



Appendix B

E-UTRA Band13



CONTENT

	Page
1 EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA.....	3
2 PEAK-TO-AVERAGE RATIO	6
2.1 FOR LTE	6
2.1.1 Test Band = LTE Band13.....	6
3 MODULATION CHARACTERISTICS	8
3.1 FOR LTE	8
3.1.1 Test Band = LTE band13.....	8
4 BANDWIDTH.....	10
4.1 FOR LTE	11
4.1.1 Test Band = LTE band13.....	11
5 BAND EDGES COMPLIANCE	19
5.1 FOR LTE	19
5.1.1 Test Band = LTE band13.....	19
6 SPURIOUS EMISSION AT ANTENNA TERMINAL.....	35
6.1 FOR LTE	35
6.1.1 Test Band = LTE band13.....	35
7 FIELD STRENGTH OF SPURIOUS RADIATION	37
7.1 FOR LTE	37
7.1.1 Test Band = LTE Band13.....	37
8 FREQUENCY STABILITY	38
8.1 FREQUENCY ERROR VS. VOLTAGE	38
8.2 FREQUENCY ERROR VS. TEMPERATURE	38



1 Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	SG Power(With Cable_Loss)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM1	5M	LCH	RB1#0	22.69	19.44	19.52	34.77	PASS
				RB1#13	22.77	19.43	19.51	34.77	PASS
				RB1#24	22.49	18.70	18.78	34.77	PASS
				RB12#0	21.81	17.98	18.06	34.77	PASS
				RB12#6	21.70	19.30	19.38	34.77	PASS
				RB12#13	21.64	18.30	18.38	34.77	PASS
				RB25#0	21.69	18.29	18.37	34.77	PASS
			MCH	RB1#0	22.90	20.09	20.17	34.77	PASS
				RB1#13	22.56	19.53	19.61	34.77	PASS
				RB1#24	22.63	18.68	18.76	34.77	PASS
				RB12#0	21.81	19.81	19.89	34.77	PASS
				RB12#6	21.73	19.60	19.68	34.77	PASS
				RB12#13	21.62	19.45	19.53	34.77	PASS
				RB25#0	21.63	18.04	18.12	34.77	PASS
			HCH	RB1#0	22.59	19.73	19.81	34.77	PASS
				RB1#13	22.69	20.38	20.46	34.77	PASS
				RB1#24	22.34	20.18	20.26	34.77	PASS
				RB12#0	21.58	17.87	17.95	34.77	PASS
				RB12#6	21.59	18.35	18.43	34.77	PASS
				RB12#13	21.57	19.44	19.52	34.77	PASS
				RB25#0	21.57	17.63	17.71	34.77	PASS



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Report No.: SZEM180100100001

Page: 4 of 38

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	SG Power(With Cable Loss)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM2	5M	LCH	RB1#0	21.15	18.00	18.08	34.77	PASS
				RB1#13	21.83	19.74	19.82	34.77	PASS
				RB1#24	21.43	19.18	19.26	34.77	PASS
				RB12#0	20.54	17.38	17.46	34.77	PASS
				RB12#6	20.58	17.60	17.68	34.77	PASS
				RB12#13	20.63	17.05	17.13	34.77	PASS
				RB25#0	20.63	17.73	17.81	34.77	PASS
			MCH	RB1#0	21.56	17.85	17.93	34.77	PASS
				RB1#13	21.75	17.93	18.01	34.77	PASS
				RB1#24	21.65	19.23	19.31	34.77	PASS
				RB12#0	20.70	17.80	17.88	34.77	PASS
				RB12#6	20.68	17.67	17.75	34.77	PASS
				RB12#13	20.58	18.03	18.11	34.77	PASS
				RB25#0	20.60	17.27	17.35	34.77	PASS
			HCH	RB1#0	21.54	17.55	17.63	34.77	PASS
				RB1#13	21.64	18.48	18.56	34.77	PASS
				RB1#24	21.49	19.05	19.13	34.77	PASS
				RB12#0	20.53	18.00	18.08	34.77	PASS
				RB12#6	20.53	16.72	16.8	34.77	PASS
				RB12#13	20.51	17.37	17.45	34.77	PASS
				RB25#0	20.73	17.40	17.48	34.77	PASS



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Report No.: SZEM180100100001

Page: 5 of 38

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	SG Power(With Cable_Loss)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM ₁	10M	LCH	RB1#0	22.60	19.80	19.88	34.77	PASS
				RB1#25	22.80	19.63	19.71	34.77	PASS
				RB1#49	22.36	19.27	19.35	34.77	PASS
				RB25#0	21.80	19.75	19.83	34.77	PASS
				RB25#13	21.74	17.97	18.05	34.77	PASS
				RB25#25	21.62	18.44	18.52	34.77	PASS
				RB50#0	21.64	19.12	19.2	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	SG Power(With Cable_Loss)	ERP (dBm)	limit (dBm)	Verdict
BAND13	LTE/TM ₂	10M	MCH	RB1#0	21.74	19.25	19.33	34.77	PASS
				RB1#25	21.68	19.57	19.65	34.77	PASS
				RB1#49	21.94	19.36	19.44	34.77	PASS
				RB25#0	20.76	18.07	18.15	34.77	PASS
				RB25#13	20.82	18.81	18.89	34.77	PASS
				RB25#25	20.42	18.03	18.11	34.77	PASS
				RB50#0	20.63	16.90	16.98	34.77	PASS

Note:

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

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

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
Band13	TM1/10M	MCH	4.78	13	PASS
	TM2/10M	MCH	5.62	13	PASS

