Appendix B

Test Data for SZEM161201075001RG

CONTENT

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	33.34	33.45	38.45	PASS
		MCH	33.31	33.42	38.45	PASS
		HCH	33.32	33.43	38.45	PASS
	GSM/TM2	LCH	26.90	27.01	38.45	PASS
		MCH	27.00	27.11	38.45	PASS
		HCH	27.10	27.21	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	30.62	32.85	33	PASS
		MCH	30.53	32.76	33	PASS
		HCH	30.59	32.82	33	PASS
	GSM/TM2	LCH	26.12	28.35	33	PASS
		MCH	26.33	28.56	33	PASS
		HCH	26.55	28.78	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	6.38	13	PASS
		MCH	6.38	13	PASS
		HCH	6.46	13	PASS
	GSM/TM2	LCH	8.35	13	PASS
		MCH	8.78	13	PASS
		HCH	8.23	13	PASS
GSM 1900	GSM/TM1	LCH	6.41	13	PASS
		MCH	6.38	13	PASS
		HCH	6.70	13	PASS
	GSM/TM2	LCH	8.32	13	PASS
		MCH	8.23	13	PASS
		HCH	8.29	13	PASS

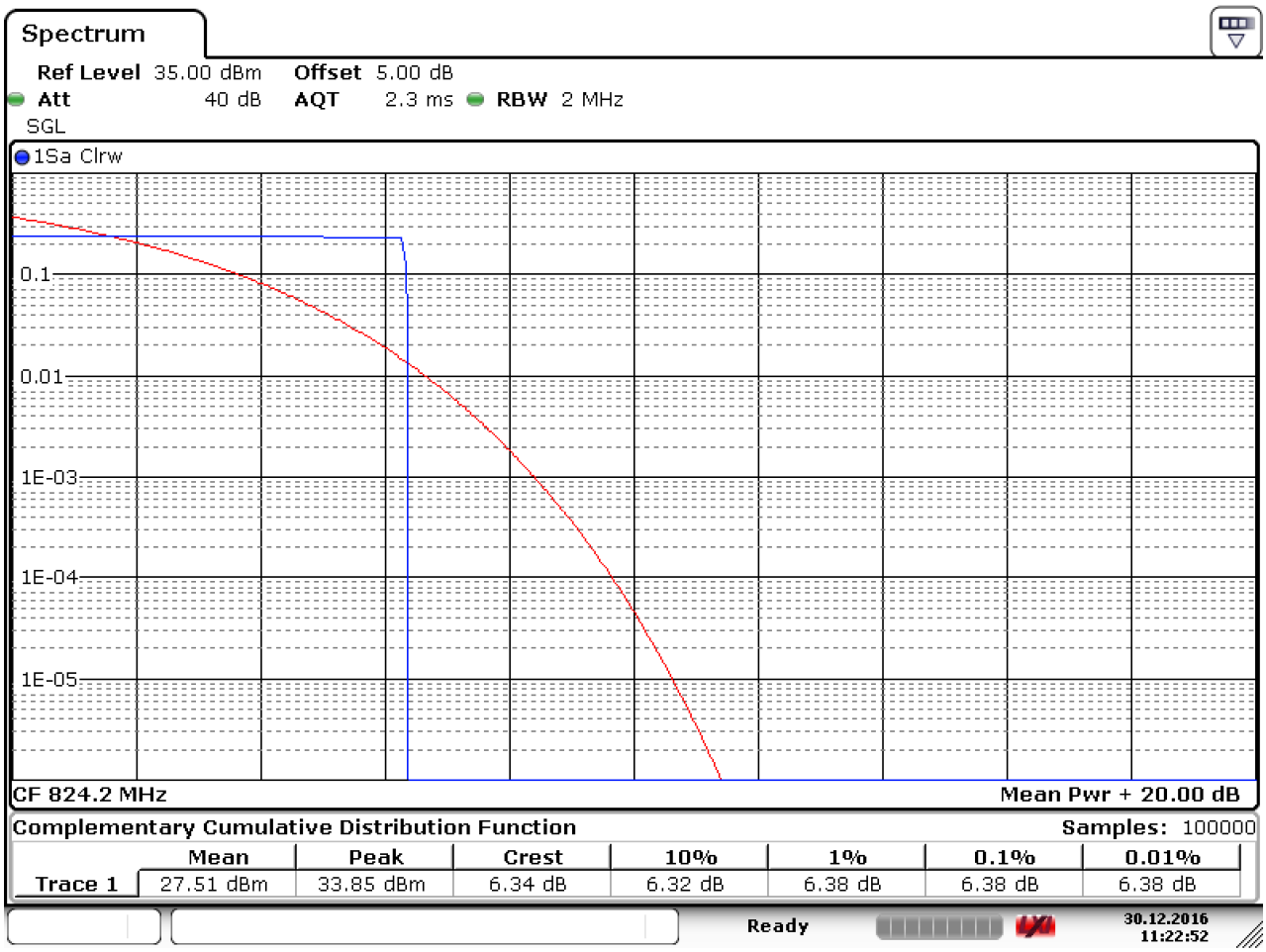
Part II - Test Plots

2.1 For GSM

2.1.1 Test Band = GSM 850

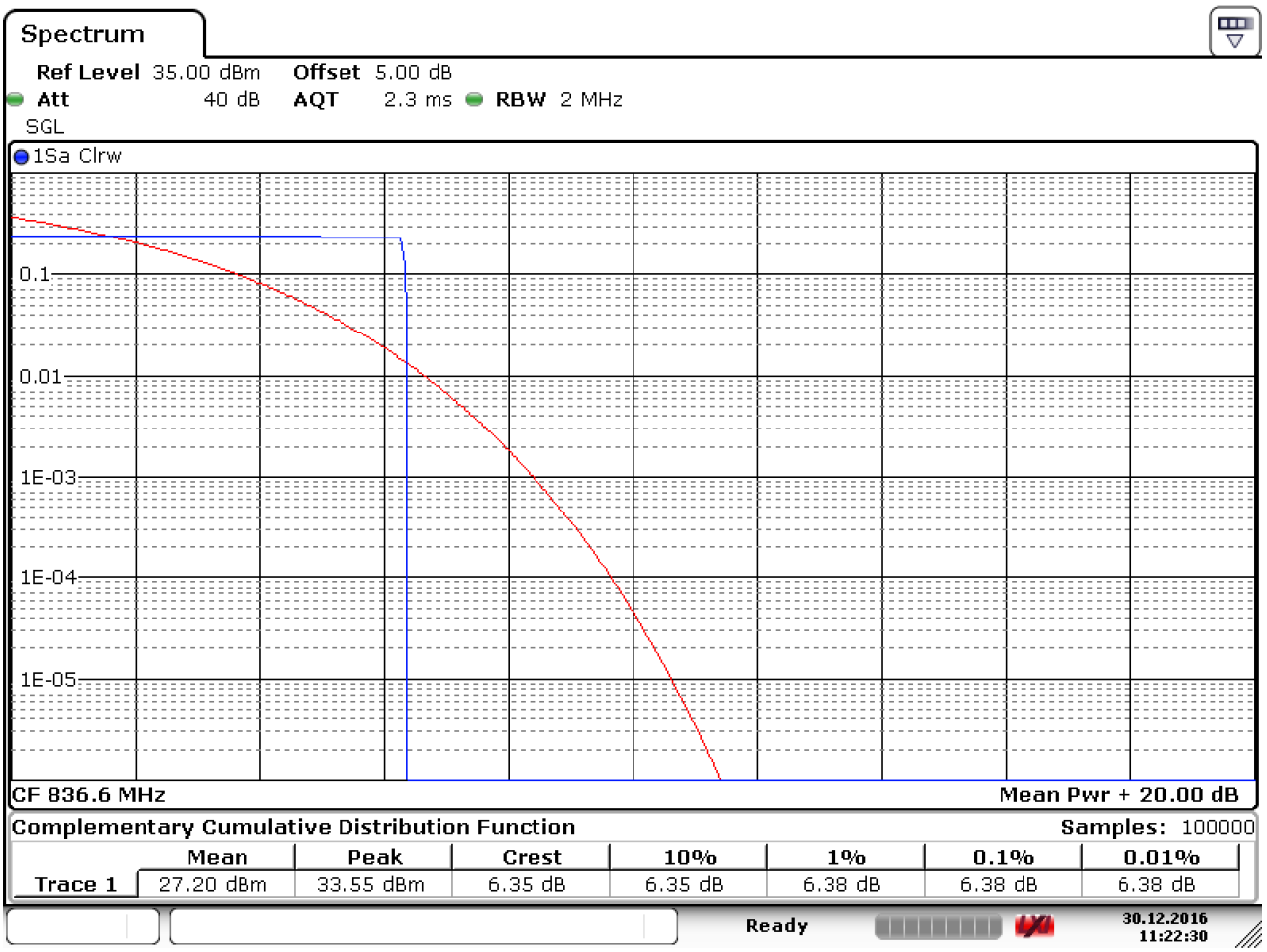
2.1.1.1 Test Mode = GSM/TM1

2.1.1.1.1 Test Channel = LCH



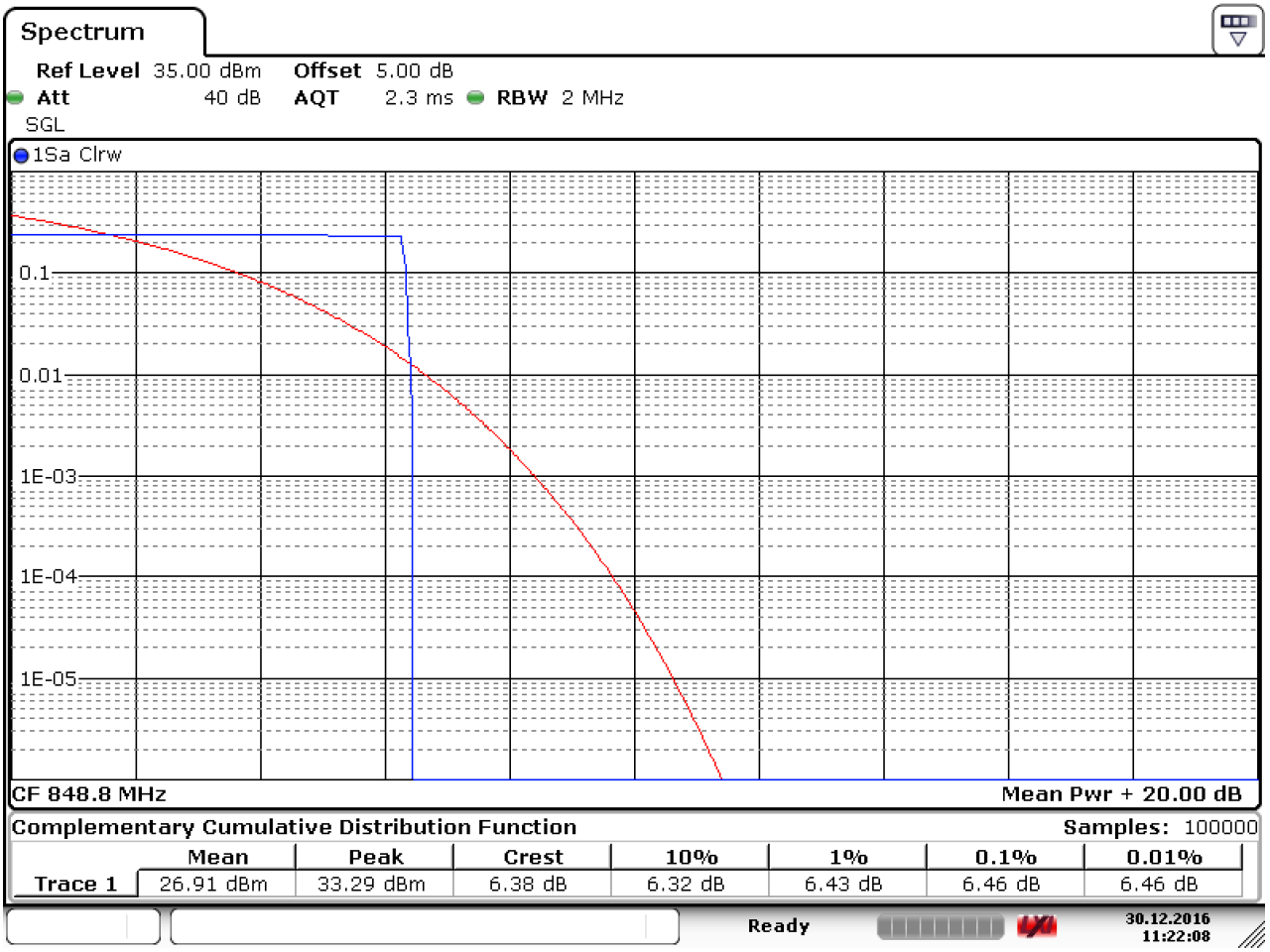
Date: 30.DEC.2016 11:22:52

2.1.1.1.2 Test Channel = MCH



Date: 30.DEC.2016 11:22:31

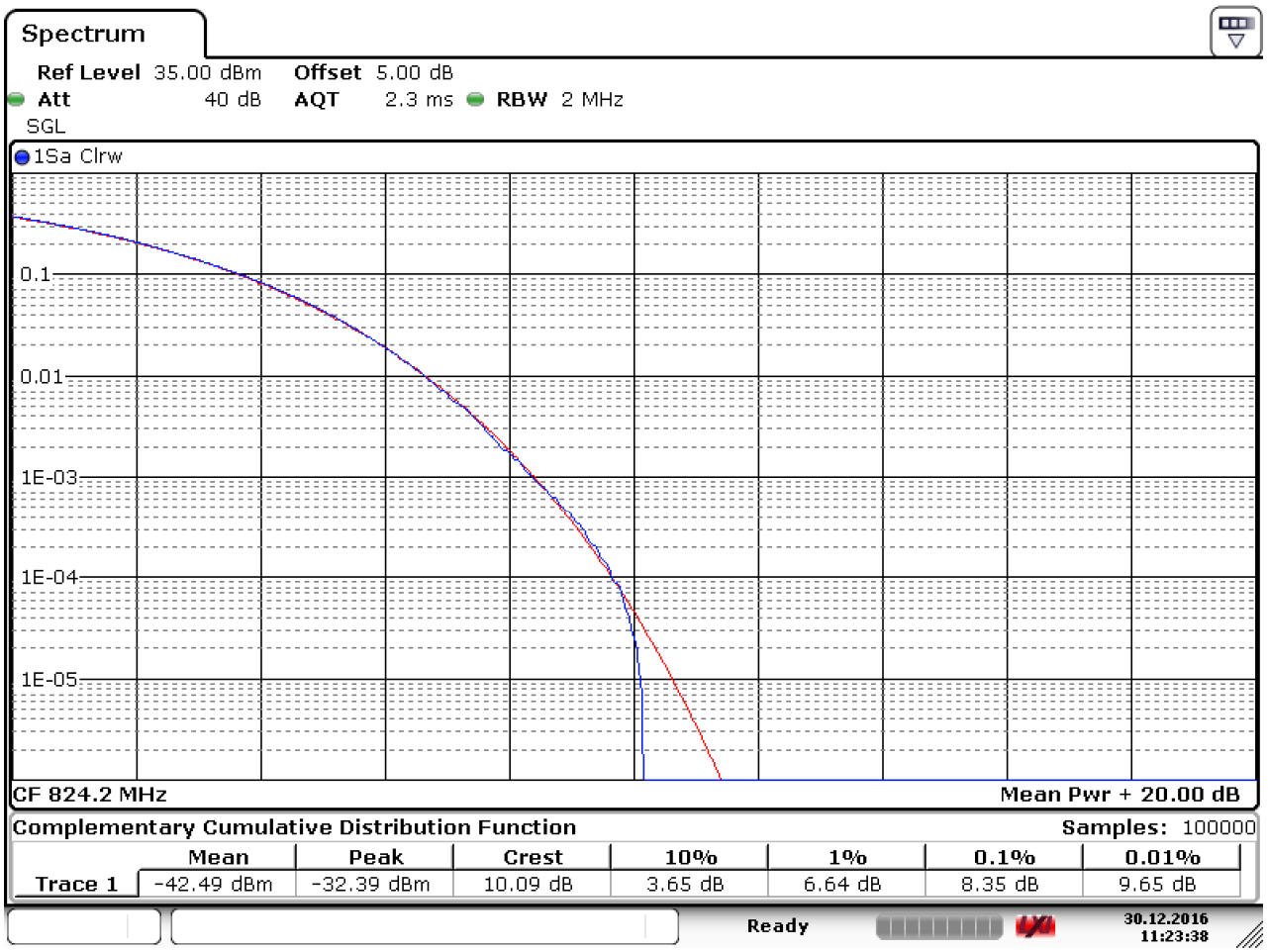
