



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
BAND13	LTE/TM1	5M	LCH	RB1#0	21.59	20.85	34.77	PASS
				RB1#13	21.1	20.36	34.77	PASS
				RB1#24	21.15	20.41	34.77	PASS
				RB12#0	21.14	20.4	34.77	PASS
				RB12#6	21.18	20.44	34.77	PASS
				RB12#13	21.23	20.49	34.77	PASS
				RB25#0	21.45	20.71	34.77	PASS
			MCH	RB1#0	21.89	21.15	34.77	PASS
				RB1#13	21.98	21.24	34.77	PASS
				RB1#24	21.9	21.16	34.77	PASS
				RB12#0	21.86	21.12	34.77	PASS
				RB12#6	21.85	21.11	34.77	PASS
				RB12#13	21.58	20.84	34.77	PASS
				RB25#0	21.75	21.01	34.77	PASS
			HCH	RB1#0	21.51	20.77	34.77	PASS
				RB1#13	21.32	20.58	34.77	PASS
				RB1#24	21.53	20.79	34.77	PASS
				RB12#0	21.27	20.53	34.77	PASS
				RB12#6	21.48	20.74	34.77	PASS
				RB12#13	21.53	20.79	34.77	PASS
				RB25#0	21.52	20.78	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
BAND13	LTE/TM2	5M	LCH	RB1#0	21.9	21.16	34.77	PASS
				RB1#13	22.24	21.5	34.77	PASS
				RB1#24	21.6	20.86	34.77	PASS
				RB12#0	20.86	20.12	34.77	PASS
				RB12#6	20.9	20.16	34.77	PASS
				RB12#13	20.74	20	34.77	PASS
				RB25#0	20.75	20.01	34.77	PASS
			MCH	RB1#0	22.46	21.72	34.77	PASS
				RB1#13	21.97	21.23	34.77	PASS
				RB1#24	21.83	21.09	34.77	PASS
				RB12#0	20.43	19.69	34.77	PASS
				RB12#6	20.47	19.73	34.77	PASS
				RB12#13	20.43	19.69	34.77	PASS
				RB25#0	20.32	19.58	34.77	PASS
			HCH	RB1#0	22.18	21.44	34.77	PASS
				RB1#13	22.09	21.35	34.77	PASS
				RB1#24	21.43	20.69	34.77	PASS
				RB12#0	20.22	19.48	34.77	PASS
				RB12#6	20.01	19.27	34.77	PASS
				RB12#13	20.94	20.2	34.77	PASS
				RB25#0	20.6	19.86	34.77	PASS



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	22.01	21.27	34.77	PASS
				RB1#25	21.75	21.01	34.77	PASS
				RB1#49	21.44	20.7	34.77	PASS
				RB25#0	21.57	20.83	34.77	PASS
				RB25#13	21.62	20.88	34.77	PASS
				RB25#25	21.4	20.66	34.77	PASS
				RB50#0	21.59	20.85	34.77	PASS
	LTE/TM2	10M	MCH	RB1#0	22.22	21.48	34.77	PASS
				RB1#25	22.17	21.43	34.77	PASS
				RB1#49	21.77	21.03	34.77	PASS
				RB25#0	20.56	19.82	34.77	PASS
				RB25#13	20.44	19.7	34.77	PASS
				RB25#25	20.41	19.67	34.77	PASS
				RB50#0	20.65	19.91	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	5.16	13	PASS
	TM2/10M	MCH	6.20	13	PASS

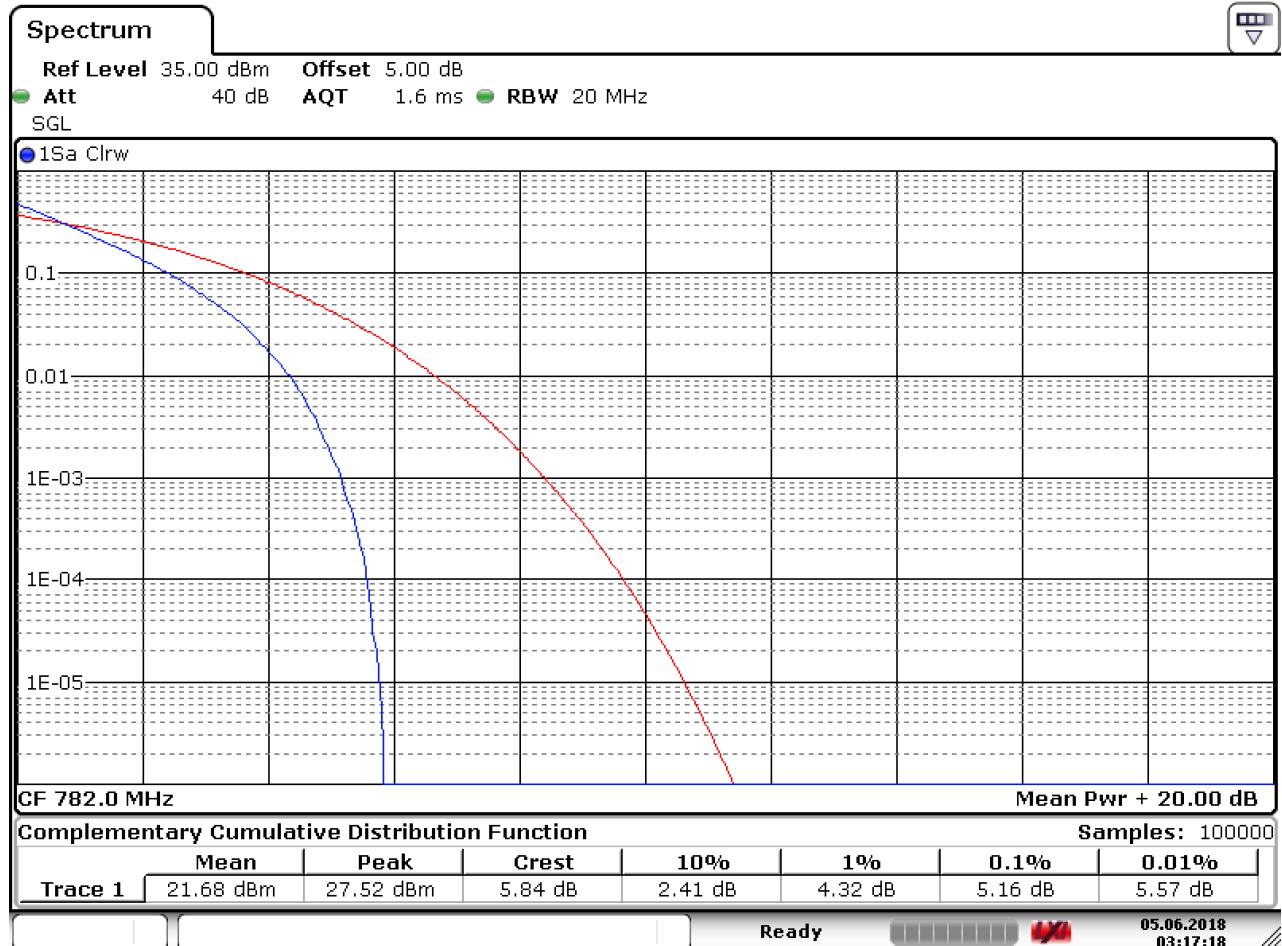
Part II - Test Plots

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

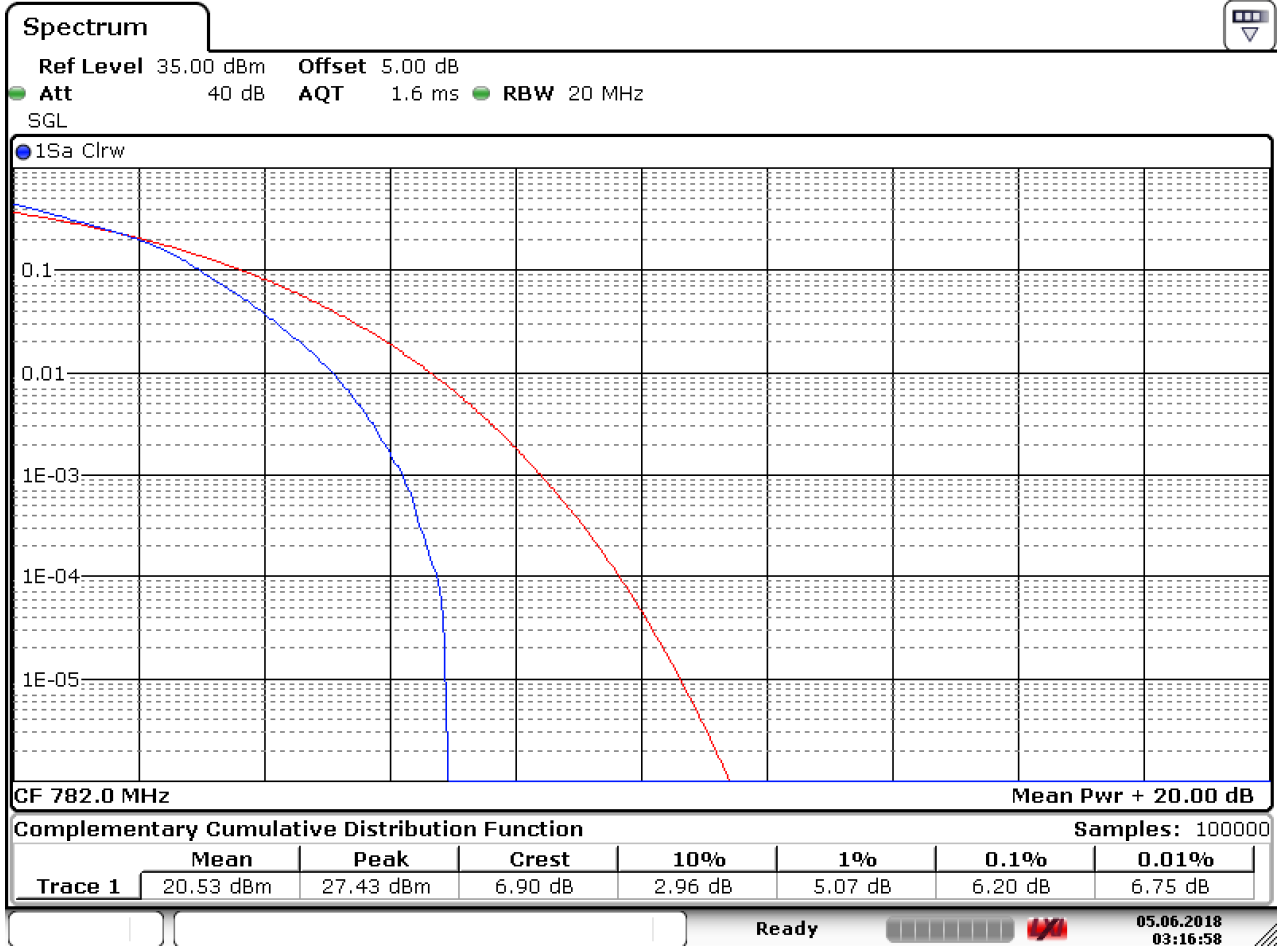


Date: 5.JUN.2018 03:17:19



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

2.1.1.2.1 Test Channel = MCH



Date: 5.JUN.2018 03:16:58

3 Modulation Characteristics

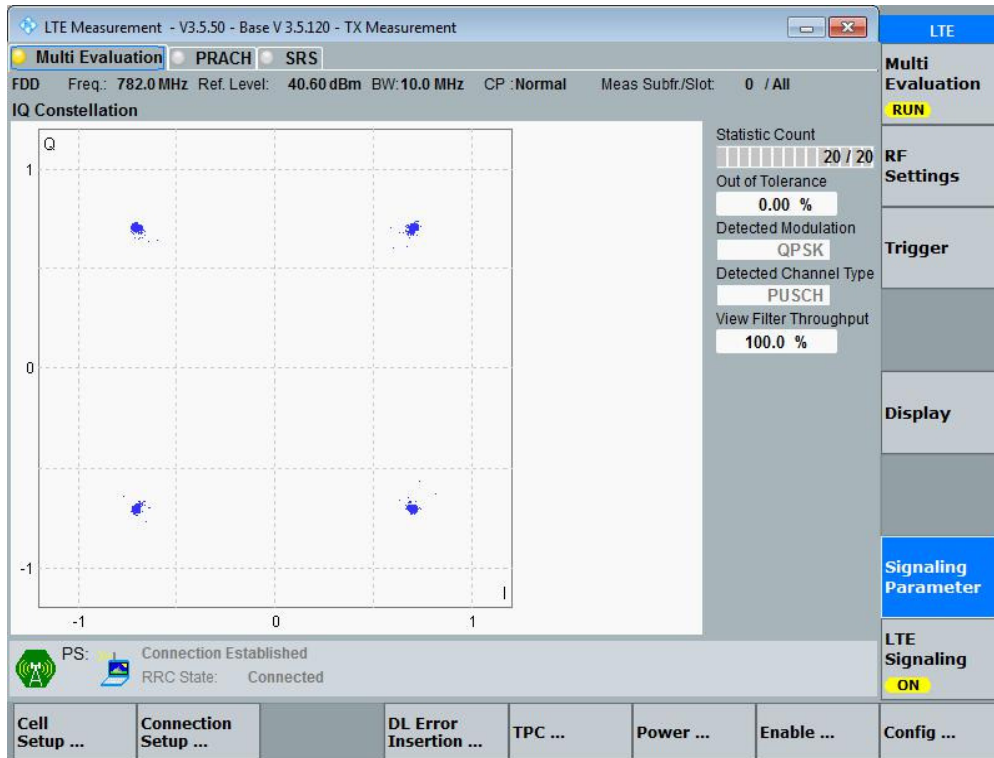
Part I - Test Plots

3.1 For LTE

3.1.1 Test Band = LTE band13

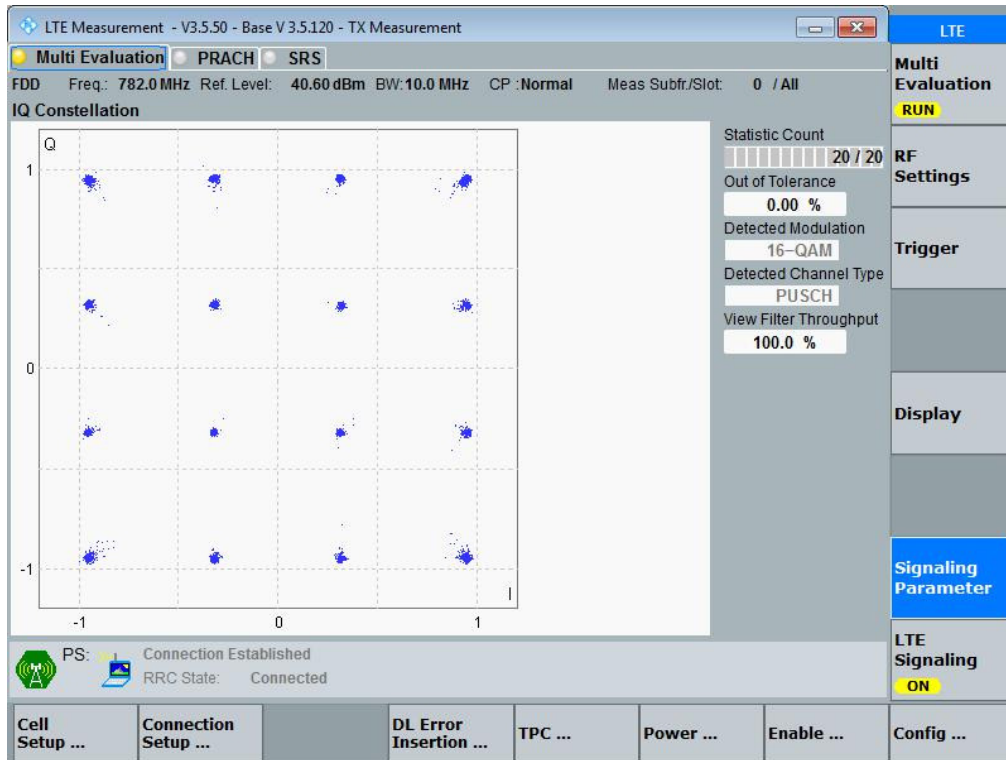
3.1.1.1 Test Mode = LTE /TM1 10MHz

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	4.46	4.85	PASS
		MCH	4.48	4.85	PASS
		HCH	4.47	4.82	PASS
	TM2/ 5MHz	LCH	4.47	4.85	PASS
		MCH	4.48	4.85	PASS
		HCH	4.47	4.82	PASS
	TM1/10MHz	MCH	8.93	9.61	PASS
	TM2/10MHz	MCH	8.95	9.63	PASS

