



RF TEST REPORT

Applicant Huawei Technologies Co., Ltd.
FCC ID QISKOB-L09
Brand Name HUAWEI
Product Tablet
Model KOB-L09
Report No. R1804H0051-R3
Issue Date May 21, 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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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(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	/27.53(m)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 /27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(m)	PASS
Date of Testing: April 26, 2018~ May 17, 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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City: Shanghai
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2 General Description of Equipment under Test

Client Information

Applicant	Huawei Technologies Co., Ltd.
Applicant address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.
Manufacturer	Huawei Technologies Co., Ltd.
Manufacturer address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.

General information

EUT Description			
Model	KOB-L09		
IMEI	864004035494571		
Hardware Version	REACH-V2.0		
Software Version	KOB-L09C127B252CUSTC127D001		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	LTE Band 7; LTE Band 38, LTE Band 41;		
Test Modulation	(LTE)QPSK 16QAM;		
LTE Category	4		
Maximum E.I.R.P.	LTE Band 7:	9.39dBm	
	LTE Band 38:	8.98dBm	
	LTE Band 41:	10.55dBm	
Rated Power Supply Voltage:	3.8V		
Extreme Voltage	Minimum: 3.5V Maximum: 4.35V		
Extreme Temperature	Lowest: 0°C Highest: +35°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	LTE Band 38	2570 ~ 2620	2570 ~ 2620
	LTE Band 41	2555 ~ 2655	2555 ~ 2655

EUT Accessory	
Adapter 1	Manufacturer: SHENZHEN HUNTKEY ELECTRIC CO.,LTD Model: HW-050100B01
Adapter 2	Manufacturer: HUIZHOU BYD ELECTRONIC CO.,LTD Model: HW-050100B01
Adapter 3	Manufacturer: DONGGUAN PHITEK ELECTRONICS CO.,LTD Model: HW-050100B01
Adapter 4	Manufacturer: SHENZHEN HUNTKEY ELECTRIC CO.,LTD Model: HW-050100U01
Adapter 5	Manufacturer: HUIZHOU BYD ELECTRONIC CO.,LTD Model: HW-050100U01
Adapter 6	Manufacturer: DONGGUAN PHITEK ELECTRONICS CO.,LTD Model: HW-050100U01
Battery	Manufacturer: Harbin Coslight Power Co., Ltd. Model: HB3080G1EBC
USB Extend Cable 1	Manufacturer: HONGLIN TECHNOLOGY CO.,LTD Model: 130-26654, Length 1.0m, Shielded
USB Extend Cable 2	Manufacturer: FOXCONN INTERCONNECT TECHNOLOGY LIMITED Model: CUBB01M-HC208-DH, Length 1.0m, Shielded
USB Extend Cable 3	Manufacturer: Luxshare Precision Industry Co., Ltd Model: L99U2013-CS-H, Length 1.0m, Shielded
<p>Note: The information of the EUT is declared by the manufacturer.</p> <p>2. There is more than one Adapter and USB cable, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 1, USB cable 1) will be recorded in this report.</p>	

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 v03r01

4 Test Configuration

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

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

Subsequently, only the worst case emissions are reported.

The following testing in LTE is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 7/38/41:

Test items	Modes	Bandwidth (MHz)				Modulation		RB			Test Channel		
		5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 7	○	○	○	○	○	○	○	○	○	○	○	○
	LTE 38	○	○	○	○	○	○	○	○	○	○	○	○
	LTE 41	○	○	○	○	○	○	○	○	○	○	○	○
Effective Isotropic Radiated power	LTE 7	○	○	○	○	○	○	-	-	○	○	○	○
	LTE 38	○	○	○	○	○	○	-	-	○	○	○	○
	LTE 41	○	○	○	○	○	○	-	-	○	○	○	○
Occupied Bandwidth	LTE 7	○	○	○	○	○	○	-	-	○	○	○	○
	LTE 38	○	○	○	○	○	○	-	-	○	○	○	○
	LTE 41	○	○	○	○	○	○	-	-	○	○	○	○
Band Edge Compliance	LTE 7	○	○	○	○	○	○	○	-	○	○	-	○
	LTE 38	○	○	○	○	○	○	○	-	○	○	-	○
	LTE 41	○	○	○	○	○	○	○	-	○	○	-	○
Peak-to-Average Power Ratio	LTE 7	○	○	○	○	○	○	-	-	○	○	○	○
	LTE 38	○	○	○	○	○	○	-	-	○	○	○	○
	LTE 41	○	○	○	○	○	○	-	-	○	○	○	○
Frequency Stability	LTE 7	○	○	○	○	○	○	-	-	○	-	○	-
	LTE 38	○	○	○	○	○	○	-	-	○	-	○	-
	LTE 41	○	○	○	○	○	○	-	-	○	-	○	-
Spurious Emissions at Antenna Terminals	LTE 7	○	○	○	○	○	-	○	-	-	○	○	○
	LTE 38	○	○	○	○	○	-	○	-	-	○	○	○
	LTE 41	○	○	○	○	○	-	○	-	-	○	○	○
Radiates Spurious	LTE 7	○	○	○	○	○	-	○	-	-	○	○	○
	LTE 38	○	○	○	○	○	-	○	-	-	○	○	○



Emission	LTE 41	○	○	○	○	○	-	○	-	-	○	○	○
Note	1. The mark “○” 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

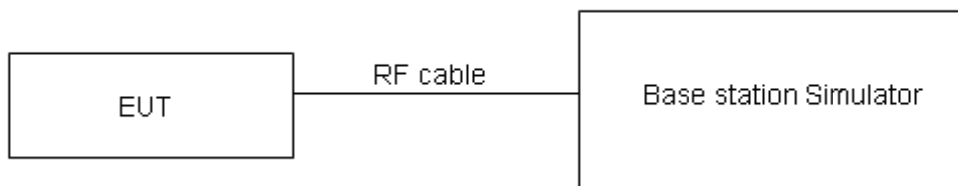
Ambient condition

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 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	7.42	7.34	7.26
		1	13	7.44	7.44	7.39
		1	24	7.00	7.13	6.81
		12	0	7.41	7.41	7.33
		12	6	7.47	7.43	7.30
		12	13	7.20	7.32	7.05
		25	0	7.25	7.31	7.19
	16QAM	1	0	7.46	7.31	7.42
		1	13	7.42	7.43	7.40
		1	24	7.37	7.41	7.31
		12	0	7.34	7.37	7.34
		12	6	7.45	7.39	7.37
		12	13	7.17	7.31	7.10
		25	0	7.14	7.25	7.25
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	6.02	5.96	5.99
		1	25	7.23	7.39	7.40
		1	49	5.51	5.52	5.53
		25	0	6.77	6.97	7.12
		25	13	7.05	7.27	7.46
		25	25	6.69	6.75	6.81
		50	0	6.68	6.78	6.93
	16QAM	1	0	6.32	6.26	6.36
		1	25	7.37	7.48	7.83
		1	49	6.01	6.10	6.03
		25	0	6.67	6.86	7.12
		25	13	6.94	7.15	7.46
		25	25	6.57	6.71	6.82
		50	0	6.63	6.73	6.97
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	6.17	6.29	6.19
		1	38	7.06	7.47	7.57
		1	74	6.01	6.02	6.03
		36	0	6.69	7.08	7.13
		36	18	7.00	7.34	7.49
		36	39	6.49	6.87	6.92
		75	0	6.78	6.97	7.11



Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
	16QAM	1	0	6.23	6.42	6.25
		1	38	7.18	7.89	7.62
		1	74	6.36	6.24	6.14
		36	0	6.51	6.98	7.13
		36	18	6.93	7.17	7.47
		36	39	6.59	6.74	6.91
		75	0	6.62	6.86	7.07
20MHz	QPSK	1	0	6.01	6.20	6.03
		1	50	6.85	7.37	7.82
		1	99	6.01	6.02	6.03
		50	0	6.40	7.03	6.88
		50	25	6.73	7.15	7.51
		50	50	6.62	6.37	6.93
		100	0	6.60	6.90	6.90
	16QAM	1	0	6.31	6.57	6.33
		1	50	7.61	7.81	8.29
		1	99	6.54	6.32	6.33
		50	0	6.40	6.95	6.94
		50	25	6.94	7.09	7.46
		50	50	6.80	6.51	6.88
		100	0	6.49	6.53	6.87

LTE Band 38				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37775/2572.5	38000/2595	38225/2617.5
5MHz	QPSK	1	0	7.22	6.83	7.30
		1	13	7.53	6.94	7.79
		1	24	7.12	6.62	7.46
		12	0	7.31	6.97	7.55
		12	6	7.43	6.85	7.71
		12	13	7.30	6.72	7.64
		25	0	7.33	6.80	7.49
	16QAM	1	0	6.91	6.64	7.01
		1	13	7.35	6.98	7.64
		1	24	6.86	6.67	7.23
		12	0	7.02	6.78	7.29
		12	6	7.17	6.82	7.48
		12	13	7.02	6.70	7.36
		25	0	7.07	6.80	7.26



Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37800/2575	38000/2595	38200/2615
10MHz	QPSK	1	0	6.01	6.02	6.06
		1	25	7.51	6.85	7.70
		1	49	6.01	6.02	6.03
		25	0	6.81	6.47	7.06
		25	13	7.34	6.74	7.49
		25	25	6.72	6.25	7.01
		50	0	6.74	6.40	7.00
	16QAM	1	0	6.01	6.02	6.03
		1	25	7.38	6.94	7.56
		1	49	6.01	6.02	6.03
		25	0	6.55	6.29	6.98
		25	13	7.12	6.72	7.26
		25	25	6.49	6.26	6.79
		50	0	6.54	6.44	6.76
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37825/2577.5	38000/2595	38175/2612.5
15MHz	QPSK	1	0	6.01	6.02	6.03
		1	38	7.49	6.87	7.52
		1	74	6.01	6.02	6.29
		36	0	6.91	6.61	6.73
		36	18	7.31	6.94	7.48
		36	39	6.80	6.34	7.15
		75	0	6.81	6.50	7.03
	16QAM	1	0	6.01	6.02	6.03
		1	38	7.30	6.93	7.57
		1	74	6.01	6.02	6.03
		36	0	6.55	6.37	6.60
		36	18	7.02	6.89	7.39
		36	39	6.48	6.29	6.86
		75	0	6.54	6.52	6.99
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37850/2580	38000/2595	38150/2610
20MHz	QPSK	1	0	6.09	6.02	6.03
		1	50	7.91	6.95	7.46
		1	99	6.01	6.02	6.11
		50	0	7.32	6.74	6.52
		50	25	7.59	6.96	7.28
		50	50	6.99	6.36	7.09
		100	0	7.08	6.54	6.89
	16QAM	1	0	6.01	6.02	6.03
		1	50	7.76	7.02	7.49



		1	99	6.01	6.02	6.03
		50	0	7.05	6.54	6.37
		50	25	7.35	6.99	7.24
		50	50	6.99	6.33	7.23
		100	0	6.80	6.35	6.82

LTE Band 41			AV Conducted Power(dBm)			
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				40265/2557.5	40740/2605	41215/2652.5
5MHz	QPSK	1	0	7.30	7.19	7.08
		1	13	7.89	7.55	7.46
		1	24	7.40	7.38	7.04
		12	0	7.86	7.35	6.89
		12	6	7.99	7.46	7.01
		12	13	7.64	7.49	6.88
		25	0	7.62	7.38	6.92
	16QAM	1	0	7.29	7.20	6.66
		1	13	7.95	7.36	7.12
		1	24	7.82	7.20	6.67
		12	0	7.60	7.05	6.82
		12	6	7.71	7.19	6.94
		12	13	7.73	7.21	6.81
		25	0	7.77	7.11	6.86
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				40290/2560	40740/2605	41190/2650
10MHz	QPSK	1	0	6.05	6.05	6.14
		1	25	7.51	7.24	6.71
		1	49	6.01	6.24	6.20
		25	0	6.99	6.76	6.23
		25	13	7.58	7.10	6.55
		25	25	7.33	6.90	6.17
		50	0	7.15	6.70	6.10
	16QAM	1	0	6.04	6.10	6.08
		1	25	7.94	7.08	6.73
		1	49	6.16	6.03	6.12
		25	0	7.12	6.75	6.14
		25	13	7.69	6.84	6.50
		25	25	7.27	6.69	6.09
		50	0	7.29	6.45	6.06



Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				40315/2562.5	40740/2605	41165/2647.5
15MHz	QPSK	1	0	6.44	6.23	6.02
		1	38	8.00	7.66	7.59
		1	74	6.59	6.78	6.06
		36	0	7.56	7.06	6.45
		36	18	7.71	7.47	6.96
		36	39	7.17	7.29	6.45
		75	0	7.13	7.05	6.53
	16QAM	1	0	6.05	6.04	6.03
		1	38	7.99	7.28	7.12
		1	74	6.43	6.51	6.01
		36	0	6.96	6.73	6.05
		36	18	7.74	7.10	6.60
		36	39	6.98	6.94	6.10
		75	0	7.19	6.73	6.22
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				40340/2565	40740/2605	41140/2645
20MHz	QPSK	1	0	6.28	6.02	6.03
		1	50	7.99	7.74	7.56
		1	99	6.10	6.57	6.06
		50	0	7.26	6.94	6.24
		50	25	7.49	7.42	6.83
		50	50	7.34	7.41	6.40
		100	0	6.99	6.93	6.21
	16QAM	1	0	6.29	6.31	6.04
		1	50	7.98	7.56	7.08
		1	99	6.01	6.29	6.09
		50	0	7.27	6.81	6.29
		50	25	7.49	7.06	6.68
		50	50	7.17	7.07	6.22
		100	0	6.90	6.68	6.13

5.2 Effective Isotropic Radiated Power

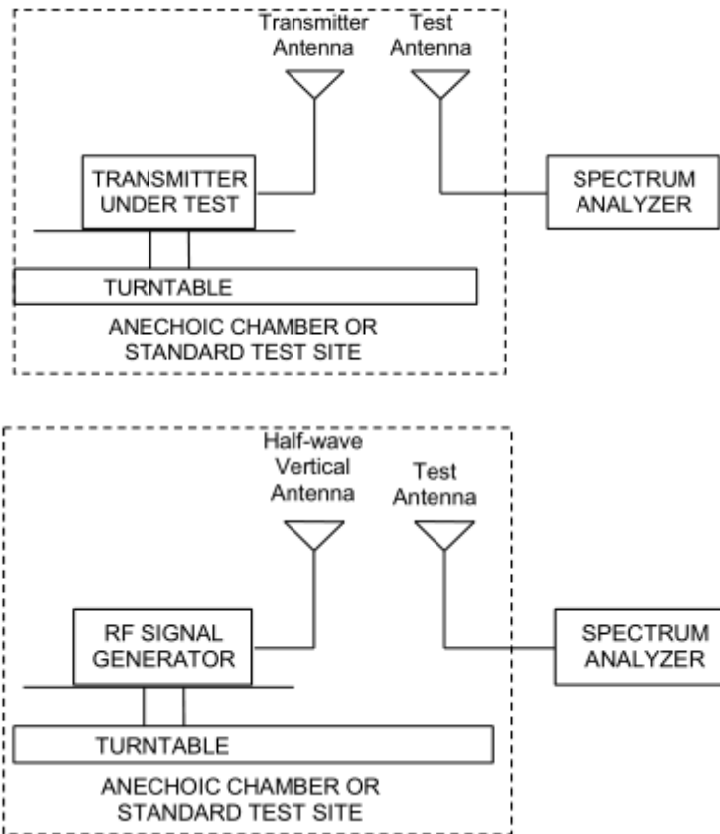
Ambient condition

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

Methods of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 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(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.”

Limit	$\leq 2 \text{ W}$ (33 dBm)
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Measurement Uncertainty

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

Test Results

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

LTE Band 7						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2502.5	Horizontal	8.89	33	Pass
	Mid	2535	Horizontal	8.31	33	Pass
	High	2567.5	Horizontal	9.33	33	Pass
10 MHz (QPSK)	Low	2505	Horizontal	8.80	33	Pass
	Mid	2535	Horizontal	8.44	33	Pass
	High	2565	Horizontal	9.35	33	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	8.91	33	Pass
	Mid	2535	Horizontal	8.67	33	Pass
	High	2562.5	Horizontal	9.18	33	Pass
20 MHz (QPSK)	Low	2510	Horizontal	8.71	33	Pass
	Mid	2535	Horizontal	8.85	33	Pass
	High	2560	Horizontal	9.39	33	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	8.61	33	Pass
	Mid	2535	Horizontal	8.03	33	Pass
	High	2567.5	Horizontal	9.05	33	Pass
10 MHz (16QAM)	Low	2505	Horizontal	8.52	33	Pass
	Mid	2535	Horizontal	8.16	33	Pass
	High	2565	Horizontal	9.07	33	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	8.63	33	Pass
	Mid	2535	Horizontal	8.39	33	Pass
	High	2562.5	Horizontal	8.90	33	Pass
20 MHz (16QAM)	Low	2510	Horizontal	8.43	33	Pass
	Mid	2535	Horizontal	8.57	33	Pass
	High	2560	Horizontal	9.11	33	Pass



LTE Band 38						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2572.5	Horizontal	8.67	33	Pass
	Mid	2595	Horizontal	8.39	33	Pass
	High	2617.5	Horizontal	8.98	33	Pass
10 MHz (QPSK)	Low	2575	Horizontal	8.25	33	Pass
	Mid	2595	Horizontal	8.30	33	Pass
	High	2615	Horizontal	8.77	33	Pass
15 MHz (QPSK)	Low	2577.5	Horizontal	8.12	33	Pass
	Mid	2595	Horizontal	8.42	33	Pass
	High	2612.5	Horizontal	8.68	33	Pass
20 MHz (QPSK)	Low	2580	Horizontal	8.28	33	Pass
	Mid	2595	Horizontal	8.31	33	Pass
	High	2610	Horizontal	8.78	33	Pass
5 MHz (16QAM)	Low	2572.5	Horizontal	8.34	33	Pass
	Mid	2595	Horizontal	8.06	33	Pass
	High	2617.5	Horizontal	8.65	33	Pass
10 MHz (16QAM)	Low	2575	Horizontal	7.92	33	Pass
	Mid	2595	Horizontal	7.97	33	Pass
	High	2615	Horizontal	8.44	33	Pass
15 MHz (16QAM)	Low	2577.5	Horizontal	7.79	33	Pass
	Mid	2595	Horizontal	8.09	33	Pass
	High	2612.5	Horizontal	8.35	33	Pass
20 MHz (16QAM)	Low	2580	Horizontal	7.95	33	Pass
	Mid	2595	Horizontal	7.98	33	Pass
	High	2610	Horizontal	8.45	33	Pass

LTE Band 41						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2557.5	Horizontal	9.15	33	Pass
	Mid	2605	Horizontal	8.99	33	Pass
	High	2652.5	Horizontal	5.67	33	Pass
10 MHz (QPSK)	Low	2560	Horizontal	9.87	33	Pass
	Mid	2605	Horizontal	8.79	33	Pass
	High	2650	Horizontal	8.49	33	Pass
15 MHz (QPSK)	Low	2562.5	Horizontal	10.16	33	Pass
	Mid	2605	Horizontal	9.16	33	Pass
	High	2647.5	Horizontal	8.67	33	Pass
20 MHz (QPSK)	Low	2565	Horizontal	10.55	33	Pass
	Mid	2605	Horizontal	8.91	33	Pass
	High	2645	Horizontal	8.50	33	Pass
5 MHz (16QAM)	Low	2557.5	Horizontal	8.92	33	Pass
	Mid	2605	Horizontal	8.76	33	Pass
	High	2652.5	Horizontal	5.44	33	Pass
10 MHz (16QAM)	Low	2560	Horizontal	9.64	33	Pass
	Mid	2605	Horizontal	8.56	33	Pass
	High	2650	Horizontal	8.26	33	Pass
15 MHz (16QAM)	Low	2562.5	Horizontal	9.93	33	Pass
	Mid	2605	Horizontal	8.93	33	Pass
	High	2647.5	Horizontal	8.44	33	Pass
20 MHz (16QAM)	Low	2565	Horizontal	10.32	33	Pass
	Mid	2605	Horizontal	8.68	33	Pass
	High	2645	Horizontal	8.27	33	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

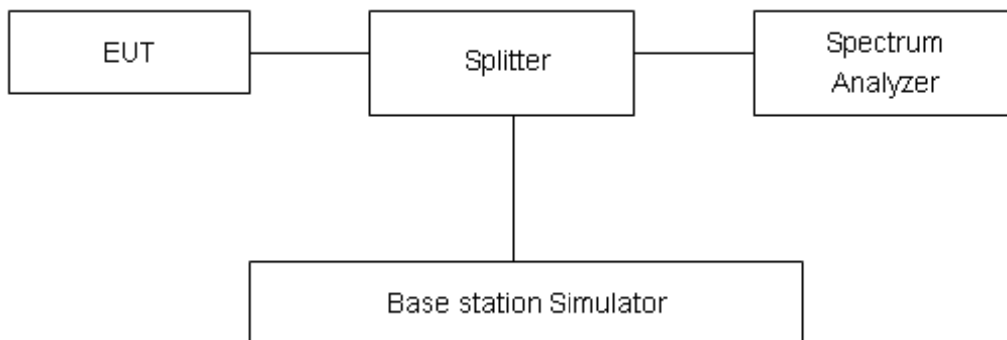
The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 7/38/41 (5MHz).

RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 7/38/41 (10MHz/15MHz/20MHz).

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

Test Setup



Limits

No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

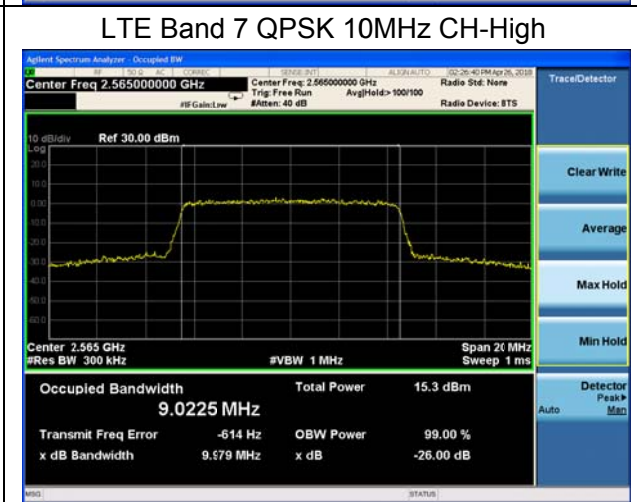
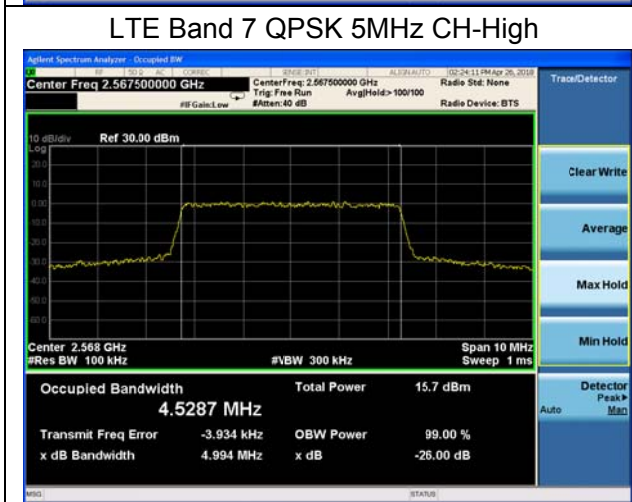
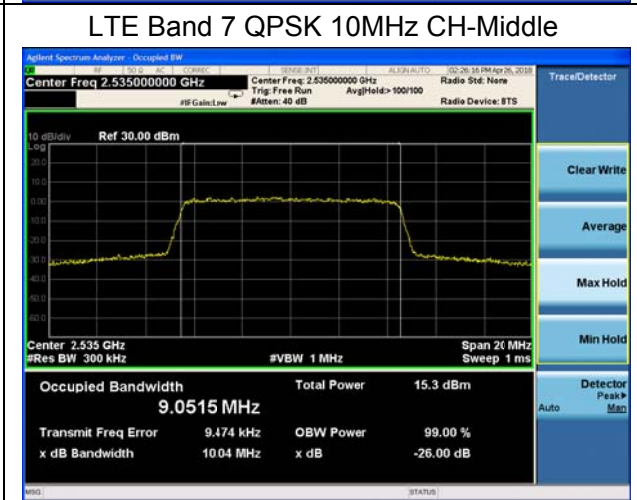
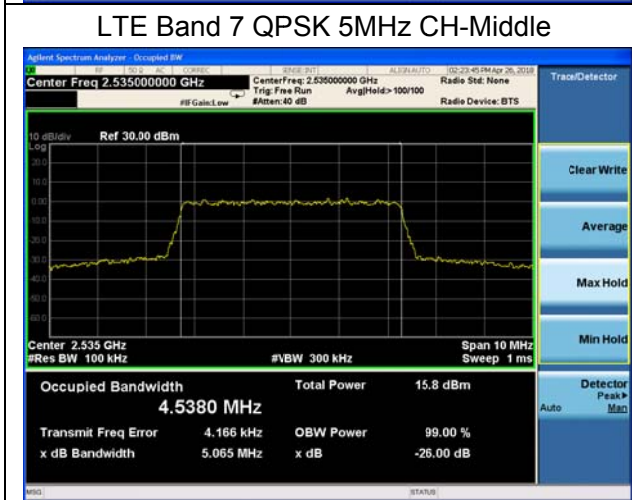
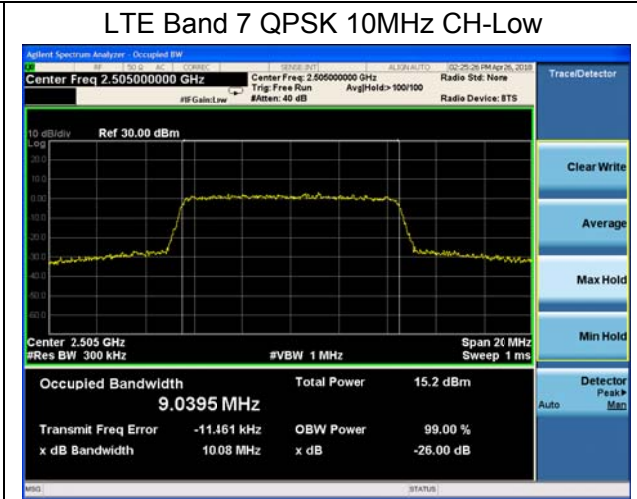
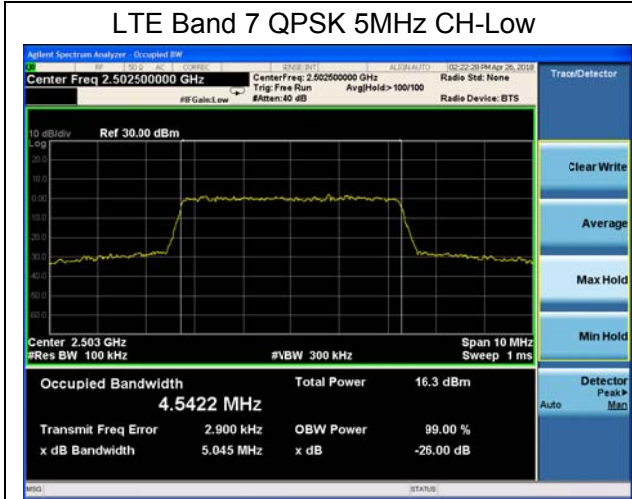
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U=624\text{Hz}$.

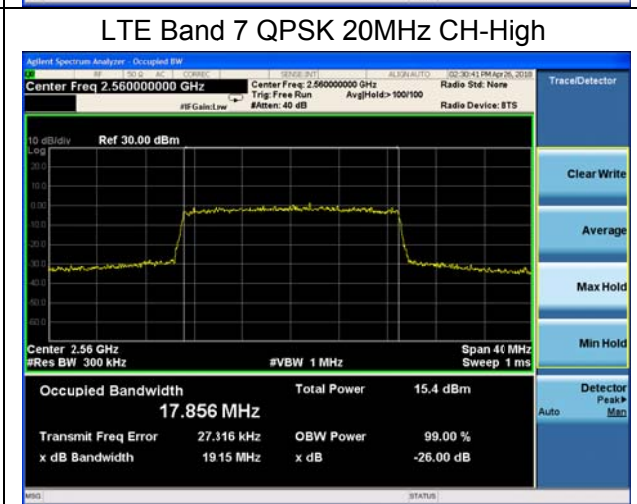
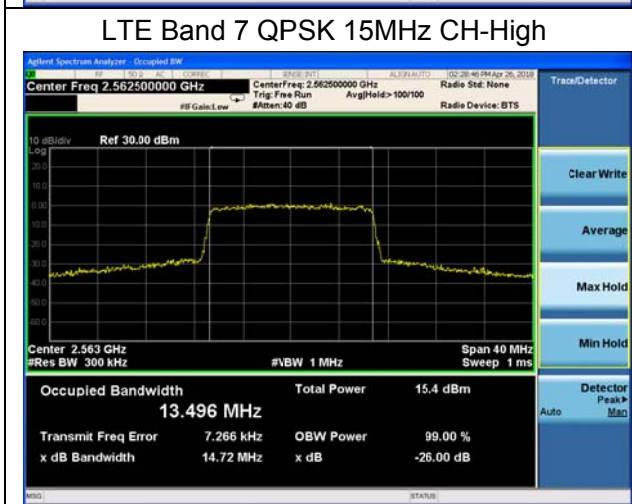
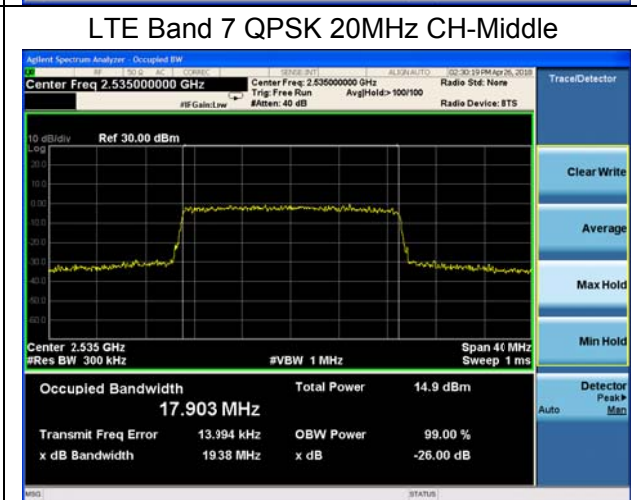
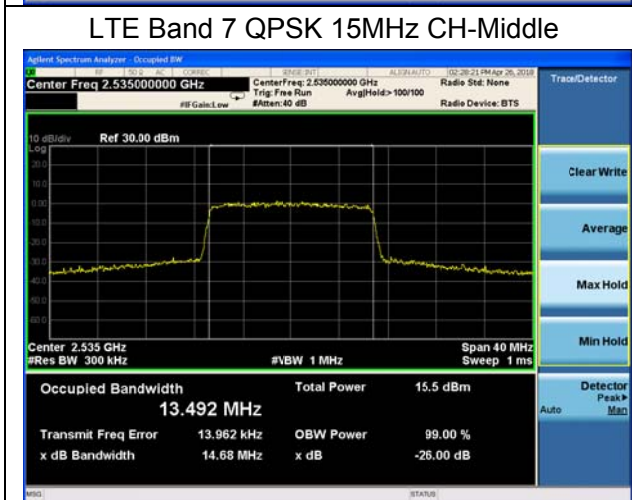
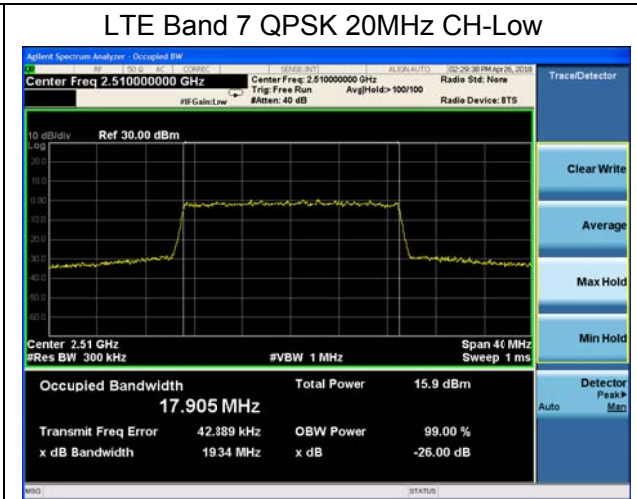
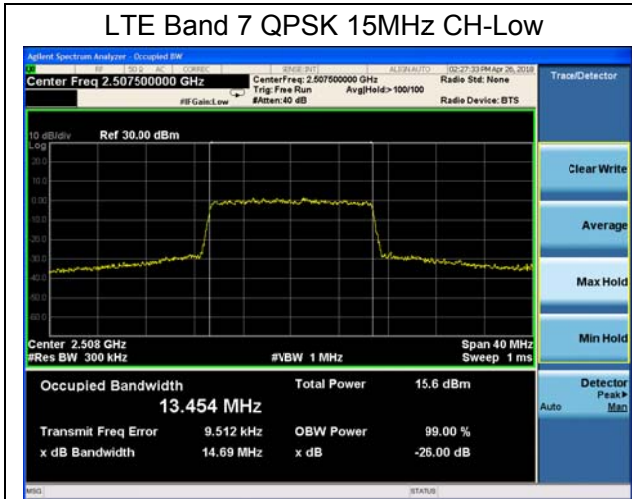
Test Result

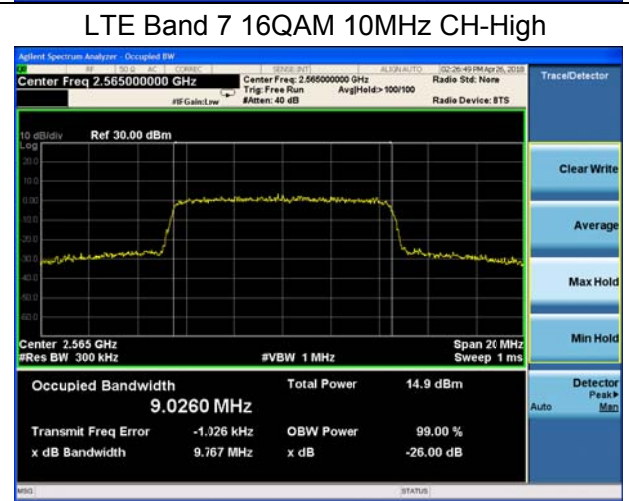
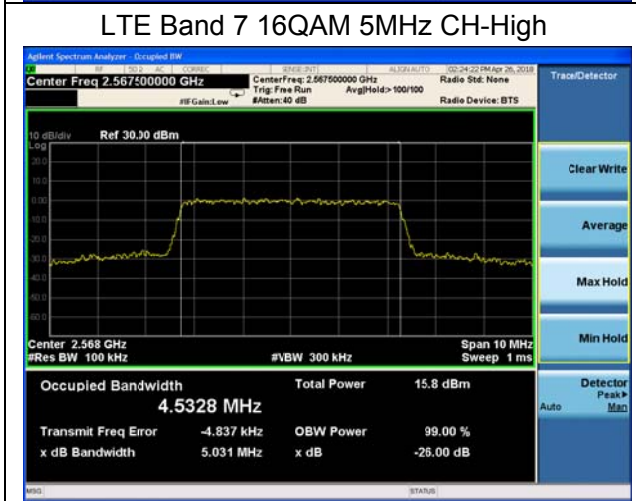
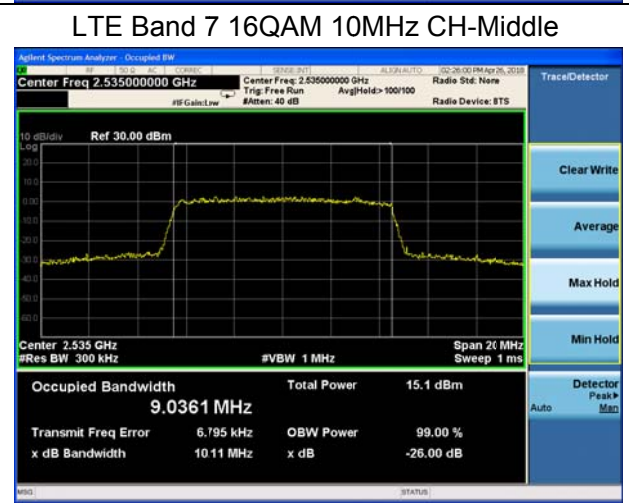
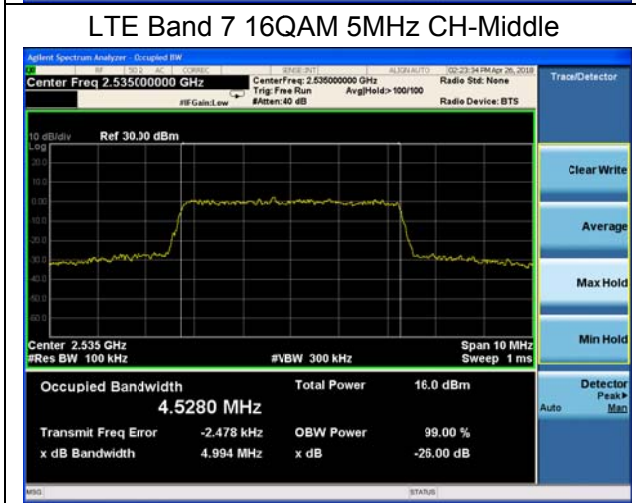
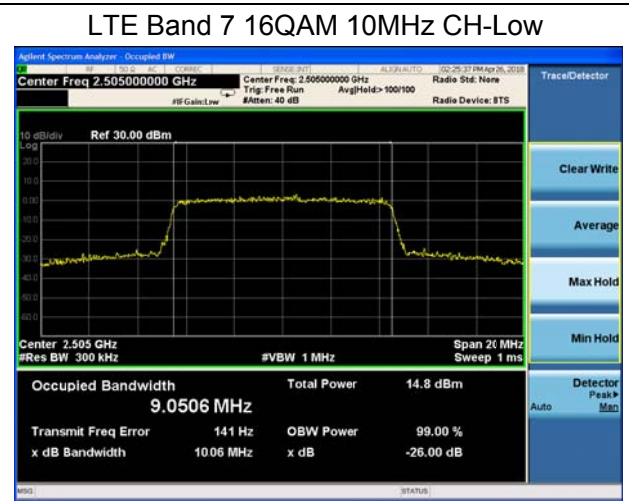
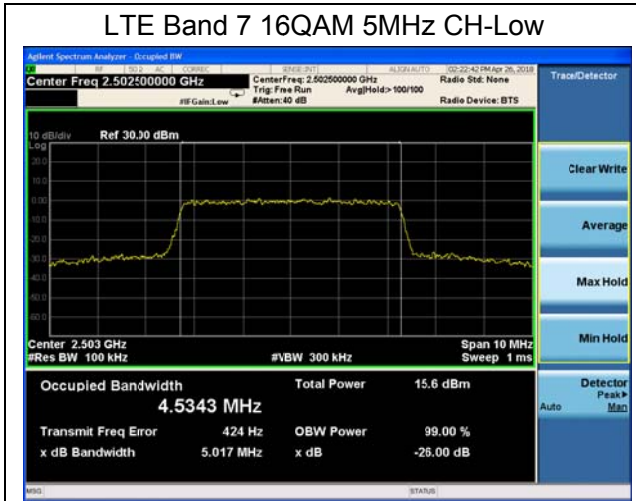
LTE Band 7						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	20775	2502.5	4.5422	5.045
			21100	2535	4.5380	5.065
			21425	2567.5	4.5287	4.994
		10	20800	2505	9.0395	10.080
			21100	2535	9.0515	10.040
			21400	2565	9.0225	9.979
		15	20825	2507.5	13.4540	14.690
			21100	2535	13.4920	14.680
			21375	2562.5	13.4960	14.720
		20	20850	2510	17.9050	19.340
			21100	2535	17.9030	19.380
			21350	2560	17.8560	19.150
	16QAM	5	20775	2502.5	4.5343	5.017
			21100	2535	4.5280	4.994
			21425	2567.5	4.5328	5.031
		10	20800	2505	9.0506	10.060
			21100	2535	9.0361	10.110
			21400	2565	9.0260	9.767
		15	20825	2507.5	13.4890	14.740
			21100	2535	13.4730	14.680
			21375	2562.5	13.4680	14.740
		20	20850	2510	17.9350	19.290
			21100	2535	17.8650	19.250
			21350	2560	17.8910	19.050

