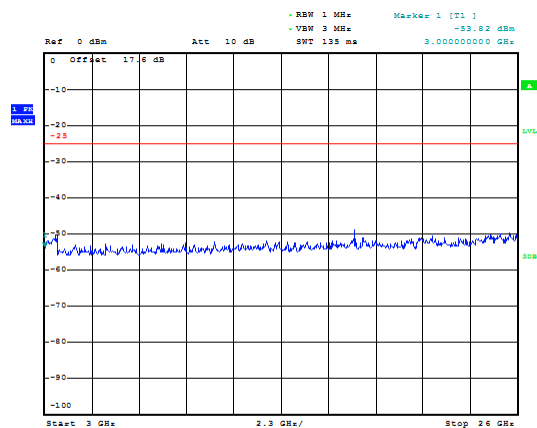
LTE Band 7 20MHz CH-Low 1GHz~3GHz



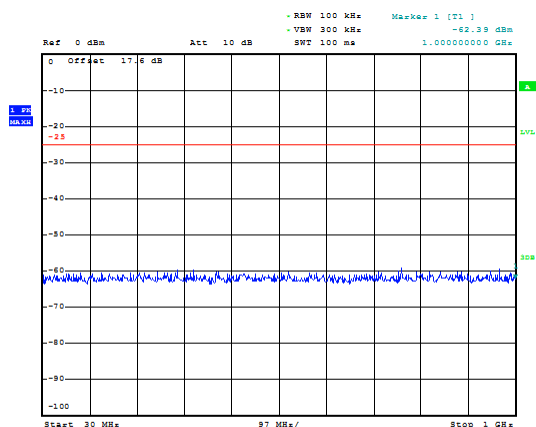
LTE Band 7 15MHz CH-High 3GHz~26GHz



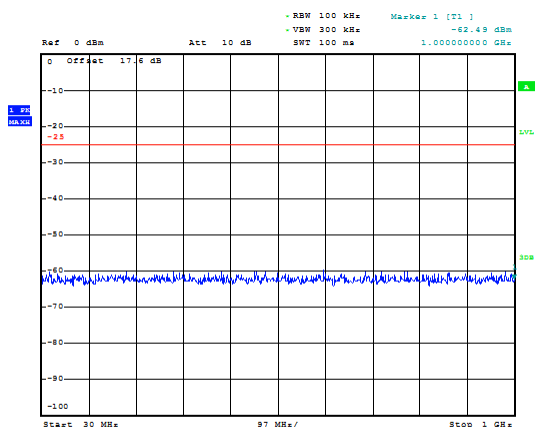
LTE Band 7 20MHz CH-Low 3GHz~26GHz



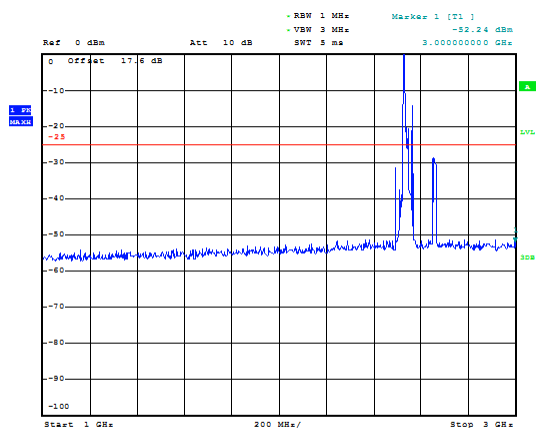
LTE Band 7 20MHz CH-Middle 30MHz~1GHz



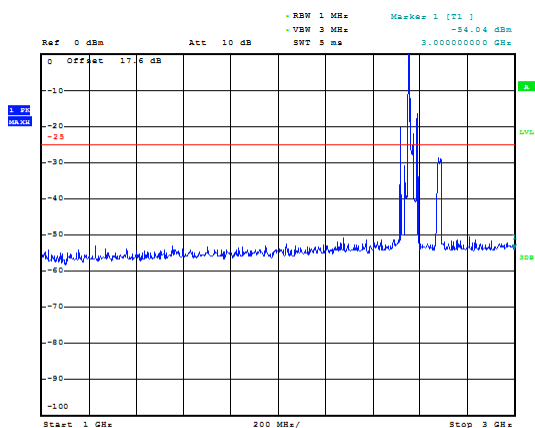
LTE Band 7 20MHz CH-High 30MHz~1GHz



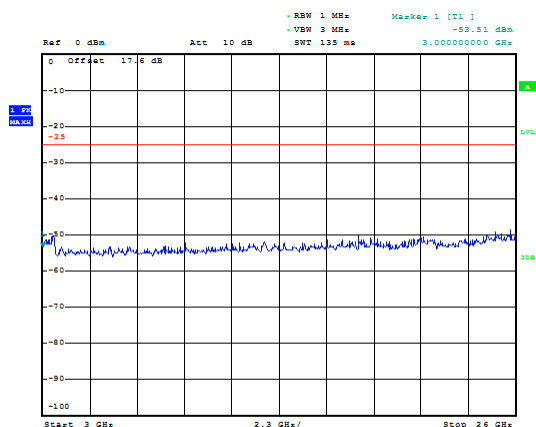
LTE Band 7 20MHz CH-Middle 1GHz~3GHz



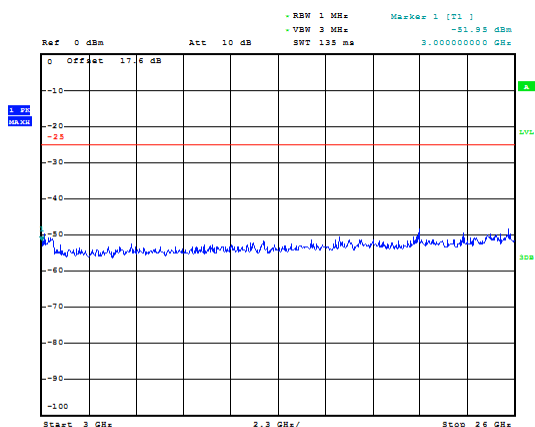
LTE Band 7 20MHz CH-High 1GHz~3GHz



LTE Band 7 20MHz CH-Middle 3GHz~26GHz

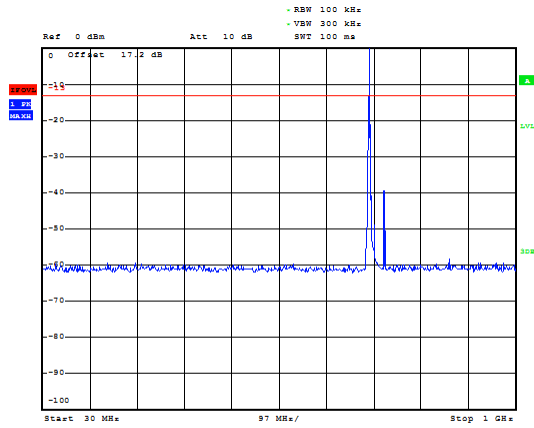


LTE Band 7 20MHz CH-High 3GHz~26GHz

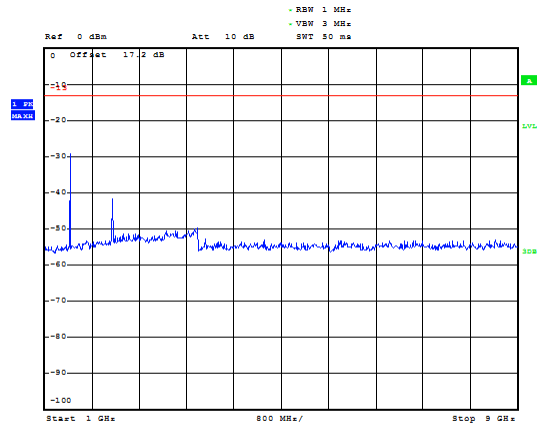




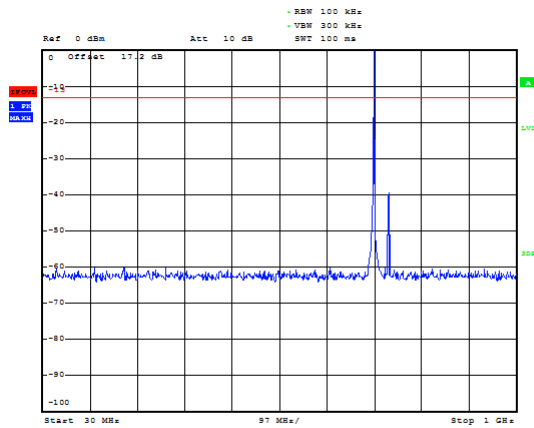
LTE Band 12 1.4MHz CH-Low 30MHz~1GHz



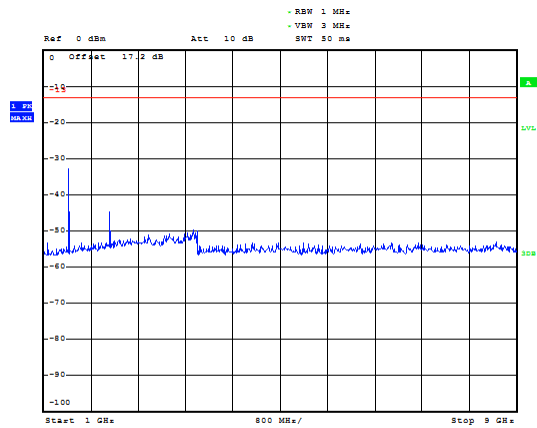
LTE Band 12 1.4MHz CH-Low 1GHz~9GHz



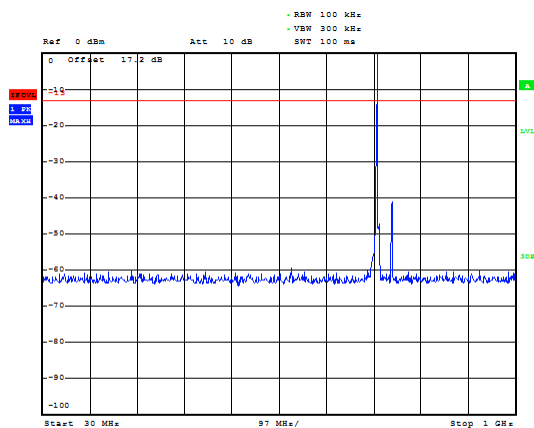
LTE Band 12 1.4MHz CH-Middle 30MHz~1GHz



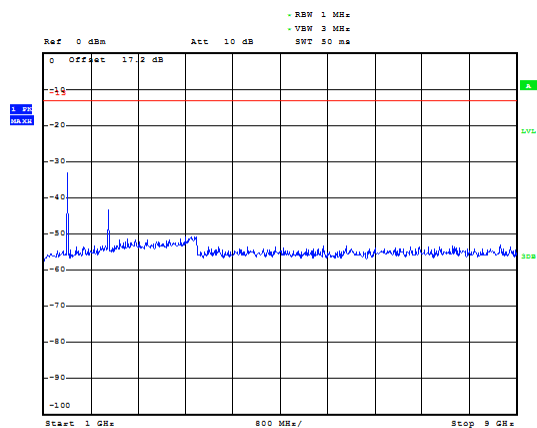
LTE Band 12 1.4MHz CH-Middle 1GHz~9GHz



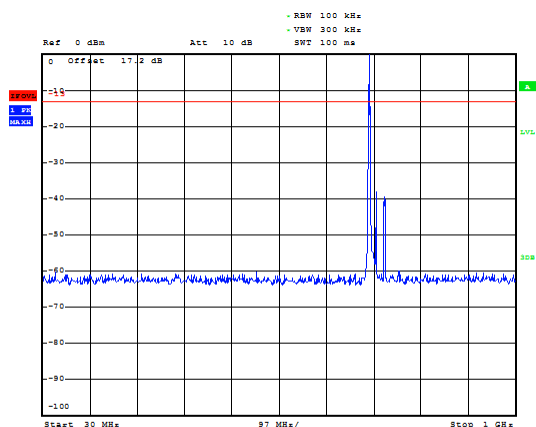
LTE Band 12 1.4MHz CH-High 30MHz~1GHz



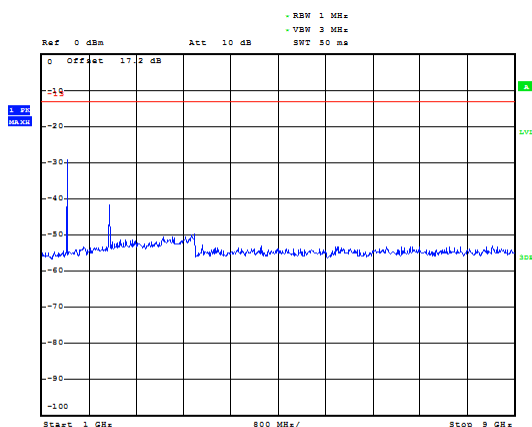
