



Appendix B

E-UTRA Band 13



CONTENT

	Page
1 EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA.....	3
2 PEAK-TO-AVERAGE RATIO	6
2.1 FOR LTE	7
2.1.1 Test Band = LTE band13.....	7
3 MODULATION CHARACTERISTICS	9
3.1 FOR LTE	9
3.1.1 Test Band = LTE band13.....	9
4 BANDWIDTH	11
4.1 FOR LTE	12
4.1.1 Test Band = LTE band13.....	12
5 BAND EDGES COMPLIANCE	17
5.1 FOR LTE	17
5.1.1 Test Band = LTE band13.....	17
6 SPURIOUS EMISSION AT ANTENNA TERMINAL.....	26
6.1 FOR LTE	26
6.1.1 Test Band = LTE band13.....	26
7 FIELD STRENGTH OF SPURIOUS RADIATION	28
7.1 FOR LTE	28
7.1.1 Test Band = LTE band13.....	28
8 FREQUENCY STABILITY	29
8.1 FREQUENCY ERROR VS. VOLTAGE	29
8.2 FREQUENCY ERROR VS. TEMPERATURE	30



1 Effective (Isotropic) Radiated Power Output Data

Effective Radiated Power of Transmitter (ERP) for LTE BAND 13

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM1	5M	LCH	RB1#0	20.79	19.79	34.77	PASS
				RB1#13	20.89	19.89	34.77	PASS
				RB1#24	20.92	19.92	34.77	PASS
				RB12#0	19.88	18.88	34.77	PASS
				RB12#6	19.88	18.88	34.77	PASS
				RB12#13	19.96	18.96	34.77	PASS
				RB25#0	19.91	18.91	34.77	PASS
			MCH	RB1#0	20.91	19.91	34.77	PASS
				RB1#13	20.79	19.79	34.77	PASS
				RB1#24	20.87	19.87	34.77	PASS
				RB12#0	19.87	18.87	34.77	PASS
				RB12#6	19.78	18.78	34.77	PASS
				RB12#13	19.81	18.81	34.77	PASS
				RB25#0	19.84	18.84	34.77	PASS
			HCH	RB1#0	20.81	19.81	34.77	PASS
				RB1#13	20.87	19.87	34.77	PASS
				RB1#24	20.74	19.74	34.77	PASS
				RB12#0	19.77	18.77	34.77	PASS
				RB12#6	19.90	18.90	34.77	PASS
				RB12#13	19.82	18.82	34.77	PASS
				RB25#0	19.76	18.76	34.77	PASS



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Report No.: SZEM1701001110301

Page: 4 of 30

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM2	5M	LCH	RB1#0	19.71	18.71	34.77	PASS
				RB1#13	19.80	18.80	34.77	PASS
				RB1#24	19.82	18.82	34.77	PASS
				RB12#0	18.87	17.87	34.77	PASS
				RB12#6	18.88	17.88	34.77	PASS
				RB12#13	18.90	17.90	34.77	PASS
				RB25#0	18.87	17.87	34.77	PASS
			MCH	RB1#0	19.76	18.76	34.77	PASS
				RB1#13	19.76	18.76	34.77	PASS
				RB1#24	19.82	18.82	34.77	PASS
				RB12#0	18.86	17.86	34.77	PASS
				RB12#6	18.78	17.78	34.77	PASS
				RB12#13	18.80	17.80	34.77	PASS
				RB25#0	18.82	17.82	34.77	PASS
			HCH	RB1#0	19.68	18.68	34.77	PASS
				RB1#13	19.8	18.80	34.77	PASS
				RB1#24	19.69	18.69	34.77	PASS
				RB12#0	18.79	17.79	34.77	PASS
				RB12#6	18.89	17.89	34.77	PASS
				RB12#13	18.79	17.79	34.77	PASS
				RB25#0	18.81	17.81	34.77	PASS



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Report No.: SZEM1701001110301

Page: 5 of 30

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM1	10M	MCH	RB1#0	20.80	19.80	34.77	PASS
				RB1#25	20.80	19.80	34.77	PASS
				RB1#49	20.79	19.79	34.77	PASS
				RB25#0	19.85	18.85	34.77	PASS
				RB25#13	19.93	18.93	34.77	PASS
				RB25#25	19.82	18.82	34.77	PASS
				RB50#0	19.92	18.92	34.77	PASS
	LTE/TM2	10M	MCH	RB1#0	19.74	18.74	34.77	PASS
				RB1#25	19.73	18.73	34.77	PASS
				RB1#49	19.72	18.72	34.77	PASS
				RB25#0	18.91	17.91	34.77	PASS
				RB25#13	18.93	17.93	34.77	PASS
				RB25#25	18.78	17.78	34.77	PASS
				RB50#0	18.90	17.90	34.77	PASS

Note:

a: For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]$$

b: SGP=Signal Generator Level

c: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMSNote:



2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
Band 13	TM1/10M	MCH	5.30	13	PASS
	TM2/10M	MCH	6.09	13	PASS



