Appendix B

E-UTRA Band 13

CONTENT

Page

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	23.58	20.93	34.77	PASS
				RB1#13	23.39	20.74	34.77	PASS
				RB1#24	23.49	20.84	34.77	PASS
				RB12#0	22.76	20.11	34.77	PASS
				RB12#6	22.55	19.9	34.77	PASS
				RB12#13	22.69	20.04	34.77	PASS
				RB25#0	22.59	19.94	34.77	PASS
			MCH	RB1#0	23.32	20.67	34.77	PASS
				RB1#13	23.56	20.91	34.77	PASS
				RB1#24	23.36	20.71	34.77	PASS
				RB12#0	22.74	20.09	34.77	PASS
				RB12#6	22.78	20.13	34.77	PASS
				RB12#13	22.75	20.1	34.77	PASS
				RB25#0	22.73	20.08	34.77	PASS
			HCH	RB1#0	23.58	20.93	34.77	PASS
				RB1#13	23.72	21.07	34.77	PASS
				RB1#24	23.28	20.63	34.77	PASS
				RB12#0	22.67	20.02	34.77	PASS
				RB12#6	22.86	20.21	34.77	PASS
				RB12#13	22.79	20.14	34.77	PASS
				RB25#0	22.72	20.07	34.77	PASS

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	22.6	19.95	34.77	PASS
				RB1#13	22.48	19.83	34.77	PASS
				RB1#24	21.93	19.28	34.77	PASS
				RB12#0	21.75	19.1	34.77	PASS
				RB12#6	21.57	18.92	34.77	PASS
				RB12#13	21.58	18.93	34.77	PASS
				RB25#0	21.75	19.1	34.77	PASS
			MCH	RB1#0	22.98	20.33	34.77	PASS
				RB1#13	22.63	19.98	34.77	PASS
				RB1#24	22.78	20.13	34.77	PASS
				RB12#0	21.7	19.05	34.77	PASS
				RB12#6	21.58	18.93	34.77	PASS
				RB12#13	21.85	19.2	34.77	PASS
				RB25#0	21.85	19.2	34.77	PASS
			HCH	RB1#0	22.06	19.41	34.77	PASS
				RB1#13	22.26	19.61	34.77	PASS
				RB1#24	22.4	19.75	34.77	PASS
				RB12#0	21.52	18.87	34.77	PASS
				RB12#6	21.56	18.91	34.77	PASS
				RB12#13	21.65	19	34.77	PASS
				RB25#0	21.62	18.97	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	23.32	20.67	34.77	PASS
				RB1#25	23.8	21.15	34.77	PASS
				RB1#49	23.62	20.97	34.77	PASS
				RB25#0	22.79	20.14	34.77	PASS
				RB25#13	22.87	20.22	34.77	PASS
				RB25#25	22.81	20.16	34.77	PASS
				RB50#0	22.74	20.09	34.77	PASS
	LTE/TM2	10M	MCH	RB1#0	23.17	20.52	34.77	PASS
				RB1#25	22.99	20.34	34.77	PASS
				RB1#49	22.36	19.71	34.77	PASS
				RB25#0	21.8	19.15	34.77	PASS
				RB25#13	21.92	19.27	34.77	PASS
				RB25#25	21.75	19.1	34.77	PASS
				RB50#0	21.8	19.15	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,

EIRP [dBm] = SGP [dBm] – Cable Loss [dB] + 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	HCH	4.96	13	PASS
	TM2/10M	HCH	5.80	13	PASS

