



Appendix B

E-UTRA BAND 13



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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
BAND 13	LTE/TM1	5M	LCH	RB1#0	23.15	24.00	34.77	PASS
				RB1#13	23.19	24.04	34.77	PASS
				RB1#24	23.18	24.03	34.77	PASS
				RB12#0	22.28	23.13	34.77	PASS
				RB12#6	22.32	23.17	34.77	PASS
				RB12#13	22.25	23.10	34.77	PASS
				RB25#0	22.23	23.08	34.77	PASS
			MCH	RB1#0	23.26	24.11	34.77	PASS
				RB1#13	23.25	24.10	34.77	PASS
				RB1#24	23.33	24.18	34.77	PASS
				RB12#0	22.26	23.11	34.77	PASS
				RB12#6	22.27	23.12	34.77	PASS
				RB12#13	22.27	23.12	34.77	PASS
				RB25#0	22.3	23.15	34.77	PASS
			HCH	RB1#0	23.16	24.01	34.77	PASS
				RB1#13	23.26	24.11	34.77	PASS
				RB1#24	23.28	24.13	34.77	PASS
				RB12#0	22.4	23.25	34.77	PASS
				RB12#6	22.25	23.10	34.77	PASS
				RB12#13	22.25	23.10	34.77	PASS
				RB25#0	22.3	23.15	34.77	PASS



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Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND 13	LTE/TM2	5M	LCH	RB1#0	22.29	23.14	34.77	PASS
				RB1#13	22.5	23.35	34.77	PASS
				RB1#24	22.49	23.34	34.77	PASS
				RB12#0	21.37	22.22	34.77	PASS
				RB12#6	21.29	22.14	34.77	PASS
				RB12#13	21.32	22.17	34.77	PASS
				RB25#0	21.27	22.12	34.77	PASS
			MCH	RB1#0	22.88	23.73	34.77	PASS
				RB1#13	22.54	23.39	34.77	PASS
				RB1#24	22.43	23.28	34.77	PASS
				RB12#0	21.29	22.14	34.77	PASS
				RB12#6	21.36	22.21	34.77	PASS
				RB12#13	21.17	22.02	34.77	PASS
				RB25#0	21.32	22.17	34.77	PASS
			HCH	RB1#0	22.37	23.22	34.77	PASS
				RB1#13	22.77	23.62	34.77	PASS
				RB1#24	22.19	23.04	34.77	PASS
				RB12#0	21.28	22.13	34.77	PASS
				RB12#6	21.34	22.19	34.77	PASS
				RB12#13	21.26	22.11	34.77	PASS
				RB25#0	21.33	22.18	34.77	PASS



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Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND 13	LTE/TM3	5M	LCH	RB1#0	22.31	23.16	34.77	PASS
				RB1#13	22.29	23.14	34.77	PASS
				RB1#24	22.15	23.00	34.77	PASS
				RB12#0	21.30	22.15	34.77	PASS
				RB12#6	21.22	22.07	34.77	PASS
				RB12#13	21.14	21.99	34.77	PASS
				RB25#0	21.22	22.07	34.77	PASS
			MCH	RB1#0	22.27	23.12	34.77	PASS
				RB1#13	22.19	23.04	34.77	PASS
				RB1#24	22.17	23.02	34.77	PASS
				RB12#0	21.22	22.07	34.77	PASS
				RB12#6	21.23	22.08	34.77	PASS
				RB12#13	21.18	22.03	34.77	PASS
				RB25#0	21.22	22.07	34.77	PASS
			HCH	RB1#0	22.25	23.10	34.77	PASS
				RB1#13	22.15	23.00	34.77	PASS
				RB1#24	22.18	23.03	34.77	PASS
				RB12#0	21.15	22.00	34.77	PASS
				RB12#6	21.21	22.06	34.77	PASS
				RB12#13	21.13	21.98	34.77	PASS
				RB25#0	21.21	22.06	34.77	PASS



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Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND 13	LTE/TM1	10M	MCH	RB1#0	23.14	23.99	34.77	PASS
				RB1#25	23.14	23.99	34.77	PASS
				RB1#49	23.13	23.98	34.77	PASS
				RB25#0	22.28	23.13	34.77	PASS
				RB25#13	22.38	23.23	34.77	PASS
				RB25#25	22.38	23.23	34.77	PASS
				RB50#0	22.49	23.34	34.77	PASS
	LTE/TM2	10M	MCH	RB1#0	22.3	23.15	34.77	PASS
				RB1#25	23.05	23.90	34.77	PASS
				RB1#49	22.8	23.65	34.77	PASS
				RB25#0	21.24	22.09	34.77	PASS
				RB25#13	21.44	22.29	34.77	PASS
				RB25#25	21.26	22.11	34.77	PASS
				RB50#0	21.38	22.23	34.77	PASS
	LTE/TM3	10M	MCH	RB1#0	22.28	23.13	34.77	PASS
				RB1#25	22.20	23.05	34.77	PASS
				RB1#49	22.13	22.98	34.77	PASS
				RB25#0	21.22	22.07	34.77	PASS
				RB25#13	21.27	22.12	34.77	PASS
				RB25#25	21.27	22.12	34.77	PASS
				RB50#0	21.26	22.11	34.77	PASS

Note:

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

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b: SGP=Signal Generator Level

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	5.04	13	PASS
	TM2/10M	MCH	5.91	13	PASS
	TM3/10M	MCH	6.12	13	PASS

