Appendix B

Test Data for SZEM170700703401

CONTENT

Page

1 Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	EIRP[dB]	Limit[dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.24	23.24	33	PASS
		MCH	23.34	23.34	33	PASS
		HCH	23.18	23.18	33	PASS
WCDMA1700	UMTS/TM1	LCH	22.40	22.40	30	PASS
		MCH	22.67	22.67	30	PASS
		HCH	22.56	22.56	30	PASS

Note:
a: For getting the ERP (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
c: RBW > emission bandwidth, VBW > 3 x RBW.
Detector: RMS

Test Band	Test Mode	Test Channel	Measured[dB]	ERP[dB]	Limit[dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	23.11	22.11	38.45	PASS
		MCH	23.05	22.05	38.45	PASS
		HCH	23.04	22.04	38.45	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
WCDMA1900	UMTS/TM1	LCH	2.43	13	PASS
		MCH	2.72	13	PASS
		HCH	2.64	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.72	13	PASS
		MCH	2.43	13	PASS
		HCH	2.67	13	PASS
WCDMA850	UMTS/TM1	LCH	2.87	13	PASS
		MCH	2.70	13	PASS
		HCH	1.83	13	PASS

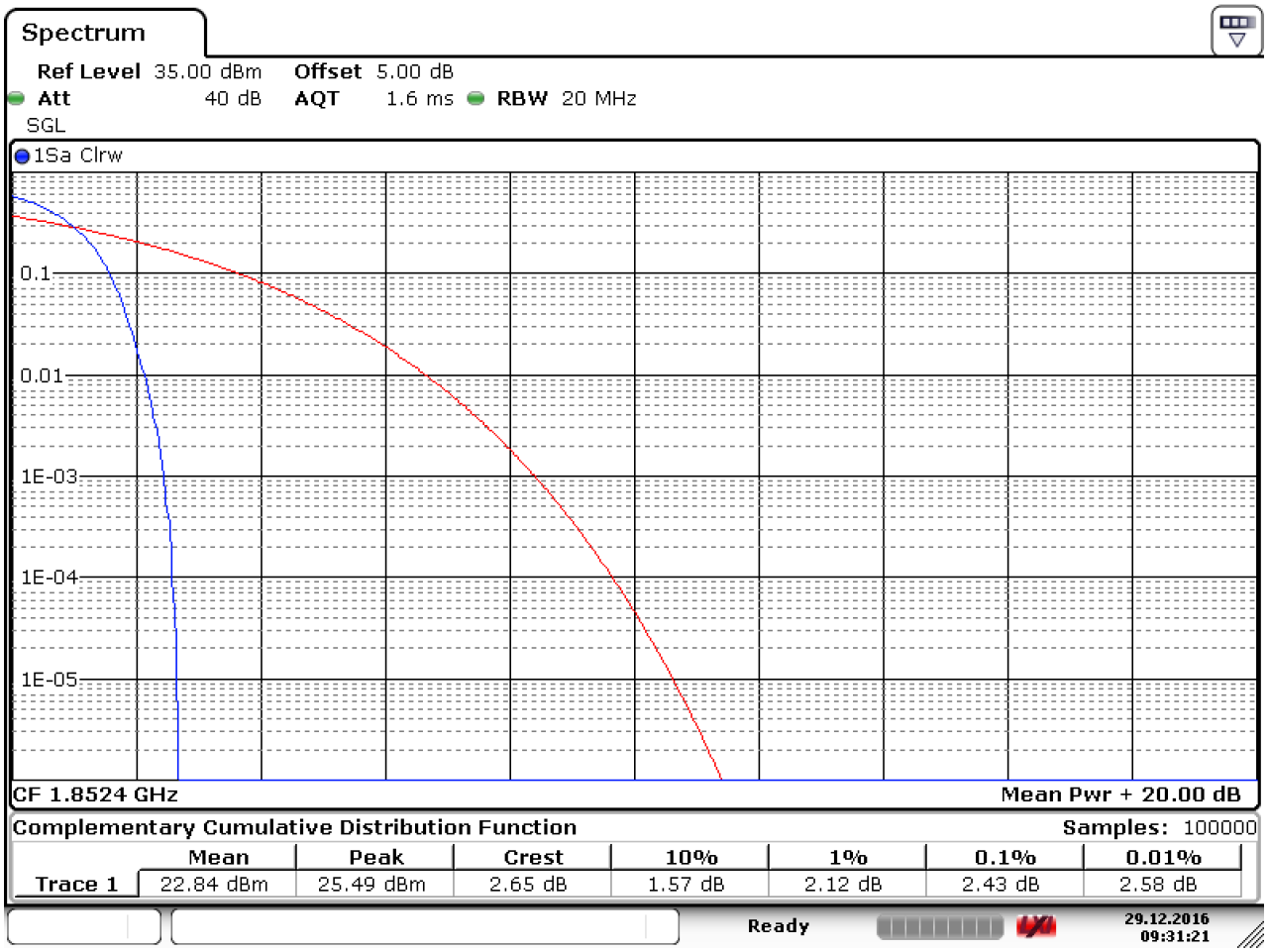
Part II - Test Plots

2.1 For WCDMA

2.1.1 Test Band = WCDMA 1900

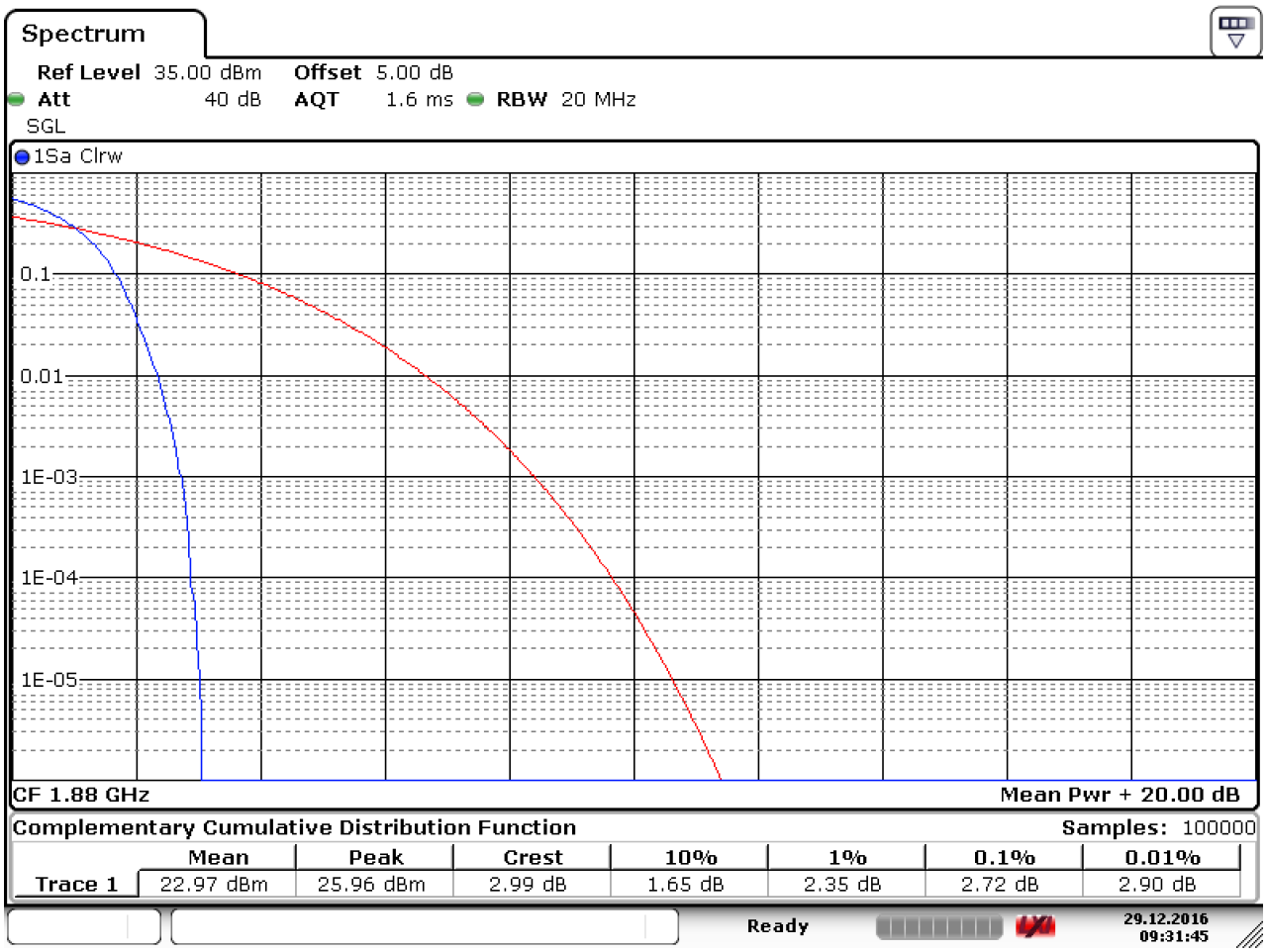
2.1.1.1 Test Mode = UMTS/TM1

2.1.1.1.1 Test Channel = LCH



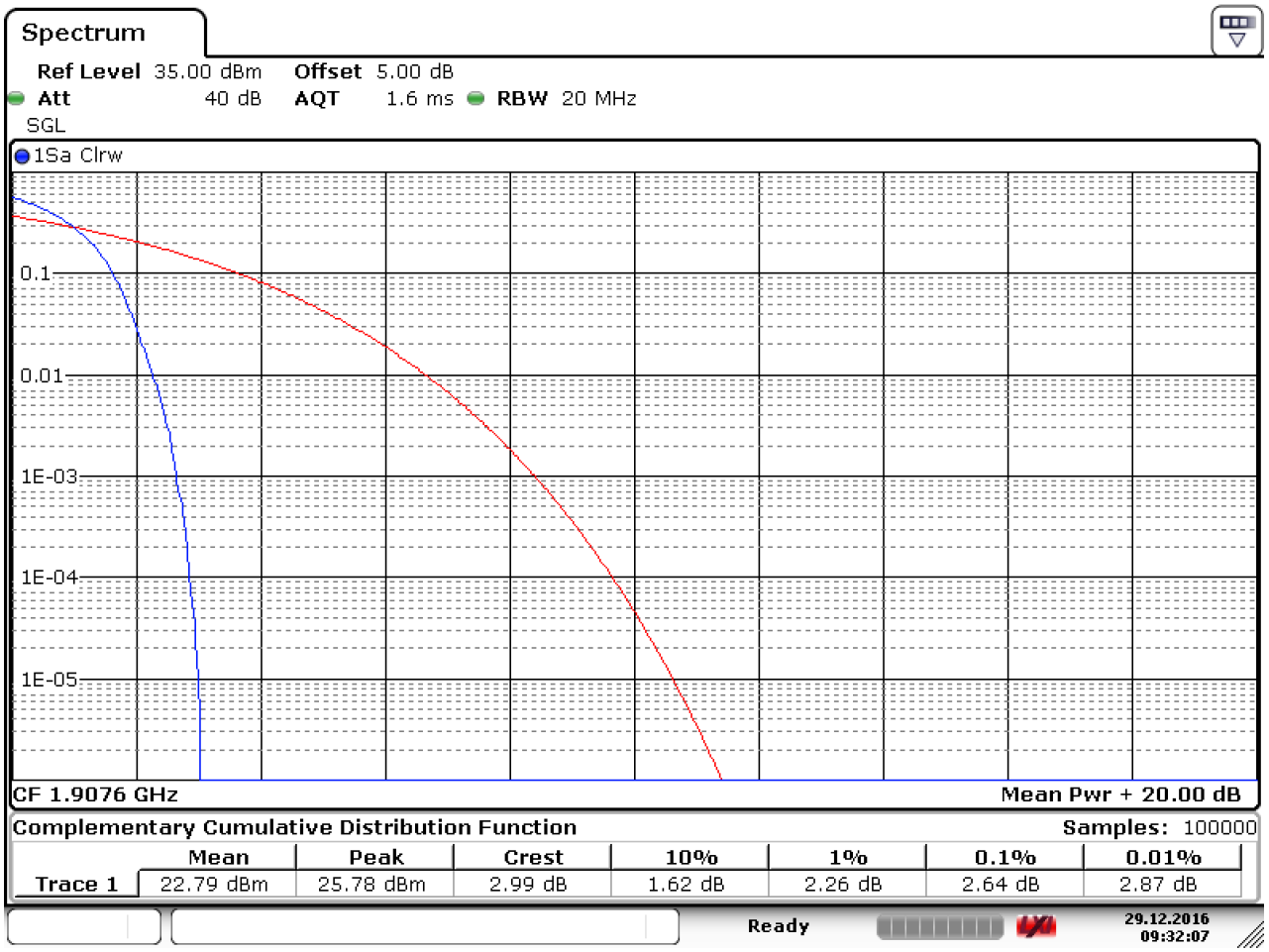
Date: 29.DEC.2016 09:31:21

2.1.1.1.2 Test Channel = MCH



Date: 29.DEC.2016 09:31:45

2.1.1.1.3 Test Channel = HCH

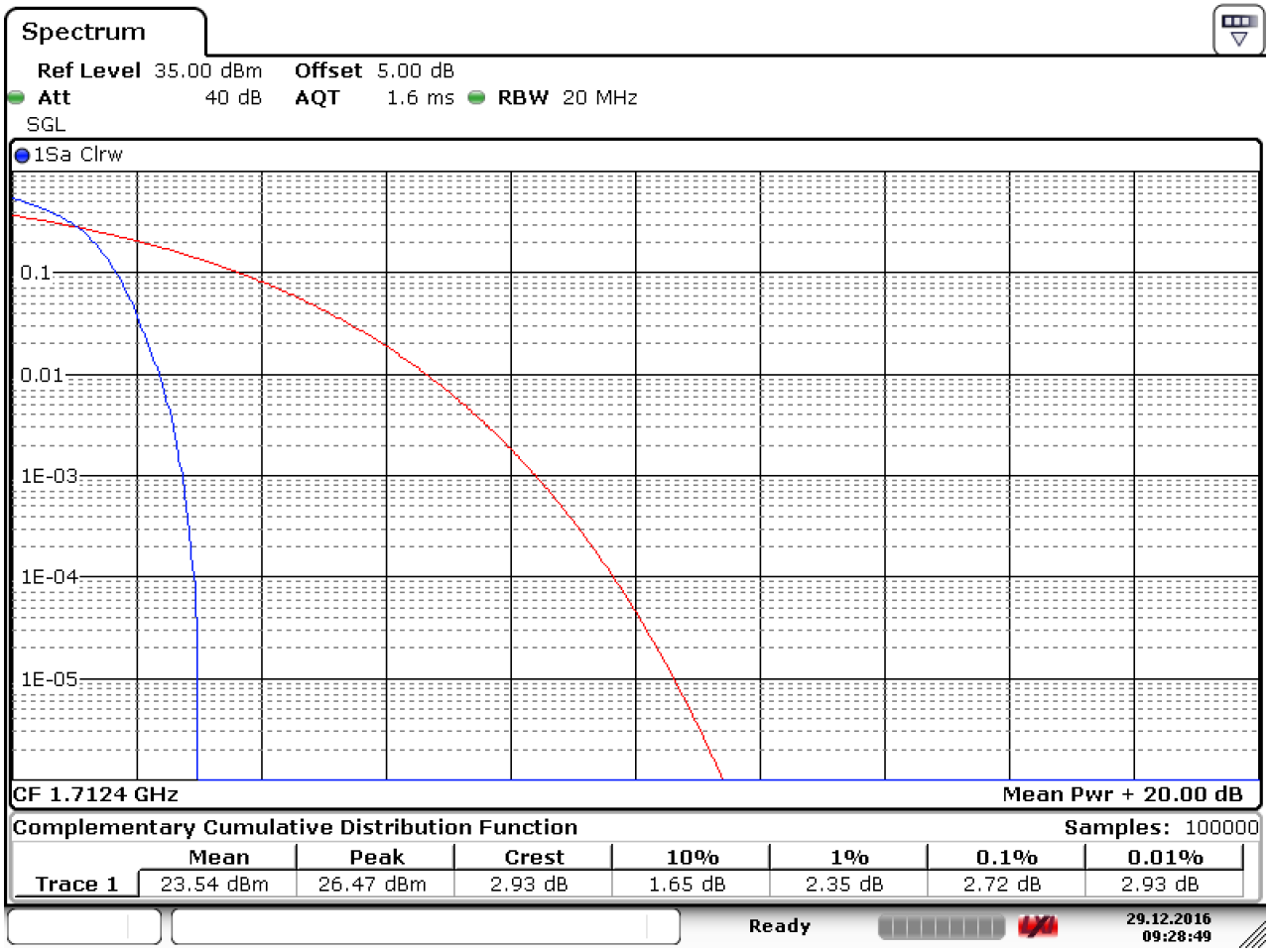


Date: 29.DEC.2016 09:32:07

2.1.2 Test Band = WCDMA 1700

