5.4 Peak-to-Average Power Ratio (PAPR)

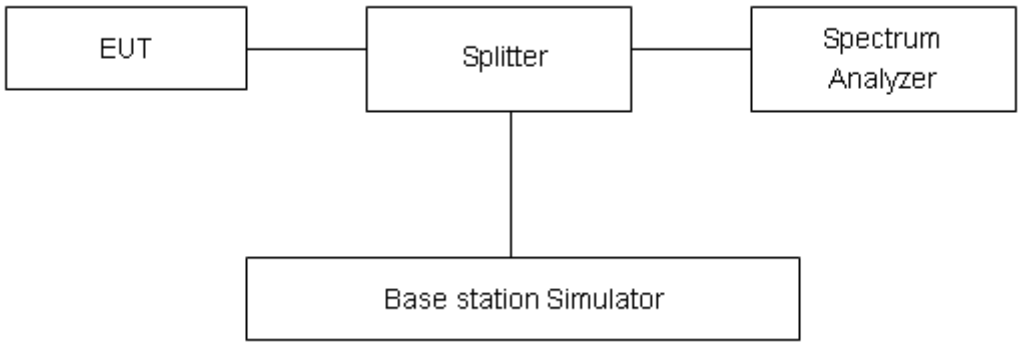
Ambient condition

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

Test Results

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 4	1.4MHz	QPSK	20175/1732.5	22.39	10.86	11.53	≤13	PASS
		16QAM	20175/1732.5	23.38	11.06	12.32	≤13	PASS
	3MHz	QPSK	20175/1732.5	22.61	12.62	9.99	≤13	PASS
		16QAM	20175/1732.5	23.30	12.49	10.81	≤13	PASS
	5MHz	QPSK	20175/1732.5	23.45	13.87	9.58	≤13	PASS
		16QAM	20175/1732.5	24.03	13.77	10.26	≤13	PASS
	10MHz	QPSK	20175/1732.5	23.42	13.94	9.48	≤13	PASS
		16QAM	20175/1732.5	24.46	14.69	9.77	≤13	PASS
	15MHz	QPSK	20175/1732.5	24.02	14.37	9.65	≤13	PASS
		16QAM	20175/1732.5	24.49	14.49	10.00	≤13	PASS
	20MHz	QPSK	20175/1732.5	24.06	15.11	8.95	≤13	PASS
		16QAM	20175/1732.5	24.52	15.26	9.26	≤13	PASS

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 12	1.4MHz	QPSK	23095/707.5	23.21	13.26	9.95	≤13	PASS
		16QAM	23095/707.5	23.88	13.14	10.74	≤13	PASS
	3MHz	QPSK	23095/707.5	23.10	13.22	9.88	≤13	PASS
		16QAM	23095/707.5	23.82	12.98	10.84	≤13	PASS
	5MHz	QPSK	23095/707.5	24.02	14.11	9.91	≤13	PASS
		16QAM	23095/707.5	24.75	14.56	10.19	≤13	PASS
	10MHz	QPSK	23095/707.5	23.91	14.04	9.87	≤13	PASS
		16QAM	23095/707.5	25.16	14.50	10.66	≤13	PASS

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 13	5MHz	QPSK	23230/782	23.89	13.85	10.04	≤13	PASS
		16QAM	23230/782	24.64	13.90	10.74	≤13	PASS
	10MHz	QPSK	23230/782	23.66	13.55	10.11	≤13	PASS
		16QAM	23230/782	25.03	14.51	10.52	≤13	PASS

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Ban 66	1.4MHz	QPSK	132322/1745	22.84	12.91	9.93	≤13	PASS
		16QAM	132322/1745	23.40	12.73	10.67	≤13	PASS
	3MHz	QPSK	132322/1745	22.73	12.70	10.03	≤13	PASS
		16QAM	132322/1745	23.49	12.85	10.64	≤13	PASS
	5MHz	QPSK	132322/1745	23.50	13.78	9.72	≤13	PASS
		16QAM	132322/1745	24.02	13.85	10.17	≤13	PASS
	10MHz	QPSK	132322/1745	23.44	13.94	9.50	≤13	PASS
		16QAM	132322/1745	24.53	14.97	9.56	≤13	PASS
	15MHz	QPSK	132322/1745	24.10	15.22	8.88	≤13	PASS
		16QAM	132322/1745	24.57	14.85	9.72	≤13	PASS
	20MHz	QPSK	132322/1745	24.08	15.34	8.74	≤13	PASS
		16QAM	132322/1745	24.54	14.76	9.78	≤13	PASS

Mode	Bandwidth	Modulation	Channel/ Frequency(MHz)	Peak-to-Average Power Ratio (PAPR)			Limit (dB)	Conclusion
				Peak(dBm)	Avg(dBm)	PAPR(dB)		
LTE Band 85	5MHz	QPSK	134092/707	23.68	13.81	9.87	≤13	PASS
		16QAM	134092/707	23.46	14.46	9.00	≤13	PASS
	10MHz	QPSK	134092/707	23.63	13.75	9.88	≤13	PASS
		16QAM	134092/707	23.48	14.65	8.83	≤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 -40°C to +85°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 -40°C to +85°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

Frequency Stability (Voltage Variation)

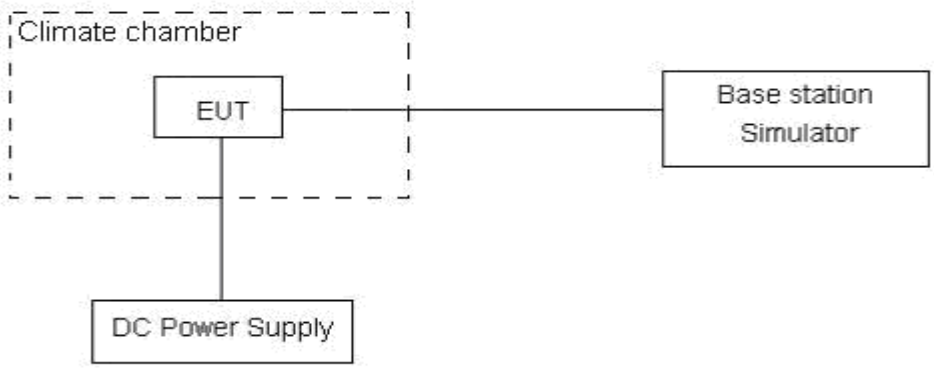
The frequency stability shall be measured with variation of primary supply voltage as follows:

(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 3.3 V and 4.3 V, with a nominal voltage of 3.8V.

Test setup



Limits

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

Measurement Uncertainty

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

Test Result

LTE Band 4						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability （ppm）	Frequency Stability （ppm）	Verdict
BANDWIDTH	1.4MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	12.87	17.36	0.00685	0.00923	PASS
Extreme（85℃）		2.89	12.78	0.00154	0.00680	PASS
Extreme（80℃）		1.62	15.60	0.00086	0.00830	PASS
Extreme（70℃）		12.53	6.69	0.00667	0.00356	PASS
Extreme（60℃）		3.09	4.62	0.00164	0.00246	PASS
Extreme（50℃）		12.23	15.84	0.00651	0.00843	PASS
Extreme（40℃）		2.32	7.22	0.00123	0.00384	PASS
Extreme（30℃）		12.04	2.54	0.00641	0.00135	PASS
Extreme（20℃）		13.19	15.10	0.00702	0.00803	PASS
Extreme（10℃）		15.99	16.71	0.00850	0.00889	PASS
Extreme（0℃）		8.03	2.06	0.00427	0.00109	PASS
Extreme（-10℃）		9.26	8.98	0.00492	0.00478	PASS
Extreme（-20℃）		8.55	3.72	0.00455	0.00198	PASS
Extreme（-30℃）		15.03	3.61	0.00799	0.00192	PASS
Extreme（-40℃）		17.90	14.46	0.00952	0.00769	PASS
25℃	LV	12.64	10.88	0.00672	0.00579	PASS
	HV	8.14	5.39	0.00433	0.00287	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℃）	Normal	15.59	13.10	0.00829	0.00697	PASS
Extreme（85℃）		8.35	11.71	0.00444	0.00623	PASS
Extreme（80℃）		16.69	1.41	0.00888	0.00075	PASS
Extreme（70℃）		6.41	1.34	0.00341	0.00071	PASS
Extreme（60℃）		14.04	6.99	0.00747	0.00372	PASS
Extreme（50℃）		5.81	13.75	0.00309	0.00732	PASS
Extreme（40℃）		7.85	8.45	0.00417	0.00449	PASS
Extreme（30℃）		2.21	12.70	0.00118	0.00676	PASS
Extreme（20℃）		8.92	8.43	0.00475	0.00449	PASS
Extreme（10℃）		6.66	13.12	0.00354	0.00698	PASS
Extreme（0℃）		9.39	14.47	0.00500	0.00770	PASS
Extreme（-10℃）		3.09	3.12	0.00164	0.00166	PASS
Extreme（-20℃）		5.40	1.89	0.00287	0.00100	PASS
Extreme（-30℃）		3.14	15.59	0.00167	0.00829	PASS

Extreme（-40℃）		1.26	3.78	0.00067	0.00201	PASS
25℃	LV	14.61	16.34	0.00777	0.00869	PASS
	HV	17.29	1.64	0.00920	0.00087	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℃）	Normal	6.79	13.64	0.00361	0.00725	PASS
Extreme（85℃）		4.57	4.50	0.00243	0.00239	PASS
Extreme（80℃）		11.04	16.48	0.00587	0.00877	PASS
Extreme（70℃）		10.87	15.51	0.00578	0.00825	PASS
Extreme（60℃）		2.61	7.31	0.00139	0.00389	PASS
Extreme（50℃）		16.55	6.56	0.00880	0.00349	PASS
Extreme（40℃）		11.36	8.36	0.00605	0.00445	PASS
Extreme（30℃）		15.45	9.46	0.00822	0.00503	PASS
Extreme（20℃）		4.71	17.33	0.00251	0.00922	PASS
Extreme（10℃）		9.94	3.64	0.00528	0.00194	PASS
Extreme（0℃）		3.50	15.66	0.00186	0.00833	PASS
Extreme（-10℃）		2.12	12.43	0.00113	0.00661	PASS
Extreme（-20℃）		5.86	4.70	0.00312	0.00250	PASS
Extreme（-30℃）		1.50	13.95	0.00080	0.00742	PASS
Extreme（-40℃）		10.17	6.24	0.00541	0.00332	PASS
25℃	LV	7.78	17.61	0.00414	0.00937	PASS
	HV	8.11	13.83	0.00432	0.00736	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℃）	Normal	3.52	11.67	0.00187	0.00621	PASS
Extreme（85℃）		5.47	14.44	0.00291	0.00768	PASS
Extreme（80℃）		12.91	11.97	0.00687	0.00637	PASS
Extreme（70℃）		11.26	4.18	0.00599	0.00222	PASS
Extreme（60℃）		11.12	14.81	0.00591	0.00788	PASS
Extreme（50℃）		11.65	12.76	0.00620	0.00679	PASS
Extreme（40℃）		16.34	8.37	0.00869	0.00445	PASS
Extreme（30℃）		9.76	9.59	0.00519	0.00510	PASS
Extreme（20℃）		2.87	7.91	0.00153	0.00421	PASS
Extreme（10℃）		11.91	14.90	0.00634	0.00792	PASS
Extreme（0℃）		1.47	8.04	0.00078	0.00427	PASS
Extreme（-10℃）		2.29	17.27	0.00122	0.00919	PASS
Extreme（-20℃）		8.12	11.10	0.00432	0.00590	PASS
Extreme（-30℃）		7.97	12.02	0.00424	0.00640	PASS

Extreme（-40℃）		12.90	14.96	0.00686	0.00796	PASS
25℃	LV	15.92	4.62	0.00847	0.00246	PASS
	HV	7.24	14.08	0.00385	0.00749	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℃）	Normal	14.70	8.82	0.00782	0.00469	PASS
Extreme（85℃）		5.39	5.05	0.00286	0.00269	PASS
Extreme（80℃）		12.50	6.13	0.00665	0.00326	PASS
Extreme（70℃）		9.33	11.81	0.00496	0.00628	PASS
Extreme（60℃）		7.94	5.38	0.00422	0.00286	PASS
Extreme（50℃）		17.96	15.83	0.00955	0.00842	PASS
Extreme（40℃）		15.36	5.36	0.00817	0.00285	PASS
Extreme（30℃）		1.16	10.57	0.00062	0.00562	PASS
Extreme（20℃）		9.88	8.13	0.00525	0.00432	PASS
Extreme（10℃）		7.07	12.37	0.00376	0.00658	PASS
Extreme（0℃）		14.69	5.15	0.00782	0.00274	PASS
Extreme（-10℃）		5.49	10.76	0.00292	0.00572	PASS
Extreme（-20℃）		17.14	1.92	0.00912	0.00102	PASS
Extreme（-30℃）		13.46	10.72	0.00716	0.00570	PASS
Extreme（-40℃）		16.54	10.41	0.00880	0.00554	PASS
25℃	LV	16.16	1.18	0.00859	0.00063	PASS
	HV	7.39	6.70	0.00393	0.00356	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℃）	Normal	4.04	7.81	0.00215	0.00416	PASS
Extreme（85℃）		7.24	14.40	0.00385	0.00766	PASS
Extreme（80℃）		7.65	3.64	0.00407	0.00194	PASS
Extreme（70℃）		15.02	4.83	0.00799	0.00257	PASS
Extreme（60℃）		3.50	15.68	0.00186	0.00834	PASS
Extreme（50℃）		4.00	5.50	0.00213	0.00293	PASS
Extreme（40℃）		17.17	3.19	0.00913	0.00170	PASS
Extreme（30℃）		5.74	3.61	0.00305	0.00192	PASS
Extreme（20℃）		9.02	9.60	0.00480	0.00511	PASS
Extreme（10℃）		8.99	5.78	0.00478	0.00307	PASS
Extreme（0℃）		8.28	16.00	0.00440	0.00851	PASS
Extreme（-10℃）		2.45	8.85	0.00130	0.00471	PASS
Extreme（-20℃）		7.82	15.65	0.00416	0.00833	PASS
Extreme（-30℃）		12.57	7.19	0.00669	0.00382	PASS

Extreme（-40℃）		14.02	14.23	0.00746	0.00757	PASS
25℃	LV	15.56	17.99	0.00828	0.00957	PASS
	HV	17.27	17.49	0.00918	0.00930	PASS

LTE Band 12						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	1.4MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	7.80	17.26	0.00415	0.00918	PASS
Extreme（85℃）		4.06	15.87	0.00216	0.00844	PASS
Extreme（80℃）		2.68	13.71	0.00142	0.00729	PASS
Extreme（70℃）		10.01	6.14	0.00532	0.00327	PASS
Extreme（60℃）		13.55	4.79	0.00721	0.00255	PASS
Extreme（50℃）		2.26	14.89	0.00120	0.00792	PASS
Extreme（40℃）		3.20	2.35	0.00170	0.00125	PASS
Extreme（30℃）		10.92	8.19	0.00581	0.00436	PASS
Extreme（20℃）		16.42	11.44	0.00873	0.00609	PASS
Extreme（10℃）		5.95	16.50	0.00317	0.00878	PASS
Extreme（0℃）		11.39	9.22	0.00606	0.00490	PASS
Extreme（-10℃）		6.36	14.34	0.00338	0.00763	PASS
Extreme（-20℃）		6.64	16.21	0.00353	0.00862	PASS
Extreme（-30℃）		8.38	12.32	0.00446	0.00655	PASS
Extreme（-40℃）		7.22	9.33	0.00384	0.00497	PASS
25℃	LV	10.13	9.96	0.00539	0.00530	PASS
	HV	7.85	5.10	0.00417	0.00271	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℃）	Normal	7.47	3.72	0.00397	0.00198	PASS
Extreme（85℃）		13.85	7.67	0.00737	0.00408	PASS
Extreme（80℃）		7.97	6.23	0.00424	0.00331	PASS
Extreme（70℃）		8.09	17.00	0.00430	0.00904	PASS
Extreme（60℃）		13.03	3.54	0.00693	0.00188	PASS
Extreme（50℃）		13.18	15.46	0.00701	0.00822	PASS
Extreme（40℃）		3.75	13.92	0.00199	0.00740	PASS
Extreme（30℃）		9.79	7.19	0.00521	0.00382	PASS
Extreme（20℃）		16.46	16.45	0.00876	0.00875	PASS
Extreme（10℃）		10.18	11.03	0.00542	0.00587	PASS
Extreme（0℃）		2.63	15.11	0.00140	0.00804	PASS
Extreme（-10℃）		8.70	6.38	0.00463	0.00340	PASS

Extreme（-20℃）		11.69	9.78	0.00622	0.00520	PASS
Extreme（-30℃）		5.27	7.29	0.00280	0.00388	PASS
Extreme（-40℃）		17.61	17.75	0.00937	0.00944	PASS
25℃	LV	7.72	15.75	0.00411	0.00838	PASS
	HV	1.39	17.82	0.00074	0.00948	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℃）	Normal	16.48	3.93	0.00876	0.00209	PASS
Extreme（85℃）		8.41	2.03	0.00447	0.00108	PASS
Extreme（80℃）		11.75	12.85	0.00625	0.00684	PASS
Extreme（70℃）		6.85	1.38	0.00364	0.00073	PASS
Extreme（60℃）		13.33	13.84	0.00709	0.00736	PASS
Extreme（50℃）		5.94	7.66	0.00316	0.00408	PASS
Extreme（40℃）		11.72	17.06	0.00624	0.00908	PASS
Extreme（30℃）		5.91	17.82	0.00315	0.00948	PASS
Extreme（20℃）		11.80	12.44	0.00627	0.00662	PASS
Extreme（10℃）		8.36	15.78	0.00445	0.00839	PASS
Extreme（0℃）		12.99	2.49	0.00691	0.00132	PASS
Extreme（-10℃）		6.71	6.40	0.00357	0.00340	PASS
Extreme（-20℃）		13.77	2.81	0.00733	0.00149	PASS
Extreme（-30℃）		1.27	13.58	0.00067	0.00722	PASS
Extreme（-40℃）		9.64	11.64	0.00513	0.00619	PASS
25℃	LV	9.74	17.19	0.00518	0.00915	PASS
	HV	16.95	14.23	0.00902	0.00757	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℃）	Normal	4.14	7.93	0.00220	0.00422	PASS
Extreme（85℃）		17.76	11.18	0.00945	0.00595	PASS
Extreme（80℃）		17.34	1.96	0.00923	0.00104	PASS
Extreme（70℃）		9.04	11.55	0.00481	0.00614	PASS
Extreme（60℃）		8.12	3.19	0.00432	0.00170	PASS
Extreme（50℃）		5.70	16.62	0.00303	0.00884	PASS
Extreme（40℃）		1.28	5.19	0.00068	0.00276	PASS
Extreme（30℃）		8.68	9.68	0.00462	0.00515	PASS
Extreme（20℃）		10.21	9.98	0.00543	0.00531	PASS
Extreme（10℃）		5.32	11.39	0.00283	0.00606	PASS
Extreme（0℃）		3.51	13.79	0.00187	0.00733	PASS
Extreme（-10℃）		12.72	6.98	0.00677	0.00371	PASS