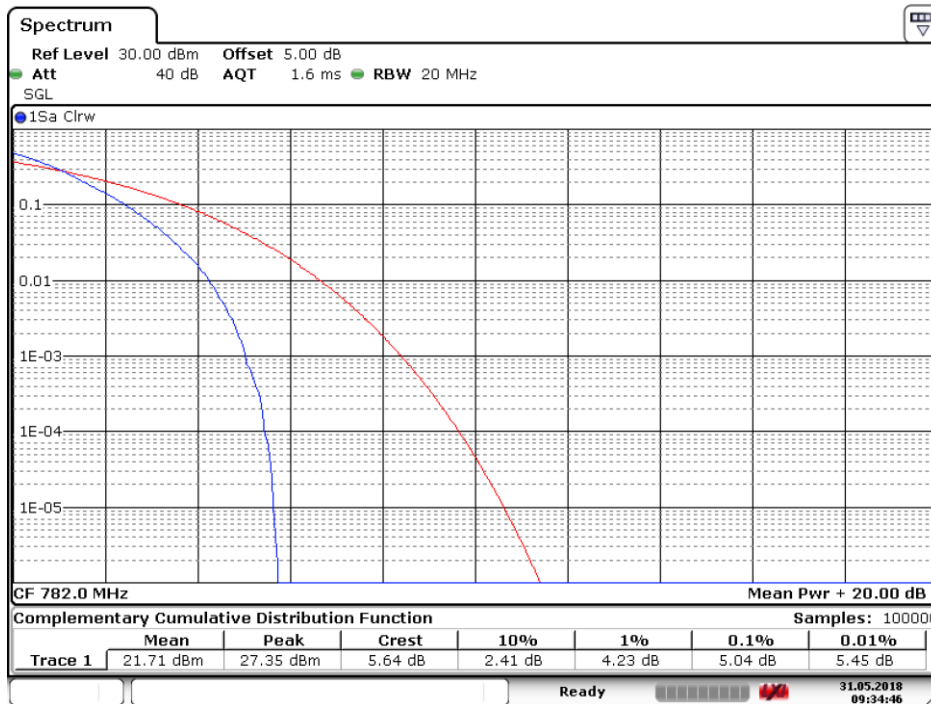
Part II - Test Plots

2.1 For LTE

2.1.1 Test Band = LTE BAND 13

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

2.1.1.1.1 Test Channel = MCH

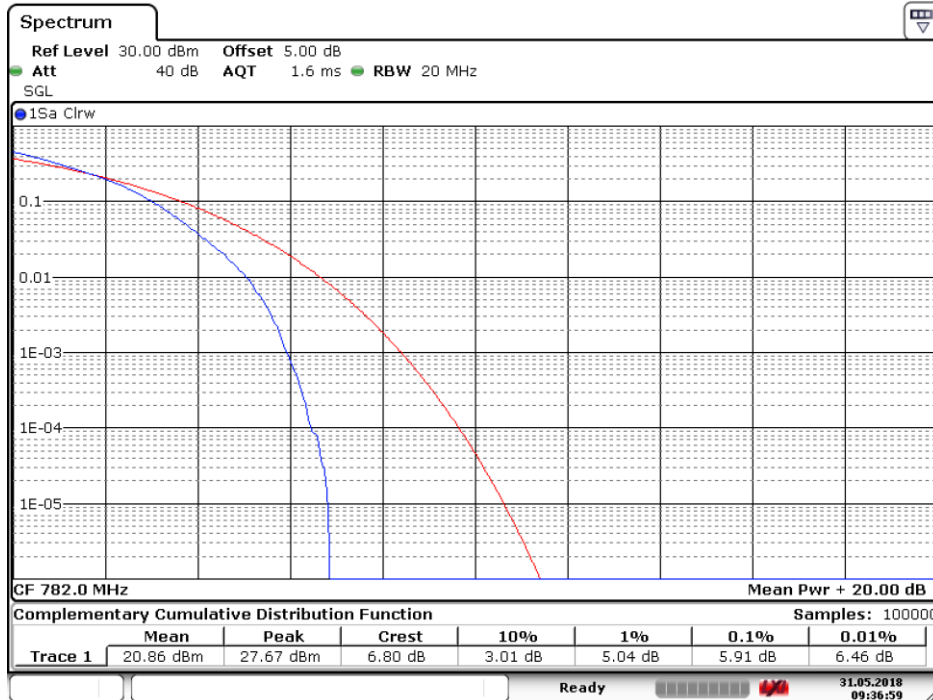


Date: 31.MAY.2018 09:34:47



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

2.1.1.2.1 Test Channel = MCH



Date: 31.MAY.2018 09:36:59



2.1.1.3 Test Mode = LTE/TM3.Bandwidth=10MHz

2.1.1.3.1 Test Channel = MCH



Date: 25 JUN 2018 14:29:04

3 Modulation Characteristics

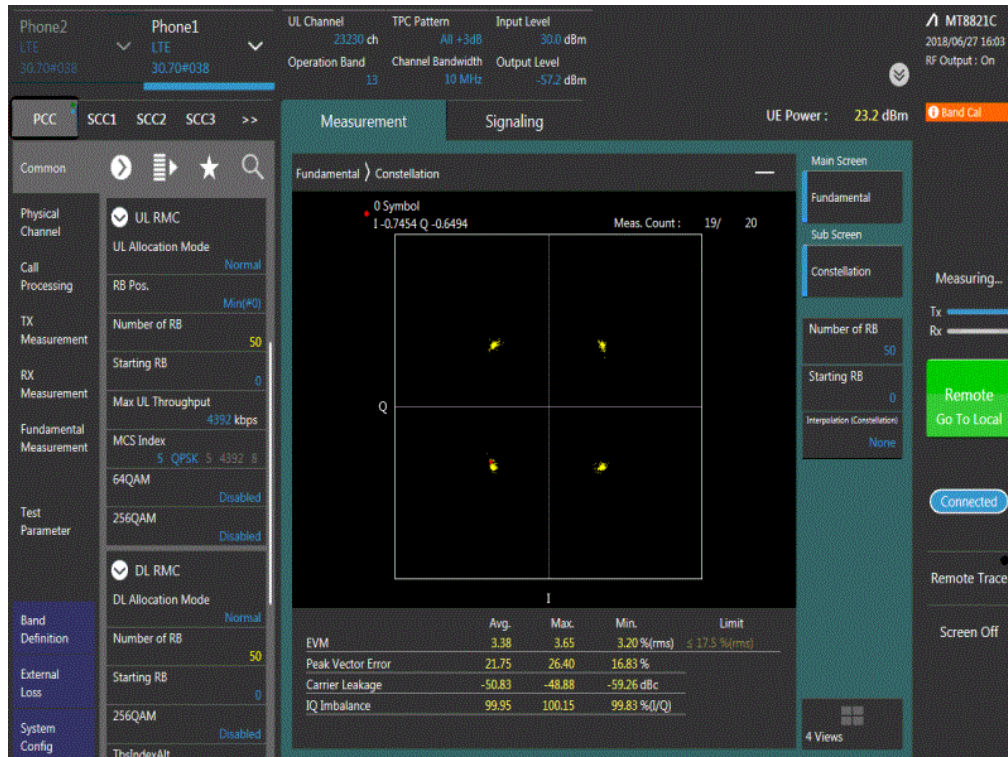
Part I - Test Plots

3.1 For LTE

3.1.1 Test Band = LTE BAND 13

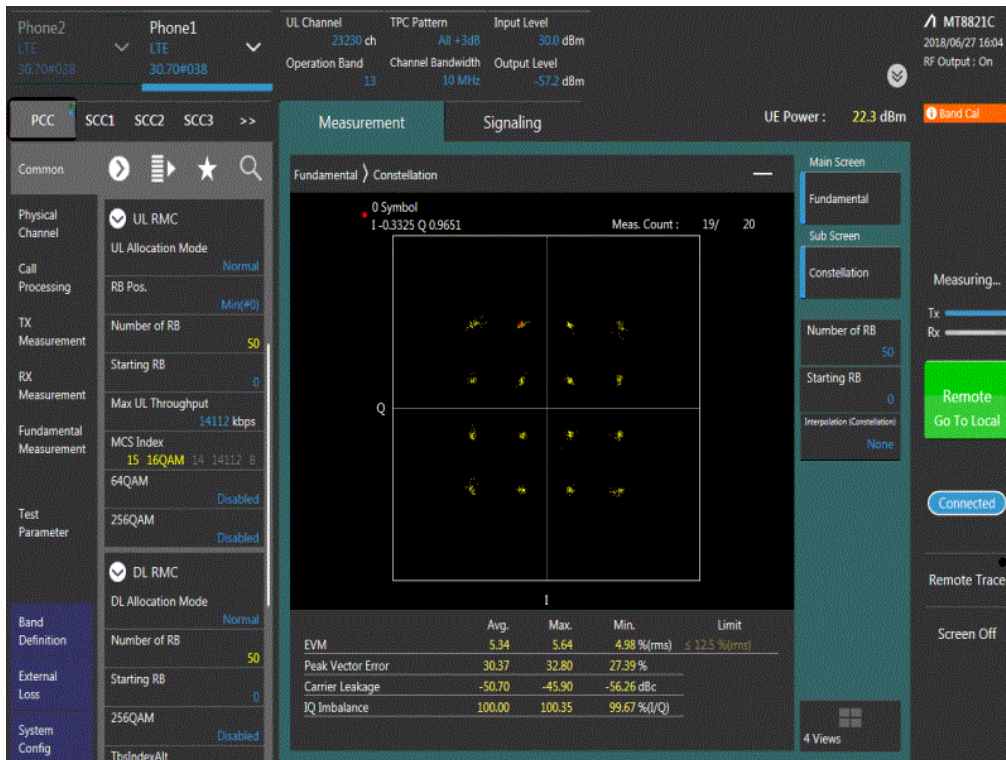
3.1.1.1 Test Mode = LTE /TM1 10MHz

3.1.1.1.1 Test Channel = MCH



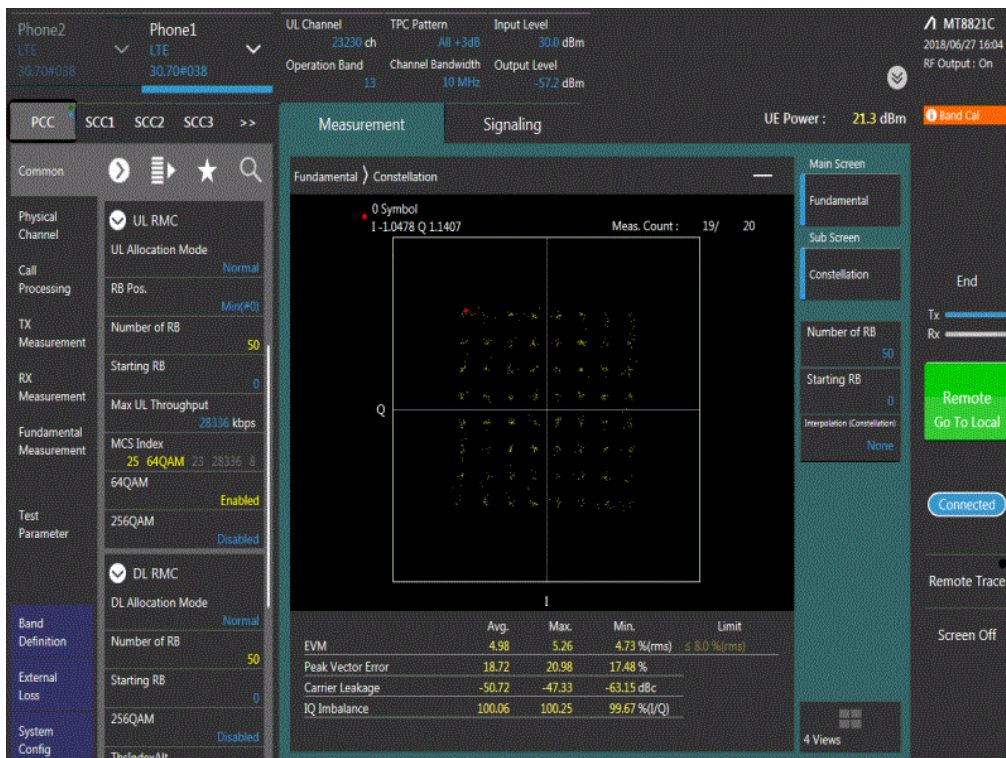
3.1.1.2 Test Mode = LTE /TM2 10MHz

3.1.1.2.1 Test Channel = MCH



3.1.1.3 Test Mode = LTE /TM3 10MHz

3.1.1.3.1 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	4.48	4.88	PASS
		MCH	4.47	4.87	PASS
		HCH	4.49	4.87	PASS
	TM2/ 5MHz	LCH	4.48	4.88	PASS
		MCH	4.46	4.83	PASS
		HCH	4.50	4.90	PASS
	TM3/ 5MHz	LCH	4.46	4.85	PASS
		MCH	4.44	4.82	PASS
		HCH	4.46	4.86	PASS
	TM1/10MHz	MCH	8.93	9.56	PASS
	TM2/10MHz	MCH	8.91	9.54	PASS
	TM3/10MHz	MCH	8.89	9.65	PASS