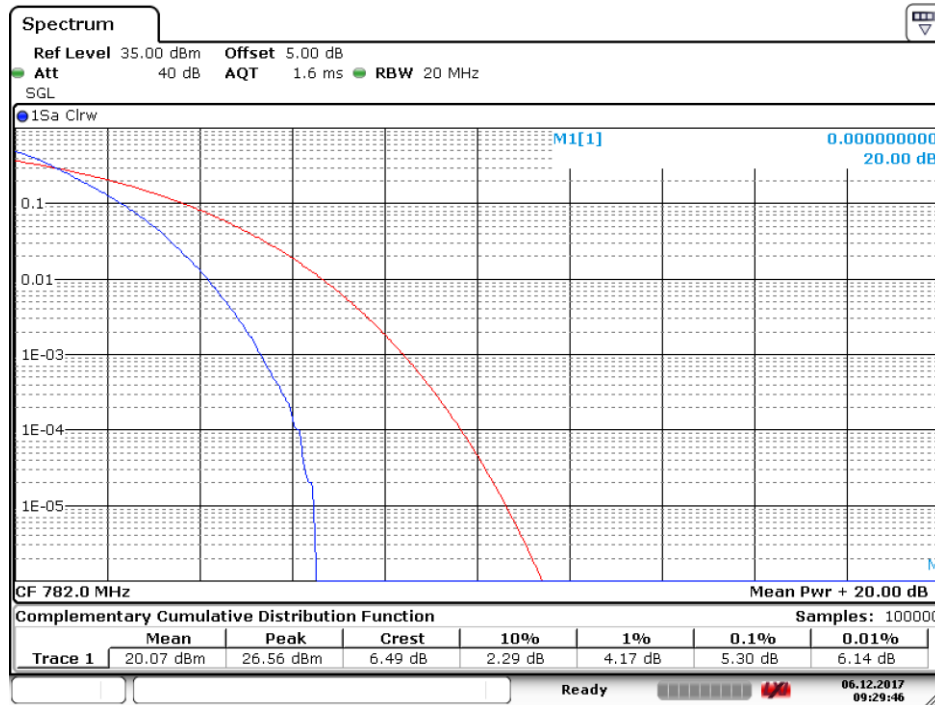
Part II - Test Plots

2.1 For LTE

2.1.1 Test Band = LTE band13

2.1.1.1 Test Mode = LTE/TM1.Bandwidth=10MHz

2.1.1.1.1 Test Channel = MCH

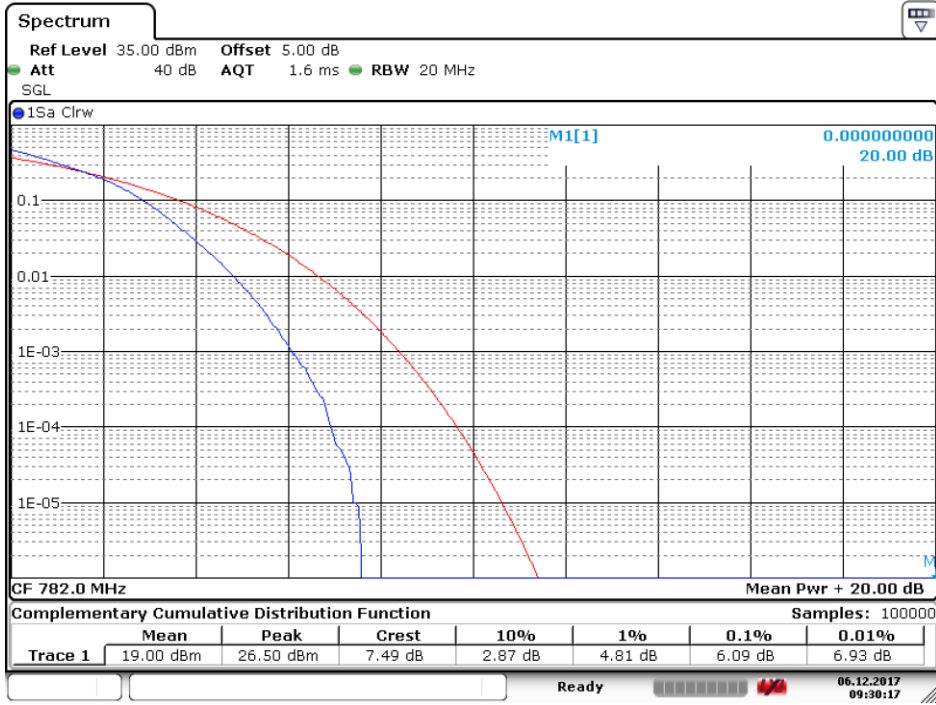


Date: 6.DEC.2017 09:29:46



2.1.1.2 Test Mode = LTE/TM2.Bandwidth=10MHz

2.1.1.2.1 Test Channel = MCH



Date: 6.DEC.2017 09:30:17

3 Modulation Characteristics

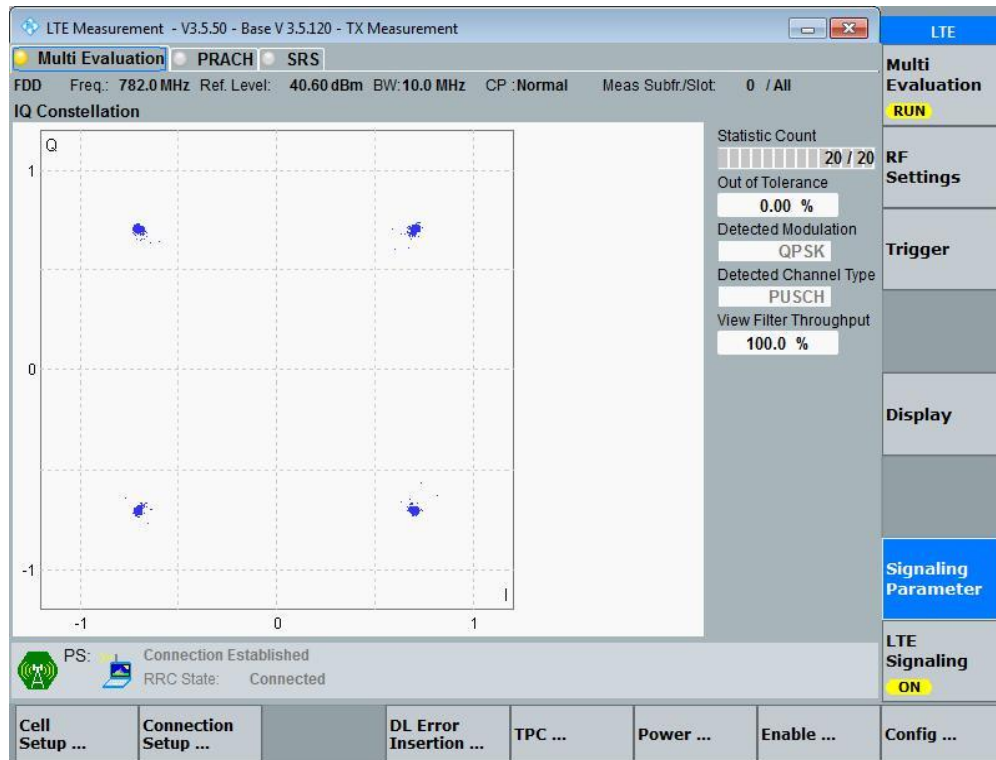
Part I - Test Plots

3.1 For LTE

3.1.1 Test Band = LTE band13

3.1.1.1 Test Mode = LTE /TM1 10MHz

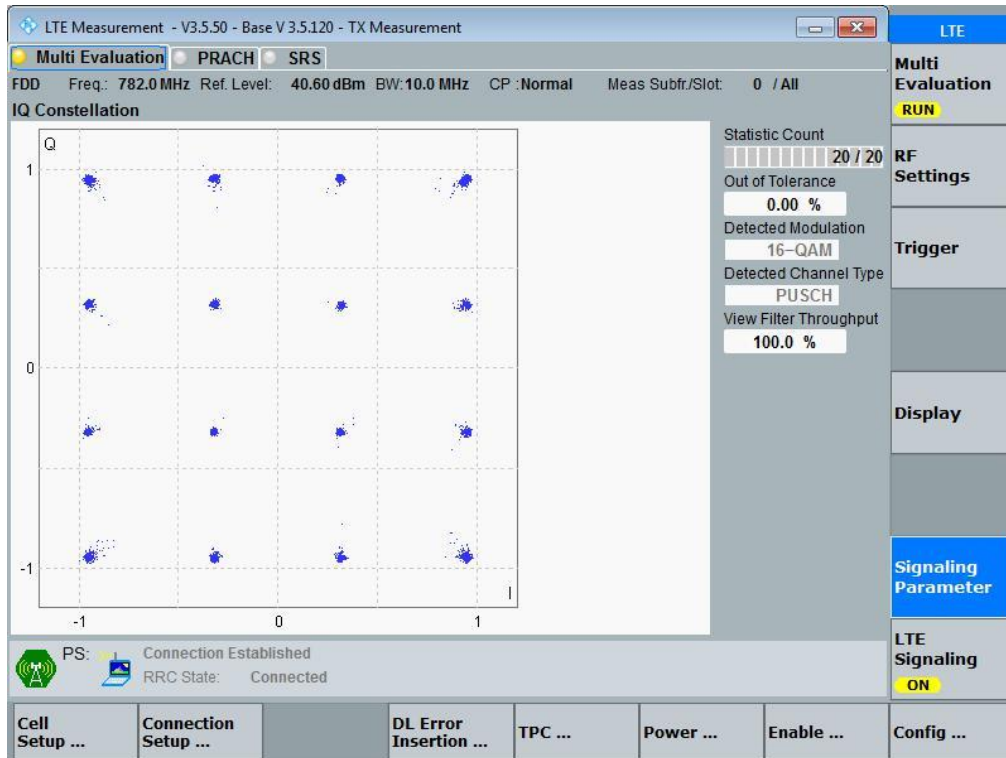
3.1.1.1.1 Test Channel = MCH





3.1.1.2 Test Mode = LTE /TM2 10MHz

3.1.1.2.1 Test Channel = MCH





4 Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
Band 13	TM1/ 5MHz	LCH	4.49	4.87	PASS
		MCH	4.47	4.86	PASS
		HCH	4.49	4.93	PASS
	TM2/ 5MHz	LCH	4.48	4.91	PASS
		MCH	4.48	4.90	PASS
		HCH	4.49	4.92	PASS
	TM1/10MHz	MCH	8.93	9.71	PASS
TM2/10MHz	MCH	8.93	9.67	PASS	