2.1.1.1.3 Test Channel = HCH



Date: 30.DEC.2016 11:22:08

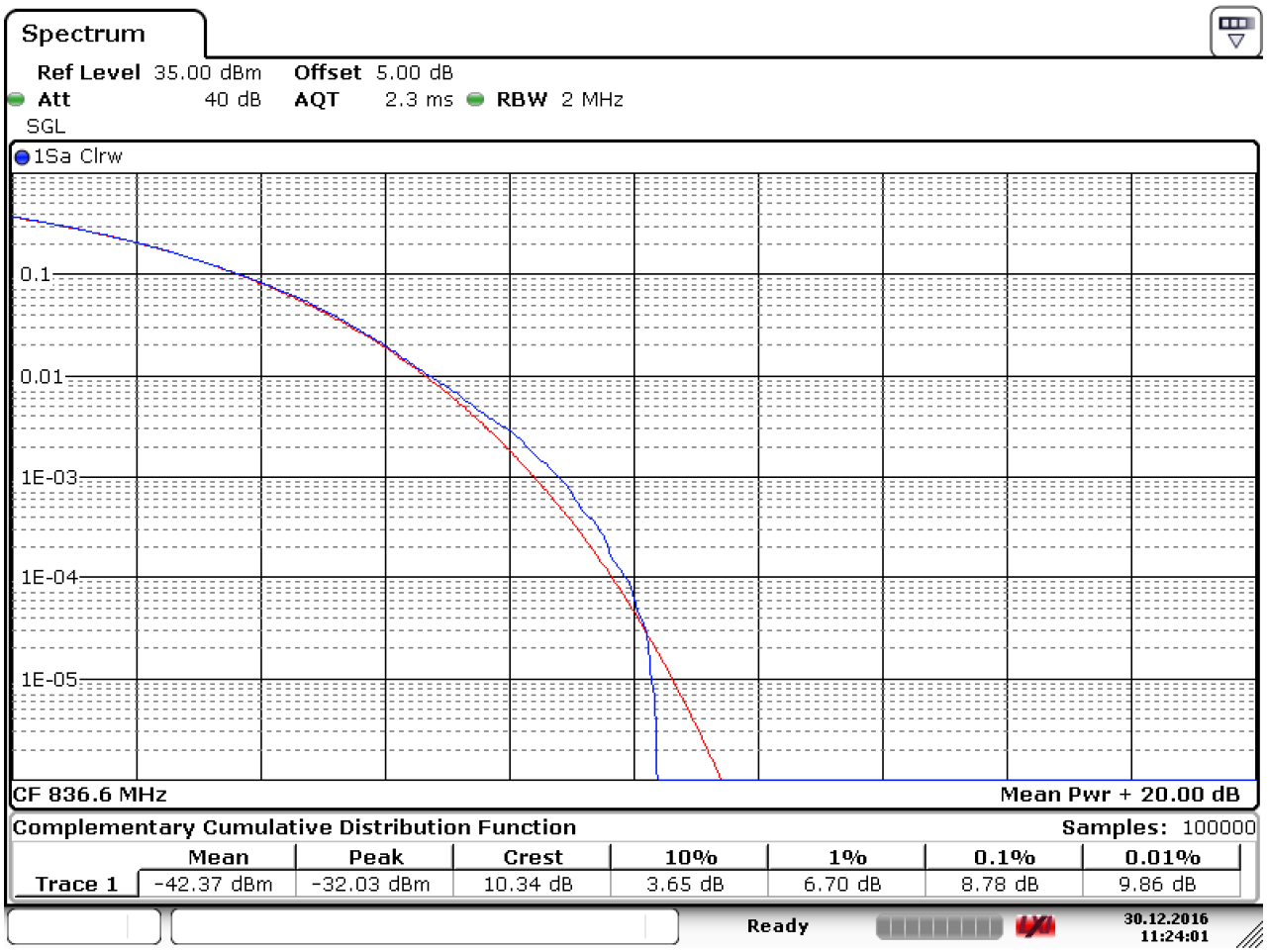
2.1.1.2 Test Mode = GSM/TM2

2.1.1.2.1 Test Channel = LCH



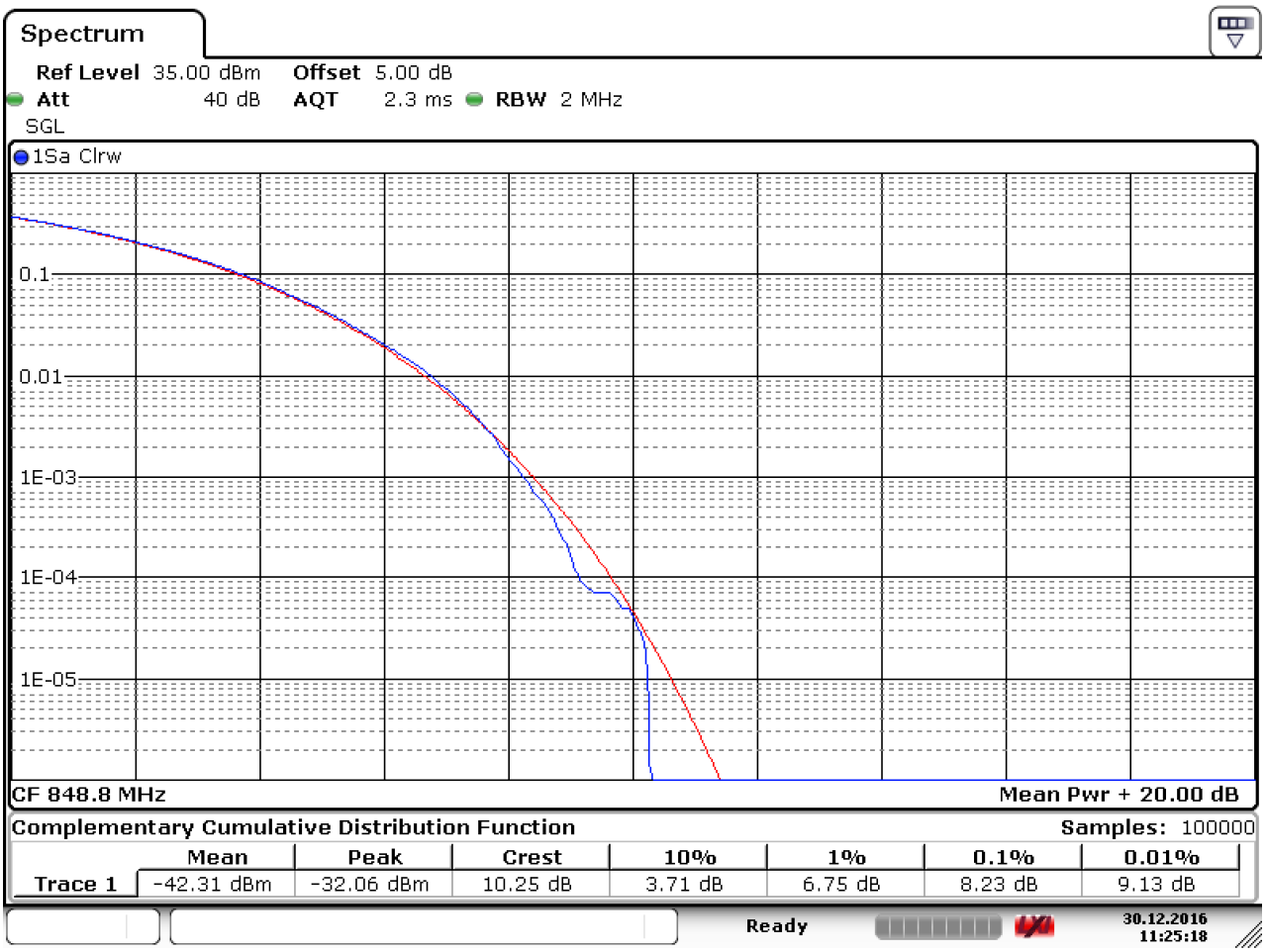
Date: 30.DEC.2016 11:23:38

2.1.1.2.2 Test Channel = MCH



Date: 30.DEC.2016 11:24:01

2.1.1.2.3 Test Channel = HCH

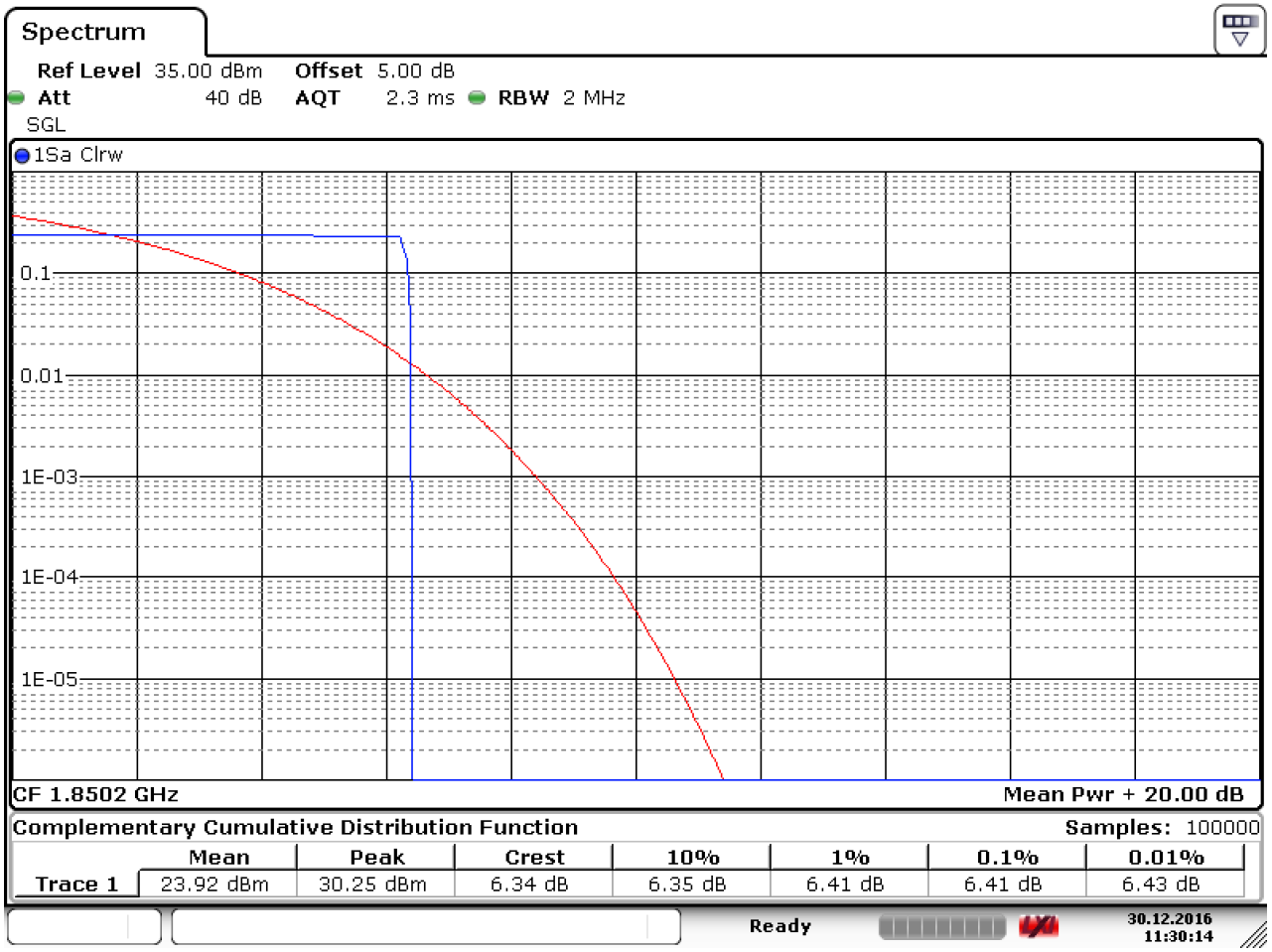


Date: 30.DEC.2016 11:25:18

2.1.2 Test Band = GSM 1900

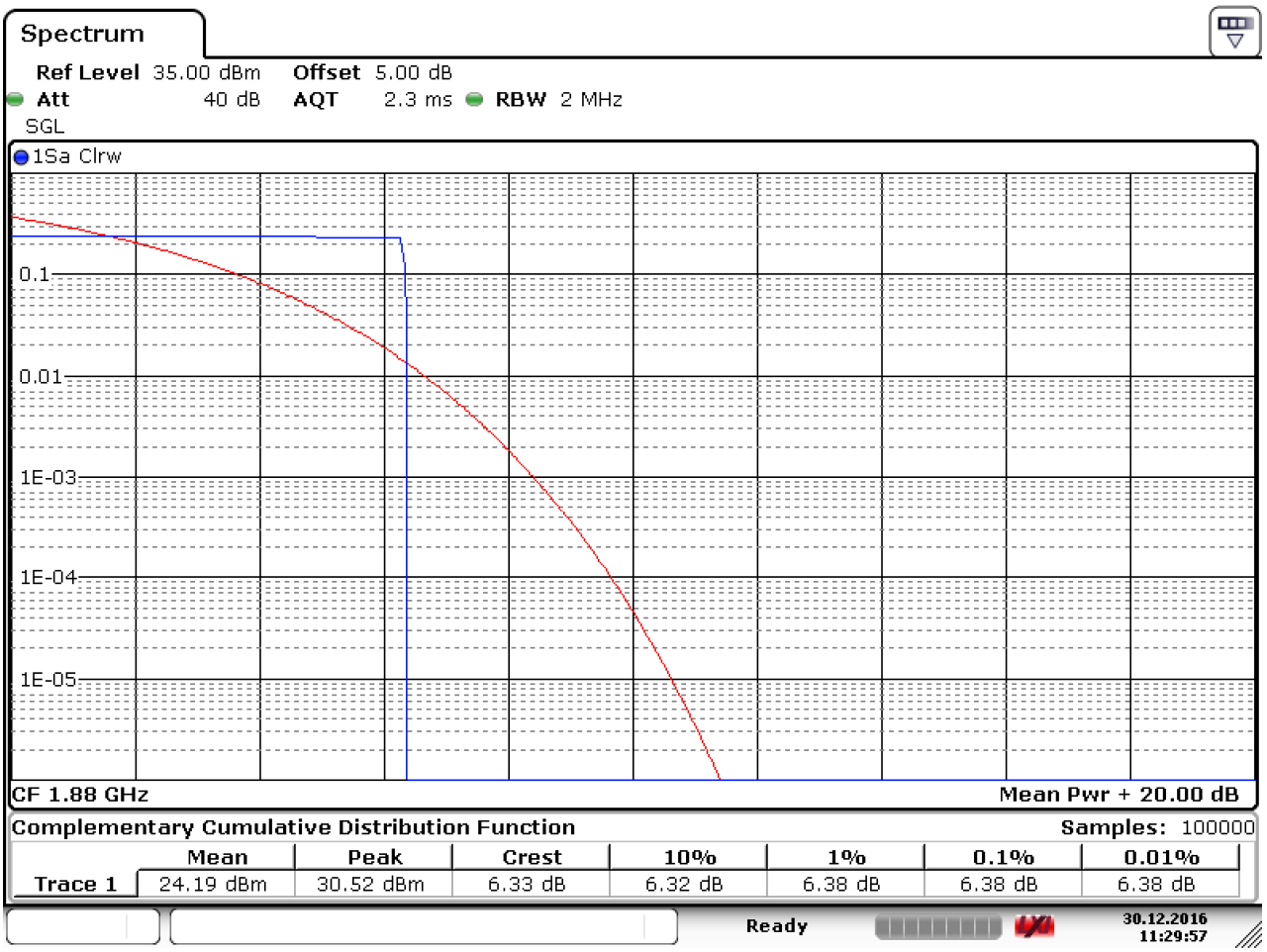
2.1.2.1 Test Mode = GSM/TM1

2.1.2.1.1 Test Channel = LCH



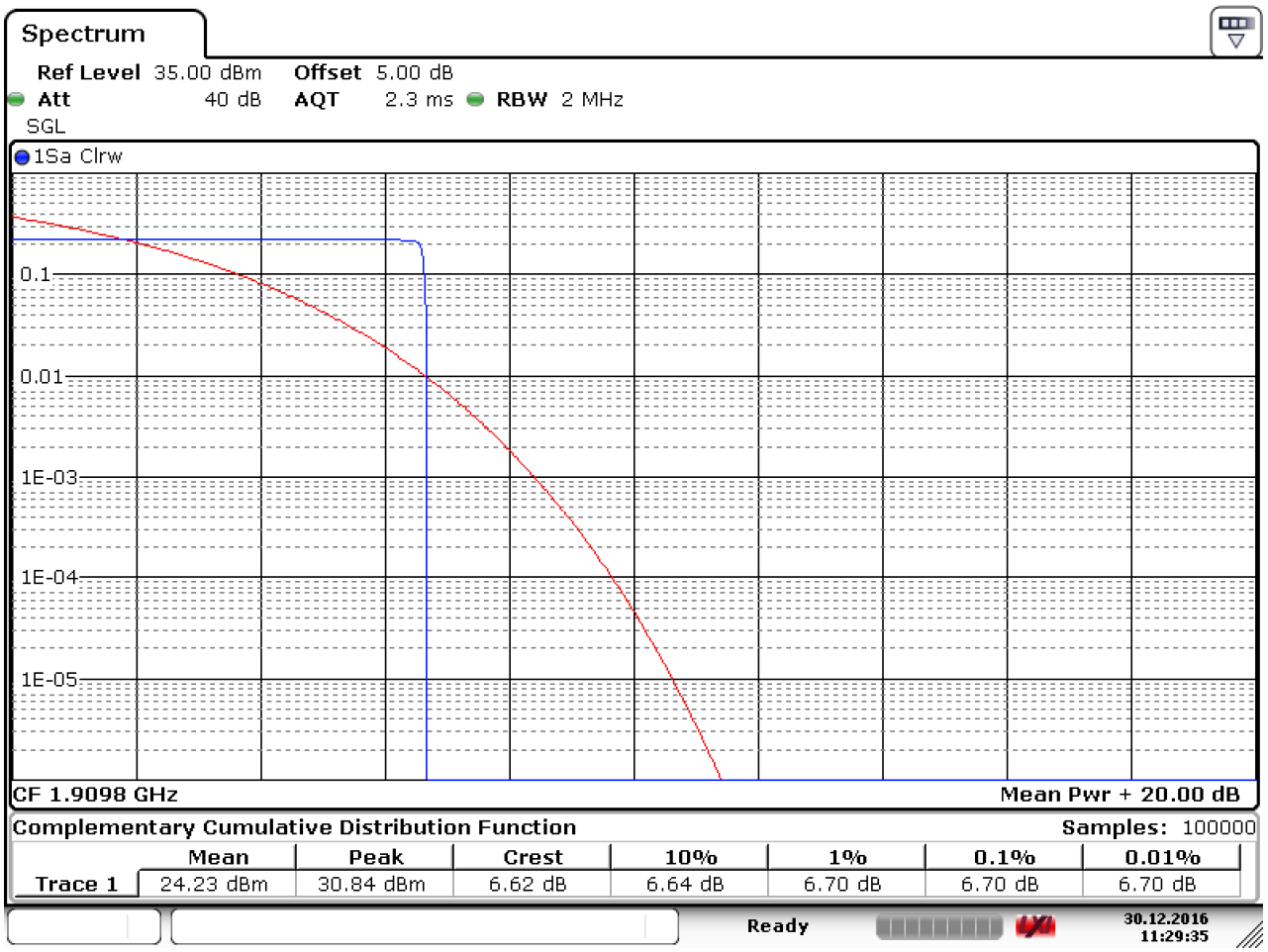
Date: 30.DEC.2016 11:30:14

2.1.2.1.2 Test Channel = MCH



Date: 30.DEC.2016 11:29:58

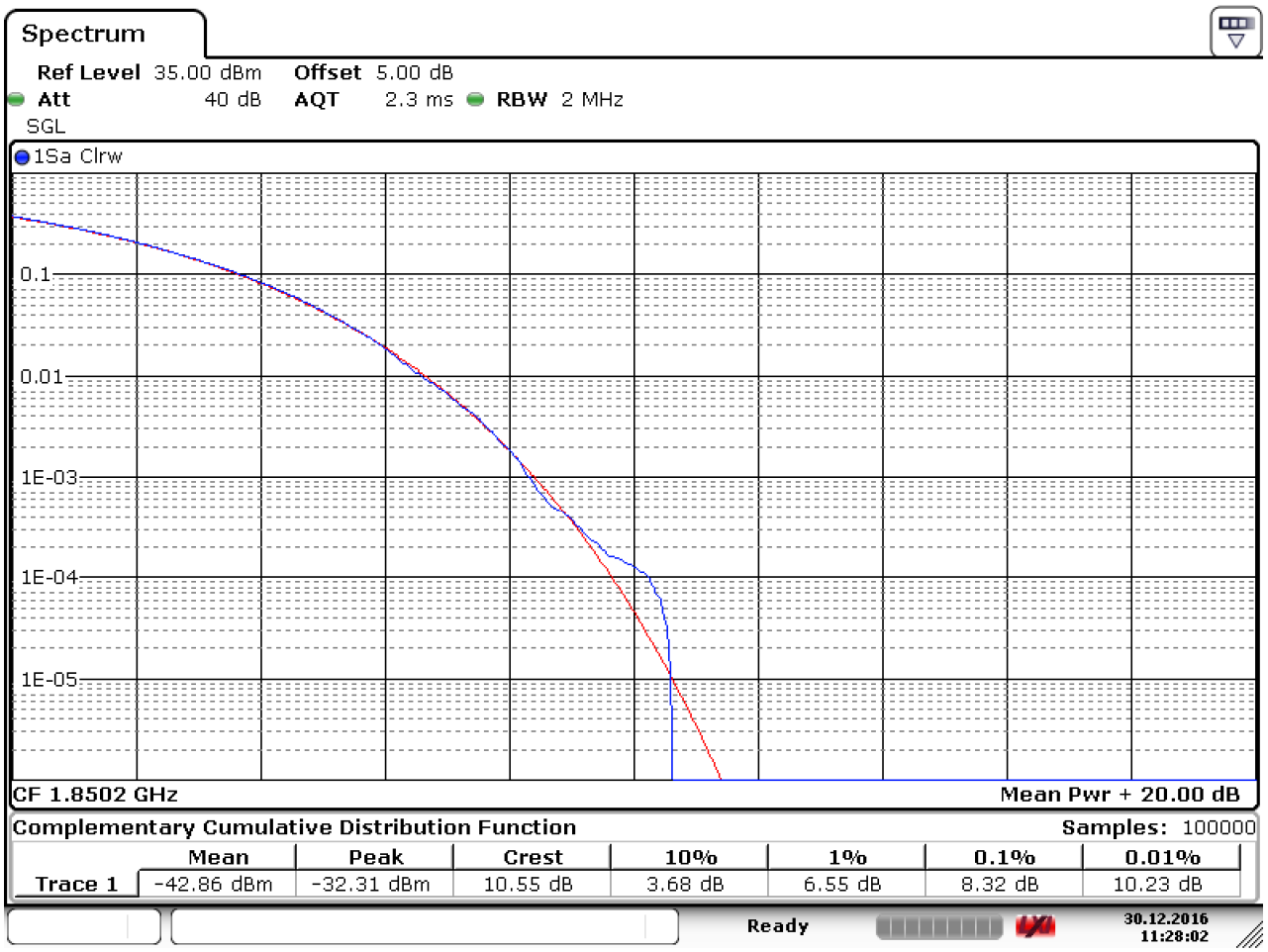
2.1.2.1.3 Test Channel = HCH



Date: 30.DEC.2016 11:29:36

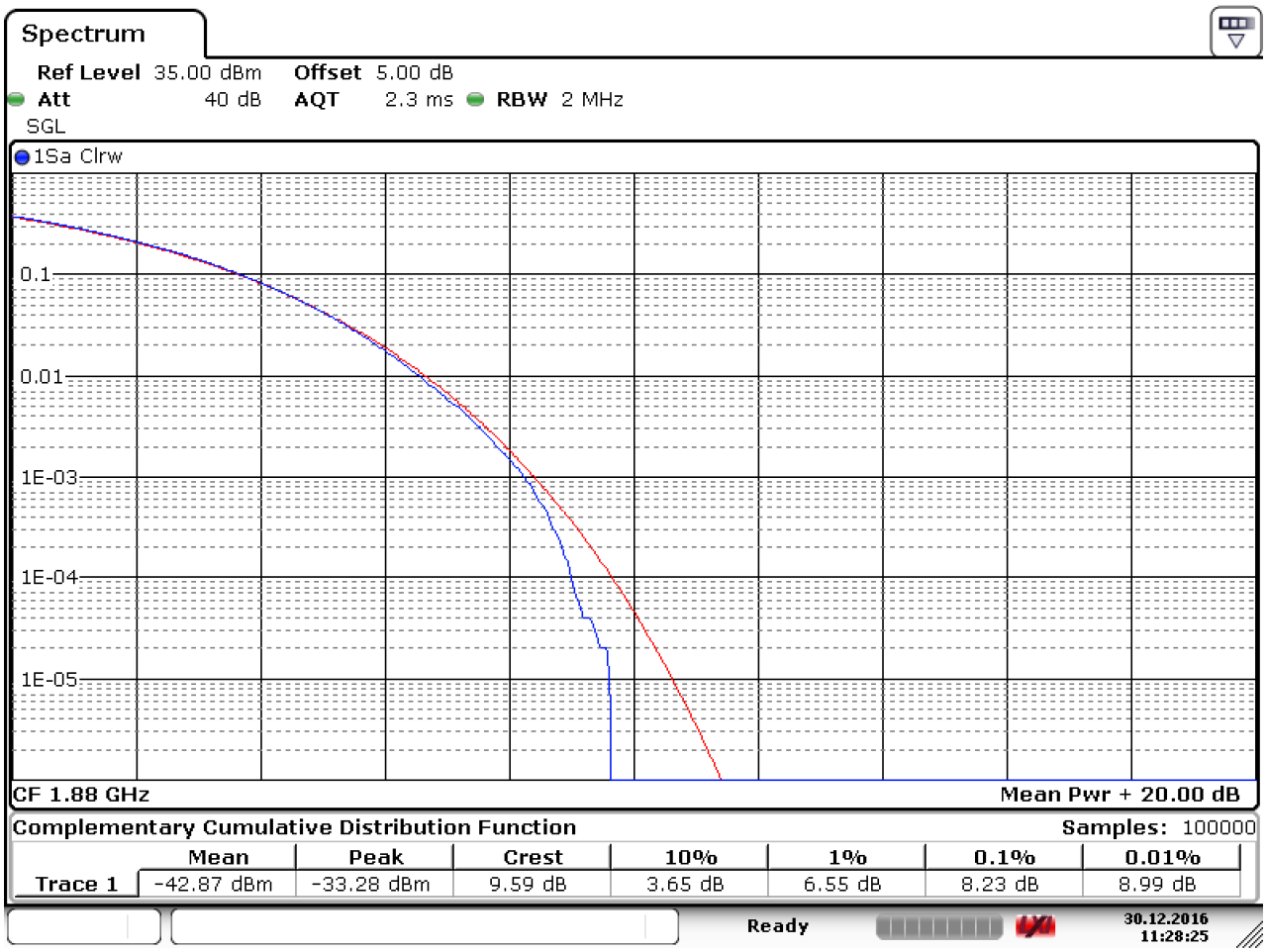
2.1.2.2 Test Mode = GSM/TM2

2.1.2.2.1 Test Channel = LCH



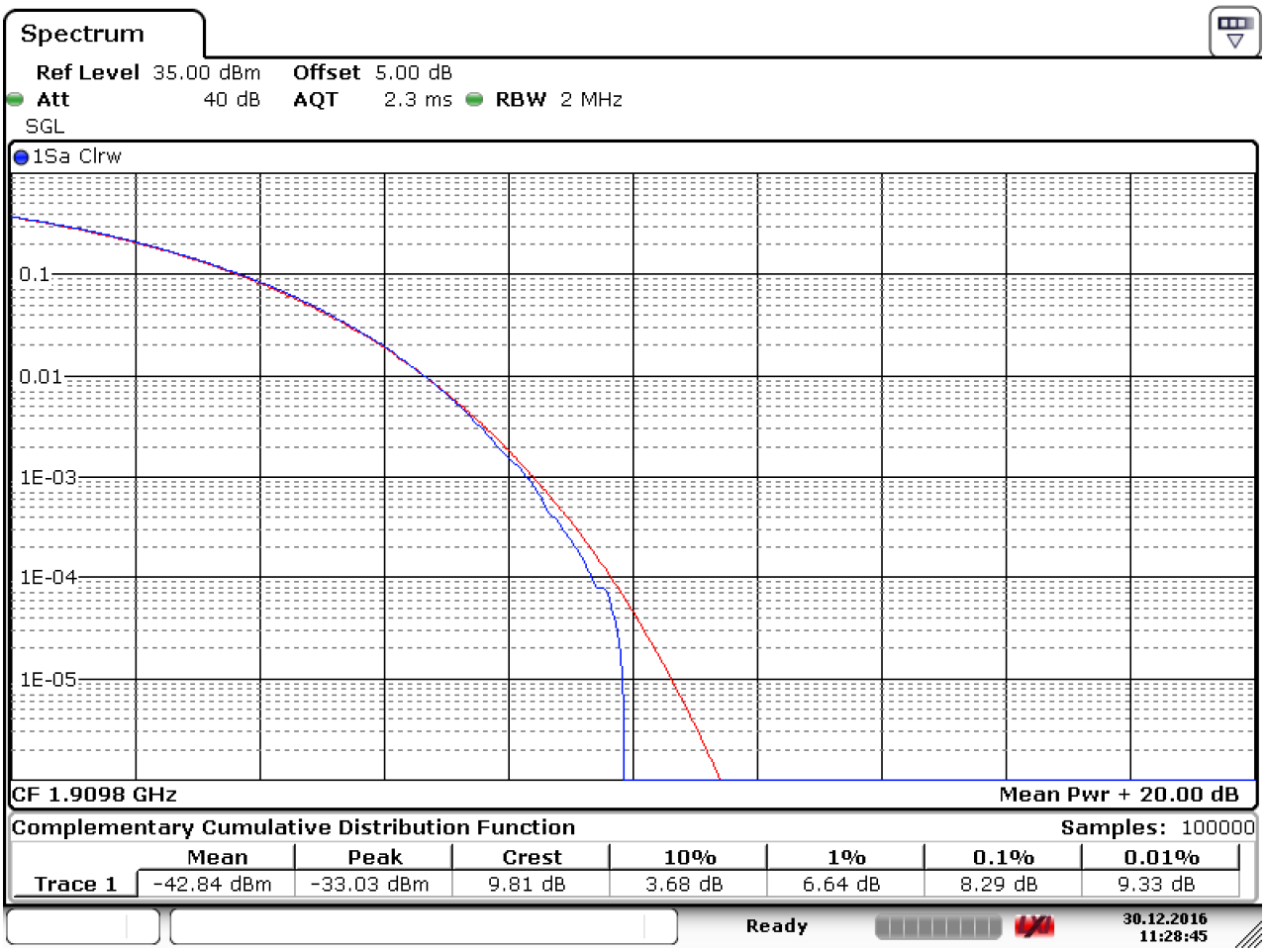
Date: 30.DEC.2016 11:28:02

2.1.2.2.2 Test Channel = MCH



Date: 30.DEC.2016 11:28:26

2.1.2.2.3 Test Channel = HCH



Date: 30.DEC.2016 11:28:46

3 Modulation Characteristics

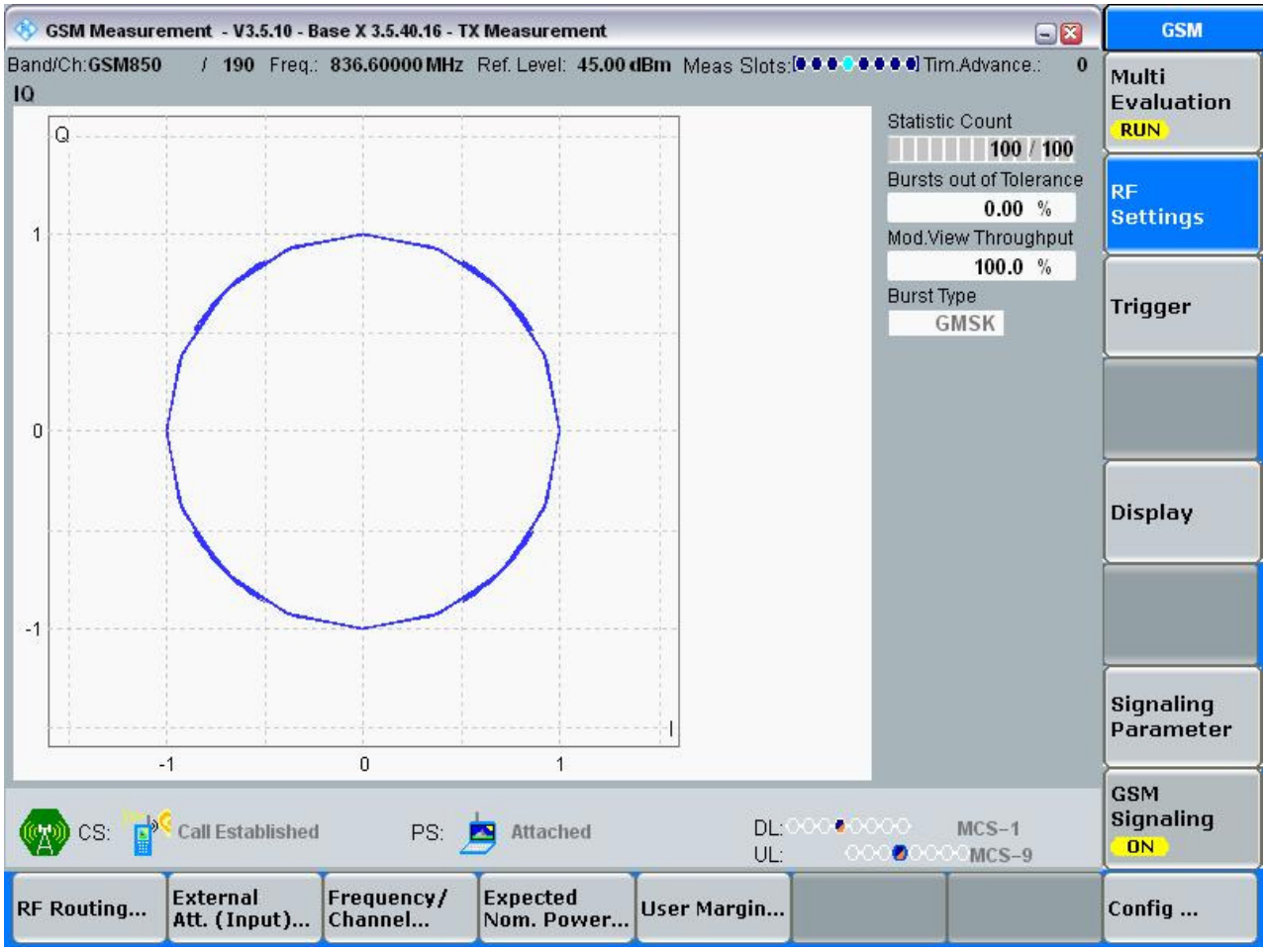
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM 850