LTE Band 12 3MHz CH- High 1MHz~9GHz



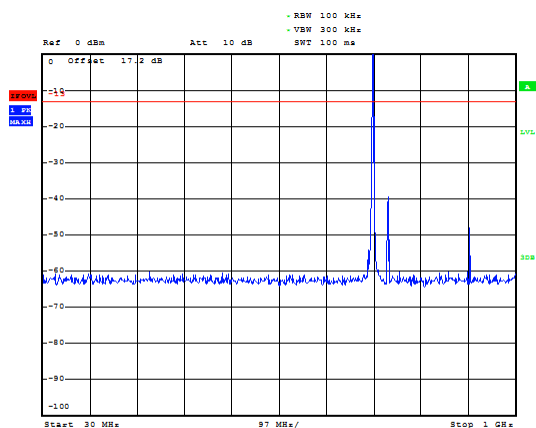
LTE Band 12 3MHz CH- Low 30MHz~1GHz



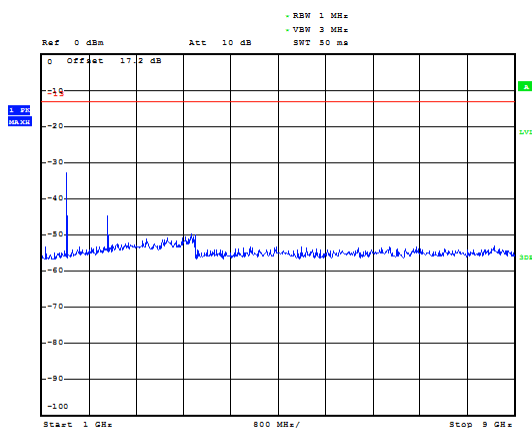
LTE Band 12 3MHz CH- Low 1GHz~9GHz



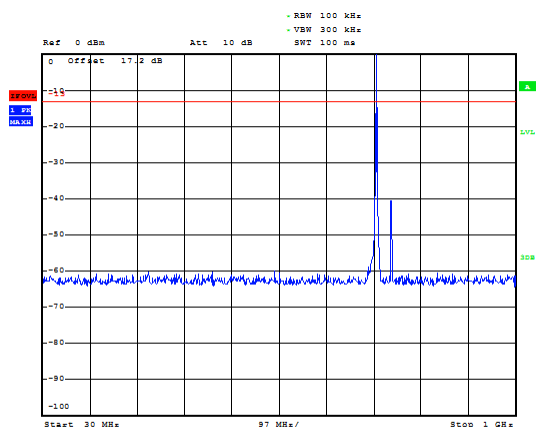
LTE Band 12 3MHz CH- Middle 30MHz~1GHz



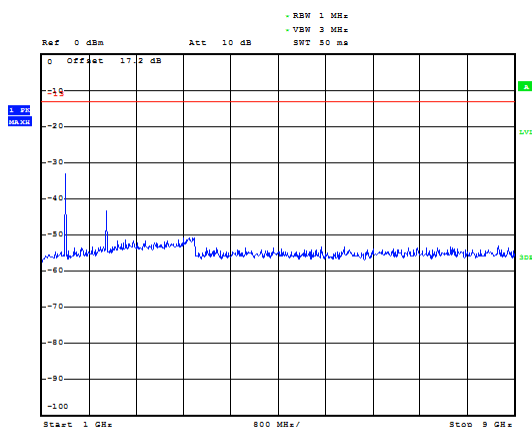
LTE Band 12 3MHz CH- Middle 1GHz~9GHz



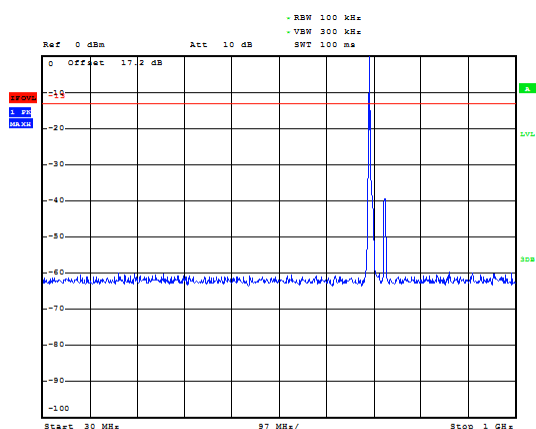
LTE Band 12 3MHz CH-High 30MHz~1GHz



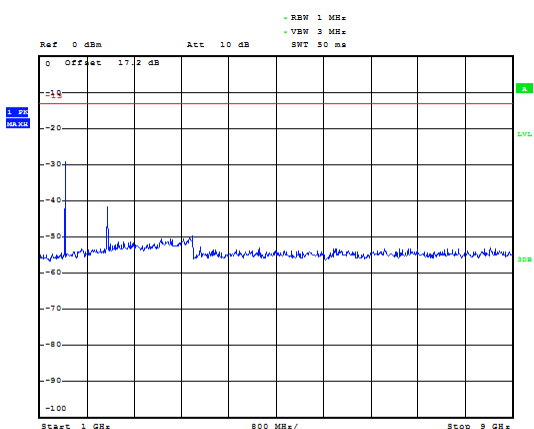
LTE Band 12 3MHz CH-High 1GHz~9GHz



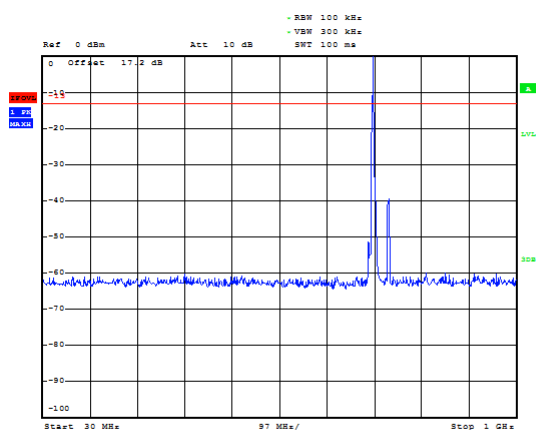
LTE Band 12 5MHz CH-Low 30MHz~1GHz



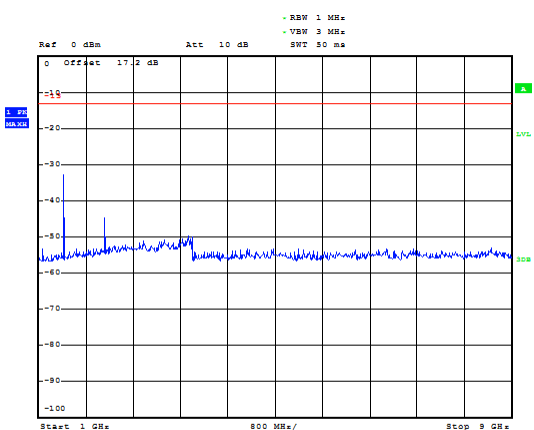
LTE Band 12 5MHz CH-Low 1GHz~9GHz



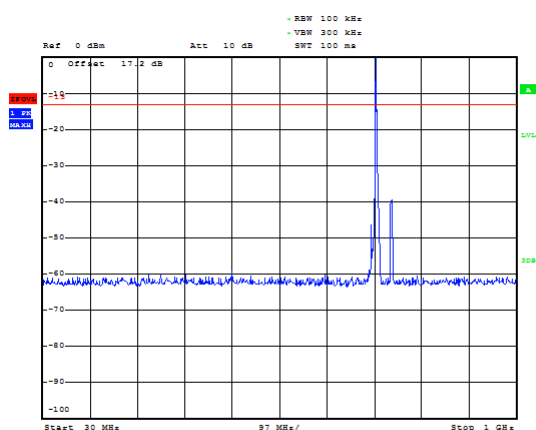
LTE Band 12 5MHz CH-Middle 30MHz~1GHz



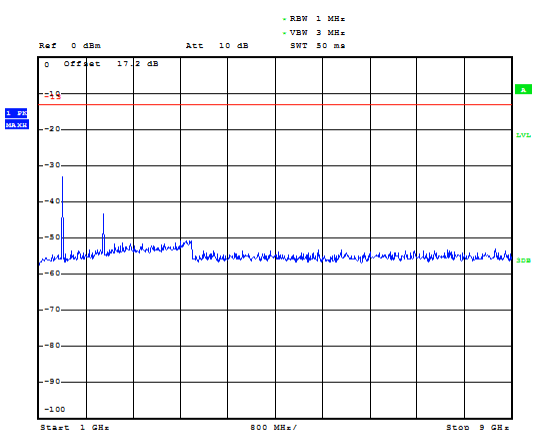
LTE Band 12 5MHz CH-Middle 1GHz~9GHz



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

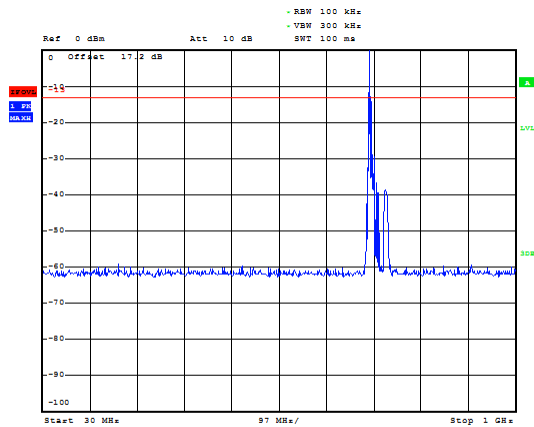


LTE Band 12 5MHz CH- High 1GHz~9GHz

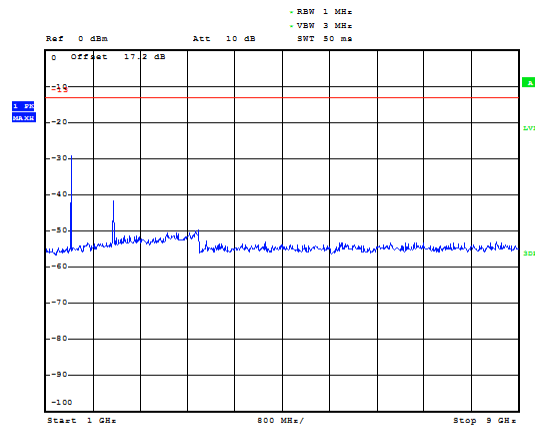




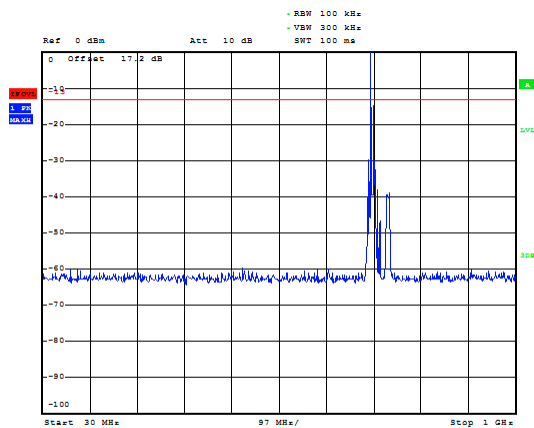
LTE Band 12 10MHz CH-Low 30MHz~1GHz



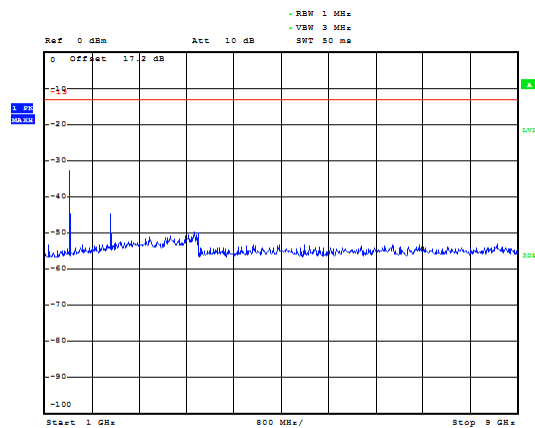
LTE Band 12 10MHz CH-Low 1GHz~9GHz



