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]	ERP[dB]	Limit[dBm]	Verdict
GSM 850	GSM/TM1	LCH	32.59	31.59	38.45	PASS
		MCH	32.31	31.31	38.45	PASS
		HCH	32.14	31.14	38.45	PASS
	GSM/TM2	LCH	26.91	25.91	38.45	PASS
		MCH	27.18	26.18	38.45	PASS
		HCH	27.14	26.14	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

Test Band	Test Mode	Test Channel	Measured[dB]	EIRP[dB]	Limit[dBm]	Verdict
GSM 1900	GSM/TM1	LCH	30.31	30.31	33	PASS
		MCH	29.94	29.94	33	PASS
		HCH	29.60	29.60	33	PASS
	GSM/TM2	LCH	26.50	26.50	33	PASS
		MCH	26.13	26.13	33	PASS
		HCH	25.93	25.93	33	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

2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM 850	GSM/TM1	LCH	4.67	13	PASS
		MCH	4.72	13	PASS
		HCH	4.64	13	PASS
	GSM/TM2	LCH	8.32	13	PASS
		MCH	8.32	13	PASS
		HCH	8.55	13	PASS
GSM 1900	GSM/TM1	LCH	4.78	13	PASS
		MCH	4.64	13	PASS
		HCH	4.72	13	PASS
	GSM/TM2	LCH	8.52	13	PASS
		MCH	8.17	13	PASS
		HCH	8.35	13	PASS

