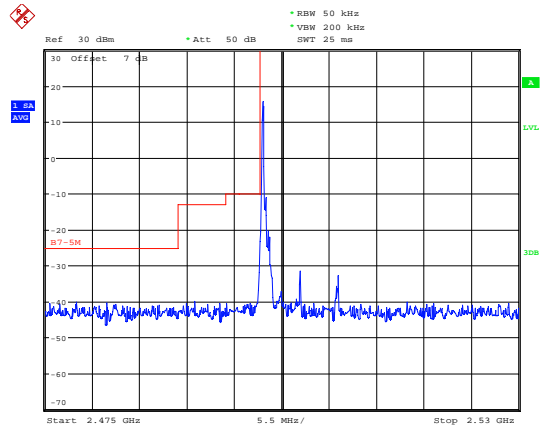
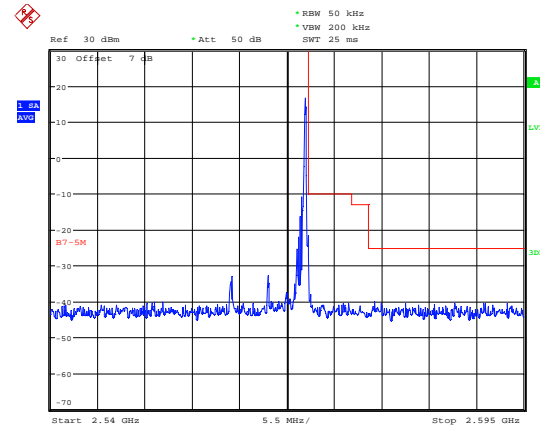