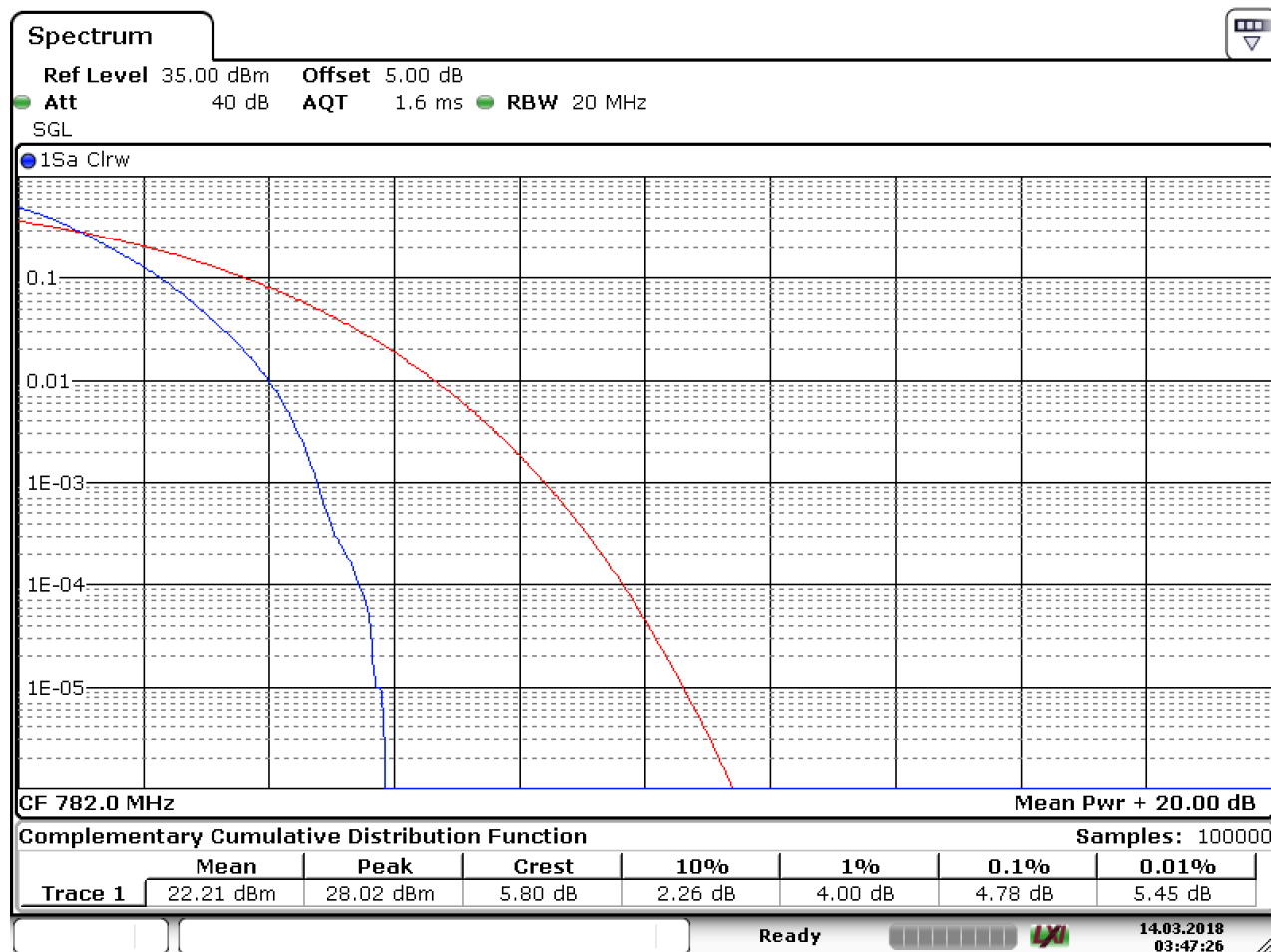
Part II - Test Plots

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

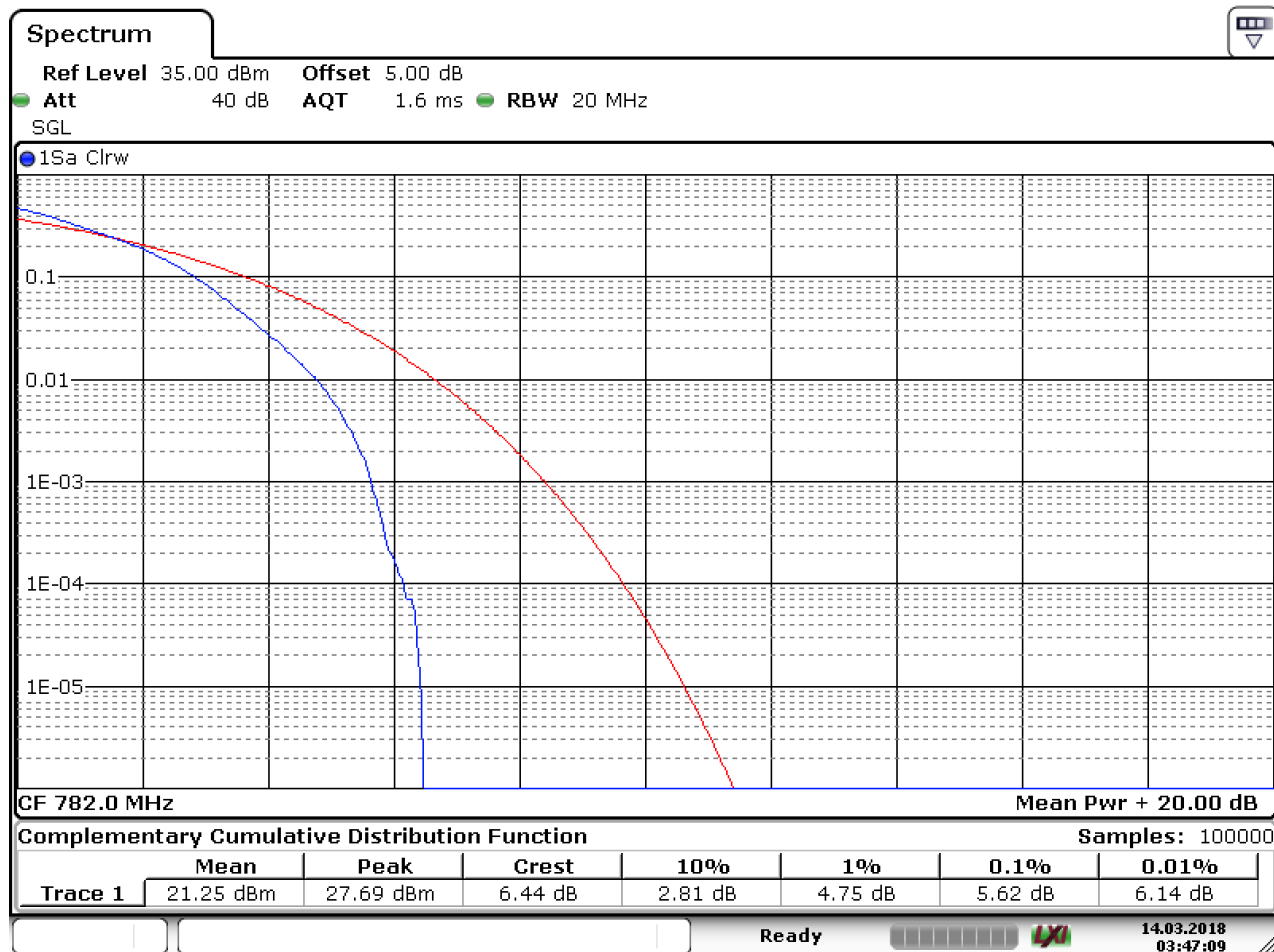


Date: 14.MAR.2018 03:47:26



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

2.1.1.2.1 Test Channel = MCH



Date: 14.MAR.2018 03:47:09

3 Modulation Characteristics

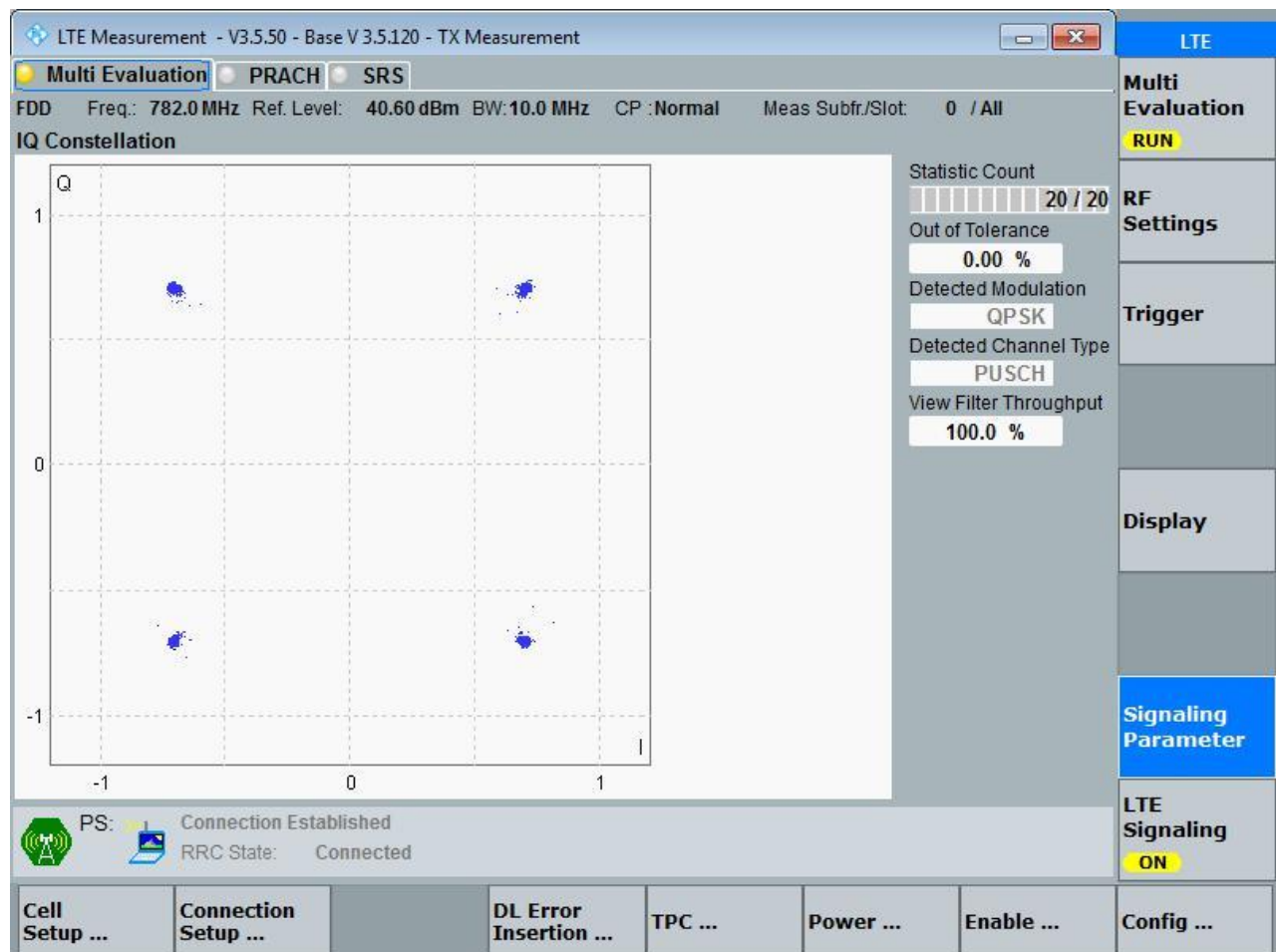
Part I - Test Plots

3.1 For LTE

3.1.1 Test Band = LTE band13

3.1.1.1 Test Mode = LTE /TM1 10MHz

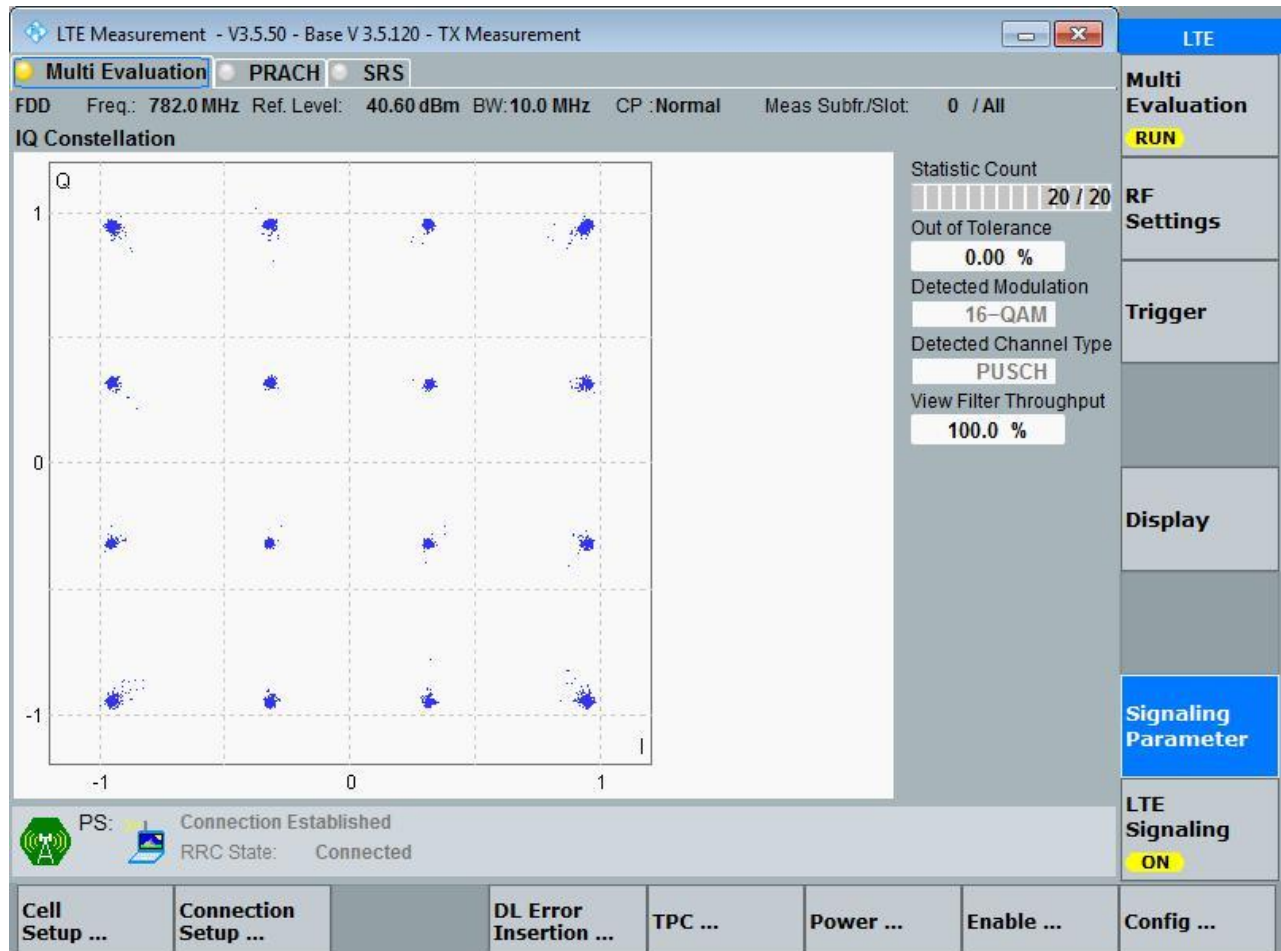
3.1.1.1.1 Test Channel = MCH





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
Band13	TM1/ 5MHz	LCH	4.47	4.94	PASS
		MCH	4.47	4.88	PASS
		HCH	4.49	4.89	PASS
	TM2/ 5MHz	LCH	4.48	4.90	PASS
		MCH	4.47	4.93	PASS
		HCH	4.48	4.91	PASS
	TM1/10MHz	MCH	8.91	9.69	PASS
	TM2/ 10MHz	MCH	8.91	9.69	PASS