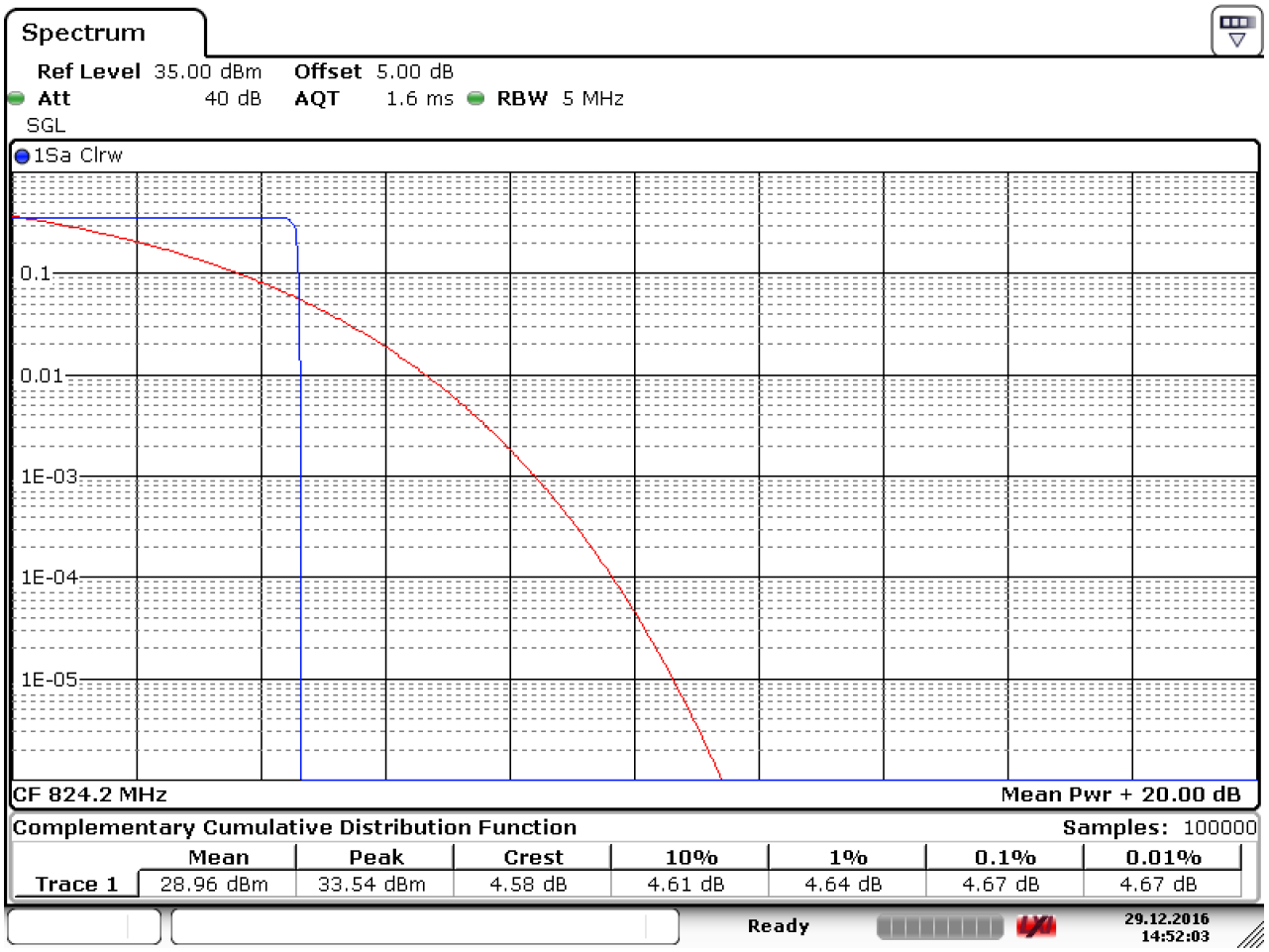
Part II - Test Plots

2.1 For GSM

2.1.1 Test Band = GSM 850

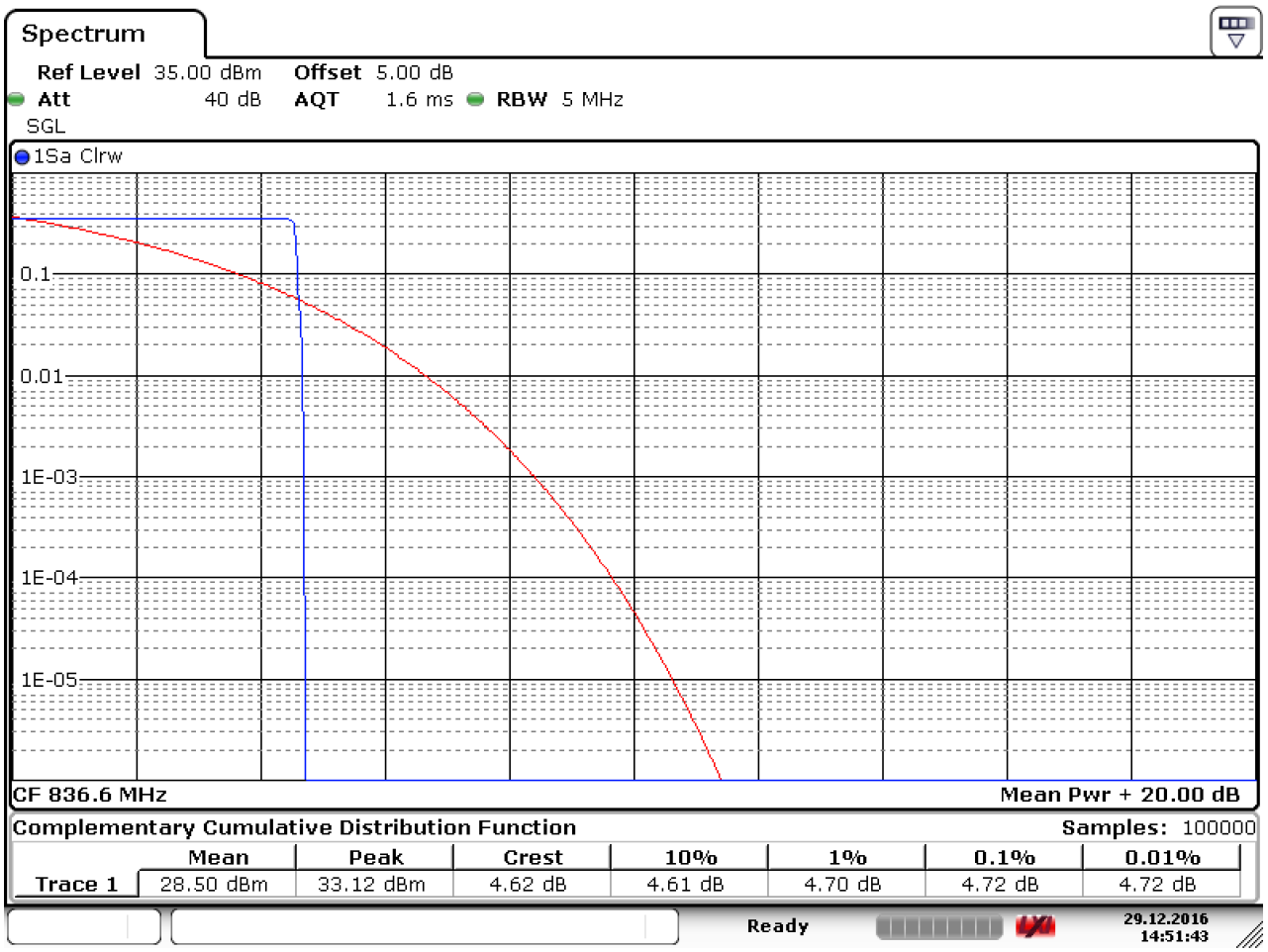
2.1.1.1 Test Mode = GSM/TM1

2.1.1.1.1 Test Channel = LCH



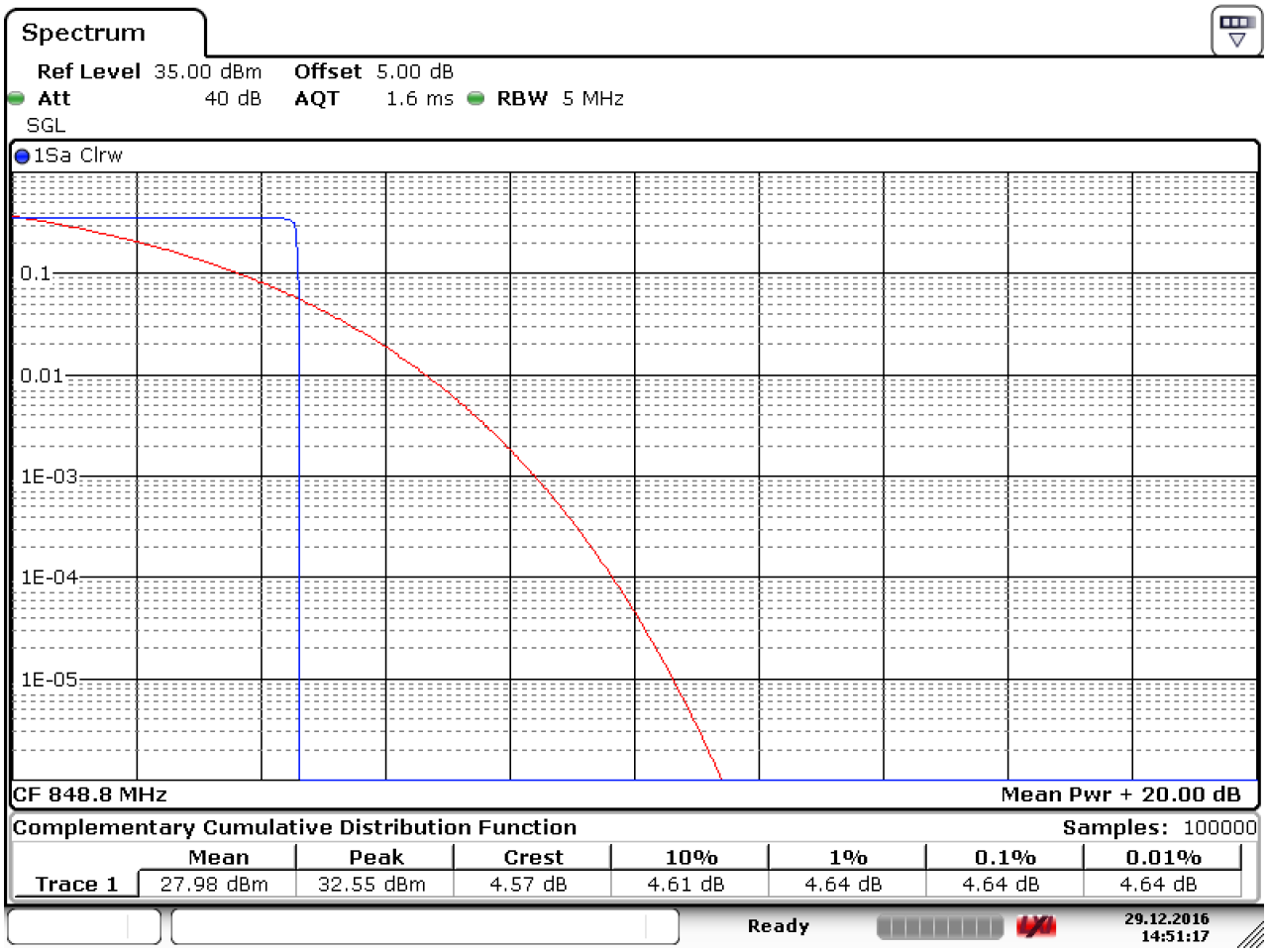
Date: 29.DEC.2016 14:52:03

2.1.1.1.2 Test Channel = MCH



Date: 29.DEC.2016 14:51:43

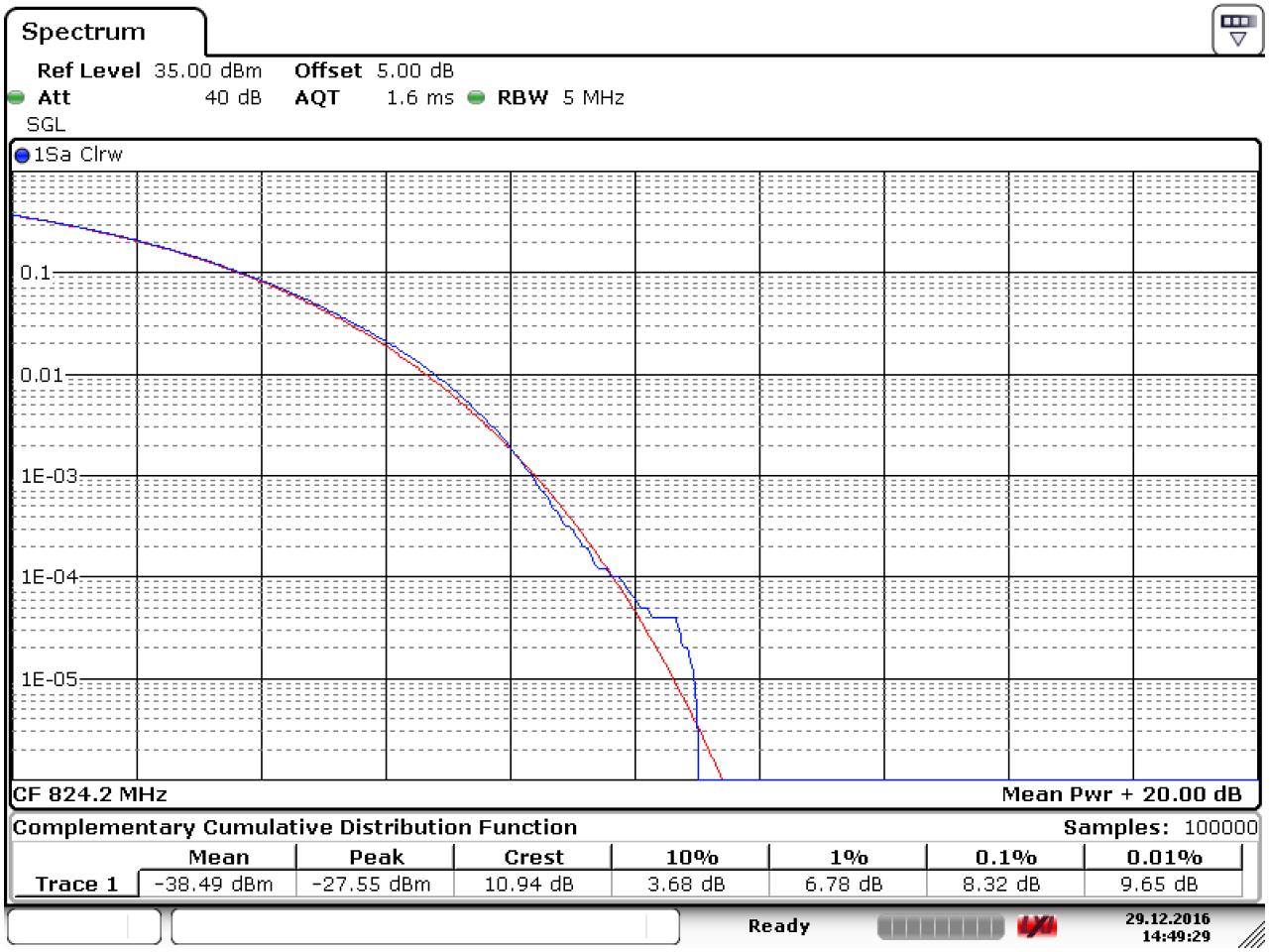
2.1.1.1.3 Test Channel = HCH



Date: 29.DEC.2016 14:51:18

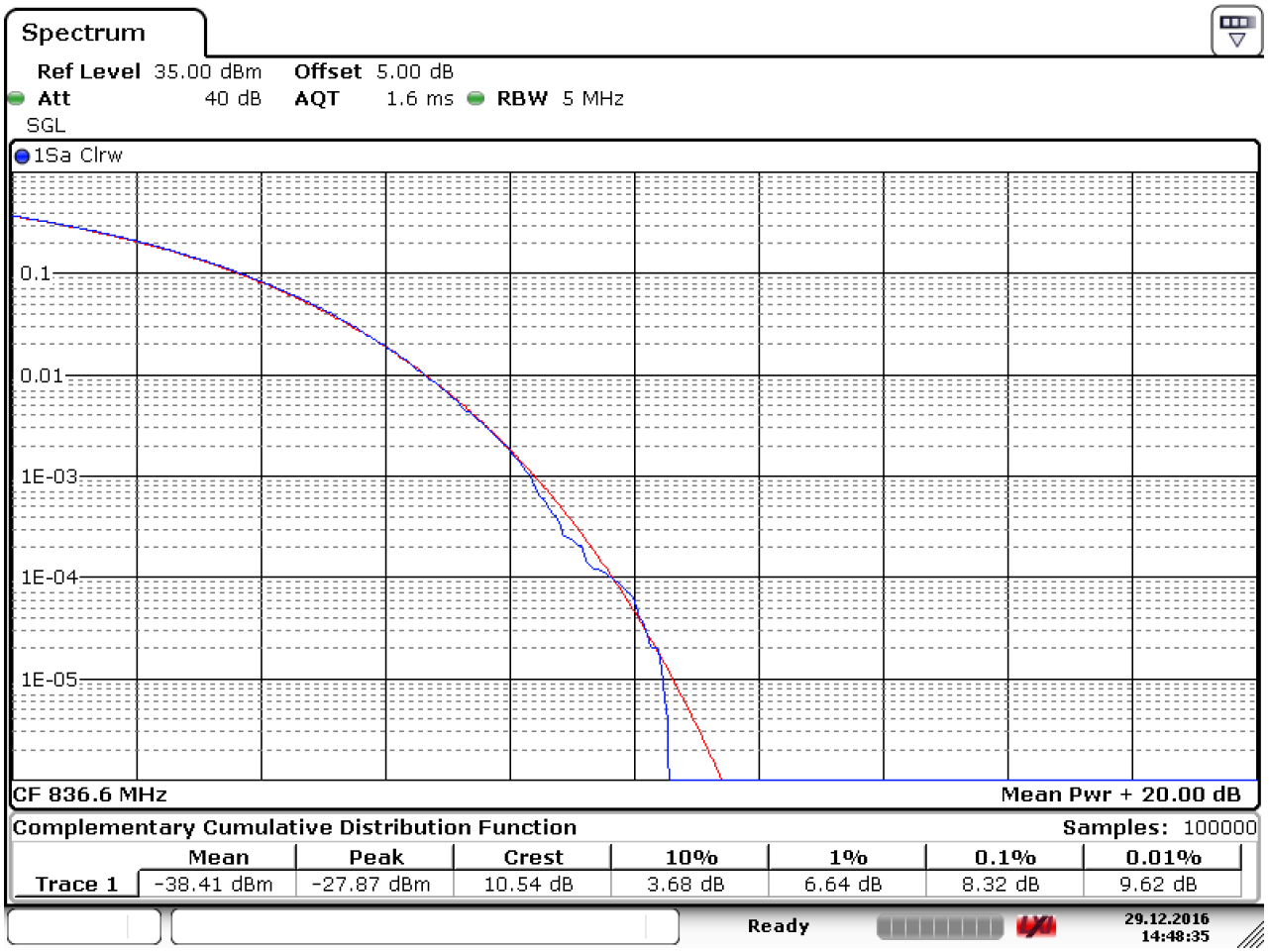
2.1.1.2 Test Mode = GSM/TM2

2.1.1.2.1 Test Channel = LCH



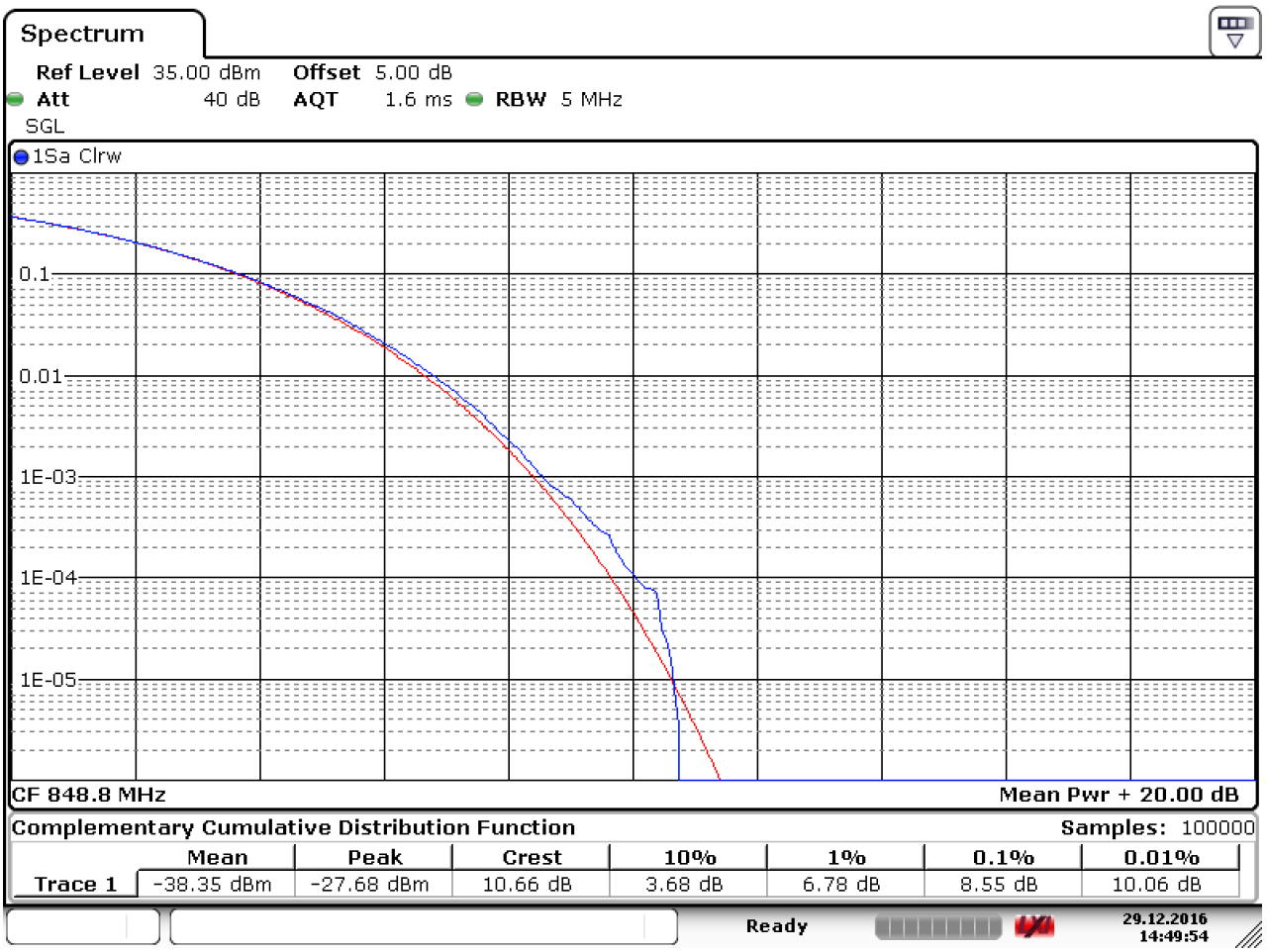
Date: 29.DEC.2016 14:49:30

2.1.1.2.2 Test Channel = MCH



Date: 29.DEC.2016 14:48:35

2.1.1.2.3 Test Channel = HCH

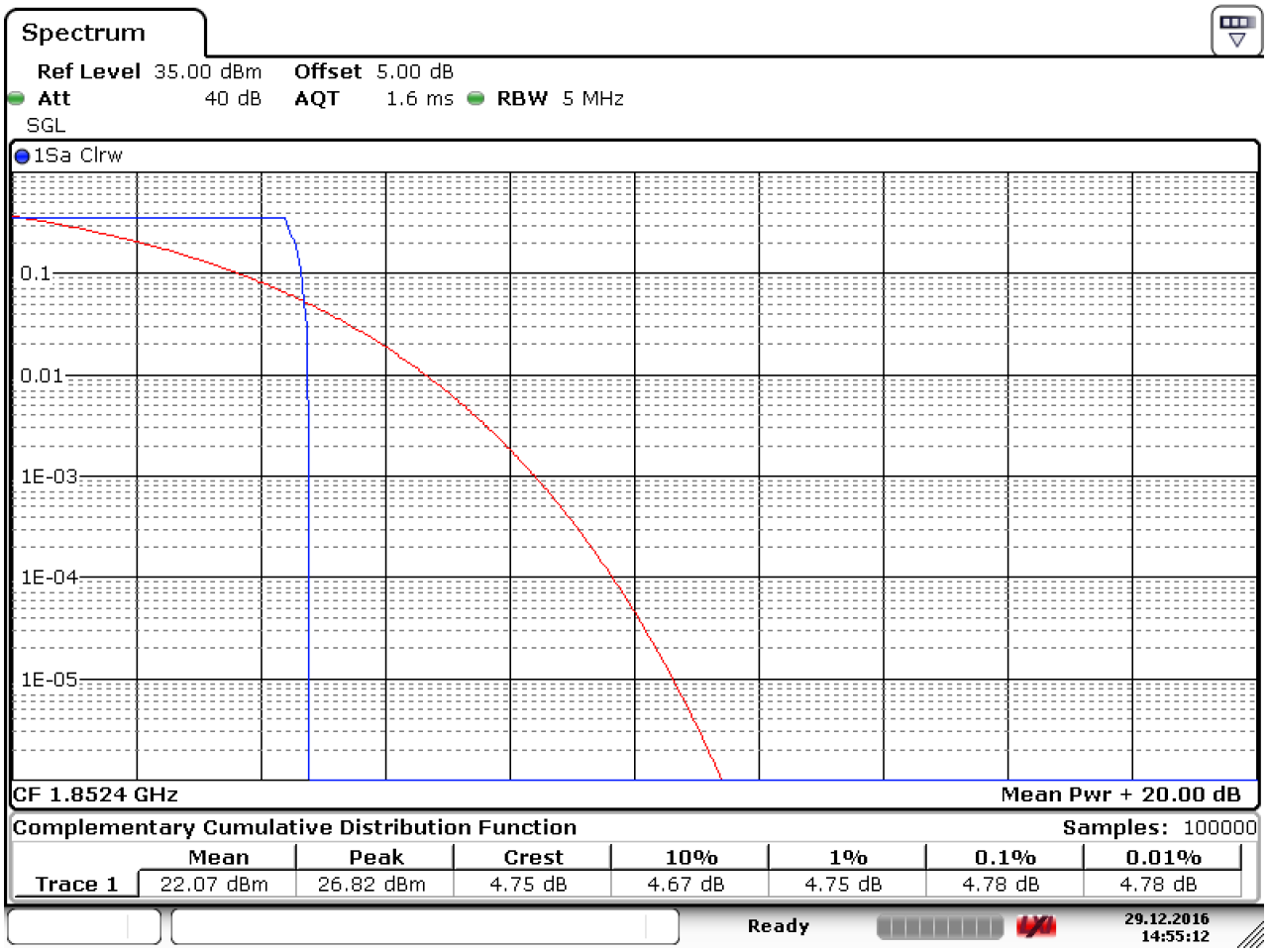


Date: 29.DEC.2016 14:49:54

2.1.2 Test Band = GSM 1900

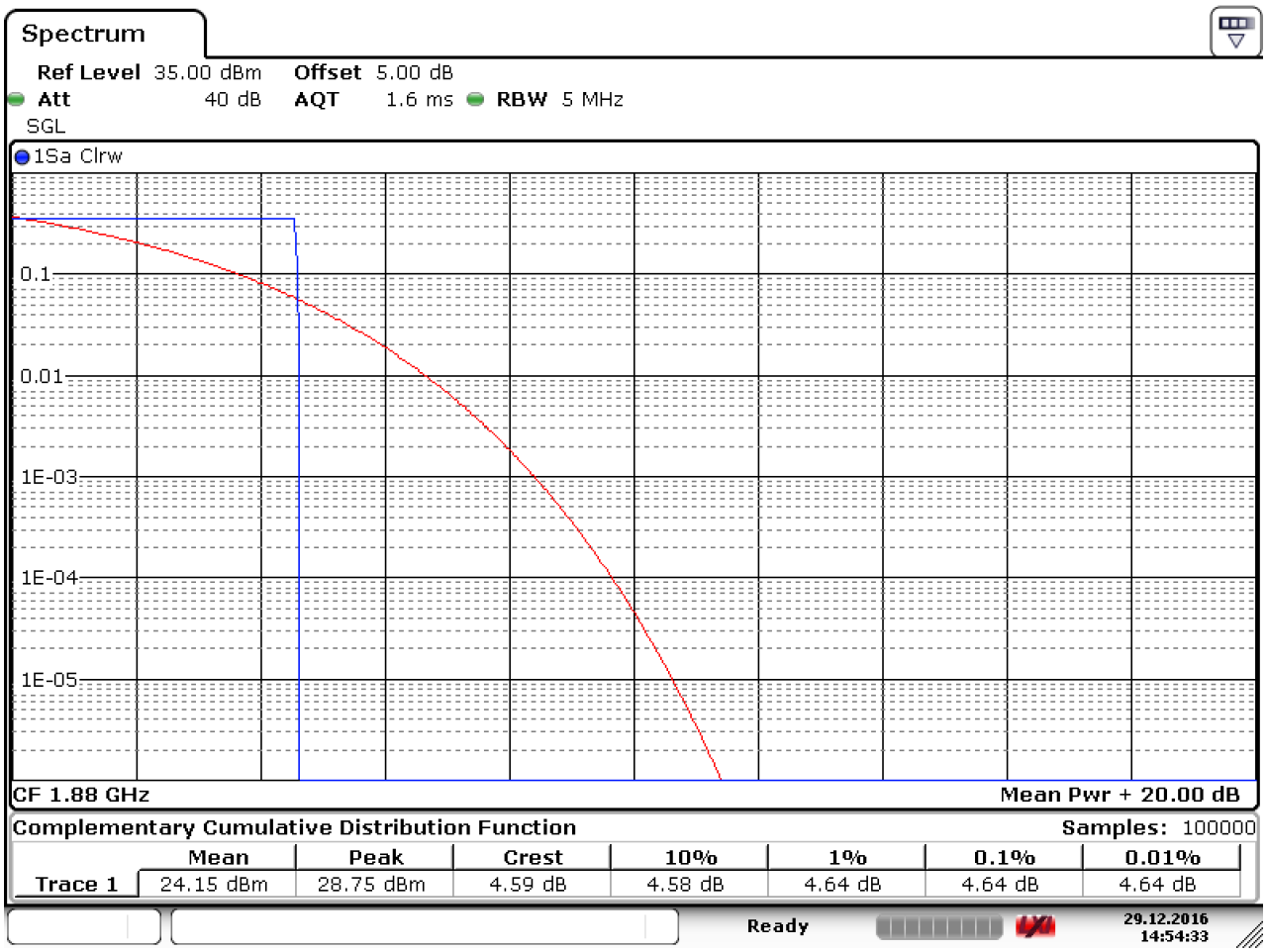
2.1.2.1 Test Mode = GSM/TM1

2.1.2.1.1 Test Channel = LCH



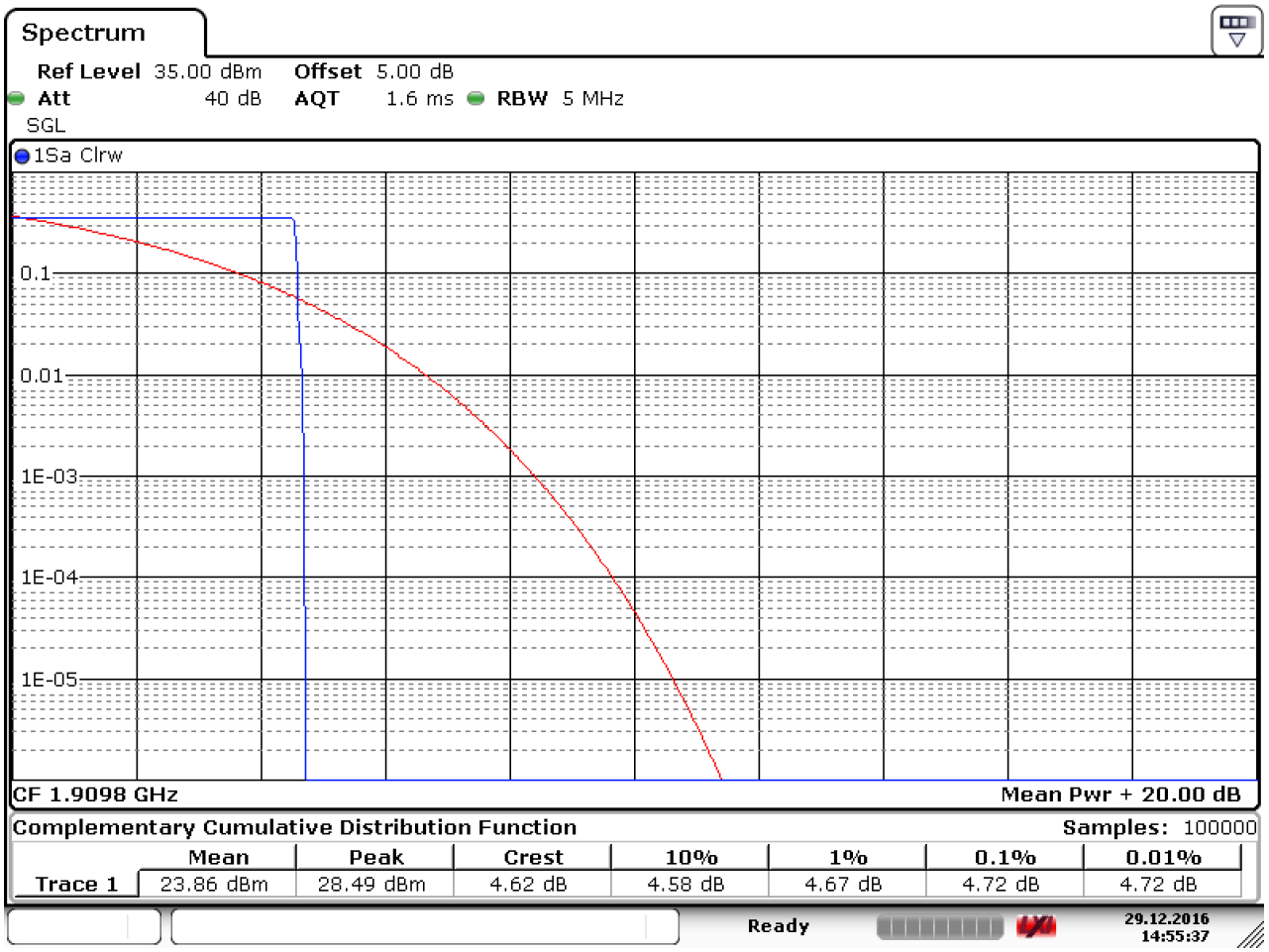
Date: 29.DEC.2016 14:55:13

2.1.2.1.2 Test Channel = MCH



Date: 29.DEC.2016 14:54:33

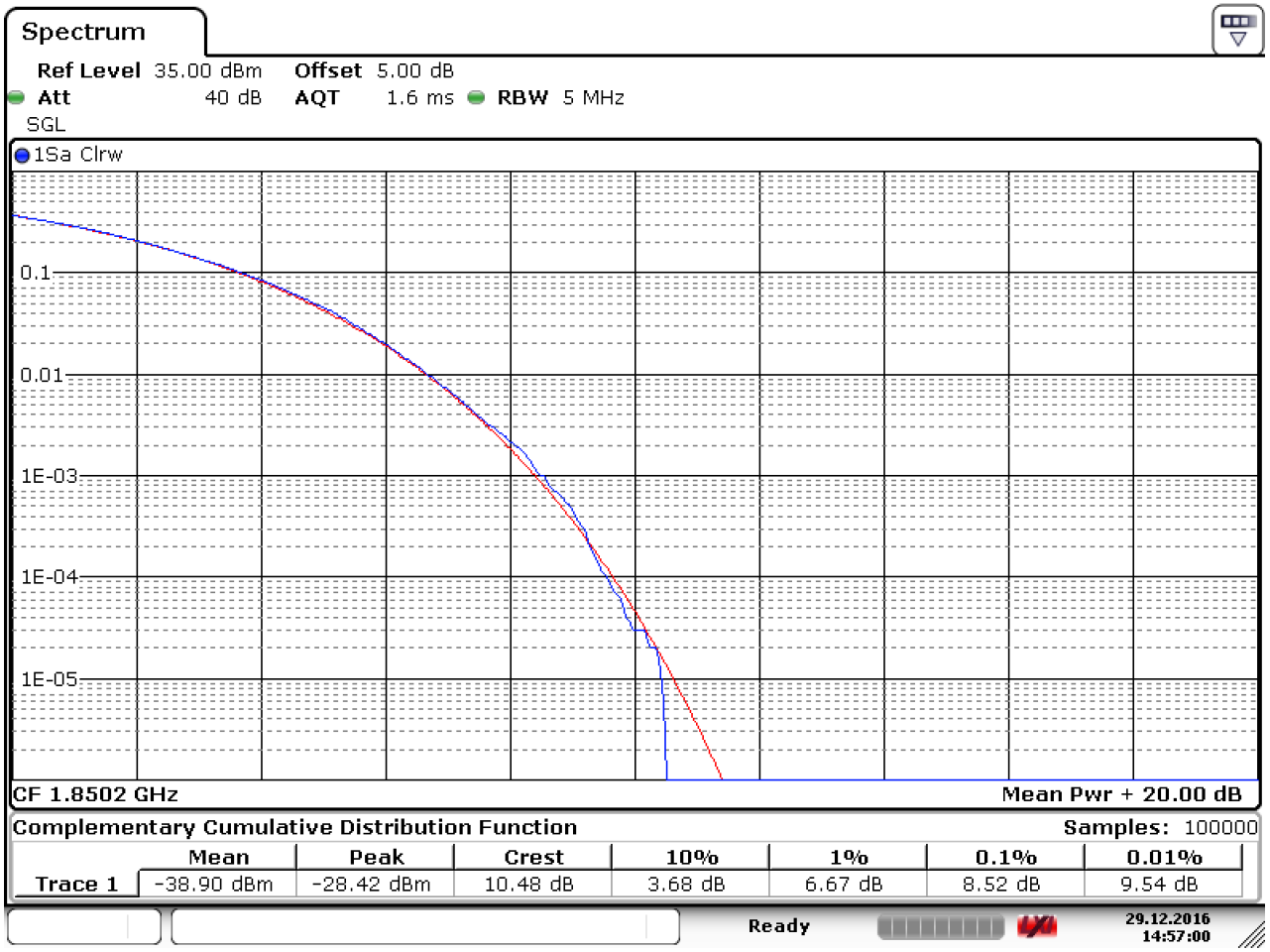
2.1.2.1.3 Test Channel = HCH



Date: 29.DEC.2016 14:55:37

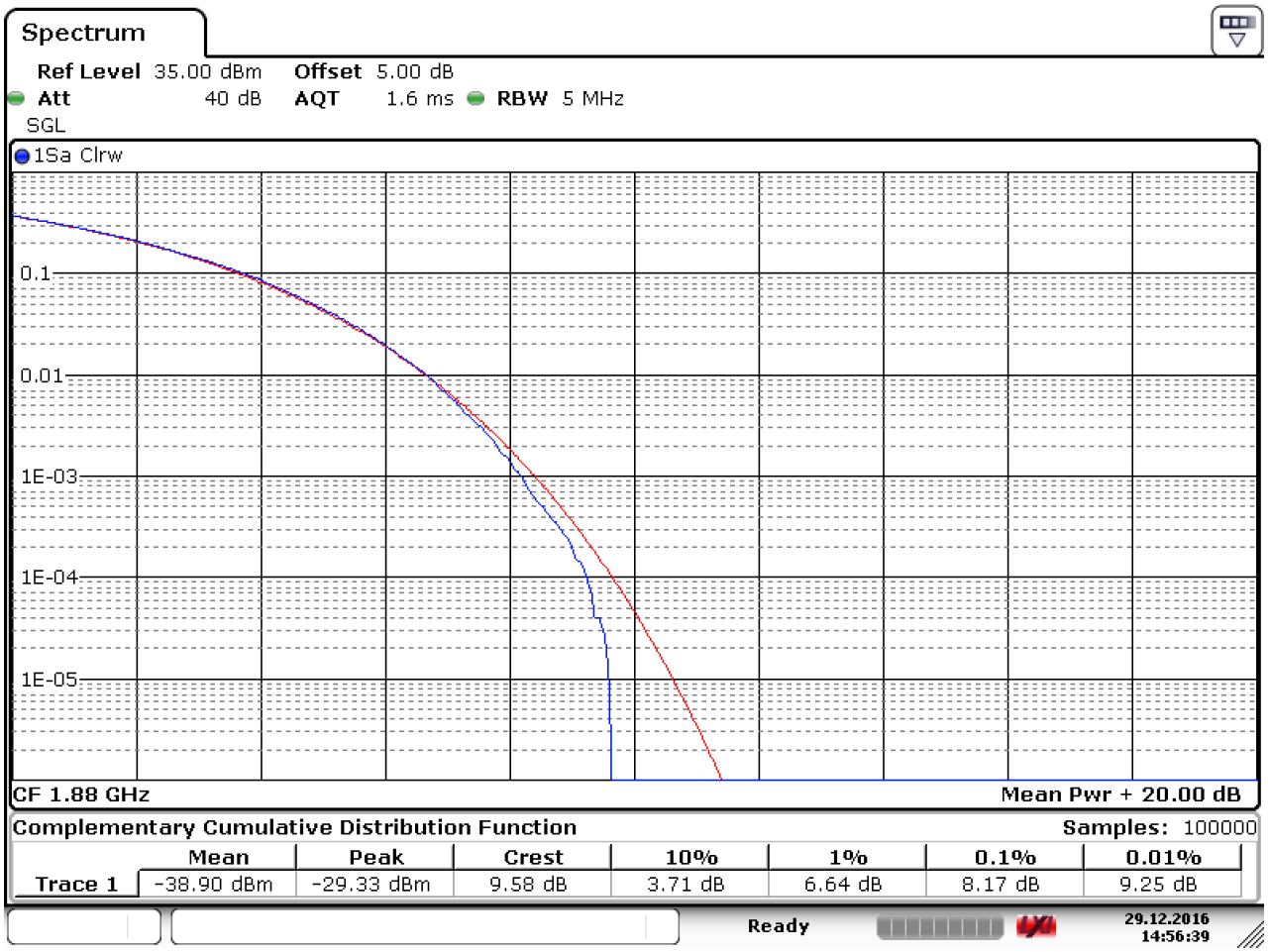
2.1.2.2 Test Mode = GSM/TM2

2.1.2.2.1 Test Channel = LCH



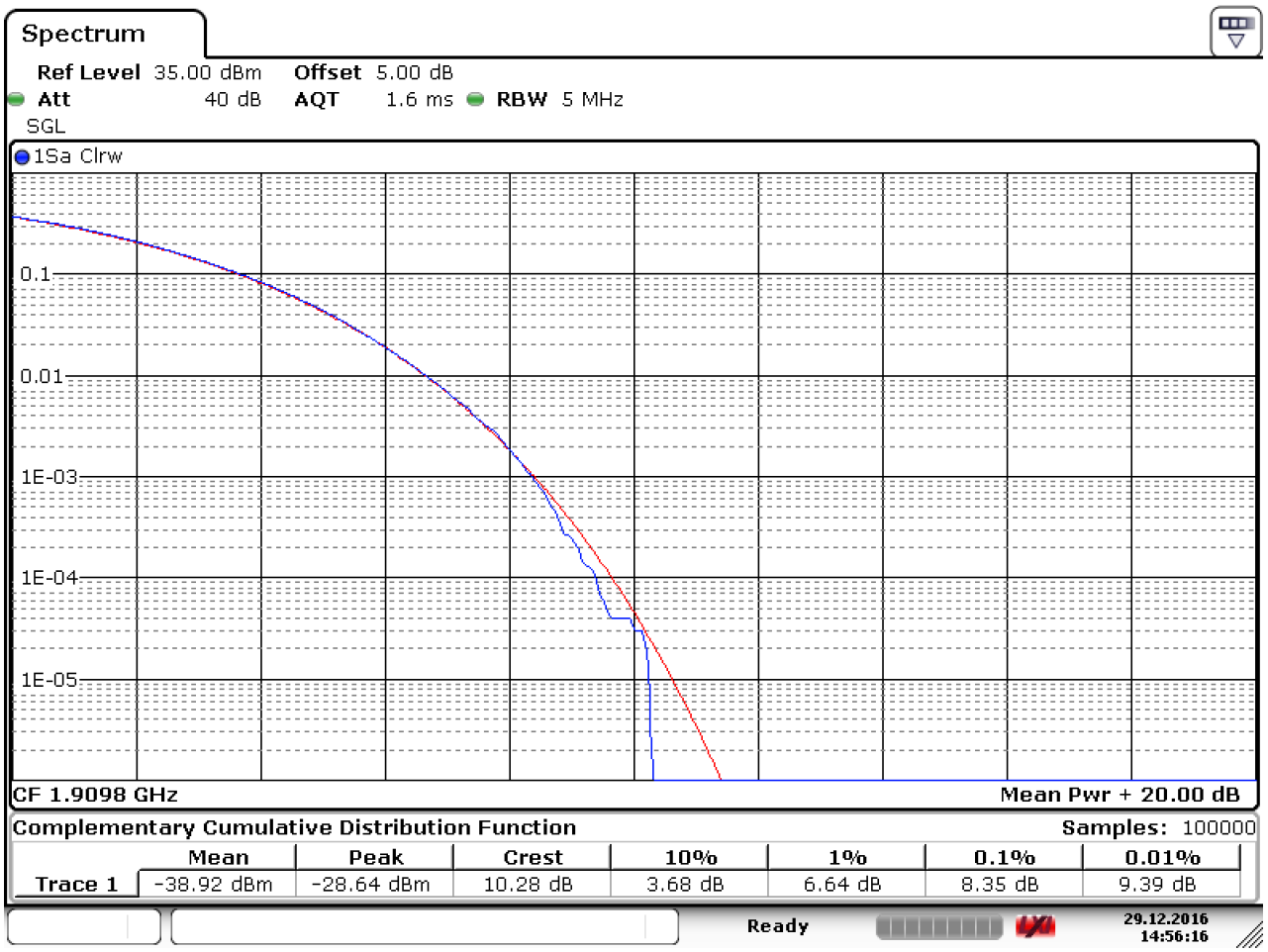
Date: 29.DEC.2016 14:57:00

2.1.2.2.2 Test Channel = MCH



Date: 29.DEC.2016 14:56:40

2.1.2.2.3 Test Channel = HCH



Date: 29.DEC.2016 14:56:17

3 Modulation Characteristics

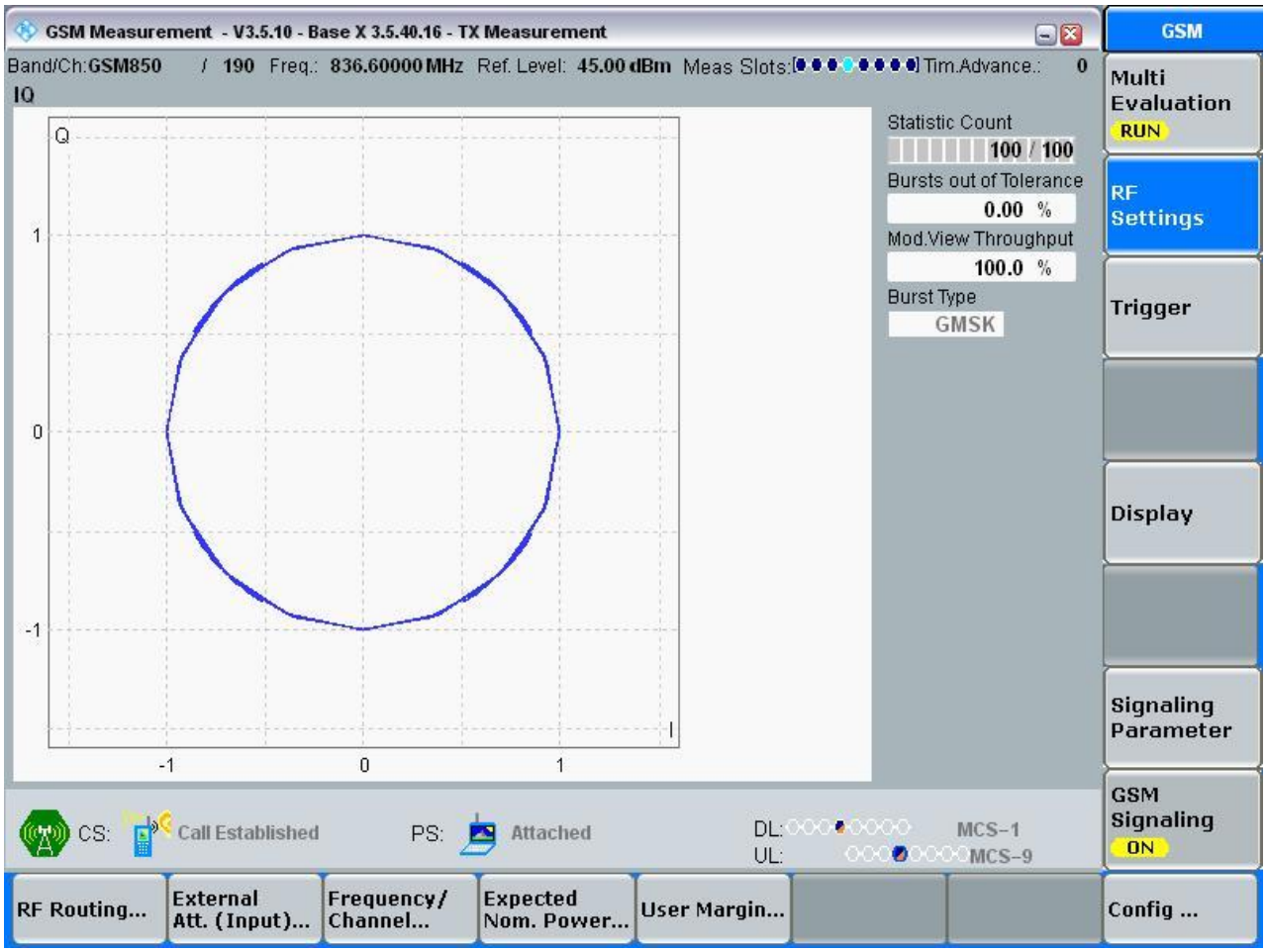
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM 850

