RF TEST REPORT

Applicant	Xiaomi Communications Co., Ltd.
FCC ID	2AFZZC3KH
Product	Mobile Phone
Brand	Redmi
Model	M1908C3KH
Report No.	R1907A0380-R3
Issue Date	September 5, 2019

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2018)/ FCC CFR47 Part 27C (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Peng Tao

Performed by: Peng Tao

Kai Xu

Approved by: Kai Xu

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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(d)(4) /27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(h) /27.53(m)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	2.1051 /27.53(h) /27.53(m)	PASS
8	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(m)	PASS
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.			
Date of Testing: July 22, 2019~ August 12, 2019 and September 5, 2019			

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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

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.

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1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City:	Shanghai
Post code:	201201
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E-mail:	xukai@ta-shanghai.com

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2 General Description of Equipment under Test

Client Information

Applicant	Xiaomi Communications Co., Ltd.
Applicant address	The Rainbow City of China Resources,NO.68,Qinghe Middle Street,Haidian District,Beijing,China
Manufacturer	Xiaomi Communications Co., Ltd.
Manufacturer address	The Rainbow City of China Resources,NO.68,Qinghe Middle Street,Haidian District,Beijing,China

General information

EUT Description			
Model	M1908C3KH		
IMEI	IMEI 1:867195040017253 IMEI 2: 867195040017261		
Hardware Version	P2		
Software Version	MIUI 10		
Power Supply	Battery/AC adapter		
Antenna Type	PIFA Antenna		
Antenna Gain	WCDMA Band IV /LTE 4:-1.01dBi LTE 7/38:-0.47dBi		
Test Mode(s)	WCDMA Band IV; LTE Band 4; LTE Band 7, LTE Band 38;		
Test Modulation	(WCDMA) BPSK, QPSK,16QAM; (LTE)QPSK 16QAM;		
HSDPA UE Category	24		
HSUPA UE Category	6		
DC-HSDPA UE Category	24		
LTE Category	4		
Maximum E.I.R.P	WCDMA Band IV:	21.50dBm	
	LTE Band 4:	22.84dBm	
	LTE Band 7:	21.39dBm	
	LTE Band 38:	19.56dBm	
Rated Power Supply Voltage:	3.85V		
Extreme Voltage	Minimum: 3.4V Maximum: 4.4V		
Extreme Temperature	Lowest: 0°C Highest: +40°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690

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	LTE Band 38	2570 ~ 2620	2570 ~ 2620
EUT Accessory			
Adapter	Manufacturer: Jiangsu Chenyang Electron Co., Ltd. Model: MDY-09-EQ		
Battery	Manufacturer: Sunwoda Electronic Co.,LTD Model: BN51		
USB Cable 1	Manufacturer: LUXSHARE Precision Industry Co., Ltd. Model: L23312 100cm Cable, Shielded		
USB Cable 2	Manufacturer: SU ZHOU KELI SCIENCE&TECHNOLOGY DEVELOPMENT CO.,LTD Model: K23312 100cm Cable, Shielded		
Note: 1. The information of the EUT is declared by the manufacturer. 2. There is more than one SIM and USB cable, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1/ USB cable 1) will be recorded in this report.			

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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 (2018)

FCC CFR47 Part 27C (2018)

ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v03r01

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4 Test Configuration

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

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

All mode and data rates and positions and RB size and modulations were investigated.
Subsequently, only the worst case emissions are reported.
The following testing in WCDMA/LTE is set based on the maximum RF Output Power.
The following testing in different Bandwidth is set to detailin the following table:
Test modes are chosen to be reported as the worst case configuration below for WCDMA Band IV:

Test items	**Modes/Modulation**
	WCDMA Band IV
RF power output	RMC HSDPA/HSUPA DC-HSDPA
Effective Isotropic Radiated power	RMC
Occupied Bandwidth	RMC
Band Edge Compliance	RMC
Peak-to-Average Power Ratio	RMC
Frequency Stability	RMC
Spurious Emissions at Antenna Terminals	RMC
Radiates Spurious Emission	RMC

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Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7/38:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
RF power output	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 38	-	-	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 38	-	-	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 38	-	-	O	O	O	O	O	O	-	-	O	O	O	O
Band Edge Compliance	LTE 4	O	O	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 7	-	-	O	O	O	O	O	O	O	-	O	O	-	O
	LTE 38	-	-	O	O	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	LTE 4	O	O	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	-	-	O	O	O	O
	LTE 38	-	-	O	O	O	O	O	O	-	-	O	O	O	O
Frequency Stability	LTE 4	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 7	-	-	O	O	O	O	O	O	O	O	O	O	O	O
	LTE 38	-	-	O	O	O	O	O	O	O	O	O	O	O	O
Spurious Emissions at Antenna Terminals	LTE 4	O	O	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	O	O	O	O	-	O	-	-	O	O	O
	LTE 38	-	-	O	O	O	O	O	-	O	-	-	O	O	O
Radiates Spurious Emission	LTE 4	O	-	O	-	-	O	O	-	O	-	-	O	O	O
	LTE 7	-	-	O	-	O	O	O	-	O	-	-	O	O	O
	LTE 38	-	-	O	O	-	O	O	-	O	-	-	O	O	O
Note	1. The mark “O” means that this configuration is chosen for testing. 2. The mark “-” means that this configuration is not testing.														

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5 Test Case Results

5.1 RF Power Output

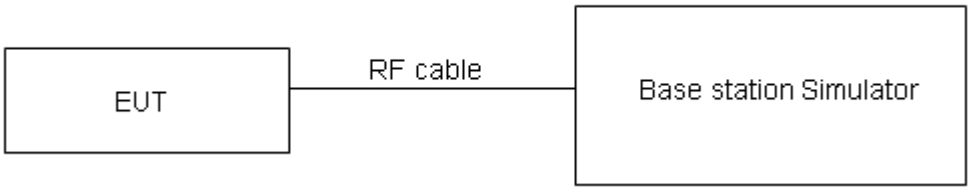
Ambient condition

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

Methods of Measurement

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

Test Setup



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

Limits

No specific RF power output requirements in part 2.1046.

Measurement Uncertainty

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

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Test Results

WCDMA Band IV		AV Conducted Power(dBm)		
		Channel 1312	Channel 1413	Channel 1513
		1712.4 (MHz)	1732.6 (MHz)	1752.6(MHz)
RMC		22.85	22.73	22.76
HSDPA	Sub - Test 1	22.27	22.15	22.18
	Sub - Test 2	22.26	22.14	22.17
	Sub - Test 3	21.75	21.63	21.66
	Sub - Test 4	21.74	21.62	21.65
HSUPA	Sub - Test 1	22.23	22.11	22.14
	Sub - Test 2	21.22	21.10	21.13
	Sub - Test 3	21.70	21.59	21.62
	Sub - Test 4	21.19	21.08	21.11
	Sub - Test 5	22.18	22.07	22.10
DC-HSDPA	Sub - Test 1	22.19	22.09	22.10
	Sub - Test 2	22.18	22.08	22.09
	Sub - Test 3	21.76	21.57	21.60
	Sub - Test 4	21.75	21.56	21.59

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LTE FDD Band 4				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19957/1710.7	20175/1732.5	20393/1754.3
1.4MHz	QPSK	1	0	22.47	22.12	22.39
		1	2	22.74	22.57	22.96
		1	5	22.69	22.60	22.66
		3	0	22.55	22.50	22.77
		3	2	22.67	22.62	22.77
		3	3	22.72	22.58	22.93
		6	0	21.49	21.59	21.80
	16QAM	1	0	21.40	21.17	21.58
		1	2	21.64	21.29	21.68
		1	5	21.29	21.08	21.57
		3	0	21.57	21.41	21.65
		3	2	21.66	21.67	21.75
		3	3	21.59	21.73	21.73
		6	0	20.48	20.60	20.78
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19965/1711.5	20175/1732.5	20385/1753.5
3MHz	QPSK	1	0	22.43	22.21	22.52
		1	7	22.86	22.51	22.97
		1	14	22.68	22.51	22.55
		8	0	21.63	21.52	21.71
		8	4	21.60	21.64	21.91
		8	7	21.62	21.60	21.88
		15	0	21.58	21.53	21.78
	16QAM	1	0	21.47	21.26	21.60
		1	7	21.76	21.16	21.75
		1	14	21.25	21.09	21.56
		8	0	20.51	20.41	20.65
		8	4	20.67	20.64	20.86
		8	7	20.57	20.72	20.84
		15	0	20.64	20.63	20.81
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				19975/1712.5	20175/1732.5	20375/1752.5
5MHz	QPSK	1	0	22.47	22.09	22.44
		1	13	22.84	22.51	22.94
		1	24	22.73	22.67	22.65
		12	0	21.74	21.47	21.70
		12	6	21.55	21.58	21.88
		12	13	21.63	21.76	21.84
		25	0	21.54	21.53	21.85
	16QAM	1	0	21.51	21.26	21.57

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		1	13	21.60	21.34	21.69
		1	24	21.32	21.11	21.57
		12	0	20.53	20.48	20.80
		12	6	20.56	20.70	20.78
		12	13	20.57	20.77	20.87
		25	0	20.64	20.57	20.84
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20000/1715	20175/1732.5	20350/1750
10MHz	QPSK	1	0	22.47	22.09	22.41
		1	25	22.75	22.55	22.96
		1	49	22.73	22.50	22.57
		25	0	21.61	21.49	21.84
		25	13	21.55	21.53	21.89
		25	25	21.73	21.62	21.82
		50	0	21.49	21.45	21.81
	16QAM	1	0	21.49	21.21	21.64
		1	25	21.63	21.19	21.81
		1	49	21.19	21.01	21.51
		25	0	20.57	20.46	20.79
		25	13	20.51	20.66	20.86
		25	25	20.57	20.77	20.82
		50	0	20.61	20.59	20.81
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20025/1717.5	20175/1732.5	20325/1747.5
15MHz	QPSK	1	0	22.51	22.20	22.38
		1	38	22.69	22.62	23.03
		1	74	22.55	22.62	22.70
		36	0	21.56	21.43	21.81
		36	18	21.66	21.64	21.90
		36	39	21.60	21.67	21.91
		75	0	21.51	21.51	21.82
	16QAM	1	0	21.39	21.23	21.60
		1	38	21.78	21.19	21.74
		1	74	21.28	21.00	21.66
		36	0	20.65	20.41	20.67
		36	18	20.56	20.63	20.86
		36	39	20.46	20.79	20.74
		75	0	20.46	20.68	20.68
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20050/1720	20175/1732.5	20300/1745
20MHz	QPSK	1	0	22.55	22.25	22.55
		1	50	22.86	22.67	23.07
		1	99	22.75	22.69	22.72

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		50	0	21.74	21.61	21.84
		50	25	21.73	21.65	21.91
		50	50	21.74	21.77	21.94
		100	0	21.60	21.64	21.87
	16QAM	1	0	21.56	21.27	21.70
		1	50	21.78	21.34	21.86
		1	99	21.36	21.14	21.69
		50	0	20.66	20.54	20.83
		50	25	20.71	20.81	20.91
		50	50	20.65	20.85	20.88
		100	0	20.65	20.69	20.84

LTE FDD Band 7				Conducted Power(dBm)		
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20775/2502.5	21100/2535	21425/2567.5
5MHz	QPSK	1	0	23.22	23.07	22.81
		1	13	23.49	23.31	22.79
		1	24	23.26	22.98	23.03
		12	0	22.16	22.02	22.26
		12	6	22.24	22.04	22.18
		12	13	22.26	22.10	22.18
		25	0	22.15	22.27	21.95
	16QAM	1	0	22.13	22.00	21.82
		1	13	22.27	21.77	21.72
		1	24	22.02	21.77	21.85
		12	0	20.98	21.01	21.18
		12	6	20.98	21.10	21.14
		12	13	21.03	21.00	21.19
		25	0	21.19	20.97	21.13
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20800/2505	21100/2535	21400/2565
10MHz	QPSK	1	0	23.32	23.23	22.88
		1	25	23.48	23.19	22.86
		1	49	23.15	23.08	22.95
		25	0	22.11	22.09	22.34
		25	13	22.27	22.04	22.27
		25	25	22.23	22.21	22.23
		50	0	22.22	22.24	22.04
	16QAM	1	0	21.97	21.98	21.90
		1	25	22.24	21.74	21.68
		1	49	22.07	21.59	21.85
		25	0	21.06	20.92	21.15

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		25	13	20.94	21.04	21.19
		25	25	21.07	21.14	21.11
		50	0	21.13	20.99	21.16
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20825/2507.5	21100/2535	21375/2562.5
15MHz	QPSK	1	0	23.31	23.12	22.76
		1	38	23.35	23.36	22.84
		1	74	23.27	23.11	23.06
		36	0	22.22	22.09	22.19
		36	18	22.29	22.12	22.24
		36	39	22.21	22.16	22.30
		75	0	22.21	22.20	22.05
	16QAM	1	0	22.04	22.13	21.82
		1	38	22.26	21.63	21.82
		1	74	21.99	21.66	21.80
		36	0	21.04	21.03	21.23
		36	18	20.99	21.02	21.13
		36	39	21.16	21.01	21.14
		75	0	21.24	21.04	21.21
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				20850/2510	21100/2535	21350/2560
20MHz	QPSK	1	0	23.35	23.25	22.96
		1	50	23.53	23.37	22.95
		1	99	23.33	23.16	23.07
		50	0	22.29	22.22	22.38
		50	25	22.31	22.22	22.33
		50	50	22.33	22.24	22.35
		100	0	22.25	22.37	22.06
	16QAM	1	0	22.16	22.13	21.98
		1	50	22.37	21.81	21.85
		1	99	22.11	21.78	21.86
		50	0	21.14	21.09	21.33
		50	25	21.13	21.12	21.29
		50	50	21.22	21.16	21.22
		100	0	21.24	21.17	21.26

LTE TDD 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	22.19	22.21	22.65
		1	13	22.28	22.44	22.94

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		1	24	22.07	22.15	22.59
		12	0	21.41	21.33	21.34
		12	6	21.55	21.37	21.52
		12	13	21.48	21.47	21.62
		25	0	21.44	21.37	21.39
	16QAM	1	0	21.79	21.21	22.17
		1	13	22.08	21.50	22.25
		1	24	21.66	21.18	22.16
		12	0	20.50	20.42	20.42
		12	6	20.56	20.60	20.58
		12	13	20.48	20.62	20.65
		25	0	20.53	20.39	20.49
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37800/2575	38000/2595	38200/2615
10MHz	QPSK	1	0	22.18	22.08	22.71
		1	25	22.32	22.44	23.04
		1	49	22.16	22.12	22.58
		25	0	21.40	21.48	21.30
		25	13	21.51	21.25	21.49
		25	25	21.37	21.42	21.64
		50	0	21.38	21.53	21.48
	16QAM	1	0	21.75	21.19	22.20
		1	25	22.10	21.46	22.30
		1	49	21.66	21.11	22.21
		25	0	20.50	20.48	20.41
		25	13	20.55	20.45	20.63
		25	25	20.51	20.59	20.55
		50	0	20.44	20.52	20.38
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37825/2577.5	38000/2595	38175/2612.5
15MHz	QPSK	1	0	22.17	22.13	22.61
		1	38	22.39	22.58	22.92
		1	74	22.12	22.26	22.75
		36	0	21.43	21.31	21.34
		36	18	21.37	21.26	21.53
		36	39	21.45	21.49	21.64
		75	0	21.54	21.47	21.40
	16QAM	1	0	21.76	21.06	22.08
		1	38	22.17	21.41	22.41
		1	74	21.66	21.05	22.22
		36	0	20.41	20.56	20.38
		36	18	20.38	20.44	20.52
		36	39	20.35	20.45	20.55

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		75	0	20.44	20.42	20.53
Bandwidth	Modulation	RB size	RB offset	Channel/Frequency (MHz)		
				37850/2580	38000/2595	38150/2610
20MHz	QPSK	1	0	22.29	22.26	22.76
		1	50	22.46	22.59	23.05
		1	99	22.25	22.30	22.76
		50	0	21.53	21.49	21.47
		50	25	21.56	21.45	21.61
		50	50	21.57	21.52	21.71
		100	0	21.55	21.53	21.51
	16QAM	1	0	21.94	21.22	22.25
		1	50	22.26	21.54	22.43
		1	99	21.83	21.22	22.23
		50	0	20.59	20.61	20.52
		50	25	20.56	20.62	20.65
		50	50	20.54	20.65	20.73
		100	0	20.58	20.55	20.54

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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 C63.26 (2015).

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 = Generator Output Power (dBm) – 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 (dBm) = LVL (dBm) + LOSS (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:

EIRP (dBm) = Output Power (dBm) - Losses (dB) + Antenna Gain (dBi)

where:dBd refers to gain relative to an ideal dipole.

EIRP (dBm) = ERP (dBm) + 2.15 (dB.)

The RB allocation refers to section 5.1, using the maximum output power configuration.

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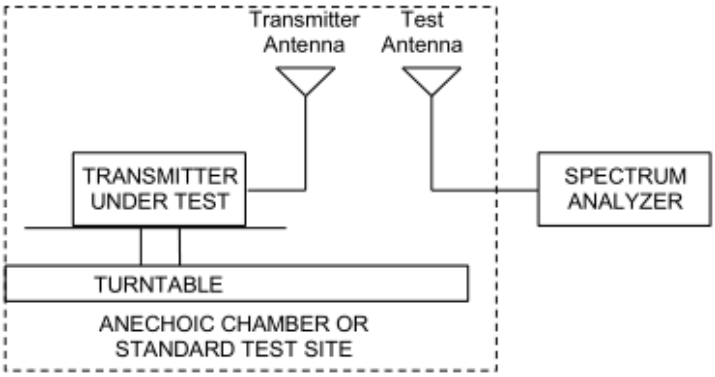
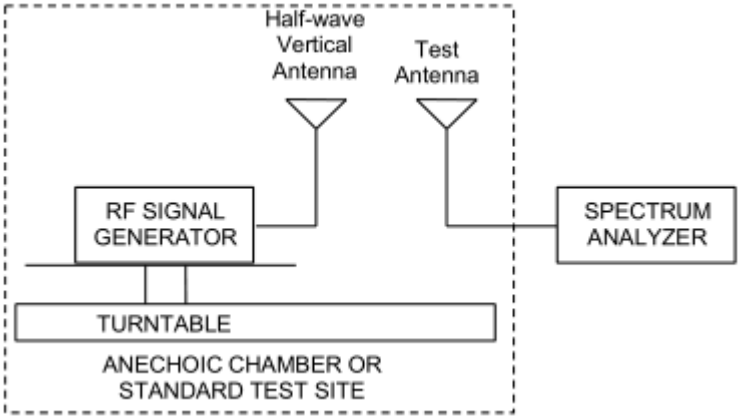
Test setup





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.

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Limits

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

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

Part 27.50(d)(4)Limit	⩽ 1 W (30 dBm)
Part 27.50(h)(2) Limit	⩽ 2 W (33 dBm)

Measurement Uncertainty

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

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Test Results

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

Mode	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
WCDMA Band IV	Low	1712.4	Horizontal	21.34	30	Pass
	Mid	1732.6	Horizontal	21.50	30	Pass
	High	1752.6	Horizontal	20.93	30	Pass

LTE Band 4						
Bandwidth	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
1.4 MHz (QPSK)	Low	1710.7	Horizontal	22.79	30	Pass
	Mid	1732.5	Horizontal	22.04	30	Pass
	High	1754.3	Horizontal	21.86	30	Pass
3 MHz (QPSK)	Low	1711.5	Horizontal	22.75	30	Pass
	Mid	1732.5	Horizontal	22.53	30	Pass
	High	1753.5	Horizontal	22.12	30	Pass
5 MHz (QPSK)	Low	1712.5	Horizontal	22.84	30	Pass
	Mid	1732.5	Horizontal	22.67	30	Pass
	High	1752.5	Horizontal	22.36	30	Pass
10 MHz (QPSK)	Low	1715	Horizontal	22.76	30	Pass
	Mid	1732.5	Horizontal	22.42	30	Pass
	High	1750	Horizontal	22.14	30	Pass
15 MHz (QPSK)	Low	1717.5	Horizontal	22.71	30	Pass
	Mid	1732.5	Horizontal	22.53	30	Pass
	High	1747.5	Horizontal	22.26	30	Pass
20 MHz (QPSK)	Low	1720	Horizontal	22.66	30	Pass
	Mid	1732.5	Horizontal	22.39	30	Pass
	High	1745	Horizontal	22.19	30	Pass
1.4 MHz (16QAM)	Low	1710.7	Horizontal	22.26	30	Pass
	Mid	1732.5	Horizontal	21.47	30	Pass
	High	1754.3	Horizontal	21.30	30	Pass
3 MHz (16QAM)	Low	1711.5	Horizontal	22.24	30	Pass
	Mid	1732.5	Horizontal	21.98	30	Pass
	High	1753.5	Horizontal	21.54	30	Pass
5 MHz (16QAM)	Low	1712.5	Horizontal	22.24	30	Pass
	Mid	1732.5	Horizontal	22.14	30	Pass
	High	1752.5	Horizontal	21.85	30	Pass
10 MHz (16QAM)	Low	1715	Horizontal	22.19	30	Pass
	Mid	1732.5	Horizontal	21.86	30	Pass
	High	1750	Horizontal	21.60	30	Pass

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15 MHz (16QAM)	Low	1717.5	Horizontal	22.19	30	Pass
	Mid	1732.5	Horizontal	22.02	30	Pass
	High	1747.5	Horizontal	21.73	30	Pass
20 MHz (16QAM)	Low	1720	Horizontal	22.12	30	Pass
	Mid	1732.5	Horizontal	21.82	30	Pass
	High	1745	Horizontal	21.67	30	Pass
1.4 MHz (64QAM)	Low	1710.7	Horizontal	21.71	30	Pass
	Mid	1732.5	Horizontal	20.89	30	Pass
	High	1754.3	Horizontal	20.70	30	Pass
3 MHz (64QAM)	Low	1711.5	Horizontal	21.71	30	Pass
	Mid	1732.5	Horizontal	21.47	30	Pass
	High	1753.5	Horizontal	20.97	30	Pass
5 MHz (64QAM)	Low	1712.5	Horizontal	21.68	30	Pass
	Mid	1732.5	Horizontal	21.60	30	Pass
	High	1752.5	Horizontal	21.33	30	Pass
10 MHz (64QAM)	Low	1715	Horizontal	21.68	30	Pass
	Mid	1732.5	Horizontal	21.33	30	Pass
	High	1750	Horizontal	21.06	30	Pass
15 MHz (64QAM)	Low	1717.5	Horizontal	21.62	30	Pass
	Mid	1732.5	Horizontal	21.50	30	Pass
	High	1747.5	Horizontal	21.22	30	Pass
20 MHz (64QAM)	Low	1720	Horizontal	21.59	30	Pass
	Mid	1732.5	Horizontal	21.27	30	Pass
	High	1745	Horizontal	21.09	30	Pass

LTE Band 7						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2502.5	Horizontal	21.34	33	Pass
	Mid	2535	Horizontal	20.05	33	Pass
	High	2567.5	Horizontal	20.46	33	Pass
10 MHz (QPSK)	Low	2505	Horizontal	21.35	33	Pass
	Mid	2535	Horizontal	20.16	33	Pass
	High	2565	Horizontal	20.13	33	Pass
15 MHz (QPSK)	Low	2507.5	Horizontal	21.39	33	Pass
	Mid	2535	Horizontal	20.42	33	Pass
	High	2562.5	Horizontal	20.38	33	Pass
20 MHz (QPSK)	Low	2510	Horizontal	21.37	33	Pass
	Mid	2535	Horizontal	20.33	33	Pass
	High	2560	Horizontal	20.23	33	Pass
5 MHz (16QAM)	Low	2502.5	Horizontal	20.78	33	Pass
	Mid	2535	Horizontal	19.51	33	Pass
	High	2567.5	Horizontal	19.93	33	Pass

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10 MHz (16QAM)	Low	2505	Horizontal	20.81	33	Pass
	Mid	2535	Horizontal	19.64	33	Pass
	High	2565	Horizontal	19.56	33	Pass
15 MHz (16QAM)	Low	2507.5	Horizontal	20.85	33	Pass
	Mid	2535	Horizontal	19.90	33	Pass
	High	2562.5	Horizontal	19.79	33	Pass
20 MHz (16QAM)	Low	2510	Horizontal	20.86	33	Pass
	Mid	2535	Horizontal	19.79	33	Pass
	High	2560	Horizontal	19.70	33	Pass
5 MHz (64QAM)	Low	2502.5	Horizontal	20.27	33	Pass
	Mid	2535	Horizontal	18.93	33	Pass
	High	2567.5	Horizontal	19.35	33	Pass
10 MHz (64QAM)	Low	2505	Horizontal	20.28	33	Pass
	Mid	2535	Horizontal	19.13	33	Pass
	High	2565	Horizontal	19.00	33	Pass
15 MHz (64QAM)	Low	2507.5	Horizontal	20.31	33	Pass
	Mid	2535	Horizontal	19.37	33	Pass
	High	2562.5	Horizontal	19.25	33	Pass
20 MHz (64QAM)	Low	2510	Horizontal	20.34	33	Pass
	Mid	2535	Horizontal	19.22	33	Pass
	High	2560	Horizontal	19.16	33	Pass

LTE Band 38						
Band width	Channel	Frequency (MHz)	Polarization	EIRP (dBm)	Limit (dBm)	Conclusion
5 MHz (QPSK)	Low	2572.5	Horizontal	19.40	33	Pass
	Mid	2595	Horizontal	19.10	33	Pass
	High	2617.5	Horizontal	19.56	33	Pass
10 MHz (QPSK)	Low	2575	Horizontal	19.45	33	Pass
	Mid	2595	Horizontal	19.03	33	Pass
	High	2615	Horizontal	19.00	33	Pass
15 MHz (QPSK)	Low	2577.5	Horizontal	19.35	33	Pass
	Mid	2595	Horizontal	19.21	33	Pass
	High	2612.5	Horizontal	19.46	33	Pass
20 MHz (QPSK)	Low	2580	Horizontal	19.36	33	Pass
	Mid	2595	Horizontal	19.35	33	Pass
	High	2610	Horizontal	19.40	33	Pass
5 MHz (16QAM)	Low	2572.5	Horizontal	18.83	33	Pass
	Mid	2595	Horizontal	18.56	33	Pass
	High	2617.5	Horizontal	19.04	33	Pass
10 MHz (16QAM)	Low	2575	Horizontal	18.86	33	Pass
	Mid	2595	Horizontal	18.52	33	Pass
	High	2615	Horizontal	18.46	33	Pass

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15 MHz (16QAM)	Low	2577.5	Horizontal	18.82	33	Pass
	Mid	2595	Horizontal	18.65	33	Pass
	High	2612.5	Horizontal	18.92	33	Pass
20 MHz (16QAM)	Low	2580	Horizontal	18.81	33	Pass
	Mid	2595	Horizontal	18.78	33	Pass
	High	2610	Horizontal	18.89	33	Pass
5 MHz (64QAM)	Low	2572.5	Horizontal	18.27	33	Pass
	Mid	2595	Horizontal	18.02	33	Pass
	High	2617.5	Horizontal	18.51	33	Pass
10 MHz (64QAM)	Low	2575	Horizontal	18.32	33	Pass
	Mid	2595	Horizontal	18.00	33	Pass
	High	2615	Horizontal	17.89	33	Pass
15 MHz (64QAM)	Low	2577.5	Horizontal	18.28	33	Pass
	Mid	2595	Horizontal	18.13	33	Pass
	High	2612.5	Horizontal	18.33	33	Pass
20 MHz (64QAM)	Low	2580	Horizontal	18.30	33	Pass
	Mid	2595	Horizontal	18.24	33	Pass
	High	2610	Horizontal	18.36	33	Pass

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5.3 Occupied Bandwidth

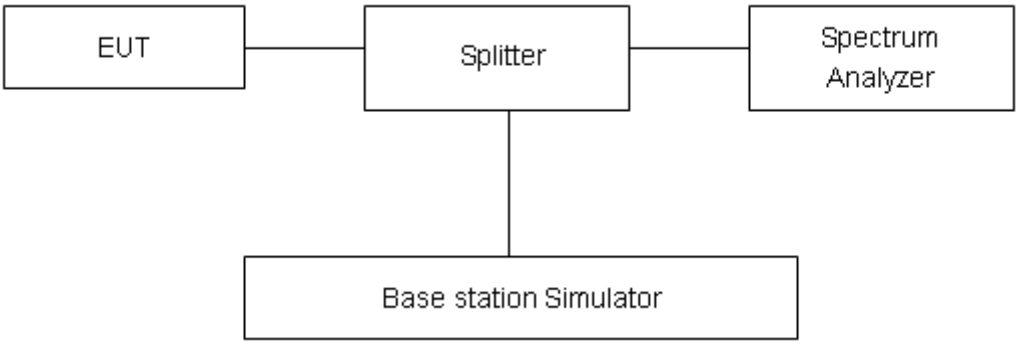
Ambient condition

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

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.
RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band IV.
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4 (1.4MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4 (3MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 4/7/38 (5MHz).
RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/38 (10MHz).
RBW is set to 300 kHz, VBW is set to 1MHz for LTE Band 4/7/38 (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=624Hz.

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Test Result

Mode	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
WCDMA Band IV (RMC)	1312	1712.4	4.1174	4.657
	1413	1732.6	4.1155	4.654
	1513	1752.6	4.1172	4.633

LTE Band 4						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth(MHz)	-26dBc Bandwidth(MHz)
100%	QPSK	1.4	19957	1710.7	1.1230	1.340
			20175	1732.5	1.1208	1.350
			20393	1754.3	1.1311	1.330
		3	19965	1711.5	2.7439	3.060
			20175	1732.5	2.7419	3.053
			20385	1753.5	2.7366	3.057
		5	19975	1712.5	4.5362	5.019
			20175	1732.5	4.5125	4.927
			20375	1752.5	4.5107	5.015
		10	20000	1715	9.0321	10.080
			20175	1732.5	9.0196	10.030
			20350	1750	9.0263	10.000
		15	20025	1717.5	13.4490	14.840
			20175	1732.5	13.4420	14.680
			20325	1747.5	13.4440	14.680
		20	20050	1720	17.8130	19.170
			20175	1732.5	17.8960	19.270
			20300	1745	17.8450	19.270
	16QAM	1.4	19957	1710.7	1.1267	1.337
			20175	1732.5	1.1100	1.337
			20393	1754.3	1.1164	1.345
		3	19965	1711.5	2.7498	3.049
			20175	1732.5	2.7361	3,.053
			20385	1753.5	2.7350	3.066
		5	19975	1712.5	4.5166	5.015
			20175	1732.5	4.5262	5.052
			20375	1752.5	4.5416	5.056
		10	20000	1715	8.9860	9.932
			20175	1732.5	9.0301	9.961

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			20350	1750	9.0580	10.030
		15	20025	1717.5	13.4150	14.530
			20175	1732.5	13.4650	14.610
			20325	1747.5	13.4290	14.570
		20	20050	1720	17.8240	19.190
			20175	1732.5	17.8970	19.210
			20300	1745	17.8100	19.090
	64QAM	1.4	19957	1710.7	1.1204	1.356
			20175	1732.5	1.1250	1.337
			20393	1754.3	1.1140	1.322
		3	19965	1711.5	2.7357	3.061
			20175	1732.5	2.7369	3.067
			20385	1753.5	2.7506	3.071
		5	19975	1712.5	4.5376	5.029
			20175	1732.5	4.5226	5.029
			20375	1752.5	4.5171	5.008
		10	20000	1715	9.0092	9.987
			20175	1732.5	9.0172	10.010
			20350	1750	9.0250	10.050
		15	20025	1717.5	13.4300	14.640
			20175	1732.5	13.4510	14.750
			20325	1747.5	13.4670	14.610
		20	20050	1720	17.8190	19.030
			20175	1732.5	17.8900	19.450
			20300	1745	17.8150	19.100

LTE Band 7						
RB	**Modulation**	**Bandwidth (MHz)**	**Channel**	**Frequency (MHz)**	**99% Power Bandwidth(MHz)**	**-26dBc Bandwidth(MHz)**
100%	QPSK	5	20775	2502.5	4.5078	5.013
			21100	2535	4.5265	4.990
			21425	2567.5	4.5214	4.996
		10	20800	2505	9.0298	9.989
			21100	2535	8.9834	9.814
			21400	2565	9.0373	10.010
		15	20825	2507.5	13.4650	14.850
			21100	2535	13.4280	14.610
			21375	2562.5	13.4690	14.770
		20	20850	2510	17.9010	19.190
			21100	2535	17.8720	19.250

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			21350	2560	17.9200	19.350
	16QAM	5	20775	2502.5	4.5201	5.007
			21100	2535	4.5119	5.023
			21425	2567.5	4.5219	4.984
		10	20800	2505	9.1020	10.040
			21100	2535	9.0308	10.030
			21400	2565	9.0527	10.030
		15	20825	2507.5	13.4660	14.670
			21100	2535	13.4710	14.770
			21375	2562.5	13.4730	14.690
		20	20850	2510	17.9210	19.180
			21100	2535	17.8970	19.280
			21350	2560	17.9060	19.330
	64QAM	5	20775	2502.5	4.5190	5.030
			21100	2535	4.5276	4.999
			21425	2567.5	4.5328	5.036
		10	20800	2505	9.0343	9.990
			21100	2535	9.0132	9.944
			21400	2565	9.0403	10.060
		15	20825	2507.5	13.4680	14.830
			21100	2535	13.4400	14.670
			21375	2562.5	13.4960	14.670
		20	20850	2510	17.8340	19.220
			21100	2535	17.8910	19.400
			21350	2560	17.9080	19.360

LTE Band 38						
RB	**Modulation**	**Bandwidth (MHz)**	**Channel**	**Frequency (MHz)**	**99% Power Bandwidth(MHz)**	**-26dBc Bandwidth(MHz)**
100%	QPSK	5	37775	2572.5	4.5150	4.996
			38000	2595	4.5113	5.058
			38225	2617.5	4.5099	5.014
		10	37800	2575	9.0707	10.800
			38000	2595	9.0477	10.910
			38200	2615	9.0958	10.740
		15	37825	2577.5	13.4820	15.760
			38000	2595	13.4580	20.780
			38175	2612.5	13.4650	17.840
		20	37850	2580	17.8670	19.140
			38000	2595	17.8660	20.150

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			38150	2610	17.8750	19.720
	16QAM	5	37775	2572.5	4.5061	5.486
			38000	2595	4.5202	5.231
			38225	2617.5	4.5259	4.934
		10	37800	2575	9.0432	12.800
			38000	2595	9.0098	10.080
			38200	2615	9.0205	14.230
		15	37825	2577.5	13.4800	15.770
			38000	2595	13.4950	17.690
			38175	2612.5	13.5080	15.640
		20	37850	2580	17.8730	19.590
			38000	2595	17.9080	20.420
			38150	2610	17.8290	19.550
	64QAM	5	37775	2572.5	4.5151	5.279
			38000	2595	4.5019	5.263
			38225	2617.5	4.5166	5.259
		10	37800	2575	9.0501	16.000
			38000	2595	9.0072	11.910
			38200	2615	9.0077	12.440
		15	37825	2577.5	13.5480	27.900
			38000	2595	13.5050	15.120
			38175	2612.5	13.5030	15.130
		20	37850	2580	17.8700	19.350
			38000	2595	17.9050	20.110
			38150	2610	17.8700	19.360

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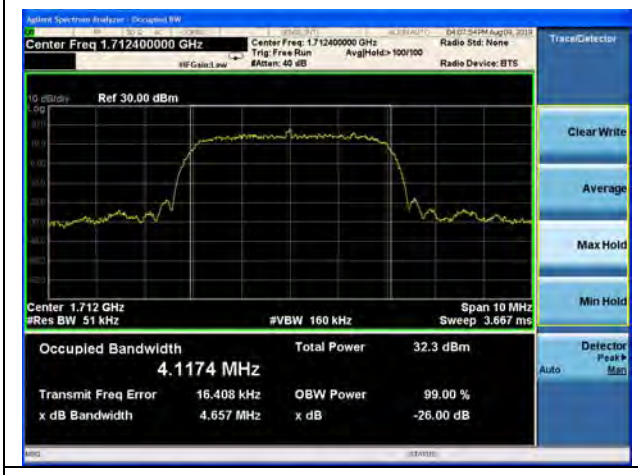
WCDMA Band IV CH-Low



WCDMA Band IV CH Middle

WCDMA Band IV CH High

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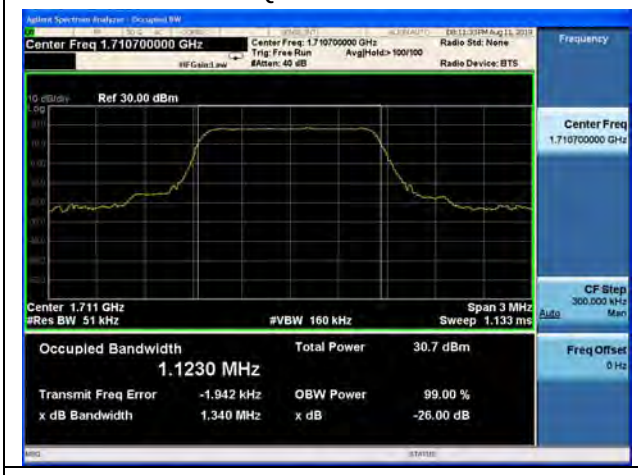
LTE Band 4 QPSK 1.4MHz CH-Low



LTE Band 4 QPSK 3MHz CH-Low

LTE Band 4 QPSK 1.4MHz CH-Middle

LTE Band 4 QPSK 3MHz CH-Middle

LTE Band 4 QPSK 1.4MHz CH-High

LTE Band 4 QPSK 3MHz CH-High

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LTE Band 4 QPSK 5MHz CH-Low

LTE Band 4 QPSK 10MHz CH-Low

LTE Band 4 QPSK 5MHz CH-Middle

LTE Band 4 QPSK 10MHz CH-Middle

LTE Band 4 QPSK 5MHz CH-High

LTE Band 4 QPSK 10MHz CH-High

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LTE Band 4 QPSK 15MHz CH-Low

LTE Band 4 QPSK 20MHz CH-Low

LTE Band 4 QPSK 15MHz CH-Middle

LTE Band 4 QPSK 20MHz CH-Middle

LTE Band 4 QPSK 15MHz CH-High

LTE Band 4 QPSK 20MHz CH-High

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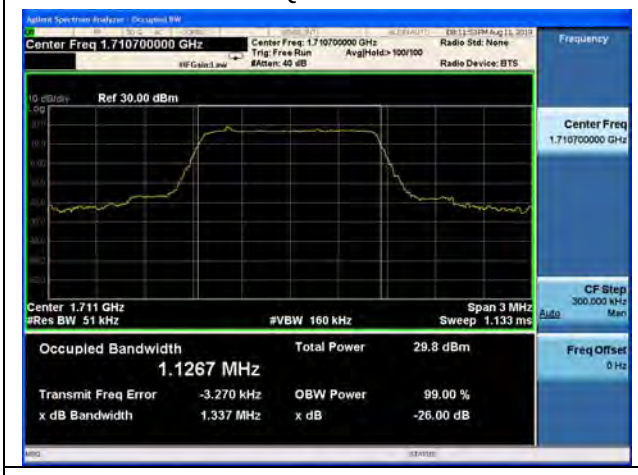
LTE Band 4 16QAM 1.4MHz CH-Low



