Appendix B

Test Data for SZEM1610009167RG

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Page

1 Effective (Isotropic) Radiated Power Output Data

Effective Isotropic 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	23.87	23.48	34.77	PASS
				RB1#13	23.81	23.42	34.77	PASS
				RB1#24	23.77	23.38	34.77	PASS
				RB12#0	23.9	23.51	34.77	PASS
				RB12#6	23.91	23.52	34.77	PASS
				RB12#13	23.98	23.59	34.77	PASS
				RB25#0	23.86	23.47	34.77	PASS
			MCH	RB1#0	23.83	23.44	34.77	PASS
				RB1#13	23.80	23.41	34.77	PASS
				RB1#24	23.90	23.51	34.77	PASS
				RB12#0	23.99	23.60	34.77	PASS
				RB12#6	23.97	23.58	34.77	PASS
				RB12#13	24.05	23.66	34.77	PASS
				RB25#0	23.81	23.42	34.77	PASS
			HCH	RB1#0	23.83	23.44	34.77	PASS
				RB1#13	23.95	23.56	34.77	PASS
				RB1#24	23.66	23.27	34.77	PASS
				RB12#0	24.07	23.68	34.77	PASS
				RB12#6	24.03	23.64	34.77	PASS
				RB12#13	23.90	23.51	34.77	PASS
				RB25#0	23.80	23.41	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	23.71	23.32	34.77	PASS
				RB1#13	23.71	23.32	34.77	PASS
				RB1#24	23.68	23.29	34.77	PASS
				RB12#0	23.86	23.47	34.77	PASS
				RB12#6	23.87	23.48	34.77	PASS
				RB12#13	23.94	23.55	34.77	PASS
				RB25#0	23.82	23.43	34.77	PASS
			MCH	RB1#0	23.71	23.32	34.77	PASS
				RB1#13	23.68	23.29	34.77	PASS
				RB1#24	23.80	23.41	34.77	PASS
				RB12#0	23.95	23.56	34.77	PASS
				RB12#6	23.93	23.54	34.77	PASS
				RB12#13	24.00	23.61	34.77	PASS
				RB25#0	23.88	23.49	34.77	PASS
			HCH	RB1#0	23.72	23.33	34.77	PASS
				RB1#13	23.83	23.44	34.77	PASS
				RB1#24	23.57	23.18	34.77	PASS
				RB12#0	24.03	23.64	34.77	PASS
				RB12#6	23.99	23.60	34.77	PASS
				RB12#13	23.86	23.47	34.77	PASS
				RB25#0	23.87	23.48	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	23.79	23.40	34.77	PASS
				RB1#25	23.72	23.33	34.77	PASS
				RB1#49	23.70	23.31	34.77	PASS
				RB25#0	23.85	23.46	34.77	PASS
				RB25#13	23.82	23.43	34.77	PASS
				RB25#25	23.80	23.41	34.77	PASS
				RB50#0	23.78	23.39	34.77	PASS
	LTE/TM2	10M	MCH	RB1#0	23.93	23.54	34.77	PASS
				RB1#25	23.88	23.49	34.77	PASS
				RB1#49	23.88	23.49	34.77	PASS
				RB25#0	23.77	23.38	34.77	PASS
				RB25#13	23.84	23.45	34.77	PASS
				RB25#25	23.82	23.43	34.77	PASS
				RB50#0	23.84	23.45	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: RMS

2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
Band 13	TM1/10M	LCH	\	13	PASS
		MCH	5.13	13	PASS
		HCH	\	13	PASS
	TM2/10M	LCH	\	13	PASS
		MCH	5.62	13	PASS
		HCH	\	13	PASS

