



RF TEST REPORT

Applicant	ZTE Corporation
FCC ID	SRQ-V9VITA
Product	LTE/WCDMA/GSM(GPRS) Multi-Mode Digital Mobile Phone
Model	ZTE BLADE V0920
Marketing	ZTE BLADE V9 VITA/BLADE V9 VITA
Report No.	R1801A0015-R3
Issue Date	January 31, 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)	64
5.6	Frequency Stability.....	68
5.7	Spurious Emissions at Antenna Terminals	74
5.8	Radiates Spurious Emission	96
6	Main Test Instruments	120

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)—LTE 4 /27.50(c)(10)—LTE 12 /27.50(h)(2)- Mobile and other user stations	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h) —LTE 4 /27.53(g) —LTE 12 /27.53(m) —LTE 7	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) —LTE 4 /27.53(g) —LTE 12 /27.53(m) —LTE 7	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(g) /27.53(m)	PASS
Date of Testing: January 9, 2018~January 25, 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, Guangdong, 518057, P.R.China
Manufacturer	ZTE Corporation
Manufacturer address	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

General information

EUT Description			
Model	ZTE BLADE V0920		
IMEI	SIM1:867854030008157 SIM2:867854030011151		
Hardware Version	udvA		
Software Version	TEL_MX_BLADE_V9_VITAV1.0.0		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	LTE Band 4; LTE Band 7, LTE Band 12;		
Test Modulation	(LTE)QPSK 16QAM;		
LTE Category	4		
Maximum E.I.R.P/ E.R.P	LTE Band 4:	23.65dBm	
	LTE Band 7:	24.71dBm	
	LTE Band 12:	12.54dBm	
Rated Power Supply Voltage:	3.85V		
Extreme Voltage	Minimum: 3.65V Maximum: 4.4V		
Extreme Temperature	Lowest: -30°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 Dokocom Energy Technology Co., Ltd. Model: STC-A515A-Z
Adapter 2	Manufacturer: SHENZHEN RUIJING INDUSTRIAL CO LTD Model: STC-A515A-Z
Adapter 3	Manufacturer: Jiangsu Chenyang Electron Co., Ltd. Model: STC-A515A-Z
Earphone 1	Manufacturer: JUWEI ELECTRONICS CO., LTD Model: JWEP1036-Z01R
Earphone 2	Manufacturer: Shenzhen FDC Electronics Co., Ltd. Model: DEM-66
Battery	Manufacturer: Zhongshan Tianmao Battery Co., Ltd Model: Li3931T44P8h806139
USB Cable 1	Manufacturer: kingpower-tech 100cm Cable, Shielded
USB Cable 2	Manufacturer: LUXSHARE-ICT 100cm Cable, Shielded
Note: 1. The information of the EUT is declared by the manufacturer. 2. There is more than one SIM, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 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

There is more than one SIM card slot, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) will be recorded in this report

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, horizontal polarization) and the worst case was recorded.

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

Subsequently, only the worst case emissions are reported.

The following testing in WCDMA 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	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O



Spurious Emission	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 12	O	O	O	O	-	-	O	-	O	-	-	O	O	O
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.														

5 Test Case Results

5.1 RF Power Output

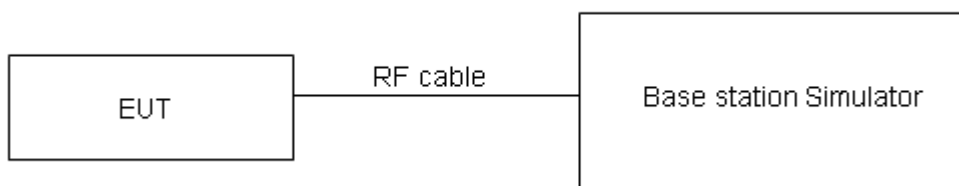
Ambient condition

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

Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

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

Test Results

LTE Band 4				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	23.10	23.20	23.32
		1	2	23.02	23.39	23.24
		1	5	23.16	23.04	23.14
		3	0	22.83	23.11	23.05
		3	2	22.88	23.05	22.90
		3	3	22.90	23.04	22.83
		6	0	21.91	22.14	22.13
	16QAM	1	0	21.90	22.14	22.07
		1	2	21.87	21.94	22.12
		1	5	21.98	21.94	21.98
		3	0	21.87	21.97	21.88
		3	2	21.95	22.05	21.96
		3	3	21.84	22.04	21.83
		6	0	20.85	21.13	20.93
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	23.12	23.24	23.35
		1	7	23.05	23.44	23.28
		1	14	23.19	23.09	23.18
		8	0	21.93	22.23	22.18
		8	4	22.00	22.15	22.02
		8	7	22.00	22.15	21.93
		15	0	21.94	22.18	22.16
	16QAM	1	0	21.93	22.16	22.10
		1	7	21.90	21.99	22.16
		1	14	22.00	21.98	22.01
		8	0	20.98	21.10	21.00
		8	4	21.06	21.18	21.08
		8	7	20.94	21.16	20.96
		15	0	20.88	21.17	20.96
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	23.09	23.22	23.31
		1	13	23.03	23.40	23.25
		1	24	23.16	23.04	23.14
		12	0	21.90	22.18	22.14
		12	6	21.98	22.11	21.97
		12	13	21.98	22.13	21.89
		25	0	21.92	22.17	22.14



	16QAM	1	0	21.90	22.12	22.07
		1	13	21.87	21.97	22.13
		1	24	21.97	21.96	21.97
		12	0	20.96	21.06	20.97
		12	6	21.03	21.13	21.04
		12	13	20.91	21.11	20.92
		25	0	20.86	21.13	20.91
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	23.11	23.23	23.34
		1	25	23.06	23.45	23.29
		1	49	23.18	23.08	23.17
		25	0	21.93	22.23	22.18
		25	13	22.01	22.16	22.01
		25	25	22.00	22.17	21.94
		50	0	22.00	22.19	22.18
	16QAM	1	0	21.92	22.15	22.09
		1	25	21.90	22.01	22.16
		1	49	22.00	21.98	22.00
		25	0	20.99	21.11	21.01
		25	13	21.05	21.17	21.07
		25	25	20.94	21.16	20.96
		50	0	20.89	21.18	20.95
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	23.10	23.19	23.32
		1	38	23.04	23.44	23.26
		1	74	23.15	23.03	23.13
		36	0	21.91	22.19	22.15
		36	18	21.98	22.11	21.97
		36	39	21.97	22.14	21.90
		75	0	21.98	22.15	22.13
	16QAM	1	0	21.87	22.13	22.07
		1	38	21.88	21.98	22.14
		1	74	21.97	21.94	21.97
		36	0	20.96	21.09	20.98
		36	18	21.02	21.12	21.03
		36	39	20.92	21.12	20.93
		75	0	20.86	21.13	20.91
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	23.07	23.15	23.29
		1	50	23.03	23.40	23.24



		1	99	23.13	23.02	23.10
		50	0	21.88	22.14	22.11
		50	25	21.96	22.07	21.94
		50	50	21.94	22.09	21.86
		100	0	21.95	22.10	22.09
	16QAM	1	0	21.85	22.09	22.02
		1	50	21.84	21.96	22.10
		1	99	21.95	21.91	21.95
		50	0	20.93	21.05	20.95
		50	25	20.99	21.10	21.00
		50	50	20.89	21.07	20.89
		100	0	20.84	21.09	20.88

LTE Band 7				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	23.56	23.59	23.54
		1	13	23.57	23.44	23.38
		1	24	23.48	23.41	23.71
		12	0	22.57	22.44	22.60
		12	6	22.47	22.57	22.64
		12	13	22.44	22.53	22.67
		25	0	22.45	22.61	22.56
	16QAM	1	0	22.40	22.42	22.63
		1	13	22.38	22.30	22.57
		1	24	22.42	22.40	22.38
		12	0	21.50	21.36	21.57
		12	6	21.46	21.44	21.57
		12	13	21.28	21.46	21.51
		25	0	21.34	21.42	21.48
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	23.58	23.60	23.57
		1	25	23.60	23.49	23.42
		1	49	23.50	23.45	23.74
		25	0	22.60	22.49	22.64
		25	13	22.50	22.62	22.68
		25	25	22.46	22.57	22.72
		50	0	22.53	22.63	22.60
	16QAM	1	0	22.42	22.45	22.65
		1	25	22.41	22.34	22.60
		1	49	22.45	22.42	22.41



		25	0	21.53	21.41	21.61
		25	13	21.48	21.48	21.60
		25	25	21.31	21.51	21.55
		50	0	21.37	21.47	21.52
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	23.57	23.56	23.55
		1	38	23.58	23.48	23.39
		1	74	23.47	23.40	23.70
		36	0	22.58	22.45	22.61
		36	18	22.47	22.57	22.64
		36	39	22.43	22.54	22.68
		75	0	22.51	22.59	22.55
	16QAM	1	0	22.37	22.43	22.63
		1	38	22.39	22.31	22.58
		1	74	22.42	22.38	22.38
		36	0	21.50	21.39	21.58
		36	18	21.45	21.43	21.56
		36	39	21.29	21.47	21.52
		75	0	21.34	21.42	21.48
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	23.54	23.52	23.52
		1	50	23.57	23.44	23.37
		1	99	23.45	23.39	23.67
		50	0	22.55	22.40	22.57
		50	25	22.45	22.53	22.61
		50	50	22.40	22.49	22.64
		100	0	22.48	22.54	22.51
	16QAM	1	0	22.35	22.39	22.58
		1	50	22.35	22.29	22.54
		1	99	22.40	22.35	22.36
		50	0	21.47	21.35	21.55
		50	25	21.42	21.41	21.53
		50	50	21.26	21.42	21.48
		100	0	21.32	21.38	21.45

LTE Band 12				AV Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23017/699.7	23095/707.5	23173/715.3
1.4MHz	QPSK	1	0	23.35	23.53	23.37
		1	2	23.52	23.63	23.45
		1	5	23.50	23.48	23.45
		3	0	23.39	23.51	23.41
		3	2	23.31	23.47	23.45
		3	3	23.37	23.48	23.45
		6	0	22.38	22.56	22.51
	16QAM	1	0	22.36	22.42	22.34
		1	2	22.31	22.32	22.22
		1	5	22.33	22.13	22.25
		3	0	22.34	22.47	22.53
		3	2	22.39	22.48	22.52
		3	3	22.39	22.51	22.52
		6	0	21.37	21.47	21.50
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23025/700.5	23095/707.5	23165/714.5
3MHz	QPSK	1	0	23.37	23.57	23.40
		1	7	23.55	23.68	23.49
		1	14	23.53	23.53	23.49
		8	0	22.49	22.63	22.54
		8	4	22.43	22.57	22.57
		8	7	22.47	22.59	22.55
		15	0	22.41	22.60	22.54
	16QAM	1	0	22.39	22.44	22.37
		1	7	22.34	22.37	22.26
		1	14	22.35	22.17	22.28
		8	0	21.45	21.60	21.65
		8	4	21.50	21.61	21.64
		8	7	21.49	21.63	21.65
		15	0	21.40	21.51	21.53
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23035/701.5	23095/707.5	23155/713.5
5MHz	QPSK	1	0	23.34	23.55	23.36
		1	13	23.53	23.64	23.46
		1	24	23.50	23.48	23.45
		12	0	22.46	22.58	22.50
		12	6	22.41	22.53	22.52
		12	13	22.45	22.57	22.51
		25	0	22.39	22.59	22.52



	16QAM	1	0	22.36	22.40	22.34
		1	13	22.31	22.35	22.23
		1	24	22.32	22.15	22.24
		12	0	21.43	21.56	21.62
		12	6	21.47	21.56	21.60
		12	13	21.46	21.58	21.61
		25	0	21.38	21.47	21.48
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				23060/704	23095/707.5	23130/711
10MHz	QPSK	1	0	23.32	23.48	23.34
		1	25	23.53	23.64	23.45
		1	49	23.47	23.46	23.41
		25	0	22.44	22.54	22.47
		25	13	22.39	22.49	22.49
		25	25	22.41	22.53	22.48
		50	0	22.42	22.52	22.47
	16QAM	1	0	22.31	22.37	22.29
		1	25	22.28	22.34	22.20
		1	49	22.30	22.10	22.22
		25	0	21.40	21.55	21.60
		25	13	21.43	21.53	21.56
		25	25	21.44	21.54	21.58
		50	0	21.36	21.43	21.45

5.2 Effective Isotropic Radiated Power

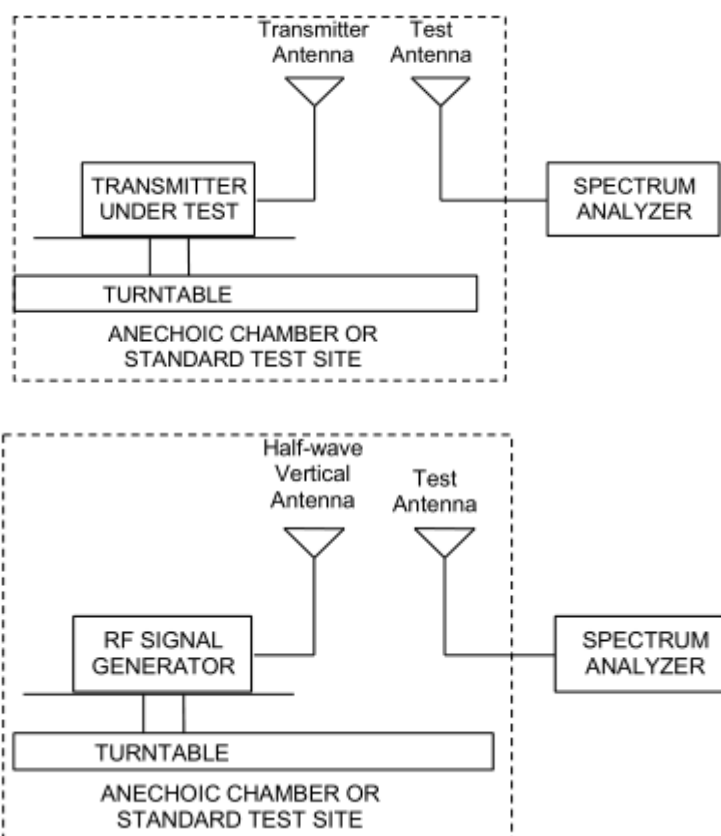
Ambient condition

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 W (34.77 dBm)
Part 27.50(d)(4)Limit (EIRP)	$\leq$ 1 W (30 dBm)
Part 27.50(h)(2) Limit (EIRP)	$\leq$ 2 W (33 dBm)

Measurement Uncertainty

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

Test Results

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

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	-33.54	-54.30	1.44	22.20	30	Pass
	Mid	1732.5	Horizontal	-33.73	-54.32	1.57	22.16	30	Pass
	High	1754.3	Horizontal	-33.47	-54.10	1.72	22.35	30	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	-33.31	-54.35	1.44	22.48	30	Pass
	Mid	1732.5	Horizontal	-33.61	-54.41	1.57	22.36	30	Pass
	High	1753.5	Horizontal	-33.77	-54.48	1.72	22.42	30	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	-33.63	-54.34	1.44	22.15	30	Pass
	Mid	1732.5	Horizontal	-33.53	-54.32	1.57	22.35	30	Pass
	High	1752.5	Horizontal	-33.37	-54.13	1.72	22.47	30	Pass
10 MHz (QPSK)	Low	1715	Horizontal	-33.67	-54.32	1.44	22.09	30	Pass
	Mid	1732.5	Horizontal	-33.21	-54.41	1.57	22.76	30	Pass
	High	1750	Horizontal	-33.07	-54.52	1.66	23.11	30	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	-32.67	-54.35	1.49	23.16	30	Pass
	Mid	1732.5	Horizontal	-32.23	-54.32	1.57	23.65	30	Pass
	High	1747.5	Horizontal	-32.26	-54.17	1.66	23.57	30	Pass
20 MHz (QPSK)	Low	1720	Horizontal	-32.44	-54.44	1.49	23.49	30	Pass
	Mid	1732.5	Horizontal	-32.33	-54.41	1.57	23.65	30	Pass
	High	1745	Horizontal	-32.73	-54.59	1.63	23.49	30	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	-33.66	-54.30	1.44	22.07	30	Pass
	Mid	1732.5	Horizontal	-33.85	-54.32	1.57	22.03	30	Pass
	High	1754.3	Horizontal	-33.59	-54.10	1.72	22.23	30	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	-33.44	-54.35	1.44	22.36	30	Pass
	Mid	1732.5	Horizontal	-33.73	-54.41	1.57	22.24	30	Pass
	High	1753.5	Horizontal	-33.90	-54.48	1.72	22.30	30	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	-33.75	-54.34	1.44	22.03	30	Pass
	Mid	1732.5	Horizontal	-33.66	-54.32	1.57	22.22	30	Pass
	High	1752.5	Horizontal	-33.50	-54.13	1.72	22.35	30	Pass
10 MHz (16QAM)	Low	1715	Horizontal	-33.79	-54.32	1.44	21.97	30	Pass
	Mid	1732.5	Horizontal	-33.34	-54.41	1.57	22.64	30	Pass
	High	1750	Horizontal	-33.19	-54.52	1.66	22.99	30	Pass
15 MHz (16QAM)	Low	1717.5	Horizontal	-32.79	-54.35	1.49	23.04	30	Pass
	Mid	1732.5	Horizontal	-32.35	-54.32	1.57	23.53	30	Pass
	High	1747.5	Horizontal	-32.38	-54.17	1.66	23.45	30	Pass
20 MHz (16QAM)	Low	1720	Horizontal	-32.56	-54.44	1.49	23.36	30	Pass
	Mid	1732.5	Horizontal	-32.45	-54.41	1.57	23.53	30	Pass
	High	1745	Horizontal	-32.86	-54.59	1.63	23.36	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	-37.10	-59.64	1.81	24.35	33	Pass
	Mid	2535	Horizontal	-37.37	-59.72	1.81	24.16	33	Pass
	High	2567.5	Horizontal	-37.49	-59.98	1.83	24.32	33	Pass
10 MHz (QPSK)	Low	2505	Horizontal	-37.12	-59.61	1.82	24.31	33	Pass
	Mid	2535	Horizontal	-37.40	-59.72	1.81	24.13	33	Pass
	High	2565	Horizontal	-37.47	-60.02	1.81	24.36	33	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	-36.93	-59.29	1.80	24.16	33	Pass
	Mid	2535	Horizontal	-37.18	-59.72	1.81	24.35	33	Pass
	High	2562.5	Horizontal	-37.12	-59.46	1.82	24.16	33	Pass
20 MHz (QPSK)	Low	2510	Horizontal	-36.72	-59.52	1.77	24.57	33	Pass
	Mid	2535	Horizontal	-36.82	-59.72	1.81	24.71	33	Pass
	High	2560	Horizontal	-37.17	-60.01	1.82	24.66	33	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	-37.23	-59.64	1.81	24.22	33	Pass
	Mid	2535	Horizontal	-37.50	-59.72	1.81	24.03	33	Pass
	High	2567.5	Horizontal	-37.62	-59.98	1.83	24.19	33	Pass
10 MHz (16QAM)	Low	2505	Horizontal	-37.24	-59.61	1.82	24.19	33	Pass
	Mid	2535	Horizontal	-37.52	-59.72	1.81	24.01	33	Pass
	High	2565	Horizontal	-37.60	-60.02	1.81	24.23	33	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	-37.06	-59.29	1.80	24.03	33	Pass
	Mid	2535	Horizontal	-37.31	-59.72	1.81	24.22	33	Pass
	High	2562.5	Horizontal	-37.24	-59.46	1.82	24.04	33	Pass
20 MHz (16QAM)	Low	2510	Horizontal	-36.85	-59.52	1.77	24.44	33	Pass
	Mid	2535	Horizontal	-36.94	-59.72	1.81	24.59	33	Pass
	High	2560	Horizontal	-37.30	-60.01	1.82	24.54	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	-38.72	-49.12	2.04	12.44	34.77	Pass
	Mid	707.5	Horizontal	-38.89	-49.39	2.03	12.54	34.77	Pass
	High	715.3	Horizontal	-39.57	-49.76	1.99	12.18	34.77	Pass
3 MHz (QPSK)	Low	700.5	Horizontal	-38.66	-48.94	2.04	12.32	34.77	Pass
	Mid	707.5	Horizontal	-38.97	-49.12	2.03	12.18	34.77	Pass
	High	714.5	Horizontal	-39.04	-49.37	2.00	12.33	34.77	Pass
5 MHz (QPSK)	Low	701.5	Horizontal	-38.72	-49.17	2.04	12.50	34.77	Pass
	Mid	707.5	Horizontal	-39.21	-49.39	2.03	12.22	34.77	Pass
	High	713.5	Horizontal	-39.72	-49.72	2.01	12.00	34.77	Pass
10 MHz (QPSK)	Low	704	Horizontal	-38.82	-49.00	2.04	12.22	34.77	Pass
	Mid	707.5	Horizontal	-38.98	-49.12	2.03	12.17	34.77	Pass
	High	711	Horizontal	-39.03	-49.33	2.02	12.31	34.77	Pass
1.4 MHz (16QAM)	Low	699.7	Horizontal	-38.87	-49.12	2.04	12.29	34.77	Pass
	Mid	707.5	Horizontal	-39.04	-49.39	2.03	12.39	34.77	Pass
	High	715.3	Horizontal	-39.72	-49.76	1.99	12.03	34.77	Pass
3 MHz (16QAM)	Low	700.5	Horizontal	-38.81	-48.94	2.04	12.17	34.77	Pass
	Mid	707.5	Horizontal	-39.12	-49.12	2.03	12.03	34.77	Pass
	High	714.5	Horizontal	-39.19	-49.37	2.00	12.18	34.77	Pass
5 MHz (16QAM)	Low	701.5	Horizontal	-38.87	-49.17	2.04	12.35	34.77	Pass
	Mid	707.5	Horizontal	-39.36	-49.39	2.03	12.07	34.77	Pass
	High	713.5	Horizontal	-39.87	-49.72	2.01	11.85	34.77	Pass
10 MHz (16QAM)	Low	704	Horizontal	-38.97	-49.00	2.04	12.07	34.77	Pass
	Mid	707.5	Horizontal	-39.12	-49.12	2.03	12.03	34.77	Pass
	High	711	Horizontal	-39.18	-49.33	2.02	12.16	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).

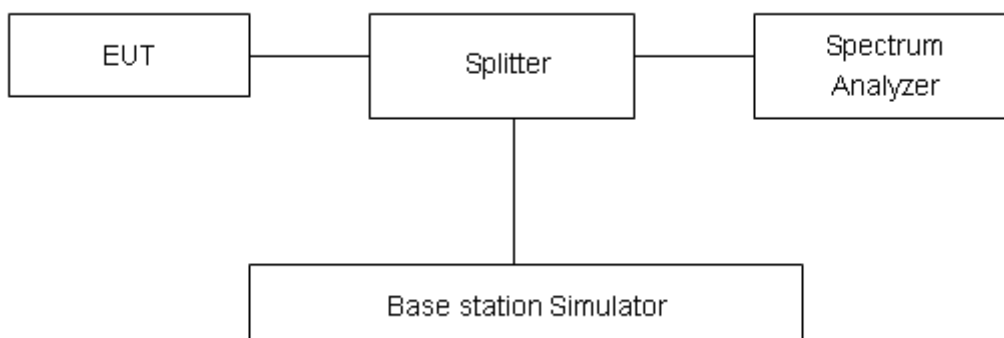
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/12 (5MHz).

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	1.1295	1.374
			20175	1732.5	1.1321	1.424
			20393	1754.3	1.1273	1.335
		3	19965	1711.5	2.7444	3.074
			20175	1732.5	2.7542	3.084
			20385	1753.5	2.7412	3.064
		5	19975	1712.5	4.5117	5.006
			20175	1732.5	4.5201	5.015
			20375	1752.5	4.5084	5.056
		10	20000	1715	9.0481	10.170
			20175	1732.5	9.0286	13.370
			20350	1750	9.0419	10.130
		15	20025	1717.5	13.4680	14.790
			20175	1732.5	13.3990	14.610
			20325	1747.5	13.4540	14.700
		20	20050	1720	17.9020	19.180
			20175	1732.5	17.8510	19.300
			20300	1745	17.8650	19.540
	16QAM	1.4	19957	1710.7	1.1271	1.351
			20175	1732.5	1.1259	1.340
			20393	1754.3	1.1205	1.366
		3	19965	1711.5	2.7638	3.043
			20175	1732.5	2.7417	3.060
			20385	1753.5	2.7350	3.080
		5	19975	1712.5	4.5074	5.002
			20175	1732.5	4.5277	5.006
			20375	1752.5	4.5340	5.026
		10	20000	1715	9.0603	10.040
			20175	1732.5	9.0321	10.060
			20350	1750	9.0302	10.040
		15	20025	1717.5	13.4630	14.670
			20175	1732.5	13.4420	14.610
			20325	1747.5	13.4440	14.750
		20	20050	1720	17.9310	19.330
			20175	1732.5	17.8620	19.270
			20300	1745	17.8660	19.370



LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5208	4.999
			21100	2535	4.5105	5.008
			21425	2567.5	4.5042	5.030
		10	20800	2505	9.0511	10.180
			21100	2535	9.0113	10.050
			21400	2565	9.0303	10.020
		15	20825	2507.5	13.4730	14.880
			21100	2535	13.4160	14.700
			21375	2562.5	13.4410	14.750
		20	20850	2510	17.8720	19.330
			21100	2535	17.8770	19.290
			21350	2560	17.8800	19.430
	16QAM	5	20775	2502.5	4.5030	4.997
			21100	2535	4.5213	5.030
			21425	2567.5	4.5319	5.032
		10	20800	2505	9.0478	10.030
			21100	2535	9.0248	10.080
			21400	2565	9.0172	10.050
		15	20825	2507.5	13.4760	14.740
			21100	2535	13.4720	14.710
			21375	2562.5	13.4470	14.820
		20	20850	2510	17.9100	19.420
			21100	2535	17.8850	19.310
			21350	2560	17.8500	19.280

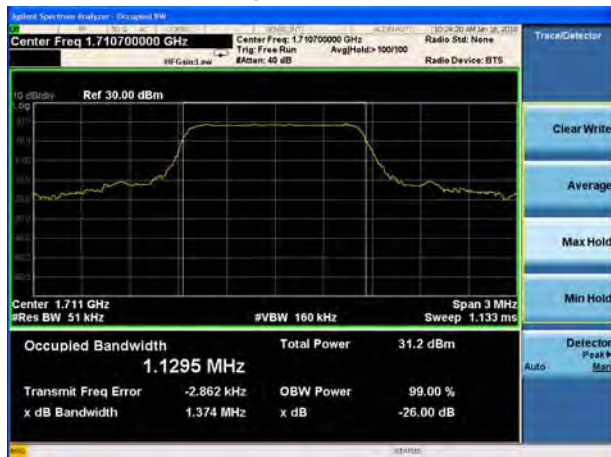
LTE Band 12						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	23017	699.7	1.1229	1.341
			23095	707.5	1.1240	1.345
			23173	715.3	1.1318	1.320
		3	23025	700.5	2.7398	3.056
			23095	707.5	2.7381	3.068
			23165	714.5	2.7398	3.059
		5	23035	701.5	4.5209	5.020
			23095	707.5	4.5006	5.013
			23155	713.5	4.5083	4.992
		10	23060	704	9.0708	10.140



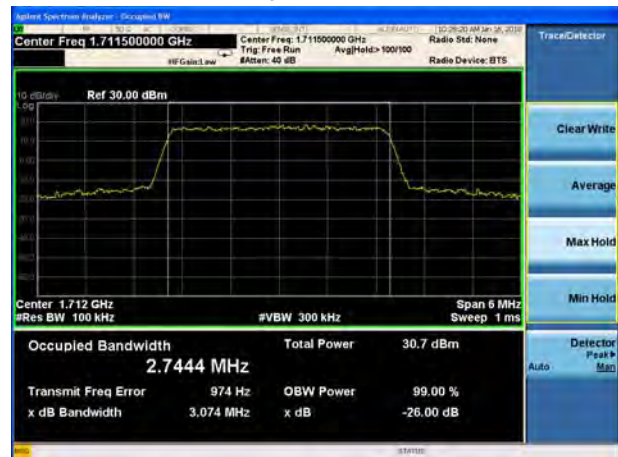
			23095	707.5	8.9998	10.000
			23130	711	9.0238	10.030
	16QAM	1.4	23017	699.7	1.1303	1.339
			23095	707.5	1.1194	1.329
			23173	715.3	1.1205	1.351
		3	23025	700.5	2.7503	3.035
			23095	707.5	2.7476	3.071
			23165	714.5	2.7365	3.062
		5	23035	701.5	4.5038	4.997
			23095	707.5	4.5151	5.004
			23155	713.5	4.5066	5.004
		10	23060	704	9.0723	10.070
			23095	707.5	9.0014	10.060
			23130	711	9.0045	10.000