LTE Band 4 16QAM 3MHz CH-Low

LTE Band 4 16QAM 1.4MHz CH-Middle

LTE Band 4 16QAM 3MHz CH-Middle

LTE Band 4 16QAM 1.4MHz CH-High

LTE Band 4 16QAM 3MHz CH-High

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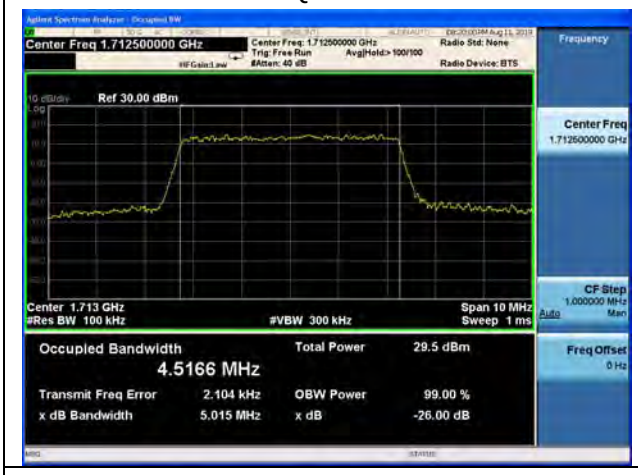
LTE Band 4 16QAM 5MHz CH-Low



LTE Band 4 16QAM 10MHz CH-Low

LTE Band 4 16QAM 5MHz CH-Middle

LTE Band 4 16QAM 10MHz CH-Middle

LTE Band 4 16QAM 5MHz CH-High

LTE Band 4 16QAM 10MHz CH-High

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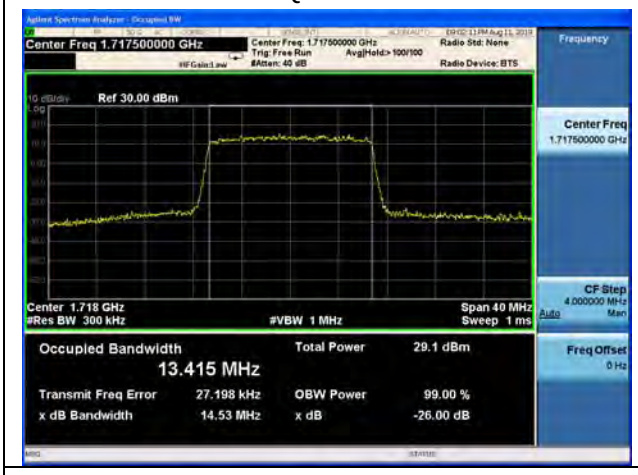
LTE Band 4 16QAM 15MHz CH-Low

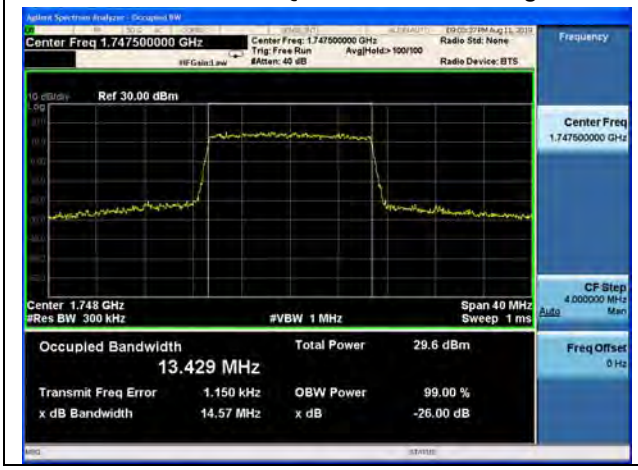


LTE Band 4 16QAM 20MHz CH-Low

LTE Band 4 16QAM 15MHz CH-Middle

LTE Band 4 16QAM 20MHz CH-Middle

LTE Band 4 16QAM 15MHz CH-High



LTE Band 4 16QAM 20MHz CH-High

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LTE Band 4 64QAM 1.4MHz CH-Low

LTE Band 4 64QAM 3MHz CH-Low

LTE Band 4 64QAM 1.4MHz CH-Middle

LTE Band 4 64QAM 3MHz CH-Middle

LTE Band 4 64QAM 1.4MHz CH-High

LTE Band 4 64QAM 3MHz CH-High

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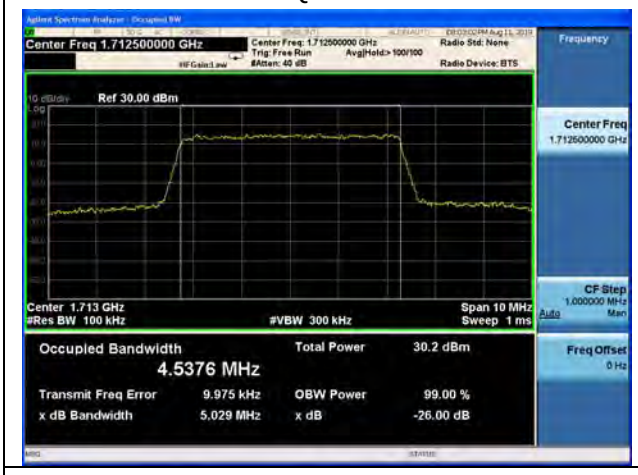
LTE Band 4 64QAM 5MHz CH-Low



LTE Band 4 64QAM 10MHz CH-Low

LTE Band 4 64QAM 5MHz CH-Middle

LTE Band 4 64QAM 10MHz CH-Middle

LTE Band 4 64QAM 5MHz CH-High

LTE Band 4 64QAM 10MHz CH-High

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LTE Band 4 64QAM 15MHz CH-Low

LTE Band 4 64QAM 20MHz CH-Low

LTE Band 4 64QAM 15MHz CH-Middle

LTE Band 4 64QAM 20MHz CH-Middle

LTE Band 4 64QAM 15MHz CH-High

LTE Band 4 64QAM 20MHz CH-High

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LTE Band 7 QPSK 5MHz CH-Low

LTE Band 7 QPSK 10MHz CH-Low

LTE Band 7 QPSK 5MHz CH-Middle

LTE Band 7 QPSK 10MHz CH-Middle

LTE Band 7 QPSK 5MHz CH-High

LTE Band 7 QPSK 10MHz CH-High

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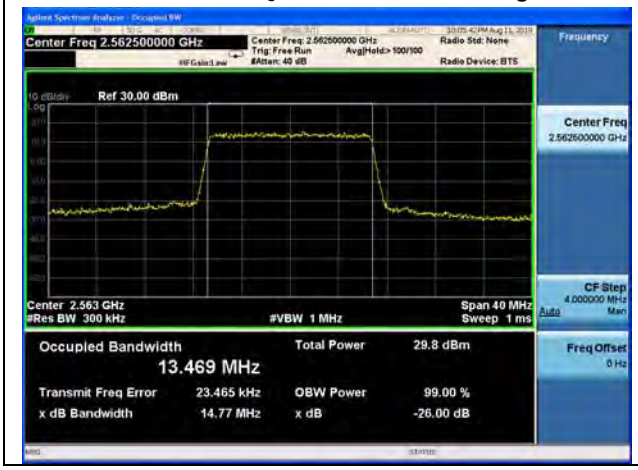
LTE Band 7 QPSK 15MHz CH-Low

LTE Band 7 QPSK 20MHz CH-Low

LTE Band 7 QPSK 15MHz CH-Middle

LTE Band 7 QPSK 20MHz CH-Middle

LTE Band 7 QPSK 15MHz CH-High



LTE Band 7 QPSK 20MHz CH-High

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LTE Band 7 16QAM 5MHz CH-Low

LTE Band 7 16QAM 10MHz CH-Low

LTE Band 7 16QAM 5MHz CH-Middle

LTE Band 7 16QAM 10MHz CH-Middle

LTE Band 7 16QAM 5MHz CH-High

LTE Band 7 16QAM 10MHz CH-High

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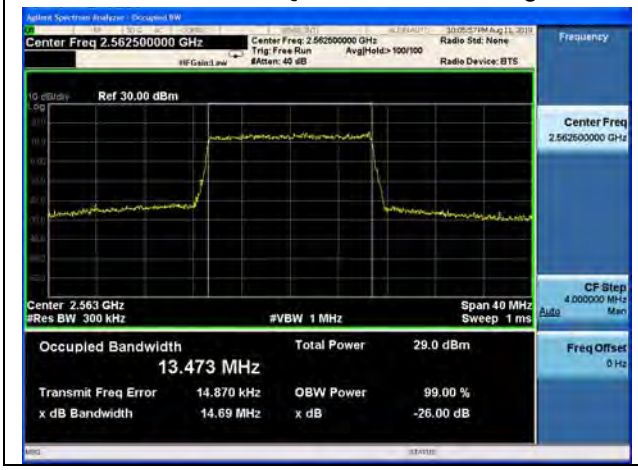
LTE Band 7 16QAM 15MHz CH-Low

LTE Band 7 16QAM 20MHz CH-Low

LTE Band 7 16QAM 15MHz CH-Middle

LTE Band 7 16QAM 20MHz CH-Middle

LTE Band 7 16QAM 15MHz CH-High



LTE Band 7 16QAM 20MHz CH-High

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LTE Band 7 64QAM 5MHz CH-Low

LTE Band 7 64QAM 10MHz CH-Low

LTE Band 7 64QAM 5MHz CH-Middle

LTE Band 7 64QAM 10MHz CH-Middle

LTE Band 7 64QAM 5MHz CH-High

LTE Band 7 64QAM 10MHz CH-High

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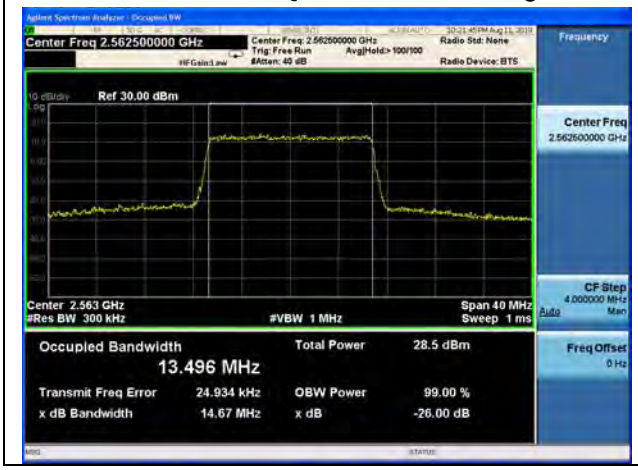
LTE Band 7 64QAM 15MHz CH-Low

LTE Band 7 64QAM 20MHz CH-Low

LTE Band 7 64QAM 15MHz CH-Middle

LTE Band 7 64QAM 20MHz CH-Middle

LTE Band 7 64QAM 15MHz CH-High



LTE Band 7 64QAM 20MHz CH-High

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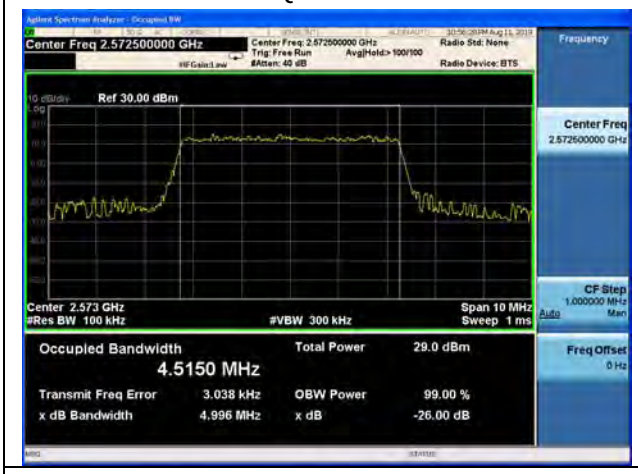
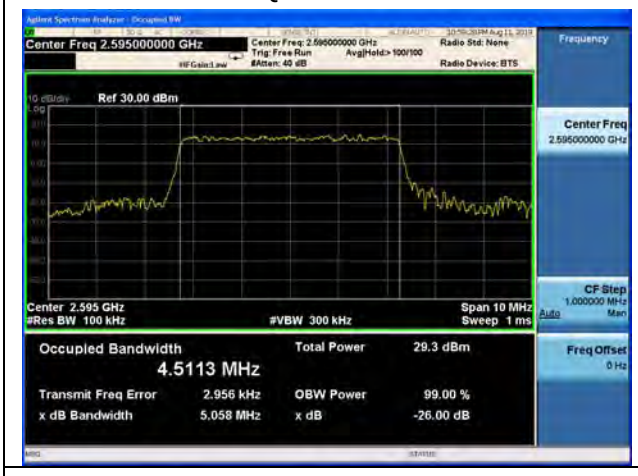
LTE Band 38 QPSK 5MHz CH-Low



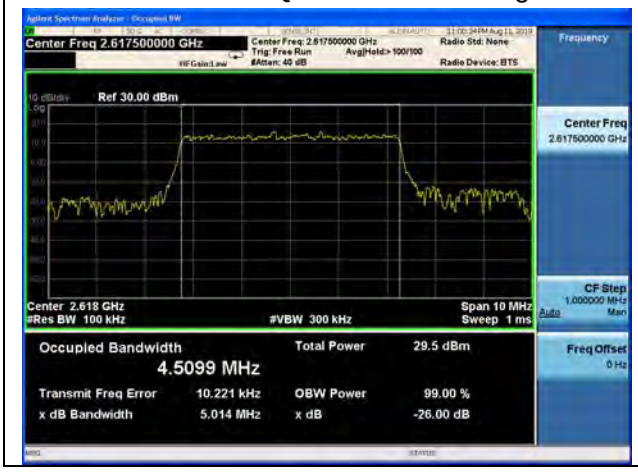
LTE Band 38 QPSK 10MHz CH-Low

LTE Band 38 QPSK 5MHz CH-Middle



LTE Band 38 QPSK 10MHz CH-Middle

LTE Band 38 QPSK 5MHz CH-High



LTE Band 38 QPSK 10MHz CH-High

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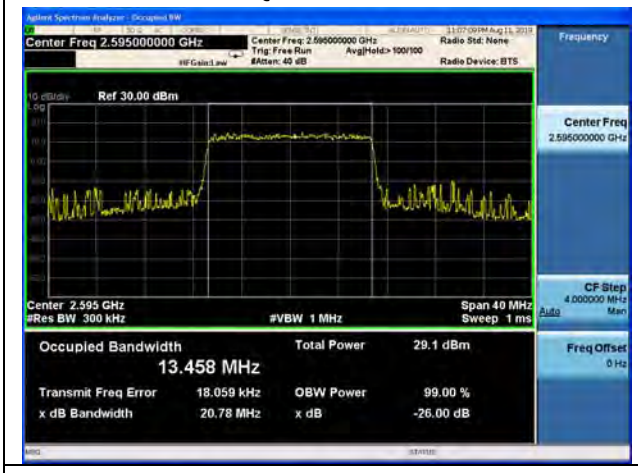
LTE Band 38 QPSK 15MHz CH-Low

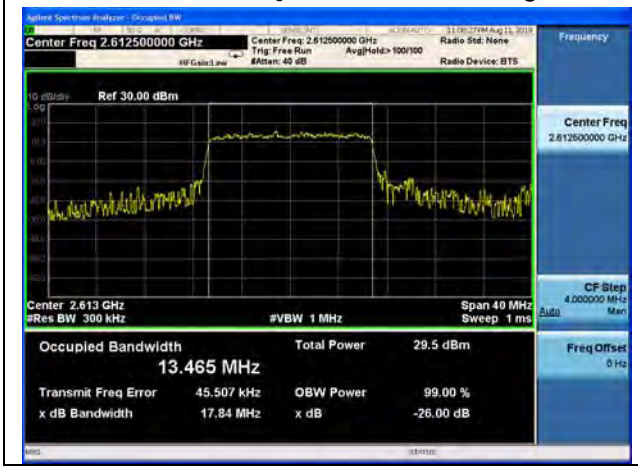
LTE Band 38 QPSK 20MHz CH-Low

LTE Band 38 QPSK 15MHz CH-Middle



LTE Band 38 QPSK 20MHz CH-Middle

LTE Band 38 QPSK 15MHz CH-High



LTE Band 38 QPSK 20MHz CH-High

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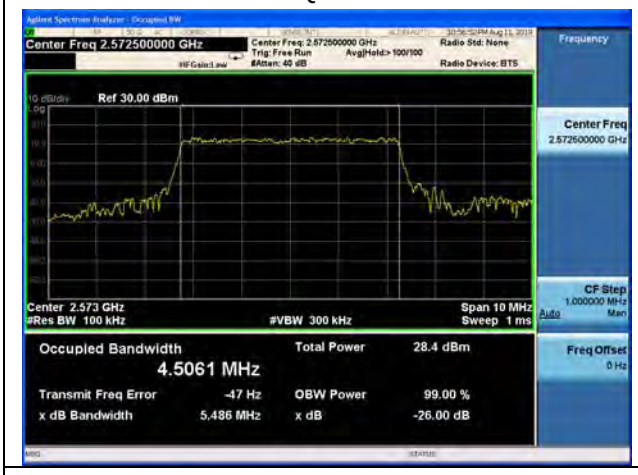
LTE Band 38 16QAM 5MHz CH-Low

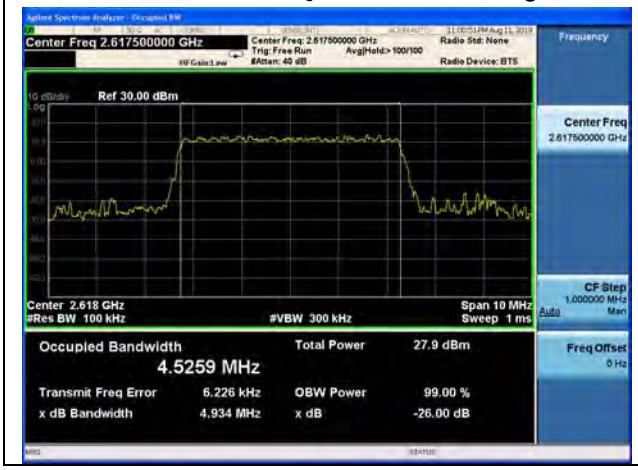


LTE Band 38 16QAM 10MHz CH-Low

LTE Band 38 16QAM 5MHz CH-Middle

LTE Band 38 16QAM 10MHz CH-Middle

LTE Band 38 16QAM 5MHz CH-High



LTE Band 38 16QAM 10MHz CH-High

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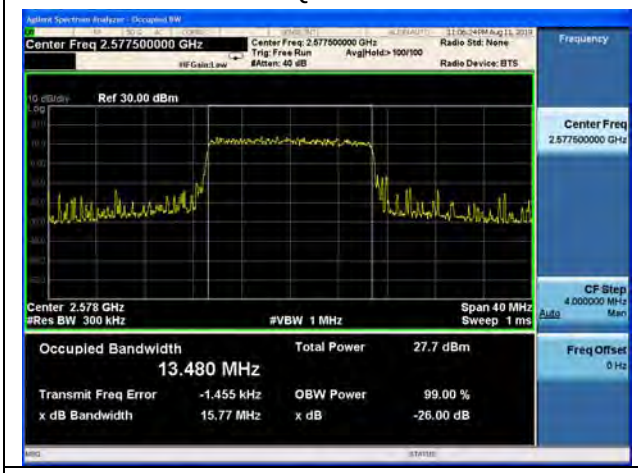
LTE Band 38 16QAM 15MHz CH-Low

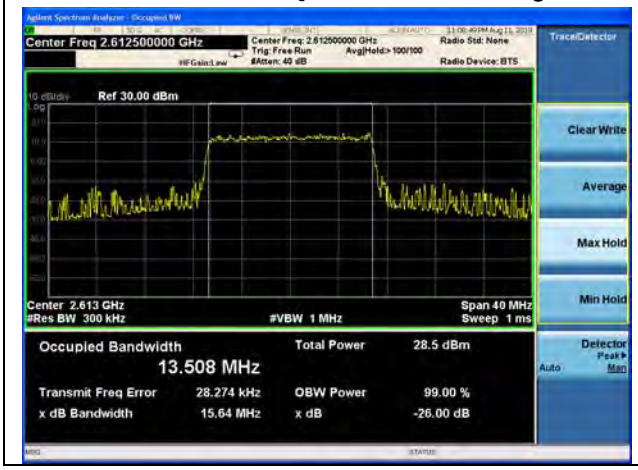


LTE Band 38 16QAM 20MHz CH-Low

LTE Band 38 16QAM 15MHz CH-Middle

LTE Band 38 16QAM 20MHz CH-Middle

LTE Band 38 16QAM 15MHz CH-High



LTE Band 38 16QAM 20MHz CH-High

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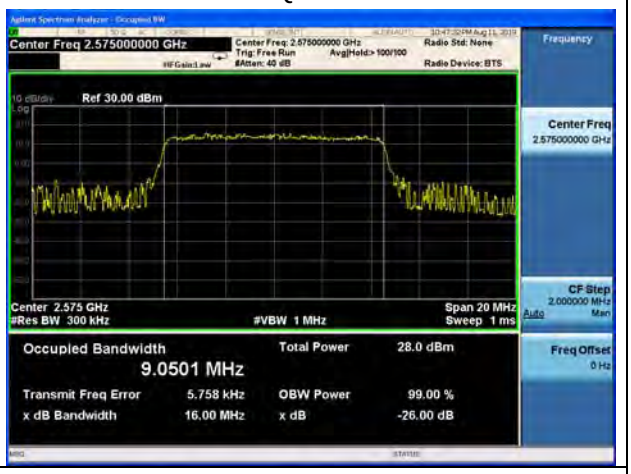
LTE Band 38 64QAM 5MHz CH-Low

LTE Band 38 64QAM 10MHz CH-Low



LTE Band 38 64QAM 5MHz CH-Middle

LTE Band 38 64QAM 10MHz CH-Middle

LTE Band 38 64QAM 5MHz CH-High

LTE Band 38 64QAM 10MHz CH-High

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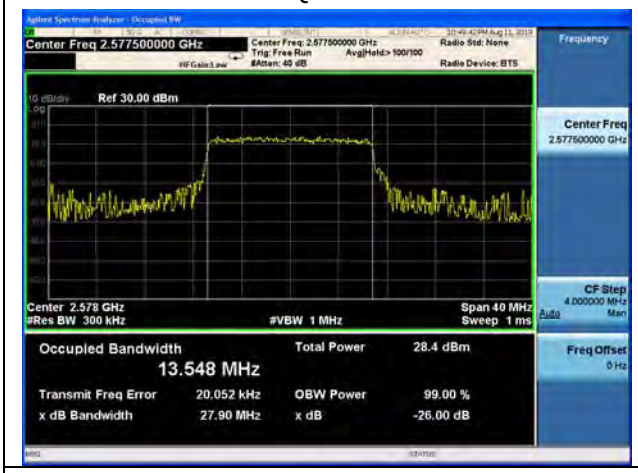
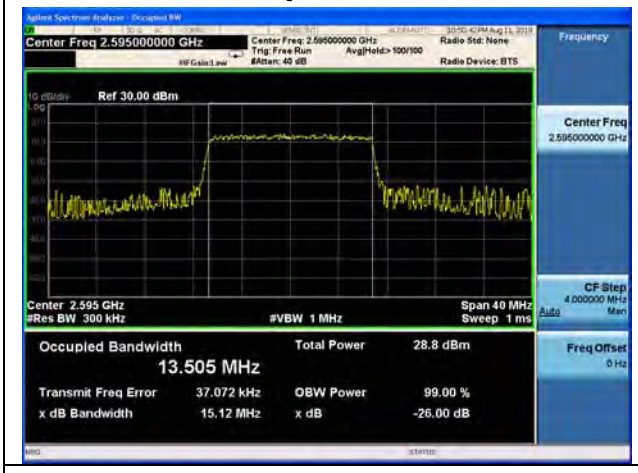
LTE Band 38 64QAM 15MHz CH-Low



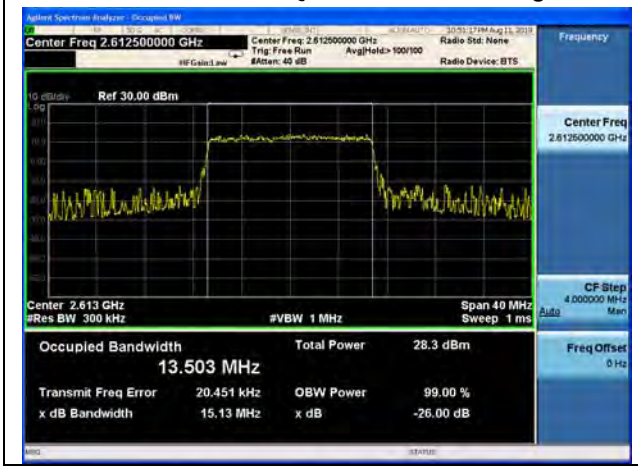
LTE Band 38 64QAM 20MHz CH-Low

LTE Band 38 64QAM 15MHz CH-Middle



LTE Band 38 64QAM 20MHz CH-Middle

LTE Band 38 64QAM 15MHz CH-High



LTE Band 38 64QAM 20MHz CH-High

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5.4 Band Edge Compliance

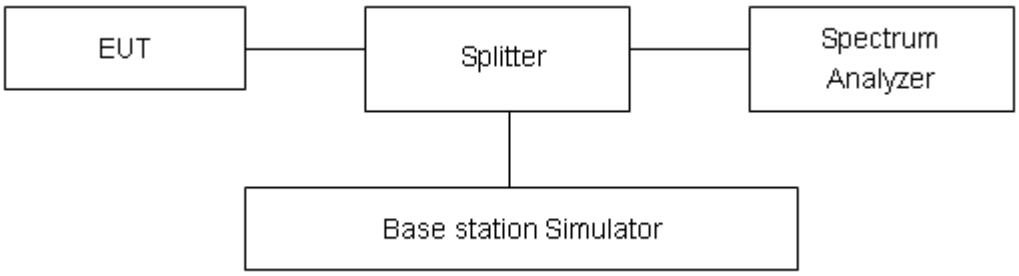
Ambient condition

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
The EUT was connected to spectrum analyzer and system simulator via a power divider.
The band edges of low and high channels for the highest RF powers were measured.
RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band IV.
RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 4 (1.4MHz).
RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4 (3MHz).
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4 (20MHz)
RBW is set to 50 kHz, VBW is set to 200 kHz for LTE Band 7/38 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 7/ 38 (10MHz).
RBW is set to 200 kHz, VBW is set to 1MHz for LTE Band 7/ 38 (15MHz/20MHz).
on spectrum analyzer.
Set spectrum analyzer with RMS detector.
The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(h) specifies that " for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and

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2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB”

Rule Part 27.53(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 that 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 + 10log (P) dB below the transmitter power P(Watts)

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

= [30 + 10log (P)] (dBm) - [43 + 10log(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*=0.684dB.

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Test Result

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

WCDMA Band IV CH-Low	WCDMA Band IV CH-High
LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB	LTE Band 4 QPSK 1.4MHz CH-High, 1 RB
LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB	LTE Band 4 QPSK 1.4MHz CH-High, 100%RB

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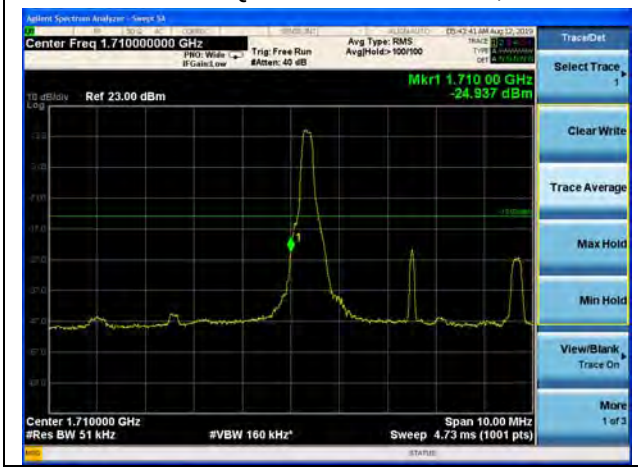
LTE Band 4 QPSK 3MHz CH-Low, 1 RB

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

LTE Band 4 64QAM 1.4MHz CH-Low, 1 RB

LTE Band 4 64QAM 1.4MHz CH-High, 1 RB

LTE Band 4 64QAM 1.4MHz CH-Low, 100%RB

LTE Band 4 64QAM 1.4MHz CH-High, 100%RB

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LTE Band 4 64QAM 3MHz CH-Low, 1 RB

LTE Band 4 64QAM 3MHz CH-High, 1 RB

LTE Band 4 64QAM 3MHz CH-Low, 100%RB

LTE Band 4 64QAM 3MHz CH-High, 100%RB

LTE Band 4 64QAM 5MHz CH-Low, 1 RB

LTE Band 4 64QAM 5MHz CH-High, 1 RB

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LTE Band 4 64QAM 5MHz CH-Low, 100%RB

LTE Band 4 64QAM 5MHz CH-High, 100%RB

LTE Band 4 64QAM 10MHz CH-Low, 1 RB

LTE Band 4 64QAM 10MHz CH-High, 1 RB

LTE Band 4 64QAM 10MHz CH-Low, 100%RB

LTE Band 4 64QAM 10MHz CH-High, 100%RB

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LTE Band 4 64QAM 15MHz CH-Low, 1 RB

LTE Band 4 64QAM 15MHz CH-High, 1 RB

LTE Band 4 64QAM 15MHz CH-Low, 100%RB

LTE Band 4 64QAM 15MHz CH-High, 100%RB

LTE Band 4 64QAM 20MHz CH-Low, 1 RB

LTE Band 4 64QAM 20MHz CH-High, 1 RB

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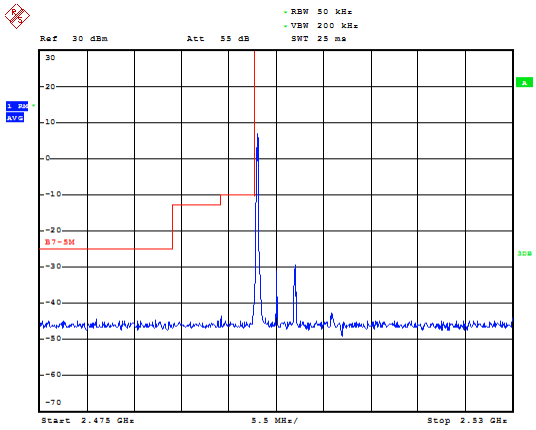
LTE Band 4 64QAM 20MHz CH-Low, 100%RB

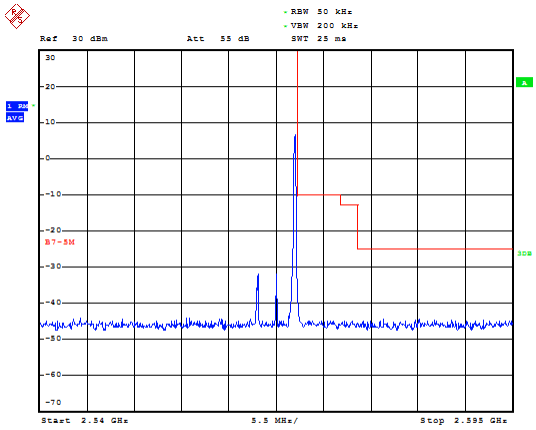
LTE Band 4 64QAM 20MHz CH-High, 100%RB

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



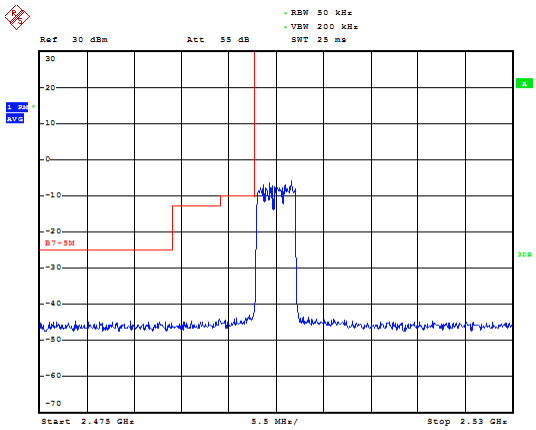
Date: 12.AUG.2019 06:24:38

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



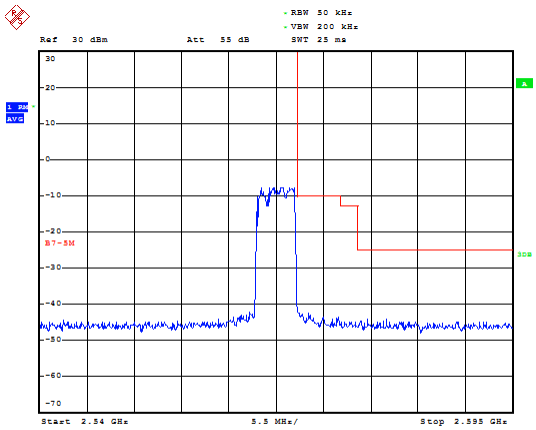
Date: 12.AUG.2019 06:30:33

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



Date: 12.AUG.2019 06:24:55

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



Date: 12.AUG.2019 06:31:06

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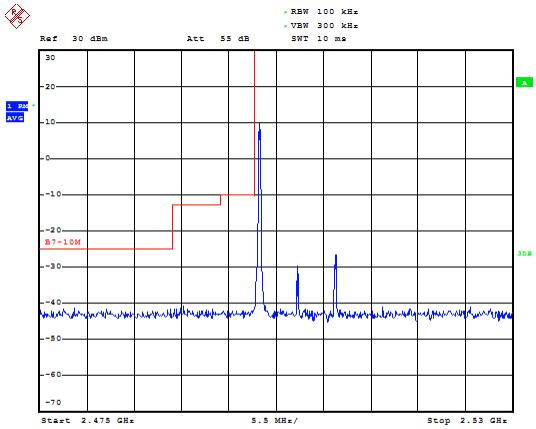
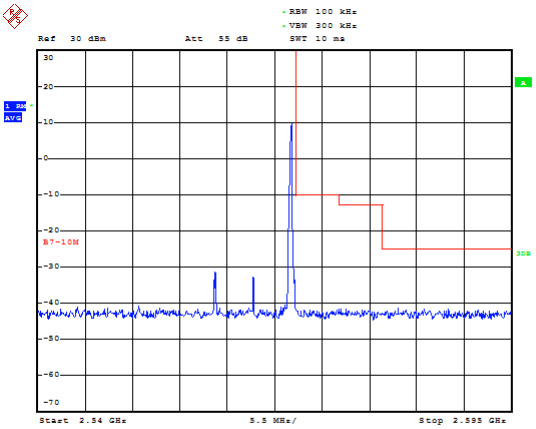
LTE Band 7 QPSK 10MHz CH-Low, 1 RB



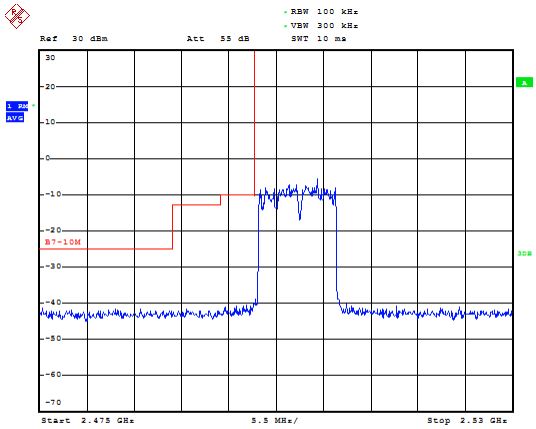
Date: 12.AUG.2019 06:33:31

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



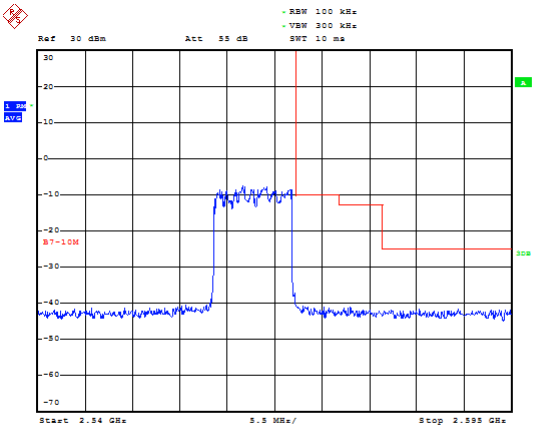
Date: 12.AUG.2019 06:39:22

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



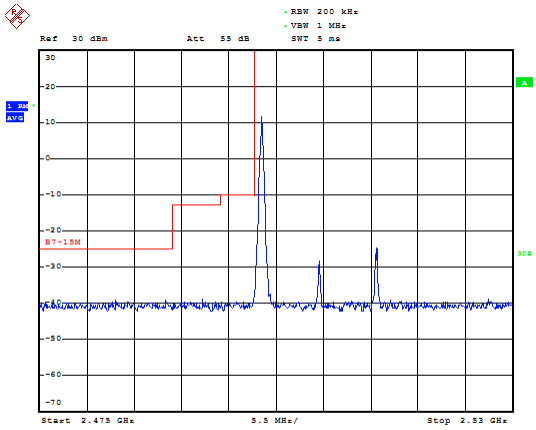
Date: 12.AUG.2019 06:34:03

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



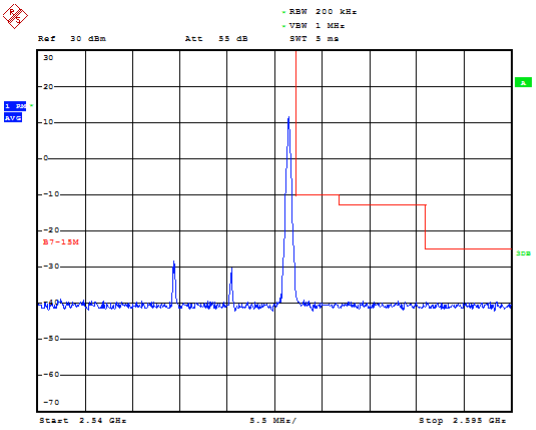
Date: 12.AUG.2019 06:38:38

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



Date: 12.AUG.2019 06:41:12

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



Date: 12.AUG.2019 06:46:49

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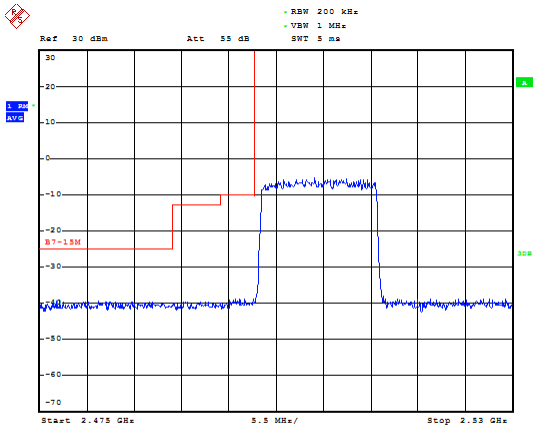
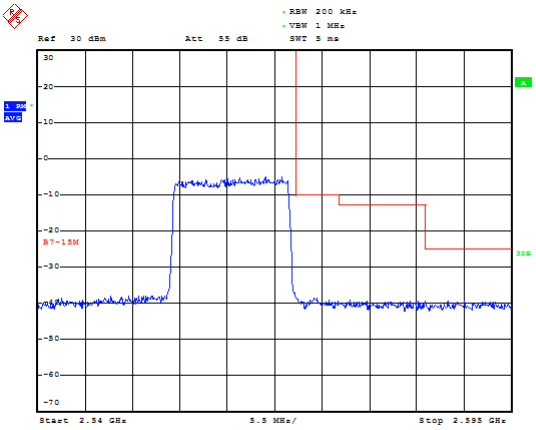
LTE Band 7 QPSK 15MHz CH-Low, 100%RB