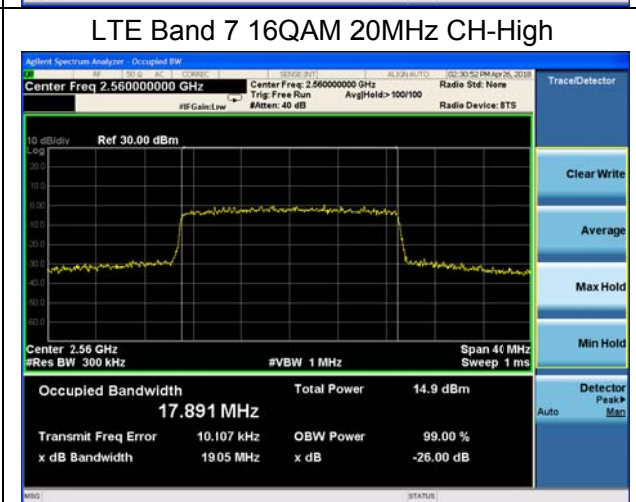
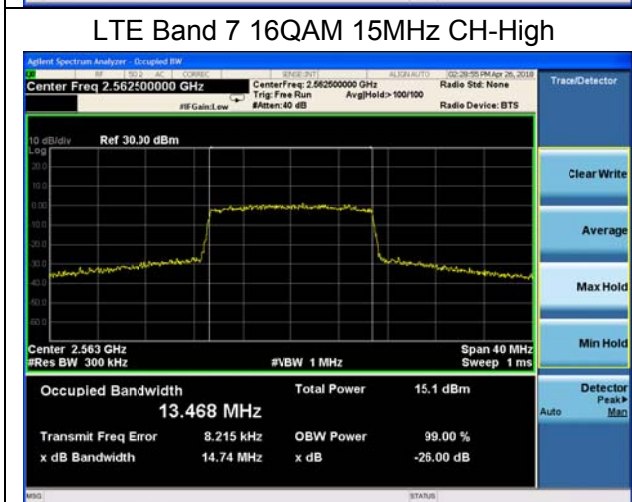
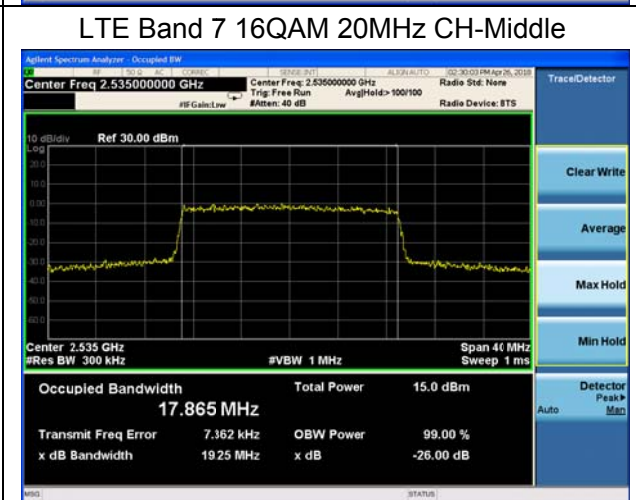
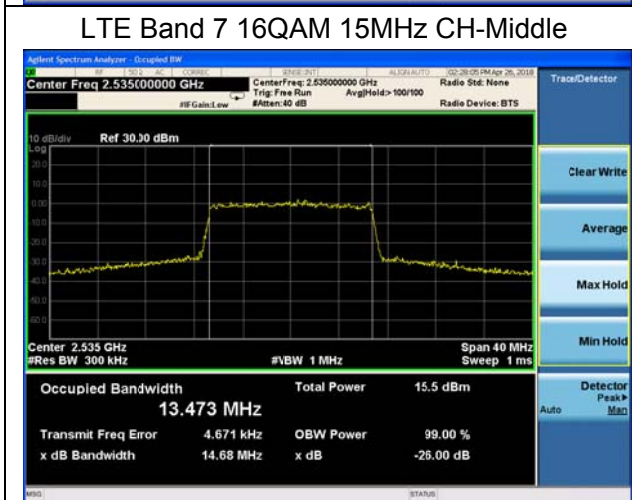
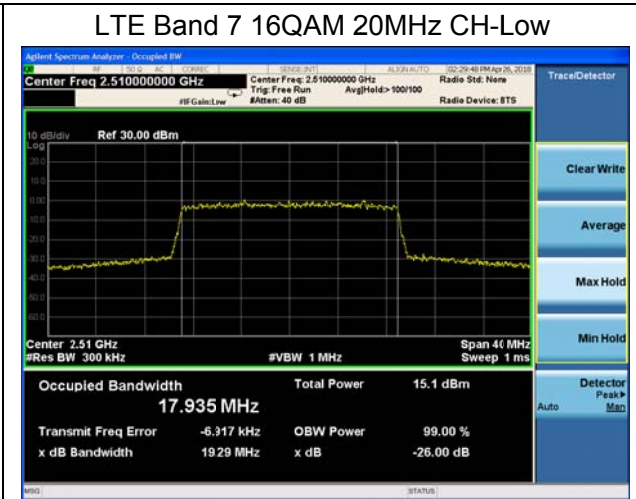
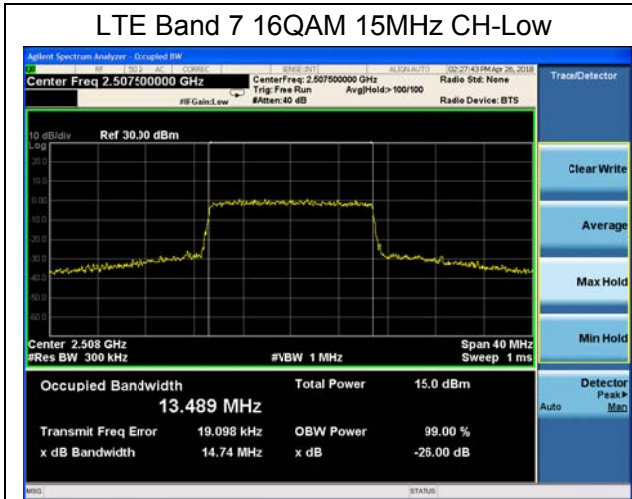
LTE Band 38						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	37775	2572.5	4.5254	5.070
			38000	2595	4.5217	4.928
			38225	2617.5	4.5114	5.007
		10	37800	2575	9.0336	10.110
			38000	2595	9.0396	9.932
			38200	2615	9.0467	9.963
		15	37825	2577.5	13.4590	14.770
			38000	2595	13.4570	16.220
			38175	2612.5	13.4700	15.340
		20	37850	2580	17.8810	19.870
			38000	2595	17.8390	19.220
			38150	2610	17.8580	19.300
	16QAM	5	37775	2572.5	4.5253	4.934
			38000	2595	4.5128	5.023
			38225	2617.5	4.5290	4.980
		10	37800	2575	9.0314	9.915
			38000	2595	9.0115	9.751
			38200	2615	9.0166	9.963
		15	37825	2577.5	13.4810	14.640
			38000	2595	13.4780	14.900
			38175	2612.5	13.4710	15.300
		20	37850	2580	17.8390	19.820
			38000	2595	17.8120	19.130
			38150	2610	17.8870	19.120

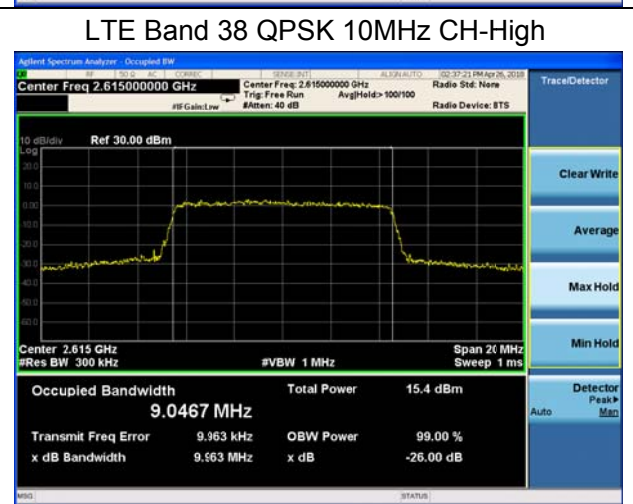
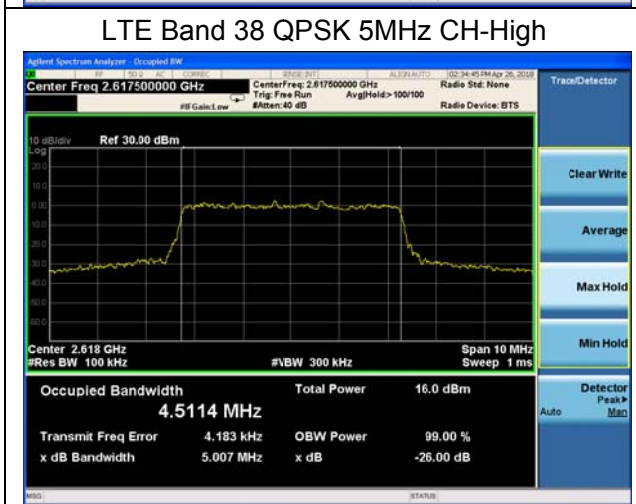
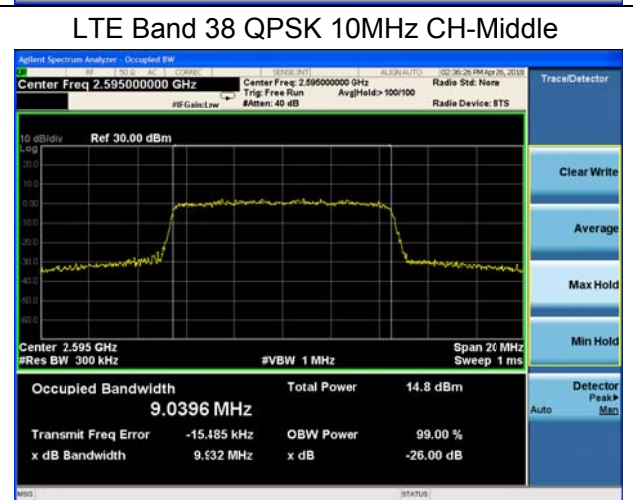
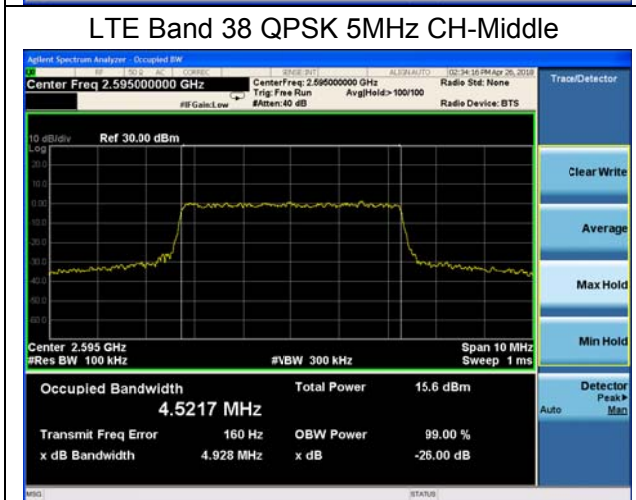
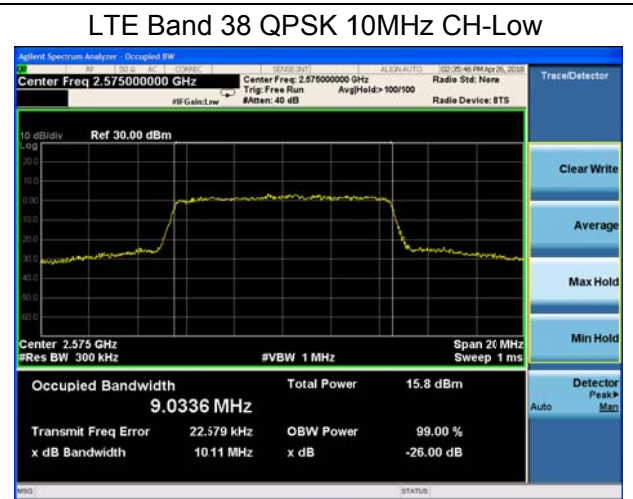
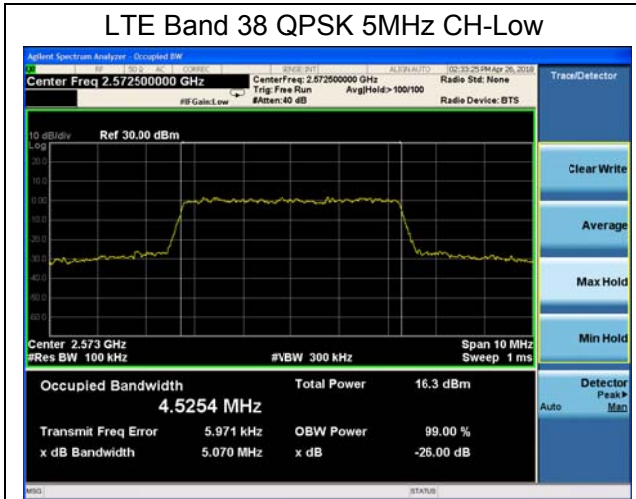
LTE Band 41						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	5	40265	2557.5	4.5242	5.015
			40740	2605	4.5129	4.963
			41215	2652.5	4.5267	5.070
		10	40290	2560	9.0474	10.190
			40740	2605	9.0519	9.962
			41190	2650	9.0606	10.060
		15	40315	2562.5	13.4960	14.710
			40740	2605	13.4510	15.890
			41165	2647.5	13.4740	15.170
		20	40340	2565	17.9220	19.750
			40740	2605	17.8490	19.570
			41140	2645	17.9360	19.160
	16QAM	5	40265	2557.5	4.5151	5.043
			40740	2605	4.5309	5.014
			41215	2652.5	4.5108	4.994
		10	40290	2560	9.0272	9.855
			40740	2605	9.0253	9.968
			41190	2650	9.0286	10.010
		15	40315	2562.5	13.5200	15.720
			40740	2605	13.5100	14.820
			41165	2647.5	13.4870	14.580
		20	40340	2565	17.9220	20.260
			40740	2605	17.8550	19.210
			41140	2645	17.8940	19.200

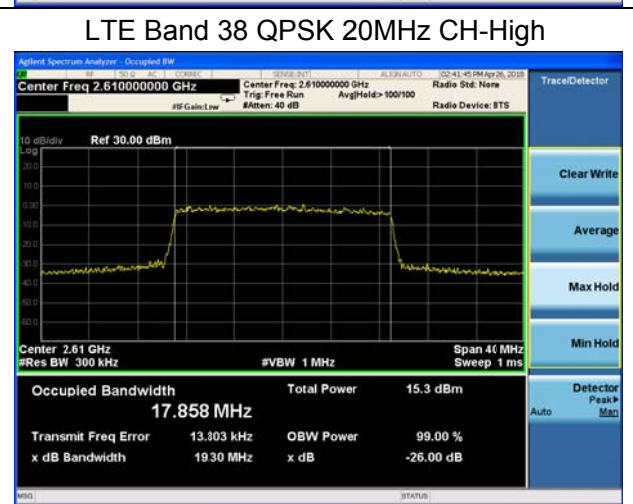
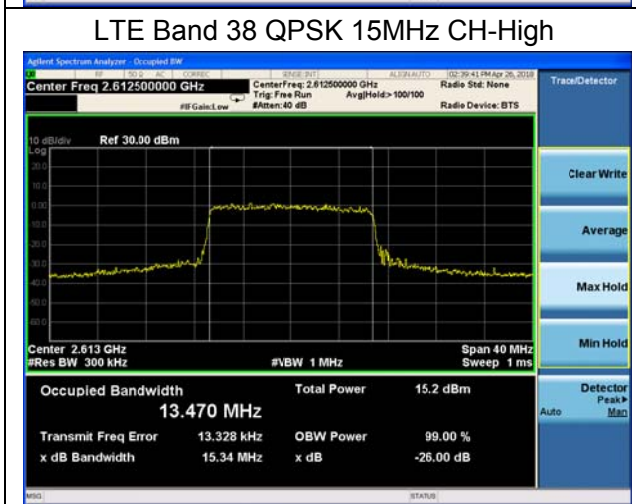
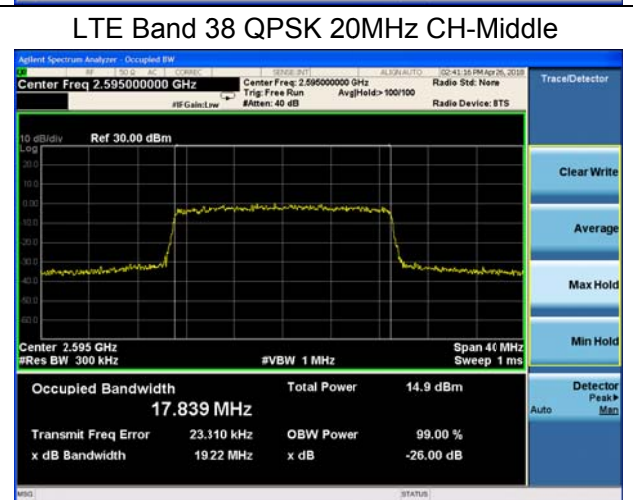
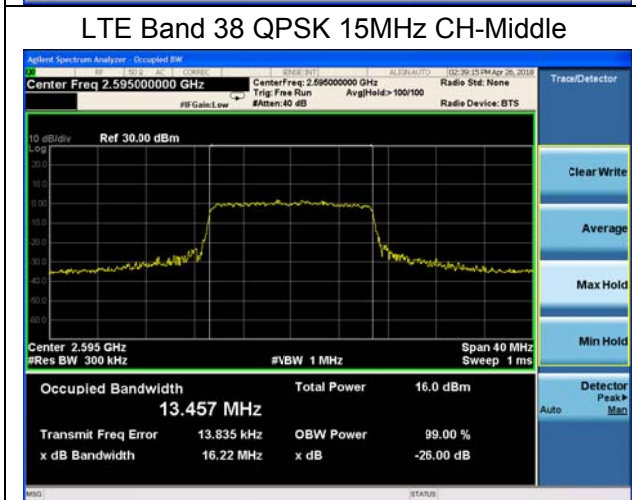
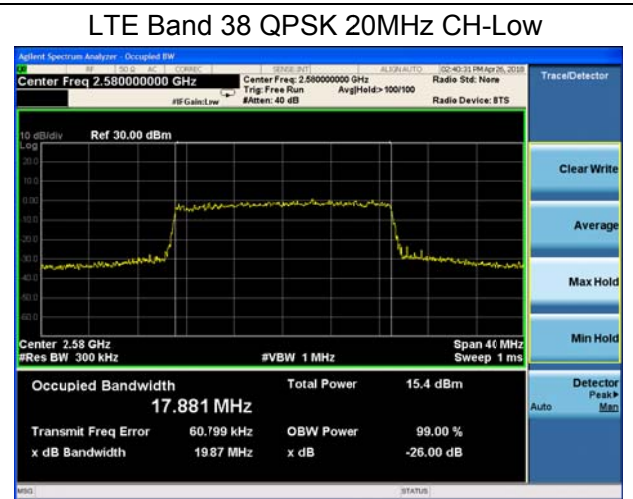
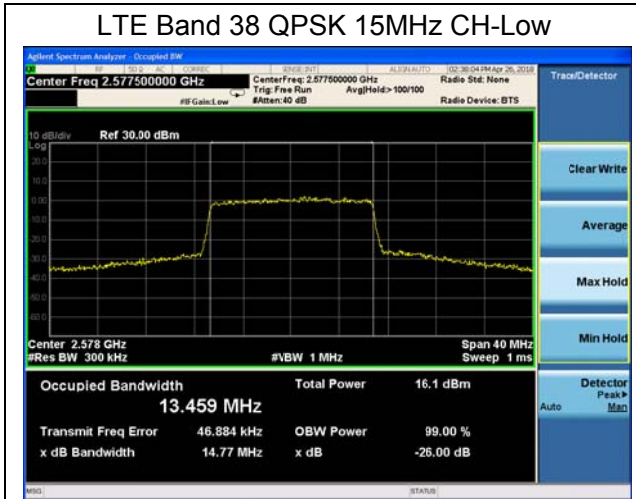


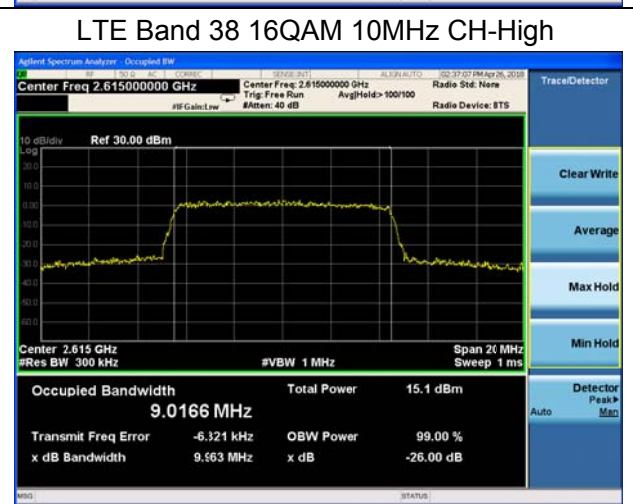
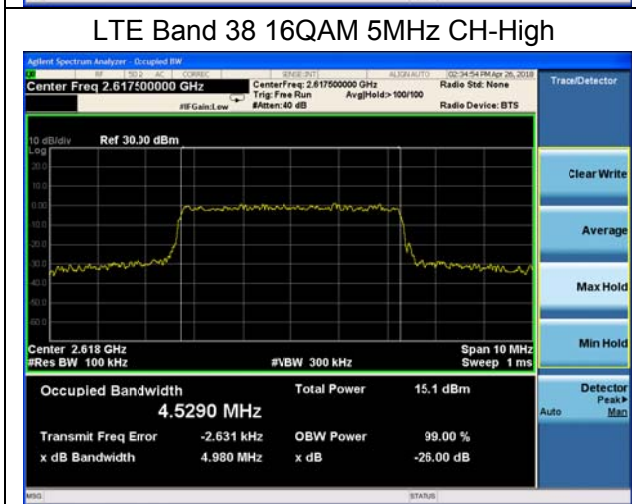
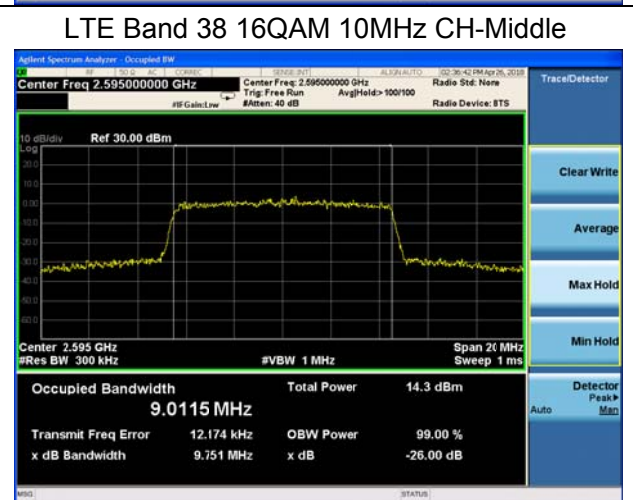
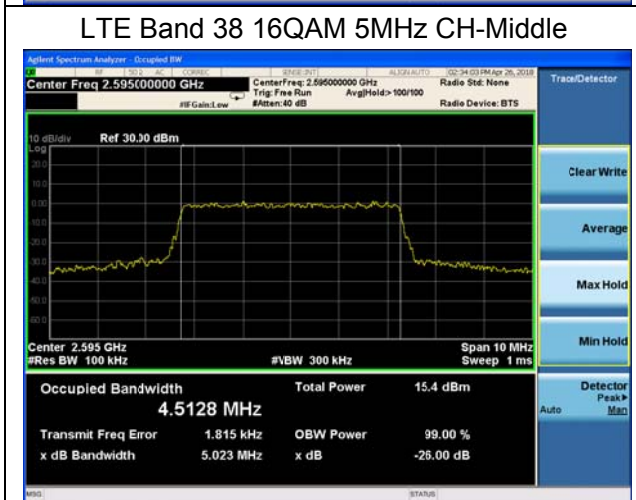
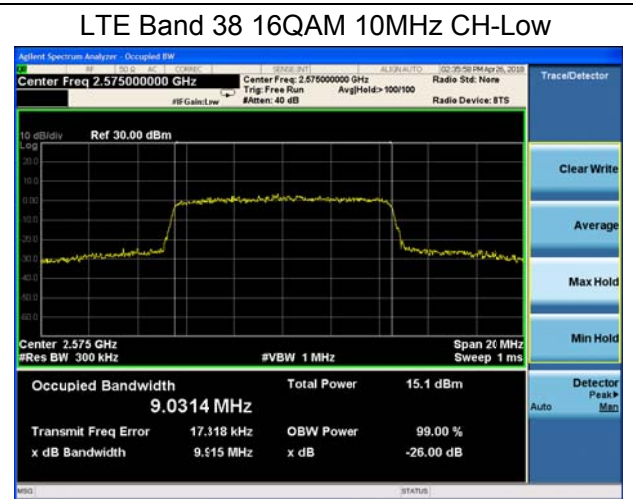
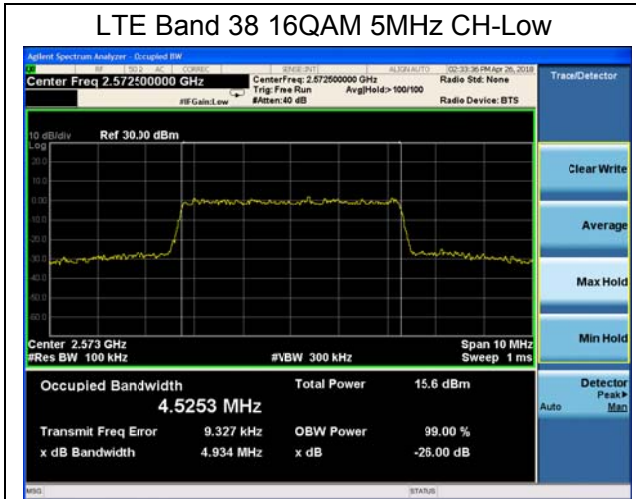


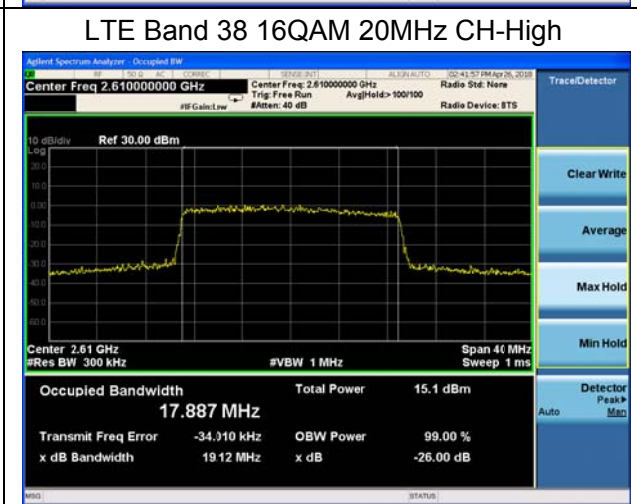
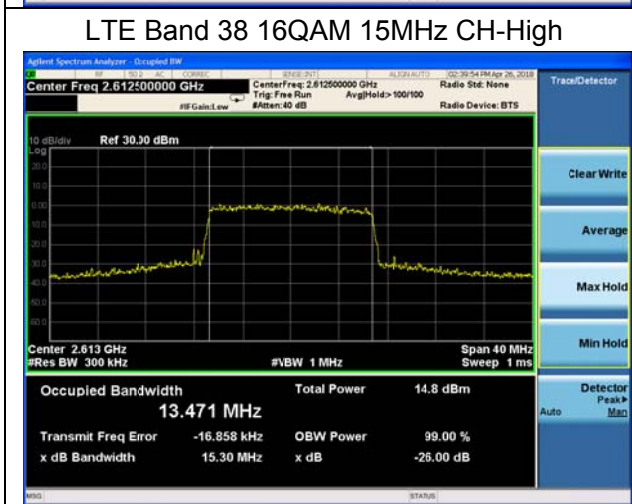
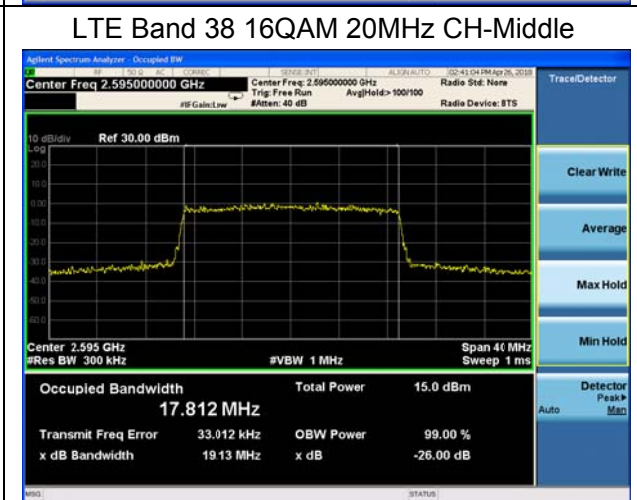
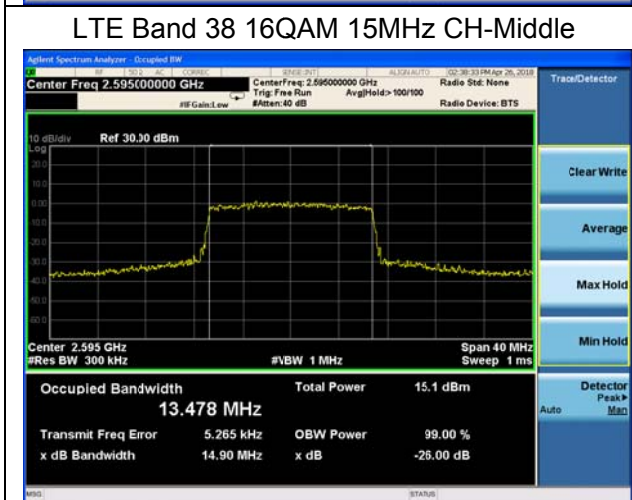
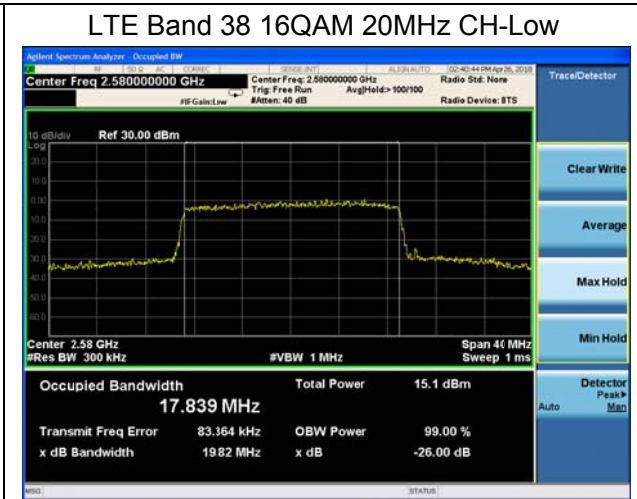
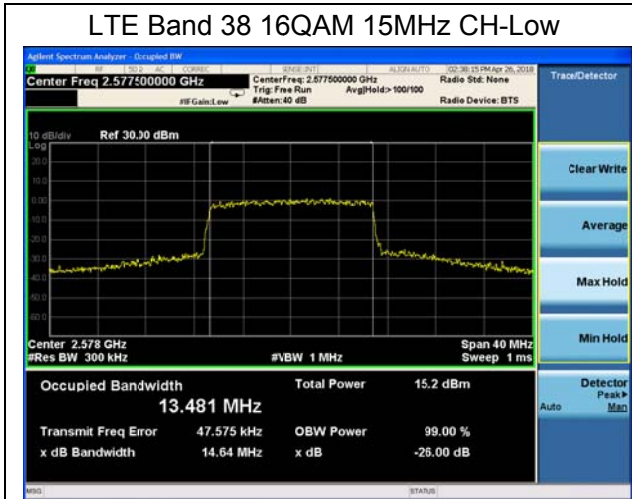


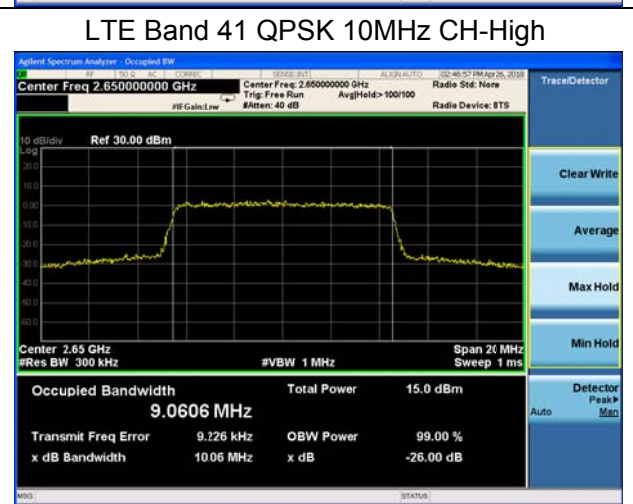
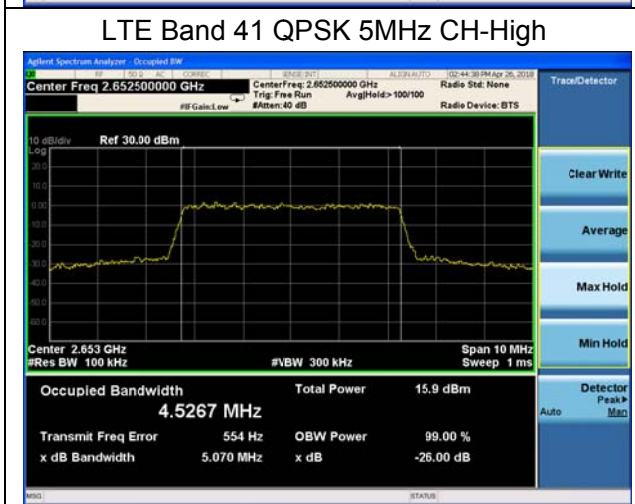
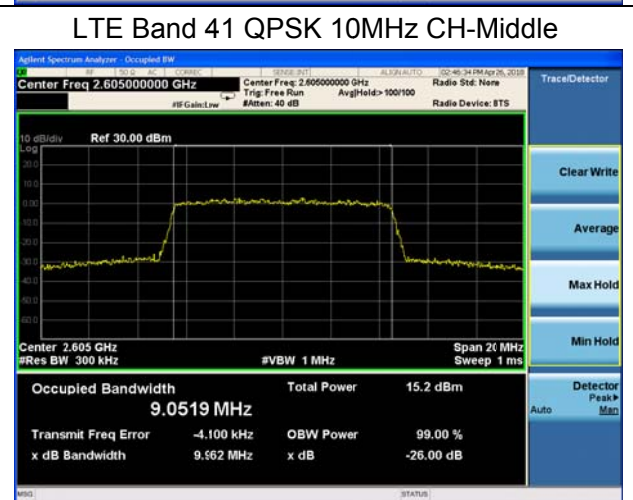
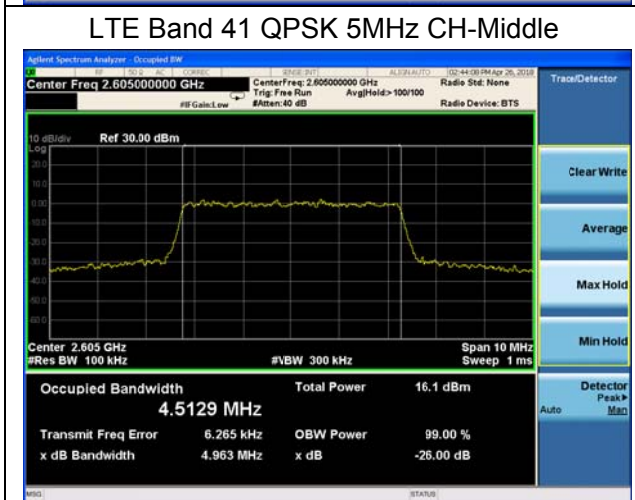
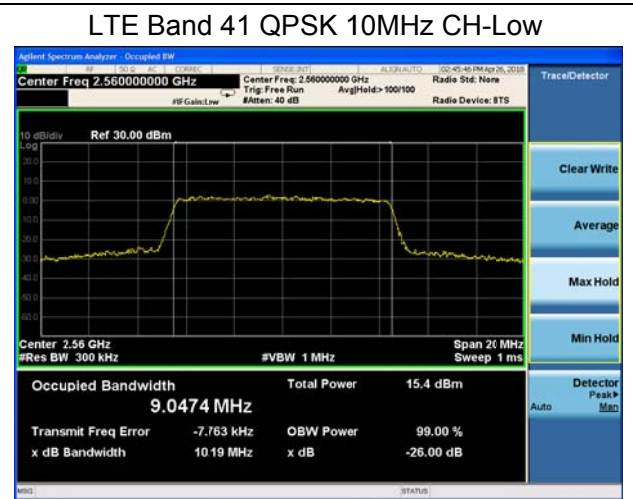
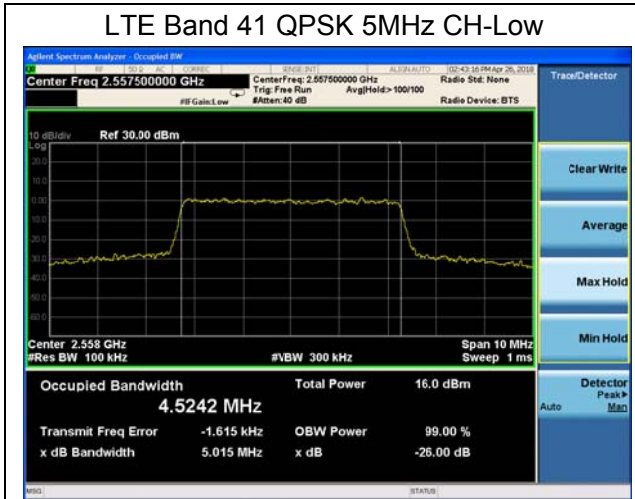