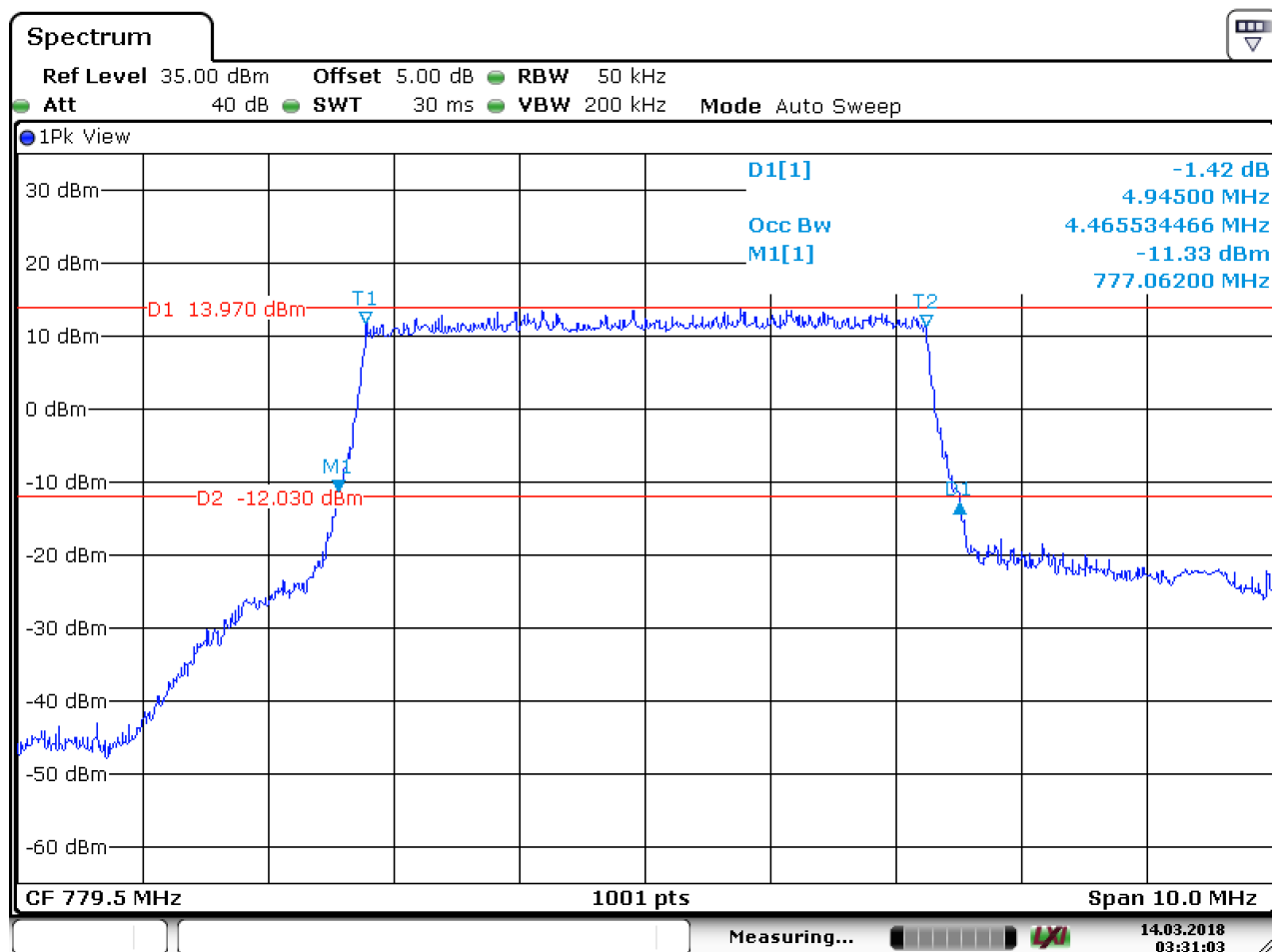
Part II - Test Plots

4.1 For LTE

4.1.1 Test Band = LTE band13

4.1.1.1 Test Mode = LTE/TM1 5MHz

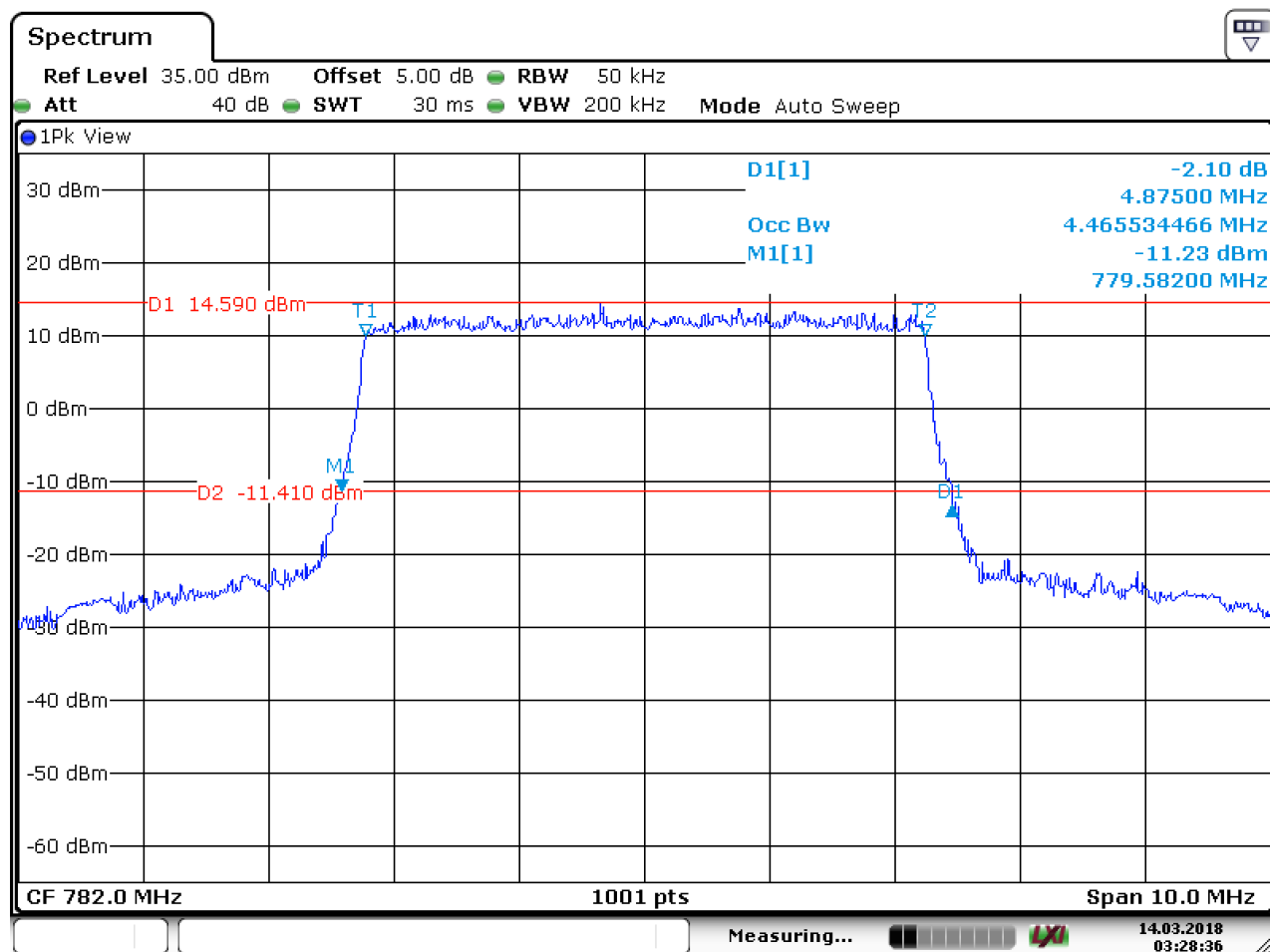
4.1.1.1.1 Test Channel = LCH



Date: 14.MAR.2018 03:31:04



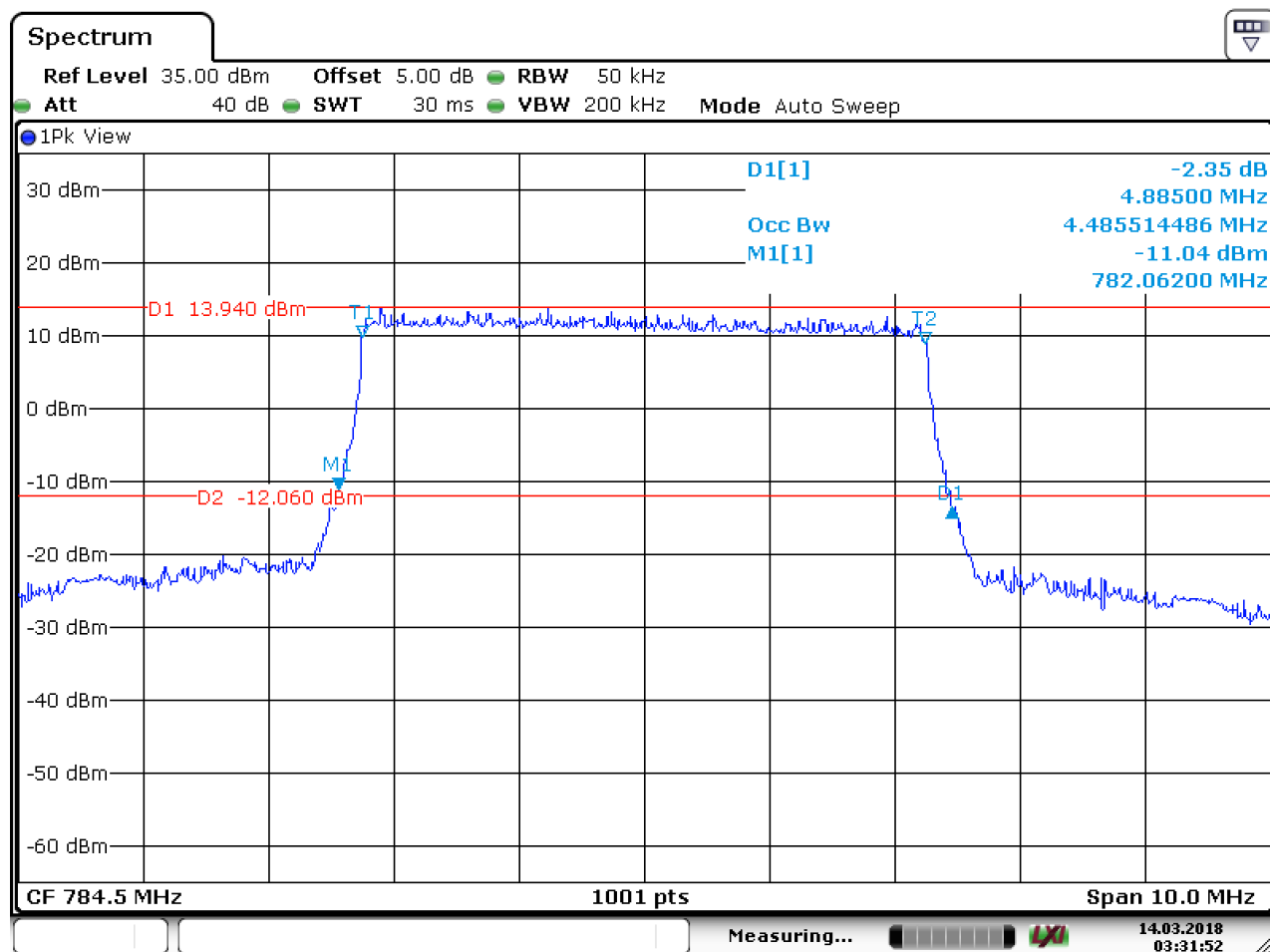
4.1.1.1.2 Test Channel = MCH



Date: 14.MAR.2018 03:28:36



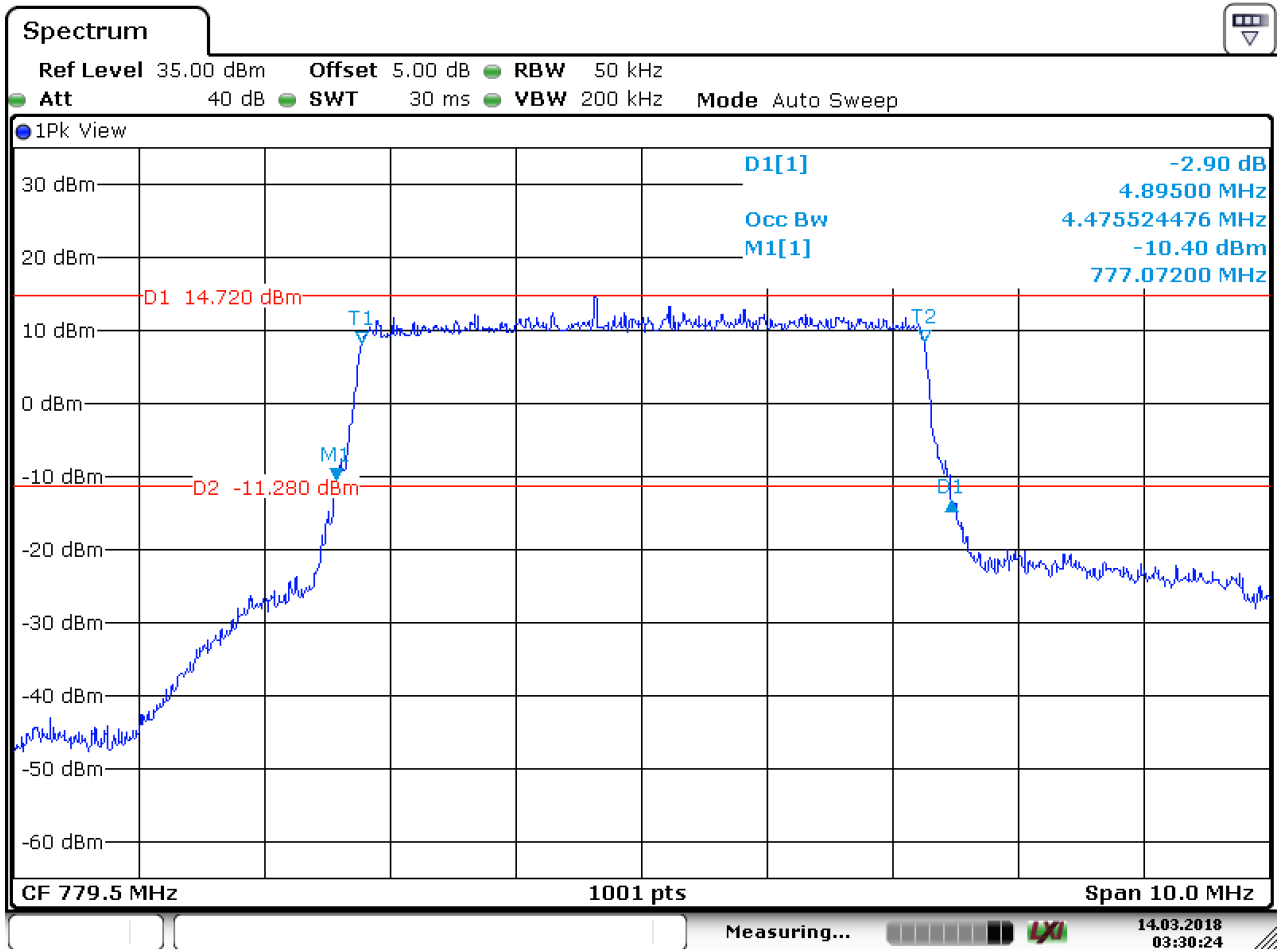
4.1.1.1.3 Test Channel = HCH



Date: 14.MAR.2018 03:31:52

4.1.1.2 Test Mode = LTE/TM2 5MHz

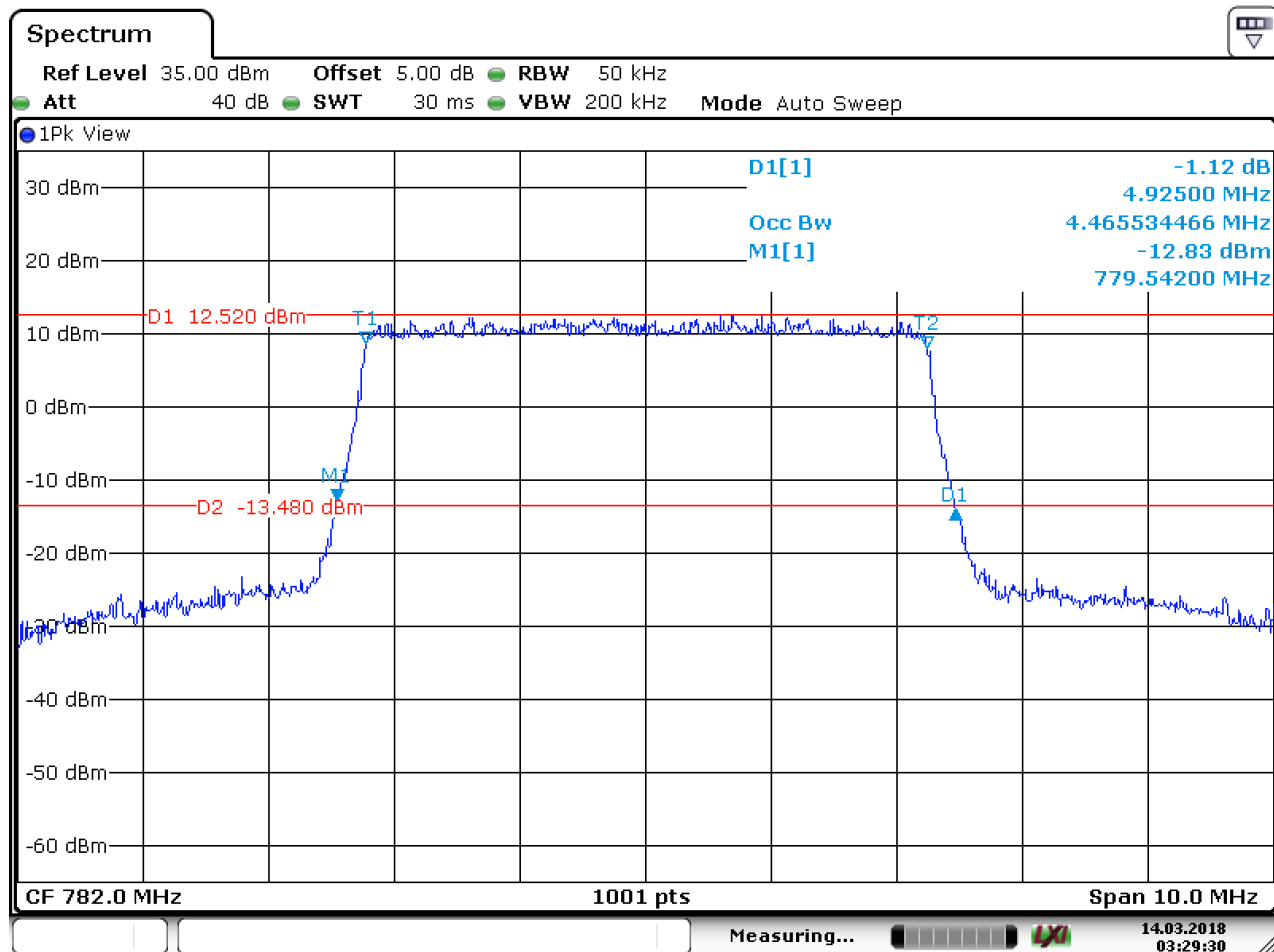
4.1.1.2.1 Test Channel = LCH



Date: 14.MAR.2018 03:30:24



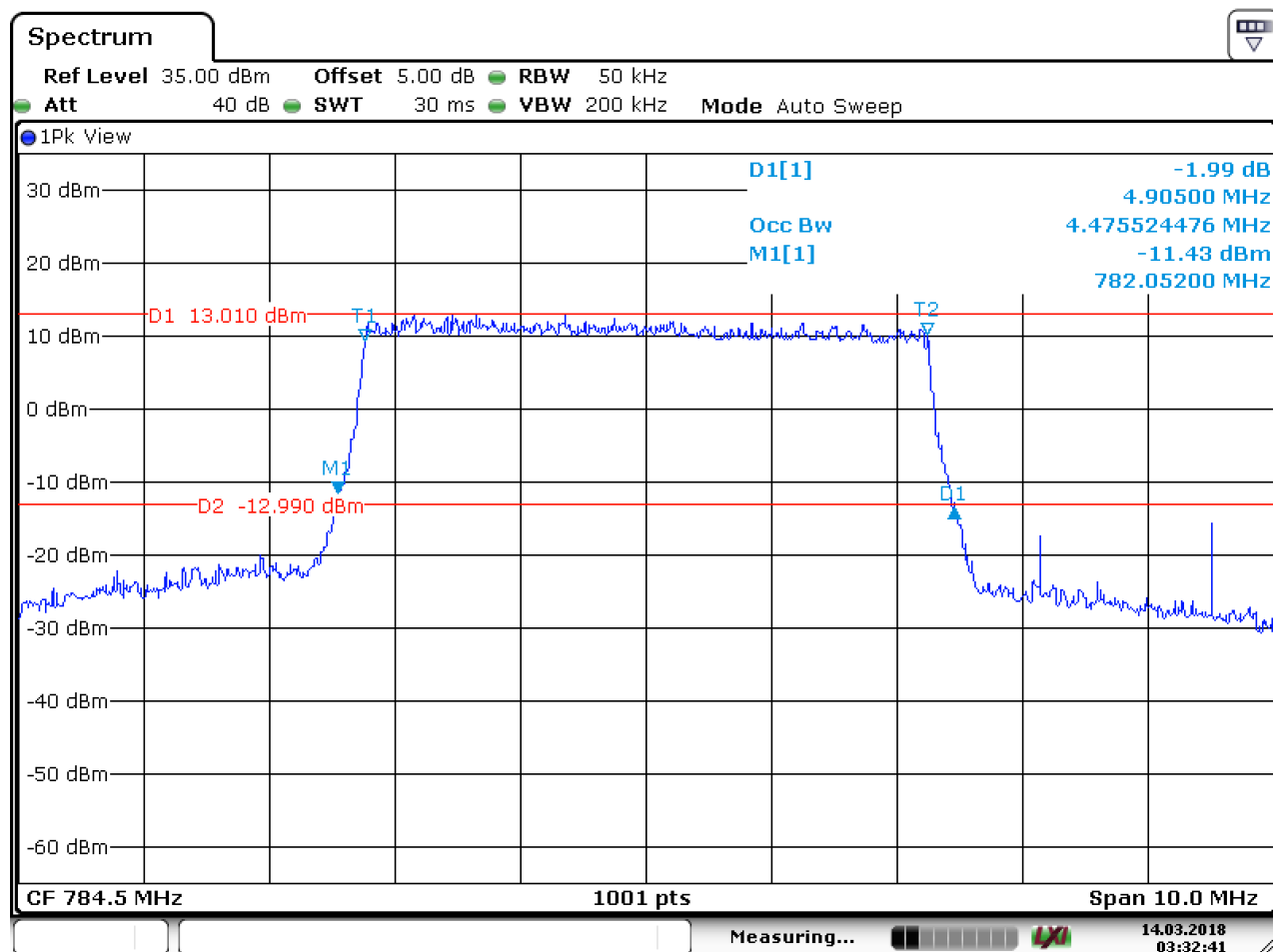
4.1.1.2.2 Test Channel = MCH



Date: 14.MAR.2018 03:29:30



4.1.1.2.3 Test Channel = HCH

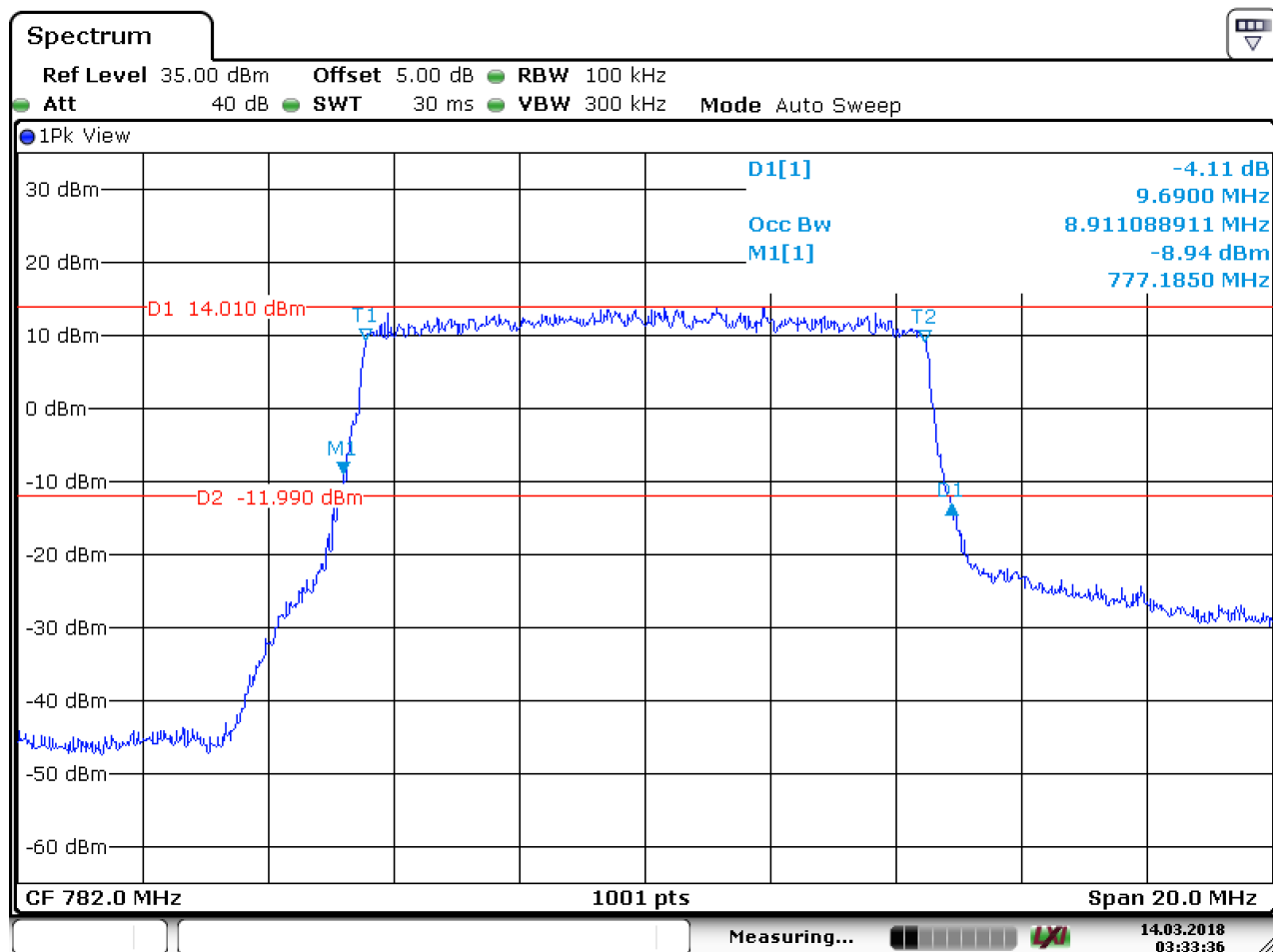


Date: 14.MAR.2018 03:32:41



4.1.1.3 Test Mode = LTE/TM1 10MHz

4.1.1.3.1 Test Channel = MCH