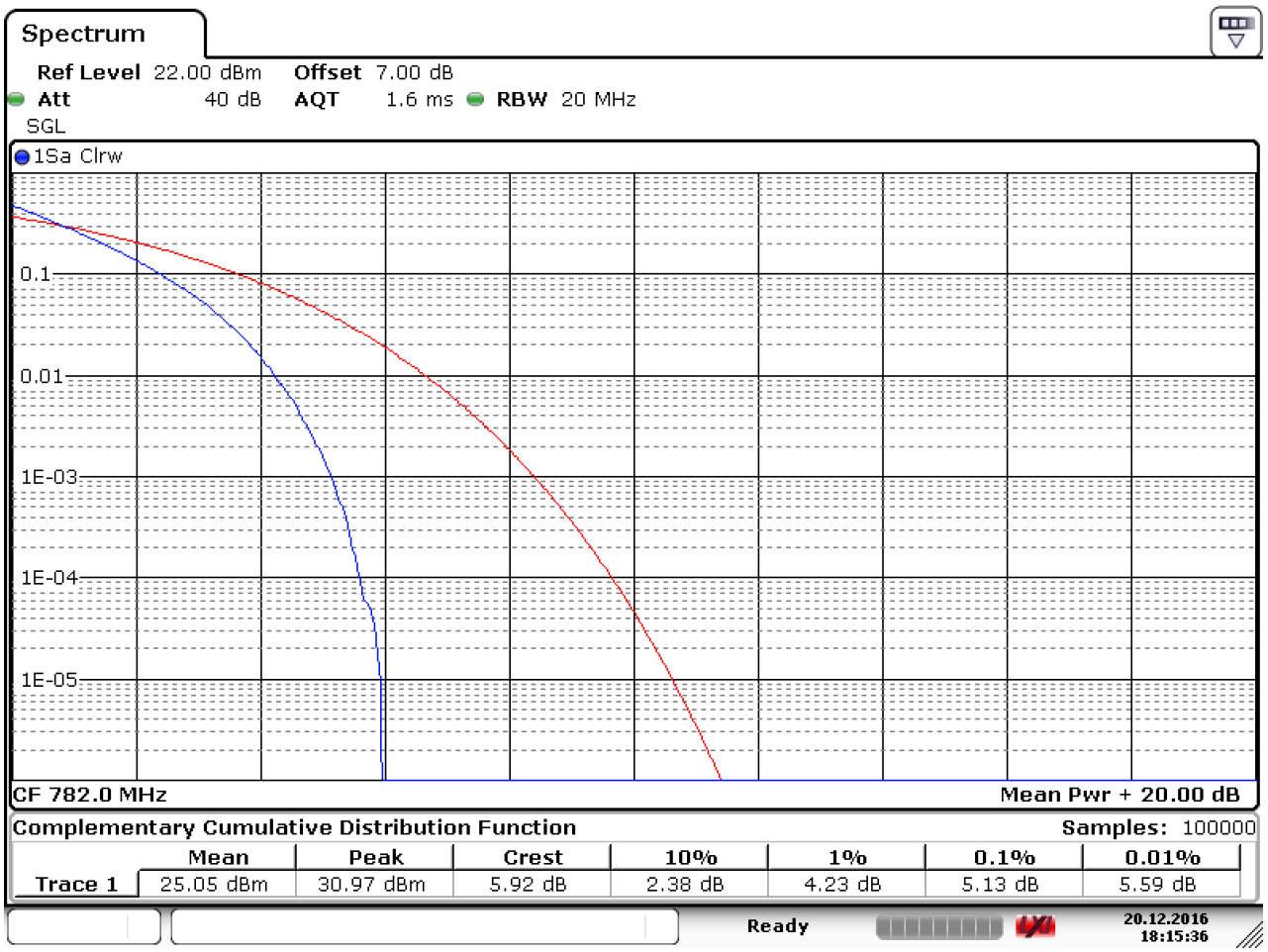
Part II - Test Plots

2.1 For LTE

2.1.1 Test Band = LTE band13

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

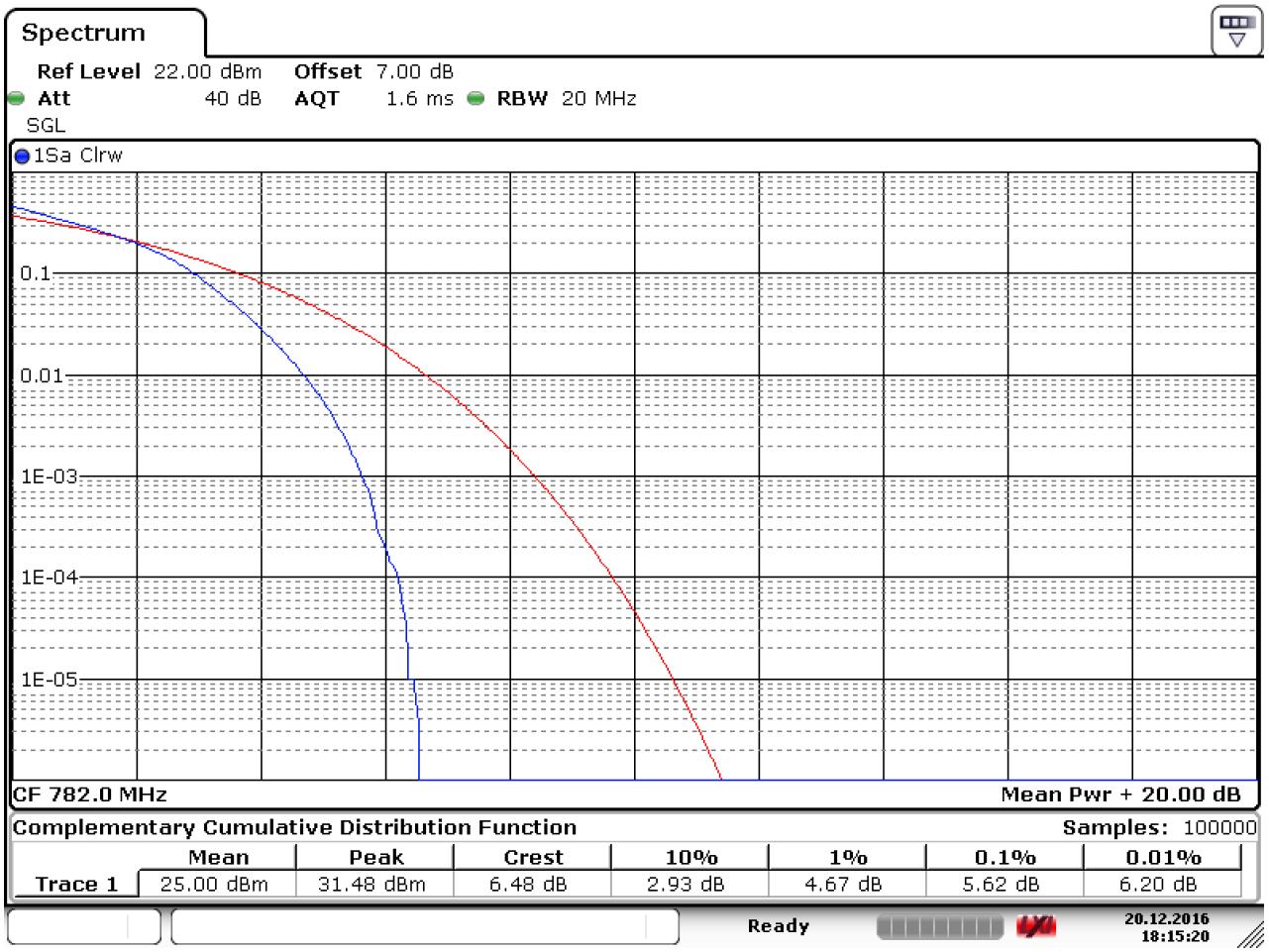
2.1.1.1.1 Test Channel = MCH



Date: 20.DEC.2016 18:15:36

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

Test Channel = MCH



Date: 20.DEC.2016 18:15:21

3 Modulation Characteristics

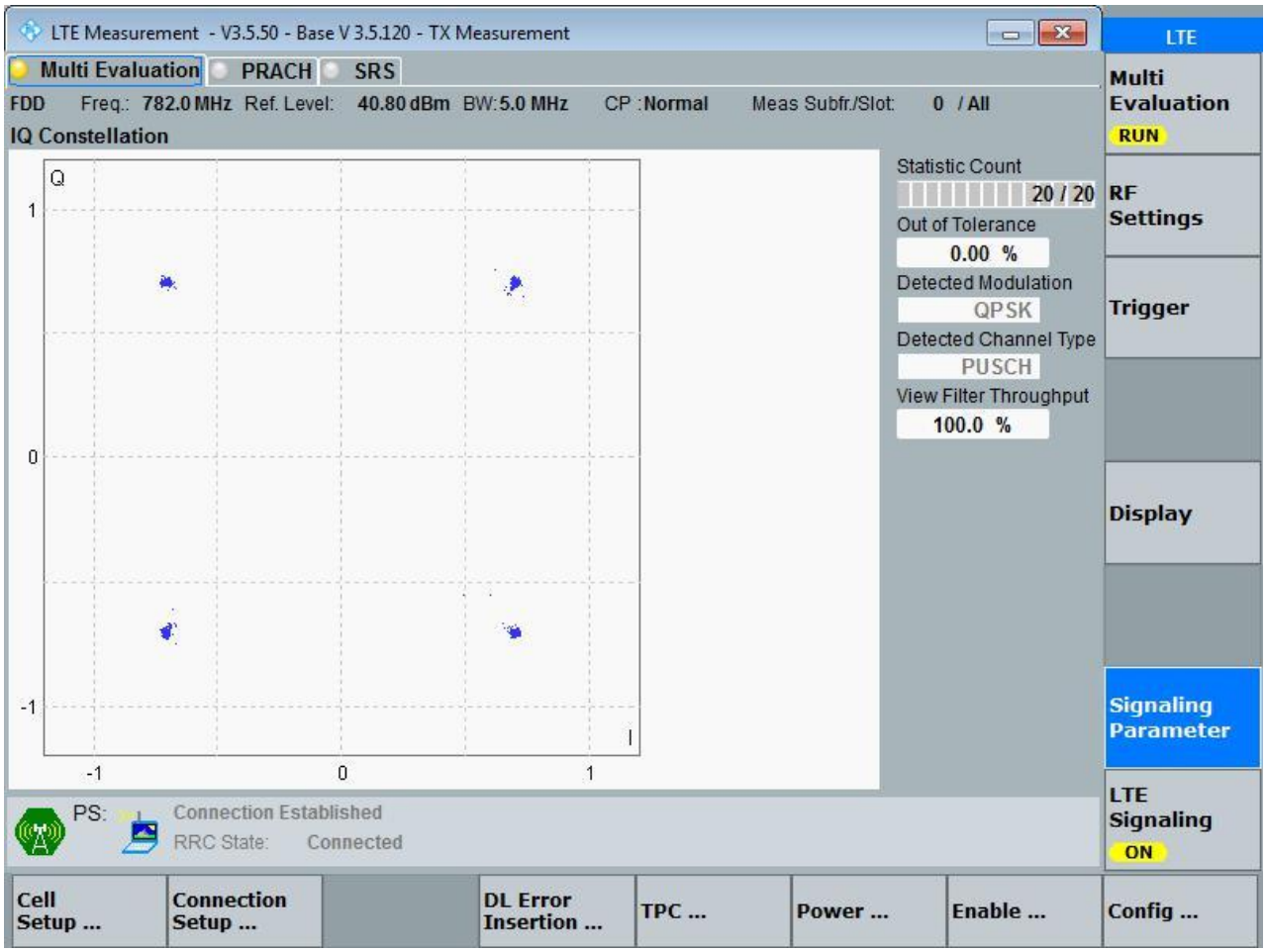
Part I - Test Plots

3.1 For LTE

3.1.1 Test Band = LTE band13

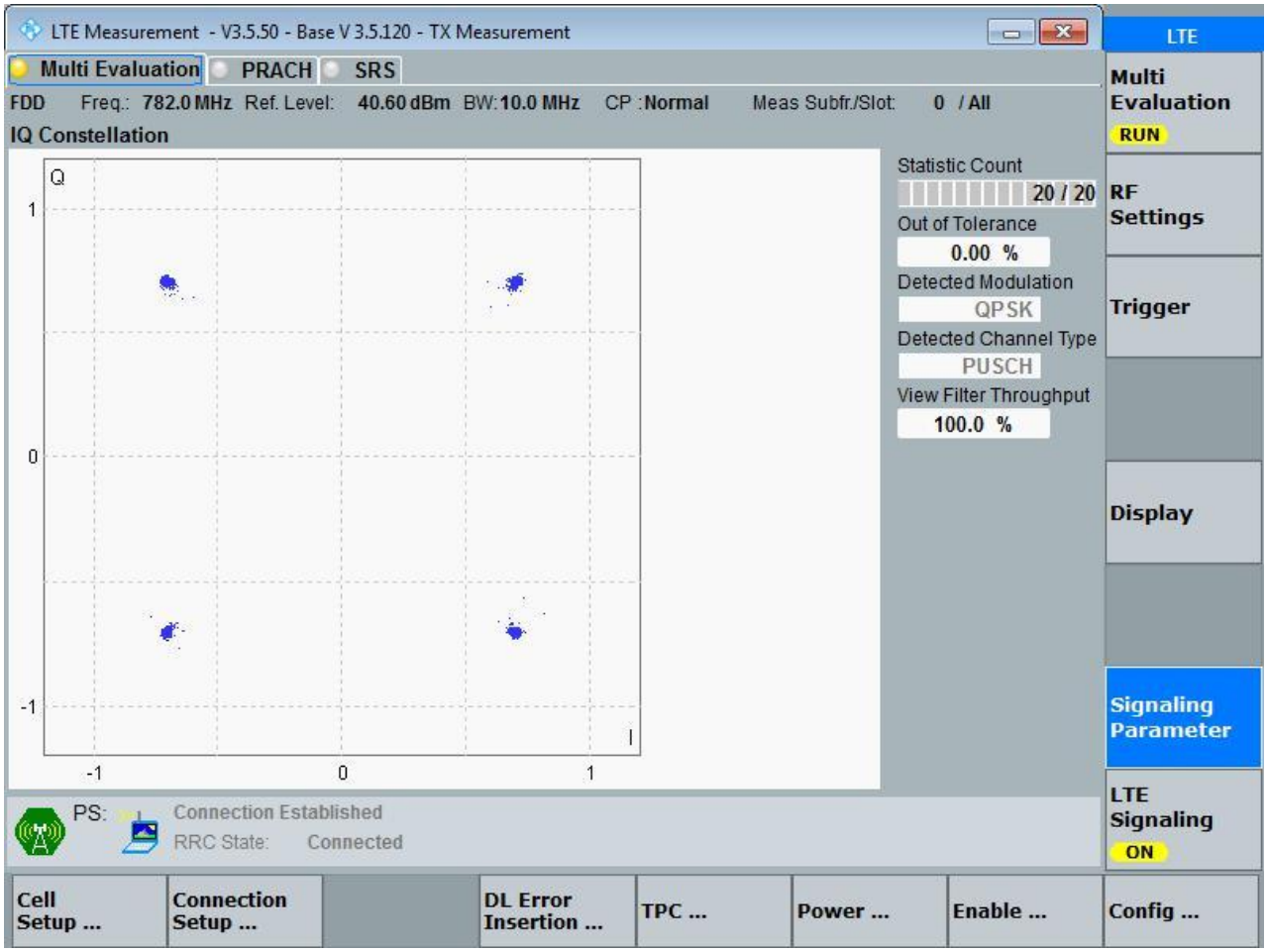
3.1.1.1 Test Mode = LTE /TM1 5MHz

3.1.1.1.1 Test Channel = MCH



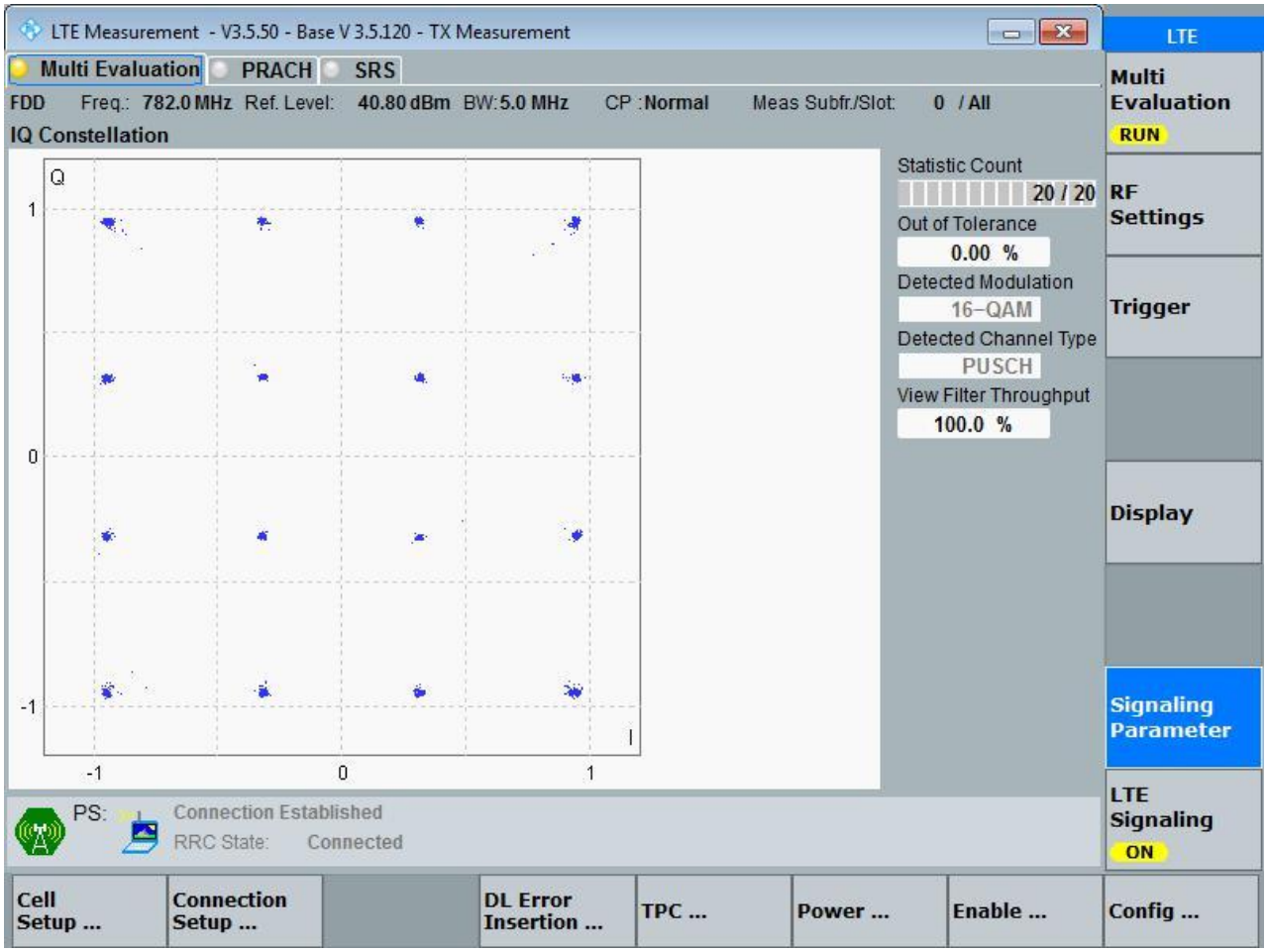
3.1.1.2 Test Mode = LTE /TM1 10MHz

3.1.1.2.1 Test Channel = MCH



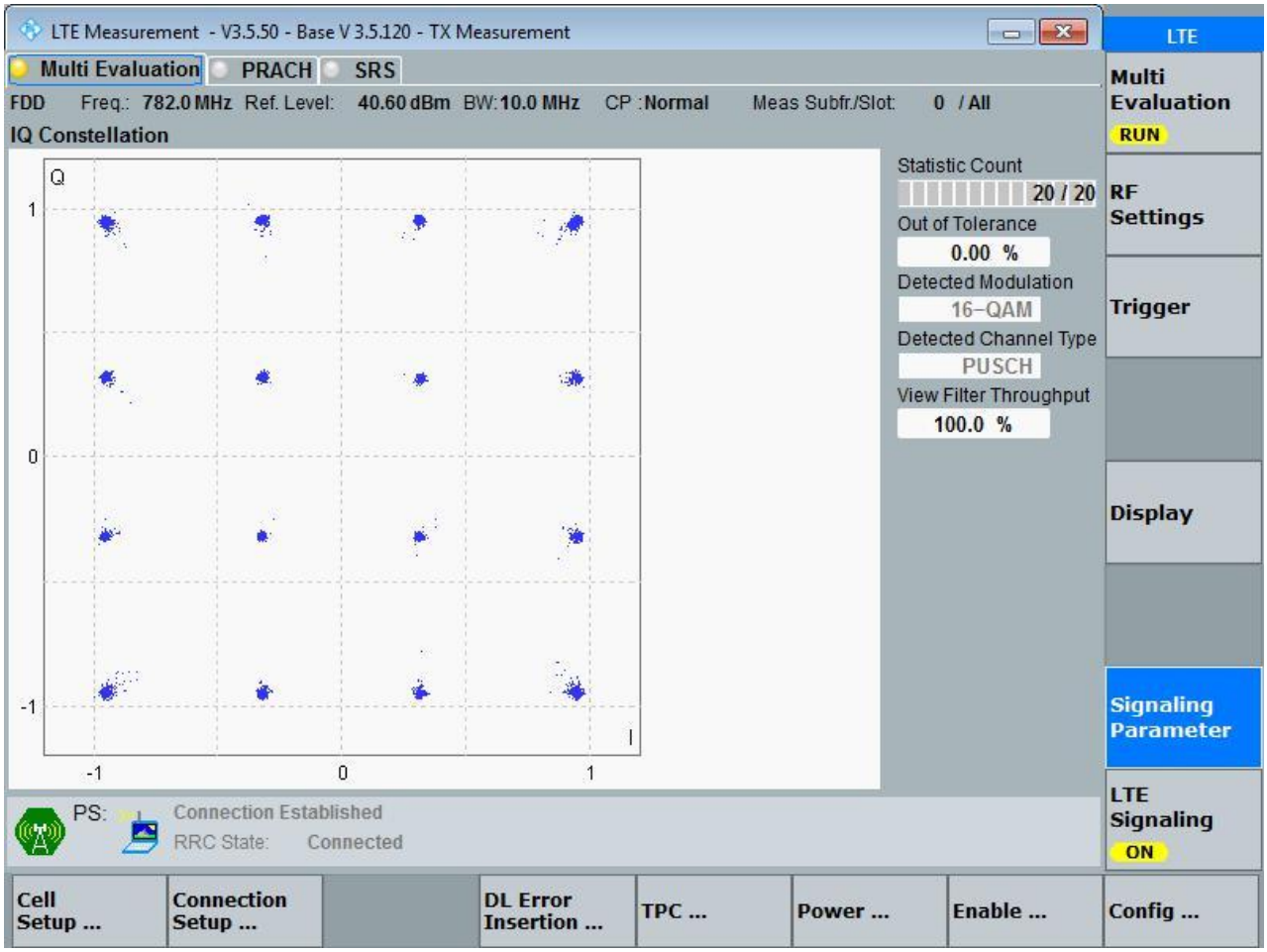
3.1.1.3 Test Mode = LTE /TM2 5MHz

3.1.1.3.1 Test Channel = MCH



3.1.1.4 Test Mode = LTE /TM2 10MHz

3.1.1.4.1 Test Channel = MCH



4 Bandwidth

Part I - Test Results

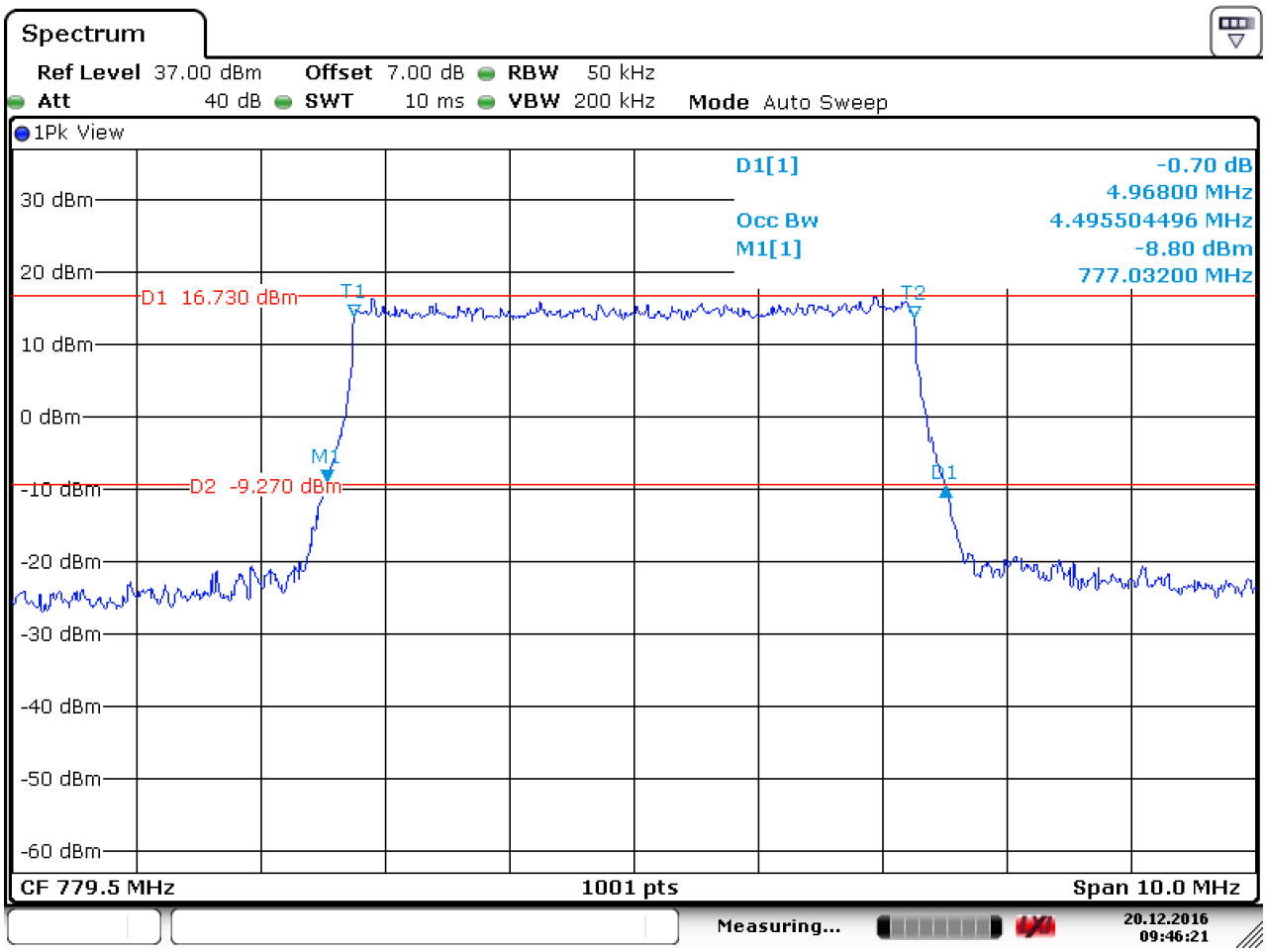
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
Band 13	TM1/ 5MHz	LCH	4.50	4.97	PASS
		MCH	4.49	4.96	PASS
		HCH	4.48	4.94	PASS
	TM2/ 5MHz	LCH	4.49	4.99	PASS
		MCH	4.49	4.95	PASS
		HCH	4.49	4.98	PASS
	TM1/10MHz	LCH	\	\	PASS
		MCH	8.95	9.71	PASS
		HCH	\	\	PASS
	TM2/ 10MHz	LCH	\	\	PASS
		MCH	8.95	9.73	PASS
		HCH	\	\	PASS