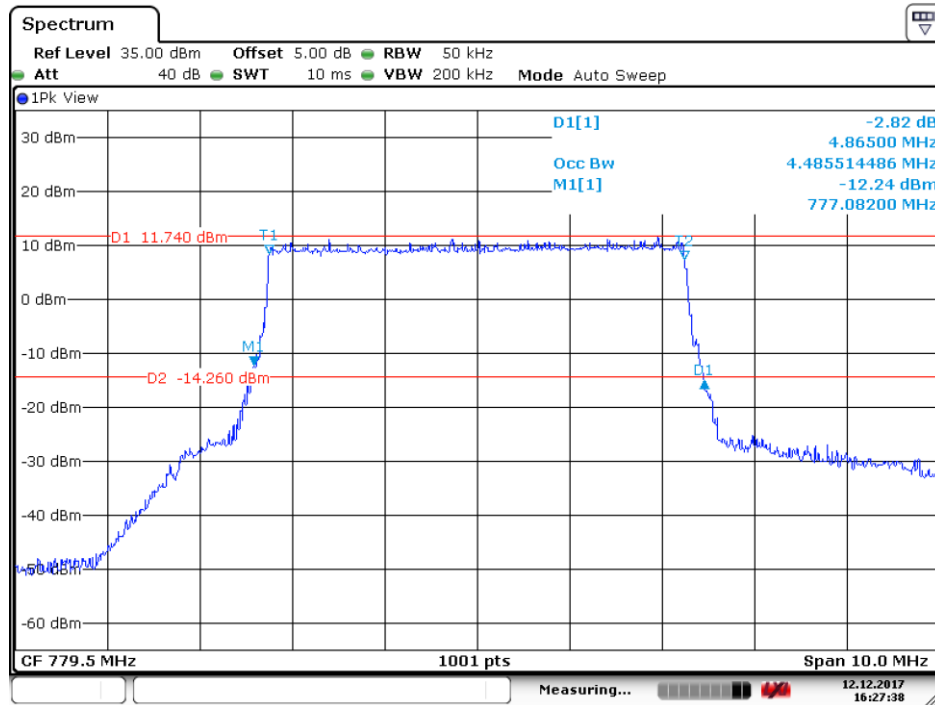


4.1 For LTE

4.1.1 Test Band = LTE band13

4.1.1.1 Test Mode = LTE/TM1 5MHz

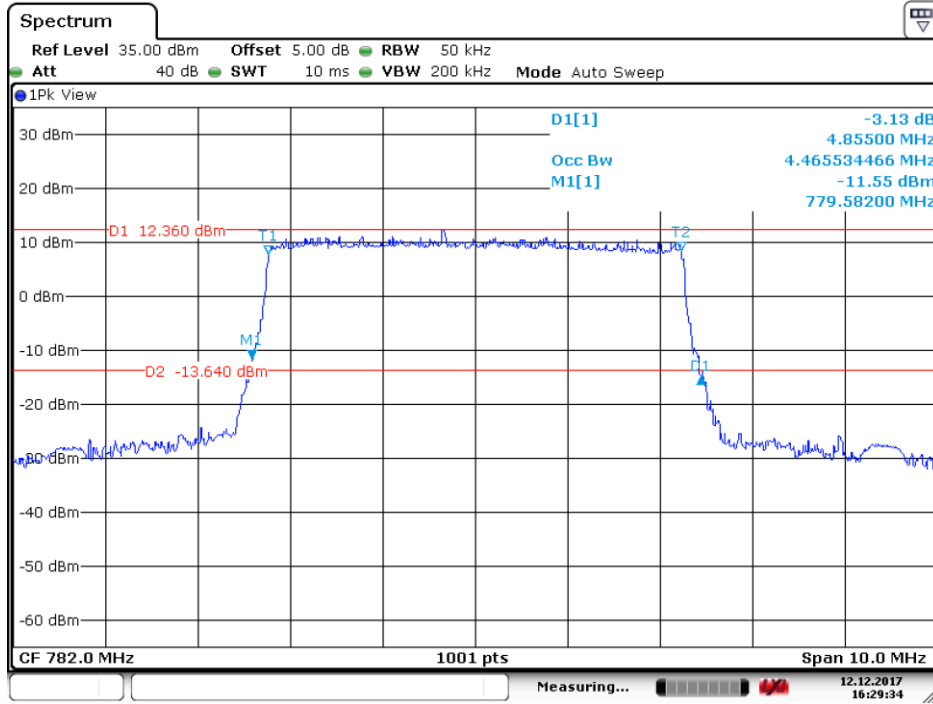
4.1.1.1.1 Test Channel = LCH



Date: 12.DEC.2017 16:27:39

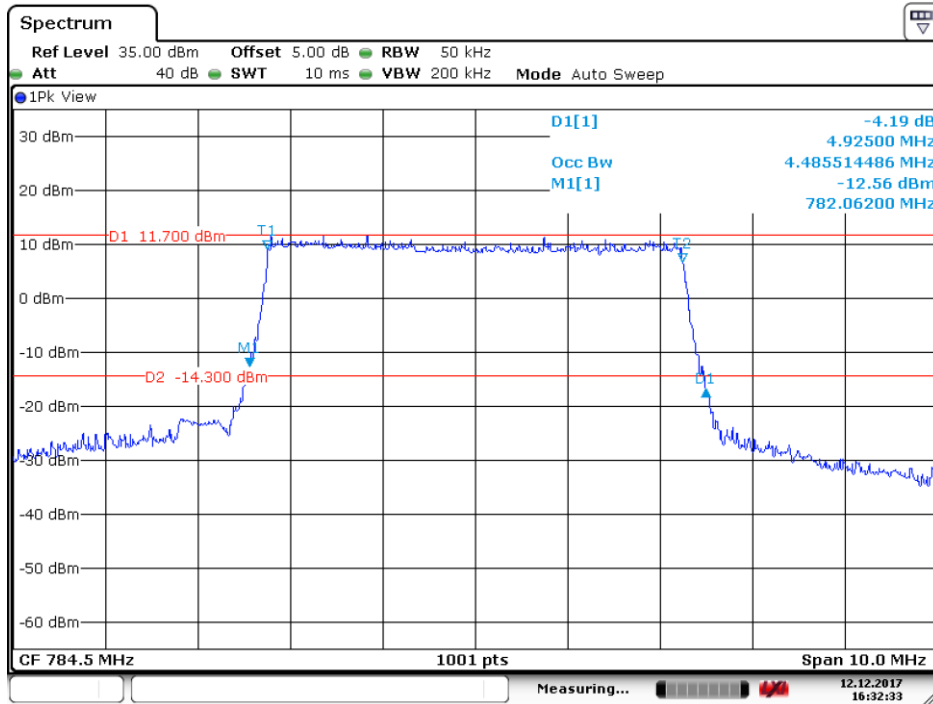


4.1.1.1.2 Test Channel = MCH



Date: 12.DEC.2017 16:29:34

4.1.1.1.3 Test Channel = HCH

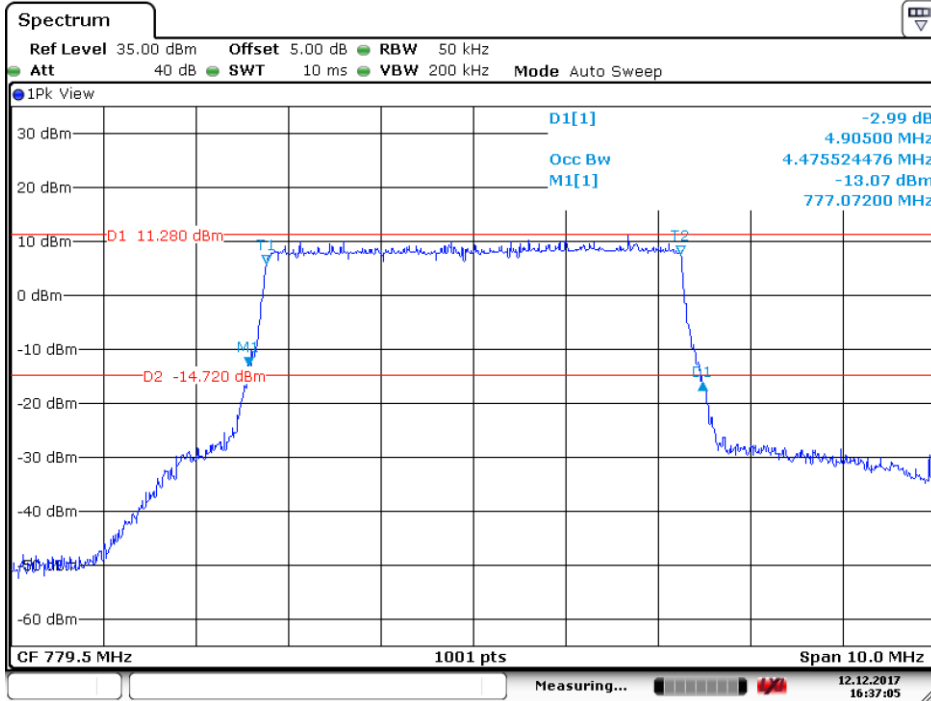


Date: 12.DEC.2017 16:32:34



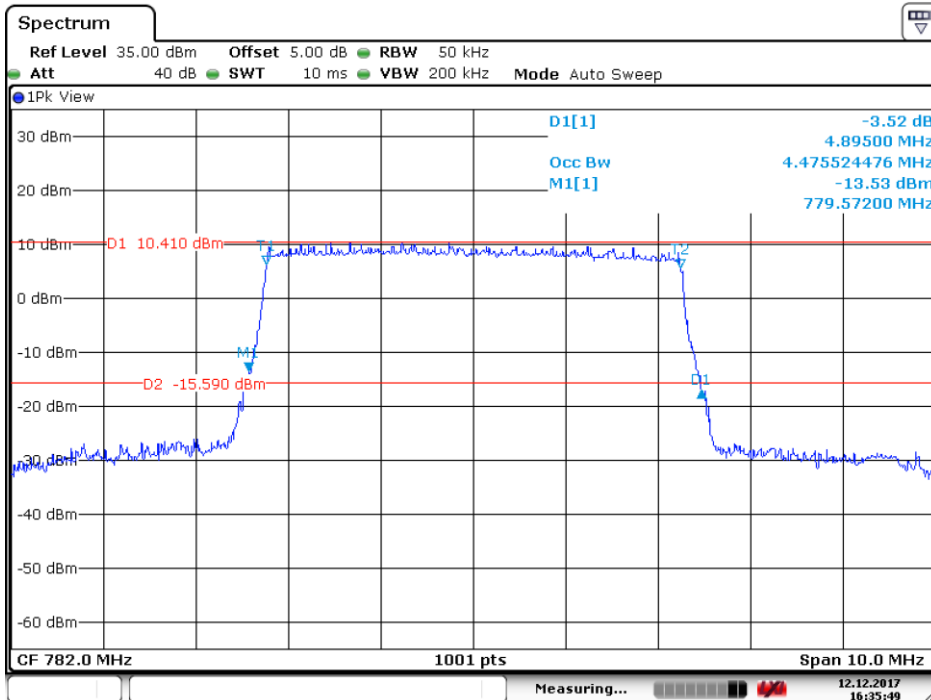
4.1.1.2 Test Mode = LTE/TM2 5MHz

4.1.1.2.1 Test Channel = LCH



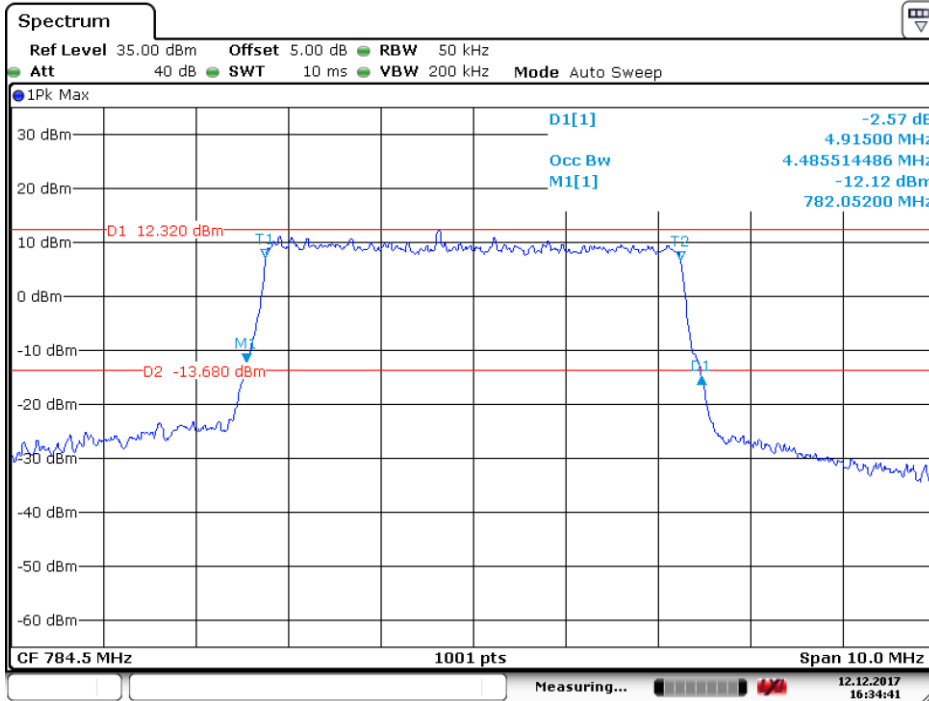
Date: 12.DEC.2017 16:37:06

4.1.1.2.2 Test Channel = MCH