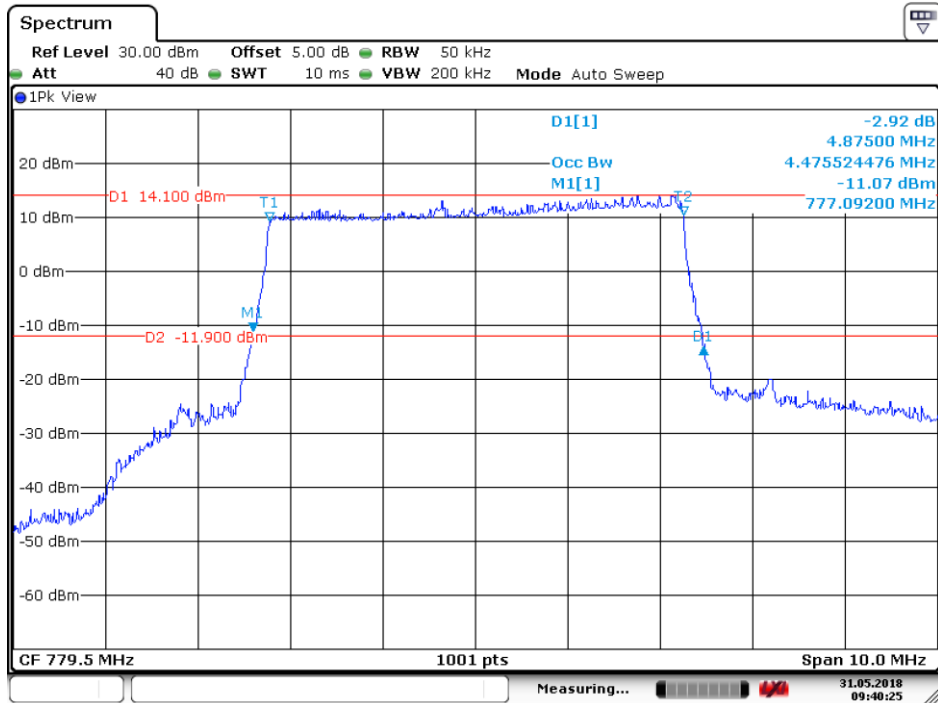


4.1 For LTE

4.1.1 Test Band = LTE BAND 13

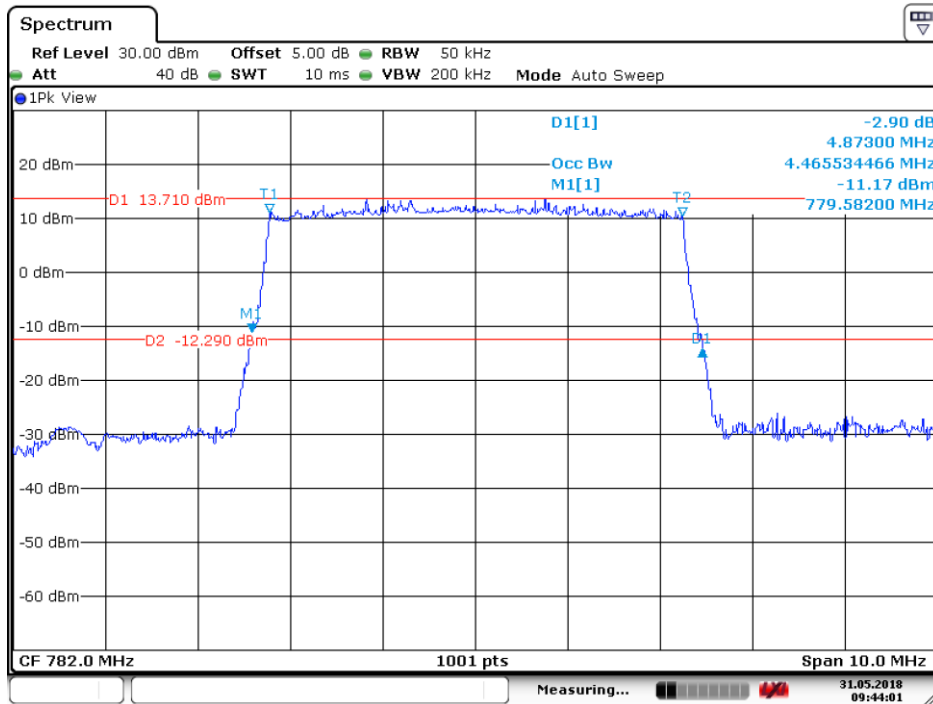
4.1.1.1 Test Mode = LTE/TM1 5MHz

4.1.1.1.1 Test Channel = LCH



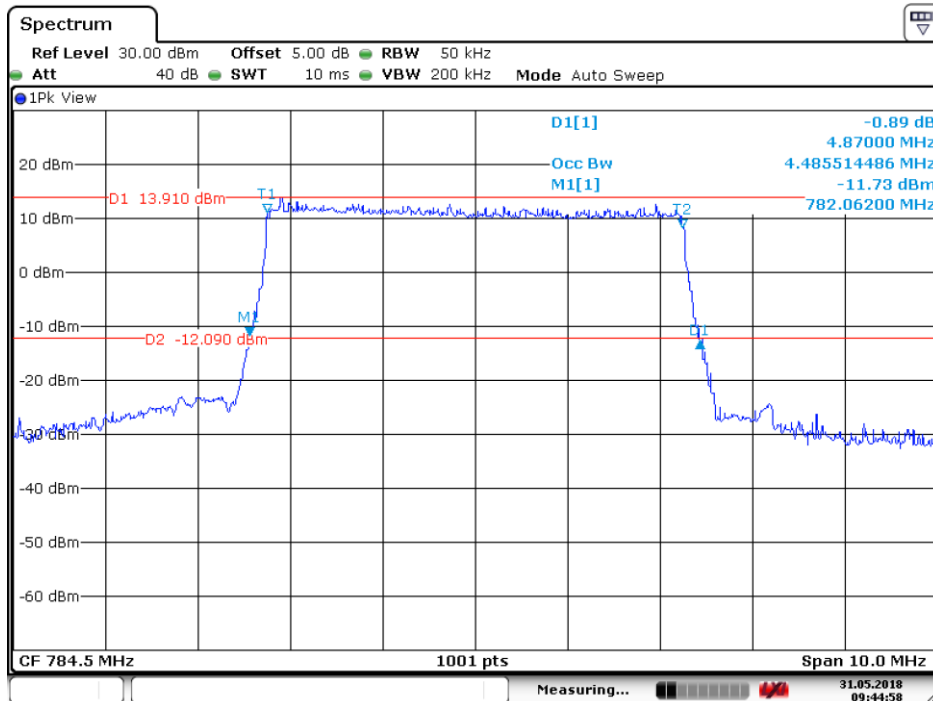
Date: 31.MAY.2018 09:40:26

4.1.1.1.2 Test Channel = MCH



Date: 31.MAY.2018 09:44:02

4.1.1.1.3 Test Channel = HCH

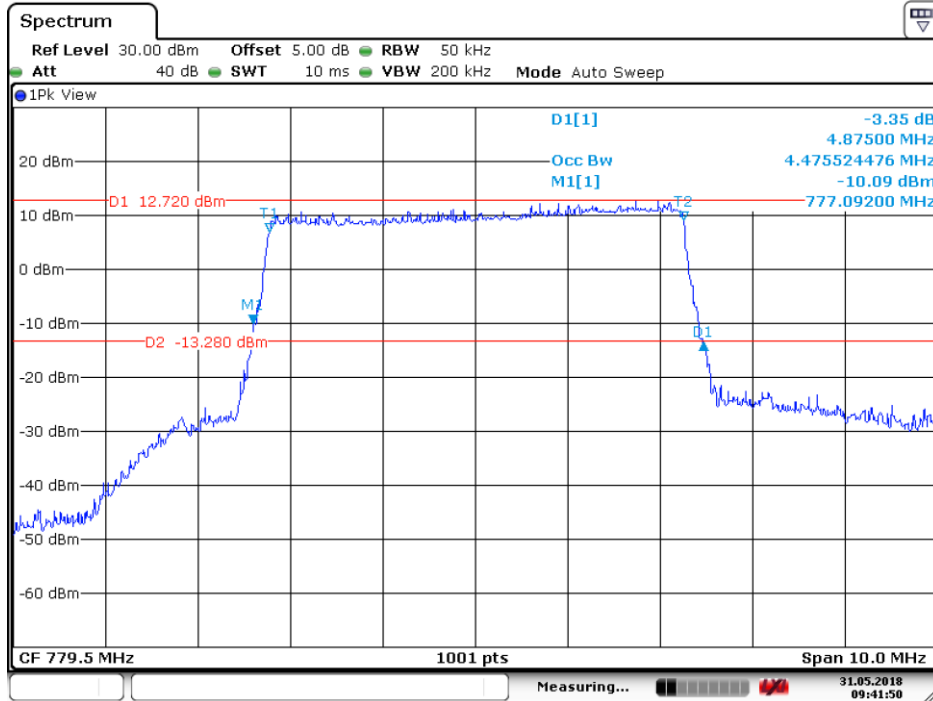


Date: 31.MAY.2018 09:44:58



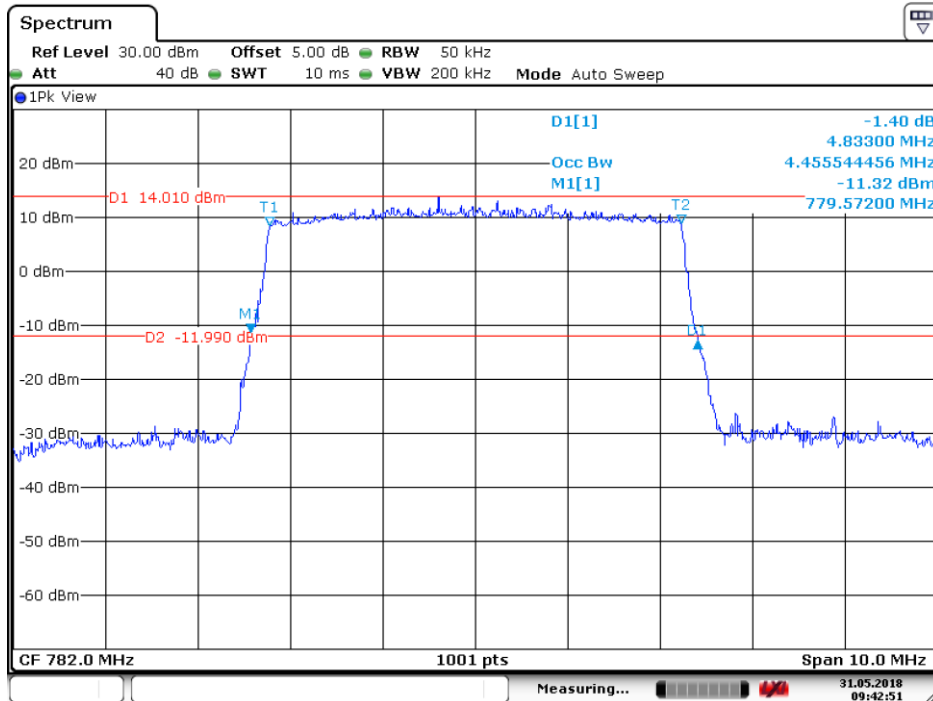
4.1.1.2 Test Mode = LTE/TM2 5MHz

4.1.1.2.1 Test Channel = LCH



Date: 31.MAY.2018 09:41:50

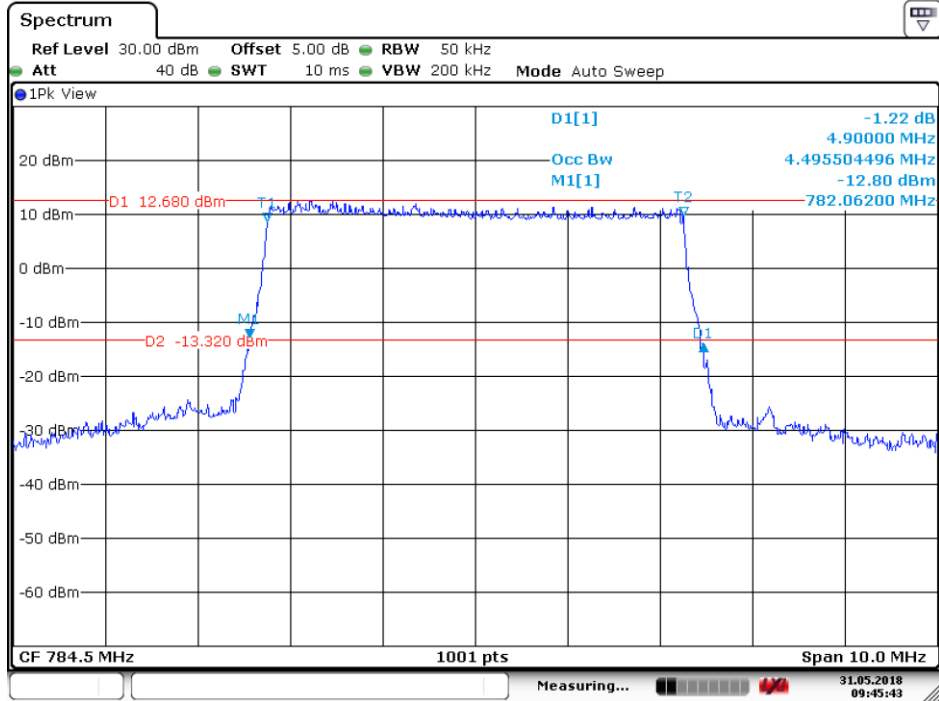
4.1.1.2.2 Test Channel = MCH



Date: 31.MAY.2018 09:42:52



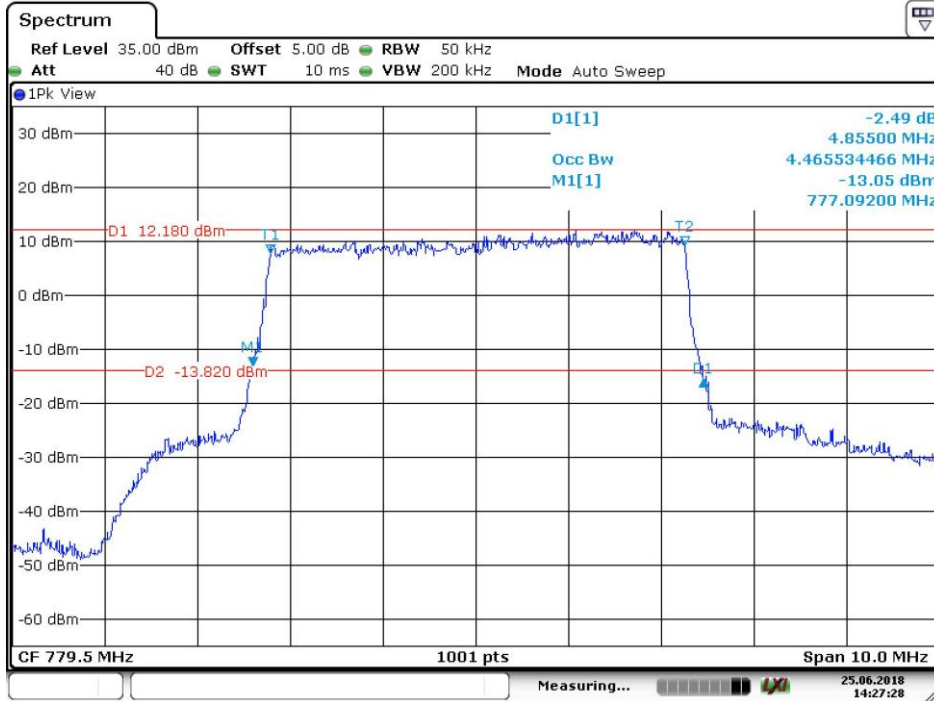
4.1.1.2.3 Test Channel = HCH



Date: 31.MAY.2018 09:45:44

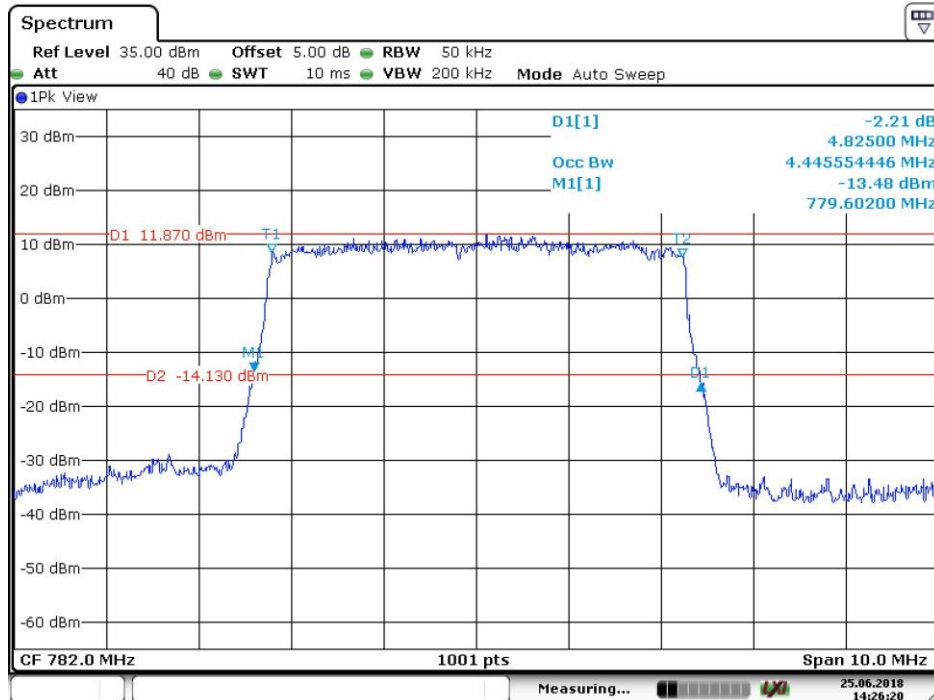
4.1.1.3 Test Mode = LTE/TM3 5MHz

4.1.1.3.1 Test Channel = LCH



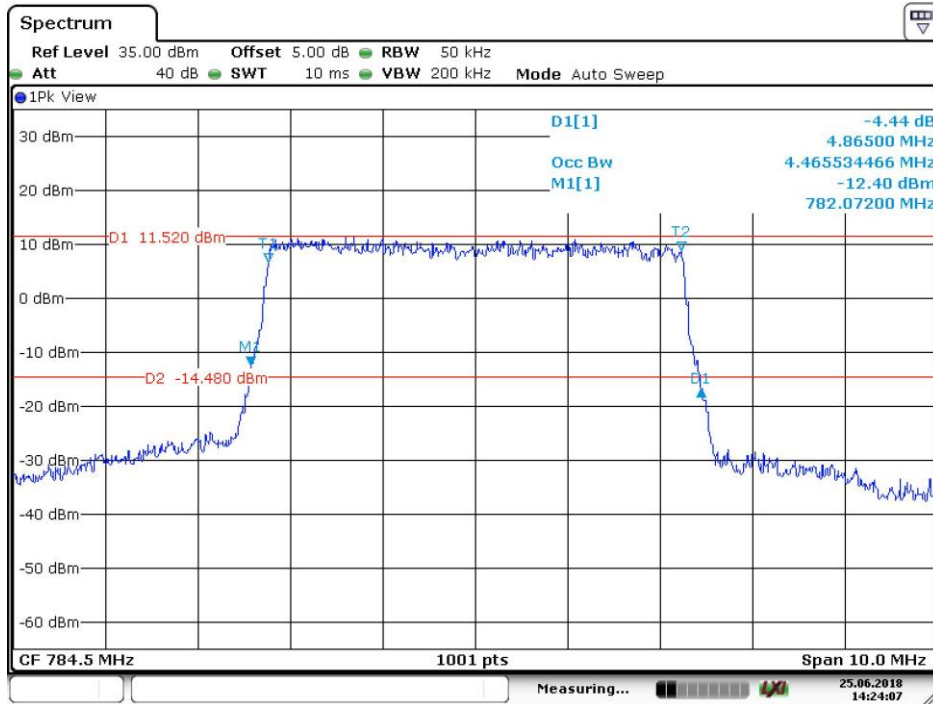
Date: 25 JUN 2018 14:27:28

4.1.1.3.2 Test Channel = MCH



Date: 25 JUN 2018 14:26:21