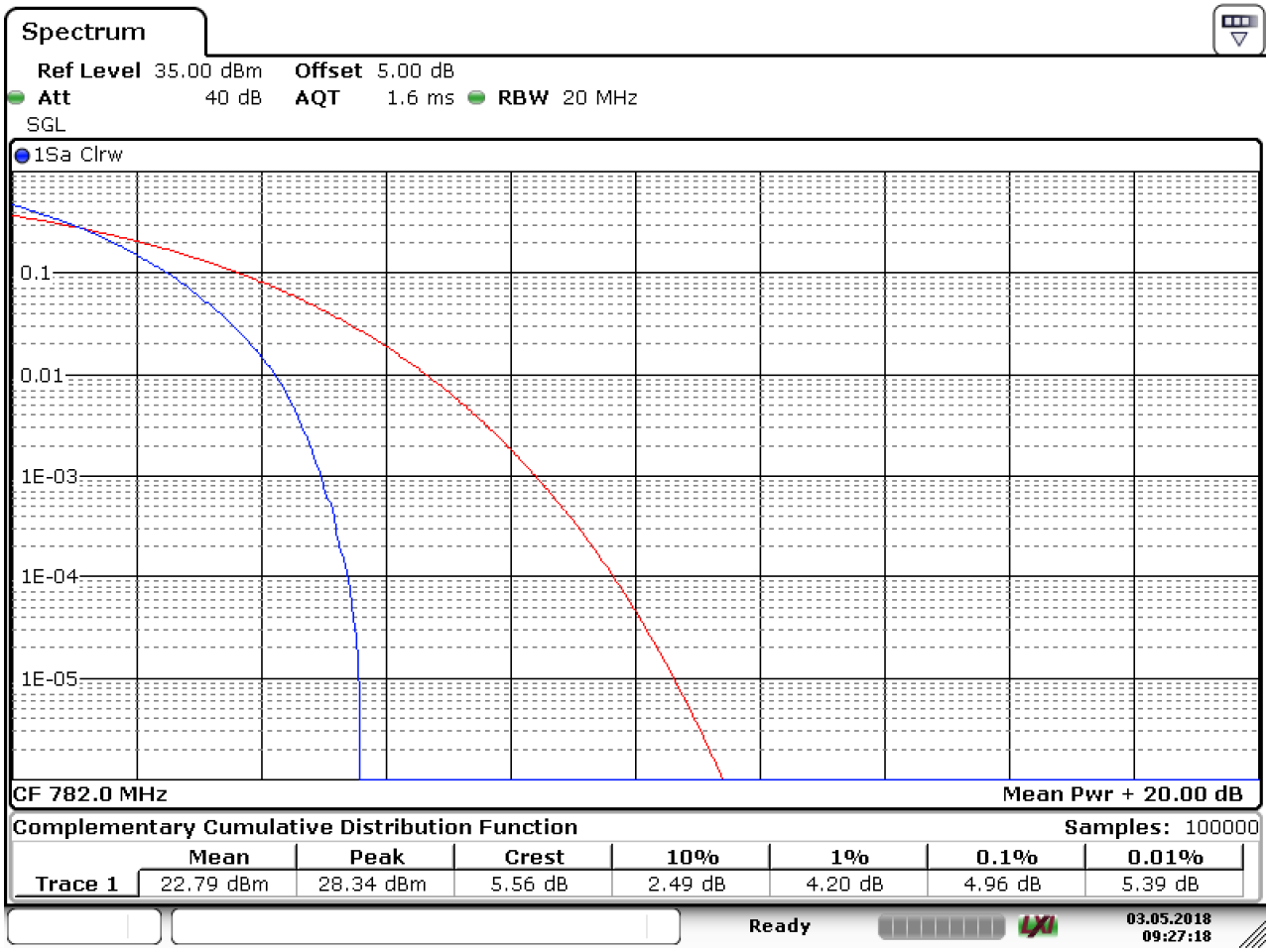
Part II - Test Plots

2.1 For LTE

2.1.1 Test Band = LTE band13

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

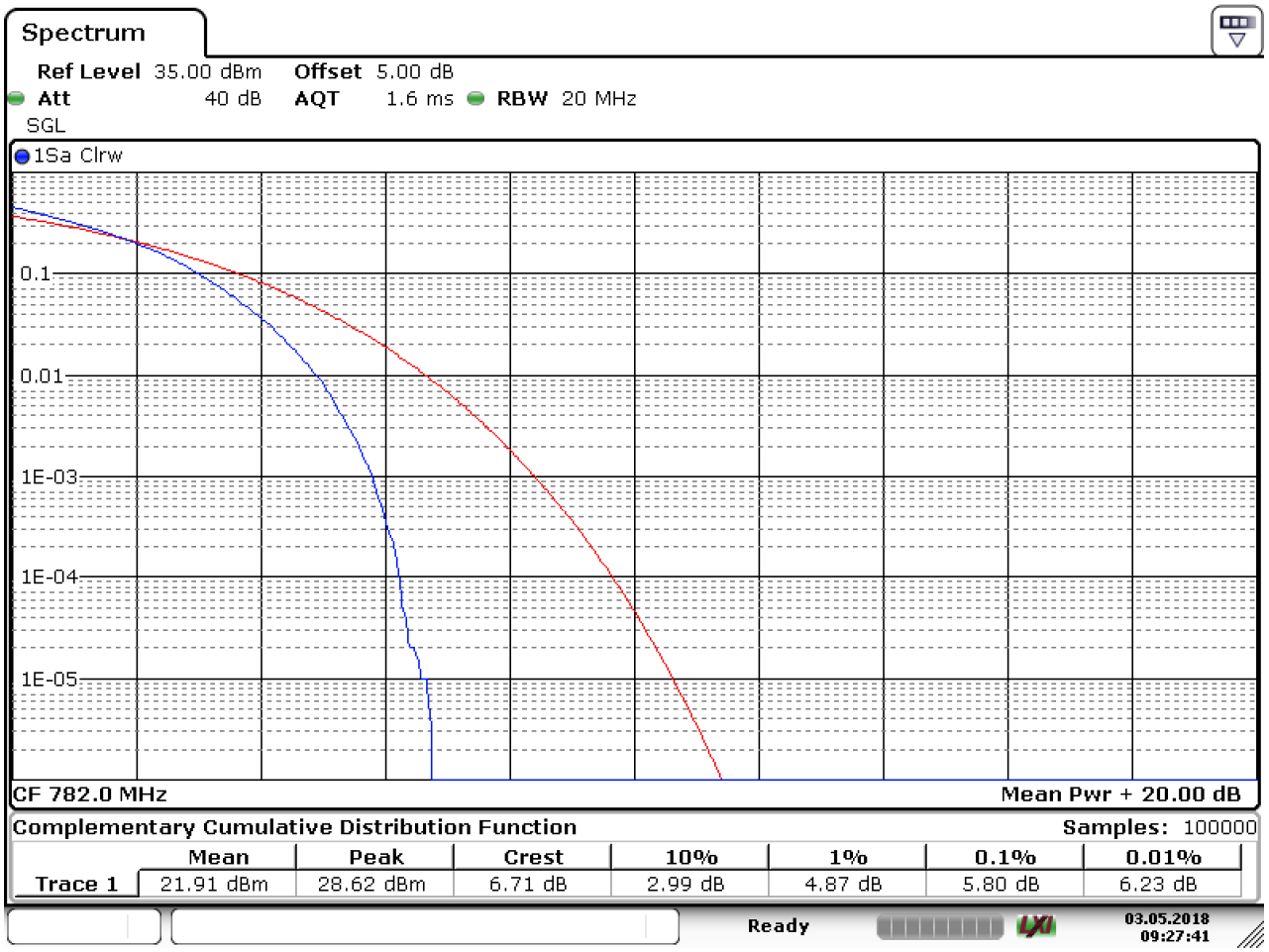
2.1.1.1.1 Test Channel = HCH



Date: 3.MAY.2018 09:27:19

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

2.1.1.2.1 Test Channel = HCH



Date: 3.MAY.2018 09:27:41

3 Modulation Characteristics

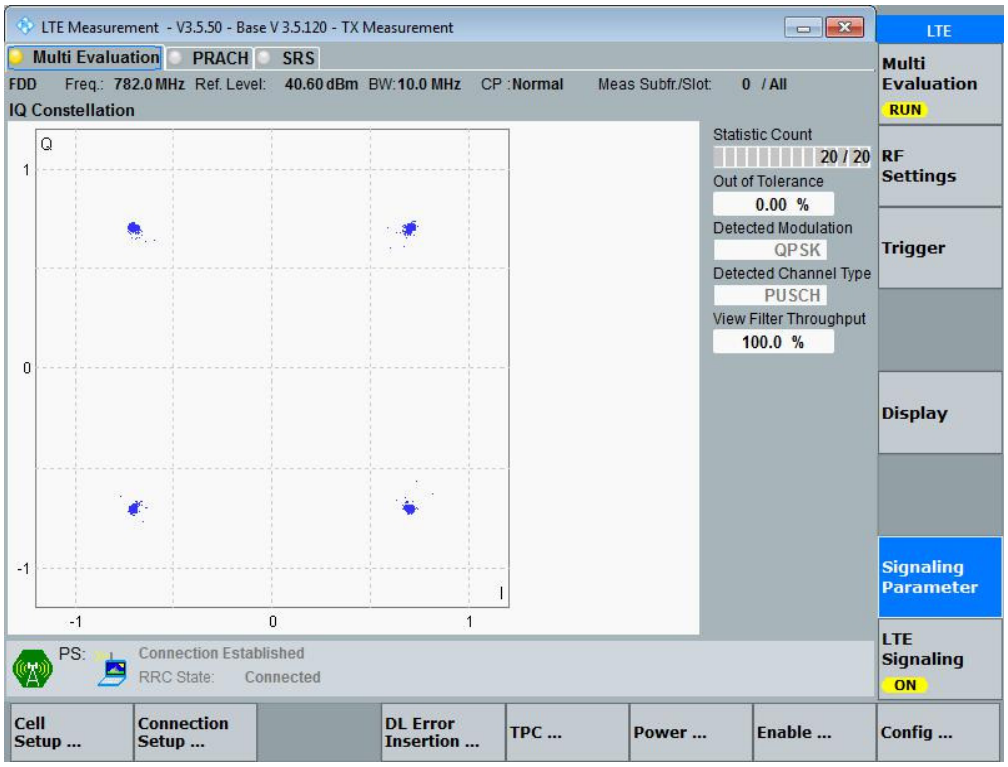
Part I - Test Plots

3.1 For LTE

3.1.1 Test Band = LTE band13

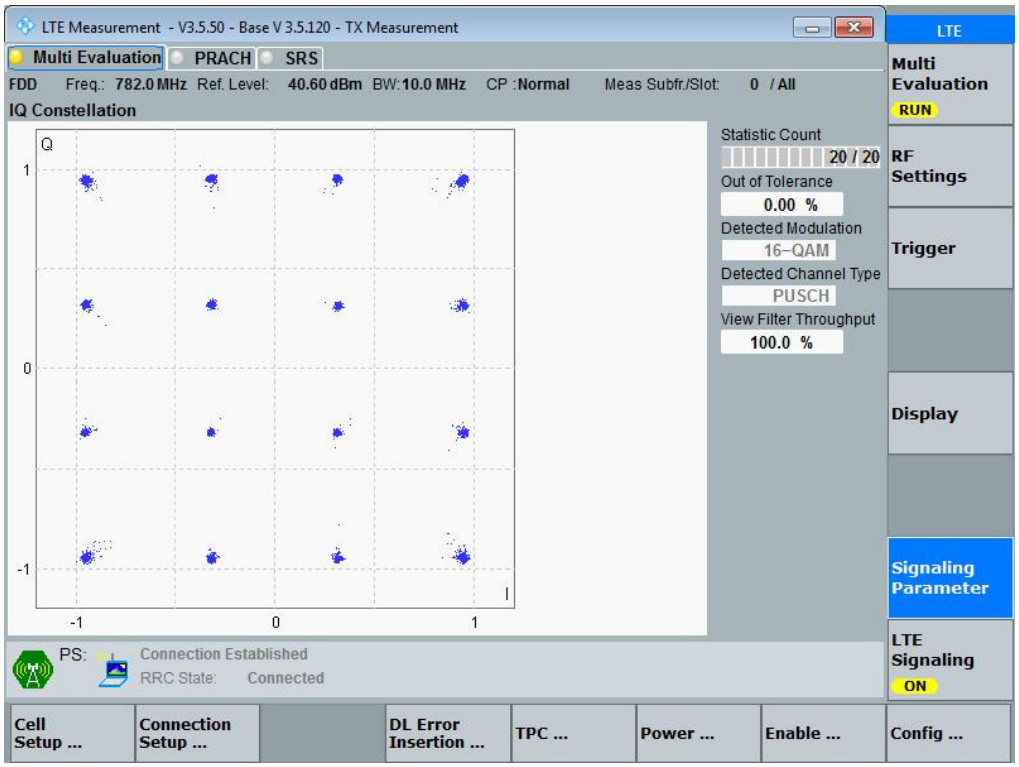
3.1.1.1 Test Mode = LTE /TM1 10MHz

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

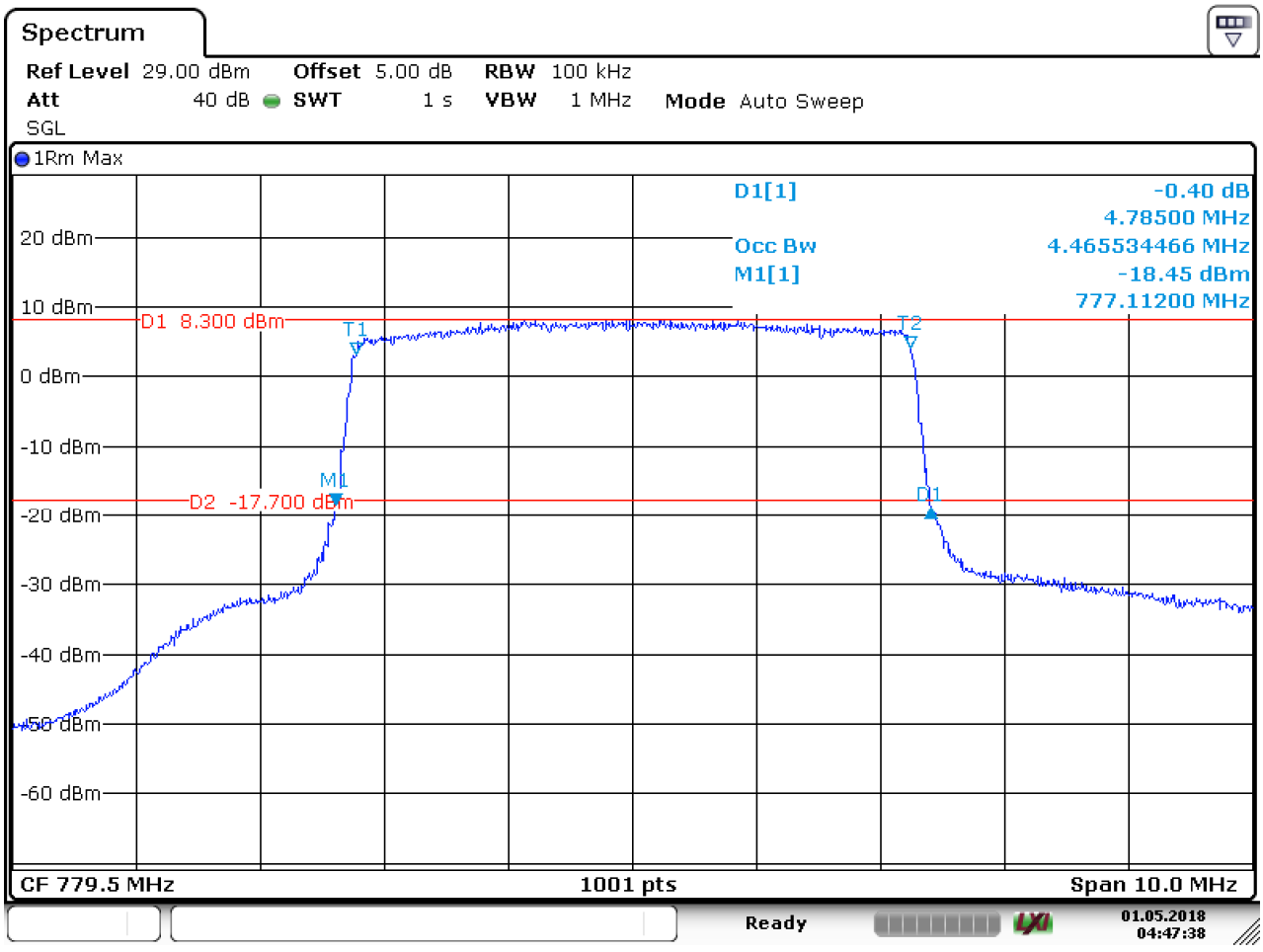
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
Band 13	TM1/ 5MHz	LCH	4.47	4.79	PASS
		MCH	4.49	4.79	PASS
		HCH	4.49	4.79	PASS
	TM2/ 5MHz	LCH	4.47	4.79	PASS
		MCH	4.49	4.83	PASS
		HCH	4.49	4.77	PASS
	TM1/10MHz	MCH	8.93	9.49	PASS
	TM2/10MHz	MCH	8.93	9.49	PASS