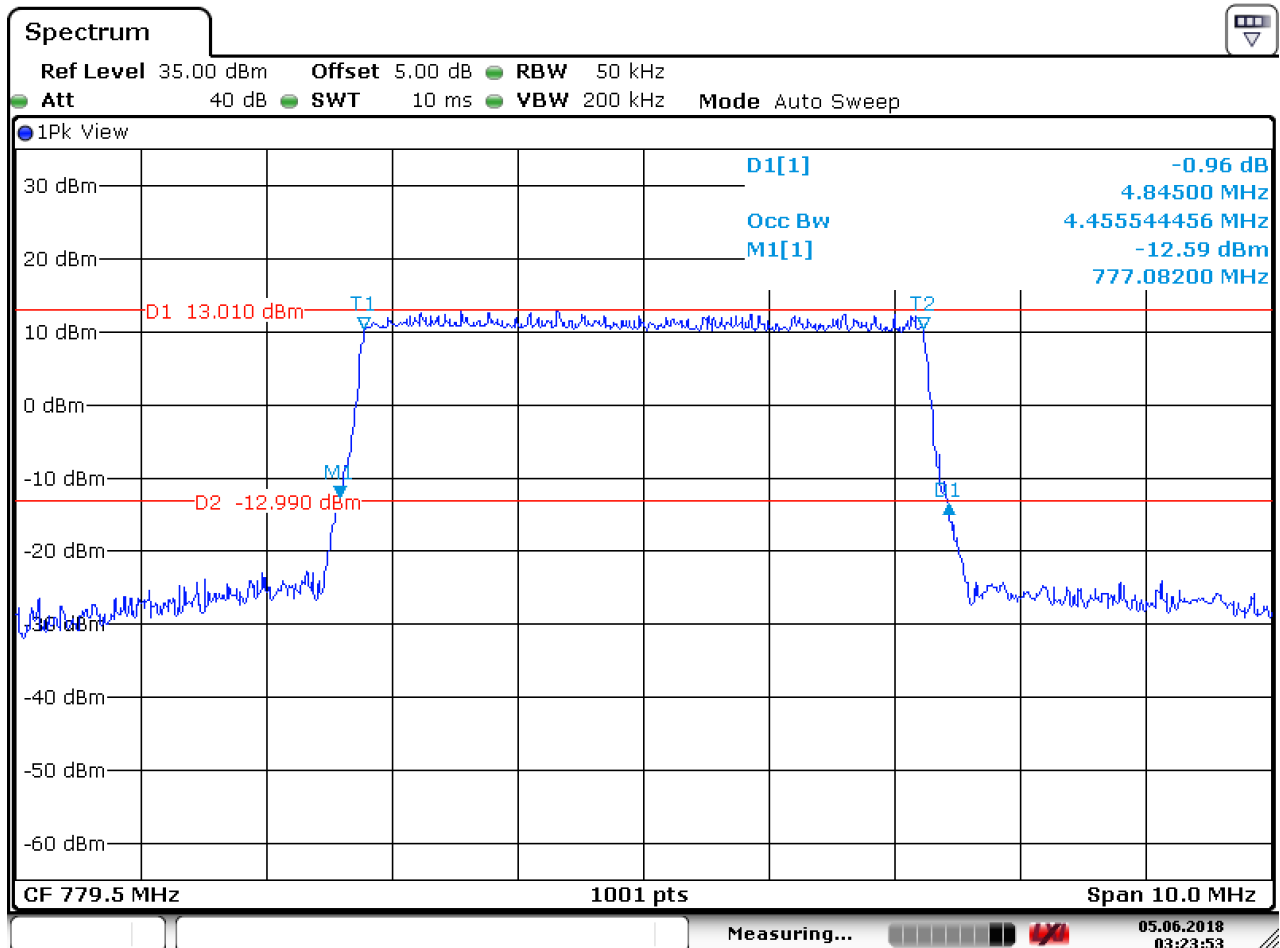


4.1 For LTE

4.1.1 Test Band = LTE band13

4.1.1.1 Test Mode = LTE/TM1 5MHz

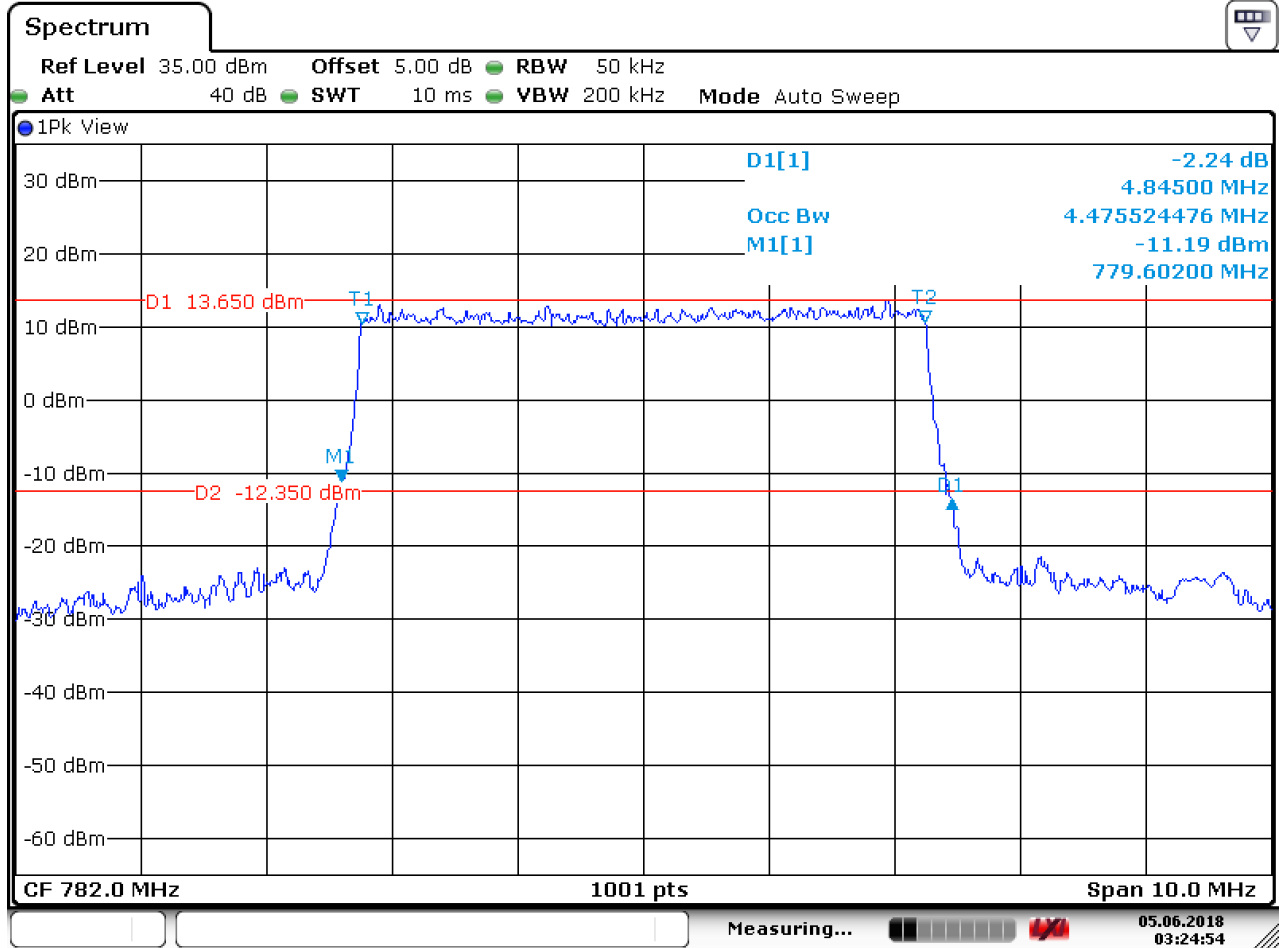
4.1.1.1.1 Test Channel = LCH



Date: 5. JUN.2018 03:23:53

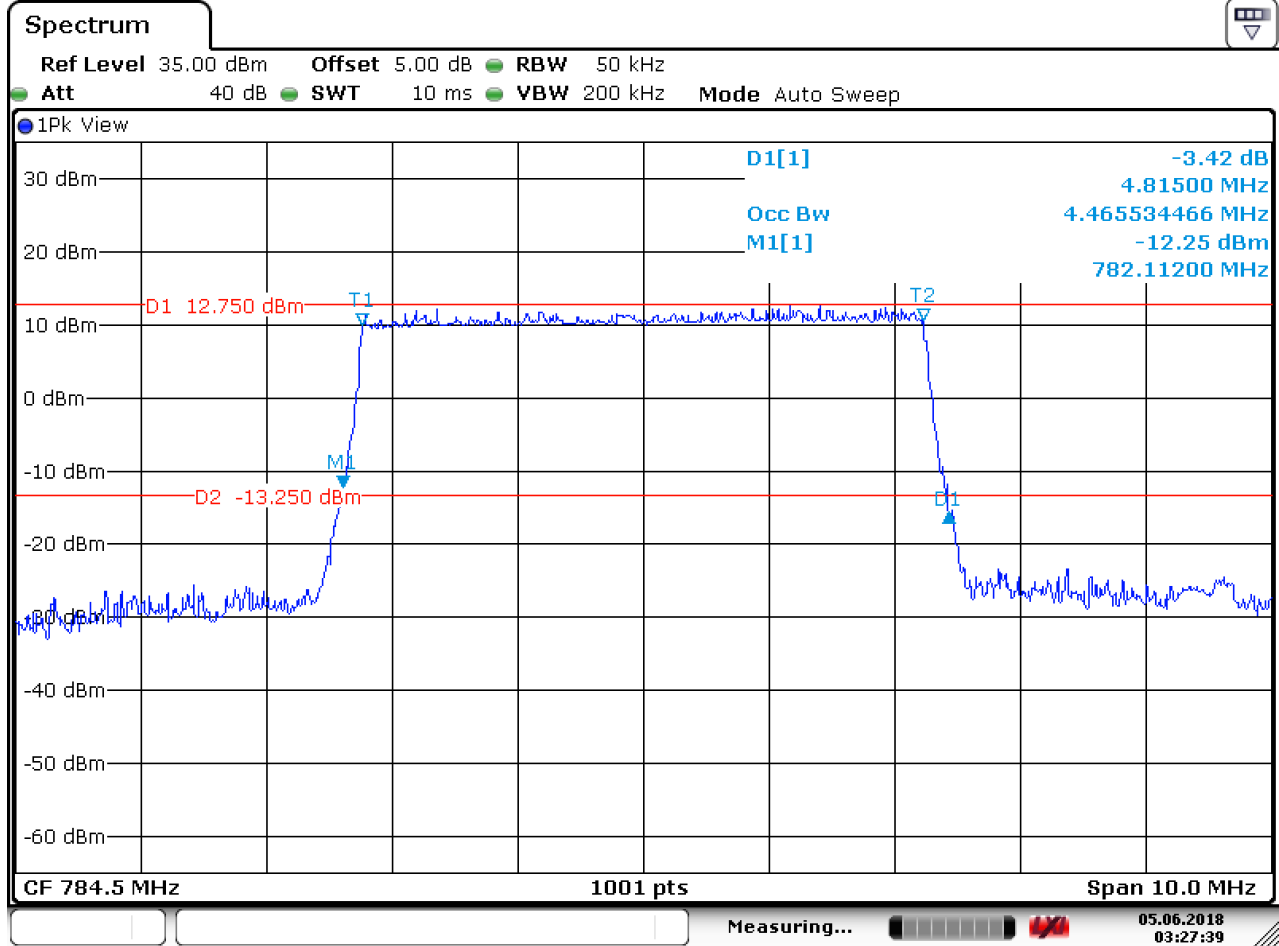


4.1.1.1.2 Test Channel = MCH



Date: 5.JUN.2018 03:24:54

4.1.1.1.3 Test Channel = HCH

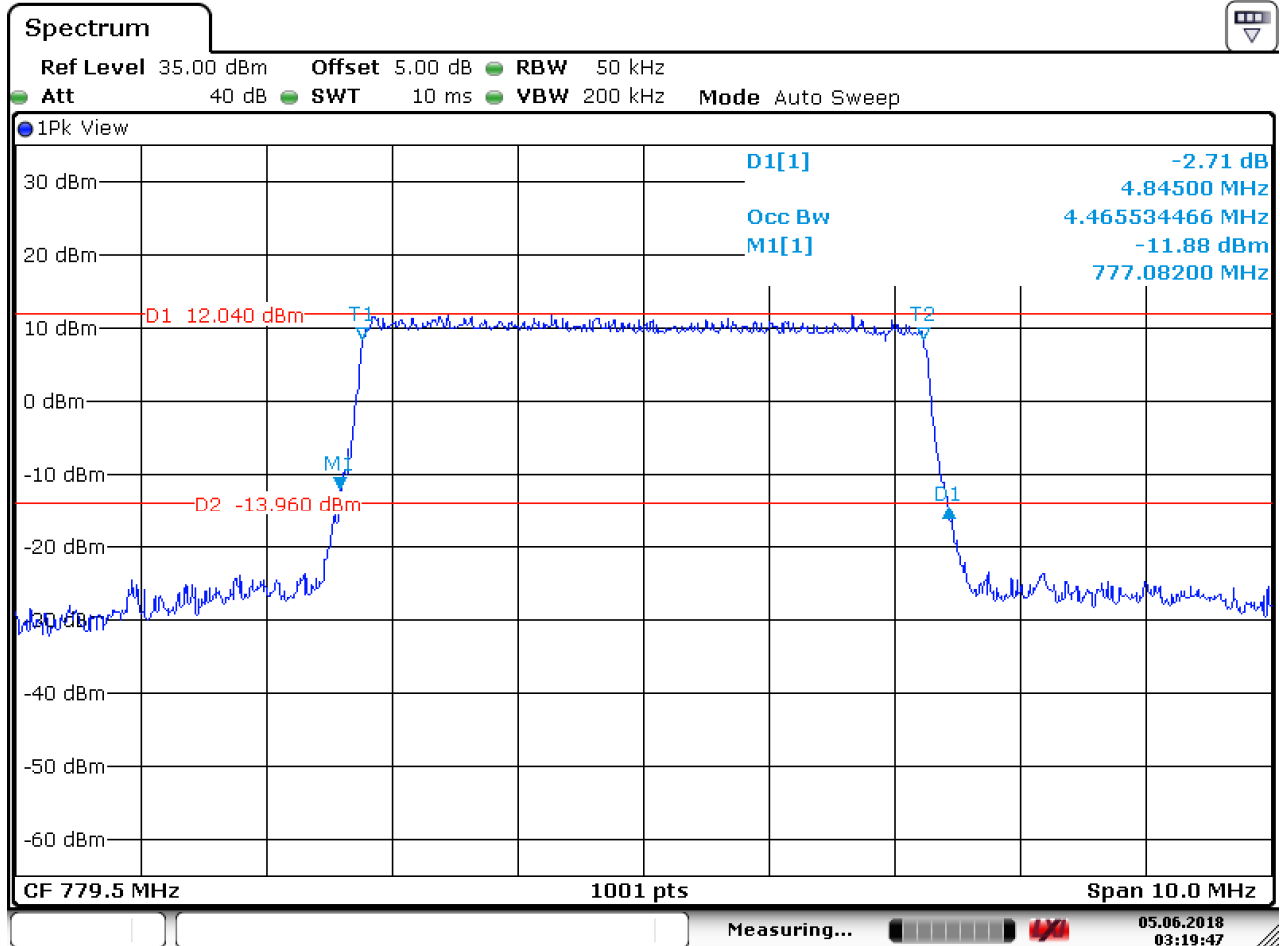


Date: 5.JUN.2018 03:27:39



4.1.1.2 Test Mode = LTE/TM2 5MHz

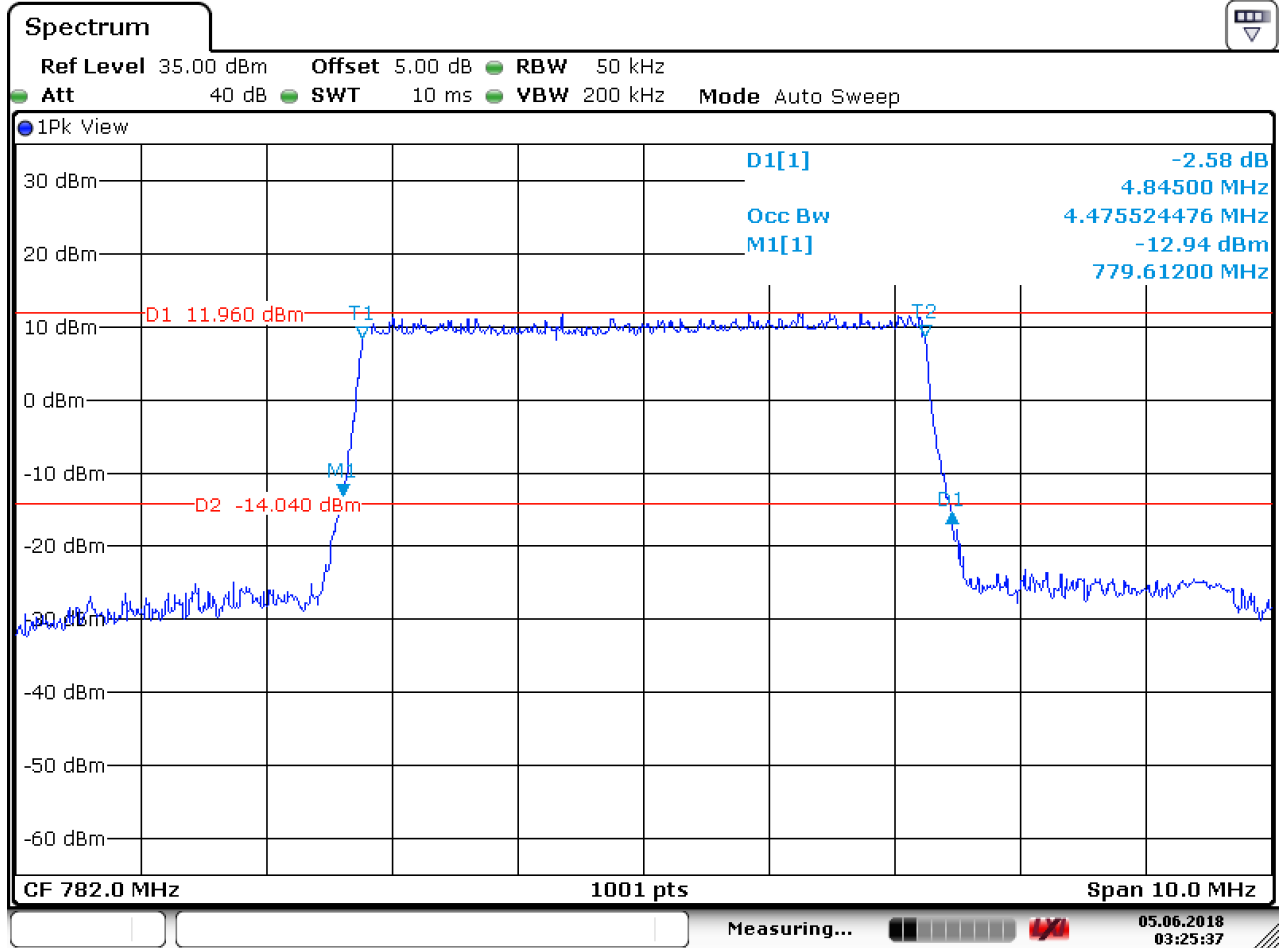