4.1 For LTE

4.1.1 Test Band = LTE band13

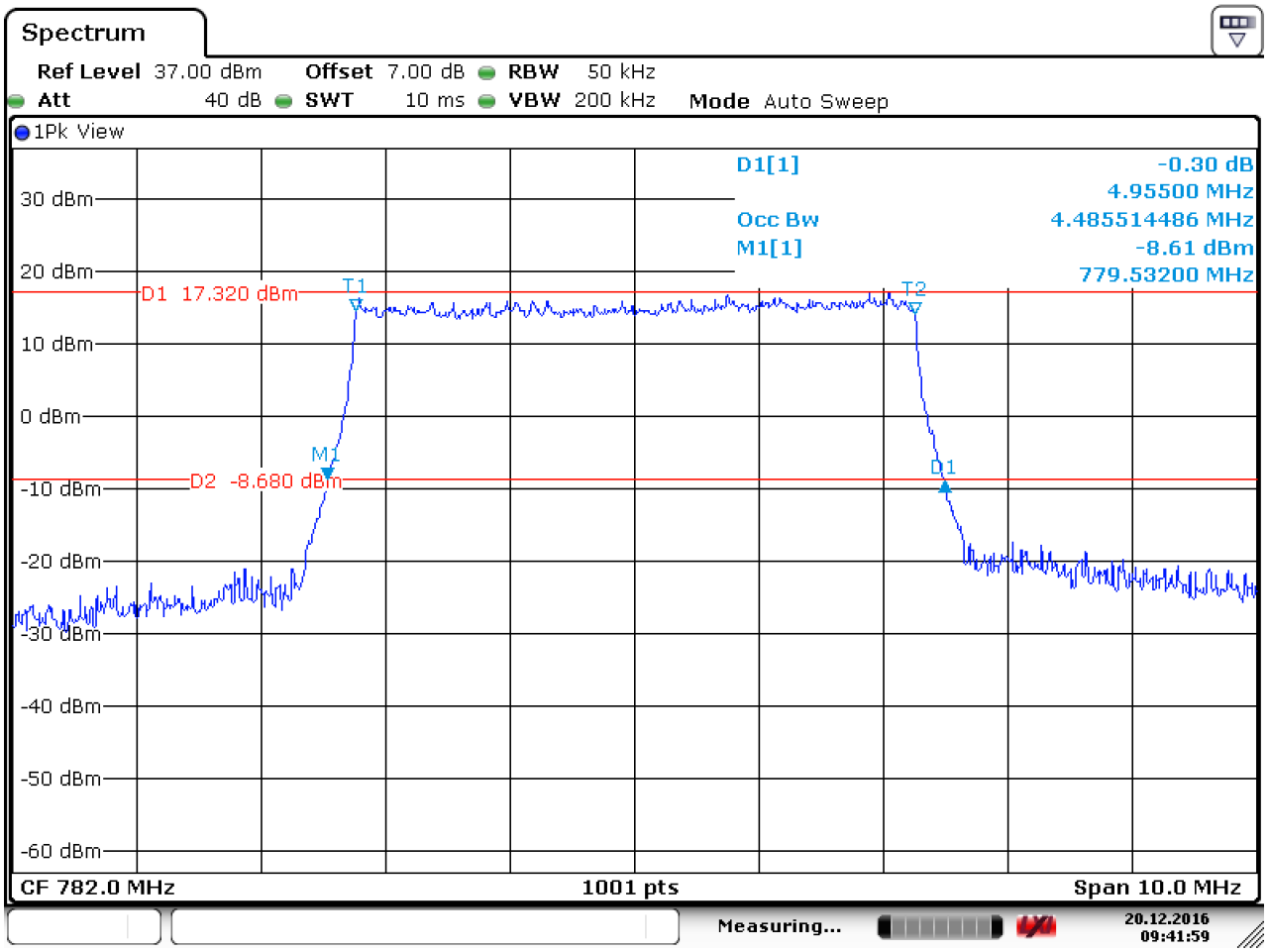
4.1.1.1 Test Mode = LTE/TM1 5MHz

4.1.1.1.1 Test Channel = LCH



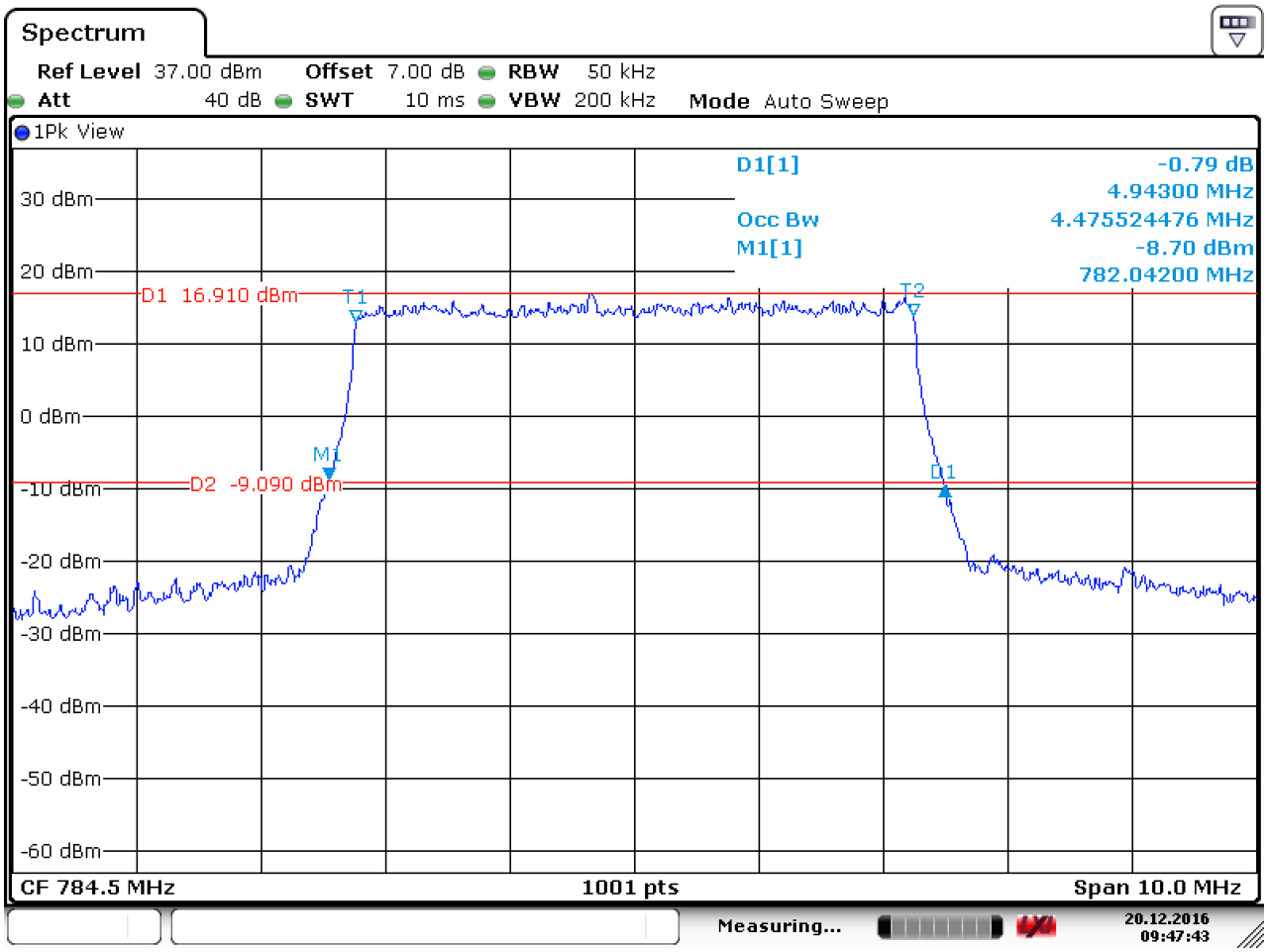
Date: 20.DEC.2016 09:46:22

4.1.1.1.2 Test Channel = MCH



Date: 20.DEC.2016 09:42:00

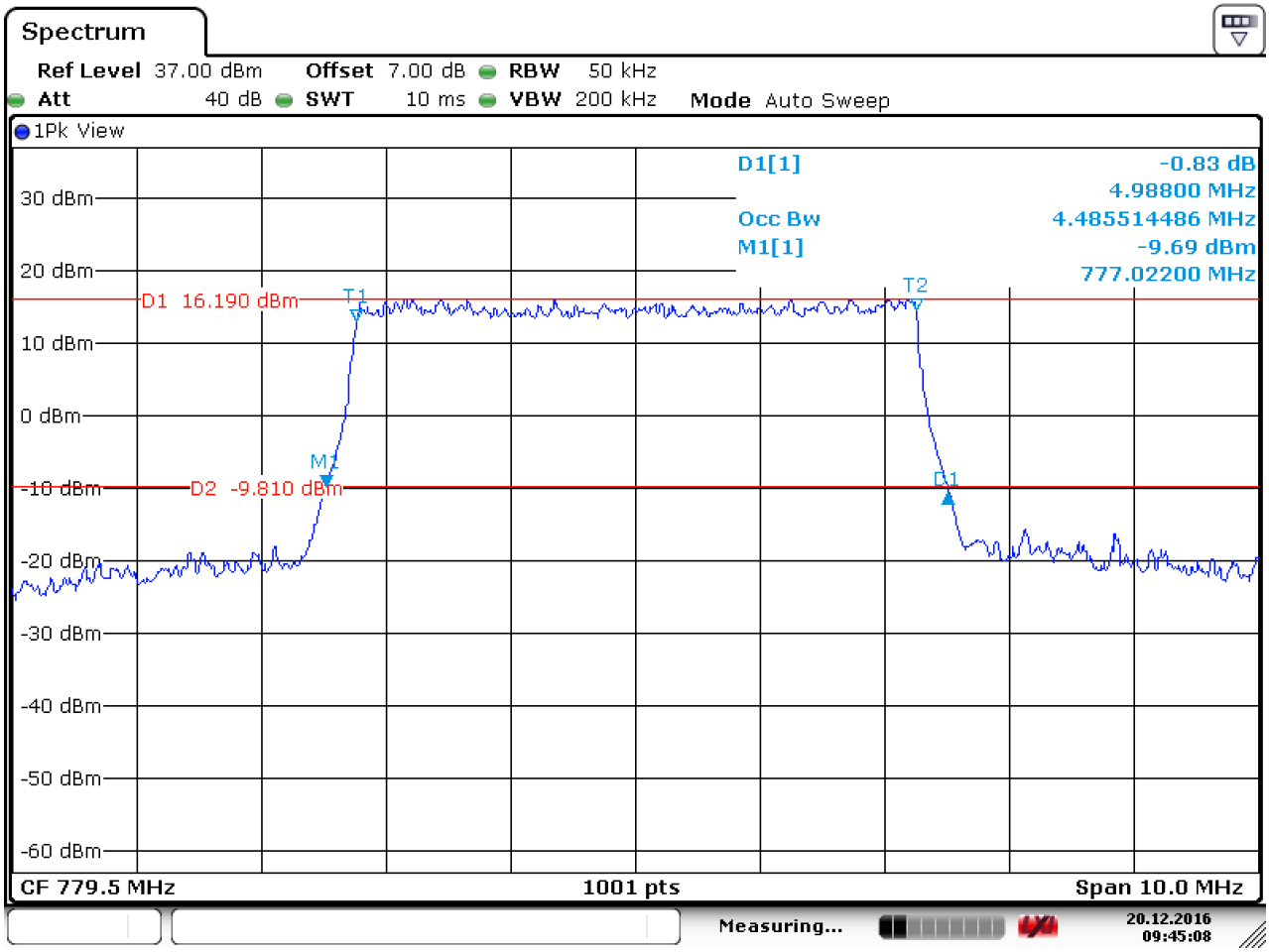
4.1.1.1.3 Test Channel = HCH



Date: 20.DEC.2016 09:47:43

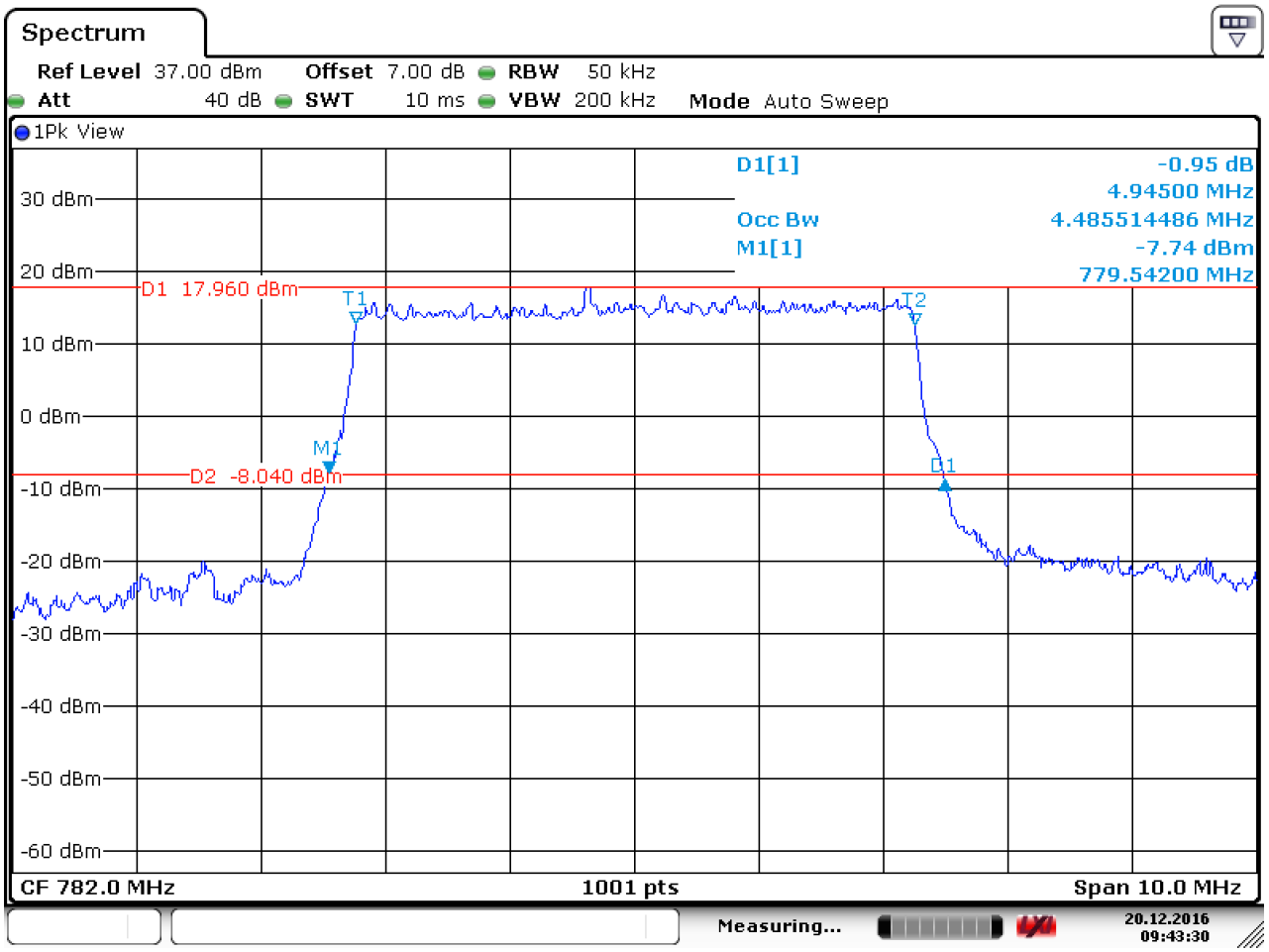
4.1.1.2 Test Mode = LTE/TM2 5MHz

4.1.1.2.1 Test Channel = LCH



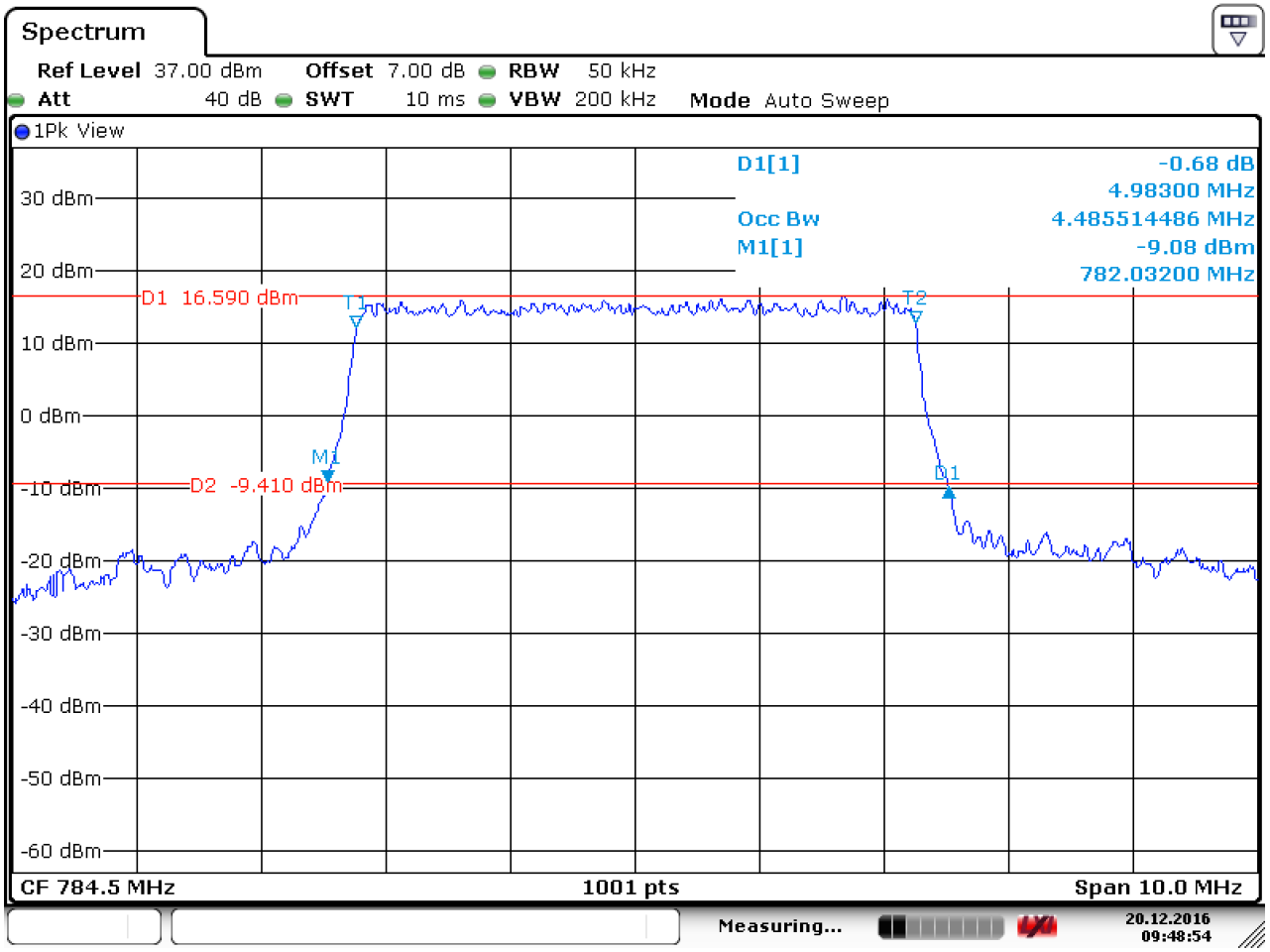
Date: 20.DEC.2016 09:45:09

4.1.1.2.2 Test Channel = MCH



Date: 20.DEC.2016 09:43:31

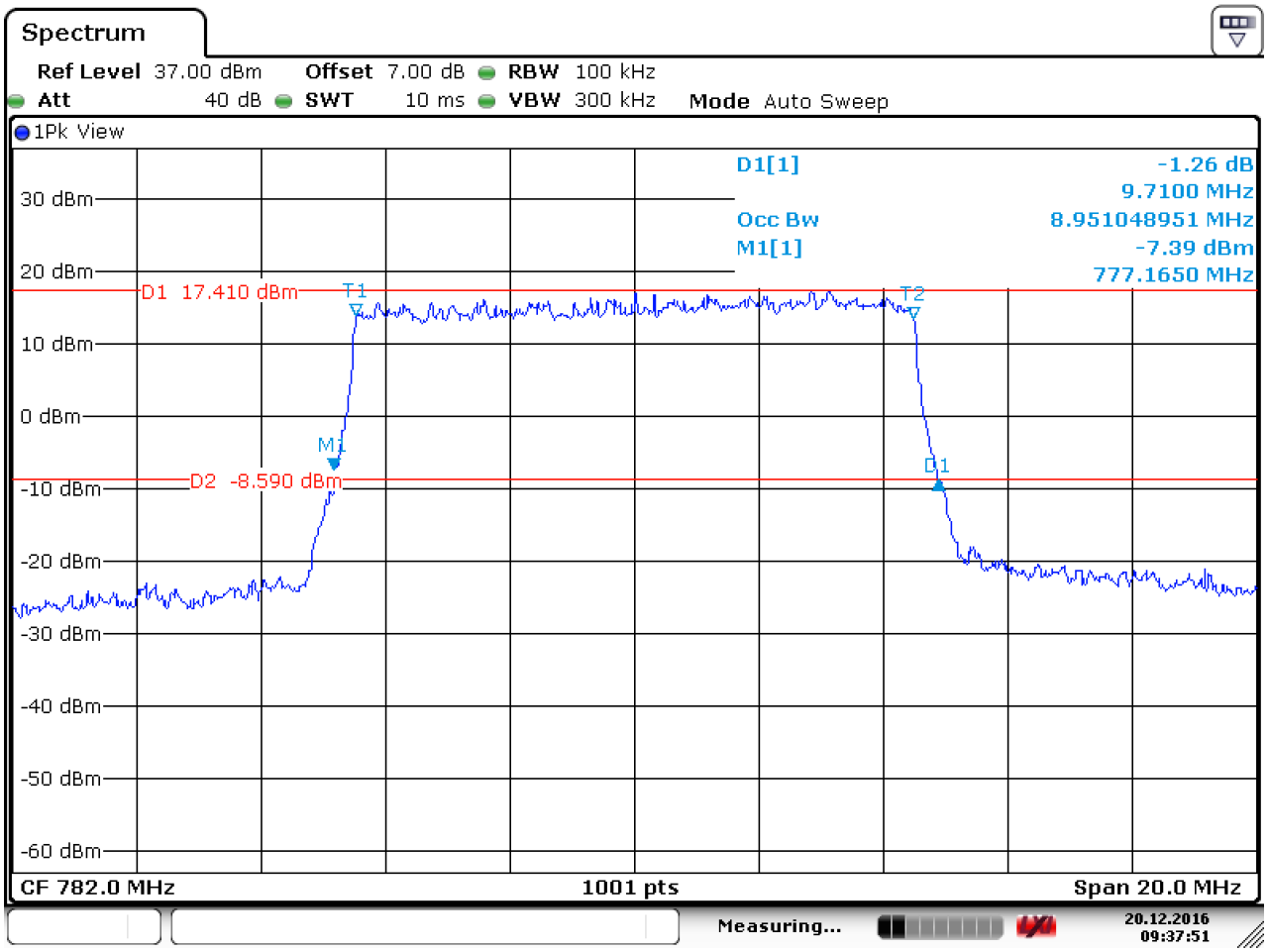
4.1.1.2.3 Test Channel = HCH



Date: 20.DEC.2016 09:48:55

4.1.1.3 Test Mode = LTE/TM1 10MHz

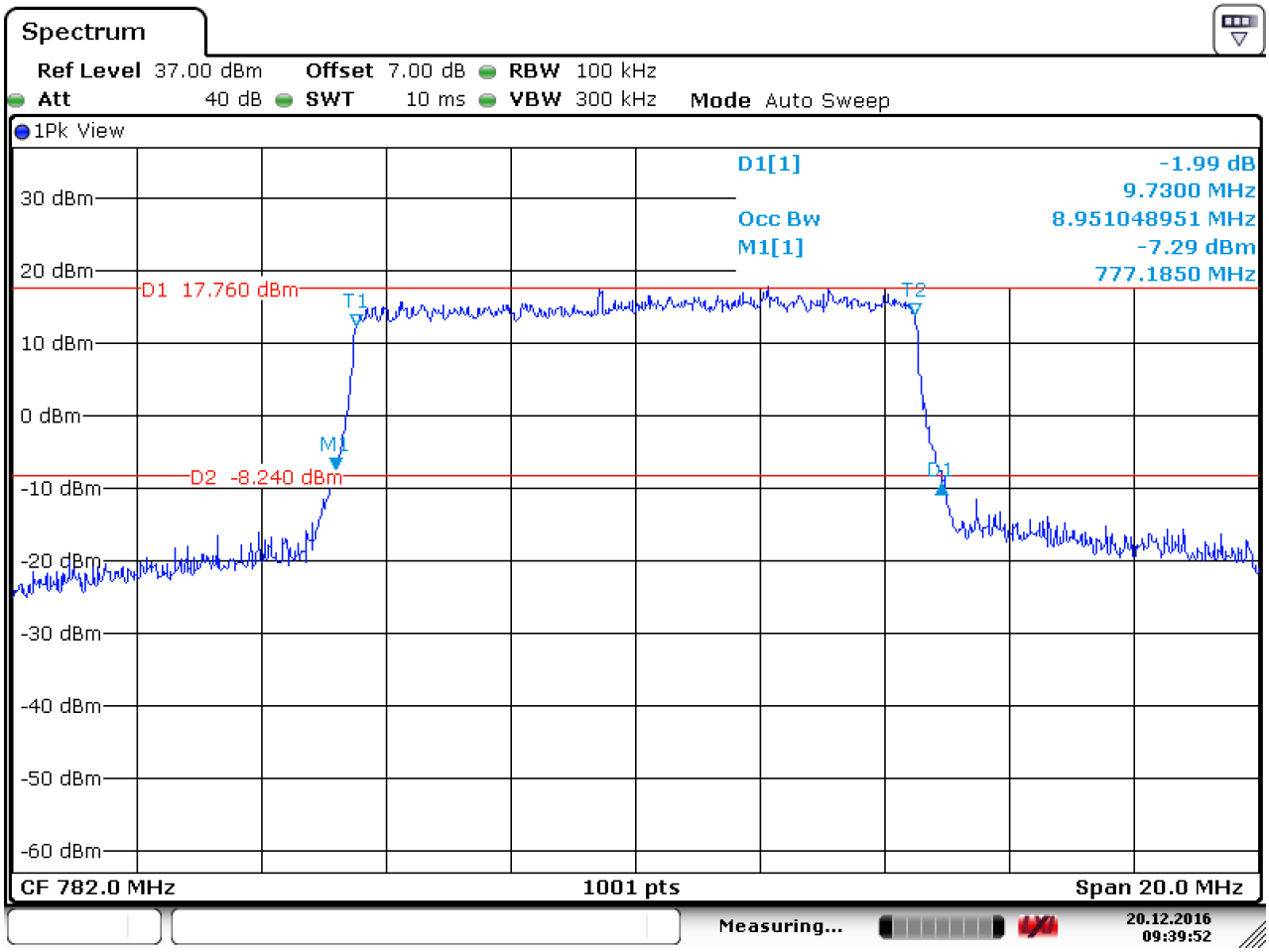
4.1.1.3.1 Test Channel = MCH



Date: 20.DEC.2016 09:37:51

4.1.1.4 Test Mode = LTE/TM2 10MHz

4.1.1.4.1 Test Channel = MCH



Date: 20.DEC.2016 09:39:52

5 Band Edges Compliance

Part I –

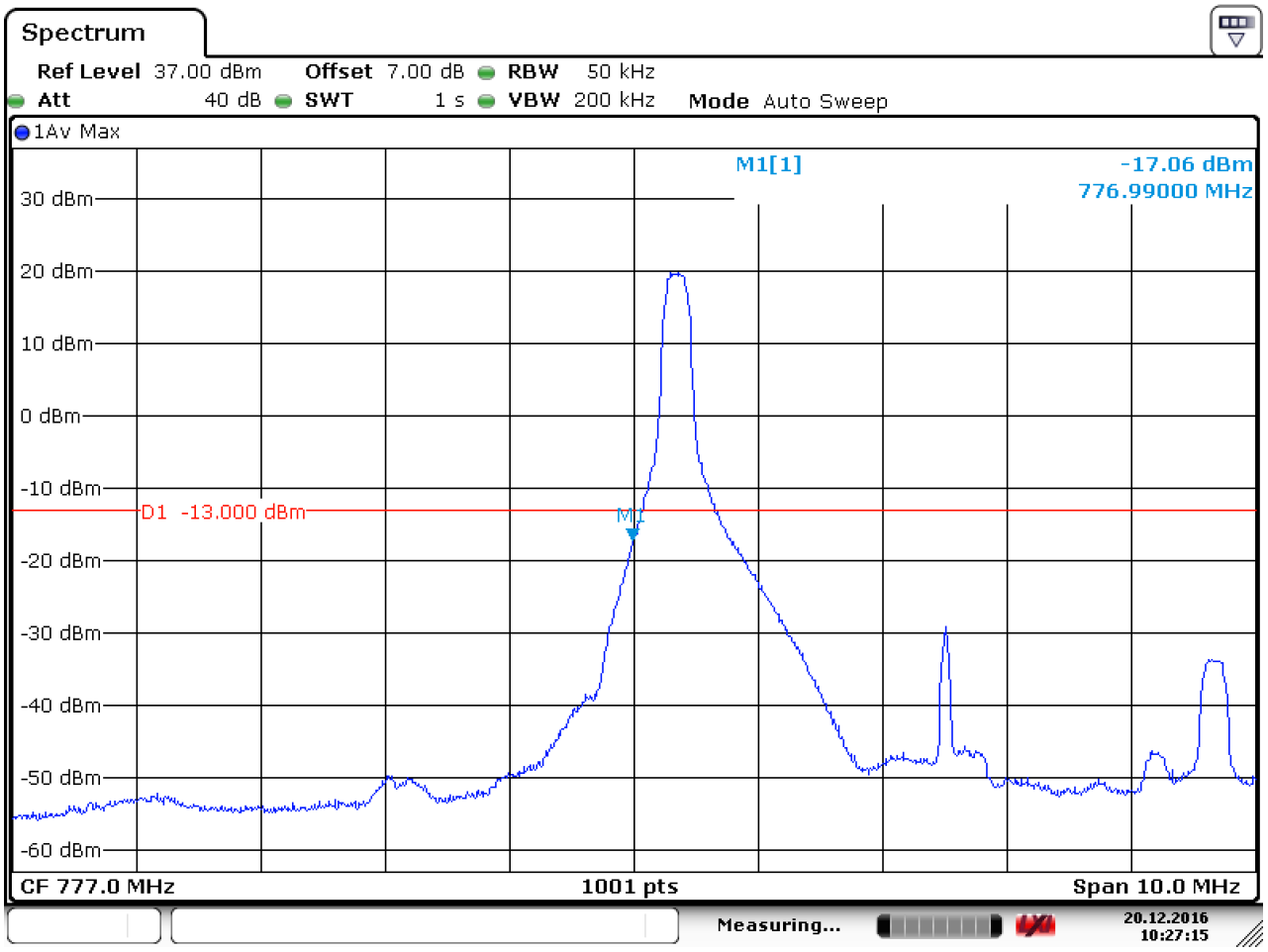
5.1 For LTE

5.1.1 Test Band = LTE band13

5.1.1.1 Test Mode = LTE/TM1 5MHz

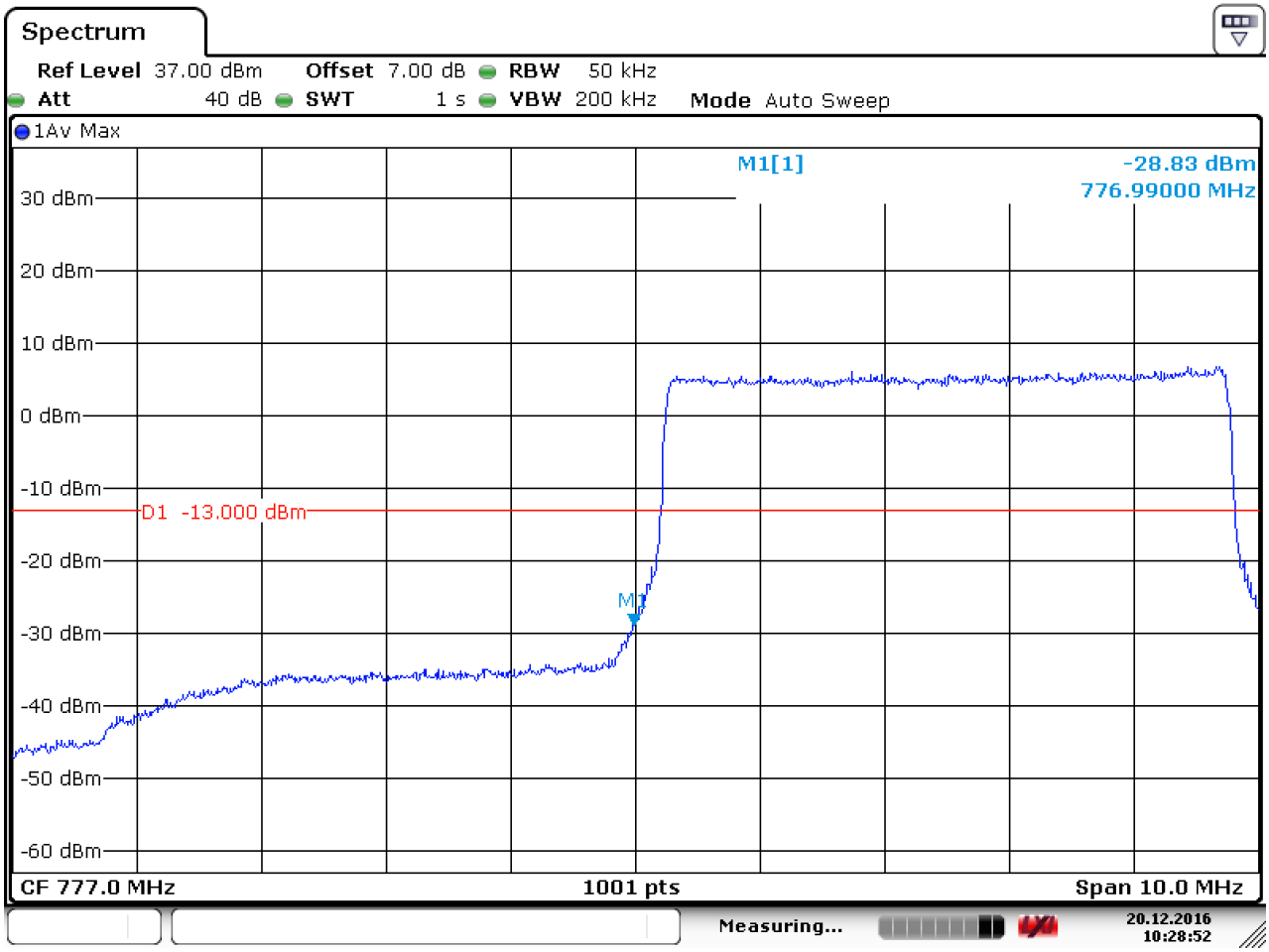
5.1.1.1.1 Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB



Date: 20.DEC.2016 10:27:15

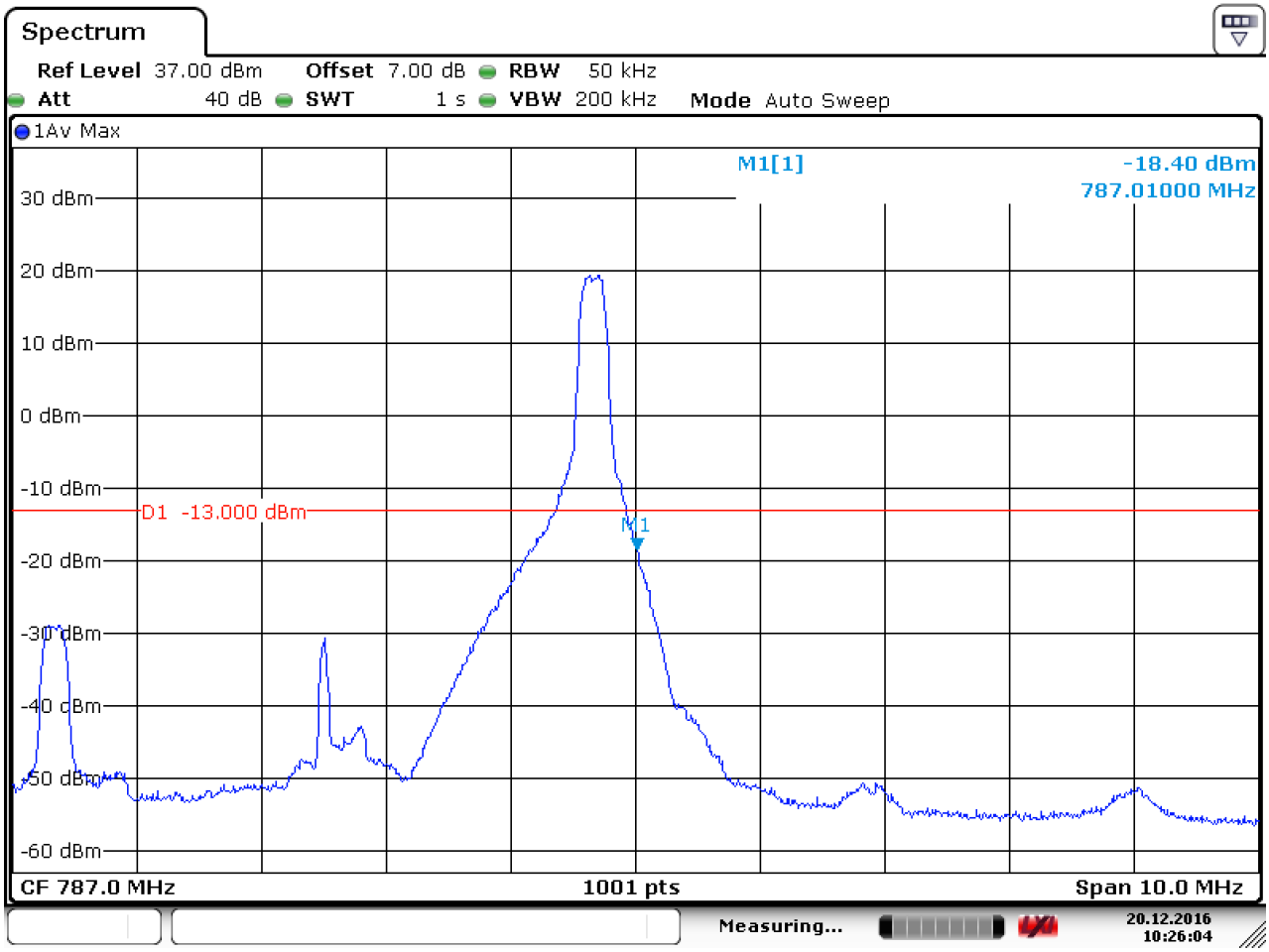
5.1.1.1.1.2 Test RB=25RB



Date: 20.DEC.2016 10:28:52

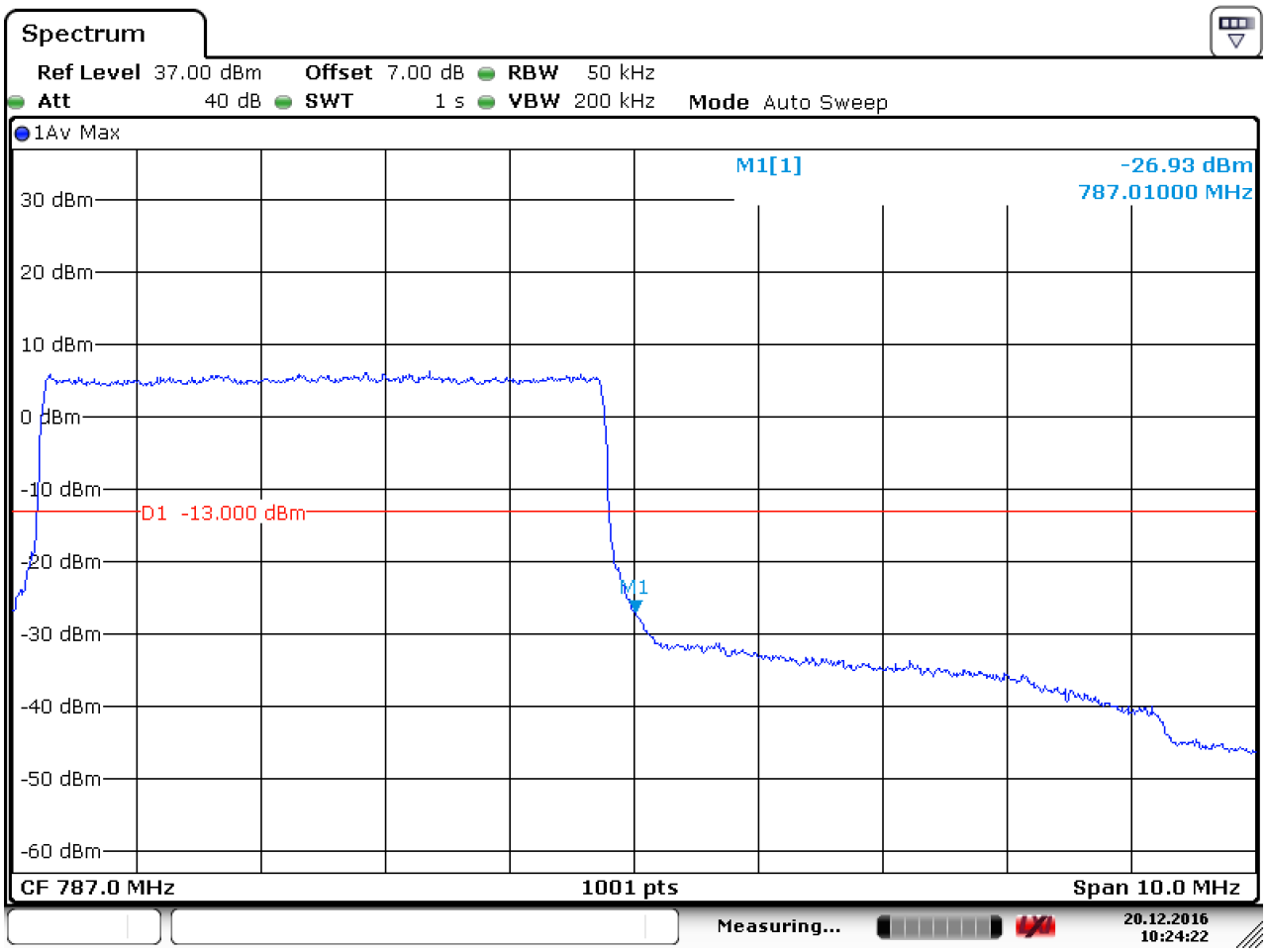
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 20.DEC.2016 10:26:04

5.1.1.1.2.2 Test RB=25RB

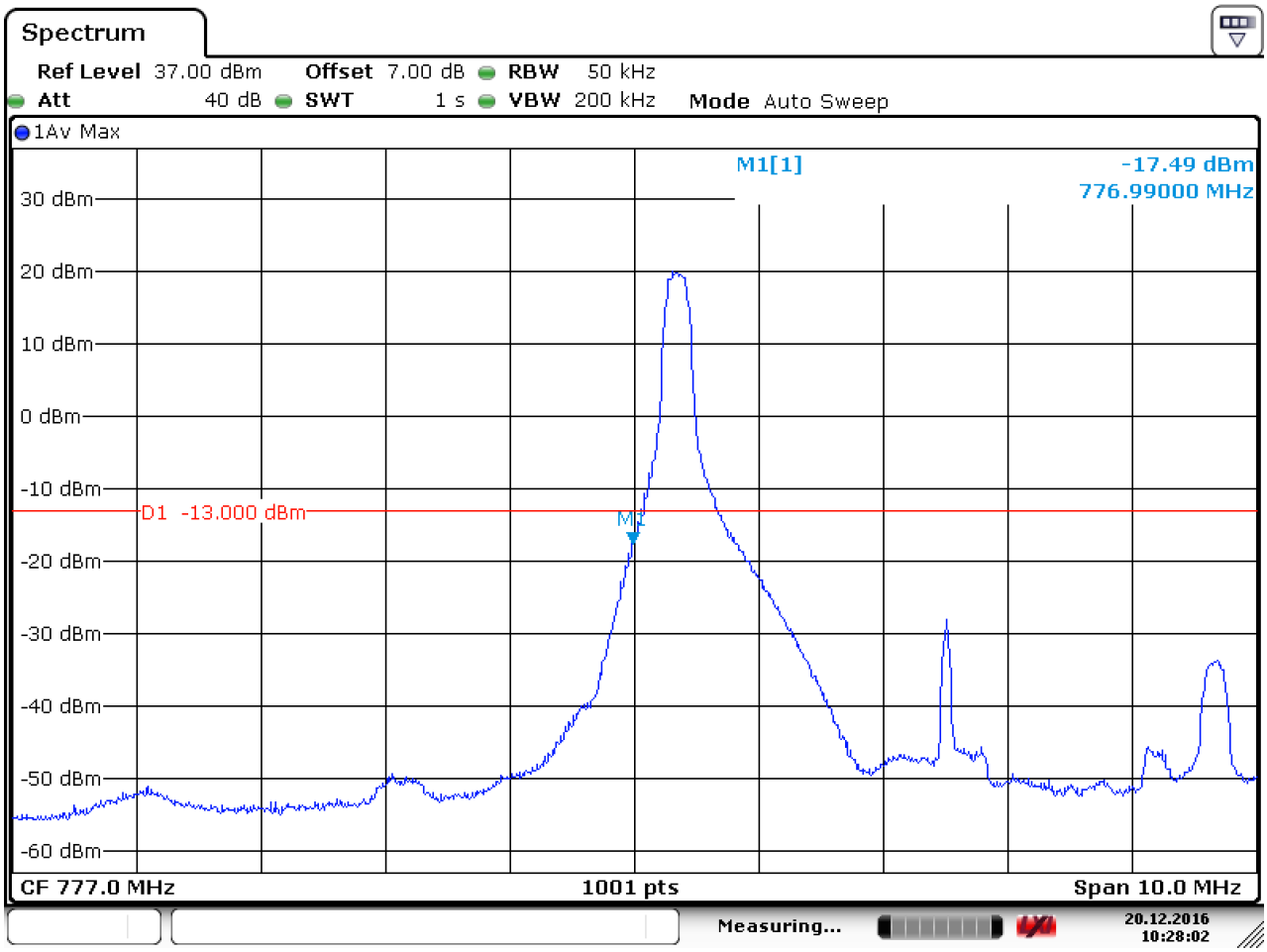


Date: 20.DEC.2016 10:24:23

5.1.1.2 Test Mode = LTE/TM2 5MHz

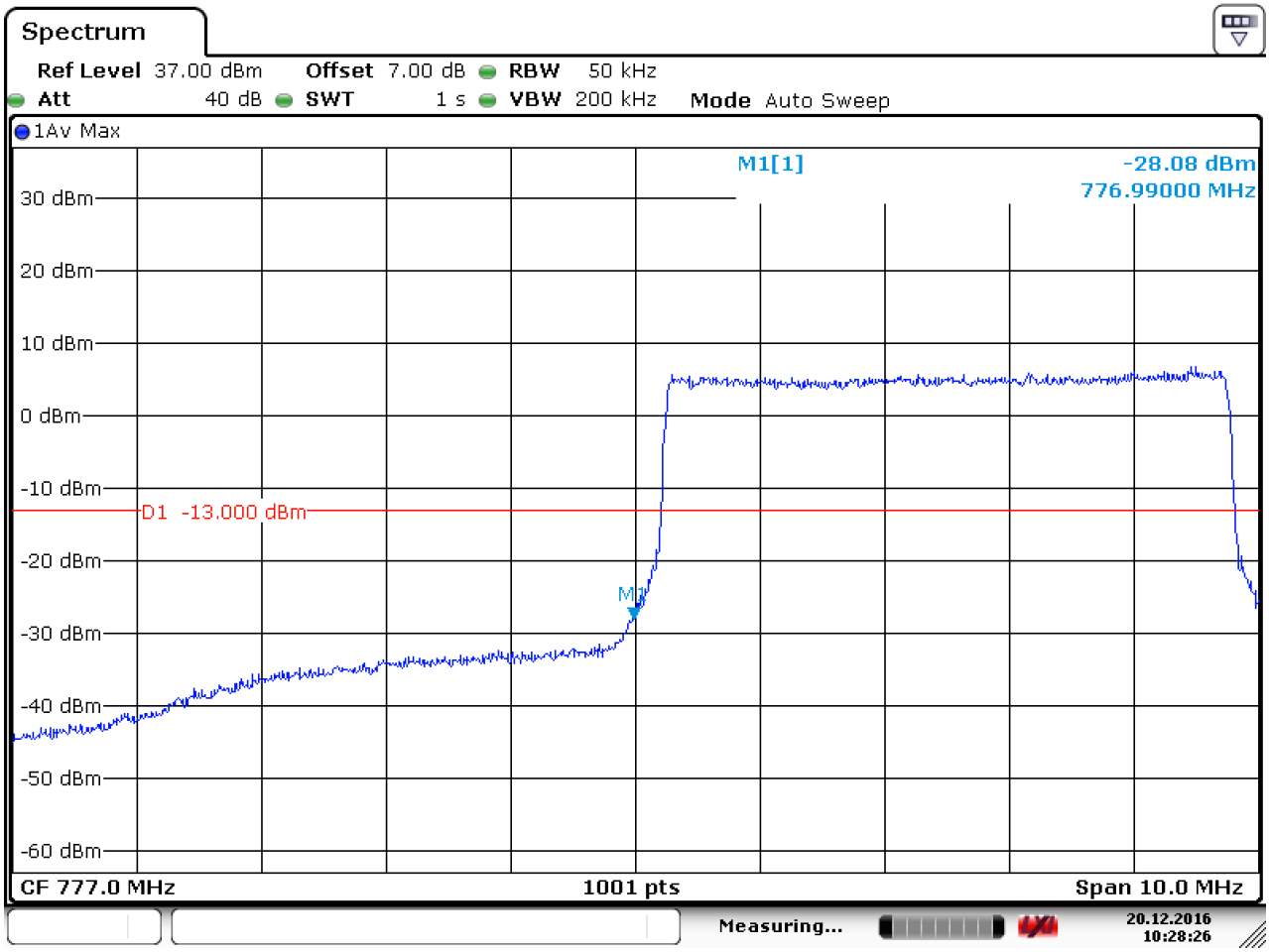
5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



Date: 20.DEC.2016 10:28:02

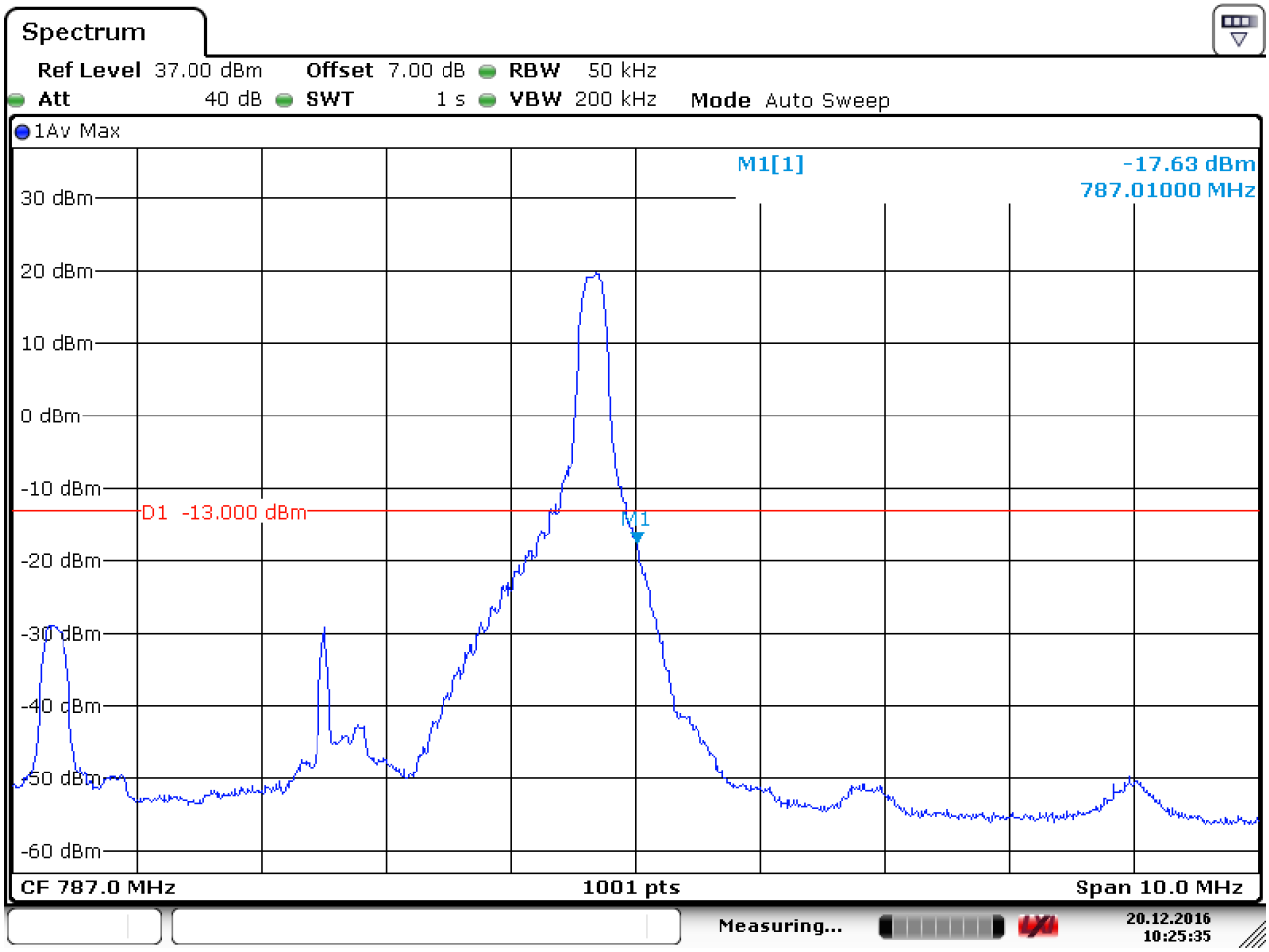
5.1.1.2.1.2 Test RB=25RB



Date: 20.DEC.2016 10:28:26

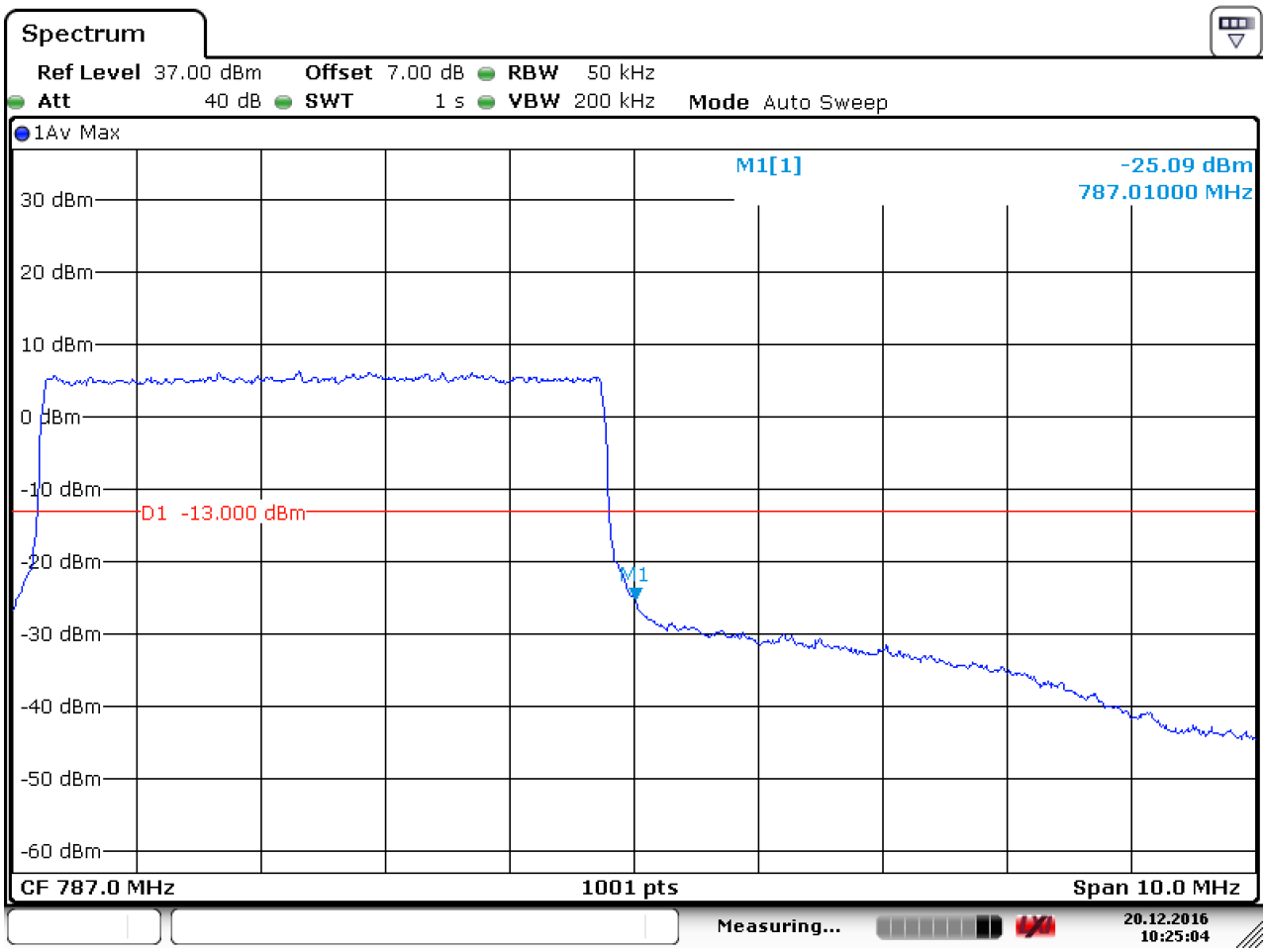
5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 20.DEC.2016 10:25:36