LTE Band 4 QPSK 1.4MHz CH-Low



LTE Band 4 QPSK 3MHz CH-Low



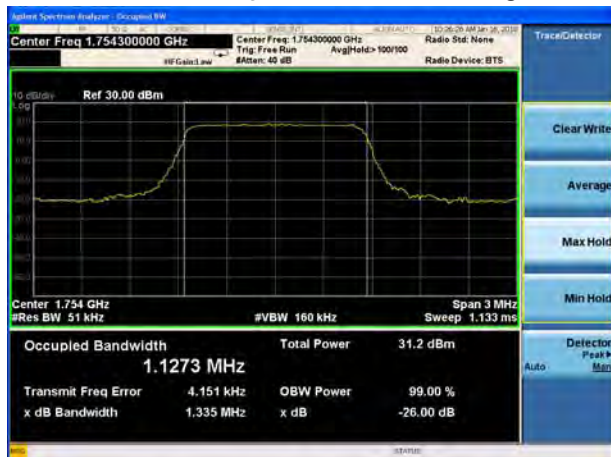
LTE Band 4 QPSK 1.4MHz CH-Middle



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



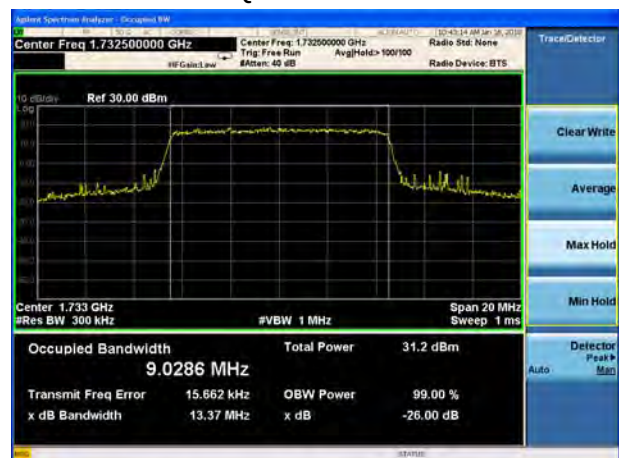
LTE Band 4 QPSK 10MHz CH-Low



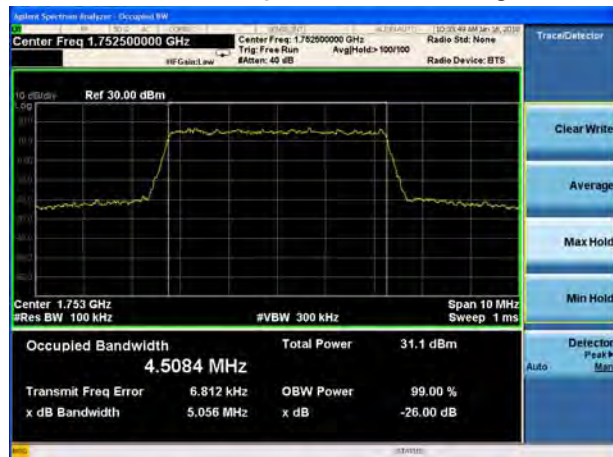
LTE Band 4 QPSK 5MHz CH-Middle



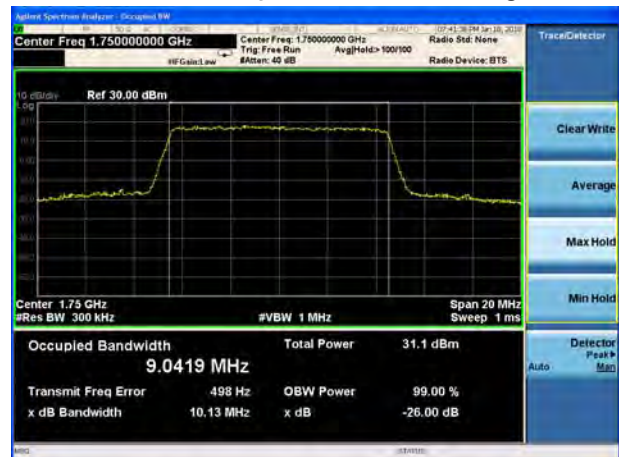
LTE Band 4 QPSK 10MHz CH-Middle



LTE Band 4 QPSK 5MHz CH-High

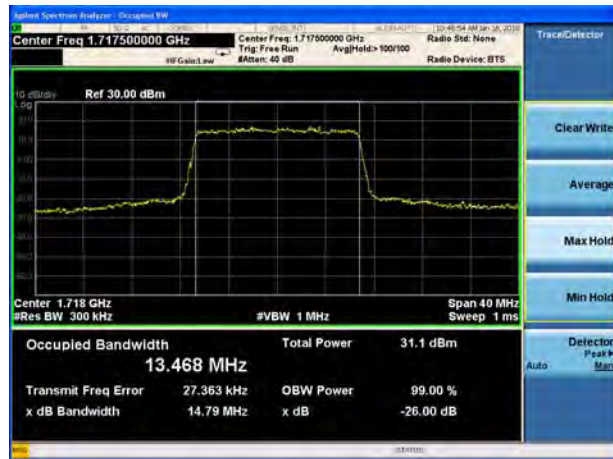


LTE Band 4 QPSK 10MHz CH-High

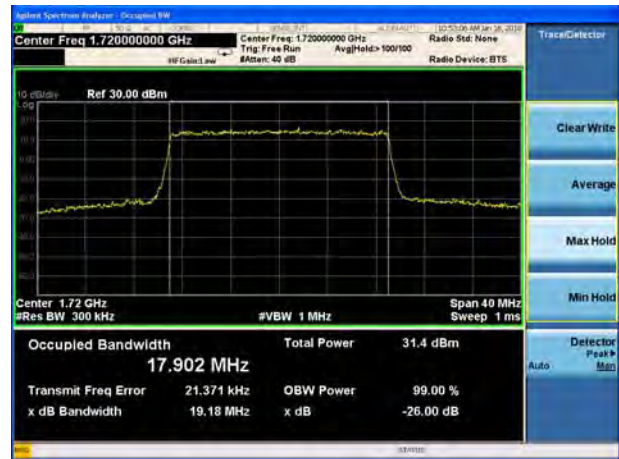




LTE Band 4 QPSK 15MHz CH-Low



LTE Band 4 QPSK 20MHz CH-Low



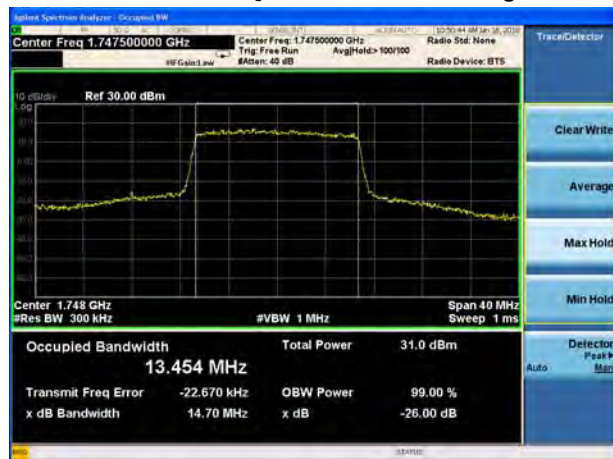
LTE Band 4 QPSK 15MHz CH-Middle



LTE Band 4 QPSK 20MHz CH-Middle



LTE Band 4 QPSK 15MHz CH-High



LTE Band 4 QPSK 20MHz CH-High

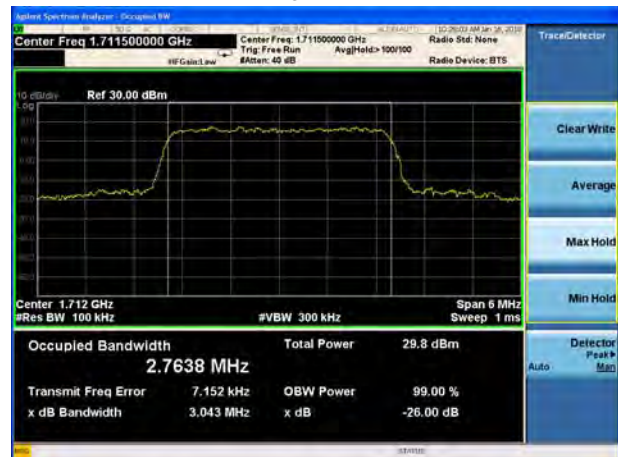




LTE Band 4 16QAM 1.4MHz CH-Low



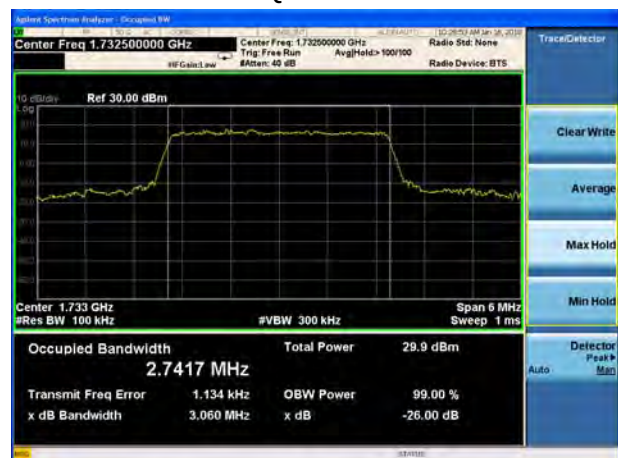
LTE Band 4 16QAM 3MHz CH-Low



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



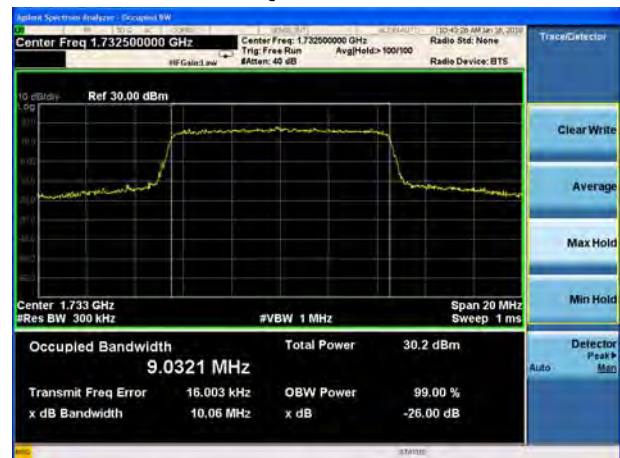
LTE Band 4 16QAM 10MHz CH-Low



LTE Band 4 16QAM 5MHz CH-Middle



LTE Band 4 16QAM 10MHz CH-Middle



LTE Band 4 16QAM 5MHz CH-High

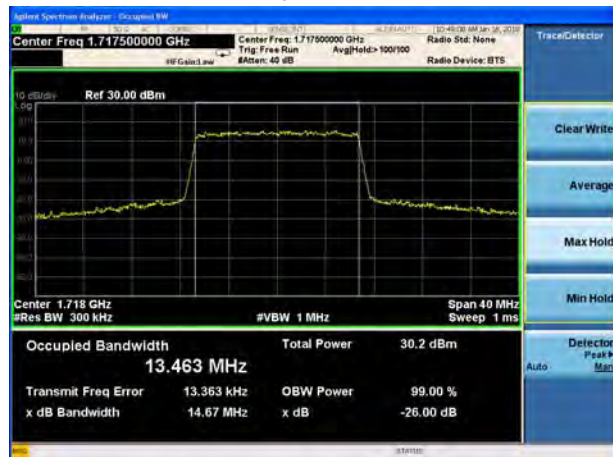


LTE Band 4 16QAM 10MHz CH-High

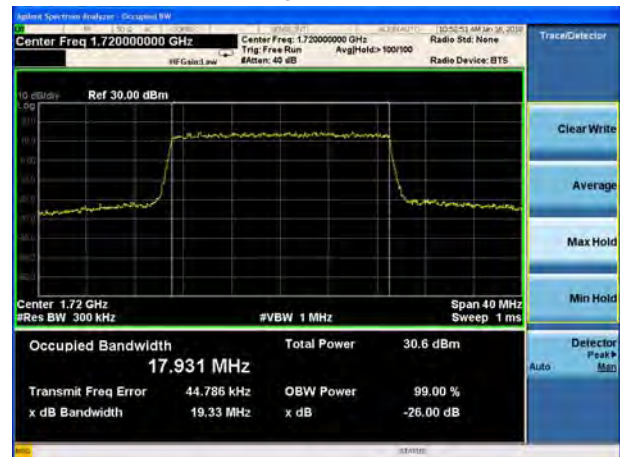




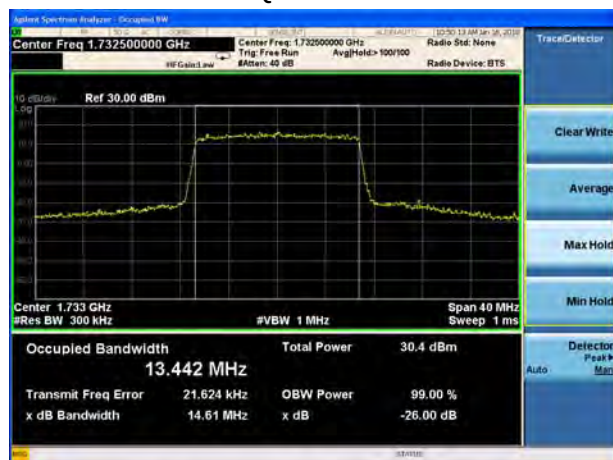
LTE Band 4 16QAM 15MHz CH-Low



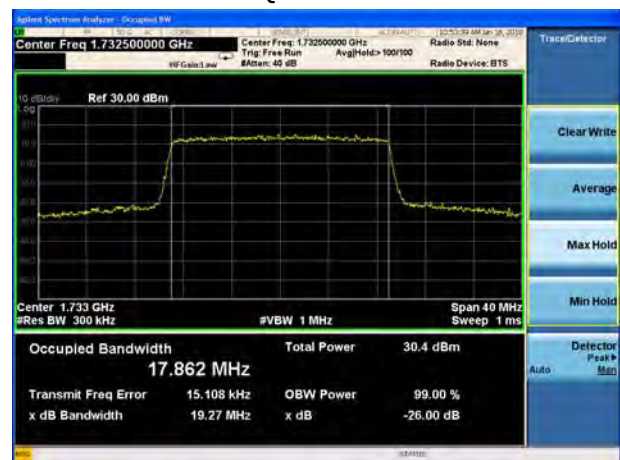
LTE Band 4 16QAM 20MHz CH-Low



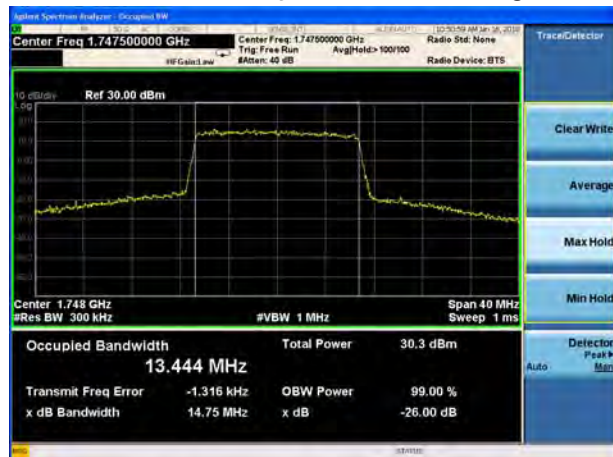
LTE Band 4 16QAM 15MHz CH-Middle



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

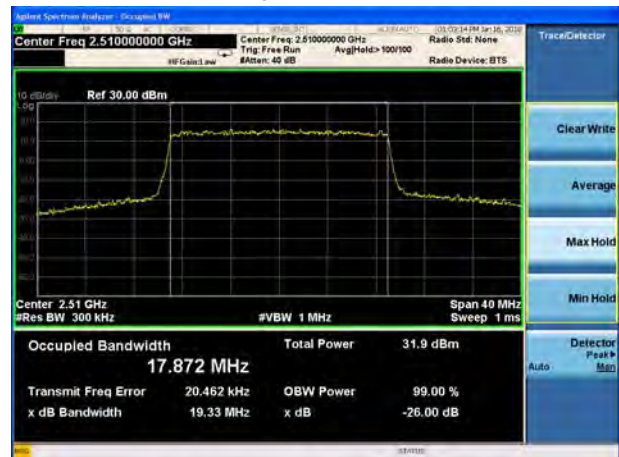




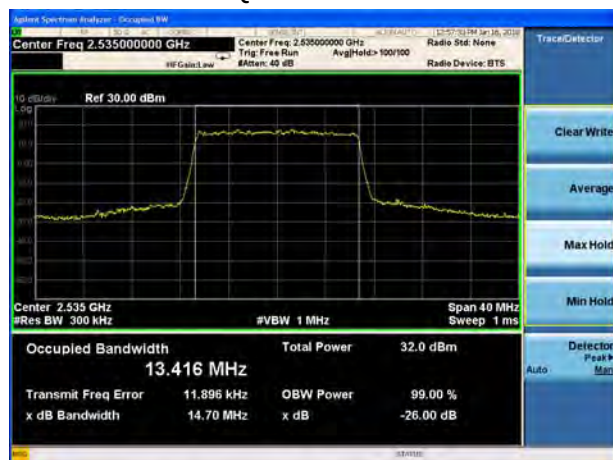
LTE Band 7 QPSK 15MHz CH-Low



LTE Band 7 QPSK 20MHz CH-Low



LTE Band 7 QPSK 15MHz CH-Middle



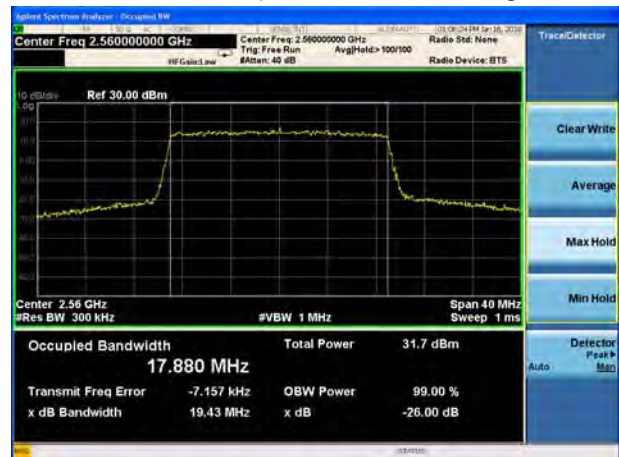
LTE Band 7 QPSK 20MHz CH-Middle



LTE Band 7 QPSK 15MHz CH-High



LTE Band 7 QPSK 20MHz CH-High

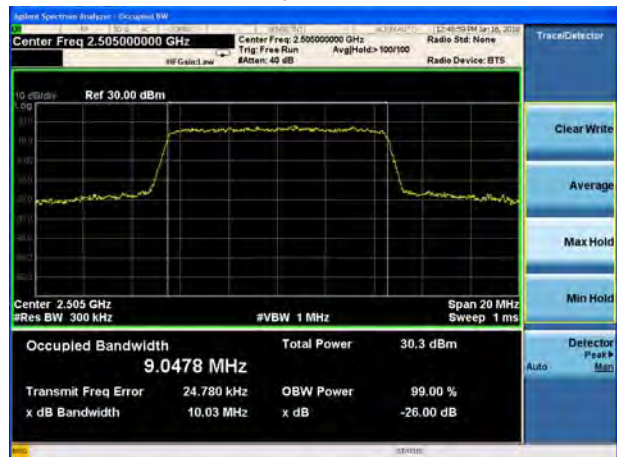




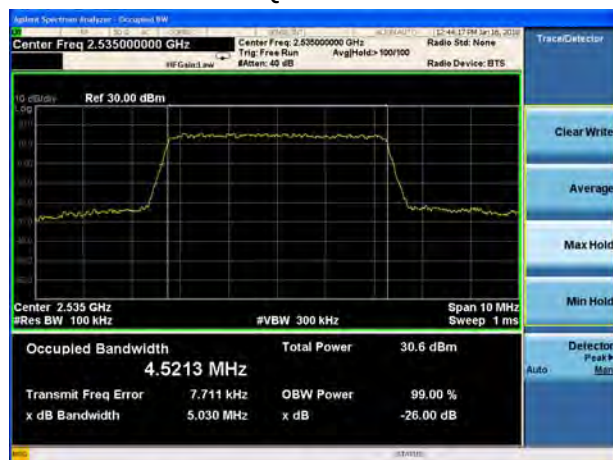
LTE Band 7 16QAM 5MHz CH-Low



LTE Band 7 16QAM 10MHz CH-Low



LTE Band 7 16QAM 5MHz CH-Middle



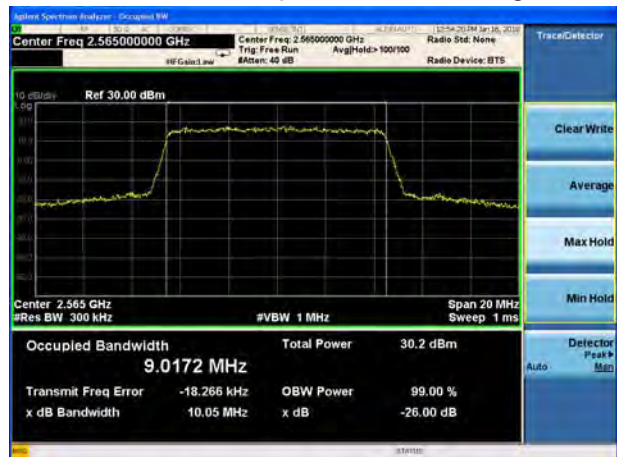
LTE Band 7 16QAM 10MHz CH-Middle



LTE Band 7 16QAM 5MHz CH-High

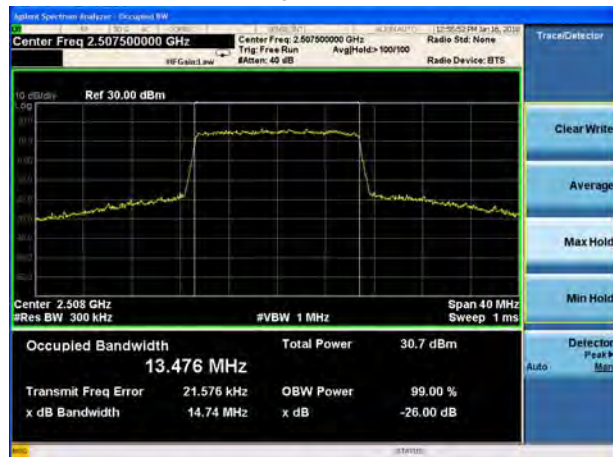


LTE Band 7 16QAM 10MHz CH-High

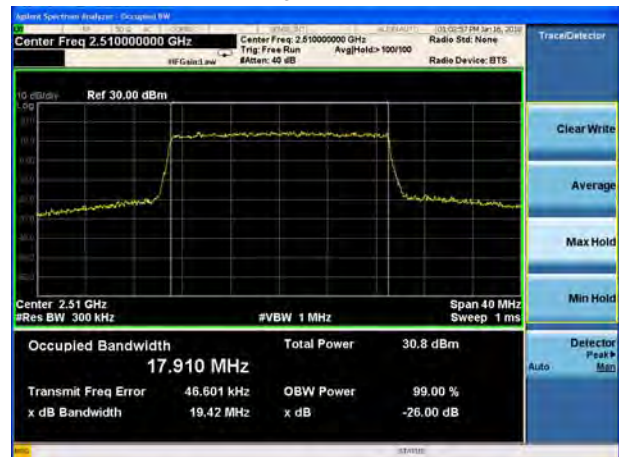




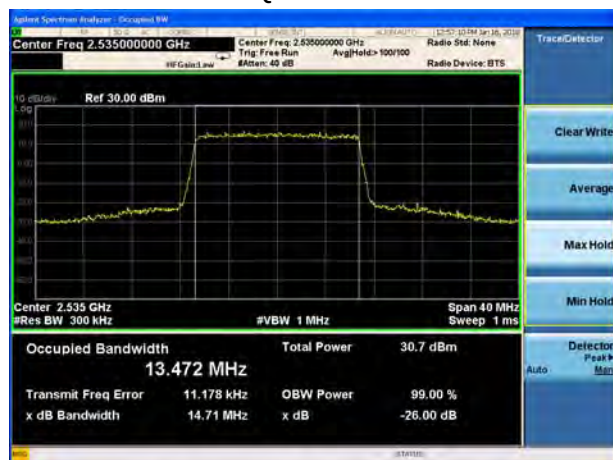
LTE Band 7 16QAM 15MHz CH-Low



LTE Band 7 16QAM 20MHz CH-Low



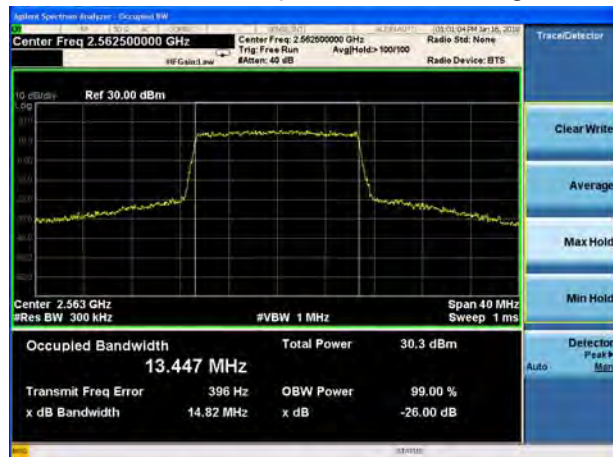
LTE Band 7 16QAM 15MHz CH-Middle



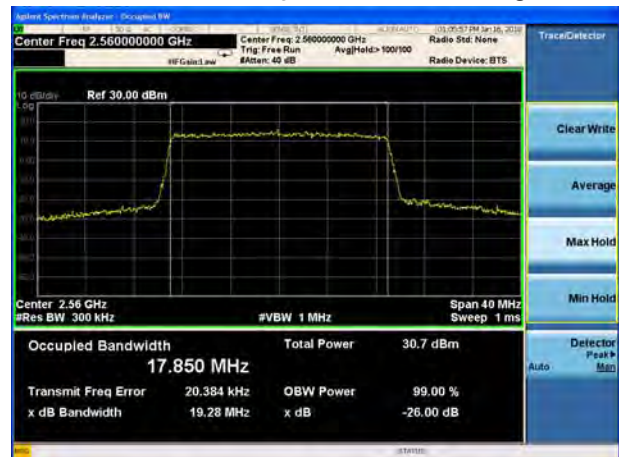
LTE Band 7 16QAM 20MHz CH-Middle



LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High

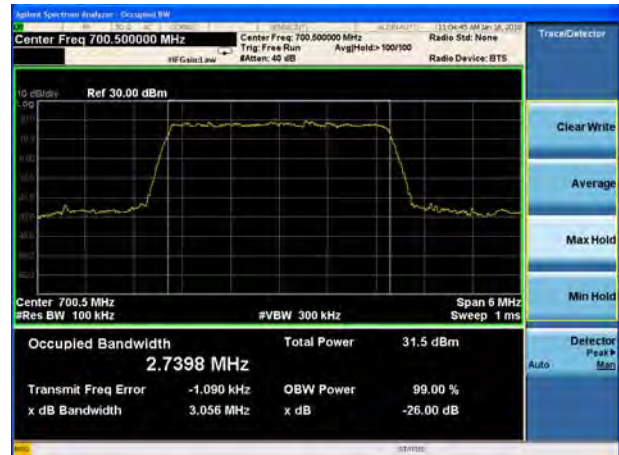




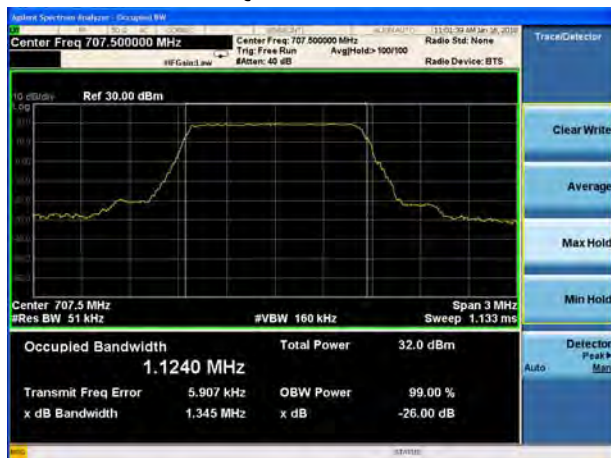
LTE Band 12 QPSK 1.4MHz CH-Low



LTE Band 12 QPSK 3MHz CH-Low



LTE Band 12 QPSK 1.4MHz CH-Middle



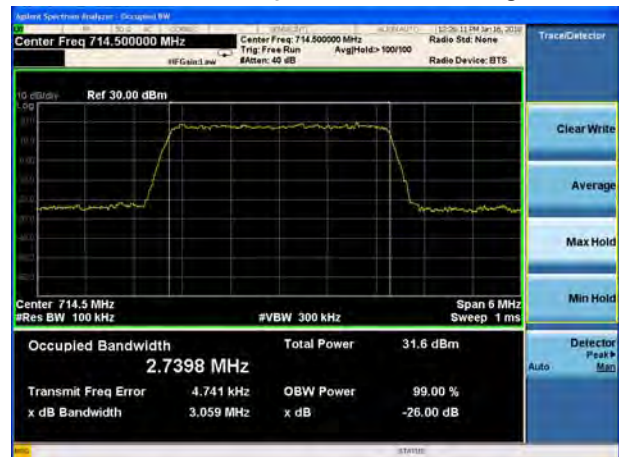
LTE Band 12 QPSK 3MHz CH-Middle



LTE Band 12 QPSK 1.4MHz CH-High



LTE Band 12 QPSK 3MHz CH-High

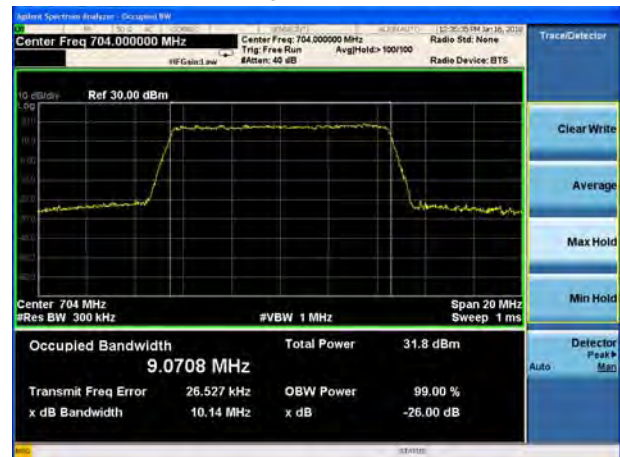




LTE Band 12 QPSK 5MHz CH-Low



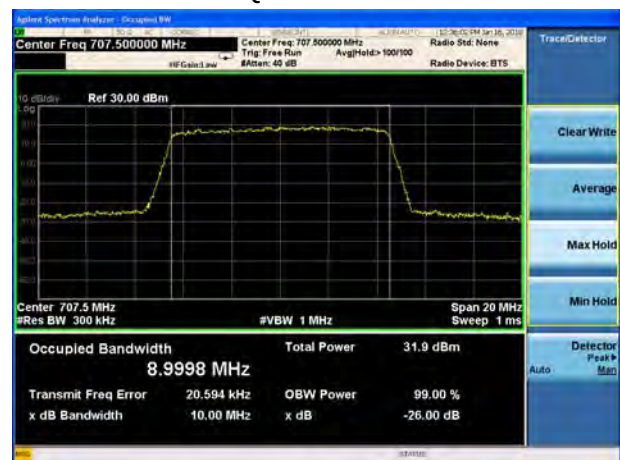
LTE Band 12 QPSK 10MHz CH-Low



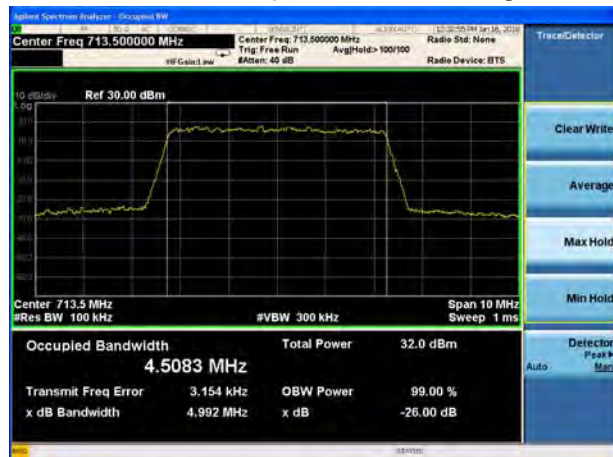
LTE Band 12 QPSK 5MHz CH-Middle



LTE Band 12 QPSK 10MHz CH-Middle



LTE Band 12 QPSK 5MHz CH-High



LTE Band 12 QPSK 10MHz CH-High





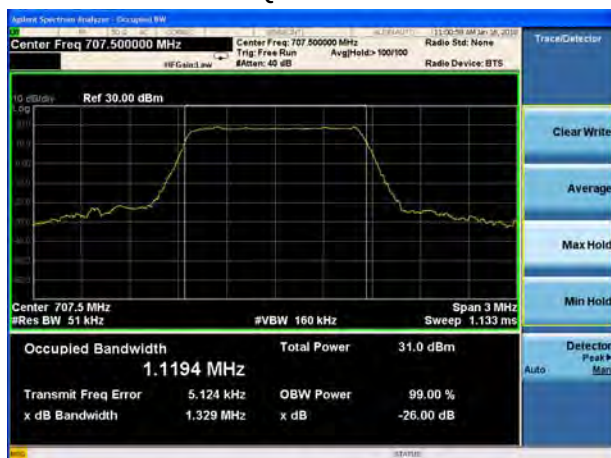
LTE Band 12 16QAM 1.4MHz CH-Low



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

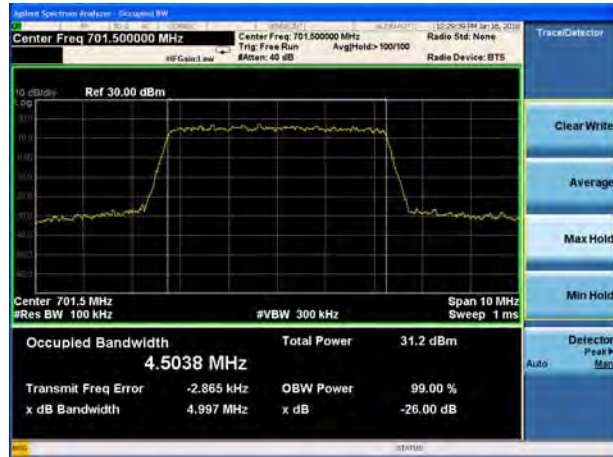


LTE Band 12 16QAM 3MHz CH-High





LTE Band 12 16QAM 5MHz CH-Low



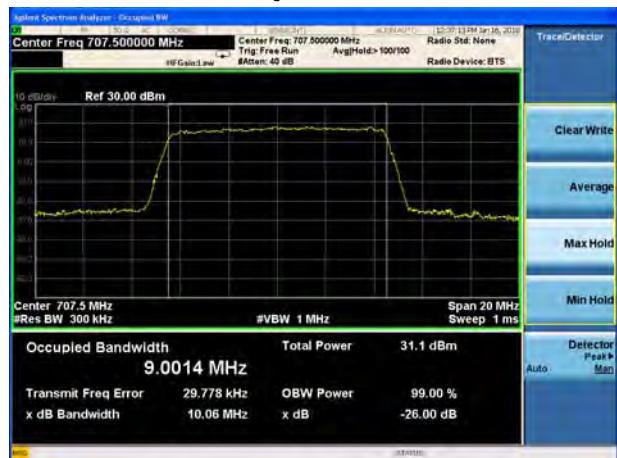
LTE Band 12 16QAM 10MHz CH-Low



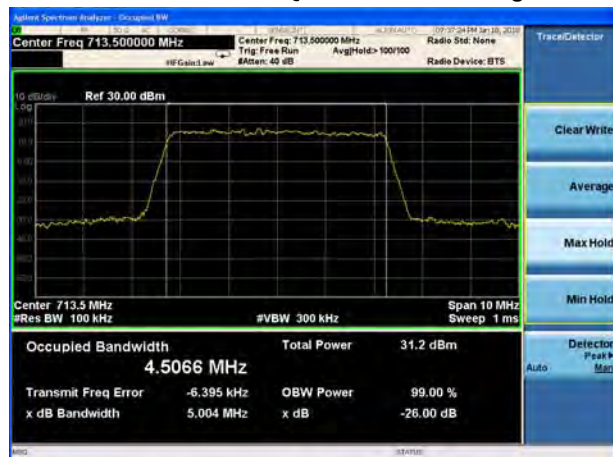
LTE Band 12 16QAM 5MHz CH-Middle



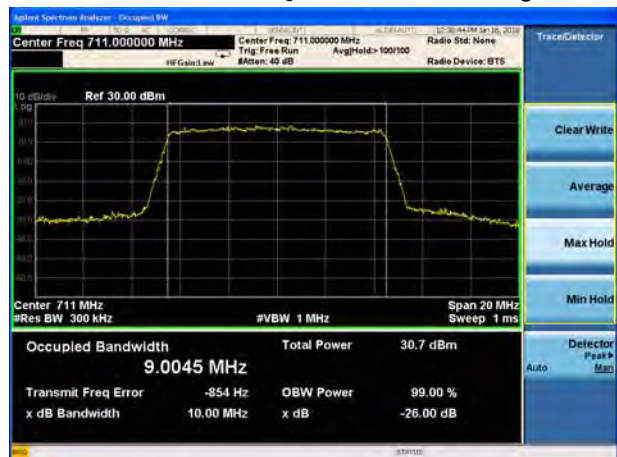
LTE Band 12 16QAM 10MHz CH-Middle



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

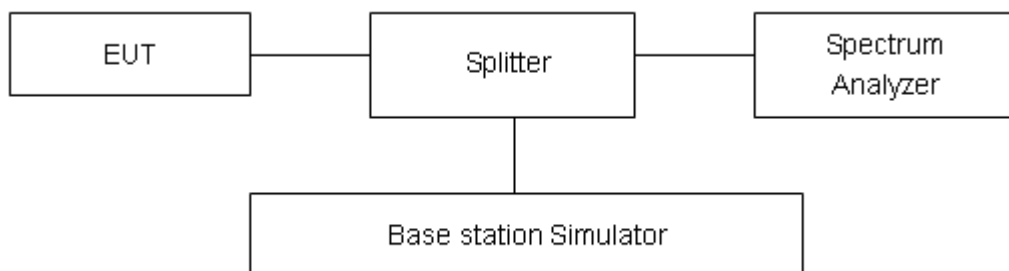
Method of Measurement

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

Test Setup



Limits

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

Part 27.53(g) specifies that “ For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee’s frequency block shall be attenuated below the transmitter



power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log_{10}(P)$ dB.”

Part 27.53(m) (4) specifies that “for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less 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)

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

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

Measurement Uncertainty

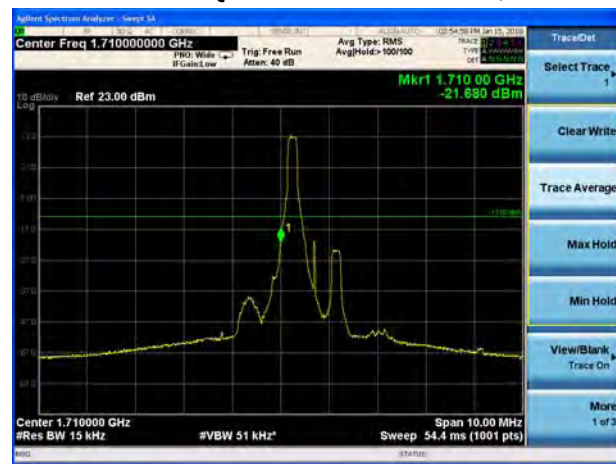
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$, $U = 0.684$ dB.