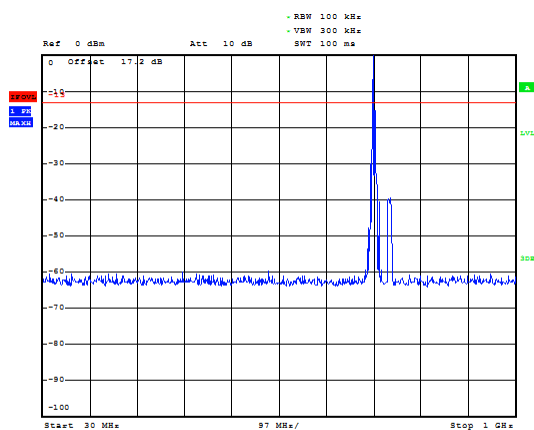
LTE Band 12 10MHz CH-Middle 30MHz~1GHz



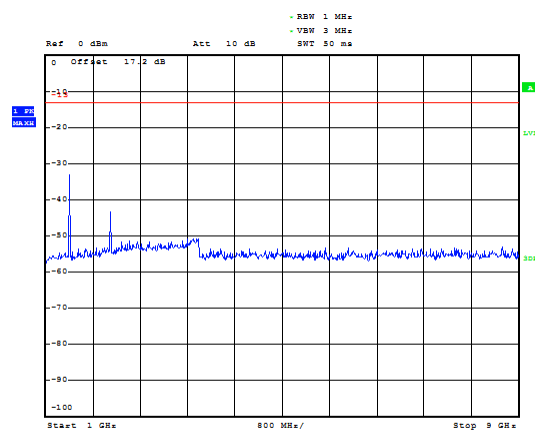
LTE Band 12 10MHz CH-Middle 1GHz~9GHz



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



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





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)
B4_CHLOW_1.4M_RB1_1-3GHz	2112.0	-30.279	-13	17.279
B4_CHMID_1.4M_RB1_1-3GHz	2130.5	-30.666	-13	17.666
B4_CHHIGH_1.4M_RB1_1-3GHz	2149.8	-30.172	-13	17.172
B4_CHLOW_3M_RB1_1-3GHz	2108.2	-28.586	-13	15.586
B4_CHMID_3M_RB1_1-3GHz	2128.9	-27.619	-13	14.619
B4_CHHIGH_3M_RB1_1-3GHz	2153.1	-29.922	-13	16.922
B4_CHLOW_5M_RB1_1-3GHz	2114.3	-28.986	-13	15.986
B4_CHMID_5M_RB1_1-3GHz	2138.0	-28.978	-13	15.978
B4_CHHIGH_5M_RB1_1-3GHz	2150.7	-30.005	-13	17.005
B4_CHLOW_10M_RB1_1-3GHz	2111.7	-29.655	-13	16.655
B4_CHMID_10M_RB1_1-3GHz	2131.0	-29.884	-13	16.884
B4_CHHIGH_10M_RB1_1-3GHz	2152.7	-28.678	-13	15.678
B4_CHLOW_15M_RB1_1-3GHz	2118.9	-28.382	-13	15.382
B4_CHMID_15M_RB1_1-3GHz	2133.4	-28.175	-13	15.175
B4_CHHIGH_15M_RB1_1-3GHz	2143.3	-28.65	-13	15.65
B4_CHLOW_20M_RB1_1-3GHz	2120.0	-29.363	-13	16.363
B4_CHMID_20M_RB1_1-3GHz	2135.3	-29.284	-13	16.284