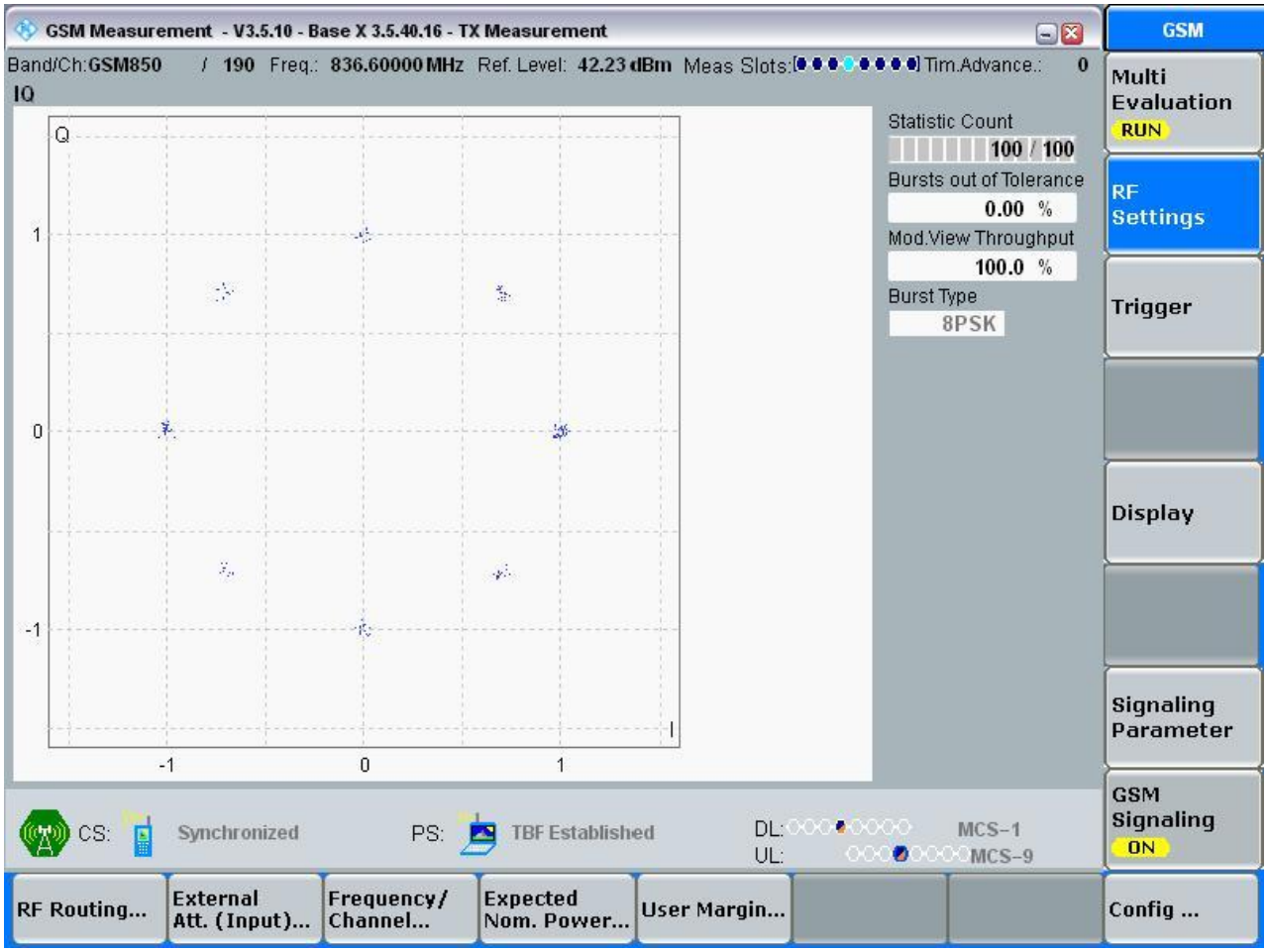
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

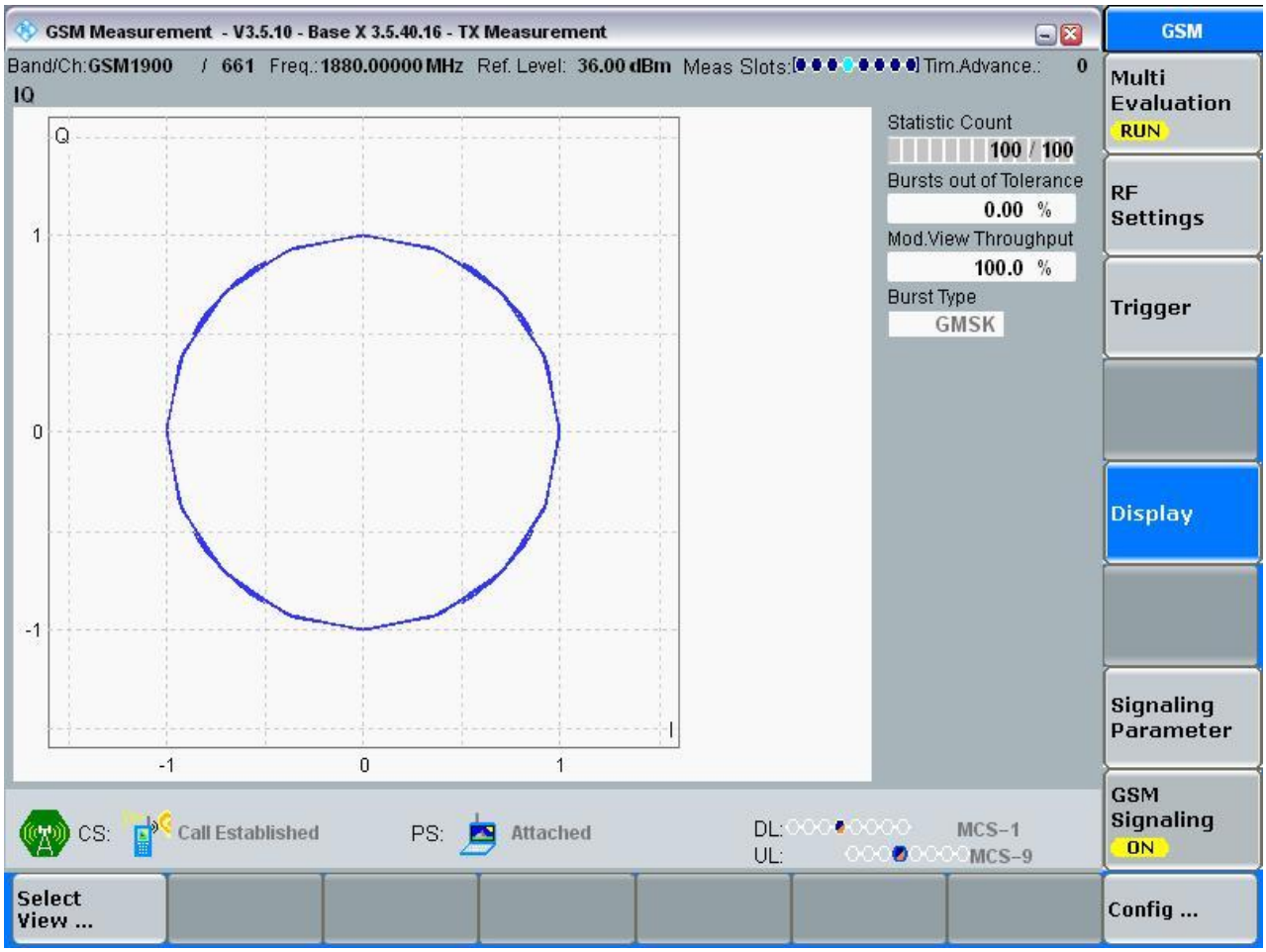
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM 1900

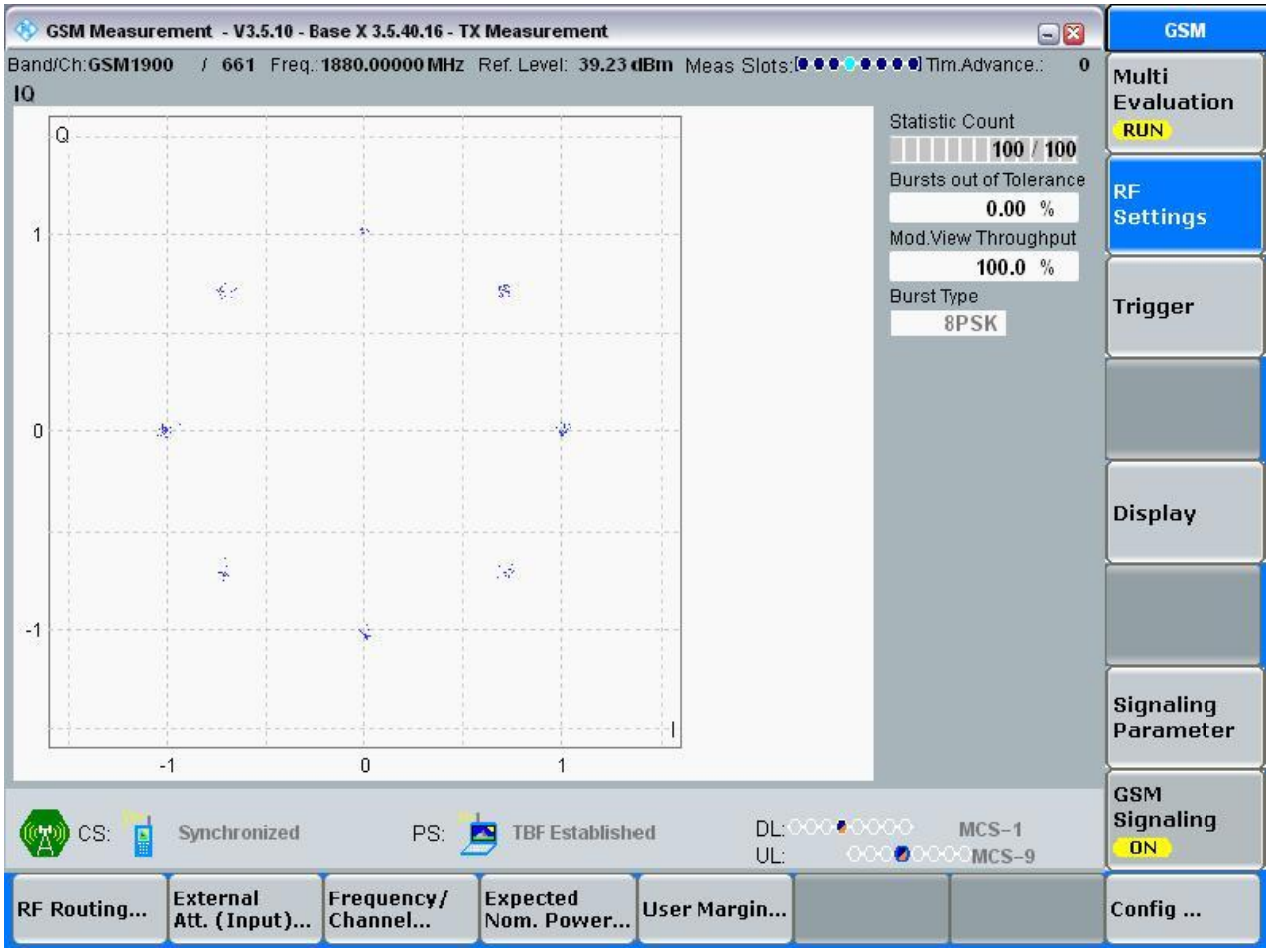
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH



4 Bandwidth

Part I - Test Results

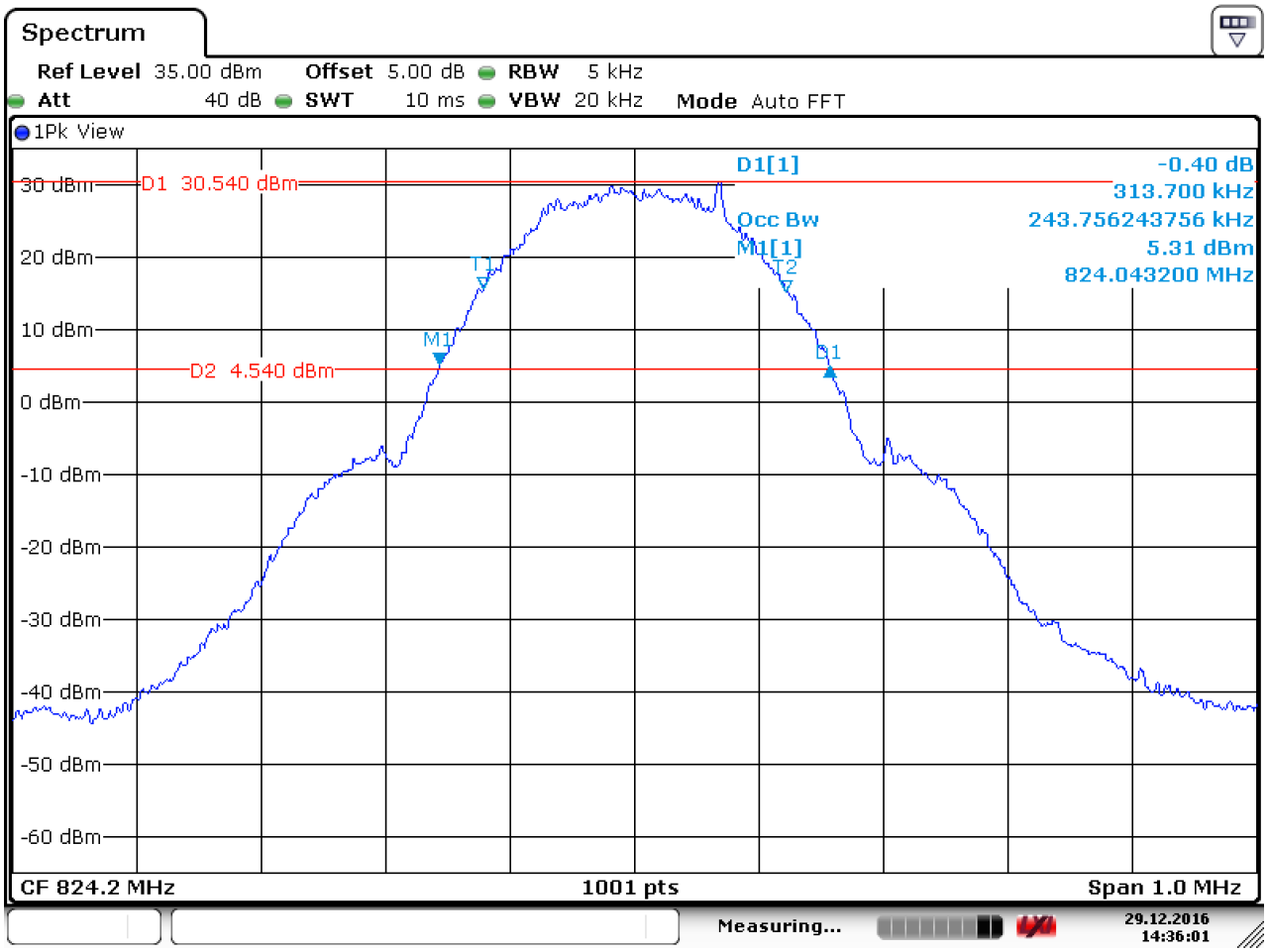
Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM 850	UMTS/TM1	LCH	243.76	313.70	PASS
		MCH	243.76	316.70	PASS
		HCH	242.76	317.70	PASS
	UMTS/TM2	LCH	239.76	309.70	PASS
		MCH	239.76	309.70	PASS
		HCH	239.76	309.70	PASS
GSM 1900	UMTS/TM1	LCH	243.76	317.70	PASS
		MCH	244.76	311.70	PASS
		HCH	243.76	311.70	PASS
	UMTS/TM2	LCH	241.76	312.70	PASS
		MCH	242.76	314.70	PASS
		HCH	242.75	316.70	PASS

4.1 For GSM

4.1.1 Test Band = GSM 850

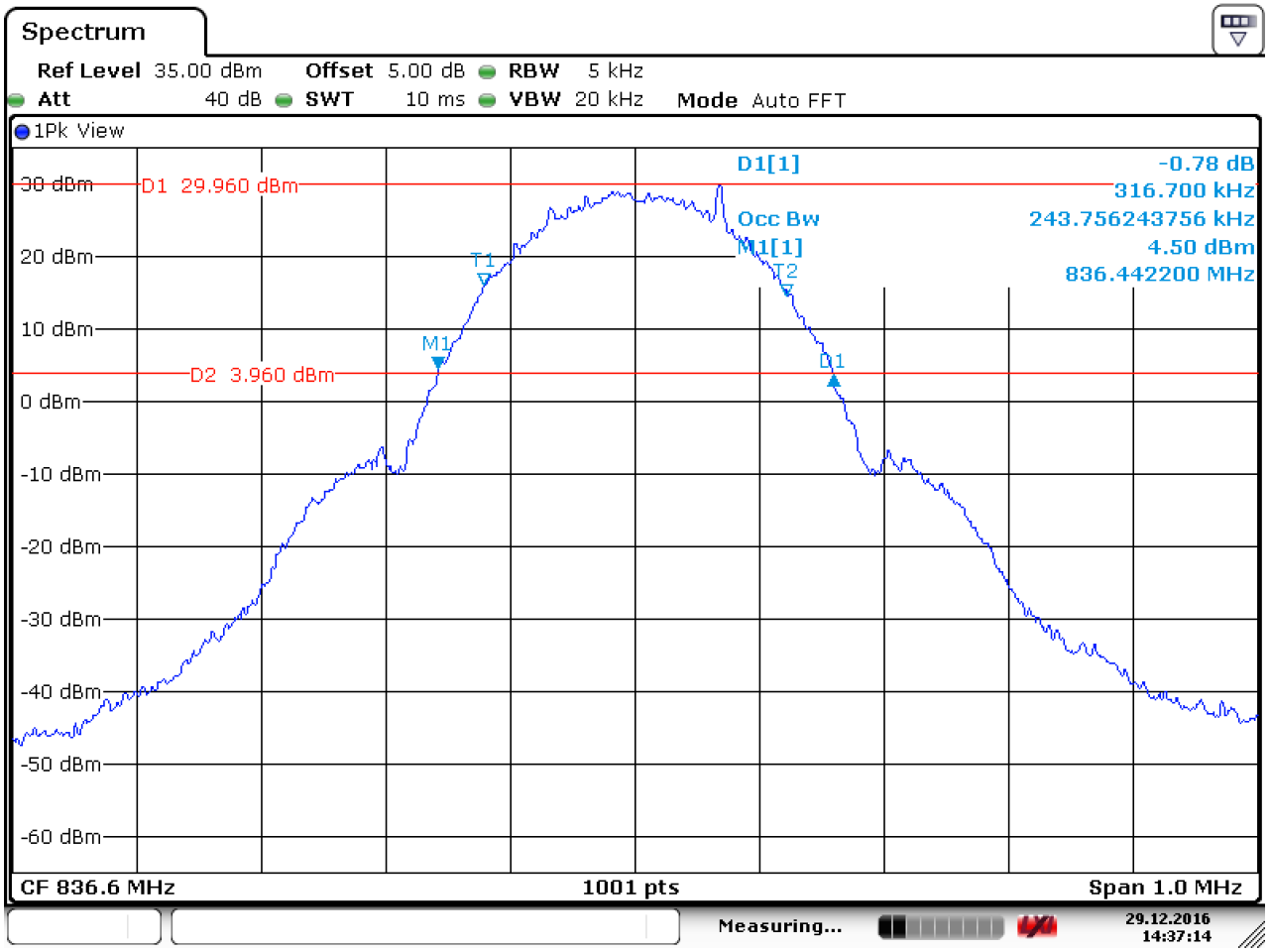
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



