Appendix B

Test Data for SZEM161000916605RG

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	32.72	32.83	38.45	PASS
		MCH	32.70	32.81	38.45	PASS
		HCH	32.69	32.80	38.45	PASS
	GSM/TM2	LCH	27.40	27.51	38.45	PASS
		MCH	27.49	27.60	38.45	PASS
		HCH	27.48	27.59	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	30.15	32.38	33	PASS
		MCH	30.04	32.27	33	PASS
		HCH	30.12	32.35	33	PASS
	GSM/TM2	LCH	26.27	28.50	33	PASS
		MCH	26.33	28.56	33	PASS
		HCH	26.36	28.59	33	PASS

Note:
a: For getting the EIRP (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	7.65	13	PASS
		MCH	8.17	13	PASS
		HCH	7.68	13	PASS
	GSM/TM2	LCH	10.49	13	PASS
		MCH	10.70	13	PASS
		HCH	10.58	13	PASS
GSM 1900	GSM/TM1	LCH	7.65	13	PASS
		MCH	7.71	13	PASS
		HCH	7.62	13	PASS
	GSM/TM2	LCH	7.71	13	PASS
		MCH	7.71	13	PASS
		HCH	7.65	13	PASS

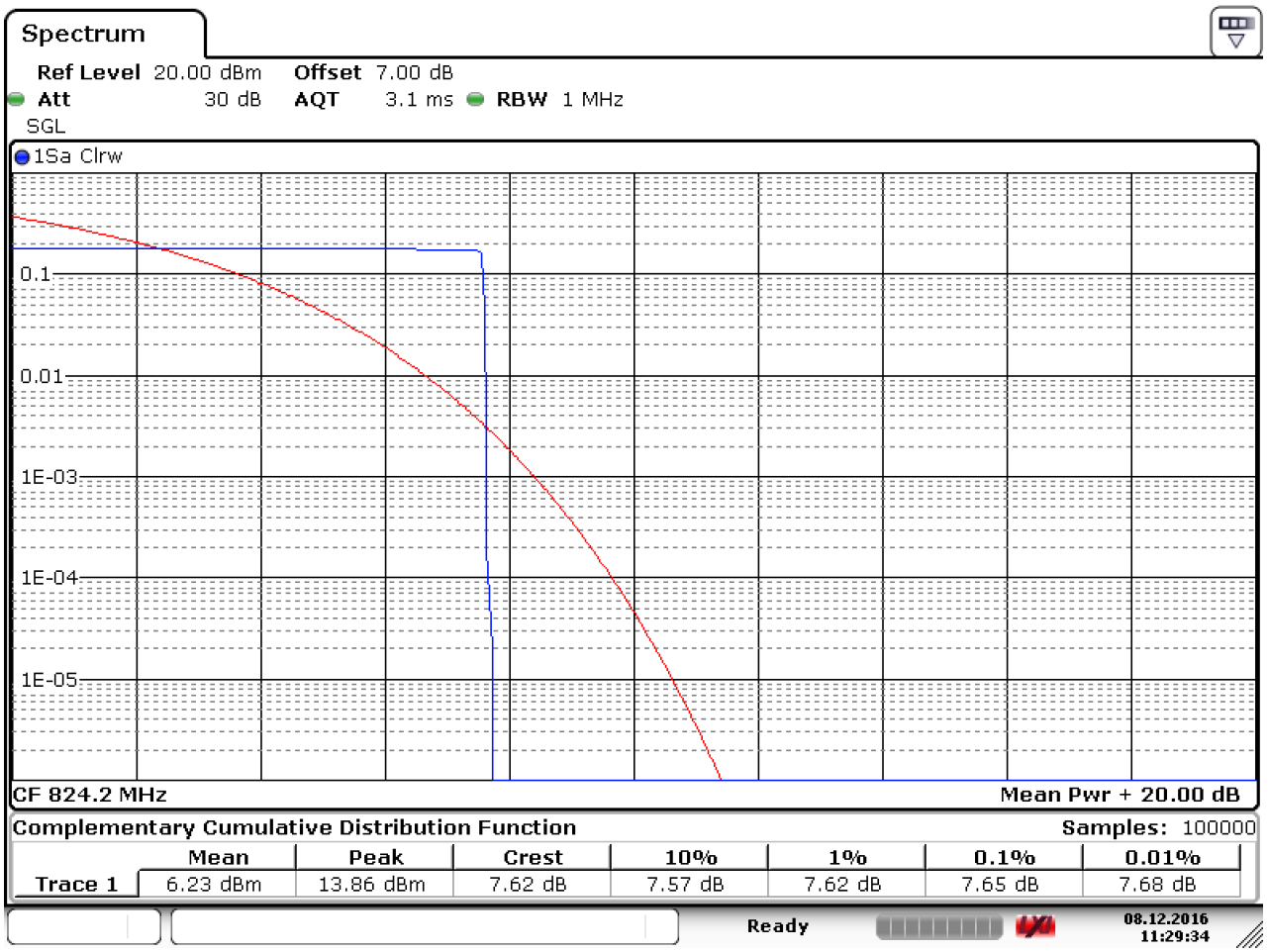
Part II - Test Plots

2.1 For GSM

2.1.1 Test Band = GSM 850

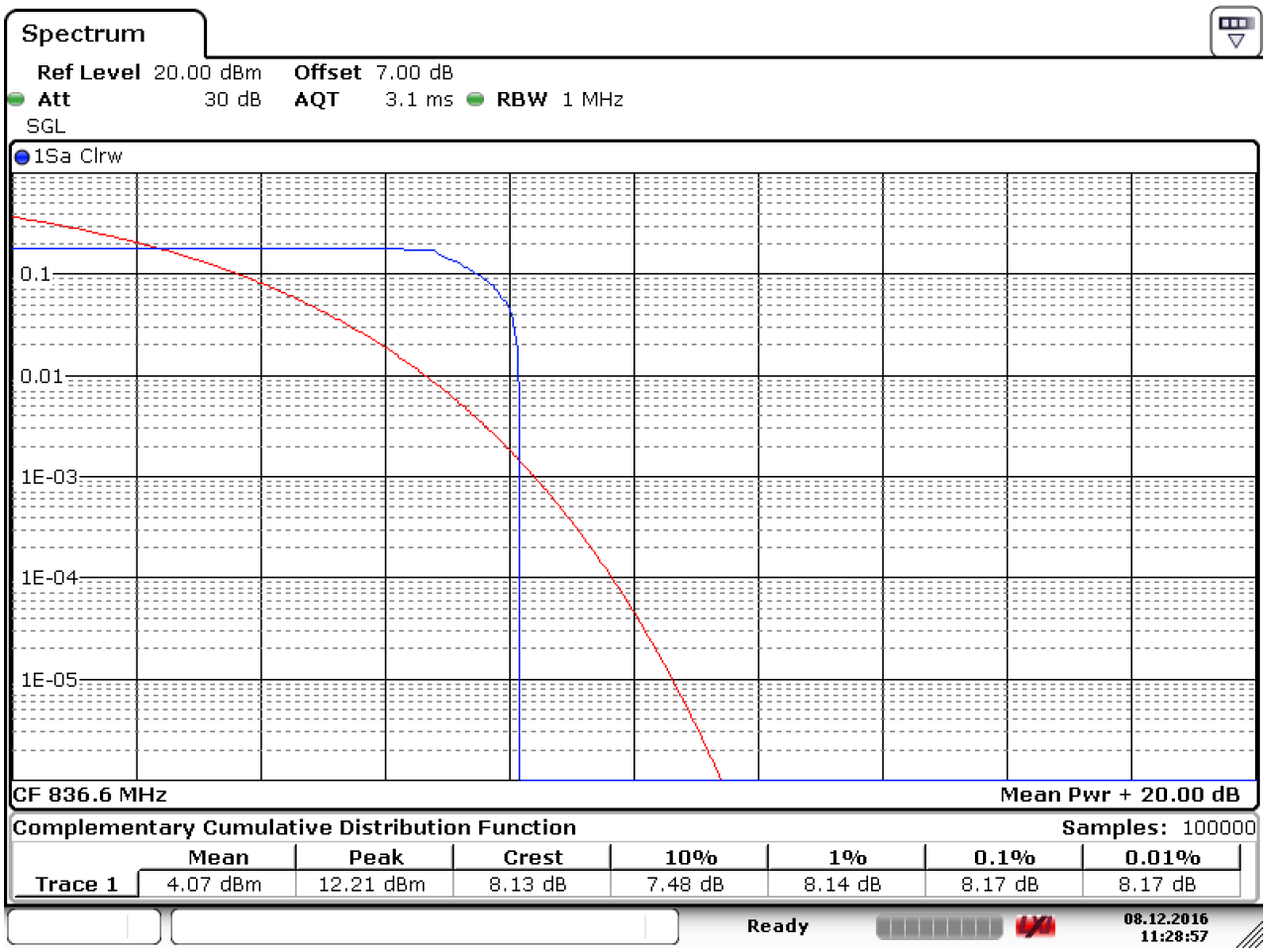
2.1.1.1 Test Mode = GSM/TM1

2.1.1.1.1 Test Channel = LCH



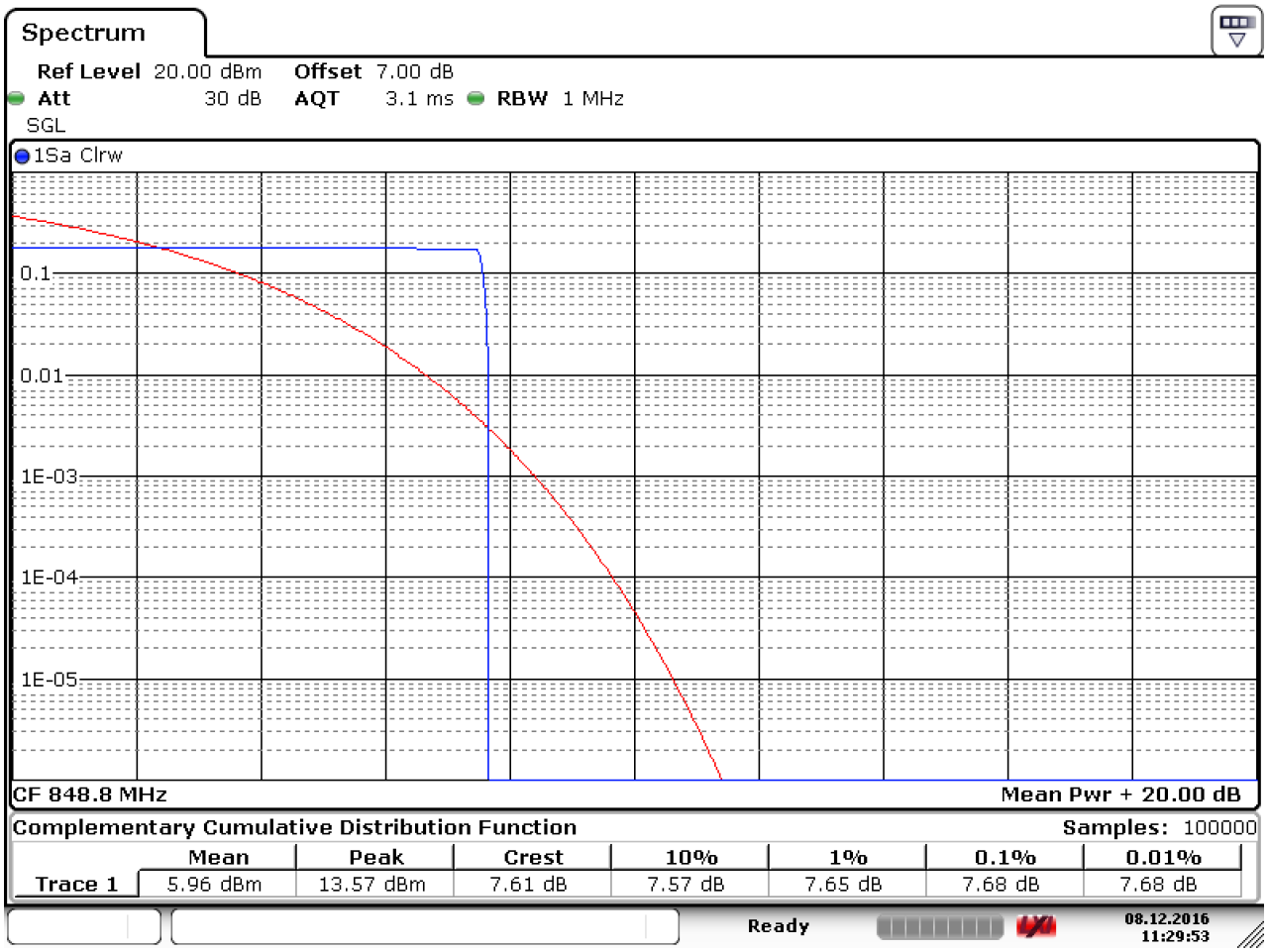
Date: 8.DEC.2016 11:29:34

2.1.1.1.2 Test Channel = MCH



Date: 8.DEC.2016 11:28:58

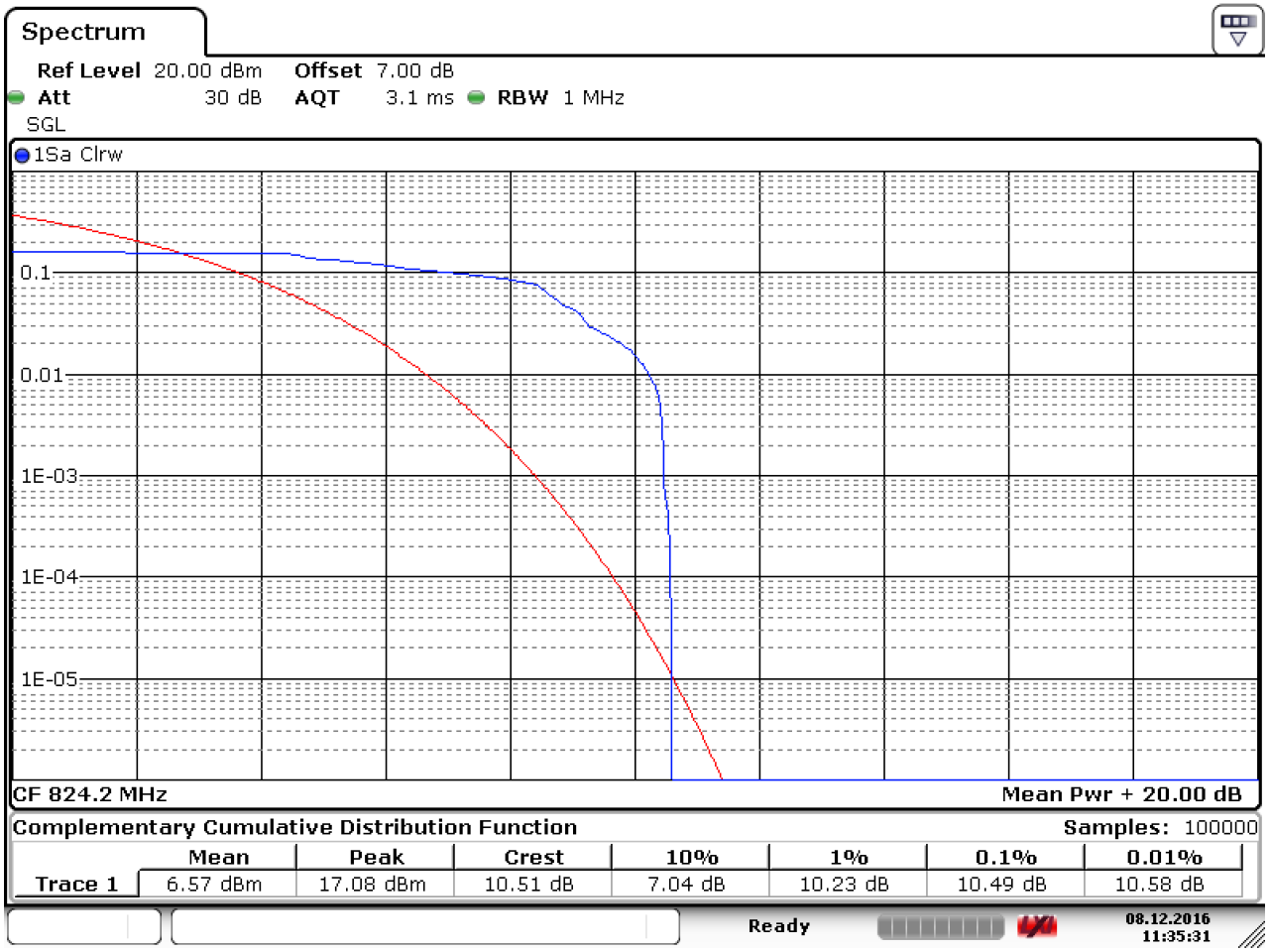
2.1.1.1.3 Test Channel = HCH