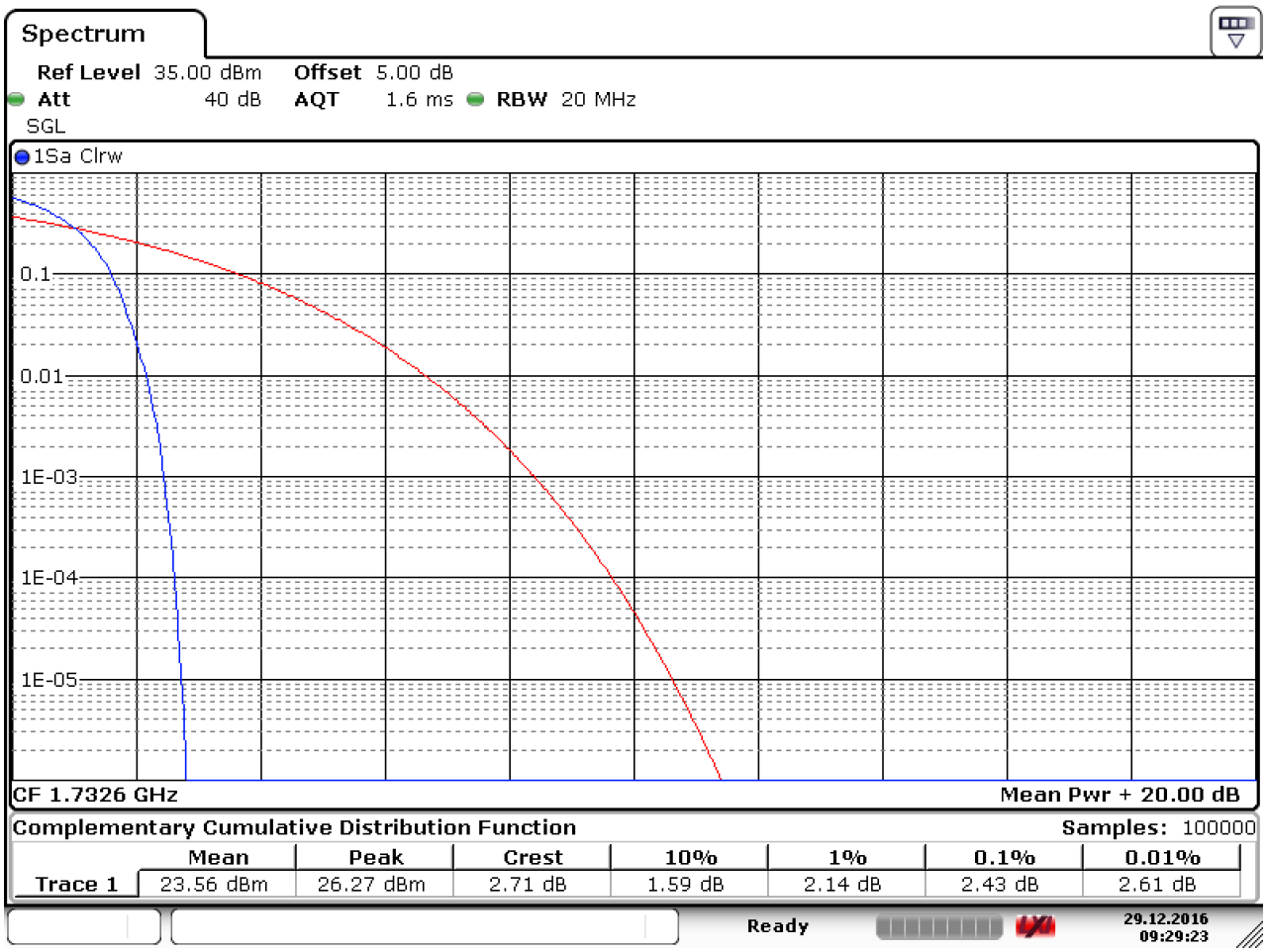
2.1.2.1 Test Mode = UMTS/TM1

2.1.2.1.1 Test Channel = LCH



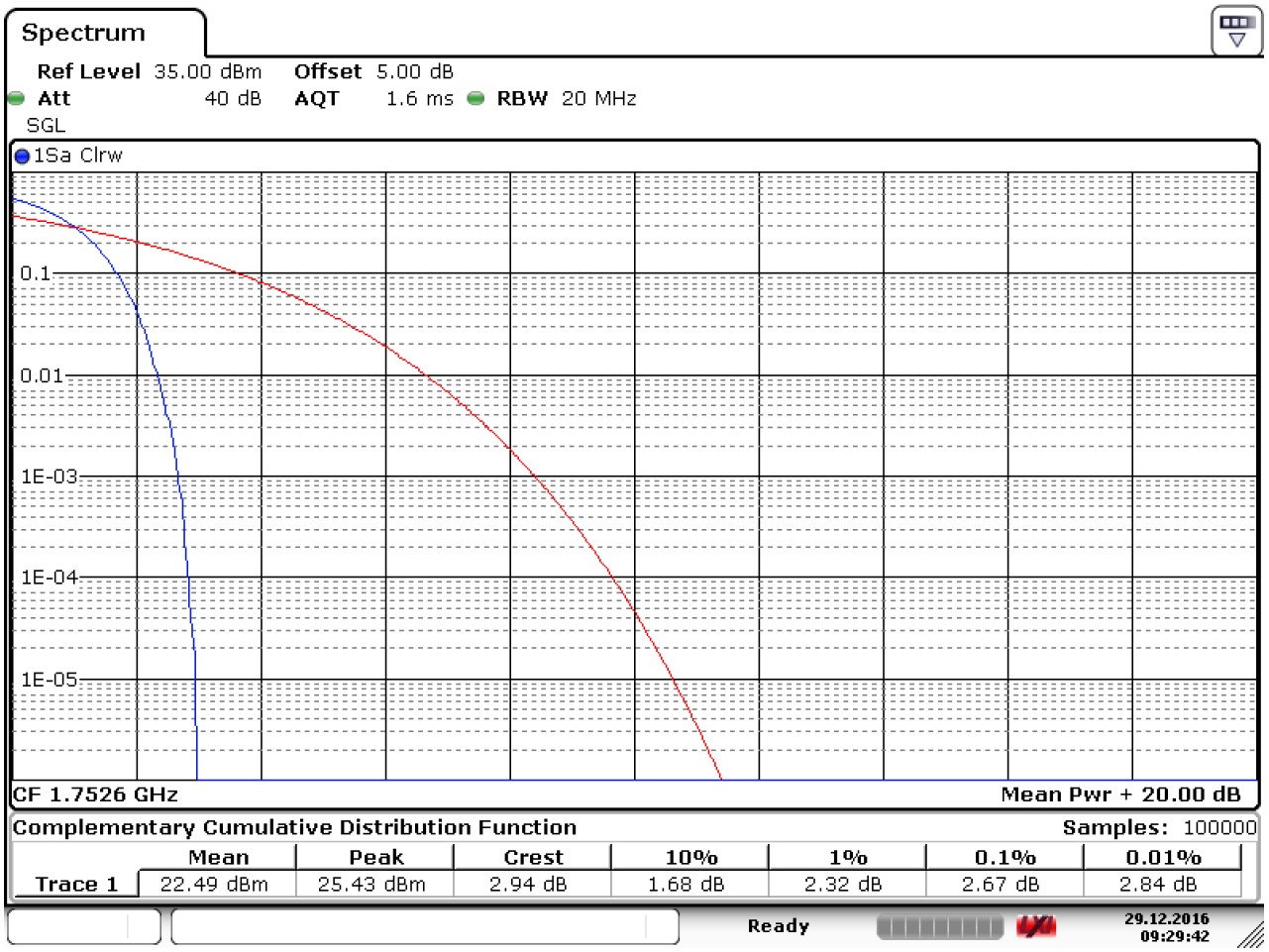
Date: 29.DEC.2016 09:28:49

2.1.2.1.2 Test Channel = MCH



Date: 29.DEC.2016 09:29:24

2.1.2.1.3 Test Channel = HCH

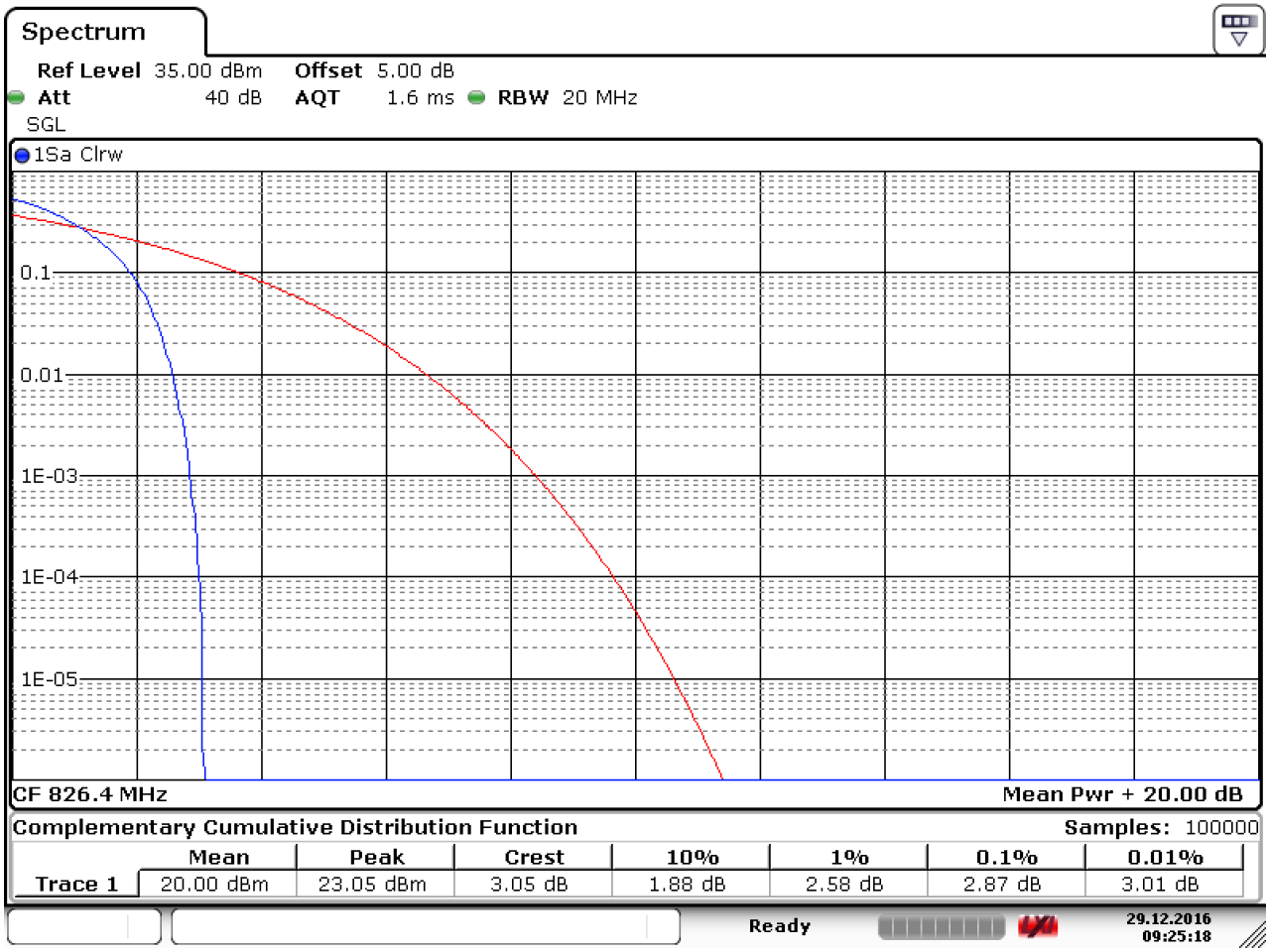


Date: 29.DEC.2016 09:29:43

2.1.3 Test Band = WCDMA 850

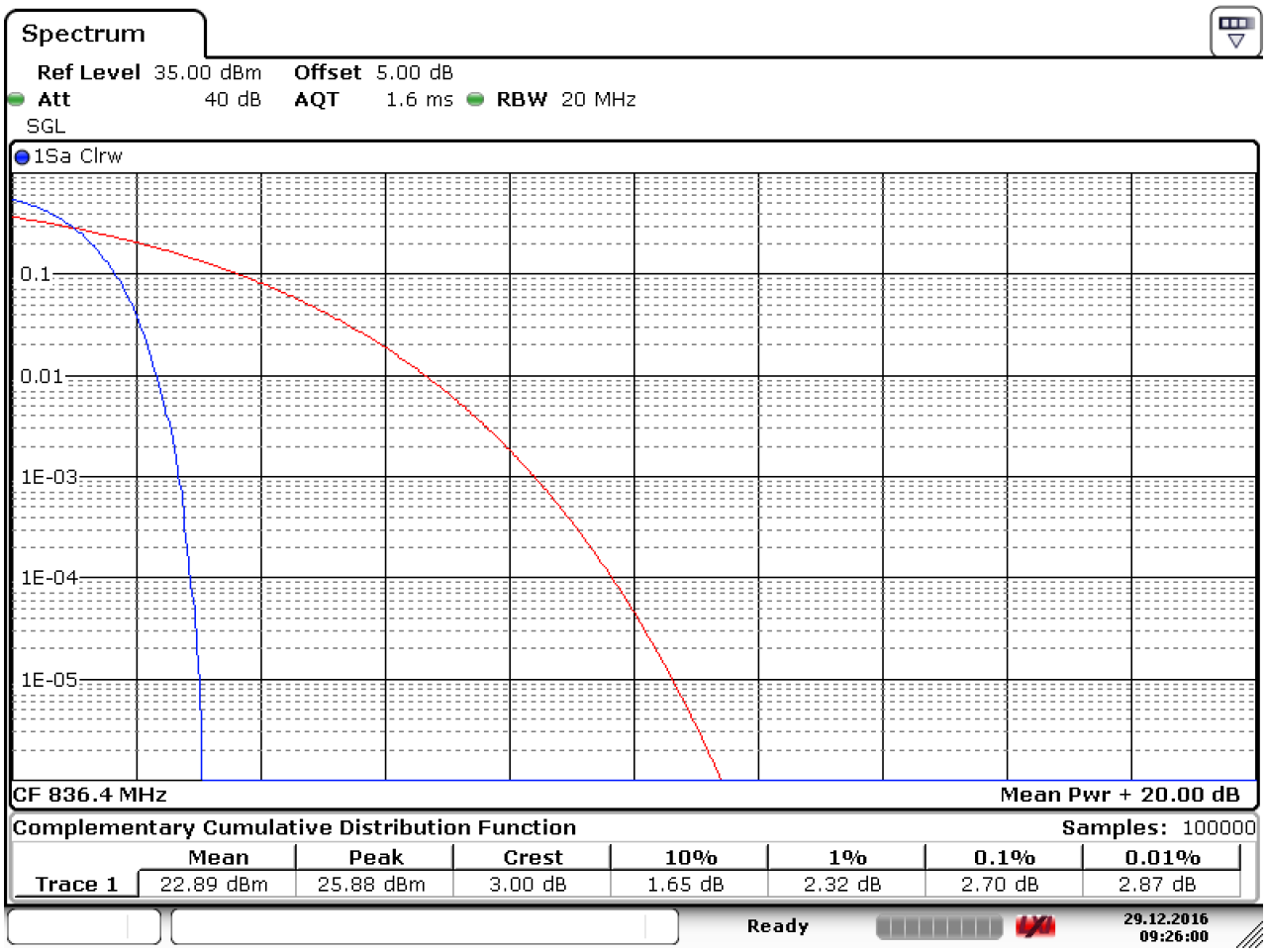
2.1.3.1 Test Mode = UMTS/TM1

2.1.3.1.1 Test Channel = LCH



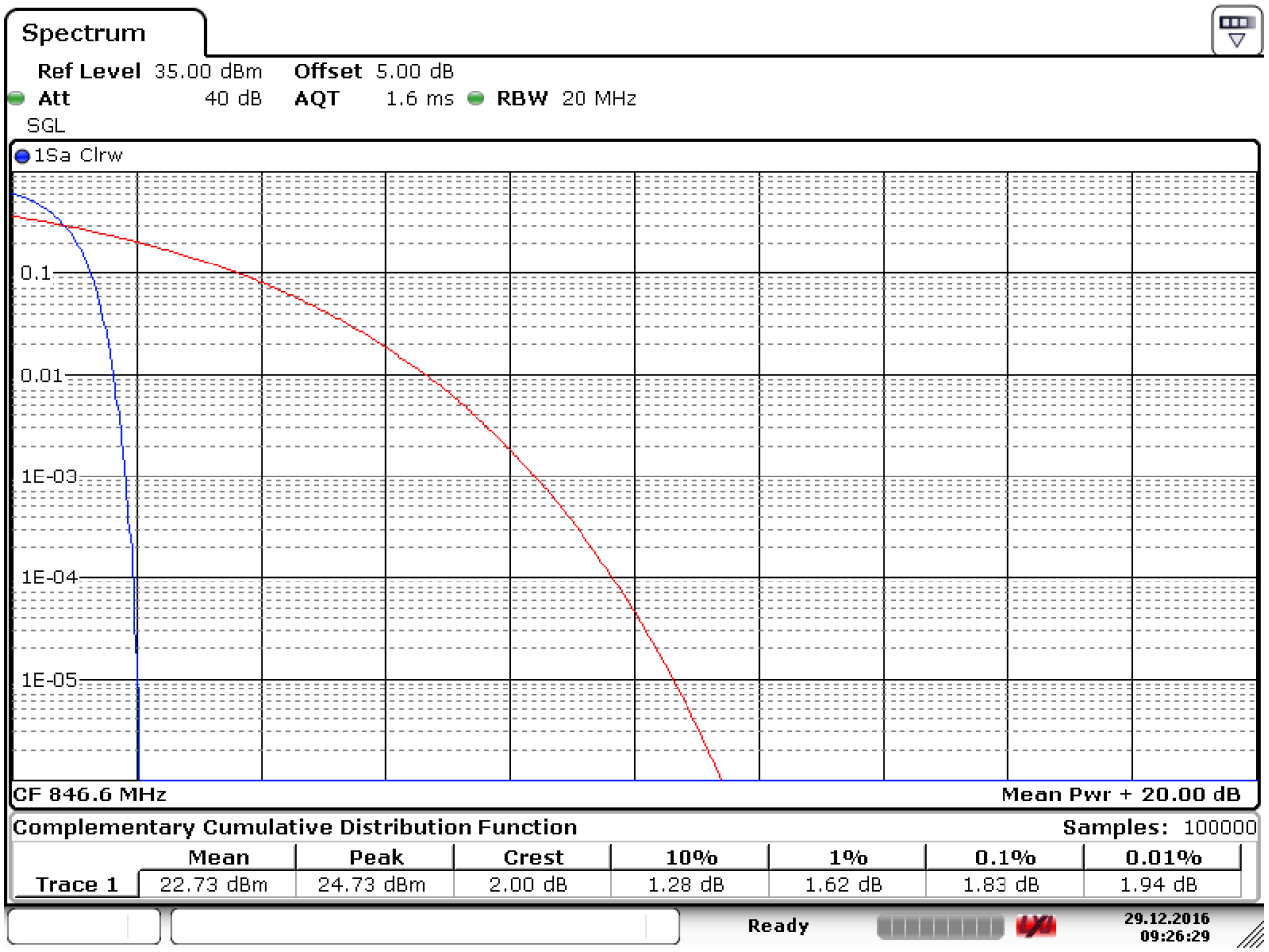
Date: 29.DEC.2016 09:25:18

2.1.3.1.2 Test Channel = MCH



Date: 29.DEC.2016 09:26:01

2.1.3.1.3 Test Channel = HCH



Date: 29.DEC.2016 09:26:29

3 Modulation Characteristics

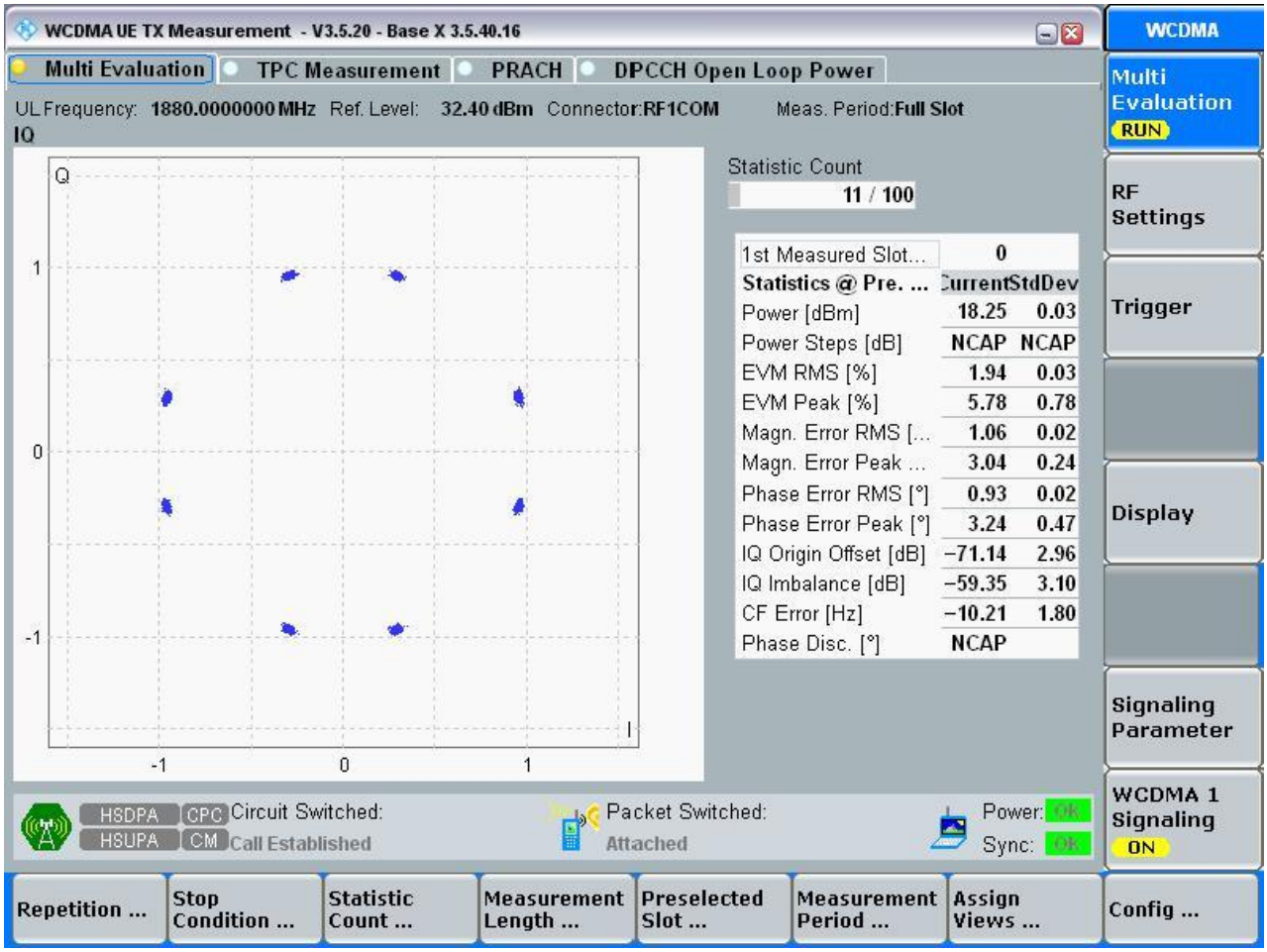
Part I - Test Plots

3.1 For WCDMA

3.1.1 Test Band = WCDMA 1900

3.1.1.1 Test Mode = UMTS/TM1

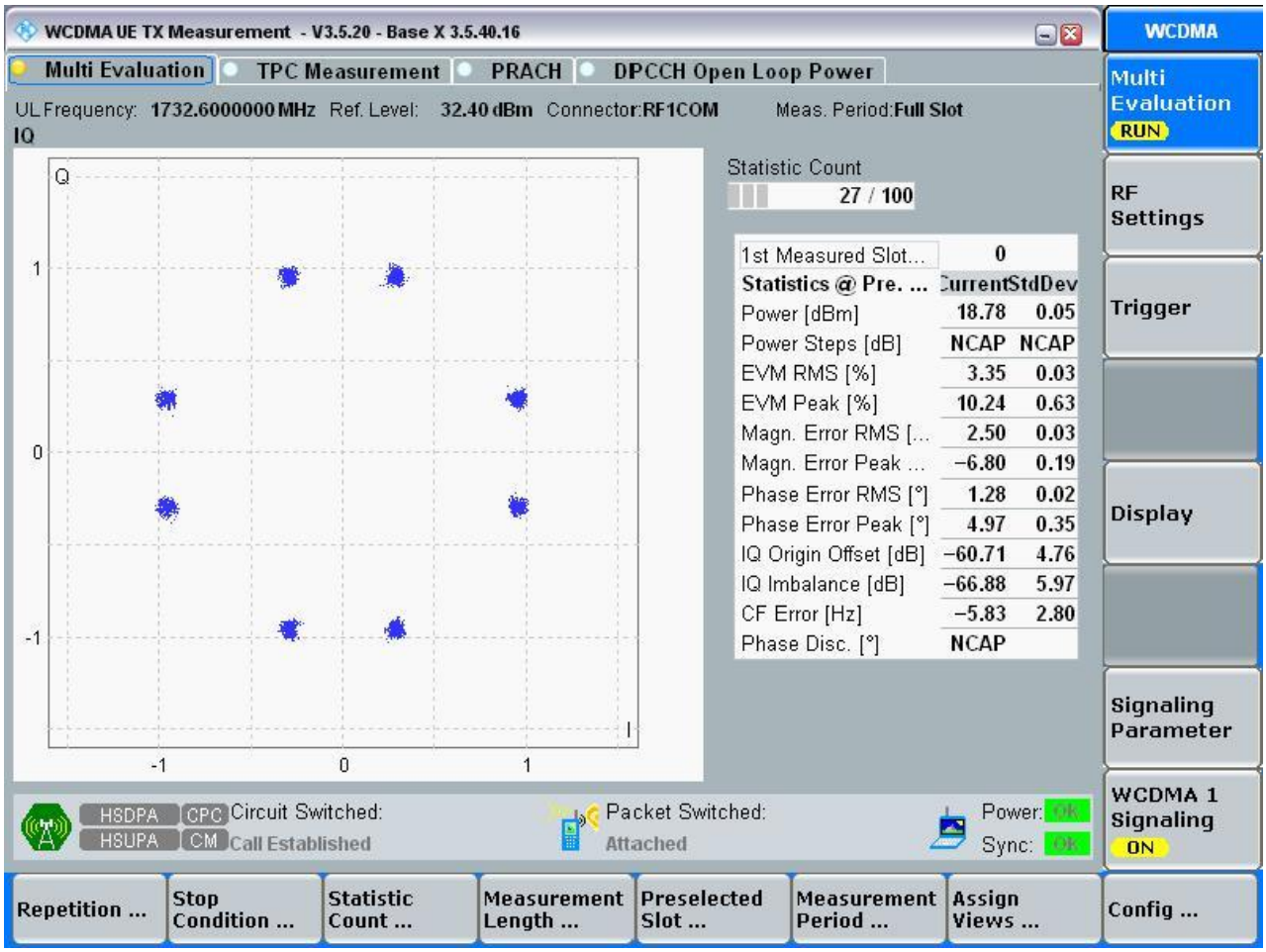
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA 1700

3.1.2.1 Test Mode = UMTS /TM1

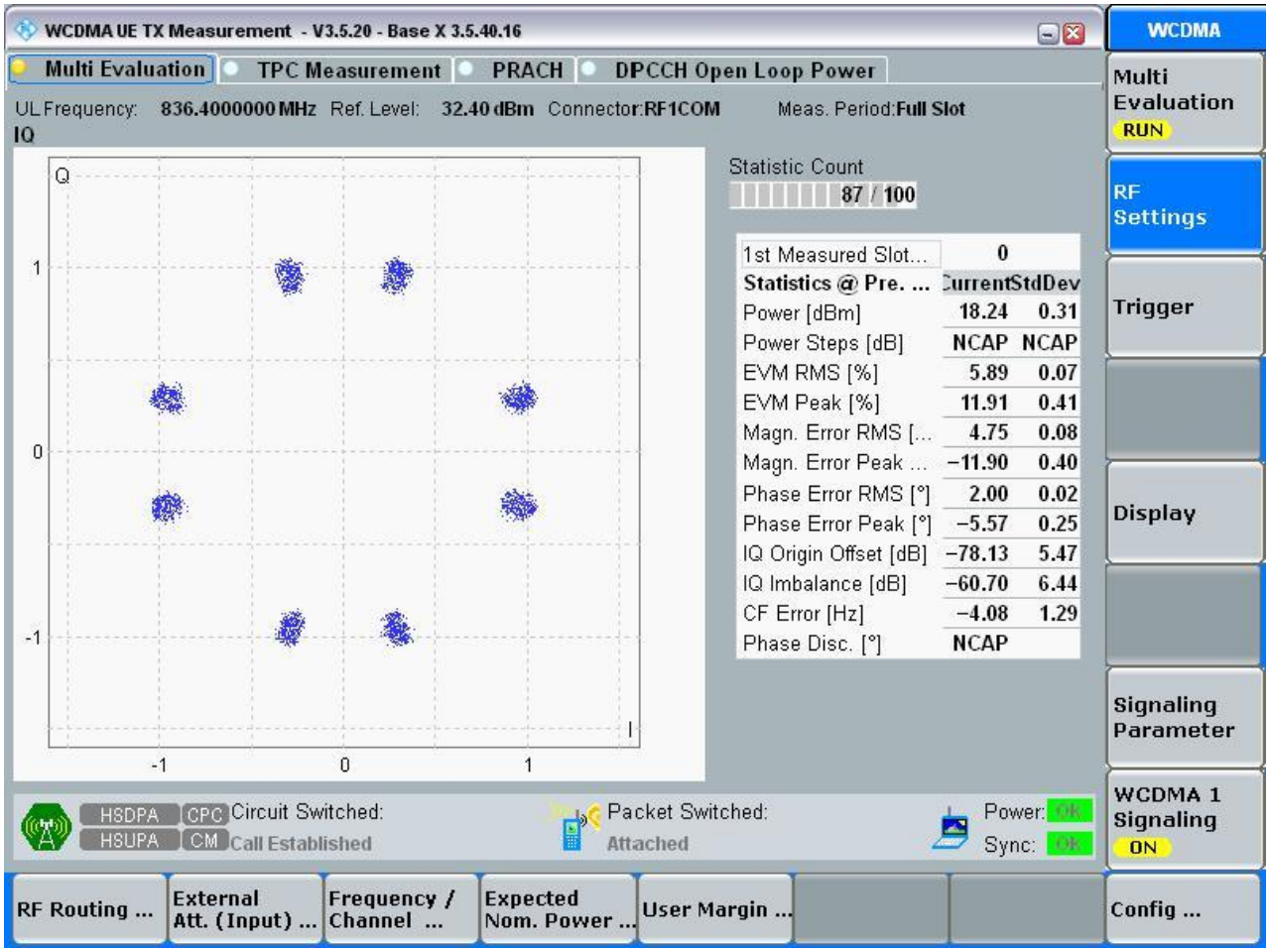
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA 850

3.1.3.1 Test Mode = UMTS /TM1

3.1.3.1.1 Test Channel = MCH



4 Bandwidth

Part I - Test Results

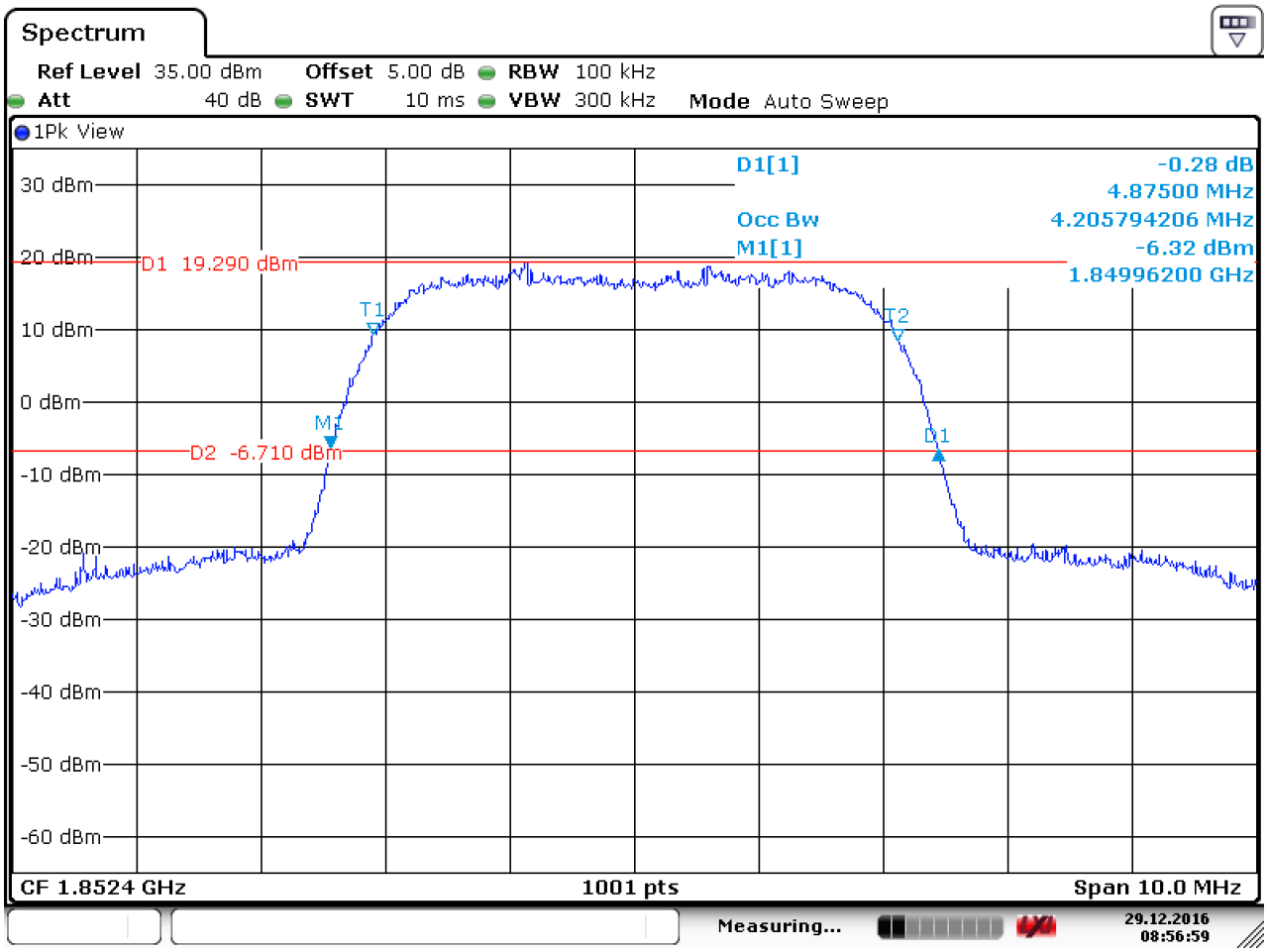
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1900	UMTS/TM1	LCH	4.21	4.88	PASS
		MCH	4.21	4.88	PASS
		HCH	4.21	4.88	PASS
WCDMA1700	UMTS/TM1	LCH	4.20	4.88	PASS
		MCH	4.21	4.88	PASS
		HCH	4.21	4.88	PASS
WCDMA850	UMTS/TM1	LCH	4.22	4.87	PASS
		MCH	4.21	4.89	PASS
		HCH	4.26	4.98	PASS

