



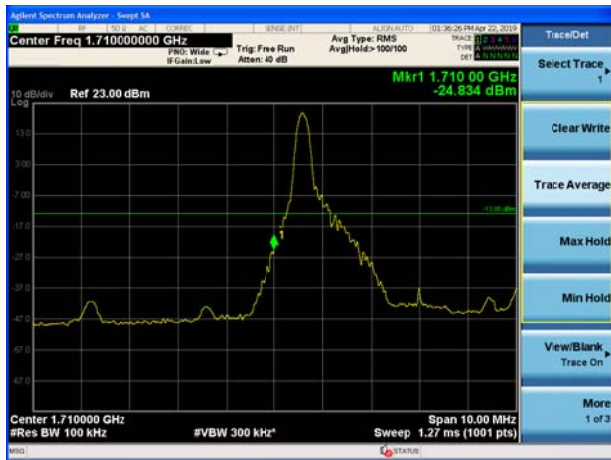
LTE Band 4 QPSK 5MHz CH-Low, 100%RB



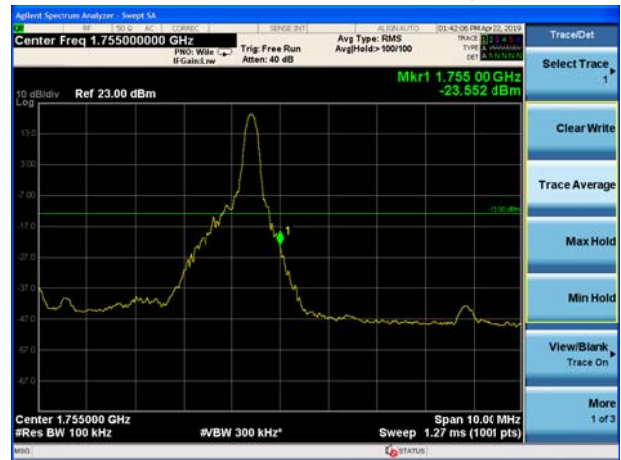
LTE Band 4 QPSK 5MHz CH-High, 100%RB



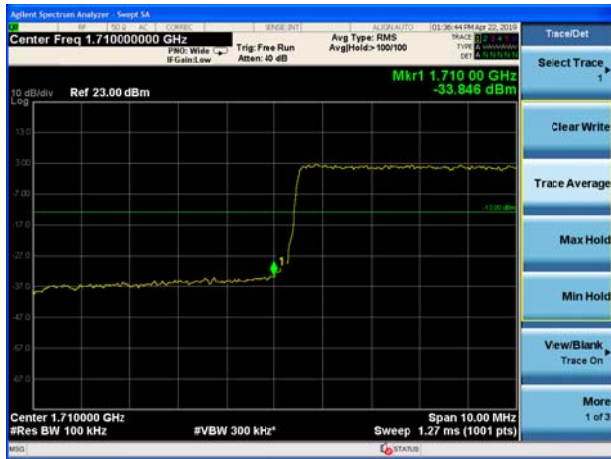
LTE Band 4 QPSK 10MHz CH-Low, 1 RB



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



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



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

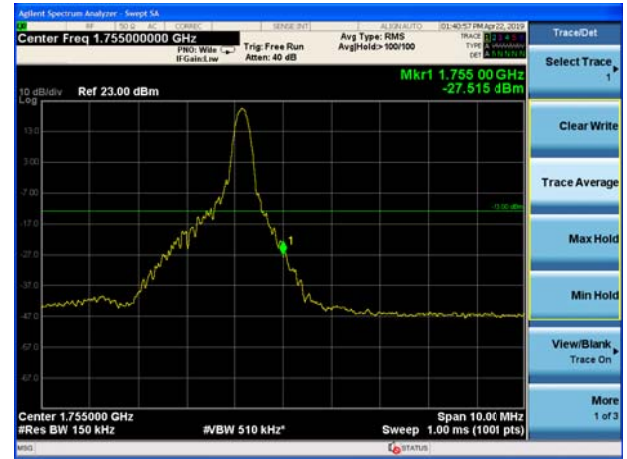




LTE Band 4 QPSK 15MHz CH-Low, 1 RB



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



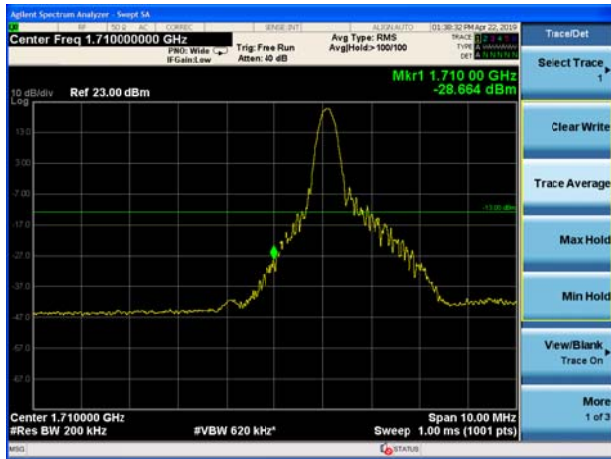
LTE Band 4 QPSK 15MHz CH-Low, 100%RB



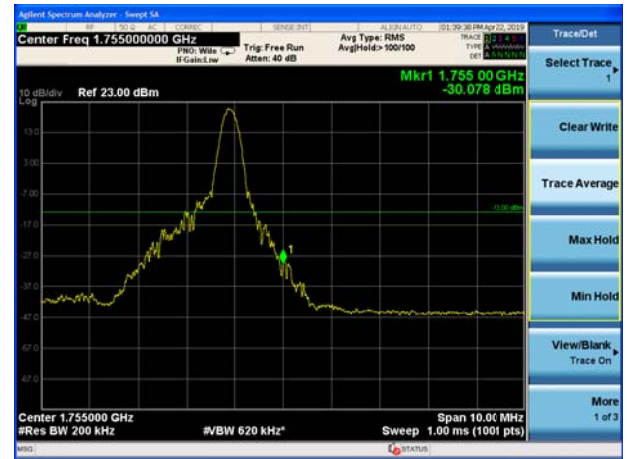
LTE Band 4 QPSK 15MHz CH-High, 100%RB



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



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





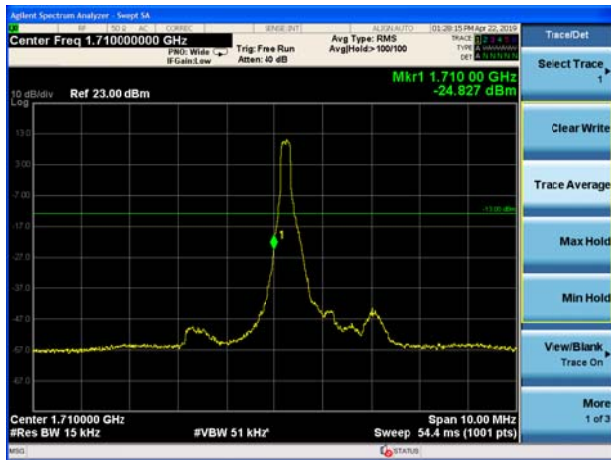
LTE Band 4 QPSK 20MHz CH-Low, 100%RB



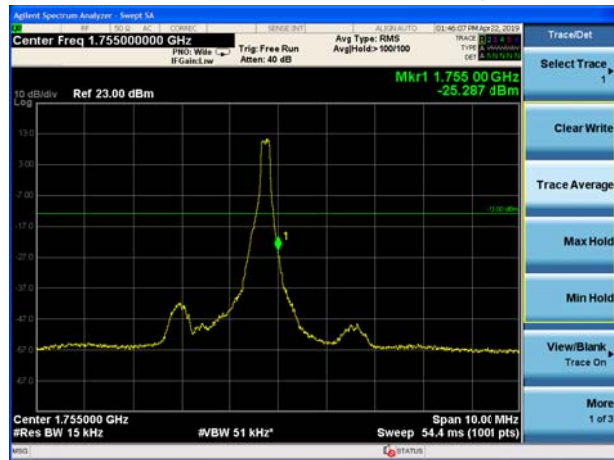
LTE Band 4 QPSK 20MHz CH-High, 100%RB



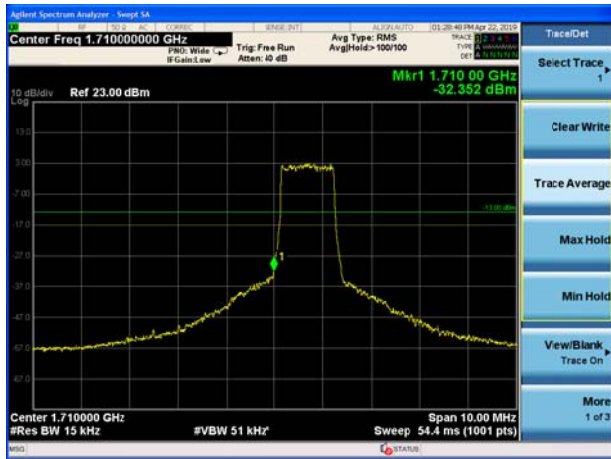
LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB



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



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



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





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



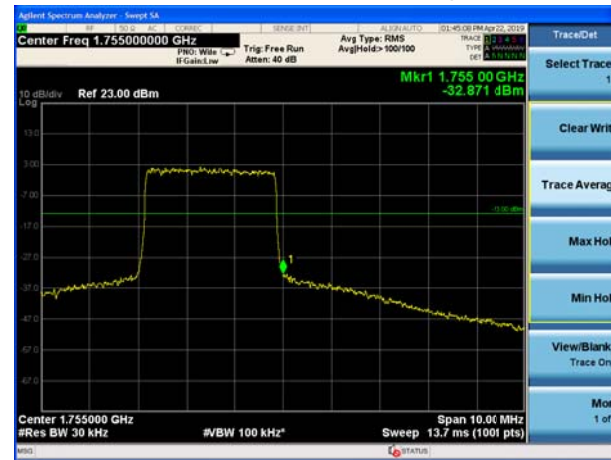
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LTE Band 4 16QAM 3MHz CH-Low, 100%RB