Test Result

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

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



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



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



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



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



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





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



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



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



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



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



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





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



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



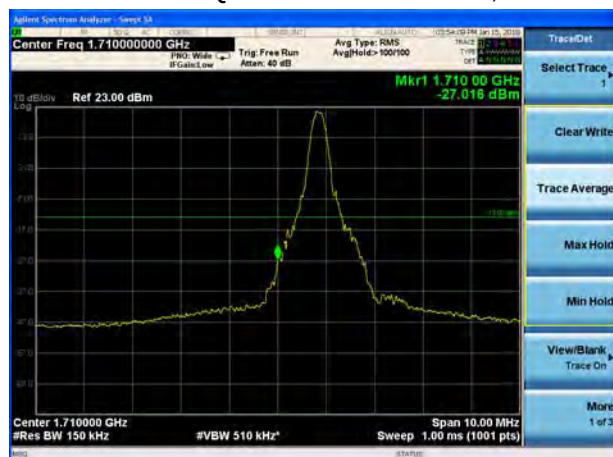
LTE Band 4 QPSK 10MHz CH-Low, 100%RB



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



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



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





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



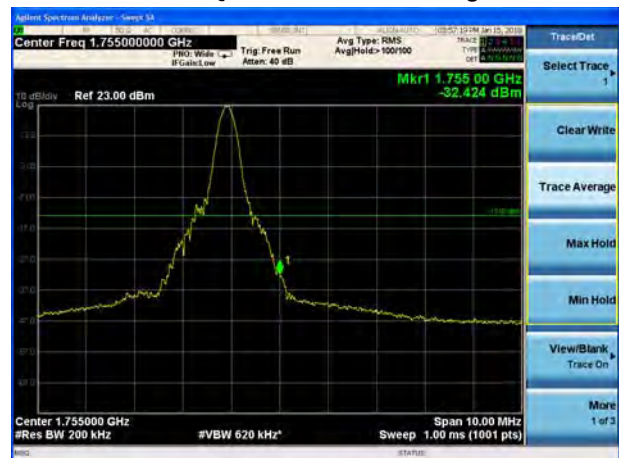
LTE Band 4 QPSK 15MHz CH-High, 100%RB



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



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



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



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





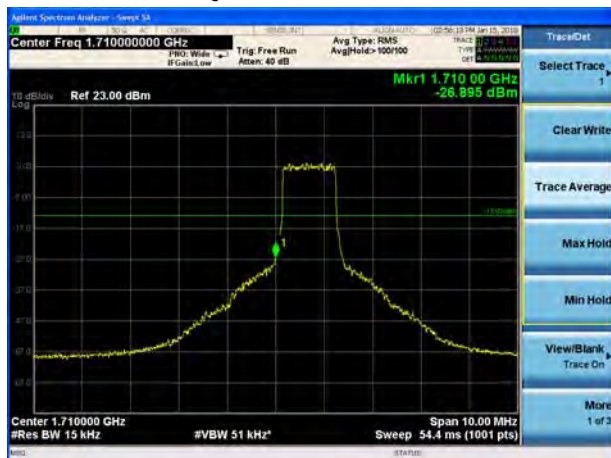
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



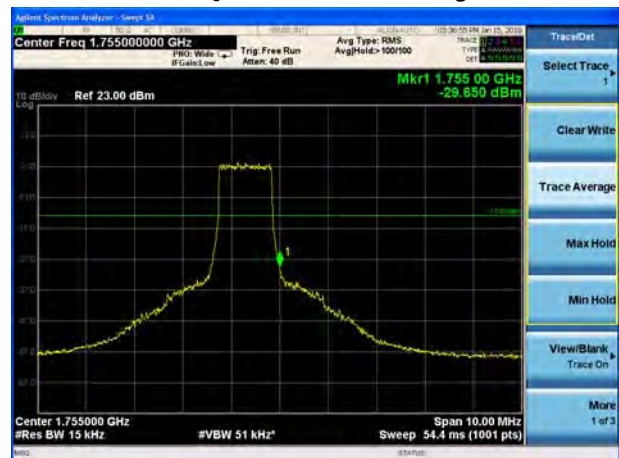
LTE Band 4 16QAM 1.4MHz CH-High, 1 RB



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



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



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



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





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



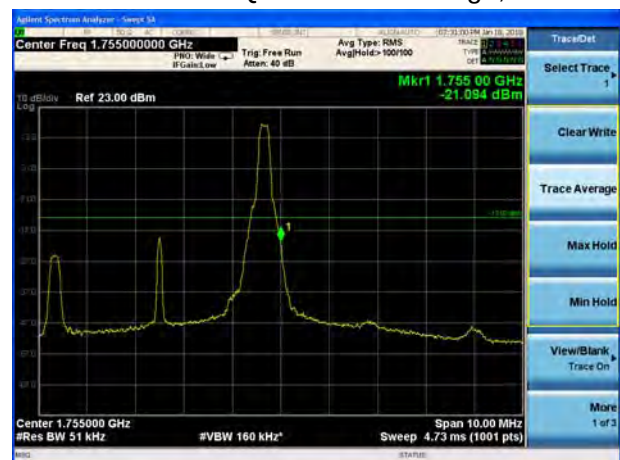
LTE Band 4 16QAM 3MHz CH-High, 100%RB



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



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



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

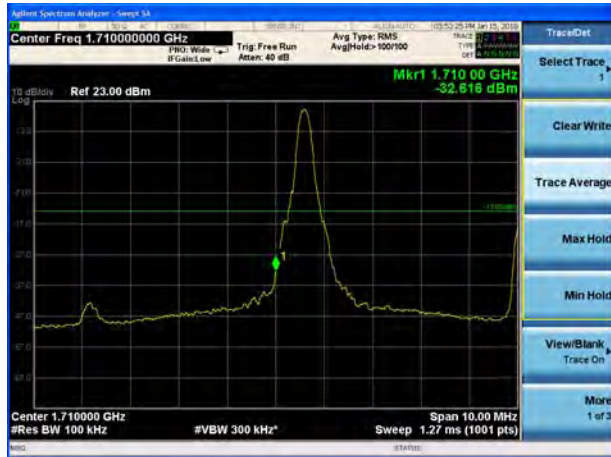


LTE Band 4 16QAM 5MHz CH-High, 100%RB

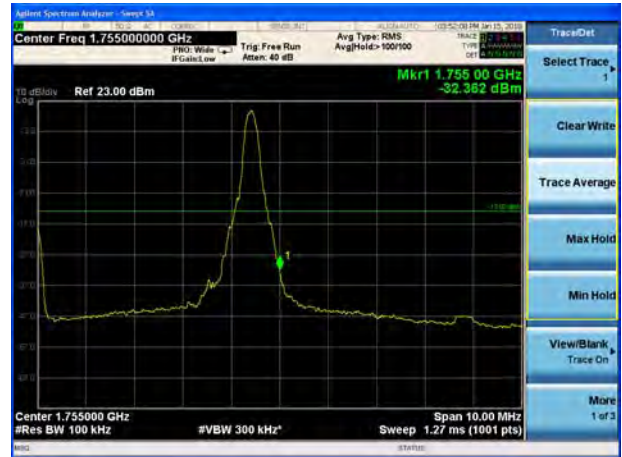




LTE Band 4 16QAM 10MHz CH-Low, 1 RB



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



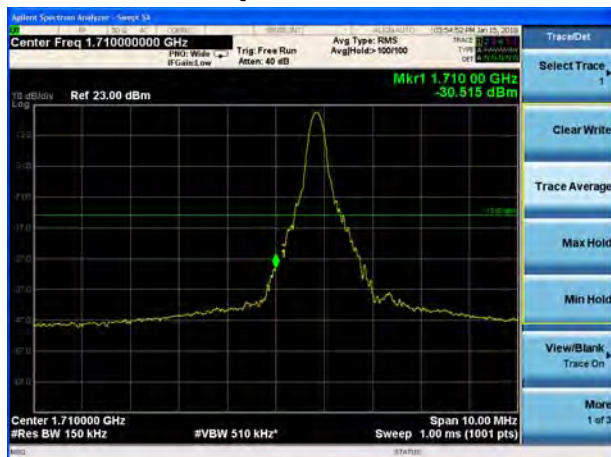
LTE Band 4 16QAM 10MHz CH-Low, 100%RB



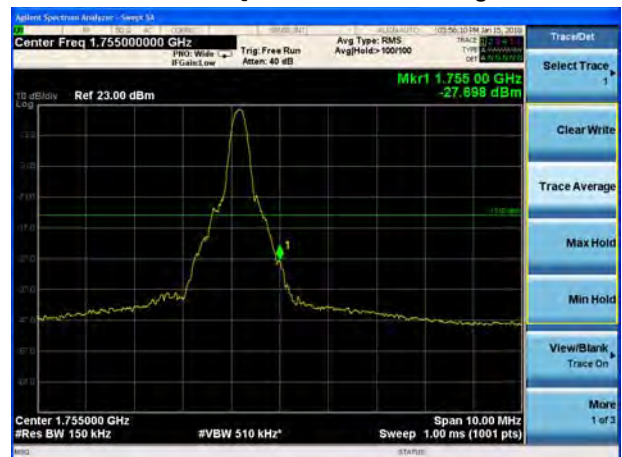
LTE Band 4 16QAM 10MHz CH-High, 100%RB



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



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





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



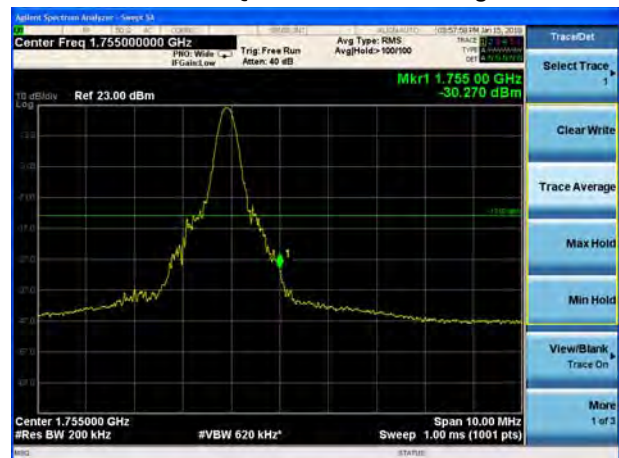
LTE Band 4 16QAM 15MHz CH-High, 100%RB



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



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



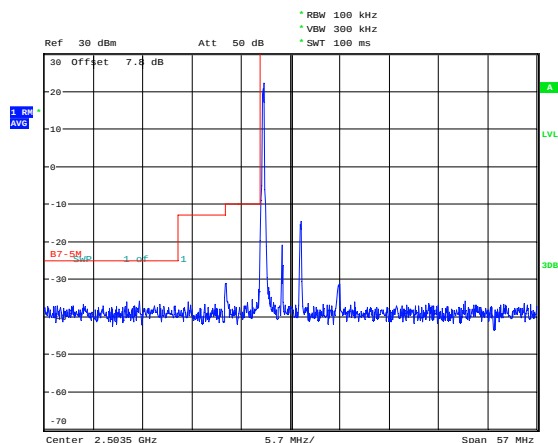
LTE Band 4 16QAM 20MHz CH-Low, 100%RB



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

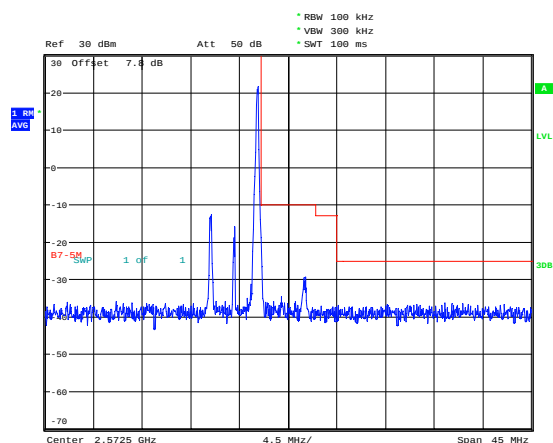


LTE Band 7 QPSK 5MHz CH-Low, 1 RB



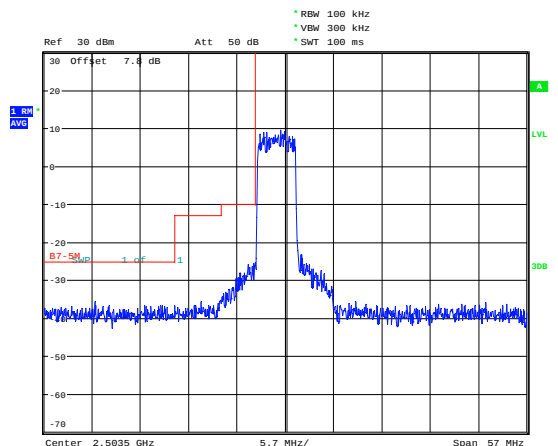
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LTE Band 7 QPSK 5MHz CH-High, 1 RB



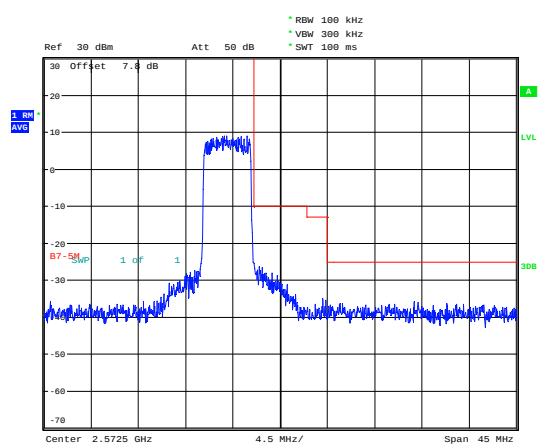
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LTE Band 7 QPSK 5MHz CH-Low, 100%RB



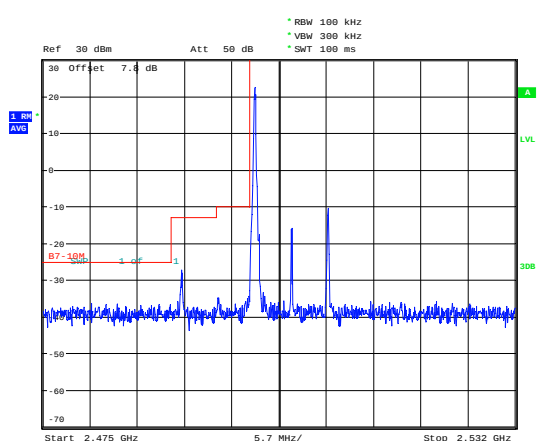
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LTE Band 7 QPSK 5MHz CH-High, 100%RB



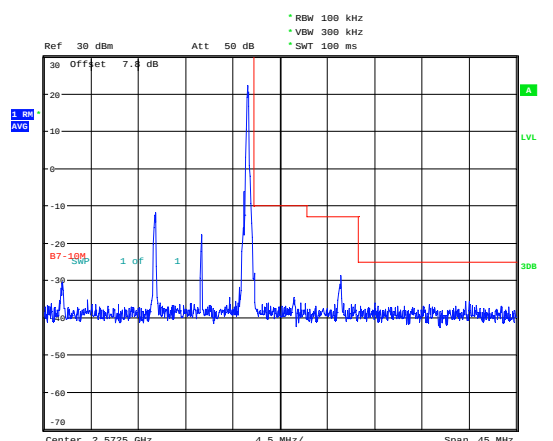
Date: 23.JAN.2018 13:52:23

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



Date: 23.JAN.2018 13:32:55

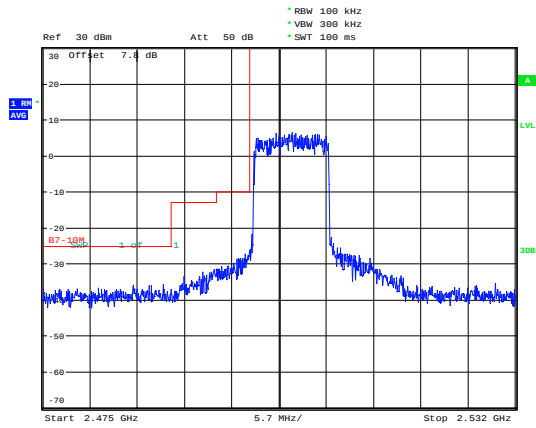
LTE Band 7 QPSK 10MHz CH-High, 1 RB



Date: 23.JAN.2018 13:49:05

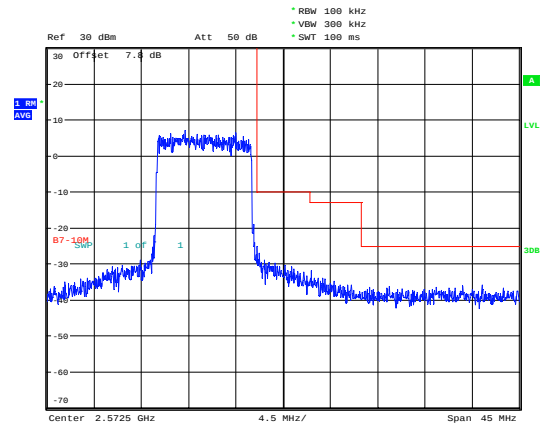


LTE Band 7 QPSK 10MHz CH-Low, 100%RB



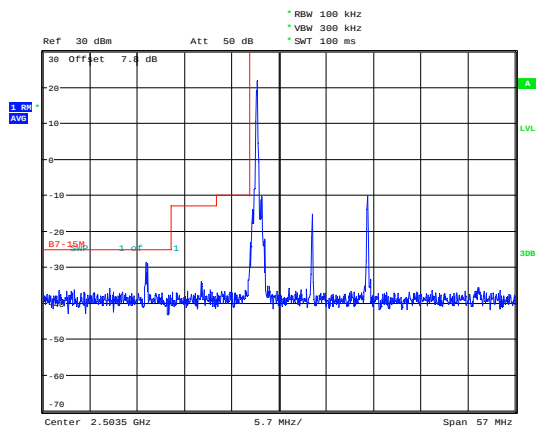
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LTE Band 7 QPSK 10MHz CH-High, 100%RB



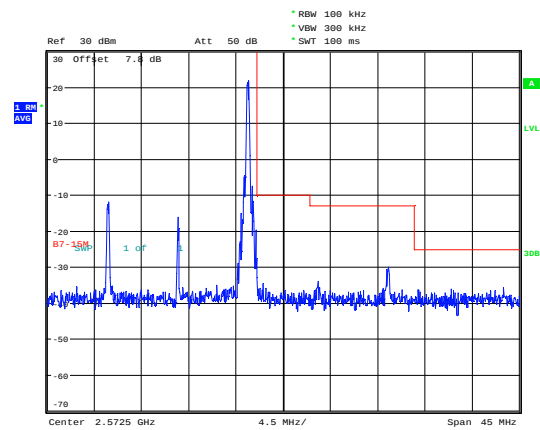
Date: 23.JAN.2018 13:49:35

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



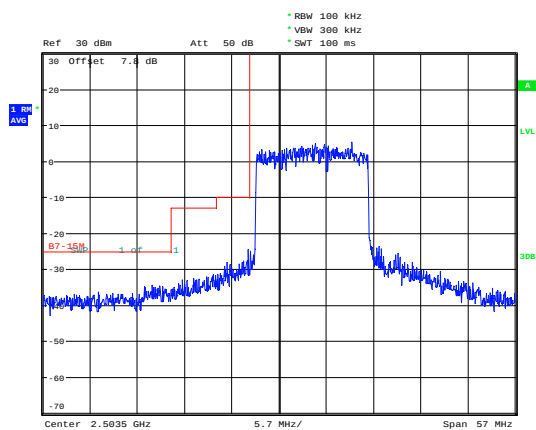
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LTE Band 7 QPSK 15MHz CH-High, 1 RB



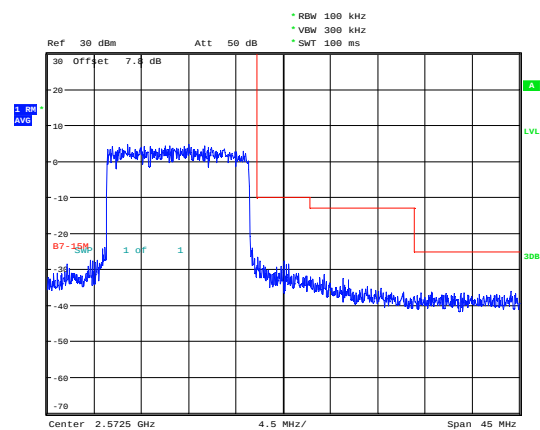
Date: 23.JAN.2018 13:46:46

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



Date: 23.JAN.2018 13:39:26

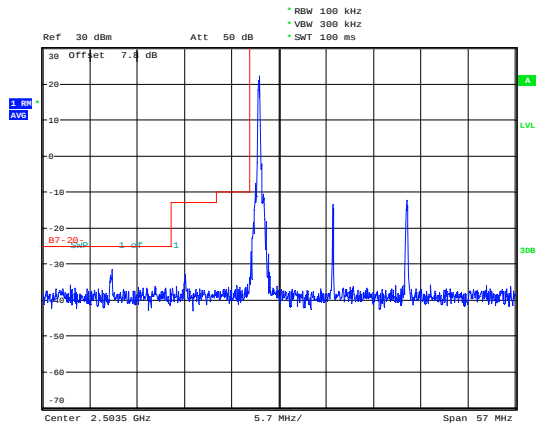
LTE Band 7 QPSK 15MHz CH-High, 100%RB



Date: 23.JAN.2018 13:47:21

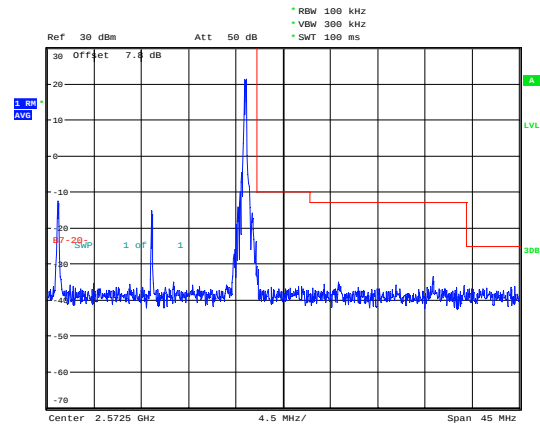


LTE Band 7 QPSK 20MHz CH-Low, 1 RB



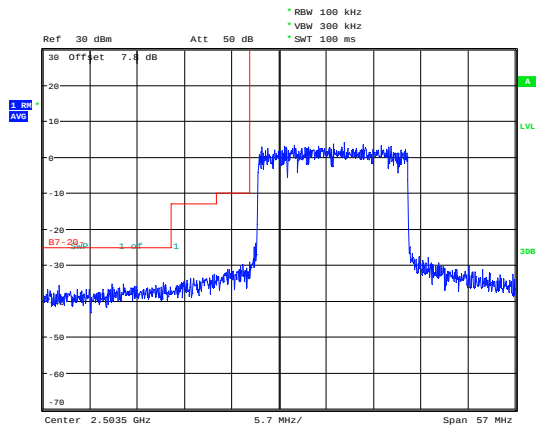
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LTE Band 7 QPSK 20MHz CH-High, 1 RB



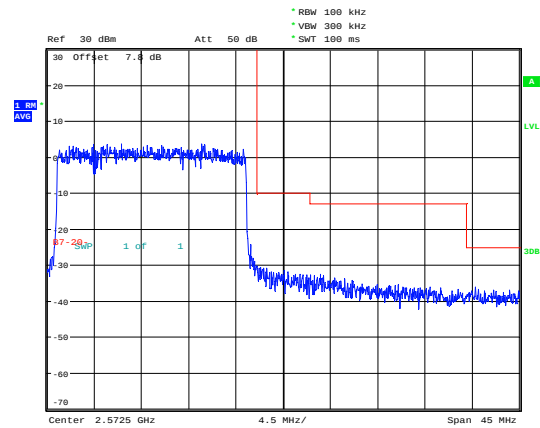
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LTE Band 7 QPSK 20MHz CH-Low, 100%RB



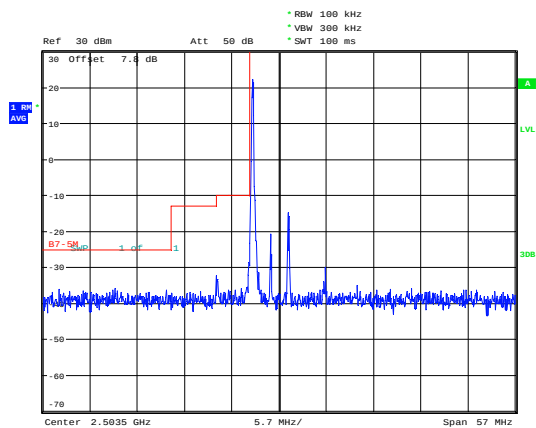
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LTE Band 7 QPSK 20MHz CH-High, 100%RB



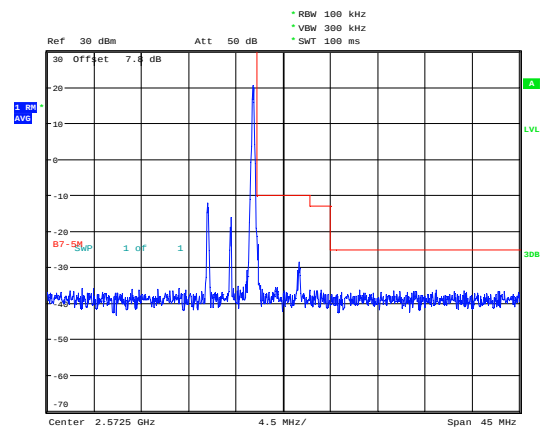
Date: 23.JAN.2018 13:45:31

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



Date: 23.JAN.2018 13:35:36

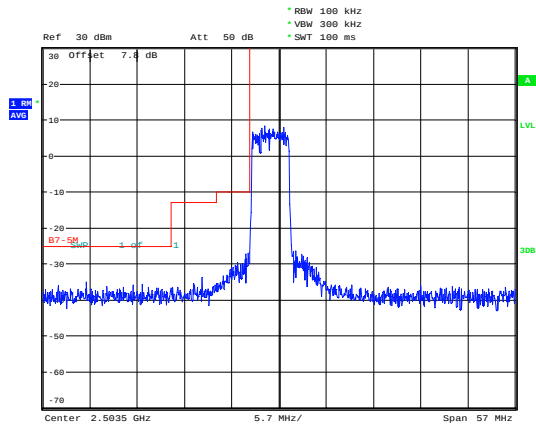
LTE Band 7 16QAM 5MHz CH-High, 1 RB



Date: 23.JAN.2018 13:53:59

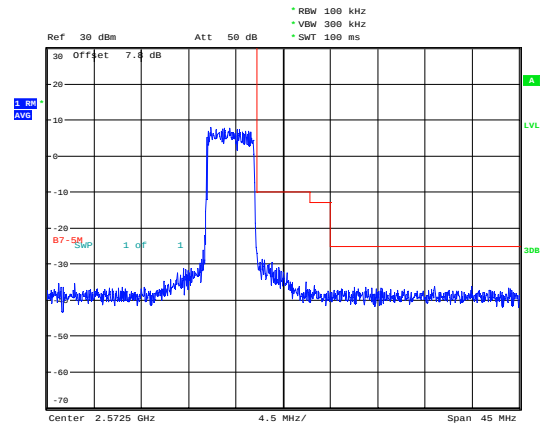


LTE Band 7 16QAM 5MHz CH-Low, 100%RB



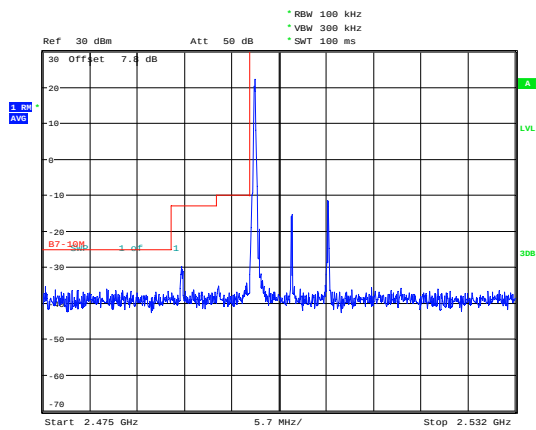
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LTE Band 7 16QAM 5MHz CH-High, 100%RB



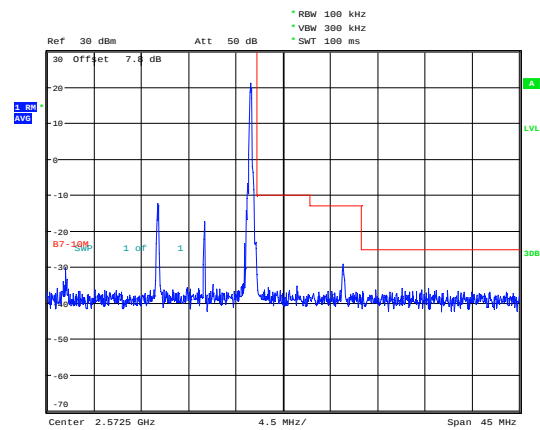
Date: 23.JAN.2018 13:52:42

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



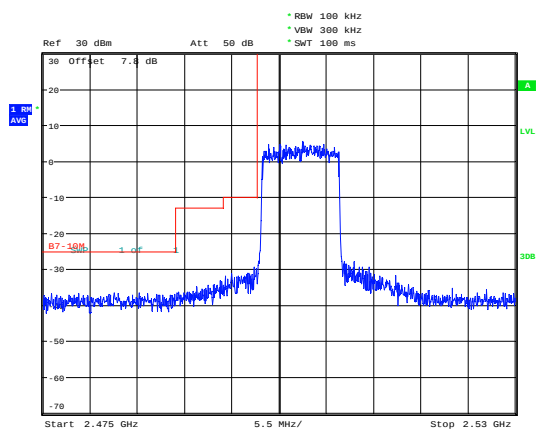
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LTE Band 7 16QAM 10MHz CH-High, 1 RB



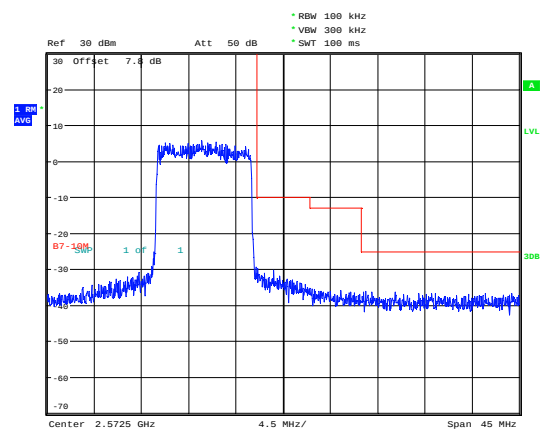
Date: 23.JAN.2018 13:49:19

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



Date: 23.JAN.2018 14:04:14

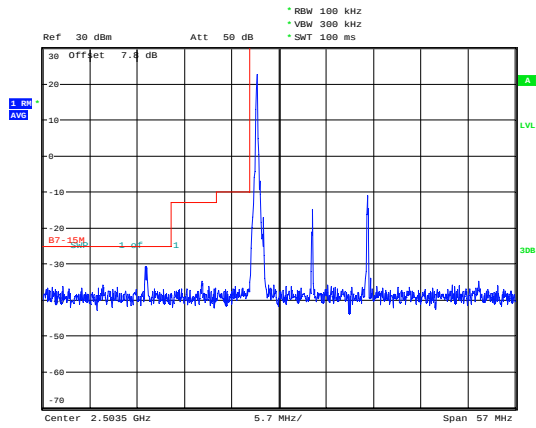
LTE Band 7 16QAM 10MHz CH-High, 100%RB



Date: 23.JAN.2018 13:49:50

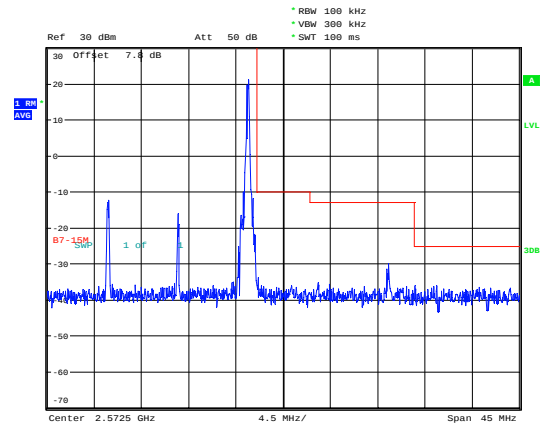


LTE Band 7 16QAM 15MHz CH-Low, 1 RB



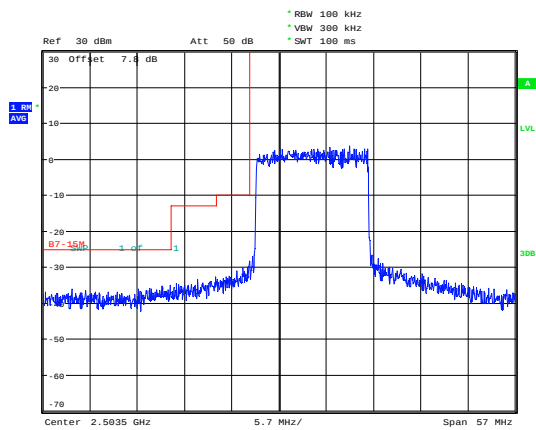
Date: 23.JAN.2018 13:39:01

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



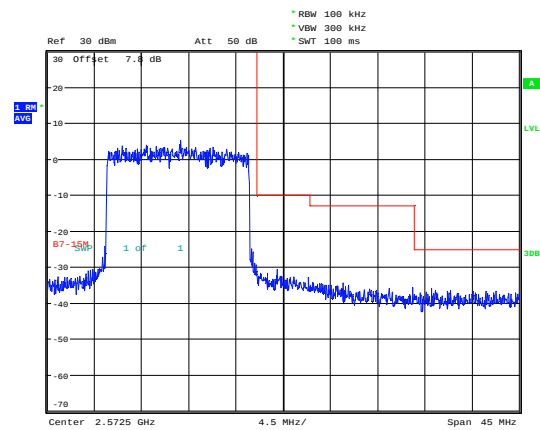
Date: 23.JAN.2018 13:47:03

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



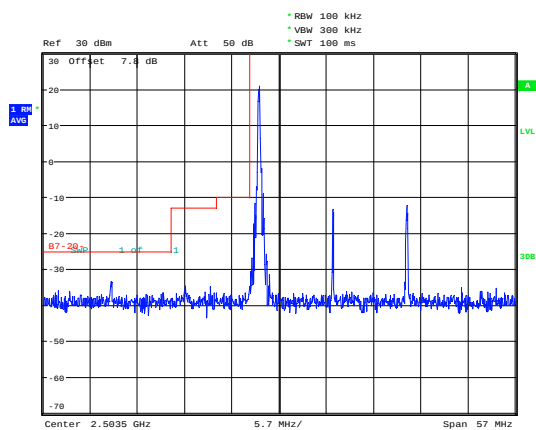
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LTE Band 7 16QAM 15MHz CH-High, 100%RB