Date: 12.DEC.2017 16:35:49

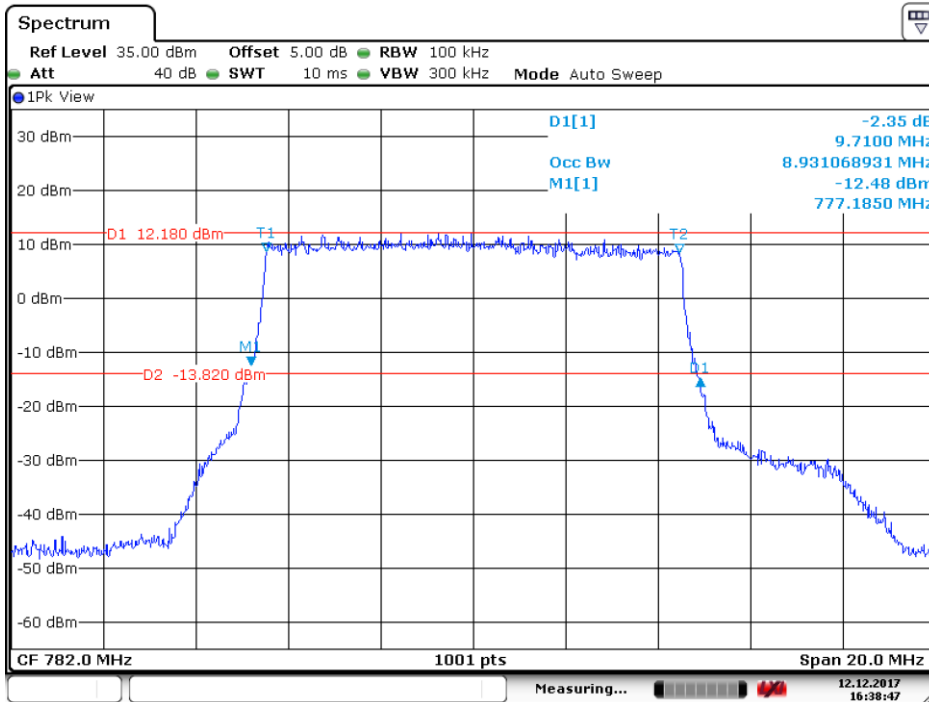
4.1.1.2.3 Test Channel = HCH



Date: 12.DEC.2017 16:34:41

4.1.1.3 Test Mode = LTE/TM1 10MHz

4.1.1.3.1 Test Channel = MCH

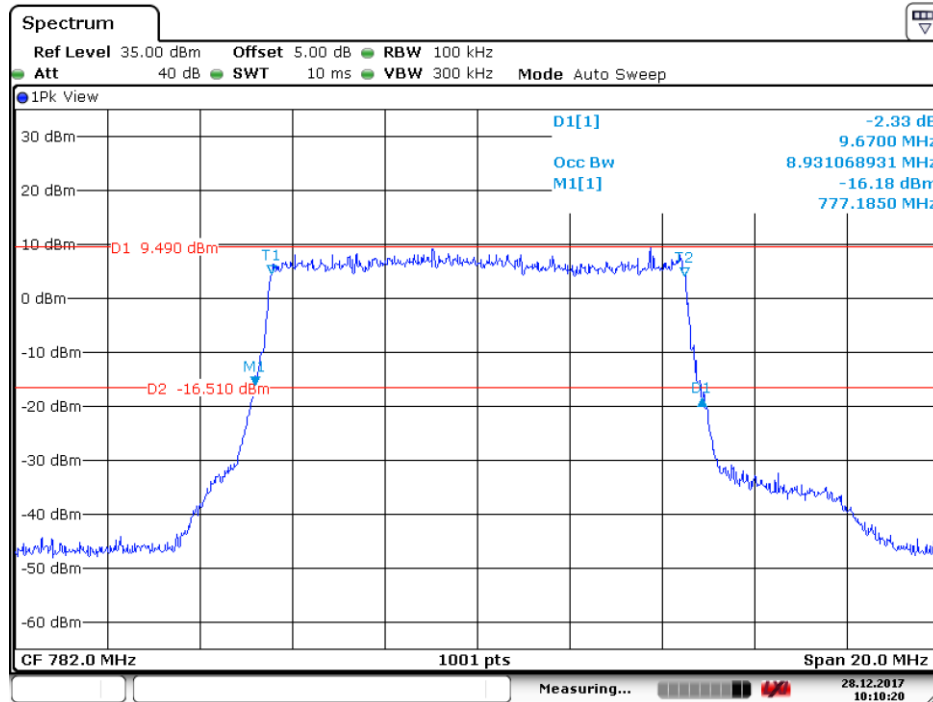


Date: 12.DEC.2017 16:38:47



4.1.1.4 Test Mode = LTE/TM2 10MHz

4.1.1.4.1 Test Channel = MCH



Date: 28.DEC.2017 10:10:20

5 Band Edges Compliance

Part I –

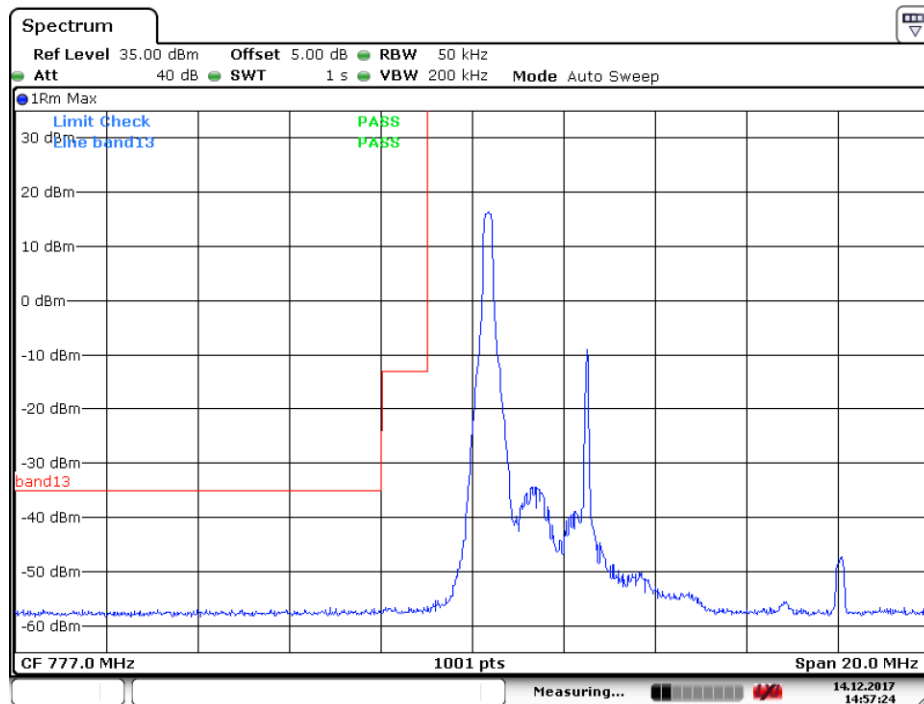
5.1 For LTE

5.1.1 Test Band = LTE band13

5.1.1.1 Test Mode = LTE/TM1 5MHz

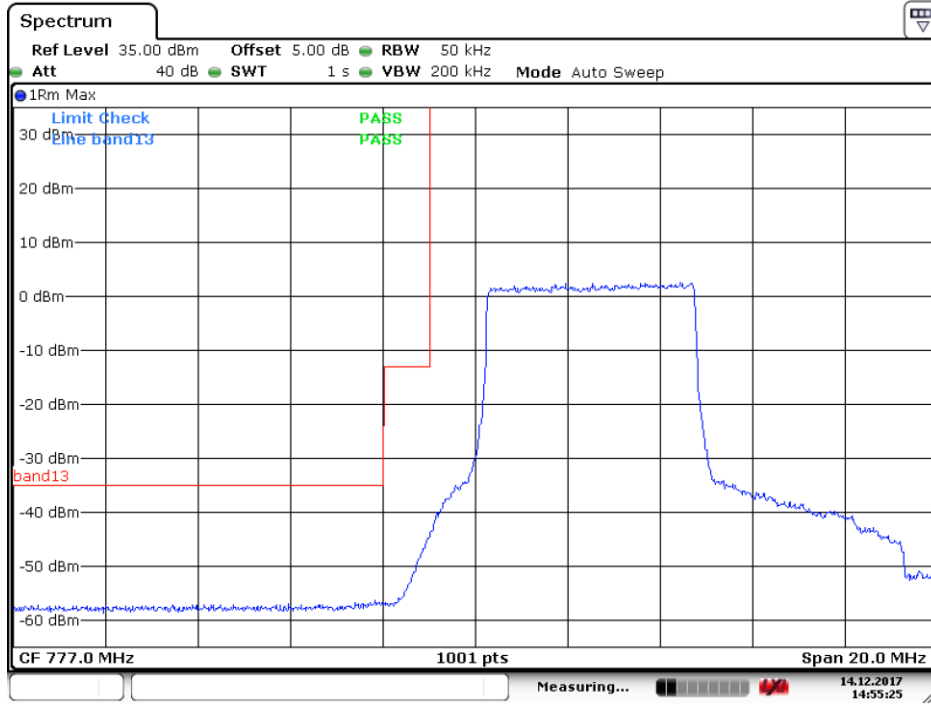
5.1.1.1.1 Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB



Date: 14.DEC.2017 14:57:24

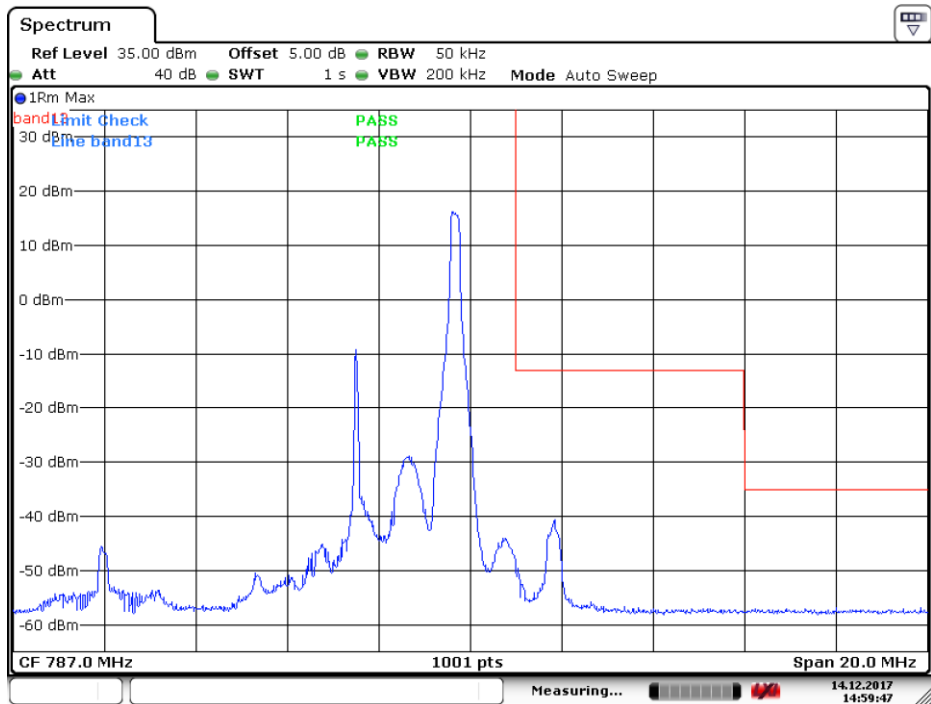
5.1.1.1.2 Test RB=25RB



Date: 14.DEC.2017 14:55:25

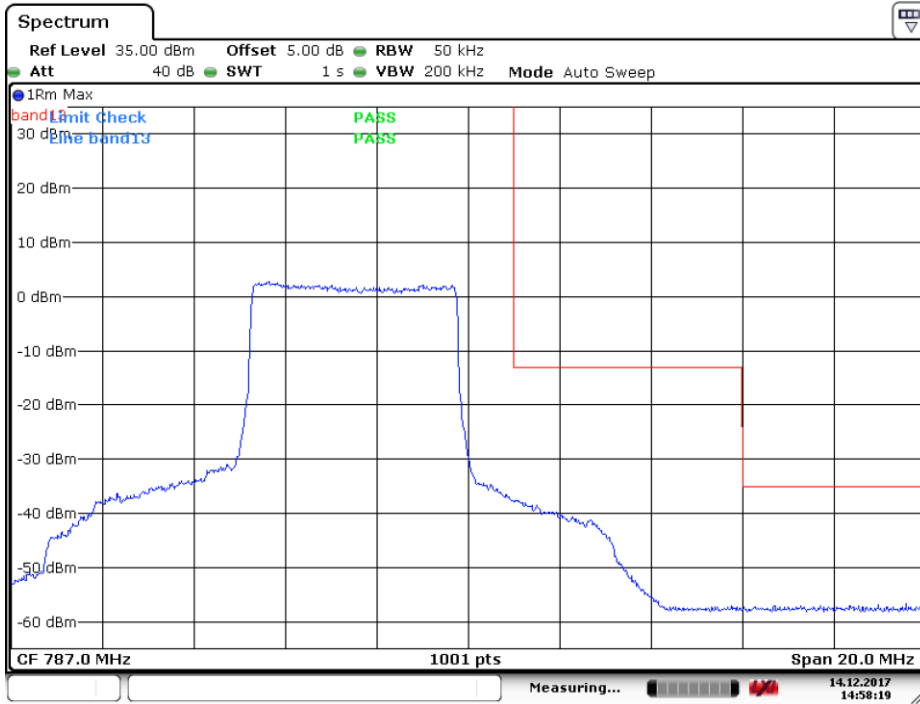
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 14.DEC.2017 14:59:47

5.1.1.1.2.2 Test RB=25RB

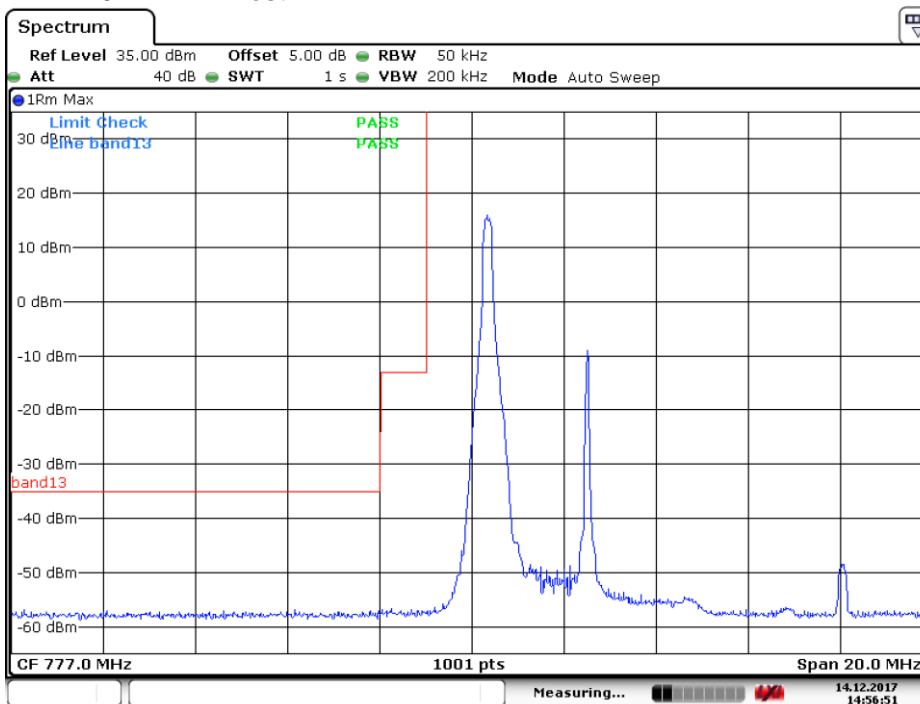


Date: 14.DEC.2017 14:58:19

5.1.1.2 Test Mode = LTE/TM2 5MHz

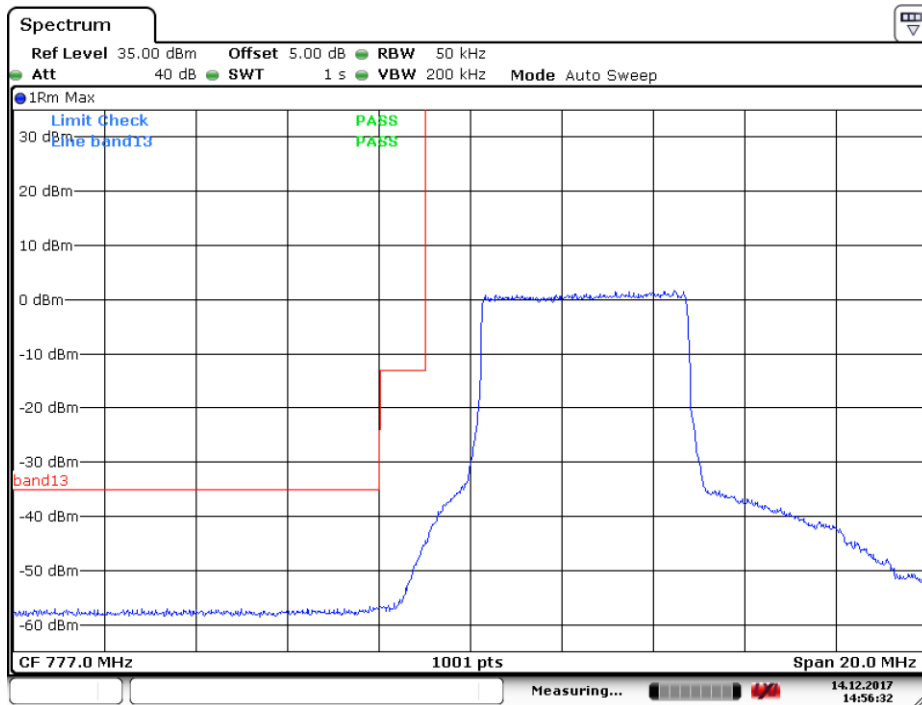
5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