Date: 8.DEC.2016 11:29:53

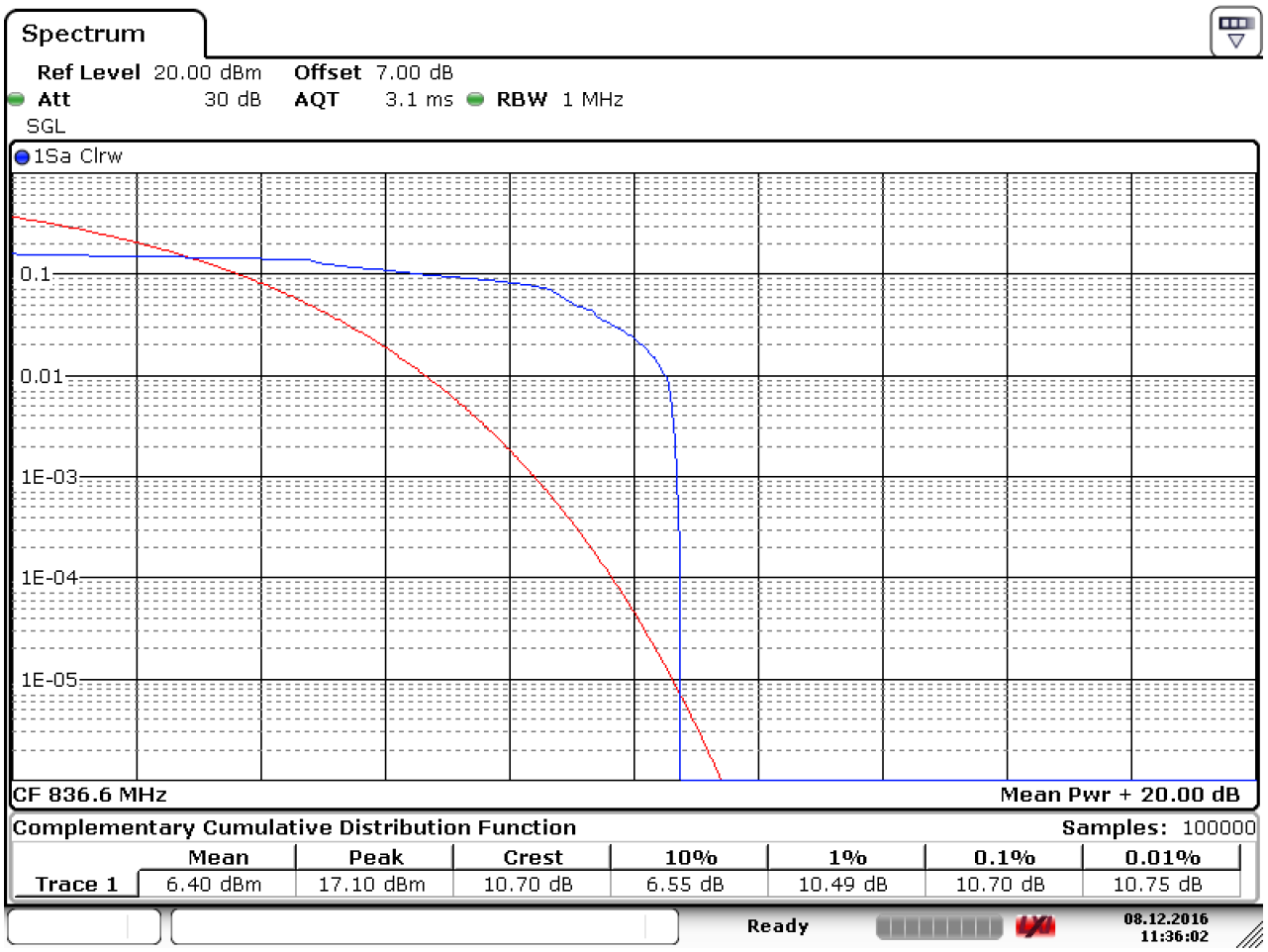
2.1.1.2 Test Mode = GSM/TM2

2.1.1.2.1 Test Channel = LCH



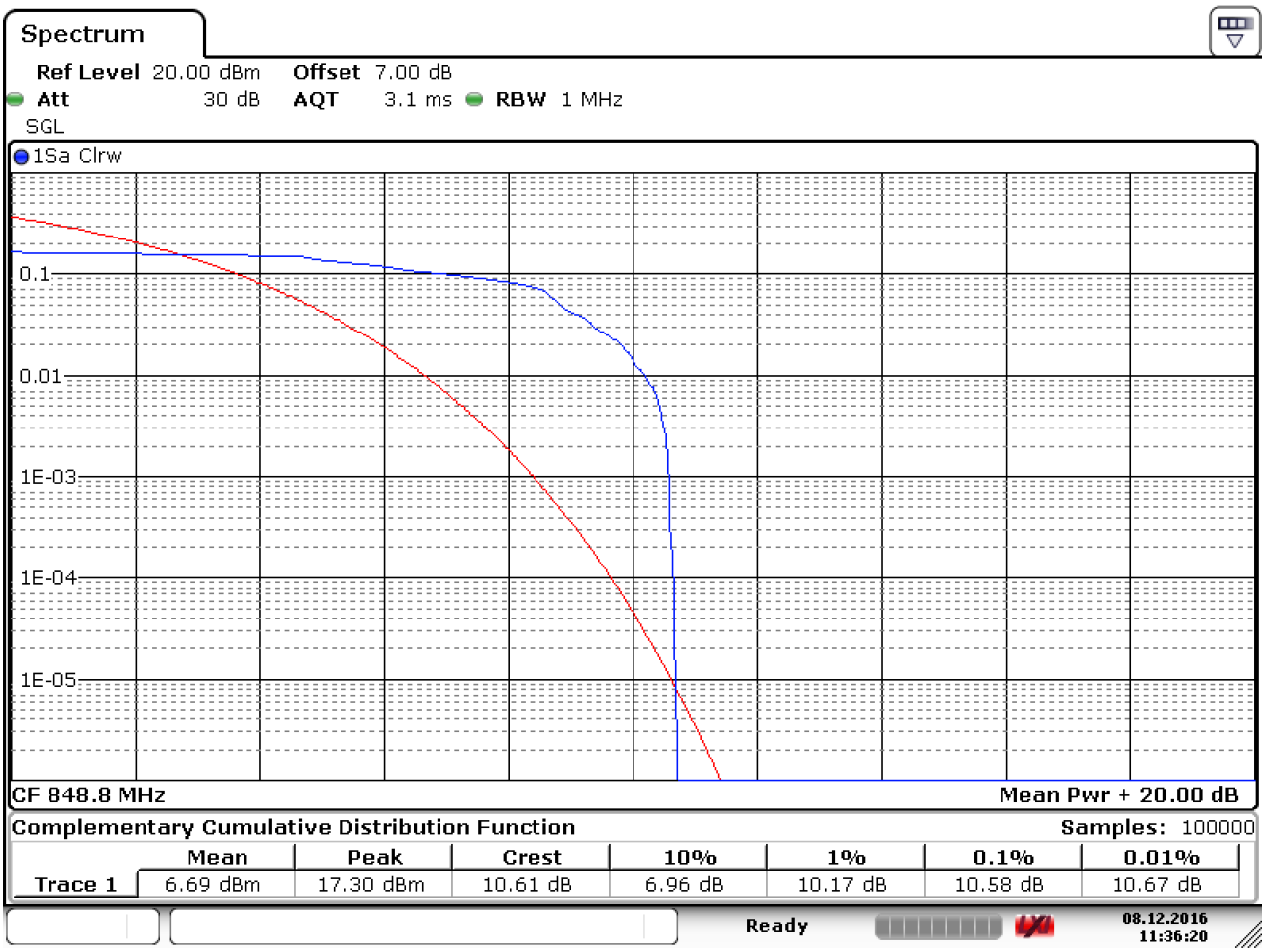
Date: 8.DEC.2016 11:35:31

2.1.1.2.2 Test Channel = MCH



Date: 8.DEC.2016 11:36:02

2.1.1.2.3 Test Channel = HCH

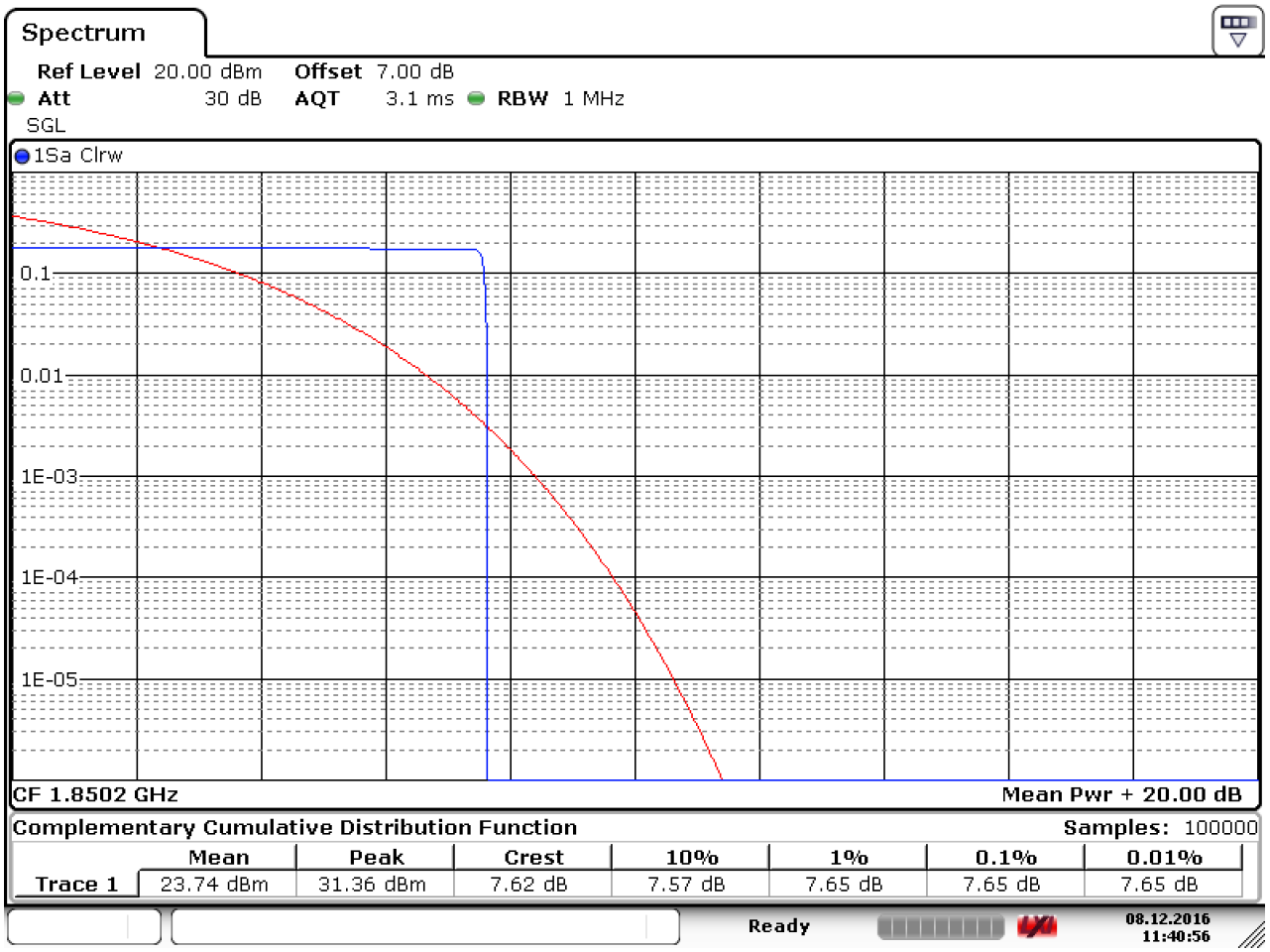


Date: 8.DEC.2016 11:36:20

2.1.2 Test Band = GSM 1900

2.1.2.1 Test Mode = GSM/TM1

2.1.2.1.1 Test Channel = LCH



Date: 8.DEC.2016 11:40:56

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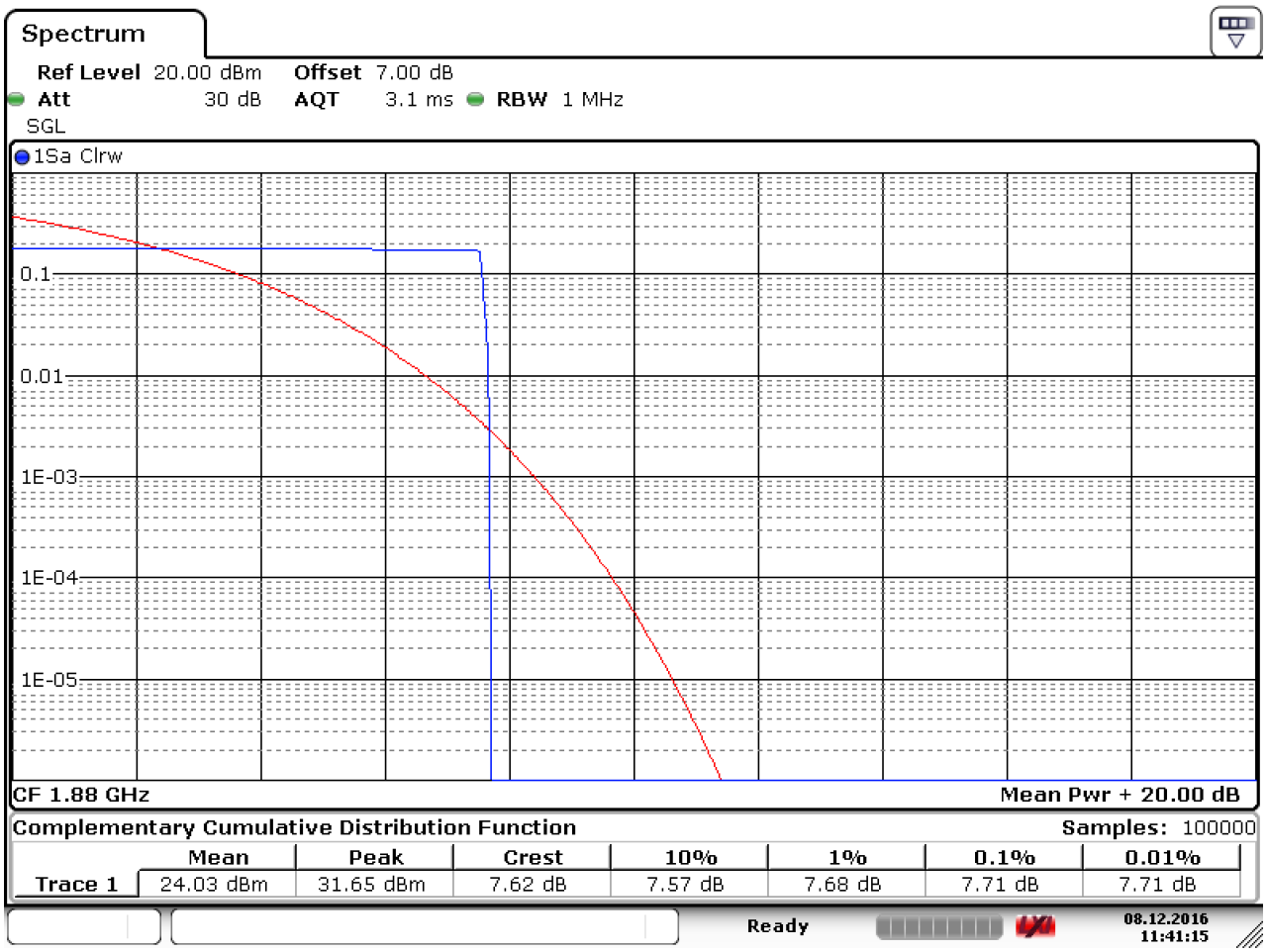

Date: 8.DEC.2016 11:41:15

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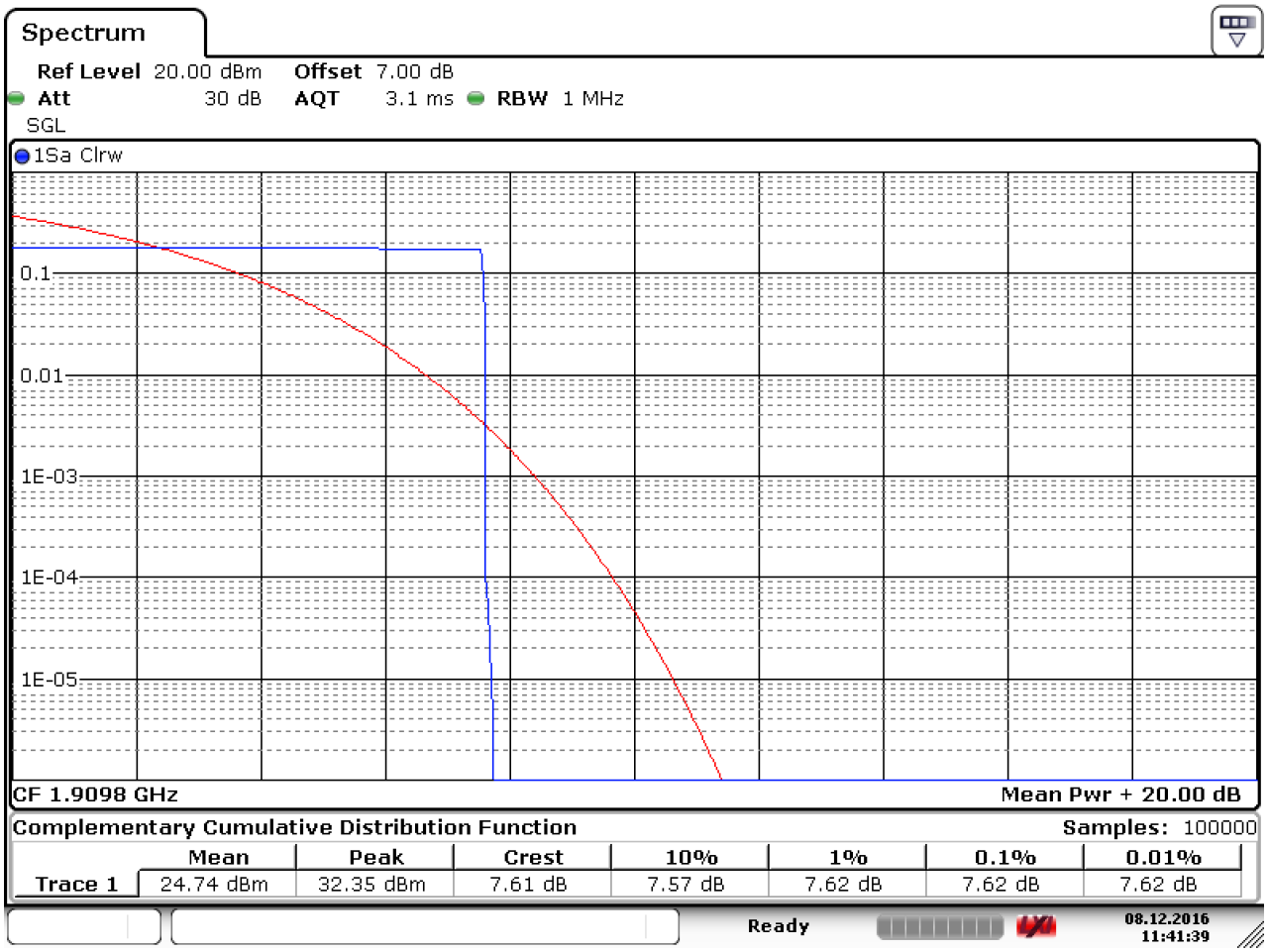
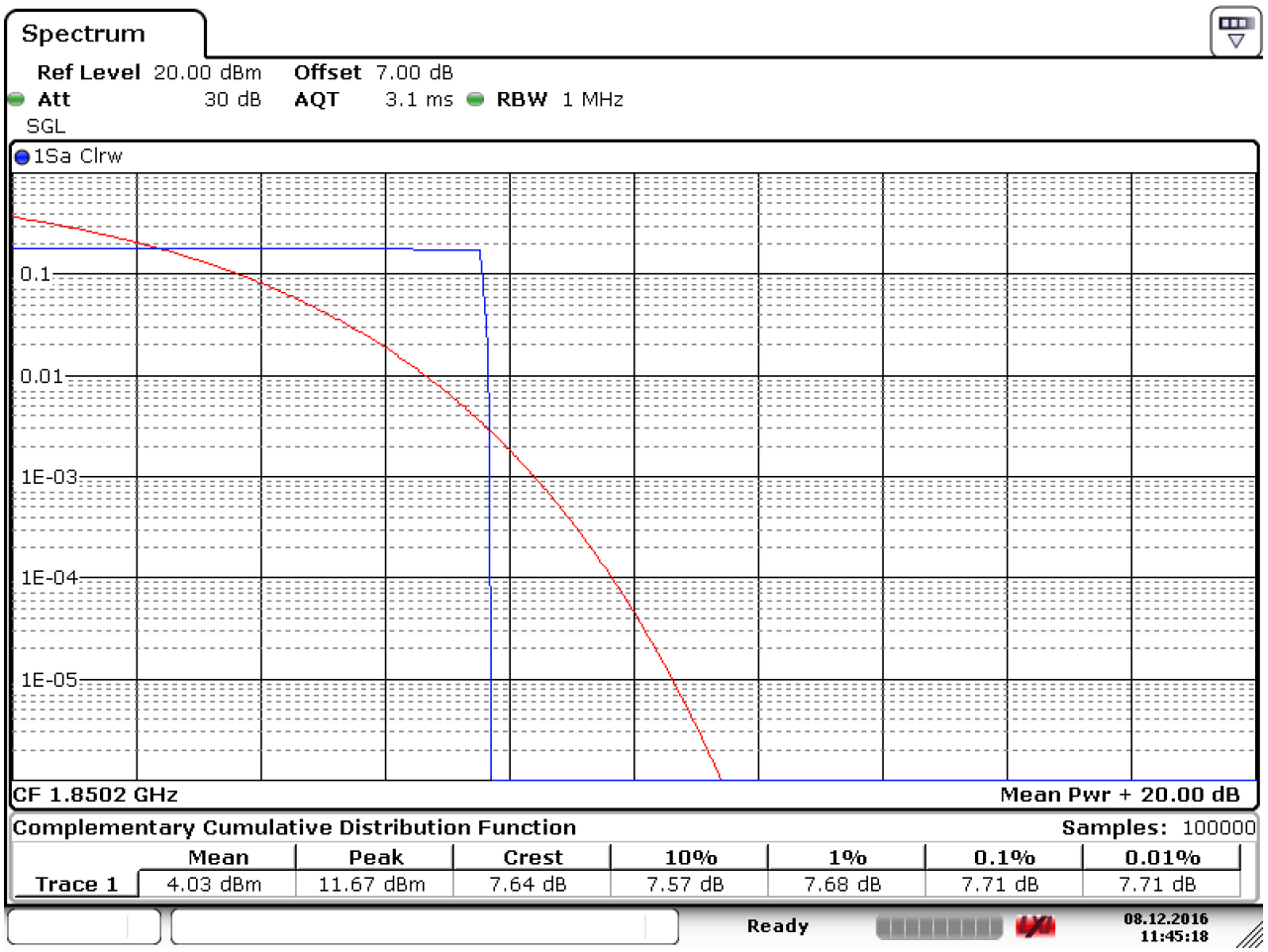


Date: 8.DEC.2016 11:41:39

2.1.2.2 Test Mode = GSM/TM2

2.1.2.2.1 Test Channel = LCH



Date: 8.DEC.2016 11:45:18

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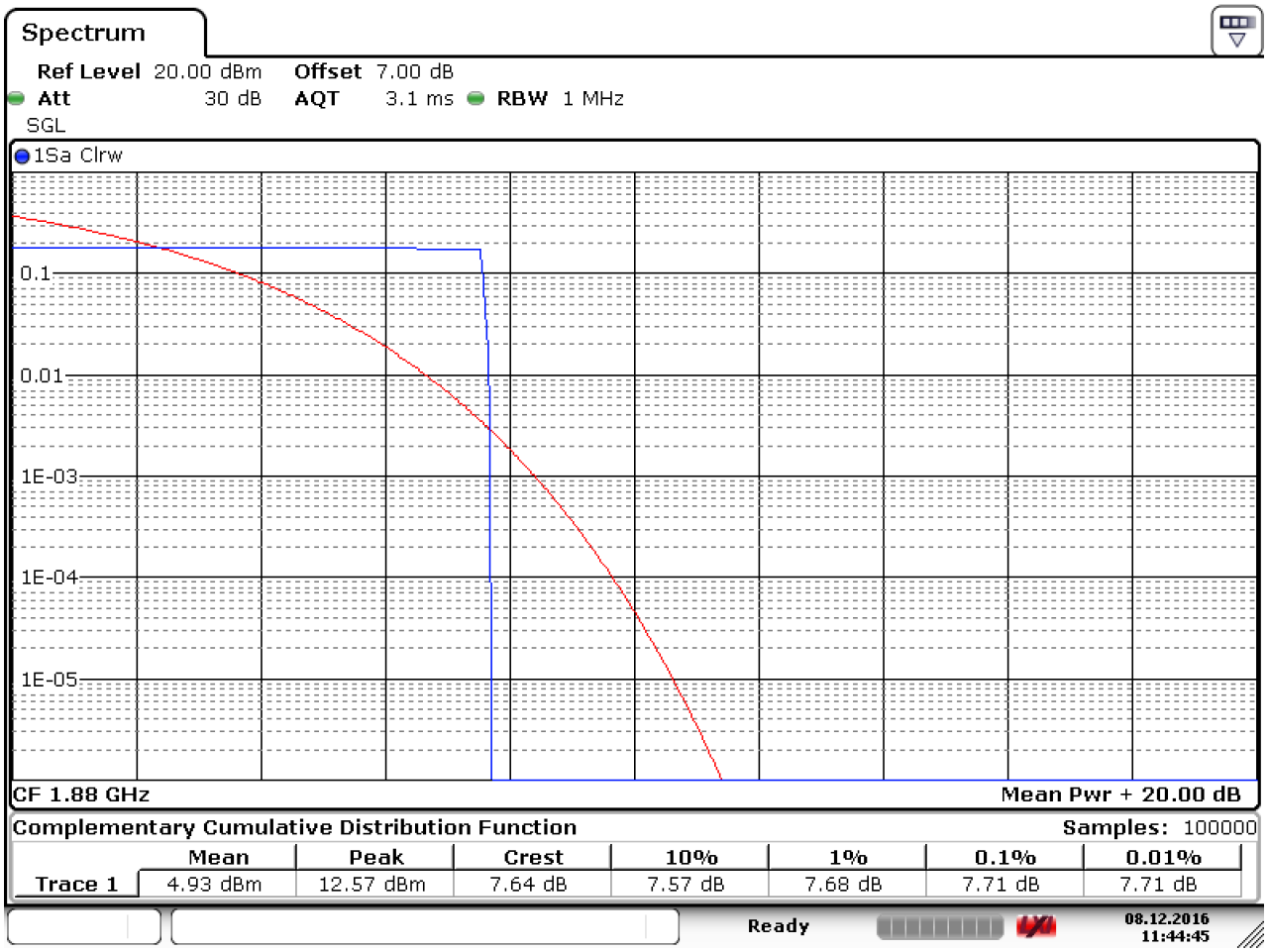

Date: 8.DEC.2016 11:44:46

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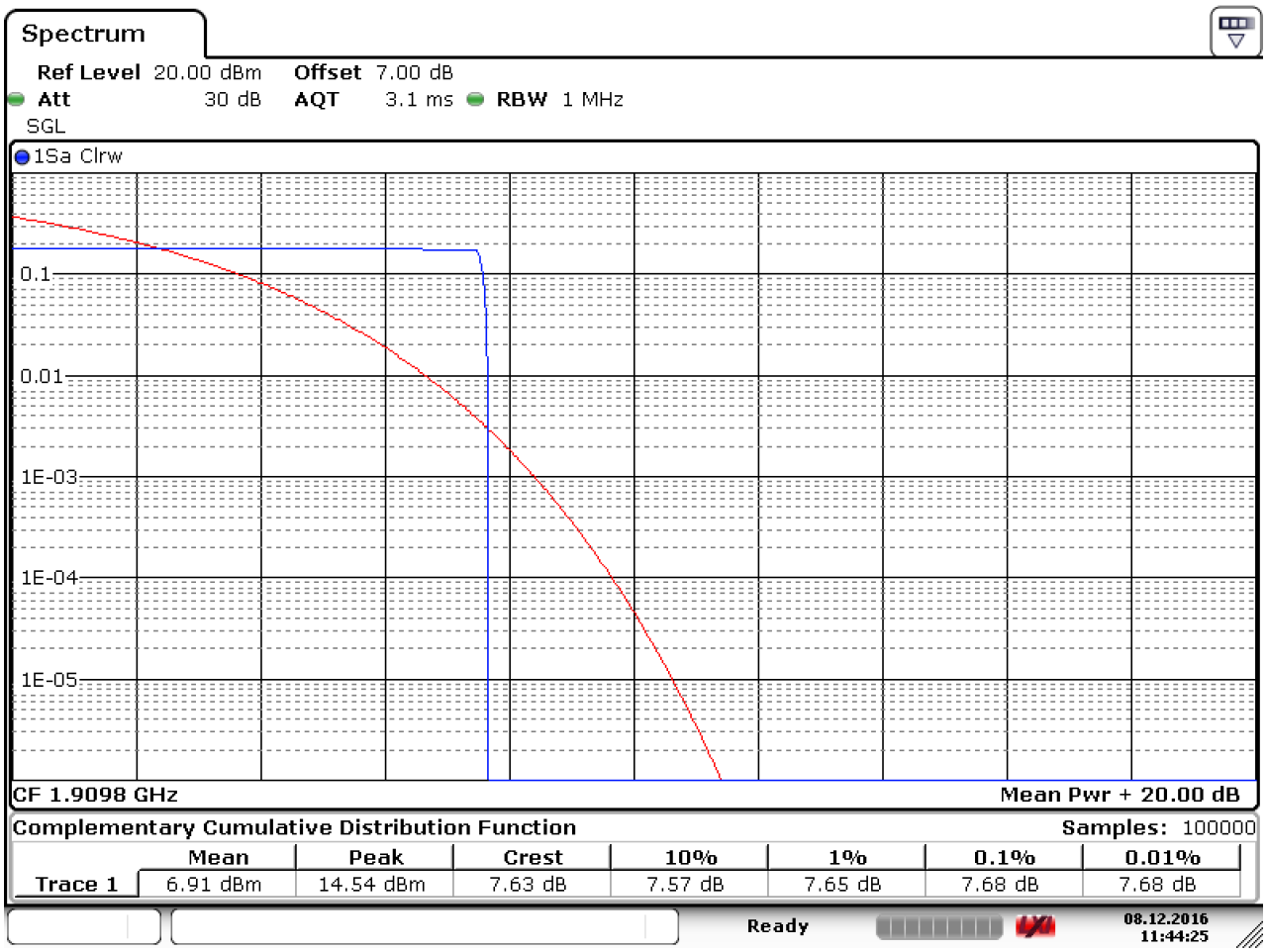


Date: 8.DEC.2016 11:44:25

3 Modulation Characteristics

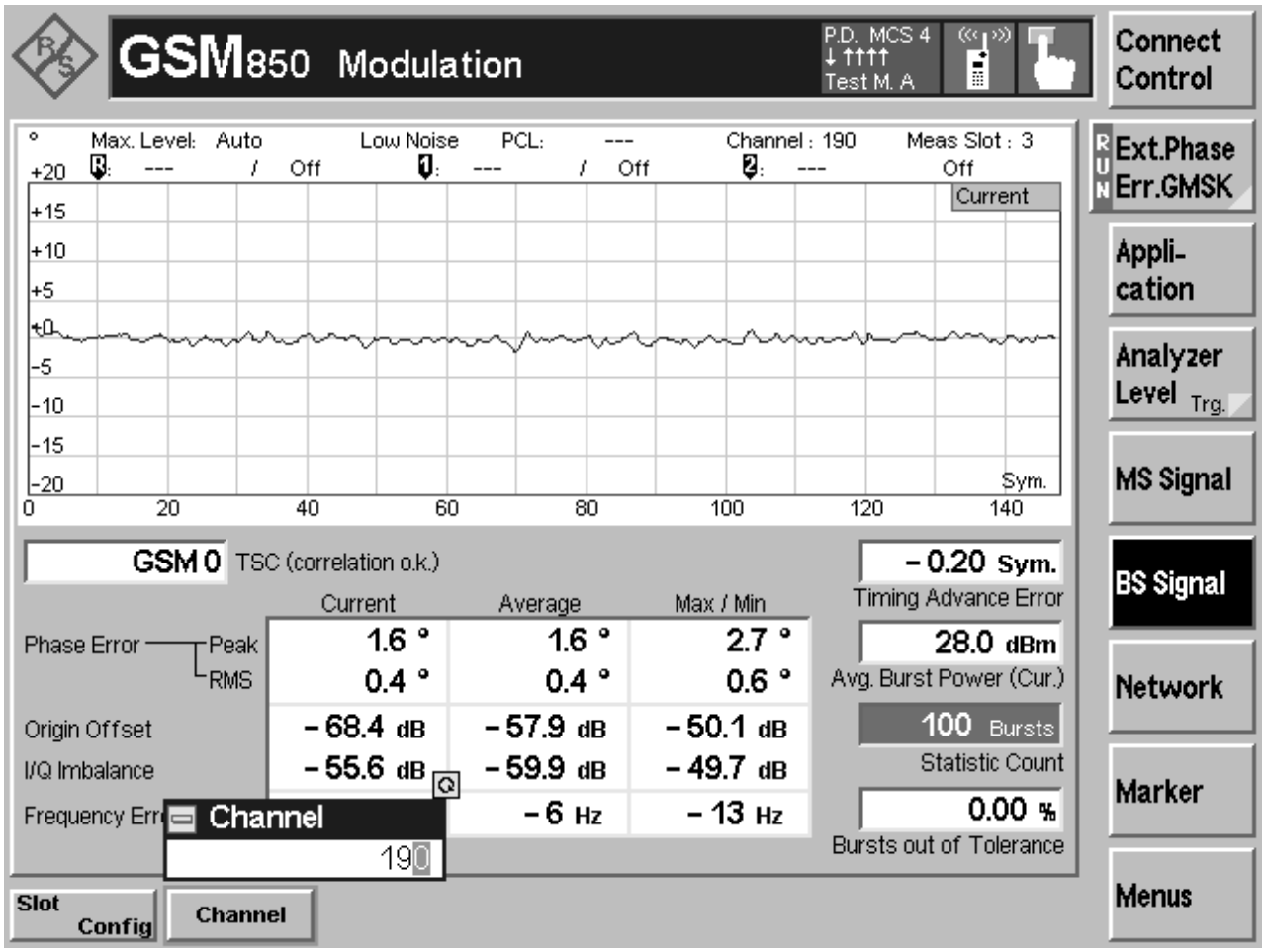
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM 850