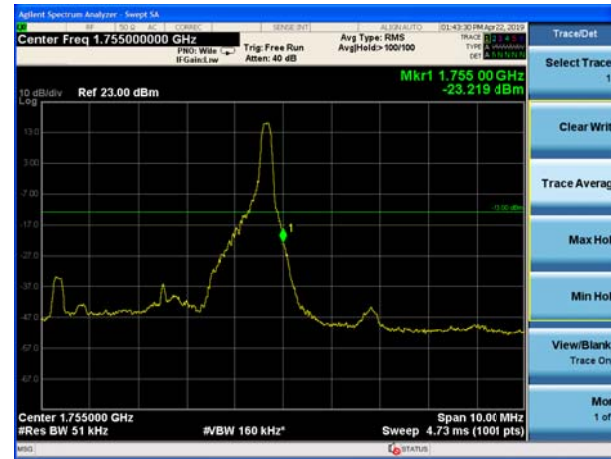
LTE Band 4 16QAM 3MHz CH-High, 100%RB



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



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





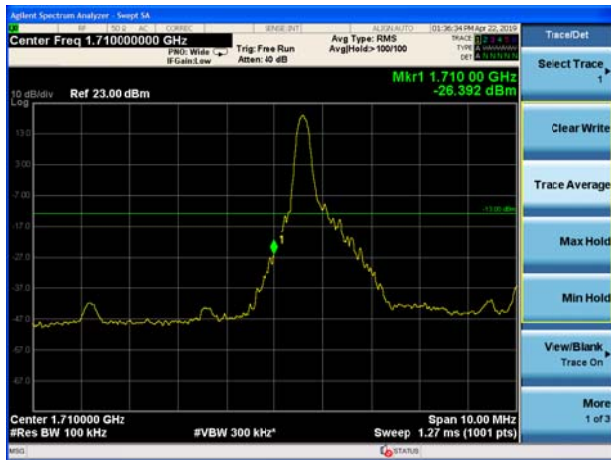
LTE Band 4 16QAM 5MHz CH-Low, 100%RB



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



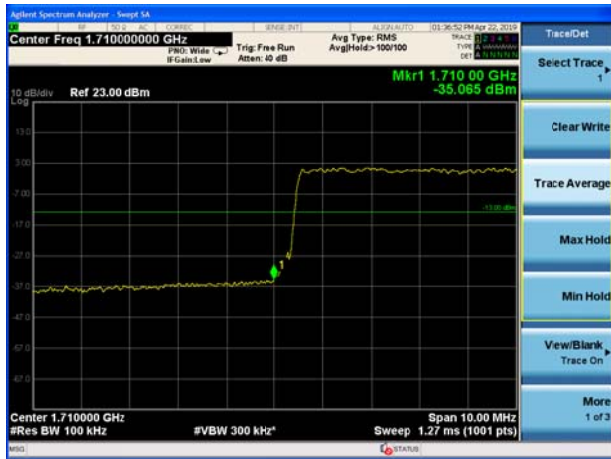
LTE Band 4 16QAM 10MHz CH-Low, 1 RB



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



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

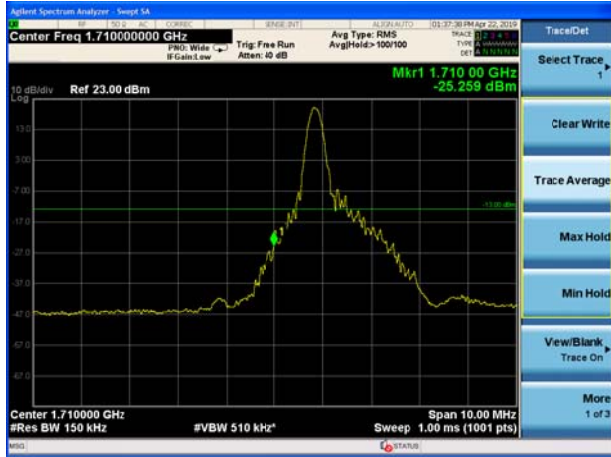


LTE Band 4 16QAM 10MHz CH-High, 100%RB

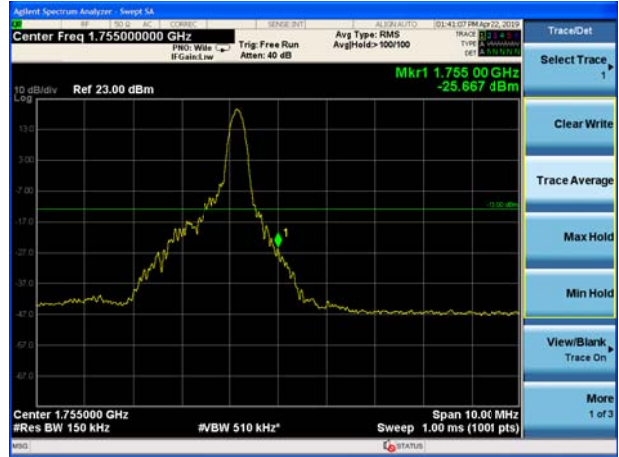




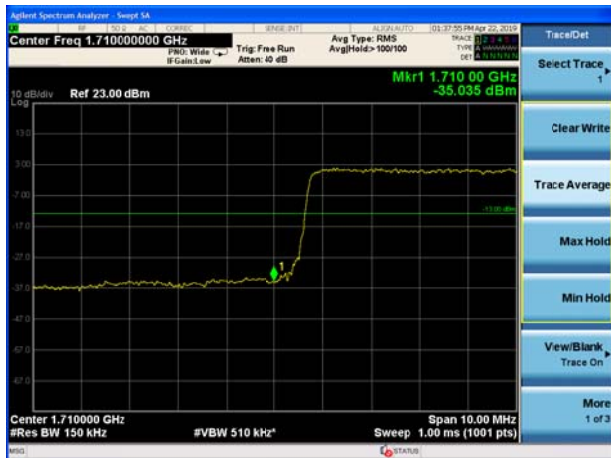
LTE Band 4 16QAM 15MHz CH-Low, 1 RB



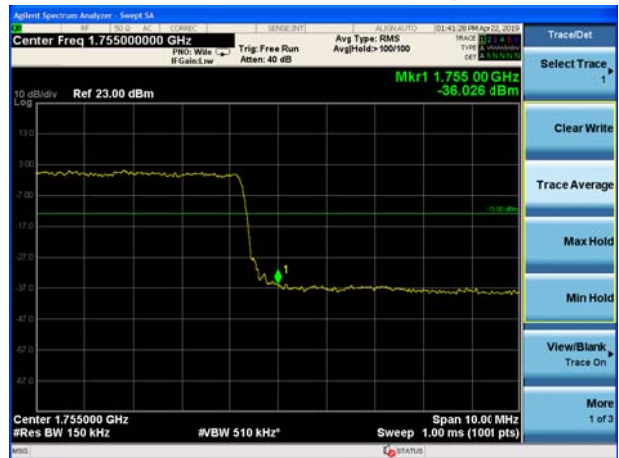
LTE Band 4 16QAM 15MHz CH-High, 1 RB



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



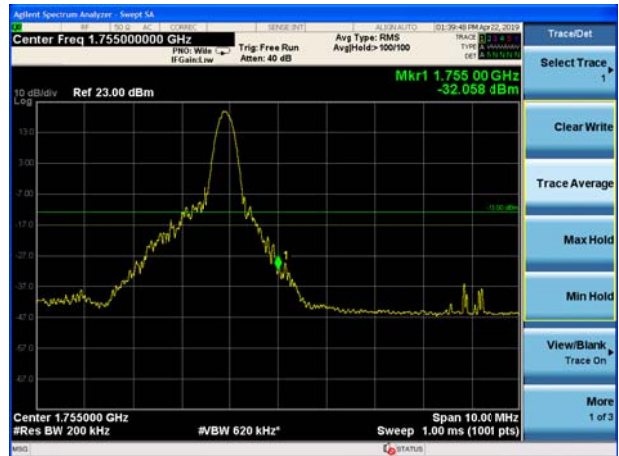
LTE Band 4 16QAM 15MHz CH-High, 100%RB



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

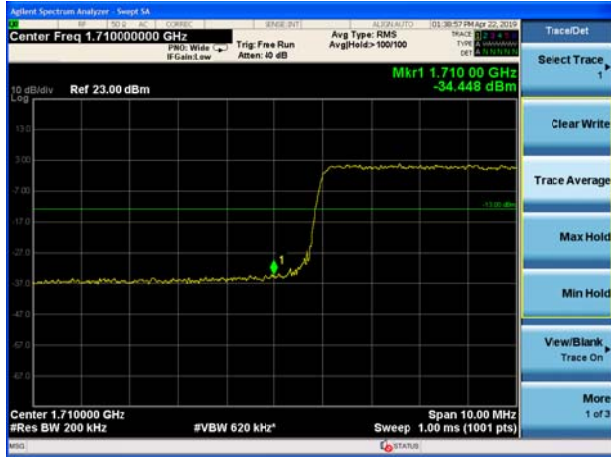


LTE Band 4 16QAM 20MHz CH-High, 1 RB

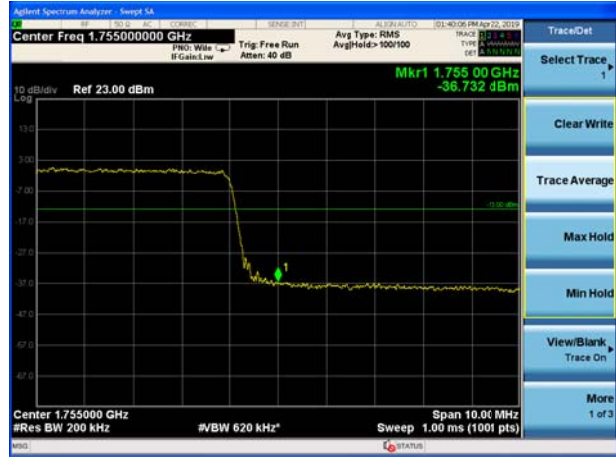




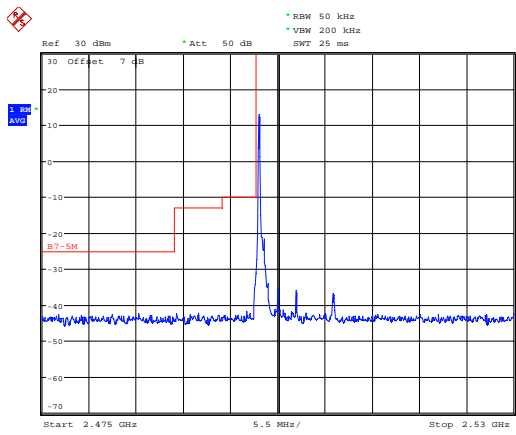
LTE Band 4 16QAM 20MHz CH-Low, 100%RB



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

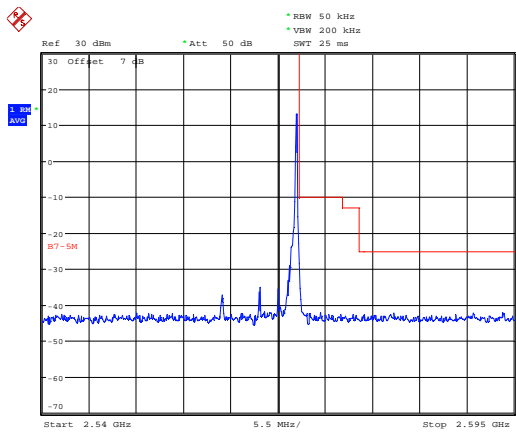


LTE Band 7 QPSK 5MHz CH-Low, 1 RB



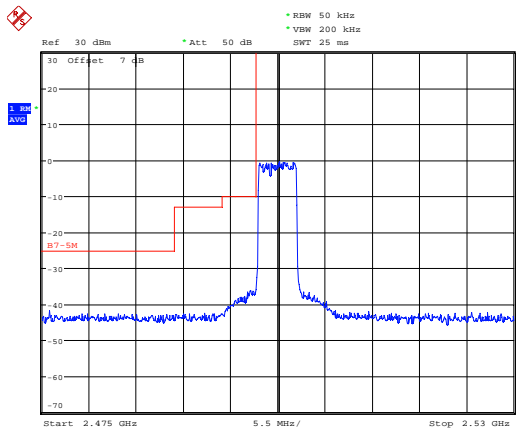
Date: 23.APR.2019 18:09:55

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



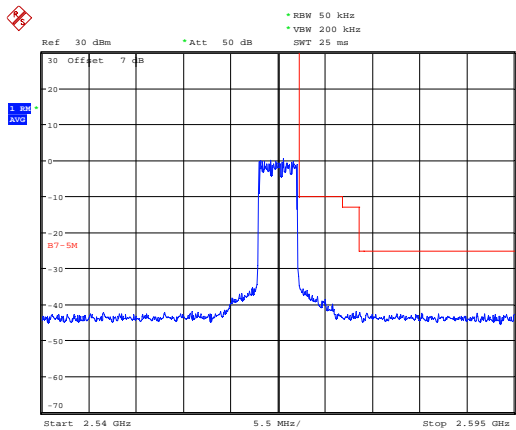
Date: 23.APR.2019 18:33:17

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



Date: 23.APR.2019 18:10:42

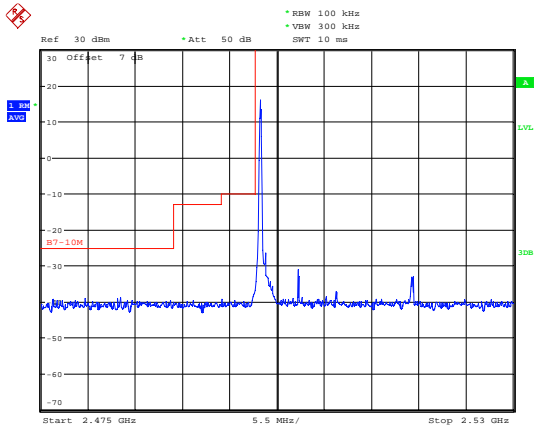
LTE Band 7 QPSK 5MHz CH-High, 100%RB



Date: 23.APR.2019 18:34:13

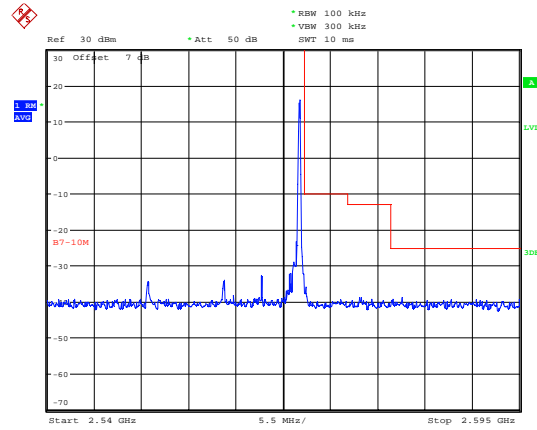


LTE Band 7 QPSK 10MHz CH-Low, 1 RB



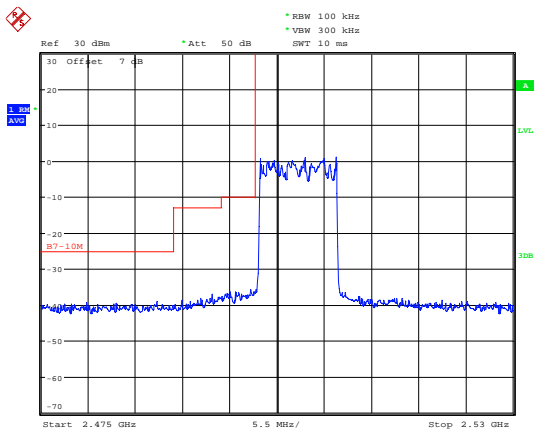
Date: 23.APR.2019 18:12:35

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



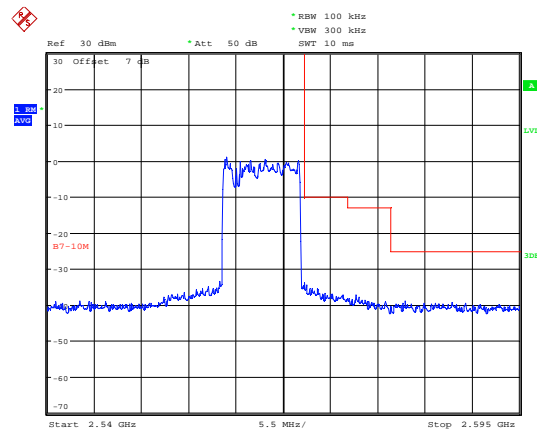
Date: 23.APR.2019 18:36:59

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



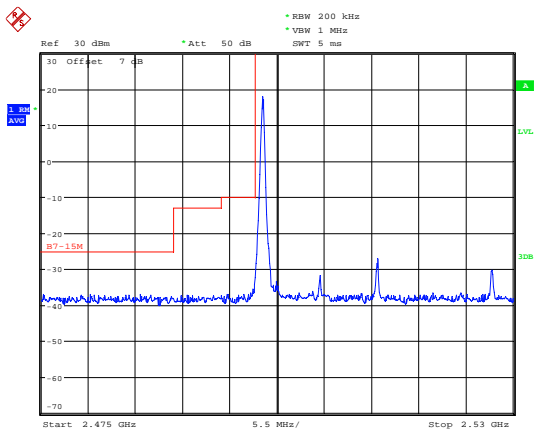
Date: 23.APR.2019 18:14:19

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



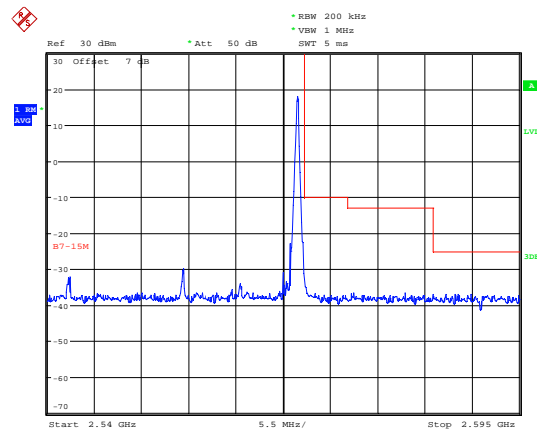
Date: 23.APR.2019 18:37:40

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



Date: 23.APR.2019 18:16:14

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

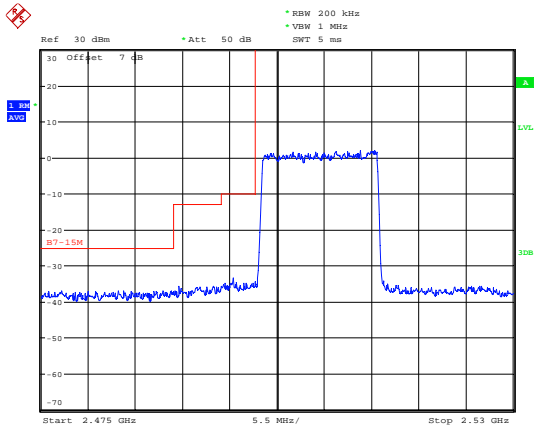


Date: 23.APR.2019 18:38:43



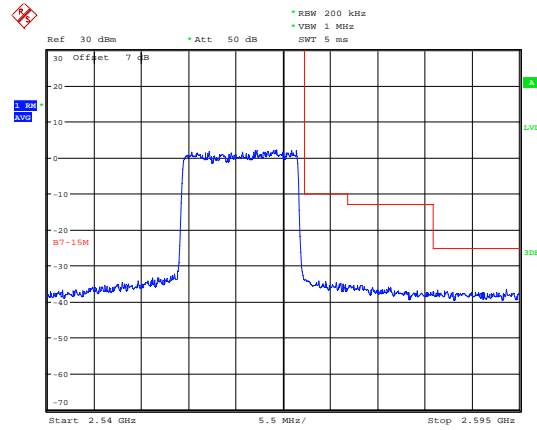


LTE Band 7 QPSK 15MHz CH-Low, 100%RB



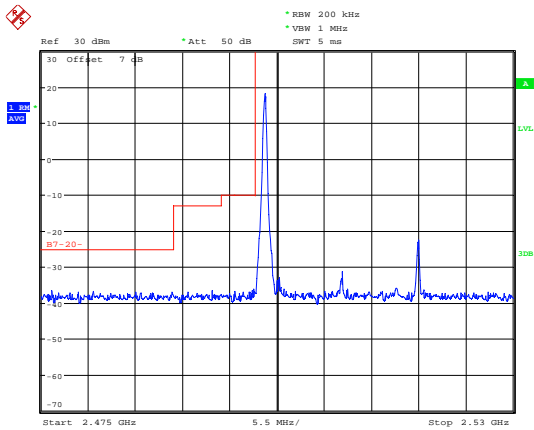
Date: 23.APR.2019 18:16:53

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



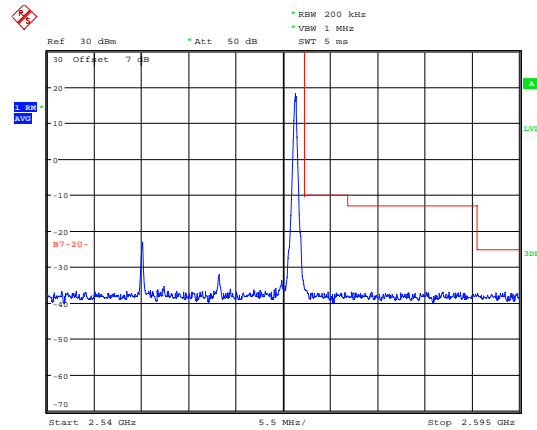
Date: 23.APR.2019 18:39:23

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



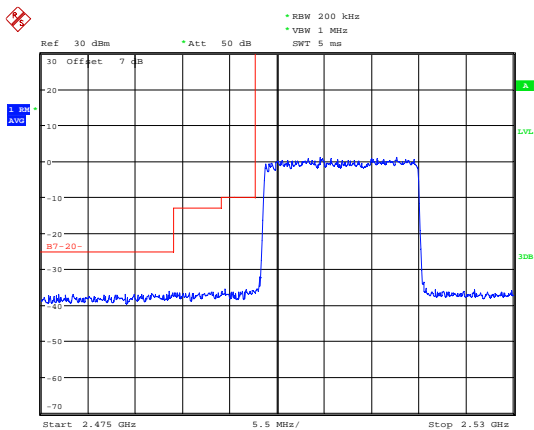
Date: 23.APR.2019 18:25:58

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



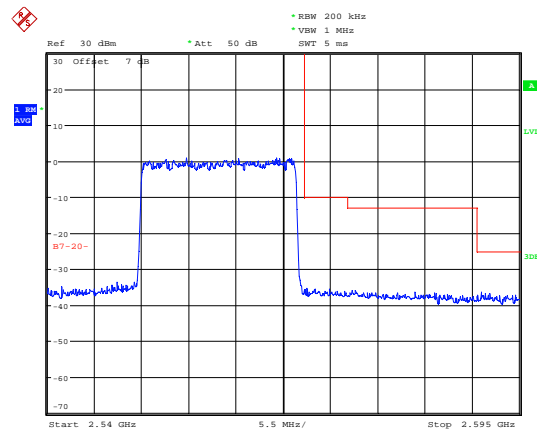
Date: 23.APR.2019 18:29:45

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



Date: 23.APR.2019 18:26:54

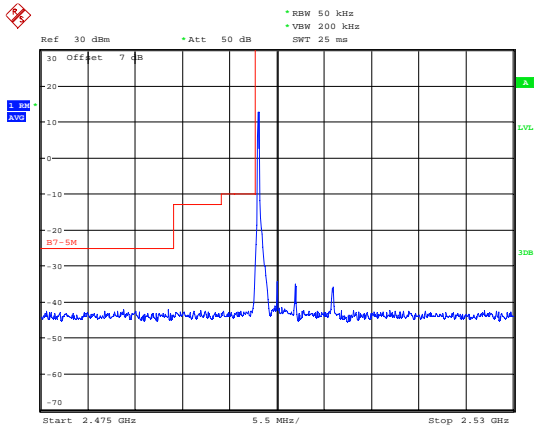
LTE Band 7 QPSK 20MHz CH-High, 100%RB



Date: 23.APR.2019 18:30:28

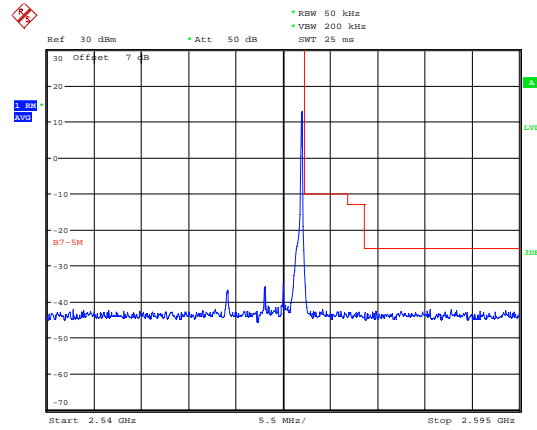


LTE Band 7 16QAM 5MHz CH-Low, 1 RB



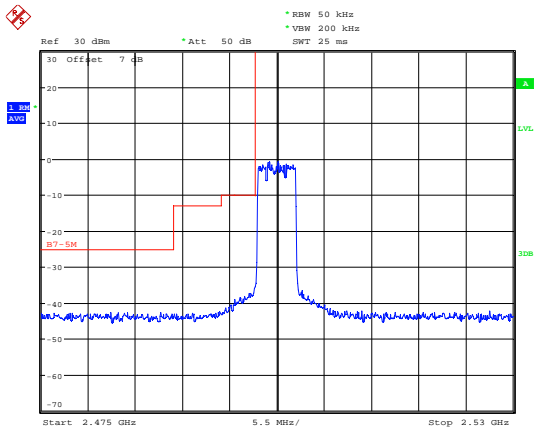
Date: 23.APR.2019 18:10:20

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



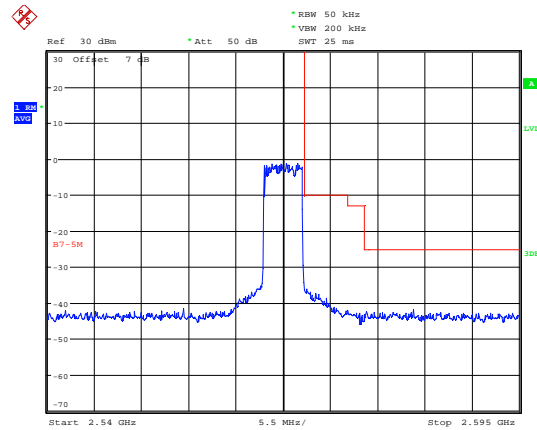
Date: 23.APR.2019 18:33:40

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



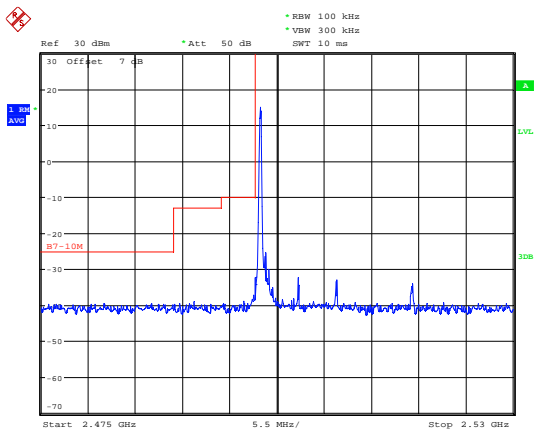
Date: 23.APR.2019 18:10:58

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



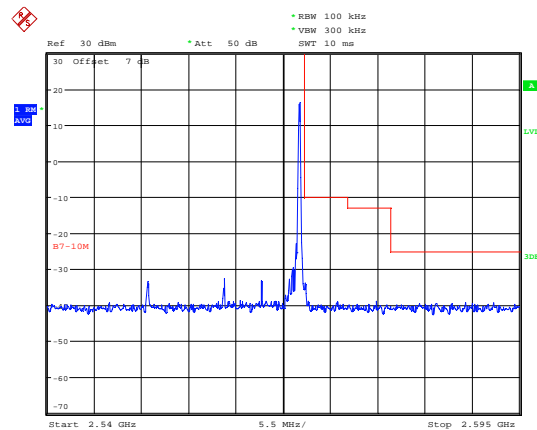
Date: 23.APR.2019 18:34:35

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



Date: 23.APR.2019 18:13:44

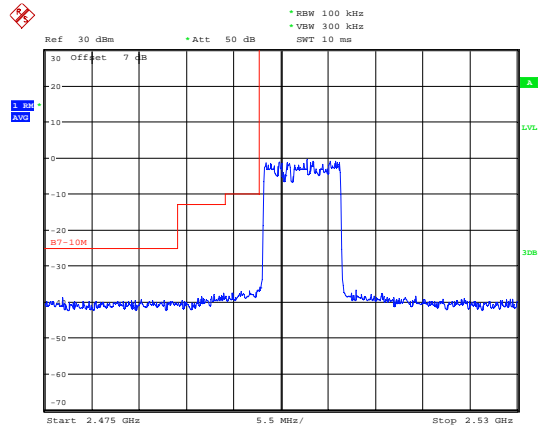
LTE Band 7 16QAM 10MHz CH-High, 1 RB



Date: 23.APR.2019 18:37:20

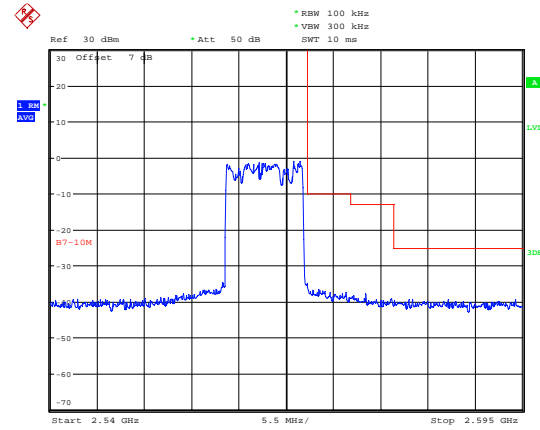


LTE Band 7 16QAM 10MHz CH-Low, 100%RB



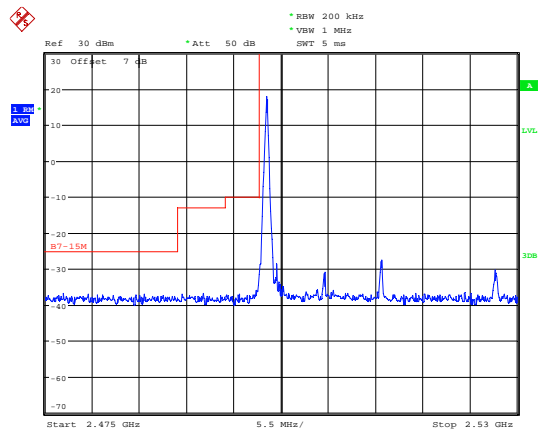
Date: 23.APR.2019 18:14:35

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



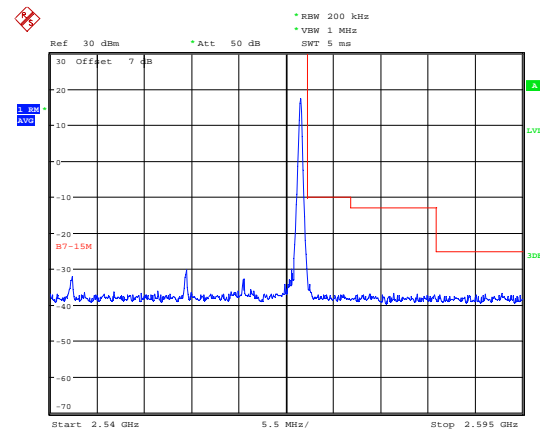
Date: 23.APR.2019 18:37:55

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



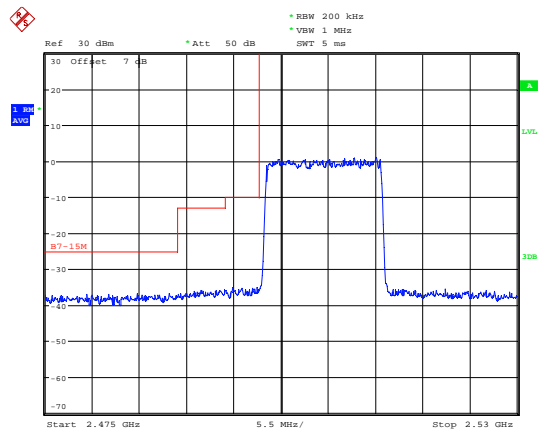
Date: 23.APR.2019 18:16:29

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



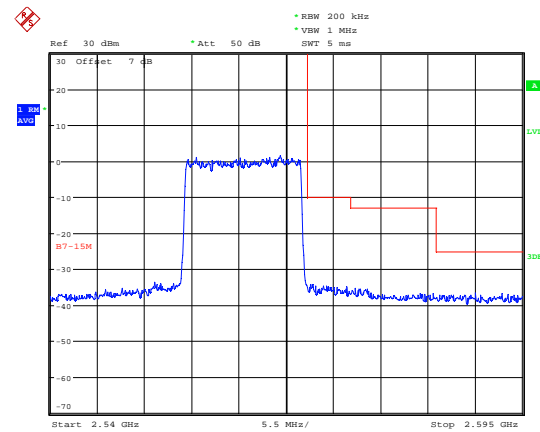
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LTE Band 7 16QAM 15MHz CH-Low, 100%RB



Date: 23.APR.2019 18:17:08

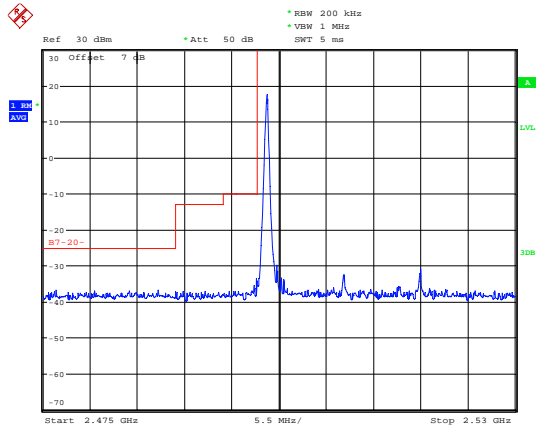
LTE Band 7 16QAM 15MHz CH-High, 100%RB



Date: 23.APR.2019 18:39:45

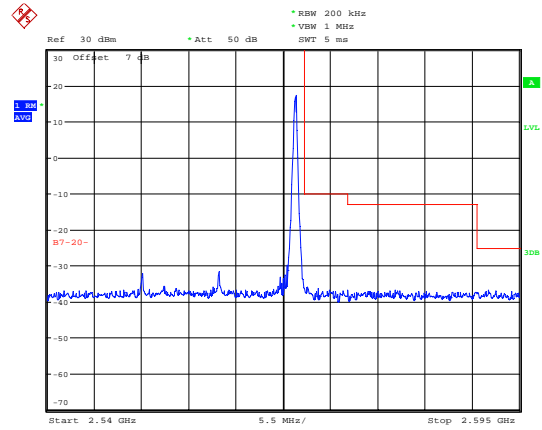


LTE Band 7 16QAM 20MHz CH-Low, 1 RB



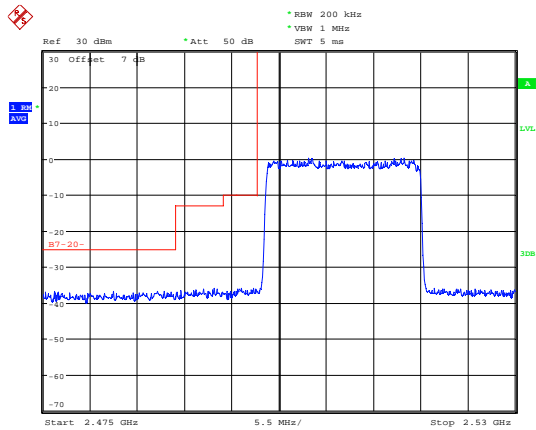
Date: 23.APR.2019 18:26:12

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



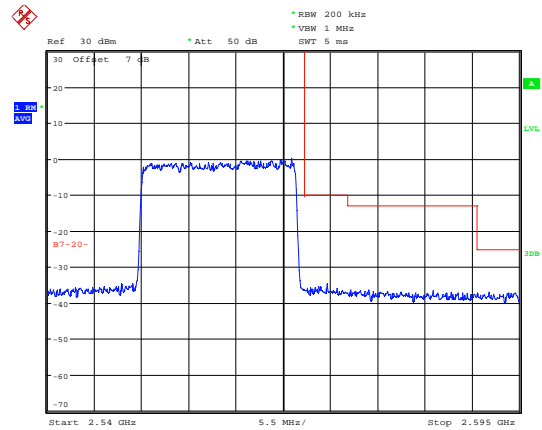
Date: 23.APR.2019 18:30:07

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



Date: 23.APR.2019 18:27:13

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



Date: 23.APR.2019 18:30:45

### 5.5 Peak-to-Average Power Ratio (PAPR)

#### Ambient condition

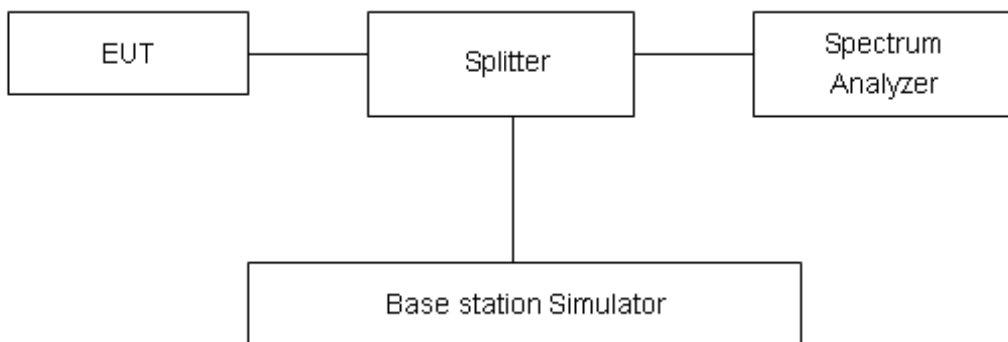
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Methods of Measurement

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

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

#### Test Setup



#### Limits

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

#### Measurement Uncertainty

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

**Test Results**

WCDMA Band IV	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
<b>RMC</b>	1312	1712.4	25.22	22.18	3.04	≤13	PASS
	1413	1732.6	25.28	22.18	3.10	≤13	PASS
	1513	1752.6	25.37	22.33	3.04	≤13	PASS

LTE Band 4								
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Peak (dBm)	Avg (dBm)	PAPR (dB)	Limit (dB)	Conclusion
<b>QPSK</b>	1.4	19957	1710.7	26.71	21.72	4.99	≤13	PASS
		20175	1732.5	26.16	20.94	5.22	≤13	PASS
		20393	1754.3	26.44	21.43	5.01	≤13	PASS
	3	19965	1711.5	26.74	21.56	5.18	≤13	PASS
		20175	1732.5	26.63	21.29	5.34	≤13	PASS
		20385	1753.5	26.68	21.55	5.13	≤13	PASS
	5	19975	1712.5	26.36	21.11	5.25	≤13	PASS
		20175	1732.5	26.58	21.14	5.44	≤13	PASS
		20375	1752.5	26.19	21.09	5.10	≤13	PASS
	10	20000	1715	26.49	21.19	5.30	≤13	PASS
		20175	1732.5	26.29	20.90	5.39	≤13	PASS