4.1 For LTE

4.1.1 Test Band = LTE band13

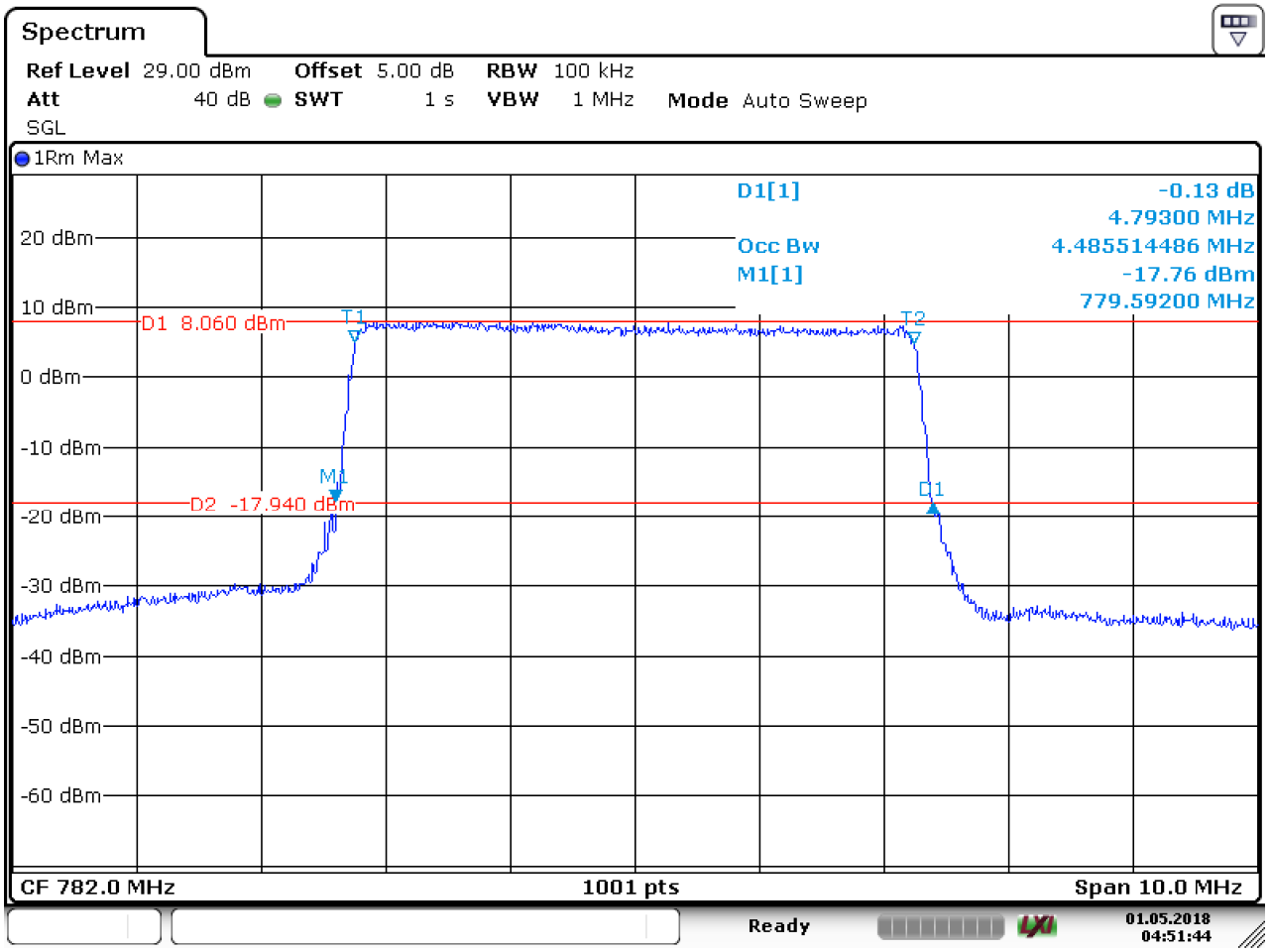
4.1.1.1 Test Mode = LTE/TM1 5MHz

4.1.1.1.1 Test Channel = LCH



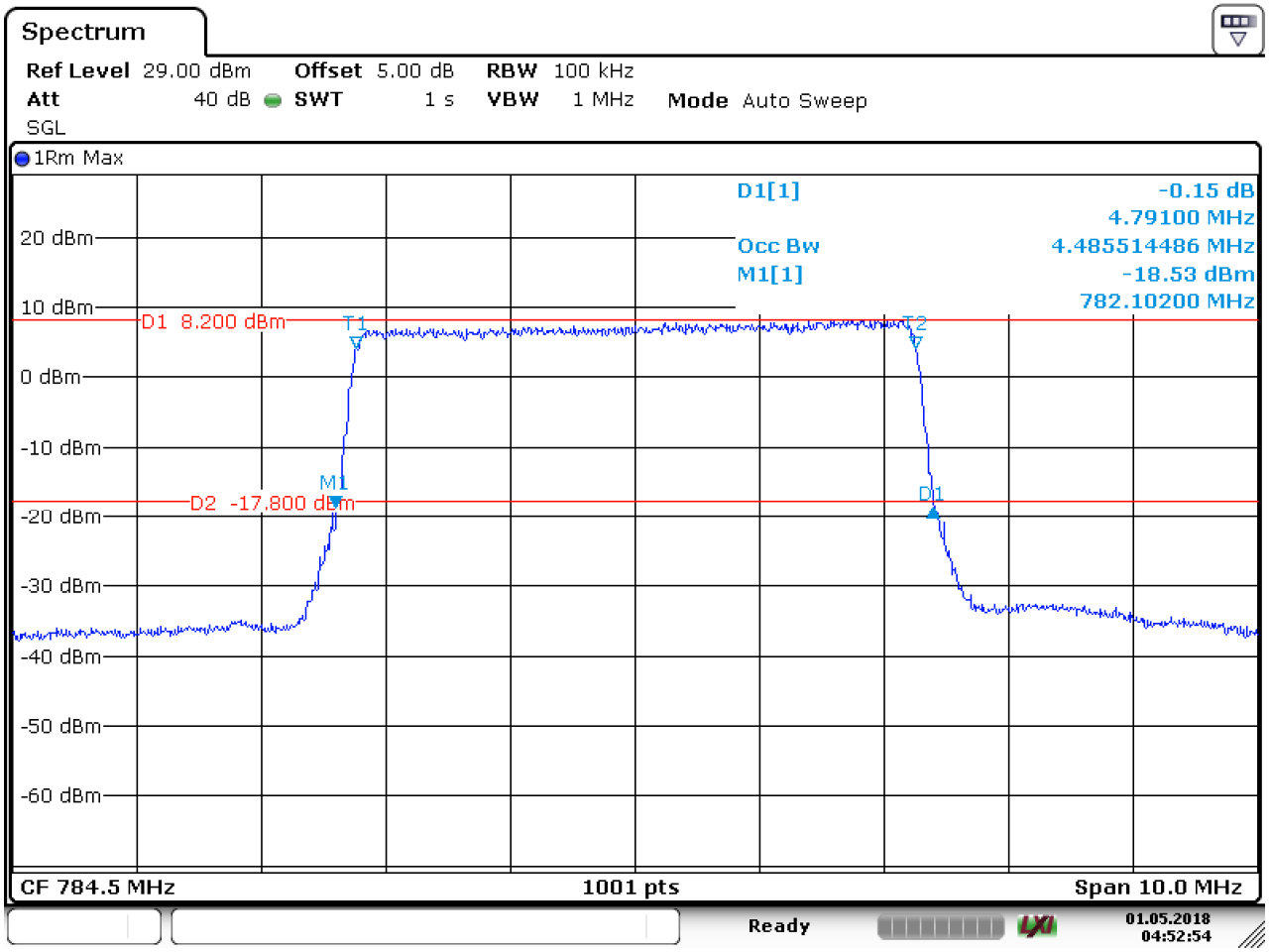
Date: 1.MAY.2018 04:47:39

4.1.1.1.2 Test Channel = MCH



Date: 1.MAY.2018 04:51:44

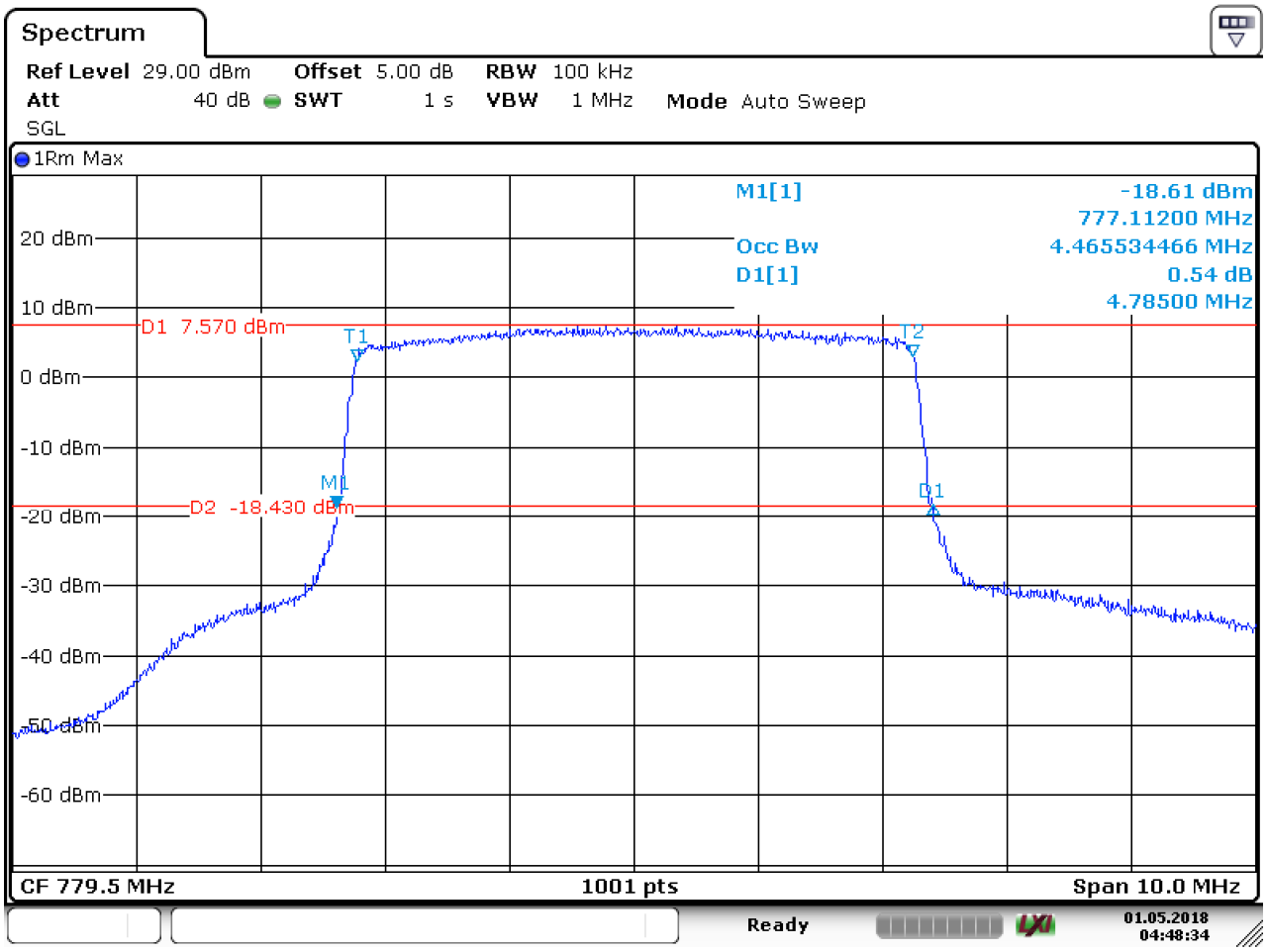
4.1.1.1.3 Test Channel = HCH



Date: 1.MAY.2018 04:52:54

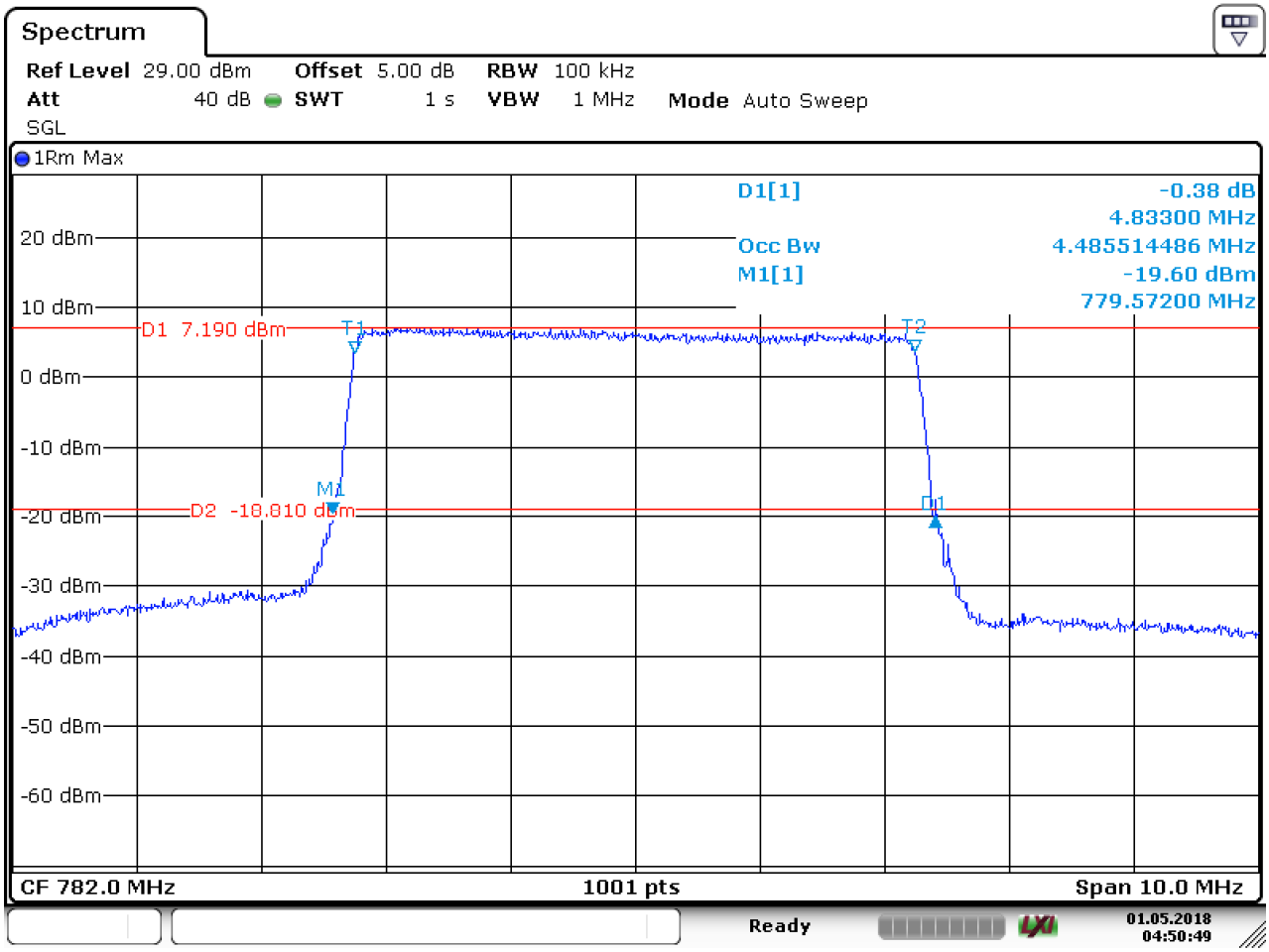
4.1.1.2 Test Mode = LTE/TM2 5MHz

4.1.1.2.1 Test Channel = LCH



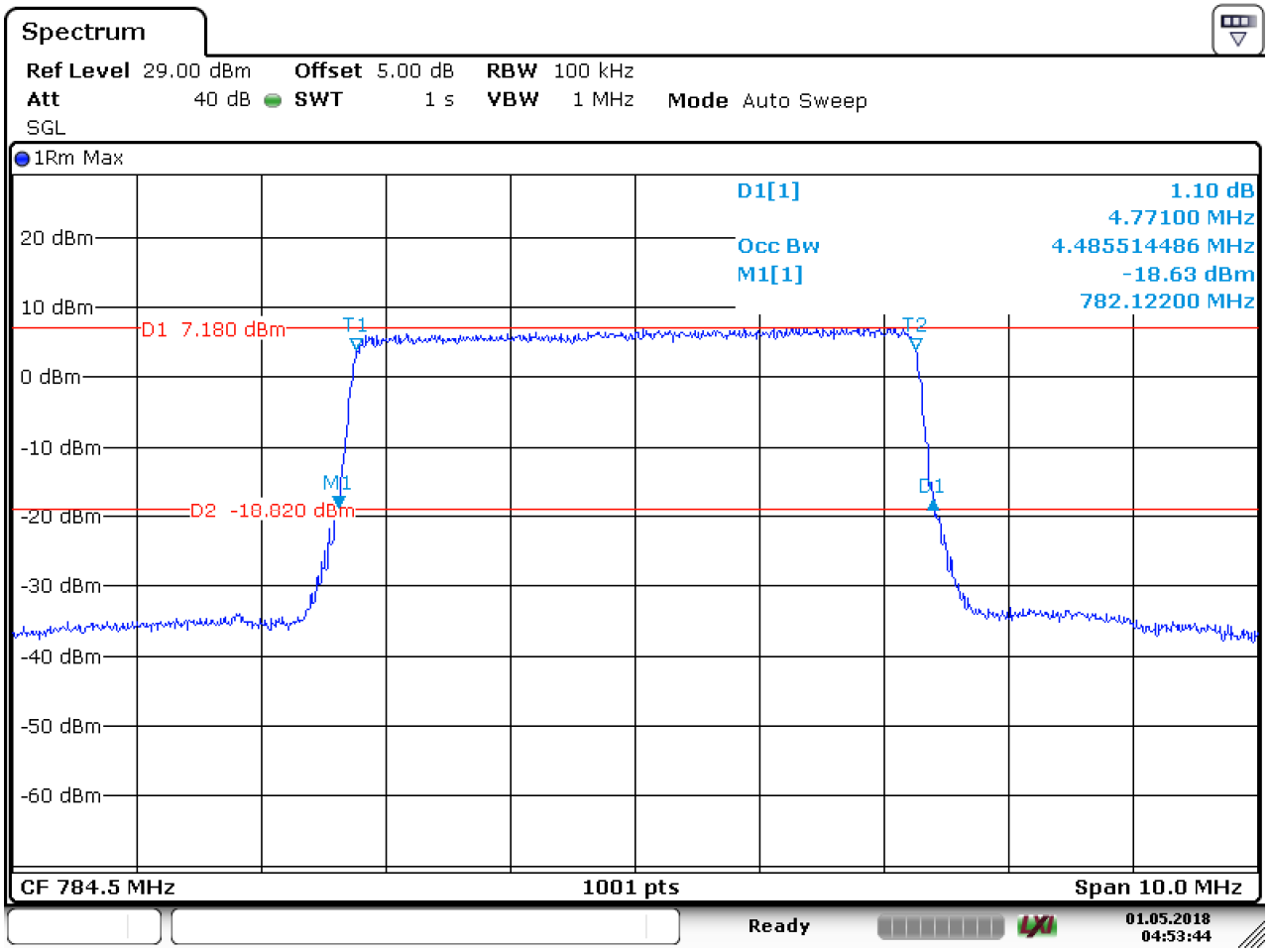
Date: 1.MAY.2018 04:48:34

4.1.1.2.2 Test Channel = MCH



Date: 1.MAY.2018 04:50:50

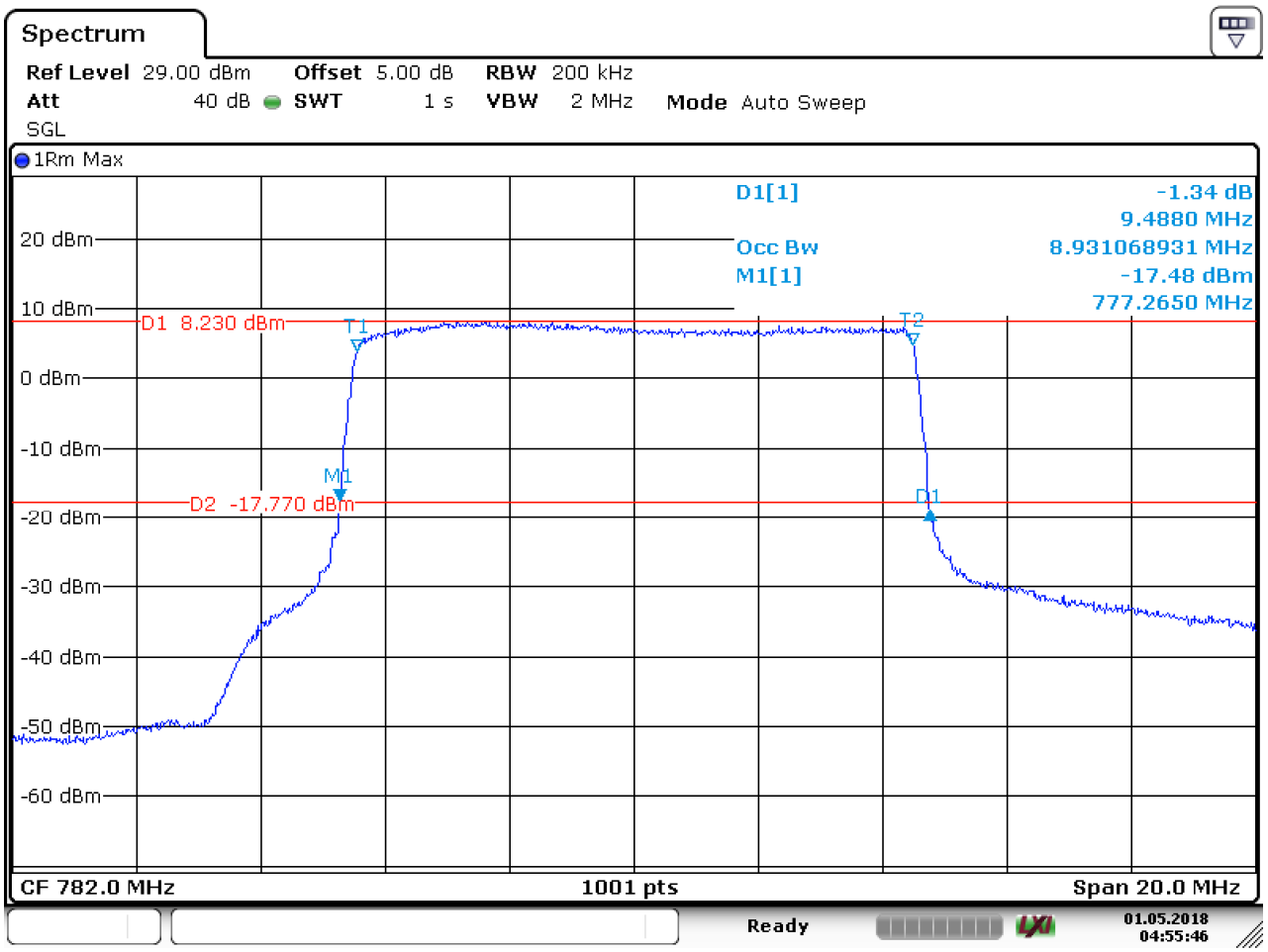
4.1.1.2.3 Test Channel = HCH



Date: 1.MAY.2018 04:53:45