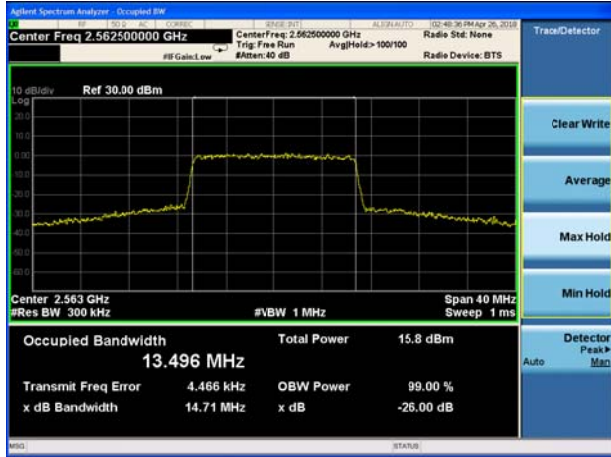




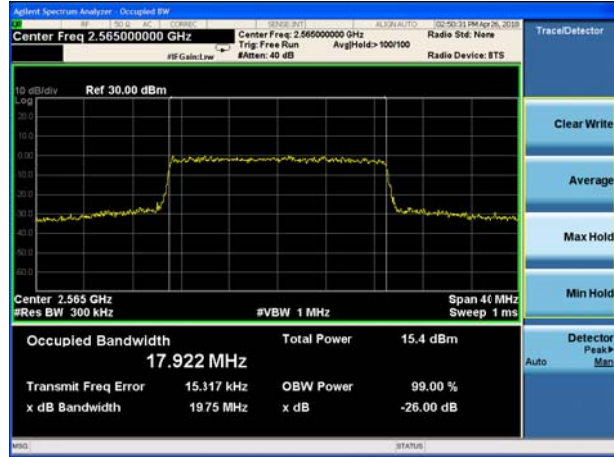




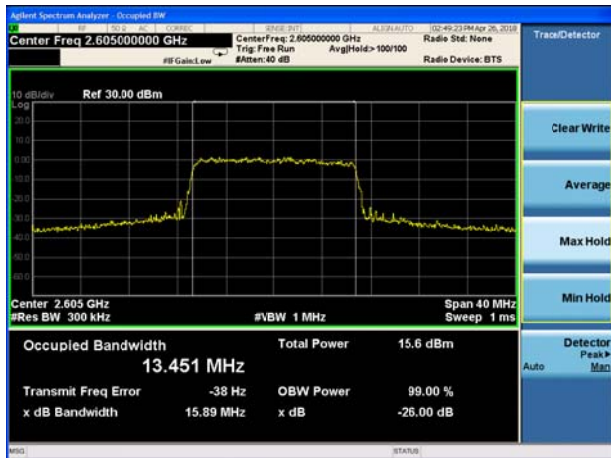
LTE Band 41 QPSK 15MHz CH-Low



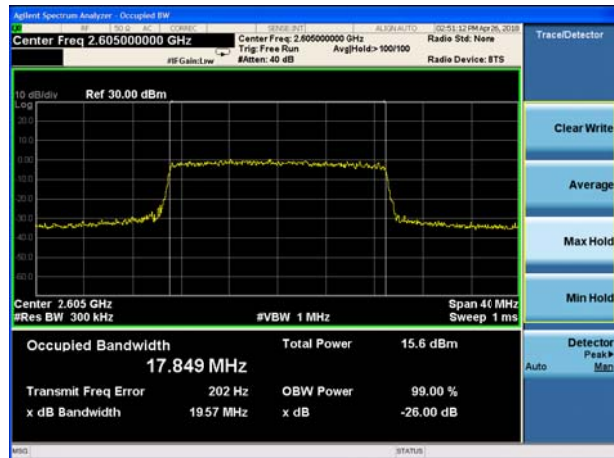
LTE Band 41 QPSK 20MHz CH-Low



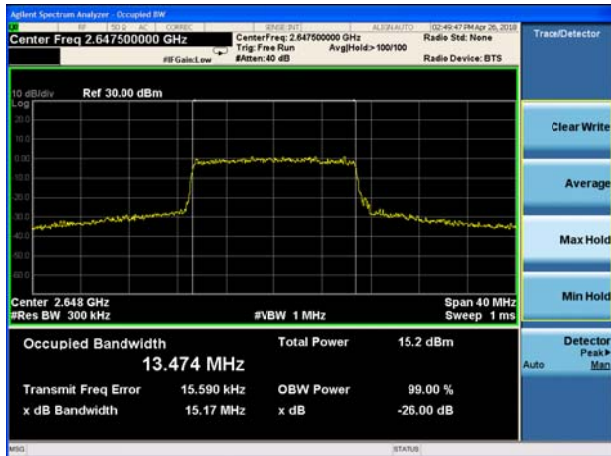
LTE Band 41 QPSK 15MHz CH-Middle



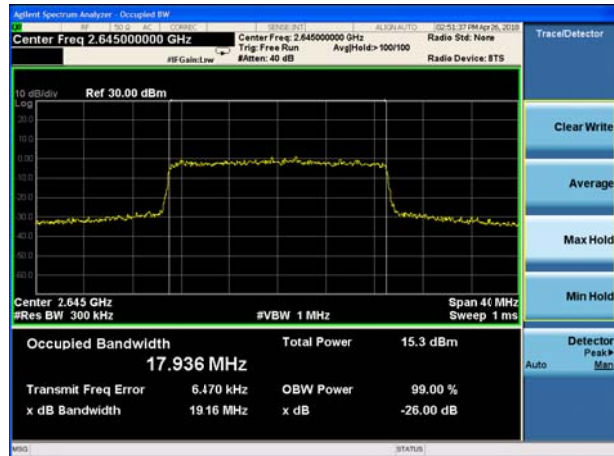
LTE Band 41 QPSK 20MHz CH-Middle

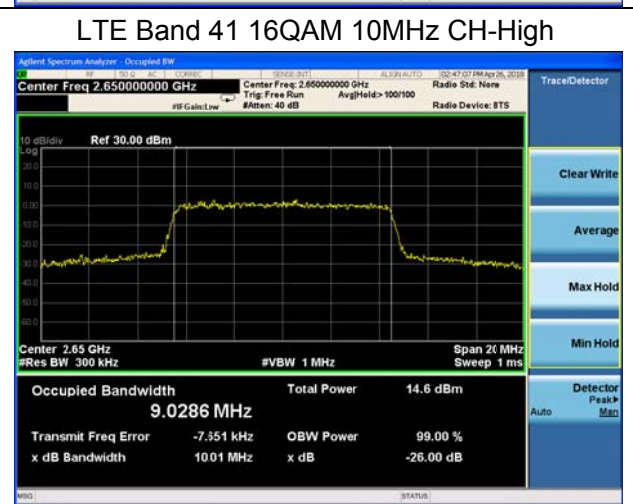
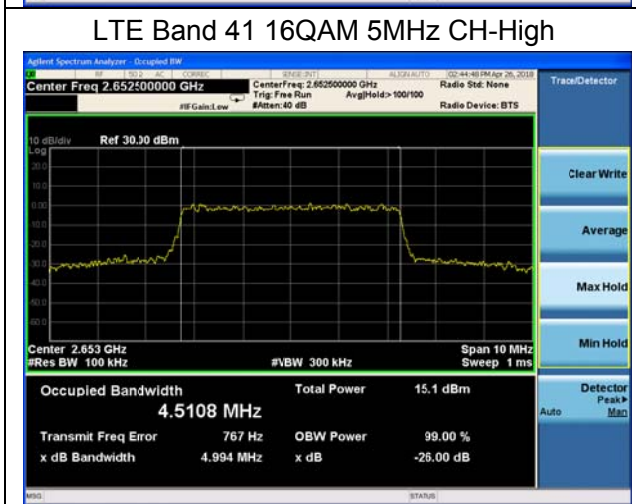
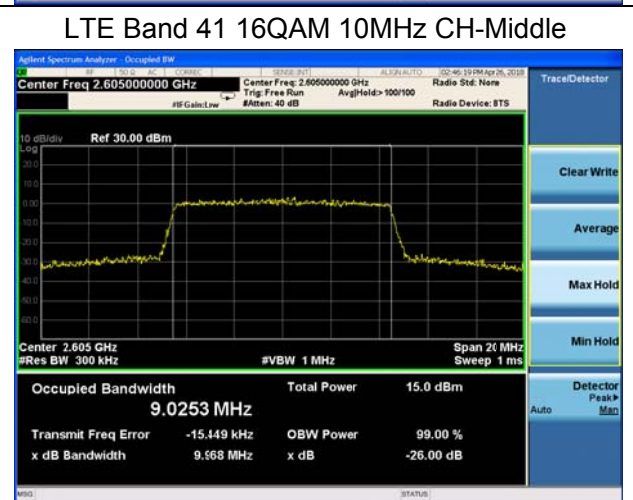
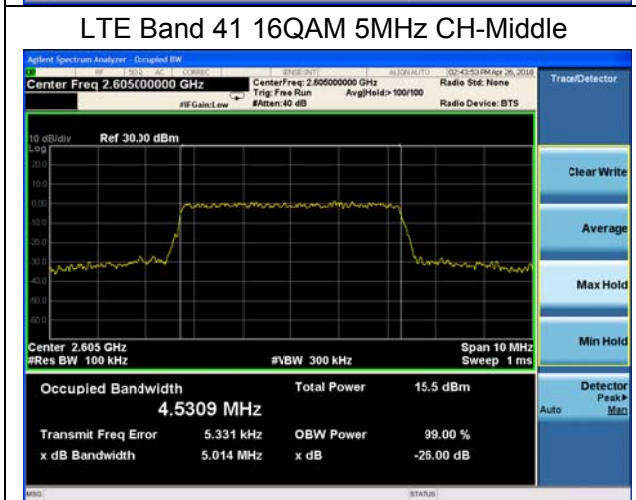
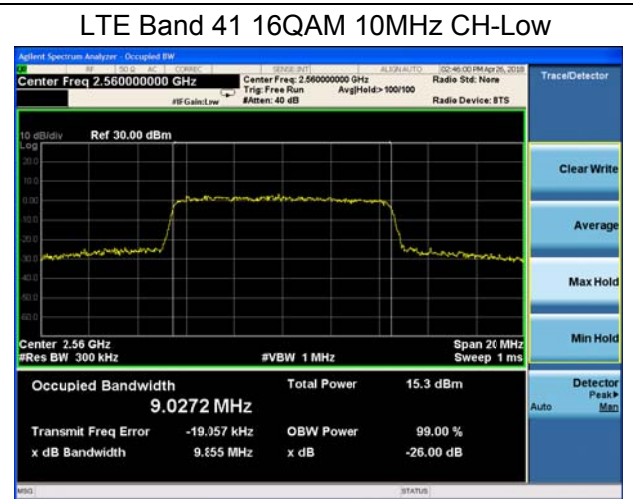
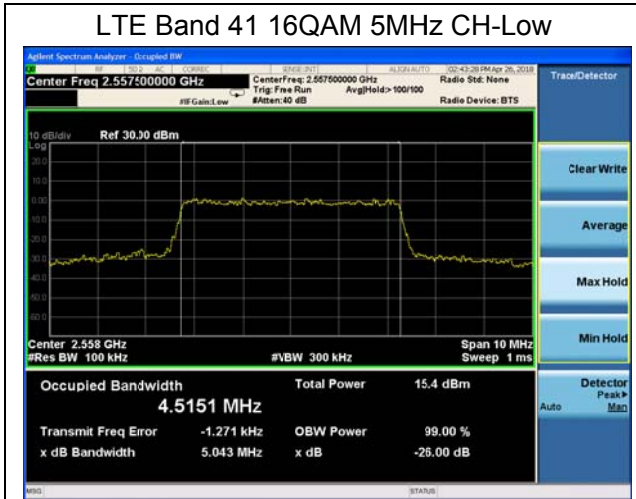


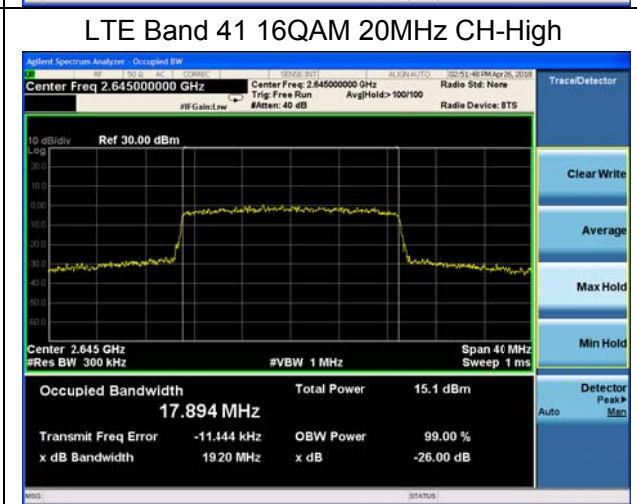
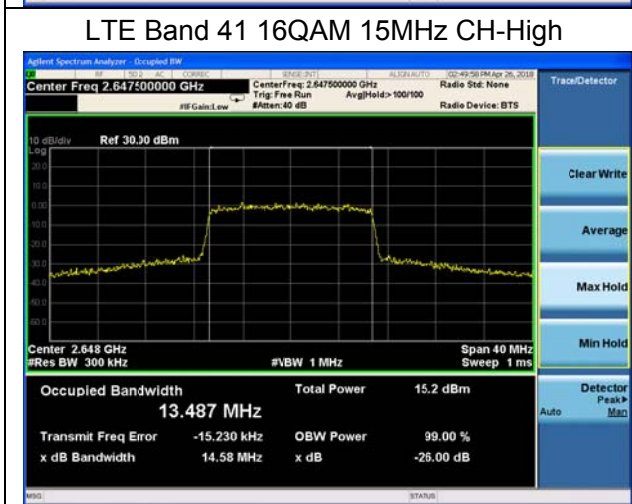
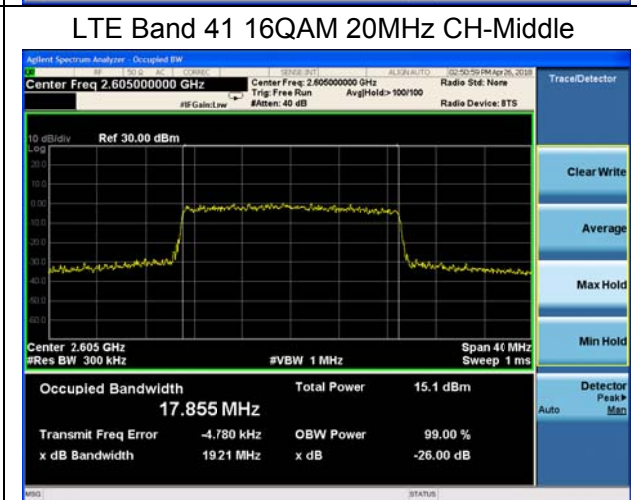
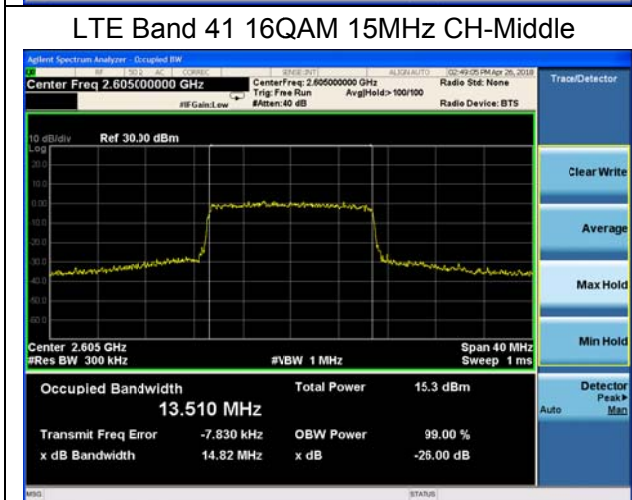
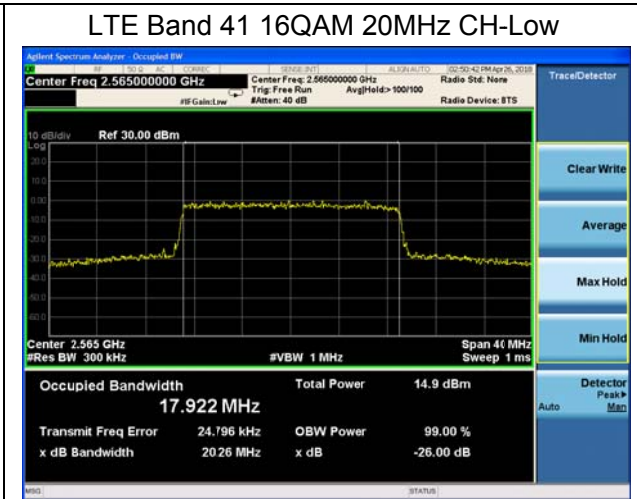
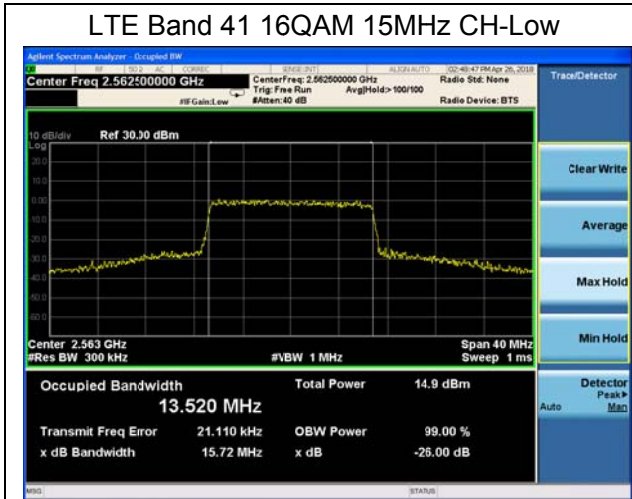
LTE Band 41 QPSK 15MHz CH-High



LTE Band 41 QPSK 20MHz 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 D01 v03r01 Section 6.0

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. For LTE Band 41 Set RBW =1%~3% EBW in the 1MHz band immediately outside and adjacent to the band edge.

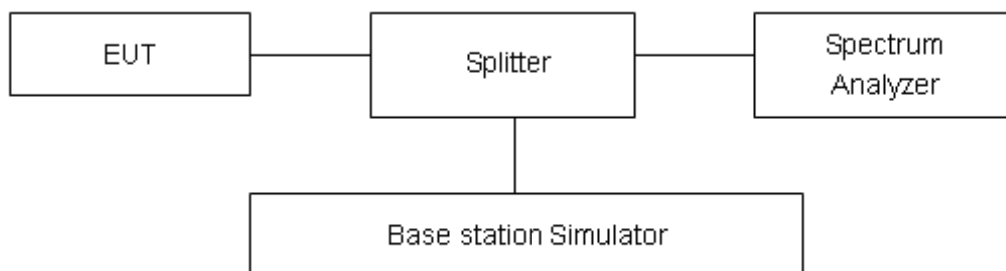
RBW is set to 50 kHz, VBW is set to 200 kHz for LTE Band 7/38/41 (5MHz).

RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 7/38/41 (10MHz).

RBW is set to 200 kHz, VBW is set to 1MHz for LTE Band 7/38/41 (15MHz/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

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)

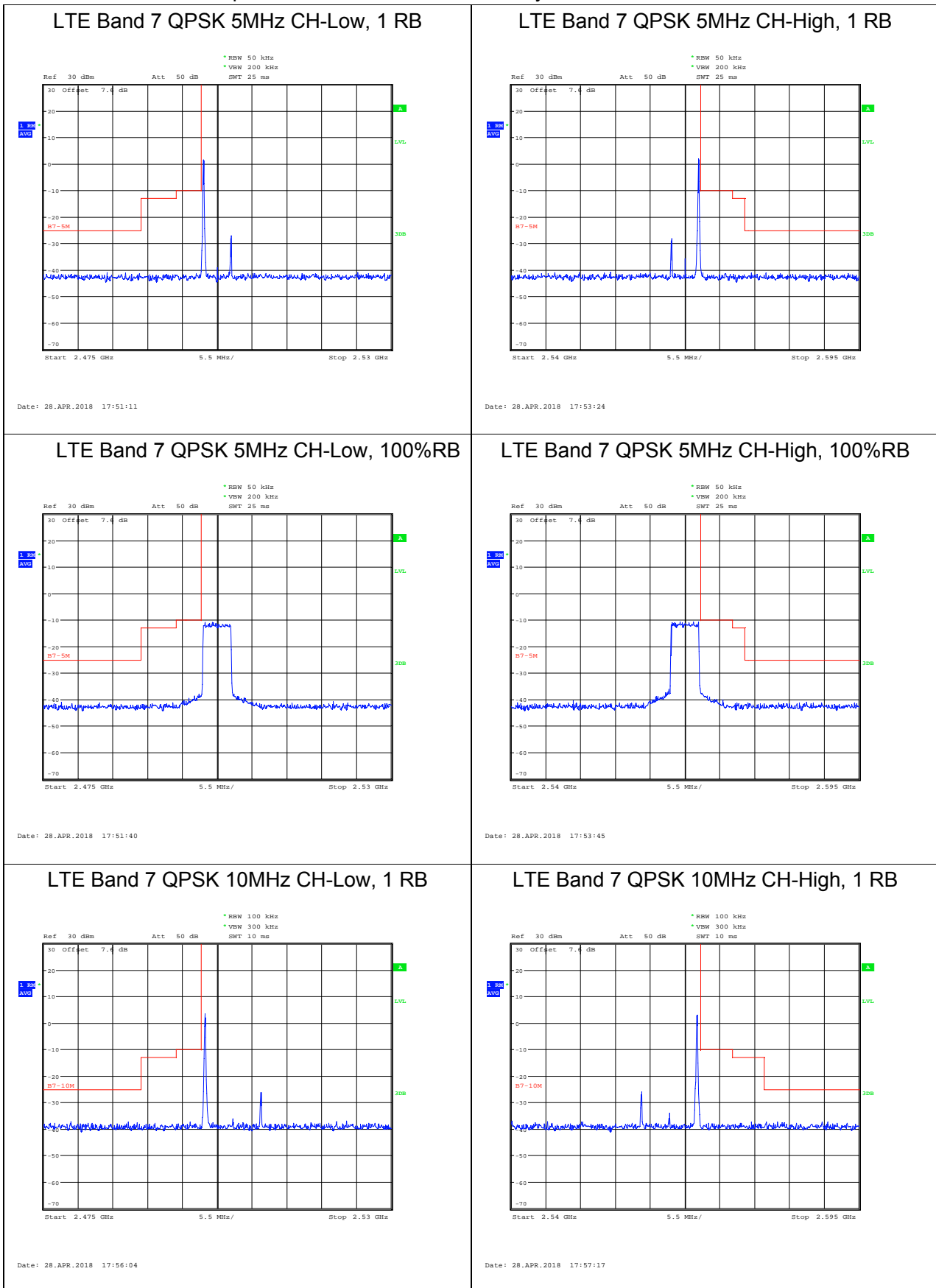
$= [30 + 10 \log(P)]$ (dBm) - $[43 + 10 \log(P)]$ (dB) = -13dBm.

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.