		20350	1750	26.30	21.22	5.08	≤13	PASS
	15	20025	1717.5	27.04	21.60	5.44	≤13	PASS
		20175	1732.5	27.02	21.55	5.47	≤13	PASS
		20325	1747.5	26.34	21.30	5.04	≤13	PASS
	20	20050	1720	26.69	21.31	5.38	≤13	PASS
		20175	1732.5	26.59	21.22	5.37	≤13	PASS
		20300	1745	26.43	21.25	5.18	≤13	PASS
<b>16QAM</b>	1.4	19957	1710.7	26.42	20.69	5.73	≤13	PASS
		20175	1732.5	26.12	20.04	6.08	≤13	PASS
		20393	1754.3	26.16	20.34	5.82	≤13	PASS
	3	19965	1711.5	26.46	20.49	5.97	≤13	PASS
		20175	1732.5	26.52	20.34	6.18	≤13	PASS
		20385	1753.5	26.57	20.64	5.93	≤13	PASS
	5	19975	1712.5	25.99	20.04	5.95	≤13	PASS
		20175	1732.5	26.39	20.24	6.15	≤13	PASS
		20375	1752.5	26.02	20.18	5.84	≤13	PASS
	10	20000	1715	26.28	20.25	6.03	≤13	PASS
		20175	1732.5	26.17	19.99	6.18	≤13	PASS
		20350	1750	26.17	20.32	5.85	≤13	PASS



	15	20025	1717.5	26.72	20.62	6.10	≤13	PASS
		20175	1732.5	26.71	20.55	6.16	≤13	PASS
		20325	1747.5	26.10	20.31	5.79	≤13	PASS
	20	20050	1720	26.54	20.39	6.15	≤13	PASS
		20175	1732.5	26.43	20.30	6.13	≤13	PASS
		20300	1745	26.25	20.33	5.92	≤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	24.98	19.65	5.33	≤13	PASS
		21100	2535	24.81	19.51	5.30	≤13	PASS
		21425	2567.5	24.72	19.37	5.35	≤13	PASS
	10	20800	2505	25.17	19.71	5.46	≤13	PASS
		21100	2535	24.81	19.54	5.27	≤13	PASS
		21400	2565	24.85	19.42	5.43	≤13	PASS
	15	20825	2507.5	25.57	19.70	5.87	≤13	PASS
		21100	2535	25.01	19.54	5.47	≤13	PASS
		21375	2562.5	25.09	19.31	5.78	≤13	PASS
20	20850	2510	25.29	19.65	5.64	≤13	PASS	
	21100	2535	24.82	19.42	5.40	≤13	PASS	
	21350	2560	24.99	19.36	5.63	≤13	PASS	
16QAM	5	20775	2502.5	24.61	18.65	5.96	≤13	PASS
		21100	2535	24.47	18.51	5.96	≤13	PASS
		21425	2567.5	24.32	18.35	5.97	≤13	PASS
	10	20800	2505	24.87	18.72	6.15	≤13	PASS
		21100	2535	24.53	18.52	6.01	≤13	PASS
		21400	2565	24.51	18.36	6.15	≤13	PASS
	15	20825	2507.5	25.05	18.67	6.38	≤13	PASS
		21100	2535	24.52	18.50	6.02	≤13	PASS
		21375	2562.5	24.59	18.32	6.27	≤13	PASS
20	20850	2510	25.06	18.67	6.39	≤13	PASS	
	21100	2535	24.49	18.39	6.10	≤13	PASS	
	21350	2560	24.68	18.37	6.31	≤13	PASS	

## 5.6 Frequency Stability

### Ambient condition

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

### Method of Measurement

#### Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +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)

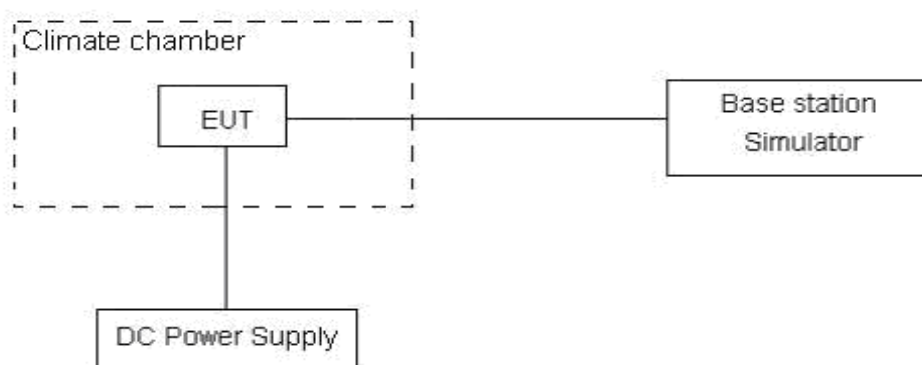
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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 3.82V.

### 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**

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	4.10	12.77	0.00218	0.00680	PASS
Extreme (55°C)		10.37	10.01	0.00552	0.00533	PASS
Extreme (50°C)		9.85	12.71	0.00524	0.00676	PASS
Extreme (40°C)		12.75	2.31	0.00678	0.00123	PASS
Extreme (30°C)		14.24	6.73	0.00757	0.00358	PASS
Extreme (20°C)		4.86	17.48	0.00258	0.00930	PASS
Extreme (10°C)		8.60	9.03	0.00457	0.00481	PASS
Extreme (0°C)		4.02	10.56	0.00214	0.00561	PASS
Extreme (-10°C)		2.38	2.23	0.00127	0.00118	PASS
Extreme (-20°C)		15.14	6.90	0.00805	0.00367	PASS
Extreme (-30°C)		10.03	10.20	0.00534	0.00543	PASS
25°C	LV	17.96	16.90	0.00956	0.00899	PASS
	HV	8.33	8.91	0.00443	0.00474	PASS

LTE Band 4						
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	8.41	13.16	0.00448	0.00700	PASS
Extreme (55°C)		13.54	2.47	0.00720	0.00131	PASS
Extreme (50°C)		11.88	15.43	0.00632	0.00821	PASS
Extreme (40°C)		12.27	1.80	0.00653	0.00096	PASS
Extreme (30°C)		15.51	5.21	0.00825	0.00277	PASS
Extreme (20°C)		3.65	4.06	0.00194	0.00216	PASS
Extreme (10°C)		15.83	15.59	0.00842	0.00829	PASS
Extreme (0°C)		9.45	15.62	0.00502	0.00831	PASS
Extreme (-10°C)		10.72	2.48	0.00570	0.00132	PASS
Extreme (-20°C)		7.18	6.34	0.00382	0.00337	PASS
Extreme (-30°C)		12.83	1.81	0.00683	0.00096	PASS
25°C	LV	13.82	14.84	0.00735	0.00789	PASS
	HV	13.26	1.64	0.00705	0.00087	PASS
Condition		Freq.Error	Freq.Error	Frequency	Frequency	Verdict

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	5.78	13.08	0.00307	0.00696	PASS
Extreme (55°C)		10.43	8.14	0.00555	0.00433	PASS
Extreme (50°C)		11.57	7.55	0.00616	0.00402	PASS
Extreme (40°C)		3.46	16.53	0.00184	0.00879	PASS
Extreme (30°C)		17.49	16.93	0.00930	0.00901	PASS
Extreme (20°C)		16.51	2.67	0.00878	0.00142	PASS
Extreme (10°C)		16.02	2.94	0.00852	0.00156	PASS
Extreme (0°C)		1.25	3.82	0.00067	0.00203	PASS
Extreme (-10°C)		13.58	5.92	0.00722	0.00315	PASS
Extreme (-20°C)		4.85	15.45	0.00258	0.00822	PASS
Extreme (-30°C)		1.44	1.67	0.00077	0.00089	PASS
25°C		LV	16.84	10.44	0.00896	0.00555
	HV	2.90	13.17	0.00154	0.00700	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	17.94	1.69	0.00954	0.00090	PASS
Extreme (55°C)		2.62	9.14	0.00139	0.00486	PASS
Extreme (50°C)		7.06	16.61	0.00376	0.00884	PASS
Extreme (40°C)		15.69	16.64	0.00834	0.00885	PASS
Extreme (30°C)		11.11	2.70	0.00591	0.00144	PASS

Extreme (20°C)		14.18	17.80	0.00754	0.00947	PASS
Extreme (10°C)		5.65	9.86	0.00301	0.00524	PASS
Extreme (0°C)		9.54	12.01	0.00507	0.00639	PASS
Extreme (-10°C)		11.58	8.59	0.00616	0.00457	PASS
Extreme (-20°C)		9.10	2.23	0.00484	0.00118	PASS
Extreme (-30°C)		13.20	5.76	0.00702	0.00306	PASS
25°C	LV	5.56	12.78	0.00296	0.00680	PASS
	HV	7.37	3.35	0.00392	0.00178	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	11.18	14.33	0.00594	0.00762	PASS
Extreme (55°C)		5.79	7.12	0.00308	0.00379	PASS
Extreme (50°C)		2.72	2.78	0.00145	0.00148	PASS
Extreme (40°C)		14.09	13.75	0.00750	0.00731	PASS
Extreme (30°C)		13.80	7.38	0.00734	0.00393	PASS
Extreme (20°C)		7.79	13.92	0.00415	0.00741	PASS
Extreme (10°C)		1.80	4.80	0.00096	0.00256	PASS
Extreme (0°C)		13.21	10.31	0.00703	0.00548	PASS
Extreme (-10°C)		4.32	14.39	0.00230	0.00766	PASS
Extreme (-20°C)		2.21	6.97	0.00118	0.00371	PASS
Extreme (-30°C)		5.63	5.03	0.00299	0.00268	PASS
25°C		LV	17.20	11.28	0.00915	0.00600
	HV	14.66	13.15	0.00780	0.00700	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	10.59	1.16	0.00564	0.00062	PASS
Extreme (55°C)		1.82	6.98	0.00097	0.00371	PASS
Extreme (50°C)		1.19	6.33	0.00064	0.00337	PASS
Extreme (40°C)		17.59	12.46	0.00936	0.00663	PASS
Extreme (30°C)		1.33	17.16	0.00071	0.00913	PASS
Extreme (20°C)		8.25	7.77	0.00439	0.00413	PASS
Extreme (10°C)		16.00	2.84	0.00851	0.00151	PASS
Extreme (0°C)		5.85	1.67	0.00311	0.00089	PASS
Extreme (-10°C)		1.73	11.92	0.00092	0.00634	PASS
Extreme (-20°C)		8.24	8.27	0.00438	0.00440	PASS
Extreme (-30°C)		10.36	15.38	0.00551	0.00818	PASS
25°C		LV	11.30	13.00	0.00601	0.00692
	HV	5.07	11.64	0.00270	0.00619	PASS