Extreme（-20℃）		5.04	5.69	0.00268	0.00303	PASS
Extreme（-30℃）		10.99	8.45	0.00584	0.00449	PASS
Extreme（-40℃）		14.46	6.09	0.00769	0.00324	PASS
25℃	LV	9.93	1.03	0.00528	0.00055	PASS
	HV	5.78	15.44	0.00307	0.00821	PASS

LTE Band 13						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	8.87	2.77	0.00472	0.00148	PASS
Extreme（85℃）		6.53	9.41	0.00347	0.00500	PASS
Extreme（80℃）		5.39	15.01	0.00287	0.00798	PASS
Extreme（70℃）		2.27	8.66	0.00121	0.00461	PASS
Extreme（60℃）		11.81	10.25	0.00628	0.00545	PASS
Extreme（50℃）		2.88	12.93	0.00153	0.00688	PASS
Extreme（40℃）		8.97	7.27	0.00477	0.00387	PASS
Extreme（30℃）		8.86	1.11	0.00471	0.00059	PASS
Extreme（20℃）		8.75	6.20	0.00465	0.00330	PASS
Extreme（10℃）		13.85	13.69	0.00737	0.00728	PASS
Extreme（0℃）		16.76	16.82	0.00891	0.00895	PASS
Extreme（-10℃）		6.80	7.74	0.00362	0.00412	PASS
Extreme（-20℃）		11.98	10.26	0.00637	0.00545	PASS
Extreme（-30℃）		11.29	9.38	0.00601	0.00499	PASS
Extreme（-40℃）		12.31	3.83	0.00655	0.00204	PASS
25℃	LV	14.19	17.18	0.00755	0.00914	PASS
	HV	7.33	13.50	0.00390	0.00718	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℃）	Normal	1.80	17.05	0.00096	0.00907	PASS
Extreme（85℃）		12.68	3.77	0.00674	0.00200	PASS
Extreme（80℃）		4.76	1.10	0.00253	0.00058	PASS
Extreme（70℃）		4.53	2.89	0.00241	0.00154	PASS
Extreme（60℃）		4.54	15.14	0.00242	0.00805	PASS
Extreme（50℃）		15.72	13.35	0.00836	0.00710	PASS
Extreme（40℃）		7.60	4.46	0.00404	0.00237	PASS
Extreme（30℃）		1.07	13.15	0.00057	0.00700	PASS
Extreme（20℃）		3.96	16.85	0.00211	0.00896	PASS

Extreme（10℃）		11.59	7.46	0.00617	0.00397	PASS
Extreme（0℃）		1.92	4.51	0.00102	0.00240	PASS
Extreme（-10℃）		10.12	16.64	0.00538	0.00885	PASS
Extreme（-20℃）		9.62	4.77	0.00512	0.00254	PASS
Extreme（-30℃）		6.33	11.38	0.00337	0.00605	PASS
Extreme（-40℃）		5.92	6.88	0.00315	0.00366	PASS
25℃	LV	6.78	1.79	0.00361	0.00095	PASS
	HV	14.94	13.32	0.00795	0.00708	PASS

LTE Band 66						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	1.4MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	7.70	3.77	0.00410	0.00200	PASS
Extreme（85℃）		17.04	12.41	0.00907	0.00660	PASS
Extreme（80℃）		1.60	13.74	0.00085	0.00731	PASS
Extreme（70℃）		14.44	6.86	0.00768	0.00365	PASS
Extreme（60℃）		10.29	3.75	0.00547	0.00199	PASS
Extreme（50℃）		15.13	15.60	0.00805	0.00830	PASS
Extreme（40℃）		13.47	7.52	0.00716	0.00400	PASS
Extreme（30℃）		12.41	5.82	0.00660	0.00310	PASS
Extreme（20℃）		9.08	6.72	0.00483	0.00358	PASS
Extreme（10℃）		9.26	13.10	0.00493	0.00697	PASS
Extreme（0℃）		14.46	11.78	0.00769	0.00627	PASS
Extreme（-10℃）		16.31	4.58	0.00868	0.00243	PASS
Extreme（-20℃）		6.04	10.49	0.00321	0.00558	PASS
Extreme（-30℃）		1.54	13.22	0.00082	0.00703	PASS
Extreme（-40℃）		5.90	2.86	0.00314	0.00152	PASS
25℃	LV	14.44	9.78	0.00768	0.00520	PASS
	HV	13.87	16.88	0.00738	0.00898	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℃）	Normal	14.88	15.66	0.00791	0.00833	PASS
Extreme（85℃）		15.43	2.04	0.00821	0.00108	PASS
Extreme（80℃）		3.94	17.55	0.00210	0.00933	PASS
Extreme（70℃）		2.03	8.73	0.00108	0.00465	PASS
Extreme（60℃）		2.83	7.39	0.00151	0.00393	PASS
Extreme（50℃）		1.99	13.66	0.00106	0.00726	PASS

Extreme（40℃）		10.32	12.70	0.00549	0.00676	PASS
Extreme（30℃）		3.05	14.42	0.00162	0.00767	PASS
Extreme（20℃）		15.81	2.80	0.00841	0.00149	PASS
Extreme（10℃）		2.59	17.45	0.00138	0.00928	PASS
Extreme（0℃）		4.88	5.89	0.00259	0.00313	PASS
Extreme（-10℃）		3.80	8.51	0.00202	0.00453	PASS
Extreme（-20℃）		7.03	6.05	0.00374	0.00322	PASS
Extreme（-30℃）		5.83	9.32	0.00310	0.00496	PASS
Extreme（-40℃）		17.69	17.50	0.00941	0.00931	PASS
25℃	LV	11.93	5.89	0.00634	0.00313	PASS
	HV	12.78	14.72	0.00680	0.00783	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℃）		1.42	3.14	0.00076	0.00167	PASS
Extreme（85℃）		9.22	7.42	0.00490	0.00395	PASS
Extreme（80℃）		1.78	14.66	0.00094	0.00780	PASS
Extreme（70℃）		16.94	12.91	0.00901	0.00687	PASS
Extreme（60℃）		7.07	17.67	0.00376	0.00940	PASS
Extreme（50℃）		1.14	17.17	0.00060	0.00913	PASS
Extreme（40℃）		15.85	13.43	0.00843	0.00714	PASS
Extreme（30℃）	Normal	4.31	11.64	0.00229	0.00619	PASS
Extreme（20℃）		6.83	16.02	0.00363	0.00852	PASS
Extreme（10℃）		15.39	5.71	0.00819	0.00304	PASS
Extreme（0℃）		5.43	5.18	0.00289	0.00276	PASS
Extreme（-10℃）		3.96	8.00	0.00211	0.00426	PASS
Extreme（-20℃）		13.60	13.39	0.00724	0.00712	PASS
Extreme（-30℃）		1.99	9.31	0.00106	0.00495	PASS
Extreme（-40℃）		6.31	6.56	0.00336	0.00349	PASS
25℃	LV	13.13	5.83	0.00698	0.00310	PASS
	HV	2.93	9.77	0.00156	0.00520	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℃）		7.04	11.64	0.00375	0.00619	PASS
Extreme（85℃）		13.03	6.80	0.00693	0.00362	PASS
Extreme（80℃）		11.35	10.10	0.00604	0.00537	PASS
Extreme（70℃）	Normal	12.62	11.47	0.00671	0.00610	PASS
Extreme（60℃）		17.30	15.95	0.00920	0.00849	PASS
Extreme（50℃）		9.77	3.52	0.00520	0.00187	PASS

Extreme（40℃）		13.02	7.55	0.00693	0.00402	PASS
Extreme（30℃）		4.88	4.18	0.00259	0.00222	PASS
Extreme（20℃）		1.45	12.22	0.00077	0.00650	PASS
Extreme（10℃）		16.79	8.13	0.00893	0.00432	PASS
Extreme（0℃）		13.56	9.06	0.00721	0.00482	PASS
Extreme（-10℃）		3.98	5.28	0.00212	0.00281	PASS
Extreme（-20℃）		2.18	7.03	0.00116	0.00374	PASS
Extreme（-30℃）		10.08	1.10	0.00536	0.00058	PASS
Extreme（-40℃）		8.66	9.60	0.00460	0.00510	PASS
25℃	LV	14.58	7.18	0.00775	0.00382	PASS
	HV	3.98	16.79	0.00212	0.00893	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℃）		3.99	14.65	0.00212	0.00779	PASS
Extreme（85℃）		4.16	16.84	0.00221	0.00896	PASS
Extreme（80℃）		14.51	6.26	0.00772	0.00333	PASS
Extreme（70℃）		1.01	16.85	0.00054	0.00896	PASS
Extreme（60℃）		9.56	4.56	0.00508	0.00243	PASS
Extreme（50℃）		11.30	11.46	0.00601	0.00610	PASS
Extreme（40℃）		11.86	5.83	0.00631	0.00310	PASS
Extreme（30℃）	Normal	10.41	16.47	0.00554	0.00876	PASS
Extreme（20℃）		3.21	10.64	0.00171	0.00566	PASS
Extreme（10℃）		16.09	9.26	0.00856	0.00492	PASS
Extreme（0℃）		3.07	15.16	0.00163	0.00807	PASS
Extreme（-10℃）		7.82	8.36	0.00416	0.00445	PASS
Extreme（-20℃）		16.53	9.98	0.00879	0.00531	PASS
Extreme（-30℃）		3.33	16.12	0.00177	0.00857	PASS
Extreme（-40℃）		3.05	11.54	0.00162	0.00614	PASS
25℃	LV	4.85	10.26	0.00258	0.00546	PASS
	HV	11.02	11.26	0.00586	0.00599	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℃）		13.18	5.60	0.00701	0.00298	PASS
Extreme（85℃）		3.76	16.84	0.00200	0.00896	PASS
Extreme（80℃）		14.32	13.97	0.00762	0.00743	PASS
Extreme（70℃）	Normal	3.32	9.90	0.00177	0.00527	PASS
Extreme（60℃）		15.69	10.51	0.00834	0.00559	PASS
Extreme（50℃）		2.67	1.61	0.00142	0.00086	PASS

Extreme（40℃）		13.95	14.70	0.00742	0.00782	PASS
Extreme（30℃）		15.95	1.31	0.00848	0.00069	PASS
Extreme（20℃）		3.14	10.47	0.00167	0.00557	PASS
Extreme（10℃）		6.66	9.32	0.00354	0.00496	PASS
Extreme（0℃）		14.56	8.99	0.00774	0.00478	PASS
Extreme（-10℃）		6.15	2.25	0.00327	0.00120	PASS
Extreme（-20℃）		11.04	17.42	0.00587	0.00927	PASS
Extreme（-30℃）		5.36	5.58	0.00285	0.00297	PASS
Extreme（-40℃）		10.29	13.32	0.00547	0.00709	PASS
25℃	LV	11.38	1.19	0.00605	0.00063	PASS
	HV	11.84	6.88	0.00630	0.00366	PASS

LTE Band 85						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability（ppm）	Frequency Stability（ppm）	Verdict
BANDWIDTH	5MHz					
Temperature	Voltage	16QAM	QPSK	16QAM	QPSK	
Normal（25℃）	Normal	5.89	2.48	0.00313	0.00132	PASS
Extreme（85℃）		6.86	8.11	0.00365	0.00431	PASS
Extreme（80℃）		12.30	13.89	0.00654	0.00739	PASS
Extreme（70℃）		15.28	4.51	0.00813	0.00240	PASS
Extreme（60℃）		14.37	9.84	0.00764	0.00524	PASS
Extreme（50℃）		6.86	8.11	0.00365	0.00431	PASS
Extreme（40℃）		12.30	13.89	0.00654	0.00739	PASS
Extreme（30℃）		15.28	4.51	0.00813	0.00240	PASS
Extreme（20℃）		14.68	7.17	0.00781	0.00381	PASS
Extreme（10℃）		10.99	1.55	0.00585	0.00082	PASS
Extreme（0℃）		8.91	12.14	0.00474	0.00646	PASS
Extreme（-10℃）		9.53	7.17	0.00507	0.00381	PASS
Extreme（-20℃）		11.05	4.18	0.00588	0.00223	PASS
Extreme（-30℃）		13.31	1.01	0.00708	0.00054	PASS
Extreme（-40℃）		13.31	1.01	0.00708	0.00054	PASS
25℃	LV	10.51	3.26	0.00559	0.00173	PASS
	HV	3.94	3.11	0.00209	0.00165	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℃）	Normal	8.86	9.87	0.00471	0.00525	PASS
Extreme（85℃）		12.32	12.10	0.00656	0.00643	PASS
Extreme（80℃）		12.30	5.25	0.00654	0.00279	PASS
Extreme（70℃）		14.39	4.88	0.00765	0.00260	PASS

Extreme（60℃）		9.74	4.11	0.00518	0.00219	PASS
Extreme（50℃）		12.32	12.10	0.00656	0.00643	PASS
Extreme（40℃）		12.30	5.25	0.00654	0.00279	PASS
Extreme（30℃）		14.39	4.88	0.00765	0.00260	PASS
Extreme（20℃）		7.16	6.10	0.00381	0.00324	PASS
Extreme（10℃）		15.69	13.75	0.00835	0.00731	PASS
Extreme（0℃）		13.41	10.08	0.00713	0.00536	PASS
Extreme（-10℃）		1.88	15.45	0.00100	0.00822	PASS
Extreme（-20℃）		2.59	11.39	0.00138	0.00606	PASS
Extreme（-30℃）		7.54	11.44	0.00401	0.00608	PASS
Extreme（-40℃）		7.54	11.44	0.00401	0.00608	PASS
25℃	LV	12.23	17.25	0.00651	0.00918	PASS
	HV	8.36	17.84	0.00445	0.00949	PASS

5.6 Spurious Emissions at Antenna Terminals

Ambient condition

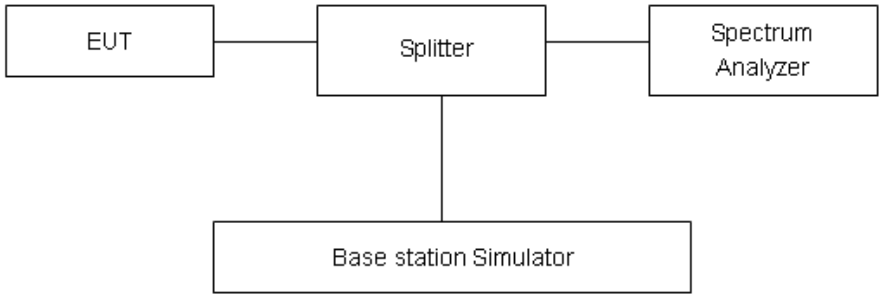
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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.

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 log10 (P) dB..”

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands,

emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Part 27.53 (h)/(g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 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.

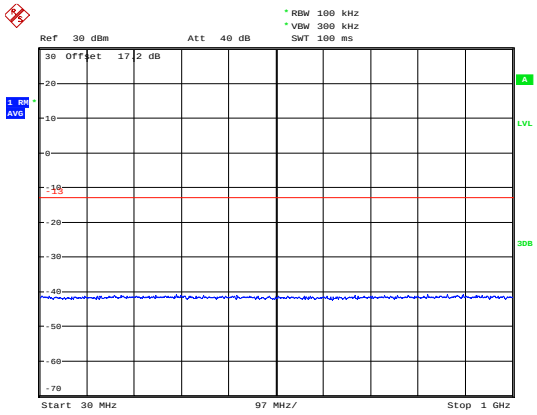
Frequency	Uncertainty
30MHz-1GHz	0.684 dB
1GHz-20GHz	1.407 dB

Test Result

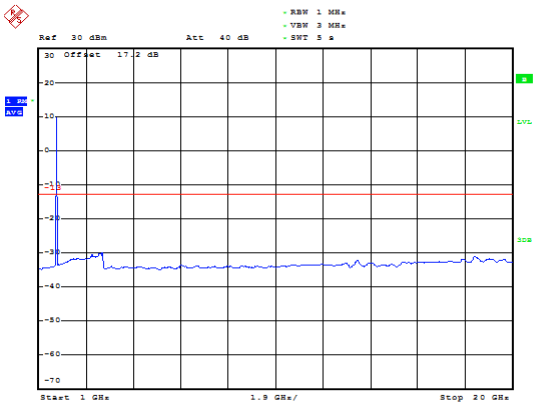
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