B4_CHHIGH_20M_RB1_1-3GHz	2145.6	-29.743	-13	16.743
B12_CHLOW_1.4M_RB1_1-9GHz	1356.4	-29.105	-13	16.105
B12_CHMID_1.4M_RB1_1-9GHz	1366.1	-31.923	-13	18.923
B12_CHHIGH_1.4M_RB1_1-9GHz	1378.2	-32.807	-13	19.807
B12_CHLOW_3M_RB1_1-9GHz	1362.2	-29.098	-13	16.098
B12_CHMID_3M_RB1_1-9GHz	1368.1	-31.79	-13	18.79
B12_CHHIGH_3M_RB1_1-9GHz	1387.2	-32.508	-13	19.508
B12_CHLOW_5M_RB1_1-9GHz	1368.7	-28.847	-13	15.847
B12_CHMID_5M_RB1_1-9GHz	1378.4	-31.665	-13	18.665
B12_CHHIGH_5M_RB1_1-9GHz	1390.5	-32.549	-13	19.549
B12_CHLOW_10M_RB1_1-9GHz	1374.5	-28.84	-13	15.84
B12_CHMID_10M_RB1_1-9GHz	1380.4	-31.532	-13	18.532
B12_CHHIGH_10M_RB1_1-9GHz	1399.5	-32.25	-13	19.25

5.8 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

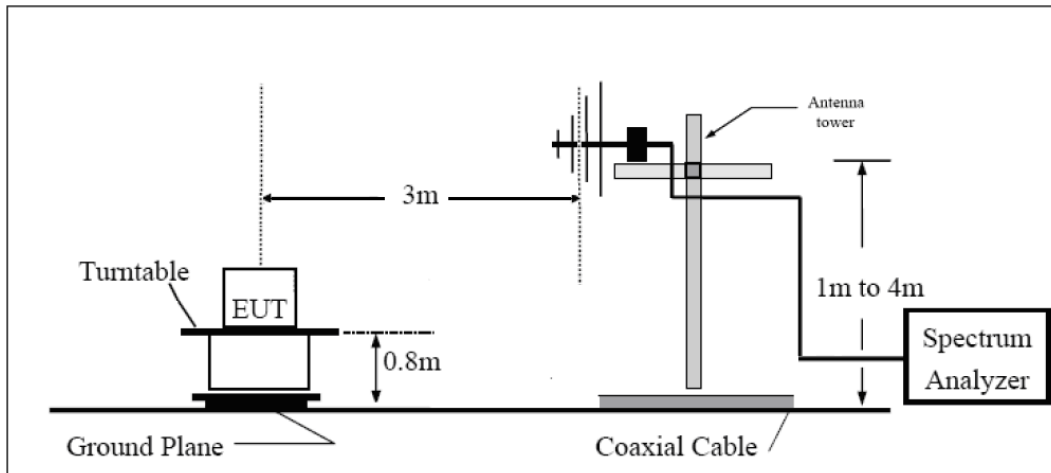
1. The testing follows FCC KDB 971168 v03 Section 5.8 and ANSI/TIA-603-E (2016).
2. The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally,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

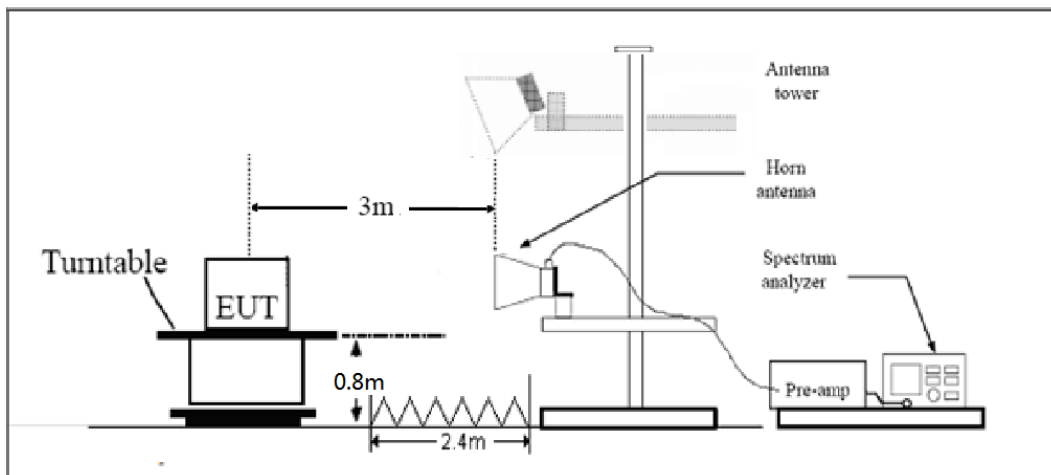
$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dBi}$.

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(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.