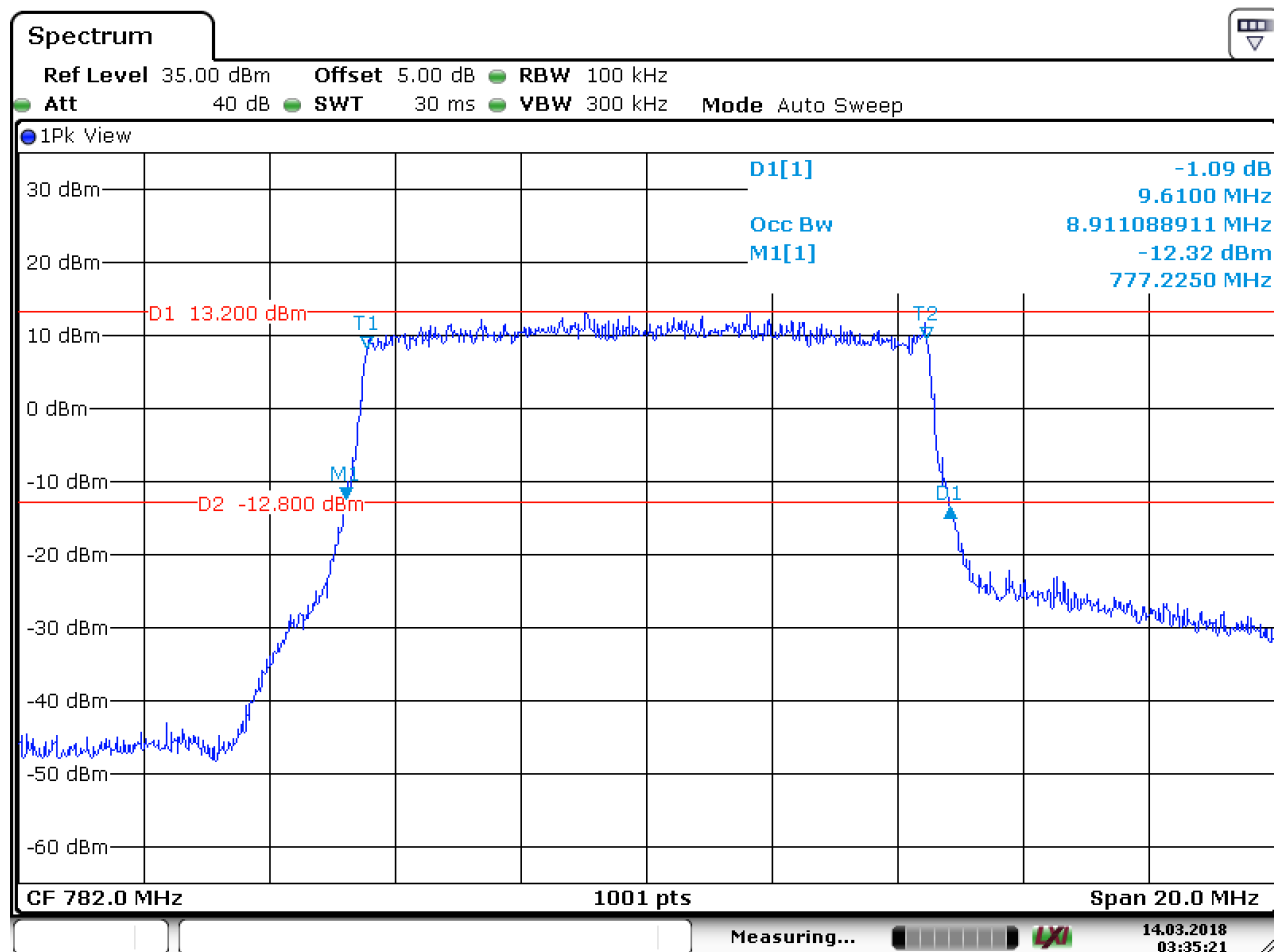


Date: 14.MAR.2018 03:33:36



4.1.1.4 Test Mode = LTE/TM2 10MHz

4.1.1.4.1 Test Channel = MCH



Date: 14.MAR.2018 03:35:21

5 Band Edges Compliance

Part I - Test Plots

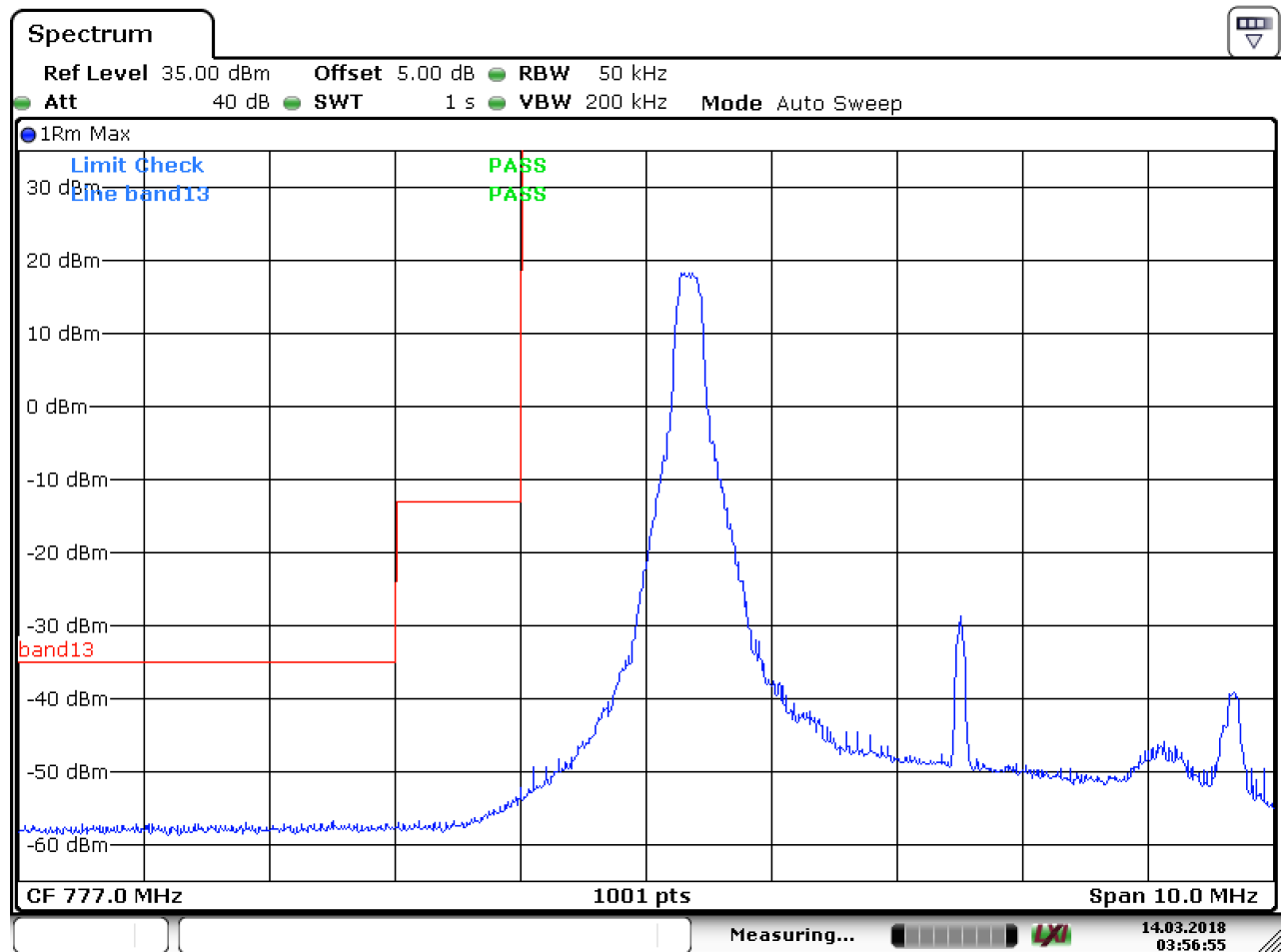
5.1 For LTE

5.1.1 Test Band = LTE band13

5.1.1.1 Test Mode = LTE/TM1 5MHz

5.1.1.1.1 Test Channel = LCH

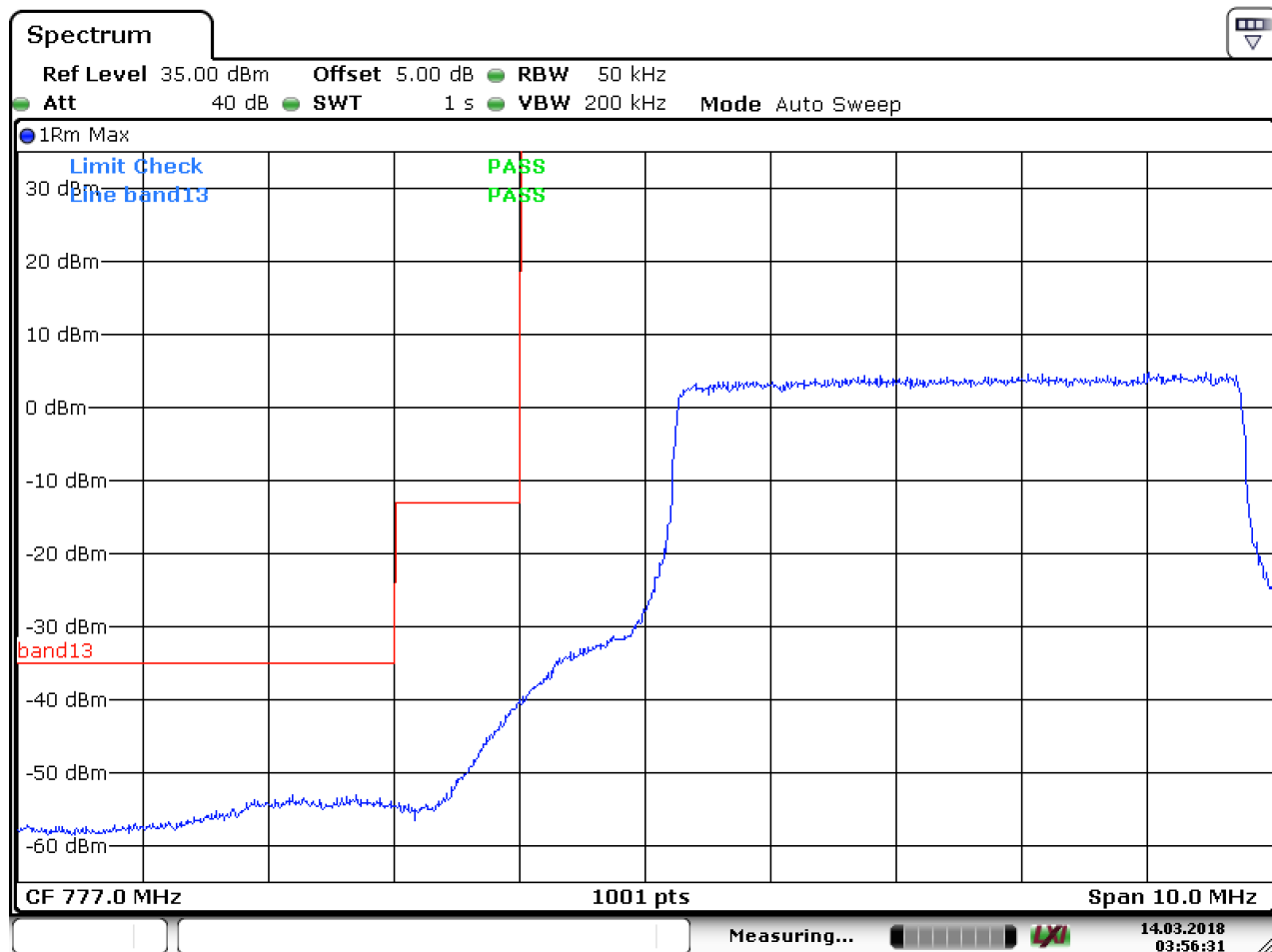
5.1.1.1.1.1 Test RB=1RB



Date: 14.MAR.2018 03:56:55



5.1.1.1.2 Test RB=25RB

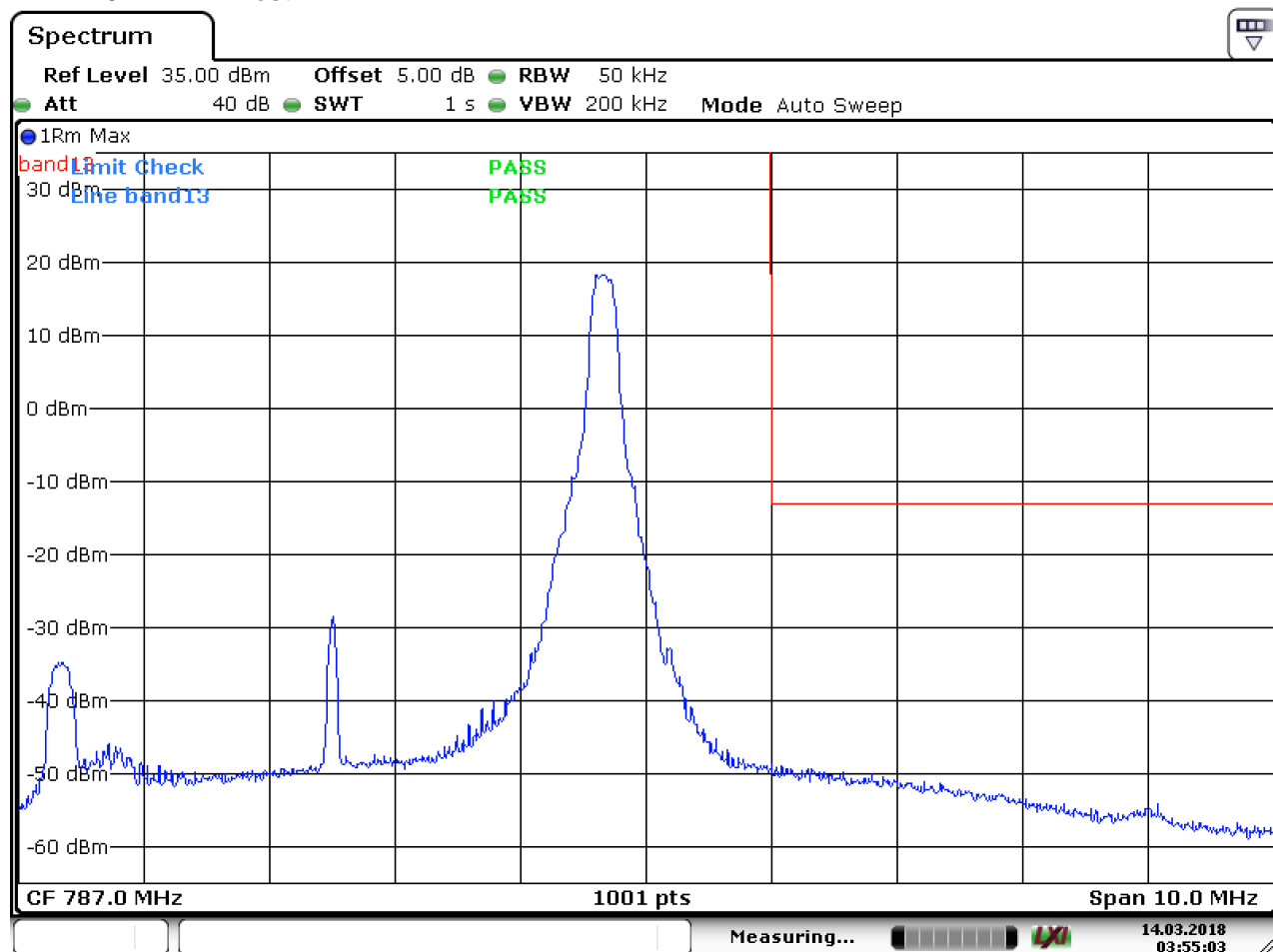


Date: 14.MAR.2018 03:56:32



5.1.1.1.2 Test Channel = HCH

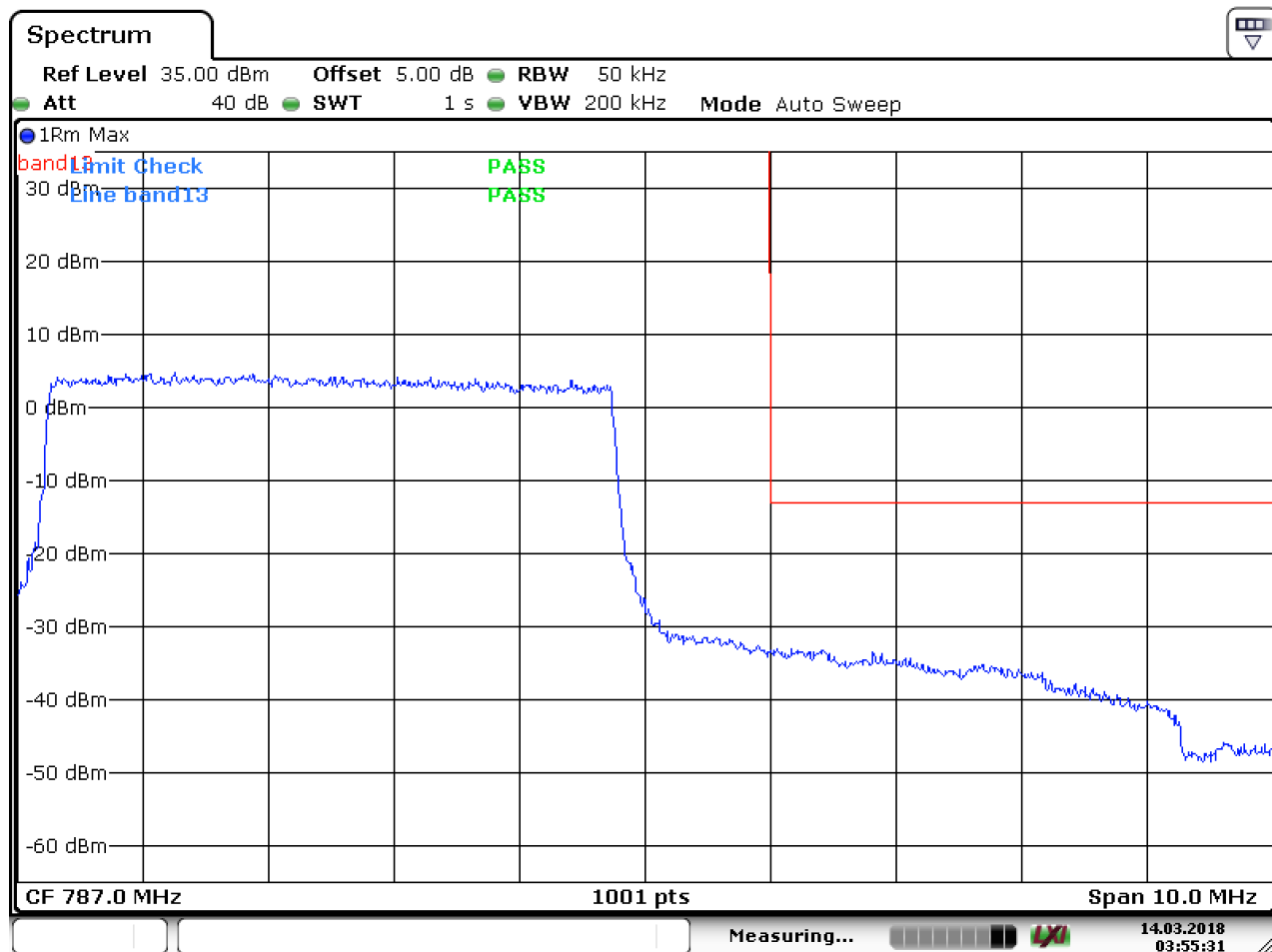
5.1.1.1.2.1 Test RB=1RB



Date: 14.MAR.2018 03:55:04



5.1.1.1.2.2 Test RB=25RB



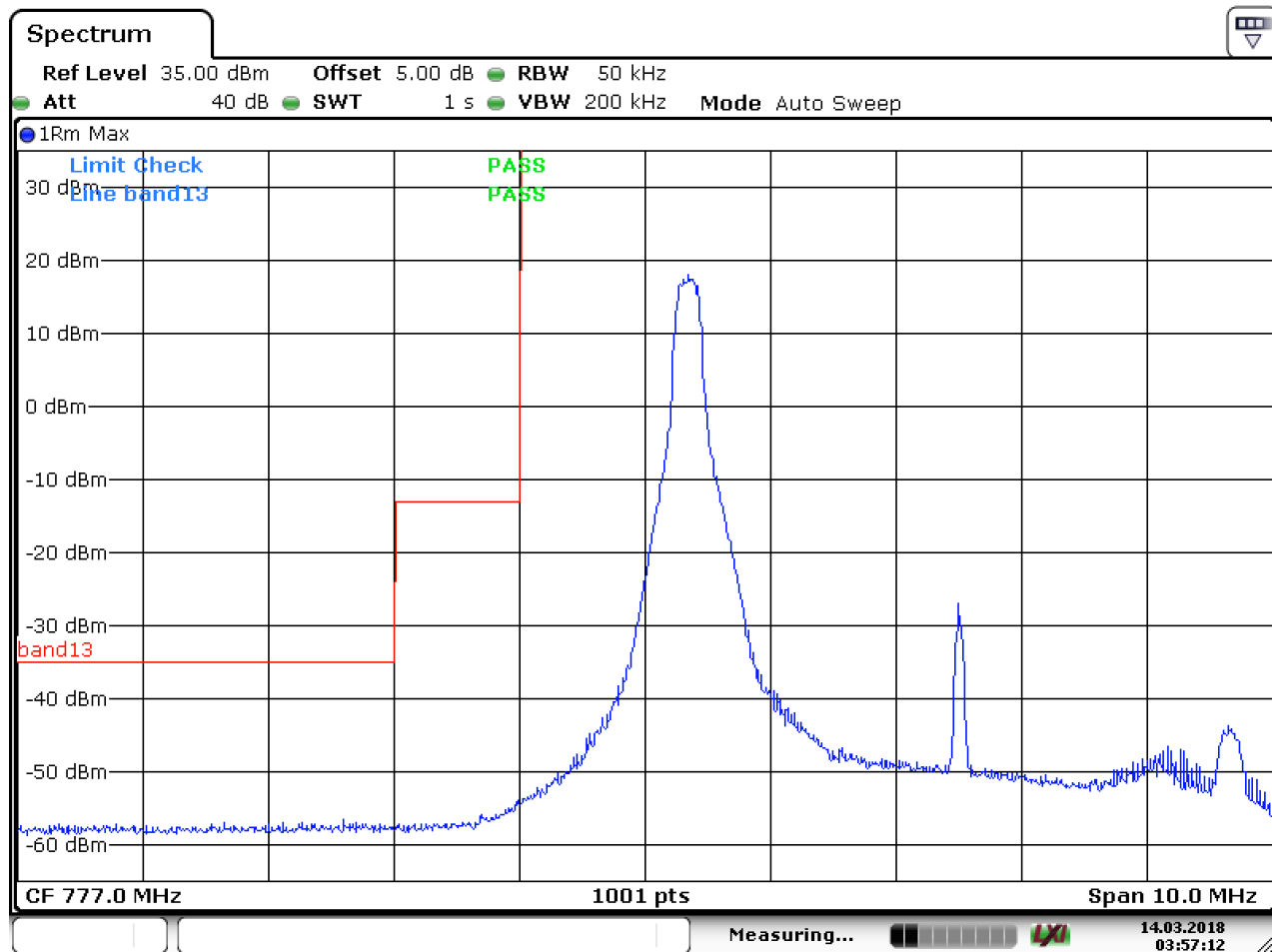
Date: 14.MAR.2018 03:55:31



5.1.1.2 Test Mode = LTE/TM2 5MHz

5.1.1.2.1 Test Channel = LCH