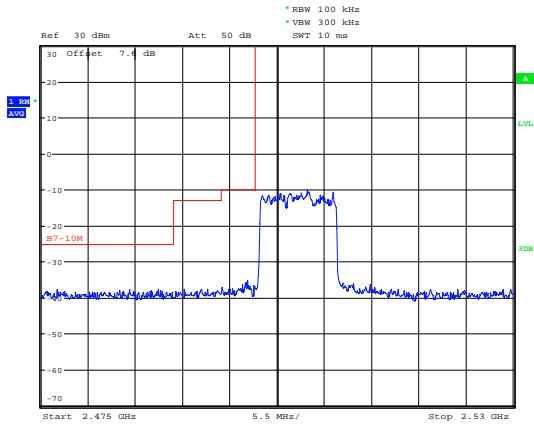
Test Result

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



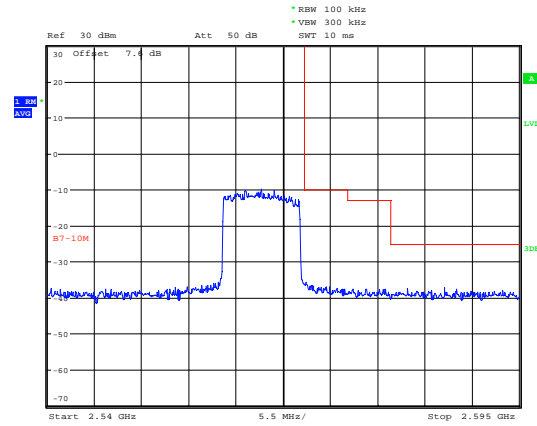


LTE Band 7 QPSK 10MHz CH-Low, 100%RB



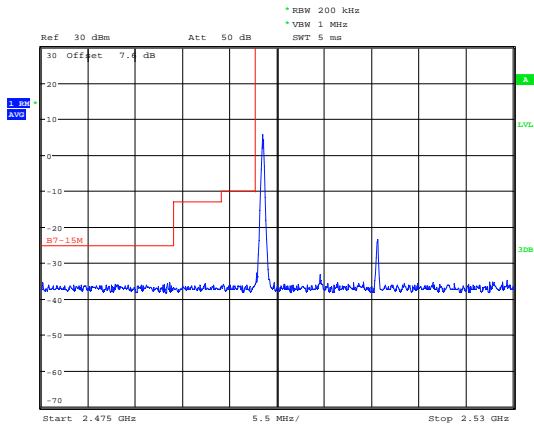
Date: 28.APR.2018 17:56:13

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



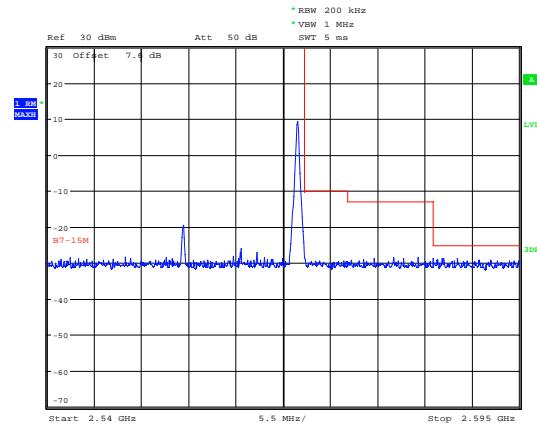
Date: 28.APR.2018 17:57:39

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



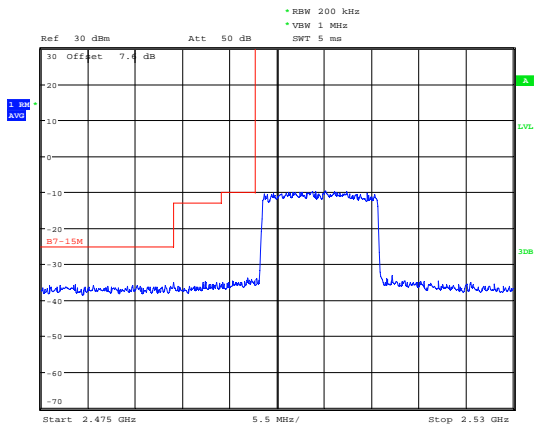
Date: 28.APR.2018 18:02:52

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



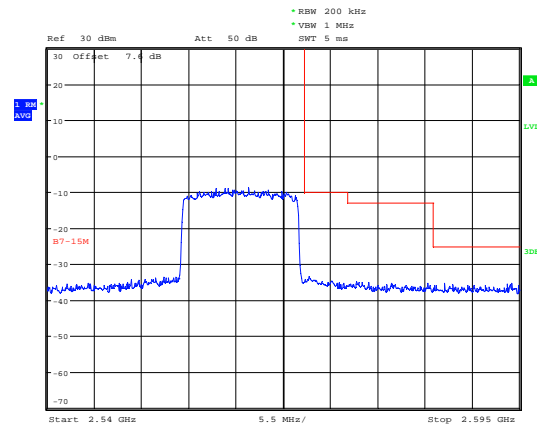
Date: 28.APR.2018 18:01:23

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



Date: 28.APR.2018 18:03:03

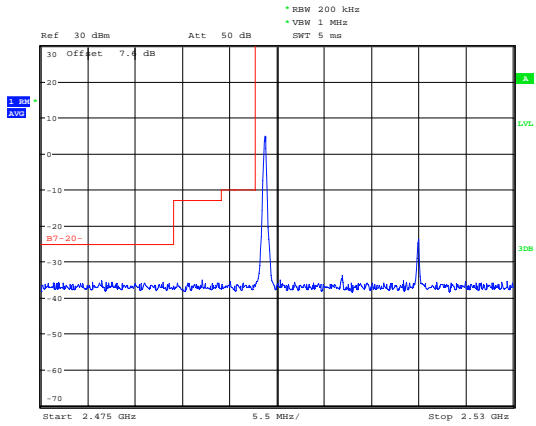
LTE Band 7 QPSK 15MHz CH-High, 100%RB



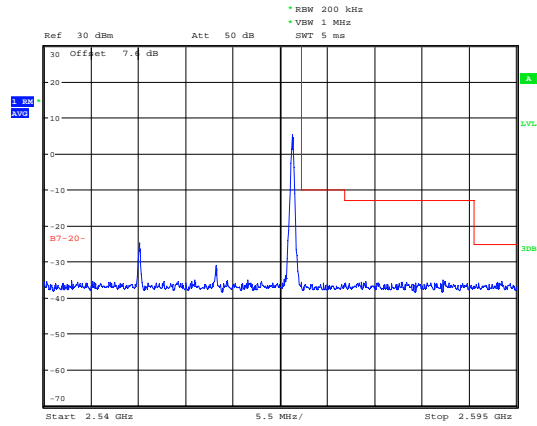
Date: 28.APR.2018 18:01:46



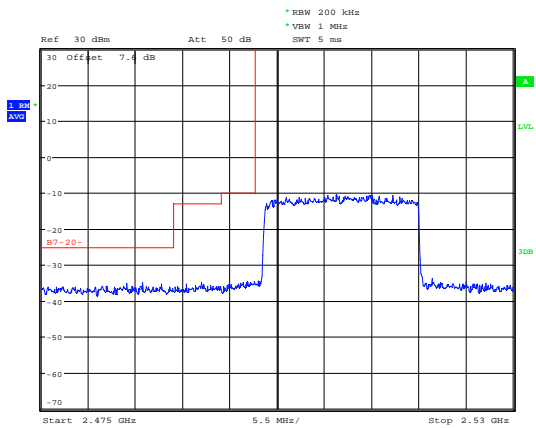
LTE Band 7 QPSK 20MHz CH-Low, 1 RB



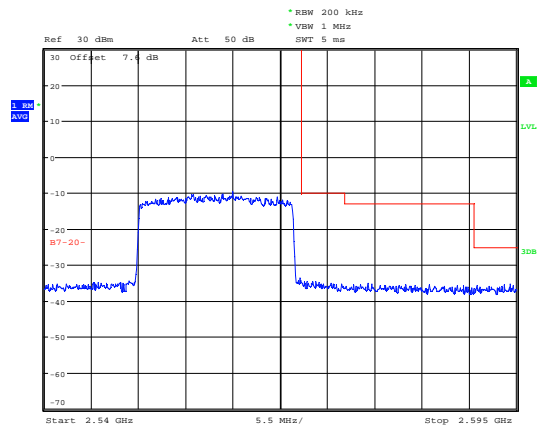
LTE Band 7 QPSK 20MHz CH-High, 1 RB



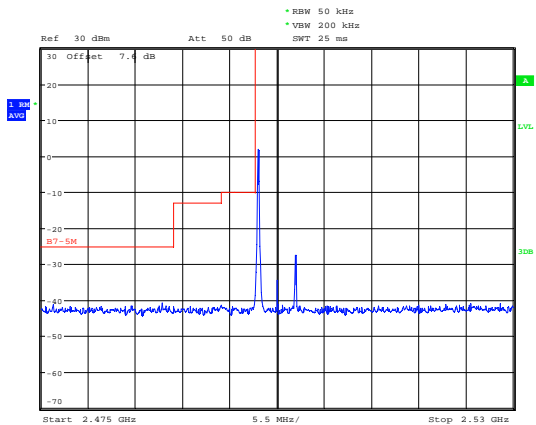
LTE Band 7 QPSK 20MHz CH-Low, 100%RB



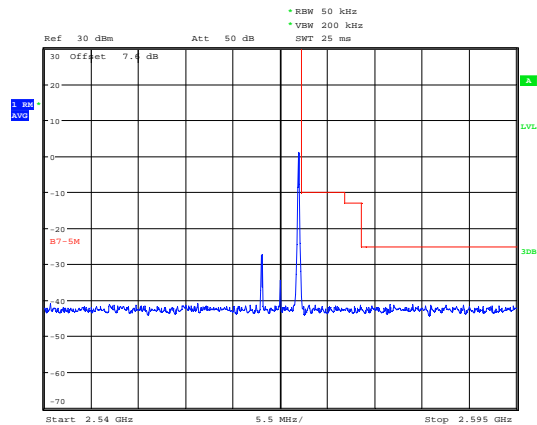
LTE Band 7 QPSK 20MHz CH-High, 100%RB



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

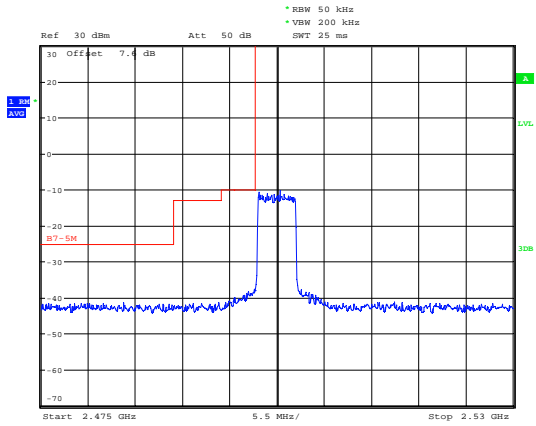


LTE Band 7 16QAM 5MHz CH-High, 1 RB



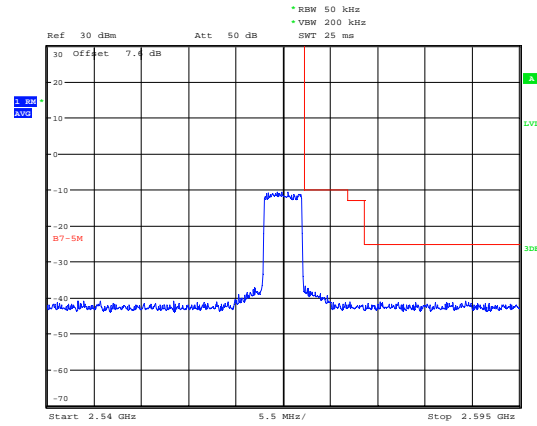


LTE Band 7 16QAM 5MHz CH-Low, 100%RB



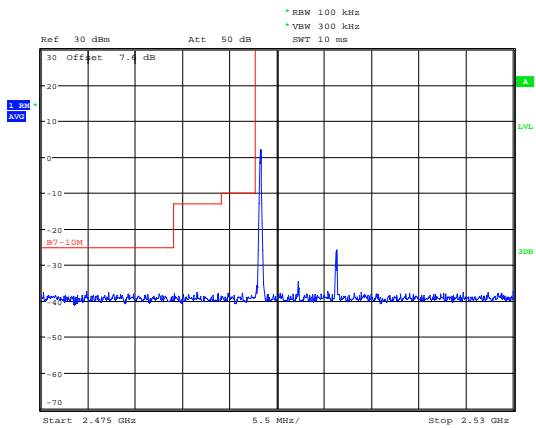
Date: 28.APR.2018 17:52:06

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



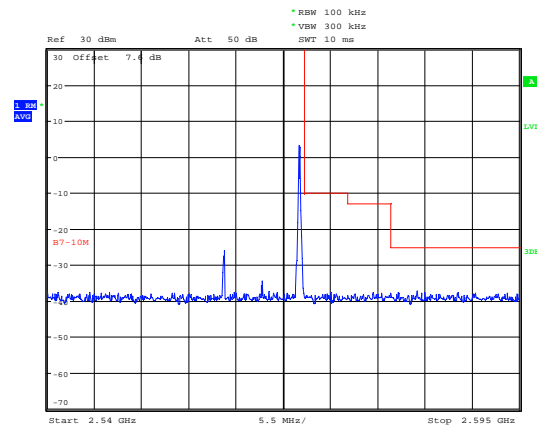
Date: 28.APR.2018 17:54:00

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



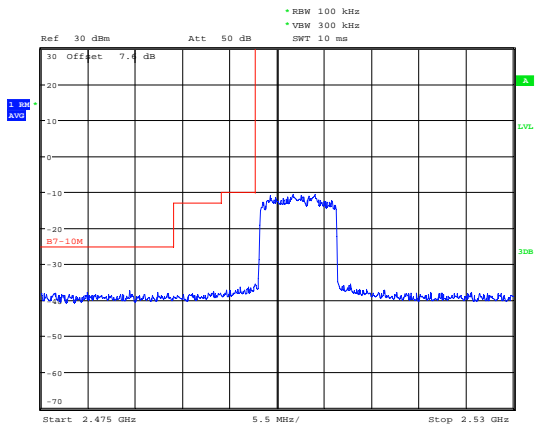
Date: 28.APR.2018 17:56:49

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



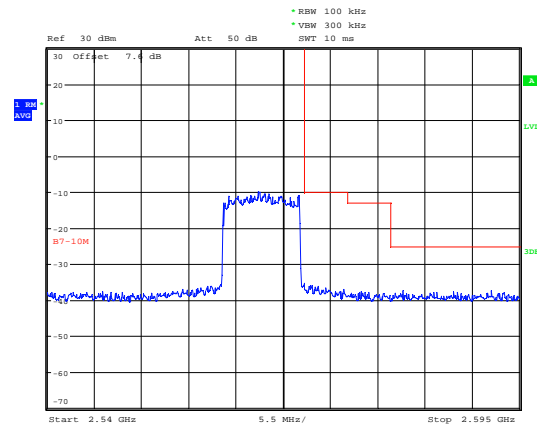
Date: 28.APR.2018 17:58:25

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



Date: 28.APR.2018 17:56:29

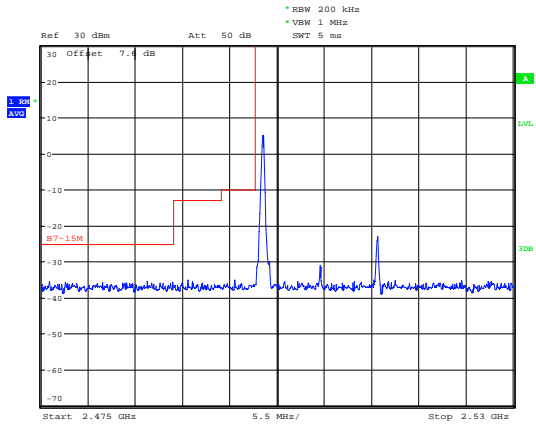
LTE Band 7 16QAM 10MHz CH-High, 100%RB



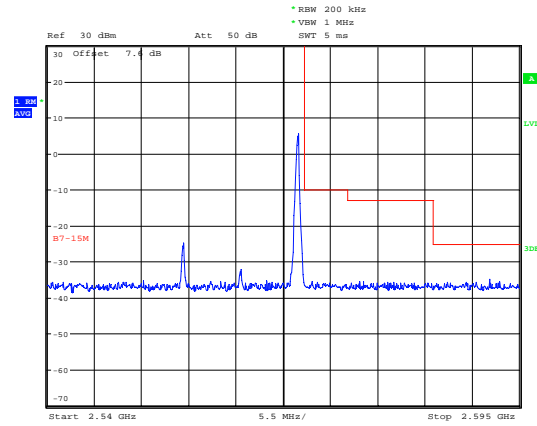
Date: 28.APR.2018 17:58:08



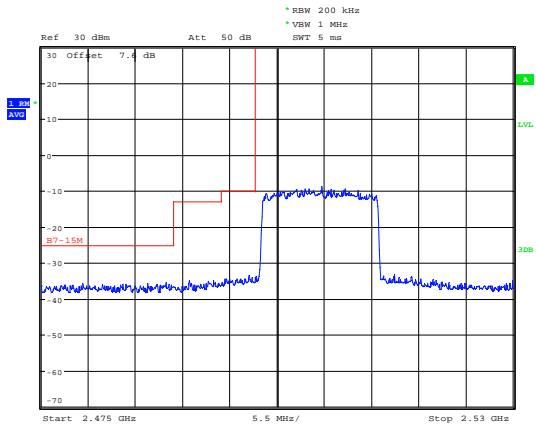
LTE Band 7 16QAM 15MHz CH-Low, 1 RB



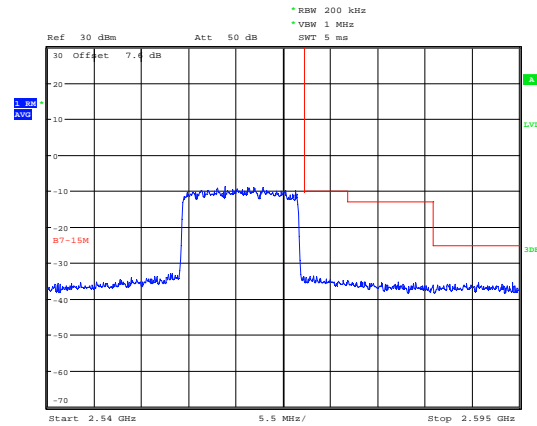
LTE Band 7 16QAM 15MHz CH-High, 1 RB



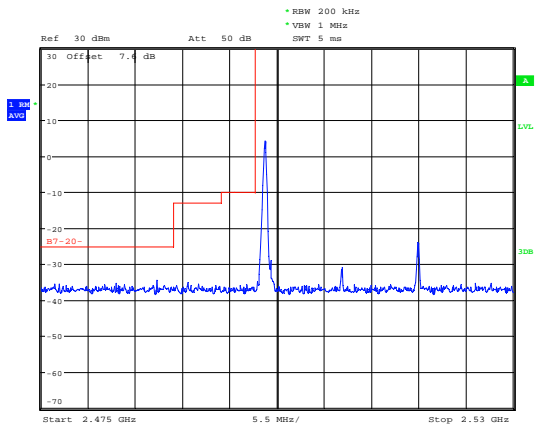
LTE Band 7 16QAM 15MHz CH-Low, 100%RB



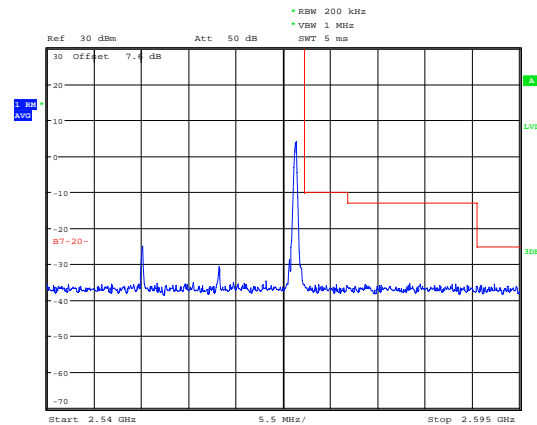
LTE Band 7 16QAM 15MHz CH-High, 100%RB



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

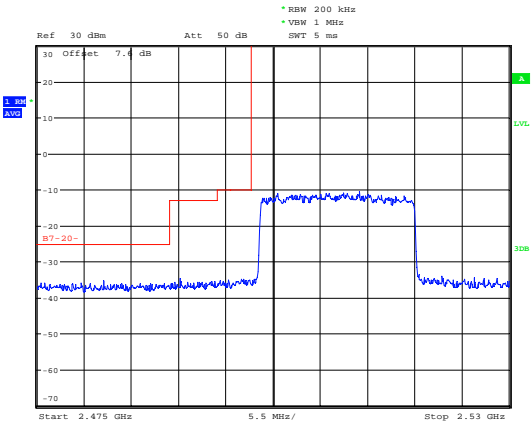


LTE Band 7 16QAM 20MHz CH-High, 1 RB

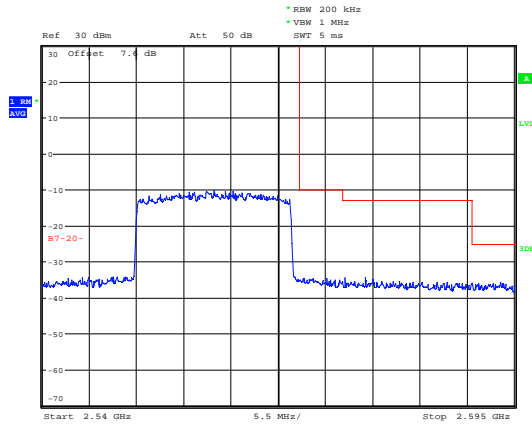




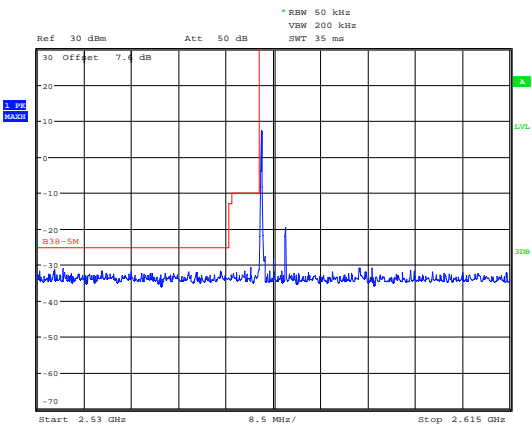
LTE Band 7 16QAM 20MHz CH-Low, 100%RB



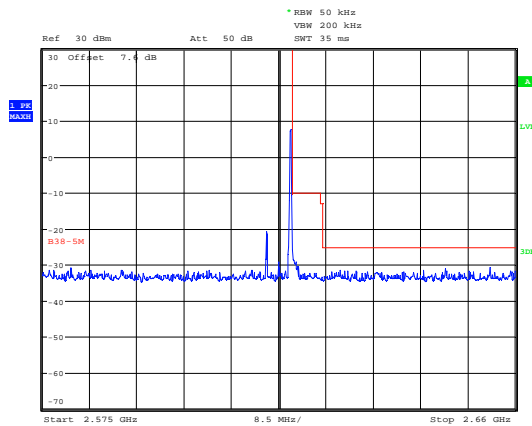
LTE Band 7 16QAM 20MHz CH-High, 100%RB



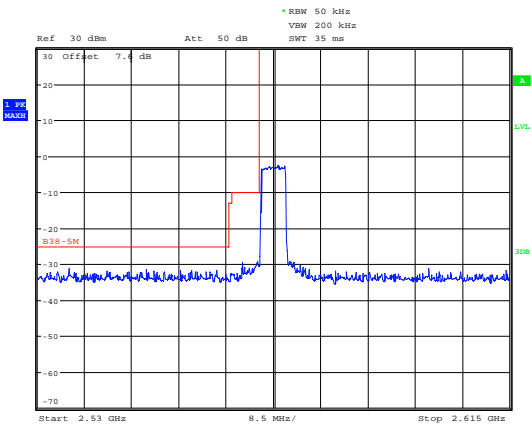
LTE Band 38 QPSK 5MHz CH-Low, 1 RB



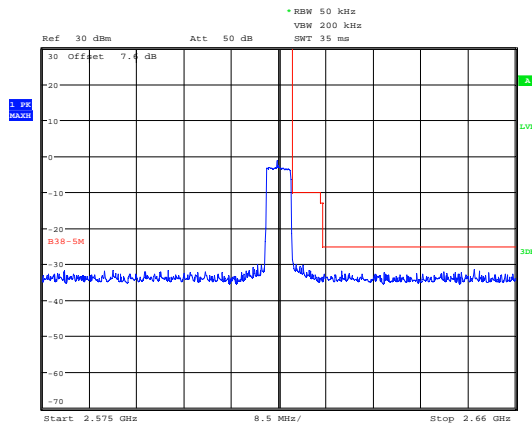
LTE Band 38 QPSK 5MHz CH-High, 1 RB



LTE Band 38 QPSK 5MHz CH-Low, 100%RB

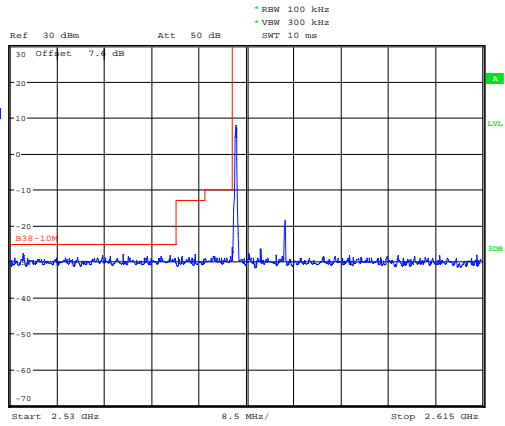


LTE Band 38 QPSK 5MHz CH-High, 100%RB



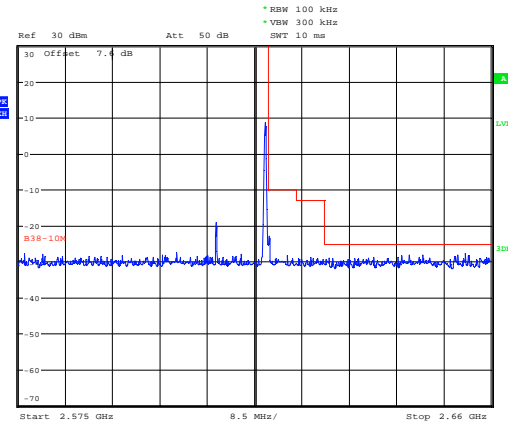


LTE Band 38 QPSK 10MHz CH-Low, 1 RB



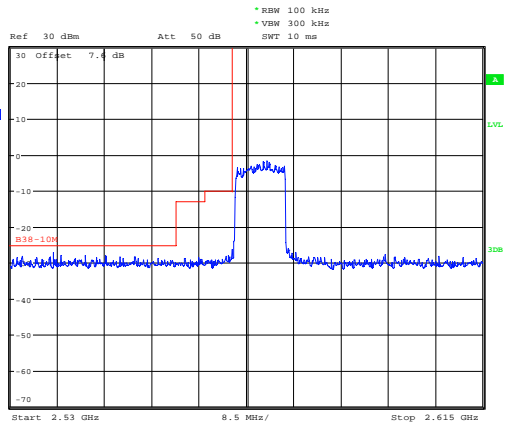
Date: 17.MAY.2018 16:41:29

LTE Band 38 QPSK 10MHz CH-High, 1 RB



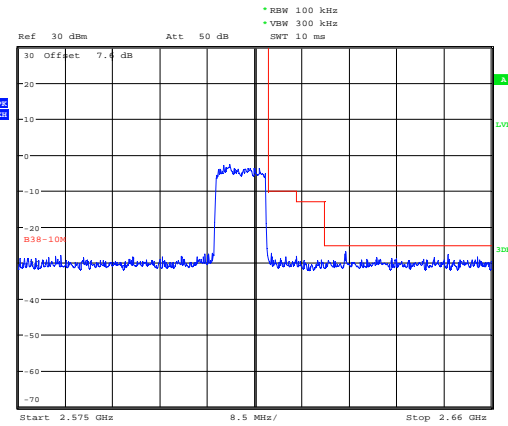
Date: 17.MAY.2018 16:45:20

LTE Band 38 QPSK 10MHz CH-Low, 100%RB



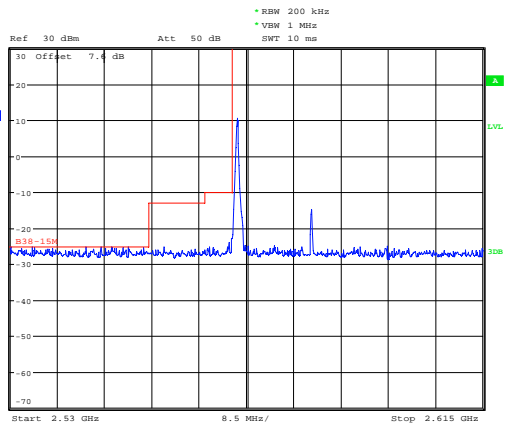
Date: 17.MAY.2018 16:42:41

LTE Band 38 QPSK 10MHz CH-High, 100%RB



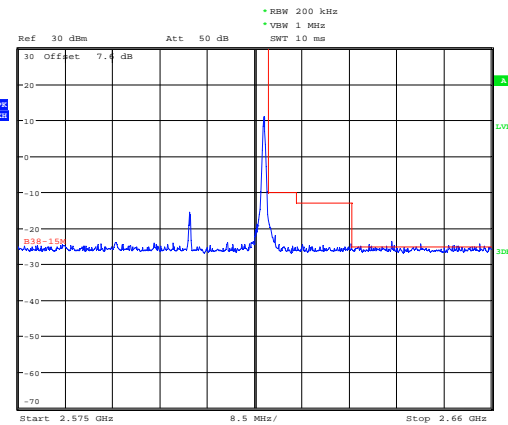
Date: 17.MAY.2018 16:46:20

LTE Band 38 QPSK 15MHz CH-Low, 1 RB



Date: 17.MAY.2018 16:51:57

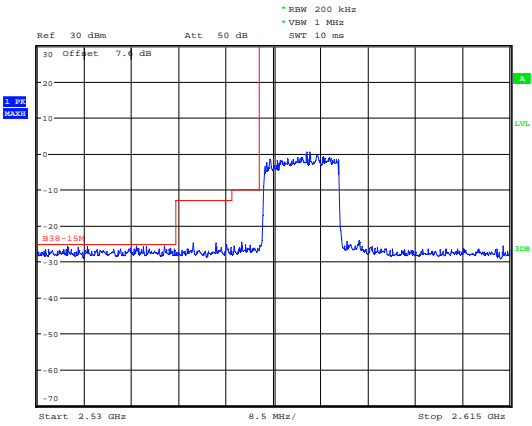
LTE Band 38 QPSK 15MHz CH-High, 1 RB



Date: 17.MAY.2018 16:49:51

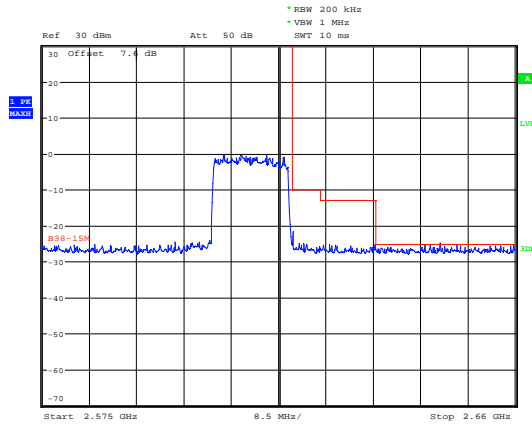


LTE Band 38 QPSK 15MHz CH-Low, 100%RB



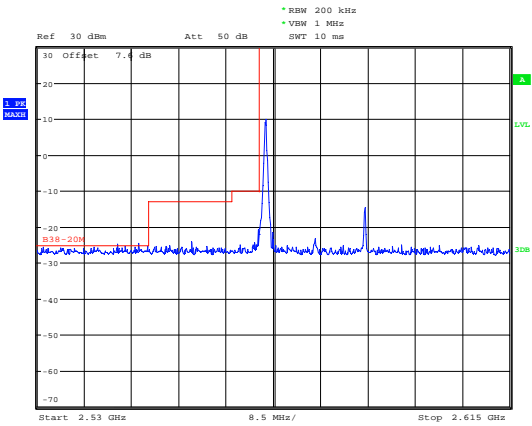
Date: 17.MAY.2018 16:57:47

LTE Band 38 QPSK 15MHz CH-High, 100%RB



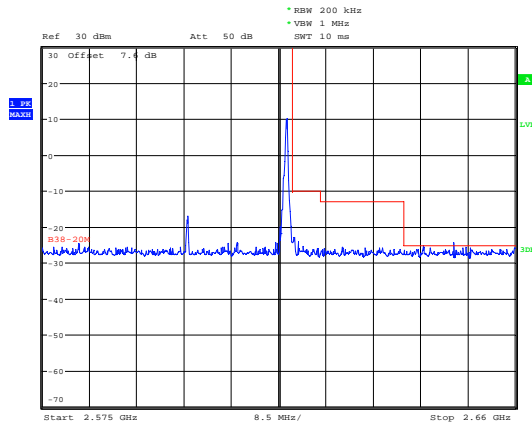
Date: 17.MAY.2018 16:50:57

LTE Band 38 QPSK 20MHz CH-Low, 1 RB



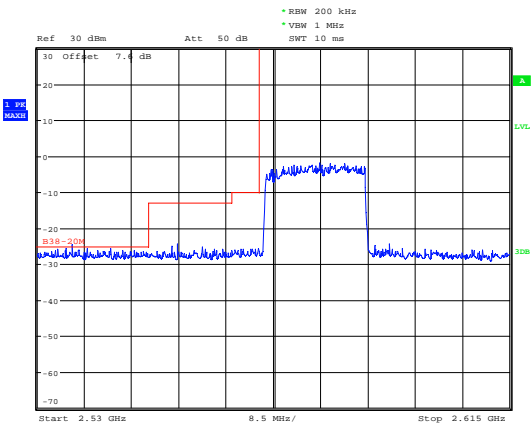
Date: 17.MAY.2018 16:58:27

LTE Band 38 QPSK 20MHz CH-High, 1 RB



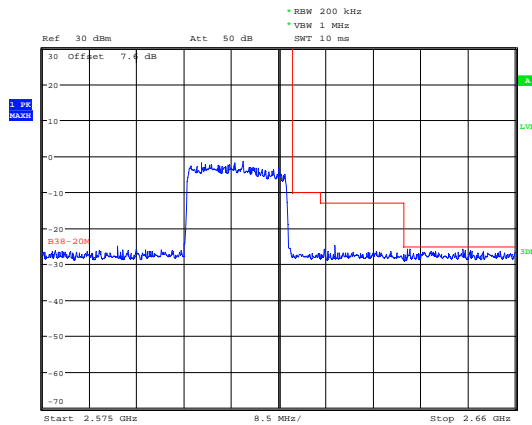
Date: 17.MAY.2018 17:00:58

LTE Band 38 QPSK 20MHz CH-Low, 100%RB



Date: 17.MAY.2018 16:59:59

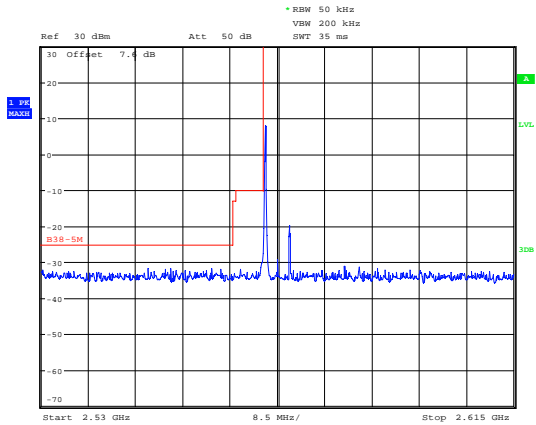
LTE Band 38 QPSK 20MHz CH-High, 100%RB



Date: 17.MAY.2018 17:01:43

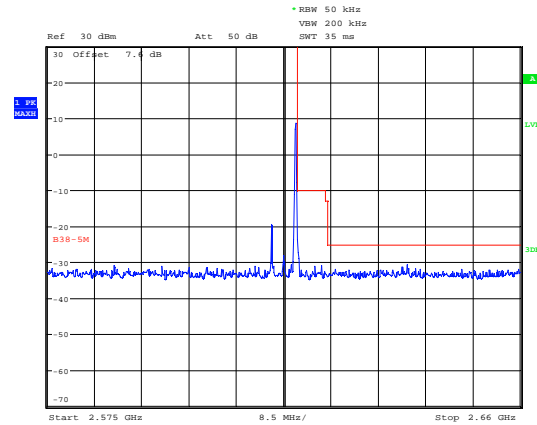


LTE Band 38 16QAM 5MHz CH-Low, 1 RB



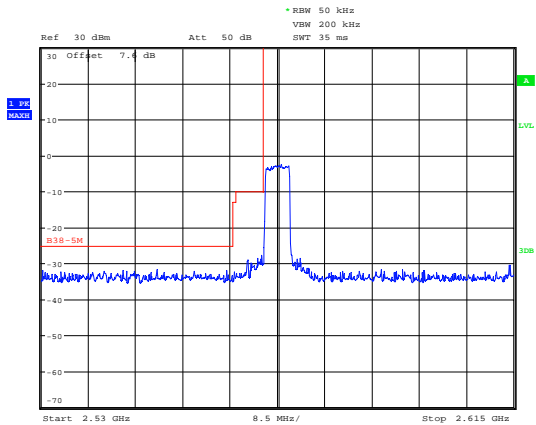
Date: 17.MAY.2018 16:38:22

LTE Band 38 16QAM 5MHz CH-High, 1 RB



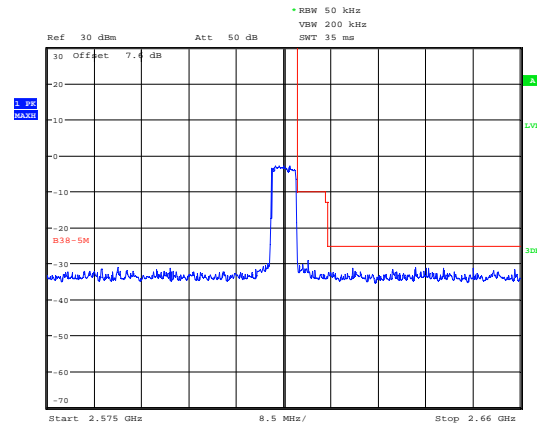
Date: 17.MAY.2018 16:33:10

LTE Band 38 16QAM 5MHz CH-Low, 100%RB



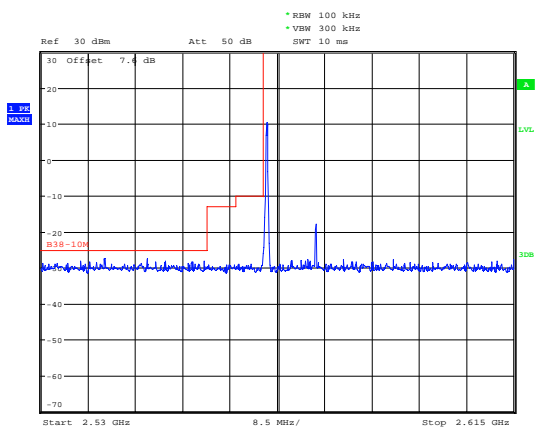
Date: 17.MAY.2018 16:38:38

LTE Band 38 16QAM 5MHz CH-High, 100%RB



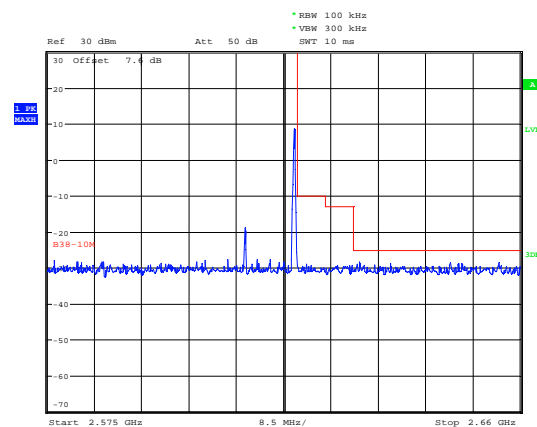
Date: 17.MAY.2018 16:34:33

LTE Band 38 16QAM 10MHz CH-Low, 1 RB



Date: 17.MAY.2018 16:41:53

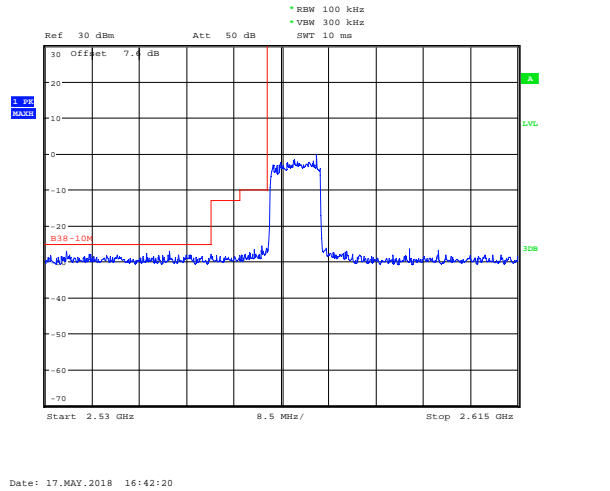
LTE Band 38 16QAM 10MHz CH-High, 1 RB



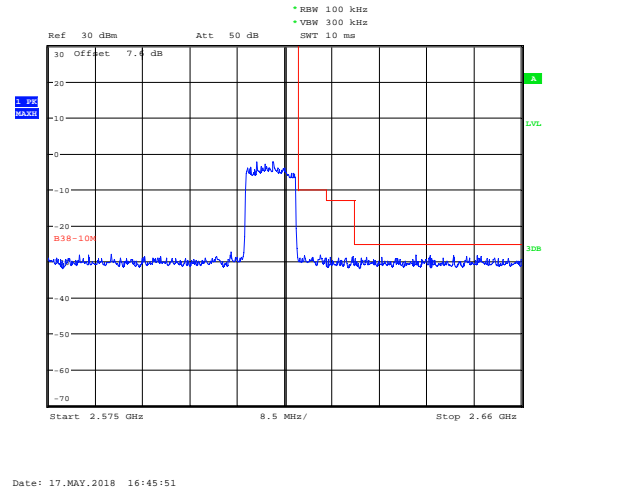
Date: 17.MAY.2018 16:45:35



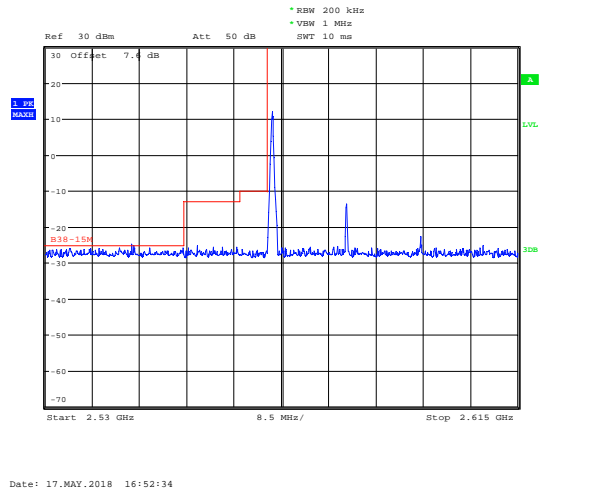
LTE Band 38 16QAM 10MHz CH-Low, 100%RB



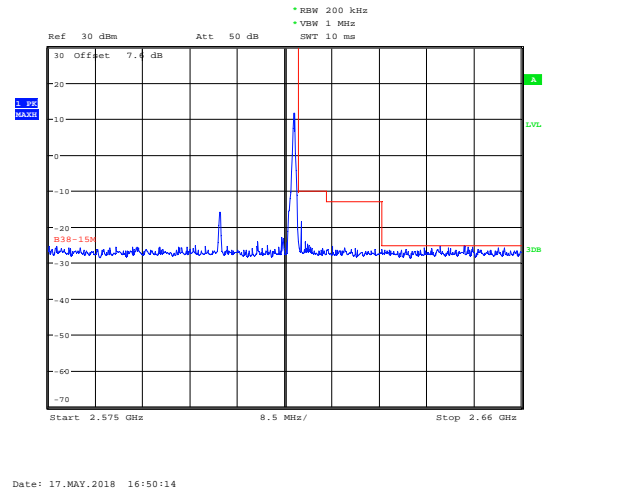
LTE Band 38 16QAM 10MHz CH-High, 100%RB



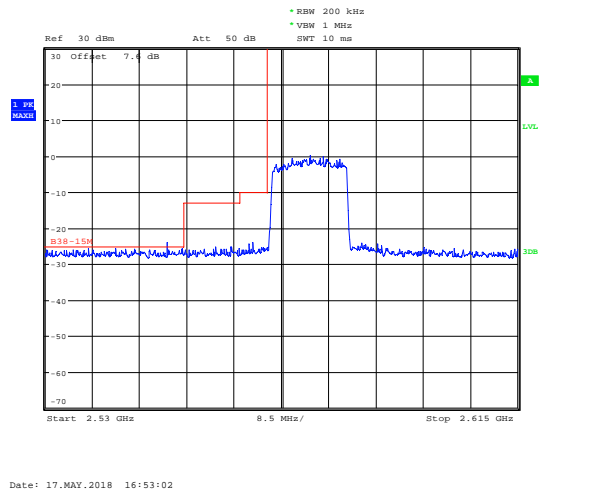
LTE Band 38 16QAM 15MHz CH-Low, 1 RB



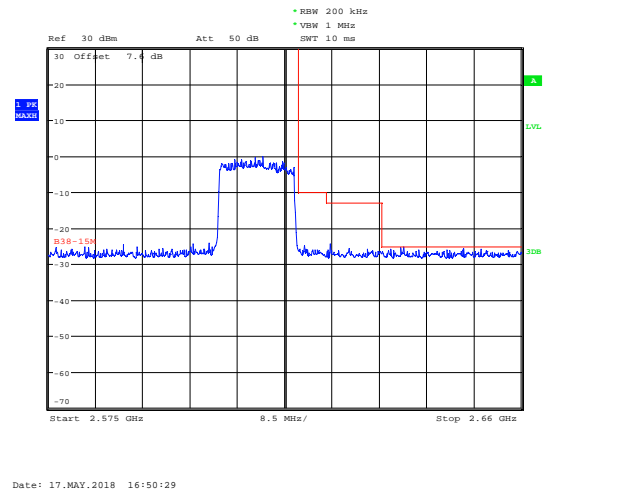
LTE Band 38 16QAM 15MHz CH-High, 1 RB



LTE Band 38 16QAM 15MHz CH-Low, 100%RB

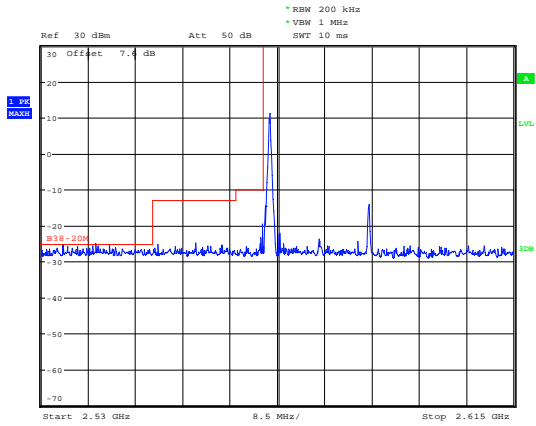


LTE Band 38 16QAM 15MHz CH-High, 100%RB



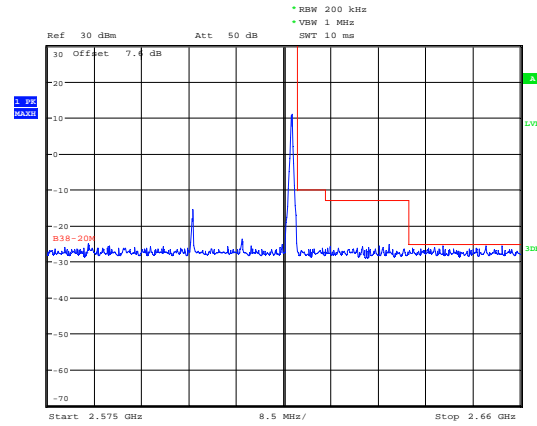


LTE Band 38 16QAM 20MHz CH-Low, RB 1



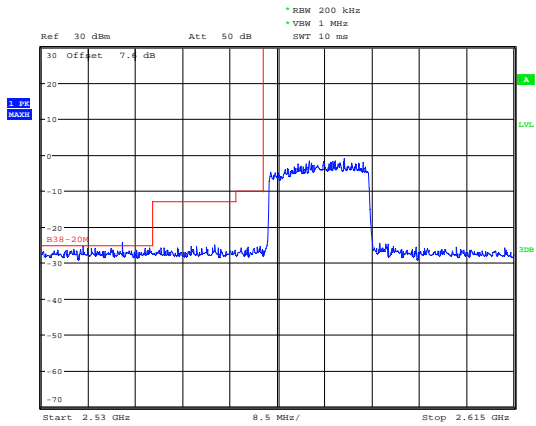
Date: 17.MAY.2018 16:59:17

LTE Band 38 16QAM 20MHz CH-High, RB 1



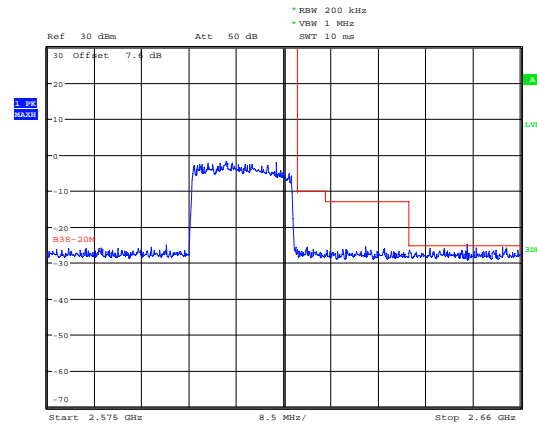
Date: 17.MAY.2018 17:01:14

LTE Band 38 16QAM 20MHz CH-Low, 100%RB



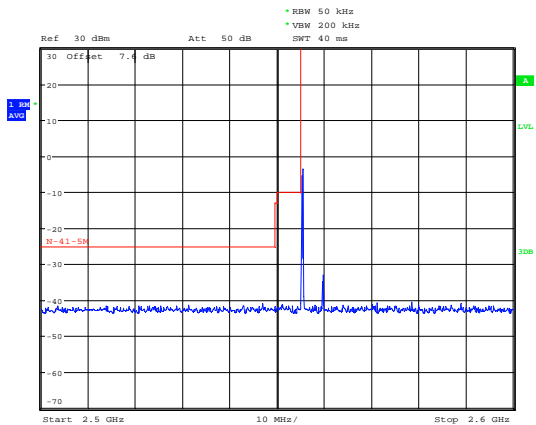
Date: 17.MAY.2018 16:59:41

LTE Band 38 16QAM 20MHz CH-High, 100%RB



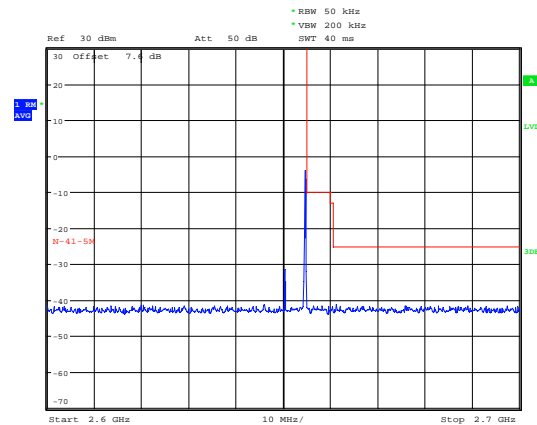
Date: 17.MAY.2018 17:01:23

LTE Band 41 QPSK 5MHz CH-Low, 1 RB



Date: 2.MAY.2018 11:23:11

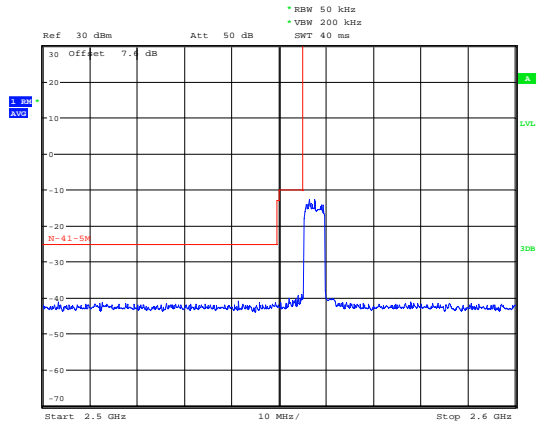
LTE Band 41 QPSK 5MHz CH-High, 1 RB



Date: 2.MAY.2018 11:52:46

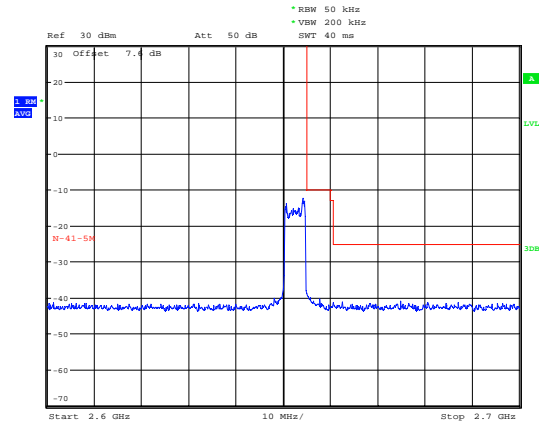


LTE Band 41 QPSK 5MHz CH-Low, 100%RB



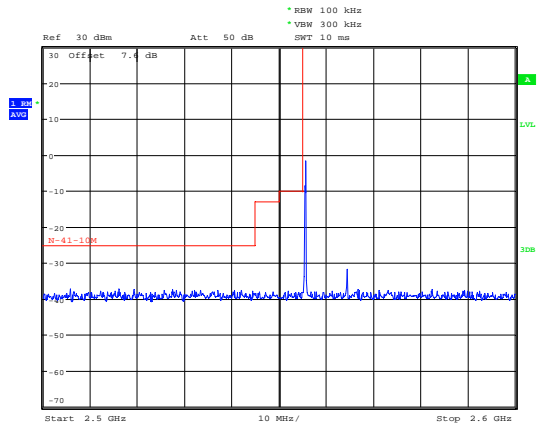
Date: 2.MAY.2018 11:29:11

LTE Band 41 QPSK 5MHz CH-High, 100%RB



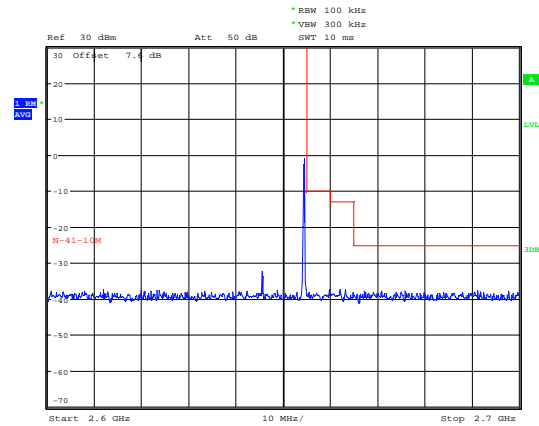
Date: 2.MAY.2018 11:33:02

LTE Band 41 QPSK 10MHz CH-Low, 1 RB



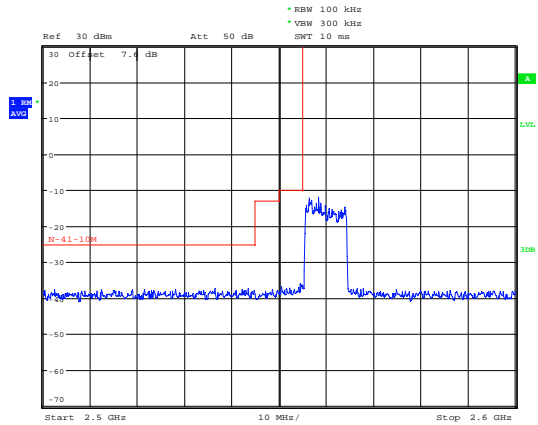
Date: 2.MAY.2018 11:41:43

LTE Band 41 QPSK 10MHz CH-High, 1 RB



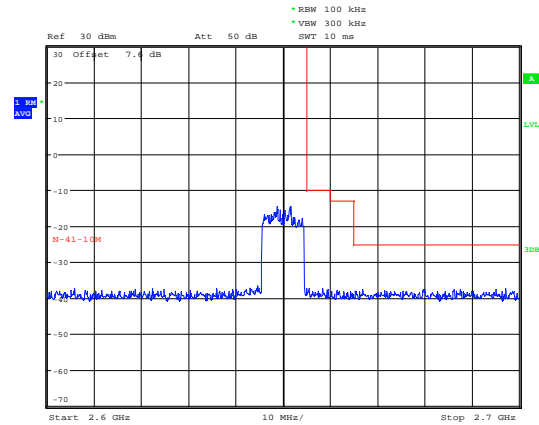
Date: 2.MAY.2018 11:45:45

LTE Band 41 QPSK 10MHz CH-Low, 100%RB



Date: 2.MAY.2018 11:42:16

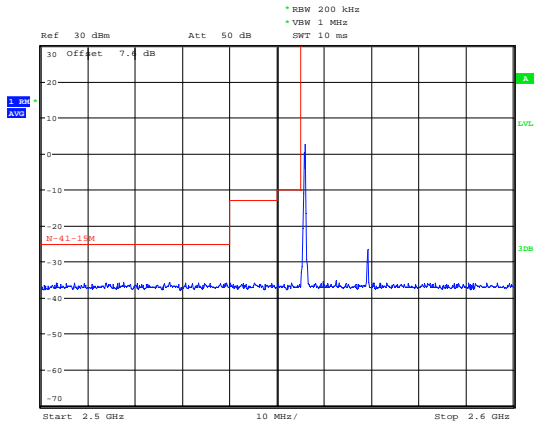
LTE Band 41 QPSK 10MHz CH-High, 100%RB



Date: 2.MAY.2018 11:46:04

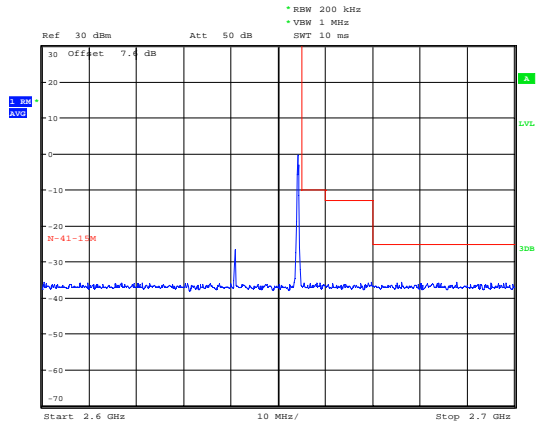


LTE Band 41 QPSK 15MHz CH-Low, 1 RB



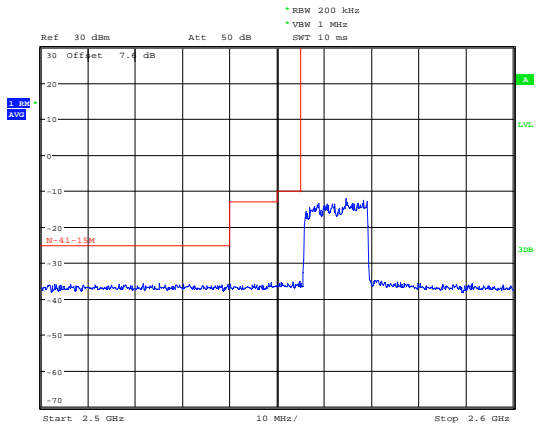
Date: 2.MAY.2018 11:52:02

LTE Band 41 QPSK 15MHz CH-High, 1 RB



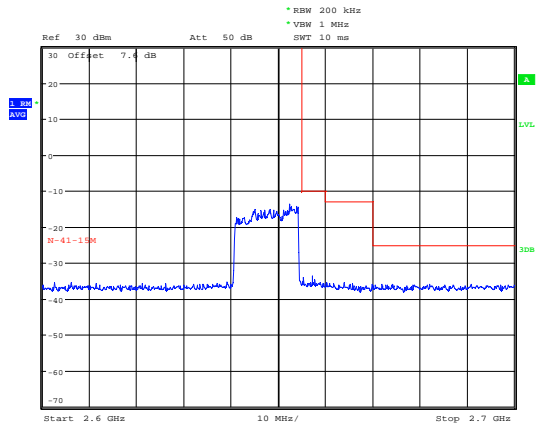
Date: 2.MAY.2018 11:54:26

LTE Band 41 QPSK 15MHz CH-Low, 100%RB



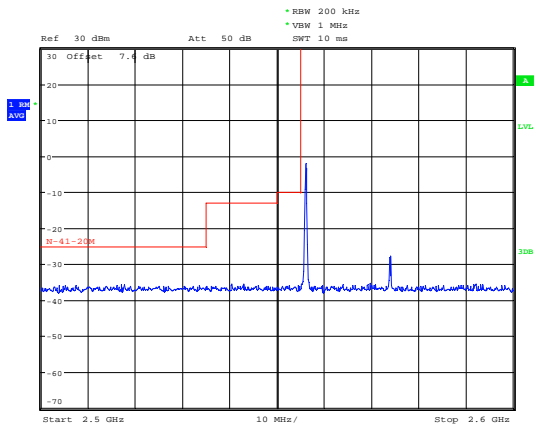
Date: 2.MAY.2018 11:52:25

LTE Band 41 QPSK 15MHz CH-High, 100%RB



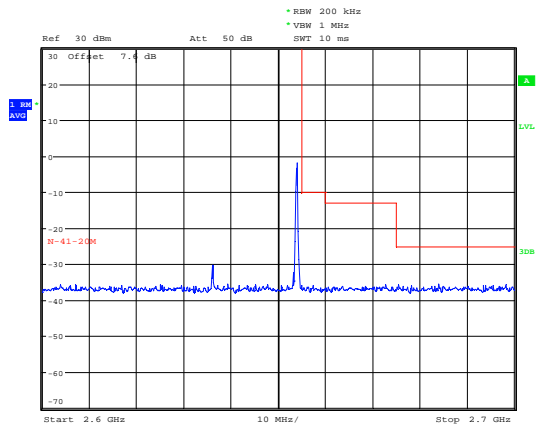
Date: 2.MAY.2018 11:54:43

LTE Band 41 QPSK 20MHz CH-Low, 1 RB



Date: 2.MAY.2018 11:56:24

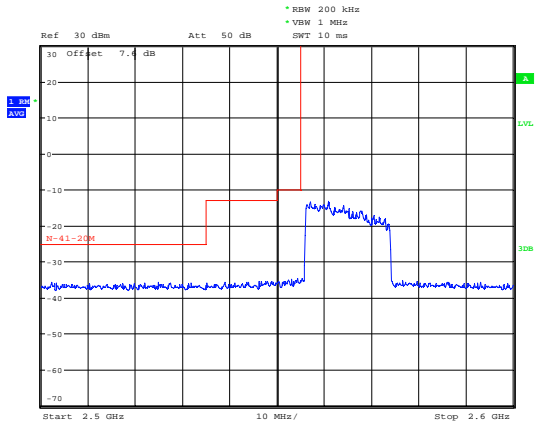
LTE Band 41 QPSK 20MHz CH-High, 1 RB



Date: 2.MAY.2018 11:57:42

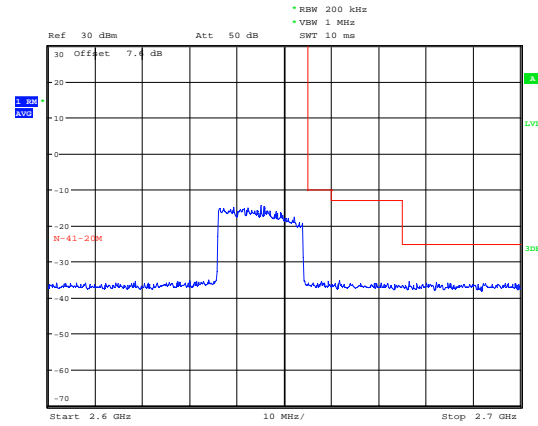


LTE Band 41 QPSK 20MHz CH-Low, 100%RB



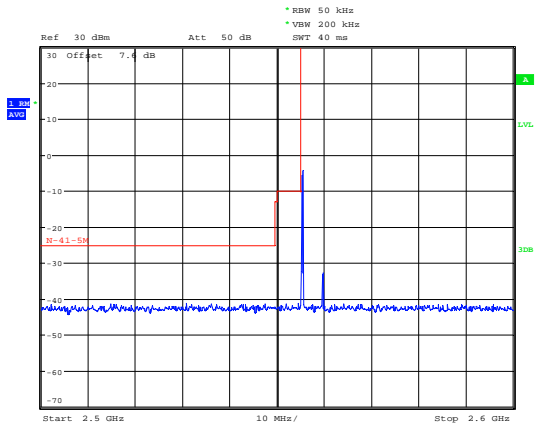
Date: 2.MAY.2018 11:56:38

LTE Band 41 QPSK 20MHz CH-High, 100%RB



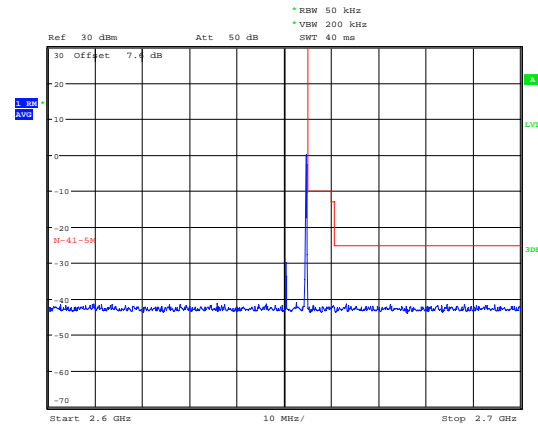
Date: 2.MAY.2018 11:58:03

LTE Band 41 16QAM 5MHz CH-Low, 1 RB



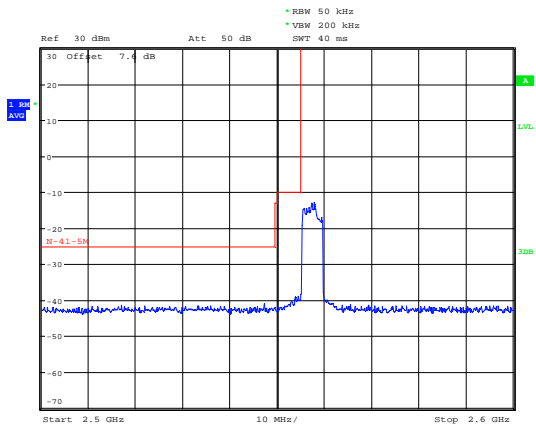
Date: 2.MAY.2018 11:31:31

LTE Band 41 16QAM 5MHz CH-High, 1 RB



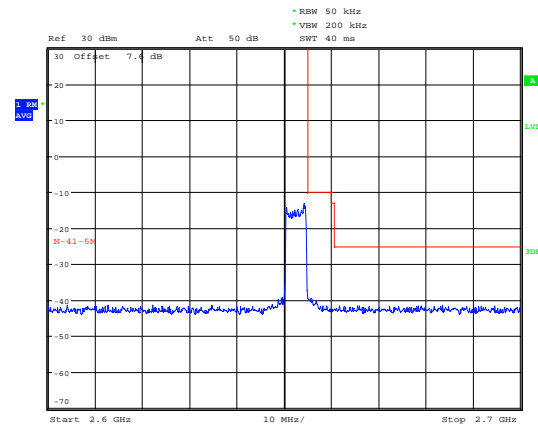
Date: 2.MAY.2018 11:33:31

LTE Band 41 16QAM 5MHz CH-Low, 100%RB



Date: 2.MAY.2018 11:29:52

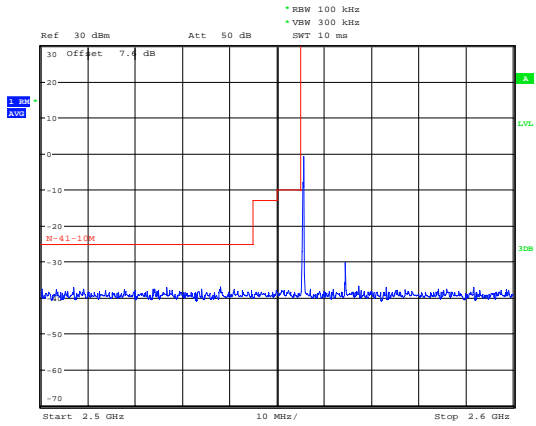
LTE Band 41 16QAM 5MHz CH-High, 100%RB



Date: 2.MAY.2018 11:33:14

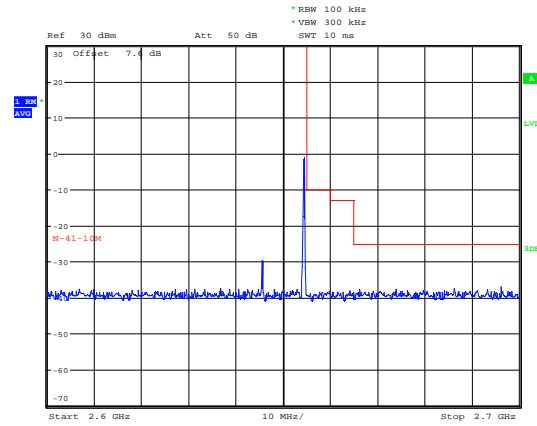


LTE Band 41 16QAM 10MHz CH-Low, 1 RB



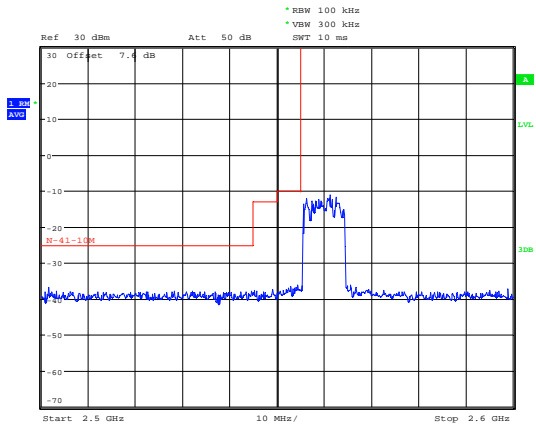
Date: 2.MAY.2018 11:42:52

LTE Band 41 16QAM 10MHz CH-High, 1 RB



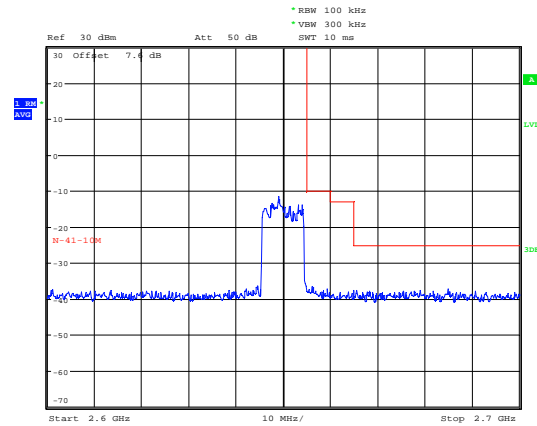
Date: 2.MAY.2018 11:46:38

LTE Band 41 16QAM 10MHz CH-Low, 100%RB



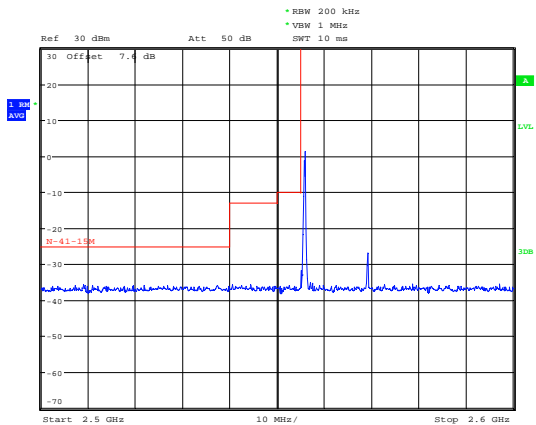
Date: 2.MAY.2018 11:42:40

LTE Band 41 16QAM 10MHz CH-High, 100%RB



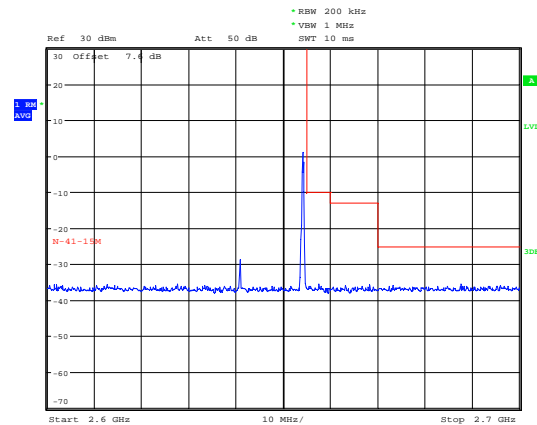
Date: 2.MAY.2018 11:46:17

LTE Band 41 16QAM 15MHz CH-Low, 1 RB



Date: 2.MAY.2018 11:52:55

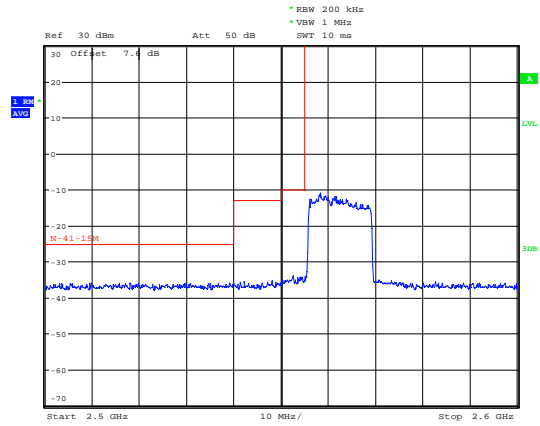
LTE Band 41 16QAM 15MHz CH-High, 1 RB



Date: 2.MAY.2018 11:55:06

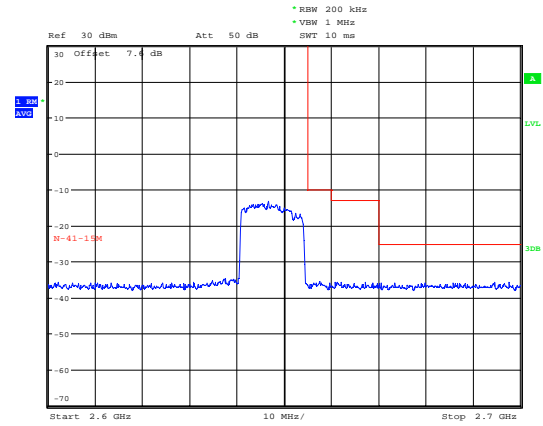


LTE Band 41 16QAM 15MHz CH-Low, 100%RB



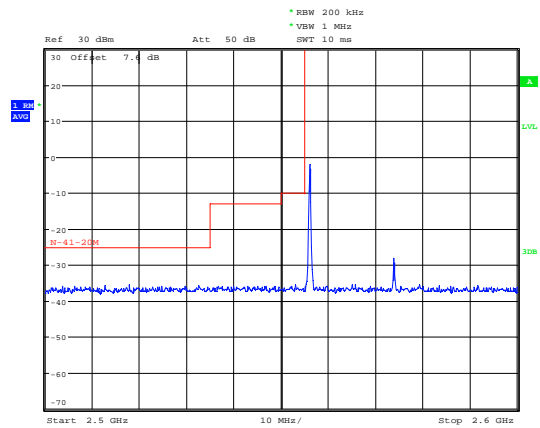
Date: 2.MAY.2018 11:52:32

LTE Band 41 16QAM 15MHz CH-High, 100%RB



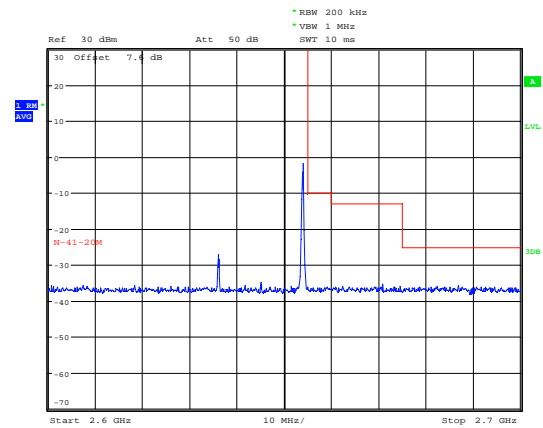
Date: 2.MAY.2018 11:54:54

LTE Band 41 16QAM 20MHz CH-Low, RB 1



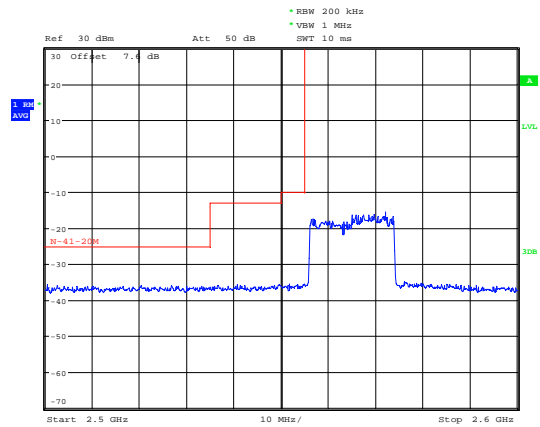
Date: 2.MAY.2018 11:57:00

LTE Band 41 16QAM 20MHz CH-High, RB 1



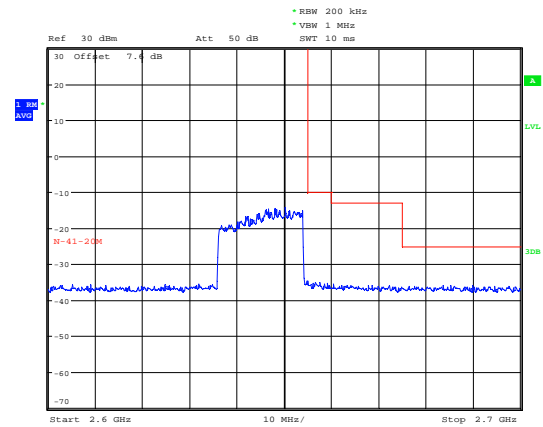
Date: 2.MAY.2018 11:58:28

LTE Band 41 16QAM 20MHz CH-Low, 100%RB



Date: 2.MAY.2018 11:56:49