4.1.1.3.3 Test Channel = HCH

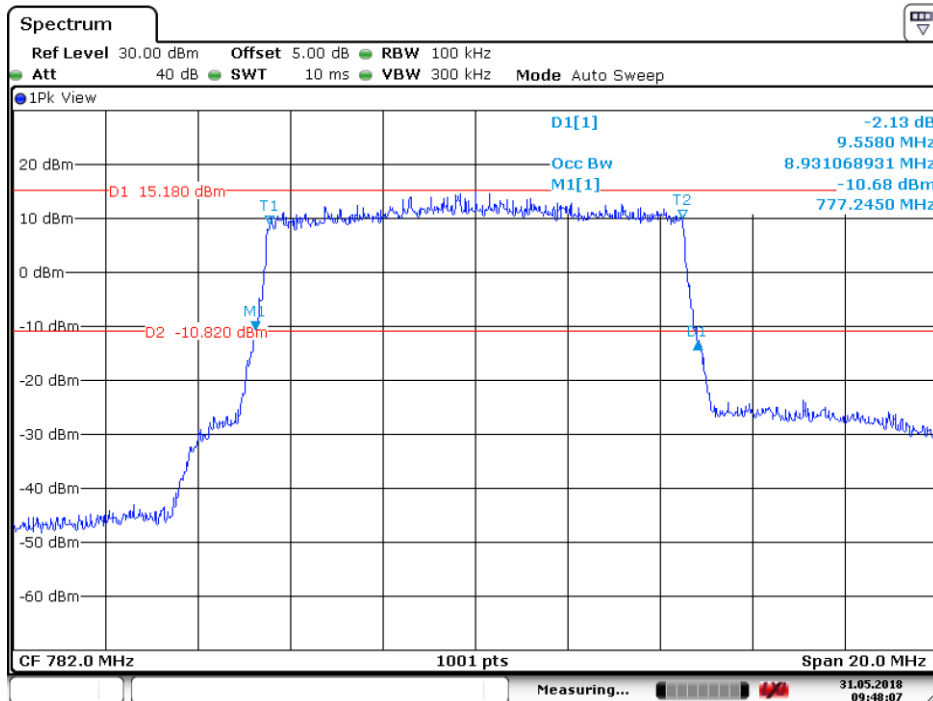


Date: 25 JUN 2018 14:24:07



4.1.1.4 Test Mode = LTE/TM1 10MHz

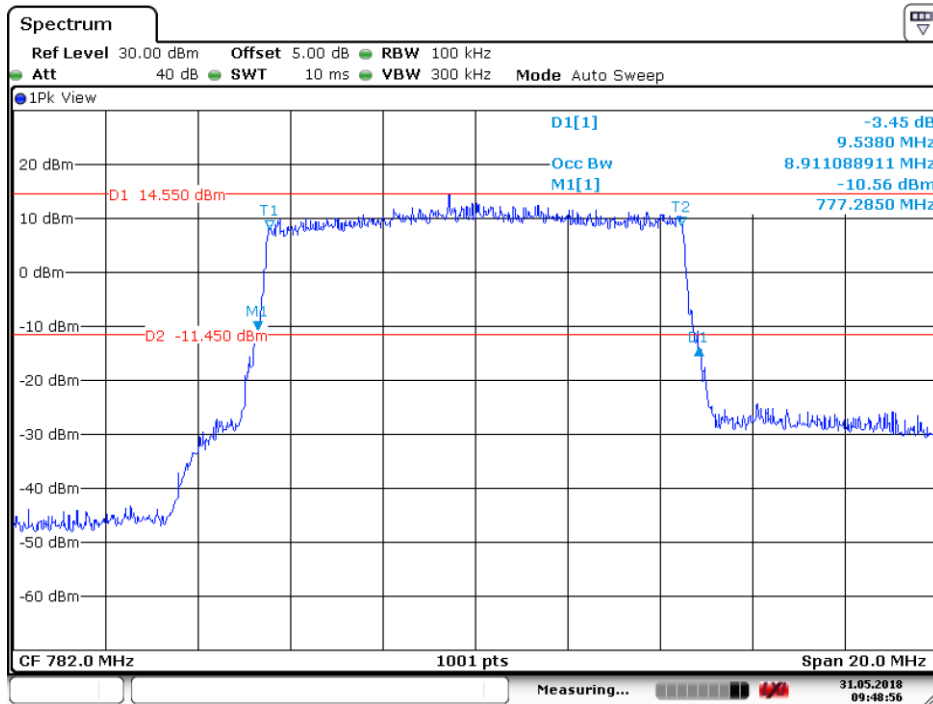
4.1.1.4.1 Test Channel = MCH



Date: 31.MAY.2018 09:48:07

4.1.1.5 Test Mode = LTE/TM2 10MHz

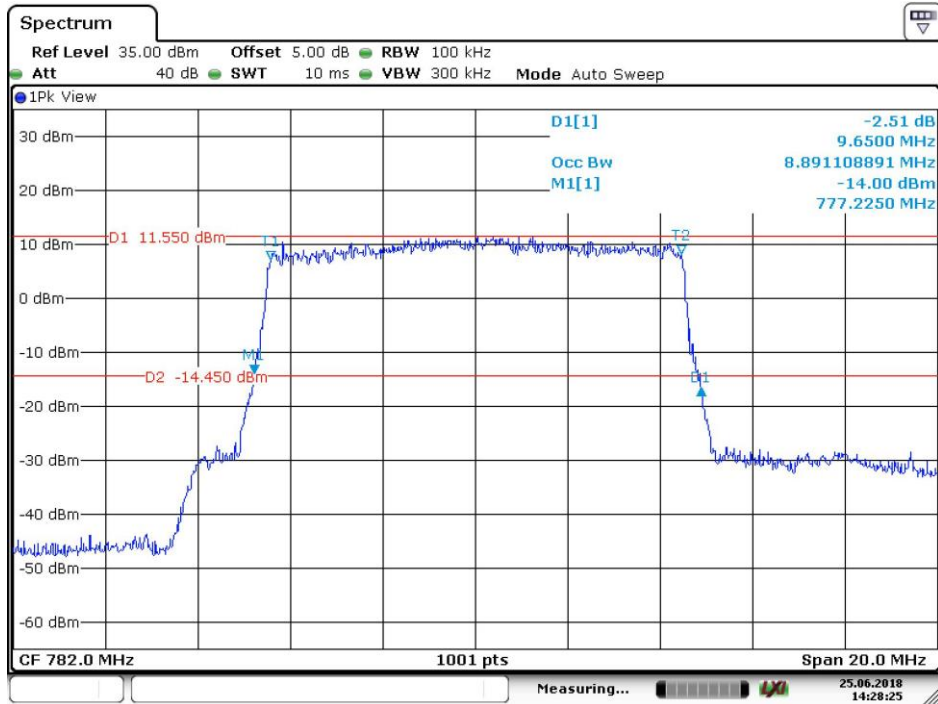
4.1.1.5.1 Test Channel = MCH



Date: 31.MAY.2018 09:48:57

4.1.1.6 Test Mode = LTE/TM3 10MHz

4.1.1.6.1 Test Channel = MCH



Date: 25 JUN 2018 14:28:25

5 Band Edges Compliance

Part I –

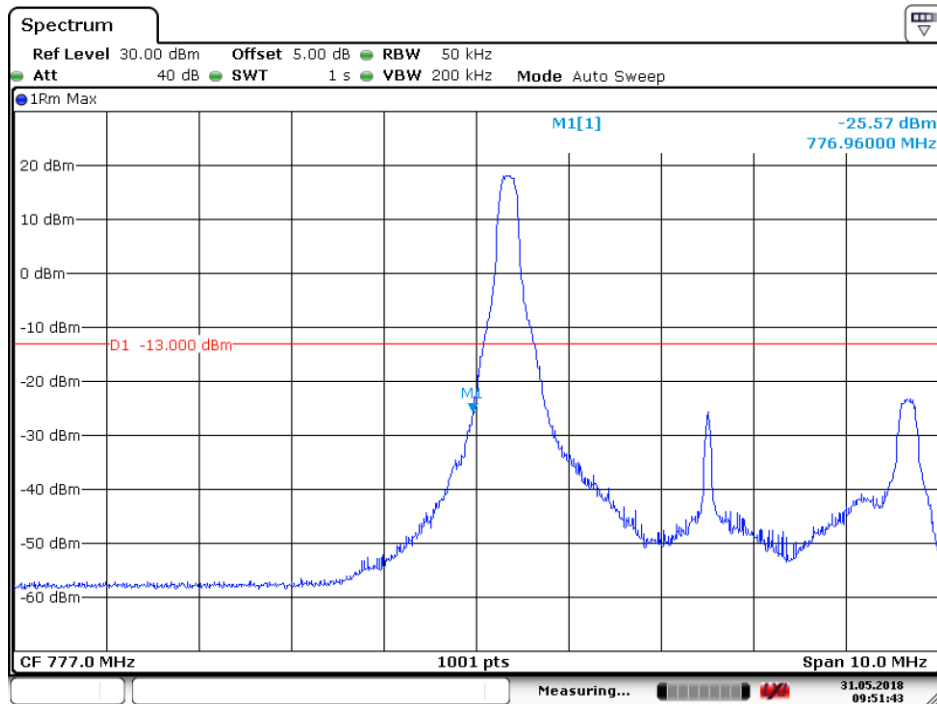
5.1 For LTE

5.1.1 Test Band = LTE BAND 13

5.1.1.1 Test Mode = LTE/TM1 5MHz

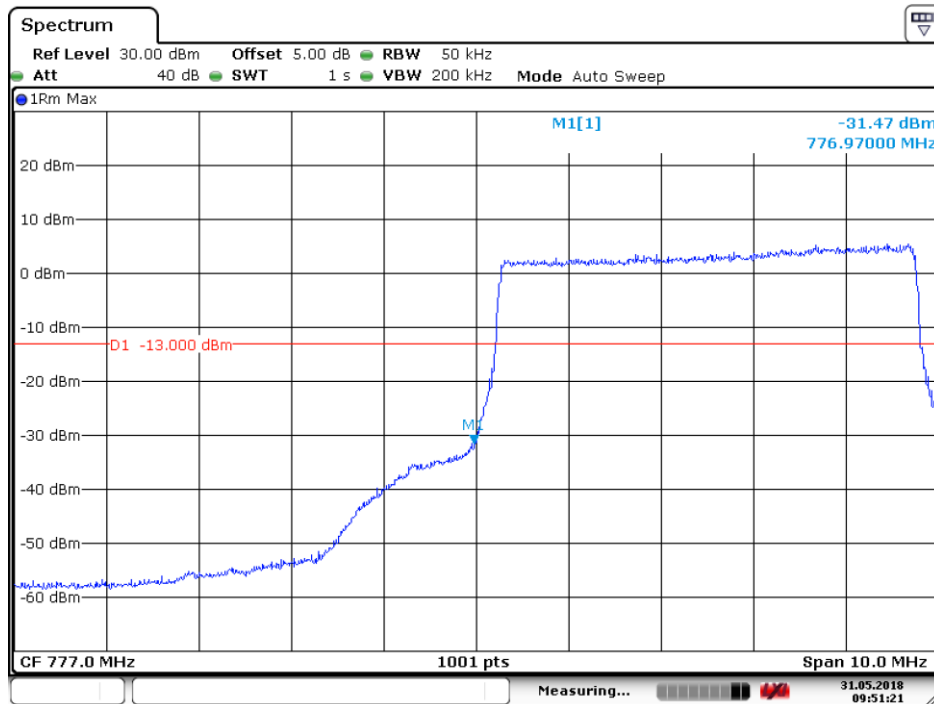
5.1.1.1.1 Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB



Date: 31.MAY.2018 09:51:44

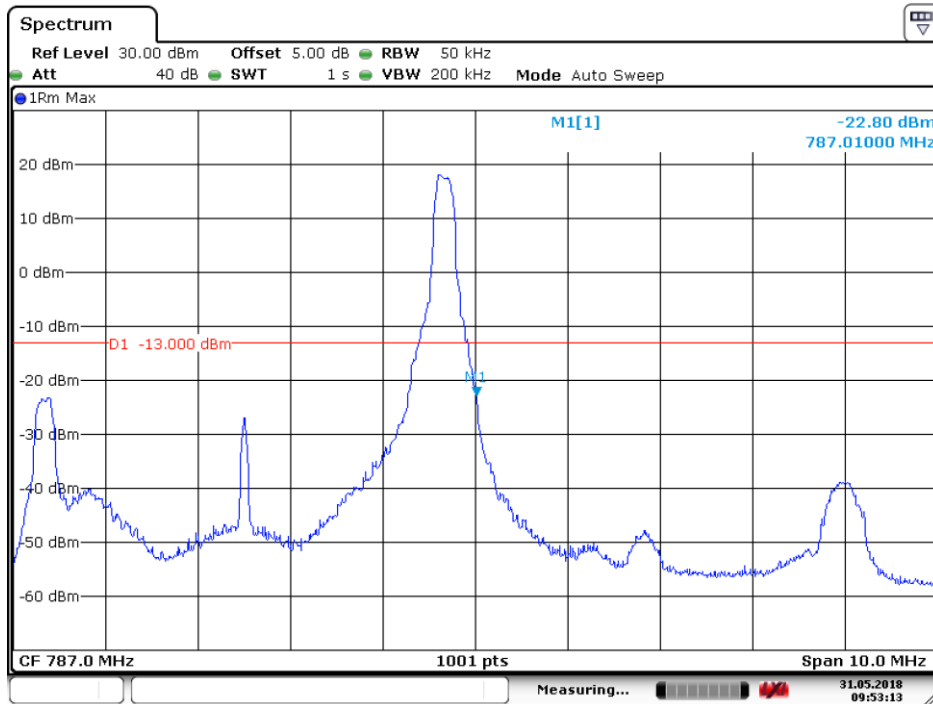
5.1.1.1.1.2 Test RB=25RB



Date: 31.MAY.2018 09:51:21

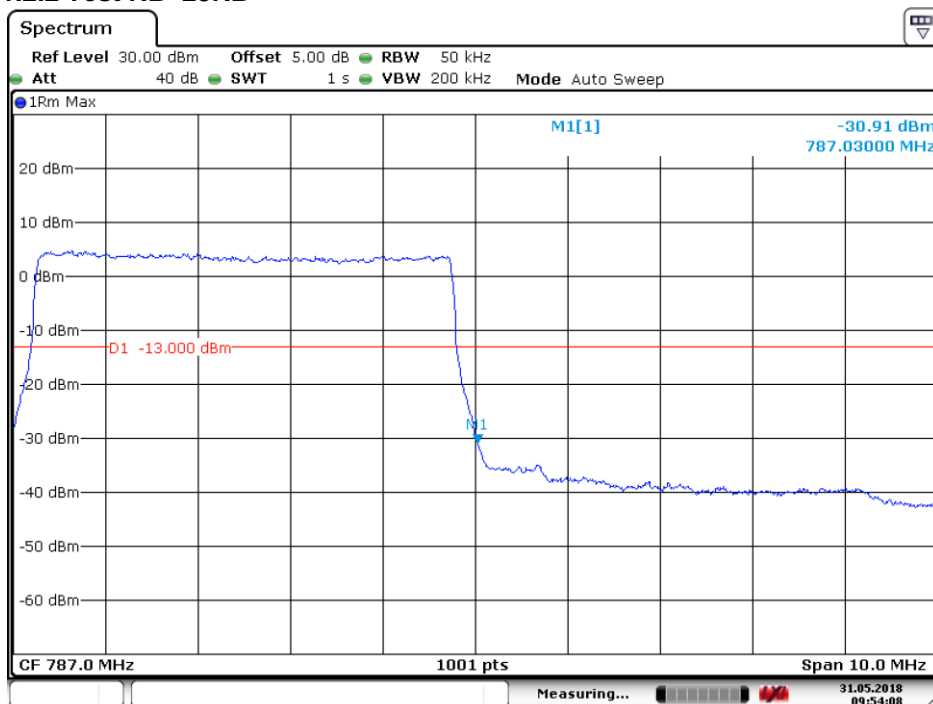
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 31.MAY.2018 09:53:13