Rule Part 27.53(m) $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

LTE B4/12 Limit	-13 dBm
LTE -7/41 Limit	-25 dBm

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

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	-55.85	2.6	10.15	Horizontal	-48.3	-13.00	35.3	270
3	5131.1	-49.35	2.4	11.35	Horizontal	-40.4	-13.00	27.4	180
4	6842.8	-50.55	4.5	10.85	Horizontal	-44.2	-13.00	31.2	135
5	8553.5	-48.55	5.1	11.35	Horizontal	-42.3	-13.00	29.3	270
6	10264.2	-47.85	5.3	11.95	Horizontal	-41.2	-13.00	28.2	180
7	11974.9	-47.25	5.5	13.55	Horizontal	-39.2	-13.00	26.2	225
8	13685.6	-44.75	6.3	13.75	Horizontal	-37.3	-13.00	24.3	45
9	15396.3	-46.75	6.7	13.85	Horizontal	-39.6	-13.00	26.6	270
10	17107.0	-43.55	6.8	14.25	Horizontal	-36.1	-13.00	23.1	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	-57.25	2.6	10.75	Horizontal	-49.1	-13.00	36.1	135
3	5197.5	-53.85	2.4	11.05	Horizontal	-45.2	-13.00	32.2	270
4	6930.0	-49.75	4.5	11.15	Horizontal	-43.1	-13.00	30.1	180
5	8662.5	-47.75	5.1	11.35	Horizontal	-41.5	-13.00	28.5	225
6	10395.0	-46.25	5.3	11.95	Horizontal	-39.6	-13.00	26.6	270
7	12127.5	-48.05	5.5	13.55	Horizontal	-40.0	-13.00	27.0	180
8	13860.0	-43.75	6.3	13.75	Horizontal	-36.3	-13.00	23.3	135
9	15592.5	-46.85	6.7	13.85	Horizontal	-39.7	-13.00	26.7	270
10	17325.0	-42.75	6.8	14.25	Horizontal	-35.3	-13.00	22.3	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	-52.15	2.6	10.15	Horizontal	-44.8	-13.00	31.8	225
3	5261.6	-49.05	2.4	11.05	Horizontal	-42.0	-13.00	29.0	45
4	7017.2	-46.85	4.5	11.15	Horizontal	-45.0	-13.00	32.0	270
5	8771.5	-43.35	5.1	11.35	Horizontal	-41.7	-13.00	28.7	180
6	10525.8	-43.85	5.3	11.95	Horizontal	-39.1	-13.00	26.1	135
7	12280.1	-42.35	5.5	13.55	Horizontal	-39.6	-13.00	26.6	270
8	14034.4	-43.45	6.3	13.75	Horizontal	-36.6	-13.00	23.6	180
9	15788.7	-43.25	6.7	13.85	Horizontal	-38.4	-13.00	25.4	225
10	17543.0	-41.85	6.8	14.25	Horizontal	-37.1	-13.00	24.1	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	-56.05	2.6	10.15	Horizontal	-48.5	-13.00	35.5	90
3	5134.5	-50.55	2.4	11.35	Horizontal	-41.6	-13.00	28.6	270
4	6846.0	-51.55	4.5	10.85	Horizontal	-45.2	-13.00	32.2	180
5	8557.5	-48.25	5.1	11.35	Horizontal	-42.0	-13.00	29.0	135
6	10269.0	-47.95	5.3	11.95	Horizontal	-41.3	-13.00	28.3	270
7	11980.5	-47.55	5.5	13.55	Horizontal	-39.5	-13.00	26.5	180
8	13692.0	-44.95	6.3	13.75	Horizontal	-37.5	-13.00	24.5	225
9	15403.5	-46.75	6.7	13.85	Horizontal	-39.6	-13.00	26.6	45
10	17115.0	-45.25	6.8	14.25	Horizontal	-37.8	-13.00	24.8	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	2	2.6	10.75	Horizontal	-47.4	-13.00	34.4	180
3	5197.5	3	2.4	11.05	Horizontal	-43.7	-13.00	30.7	270
4	6930.0	4	4.5	11.15	Horizontal	-45.0	-13.00	32.0	45
5	8662.5	5	5.1	11.35	Horizontal	-41.1	-13.00	28.1	90
6	10395.0	6	5.3	11.95	Horizontal	-40.5	-13.00	27.5	135
7	12127.5	7	5.5	13.55	Horizontal	-38.8	-13.00	25.8	225
8	13860.0	8	6.3	13.75	Horizontal	-37.4	-13.00	24.4	180
9	15592.5	9	6.7	13.85	Horizontal	-40.7	-13.00	27.7	270
10	17325.0	10	6.8	14.25	Horizontal	-36.8	-13.00	23.8	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	-50.85	2.6	10.15	Horizontal	-43.3	-13.00	30.3	270
3	5256.8	-50.75	2.4	11.05	Horizontal	-42.1	-13.00	29.1	180
4	7014.0	-52.55	4.5	11.15	Horizontal	-45.9	-13.00	32.9	225
5	8767.5	-48.65	5.1	11.35	Horizontal	-42.4	-13.00	29.4	45
6	10521.0	-46.55	5.3	11.95	Horizontal	-39.9	-13.00	26.9	90
7	12274.5	-48.05	5.5	13.55	Horizontal	-40.0	-13.00	27.0	180
8	14028.0	-44.15	6.3	13.75	Horizontal	-36.7	-13.00	23.7	270
9	15781.5	-46.25	6.7	13.85	Horizontal	-39.1	-13.00	26.1	135
10	17535.0	-44.55	6.8	14.25	Horizontal	-37.1	-13.00	24.1	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	-56.65	2.6	10.15	Horizontal	-49.1	-13.00	36.1	225
3	5131.1	-50.25	2.4	11.35	Horizontal	-41.3	-13.00	28.3	45
4	6850.0	-51.85	4.5	10.85	Horizontal	-45.5	-13.00	32.5	90
5	8562.5	-48.05	5.1	11.35	Horizontal	-41.8	-13.00	28.8	180
6	10275.0	-47.55	5.3	11.95	Horizontal	-40.9	-13.00	27.9	270
7	11987.5	-47.05	5.5	13.55	Horizontal	-39.0	-13.00	26.0	180
8	13700.0	-45.65	6.3	13.75	Horizontal	-38.2	-13.00	25.2	225
9	15412.5	-45.75	6.7	13.85	Horizontal	-38.6	-13.00	25.6	45
10	17125.0	-44.45	6.8	14.25	Horizontal	-37.0	-13.00	24.0	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	-53.55	2.6	10.75	Horizontal	-45.4	-13.00	32.4	180
3	5191.5	-52.75	2.4	11.05	Horizontal	-44.1	-13.00	31.1	135
4	6930.0	-52.35	4.5	11.15	Horizontal	-45.7	-13.00	32.7	270
5	8662.5	-48.15	5.1	11.35	Horizontal	-41.9	-13.00	28.9	180
6	10395.0	-46.85	5.3	11.95	Horizontal	-40.2	-13.00	27.2	225
7	12127.5	-47.05	5.5	13.55	Horizontal	-39.0	-13.00	26.0	45
8	13860.0	-44.45	6.3	13.75	Horizontal	-37.0	-13.00	24.0	90
9	15592.5	-47.35	6.7	13.85	Horizontal	-40.2	-13.00	27.2	270
10	17325.0	-43.75	6.8	14.25	Horizontal	-36.3	-13.00	23.3	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	-51.35	2.6	10.15	Horizontal	-43.8	-13.00	30.8	225
3	5250.8	-48.85	2.4	11.05	Horizontal	-40.2	-13.00	27.2	45
4	7010.0	-52.15	4.5	11.15	Horizontal	-45.5	-13.00	32.5	135
5	8762.5	-49.55	5.1	11.35	Horizontal	-43.3	-13.00	30.3	180
6	10515.0	-46.35	5.3	11.95	Horizontal	-39.7	-13.00	26.7	225
7	12267.5	-46.15	5.5	13.55	Horizontal	-38.1	-13.00	25.1	45
8	14020.0	-44.25	6.3	13.75	Horizontal	-36.8	-13.00	23.8	90
9	15772.5	-45.55	6.7	13.85	Horizontal	-38.4	-13.00	25.4	270
10	17525.0	-44.75	6.8	14.25	Horizontal	-37.3	-13.00	24.3	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	3420.8	-56.35	2.6	10.15	Horizontal	-48.8	-13.00	35.8	225
3	5131.9	-50.45	2.4	11.35	Horizontal	-41.5	-13.00	28.5	45
4	6860.0	-51.25	4.5	10.85	Horizontal	-44.9	-13.00	31.9	90
5	8575.0	-48.05	5.1	11.35	Horizontal	-41.8	-13.00	28.8	180
6	10290.0	-47.65	5.3	11.95	Horizontal	-41.0	-13.00	28.0	270
7	12005.0	-47.25	5.5	13.55	Horizontal	-39.2	-13.00	26.2	135
8	13720.0	-44.85	6.3	13.75	Horizontal	-37.4	-13.00	24.4	180
9	15435.0	-46.35	6.7	13.85	Horizontal	-39.2	-13.00	26.2	225
10	17150.0	-43.95	6.8	14.25	Horizontal	-36.5	-13.00	23.5	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	-56.65	2.6	10.75	Horizontal	-48.5	-13.00	35.5	90
3	5184.4	-50.85	2.4	11.05	Horizontal	-42.2	-13.00	29.2	180
4	6930.0	-52.15	4.5	11.15	Horizontal	-45.5	-13.00	32.5	270
5	8662.5	-49.15	5.1	11.35	Horizontal	-42.9	-13.00	29.9	180
6	10395.0	-46.75	5.3	11.95	Horizontal	-40.1	-13.00	27.1	225
7	12127.5	-45.95	5.5	13.55	Horizontal	-37.9	-13.00	24.9	45
8	13860.0	-45.45	6.3	13.75	Horizontal	-38.0	-13.00	25.0	90
9	15592.5	-47.55	6.7	13.85	Horizontal	-40.4	-13.00	27.4	180
10	17325.0	-43.55	6.8	14.25	Horizontal	-36.1	-13.00	23.1	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	-53.25	2.6	10.15	Horizontal	-45.7	-13.00	32.7	270