4.1 For WCDMA

4.1.1 Test Band = WCDMA 1900

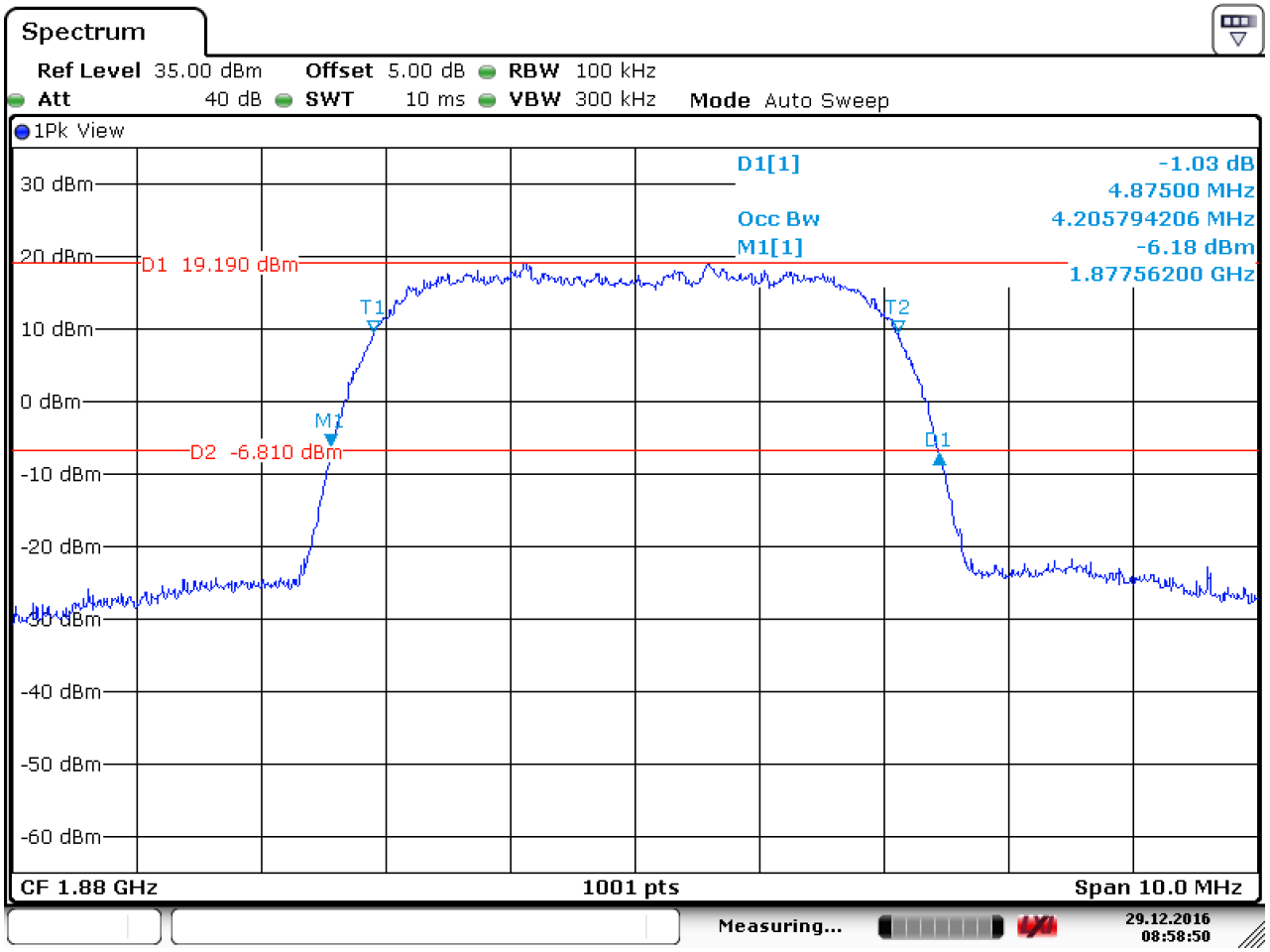
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



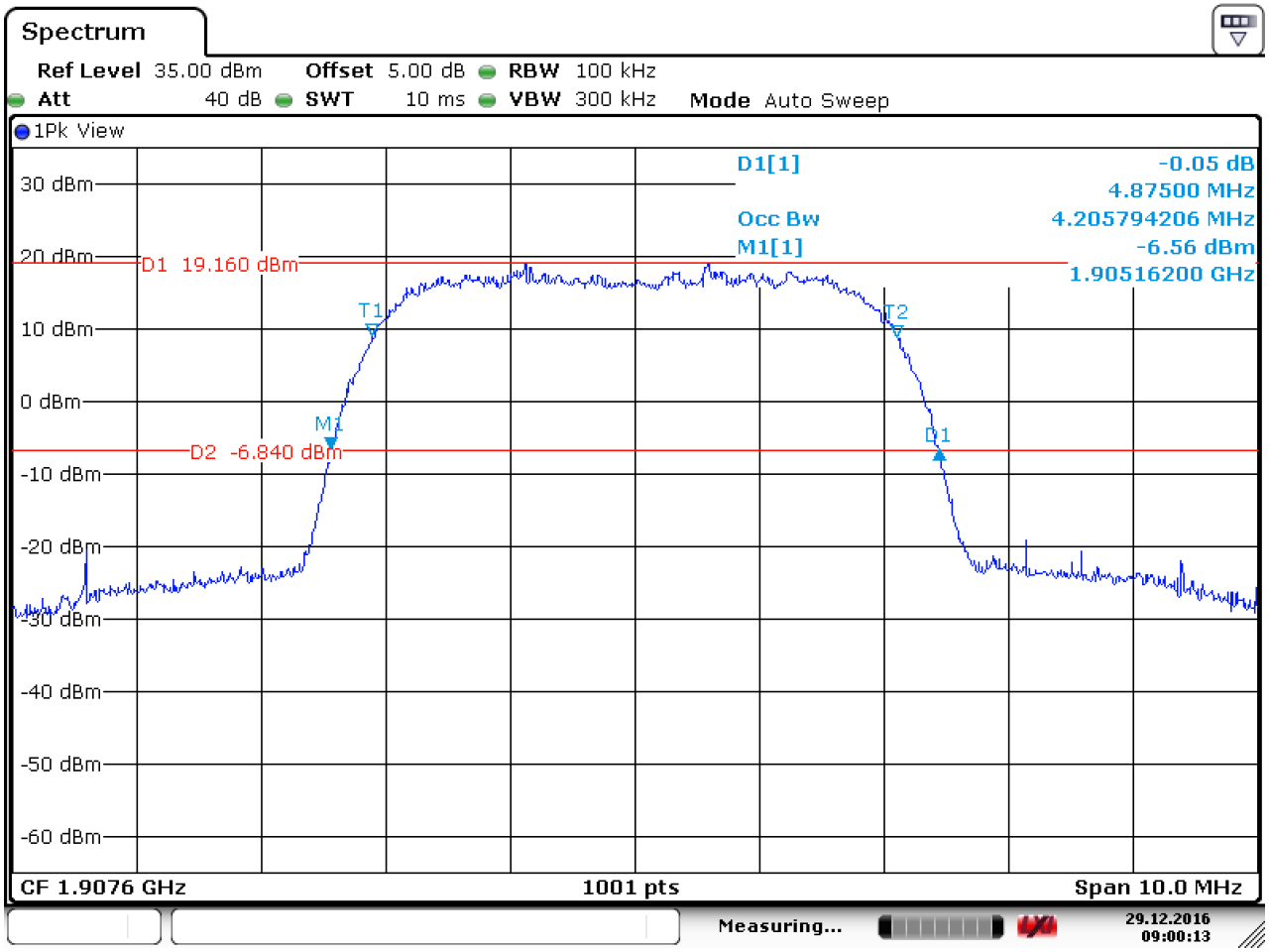
Date: 29.DEC.2016 08:57:00

4.1.1.1.2 Test Channel = MCH



Date: 29.DEC.2016 08:58:50

4.1.1.1.3 Test Channel = HCH

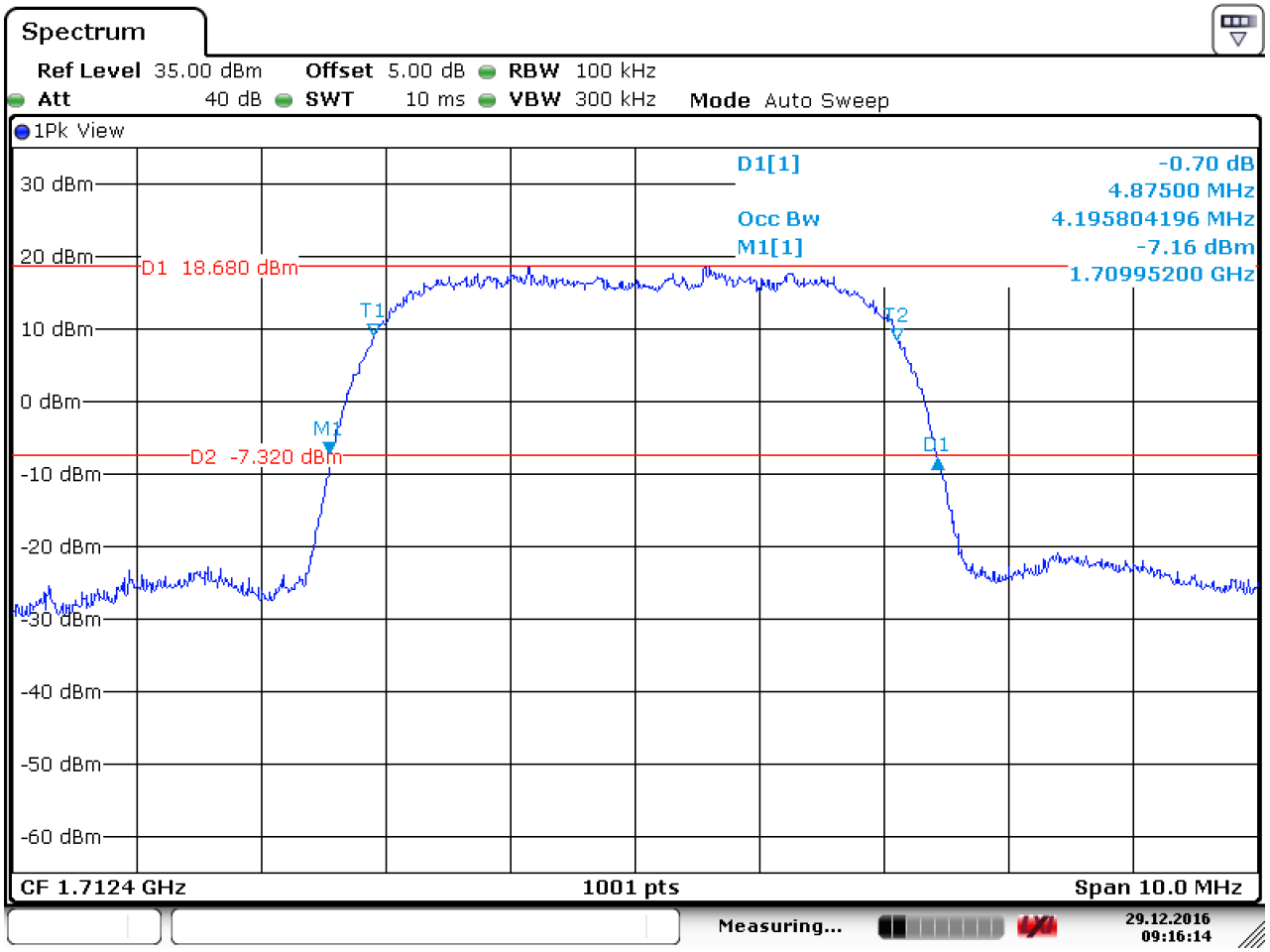


Date: 29.DEC.2016 09:00:14

4.1.2 Test Band = WCDMA 1700

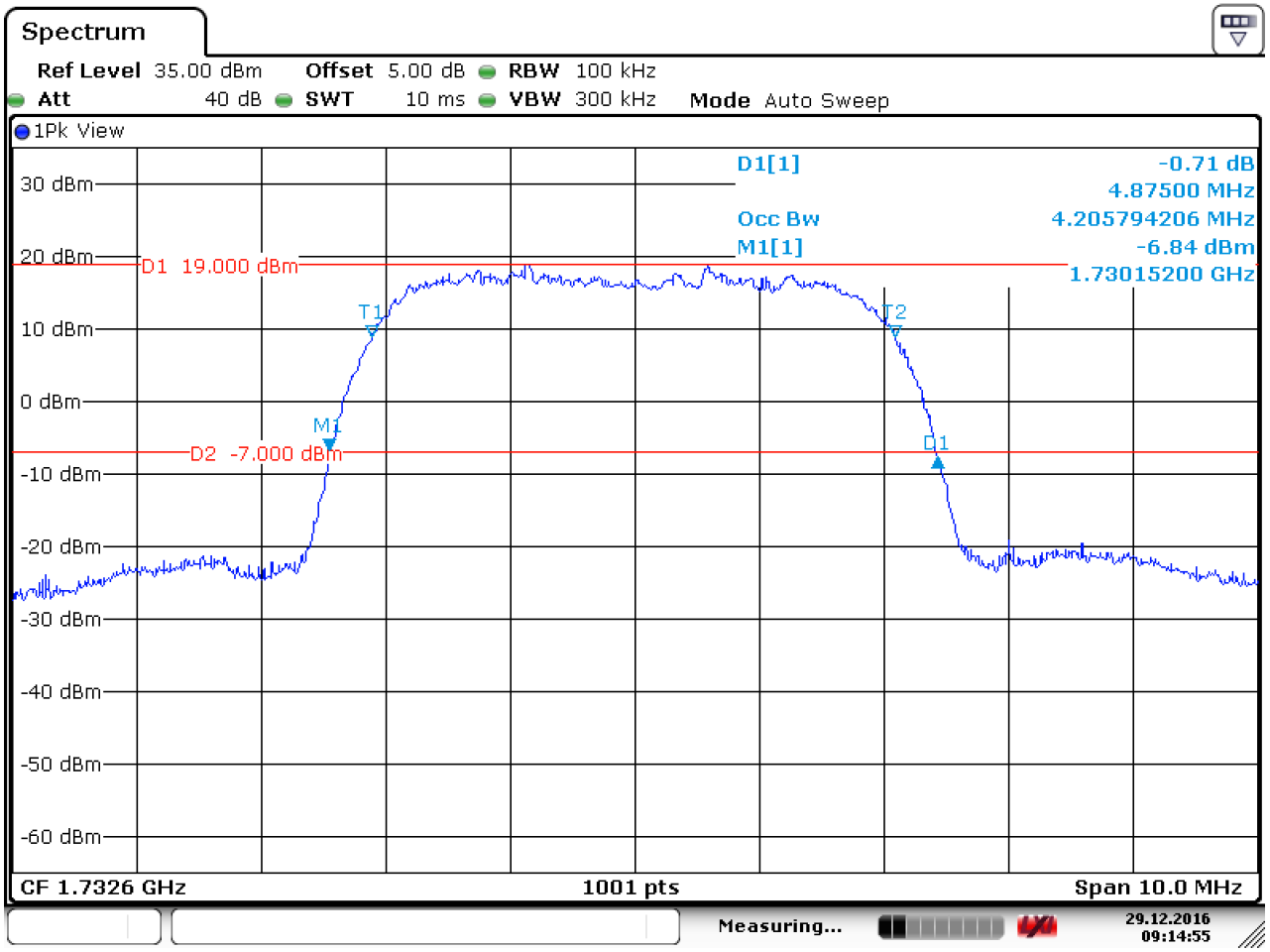
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



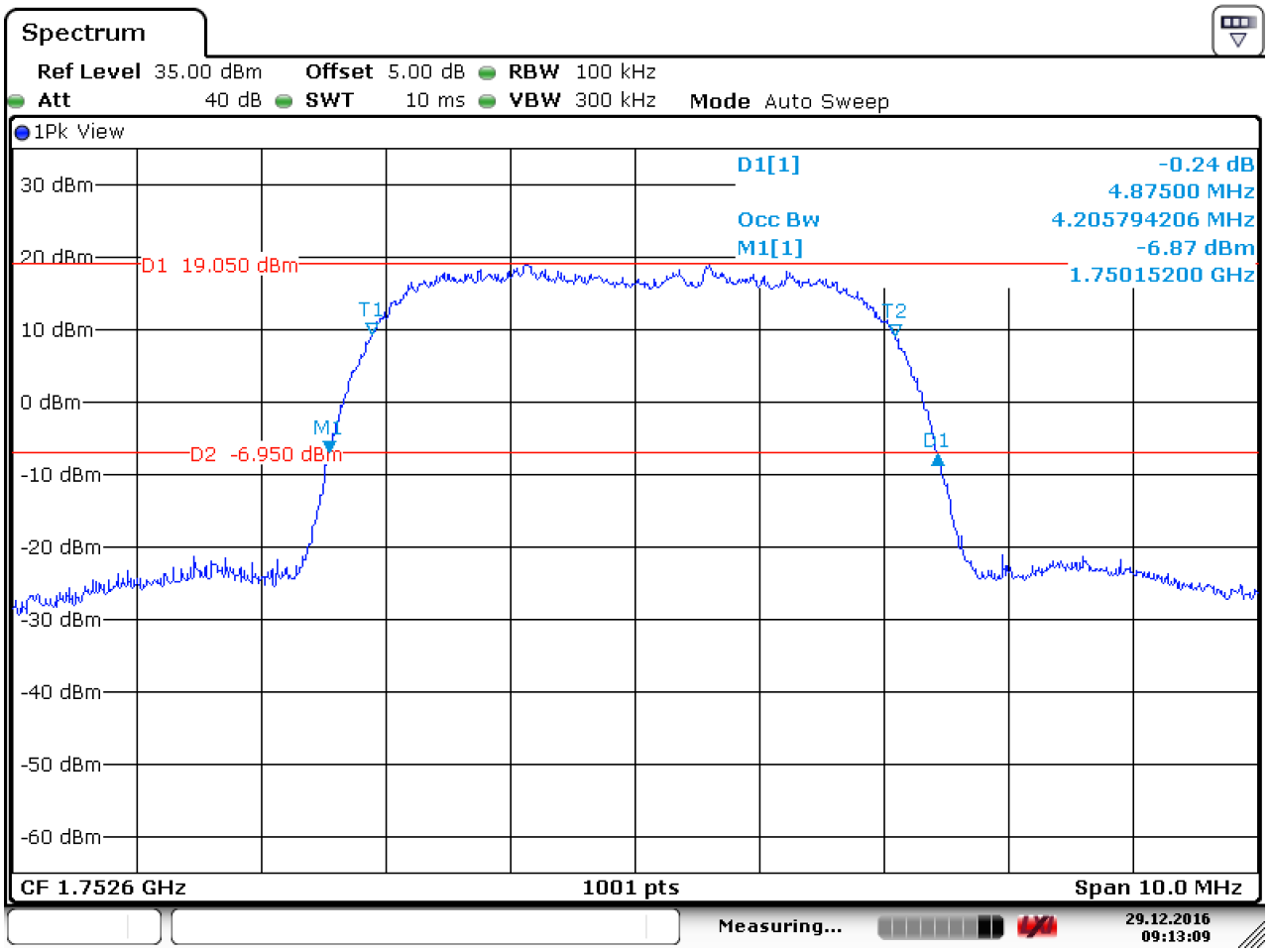
Date: 29.DEC.2016 09:16:14

4.1.2.1.2 Test Channel = MCH



Date: 29.DEC.2016 09:14:56

4.1.2.1.3 Test Channel = HCH

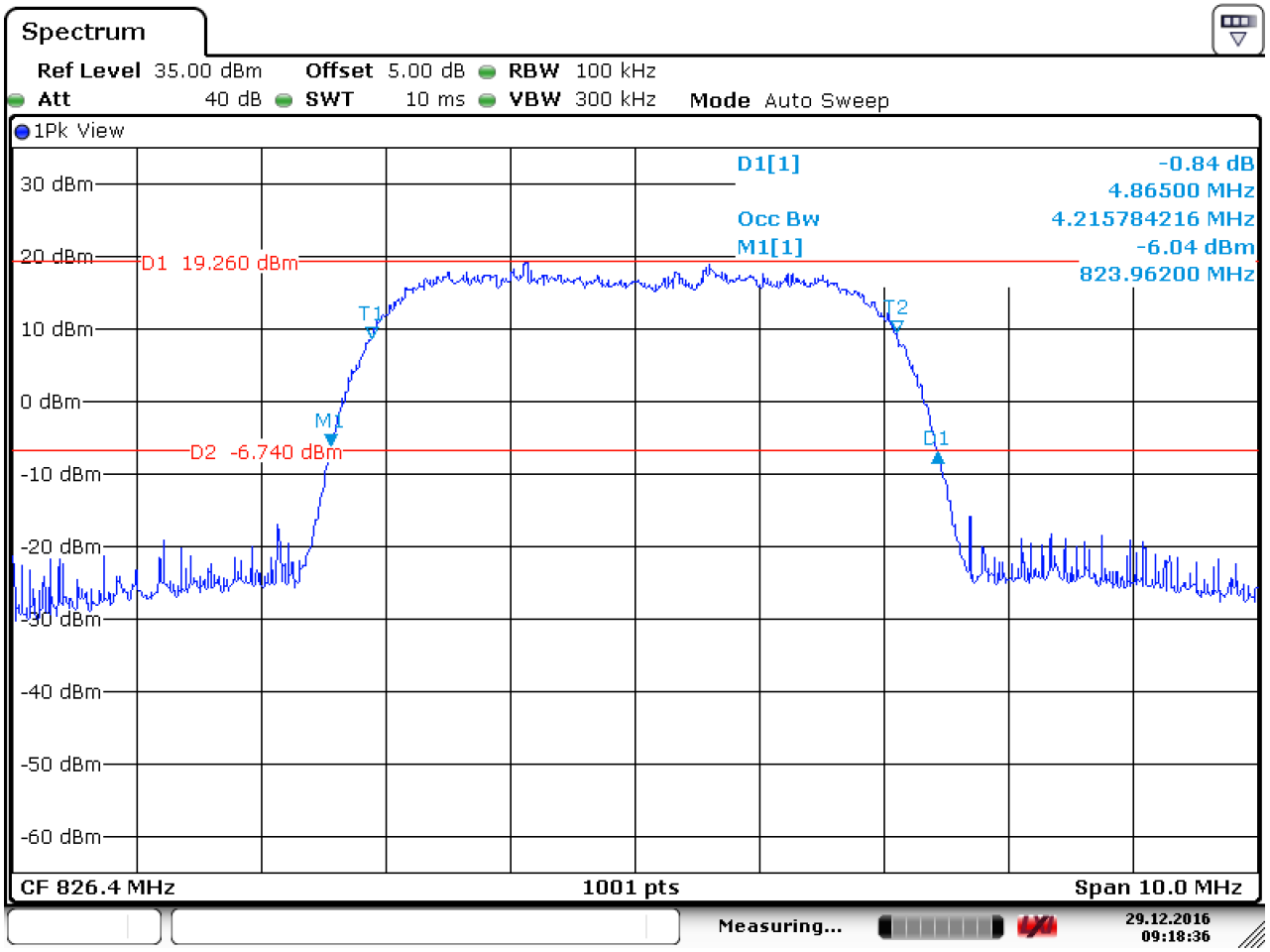


Date: 29.DEC.2016 09:13:09

4.1.3 Test Band = WCDMA 850

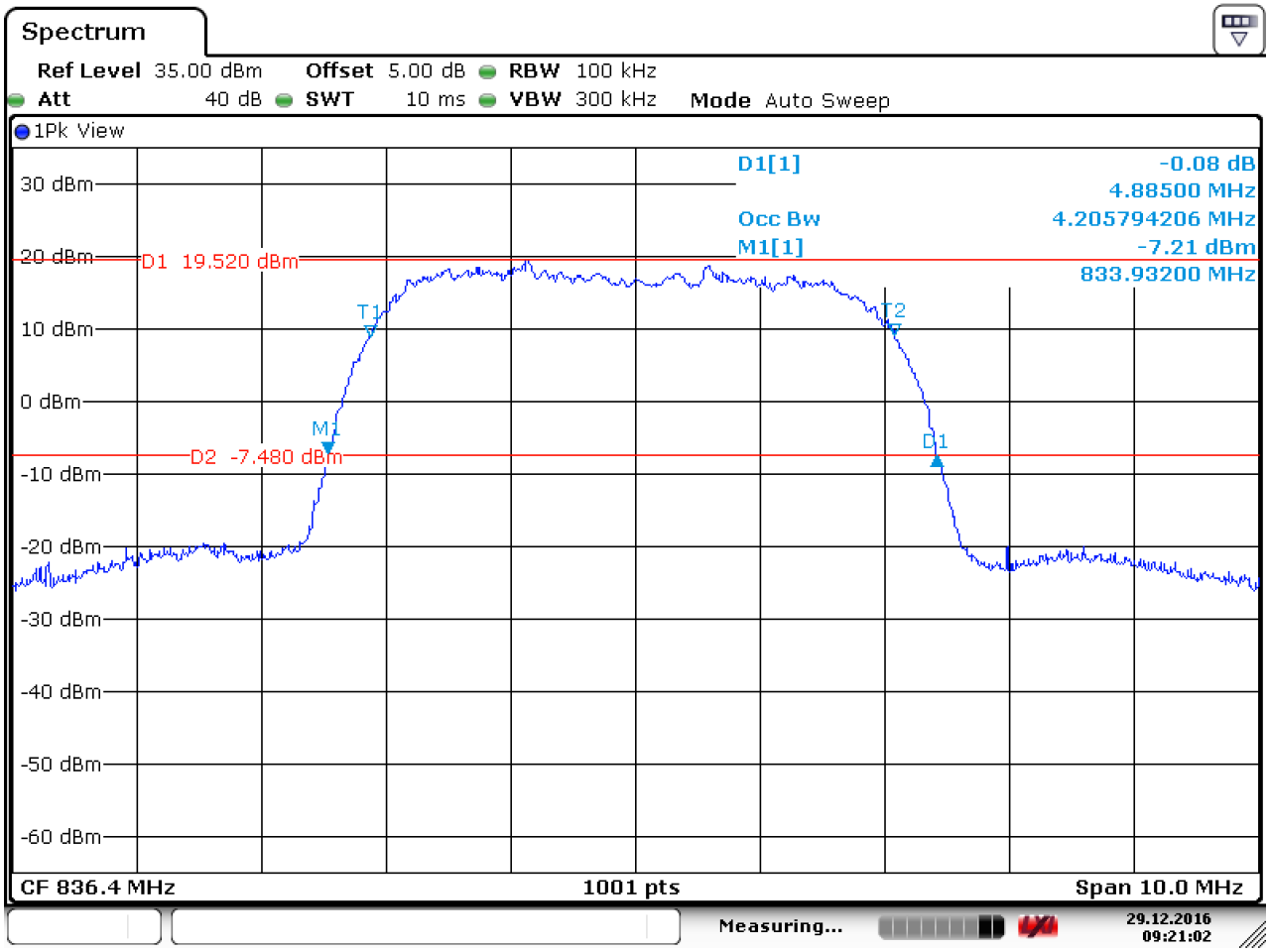
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