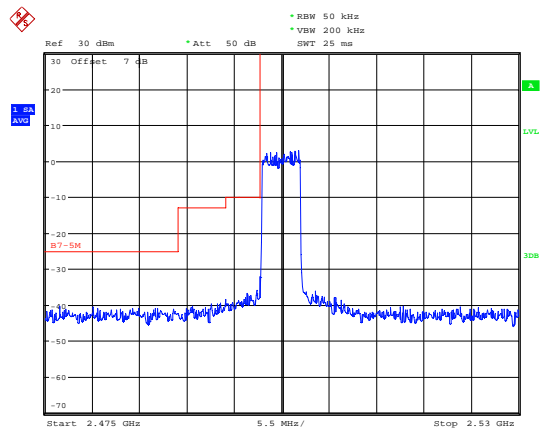
LTE Band 7 16QAM 5MHz CH-Low, 1 RB



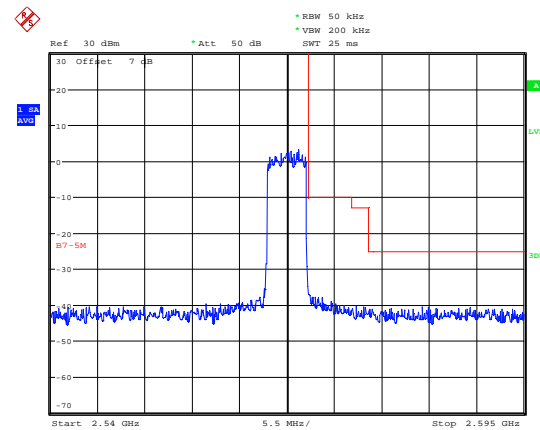
LTE Band 7 16QAM 5MHz CH-High, 1 RB



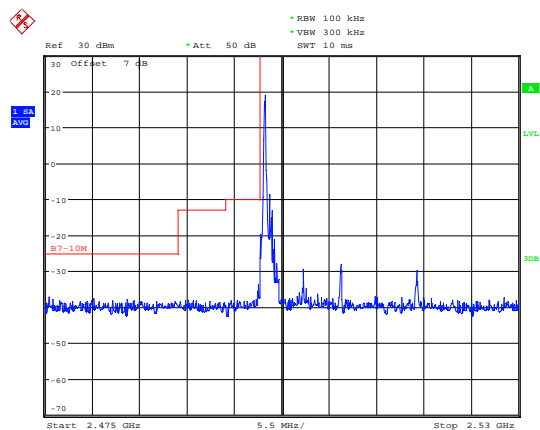
LTE Band 7 16QAM 5MHz CH-Low, 100%RB



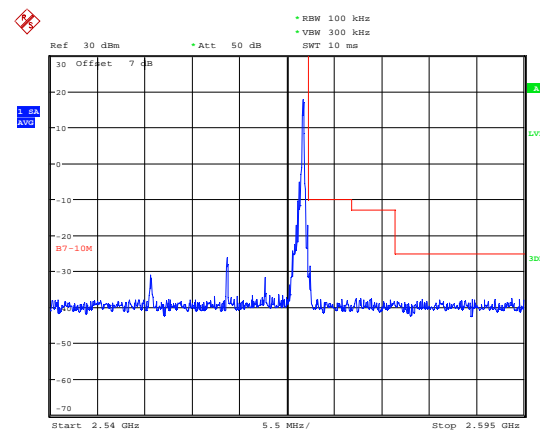
LTE Band 7 16QAM 5MHz CH-High, 100%RB



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

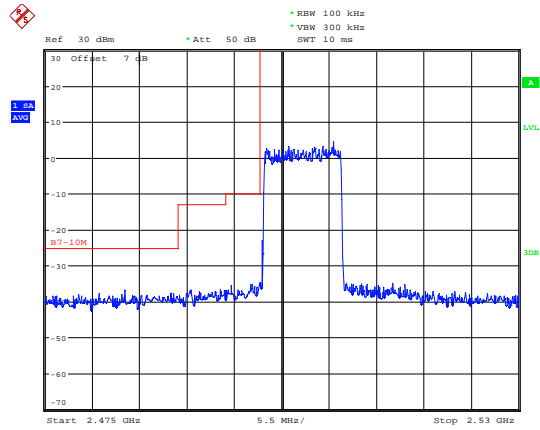


LTE Band 7 16QAM 10MHz CH-High, 1 RB



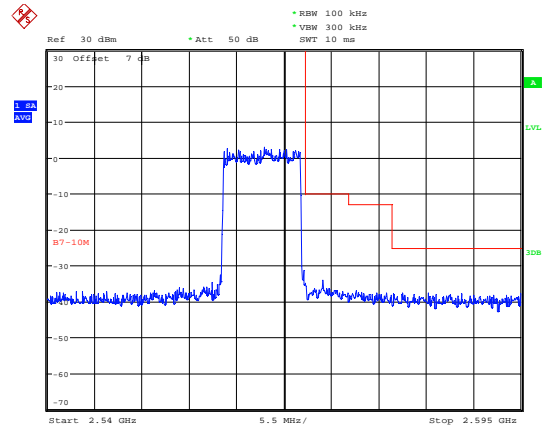


LTE Band 7 16QAM 10MHz CH-Low, 100%RB



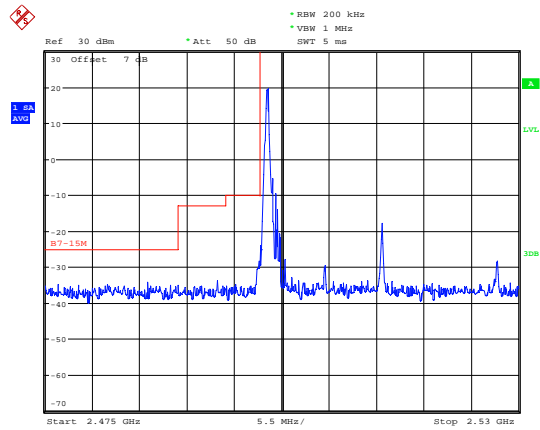
Date: 9.MAY.2020 19:59:42

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



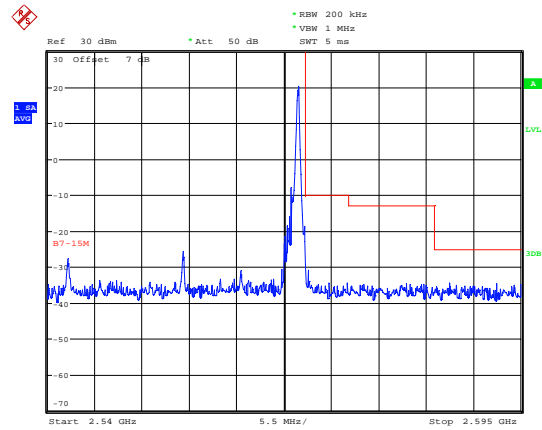
Date: 9.MAY.2020 20:01:49

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



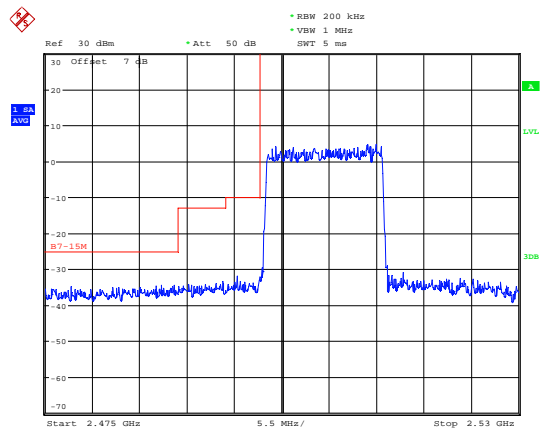
Date: 9.MAY.2020 20:03:40

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



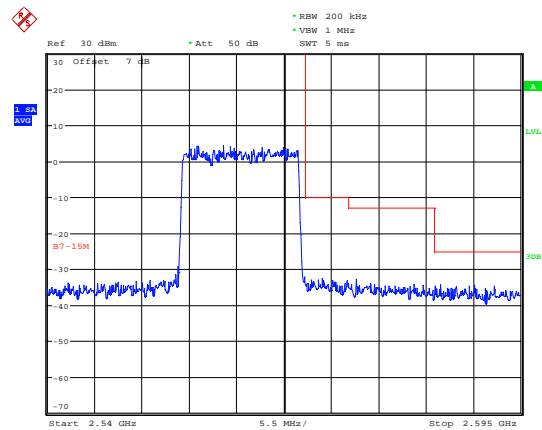
Date: 9.MAY.2020 20:05:46

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



Date: 9.MAY.2020 20:04:04

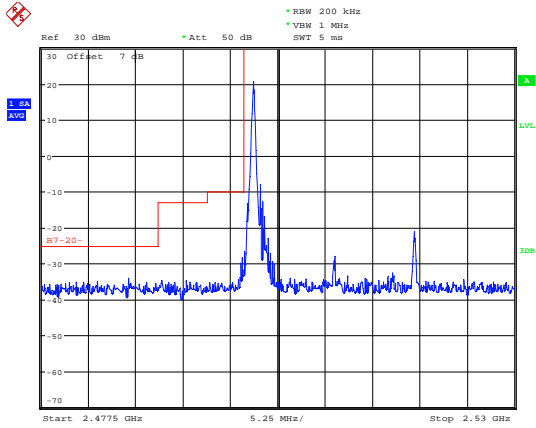
LTE Band 7 16QAM 15MHz CH-High, 100%RB



Date: 9.MAY.2020 20:05:57

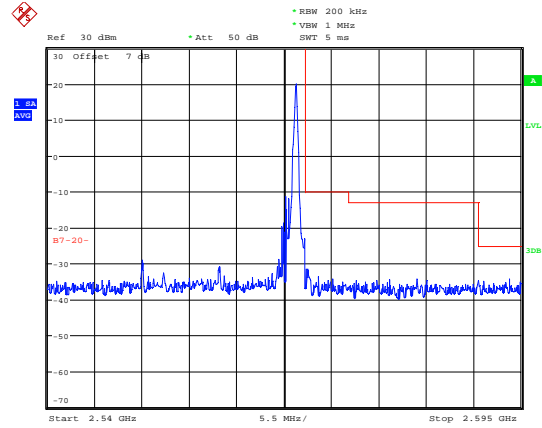


LTE Band 7 16QAM 20MHz CH-Low, 1 RB



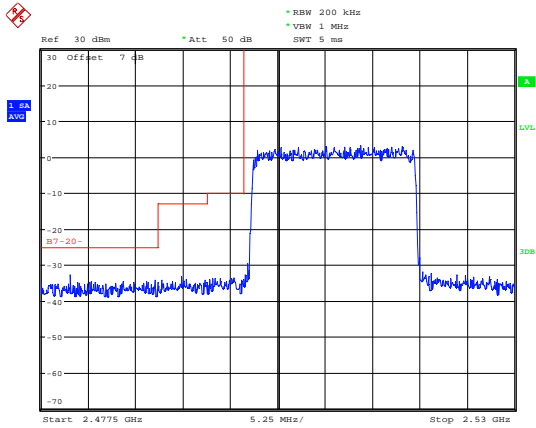
Date: 9.MAY.2020 20:07:29

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



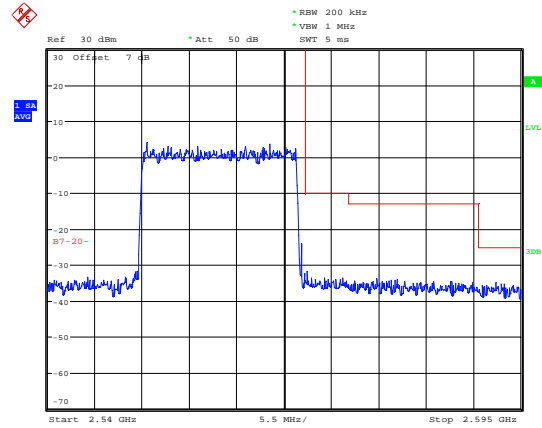
Date: 9.MAY.2020 20:08:54

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



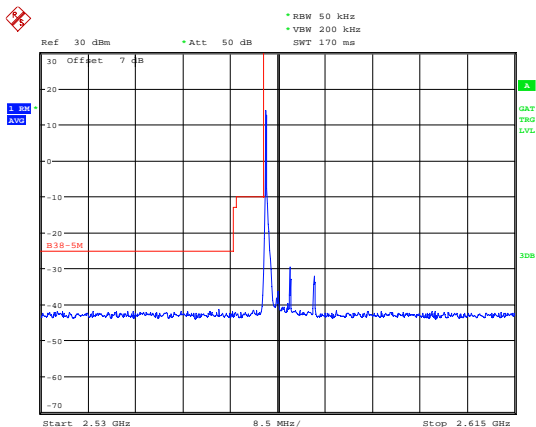
Date: 9.MAY.2020 20:07:39

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



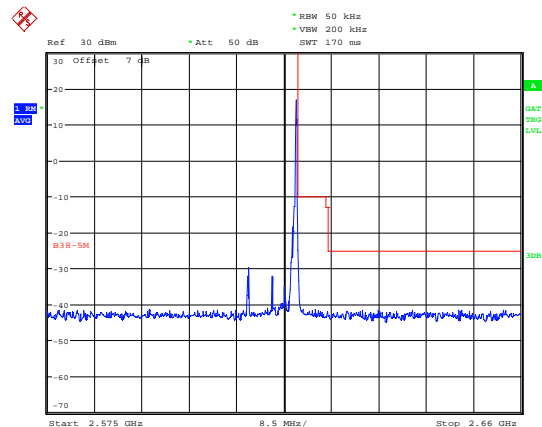
Date: 9.MAY.2020 20:09:06

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



Date: 9.JUN.2020 16:03:07

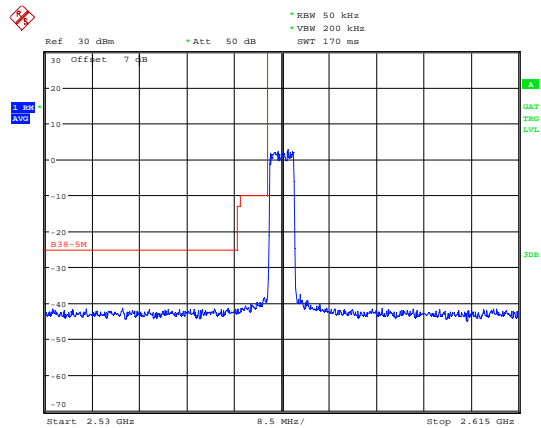
LTE Band 38 QPSK 5MHz CH-High, 1 RB



Date: 9.JUN.2020 16:08:43

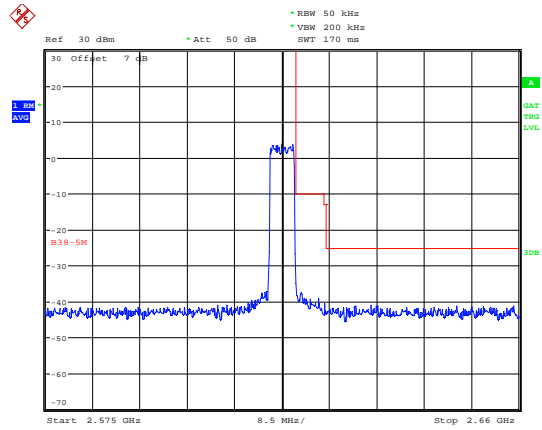


LTE Band 38 QPSK 5MHz CH-Low, 100%RB



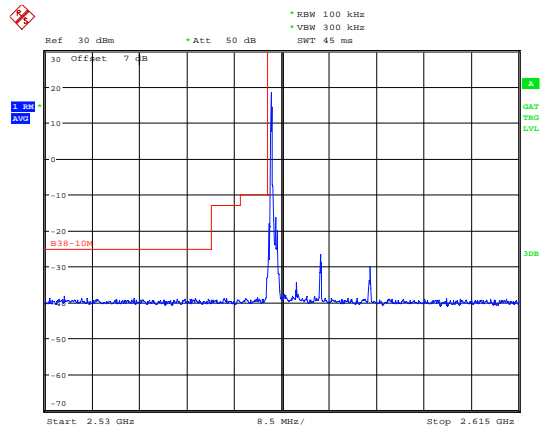
Date: 9 JUN 2020 16:03:43

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



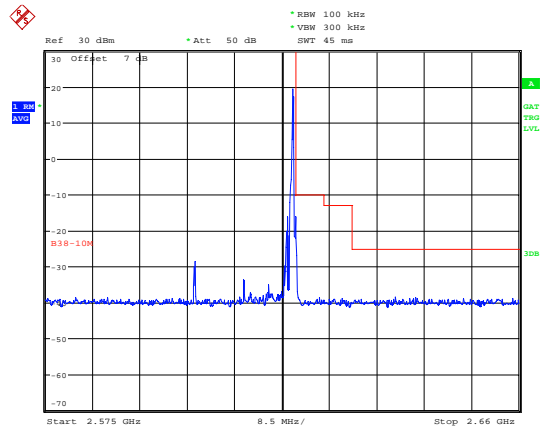
Date: 9 JUN 2020 16:09:04

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



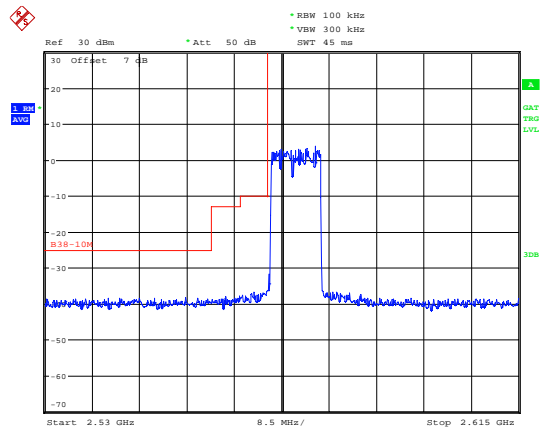
Date: 9 JUN 2020 16:13:12

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



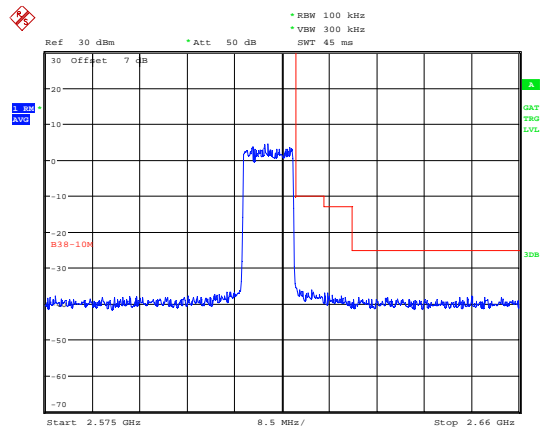
Date: 9 JUN 2020 16:16:00

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



Date: 9 JUN 2020 16:12:30

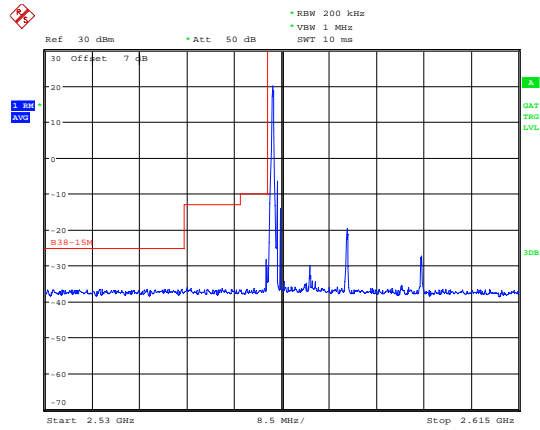
LTE Band 38 QPSK 10MHz CH-High, 100%RB



Date: 9 JUN 2020 16:16:17

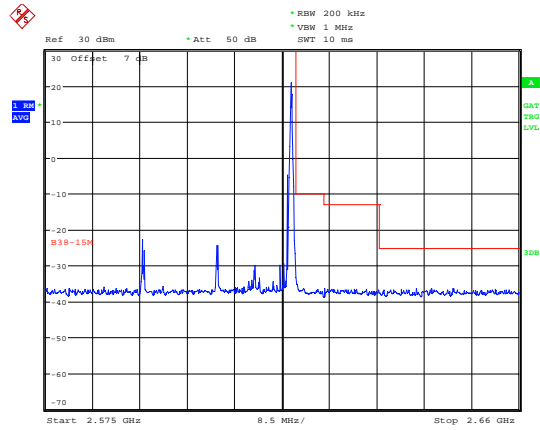


LTE Band 38 QPSK 15MHz CH-Low, 1 RB



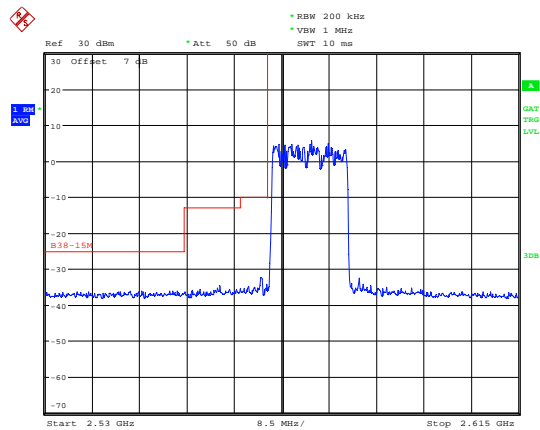
Date: 9 JUN 2020 16:18:30

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



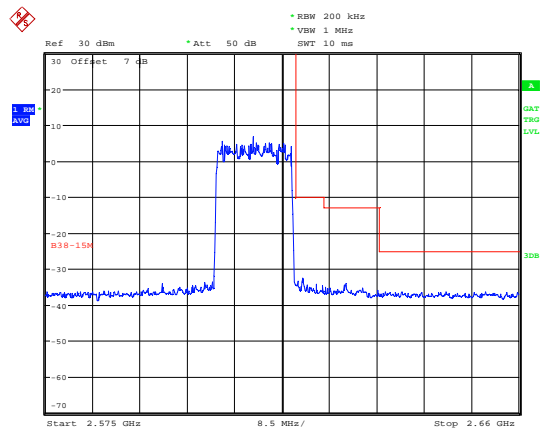
Date: 9 JUN 2020 16:20:29

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



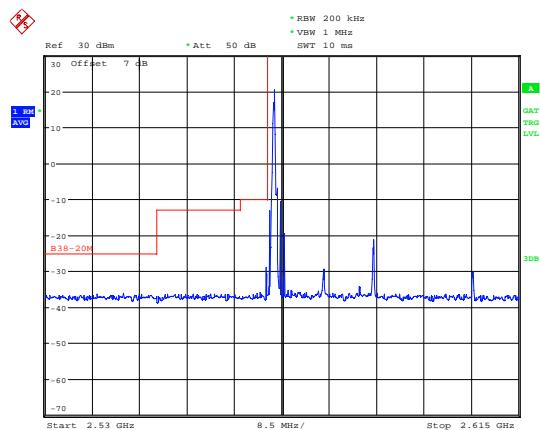
Date: 9 JUN 2020 16:18:50

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



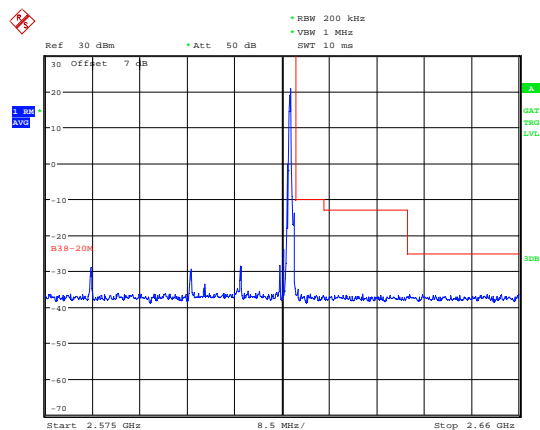
Date: 9 JUN 2020 16:21:08

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



Date: 9 JUN 2020 16:22:59

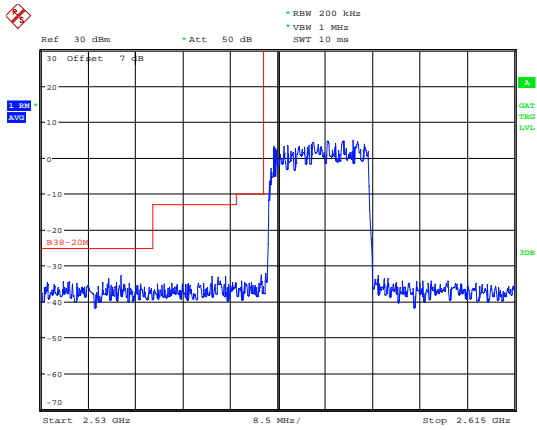
LTE Band 38 QPSK 20MHz CH-High, 1 RB



Date: 9 JUN 2020 16:24:50

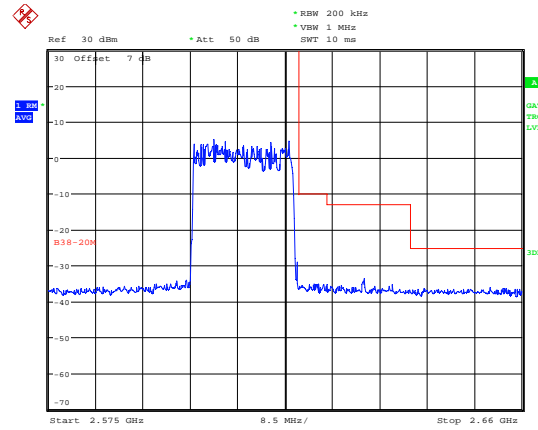


LTE Band 38 QPSK 20MHz CH-Low, 100%RB



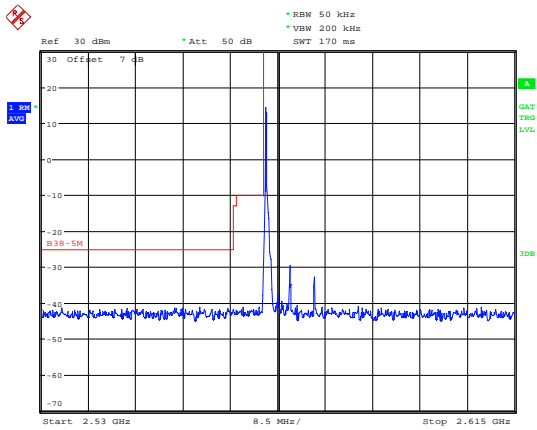
Date: 9 JUN 2020 16:23:23

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



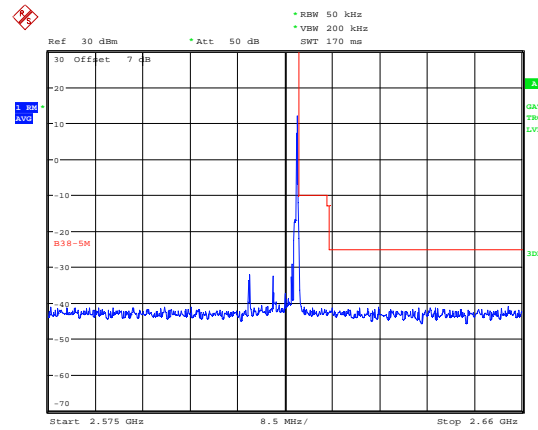
Date: 9 JUN 2020 16:25:11

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



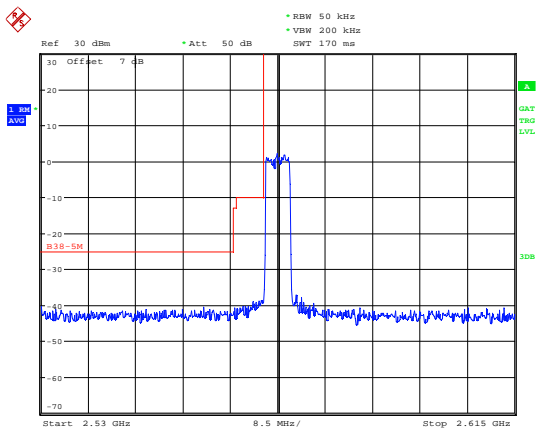
Date: 9 JUN 2020 16:04:04

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



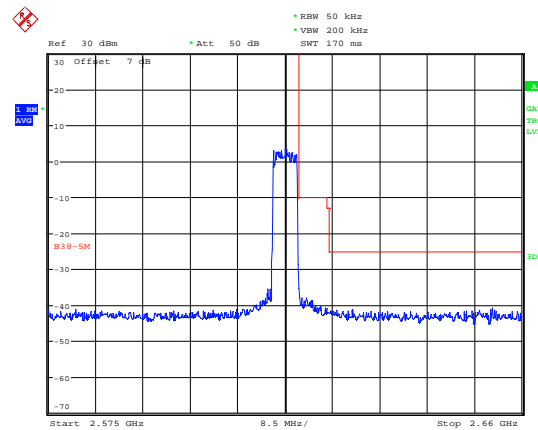
Date: 9 JUN 2020 16:09:26

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



Date: 9 JUN 2020 16:04:23

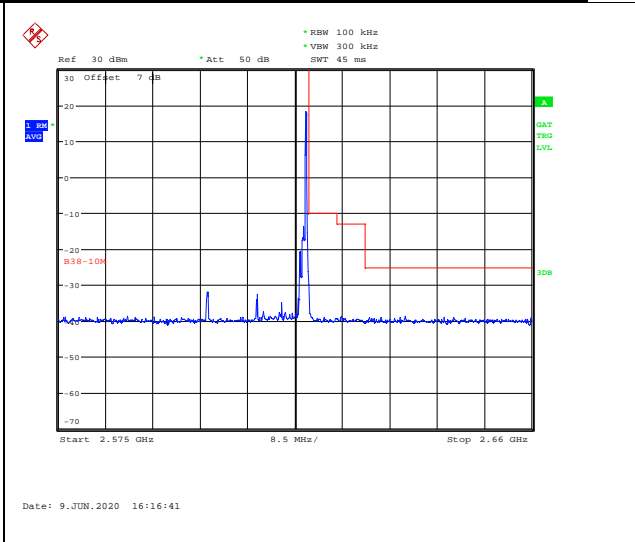
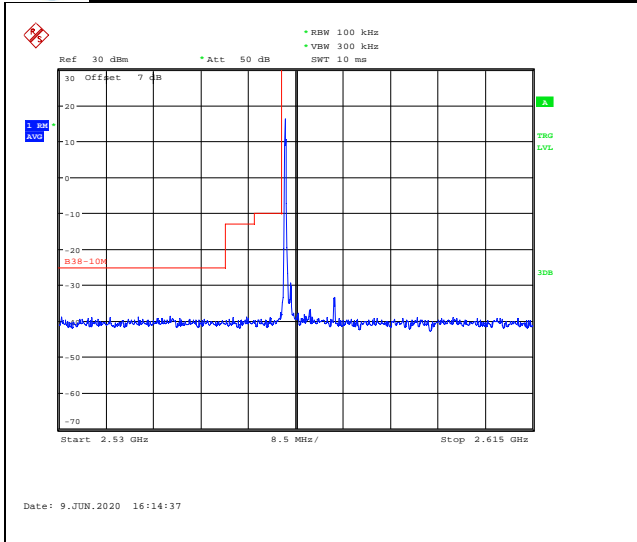
LTE Band 38 16QAM 5MHz CH-High, 100%RB



Date: 9 JUN 2020 16:09:51

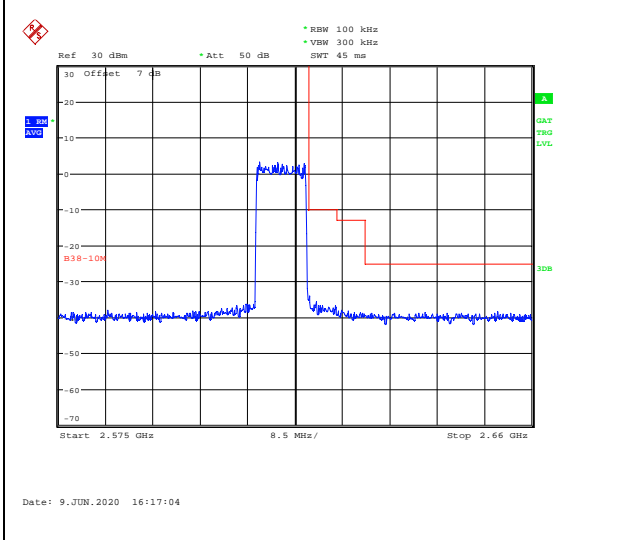
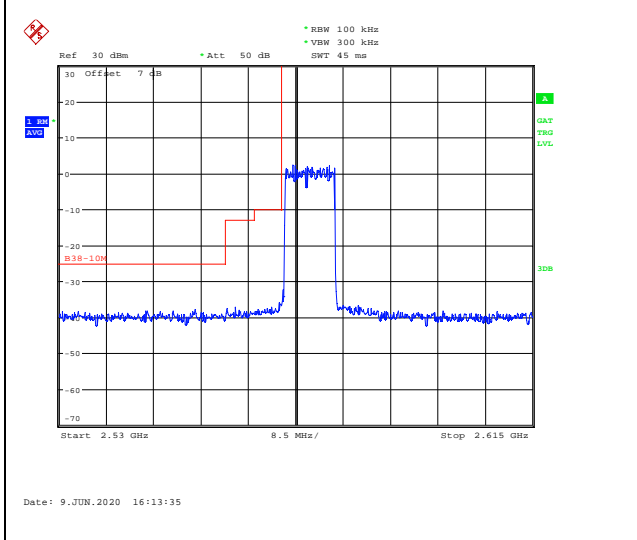
LTE Band 38 16QAM 10MHz CH-Low, 1 RB

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



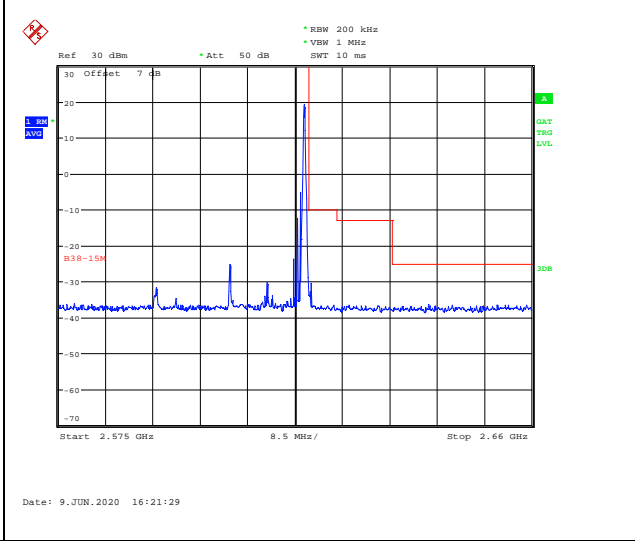
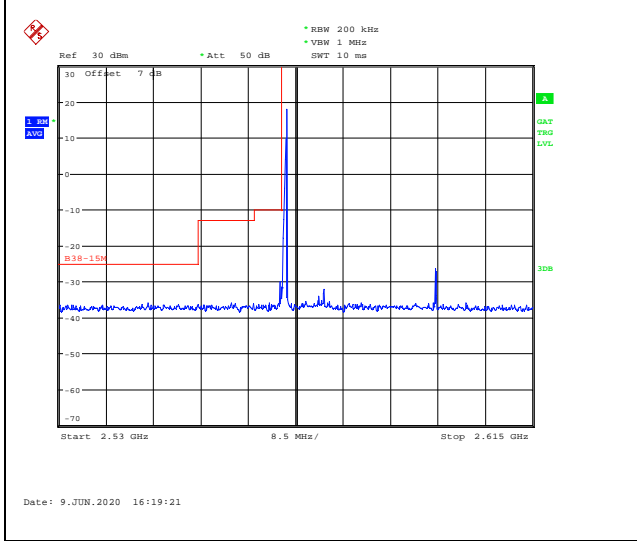
LTE Band 38 16QAM 10MHz CH-Low, 100%RB