3	5236.9	-49.75	2.4	11.05	Horizontal	-41.1	-13.00	28.1	180
4	7000.0	-51.95	4.5	11.15	Horizontal	-45.3	-13.00	32.3	225
5	8750.0	-47.55	5.1	11.35	Horizontal	-41.3	-13.00	28.3	45
6	10500.0	-46.45	5.3	11.95	Horizontal	-39.8	-13.00	26.8	90
7	12250.0	-46.55	5.5	13.55	Horizontal	-38.5	-13.00	25.5	180
8	14000.0	-45.55	6.3	13.75	Horizontal	-38.1	-13.00	25.1	270
9	15750.0	-46.95	6.7	13.85	Horizontal	-39.8	-13.00	26.8	45
10	17500.0	-44.75	6.8	14.25	Horizontal	-37.3	-13.00	24.3	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	3448.1	-56.15	2.6	10.15	Horizontal	-48.6	-13.00	35.6	45
3	5132.6	-49.95	2.4	11.35	Horizontal	-41.0	-13.00	28.0	90
4	6870.0	-51.25	4.5	10.85	Horizontal	-44.9	-13.00	31.9	90
5	8587.5	-48.95	5.1	11.35	Horizontal	-42.7	-13.00	29.7	45
6	10305.0	-47.75	5.3	11.95	Horizontal	-41.1	-13.00	28.1	135
7	12022.5	-48.55	5.5	13.55	Horizontal	-40.5	-13.00	27.5	225
8	13740.0	-45.65	6.3	13.75	Horizontal	-38.2	-13.00	25.2	45
9	15457.5	-47.15	6.7	13.85	Horizontal	-40.0	-13.00	27.0	90
10	17175.0	-44.85	6.8	14.25	Horizontal	-37.4	-13.00	24.4	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	3478.1	-53.65	2.6	10.75	Horizontal	-45.5	-13.00	32.5	135
3	5217.8	-52.15	2.4	11.05	Horizontal	-43.5	-13.00	30.5	45
4	6930.0	-51.85	4.5	11.15	Horizontal	-45.2	-13.00	32.2	90
5	8662.5	-48.05	5.1	11.35	Horizontal	-41.8	-13.00	28.8	180
6	10395.0	-46.05	5.3	11.95	Horizontal	-39.4	-13.00	26.4	270
7	12127.5	-47.75	5.5	13.55	Horizontal	-39.7	-13.00	26.7	225
8	13860.0	-44.35	6.3	13.75	Horizontal	-36.9	-13.00	23.9	135
9	15592.5	-45.95	6.7	13.85	Horizontal	-38.8	-13.00	25.8	225
10	17325.0	-43.95	6.8	14.25	Horizontal	-36.5	-13.00	23.5	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	3508.1	-53.95	2.6	10.15	Horizontal	-46.4	-13.00	33.4	90
3	5262.8	-51.85	2.4	11.05	Horizontal	-43.2	-13.00	30.2	135
4	6990.0	-52.55	4.5	11.15	Horizontal	-45.9	-13.00	32.9	225
5	8737.5	-49.35	5.1	11.35	Horizontal	-43.1	-13.00	30.1	45
6	10485.0	-47.05	5.3	11.95	Horizontal	-40.4	-13.00	27.4	90
7	12232.5	-47.65	5.5	13.55	Horizontal	-39.6	-13.00	26.6	135
8	13980.0	-45.85	6.3	13.75	Horizontal	-38.4	-13.00	25.4	135
9	15727.5	-46.65	6.7	13.85	Horizontal	-39.5	-13.00	26.5	90
10	17475.0	-45.05	6.8	14.25	Horizontal	-37.6	-13.00	24.6	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	3421.9	-56.15	2.6	10.15	Horizontal	-48.6	-13.00	35.6	135
3	5133.0	-51.55	2.4	11.35	Horizontal	-42.6	-13.00	29.6	90
4	6880.0	-51.85	4.5	10.85	Horizontal	-45.5	-13.00	32.5	45
5	8600.0	-48.65	5.1	11.35	Horizontal	-42.4	-13.00	29.4	90
6	10320.0	-47.75	5.3	11.95	Horizontal	-41.1	-13.00	28.1	90
7	12040.0	-46.95	5.5	13.55	Horizontal	-38.9	-13.00	25.9	135
8	13760.0	-44.85	6.3	13.75	Horizontal	-37.4	-13.00	24.4	225
9	15480.0	-47.55	6.7	13.85	Horizontal	-40.4	-13.00	27.4	135
10	17200.0	-44.35	6.8	14.25	Horizontal	-36.9	-13.00	23.9	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	3447.0	-55.65	2.6	10.75	Horizontal	-47.5	-13.00	34.5	90
3	5170.5	-51.15	2.4	11.05	Horizontal	-42.5	-13.00	29.5	45
4	6930.0	-52.45	4.5	11.15	Horizontal	-45.8	-13.00	32.8	45
5	8662.5	-48.65	5.1	11.35	Horizontal	-42.4	-13.00	29.4	180
6	10395.0	-46.55	5.3	11.95	Horizontal	-39.9	-13.00	26.9	270
7	12127.5	-46.95	5.5	13.55	Horizontal	-38.9	-13.00	25.9	225
8	13860.0	-44.55	6.3	13.75	Horizontal	-37.1	-13.00	24.1	135
9	15592.5	-46.95	6.7	13.85	Horizontal	-39.8	-13.00	26.8	180
10	17325.0	-44.95	6.8	14.25	Horizontal	-37.5	-13.00	24.5	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	3472.1	-55.95	2.6	10.15	Horizontal	-48.4	-13.00	35.4	45
3	5208.4	-52.95	2.4	11.05	Horizontal	-44.3	-13.00	31.3	225
4	6980.0	-52.05	4.5	11.15	Horizontal	-45.4	-13.00	32.4	135
5	8725.0	-48.85	5.1	11.35	Horizontal	-42.6	-13.00	29.6	90
6	10470.0	-45.65	5.3	11.95	Horizontal	-39.0	-13.00	26.0	45
7	12215.0	-47.55	5.5	13.55	Horizontal	-39.5	-13.00	26.5	90
8	13960.0	-44.75	6.3	13.75	Horizontal	-37.3	-13.00	24.3	45
9	15705.0	-45.85	6.7	13.85	Horizontal	-38.7	-13.00	25.7	135
10	17450.0	-44.55	6.8	14.25	Horizontal	-37.1	-13.00	24.1	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 7 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	5005.0	-43.55	2.00	9.15	Horizontal	-36.4	-25.00	11.4	180
3	7507.5	-47.75	2.50	11.35	Horizontal	-38.9	-25.00	13.9	225
4	10010.0	-49.65	4.20	12.05	Horizontal	-41.8	-25.00	16.8	45
5	12512.5	-48.45	5.20	12.85	Horizontal	-40.8	-25.00	15.8	180
6	15015.0	-46.83	5.50	14.23	Horizontal	-38.1	-25.00	13.1	270
7	17517.5	-46.15	5.70	14.15	Horizontal	-37.7	-25.00	12.7	135
8	20020.0	-44.06	6.30	13.76	Horizontal	-36.6	-25.00	11.6	180
9	22522.5	-43.35	6.80	14.05	Horizontal	-36.1	-25.00	11.1	180
10	25025.0	-43.44	6.90	14.84	Horizontal	-35.5	-25.00	10.5	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 7 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	5070.0	-43.05	2.00	9.15	Horizontal	-35.9	-25.00	10.9	45
3	7605.0	-47.55	2.50	11.35	Horizontal	-38.7	-25.00	13.7	180
4	10140.0	-47.55	4.20	12.05	Horizontal	-39.7	-25.00	14.7	270
5	12675.0	-47.65	5.20	12.85	Horizontal	-40.0	-25.00	15.0	135
6	15210.0	-47.03	5.50	14.23	Horizontal	-38.3	-25.00	13.3	180
7	17745.0	-45.65	5.70	14.15	Horizontal	-37.2	-25.00	12.2	225
8	20280.0	-43.96	6.30	13.76	Horizontal	-36.5	-25.00	11.5	90
9	22815.0	-43.45	6.80	14.05	Horizontal	-36.2	-25.00	11.2	135
10	25350.0	-42.54	6.90	14.84	Horizontal	-34.6	-25.00	9.6	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 7 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	5135.0	-43.05	2.00	9.15	Horizontal	-35.9	-25.00	10.9	90
3	7702.5	-51.75	2.50	11.35	Horizontal	-42.9	-25.00	17.9	45
4	10270.0	-48.05	4.20	12.05	Horizontal	-40.2	-25.00	15.2	180
5	12837.5	-46.15	5.20	12.85	Horizontal	-38.5	-25.00	13.5	180
6	15405.0	-48.93	5.50	14.23	Horizontal	-40.2	-25.00	15.2	180
7	17972.5	-46.25	5.70	14.15	Horizontal	-37.8	-25.00	12.8	270
8	20540.0	-43.66	6.30	13.76	Horizontal	-36.2	-25.00	11.2	135
9	23107.5	-43.05	6.80	14.05	Horizontal	-35.8	-25.00	10.8	180
10	25675.0	-43.54	6.90	14.84	Horizontal	-35.6	-25.00	10.6	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 7 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	5010.0	-44.25	2.00	9.15	Horizontal	-37.1	-25.00	12.1	225
3	7515.0	-45.85	2.50	11.35	Horizontal	-37.0	-25.00	12.0	45
4	10020.0	-49.15	4.20	12.05	Horizontal	-41.3	-25.00	16.3	180
5	12525.0	-47.45	5.20	12.85	Horizontal	-39.8	-25.00	14.8	270
6	15030.0	-47.33	5.50	14.23	Horizontal	-38.6	-25.00	13.6	135
7	17535.0	-46.65	5.70	14.15	Horizontal	-38.2	-25.00	13.2	180
8	20040.0	-44.56	6.30	13.76	Horizontal	-37.1	-25.00	12.1	180