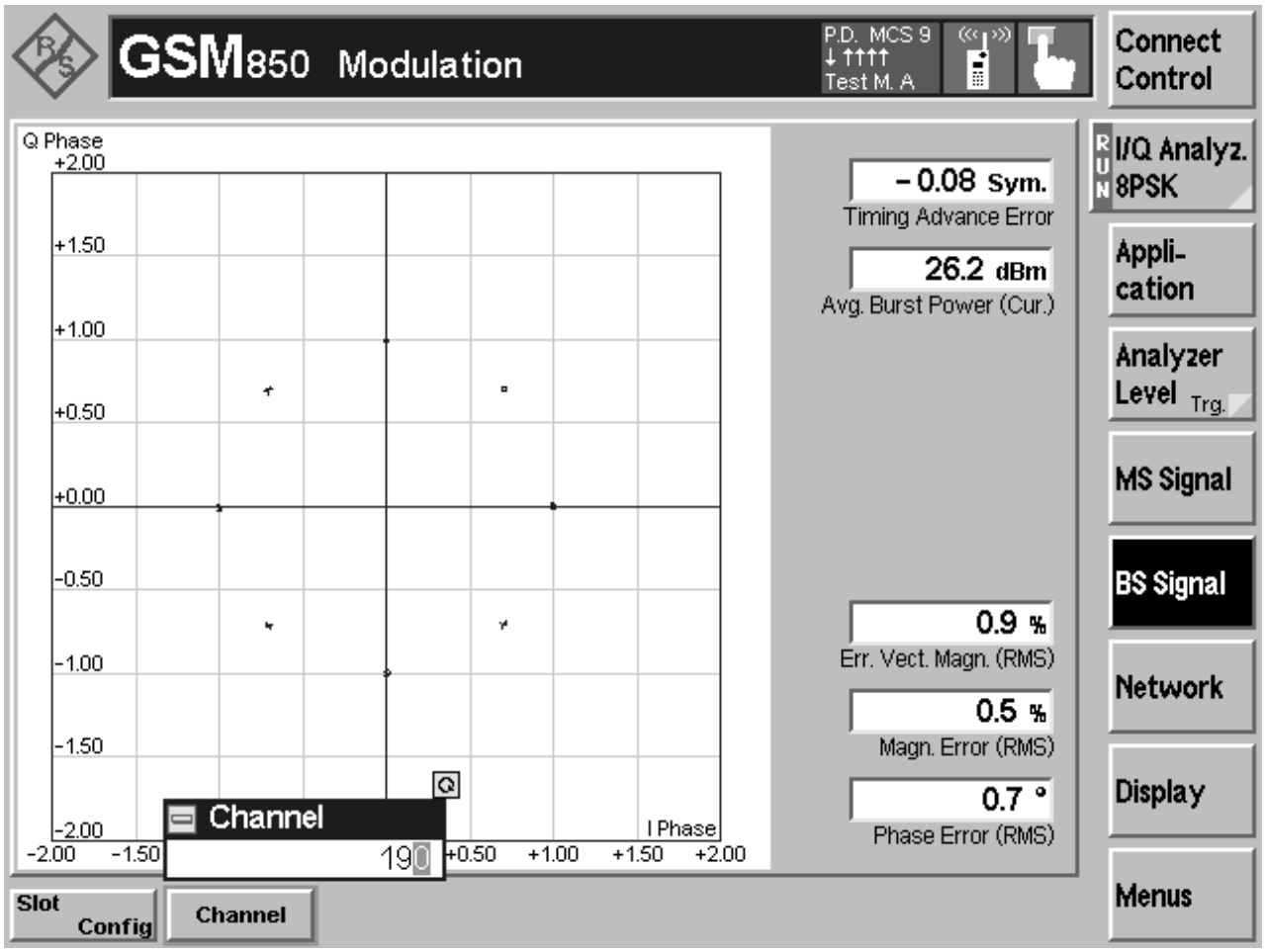
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

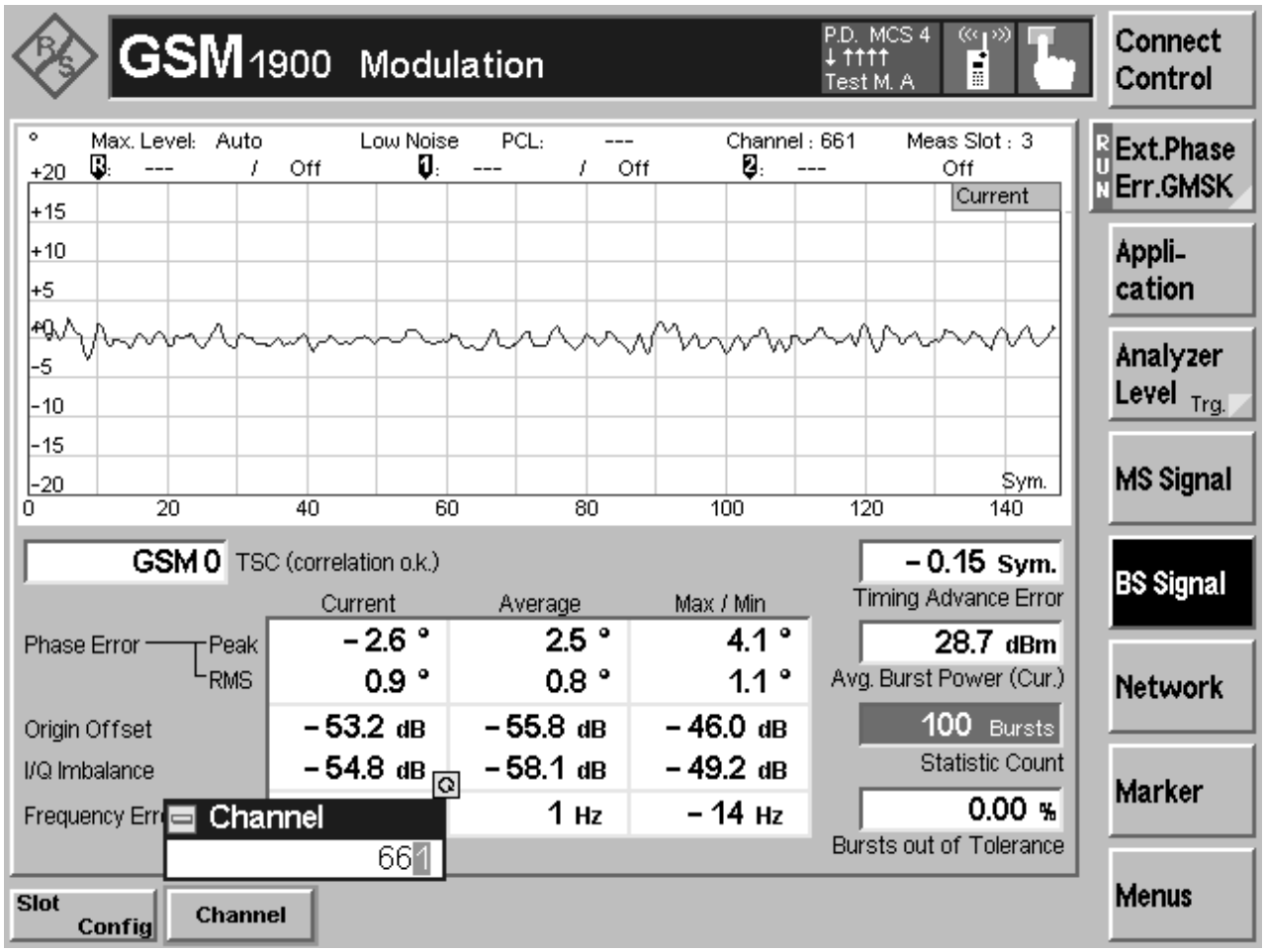
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM 1900

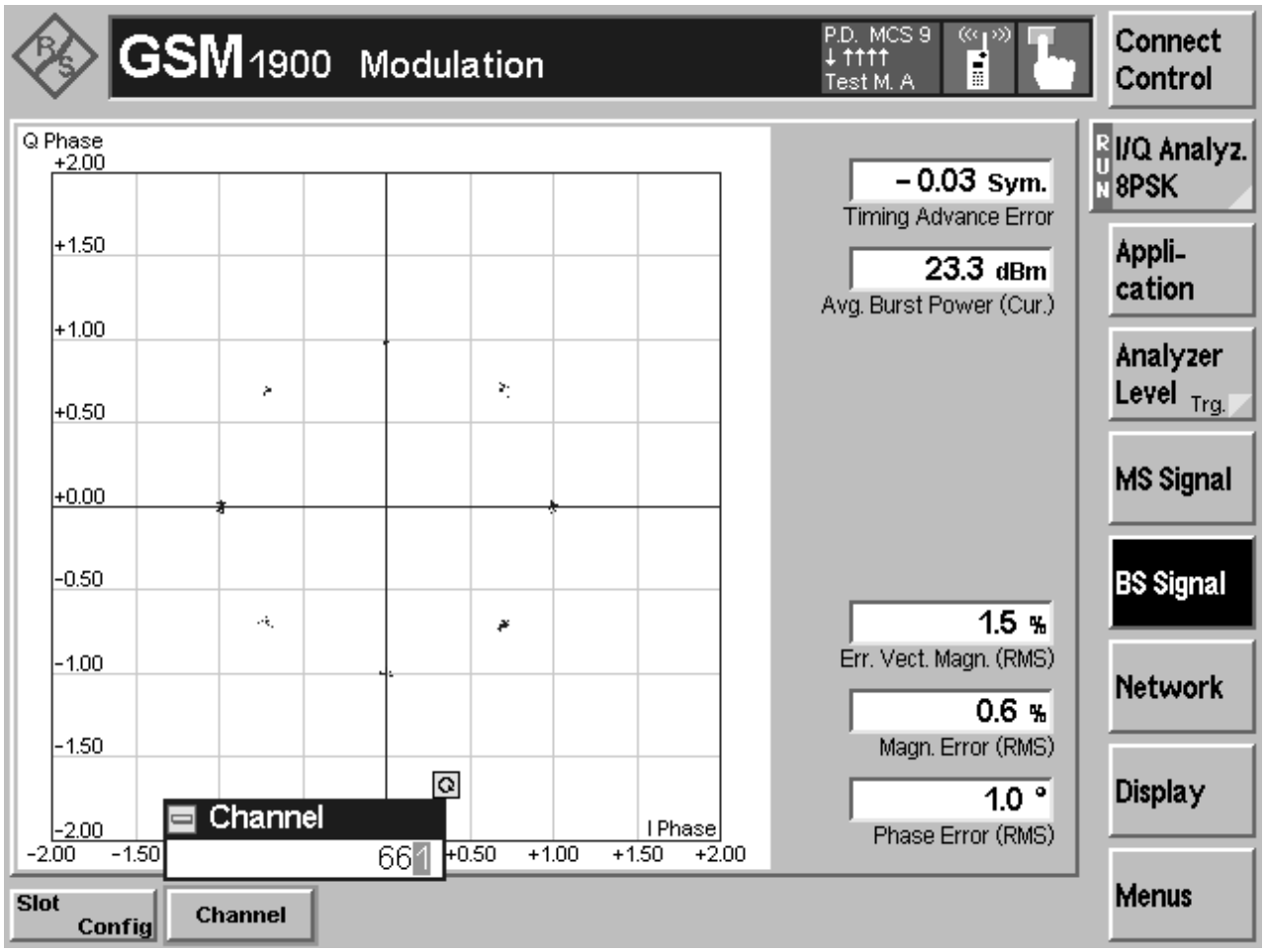
3.1.2.1 Test Mode = GSM/TM1

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

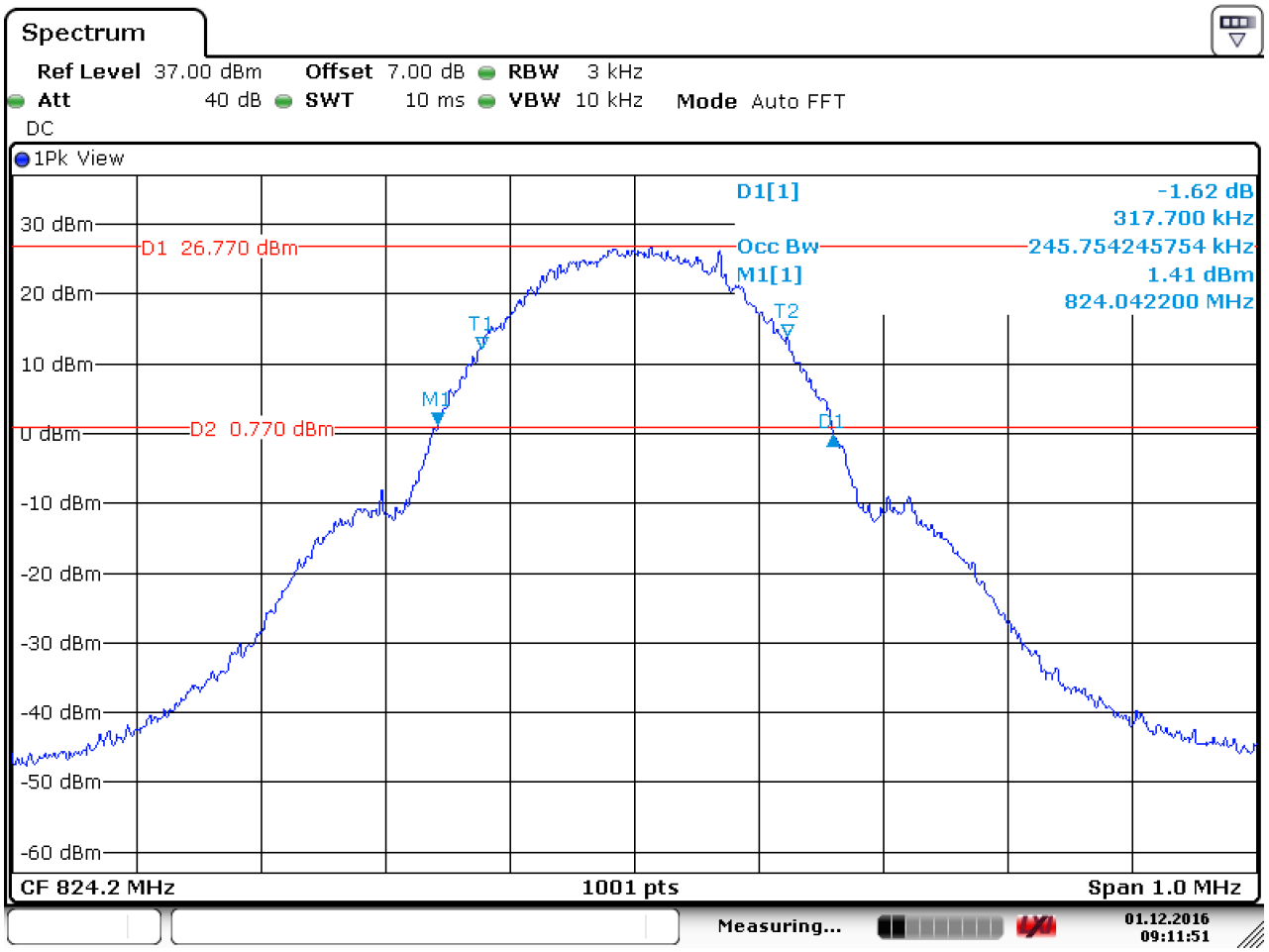
Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM 850	UMTS/TM1	LCH	245.75	317.70	PASS
		MCH	244.76	316.70	PASS
		HCH	243.76	314.70	PASS
	UMTS/TM2	LCH	239.76	314.70	PASS
		MCH	239.76	314.70	PASS
		HCH	239.76	314.70	PASS
GSM 1900	UMTS/TM1	LCH	243.76	312.70	PASS
		MCH	244.76	312.70	PASS
		HCH	244.76	312.70	PASS
	UMTS/TM2	LCH	244.76	314.70	PASS
		MCH	242.76	314.70	PASS
		HCH	242.76	314.70	PASS

4.1 For GSM

4.1.1 Test Band = GSM 850

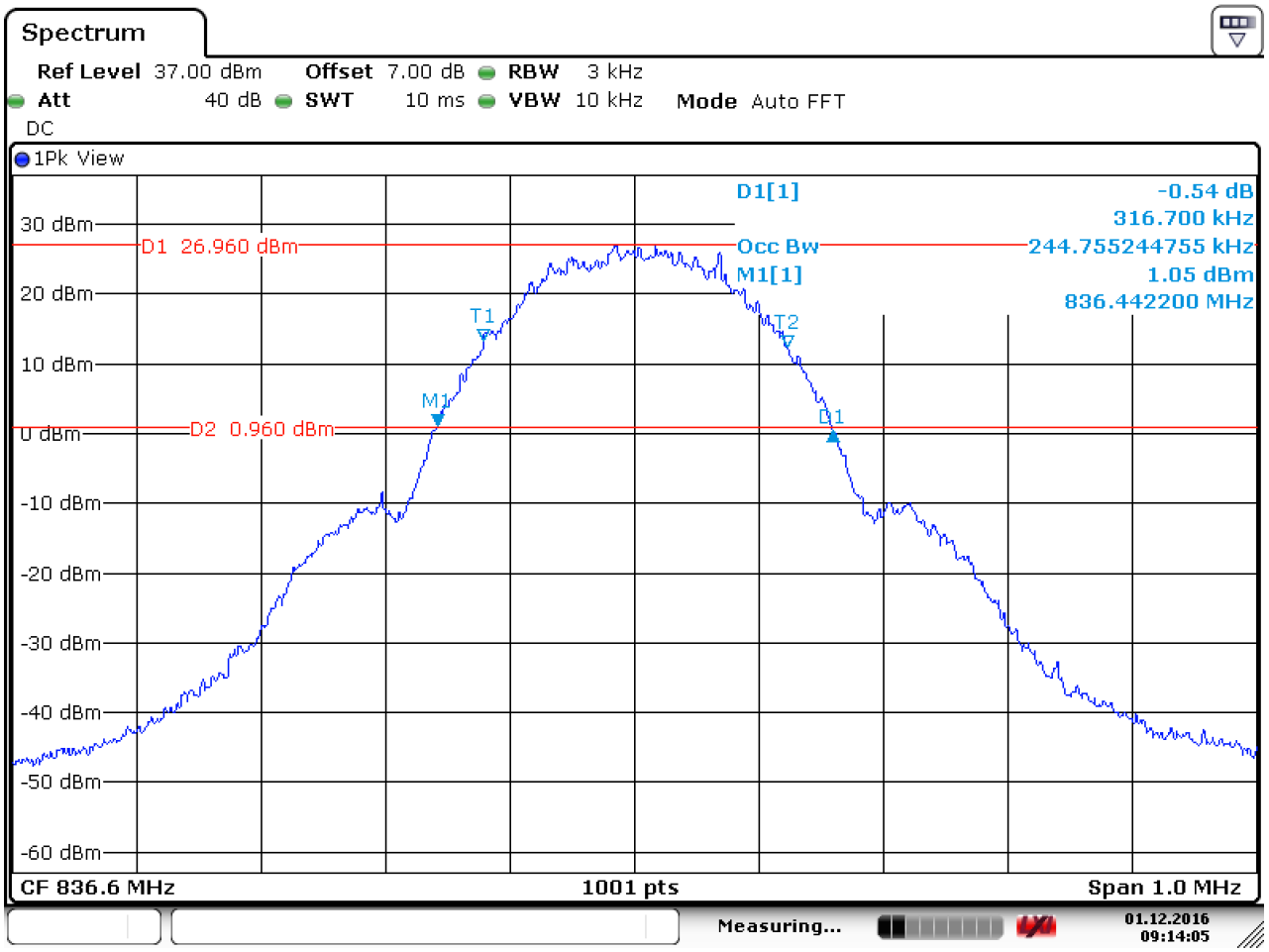
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