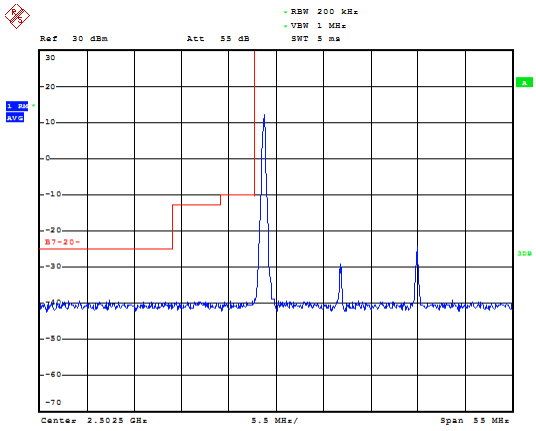
Date: 12.AUG.2019 06:41:25

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



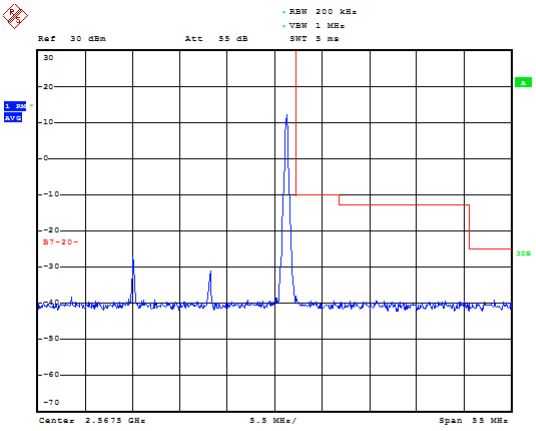
Date: 12.AUG.2019 06:46:29

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



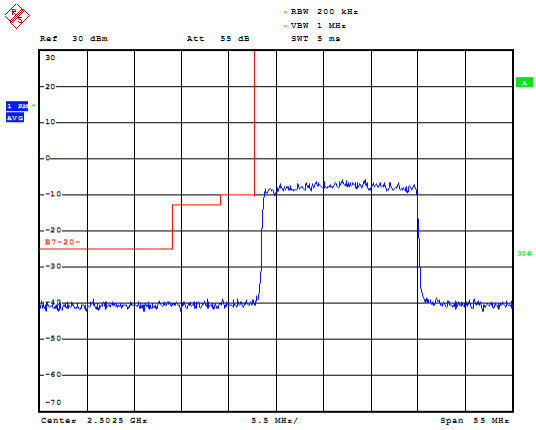
Date: 12.AUG.2019 06:48:32

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



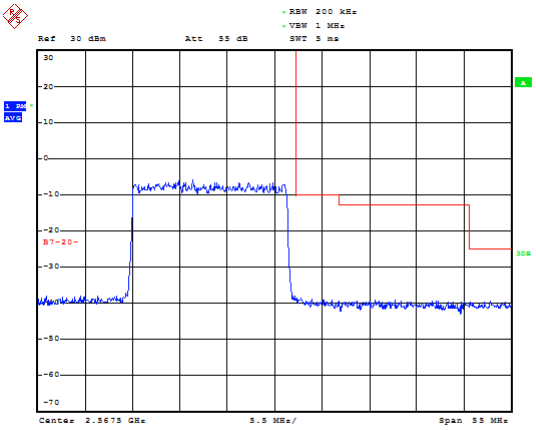
Date: 12.AUG.2019 06:54:04

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



Date: 12.AUG.2019 06:48:52

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



Date: 12.AUG.2019 06:53:48

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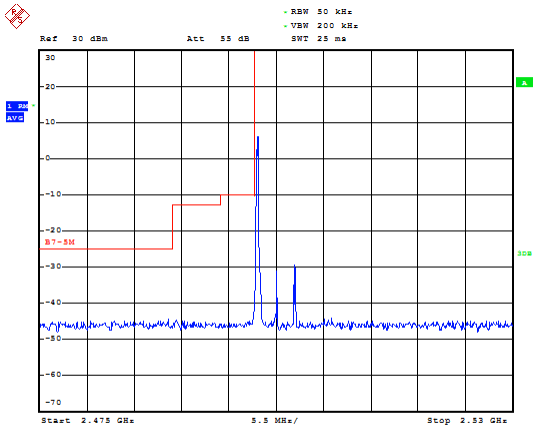
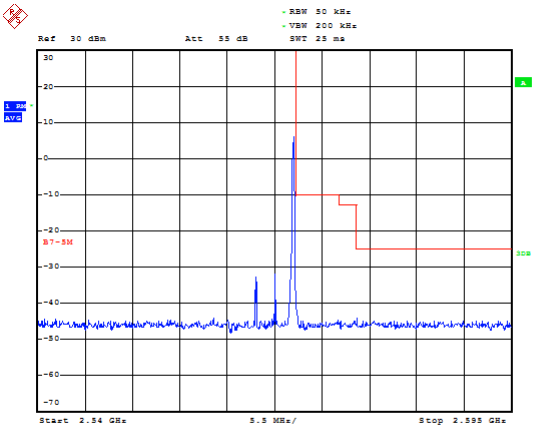
LTE Band 7 16QAM 5MHz CH-Low, 1 RB



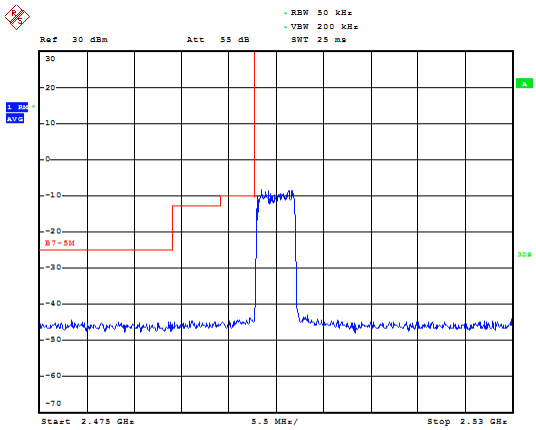
Date: 12.AUG.2019 06:25:18

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



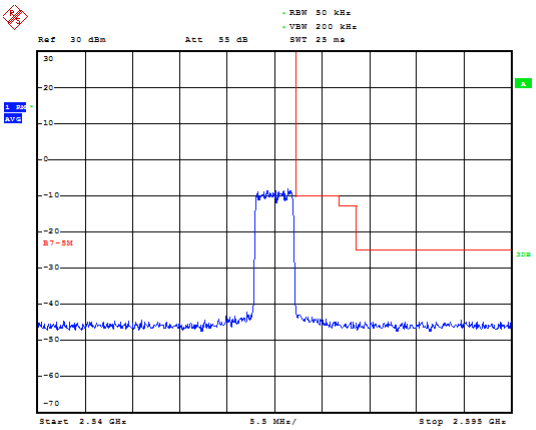
Date: 12.AUG.2019 06:30:14

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



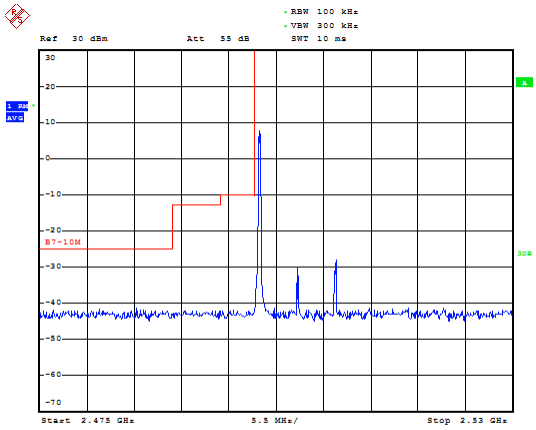
Date: 12.AUG.2019 06:25:30

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



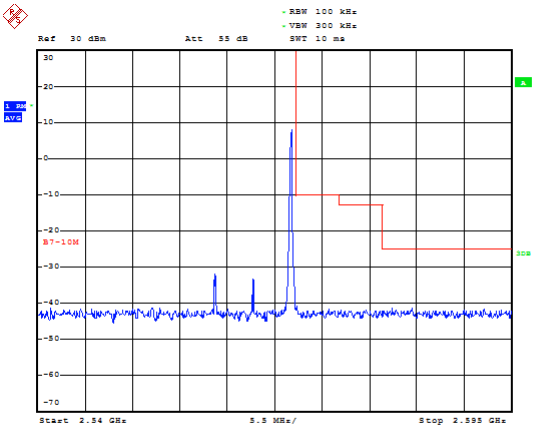
Date: 12.AUG.2019 06:29:58

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



Date: 12.AUG.2019 06:34:34

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



Date: 12.AUG.2019 06:37:53

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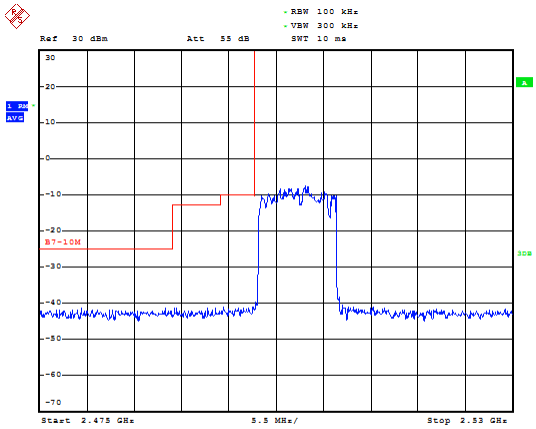
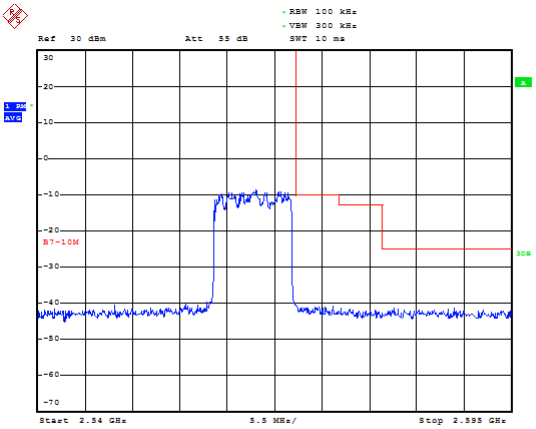
LTE Band 7 16QAM 10MHz CH-Low, 100%RB



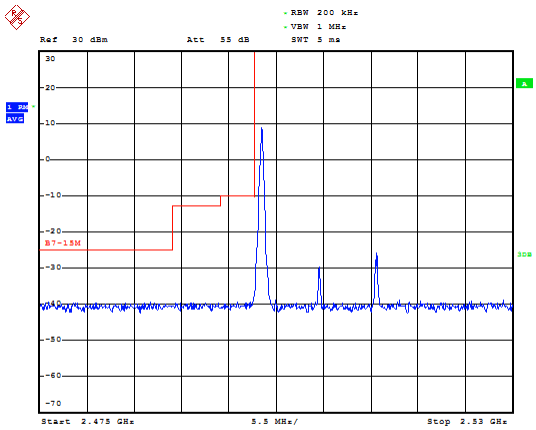
Date: 12.AUG.2019 06:34:21

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



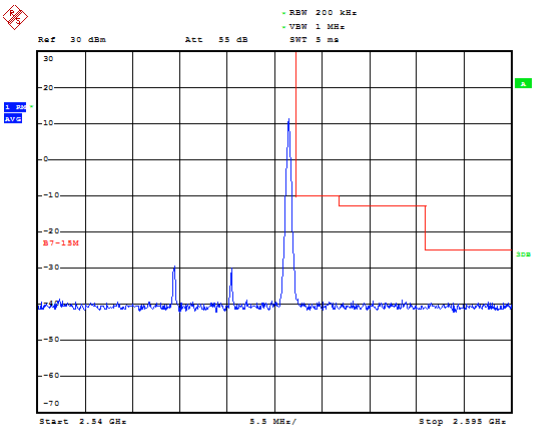
Date: 12.AUG.2019 06:38:24

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



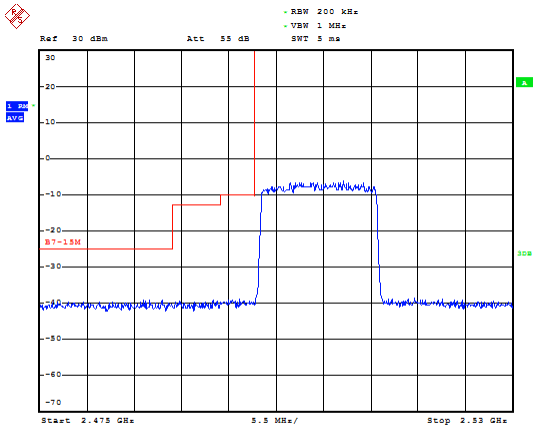
Date: 12.AUG.2019 06:42:38

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



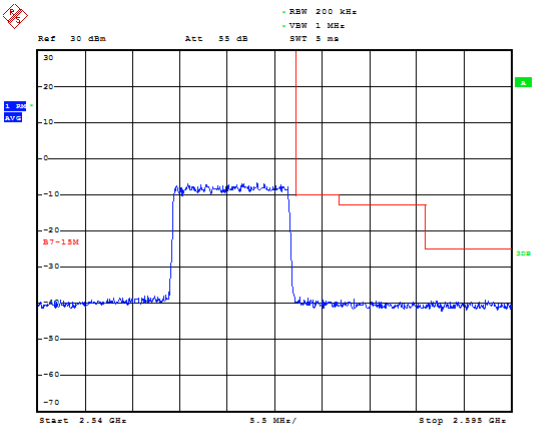
Date: 12.AUG.2019 06:46:01

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



Date: 12.AUG.2019 06:41:51

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



Date: 12.AUG.2019 06:46:14

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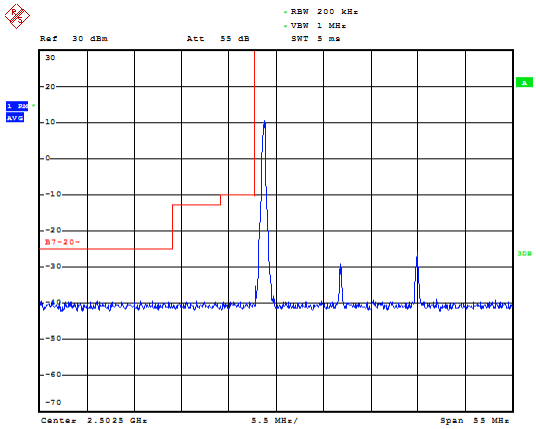
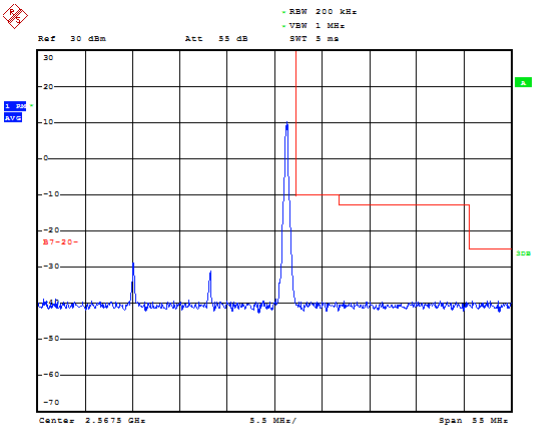
LTE Band 7 16QAM 20MHz CH-Low, 1 RB



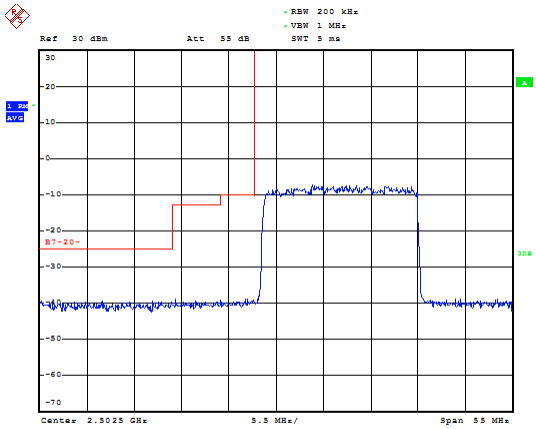
Date: 12.AUG.2019 06:49:32

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



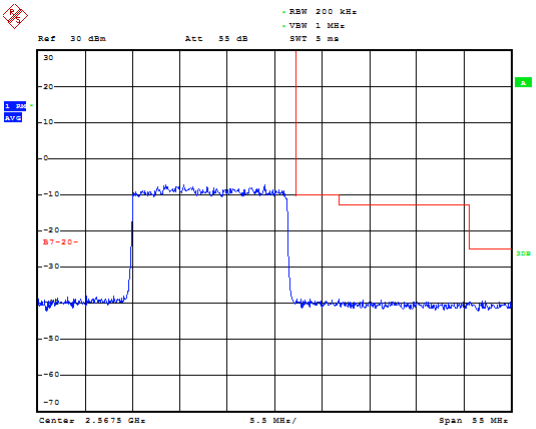
Date: 12.AUG.2019 06:53:14

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



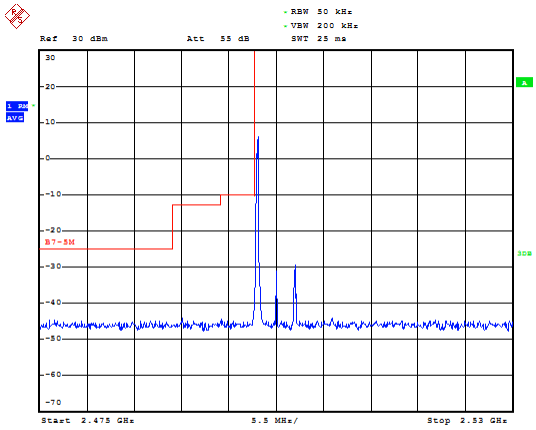
Date: 12.AUG.2019 06:49:04

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



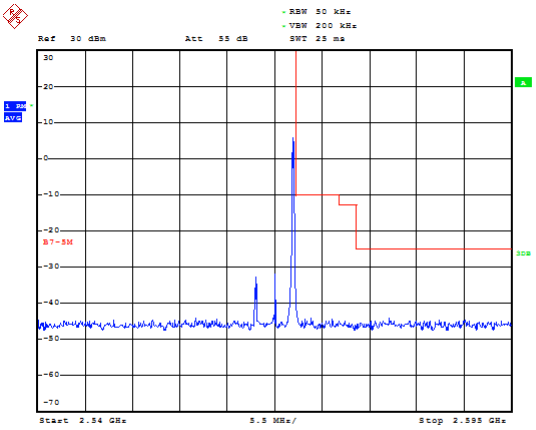
Date: 12.AUG.2019 06:53:35

LTE Band 7 64QAM 5MHz CH-Low, 1 RB



Date: 12.AUG.2019 06:26:41

LTE Band 7 64QAM 5MHz CH-High, 1 RB



Date: 12.AUG.2019 06:28:52

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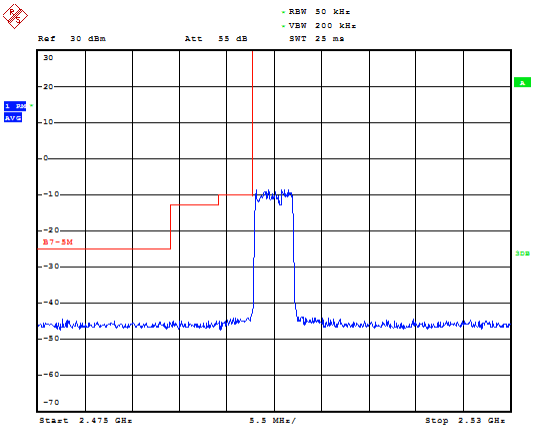
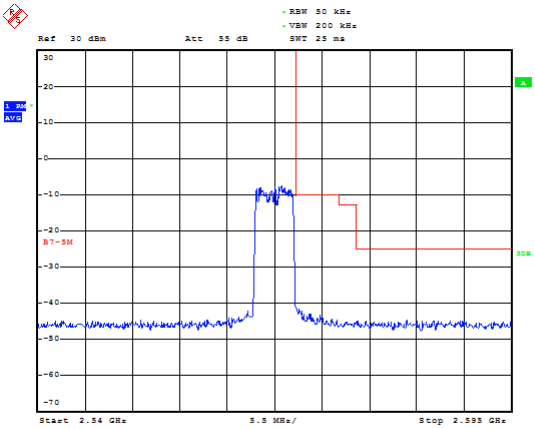
LTE Band 7 64QAM 5MHz CH-Low, 100%RB



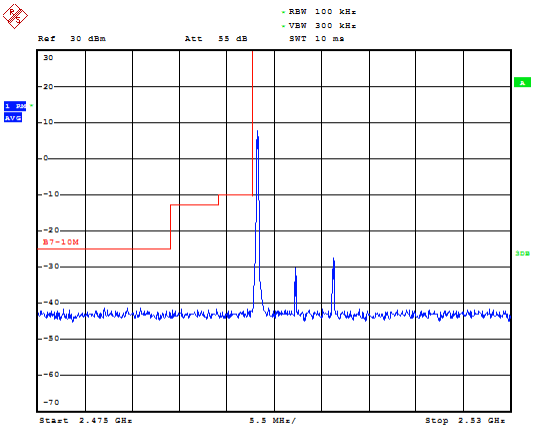
Date: 12.AUG.2019 06:26:17

LTE Band 7 64QAM 5MHz CH-High, 100%RB



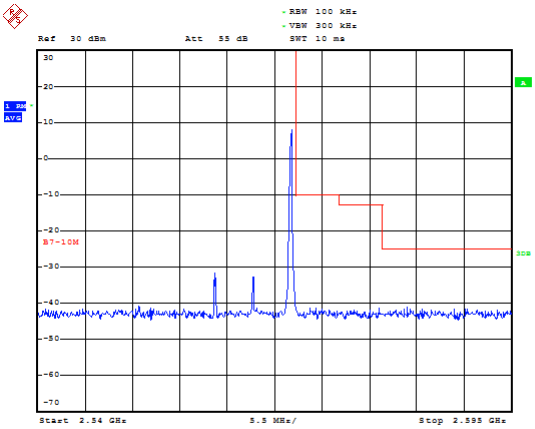
Date: 12.AUG.2019 06:29:07

LTE Band 7 64QAM 10MHz CH-Low, 1 RB



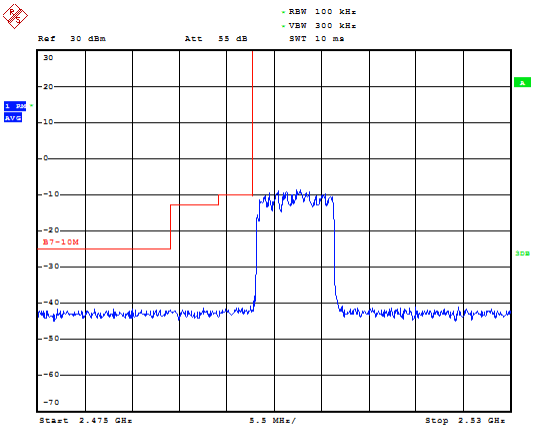
Date: 12.AUG.2019 06:35:15

LTE Band 7 64QAM 10MHz CH-High, 1 RB



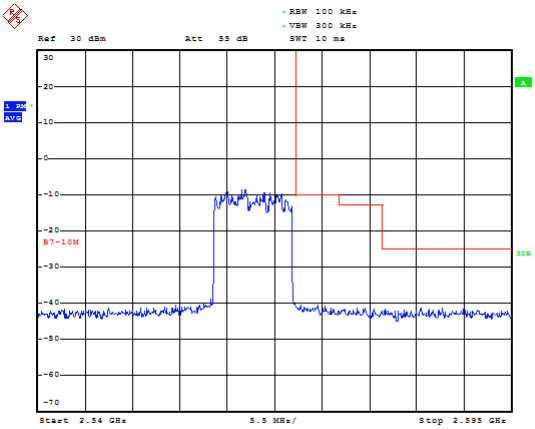
Date: 12.AUG.2019 06:37:20

LTE Band 7 64QAM 10MHz CH-Low, 100%RB



Date: 12.AUG.2019 06:35:29

LTE Band 7 64QAM 10MHz CH-High, 100%RB



Date: 12.AUG.2019 06:36:51

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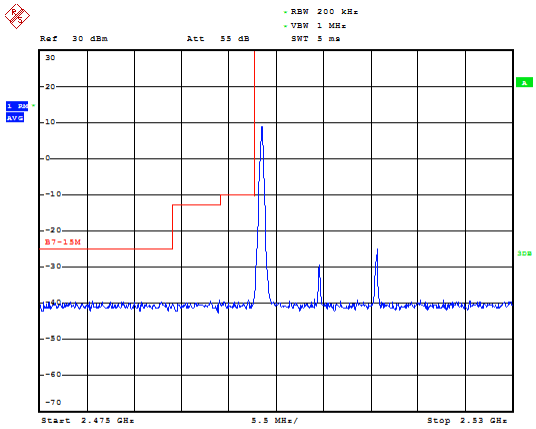
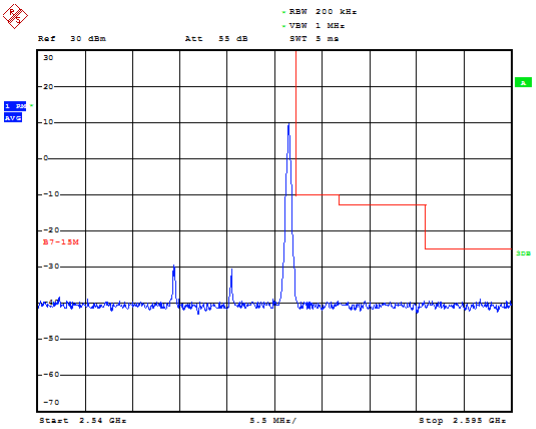
LTE Band 7 64QAM 15MHz CH-Low, 1 RB



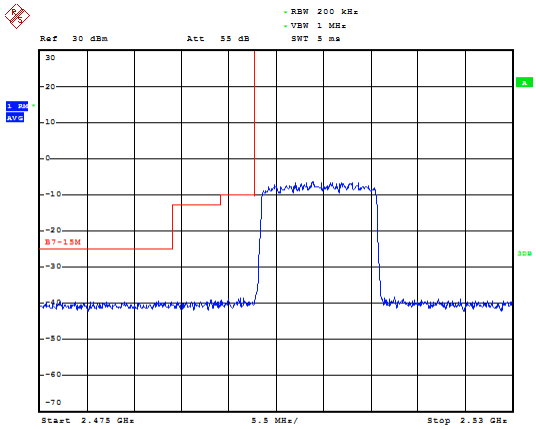
Date: 12.AUG.2019 06:43:21

LTE Band 7 64QAM 15MHz CH-High, 1 RB



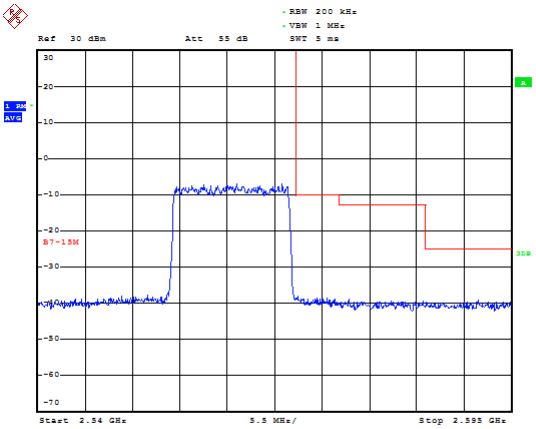
Date: 12.AUG.2019 06:45:12

LTE Band 7 64QAM 15MHz CH-Low, 100%RB



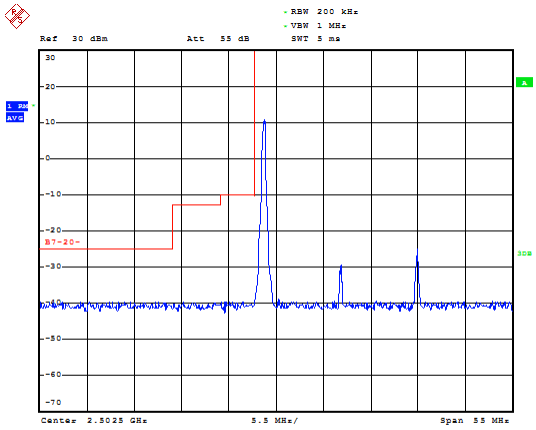
Date: 12.AUG.2019 06:43:39

LTE Band 7 64QAM 15MHz CH-High, 100%RB



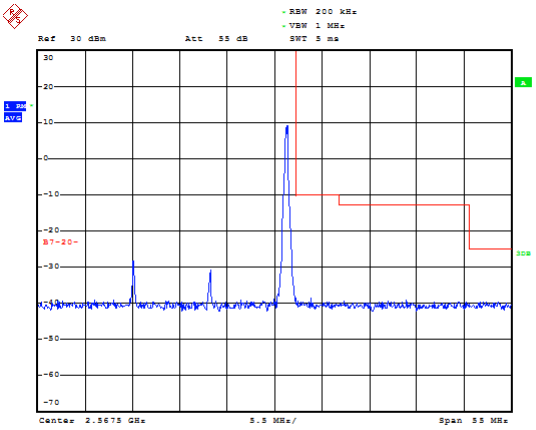
Date: 12.AUG.2019 06:44:55

LTE Band 7 64QAM 20MHz CH-Low, 1 RB



Date: 12.AUG.2019 06:50:05

LTE Band 7 64QAM 20MHz CH-High, 1 RB



Date: 12.AUG.2019 06:52:11

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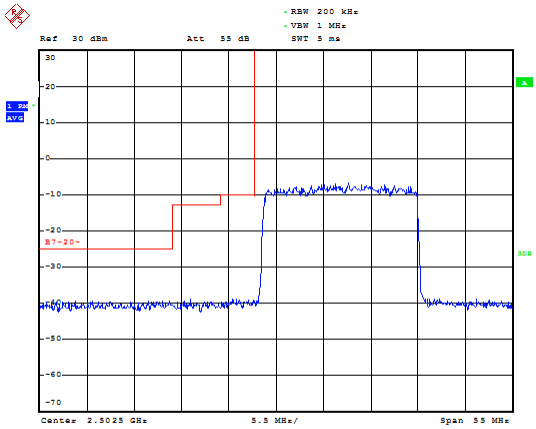
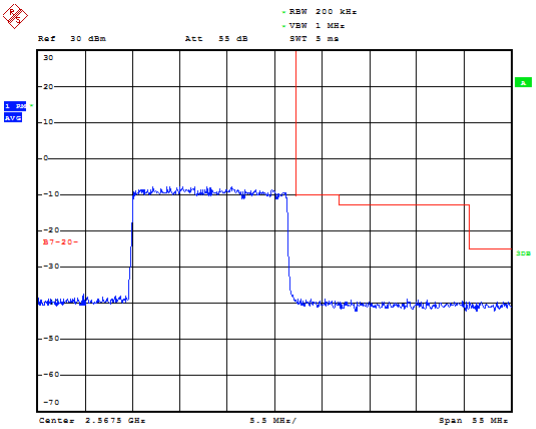
LTE Band 7 64QAM 20MHz CH-Low, 100%RB



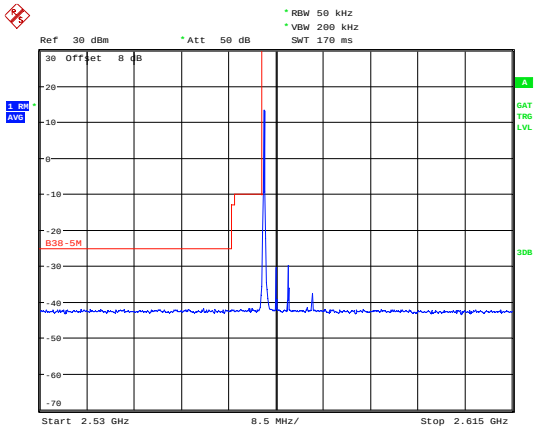
Date: 12.AUG.2019 06:50:22

LTE Band 7 64QAM 20MHz CH-High, 100%RB



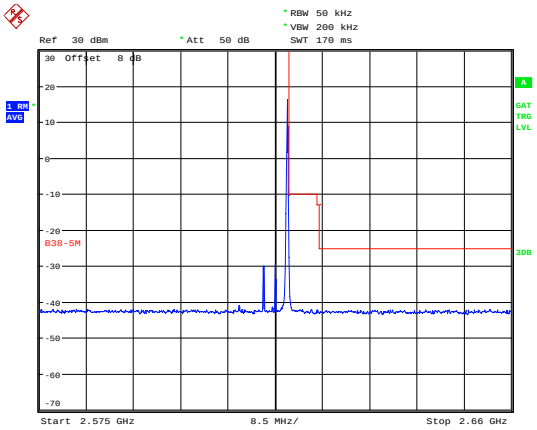
Date: 12.AUG.2019 06:51:28

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



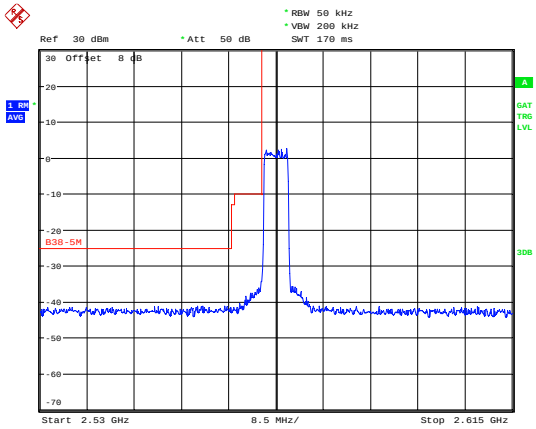
Date: 13.AUG.2019 17:51:14

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



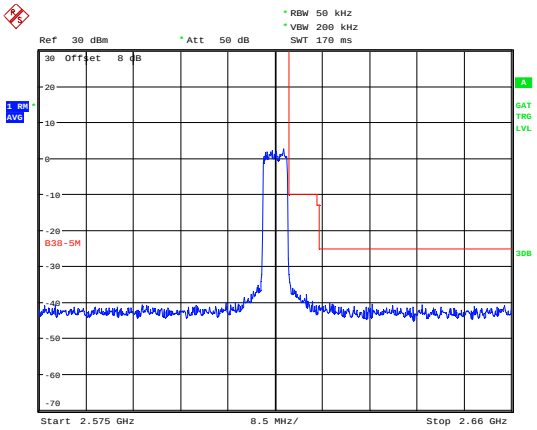
Date: 13.AUG.2019 18:04:36

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



Date: 13.AUG.2019 17:51:38

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



Date: 13.AUG.2019 18:04:55

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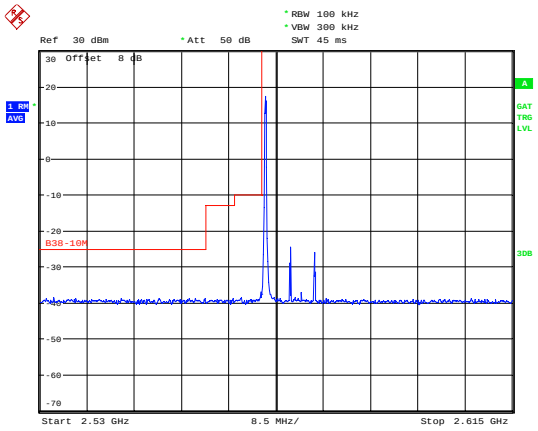
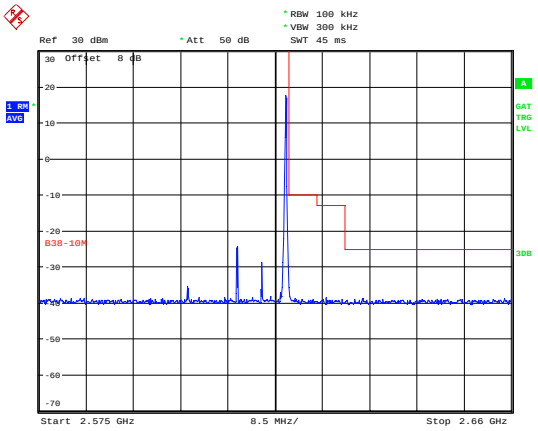
LTE Band 38 QPSK 10MHz CH-Low, 1 RB