9	22545.0	-43.95	6.80	14.05	Horizontal	-36.7	-25.00	11.7	225
10	25050.0	-43.84	6.90	14.84	Horizontal	-35.9	-25.00	10.9	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 7 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	5070.0	-44.65	2.00	9.15	Horizontal	-37.5	-25.00	12.5	180
3	7605.0	-49.85	2.50	11.35	Horizontal	-41.0	-25.00	16.0	270
4	10140.0	-48.25	4.20	12.05	Horizontal	-40.4	-25.00	15.4	135
5	12675.0	-47.15	5.20	12.85	Horizontal	-39.5	-25.00	14.5	180
6	15210.0	-45.83	5.50	14.23	Horizontal	-37.1	-25.00	12.1	225
7	17745.0	-44.65	5.70	14.15	Horizontal	-36.2	-25.00	11.2	90
8	20280.0	-43.16	6.30	13.76	Horizontal	-35.7	-25.00	10.7	135
9	22815.0	-41.55	6.80	14.05	Horizontal	-34.3	-25.00	9.3	90
10	25350.0	-41.04	6.90	14.84	Horizontal	-33.1	-25.00	8.1	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 7 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	5130.0	-44.15	2.00	10.15	Horizontal	-36.0	-25.00	11.0	45
3	7695.0	-51.55	2.50	11.35	Horizontal	-42.7	-25.00	17.7	180
4	10260.0	-48.65	4.20	12.05	Horizontal	-40.8	-25.00	15.8	225
5	12825.0	-46.75	5.20	14.85	Horizontal	-37.1	-25.00	12.1	45
6	15390.0	-47.53	5.50	13.23	Horizontal	-39.8	-25.00	14.8	90
7	17955.0	-42.45	5.70	12.15	Horizontal	-36.0	-25.00	11.0	180
8	20520.0	-43.56	6.30	13.76	Horizontal	-36.1	-25.00	11.1	270
9	23085.0	-42.45	6.80	14.05	Horizontal	-35.2	-25.00	10.2	180
10	25650.0	-41.94	6.90	14.84	Horizontal	-34.0	-25.00	9.0	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 7 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	5015.0	-45.35	2.00	10.15	Horizontal	-37.2	-25.00	12.2	270
3	7522.5	-45.75	2.50	11.35	Horizontal	-36.9	-25.00	11.9	135
4	10030.0	-48.75	4.20	12.05	Horizontal	-40.9	-25.00	15.9	180
5	12537.5	-49.55	5.20	14.85	Horizontal	-39.9	-25.00	14.9	225
6	15045.0	-47.03	5.50	13.23	Horizontal	-39.3	-25.00	14.3	45
7	17552.5	-44.35	5.70	12.15	Horizontal	-37.9	-25.00	12.9	90
8	20060.0	-43.96	6.30	13.76	Horizontal	-36.5	-25.00	11.5	180
9	22567.5	-42.55	6.80	14.05	Horizontal	-35.3	-25.00	10.3	270
10	25075.0	-42.14	6.90	14.84	Horizontal	-34.2	-25.00	9.2	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 7 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	5070.0	-45.05	2.00	10.15	Horizontal	-36.9	-25.00	11.9	225
3	7605.0	-47.75	2.50	11.35	Horizontal	-38.9	-25.00	13.9	45
4	10140.0	-48.15	4.20	12.05	Horizontal	-40.3	-25.00	15.3	180
5	12675.0	-48.85	5.20	14.85	Horizontal	-39.2	-25.00	14.2	270
6	15210.0	-45.23	5.50	13.23	Horizontal	-37.5	-25.00	12.5	135
7	17745.0	-43.35	5.70	12.15	Horizontal	-36.9	-25.00	11.9	180
8	20280.0	-43.36	6.30	13.76	Horizontal	-35.9	-25.00	10.9	180
9	22815.0	-41.65	6.80	14.05	Horizontal	-34.4	-25.00	9.4	225
10	25350.0	-41.64	6.90	14.84	Horizontal	-33.7	-25.00	8.7	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 7 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	5125.0	-46.75	2.00	10.15	Horizontal	-38.6	-25.00	13.6	180
3	7687.5	-49.75	2.50	11.35	Horizontal	-40.9	-25.00	15.9	270
4	10250.0	-47.75	4.20	12.05	Horizontal	-39.9	-25.00	14.9	135
5	12812.5	-47.95	5.20	14.85	Horizontal	-38.3	-25.00	13.3	180
6	15375.0	-45.83	5.50	13.23	Horizontal	-38.1	-25.00	13.1	225
7	17937.5	-43.95	5.70	12.15	Horizontal	-37.5	-25.00	12.5	90
8	20500.0	-44.26	6.30	13.76	Horizontal	-36.8	-25.00	11.8	135
9	23062.5	-43.15	6.80	14.05	Horizontal	-35.9	-25.00	10.9	180
10	25625.0	-42.54	6.90	14.84	Horizontal	-34.6	-25.00	9.6	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 7 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	5020.0	-45.85	2.00	10.15	Horizontal	-37.7	-25.00	12.7	270
3	7530.0	-46.95	2.50	11.35	Horizontal	-38.1	-25.00	13.1	180
4	10040.0	-47.65	4.20	12.05	Horizontal	-39.8	-25.00	14.8	270
5	12550.0	-50.35	5.20	14.85	Horizontal	-40.7	-25.00	15.7	135
6	15060.0	-45.83	5.50	13.23	Horizontal	-38.1	-25.00	13.1	180
7	17570.0	-43.75	5.70	12.15	Horizontal	-37.3	-25.00	12.3	270
8	20080.0	-43.96	6.30	13.76	Horizontal	-36.5	-25.00	11.5	135
9	22590.0	-43.05	6.80	14.05	Horizontal	-35.8	-25.00	10.8	180
10	25100.0	-42.84	6.90	14.84	Horizontal	-34.9	-25.00	9.9	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 7 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	5070.0	-46.85	2.00	10.15	Horizontal	-38.7	-25.00	13.7	45
3	7605.0	-47.75	2.50	11.35	Horizontal	-38.9	-25.00	13.9	180
4	10140.0	-48.35	4.20	12.05	Horizontal	-40.5	-25.00	15.5	270
5	12675.0	-50.25	5.20	14.85	Horizontal	-40.6	-25.00	15.6	135
6	15210.0	-44.93	5.50	13.23	Horizontal	-37.2	-25.00	12.2	180
7	17745.0	-43.85	5.70	12.15	Horizontal	-37.4	-25.00	12.4	180
8	20280.0	-43.56	6.30	13.76	Horizontal	-36.1	-25.00	11.1	225
9	22815.0	-42.75	6.80	14.05	Horizontal	-35.5	-25.00	10.5	45
10	25350.0	-42.64	6.90	14.84	Horizontal	-34.7	-25.00	9.7	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 7 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	5120.0	-48.35	2.00	10.15	Horizontal	-40.2	-25.00	15.2	270
3	7680.0	-46.65	2.50	11.35	Horizontal	-37.8	-25.00	12.8	135
4	10240.0	-47.85	4.20	12.05	Horizontal	-40.0	-25.00	15.0	180
5	12800.0	-47.35	5.20	14.85	Horizontal	-37.7	-25.00	12.7	225
6	15360.0	-46.83	5.50	13.23	Horizontal	-39.1	-25.00	14.1	90
7	17920.0	-43.65	5.70	12.15	Horizontal	-37.2	-25.00	12.2	135
8	20480.0	-43.86	6.30	13.76	Horizontal	-36.4	-25.00	11.4	180
9	23040.0	-42.95	6.80	14.05	Horizontal	-35.7	-25.00	10.7	270
10	25600.0	-42.84	6.90	14.84	Horizontal	-34.9	-25.00	9.9	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 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	1399.40	-57.10	2.00	10.15	Horizontal	-51.1	-13.00	38.1	270
3	2099.10	-57.90	2.50	11.35	Horizontal	-51.2	-13.00	38.2	225
4	2798.80	-54.60	4.20	10.85	Horizontal	-50.1	-13.00	37.1	180
5	3498.50	-54.60	5.20	11.35	Horizontal	-50.6	-13.00	37.6	135
6	4198.20	-49.80	5.50	11.95	Horizontal	-45.5	-13.00	32.5	270
7	4897.90	-54.80	5.70	13.55	Horizontal	-49.1	-13.00	36.1	315
8	5597.60	-53.10	6.30	13.75	Horizontal	-47.8	-13.00	34.8	315
9	6297.30	-51.80	6.80	13.85	Horizontal	-46.9	-13.00	33.9	270
10	6997.00	-51.10	6.90	14.25	Horizontal	-45.9	-13.00	32.9	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	1415.00	-60.30	2.00	10.75	Horizontal	-53.7	-13.00	40.7	45
3	2122.50	-54.69	2.51	11.05	Horizontal	-48.3	-13.00	35.3	315
4	2830.00	-55.60	4.20	11.15	Horizontal	-50.8	-13.00	37.8	270
5	3537.50	-55.70	5.20	11.15	Horizontal	-51.9	-13.00	38.9	315
6	4245.00	-50.40	5.50	11.95	Horizontal	-46.1	-13.00	33.1	180
7	4952.50	-54.10	5.70	13.55	Horizontal	-48.4	-13.00	35.4	225
8	5660.00	-53.50	6.30	13.75	Horizontal	-48.2	-13.00	35.2	45
9	6367.50	-50.50	6.80	13.85	Horizontal	-45.6	-13.00	32.6	180