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



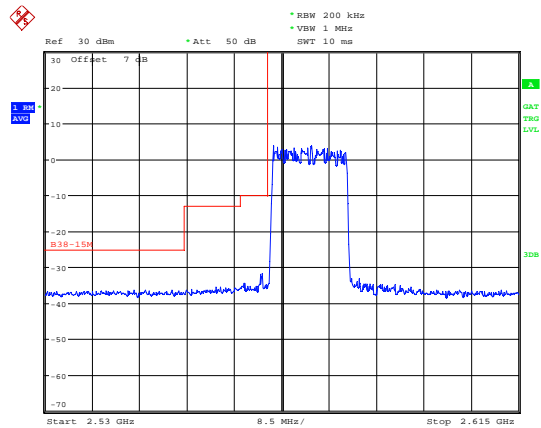
LTE Band 38 16QAM 15MHz CH-Low, 1 RB

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

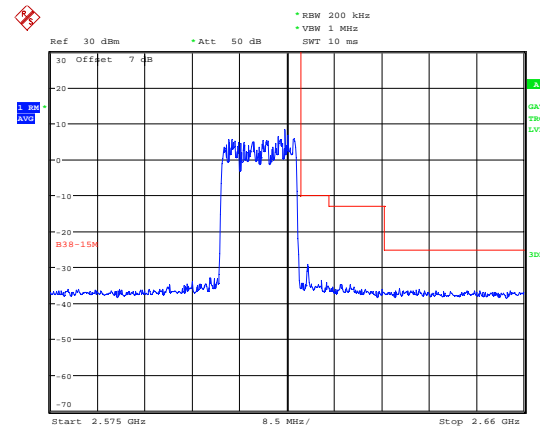




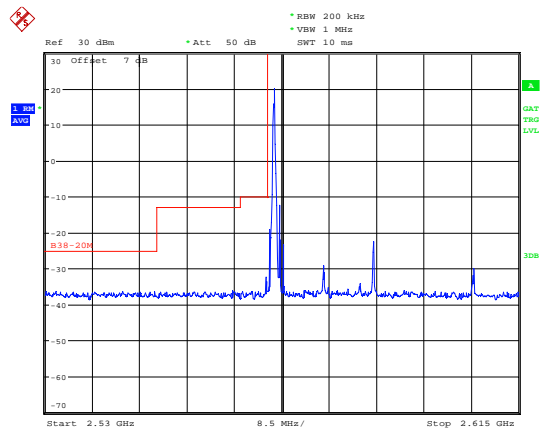
LTE Band 38 16QAM 15MHz CH-Low, 100%RB



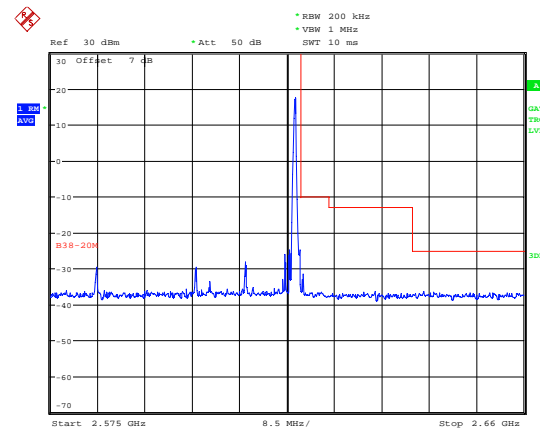
LTE Band 38 16QAM 15MHz CH-High, 100%RB



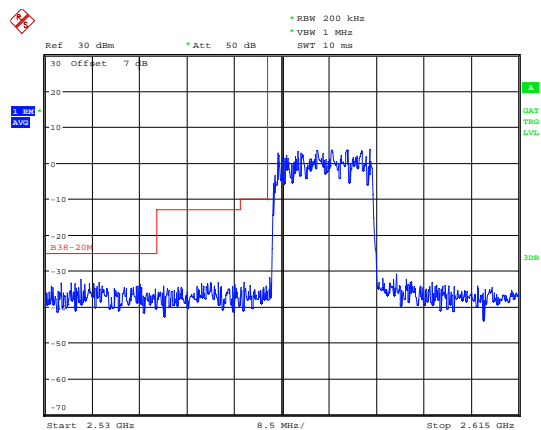
LTE Band 38 16QAM 20MHz CH-Low, 1 RB



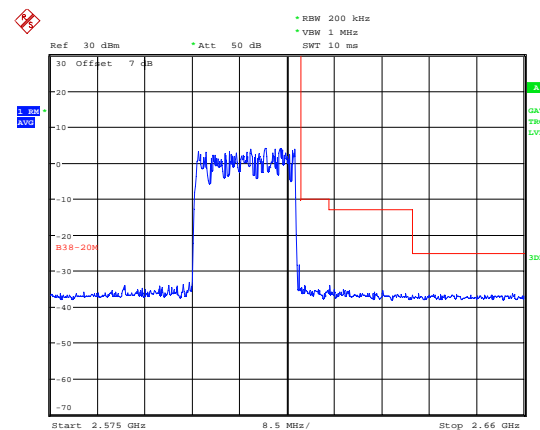
LTE Band 38 16QAM 20MHz CH-High, 1 RB



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

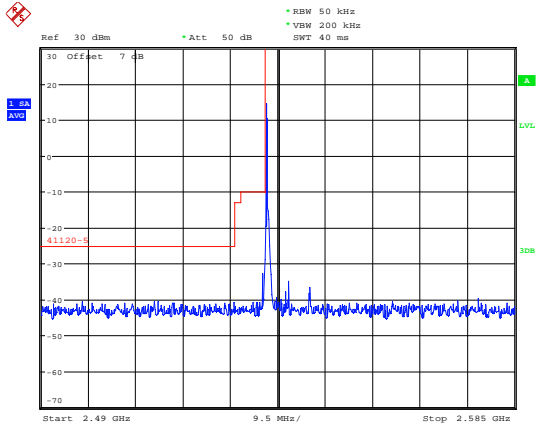


LTE Band 38 16QAM 20MHz CH-High, 100%RB



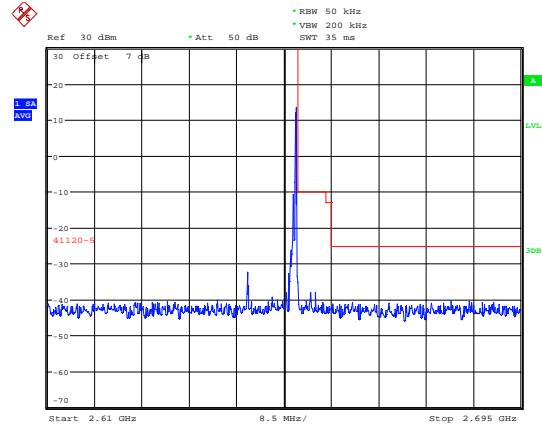


LTE Band 41 QPSK 5MHz CH-Low, 1 RB



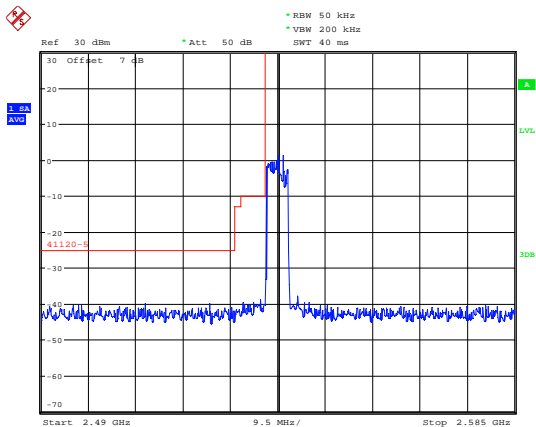
Date: 9.MAY.2020 20:14:32

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



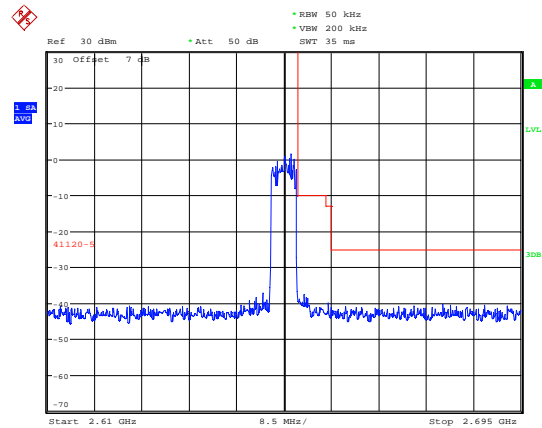
Date: 9.MAY.2020 20:16:34

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



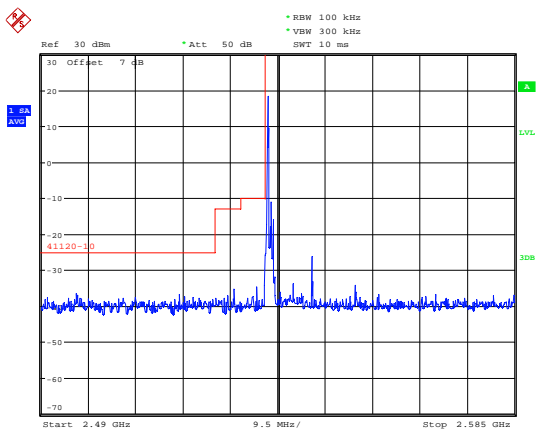
Date: 9.MAY.2020 20:14:54

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



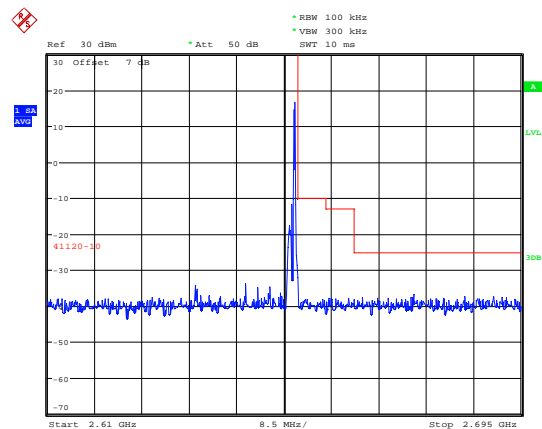
Date: 9.MAY.2020 20:16:48

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



Date: 9.MAY.2020 20:22:43

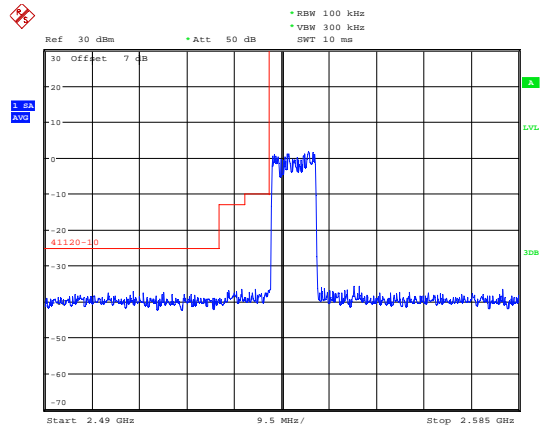
LTE Band 41 QPSK 10MHz CH-High, 1 RB



Date: 9.MAY.2020 20:20:57

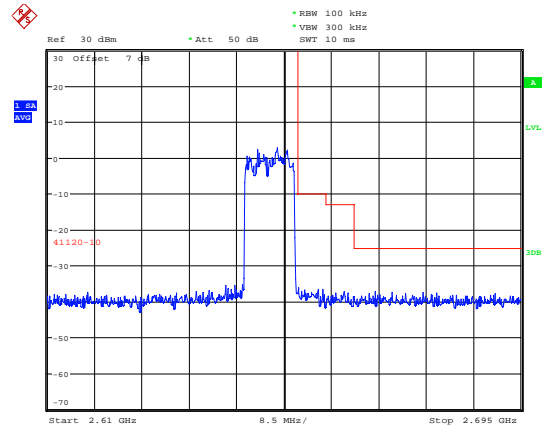


LTE Band 41 QPSK 10MHz CH-Low, 100%RB



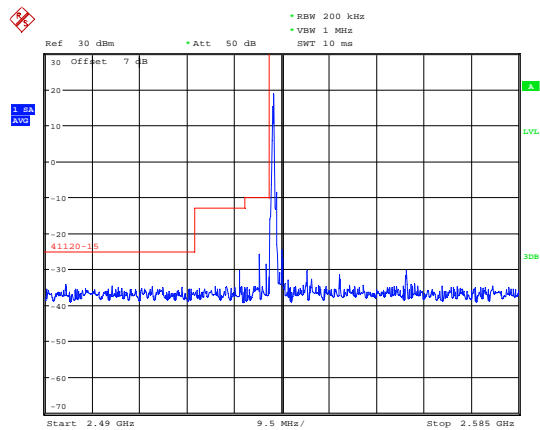
Date: 9.MAY.2020 20:22:57

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



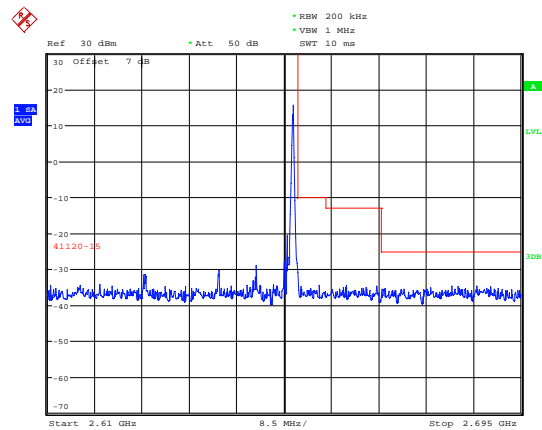
Date: 9.MAY.2020 20:21:22

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



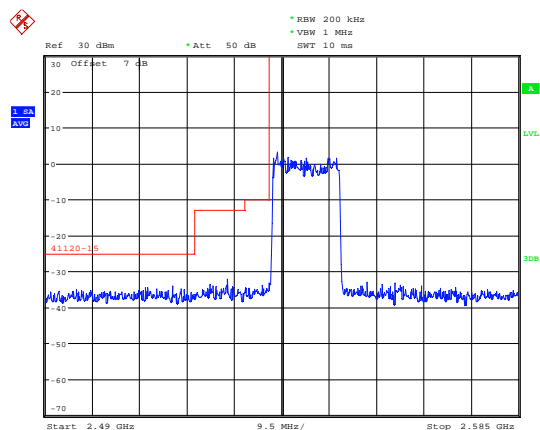
Date: 9.MAY.2020 20:26:37

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



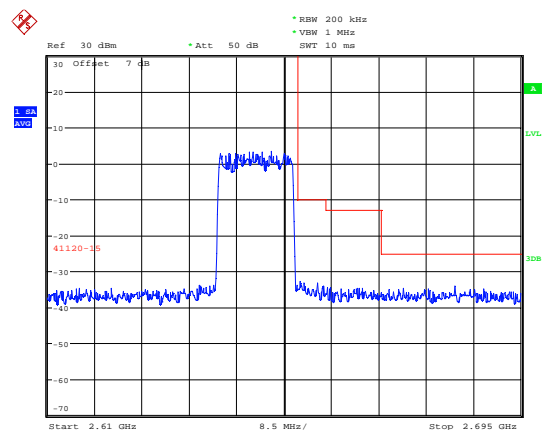
Date: 9.MAY.2020 20:29:45

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



Date: 9.MAY.2020 20:26:48

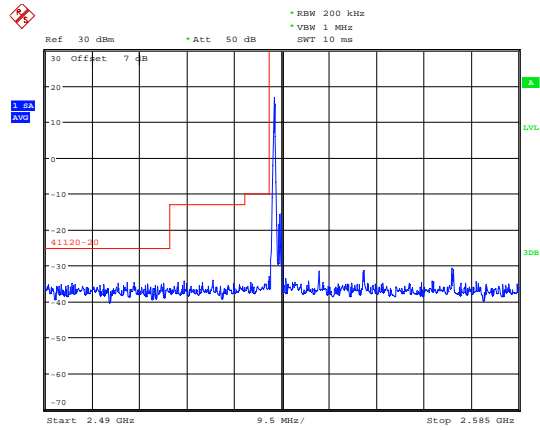
LTE Band 41 QPSK 15MHz CH-High, 100%RB



Date: 9.MAY.2020 20:29:56

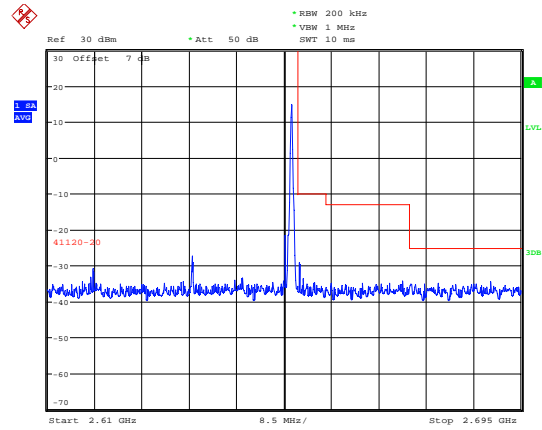


LTE Band 41 QPSK 20MHz CH-Low, 1 RB



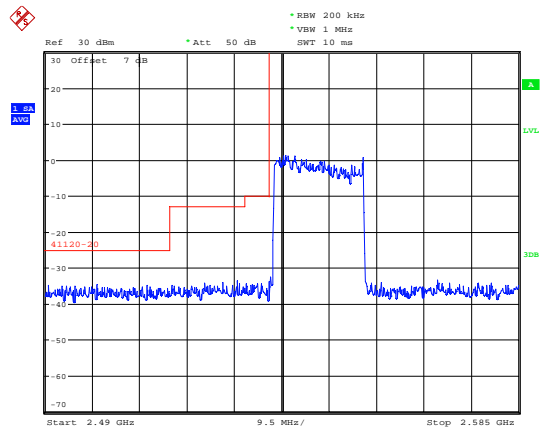
Date: 9.MAY.2020 20:35:30

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



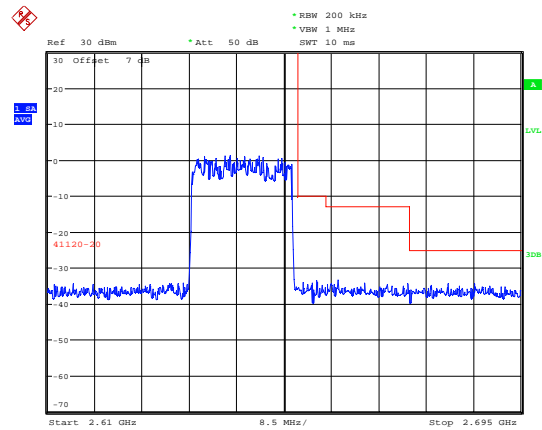
Date: 9.MAY.2020 20:34:00

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



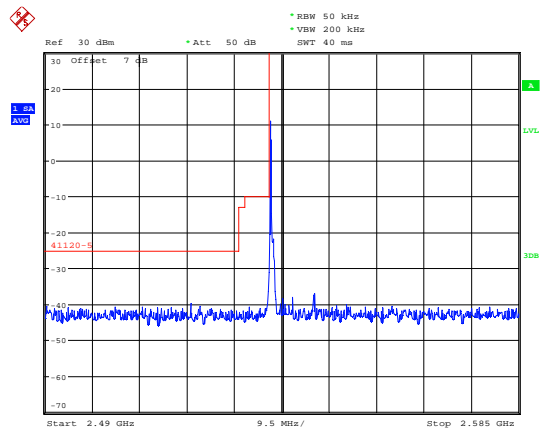
Date: 9.MAY.2020 20:35:48

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



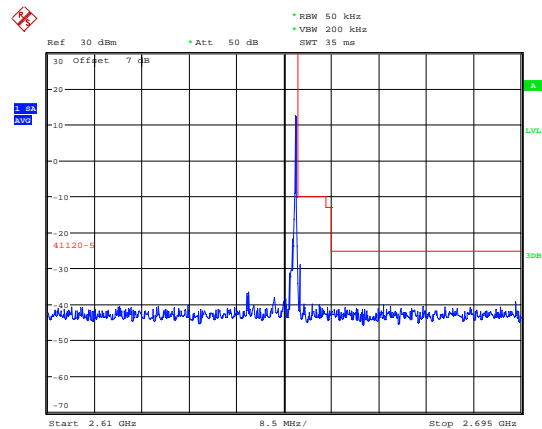
Date: 9.MAY.2020 20:34:12

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



Date: 9.MAY.2020 20:15:12

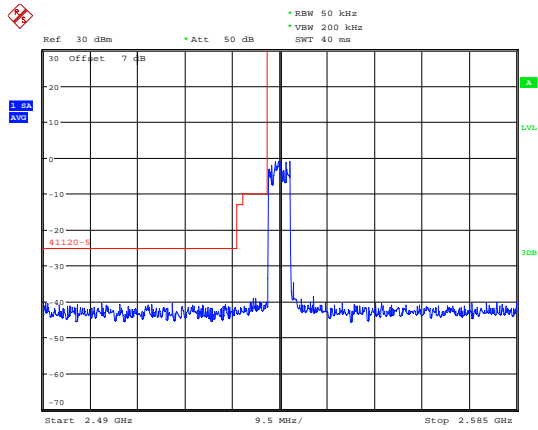
LTE Band 41 16QAM 5MHz CH-High, 1 RB



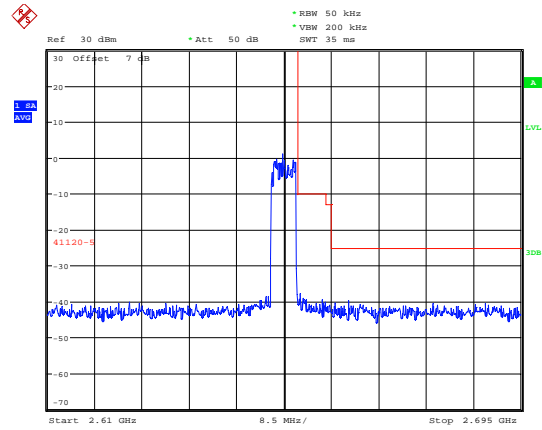
Date: 9.MAY.2020 20:17:02



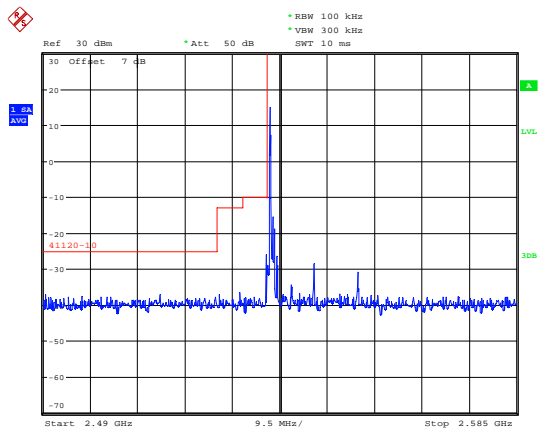
LTE Band 41 16QAM 5MHz CH-Low, 100%RB



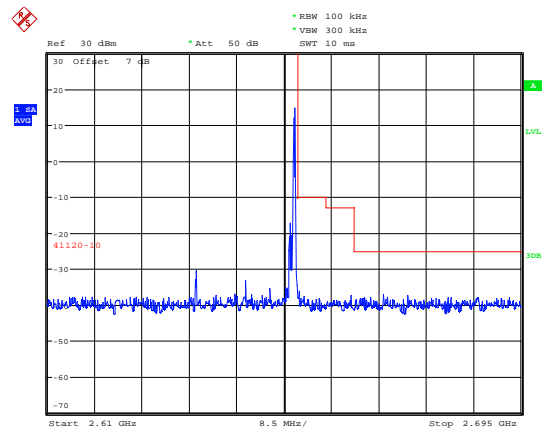
LTE Band 41 16QAM 5MHz CH-High, 100%RB



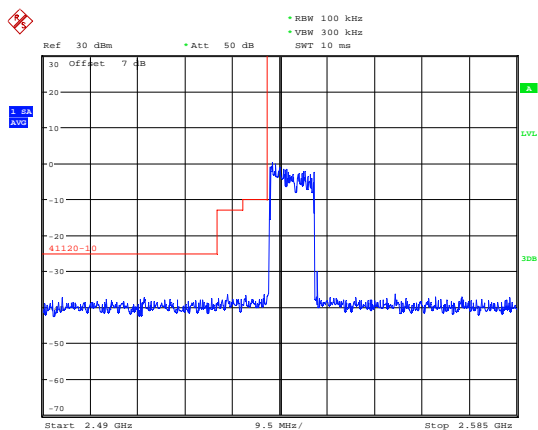
LTE Band 41 16QAM 10MHz CH-Low, 1 RB



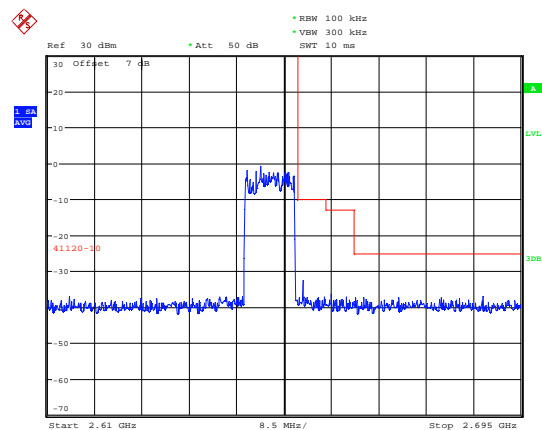
LTE Band 41 16QAM 10MHz CH-High, 1 RB



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

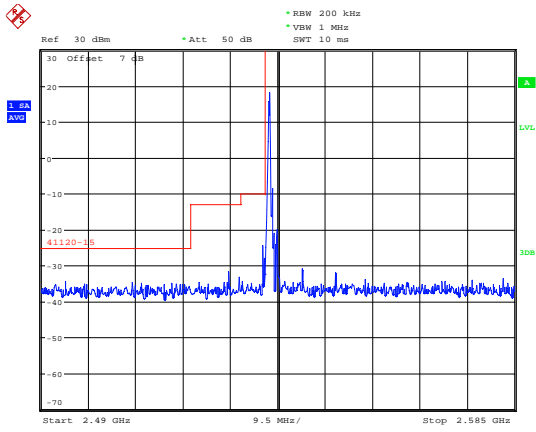


LTE Band 41 16QAM 10MHz CH-High, 100%RB



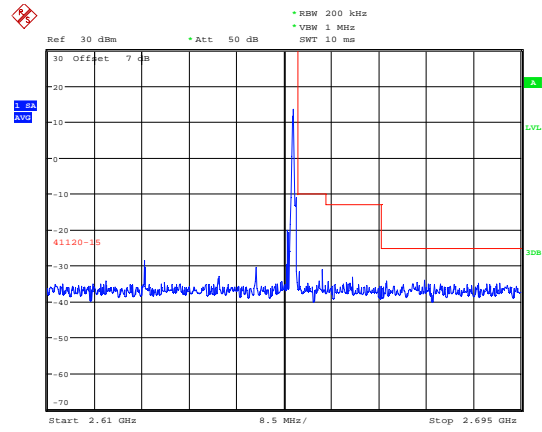


LTE Band 41 16QAM 15MHz CH-Low, 1 RB



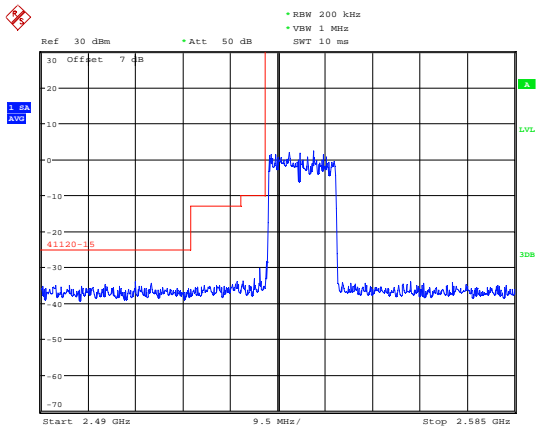
Date: 9.MAY.2020 20:27:01

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



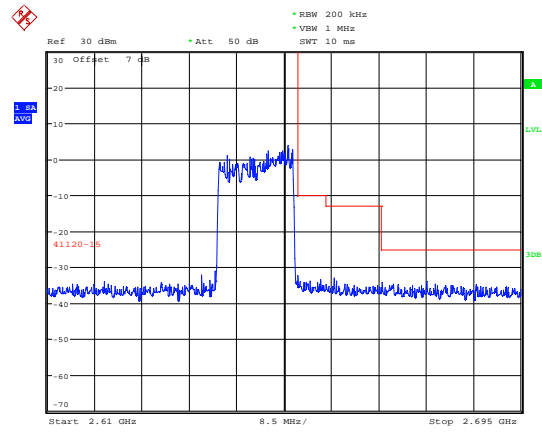
Date: 9.MAY.2020 20:30:15

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



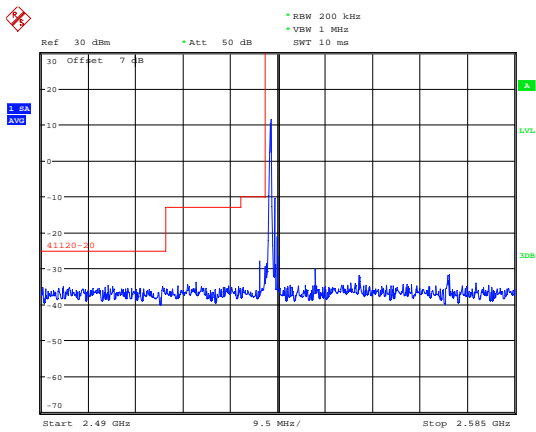
Date: 9.MAY.2020 20:27:12

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



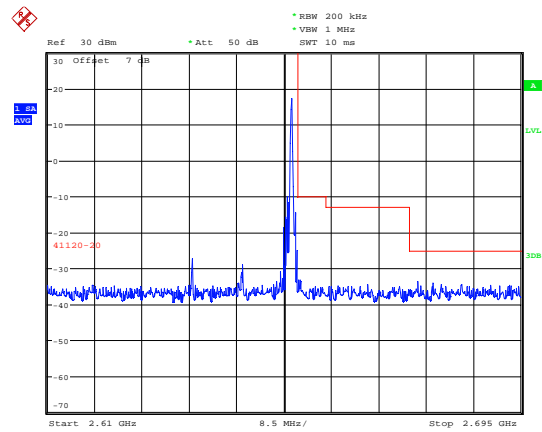
Date: 9.MAY.2020 20:30:26

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



Date: 9.MAY.2020 20:36:02

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

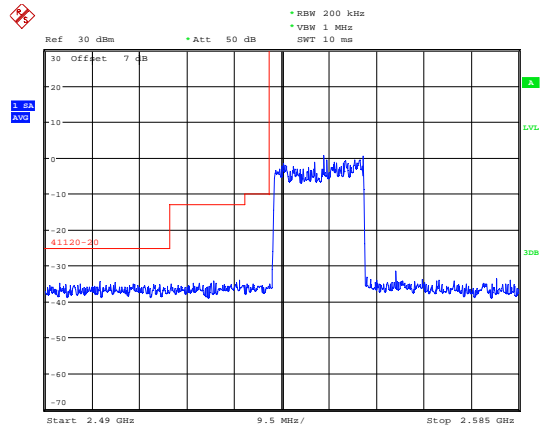


Date: 9.MAY.2020 20:34:35

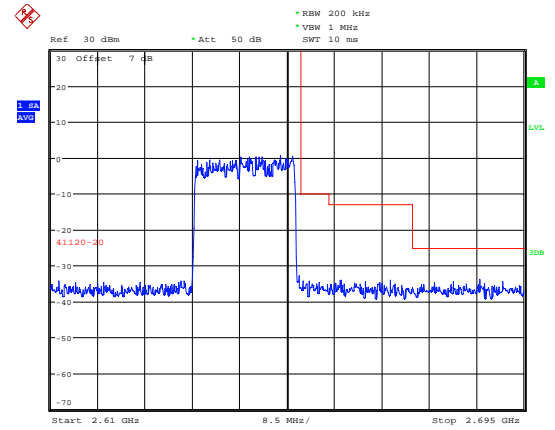


LTE Band 41 16QAM 20MHz CH-Low, 100%RB

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



Date: 9.MAY.2020 20:36:15



Date: 9.MAY.2020 20:34:46

5.4 Peak-to-Average Power Ratio (PAPR)

Ambient condition

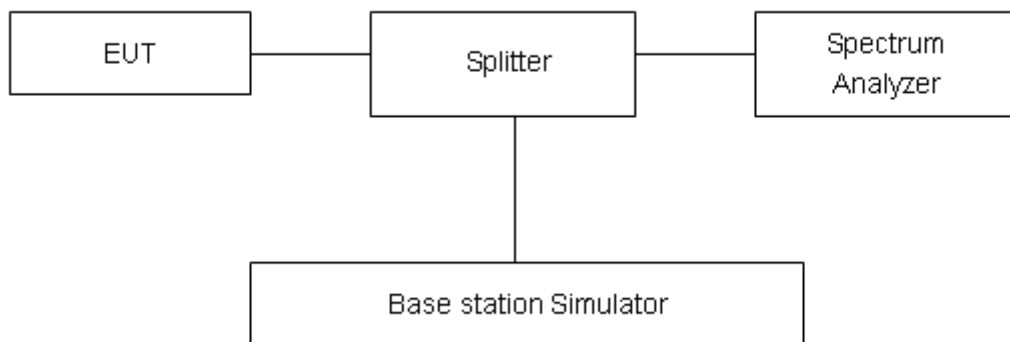
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

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

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

Test Setup



Limits

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

Measurement Uncertainty

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



Test Results

WCDMA Band IV	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
RMC	1312	1712.4	23.31	20.18	3.13	≤13	PASS
	1413	1732.6	23.55	20.49	3.06	≤13	PASS
	1513	1752.6	23.83	20.80	3.03	≤13	PASS

LTE Band 4								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	1.4	19957	1710.7	27.57	22.31	5.26	≤13	PASS
		20175	1732.5	27.62	22.32	5.30	≤13	PASS
		20393	1754.3	27.60	22.41	5.19	≤13	PASS
	3	19965	1711.5	27.68	22.31	5.37	≤13	PASS
		20175	1732.5	27.74	22.35	5.39	≤13	PASS
		20385	1753.5	27.62	22.41	5.21	≤13	PASS
	5	19975	1712.5	27.91	22.40	5.51	≤13	PASS
		20175	1732.5	28.00	22.42	5.58	≤13	PASS
		20375	1752.5	27.87	22.47	5.40	≤13	PASS
	10	20000	1715	28.03	22.48	5.55	≤13	PASS
		20175	1732.5	28.05	22.51	5.54	≤13	PASS
		20350	1750	27.96	22.54	5.42	≤13	PASS
	15	20025	1717.5	28.47	22.54	5.93	≤13	PASS
		20175	1732.5	28.41	22.53	5.88	≤13	PASS
		20325	1747.5	28.35	22.55	5.80	≤13	PASS
	20	20050	1720	28.14	22.55	5.59	≤13	PASS
		20175	1732.5	28.12	22.48	5.64	≤13	PASS
		20300	1745	28.09	22.48	5.61	≤13	PASS
16QAM	1.4	19957	1710.7	27.28	21.30	5.98	≤13	PASS
		20175	1732.5	27.53	21.37	6.16	≤13	PASS
		20393	1754.3	27.41	21.40	6.01	≤13	PASS
	3	19965	1711.5	27.54	21.34	6.20	≤13	PASS
		20175	1732.5	27.57	21.36	6.21	≤13	PASS
		20385	1753.5	27.42	21.39	6.03	≤13	PASS
	5	19975	1712.5	27.66	21.42	6.24	≤13	PASS
		20175	1732.5	27.69	21.45	6.24	≤13	PASS
		20375	1752.5	27.63	21.50	6.13	≤13	PASS
	10	20000	1715	27.76	21.50	6.26	≤13	PASS
		20175	1732.5	27.80	21.50	6.30	≤13	PASS
		20350	1750	27.74	21.55	6.19	≤13	PASS



	15	20025	1717.5	27.95	21.51	6.44	≤13	PASS
		20175	1732.5	27.92	21.53	6.39	≤13	PASS
		20325	1747.5	27.87	21.55	6.32	≤13	PASS
	20	20050	1720	27.88	21.52	6.36	≤13	PASS
		20175	1732.5	27.87	21.51	6.36	≤13	PASS
		20300	1745	27.81	21.54	6.27	≤13	PASS