LTE Band 7						
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	5.66	2.59	0.00301	0.00138	PASS
Extreme (55°C)		15.52	1.45	0.00825	0.00077	PASS
Extreme (50°C)		10.75	1.56	0.00572	0.00083	PASS
Extreme (40°C)		14.95	7.52	0.00795	0.00400	PASS
Extreme (30°C)		2.81	4.05	0.00149	0.00215	PASS
Extreme (20°C)		14.57	9.09	0.00775	0.00483	PASS
Extreme (10°C)		3.17	16.26	0.00169	0.00865	PASS
Extreme (0°C)		14.41	3.10	0.00766	0.00165	PASS
Extreme (-10°C)		5.80	2.84	0.00308	0.00151	PASS
Extreme (-20°C)		7.19	17.84	0.00383	0.00949	PASS
Extreme (-30°C)		10.90	2.10	0.00580	0.00112	PASS
25°C		LV	1.38	17.48	0.00073	0.00930
	HV	1.83	9.73	0.00098	0.00518	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	8.62	5.11	0.00459	0.00272	PASS
Extreme (55°C)		16.00	1.49	0.00851	0.00079	PASS
Extreme (50°C)		6.46	5.45	0.00344	0.00290	PASS
Extreme (40°C)		1.33	15.30	0.00071	0.00814	PASS
Extreme (30°C)		17.32	12.65	0.00921	0.00673	PASS
Extreme (20°C)		7.43	16.42	0.00395	0.00873	PASS
Extreme (10°C)		1.74	6.60	0.00092	0.00351	PASS
Extreme (0°C)		8.01	15.29	0.00426	0.00813	PASS
Extreme (-10°C)		12.56	3.77	0.00668	0.00200	PASS
Extreme (-20°C)		15.58	2.61	0.00829	0.00139	PASS
Extreme (-30°C)		14.28	4.77	0.00760	0.00254	PASS
25°C		LV	12.72	5.88	0.00677	0.00313
	HV	14.52	17.08	0.00772	0.00908	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	16.14	2.41	0.00859	0.00128	PASS
Extreme (55°C)		10.97	16.61	0.00584	0.00884	PASS



Extreme (50°C)		10.20	3.40	0.00542	0.00181	PASS
Extreme (40°C)		16.80	13.49	0.00893	0.00718	PASS
Extreme (30°C)		4.94	15.56	0.00263	0.00828	PASS
Extreme (20°C)		1.96	15.69	0.00104	0.00835	PASS
Extreme (10°C)		11.65	11.70	0.00620	0.00622	PASS
Extreme (0°C)		15.19	17.12	0.00808	0.00911	PASS
Extreme (-10°C)		15.58	17.28	0.00829	0.00919	PASS
Extreme (-20°C)		7.94	11.60	0.00422	0.00617	PASS
Extreme (-30°C)		13.52	14.40	0.00719	0.00766	PASS
25°C	LV	7.32	14.48	0.00390	0.00770	PASS
	HV	8.98	13.54	0.00478	0.00720	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	7.08	0.00951	0.00377	
Extreme (55°C)		11.95	13.80	0.00636	0.00734	PASS
Extreme (50°C)		17.45	17.51	0.00928	0.00931	PASS
Extreme (40°C)		9.44	7.43	0.00502	0.00395	PASS
Extreme (30°C)		14.31	9.26	0.00761	0.00492	PASS
Extreme (20°C)		2.98	16.01	0.00158	0.00851	PASS
Extreme (10°C)		17.91	11.24	0.00953	0.00598	PASS
Extreme (0°C)		1.66	10.55	0.00088	0.00561	PASS
Extreme (-10°C)		5.18	6.81	0.00276	0.00362	PASS
Extreme (-20°C)		8.91	3.35	0.00474	0.00178	PASS
Extreme (-30°C)		13.98	5.24	0.00744	0.00279	PASS
25°C		LV	9.91	6.08	0.00527	0.00323
	HV	12.67	5.22	0.00674	0.00278	PASS

### 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.

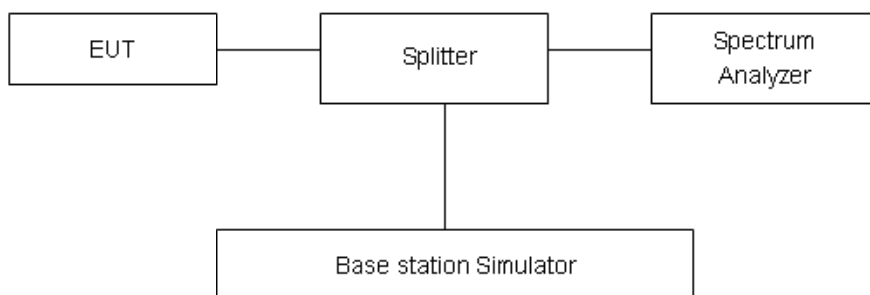
RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

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 log<sub>10</sub> (P) dB..”

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

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

**Measurement Uncertainty**

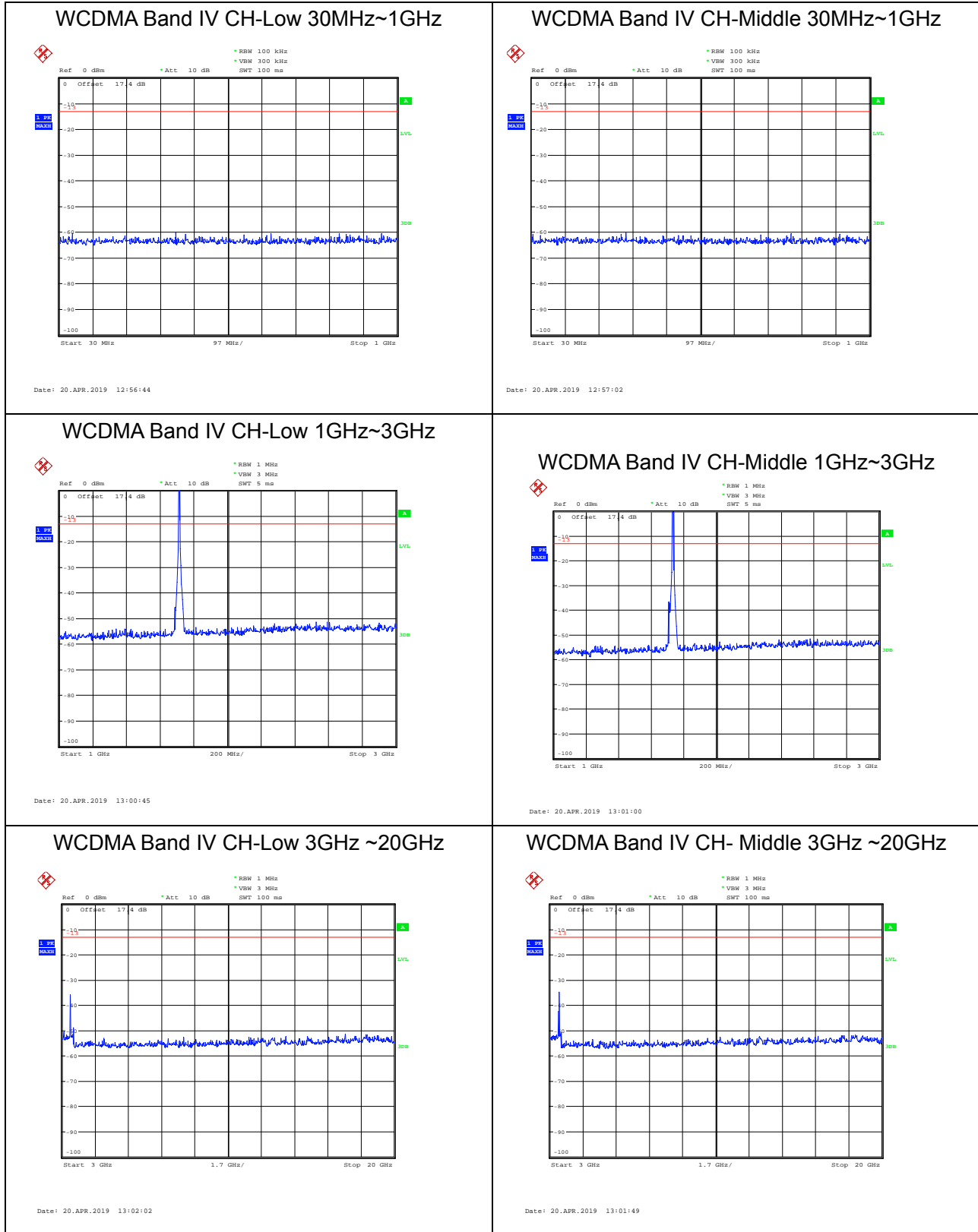
The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

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.

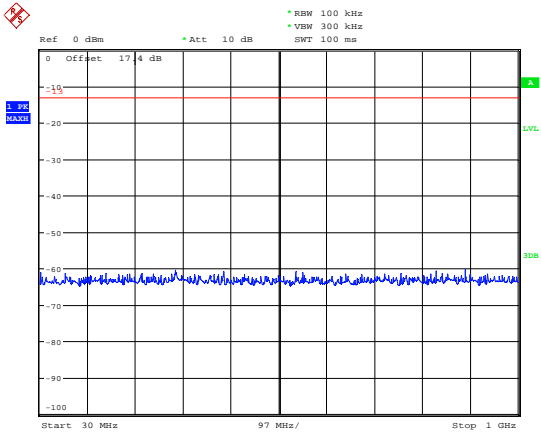
The signal beyond the limit is carrier.