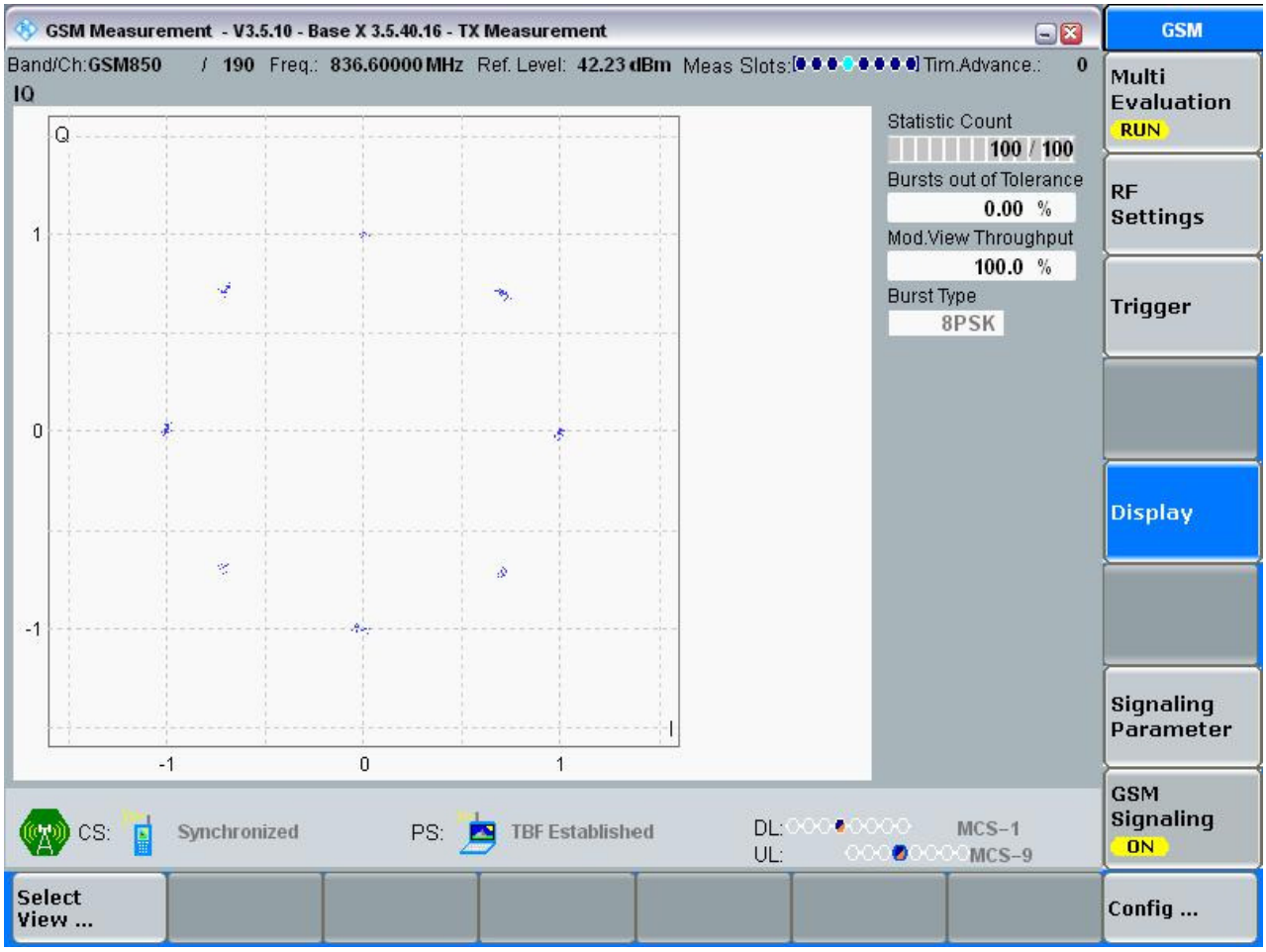
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

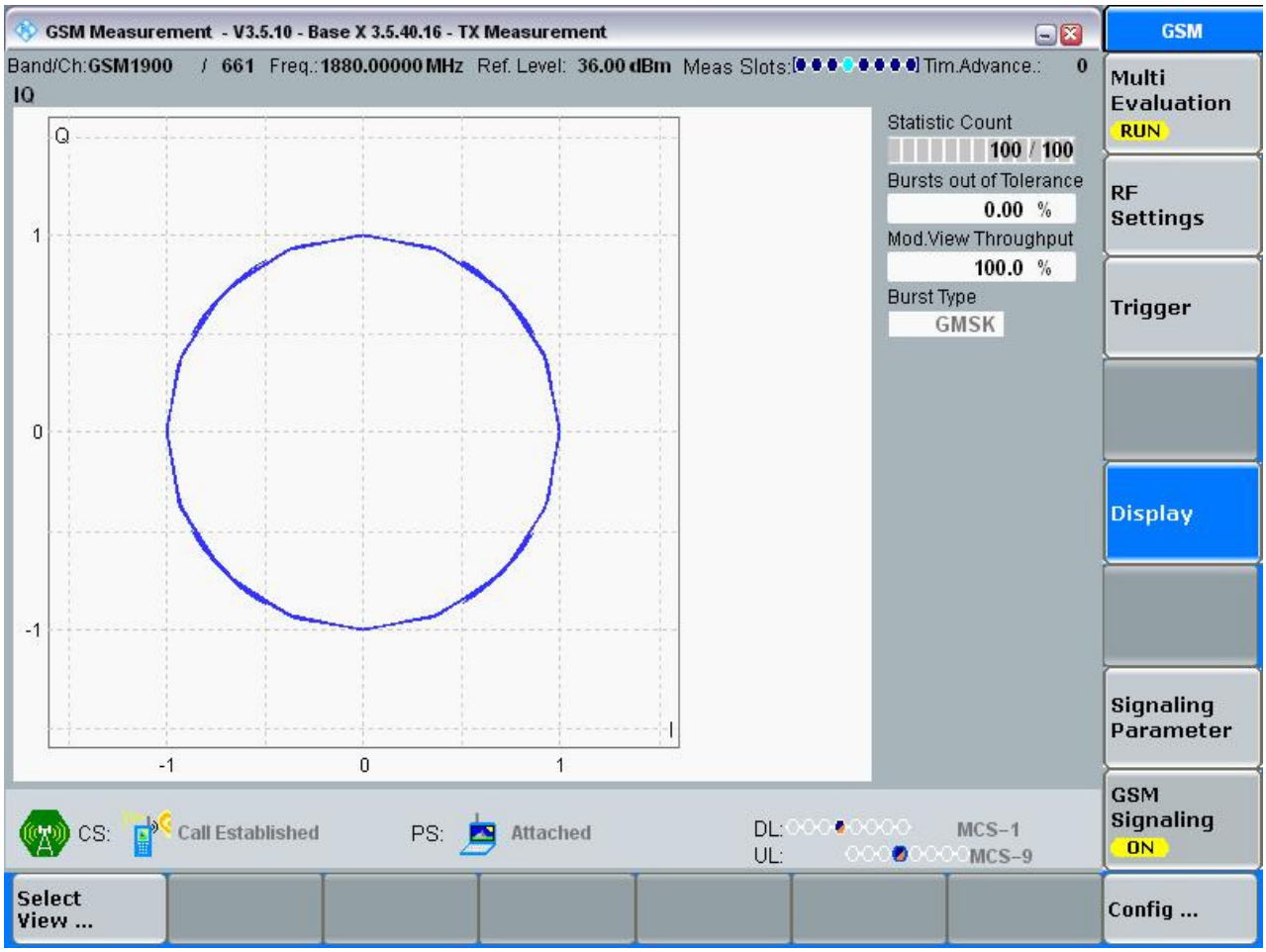
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM 1900

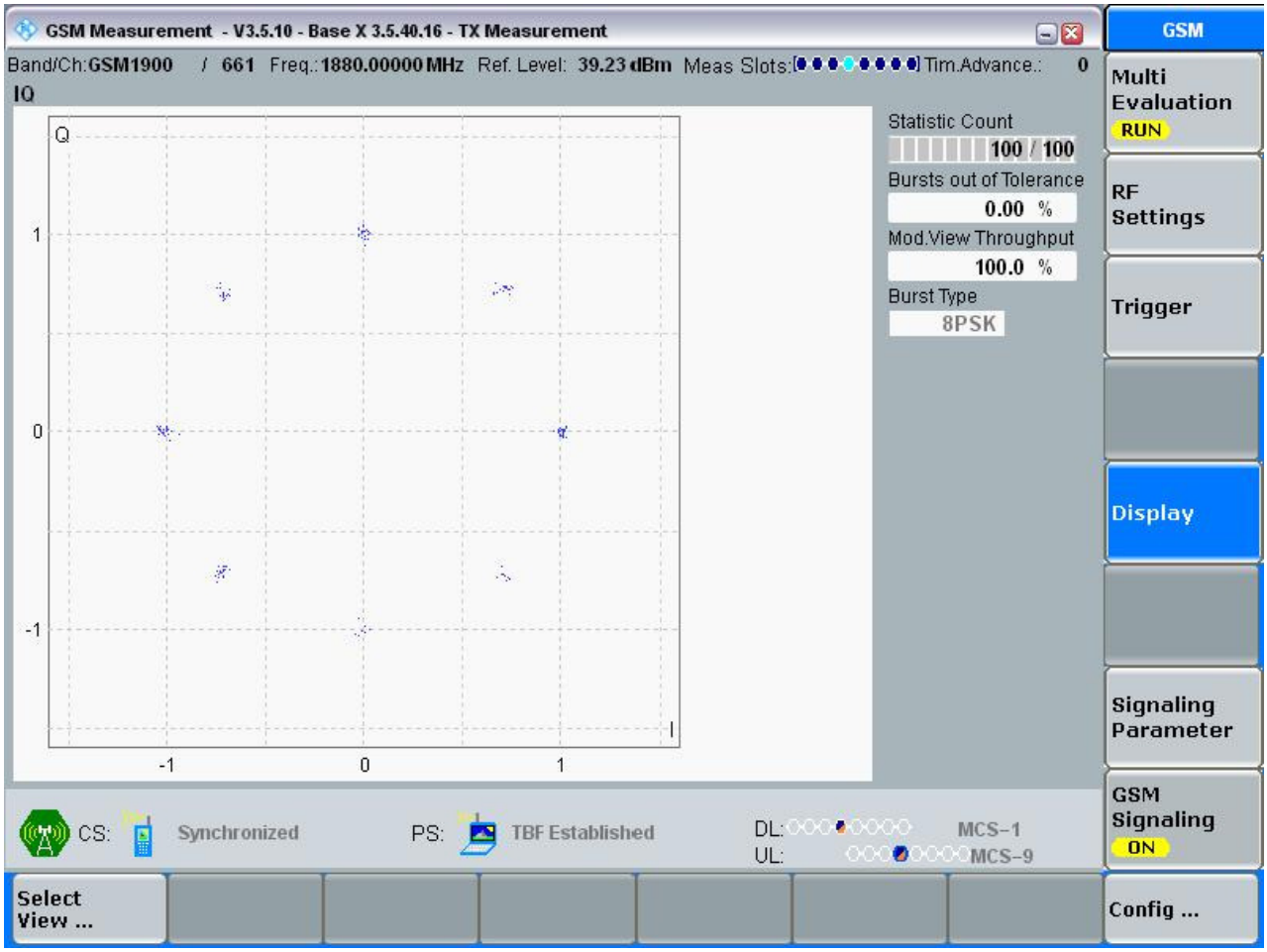
3.1.2.1 Test Mode = GSM/TM1

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

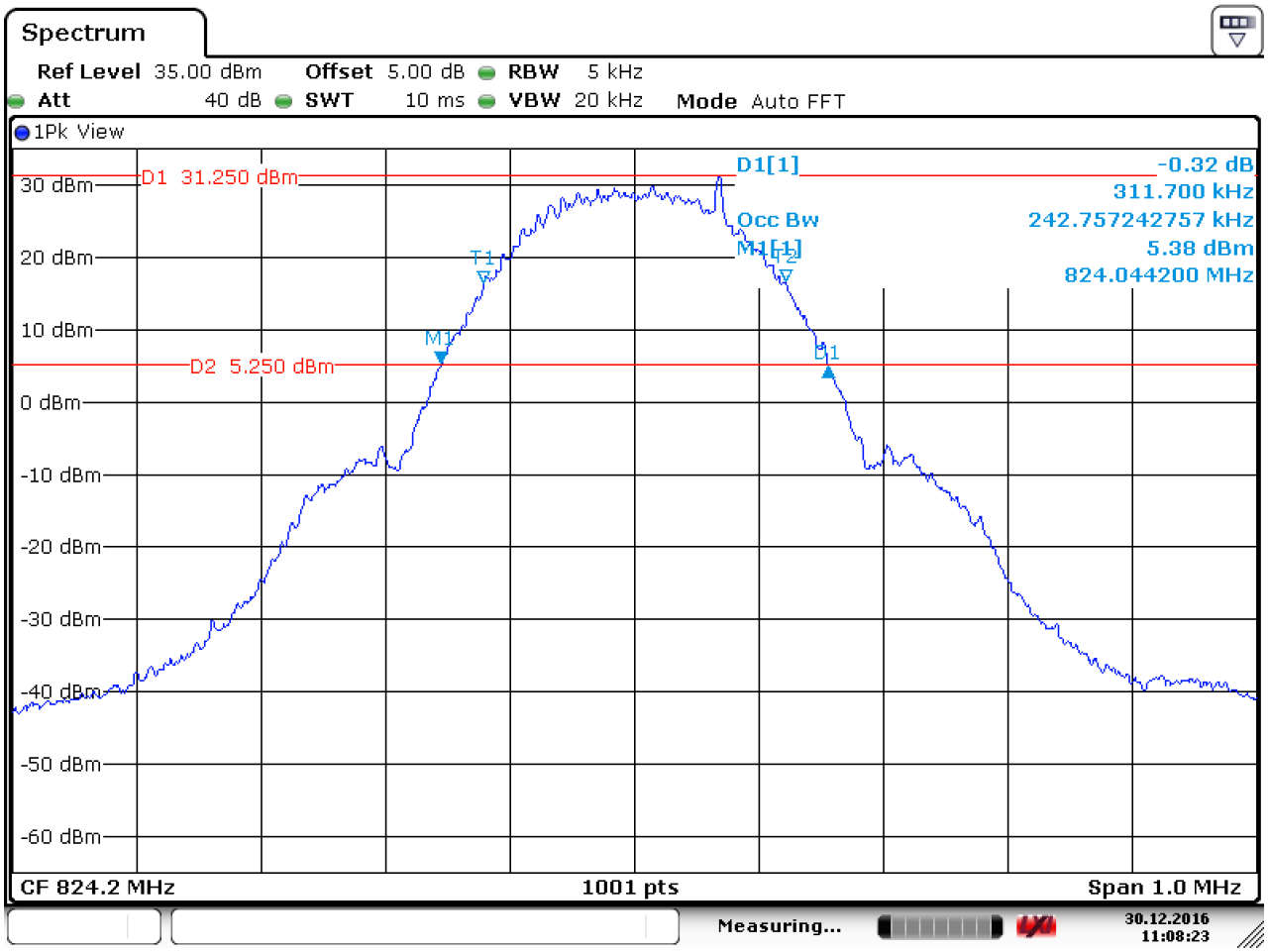
Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM 850	GSM/TM1	LCH	242.76	311.7	PASS
		MCH	244.76	315.7	PASS
		HCH	243.76	317.7	PASS
	GSM/TM2	LCH	236.76	313.7	PASS
		MCH	236.76	313.7	PASS
		HCH	237.76	313.7	PASS
GSM 1900	GSM/TM1	LCH	243.76	316.7	PASS
		MCH	243.76	319.7	PASS
		HCH	243.76	316.7	PASS
	GSM/TM2	LCH	239.76	311.7	PASS
		MCH	240.76	311.7	PASS
		HCH	239.76	313.7	PASS

4.1 For GSM

4.1.1 Test Band = GSM 850

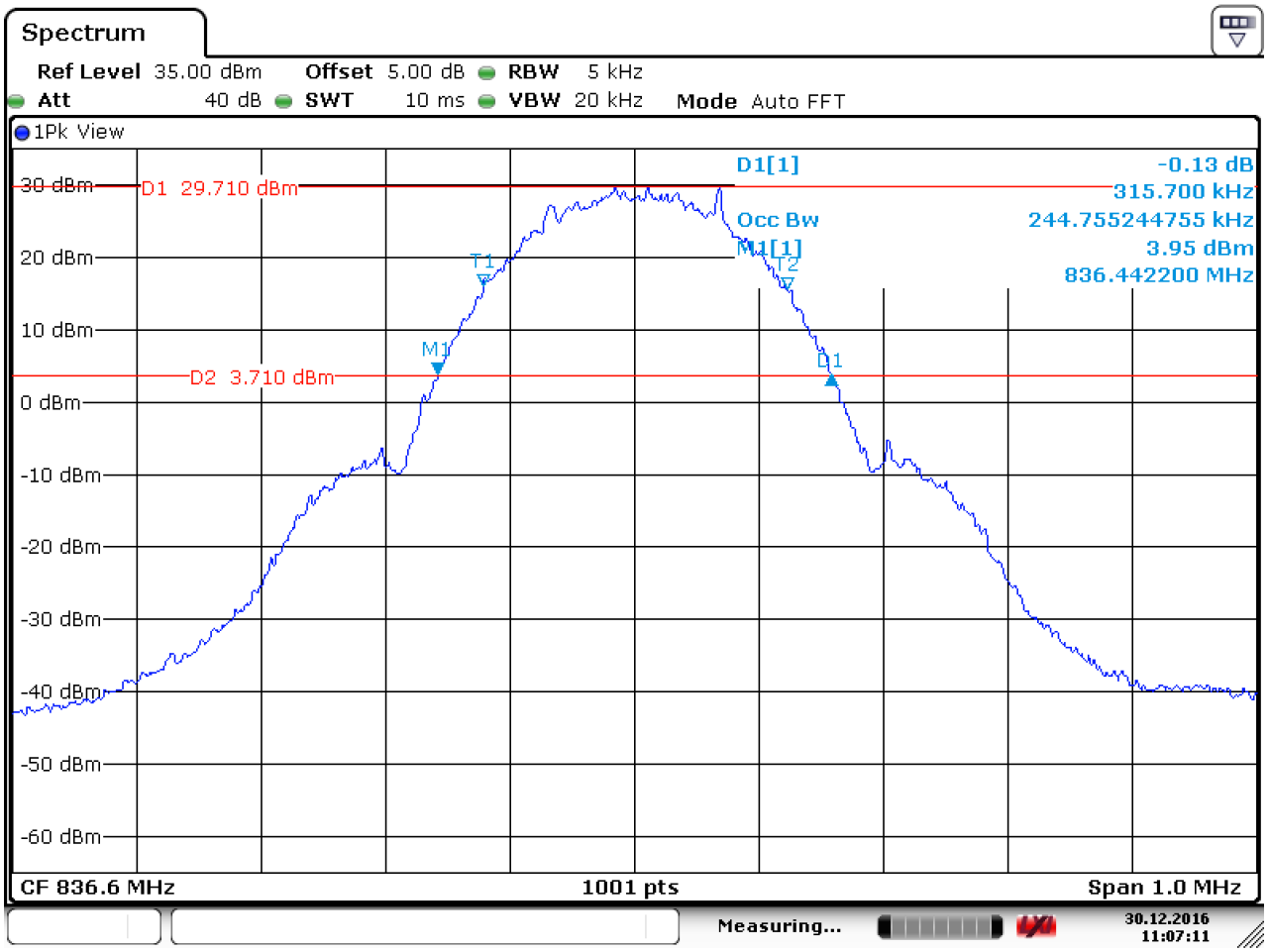
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