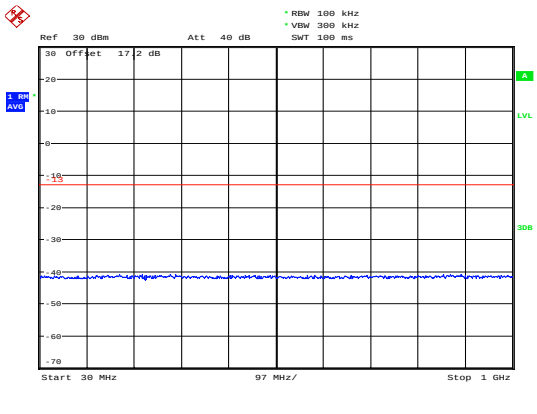
LTE Band 4 1.4MHz CH-Low 30MHz~1GHz



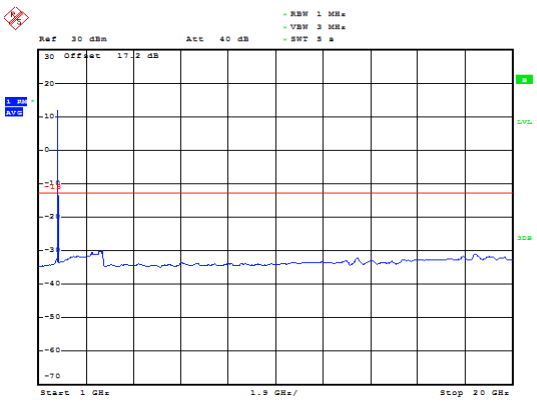
LTE Band 4 1.4MHz CH-Low 1GHz~20GHz



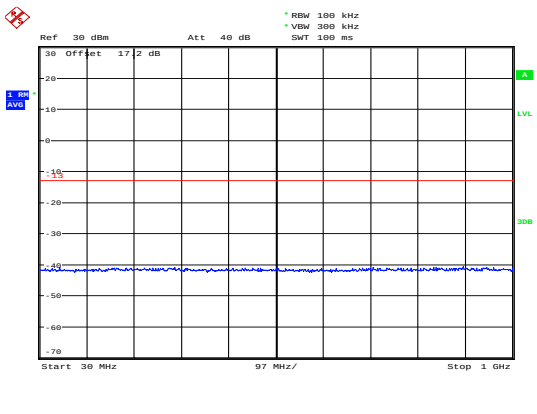
LTE Band 4 1.4MHz CH- Middle 30MHz~1GHz



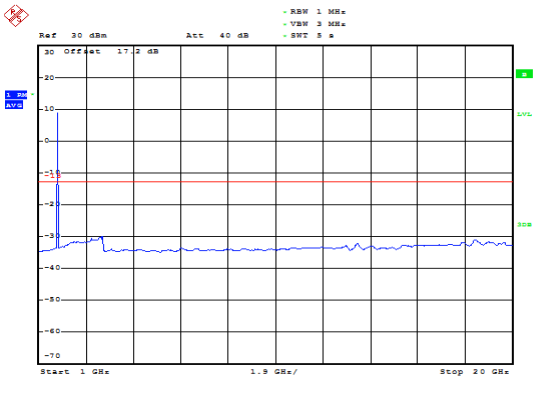
LTE Band 4 1.4MHz CH- Middle 1GHz~20GHz



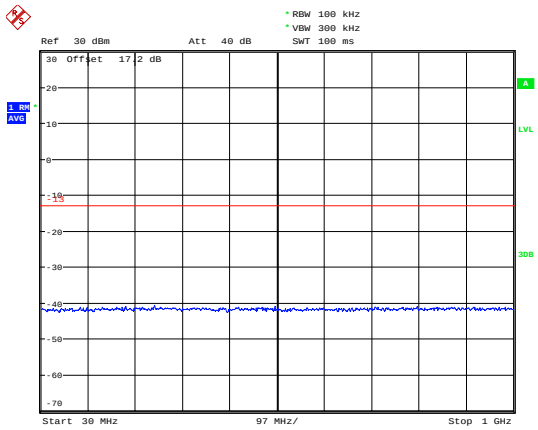
LTE Band 4 1.4MHz CH- High 30MHz~1GHz



LTE Band 4 1.4MHz CH- High 1GHz~20GHz

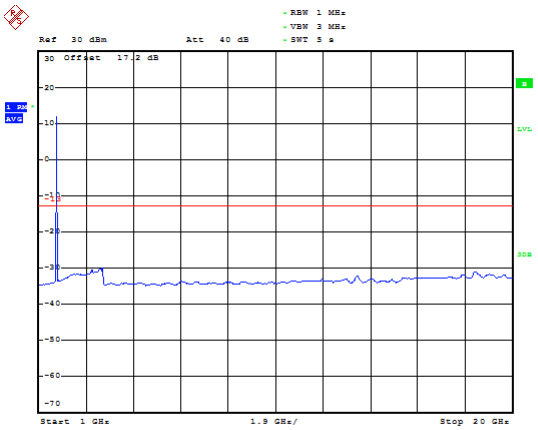


LTE Band 4 3MHz CH-Low 30MHz~1GHz



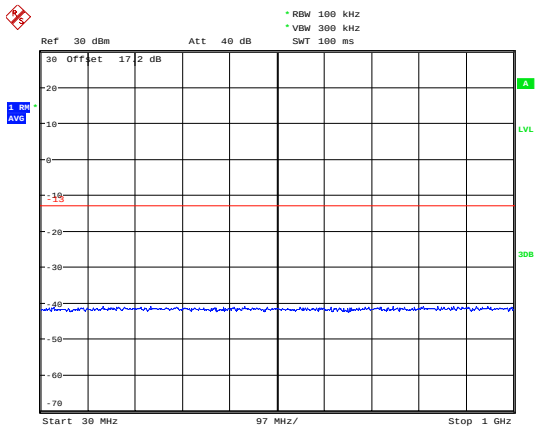
Date: 7.MAY.2020 14:52:56

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



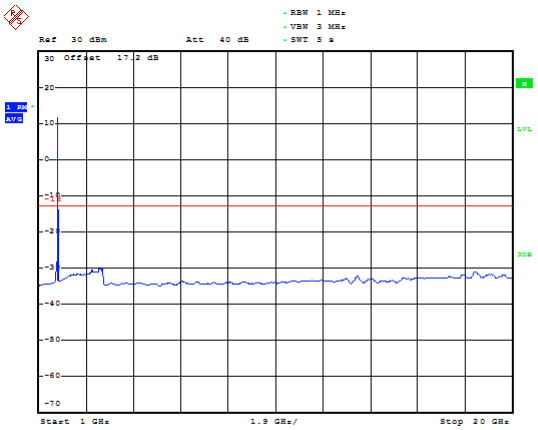
Date: 7.MAY.2020 15:08:00

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



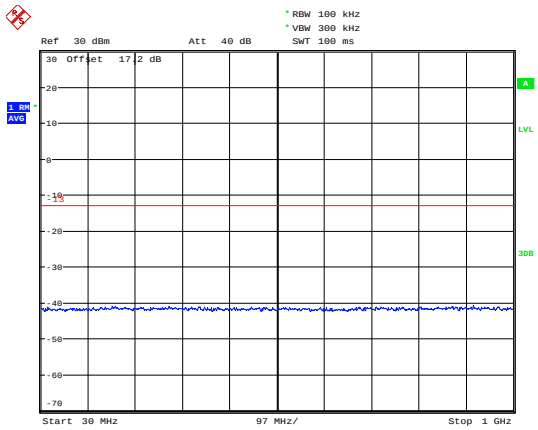
Date: 7.MAY.2020 14:53:05

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



Date: 7.MAY.2020 15:08:23

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



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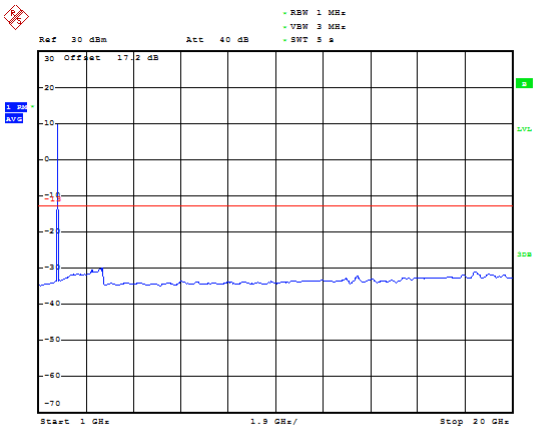
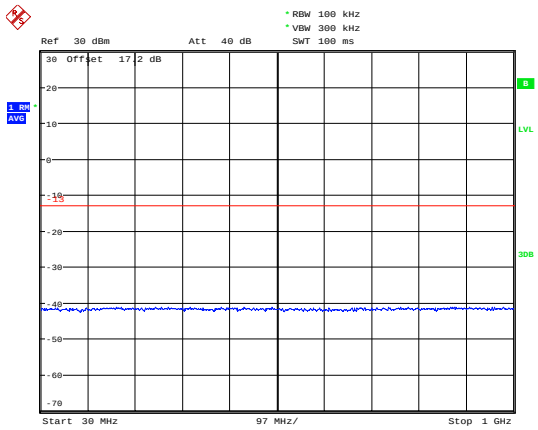
LTE Band 4 3MHz CH- High 1GHz~20GHz



Date: 7.MAY.2020 15:08:55

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



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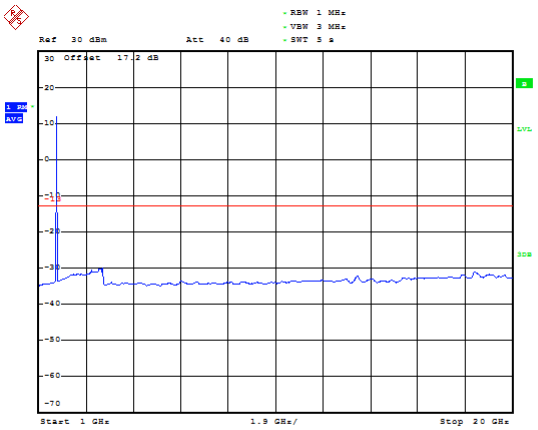
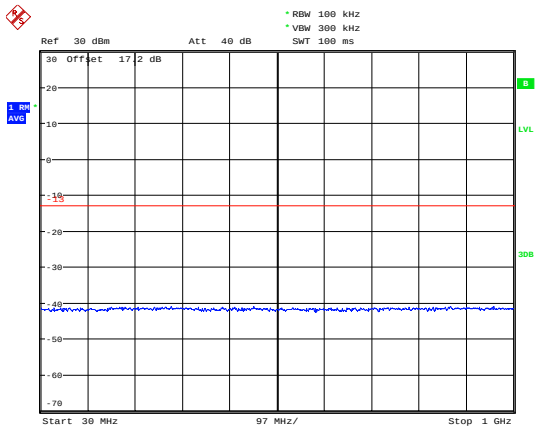
LTE Band 4 5MHz CH-Low 1GHz~20GHz



Date: 7.MAY.2020 15:09:56

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



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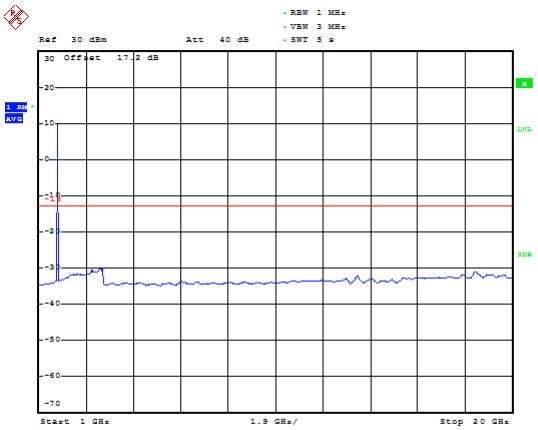
LTE Band 4 5MHz CH- Middle 1GHz~20GHz



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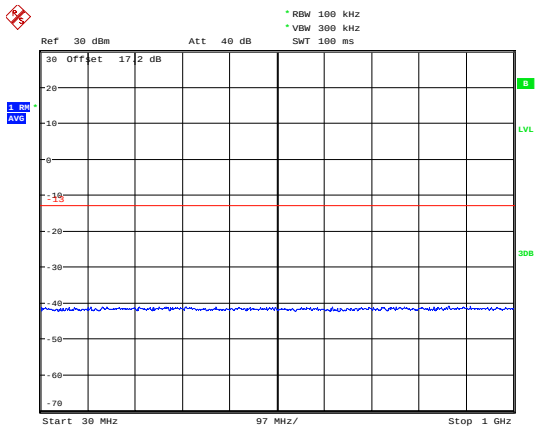
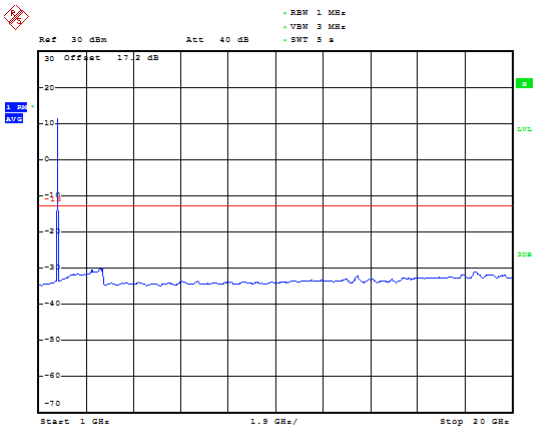
LTE Band 4 5MHz CH- High 30MHz~1GHz



Date: 7.MAY.2020 14:55:17

LTE Band 4 5MHz CH- High 1GHz~20GHz



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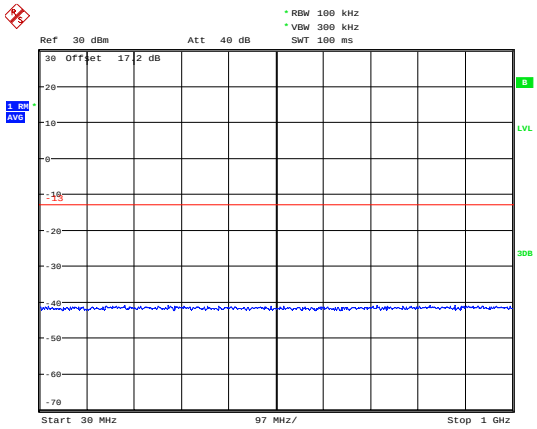
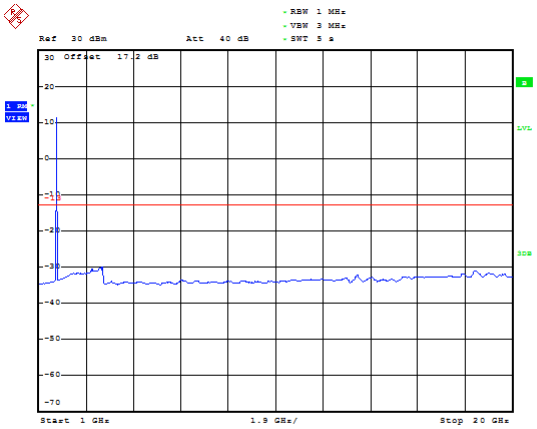
LTE Band 4 10MHz CH-Low 30MHz~1GHz



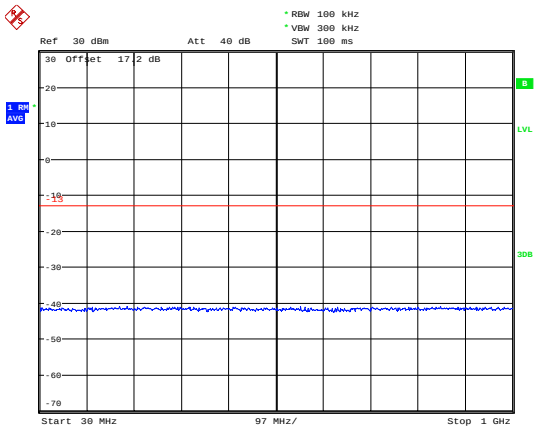
Date: 7.MAY.2020 14:56:14

LTE Band 4 10MHz CH-Low 1GHz~20GHz



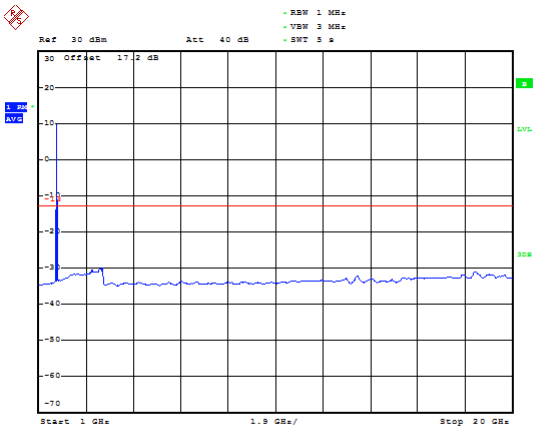
Date: 7.MAY.2020 15:12:57

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



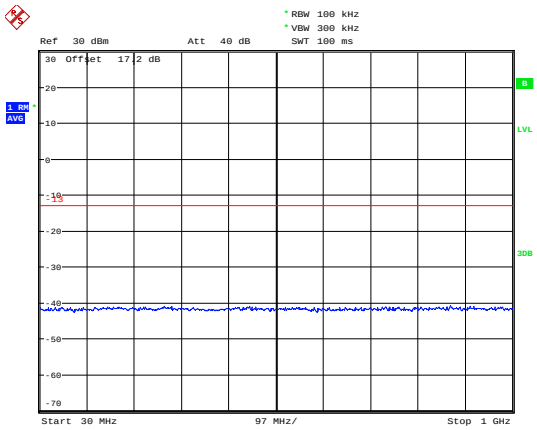
Date: 7.MAY.2020 14:56:25

LTE Band 4 10MHz CH- Middle 1GHz~20GHz



Date: 7.MAY.2020 15:13:34

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



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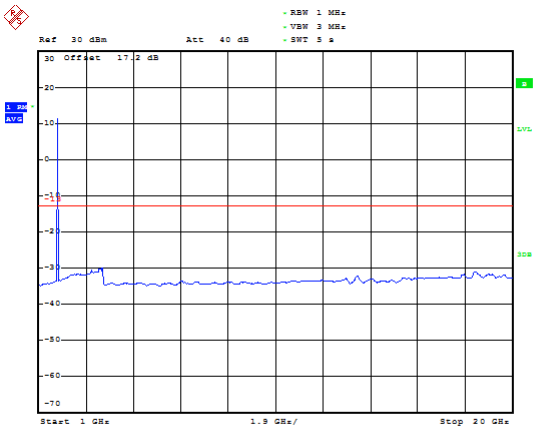
LTE Band 4 10MHz CH- High 1GHz~20GHz



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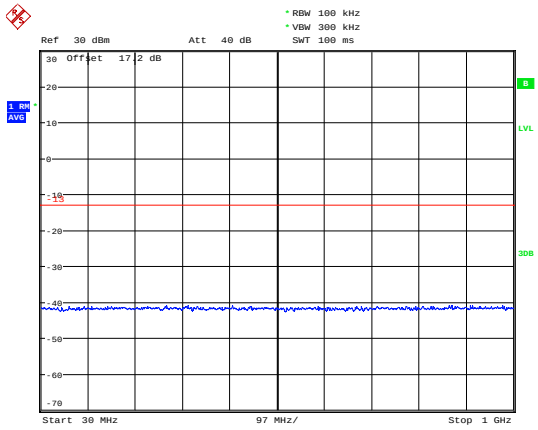
LTE Band 4 15MHz CH-Low 30MHz~1GHz



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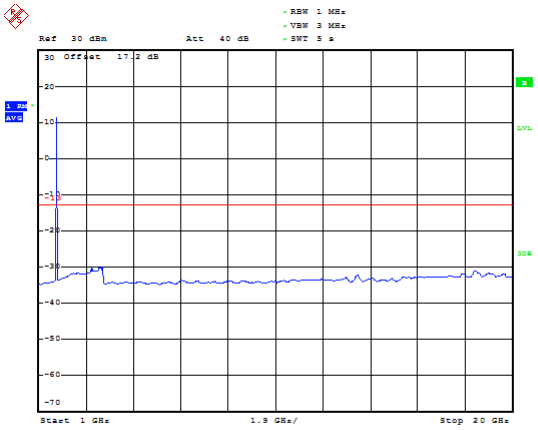
LTE Band 4 15MHz CH-Low 1GHz~20GHz



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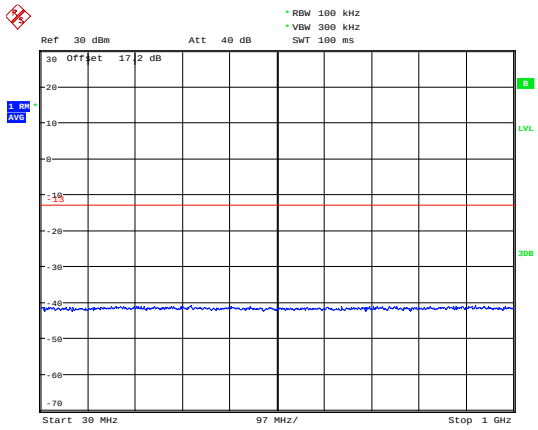
LTE Band 4 15MHz CH- Middle 30MHz~1GHz