4.1.1.2.1 Test Channel = LCH



Date: 5 JUN.2018 03:19:48



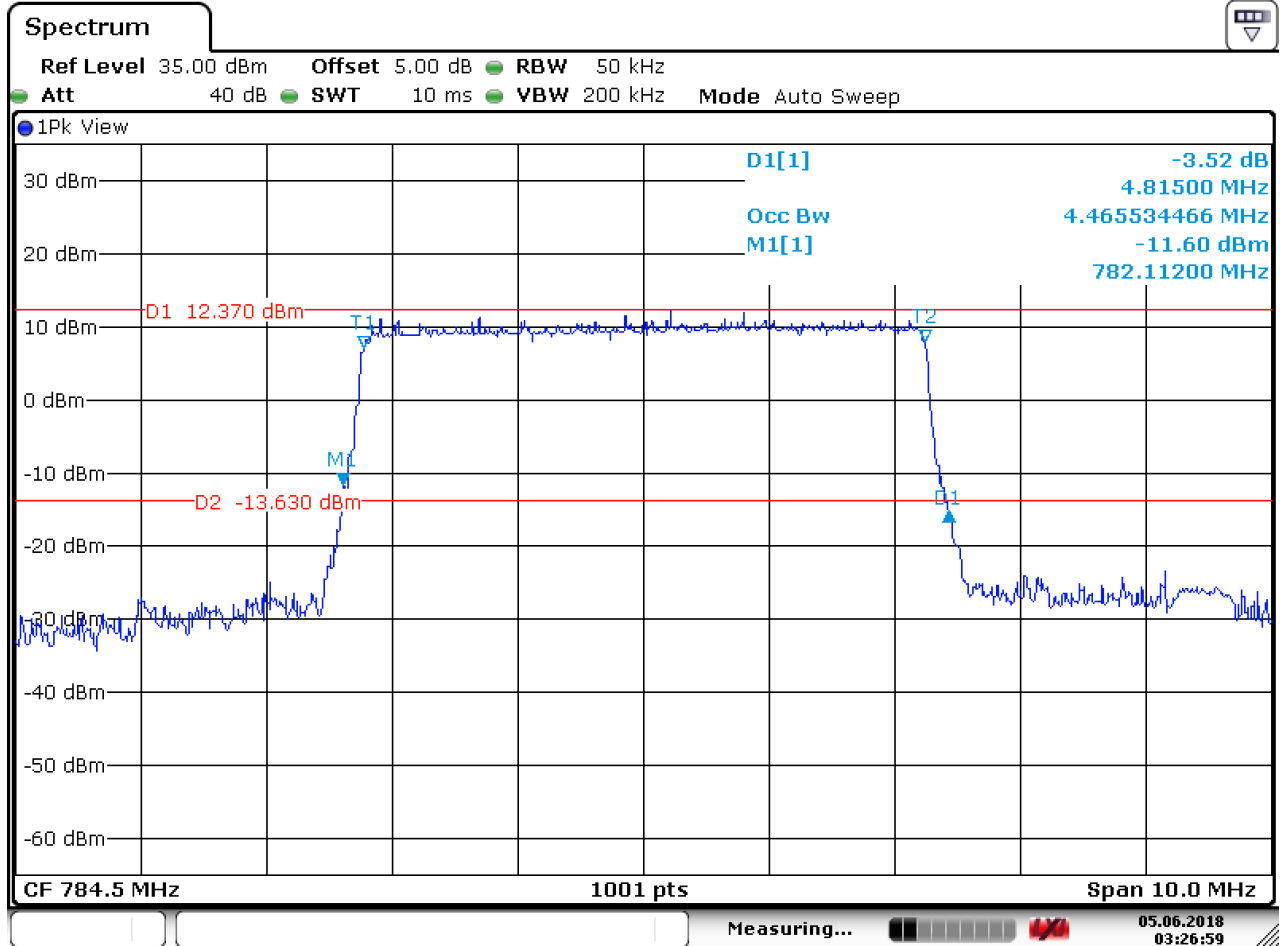
4.1.1.2.2 Test Channel = MCH



Date: 5 JUN.2018 03:25:38



4.1.1.2.3 Test Channel = HCH

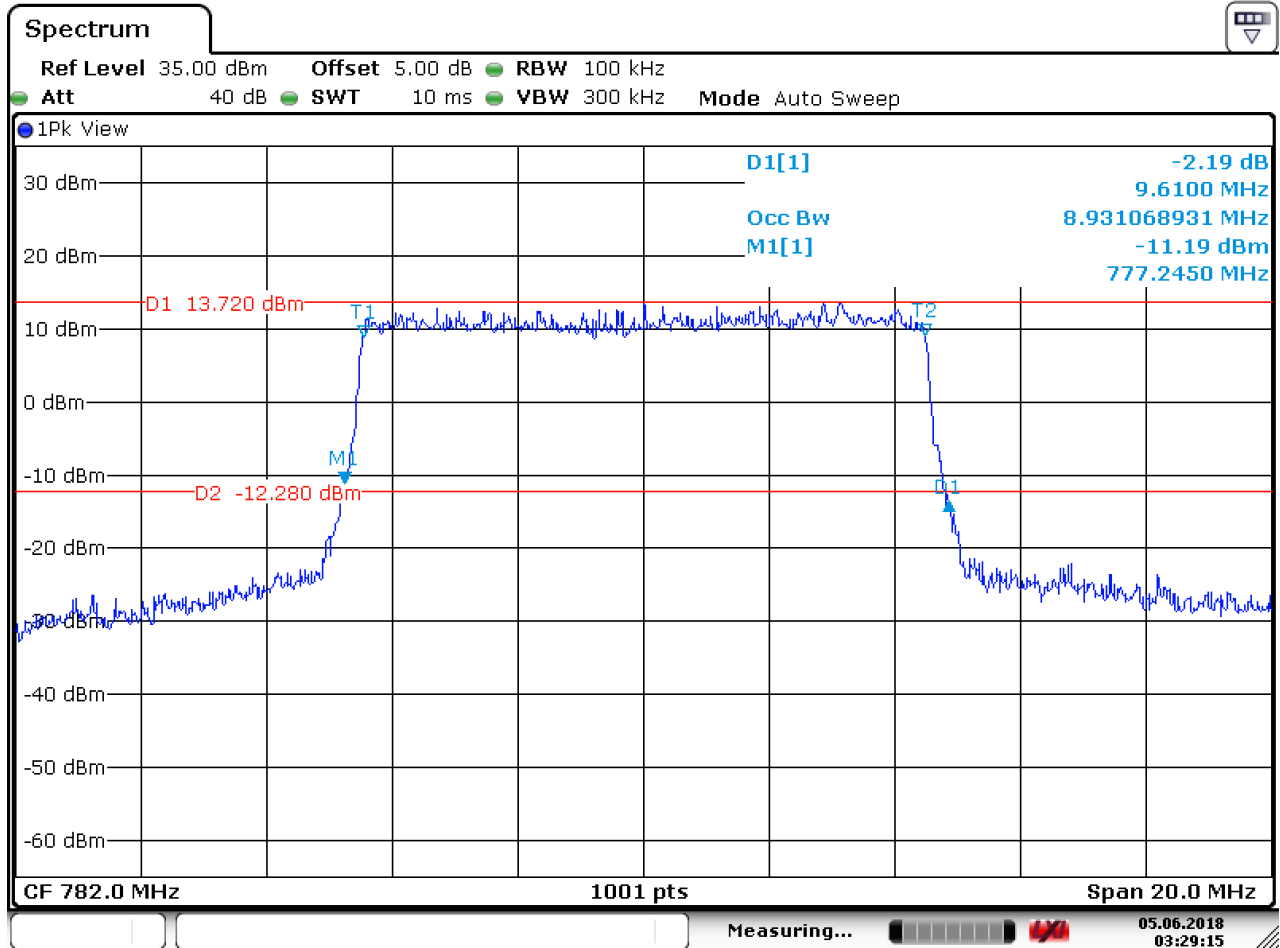


Date: 5.JUN.2018 03:27:00



4.1.1.3 Test Mode = LTE/TM1 10MHz

4.1.1.3.1 Test Channel = MCH

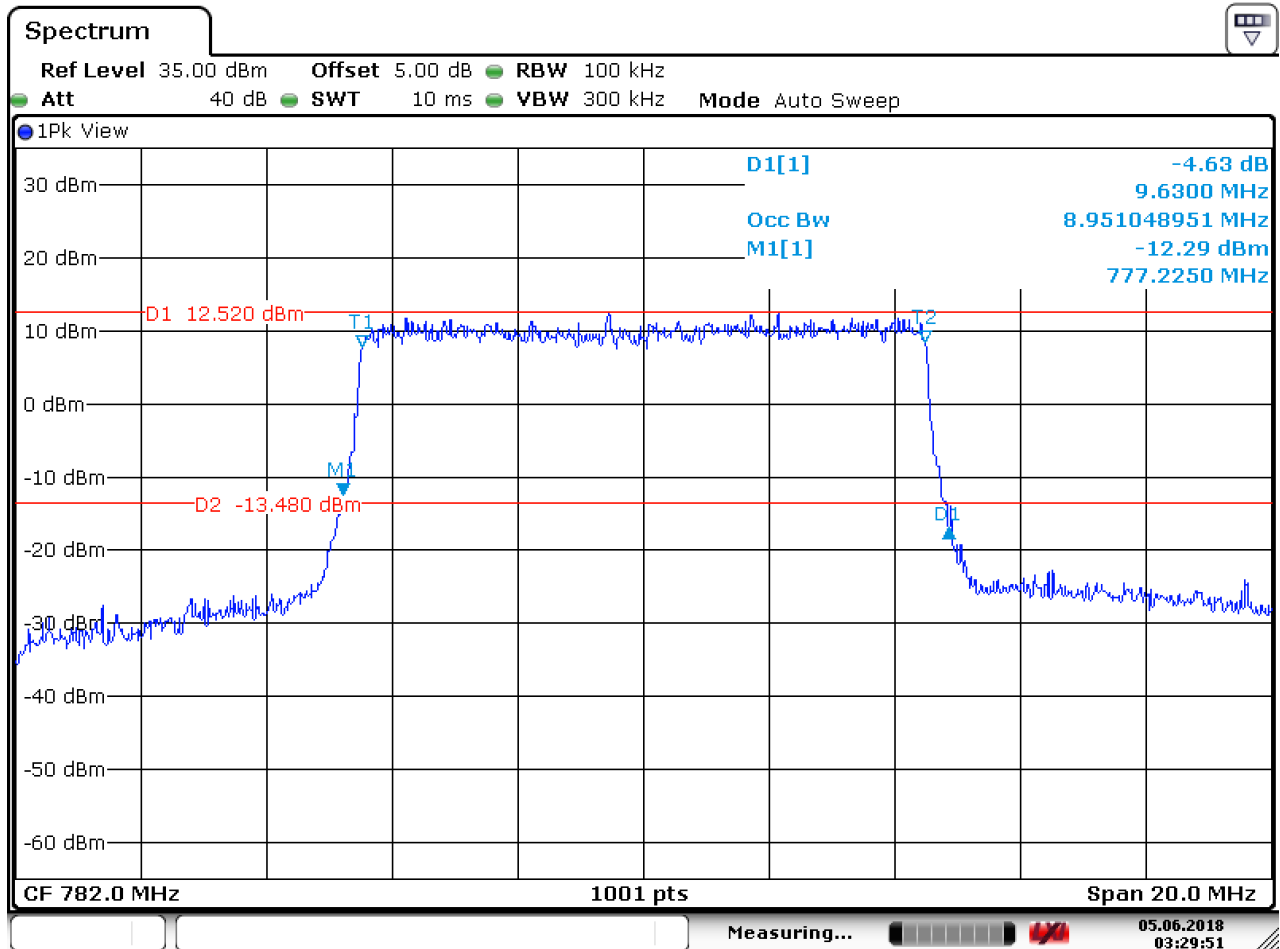


Date: 5.JUN.2018 03:29:16



4.1.1.4 Test Mode = LTE/TM2 10MHz

4.1.1.4.1 Test Channel = MCH



Date: 5 JUN.2018 03:29:51

5 Band Edges Compliance