Date: 14.DEC.2017 14:56:51

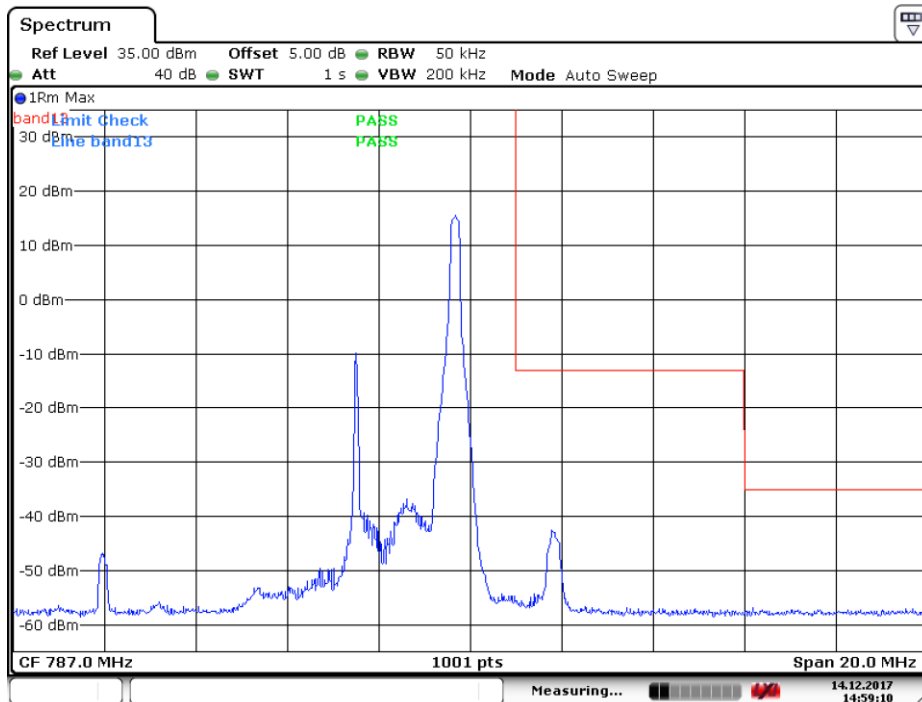
5.1.1.2.1.2 Test RB=25RB



Date: 14.DEC.2017 14:56:32

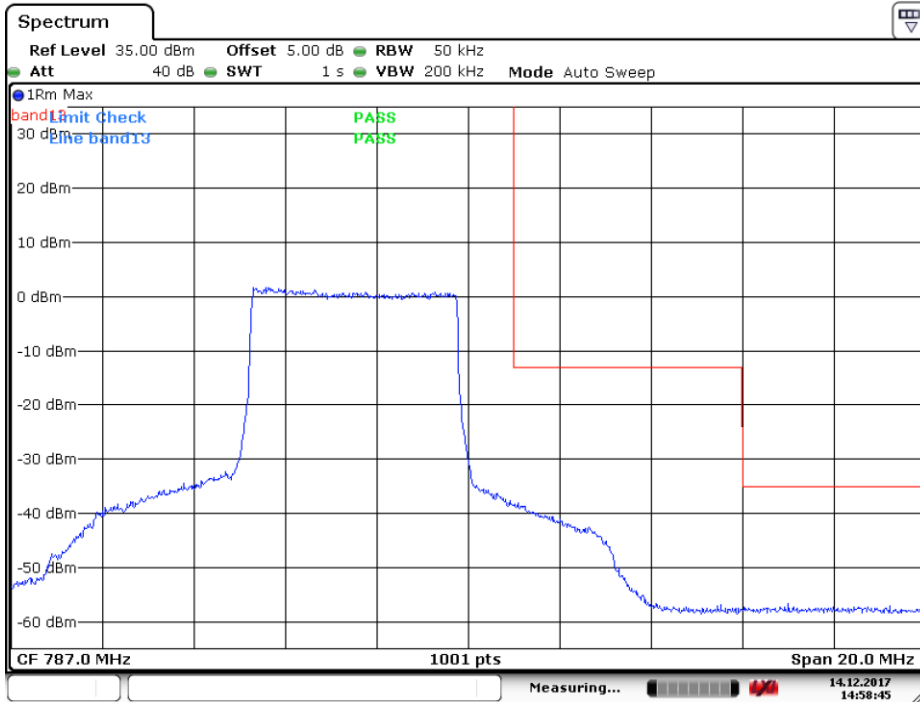
5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 14.DEC.2017 14:59:10