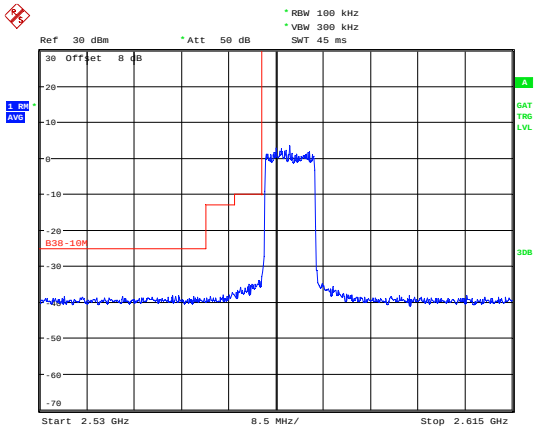
Date: 13.AUG.2019 18:10:00

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



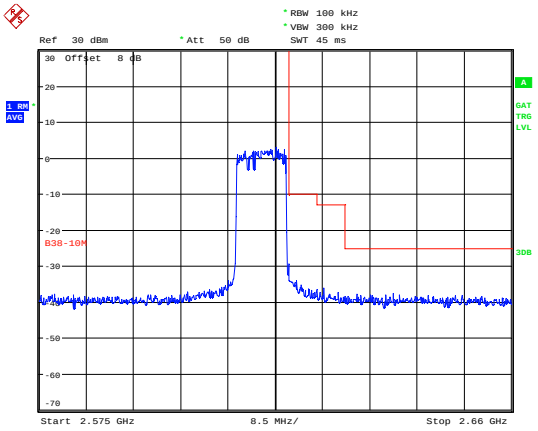
Date: 13.AUG.2019 18:15:33

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



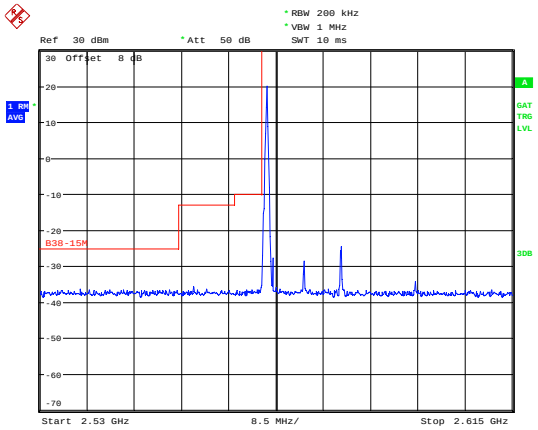
Date: 13.AUG.2019 18:10:16

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



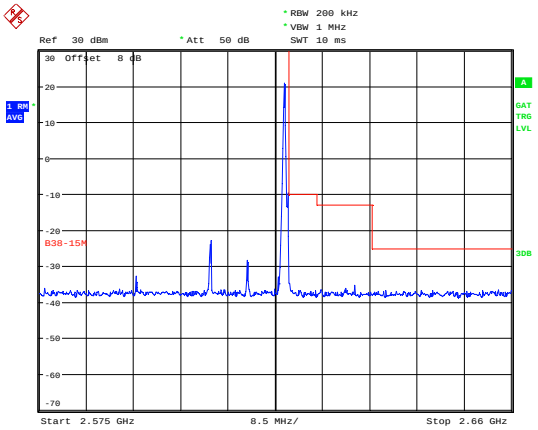
Date: 13.AUG.2019 18:15:55

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



Date: 13.AUG.2019 18:30:58

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



Date: 13.AUG.2019 18:26:26

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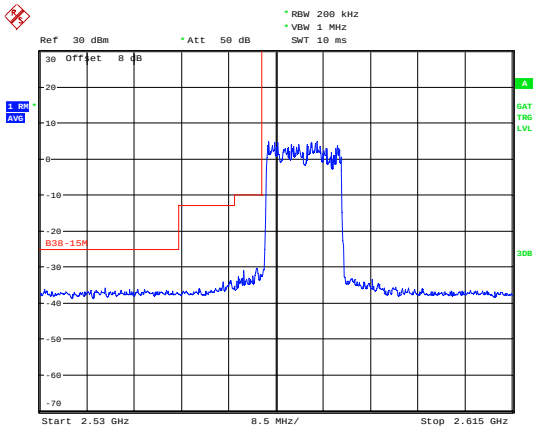
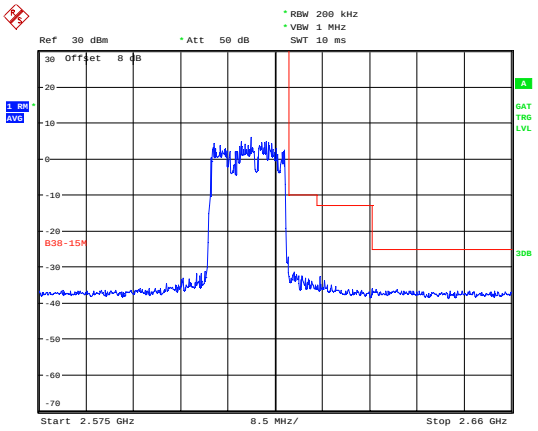
LTE Band 38 QPSK 15MHz CH-Low, 100%RB



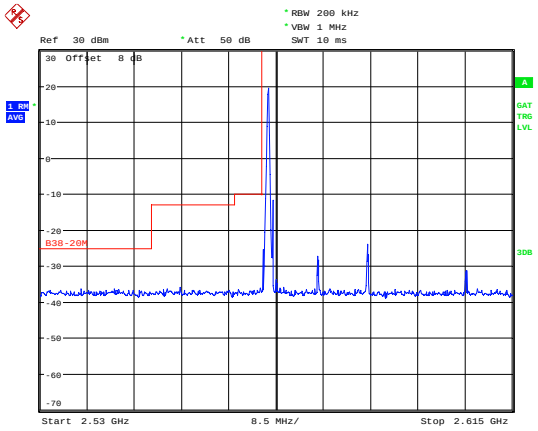
Date: 13.AUG.2019 18:33:19

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



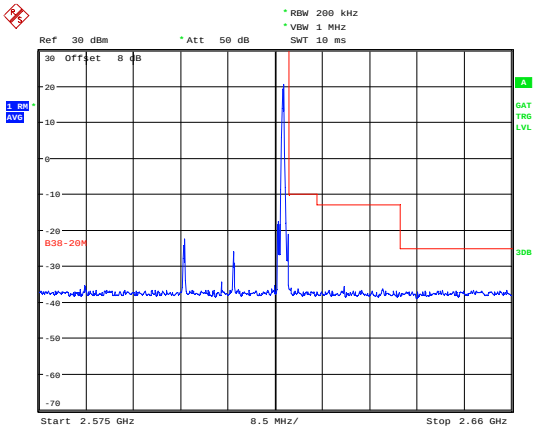
Date: 13.AUG.2019 18:27:03

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



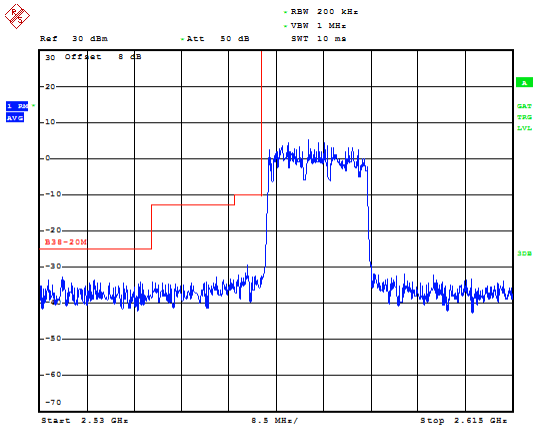
Date: 13.AUG.2019 18:37:47

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



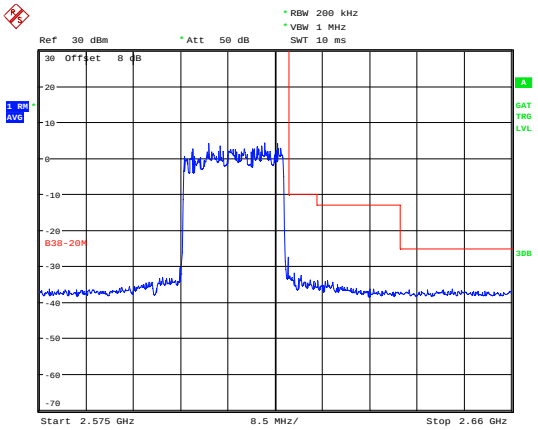
Date: 13.AUG.2019 18:50:11

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



Date: 13.AUG.2019 18:38:08

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



Date: 13.AUG.2019 18:52:20

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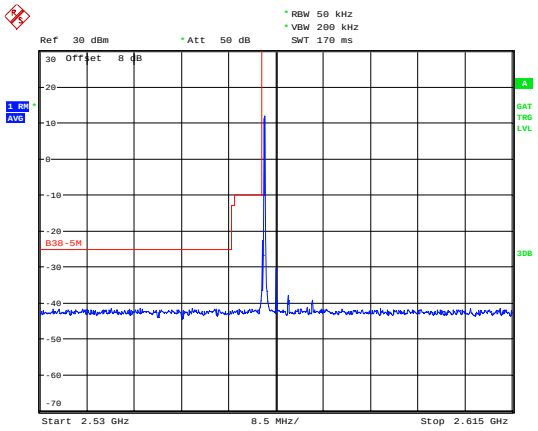
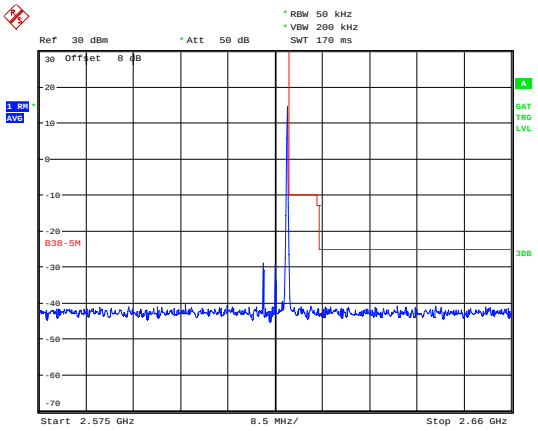
LTE Band 38 16QAM 5MHz CH-Low, 1 RB



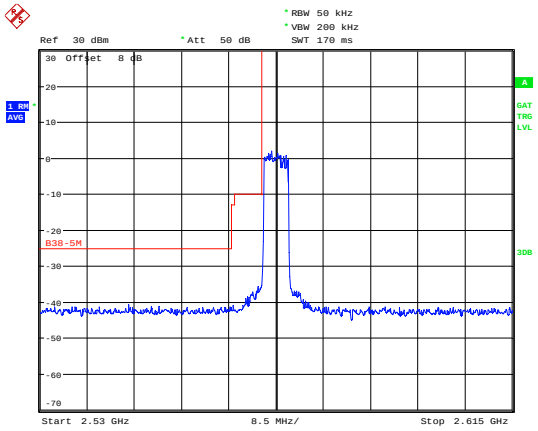
Date: 13.AUG.2019 17:52:26

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



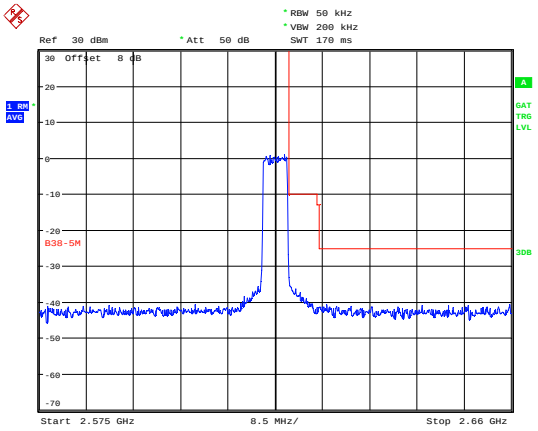
Date: 13.AUG.2019 18:05:24

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



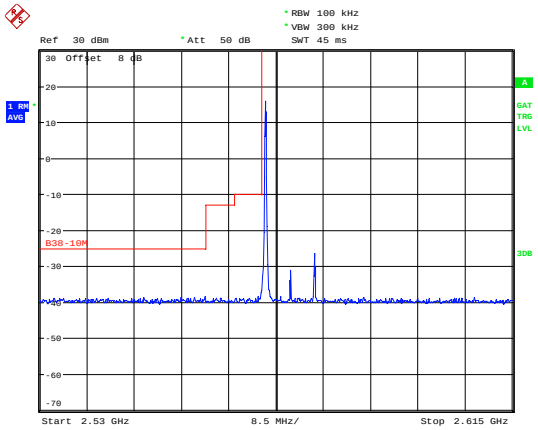
Date: 13.AUG.2019 17:52:03

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



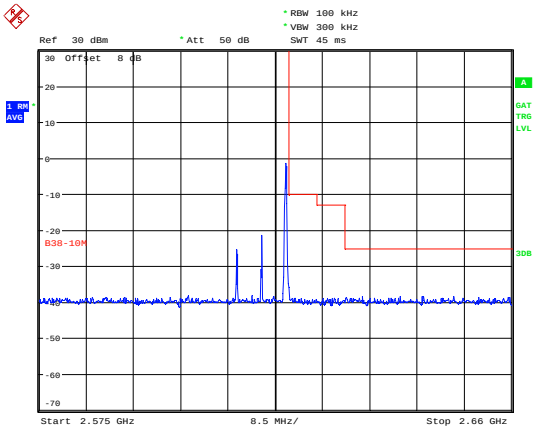
Date: 13.AUG.2019 18:05:10

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



Date: 13.AUG.2019 18:10:49

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



Date: 13.AUG.2019 18:16:22

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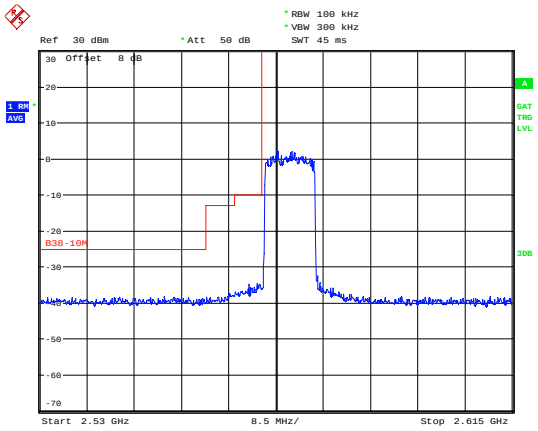
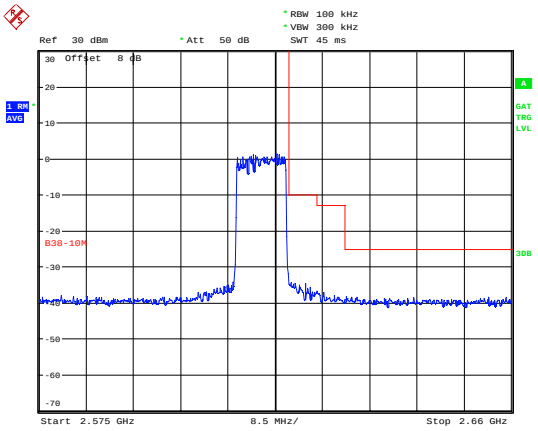
LTE Band 38 16QAM 10MHz CH-Low, 100%RB



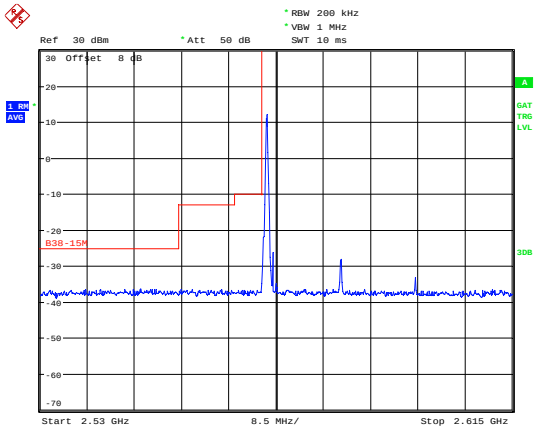
Date: 13.AUG.2019 18:10:34

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



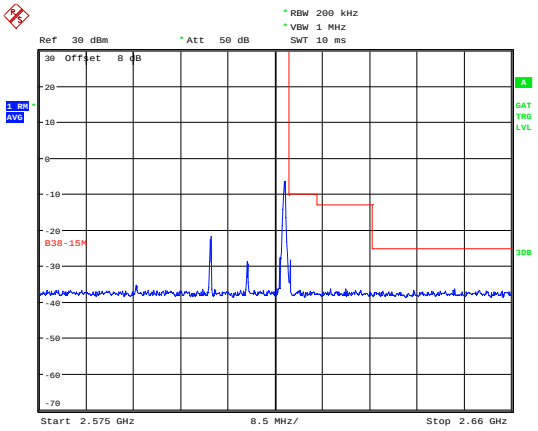
Date: 13.AUG.2019 18:16:09

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



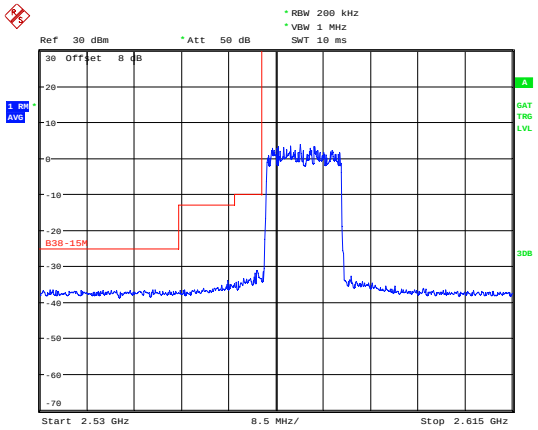
Date: 13.AUG.2019 18:33:38

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



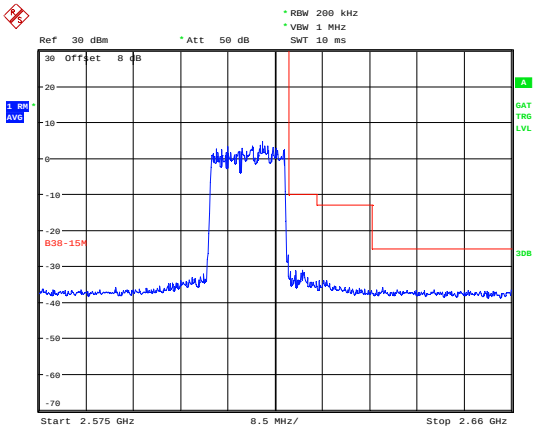
Date: 13.AUG.2019 18:28:23

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



Date: 13.AUG.2019 18:32:33

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



Date: 13.AUG.2019 18:27:20

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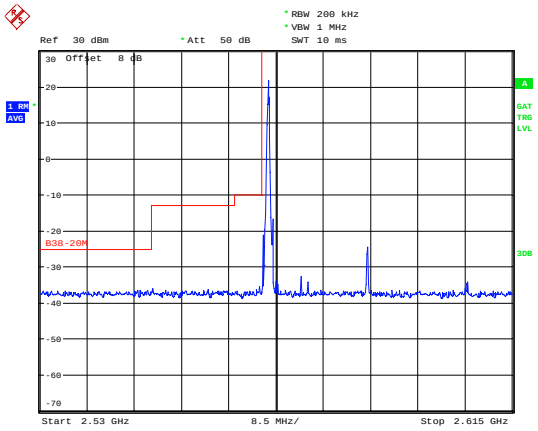
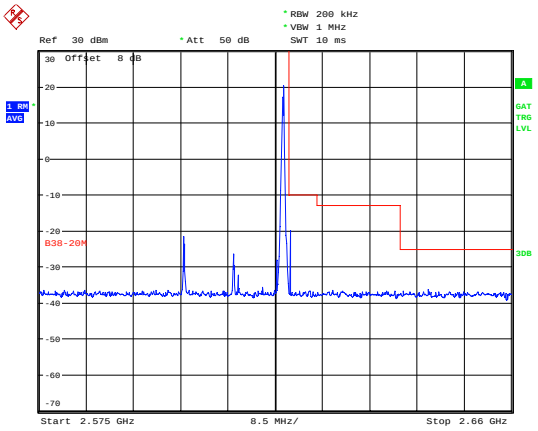
LTE Band 38 16QAM 20MHz CH-Low, 1 RB



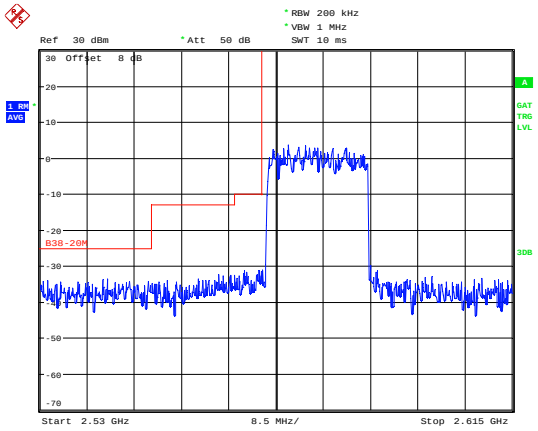
Date: 13.AUG.2019 18:38:56

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



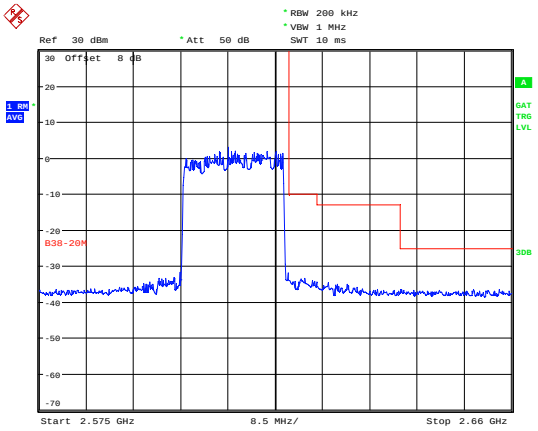
Date: 13.AUG.2019 18:50:44

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



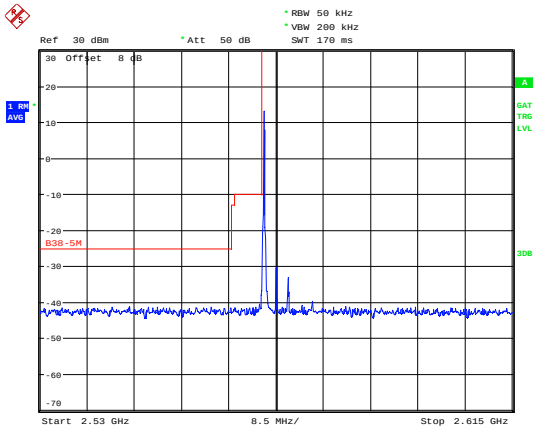
Date: 13.AUG.2019 18:42:01

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



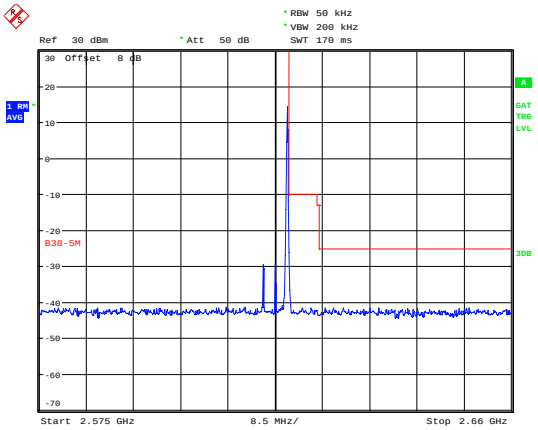
Date: 13.AUG.2019 18:52:07

LTE Band 38 64QAM 5MHz CH-Low, 1 RB



Date: 13.AUG.2019 17:53:30

LTE Band 38 64QAM 5MHz CH-High, 1 RB



Date: 13.AUG.2019 18:06:19

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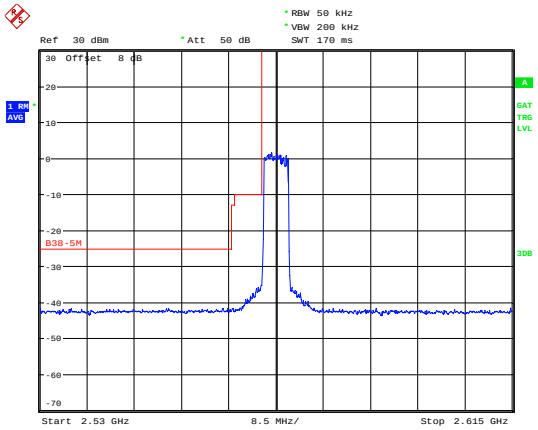
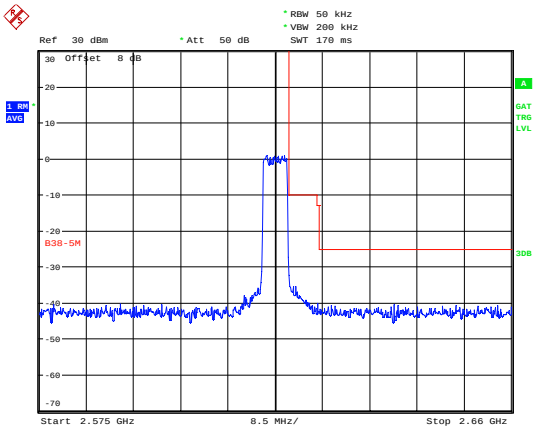
LTE Band 38 64QAM 5MHz CH-Low, 100%RB



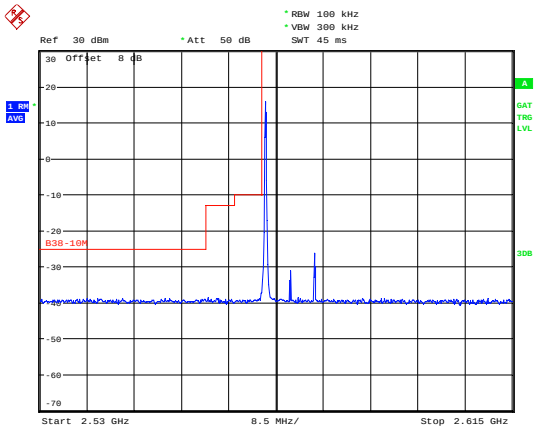
Date: 13.AUG.2019 17:53:14

LTE Band 38 64QAM 5MHz CH-High, 100%RB



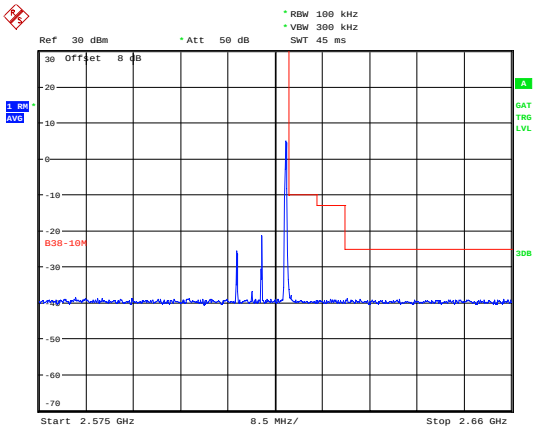
Date: 13.AUG.2019 18:05:45

LTE Band 38 64QAM 10MHz CH-Low, 1 RB



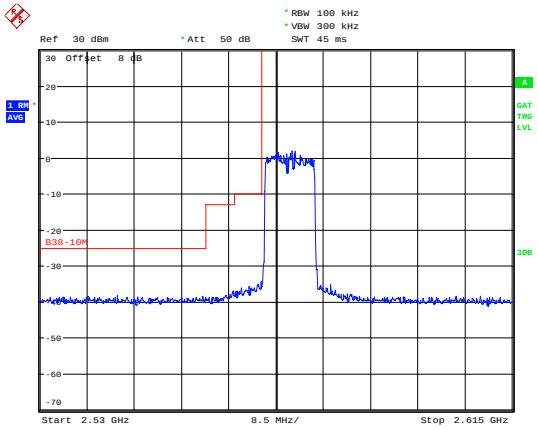
Date: 13.AUG.2019 18:11:20

LTE Band 38 64QAM 10MHz CH-High, 1 RB



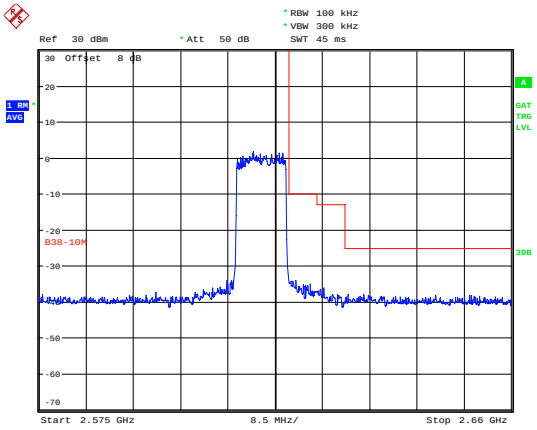
Date: 13.AUG.2019 18:17:35

LTE Band 38 64QAM 10MHz CH-Low, 100%RB



Date: 13.AUG.2019 18:11:03

LTE Band 38 64QAM 10MHz CH-High, 100%RB



Date: 13.AUG.2019 18:16:38

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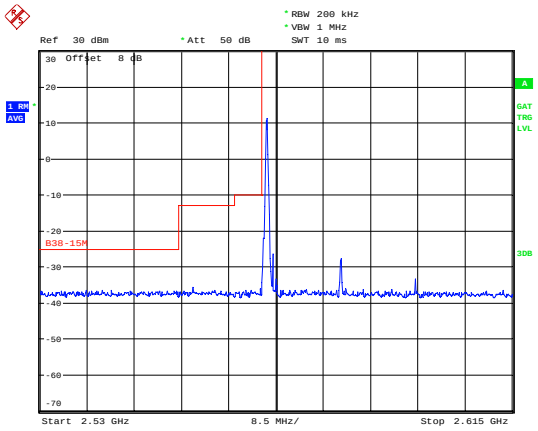
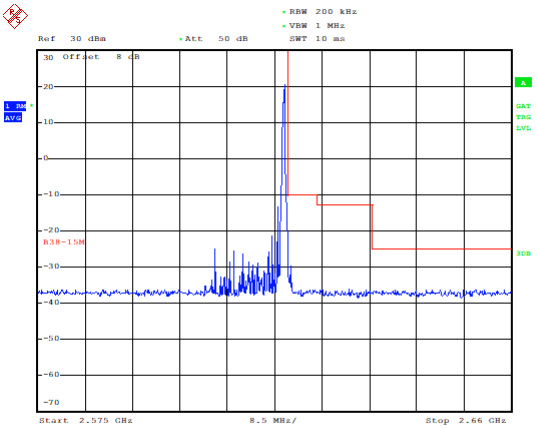
LTE Band 38 64QAM 15MHz CH-Low, 1 RB



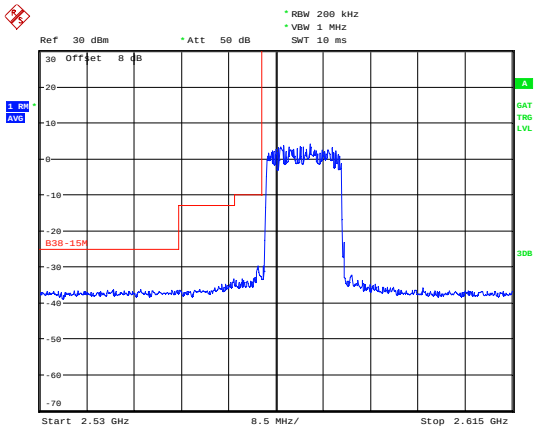
Date: 13.AUG.2019 18:34:36

LTE Band 38 64QAM 15MHz CH-High, 1 RB



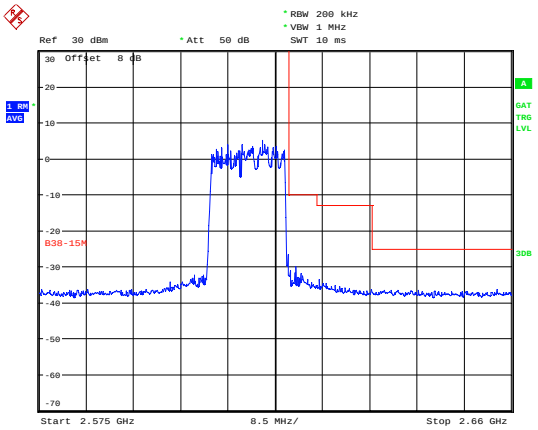
Date: 13.AUG.2019 18:29:24

LTE Band 38 64QAM 15MHz CH-Low, 100%RB



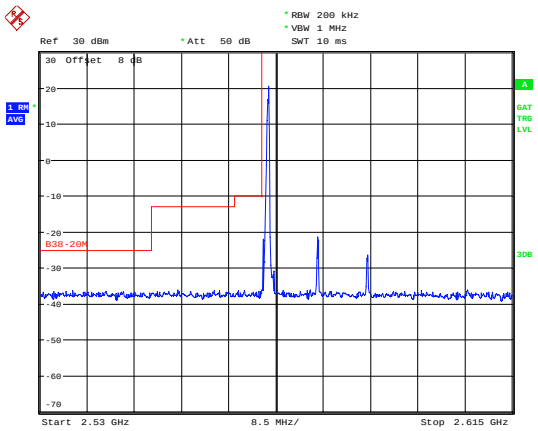
Date: 13.AUG.2019 18:34:06

LTE Band 38 64QAM 15MHz CH-High, 100%RB



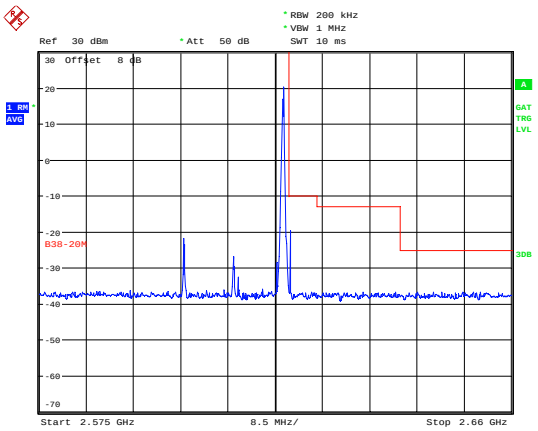
Date: 13.AUG.2019 18:29:00

LTE Band 38 64QAM 20MHz CH-Low, 1 RB



Date: 13.AUG.2019 18:42:25

LTE Band 38 64QAM 20MHz CH-High, 1 RB



Date: 13.AUG.2019 18:52:56

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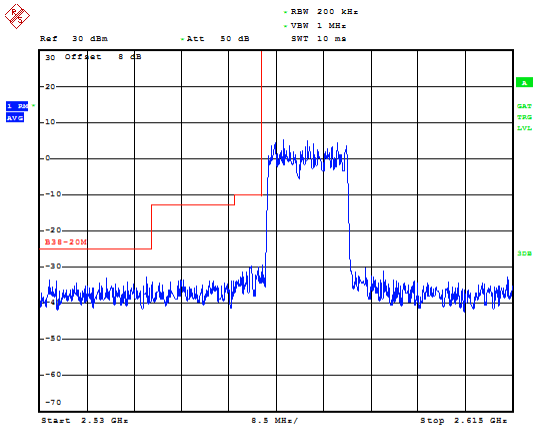
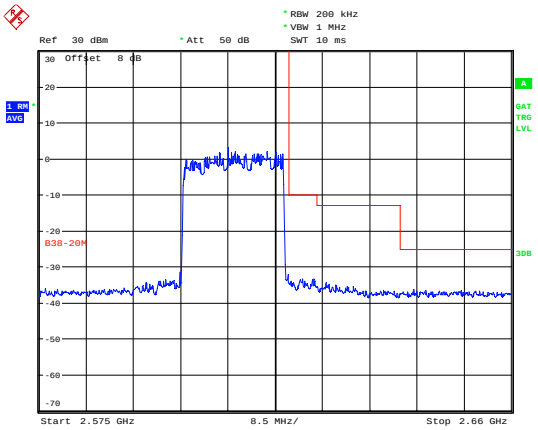
LTE Band 38 64QAM 20MHz CH-Low, 100%RB



Date: 13.AUG.2019 18:44:01

LTE Band 38 64QAM 20MHz CH-High, 100%RB



Date: 13.AUG.2019 18:52:34

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5.5 Peak-to-Average Power Ratio (PAPR)

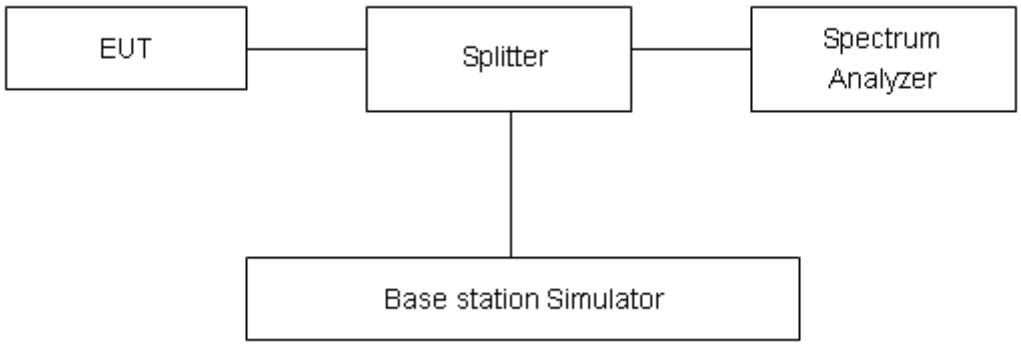
Ambient condition

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

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Test Results

WCDMA Band IV	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
RMC	1312	1712.4	26.14	23.16	2.98	≤13	PASS
	1413	1732.6	26.31	22.97	3.34	≤13	PASS
	1513	1752.6	26.54	23.20	3.34	≤13	PASS

LTE Band 4								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	19957	1710.7	26.56	21.59	4.97	≤13	PASS
		20175	1732.5	26.30	21.16	5.14	≤13	PASS
		20393	1754.3	26.76	21.65	5.11	≤13	PASS
	3	19965	1711.5	26.43	21.71	4.72	≤13	PASS
		20175	1732.5	26.48	21.24	5.24	≤13	PASS
		20385	1753.5	26.91	21.73	5.18	≤13	PASS
	5	19975	1712.5	26.22	21.50	4.72	≤13	PASS
		20175	1732.5	66.85	21.30	45.55	≤13	PASS
		20375	1752.5	27.00	21.92	5.08	≤13	PASS
	10	20000	1715	26.25	21.56	4.69	≤13	PASS
		20175	1732.5	26.37	21.17	5.20	≤13	PASS
		20350	1750	26.77	21.86	4.91	≤13	PASS
	15	20025	1717.5	26.39	21.53	4.86	≤13	PASS
		20175	1732.5	26.52	21.25	5.27	≤13	PASS
		20325	1747.5	26.64	21.79	4.85	≤13	PASS
	20	20050	1720	26.21	21.29	4.92	≤13	PASS
		20175	1732.5	26.38	21.27	5.11	≤13	PASS
		20300	1745	26.52	21.73	4.79	≤13	PASS
16QAM	1.4	19957	1710.7	26.51	20.73	5.78	≤13	PASS
		20175	1732.5	26.25	20.59	5.66	≤13	PASS
		20393	1754.3	26.55	20.56	5.99	≤13	PASS
	3	19965	1711.5	26.19	20.56	5.63	≤13	PASS
		20175	1732.5	26.44	20.33	6.11	≤13	PASS
		20385	1753.5	26.75	20.69	6.06	≤13	PASS
	5	19975	1712.5	26.10	20.58	5.52	≤13	PASS
		20175	1732.5	26.42	20.35	6.07	≤13	PASS
		20375	1752.5	26.79	20.86	5.93	≤13	PASS
	10	20000	1715	26.06	20.52	5.54	≤13	PASS
		20175	1732.5	26.28	20.23	6.05	≤13	PASS
		20350	1750	26.66	21.18	5.48	≤13	PASS