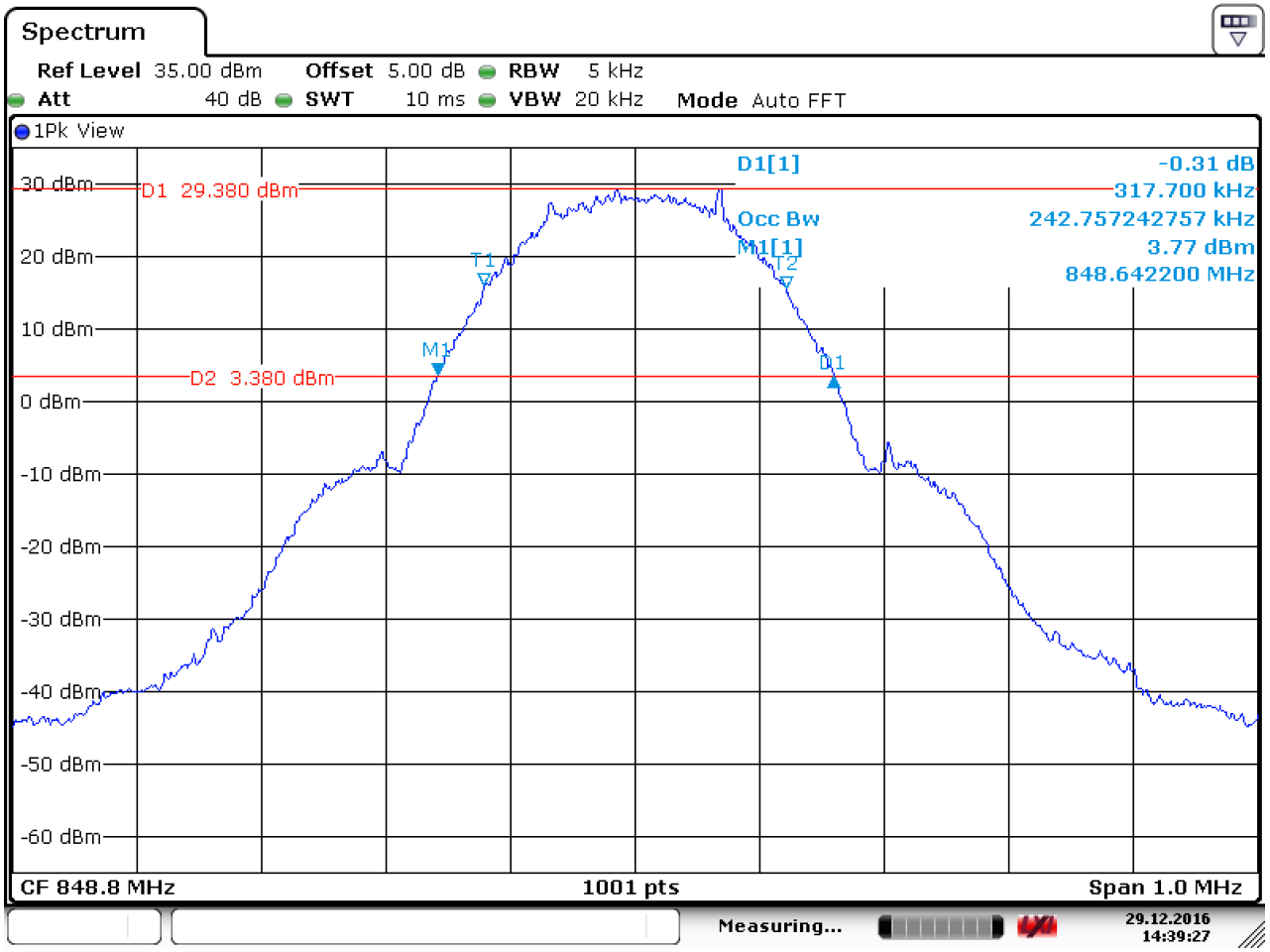
Date: 29.DEC.2016 14:36:01

4.1.1.1.2 Test Channel = MCH



Date: 29.DEC.2016 14:37:15

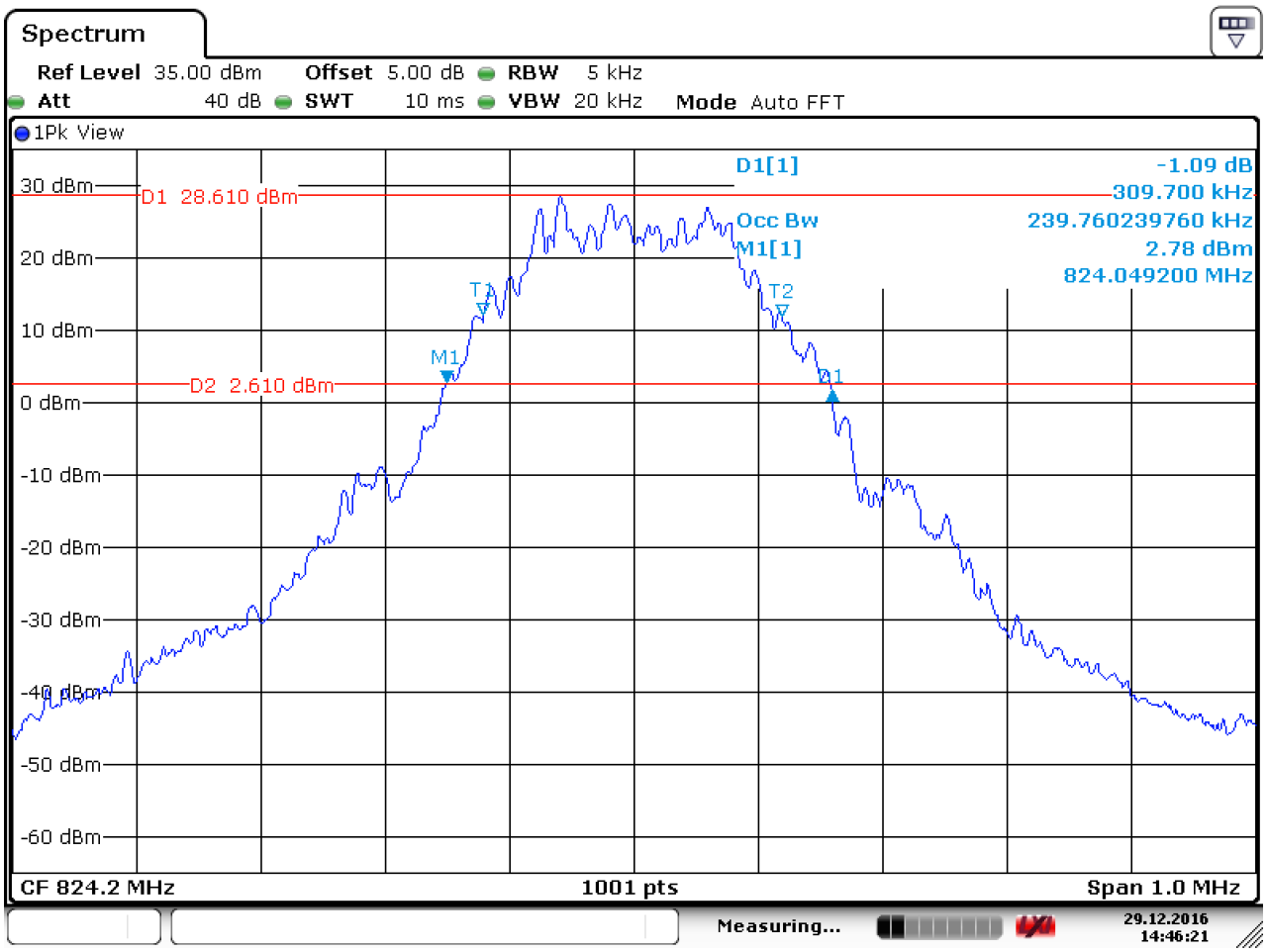
4.1.1.1.3 Test Channel = HCH



Date: 29.DEC.2016 14:39:28

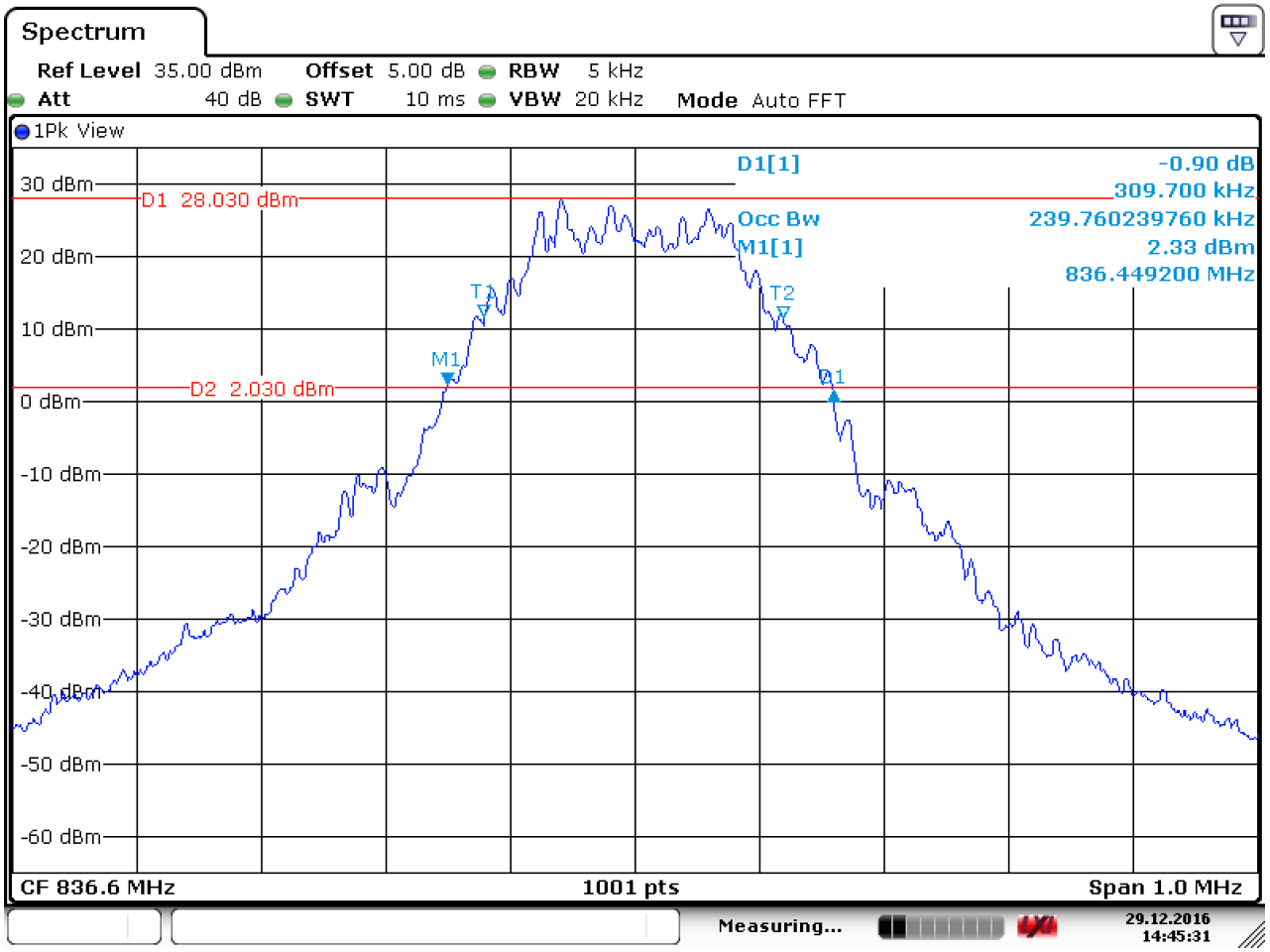
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



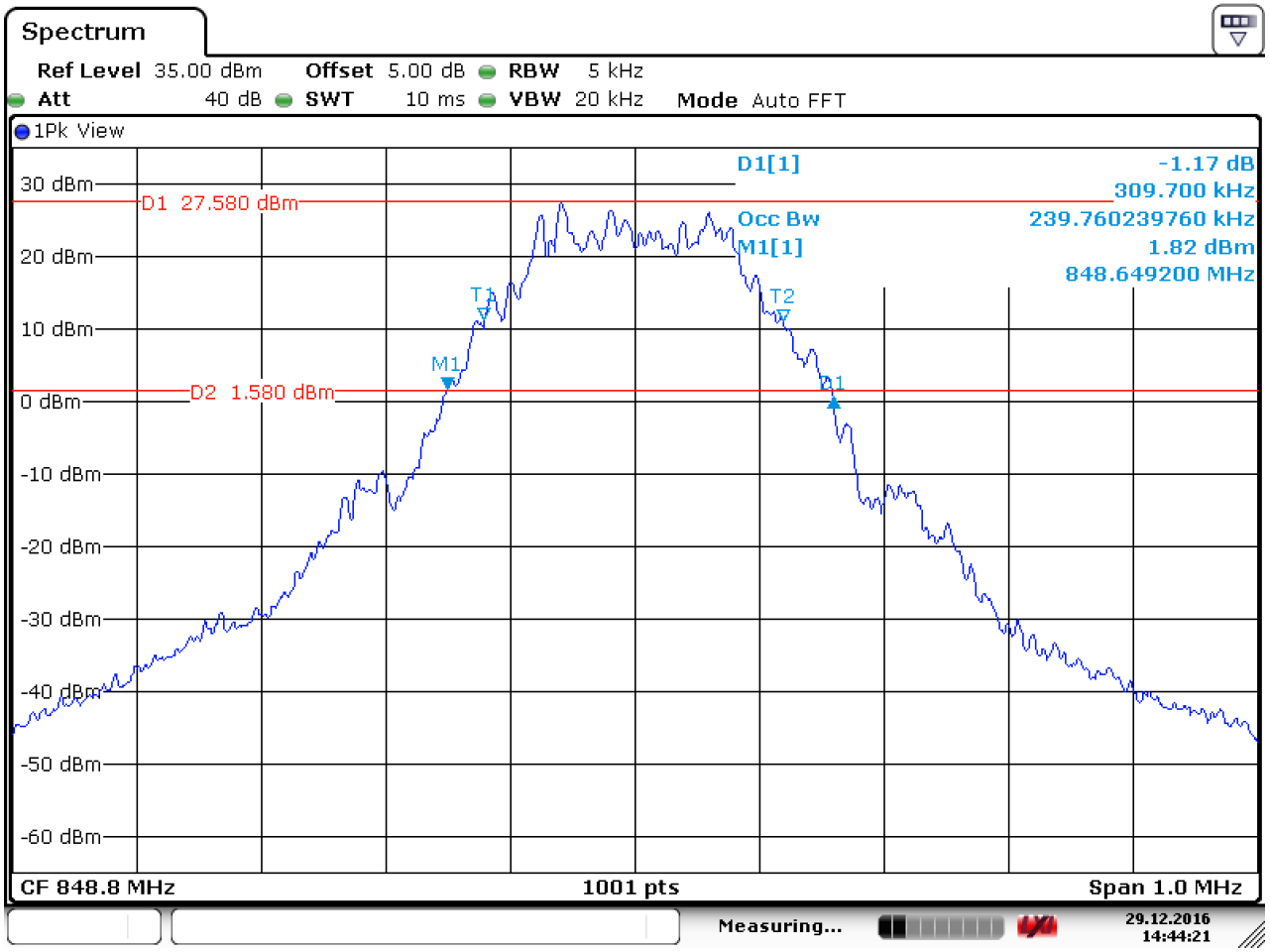
Date: 29.DEC.2016 14:46:21

4.1.1.2.2 Test Channel = MCH



Date: 29.DEC.2016 14:45:31

4.1.1.2.3 Test Channel = HCH

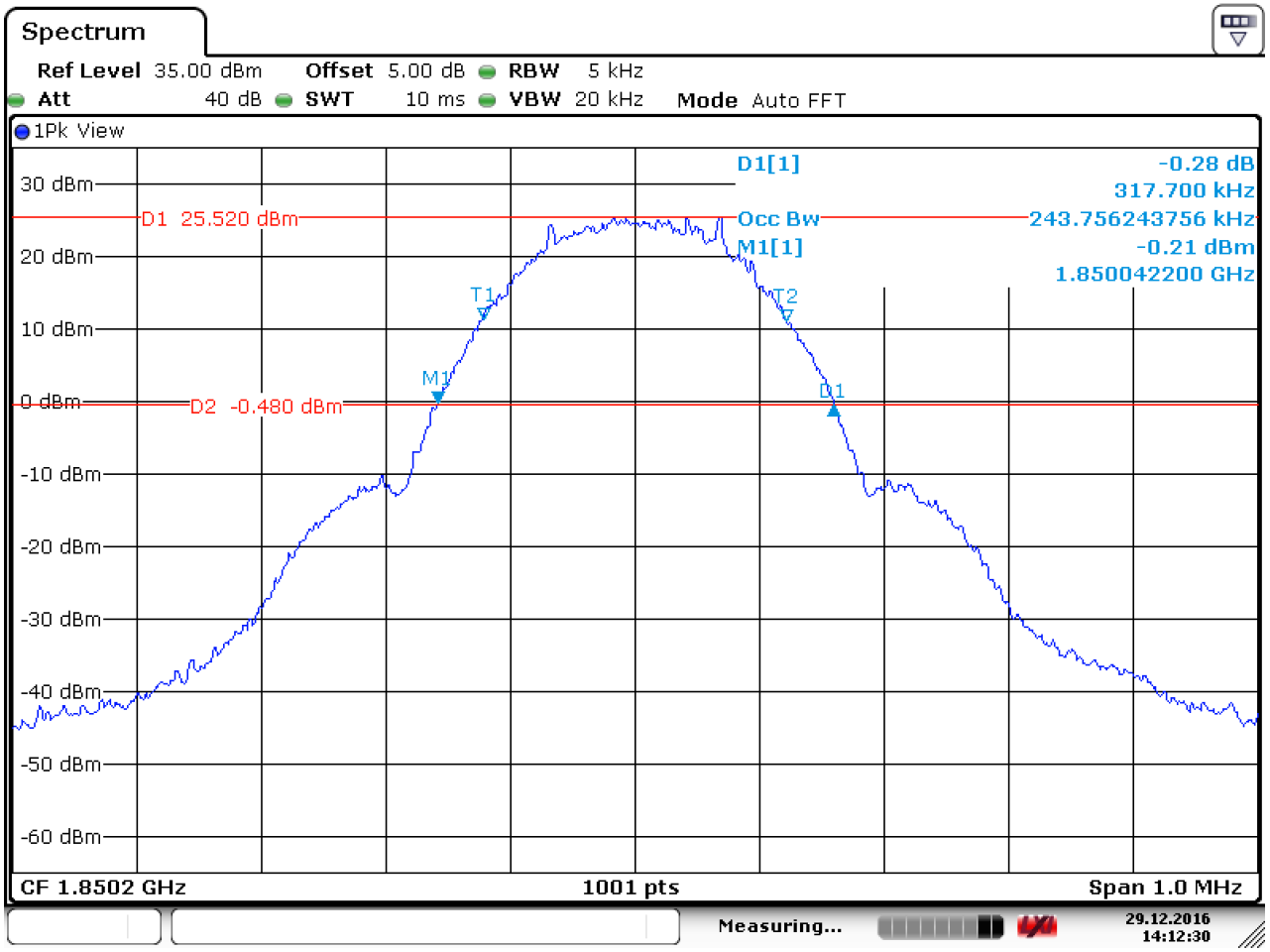


Date: 29.DEC.2016 14:44:22

4.1.2 Test Band = GSM 1900

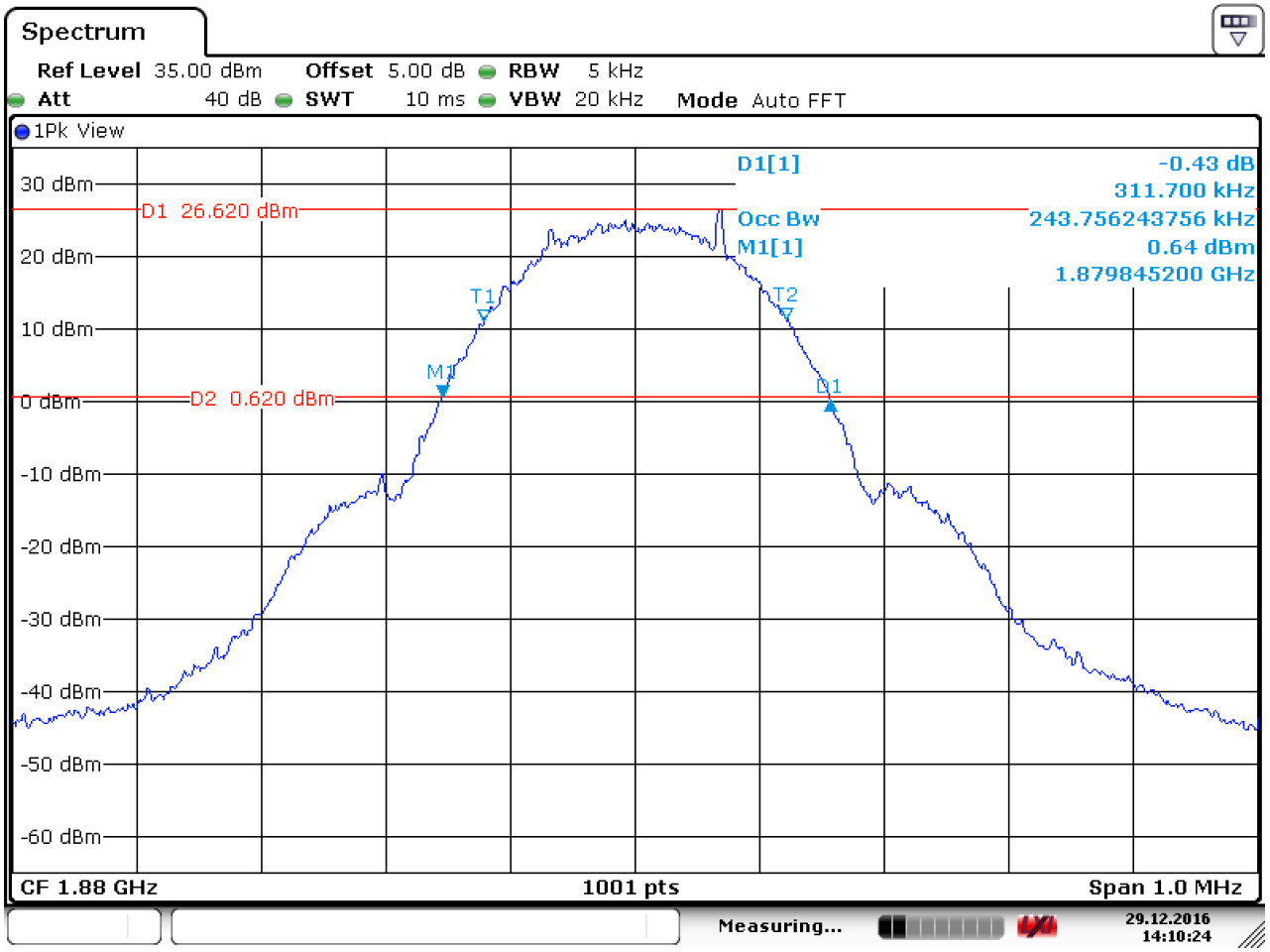
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



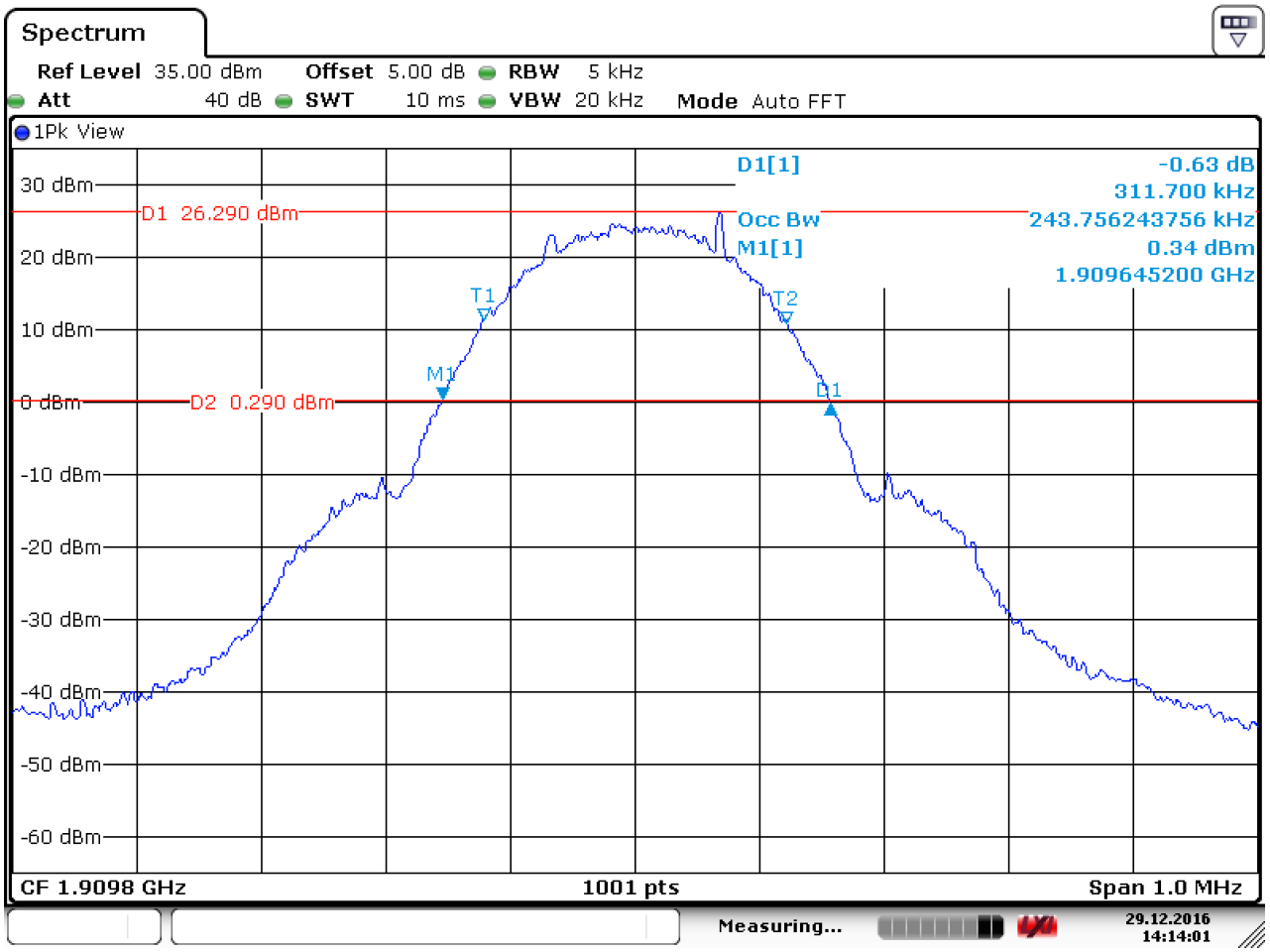
Date: 29.DEC.2016 14:12:30

4.1.2.1.2 Test Channel = MCH



Date: 29.DEC.2016 14:10:25

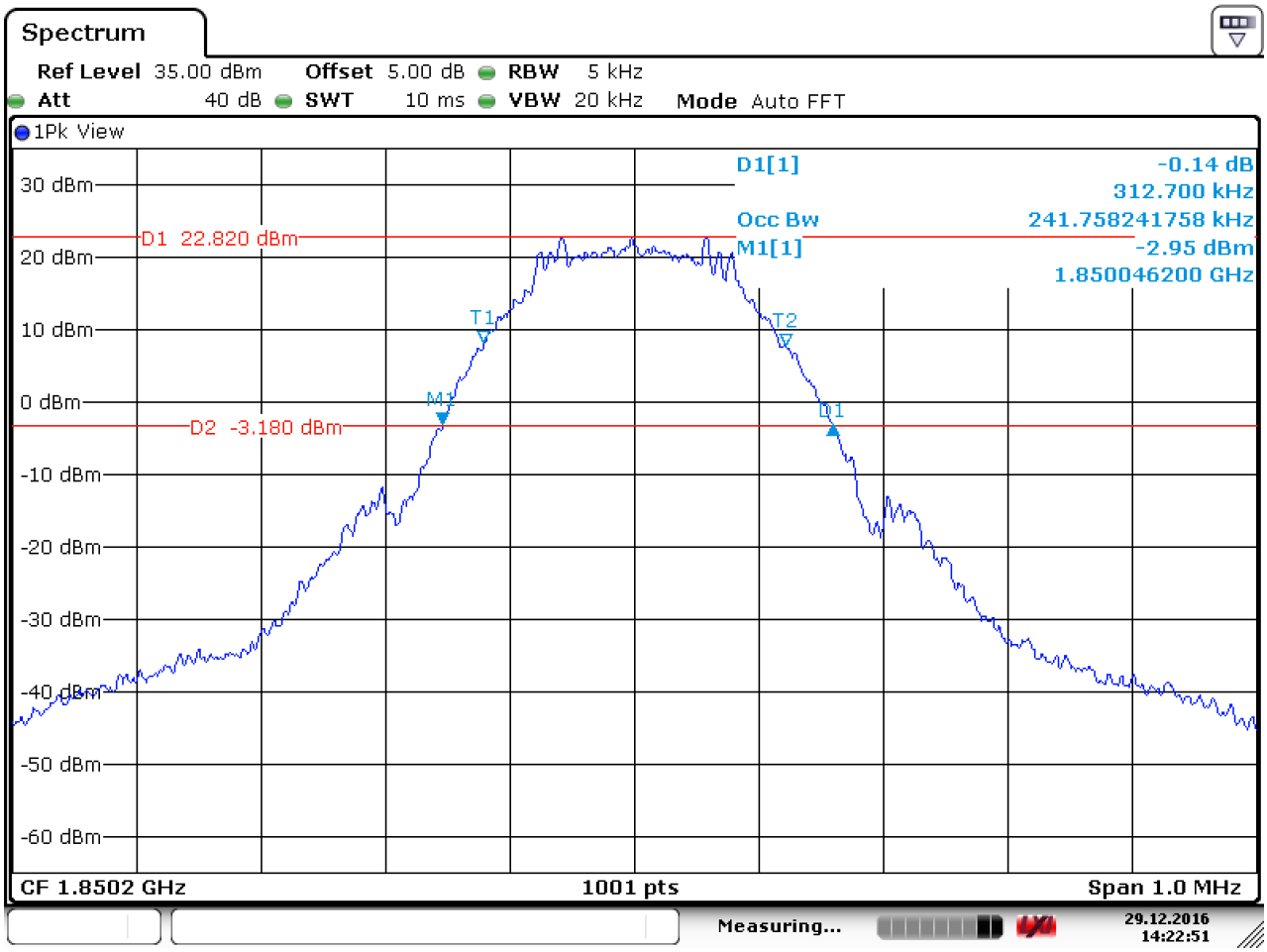
4.1.2.1.3 Test Channel = HCH



Date: 29.DEC.2016 14:14:02

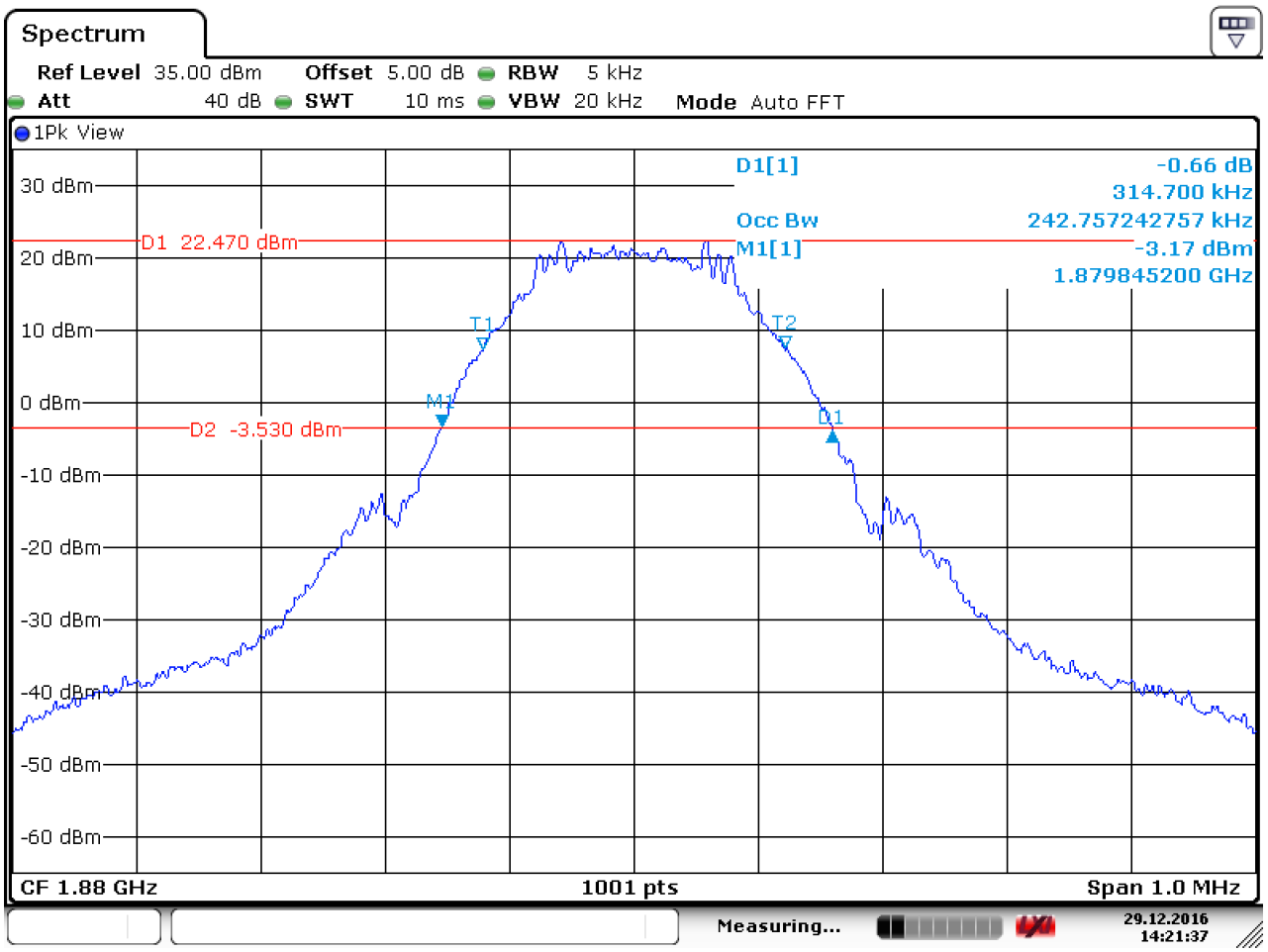
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