LTE Band 7								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	20775	2502.5	27.67	22.51	5.16	≤13	PASS
		21100	2535	27.54	22.15	5.39	≤13	PASS
		21425	2567.5	27.37	22.19	5.18	≤13	PASS
	10	20800	2505	27.69	22.51	5.18	≤13	PASS
		21100	2535	27.52	22.20	5.32	≤13	PASS
		21400	2565	27.43	22.21	5.22	≤13	PASS
	15	20825	2507.5	28.04	22.51	5.53	≤13	PASS
		21100	2535	27.92	22.19	5.73	≤13	PASS
		21375	2562.5	27.88	22.26	5.62	≤13	PASS
	20	20850	2510	27.70	22.32	5.38	≤13	PASS
		21100	2535	27.68	22.13	5.55	≤13	PASS
		21350	2560	27.66	22.21	5.45	≤13	PASS
16QAM	5	20775	2502.5	27.37	21.50	5.87	≤13	PASS
		21100	2535	27.29	21.17	6.12	≤13	PASS
		21425	2567.5	27.12	21.18	5.94	≤13	PASS
	10	20800	2505	27.45	21.47	5.98	≤13	PASS
		21100	2535	27.27	21.17	6.10	≤13	PASS
		21400	2565	27.25	21.21	6.04	≤13	PASS
	15	20825	2507.5	27.55	21.45	6.10	≤13	PASS
		21100	2535	27.45	21.19	6.26	≤13	PASS
		21375	2562.5	27.37	21.22	6.15	≤13	PASS
	20	20850	2510	27.48	21.33	6.15	≤13	PASS
		21100	2535	27.37	21.13	6.24	≤13	PASS
		21350	2560	27.37	21.20	6.17	≤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	27.19	16.41	10.78	≤13	PASS
		38000	2595	27.38	18.06	9.32	≤13	PASS
		38225	2617.5	27.33	17.82	9.51	≤13	PASS
	10	37800	2575	27.50	18.38	9.12	≤13	PASS
		38000	2595	27.25	16.65	10.60	≤13	PASS
		38200	2615	27.44	18.67	8.77	≤13	PASS
	15	37825	2577.5	27.72	17.71	10.01	≤13	PASS
		38000	2595	27.80	18.47	9.33	≤13	PASS
		38175	2612.5	27.69	17.66	10.03	≤13	PASS
	20	37850	2580	27.44	18.63	8.81	≤13	PASS
		38000	2595	27.40	18.28	9.12	≤13	PASS
		38150	2610	27.35	17.94	9.41	≤13	PASS
16QAM	5	37775	2572.5	26.95	17.28	9.67	≤13	PASS
		38000	2595	26.97	16.31	10.66	≤13	PASS
		38225	2617.5	27.13	17.84	9.29	≤13	PASS
	10	37800	2575	27.29	17.82	9.47	≤13	PASS
		38000	2595	27.06	16.65	10.41	≤13	PASS
		38200	2615	27.24	17.77	9.47	≤13	PASS
	15	37825	2577.5	27.17	16.26	10.91	≤13	PASS
		38000	2595	27.08	15.80	11.28	≤13	PASS
		38175	2612.5	27.29	17.79	9.50	≤13	PASS
	20	37850	2580	26.97	16.26	10.71	≤13	PASS
		38000	2595	27.03	17.07	9.96	≤13	PASS
		38150	2610	27.17	17.89	9.28	≤13	PASS

LTE Band 41								
Modulation	Bandwidth ((MHz))	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
QPSK	5	40065	2537.5	25.90	16.91	8.99	≤13	PASS
		40640	2595	26.06	16.80	9.26	≤13	PASS
		41215	2652.5	26.13	16.62	9.51	≤13	PASS
	10	40090	2540	25.98	16.67	9.31	≤13	PASS



		40640	2595	26.00	16.65	9.35	≤13	PASS
		41190	2650	26.14	16.81	9.33	≤13	PASS
	15	40115	2542.5	26.31	17.24	9.07	≤13	PASS
		40640	2595	26.23	16.10	10.13	≤13	PASS
		41165	2647.5	26.40	16.81	9.59	≤13	PASS
	20	40140	2545	26.03	16.93	9.10	≤13	PASS
		40640	2595	25.87	16.13	9.74	≤13	PASS
		41140	2645	26.12	17.20	8.92	≤13	PASS
	16QAM	5	40065	2537.5	25.54	15.79	9.75	≤13
40640			2595	25.59	15.80	9.79	≤13	PASS
41215			2652.5	25.80	15.77	10.03	≤13	PASS
10		40090	2540	25.68	15.89	9.79	≤13	PASS
		40640	2595	25.72	15.71	10.01	≤13	PASS
		41190	2650	25.96	16.03	9.93	≤13	PASS
15		40115	2542.5	25.75	15.44	10.31	≤13	PASS
		40640	2595	25.83	15.52	10.31	≤13	PASS
		41165	2647.5	25.90	15.56	10.34	≤13	PASS
20		40140	2545	25.63	15.44	10.19	≤13	PASS
		40640	2595	25.61	15.49	10.12	≤13	PASS
		41140	2645	25.78	15.86	9.92	≤13	PASS

5.5 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)

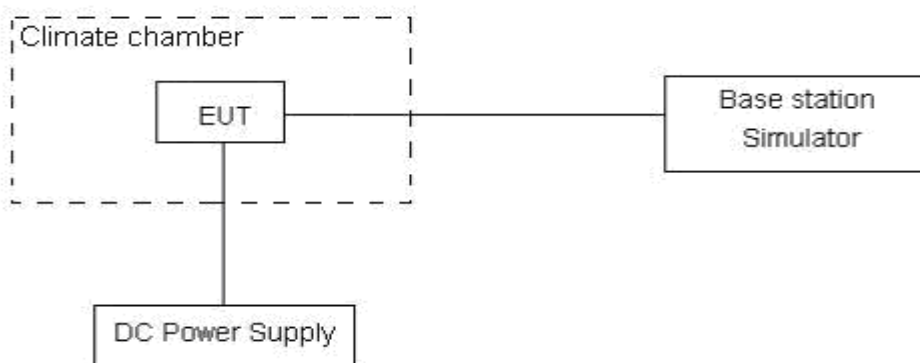
The frequency stability shall be measured with variation of primary supply voltage as follows:

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



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°C)	Normal	14.66	13.59	0.00780	0.00723	PASS
Extreme (55°C)		5.84	2.84	0.00311	0.00151	PASS
Extreme (50°C)		13.66	16.01	0.00726	0.00851	PASS
Extreme (40°C)		11.00	3.38	0.00585	0.00180	PASS
Extreme (30°C)		8.83	10.35	0.00469	0.00551	PASS
Extreme (20°C)		15.44	13.12	0.00821	0.00698	PASS
Extreme (10°C)		5.38	15.51	0.00286	0.00825	PASS
Extreme (0°C)		11.36	2.81	0.00604	0.00149	PASS
Extreme (-10°C)		15.55	3.79	0.00827	0.00202	PASS
Extreme (-20°C)		15.25	14.33	0.00811	0.00762	PASS
Extreme (-30°C)		12.06	7.65	0.00641	0.00407	PASS
25°C	LV	6.52	3.53	0.00347	0.00188	PASS
	HV	4.14	1.32	0.00220	0.00070	PASS

LTE B4						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	1.4MHz	16QAM	QPSK	16QAM	QPSK	
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	17.70	11.48	0.00941	0.00610	PASS
Extreme (55°C)		3.81	2.48	0.00203	0.00132	PASS
Extreme (50°C)		4.12	17.45	0.00219	0.00928	PASS
Extreme (40°C)		15.84	5.06	0.00842	0.00269	PASS
Extreme (30°C)		5.14	3.55	0.00274	0.00189	PASS
Extreme (20°C)		11.58	7.70	0.00616	0.00410	PASS
Extreme (10°C)		7.50	12.59	0.00399	0.00670	PASS
Extreme (0°C)		12.17	11.26	0.00647	0.00599	PASS
Extreme (-10°C)		10.77	16.06	0.00573	0.00854	PASS
Extreme (-20°C)		10.77	5.64	0.00573	0.00300	PASS
Extreme (-30°C)		7.83	6.32	0.00416	0.00336	PASS
25°C	LV	16.06	7.40	0.00854	0.00394	PASS
	HV	2.44	12.83	0.00130	0.00683	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	3MHz					



Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	11.32	10.93	0.00602	0.00582	PASS
Extreme (55°C)		17.21	5.66	0.00915	0.00301	PASS
Extreme (50°C)		14.42	16.09	0.00767	0.00856	PASS
Extreme (40°C)		13.06	8.66	0.00695	0.00461	PASS
Extreme (30°C)		2.70	1.39	0.00144	0.00074	PASS
Extreme (20°C)		7.28	12.54	0.00387	0.00667	PASS
Extreme (10°C)		17.70	11.38	0.00941	0.00605	PASS
Extreme (0°C)		10.91	2.49	0.00580	0.00132	PASS
Extreme (-10°C)		3.17	2.02	0.00169	0.00108	PASS
Extreme (-20°C)		4.09	15.60	0.00218	0.00830	PASS
Extreme (-30°C)		8.95	15.78	0.00476	0.00839	PASS
25°C	LV	11.09	16.11	0.00590	0.00857	PASS
	HV	17.35	10.48	0.00923	0.00557	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	2.32	14.70	0.00123	0.00782	PASS
Extreme (55°C)		15.60	9.79	0.00830	0.00521	PASS
Extreme (50°C)		2.90	2.32	0.00154	0.00123	PASS
Extreme (40°C)		7.72	7.13	0.00411	0.00379	PASS
Extreme (30°C)		2.73	3.24	0.00145	0.00173	PASS
Extreme (20°C)		5.98	6.71	0.00318	0.00357	PASS
Extreme (10°C)		7.55	1.16	0.00402	0.00062	PASS
Extreme (0°C)		16.60	15.33	0.00883	0.00815	PASS
Extreme (-10°C)		10.49	14.00	0.00558	0.00744	PASS
Extreme (-20°C)		6.99	5.90	0.00372	0.00314	PASS
Extreme (-30°C)		14.90	7.47	0.00792	0.00397	PASS
25°C	LV	15.80	3.27	0.00840	0.00174	PASS
	HV	5.79	10.18	0.00308	0.00541	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	17.57	11.29	0.00935	0.00600	PASS
Extreme (55°C)		8.02	6.27	0.00427	0.00333	PASS
Extreme (50°C)		5.71	4.12	0.00303	0.00219	PASS
Extreme (40°C)		2.03	15.59	0.00108	0.00829	PASS
Extreme (30°C)		14.98	16.92	0.00797	0.00900	PASS
Extreme (20°C)		12.60	8.88	0.00670	0.00472	PASS
Extreme (10°C)		15.88	8.68	0.00845	0.00462	PASS