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	15	20025	1717.5	26.22	20.58	5.64	≤13	PASS
		20175	1732.5	26.34	20.28	6.06	≤13	PASS
		20325	1747.5	25.97	20.68	5.29	≤13	PASS
	20	20050	1720	26.20	20.44	5.76	≤13	PASS
		20175	1732.5	26.28	20.32	5.96	≤13	PASS
		20300	1745	26.35	20.69	5.66	≤13	PASS
64QAM	1.4	19957	1710.7	26.77	20.94	5.83	≤13	PASS
		20175	1732.5	26.55	20.51	6.04	≤13	PASS
		20393	1754.3	31.54	20.74	10.80	≤13	PASS
	3	19965	1711.5	26.60	20.86	5.74	≤13	PASS
		20175	1732.5	32.87	20.91	11.96	≤13	PASS
		20385	1753.5	26.45	20.41	6.04	≤13	PASS
	5	19975	1712.5	26.46	20.89	5.57	≤13	PASS
		20175	1732.5	26.35	20.51	5.84	≤13	PASS
		20375	1752.5	26.47	20.56	5.91	≤13	PASS
	10	20000	1715	26.38	20.83	5.55	≤13	PASS
		20175	1732.5	26.57	20.51	6.06	≤13	PASS
		20350	1750	26.28	20.49	5.79	≤13	PASS
	15	20025	1717.5	26.57	20.92	5.65	≤13	PASS
		20175	1732.5	26.55	20.46	6.09	≤13	PASS
		20325	1747.5	25.78	20.50	5.28	≤13	PASS
	20	20050	1720	26.55	20.78	5.77	≤13	PASS
		20175	1732.5	26.52	20.56	5.96	≤13	PASS
		20300	1745	25.86	20.48	5.38	≤13	PASS

LTE Band 7								
Modulation	**Bandwidth (MHz)**	**Channel**	**Frequency (MHz)**	**Peak (dBm)**	**Avg (dBm)**	**PAPR (dB)**	**Limit (dB)**	**Conclusion**
QPSK	5	20775	2502.5	26.18	21.10	5.08	≤13	PASS
		21100	2535	26.42	21.28	5.14	≤13	PASS
		21425	2567.5	26.32	21.15	5.17	≤13	PASS
	10	20800	2505	26.19	21.13	5.06	≤13	PASS
		21100	2535	26.52	21.42	5.10	≤13	PASS
		21400	2565	26.34	21.19	5.15	≤13	PASS
	15	20825	2507.5	26.40	21.20	5.20	≤13	PASS
		21100	2535	26.50	21.28	5.22	≤13	PASS
		21375	2562.5	26.60	21.30	5.30	≤13	PASS
	20	20850	2510	26.19	21.08	5.11	≤13	PASS

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		21100	2535	26.43	21.37	5.06	≤13	PASS
		21350	2560	26.42	21.28	5.14	≤13	PASS
16QAM	5	20775	2502.5	25.99	20.06	5.93	≤13	PASS
		21100	2535	26.30	20.34	5.96	≤13	PASS
		21425	2567.5	26.07	20.03	6.04	≤13	PASS
	10	20800	2505	26.01	20.12	5.89	≤13	PASS
		21100	2535	26.26	20.28	5.98	≤13	PASS
		21400	2565	26.25	20.23	6.02	≤13	PASS
	15	20825	2507.5	26.23	20.25	5.98	≤13	PASS
		21100	2535	26.28	20.24	6.04	≤13	PASS
		21375	2562.5	26.45	20.40	6.05	≤13	PASS
	20	20850	2510	26.12	20.14	5.98	≤13	PASS
		21100	2535	26.36	20.83	5.53	≤13	PASS
		21350	2560	26.20	20.23	5.97	≤13	PASS
64QAM	5	20775	2502.5	26.00	20.04	5.96	≤13	PASS
		21100	2535	26.35	20.32	6.03	≤13	PASS
		21425	2567.5	25.81	19.75	6.06	≤13	PASS
	10	20800	2505	25.83	19.84	5.99	≤13	PASS
		21100	2535	26.36	20.37	5.99	≤13	PASS
		21400	2565	25.80	19.70	6.10	≤13	PASS
	15	20825	2507.5	26.14	20.10	6.04	≤13	PASS
		21100	2535	26.38	20.33	6.05	≤13	PASS
		21375	2562.5	25.94	19.82	6.12	≤13	PASS
	20	20850	2510	26.15	20.16	5.99	≤13	PASS
		21100	2535	26.34	20.40	5.94	≤13	PASS
		21350	2560	25.95	19.93	6.02	≤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	25.93	16.98	8.95	≤13	PASS
		38000	2595	26.02	16.96	9.06	≤13	PASS
		38225	2617.5	26.04	17.11	8.93	≤13	PASS
	10	37800	2575	25.81	16.53	9.28	≤13	PASS
		38000	2595	25.95	17.34	8.61	≤13	PASS

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		38200	2615	25.96	16.77	9.19	≤13	PASS
	15	37825	2577.5	26.24	17.00	9.24	≤13	PASS
		38000	2595	26.24	16.74	9.50	≤13	PASS
		38175	2612.5	26.32	17.10	9.22	≤13	PASS
	20	37850	2580	25.86	16.80	9.06	≤13	PASS
		38000	2595	25.80	16.48	9.32	≤13	PASS
		38150	2610	25.96	16.83	9.13	≤13	PASS
16QAM	5	37775	2572.5	25.73	15.90	9.83	≤13	PASS
		38000	2595	25.91	15.69	10.22	≤13	PASS
		38225	2617.5	25.74	16.19	9.55	≤13	PASS
	10	37800	2575	25.76	15.72	10.04	≤13	PASS
		38000	2595	25.69	15.43	10.26	≤13	PASS
		38200	2615	25.76	15.87	9.89	≤13	PASS
	15	37825	2577.5	25.92	16.01	9.91	≤13	PASS
		38000	2595	26.01	15.41	10.60	≤13	PASS
		38175	2612.5	26.09	16.18	9.91	≤13	PASS
	20	37850	2580	25.69	15.75	9.94	≤13	PASS
		38000	2595	25.75	16.31	9.44	≤13	PASS
		38150	2610	25.93	15.96	9.97	≤13	PASS
64QAM	5	37775	2572.5	25.67	16.67	9.00	≤13	PASS
		38000	2595	26.18	15.57	10.61	≤13	PASS
		38225	2617.5	25.41	15.23	10.18	≤13	PASS
	10	37800	2575	25.77	16.95	8.82	≤13	PASS
		38000	2595	26.23	16.38	9.85	≤13	PASS
		38200	2615	25.59	15.79	9.80	≤13	PASS
	15	37825	2577.5	25.82	15.37	10.45	≤13	PASS
		38000	2595	26.46	16.81	9.65	≤13	PASS
		38175	2612.5	22.31	11.45	10.86	≤13	PASS
	20	37850	2580	25.75	15.56	10.19	≤13	PASS
		38000	2595	26.13	16.22	9.91	≤13	PASS
		38150	2610	25.94	15.89	10.05	≤13	PASS

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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 +55°C in 10°C step size.

(1)With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.

(2)Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +55°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

Frequency Stability (Voltage Variation)

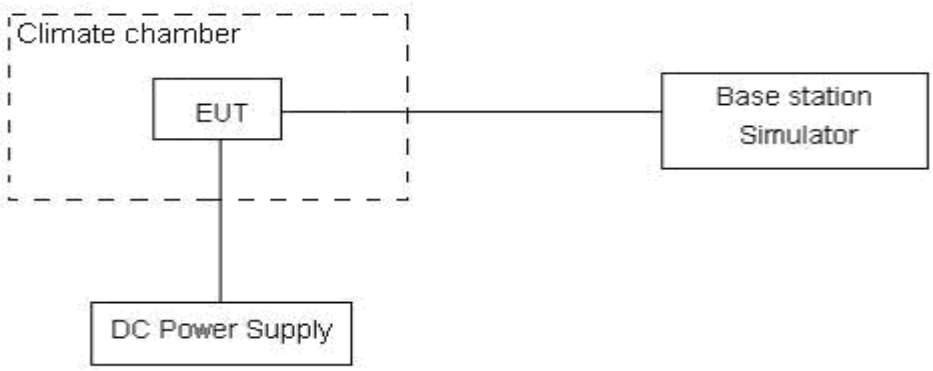
The frequency stability shall be measured with variation of primary supply voltage as follows:

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

Test setup



Limits

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Measurement Uncertainty

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

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Test Result

WCDMA Band IV						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
Temperature	Voltage	QPSK	BPSK	QPSK	BPSK	
Normal（25℃）	Normal	1.28	10.58	0.00068	0.00563	PASS
Extreme（55℃）		15.33	6.19	0.00815	0.00329	PASS
Extreme（50℃）		16.01	16.15	0.00852	0.00859	PASS
Extreme（40℃）		5.57	13.74	0.00296	0.00731	PASS
Extreme（30℃）		17.42	6.65	0.00927	0.00354	PASS
Extreme（20℃）		10.66	12.47	0.00567	0.00663	PASS
Extreme（10℃）		11.80	1.76	0.00628	0.00094	PASS
Extreme（0℃）		2.11	6.83	0.00112	0.00363	PASS
Extreme（-10℃）		7.60	2.05	0.00404	0.00109	PASS
Extreme（-20℃）		15.41	17.94	0.00820	0.00954	PASS
Extreme（-30℃）		2.16	6.54	0.00115	0.00348	PASS
25℃	LV	11.03	2.68	0.00587	0.00142	PASS
	HV	17.76	1.98	0.00945	0.00105	PASS

LTE Band 4								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	1.4MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	16.41	8.41	11.22	0.00873	0.00447	0.00597	PASS
Extreme（55℃）		11.74	11.74	16.71	0.00624	0.00624	0.00889	PASS
Extreme（50℃）		4.14	2.14	13.02	0.00220	0.00114	0.00693	PASS
Extreme（40℃）		12.48	4.48	14.60	0.00664	0.00238	0.00776	PASS
Extreme（30℃）		1.20	16.20	12.60	0.00064	0.00862	0.00670	PASS
Extreme（20℃）		8.49	14.49	2.68	0.00452	0.00771	0.00143	PASS
Extreme（10℃）		14.52	16.52	7.40	0.00773	0.00879	0.00394	PASS
Extreme（0℃）		1.86	17.86	3.81	0.00099	0.00950	0.00203	PASS
Extreme（-10℃）		14.25	17.25	6.99	0.00758	0.00917	0.00372	PASS
Extreme（-20℃）		4.85	4.85	2.93	0.00258	0.00258	0.00156	PASS
Extreme（-30℃）		8.55	10.55	14.05	0.00455	0.00561	0.00747	PASS
25℃	LV	5.45	3.45	6.49	0.00290	0.00184	0.00345	PASS
	HV	5.86	15.86	12.67	0.00312	0.00844	0.00674	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability	Frequency Stability	Frequency Stability	Verdict

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BANDWIDTH	3MHz				（ppm）	（ppm）	（ppm）	
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	3.63	10.63	5.02	0.00193	0.00565	0.00267	PASS
Extreme（55℃）		17.31	15.31	13.87	0.00921	0.00814	0.00738	PASS
Extreme（50℃）		10.77	12.77	5.57	0.00573	0.00679	0.00296	PASS
Extreme（40℃）		3.61	14.61	12.61	0.00192	0.00777	0.00671	PASS
Extreme（30℃）		8.53	9.53	8.56	0.00454	0.00507	0.00455	PASS
Extreme（20℃）		9.55	5.55	2.35	0.00508	0.00295	0.00125	PASS
Extreme（10℃）		16.53	17.53	1.52	0.00879	0.00933	0.00081	PASS
Extreme（0℃）		2.77	10.77	3.74	0.00148	0.00573	0.00199	PASS
Extreme（-10℃）		12.82	17.82	2.56	0.00682	0.00948	0.00136	PASS
Extreme（-20℃）		12.24	3.24	8.55	0.00651	0.00172	0.00455	PASS
Extreme（-30℃）		9.07	14.07	14.78	0.00483	0.00749	0.00786	PASS
25℃	LV	14.48	1.48	17.19	0.00770	0.00079	0.00914	PASS
	HV	7.38	9.38	17.22	0.00393	0.00499	0.00916	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	6.52	8.52	15.39	0.00347	0.00453	0.00819	PASS
Extreme（55℃）		11.77	13.77	16.01	0.00626	0.00733	0.00851	PASS
Extreme（50℃）		2.77	17.77	5.59	0.00147	0.00945	0.00297	PASS
Extreme（40℃）		8.96	11.96	11.46	0.00477	0.00636	0.00609	PASS
Extreme（30℃）		2.24	2.24	12.07	0.00119	0.00119	0.00642	PASS
Extreme（20℃）		8.76	3.76	2.69	0.00466	0.00200	0.00143	PASS
Extreme（10℃）		15.24	13.24	7.32	0.00811	0.00704	0.00389	PASS
Extreme（0℃）		9.58	10.58	14.90	0.00509	0.00563	0.00792	PASS
Extreme（-10℃）		12.03	14.03	2.31	0.00640	0.00746	0.00123	PASS
Extreme（-20℃）		6.49	17.49	3.83	0.00345	0.00930	0.00204	PASS
Extreme（-30℃）		3.46	6.46	12.19	0.00184	0.00344	0.00649	PASS
25℃	LV	11.98	13.98	14.85	0.00637	0.00744	0.00790	PASS
	HV	10.76	12.76	17.90	0.00573	0.00679	0.00952	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	11.80	12.80	3.79	0.00627	0.00681	0.00202	PASS
Extreme（55℃）		8.57	13.57	13.78	0.00456	0.00722	0.00733	PASS
Extreme（50℃）		2.32	7.32	3.18	0.00123	0.00389	0.00169	PASS
Extreme（40℃）		16.98	7.98	14.40	0.00903	0.00424	0.00766	PASS
Extreme（30℃）		2.57	10.57	2.85	0.00137	0.00562	0.00151	PASS
Extreme（20℃）		10.27	10.27	6.75	0.00546	0.00546	0.00359	PASS

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Extreme（10℃）		8.90	1.90	14.82	0.00474	0.00101	0.00788	PASS
Extreme（0℃）		11.57	13.57	6.35	0.00615	0.00722	0.00338	PASS
Extreme（-10℃）		10.09	12.09	15.48	0.00536	0.00643	0.00823	PASS
Extreme（-20℃）		13.08	4.08	6.90	0.00696	0.00217	0.00367	PASS
Extreme（-30℃）		4.84	17.84	5.38	0.00258	0.00949	0.00286	PASS
25℃	LV	9.85	12.85	3.29	0.00524	0.00683	0.00175	PASS
	HV	9.03	17.03	2.99	0.00480	0.00906	0.00159	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	4.86	12.86	15.84	0.00258	0.00684	0.00842	PASS
Extreme（55℃）		9.00	11.00	17.32	0.00479	0.00585	0.00922	PASS
Extreme（50℃）		9.41	1.41	17.74	0.00501	0.00075	0.00944	PASS
Extreme（40℃）		13.47	9.47	10.59	0.00716	0.00504	0.00564	PASS
Extreme（30℃）		13.71	15.71	17.32	0.00729	0.00836	0.00921	PASS
Extreme（20℃）		2.89	7.89	3.99	0.00154	0.00420	0.00212	PASS
Extreme（10℃）		8.57	3.57	3.35	0.00456	0.00190	0.00178	PASS
Extreme（0℃）		7.35	5.35	7.42	0.00391	0.00285	0.00395	PASS
Extreme（-10℃）		3.39	7.39	13.24	0.00180	0.00393	0.00704	PASS
Extreme（-20℃）		10.08	16.08	16.84	0.00536	0.00855	0.00896	PASS
Extreme（-30℃）		2.55	7.55	12.43	0.00136	0.00401	0.00661	PASS
25℃	LV	2.63	1.63	16.71	0.00140	0.00087	0.00889	PASS
	HV	17.99	6.99	2.14	0.00957	0.00372	0.00114	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	5.13	5.13	3.21	0.00273	0.00273	0.00171	PASS
Extreme（55℃）		11.70	6.70	12.07	0.00622	0.00356	0.00642	PASS
Extreme（50℃）		8.16	5.16	16.21	0.00434	0.00274	0.00862	PASS
Extreme（40℃）		1.58	9.58	16.58	0.00084	0.00509	0.00882	PASS
Extreme（30℃）		14.27	5.27	7.02	0.00759	0.00280	0.00373	PASS
Extreme（20℃）		7.74	12.74	2.60	0.00412	0.00678	0.00138	PASS
Extreme（10℃）		13.59	4.59	13.78	0.00723	0.00244	0.00733	PASS
Extreme（0℃）		14.54	2.54	1.21	0.00773	0.00135	0.00064	PASS
Extreme（-10℃）		10.09	13.09	17.94	0.00537	0.00696	0.00954	PASS
Extreme（-20℃）		8.67	1.67	9.48	0.00461	0.00089	0.00504	PASS
Extreme（-30℃）		4.91	11.91	7.00	0.00261	0.00633	0.00372	PASS
25℃	LV	9.86	1.86	10.18	0.00524	0.00099	0.00541	PASS
	HV	15.81	15.81	6.17	0.00841	0.00841	0.00328	PASS

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LTE Band 7								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	13.31	14.31	15.38	0.00708	0.00761	0.00818	PASS
Extreme（55℃）		11.06	4.06	12.34	0.00588	0.00216	0.00656	PASS
Extreme（50℃）		16.50	3.50	1.51	0.00878	0.00186	0.00080	PASS
Extreme（40℃）		16.51	16.51	7.32	0.00878	0.00878	0.00389	PASS
Extreme（30℃）		12.04	8.04	7.28	0.00640	0.00428	0.00387	PASS
Extreme（20℃）		4.30	3.30	12.65	0.00229	0.00175	0.00673	PASS
Extreme（10℃）		7.61	11.61	14.85	0.00405	0.00617	0.00790	PASS
Extreme（0℃）		7.33	16.33	8.39	0.00390	0.00868	0.00446	PASS
Extreme（-10℃）		17.96	17.96	17.18	0.00955	0.00955	0.00914	PASS
Extreme（-20℃）		5.39	9.39	15.99	0.00287	0.00500	0.00851	PASS
Extreme（-30℃）		3.57	9.57	5.00	0.00190	0.00509	0.00266	PASS
25℃	LV	16.76	17.76	17.24	0.00892	0.00945	0.00917	PASS
	HV	4.63	7.63	6.25	0.00246	0.00406	0.00333	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	15.48	9.48	7.11	0.00823	0.00504	0.00378	PASS
Extreme（55℃）		10.09	17.09	1.33	0.00537	0.00909	0.00071	PASS
Extreme（50℃）		15.20	1.20	16.86	0.00808	0.00064	0.00897	PASS
Extreme（40℃）		5.53	3.53	13.72	0.00294	0.00188	0.00730	PASS
Extreme（30℃）		16.68	4.68	13.13	0.00887	0.00249	0.00699	PASS
Extreme（20℃）		9.26	2.26	4.32	0.00492	0.00120	0.00230	PASS
Extreme（10℃）		5.25	16.25	14.34	0.00279	0.00864	0.00763	PASS
Extreme（0℃）		13.15	10.15	14.47	0.00699	0.00540	0.00769	PASS
Extreme（-10℃）		5.71	12.71	17.06	0.00304	0.00676	0.00908	PASS
Extreme（-20℃）		15.27	4.27	7.55	0.00812	0.00227	0.00402	PASS
Extreme（-30℃）		14.98	8.98	5.31	0.00797	0.00478	0.00283	PASS
25℃	LV	5.45	11.45	4.58	0.00290	0.00609	0.00244	PASS
	HV	5.76	9.76	13.81	0.00306	0.00519	0.00735	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	3.59	9.59	15.36	0.00191	0.00510	0.00817	PASS
Extreme（55℃）		12.02	17.02	15.34	0.00640	0.00906	0.00816	PASS
Extreme（50℃）		11.02	4.02	17.03	0.00586	0.00214	0.00906	PASS

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Extreme（40℃）		10.84	3.84	15.26	0.00577	0.00205	0.00812	PASS
Extreme（30℃）		2.97	6.97	9.25	0.00158	0.00371	0.00492	PASS
Extreme（20℃）		16.02	15.02	6.14	0.00852	0.00799	0.00327	PASS
Extreme（10℃）		16.71	4.71	10.23	0.00889	0.00251	0.00544	PASS
Extreme（0℃）		4.66	6.66	7.92	0.00248	0.00354	0.00421	PASS
Extreme（-10℃）		2.77	4.77	8.95	0.00147	0.00254	0.00476	PASS
Extreme（-20℃）		12.12	3.12	14.02	0.00644	0.00166	0.00746	PASS
Extreme（-30℃）		9.25	2.25	17.16	0.00492	0.00119	0.00913	PASS
25℃	LV	2.22	5.22	1.12	0.00118	0.00278	0.00060	PASS
	HV	4.09	4.09	12.76	0.00218	0.00218	0.00678	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	20MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	11.85	3.85	17.51	0.00631	0.00205	0.00931	PASS
Extreme（55℃）		7.38	5.38	14.87	0.00392	0.00286	0.00791	PASS
Extreme（50℃）		17.61	17.61	4.34	0.00937	0.00937	0.00231	PASS
Extreme（40℃）		6.82	12.82	5.85	0.00363	0.00682	0.00311	PASS
Extreme（30℃）		4.89	7.89	4.34	0.00260	0.00420	0.00231	PASS
Extreme（20℃）		16.62	8.62	1.72	0.00884	0.00458	0.00092	PASS
Extreme（10℃）		5.00	13.00	15.75	0.00266	0.00692	0.00838	PASS
Extreme（0℃）		15.44	10.44	4.88	0.00822	0.00556	0.00260	PASS
Extreme（-10℃）		17.36	9.36	12.74	0.00924	0.00498	0.00678	PASS
Extreme（-20℃）		9.33	2.33	15.83	0.00497	0.00124	0.00842	PASS
Extreme（-30℃）		4.22	4.22	8.75	0.00225	0.00225	0.00465	PASS
25℃	LV	1.37	15.37	6.61	0.00073	0.00818	0.00352	PASS
	HV	16.14	17.14	14.85	0.00858	0.00911	0.00790	PASS

LTE Band 38								
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	5MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	16.51	7.51	5.16	0.00878	0.00399	0.00275	PASS
Extreme（55℃）		12.38	3.38	3.62	0.00658	0.00180	0.00192	PASS
Extreme（50℃）		14.67	2.67	12.63	0.00780	0.00142	0.00672	PASS
Extreme（40℃）		7.50	7.50	14.61	0.00399	0.00399	0.00777	PASS
Extreme（30℃）		17.08	9.08	6.56	0.00909	0.00483	0.00349	PASS
Extreme（20℃）		4.31	5.31	8.79	0.00229	0.00283	0.00468	PASS
Extreme（10℃）		9.07	10.07	3.04	0.00482	0.00536	0.00162	PASS
Extreme（0℃）		5.25	13.25	14.85	0.00279	0.00705	0.00790	PASS

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Extreme（-10℃）		2.84	5.84	9.72	0.00151	0.00311	0.00517	PASS
Extreme（-20℃）		17.70	5.70	2.90	0.00941	0.00303	0.00154	PASS
Extreme（-30℃）		1.10	5.10	3.47	0.00059	0.00272	0.00185	PASS
25℃	LV	10.73	2.73	14.65	0.00571	0.00145	0.00779	PASS
	HV	5.34	10.34	8.85	0.00284	0.00550	0.00471	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	10MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	7.34	15.34	12.26	0.00391	0.00816	0.00652	PASS
Extreme（55℃）		2.28	10.28	10.48	0.00121	0.00547	0.00557	PASS
Extreme（50℃）		13.82	3.82	4.42	0.00735	0.00203	0.00235	PASS
Extreme（40℃）		15.68	3.68	13.83	0.00834	0.00196	0.00736	PASS
Extreme（30℃）		15.71	5.71	17.02	0.00836	0.00304	0.00905	PASS
Extreme（20℃）		5.89	9.89	2.79	0.00313	0.00526	0.00148	PASS
Extreme（10℃）		16.99	4.99	13.87	0.00904	0.00265	0.00738	PASS
Extreme（0℃）		12.23	11.23	14.30	0.00651	0.00597	0.00761	PASS
Extreme（-10℃）		8.87	17.87	17.27	0.00472	0.00950	0.00918	PASS
Extreme（-20℃）		4.07	5.07	1.48	0.00216	0.00270	0.00079	PASS
Extreme（-30℃）		9.12	17.12	11.96	0.00485	0.00911	0.00636	PASS
25℃	LV	6.86	9.86	1.68	0.00365	0.00524	0.00089	PASS
	HV	9.68	2.68	1.08	0.00515	0.00143	0.00057	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	15MHz							
Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	8.58	4.58	16.31	0.00457	0.00244	0.00867	PASS
Extreme（55℃）		9.11	16.11	8.20	0.00485	0.00857	0.00436	PASS
Extreme（50℃）		15.29	15.29	6.86	0.00813	0.00813	0.00365	PASS
Extreme（40℃）		7.06	10.06	17.29	0.00376	0.00535	0.00920	PASS
Extreme（30℃）		8.45	11.45	14.93	0.00450	0.00609	0.00794	PASS
Extreme（20℃）		3.29	14.29	9.93	0.00175	0.00760	0.00528	PASS
Extreme（10℃）		12.97	15.97	8.95	0.00690	0.00850	0.00476	PASS
Extreme（0℃）		1.04	5.04	12.07	0.00056	0.00268	0.00642	PASS
Extreme（-10℃）		10.75	14.75	5.78	0.00572	0.00785	0.00307	PASS
Extreme（-20℃）		1.73	9.73	10.87	0.00092	0.00518	0.00578	PASS
Extreme（-30℃）		15.49	5.49	11.78	0.00824	0.00292	0.00627	PASS
25℃	LV	10.69	15.69	6.70	0.00569	0.00835	0.00356	PASS
	HV	13.10	15.10	7.99	0.00697	0.00803	0.00425	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	20MHz							

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Temperature	Voltage	64QAM	16QAM	QPSK	64QAM	16QAM	QPSK	
Normal（25℃）	Normal	3.08	7.08	1.69	0.00164	0.00376	0.00090	PASS
Extreme（55℃）		8.58	15.58	14.31	0.00456	0.00829	0.00761	PASS
Extreme（50℃）		2.58	16.58	4.83	0.00137	0.00882	0.00257	PASS
Extreme（40℃）		11.40	5.40	6.80	0.00606	0.00287	0.00362	PASS
Extreme（30℃）		12.80	5.80	16.75	0.00681	0.00308	0.00891	PASS
Extreme（20℃）		6.91	9.91	11.14	0.00368	0.00527	0.00593	PASS
Extreme（10℃）		17.22	8.22	14.27	0.00916	0.00437	0.00759	PASS
Extreme（0℃）		10.59	1.59	3.67	0.00563	0.00084	0.00195	PASS
Extreme（-10℃）		2.70	8.70	13.61	0.00143	0.00463	0.00724	PASS
Extreme（-20℃）		15.52	6.52	14.19	0.00825	0.00347	0.00755	PASS
Extreme（-30℃）		4.85	4.85	15.63	0.00258	0.00258	0.00831	PASS
25℃	LV	3.42	9.42	12.33	0.00182	0.00501	0.00656	PASS
	HV	1.85	17.85	11.43	0.00098	0.00949	0.00608	PASS

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5.7 Spurious Emissions at Antenna Terminals

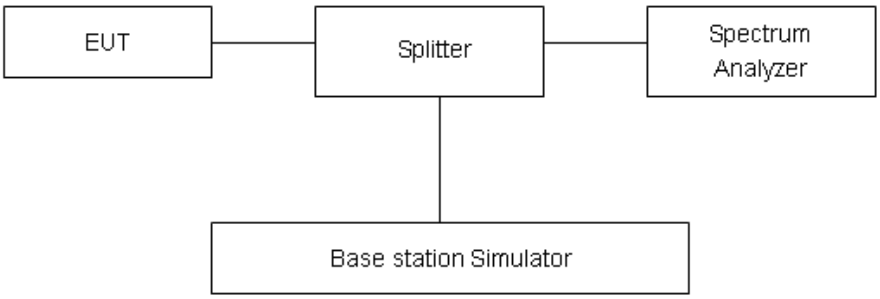
Ambient condition

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.
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup



Limits

LTE -4 Rule Part 27.53(h) specifies that “for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB..”

LTE -7/38 Rule Part 27.53(m) 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

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

Measurement Uncertainty

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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

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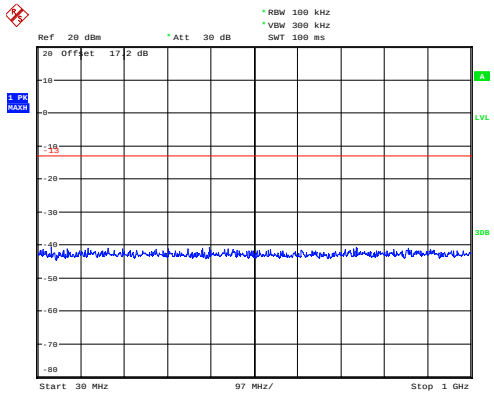
Test Result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

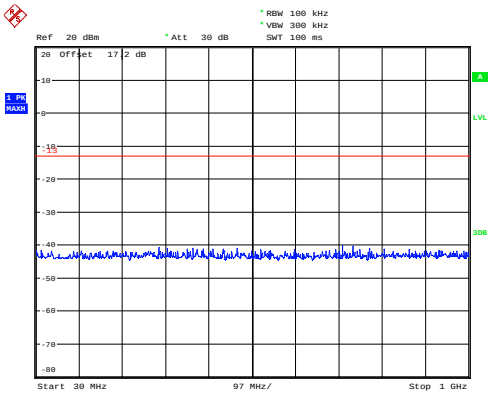
The signal beyond the limit is carrier.

WCDMA Band IV CH-Low 30MHz~1GHz



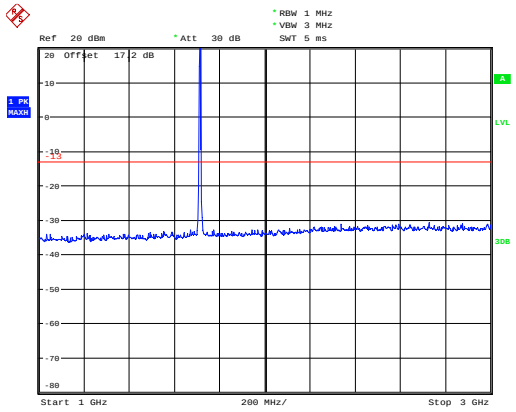
Date: 6.AUG.2019 16:14:51

WCDMA Band IV CH-Middle 30MHz~1GHz



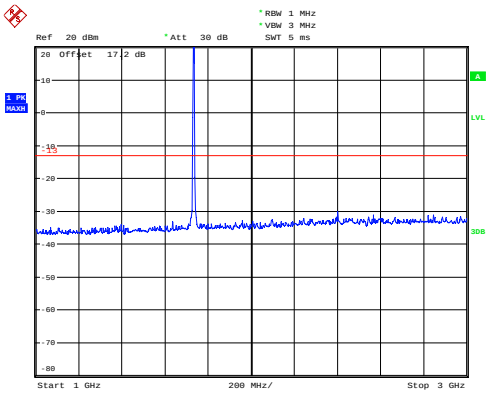
Date: 6.AUG.2019 16:15:04

WCDMA Band IV CH-Low 1GHz~3GHz



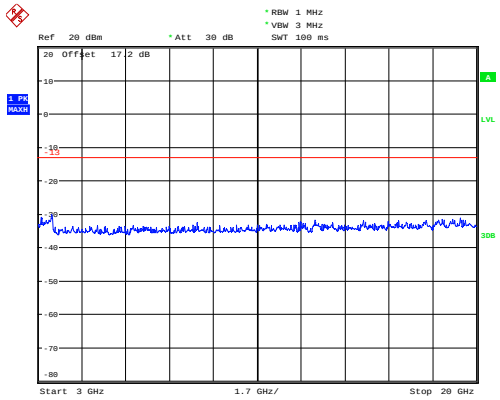
Date: 6.AUG.2019 16:33:11

WCDMA Band IV CH-Middle 1GHz~3GHz



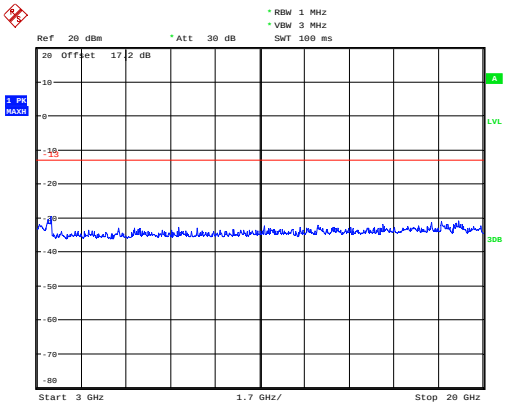
Date: 6.AUG.2019 16:34:06

WCDMA Band IV CH-Low 3GHz~20GHz



Date: 6.AUG.2019 16:59:13

WCDMA Band IV CH-Middle 3GHz~20GHz



Date: 6.AUG.2019 16:59:56

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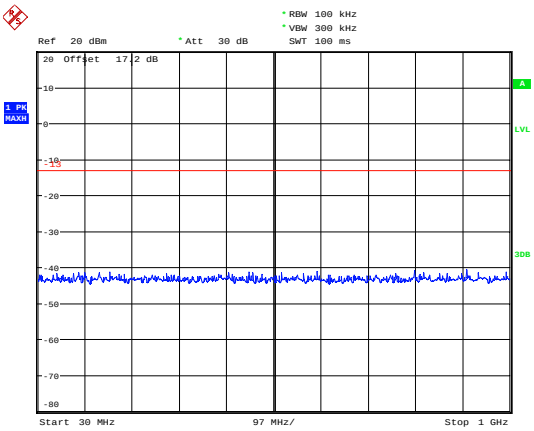
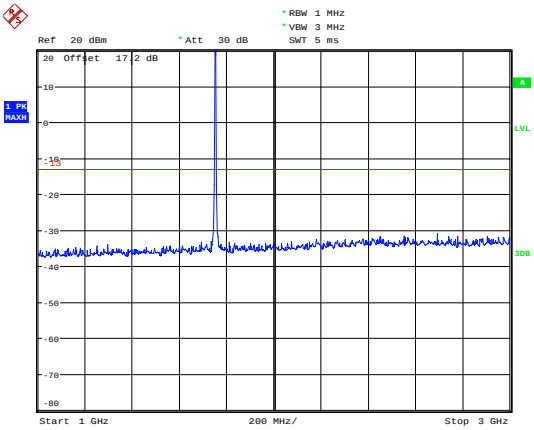
WCDMA Band IV CH-High 30MHz~1GHz



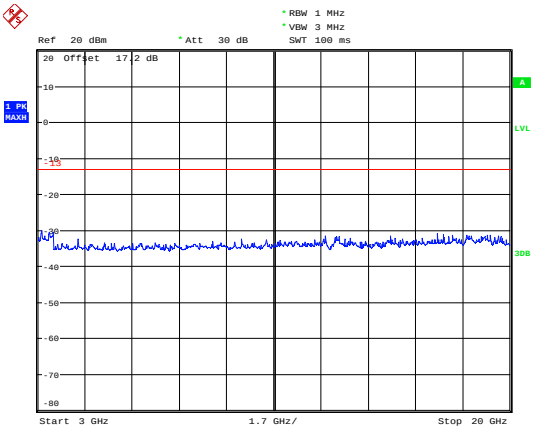
Date: 6.AUG.2019 16:15:24

WCDMA Band IV CH-High 1GHz~3GHz



Date: 6.AUG.2019 16:34:41

WCDMA Band IV CH-High 3GHz~20GHz



Date: 6.AUG.2019 17:02:22

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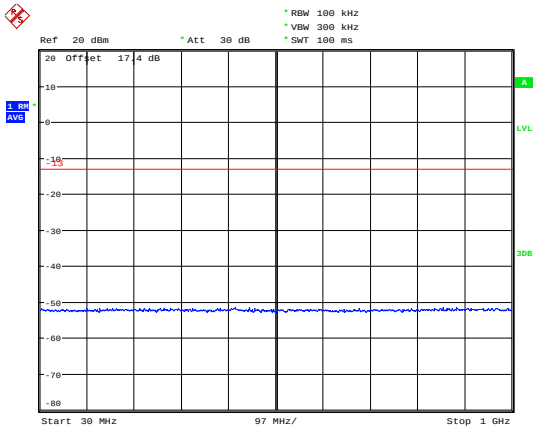
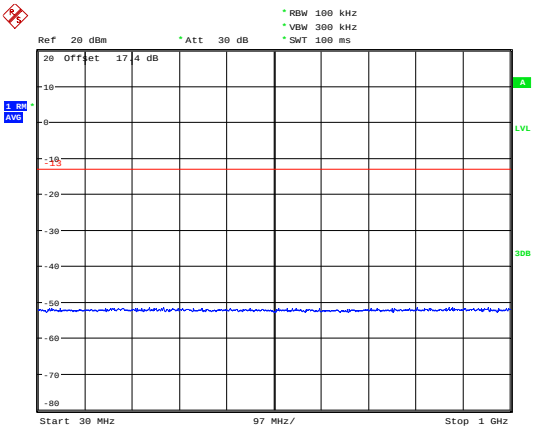
LTE Band 4 1.4MHz CH-Low 30MHz~1GHz