5.1.1.1.2.2 Test RB=25RB

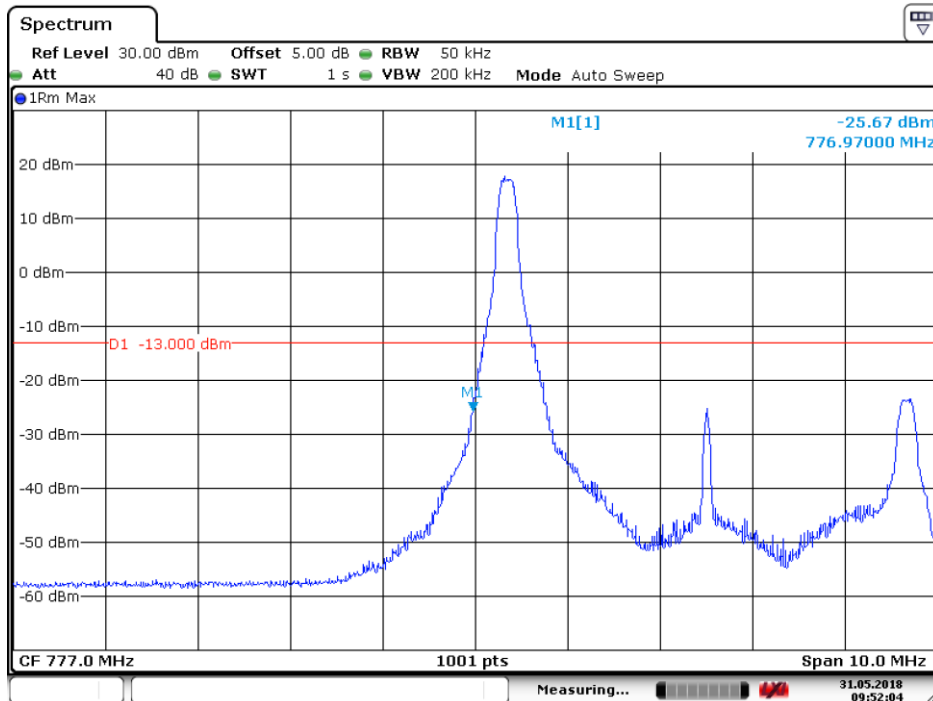


Date: 31.MAY.2018 09:54:09

5.1.1.2 Test Mode = LTE/TM2 5MHz

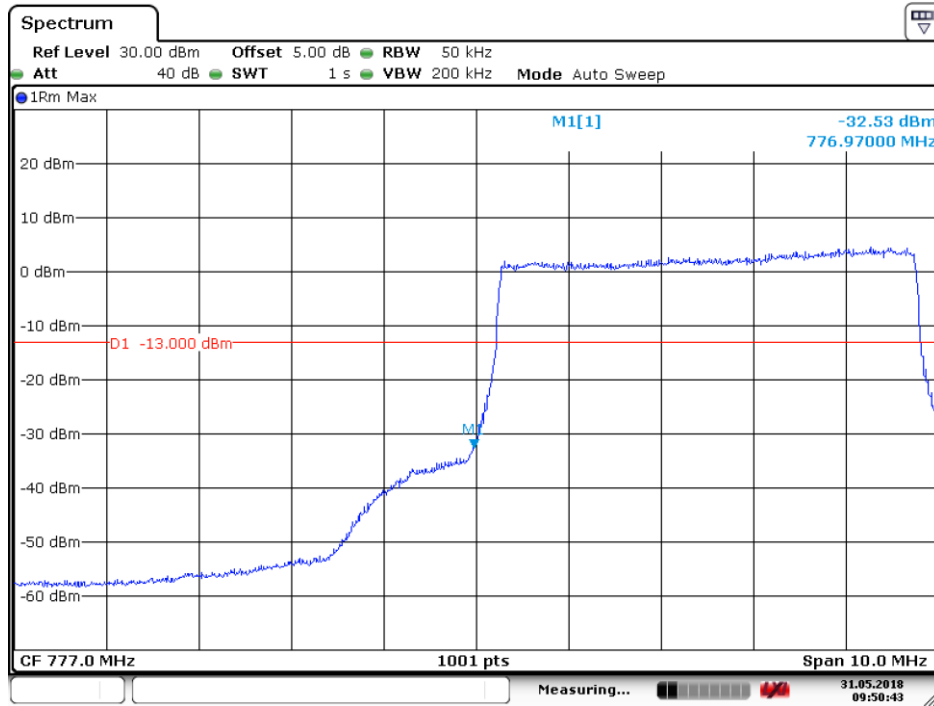
5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



Date: 31.MAY.2018 09:52:04

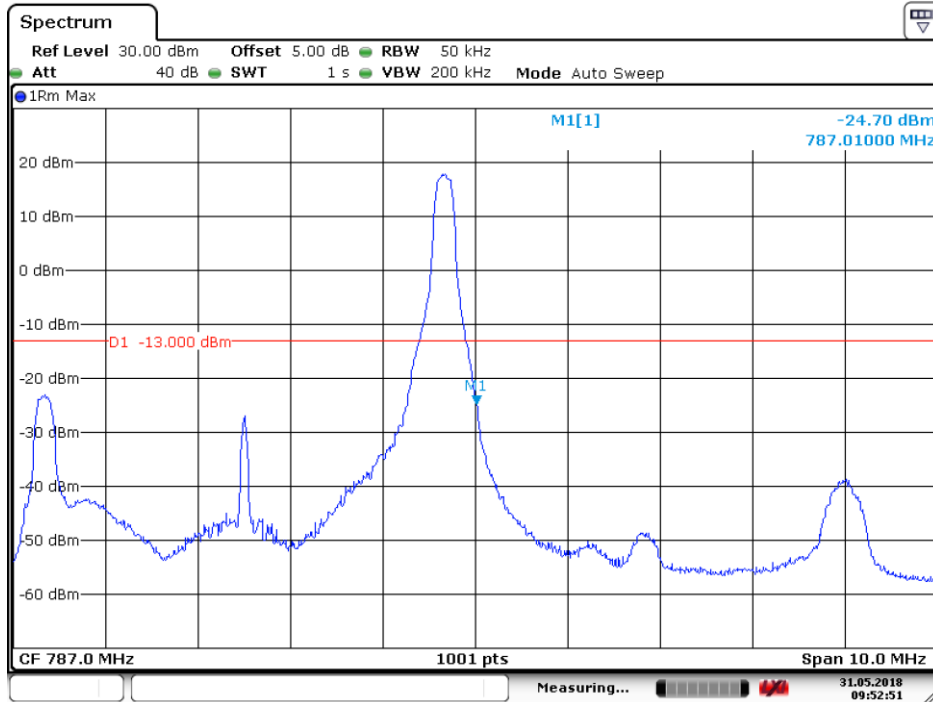
5.1.1.2.1.2 Test RB=25RB



Date: 31.MAY.2018 09:50:43

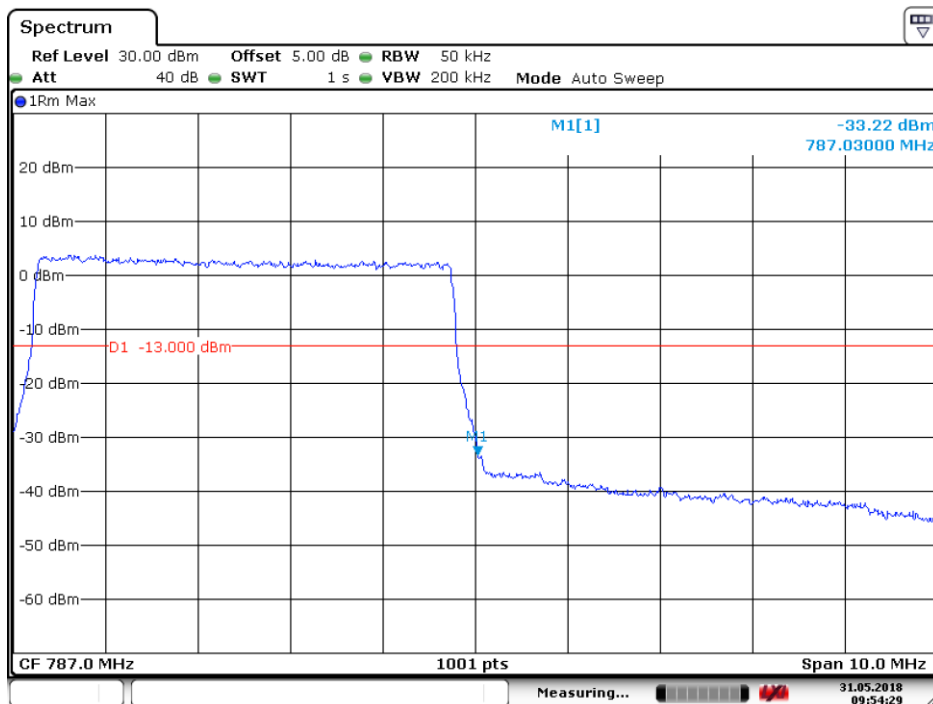
5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 31.MAY.2018 09:52:52