LTE Band 41 16QAM 20MHz CH-High, 100%RB



Date: 2.MAY.2018 11:58:12

5.5 Peak-to-Average Power Ratio (PAPR)

Ambient condition

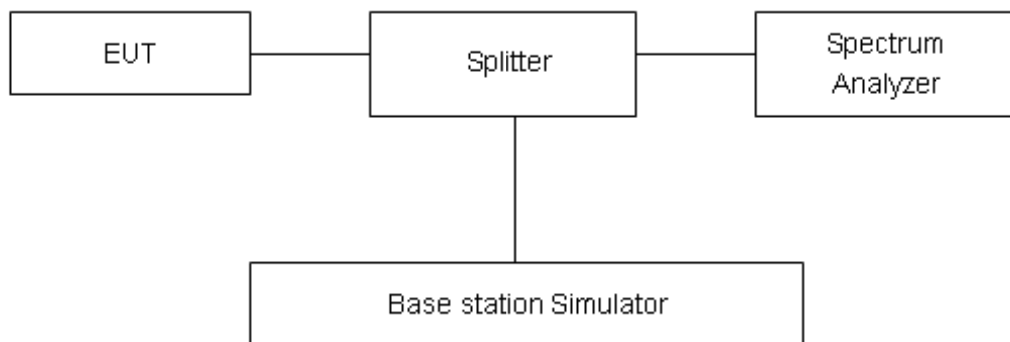
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

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

$$PAPR (dB) = Ppk (dBm) - PAvg (dBm).$$

Test Setup



Limits

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

Measurement Uncertainty

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

Test Results

LTE Band 7								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	20775	2502.5	13.34	7.25	6.09	≤13	PASS
		21100	2535	13.39	7.31	6.08	≤13	PASS
		21425	2567.5	13.32	7.19	6.13	≤13	PASS
	10	20800	2505	12.53	6.68	5.85	≤13	PASS
		21100	2535	12.65	6.78	5.87	≤13	PASS
		21400	2565	12.85	6.93	5.92	≤13	PASS
	15	20825	2507.5	13.04	6.78	6.26	≤13	PASS
		21100	2535	13.18	6.97	6.21	≤13	PASS
		21375	2562.5	13.43	7.11	6.32	≤13	PASS
	20	20850	2510	12.49	6.60	5.89	≤13	PASS
		21100	2535	12.73	6.90	5.83	≤13	PASS
		21350	2560	12.84	6.90	5.94	≤13	PASS
16QAM	5	20775	2502.5	14.19	7.14	7.05	≤13	PASS
		21100	2535	14.30	7.25	7.05	≤13	PASS
		21425	2567.5	14.37	7.25	7.12	≤13	PASS
	10	20800	2505	13.54	6.63	6.91	≤13	PASS
		21100	2535	13.65	6.73	6.92	≤13	PASS
		21400	2565	14.00	6.97	7.03	≤13	PASS
	15	20825	2507.5	13.76	6.62	7.14	≤13	PASS
		21100	2535	13.96	6.86	7.10	≤13	PASS
		21375	2562.5	14.27	7.07	7.20	≤13	PASS
	20	20850	2510	13.43	6.49	6.94	≤13	PASS
		21100	2535	13.41	6.53	6.88	≤13	PASS
		21350	2560	13.89	6.87	7.02	≤13	PASS

LTE Band 38								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	37775	2572.5	15.63	7.33	8.30	≤13	PASS
		38000	2595	14.56	6.80	7.76	≤13	PASS
		38225	2617.5	15.22	7.49	7.73	≤13	PASS
	10	37800	2575	14.33	6.74	7.59	≤13	PASS
		38000	2595	14.14	6.40	7.74	≤13	PASS
		38200	2615	15.13	7.00	8.13	≤13	PASS
	15	37825	2577.5	15.77	6.81	8.96	≤13	PASS
		38000	2595	14.52	6.50	8.02	≤13	PASS
		38175	2612.5	15.51	7.03	8.48	≤13	PASS
	20	37850	2580	14.88	7.08	7.80	≤13	PASS
		38000	2595	14.17	6.54	7.63	≤13	PASS
		38150	2610	14.47	6.89	7.58	≤13	PASS
16QAM	5	37775	2572.5	16.15	7.07	9.08	≤13	PASS
		38000	2595	16.35	6.80	9.55	≤13	PASS
		38225	2617.5	16.13	7.26	8.87	≤13	PASS
	10	37800	2575	15.00	6.54	8.46	≤13	PASS
		38000	2595	14.78	6.44	8.34	≤13	PASS
		38200	2615	15.19	6.76	8.43	≤13	PASS
	15	37825	2577.5	15.78	6.54	9.24	≤13	PASS
		38000	2595	15.76	6.52	9.24	≤13	PASS
		38175	2612.5	16.20	6.99	9.21	≤13	PASS
	20	37850	2580	15.57	6.80	8.77	≤13	PASS
		38000	2595	14.84	6.35	8.49	≤13	PASS
		38150	2610	15.26	6.82	8.44	≤13	PASS

LTE Band 41								
Modulation	Bandwidth ((MHz))	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	40265	2557.5	15.37	7.62	7.75	≤13	PASS
		40740	2605	15.23	7.38	7.85	≤13	PASS
		41215	2652.5	15.22	6.92	8.30	≤13	PASS
	10	40290	2560	15.63	7.15	8.48	≤13	PASS
		40740	2605	14.43	6.70	7.73	≤13	PASS
		41190	2650	14.00	6.10	7.90	≤13	PASS
	15	40315	2562.5	15.80	7.13	8.67	≤13	PASS
		40740	2605	15.30	7.05	8.25	≤13	PASS
		41165	2647.5	14.80	6.53	8.27	≤13	PASS
	20	40340	2565	16.52	6.99	9.53	≤13	PASS
		40740	2605	14.80	6.93	7.87	≤13	PASS
		41140	2645	14.07	6.21	7.86	≤13	PASS
16QAM	5	40265	2557.5	16.72	7.77	8.95	≤13	PASS
		40740	2605	15.80	7.11	8.69	≤13	PASS
		41215	2652.5	15.96	6.86	9.10	≤13	PASS
	10	40290	2560	16.23	7.29	8.94	≤13	PASS
		40740	2605	15.41	6.45	8.96	≤13	PASS
		41190	2650	14.68	6.06	8.62	≤13	PASS
	15	40315	2562.5	15.70	7.19	8.51	≤13	PASS
		40740	2605	15.74	6.73	9.01	≤13	PASS
		41165	2647.5	15.19	6.22	8.97	≤13	PASS
	20	40340	2565	16.17	6.90	9.27	≤13	PASS
		40740	2605	15.29	6.68	8.61	≤13	PASS
		41140	2645	15.16	6.13	9.03	≤13	PASS

5.6 Frequency Stability

Ambient condition

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

Method of Measurement

Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +50°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 +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

Frequency Stability (Voltage Variation)

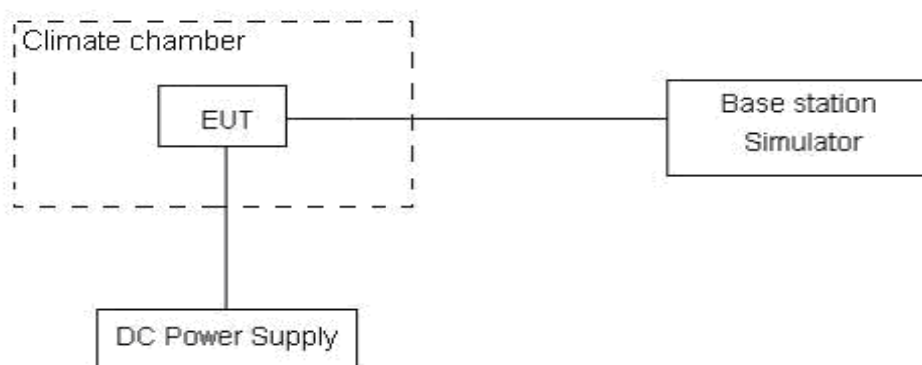
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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 3.5 V and 4.35 V, with a nominal voltage of 3.8V.

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

LTE Band 7					
(QPSK, 20MHz BANDWIDTH)					
Condition		2500	2570	Delta (Hz)	Frequency Stability(ppm)
Temperature	Voltage	F low@-13dBm(MHz)	F high@-13dBm(MHz)		
Normal (25°C)	Normal	2500.4385	2569.6777	-6.06	-0.00239
Extreme (50°C)		2500.4383	2569.6779	-2.97	-0.00117
Extreme (40°C)		2500.4384	2569.6778	-5.31	-0.00209
Extreme (30°C)		2500.4386	2569.6776	-1.16	-0.00046
Extreme (20°C)		2500.4381	2569.6781	-2.13	-0.00084
Extreme (10C)		2500.4382	2569.6784	-3.06	-0.00121
Extreme (0°C)		2500.4387	2569.6775	-5.05	-0.00199
Extreme (-10°C)		2500.4388	2569.6774	-0.04	-0.00001
Extreme (-20°C)		2500.4382	2569.6782	-2.16	-0.00085
Extreme (-30°C)		2500.4393	2569.6772	-3.23	-0.00127
25°C	LV	2500.4392	2569.6773	-0.90	-0.00035
	HV	2500.4394	2569.6768	-2.46	-0.00097
(16QAM,20MHz BANDWIDTH)					
Condition		2500	2570	Delta (Hz)	Frequency Stability(ppm)
Temperature	Voltage	F low@-13dBm(MHz)	F high@-13dBm(MHz)		
Normal (25°C)	Normal	2500.3784	2569.6118	-2.82	-0.00111
Extreme (50°C)		2500.3998	2569.6126	-1.24	-0.00049
Extreme (40°C)		2500.3999	2569.6119	-3.85	-0.00152
Extreme (30°C)		2500.4001	2569.6117	-3.06	-0.00121
Extreme (20°C)		2500.3996	2569.6122	-6.79	-0.00268
Extreme (10C)		2500.3997	2569.6121	-6.05	-0.00239
Extreme (0°C)		2500.4002	2569.6116	-2.73	-0.00108
Extreme (-10°C)		2500.4003	2569.6115	-4.62	-0.00182
Extreme (-20°C)		2500.3995	2569.6123	-0.96	-0.00038
Extreme (-30°C)		2500.4005	2569.6113	0.13	0.00005
25°C	LV	2500.4007	2569.6111	1.28	0.00051
	HV	2500.4009	2569.6109	-3.49	-0.00138

LTE Band 38					
(QPSK, 20MHz BANDWIDTH)					
Condition		2570	2620	Delta (Hz)	Frequency Stability(ppm)
Temperature	Voltage	F low@-13dBm(MHz)	F high@-13dBm(MHz)		
Normal (25°C)	Normal	2570.3654	2619.6638	8.73	0.00336
Extreme (50°C)		2570.3652	2619.6641	-4.67	-0.00180
Extreme (40°C)		2570.3653	2619.6639	1.02	0.00039
Extreme (30°C)		2570.3655	2619.6637	6.71	0.00259
Extreme (20°C)		2570.3652	2619.6642	2.66	0.00103
Extreme (10C)		2570.3651	2619.6641	1.11	0.00043
Extreme (0°C)		2570.3656	2619.6636	0.54	0.00021
Extreme (-10°C)		2570.3657	2619.6635	0.15	0.00006
Extreme (-20°C)		2570.3649	2619.6643	9.72	0.00375
Extreme (-30°C)		2570.3659	2619.6633	5.89	0.00227
25°C	LV	2570.3661	2619.6631	-8.51	-0.00328
	HV	2570.3663	2619.6629	4.04	0.00156
(16QAM,20MHz BANDWIDTH)					
Condition		2570	2620	Delta (Hz)	Frequency Stability(ppm)
Temperature	Voltage	F low@-13dBm(MHz)	F high@-13dBm(MHz)		
Normal (25°C)	Normal	2570.4163	2619.6117	9.92	0.00382
Extreme (50°C)		2570.4161	2619.6112	-2.29	-0.00088
Extreme (40°C)		2570.4162	2619.6111	3.40	0.00131
Extreme (30°C)		2570.4164	2619.6109	9.09	0.00350
Extreme (20°C)		2570.4159	2619.6114	5.04	0.00194
Extreme (10C)		2570.4162	2619.6113	2.30	0.00089
Extreme (0°C)		2570.4165	2619.6108	1.73	0.00067
Extreme (-10°C)		2570.4166	2619.6107	1.34	0.00052
Extreme (-20°C)		2570.4158	2619.6115	10.91	0.00420
Extreme (-30°C)		2570.4168	2619.6105	7.08	0.00273
25°C	LV	2570.4179	2619.6103	-7.32	-0.00282
	HV	2570.4172	2619.6101	5.23	0.00202



LTE Band 41					
(QPSK, 20MHz BANDWIDTH)					
Condition		2555	2655	Delta (Hz)	Frequency Stability(ppm)
Temperature	Voltage	F low@-13dBm(MHz)	F high@-13dBm(MHz)		
Normal (25°C)	Normal	2555.3767	2654.6435	10.10	0.00388
Extreme (50°C)		2555.3767	2654.6435	-3.30	-0.00127
Extreme (40°C)		2555.3767	2654.6435	2.39	0.00092
Extreme (30°C)		2555.3767	2654.6435	8.08	0.00310
Extreme (20°C)		2555.3767	2654.6435	4.03	0.00155
Extreme (10C)		2555.3767	2654.6435	2.48	0.00095
Extreme (0°C)		2555.3767	2654.6435	1.91	0.00073
Extreme (-10°C)		2555.3767	2654.6435	1.52	0.00058
Extreme (-20°C)		2555.3767	2654.6435	11.09	0.00426
Extreme (-30°C)		2555.3767	2654.6435	7.26	0.00279
25°C		LV	2555.3767	2654.6435	-7.14
	HV	2555.3767	2654.6435	5.41	0.00208
(16QAM,20MHz BANDWIDTH)					
Condition		2555	2655	Delta (Hz)	Frequency Stability(ppm)
Temperature	Voltage	F low@-13dBm(MHz)	F high@-13dBm(MHz)		
Normal (25°C)	Normal	2555.4165	2654.6126	11.29	0.00433
Extreme (50°C)		2555.4158	2654.6128	-0.92	-0.00035
Extreme (40°C)		2555.4159	2654.6127	4.77	0.00183
Extreme (30°C)		2555.4161	2654.6125	10.46	0.00402
Extreme (20°C)		2555.4156	2654.6131	6.41	0.00246
Extreme (10C)		2555.4157	2654.6129	3.67	0.00141
Extreme (0°C)		2555.4162	2654.6124	3.10	0.00119
Extreme (-10°C)		2555.4163	2654.6123	2.71	0.00104
Extreme (-20°C)		2555.4155	2654.6131	12.28	0.00471
Extreme (-30°C)		2555.4165	2654.6121	8.45	0.00324
25°C		LV	2555.4167	2654.6119	-5.95
	HV	2555.4169	2654.6117	6.60	0.00253

5.7 Spurious Emissions at Antenna Terminals

Ambient condition

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

Method of Measurement

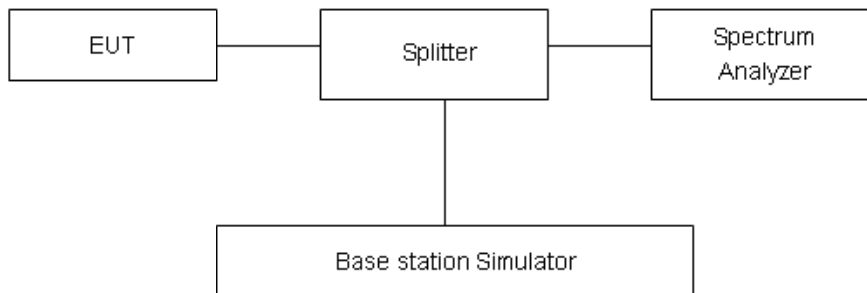
The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.

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

Test setup



Limits

Rule Part 27.53(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.

Rule Part 27.53(i) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2570 and 2620 MHz.

Part 27.53(m) Limit	-25 dBm
Part 27.53(i) Limit	-13 dBm

Measurement Uncertainty

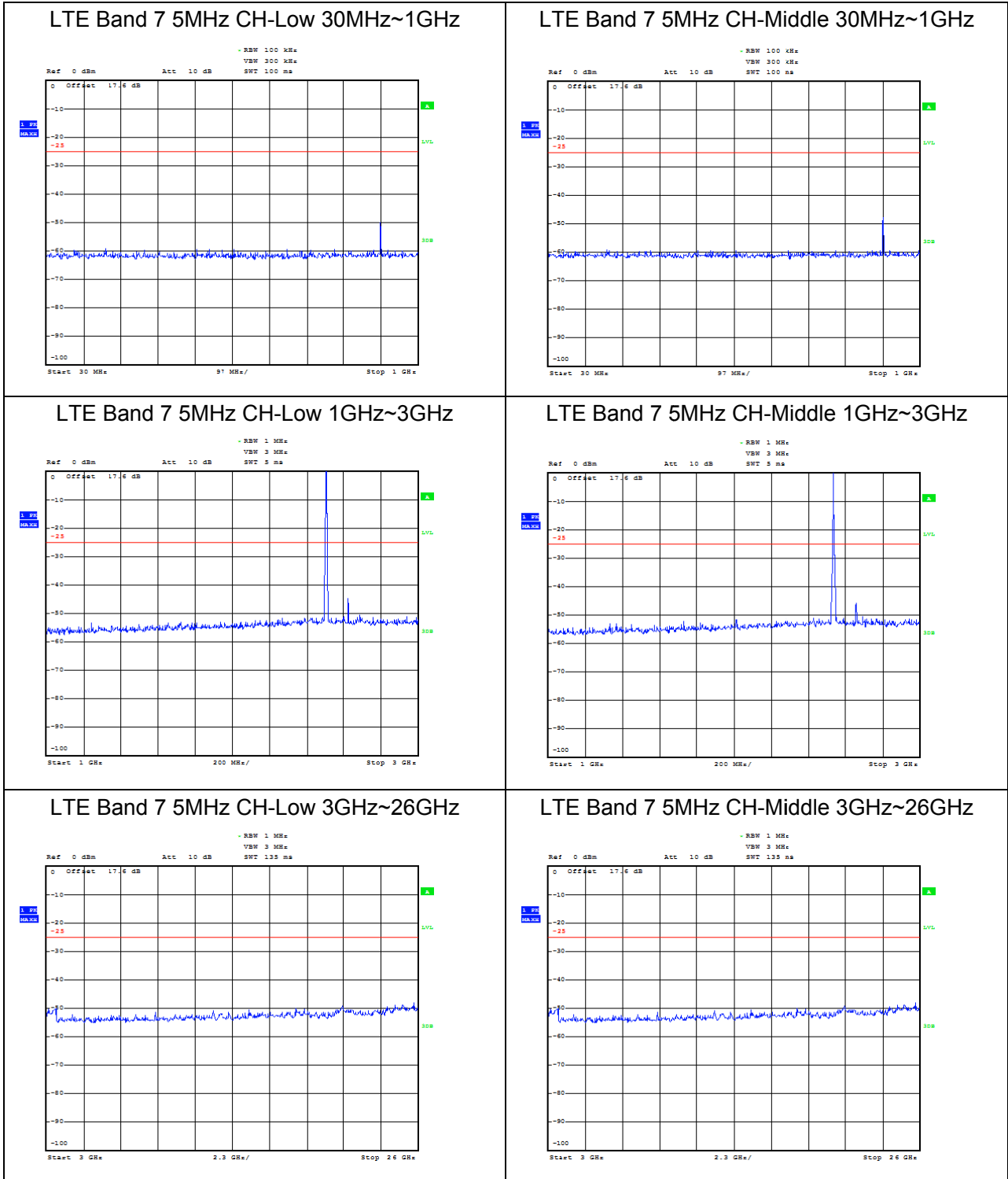
The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

Test Result

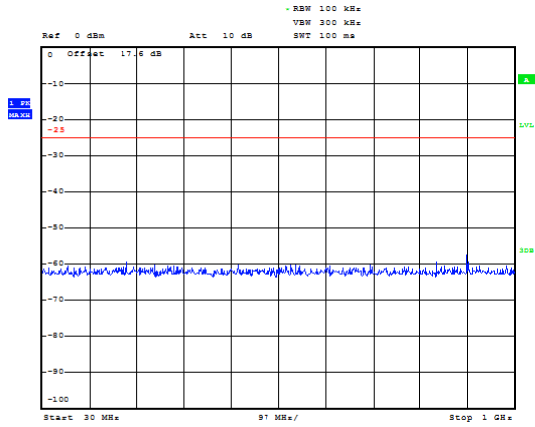
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