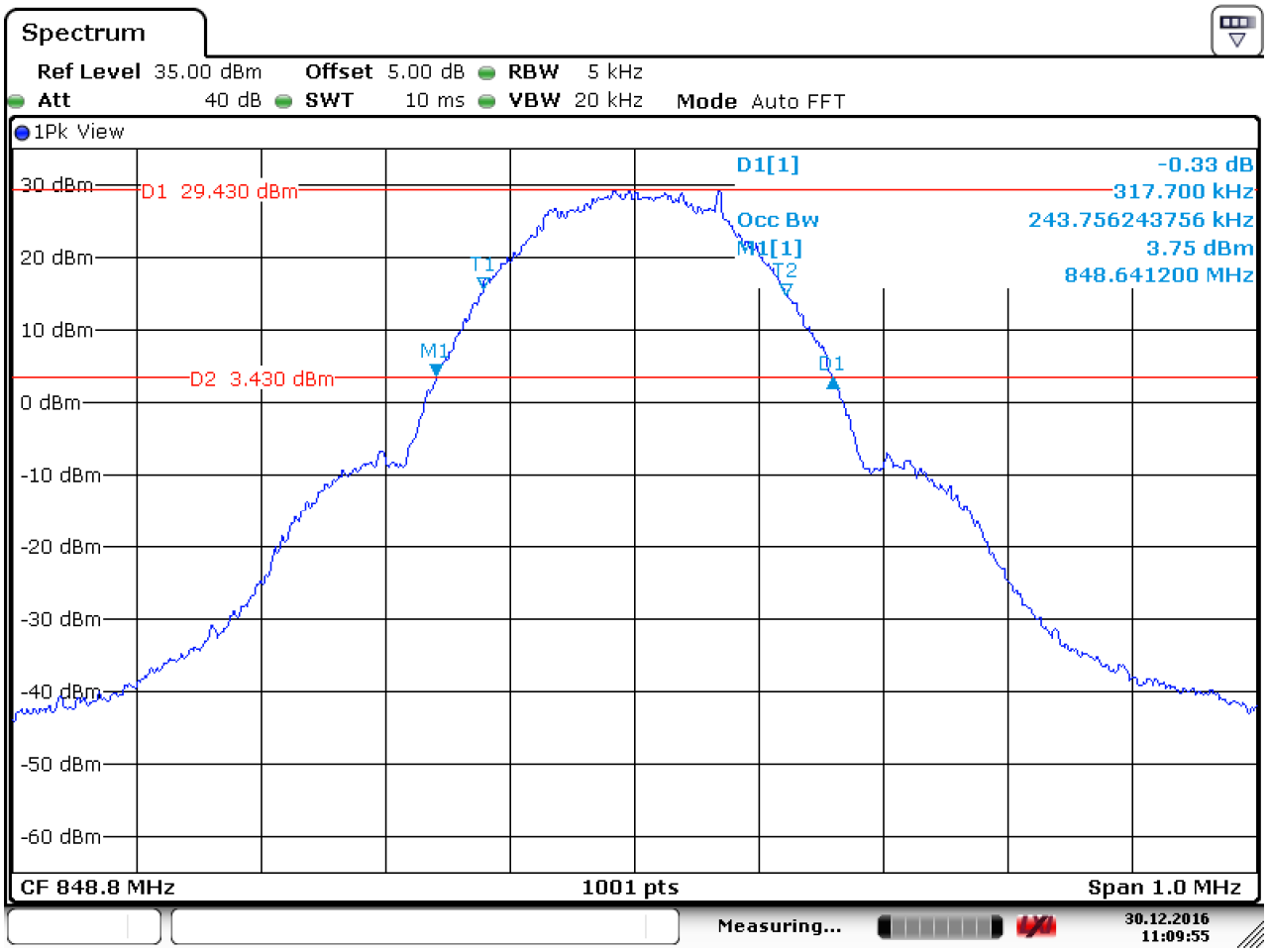
Date: 30.DEC.2016 11:08:23

4.1.1.1.2 Test Channel = MCH



Date: 30.DEC.2016 11:07:11

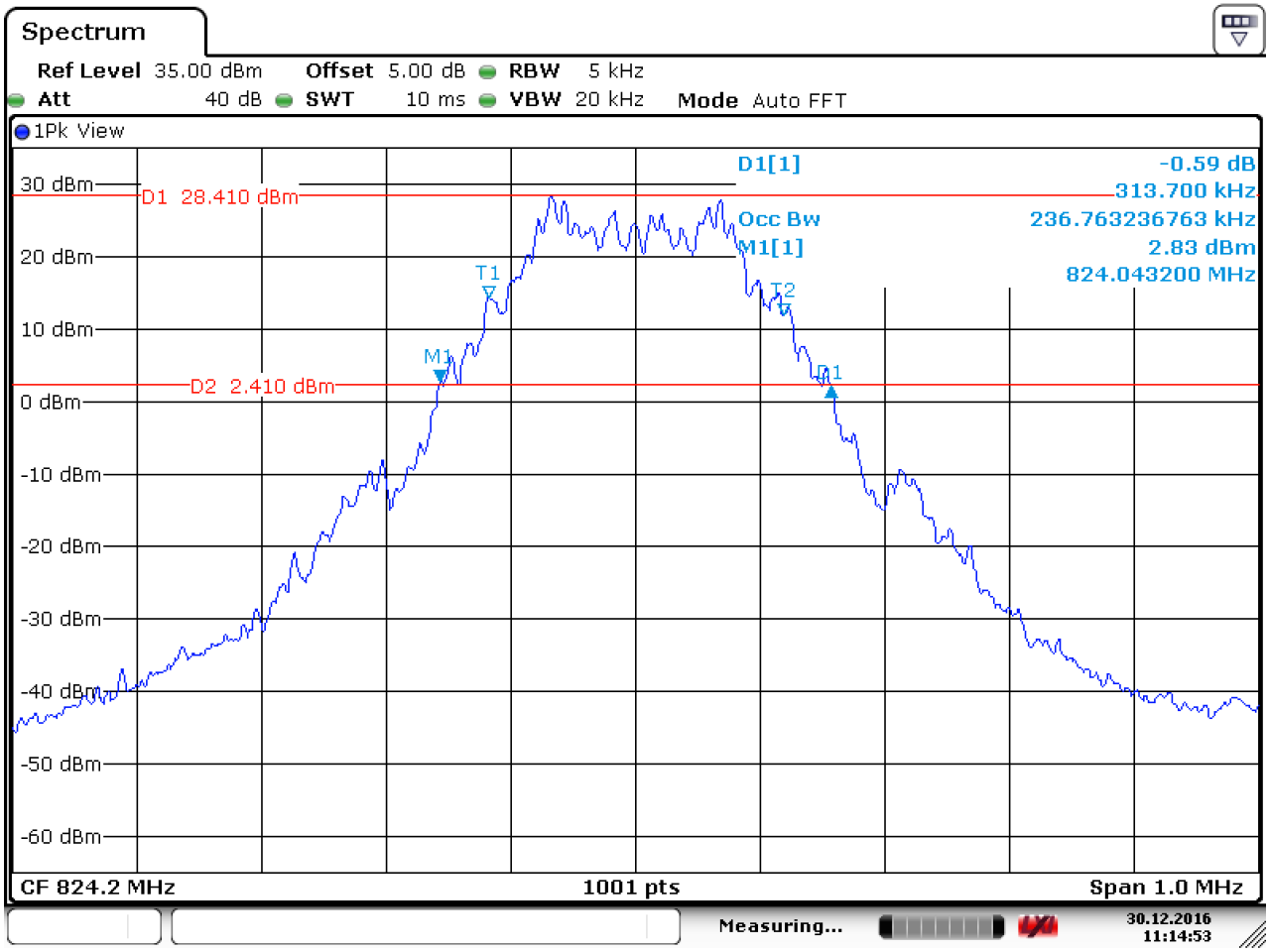
4.1.1.1.3 Test Channel = HCH



Date: 30.DEC.2016 11:09:56

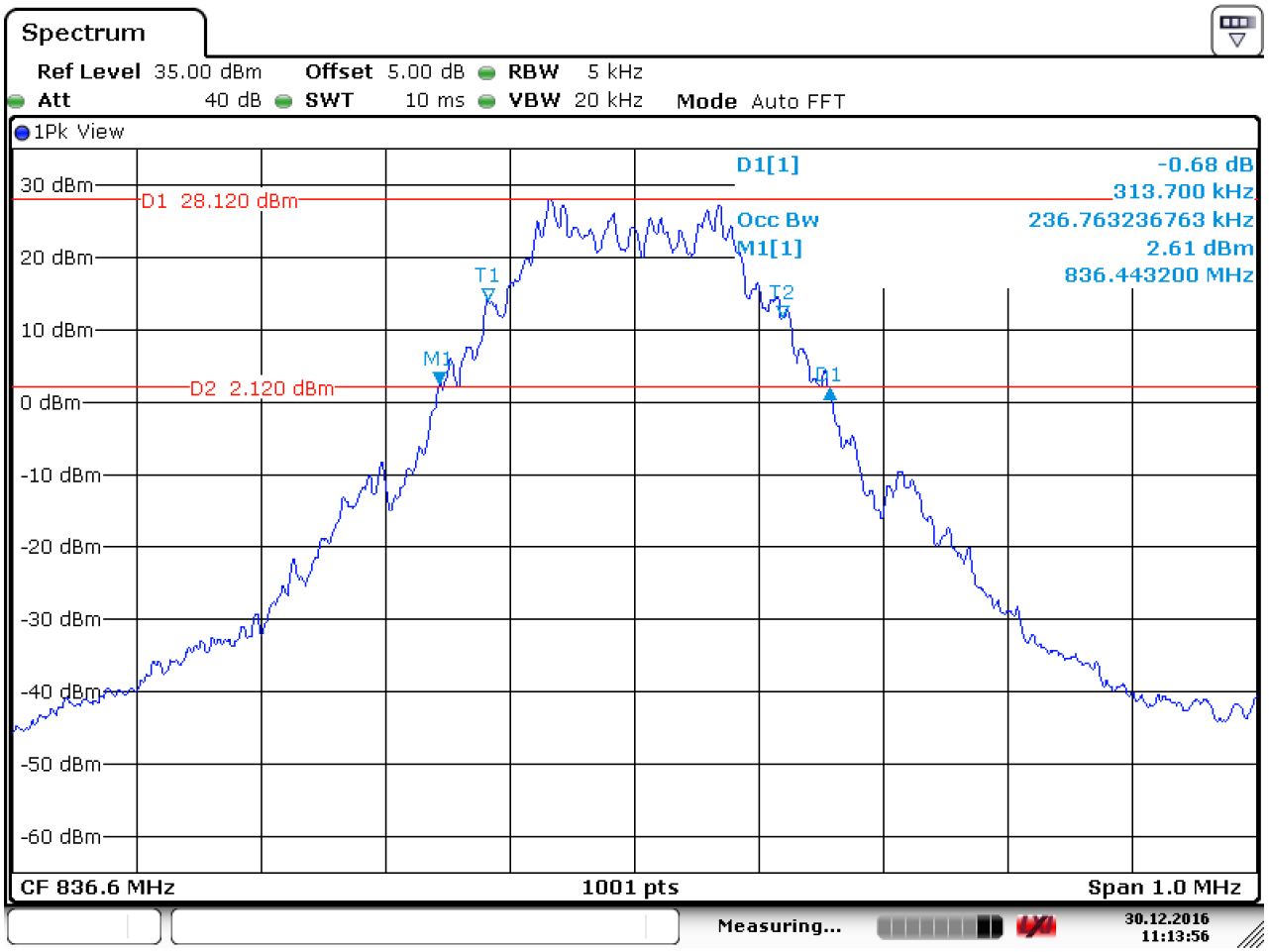
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



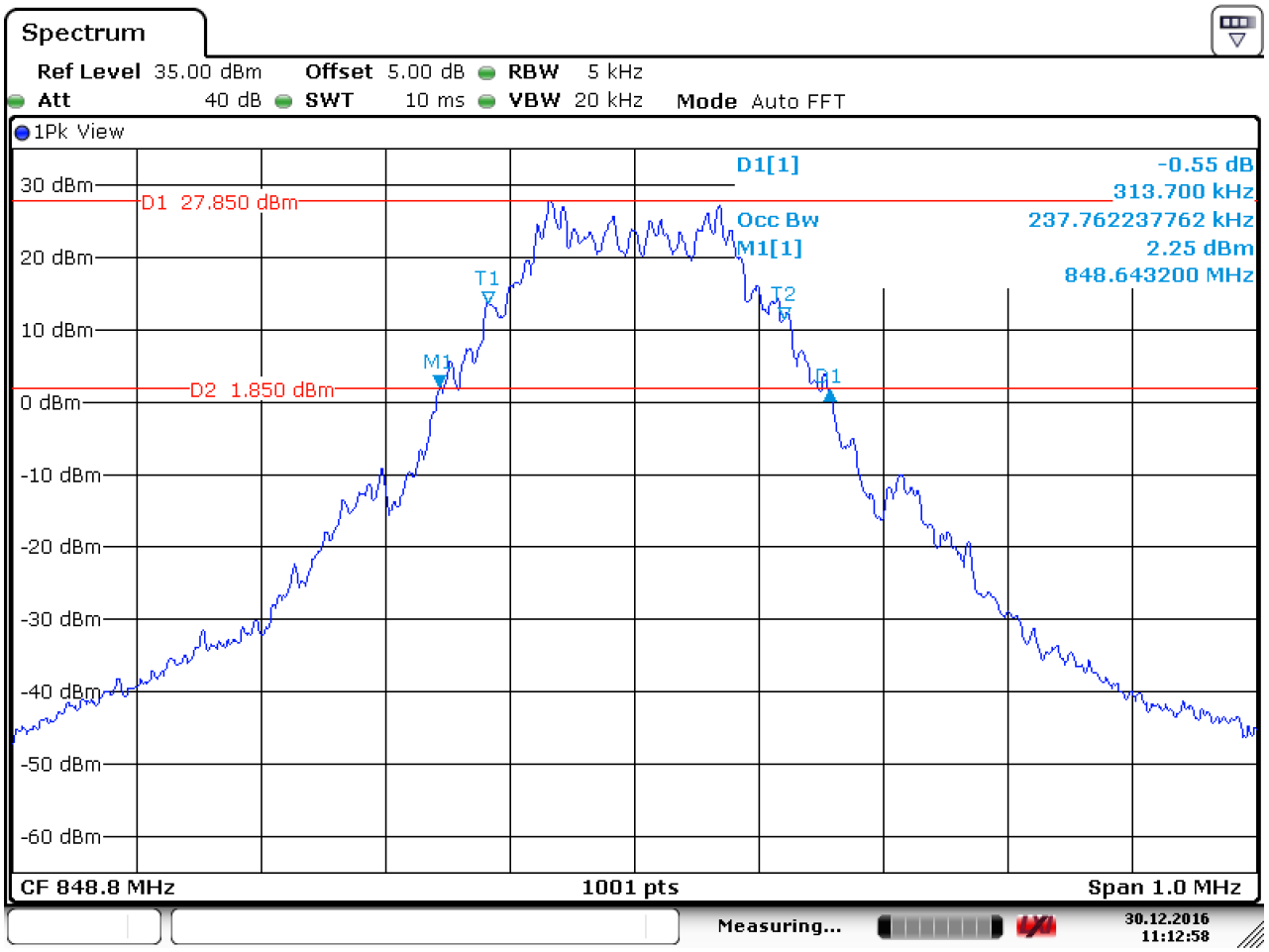
Date: 30.DEC.2016 11:14:54

4.1.1.2.2 Test Channel = MCH



Date: 30.DEC.2016 11:13:57

4.1.1.2.3 Test Channel = HCH

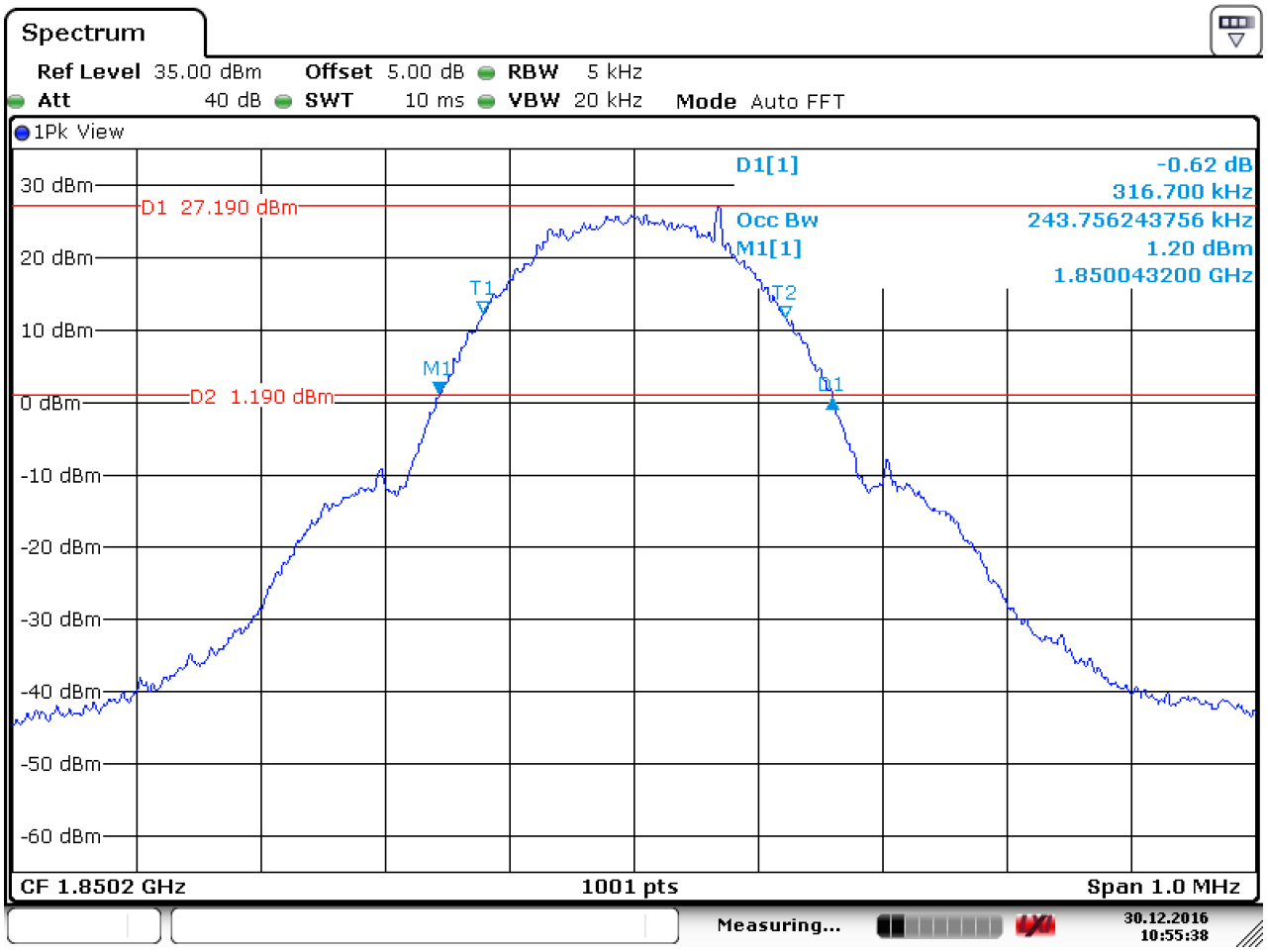


Date: 30.DEC.2016 11:12:59

4.1.2 Test Band = GSM 1900

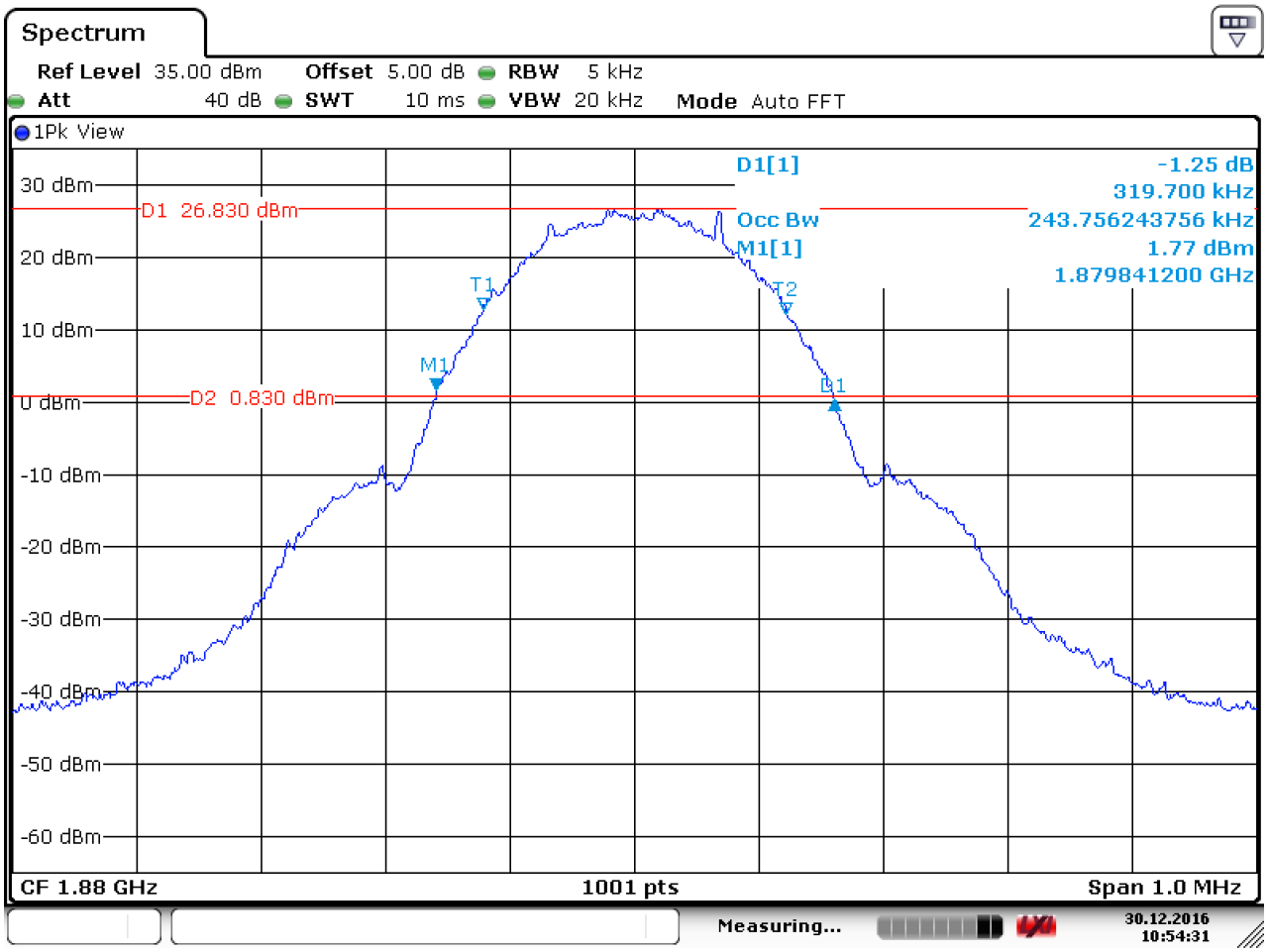
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



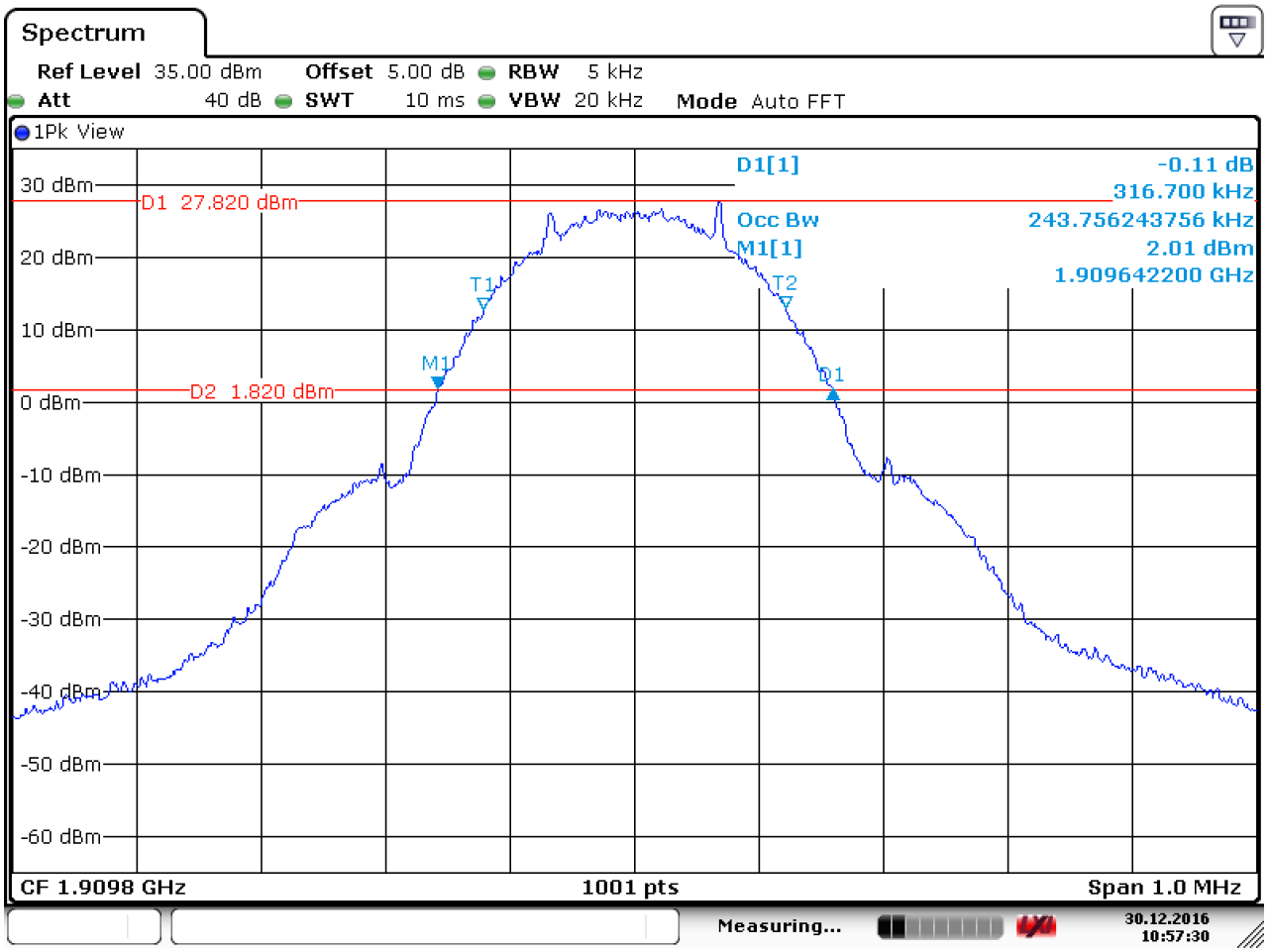
Date: 30.DEC.2016 10:55:39

4.1.2.1.2 Test Channel = MCH



Date: 30.DEC.2016 10:54:32

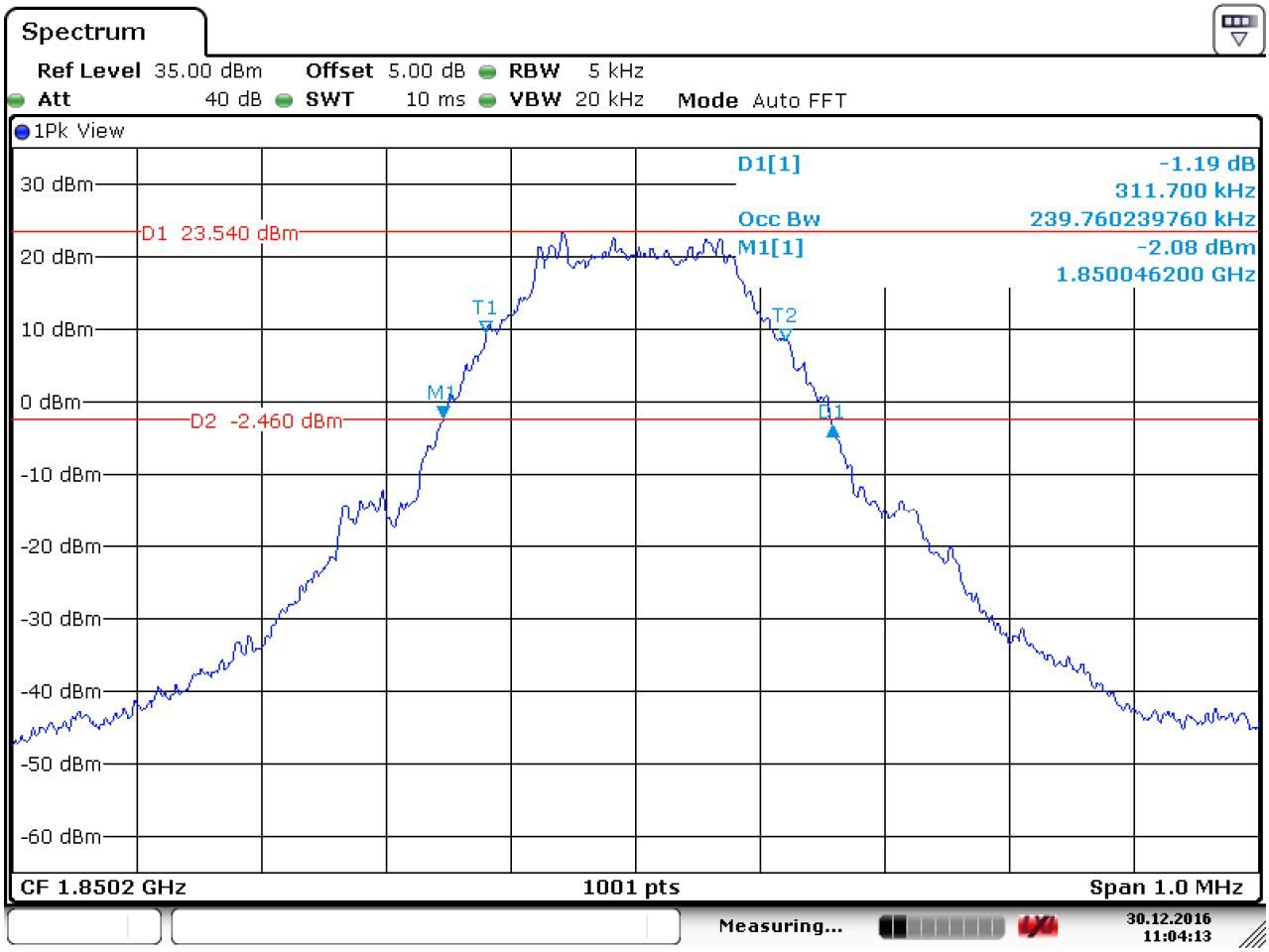
4.1.2.1.3 Test Channel = HCH



Date: 30.DEC.2016 10:57:30

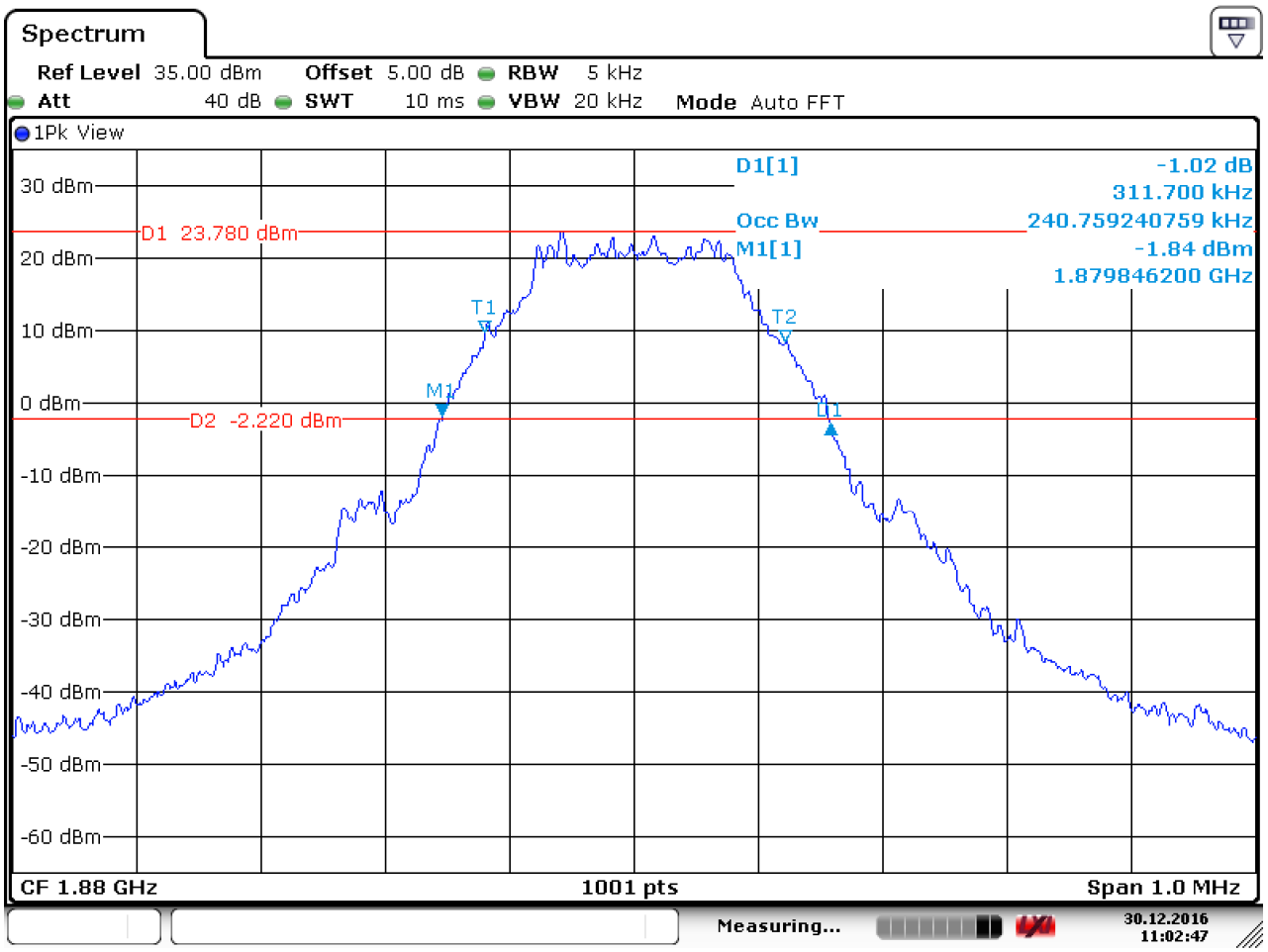
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