5.1.1.2.2.2 Test RB=25RB

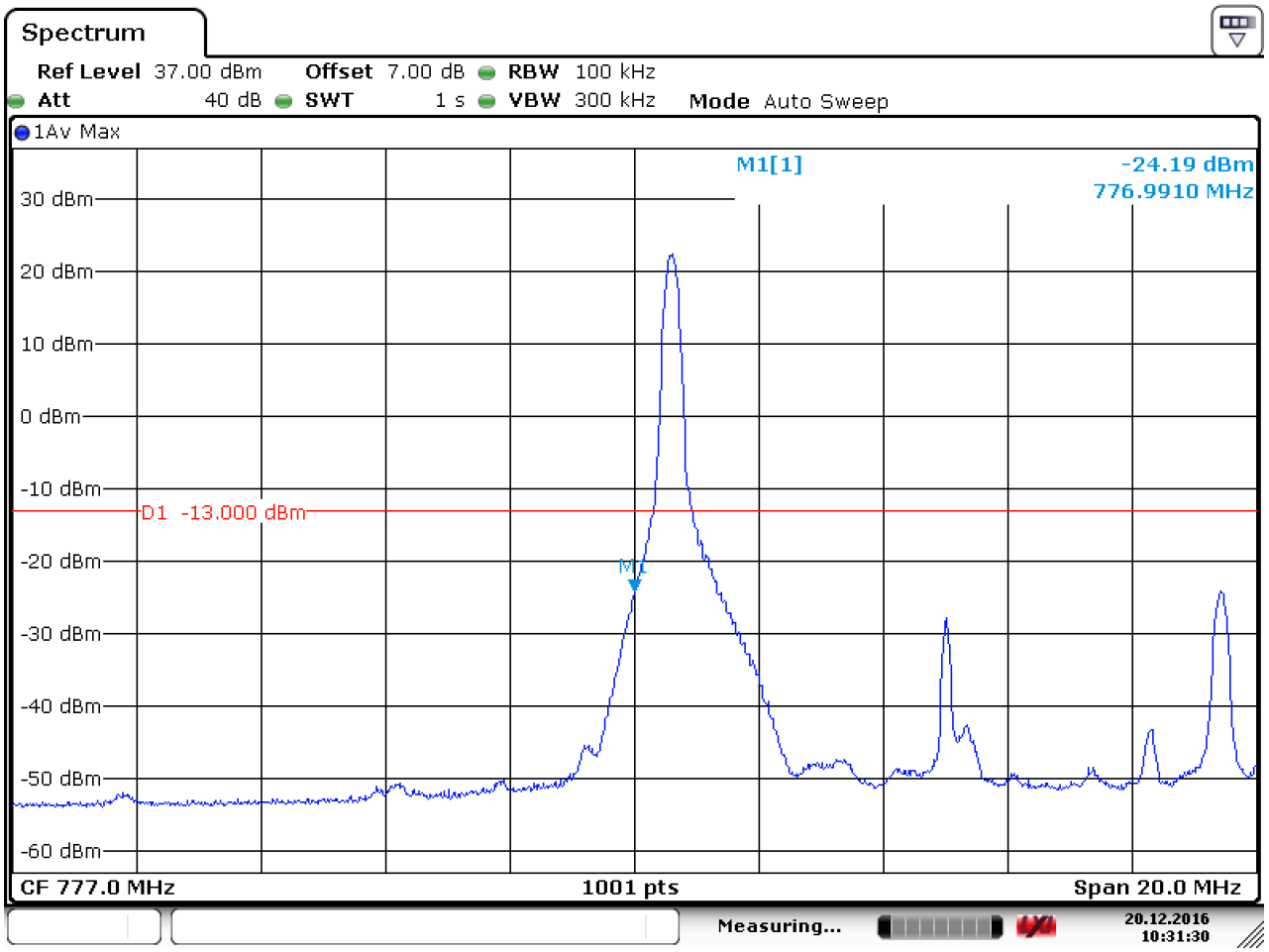


Date: 20.DEC.2016 10:25:04

5.1.1.3 Test Mode = LTE/TM1 10MHz

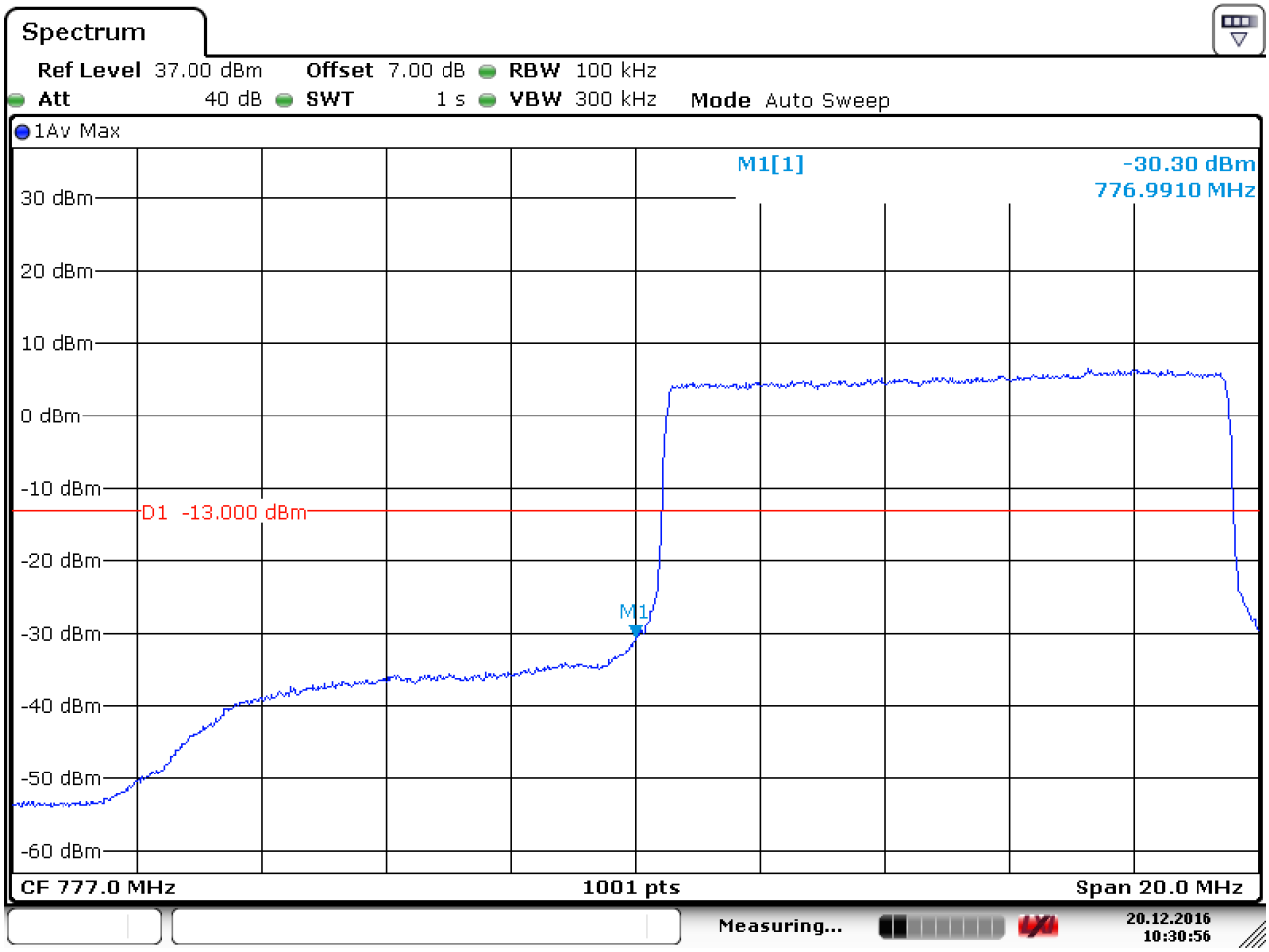
5.1.1.3.1 Test Channel = LCH

5.1.1.3.1.1 Test RB=1RB



Date: 20.DEC.2016 10:31:30

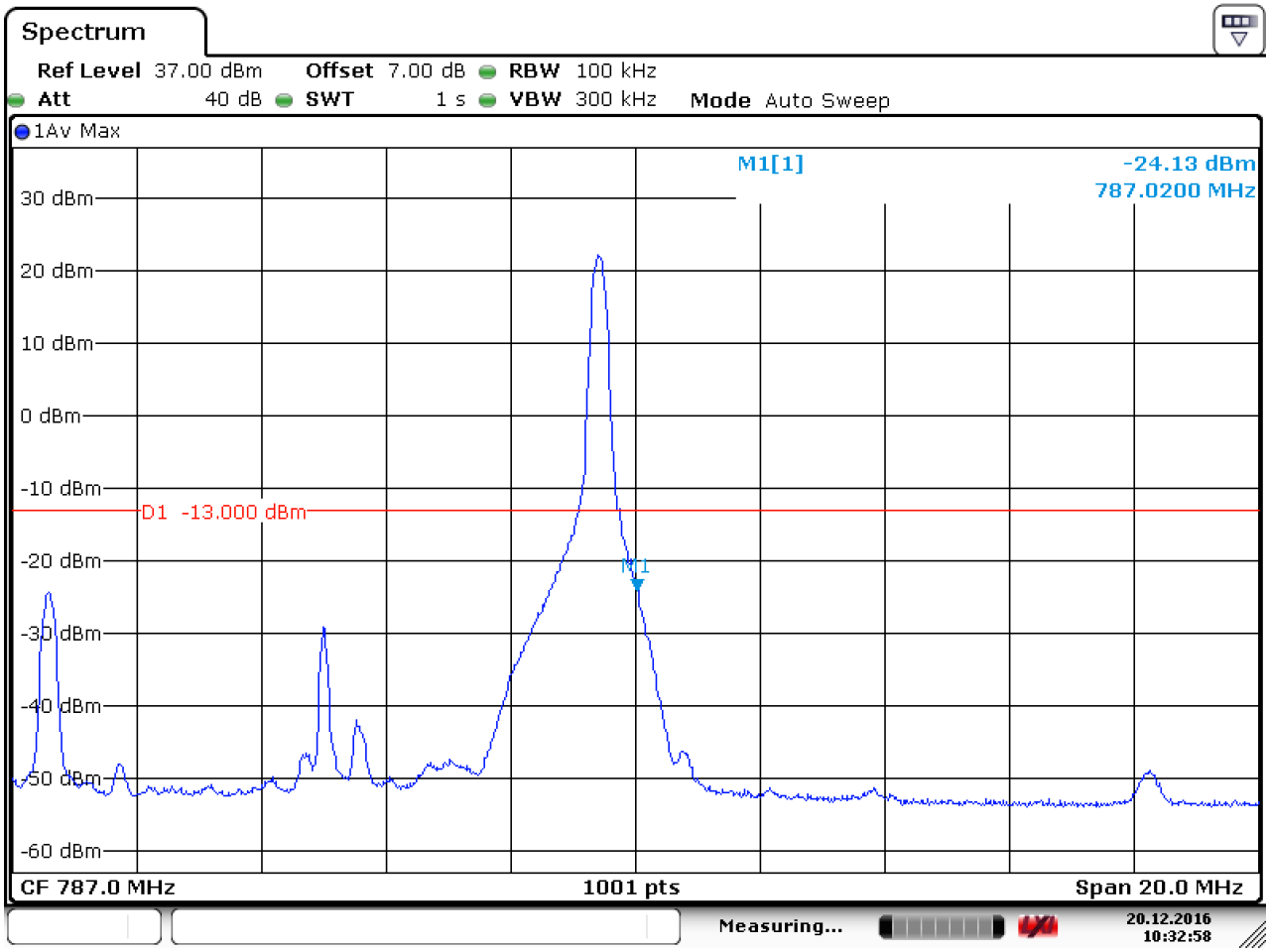
5.1.1.3.1.2 Test RB=50RB



Date: 20.DEC.2016 10:30:56

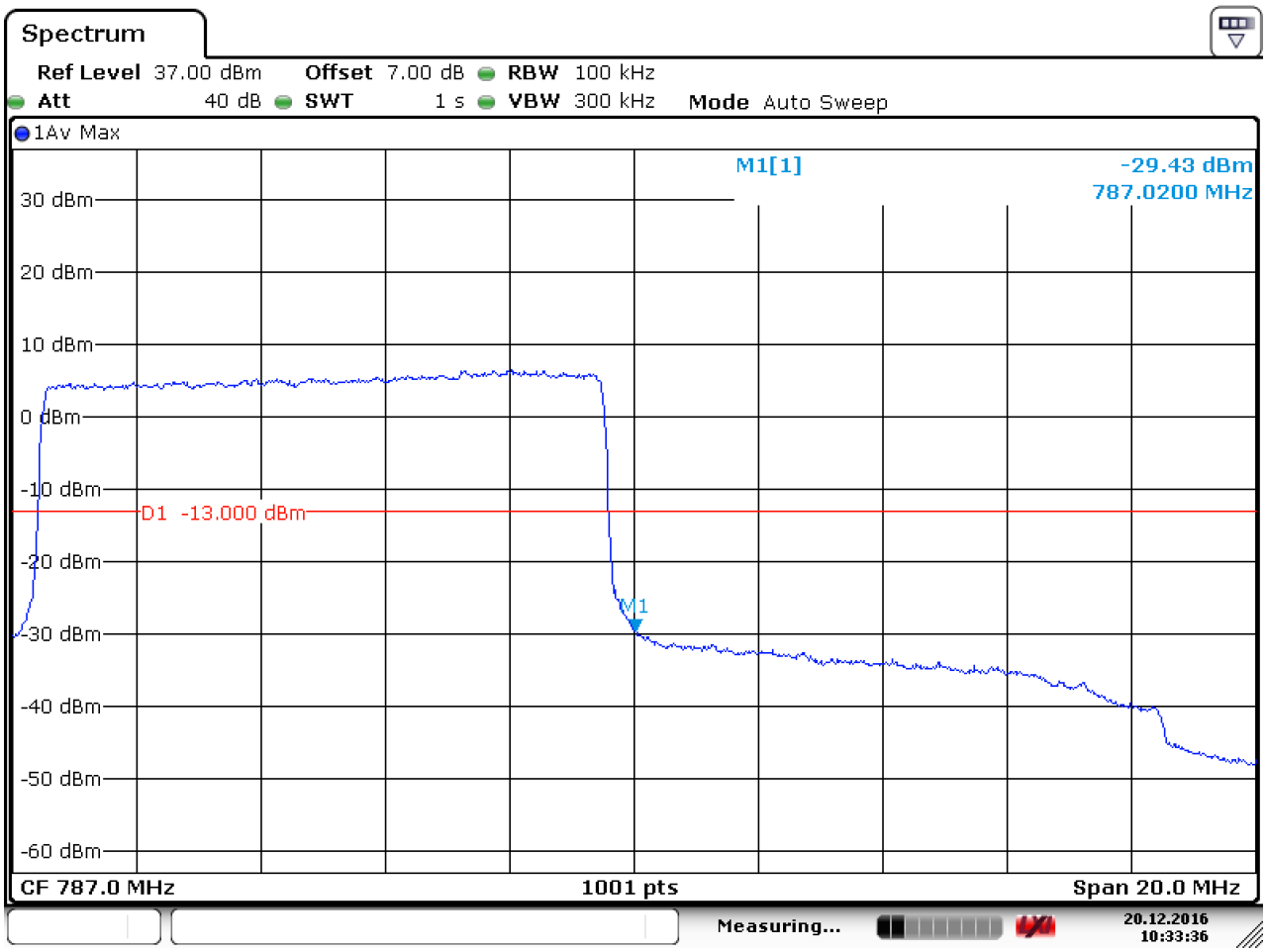
5.1.1.3.2 Test Channel = HCH

5.1.1.3.2.1 Test RB=1RB



Date: 20.DEC.2016 10:32:59

5.1.1.3.2.2 Test RB=50RB

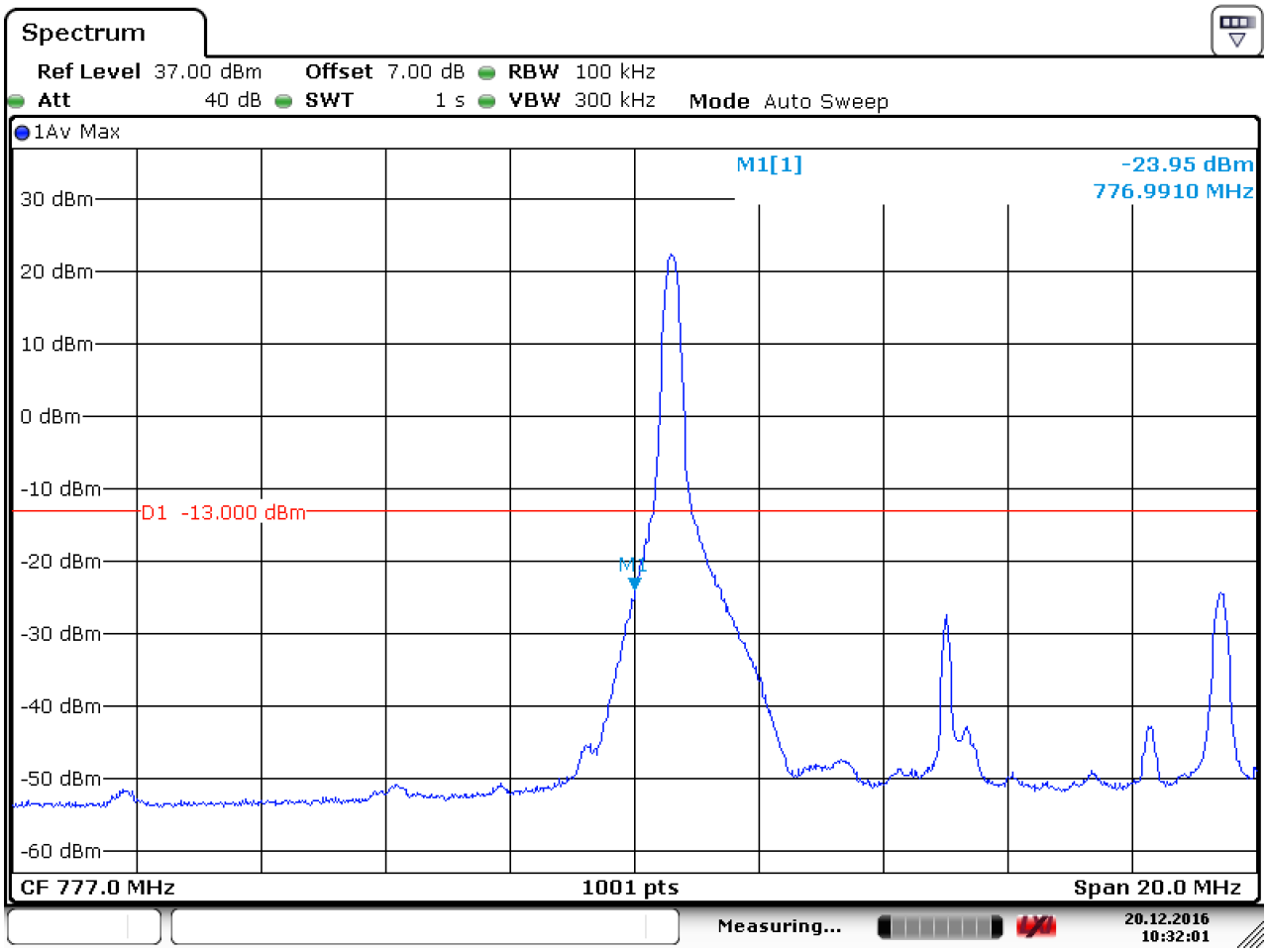


Date: 20.DEC.2016 10:33:36

5.1.1.4 Test Mode = LTE/TM2 10MHz

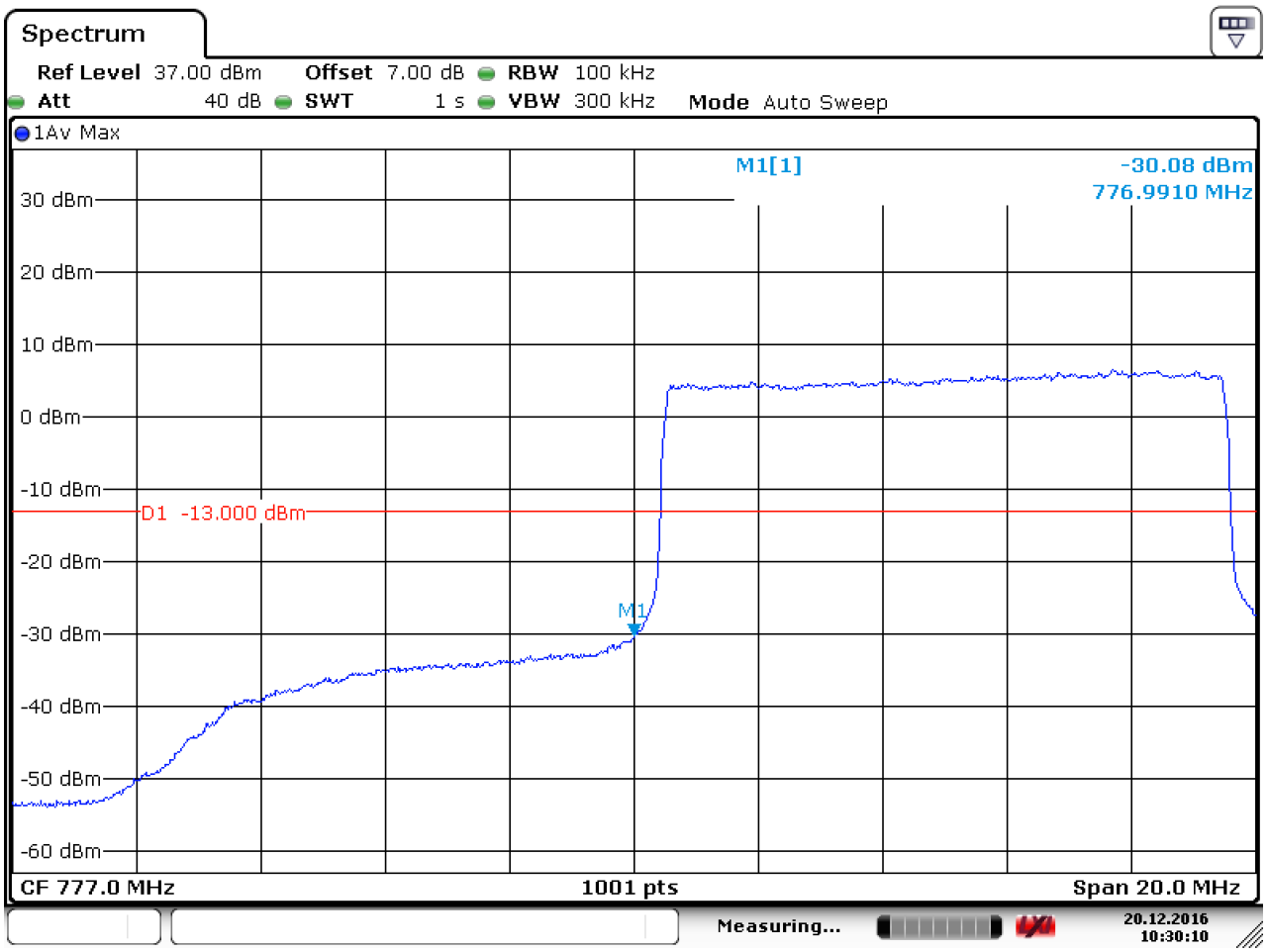
5.1.1.4.1 Test Channel = LCH

5.1.1.4.1.1 Test RB=1RB



Date: 20.DEC.2016 10:32:01

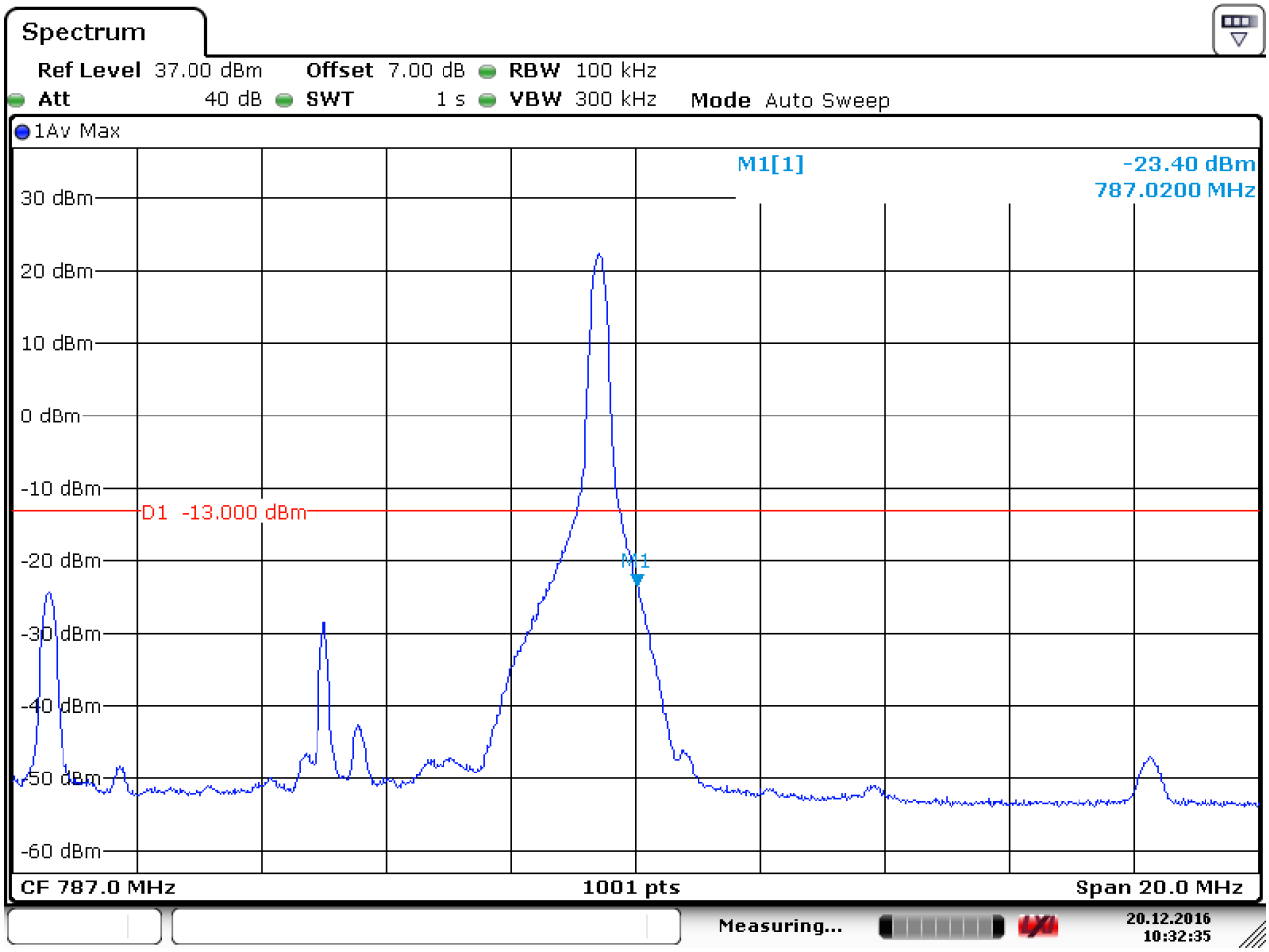
5.1.1.4.1.2 Test RB=50RB



Date: 20.DEC.2016 10:30:10

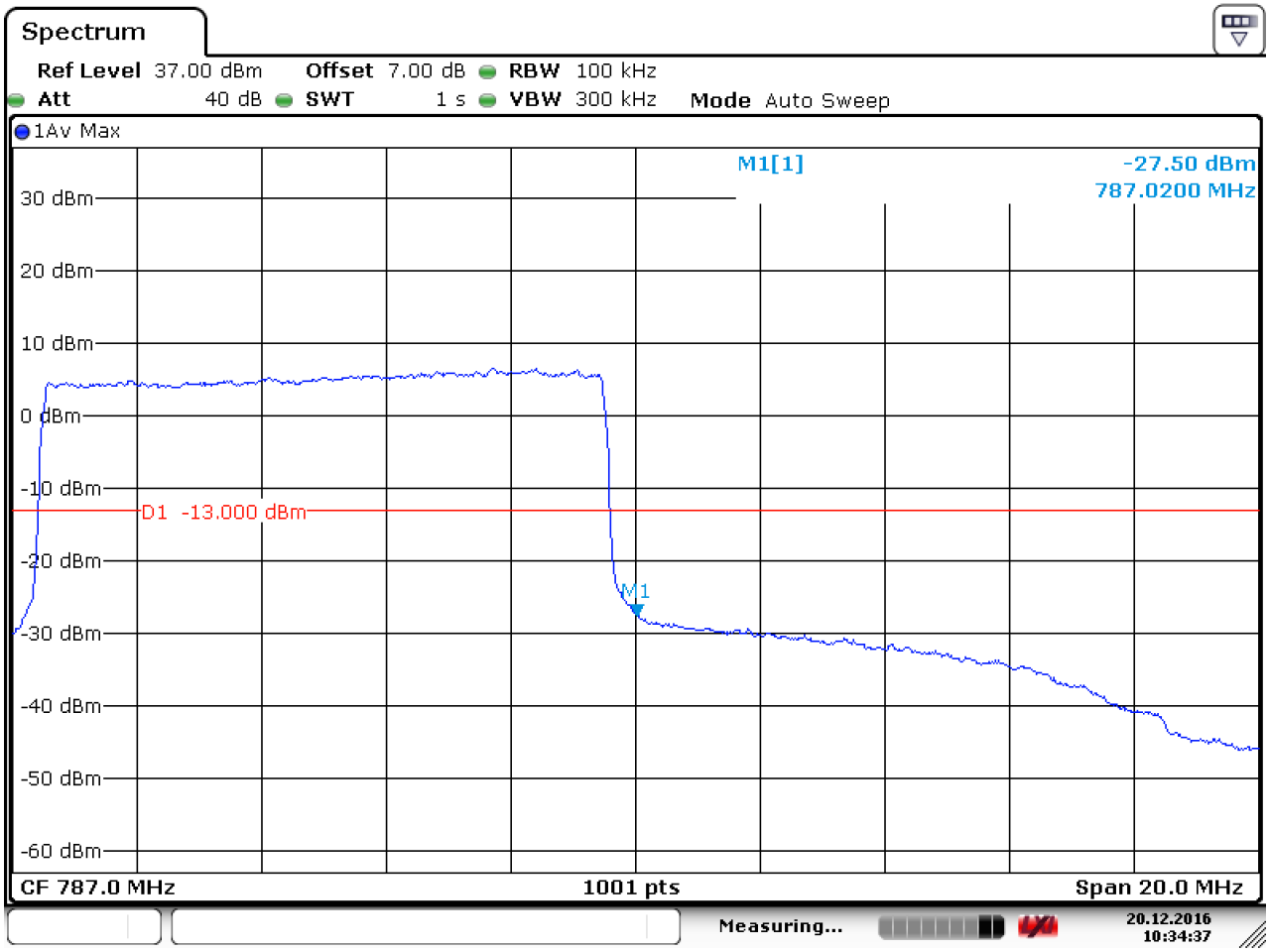
5.1.1.4.2 Test Channel = HCH

5.1.1.4.2.1 Test RB=1RB



Date: 20.DEC.2016 10:32:35

5.1.1.4.2.2 Test RB=50RB



Date: 20.DEC.2016 10:34:37

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.