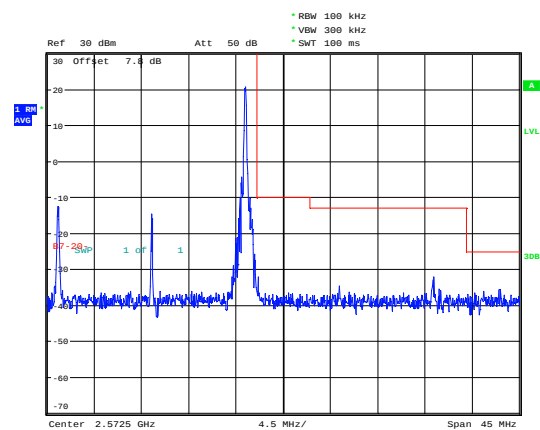
Date: 23.JAN.2018 13:47:43

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



Date: 23.JAN.2018 13:41:18

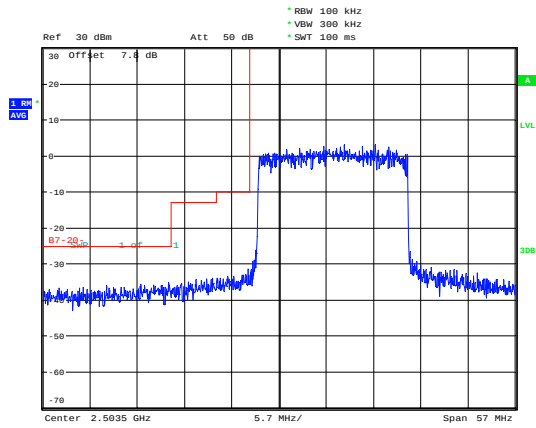
LTE Band 7 16QAM 20MHz CH-High, 1 RB



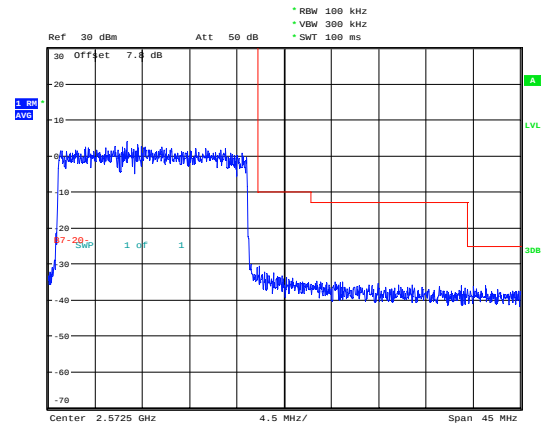
Date: 23.JAN.2018 13:45:16



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



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





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



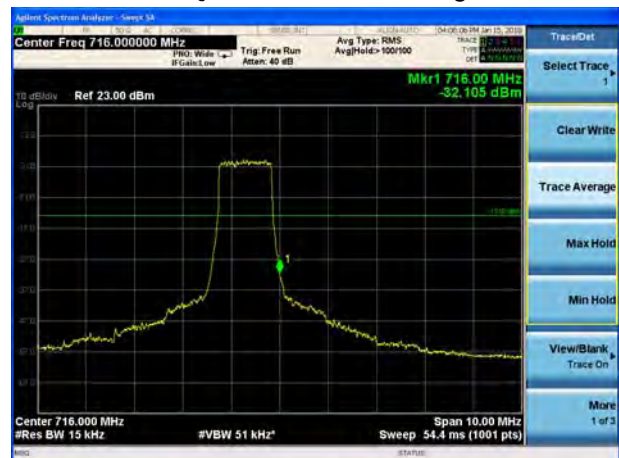
LTE Band 12 QPSK 1.4MHz CH-High, 1 RB



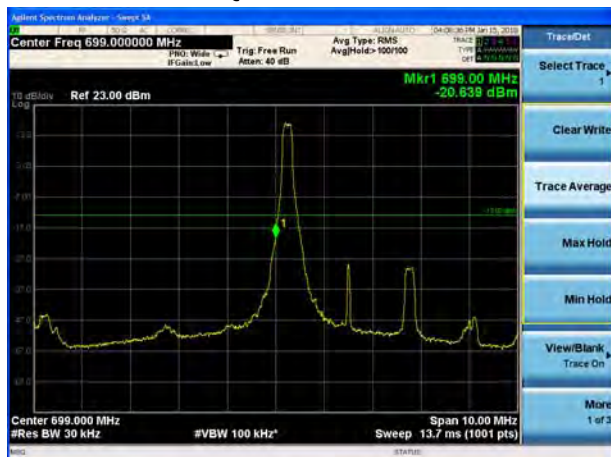
LTE Band 12 QPSK 1.4MHz CH-Low, 100%RB



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





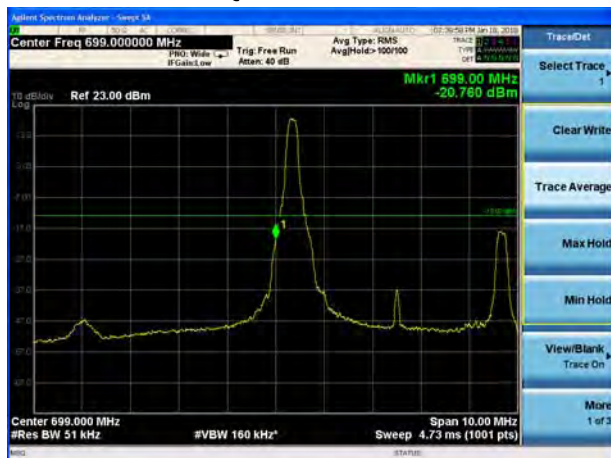
LTE Band 12 QPSK 3MHz CH-Low, 100%RB



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



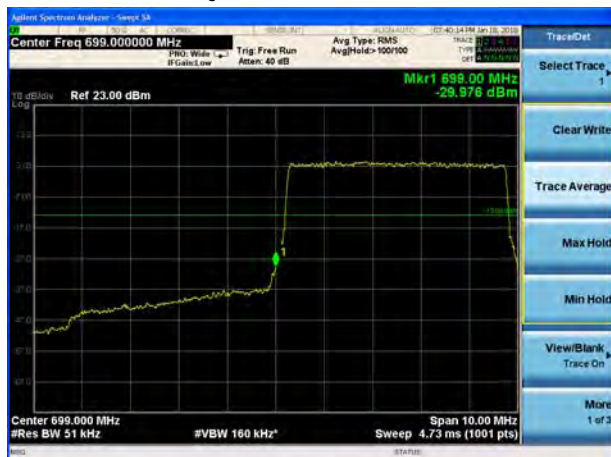
LTE Band 12 QPSK 5MHz CH-Low, 1 RB



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



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

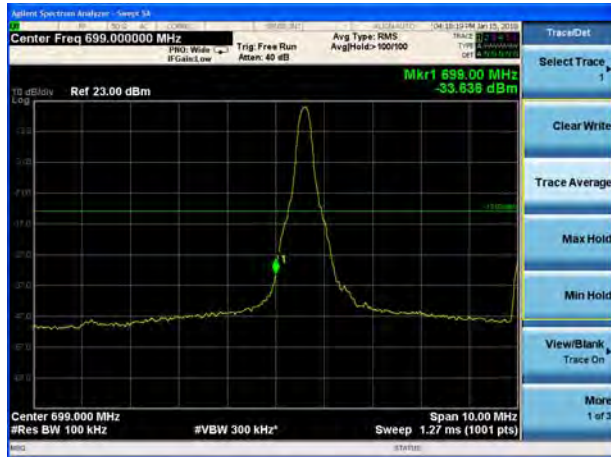


LTE Band 12 QPSK 5MHz CH-High, 100%RB

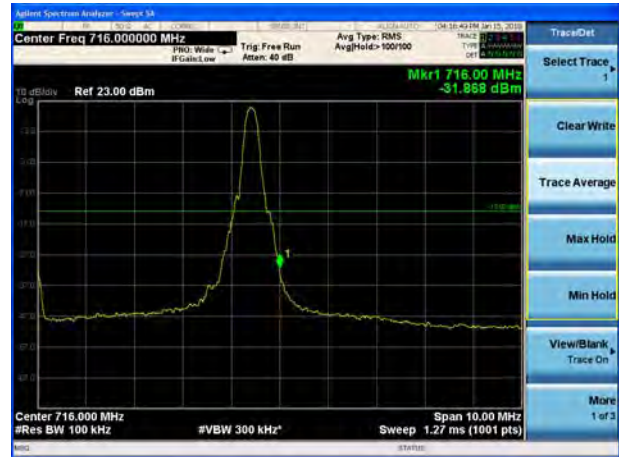




LTE Band 12 QPSK 10MHz CH-Low, 1 RB



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



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

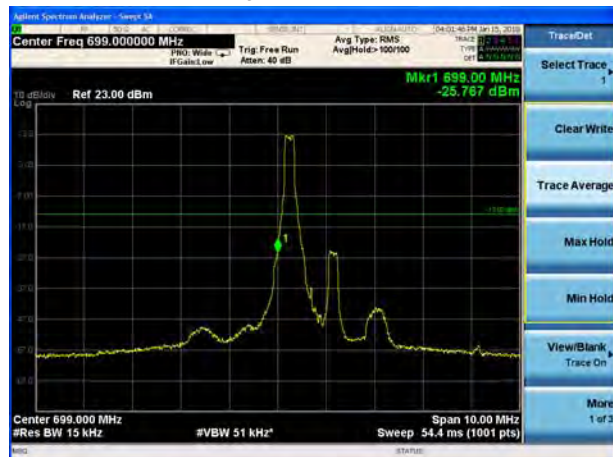


LTE Band 12 QPSK 10MHz CH-High, 100%RB





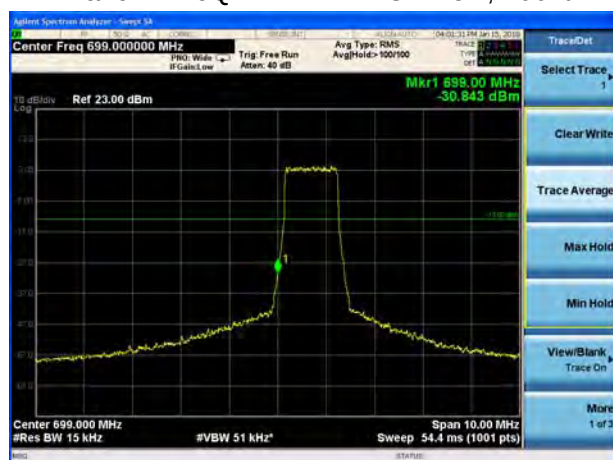
LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB



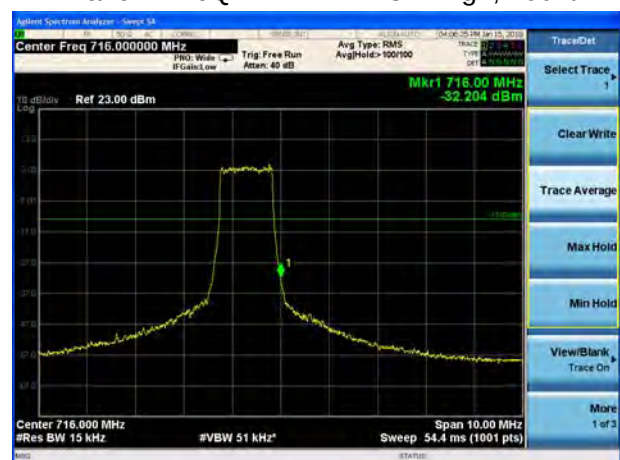
LTE Band 12 16QAM 1.4MHz CH-High, 1 RB



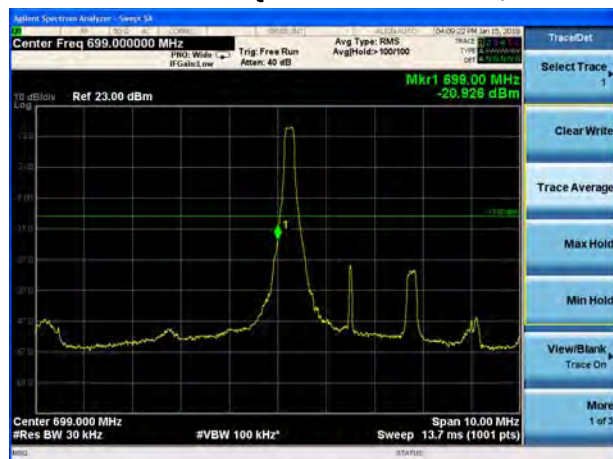
LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB



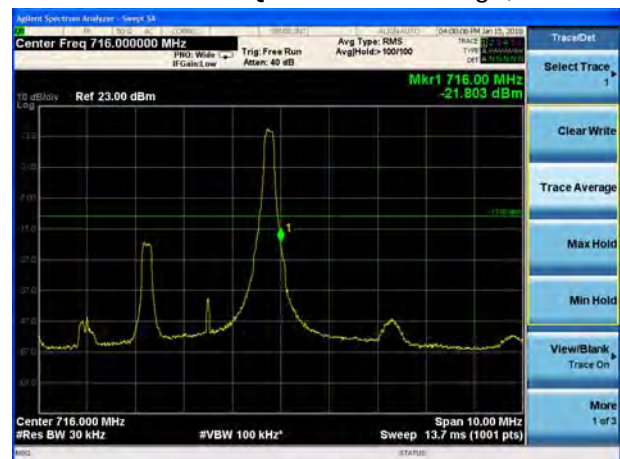
LTE Band 12 16QAM 1.4MHz CH-High, 100%RB



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



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





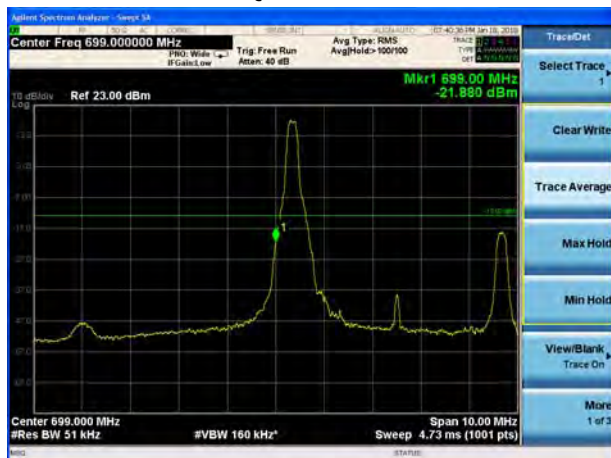
LTE Band 12 16QAM 3MHz CH-Low, 100%RB



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



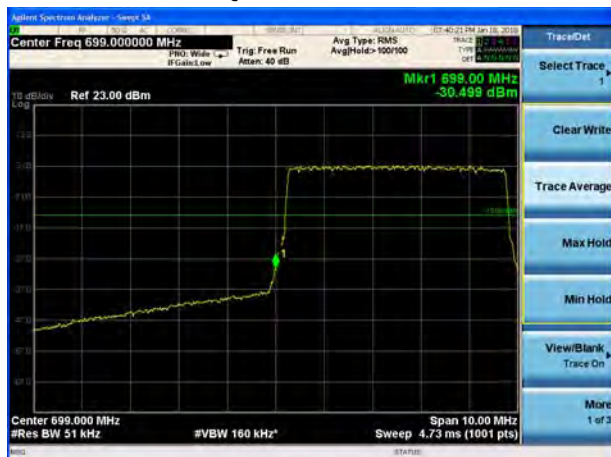
LTE Band 12 16QAM 5MHz CH-Low, 1 RB



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



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

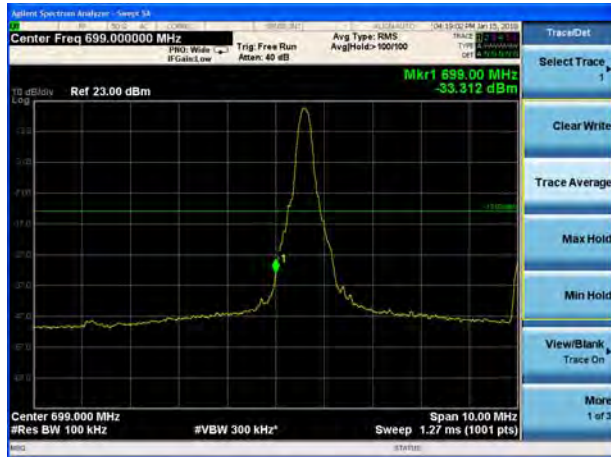


LTE Band 12 16QAM 5MHz CH-High, 100%RB





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



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



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



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



5.5 Peak-to-Average Power Ratio (PAPR)

Ambient condition

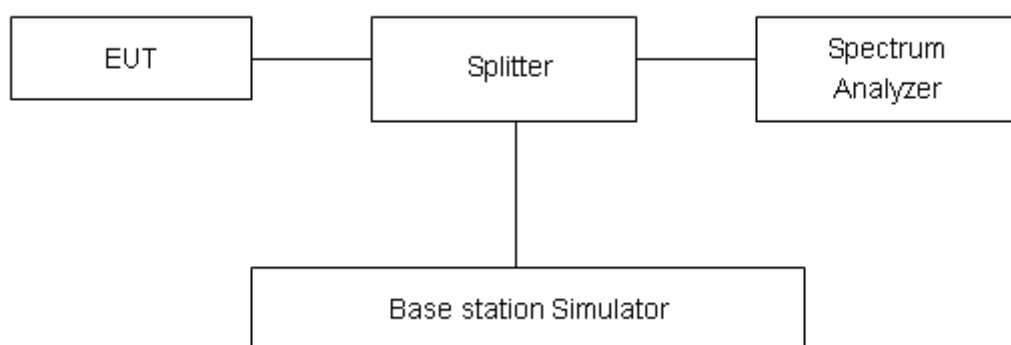
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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	26.85	21.91	4.94	≤13	PASS
		20175	1732.5	25.87	22.14	3.73	≤13	PASS
		20393	1754.3	26.25	22.13	4.12	≤13	PASS
	3	19965	1711.5	26.88	21.94	4.94	≤13	PASS
		20175	1732.5	27.71	22.18	5.53	≤13	PASS
		20385	1753.5	26.89	22.16	4.73	≤13	PASS
	5	19975	1712.5	26.42	21.92	4.50	≤13	PASS
		20175	1732.5	27.43	22.17	5.26	≤13	PASS
		20375	1752.5	27.31	22.14	5.17	≤13	PASS
	10	20000	1715	26.31	22.00	4.31	≤13	PASS
		20175	1732.5	27.02	22.19	4.83	≤13	PASS
		20350	1750	27.85	22.18	5.67	≤13	PASS
	15	20025	1717.5	27.22	21.98	5.24	≤13	PASS
		20175	1732.5	26.62	22.15	4.47	≤13	PASS
		20325	1747.5	26.37	22.13	4.24	≤13	PASS
	20	20050	1720	27.03	21.95	5.08	≤13	PASS
		20175	1732.5	27.67	22.10	5.57	≤13	PASS
		20300	1745	26.83	22.09	4.74	≤13	PASS
16QAM	1.4	19957	1710.7	25.49	20.85	4.64	≤13	PASS
		20175	1732.5	26.60	21.13	5.47	≤13	PASS
		20393	1754.3	26.10	20.93	5.17	≤13	PASS
	3	19965	1711.5	25.44	20.88	4.56	≤13	PASS
		20175	1732.5	25.86	21.17	4.69	≤13	PASS
		20385	1753.5	26.46	20.96	5.50	≤13	PASS
	5	19975	1712.5	26.37	20.86	5.51	≤13	PASS
		20175	1732.5	25.87	21.13	4.74	≤13	PASS
		20375	1752.5	25.58	20.91	4.67	≤13	PASS
	10	20000	1715	26.39	20.89	5.50	≤13	PASS
		20175	1732.5	25.47	21.18	4.29	≤13	PASS
		20350	1750	25.47	20.95	4.52	≤13	PASS
	15	20025	1717.5	25.58	20.86	4.72	≤13	PASS
		20175	1732.5	26.72	21.13	5.59	≤13	PASS
		20325	1747.5	26.41	20.91	5.50	≤13	PASS
	20	20050	1720	25.47	20.84	4.63	≤13	PASS
		20175	1732.5	25.62	21.09	4.53	≤13	PASS
		20300	1745	26.15	20.88	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	27.94	22.45	5.49	≤13	PASS
		21100	2535	27.34	22.61	4.73	≤13	PASS
		21425	2567.5	27.50	22.56	4.94	≤13	PASS
	10	20800	2505	28.26	22.53	5.73	≤13	PASS
		21100	2535	28.09	22.63	5.46	≤13	PASS
		21400	2565	27.24	22.60	4.64	≤13	PASS
	15	20825	2507.5	27.30	22.51	4.79	≤13	PASS
		21100	2535	28.19	22.59	5.60	≤13	PASS
		21375	2562.5	28.33	22.55	5.78	≤13	PASS
	20	20850	2510	27.44	22.48	4.96	≤13	PASS
		21100	2535	27.26	22.54	4.72	≤13	PASS
		21350	2560	28.08	22.51	5.57	≤13	PASS
16QAM	5	20775	2502.5	26.96	21.34	5.62	≤13	PASS
		21100	2535	26.27	21.42	4.85	≤13	PASS
		21425	2567.5	26.49	21.48	5.01	≤13	PASS
	10	20800	2505	27.13	21.37	5.76	≤13	PASS
		21100	2535	27.07	21.47	5.60	≤13	PASS
		21400	2565	26.32	21.52	4.80	≤13	PASS
	15	20825	2507.5	26.11	21.34	4.77	≤13	PASS
		21100	2535	27.02	21.42	5.60	≤13	PASS
		21375	2562.5	27.20	21.48	5.72	≤13	PASS
	20	20850	2510	26.25	21.32	4.93	≤13	PASS
		21100	2535	26.19	21.38	4.81	≤13	PASS
		21350	2560	27.12	21.45	5.67	≤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	28.41	22.38	6.03	≤13	PASS
		23095	707.5	27.76	22.56	5.20	≤13	PASS
		23173	715.3	27.76	22.51	5.25	≤13	PASS
	3	23025	700.5	28.55	22.41	6.14	≤13	PASS
		23095	707.5	28.54	22.60	5.94	≤13	PASS
		23165	714.5	27.61	22.54	5.07	≤13	PASS
	5	23035	701.5	27.68	22.39	5.29	≤13	PASS
		23095	707.5	28.70	22.59	6.11	≤13	PASS
		23155	713.5	28.71	22.52	6.19	≤13	PASS
	10	23060	704	27.76	22.42	5.34	≤13	PASS
		23095	707.5	27.61	22.52	5.09	≤13	PASS
		23130	711	28.41	22.47	5.94	≤13	PASS
16QAM	1.4	23017	699.7	27.40	21.37	6.03	≤13	PASS
		23095	707.5	26.70	21.47	5.23	≤13	PASS
		23173	715.3	26.66	21.50	5.16	≤13	PASS
	3	23025	700.5	27.41	21.40	6.01	≤13	PASS
		23095	707.5	27.30	21.51	5.79	≤13	PASS
		23165	714.5	26.53	21.53	5.00	≤13	PASS
	5	23035	701.5	26.74	21.38	5.36	≤13	PASS
		23095	707.5	27.61	21.47	6.14	≤13	PASS
		23155	713.5	27.42	21.48	5.94	≤13	PASS
	10	23060	704	26.47	21.36	5.11	≤13	PASS
		23095	707.5	26.40	21.43	4.97	≤13	PASS
		23130	711	27.28	21.45	5.83	≤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)

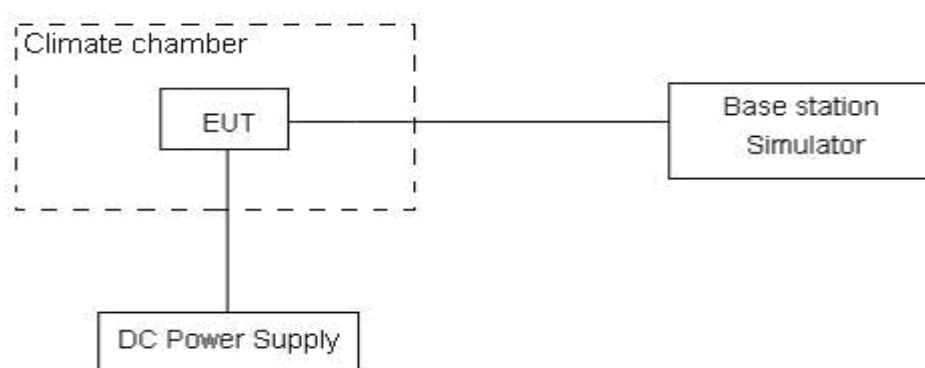
The frequency stability shall be measured with variation of primary supply voltage as follows:

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

Test setup



Limits

No specific frequency stability requirements in part 27.54

Measurement Uncertainty

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

Test Result

Bandwidth	Test status	LTE Band 4 Channel 20175 Test Results (ppm)	
		QPSK	16QAM
1.4MHz	-30°C/Normal Voltage	0.00216	0.00079
	-20°C/Normal Voltage	0.00278	0.00198
	-10°C/Normal Voltage	0.00007	0.00314
	0°C/Normal Voltage	0.00088	-0.00016
	10°C/Normal Voltage	0.00268	0.00132
	20°C/Normal Voltage	0.00279	0.00272
	30°C/Normal Voltage	0.00191	0.00048
	40°C/Normal Voltage	0.00023	0.00255
	50°C/Normal Voltage	0.00329	0.00130
	55°C/Normal Voltage	0.00271	0.00357
	20°C/Min Voltage	0.00025	0.00114
	20°C/Max Voltage	0.00157	0.00230
3MHz	-30°C/Normal Voltage	0.00007	0.00188
	-20°C/Normal Voltage	-0.00006	0.00251
	-10°C/Normal Voltage	0.00165	0.00045
	0°C/Normal Voltage	0.00131	0.00152
	10°C/Normal Voltage	-0.00074	0.00072
	20°C/Normal Voltage	0.00249	0.00255
	30°C/Normal Voltage	0.00153	0.00114
	40°C/Normal Voltage	0.00158	0.00166
	50°C/Normal Voltage	0.00258	0.00176
	55°C/Normal Voltage	0.00204	0.00030
	20°C/Min Voltage	0.00079	-0.00008
	20°C/Max Voltage	-0.00149	0.00056
5MHz	-30°C/Normal Voltage	-0.00044	0.00283
	-20°C/Normal Voltage	0.00182	0.00057
	-10°C/Normal Voltage	0.00110	0.00176
	0°C/Normal Voltage	0.00057	0.00153
	10°C/Normal Voltage	0.00081	0.00045
	20°C/Normal Voltage	0.00038	0.00009
	30°C/Normal Voltage	0.00049	0.00030
	40°C/Normal Voltage	0.00093	0.00238
	50°C/Normal Voltage	-0.00089	0.00110
	55°C/Normal Voltage	0.00262	0.00007
	20°C/Min Voltage	0.00045	0.00119
	20°C/Max Voltage	0.00101	0.00071



10MHz	-30°C/Normal Voltage	-0.00134	-0.00158
	-20°C/Normal Voltage	-0.00037	-0.00121
	-10°C/Normal Voltage	0.00092	-0.00203
	0°C/Normal Voltage	-0.00176	-0.00172
	10°C/Normal Voltage	-0.00054	-0.00059
	20°C/Normal Voltage	-0.00140	-0.00186
	30°C/Normal Voltage	-0.00182	0.00124
	40°C/Normal Voltage	-0.00102	-0.00171
	50°C/Normal Voltage	0.00168	0.00192
	55°C/Normal Voltage	-0.00058	-0.00084
	20°C/Min Voltage	0.00073	0.00070
	20°C/Max Voltage	-0.00086	-0.00093
15MHz	-30°C/Normal Voltage	0.00063	0.00114
	-20°C/Normal Voltage	0.00044	-0.00047
	-10°C/Normal Voltage	-0.00014	0.00115
	0°C/Normal Voltage	-0.00021	0.00178
	10°C/Normal Voltage	0.00083	0.00140
	20°C/Normal Voltage	0.00037	0.00115
	30°C/Normal Voltage	0.00077	0.00066
	40°C/Normal Voltage	0.00207	-0.00031
	50°C/Normal Voltage	-0.00025	-0.00032
	55°C/Normal Voltage	0.00061	-0.00071
	20°C/Min Voltage	-0.00108	0.00119
	20°C/Max Voltage	-0.00050	0.00206
20MHz	-30°C/Normal Voltage	0.00140	0.00273
	-20°C/Normal Voltage	-0.00137	0.00040
	-10°C/Normal Voltage	-0.00059	-0.00058
	0°C/Normal Voltage	0.00111	0.00169
	10°C/Normal Voltage	-0.00184	0.00059
	20°C/Normal Voltage	-0.00053	0.00032
	30°C/Normal Voltage	0.00092	-0.00050
	40°C/Normal Voltage	-0.00002	-0.00231
	50°C/Normal Voltage	0.00230	0.00159
	55°C/Normal Voltage	0.00146	0.00010
	20°C/Min Voltage	-0.00006	-0.00049
	20°C/Max Voltage	-0.00130	0.00097

Bandwidth	Test status	LTE Band 7 Channel 21100 Test Results (ppm)	
		QPSK	16QAM
5MHz	-30°C/Normal Voltage	0.00057	0.00031
	-20°C/Normal Voltage	0.00102	-0.00067
	-10°C/Normal Voltage	-0.00053	-0.00060
	0°C/Normal Voltage	0.00012	-0.00028
	10°C/Normal Voltage	-0.00054	0.00058
	20°C/Normal Voltage	-0.00103	0.00156
	30°C/Normal Voltage	0.00067	0.00007
	40°C/Normal Voltage	0.00139	0.00003
	50°C/Normal Voltage	0.00125	0.00082
	55°C/Normal Voltage	0.00104	0.00191
	20°C/Min Voltage	-0.00064	-0.00198
	20°C/Max Voltage	-0.00101	-0.00148
10MHz	-30°C/Normal Voltage	0.00173	0.00105
	-20°C/Normal Voltage	-0.00085	-0.00078
	-10°C/Normal Voltage	-0.00136	0.00087
	0°C/Normal Voltage	0.00031	0.00016
	10°C/Normal Voltage	0.00010	-0.00150
	20°C/Normal Voltage	0.00062	-0.00099
	30°C/Normal Voltage	-0.00162	-0.00029
	40°C/Normal Voltage	-0.00077	-0.00048
	50°C/Normal Voltage	0.00083	0.00078
	55°C/Normal Voltage	-0.00210	-0.00062
	20°C/Min Voltage	0.00031	0.00028
	20°C/Max Voltage	0.00022	-0.00006
15MHz	-30°C/Normal Voltage	-0.00068	-0.00033
	-20°C/Normal Voltage	-0.00138	-0.00130
	-10°C/Normal Voltage	-0.00036	0.00083
	0°C/Normal Voltage	0.00000	-0.00064
	10°C/Normal Voltage	0.00027	0.00090
	20°C/Normal Voltage	0.00174	0.00074
	30°C/Normal Voltage	0.00032	0.00051
	40°C/Normal Voltage	-0.00008	-0.00138
	50°C/Normal Voltage	-0.00031	0.00001
	55°C/Normal Voltage	-0.00085	0.00038
	20°C/Min Voltage	-0.00035	-0.00008
	20°C/Max Voltage	-0.00097	-0.00015
20MHz	-30°C/Normal Voltage	-0.00239	-0.00111



	-20°C/Normal Voltage	-0.00098	-0.00284
	-10°C/Normal Voltage	-0.00117	-0.00049
	0°C/Normal Voltage	-0.00209	-0.00152
	10°C/Normal Voltage	-0.00046	-0.00121
	20°C/Normal Voltage	-0.00084	-0.00268
	30°C/Normal Voltage	-0.00121	-0.00239
	40°C/Normal Voltage	-0.00199	-0.00108
	50°C/Normal Voltage	-0.00001	-0.00182
	55°C/Normal Voltage	-0.00085	-0.00038
	20°C/Min Voltage	-0.00127	0.00005
	20°C/Max Voltage	-0.00065	-0.00121

Bandwidth	Test status	LTE Band 12 Channel 23095 Test Results (ppm)	
		QPSK	16QAM
1.4M	-30°C/Normal Voltage	0.00063	0.00651
	-20°C/Normal Voltage	0.00360	0.00487
	-10°C/Normal Voltage	-0.00061	0.00740
	0°C/Normal Voltage	0.00493	0.00186
	10°C/Normal Voltage	0.00318	0.00479
	20°C/Normal Voltage	0.00186	0.00422
	30°C/Normal Voltage	0.00246	0.00158
	40°C/Normal Voltage	0.00140	0.00069
	50°C/Normal Voltage	0.00168	0.00121
	55°C/Normal Voltage	0.00258	0.00226
	20°C/Min Voltage	0.00400	0.00122
	20°C/Max Voltage	-0.00094	0.00241
3M	-30°C/Normal Voltage	0.00594	0.00666
	-20°C/Normal Voltage	0.00222	0.00280
	-10°C/Normal Voltage	0.00030	0.00535
	0°C/Normal Voltage	0.00256	0.00603
	10°C/Normal Voltage	-0.00039	0.00197
	20°C/Normal Voltage	-0.00011	0.00251
	30°C/Normal Voltage	0.00424	0.00088
	40°C/Normal Voltage	0.00398	-0.00066
	50°C/Normal Voltage	0.00440	0.00007
	55°C/Normal Voltage	0.00699	0.00446
	20°C/Min Voltage	0.00716	0.00639
	20°C/Max Voltage	0.00260	0.00410
5MHz	-30°C/Normal Voltage	0.00402	0.00459



	-20°C/Normal Voltage	0.00412	0.00211
	-10°C/Normal Voltage	-0.00080	0.00399
	0°C/Normal Voltage	0.00292	0.00080
	10°C/Normal Voltage	-0.00114	0.00353
	20°C/Normal Voltage	0.00173	0.00278
	30°C/Normal Voltage	0.00152	0.00083
	40°C/Normal Voltage	0.00413	0.00562
	50°C/Normal Voltage	0.00398	0.00357
	55°C/Normal Voltage	0.00524	0.00135
	20°C/Min Voltage	0.00307	0.00164
	20°C/Max Voltage	0.00002	0.00276
10MHz	-30°C/Normal Voltage	0.00545	0.00151
	-20°C/Normal Voltage	0.00455	0.00213
	-10°C/Normal Voltage	0.00316	0.00244
	0°C/Normal Voltage	0.00451	-0.00193
	10°C/Normal Voltage	-0.00085	0.00343
	20°C/Normal Voltage	0.00159	0.00451
	30°C/Normal Voltage	0.00299	0.00117
	40°C/Normal Voltage	0.00264	0.00950
	50°C/Normal Voltage	-0.00079	0.00299
	55°C/Normal Voltage	0.00039	0.00056
	20°C/Min Voltage	-0.00207	0.00067
	20°C/Max Voltage	0.00538	0.00080

5.7 Spurious Emissions at Antenna Terminals

Ambient condition

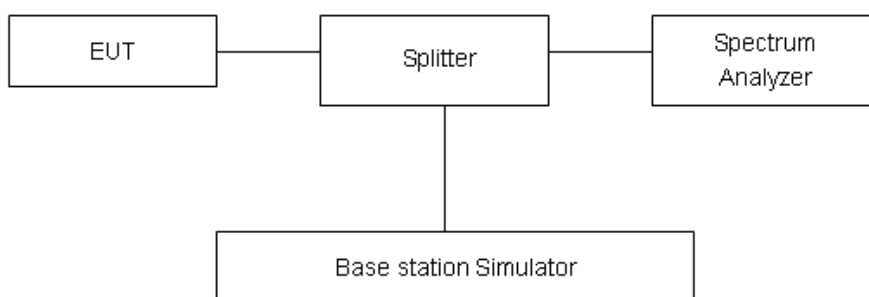
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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

LTE -4 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..”

LTE -12 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.

LTE -7 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.



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 $k = 1.96$.