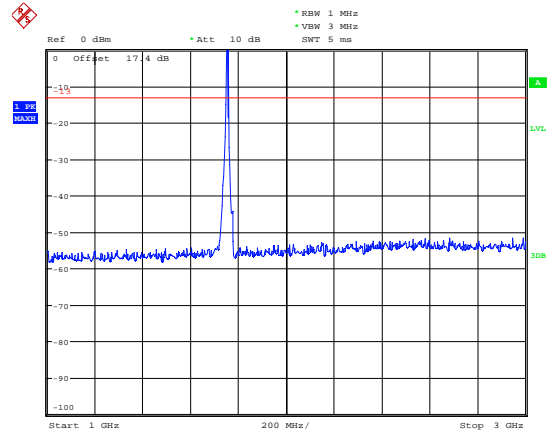


### WCDMA Band IV CH- High 30MHz~1GHz



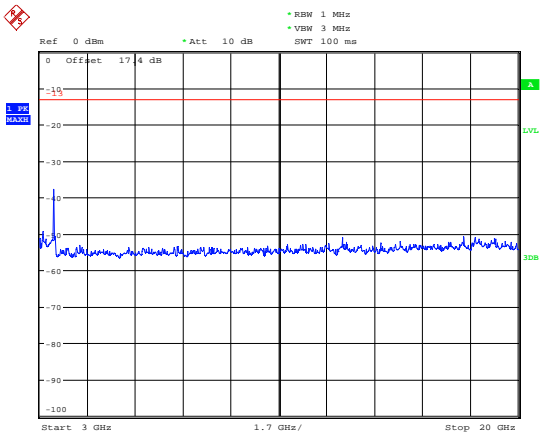
Date: 20.APR.2019 12:57:18

### WCDMA Band IV CH- High 1GHz~3GHz



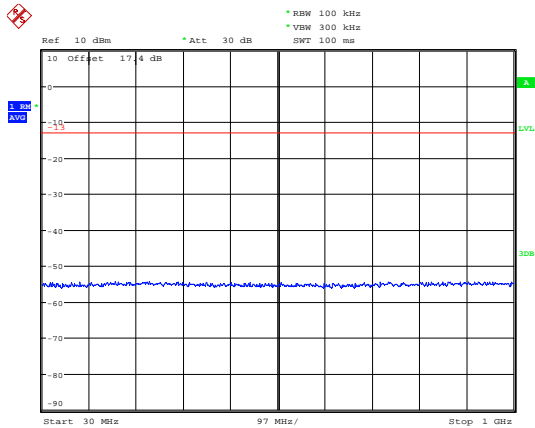
Date: 20.APR.2019 13:01:14

### WCDMA Band IV CH-High 3GHz ~20GHz



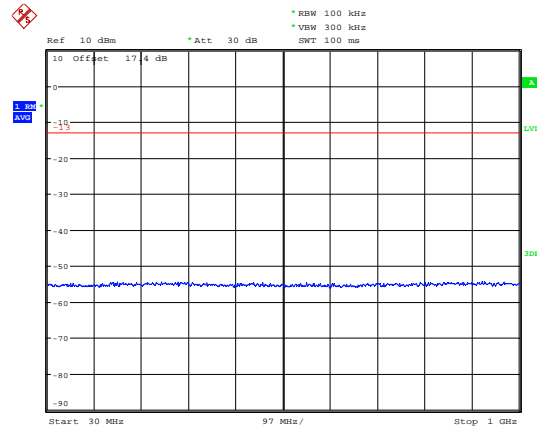
Date: 20.APR.2019 13:01:31

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



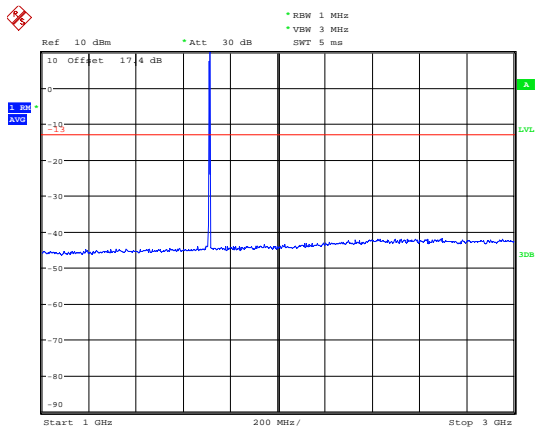
Date: 24.APR.2019 17:30:15

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



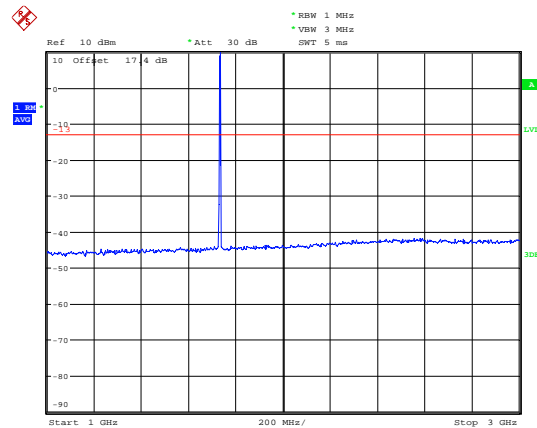
Date: 24.APR.2019 17:30:43

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



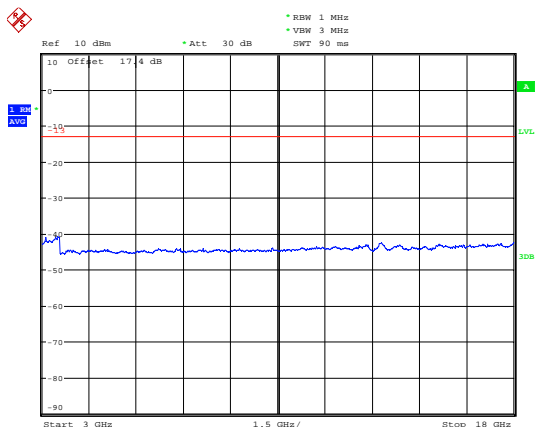
Date: 24.APR.2019 20:44:22

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



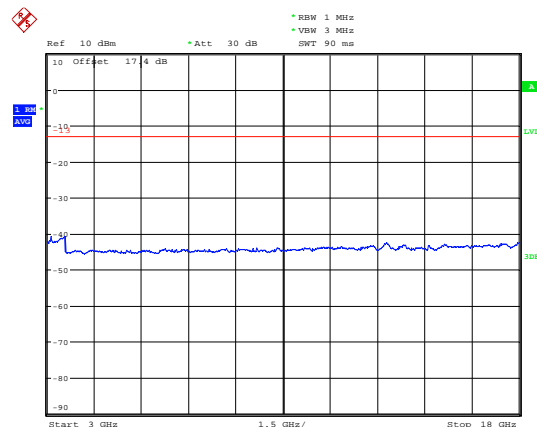
Date: 24.APR.2019 20:44:35

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



Date: 25.APR.2019 11:36:42

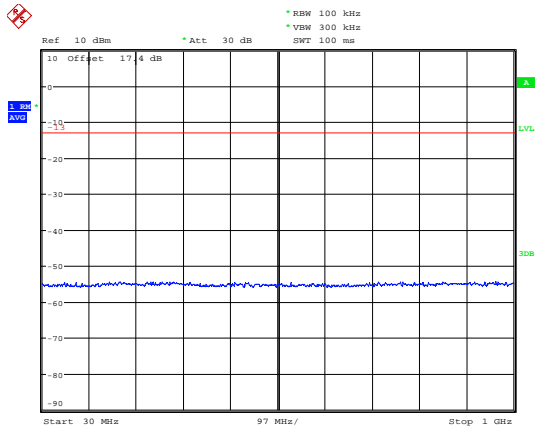
LTE Band 4 1.4MHz CH-Middle 3GHz~18GHz



Date: 25.APR.2019 11:36:55

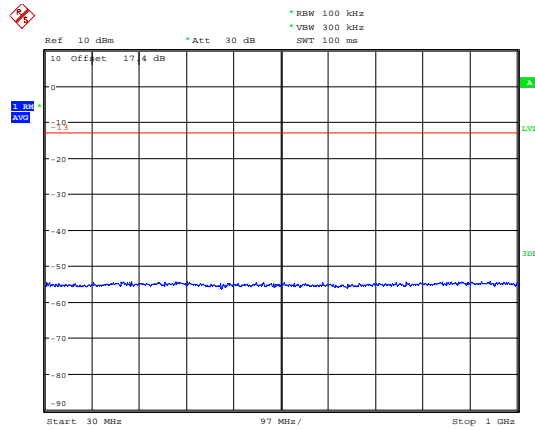


### LTE Band 4 1.4MHz CH-High 30MHz~1GHz



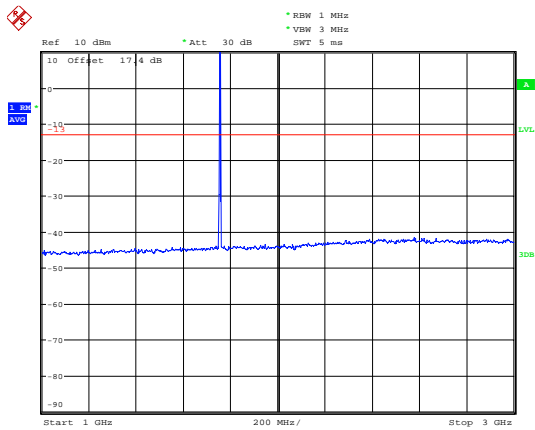
Date: 24.APR.2019 17:31:21

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



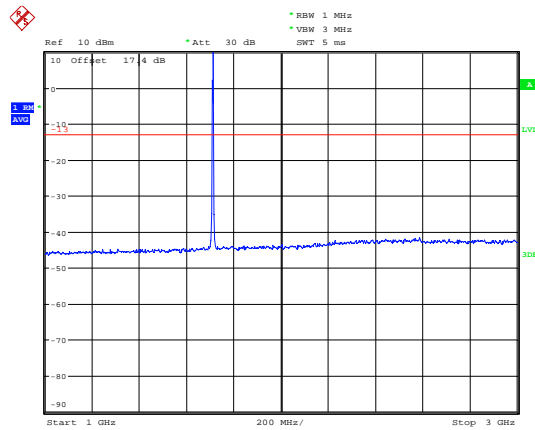
Date: 24.APR.2019 17:32:03

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



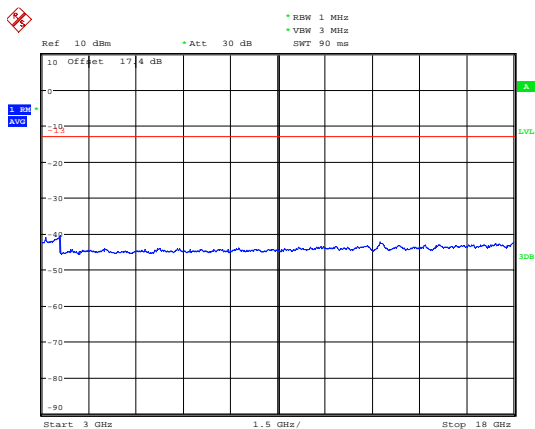
Date: 24.APR.2019 20:44:49

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



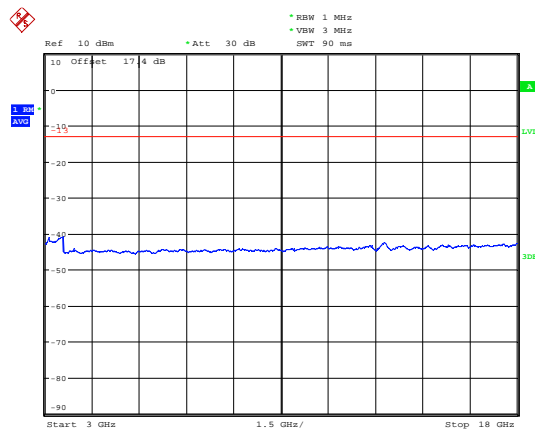
Date: 24.APR.2019 20:45:10

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



Date: 25.APR.2019 11:38:27

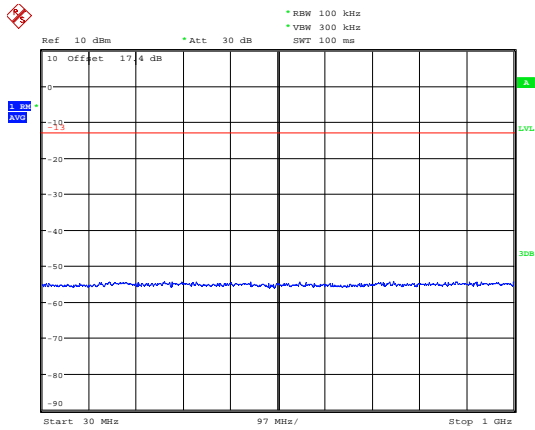
### LTE Band 4 3MHz CH-Low 3GHz~18GHz



Date: 25.APR.2019 11:38:47

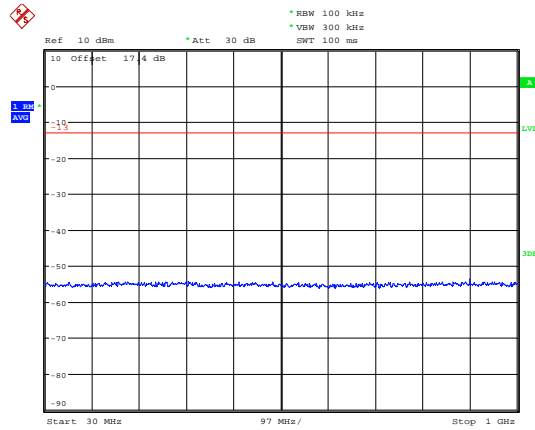


### LTE Band 4 3MHz CH-Middle 30MHz~1GHz



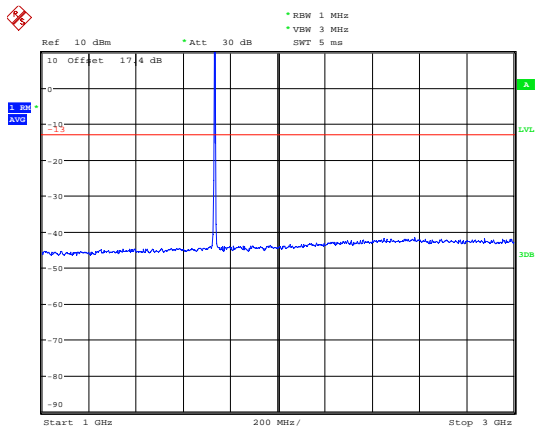
Date: 24.APR.2019 17:32:29

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



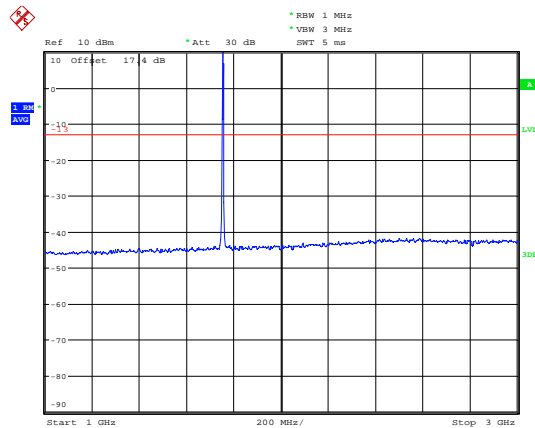
Date: 24.APR.2019 17:32:46

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



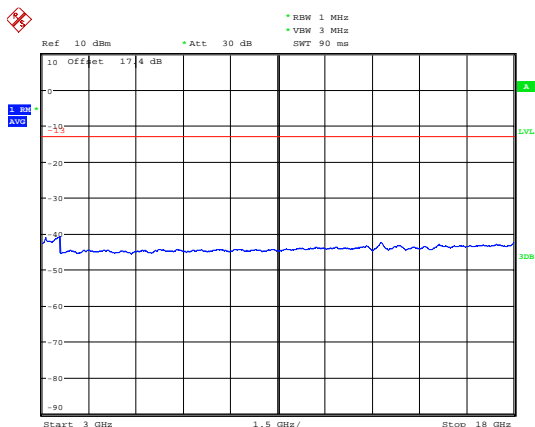
Date: 24.APR.2019 20:45:22

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



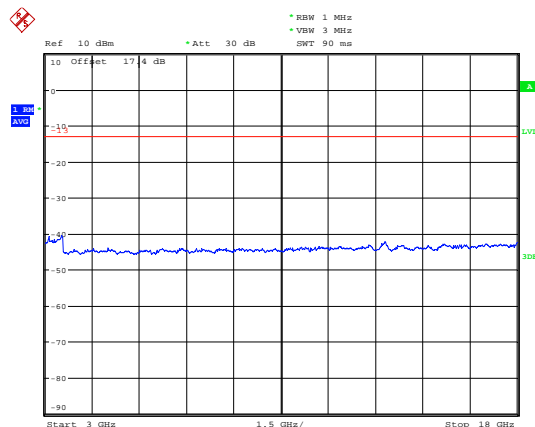
Date: 24.APR.2019 20:45:39

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



Date: 25.APR.2019 11:37:54

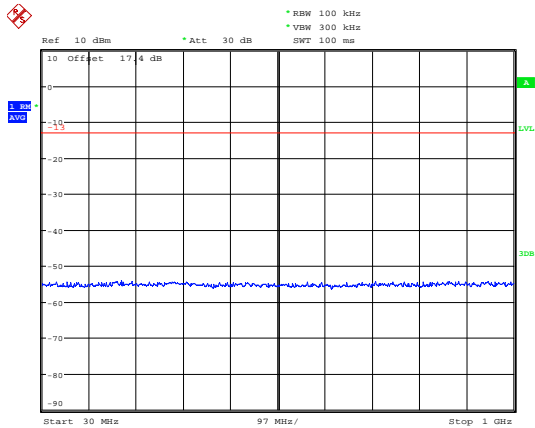
### LTE Band 4 3MHz CH-High 3GHz~18GHz



Date: 25.APR.2019 11:39:01

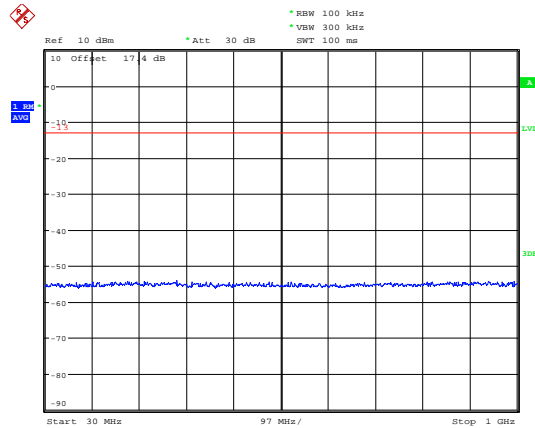


### LTE Band 4 5MHz CH-Low 30MHz~1GHz



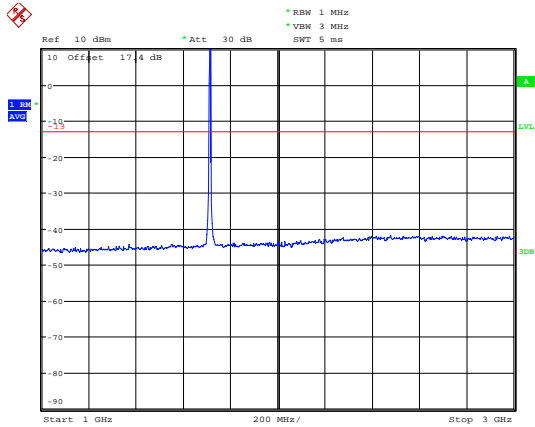
Date: 24.APR.2019 17:35:29

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



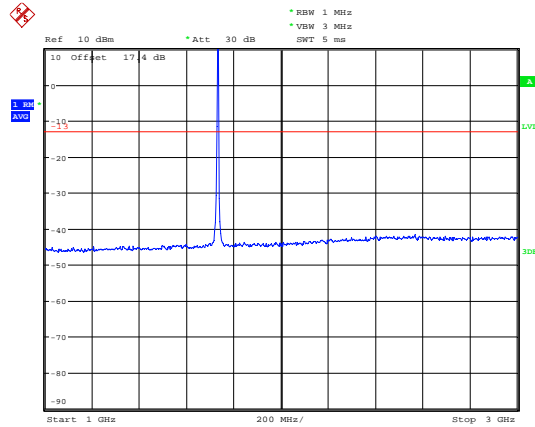
Date: 24.APR.2019 17:35:42

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



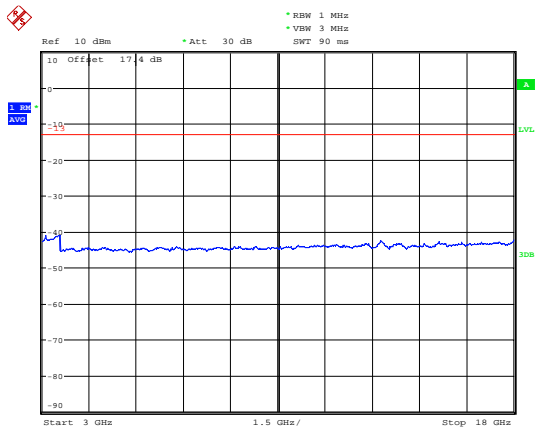
Date: 25.APR.2019 10:59:15

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



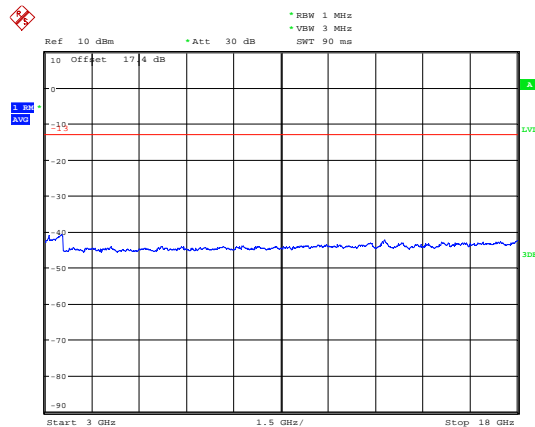
Date: 25.APR.2019 10:59:36

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



Date: 25.APR.2019 11:39:56

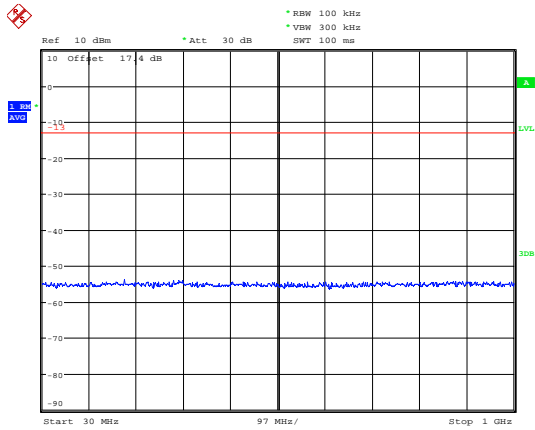
### LTE Band 4 5MHz CH-Middle 3GHz~18GHz