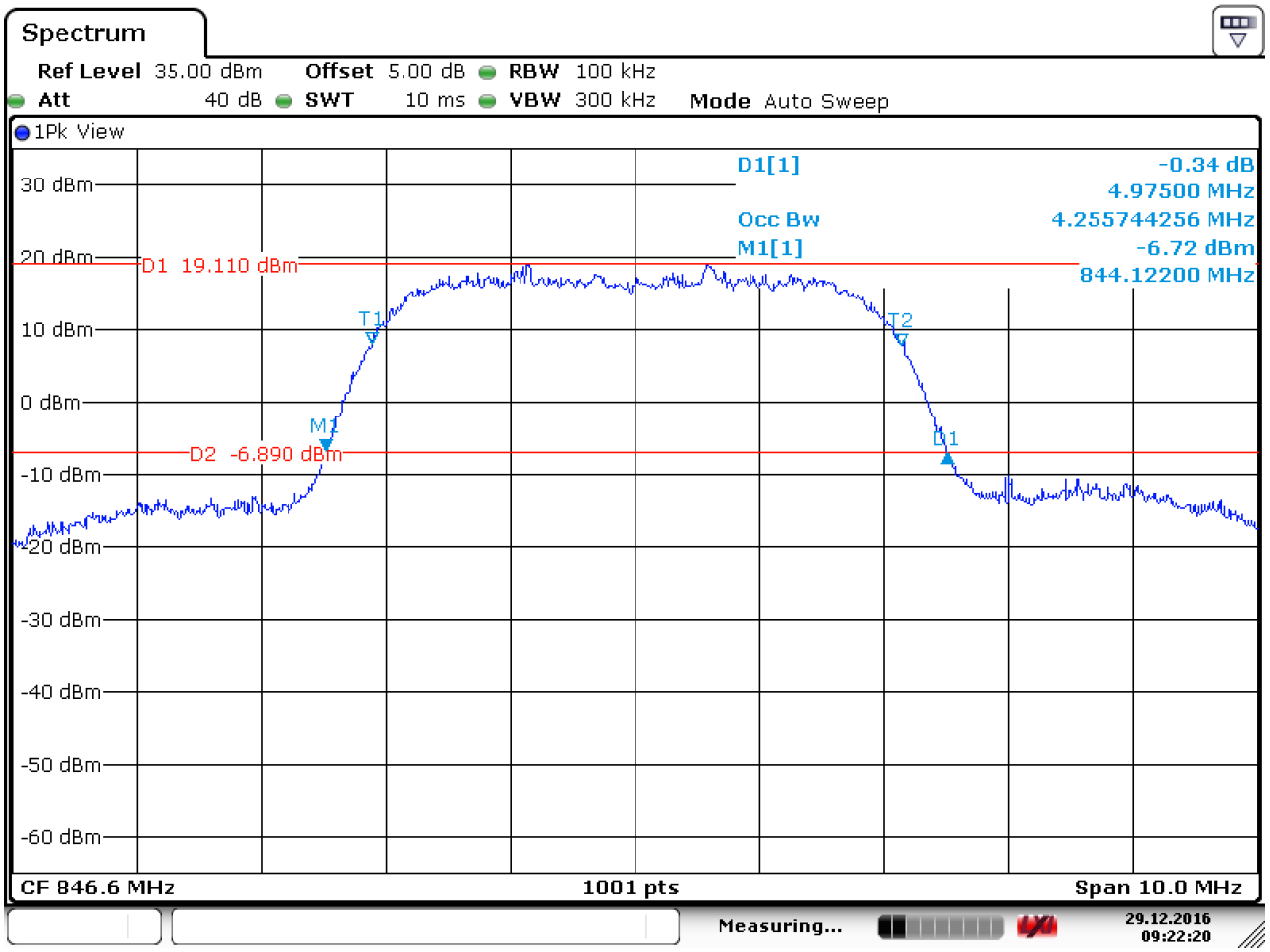
Date: 29.DEC.2016 09:18:37

4.1.3.1.2 Test Channel = MCH



Date: 29.DEC.2016 09:21:03

4.1.3.1.3 Test Channel = HCH



Date: 29.DEC.2016 09:22:20

5 Band Edges Compliance

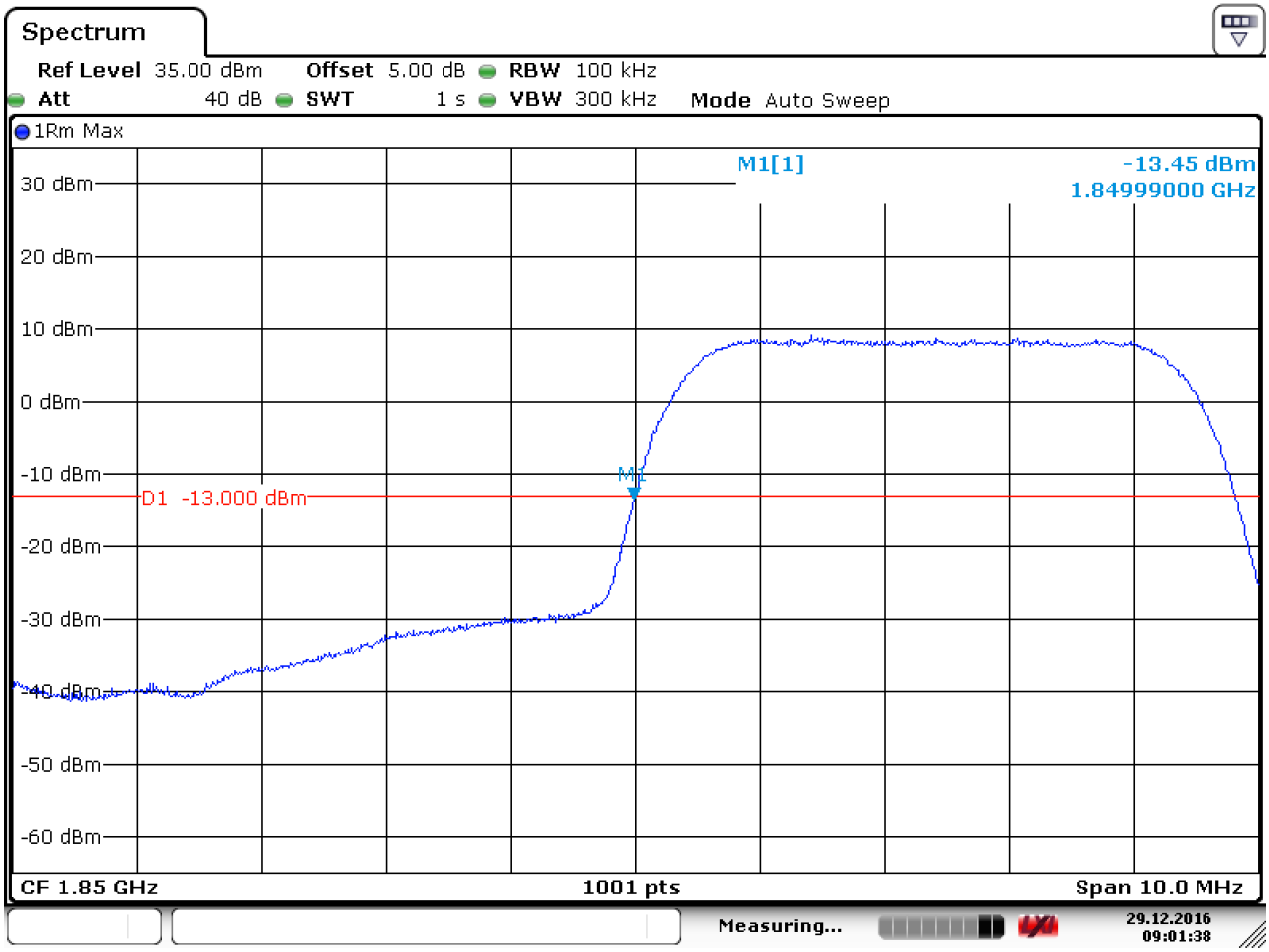
Part I - Test Plots

5.1 For WCDMA

5.1.1 Test Band = WCDMA 1900

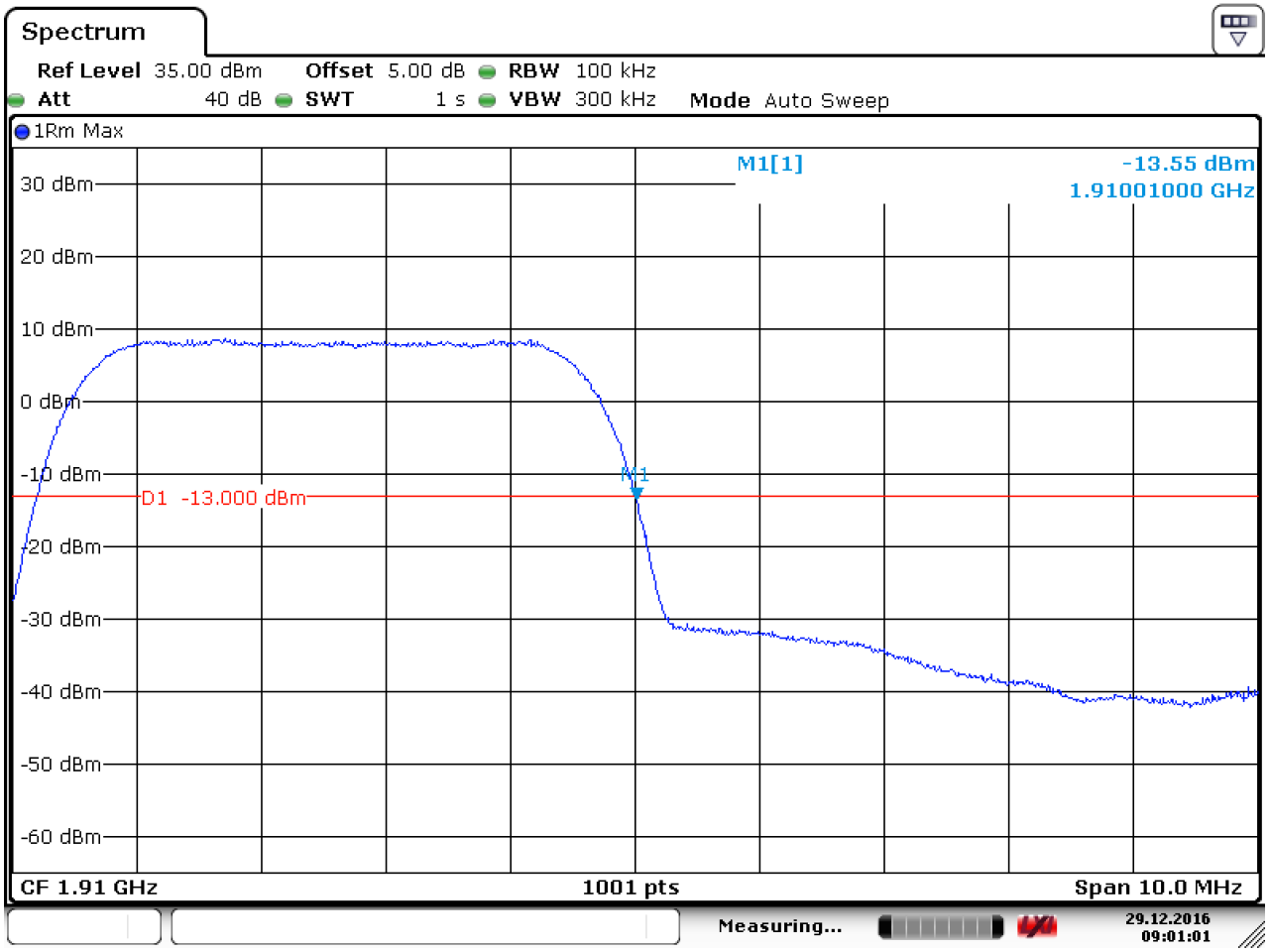
5.1.1.1 Test Mode = UMTS/TM1

5.1.1.1.1 Test Channel = LCH



Date: 29.DEC.2016 09:01:38

5.1.1.1.2 Test Channel = HCH

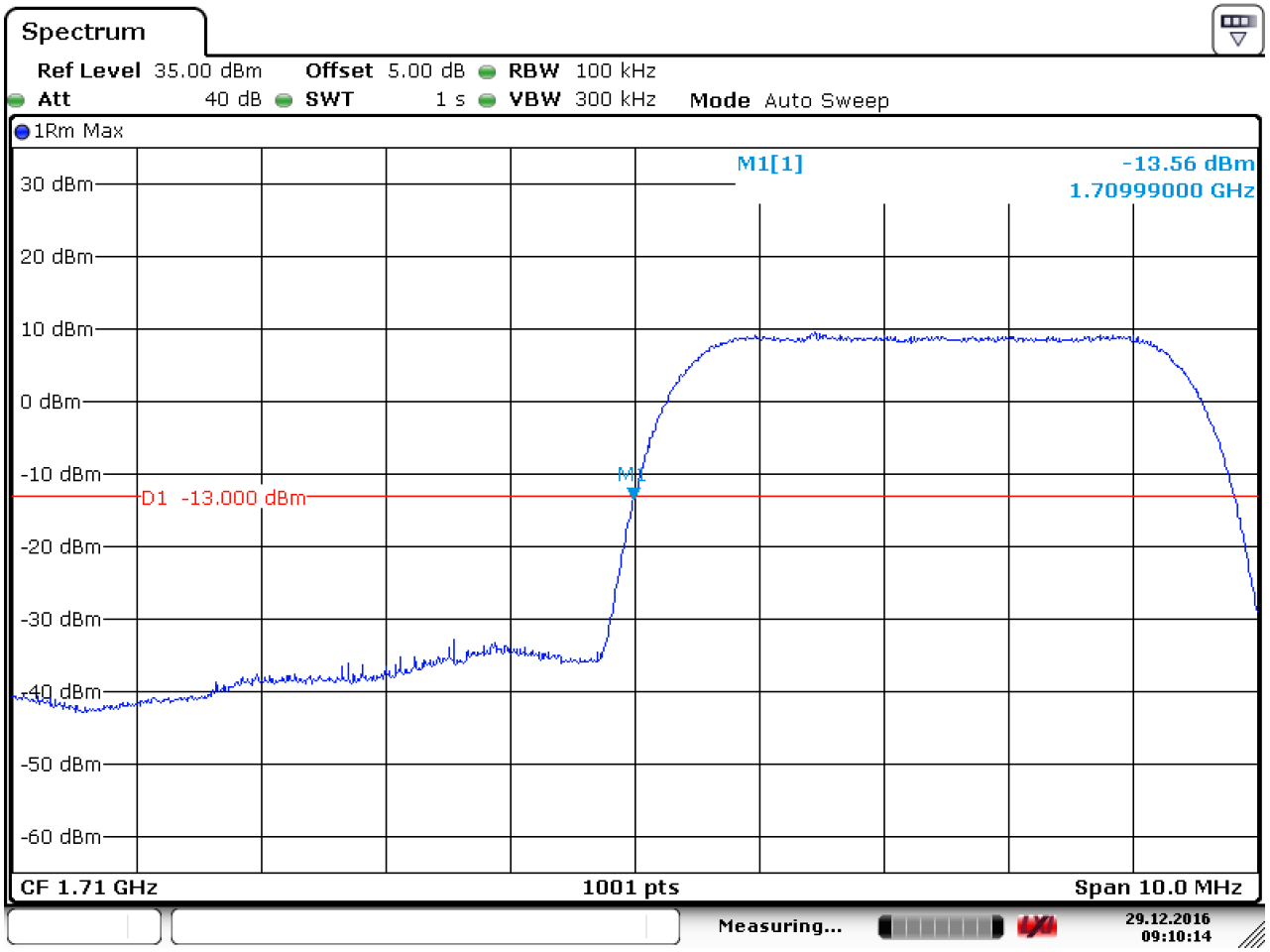


Date: 29.DEC.2016 09:01:01

5.1.2 Test Band = WCDMA 1700

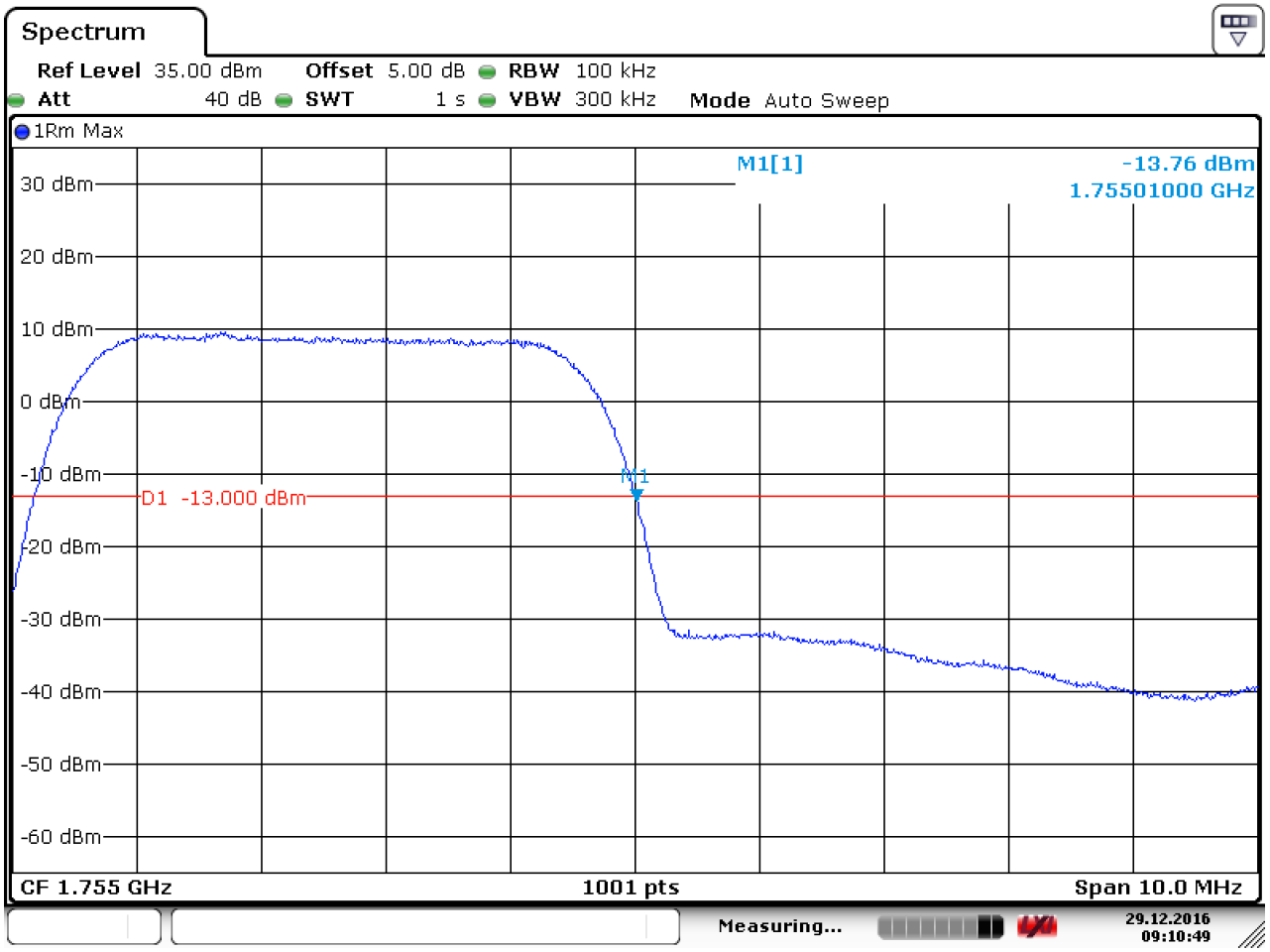
5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



Date: 29.DEC.2016 09:10:15

5.1.2.1.2 Test Channel = HCH

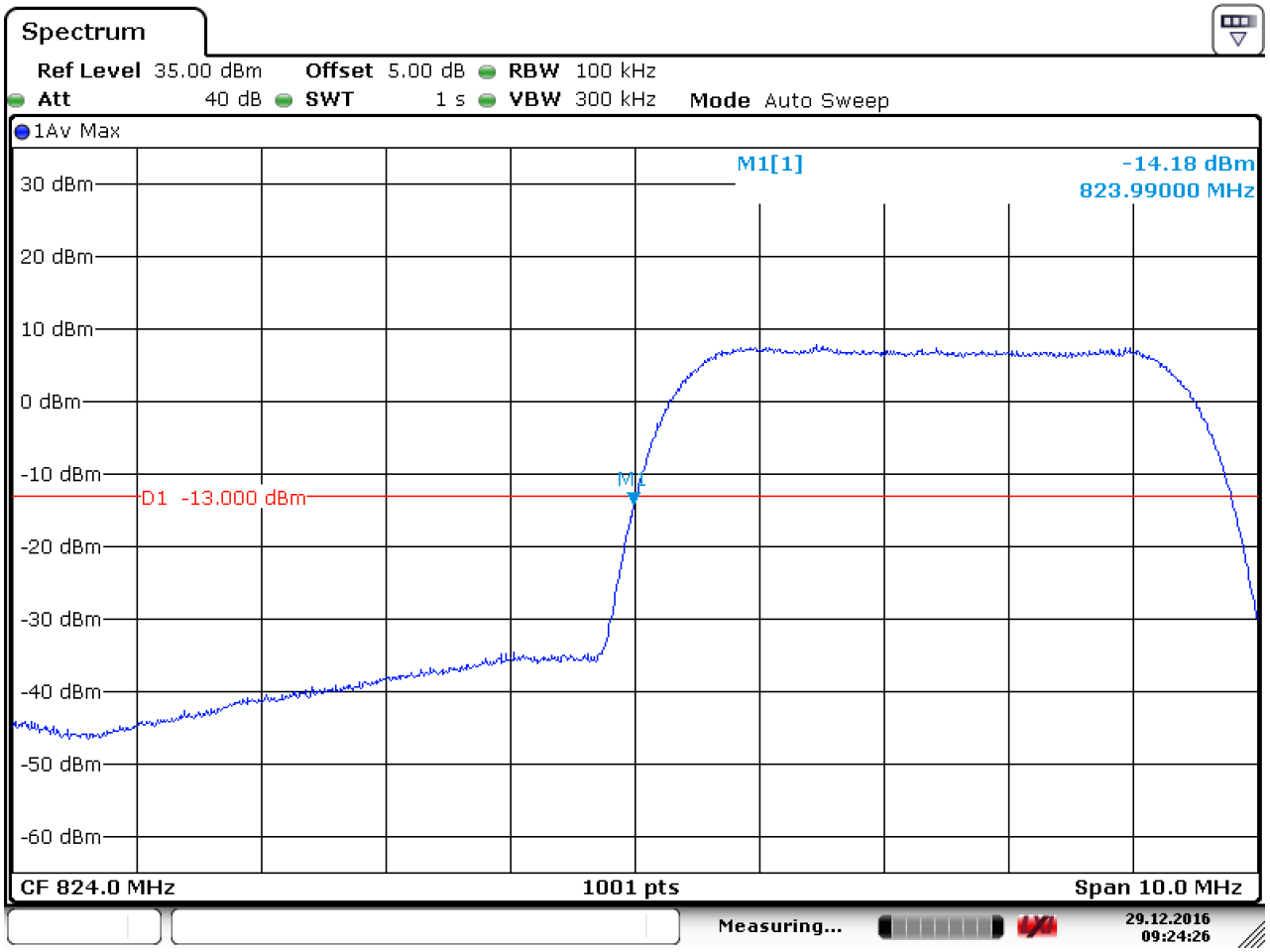


Date: 29.DEC.2016 09:10:49

5.1.3 Test Band = WCDMA 850

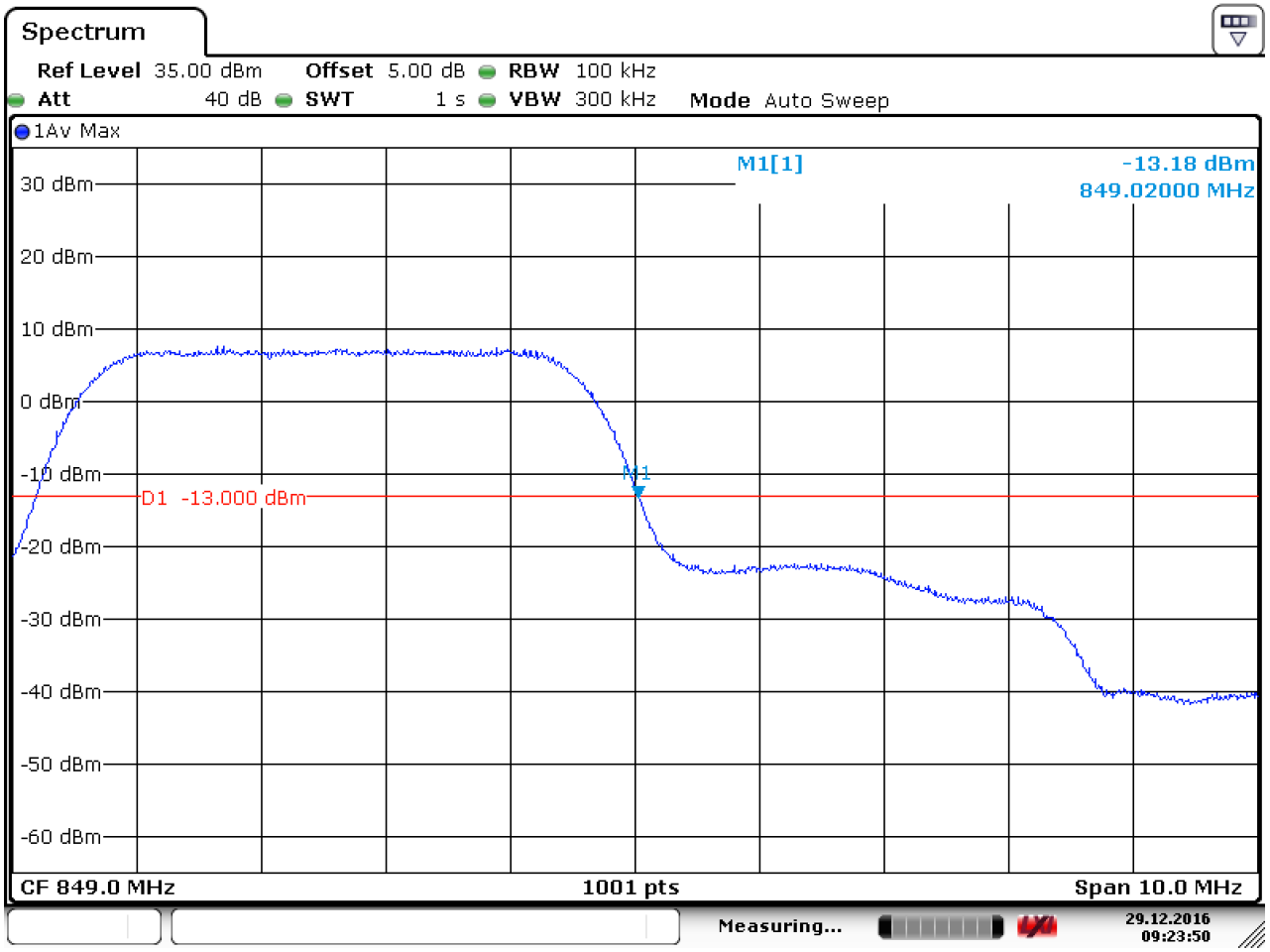
5.1.3.1 Test Mode = UMTS/TM1

5.1.3.1.1 Test Channel = LCH



Date: 29.DEC.2016 09:24:27

5.1.3.1.2 Test Channel = HCH



Date: 29.DEC.2016 09:23:50

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.