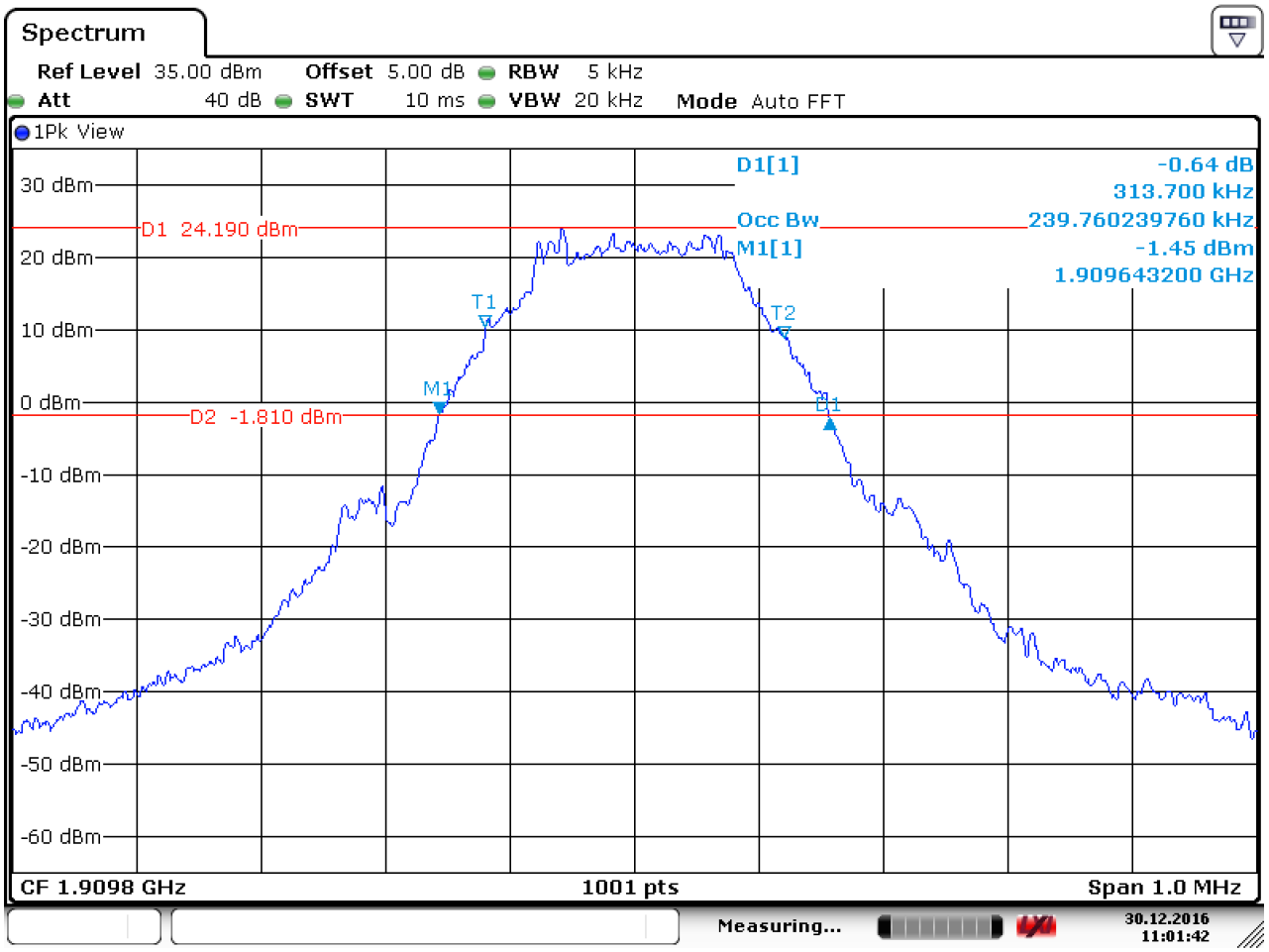
Date: 30.DEC.2016 11:04:14

4.1.2.2.2 Test Channel = MCH



Date: 30.DEC.2016 11:02:47

4.1.2.2.3 Test Channel = HCH



Date: 30.DEC.2016 11:01:42

5 Band Edges Compliance

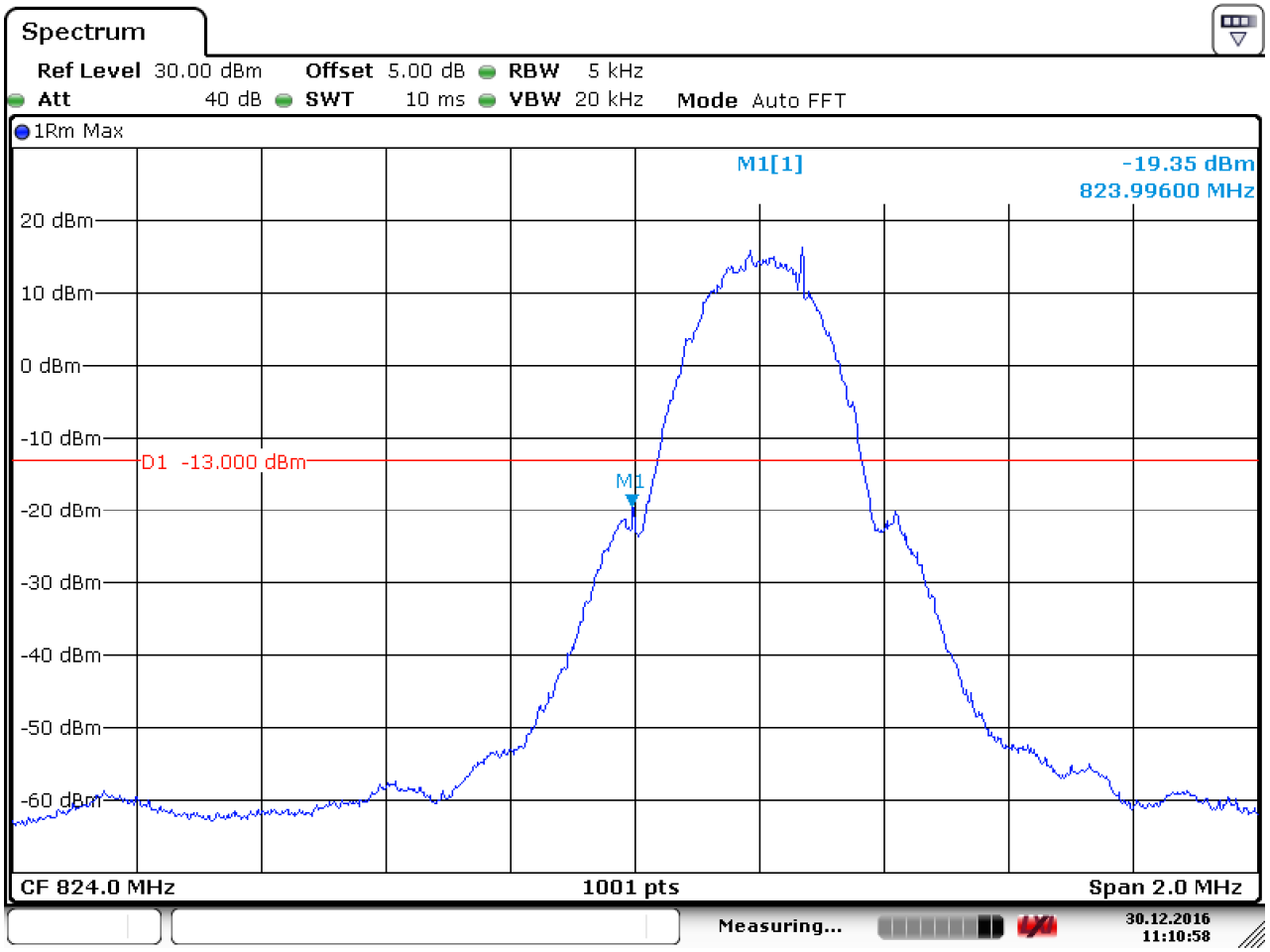
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM 850

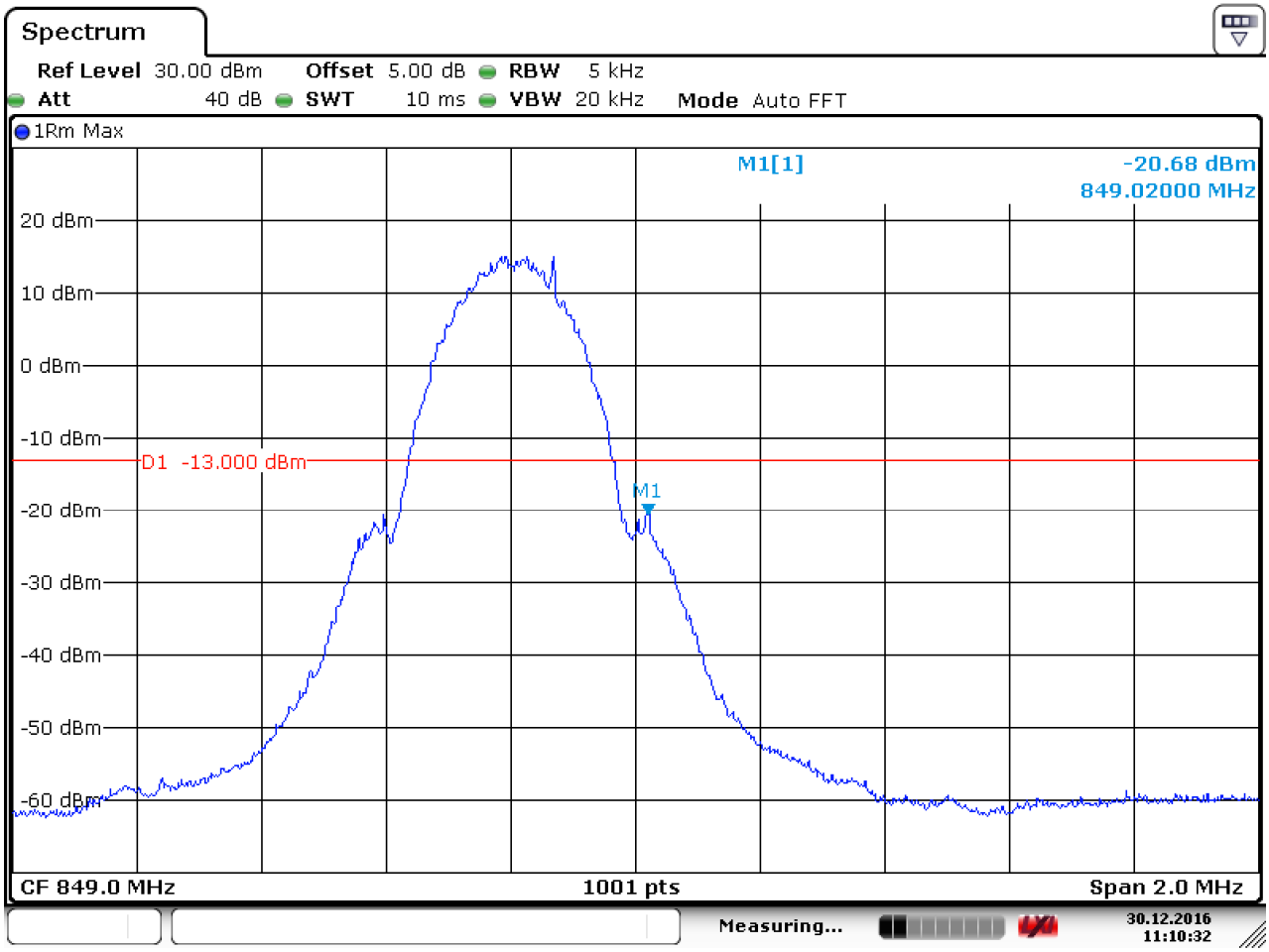
5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



Date: 30.DEC.2016 11:10:58

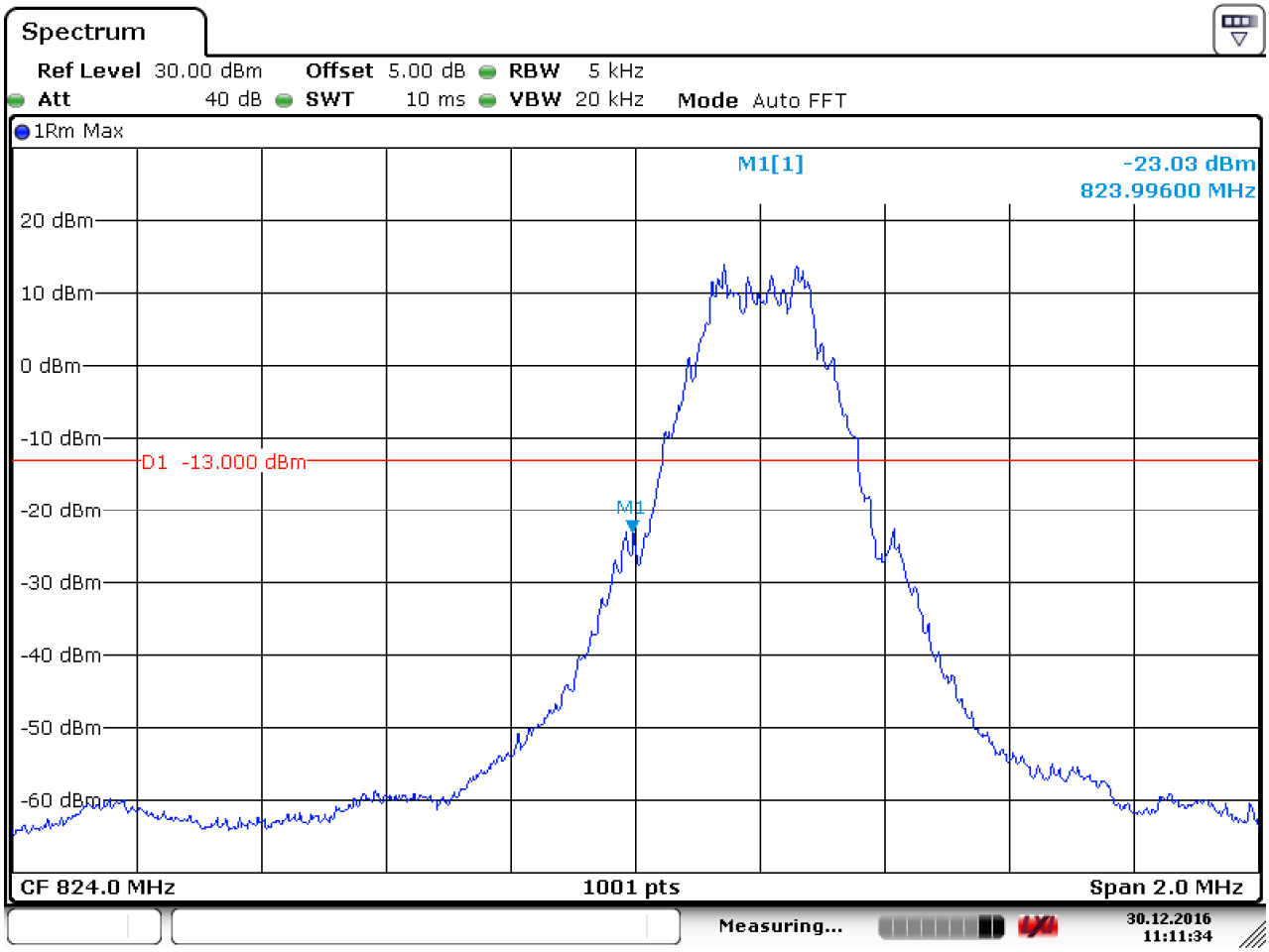
5.1.1.1.2 Test Channel = HCH



Date: 30.DEC.2016 11:10:33

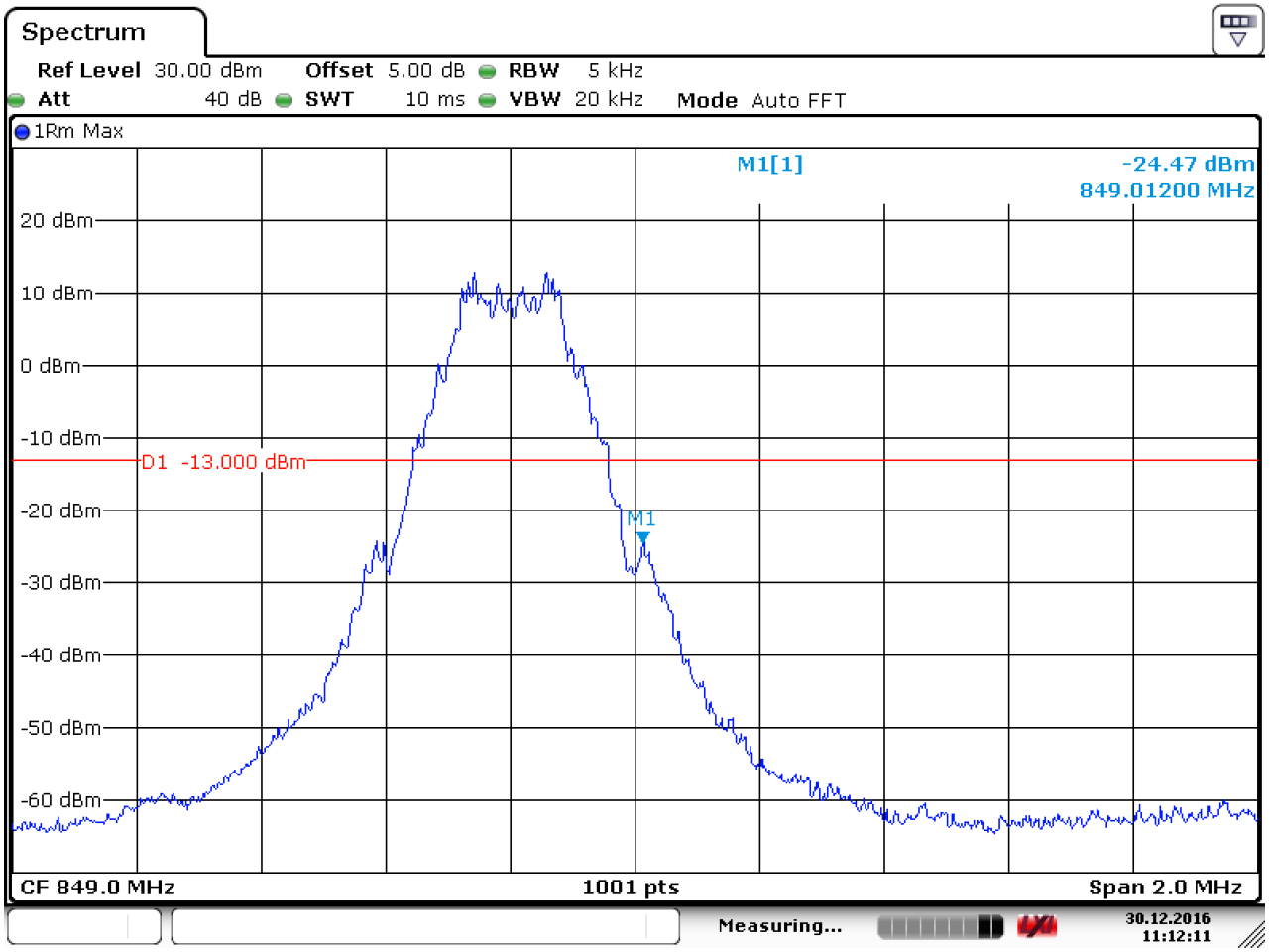
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



Date: 30.DEC.2016 11:11:35

5.1.1.2.2 Test Channel = HCH

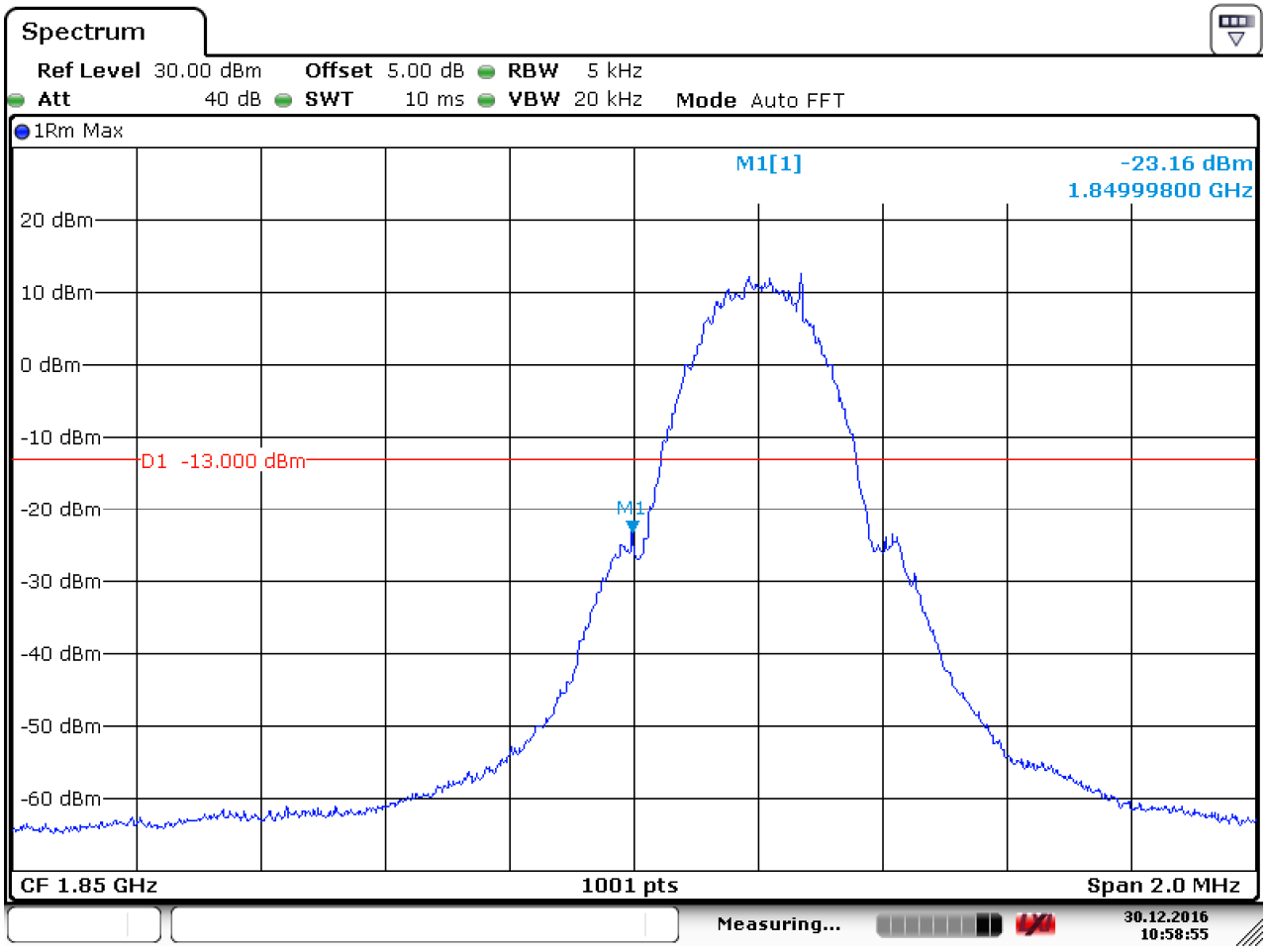


Date: 30.DEC.2016 11:12:11

5.1.2 Test Band = GSM 1900

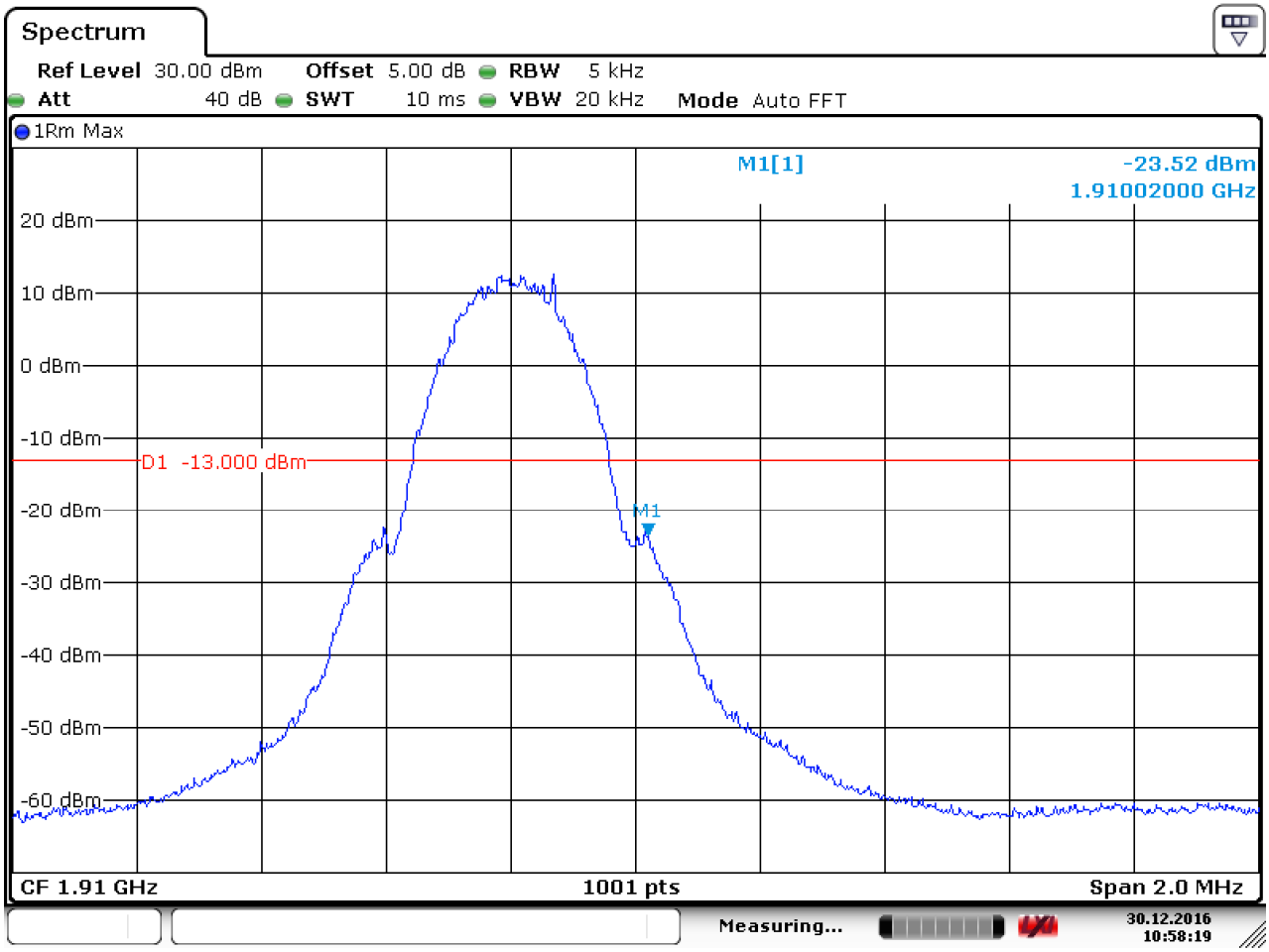
5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