Date: 25.APR.2019 11:40:07

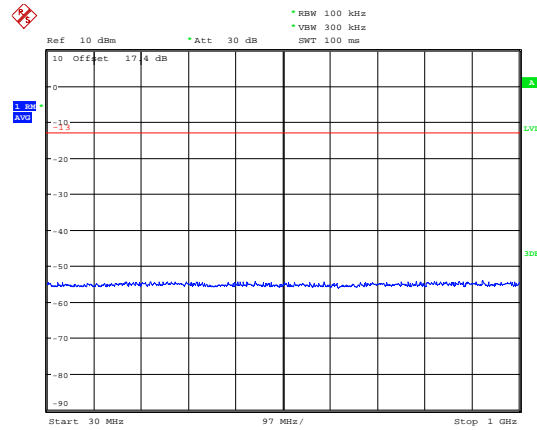


### LTE Band 4 5MHz CH-High 30MHz~1GHz



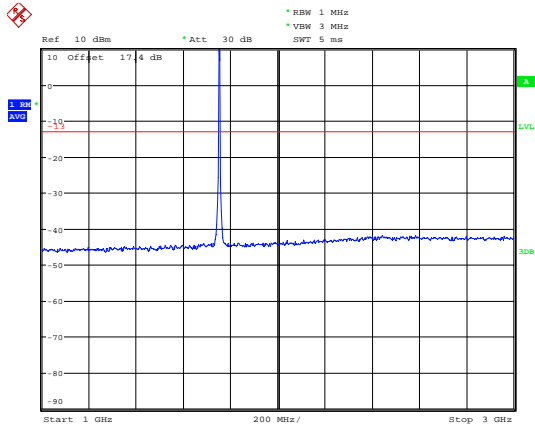
Date: 24.APR.2019 17:36:03

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



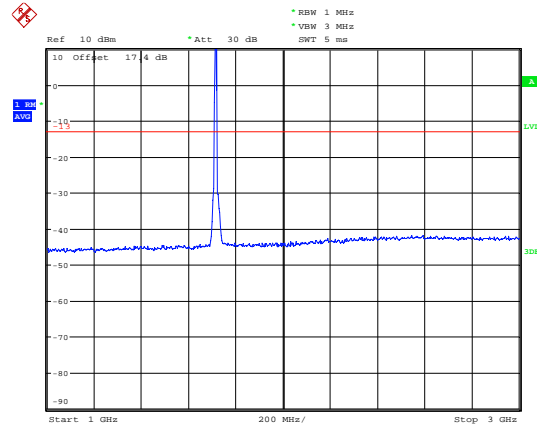
Date: 24.APR.2019 17:40:36

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



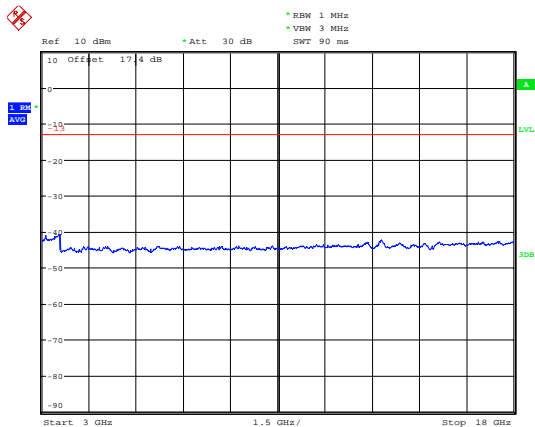
Date: 25.APR.2019 10:59:49

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



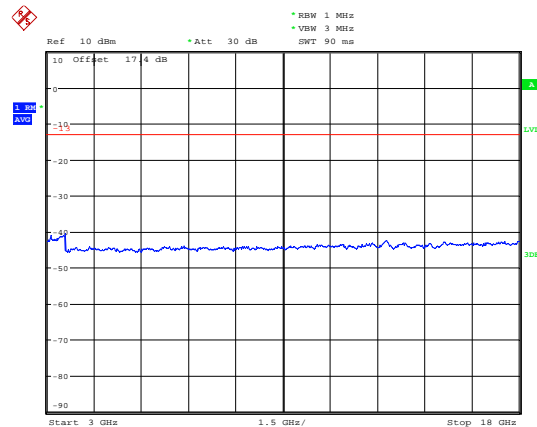
Date: 25.APR.2019 11:11:45

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



Date: 25.APR.2019 11:40:23

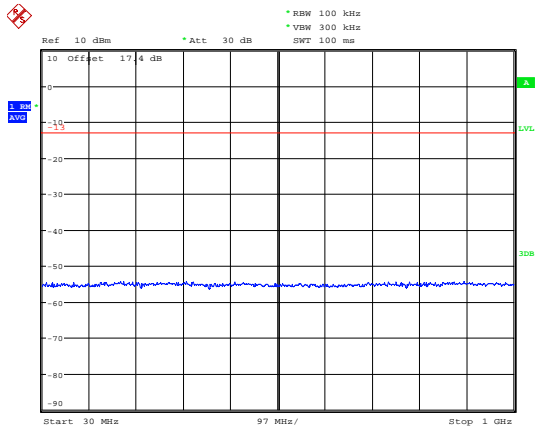
### LTE Band 4 10MHz CH-Low 3GHz~18GHz



Date: 25.APR.2019 11:40:43

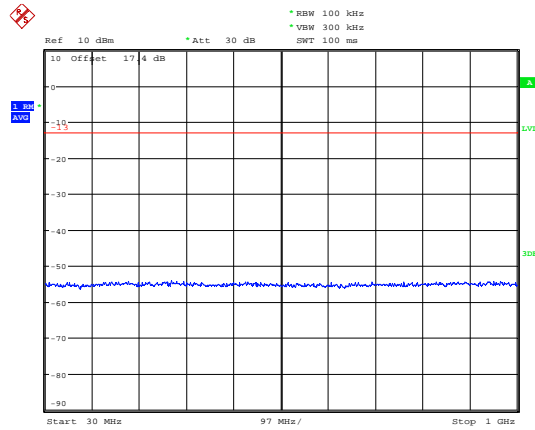


### LTE Band 4 10MHz CH-Middle 30MHz~1GHz



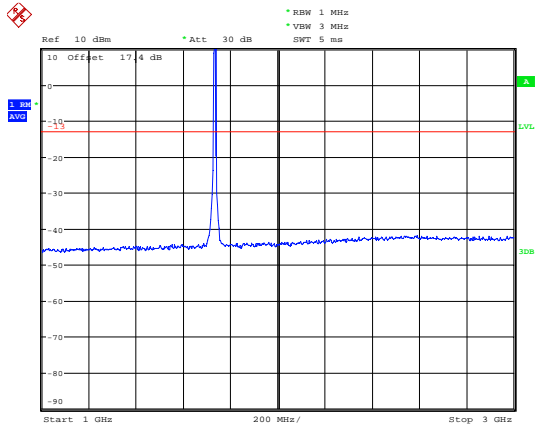
Date: 24.APR.2019 17:40:49

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



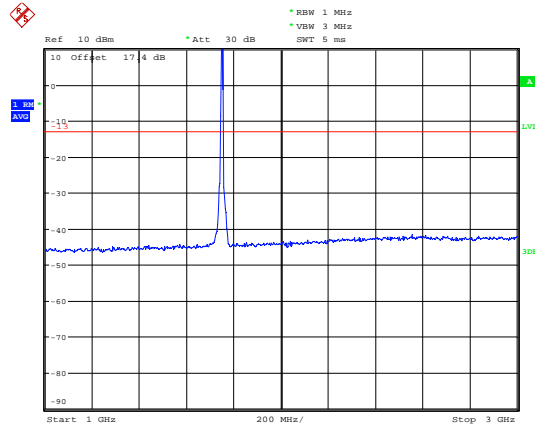
Date: 24.APR.2019 17:41:04

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



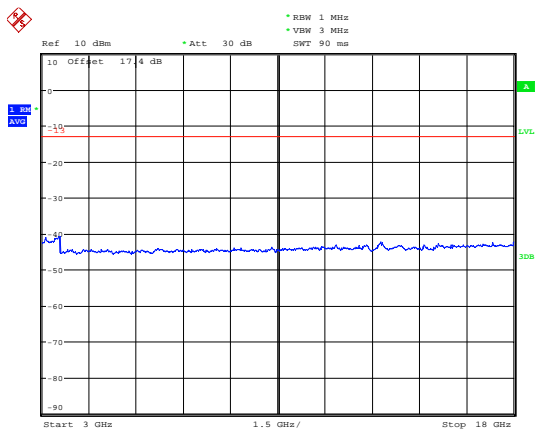
Date: 25.APR.2019 11:12:00

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



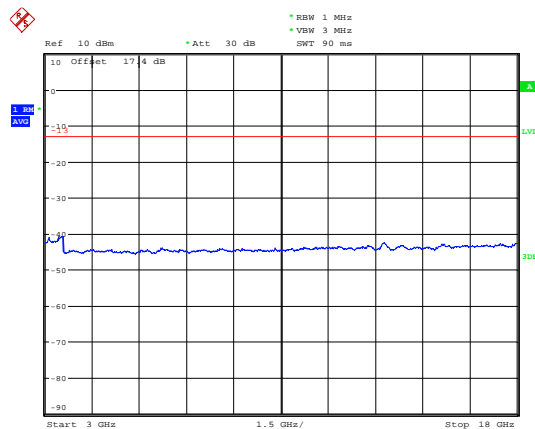
Date: 25.APR.2019 11:12:17

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



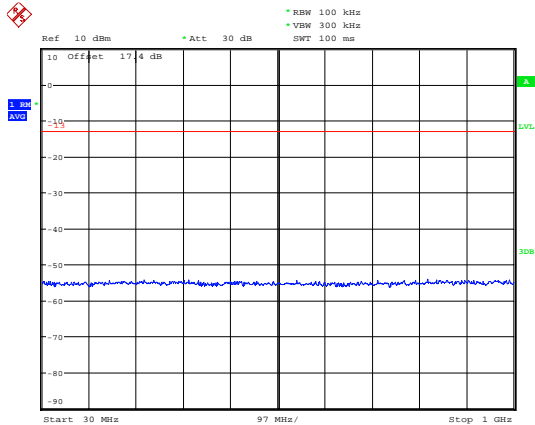
Date: 25.APR.2019 11:40:54

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



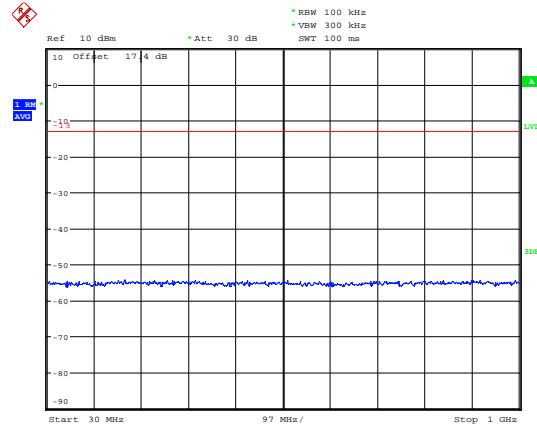
Date: 25.APR.2019 11:41:11

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



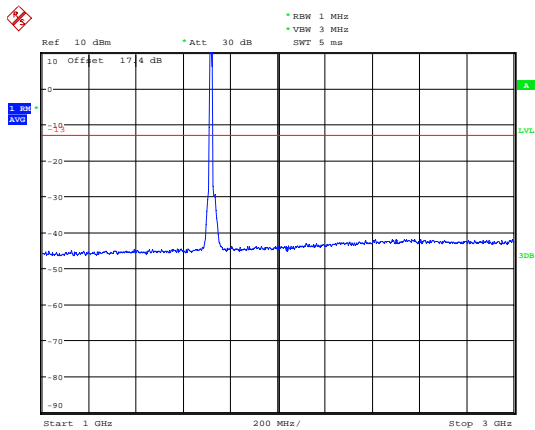
Date: 24.APR.2019 17:48:31

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



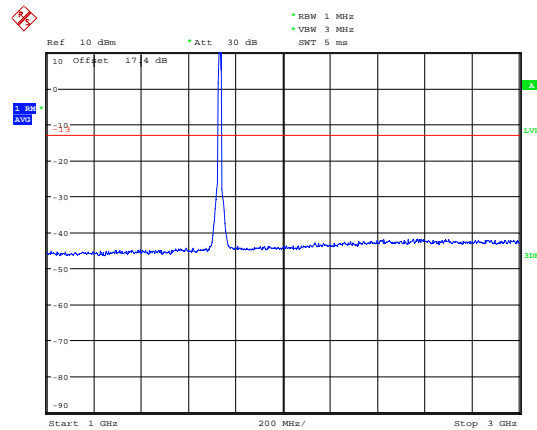
Date: 24.APR.2019 17:48:46

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



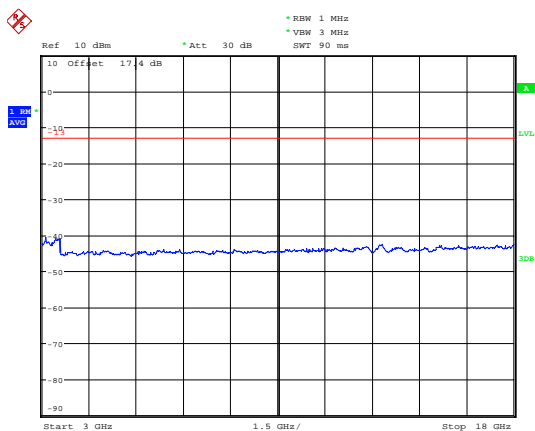
Date: 25.APR.2019 11:15:26

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



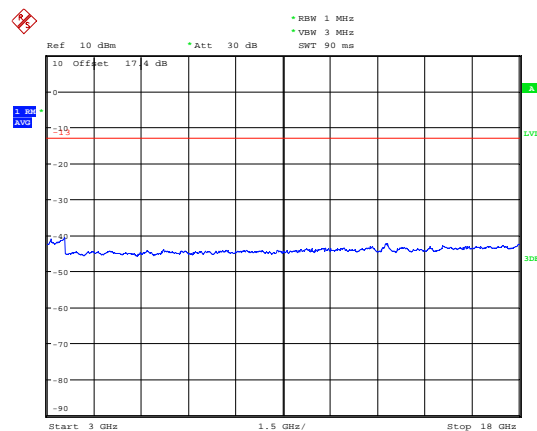
Date: 25.APR.2019 11:15:38

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



Date: 25.APR.2019 11:41:29

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

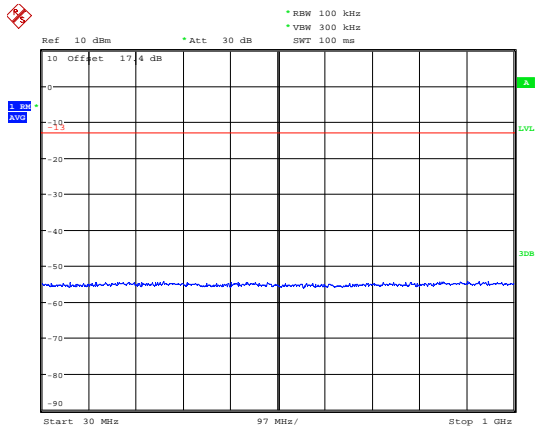


Date: 25.APR.2019 11:41:40



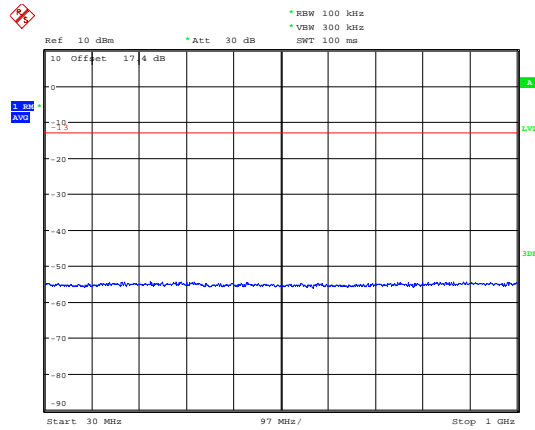


### LTE Band 4 15MHz CH-High 30MHz~1GHz



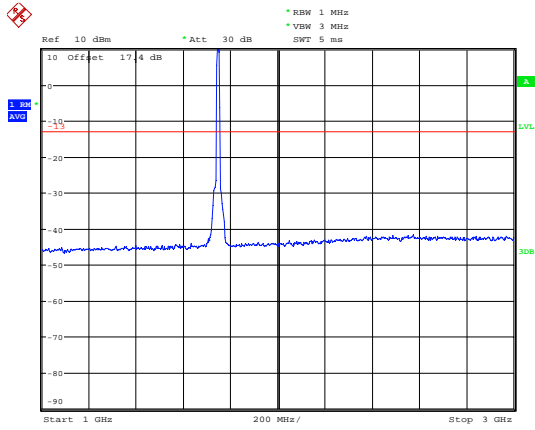
Date: 24.APR.2019 17:49:32

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



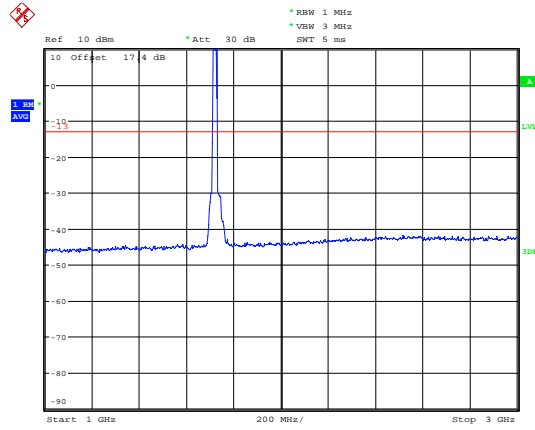
Date: 24.APR.2019 17:50:00

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



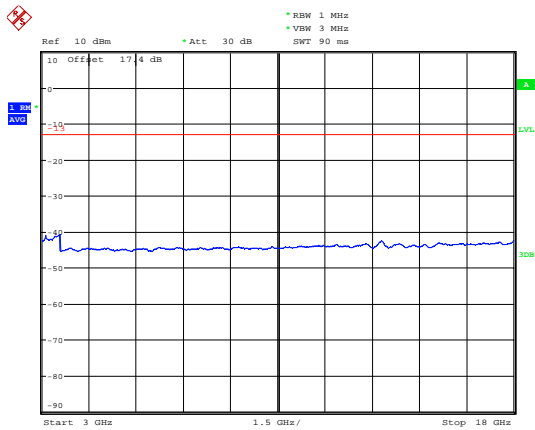
Date: 25.APR.2019 11:15:52

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



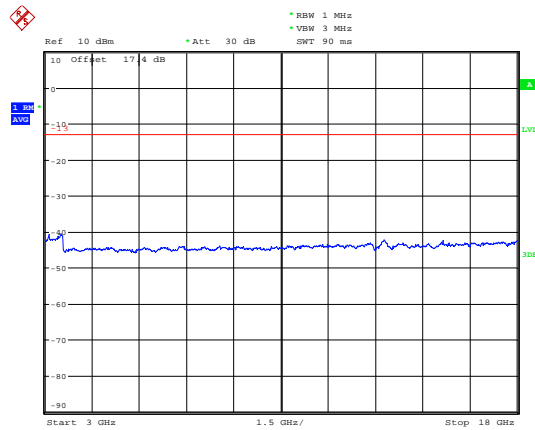
Date: 25.APR.2019 11:16:12

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

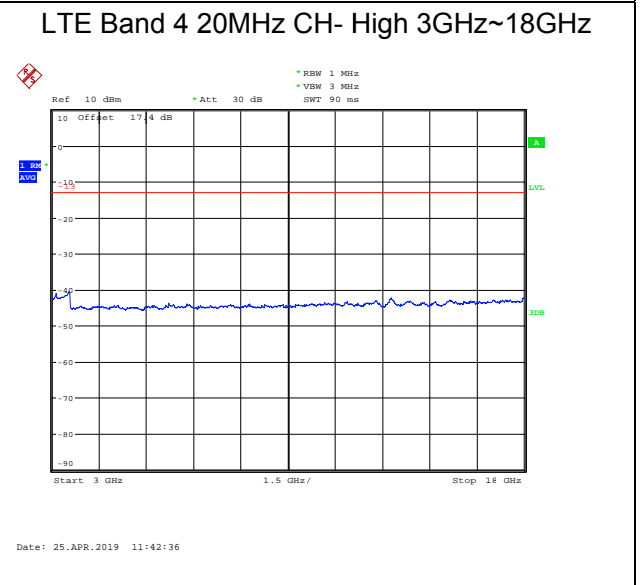
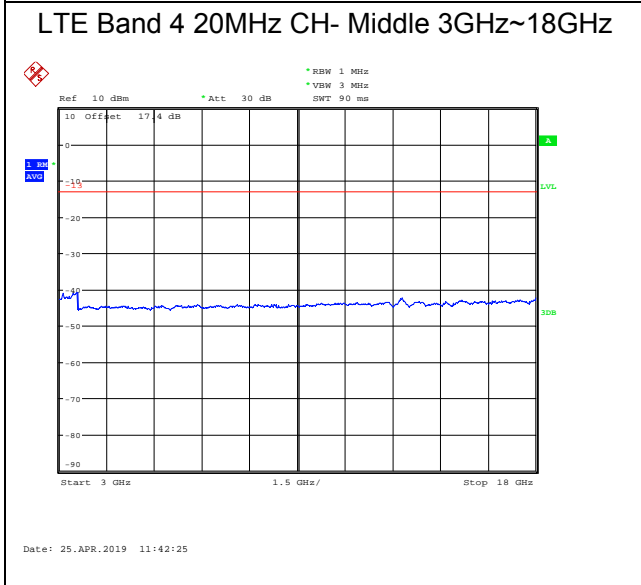
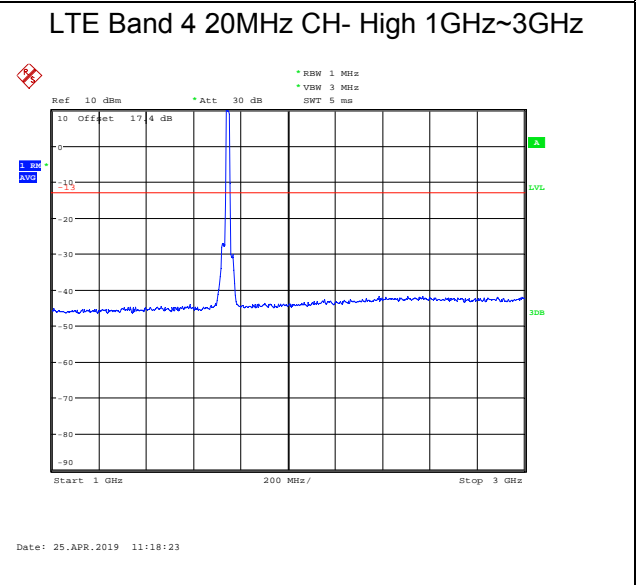
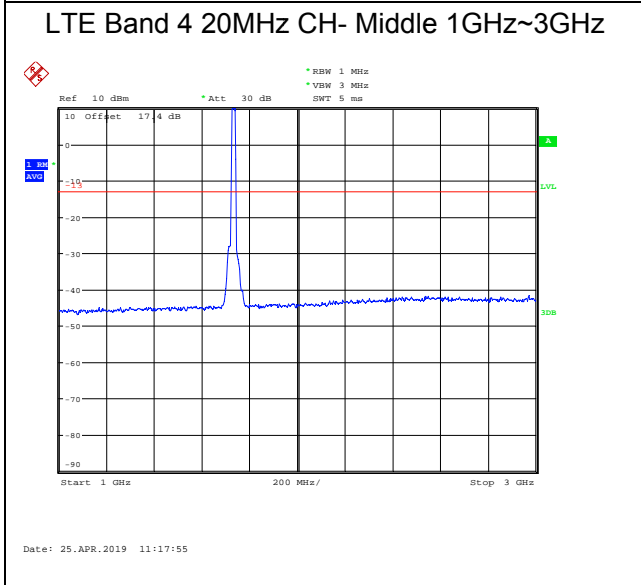
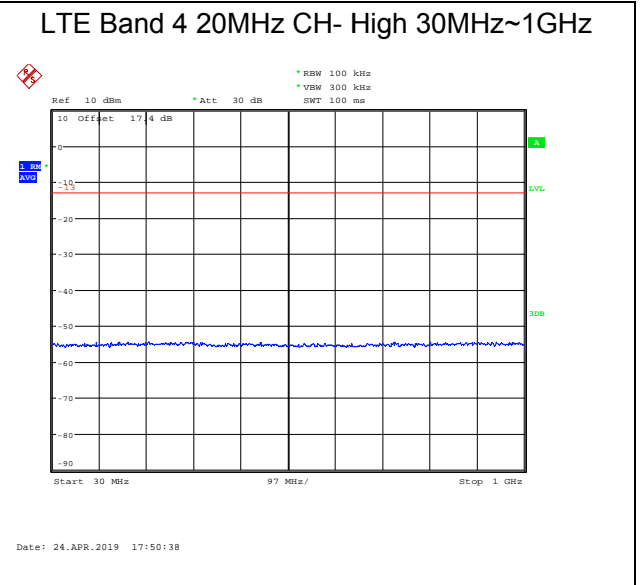
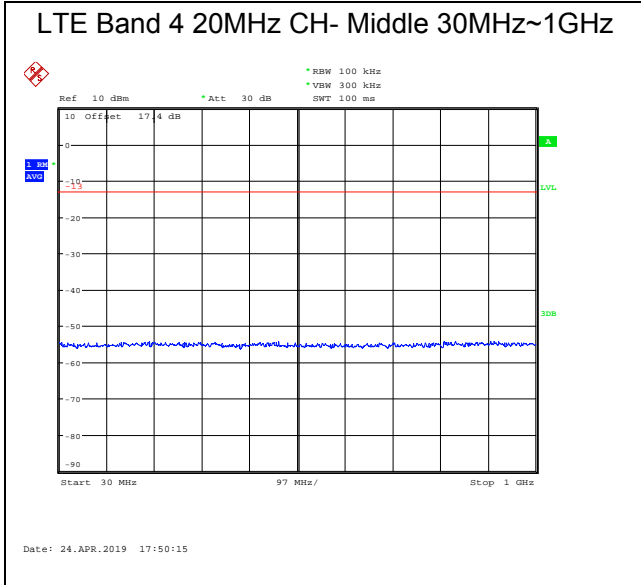