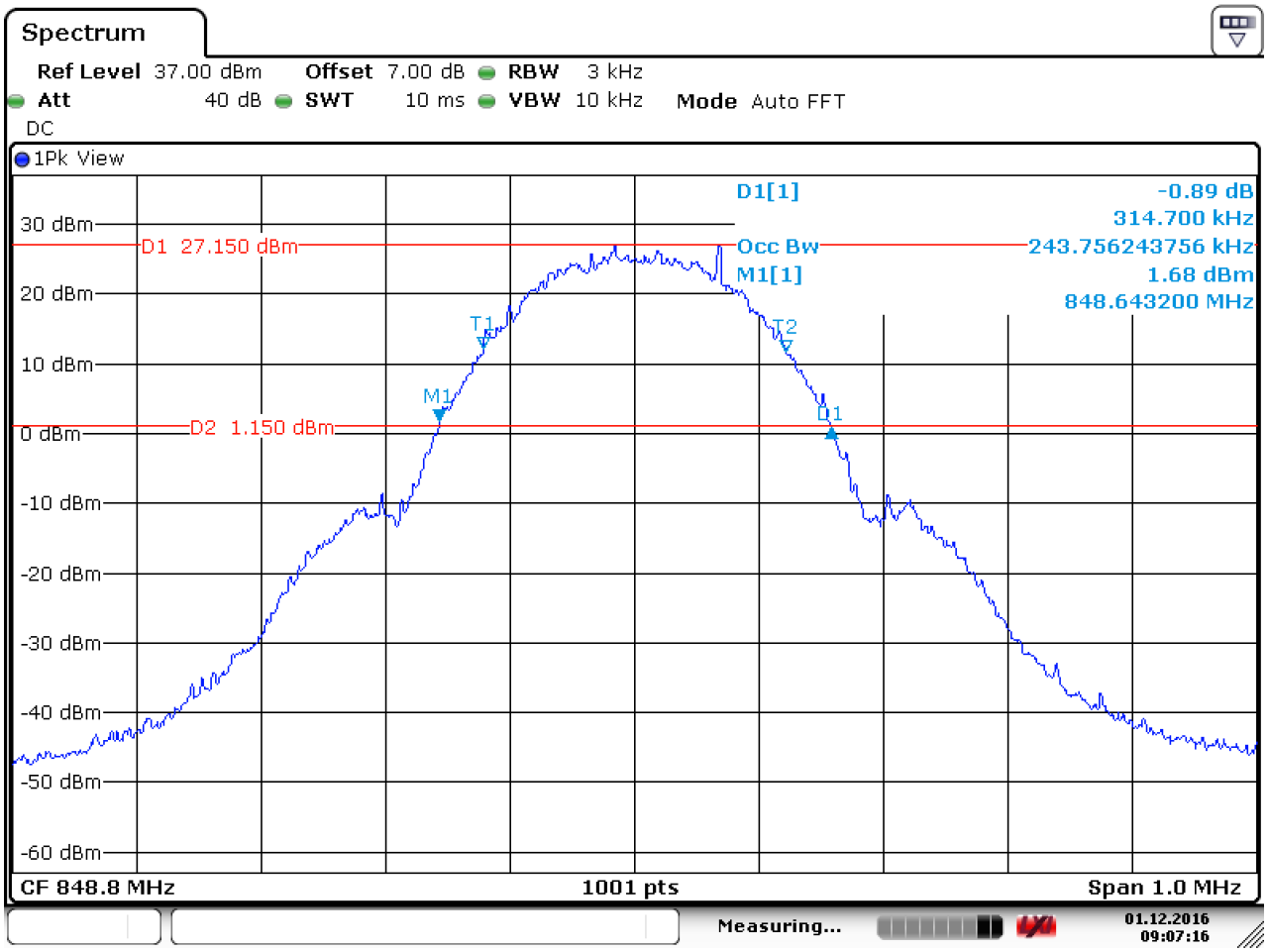
Date: 1.DEC.2016 09:11:51

4.1.1.1.2 Test Channel = MCH



Date: 1.DEC.2016 09:14:05

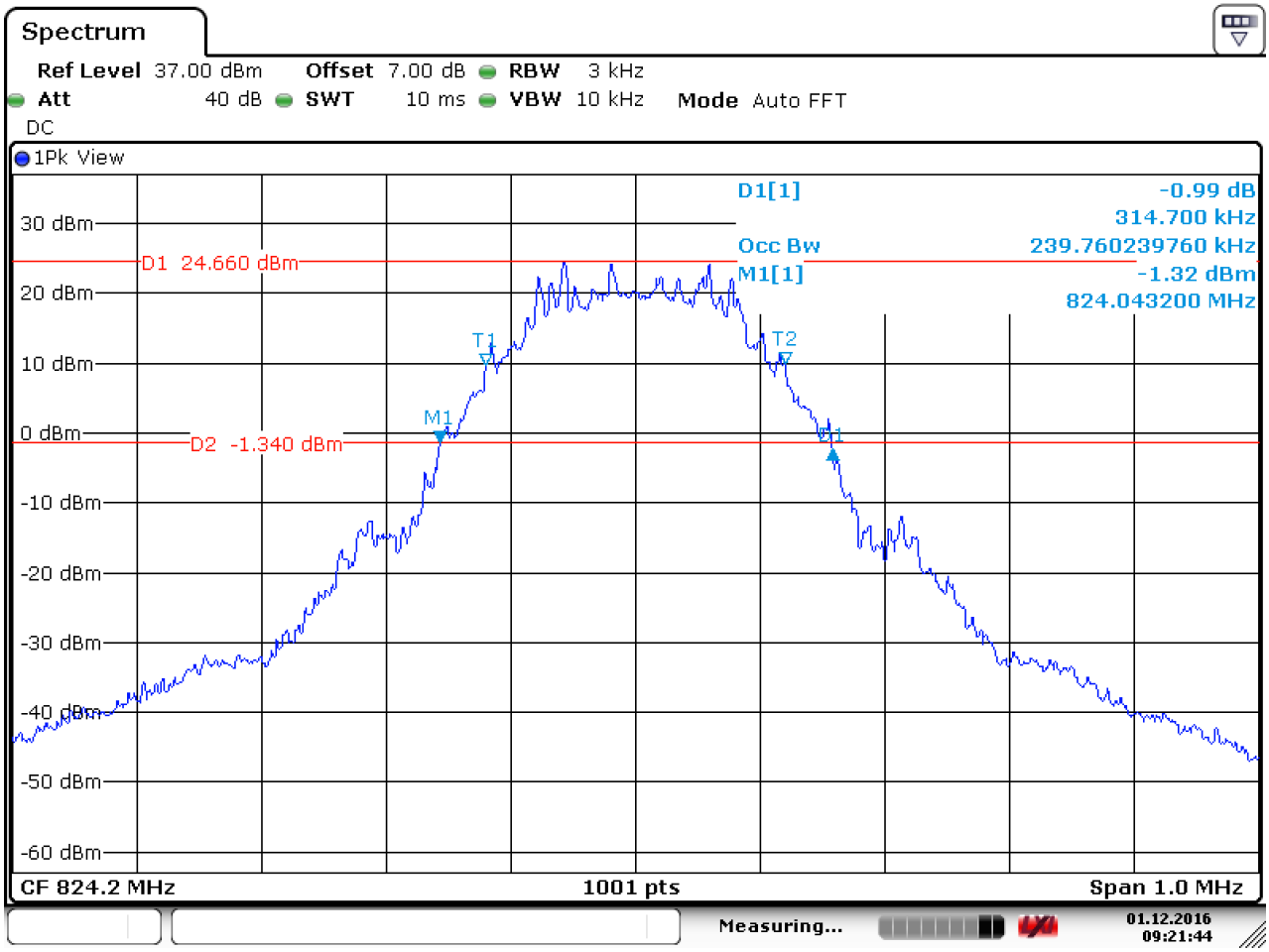
4.1.1.1.3 Test Channel = HCH



Date: 1.DEC.2016 09:07:17

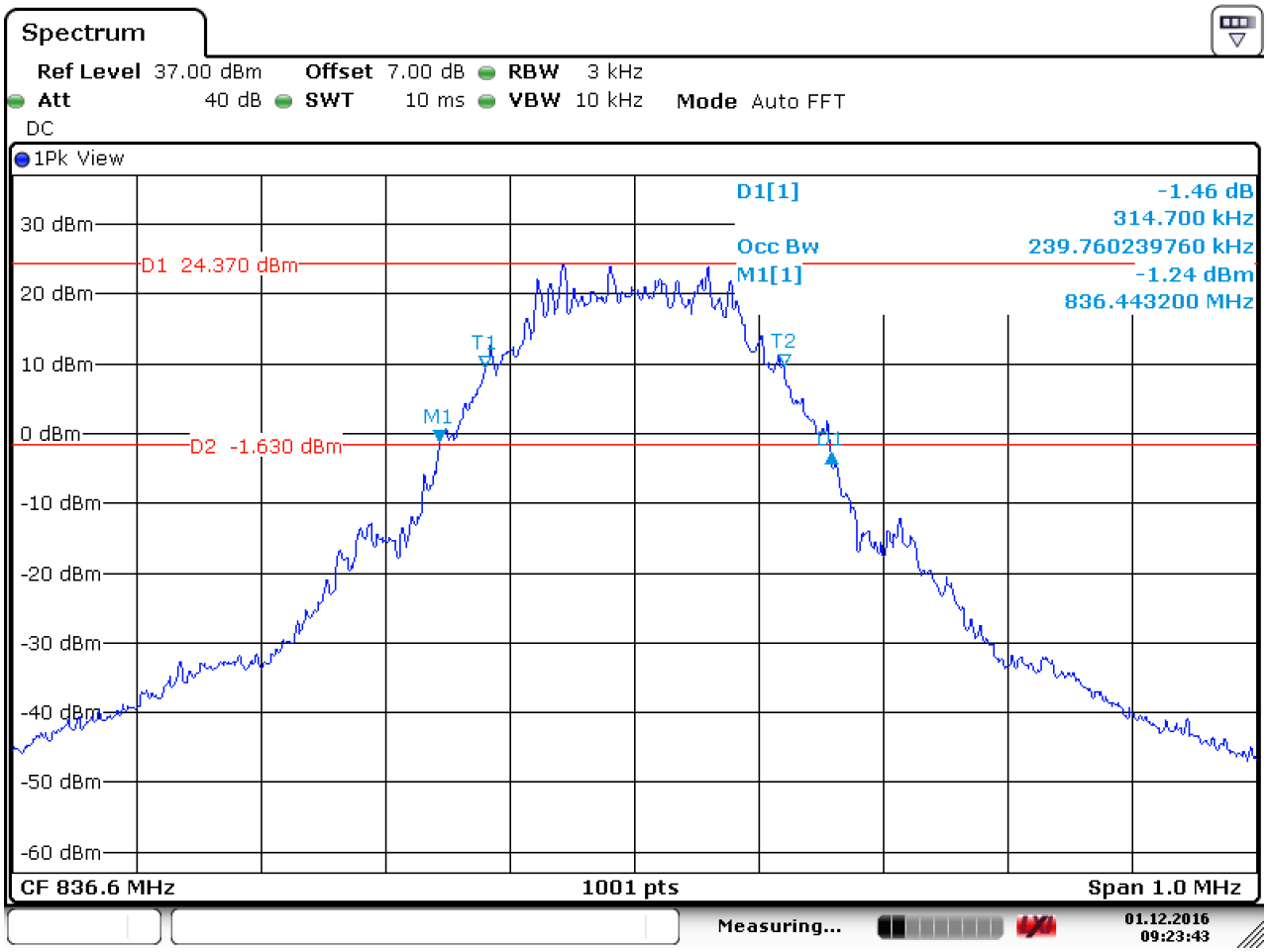
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



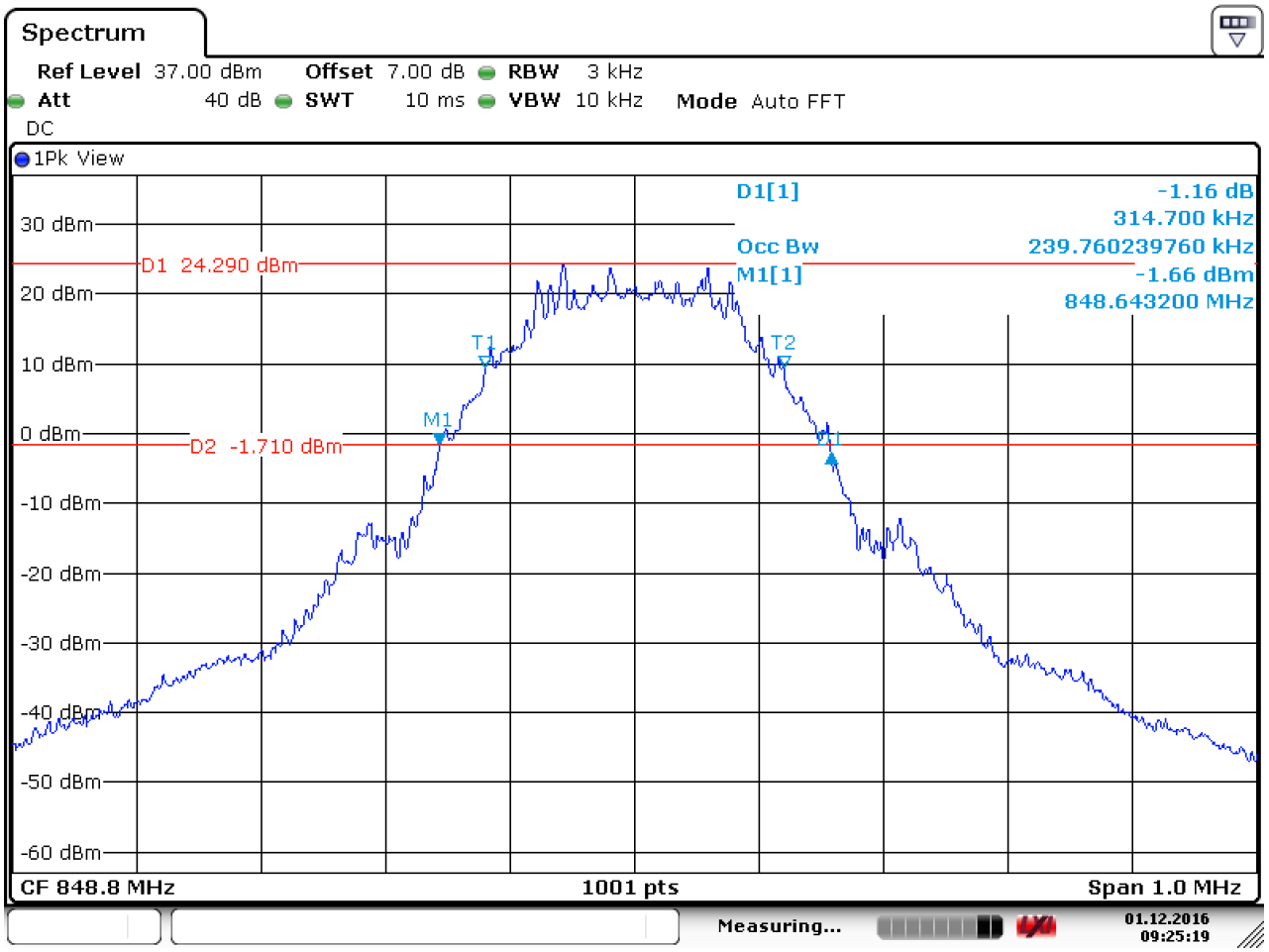
Date: 1.DEC.2016 09:21:44

4.1.1.2.2 Test Channel = MCH



Date: 1.DEC.2016 09:23:44

4.1.1.2.3 Test Channel = HCH

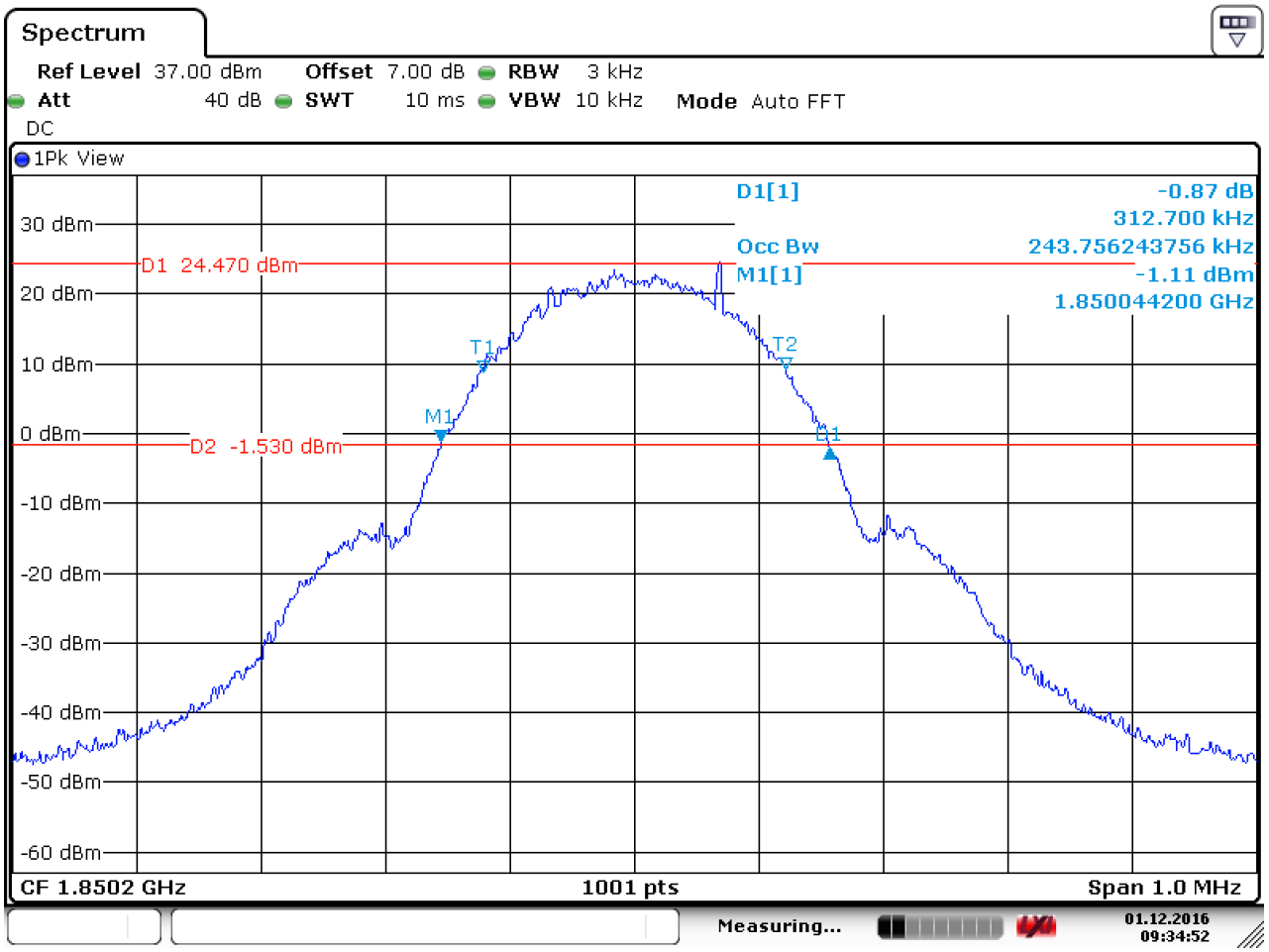


Date: 1.DEC.2016 09:25:20

4.1.2 Test Band = GSM 1900

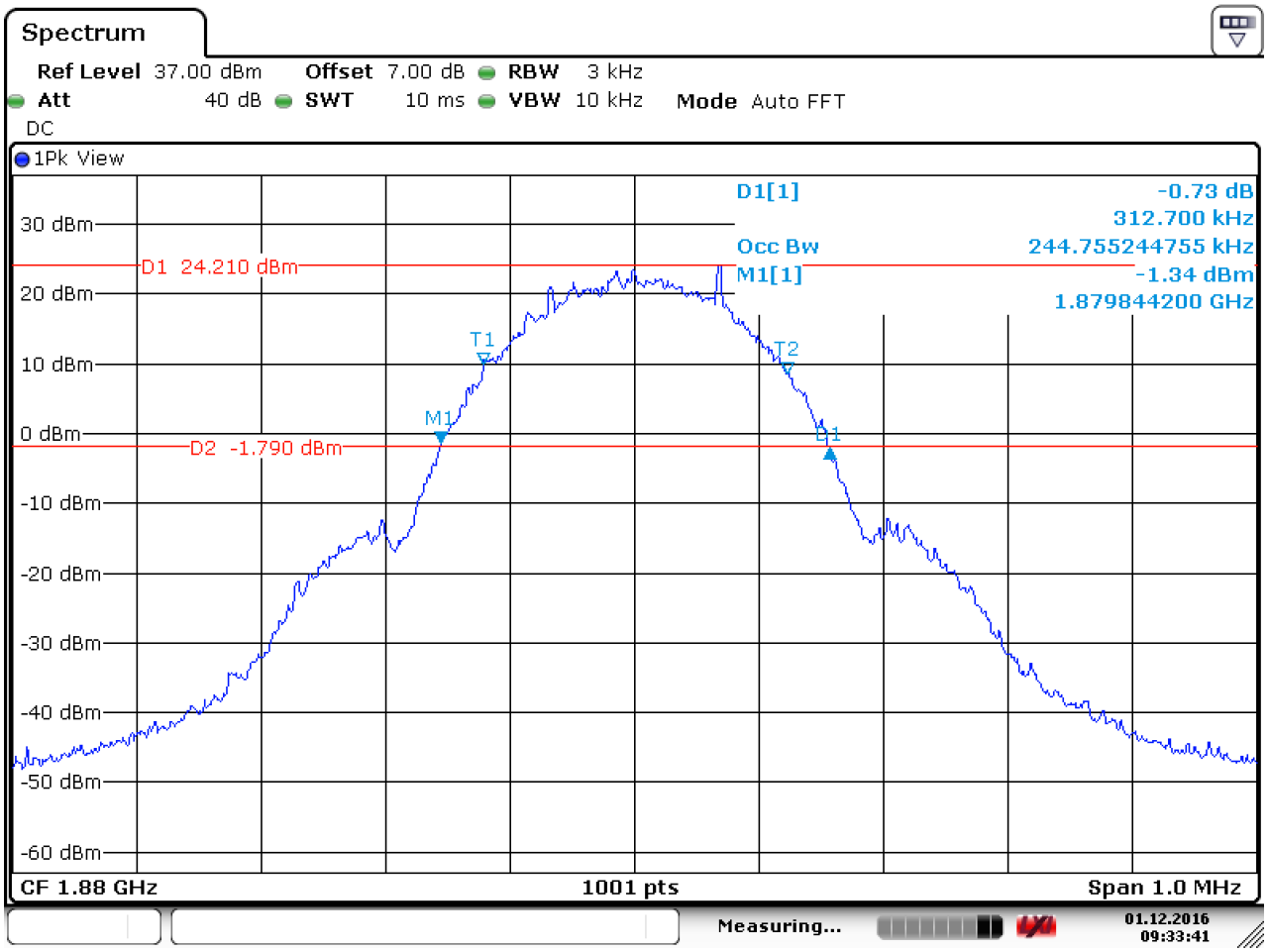
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



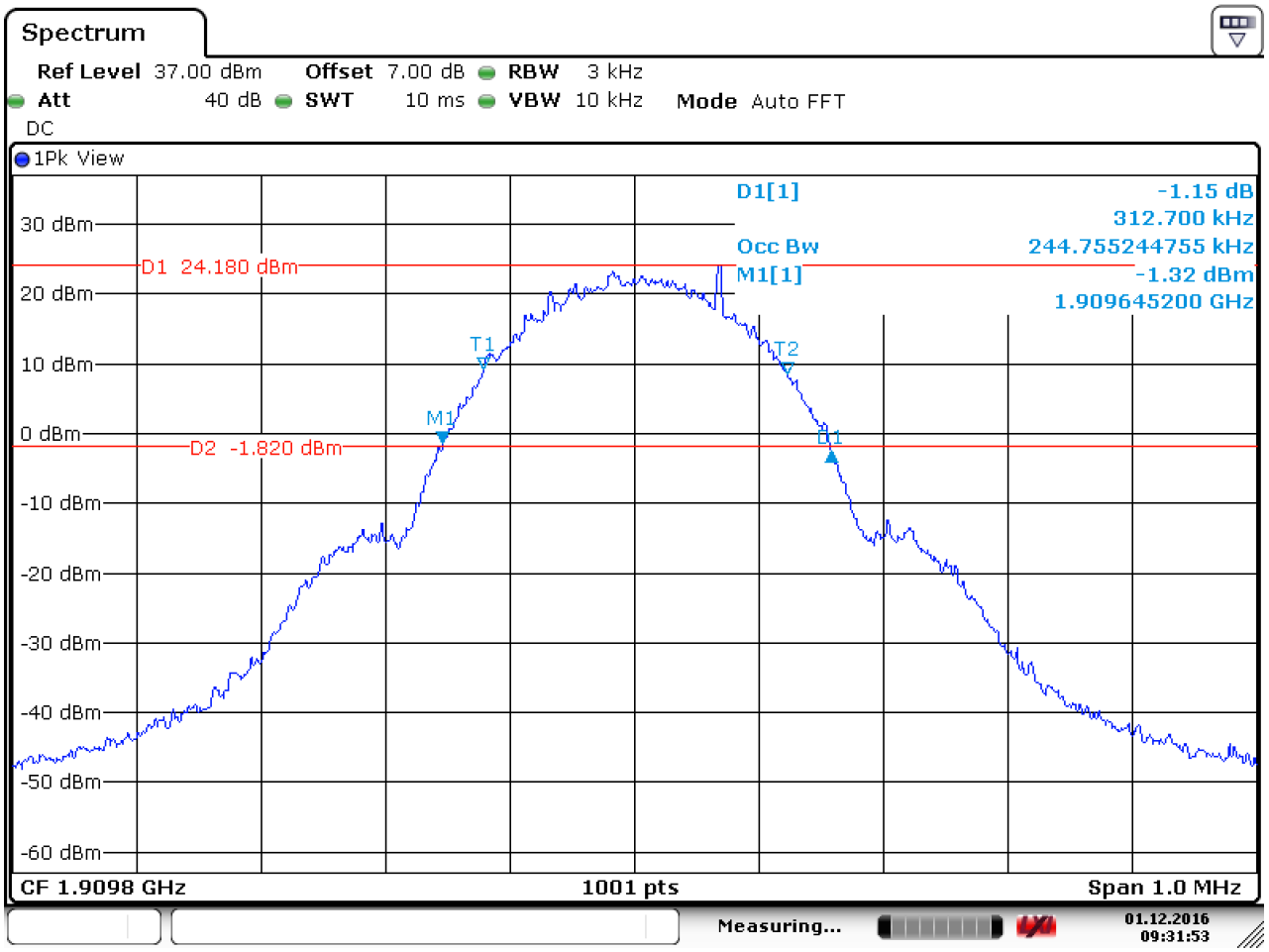
Date: 1.DEC.2016 09:34:53

4.1.2.1.2 Test Channel = MCH



Date: 1.DEC.2016 09:33:42

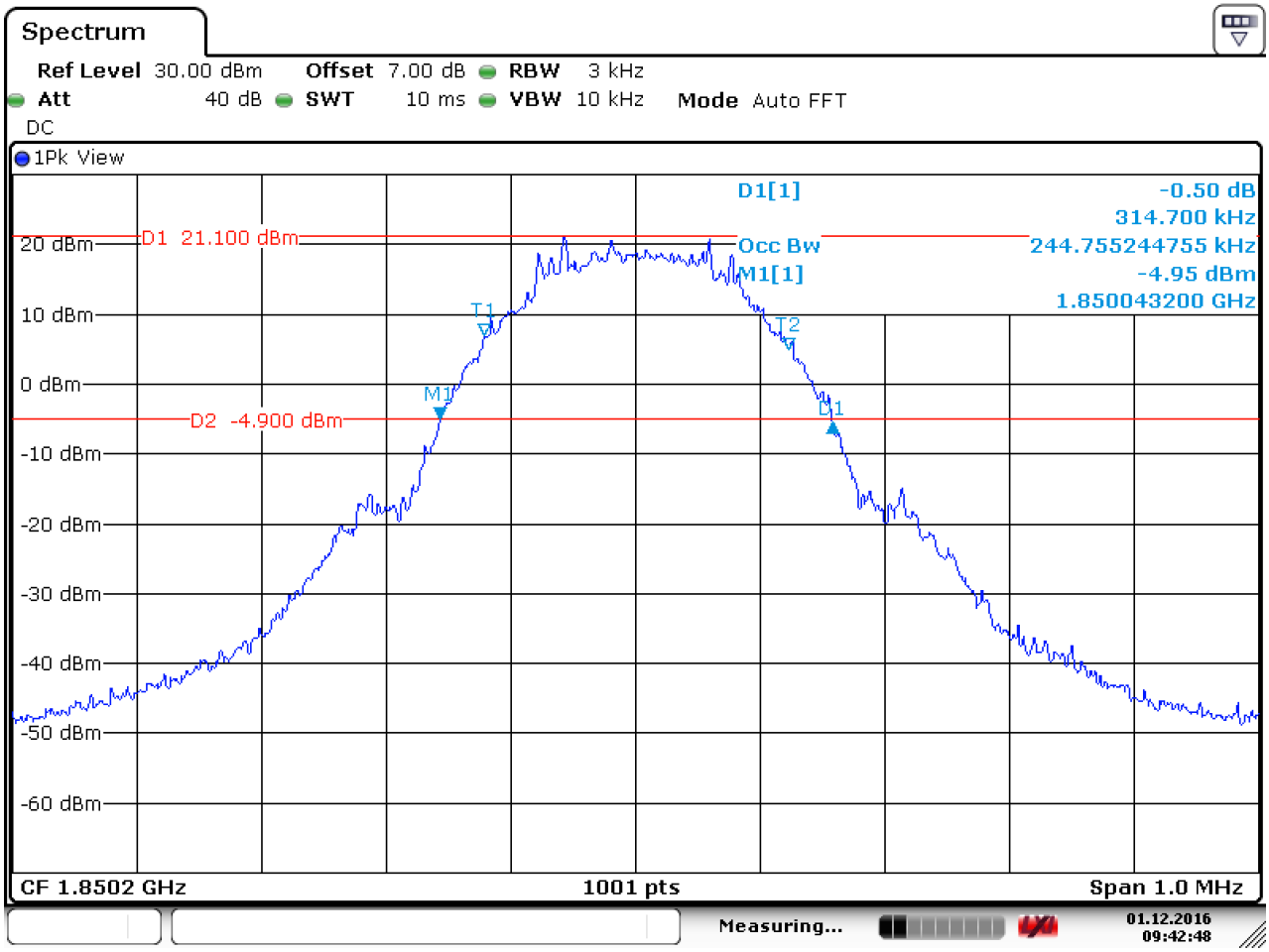
4.1.2.1.3 Test Channel = HCH



Date: 1.DEC.2016 09:31:53

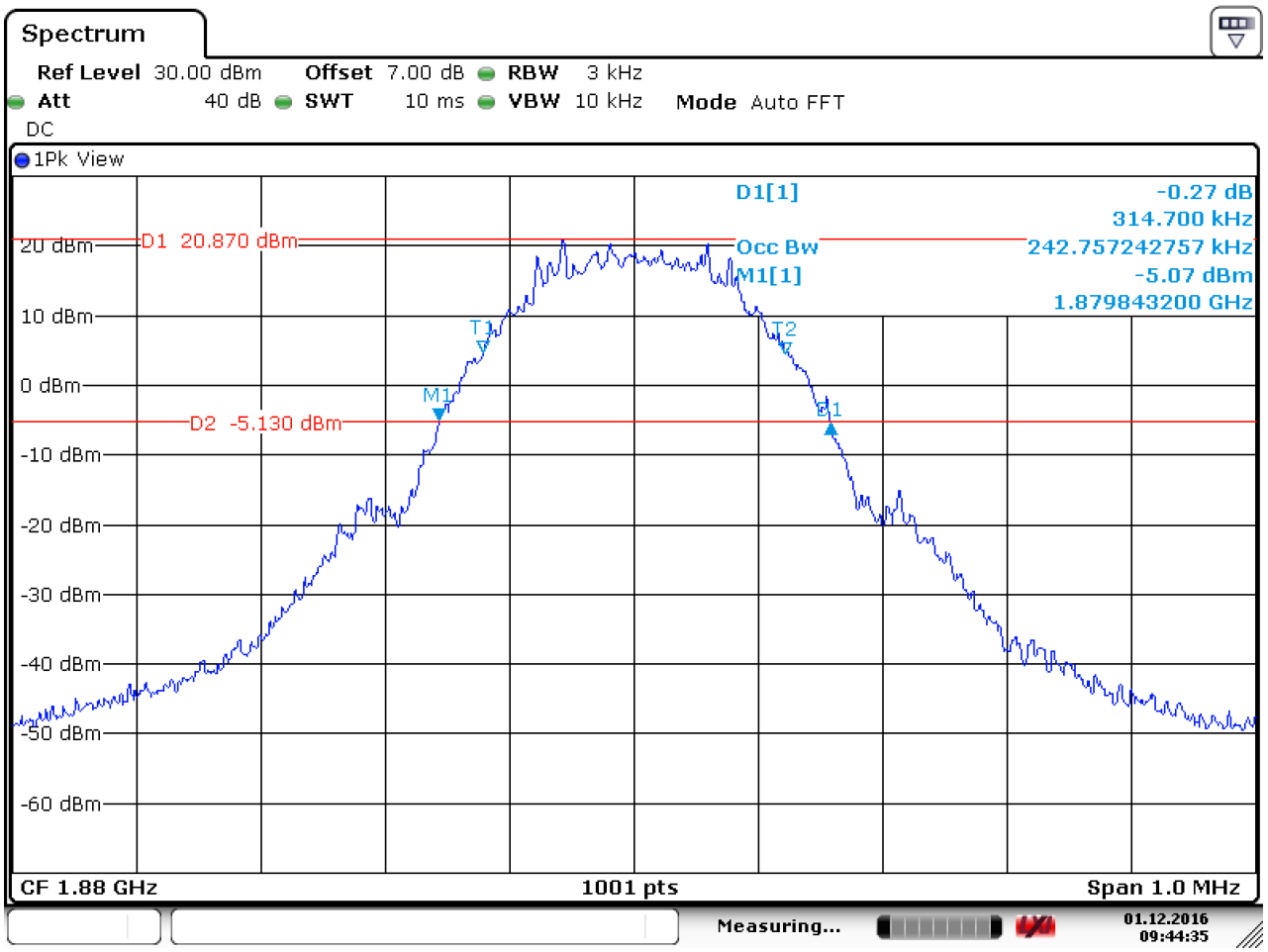
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