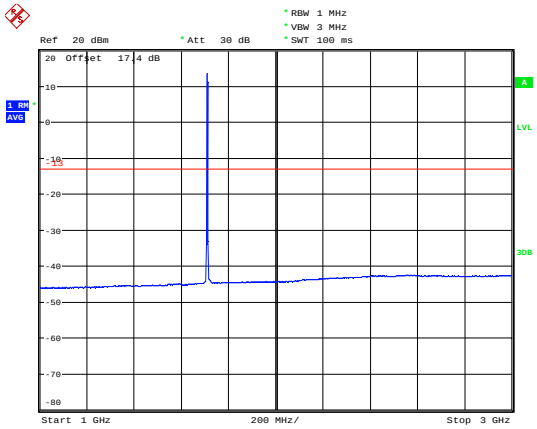
Date: 7.AUG.2019 21:17:32

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



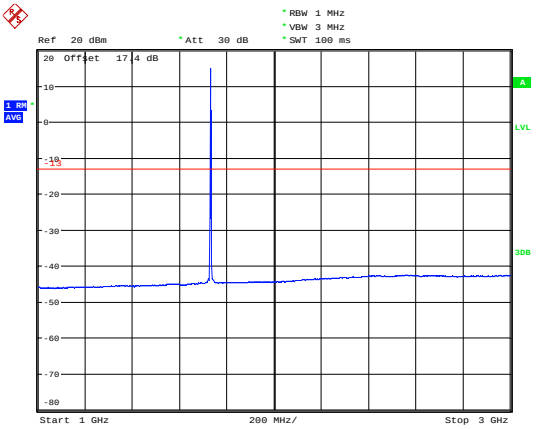
Date: 7.AUG.2019 21:17:44

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



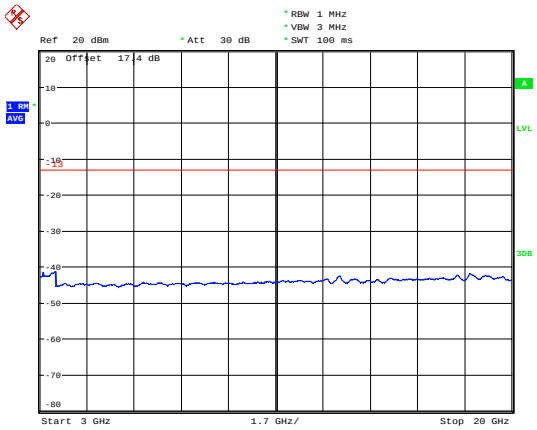
Date: 7.AUG.2019 21:27:20

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



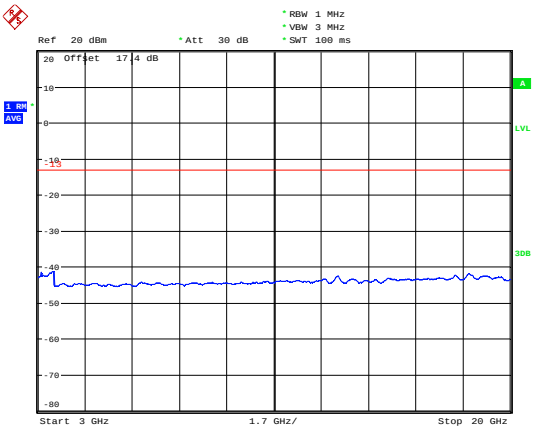
Date: 7.AUG.2019 21:27:43

LTE Band 4 1.4MHz CH-Low 3GHz~20GHz



Date: 7.AUG.2019 21:04:17

LTE Band 4 1.4MHz CH-Middle 3GHz~20GHz



Date: 7.AUG.2019 21:04:42

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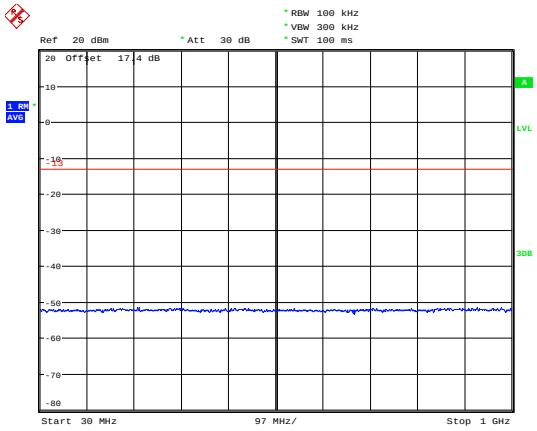
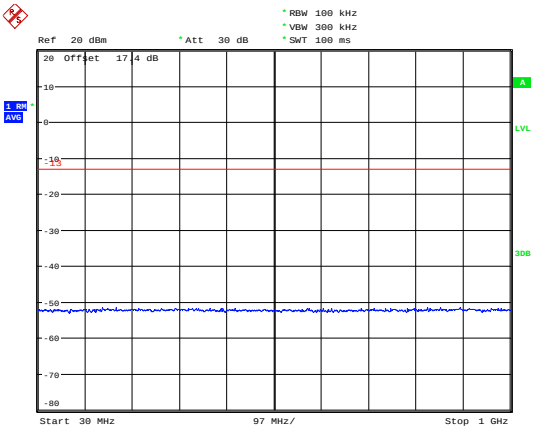
LTE Band 4 1.4MHz CH-High 30MHz~1GHz



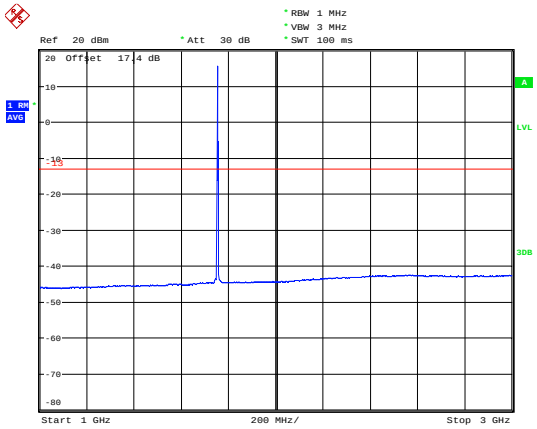
Date: 7.AUG.2019 21:18:38

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



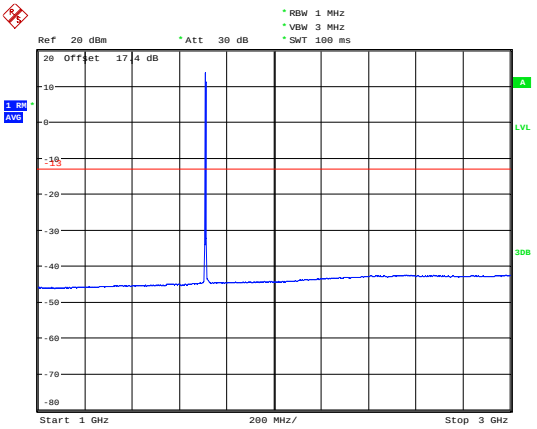
Date: 7.AUG.2019 21:19:27

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



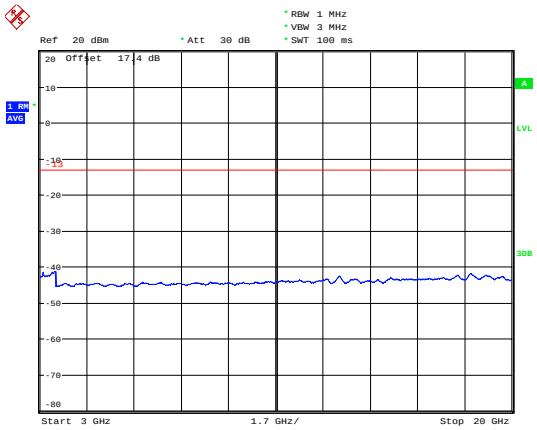
Date: 7.AUG.2019 21:28:13

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



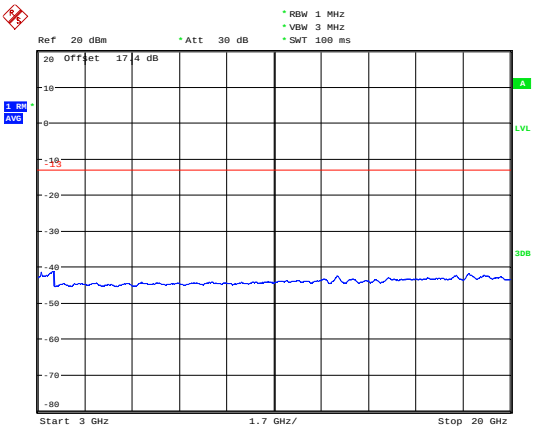
Date: 7.AUG.2019 21:29:26

LTE Band 4 1.4MHz CH-High 3GHz~20GHz



Date: 7.AUG.2019 21:05:07

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



Date: 7.AUG.2019 21:06:16

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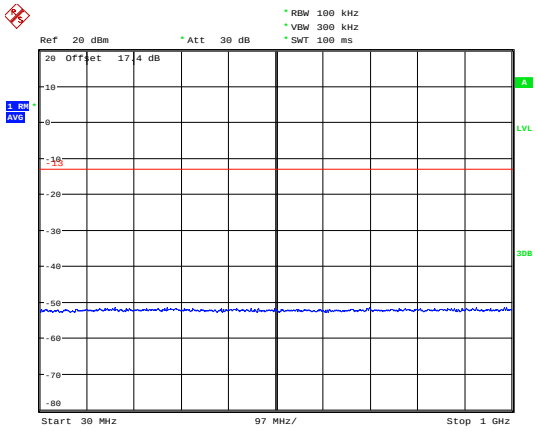
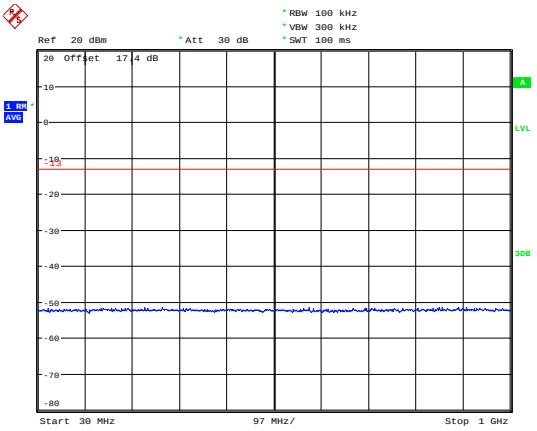
LTE Band 4 3MHz CH-Middle 30MHz~1GHz



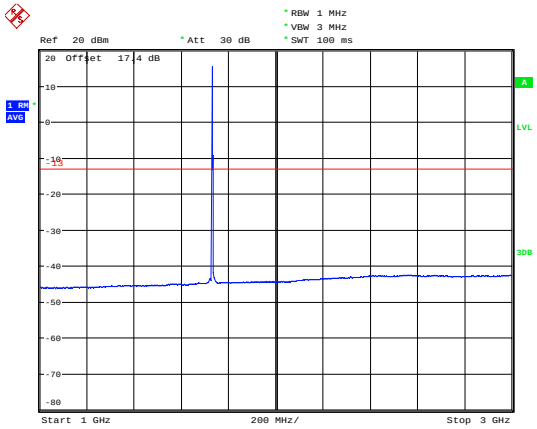
Date: 7.AUG.2019 21:19:47

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



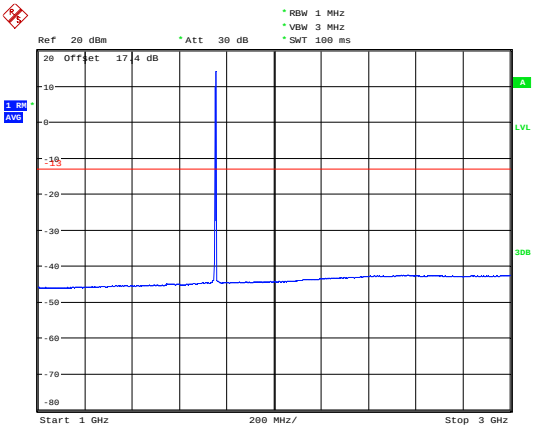
Date: 7.AUG.2019 21:20:15

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



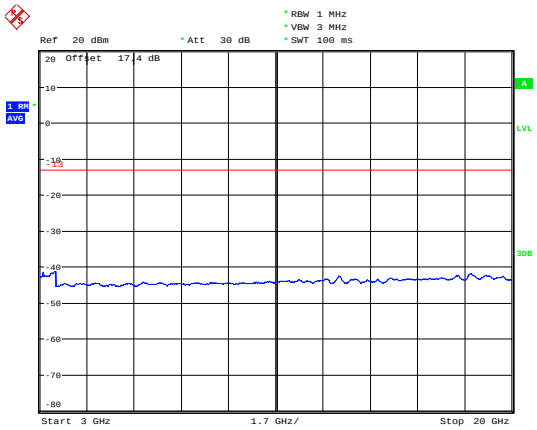
Date: 7.AUG.2019 21:29:54

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



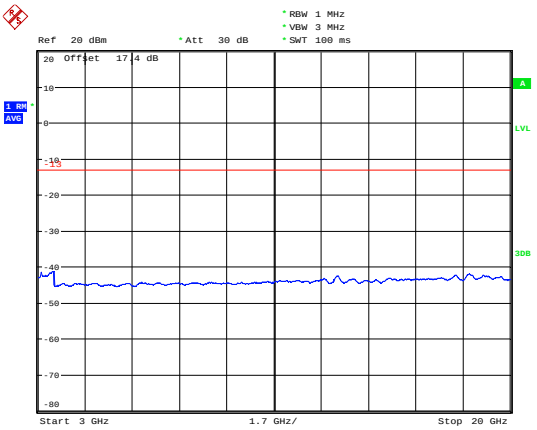
Date: 7.AUG.2019 21:30:39

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



Date: 7.AUG.2019 21:06:37

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



Date: 7.AUG.2019 21:07:10

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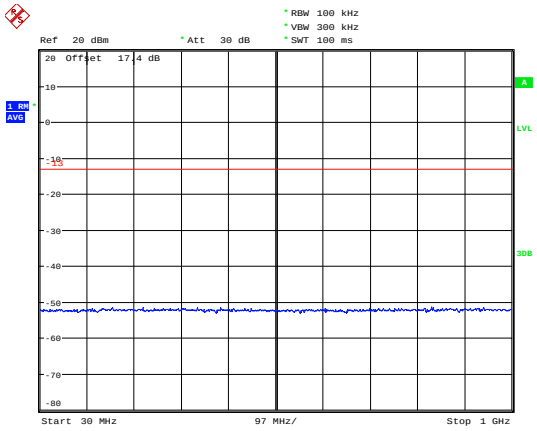
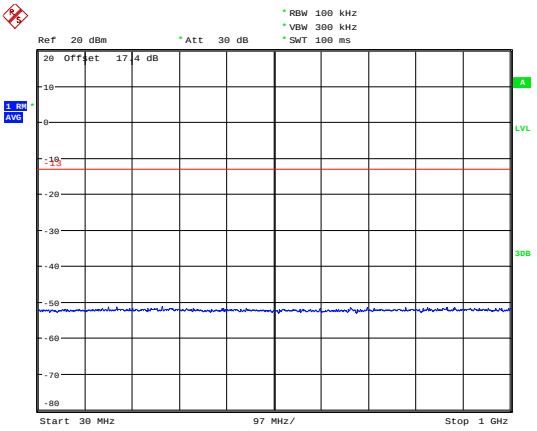
LTE Band 4 5MHz CH-Low 30MHz~1GHz



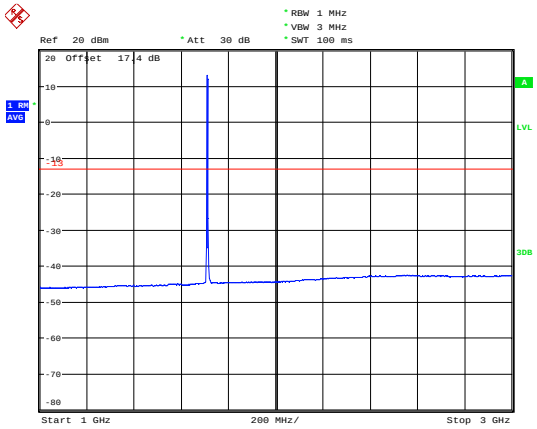
Date: 7.AUG.2019 21:20:57

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



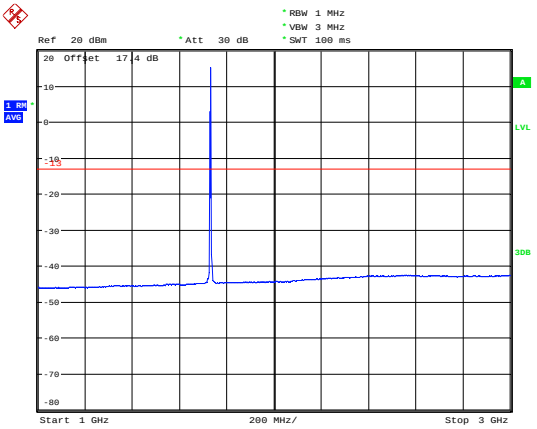
Date: 7.AUG.2019 21:21:31

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



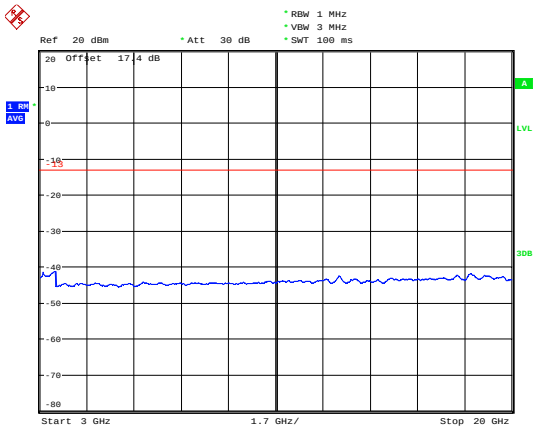
Date: 7.AUG.2019 21:31:06

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



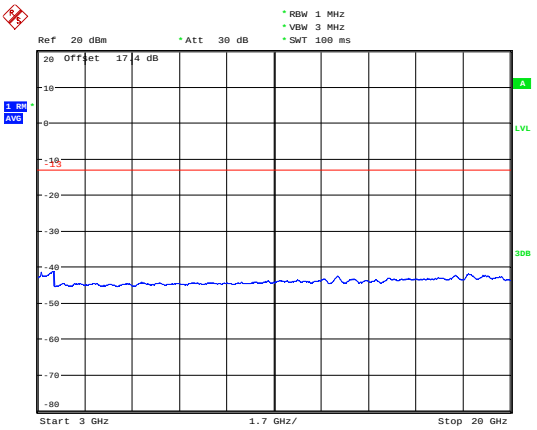
Date: 7.AUG.2019 21:31:42

LTE Band 4 5MHz CH-Low 3GHz~20GHz



Date: 7.AUG.2019 21:08:03

LTE Band 4 5MHz CH-Middle 3GHz~20GHz



Date: 7.AUG.2019 21:08:24

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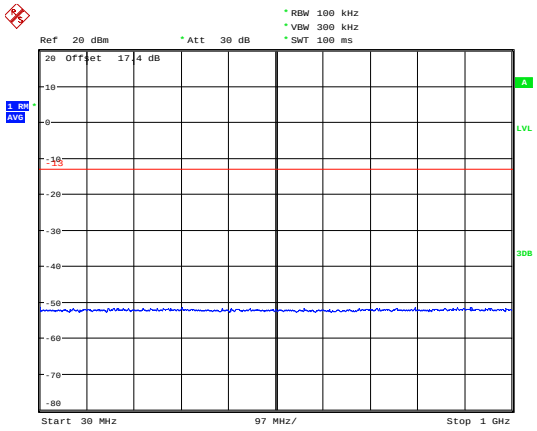
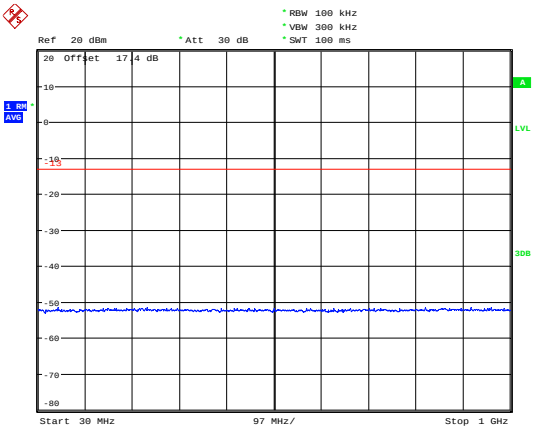
LTE Band 4 5MHz CH-High 30MHz~1GHz



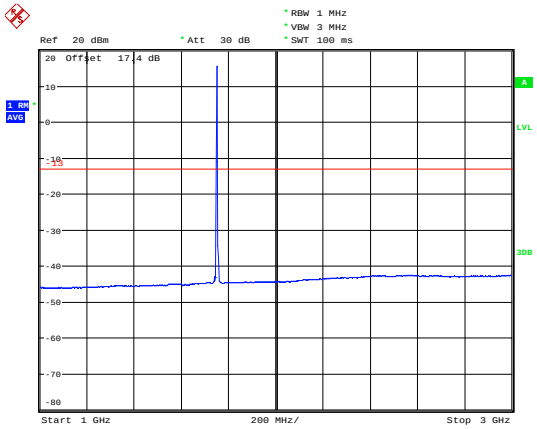
Date: 7.AUG.2019 21:21:54

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



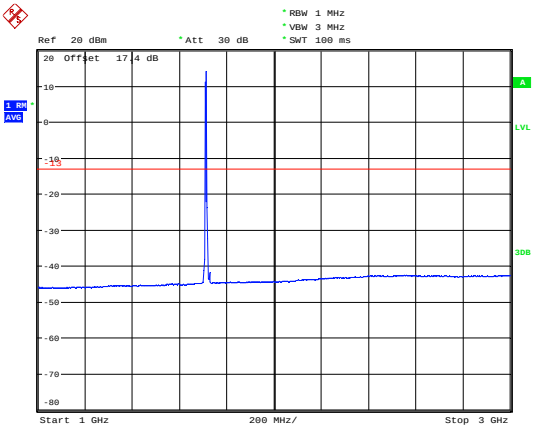
Date: 7.AUG.2019 21:22:30

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



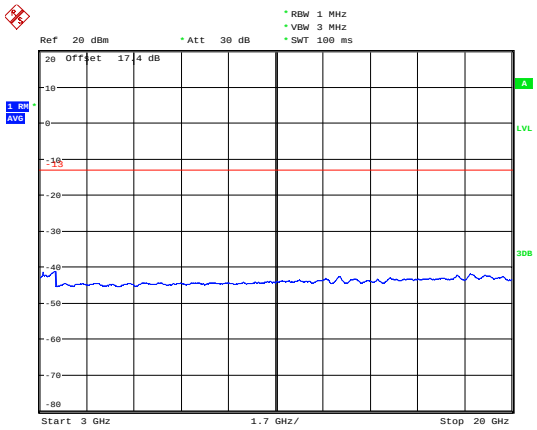
Date: 7.AUG.2019 21:32:17

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



Date: 7.AUG.2019 21:33:07

LTE Band 4 5MHz CH-High 3GHz~20GHz



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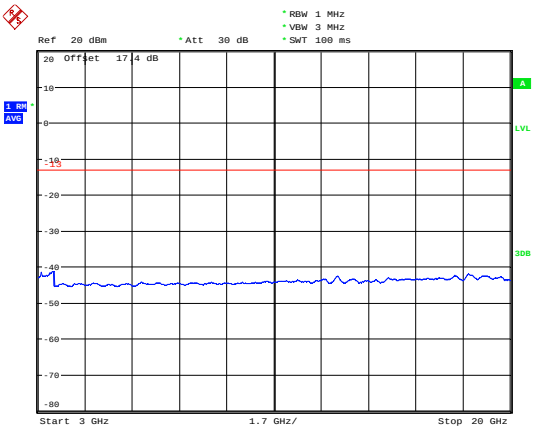
LTE Band 4 10MHz CH-Low 3GHz~20GHz



Date: 7.AUG.2019 21:09:31

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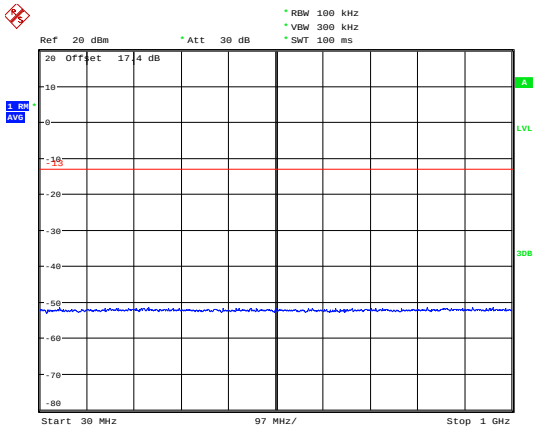
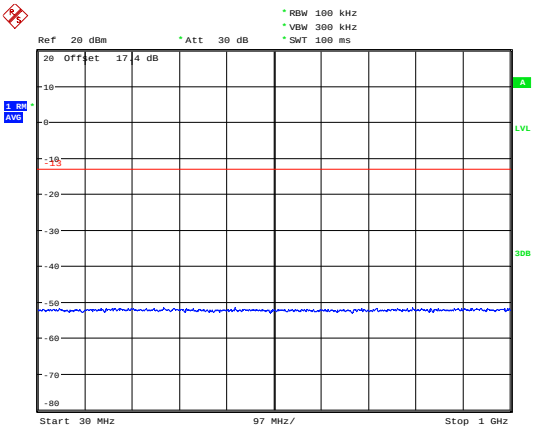
LTE Band 4 10MHz CH-Middle 30MHz~1GHz



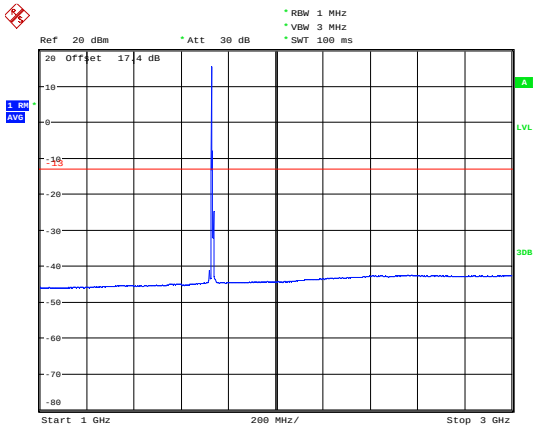
Date: 7.AUG.2019 21:22:30

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



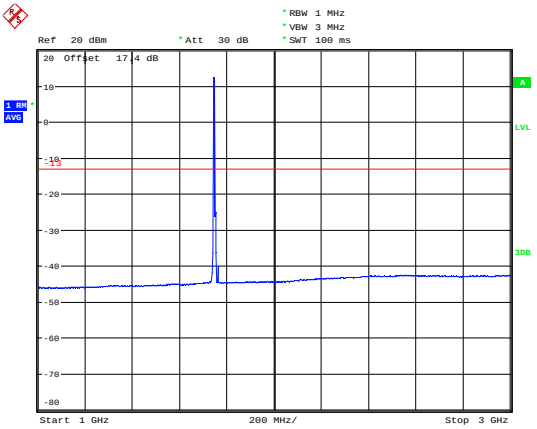
Date: 7.AUG.2019 21:23:34

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



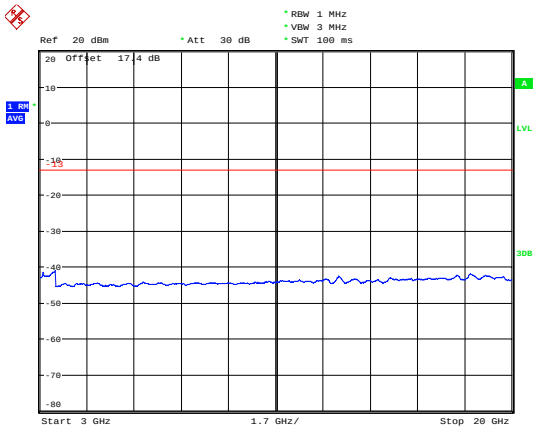
Date: 7.AUG.2019 21:33:37

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



Date: 7.AUG.2019 21:34:32

LTE Band 4 10MHz CH-Middle 3GHz~20GHz



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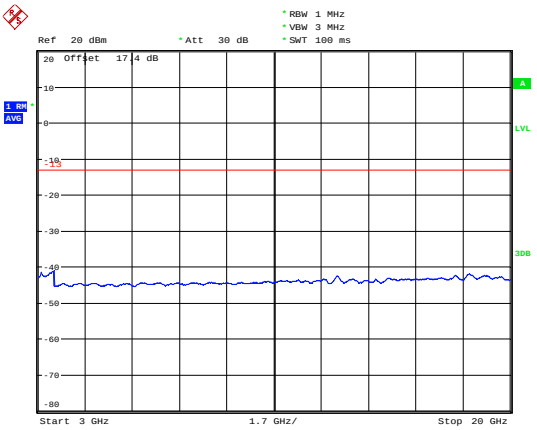
LTE Band 4 10MHz CH-High 3GHz~20GHz



Date: 7.AUG.2019 21:10:21

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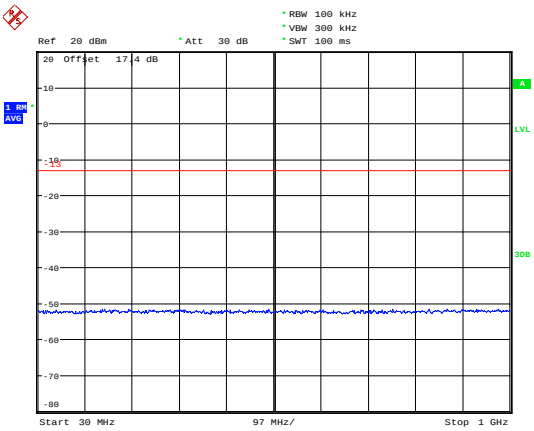
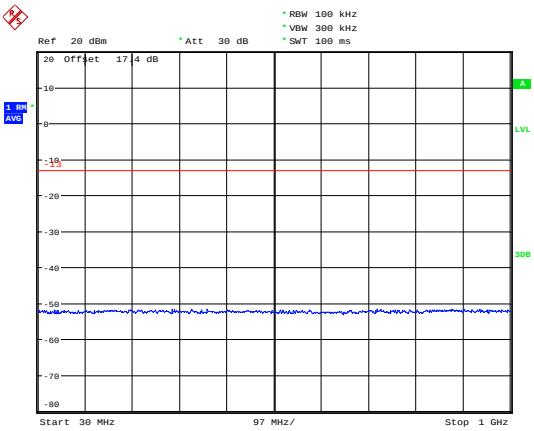
LTE Band 4 15MHz CH-Low 30MHz~1GHz



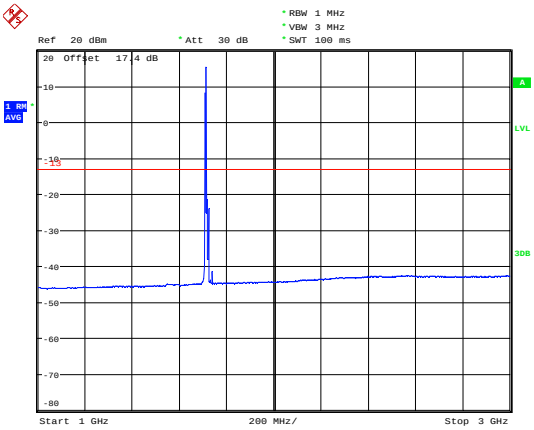
Date: 7.AUG.2019 21:24:09

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



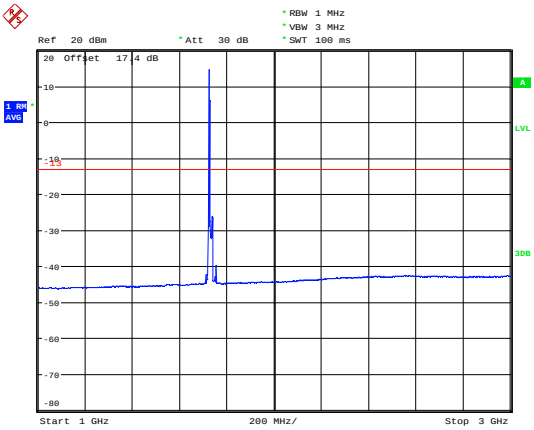
Date: 7.AUG.2019 21:24:31

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



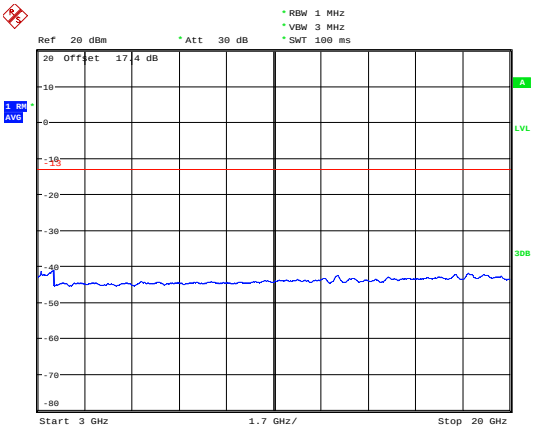
Date: 7.AUG.2019 21:35:04

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



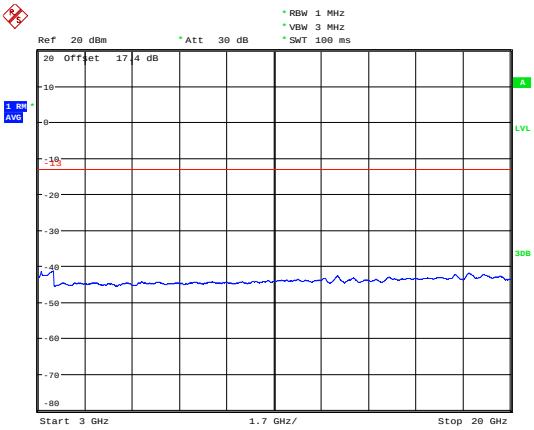
Date: 7.AUG.2019 21:35:31

LTE Band 4 15MHz CH-Low 3GHz~20GHz



Date: 7.AUG.2019 21:11:44

LTE Band 4 15MHz CH-Middle 3GHz~20GHz



Date: 7.AUG.2019 21:12:16

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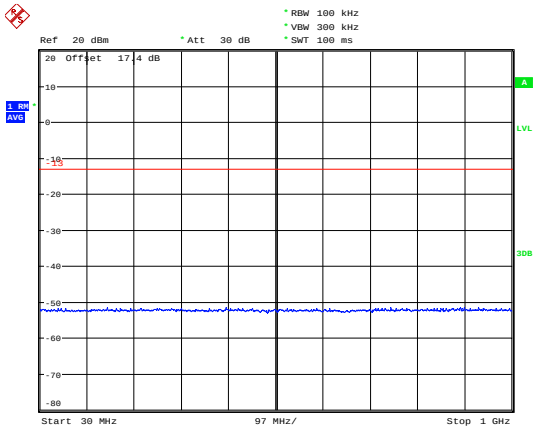
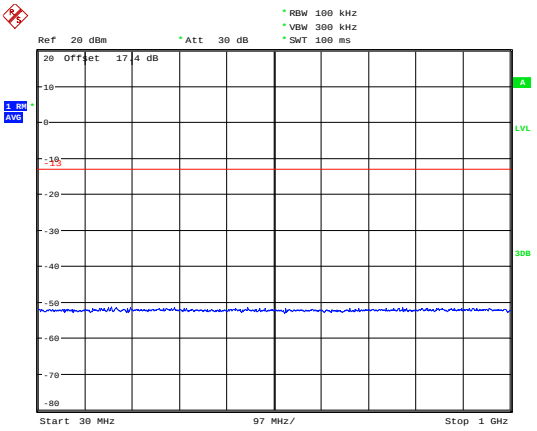
LTE Band 4 15MHz CH-High 30MHz~1GHz



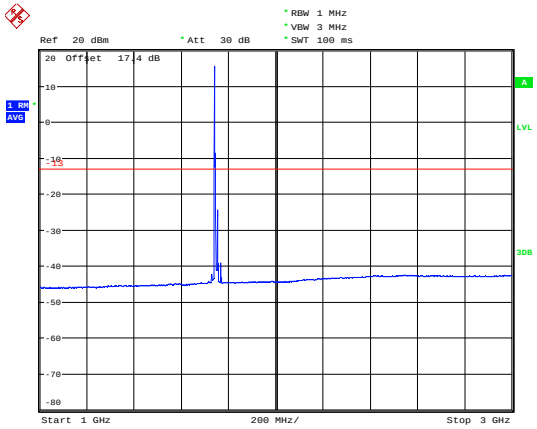
Date: 7.AUG.2019 21:24:56

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



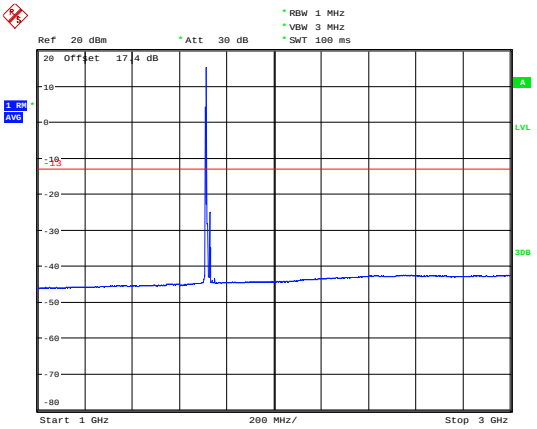
Date: 7.AUG.2019 21:25:10

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



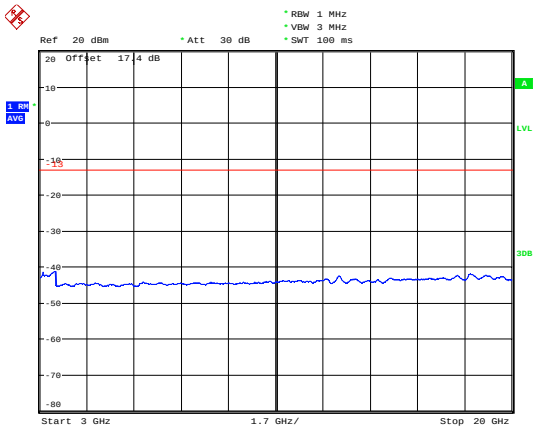
Date: 7.AUG.2019 21:36:15

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



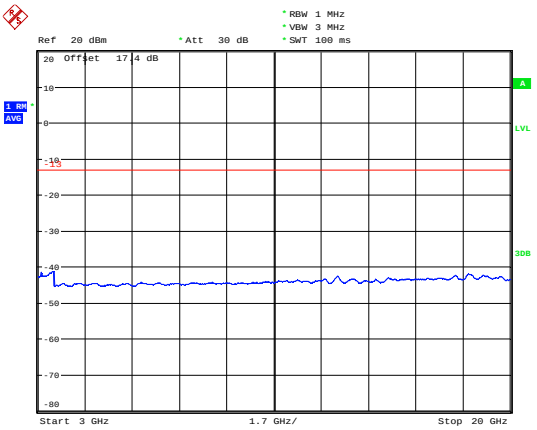
Date: 7.AUG.2019 21:37:53

LTE Band 4 15MHz CH-High 3GHz~20GHz



Date: 7.AUG.2019 21:12:30

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



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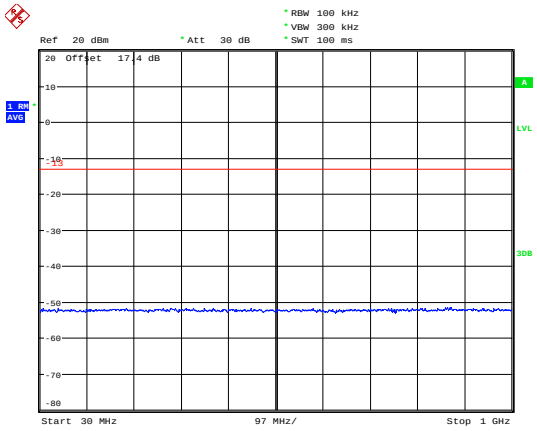
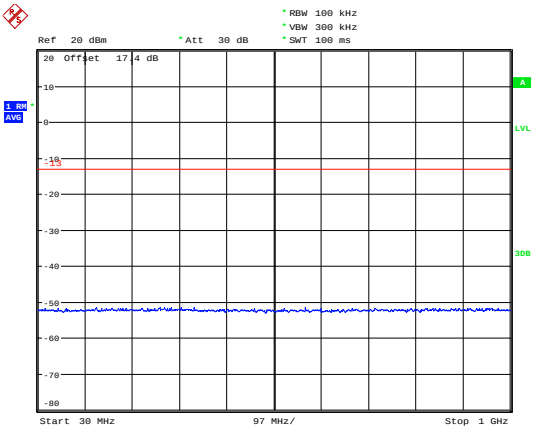
LTE Band 4 20MHz CH-Middle 30MHz~1GHz