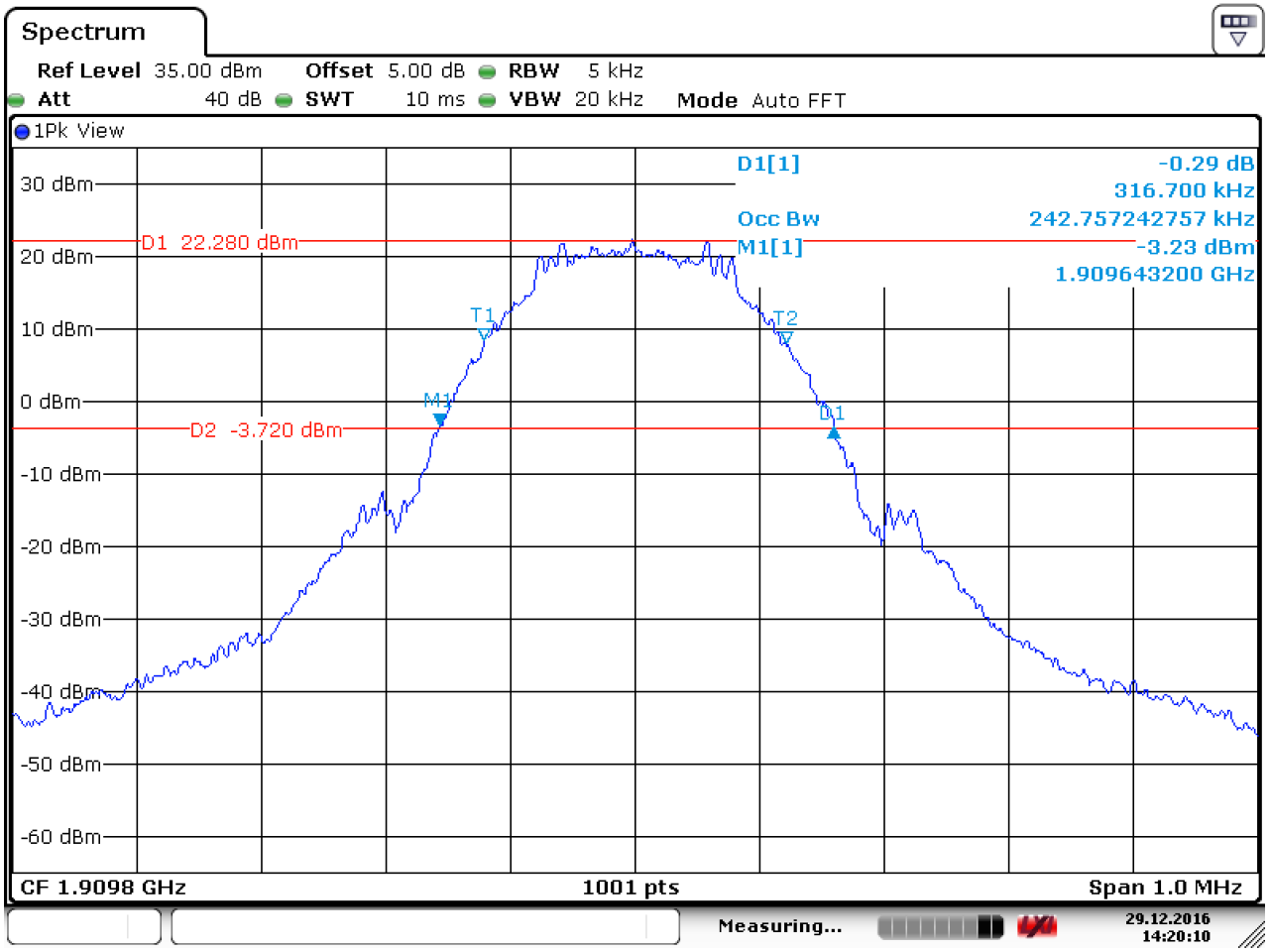
Date: 29.DEC.2016 14:22:52

4.1.2.2.2 Test Channel = MCH



Date: 29.DEC.2016 14:21:37

4.1.2.2.3 Test Channel = HCH



Date: 29.DEC.2016 14:20:10

5 Band Edges Compliance

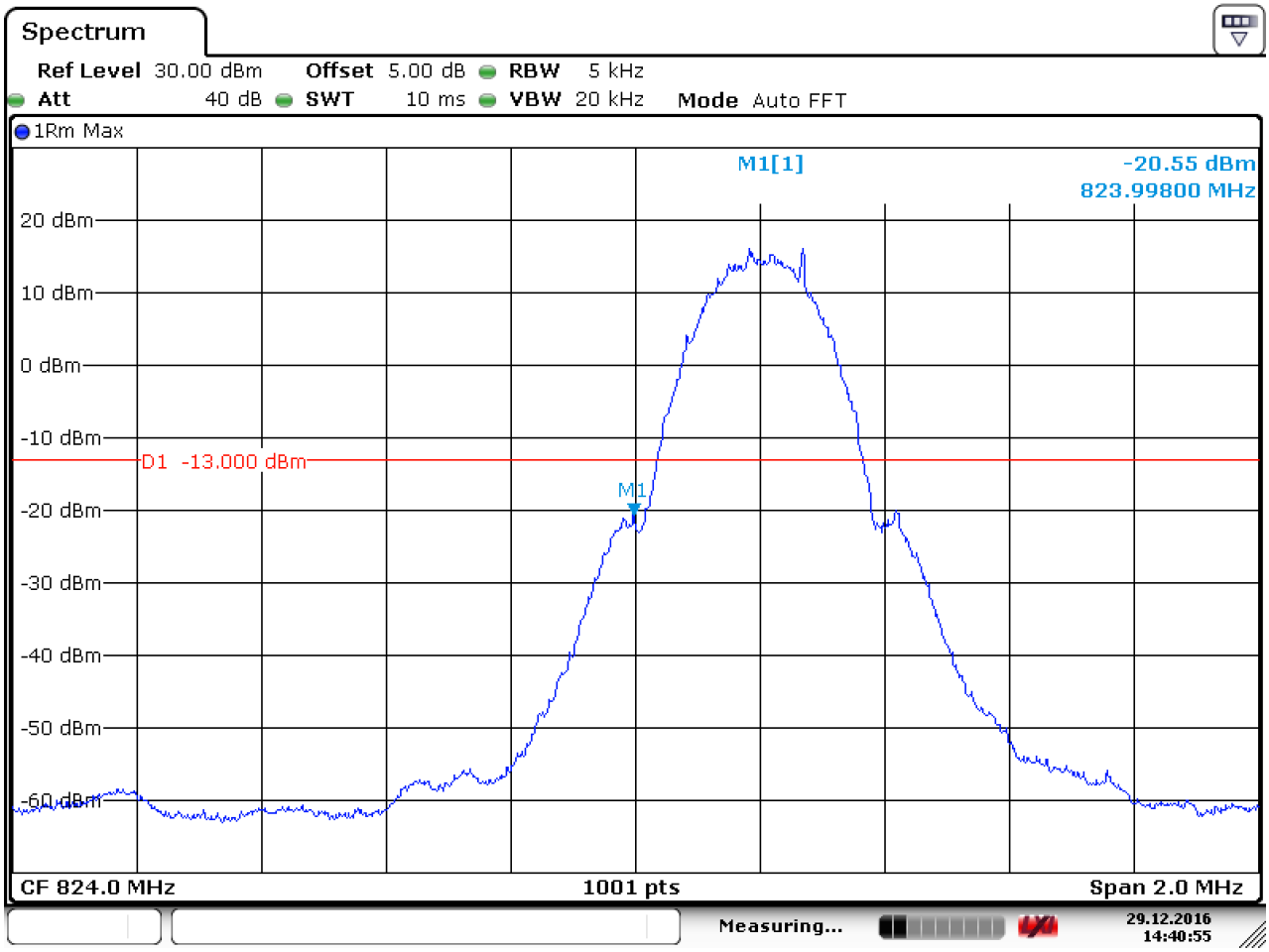
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM 850

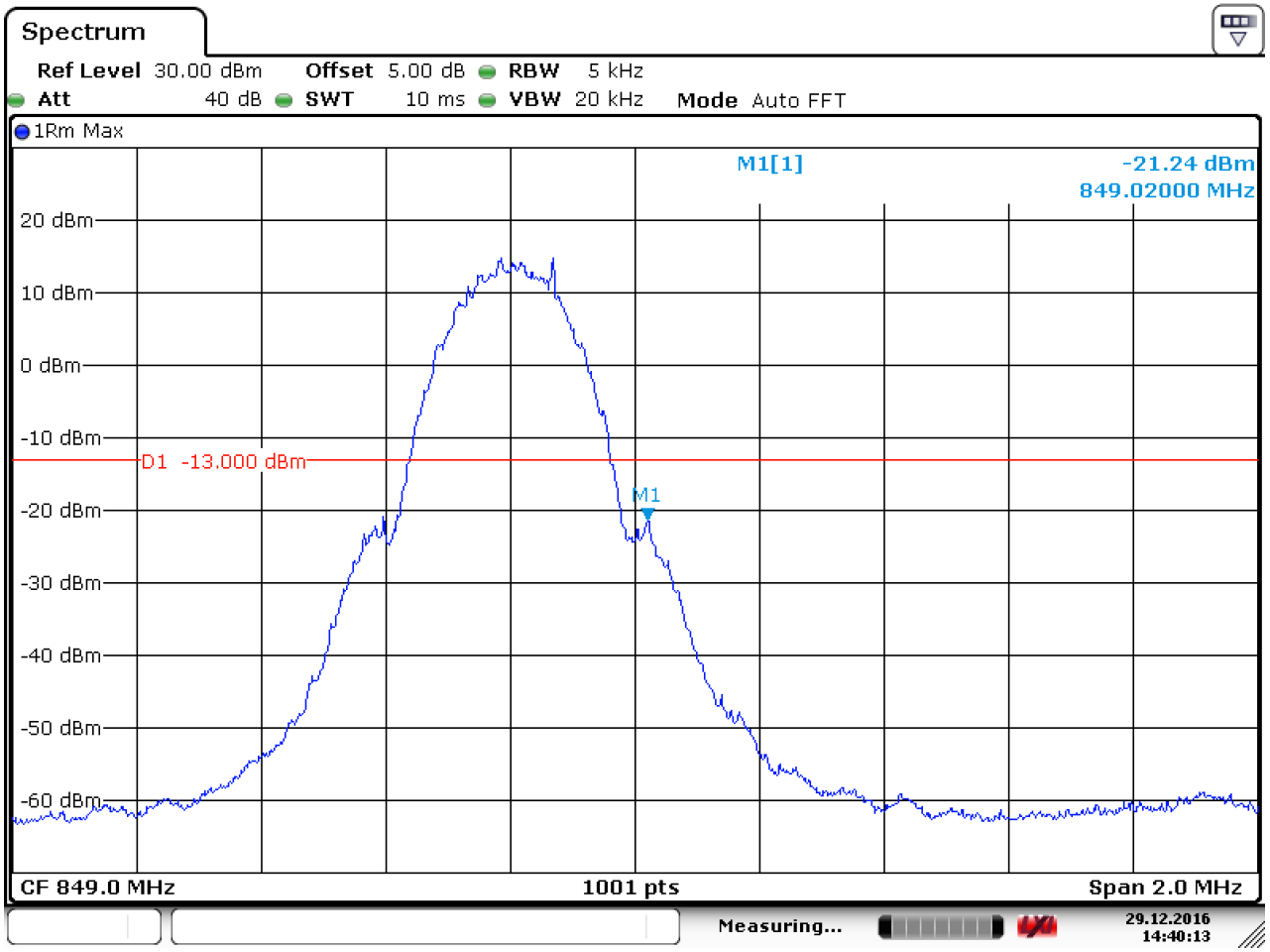
5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



Date: 29.DEC.2016 14:40:55

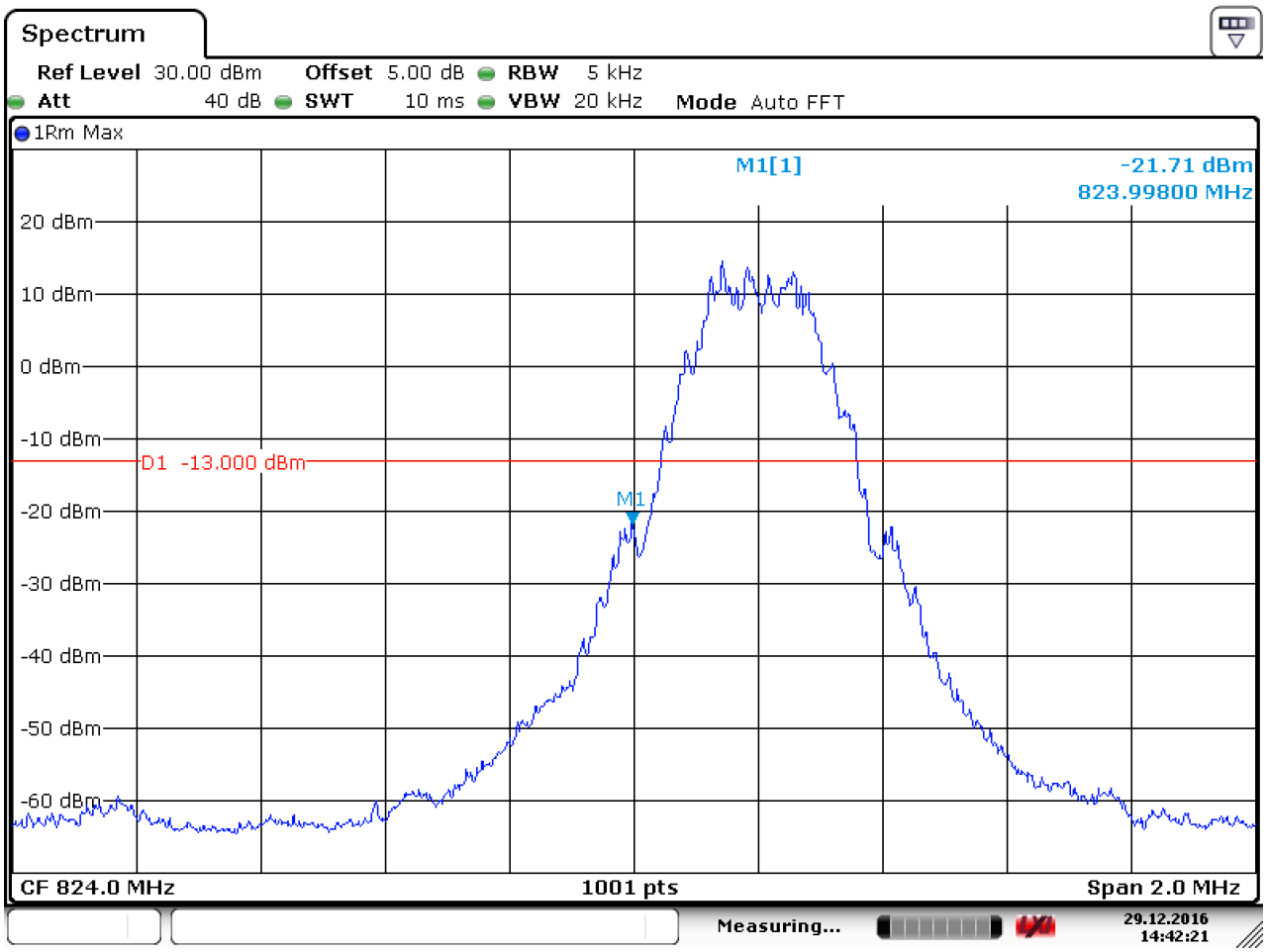
5.1.1.1.2 Test Channel = HCH



Date: 29.DEC.2016 14:40:13

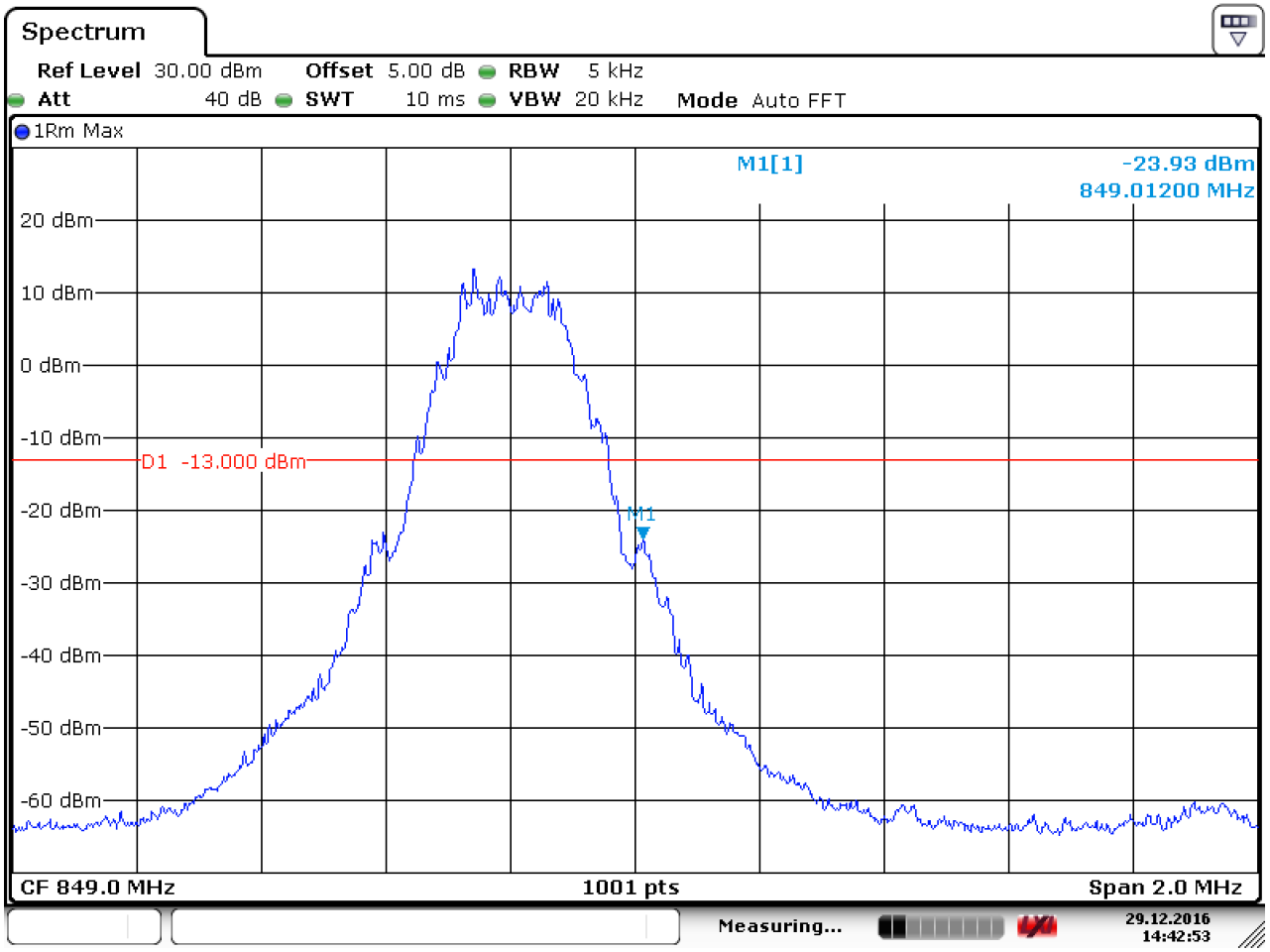
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



Date: 29.DEC.2016 14:42:21

5.1.1.2.2 Test Channel = HCH

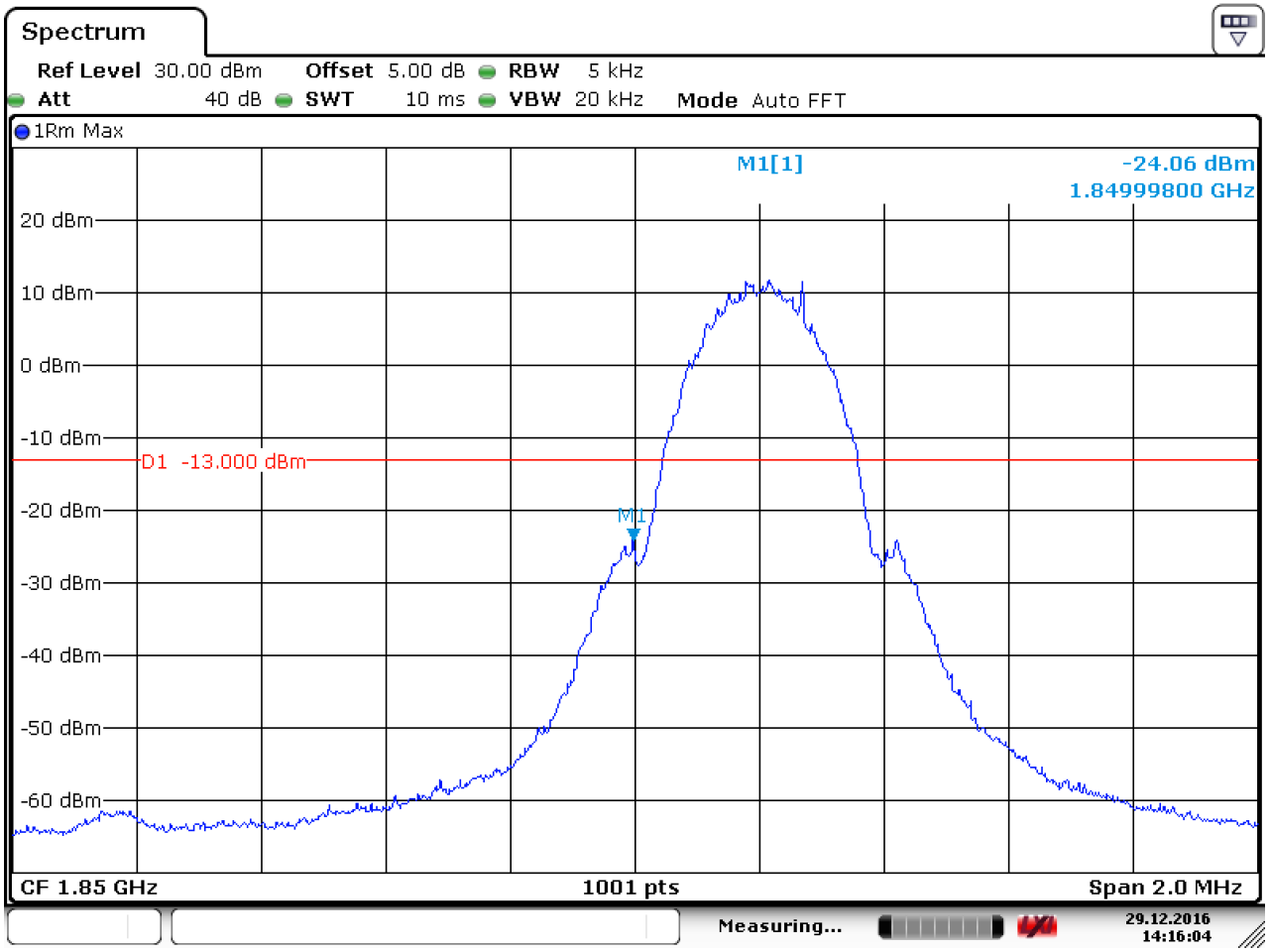


Date: 29.DEC.2016 14:42:53

5.1.2 Test Band = GSM 1900

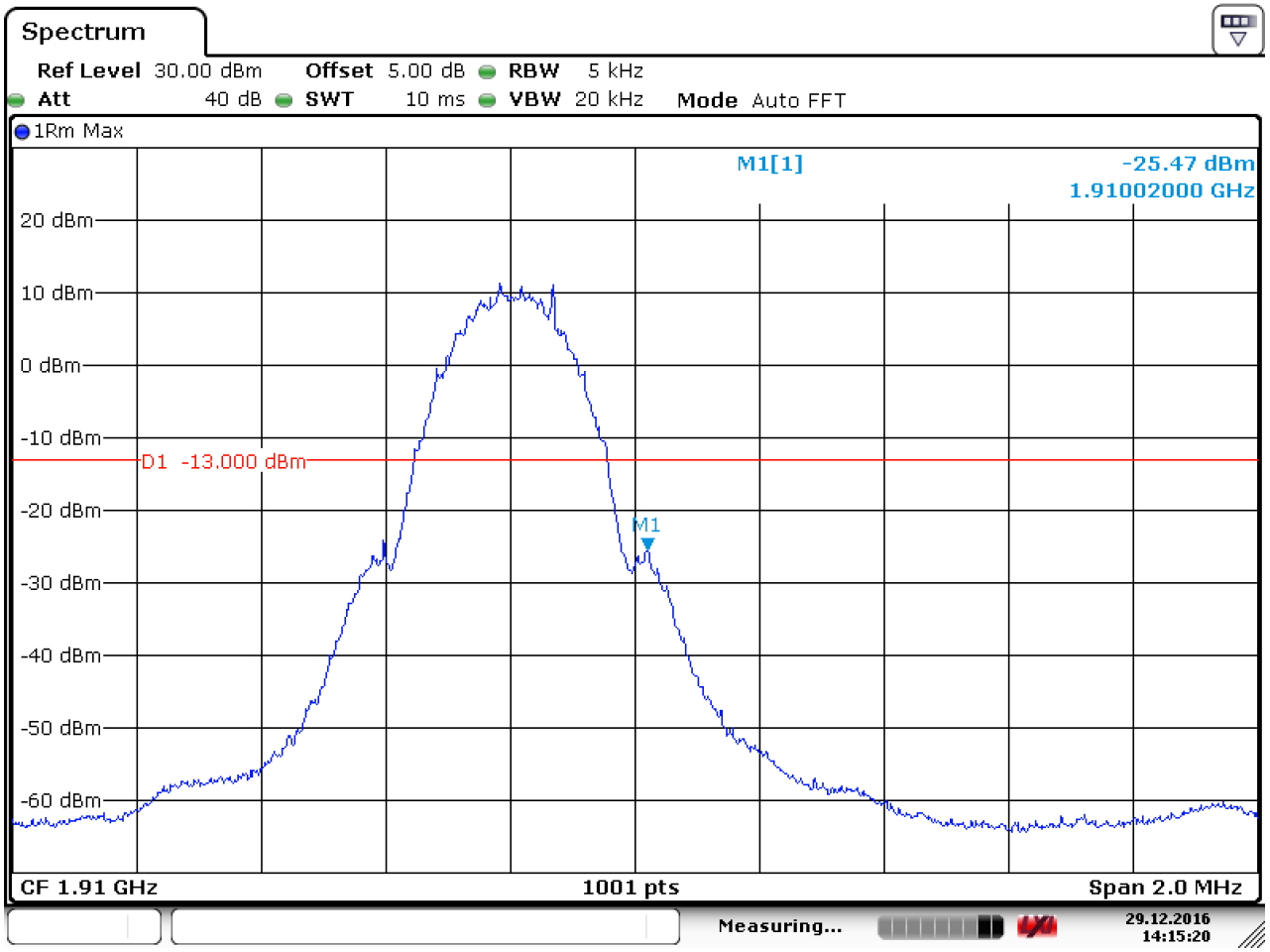
5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