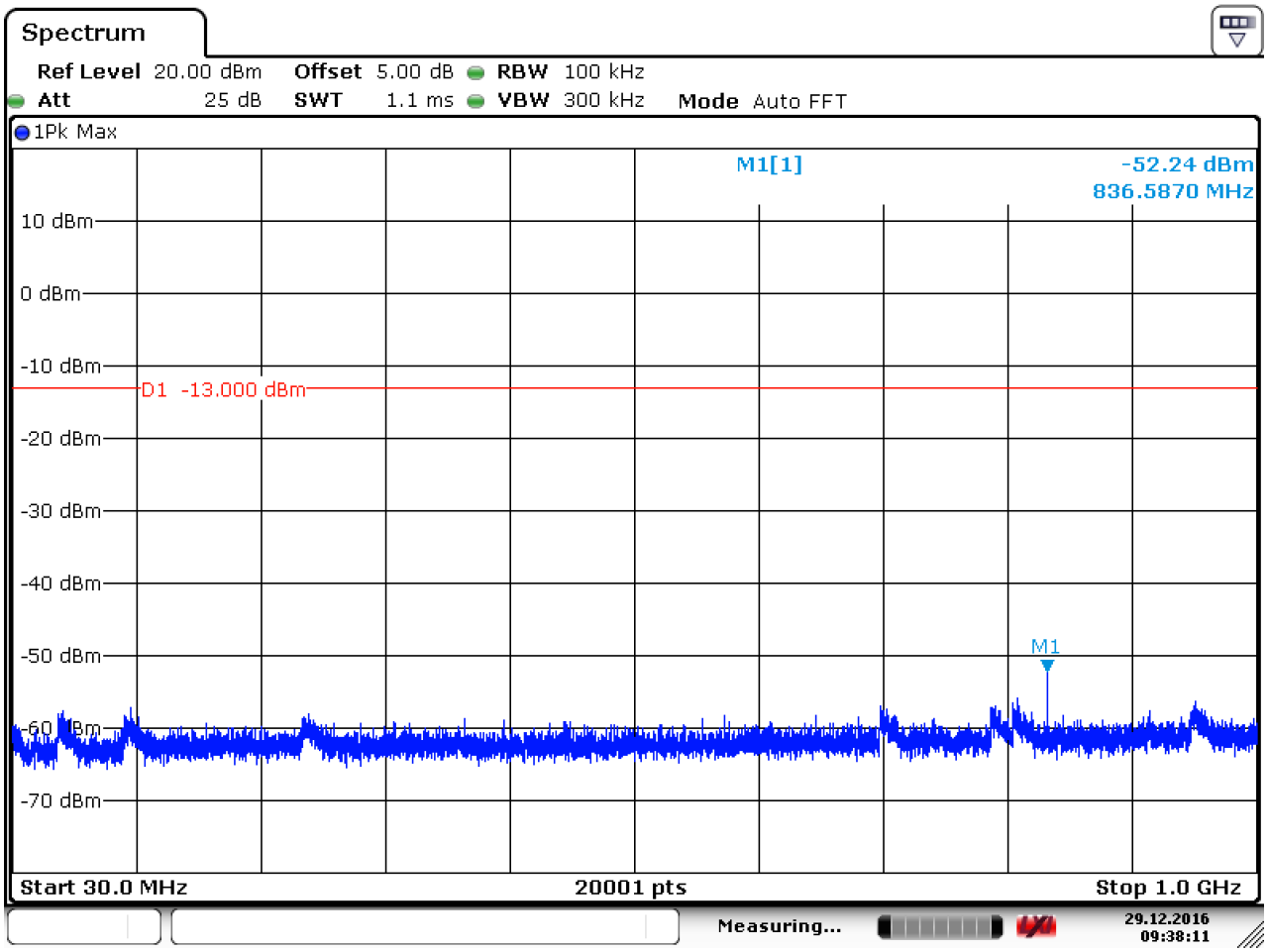
Part I - Test Plots

6.1 For WCDMA

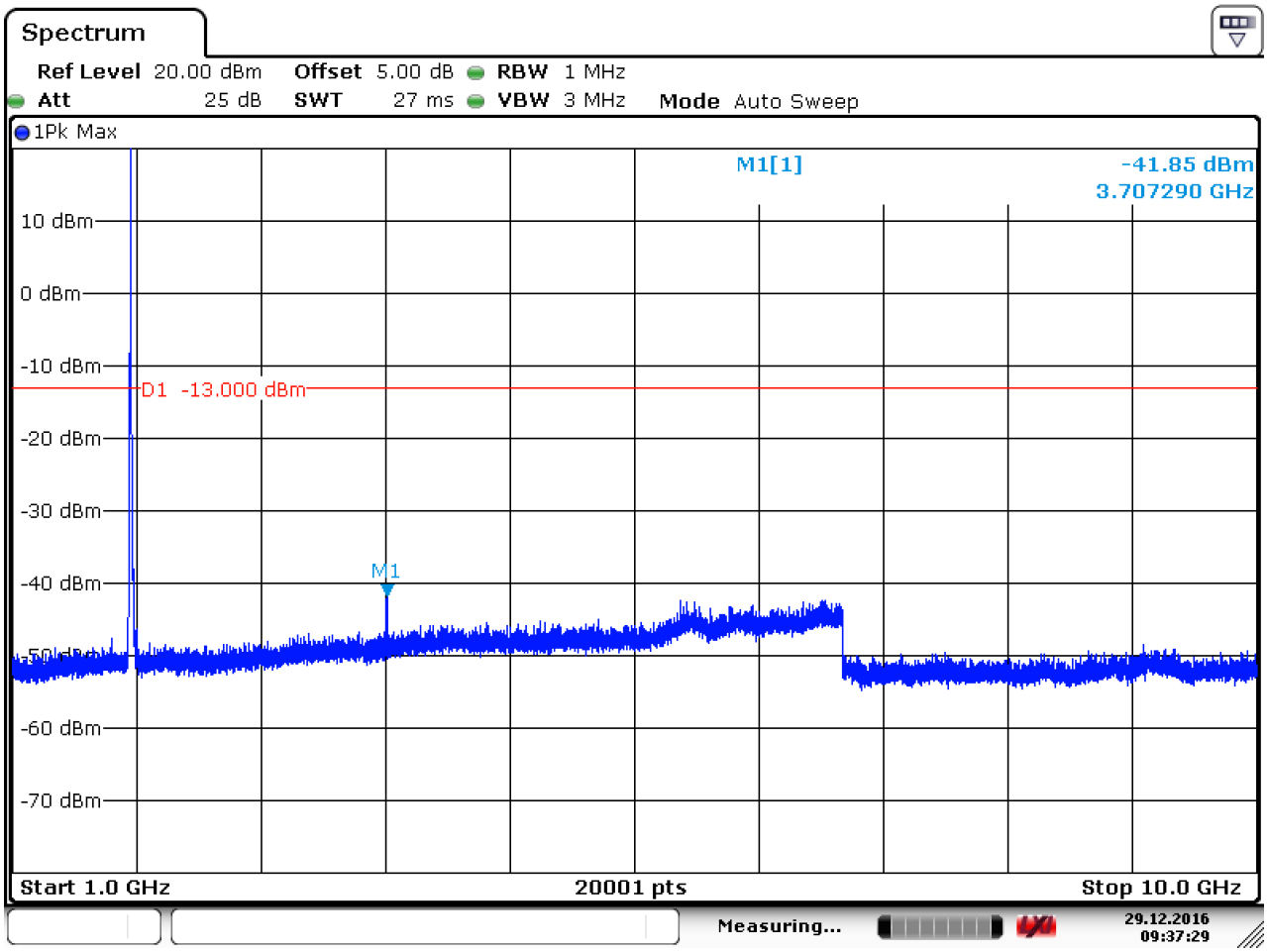
6.1.1 Test Band = WCDMA 1900

6.1.1.1 Test Mode = UMTS/TM1

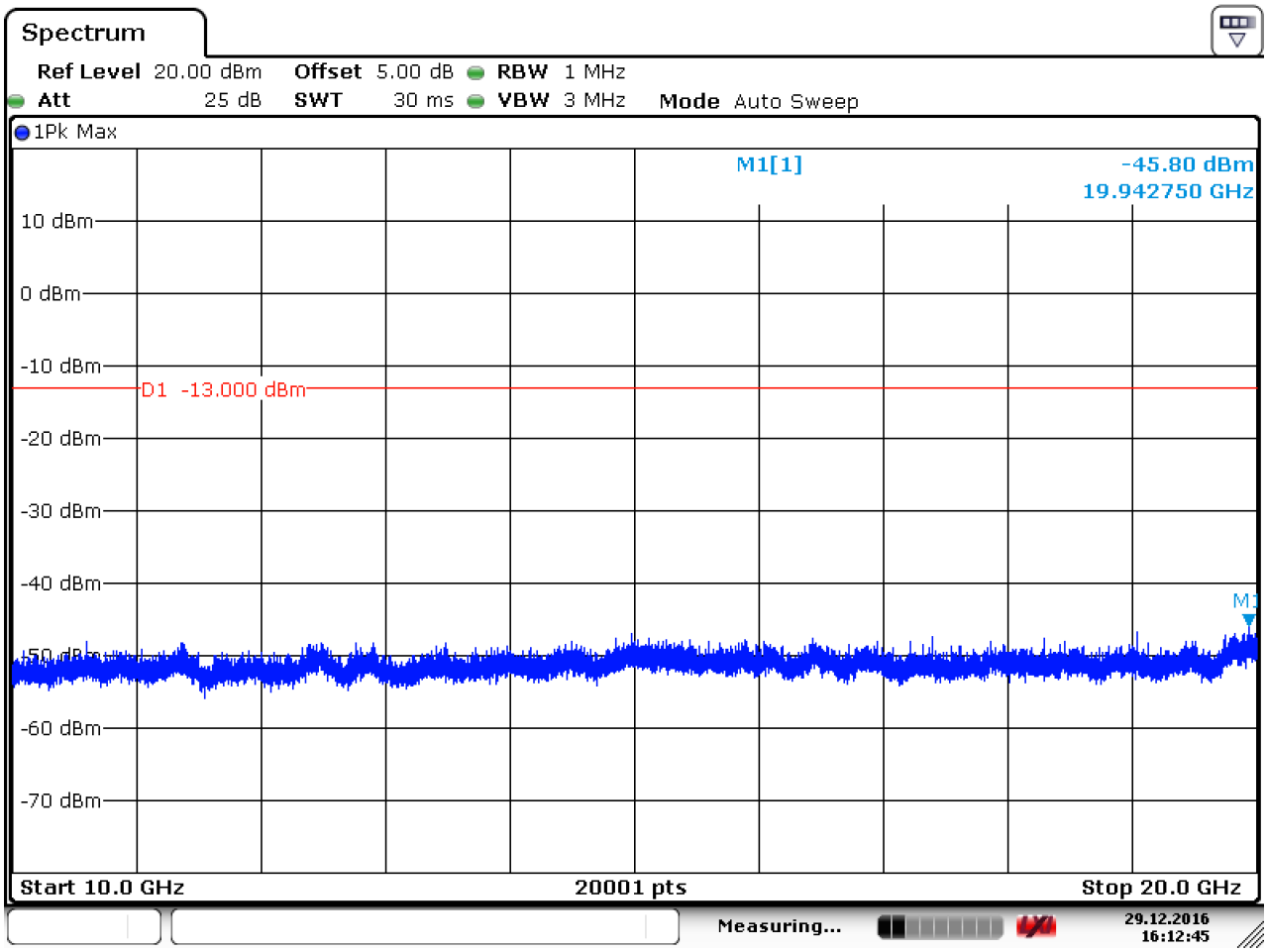
6.1.1.1.1 Test Channel = LCH



Date: 29.DEC.2016 09:38:12

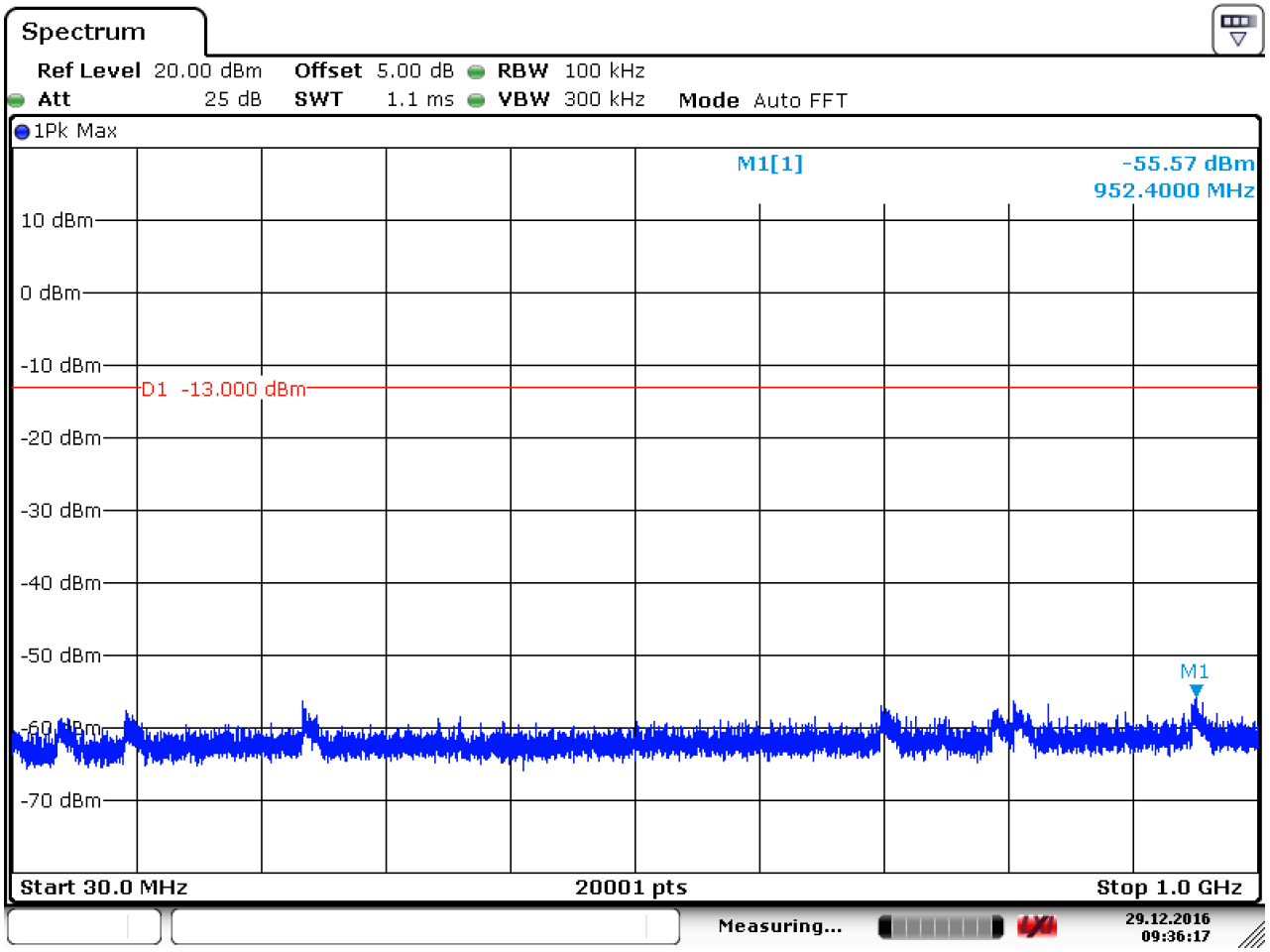


Date: 29.DEC.2016 09:37:29



Date: 29.DEC.2016 16:12:45

6.1.1.1.2 Test Channel = MCH



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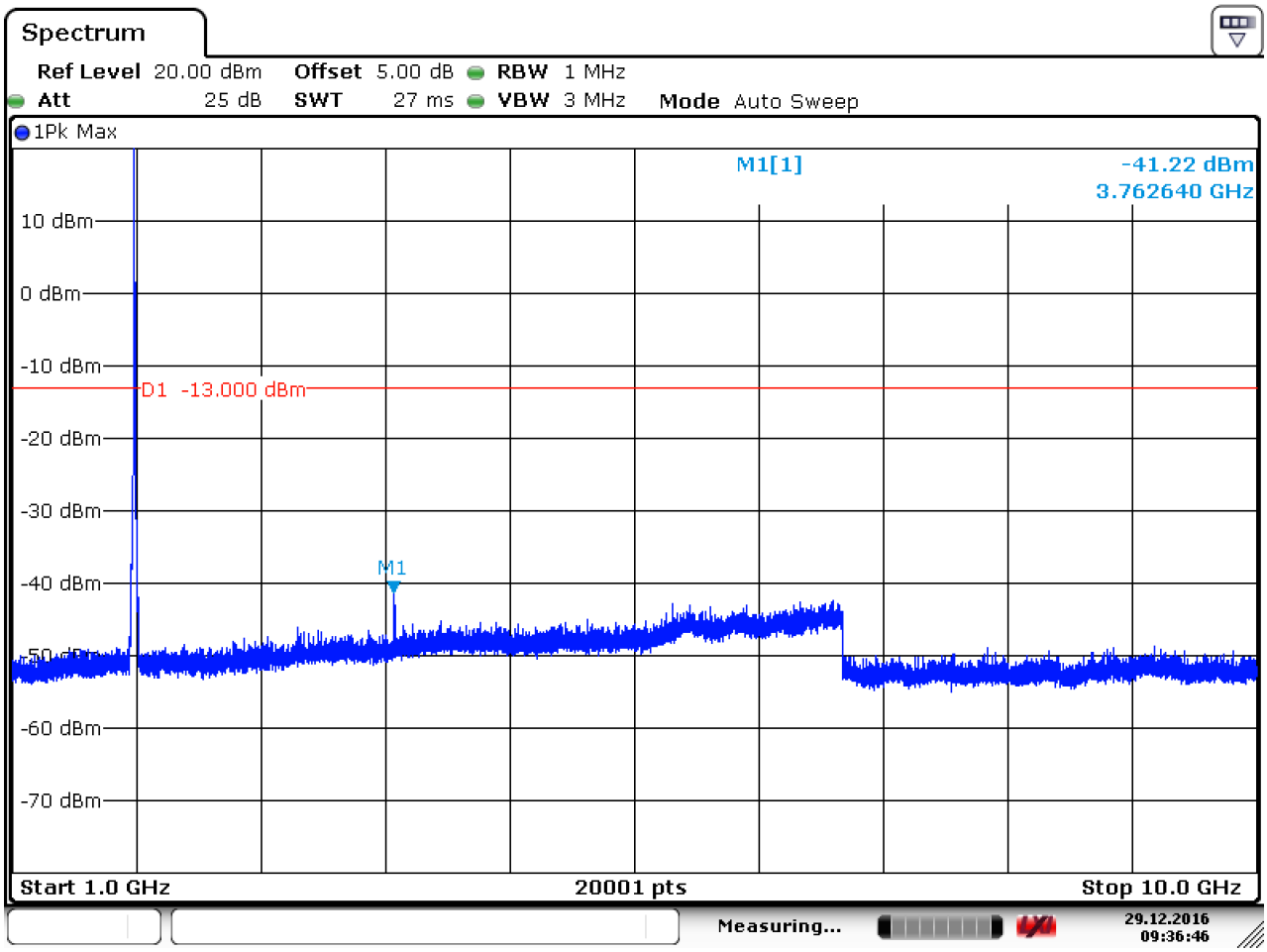
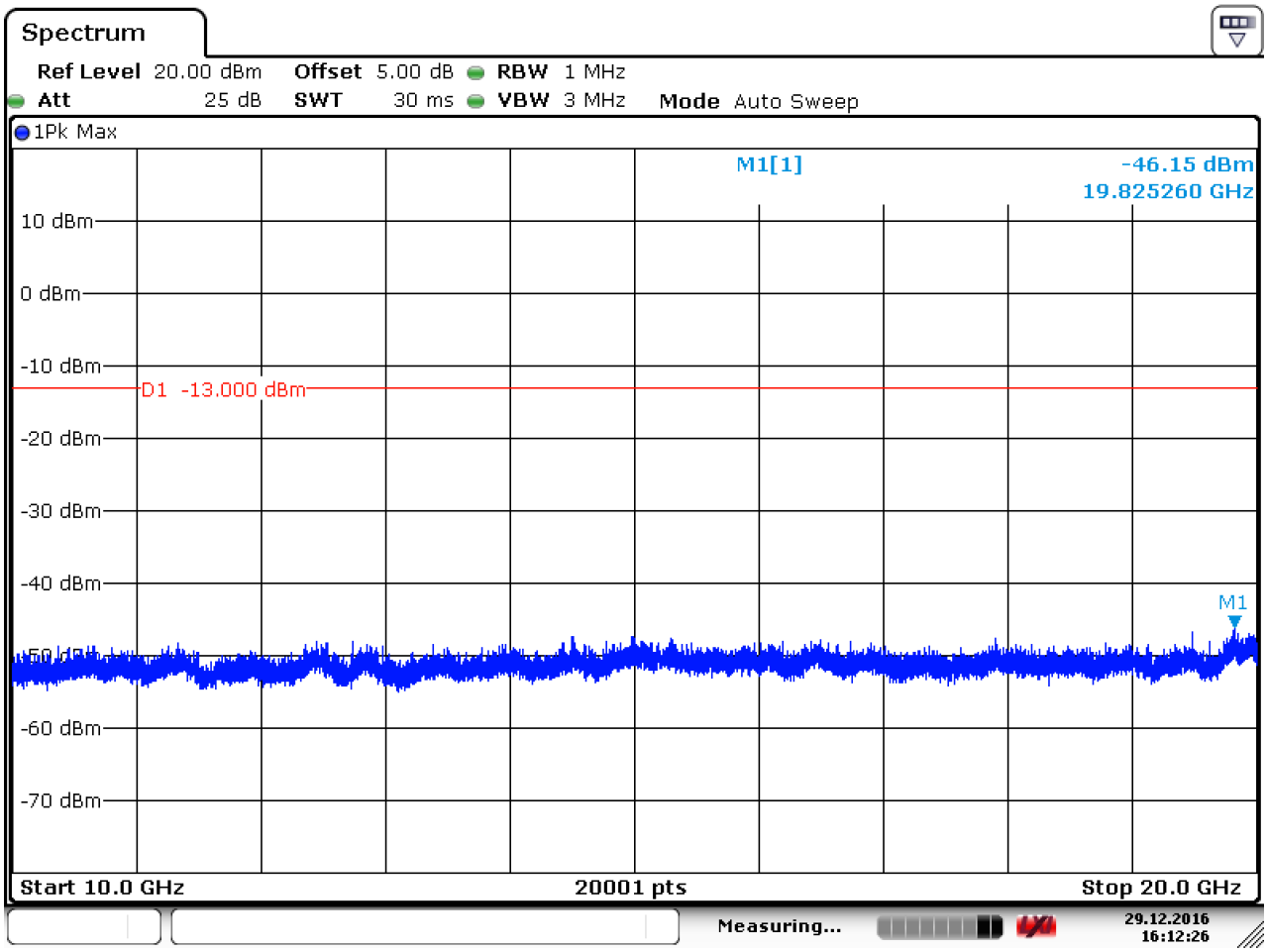
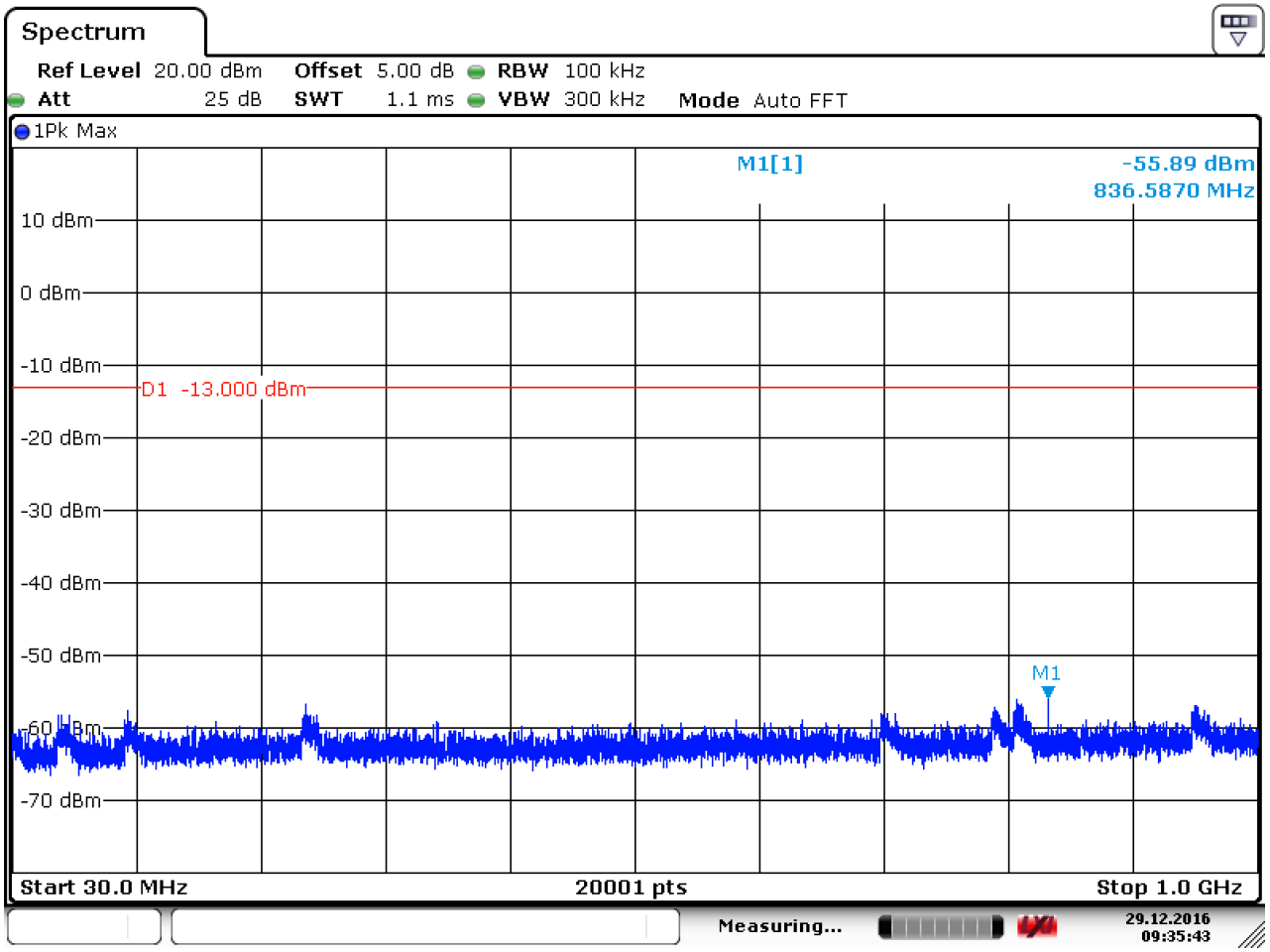