4.1.1.3 Test Mode = LTE/TM1 10MHz

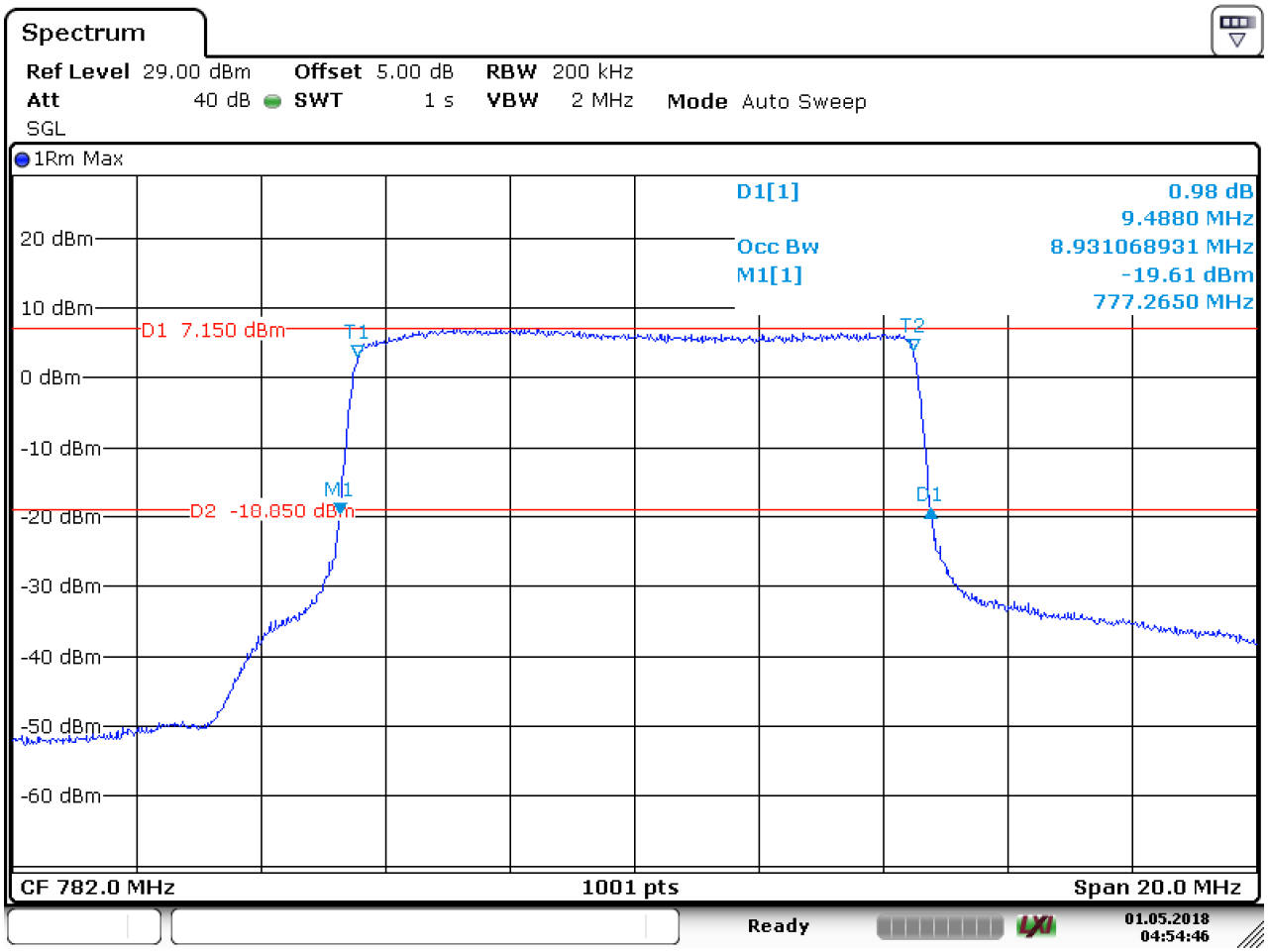
4.1.1.3.1 Test Channel = MCH



Date: 1.MAY.2018 04:55:46

4.1.1.4 Test Mode = LTE/TM2 10MHz

4.1.1.4.1 Test Channel = MCH



Date: 1.MAY.2018 04:54:46

5 Band Edges Compliance

Part I –

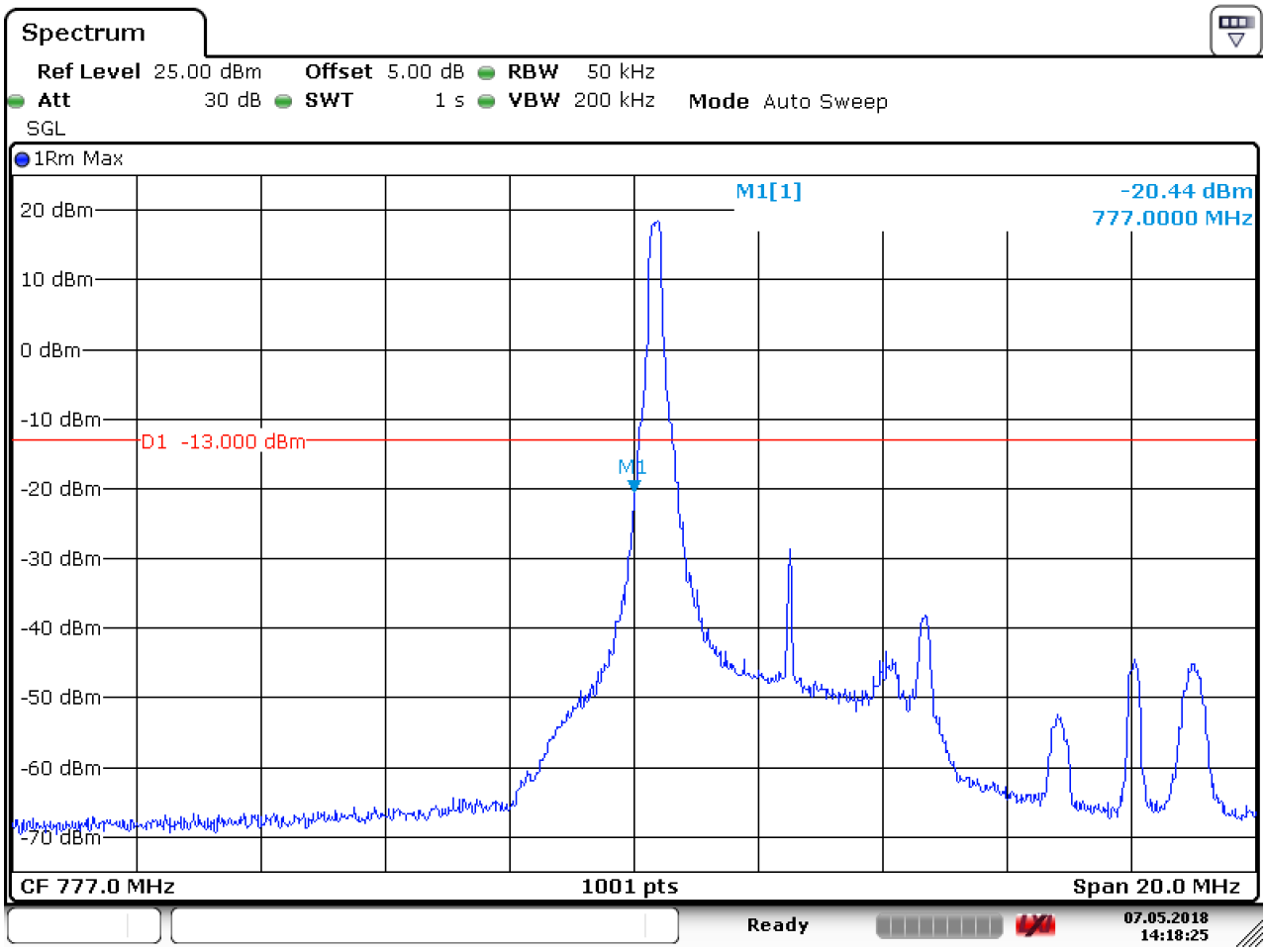
5.1 For LTE

5.1.1 Test Band = LTE band13

5.1.1.1 Test Mode = LTE/TM1 5MHz

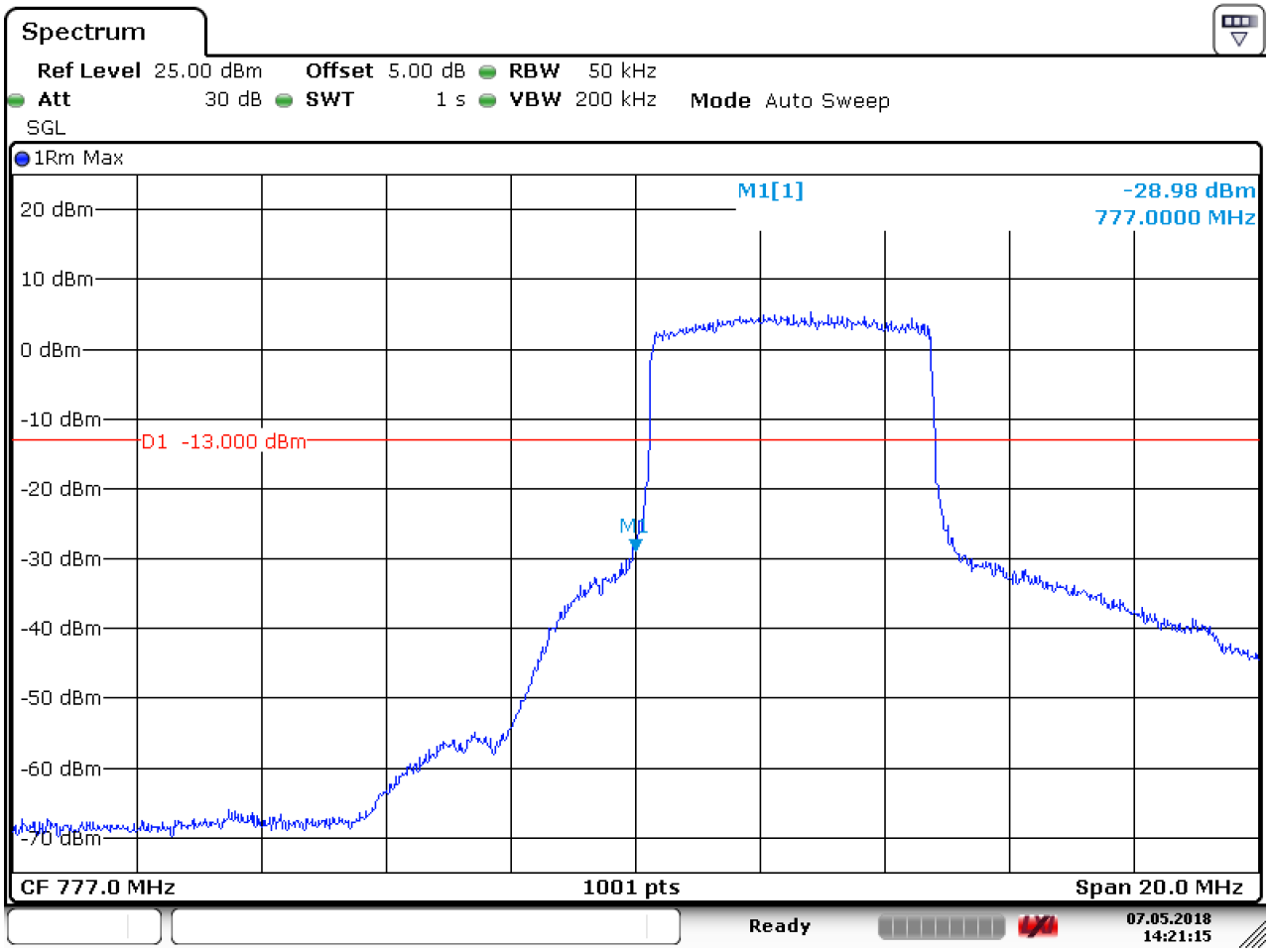
5.1.1.1.1 Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB



Date: 7.MAY.2018 14:18:26

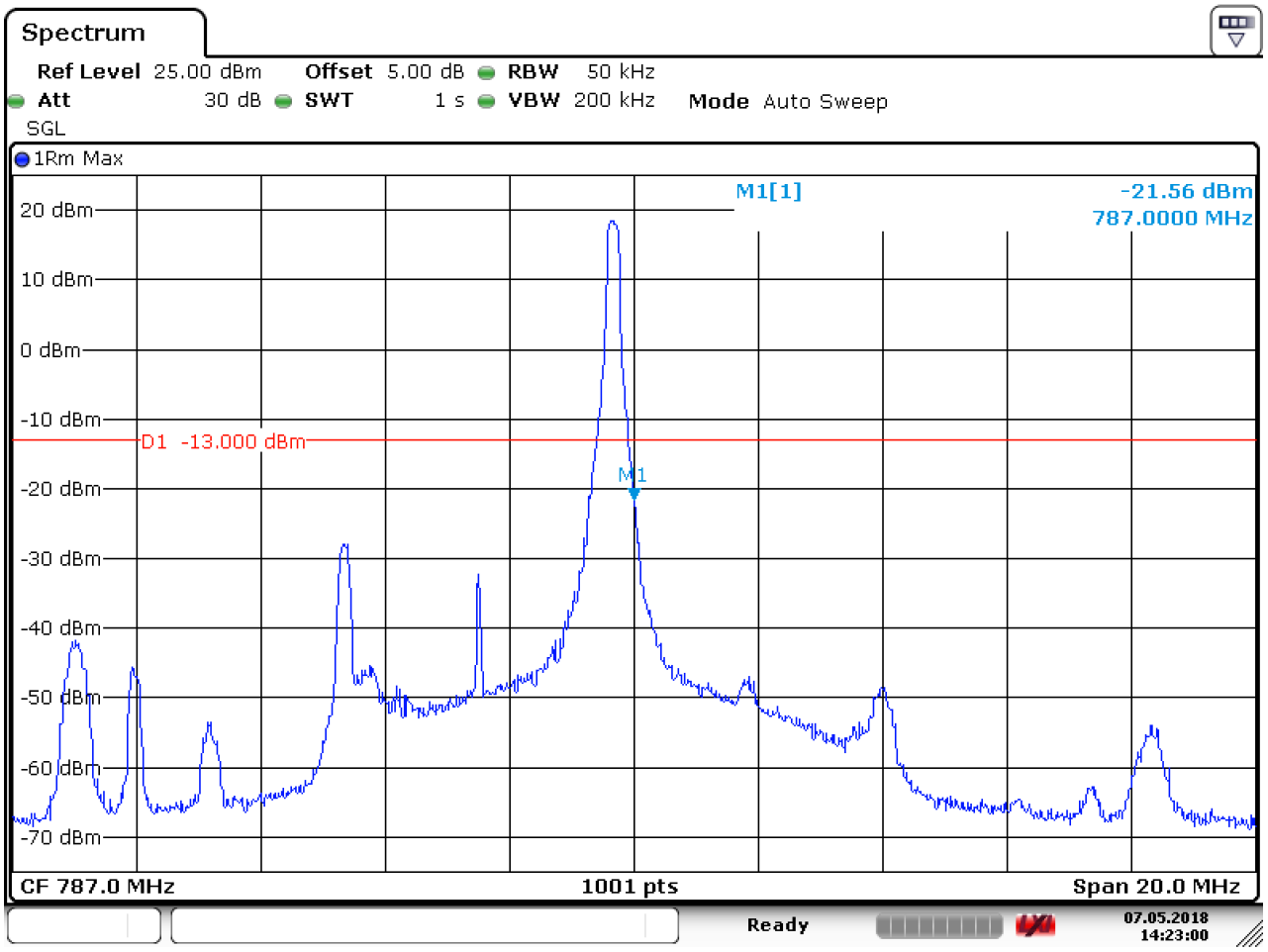
5.1.1.1.1.2 Test RB=25RB



Date: 7.MAY.2018 14:21:15

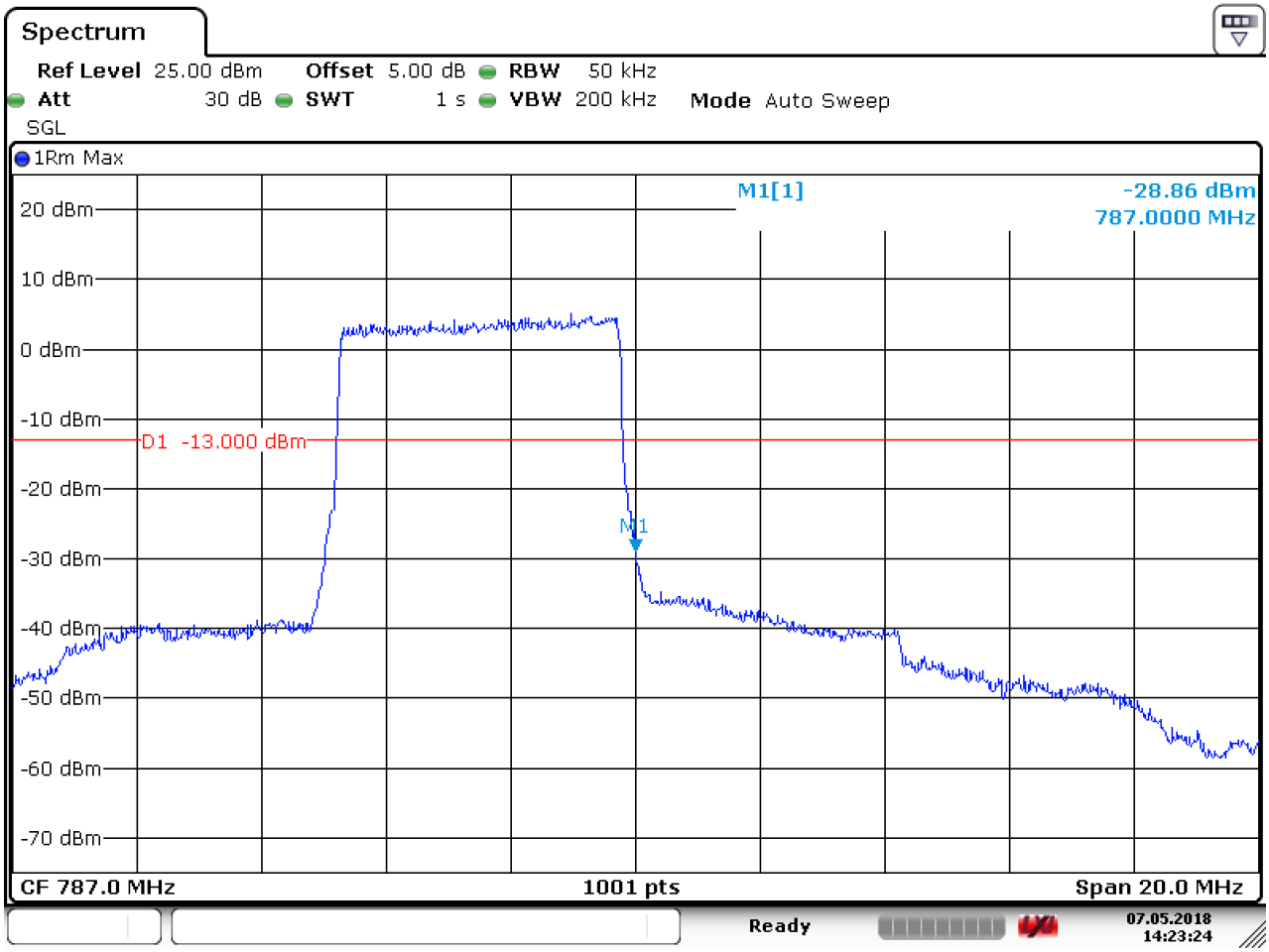
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 7.MAY.2018 14:23:00