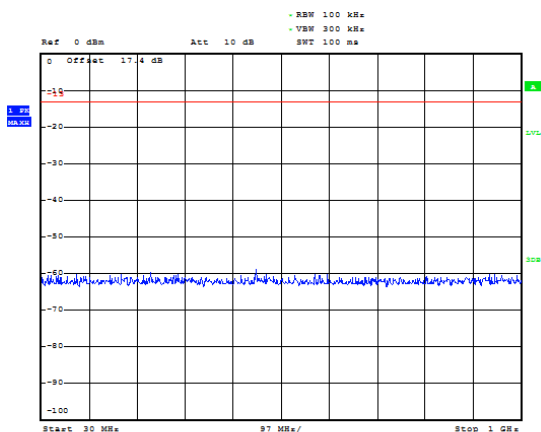
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-18GHz	1.407 dB

Test Result

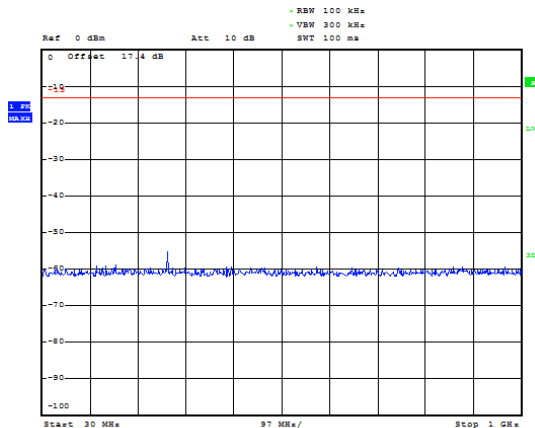
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

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.