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

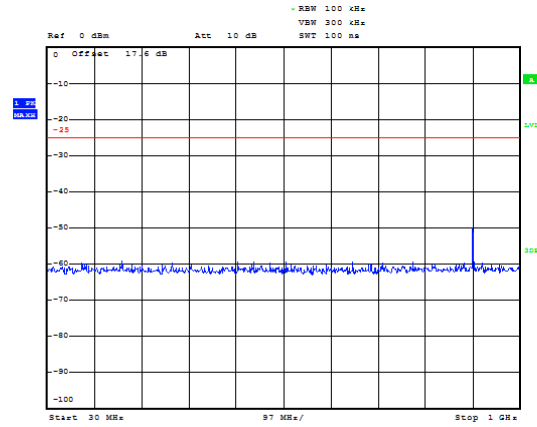




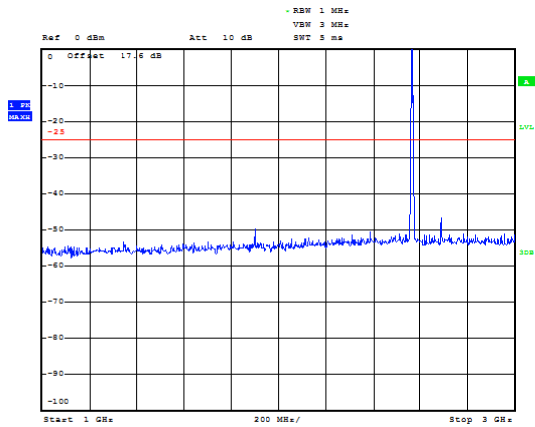
LTE Band 7 5MHz CH-High 30MHz~1GHz



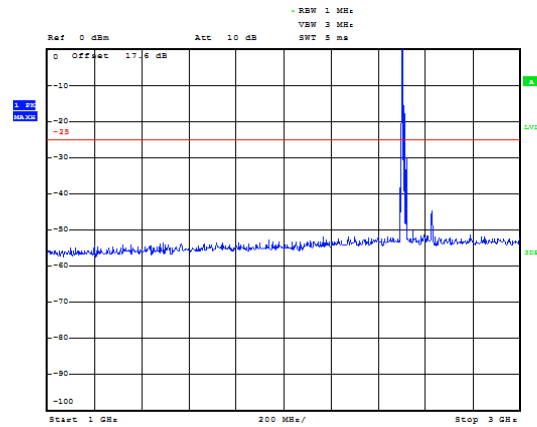
LTE Band 7 10MHz CH-Low 30MHz~1GHz



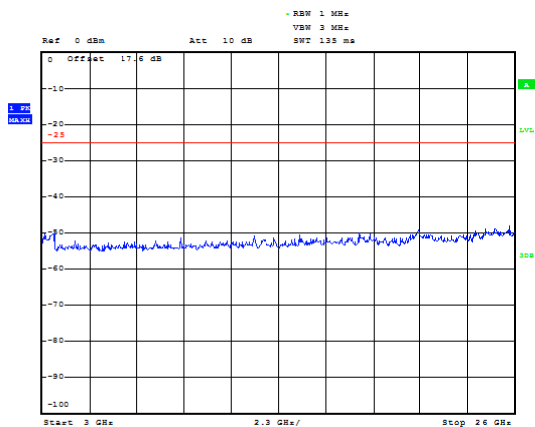
LTE Band 7 5MHz CH-High 1GHz~3GHz



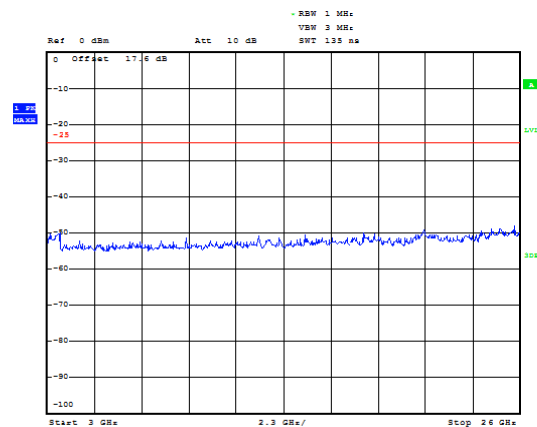
LTE Band 7 10MHz CH-Low 1GHz~3GHz



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

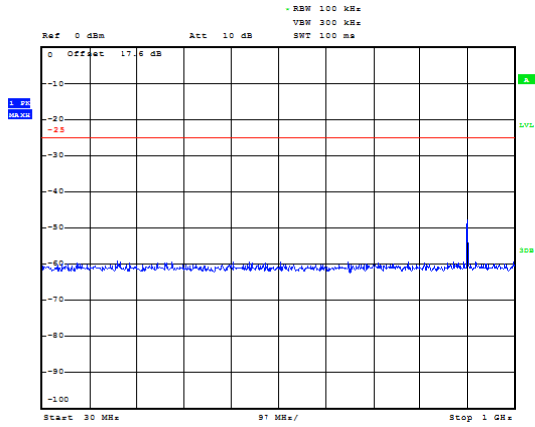


LTE Band 7 10MHz CH-Low 3GHz~26GHz

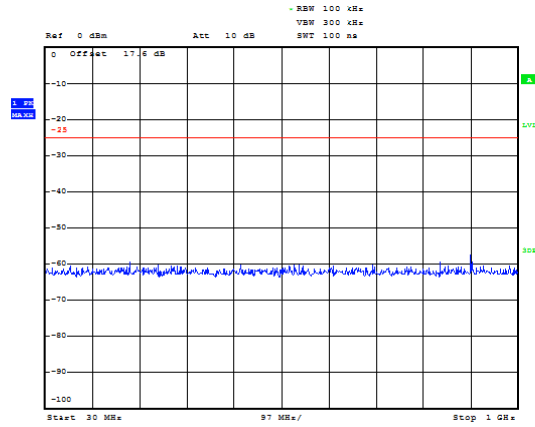




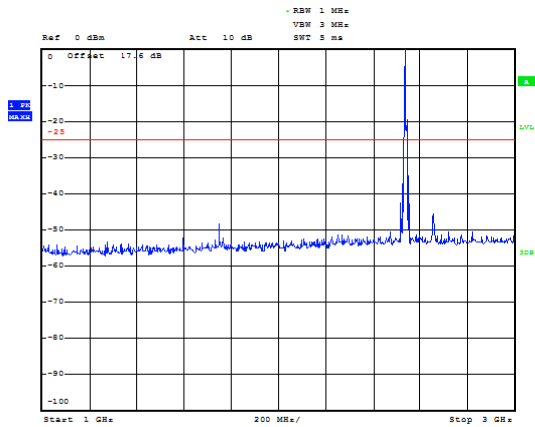
LTE Band 7 10MHz CH-Middle 30MHz~1GHz



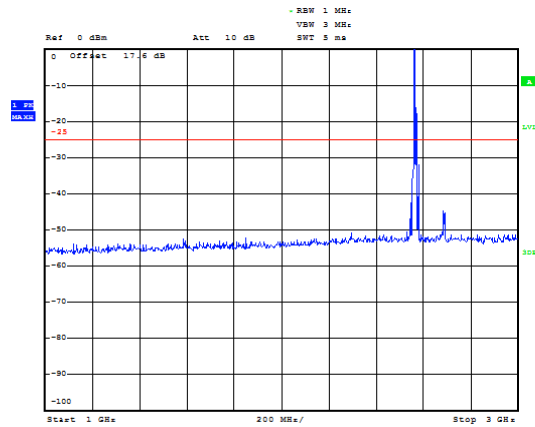
LTE Band 7 10MHz CH-High 30MHz~1GHz



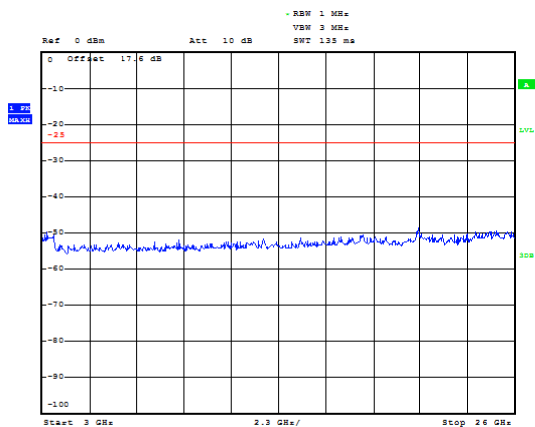
LTE Band 7 10MHz CH-Middle 1GHz~3GHz



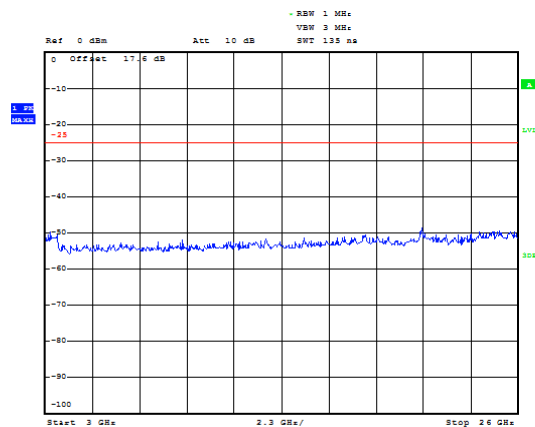
LTE Band 7 10MHz CH-High 1GHz~3GHz



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

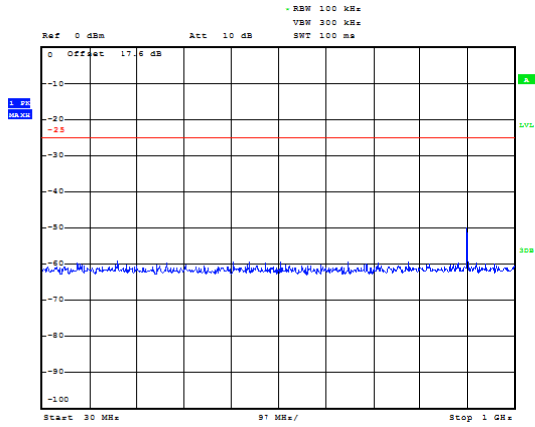


LTE Band 7 10MHz CH-High 3GHz~26GHz

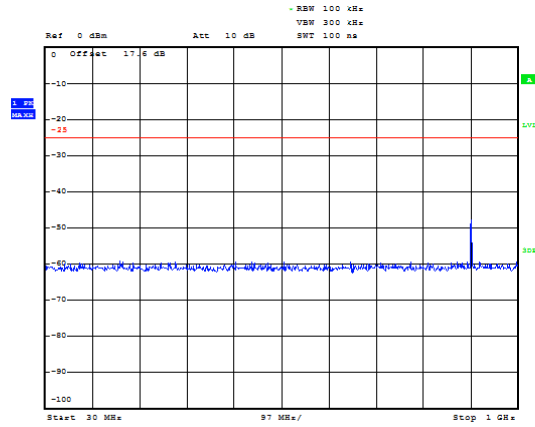




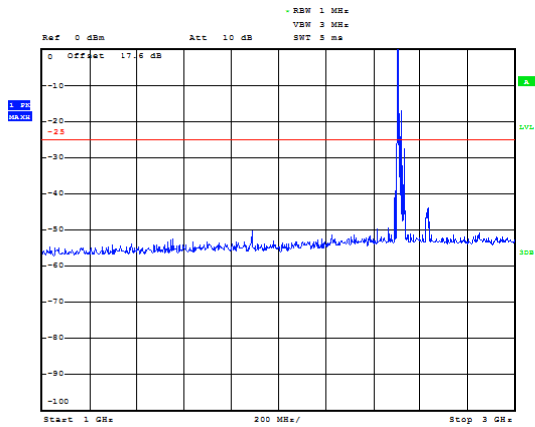
LTE Band 7 15MHz CH-Low 30MHz~1GHz



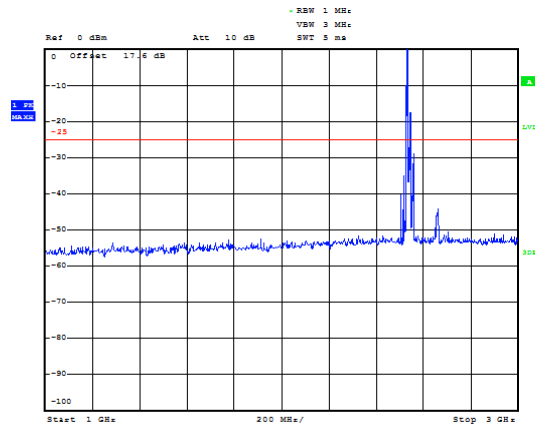
LTE Band 7 15MHz CH-Middle 30MHz~1GHz



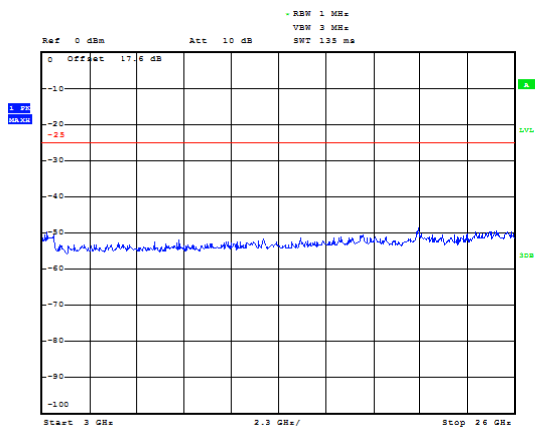
LTE Band 7 15MHz CH-Low 1GHz~3GHz



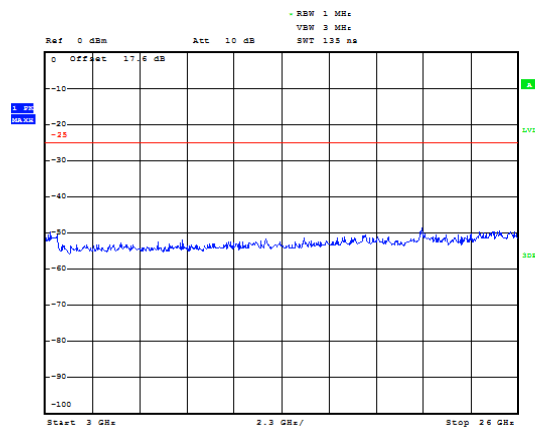
LTE Band 7 15MHz CH-Middle 1GHz~3GHz



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

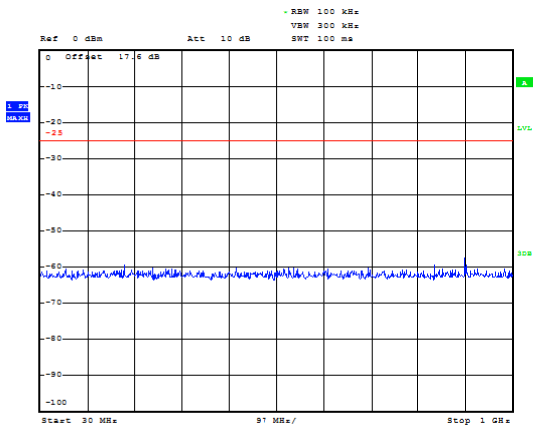


LTE Band 7 15MHz CH-Middle 3GHz~26GHz

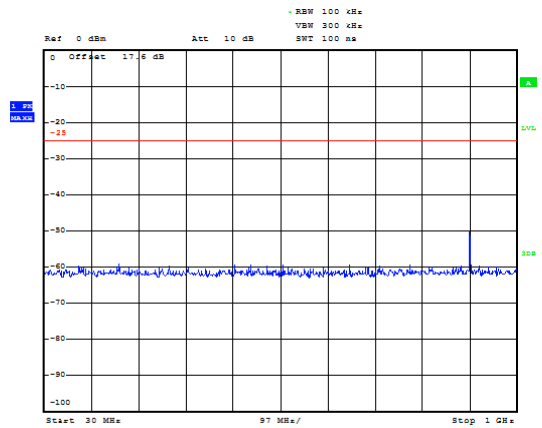




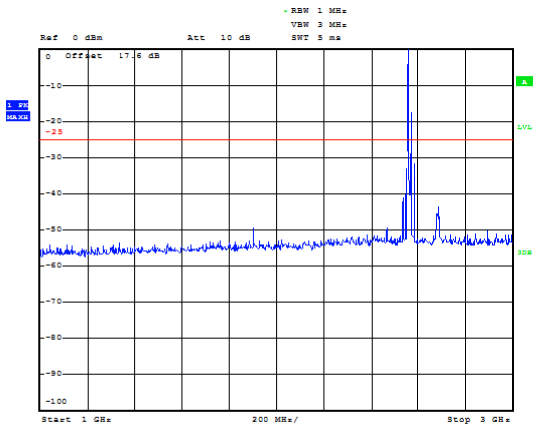
LTE Band 7 15MHz CH-High 30MHz~1GHz



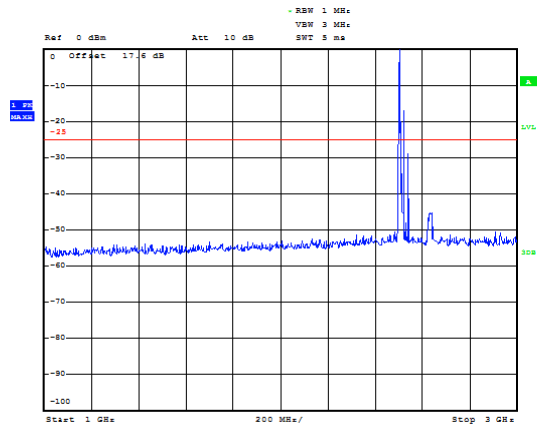
LTE Band 7 20MHz CH-Low 30MHz~1GHz



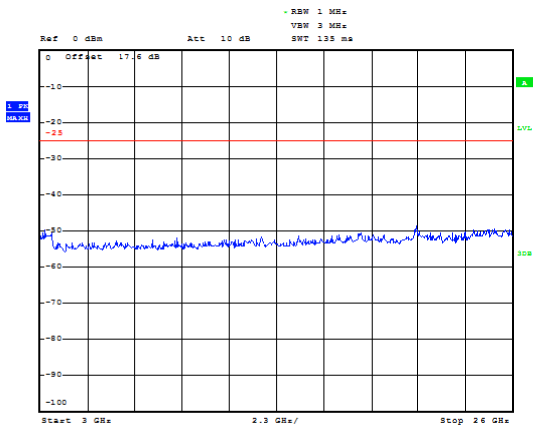
LTE Band 7 15MHz CH-High 1GHz~3GHz



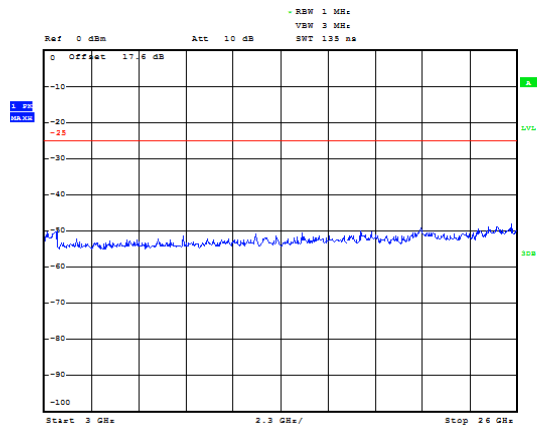
LTE Band 7 20MHz CH-Low 1GHz~3GHz



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

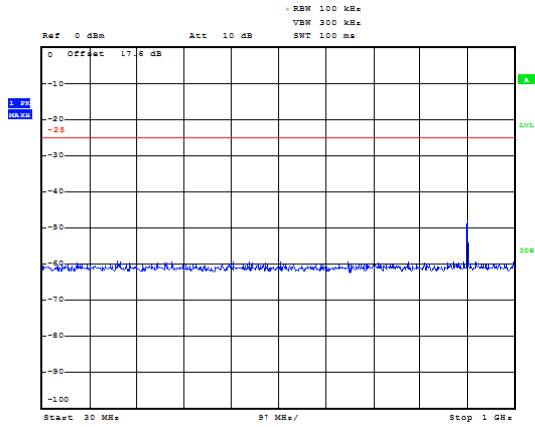


LTE Band 7 20MHz CH-Low 3GHz~26GHz

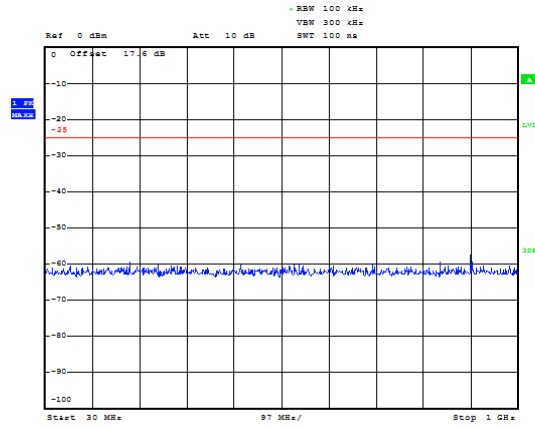




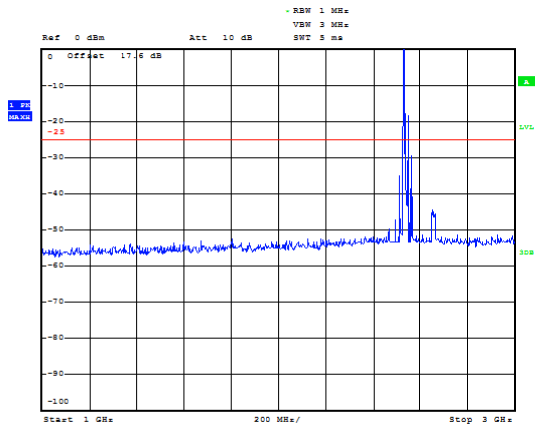
LTE Band 7 20MHz CH-Middle 30MHz~1GHz



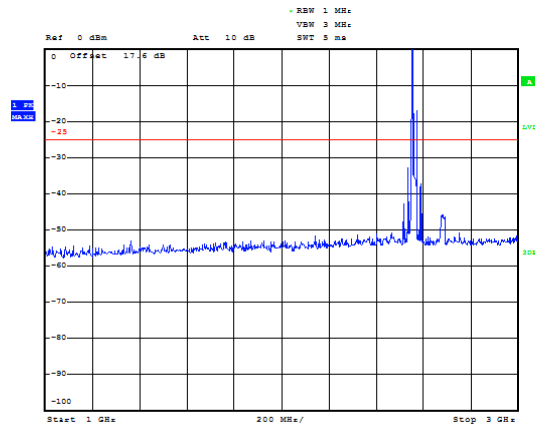
LTE Band 7 20MHz CH-High 30MHz~1GHz



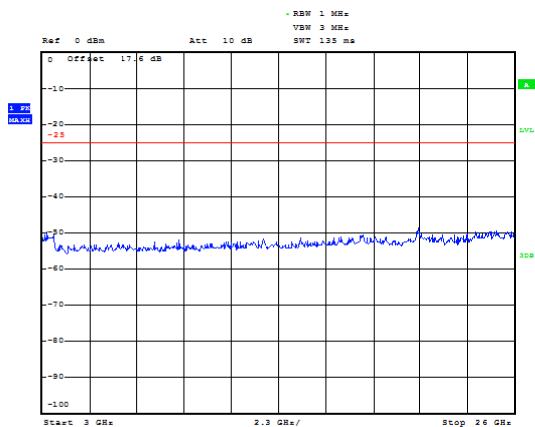
LTE Band 7 20MHz CH-Middle 1GHz~3GHz



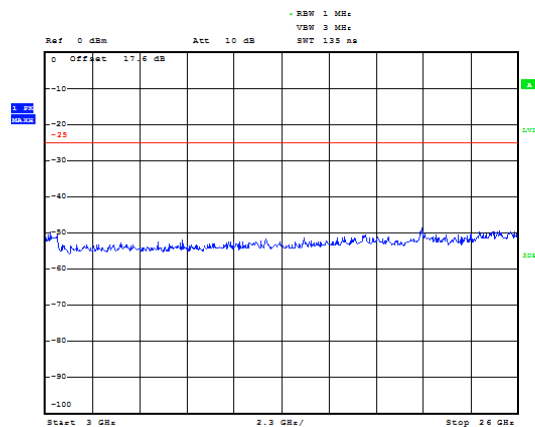
LTE Band 7 20MHz CH-High 1GHz~3GHz



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

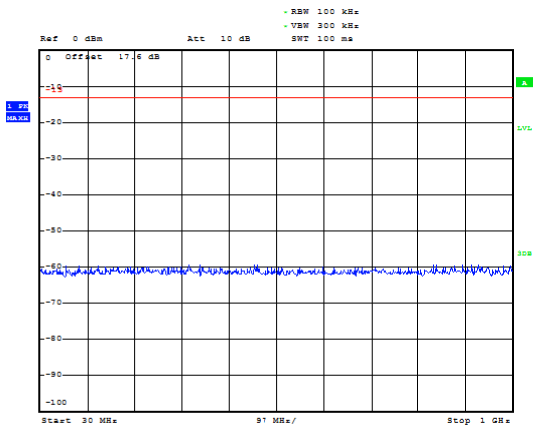


LTE Band 7 20MHz CH-High 3GHz~26GHz

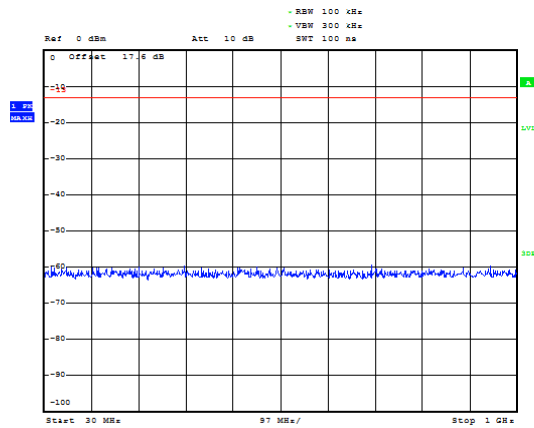




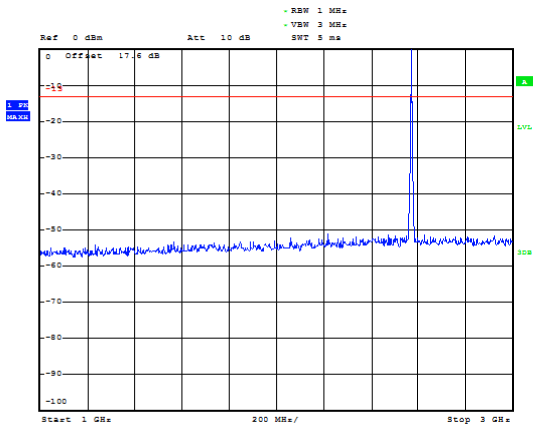
LTE Band 38 5MHz CH-Low 30MHz~1GHz



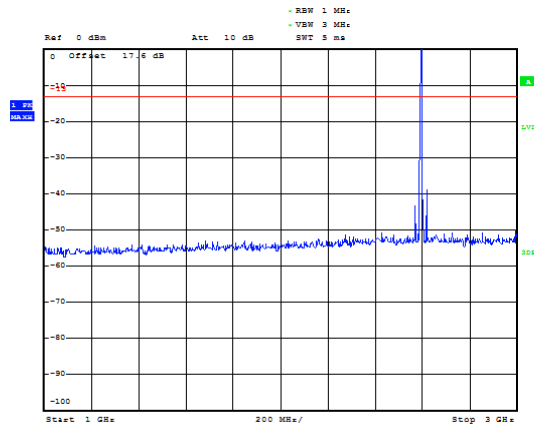
LTE Band 38 5MHz CH-Middle 30MHz~1GHz



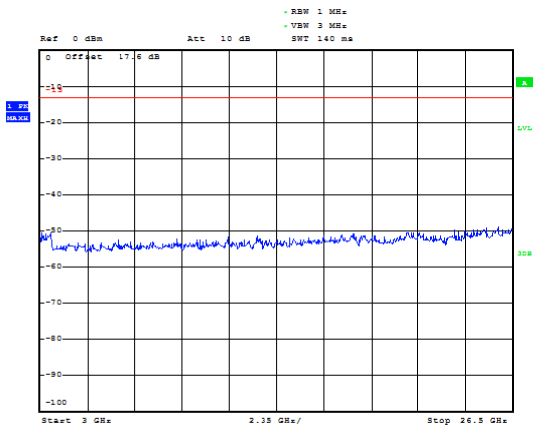
LTE Band 38 5MHz CH-Low 1GHz~3GHz



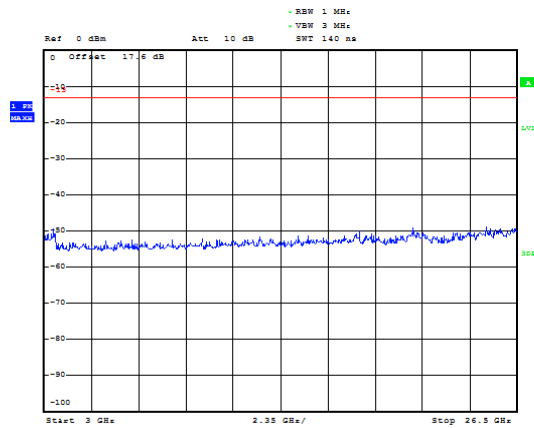
LTE Band 38 5MHz CH-Middle 1GHz~3GHz



LTE Band 38 5MHz CH-Low 3GHz~26.5GHz

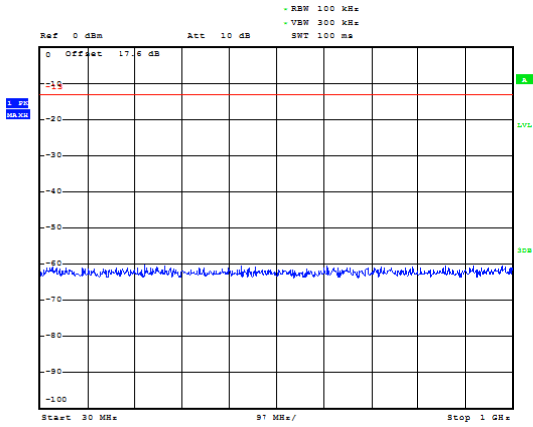


LTE Band 38 5MHz CH-Middle 3GHz~26.5GHz

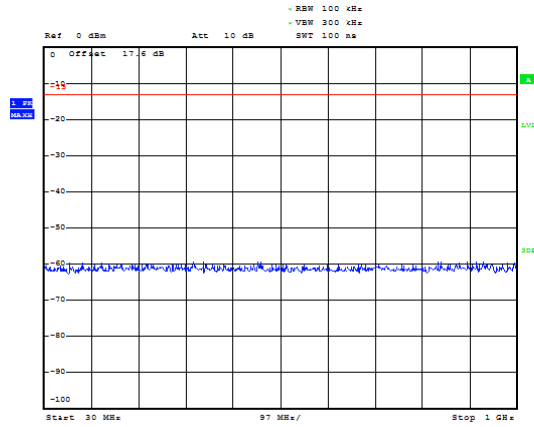




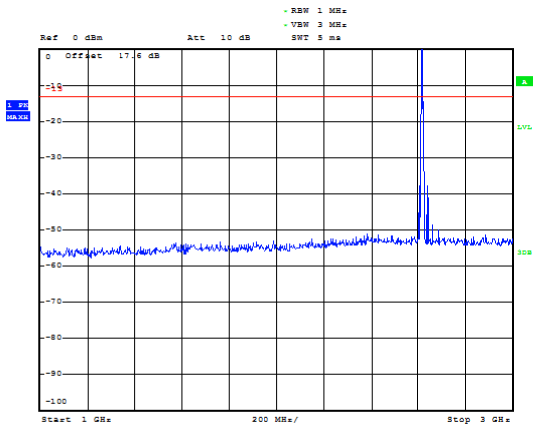
LTE Band 38 5MHz CH-High 30MHz~1GHz



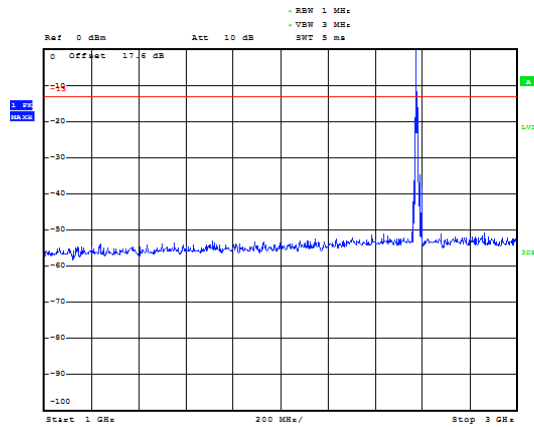
LTE Band 38 10MHz CH-Low 30MHz~1GHz



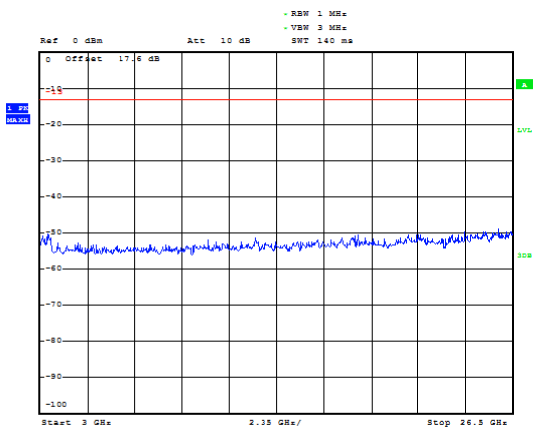
LTE Band 38 5MHz CH-High 1GHz~3GHz



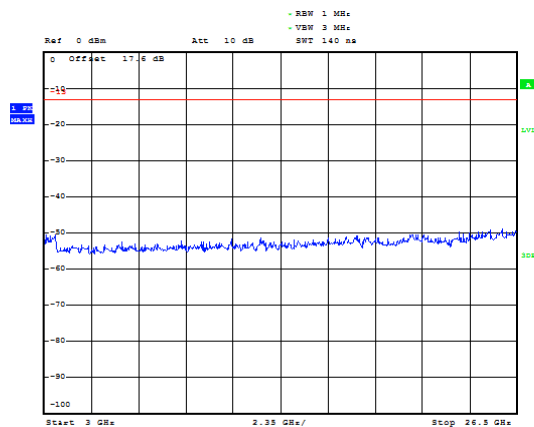
LTE Band 38 10MHz CH-Low 1GHz~3GHz



LTE Band 38 5MHz CH-High 3GHz~26.5GHz