Date: 29.DEC.2016 14:16:05

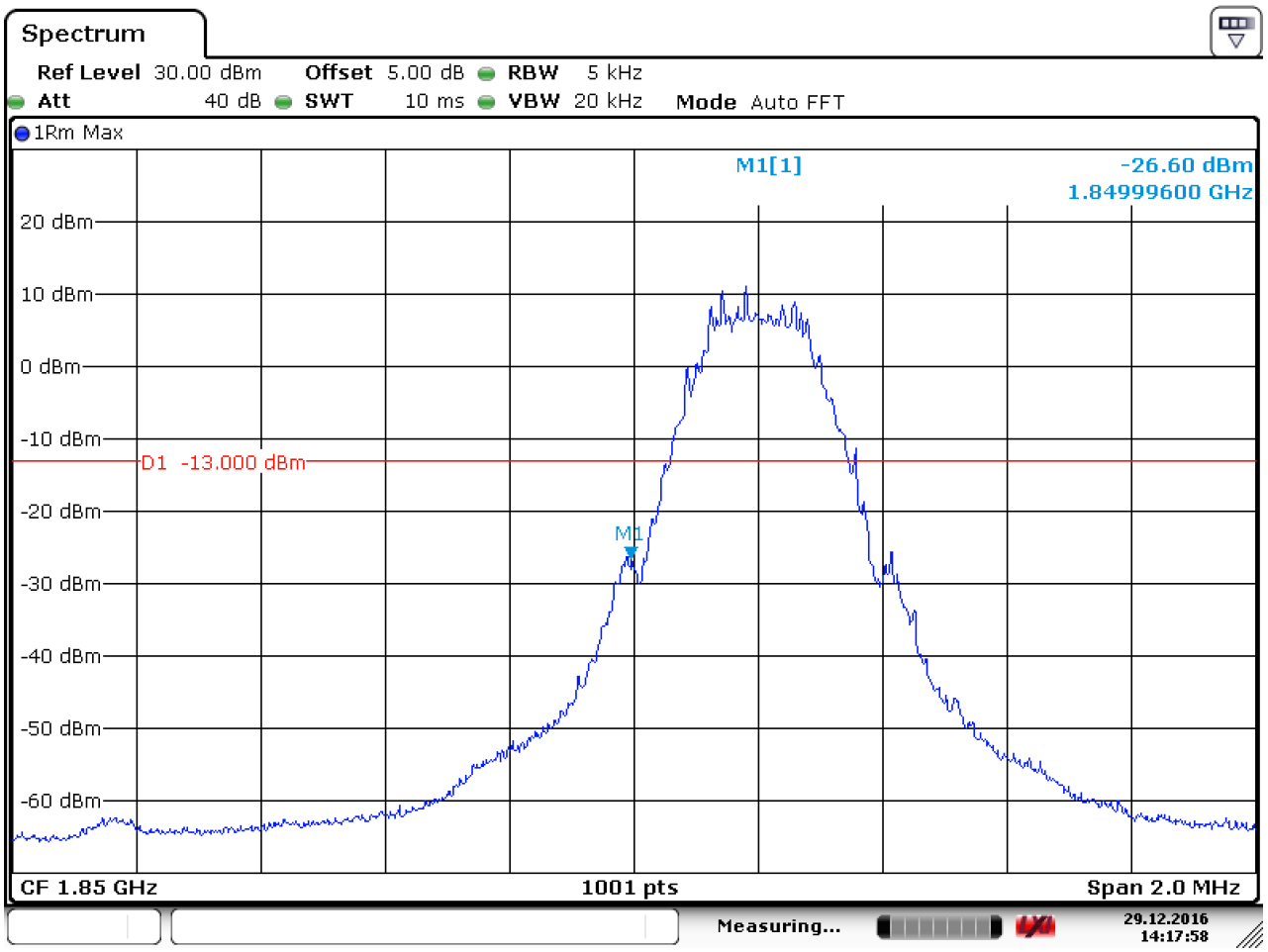
5.1.2.1.2 Test Channel = HCH



Date: 29.DEC.2016 14:15:21

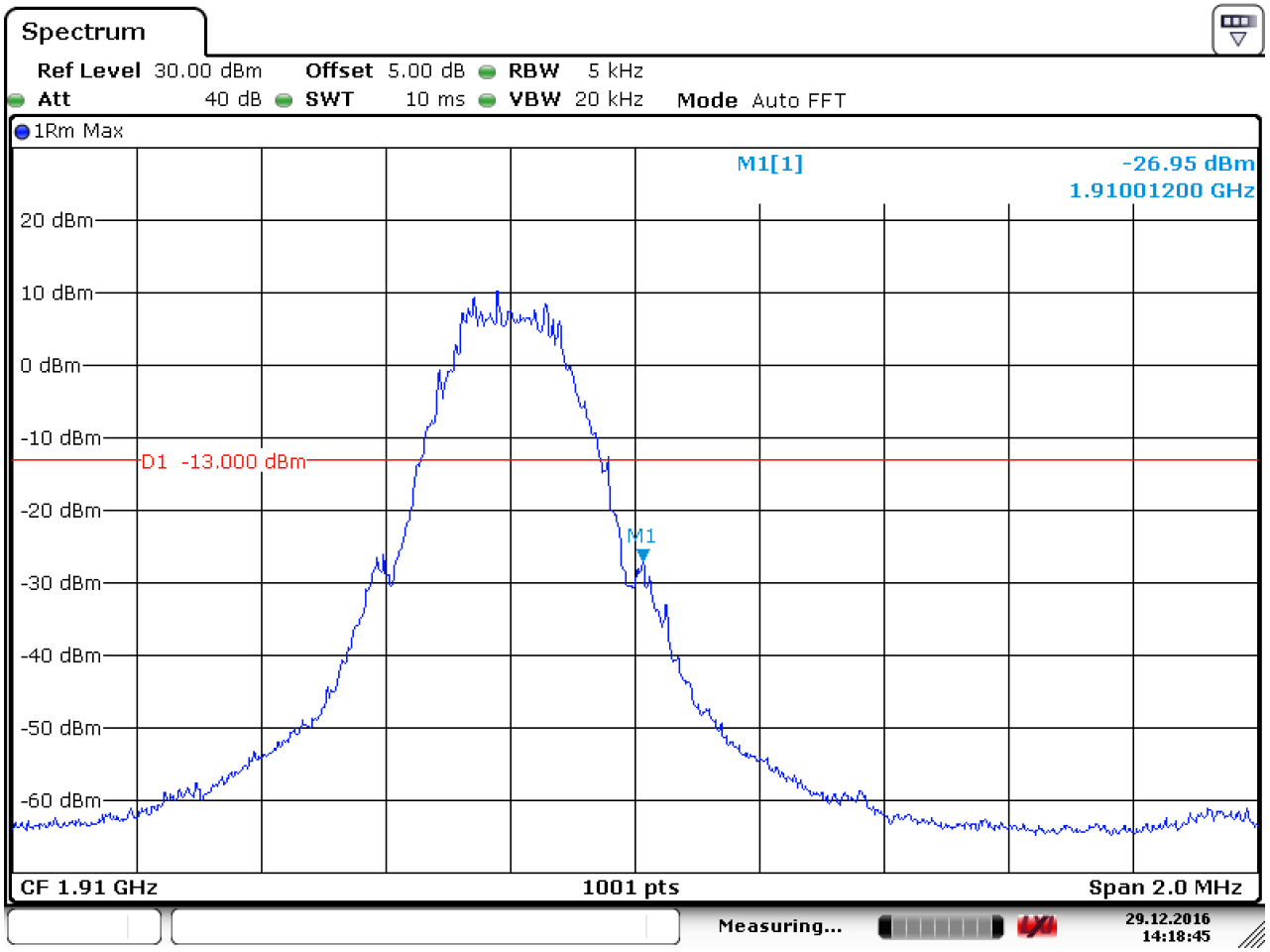
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



Date: 29.DEC.2016 14:17:59

5.1.2.2.2 Test Channel = HCH



Date: 29.DEC.2016 14:18:45

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.

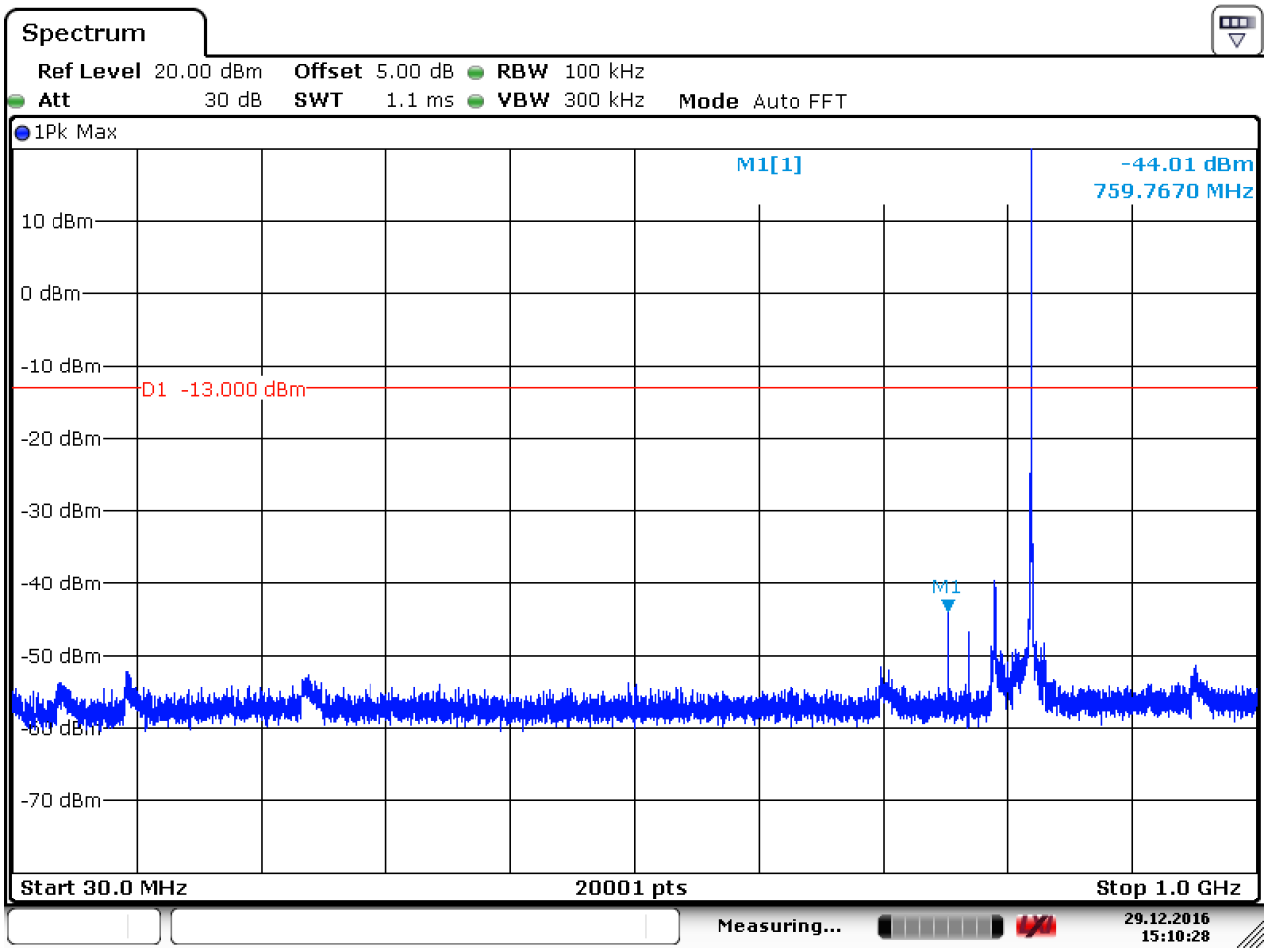
Part I - Test Plots

6.1 For GSM

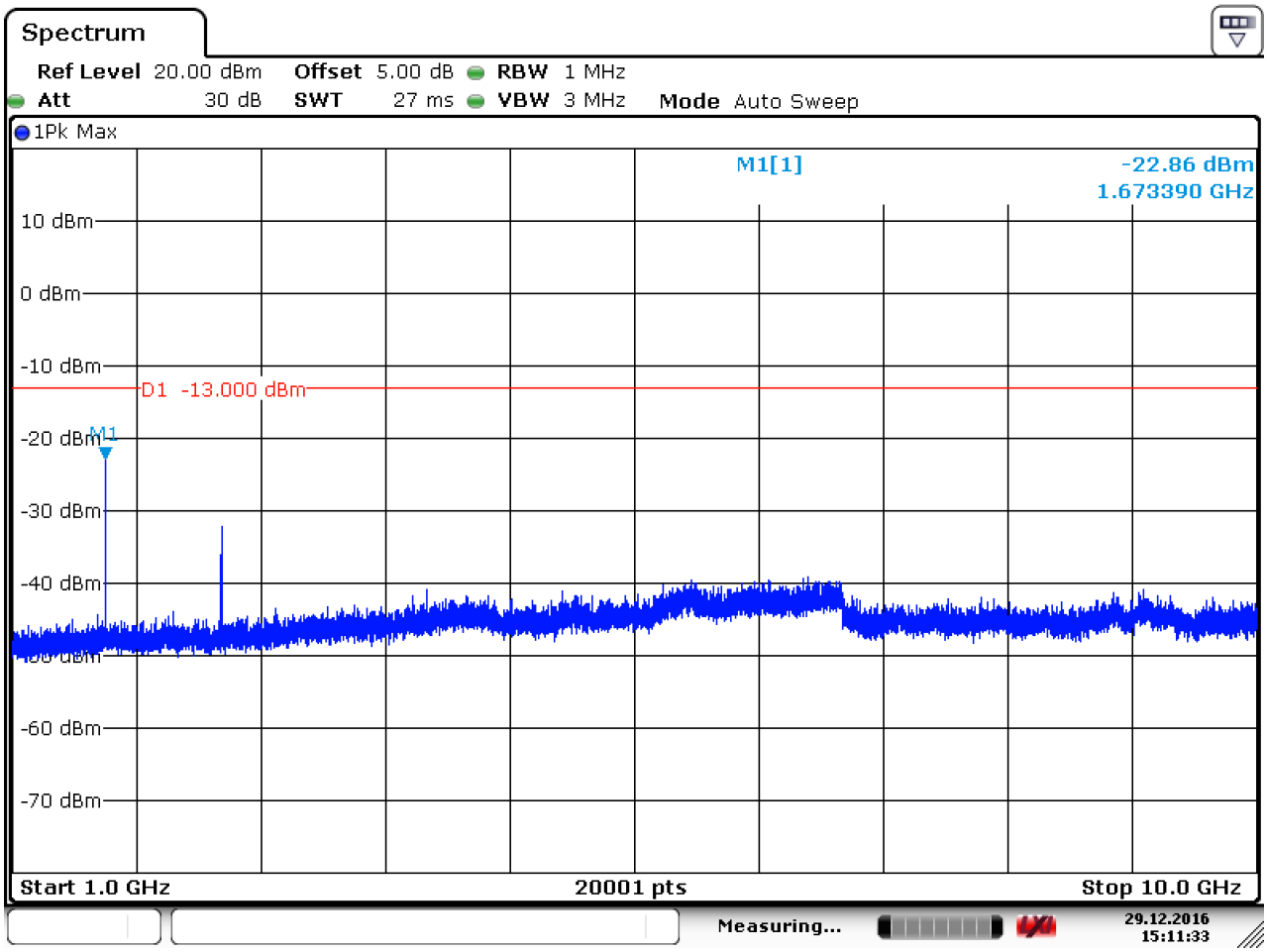
6.1.1 Test Band = GSM 850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