Date: 30.DEC.2016 10:58:55

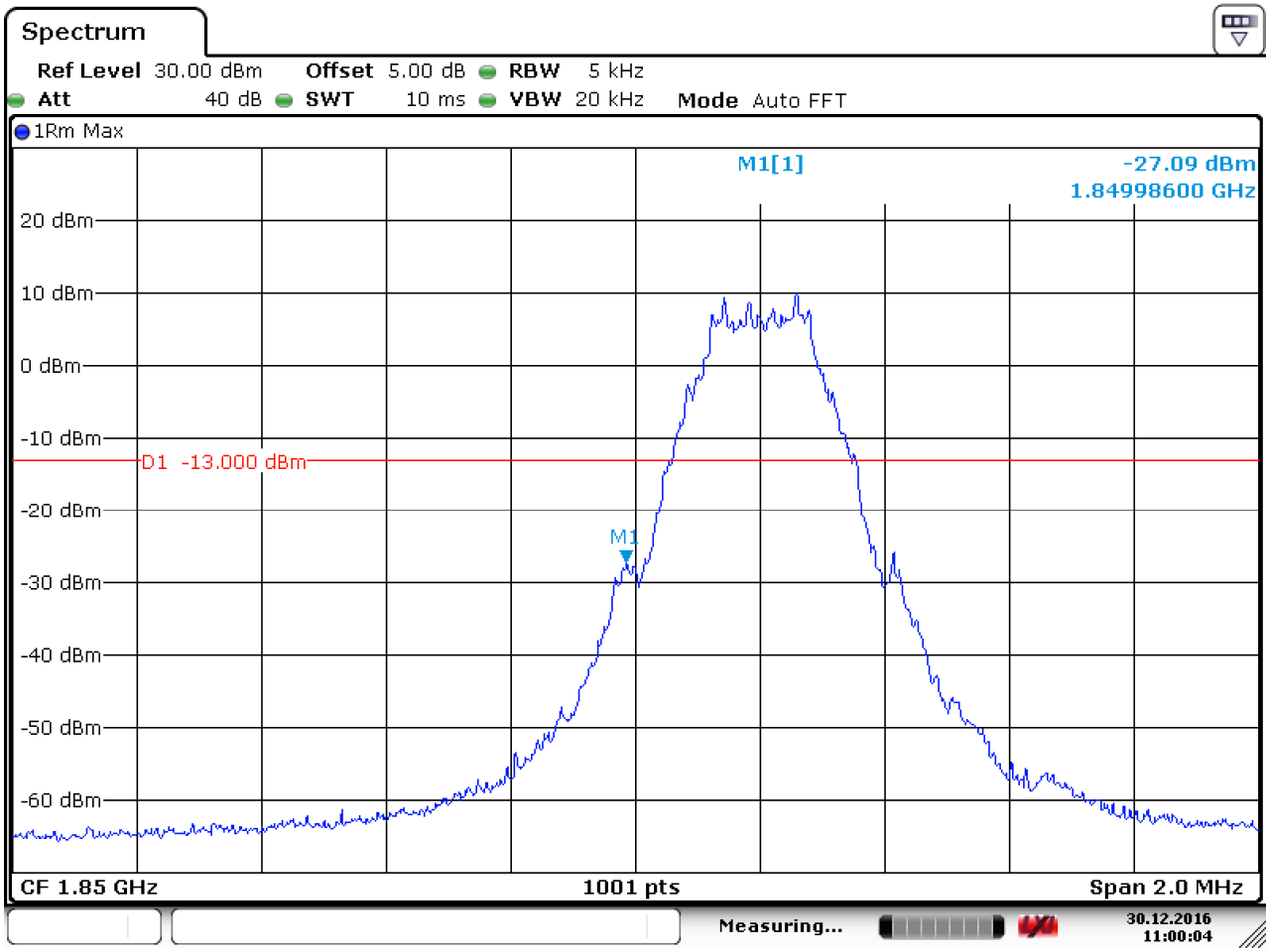
5.1.2.1.2 Test Channel = HCH



Date: 30.DEC.2016 10:58:20

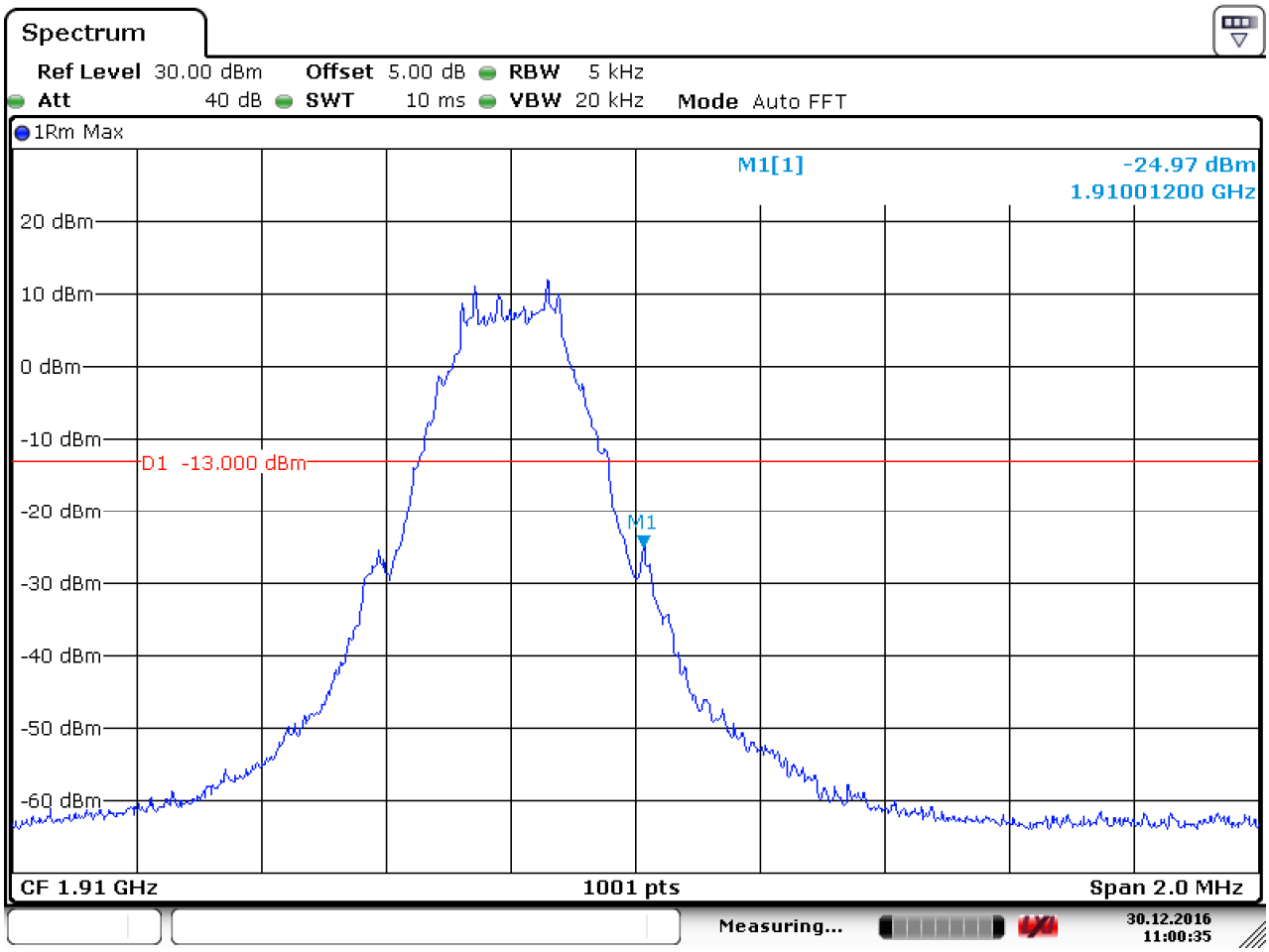
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



Date: 30.DEC.2016 11:00:04

5.1.2.2.2 Test Channel = HCH



Date: 30.DEC.2016 11:00:36

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.

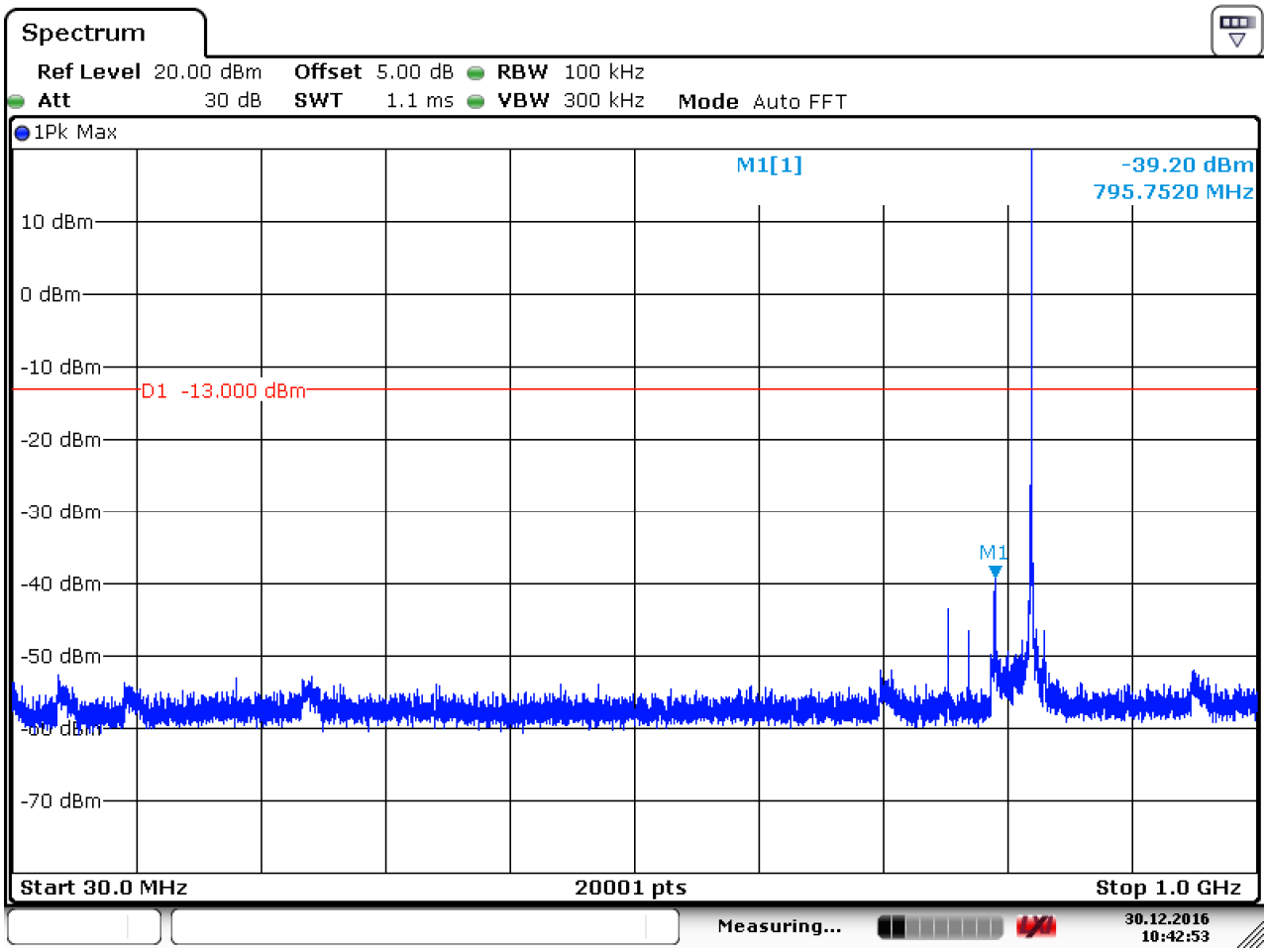
Part I - Test Plots

6.1 For GSM

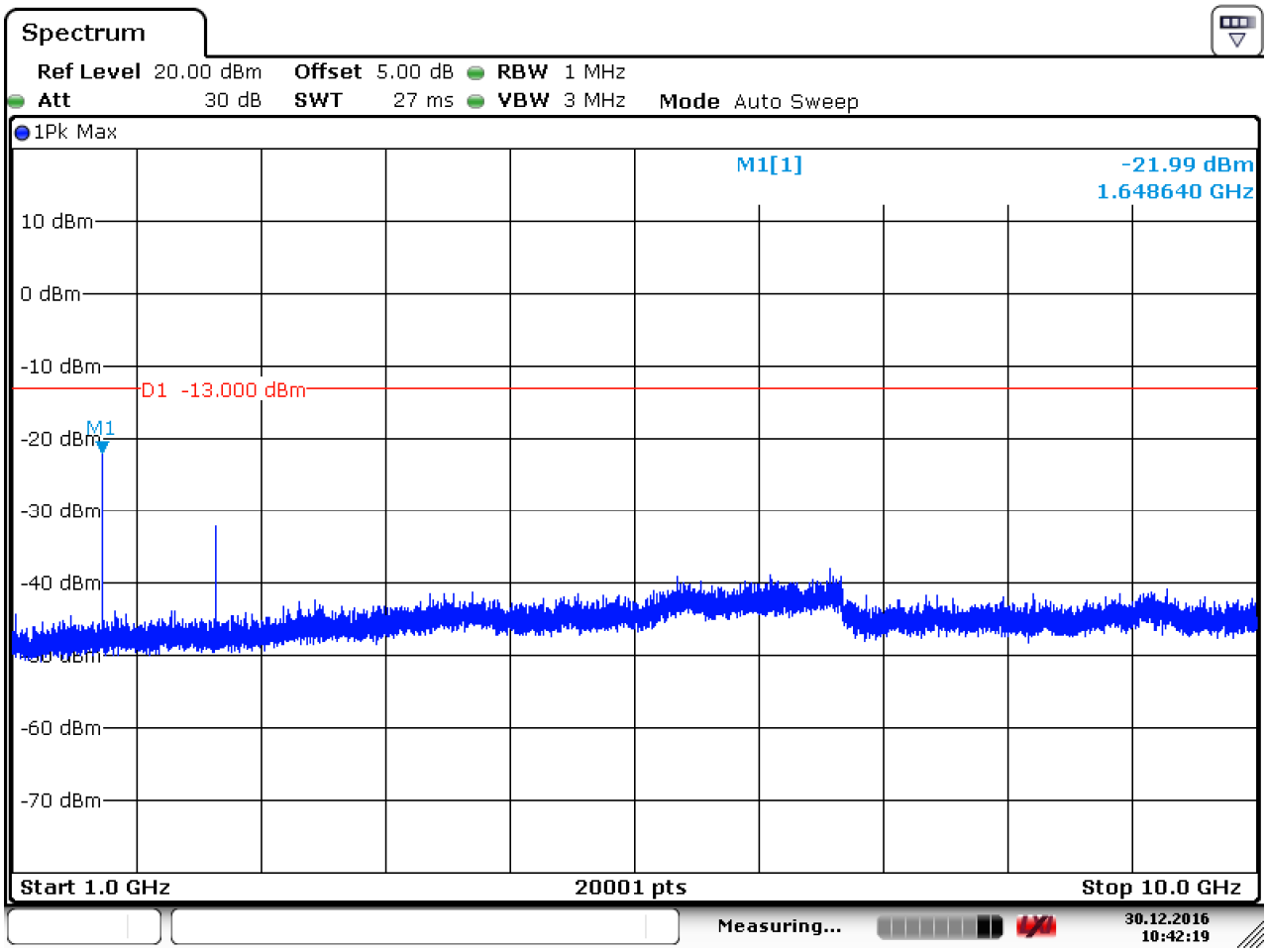
6.1.1 Test Band = GSM 850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