5.1.1.2.2.2 Test RB=25RB

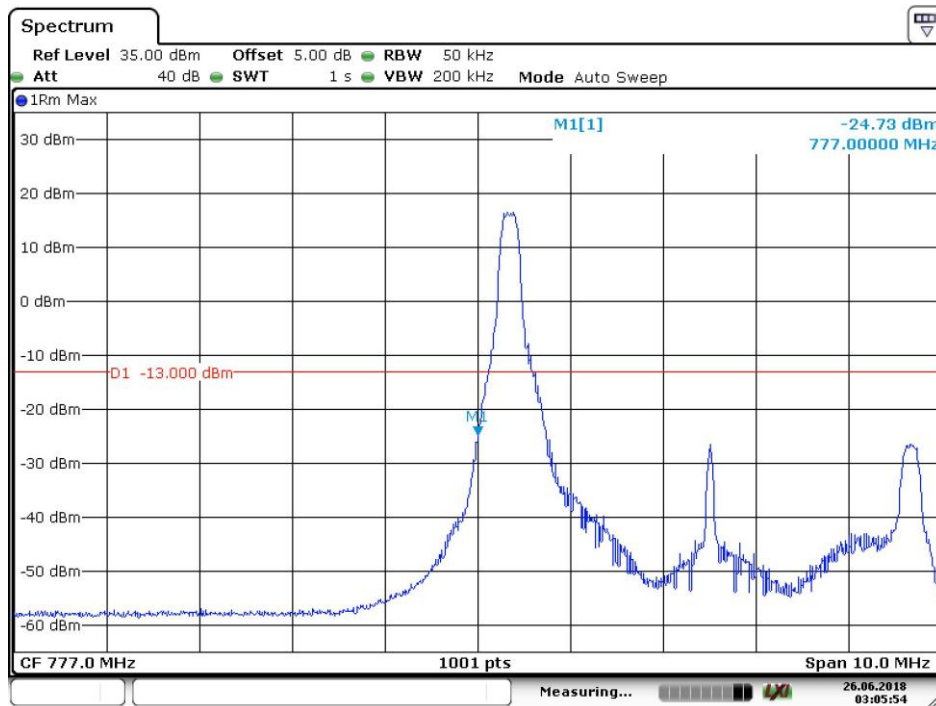


Date: 31.MAY.2018 09:54:30

5.1.1.3 Test Mode = LTE/TM3 5MHz

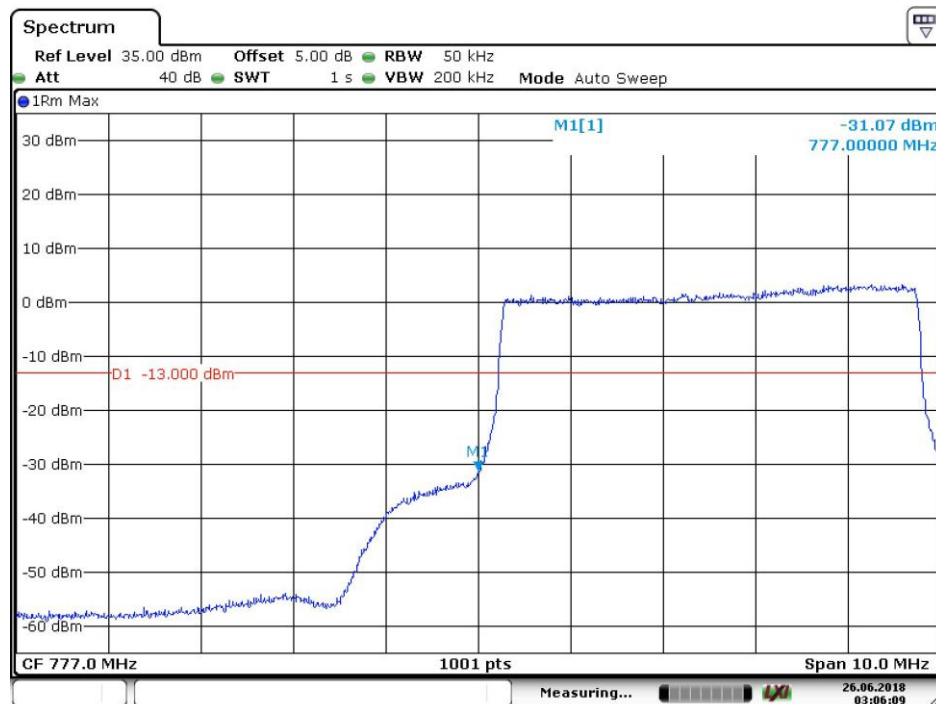
5.1.1.3.1 Test Channel = LCH

5.1.1.3.1.1 Test RB=1RB



Date: 26 JUN 2018 03:05:54

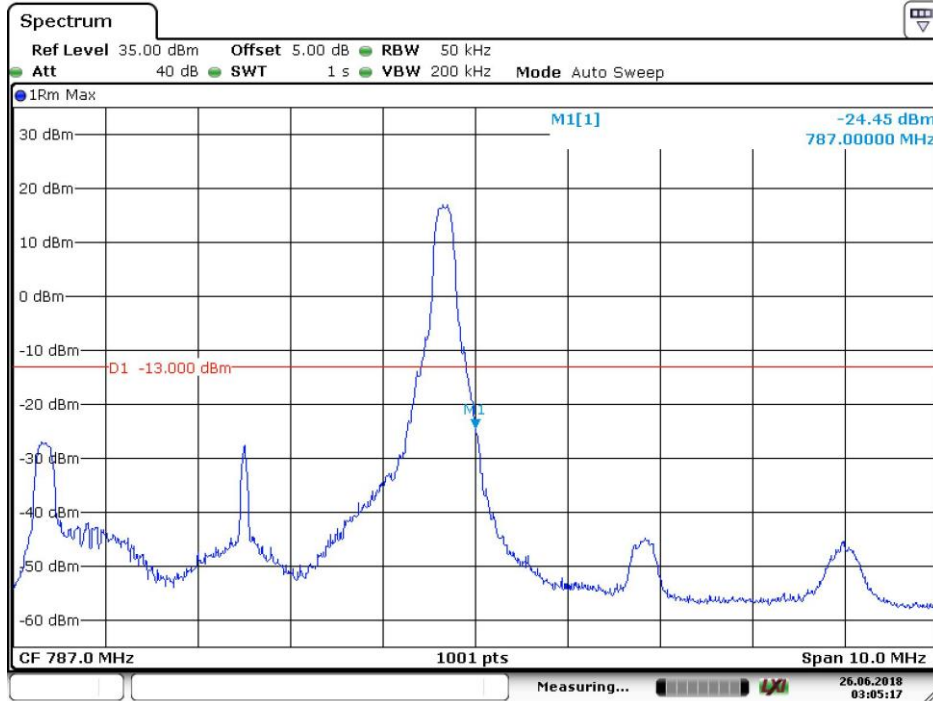
5.1.1.3.1.2 Test RB=25RB



Date: 26 JUN 2018 03:06:10

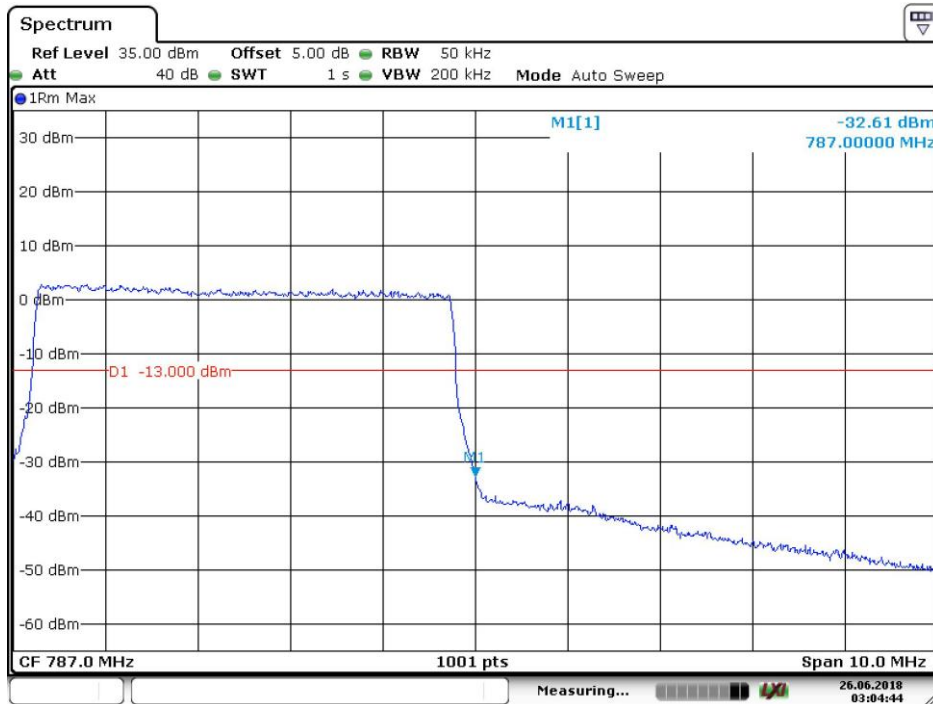
5.1.1.3.1 Test Channel = HCH

5.1.1.3.1.1 Test RB=1RB



Date: 26 JUN.2018 03:05:18

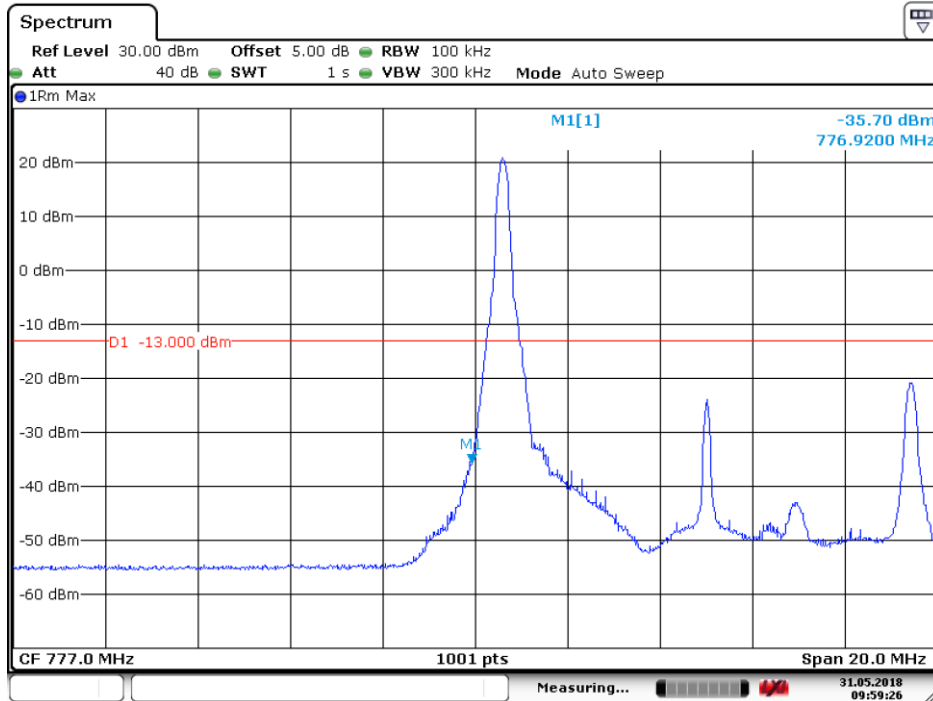
5.1.1.3.1.2 Test RB=25RB



Date: 26 JUN.2018 03:04:44

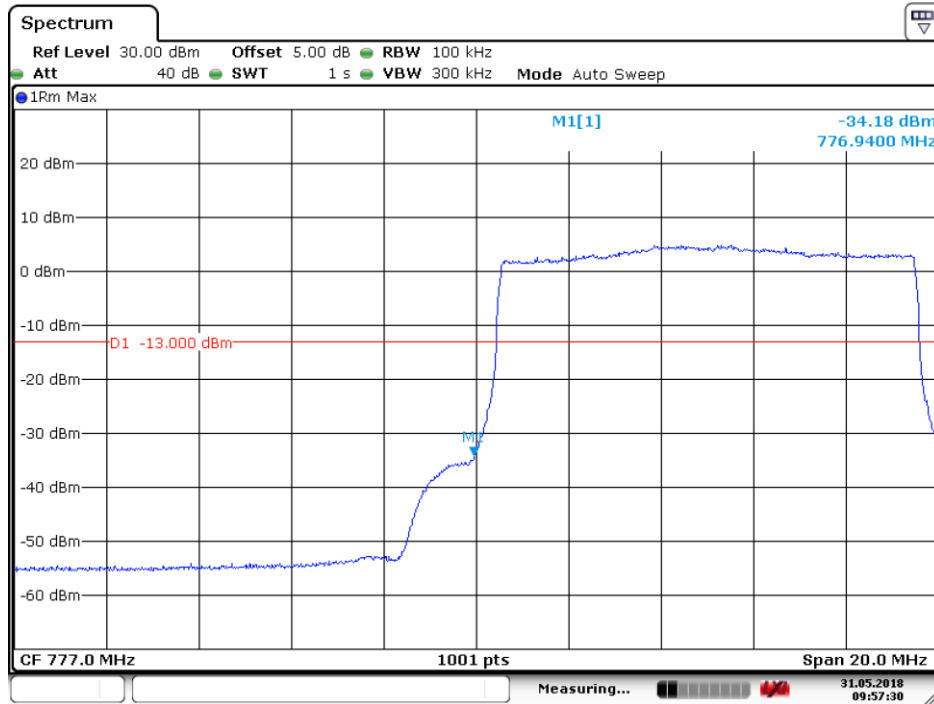
5.1.1.4 Test Mode = LTE/TM1 10MHz
5.1.1.4.1 Test Channel = LCH