Part I –

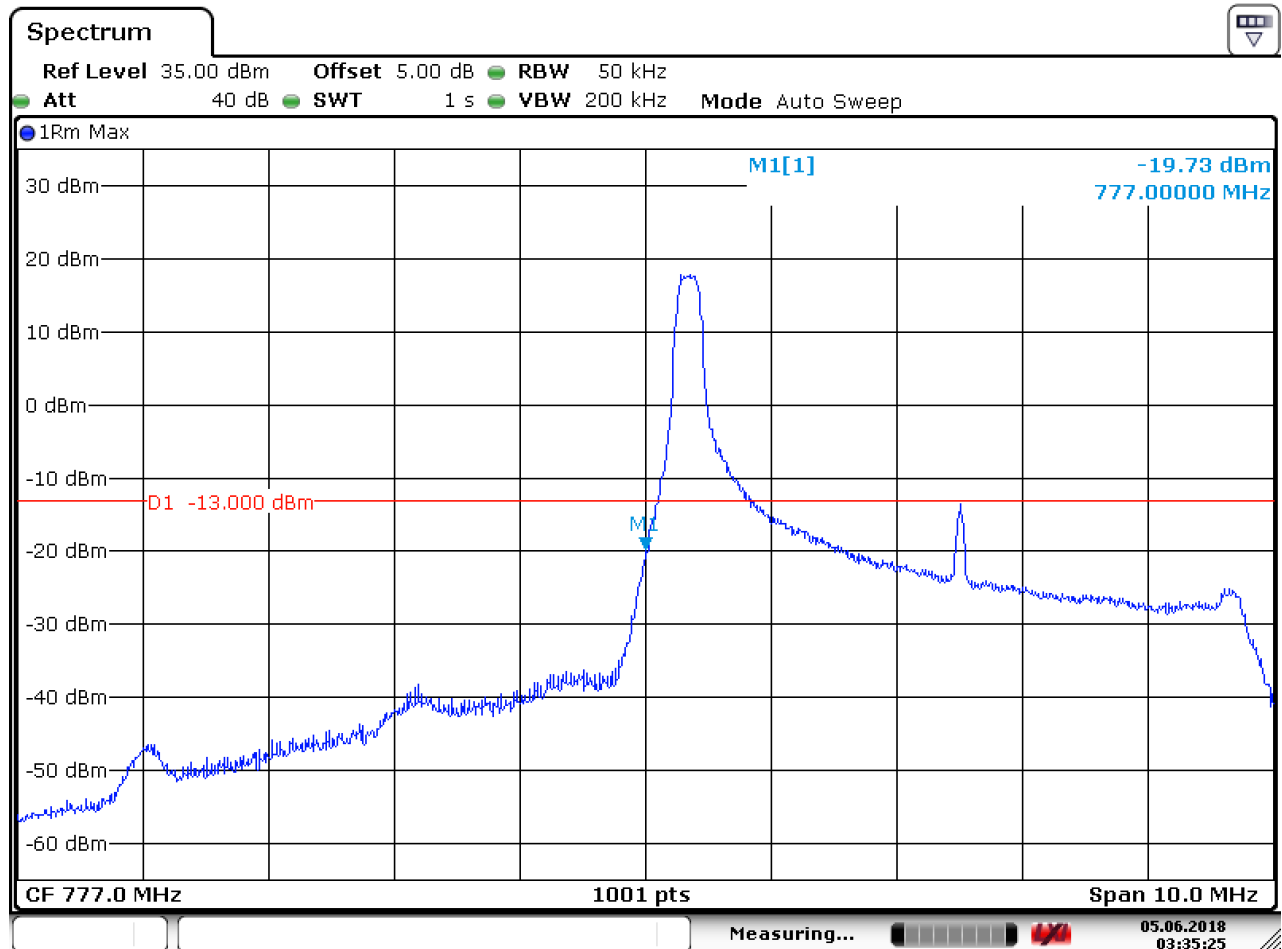
5.1 For LTE

5.1.1 Test Band = LTE band13

5.1.1.1 Test Mode = LTE/TM1 5MHz

5.1.1.1.1 Test Channel = LCH

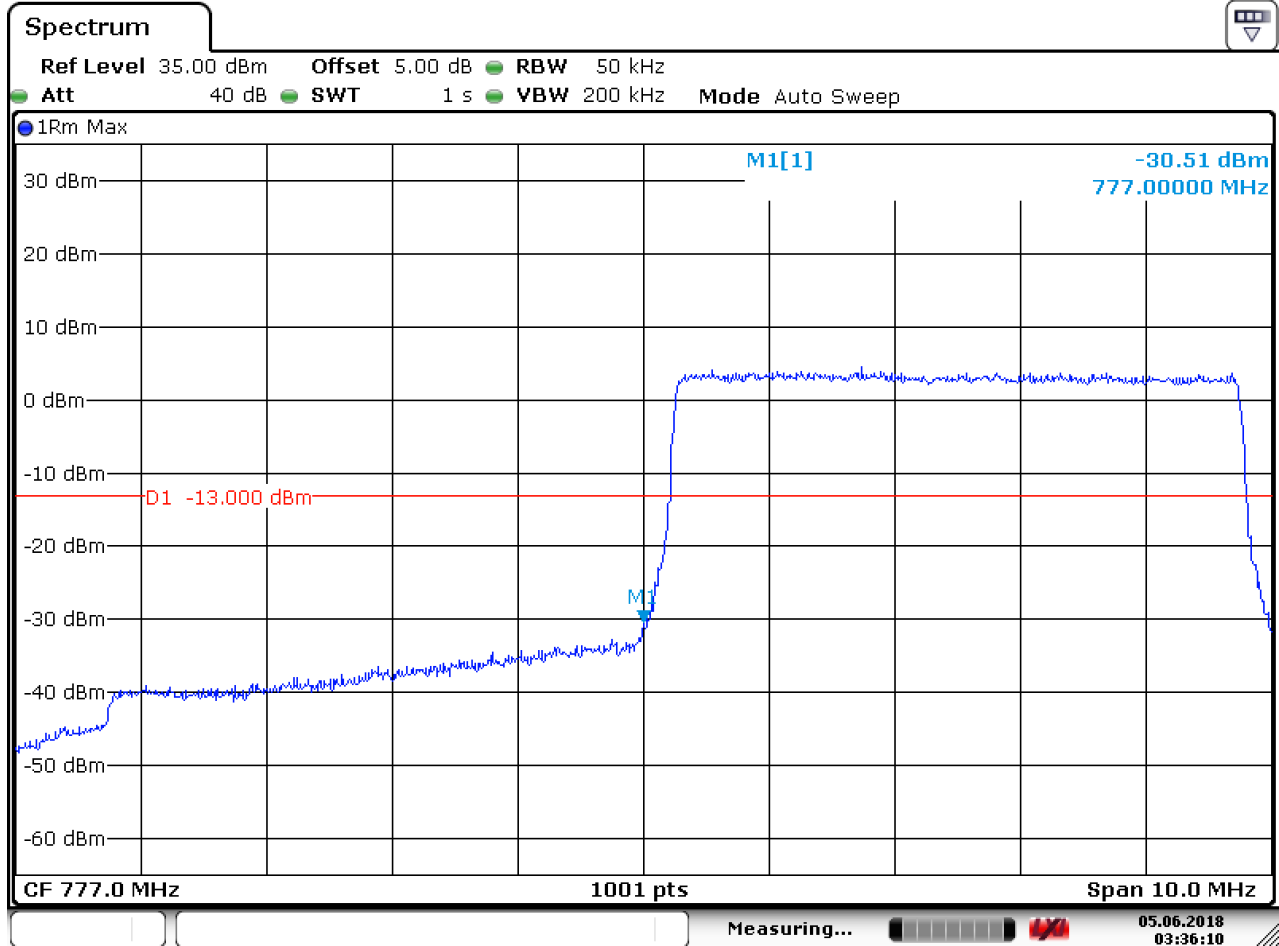
5.1.1.1.1.1 Test RB=1RB



Date: 5 JUN.2018 03:35:26



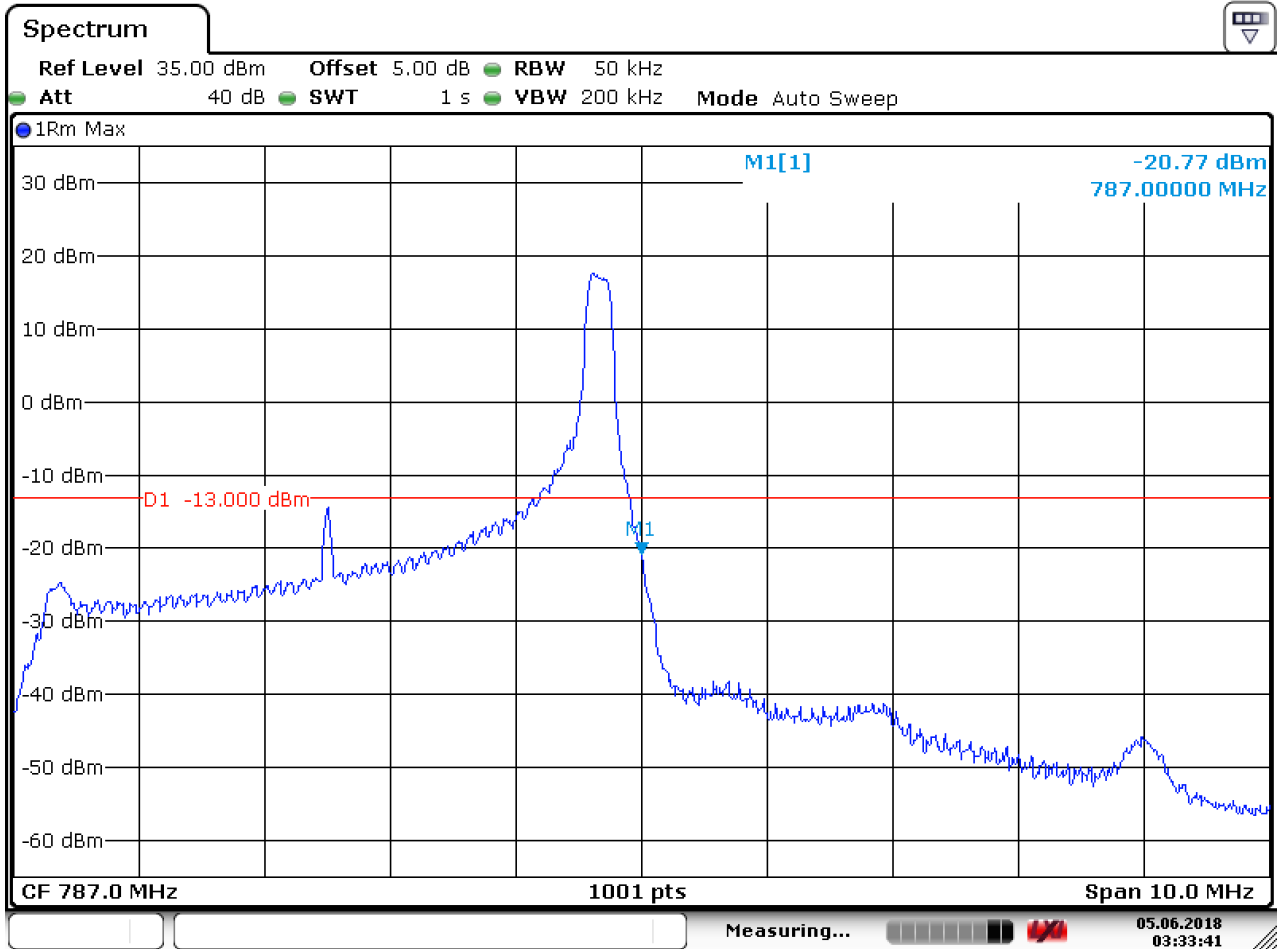
5.1.1.1.2 Test RB=25RB



Date: 5.JUN.2018 03:36:11

5.1.1.1.2 Test Channel = HCH

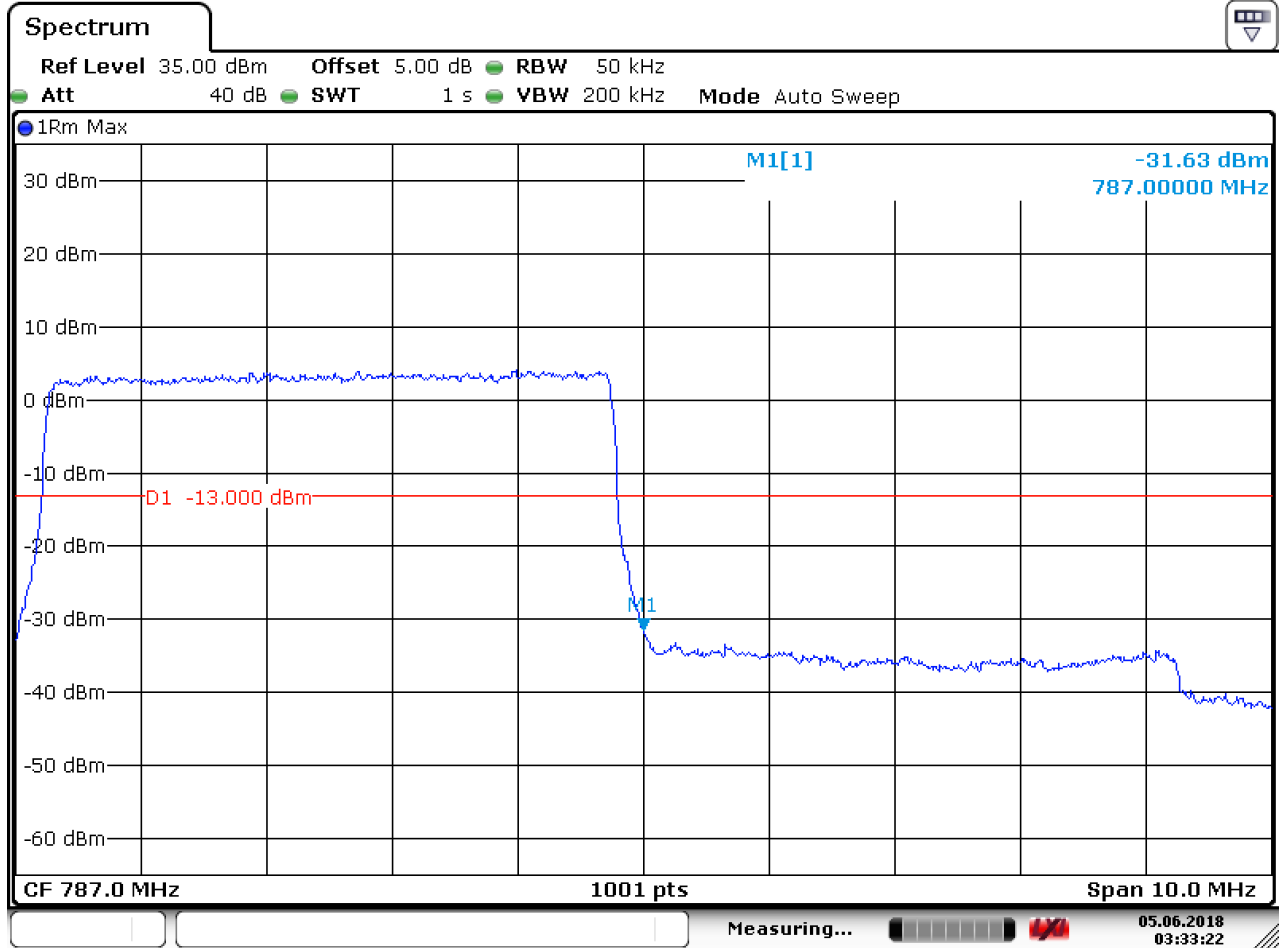
5.1.1.1.2.1 Test RB=1RB



Date: 5 JUN.2018 03:33:41



5.1.1.1.2.2 Test RB=25RB