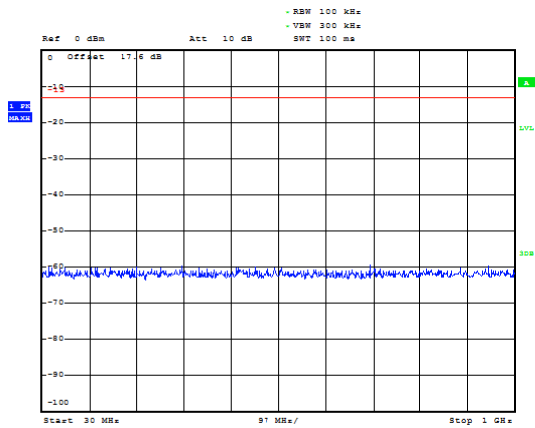


LTE Band 38 10MHz CH-Low 3GHz~26.5GHz

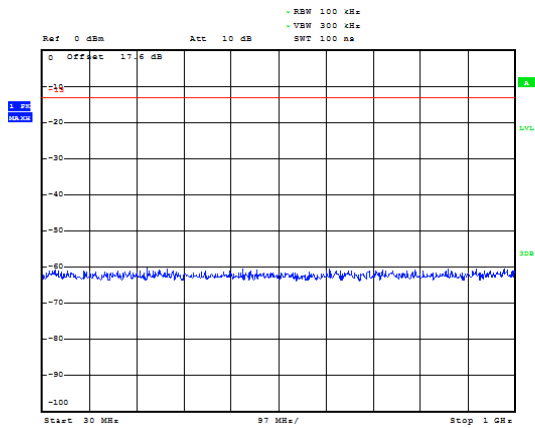




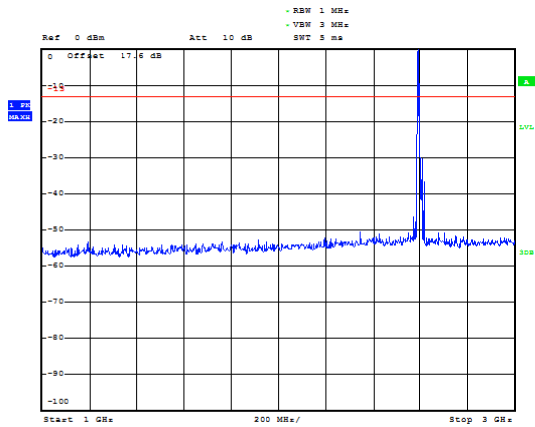
LTE Band 38 10MHz CH-Middle 30MHz~1GHz



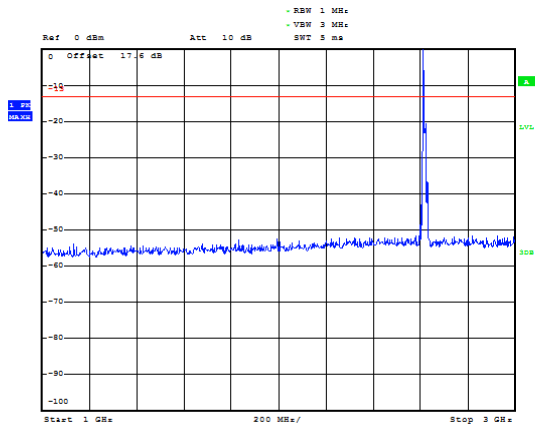
LTE Band 38 10MHz CH-High 30MHz~1GHz



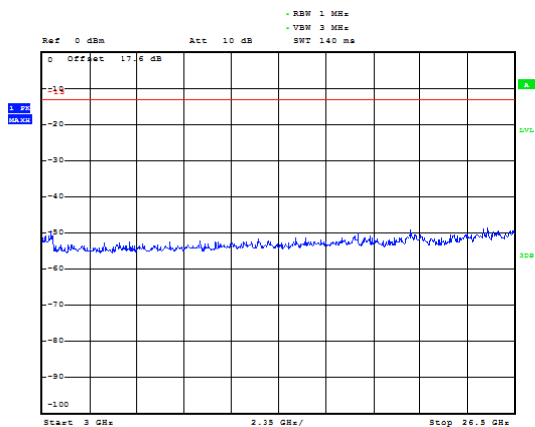
LTE Band 38 10MHz CH-Middle 1GHz~3GHz



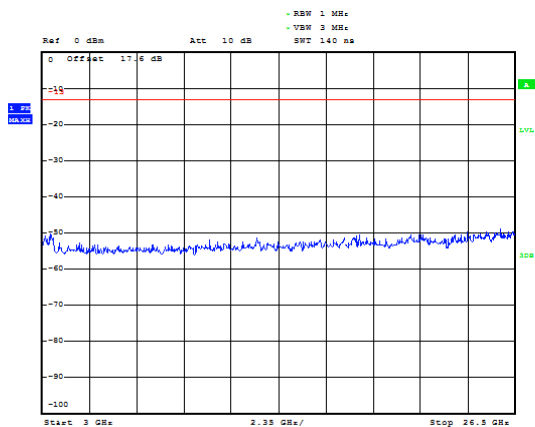
LTE Band 38 10MHz CH-High 1GHz~3GHz



LTE Band 38 10MHz CH-Middle 3GHz~26.5GHz

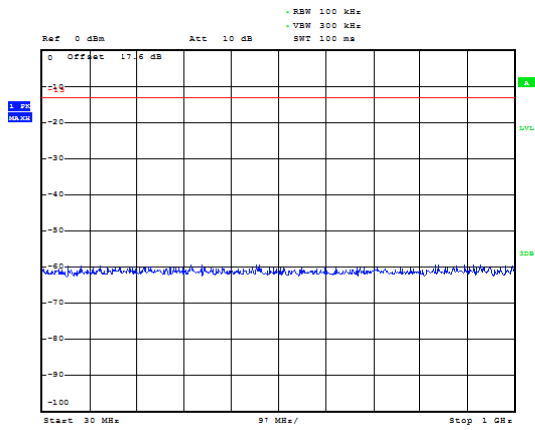


LTE Band 38 10MHz CH-High 3GHz~26.5GHz

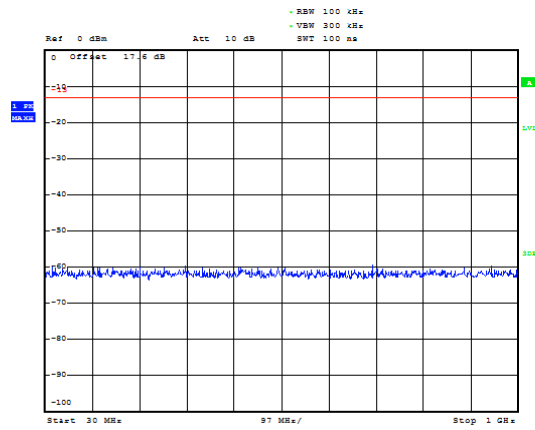




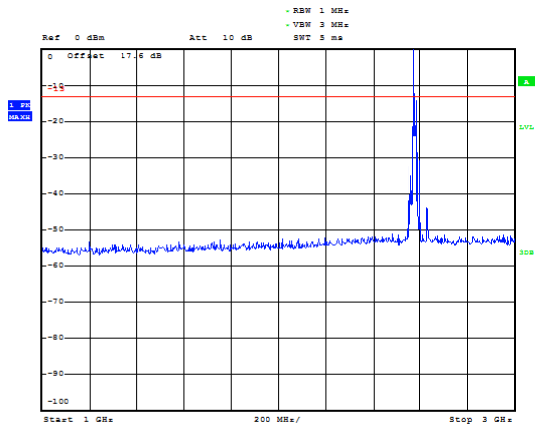
LTE Band 38 15MHz CH-Low 30MHz~1GHz



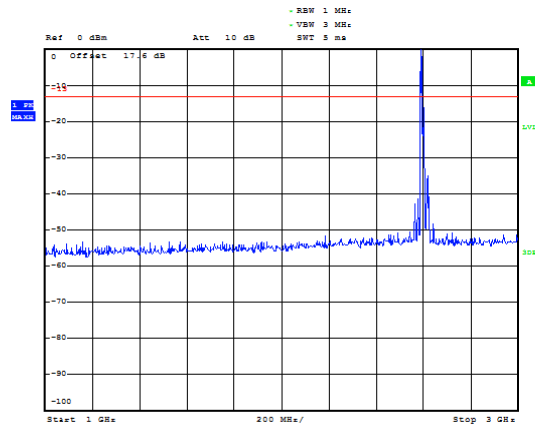
LTE Band 38 15MHz CH-Middle 30MHz~1GHz



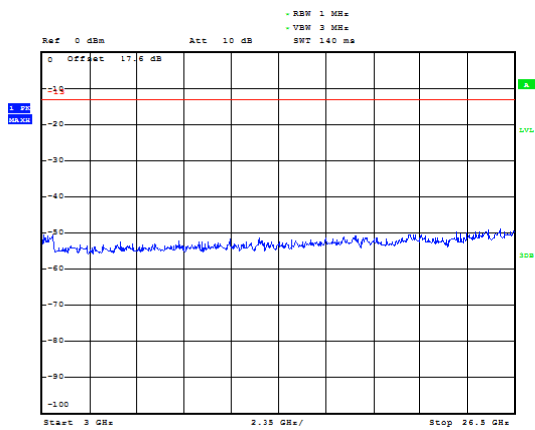
LTE Band 38 15MHz CH-Low 1GHz~3GHz



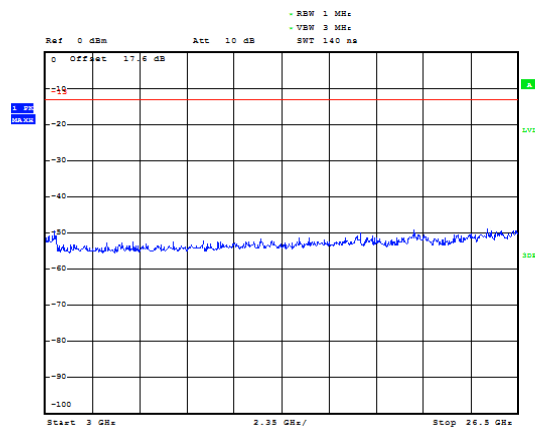
LTE Band 38 15MHz CH-Middle 1GHz~3GHz



LTE Band 38 15MHz CH-Low 3GHz~26.5GHz

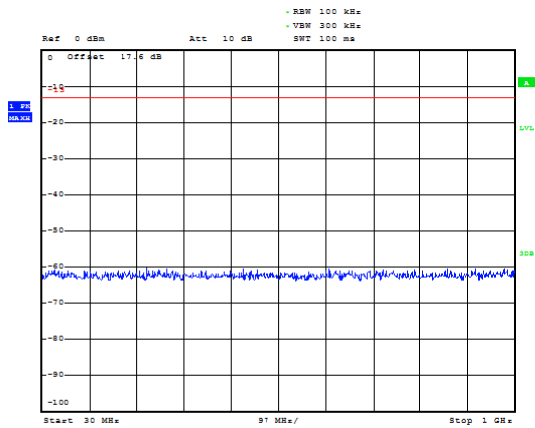


LTE Band 38 15MHz CH-Middle 3GHz~26.5GHz

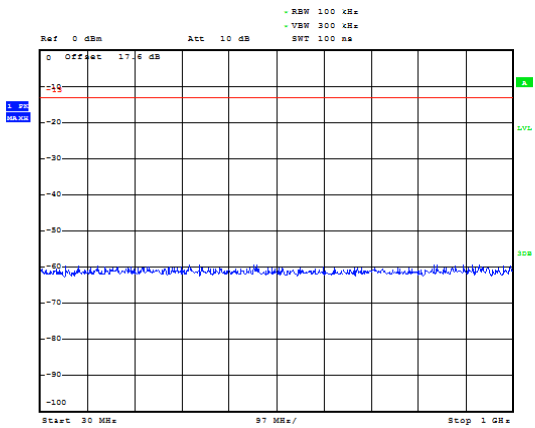




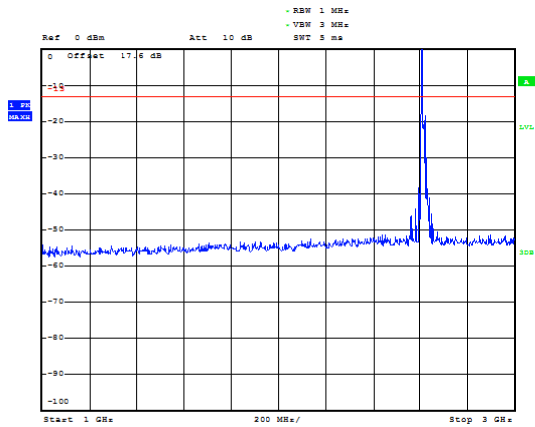
LTE Band 38 15MHz CH-High 30MHz~1GHz



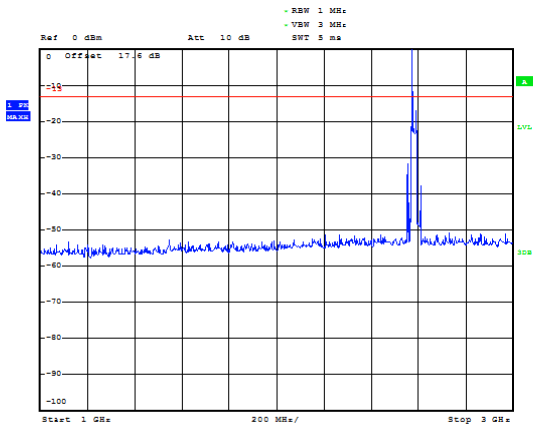
LTE Band 38 20MHz CH-Low 30MHz~1GHz



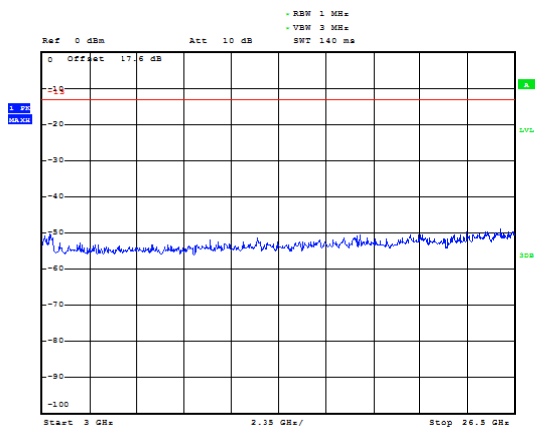
LTE Band 38 15MHz CH-High 1GHz~3GHz



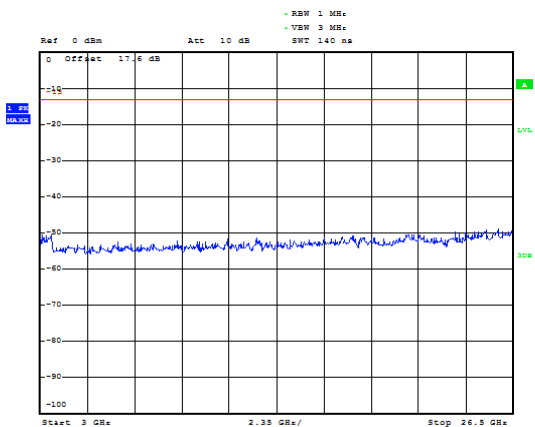
LTE Band 38 20MHz CH-Low 1GHz~3GHz



LTE Band 38 15MHz CH-High 3GHz~26.5GHz

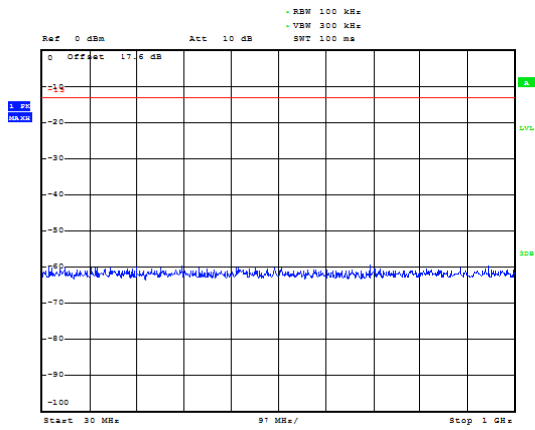


LTE Band 38 20MHz CH-Low 3GHz~26.5GHz

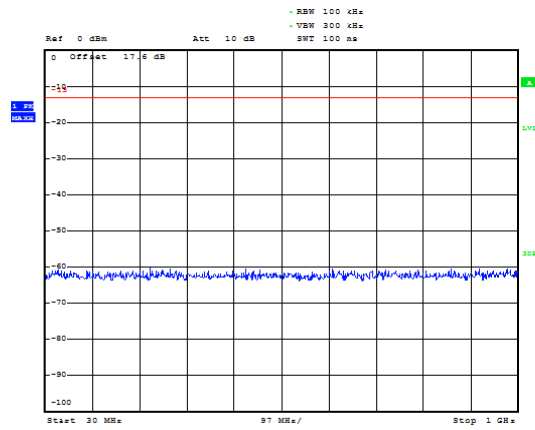




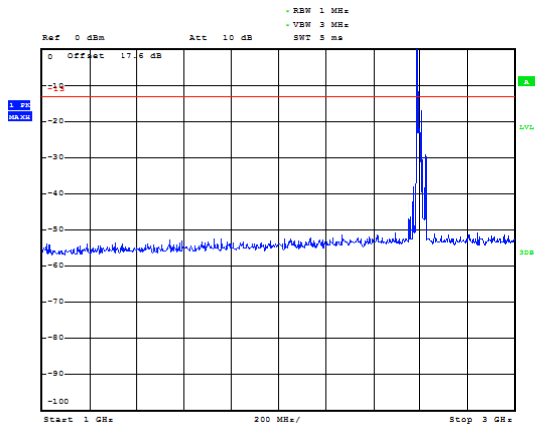
LTE Band 38 20MHz CH-Middle 30MHz~1GHz



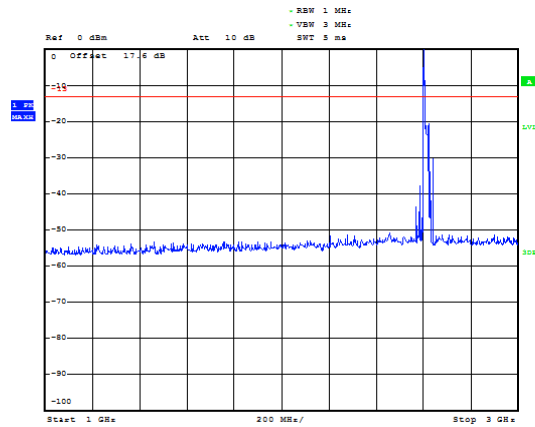
LTE Band 38 20MHz CH-High 30MHz~1GHz



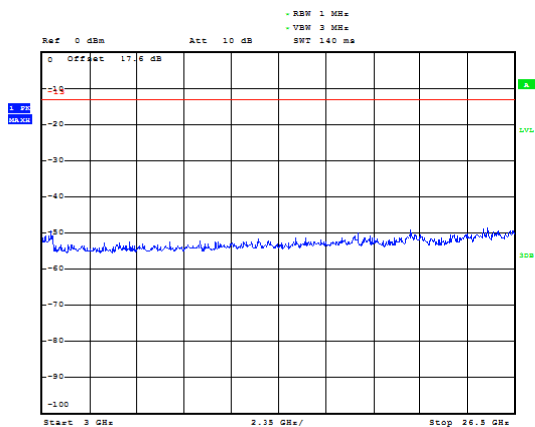
LTE Band 38 20MHz CH-Middle 1GHz~3GHz



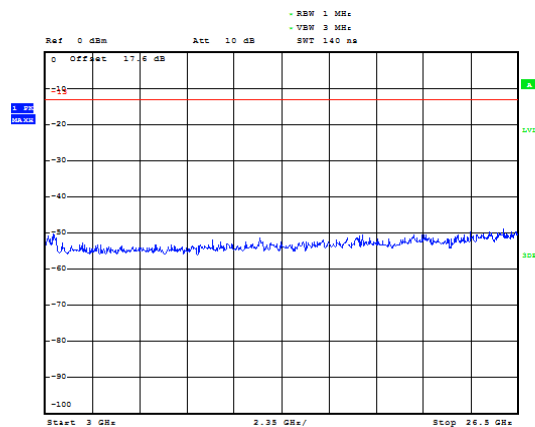
LTE Band 38 20MHz CH-High 1GHz~3GHz

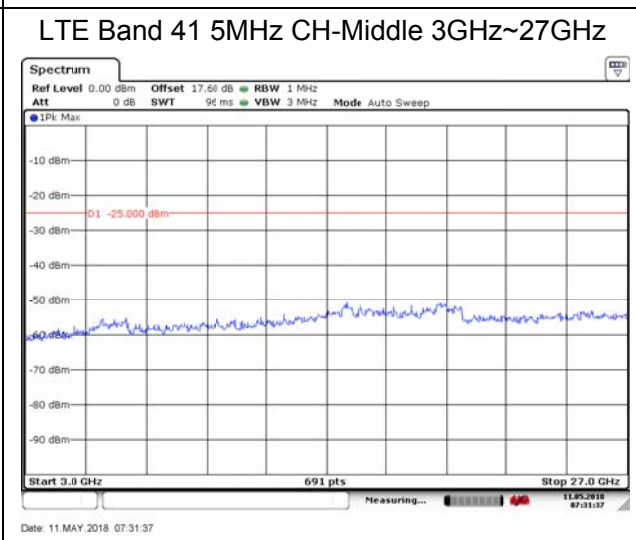
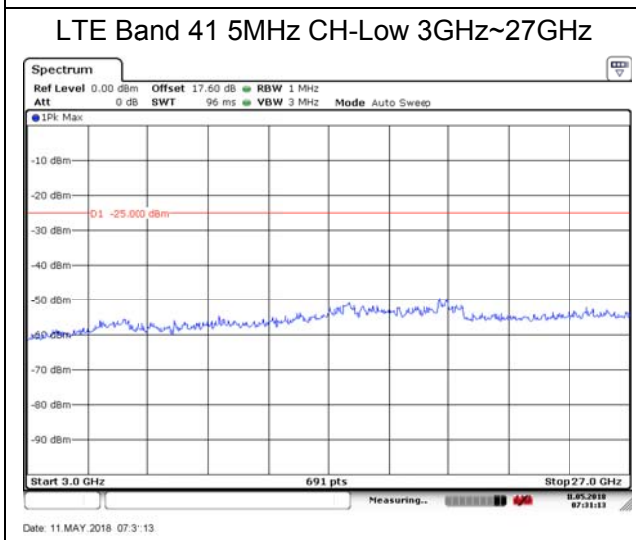
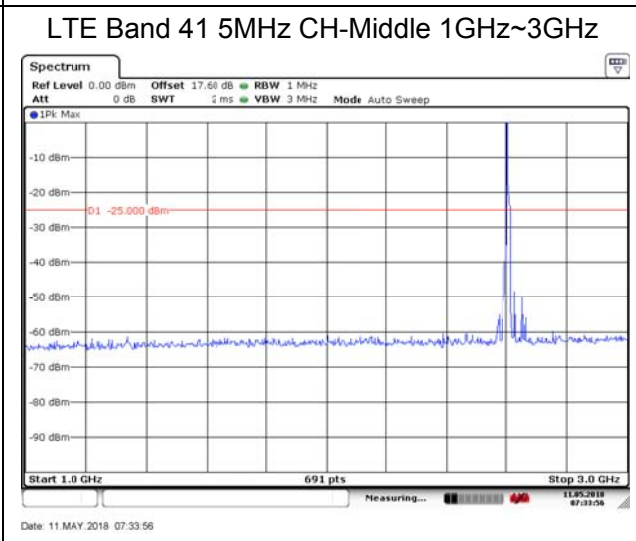
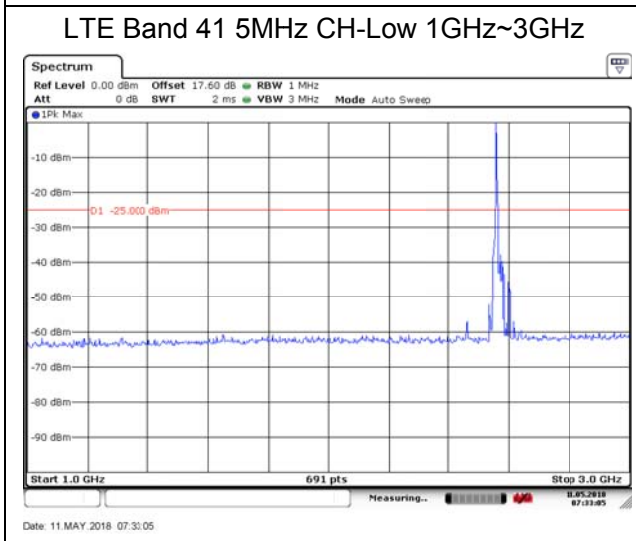
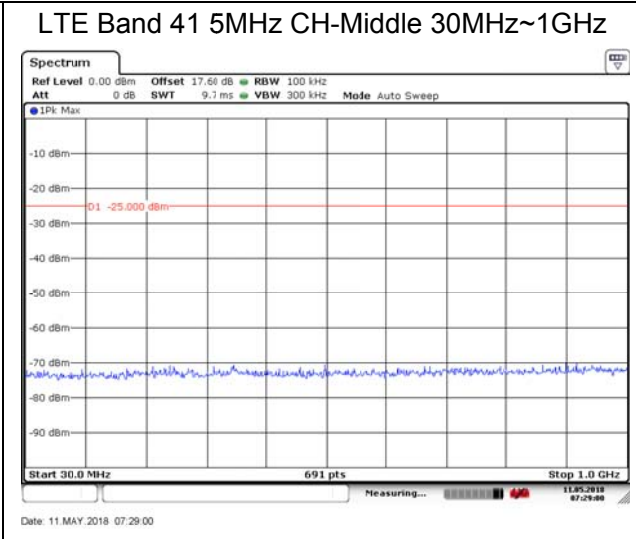
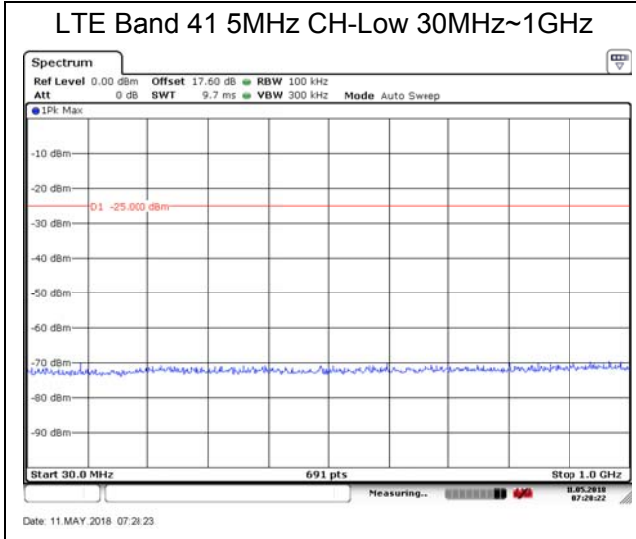


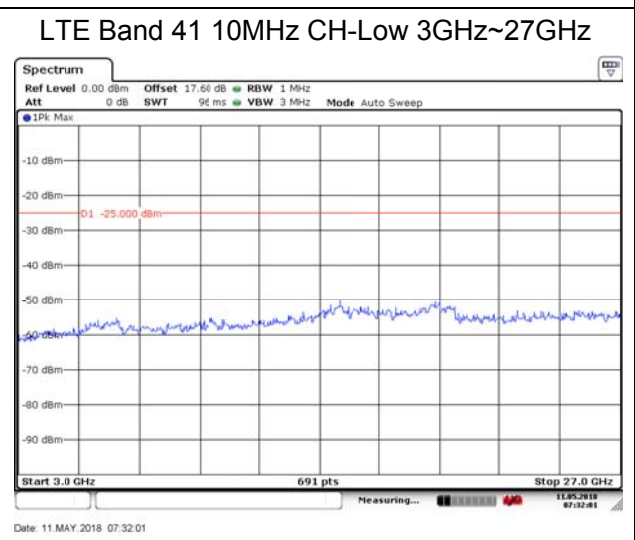
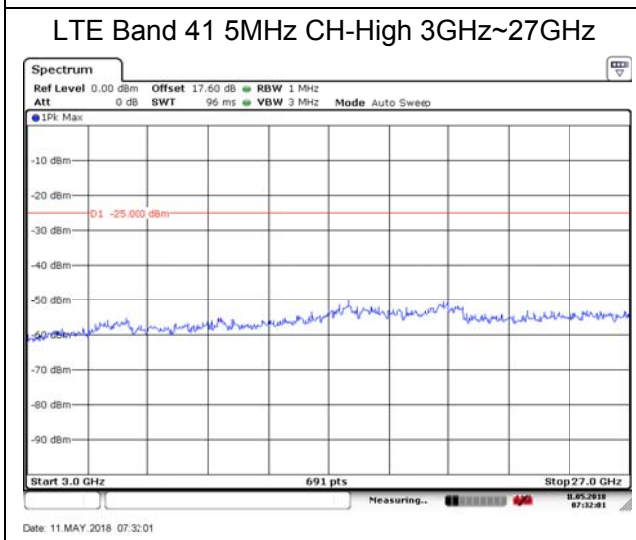
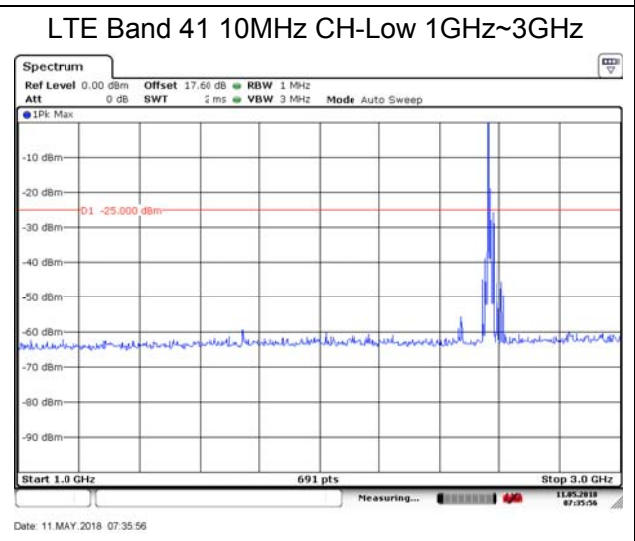
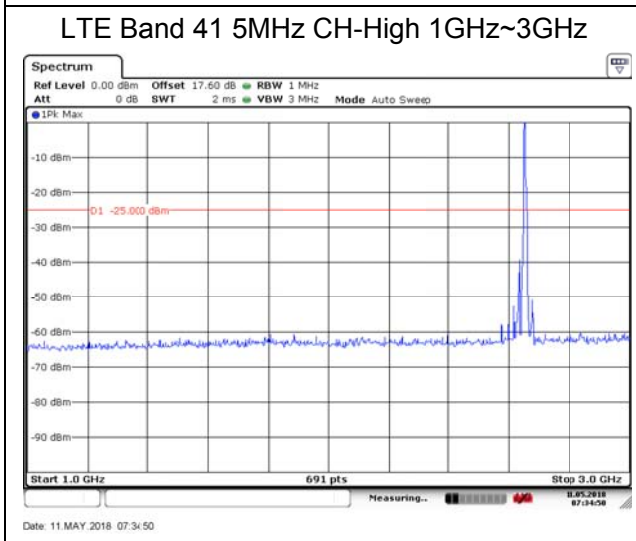
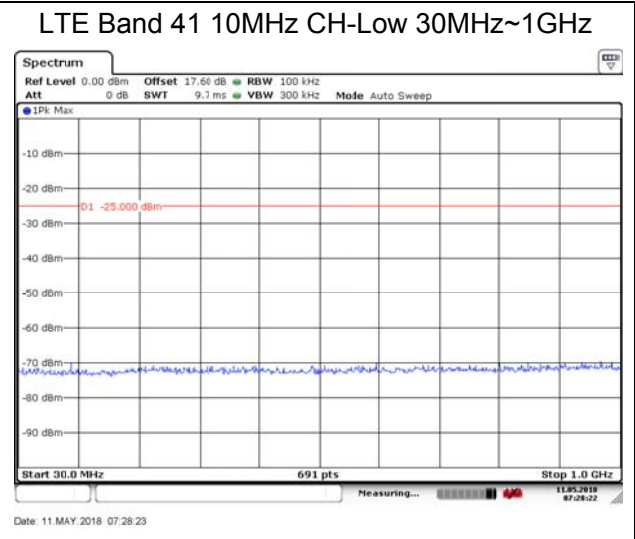
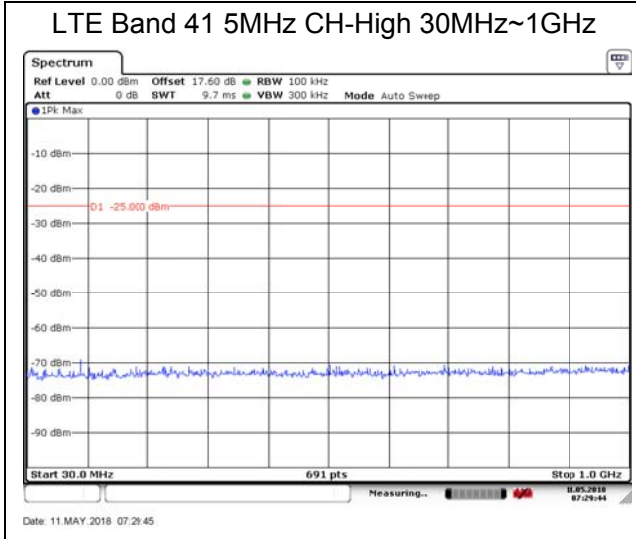
LTE Band 38 20MHz CH-Middle 3GHz~26.5GHz

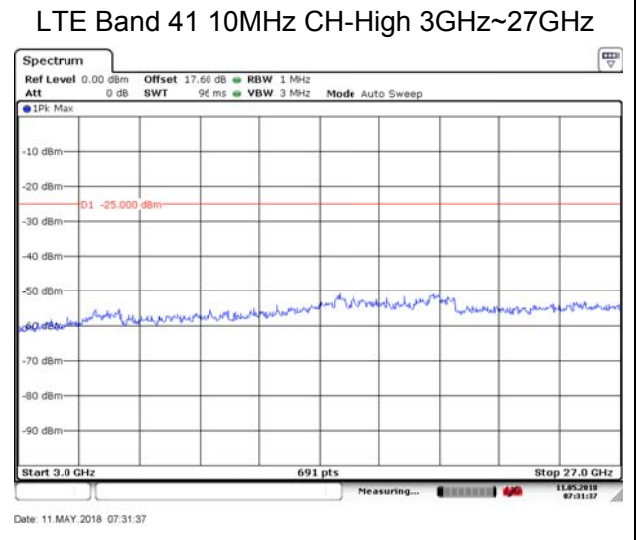
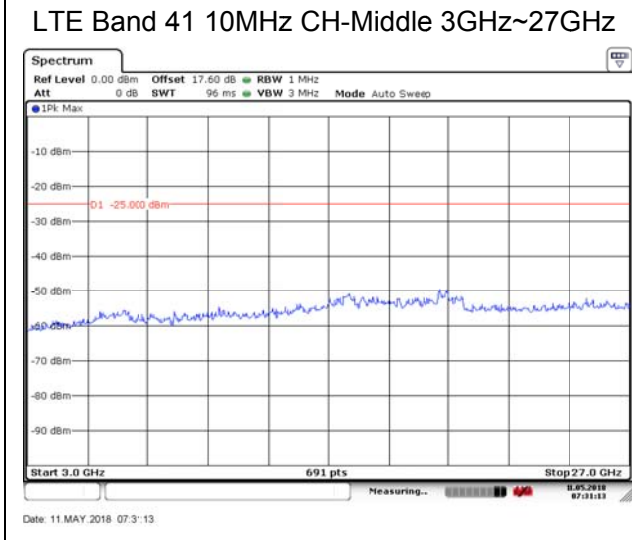
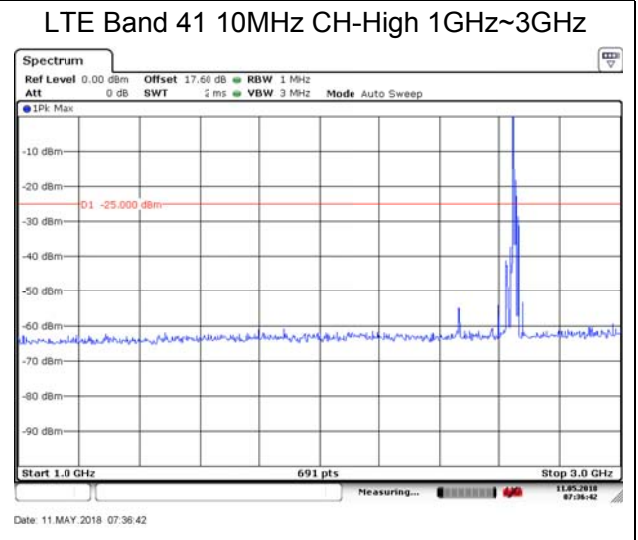
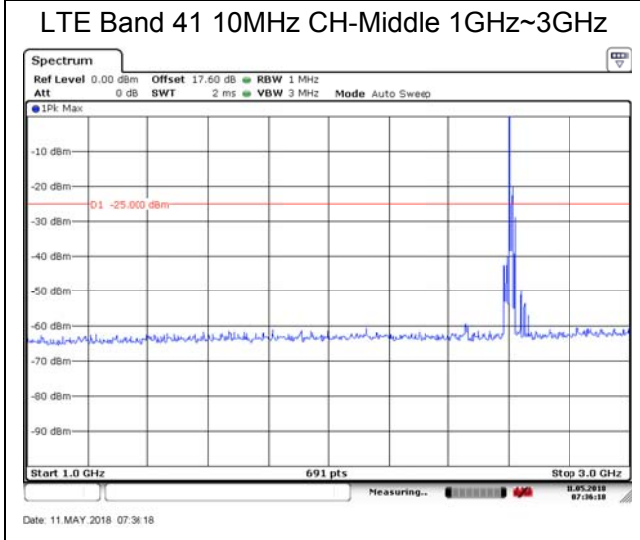
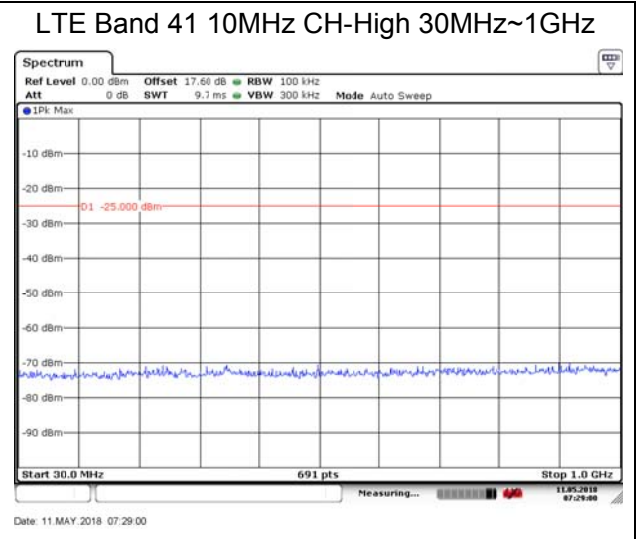
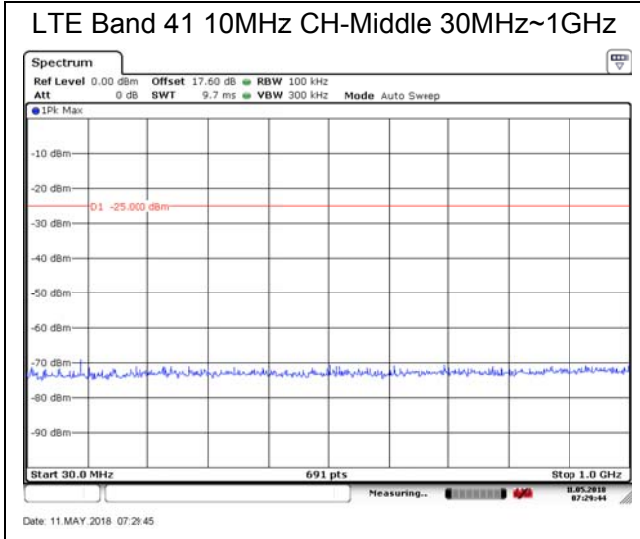


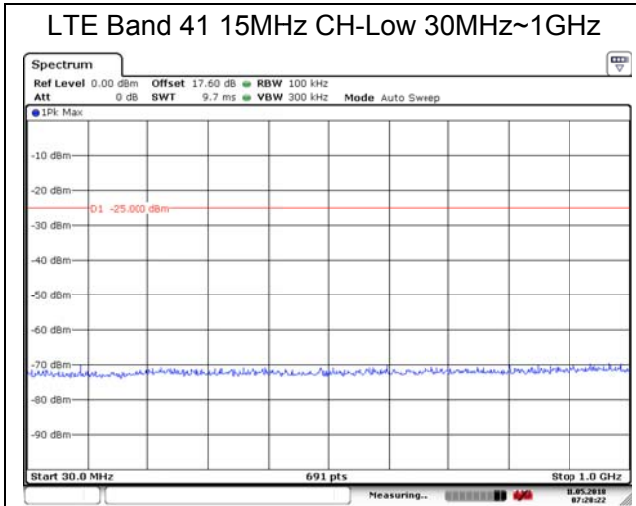
LTE Band 38 20MHz CH-High 3GHz~26.5GHz



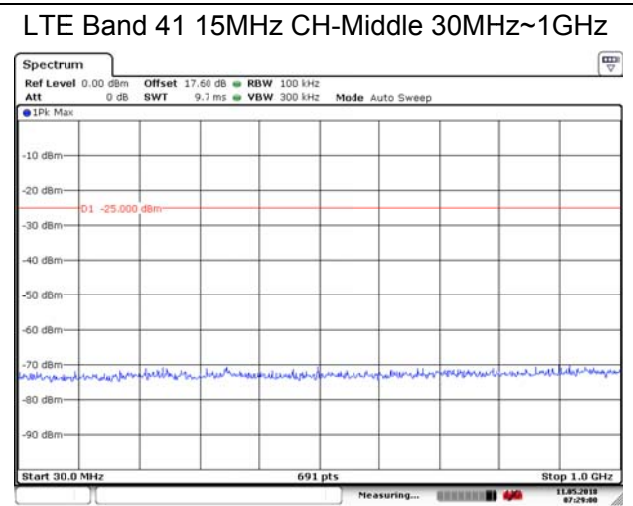




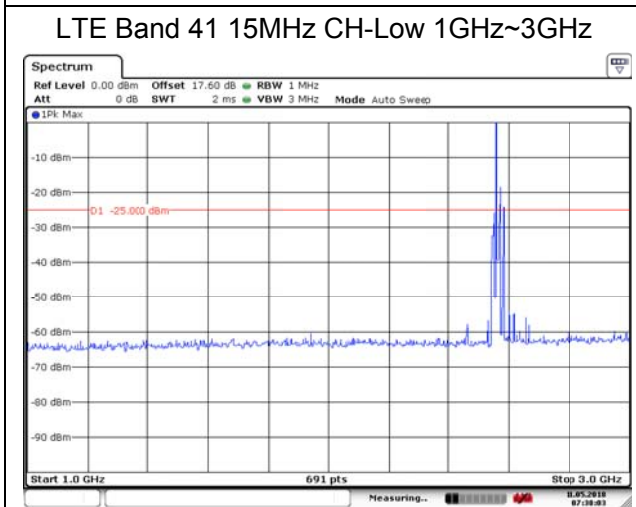




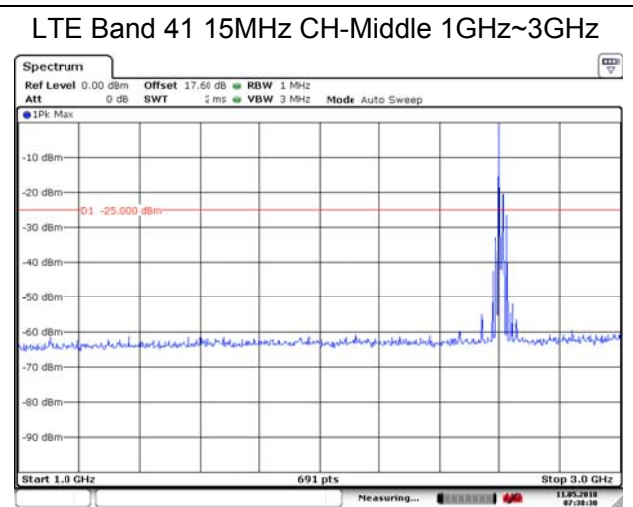
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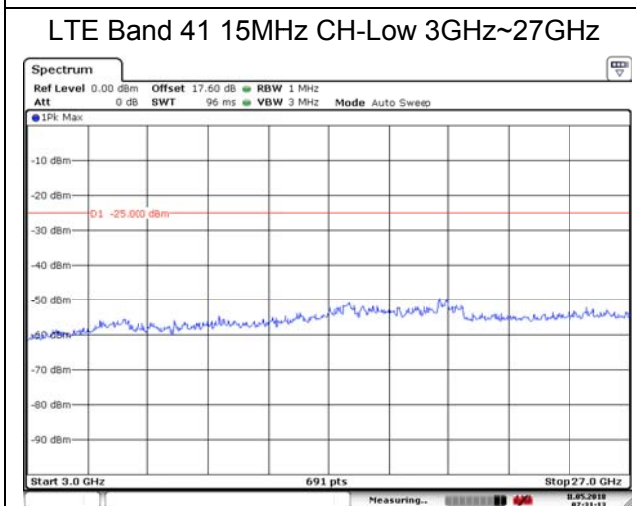
Date: 11 MAY 2018 07:29:00



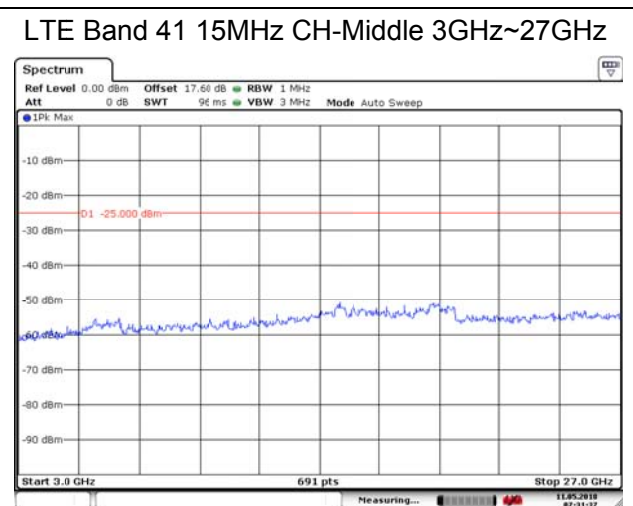
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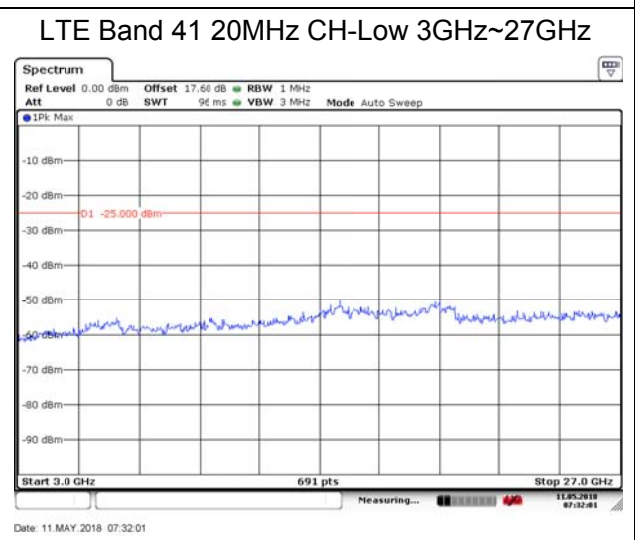
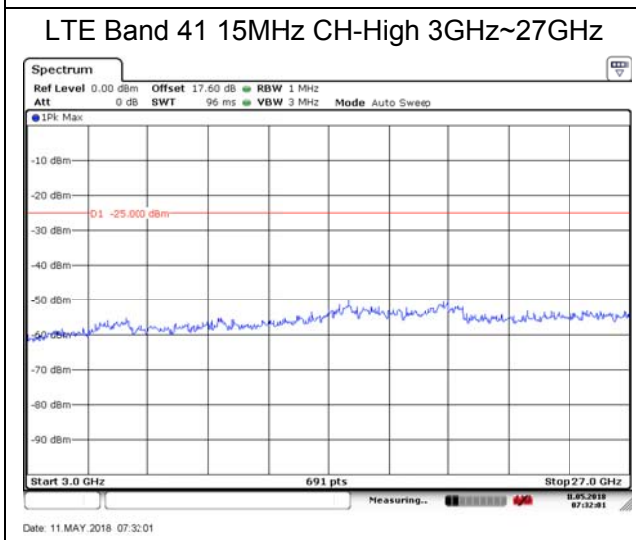
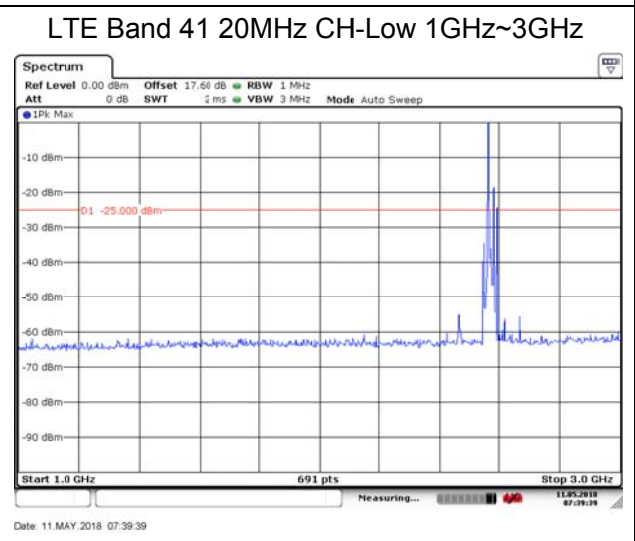
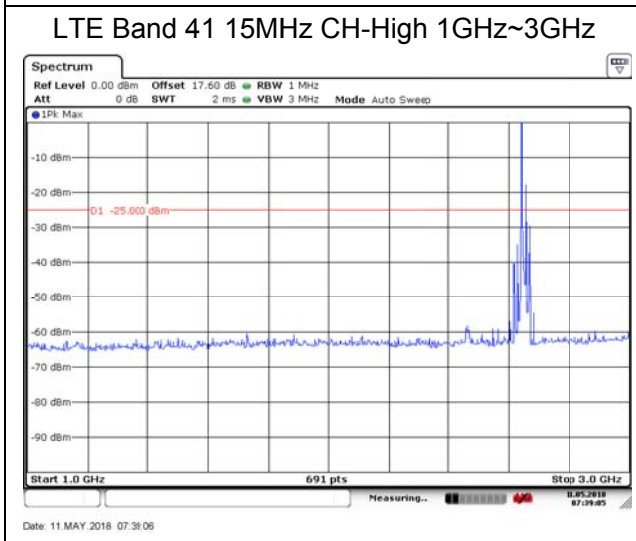
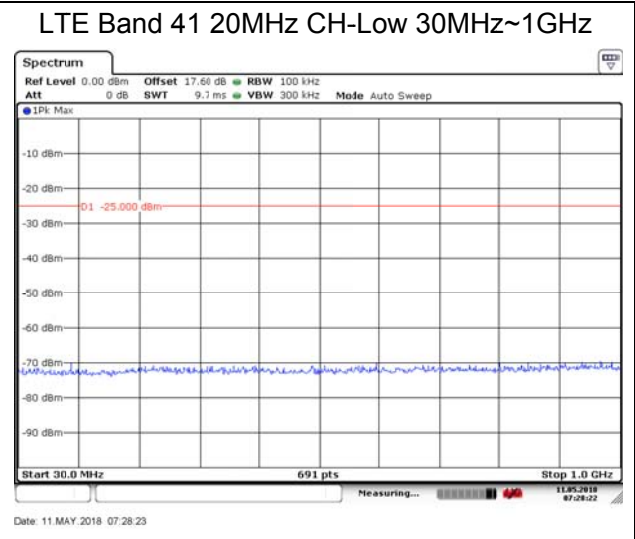
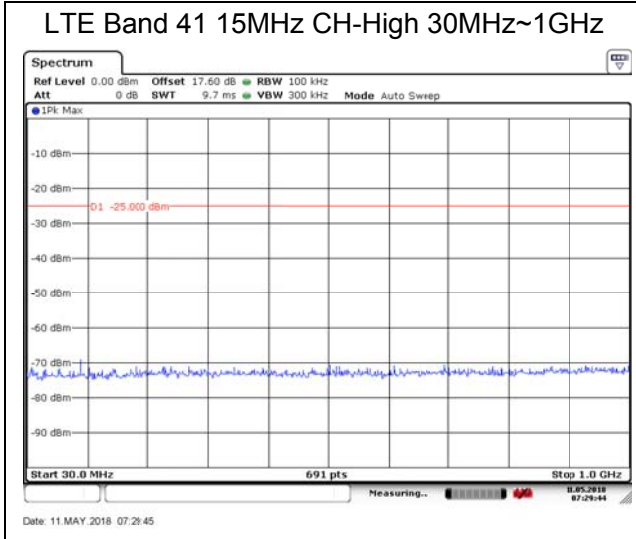
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Date: 11 MAY 2018 07:31:13