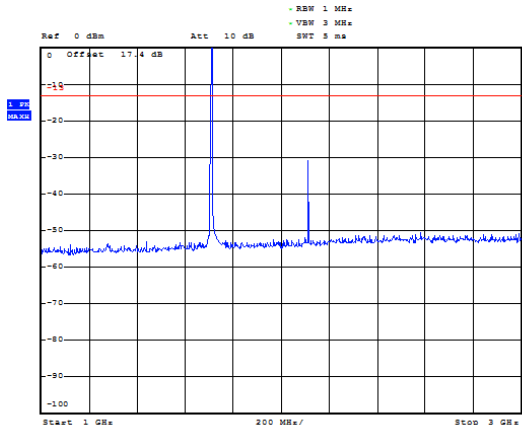
LTE Band 4 1.4MHz CH-Low 30MHz~1GHz



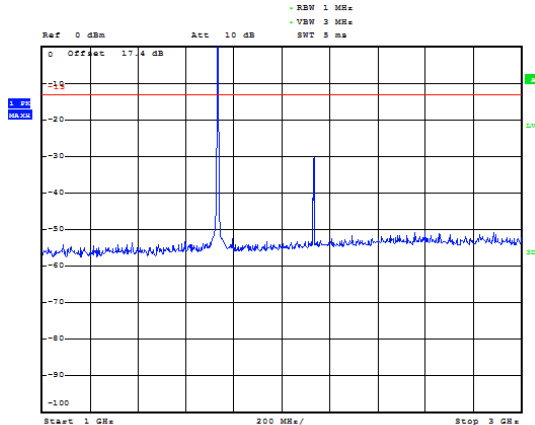
LTE Band 4 1.4MHz CH-Middle 30MHz~1GHz



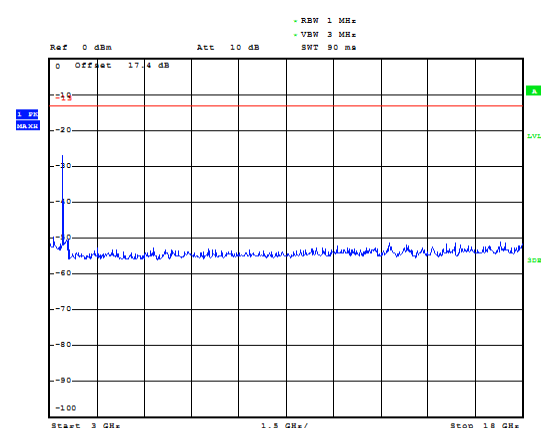
LTE Band 4 1.4MHz CH-Low 1GHz~3GHz



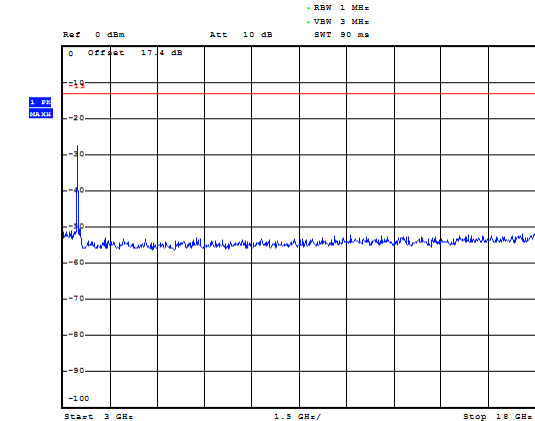
LTE Band 4 1.4MHz CH-Middle 1GHz~3GHz



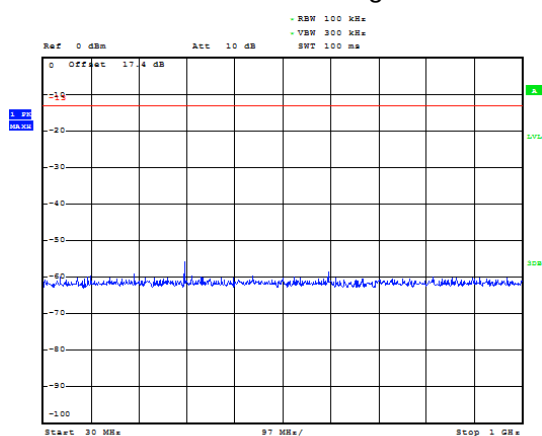
LTE Band 4 1.4MHz CH-Low 3GHz~18GHz



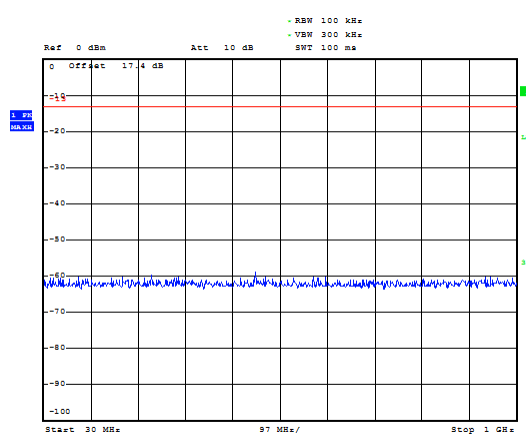
LTE Band 4 1.4MHz CH-Middle 3GHz~18GHz



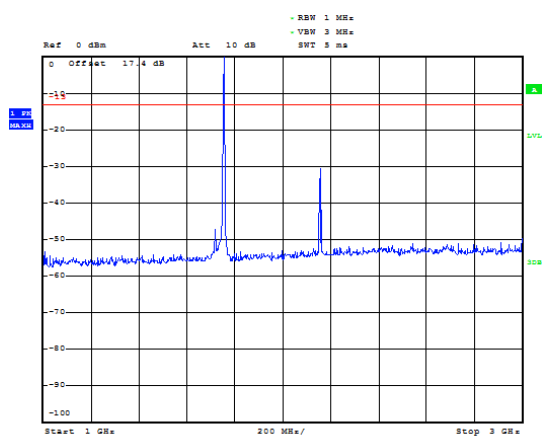
LTE Band 4 1.4MHz CH-High 30MHz~1GHz



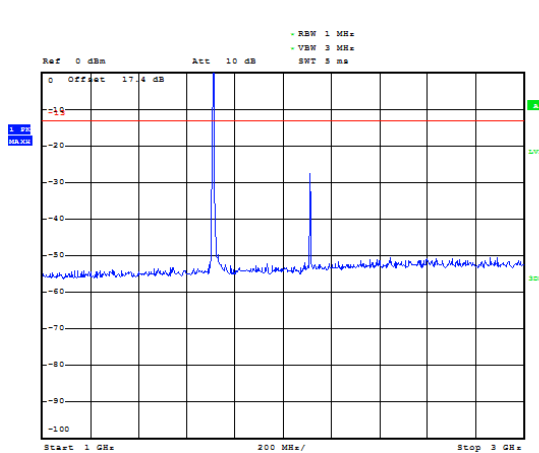
LTE Band 4 3MHz CH-Low 30MHz~1GHz



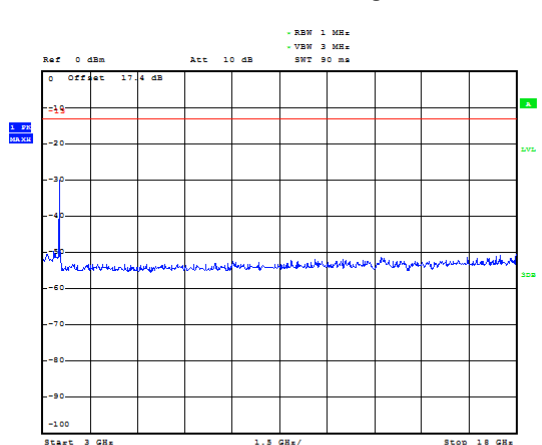
LTE Band 4 1.4MHz CH-High 1GHz~3GHz



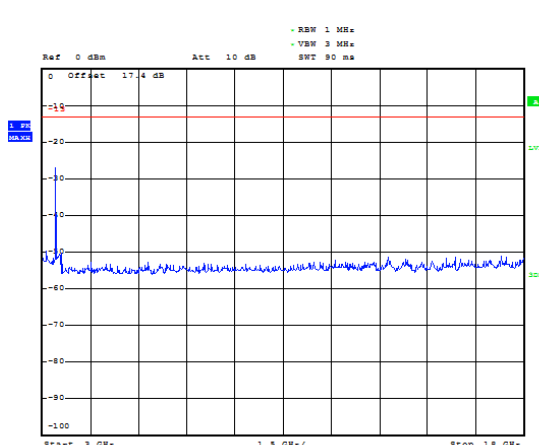
LTE Band 4 3MHz CH-Low 1GHz~3GHz



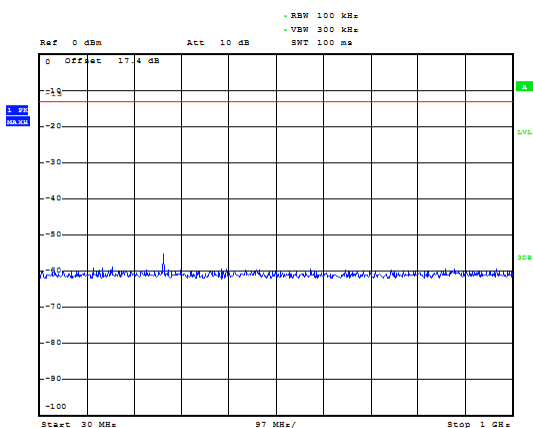
LTE Band 4 1.4MHz CH-High 3GHz~18GHz



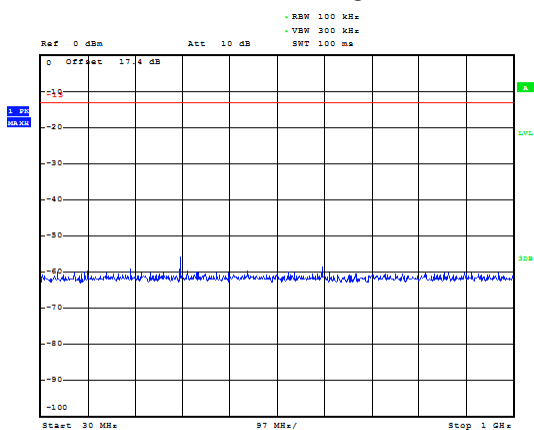
LTE Band 4 3MHz CH-Low 3GHz~18GHz



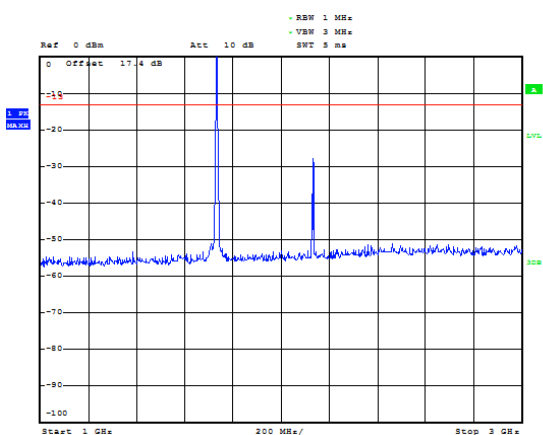
LTE Band 4 3MHz CH-Middle 30MHz~1GHz



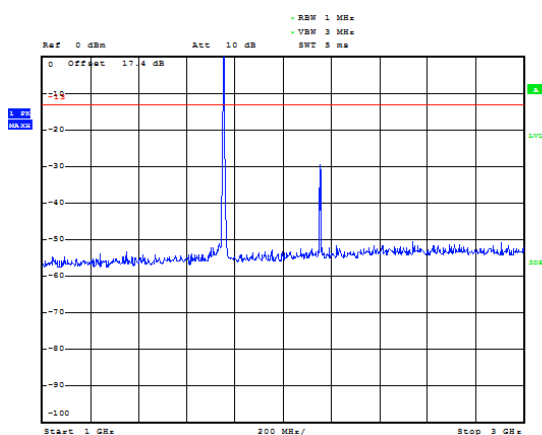
LTE Band 4 3MHz CH-High 30MHz~1GHz



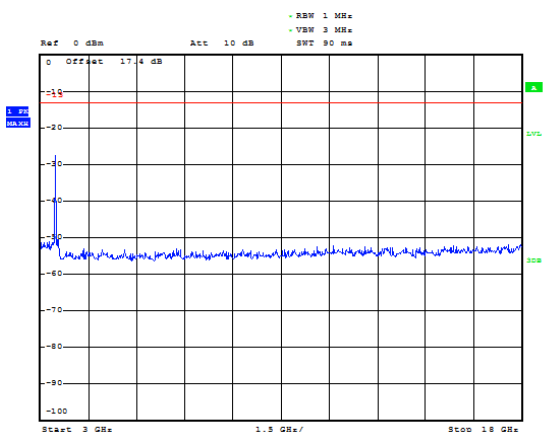
LTE Band 4 3MHz CH-Middle 1GHz~3GHz



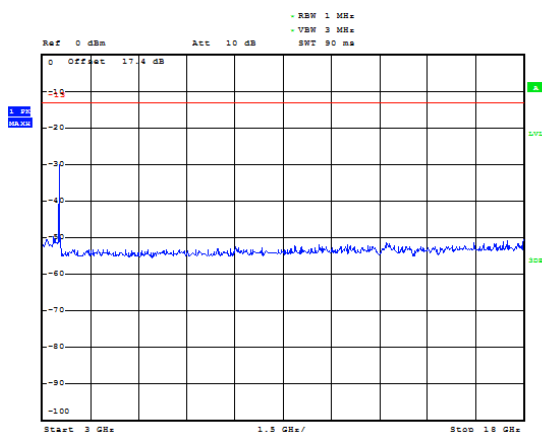
LTE Band 4 3MHz CH-High 1GHz~3GHz



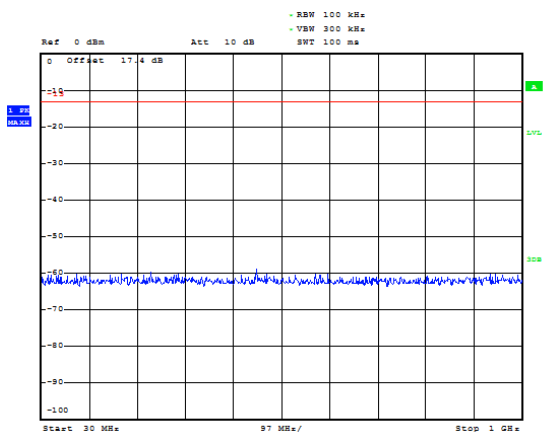
LTE Band 4 3MHz CH-Middle 3GHz~18GHz



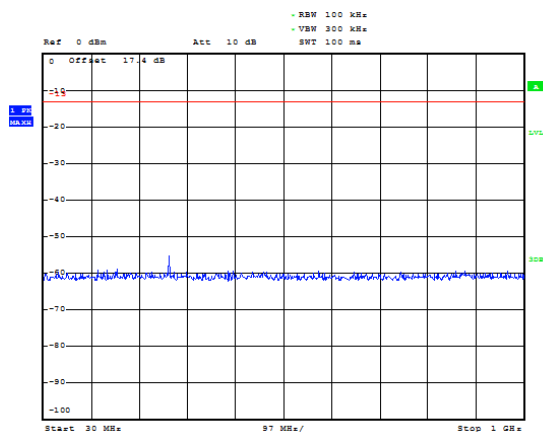
LTE Band 4 3MHz CH-High 3GHz~18GHz



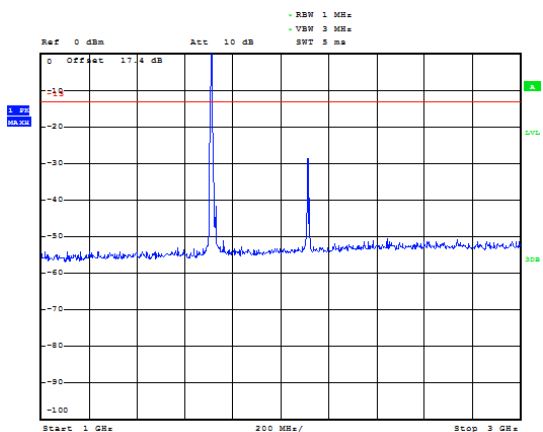
LTE Band 4 5MHz CH-Low 30MHz~1GHz



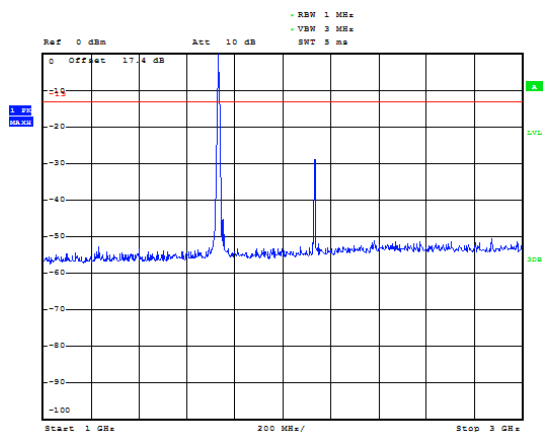
LTE Band 4 5MHz CH-Middle 30MHz~1GHz



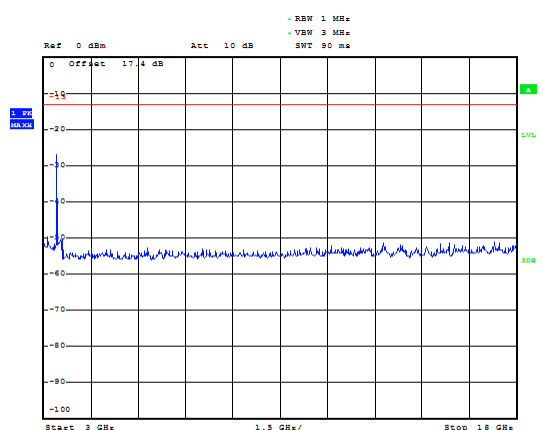
LTE Band 4 5MHz CH-Low 1GHz~3GHz



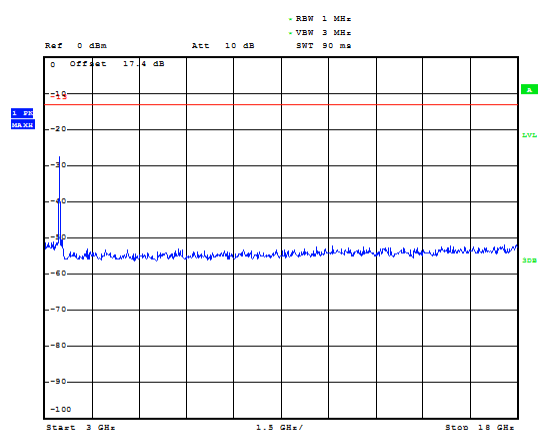
LTE Band 4 5MHz CH-Middle 1GHz~3GHz



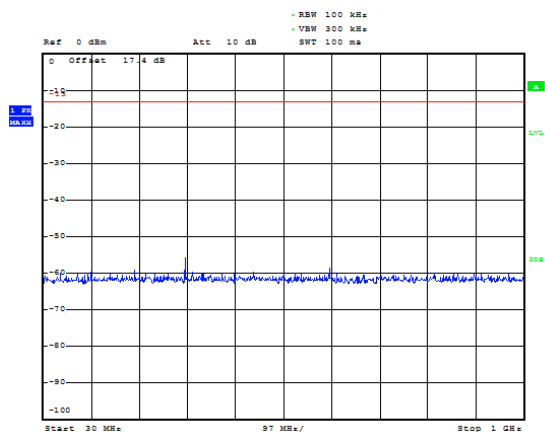
LTE Band 4 5MHz CH-Low 3GHz~18GHz



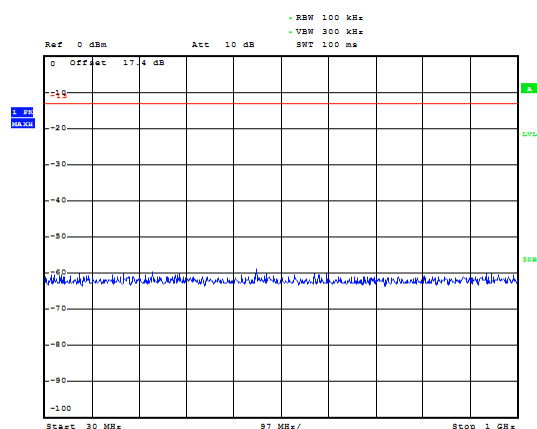
LTE Band 4 5MHz CH-Middle 3GHz~18GHz



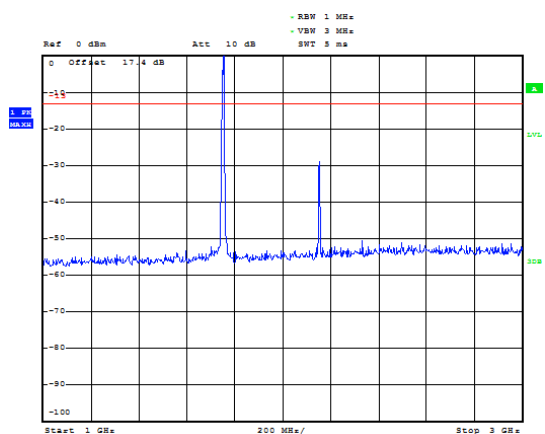
LTE Band 4 5MHz CH-High 30MHz~1GHz



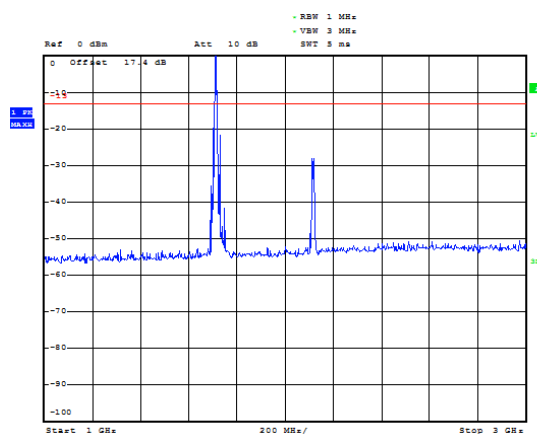
LTE Band 4 10MHz CH-Low 30MHz~1GHz



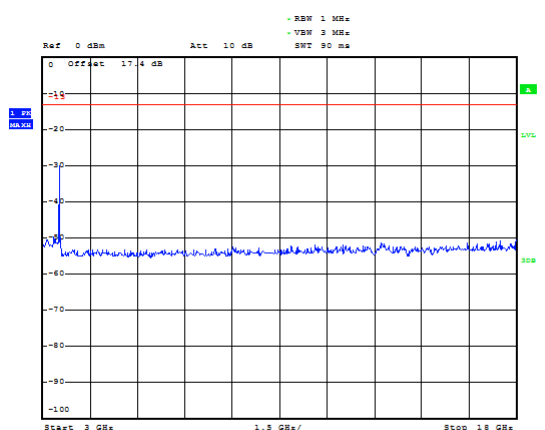
LTE Band 4 5MHz CH-High 1GHz~3GHz



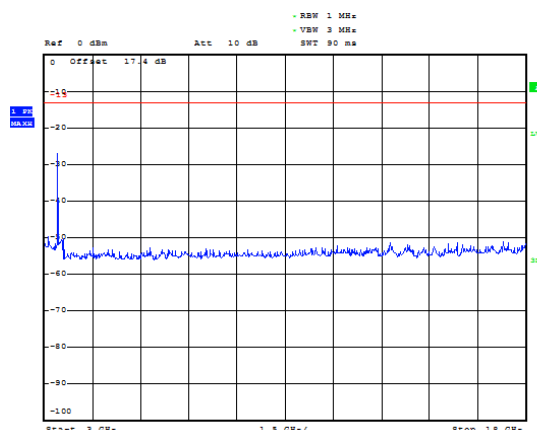
LTE Band 4 10MHz CH-Low 1GHz~3GHz



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

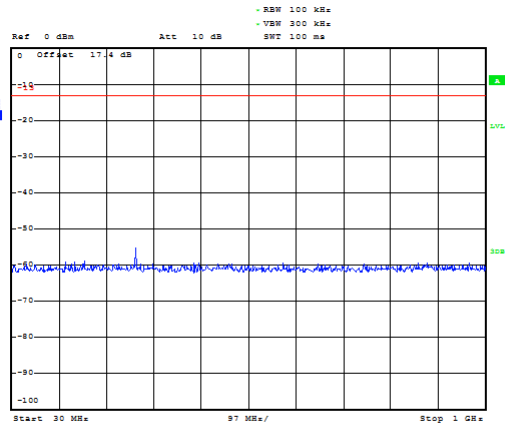


LTE Band 4 10MHz CH-Low 3GHz~18GHz

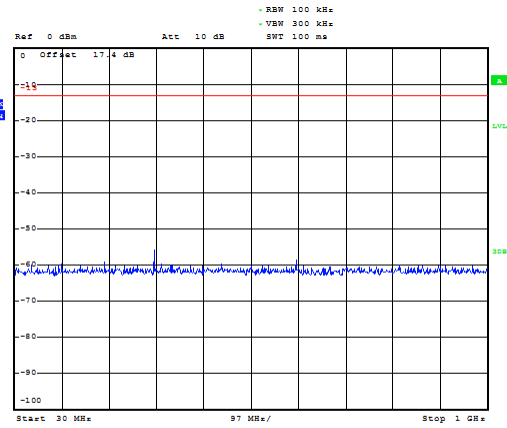




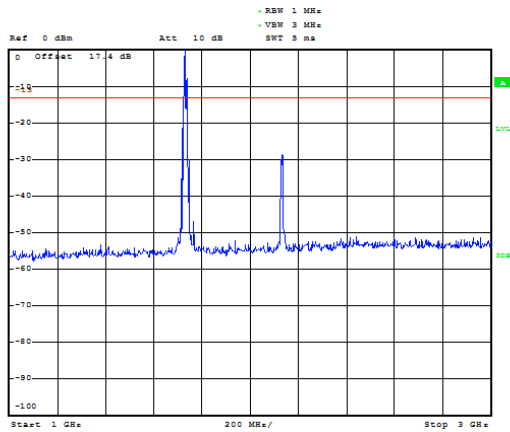
LTE Band 4 10MHz CH-Middle 30MHz~1GHz



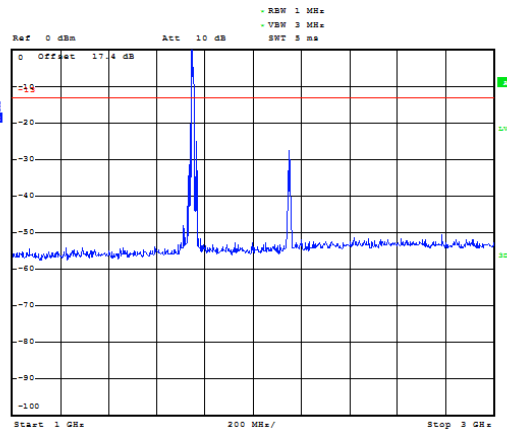
LTE Band 4 10MHz CH-High 30MHz~1GHz



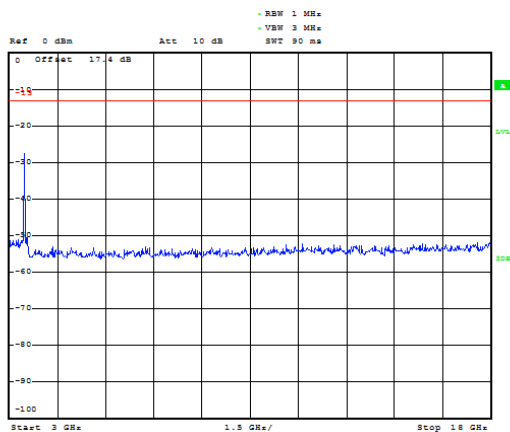
LTE Band 4 10MHz CH-Middle 1GHz~3GHz



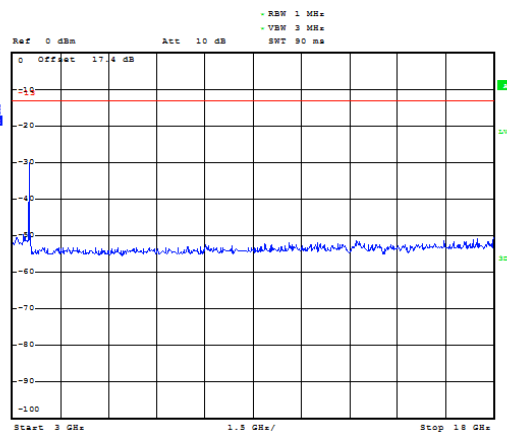
LTE Band 4 10MHz CH-High 1GHz~3GHz



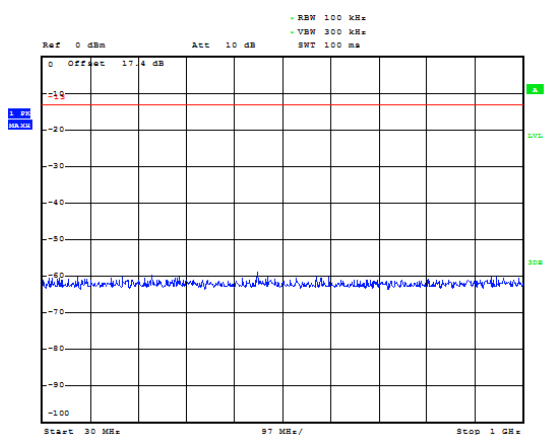
LTE Band 4 10MHz CH-Middle 3GHz~18GHz



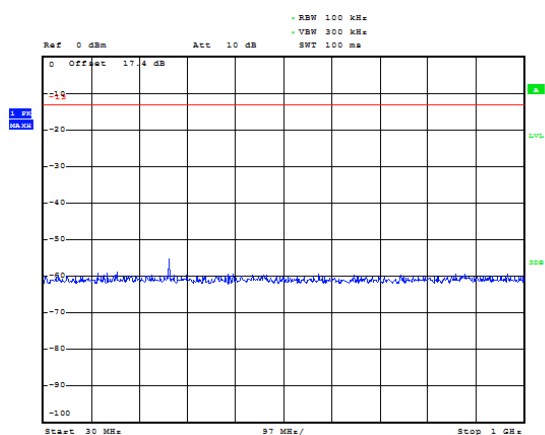
LTE Band 4 10MHz CH-High 3GHz~18GHz



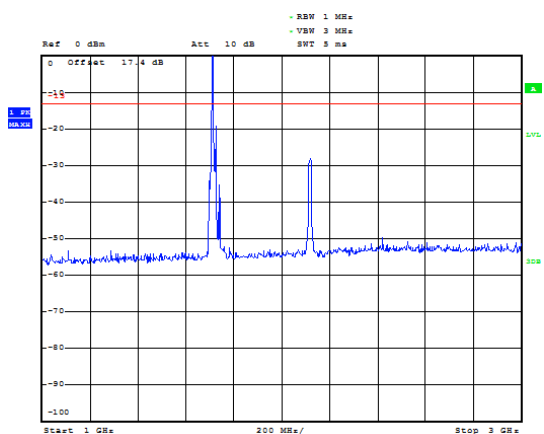
LTE Band 4 15MHz CH-Low 30MHz~1GHz



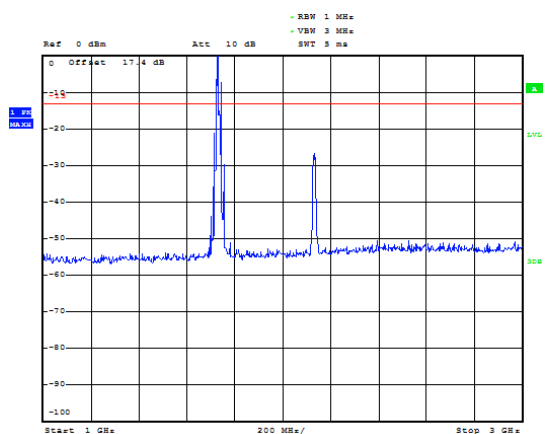
LTE Band 4 15MHz CH-Middle 30MHz~1GHz



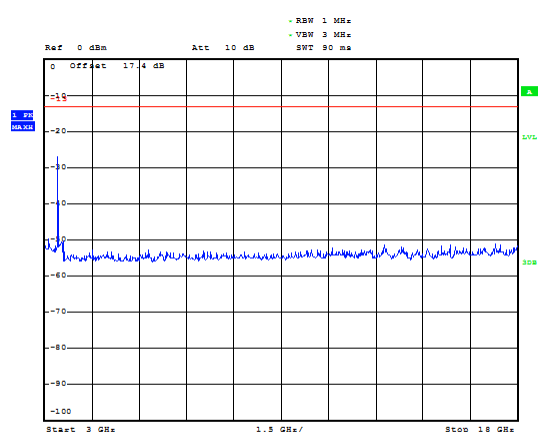
LTE Band 4 15MHz CH-Low 1GHz~3GHz



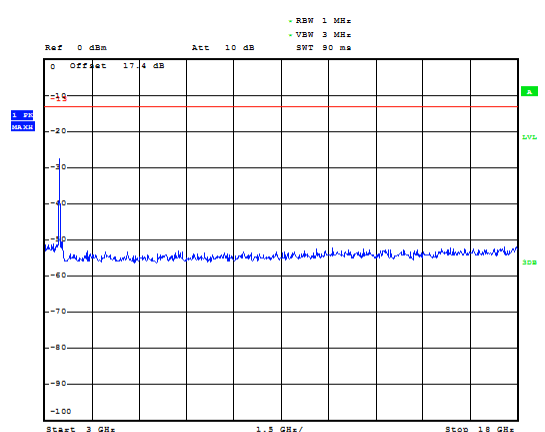
LTE Band 4 15MHz CH-Middle 1GHz~3GHz



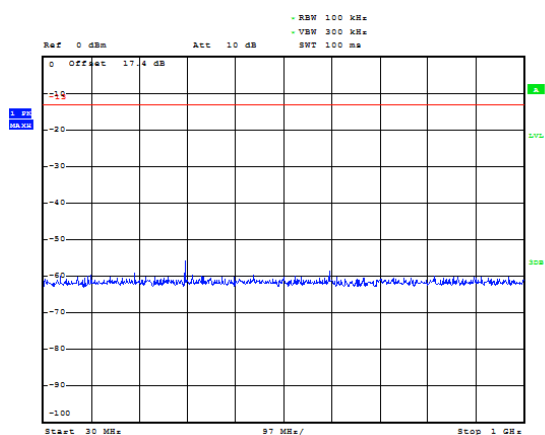
LTE Band 4 15MHz CH-Low 3GHz~18GHz



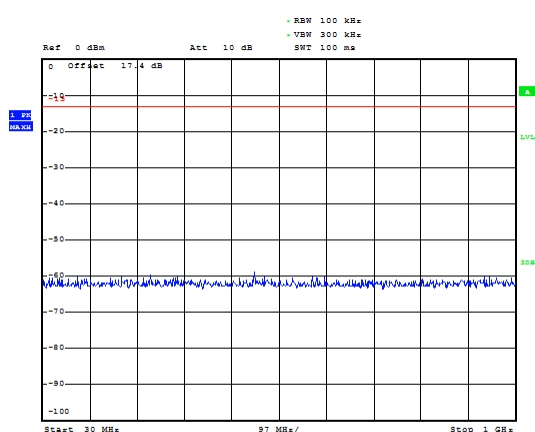
LTE Band 4 15MHz CH-Middle 3GHz~18GHz



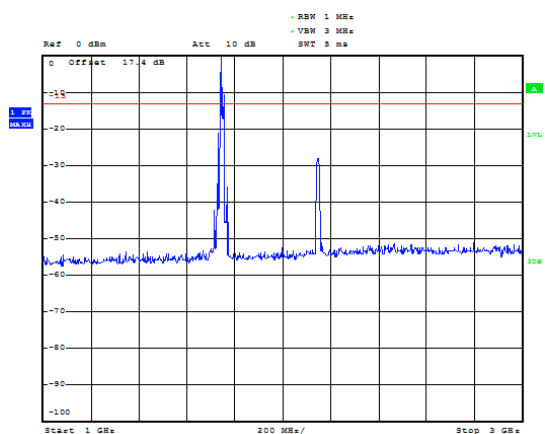
LTE Band 4 15MHz CH-High 30MHz~1GHz



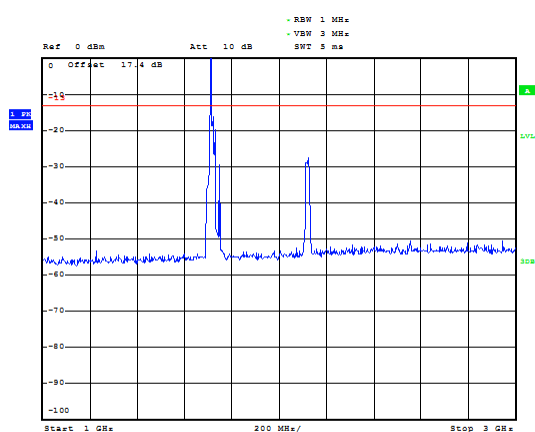
LTE Band 4 20MHz CH-Low 30MHz~1GHz



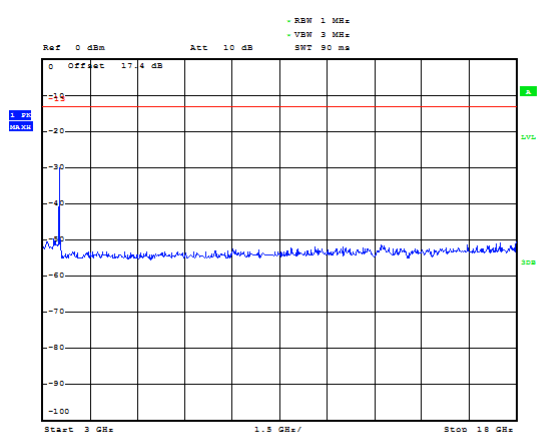
LTE Band 4 15MHz CH-High 1GHz~3GHz



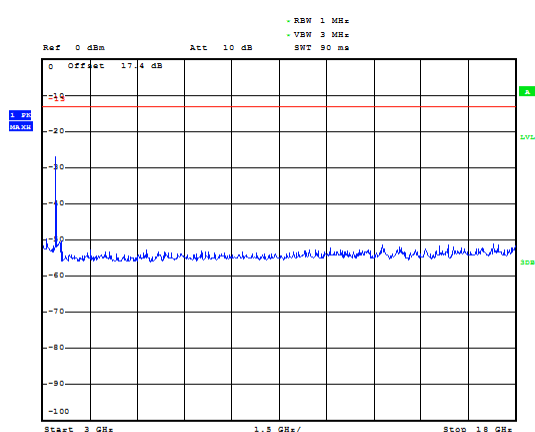
LTE Band 4 20MHz CH-Low 1GHz~3GHz



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

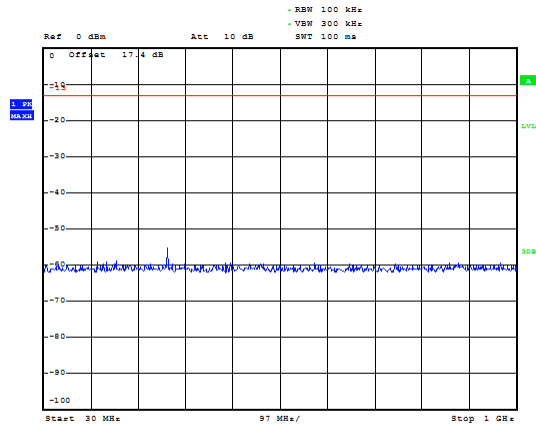


LTE Band 4 20MHz CH-Low 3GHz~18GHz

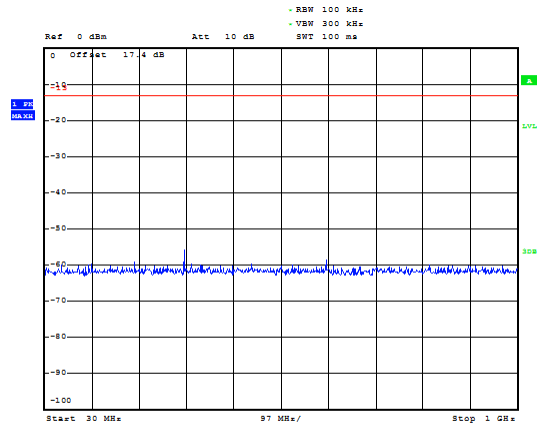




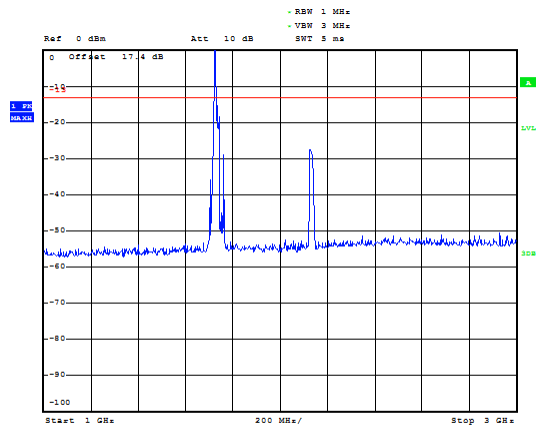
LTE Band 4 20MHz CH-Middle 30MHz~1GHz



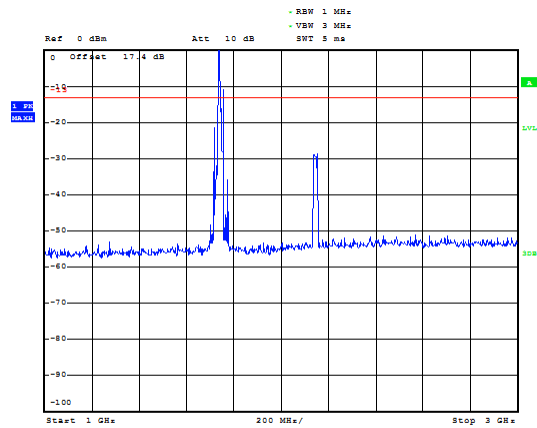
LTE Band 4 20MHz CH-High 30MHz~1GHz



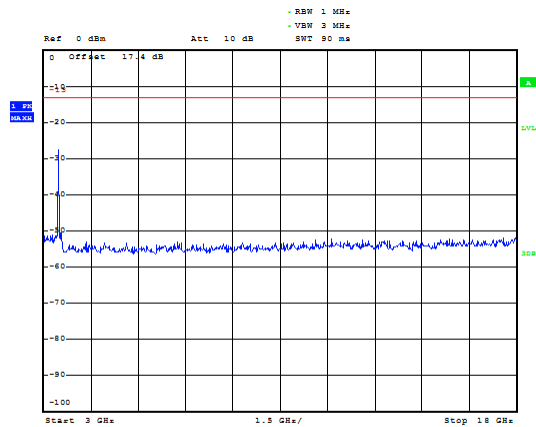
LTE Band 4 20MHz CH-Middle 1GHz~3GHz



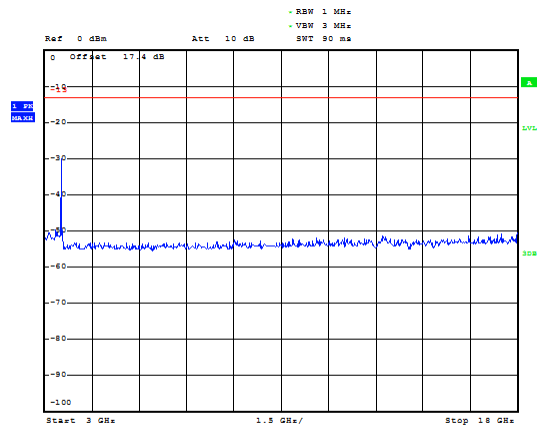
LTE Band 4 20MHz CH-High 1GHz~3GHz



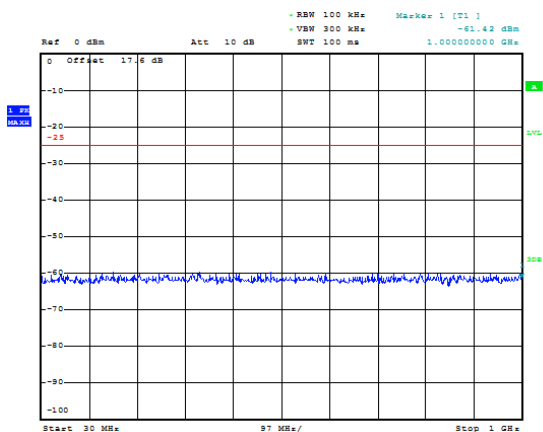
LTE Band 4 20MHz CH-Middle 3GHz~18GHz



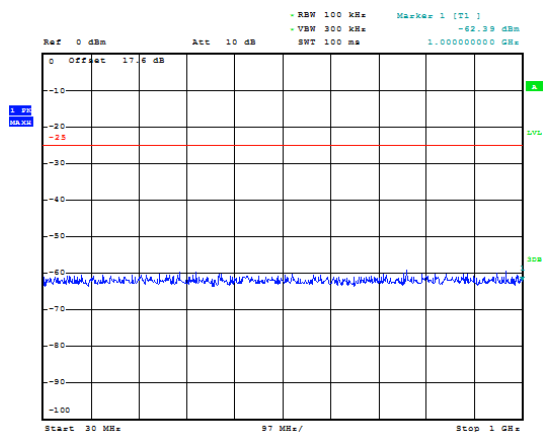
LTE Band 4 20MHz CH-High 3GHz~18GHz



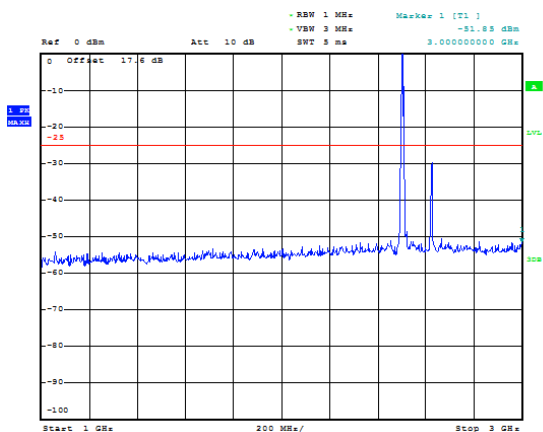
LTE Band 7 5MHz CH-Low 30MHz~1GHz



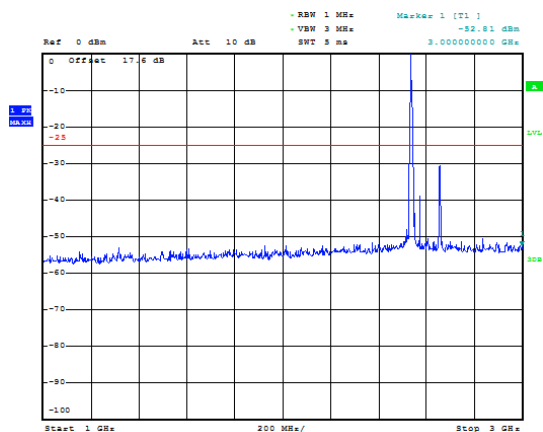
LTE Band 7 5MHz CH-Middle 30MHz~1GHz



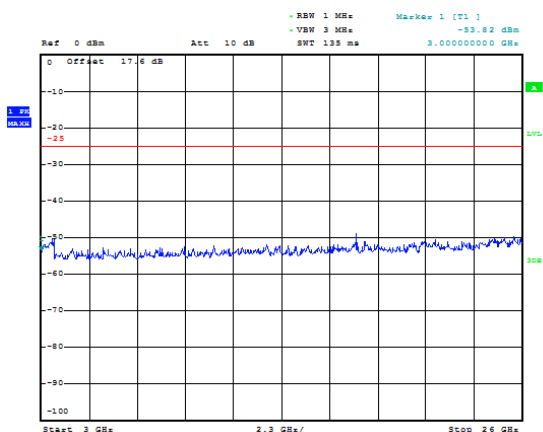
LTE Band 7 5MHz CH-Low 1GHz~3GHz



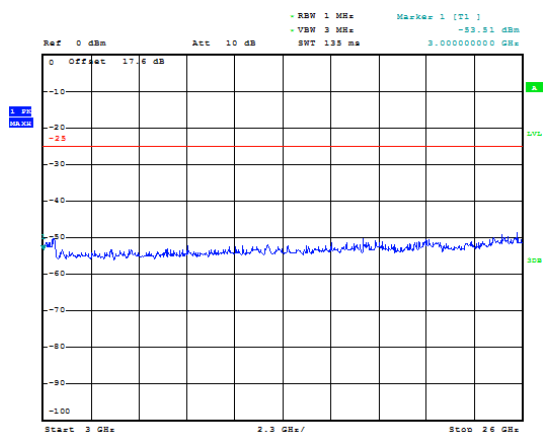
LTE Band 7 5MHz CH-Middle 1GHz~3GHz



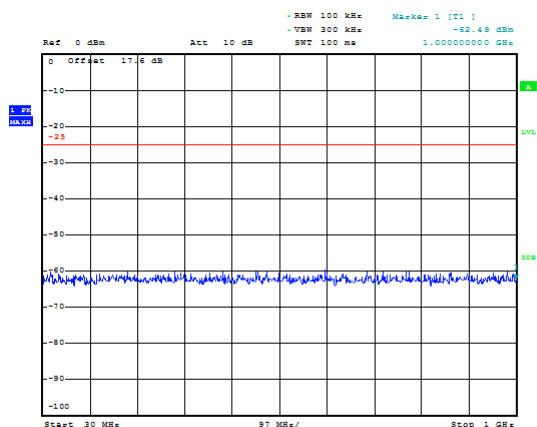
LTE Band 7 5MHz CH-Low 3GHz~26GHz



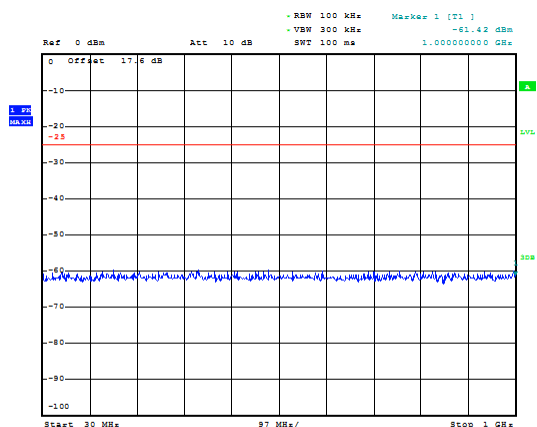
LTE Band 7 5MHz CH-Middle 3GHz~26GHz



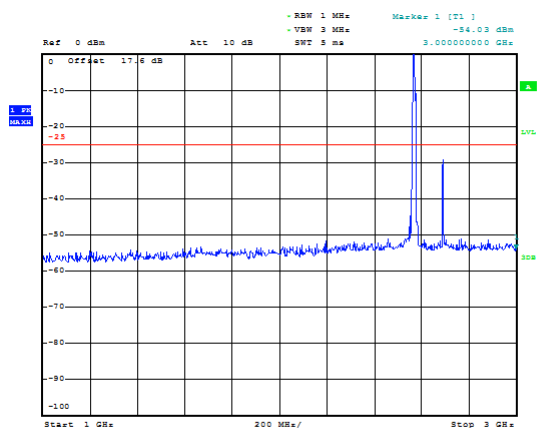
LTE Band 7 5MHz CH-High 30MHz~1GHz



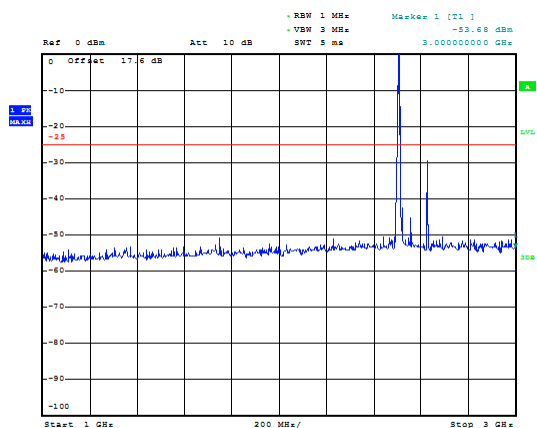
LTE Band 7 10MHz CH-Low 30MHz~1GHz



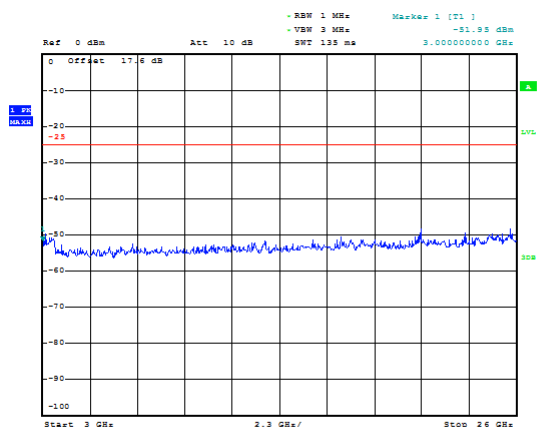
LTE Band 7 5MHz CH-High 1GHz~3GHz



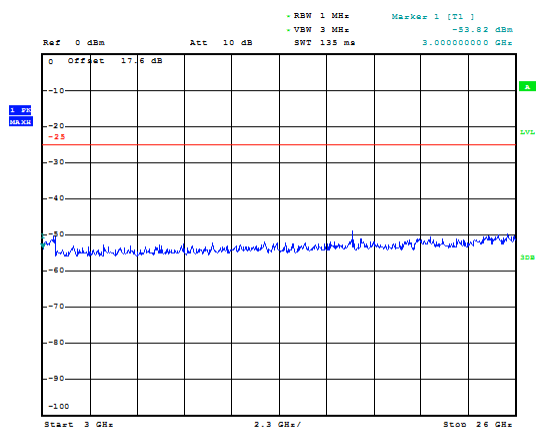
LTE Band 7 10MHz CH-Low 1GHz~3GHz



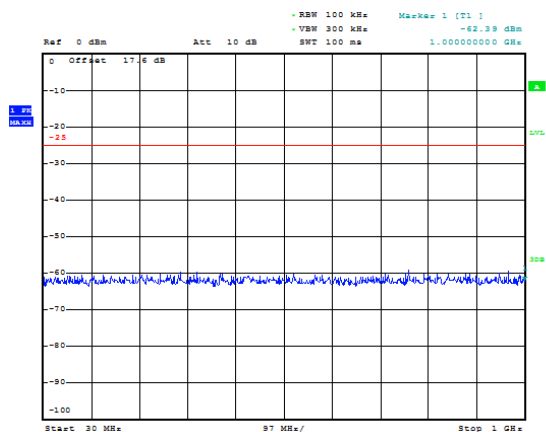
LTE Band 7 5MHz CH-High 3GHz~26GHz



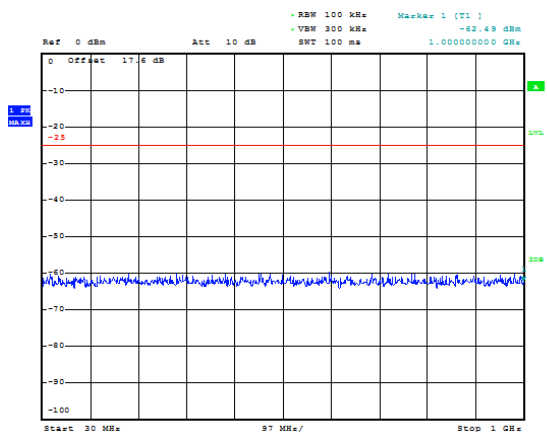
LTE Band 7 10MHz CH-Low 3GHz~26GHz



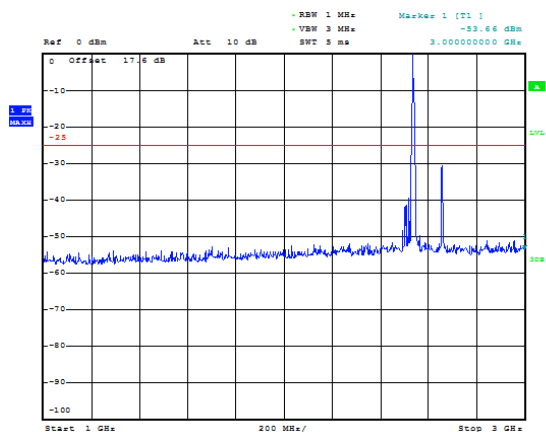
LTE Band 7 10MHz CH-Middle 30MHz~1GHz



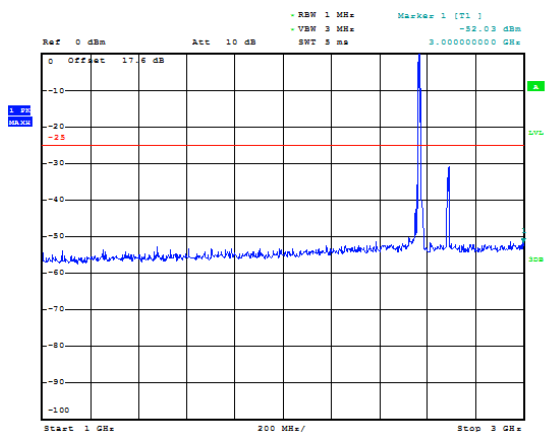
LTE Band 7 10MHz CH-High 30MHz~1GHz



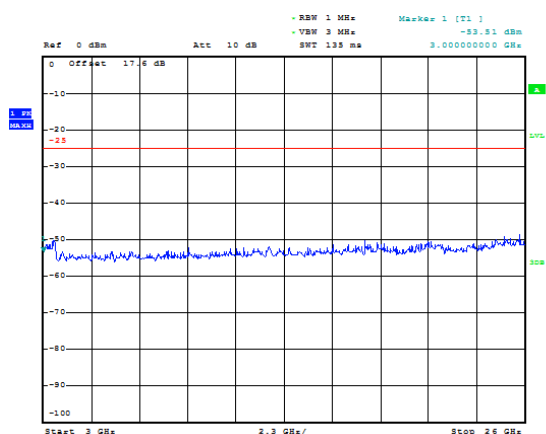
LTE Band 7 10MHz CH-Middle 1GHz~3GHz



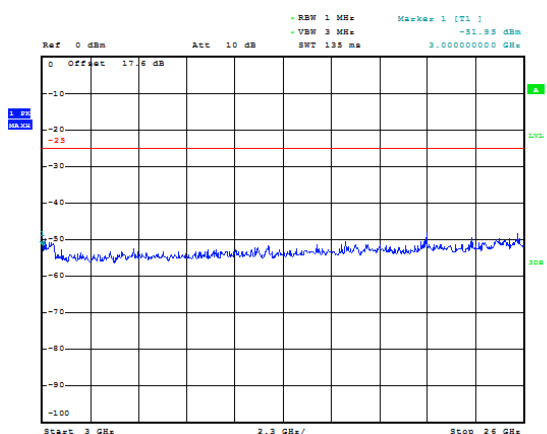
LTE Band 7 10MHz CH-High 1GHz~3GHz



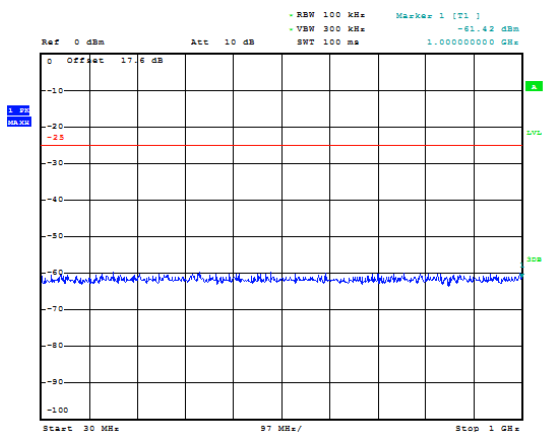
LTE Band 7 10MHz CH-Middle 3GHz~26GHz



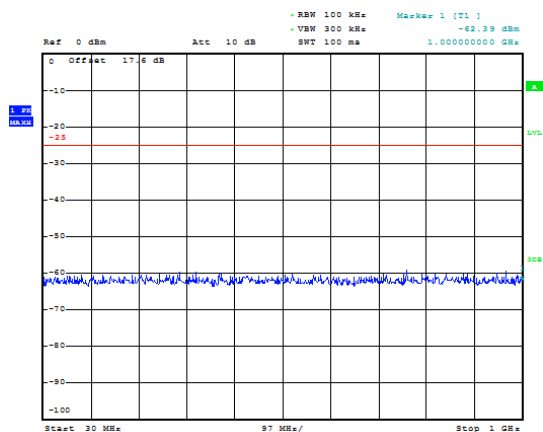
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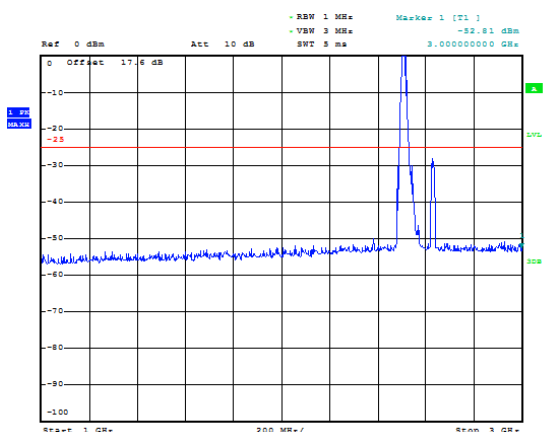
LTE Band 7 15MHz CH-Low 30MHz~1GHz