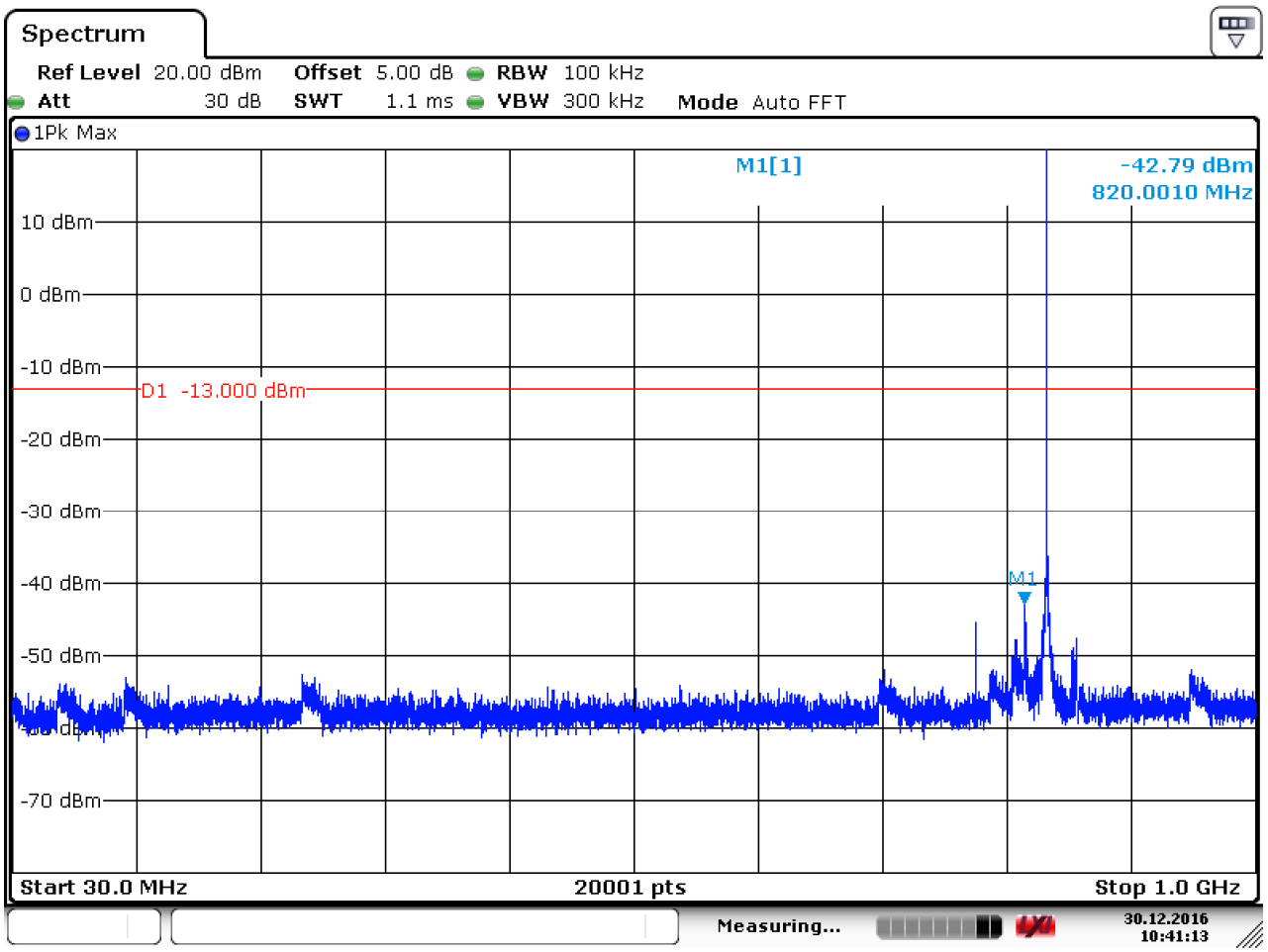


Date: 30.DEC.2016 10:42:54

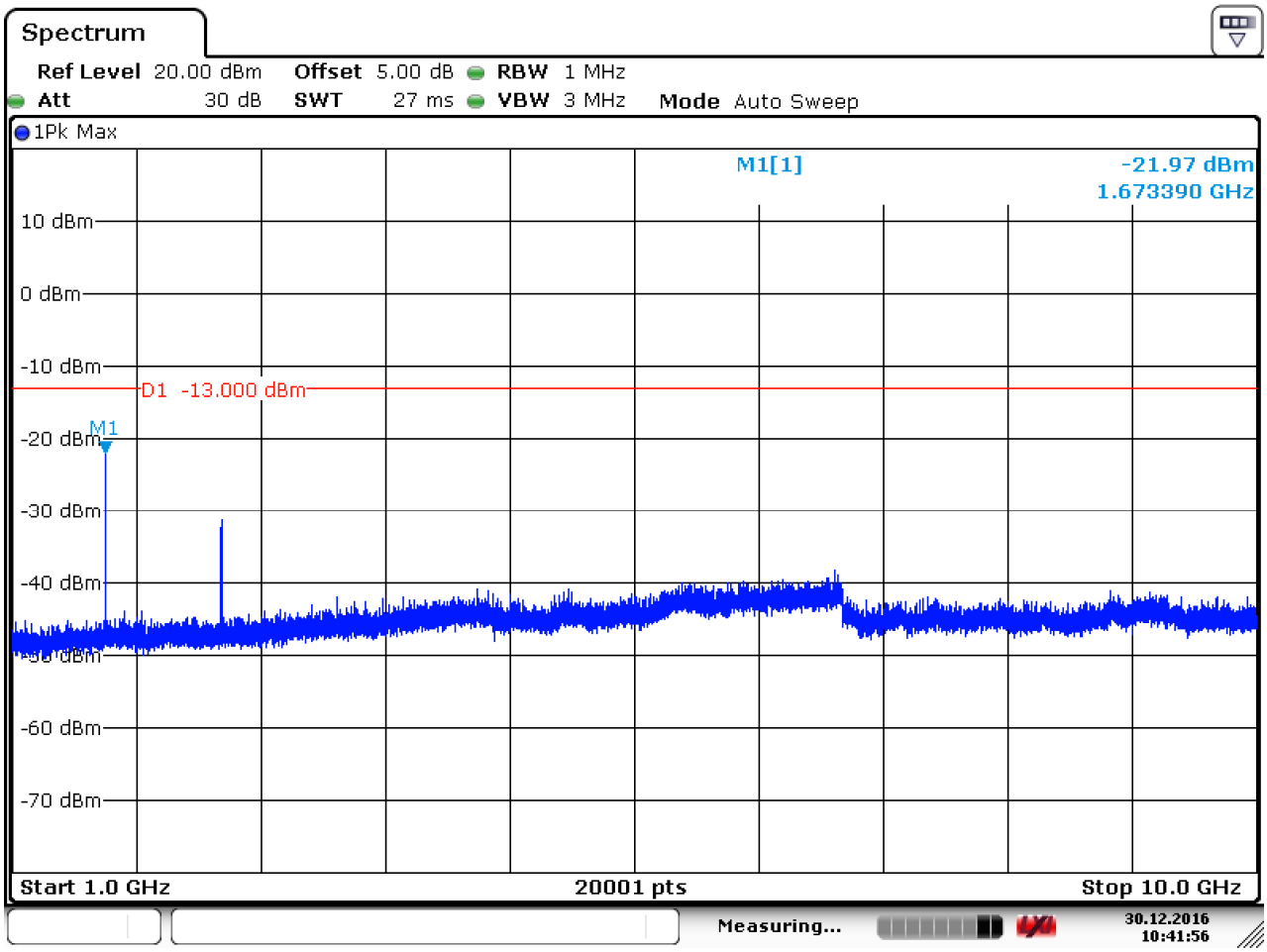


Date: 30.DEC.2016 10:42:19

6.1.1.1.2 Test Channel = MCH

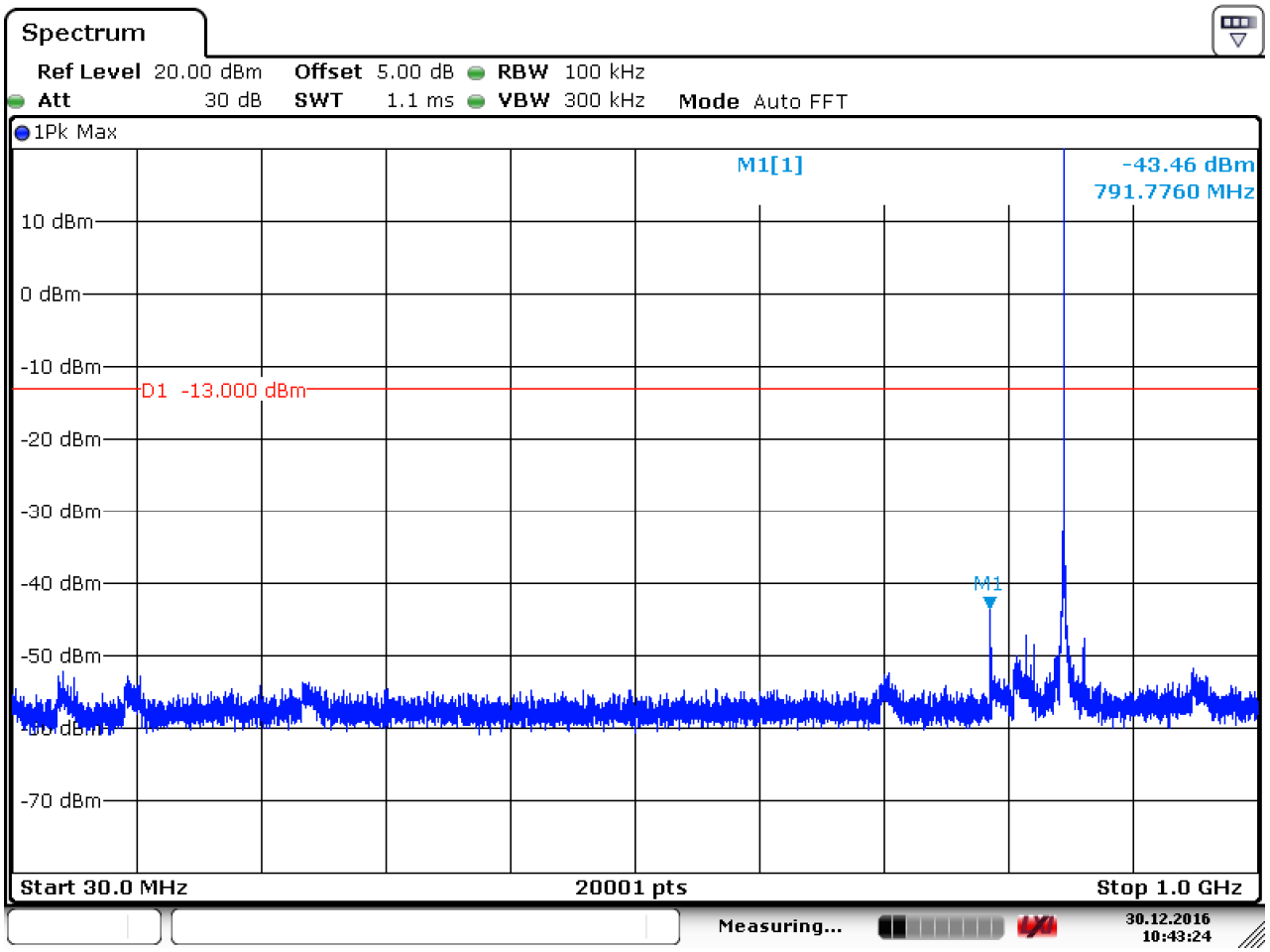


Date: 30.DEC.2016 10:41:13

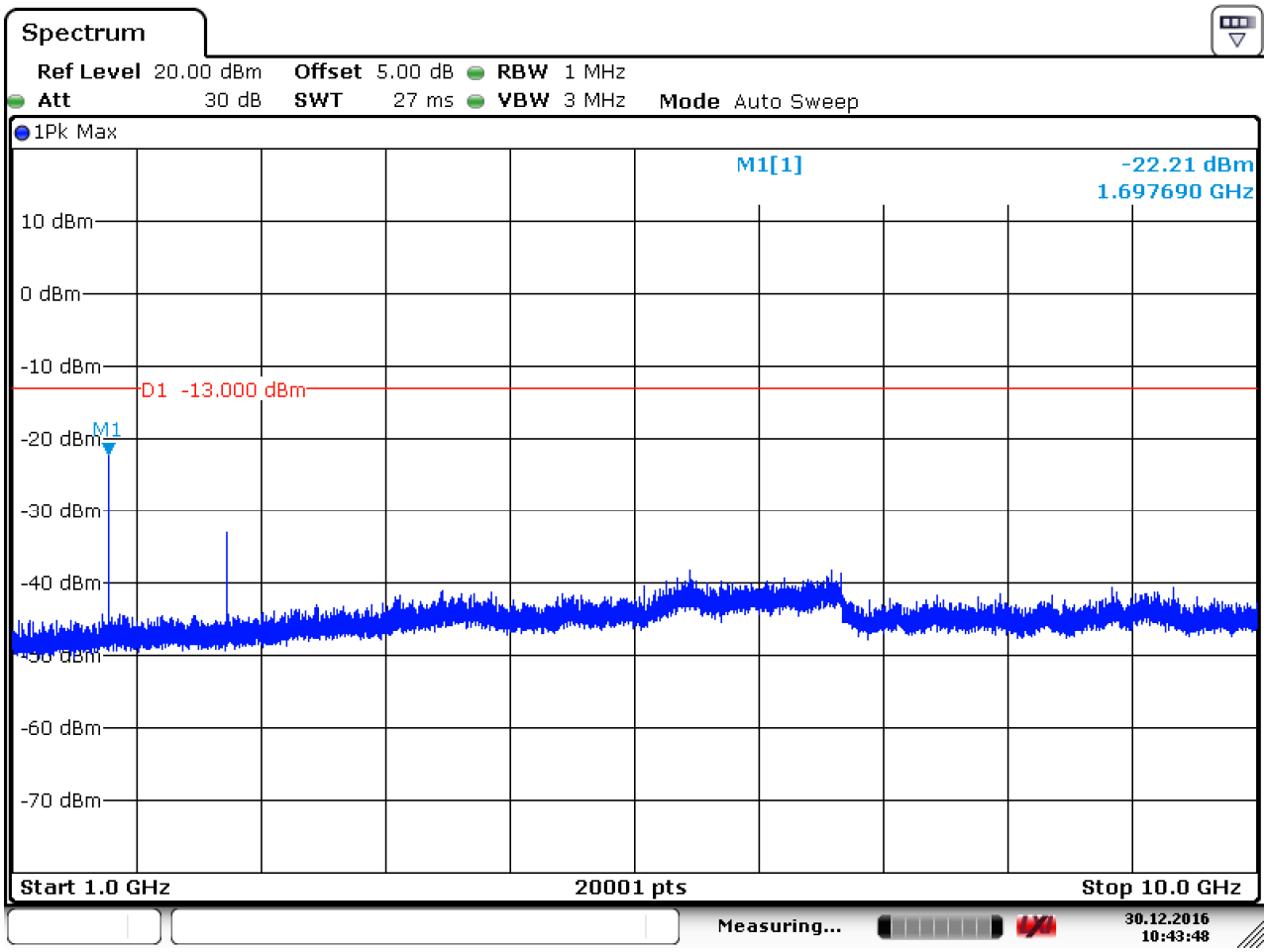


Date: 30.DEC.2016 10:41:56

6.1.1.1.3 Test Channel = HCH



Date: 30.DEC.2016 10:43:24

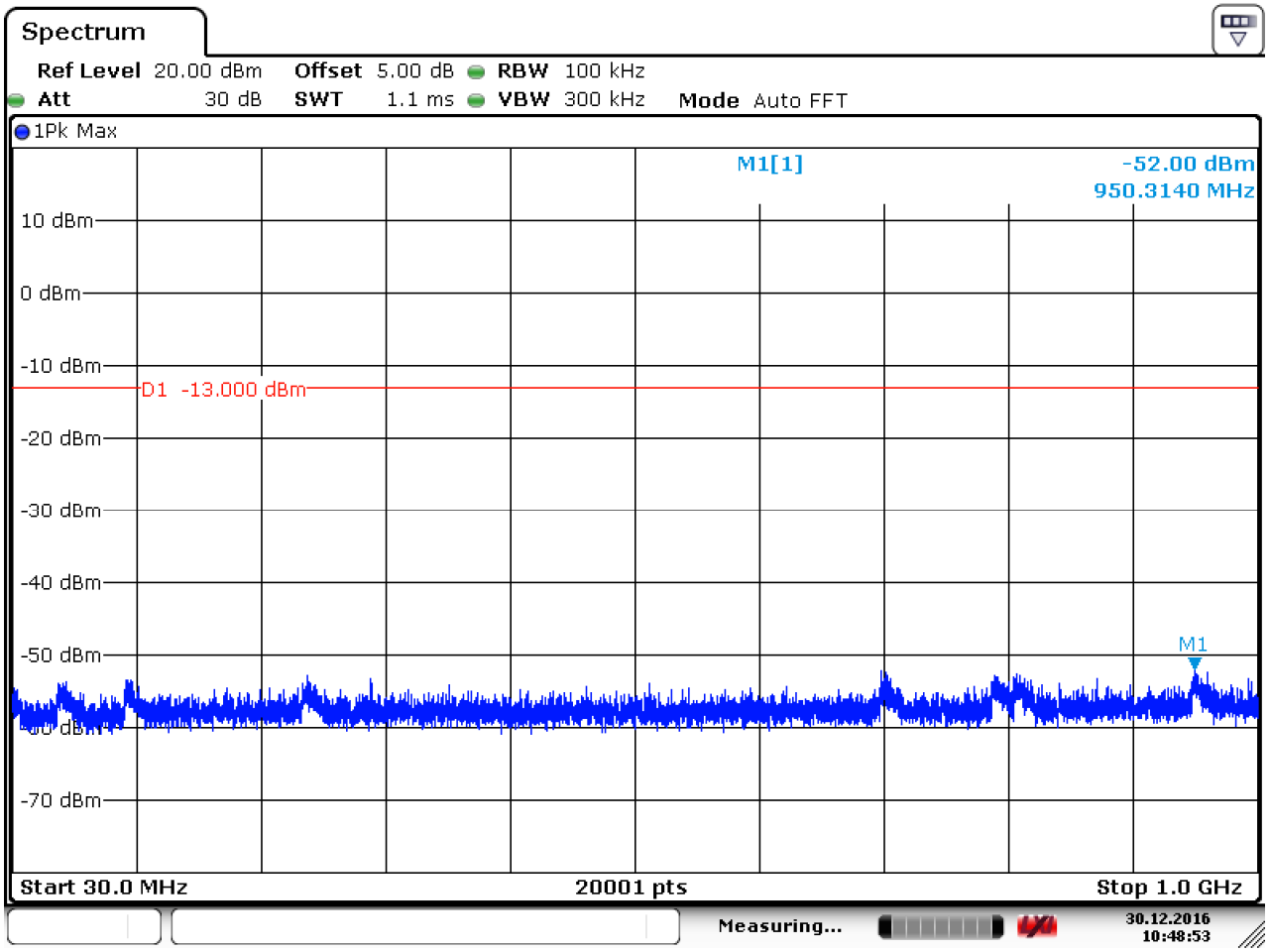


Date: 30.DEC.2016 10:43:49

6.1.2 Test Band = GSM 1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



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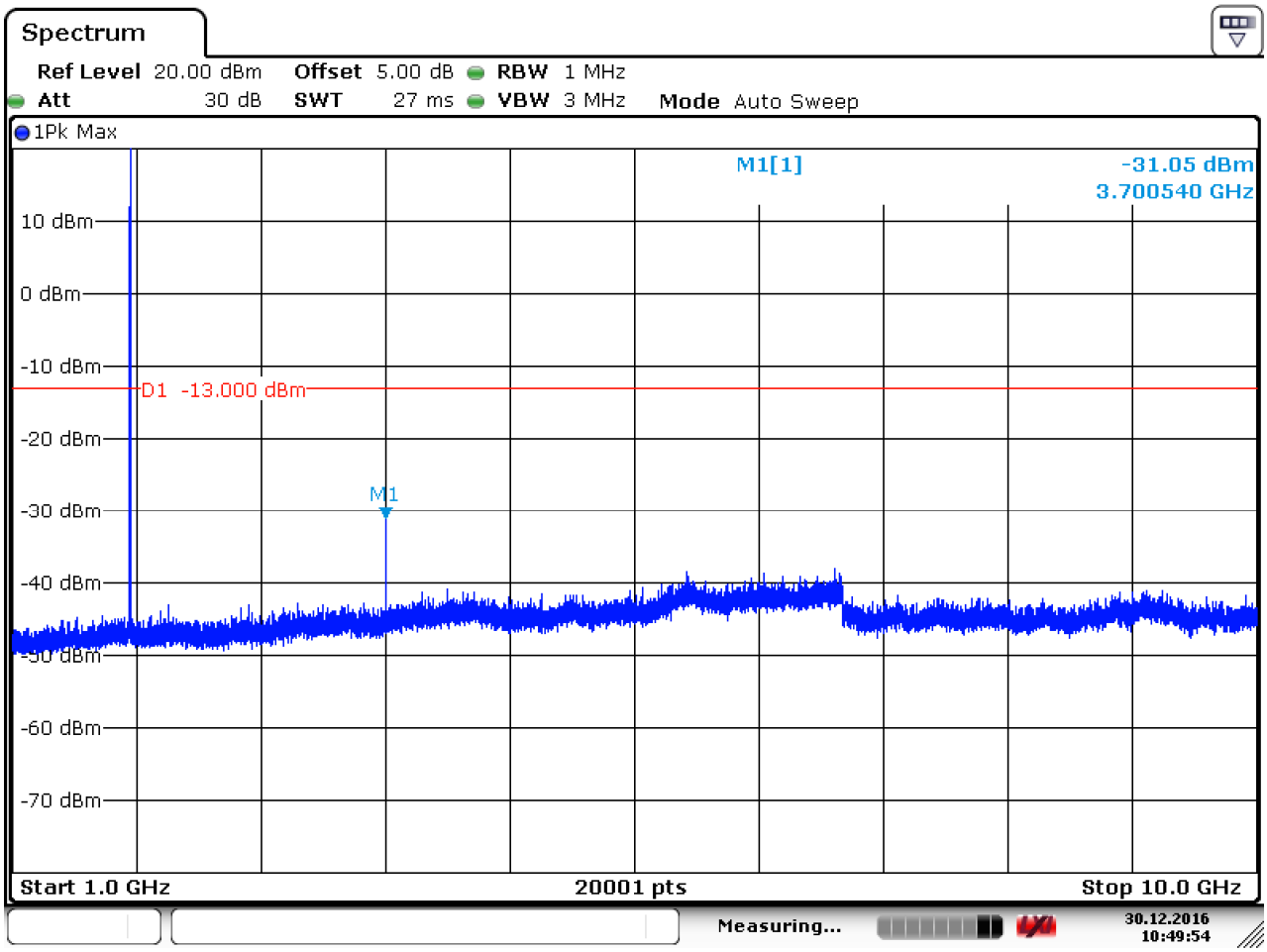
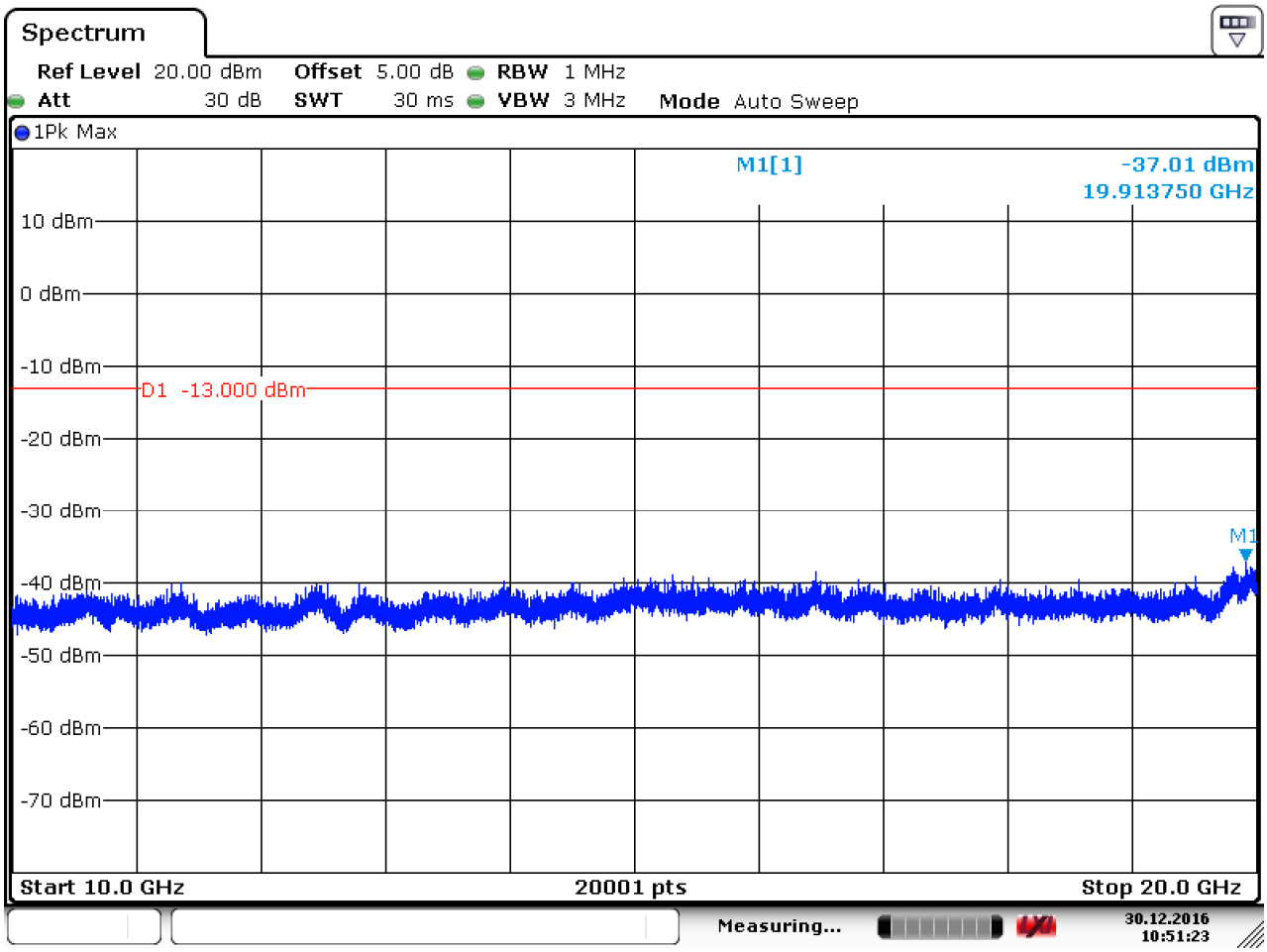
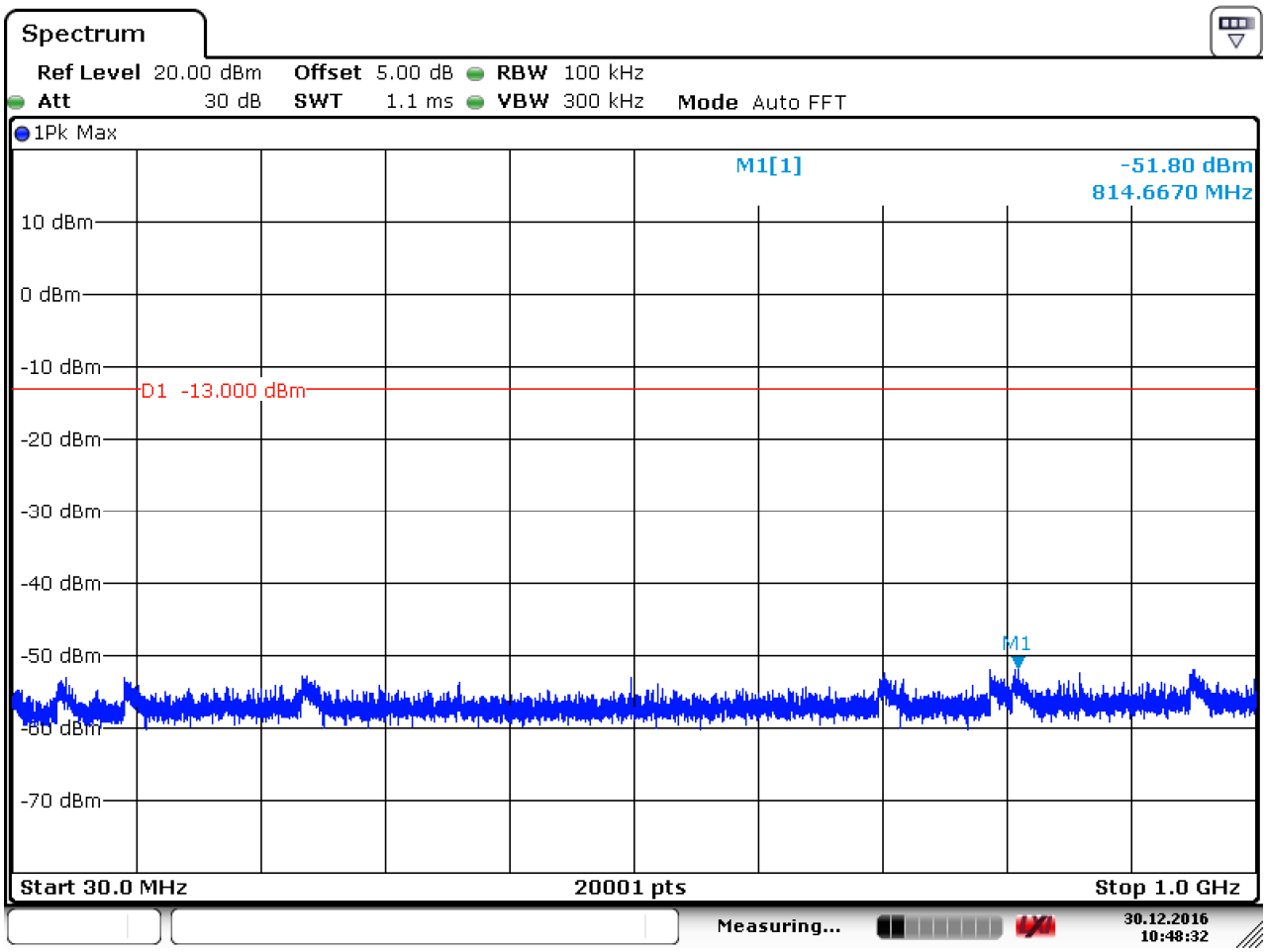