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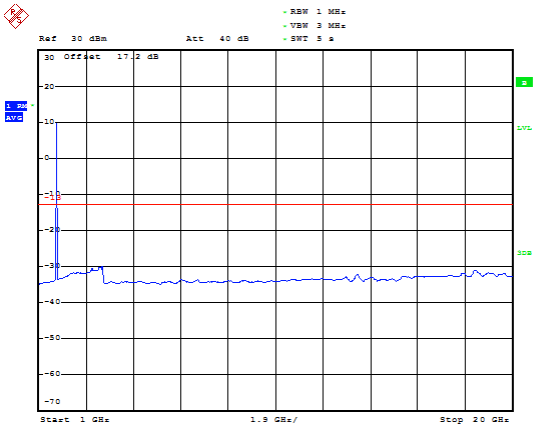
LTE Band 4 15MHz CH- Middle 1GHz~20GHz



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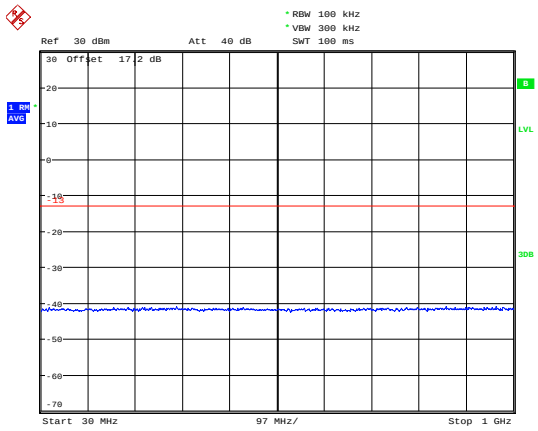
LTE Band 4 15MHz CH- High 30MHz~1GHz



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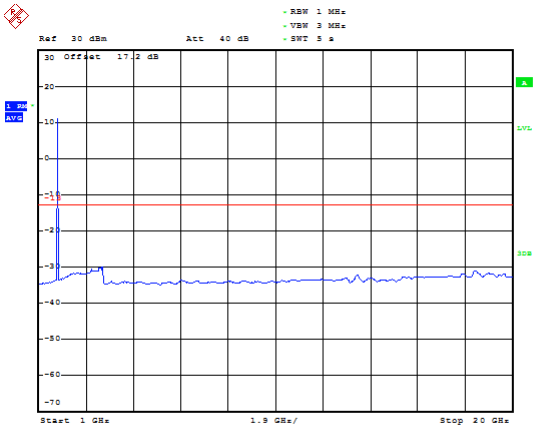
LTE Band 4 15MHz CH- High 1GHz~20GHz



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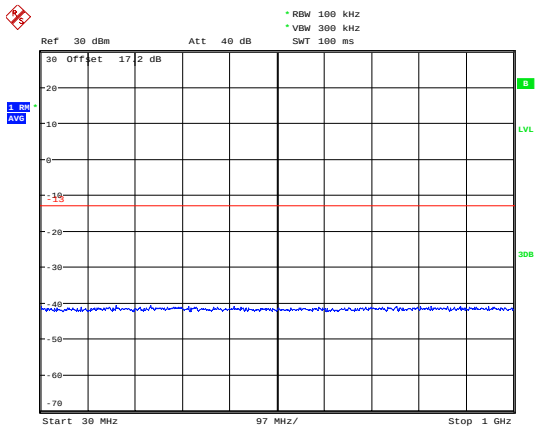
LTE Band 4 20MHz CH-Low 30MHz~1GHz



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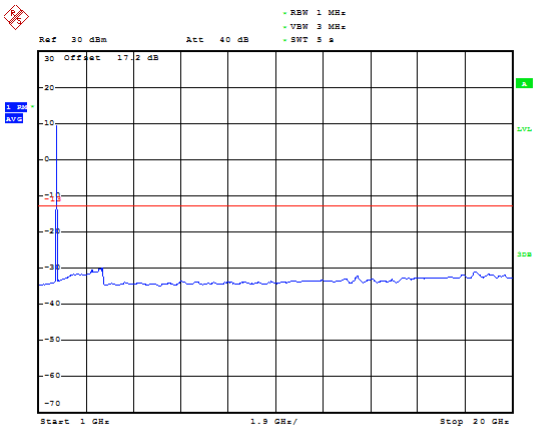
LTE Band 4 20MHz CH-Low 1GHz~20GHz



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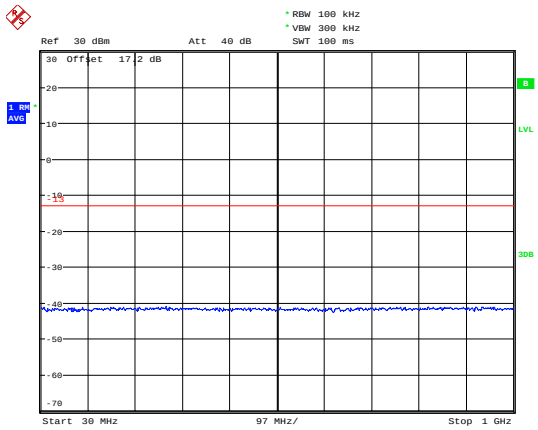
LTE Band 4 20MHz CH- Middle 30MHz~1GHz



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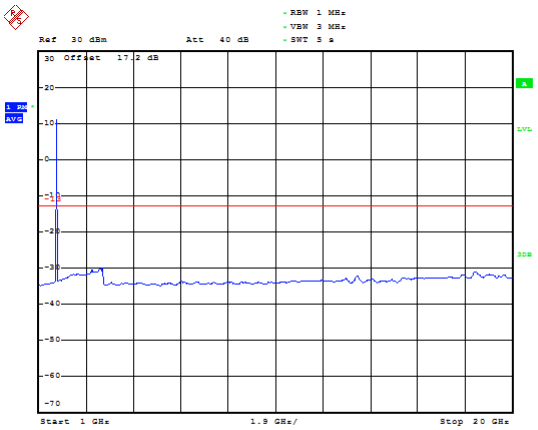
LTE Band 4 20MHz CH- Middle 1GHz~20GHz



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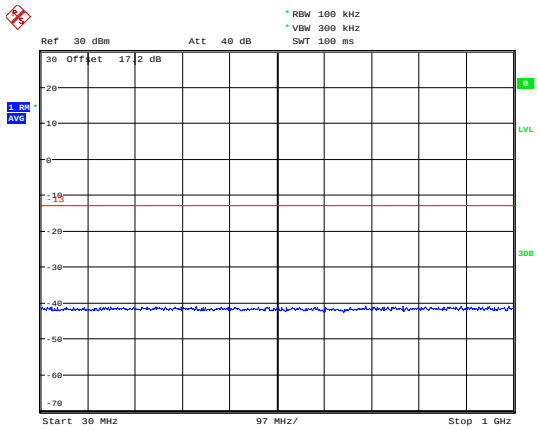
LTE Band 4 20MHz CH- High 30MHz~1GHz



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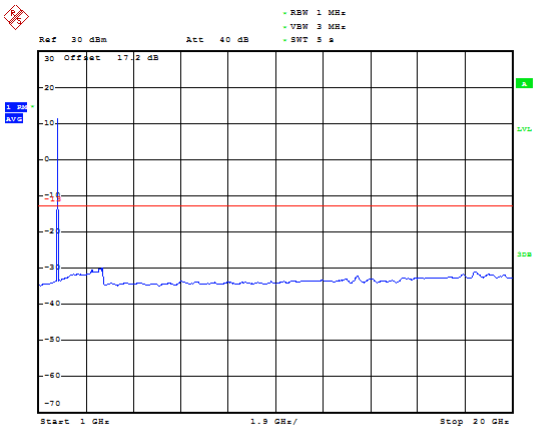
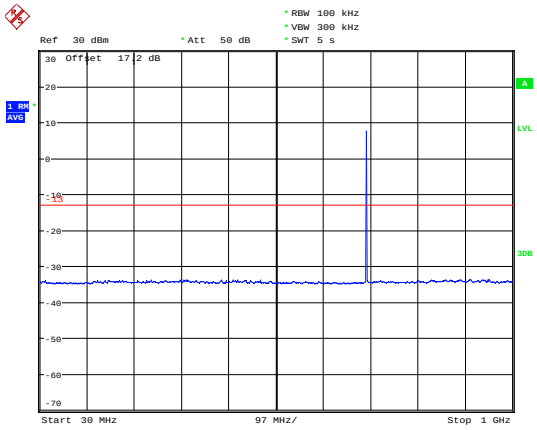
LTE Band 4 20MHz CH- High 1GHz~20GHz



Date: 7.MAY.2020 15:18:47

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



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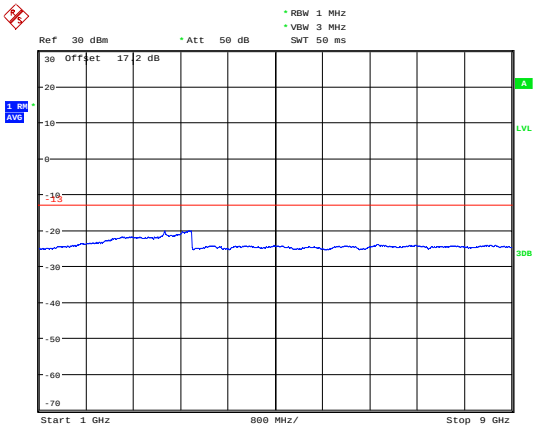
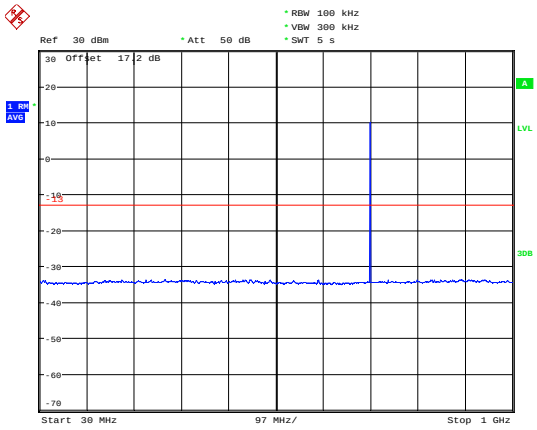
LTE Band 12 1.4MHz CH-Low 1GHz~9GHz



Date: 7.MAY.2020 16:43:17

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



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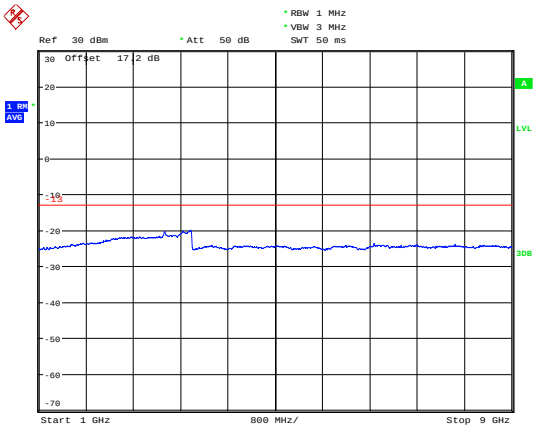
LTE Band 12 1.4MHz CH- Middle 1GHz~9GHz



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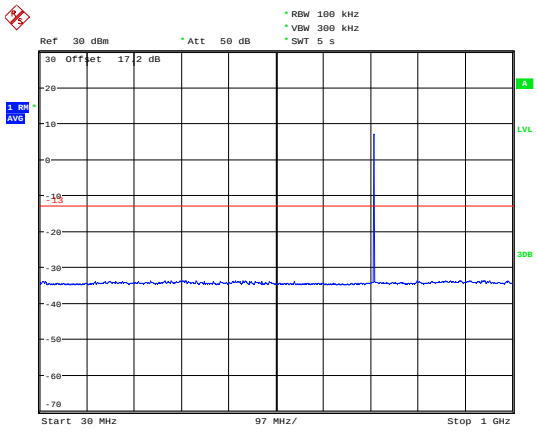
LTE Band 12 1.4MHz CH-High 30MHz~1GHz



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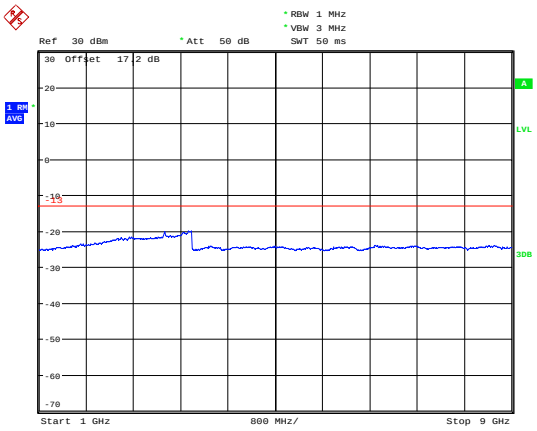
LTE Band 12 1.4MHz CH-High 1GHz~9GHz



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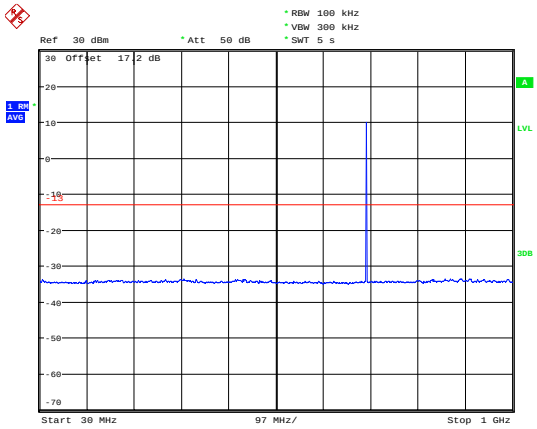
LTE Band 12 3MHz CH-Low 30MHz~1GHz



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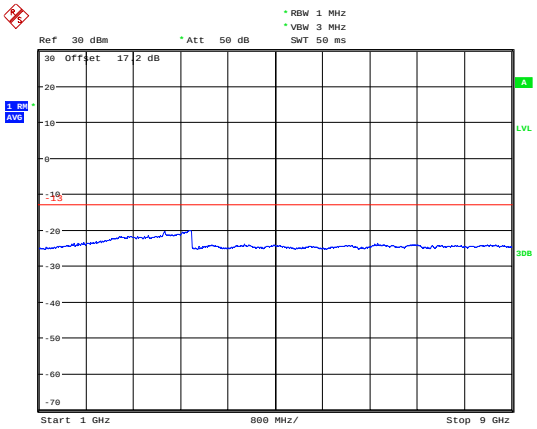
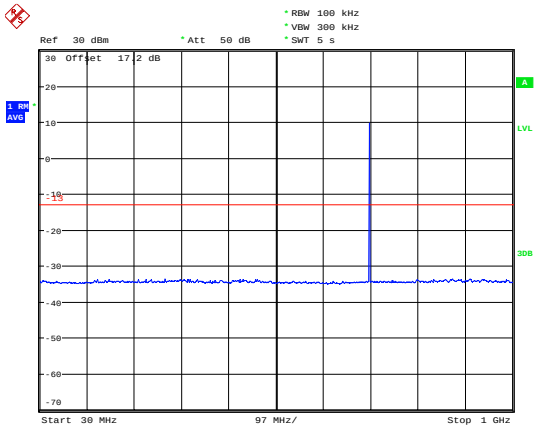
LTE Band 12 3MHz CH-Low 1GHz~9GHz



Date: 7.MAY.2020 16:43:47

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



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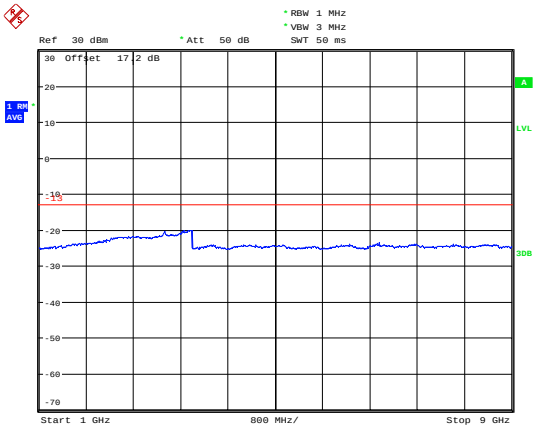
LTE Band 12 3MHz CH- Middle 1GHz~9GHz



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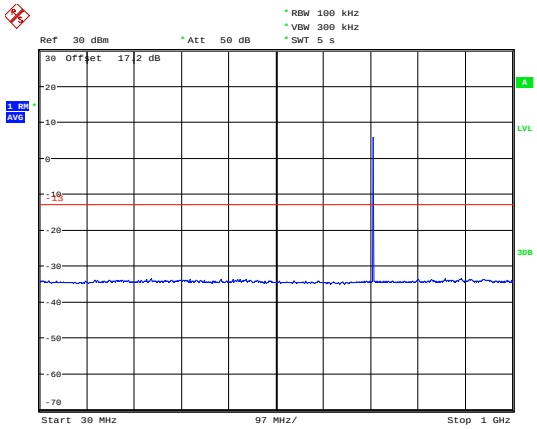
LTE Band 12 3MHz CH-High 30MHz~1GHz



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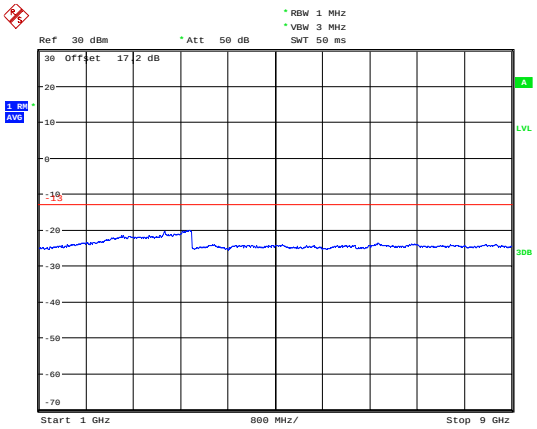
LTE Band 12 3MHz CH-High 1GHz~9GHz



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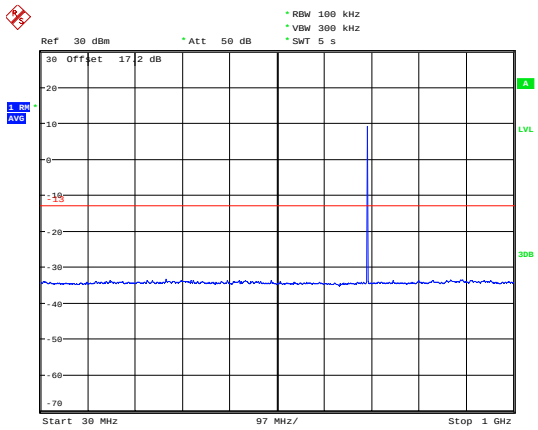
LTE Band 12 5MHz CH-Low 30MHz~1GHz



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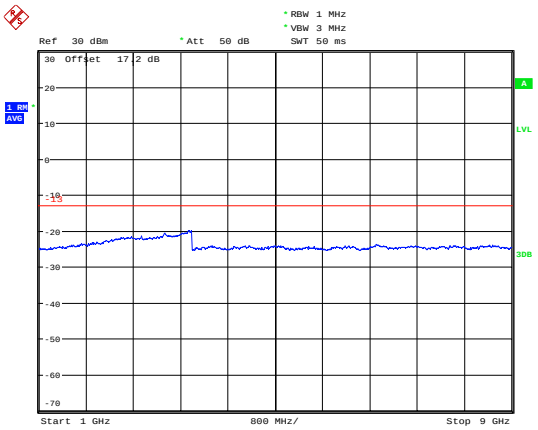
LTE Band 12 5MHz CH-Low 1GHz~9GHz