5.1.1.2.2 Test RB=25RB

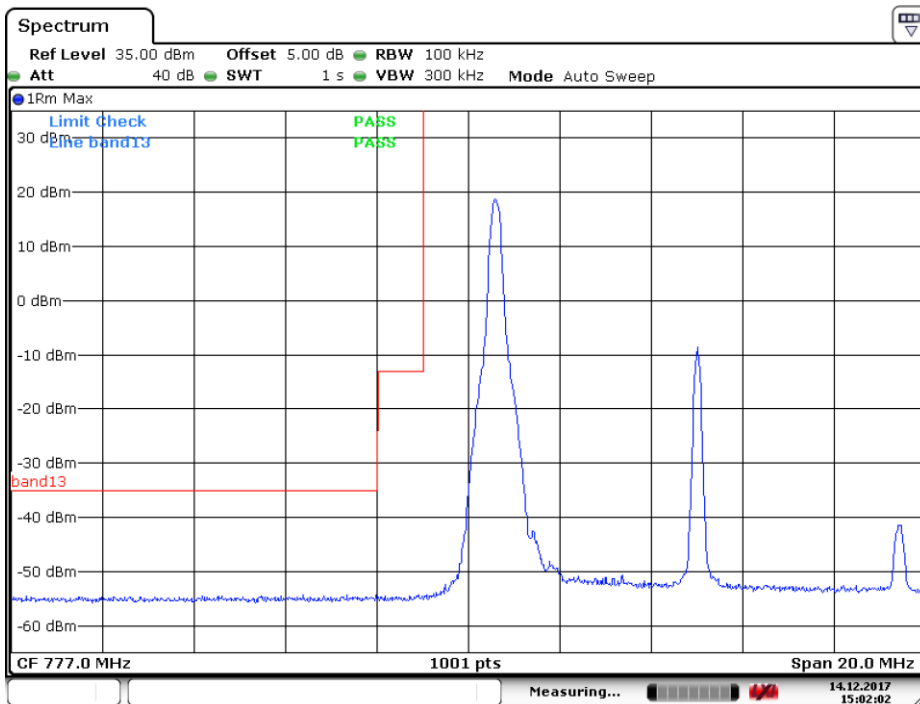


Date: 14.DEC.2017 14:58:45

5.1.1.3 Test Mode = LTE/TM1 10MHz

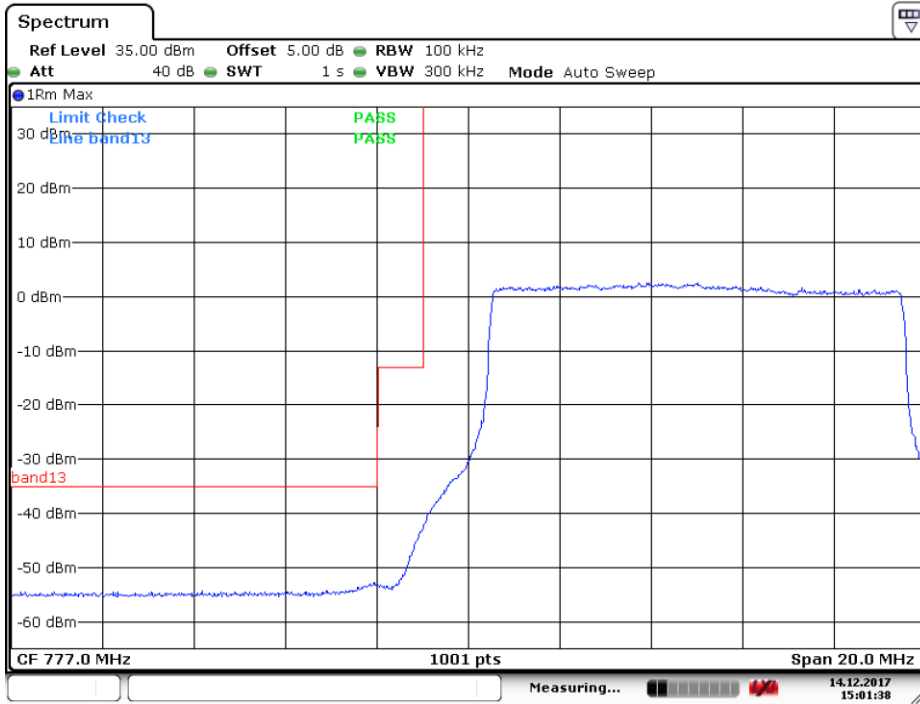
5.1.1.3.1 Test Channel = LCH

5.1.1.3.1.1 Test RB=1RB



Date: 14.DEC.2017 15:02:02

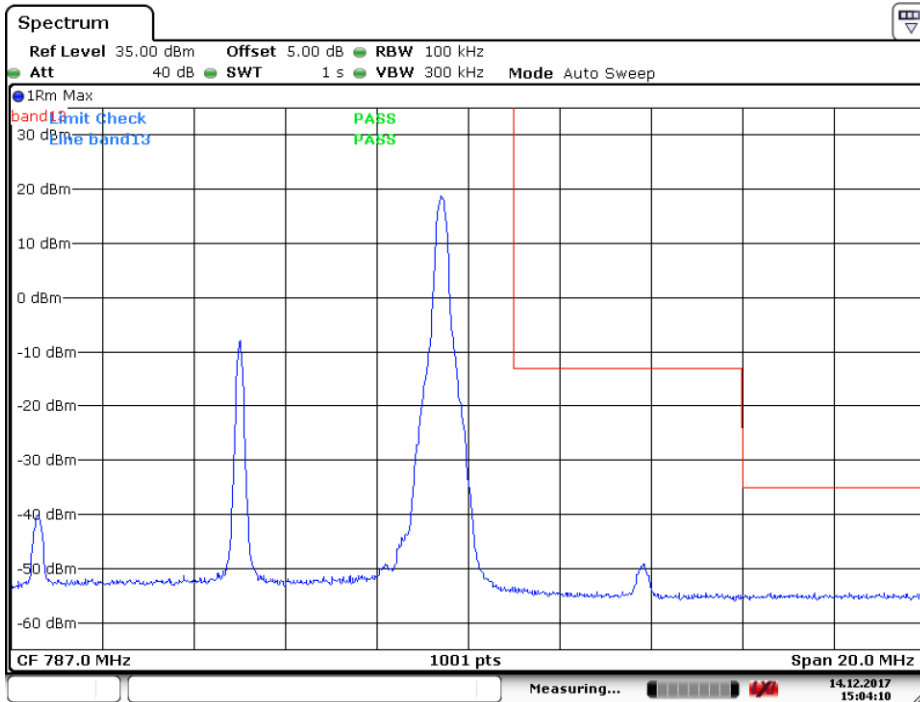
5.1.1.3.1.2 Test RB=50RB



Date: 14.DEC.2017 15:01:38

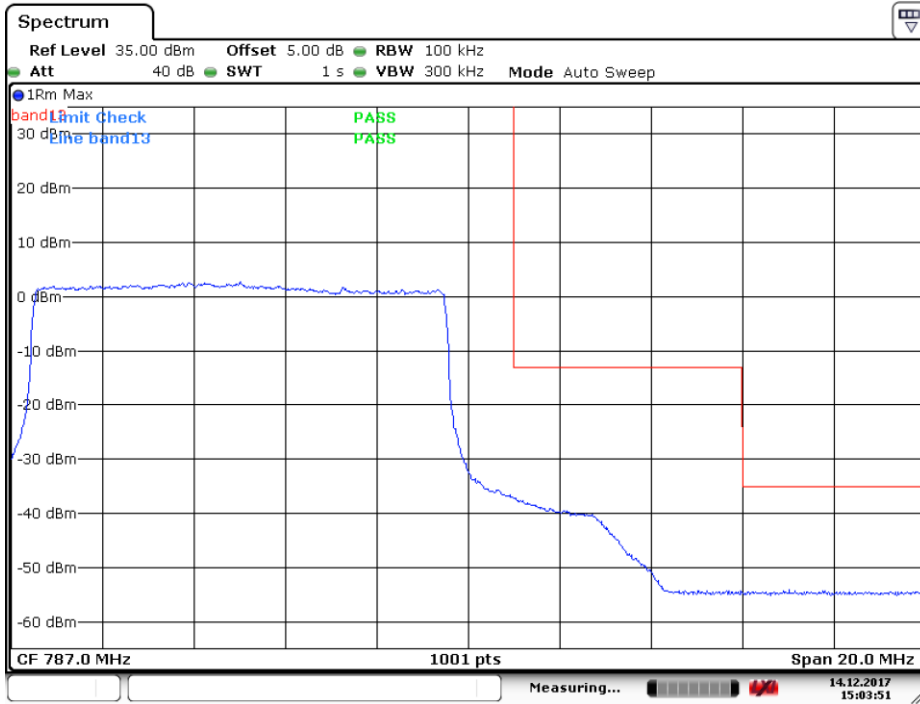
5.1.1.3.2 Test Channel = HCH

5.1.1.3.2.1 Test RB=1RB



Date: 14.DEC.2017 15:04:10

5.1.1.3.2.2 Test RB=50RB

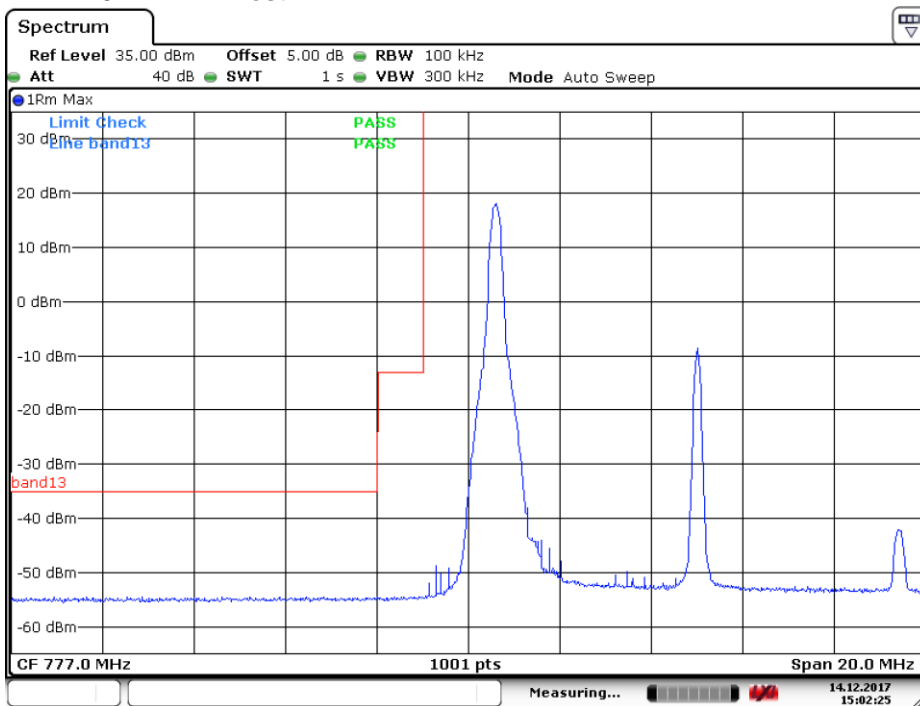


Date: 14.DEC.2017 15:03:51

5.1.1.4 Test Mode = LTE/TM2 10MHz

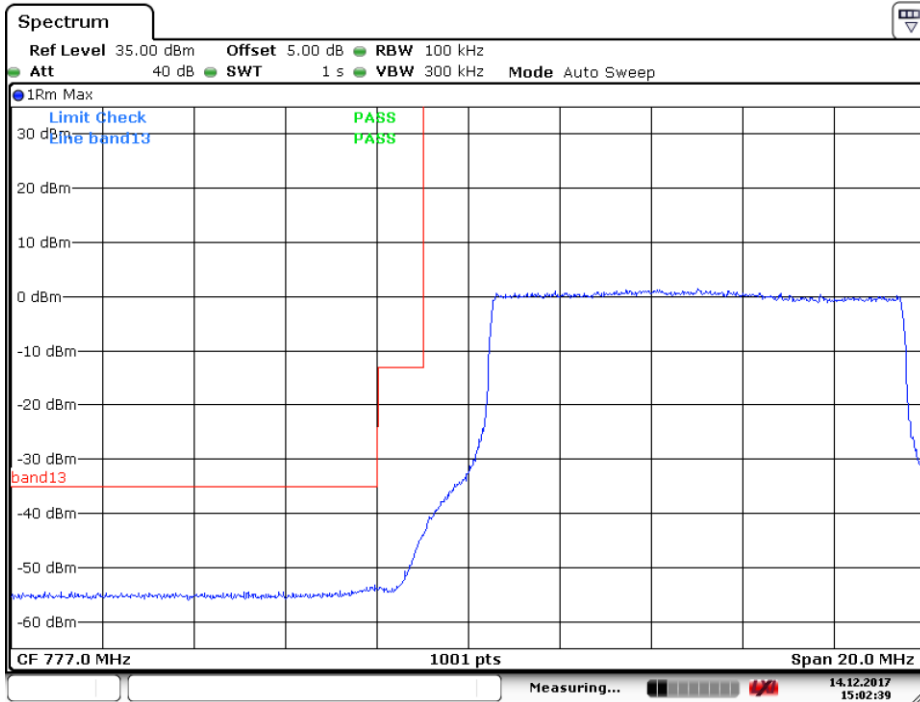
5.1.1.4.1 Test Channel = LCH

5.1.1.4.1.1 Test RB=1RB



Date: 14.DEC.2017 15:02:26

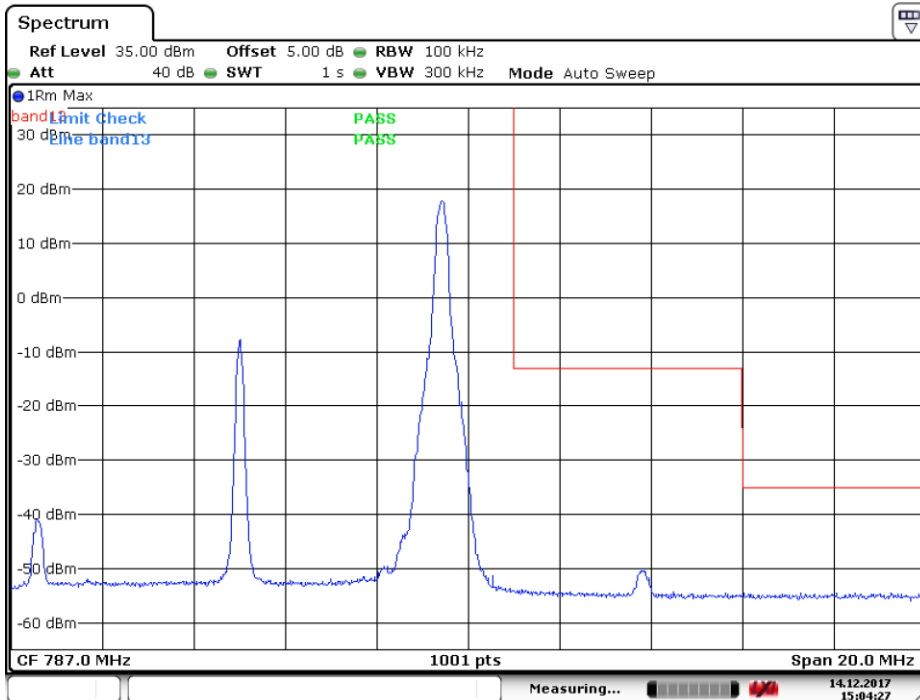
5.1.1.4.1.2 Test RB=50RB



Date: 14.DEC.2017 15:02:39

5.1.1.4.2 Test Channel = HCH

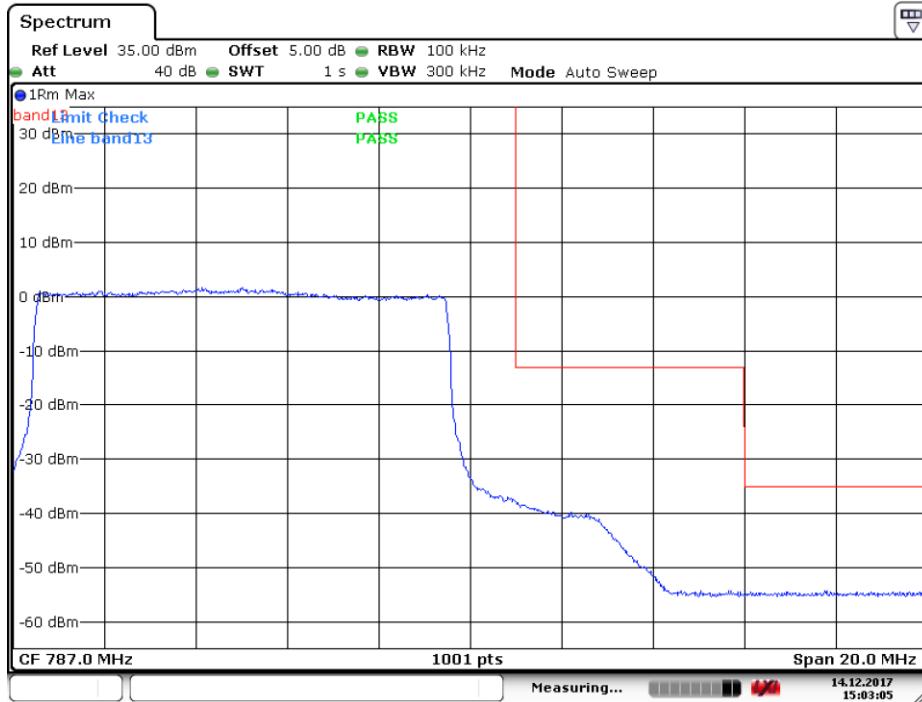
5.1.1.4.2.1 Test RB=1RB



Date: 14.DEC.2017 15:04:27



5.1.1.4.2.2 Test RB=50RB



Date: 14.DEC.2017 15:03:06

6 Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k \cdot (Span / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