Extreme (0°C)		8.97	11.69	0.00477	0.00622	PASS
Extreme (-10°C)		4.58	14.71	0.00243	0.00783	PASS
Extreme (-20°C)		14.28	7.75	0.00760	0.00412	PASS
Extreme (-30°C)		4.49	3.36	0.00239	0.00179	PASS
25°C	LV	12.88	8.03	0.00685	0.00427	PASS
	HV	15.63	8.65	0.00831	0.00460	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	1.26	8.09	0.00067	0.00430	PASS
Extreme (55°C)		7.05	9.52	0.00375	0.00506	PASS
Extreme (50°C)		5.30	15.50	0.00282	0.00824	PASS
Extreme (40°C)		17.05	8.53	0.00907	0.00454	PASS
Extreme (30°C)		16.59	5.66	0.00883	0.00301	PASS
Extreme (20°C)		5.53	12.97	0.00294	0.00690	PASS
Extreme (10°C)		6.40	17.56	0.00340	0.00934	PASS
Extreme (0°C)		6.98	15.86	0.00371	0.00844	PASS
Extreme (-10°C)		5.05	17.20	0.00269	0.00915	PASS
Extreme (-20°C)		9.42	14.79	0.00501	0.00787	PASS
Extreme (-30°C)		15.92	16.29	0.00847	0.00866	PASS
25°C		LV	4.76	3.10	0.00253	0.00165
	HV	6.17	7.37	0.00328	0.00392	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	6.83	9.90	0.00363	0.00526	PASS
Extreme (55°C)		14.61	15.95	0.00777	0.00849	PASS
Extreme (50°C)		13.45	13.23	0.00715	0.00704	PASS
Extreme (40°C)		4.24	9.52	0.00226	0.00507	PASS
Extreme (30°C)		1.81	13.44	0.00096	0.00715	PASS
Extreme (20°C)		2.36	11.88	0.00126	0.00632	PASS
Extreme (10°C)		12.45	3.49	0.00662	0.00186	PASS
Extreme (0°C)		9.71	11.37	0.00516	0.00605	PASS
Extreme (-10°C)		4.08	10.35	0.00217	0.00550	PASS
Extreme (-20°C)		5.43	2.62	0.00289	0.00139	PASS
Extreme (-30°C)		16.61	5.44	0.00884	0.00289	PASS
25°C		LV	12.99	15.89	0.00691	0.00845
	HV	16.05	16.81	0.00854	0.00894	PASS



LTE B7						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz	16QAM	QPSK	16QAM	QPSK	
Temperature	Voltage					
Normal (25°C)	Normal	2.07	10.27	0.00110	0.00546	PASS
Extreme (55°C)		9.86	12.97	0.00524	0.00690	PASS
Extreme (50°C)		7.62	13.75	0.00405	0.00732	PASS
Extreme (40°C)		11.08	16.69	0.00589	0.00888	PASS
Extreme (30°C)		8.99	3.92	0.00478	0.00208	PASS
Extreme (20°C)		7.46	3.48	0.00397	0.00185	PASS
Extreme (10°C)		8.79	4.55	0.00467	0.00242	PASS
Extreme (0°C)		9.10	12.15	0.00484	0.00646	PASS
Extreme (-10°C)		7.30	7.94	0.00388	0.00422	PASS
Extreme (-20°C)		7.03	13.23	0.00374	0.00704	PASS
Extreme (-30°C)		3.08	11.58	0.00164	0.00616	PASS
25°C		LV	2.56	9.80	0.00136	0.00521
	HV	14.07	9.95	0.00748	0.00529	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz	16QAM	QPSK	16QAM	QPSK	
Temperature	Voltage					
Normal (25°C)	Normal	16.93	2.39	0.00900	0.00127	PASS
Extreme (55°C)		7.81	1.97	0.00415	0.00105	PASS
Extreme (50°C)		9.93	15.73	0.00528	0.00837	PASS
Extreme (40°C)		10.79	14.73	0.00574	0.00784	PASS
Extreme (30°C)		16.32	15.94	0.00868	0.00848	PASS
Extreme (20°C)		16.69	10.39	0.00888	0.00553	PASS
Extreme (10°C)		11.87	2.33	0.00631	0.00124	PASS
Extreme (0°C)		5.23	10.27	0.00278	0.00546	PASS
Extreme (-10°C)		17.68	13.11	0.00941	0.00697	PASS
Extreme (-20°C)		7.42	13.60	0.00395	0.00723	PASS
Extreme (-30°C)		10.07	1.85	0.00536	0.00098	PASS
25°C		LV	9.50	13.10	0.00505	0.00697
	HV	5.14	13.54	0.00273	0.00720	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz	16QAM	QPSK	16QAM	QPSK	
Temperature	Voltage					



Normal (25°C)	Normal	14.68	16.78	0.00781	0.00893	PASS
Extreme (55°C)		12.19	16.72	0.00649	0.00889	PASS
Extreme (50°C)		13.15	2.77	0.00699	0.00147	PASS
Extreme (40°C)		16.94	2.45	0.00901	0.00130	PASS
Extreme (30°C)		8.70	1.82	0.00463	0.00097	PASS
Extreme (20°C)		8.47	17.96	0.00451	0.00955	PASS
Extreme (10°C)		14.17	14.32	0.00754	0.00762	PASS
Extreme (0°C)		9.77	2.24	0.00520	0.00119	PASS
Extreme (-10°C)		15.81	12.48	0.00841	0.00664	PASS
Extreme (-20°C)		13.95	8.47	0.00742	0.00451	PASS
Extreme (-30°C)		4.39	3.09	0.00234	0.00164	PASS
25°C	LV	6.88	11.15	0.00366	0.00593	PASS
	HV	5.84	13.39	0.00311	0.00712	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	7.91	8.87	0.00421	0.00472	PASS
Extreme (55°C)		12.14	15.52	0.00646	0.00826	PASS
Extreme (50°C)		8.96	4.03	0.00477	0.00214	PASS
Extreme (40°C)		2.89	14.72	0.00154	0.00783	PASS
Extreme (30°C)		6.54	13.05	0.00348	0.00694	PASS
Extreme (20°C)		6.12	10.37	0.00326	0.00552	PASS
Extreme (10°C)		7.52	5.42	0.00400	0.00288	PASS
Extreme (0°C)		7.52	12.74	0.00400	0.00678	PASS
Extreme (-10°C)		16.47	15.05	0.00876	0.00800	PASS
Extreme (-20°C)		4.45	14.08	0.00237	0.00749	PASS
Extreme (-30°C)		6.01	10.59	0.00320	0.00563	PASS
25°C	LV	13.88	10.53	0.00739	0.00560	PASS
	HV	5.18	11.91	0.00275	0.00634	PASS

LTE B38						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	9.57	1.30	0.00509	0.00069	PASS
Extreme (55°C)		13.83	17.06	0.00736	0.00907	PASS
Extreme (50°C)		15.94	16.56	0.00848	0.00881	PASS
Extreme (40°C)		1.06	11.37	0.00057	0.00605	PASS
Extreme (30°C)		14.55	17.74	0.00774	0.00944	PASS



Extreme (20°C)		2.14	16.30	0.00114	0.00867	PASS
Extreme (10°C)		15.82	12.68	0.00842	0.00674	PASS
Extreme (0°C)		17.41	16.40	0.00926	0.00872	PASS
Extreme (-10°C)		17.77	14.66	0.00945	0.00780	PASS
Extreme (-20°C)		17.26	1.96	0.00918	0.00104	PASS
Extreme (-30°C)		6.53	8.57	0.00347	0.00456	PASS
25°C	LV	15.49	15.15	0.00824	0.00806	PASS
	HV	8.02	4.94	0.00427	0.00263	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	11.21	12.37	0.00596	0.00658	PASS
Extreme (55°C)		16.40	10.59	0.00872	0.00563	PASS
Extreme (50°C)		17.63	9.06	0.00938	0.00482	PASS
Extreme (40°C)		4.78	16.94	0.00254	0.00901	PASS
Extreme (30°C)		13.60	7.12	0.00723	0.00379	PASS
Extreme (20°C)		3.90	14.68	0.00207	0.00781	PASS
Extreme (10°C)		7.06	8.89	0.00376	0.00473	PASS
Extreme (0°C)		14.23	6.33	0.00757	0.00337	PASS
Extreme (-10°C)		11.28	9.93	0.00600	0.00528	PASS
Extreme (-20°C)		14.84	12.52	0.00789	0.00666	PASS
Extreme (-30°C)		3.80	10.53	0.00202	0.00560	PASS
25°C		LV	8.76	8.86	0.00466	0.00472
	HV	6.82	8.01	0.00363	0.00426	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	12.80	8.55	0.00681	0.00455	PASS
Extreme (55°C)		4.49	1.97	0.00239	0.00105	PASS
Extreme (50°C)		4.20	13.12	0.00223	0.00698	PASS
Extreme (40°C)		8.64	11.37	0.00459	0.00605	PASS
Extreme (30°C)		11.11	1.17	0.00591	0.00062	PASS
Extreme (20°C)		6.21	3.48	0.00330	0.00185	PASS
Extreme (10°C)		3.17	17.95	0.00169	0.00955	PASS
Extreme (0°C)		7.25	5.93	0.00386	0.00315	PASS
Extreme (-10°C)		5.44	2.90	0.00289	0.00154	PASS
Extreme (-20°C)		2.66	3.25	0.00141	0.00173	PASS
Extreme (-30°C)		11.83	3.43	0.00629	0.00183	PASS
25°C		LV	13.02	1.50	0.00693	0.00080
	HV	15.76	6.68	0.00838	0.00355	PASS



Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	17.88	5.98	0.00951	0.00318	PASS
Extreme (55°C)		17.18	16.58	0.00914	0.00882	PASS
Extreme (50°C)		3.87	1.48	0.00206	0.00079	PASS
Extreme (40°C)		17.46	17.56	0.00929	0.00934	PASS
Extreme (30°C)		4.33	5.89	0.00230	0.00313	PASS
Extreme (20°C)		1.84	14.86	0.00098	0.00791	PASS
Extreme (10°C)		12.52	12.10	0.00666	0.00643	PASS
Extreme (0°C)		1.38	15.33	0.00073	0.00815	PASS
Extreme (-10°C)		3.69	7.46	0.00196	0.00397	PASS
Extreme (-20°C)		5.63	1.32	0.00300	0.00070	PASS
Extreme (-30°C)		8.41	17.73	0.00447	0.00943	PASS
25°C		LV	5.16	5.24	0.00274	0.00279
	HV	5.72	3.66	0.00304	0.00195	PASS

LTE B41						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	3.38	8.70	0.00180	0.00463	PASS
Extreme (55°C)		9.64	11.72	0.00513	0.00623	PASS
Extreme (50°C)		11.18	12.60	0.00595	0.00670	PASS
Extreme (40°C)		12.10	9.73	0.00644	0.00518	PASS
Extreme (30°C)		7.96	4.38	0.00423	0.00233	PASS
Extreme (20°C)		6.90	3.95	0.00367	0.00210	PASS
Extreme (10°C)		10.00	15.63	0.00532	0.00831	PASS
Extreme (0°C)		17.51	16.13	0.00931	0.00858	PASS
Extreme (-10°C)		9.16	11.30	0.00487	0.00601	PASS
Extreme (-20°C)		14.85	9.43	0.00790	0.00502	PASS
Extreme (-30°C)		11.49	11.91	0.00611	0.00634	PASS
25°C		LV	4.24	4.95	0.00226	0.00263
	HV	4.18	17.85	0.00222	0.00950	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	10MHz					



Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	12.09	9.10	0.00643	0.00484	PASS
Extreme (55°C)		2.80	13.59	0.00149	0.00723	PASS
Extreme (50°C)		10.59	14.60	0.00563	0.00777	PASS
Extreme (40°C)		1.41	6.64	0.00075	0.00353	PASS
Extreme (30°C)		7.37	16.15	0.00392	0.00859	PASS
Extreme (20°C)		14.65	15.37	0.00779	0.00818	PASS
Extreme (10°C)		3.97	5.31	0.00211	0.00283	PASS
Extreme (0°C)		17.46	7.34	0.00929	0.00391	PASS
Extreme (-10°C)		8.56	6.68	0.00455	0.00356	PASS
Extreme (-20°C)		12.91	13.92	0.00687	0.00741	PASS
Extreme (-30°C)		6.90	4.72	0.00367	0.00251	PASS
25°C	LV	4.07	16.06	0.00216	0.00854	PASS
	HV	1.78	8.82	0.00095	0.00469	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	15MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	12.41	1.10	0.00660	0.00058	PASS
Extreme (55°C)		6.51	3.80	0.00346	0.00202	PASS
Extreme (50°C)		7.95	14.03	0.00423	0.00746	PASS
Extreme (40°C)		11.09	16.61	0.00590	0.00884	PASS
Extreme (30°C)		17.84	8.86	0.00949	0.00471	PASS
Extreme (20°C)		7.51	12.76	0.00400	0.00679	PASS
Extreme (10°C)		13.35	14.40	0.00710	0.00766	PASS
Extreme (0°C)		14.39	17.85	0.00765	0.00950	PASS
Extreme (-10°C)		17.96	1.49	0.00956	0.00079	PASS
Extreme (-20°C)		15.77	8.26	0.00839	0.00439	PASS
Extreme (-30°C)		1.61	15.13	0.00086	0.00805	PASS
25°C	LV	4.25	2.62	0.00226	0.00139	PASS
	HV	2.15	12.64	0.00114	0.00673	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability (ppm)	Frequency Stability (ppm)	Verdict
BANDWIDTH	20MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal (25°C)	Normal	9.75	17.96	0.00518	0.00955	PASS
Extreme (55°C)		13.45	2.33	0.00716	0.00124	PASS
Extreme (50°C)		13.42	4.30	0.00714	0.00229	PASS
Extreme (40°C)		6.13	4.83	0.00326	0.00257	PASS
Extreme (30°C)		9.41	6.53	0.00501	0.00347	PASS
Extreme (20°C)		6.01	11.77	0.00320	0.00626	PASS



Extreme (10°C)		13.27	1.73	0.00706	0.00092	PASS
Extreme (0°C)		9.82	7.55	0.00522	0.00401	PASS
Extreme (-10°C)		3.81	15.73	0.00202	0.00837	PASS
Extreme (-20°C)		12.39	1.92	0.00659	0.00102	PASS
Extreme (-30°C)		5.91	12.96	0.00314	0.00689	PASS
25°C	LV	4.62	2.04	0.00246	0.00108	PASS
	HV	17.82	5.51	0.00948	0.00293	PASS

5.6 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.

RBW is set to 1 kHz (0.009MHz~ 0.15 MHz),

RBW is set to 10 kHz (0.15 MHz~ 30 MHz)

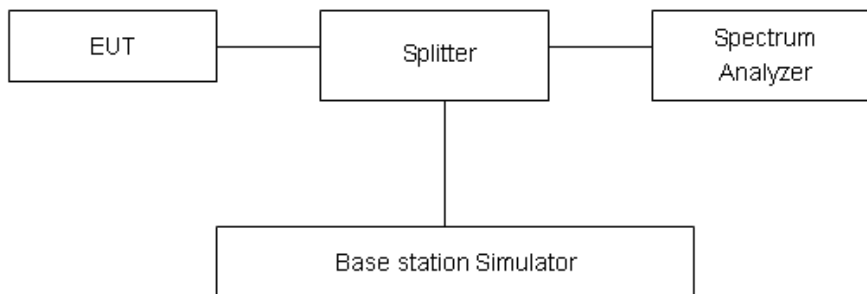
RBW is set to 100 kHz (30MHz~1000 MHz)

RBW is set to 1000 kHz (above 1000MHz)

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

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

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

Measurement Uncertainty

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

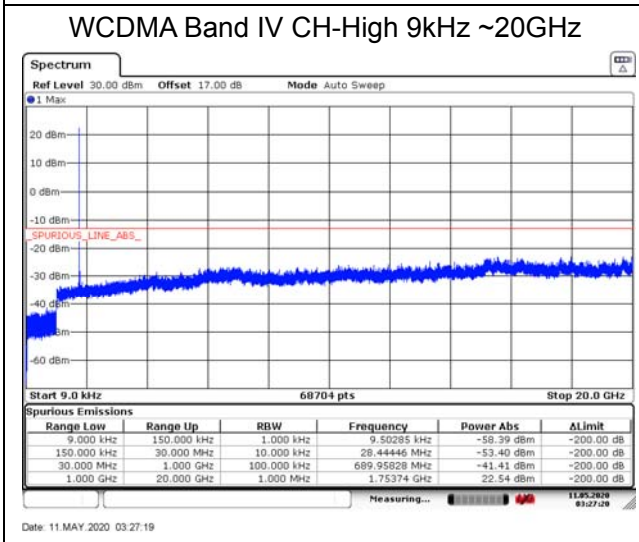
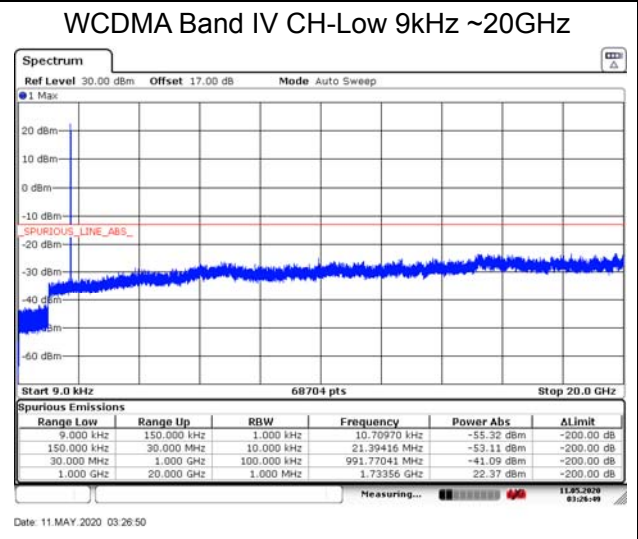
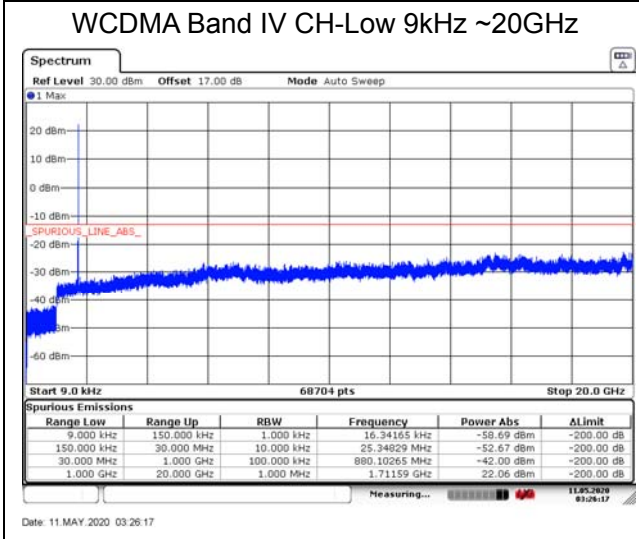
Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB



Test Result

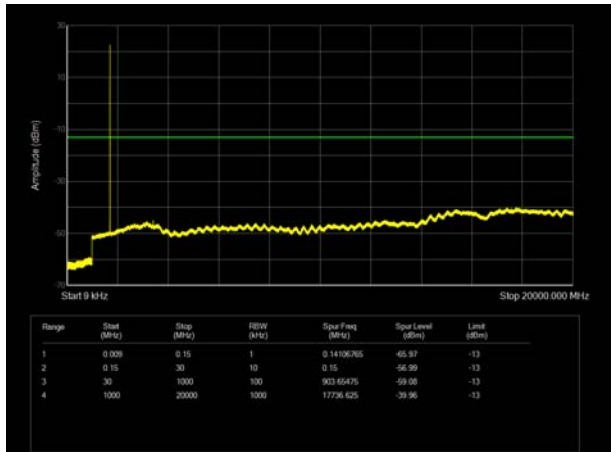
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