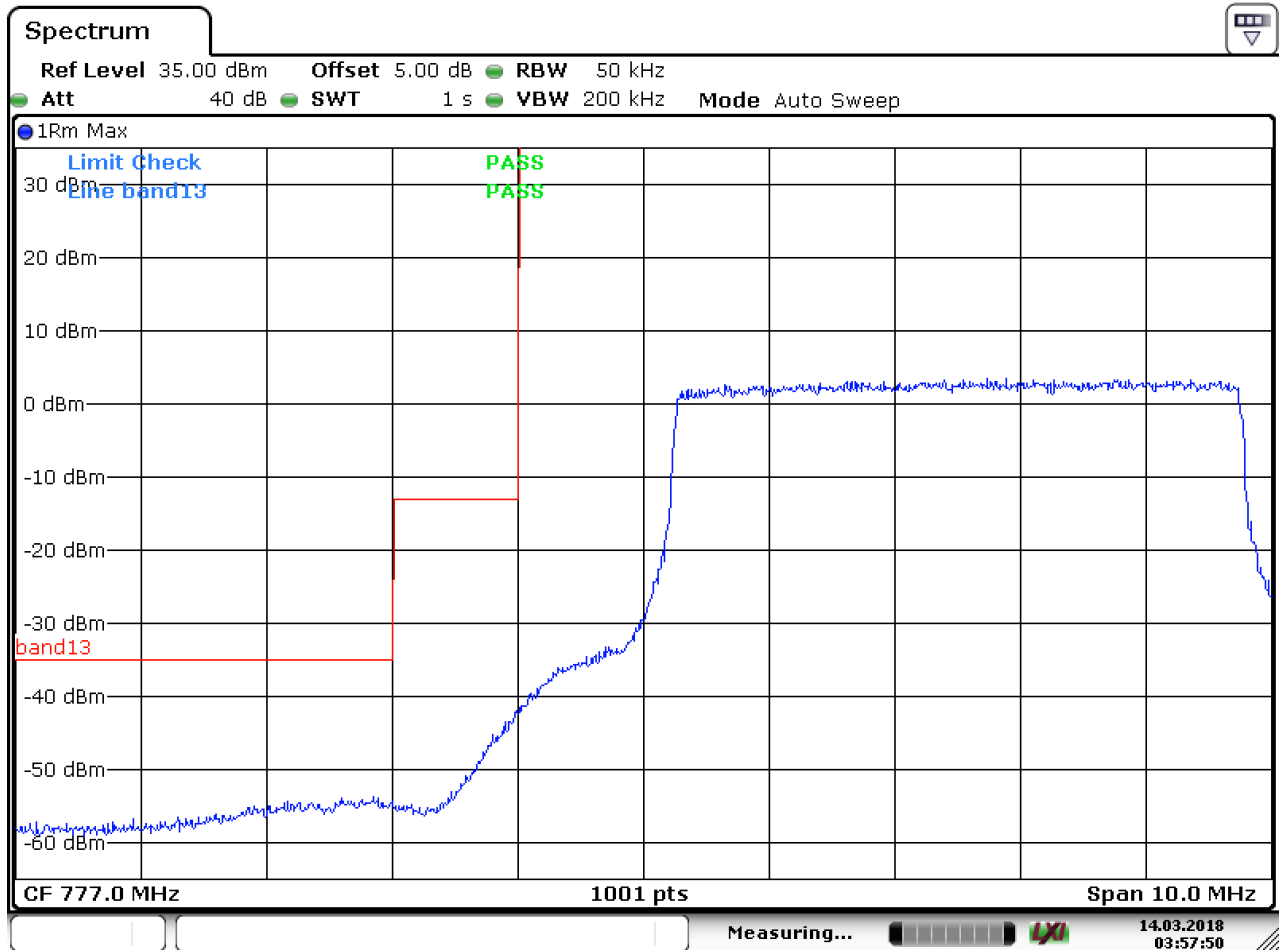
5.1.1.2.1.1 Test RB=1RB



Date: 14.MAR.2018 03:57:13



5.1.1.2.1.2 Test RB=25RB

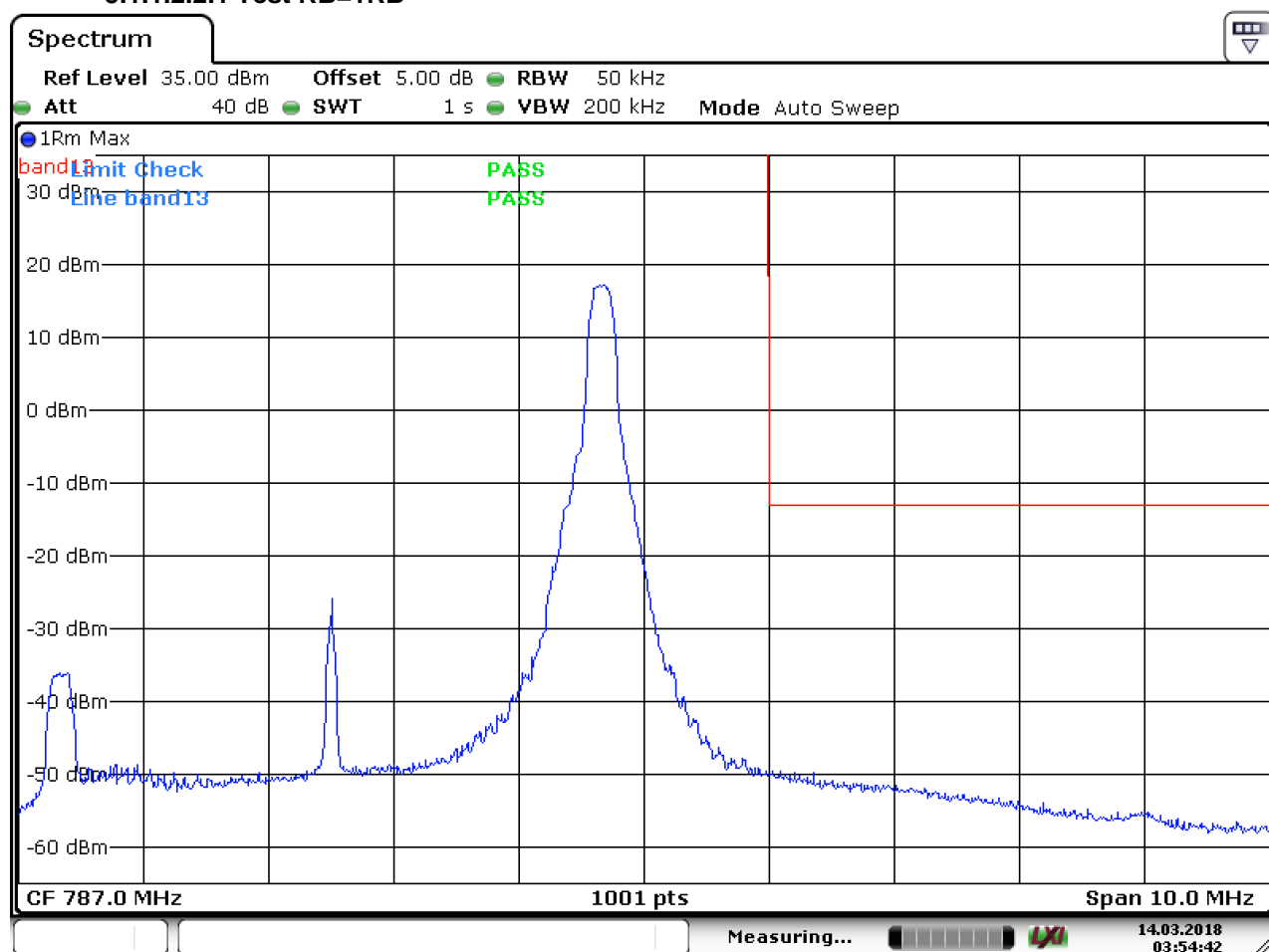


Date: 14.MAR.2018 03:57:51



5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 14.MAR.2018 03:54:42



5.1.1.2.2.2 Test RB=25RB



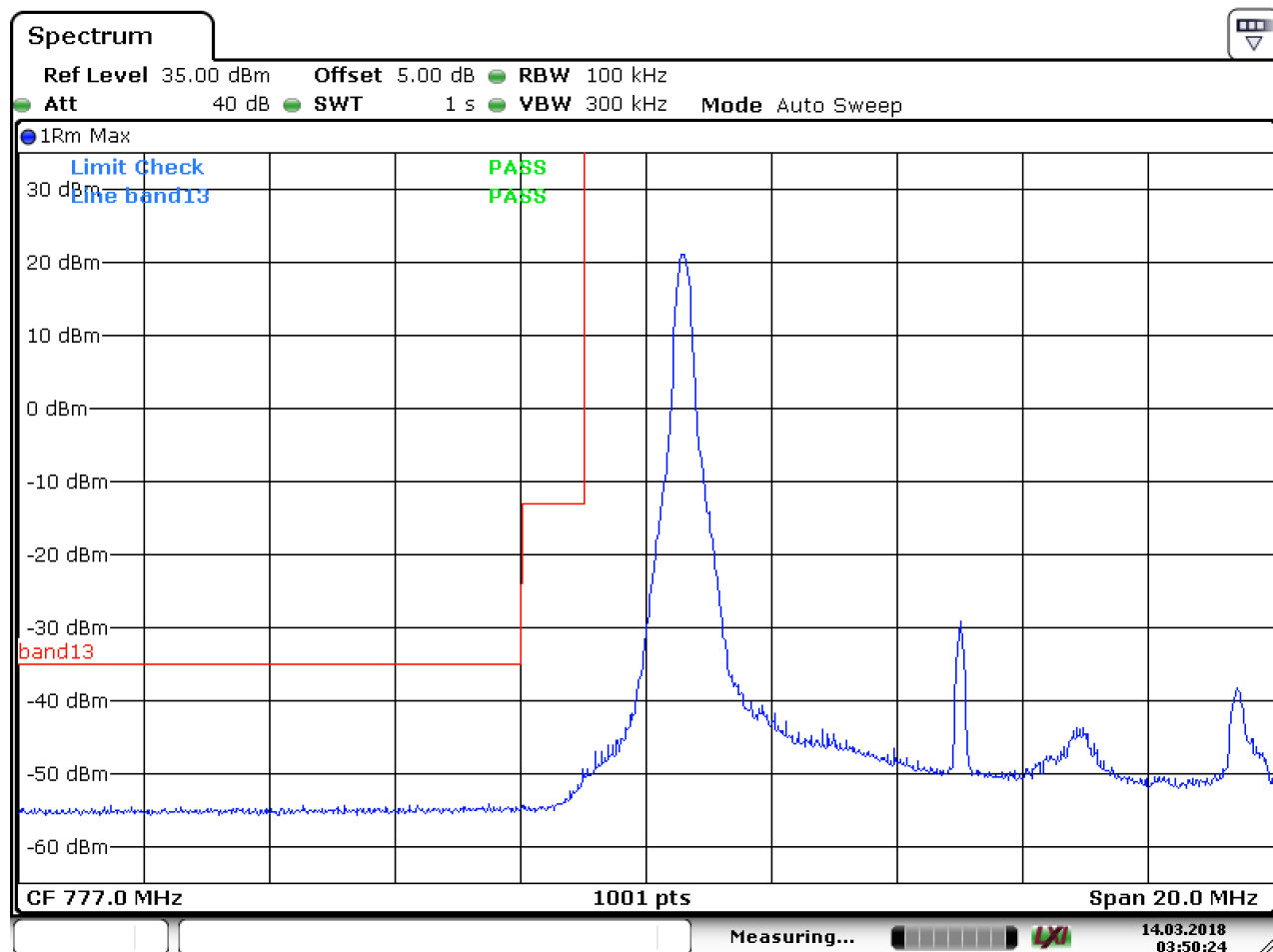
Date: 14.MAR.2018 03:53:47



5.1.1.3 Test Mode = LTE/TM1 10MHz

5.1.1.3.1 Test Channel = LCH

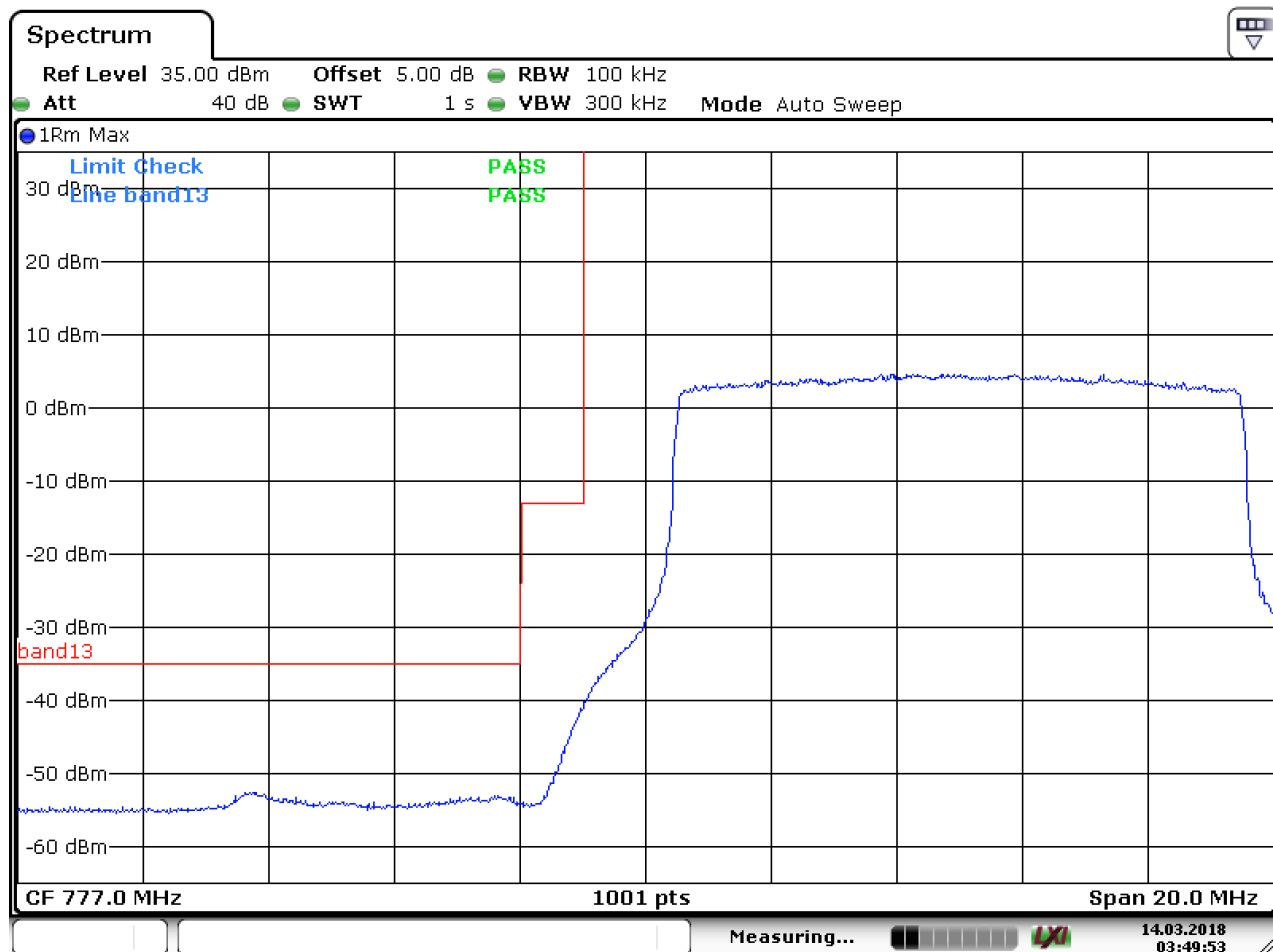
5.1.1.3.1.1 Test RB=1RB



Date: 14.MAR.2018 03:50:24



5.1.1.3.1.2 Test RB=50RB

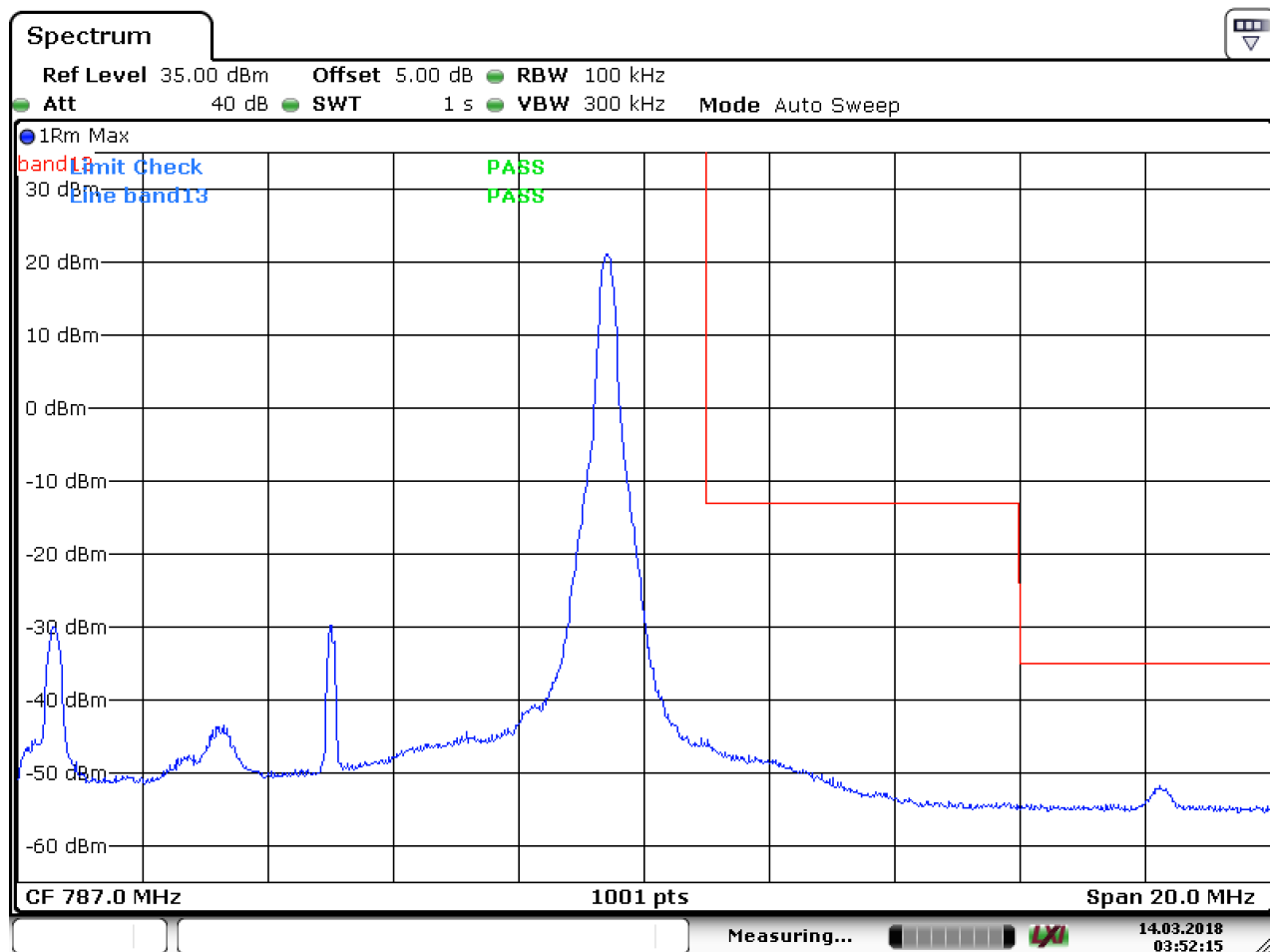


Date: 14.MAR.2018 03:49:53



5.1.1.3.2 Test Channel = HCH

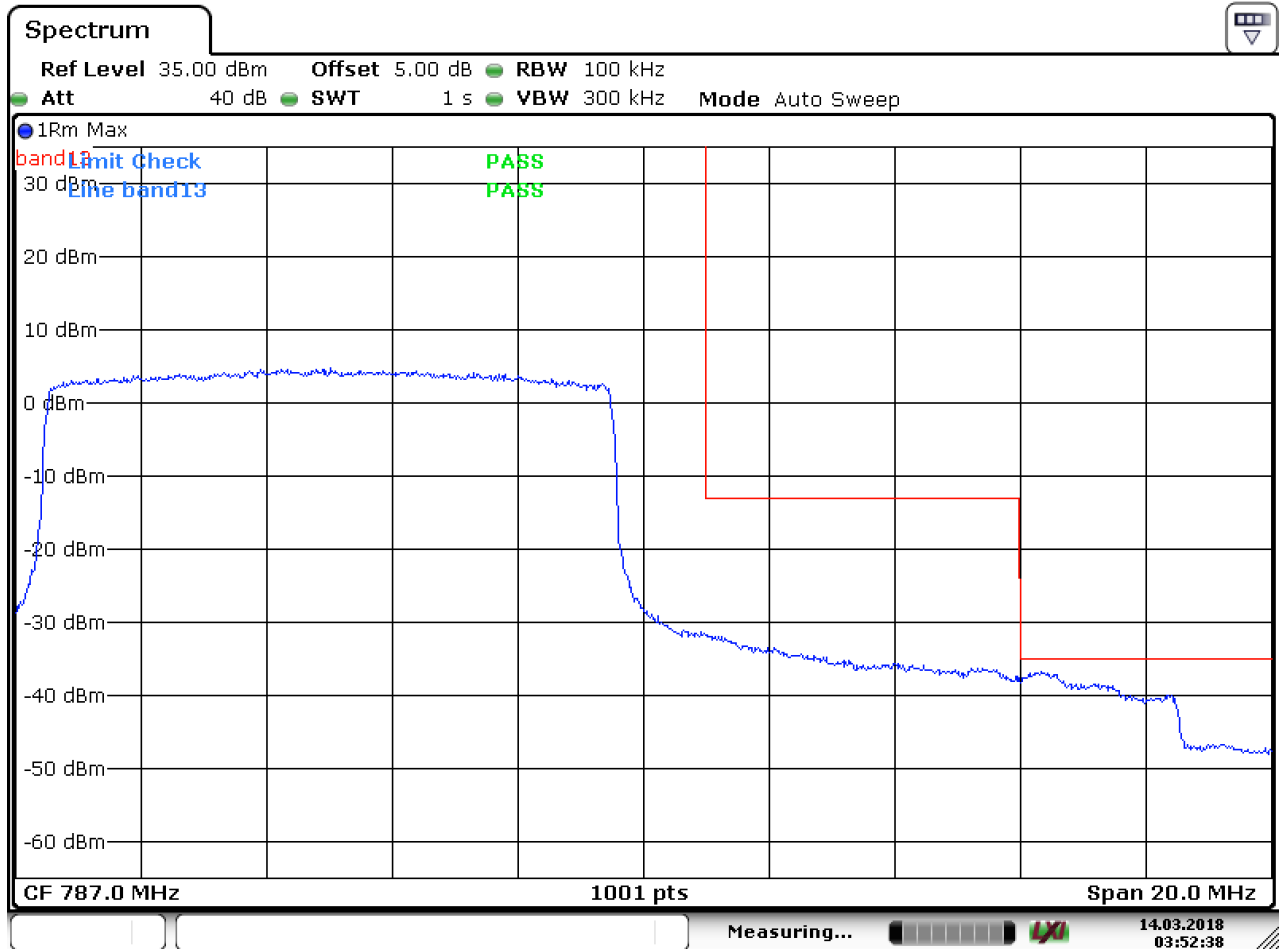
5.1.1.3.2.1 Test RB=1RB



Date: 14.MAR.2018 03:52:15



5.1.1.3.2.2 Test RB=50RB



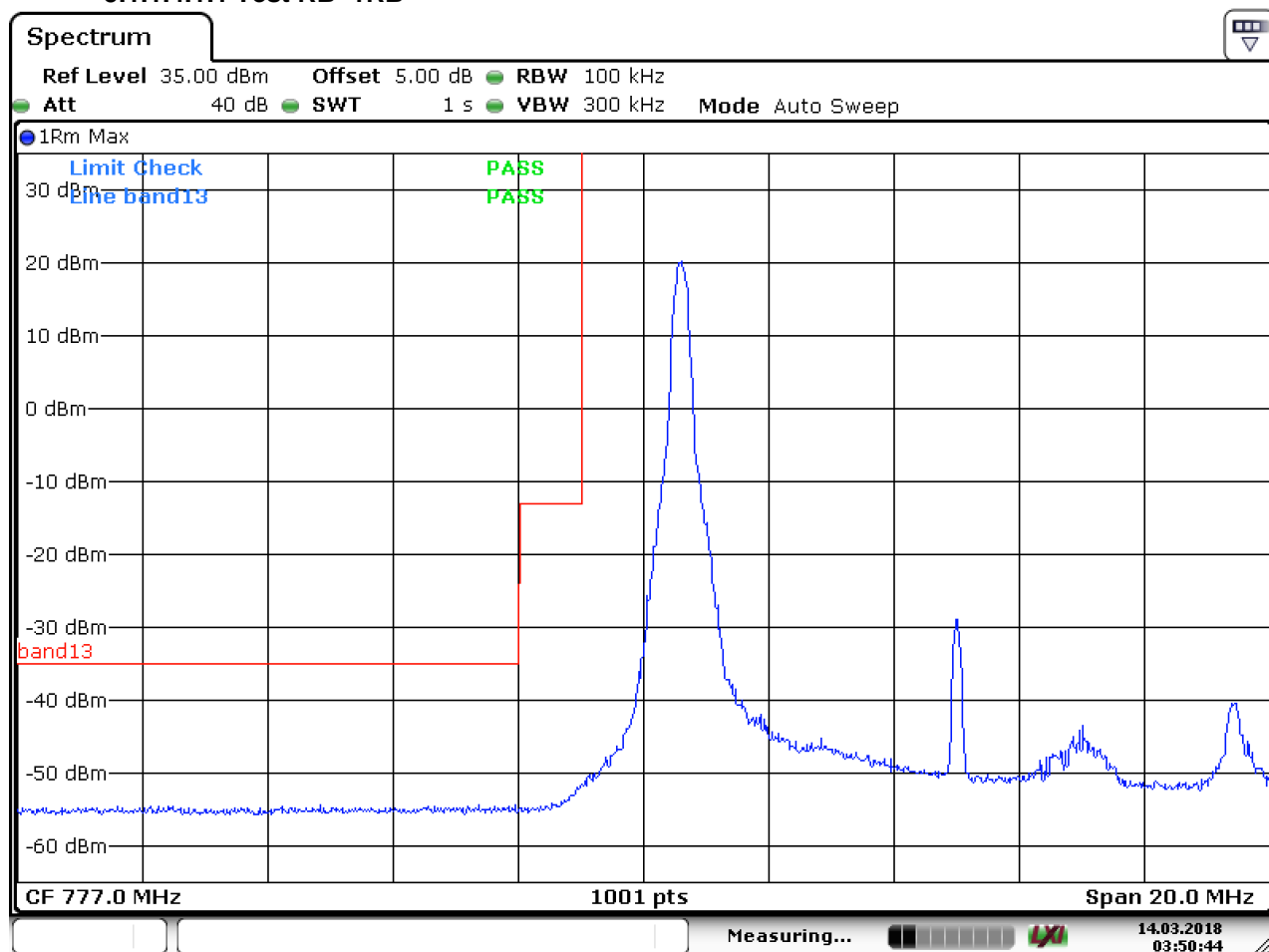
Date: 14.MAR.2018 03:52:38