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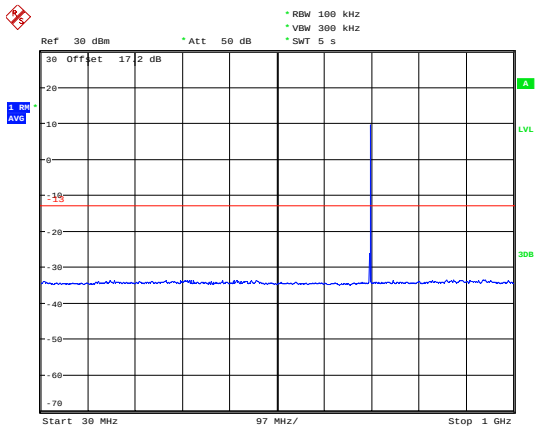
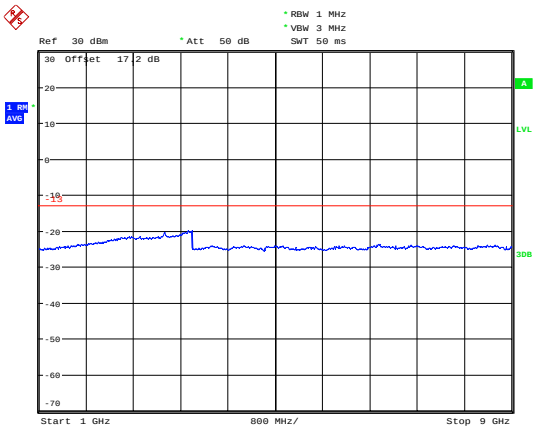
LTE Band 12 5MHz CH- Middle 30MHz~1GHz



Date: 7.MAY.2020 16:22:00

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



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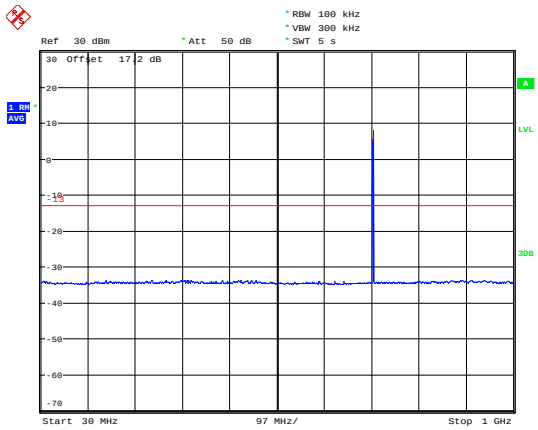
LTE Band 12 5MHz CH-High 30MHz~1GHz



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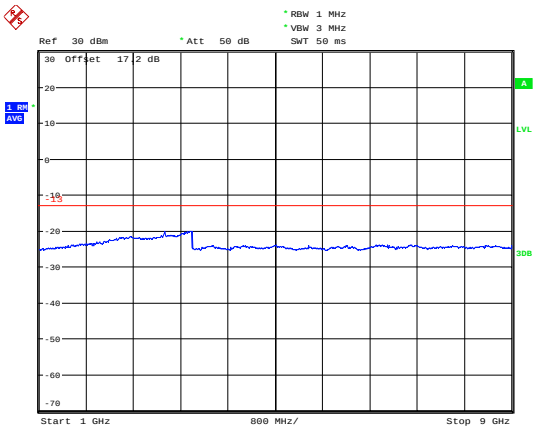
LTE Band 12 5MHz CH-High 1GHz~9GHz



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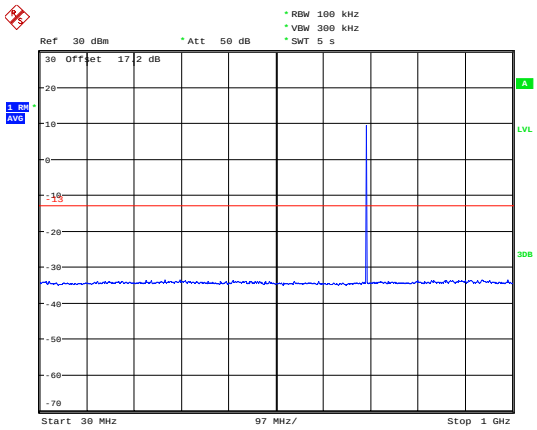
LTE Band 12 10MHz CH-Low 30MHz~1GHz



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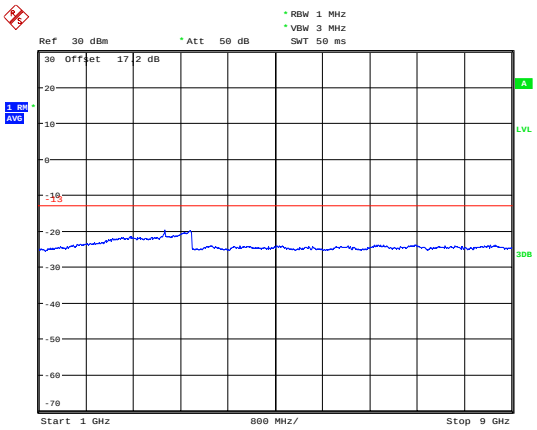
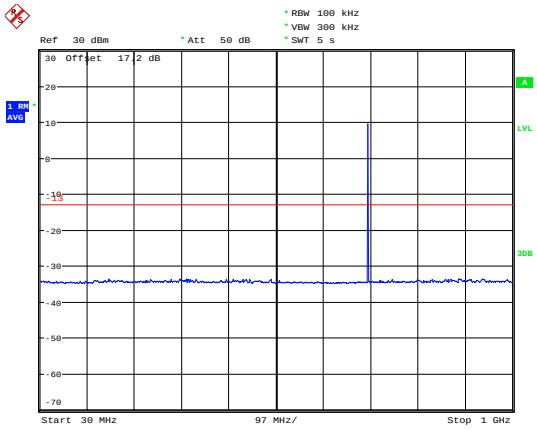
LTE Band 12 10MHz CH-Low 1GHz~9GHz



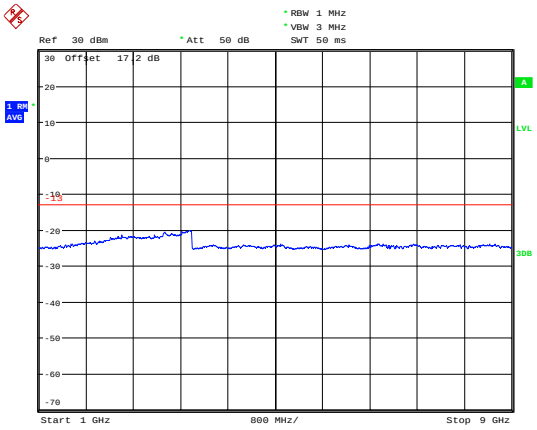
Date: 7.MAY.2020 16:44:30

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



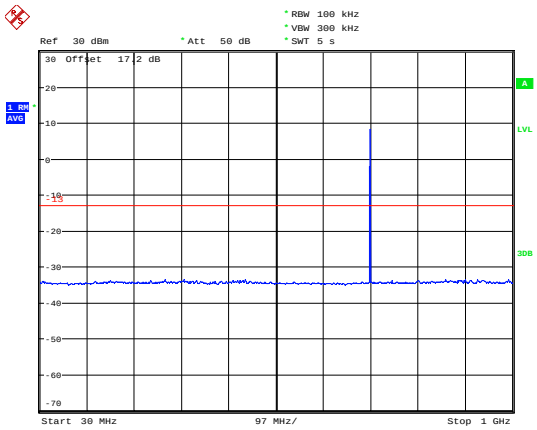
Date: 7.MAY.2020 16:25:53

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



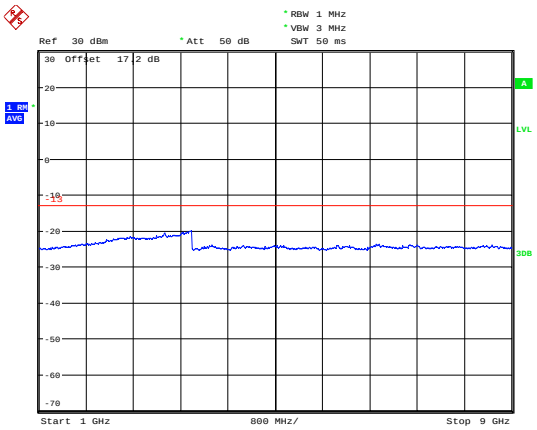
Date: 7.MAY.2020 16:44:37

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



Date: 7.MAY.2020 16:27:30

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



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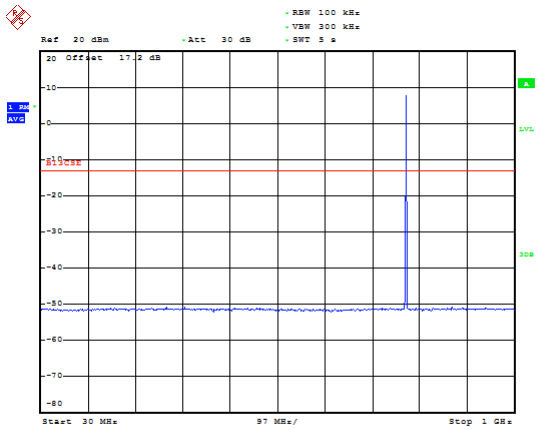
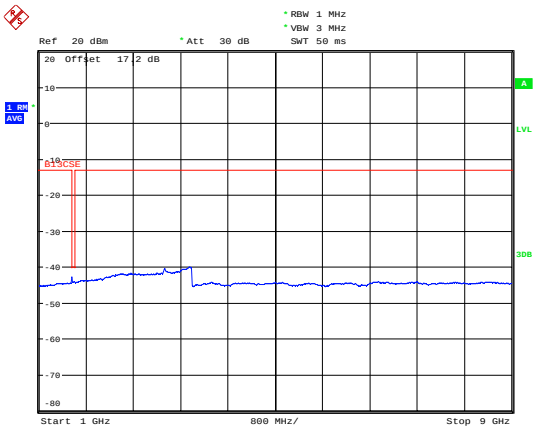
LTE Band 13 5MHz CH-Low 30MHz~1GHz



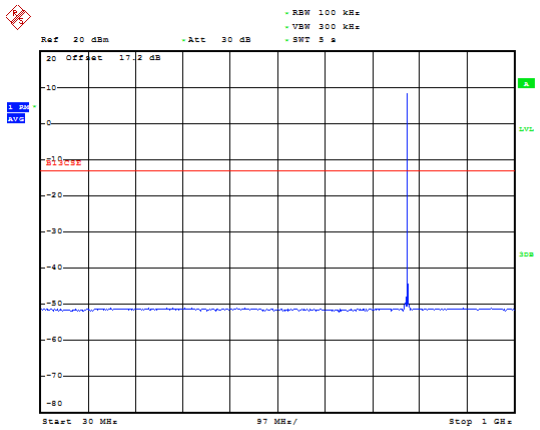
Date: 8.MAY.2020 12:25:06

LTE Band 13 5MHz CH-Low 1GHz~9GHz



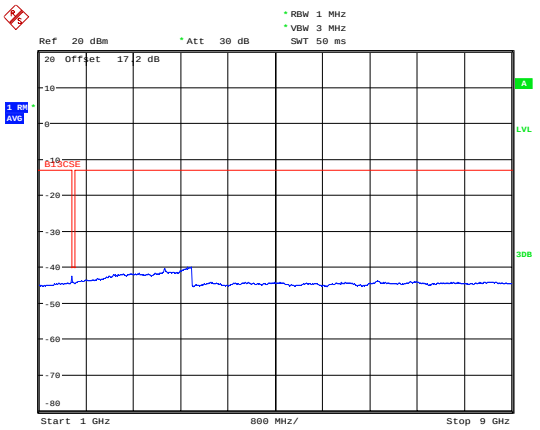
Date: 8.MAY.2020 12:21:09

LTE Band 13 5MHz CH-Middle 30MHz~1GHz



Date: 8.MAY.2020 12:26:01

LTE Band 13 5MHz CH-Middle 1GHz~9GHz



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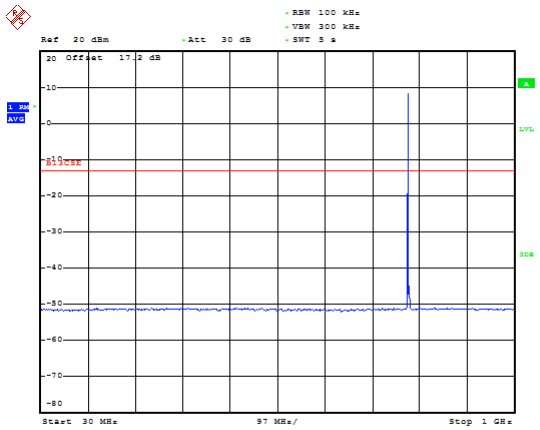
LTE Band 13 5MHz CH-High 30MHz~1GHz



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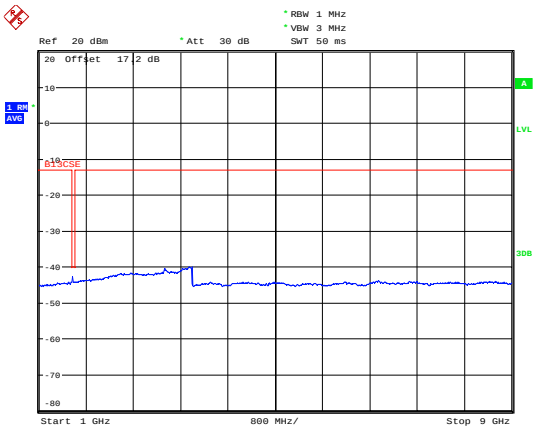
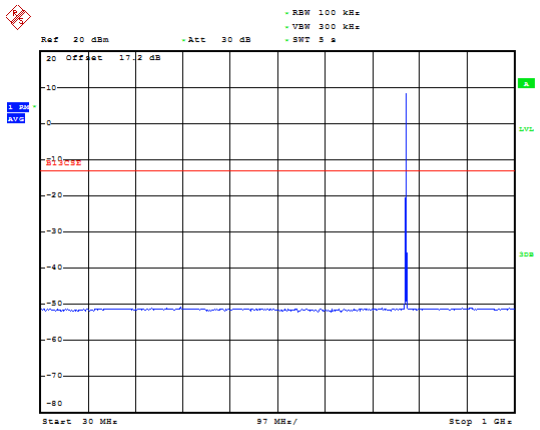
LTE Band 13 5MHz CH-High 1GHz~9GHz



Date: 8.MAY.2020 12:22:21

LTE Band 13 10MHz CH-Middle 30MHz~1GHz



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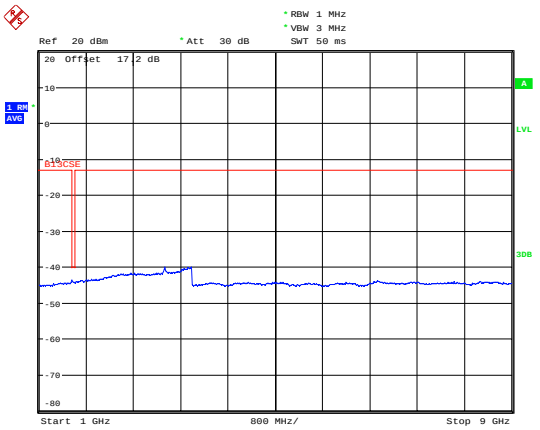
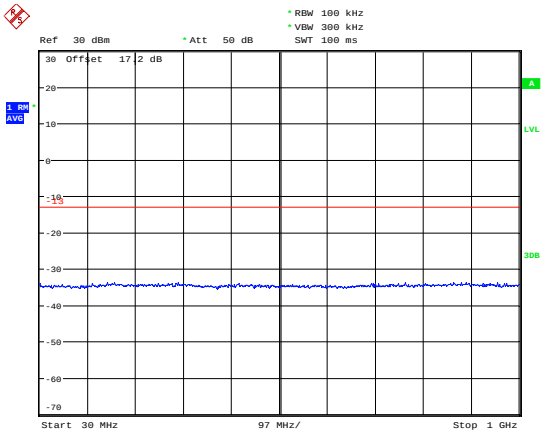
LTE Band 13 10MHz CH-Middle 1GHz~9GHz



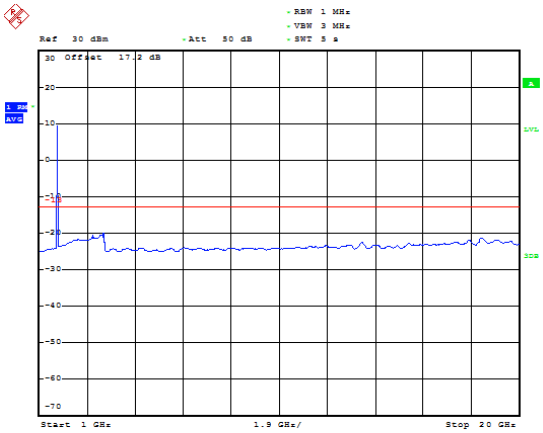
Date: 8.MAY.2020 12:22:42

LTE Band 66 1.4MHz CH-Low 30MHz~1GHz



Date: 8.MAY.2020 14:26:29

LTE Band 66 1.4MHz CH-Low 1GHz~20GHz



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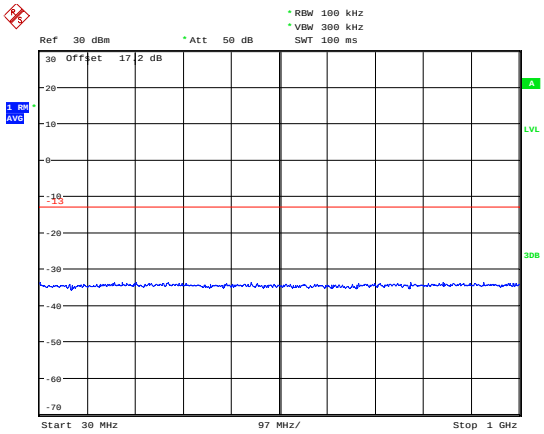
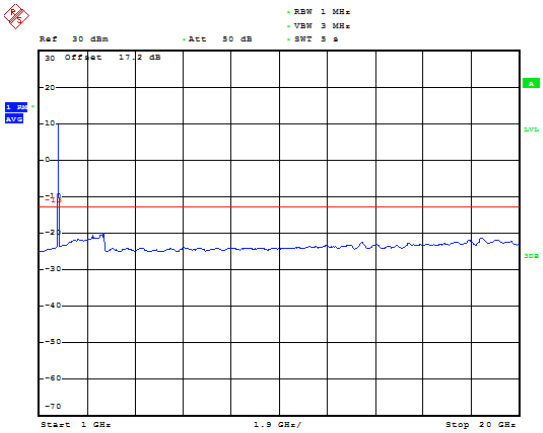
LTE Band 66 1.4MHz CH-Middle 30MHz~1GHz