5.1.1.4.1.1 Test RB=1RB



Date: 31.MAY.2018 09:59:26

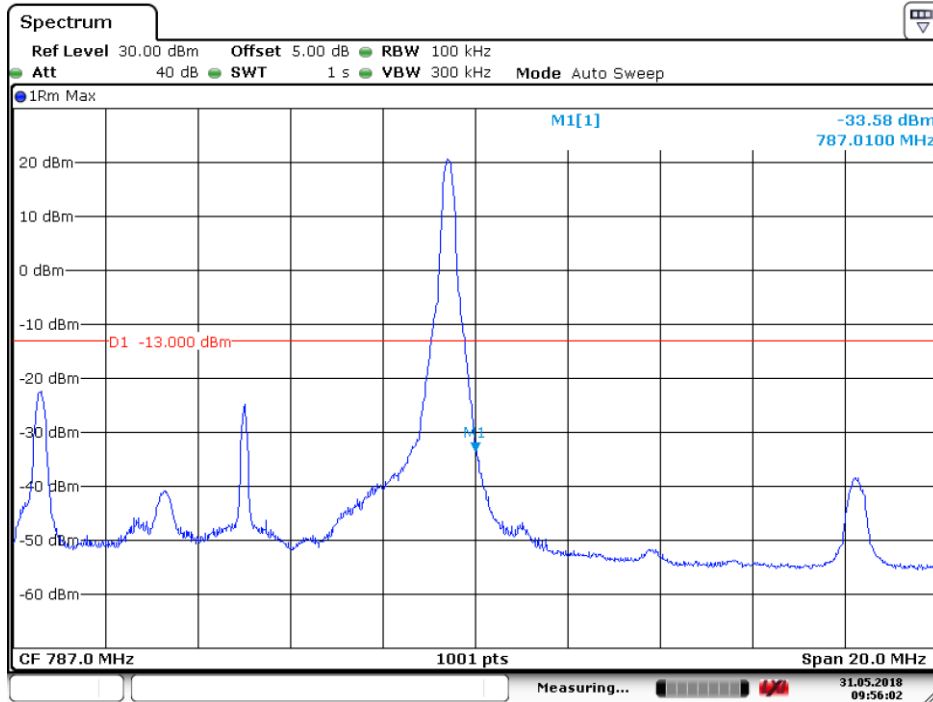
5.1.1.4.1.2 Test RB=50RB



Date: 31.MAY.2018 09:57:30

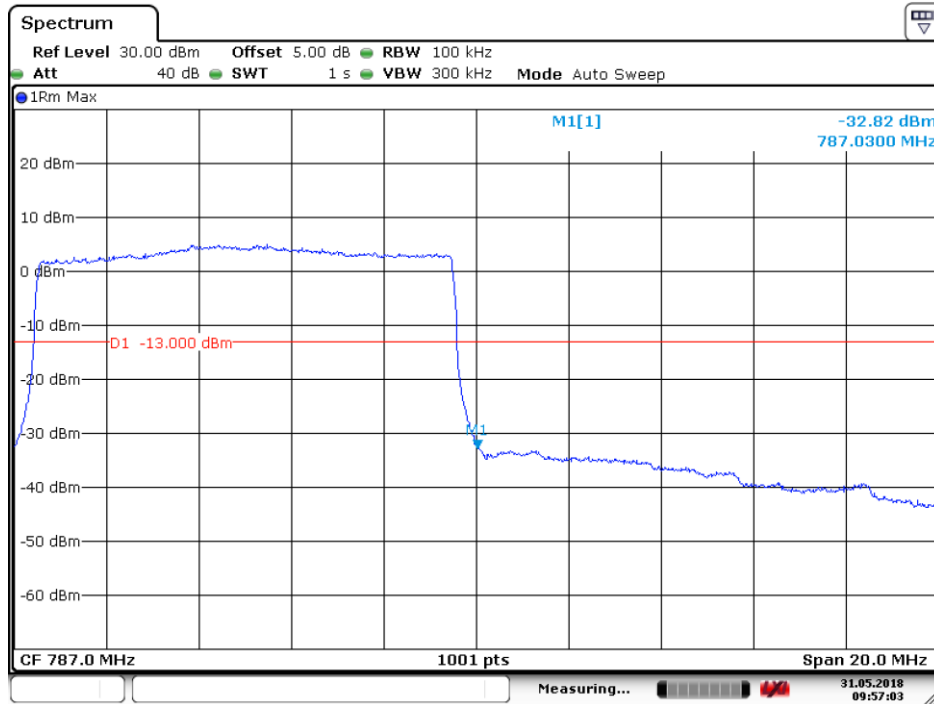
5.1.1.4.2 Test Channel = HCH

5.1.1.4.2.1 Test RB=1RB



Date: 31.MAY.2018 09:56:03

5.1.1.4.2.2 Test RB=50RB

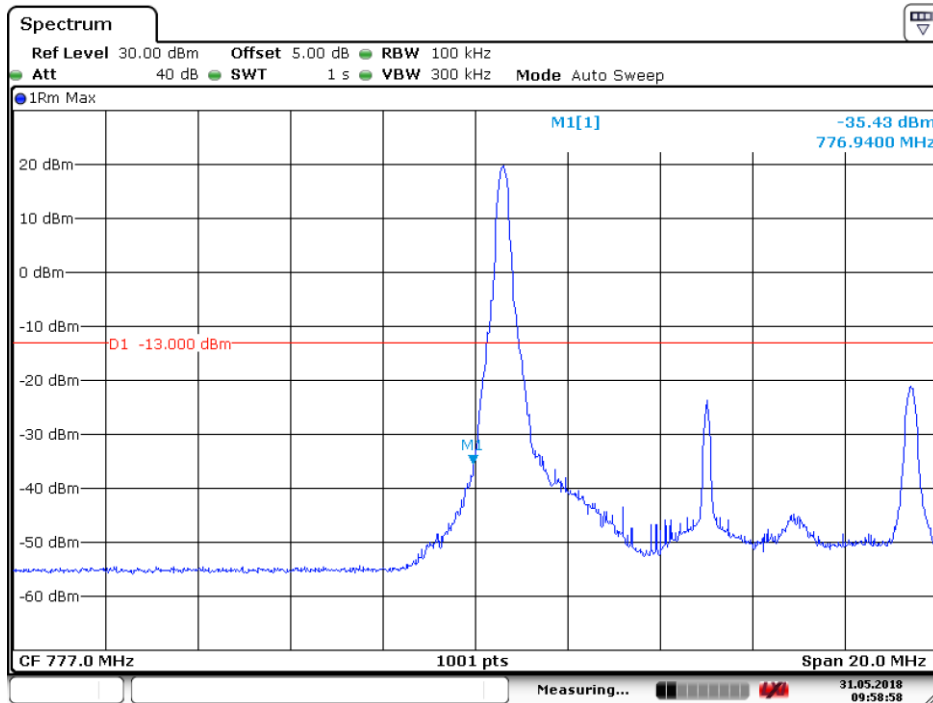


Date: 31.MAY.2018 09:57:03

5.1.1.5 Test Mode = LTE/TM2 10MHz

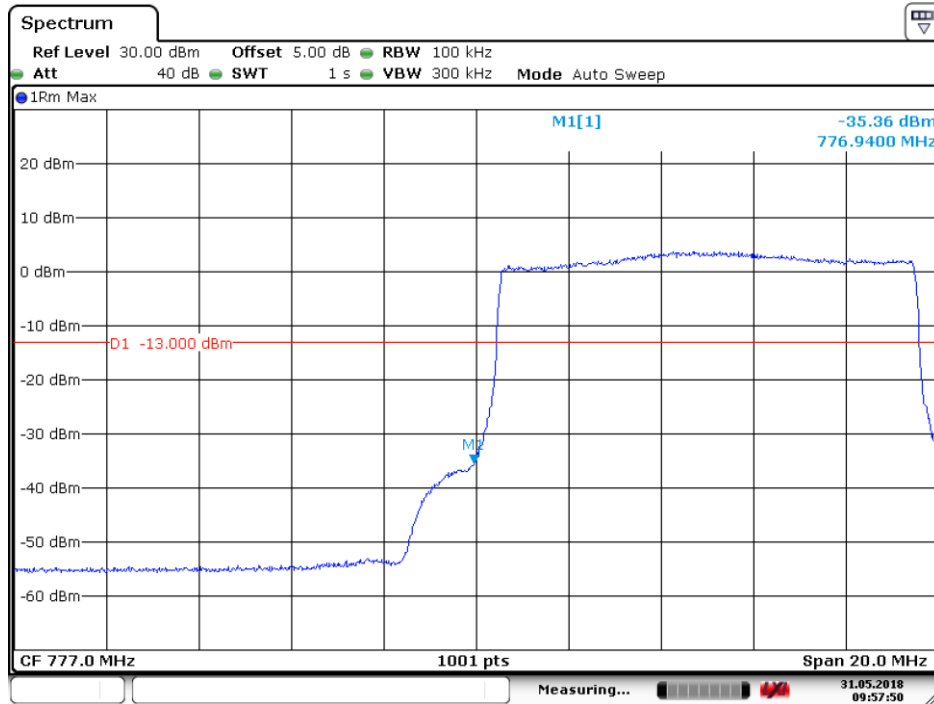
5.1.1.5.1 Test Channel = LCH

5.1.1.5.1.1 Test RB=1RB



Date: 31.MAY.2018 09:58:59

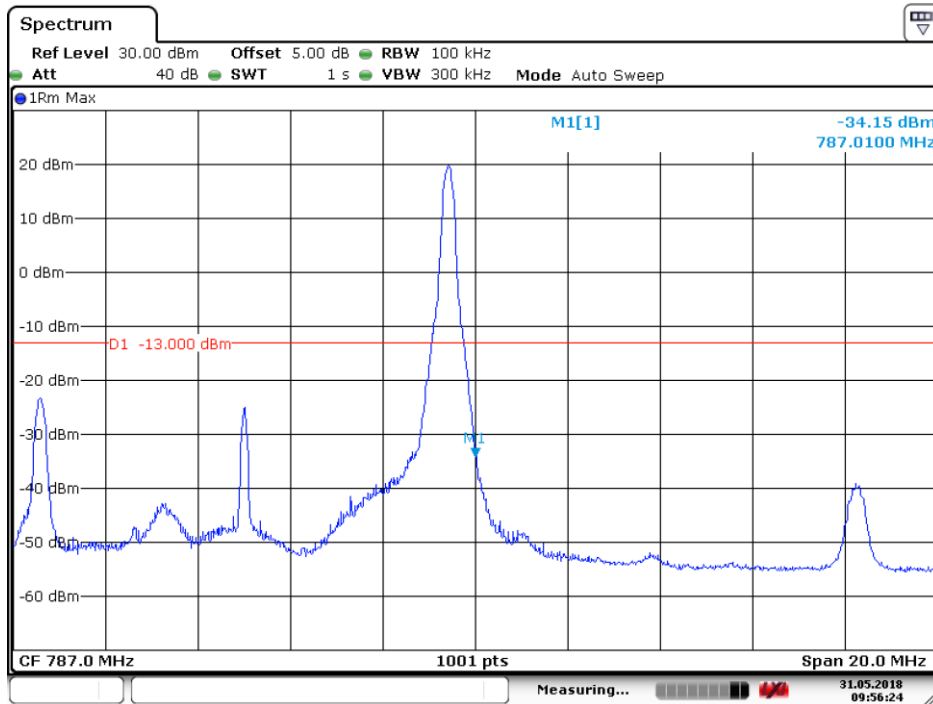
5.1.1.5.1.2 Test RB=50RB



Date: 31.MAY.2018 09:57:50

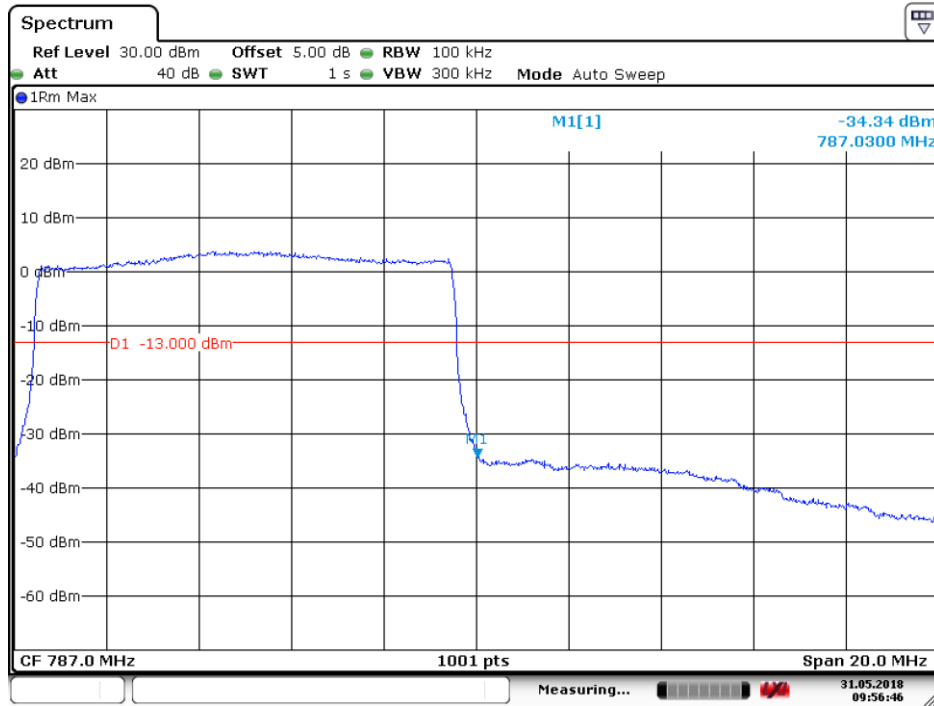
5.1.1.5.2 Test Channel = HCH

5.1.1.5.2.1 Test RB=1RB



Date: 31.MAY.2018 09:56:25

5.1.1.5.2.2 Test RB=50RB

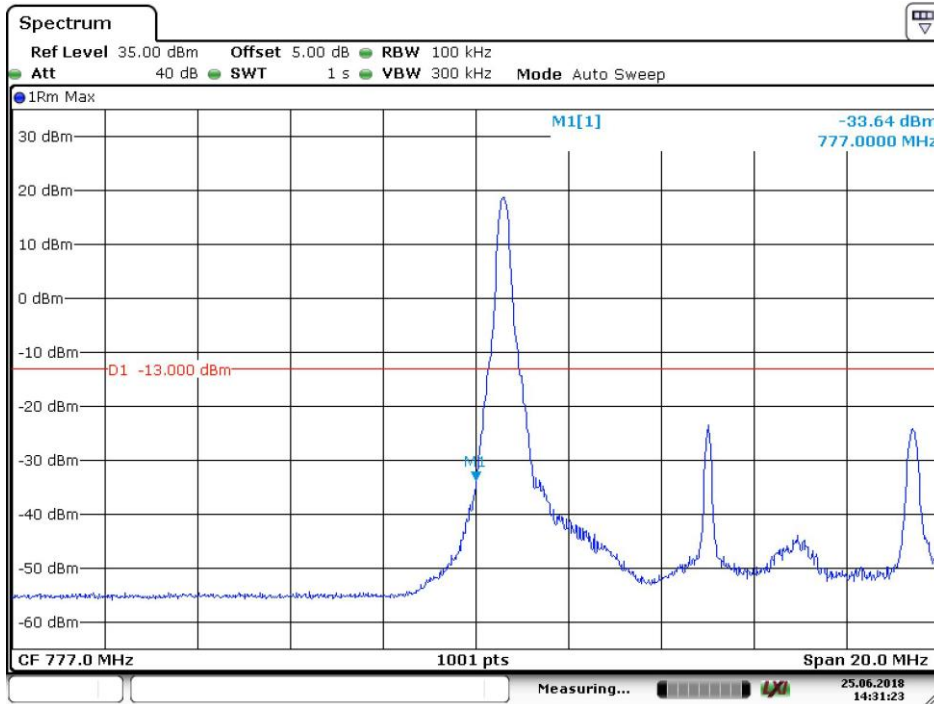


Date: 31.MAY.2018 09:56:46

5.1.1.6 Test Mode = LTE/TM3 10MHz

5.1.1.6.1 Test Channel = LCH

5.1.1.6.1.1 Test RB=1RB



Date: 25 JUN.2018 14:31:24

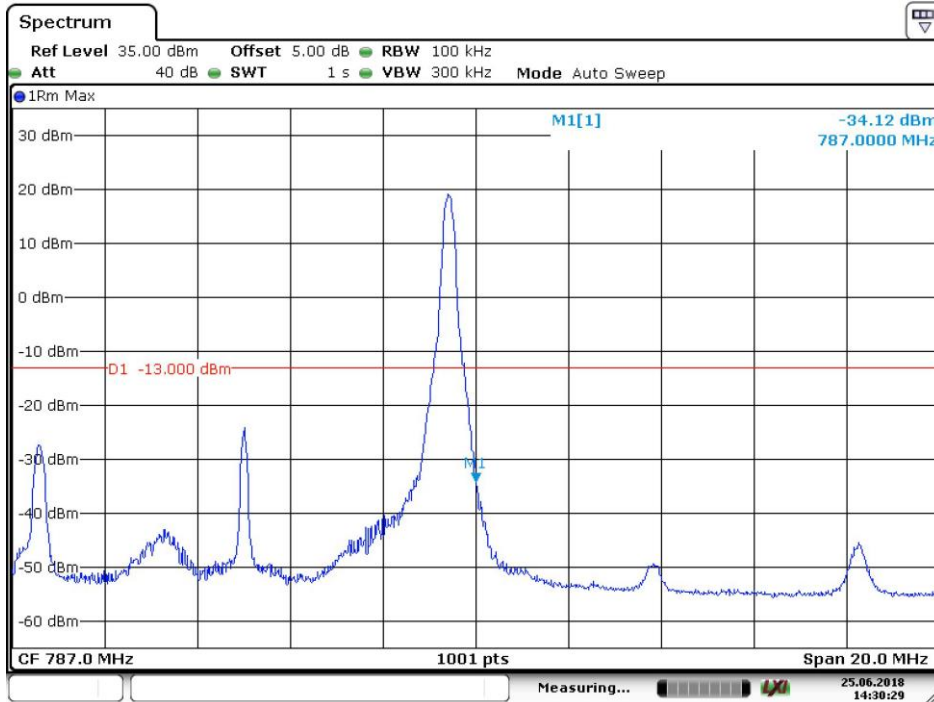
5.1.1.6.1.2 Test RB=50RB



Date: 25 JUN.2018 14:31:52

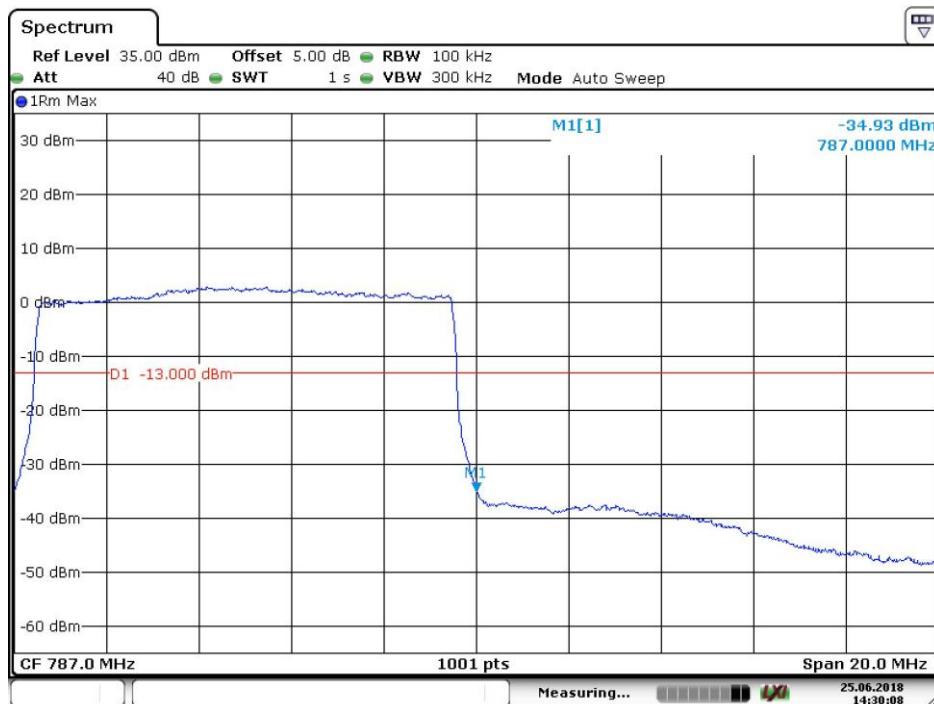
5.1.1.6.1 Test Channel = HCH

5.1.1.6.1.1 Test RB=1RB



Date: 25 JUN 2018 14:30:30

5.1.1.6.1.2 Test RB=50RB



Date: 25 JUN 2018 14:30:09

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 = $k * (Span / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

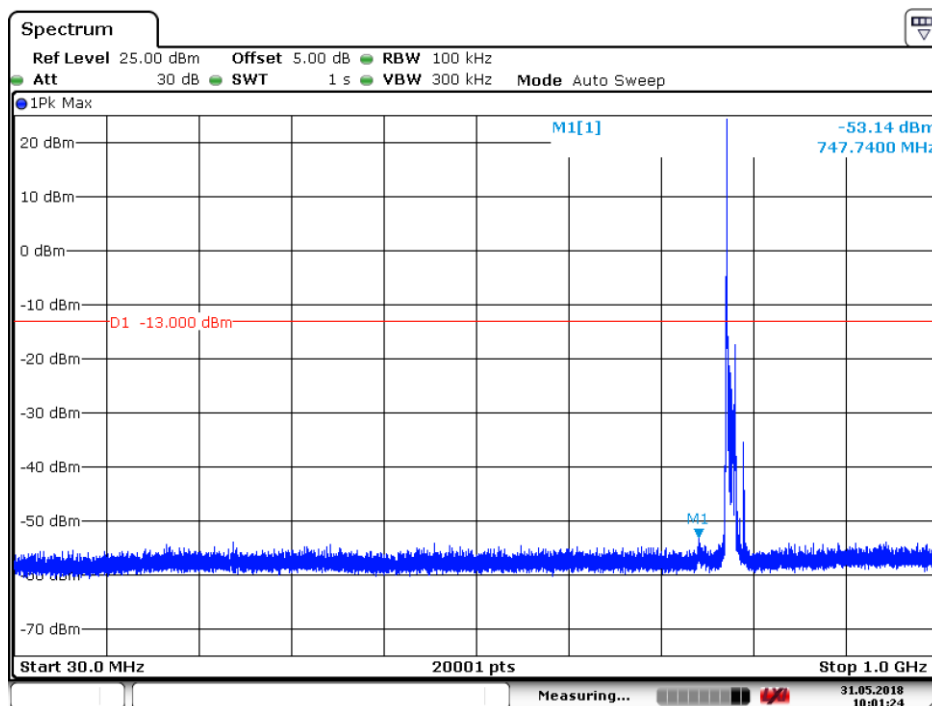
Part I - Test Plots

6.1 For LTE

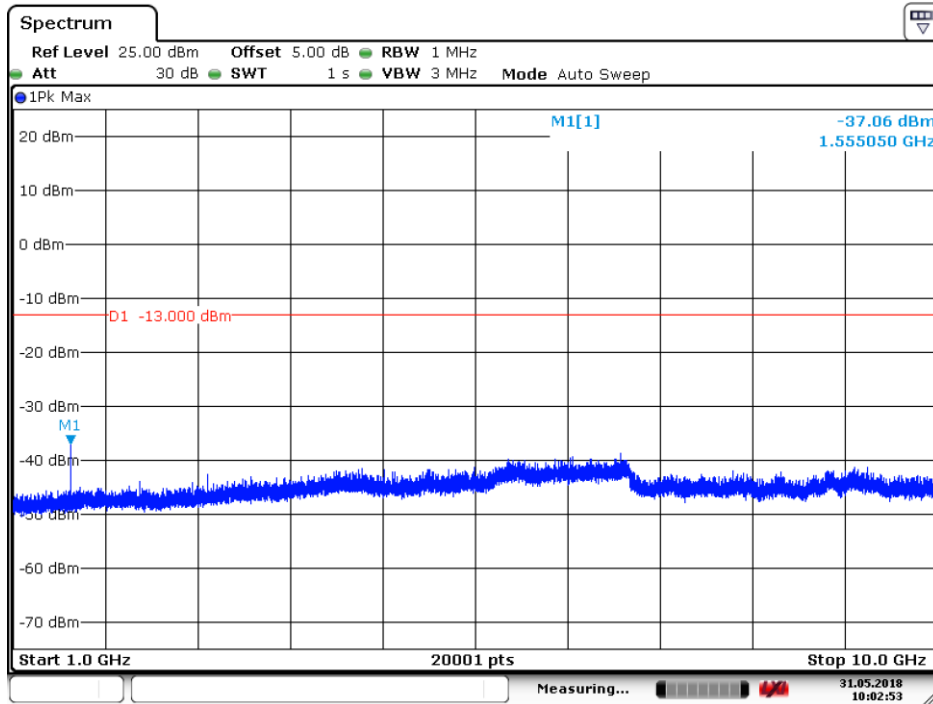
6.1.1 Test Band = LTE BAND 13

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

6.1.1.1.1 Test Channel = MCH



Date: 31.MAY.2018 10:01:25



Date: 31.MAY.2018 10:02:53



7 Field Strength of Spurious Radiation

7.1 For LTE

7.1.1 Test Band = LTE BAND 13

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