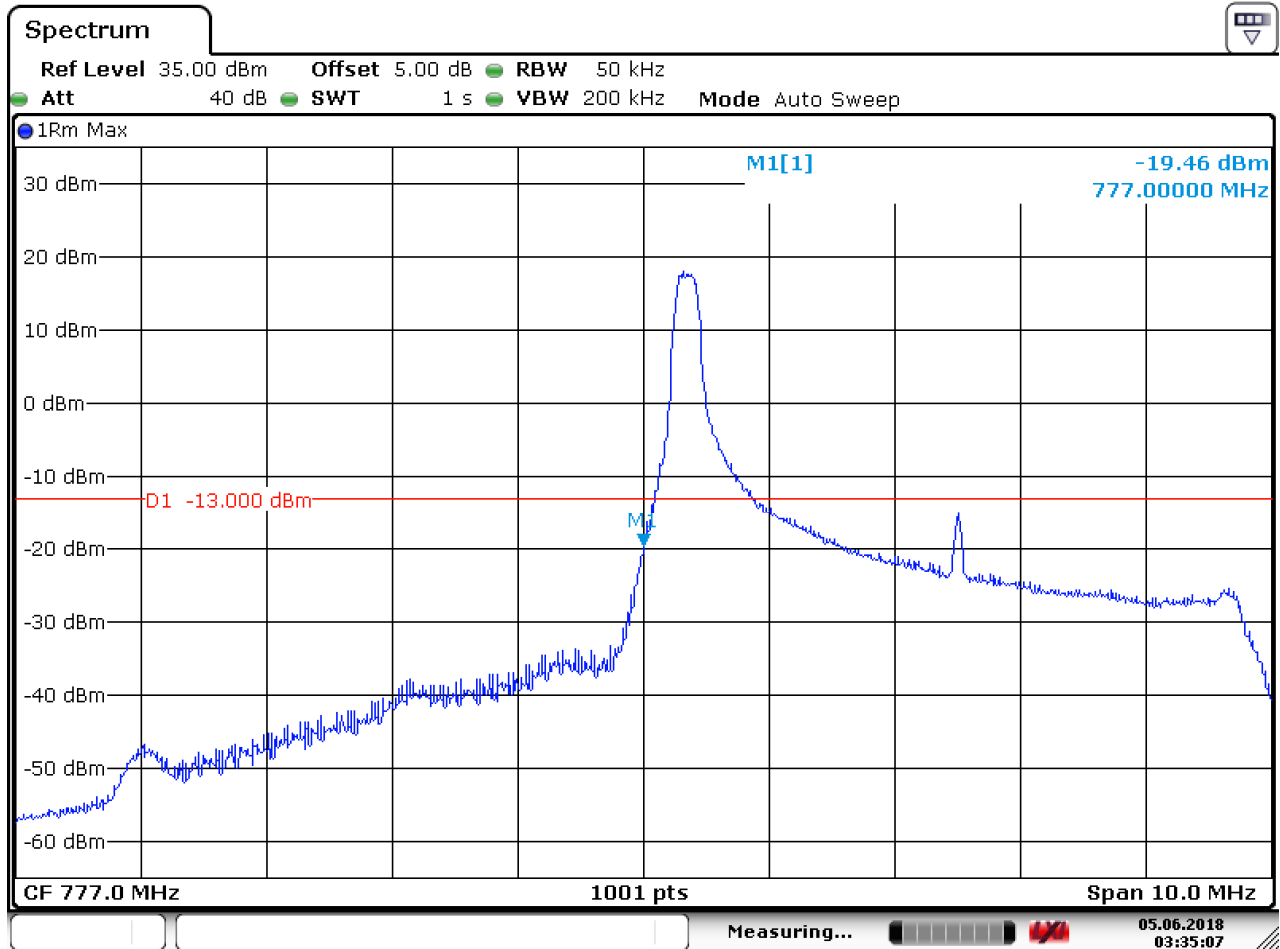
Date: 5.JUN.2018 03:33:22



5.1.1.2 Test Mode = LTE/TM2 5MHz

5.1.1.2.1 Test Channel = LCH

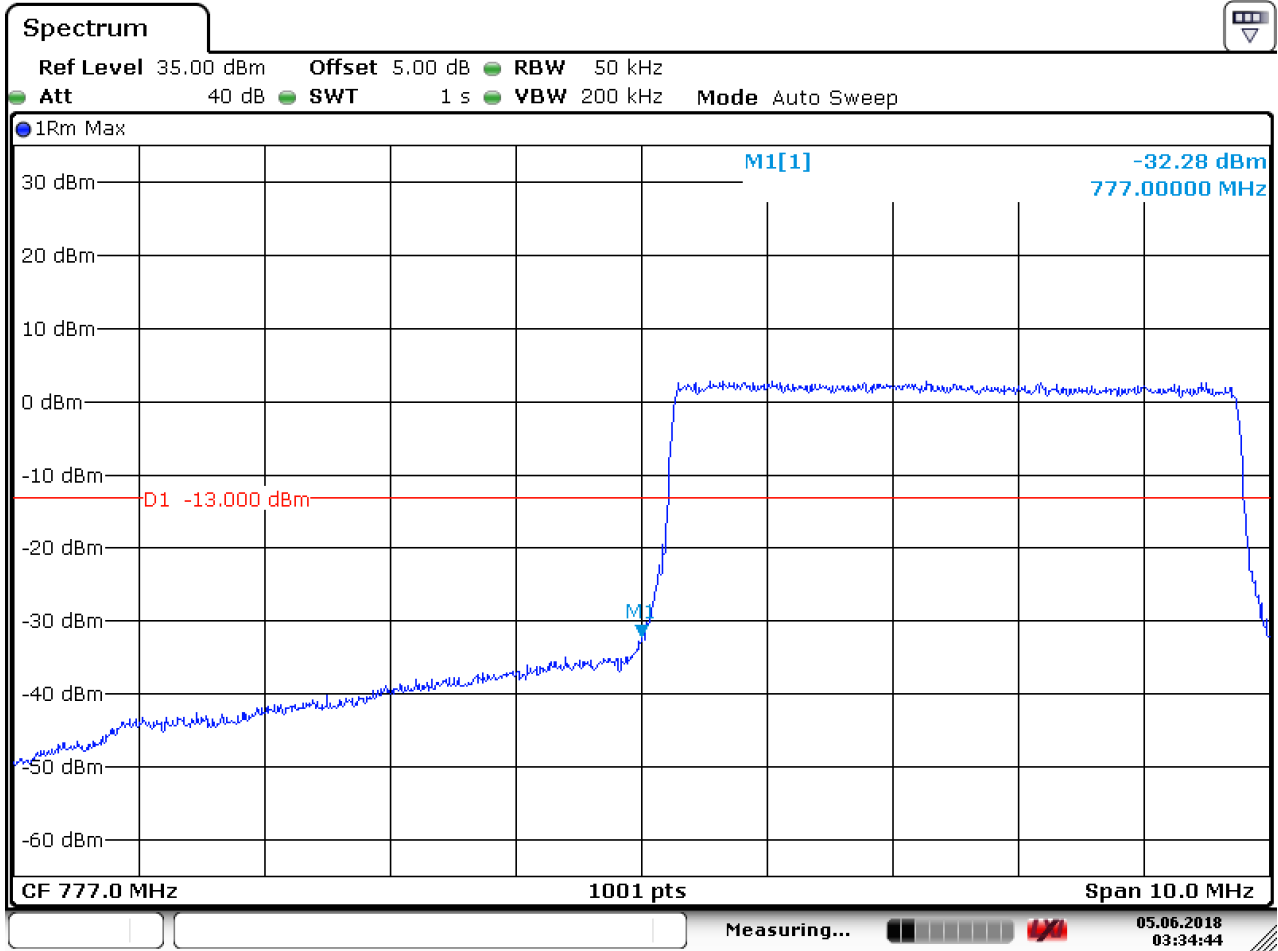
5.1.1.2.1.1 Test RB=1RB



Date: 5 JUN.2018 03:35:07



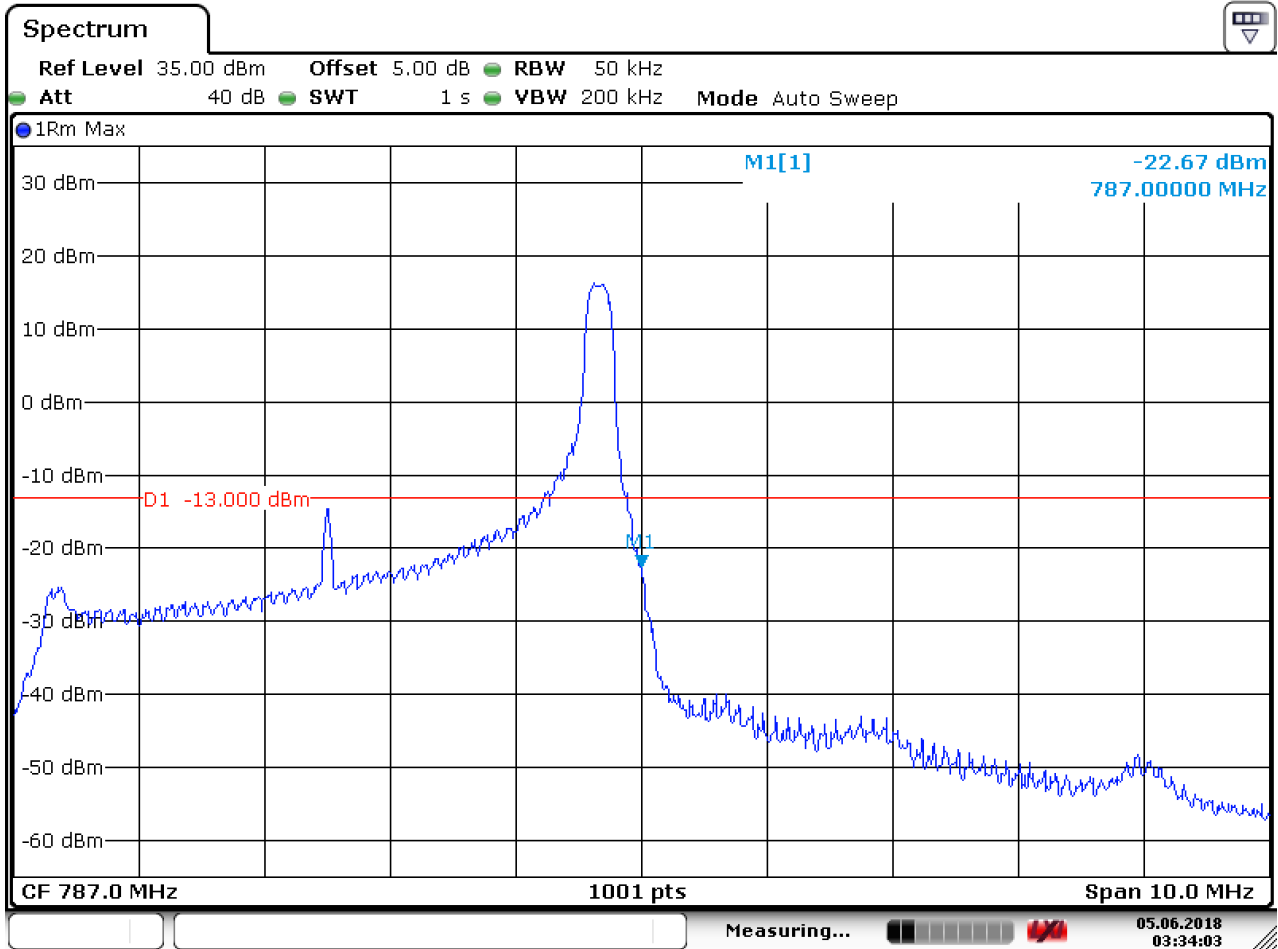
5.1.1.2.1.2 Test RB=25RB



Date: 5.JUN.2018 03:34:44

5.1.1.2.2 Test Channel = HCH

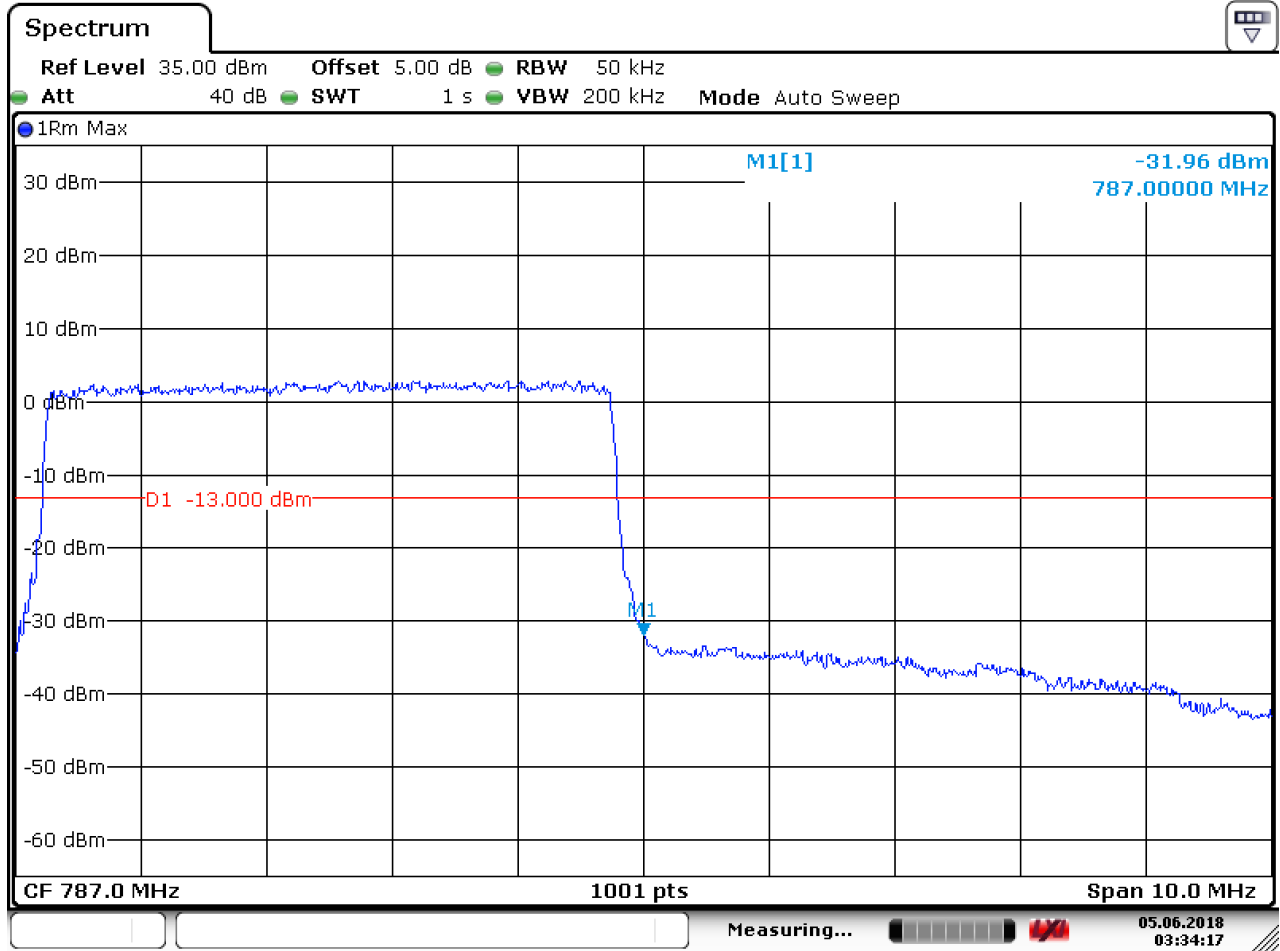
5.1.1.2.2.1 Test RB=1RB



Date: 5.JUN.2018 03:34:03



5.1.1.2.2.2 Test RB=25RB



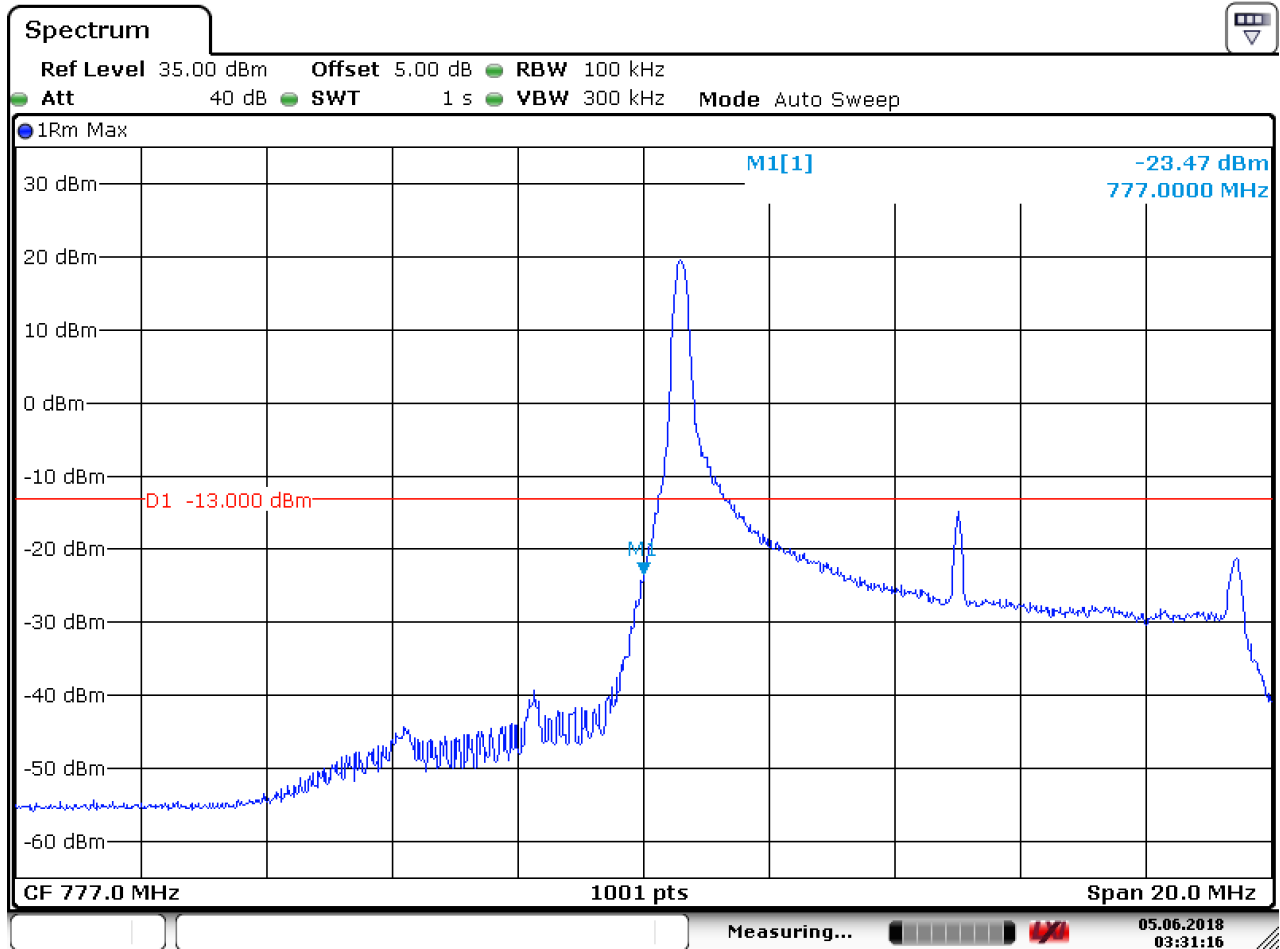