5.1.1.1.2.2 Test RB=25RB

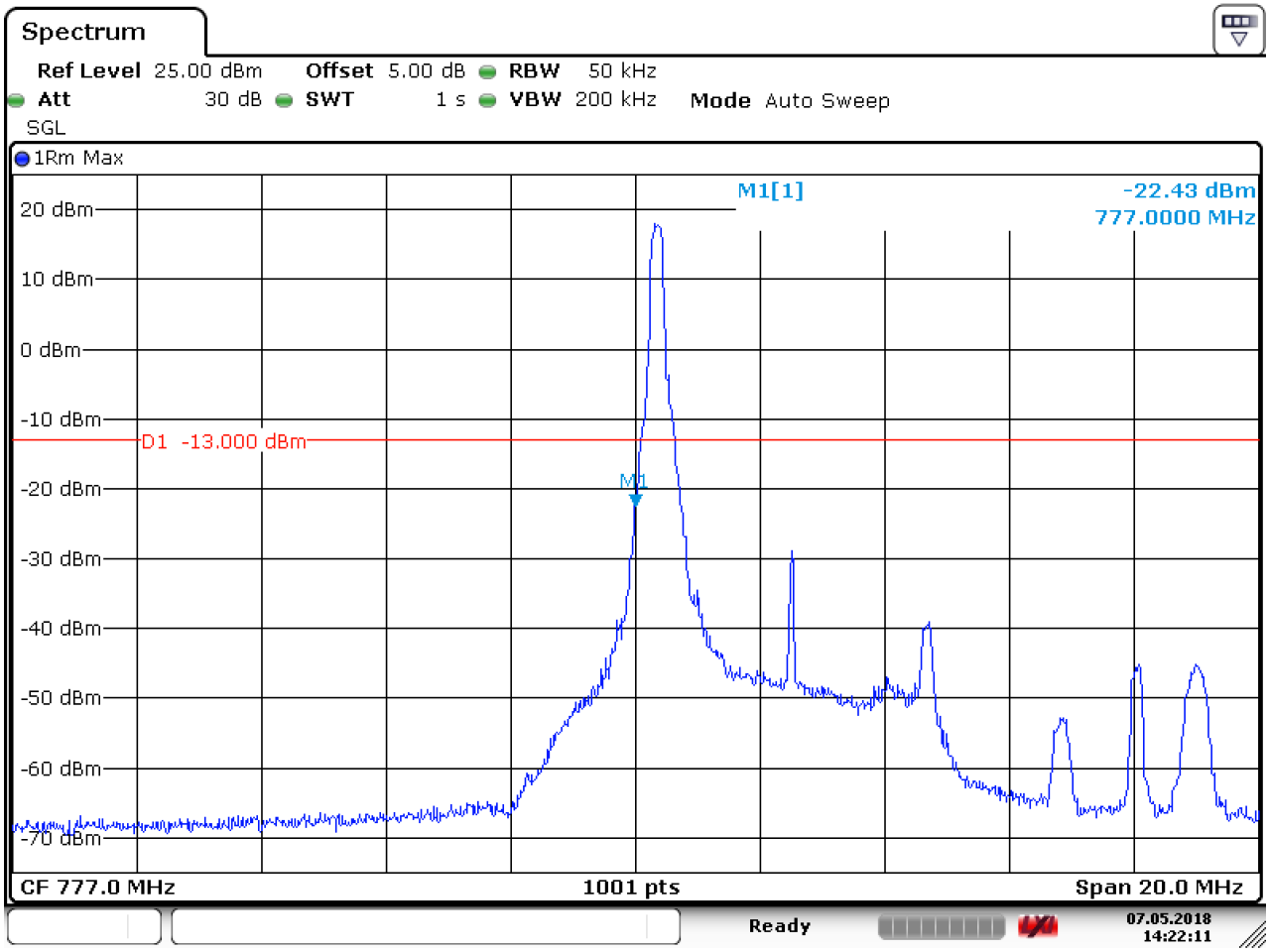


Date: 7.MAY.2018 14:23:25

5.1.1.2 Test Mode = LTE/TM2 5MHz

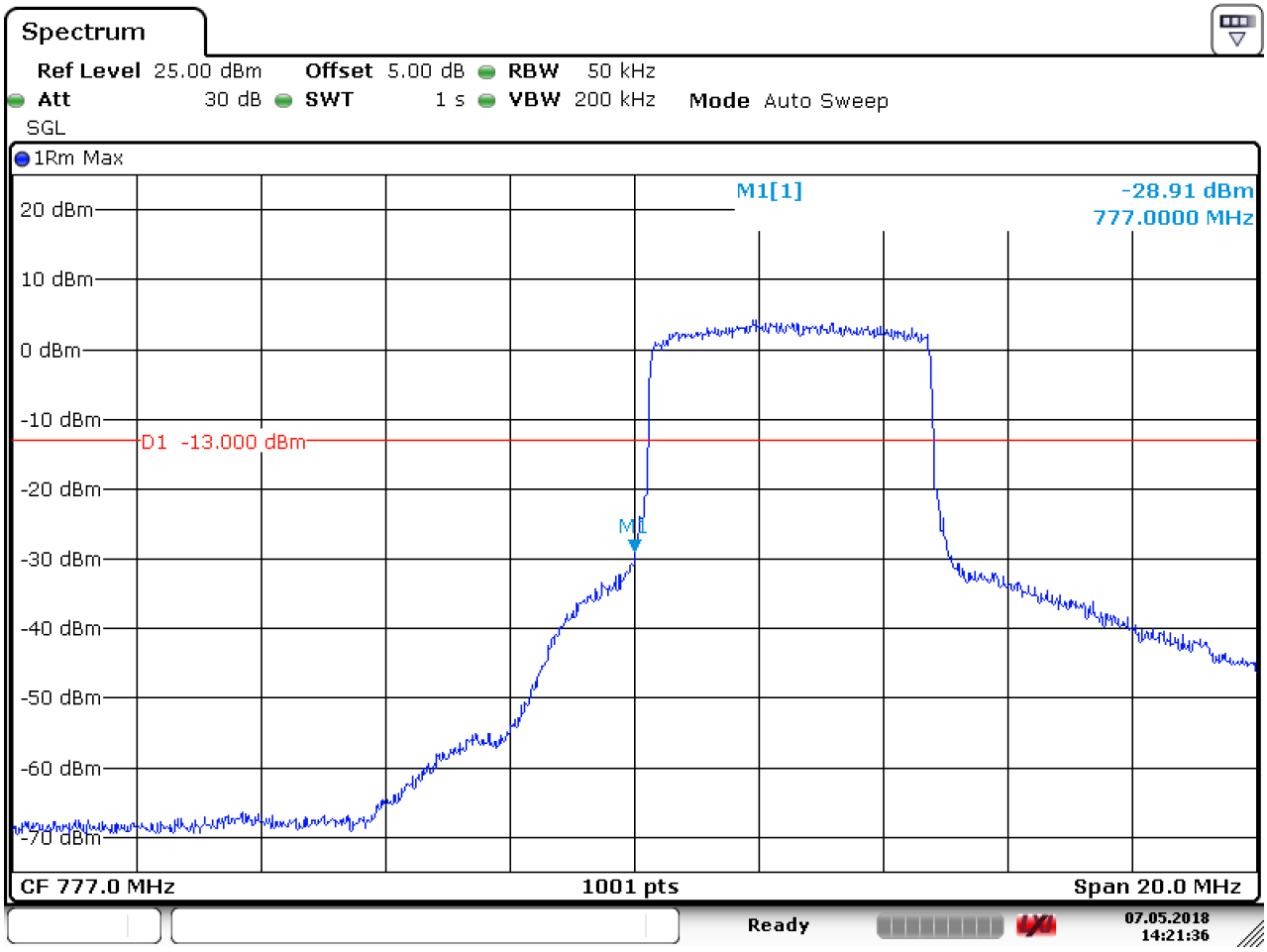
5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



Date: 7.MAY.2018 14:22:11

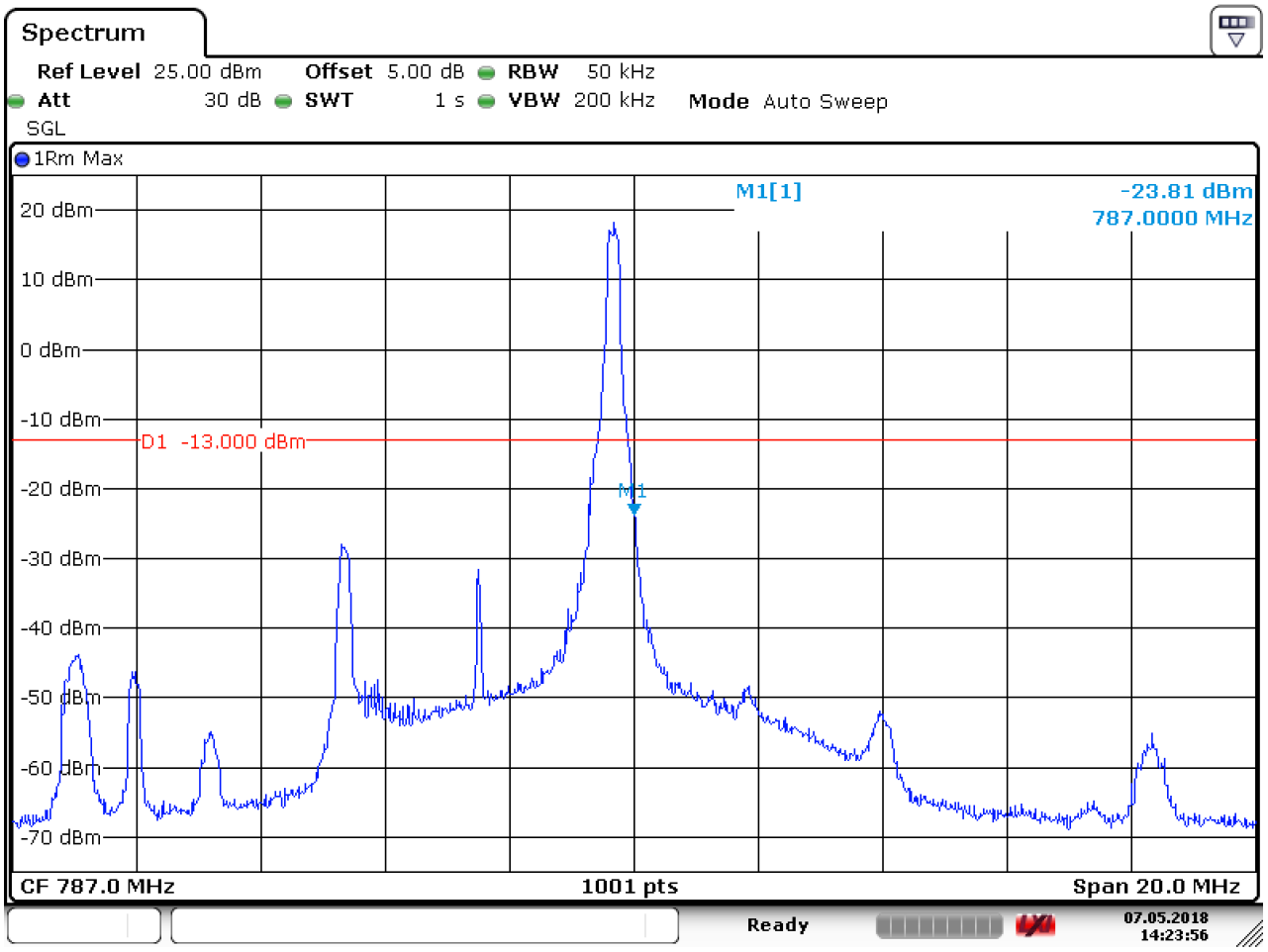
5.1.1.2.1.2 Test RB=25RB



Date: 7.MAY.2018 14:21:36

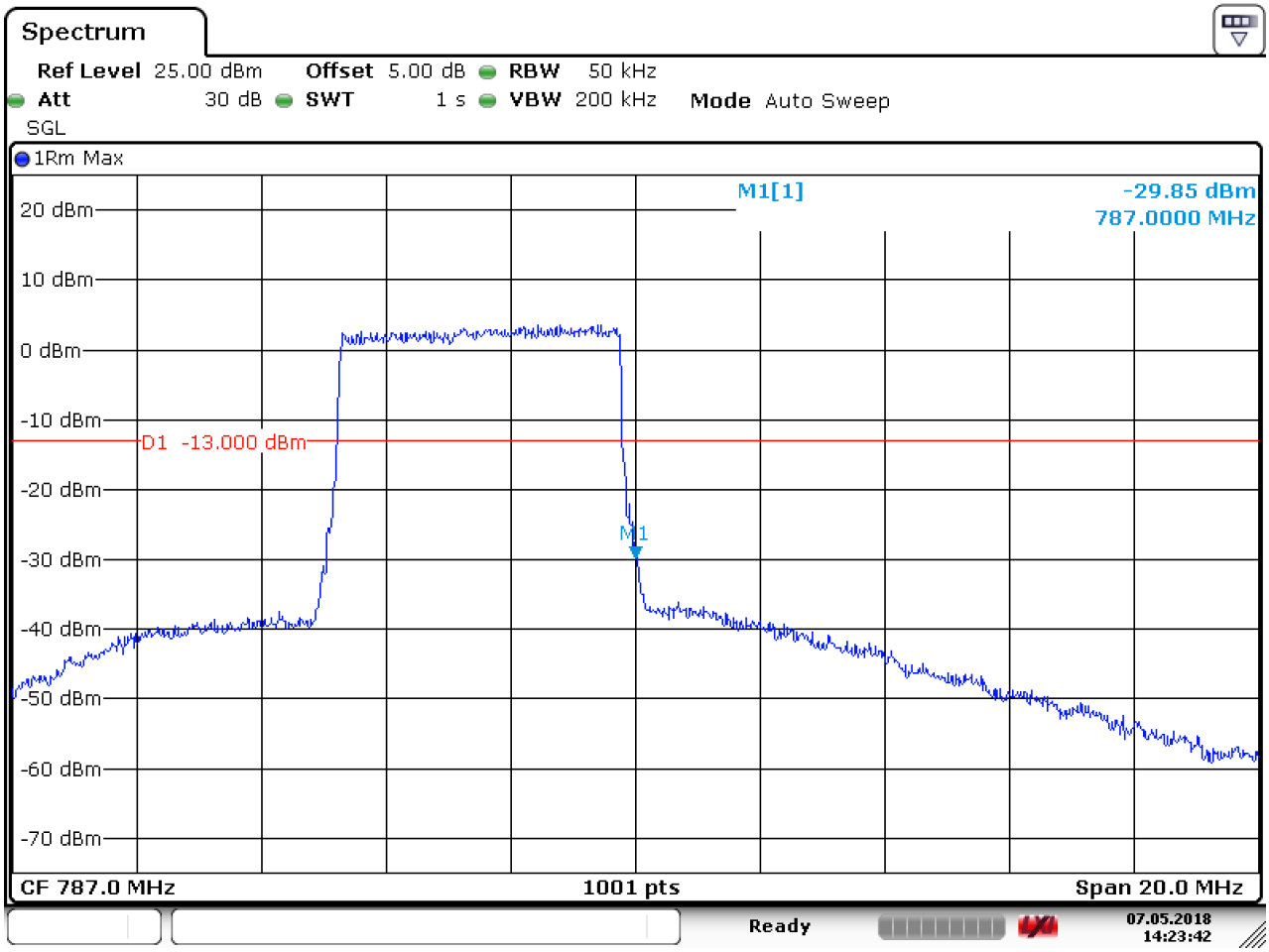
5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 7.MAY.2018 14:23:57