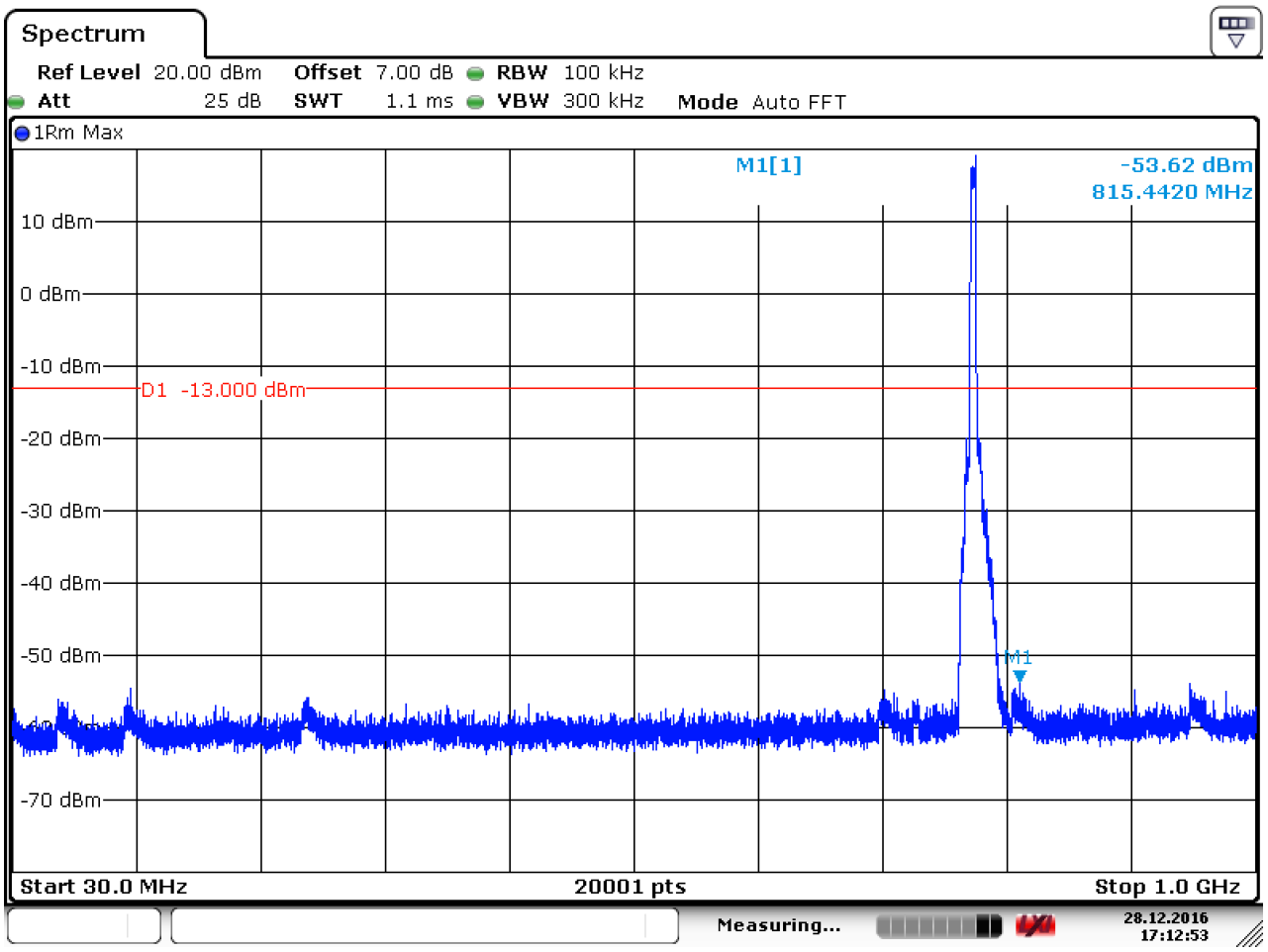
Part I - Test Plots

6.1 For LTE

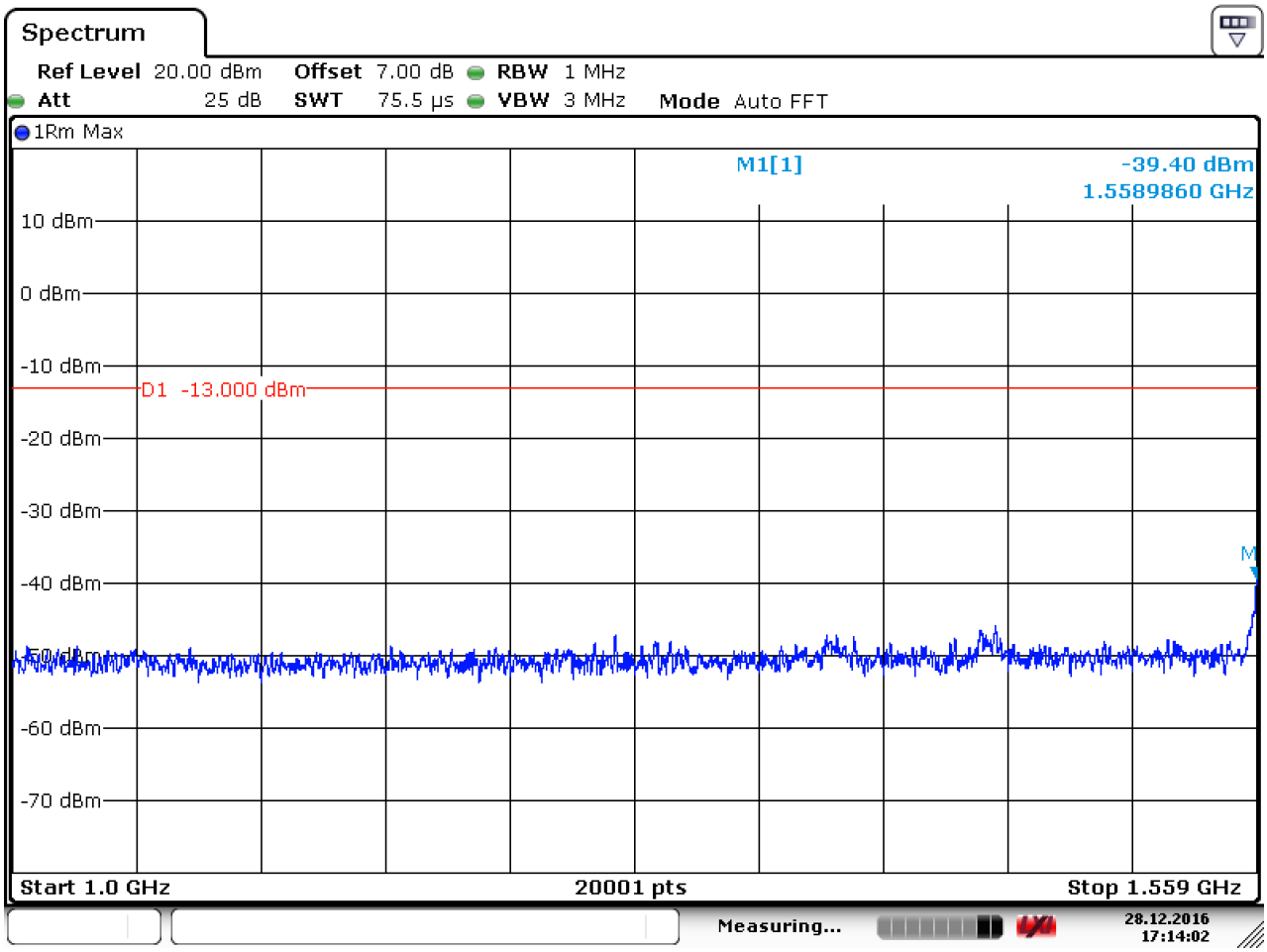
6.1.1 Test Band = LTE band13

6.1.1.1 Test Mode = LTE / TM1 5MHz RB1#0

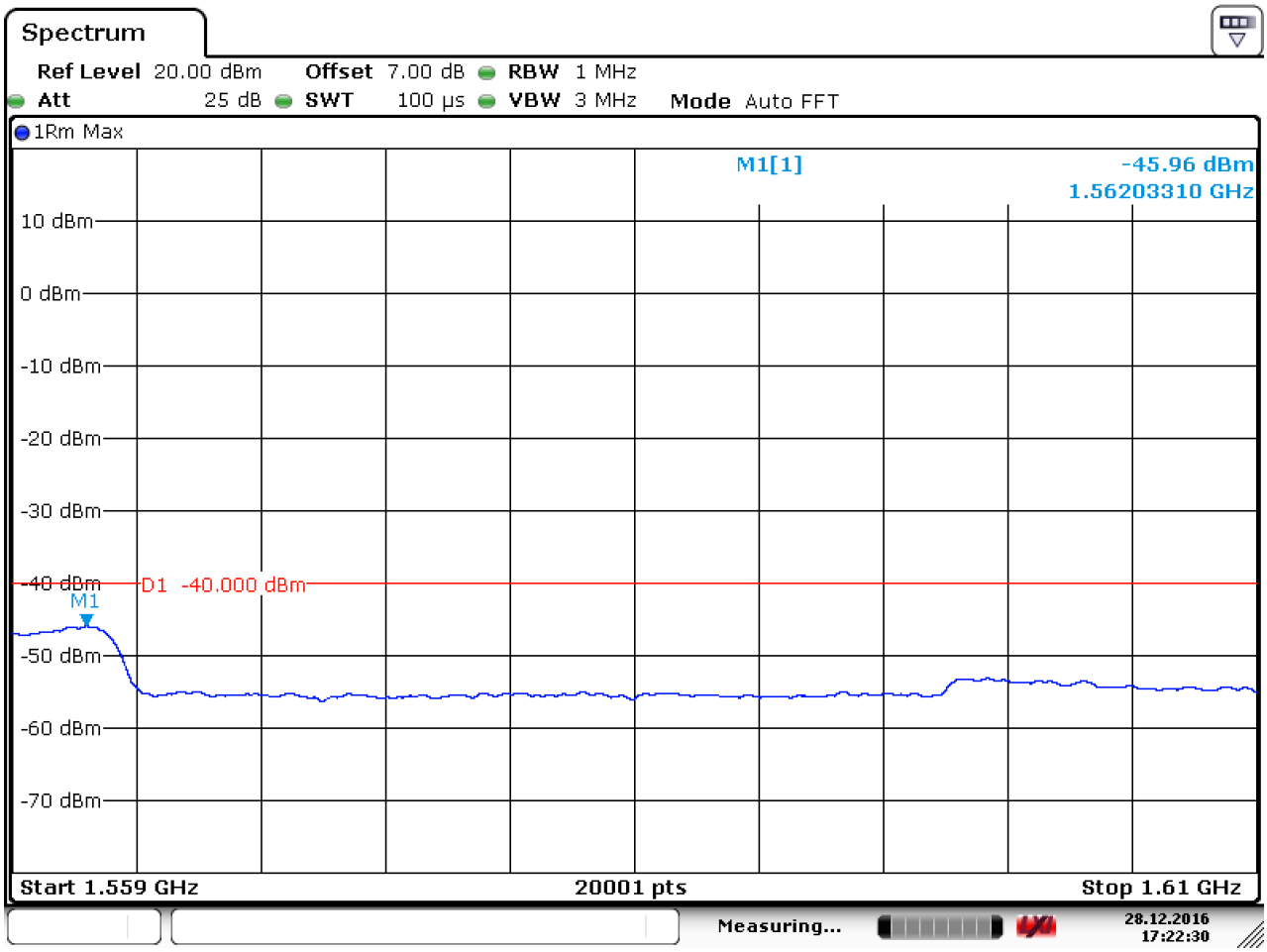
6.1.1.1.1 Test Channel = LCH



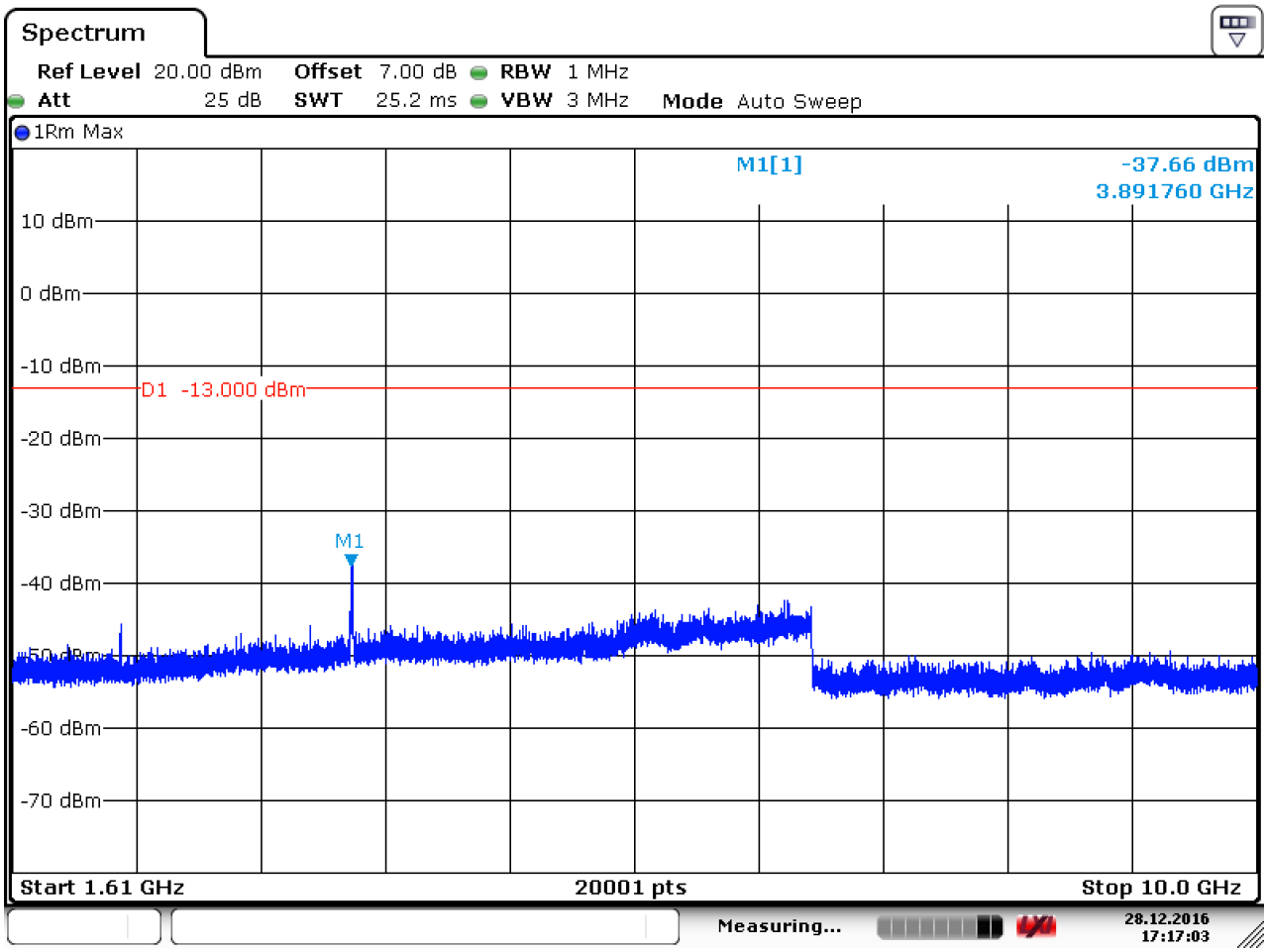
Date: 28.DEC.2016 17:12:54



Date: 28.DEC.2016 17:14:03

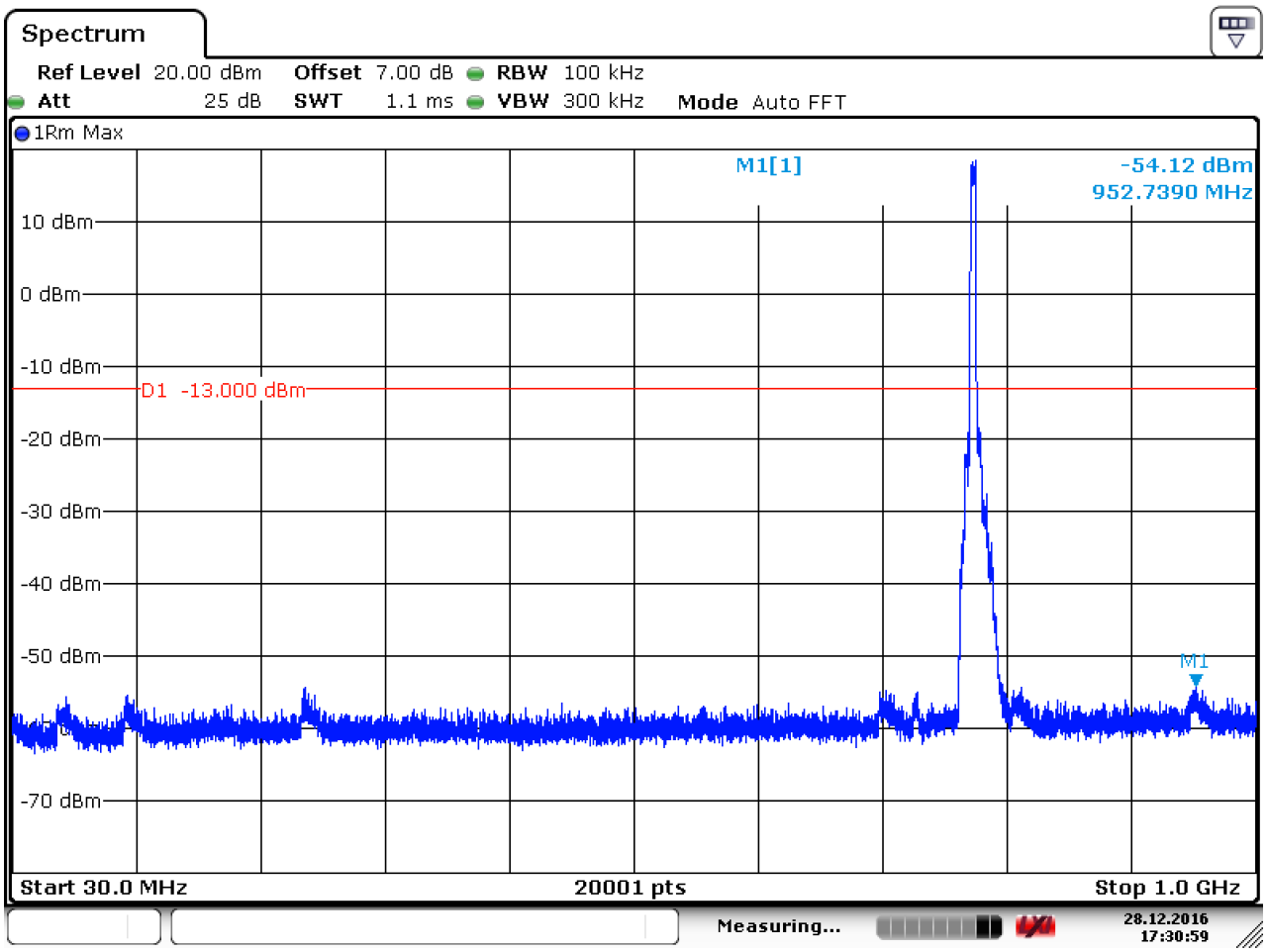


Date: 28.DEC.2016 17:22:30

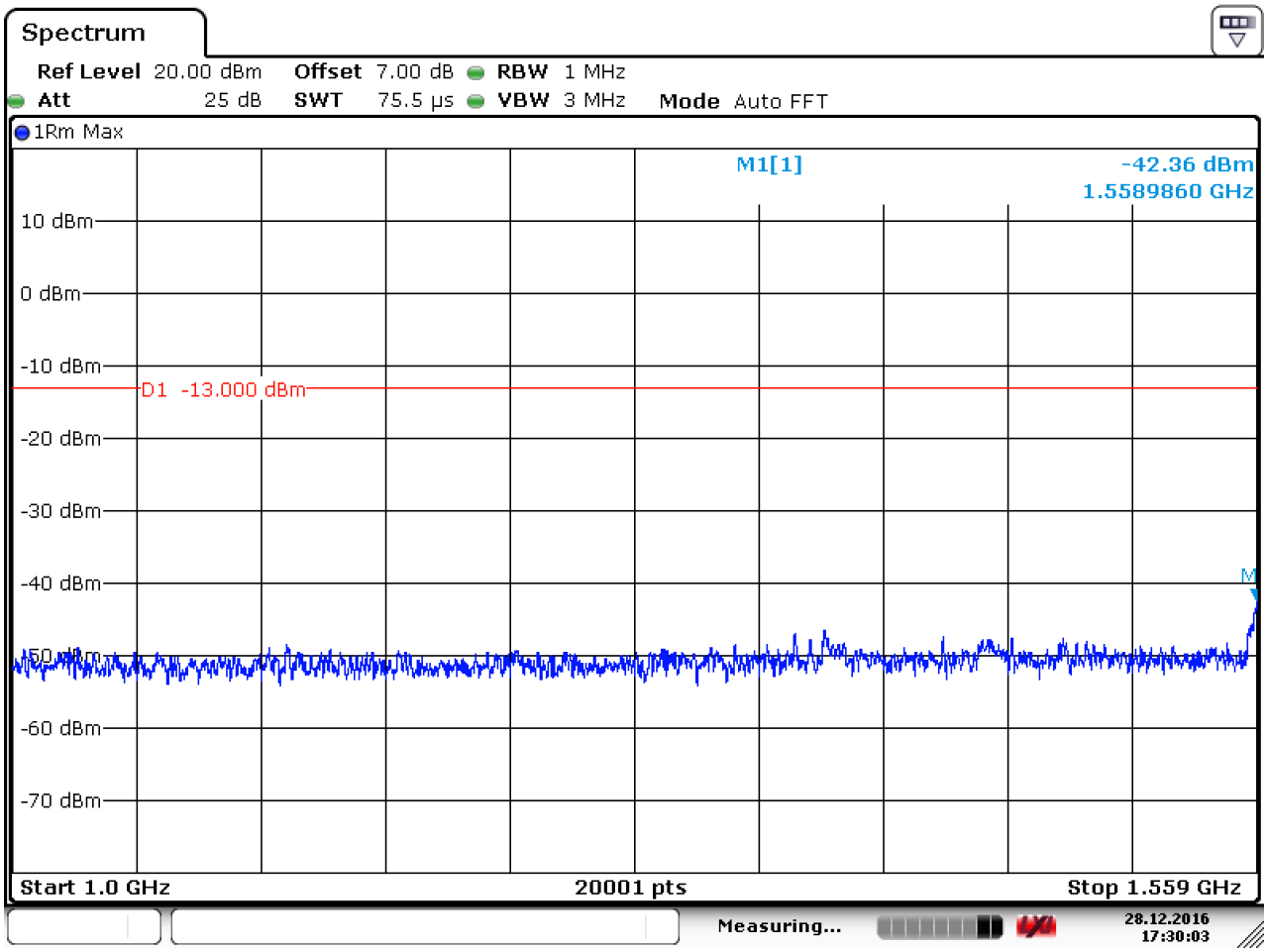


Date: 28.DEC.2016 17:17:03

6.1.1.1.2 Test Channel = MCH