Date: 8.MAY.2020 14:26:37

LTE Band 66 1.4MHz CH-Middle 1GHz~20GHz



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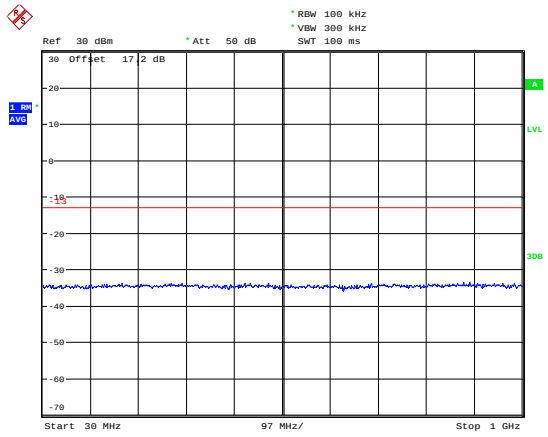
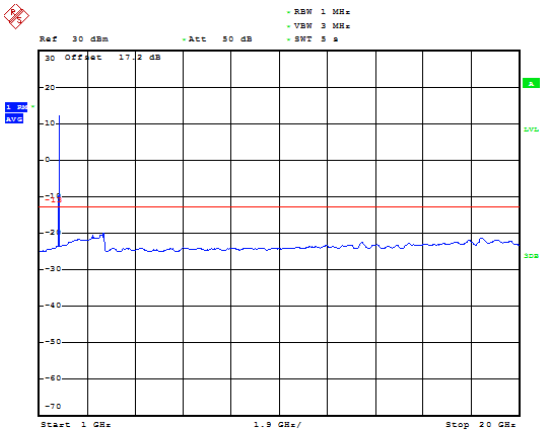
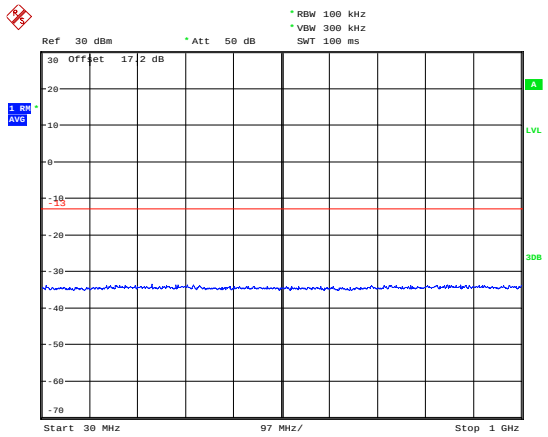
LTE Band 66 1.4MHz CH-High 30MHz~1GHz