5.1.1.2.2.2 Test RB=25RB

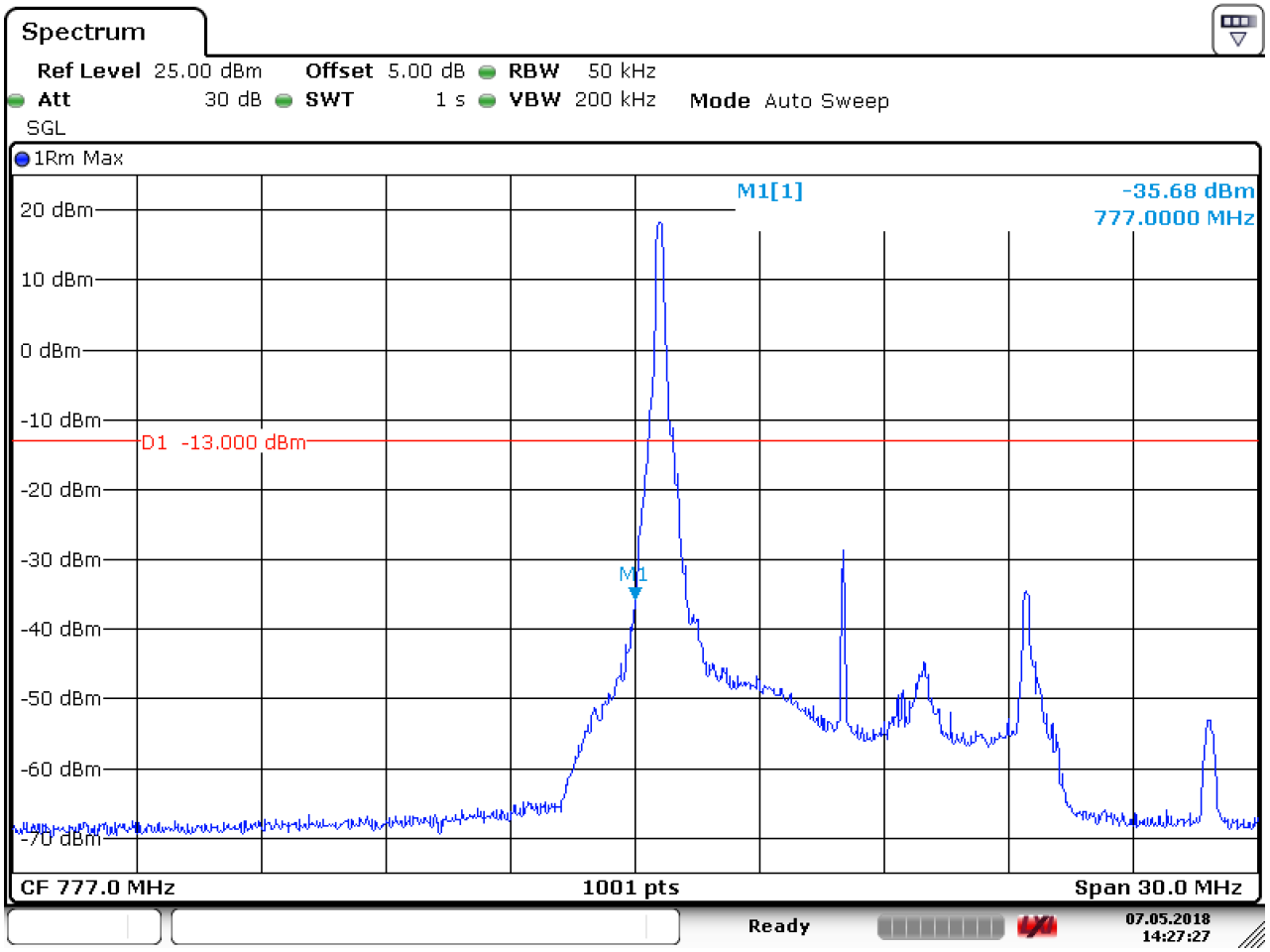


Date: 7.MAY.2018 14:23:42

5.1.1.3 Test Mode = LTE/TM1 10MHz

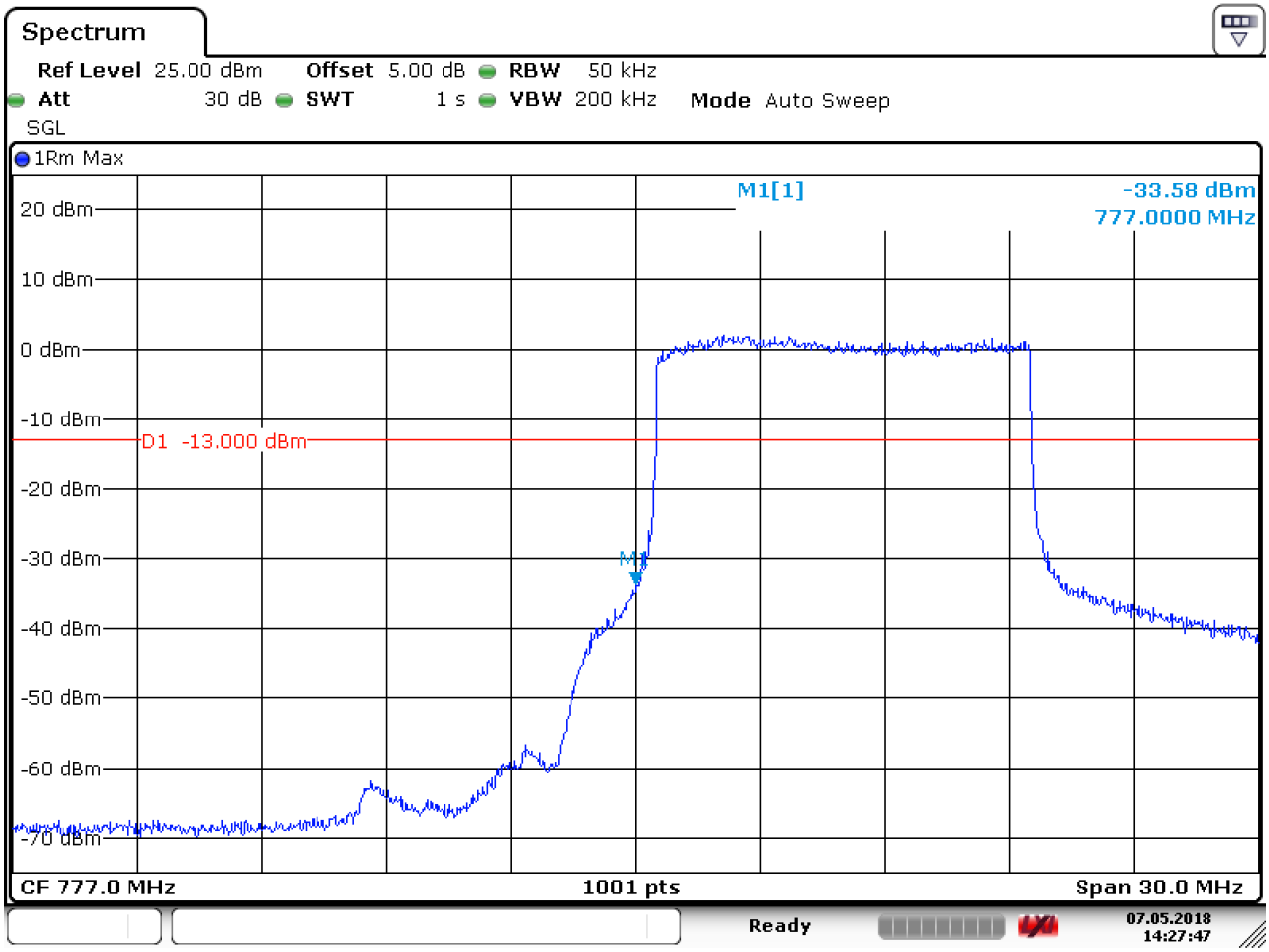
5.1.1.3.1 Test Channel = LCH

5.1.1.3.1.1 Test RB=1RB



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

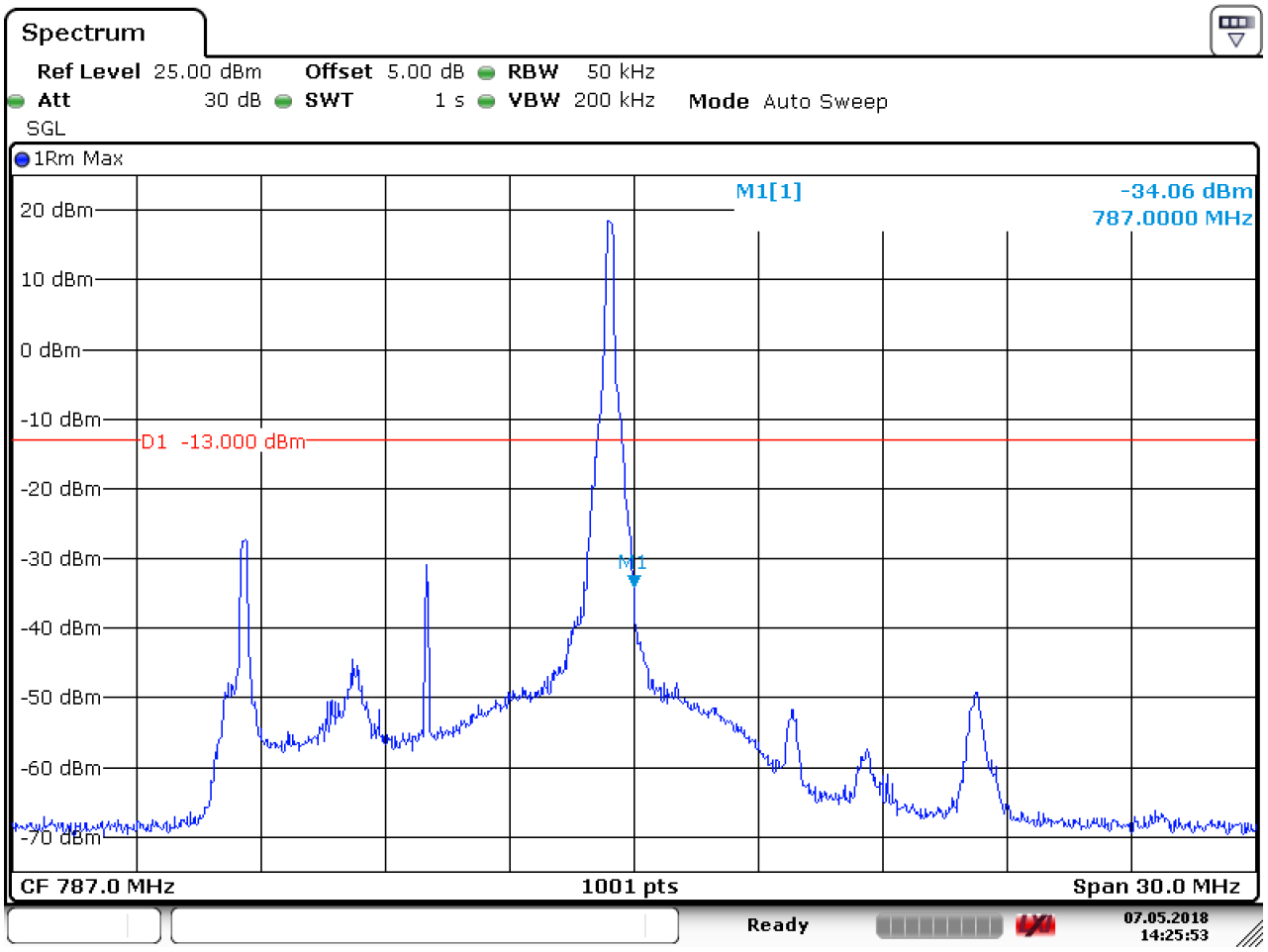
5.1.1.3.1.2 Test RB=50RB



Date: 7.MAY.2018 14:27:48

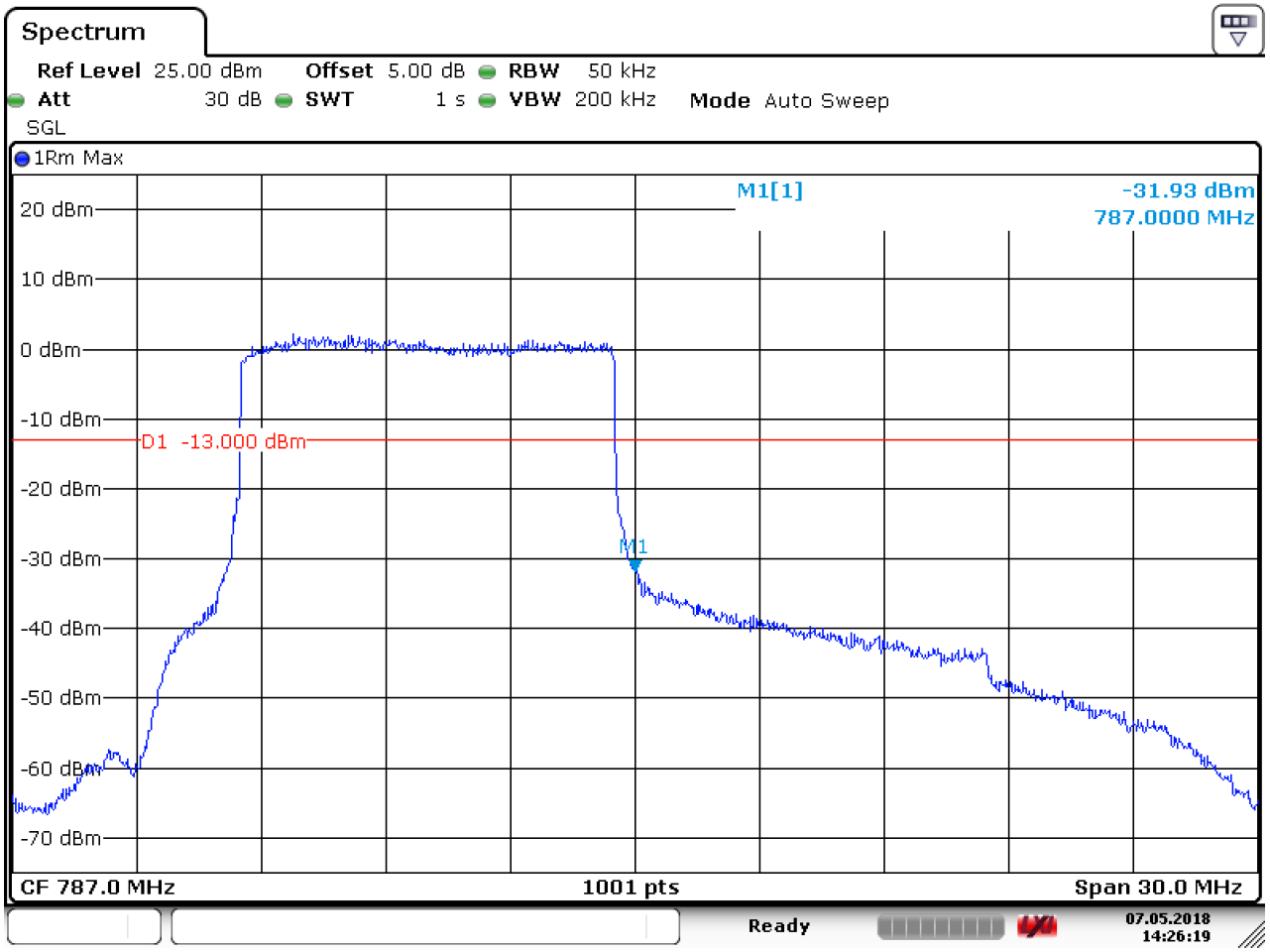
5.1.1.3.2 Test Channel = HCH

5.1.1.3.2.1 Test RB=1RB



Date: 7.MAY.2018 14:25:53

5.1.1.3.2.2 Test RB=50RB