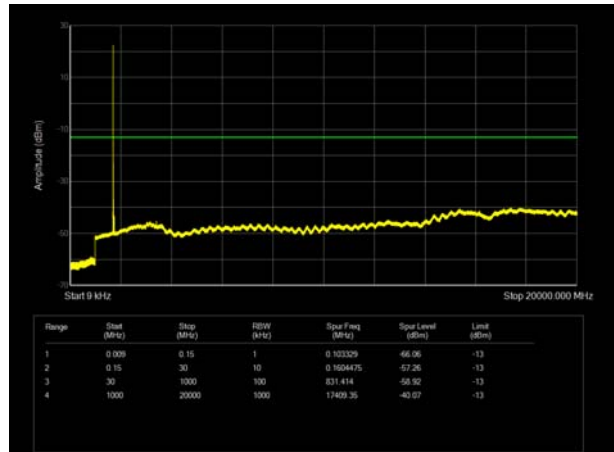




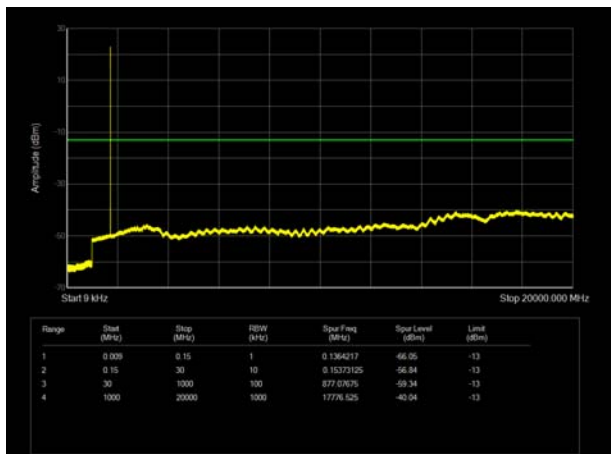
LTE Band 4 1.4MHz CH-Low 9kHz~20GHz



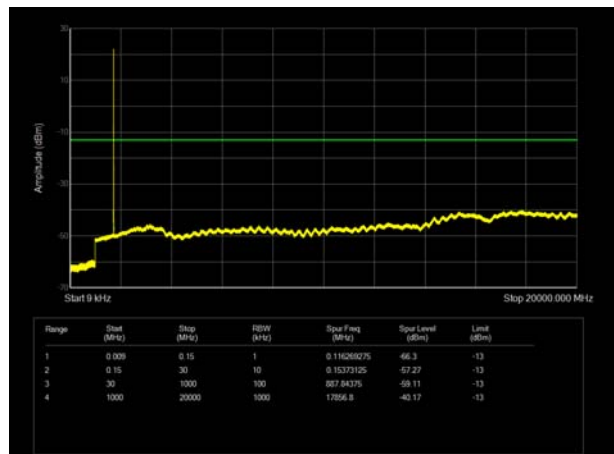
LTE Band 4 3MHz CH- Low 9kHz~20GHz



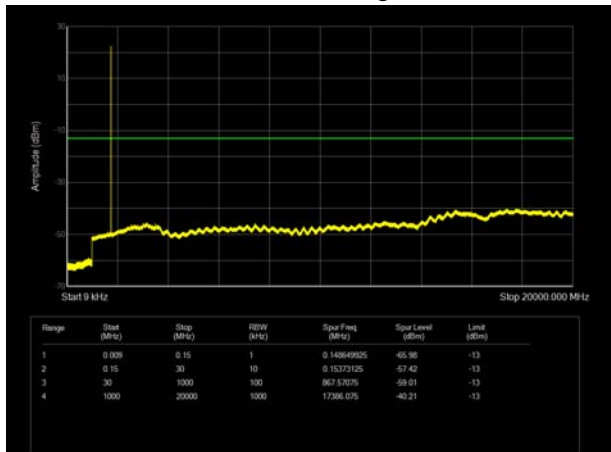
LTE Band 4 1.4MHz CH- Middle 9kHz~20GHz



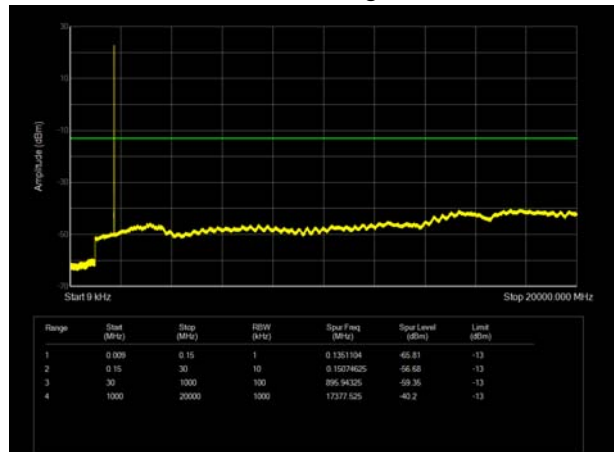
LTE Band 4 3MHz CH- Middle 9kHz~20GHz



LTE Band 4 1.4MHz CH- High 9kHz~20GHz

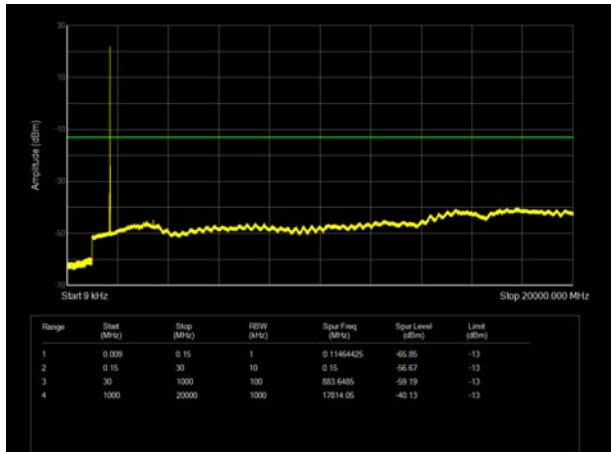


LTE Band 4 3MHz CH-High 9kHz~20GHz

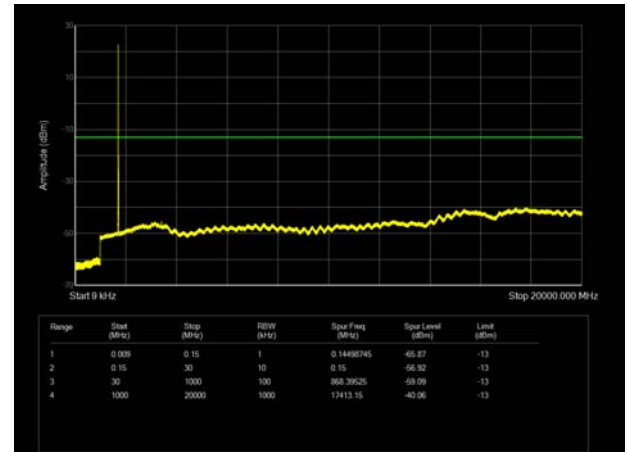




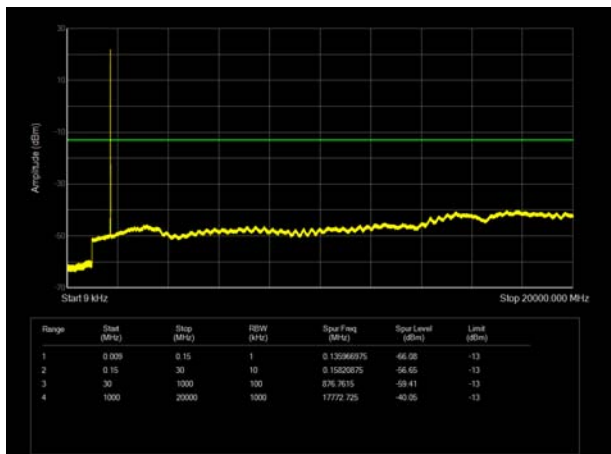
LTE Band 4 5MHz CH- Low 9kHz~20GHz



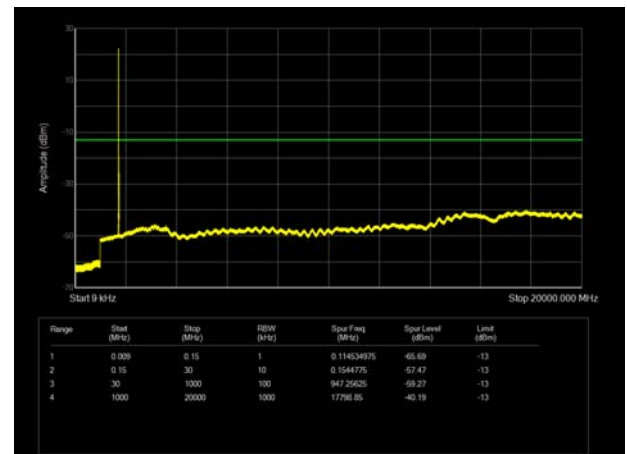
LTE Band 4 10MHz CH-Low 9kHz~20GHz



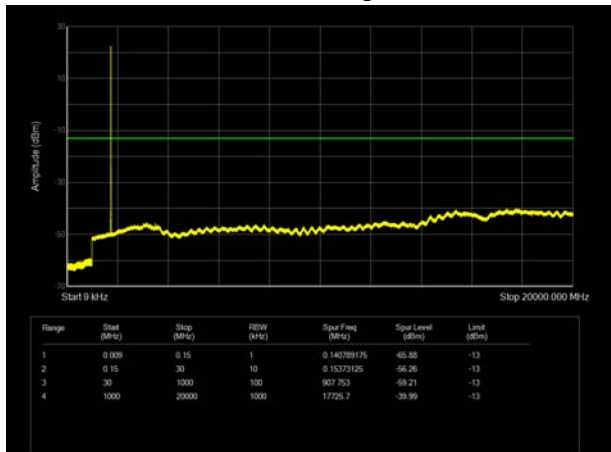
LTE Band 4 5MHz CH- Middle 9kHz~20GHz



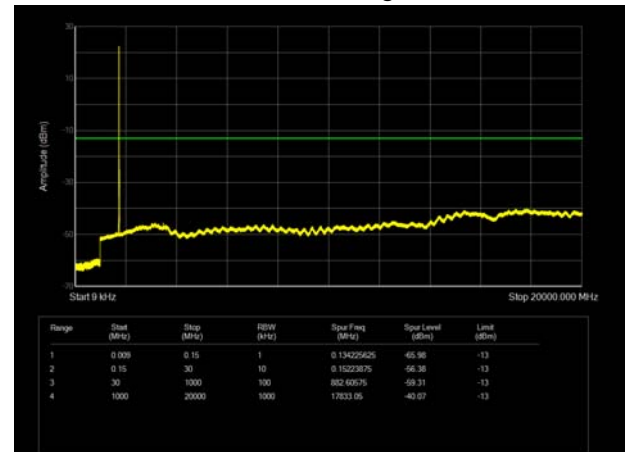
LTE Band 4 10MHz CH- Middle 9kHz~20GHz



LTE Band 4 5MHz CH-High 9kHz~20GHz

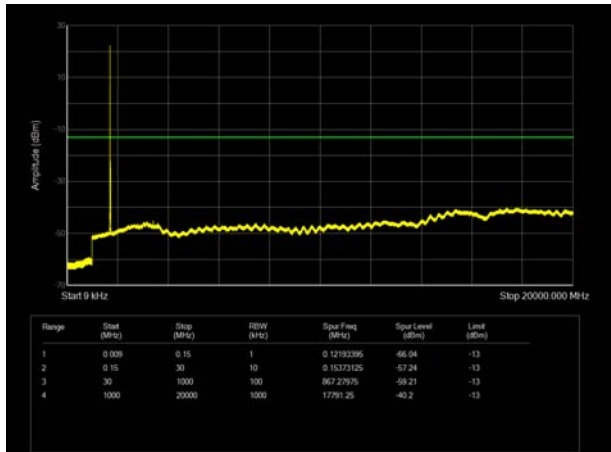


LTE Band 4 10MHz CH- High 9kHz~20GHz

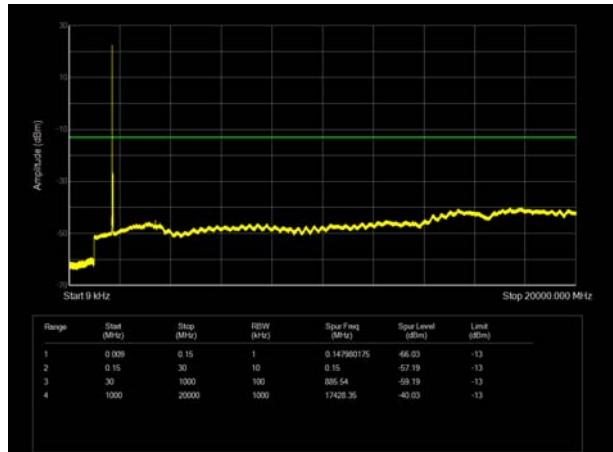




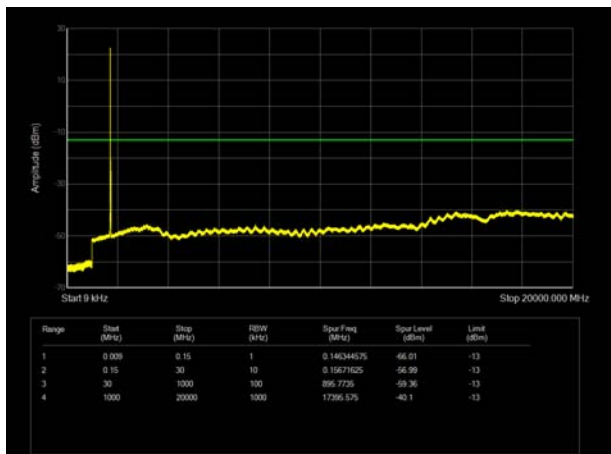
LTE Band 4 15MHz CH- Low 9kHz~20GHz



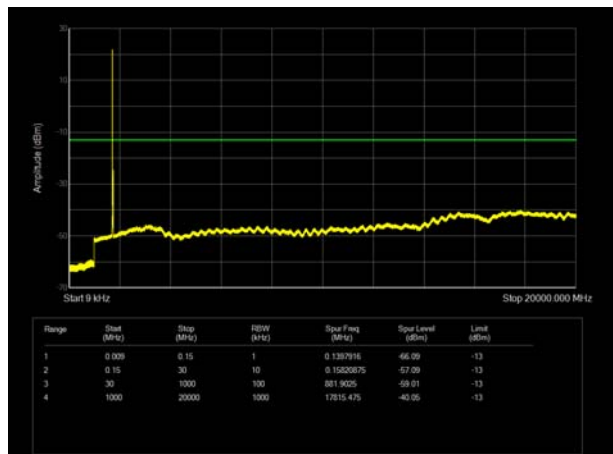
LTE Band 4 20MHz CH-Low 9kHz~20GHz



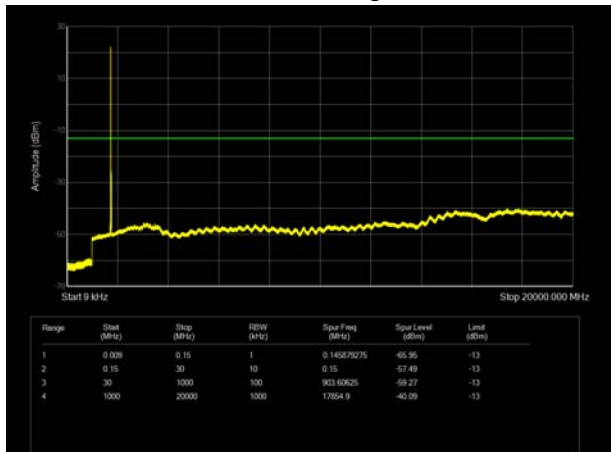
LTE Band 4 15MHz CH- Middle 9kHz~20GHz



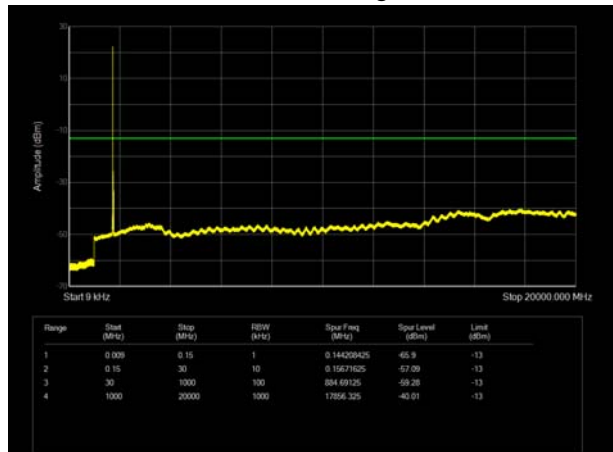
LTE Band 4 20MHz CH- Middle 9kHz~20GHz



LTE Band 4 15MHz CH-High 9kHz~20GHz

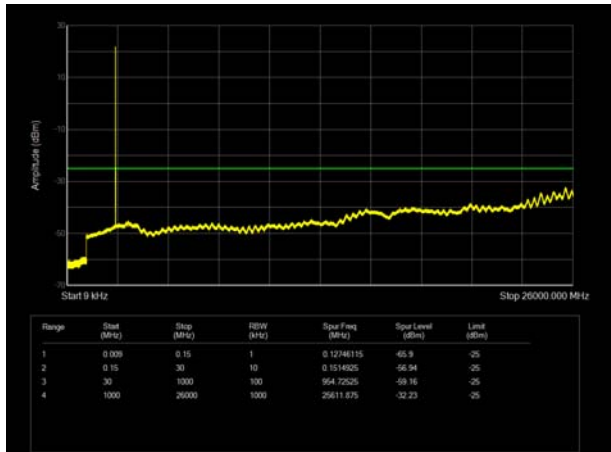


LTE Band 4 20MHz CH- High 9kHz~20GHz

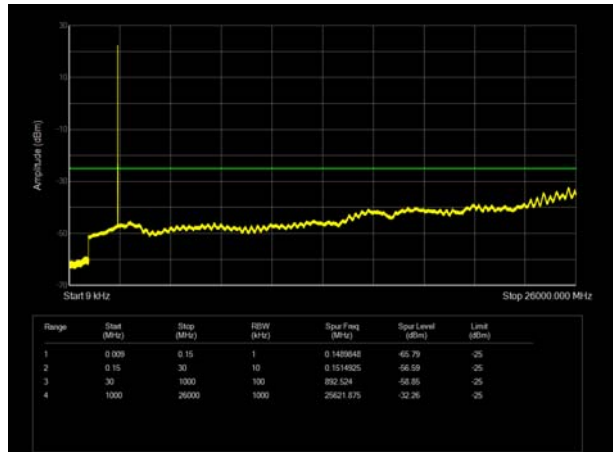




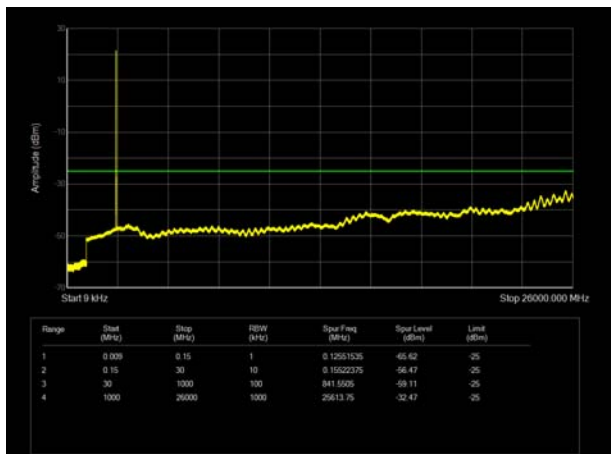
LTE Band 7 1.4MHz CH-Low 9kHz~20GHz



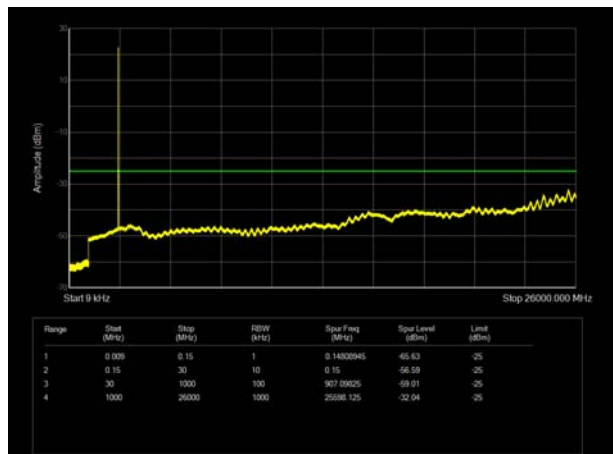
LTE Band 7 5MHz CH- Low 9kHz~20GHz



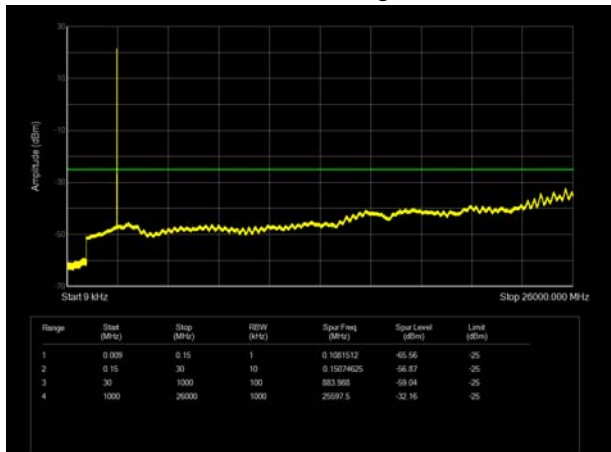
LTE Band 7 1.4MHz CH- Middle 9kHz~20GHz



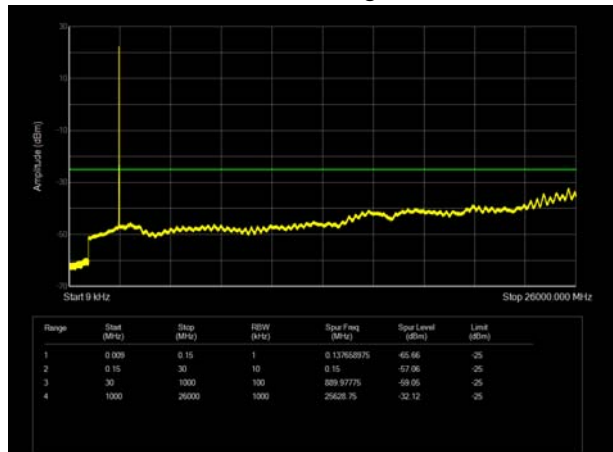
LTE Band 7 5MHz CH- Middle 9kHz~20GHz



LTE Band 7 1.4MHz CH- High 9kHz~20GHz

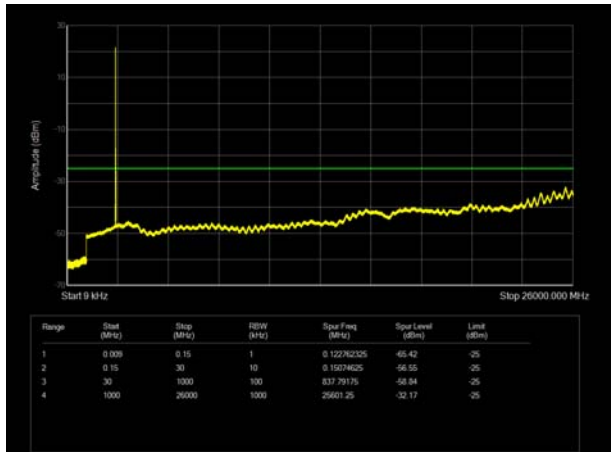


LTE Band 7 5MHz CH-High 9kHz~20GHz