Date: 29.DEC.2016 09:36:47

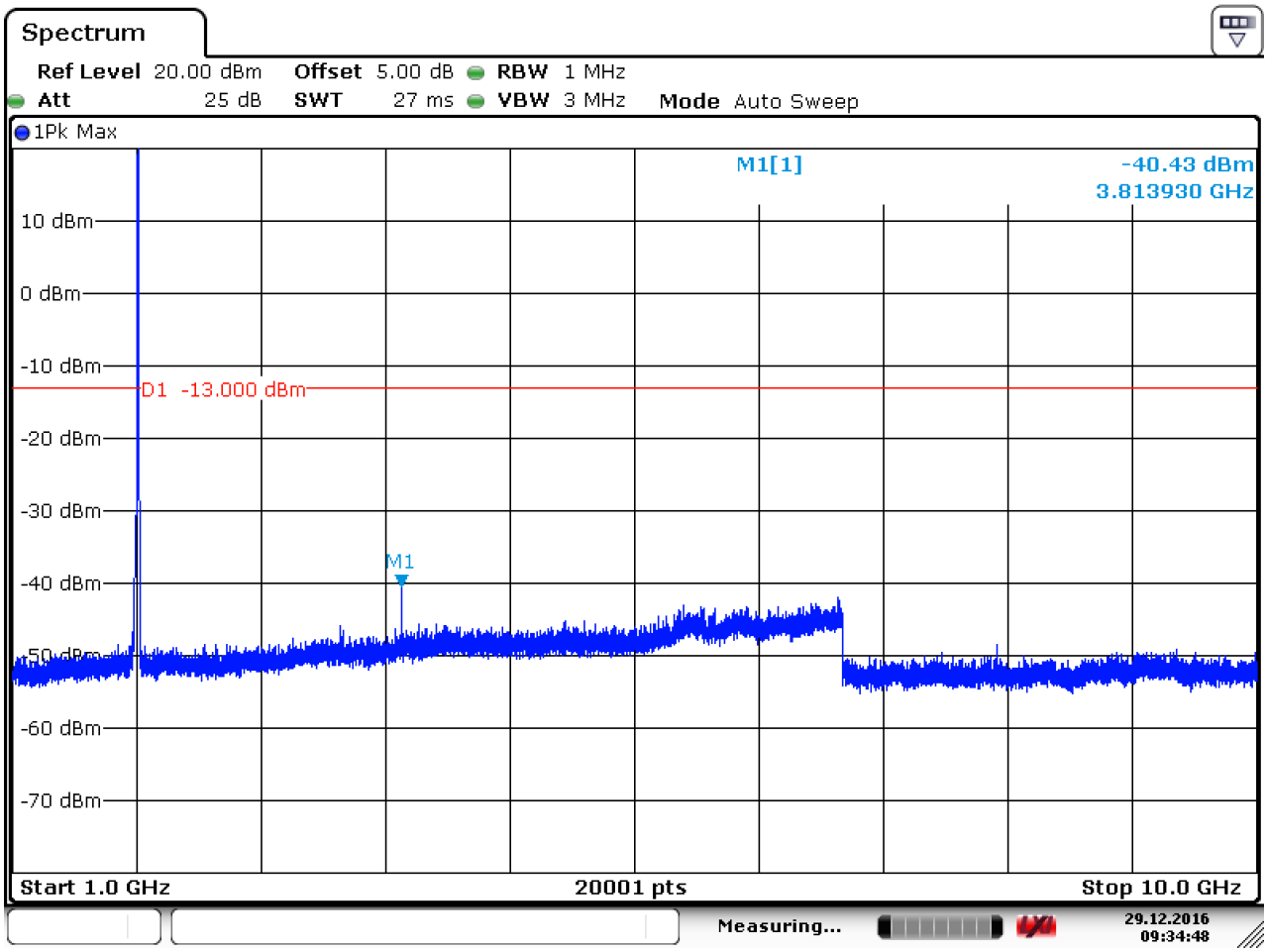


Date: 29.DEC.2016 16:12:26

6.1.1.1.3 Test Channel = HCH



Date: 29.DEC.2016 09:35:44



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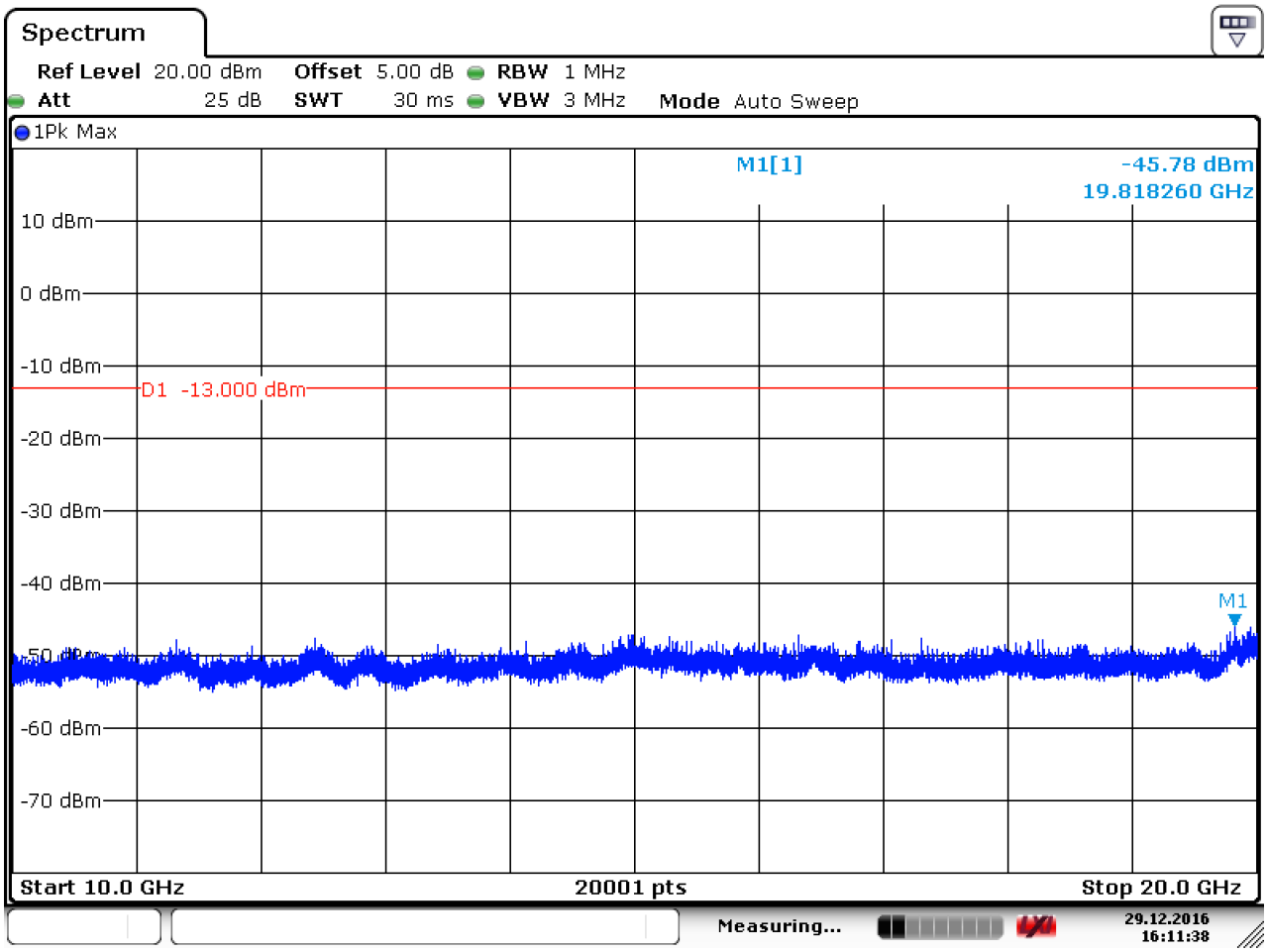
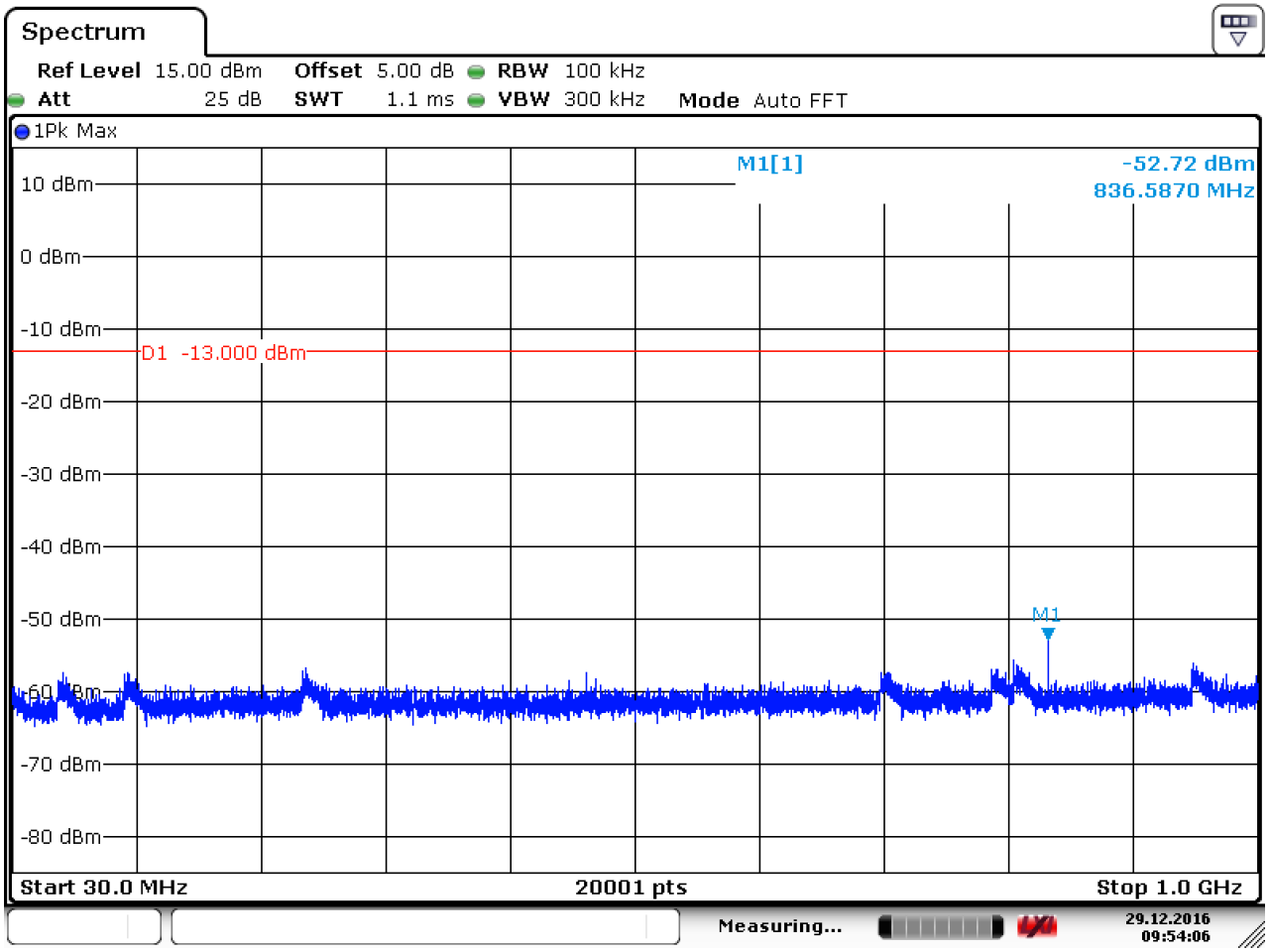


Date: 29.DEC.2016 16:11:38

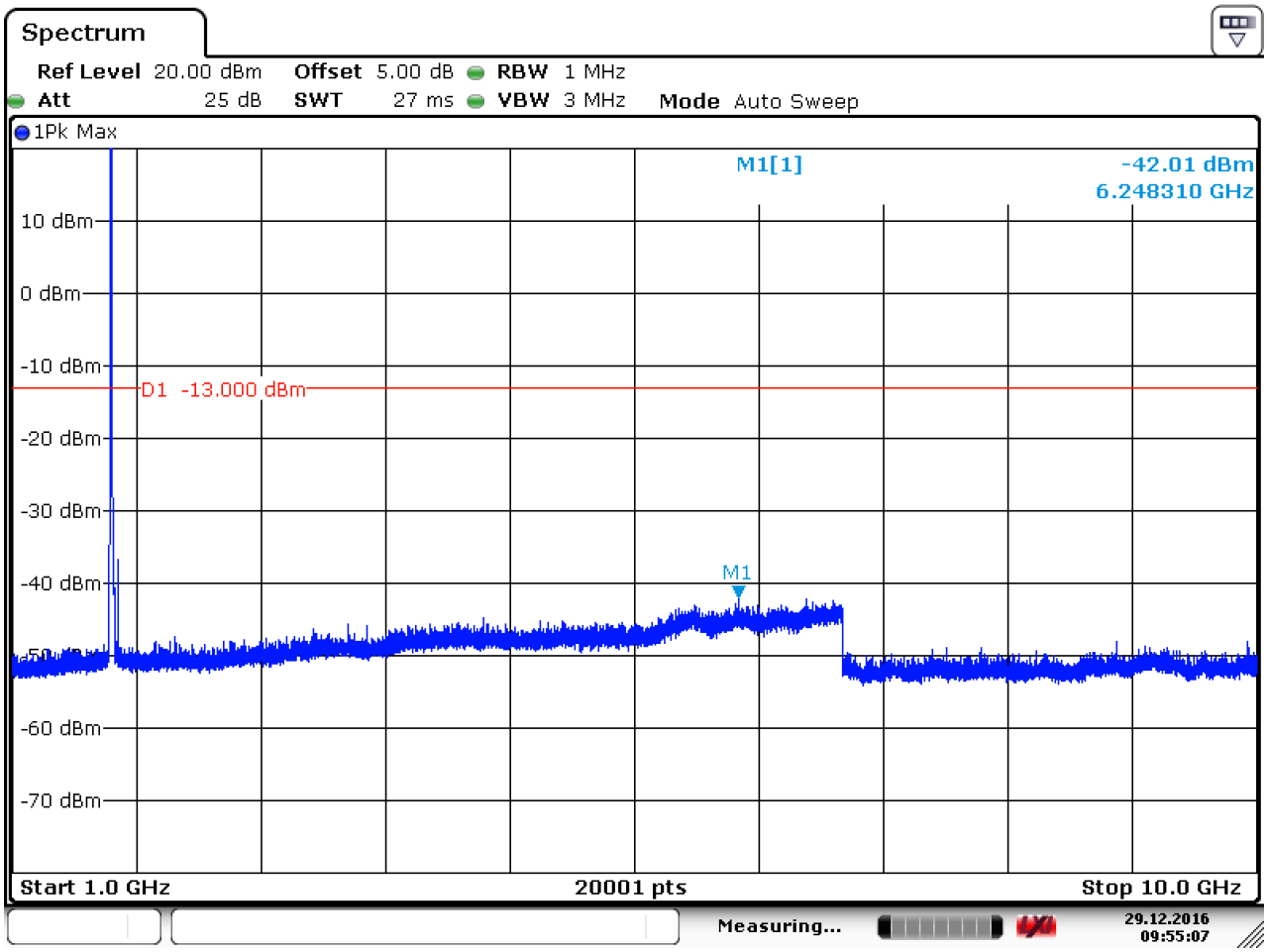
6.1.2 Test Band = WCDMA 1700

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH



Date: 29.DEC.2016 09:54:06



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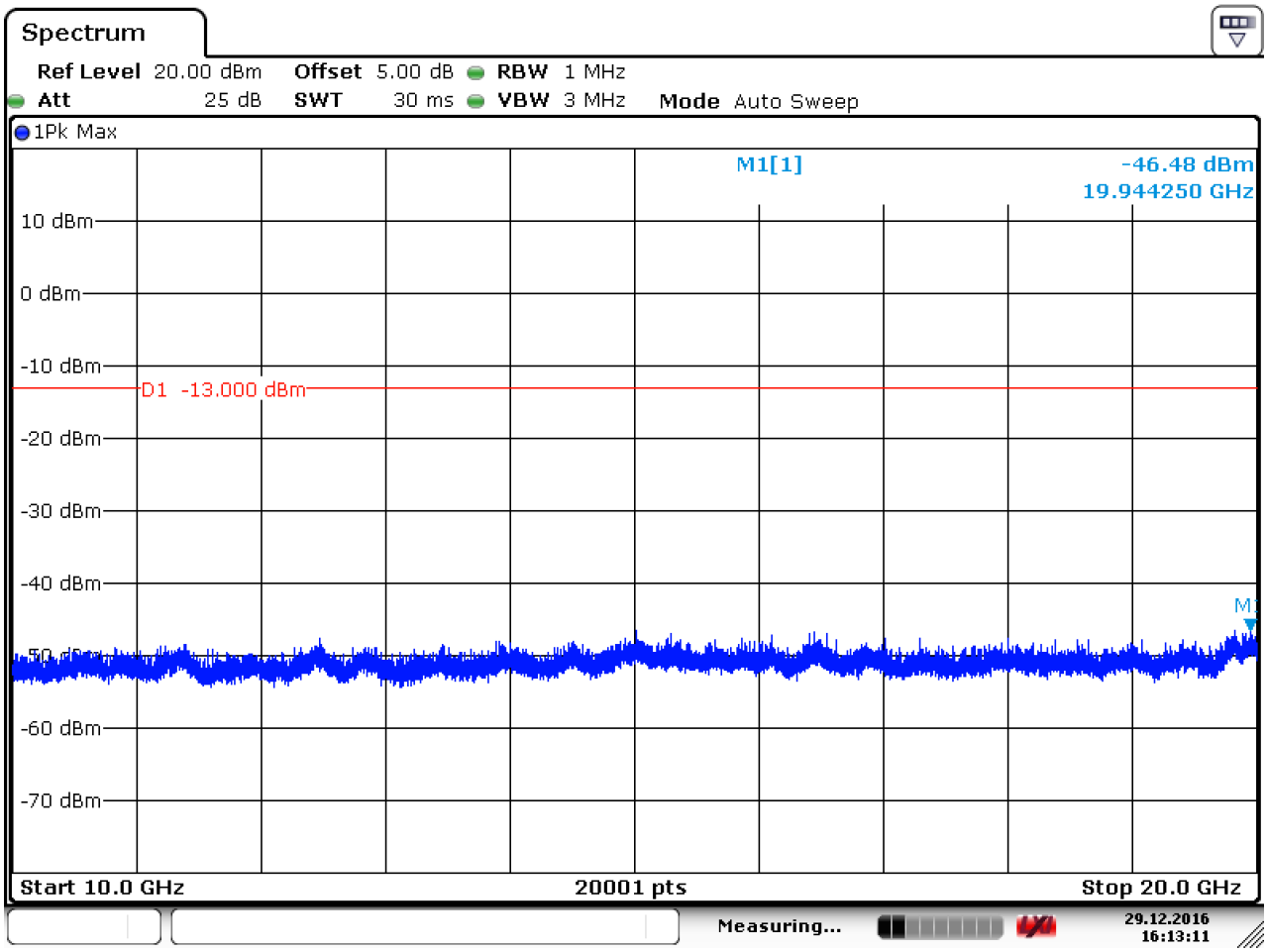
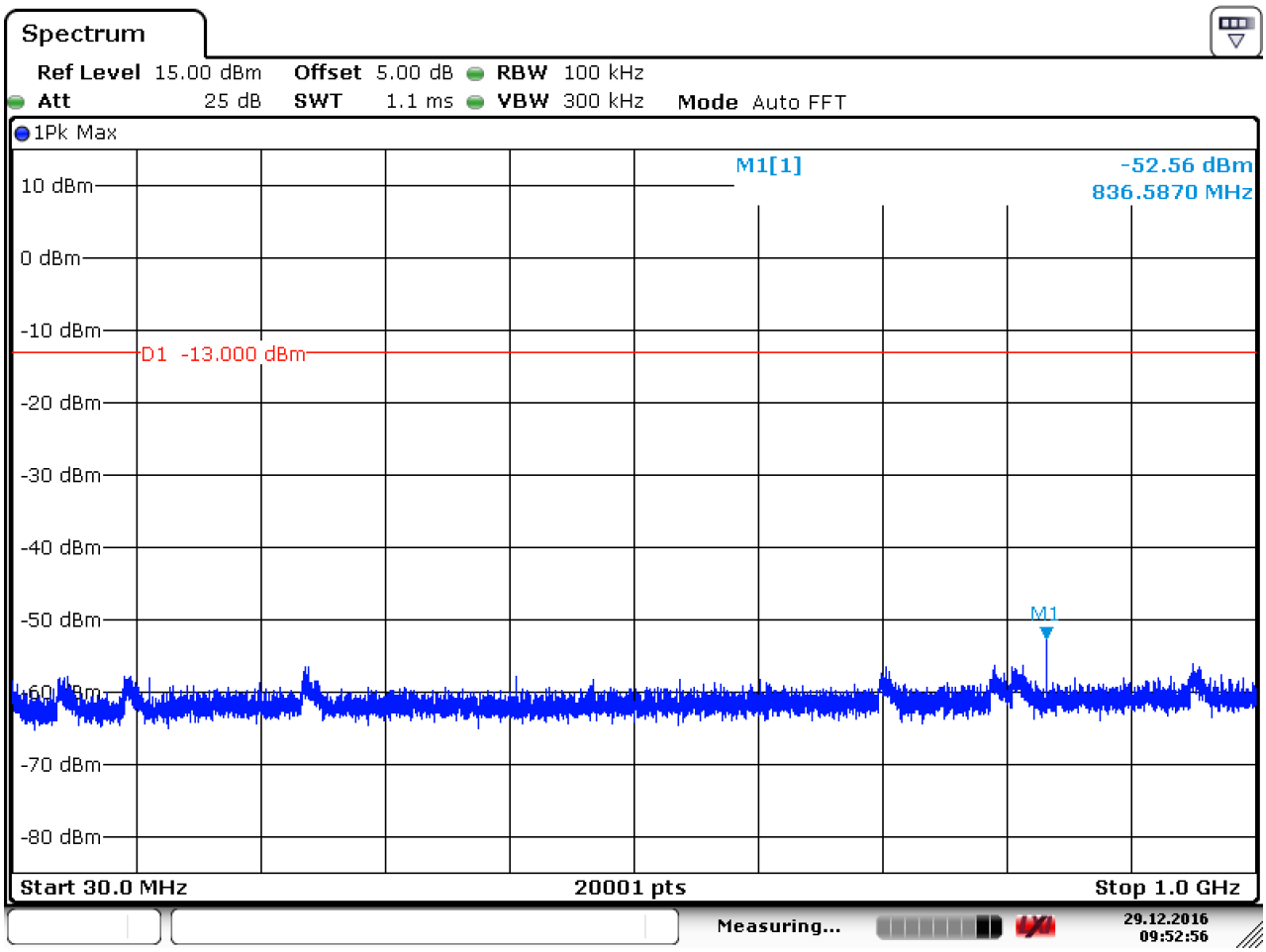
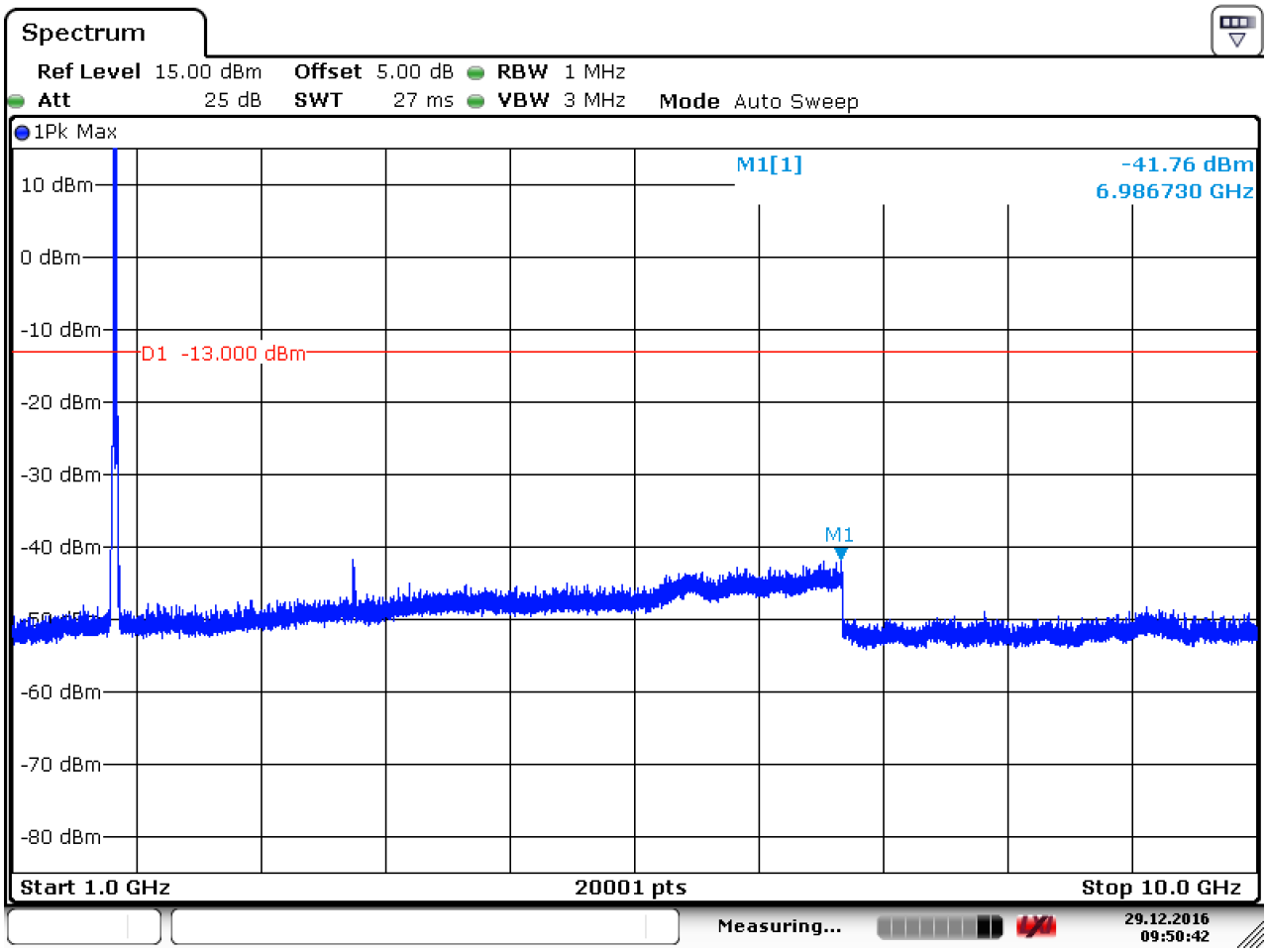