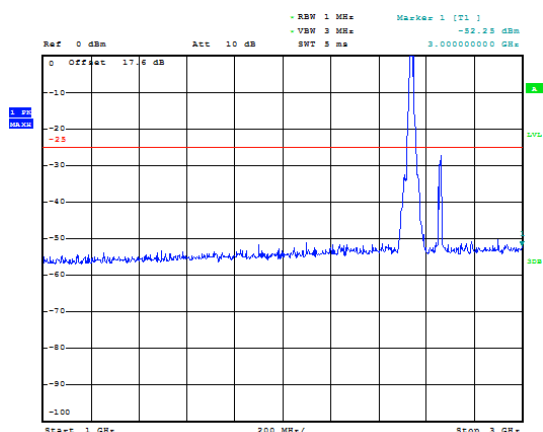
LTE Band 7 15MHz CH-Middle 30MHz~1GHz



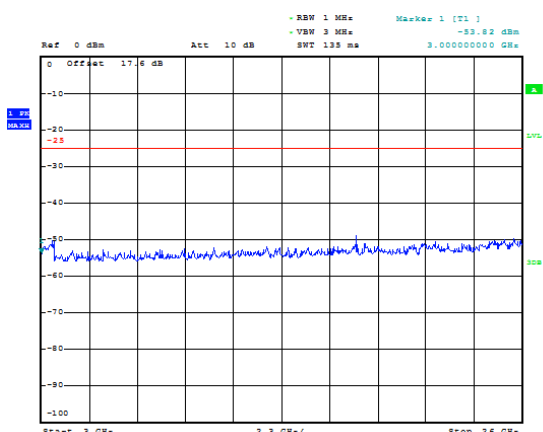
LTE Band 7 15MHz CH-Low 1GHz~3GHz



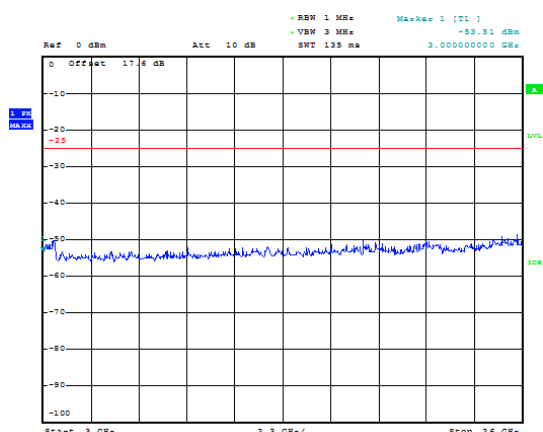
LTE Band 7 15MHz CH-Middle 1GHz~3GHz



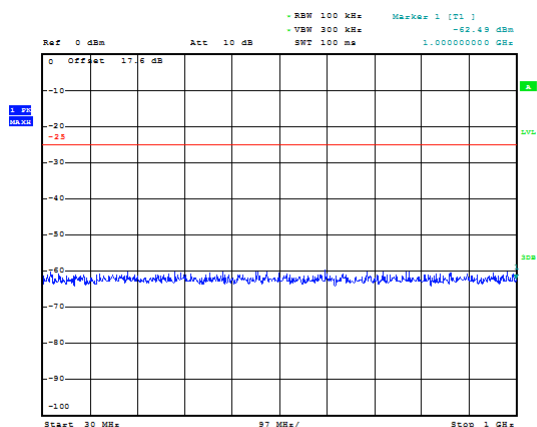
LTE Band 7 15MHz CH-Low 3GHz~26GHz



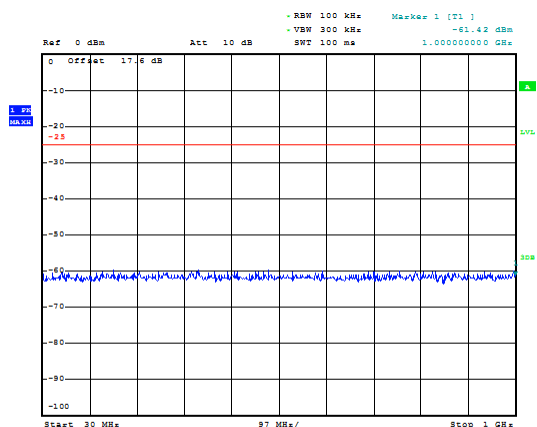
LTE Band 7 15MHz CH-Middle 3GHz~26GHz



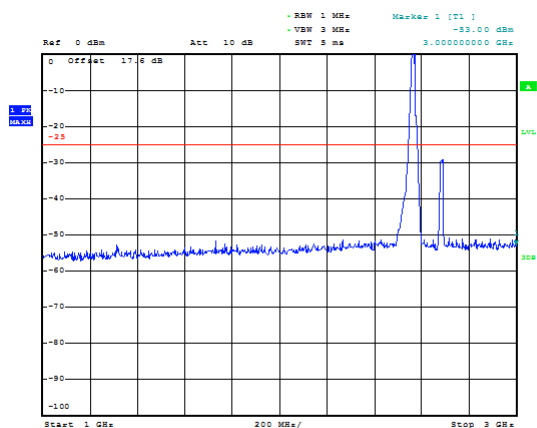
LTE Band 7 15MHz CH-High 30MHz~1GHz



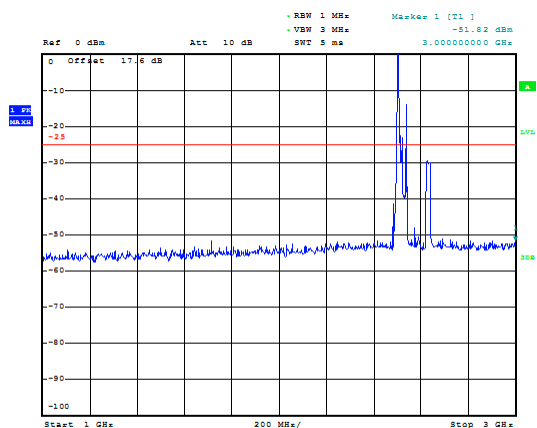
LTE Band 7 20MHz CH-Low 30MHz~1GHz



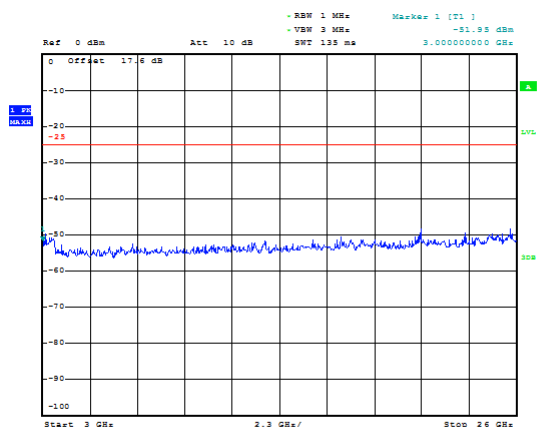
LTE Band 7 15MHz CH-High 1GHz~3GHz



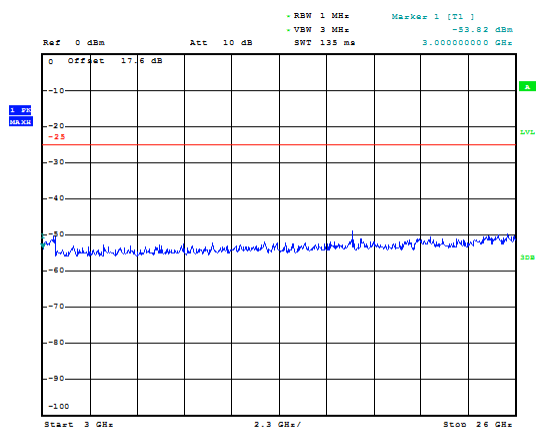
LTE Band 7 20MHz CH-Low 1GHz~3GHz



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

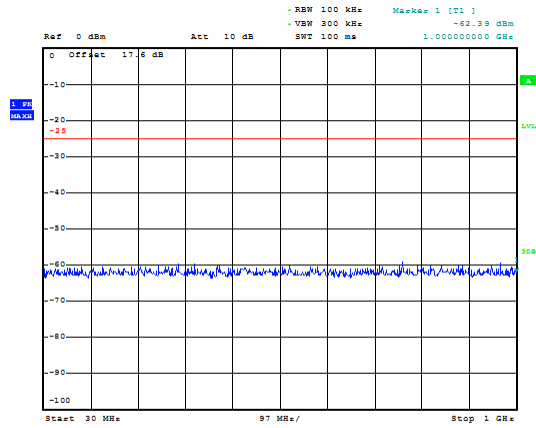


LTE Band 7 20MHz CH-Low 3GHz~26GHz

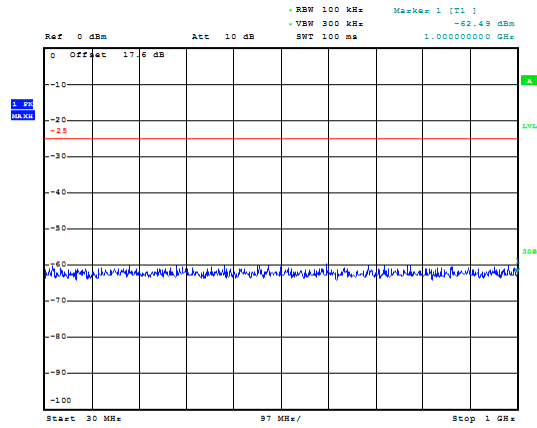




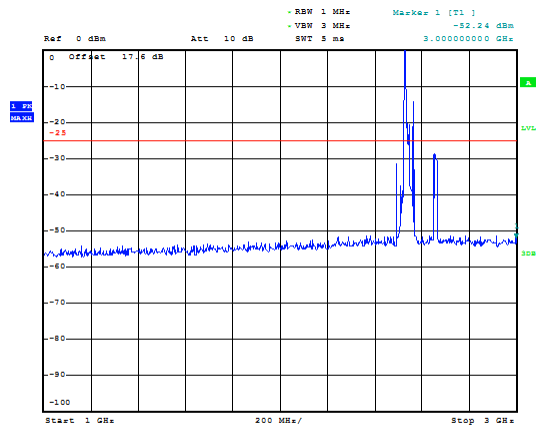
LTE Band 7 20MHz CH-Middle 30MHz~1GHz



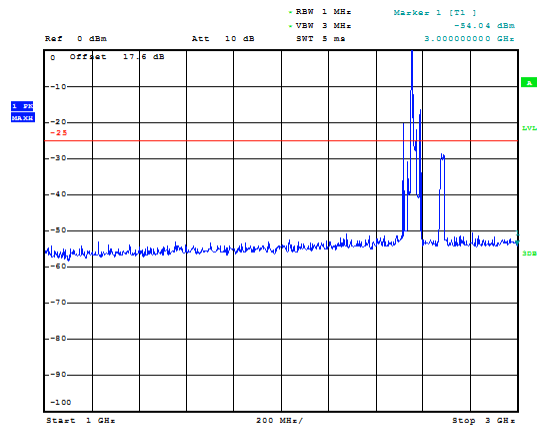
LTE Band 7 20MHz CH-High 30MHz~1GHz



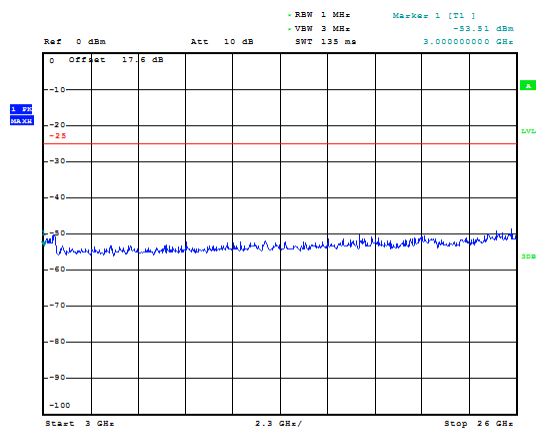
LTE Band 7 20MHz CH-Middle 1GHz~3GHz



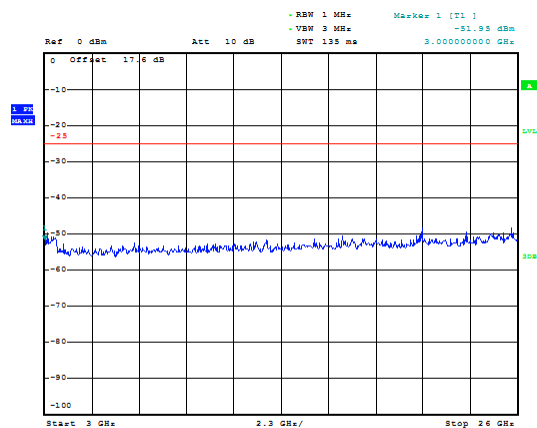
LTE Band 7 20MHz CH-High 1GHz~3GHz



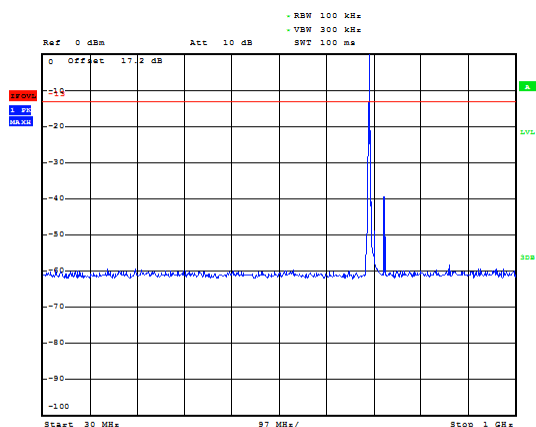
LTE Band 7 20MHz CH-Middle 3GHz~26GHz



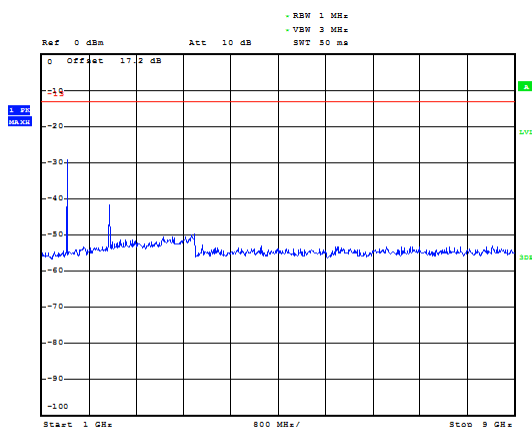
LTE Band 7 20MHz CH-High 3GHz~26GHz



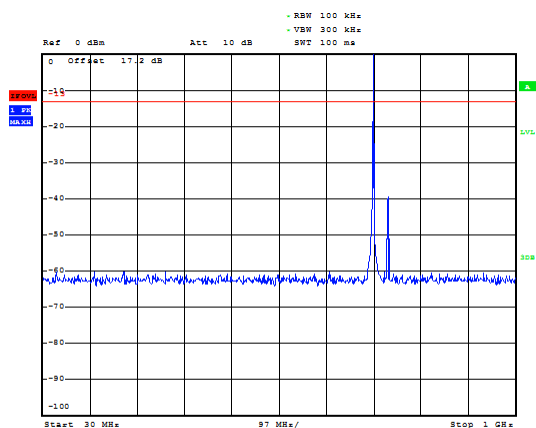
LTE Band 12 1.4MHz CH-Low 30MHz~1GHz



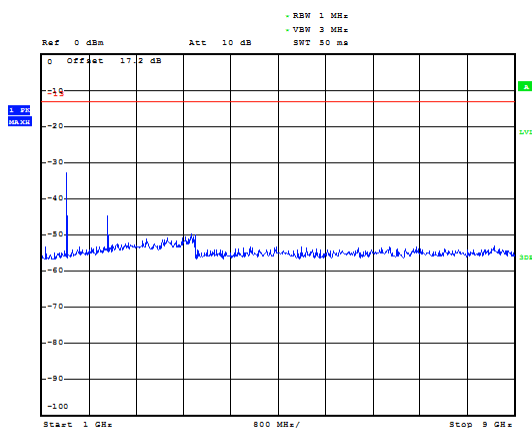
LTE Band 12 1.4MHz CH-Low 1GHz~9GHz



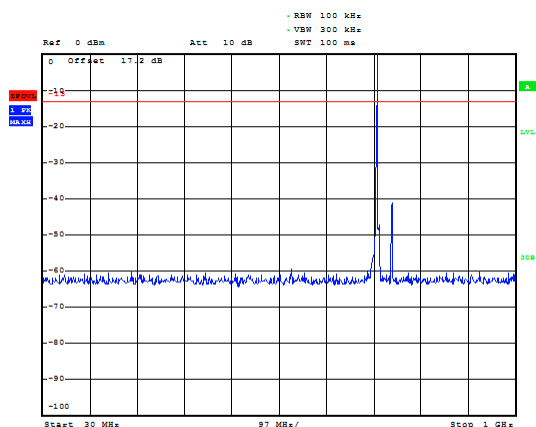
LTE Band 12 1.4MHz CH- Middle 30MHz~1GHz



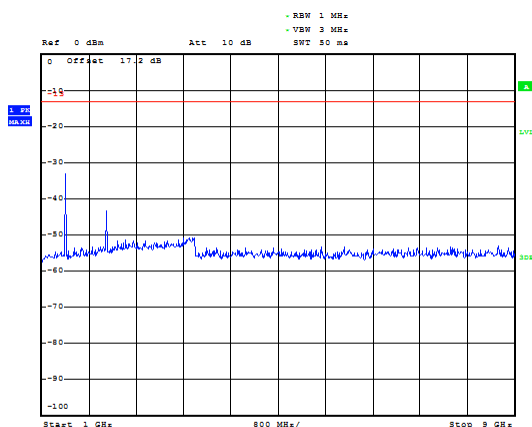
LTE Band 12 1.4MHz CH- Middle 1GHz~9GHz



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

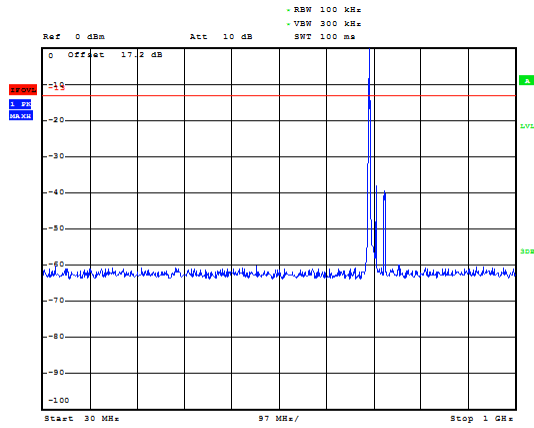


LTE Band 12 1.4MHz CH- High 1GHz~9GHz

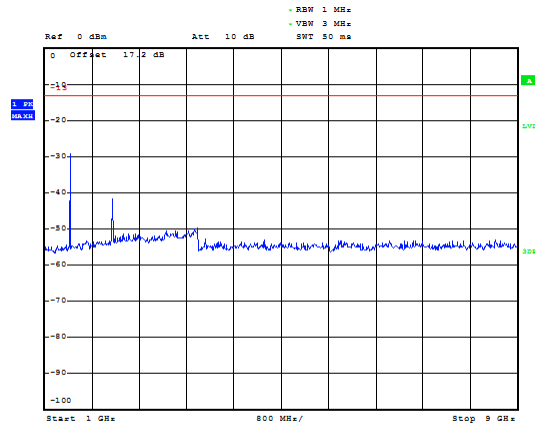




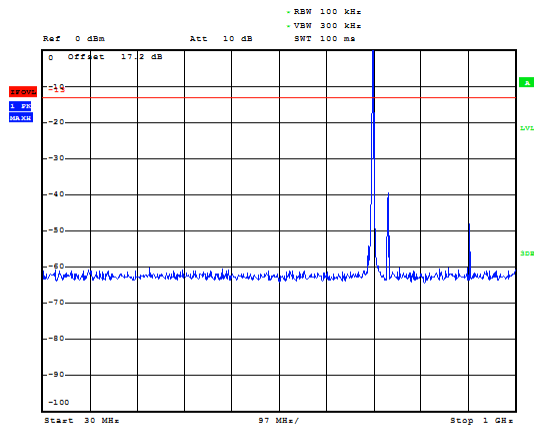
LTE Band 12 3MHz CH-Low 30MHz~1GHz



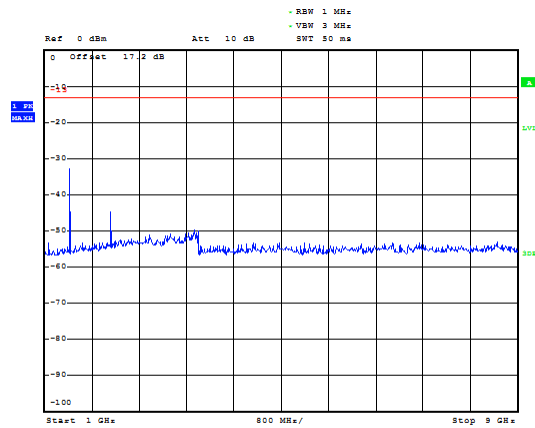
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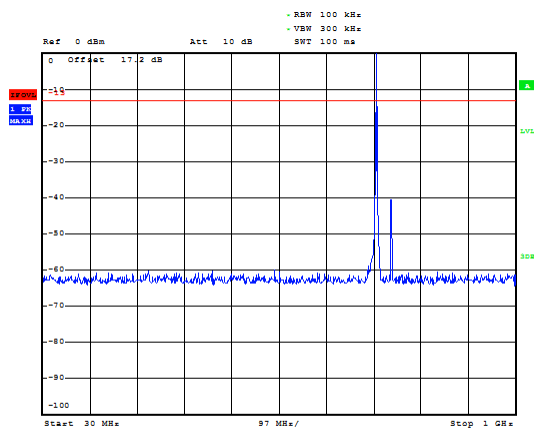
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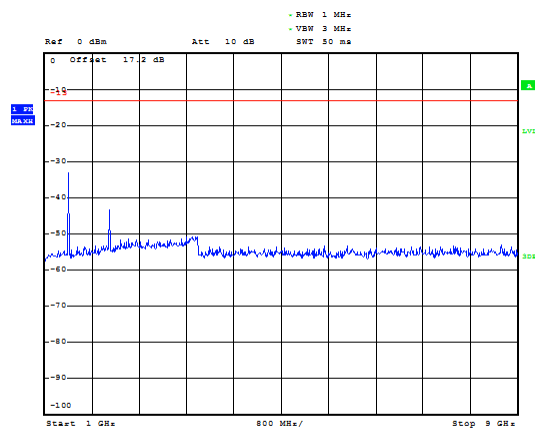
LTE Band 12 3MHz CH- Middle 1GHz~9GHz



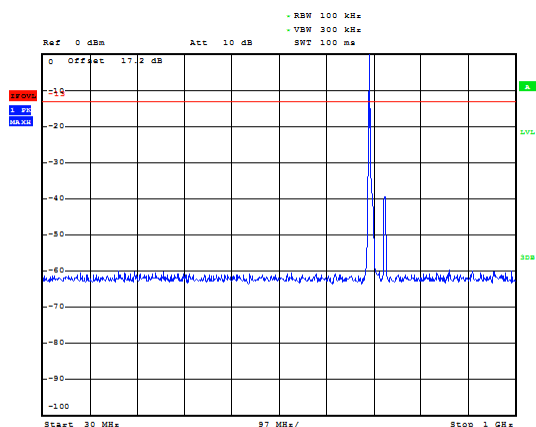
LTE Band 12 3MHz CH- High 30MHz~1GHz



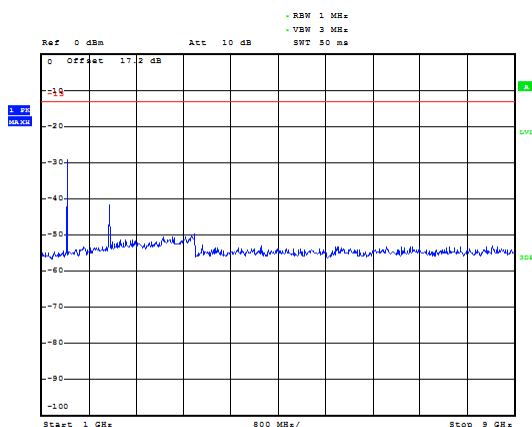
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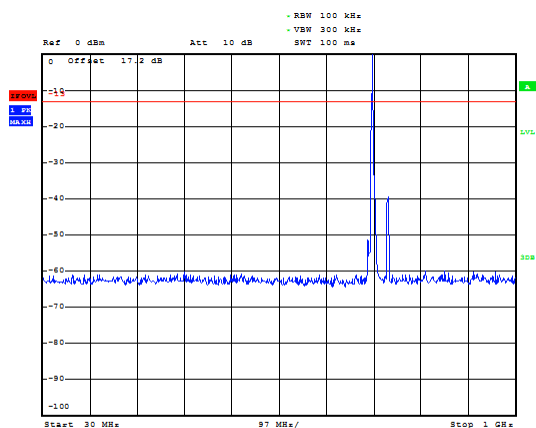
LTE Band 12 5MHz CH-Low 30MHz~1GHz



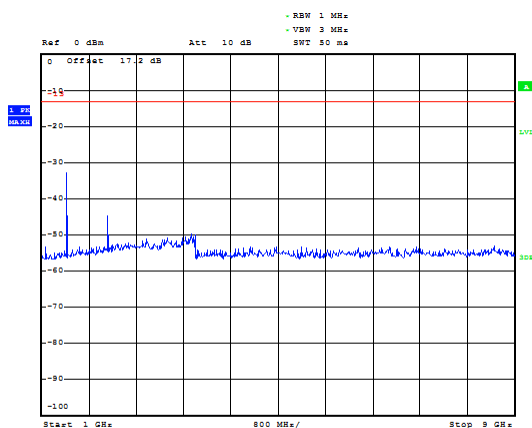
LTE Band 12 5MHz CH-Low 1GHz~9GHz



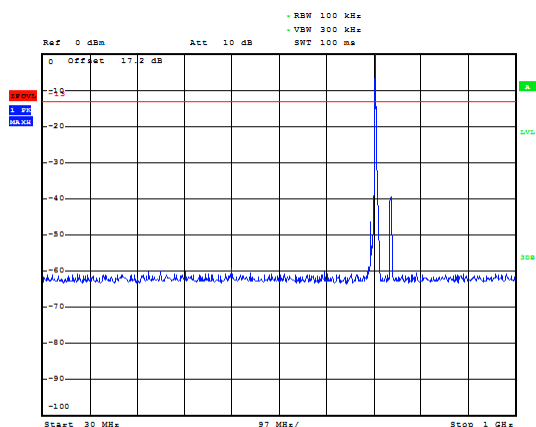
LTE Band 12 5MHz CH- Middle 30MHz~1GHz



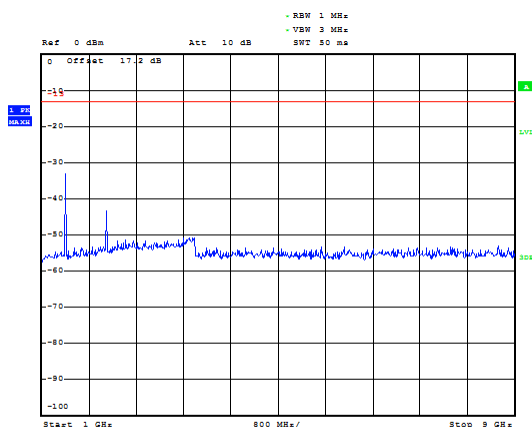
LTE Band 12 5MHz CH- Middle 1GHz~9GHz



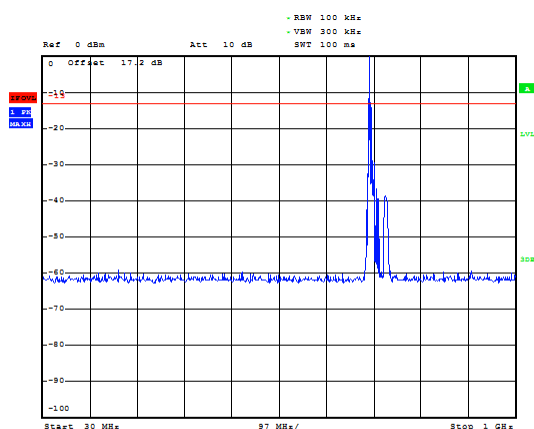
LTE Band 12 5MHz CH- High 30MHz~1GHz



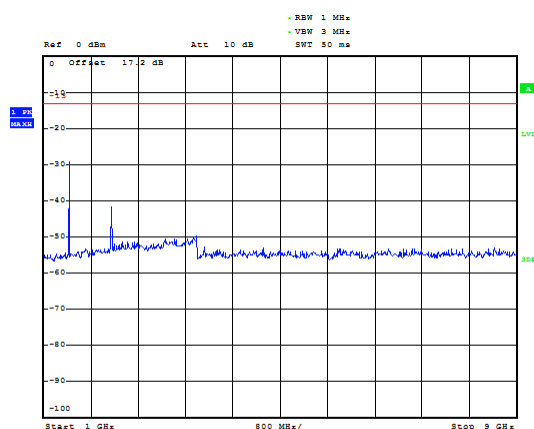
LTE Band 12 5MHz CH- High 1GHz~9GHz



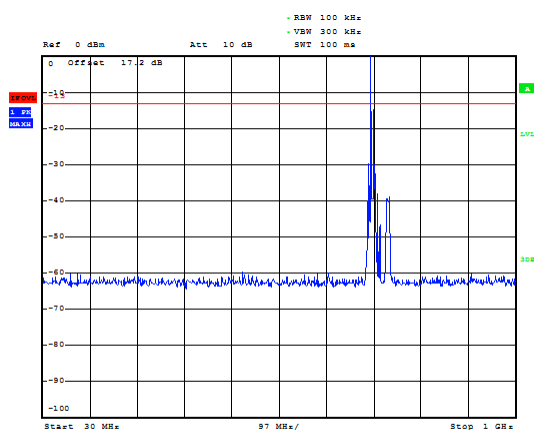
LTE Band 12 10MHz CH-Low 30MHz~1GHz



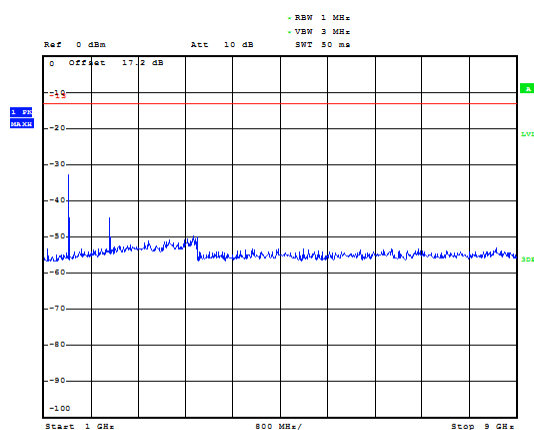
LTE Band 12 10MHz CH-Low 1GHz~9GHz



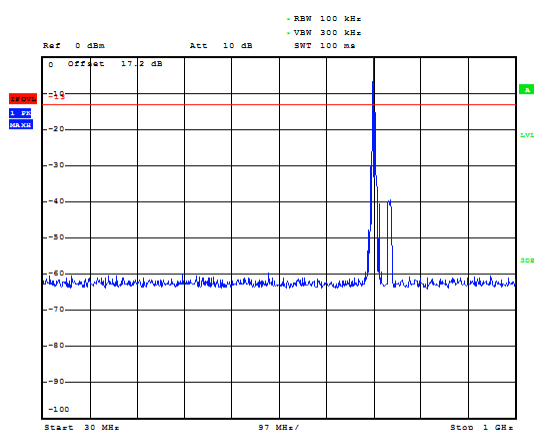
LTE Band 12 10MHz CH- Middle 30MHz~1GHz



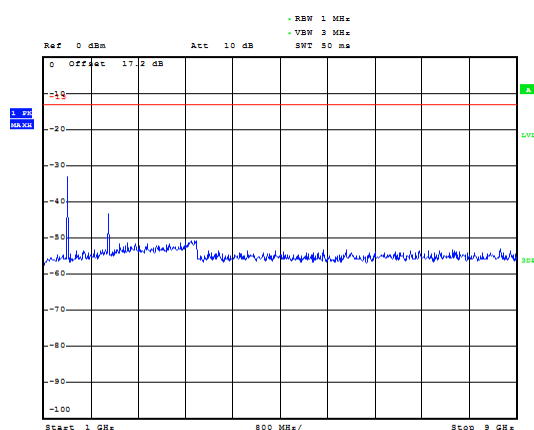
LTE Band 12 10MHz CH- Middle 1GHz~9GHz



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	2112.3	-30.338	-13	17.338
B4_CHMID_1.4M_RB1_1-3GHz	2130.8	-30.725	-13	17.725
B4_CHHIGH_1.4M_RB1_1-3GHz	2150.1	-30.231	-13	17.231
B4_CHLOW_3M_RB1_1-3GHz	2108.5	-28.645	-13	15.645
B4_CHMID_3M_RB1_1-3GHz	2129.2	-27.678	-13	14.678
B4_CHHIGH_3M_RB1_1-3GHz	2153.4	-29.981	-13	16.981
B4_CHLOW_5M_RB1_1-3GHz	2114.6	-29.045	-13	16.045
B4_CHMID_5M_RB1_1-3GHz	2138.3	-29.037	-13	16.037
B4_CHHIGH_5M_RB1_1-3GHz	2151.0	-30.064	-13	17.064
B4_CHLOW_10M_RB1_1-3GHz	2112.0	-29.714	-13	16.714
B4_CHMID_10M_RB1_1-3GHz	2131.3	-29.943	-13	16.943
B4_CHHIGH_10M_RB1_1-3GHz	2153.0	-28.737	-13	15.737
B4_CHLOW_15M_RB1_1-3GHz	2119.2	-28.441	-13	15.441
B4_CHMID_15M_RB1_1-3GHz	2133.7	-28.234	-13	15.234
B4_CHHIGH_15M_RB1_1-3GHz	2143.6	-28.709	-13	15.709
B4_CHLOW_20M_RB1_1-3GHz	2120.3	-29.422	-13	16.422
B4_CHMID_20M_RB1_1-3GHz	2135.6	-29.343	-13	16.343
B4_CHHIGH_20M_RB1_1-3GHz	2145.9	-29.802	-13	16.802
B12_CHLOW_1.4M_RB1_1-9GHz	1356.7	-29.164	-13	16.164
B12_CHMID_1.4M_RB1_1-9GHz	1366.4	-31.982	-13	18.982
B12_CHHIGH_1.4M_RB1_1-9GHz	1378.5	-32.866	-13	19.866
B12_CHLOW_3M_RB1_1-9GHz	1362.5	-29.157	-13	16.157
B12_CHMID_3M_RB1_1-9GHz	1368.4	-31.849	-13	18.849
B12_CHHIGH_3M_RB1_1-9GHz	1387.5	-32.567	-13	19.567
B12_CHLOW_5M_RB1_1-9GHz	1369.0	-28.906	-13	15.906
B12_CHMID_5M_RB1_1-9GHz	1378.7	-31.724	-13	18.724
B12_CHHIGH_5M_RB1_1-9GHz	1390.8	-32.608	-13	19.608
B12_CHLOW_10M_RB1_1-9GHz	1374.8	-28.899	-13	15.899
B12_CHMID_10M_RB1_1-9GHz	1380.7	-31.591	-13	18.591
B12_CHHIGH_10M_RB1_1-9GHz	1399.8	-32.309	-13	19.309

5.8 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

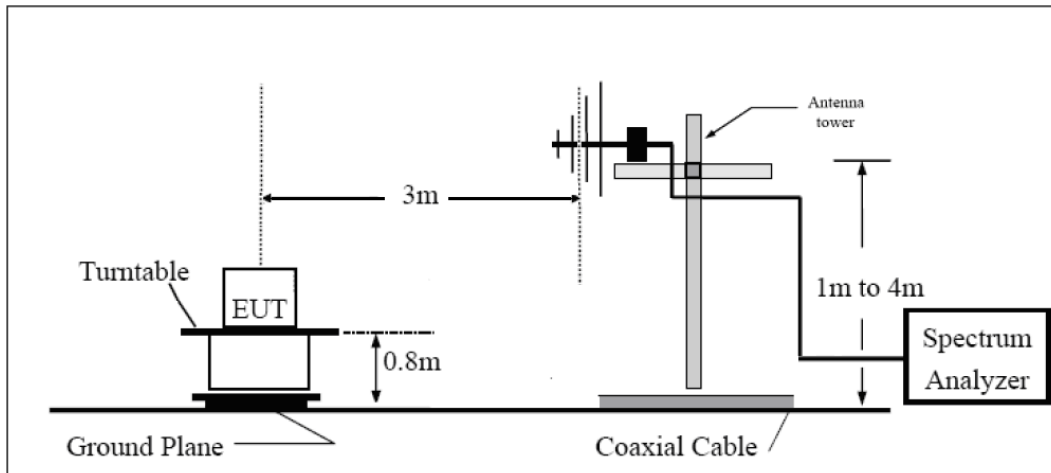
1. The testing follows FCC KDB 971168 v03 Section 5.8 and ANSI/TIA-603-E (2016).
2. The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally,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

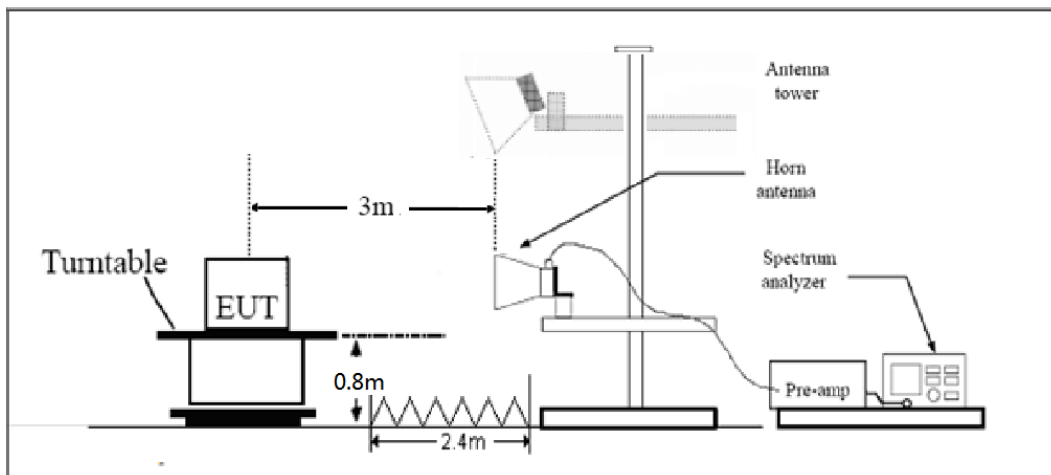
$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dBi}$.

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

LTE -4 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..”

LTE -12 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.