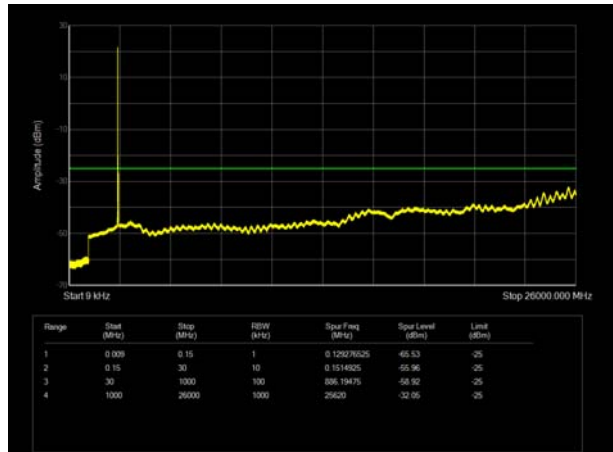




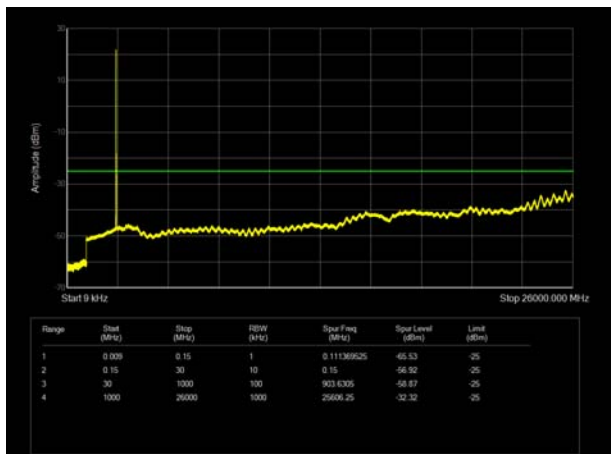
LTE Band 7 15MHz CH- Low 9kHz~20GHz



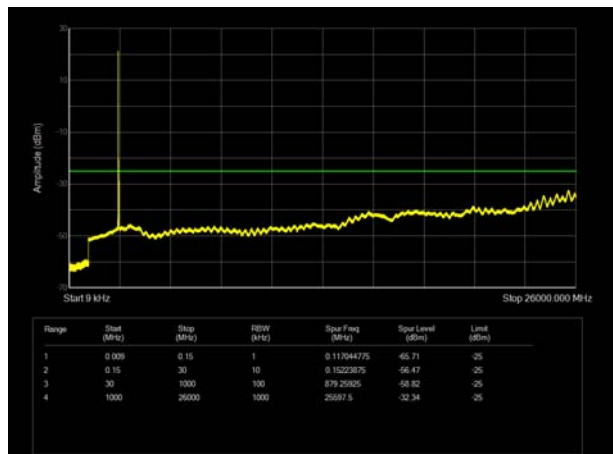
LTE Band 7 20MHz CH-Low 9kHz~20GHz



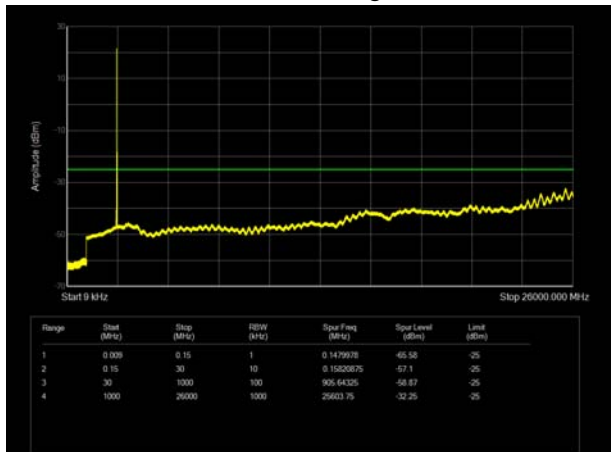
LTE Band 7 15MHz CH- Middle 9kHz~20GHz



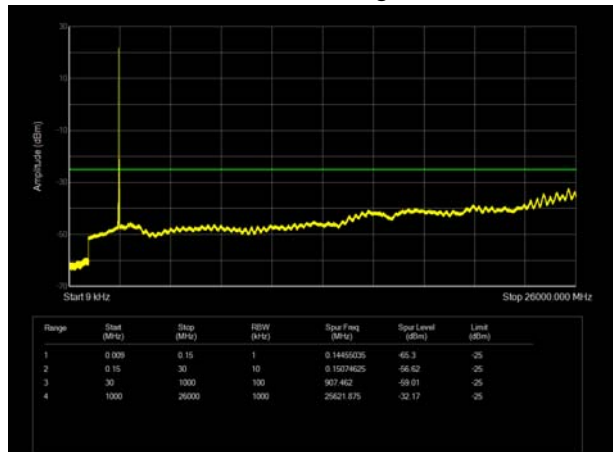
LTE Band 7 20MHz CH- Middle 9kHz~20GHz



LTE Band 7 15MHz CH-High 9kHz~20GHz

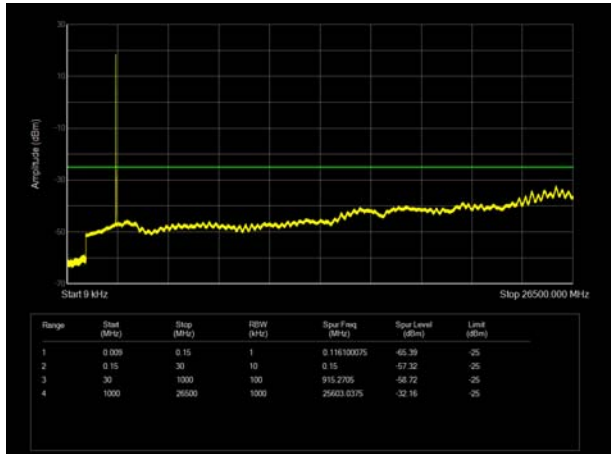


LTE Band 7 20MHz CH- High 9kHz~20GHz

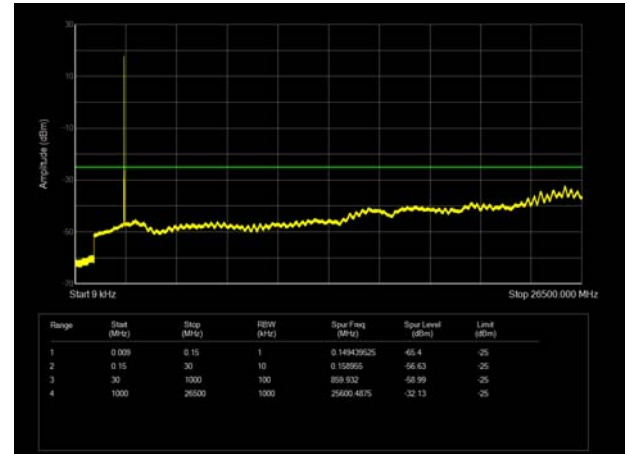




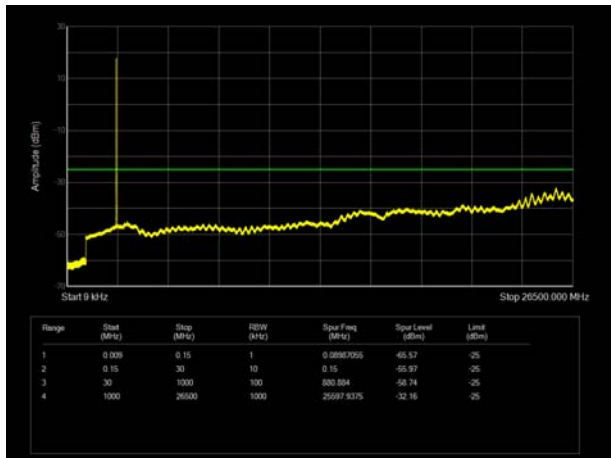
LTE Band 38 5MHz CH- Low 9kHz~26.5GHz



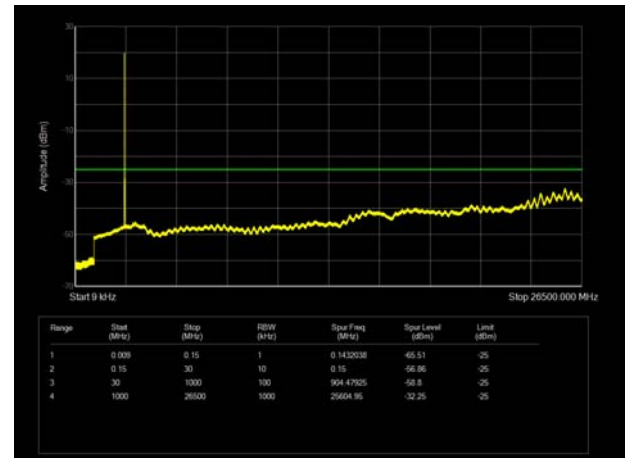
LTE Band 38 10MHz CH-Low 9kHz~26.5GHz



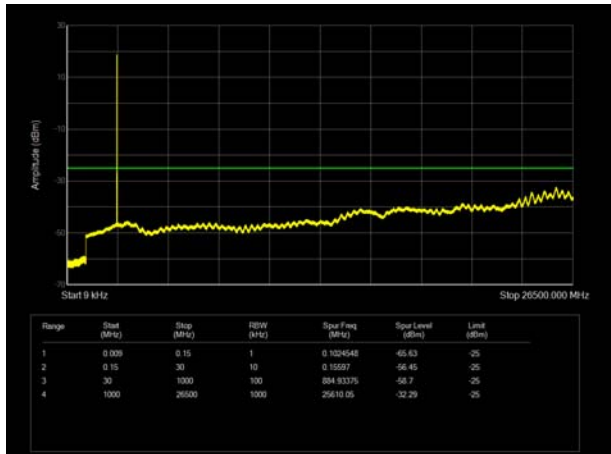
LTE Band 38 5MHz CH- Middle 9kHz~26.5GHz



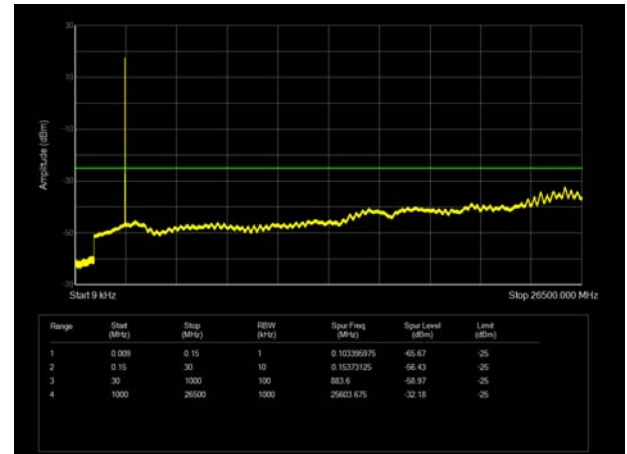
LTE Band 38 10MHz CH- Middle 9kHz~26.5GHz



LTE Band 38 5MHz CH-High 9kHz~26.5GHz

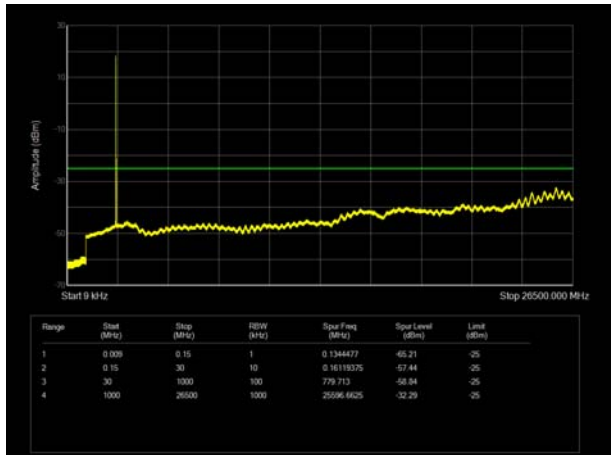


LTE Band 38 10MHz CH- High 9kHz~26.5GHz

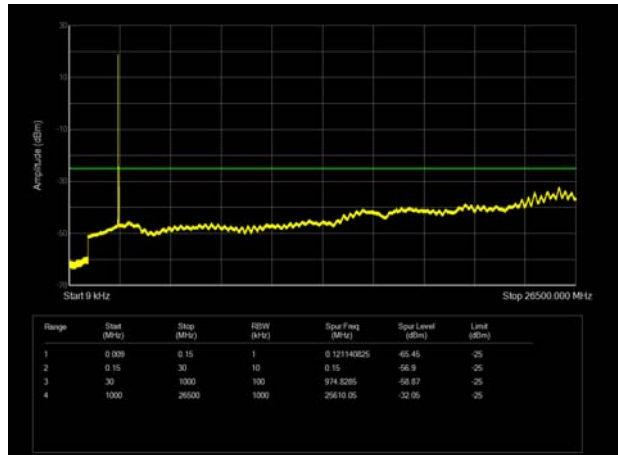




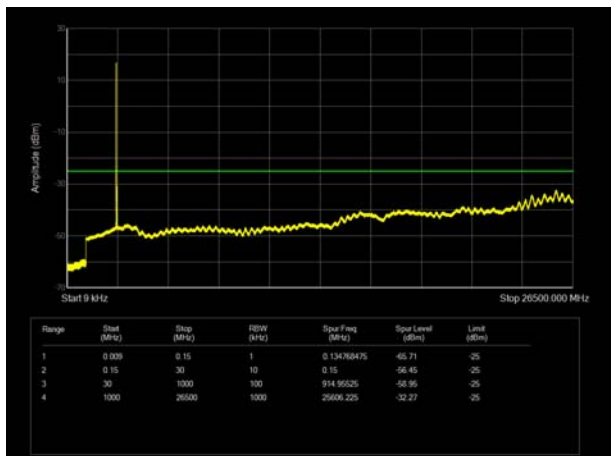
LTE Band 38 15MHz CH- Low 9kHz~26.5GHz



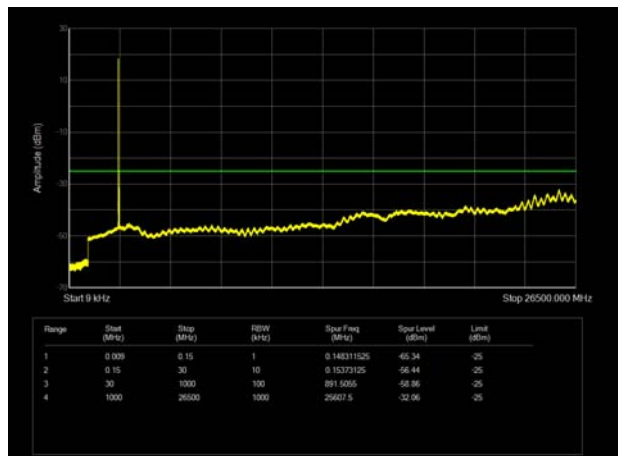
LTE Band 38 20MHz CH-Low 9kHz~26.5GHz



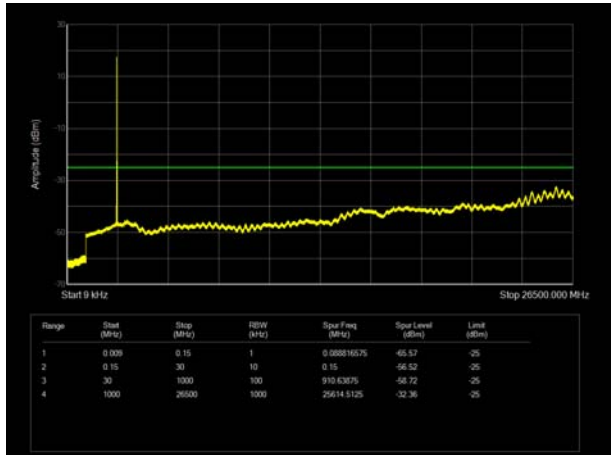
LTE Band 38 15MHz CH- Middle 9kHz~26.5GHz



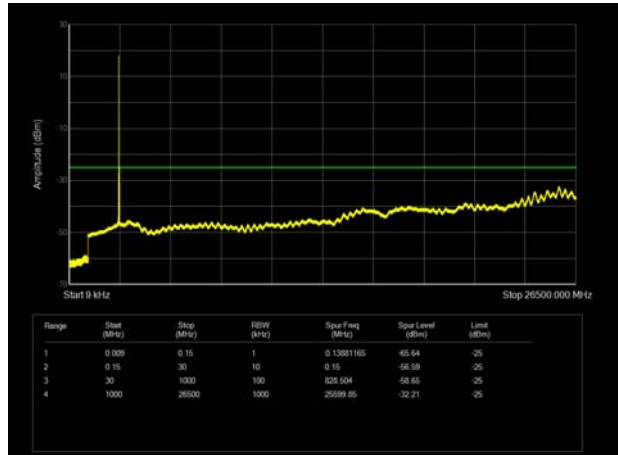
LTE Band 38 20MHz CH- Middle 9kHz~26.5GHz



LTE Band 38 15MHz CH-High 9kHz~26.5GHz

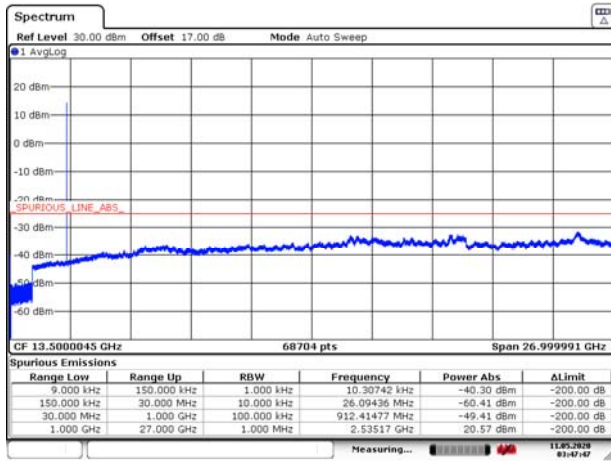


LTE Band 38 20MHz CH- High 9kHz~26.5GHz



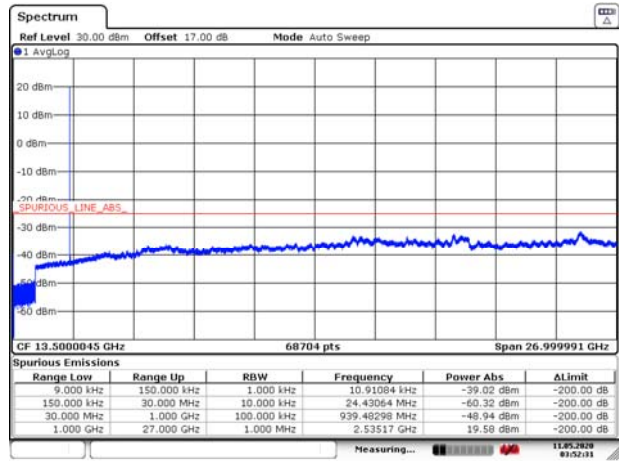


LTE Band 41 5MHz CH- Low 9kHz~20GHz



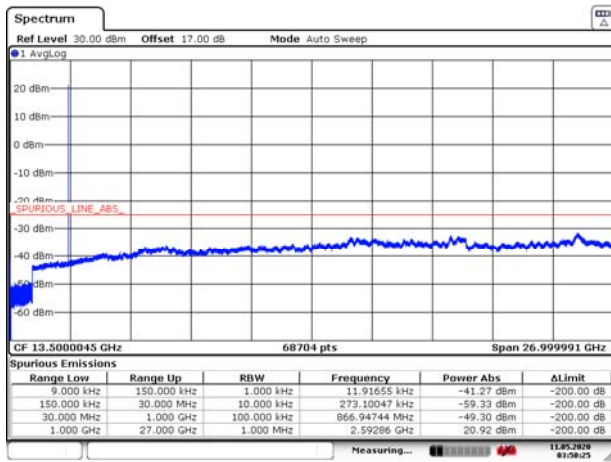
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LTE Band 41 10MHz CH- Low 9kHz~20GHz



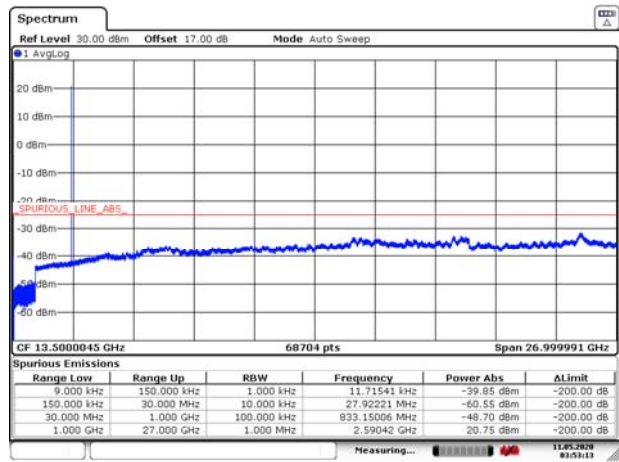
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LTE Band 41 5MHz CH- Middle 9kHz~20GHz



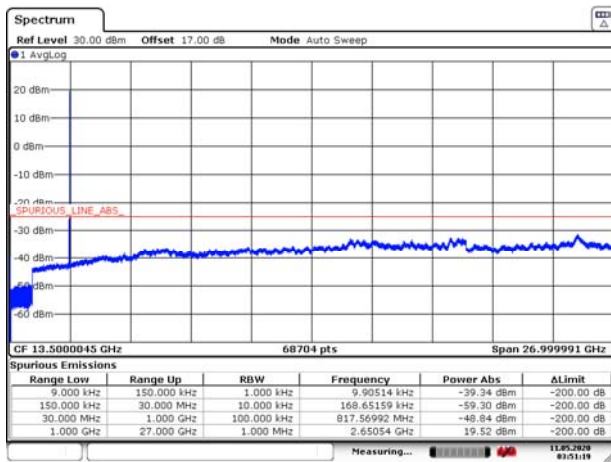
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LTE Band 41 10MHz CH- Middle 9kHz~20GHz