10	7075.00	-48.70	6.90	14.25	Horizontal	-43.5	-13.00	30.5	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 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	1430.60	-59.90	2.00	10.15	Horizontal	-53.9	-13.00	40.9	135
3	2145.90	-56.39	2.51	11.05	Horizontal	-50.0	-13.00	37.0	270
4	2861.20	-55.40	4.20	11.15	Horizontal	-50.6	-13.00	37.6	315
5	3576.50	-56.40	5.20	11.15	Horizontal	-52.6	-13.00	39.6	135
6	4291.80	-53.60	5.50	11.95	Horizontal	-49.3	-13.00	36.3	180
7	5007.10	-52.70	5.70	13.55	Horizontal	-47.0	-13.00	34.0	180
8	5722.40	-53.10	6.30	13.75	Horizontal	-47.8	-13.00	34.8	225
9	6437.70	-50.80	6.80	13.85	Horizontal	-45.9	-13.00	32.9	45
10	7153.00	-48.50	6.90	14.25	Horizontal	-43.3	-13.00	30.3	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	1401.00	-57.90	2.00	10.15	Horizontal	-51.9	-13.00	38.9	135
3	2101.50	-57.69	2.51	11.35	Horizontal	-51.0	-13.00	38.0	270
4	2802.00	-55.10	4.20	10.85	Horizontal	-50.6	-13.00	37.6	180
5	3502.50	-46.50	5.20	11.35	Horizontal	-50.5	-13.00	37.5	270
6	4203.00	-49.60	5.50	11.95	Horizontal	-45.3	-13.00	32.3	135
7	4903.50	-56.00	5.70	13.55	Horizontal	-50.3	-13.00	37.3	180
8	5604.00	-53.70	6.30	13.75	Horizontal	-48.4	-13.00	35.4	225
9	6304.50	-51.30	6.80	13.85	Horizontal	-46.4	-13.00	33.4	90
10	7005.00	-50.60	6.90	14.25	Horizontal	-45.4	-13.00	32.4	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 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	1415.00	-59.80	2.00	10.75	Horizontal	-53.2	-13.00	40.2	225
3	2122.50	-54.29	2.51	11.05	Horizontal	-47.9	-13.00	34.9	45
4	2830.00	-55.40	4.20	11.15	Horizontal	-50.6	-13.00	37.6	180
5	3537.50	-54.80	5.20	11.15	Horizontal	-51.0	-13.00	38.0	270
6	4245.00	-54.40	5.50	11.95	Horizontal	-50.1	-13.00	37.1	45
7	4952.50	-53.30	5.70	13.55	Horizontal	-47.6	-13.00	34.6	315
8	5660.00	-53.40	6.30	13.75	Horizontal	-48.1	-13.00	35.1	90
9	6367.50	-50.30	6.80	13.85	Horizontal	-45.4	-13.00	32.4	225
10	7075.00	-48.60	6.90	14.25	Horizontal	-43.4	-13.00	30.4	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	1429.00	-60.00	2.00	10.15	Horizontal	-54.0	-13.00	41.0	270
3	2143.50	-55.79	2.51	11.05	Horizontal	-49.4	-13.00	36.4	135
4	2858.00	-54.00	4.20	11.15	Horizontal	-49.2	-13.00	36.2	180
5	3572.50	-55.80	5.20	11.15	Horizontal	-52.0	-13.00	39.0	45
6	4287.00	-49.10	5.50	11.95	Horizontal	-44.8	-13.00	31.8	315
7	5001.50	-52.50	5.70	13.55	Horizontal	-46.8	-13.00	33.8	270
8	5716.00	-53.10	6.30	13.75	Horizontal	-47.8	-13.00	34.8	135
9	6430.50	-50.60	6.80	13.85	Horizontal	-45.7	-13.00	32.7	270
10	7145.00	-48.30	6.90	14.25	Horizontal	-43.1	-13.00	30.1	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	1403.00	-57.50	2.00	10.15	Horizontal	-51.5	-13.00	38.5	180
3	2104.50	-59.00	2.50	11.35	Horizontal	-52.3	-13.00	39.3	225
4	2806.00	-55.00	4.20	10.85	Horizontal	-50.5	-13.00	37.5	45
5	3507.50	-54.00	5.20	11.35	Horizontal	-50.0	-13.00	37.0	135
6	4209.00	-48.80	5.50	11.95	Horizontal	-44.5	-13.00	31.5	270
7	4910.50	-54.10	5.70	13.55	Horizontal	-48.4	-13.00	35.4	315
8	5612.00	-51.50	6.30	13.75	Horizontal	-46.2	-13.00	33.2	315
9	6313.50	-51.20	6.80	13.85	Horizontal	-46.3	-13.00	33.3	270
10	7015.00	-50.50	6.90	14.25	Horizontal	-45.3	-13.00	32.3	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	1415.00	-59.80	2.00	10.75	Horizontal	-53.2	-13.00	40.2	180
3	2122.50	-54.79	2.51	11.05	Horizontal	-48.4	-13.00	35.4	270
4	2830.00	-55.10	4.20	11.15	Horizontal	-50.3	-13.00	37.3	135
5	3537.50	-54.80	5.20	11.15	Horizontal	-51.0	-13.00	38.0	315
6	4245.00	-50.10	5.50	11.95	Horizontal	-45.8	-13.00	32.8	90
7	4952.50	-55.40	5.70	13.55	Horizontal	-49.7	-13.00	36.7	225
8	5660.00	-53.60	6.30	13.75	Horizontal	-48.3	-13.00	35.3	180
9	6367.50	-47.90	6.80	13.85	Horizontal	-43.0	-13.00	30.0	180
10	7075.00	-48.20	6.90	14.25	Horizontal	-43.0	-13.00	30.0	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 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	1427.00	-60.70	2.00	10.15	Horizontal	-54.7	-13.00	41.7	180
3	2140.50	-55.39	2.51	11.05	Horizontal	-49.0	-13.00	36.0	225
4	2854.00	-55.60	4.20	11.15	Horizontal	-50.8	-13.00	37.8	90
5	3567.50	-53.70	5.20	11.15	Horizontal	-49.9	-13.00	36.9	45
6	4281.00	-50.40	5.50	11.95	Horizontal	-46.1	-13.00	33.1	180
7	4994.50	-51.50	5.70	13.55	Horizontal	-45.8	-13.00	32.8	270
8	5708.00	-53.00	6.30	13.75	Horizontal	-47.7	-13.00	34.7	135
9	6421.50	-51.30	6.80	13.85	Horizontal	-46.4	-13.00	33.4	180
10	7135.00	-48.90	6.90	14.25	Horizontal	-43.7	-13.00	30.7	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 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	1408.00	-57.40	2.00	10.15	Horizontal	-51.4	-13.00	38.4	135
3	2112.00	-57.69	2.51	11.35	Horizontal	-51.0	-13.00	38.0	45
4	2816.00	-54.70	4.20	10.85	Horizontal	-50.2	-13.00	37.2	315
5	3520.00	-55.00	5.20	11.35	Horizontal	-51.0	-13.00	38.0	225
6	4224.00	-47.80	5.50	11.95	Horizontal	-43.5	-13.00	30.5	45
7	4928.00	-55.10	5.70	13.55	Horizontal	-49.4	-13.00	36.4	180
8	5632.00	-53.70	6.30	13.75	Horizontal	-48.4	-13.00	35.4	270
9	6336.00	-51.70	6.80	13.85	Horizontal	-46.8	-13.00	33.8	135
10	7040.00	-48.80	6.90	14.25	Horizontal	-43.6	-13.00	30.6	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 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	1415.00	-60.70	2.00	10.75	Horizontal	-54.1	-13.00	41.1	90
3	2122.50	-57.59	2.51	11.05	Horizontal	-51.2	-13.00	38.2	225
4	2830.00	-55.40	4.20	11.15	Horizontal	-50.6	-13.00	37.6	180
5	3537.50	-54.10	5.20	11.15	Horizontal	-50.3	-13.00	37.3	225
6	4245.00	-49.40	5.50	11.95	Horizontal	-45.1	-13.00	32.1	90
7	4952.50	-55.10	5.70	13.55	Horizontal	-49.4	-13.00	36.4	135
8	5660.00	-53.20	6.30	13.75	Horizontal	-47.9	-13.00	34.9	90
9	6367.50	-50.20	6.80	13.85	Horizontal	-45.3	-13.00	32.3	225
10	7075.00	-49.60	6.90	14.25	Horizontal	-44.4	-13.00	31.4	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 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	1422.00	-59.90	2.00	10.15	Horizontal	-53.9	-13.00	40.9	45
3	2133.00	-54.69	2.51	11.05	Horizontal	-48.3	-13.00	35.3	315
4	2844.00	-55.10	4.20	11.15	Horizontal	-50.3	-13.00	37.3	270
5	3555.00	-53.50	5.20	11.15	Horizontal	-49.7	-13.00	36.7	45
6	4266.00	-49.60	5.50	11.95	Horizontal	-45.3	-13.00	32.3	315
7	4977.00	-54.40	5.70	13.55	Horizontal	-48.7	-13.00	35.7	270
8	5688.00	-52.80	6.30	13.75	Horizontal	-47.5	-13.00	34.5	135
9	6399.00	-52.00	6.80	13.85	Horizontal	-47.1	-13.00	34.1	270
10	7110.00	-49.10	6.90	14.25	Horizontal	-43.9	-13.00	30.9	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.

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	/	/
Preamplifier	R&S	SCU18	102327	2017-06-18	2018-06-17
Software	R&S	EMC32	V 8.52.0	/	/

*******END OF REPORT *******