Date: 29.DEC.2016 16:13:12

6.1.2.1.2 Test Channel = MCH



Date: 29.DEC.2016 09:52:56



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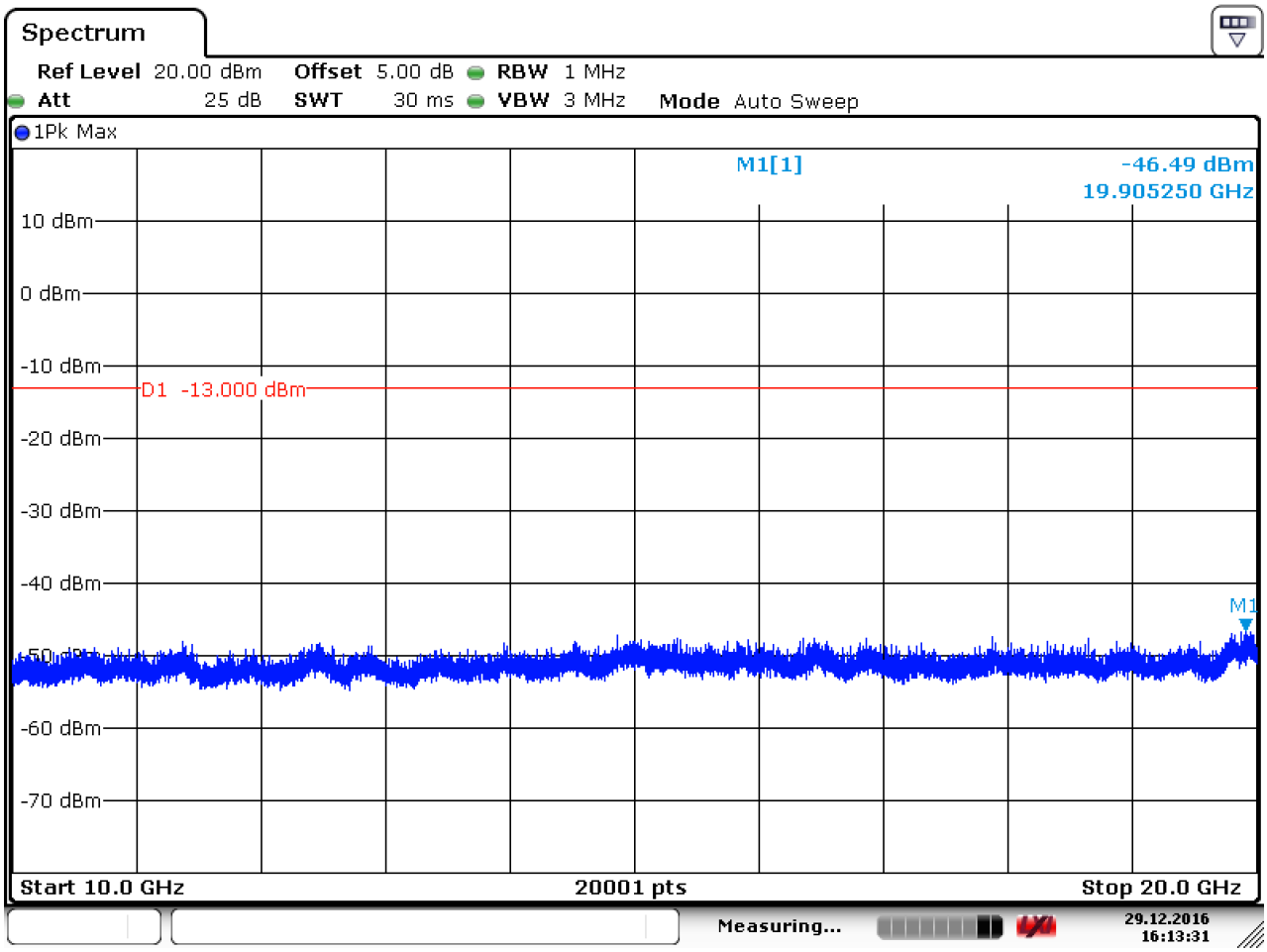
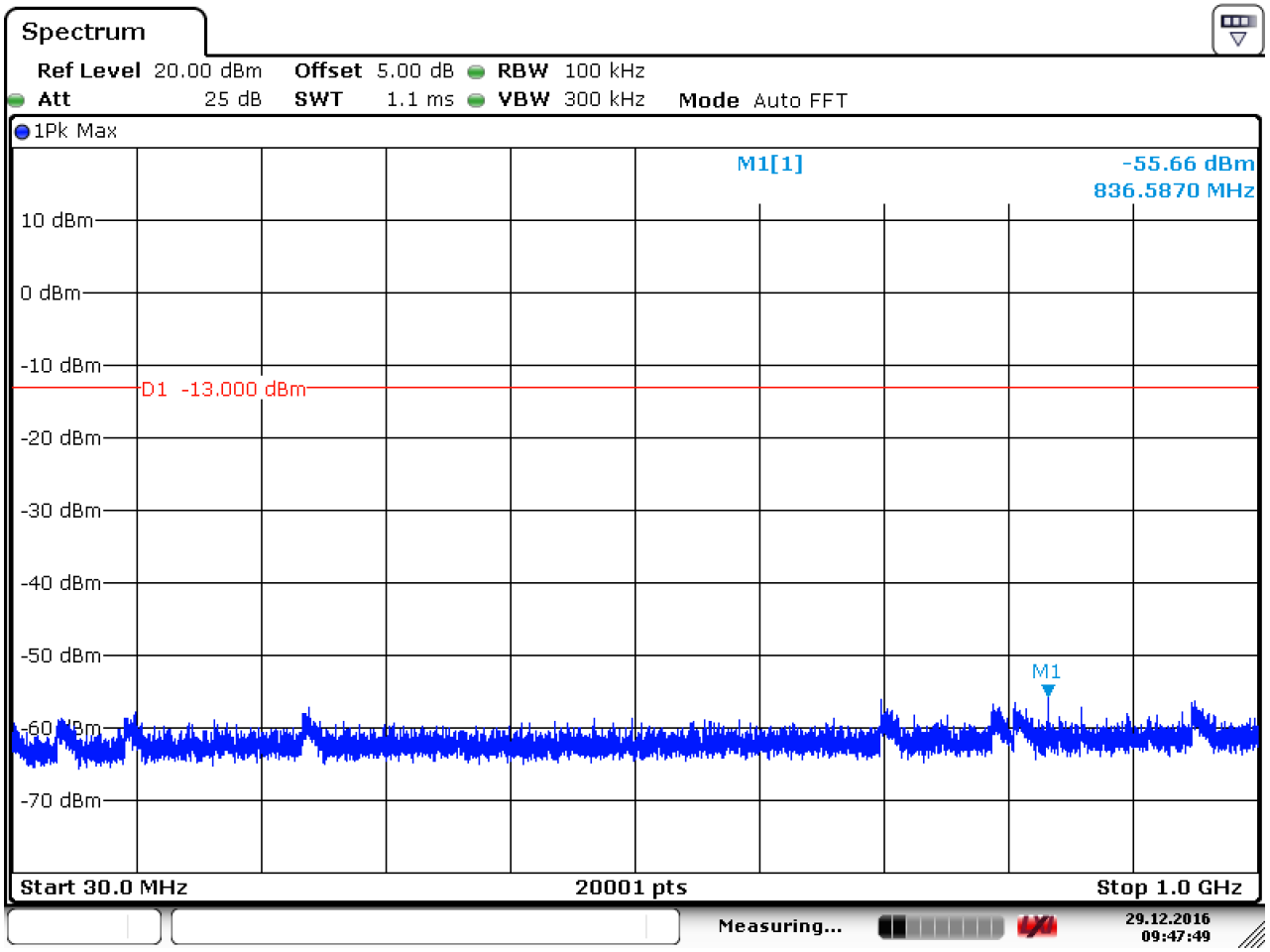
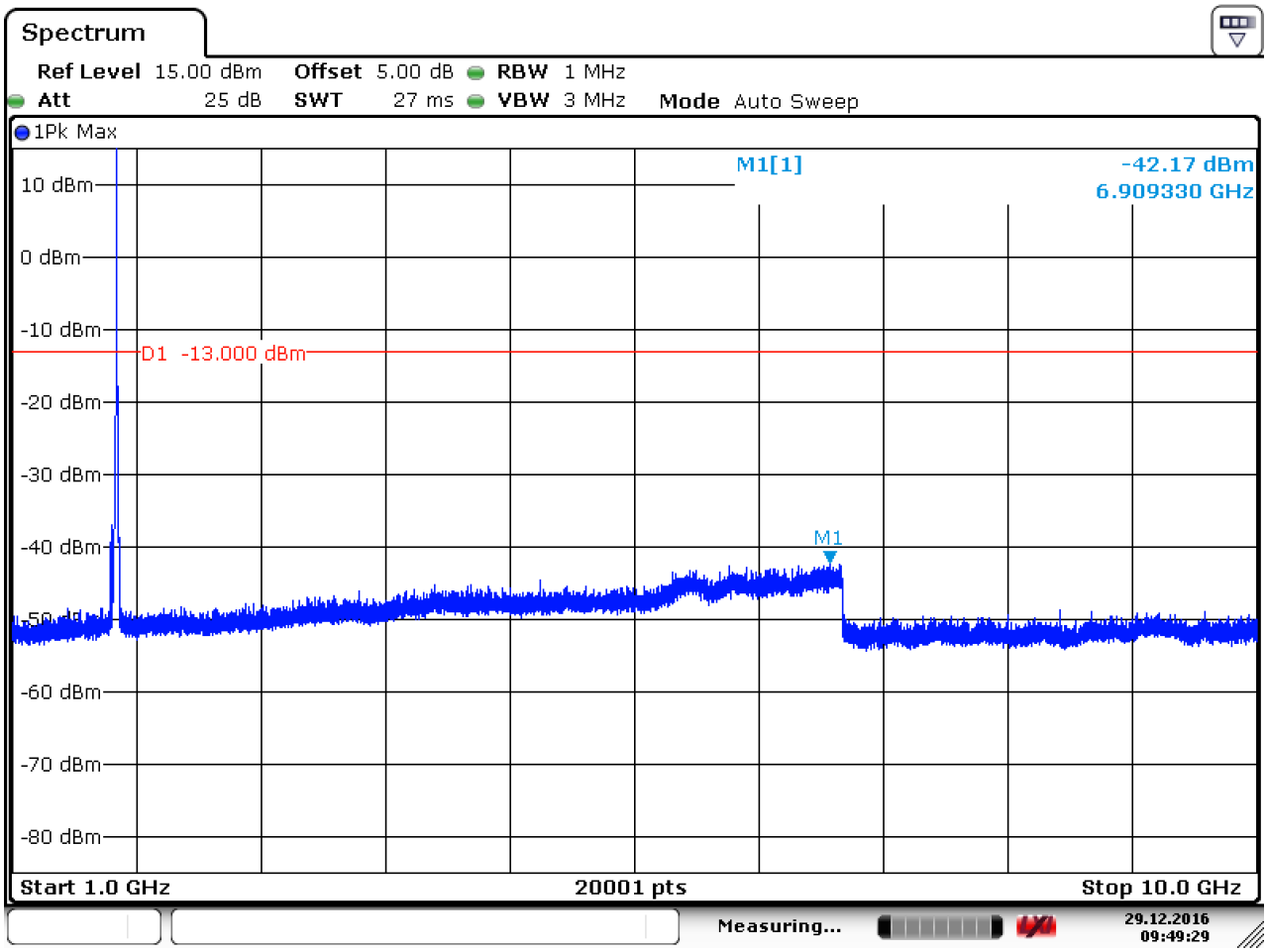


Date: 29.DEC.2016 16:13:31

6.1.2.1.3 Test Channel = HCH



Date: 29.DEC.2016 09:47:49



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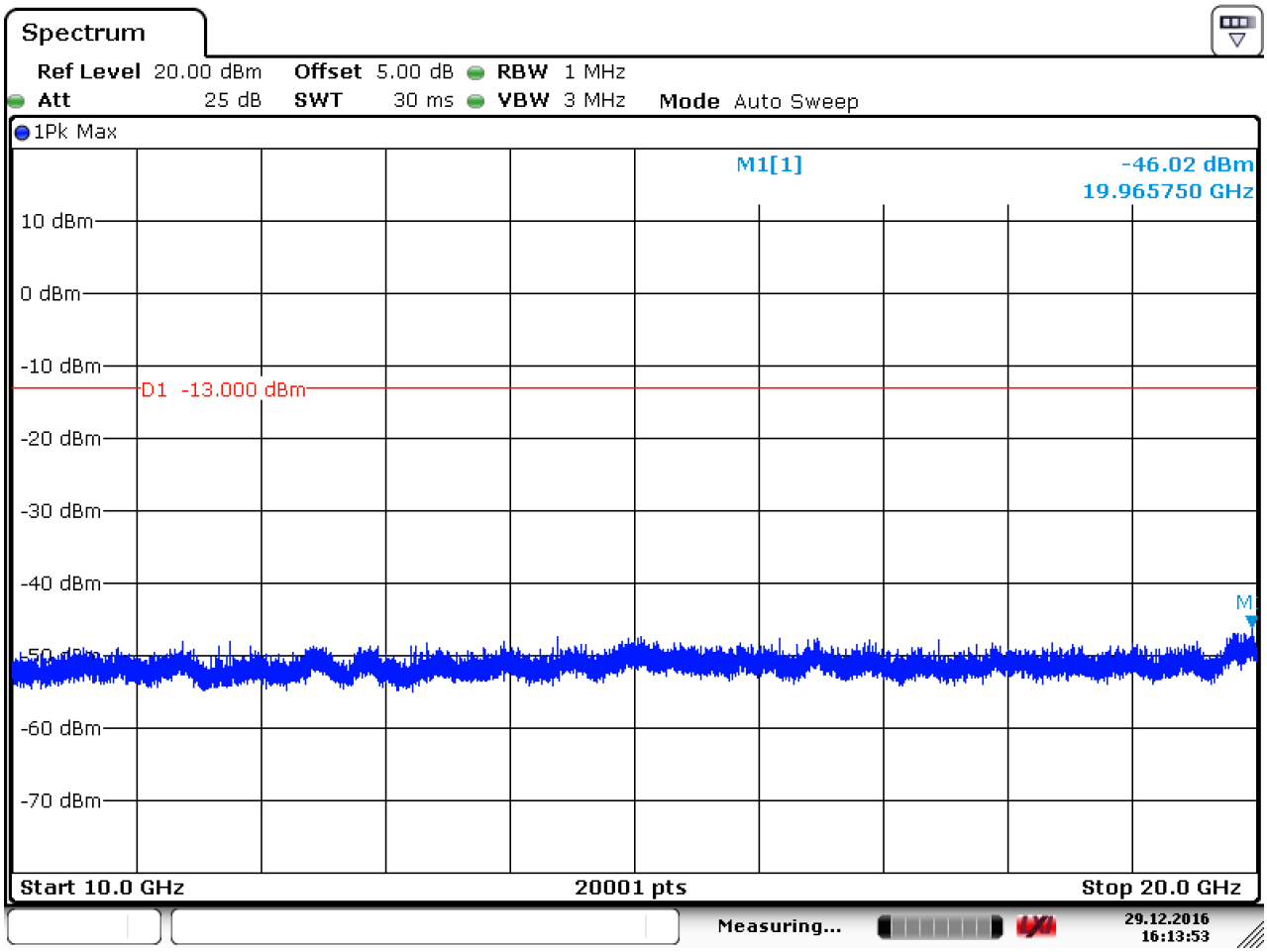
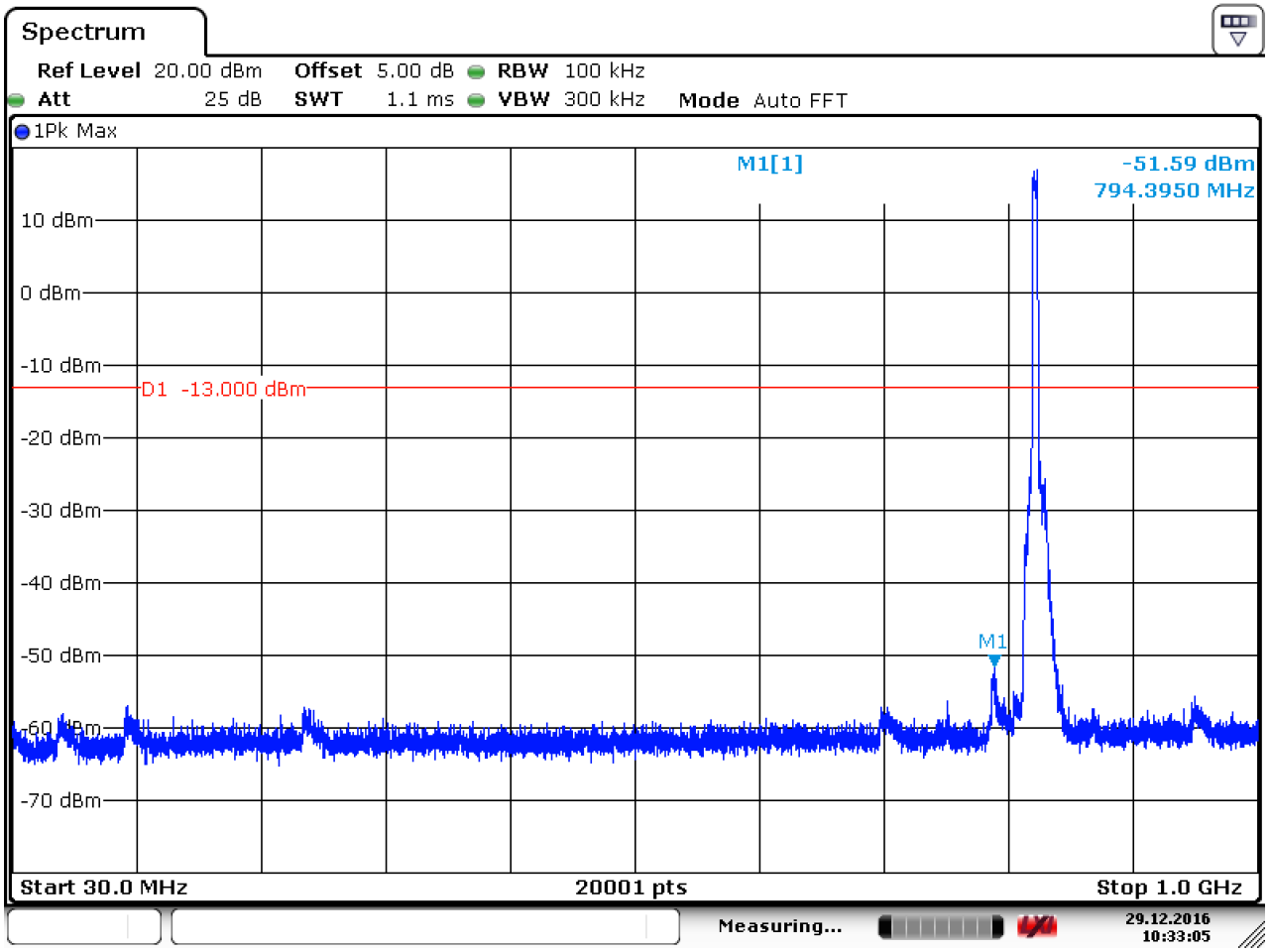