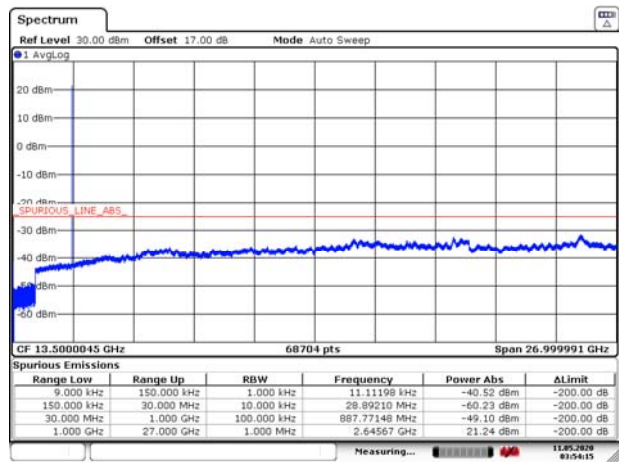
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LTE Band 41 5MHz CH-High 9kHz~20GHz



Date: 11 MAY 2020 03:51:19

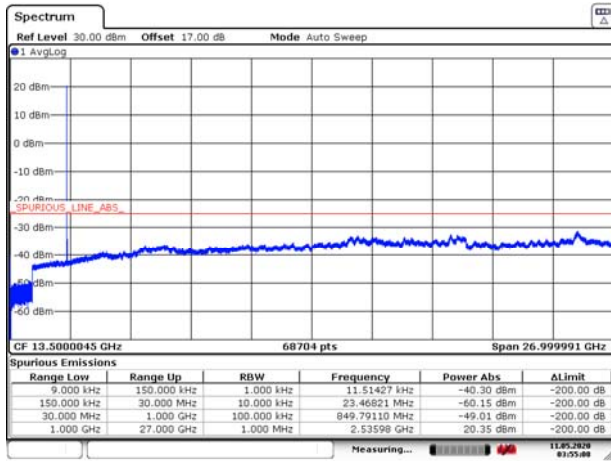
LTE Band 41 10MHz CH-High 9kHz~20GHz



Date: 11 MAY 2020 03:54:15

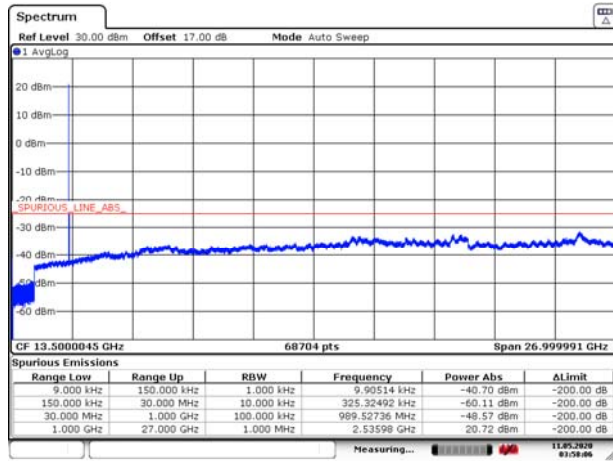


LTE Band 41 15MHz CH- Low 9kHz~20GHz



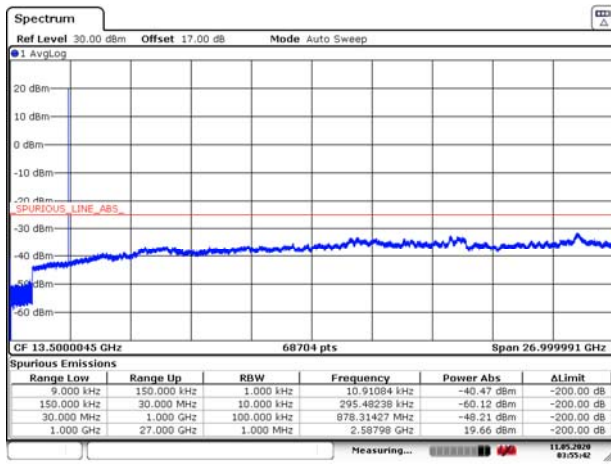
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LTE Band 41 20MHz CH-Low 9kHz~20GHz



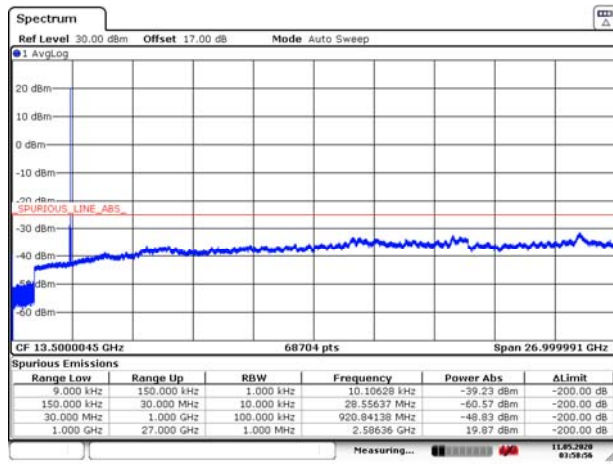
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LTE Band 41 15MHz CH- Middle 9kHz~20GHz



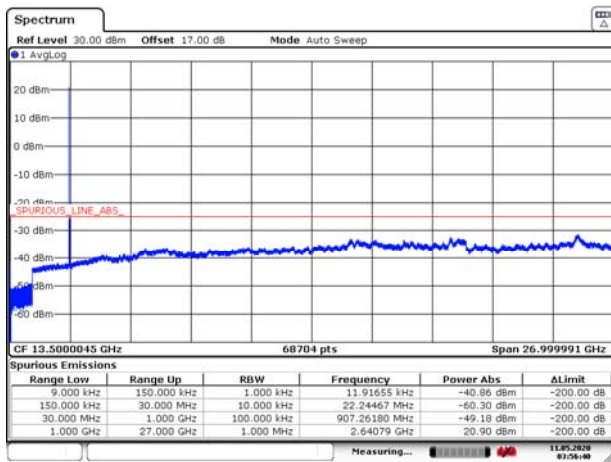
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LTE Band 41 20MHz CH- Middle 9kHz~20GHz



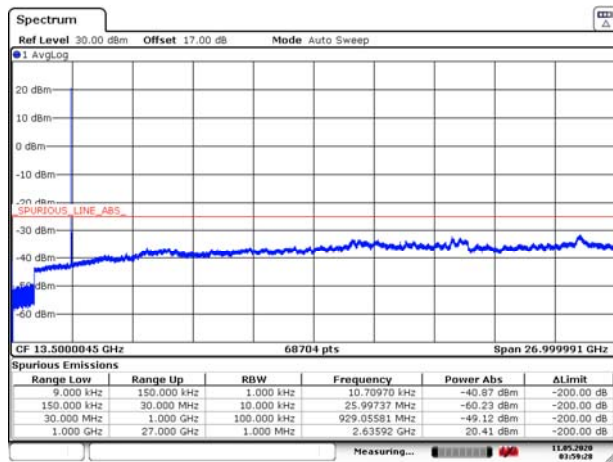
Date: 11 MAY 2020 03:58:55

LTE Band 41 15MHz CH-High 9kHz~20GHz



Date: 11 MAY 2020 03:56:40

LTE Band 41 20MHz CH- High 9kHz~20GHz



Date: 11 MAY 2020 03:59:28

5.7 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

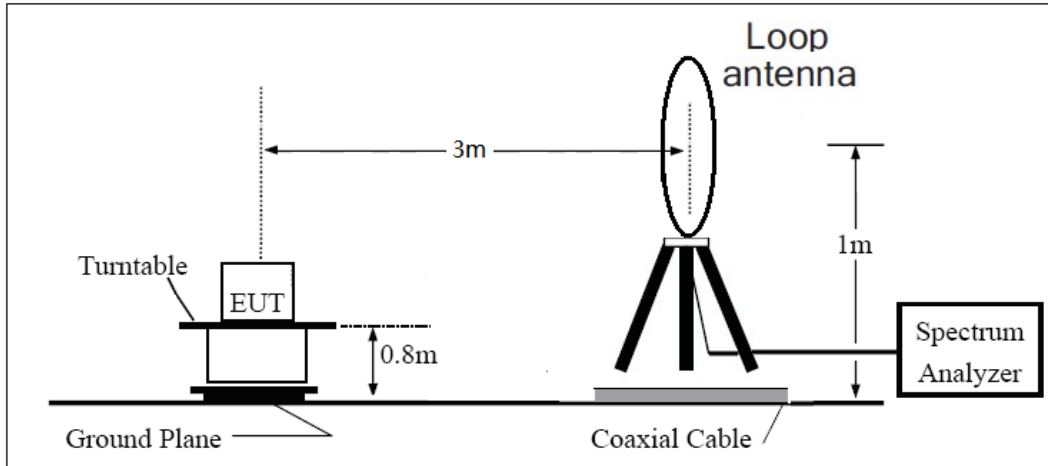
1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable 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

= EIRP-2.15dBi.

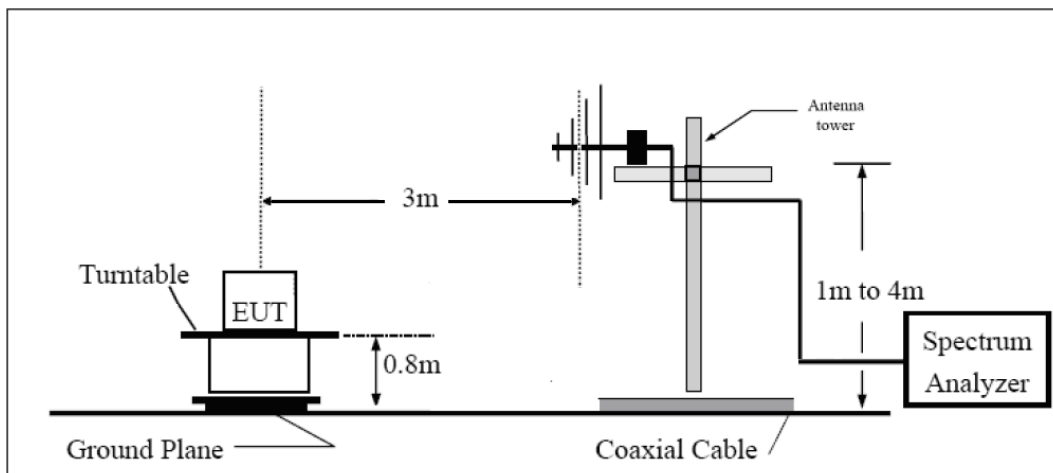
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

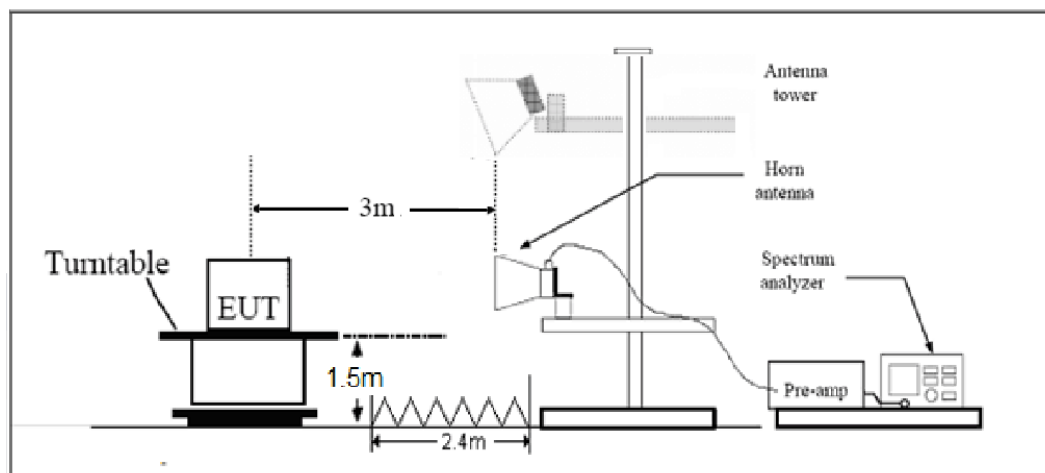
9KHz ~ 30MHz



30MHz ~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

**Limits**

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

Rule Part 27.53(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(a)/(h)/(g) 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 $k = \pm 1.96$, $U = \pm 3.55$ dB.

**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	3465.2	-63.84	2.6	10.75	Horizontal	-55.69	-13.00	42.69	45
3	5197.8	-62.87	2.4	11.05	Horizontal	-54.22	-13.00	41.22	180
4	6930.4	-58.14	4.5	11.15	Horizontal	-51.49	-13.00	38.49	225
5	8663.0	-56.21	5.1	11.35	Horizontal	-49.96	-13.00	36.96	270
6	10395.6	-54.70	5.3	11.95	Horizontal	-48.05	-13.00	35.05	315
7	12128.2	-53.82	5.5	13.55	Horizontal	-45.77	-13.00	32.77	90
8	13860.8	-50.54	6.3	13.75	Horizontal	-43.09	-13.00	30.09	225
9	15593.4	-54.14	6.7	13.85	Horizontal	-46.99	-13.00	33.99	180
10	17326.0	-51.64	6.8	14.25	Horizontal	-44.19	-13.00	31.19	135

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3464.3	-61.79	2.6	10.75	Horizontal	-53.64	-13.00	40.64	0
3	5197.5	-63.31	2.4	11.05	Horizontal	-54.66	-13.00	41.66	270
4	6930.0	-58.47	4.5	11.15	Horizontal	-51.82	-13.00	38.82	315
5	8662.5	-56.67	5.1	11.35	Horizontal	-50.42	-13.00	37.42	225
6	10395.0	-53.96	5.3	11.95	Horizontal	-47.31	-13.00	34.31	180
7	12127.5	-54.26	5.5	13.55	Horizontal	-46.21	-13.00	33.21	135
8	13860.0	-50.73	6.3	13.75	Horizontal	-43.28	-13.00	30.28	315
9	15592.5	-55.55	6.7	13.85	Horizontal	-48.40	-13.00	35.40	90
10	17325.0	-51.46	6.8	14.25	Horizontal	-44.01	-13.00	31.01	180

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

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3460.5	-62.00	2.6	10.75	Horizontal	-53.85	-13.00	40.85	135
3	5191.5	-60.32	2.4	11.05	Horizontal	-51.67	-13.00	38.67	270
4	6930.0	-57.42	4.5	11.15	Horizontal	-50.77	-13.00	37.77	180
5	8662.5	-57.64	5.1	11.35	Horizontal	-51.39	-13.00	38.39	0
6	10395.0	-54.69	5.3	11.95	Horizontal	-48.04	-13.00	35.04	225
7	12127.5	-54.73	5.5	13.55	Horizontal	-46.68	-13.00	33.68	315
8	13860.0	-51.42	6.3	13.75	Horizontal	-43.97	-13.00	30.97	90
9	15592.5	-54.82	6.7	13.85	Horizontal	-47.67	-13.00	34.67	180
10	17325.0	-51.45	6.8	14.25	Horizontal	-44.00	-13.00	31.00	45

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-63.07	2.6	10.75	Horizontal	-54.92	-13.00	41.92	315
3	5170.9	-62.91	2.4	11.05	Horizontal	-54.26	-13.00	41.26	270
4	6930.0	-59.20	4.5	11.15	Horizontal	-52.55	-13.00	39.55	180
5	8662.5	-56.85	5.1	11.35	Horizontal	-50.60	-13.00	37.60	225
6	10395.0	-55.68	5.3	11.95	Horizontal	-49.03	-13.00	36.03	315
7	12127.5	-54.55	5.5	13.55	Horizontal	-46.50	-13.00	33.50	90
8	13860.0	-52.56	6.3	13.75	Horizontal	-45.11	-13.00	32.11	45
9	15592.5	-55.70	6.7	13.85	Horizontal	-48.55	-13.00	35.55	135
10	17325.0	-51.70	6.8	14.25	Horizontal	-44.25	-13.00	31.25	270

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

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5065.8	-59.04	2.00	9.15	Horizontal	-51.89	-25.00	26.89	0
3	7598.6	-60.16	2.50	11.35	Horizontal	-51.31	-25.00	26.31	225
4	10130.6	-56.16	4.20	12.05	Horizontal	-48.31	-25.00	23.31	180
5	12675.0	-53.56	5.20	12.85	Horizontal	-45.91	-25.00	20.91	315
6	15210.0	-54.98	5.50	14.23	Horizontal	-46.25	-25.00	21.25	90
7	17745.0	-53.29	5.70	14.15	Horizontal	-44.84	-25.00	19.84	227
8	20280.0	--	--	--	--	--	--	--	--
9	22815.0	--	--	--	--	--	--	--	--
10	25350.0	--	--	--	--	--	--	--	--

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5052.4	-60.24	2.00	10.15	Horizontal	-52.09	-25.00	27.09	225
3	7605.0	-60.71	2.50	11.35	Horizontal	-51.86	-25.00	26.86	315
4	10140.0	-54.43	4.20	12.05	Horizontal	-46.58	-25.00	21.58	90
5	12675.0	-55.75	5.20	14.85	Horizontal	-46.10	-25.00	21.10	180
6	15210.0	-53.69	5.50	13.23	Horizontal	-45.96	-25.00	20.96	0
7	17745.0	-52.15	5.70	12.15	Horizontal	-45.70	-25.00	20.70	135
8	20280.0	--	--	--	--	--	--	--	--
9	22815.0	--	--	--	--	--	--	--	--
10	25350.0	--	--	--	--	--	--	--	--

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

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5190.0	-56.25	2.00	9.15	Horizontal	-49.10	-25.00	24.10	45
3	7785.0	-58.84	2.50	11.35	Horizontal	-49.99	-25.00	24.99	135
4	10380.0	-51.05	4.20	12.05	Horizontal	-43.20	-25.00	18.20	45
5	12975.0	-51.05	5.20	12.85	Horizontal	-43.40	-25.00	18.40	270
6	15570.0	-49.73	5.50	14.23	Horizontal	-41.00	-25.00	16.00	315
7	18165.0	/	/	/	/	/	/	/	/
8	20760.0	/	/	/	/	/	/	/	/
9	23355.0	/	/	/	/	/	/	/	/
10	25950.0	/	/	/	/	/	/	/	/

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

LTE Band 38 QPSK 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	5190.0	-58.85	2.00	10.15	Horizontal	-50.70	-25.00	25.70	0
3	7785.0	-58.85	2.50	11.35	Horizontal	-50.00	-25.00	25.00	45
4	10380.0	-49.85	4.20	12.05	Horizontal	-42.00	-25.00	17.00	180
5	12975.0	-53.02	5.20	14.85	Horizontal	-43.37	-25.00	18.37	225
6	15570.0	-48.53	5.50	13.23	Horizontal	-40.80	-25.00	15.80	135
7	18165.0	/	/	/	/	/	/	/	/
8	20760.0	/	/	/	/	/	/	/	/
9	23355.0	/	/	/	/	/	/	/	/
10	25950.0	/	/	/	/	/	/	/	/

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



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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	4997.0	-63.67	2.00	9.15	Horizontal	-56.52	-25.00	31.52	270
3	7495.5	-60.32	2.50	11.35	Horizontal	-51.47	-25.00	26.47	135
4	9994.0	-57.31	4.20	12.05	Horizontal	-49.46	-25.00	24.46	90
5	12492.5	-53.50	5.20	12.85	Horizontal	-45.85	-25.00	20.85	315
6	14991.0	-55.03	5.50	14.23	Horizontal	-46.30	-25.00	21.30	180
7	17489.5	-52.94	5.70	14.15	Horizontal	-44.49	-25.00	19.49	0
8	19988.0	--	--	--	--	--	--	--	--
9	22486.5	--	--	--	--	--	--	--	--
10	24985.0	--	--	--	--	--	--	--	--

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

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5186.0	-64.44	2.00	10.15	Horizontal	-56.29	-25.00	31.29	270
3	7779.0	-59.06	2.50	11.35	Horizontal	-50.21	-25.00	25.21	315
4	10372.0	-55.78	4.20	12.05	Horizontal	-47.93	-25.00	22.93	180
5	12965.0	-55.01	5.20	14.85	Horizontal	-45.36	-25.00	20.36	135
6	15558.0	-55.18	5.50	13.23	Horizontal	-47.45	-25.00	22.45	225
7	18151.0	--	--	--	--	--	--	--	--
8	20744.0	--	--	--	--	--	--	--	--
9	23337.0	--	--	--	--	--	--	--	--
10	25930.0	--	--	--	--	--	--	--	--

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

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



6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2019-05-19	2020-05-18
Base Station Simulator	R&S	CMW500	113824	2020-05-18	2021-05-17
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2019-05-19	2020-05-18
Spectrum Analyzer	Key sight	N9010A	MY50210259	2020-05-18	2021-05-17
Signal Analyzer	R&S	FSV30	100815	2019-12-15	2020-12-14
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2020-09-25
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
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
Horn Antenna	STEATITE	QSH-SL-26-40-K-15	16779	2017-07-20	2020-07-19
Signal generator	R&S	SMB 100A	102594	2019-05-19	2020-05-18
Signal generator	R&S	SMB 100A	102594	2020-05-18	2021-05-17
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preamplifier	R&S	SCU18	102327	2019-05-19	2020-05-18
Preamplifier	R&S	SCU18	102327	2020-05-18	2021-05-17
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2019-05-19	2020-05-18
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2020-05-18	2021-05-17
RF Cable	Agilent	SMA 15cm	0001	2019-12-13	2020-06-12
Software	R&S	EMC32	9.26.0	/	/

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