Date: 25.APR.2019 11:41:57

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

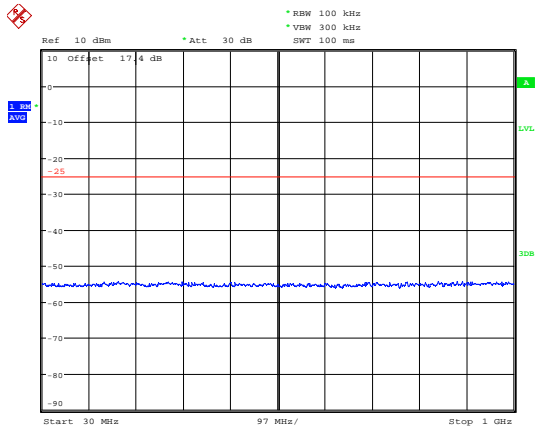


Date: 25.APR.2019 11:42:14



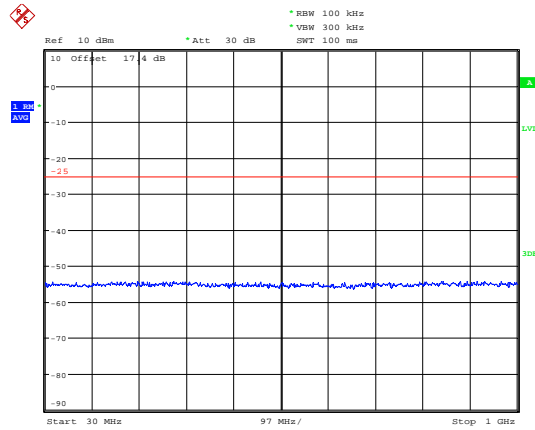


### LTE Band 7 5MHz CH-Low 30MHz~1GHz



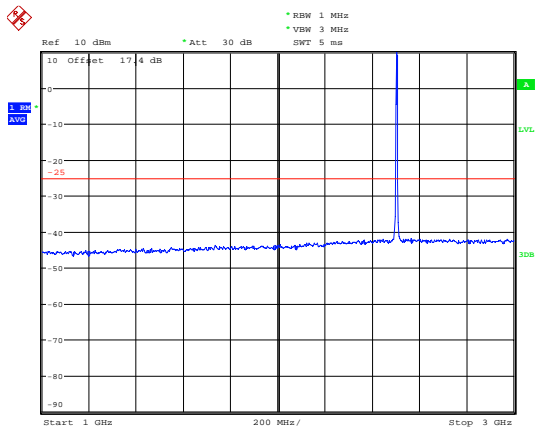
Date: 24.APR.2019 17:59:39

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



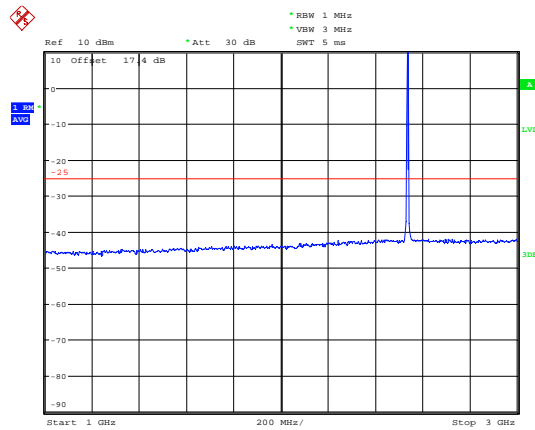
Date: 24.APR.2019 17:59:51

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



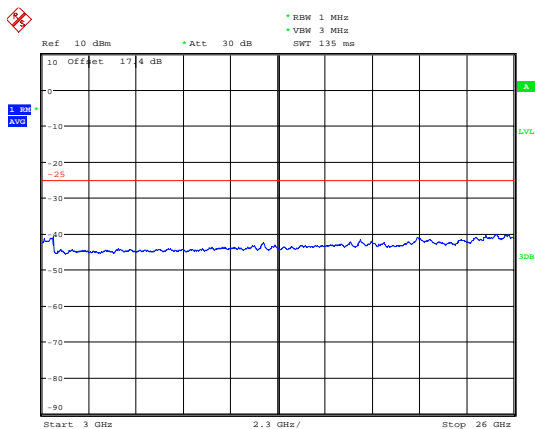
Date: 24.APR.2019 18:09:47

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



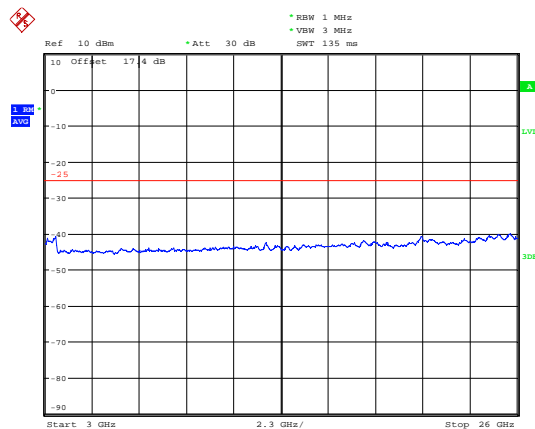
Date: 24.APR.2019 18:10:01

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



Date: 25.APR.2019 11:49:20

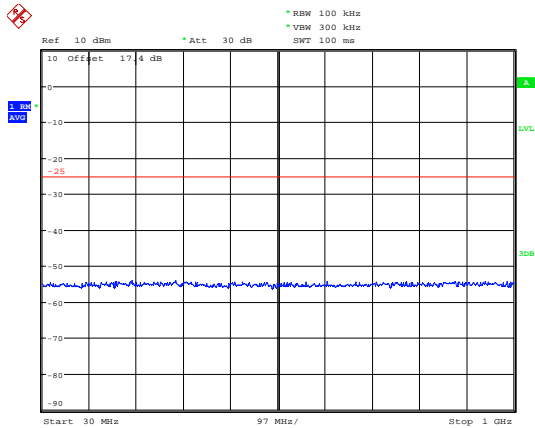
### LTE Band 7 5MHz CH-Middle 3GHz~26GHz



Date: 25.APR.2019 11:49:31

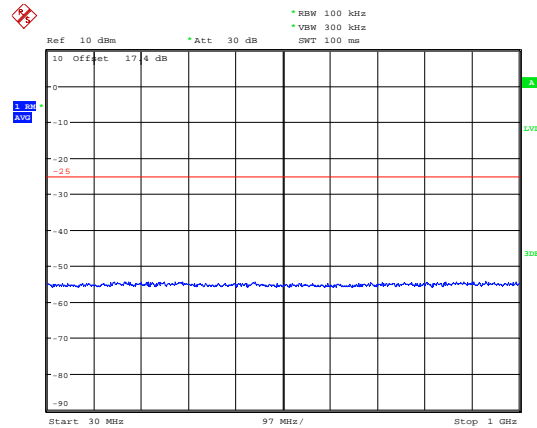


### LTE Band 7 5MHz CH-High 30MHz~1GHz



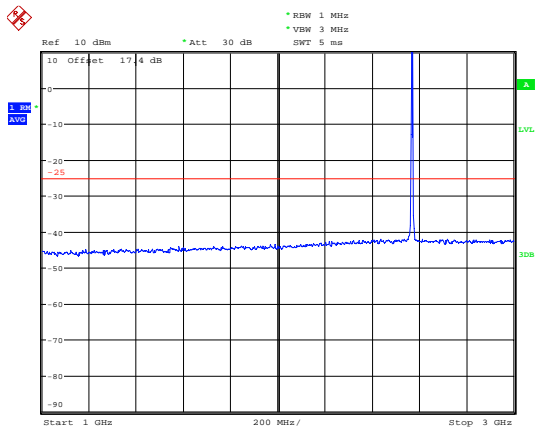
Date: 24.APR.2019 18:00:05

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



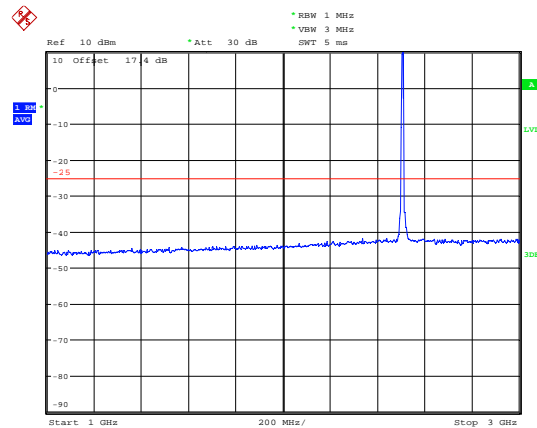
Date: 24.APR.2019 17:58:50

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



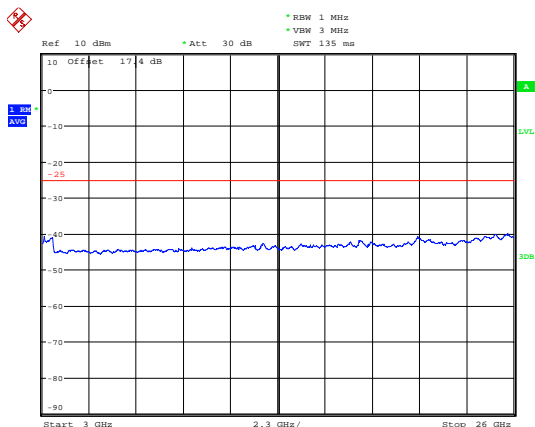
Date: 24.APR.2019 18:10:21

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



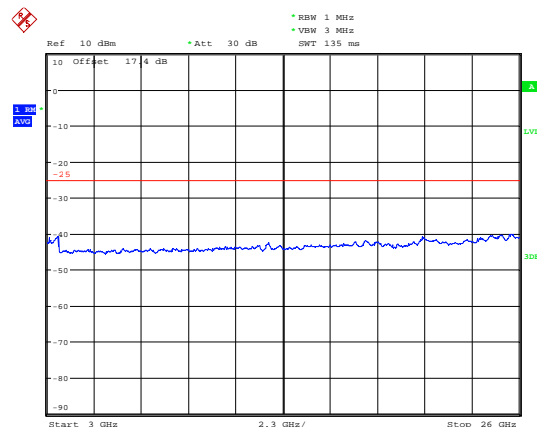
Date: 24.APR.2019 18:13:22

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



Date: 25.APR.2019 11:49:50

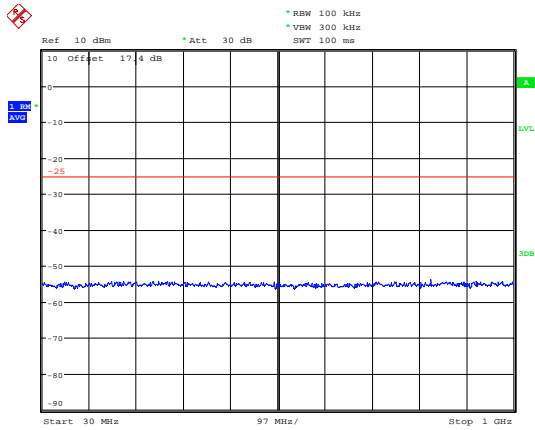
### LTE Band 7 10MHz CH-Low 3GHz~26GHz



Date: 25.APR.2019 11:50:12

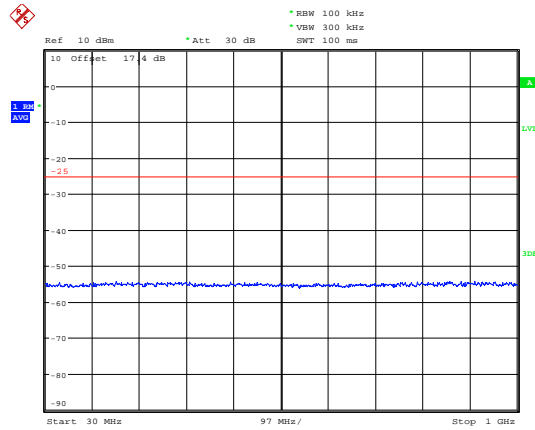


### LTE Band 7 10MHz CH-Middle 30MHz~1GHz



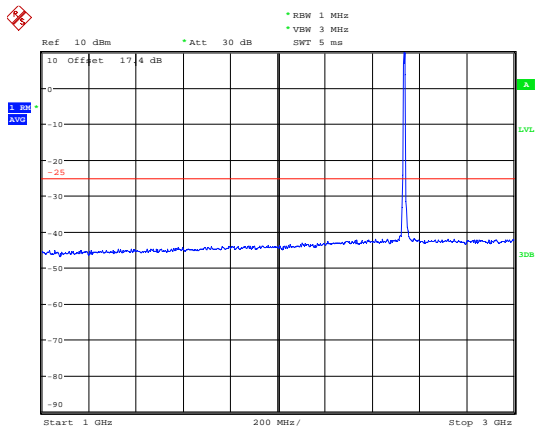
Date: 24.APR.2019 17:59:02

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



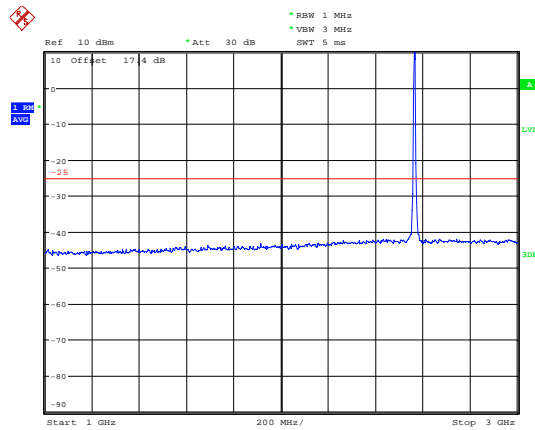
Date: 24.APR.2019 17:59:16

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



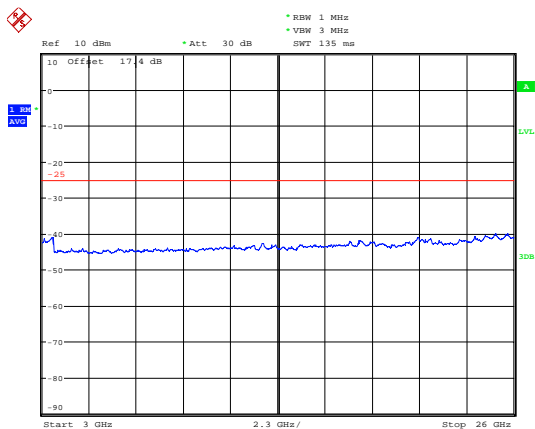
Date: 24.APR.2019 18:13:39

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



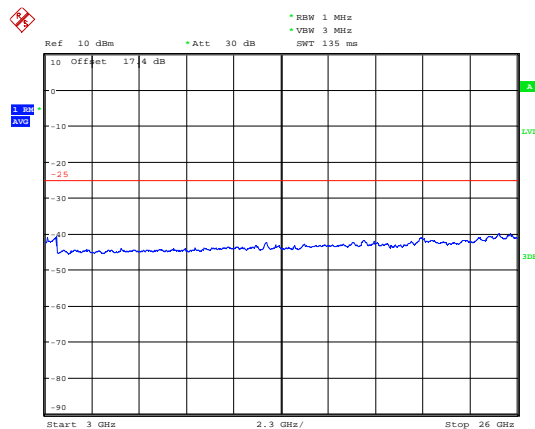
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### LTE Band 7 10MHz CH-Middle 3GHz~26GHz