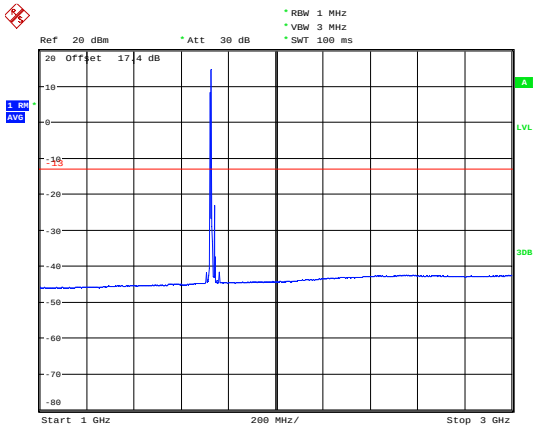
Date: 7.AUG.2019 21:25:24

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



Date: 7.AUG.2019 21:25:44

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



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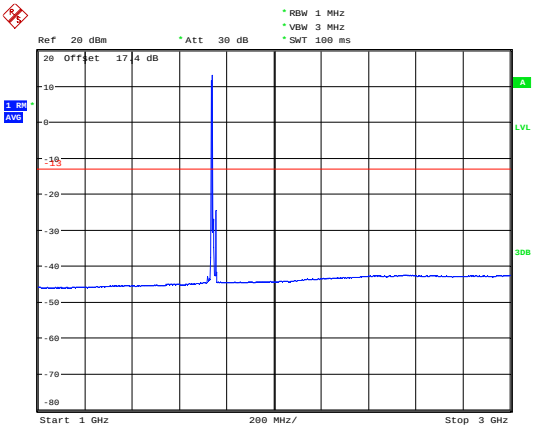
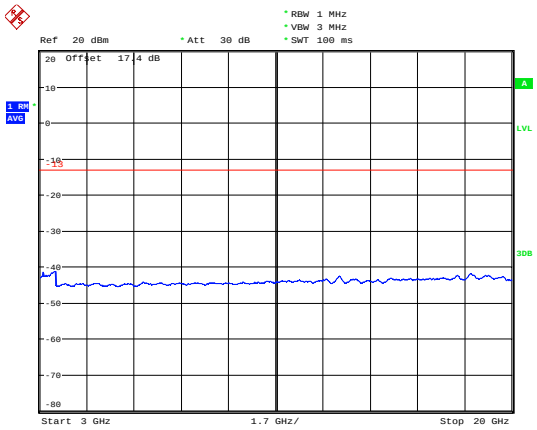
LTE Band 4 20MHz CH-High 1GHz~3GHz



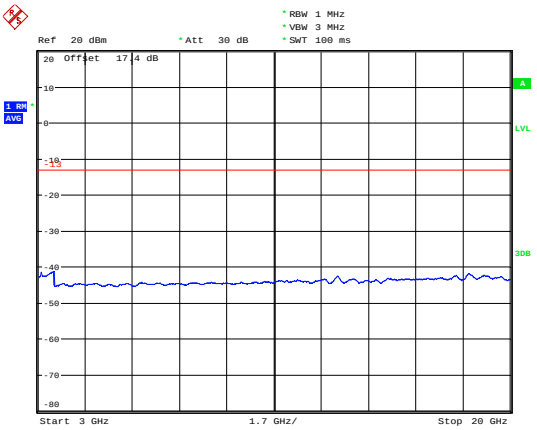
Date: 7.AUG.2019 21:39:02

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



Date: 7.AUG.2019 21:13:19

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



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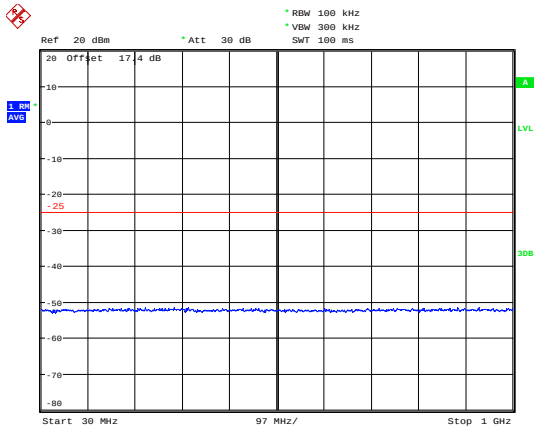
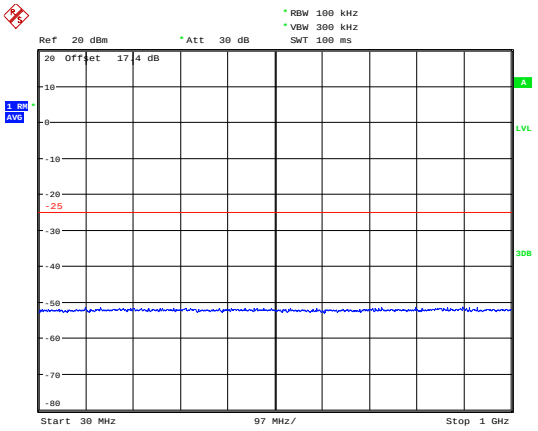
LTE Band 7 5MHz CH-Low 30MHz~1GHz



Date: 7.AUG.2019 22:29:27

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



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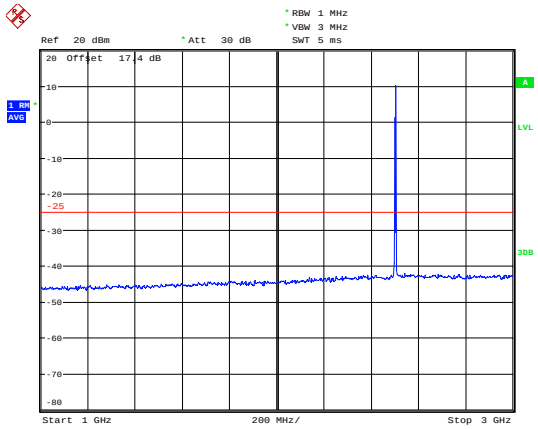
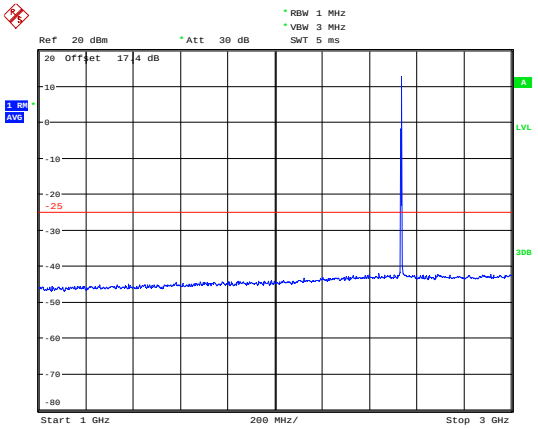
LTE Band 7 5MHz CH-Low 1GHz~3GHz



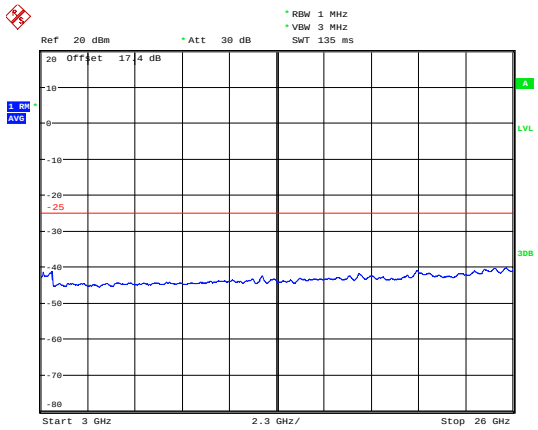
Date: 7.AUG.2019 22:15:36

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



Date: 7.AUG.2019 22:15:51

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



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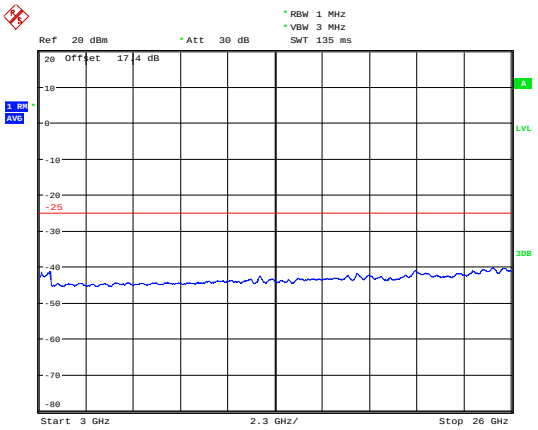
LTE Band 7 5MHz CH-Middle 3GHz~26GHz



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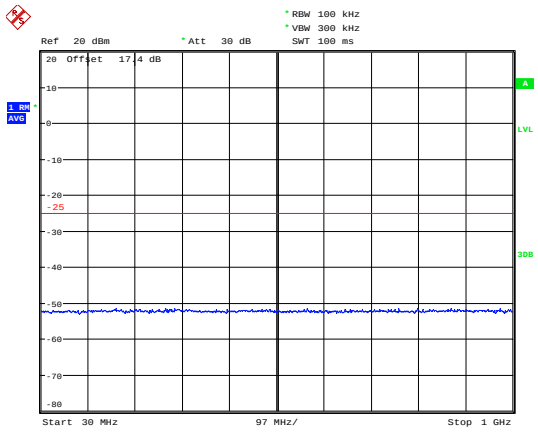
LTE Band 7 5MHz CH-High 30MHz~1GHz



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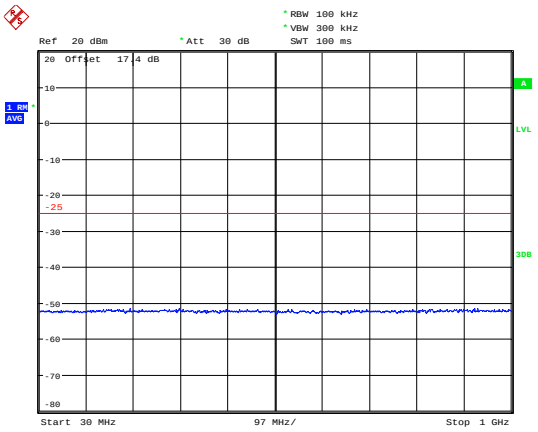
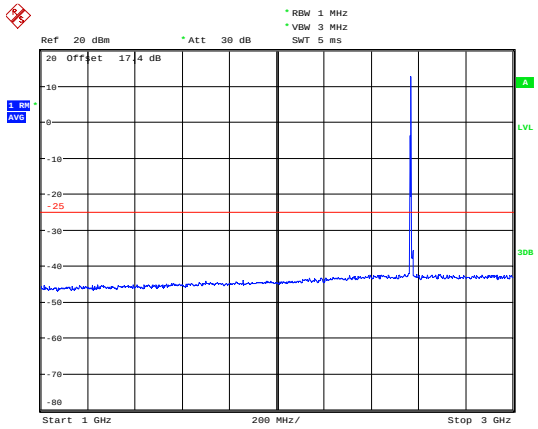
LTE Band 7 10MHz CH-Low 30MHz~1GHz



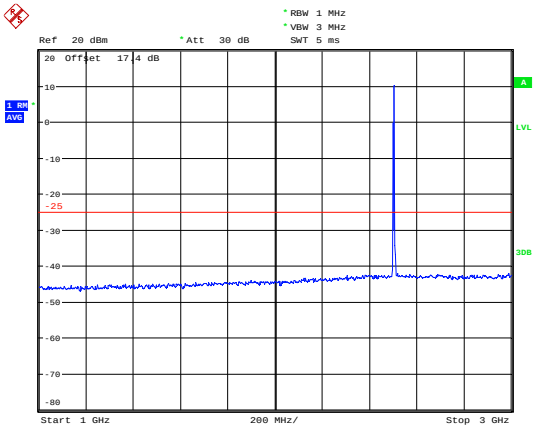
Date: 7.AUG.2019 22:29:59

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



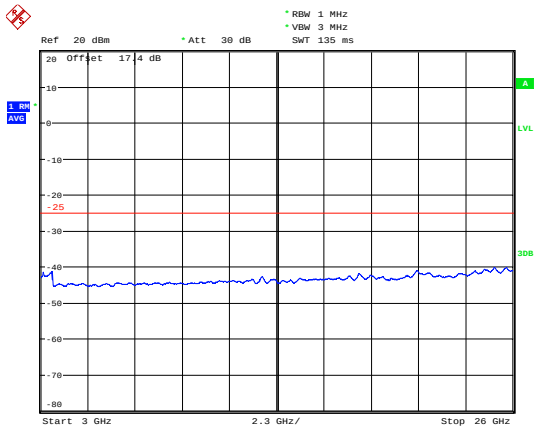
Date: 7.AUG.2019 22:16:09

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



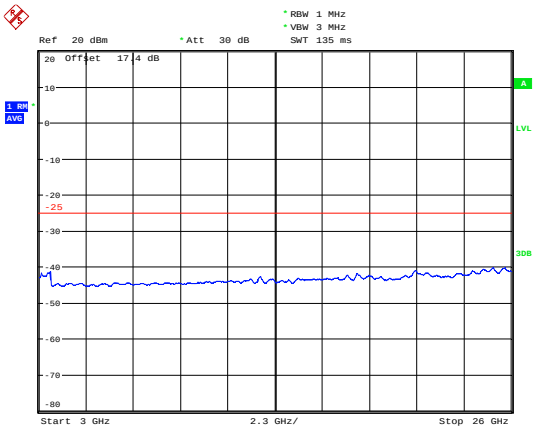
Date: 7.AUG.2019 22:16:51

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



Date: 7.AUG.2019 22:24:03

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



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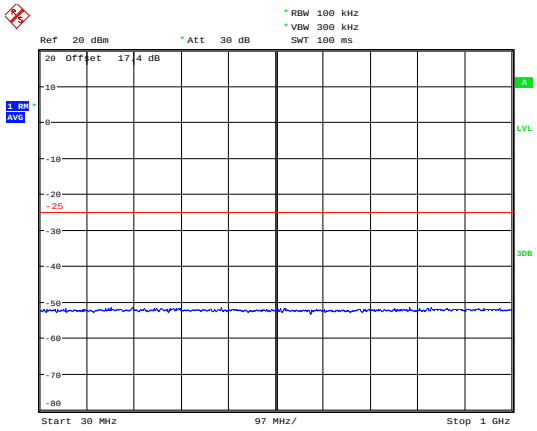
LTE Band 7 10MHz CH-Middle 30MHz~1GHz



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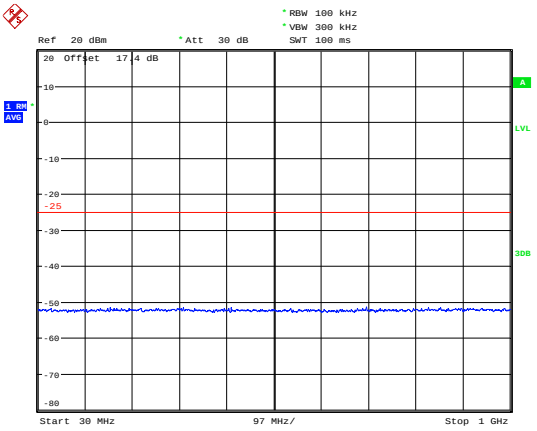
LTE Band 7 10MHz CH-High 30MHz~1GHz



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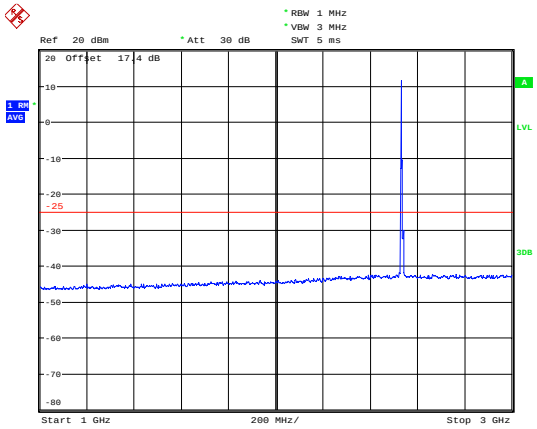
LTE Band 7 10MHz CH-Middle 1GHz~3GHz



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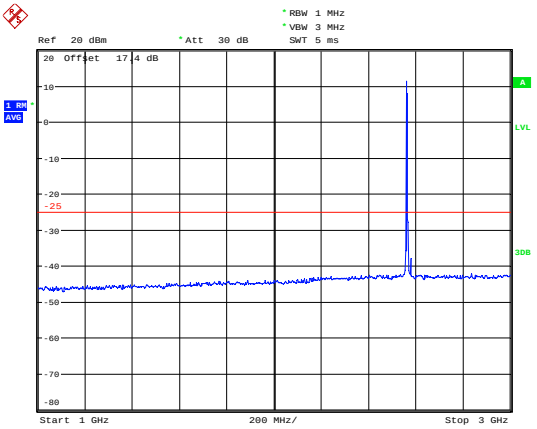
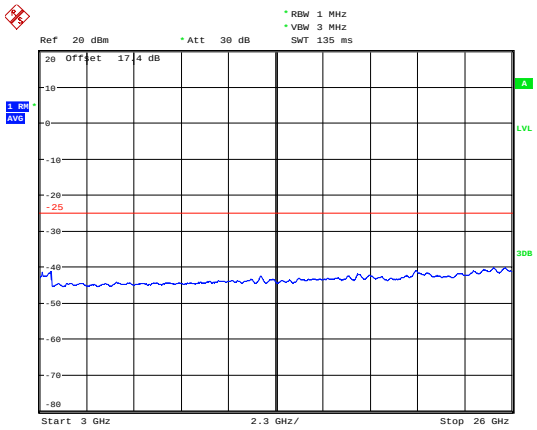
LTE Band 7 10MHz CH-High 1GHz~3GHz



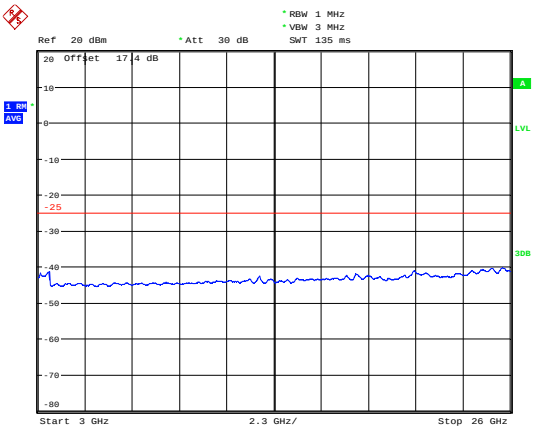
Date: 7.AUG.2019 22:17:33

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



Date: 7.AUG.2019 22:25:01

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



Date: 7.AUG.2019 22:25:17

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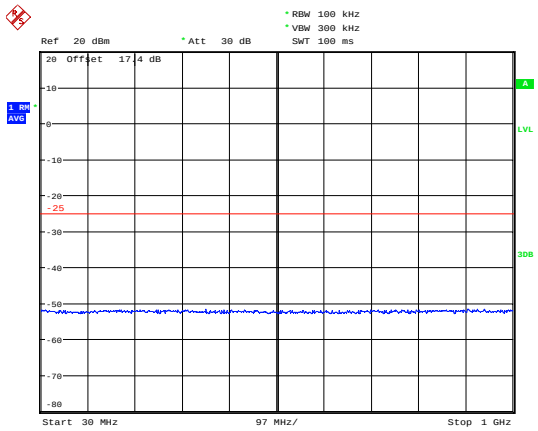
LTE Band 7 15MHz CH-Low 30MHz~1GHz



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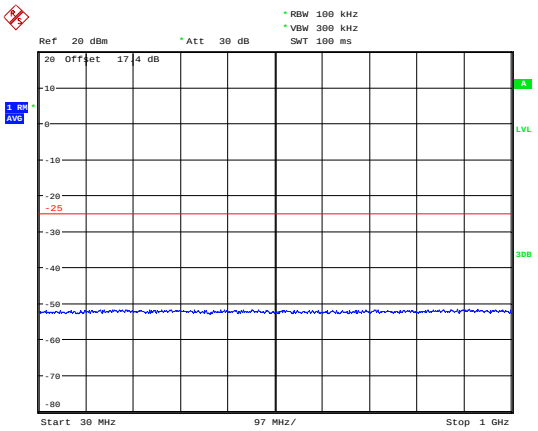
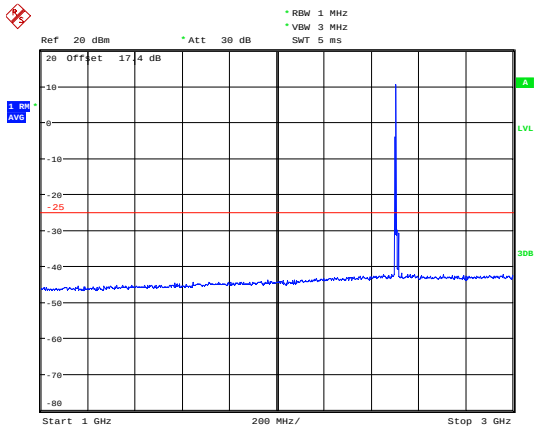
LTE Band 7 15MHz CH-Middle 30MHz~1GHz



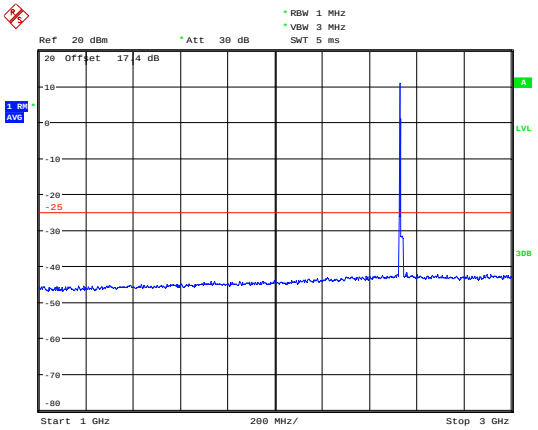
Date: 7.AUG.2019 22:31:26

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



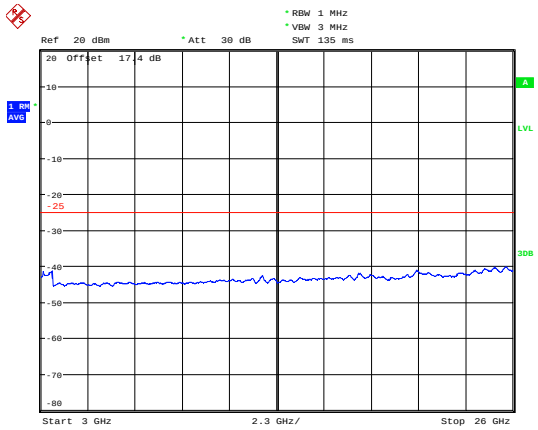
Date: 7.AUG.2019 22:18:15

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



Date: 7.AUG.2019 22:19:21

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



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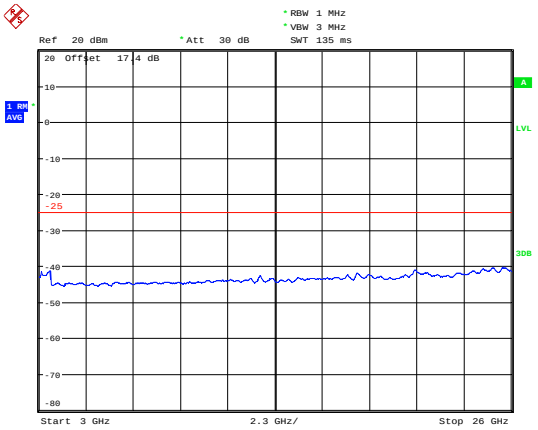
LTE Band 7 15MHz CH-Middle 3GHz~26GHz



Date: 7.AUG.2019 22:26:03

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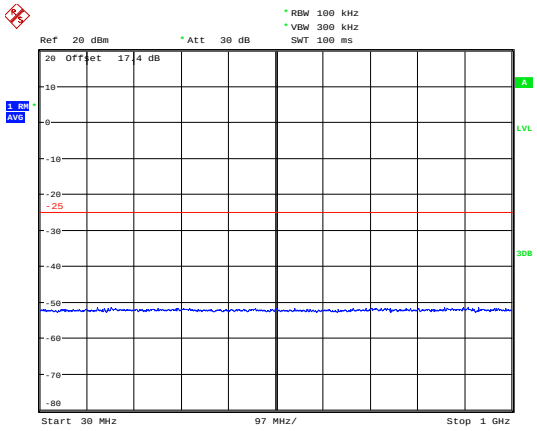
LTE Band 7 15MHz CH-High 30MHz~1GHz



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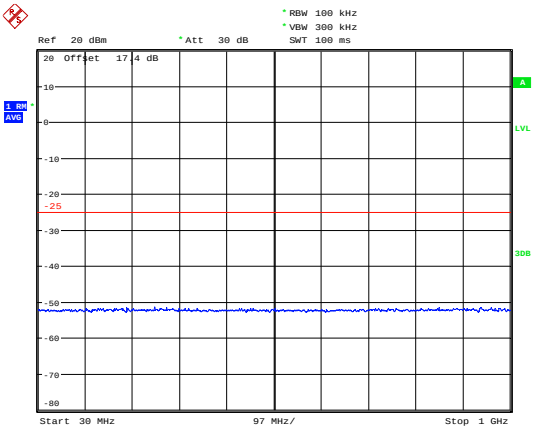
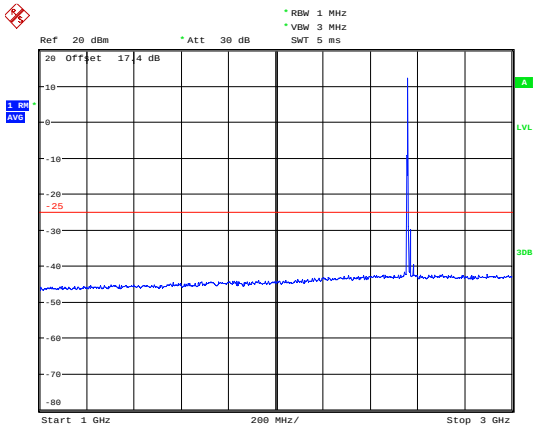
LTE Band 7 20MHz CH-Low 30MHz~1GHz



Date: 7.AUG.2019 22:32:45

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



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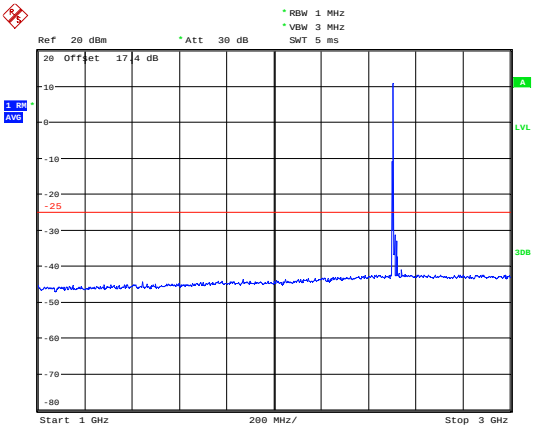
LTE Band 7 20MHz CH-Low 1GHz~3GHz



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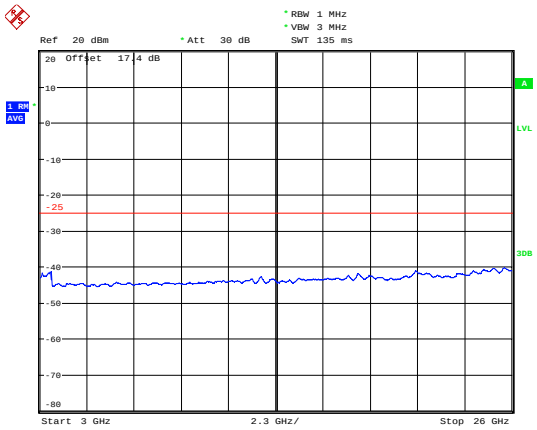
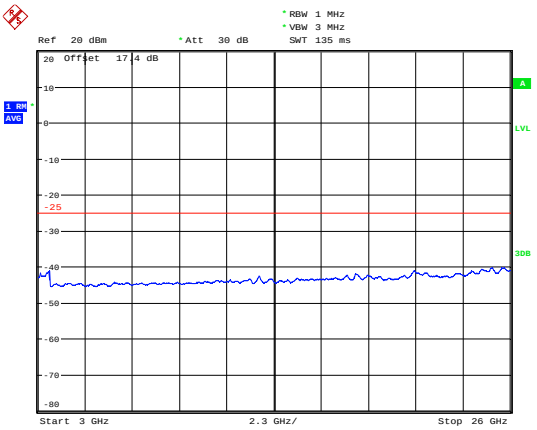
LTE Band 7 15MHz CH-High 3GHz~26GHz



Date: 7.AUG.2019 22:26:26

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



Date: 7.AUG.2019 22:27:00

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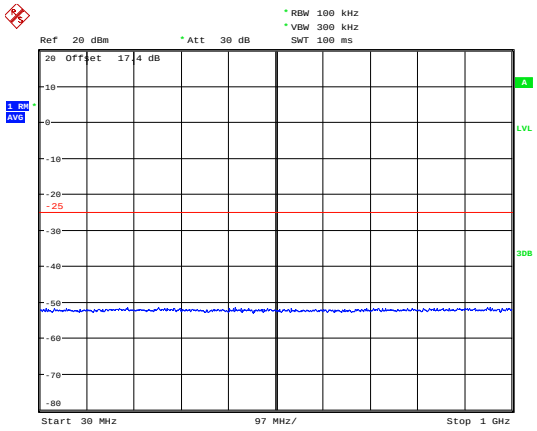
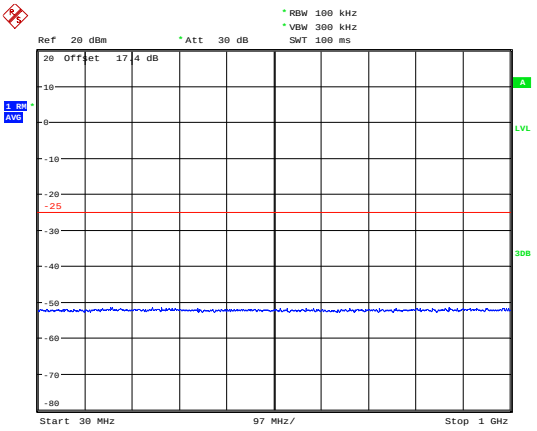
LTE Band 7 20MHz CH-Middle 30MHz~1GHz



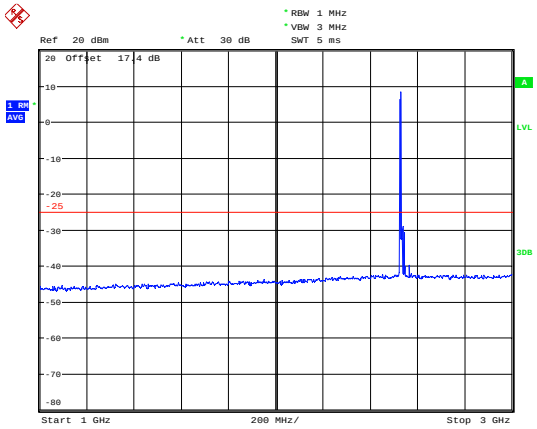
Date: 7.AUG.2019 22:33:04

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



Date: 7.AUG.2019 22:33:19

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



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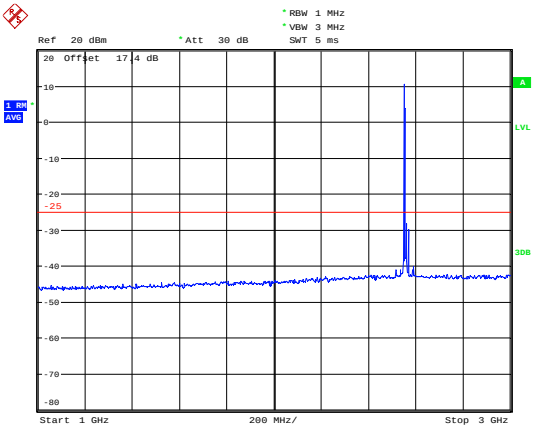
LTE Band 7 20MHz CH-High 1GHz~3GHz



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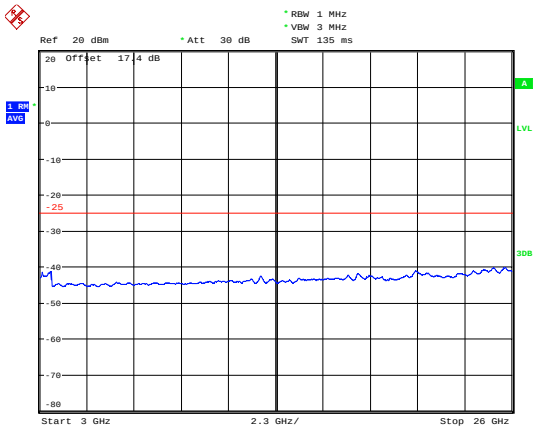
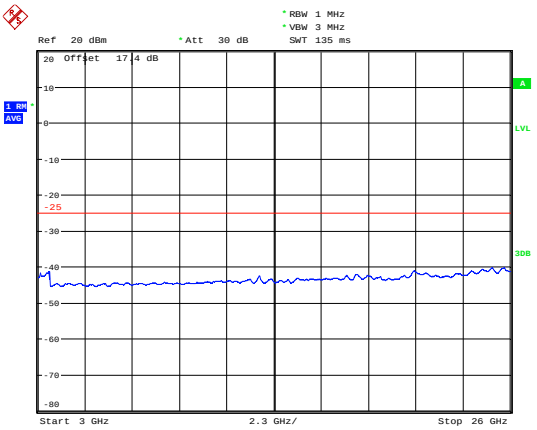
LTE Band 7 20MHz CH-Middle 3GHz~26GHz



Date: 7.AUG.2019 22:27:13

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



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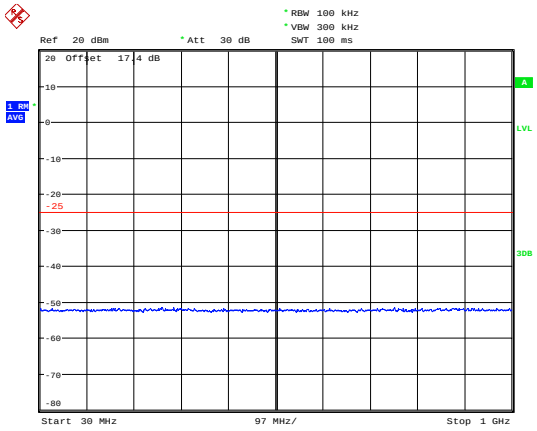
LTE Band 38 5MHz CH-Low 30MHz~1GHz



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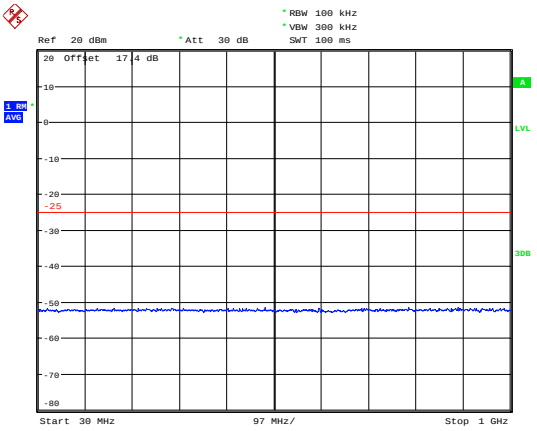
LTE Band 38 5MHz CH-Middle 30MHz~1GHz



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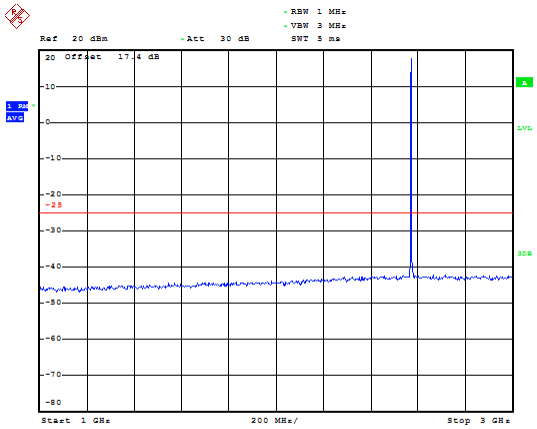
LTE Band 38 5MHz CH-Low 1GHz~3GHz



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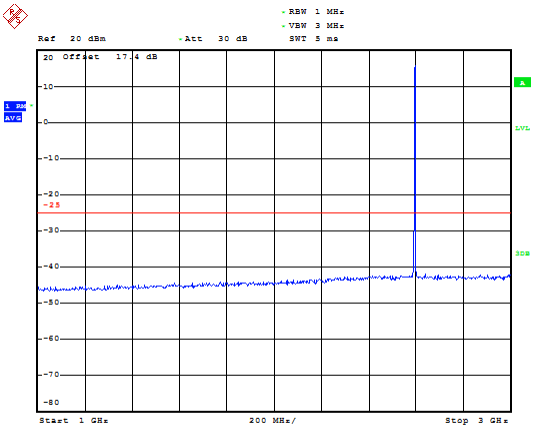
LTE Band 38 5MHz CH-Middle 1GHz~3GHz



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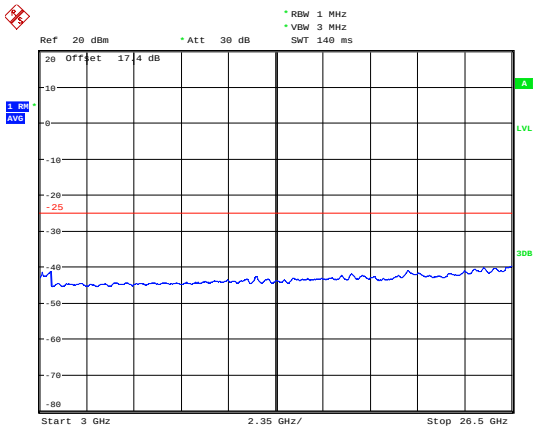
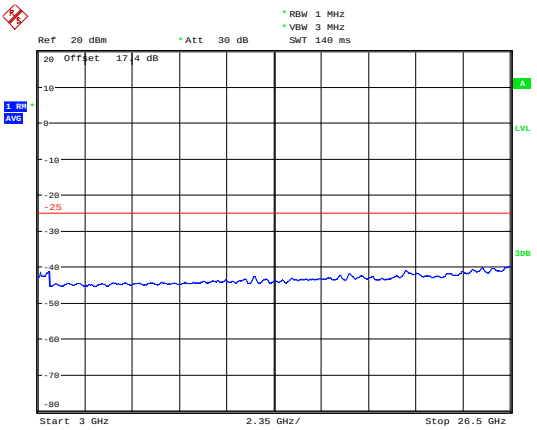
LTE Band 38 5MHz CH-Low 3GHz~26.5GHz