Date: 5.JUN.2018 03:34:16



5.1.1.3 Test Mode = LTE/TM1 10MHz

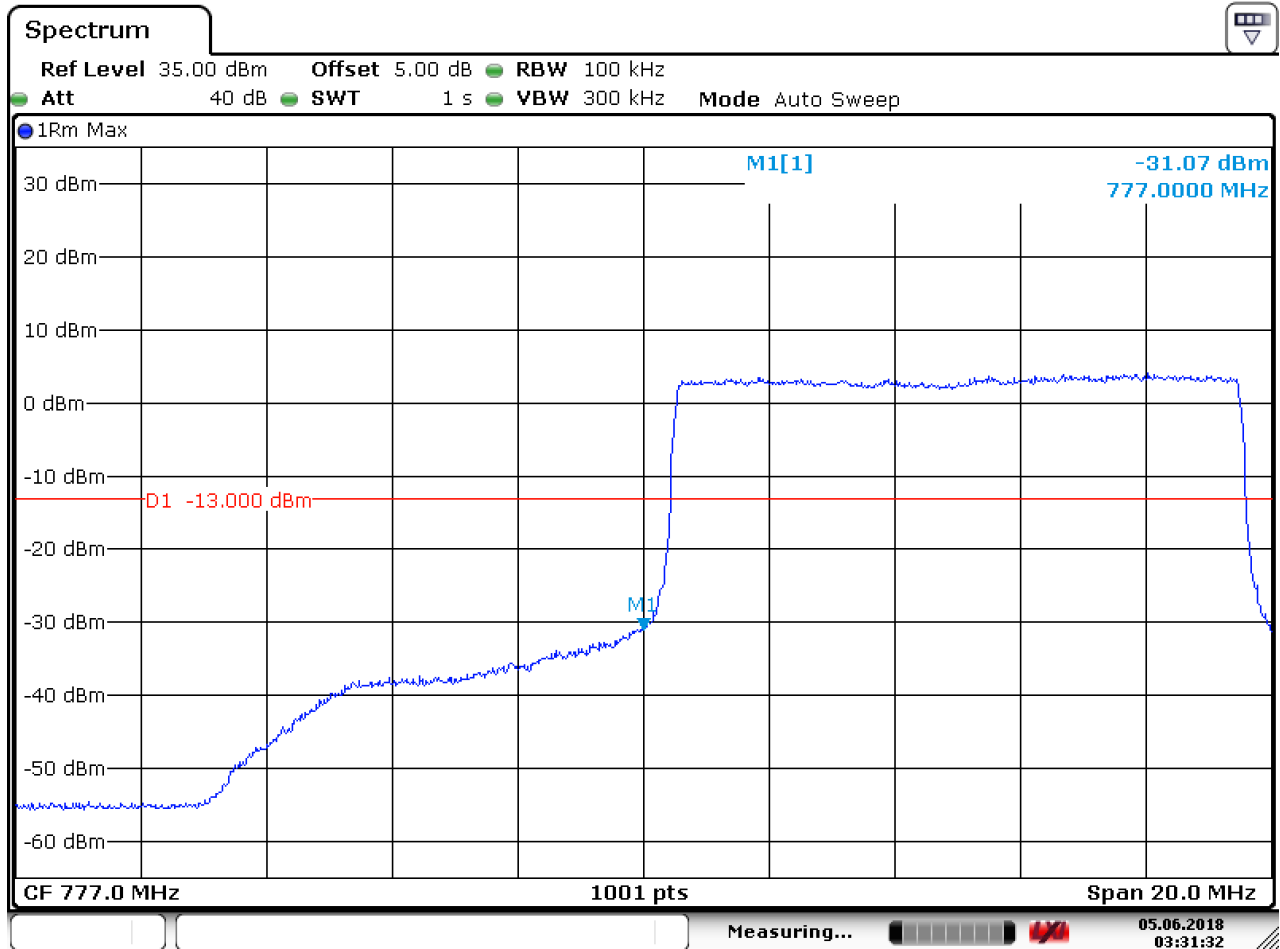
5.1.1.3.1 Test Channel = LCH

5.1.1.3.1.1 Test RB=1RB



Date: 5.JUN.2018 03:31:16

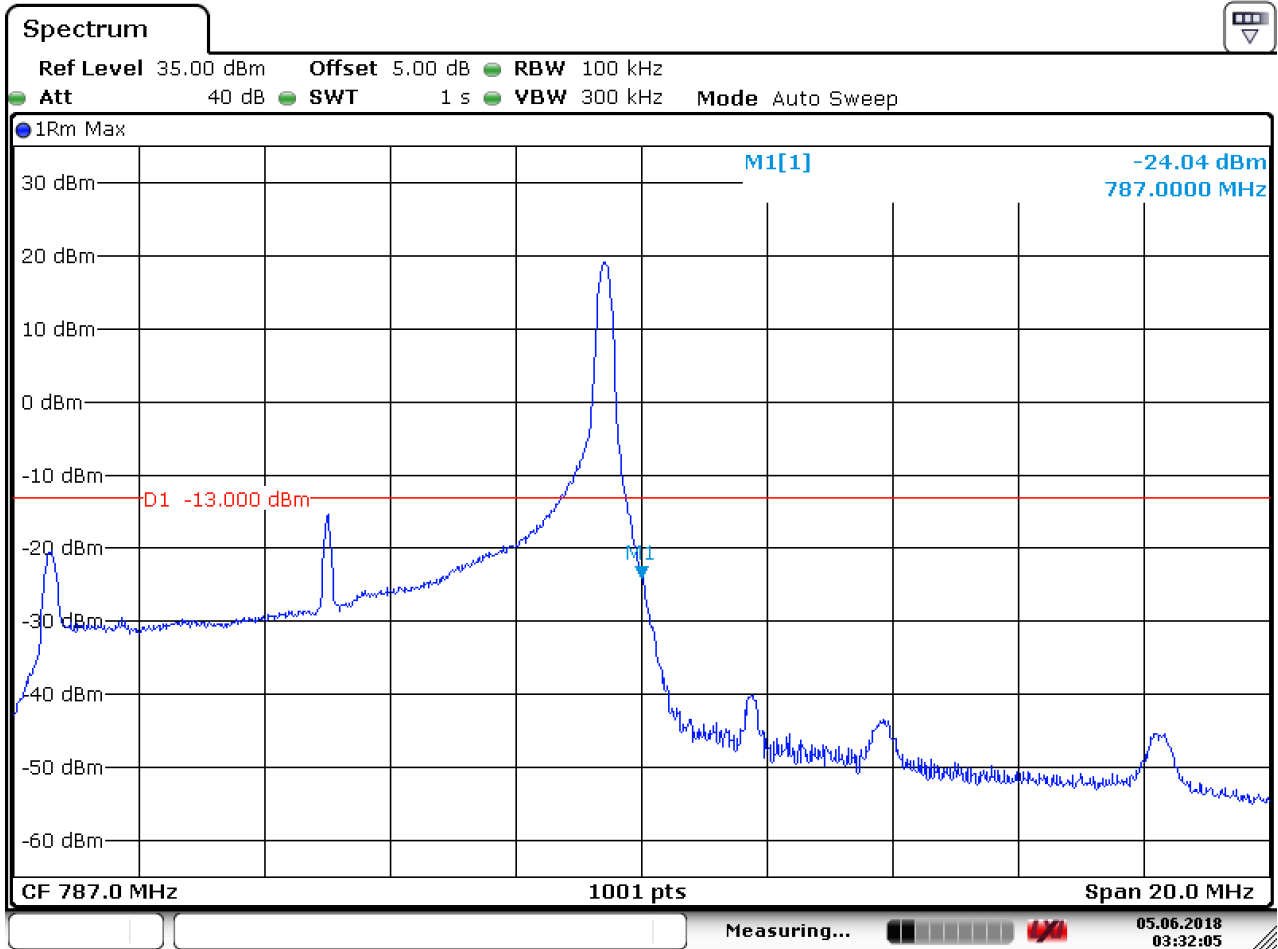
5.1.1.3.1.2 Test RB=50RB



Date: 5.JUN.2018 03:31:33

5.1.1.3.2 Test Channel = HCH

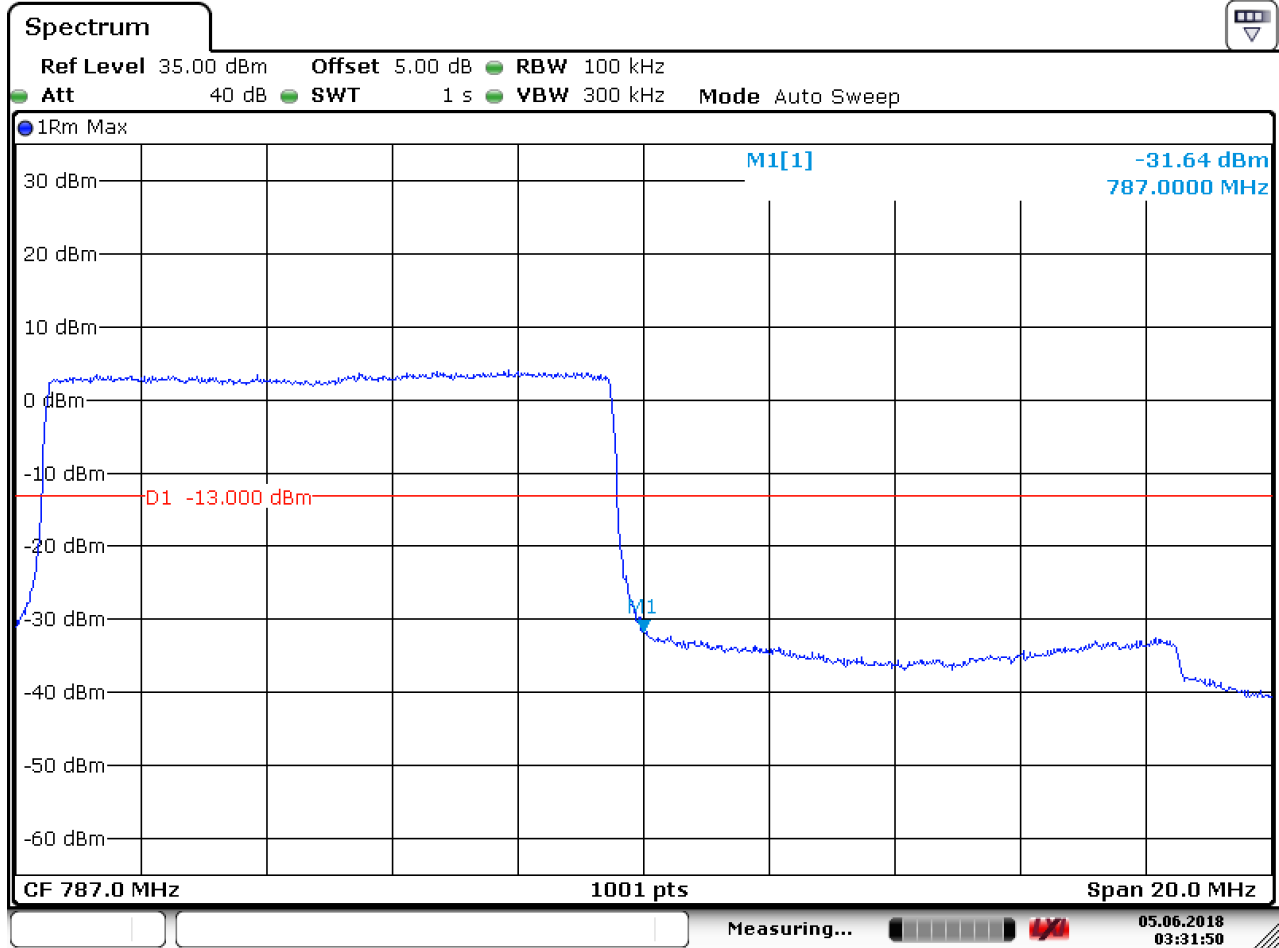
5.1.1.3.2.1 Test RB=1RB



Date: 5 JUN.2018 03:32:05



5.1.1.3.2.2 Test RB=50RB

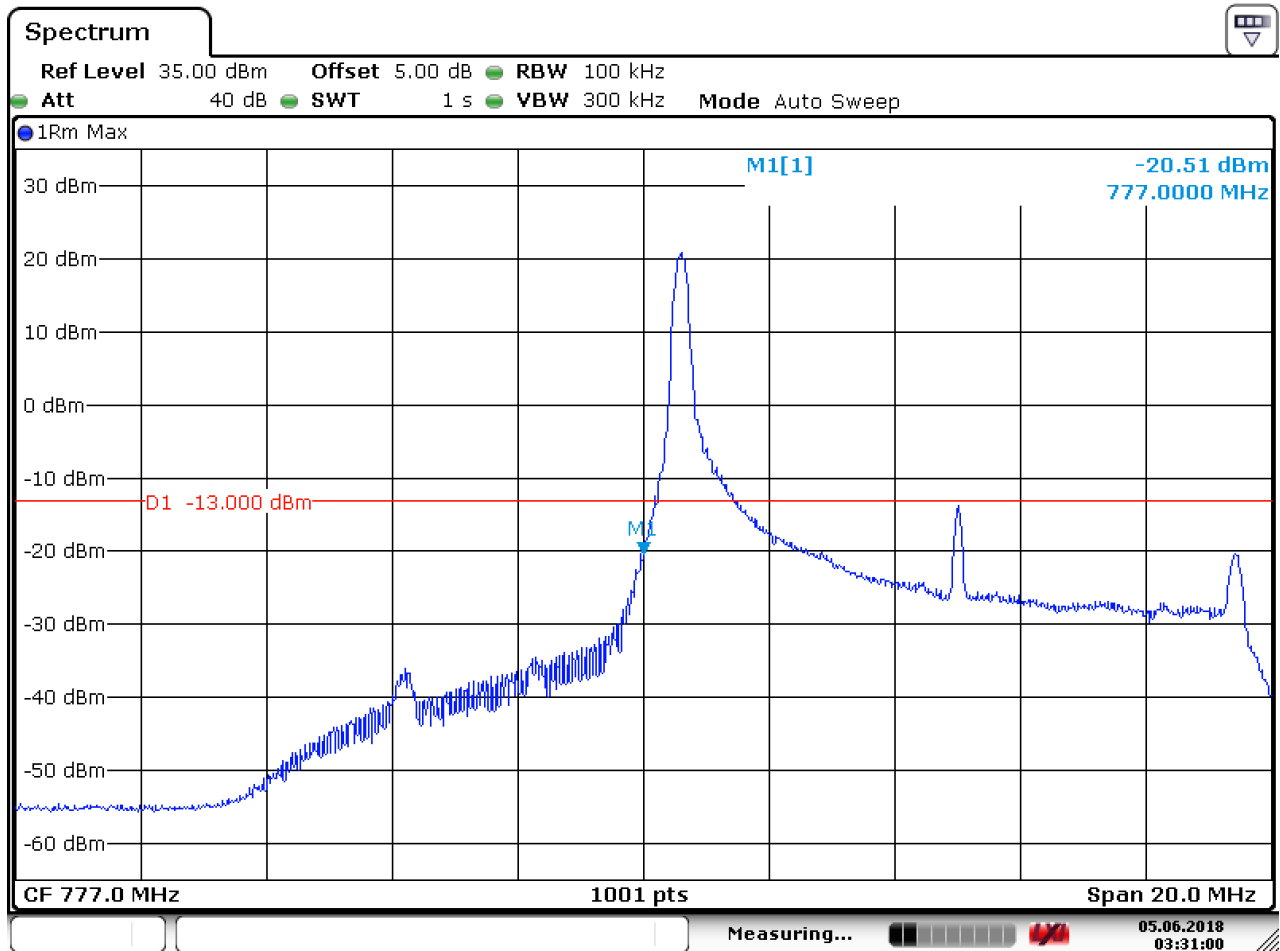