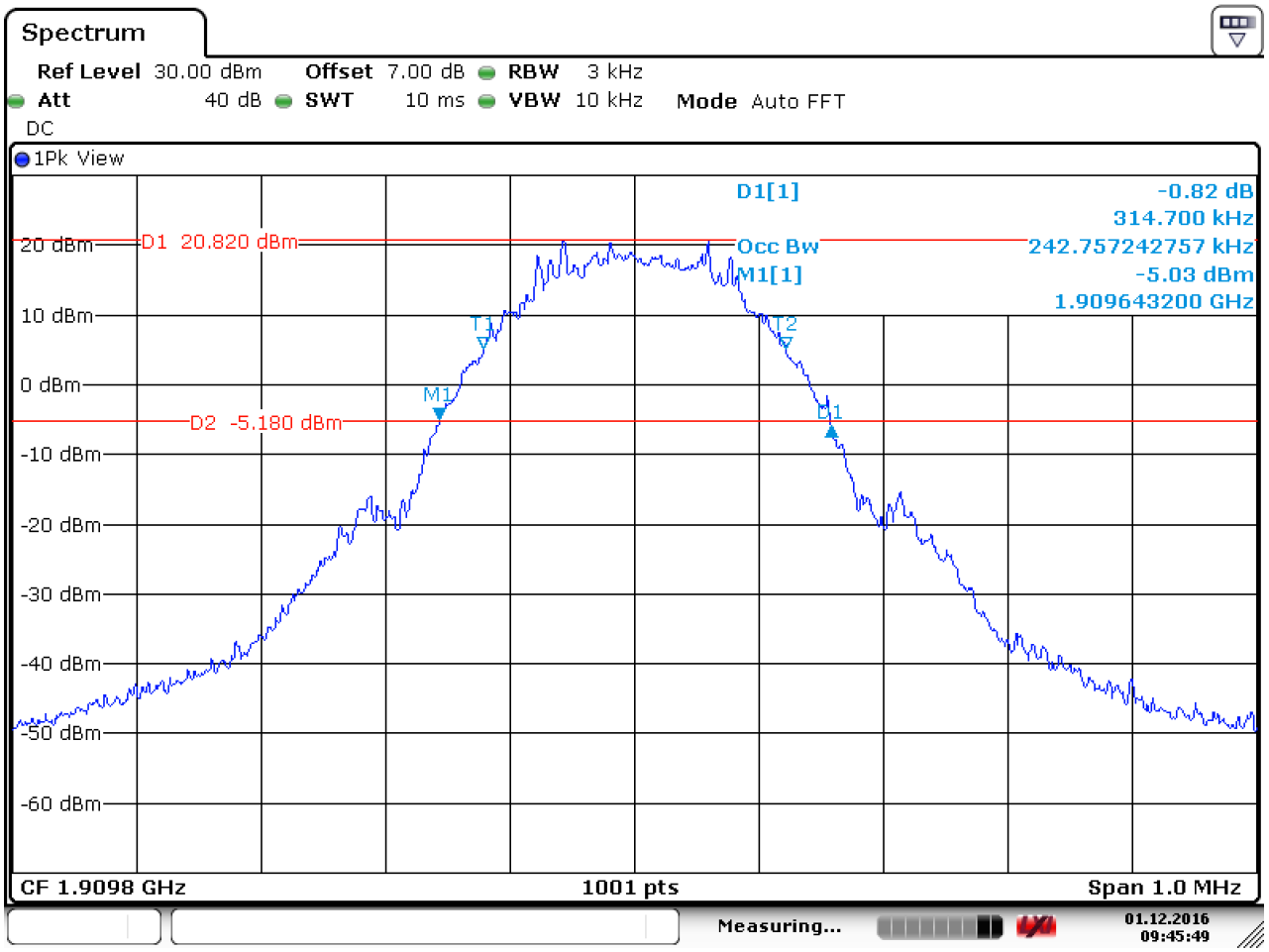
Date: 1.DEC.2016 09:42:48

4.1.2.2.2 Test Channel = MCH



Date: 1.DEC.2016 09:44:35

4.1.2.2.3 Test Channel = HCH



Date: 1.DEC.2016 09:45:50

5 Band Edges Compliance

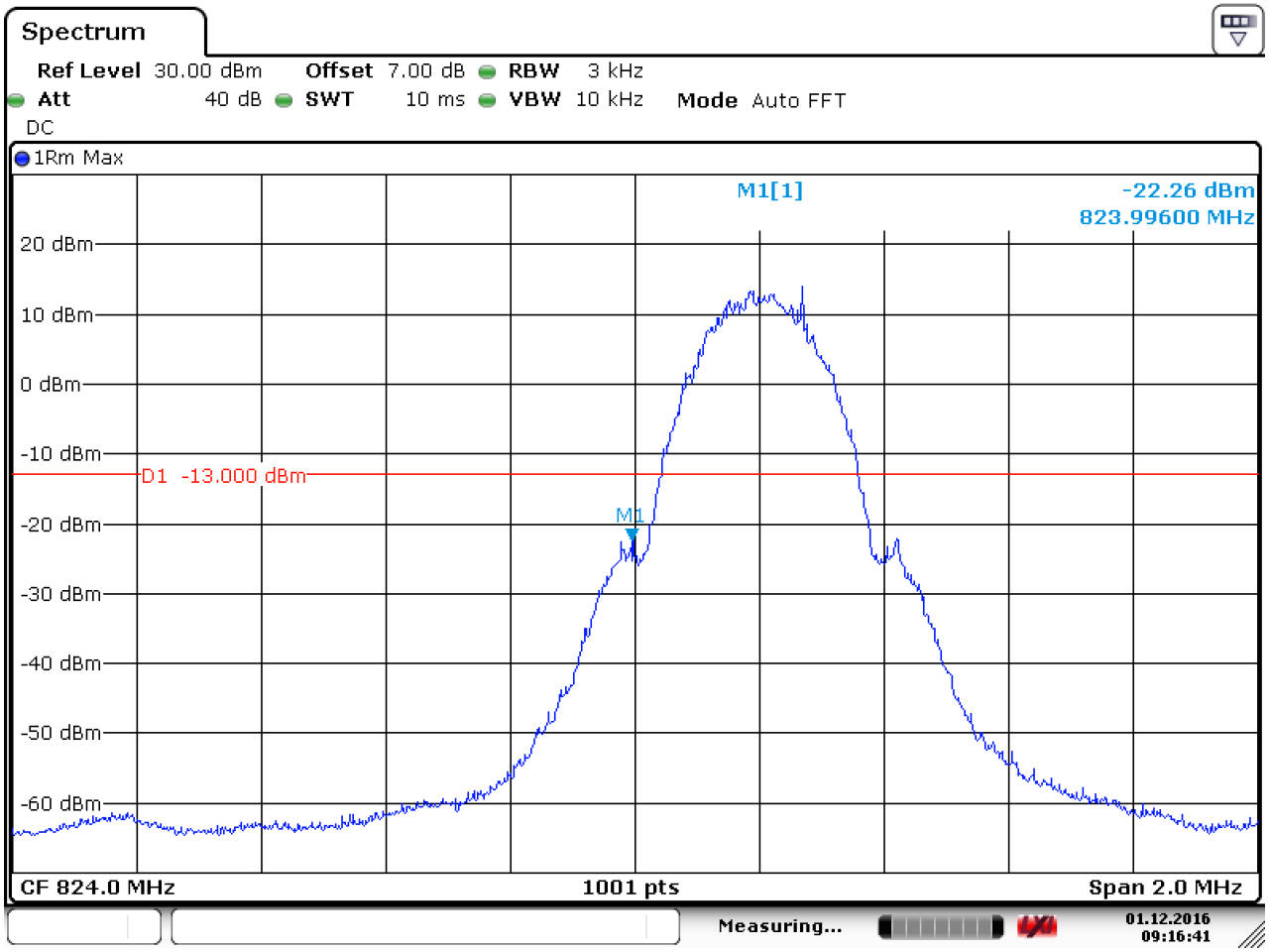
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM 850

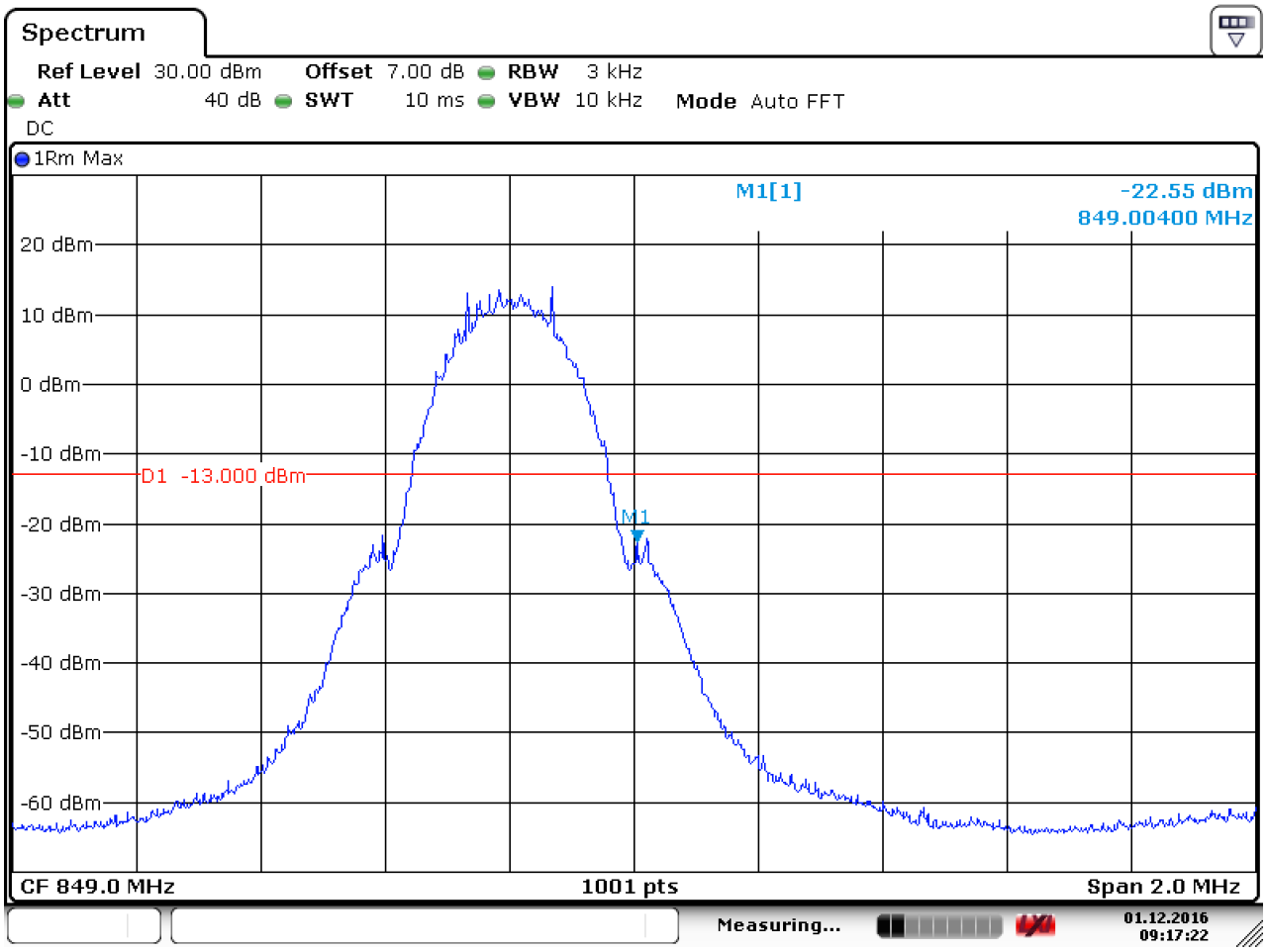
5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



Date: 1.DEC.2016 09:16:42

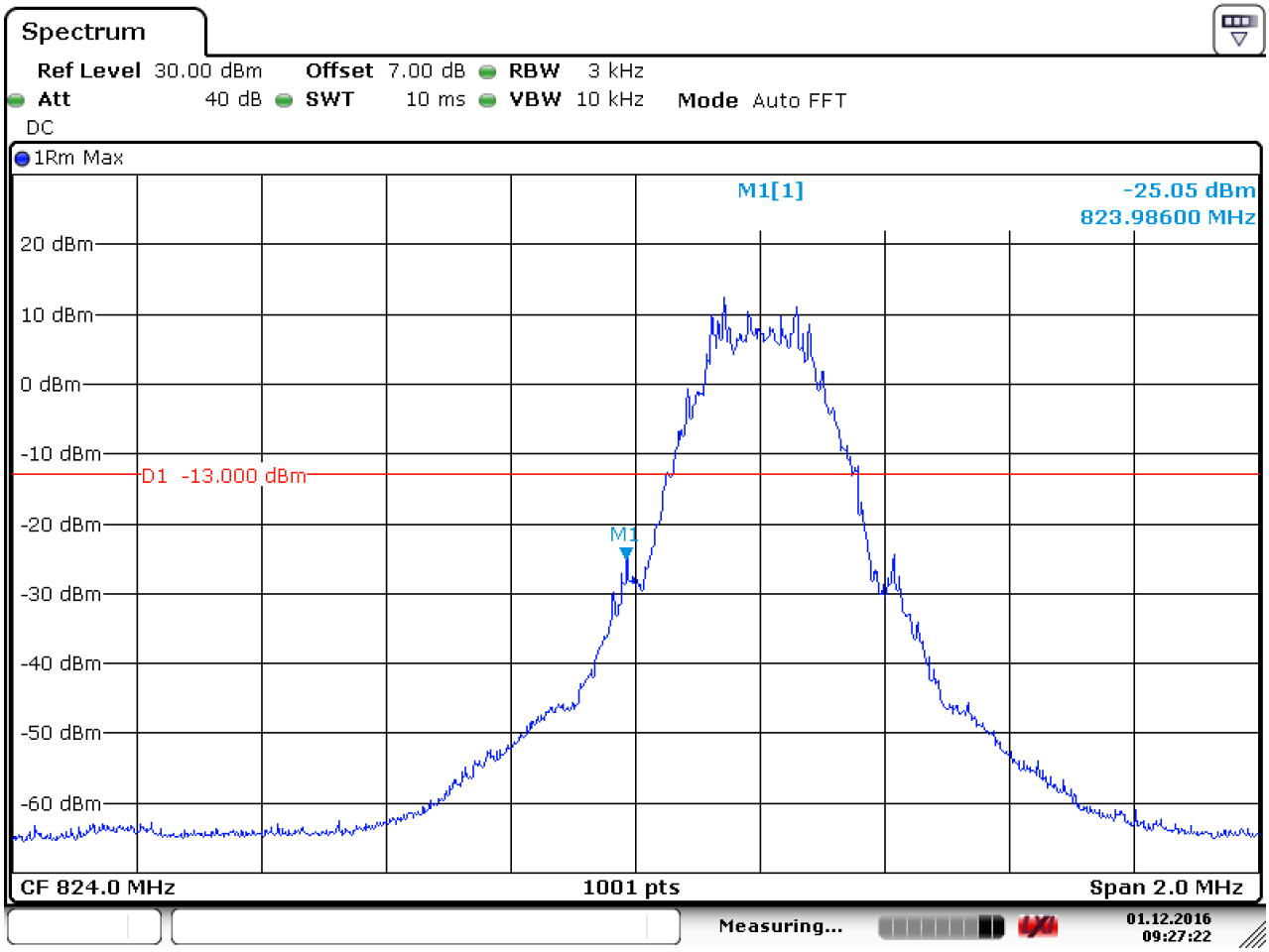
5.1.1.1.2 Test Channel = HCH



Date: 1.DEC.2016 09:17:22

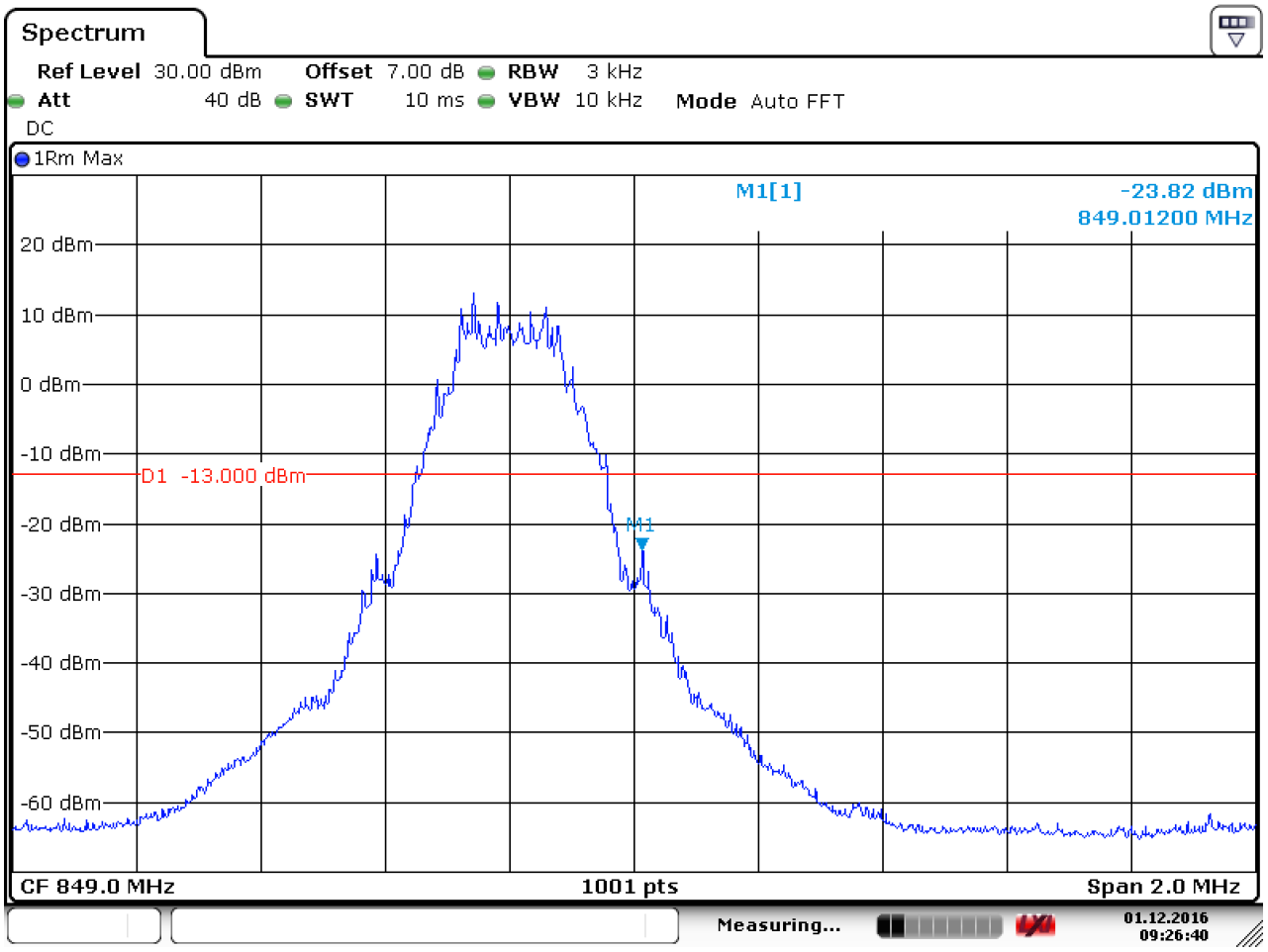
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



Date: 1.DEC.2016 09:27:23

5.1.1.2.2 Test Channel = HCH

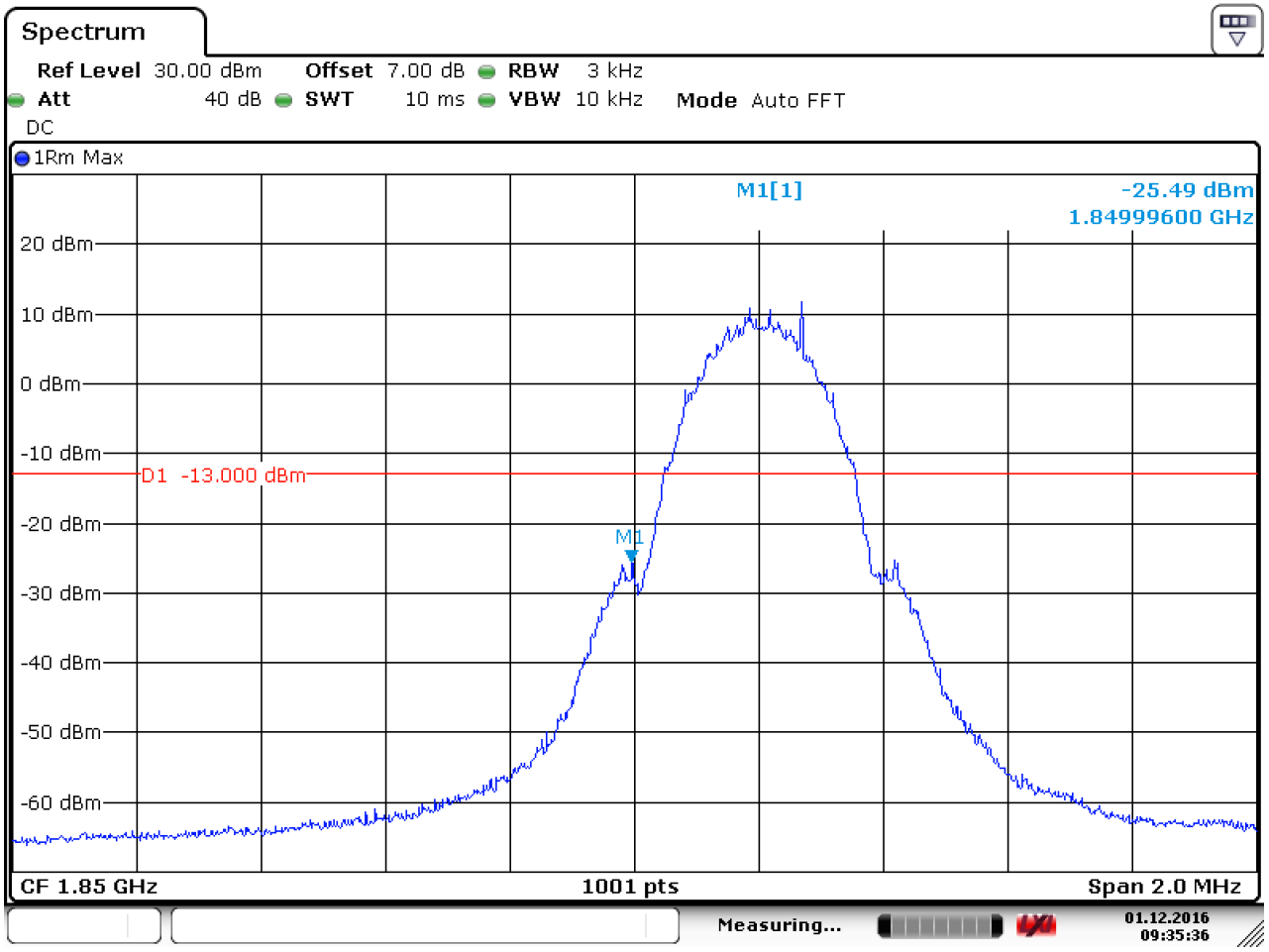


Date: 1.DEC.2016 09:26:41

5.1.2 Test Band = GSM 1900

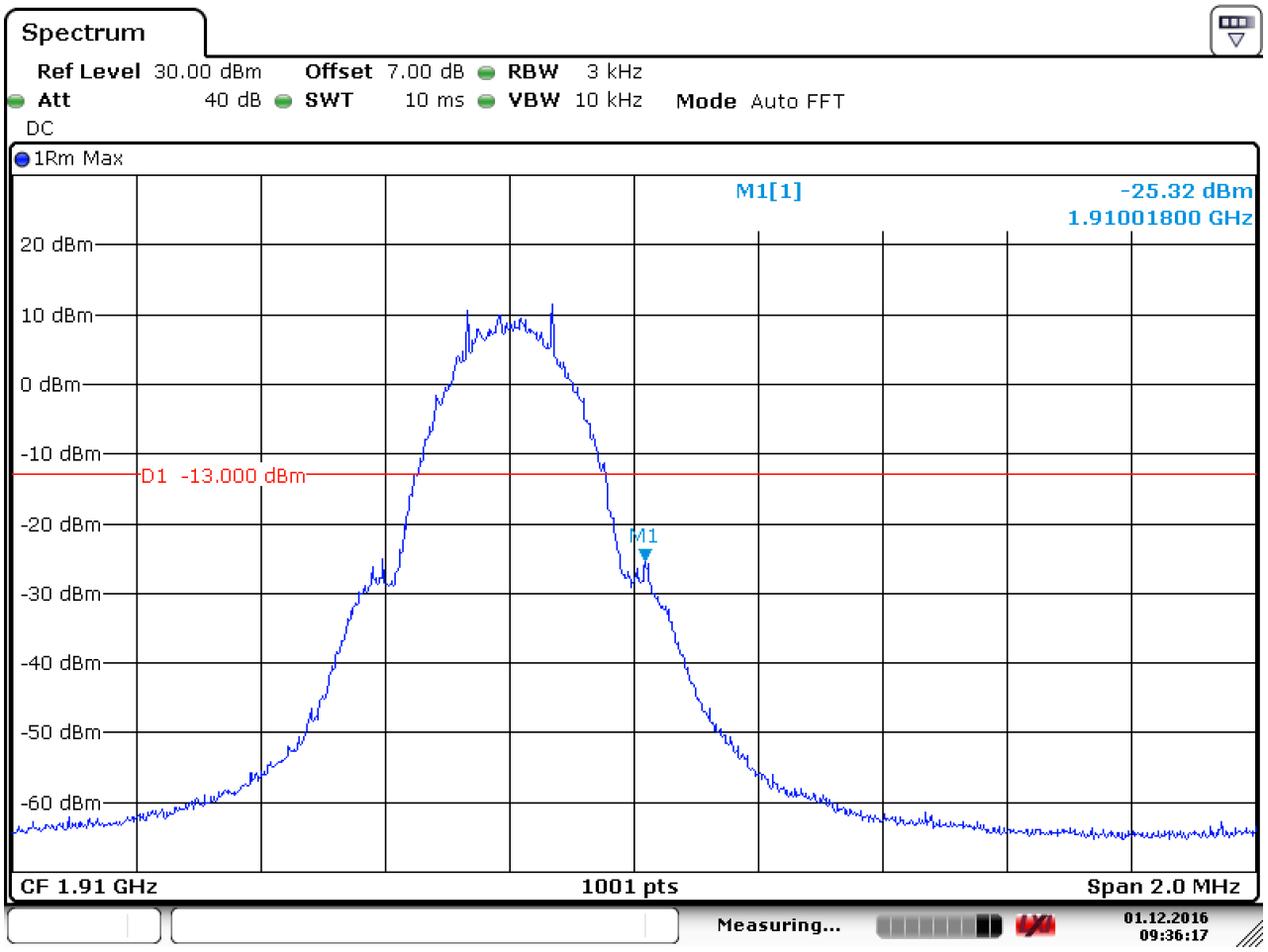
5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