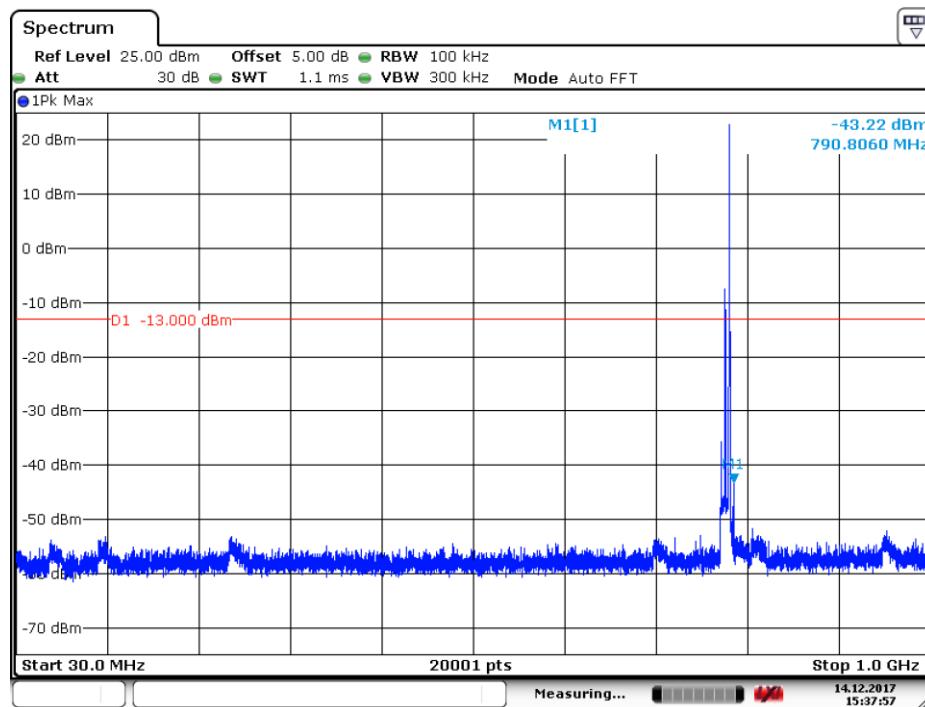
Part I - Test Plots

6.1 For LTE

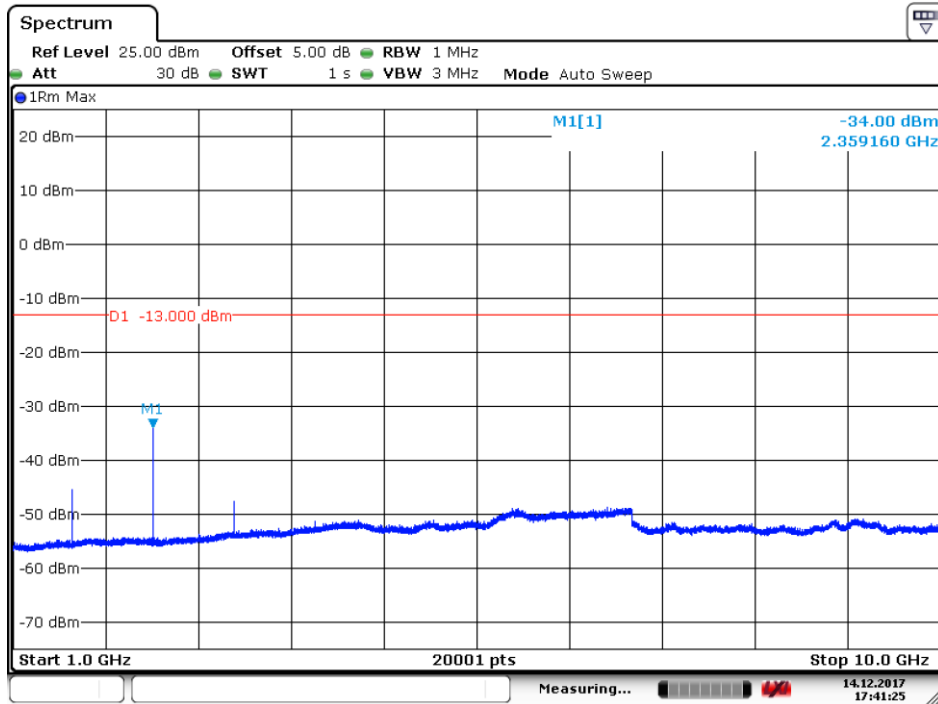
6.1.1 Test Band = LTE band13

6.1.1.1 Test Mode = LTE / TM1 10MHz RB1#0

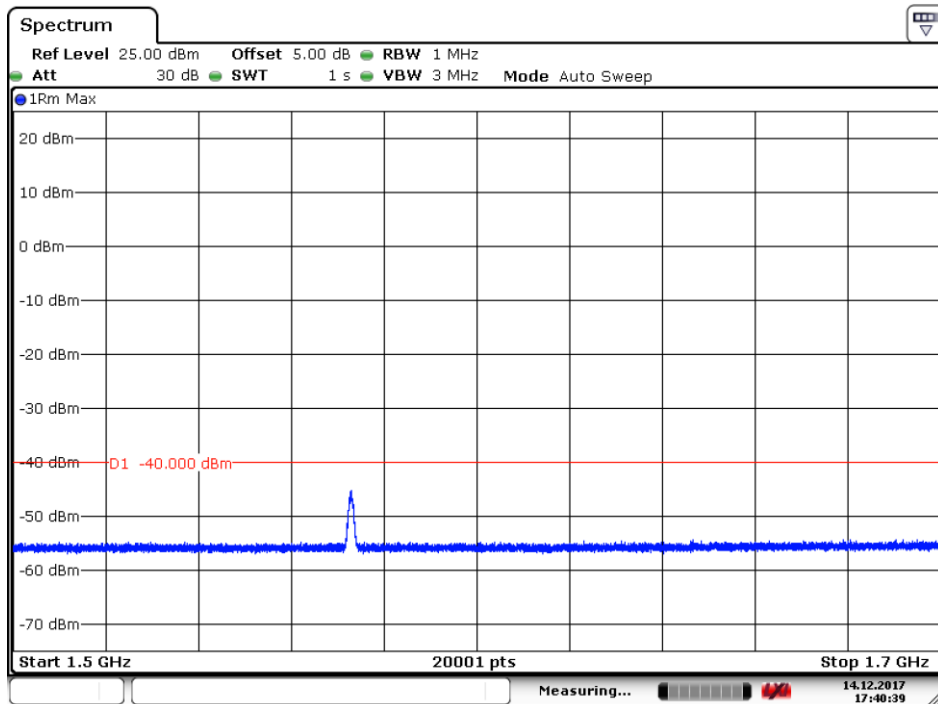
6.1.1.1.1 Test Channel = MCH



Date: 14.DEC.2017 15:37:57



Date: 14.DEC.2017 17:41:25



Date: 14.DEC.2017 17:40:40



7 Field Strength of Spurious Radiation

7.1 For LTE

7.1.1 Test Band = LTE band13

7.1.1.1 Test Mode =LTE/TM1 10MHz RB1#0

7.1.1.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
38.586667	-74.68	-13.00	-61.68	Vertical
73.306667	-72.85	-13.00	-59.85	Vertical
203.413333	-69.20	-13.00	-56.20	Vertical
2632.000000	-57.59	-13.00	-44.59	Vertical
6058.087500	-64.61	-13.00	-51.61	Vertical
8605.762500	-63.66	-13.00	-50.66	Vertical
63.366667	-77.41	-13.00	-64.41	Horizontal
129.213333	-72.02	-13.00	-59.02	Horizontal
205.886667	-74.21	-13.00	-61.21	Horizontal
1100.000000	-66.34	-13.00	-53.34	Horizontal
4289.437500	-66.51	-13.00	-53.51	Horizontal
7970.062500	-63.31	-13.00	-50.31	Horizontal

NOTE:

- 1) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEband13	LTE/TM1 10MHz	LCH	TN	VL	-4.93	-0.00630	PASS
				VN	2.06	0.00263	PASS
				VH	-3.79	-0.00485	PASS
		MCH	TN	VL	2.05	0.00262	PASS
				VN	-2.38	-0.00304	PASS
				VH	2.63	0.00336	PASS
		HCH	TN	VL	-5.46	-0.00698	PASS
				VN	-5.99	-0.00766	PASS
				VH	-0.04	-0.00005	PASS
	LTE/TM2 10MHz	LCH	TN	VL	-4.32	-0.00552	PASS
				VN	-2.58	-0.00330	PASS
				VH	-2.89	-0.00370	PASS
		MCH	TN	VL	1.96	0.00251	PASS
				VN	-0.88	-0.00113	PASS
				VH	2.87	0.00367	PASS
		HCH	TN	VL	-3.04	-0.00389	PASS
				VN	-8.28	-0.01059	PASS
				VH	5.55	0.00710	PASS



8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEband13	LTE/TM1 10MHz	MCH	VN	-30	-0.39	-0.00050	PASS
				-20	-1.94	-0.00248	PASS
				-10	2.76	0.00353	PASS
				0	1.78	0.00228	PASS
				10	1.65	0.00211	PASS
				20	6.71	0.00858	PASS
				30	-3.32	-0.00425	PASS
				40	-2.84	-0.00363	PASS
				50	3.69	0.00472	PASS
	LTE/TM2 10MHz	MCH	VN	-30	-2.89	-0.00370	PASS
				-20	-0.25	-0.00032	PASS
				-10	-1.49	-0.00191	PASS
				0	-5.96	-0.00762	PASS
				10	-4.54	-0.00581	PASS
				20	-2.34	-0.00299	PASS
				30	-5.60	-0.00716	PASS
				40	-4.65	-0.00595	PASS
				50	-6.75	-0.00863	PASS

The End