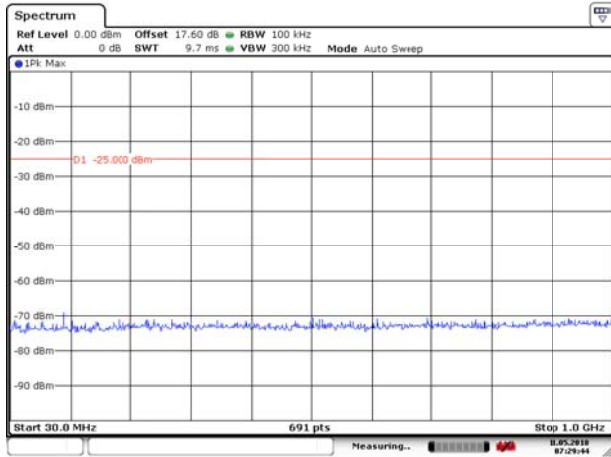


Date: 11 MAY 2018 07:31:37



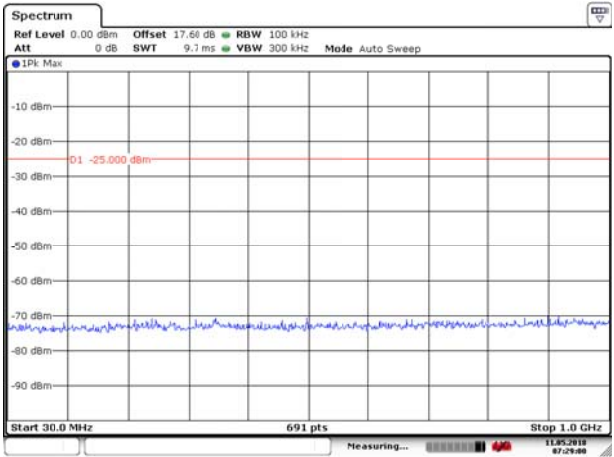


LTE Band 41 20MHz CH-Middle 30MHz~1GHz



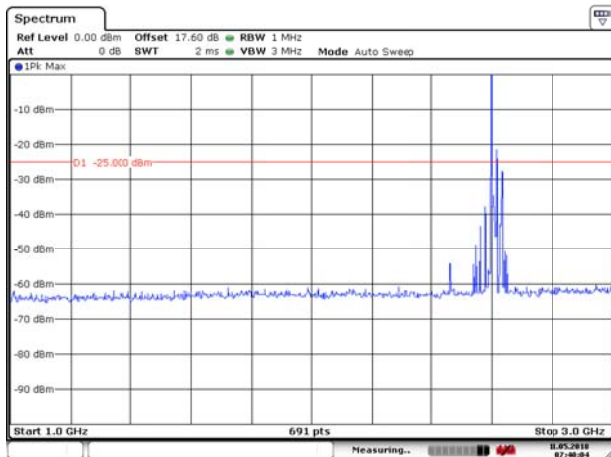
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LTE Band 41 20MHz CH-High 30MHz~1GHz



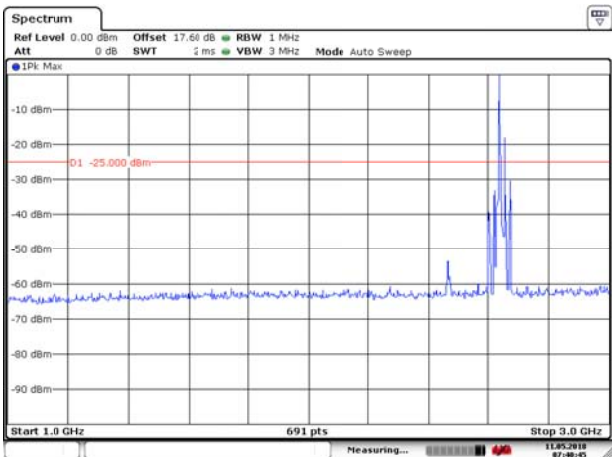
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LTE Band 41 20MHz CH-Middle 1GHz~3GHz



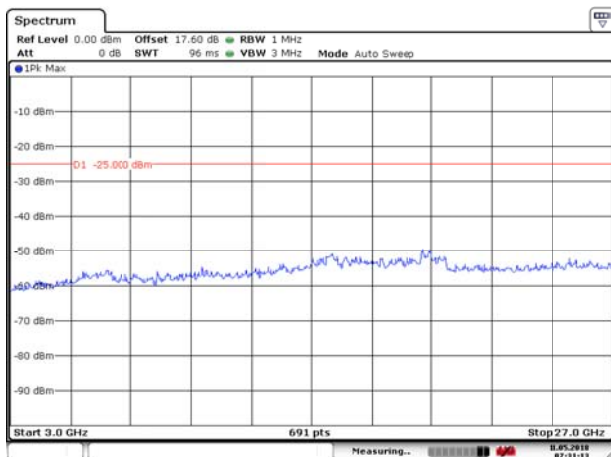
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LTE Band 41 20MHz CH-High 1GHz~3GHz



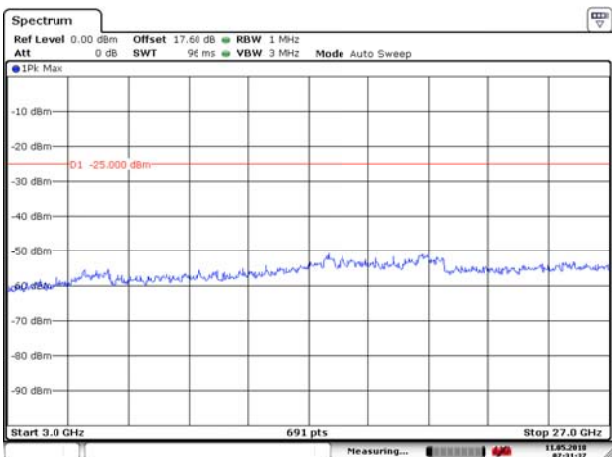
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LTE Band 41 20MHz CH-Middle 3GHz~27GHz



Date: 11 MAY 2018 07:31:13

LTE Band 41 20MHz CH-High 3GHz~27GHz



Date: 11 MAY 2018 07:31:37

5.8 Radiates Spurious Emission

Ambient condition

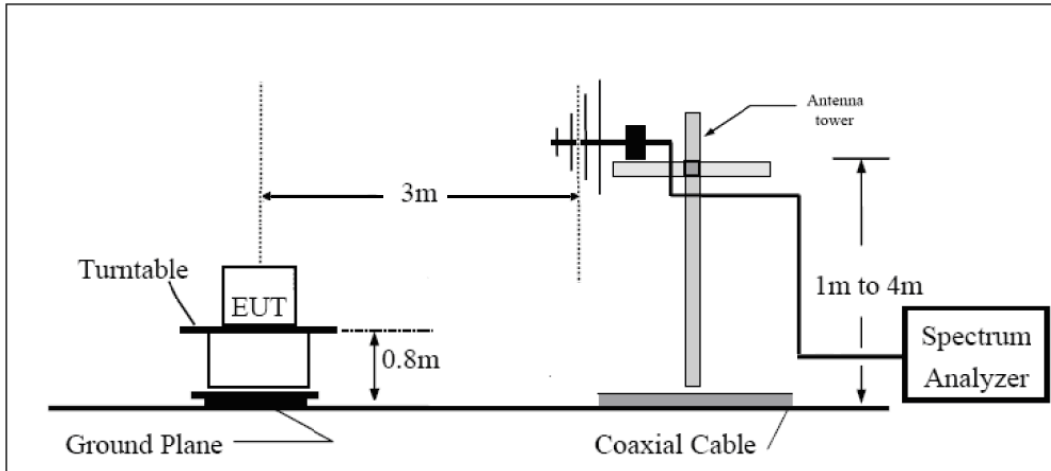
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

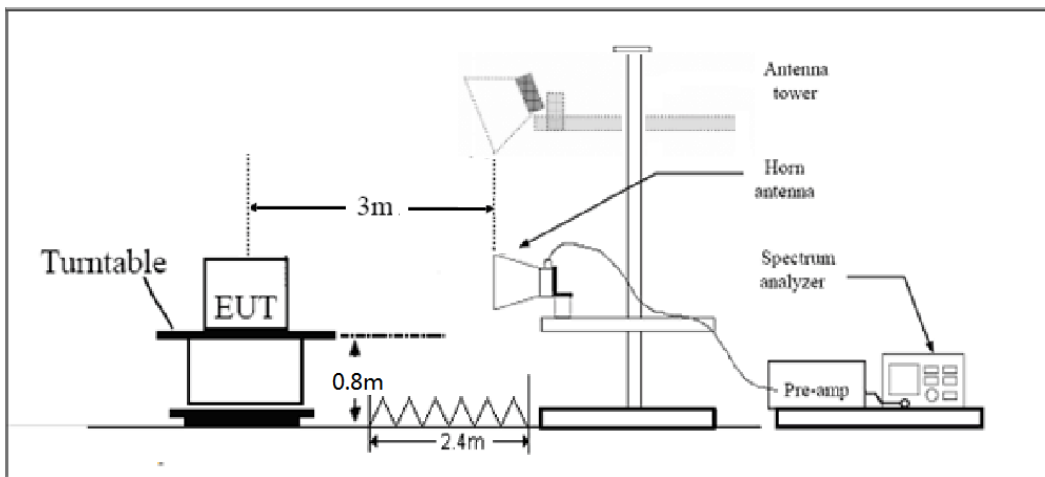
1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI/TIA-603-E (2016).
2. The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. 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:
 $Power(EIRP) = PMea - PAg - Pcl + Ga$
 The measurement results are amend as described below:
 $Power(EIRP) = PMea - Pcl + Ga$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15dBi$.

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 lie-down position (X axis) and the worst case was recorded.

Limits

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.

Rule Part 27.53(i) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2570 and 2620 MHz.

Part 27.53(m) Limit	-25 dBm
Part 27.53(i) Limit	-13 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

Sweep above 18GHz and the emissions more than 20 dB below the permissible value are not reported.

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	5010.8	-56.01	2.00	9.15	Horizontal	-48.86	-25.00	23.86	315
3	7504.5	-50.88	2.50	11.35	Horizontal	-42.03	-25.00	17.03	45
4	10002.4	-46.39	4.20	12.05	Horizontal	-38.54	-25.00	13.54	180
5	12516.8	-49.19	5.20	12.85	Horizontal	-41.54	-25.00	16.54	225
6	15014.3	-49.50	5.50	14.23	Horizontal	-40.77	-25.00	15.77	90
7	17518.5	-46.97	5.70	14.15	Horizontal	-38.52	-25.00	13.52	180
8	20020.0	/	/	/	/	/	/	/	/
9	22522.5	/	/	/	/	/	/	/	/
10	25025.0	/	/	/	/	/	/	/	/

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	5072.6	-56.58	2.00	9.15	Horizontal	-49.43	-25.00	24.43	90
3	7604.3	-52.33	2.50	11.35	Horizontal	-43.48	-25.00	18.48	45
4	10141.9	-45.58	4.20	12.05	Horizontal	-37.73	-25.00	12.73	90
5	12677.6	-50.44	5.20	12.85	Horizontal	-42.79	-25.00	17.79	45
6	15207.8	-49.20	5.50	14.23	Horizontal	-40.47	-25.00	15.47	180
7	17743.5	-45.74	5.70	14.15	Horizontal	-37.29	-25.00	12.29	0
8	20280.0	/	/	/	/	/	/	/	/
9	22815.0	/	/	/	/	/	/	/	/
10	25350.0	/	/	/	/	/	/	/	/

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	5130.0	-55.00	2.00	9.15	Horizontal	-47.85	-25.00	22.85	180
3	7702.1	-53.76	2.50	11.35	Horizontal	-44.91	-25.00	19.91	135
4	10269.0	-47.12	4.20	12.05	Horizontal	-39.27	-25.00	14.27	180
5	12836.3	-49.02	5.20	12.85	Horizontal	-41.37	-25.00	16.37	90
6	15413.6	-50.61	5.50	14.23	Horizontal	-41.88	-25.00	16.88	135
7	17976.4	-45.81	5.70	14.15	Horizontal	-37.36	-25.00	12.36	225
8	20540.0	/	/	/	/	/	/	/	/
9	23107.5	/	/	/	/	/	/	/	/
10	25675.0	/	/	/	/	/	/	/	/

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5010.8	-57.92	2.00	9.15	Horizontal	-50.77	-25.00	25.77	270
3	7516.5	-53.20	2.50	11.35	Horizontal	-44.35	-25.00	19.35	90
4	10022.6	-45.11	4.20	12.05	Horizontal	-37.26	-25.00	12.26	225
5	12526.9	-50.90	5.20	12.85	Horizontal	-43.25	-25.00	18.25	135
6	15033.4	-50.14	5.50	14.23	Horizontal	-41.41	-25.00	16.41	45
7	17536.5	-46.48	5.70	14.15	Horizontal	-38.03	-25.00	13.03	0
8	20040.0	/	/	/	/	/	/	/	/
9	22545.0	/	/	/	/	/	/	/	/
10	25050.0	/	/	/	/	/	/	/	/

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5070.0	-57.36	2.00	9.15	Horizontal	-50.21	-25.00	25.21	315
3	7603.1	-54.15	2.50	11.35	Horizontal	-45.30	-25.00	20.30	135
4	10143.0	-45.71	4.20	12.05	Horizontal	-37.86	-25.00	12.86	0
5	12677.6	-50.38	5.20	12.85	Horizontal	-42.73	-25.00	17.73	270
6	15210.0	-48.47	5.50	14.23	Horizontal	-39.74	-25.00	14.74	135
7	17742.4	-46.06	5.70	14.15	Horizontal	-37.61	-25.00	12.61	180
8	20280.0	/	/	/	/	/	/	/	/
9	22815.0	/	/	/	/	/	/	/	/
10	25350.0	/	/	/	/	/	/	/	/

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	5127.4	-55.62	2.00	10.15	Horizontal	-47.47	-25.00	22.47	225
3	7696.1	-53.34	2.50	11.35	Horizontal	-44.49	-25.00	19.49	0
4	10261.1	-45.60	4.20	12.05	Horizontal	-37.75	-25.00	12.75	315
5	12828.4	-50.33	5.20	14.85	Horizontal	-40.68	-25.00	15.68	45
6	15369.8	-47.73	5.50	13.23	Horizontal	-40.00	-25.00	15.00	135
7	17952.8	-45.45	5.70	12.15	Horizontal	-39.00	-25.00	14.00	45
8	20520.0	/	/	/	/	/	/	/	/
9	23085.0	/	/	/	/	/	/	/	/
10	25650.0	/	/	/	/	/	/	/	/

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	5016.8	-57.21	2.00	10.15	Horizontal	-49.06	-25.00	24.06	315
3	7520.3	-53.28	2.50	11.35	Horizontal	-44.43	-25.00	19.43	315
4	10026.0	-45.54	4.20	12.05	Horizontal	-37.69	-25.00	12.69	135
5	12534.8	-52.16	5.20	14.85	Horizontal	-42.51	-25.00	17.51	270
6	15042.4	-49.62	5.50	13.23	Horizontal	-41.89	-25.00	16.89	45
7	17556.8	-45.90	5.70	12.15	Horizontal	-39.45	-25.00	14.45	135
8	20060.0	/	/	/	/	/	/	/	/
9	22567.5	/	/	/	/	/	/	/	/
10	25075.0	/	/	/	/	/	/	/	/

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	5071.5	-57.39	2.00	10.15	Horizontal	-49.24	-25.00	24.24	135
3	7604.3	-53.73	2.50	11.35	Horizontal	-44.88	-25.00	19.88	135
4	10140.8	-45.25	4.20	12.05	Horizontal	-37.40	-25.00	12.40	270
5	12676.5	-52.12	5.20	14.85	Horizontal	-42.47	-25.00	17.47	90
6	15214.5	-47.49	5.50	13.23	Horizontal	-39.76	-25.00	14.76	90
7	17742.4	-43.51	5.70	12.15	Horizontal	-37.06	-25.00	12.06	45
8	20280.0	/	/	/	/	/	/	/	/
9	22815.0	/	/	/	/	/	/	/	/
10	25350.0	/	/	/	/	/	/	/	/

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	5124.0	-57.20	2.00	10.15	Horizontal	-49.05	-25.00	24.05	315
3	7683.0	-53.41	2.50	11.35	Horizontal	-44.56	-25.00	19.56	0
4	10255.5	-46.55	4.20	12.05	Horizontal	-38.70	-25.00	13.70	135
5	12817.1	-50.95	5.20	14.85	Horizontal	-41.30	-25.00	16.30	0
6	15377.6	-47.52	5.50	13.23	Horizontal	-39.79	-25.00	14.79	90
7	17935.9	-43.92	5.70	12.15	Horizontal	-37.47	-25.00	12.47	180
8	20500.0	/	/	/	/	/	/	/	/
9	23062.5	/	/	/	/	/	/	/	/
10	25625.0	/	/	/	/	/	/	/	/

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	5022.0	-58.01	2.00	10.15	Horizontal	-49.86	-25.00	24.86	315
3	7530.4	-53.68	2.50	11.35	Horizontal	-44.83	-25.00	19.83	45
4	10040.6	-47.09	4.20	12.05	Horizontal	-39.24	-25.00	14.24	225
5	12552.8	-51.99	5.20	14.85	Horizontal	-42.34	-25.00	17.34	225
6	15061.5	-49.11	5.50	13.23	Horizontal	-41.38	-25.00	16.38	180
7	17573.6	-43.84	5.70	12.15	Horizontal	-37.39	-25.00	12.39	225
8	20080.0	/	/	/	/	/	/	/	/
9	22590.0	/	/	/	/	/	/	/	/
10	25100.0	/	/	/	/	/	/	/	/

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	5074.5	-57.75	2.00	10.15	Horizontal	-49.60	-25.00	24.60	225
3	7608.8	-52.25	2.50	11.35	Horizontal	-43.40	-25.00	18.40	225
4	10141.9	-45.77	4.20	12.05	Horizontal	-37.92	-25.00	12.92	315
5	12676.5	-52.29	5.20	14.85	Horizontal	-42.64	-25.00	17.64	0
6	15211.1	-47.70	5.50	13.23	Horizontal	-39.97	-25.00	14.97	270
7	17749.1	-43.31	5.70	12.15	Horizontal	-36.86	-25.00	11.86	45
8	20280.0	/	/	/	/	/	/	/	/
9	22815.0	/	/	/	/	/	/	/	/
10	25350.0	/	/	/	/	/	/	/	/

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5120.6	-58.25	2.00	10.15	Horizontal	-50.10	-25.00	25.10	180
3	7680.0	-53.72	2.50	11.35	Horizontal	-44.87	-25.00	19.87	270
4	10243.1	-47.05	4.20	12.05	Horizontal	-39.20	-25.00	14.20	315
5	12804.8	-51.35	5.20	14.85	Horizontal	-41.70	-25.00	16.70	270
6	15360.8	-48.05	5.50	13.23	Horizontal	-40.32	-25.00	15.32	135
7	17920.1	-45.43	5.70	12.15	Horizontal	-38.98	-25.00	13.98	180
8	20480.0	/	/	/	/	/	/	/	/
9	23040.0	/	/	/	/	/	/	/	/
10	25600.0	/	/	/	/	/	/	/	/

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 38 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	5143.1	-57.97	2.00	9.15	Horizontal	-50.82	-13.00	37.82	180
3	7716.4	-52.03	2.50	11.35	Horizontal	-43.18	-13.00	30.18	270
4	10290.4	-46.13	4.20	12.05	Horizontal	-38.28	-13.00	25.28	315
5	12862.1	-48.35	5.20	12.85	Horizontal	-40.70	-13.00	27.70	90
6	15440.6	-49.00	5.50	14.23	Horizontal	-40.27	-13.00	27.27	270
7	18007.5	/	/	/	/	/	/	/	/
8	20580.0	/	/	/	/	/	/	/	/
9	23152.5	/	/	/	/	/	/	/	/
10	25725.0	/	/	/	/	/	/	/	/

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 38 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	5190.5	-57.14	2.00	9.15	Horizontal	-49.99	-13.00	36.99	225
3	7789.1	-53.28	2.50	11.35	Horizontal	-44.43	-13.00	31.43	45
4	10386.0	-46.55	4.20	12.05	Horizontal	-38.70	-13.00	25.70	180
5	12976.9	-48.02	5.20	12.85	Horizontal	-40.37	-13.00	27.37	180
6	15573.4	-47.74	5.50	14.23	Horizontal	-39.01	-13.00	26.01	0
7	18165.0	/	/	/	/	/	/	/	/
8	20760.0	/	/	/	/	/	/	/	/
9	23355.0	/	/	/	/	/	/	/	/
10	25950.0	/	/	/	/	/	/	/	/

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 38 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	5235.4	-57.97	2.00	9.15	Horizontal	-50.82	-13.00	37.82	270
3	7852.1	-52.30	2.50	11.35	Horizontal	-43.45	-13.00	30.45	315
4	10474.9	-47.38	4.20	12.05	Horizontal	-39.53	-13.00	26.53	180
5	13086.0	-47.85	5.20	12.85	Horizontal	-40.20	-13.00	27.20	270
6	15705.0	-48.53	5.50	14.23	Horizontal	-39.80	-13.00	26.80	90
7	18322.5	/	/	/	/	/	/	/	/
8	20940.0	/	/	/	/	/	/	/	/
9	23557.5	/	/	/	/	/	/	/	/
10	26175.0	/	/	/	/	/	/	/	/

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 38 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	5151.8	-57.46	2.00	9.15	Horizontal	-50.31	-13.00	37.31	225
3	7726.5	-52.81	2.50	11.35	Horizontal	-43.96	-13.00	30.96	180
4	10301.6	-46.71	4.20	12.05	Horizontal	-38.86	-13.00	25.86	90
5	12872.3	-47.61	5.20	12.85	Horizontal	-39.96	-13.00	26.96	315
6	15493.5	-47.96	5.50	14.23	Horizontal	-39.23	-13.00	26.23	90
7	18025.0	/	/	/	/	/	/	/	/
8	20600.0	/	/	/	/	/	/	/	/
9	23175.0	/	/	/	/	/	/	/	/
10	25750.0	/	/	/	/	/	/	/	/

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 38 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	5193.4	-58.09	2.00	9.15	Horizontal	-50.94	-13.00	37.94	90
3	7788.8	-52.19	2.50	11.35	Horizontal	-43.34	-13.00	30.34	45
4	10384.9	-46.33	4.20	12.05	Horizontal	-38.48	-13.00	25.48	270
5	12973.5	-49.05	5.20	12.85	Horizontal	-41.40	-13.00	28.40	180
6	15575.6	-48.20	5.50	14.23	Horizontal	-39.47	-13.00	26.47	315
7	18165.0	/	/	/	/	/	/	/	/
8	20760.0	/	/	/	/	/	/	/	/
9	23355.0	/	/	/	/	/	/	/	/
10	25950.0	/	/	/	/	/	/	/	/

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 38 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	5234.3	-60.27	2.00	10.15	Horizontal	-52.12	-13.00	39.12	225
3	7849.9	-52.15	2.50	11.35	Horizontal	-43.30	-13.00	30.30	180
4	10465.9	-46.38	4.20	12.05	Horizontal	-38.53	-13.00	25.53	90
5	13071.4	-52.32	5.20	14.85	Horizontal	-42.67	-13.00	29.67	315
6	15691.5	-46.64	5.50	13.23	Horizontal	-38.91	-13.00	25.91	270
7	18305.0	/	/	/	/	/	/	/	/
8	20920.0	/	/	/	/	/	/	/	/
9	23535.0	/	/	/	/	/	/	/	/
10	26150.0	/	/	/	/	/	/	/	/

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 38 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	5154.0	-58.44	2.00	10.15	Horizontal	-50.29	-13.00	37.29	45
3	7737.8	-52.82	2.50	11.35	Horizontal	-43.97	-13.00	30.97	180
4	10315.1	-47.38	4.20	12.05	Horizontal	-39.53	-13.00	26.53	270
5	12882.4	-51.69	5.20	14.85	Horizontal	-42.04	-13.00	29.04	45
6	15463.1	-49.90	5.50	13.23	Horizontal	-42.17	-13.00	29.17	270
7	18042.5	/	/	/	/	/	/	/	/
8	20620.0	/	/	/	/	/	/	/	/
9	23197.5	/	/	/	/	/	/	/	/
10	25775.0	/	/	/	/	/	/	/	/

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 38 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	5190.0	-57.93	2.00	10.15	Horizontal	-49.78	-13.00	36.78	45
3	7788.0	-52.51	2.50	11.35	Horizontal	-43.66	-13.00	30.66	180
4	10384.0	-44.91	4.20	12.05	Horizontal	-37.06	-13.00	24.06	315
5	12975.8	-49.74	5.20	14.85	Horizontal	-40.09	-13.00	27.09	270
6	15573.4	-47.30	5.50	13.23	Horizontal	-39.57	-13.00	26.57	180
7	18165.0	/	/	/	/	/	/	/	/
8	20760.0	/	/	/	/	/	/	/	/
9	23355.0	/	/	/	/	/	/	/	/
10	25950.0	/	/	/	/	/	/	/	/

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 38 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	5224.5	-58.05	2.00	10.15	Horizontal	-49.90	-13.00	36.90	270
3	7834.1	-52.94	2.50	11.35	Horizontal	-44.09	-13.00	31.09	180
4	10455.8	-45.96	4.20	12.05	Horizontal	-38.11	-13.00	25.11	45
5	13064.6	-52.55	5.20	14.85	Horizontal	-42.90	-13.00	29.90	315
6	15670.1	-46.54	5.50	13.23	Horizontal	-38.81	-13.00	25.81	90
7	18287.5	/	/	/	/	/	/	/	/
8	20900.0	/	/	/	/	/	/	/	/
9	23512.5	/	/	/	/	/	/	/	/
10	26125.0	/	/	/	/	/	/	/	/

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 38 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	5162.3	-58.83	2.00	10.15	Horizontal	-50.68	-13.00	37.68	315
3	7740.0	-52.99	2.50	11.35	Horizontal	-44.14	-13.00	31.14	240
4	10319.6	-47.61	4.20	12.05	Horizontal	-39.76	-13.00	26.76	90
5	12903.8	-49.65	5.20	14.85	Horizontal	-40.00	-13.00	27.00	180
6	15482.3	-47.97	5.50	13.23	Horizontal	-40.24	-13.00	27.24	270
7	18060.0	/	/	/	/	/	/	/	/
8	20640.0	/	/	/	/	/	/	/	/
9	23220.0	/	/	/	/	/	/	/	/
10	25800.0	/	/	/	/	/	/	/	/

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 38 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	5191.9	-58.12	2.00	10.15	Horizontal	-49.97	-13.00	36.97	225
3	7781.6	-51.14	2.50	11.35	Horizontal	-42.29	-13.00	29.29	180
4	10380.4	-46.54	4.20	12.05	Horizontal	-38.69	-13.00	25.69	45
5	12976.9	-51.64	5.20	14.85	Horizontal	-41.99	-13.00	28.99	225
6	15570.0	-47.55	5.50	13.23	Horizontal	-39.82	-13.00	26.82	270
7	18165.0	/	/	/	/	/	/	/	/
8	20760.0	/	/	/	/	/	/	/	/
9	23355.0	/	/	/	/	/	/	/	/
10	25950.0	/	/	/	/	/	/	/	/

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 38 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	5222.6	-59.50	2.00	10.15	Horizontal	-51.35	-13.00	38.35	90
3	7831.1	-52.66	2.50	11.35	Horizontal	-43.81	-13.00	30.81	45
4	10446.8	-45.94	4.20	12.05	Horizontal	-38.09	-13.00	25.09	270
5	13053.4	-52.42	5.20	14.85	Horizontal	-42.77	-13.00	29.77	180
6	15667.9	-46.25	5.50	13.23	Horizontal	-38.52	-13.00	25.52	225
7	18270.0	/	/	/	/	/	/	/	/
8	20880.0	/	/	/	/	/	/	/	/
9	23490.0	/	/	/	/	/	/	/	/
10	26100.0	/	/	/	/	/	/	/	/

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 41 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	5116.5	-55.45	2.00	9.15	Horizontal	-48.30	-25.00	23.30	270
3	7677.4	-51.54	2.50	11.35	Horizontal	-42.69	-25.00	17.69	270
4	10235.3	-45.90	4.20	12.05	Horizontal	-38.05	-25.00	13.05	90
5	12785.6	-47.37	5.20	12.85	Horizontal	-39.72	-25.00	14.72	0
6	15349.5	-48.07	5.50	14.23	Horizontal	-39.34	-25.00	14.34	0
7	17902.1	-47.66	5.70	14.15	Horizontal	-39.21	-25.00	14.21	315
8	20460.0	/	/	/	/	/	/	/	/
9	23017.5	/	/	/	/	/	/	/	/
10	25575.0	/	/	/	/	/	/	/	/

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 41 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	5215.9	-57.39	2.00	9.15	Horizontal	-50.24	-25.00	25.24	180
3	7816.9	-52.61	2.50	11.35	Horizontal	-43.76	-25.00	18.76	180
4	10428.8	-47.08	4.20	12.05	Horizontal	-39.23	-25.00	14.23	270
5	13018.5	-48.59	5.20	12.85	Horizontal	-40.94	-25.00	15.94	90
6	15629.6	-46.89	5.50	14.23	Horizontal	-38.16	-25.00	13.16	270
7	18235.0	/	/	/	/	/	/	/	/
8	20840.0	/	/	/	/	/	/	/	/
9	23445.0	/	/	/	/	/	/	/	/
10	26050.0	/	/	/	/	/	/	/	/

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 41 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	5306.6	-58.01	2.00	9.15	Horizontal	-50.86	-25.00	25.86	135
3	7952.3	-50.60	2.50	11.35	Horizontal	-41.75	-25.00	16.75	0
4	10614.4	-46.91	4.20	12.05	Horizontal	-39.06	-25.00	14.06	90
5	13268.3	-49.07	5.20	12.85	Horizontal	-41.42	-25.00	16.42	0
6	15918.8	-48.12	5.50	14.23	Horizontal	-39.39	-25.00	14.39	45
7	18567.5	/	/	/	/	/	/	/	/
8	21220.0	/	/	/	/	/	/	/	/
9	23872.5	/	/	/	/	/	/	/	/
10	26525.0	/	/	/	/	/	/	/	/

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 41 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	5121.4	-56.27	2.00	9.15	Horizontal	-49.12	-25.00	24.12	90
3	7683.0	-52.26	2.50	11.35	Horizontal	-43.41	-25.00	18.41	180
4	10247.6	-46.84	4.20	12.05	Horizontal	-38.99	-25.00	13.99	270
5	12805.9	-48.65	5.20	12.85	Horizontal	-41.00	-25.00	16.00	45
6	15379.9	-47.92	5.50	14.23	Horizontal	-39.19	-25.00	14.19	315
7	17920.1	-48.22	5.70	14.15	Horizontal	-39.77	-25.00	14.77	90
8	20480.0	/	/	/	/	/	/	/	/
9	23040.0	/	/	/	/	/	/	/	/
10	25600.0	/	/	/	/	/	/	/	/

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 41 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	5212.5	-56.42	2.00	9.15	Horizontal	-49.27	-25.00	24.27	315
3	7814.3	-52.15	2.50	11.35	Horizontal	-43.30	-25.00	18.30	45
4	10425.0	-45.32	4.20	12.05	Horizontal	-37.47	-25.00	12.47	270
5	13028.6	-50.65	5.20	12.85	Horizontal	-43.00	-25.00	18.00	45
6	15642.0	-48.73	5.50	14.23	Horizontal	-40.00	-25.00	15.00	315
7	18235.0	-49.10	5.70	14.15	Horizontal	-40.65	-25.00	15.65	90
8	20840.0	/	/	/	/	/	/	/	/
9	23445.0	/	/	/	/	/	/	/	/
10	26050.0	/	/	/	/	/	/	/	/

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 41 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	5301.4	-58.21	2.00	10.15	Horizontal	-50.06	-25.00	25.06	90
3	7954.5	-51.95	2.50	11.35	Horizontal	-43.10	-25.00	18.10	180
4	10602.0	-46.53	4.20	12.05	Horizontal	-38.68	-25.00	13.68	90
5	13245.0	-49.95	5.20	14.85	Horizontal	-40.30	-25.00	15.30	315
6	15912.0	-46.73	5.50	13.23	Horizontal	-39.00	-25.00	14.00	225
7	18550.0	/	/	/	/	/	/	/	/
8	21200.0	/	/	/	/	/	/	/	/
9	23850.0	/	/	/	/	/	/	/	/
10	26500.0	/	/	/	/	/	/	/	/

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 41 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	5127.0	-57.73	2.00	10.15	Horizontal	-49.58	-25.00	24.58	90
3	7690.5	-53.67	2.50	11.35	Horizontal	-44.82	-25.00	19.82	315
4	10248.8	-46.78	4.20	12.05	Horizontal	-38.93	-25.00	13.93	180
5	12825.0	-51.97	5.20	14.85	Horizontal	-42.32	-25.00	17.32	225
6	15364.1	-46.16	5.50	13.23	Horizontal	-38.43	-25.00	13.43	45
7	17930.0	-45.23	5.70	12.15	Horizontal	-38.78	-25.00	13.78	180
8	20500.0	/	/	/	/	/	/	/	/
9	23062.5	/	/	/	/	/	/	/	/
10	25625.0	/	/	/	/	/	/	/	/

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 41 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	5212.5	-58.60	2.00	10.15	Horizontal	-50.45	-25.00	25.45	45
3	7810.9	-53.27	2.50	11.35	Horizontal	-44.42	-25.00	19.42	180
4	10420.9	-45.53	4.20	12.05	Horizontal	-37.68	-25.00	12.68	225
5	13024.1	-50.94	5.20	14.85	Horizontal	-41.29	-25.00	16.29	315
6	15627.4	-46.27	5.50	13.23	Horizontal	-38.54	-25.00	13.54	180
7	18235.0	/	/	/	/	/	/	/	/
8	20840.0	/	/	/	/	/	/	/	/
9	23445.0	/	/	/	/	/	/	/	/
10	26050.0	/	/	/	/	/	/	/	/

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 41 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	5295.4	-57.45	2.00	10.15	Horizontal	-49.30	-25.00	24.30	180
3	7942.5	-51.25	2.50	11.35	Horizontal	-42.40	-25.00	17.40	225
4	10590.8	-44.96	4.20	12.05	Horizontal	-37.11	-25.00	12.11	90
5	13227.8	-51.75	5.20	14.85	Horizontal	-42.10	-25.00	17.10	180
6	15872.6	-49.03	5.50	13.23	Horizontal	-41.30	-25.00	16.30	45
7	18532.5	/	/	/	/	/	/	/	/
8	21180.0	/	/	/	/	/	/	/	/
9	23827.5	/	/	/	/	/	/	/	/
10	26475.0	/	/	/	/	/	/	/	/

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 41 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	5128.5	-57.43	2.00	10.15	Horizontal	-49.28	-25.00	24.28	90
3	7690.5	-54.22	2.50	11.35	Horizontal	-45.37	-25.00	20.37	315
4	10260.0	-46.50	4.20	12.05	Horizontal	-38.65	-25.00	13.65	45
5	12821.6	-51.16	5.20	14.85	Horizontal	-41.51	-25.00	16.51	225
6	15367.5	-46.85	5.50	13.23	Horizontal	-39.12	-25.00	14.12	90
7	17946.0	-45.19	5.70	12.15	Horizontal	-38.74	-25.00	13.74	225
8	20520.0	/	/	/	/	/	/	/	/
9	23085.0	/	/	/	/	/	/	/	/
10	25650.0	/	/	/	/	/	/	/	/

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 41 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	5208.8	-58.84	2.00	10.15	Horizontal	-50.69	-25.00	25.69	180
3	7812.0	-52.70	2.50	11.35	Horizontal	-43.85	-25.00	18.85	315
4	10428.8	-46.56	4.20	12.05	Horizontal	-38.71	-25.00	13.71	315
5	13016.3	-50.42	5.20	14.85	Horizontal	-40.77	-25.00	15.77	0
6	15640.9	-48.00	5.50	13.23	Horizontal	-40.27	-25.00	15.27	225
7	18235.0	/	/	/	/	/	/	/	/
8	20840.0	/	/	/	/	/	/	/	/
9	23445.0	/	/	/	/	/	/	/	/
10	26050.0	/	/	/	/	/	/	/	/

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 41 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	5283.8	-57.85	2.00	10.15	Horizontal	-49.70	-25.00	24.70	45
3	7938.0	-51.80	2.50	11.35	Horizontal	-42.95	-25.00	17.95	225
4	10579.5	-44.59	4.20	12.05	Horizontal	-36.74	-25.00	11.74	90
5	13237.9	-50.58	5.20	14.85	Horizontal	-40.93	-25.00	15.93	225
6	15883.9	-45.90	5.50	13.23	Horizontal	-38.17	-25.00	13.17	180
7	18515.0	/	/	/	/	/	/	/	/
8	21160.0	/	/	/	/	/	/	/	/
9	23805.0	/	/	/	/	/	/	/	/
10	26450.0	/	/	/	/	/	/	/	/

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
Base Station Simulator	R&S	CMW500	113645	2018-05-13	2019-05-12
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	2017-05-14	2018-05-13
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	2018-05-13	2019-05-12
Spectrum Analyzer	Agilent	N9010A	MY47191109	2017-05-14	2018-05-13
Spectrum Analyzer	Agilent	N9010A	MY47191109	2018-05-13	2019-05-12
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
Signal generator	R&S	SMB 100A	102594	2018-05-13	2019-05-12
EMI Test Receiver	R&S	ESCI	100948	2017-05-20	2018-05-19
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2014-12-06	2019-12-05
Horn Antenna	ETS-Lindgren	3160-09	00102643	2015-01-30	2020-01-29
Climatic Chamber	Re Ce	PT-30B	20101891	2015-07-18	2018-07-17
RF Cable	Agilent	SMA 15cm	0001	NA	NA
Preamplifier	R&S	SCU18	102327	2017-06-18	2018-06-17
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2017-05-14	2018-05-13
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2018-05-13	2019-05-12
Software	R&S	EMC32	V 8.52.0	NA	NA

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