Date: 25.APR.2019 11:50:22

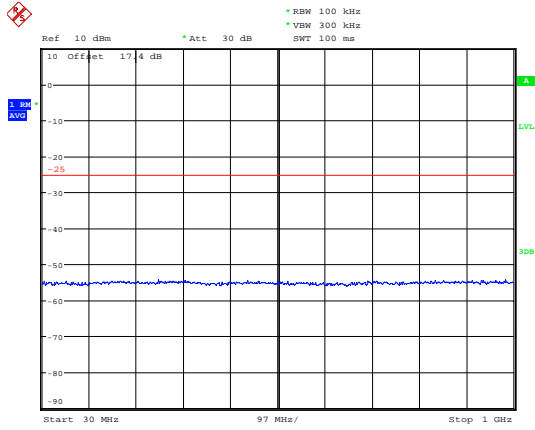
### LTE Band 7 10MHz CH-High 3GHz~26GHz



Date: 25.APR.2019 11:50:36

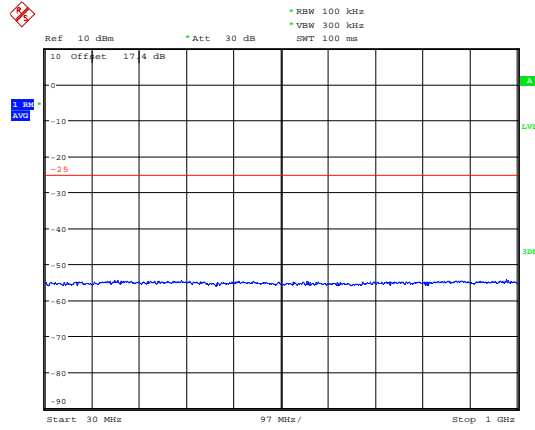


### LTE Band 7 15MHz CH-Low 30MHz~1GHz



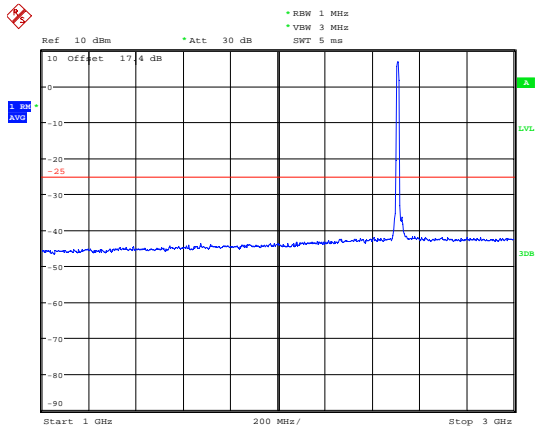
Date: 24.APR.2019 18:04:38

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



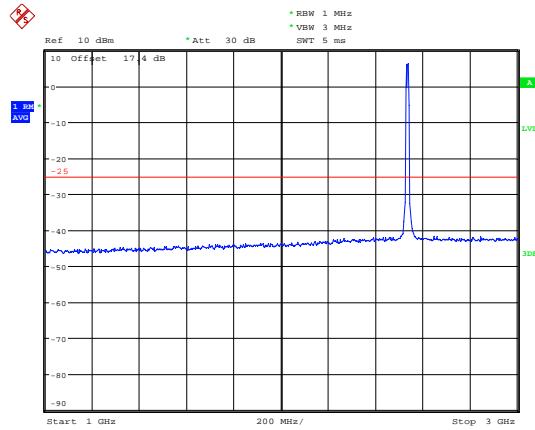
Date: 24.APR.2019 18:05:01

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



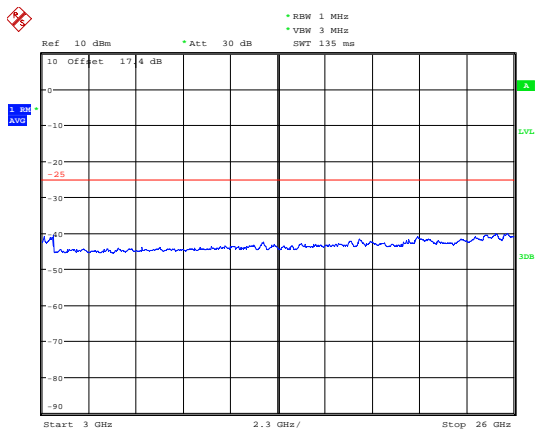
Date: 24.APR.2019 18:56:05

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



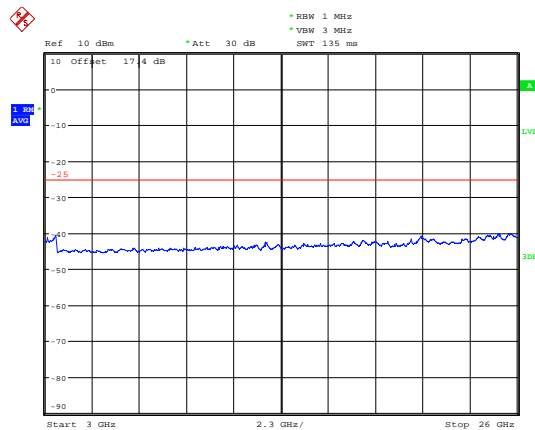
Date: 24.APR.2019 18:56:24

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



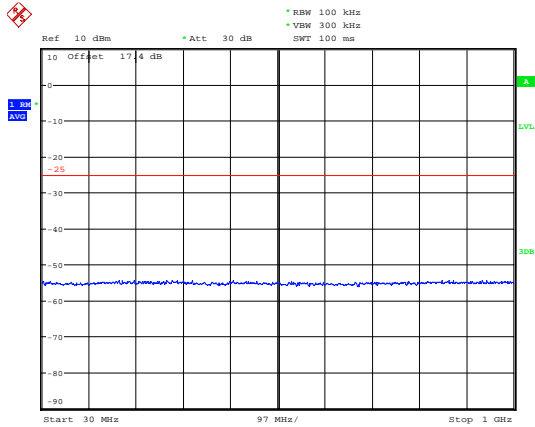
Date: 25.APR.2019 11:50:58

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



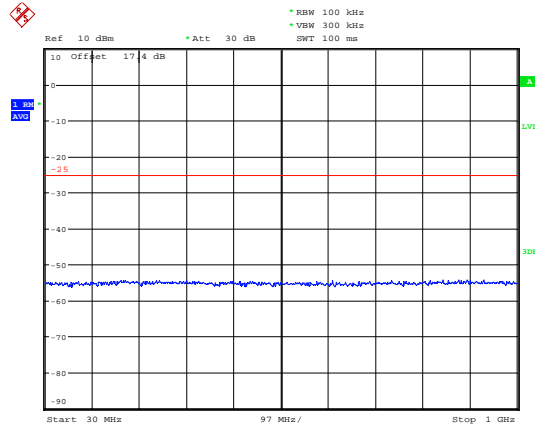
Date: 25.APR.2019 11:51:10

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



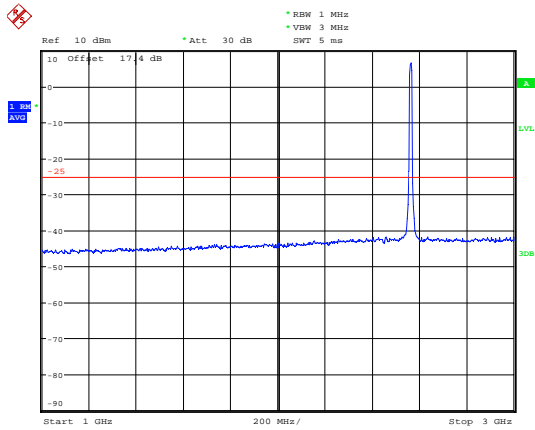
Date: 24.APR.2019 18:05:19

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



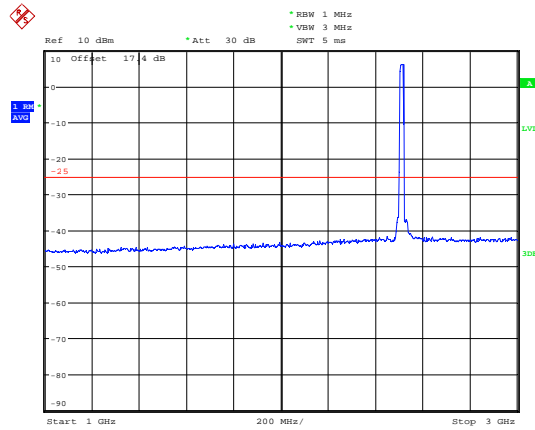
Date: 24.APR.2019 18:05:48

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



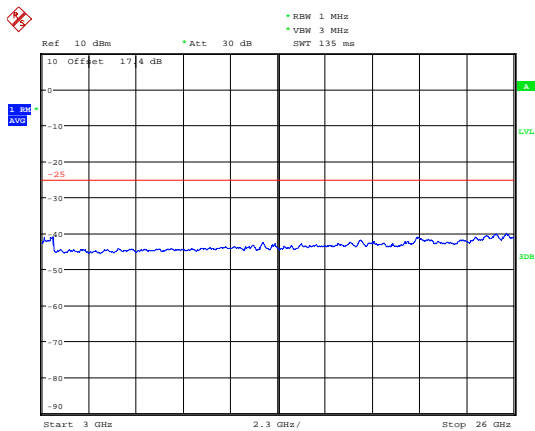
Date: 24.APR.2019 18:56:59

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



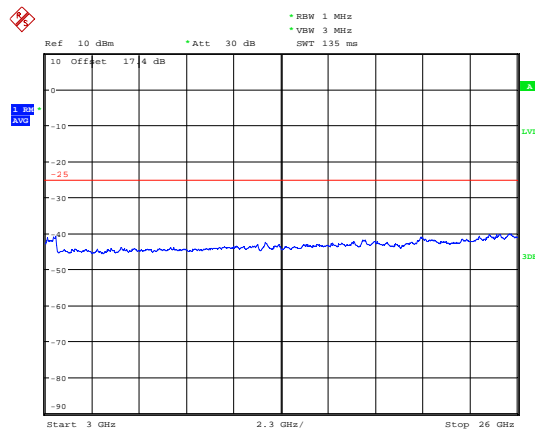
Date: 24.APR.2019 18:57:32

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



Date: 25.APR.2019 11:51:22

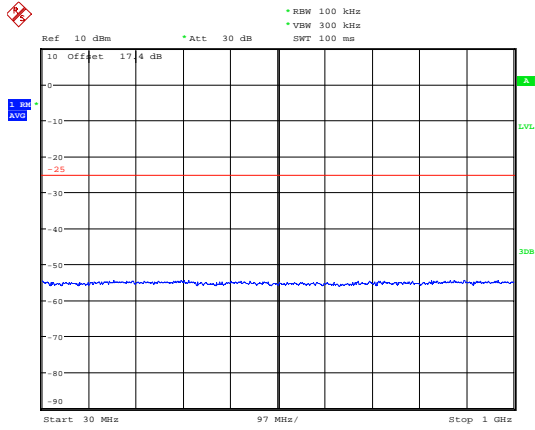
LTE Band 7 20MHz CH-Low 3GHz~26GHz



Date: 25.APR.2019 11:51:40

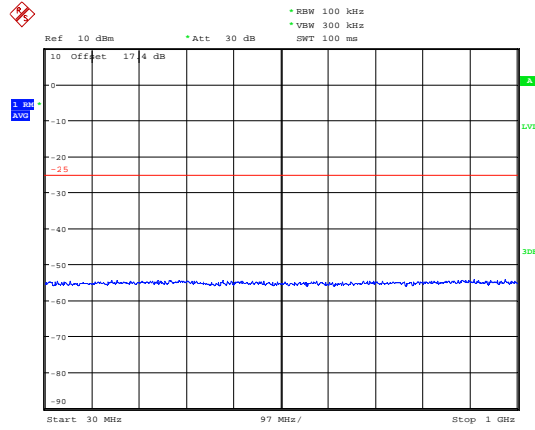


LTE Band 7 20MHz CH-Middle 30MHz~1GHz



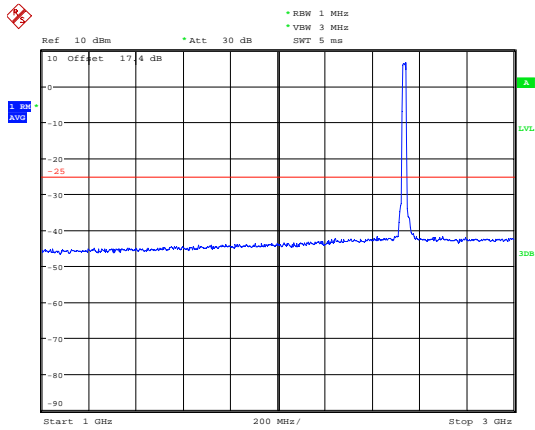
Date: 24.APR.2019 18:06:20

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



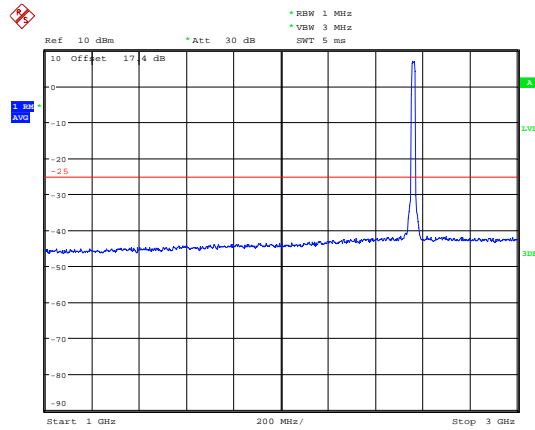
Date: 24.APR.2019 18:06:36

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



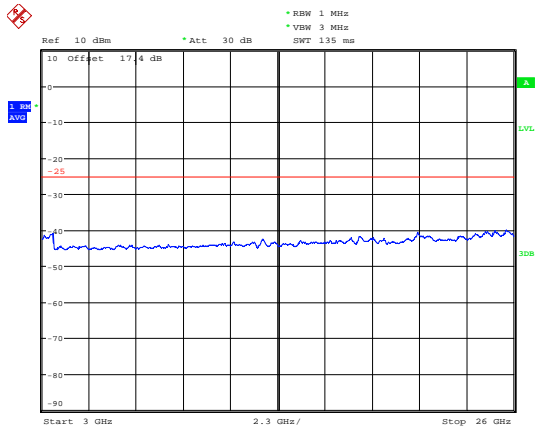
Date: 24.APR.2019 18:57:46

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



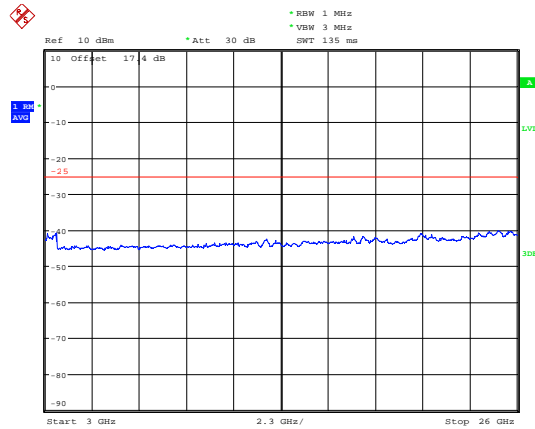
Date: 24.APR.2019 18:58:10

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



Date: 25.APR.2019 11:51:57

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



Date: 25.APR.2019 11:52:07



## 5.8 Radiates Spurious Emission

### Ambient condition

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

### Method of Measurement

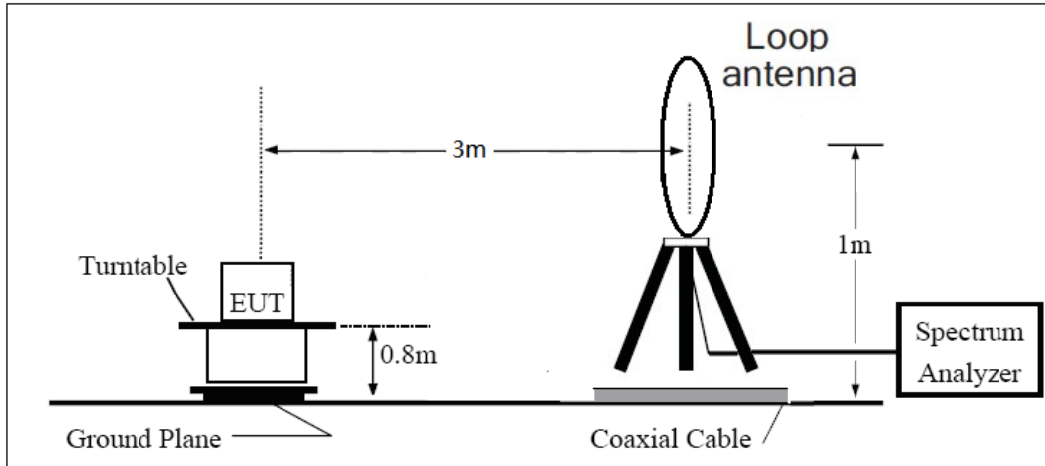
- The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
- Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable 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).
- 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.
- 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).
- 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.
- 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.
- The measurement results are obtained as described below:  
 $Power(EIRP)=PMea- PAg - Pcl + Ga$   
 The measurement results are amend as described below:  
 $Power(EIRP)=PMea- Pcl + Ga$
- 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.

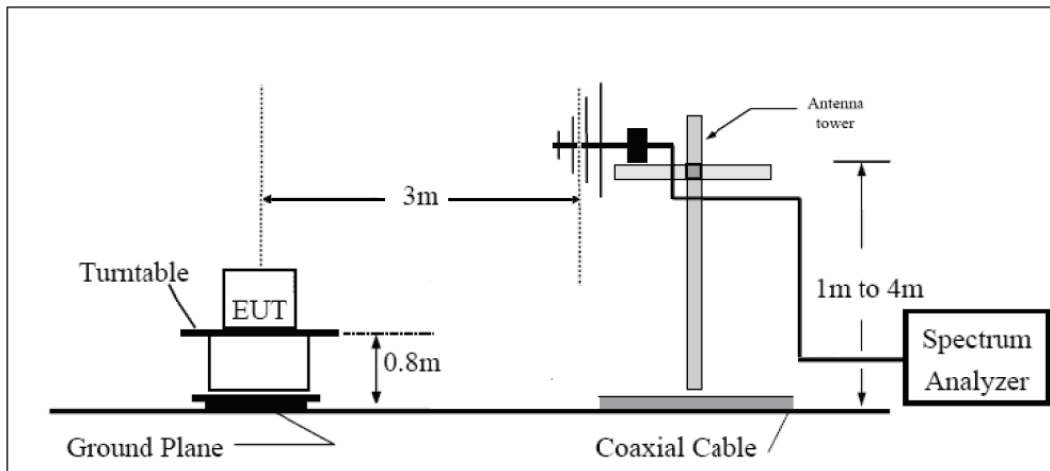
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

**Test setup**

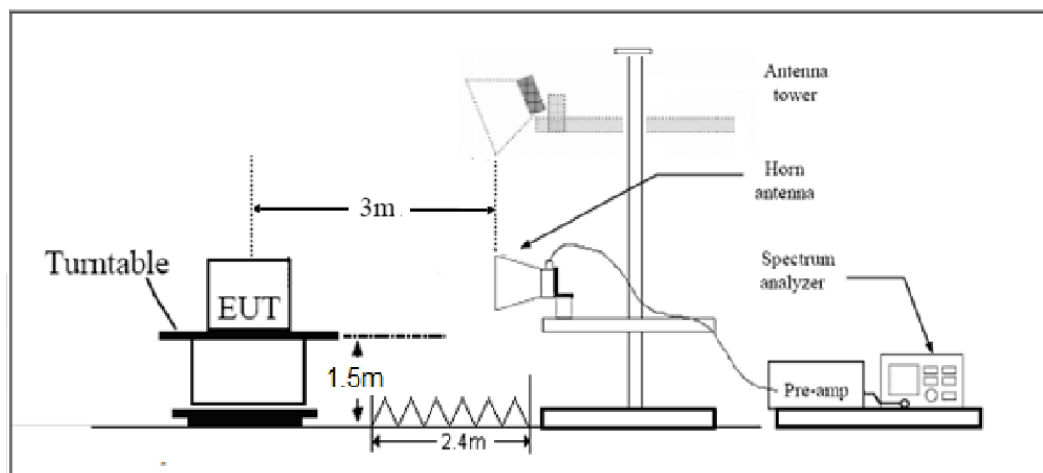
**9KHz ~ 30MHz**



**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 (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  $k = \pm 1.96$ ,  $U = \pm 3.55$  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	-61.76	2.6	10.75	Horizontal	-53.61	-13.00	40.61	90
3	5197.8	-62.76	2.4	11.05	Horizontal	-54.11	-13.00	41.11	0
4	6930.4	-57.38	4.5	11.15	Horizontal	-50.73	-13.00	37.73	45
5	8663.0	-54.73	5.1	11.35	Horizontal	-48.48	-13.00	35.48	315
6	10395.6	-53.87	5.3	11.95	Horizontal	-47.22	-13.00	34.22	225
7	12128.2	-55.45	5.5	13.55	Horizontal	-47.40	-13.00	34.40	225
8	13860.8	-52.16	6.3	13.75	Horizontal	-44.71	-13.00	31.71	315
9	15593.4	-55.02	6.7	13.85	Horizontal	-47.87	-13.00	34.87	135
10	17326.0	-51.63	6.8	14.25	Horizontal	-44.18	-13.00	31.18	180

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3464.3	-59.49	2.6	10.75	Horizontal	-51.34	-13.00	38.34	225
3	5197.5	-63.05	2.4	11.05	Horizontal	-54.40	-13.00	41.40	45
4	6930.0	-56.71	4.5	11.15	Horizontal	-50.06	-13.00	37.06	90
5	8662.5	-56.35	5.1	11.35	Horizontal	-50.10	-13.00	37.10	0
6	10395.0	-53.28	5.3	11.95	Horizontal	-46.63	-13.00	33.63	45
7	12127.5	-54.07	5.5	13.55	Horizontal	-46.02	-13.00	33.02	225
8	13860.0	-52.22	6.3	13.75	Horizontal	-44.77	-13.00	31.77	315
9	15592.5	-54.08	6.7	13.85	Horizontal	-46.93	-13.00	33.93	180
10	17325.0	-51.17	6.8	14.25	Horizontal	-43.72	-13.00	30.72	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 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	-58.52	2.6	10.75	Horizontal	-50.37	-13.00	37.37	225
3	5191.5	-63.48	2.4	11.05	Horizontal	-54.83	-13.00	41.83	315
4	6930.0	-56.74	4.5	11.15	Horizontal	-50.09	-13.00	37.09	180
5	8662.5	-55.53	5.1	11.35	Horizontal	-49.28	-13.00	36.28	0
6	10395.0	-52.72	5.3	11.95	Horizontal	-46.07	-13.00	33.07	45
7	12127.5	-53.87	5.5	13.55	Horizontal	-45.82	-13.00	32.82	315
8	13860.0	-52.47	6.3	13.75	Horizontal	-45.02	-13.00	32.02	0
9	15592.5	-53.94	6.7	13.85	Horizontal	-46.79	-13.00	33.79	45
10	17325.0	-50.90	6.8	14.25	Horizontal	-43.45	-13.00	30.45	315

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

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3447.0	-61.95	2.6	10.75	Horizontal	-53.80	-13.00	40.80	225
3	5170.5	-62.79	2.4	11.05	Horizontal	-54.14	-13.00	41.14	45
4	6930.0	-56.06	4.5	11.15	Horizontal	-49.41	-13.00	36.41	225
5	8662.5	-55.91	5.1	11.35	Horizontal	-49.66	-13.00	36.66	315
6	10395.0	-51.25	5.3	11.95	Horizontal	-44.60	-13.00	31.60	180
7	12127.5	-53.29	5.5	13.55	Horizontal	-45.24	-13.00	32.24	45
8	13860.0	-51.51	6.3	13.75	Horizontal	-44.06	-13.00	31.06	225
9	15592.5	-53.73	6.7	13.85	Horizontal	-46.58	-13.00	33.58	315
10	17325.0	-51.09	6.8	14.25	Horizontal	-43.64	-13.00	30.64	180

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

**LTE Band 7 QPSK 5MHz CH-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	-60.58	2.00	9.15	Horizontal	-53.43	-25.00	28.43	0
3	7598.6	-53.08	2.50	11.35	Horizontal	-44.23	-25.00	19.23	45
4	10130.6	-45.81	4.20	12.05	Horizontal	-37.96	-25.00	12.96	315
5	12675.0	-53.65	5.20	12.85	Horizontal	-46.00	-25.00	21.00	0
6	15210.0	-55.08	5.50	14.23	Horizontal	-46.35	-25.00	21.35	225
7	17745.0	-52.02	5.70	14.15	Horizontal	-43.57	-25.00	18.57	315
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	-61.74	2.00	10.15	Horizontal	-53.59	-25.00	28.59	45
3	7605.0	-53.21	2.50	11.35	Horizontal	-44.36	-25.00	19.36	225
4	10140.0	-43.75	4.20	12.05	Horizontal	-35.90	-25.00	10.90	315
5	12675.0	-55.15	5.20	14.85	Horizontal	-45.50	-25.00	20.50	315
6	15210.0	-53.44	5.50	13.23	Horizontal	-45.71	-25.00	20.71	180
7	17745.0	-49.77	5.70	12.15	Horizontal	-43.32	-25.00	18.32	0
8	20280.0	--	--	--	--	--	--	--	--
9	22815.0	--	--	--	--	--	--	--	--
10	25350.0	--	--	--	--	--	--	--	--

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

## 6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2018-05-20	2019-05-19
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2018-05-20	2019-05-19
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	2018-05-20	2019-05-19
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preamplifier	R&S	SCU18	102327	2018-05-20	2019-05-19
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2018-05-21	2019-05-20
RF Cable	Agilent	SMA 15cm	0001	2019-03-15	2019-06-14
Software	R&S	EMC32	9.26.0	/	/

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