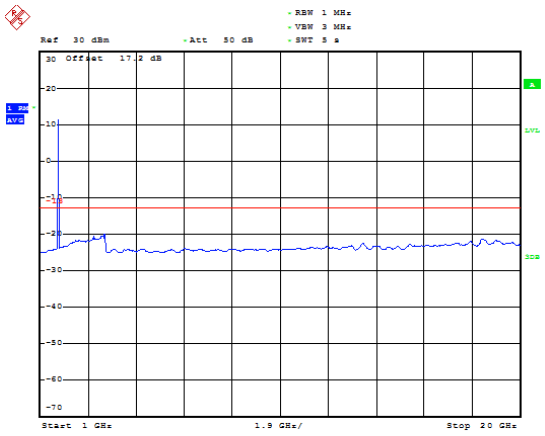
LTE Band 66 1.4MHz CH-High 1GHz~20GHz



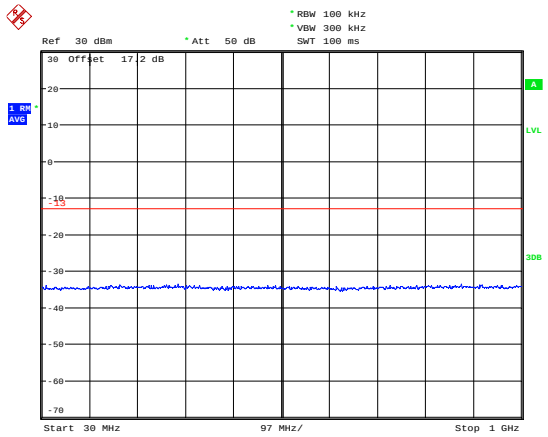
LTE Band 66 3MHz CH-Low 30MHz~1GHz



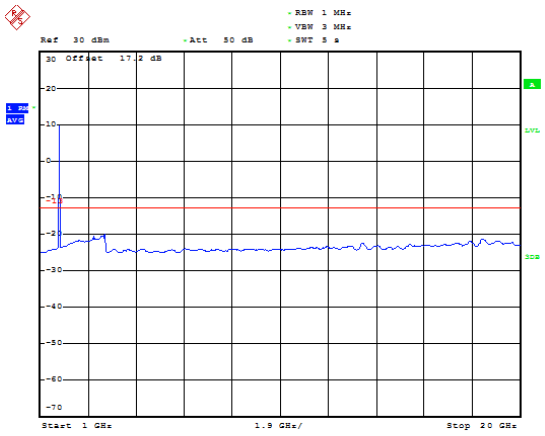
LTE Band 66 3MHz CH-Low 1GHz~20GHz



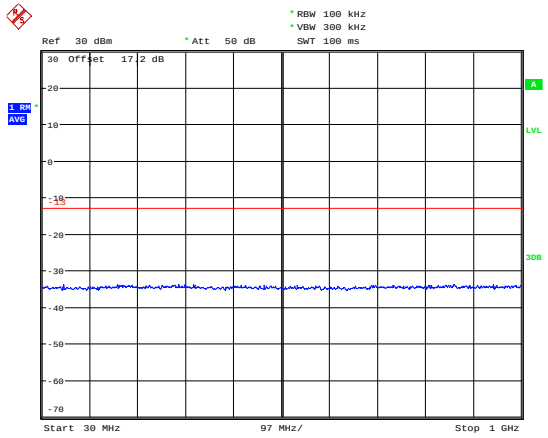
LTE Band 66 3MHz CH-Middle 30MHz~1GHz



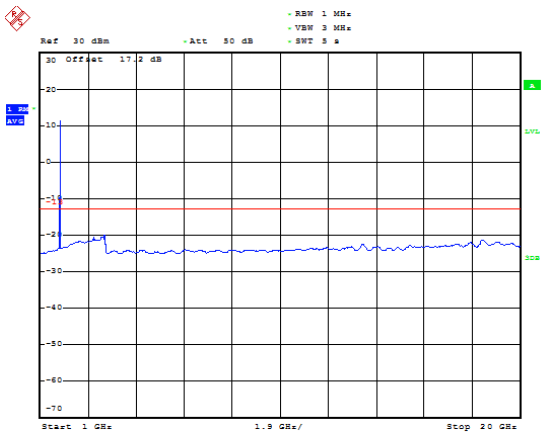
LTE Band 66 3MHz CH-Middle 1GHz~20GHz



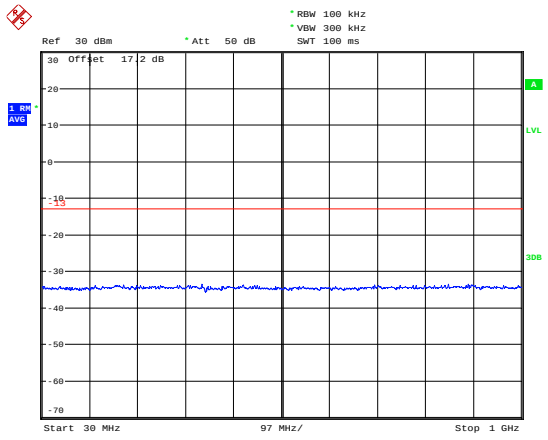
LTE Band 66 3MHz CH-High 30MHz~1GHz



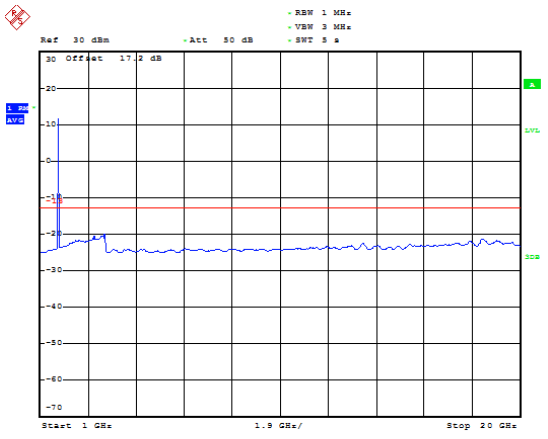
LTE Band 66 3MHz CH-High 1GHz~20GHz



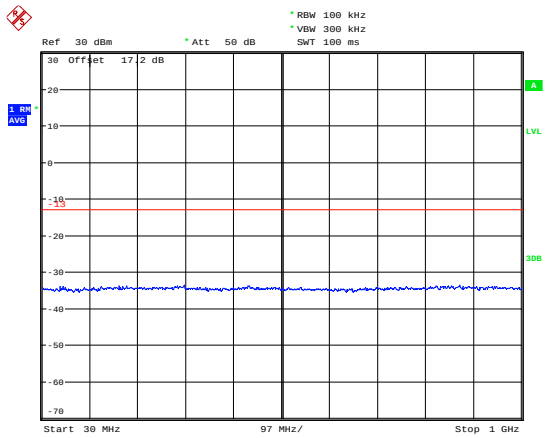
LTE Band 66 5MHz CH-Low 30MHz~1GHz



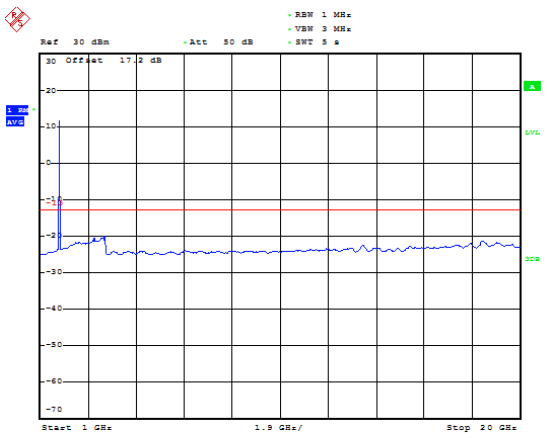
LTE Band 66 5MHz CH-Low 1GHz~20GHz



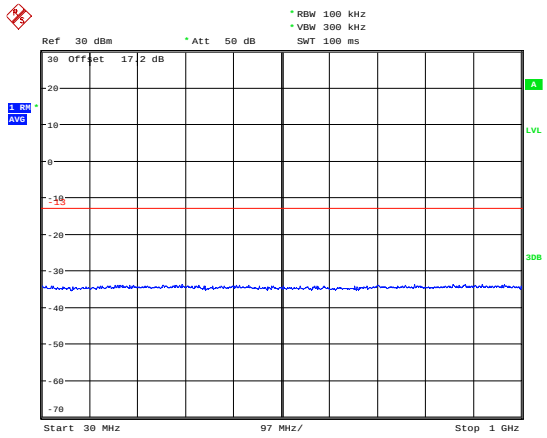
LTE Band 66 5MHz CH-Middle 30MHz~1GHz



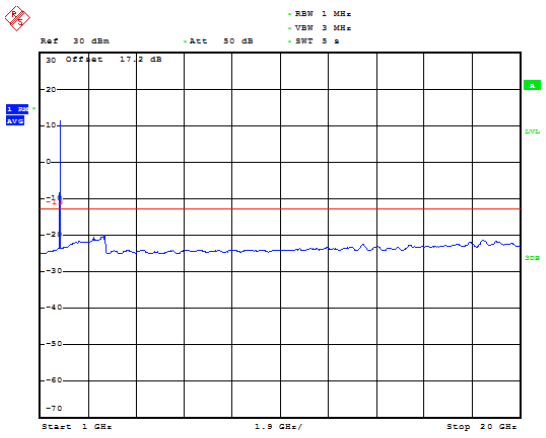
LTE Band 66 5MHz CH-Middle 1GHz~20GHz



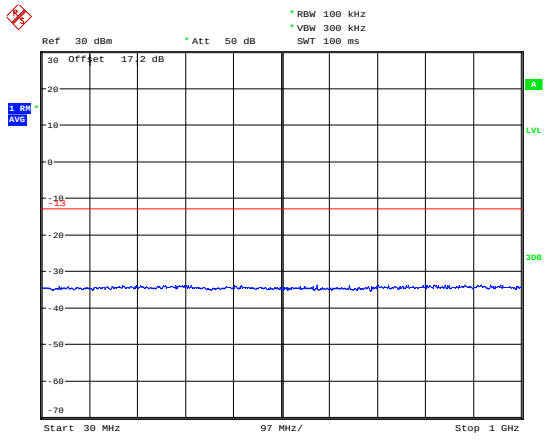
LTE Band 66 5MHz CH-High 30MHz~1GHz



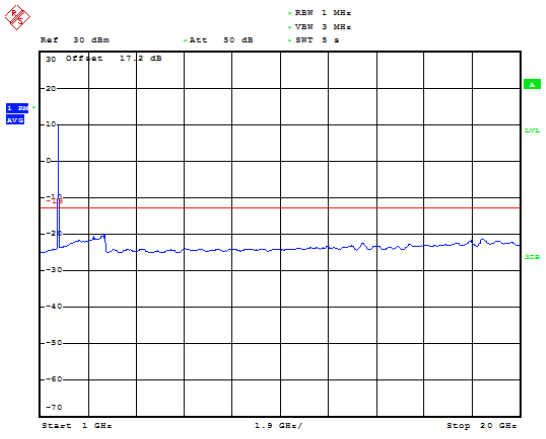
LTE Band 66 5MHz CH-High 1GHz~20GHz



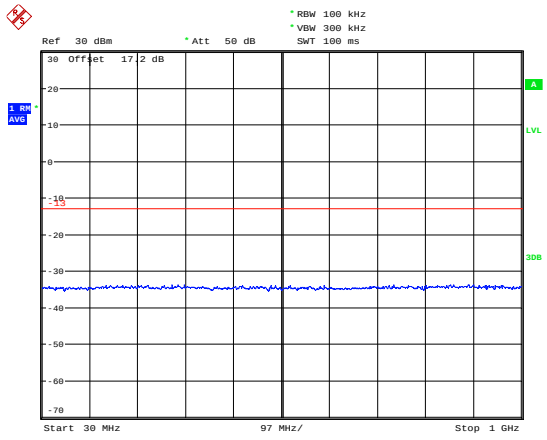
LTE Band 66 10MHz CH-Low 30MHz~1GHz



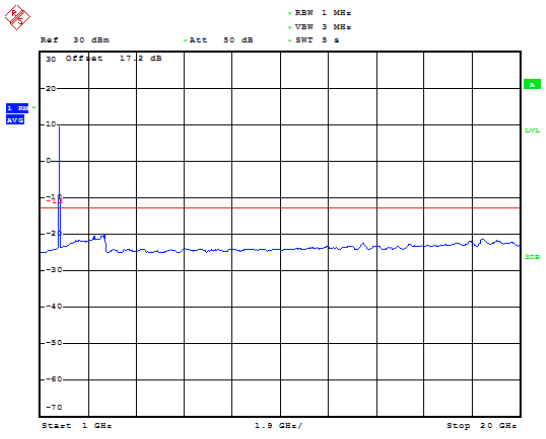
LTE Band 66 10MHz CH-Low 1GHz~20GHz



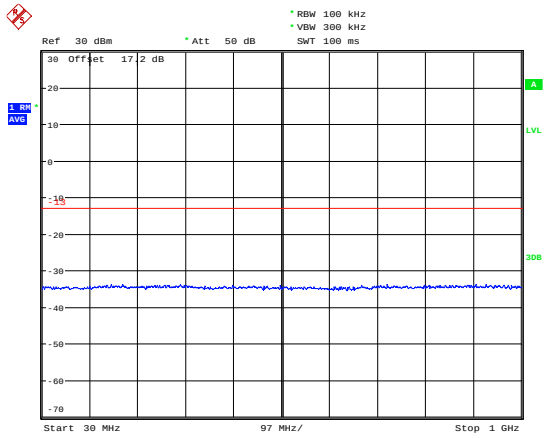
LTE Band 66 10MHz CH-Middle 30MHz~1GHz



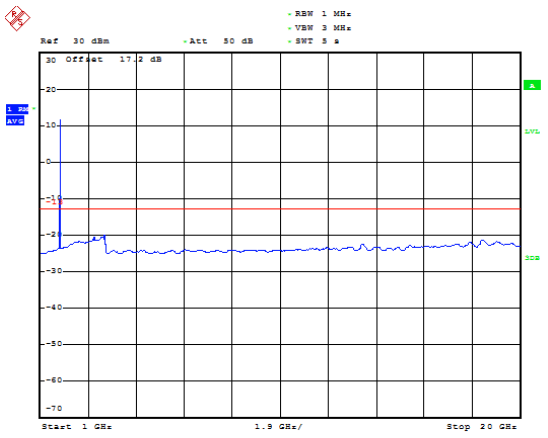
LTE Band 66 10MHz CH-Middle 1GHz~20GHz



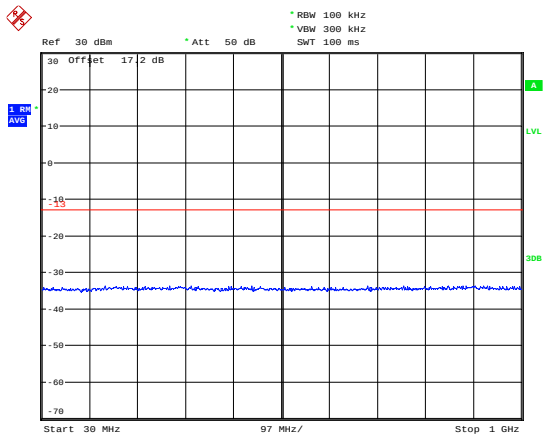
LTE Band 66 10MHz CH-High 30MHz~1GHz



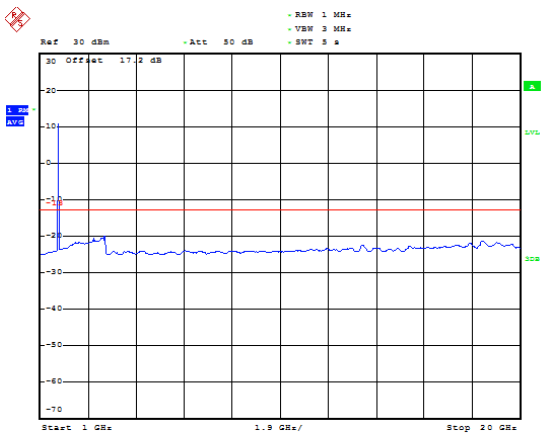
LTE Band 66 10MHz CH-High 1GHz~20GHz



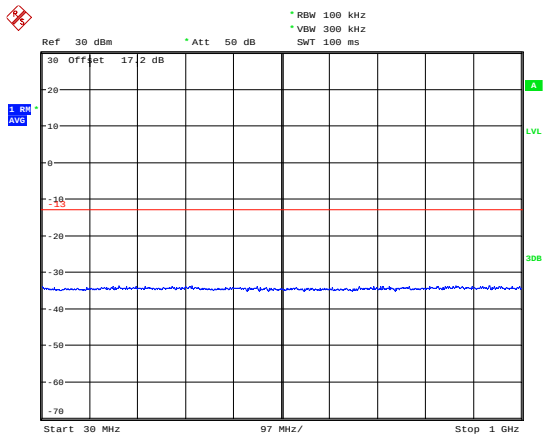
LTE Band 66 15MHz CH-Low 30MHz~1GHz



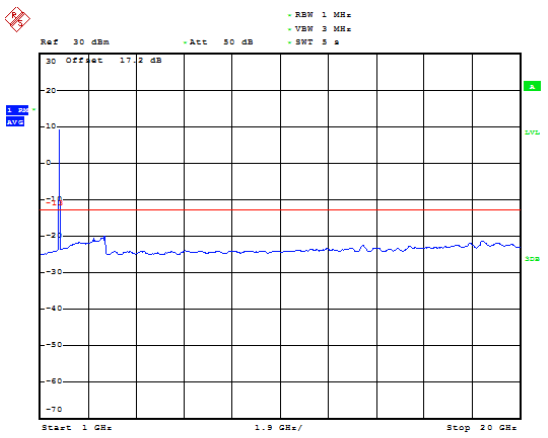
LTE Band 66 15MHz CH-Low 1GHz~20GHz



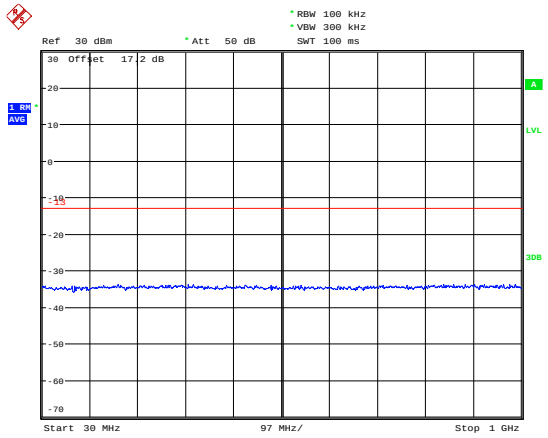
LTE Band 66 15MHz CH-Middle 30MHz~1GHz



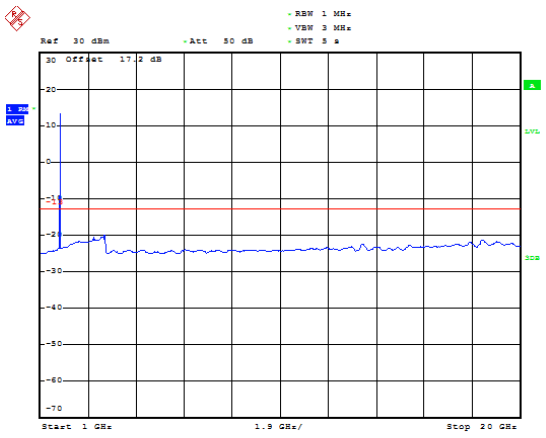
LTE Band 66 15MHz CH-Middle 1GHz~20GHz



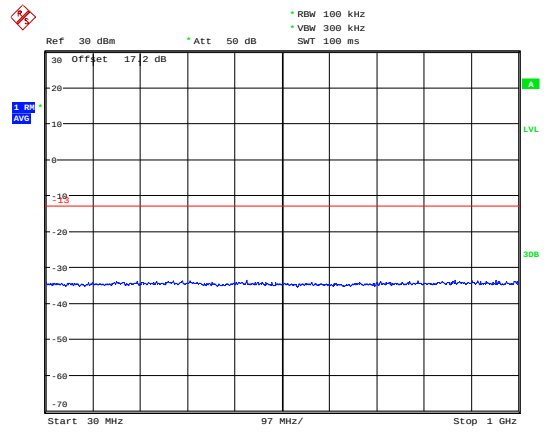
LTE Band 66 15MHz CH-High 30MHz~1GHz



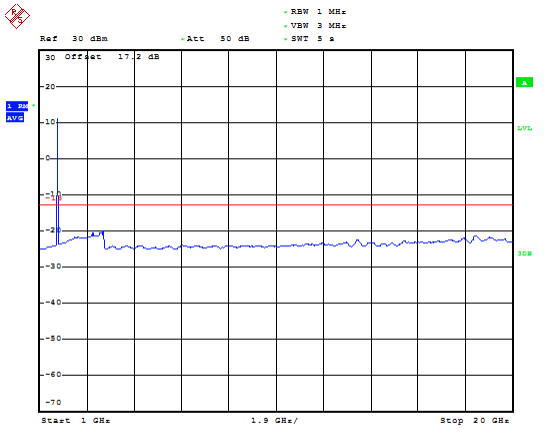
LTE Band 66 15MHz CH-High 1GHz~20GHz



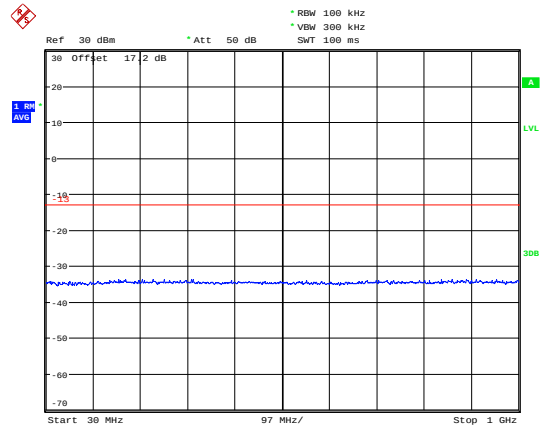
LTE Band 66 20MHz CH-Low 30MHz~1GHz



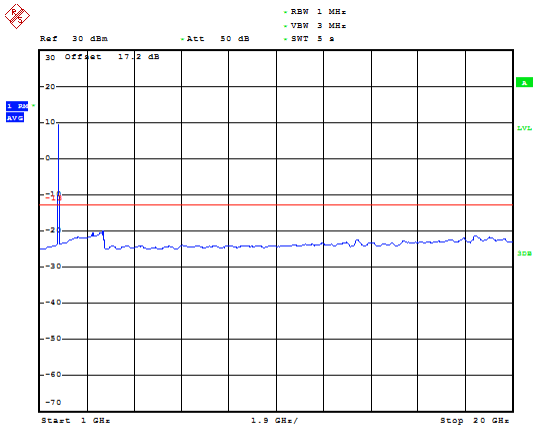
LTE Band 66 20MHz CH-Low 1GHz~20GHz



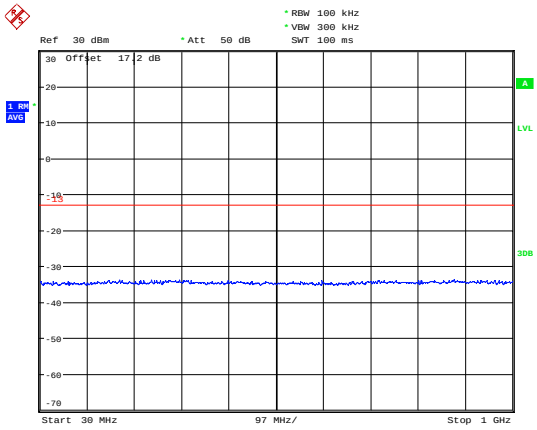
LTE Band 66 20MHz CH-Middle 30MHz~1GHz



LTE Band 66 20MHz CH-Middle 1GHz~20GHz

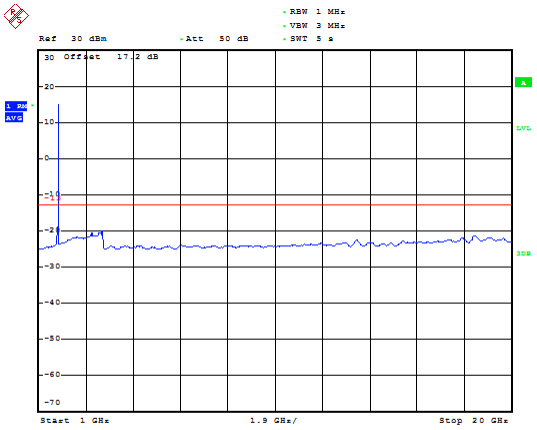


LTE Band 66 20MHz CH-High 30MHz~1GHz



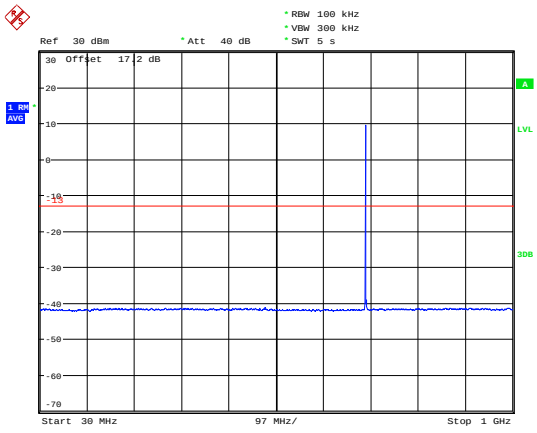
Date: 8.MAY.2020 14:33:13

LTE Band 66 20MHz CH-High 1GHz~20GHz



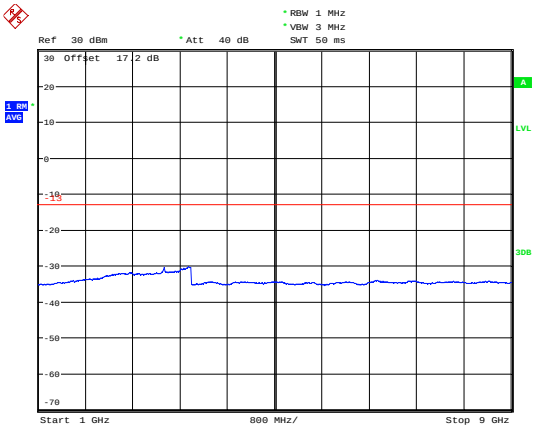
Date: 8.MAY.2020 14:45:01

LTE Band 85 5MHz CH-Low 30MHz~1GHz



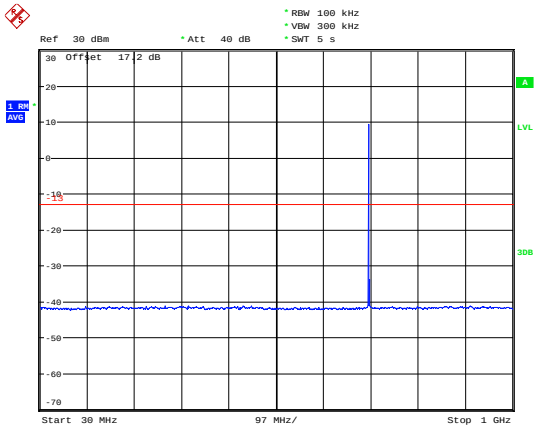
Date: 18.MAY.2020 10:49:06

LTE Band 85 5MHz CH-Low 1GHz~9GHz



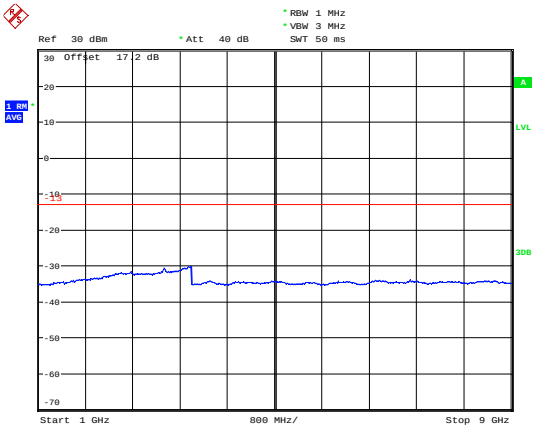
Date: 18.MAY.2020 10:52:00

LTE Band 85 5MHz CH-Middle 30MHz~1GHz



Date: 18.MAY.2020 10:49:54

LTE Band 85 5MHz CH-Middle 1GHz~9GHz



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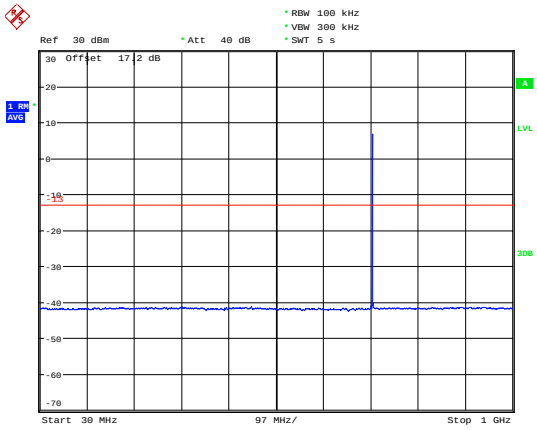
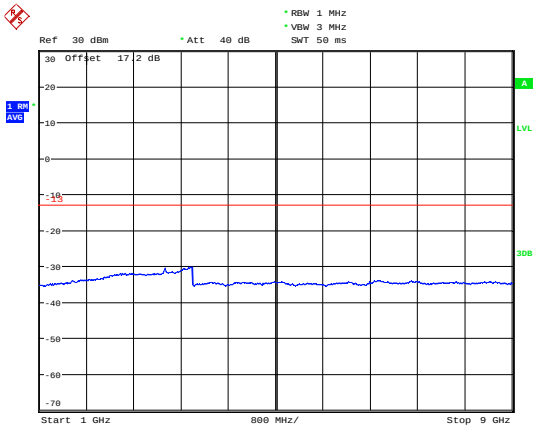
LTE Band 85 5MHz CH-High 30MHz~1GHz



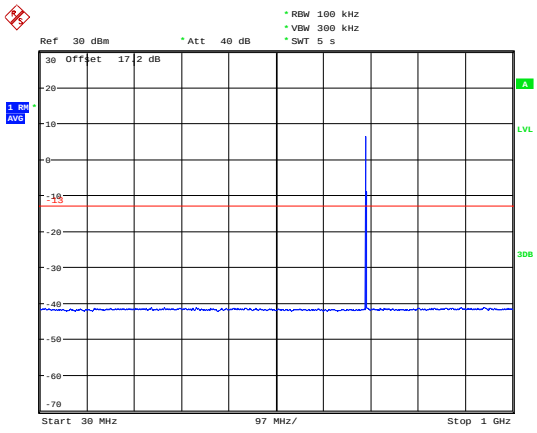
Date: 18.MAY.2020 10:51:23

LTE Band 85 5MHz CH-High 1GHz~9GHz



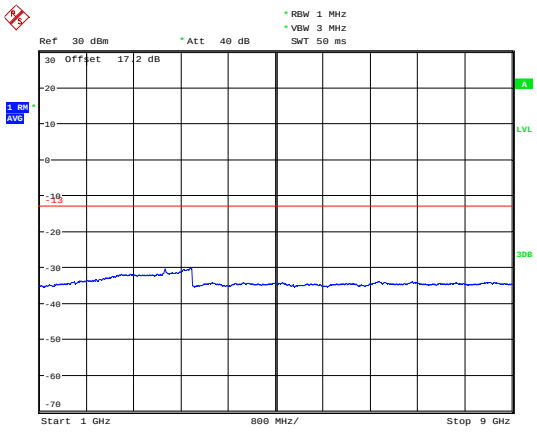
Date: 18.MAY.2020 10:52:20

LTE Band 85 10MHz CH-Low 30MHz~1GHz



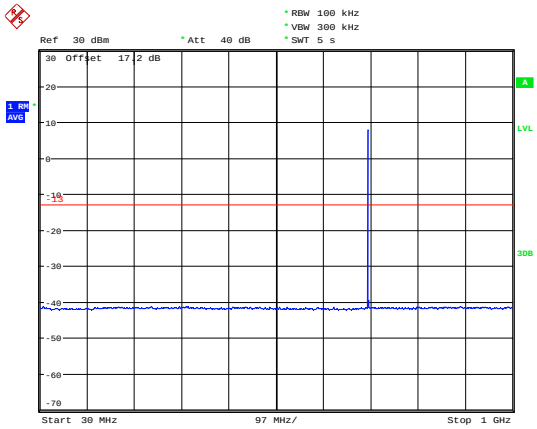
Date: 18.MAY.2020 10:53:31

LTE Band 85 10MHz CH-Low 1GHz~9GHz



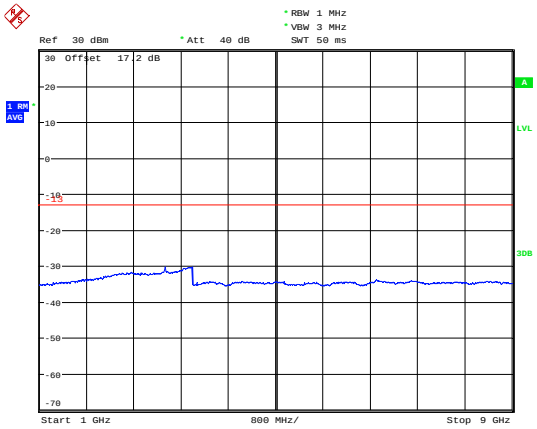
Date: 18.MAY.2020 10:55:58

LTE Band 85 10MHz CH-Middle 30MHz~1GHz



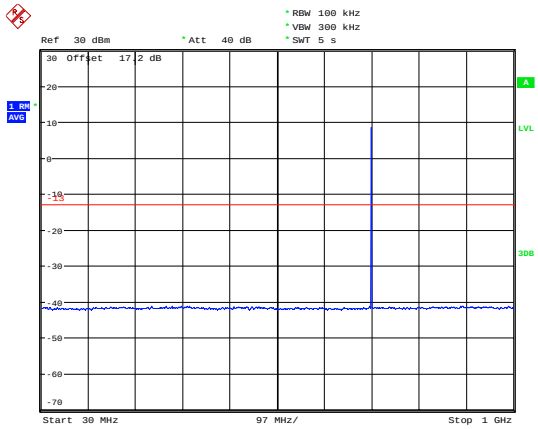
Date: 18.MAY.2020 10:53:57

LTE Band 85 10MHz CH-Middle 1GHz~9GHz



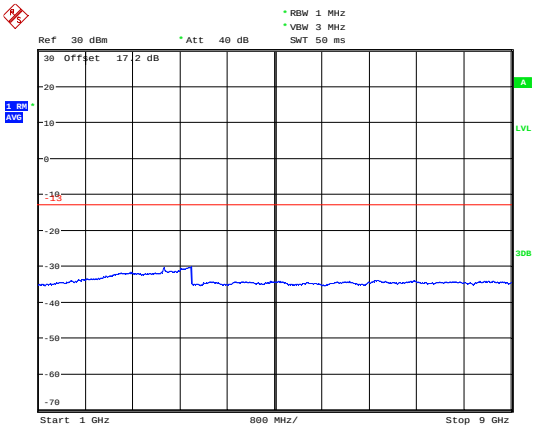
Date: 18.MAY.2020 10:56:10

LTE Band 85 10MHz CH-High 30MHz~1GHz



Date: 18.MAY.2020 10:55:39

LTE Band 85 10MHz CH-High 1GHz~9GHz



Date: 18.MAY.2020 10:56:20

5.7 Radiates Spurious Emission

Ambient condition

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

Method of Measurement

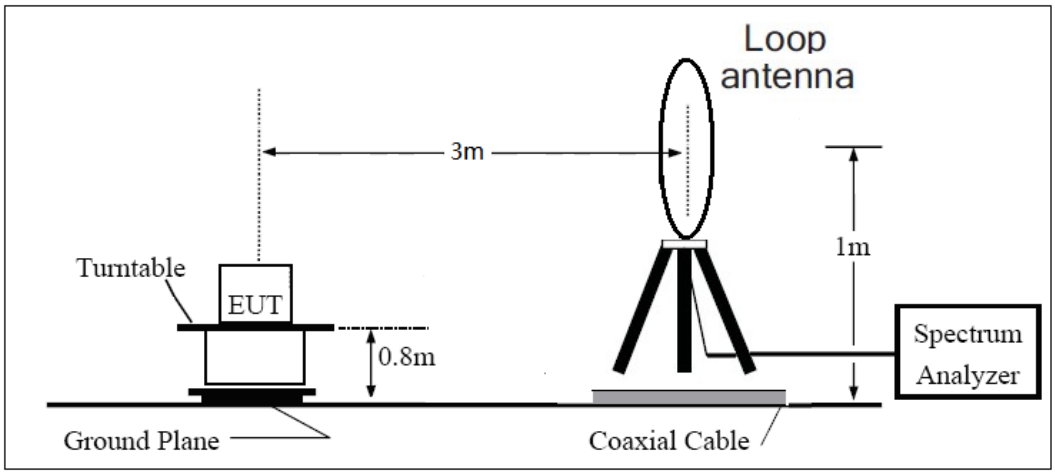
1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Below 1GHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable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