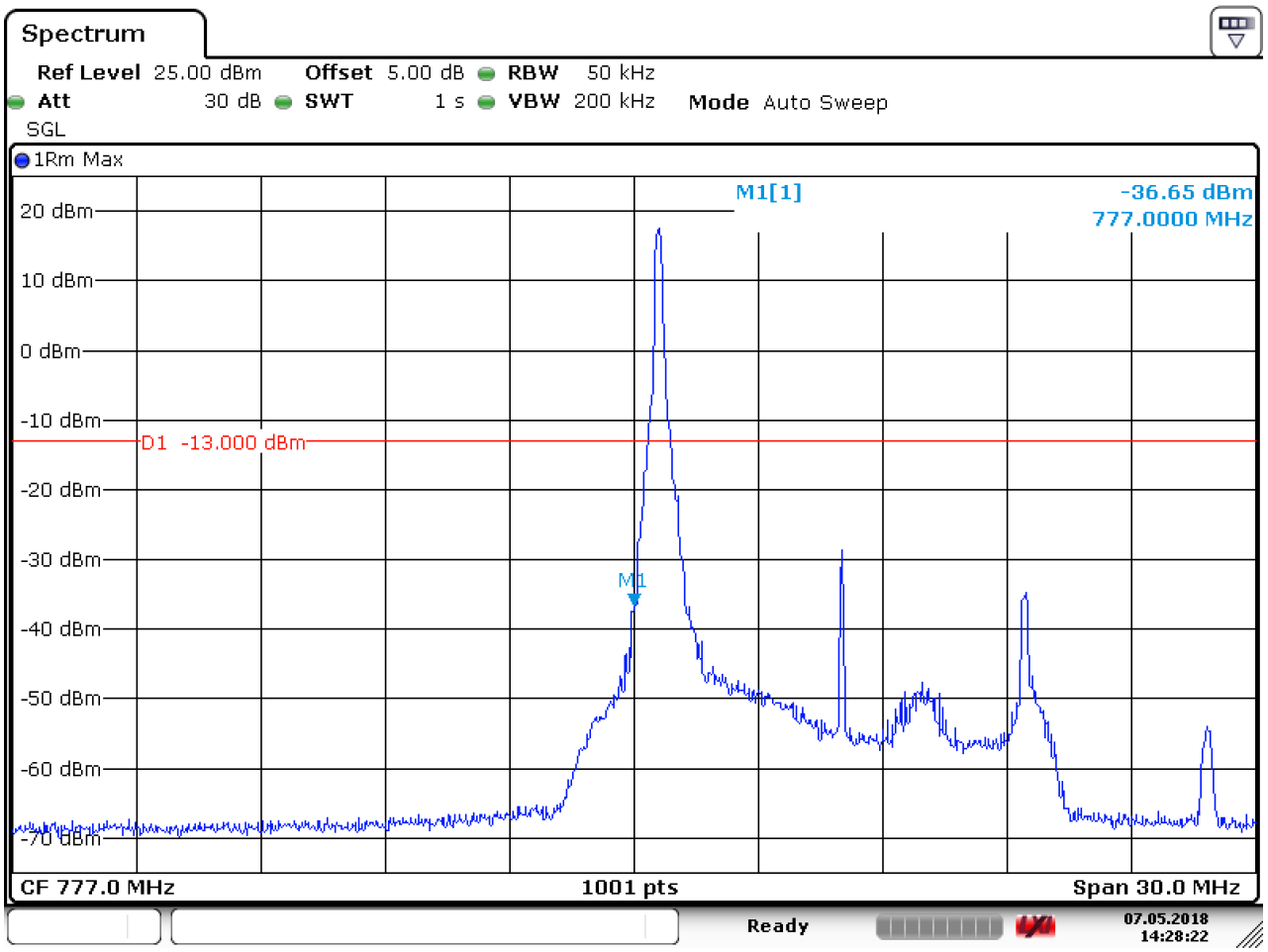


Date: 7.MAY.2018 14:26:19

5.1.1.4 Test Mode = LTE/TM2 10MHz

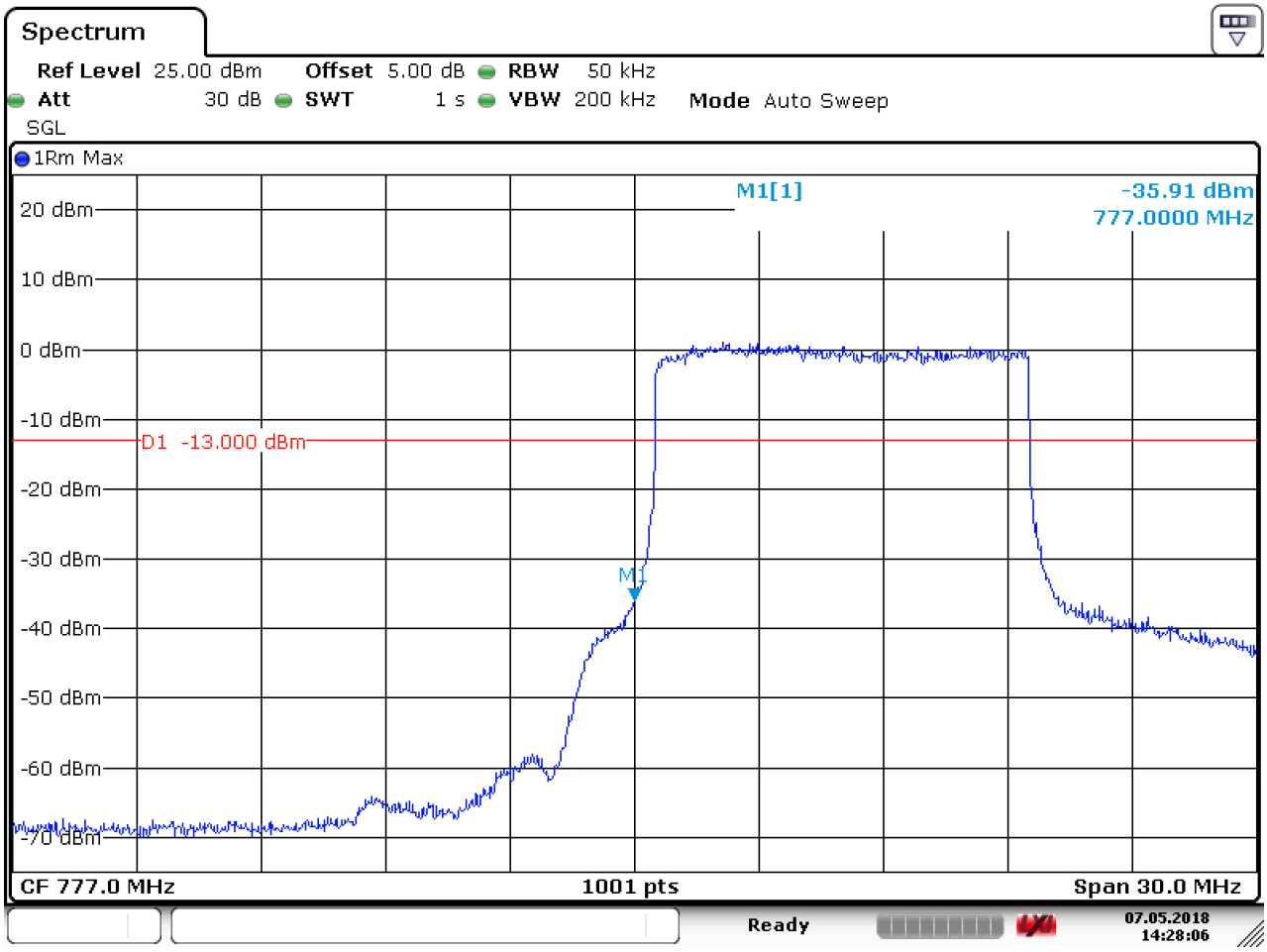
5.1.1.4.1 Test Channel = LCH

5.1.1.4.1.1 Test RB=1RB



Date: 7.MAY.2018 14:28:22

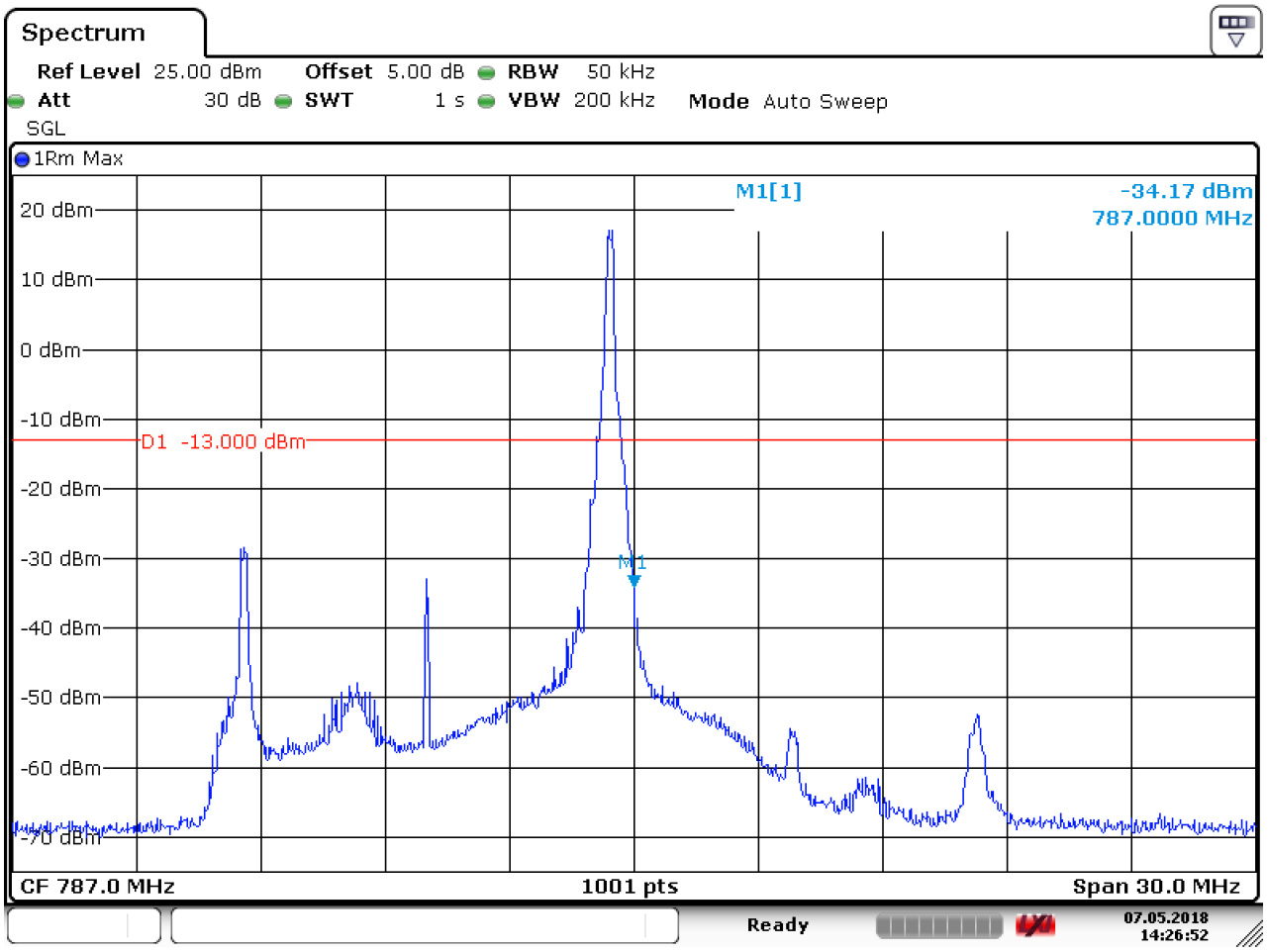
5.1.1.4.1.2 Test RB=50RB



Date: 7.MAY.2018 14:28:07

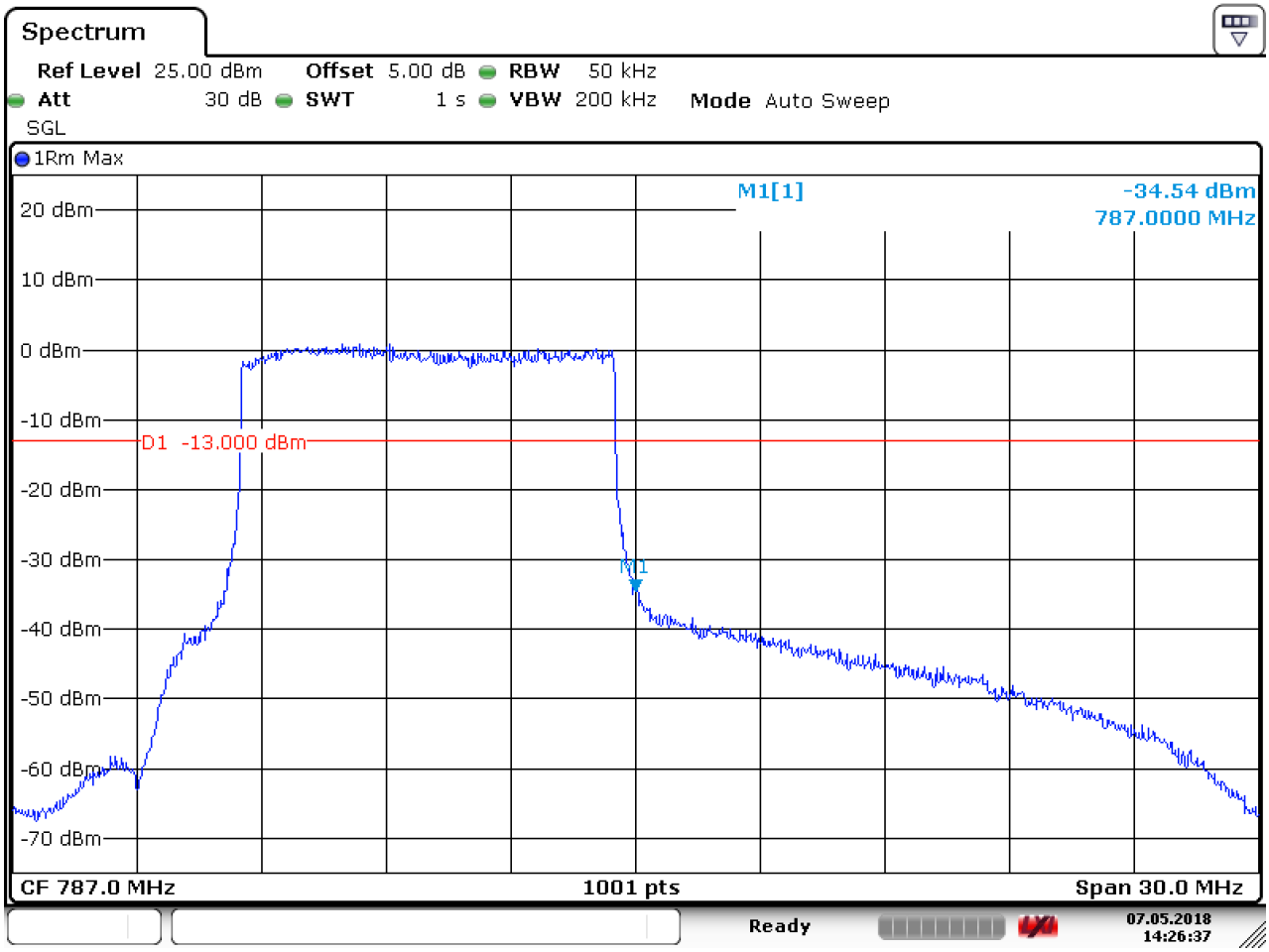
5.1.1.4.2 Test Channel = HCH

5.1.1.4.2.1 Test RB=1RB



Date: 7.MAY.2018 14:26:53

5.1.1.4.2.2 Test RB=50RB



Date: 7.MAY.2018 14:26:38

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.