Date: 29.DEC.2016 16:13:53

6.1.3 Test Band = WCDMA 850

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH



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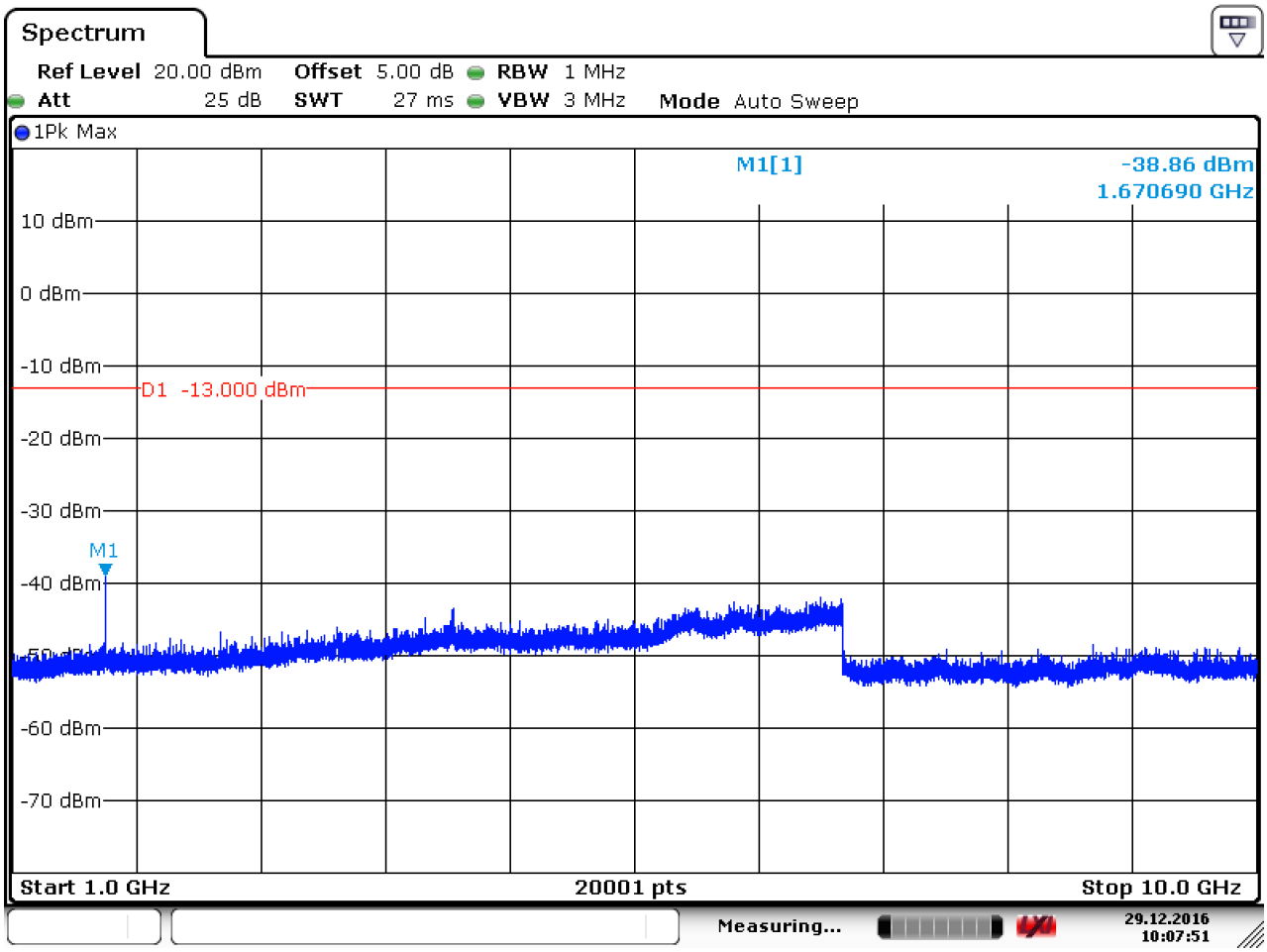
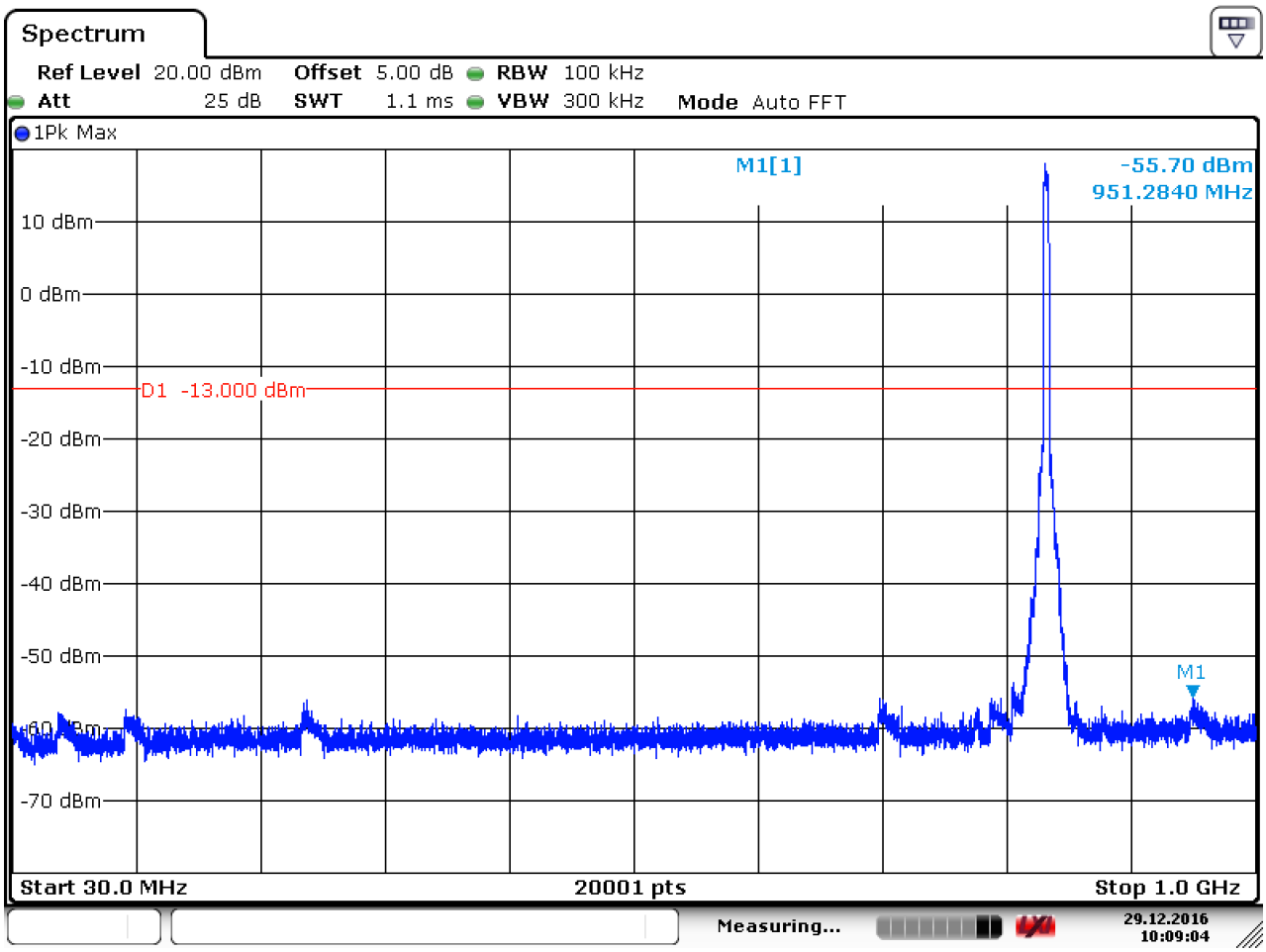
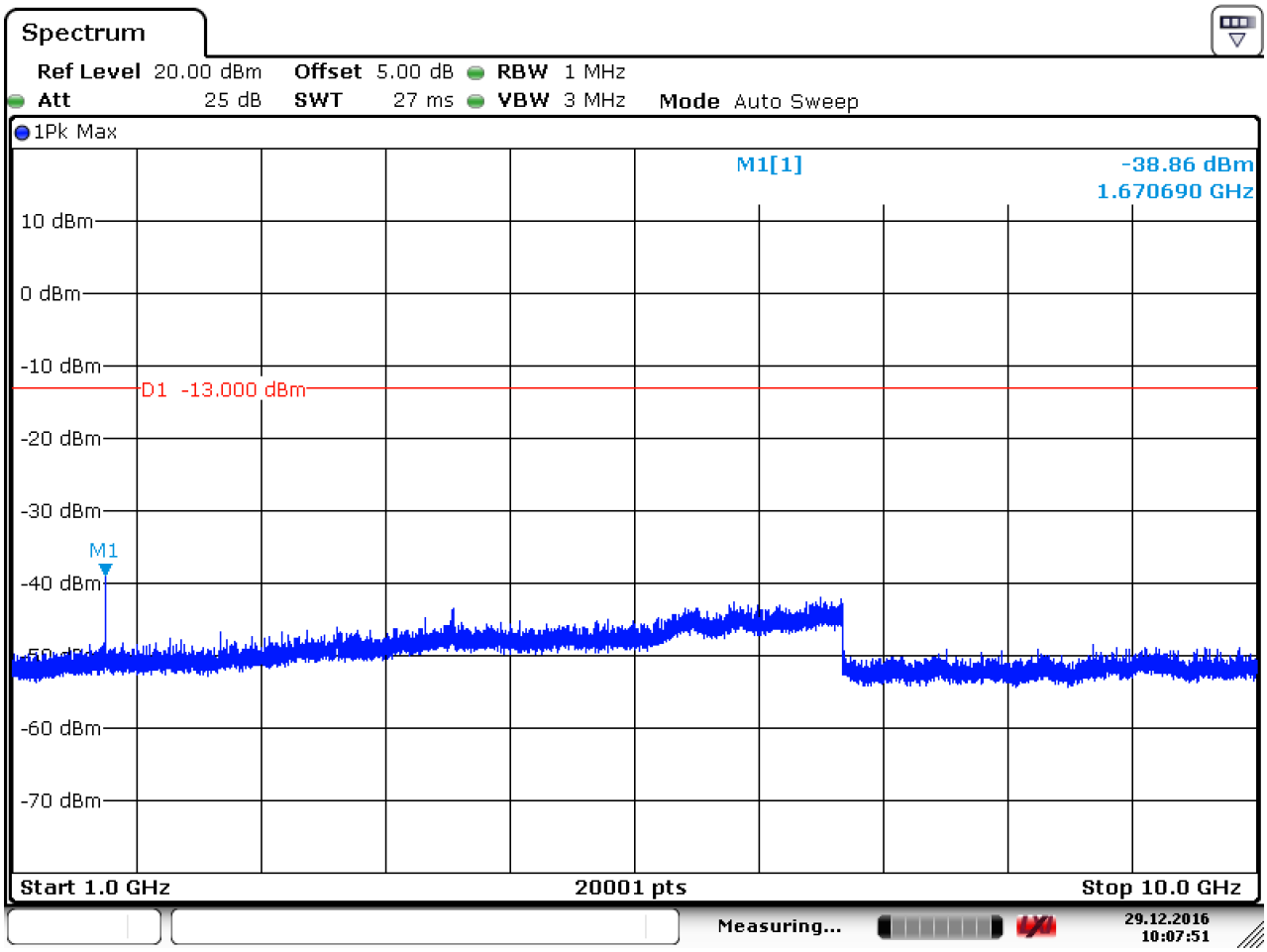


Date: 29.DEC.2016 10:07:51

6.1.3.1.2 Test Channel = MCH

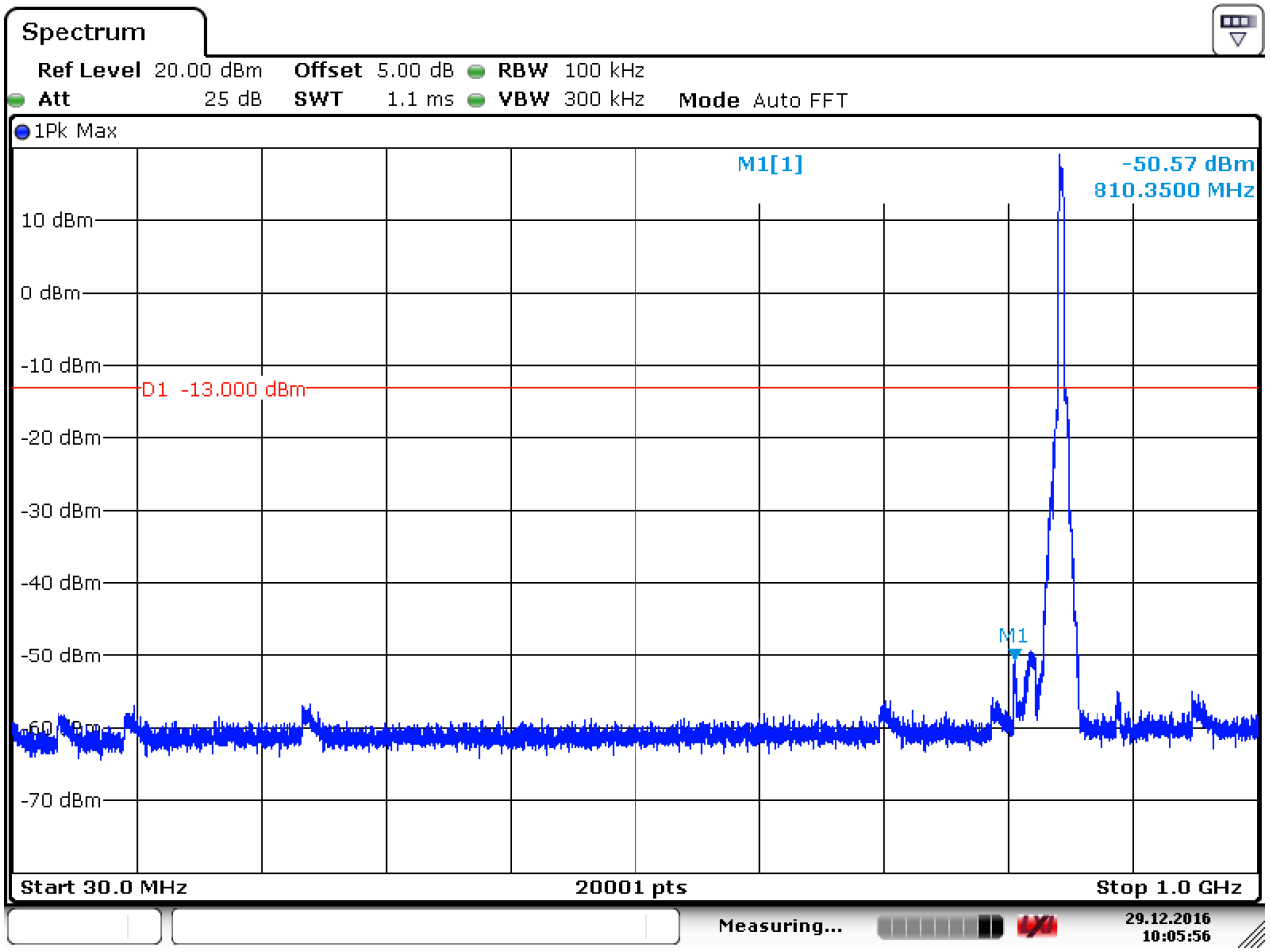


Date: 29.DEC.2016 10:09:05

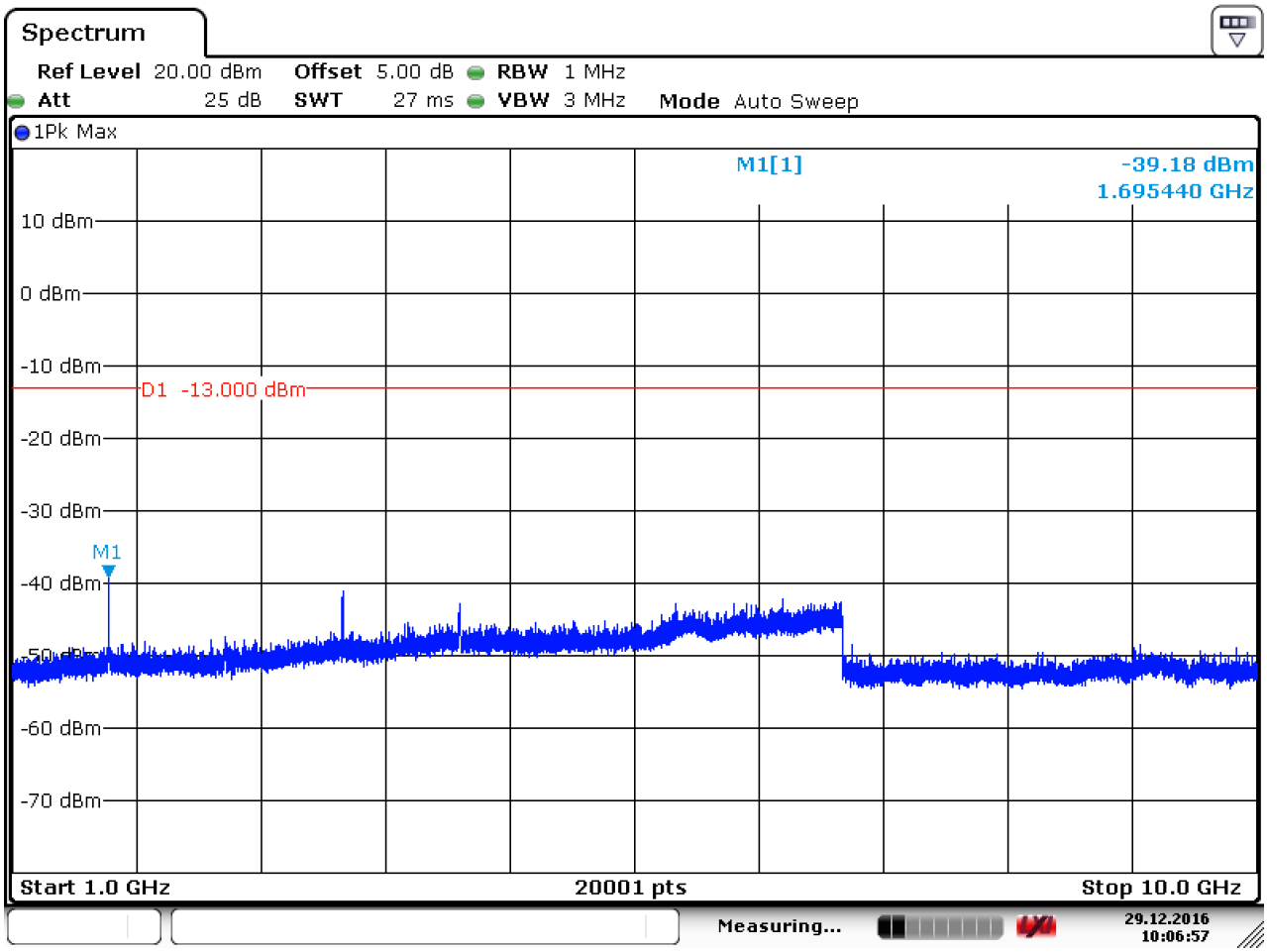


Date: 29.DEC.2016 10:07:51

6.1.3.1.3 Test Channel = HCH



Date: 29.DEC.2016 10:05:57



Date: 29.DEC.2016 10:06:58

7 Field Strength of Spurious Radiation

Part I - Test Plots

7.1 For WCDMA

7.1.1 Test Band = WCDMA 1900

7.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1199.000	-61.53	-13.00	48.53	Vertical
2582.500	-58.05	-13.00	45.05	Vertical
5030.925	-67.34	-13.00	54.34	Vertical
1327.500	-63.04	-13.00	50.04	Horizontal
2801.000	-56.82	-13.00	43.82	Horizontal
5077.725	-67.44	-13.00	54.44	Horizontal

7.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1195.500	-61.79	-13.00	48.79	Vertical
2467.000	-58.63	-13.00	45.63	Vertical
5319.037	-67.74	-13.00	54.74	Vertical
1454.500	-61.19	-13.00	48.19	Horizontal
2670.000	-57.79	-13.00	44.79	Horizontal
6224.325	-66.19	-13.00	53.19	Horizontal

7.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1267.500	-61.40	-13.00	48.40	Vertical
2187.500	-55.77	-13.00	42.77	Vertical
6518.775	-66.21	-13.00	53.21	Vertical
1454.500	-61.19	-13.00	48.19	Horizontal
2584.000	-58.56	-13.00	45.56	Horizontal
5468.212	-67.44	-13.00	54.44	Horizontal

7.1.2 Test Band = WCDMAband 1700

7.1.2.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1200.000	-61.52	-13.00	48.52	Vertical
1898.500	-56.46	-13.00	43.46	Vertical
5520.375	-67.40	-13.00	54.40	Vertical
1224.000	-62.44	-13.00	49.44	Horizontal
2681.500	-57.45	-13.00	44.45	Horizontal
6420.300	-67.17	-13.00	54.17	Horizontal

7.1.2.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1459.000	-61.49	-13.00	48.49	Vertical
2652.000	-57.39	-13.00	44.39	Vertical
7019.437	-66.15	-13.00	53.15	Vertical
1283.000	-62.81	-13.00	49.81	Horizontal
2681.000	-57.47	-13.00	44.47	Horizontal
6980.437	-65.86	-13.00	52.86	Horizontal

7.1.2.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1267.500	-61.44	-13.00	48.44	Vertical
1889.000	-51.26	-13.00	38.26	Vertical
4066.162	-68.90	-13.00	55.90	Vertical
1490.000	-60.89	-13.00	47.89	Horizontal
2492.500	-58.99	-13.00	45.99	Horizontal
6551.925	-66.16	-13.00	53.16	Horizontal

7.1.3 Test Band = WCDMAband 850

7.1.3.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1508.000	-61.85	-13.00	48.85	Vertical
1731.000	-51.88	-13.00	38.88	Vertical
5032.387	-67.43	-13.00	54.43	Vertical
1512.000	-61.17	-13.00	48.17	Horizontal
2602.500	-58.35	-13.00	45.35	Horizontal
5125.012	-67.44	-13.00	54.44	Horizontal

7.1.3.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1200.500	-61.48	-13.00	48.48	Vertical
1995.500	-58.11	-13.00	45.11	Vertical
2972.000	-56.66	-13.00	43.66	Vertical
1269.500	-62.44	-13.00	49.44	Horizontal
1895.000	-53.39	-13.00	40.39	Horizontal
5941.575	-66.68	-13.00	53.68	Horizontal

7.1.3.1.2 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1591.000	-60.94	-13.00	47.94	Vertical
2656.500	-57.51	-13.00	44.51	Vertical
6557.287	-65.76	-13.00	52.76	Vertical
1210.000	-62.31	-13.00	49.31	Horizontal
2872.000	-56.55	-13.00	43.55	Horizontal
3474.337	-69.51	-13.00	56.51	Horizontal

NOTE:

1) All modes are tested, but the data presented above is the worst case. 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
WCDMA 1900	UMTS/TM1	LCH	TN	VL	2.48	0.00134	PASS
				VN	-2.38	-0.00128	PASS
				VH	3.02	0.00163	PASS
		MCH	TN	VL	-4.83	-0.00257	PASS
				VN	3.73	0.00198	PASS
				VH	-0.37	-0.00020	PASS
		HCH	TN	VL	1.65	0.00086	PASS
				VN	-3.88	-0.00203	PASS
				VH	-4.64	-0.00243	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 1700	UMTS/TM1	LCH	TN	VL	-5.38	-0.00314	PASS
				VN	-2.40	-0.00140	PASS
				VH	2.32	0.00135	PASS
		MCH	TN	VL	-3.25	-0.00188	PASS
				VN	0.39	0.00023	PASS
				VH	-2.45	-0.00141	PASS
		HCH	TN	VL	-3.75	-0.00214	PASS
				VN	-4.61	-0.00263	PASS
				VH	-2.80	-0.00160	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 850	UMTS/TM1	LCH	TN	VL	-3.66	-0.00443	PASS
				VN	-1.48	-0.00179	PASS
				VH	2.55	0.00309	PASS
		MCH	TN	VL	-6.84	-0.00818	PASS
				VN	2.34	0.00280	PASS
				VH	-2.45	-0.00293	PASS
		HCH	TN	VL	3.75	0.00443	PASS
				VN	-5.61	-0.00663	PASS
				VH	2.57	0.00304	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
WCDMA 1900	UMTS/TM1	LCH	VN	-30	-4.43	-0.00239	PASS
				-20	3.60	0.00194	PASS
				-10	3.65	0.00197	PASS
				0	-2.68	-0.00145	PASS
				10	2.53	0.00137	PASS
				20	-4.80	-0.00259	PASS
				30	1.60	0.00086	PASS
				40	-3.04	-0.00164	PASS
				50	-6.33	-0.00342	PASS
		MCH	VN	-30	-3.80	-0.00202	PASS
				-20	-5.21	-0.00277	PASS
				-10	-0.39	-0.00021	PASS
				0	-2.38	-0.00127	PASS
				10	1.51	0.00080	PASS
				20	2.70	0.00144	PASS
				30	1.41	0.00075	PASS
				40	0.13	0.00007	PASS
				50	-4.35	-0.00231	PASS
		HCH	VN	-30	-1.17	-0.00061	PASS
				-20	3.38	0.00177	PASS
				-10	2.35	0.00123	PASS
				0	-5.42	-0.00284	PASS
				10	2.41	0.00126	PASS
				20	-2.78	-0.00146	PASS
				30	3.24	0.00170	PASS
				40	-1.60	-0.00084	PASS
				50	-4.43	-0.00232	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 1700	UMTS/TM1	LCH	VN	-30	-3.23	-0.00189	PASS
				-20	-4.25	-0.00248	PASS
				-10	1.58	0.00092	PASS
				0	-3.45	-0.00201	PASS
				10	-2.58	-0.00151	PASS
				20	1.42	0.00083	PASS
				30	-3.29	-0.00192	PASS
				40	-3.89	-0.00227	PASS
				50	-4.34	-0.00253	PASS
		MCH	VN	-30	-3.92	-0.00226	PASS
				-20	1.25	0.00072	PASS
				-10	-2.43	-0.00140	PASS
				0	3.80	0.00219	PASS
				10	-3.15	-0.00182	PASS
				20	-6.32	-0.00365	PASS
				30	-2.87	-0.00166	PASS
				40	-4.19	-0.00242	PASS
				50	-5.81	-0.00335	PASS
		HCH	VN	-30	-3.35	-0.00191	PASS
				-20	3.62	0.00207	PASS
				-10	-2.85	-0.00163	PASS
				0	-0.37	-0.00021	PASS
				10	-5.18	-0.00296	PASS
				20	-4.16	-0.00237	PASS
				30	1.69	0.00096	PASS
				40	-4.22	-0.00241	PASS
				50	-4.20	-0.00240	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA 850	UMTS/TM1	LCH	VN	-30	-4.13	-0.00500	PASS
				-20	-4.08	-0.00494	PASS
				-10	1.77	0.00214	PASS
				0	-2.57	-0.00311	PASS
				10	-3.75	-0.00454	PASS
				20	-4.08	-0.00494	PASS
				30	1.54	0.00186	PASS
				40	-3.67	-0.00444	PASS
				50	-5.31	-0.00643	PASS
		MCH	VN	-30	-5.02	-0.00600	PASS
				-20	-2.44	-0.00292	PASS
				-10	-4.32	-0.00516	PASS
				0	1.96	0.00234	PASS
				10	-5.15	-0.00616	PASS
				20	-2.62	-0.00313	PASS
				30	-3.37	-0.00403	PASS
				40	0.44	0.00053	PASS
				50	-6.04	-0.00722	PASS
		HCH	VN	-30	-3.45	-0.00408	PASS
				-20	2.34	0.00276	PASS
				-10	3.45	0.00408	PASS
				0	-4.30	-0.00508	PASS
				10	-6.31	-0.00745	PASS
				20	-4.30	-0.00508	PASS
				30	-3.37	-0.00398	PASS
				40	-2.55	-0.00301	PASS
				50	-3.19	-0.00377	PASS

The End