Date: 7.AUG.2019 22:42:11

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



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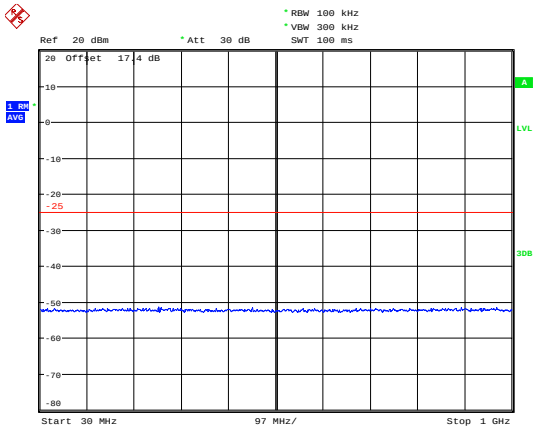
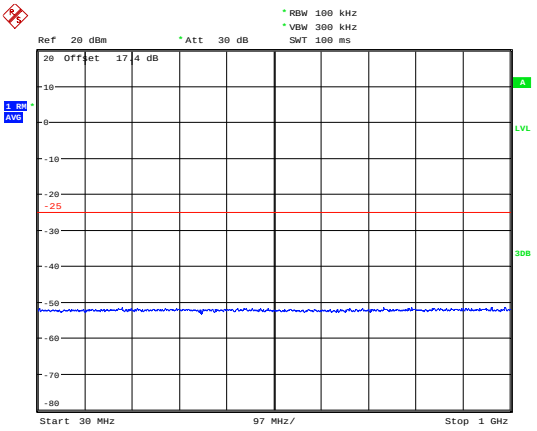
LTE Band 38 5MHz CH-High 30MHz~1GHz



Date: 7.AUG.2019 22:35:59

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



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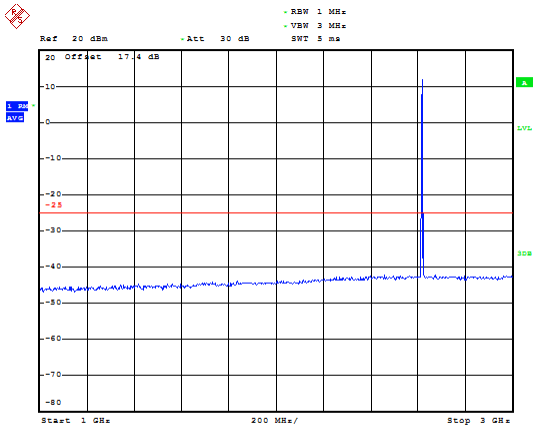
LTE Band 38 5MHz CH-High 1GHz~3GHz



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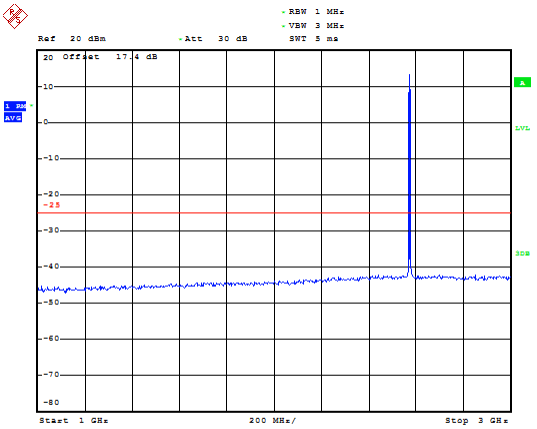
LTE Band 38 10MHz CH-Low 1GHz~3GHz



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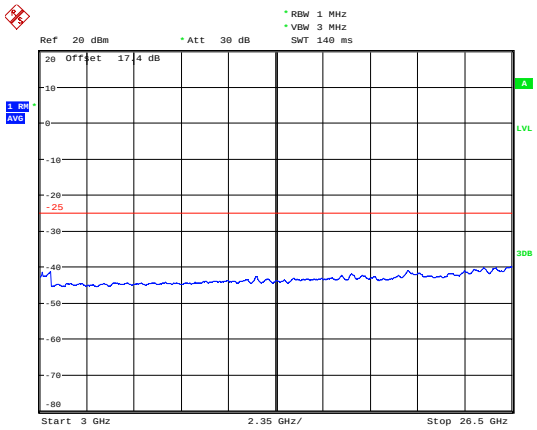
LTE Band 38 5MHz CH-High 3GHz~26.5GHz



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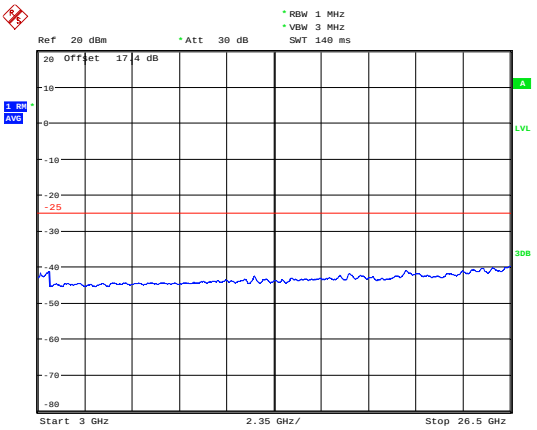
LTE Band 38 10MHz CH-Low 3GHz~26.5GHz



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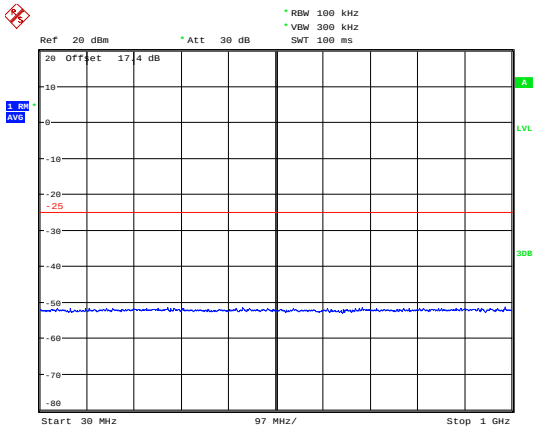
LTE Band 38 10MHz CH-Middle 30MHz~1GHz



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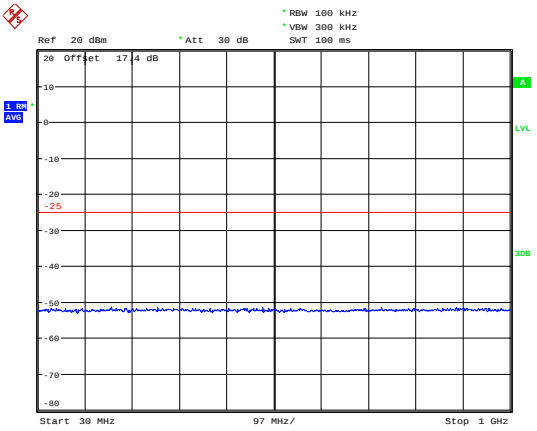
LTE Band 38 10MHz CH-High 30MHz~1GHz



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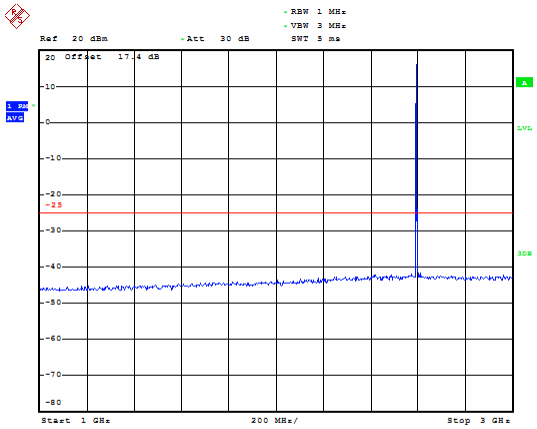
LTE Band 38 10MHz CH-Middle 1GHz~3GHz



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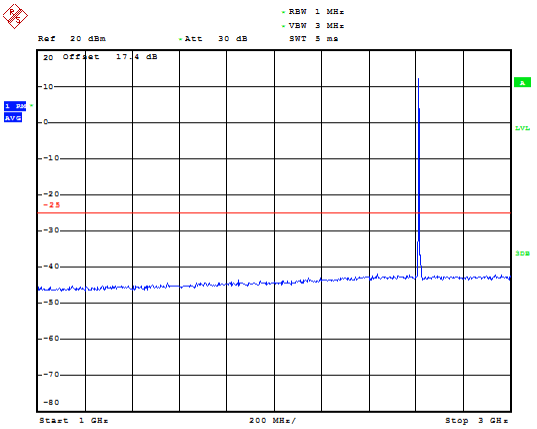
LTE Band 38 10MHz CH-High 1GHz~3GHz



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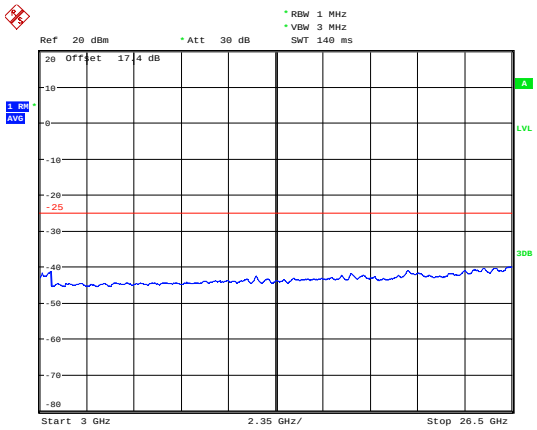
LTE Band 38 10MHz CH-Middle 3GHz~26.5GHz



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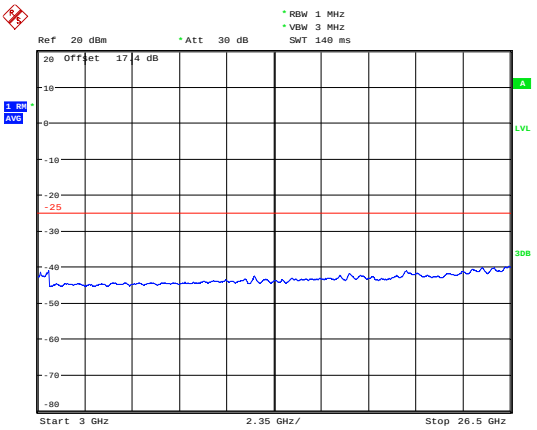
LTE Band 38 10MHz CH-High 3GHz~26.5GHz



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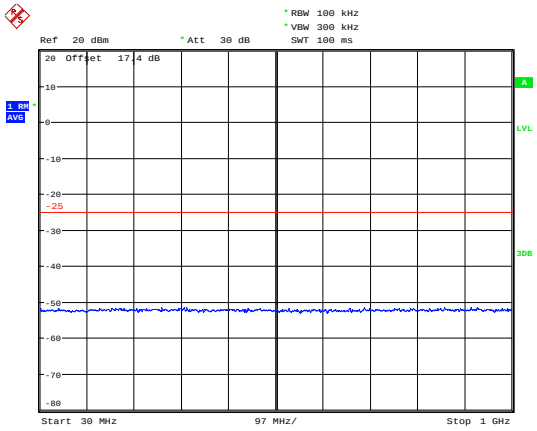
LTE Band 38 15MHz CH-Low 30MHz~1GHz



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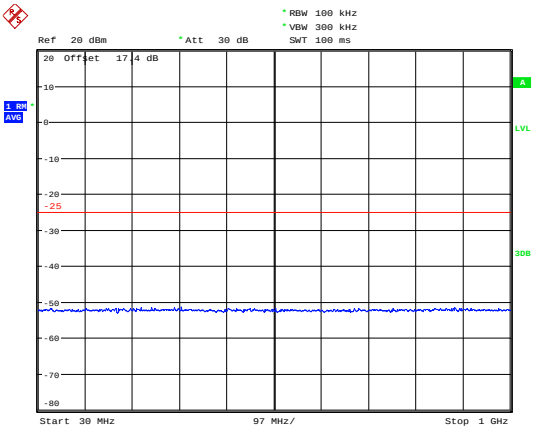
LTE Band 38 15MHz CH-Middle 30MHz~1GHz



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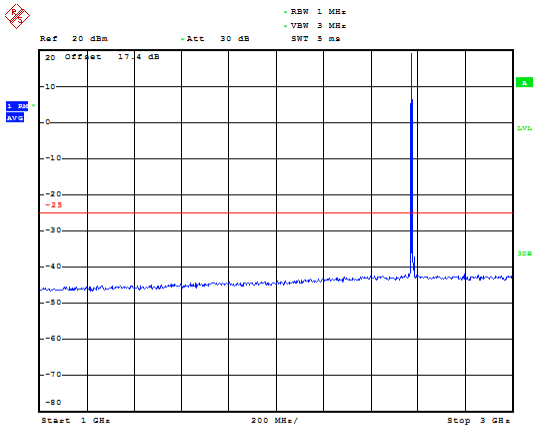
LTE Band 38 15MHz CH-Low 1GHz~3GHz



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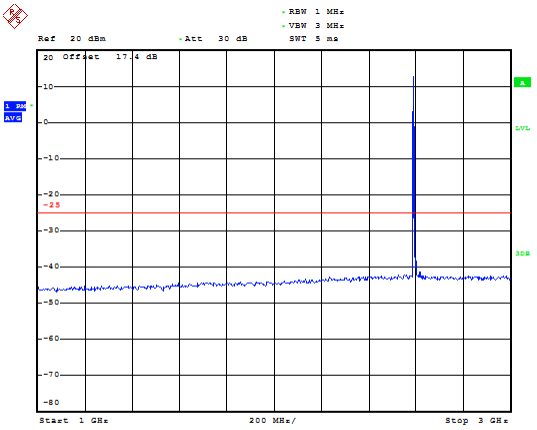
LTE Band 38 15MHz CH-Middle 1GHz~3GHz



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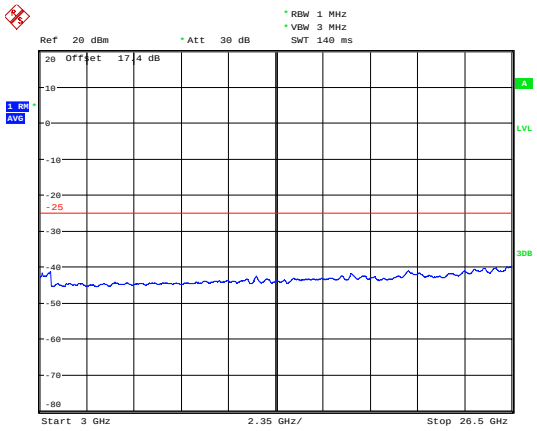
LTE Band 38 15MHz CH-Low 3GHz~26.5GHz



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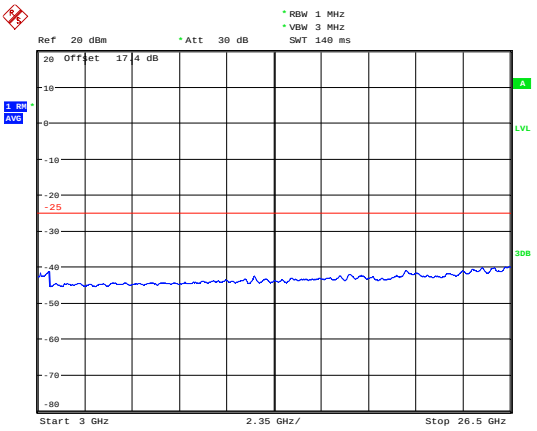
LTE Band 38 15MHz CH-Middle 3GHz~26.5GHz



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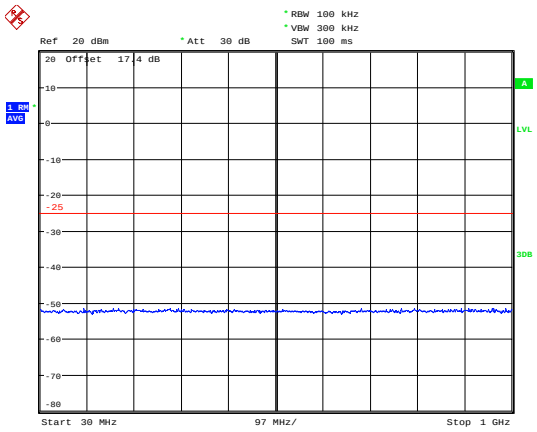
LTE Band 38 15MHz CH-High 30MHz~1GHz



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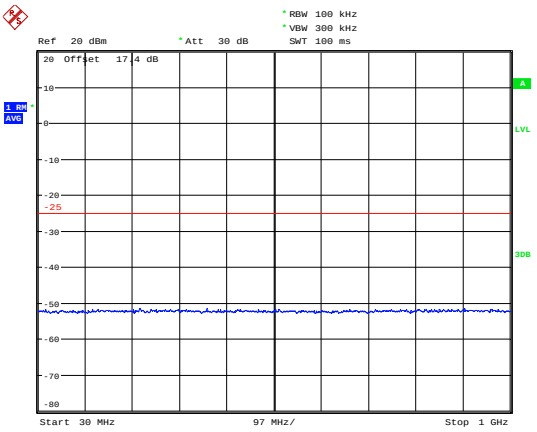
LTE Band 38 20MHz CH-Low 30MHz~1GHz



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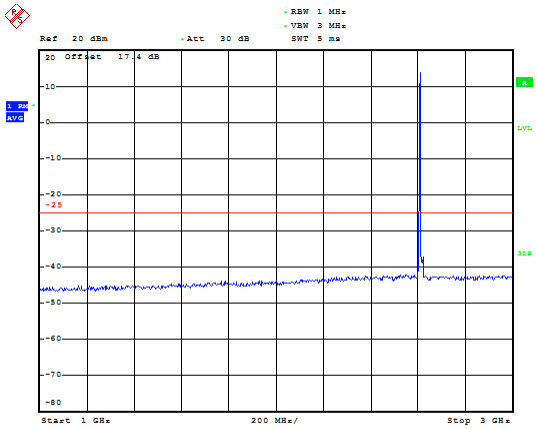
LTE Band 38 15MHz CH-High 1GHz~3GHz



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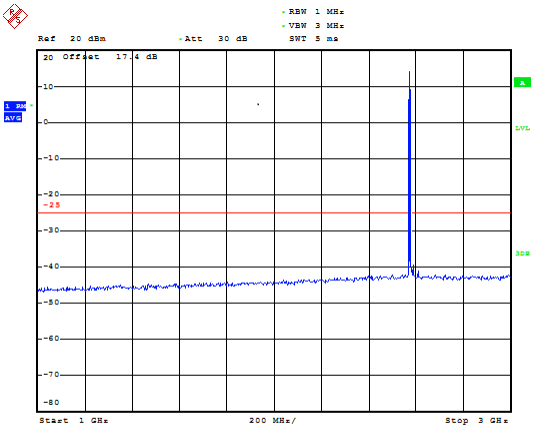
LTE Band 38 20MHz CH-Low 1GHz~3GHz



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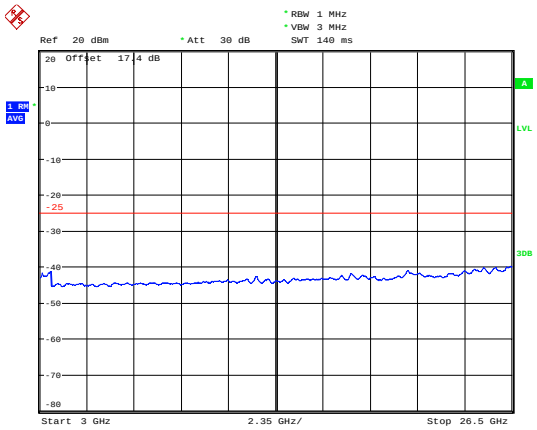
LTE Band 38 15MHz CH-High 3GHz~26.5GHz



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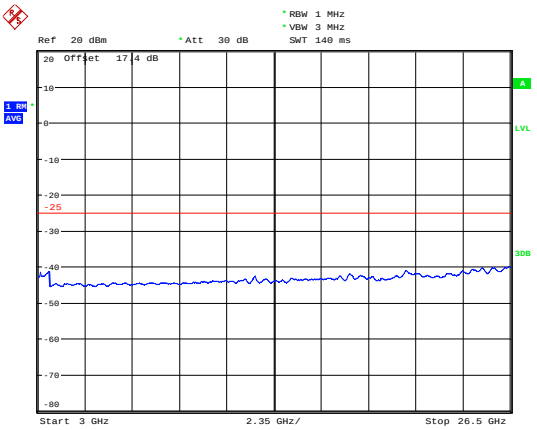
LTE Band 38 20MHz CH-Low 3GHz~26.5GHz



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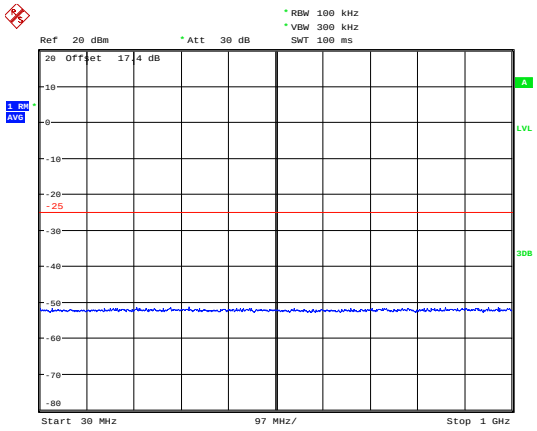
LTE Band 38 20MHz CH-Middle 30MHz~1GHz



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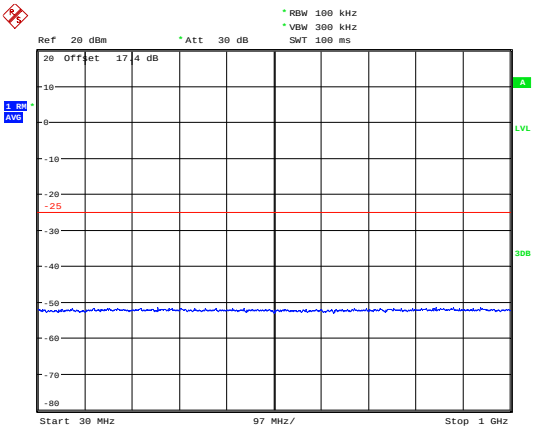
LTE Band 38 20MHz CH-High 30MHz~1GHz



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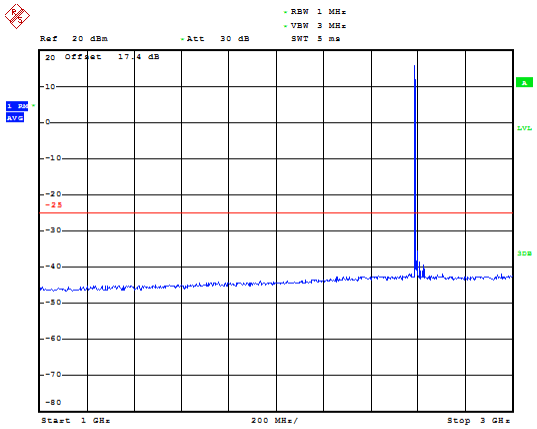
LTE Band 38 20MHz CH-Middle 1GHz~3GHz



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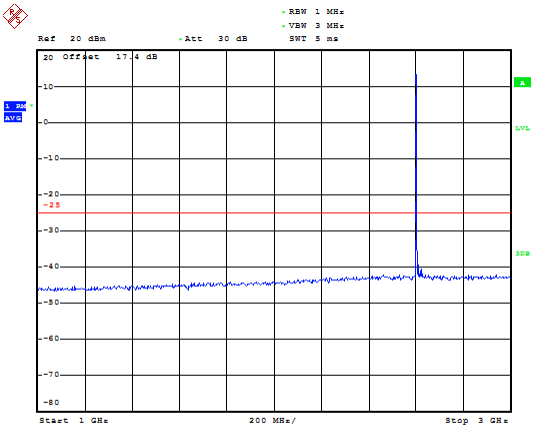
LTE Band 38 20MHz CH-High 1GHz~3GHz



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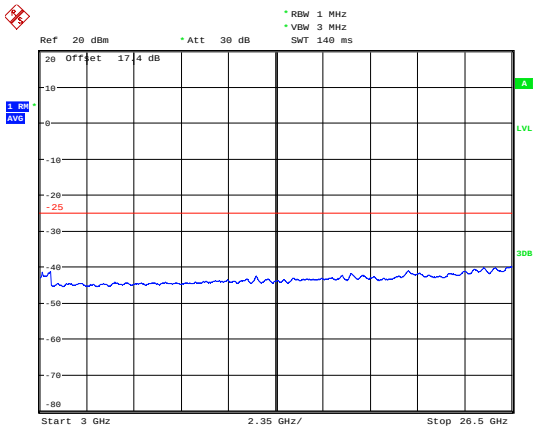
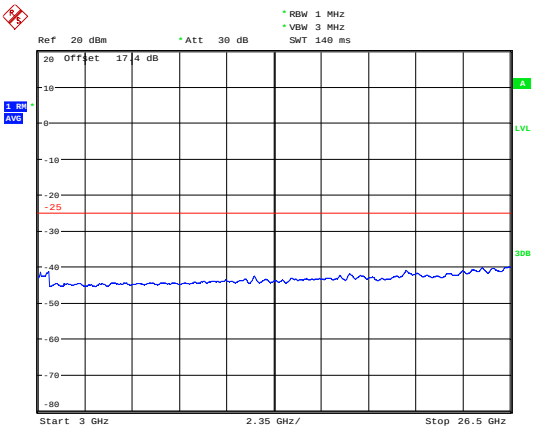
LTE Band 38 20MHz CH-Middle 3GHz~26.5GHz



Date: 7.AUG.2019 22:47:28

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



Date: 7.AUG.2019 22:47:43

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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 C63.26 (2015).
2. Below 1GHz: 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). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 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 loop antenna, A log-periodic antenna or 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=200Hz,VBW=600Hz for 9kHz150kHz , RBW=10kHz, VBW=30kHz 150kHz-30MHz ,RBW=100kHz,VBW=300kHz for 30MHz to 1GHz and RBW=1MHz, VBW=3MHz for above 1GHz 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

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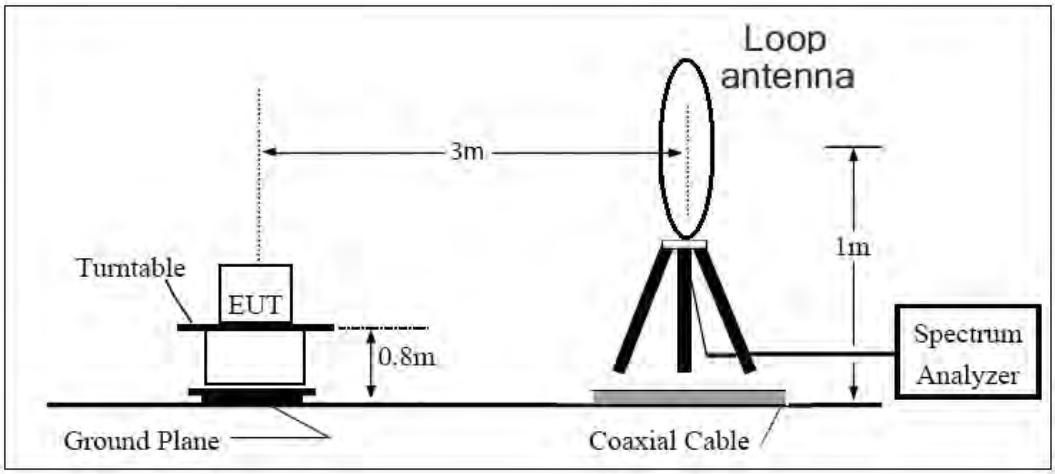
= EIRP-2.15dBi.

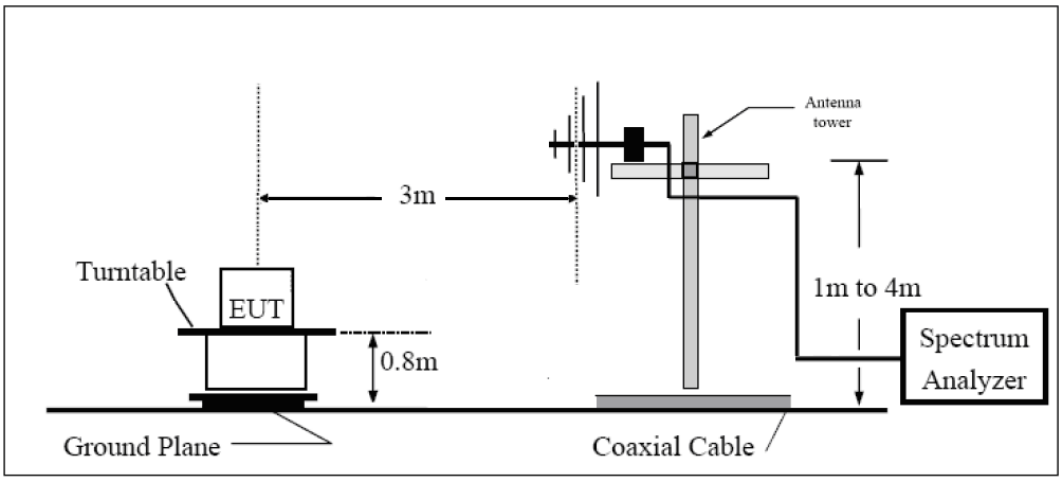
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

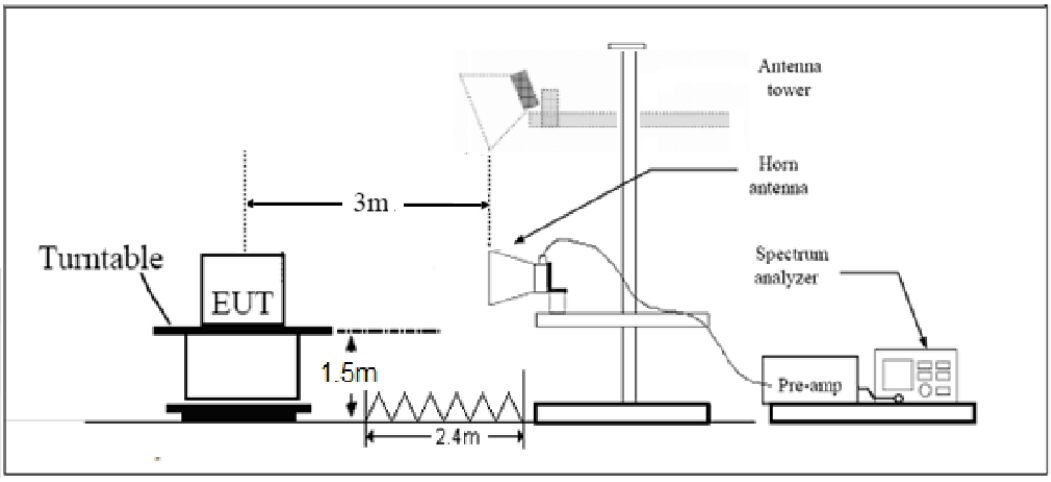
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

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Limits

LTE -4 Rule Part 27.53(h) specifies that “for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.”

LTE -7/38 Rule Part 27.53(m) 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

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

Measurement Uncertainty

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

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Test Result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

WCDMA Band IV CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.20	-58.52	2.6	10.75	Horizontal	-50.37	-13.00	37.37	45
3	5197.80	-59.08	2.4	11.05	Horizontal	-50.43	-13.00	37.43	180
4	6930.40	-59.09	4.5	11.15	Horizontal	-52.44	-13.00	39.44	0
5	8663.00	-57.07	5.1	11.35	Horizontal	-50.82	-13.00	37.82	45
6	10395.60	-54.30	5.3	11.95	Horizontal	-47.65	-13.00	34.65	315
7	12128.20	-55.00	5.5	13.55	Horizontal	-46.95	-13.00	33.95	270
8	13860.80	-52.37	6.3	13.75	Horizontal	-44.92	-13.00	31.92	45
9	15593.40	-53.55	6.7	13.85	Horizontal	-46.40	-13.00	33.40	90
10	17326.00	-50.65	6.8	14.25	Horizontal	-43.20	-13.00	30.20	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 4 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3464.25	-51.65	2.6	10.75	Horizontal	-43.50	-13.00	30.50	315
3	5197.50	-64.95	2.4	11.05	Horizontal	-56.30	-13.00	43.30	45
4	6930.00	-58.02	4.5	11.15	Horizontal	-51.37	-13.00	38.37	90
5	8662.50	-56.05	5.1	11.35	Horizontal	-49.80	-13.00	36.80	135
6	10395.00	-54.65	5.3	11.95	Horizontal	-48.00	-13.00	35.00	315
7	12127.50	-54.06	5.5	13.55	Horizontal	-46.01	-13.00	33.01	45
8	13860.00	-52.11	6.3	13.75	Horizontal	-44.66	-13.00	31.66	90
9	15592.50	-52.42	6.7	13.85	Horizontal	-45.27	-13.00	32.27	135
10	17325.00	-49.78	6.8	14.25	Horizontal	-42.33	-13.00	29.33	315

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3460.50	-51.44	2.6	10.75	Horizontal	-43.29	-13.00	30.29	90
3	5191.50	-61.25	2.4	11.05	Horizontal	-52.60	-13.00	39.60	315
4	6930.00	-58.32	4.5	11.15	Horizontal	-51.67	-13.00	38.67	225
5	8662.50	-56.64	5.1	11.35	Horizontal	-50.39	-13.00	37.39	180
6	10395.00	-54.35	5.3	11.95	Horizontal	-47.70	-13.00	34.70	45
7	12127.50	-55.15	5.5	13.55	Horizontal	-47.10	-13.00	34.10	0
8	13860.00	-50.35	6.3	13.75	Horizontal	-42.90	-13.00	29.90	135
9	15592.50	-53.25	6.7	13.85	Horizontal	-46.10	-13.00	33.10	225
10	17325.00	-49.35	6.8	14.25	Horizontal	-41.90	-13.00	28.90	270
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.00	-50.95	2.6	10.75	Horizontal	-42.80	-13.00	29.80	315
3	5170.88	-58.95	2.4	11.05	Horizontal	-50.30	-13.00	37.30	270
4	6930.00	-58.35	4.5	11.15	Horizontal	-51.70	-13.00	38.70	225
5	8662.50	-56.25	5.1	11.35	Horizontal	-50.00	-13.00	37.00	90
6	10395.00	-54.63	5.3	11.95	Horizontal	-47.98	-13.00	34.98	45
7	12127.50	-55.65	5.5	13.55	Horizontal	-47.60	-13.00	34.60	0
8	13860.00	-50.75	6.3	13.75	Horizontal	-43.30	-13.00	30.30	180
9	15592.50	-53.35	6.7	13.85	Horizontal	-46.20	-13.00	33.20	135
10	17325.00	-49.35	6.8	14.25	Horizontal	-41.90	-13.00	28.90	45
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5065.80	-61.04	2.00	9.15	Horizontal	-53.89	-25.00	28.89	270
3	7598.60	-59.75	2.50	11.35	Horizontal	-50.90	-25.00	25.90	45
4	10130.63	-53.35	4.20	12.05	Horizontal	-45.50	-25.00	20.50	180
5	12675.00	-54.95	5.20	12.85	Horizontal	-47.30	-25.00	22.30	225
6	15210.00	-54.53	5.50	14.23	Horizontal	-45.80	-25.00	20.80	90
7	17745.00	-51.65	5.70	14.15	Horizontal	-43.20	-25.00	18.20	135
8	20280.00	--	--	--	--	--	--	--	--
9	22815.00	--	--	--	--	--	--	--	--
10	25350.00	--	--	--	--	--	--	--	--
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5052.38	-62.22	2.00	10.15	Horizontal	-54.07	-25.00	29.07	315
3	7605.00	-59.38	2.50	11.35	Horizontal	-50.53	-25.00	25.53	225
4	10140.00	-53.45	4.20	12.05	Horizontal	-45.60	-25.00	20.60	90
5	12675.00	-56.15	5.20	14.85	Horizontal	-46.50	-25.00	21.50	135
6	15210.00	-53.13	5.50	13.23	Horizontal	-45.40	-25.00	20.40	45
7	17745.00	-49.35	5.70	12.15	Horizontal	-42.90	-25.00	17.90	0
8	20280.00	--	--	--	--	--	--	--	--
9	22815.00	--	--	--	--	--	--	--	--
10	25350.00	--	--	--	--	--	--	--	--
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.									

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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	5185.00	-62.96	2.00	9.15	Horizontal	-55.81	-13.00	42.81	315
3	7785.00	-59.64	2.50	11.35	Horizontal	-50.79	-13.00	37.79	45
4	10380.00	-56.38	4.20	12.05	Horizontal	-48.53	-13.00	35.53	90
5	12975.00	-54.25	5.20	12.85	Horizontal	-46.60	-13.00	33.60	225
6	15570.00	-56.08	5.50	14.23	Horizontal	-47.35	-13.00	34.35	315
7	18165.00	/	/	/	/	/	/	/	/
8	20760.00	/	/	/	/	/	/	/	/
9	23355.00	/	/	/	/	/	/	/	/
10	25950.00	/	/	/	/	/	/	/	/

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	5172.00	-63.69	2.00	10.15	Horizontal	-55.54	-13.00	42.54	45
3	7785.00	-57.62	2.50	11.35	Horizontal	-48.77	-13.00	35.77	315
4	10380.00	-56.28	4.20	12.05	Horizontal	-48.43	-13.00	35.43	225
5	12975.00	-55.38	5.20	14.85	Horizontal	-45.73	-13.00	32.73	45
6	15570.00	-55.28	5.50	13.23	Horizontal	-47.55	-13.00	34.55	180
7	18165.00	/	/	/	/	/	/	/	/
8	20760.00	/	/	/	/	/	/	/	/
9	23355.00	/	/	/	/	/	/	/	/
10	25950.00	/	/	/	/	/	/	/	/

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.

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6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2019-05-19	2020-05-18
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2019-05-19	2020-05-18
Signal Analyzer	R&S	FSV30	100815	2018-12-16	2019-12-15
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2019-11-17
Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Signal generator	R&S	SMB 100A	102594	2019-05-19	2020-05-18
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preampflier	R&S	SCU18	102327	2019-05-19	2020-05-18
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2019-05-19	2020-05-18
RF Cable	Agilent	SMA 15cm	0001	2019-06-14	2019-09-13
Software	R&S	EMC32	9.26.0	/	/

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

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