Date: 30.DEC.2016 10:49:55

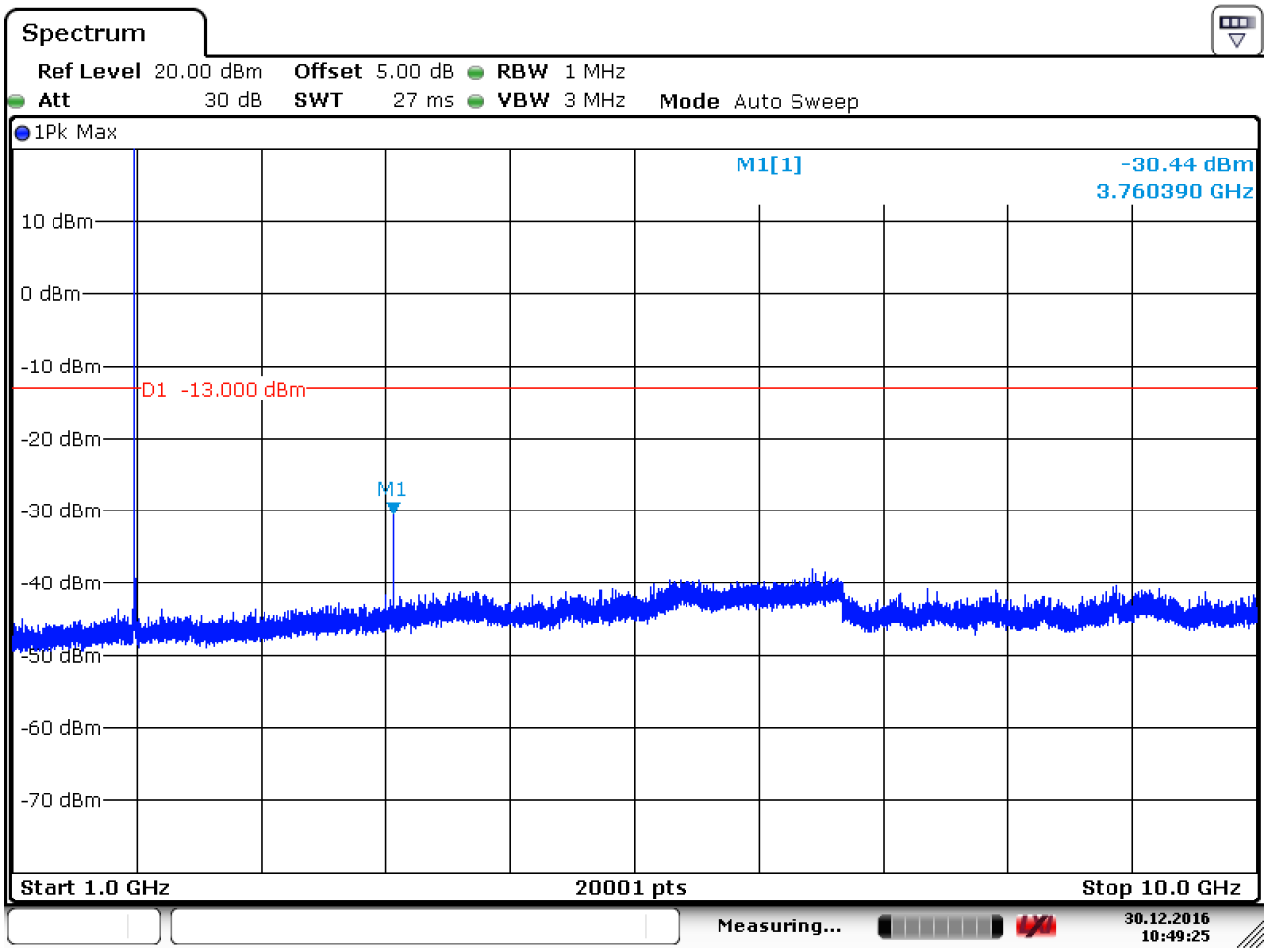


Date: 30.DEC.2016 10:51:23

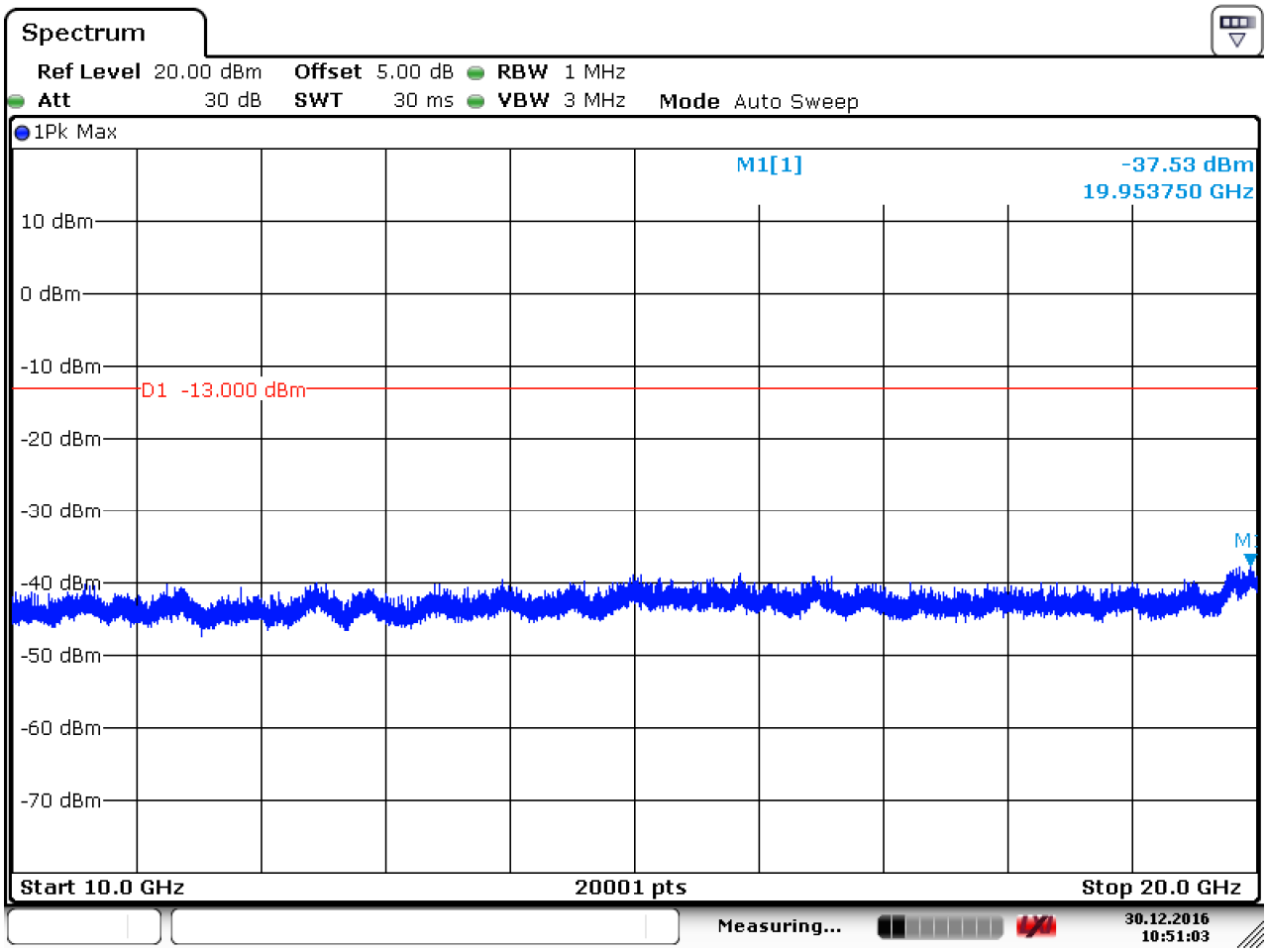
6.1.2.1.2 Test Channel = MCH



Date: 30.DEC.2016 10:48:32

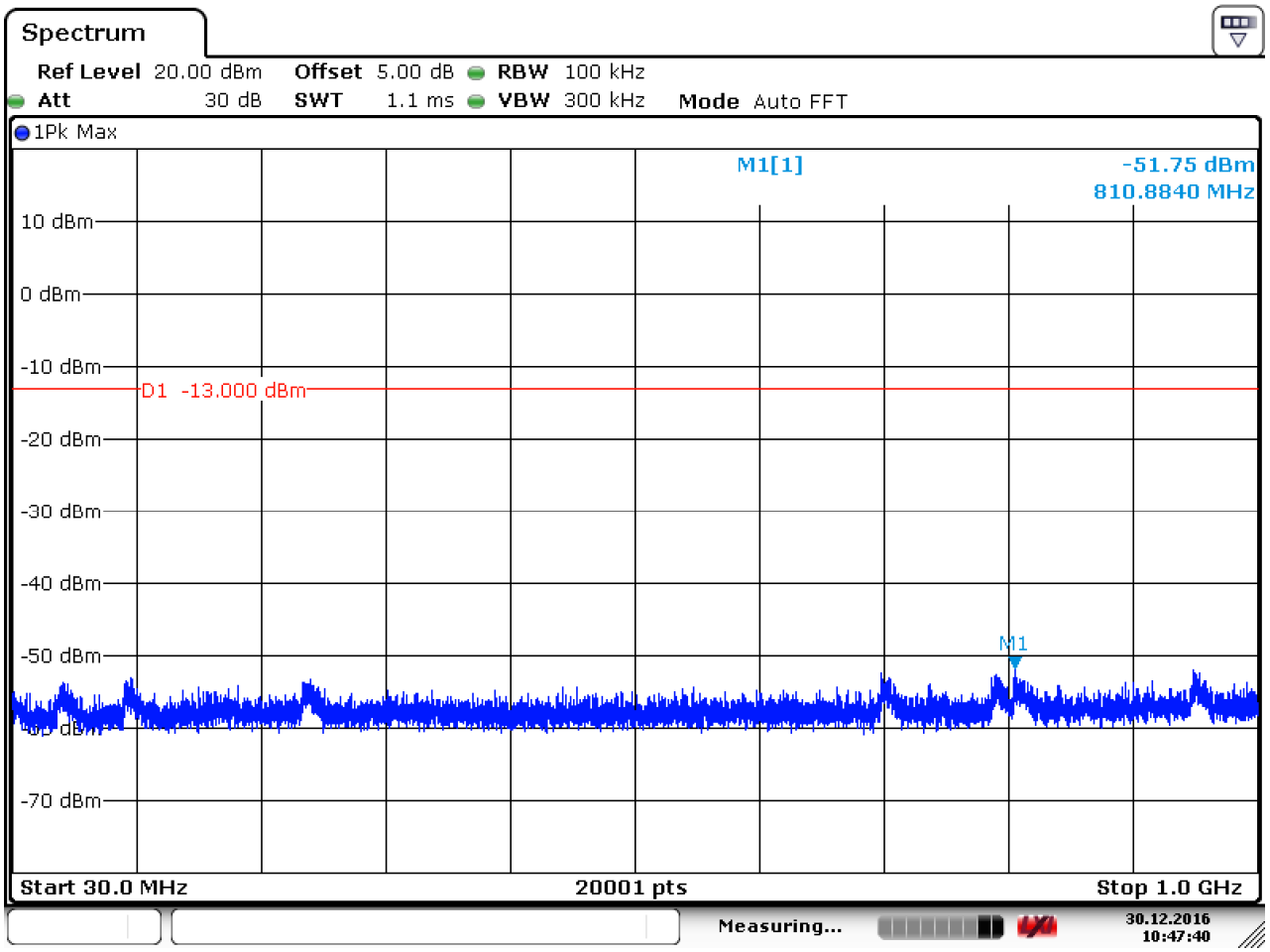


Date: 30.DEC.2016 10:49:25



Date: 30.DEC.2016 10:51:04

6.1.2.1.3 Test Channel = HCH



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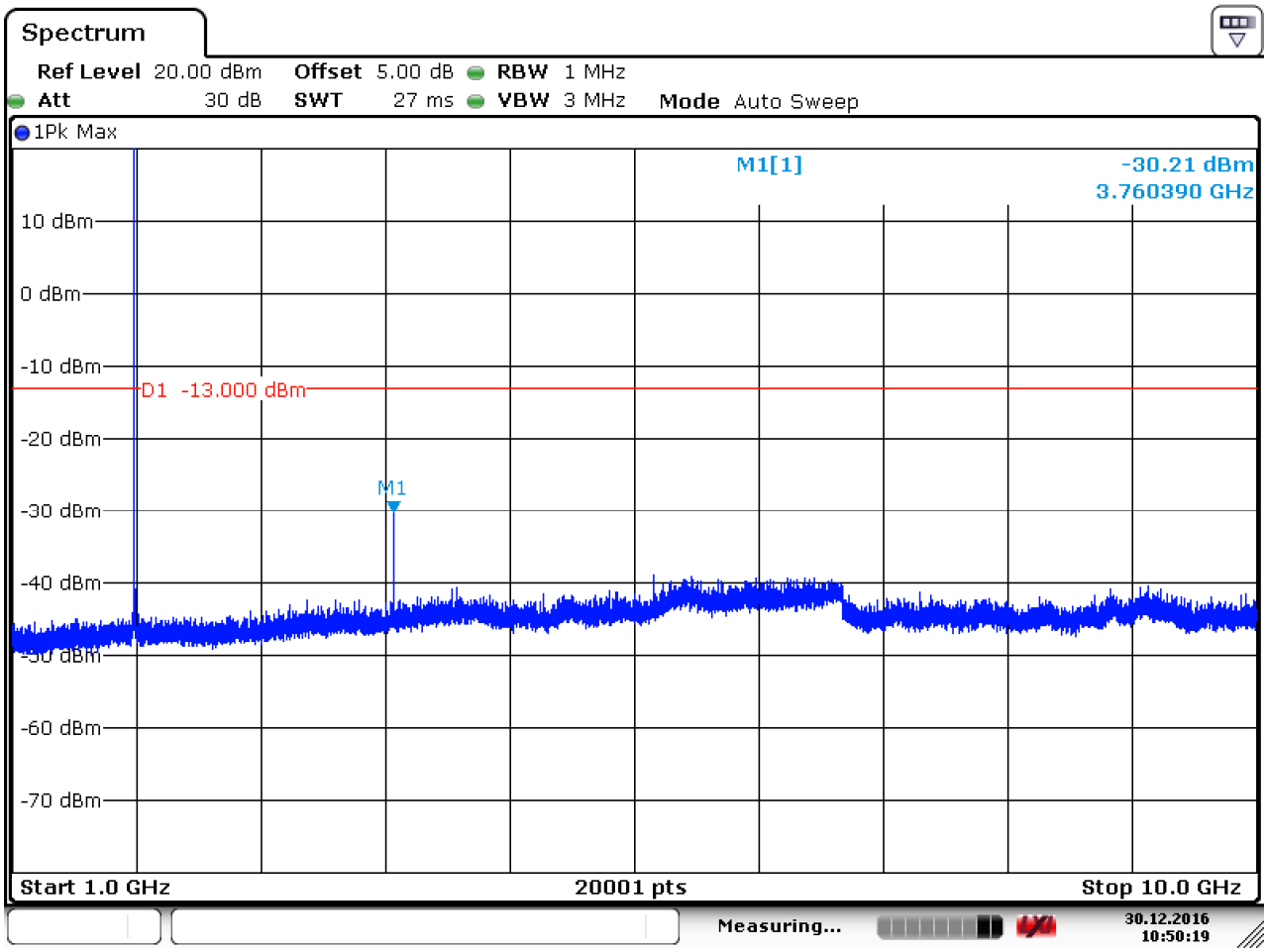

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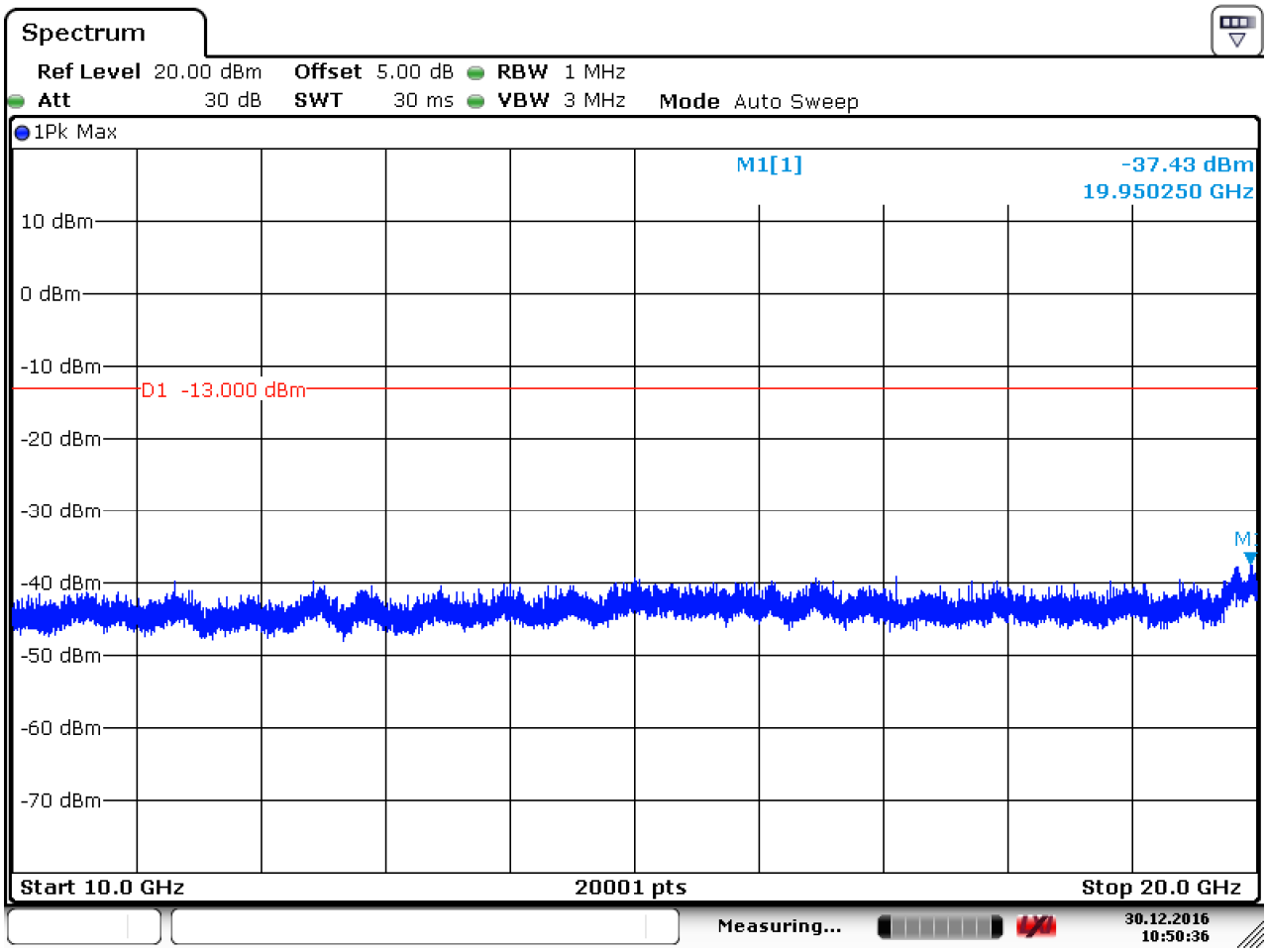

Date: 30.DEC.2016 10:50:36

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
1648.875	-50.27	-13.00	37.27	Vertical
2472.150	-46.17	-13.00	33.17	Vertical
7825.100	-53.58	-13.00	40.58	Vertical
1648.425	-47.47	-13.00	34.47	Horizontal
2472.375	-43.11	-13.00	30.11	Horizontal
4121.050	-53.80	-13.00	40.80	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1673.100	-50.65	-13.00	37.65	Vertical
2509.875	-45.14	-13.00	32.14	Vertical
6183.250	-54.11	-13.00	41.11	Vertical
1673.250	-49.07	-13.00	36.07	Horizontal
2509.950	-40.87	-13.00	27.87	Horizontal
4183.350	-50.23	-13.00	37.23	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1697.400	-48.85	-13.00	35.85	Vertical
2546.400	-43.42	-13.00	30.42	Vertical
4244.250	-53.24	-13.00	40.24	Vertical
1697.700	-46.86	-13.00	33.86	Horizontal
2546.625	-36.26	-13.00	23.26	Horizontal
4244.250	-48.41	-13.00	35.41	Horizontal

7.1.2 Test Band = GSM 1900

7.1.2.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
3700.875	-43.31	-13.00	30.31	Vertical
5549.750	-46.50	-13.00	33.50	Vertical
7824.750	-47.93	-13.00	34.93	Vertical
3700.000	-41.86	-13.00	28.86	Horizontal
5550.625	-42.38	-13.00	29.38	Horizontal
9251.000	-46.52	-13.00	33.52	Horizontal

7.1.2.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
3757.750	-46.26	-13.00	33.26	Vertical
5639.875	-47.86	-13.00	34.86	Vertical
9109.250	-48.13	-13.00	35.13	Vertical
3758.625	-41.20	-13.00	28.20	Horizontal
5640.750	-43.02	-13.00	30.02	Horizontal
7520.250	-43.82	-13.00	30.82	Horizontal

7.1.2.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
3819.875	-43.70	-13.00	30.70	Vertical
5729.125	-48.73	-13.00	35.73	Vertical
8655.125	-47.89	-13.00	34.89	Vertical
3819.000	-39.12	-13.00	26.12	Horizontal
5730.000	-44.92	-13.00	31.92	Horizontal
7640.125	-47.89	-13.00	34.89	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

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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	2.10	0.00255	PASS
				VN	-3.39	-0.00411	PASS
				VH	2.89	0.00351	PASS
		MCH	TN	VL	1.99	0.00238	PASS
				VN	2.00	0.00239	PASS
				VH	-5.09	-0.00608	PASS
		HCH	TN	VL	4.01	0.00472	PASS
				VN	-3.77	-0.00444	PASS
				VH	-1.89	-0.00223	PASS
	GSM/TM2	LCH	TN	VL	1.20	0.00146	PASS
				VN	4.44	0.00539	PASS
				VH	2.87	0.00348	PASS
		MCH	TN	VL	0.93	0.00111	PASS
				VN	-6.02	-0.00720	PASS
				VH	1.11	0.00133	PASS
		HCH	TN	VL	5.39	0.00635	PASS
				VN	-2.30	-0.00271	PASS
				VH	4.20	0.00495	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	-3.22	-0.00174	PASS
				VN	-6.03	-0.00326	PASS
				VH	1.29	0.00070	PASS
		MCH	TN	VL	0.99	0.00053	PASS
				VN	2.44	0.00130	PASS
				VH	-5.55	-0.00295	PASS
		HCH	TN	VL	-3.01	-0.00158	PASS
				VN	3.21	0.00168	PASS
				VH	-6.09	-0.00319	PASS
	GSM/TM2	LCH	TN	VL	-4.02	-0.00217	PASS
				VN	-1.67	-0.00090	PASS
				VH	2.66	0.00144	PASS
		MCH	TN	VL	-3.89	-0.00207	PASS
				VN	-0.12	-0.00006	PASS
				VH	1.10	0.00059	PASS
		HCH	TN	VL	4.11	0.00215	PASS
				VN	-2.22	-0.00116	PASS
				VH	-3.90	-0.00204	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	-4.01	-0.00487	PASS
				-20	1.3	0.00158	PASS
				-10	0.77	0.00093	PASS
				0	-2.79	-0.00339	PASS
				10	0.90	0.00109	PASS
				20	-3.98	-0.00483	PASS
				30	1.09	0.00132	PASS
				40	-0.11	-0.00013	PASS
				50	-6.20	-0.00752	PASS
		MCH	VN	-30	-3.67	-0.00439	PASS
				-20	-5.22	-0.00624	PASS
				-10	-0.55	-0.00066	PASS
				0	-3.09	-0.00369	PASS
				10	1.23	0.00147	PASS
				20	2.89	0.00345	PASS
				30	1.09	0.00130	PASS
				40	0.33	0.00039	PASS
				50	-4.52	-0.00540	PASS
		HCH	VN	-30	-0.15	-0.00018	PASS
				-20	3.58	0.00422	PASS
				-10	2.09	0.00246	PASS
				0	-5.44	-0.00641	PASS
				10	1.20	0.00141	PASS
				20	-2.88	-0.00339	PASS
				30	3.46	0.00408	PASS
				40	-0.62	-0.00073	PASS
				50	-4.90	-0.00577	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	2.01	0.00244	PASS
				-10	-5.32	-0.00645	PASS
				0	0.60	0.00073	PASS
				10	-5.70	-0.00692	PASS
				20	-4.87	-0.00591	PASS
				30	-2.99	-0.00363	PASS
				40	-5.64	-0.00684	PASS
				50	-2.09	-0.00254	PASS
		MCH	VN	-30	-2.00	-0.00239	PASS
				-20	3.40	0.00406	PASS
				-10	-4.55	-0.00544	PASS
				0	1.88	0.00225	PASS
				10	-5.22	-0.00624	PASS
				20	-3.56	-0.00426	PASS
				30	-2.12	-0.00253	PASS
				40	-3.08	-0.00368	PASS
				50	-0.67	-0.00080	PASS
		HCH	VN	-30	-3.98	-0.00469	PASS
				-20	-6.23	-0.00734	PASS
				-10	-2.77	-0.00326	PASS
				0	-5.39	-0.00635	PASS
				10	1.34	0.00158	PASS
				20	-4.11	-0.00484	PASS
				30	-3.20	-0.00377	PASS
				40	-2.47	-0.00291	PASS
				50	-5.01	-0.00590	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	-4.43	-0.00239	PASS
				-20	-5.09	-0.00275	PASS
				-10	2.19	0.00118	PASS
				0	-3.90	-0.00211	PASS
				10	-0.56	-0.00030	PASS
				20	1.18	0.00064	PASS
				30	-3.09	-0.00167	PASS
				40	-5.20	-0.00281	PASS
				50	-4.43	-0.00239	PASS
		MCH	VN	-30	-4.76	-0.00253	PASS
				-20	1.46	0.00078	PASS
				-10	-2.48	-0.00132	PASS
				0	4.64	0.00247	PASS
				10	-3.47	-0.00185	PASS
				20	-6.29	-0.00335	PASS
				30	-3.09	-0.00164	PASS
				40	-8.39	-0.00446	PASS
				50	-5.01	-0.00266	PASS
		HCH	VN	-30	-3.49	-0.00183	PASS
				-20	3.77	0.00197	PASS
				-10	1.90	0.00099	PASS
				0	-0.27	-0.00014	PASS
				10	-3.28	-0.00172	PASS
				20	-4.09	-0.00214	PASS
				30	1.09	0.00057	PASS
				40	-2.10	-0.00110	PASS
				50	-3.99	-0.00209	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	-3.09	-0.00167	PASS
				-20	-4.11	-0.00222	PASS
				-10	2.22	0.00120	PASS
				0	-2.89	-0.00156	PASS
				10	-2.09	-0.00113	PASS
				20	-4.33	-0.00234	PASS
				30	1.09	0.00059	PASS
				40	-3.12	-0.00169	PASS
				50	-6.27	-0.00339	PASS
		MCH	VN	-30	-5.09	-0.00271	PASS
				-20	-2.10	-0.00112	PASS
				-10	-4.55	-0.00242	PASS
				0	1.90	0.00101	PASS
				10	-5.20	-0.00277	PASS
				20	-2.55	-0.00136	PASS
				30	-3.73	-0.00198	PASS
				40	0.13	0.00007	PASS
				50	-6.09	-0.00324	PASS
		HCH	VN	-30	-3.48	-0.00182	PASS
				-20	2.98	0.00156	PASS
				-10	1.60	0.00084	PASS
				0	-5.66	-0.00296	PASS
				10	-6.43	-0.00337	PASS
				20	-4.09	-0.00214	PASS
				30	-2.24	-0.00117	PASS
				40	-2.53	-0.00132	PASS
				50	-5.10	-0.00267	PASS

The End