Date: 5.JUN.2018 03:31:51

5.1.1.4 Test Mode = LTE/TM2 10MHz

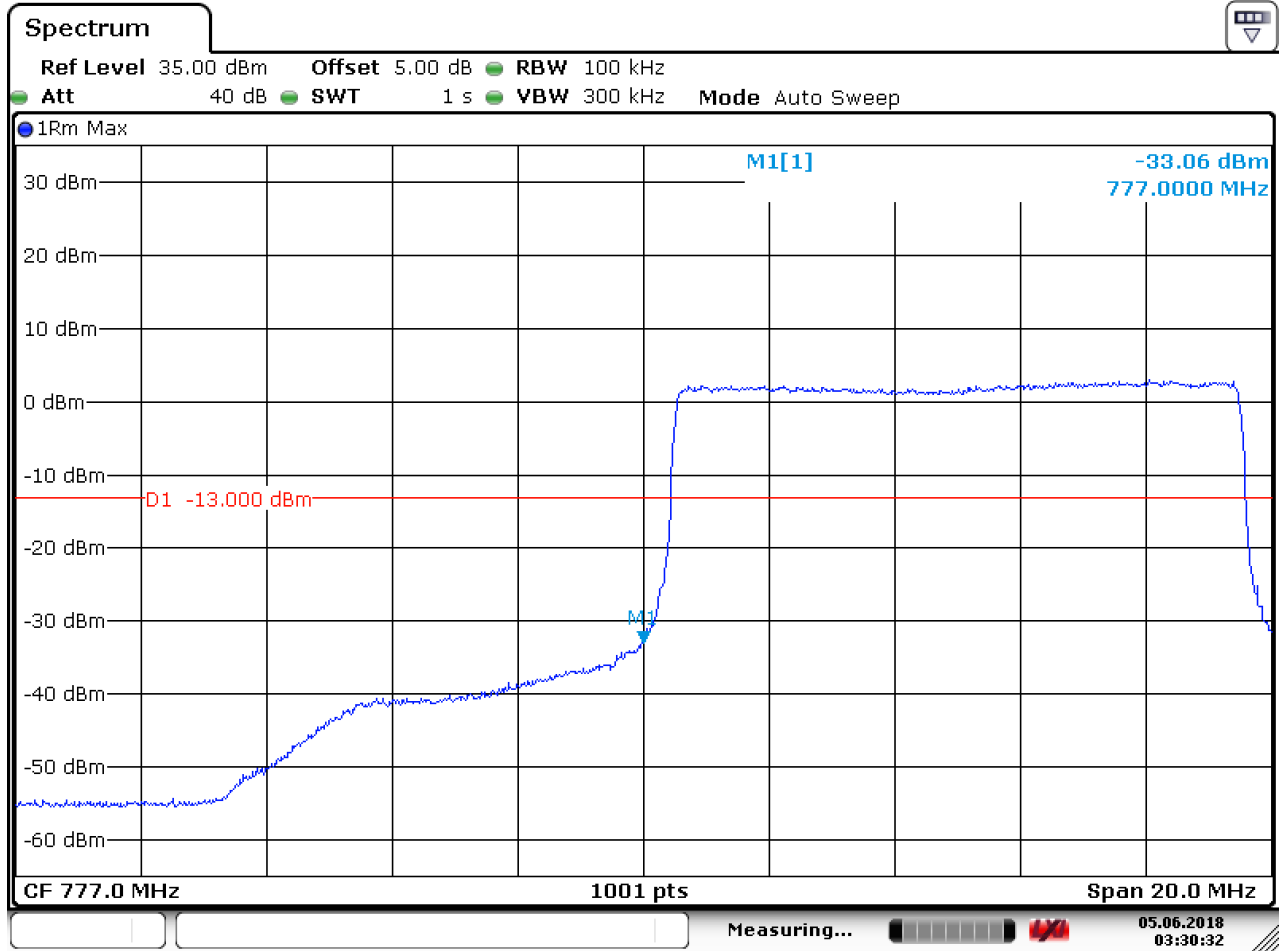
5.1.1.4.1 Test Channel = LCH

5.1.1.4.1.1 Test RB=1RB



Date: 5 JUN.2018 03:31:00

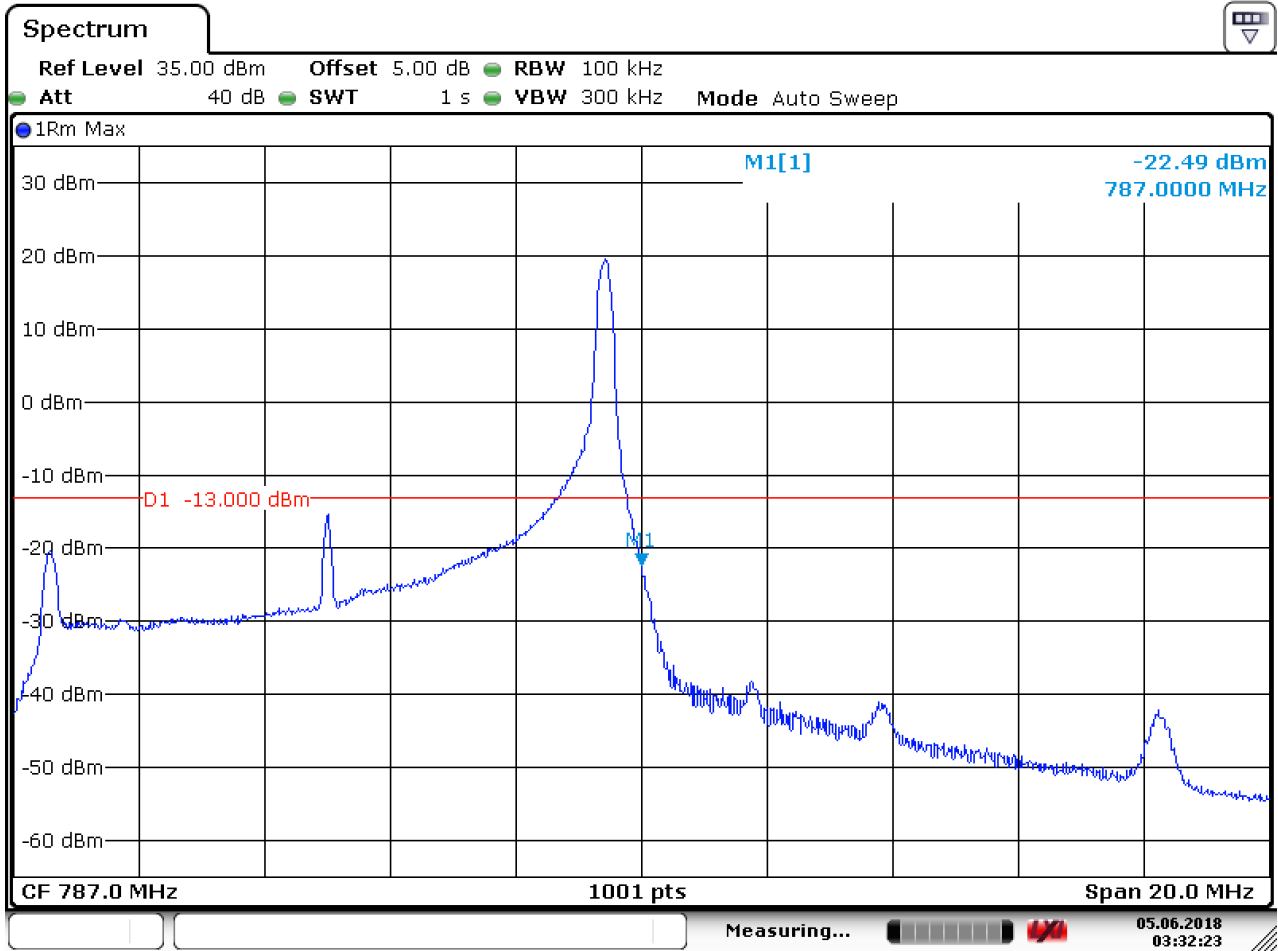
5.1.1.4.1.2 Test RB=50RB



Date: 5.JUN.2018 03:30:33

5.1.1.4.2 Test Channel = HCH

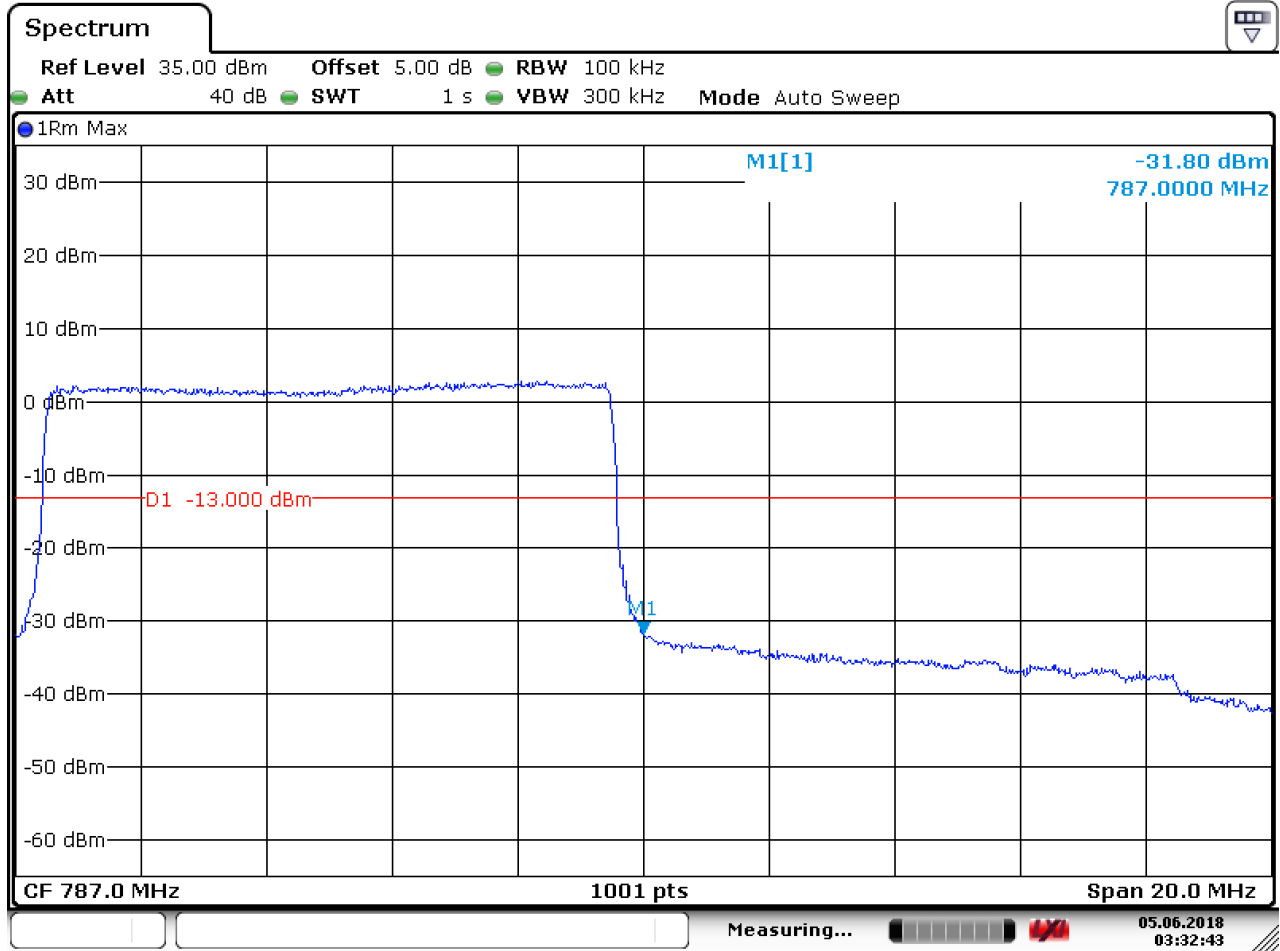
5.1.1.4.2.1 Test RB=1RB



Date: 5 JUN.2018 03:32:24



5.1.1.4.2.2 Test RB=50RB



Date: 5.JUN.2018 03:32:44

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.