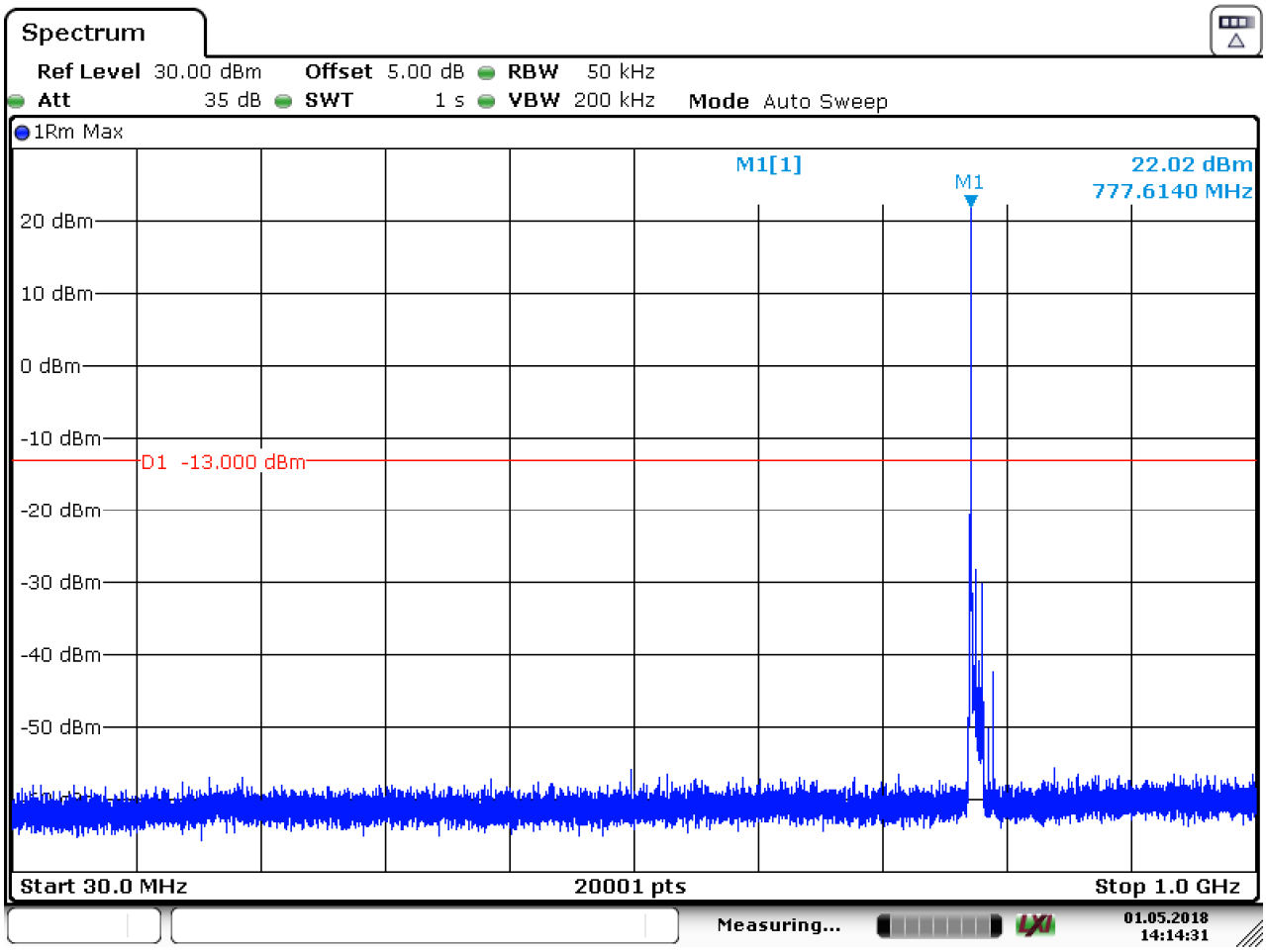
Part I - Test Plots

6.1 For LTE

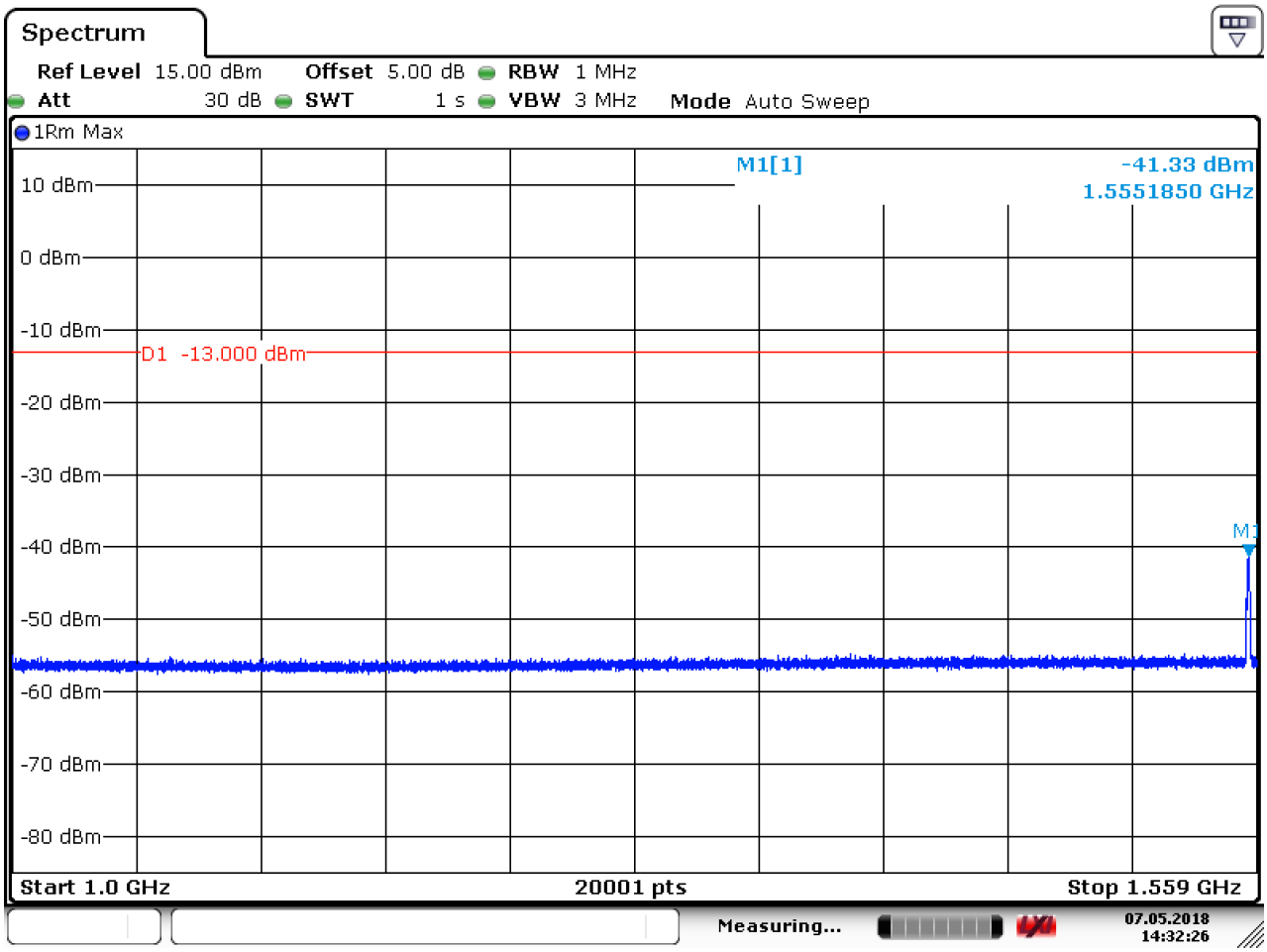
6.1.1 Test Band = LTE band13

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

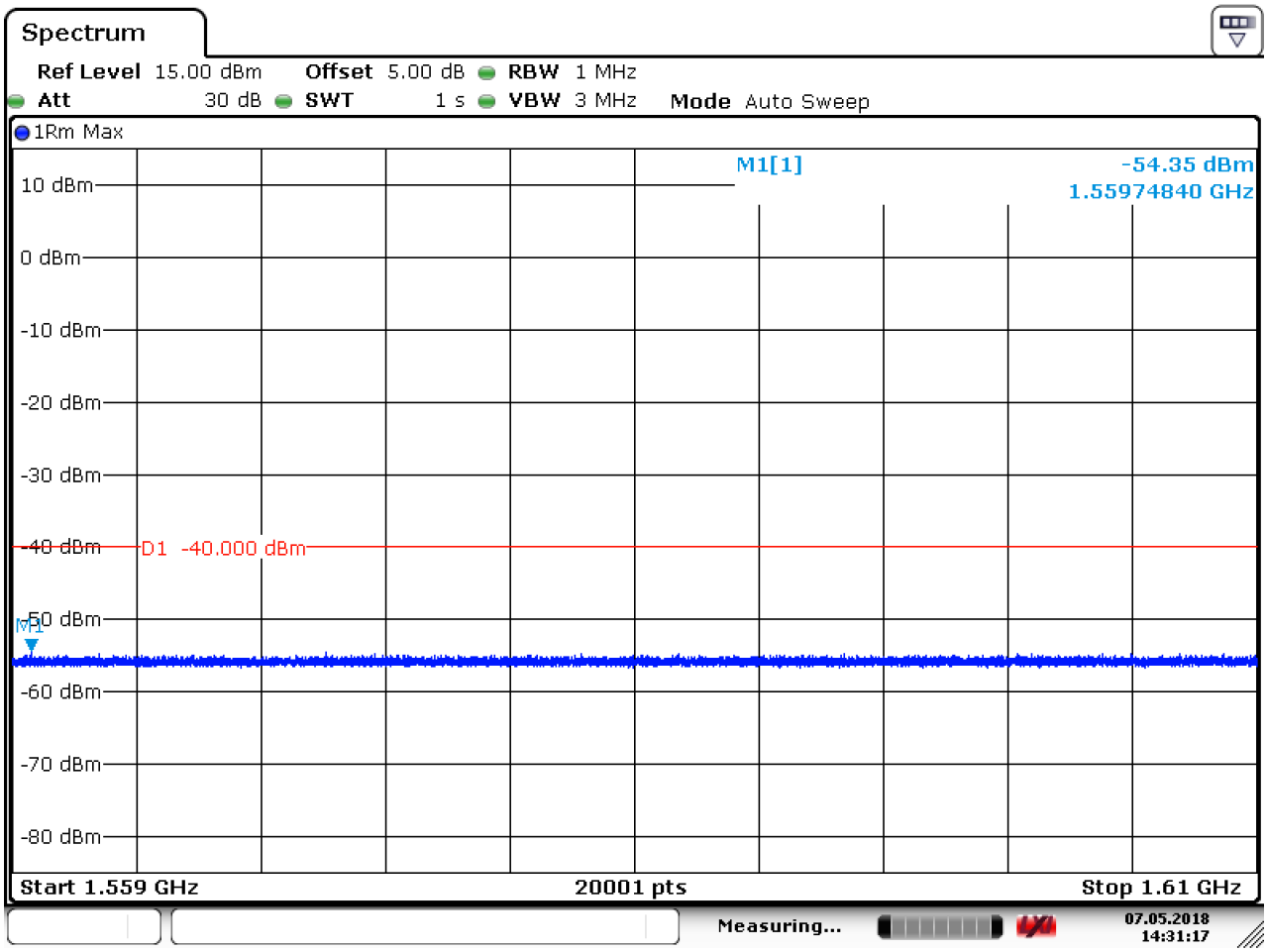
6.1.1.1.1 Test Channel = MCH



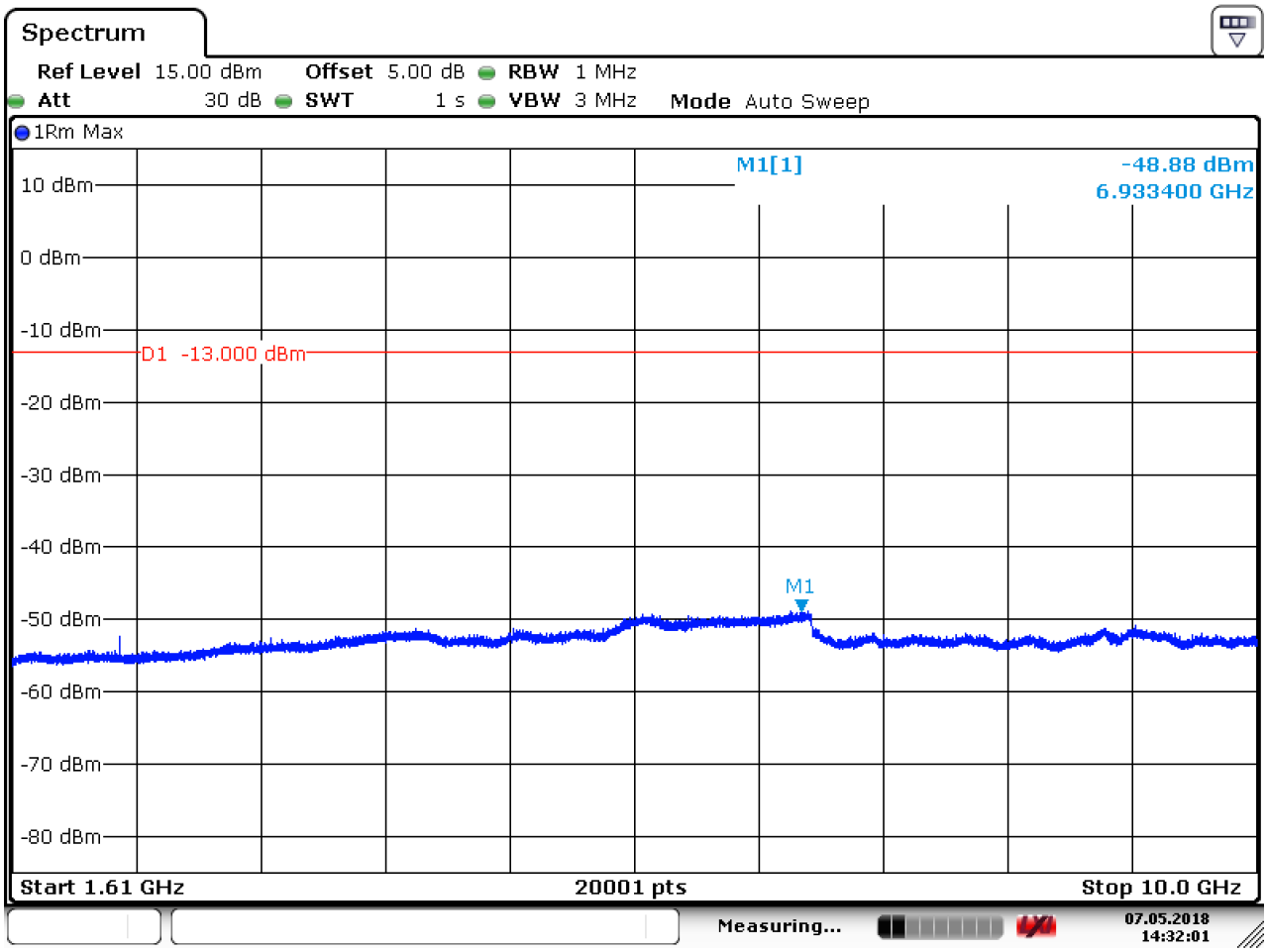
Date: 1.MAY.2018 14:14:32



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



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



Date: 7.MAY.2018 14:32:01

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
71.953333	-73.54	-13.00	60.54	Vertical
144.006667	-70.53	-13.00	57.53	Vertical
1605.000000	-60.28	-40.00	20.28	Vertical
2332.500000	-54.12	-13.00	41.12	Vertical
3109.850000	-68.04	-13.00	55.04	Vertical
4011.725000	-67.08	-13.00	54.08	Vertical
62.713333	-78.04	-13.00	65.04	Horizontal
144.006667	-75.51	-13.00	62.51	Horizontal
1605.000000	-62.38	-40.00	20.38	Horizontal
2332.500000	-57.11	-13.00	44.11	Horizontal
3110.175000	-68.01	-13.00	55.01	Horizontal
6056.625000	-65.26	-13.00	52.26	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	8.41	0.01075	PASS
				VN	-2.33	-0.00297	PASS
				VH	0.16	0.00021	PASS
		MCH	TN	VL	-6.82	-0.00872	PASS
				VN	2.30	0.00294	PASS
				VH	7.89	0.01009	PASS
		HCH	TN	VL	-3.42	-0.00437	PASS
				VN	-4.79	-0.00612	PASS
				VH	2.82	0.00361	PASS
	LTE/TM2 10MHz	LCH	TN	VL	-6.49	-0.00830	PASS
				VN	8.37	0.01070	PASS
				VH	-6.40	-0.00818	PASS
		MCH	TN	VL	-2.56	-0.00327	PASS
				VN	-1.07	-0.00137	PASS
				VH	0.54	0.00069	PASS
		HCH	TN	VL	4.50	0.00575	PASS
				VN	-7.63	-0.00976	PASS
				VH	6.68	0.00854	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	-4.90	-0.00627	PASS
				-20	-6.14	-0.00785	PASS
				-10	5.47	0.00699	PASS
				0	-3.63	-0.00464	PASS
				10	7.43	0.00950	PASS
				20	6.03	0.00771	PASS
				30	0.99	0.00126	PASS
				40	-4.50	-0.00575	PASS
				50	-4.42	-0.00565	PASS
	LTE/TM2 10MHz	MCH	VN	-30	-2.09	-0.00268	PASS
				-20	-6.03	-0.00771	PASS
				-10	0.60	0.00076	PASS
				0	2.34	0.00299	PASS
				10	4.16	0.00532	PASS
				20	0.39	0.00050	PASS
				30	9.98	0.01276	PASS
				40	1.61	0.00205	PASS
				50	-4.09	-0.00522	PASS

The End