Date: 1.DEC.2016 09:35:37

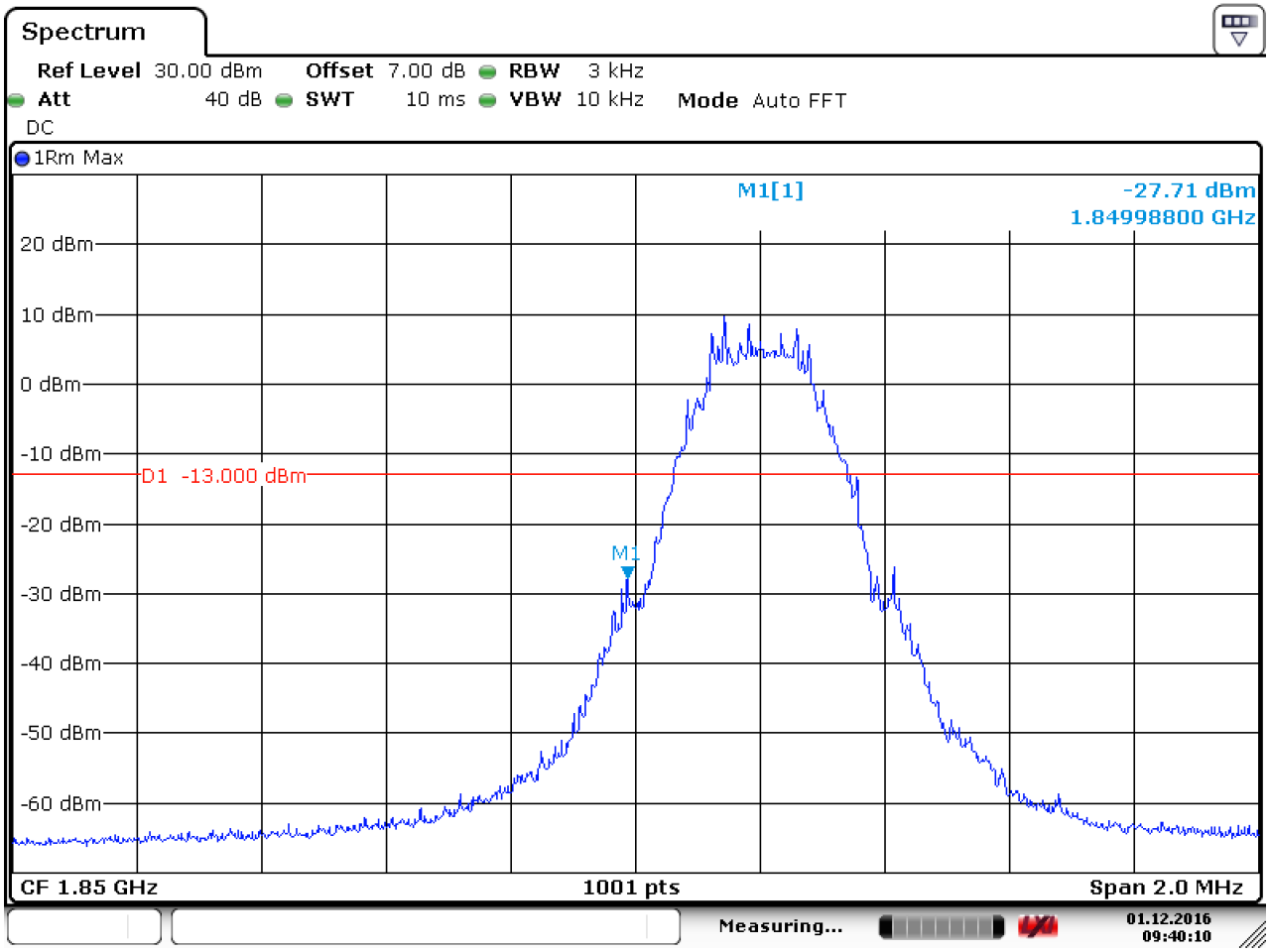
5.1.2.1.2 Test Channel = HCH



Date: 1.DEC.2016 09:36:18

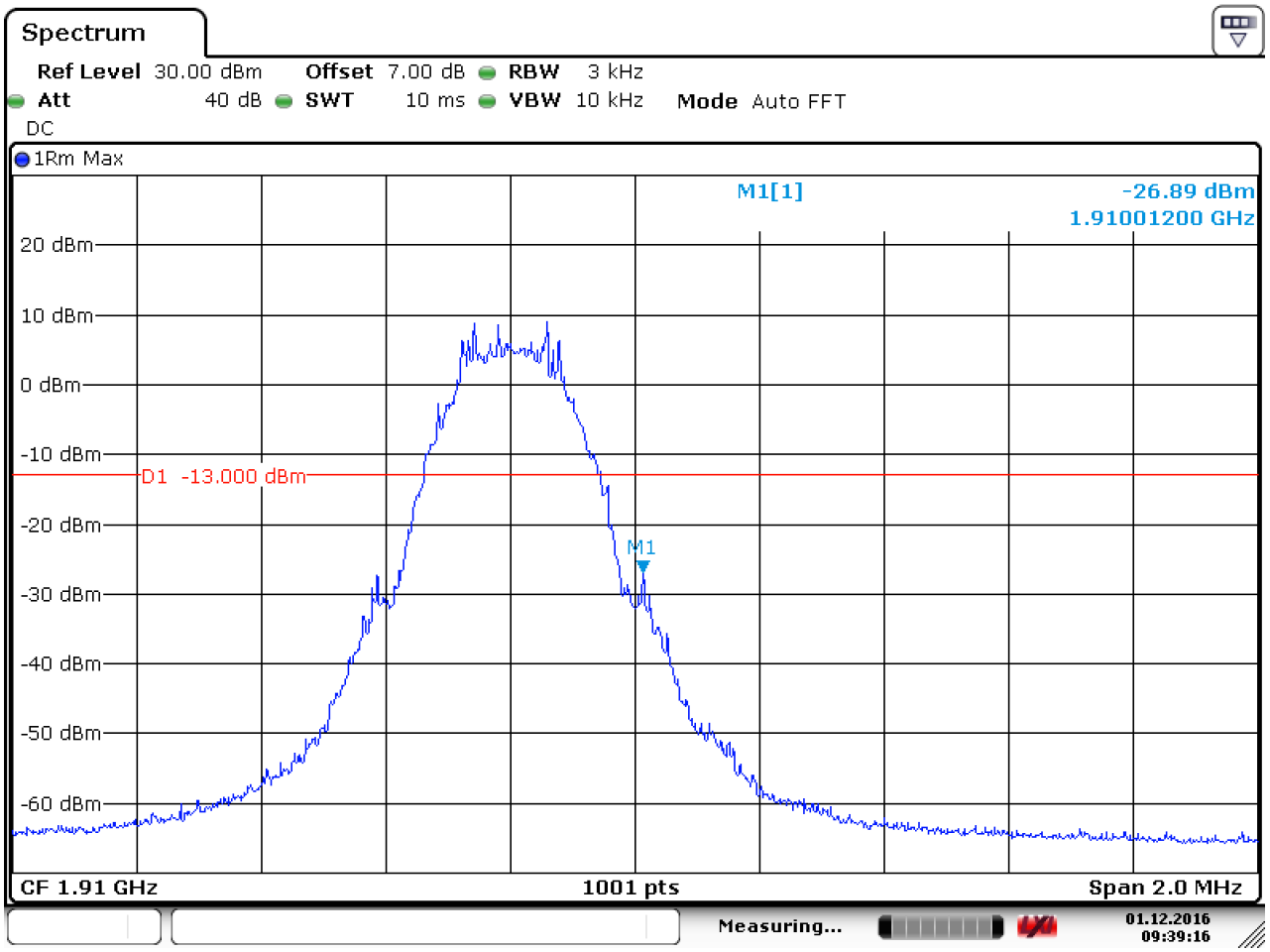
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



Date: 1.DEC.2016 09:40:10

5.1.2.2.2 Test Channel = HCH



Date: 1.DEC.2016 09:39:16

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.

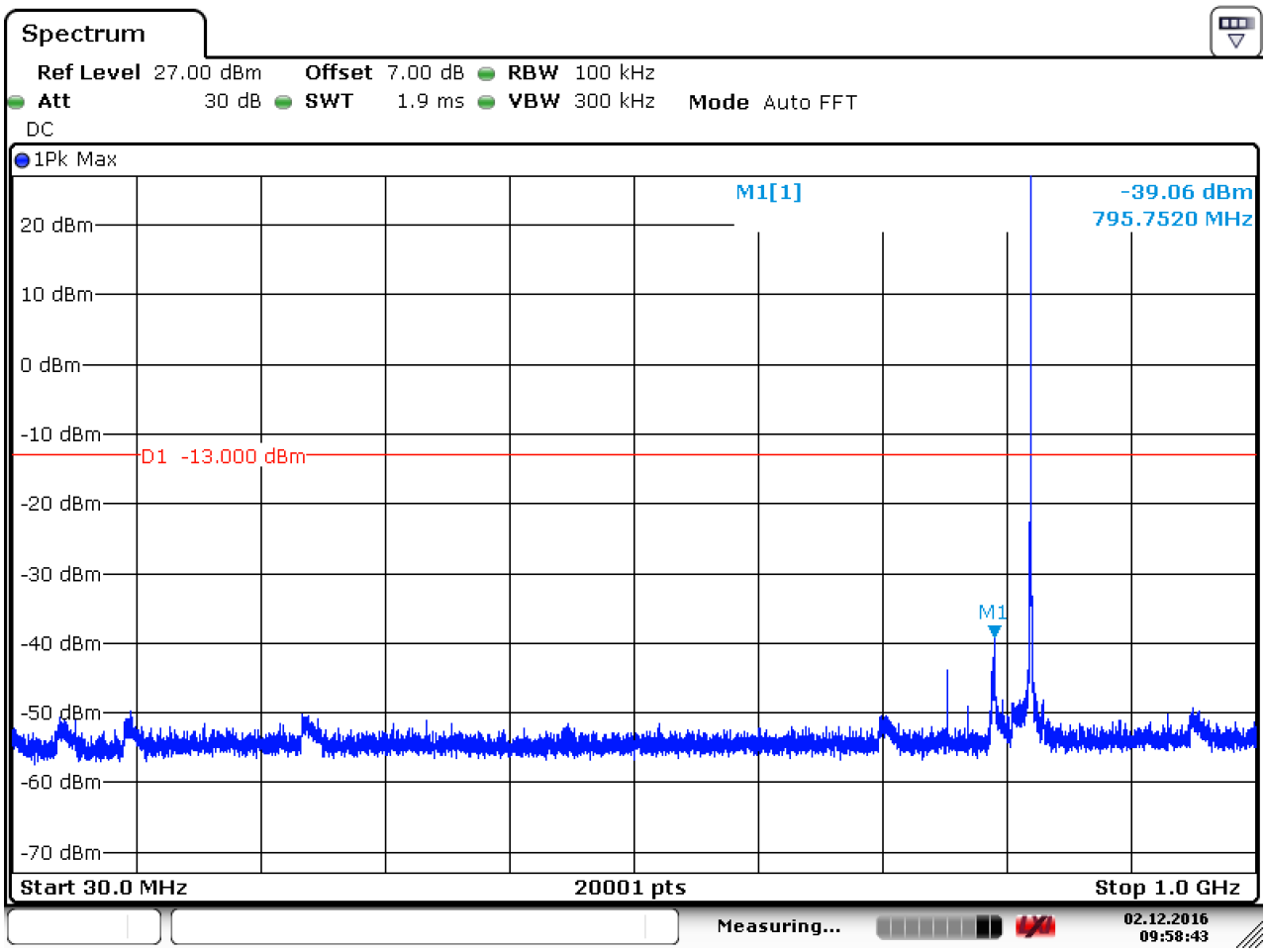
Part I - Test Plots

6.1 For GSM

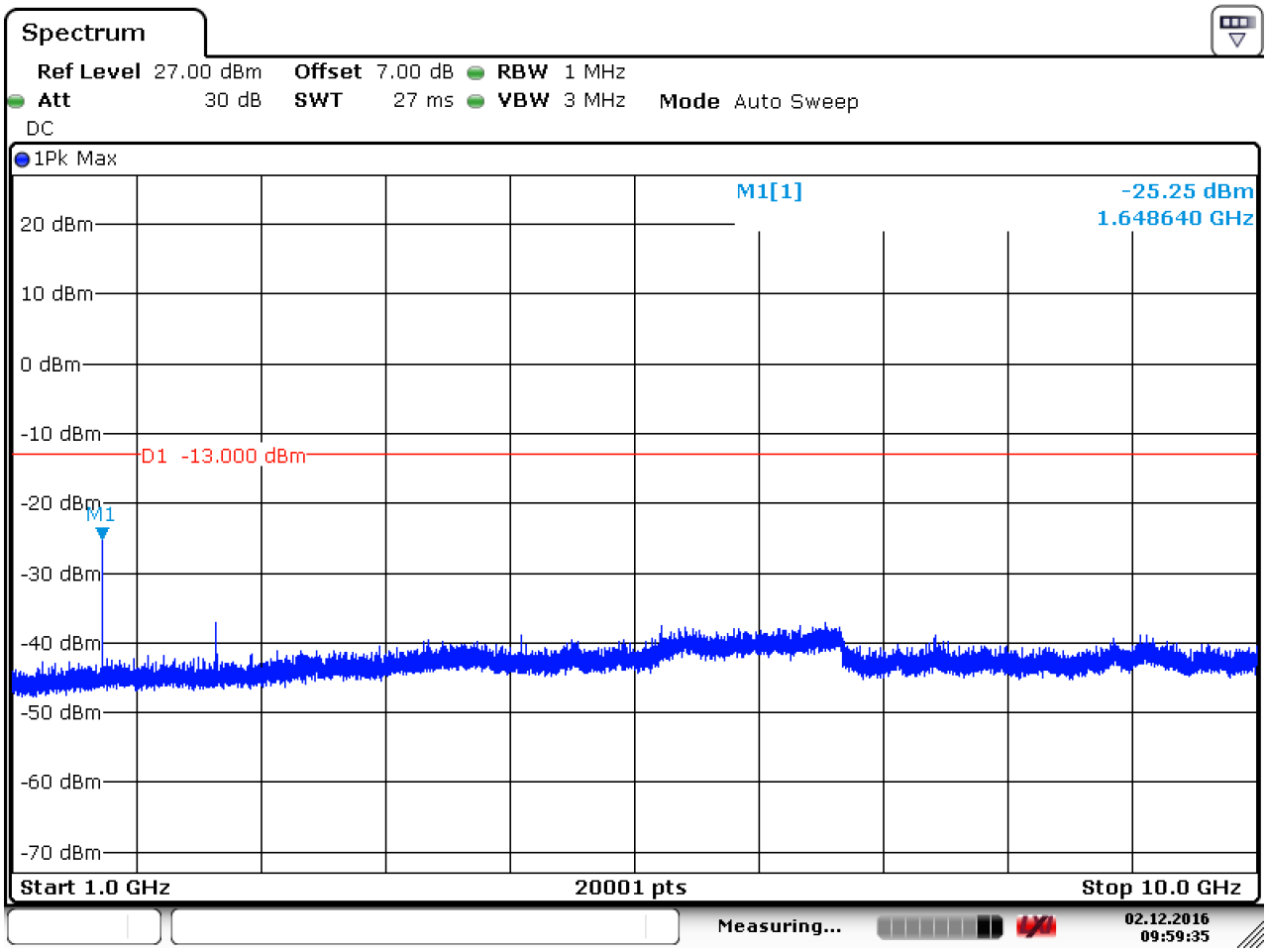
6.1.1 Test Band = GSM 850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