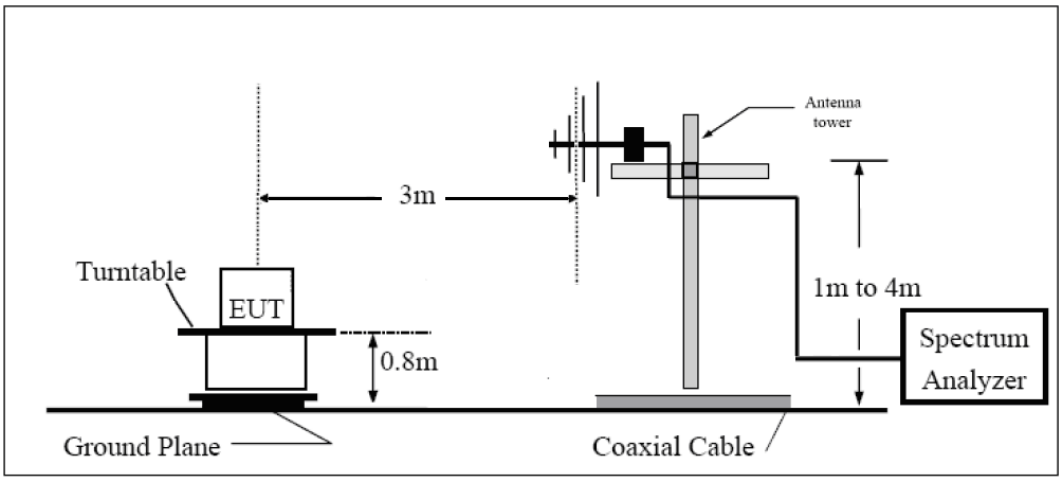
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

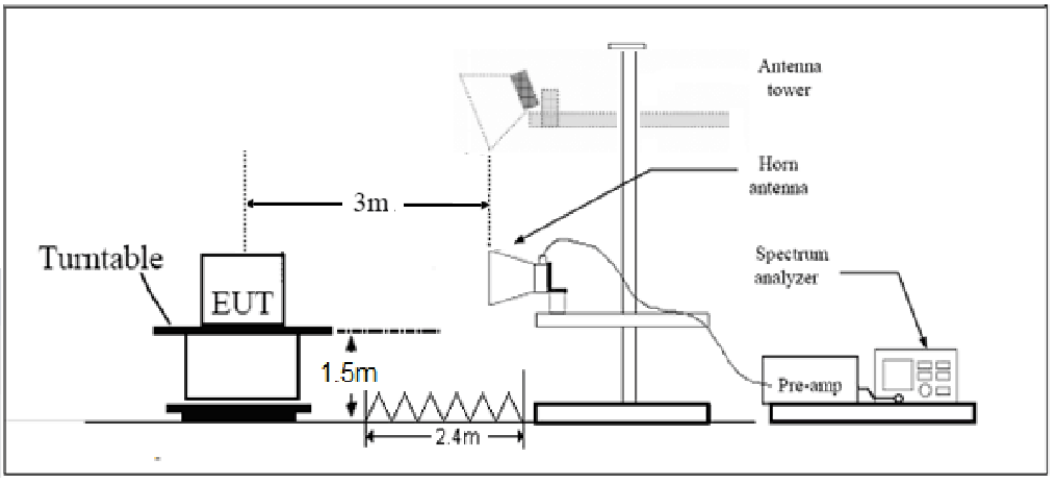
9KHz ~ 30MHz



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 log10 (P) dB.”

Rule Part 27.53 (g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Rule Part 27.53(f)For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Part 27.53 (h)/(g) Limit		-13 dBm
Part 27.53(f) Limit	Limit out of the band 1559-1610 MHz	-13 dBm
	Limit in the band 1559-1610 MHz	-40 dBm

Measurement Uncertainty

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

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.

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	-53.75	2.6	10.75	Horizontal	-45.60	-13.00	32.60	135
3	5197.5	-64.31	2.4	11.05	Horizontal	-55.66	-13.00	42.66	225
4	6930.0	-59.36	4.5	11.15	Horizontal	-52.71	-13.00	39.71	270
5	8662.5	-56.29	5.1	11.35	Horizontal	-50.04	-13.00	37.04	45
6	10395.0	-54.24	5.3	11.95	Horizontal	-47.59	-13.00	34.59	315
7	12127.5	-53.67	5.5	13.55	Horizontal	-45.62	-13.00	32.62	90
8	13860.0	-51.25	6.3	13.75	Horizontal	-43.80	-13.00	30.80	225
9	15592.5	-54.86	6.7	13.85	Horizontal	-47.71	-13.00	34.71	180
10	17325.0	-51.84	6.8	14.25	Horizontal	-44.39	-13.00	31.39	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 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	-53.39	2.6	10.75	Horizontal	-45.24	-13.00	32.24	0
3	5191.5	-66.06	2.4	11.05	Horizontal	-57.41	-13.00	44.41	180
4	6930.0	-58.71	4.5	11.15	Horizontal	-52.06	-13.00	39.06	45
5	8662.5	-57.50	5.1	11.35	Horizontal	-51.25	-13.00	38.25	270
6	10395.0	-54.46	5.3	11.95	Horizontal	-47.81	-13.00	34.81	225
7	12127.5	-55.86	5.5	13.55	Horizontal	-47.81	-13.00	34.81	315
8	13860.0	-51.93	6.3	13.75	Horizontal	-44.48	-13.00	31.48	180
9	15592.5	-55.63	6.7	13.85	Horizontal	-48.48	-13.00	35.48	90
10	17325.0	-52.49	6.8	14.25	Horizontal	-45.04	-13.00	32.04	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 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	3447.8	-54.70	2.6	10.75	Horizontal	-46.55	-13.00	33.55	180
3	5170.9	-62.04	2.4	11.05	Horizontal	-53.39	-13.00	40.39	225
4	6930.0	-60.02	4.5	11.15	Horizontal	-53.37	-13.00	40.37	90
5	8662.5	-56.03	5.1	11.35	Horizontal	-49.78	-13.00	36.78	315
6	10395.0	-55.36	5.3	11.95	Horizontal	-48.71	-13.00	35.71	180
7	12127.5	-55.11	5.5	13.55	Horizontal	-47.06	-13.00	34.06	45
8	13860.0	-50.68	6.3	13.75	Horizontal	-43.23	-13.00	30.23	270
9	15592.5	-55.60	6.7	13.85	Horizontal	-48.45	-13.00	35.45	180
10	17325.0	-51.97	6.8	14.25	Horizontal	-44.52	-13.00	31.52	135
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.0	-54.30	2.00	10.75	Horizontal	-47.70	-13.00	34.70	45
3	2122.5	-51.35	2.51	11.05	Horizontal	-44.96	-13.00	31.96	225
4	2830.0	-53.80	4.20	11.15	Horizontal	-49.00	-13.00	36.00	315
5	3537.5	-61.47	5.20	11.15	Horizontal	-57.67	-13.00	44.67	180
6	4245.0	-61.00	5.50	11.95	Horizontal	-56.70	-13.00	43.70	225
7	4952.5	-61.82	5.70	13.55	Horizontal	-56.12	-13.00	43.12	90
8	5660.0	-62.33	6.30	13.75	Horizontal	-57.03	-13.00	44.03	315
9	6367.5	-59.58	6.80	13.85	Horizontal	-54.68	-13.00	41.68	180
10	7075.0	-56.21	6.90	14.25	Horizontal	-51.01	-13.00	38.01	45
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.0	-55.30	2.00	10.75	Horizontal	-48.70	-13.00	35.70	135
3	2122.5	-49.99	2.51	11.05	Horizontal	-43.60	-13.00	30.60	45
4	2830.0	-55.00	4.20	11.15	Horizontal	-50.20	-13.00	37.20	315
5	3512.5	-61.92	5.20	11.15	Horizontal	-58.12	-13.00	45.12	315
6	4215.0	-60.90	5.50	11.95	Horizontal	-56.60	-13.00	43.60	45
7	4917.5	-62.00	5.70	13.55	Horizontal	-56.30	-13.00	43.30	270
8	5620.0	-60.91	6.30	13.75	Horizontal	-55.61	-13.00	42.61	225
9	6322.5	-59.08	6.80	13.85	Horizontal	-54.18	-13.00	41.18	180
10	7025.0	-55.98	6.90	14.25	Horizontal	-50.78	-13.00	37.78	135
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.0	-55.63	2.00	10.75	Horizontal	-49.03	-13.00	36.03	0
3	2122.5	-50.76	2.51	11.05	Horizontal	-44.37	-13.00	31.37	270
4	2830.0	-54.49	4.20	11.15	Horizontal	-49.69	-13.00	36.69	135
5	3537.5	-60.77	5.20	11.15	Horizontal	-56.97	-13.00	43.97	45
6	4245.0	-60.97	5.50	11.95	Horizontal	-56.67	-13.00	43.67	135
7	4952.5	-61.20	5.70	13.55	Horizontal	-55.50	-13.00	42.50	270
8	5660.0	-60.00	6.30	13.75	Horizontal	-54.70	-13.00	41.70	315
9	6367.5	-58.30	6.80	13.85	Horizontal	-53.40	-13.00	40.40	90
10	7075.0	-54.90	6.90	14.25	Horizontal	-49.70	-13.00	36.70	225
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1422.00	-59.65	2.00	10.15	Horizontal	-53.65	-13.00	40.65	270
3	2133.00	-57.86	2.51	11.05	Horizontal	-51.47	-13.00	38.47	0
4	2844.00	-51.79	4.20	11.15	Horizontal	-46.99	-13.00	33.99	135
5	3555.00	-55.65	5.20	11.15	Horizontal	-51.85	-13.00	38.85	0
6	4266.00	-52.15	5.50	11.95	Horizontal	-47.85	-13.00	34.85	45
7	4977.00	-53.31	5.70	13.55	Horizontal	-47.61	-13.00	34.61	90
8	5688.00	-53.98	6.30	13.75	Horizontal	-48.68	-13.00	35.68	180
9	6399.00	-52.15	6.80	13.85	Horizontal	-47.25	-13.00	34.25	45
10	7110.00	-51.85	6.90	14.25	Horizontal	-46.65	-13.00	33.65	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 13 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	1564.0	-57.56	2.00	10.75	Horizontal	-50.96	-40.00	10.96	90
Harmonic	**Frequency (MHz)**	**SG (dBm)**	**Cable Loss (dB)**	**Gain (dBi)**	**Antenna Polarization**	**ERP Level (dBm)**	**Limit (dBm)**	**Margin (dB)**	**Azimuth (deg)**
3	2346.0	-46.49	2.51	11.05	Horizontal	-40.10	-13.00	27.10	45
4	3120.0	-52.46	4.20	11.15	Horizontal	-47.66	-13.00	34.66	270
5	3901.0	-56.01	5.20	11.15	Horizontal	-52.21	-13.00	39.21	315
6	4692.0	-60.69	5.50	11.95	Horizontal	-56.39	-13.00	43.39	90
7	5474.0	-61.80	5.70	13.55	Horizontal	-56.10	-13.00	43.10	225
8	6256.0	-60.00	6.30	13.75	Horizontal	-54.70	-13.00	41.70	45
9	7038.0	-56.55	6.80	13.85	Horizontal	-51.65	-13.00	38.65	135
10	7820.0	-55.46	6.90	14.25	Horizontal	-50.26	-13.00	37.26	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 13 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1555.3	-53.60	2.00	10.75	Horizontal	-47.00	-13.00	34.00	225
3	2346.0	-46.89	2.51	11.05	Horizontal	-40.50	-13.00	27.50	90
4	3128.0	-51.59	4.20	11.15	Horizontal	-46.79	-13.00	33.79	225
5	3910.0	-57.69	5.20	11.15	Horizontal	-53.89	-13.00	40.89	135
6	4692.0	-60.69	5.50	11.95	Horizontal	-56.39	-13.00	43.39	90
7	5474.0	-62.06	5.70	13.55	Horizontal	-56.36	-13.00	43.36	270
8	6256.0	-59.50	6.30	13.75	Horizontal	-54.20	-13.00	41.20	315
9	7038.0	-54.99	6.80	13.85	Horizontal	-50.09	-13.00	37.09	180
10	7820.0	-55.32	6.90	14.25	Horizontal	-50.12	-13.00	37.12	225
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 66 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	3509.3	-55.57	2.6	10.75	Horizontal	-47.42	-13.00	34.42	45
3	5262.5	-64.92	2.4	11.05	Horizontal	-56.27	-13.00	43.27	315
4	7018.0	-58.87	4.5	11.15	Horizontal	-52.22	-13.00	39.22	270
5	8772.5	-55.73	5.1	11.35	Horizontal	-49.48	-13.00	36.48	135
6	10527.0	-55.13	5.3	11.95	Horizontal	-48.48	-13.00	35.48	225
7	12281.5	-55.29	5.5	13.55	Horizontal	-47.24	-13.00	34.24	90
8	14036.0	-52.23	6.3	13.75	Horizontal	-44.78	-13.00	31.78	180
9	15790.5	-54.15	6.7	13.85	Horizontal	-47.00	-13.00	34.00	0
10	17545.0	-56.73	6.8	14.25	Horizontal	-49.28	-13.00	36.28	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 66 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	3486.0	-57.12	2.6	10.75	Horizontal	-48.97	-13.00	35.97	90
3	5229.0	-64.43	2.4	11.05	Horizontal	-55.78	-13.00	42.78	135
4	6972.0	-57.98	4.5	11.15	Horizontal	-51.33	-13.00	38.33	270
5	8715.0	-56.78	5.1	11.35	Horizontal	-50.53	-13.00	37.53	45
6	10458.0	-54.82	5.3	11.95	Horizontal	-48.17	-13.00	35.17	0
7	12201.0	-55.44	5.5	13.55	Horizontal	-47.39	-13.00	34.39	180
8	13944.0	-52.99	6.3	13.75	Horizontal	-45.54	-13.00	32.54	90
9	15687.0	-55.15	6.7	13.85	Horizontal	-48.00	-13.00	35.00	315
10	17430.0	-52.44	6.8	14.25	Horizontal	-44.99	-13.00	31.99	225
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

LTE Band 66 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	3472.9	-55.88	2.6	10.75	Horizontal	-47.73	-13.00	34.73	180
3	5209.0	-64.27	2.4	11.05	Horizontal	-55.62	-13.00	42.62	45
4	6945.8	-59.17	4.5	11.15	Horizontal	-52.52	-13.00	39.52	315
5	8682.0	-56.90	5.1	11.35	Horizontal	-50.65	-13.00	37.65	90
6	10418.6	-53.59	5.3	11.95	Horizontal	-46.94	-13.00	33.94	225
7	12455.0	-54.17	5.5	13.55	Horizontal	-46.12	-13.00	33.12	180
8	13891.5	-53.03	6.3	13.75	Horizontal	-45.58	-13.00	32.58	270
9	15627.0	-54.96	6.7	13.85	Horizontal	-47.81	-13.00	34.81	0
10	17364.4	-52.48	6.8	14.25	Horizontal	-45.03	-13.00	32.03	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 85 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1414.0	-54.43	2.00	10.75	Horizontal	-45.68	-13.00	32.68	270
3	2121.0	-56.94	2.51	11.05	Horizontal	-48.40	-13.00	35.40	225
4	2828.0	-58.10	4.20	11.15	Horizontal	-51.15	-13.00	38.15	0
5	3535.0	-63.63	5.20	11.15	Horizontal	-57.68	-13.00	44.68	315
6	4242.0	-62.85	5.50	11.95	Horizontal	-56.40	-13.00	43.40	225
7	4949.0	-64.62	5.70	13.55	Horizontal	-56.77	-13.00	43.77	90
8	5656.0	-63.68	6.30	13.75	Horizontal	-56.23	-13.00	43.23	315
9	6363.0	-61.06	6.80	13.85	Horizontal	-54.01	-13.00	41.01	45
10	7070.0	-58.41	6.90	14.25	Horizontal	-51.06	-13.00	38.06	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 85 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1405.3	-44.11	2.00	10.75	Horizontal	-35.36	-13.00	22.36	180
3	2108.0	-51.18	2.51	11.05	Horizontal	-42.64	-13.00	29.64	315
4	2810.8	-54.18	4.20	11.15	Horizontal	-47.23	-13.00	34.23	45
5	3535.0	-63.06	5.20	11.15	Horizontal	-57.11	-13.00	44.11	225
6	4242.0	-63.08	5.50	11.95	Horizontal	-56.63	-13.00	43.63	315
7	4949.0	-64.21	5.70	13.55	Horizontal	-56.36	-13.00	43.36	90
8	5656.0	-62.38	6.30	13.75	Horizontal	-54.93	-13.00	41.93	315
9	6363.0	-61.23	6.80	13.85	Horizontal	-54.18	-13.00	41.18	45
10	7070.0	-58.62	6.90	14.25	Horizontal	-51.27	-13.00	38.27	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.									

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
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
Preampflier	R&S	SCU18	102327	2019-05-19	2020-05-18
Preampflier	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 ********