5.1.1.4 Test Mode = LTE/TM2 10MHz

5.1.1.4.1 Test Channel = LCH

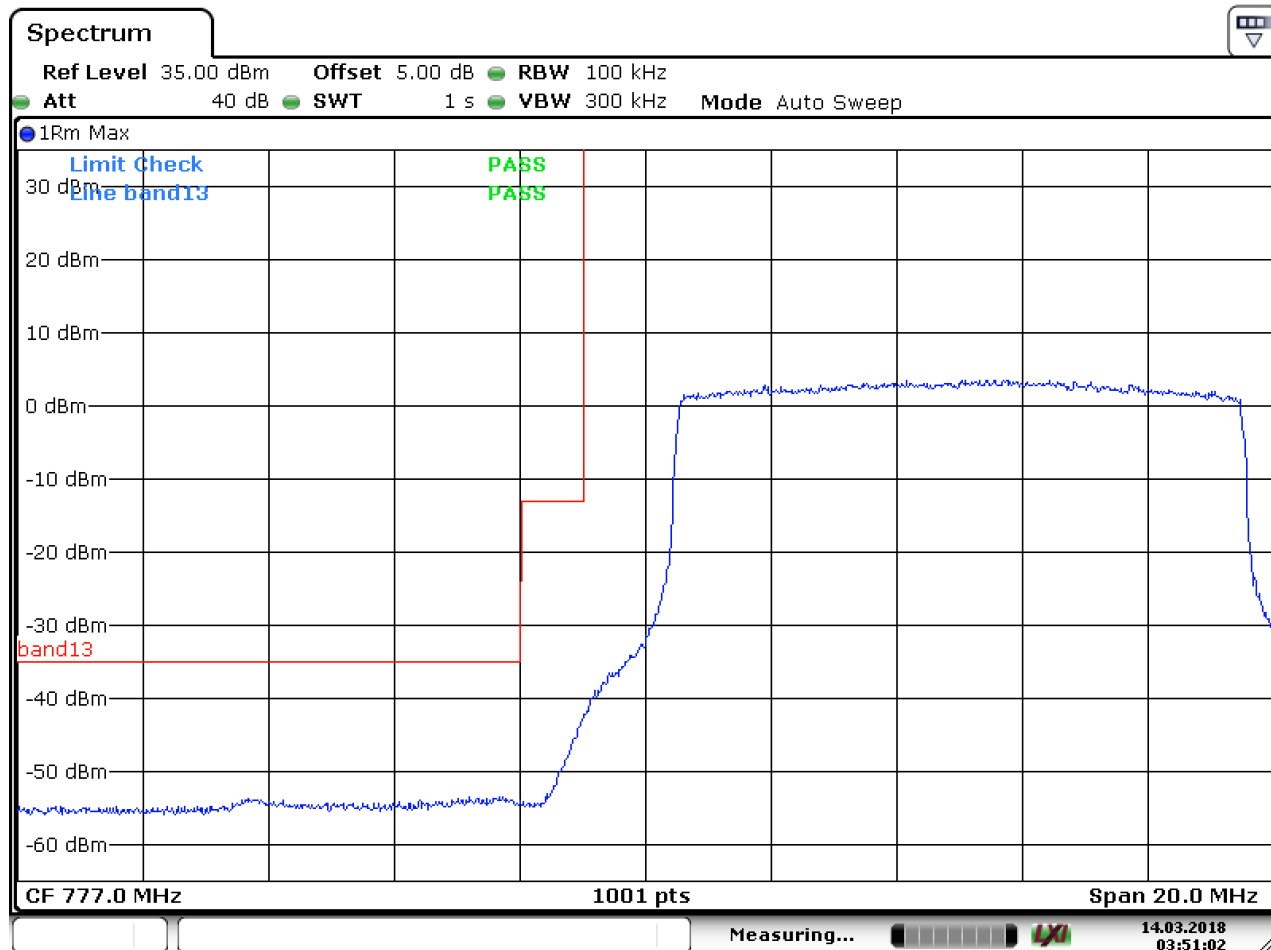
5.1.1.4.1.1 Test RB=1RB



Date: 14.MAR.2018 03:50:44



5.1.1.4.1.2 Test RB=50RB

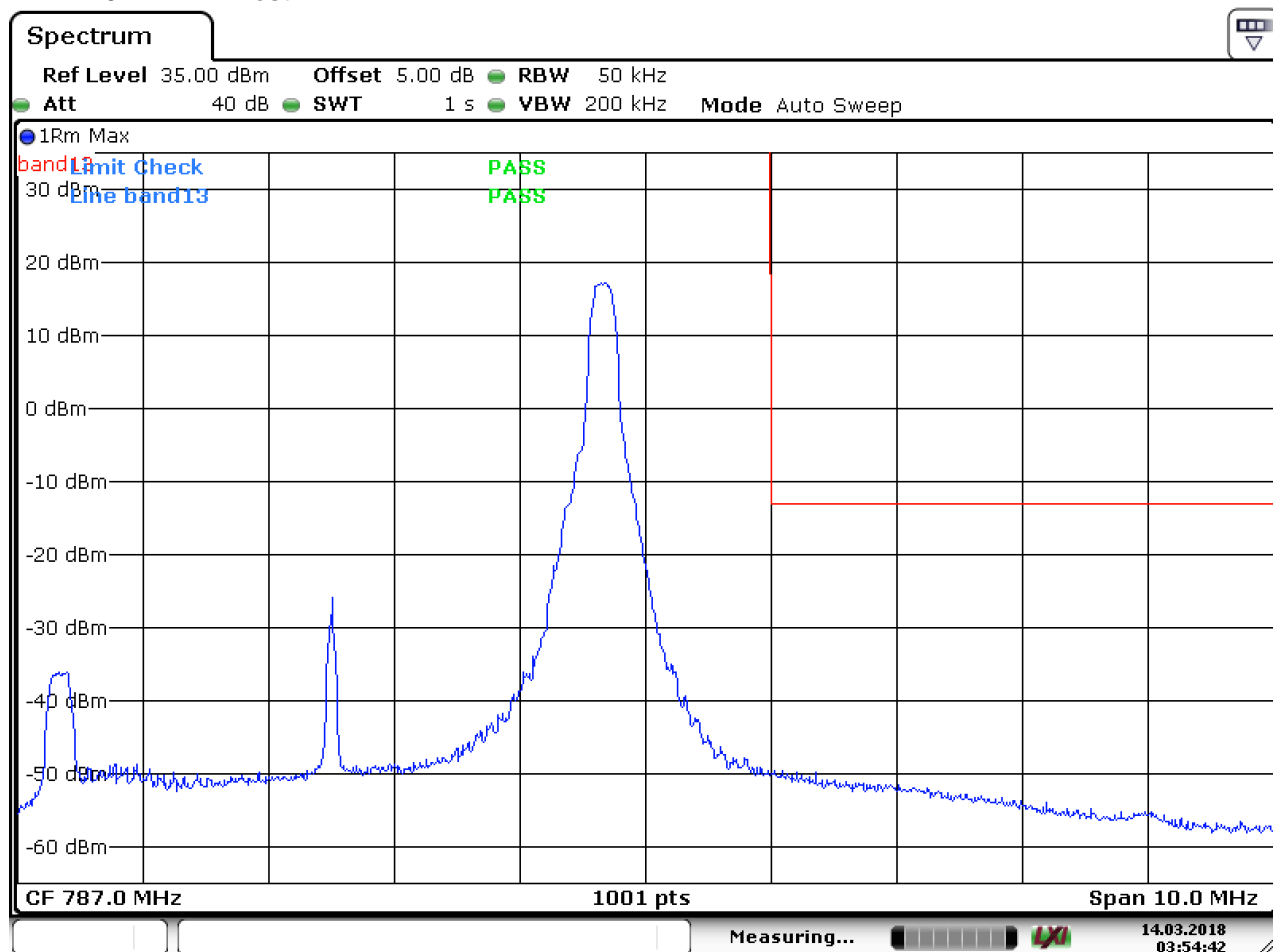


Date: 14.MAR.2018 03:51:02



5.1.1.4.2 Test Channel = HCH

5.1.1.4.2.1 Test RB=1RB



Date: 14.MAR.2018 03:54:42



5.1.1.4.2.2 Test RB=50RB



Date: 14.MAR.2018 03:53:47

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

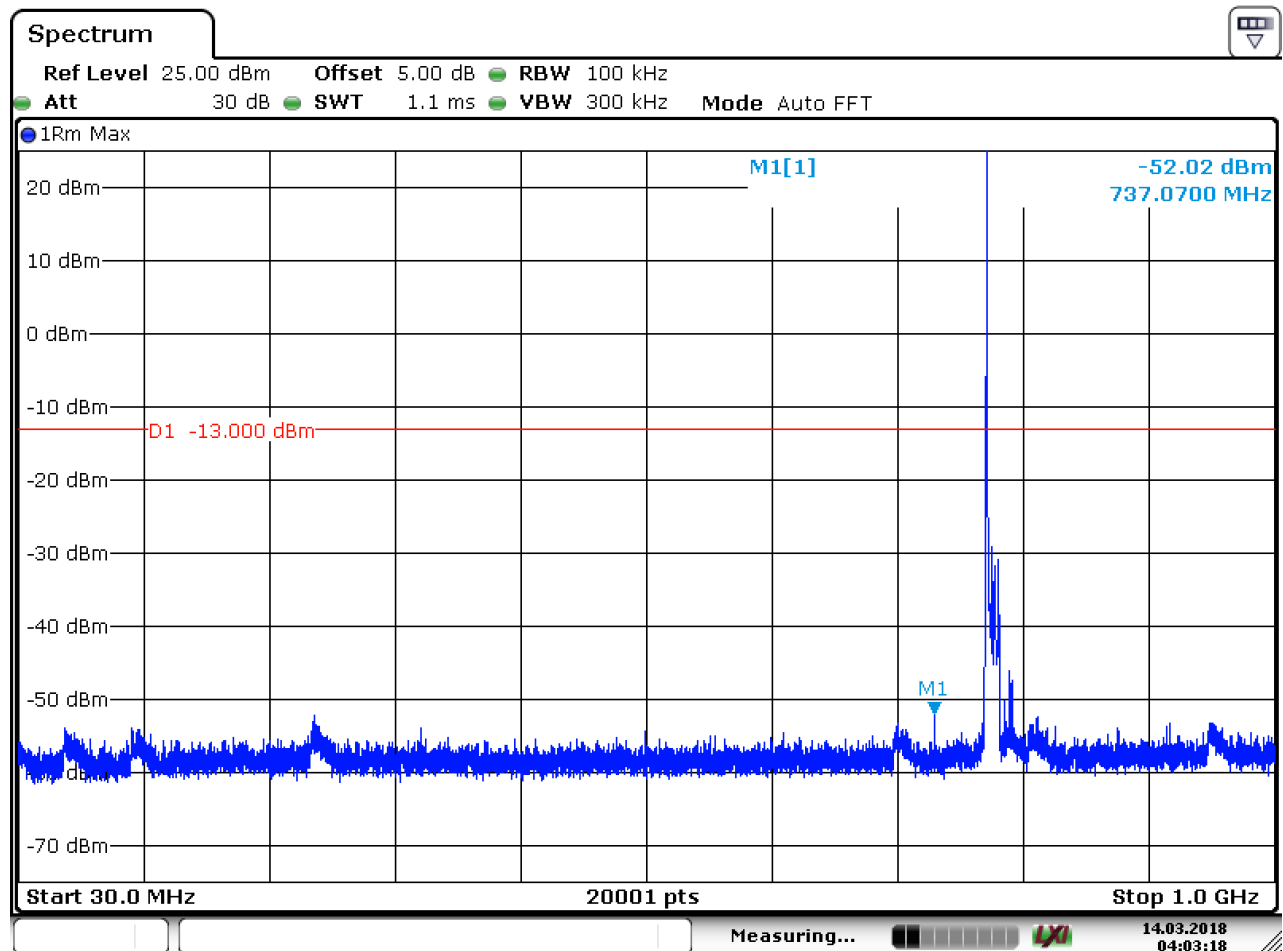
Part I - Test Plots

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

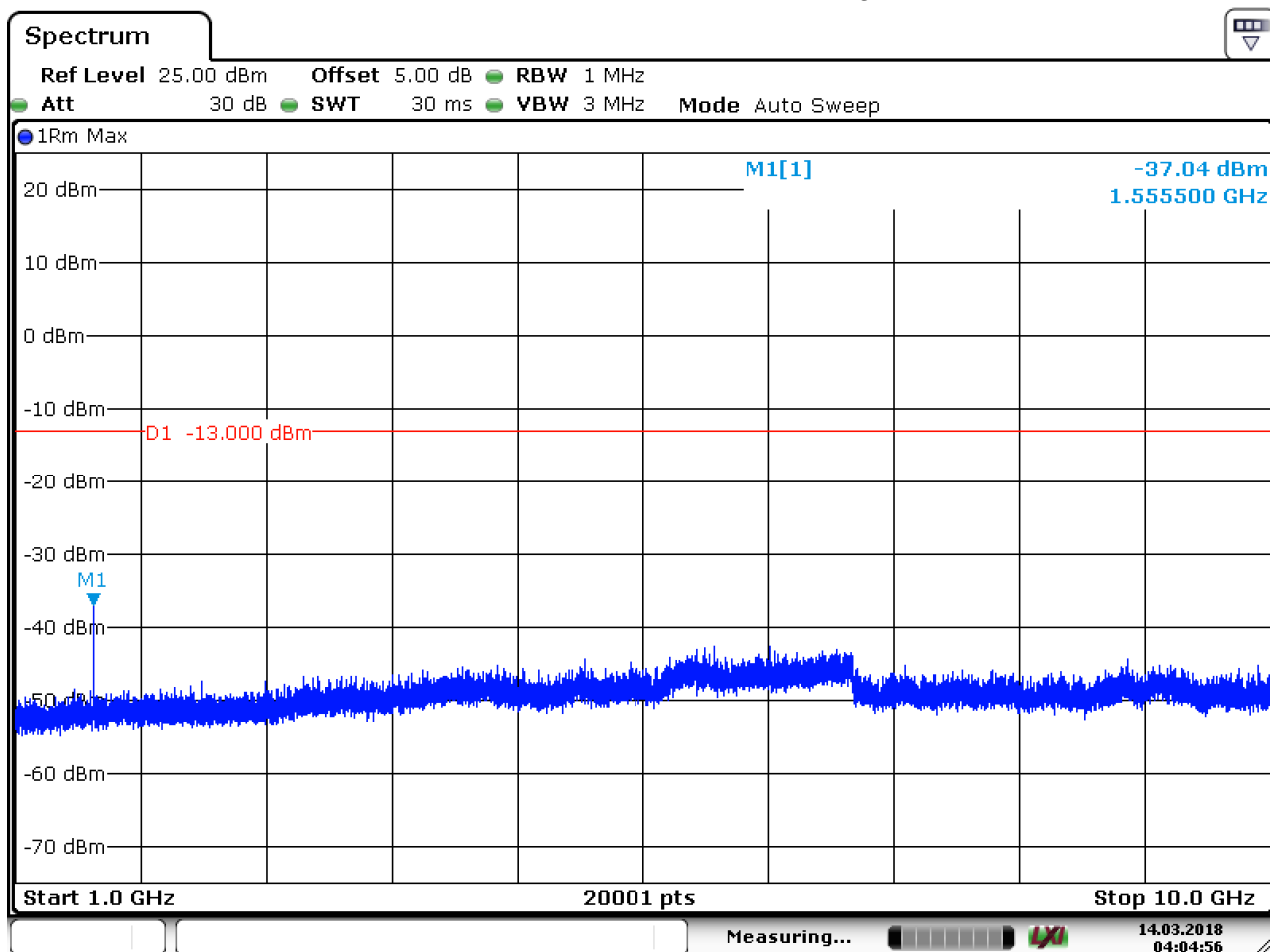


Date: 14.MAR.2018 04:03:19



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

Report No.: SZEM180100100001
Page: 36 of 38



Date: 14.MAR.2018 04:04:56



7 Field Strength of Spurious Radiation

Part I - Test Results