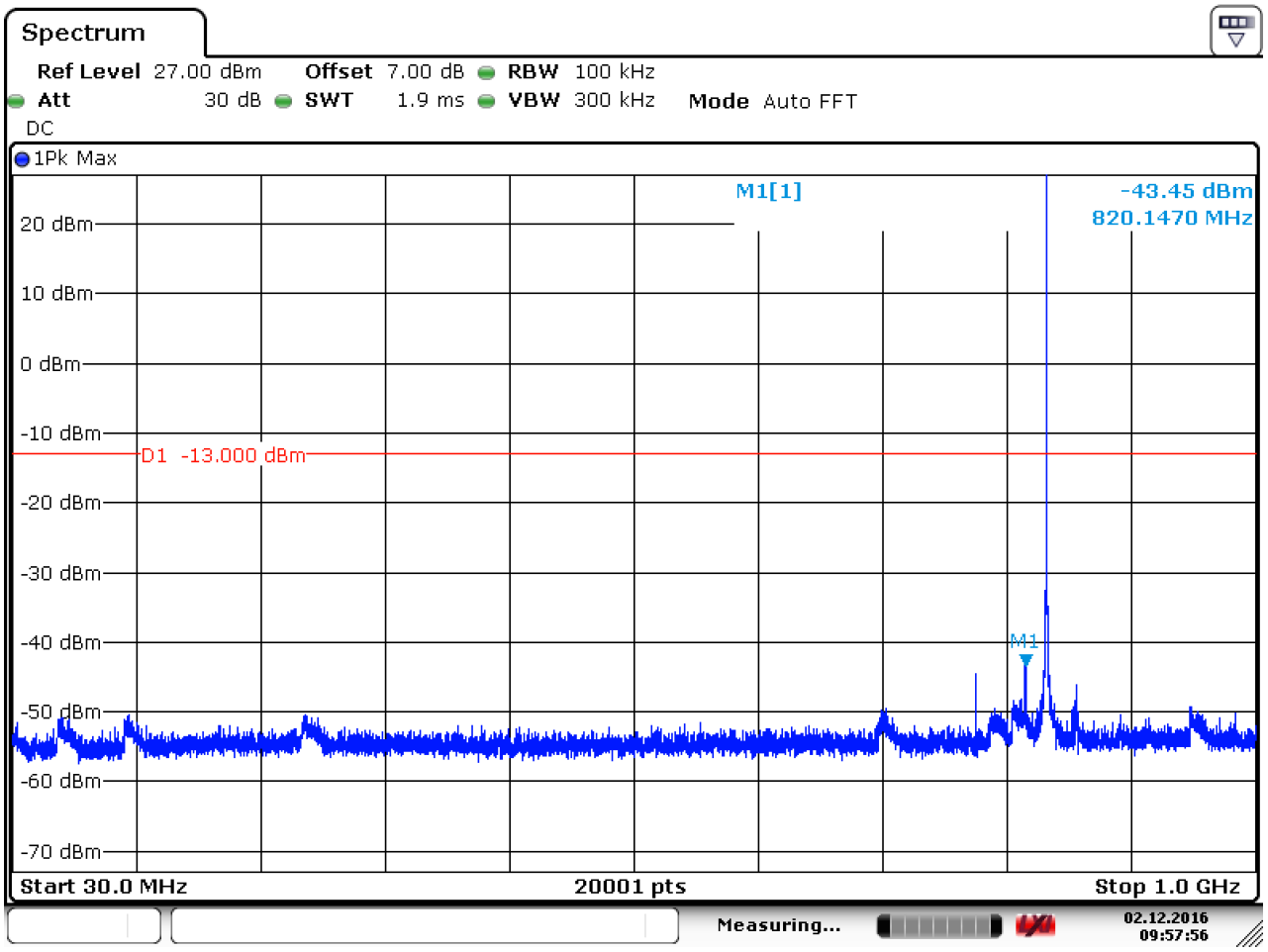


Date: 2.DEC.2016 09:58:43

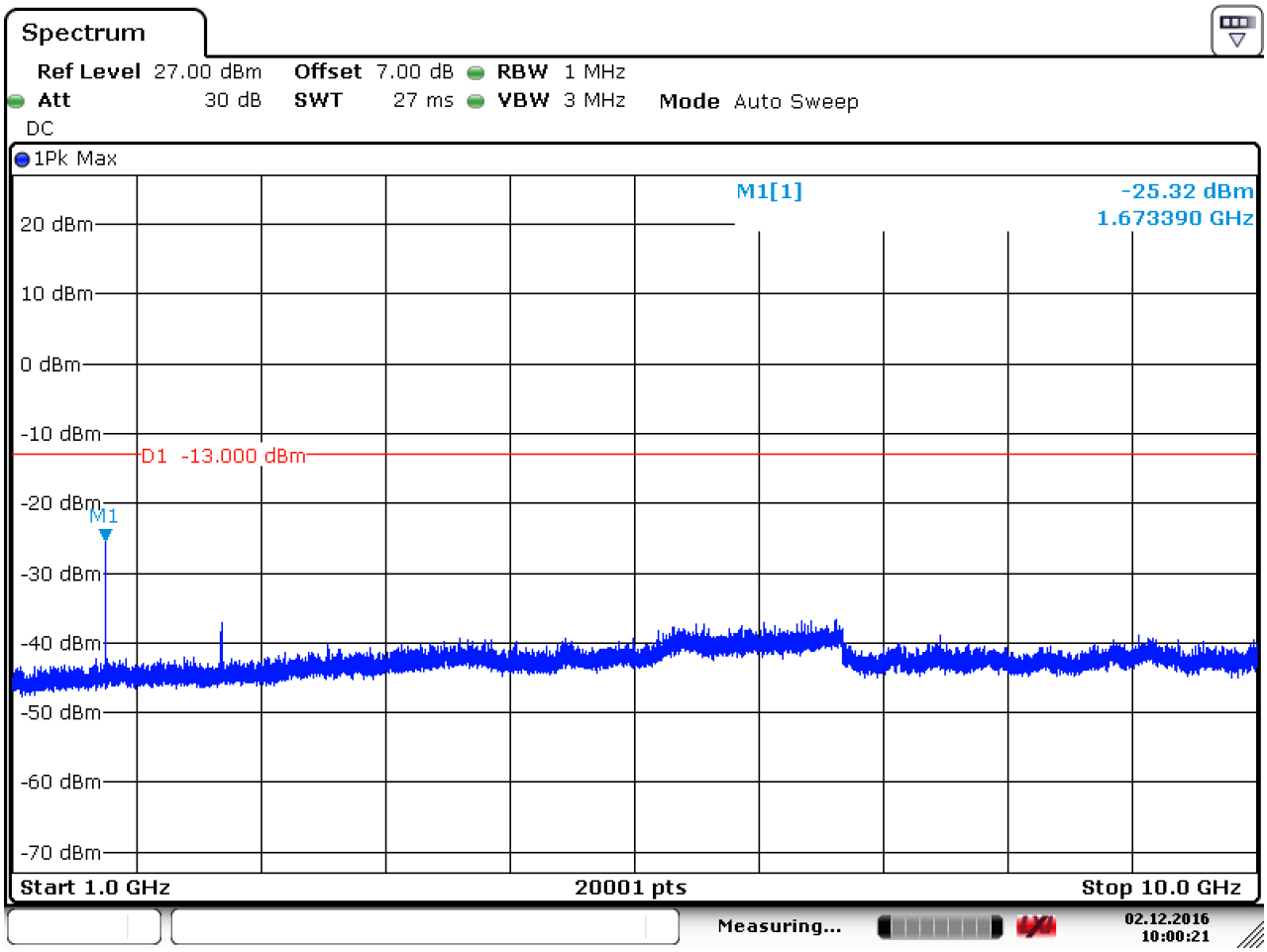


Date: 2.DEC.2016 09:59:36

6.1.1.1.2 Test Channel = MCH

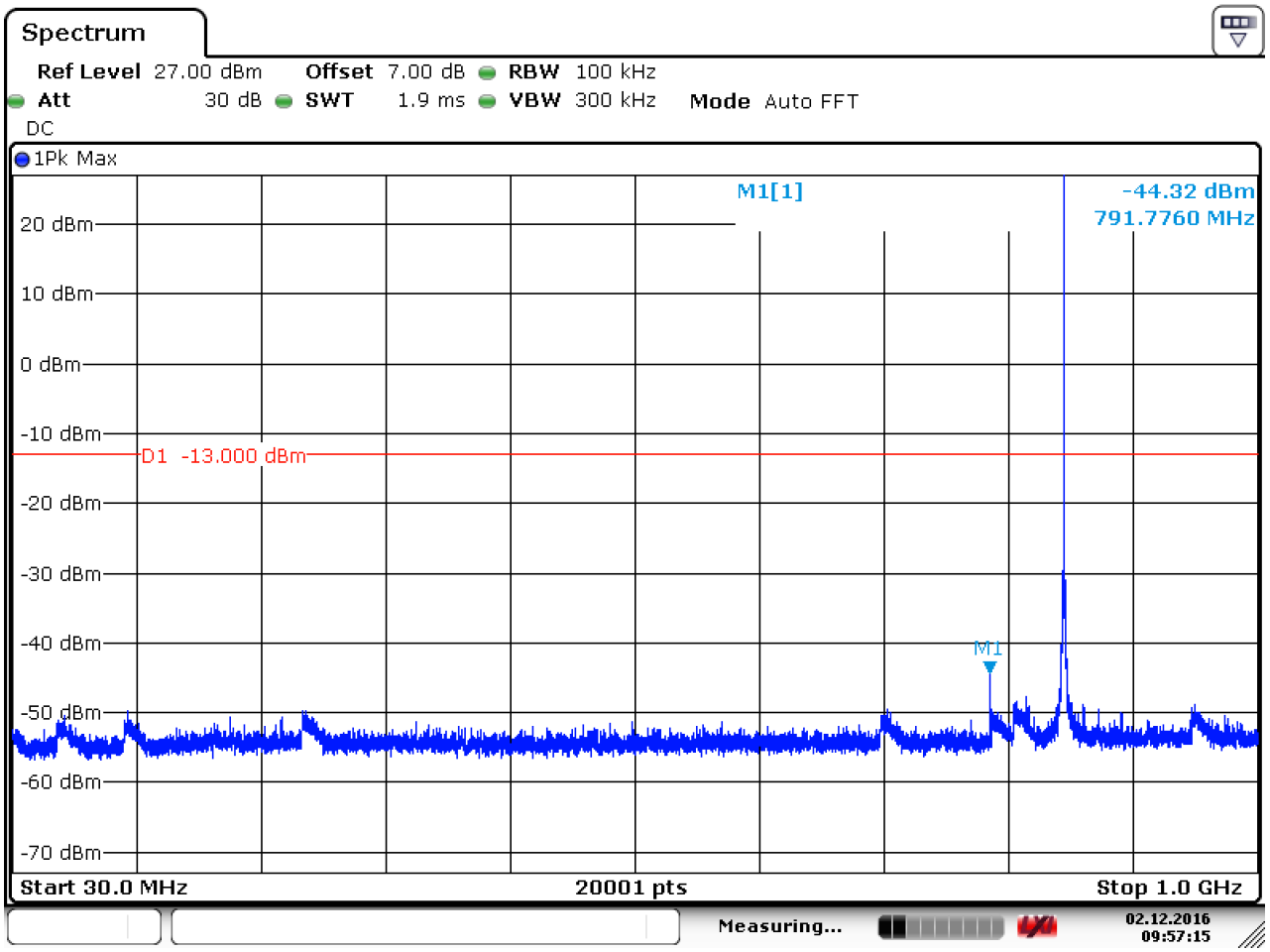


Date: 2.DEC.2016 09:57:56

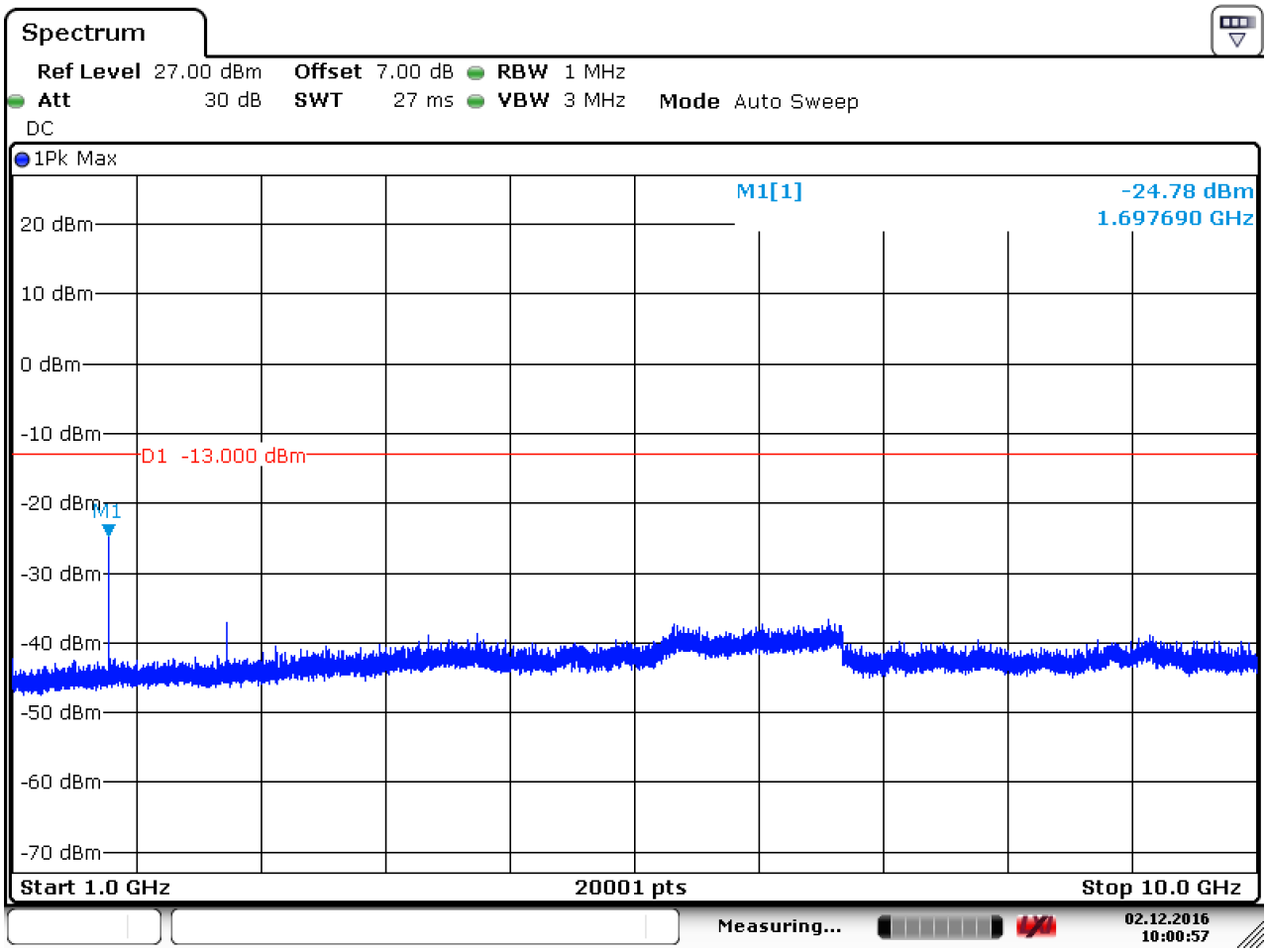


Date: 2.DEC.2016 10:00:21

6.1.1.1.3 Test Channel = HCH



Date: 2.DEC.2016 09:57:15

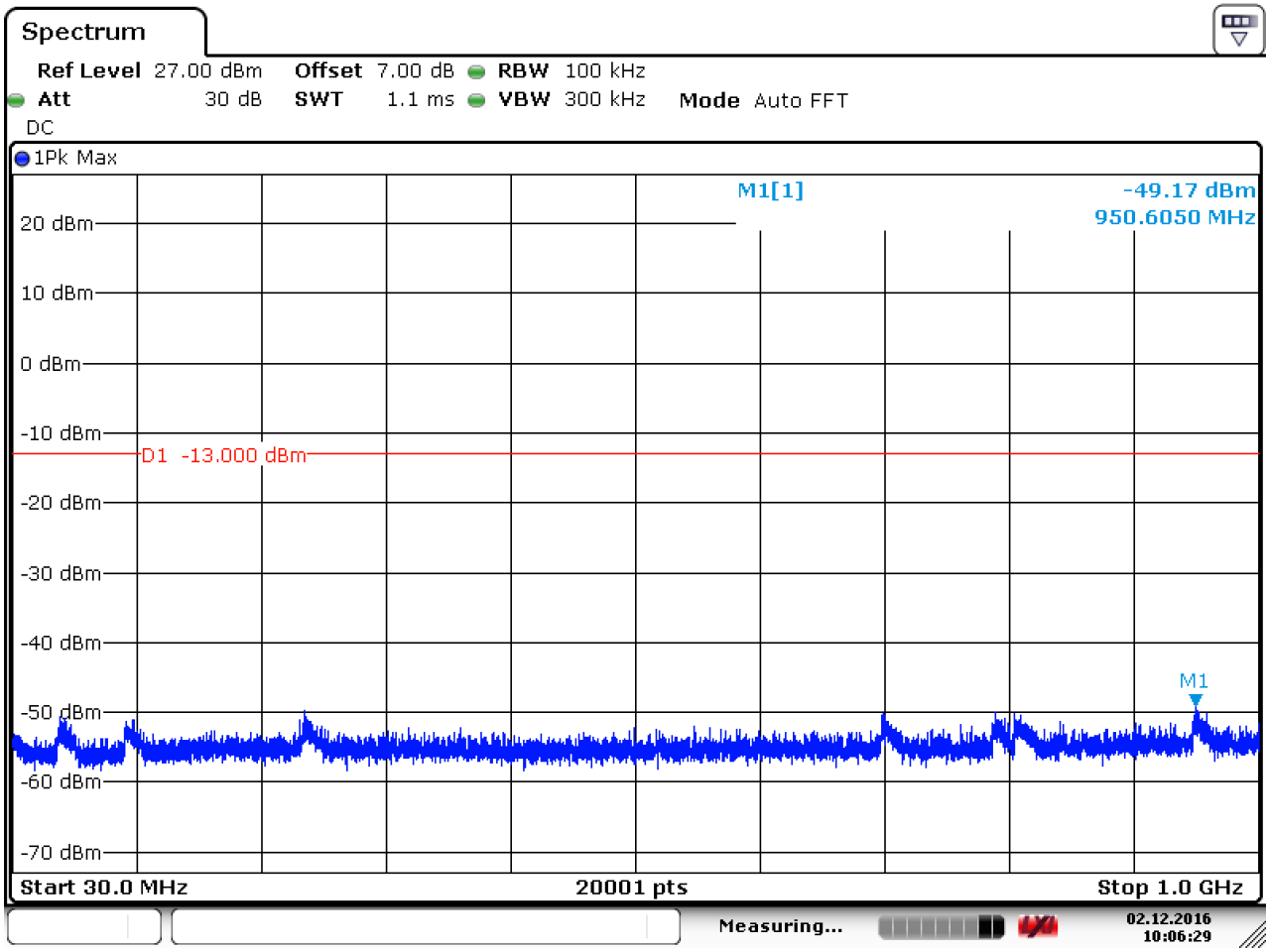


Date: 2.DEC.2016 10:00:58

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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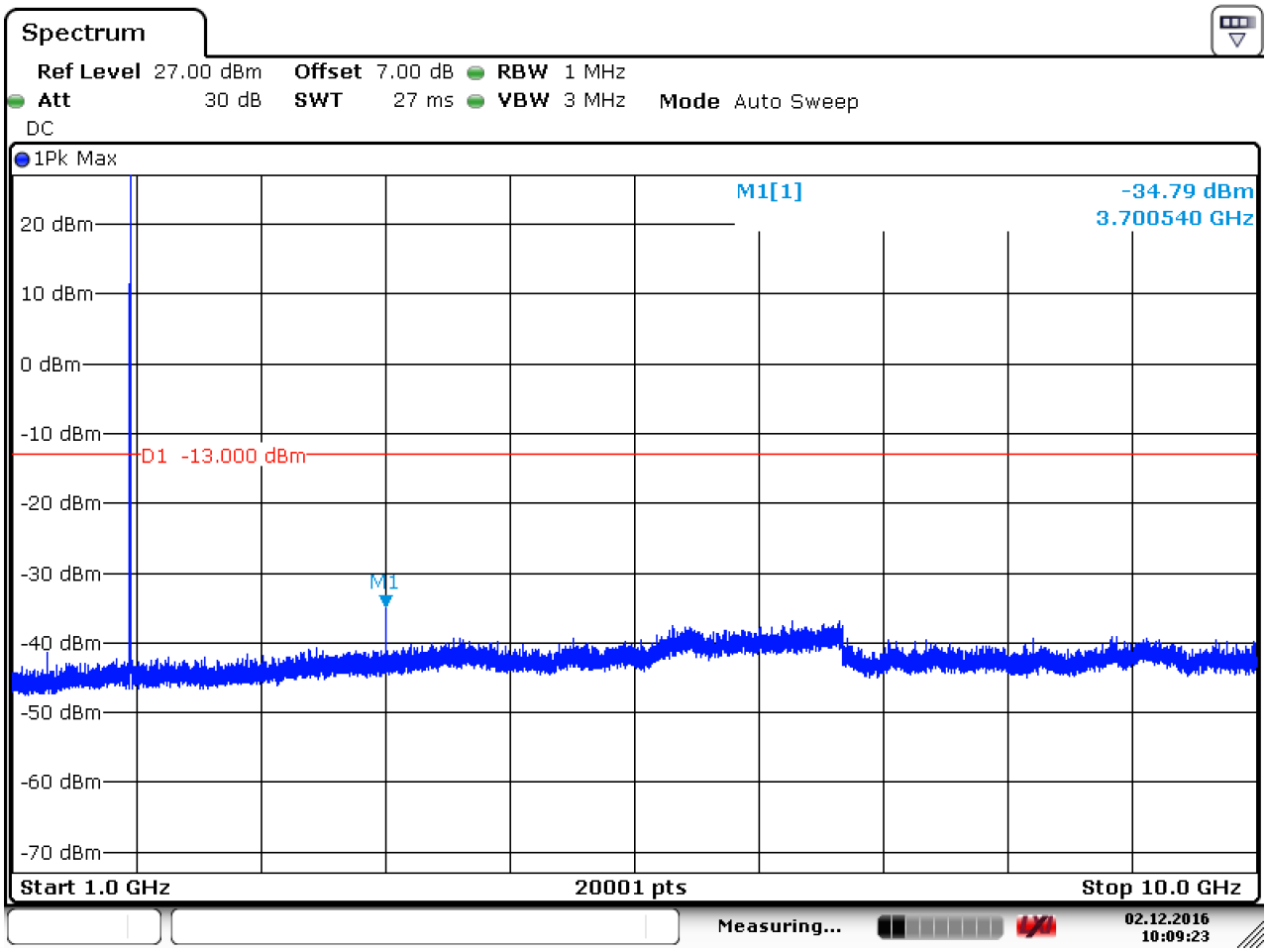
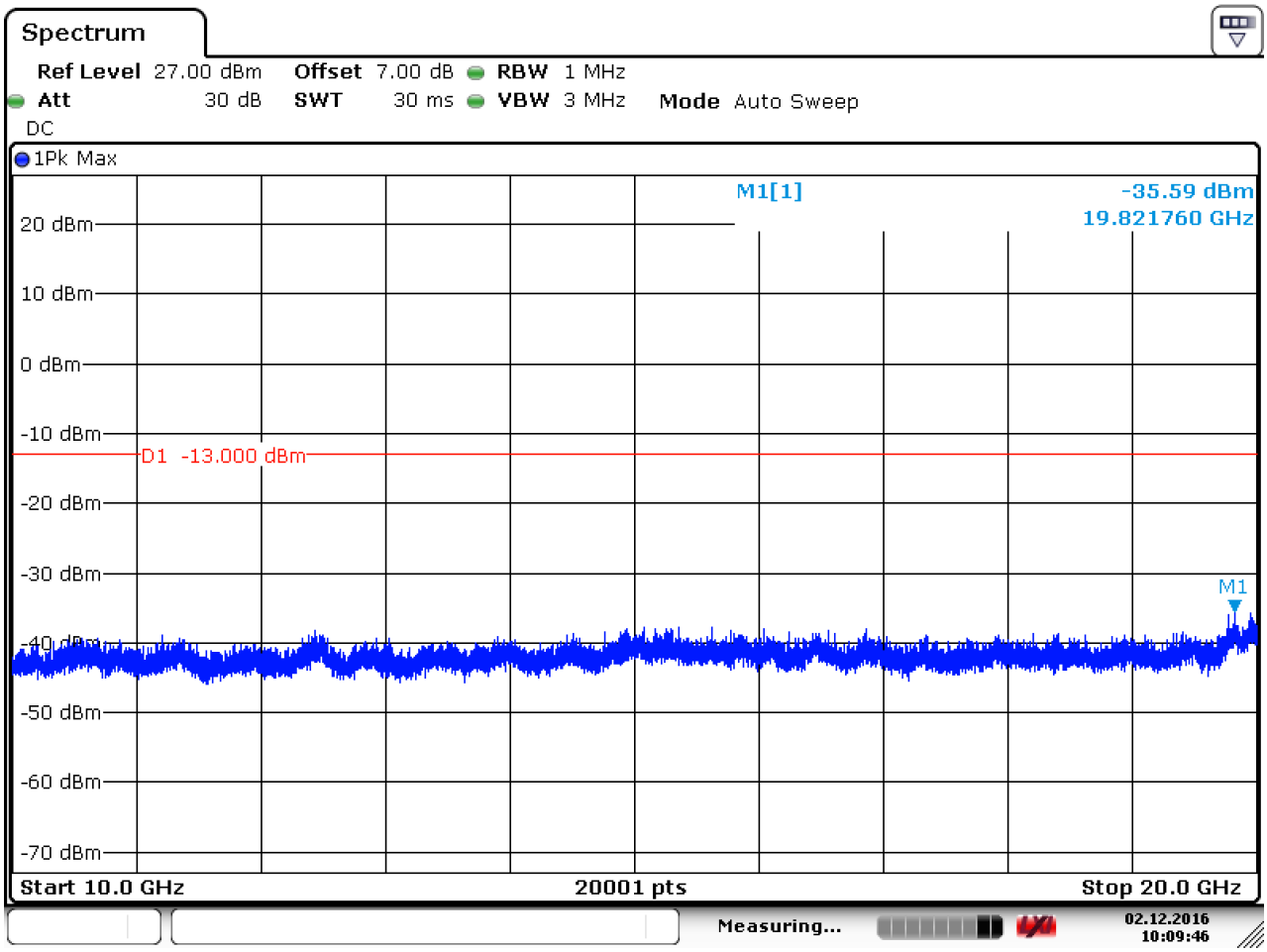
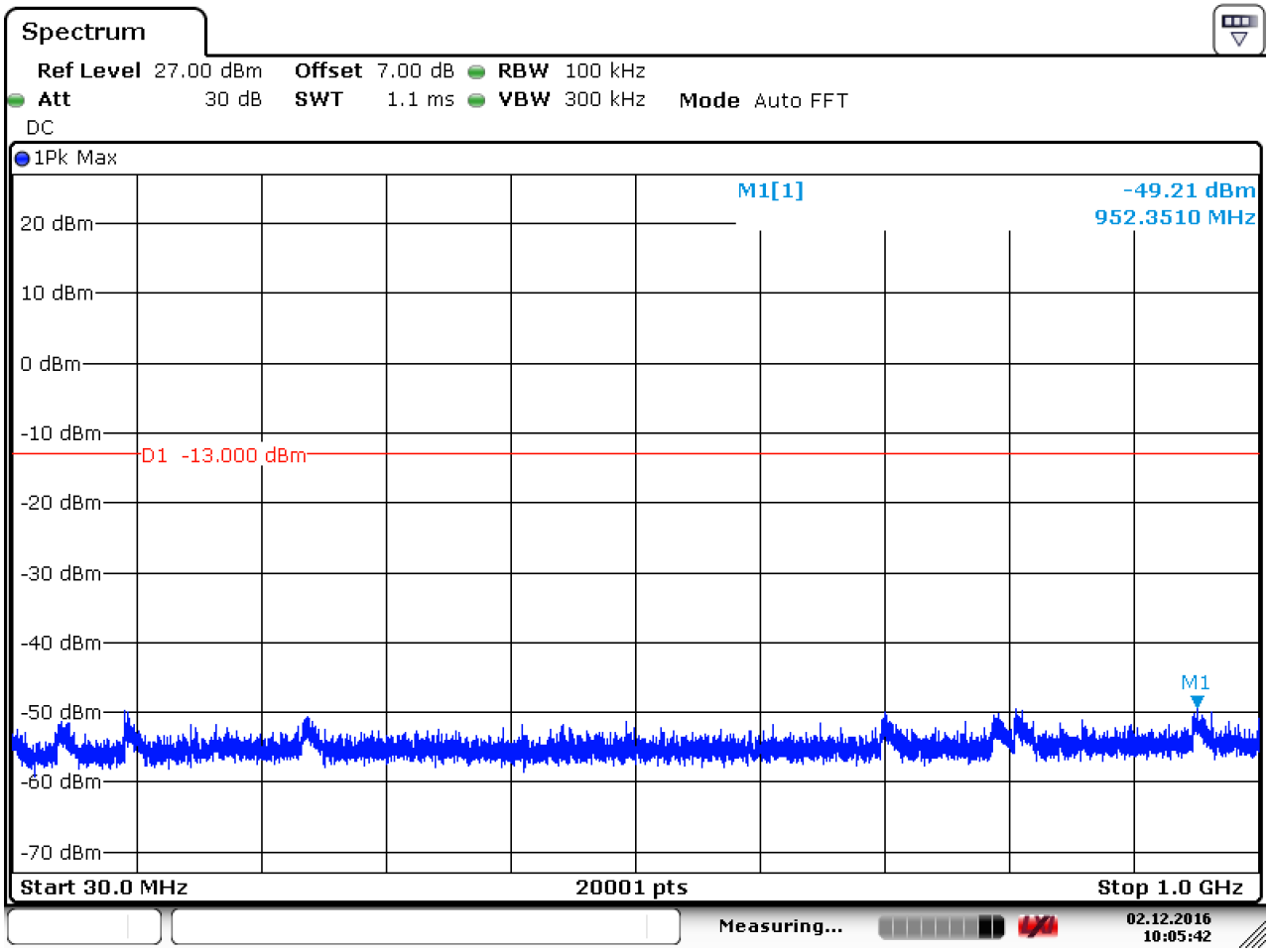