LTE -7 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 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	-59.52	2.6	10.15	Horizontal	-51.97	-13.00	38.97	270
3	5131.1	-50.64	2.4	11.35	Horizontal	-41.69	-13.00	28.69	180
4	6842.8	-51.48	4.5	10.85	Horizontal	-45.13	-13.00	32.13	135
5	8553.5	-48.01	5.1	11.35	Horizontal	-41.76	-13.00	28.76	270
6	10264.2	-47.73	5.3	11.95	Horizontal	-41.08	-13.00	28.08	180
7	11974.9	-46.40	5.5	13.55	Horizontal	-38.35	-13.00	25.35	225
8	13685.6	-43.33	6.3	13.75	Horizontal	-35.88	-13.00	22.88	45
9	15396.3	-45.29	6.7	13.85	Horizontal	-38.14	-13.00	25.14	270
10	17107.0	-45.30	6.8	14.25	Horizontal	-37.85	-13.00	24.85	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	-58.70	2.6	10.75	Horizontal	-50.55	-13.00	37.55	135
3	5197.5	-51.76	2.4	11.05	Horizontal	-43.11	-13.00	30.11	270
4	6930.0	-50.82	4.5	11.15	Horizontal	-44.17	-13.00	31.17	180
5	8662.5	-49.39	5.1	11.35	Horizontal	-43.14	-13.00	30.14	225
6	10395.0	-45.67	5.3	11.95	Horizontal	-39.02	-13.00	26.02	270
7	12127.5	-45.90	5.5	13.55	Horizontal	-37.85	-13.00	24.85	180
8	13860.0	-43.21	6.3	13.75	Horizontal	-35.76	-13.00	22.76	135
9	15592.5	-45.65	6.7	13.85	Horizontal	-38.50	-13.00	25.50	270
10	17325.0	-44.93	6.8	14.25	Horizontal	-37.48	-13.00	24.48	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	-56.62	2.6	10.15	Horizontal	-49.07	-13.00	36.07	225
3	5261.6	-51.91	2.4	11.05	Horizontal	-43.26	-13.00	30.26	45
4	7017.2	-50.48	4.5	11.15	Horizontal	-43.83	-13.00	30.83	270
5	8771.5	-49.35	5.1	11.35	Horizontal	-43.10	-13.00	30.10	180
6	10525.8	-46.35	5.3	11.95	Horizontal	-39.70	-13.00	26.70	135
7	12280.1	-46.38	5.5	13.55	Horizontal	-38.33	-13.00	25.33	270
8	14034.4	-42.68	6.3	13.75	Horizontal	-35.23	-13.00	22.23	180
9	15788.7	-46.13	6.7	13.85	Horizontal	-38.98	-13.00	25.98	225
10	17543.0	-44.56	6.8	14.25	Horizontal	-37.11	-13.00	24.11	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	-58.30	2.6	10.15	Horizontal	-50.75	-13.00	37.75	90
3	5134.5	-51.79	2.4	11.35	Horizontal	-42.84	-13.00	29.84	270
4	6846.0	-50.39	4.5	10.85	Horizontal	-44.04	-13.00	31.04	180
5	8557.5	-49.52	5.1	11.35	Horizontal	-43.27	-13.00	30.27	135
6	10269.0	-46.79	5.3	11.95	Horizontal	-40.14	-13.00	27.14	270
7	11980.5	-46.79	5.5	13.55	Horizontal	-38.74	-13.00	25.74	180
8	13692.0	-44.66	6.3	13.75	Horizontal	-37.21	-13.00	24.21	225
9	15403.5	-45.59	6.7	13.85	Horizontal	-38.44	-13.00	25.44	45
10	17115.0	-42.87	6.8	14.25	Horizontal	-35.42	-13.00	22.42	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	-59.85	2.6	10.75	Horizontal	-51.70	-13.00	38.70	180
3	5197.5	-50.19	2.4	11.05	Horizontal	-41.54	-13.00	28.54	270
4	6930.0	-50.91	4.5	11.15	Horizontal	-44.26	-13.00	31.26	45
5	8662.5	-48.75	5.1	11.35	Horizontal	-42.50	-13.00	29.50	90
6	10395.0	-45.65	5.3	11.95	Horizontal	-39.00	-13.00	26.00	135
7	12127.5	-45.03	5.5	13.55	Horizontal	-36.98	-13.00	23.98	225
8	13860.0	-42.93	6.3	13.75	Horizontal	-35.48	-13.00	22.48	180
9	15592.5	-45.46	6.7	13.85	Horizontal	-38.31	-13.00	25.31	270
10	17325.0	-45.27	6.8	14.25	Horizontal	-37.82	-13.00	24.82	45

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3504.8	-58.46	2.6	10.15	Horizontal	-50.91	-13.00	37.91	270
3	5256.8	-51.90	2.4	11.05	Horizontal	-43.25	-13.00	30.25	180
4	7014.0	-50.04	4.5	11.15	Horizontal	-43.39	-13.00	30.39	225
5	8767.5	-49.13	5.1	11.35	Horizontal	-42.88	-13.00	29.88	45
6	10521.0	-46.72	5.3	11.95	Horizontal	-40.07	-13.00	27.07	90
7	12274.5	-45.43	5.5	13.55	Horizontal	-37.38	-13.00	24.38	180
8	14028.0	-43.64	6.3	13.75	Horizontal	-36.19	-13.00	23.19	270
9	15781.5	-46.24	6.7	13.85	Horizontal	-39.09	-13.00	26.09	135
10	17535.0	-43.66	6.8	14.25	Horizontal	-36.21	-13.00	23.21	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	-60.78	2.6	10.15	Horizontal	-53.23	-13.00	40.23	225
3	5131.1	-50.05	2.4	11.35	Horizontal	-41.10	-13.00	28.10	45
4	6850.0	-50.83	4.5	10.85	Horizontal	-44.48	-13.00	31.48	90
5	8562.5	-48.63	5.1	11.35	Horizontal	-42.38	-13.00	29.38	180
6	10275.0	-46.72	5.3	11.95	Horizontal	-40.07	-13.00	27.07	270
7	11987.5	-46.74	5.5	13.55	Horizontal	-38.69	-13.00	25.69	180
8	13700.0	-44.89	6.3	13.75	Horizontal	-37.44	-13.00	24.44	225
9	15412.5	-45.31	6.7	13.85	Horizontal	-38.16	-13.00	25.16	45
10	17125.0	-43.37	6.8	14.25	Horizontal	-35.92	-13.00	22.92	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	-59.36	2.6	10.75	Horizontal	-51.21	-13.00	38.21	180
3	5191.5	-50.33	2.4	11.05	Horizontal	-41.68	-13.00	28.68	135
4	6930.0	-49.52	4.5	11.15	Horizontal	-42.87	-13.00	29.87	270
5	8662.5	-46.89	5.1	11.35	Horizontal	-40.64	-13.00	27.64	180
6	10395.0	-45.13	5.3	11.95	Horizontal	-38.48	-13.00	25.48	225
7	12127.5	-45.60	5.5	13.55	Horizontal	-37.55	-13.00	24.55	45
8	13860.0	-43.39	6.3	13.75	Horizontal	-35.94	-13.00	22.94	90
9	15592.5	-44.76	6.7	13.85	Horizontal	-37.61	-13.00	24.61	270
10	17325.0	-44.52	6.8	14.25	Horizontal	-37.07	-13.00	24.07	180
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3500.6	-59.24	2.6	10.15	Horizontal	-51.69	-13.00	38.69	225
3	5251.1	-50.88	2.4	11.05	Horizontal	-42.23	-13.00	29.23	45
4	7010.0	-49.79	4.5	11.15	Horizontal	-43.14	-13.00	30.14	135
5	8762.5	-47.90	5.1	11.35	Horizontal	-41.65	-13.00	28.65	180
6	10515.0	-46.21	5.3	11.95	Horizontal	-39.56	-13.00	26.56	225
7	12267.5	-46.59	5.5	13.55	Horizontal	-38.54	-13.00	25.54	45
8	14020.0	-43.72	6.3	13.75	Horizontal	-36.27	-13.00	23.27	90
9	15772.5	-46.50	6.7	13.85	Horizontal	-39.35	-13.00	26.35	270
10	17525.0	-44.76	6.8	14.25	Horizontal	-37.31	-13.00	24.31	180

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3430.0	-49.73	2.6	10.15	Horizontal	-42.18	-13.00	29.18	225
3	5131.9	-52.29	2.4	11.35	Horizontal	-43.34	-13.00	30.34	45
4	6860.0	-50.41	4.5	10.85	Horizontal	-44.06	-13.00	31.06	90
5	8575.0	-49.03	5.1	11.35	Horizontal	-42.78	-13.00	29.78	180
6	10290.0	-47.08	5.3	11.95	Horizontal	-40.43	-13.00	27.43	270
7	12005.0	-47.02	5.5	13.55	Horizontal	-38.97	-13.00	25.97	135
8	13720.0	-45.28	6.3	13.75	Horizontal	-37.83	-13.00	24.83	180
9	15435.0	-46.16	6.7	13.85	Horizontal	-39.01	-13.00	26.01	225
10	17150.0	-45.47	6.8	14.25	Horizontal	-38.02	-13.00	25.02	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	-58.19	2.6	10.75	Horizontal	-50.04	-13.00	37.04	90
3	5184.4	-51.20	2.4	11.05	Horizontal	-42.55	-13.00	29.55	180
4	6930.0	-49.77	4.5	11.15	Horizontal	-43.12	-13.00	30.12	270
5	8662.5	-46.85	5.1	11.35	Horizontal	-40.60	-13.00	27.60	180
6	10395.0	-46.15	5.3	11.95	Horizontal	-39.50	-13.00	26.50	225
7	12127.5	-46.11	5.5	13.55	Horizontal	-38.06	-13.00	25.06	45
8	13860.0	-44.19	6.3	13.75	Horizontal	-36.74	-13.00	23.74	90
9	15592.5	-45.18	6.7	13.85	Horizontal	-38.03	-13.00	25.03	180
10	17325.0	-44.06	6.8	14.25	Horizontal	-36.61	-13.00	23.61	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	-57.64	2.6	10.15	Horizontal	-50.09	-13.00	37.09	270
3	5236.9	-52.81	2.4	11.05	Horizontal	-44.16	-13.00	31.16	180
4	7000.0	-49.37	4.5	11.15	Horizontal	-42.72	-13.00	29.72	225
5	8750.0	-48.02	5.1	11.35	Horizontal	-41.77	-13.00	28.77	45
6	10500.0	-45.86	5.3	11.95	Horizontal	-39.21	-13.00	26.21	90
7	12250.0	-46.02	5.5	13.55	Horizontal	-37.97	-13.00	24.97	180
8	14000.0	-42.62	6.3	13.75	Horizontal	-35.17	-13.00	22.17	270
9	15750.0	-45.55	6.7	13.85	Horizontal	-38.40	-13.00	25.40	45
10	17500.0	-44.07	6.8	14.25	Horizontal	-36.62	-13.00	23.62	135

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

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



LTE Band 4 QPSK 15MHz CH Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3435.0	-58.36	2.6	10.15	Horizontal	-50.81	-13.00	37.81	45
3	5132.6	-51.91	2.4	11.35	Horizontal	-42.96	-13.00	29.96	90
4	6870.0	-50.15	4.5	10.85	Horizontal	-43.80	-13.00	30.80	90
5	8587.5	-48.24	5.1	11.35	Horizontal	-41.99	-13.00	28.99	45
6	10305.0	-46.43	5.3	11.95	Horizontal	-39.78	-13.00	26.78	135
7	12022.5	-44.62	5.5	13.55	Horizontal	-36.57	-13.00	23.57	225
8	13740.0	-44.22	6.3	13.75	Horizontal	-36.77	-13.00	23.77	45
9	15457.5	-46.22	6.7	13.85	Horizontal	-39.07	-13.00	26.07	90
10	17175.0	-45.93	6.8	14.25	Horizontal	-38.48	-13.00	25.48	135

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-59.45	2.6	10.75	Horizontal	-51.30	-13.00	38.30	135
3	5197.5	-51.77	2.4	11.05	Horizontal	-43.12	-13.00	30.12	45
4	6930.0	-50.86	4.5	11.15	Horizontal	-44.21	-13.00	31.21	90
5	8662.5	-48.51	5.1	11.35	Horizontal	-42.26	-13.00	29.26	180
6	10395.0	-46.15	5.3	11.95	Horizontal	-39.50	-13.00	26.50	270
7	12127.5	-46.11	5.5	13.55	Horizontal	-38.06	-13.00	25.06	225
8	13860.0	-44.19	6.3	13.75	Horizontal	-36.74	-13.00	23.74	135
9	15592.5	-45.18	6.7	13.85	Horizontal	-38.03	-13.00	25.03	225
10	17325.0	-44.06	6.8	14.25	Horizontal	-36.61	-13.00	23.61	45

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

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3481.5	-58.78	2.6	10.15	Horizontal	-51.23	-13.00	38.23	90
3	5222.3	-53.89	2.4	11.05	Horizontal	-45.24	-13.00	32.24	135
4	6990.0	-50.60	4.5	11.15	Horizontal	-43.95	-13.00	30.95	225
5	8737.5	-47.90	5.1	11.35	Horizontal	-41.65	-13.00	28.65	45
6	10485.0	-45.29	5.3	11.95	Horizontal	-38.64	-13.00	25.64	90
7	12232.5	-46.12	5.5	13.55	Horizontal	-38.07	-13.00	25.07	135
8	13980.0	-44.91	6.3	13.75	Horizontal	-37.46	-13.00	24.46	135
9	15727.5	-46.17	6.7	13.85	Horizontal	-39.02	-13.00	26.02	90
10	17475.0	-43.90	6.8	14.25	Horizontal	-36.45	-13.00	23.45	225

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3440.0	-59.11	2.6	10.15	Horizontal	-51.56	-13.00	38.56	135
3	5133.4	-52.20	2.4	11.35	Horizontal	-43.25	-13.00	30.25	90
4	6880.0	-49.80	4.5	10.85	Horizontal	-43.45	-13.00	30.45	45
5	8600.0	-49.13	5.1	11.35	Horizontal	-42.88	-13.00	29.88	90
6	10320.0	-46.36	5.3	11.95	Horizontal	-39.71	-13.00	26.71	90
7	12040.0	-46.46	5.5	13.55	Horizontal	-38.41	-13.00	25.41	135
8	13760.0	-45.15	6.3	13.75	Horizontal	-37.70	-13.00	24.70	225
9	15480.0	-46.13	6.7	13.85	Horizontal	-38.98	-13.00	25.98	135
10	17200.0	-44.29	6.8	14.25	Horizontal	-36.84	-13.00	23.84	90

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

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-59.57	2.6	10.75	Horizontal	-51.42	-13.00	38.42	90
3	5170.9	-51.56	2.4	11.05	Horizontal	-42.91	-13.00	29.91	45
4	6930.0	-50.94	4.5	11.15	Horizontal	-44.29	-13.00	31.29	45
5	8662.5	-48.47	5.1	11.35	Horizontal	-42.22	-13.00	29.22	180
6	10395.0	-46.15	5.3	11.95	Horizontal	-39.50	-13.00	26.50	270
7	12127.5	-46.11	5.5	13.55	Horizontal	-38.06	-13.00	25.06	225
8	13860.0	-44.19	6.3	13.75	Horizontal	-36.74	-13.00	23.74	135
9	15592.5	-45.18	6.7	13.85	Horizontal	-38.03	-13.00	25.03	180
10	17325.0	-44.06	6.8	14.25	Horizontal	-36.61	-13.00	23.61	225

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3490.0	-58.32	2.6	10.15	Horizontal	-50.77	-13.00	37.77	45
3	5208.4	-55.20	2.4	11.05	Horizontal	-46.55	-13.00	33.55	225
4	6980.0	-50.99	4.5	11.15	Horizontal	-44.34	-13.00	31.34	135
5	8725.0	-49.13	5.1	11.35	Horizontal	-42.88	-13.00	29.88	90
6	10470.0	-45.95	5.3	11.95	Horizontal	-39.30	-13.00	26.30	45
7	12215.0	-46.67	5.5	13.55	Horizontal	-38.62	-13.00	25.62	90
8	13960.0	-44.25	6.3	13.75	Horizontal	-36.80	-13.00	23.80	45
9	15705.0	-46.31	6.7	13.85	Horizontal	-39.16	-13.00	26.16	135
10	17450.0	-43.77	6.8	14.25	Horizontal	-36.32	-13.00	23.32	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	5000.6	-44.35	2.00	9.15	Horizontal	-37.20	-25.00	12.20	180
3	7501.1	-52.45	2.50	11.35	Horizontal	-43.60	-25.00	18.60	225
4	10001.3	-49.65	4.20	12.05	Horizontal	-41.80	-25.00	16.80	45
5	12512.5	-48.45	5.20	12.85	Horizontal	-40.80	-25.00	15.80	180
6	15015.0	-46.83	5.50	14.23	Horizontal	-38.10	-25.00	13.10	270
7	17517.5	-46.15	5.70	14.15	Horizontal	-37.70	-25.00	12.70	135
8	20020.0	-44.06	6.30	13.76	Horizontal	-36.60	-25.00	11.60	180
9	22522.5	-43.35	6.80	14.05	Horizontal	-36.10	-25.00	11.10	225
10	25025.0	-43.44	6.90	14.84	Horizontal	-35.50	-25.00	10.50	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-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	5065.8	-43.42	2.00	9.15	Horizontal	-36.27	-25.00	11.27	135
3	7598.6	-52.15	2.50	11.35	Horizontal	-43.30	-25.00	18.30	180
4	10130.6	-47.55	4.20	12.05	Horizontal	-39.70	-25.00	14.70	90
5	12675.0	-47.65	5.20	12.85	Horizontal	-40.00	-25.00	15.00	45
6	15210.0	-47.03	5.50	14.23	Horizontal	-38.30	-25.00	13.30	180
7	17745.0	-45.65	5.70	14.15	Horizontal	-37.20	-25.00	12.20	270
8	20280.0	-43.96	6.30	13.76	Horizontal	-36.50	-25.00	11.50	45
9	22815.0	-43.45	6.80	14.05	Horizontal	-36.20	-25.00	11.20	180
10	25350.0	-42.54	6.90	14.84	Horizontal	-34.60	-25.00	9.60	225
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 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	5130.8	-41.43	2.00	9.15	Horizontal	-34.28	-25.00	9.28	225
3	7696.1	-52.05	2.50	11.35	Horizontal	-43.20	-25.00	18.20	45
4	10261.1	-47.55	4.20	12.05	Horizontal	-39.70	-25.00	14.70	90
5	12837.5	-46.15	5.20	12.85	Horizontal	-38.50	-25.00	13.50	180
6	15405.0	-48.93	5.50	14.23	Horizontal	-40.20	-25.00	15.20	180
7	17972.5	-46.25	5.70	14.15	Horizontal	-37.80	-25.00	12.80	270
8	20540.0	-43.66	6.30	13.76	Horizontal	-36.20	-25.00	11.20	135
9	23107.5	-43.05	6.80	14.05	Horizontal	-35.80	-25.00	10.80	180
10	25675.0	-43.54	6.90	14.84	Horizontal	-35.60	-25.00	10.60	225
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 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	5001.0	-43.95	2.00	9.15	Horizontal	-36.80	-25.00	11.80	225
3	7515.0	-52.35	2.50	11.35	Horizontal	-43.50	-25.00	18.50	45
4	10002.4	-49.05	4.20	12.05	Horizontal	-41.20	-25.00	16.20	180
5	12525.0	-47.45	5.20	12.85	Horizontal	-39.80	-25.00	14.80	270
6	15030.0	-46.93	5.50	14.23	Horizontal	-38.20	-25.00	13.20	135
7	17535.0	-46.85	5.70	14.15	Horizontal	-38.40	-25.00	13.40	180
8	20040.0	-45.06	6.30	13.76	Horizontal	-37.60	-25.00	12.60	225
9	22545.0	-44.05	6.80	14.05	Horizontal	-36.80	-25.00	11.80	90
10	25050.0	-43.84	6.90	14.84	Horizontal	-35.90	-25.00	10.90	135
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 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	5061.9	-42.63	2.00	9.15	Horizontal	-35.48	-25.00	10.48	45
3	7598.6	-52.35	2.50	11.35	Horizontal	-43.50	-25.00	18.50	180
4	10130.6	-48.55	4.20	12.05	Horizontal	-40.70	-25.00	15.70	270
5	12675.0	-47.15	5.20	12.85	Horizontal	-39.50	-25.00	14.50	135
6	15210.0	-46.03	5.50	14.23	Horizontal	-37.30	-25.00	12.30	180
7	17745.0	-45.05	5.70	14.15	Horizontal	-36.60	-25.00	11.60	225
8	20280.0	-42.56	6.30	13.76	Horizontal	-35.10	-25.00	10.10	45
9	22815.0	-42.15	6.80	14.05	Horizontal	-34.90	-25.00	9.90	90
10	25350.0	-41.04	6.90	14.84	Horizontal	-33.10	-25.00	8.10	180

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

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

LTE Band 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	5121.4	-43.71	2.00	10.15	Horizontal	-35.56	-25.00	10.56	45
3	7681.9	-51.05	2.50	11.35	Horizontal	-42.20	-25.00	17.20	180
4	10242.0	-48.55	4.20	12.05	Horizontal	-40.70	-25.00	15.70	225
5	12825.0	-46.65	5.20	14.85	Horizontal	-37.00	-25.00	12.00	45
6	15390.0	-47.53	5.50	13.23	Horizontal	-39.80	-25.00	14.80	90
7	17955.0	-43.35	5.70	12.15	Horizontal	-36.90	-25.00	11.90	180
8	20520.0	-43.46	6.30	13.76	Horizontal	-36.00	-25.00	11.00	270
9	23085.0	-42.65	6.80	14.05	Horizontal	-35.40	-25.00	10.40	180
10	25650.0	-42.14	6.90	14.84	Horizontal	-34.20	-25.00	9.20	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	5001.8	-45.61	2.00	10.15	Horizontal	-37.46	-25.00	12.46	270
3	7502.6	-51.55	2.50	11.35	Horizontal	-42.70	-25.00	17.70	135
4	1000.4	-48.05	4.20	12.05	Horizontal	-40.20	-25.00	15.20	180
5	12537.5	-48.85	5.20	14.85	Horizontal	-39.20	-25.00	14.20	225
6	15045.0	-44.83	5.50	13.23	Horizontal	-37.10	-25.00	12.10	45
7	17552.5	-43.35	5.70	12.15	Horizontal	-36.90	-25.00	11.90	90
8	20060.0	-43.36	6.30	13.76	Horizontal	-35.90	-25.00	10.90	180
9	22567.5	-41.75	6.80	14.05	Horizontal	-34.50	-25.00	9.50	270
10	25075.0	-41.74	6.90	14.84	Horizontal	-33.80	-25.00	8.80	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 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	5065.8	-43.72	2.00	10.15	Horizontal	-35.57	-25.00	10.57	180
3	7598.6	-51.65	2.50	11.35	Horizontal	-42.80	-25.00	17.80	270
4	10130.6	-48.75	4.20	12.05	Horizontal	-40.90	-25.00	15.90	135
5	12675.0	-49.55	5.20	14.85	Horizontal	-39.90	-25.00	14.90	180
6	15210.0	-47.03	5.50	13.23	Horizontal	-39.30	-25.00	14.30	225
7	17745.0	-44.35	5.70	12.15	Horizontal	-37.90	-25.00	12.90	45
8	20280.0	-43.96	6.30	13.76	Horizontal	-36.50	-25.00	11.50	180
9	22815.0	-42.55	6.80	14.05	Horizontal	-35.30	-25.00	10.30	270
10	25350.0	-42.14	6.90	14.84	Horizontal	-34.20	-25.00	9.20	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 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	5112.0	-44.10	2.00	10.15	Horizontal	-35.95	-25.00	10.95	270
3	7667.3	-51.65	2.50	11.35	Horizontal	-42.80	-25.00	17.80	135
4	10250.0	-47.75	4.20	12.05	Horizontal	-39.90	-25.00	14.90	45
5	12812.5	-47.95	5.20	14.85	Horizontal	-38.30	-25.00	13.30	270
6	15375.0	-45.83	5.50	13.23	Horizontal	-38.10	-25.00	13.10	180
7	17937.5	-43.95	5.70	12.15	Horizontal	-37.50	-25.00	12.50	270
8	20500.0	-44.26	6.30	13.76	Horizontal	-36.80	-25.00	11.80	135
9	23062.5	-43.15	6.80	14.05	Horizontal	-35.90	-25.00	10.90	180
10	25625.0	-42.54	6.90	14.84	Horizontal	-34.60	-25.00	9.60	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	5002.1	-44.66	2.00	10.15	Horizontal	-36.51	-25.00	11.51	270
3	7530.0	-52.55	2.50	11.35	Horizontal	-43.70	-25.00	18.70	180
4	10040.0	-47.65	4.20	12.05	Horizontal	-39.80	-25.00	14.80	270
5	12550.0	-50.35	5.20	14.85	Horizontal	-40.70	-25.00	15.70	135
6	15060.0	-45.83	5.50	13.23	Horizontal	-38.10	-25.00	13.10	180
7	17570.0	-43.75	5.70	12.15	Horizontal	-37.30	-25.00	12.30	270
8	20080.0	-43.96	6.30	13.76	Horizontal	-36.50	-25.00	11.50	135
9	22590.0	-43.05	6.80	14.05	Horizontal	-35.80	-25.00	10.80	45
10	25100.0	-42.84	6.90	14.84	Horizontal	-34.90	-25.00	9.90	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-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	5052.4	-44.84	2.00	10.15	Horizontal	-36.69	-25.00	11.69	270
3	7605.0	-51.35	2.50	11.35	Horizontal	-42.50	-25.00	17.50	135
4	10140.0	-48.35	4.20	12.05	Horizontal	-40.50	-25.00	15.50	45
5	12675.0	-50.25	5.20	14.85	Horizontal	-40.60	-25.00	15.60	270
6	15210.0	-44.93	5.50	13.23	Horizontal	-37.20	-25.00	12.20	180
7	17745.0	-43.85	5.70	12.15	Horizontal	-37.40	-25.00	12.40	270
8	20280.0	-43.56	6.30	13.76	Horizontal	-36.10	-25.00	11.10	135
9	22815.0	-42.75	6.80	14.05	Horizontal	-35.50	-25.00	10.50	45
10	25350.0	-42.64	6.90	14.84	Horizontal	-34.70	-25.00	9.70	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	5102.3	-44.92	2.00	10.15	Horizontal	-36.77	-25.00	11.77	45
3	7680.0	-52.35	2.50	11.35	Horizontal	-43.50	-25.00	18.50	180
4	10240.0	-47.85	4.20	12.05	Horizontal	-40.00	-25.00	15.00	270
5	12800.0	-47.35	5.20	14.85	Horizontal	-37.70	-25.00	12.70	135
6	15360.0	-46.83	5.50	13.23	Horizontal	-39.10	-25.00	14.10	45
7	17920.0	-43.65	5.70	12.15	Horizontal	-37.20	-25.00	12.20	270
8	20480.0	-43.86	6.30	13.76	Horizontal	-36.40	-25.00	11.40	180
9	23040.0	-42.95	6.80	14.05	Horizontal	-35.70	-25.00	10.70	270
10	25600.0	-42.84	6.90	14.84	Horizontal	-34.90	-25.00	9.90	135
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									



LTE Band 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	1399.4	-52.87	2.00	10.15	Horizontal	-44.72	-13.00	31.72	270
3	2099.1	-56.75	2.50	11.35	Horizontal	-47.90	-13.00	34.90	225
4	2798.8	-56.85	4.20	10.85	Horizontal	-50.20	-13.00	37.20	180
5	3498.5	-56.85	5.20	11.35	Horizontal	-50.70	-13.00	37.70	135
6	4198.2	-56.15	5.50	11.95	Horizontal	-49.70	-13.00	36.70	270
7	4897.9	-56.95	5.70	13.55	Horizontal	-49.10	-13.00	36.10	315
8	5597.6	-55.25	6.30	13.75	Horizontal	-47.80	-13.00	34.80	315
9	6297.3	-53.95	6.80	13.85	Horizontal	-46.90	-13.00	33.90	270
10	6997.0	-53.25	6.90	14.25	Horizontal	-45.90	-13.00	32.90	45

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

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

LTE Band 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	1415.0	-58.72	2.00	10.75	Horizontal	-49.97	-13.00	36.97	45
3	2122.5	-56.28	2.51	11.05	Horizontal	-47.74	-13.00	34.74	315
4	3537.5	-57.27	4.20	11.15	Horizontal	-50.32	-13.00	37.32	270
5	4245.0	-56.15	5.20	11.15	Horizontal	-50.20	-13.00	37.20	315
6	4952.5	-56.05	5.50	11.95	Horizontal	-49.60	-13.00	36.60	90
7	5660.0	-56.25	5.70	13.55	Horizontal	-48.40	-13.00	35.40	225
8	6367.5	-55.65	6.30	13.75	Horizontal	-48.20	-13.00	35.20	180
9	7075.0	-52.65	6.80	13.85	Horizontal	-45.60	-13.00	32.60	45
10	3537.5	-50.85	6.90	14.25	Horizontal	-43.50	-13.00	30.50	315

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

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

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



Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1430.6	-58.82	2.00	10.15	Horizontal	-50.67	-13.00	37.67	135
3	2145.9	-56.90	2.51	11.05	Horizontal	-48.36	-13.00	35.36	270
4	2861.2	-57.78	4.20	11.15	Horizontal	-50.83	-13.00	37.83	315
5	3576.5	-56.45	5.20	11.15	Horizontal	-50.50	-13.00	37.50	270
6	4291.8	-56.05	5.50	11.95	Horizontal	-49.60	-13.00	36.60	135
7	5007.1	-55.05	5.70	13.55	Horizontal	-47.20	-13.00	34.20	270
8	5722.4	-55.25	6.30	13.75	Horizontal	-47.80	-13.00	34.80	315
9	6437.7	-52.95	6.80	13.85	Horizontal	-45.90	-13.00	32.90	225
10	7153.0	-50.65	6.90	14.25	Horizontal	-43.30	-13.00	30.30	180

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

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

LTE Band 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	1401.0	-53.19	2.00	10.15	Horizontal	-45.04	-13.00	32.04	135
3	2101.5	-57.52	2.51	11.35	Horizontal	-48.68	-13.00	35.68	270
4	2802.0	-56.85	4.20	10.85	Horizontal	-50.20	-13.00	37.20	315
5	3502.5	-57.45	5.20	11.35	Horizontal	-51.30	-13.00	38.30	45
6	4203.0	-56.15	5.50	11.95	Horizontal	-49.70	-13.00	36.70	225
7	4903.5	-58.15	5.70	13.55	Horizontal	-50.30	-13.00	37.30	180
8	5604.0	-55.85	6.30	13.75	Horizontal	-48.40	-13.00	35.40	45
9	6304.5	-53.45	6.80	13.85	Horizontal	-46.40	-13.00	33.40	315
10	7005.0	-52.75	6.90	14.25	Horizontal	-45.40	-13.00	32.40	270

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

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

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	1415.0	-58.92	2.00	10.75	Horizontal	-50.17	-13.00	37.17	90
3	2122.5	-53.22	2.51	11.05	Horizontal	-44.68	-13.00	31.68	225
4	2830.0	-58.55	4.20	11.15	Horizontal	-51.60	-13.00	38.60	270
5	3537.5	-56.15	5.20	11.15	Horizontal	-50.20	-13.00	37.20	45
6	4245.0	-54.05	5.50	11.95	Horizontal	-47.60	-13.00	34.60	315
7	4952.5	-55.95	5.70	13.55	Horizontal	-48.10	-13.00	35.10	90
8	5660.0	-52.85	6.30	13.75	Horizontal	-45.40	-13.00	32.40	225
9	6367.5	-50.45	6.80	13.85	Horizontal	-43.40	-13.00	30.40	180
10	7075.0	-58.95	6.90	14.25	Horizontal	-51.60	-13.00	38.60	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 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	1429.0	-55.42	2.00	10.15	Horizontal	-47.27	-13.00	34.27	180
3	2143.5	-55.45	2.51	11.05	Horizontal	-46.91	-13.00	33.91	45
4	2858.0	-57.02	4.20	11.15	Horizontal	-50.07	-13.00	37.07	315
5	3572.5	-57.95	5.20	11.15	Horizontal	-52.00	-13.00	39.00	45
6	4287.0	-55.75	5.50	11.95	Horizontal	-49.30	-13.00	36.30	315
7	5001.5	-54.65	5.70	13.55	Horizontal	-46.80	-13.00	33.80	270
8	5716.0	-55.25	6.30	13.75	Horizontal	-47.80	-13.00	34.80	135
9	6430.5	-52.75	6.80	13.85	Horizontal	-45.70	-13.00	32.70	270
10	7145.0	-50.45	6.90	14.25	Horizontal	-43.10	-13.00	30.10	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	1403.0	-53.25	2.00	10.15	Horizontal	-45.10	-13.00	32.10	270
3	2104.5	-56.60	2.50	11.35	Horizontal	-47.75	-13.00	34.75	135
4	2806.0	-57.59	4.20	10.85	Horizontal	-50.94	-13.00	37.94	270
5	3507.5	-56.55	5.20	11.35	Horizontal	-50.40	-13.00	37.40	135
6	4209.0	-56.35	5.50	11.95	Horizontal	-49.90	-13.00	36.90	270
7	4910.5	-56.25	5.70	13.55	Horizontal	-48.40	-13.00	35.40	315
8	5612.0	-53.65	6.30	13.75	Horizontal	-46.20	-13.00	33.20	315
9	6313.5	-53.35	6.80	13.85	Horizontal	-46.30	-13.00	33.30	270
10	7015.0	-52.65	6.90	14.25	Horizontal	-45.30	-13.00	32.30	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	1415.0	-58.06	2.00	10.75	Horizontal	-49.31	-13.00	36.31	315
3	2122.5	-56.13	2.51	11.05	Horizontal	-47.59	-13.00	34.59	135
4	2830.0	-57.35	4.20	11.15	Horizontal	-50.40	-13.00	37.40	270
5	3537.5	-58.15	5.20	11.15	Horizontal	-52.20	-13.00	39.20	315
6	4245.0	-56.35	5.50	11.95	Horizontal	-49.90	-13.00	36.90	90
7	4952.5	-57.55	5.70	13.55	Horizontal	-49.70	-13.00	36.70	225
8	5660.0	-55.75	6.30	13.75	Horizontal	-48.30	-13.00	35.30	180
9	6367.5	-51.65	6.80	13.85	Horizontal	-44.60	-13.00	31.60	45
10	7075.0	-50.35	6.90	14.25	Horizontal	-43.00	-13.00	30.00	315

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

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

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



Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1427.0	-54.23	2.00	10.15	Horizontal	-46.08	-13.00	33.08	315
3	2140.5	-57.73	2.51	11.05	Horizontal	-49.19	-13.00	36.19	315
4	2854.0	-58.03	4.20	11.15	Horizontal	-51.08	-13.00	38.08	270
5	3567.5	-57.35	5.20	11.15	Horizontal	-51.40	-13.00	38.40	270
6	4281.0	-56.25	5.50	11.95	Horizontal	-49.80	-13.00	36.80	135
7	4994.5	-53.65	5.70	13.55	Horizontal	-45.80	-13.00	32.80	270
8	5708.0	-55.15	6.30	13.75	Horizontal	-47.70	-13.00	34.70	315
9	6421.5	-53.45	6.80	13.85	Horizontal	-46.40	-13.00	33.40	225
10	7135.0	-51.05	6.90	14.25	Horizontal	-43.70	-13.00	30.70	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	1398.8	-53.52	2.00	10.15	Horizontal	-45.37	-13.00	32.37	270
3	2099.0	-58.68	2.51	11.35	Horizontal	-49.84	-13.00	36.84	45
4	2816.0	-55.93	4.20	10.85	Horizontal	-49.28	-13.00	36.28	315
5	3520.0	-58.35	5.20	11.35	Horizontal	-52.20	-13.00	39.20	45
6	4224.0	-55.15	5.50	11.95	Horizontal	-48.70	-13.00	35.70	225
7	4928.0	-57.15	5.70	13.55	Horizontal	-49.30	-13.00	36.30	180
8	5632.0	-55.85	6.30	13.75	Horizontal	-48.40	-13.00	35.40	45
9	6336.0	-53.85	6.80	13.85	Horizontal	-46.80	-13.00	33.80	315
10	7040.0	-50.95	6.90	14.25	Horizontal	-43.60	-13.00	30.60	270

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

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.0	-61.64	2.00	10.75	Horizontal	-52.89	-13.00	39.89	90
3	2122.5	-60.12	2.51	11.05	Horizontal	-51.58	-13.00	38.58	225
4	2830.0	-56.48	4.20	11.15	Horizontal	-49.53	-13.00	36.53	180
5	3537.5	-57.45	5.20	11.15	Horizontal	-51.50	-13.00	38.50	270
6	4245.0	-56.25	5.50	11.95	Horizontal	-49.80	-13.00	36.80	45
7	4952.5	-57.25	5.70	13.55	Horizontal	-49.40	-13.00	36.40	315
8	5660.0	-55.35	6.30	13.75	Horizontal	-47.90	-13.00	34.90	90
9	6367.5	-52.35	6.80	13.85	Horizontal	-45.30	-13.00	32.30	225
10	7075.0	-51.75	6.90	14.25	Horizontal	-44.40	-13.00	31.40	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	1413.3	-58.43	2.00	10.15	Horizontal	-50.28	-13.00	37.28	45
3	2120.0	-52.71	2.51	11.05	Horizontal	-44.17	-13.00	31.17	315
4	2844.0	-57.54	4.20	11.15	Horizontal	-50.59	-13.00	37.59	270
5	3555.0	-57.55	5.20	11.15	Horizontal	-51.60	-13.00	38.60	45
6	4266.0	-57.15	5.50	11.95	Horizontal	-50.70	-13.00	37.70	315
7	4977.0	-56.55	5.70	13.55	Horizontal	-48.70	-13.00	35.70	270
8	5688.0	-54.95	6.30	13.75	Horizontal	-47.50	-13.00	34.50	135
9	6399.0	-54.15	6.80	13.85	Horizontal	-47.10	-13.00	34.10	270
10	7110.0	-51.25	6.90	14.25	Horizontal	-43.90	-13.00	30.90	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	2018-01-29
Climatic Chamber	Re Ce	PT-30B	20101891	2015-07-18	2018-07-17
RF Cable	Agilent	SMA 15cm	0001	2017-08-04	2018-02-03
Preamplifier	R&S	SCU18	102327	2017-06-18	2018-06-17
Software	R&S	EMC32	V 8.52.0	NA	NA

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