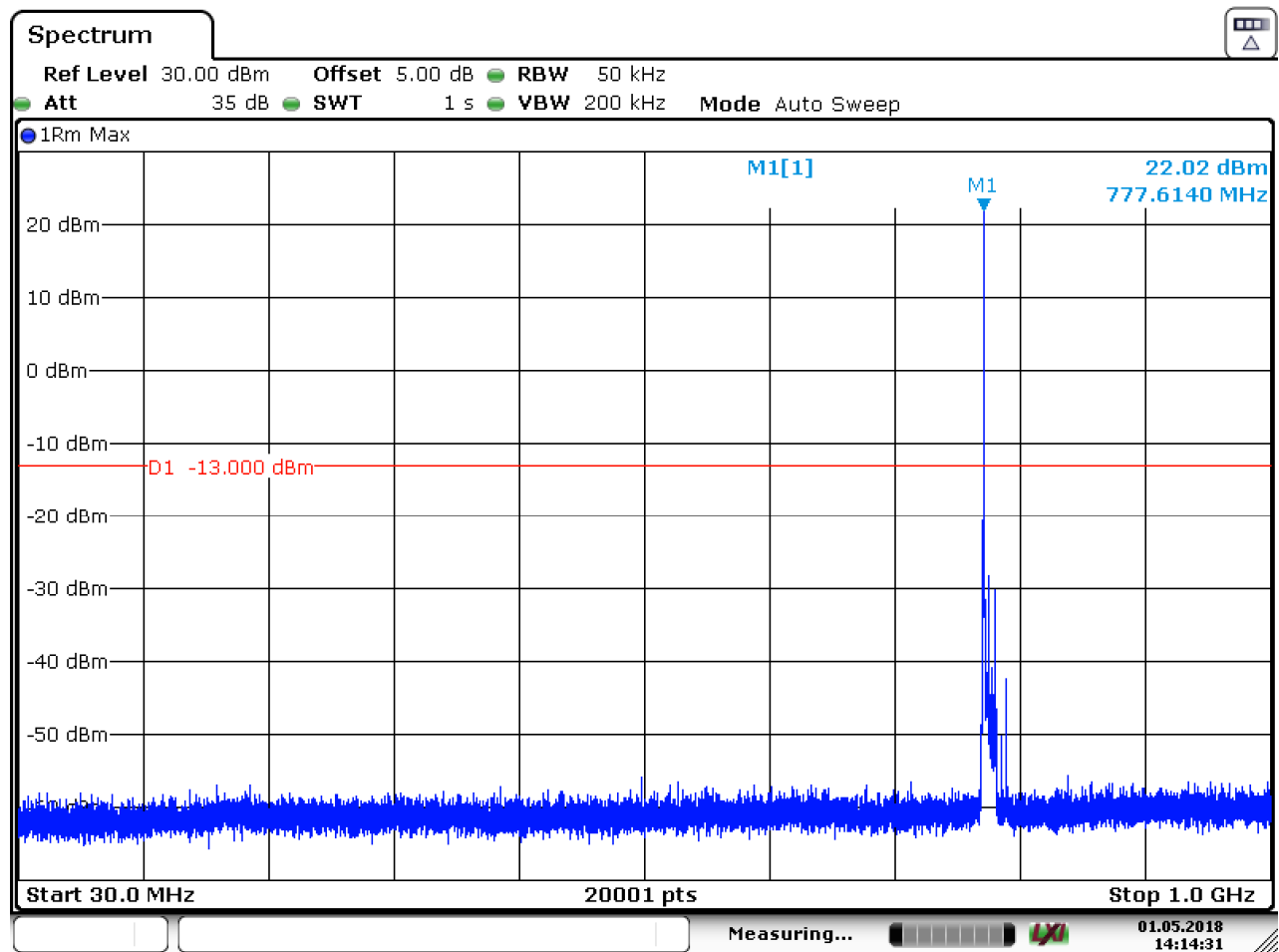
Part I - Test Plots

6.1 For LTE

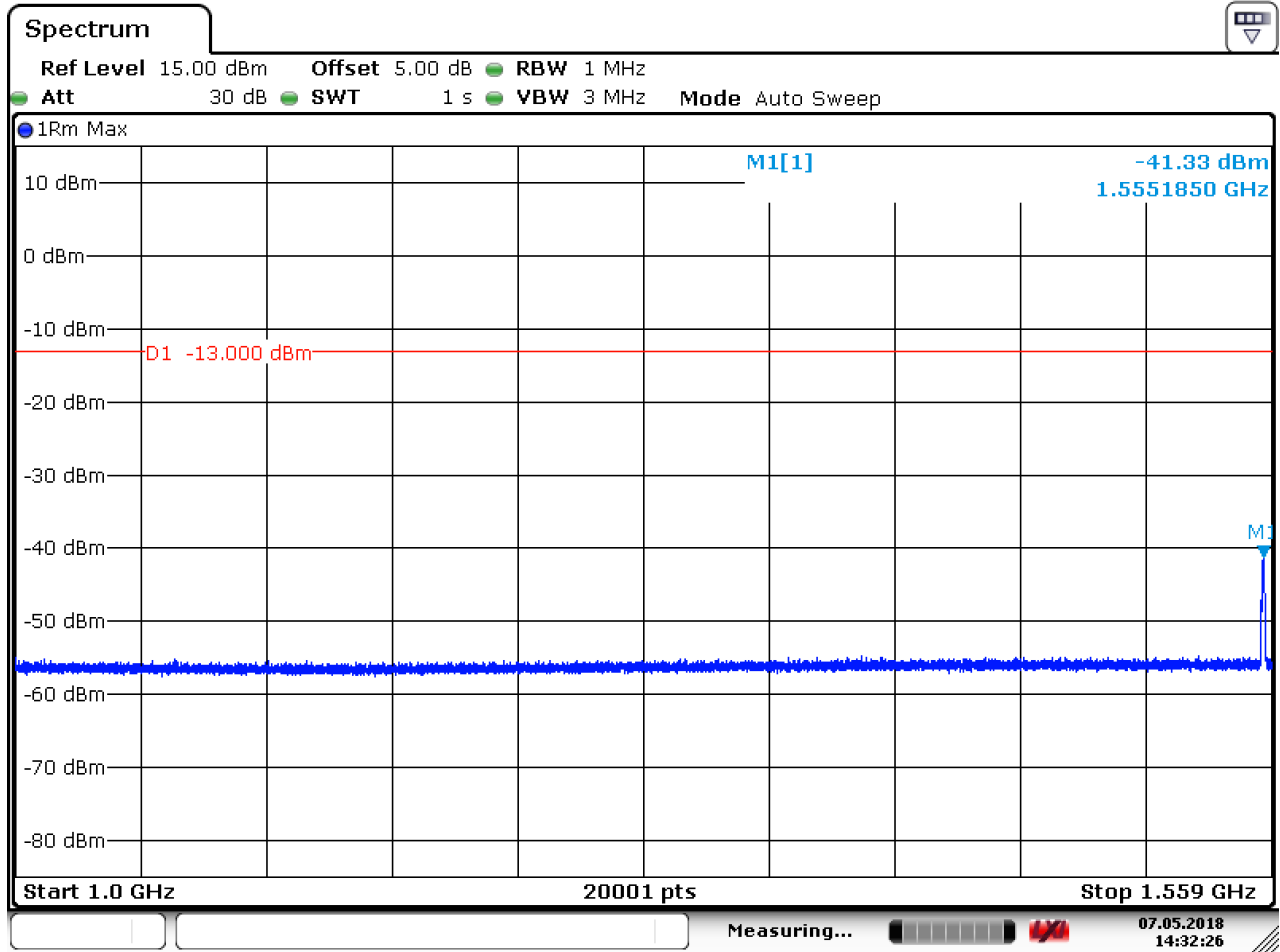
6.1.1 Test Band = LTE band13

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

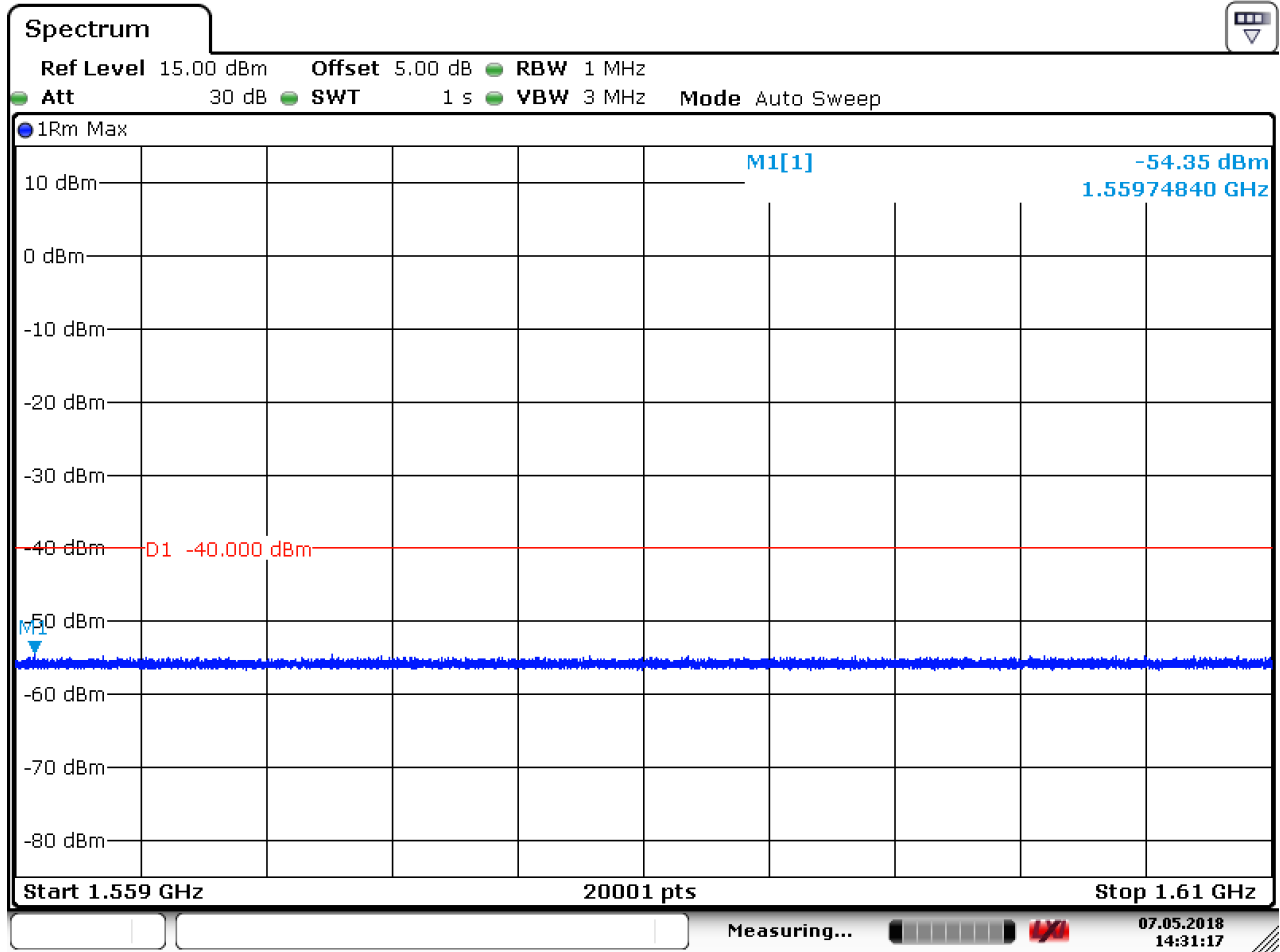
6.1.1.1.1 Test Channel = MCH



Date: 1.MAY.2018 14:14:32



Date: 7.MAY.2018 14:32:27



Date: 7.MAY.2018 14:31:17



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
40.920000	-79.58	-13.00	66.58	Vertical
70.973333	-78.25	-13.00	65.25	Vertical
313.266667	-71.76	-13.00	58.76	Vertical
1560.000000	-63.49	-40.00	23.49	Vertical
3617.662500	-62.41	-13.00	49.41	Vertical
7235.887500	-64.02	-13.00	51.02	Vertical
63.786667	-77.30	-13.00	64.30	Horizontal
130.706667	-81.01	-13.00	68.01	Horizontal
284.100000	-75.08	-13.00	62.08	Horizontal
1560.000000	-65.29	-40.00	25.29	Horizontal
3617.662500	-59.84	-13.00	46.84	Horizontal
7918.387500	-64.01	-13.00	51.01	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
LTEband13	LTE/TM1 10MHz	LCH	TN	VL	-3.81	-0.00741	PASS
				VN	3.92	-0.00594	PASS
				VH	9.59	0.01019	PASS
		MCH	TN	VL	-9.71	0.00988	PASS
				VN	-6.96	-0.01187	PASS
				VH	5.55	0.01014	PASS
		HCH	TN	VL	5.73	-0.00444	PASS
				VN	-2.15	0.00757	PASS
				VH	-2.57	0.00084	PASS
	LTE/TM2 10MHz	LCH	TN	VL	-6.16	-0.00291	PASS
				VN	-8.25	0.00394	PASS
				VH	-4.73	-0.00924	PASS
		MCH	TN	VL	-6.88	0.00808	PASS
				VN	4.98	0.00899	PASS
				VH	-3.87	0.00284	PASS
		HCH	TN	VL	-6.54	0.01108	PASS
				VN	-4.33	0.01220	PASS
				VH	0.49	0.00063	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	-7.15	-0.00915	PASS
				-20	-2.44	-0.00311	PASS
				-10	9.23	0.01180	PASS
				0	9.54	0.01220	PASS
				10	-1.93	-0.00247	PASS
				20	-3.46	-0.00443	PASS
				30	3.94	0.00504	PASS
				40	-9.68	-0.01238	PASS
				50	1.79	0.00230	PASS
	LTE/TM2 10MHz	MCH	VN	-30	9.41	0.01204	PASS
				-20	8.98	0.01148	PASS
				-10	8.30	0.01061	PASS
				0	-6.23	-0.00796	PASS
				10	8.21	0.01049	PASS
				20	6.36	0.00813	PASS
				30	-9.91	-0.01267	PASS
				40	-7.97	-0.01019	PASS
				50	-0.55	-0.00071	PASS

The End