65.093333	-81.55	-13.00	68.55	Vertical
128.606667	-85.32	-13.00	72.32	Vertical
179.706667	-81.85	-13.00	68.85	Vertical
1518.000000	-66.60	-13.00	53.60	Vertical
2780.000000	-57.83	-13.00	44.83	Vertical
4270.912500	-66.79	-13.00	53.79	Vertical
63.460000	-77.76	-13.00	64.76	Horizontal
183.486667	-72.38	-13.00	59.38	Horizontal
364.786667	-84.97	-13.00	71.97	Horizontal
1555.000000	-65.36	-13.00	52.36	Horizontal
2486.500000	-59.02	-13.00	46.02	Horizontal
3869.700000	-68.22	-13.00	55.22	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.
- 2) We have tested all modulation and all bandwidth, but only the worst case data presented in this report.



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
LTEBAND 13	LTE/TM1 10MHz	LCH/MCH/HCH	TN	VL	-1.89	-0.00242	PASS
				VN	-8.66	-0.01107	PASS
				VH	10.00	0.01279	PASS
	LTE/TM2 10MHz	LCH/MCH/HCH	TN	VL	7.45	0.00952	PASS
				VN	-2.41	-0.00308	PASS
				VH	4.91	0.00627	PASS
	LTE/TM3 10MHz	LCH/MCH/HCH	TN	VL	9.46	0.012101	PASS
				VN	-1.41	-0.001803	PASS
				VH	2.38	0.003047	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
LTEBAND 13	LTE/TM1 10MHz	LCH/MCH/HCH	VN	-30	5.39	0.00690	PASS
				-20	-0.23	-0.00029	PASS
				-10	9.07	0.01159	PASS
				0	-4.44	-0.00567	PASS
				10	3.78	0.00483	PASS
				20	-6.89	-0.00881	PASS
				30	6.99	0.00894	PASS
				40	-9.79	-0.01252	PASS
	LTE/TM2 10MHz	LCH/MCH/HCH	VN	-30	2.74	0.00351	PASS
				-20	-0.49	-0.00063	PASS
				-10	-4.67	-0.00597	PASS
				0	1.26	0.00162	PASS
				10	-9.56	-0.01222	PASS
				20	-1.33	-0.00171	PASS
				30	-5.52	-0.00705	PASS
				40	-7.52	-0.00961	PASS
	LTE/TM3 10MHz	LCH/MCH/HCH	VN	-30	6.85	0.008760	PASS
				-20	-0.59	-0.000757	PASS
				-10	8.77	0.011212	PASS
				0	-3.64	-0.004655	PASS
				10	-7.05	-0.009019	PASS
				20	9.59	0.012269	PASS
				30	7.21	0.009221	PASS
				40	-6.11	-0.007816	PASS
			50	7.61	0.009734	PASS	

The End