Date: 28.DEC.2016 17:30:59



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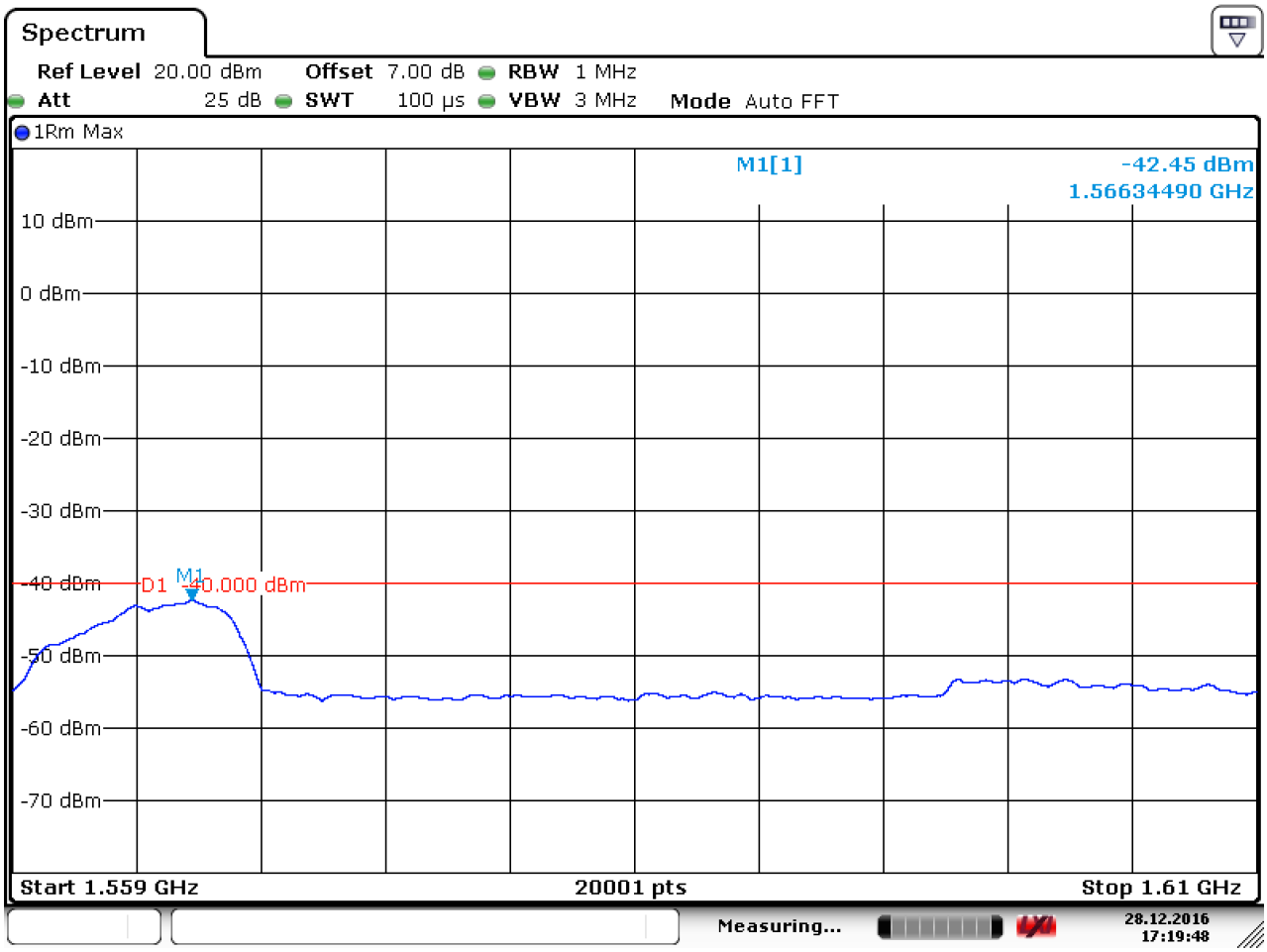

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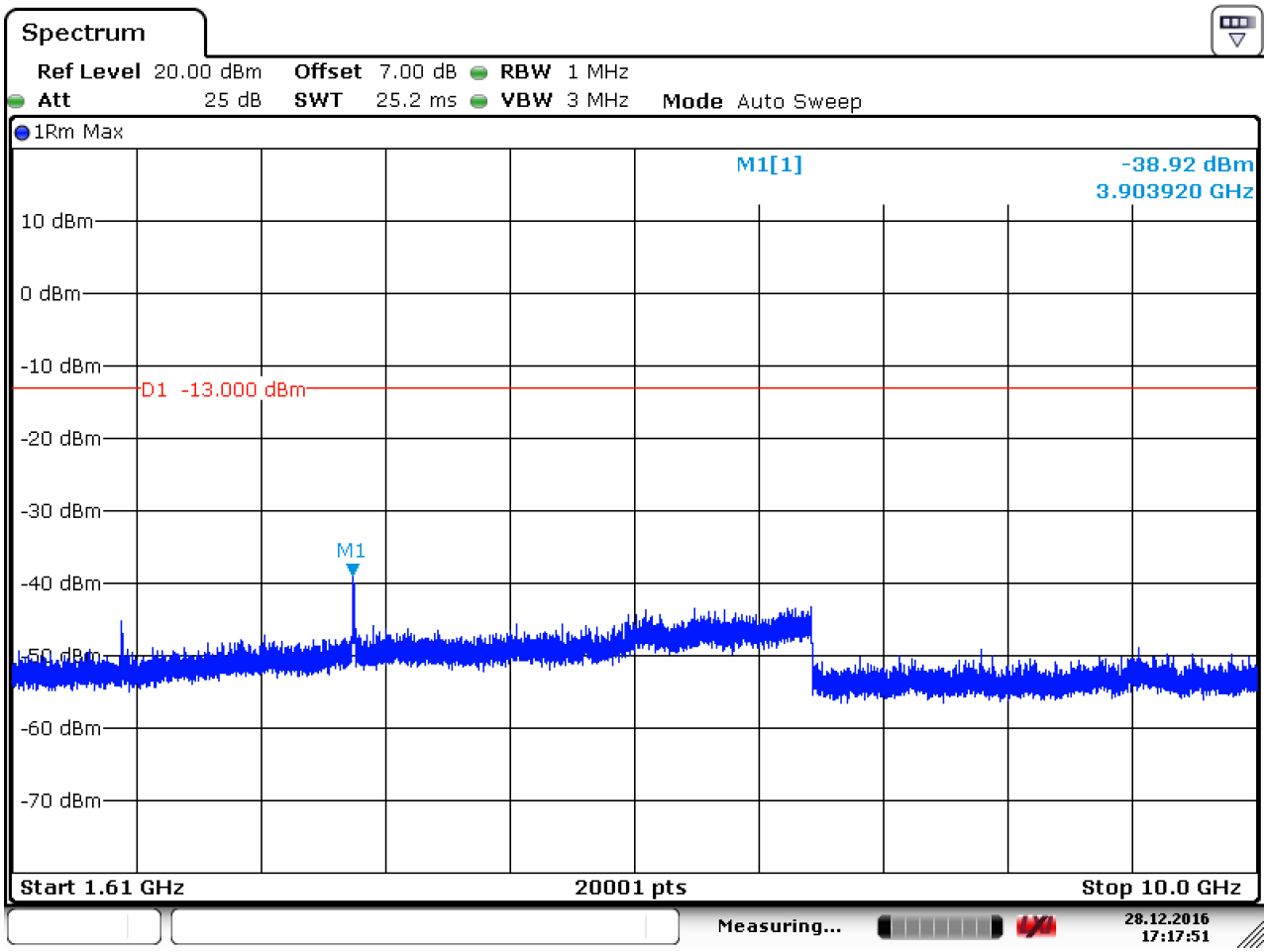
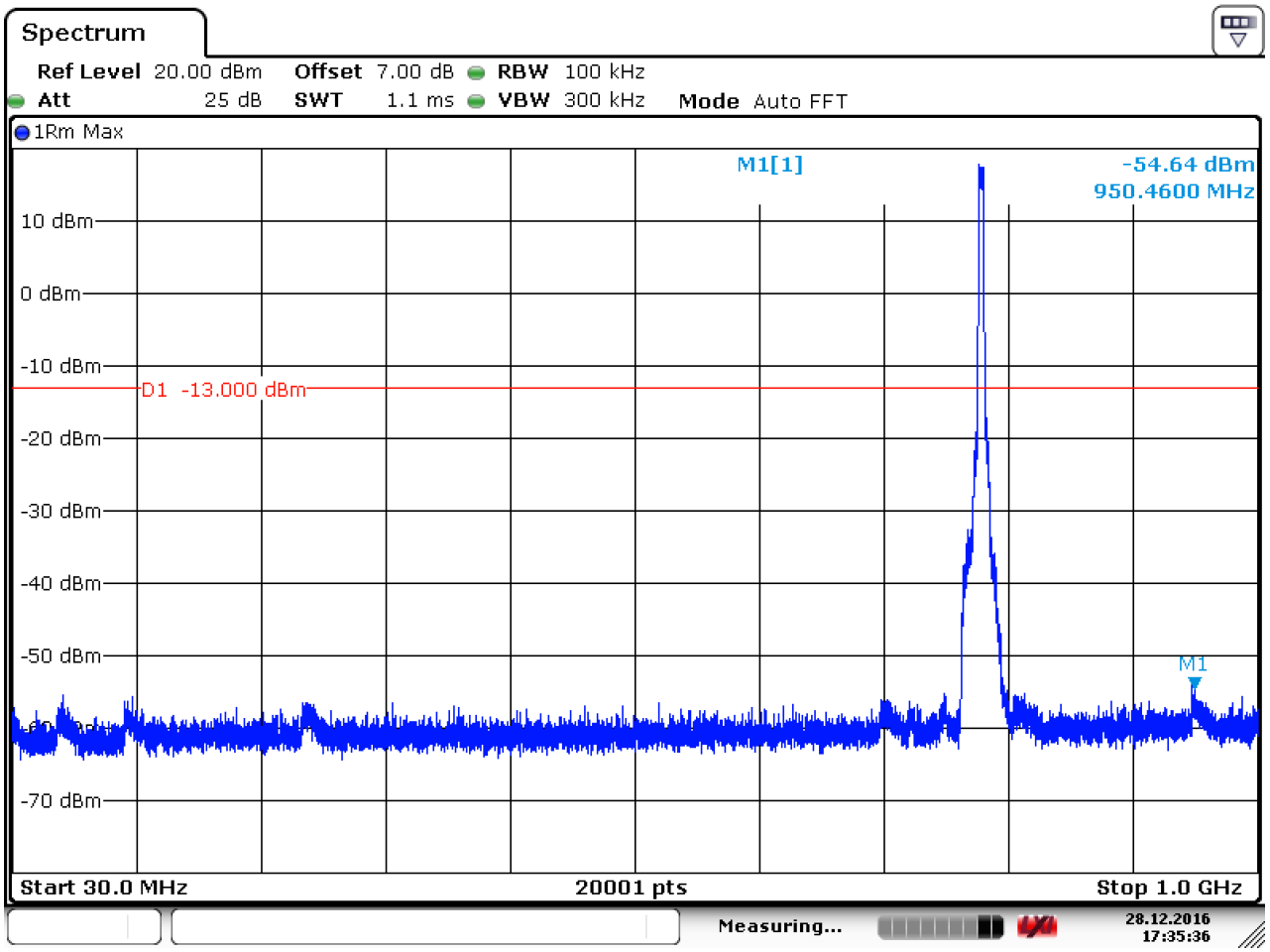


Date: 28.DEC.2016 17:17:52

6.1.1.1.3 Test Channel = HCH



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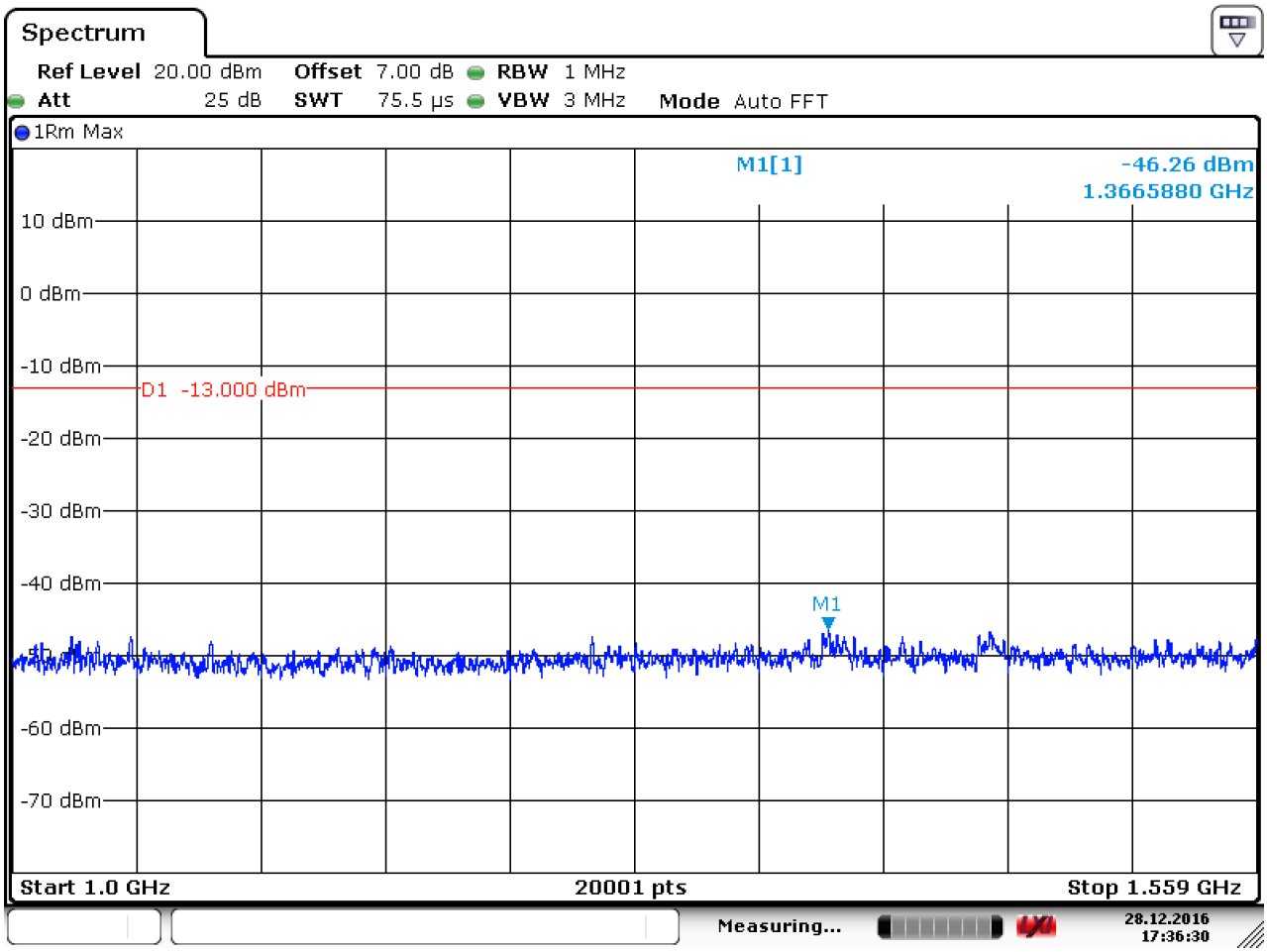

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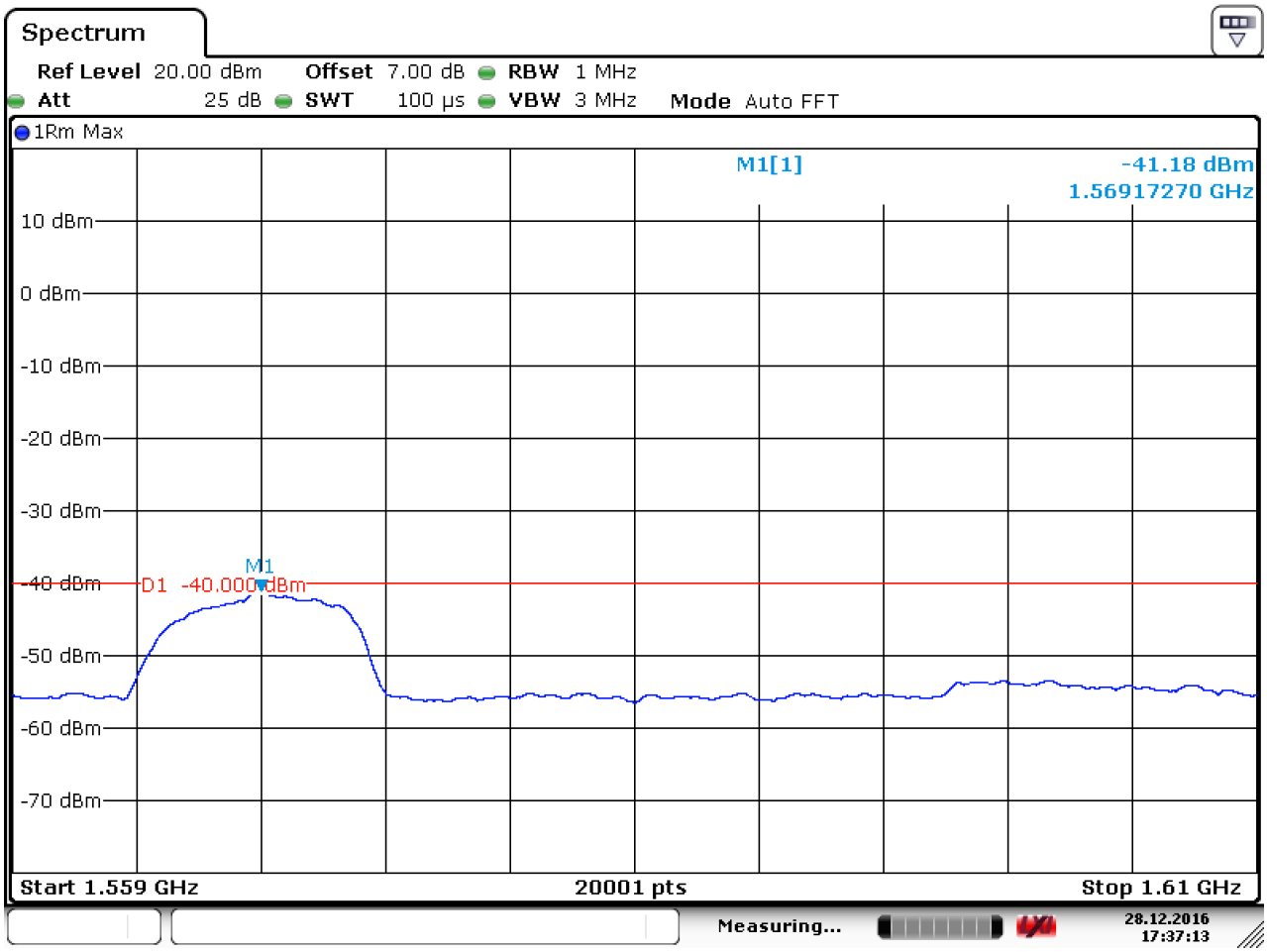