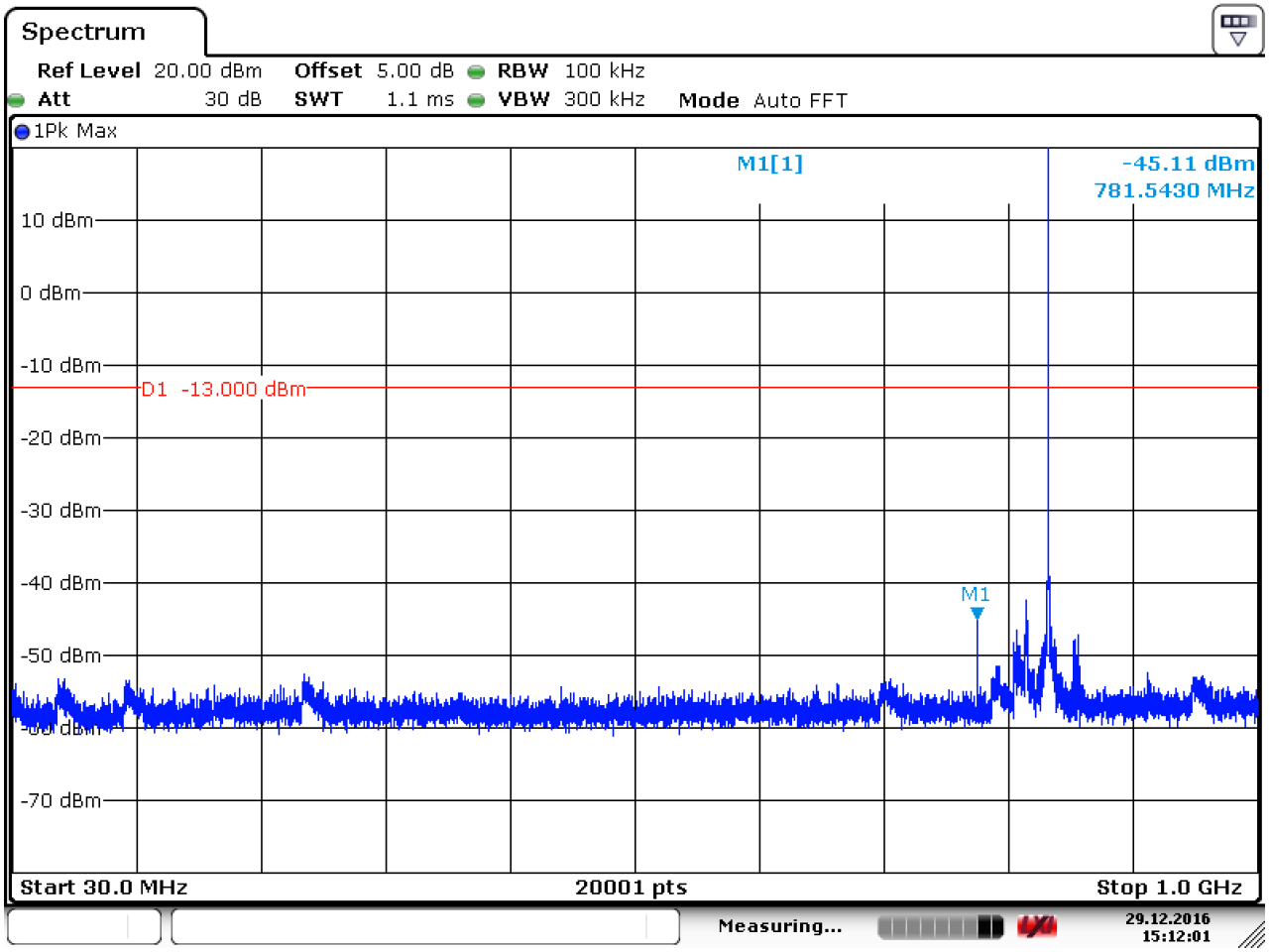


Date: 29.DEC.2016 15:10:28

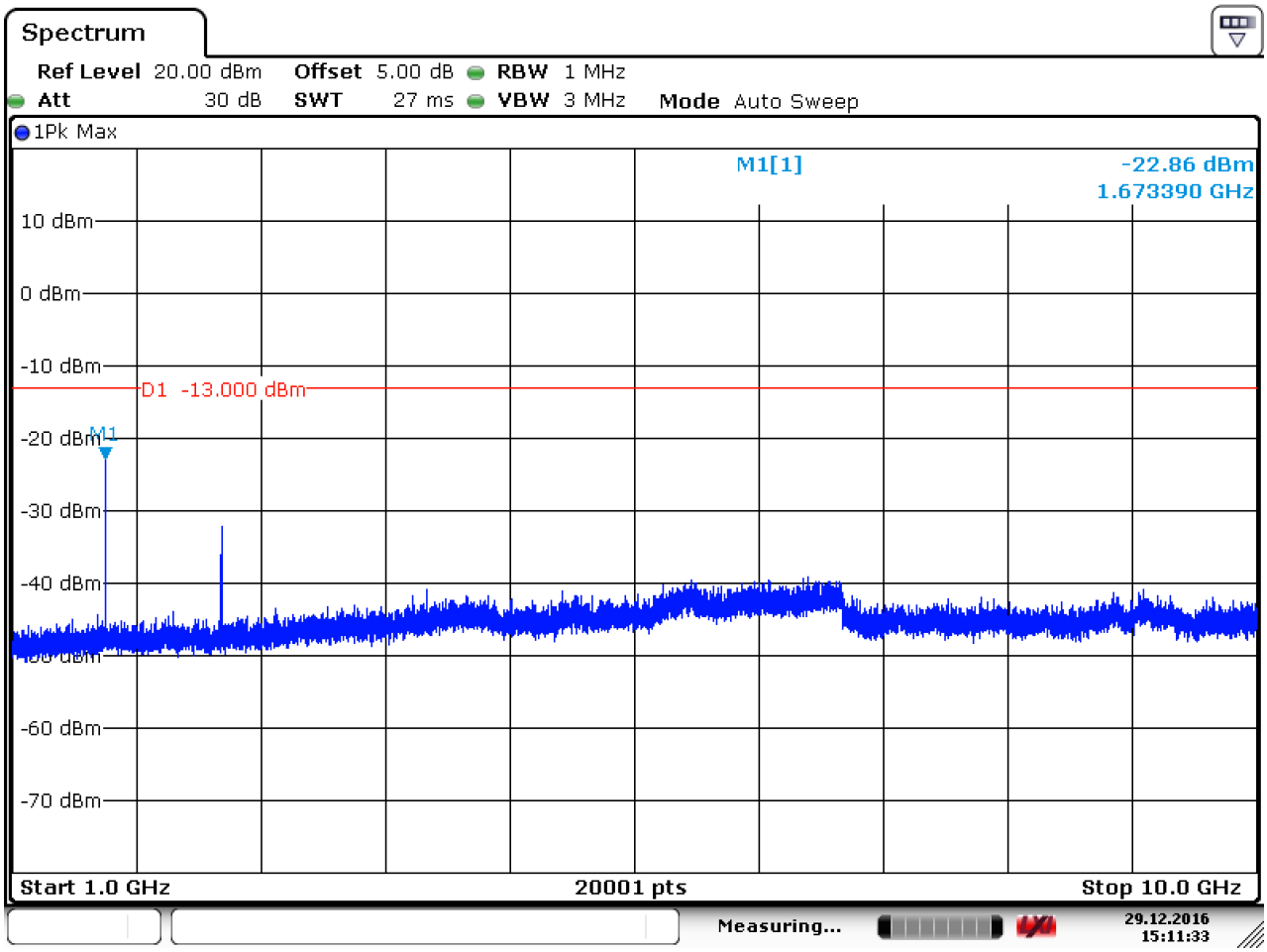


Date: 29.DEC.2016 15:11:33

6.1.1.1.2 Test Channel = MCH

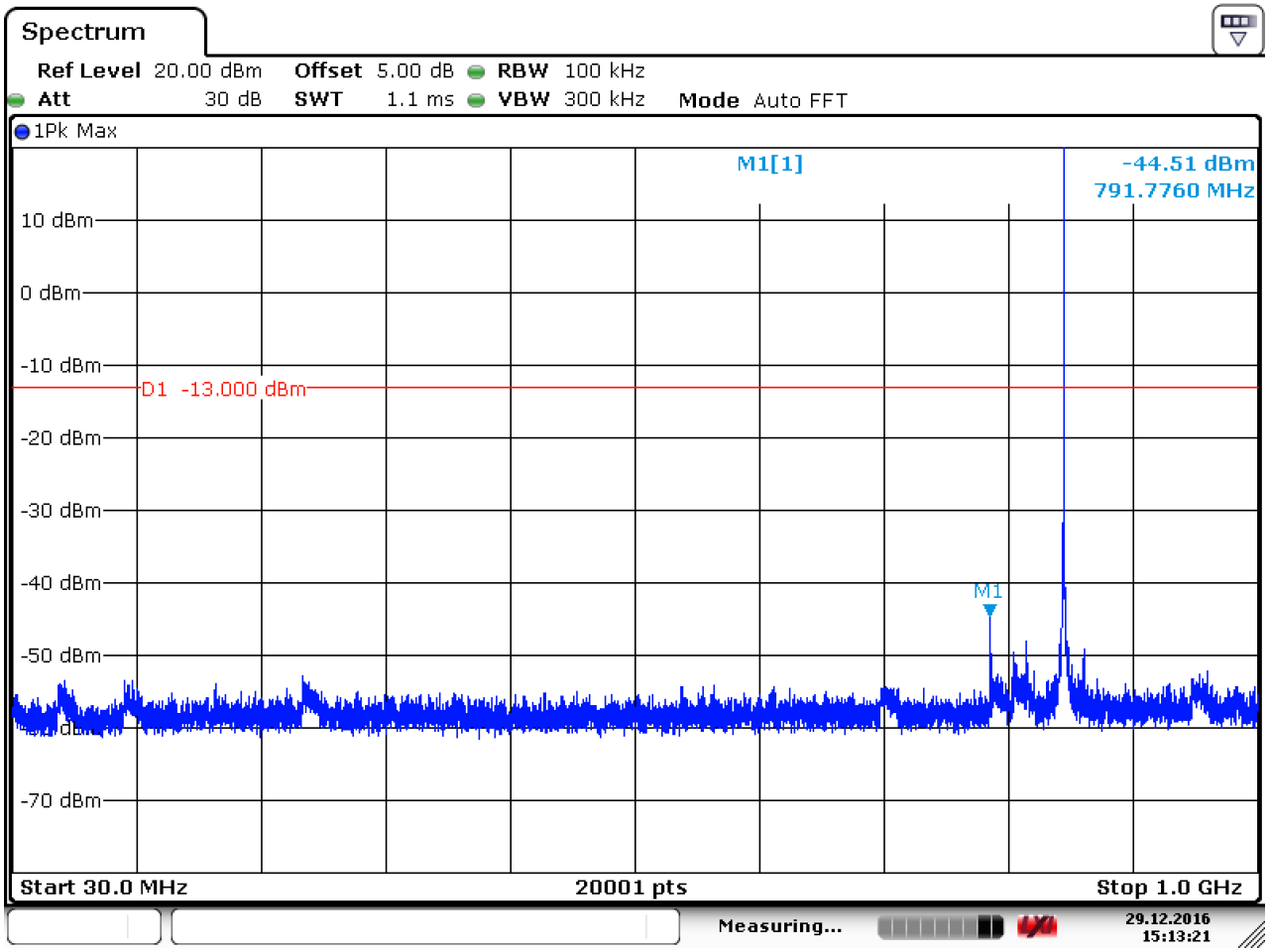


Date: 29.DEC.2016 15:12:01

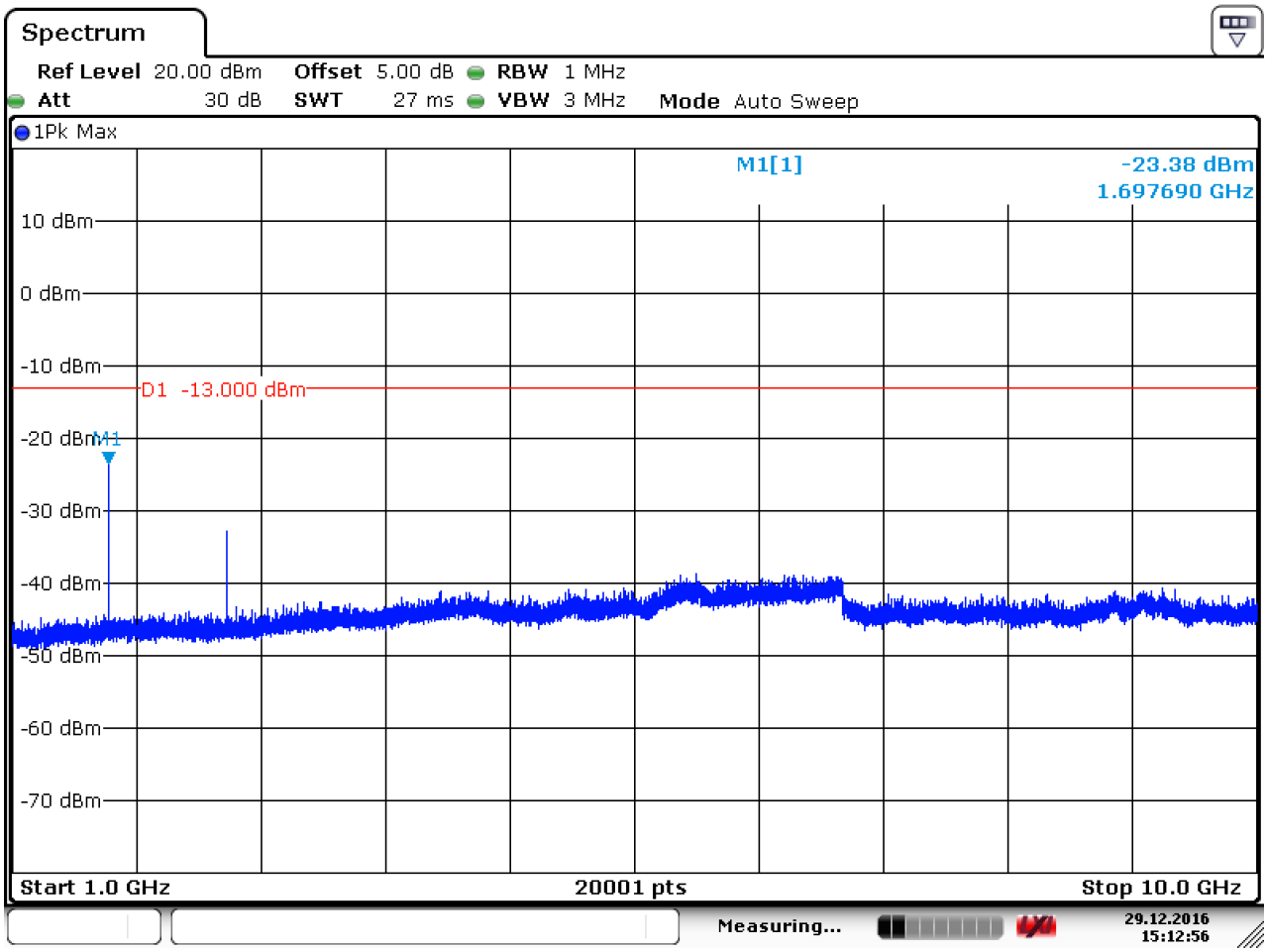


Date: 29.DEC.2016 15:11:33

6.1.1.1.3 Test Channel = HCH



Date: 29.DEC.2016 15:13:22

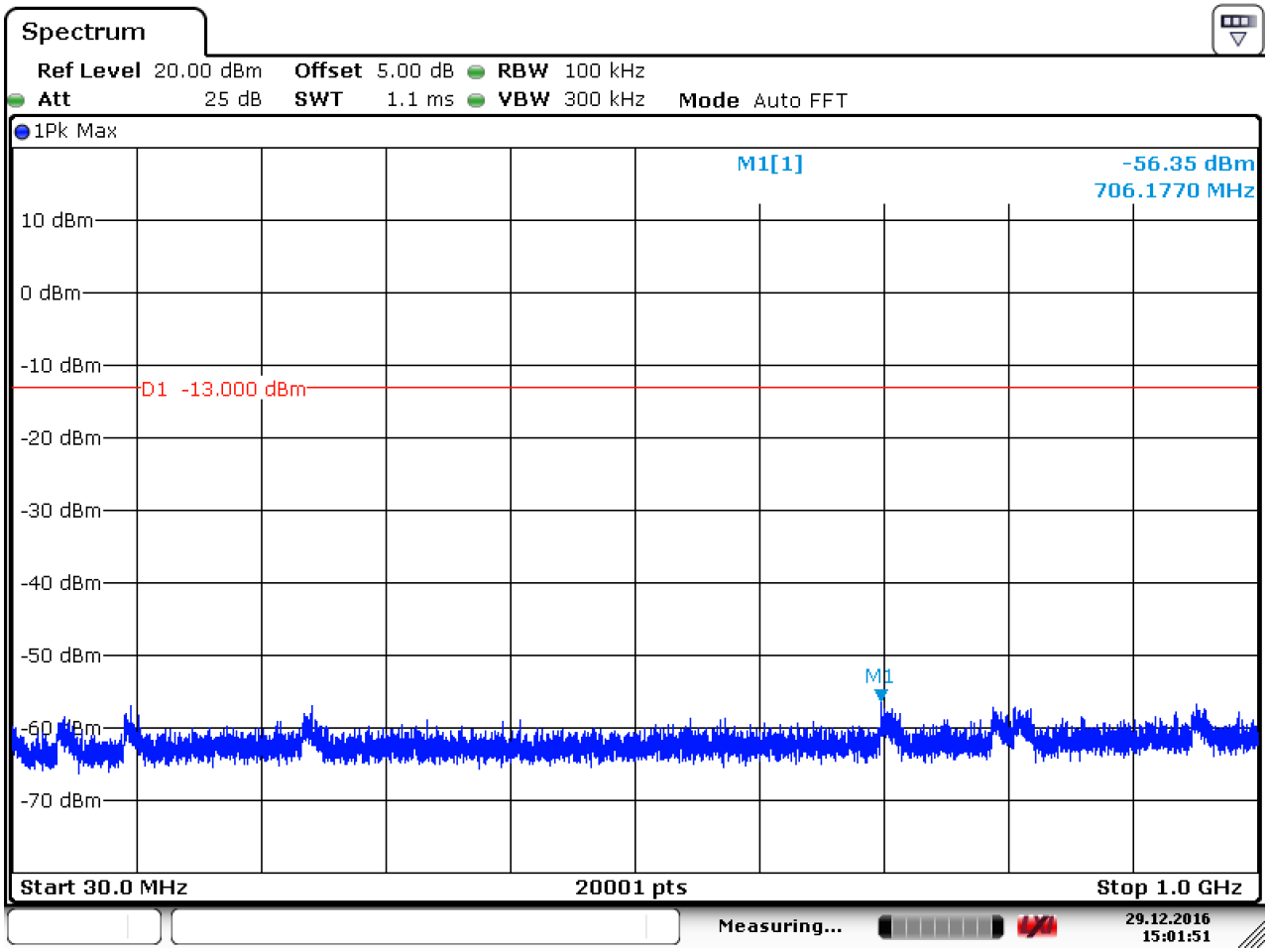


Date: 29.DEC.2016 15:12:57

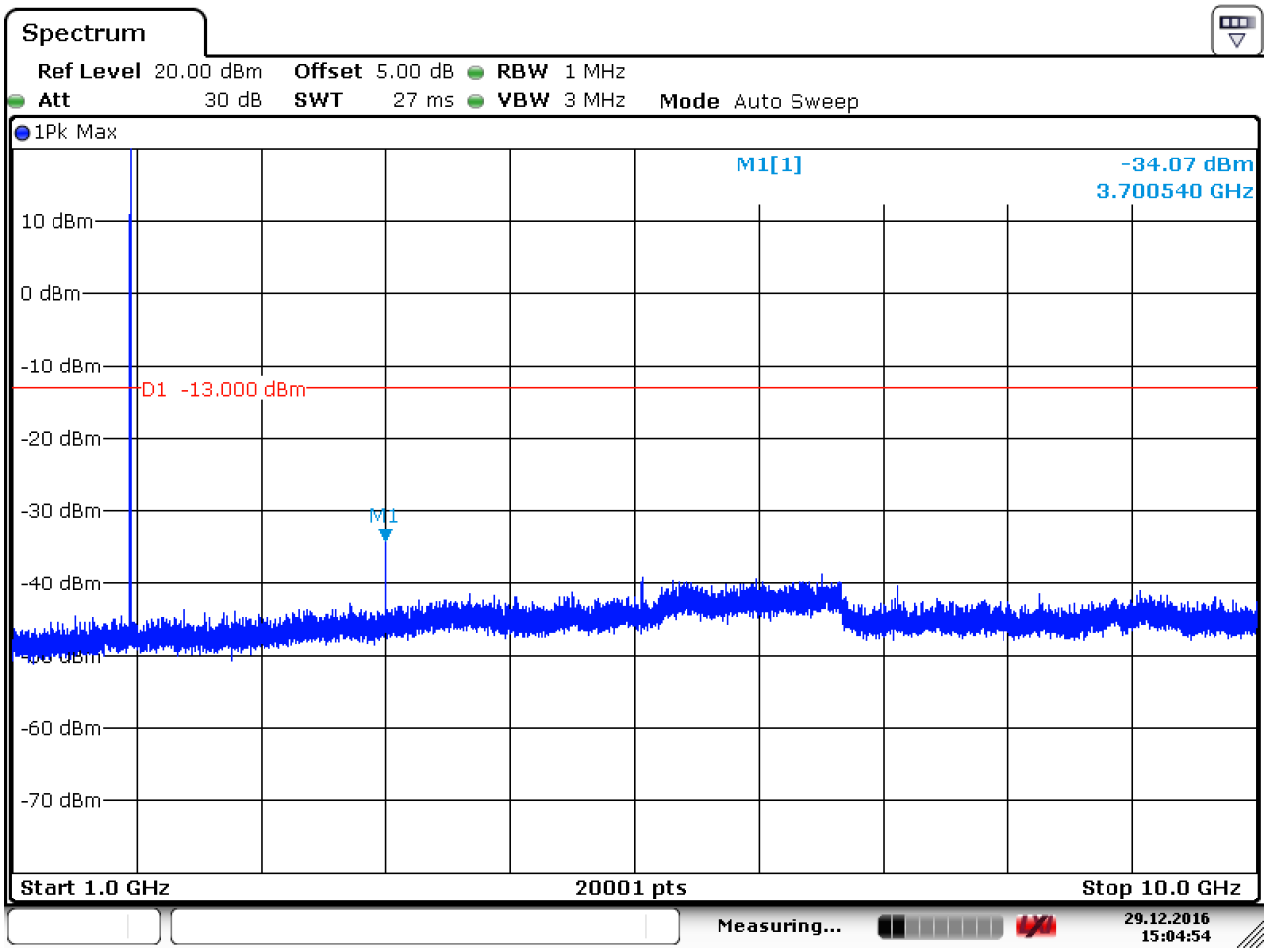
6.1.2 Test Band = GSM 1900

6.1.2.1 Test Mode = GSM/TM1

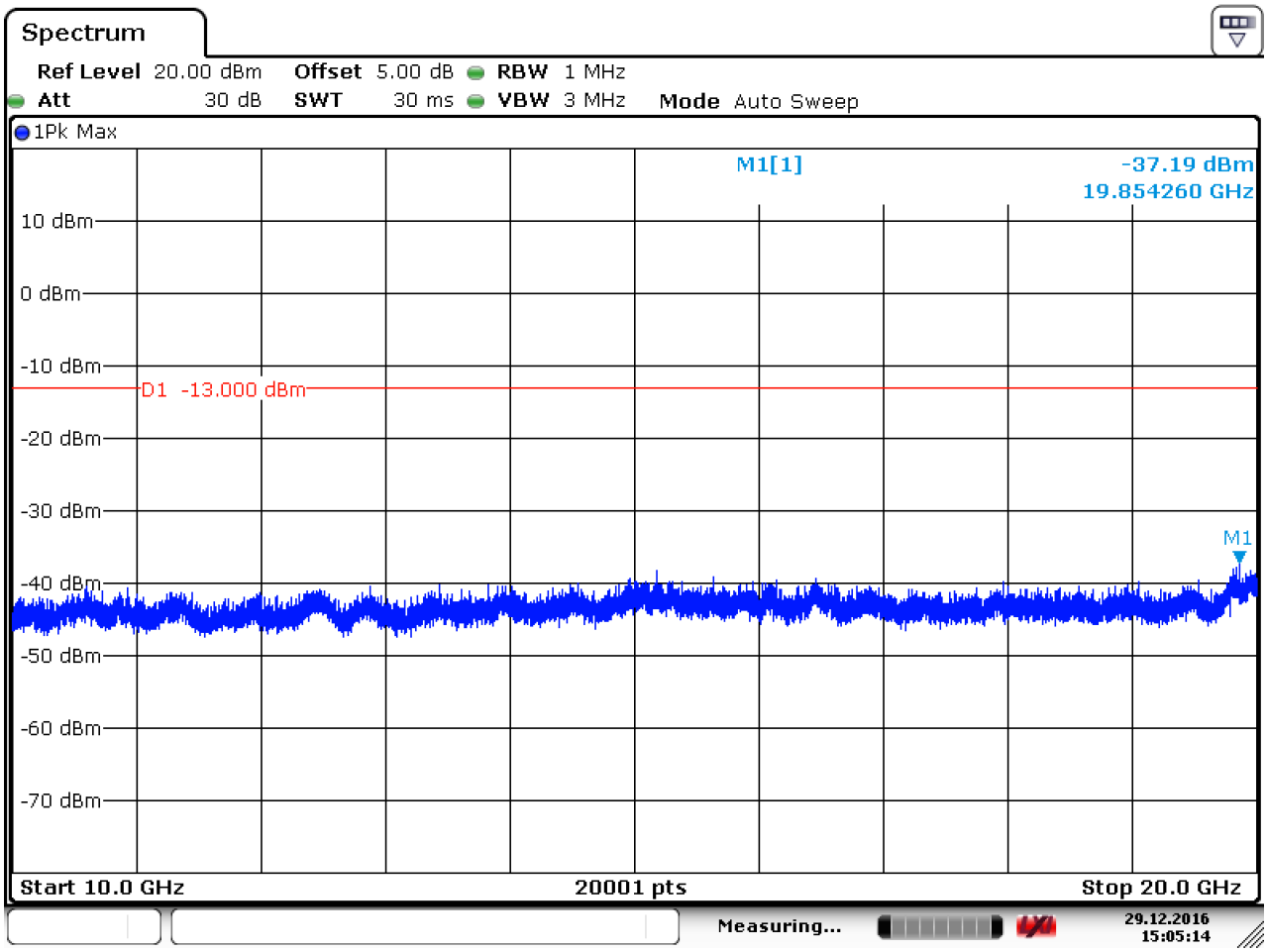
6.1.2.1.1 Test Channel = LCH



Date: 29.DEC.2016 15:01:51

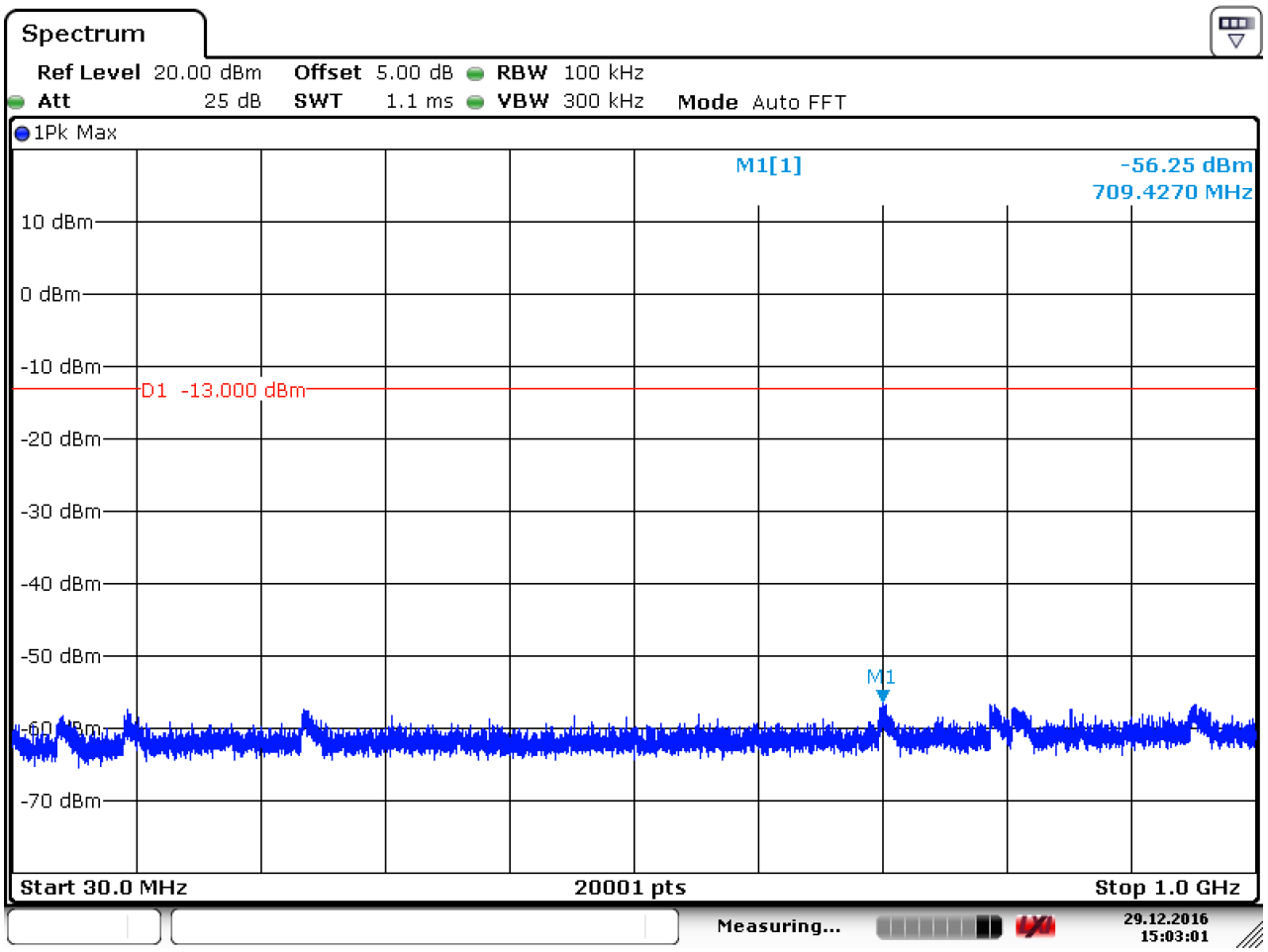


Date: 29.DEC.2016 15:04:54



Date: 29.DEC.2016 15:05:14

6.1.2.1.2 Test Channel = MCH



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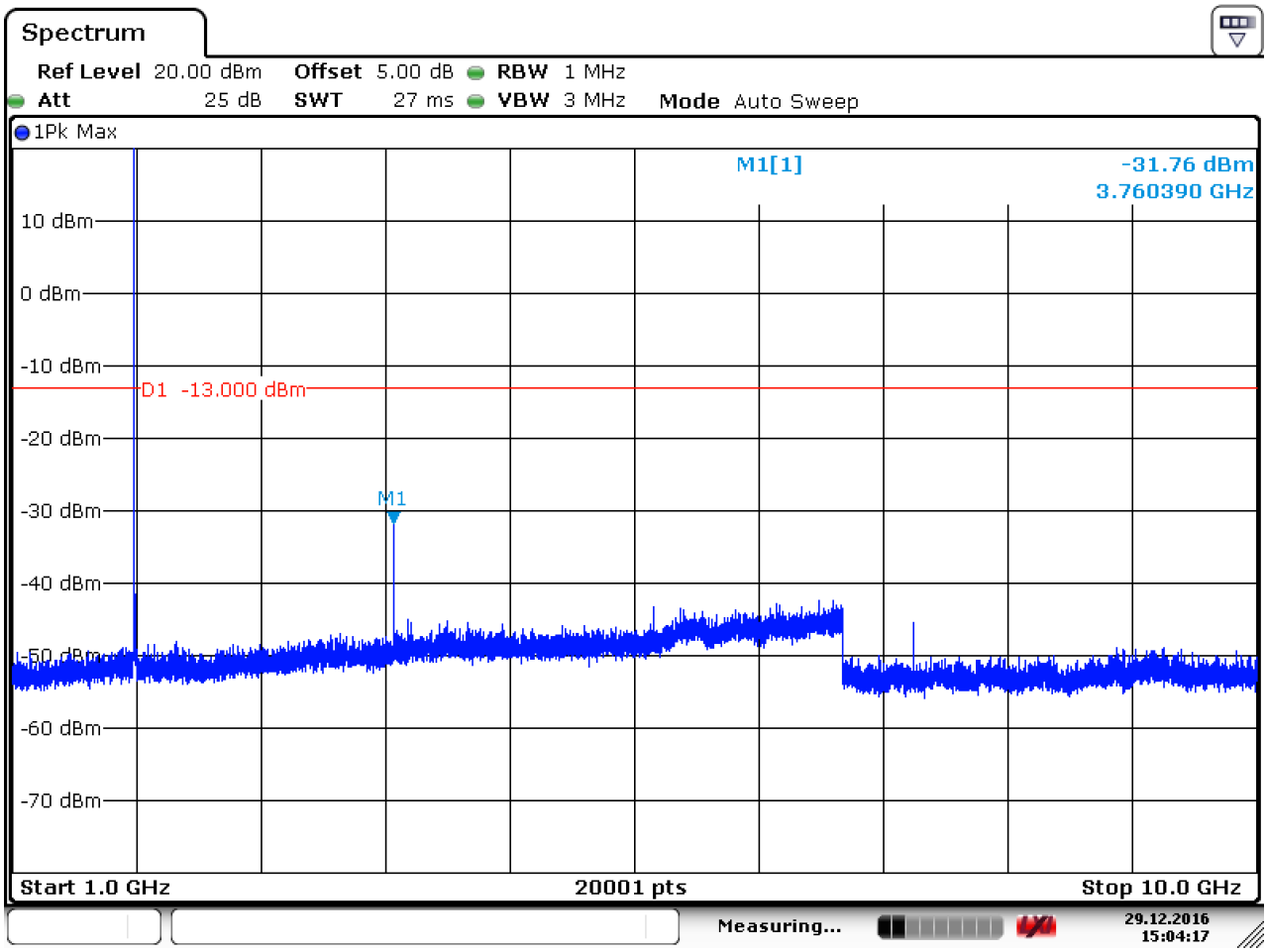
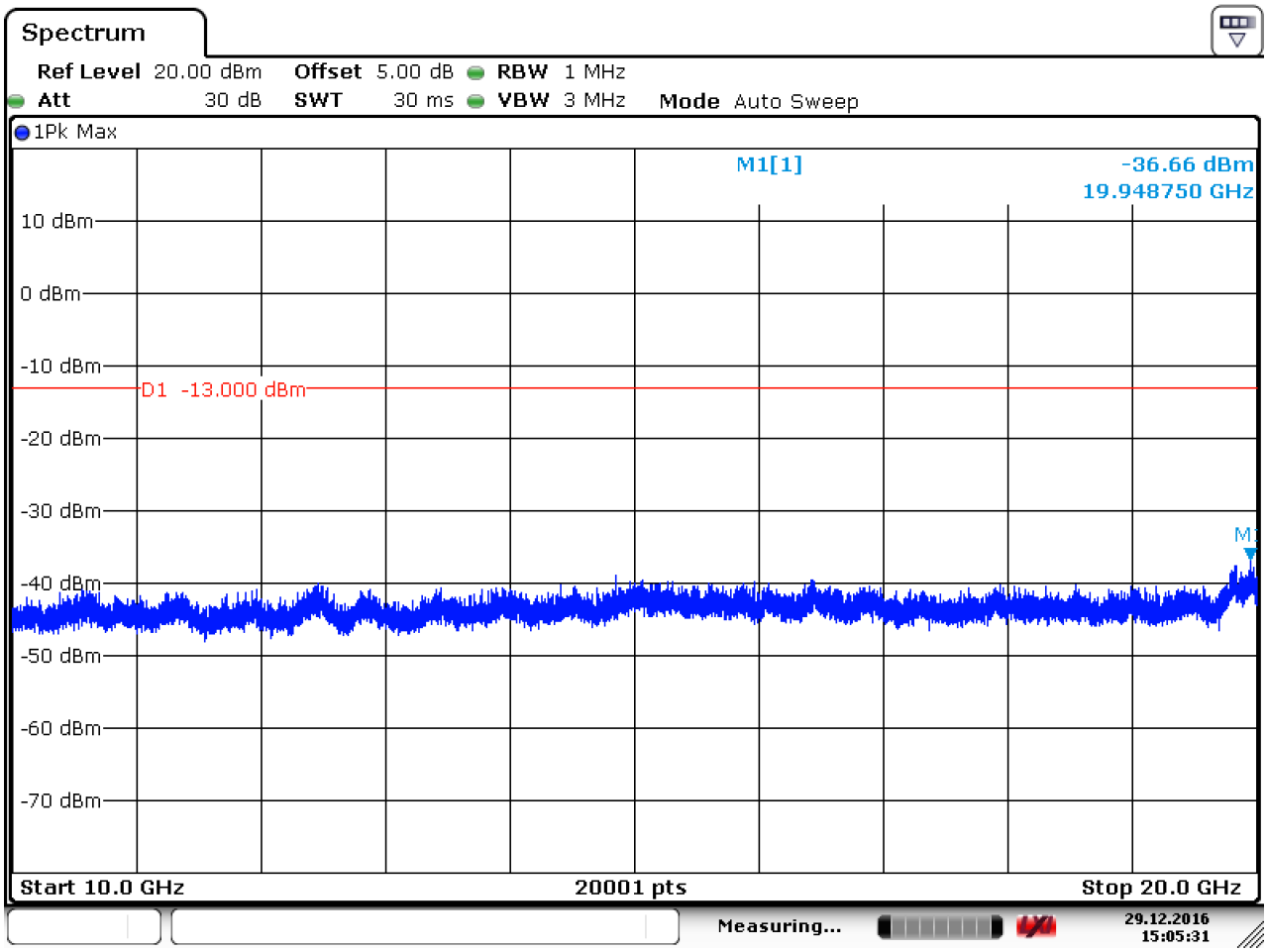
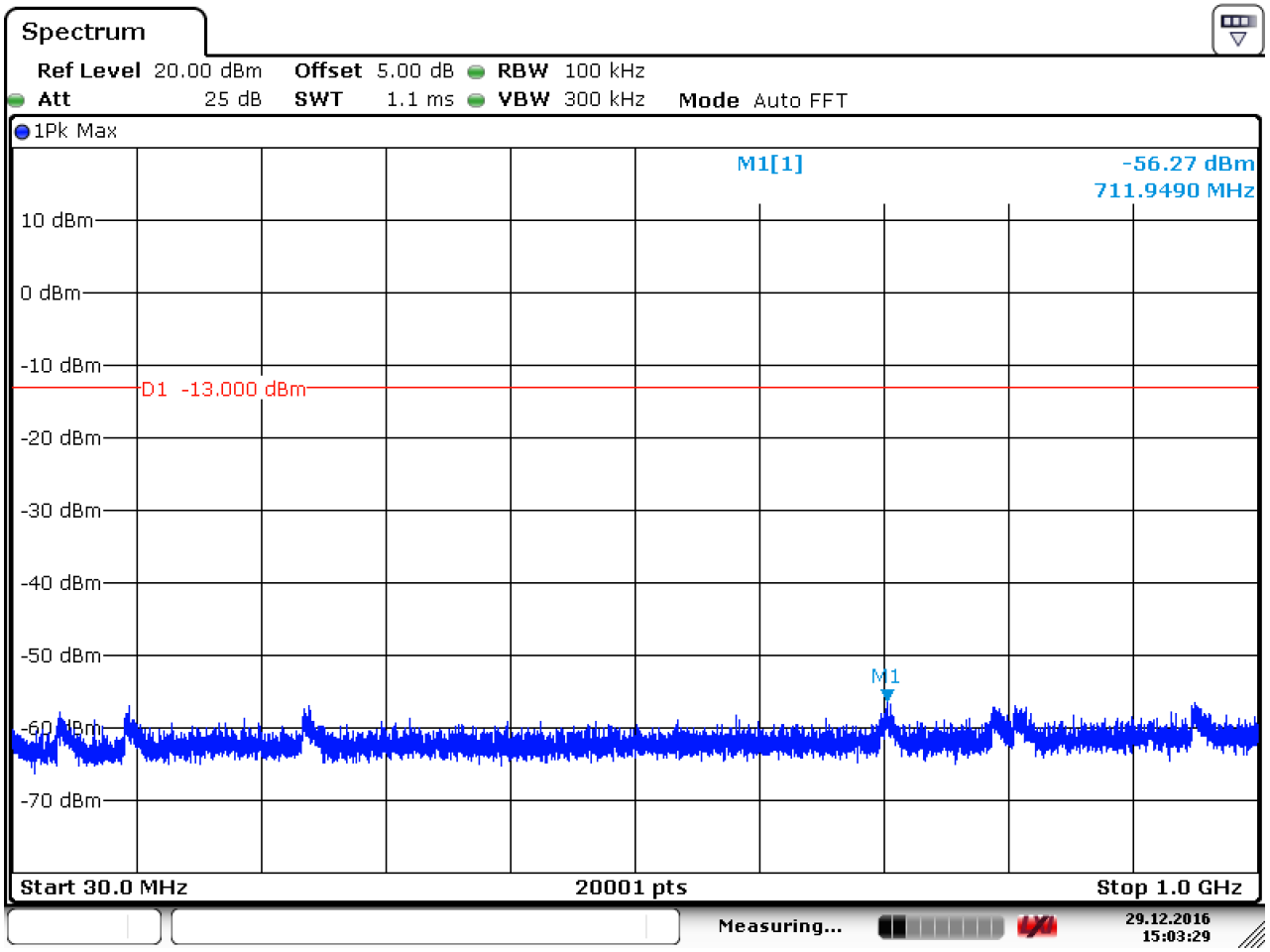


Date: 29.DEC.2016 15:04:17



Date: 29.DEC.2016 15:05:31

6.1.2.1.3 Test Channel = HCH



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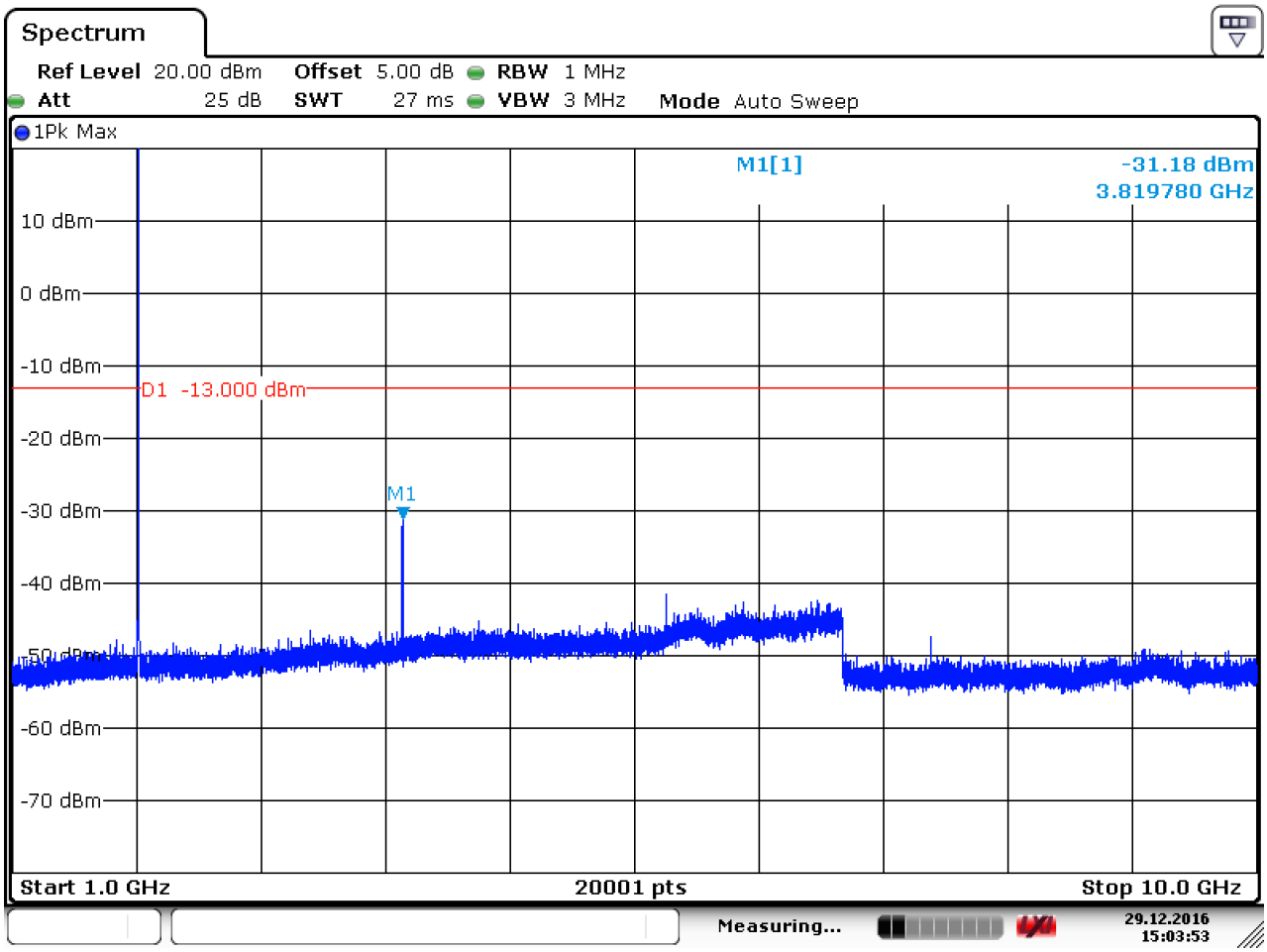

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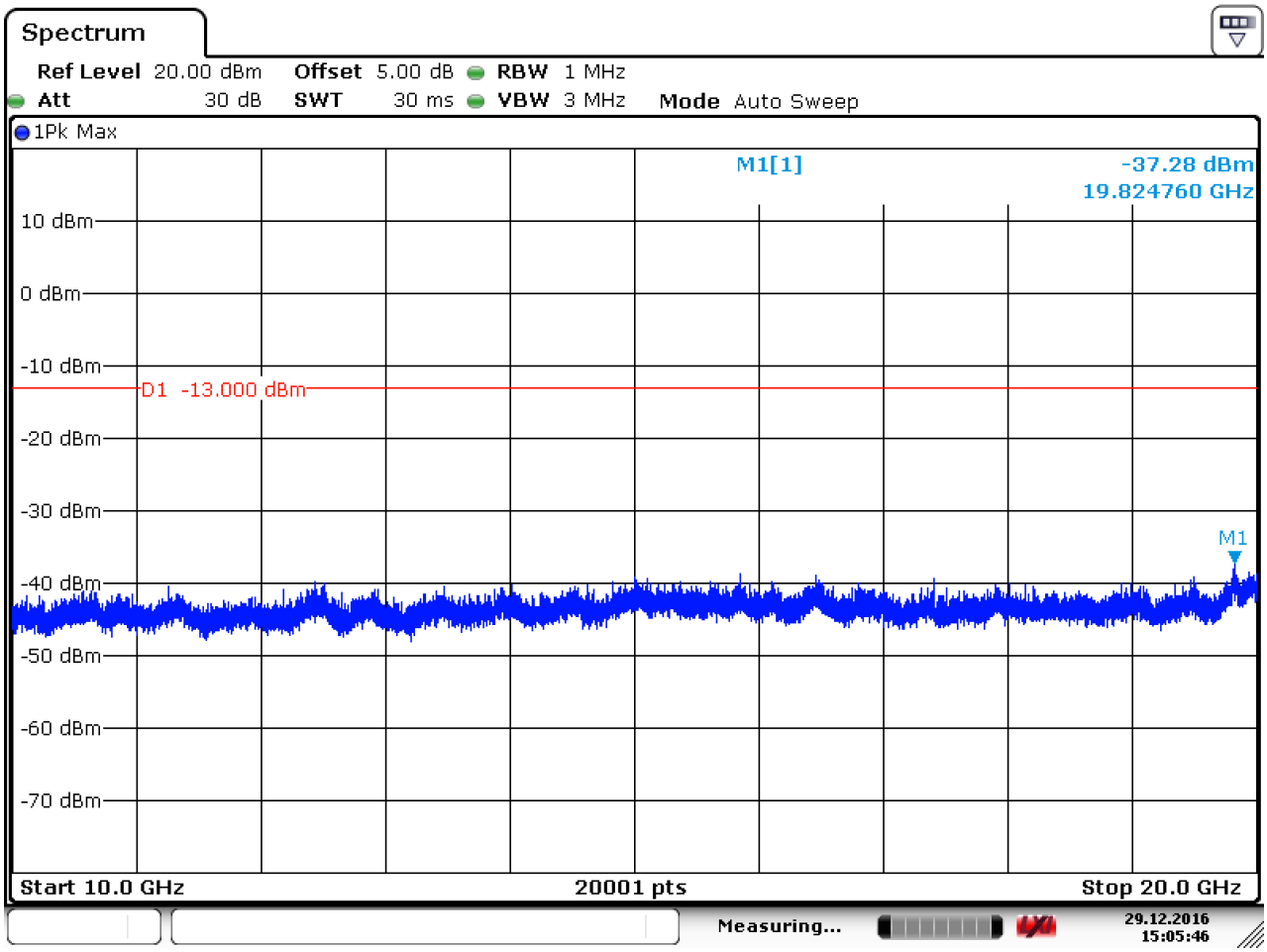

Date: 29.DEC.2016 15:05:47

7 Field Strength of Spurious Radiation

Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM 850

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1270.000	-51.43	-13.00	38.43	Vertical
2464.687	-36.90	-13.00	23.90	Vertical
4334.625	-51.20	-13.00	38.20	Vertical
1674.000	-45.57	-13.00	32.57	Horizontal
2455.500	-35.03	-13.00	22.03	Horizontal
4316.625	-50.53	-13.00	37.53	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1892.812	-27.98	-13.00	14.98	Vertical
2510.250	-35.79	-13.00	22.79	Vertical
4022.250	-50.69	-13.00	37.69	Vertical
1833.000	-47.14	-13.00	34.14	Horizontal
2511.000	-34.88	-13.00	21.88	Horizontal
4362.375	-50.79	-13.00	37.79	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1892.062	-35.08	-13.00	22.08	Vertical
2511.187	-35.17	-13.00	22.17	Vertical
4087.875	-51.41	-13.00	38.41	Vertical
1385.000	-52.50	-13.00	39.50	Horizontal
2329.687	-44.03	-13.00	31.03	Horizontal
2836.687	-41.49	-13.00	28.49	Horizontal

7.1.2 Test Band = GSM 1900

7.1.2.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1278.800	-51.16	-13.00	38.16	Vertical
2453.040	-38.57	-13.00	25.57	Vertical
5609.625	-47.03	-13.00	34.03	Vertical
1484.620	-47.23	-13.00	34.23	Horizontal
2407.460	-43.21	-13.00	30.21	Horizontal
5608.875	-46.06	-13.00	33.06	Horizontal

7.1.2.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1122.180	-52.91	-13.00	39.91	Vertical
2504.980	-43.10	-13.00	30.10	Vertical
3739.125	-50.59	-13.00	37.59	Vertical
1312.420	-52.55	-13.00	39.55	Horizontal
2492.260	-42.87	-13.00	29.87	Horizontal
5609.625	-45.25	-13.00	32.25	Horizontal

7.1.2.1.2 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
2462.580	-41.98	-13.00	28.98	Vertical
3739.875	-49.94	-13.00	36.94	Vertical
5609.250	-46.96	-13.00	33.96	Vertical
2462.580	-30.67	-13.00	17.67	Horizontal
3739.875	-51.08	-13.00	38.08	Horizontal
5609.250	-45.19	-13.00	32.19	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
GSM 850	GSM/TM1	LCH	TN	VL	-3.13	-0.00380	PASS
				VN	2.45	0.00297	PASS
				VH	1.83	0.00222	PASS
		MCH	TN	VL	-2.31	-0.00276	PASS
				VN	-4.25	-0.00508	PASS
				VH	0.48	0.00057	PASS
		HCH	TN	VL	-5.24	-0.00617	PASS
				VN	-2.41	-0.00284	PASS
				VH	3.85	0.00454	PASS
	GSM/TM2	LCH	TN	VL	2.75	0.00334	PASS
				VN	-3.70	-0.00449	PASS
				VH	4.64	0.00563	PASS
		MCH	TN	VL	-2.45	-0.00293	PASS
				VN	1.09	0.00130	PASS
				VH	-4.37	-0.00522	PASS
		HCH	TN	VL	-3.86	-0.00455	PASS
				VN	2.45	0.00289	PASS
				VH	0.44	0.00052	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM 1900	GSM/TM1	LCH	TN	VL	1.43	0.00077	PASS