Date: 2.DEC.2016 10:09:24



Date: 2.DEC.2016 10:09:46

6.1.2.1.2 Test Channel = MCH



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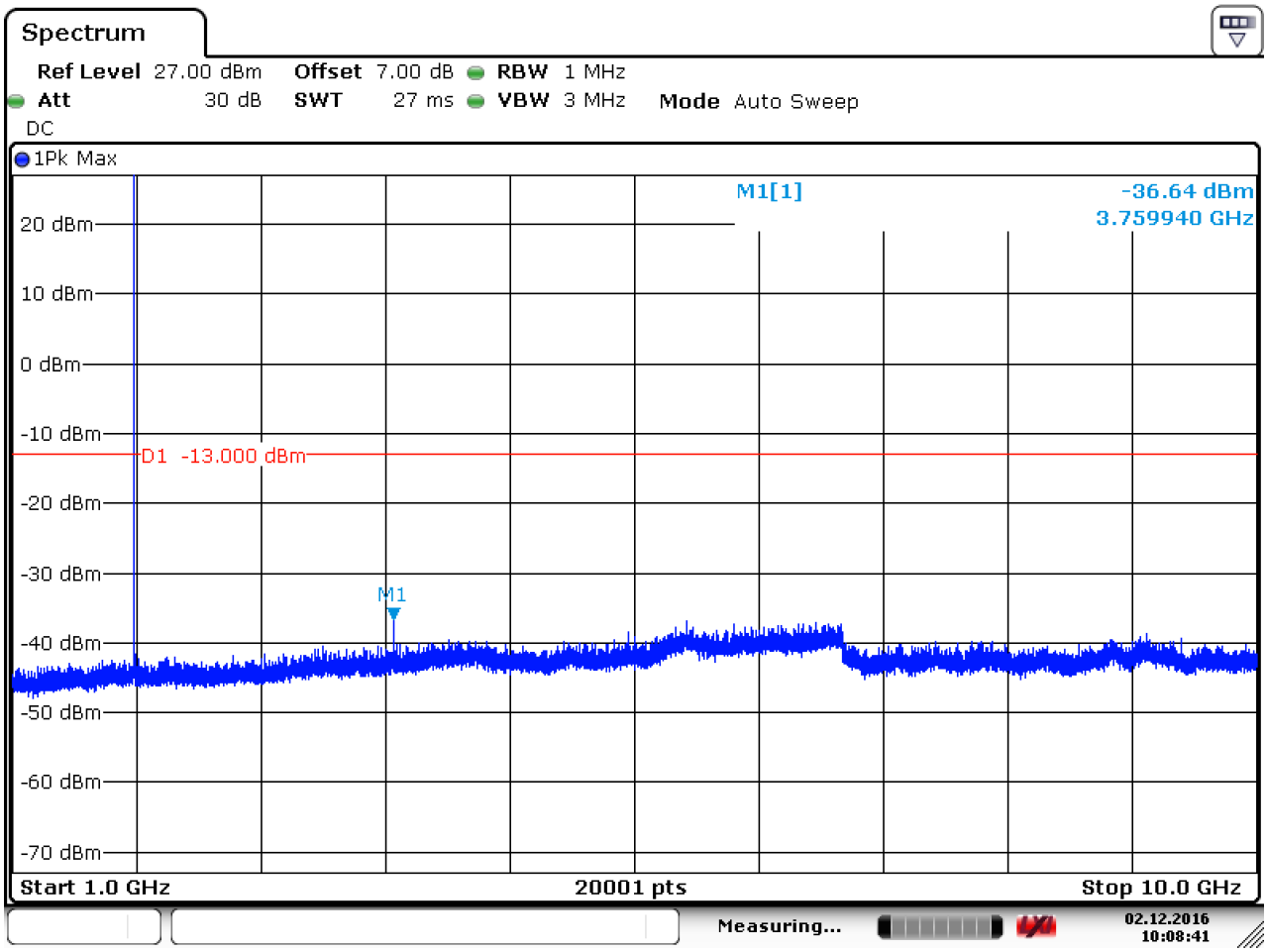
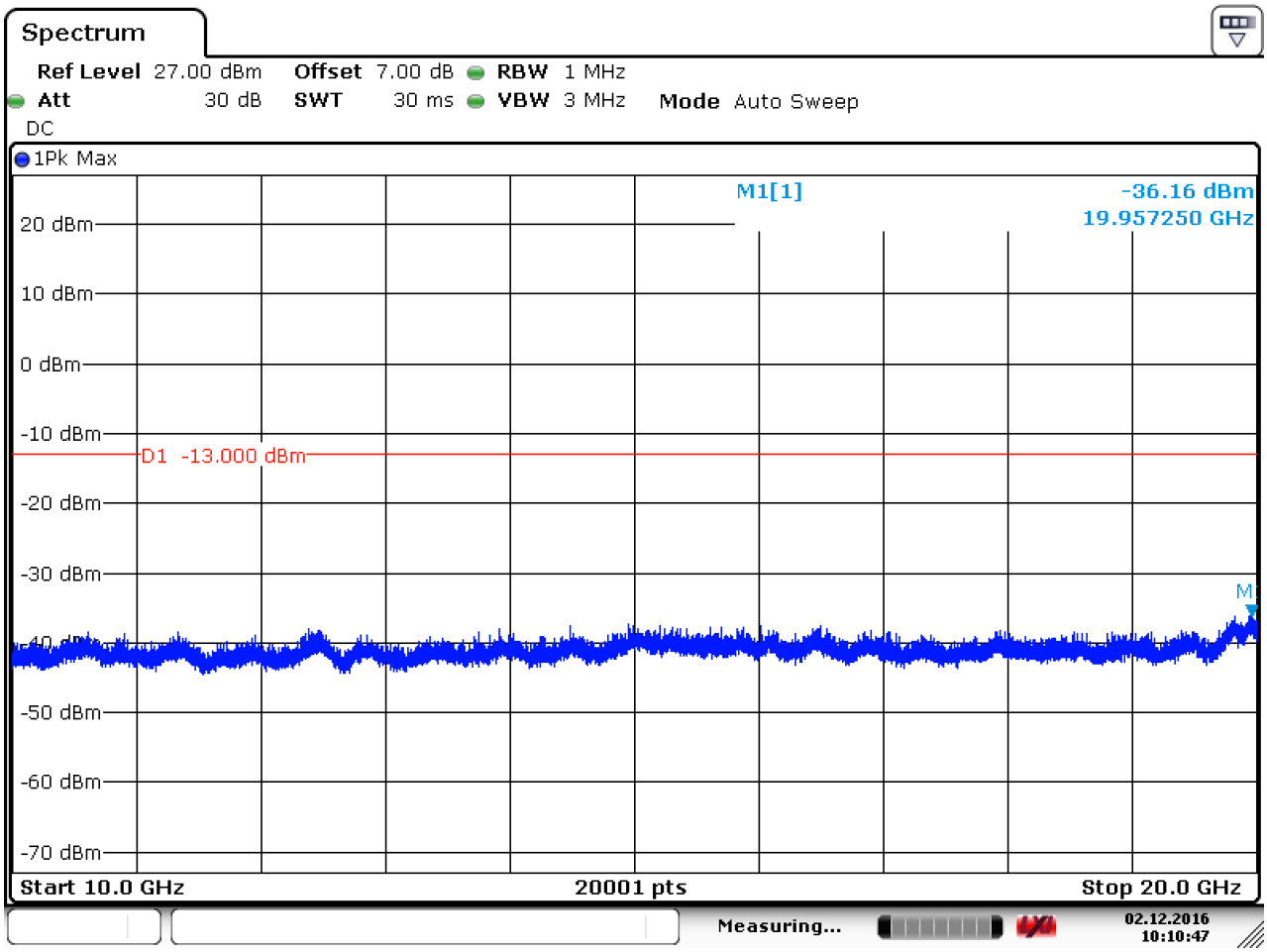
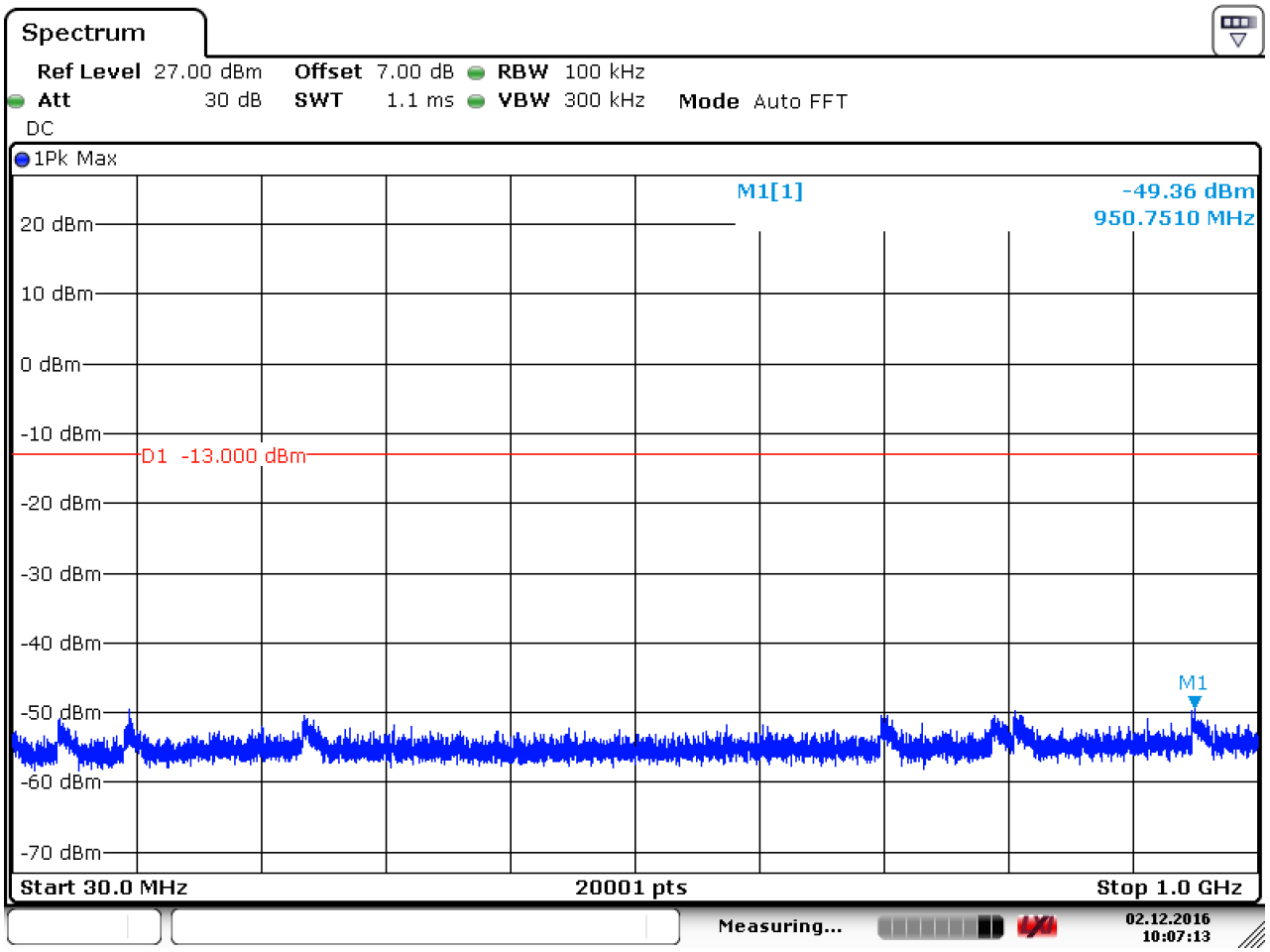


Date: 2.DEC.2016 10:08:41



Date: 2.DEC.2016 10:10:47

6.1.2.1.3 Test Channel = HCH



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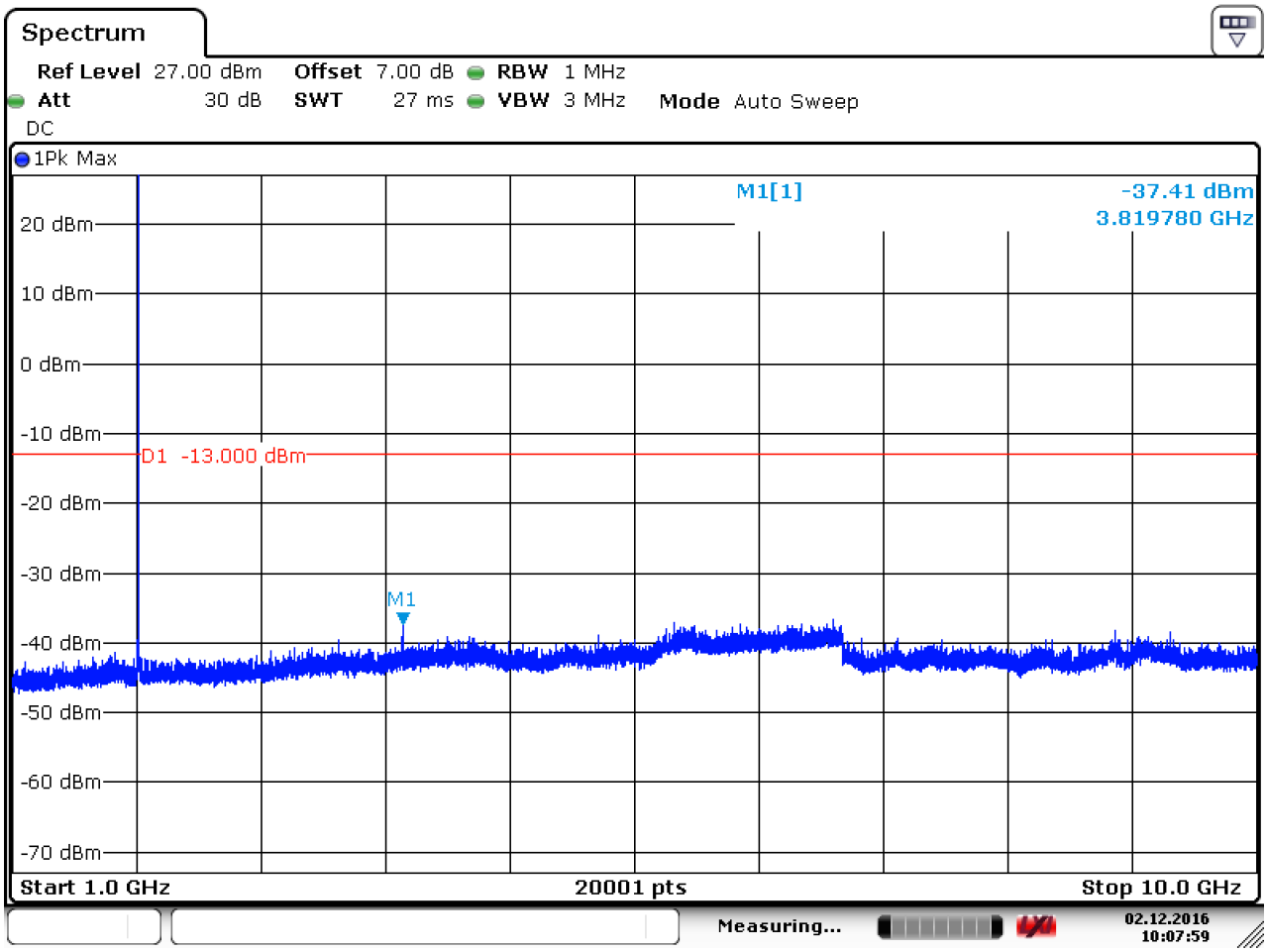

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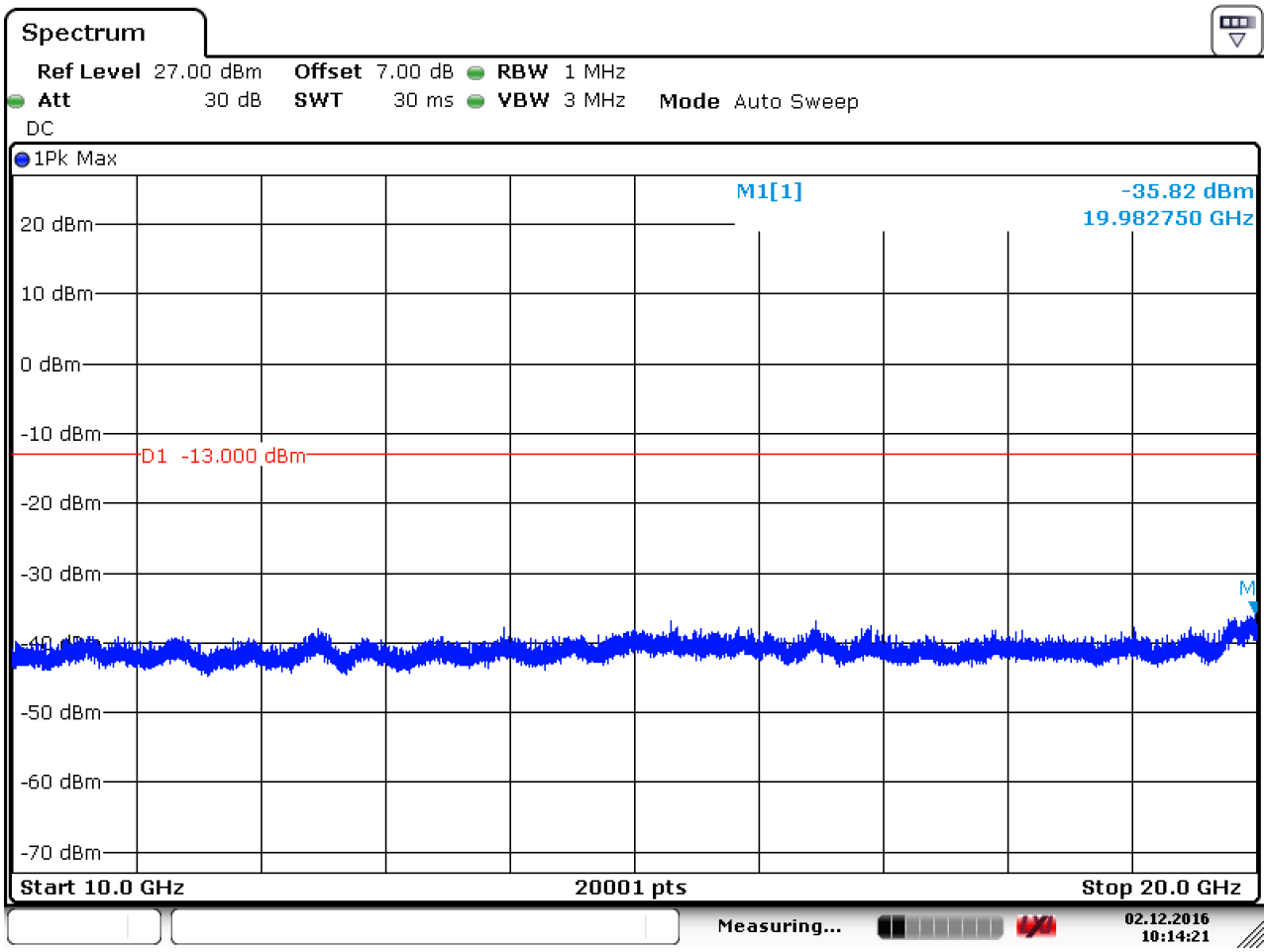

Date: 2.DEC.2016 10:14:22

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 Test Mode = GSM/TM1

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1648.050	-47.49	-13.00	34.49	Vertical
4120.700	-50.27	-13.00	37.27	Vertical
7963.000	-53.26	-13.00	40.26	Vertical
1648.125	-45.40	-13.00	32.40	Horizontal
2473.125	-45.60	-13.00	32.60	Horizontal
9542.200	-52.97	-13.00	39.97	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1673.175	-49.71	-13.00	36.71	Vertical
2684.850	-45.52	-13.00	32.52	Vertical
4183.000	-51.46	-13.00	38.46	Vertical
1673.100	-47.78	-13.00	34.78	Horizontal
2509.650	-43.23	-13.00	30.23	Horizontal
4183.350	-51.56	-13.00	38.56	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1697.775	-50.62	-13.00	37.62	Vertical
2546.400	-46.71	-13.00	33.71	Vertical
4243.550	-51.88	-13.00	38.88	Vertical
2545.950	-44.76	-13.00	31.76	Horizontal
4243.900	-52.25	-13.00	39.25	Horizontal
7638.900	-53.00	-13.00	40.00	Horizontal

7.1.2 Test Band = GSM 1900

7.1.2.1 Test Mode = GSM/TM1

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
3699.125	-43.55	-13.00	30.55	Vertical
5550.625	-47.78	-13.00	34.78	Vertical
7399.500	-48.56	-13.00	35.56	Vertical
3700.875	-41.08	-13.00	28.08	Horizontal
5549.750	-46.70	-13.00	33.70	Horizontal
7402.125	-44.18	-13.00	31.18	Horizontal

7.1.2.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
3758.625	-45.06	-13.00	32.06	Vertical
5640.750	-46.60	-13.00	33.60	Vertical
8704.125	-48.79	-13.00	35.79	Vertical
3760.375	-43.25	-13.00	30.25	Horizontal
5639.875	-42.57	-13.00	29.57	Horizontal
7519.375	-47.56	-13.00	34.56	Horizontal

7.1.2.1.2 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
3819.875	-43.53	-13.00	30.53	Vertical
5729.125	-43.66	-13.00	30.66	Vertical
7639.250	-47.04	-13.00	34.04	Vertical
3819.875	-42.77	-13.00	29.77	Horizontal
5730.000	-43.62	-13.00	30.62	Horizontal
7638.375	-46.92	-13.00	33.92	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
GSM 850	GSM/TM1	LCH	TN	VL	2.43	0.00295	PASS
				VN	1.08	0.00131	PASS
				VH	-3.42	-0.00415	PASS
		MCH	TN	VL	-2.43	-0.00290	PASS
				VN	-1.37	-0.00164	PASS
				VH	-4.25	-0.00508	PASS
		HCH	TN	VL	0.39	0.00046	PASS
				VN	-1.66	-0.00196	PASS
				VH	-3.09	-0.00364	PASS
	GSM/TM2	LCH	TN	VL	-3.02	-0.00366	PASS
				VN	1.32	0.00160	PASS
				VH	-2.29	-0.00278	PASS
		MCH	TN	VL	2.12	0.00253	PASS
				VN	1.87	0.00224	PASS
				VH	-4.22	-0.00504	PASS
		HCH	TN	VL	0.32	0.00038	PASS
				VN	-3.86	-0.00455	PASS
				VH	2.47	0.00291	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	-4.21	-0.00228	PASS
				VN	2.43	0.00131	PASS
				VH	1.39	0.00075	PASS
		MCH	TN	VL	0.41	0.00022	PASS
				VN	-2.49	-0.00132	PASS
				VH	5.33	0.00284	PASS
		HCH	TN	VL	-2.93	-0.00153	PASS
				VN	2.44	0.00128	PASS
				VH	-4.53	-0.00237	PASS
	GSM/TM2	LCH	TN	VL	0.47	0.00025	PASS
				VN	-3.42	-0.00185	PASS
				VH	2.64	0.00143	PASS
		MCH	TN	VL	-4.22	-0.00224	PASS
				VN	1.09	0.00058	PASS
				VH	0.53	0.00028	PASS
		HCH	TN	VL	-1.32	-0.00069	PASS
				VN	3.52	0.00184	PASS
				VH	-4.55	-0.00238	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	1.50	0.00182	PASS
				-10	0.67	0.00081	PASS
				0	-2.68	-0.00325	PASS
				10	0.57	0.00069	PASS
				20	-4.80	-0.00582	PASS
				30	1.60	0.00194	PASS
				40	-3.04	-0.00369	PASS
				50	-6.01	-0.00729	PASS
		MCH	VN	-30	-3.82	-0.00457	PASS
				-20	-4.08	-0.00488	PASS
				-10	-0.66	-0.00079	PASS
				0	-3.38	-0.00404	PASS
				10	1.31	0.00157	PASS
				20	2.72	0.00325	PASS
				30	-1.62	-0.00194	PASS
				40	0.83	0.00099	PASS
				50	-4.35	-0.00520	PASS
		HCH	VN	-30	-0.17	-0.00020	PASS
				-20	3.64	0.00429	PASS
				-10	2.25	0.00265	PASS
				0	-5.52	-0.00650	PASS
				10	1.53	0.00180	PASS
				20	-2.78	-0.00328	PASS
				30	3.64	0.00429	PASS
				40	-0.63	-0.00074	PASS
				50	-4.47	-0.00527	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	-2.48	-0.00301	PASS
				-20	1.86	0.00226	PASS
				-10	-5.66	-0.00687	PASS
				0	0.54	0.00066	PASS
				10	-5.38	-0.00653	PASS
				20	-4.11	-0.00499	PASS
				30	-3.96	-0.00480	PASS
				40	-5.01	-0.00608	PASS
				50	-2.74	-0.00332	PASS
		MCH	VN	-30	-1.84	-0.00220	PASS
				-20	3.29	0.00393	PASS
				-10	-4.35	-0.00520	PASS
				0	1.46	0.00175	PASS
				10	-5.30	-0.00634	PASS
				20	-3.43	-0.00410	PASS
				30	-2.13	-0.00255	PASS
				40	-3.02	-0.00361	PASS
				50	-6.50	-0.00777	PASS
		HCH	VN	-30	-3.33	-0.00392	PASS
				-20	-6.14	-0.00723	PASS
				-10	-2.73	-0.00322	PASS
				0	-5.32	-0.00627	PASS
				10	1.33	0.00157	PASS
				20	-4.03	-0.00475	PASS
				30	-3.15	-0.00371	PASS
				40	-2.47	-0.00291	PASS
				50	-5.55	-0.00654	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	-3.85	-0.00208	PASS
				-20	-4.42	-0.00239	PASS
				-10	1.55	0.00084	PASS
				0	-3.77	-0.00204	PASS
				10	-1.87	-0.00101	PASS
				20	2.08	0.00112	PASS
				30	-3.89	-0.00210	PASS
				40	-5.32	-0.00288	PASS
				50	-2.37	-0.00128	PASS
		MCH	VN	-30	-4.62	-0.00246	PASS
				-20	1.27	0.00068	PASS
				-10	-2.45	-0.00130	PASS
				0	2.87	0.00153	PASS
				10	-3.25	-0.00173	PASS
				20	-6.39	-0.00340	PASS
				30	-3.28	-0.00174	PASS
				40	-7.19	-0.00382	PASS
				50	-5.01	-0.00266	PASS
		HCH	VN	-30	-3.85	-0.00202	PASS
				-20	3.67	0.00192	PASS
				-10	1.55	0.00081	PASS
				0	-0.97	-0.00051	PASS
				10	-3.19	-0.00167	PASS
				20	-4.16	-0.00218	PASS
				30	1.21	0.00063	PASS
				40	-2.62	-0.00137	PASS
				50	-4.29	-0.00225	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	-3.03	-0.00164	PASS
				-20	-4.23	-0.00229	PASS
				-10	1.39	0.00075	PASS
				0	-2.47	-0.00133	PASS
				10	-2.35	-0.00127	PASS
				20	-4.08	-0.00221	PASS
				30	1.07	0.00058	PASS
				40	-3.11	-0.00168	PASS
				50	-6.37	-0.00344	PASS
		MCH	VN	-30	-5.32	-0.00283	PASS
				-20	-2.65	-0.00141	PASS
				-10	-4.22	-0.00224	PASS
				0	1.69	0.00090	PASS
				10	-5.37	-0.00286	PASS
				20	-2.15	-0.00114	PASS
				30	-3.07	-0.00163	PASS
				40	0.17	0.00009	PASS
				50	-6.23	-0.00331	PASS
		HCH	VN	-30	-3.25	-0.00170	PASS
				-20	2.42	0.00127	PASS
				-10	-1.33	-0.00070	PASS
				0	-3.20	-0.00168	PASS
				10	-6.44	-0.00337	PASS
				20	-4.32	-0.00226	PASS
				30	-2.22	-0.00116	PASS
				40	-1.42	-0.00074	PASS
				50	-6.48	-0.00339	PASS

The End