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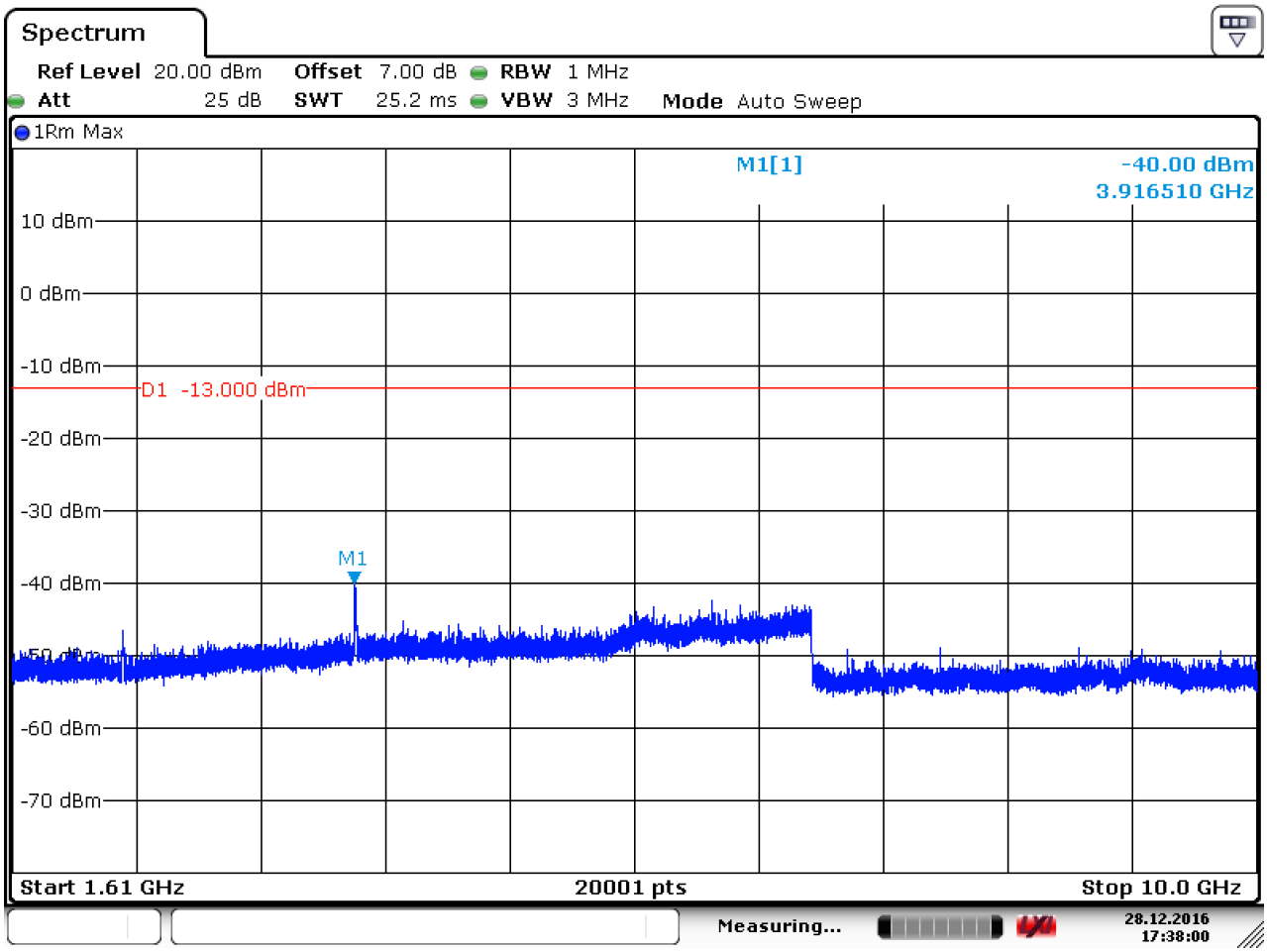
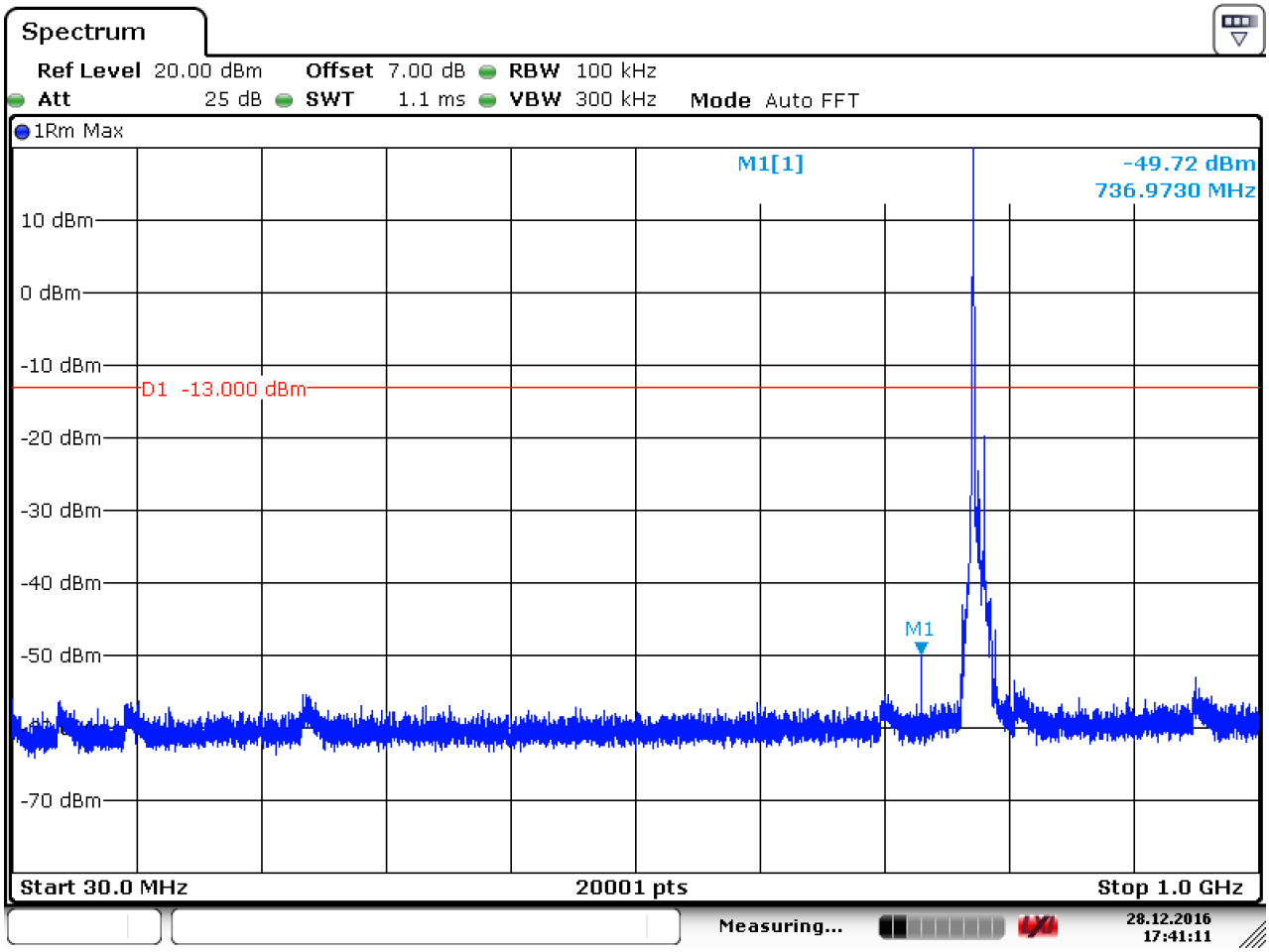


Date: 28.DEC.2016 17:38:00

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

6.1.1.2.1 Test Channel = MCH



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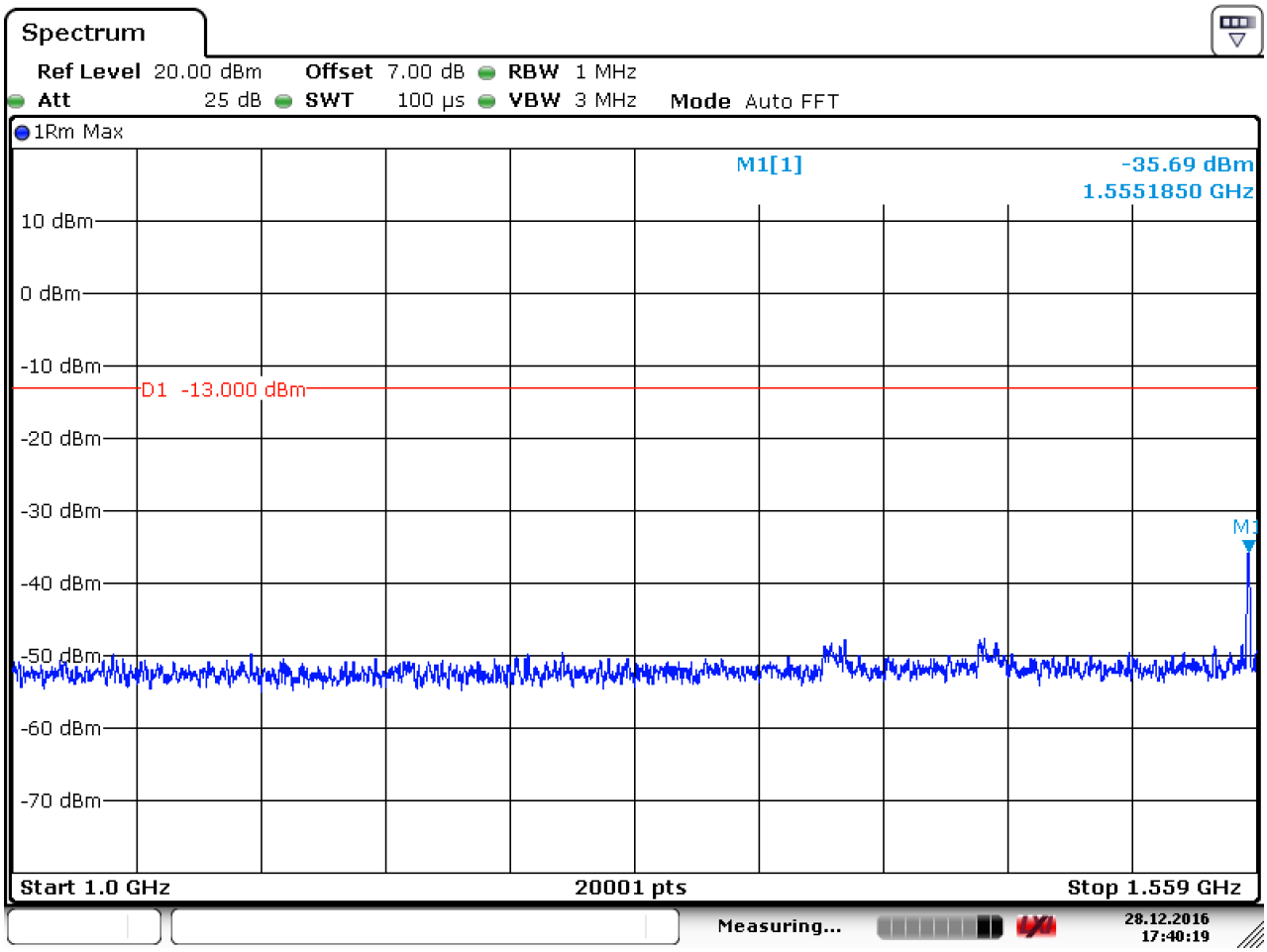

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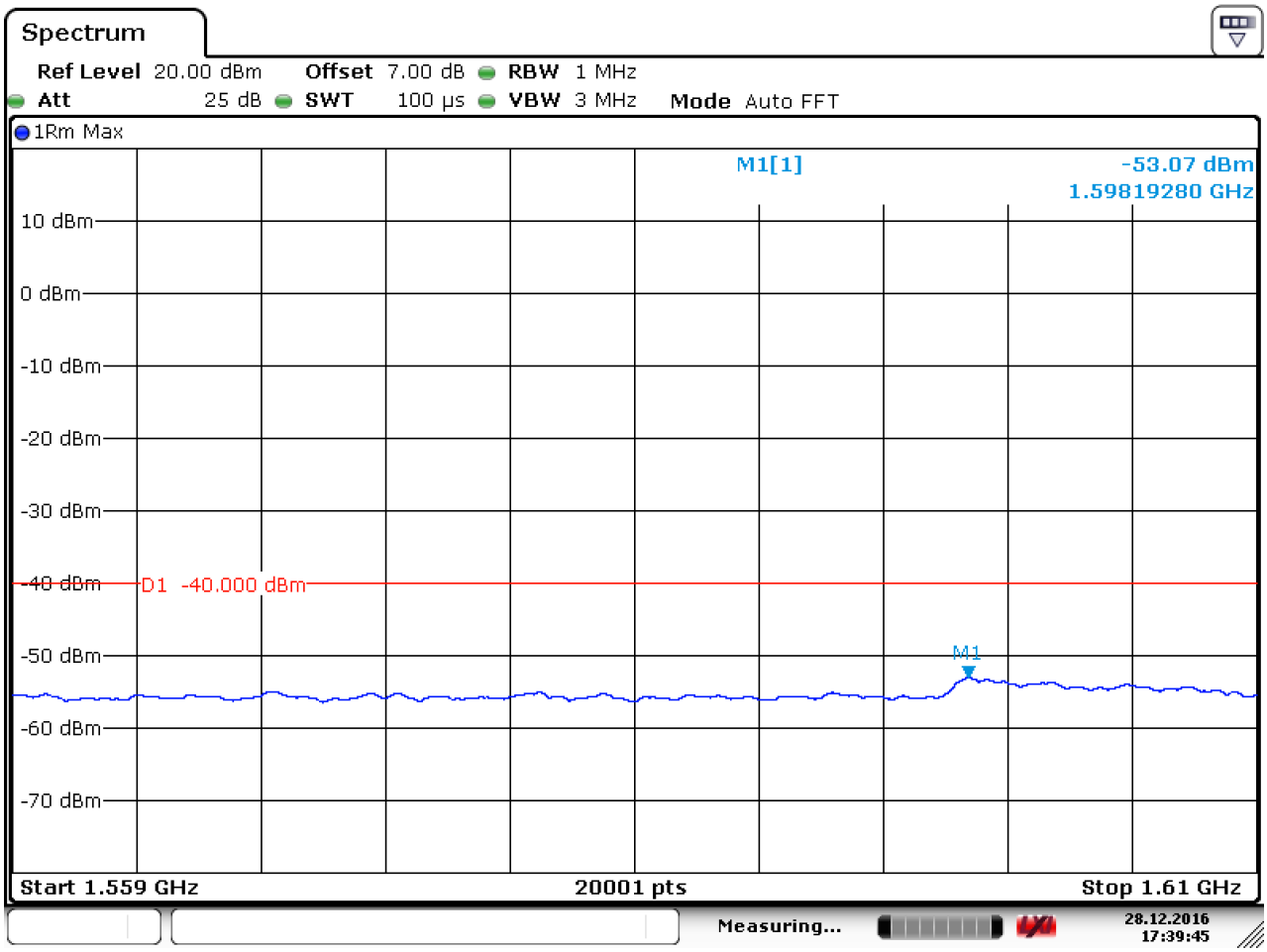

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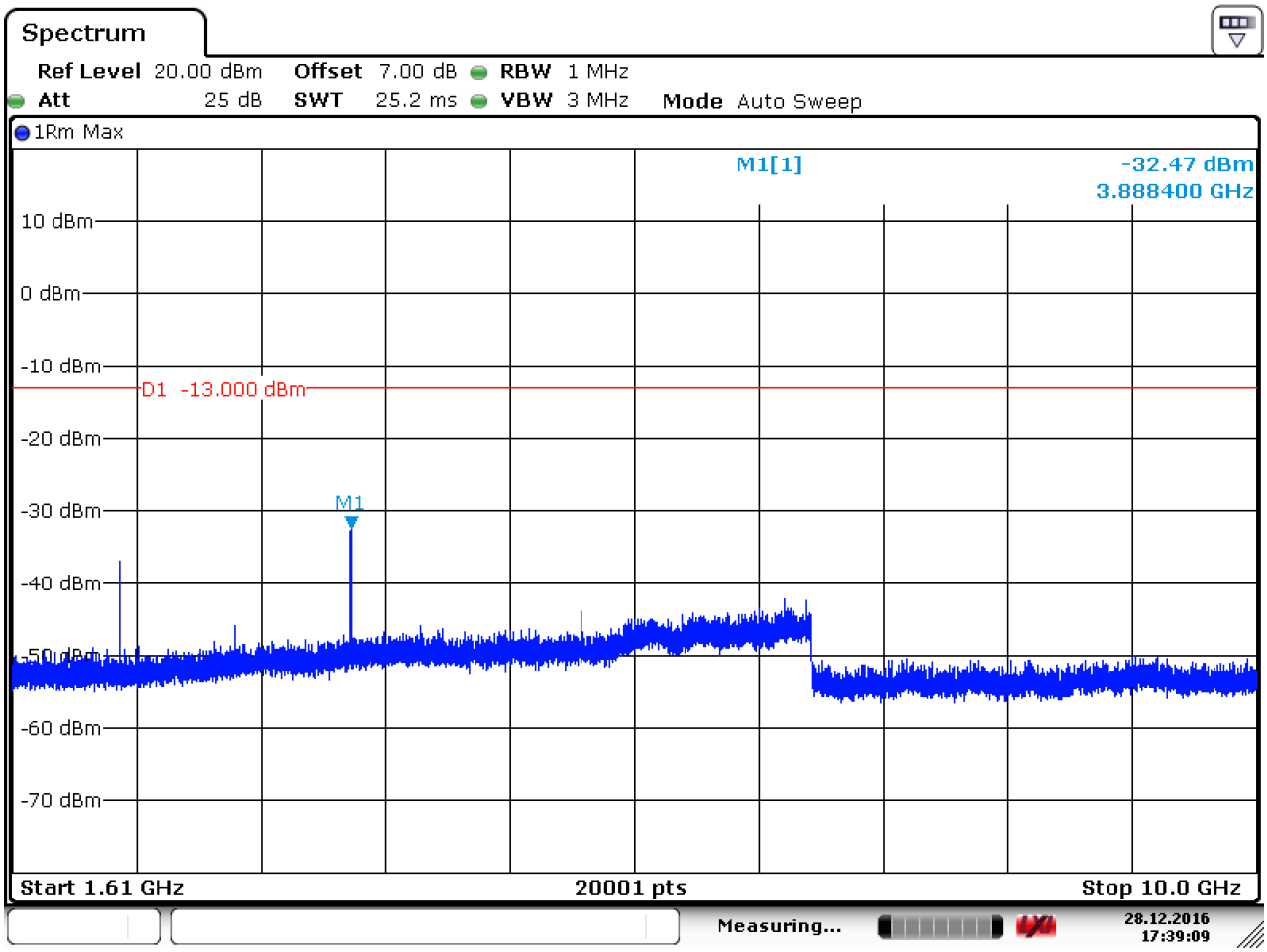

Date: 28.DEC.2016 17:39:10

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 5MHz RB1#0

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1595.000	-65.93	-40.00	-25.93	Vertical
3975.000	-68.44	-13.00	55.44	Vertical
5145.000	-67.54	-13.00	54.54	Vertical
7192.500	-65.61	-13.00	52.61	Vertical
1529.000	-66.16	-13.00	53.16	Horizontal
1606.000	-65.83	-40.00	-25.83	Horizontal
1870.000	-63.12	-13.00	50.12	Horizontal
2608.000	-58.50	-13.00	45.50	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1245.500	-65.23	-13.00	52.23	Vertical
1588.000	-61.32	-40.00	21.32	Vertical
2350.000	-59.12	-13.00	46.12	Vertical
4368.000	-63.73	-13.00	50.73	Vertical
1354.000	-64.26	-13.00	51.26	Horizontal
1591.000	-63.43	-40.00	23.43	Horizontal
1869.000	-65.72	-13.00	52.72	Horizontal
5456.000	-64.24	-13.00	51.24	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1463.000	-66.70	-13.00	53.70	Vertical
1595.000	-65.93	-40.00	-25.93	Vertical
2432.000	-58.66	-13.00	45.66	Vertical
5925.000	-66.98	-13.00	53.98	Vertical
1111.000	-67.01	-13.00	54.01	Horizontal
1584.000	-65.86	-40.00	-25.86	Horizontal
3292.500	-69.75	-13.00	56.75	Horizontal
5145.000	-67.47	-13.00	54.47	Horizontal

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

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1595.000	-65.93	-40.00	25.93	Vertical
1991.000	-61.51	-13.00	48.51	Vertical
2200.000	-59.12	-13.00	46.12	Vertical
2568.000	-58.70	-13.00	45.70	Vertical
1111.000	-67.01	-13.00	54.01	Horizontal
1199.000	-67.09	-13.00	54.09	Horizontal
1595.000	-65.77	-40.00	25.77	Horizontal
2256.000	-59.29	-13.00	46.29	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
LTE band 13	LTE/TM1 10MHz	MCH	TN	VL	-5.11	-0.00653	PASS
				VN	-3.32	-0.00425	PASS
				VH	-2.64	-0.00338	PASS
	LTE/TM2 10MHz	MCH	TN	VL	-4.43	-0.00566	PASS
				VN	-1.82	-0.00233	PASS
				VH	3.63	0.00464	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 20MHz	MCH	VN	-30	-2.45	-0.00313	PASS
				-20	-1.64	-0.00210	PASS
				-10	2.18	0.00279	PASS
				0	1.69	0.00216	PASS
				10	-1.22	-0.00156	PASS
				20	0.59	0.00075	PASS
				30	-1.81	-0.00231	PASS
				40	-2.33	-0.00298	PASS
				50	-3.54	-0.00453	PASS
	LTE/TM1 20MHz	MCH	VN	-30	-3.80	-0.00486	PASS
				-20	-2.91	-0.00372	PASS
				-10	-1.49	-0.00191	PASS
				0	-4.17	-0.00533	PASS
				10	-2.03	-0.00260	PASS
				20	-5.22	-0.00668	PASS
				30	-3.18	-0.00407	PASS
				40	-4.69	-0.00600	PASS
				50	-2.78	-0.00355	PASS

The End