				VN	-4.13	-0.00223	PASS
				VH	2.84	0.00153	PASS
		MCH	TN	VL	-5.24	-0.00279	PASS
				VN	2.80	0.00149	PASS
				VH	-1.57	-0.00084	PASS
		HCH	TN	VL	2.54	0.00133	PASS
				VN	-6.42	-0.00336	PASS
				VH	3.06	0.00160	PASS
	GSM/TM2	LCH	TN	VL	2.58	0.00139	PASS
				VN	-2.08	-0.00112	PASS
				VH	-1.37	-0.00074	PASS
		MCH	TN	VL	3.86	0.00205	PASS
				VN	-2.97	-0.00158	PASS
				VH	2.15	0.00114	PASS
		HCH	TN	VL	4.82	0.00252	PASS
				VN	-2.54	-0.00133	PASS
				VH	-1.88	-0.00098	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
GSM 850	GSM/TM1	LCH	VN	-30	-4.33	-0.00525	PASS
				-20	1.20	0.00146	PASS
				-10	0.69	0.00084	PASS
				0	-2.38	-0.00289	PASS
				10	0.26	0.00032	PASS
				20	-4.54	-0.00551	PASS
				30	-1.60	-0.00194	PASS
				40	-0.53	-0.00064	PASS
				50	-6.21	-0.00753	PASS
		MCH	VN	-30	-2.80	-0.00335	PASS
				-20	-5.18	-0.00619	PASS
				-10	-0.79	-0.00094	PASS
				0	-3.28	-0.00392	PASS
				10	1.37	0.00164	PASS
				20	2.32	0.00277	PASS
				30	1.91	0.00228	PASS
				40	0.55	0.00066	PASS
				50	-4.35	-0.00520	PASS
		HCH	VN	-30	-0.47	-0.00055	PASS
				-20	2.68	0.00316	PASS
				-10	-2.59	-0.00305	PASS
				0	-5.42	-0.00639	PASS
				10	1.17	0.00138	PASS
				20	-2.78	-0.00328	PASS
				30	3.74	0.00441	PASS
				40	-1.63	-0.00192	PASS
				50	-4.20	-0.00495	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM 850	GSM/TM2	LCH	VN	-30	-2.59	-0.00314	PASS
				-20	1.96	0.00238	PASS
				-10	-5.37	-0.00652	PASS
				0	0.50	0.00061	PASS
				10	-4.65	-0.00564	PASS
				20	-5.11	-0.00620	PASS
				30	-3.96	-0.00480	PASS
				40	-5.71	-0.00693	PASS
				50	-2.44	-0.00296	PASS
		MCH	VN	-30	-1.91	-0.00228	PASS
				-20	3.29	0.00393	PASS
				-10	-4.24	-0.00507	PASS
				0	1.76	0.00210	PASS
				10	-5.10	-0.00610	PASS
				20	-4.43	-0.00530	PASS
				30	-2.13	-0.00255	PASS
				40	-3.20	-0.00383	PASS
				50	-0.50	-0.00060	PASS
		HCH	VN	-30	-3.21	-0.00378	PASS
				-20	-6.34	-0.00747	PASS
				-10	-2.33	-0.00275	PASS
				0	-5.24	-0.00617	PASS
				10	1.07	0.00126	PASS
				20	-4.03	-0.00475	PASS
				30	-3.28	-0.00386	PASS
				40	-2.34	-0.00276	PASS
				50	-5.07	-0.00597	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM 1900	GSM/TM1	LCH	VN	-30	-3.55	-0.00192	PASS
				-20	-4.45	-0.00241	PASS
				-10	1.68	0.00091	PASS
				0	-3.48	-0.00188	PASS
				10	-0.88	-0.00048	PASS
				20	1.08	0.00058	PASS
				30	-3.39	-0.00183	PASS
				40	-5.20	-0.00281	PASS
				50	-4.34	-0.00235	PASS
		MCH	VN	-30	-4.56	-0.00243	PASS
				-20	1.27	0.00068	PASS
				-10	-2.23	-0.00119	PASS
				0	4.86	0.00259	PASS
				10	-3.15	-0.00168	PASS
				20	-6.29	-0.00335	PASS
				30	-3.27	-0.00174	PASS
				40	-8.09	-0.00430	PASS
				50	-5.11	-0.00272	PASS
		HCH	VN	-30	-3.25	-0.00170	PASS
				-20	4.63	0.00242	PASS
				-10	1.85	0.00097	PASS
				0	-2.87	-0.00150	PASS
				10	-3.18	-0.00167	PASS
				20	-4.54	-0.00238	PASS
				30	2.31	0.00121	PASS
				40	-2.92	-0.00153	PASS
				50	-5.24	-0.00274	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM 1900	GSM/TM2	LCH	VN	-30	-4.13	-0.00223	PASS
				-20	-4.00	-0.00216	PASS
				-10	1.68	0.00091	PASS
				0	-2.47	-0.00133	PASS
				10	-2.55	-0.00138	PASS
				20	-4.08	-0.00221	PASS
				30	1.44	0.00078	PASS
				40	-3.20	-0.00173	PASS
				50	-5.31	-0.00287	PASS
		MCH	VN	-30	-6.44	-0.00343	PASS
				-20	-2.30	-0.00122	PASS
				-10	-4.15	-0.00221	PASS
				0	1.59	0.00085	PASS
				10	-5.35	-0.00285	PASS
				20	-2.66	-0.00141	PASS
				30	-3.27	-0.00174	PASS
				40	0.73	0.00039	PASS
				50	-4.14	-0.00220	PASS
		HCH	VN	-30	-3.43	-0.00180	PASS
				-20	2.62	0.00137	PASS
				-10	1.47	0.00077	PASS
				0	-5.20	-0.00272	PASS
				10	-4.51	-0.00236	PASS
				20	-1.33	-0.00070	PASS
				30	-2.77	-0.00145	PASS
				40	-2.42	-0.00127	PASS
				50	-6.26	-0.00328	PASS

The End