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
64.393333	-81.76	-13.00	68.76	Vertical
103.640000	-78.31	-13.00	65.31	Vertical
1555.000000	-59.33	-13.00	46.33	Vertical
2332.500000	-56.77	-13.00	43.77	Vertical
3110.175000	-66.51	-13.00	53.51	Vertical
3887.737500	-65.71	-13.00	52.71	Vertical
62.200000	-77.52	-13.00	64.52	Horizontal
479.975000	-78.96	-13.00	65.96	Horizontal
1555.000000	-57.34	-13.00	44.34	Horizontal
3110.175000	-66.51	-13.00	53.51	Horizontal
3887.737500	-67.17	-13.00	54.17	Horizontal
6579.225000	-65.46	-13.00	52.46	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, but only the worst case data presented in this report.



8 Frequency Stability

8.1 Frequency Error VS. Voltage

Part I - Test Results

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEBand13	LTE/TM1 10MHz	MCH	TN	VL	-2.66	-0.00321	PASS
				VN	1.42	0.00171	PASS
				VH	-5.23	-0.00631	PASS
	LTE/TM2 10MHz	MCH	TN	VL	-4.30	-0.00519	PASS
				VN	-3.33	-0.00402	PASS
				VH	-4.13	-0.00498	PASS

8.2 Frequency Error VS. Temperature

Part I - Test Results

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEBand13	LTE/TM1 10MHz	LCH	VN	-30	-4.16	-0.005320	PASS
				-20	-4.13	-0.005281	PASS
				-10	-4.61	-0.005895	PASS
				0	3.86	0.004936	PASS
				10	-3.10	-0.003964	PASS
				20	2.98	0.003811	PASS
				30	-4.16	-0.005320	PASS
				40	-4.13	-0.005281	PASS
				50	-4.61	-0.005895	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEBand13	LTE/TM2 10MHz	MCH	VN	-30	-3.43	-0.004386	PASS
				-20	-4.02	-0.005141	PASS
				-10	-3.62	-0.004629	PASS
				0	-4.58	-0.005857	PASS
				10	-3.82	-0.004885	PASS
				20	-4.36	-0.005575	PASS
				30	-3.35	-0.004284	PASS
				40	-4.19	-0.005358	PASS
				50	-3.30	-0.004220	PASS

The End