Appendix for test report

1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP/EIRP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.4	23.5	38.5	PASS
		MCH	32.63	23.73	38.5	PASS
		HCH	32.58	23.68	38.5	PASS
	GSM/TM2	LCH	26.36	17.46	38.5	PASS
		MCH	26.52	17.62	38.5	PASS
		HCH	26.42	17.52	38.5	PASS
GSM1900	GSM/TM1	LCH	29.64	26.64	33	PASS
		MCH	29.44	26.44	33	PASS
		HCH	29.59	26.59	33	PASS
	GSM/TM2	LCH	26.27	23.27	33	PASS
		MCH	26.18	23.18	33	PASS
		HCH	26.16	23.16	33	PASS

Note1:

a, For getting the ERP (Efficient Radiated Power) or EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b, SGP=Signal Generator Level

Note2: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS

2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM850	GSM/TM1	LCH	0.15	13	PASS
		MCH	0.16	13	PASS
		HCH	0.17	13	PASS
	GSM/TM2	LCH	2.96	13	PASS
		MCH	3	13	PASS
		HCH	3.05	13	PASS
GSM1900	GSM/TM1	LCH	0.13	13	PASS
		MCH	0.13	13	PASS
		HCH	0.12	13	PASS
	GSM/TM2	LCH	3	13	PASS
		MCH	3.1	13	PASS
		HCH	2.91	13	PASS

3Appendix_C: Modulation Characteristics

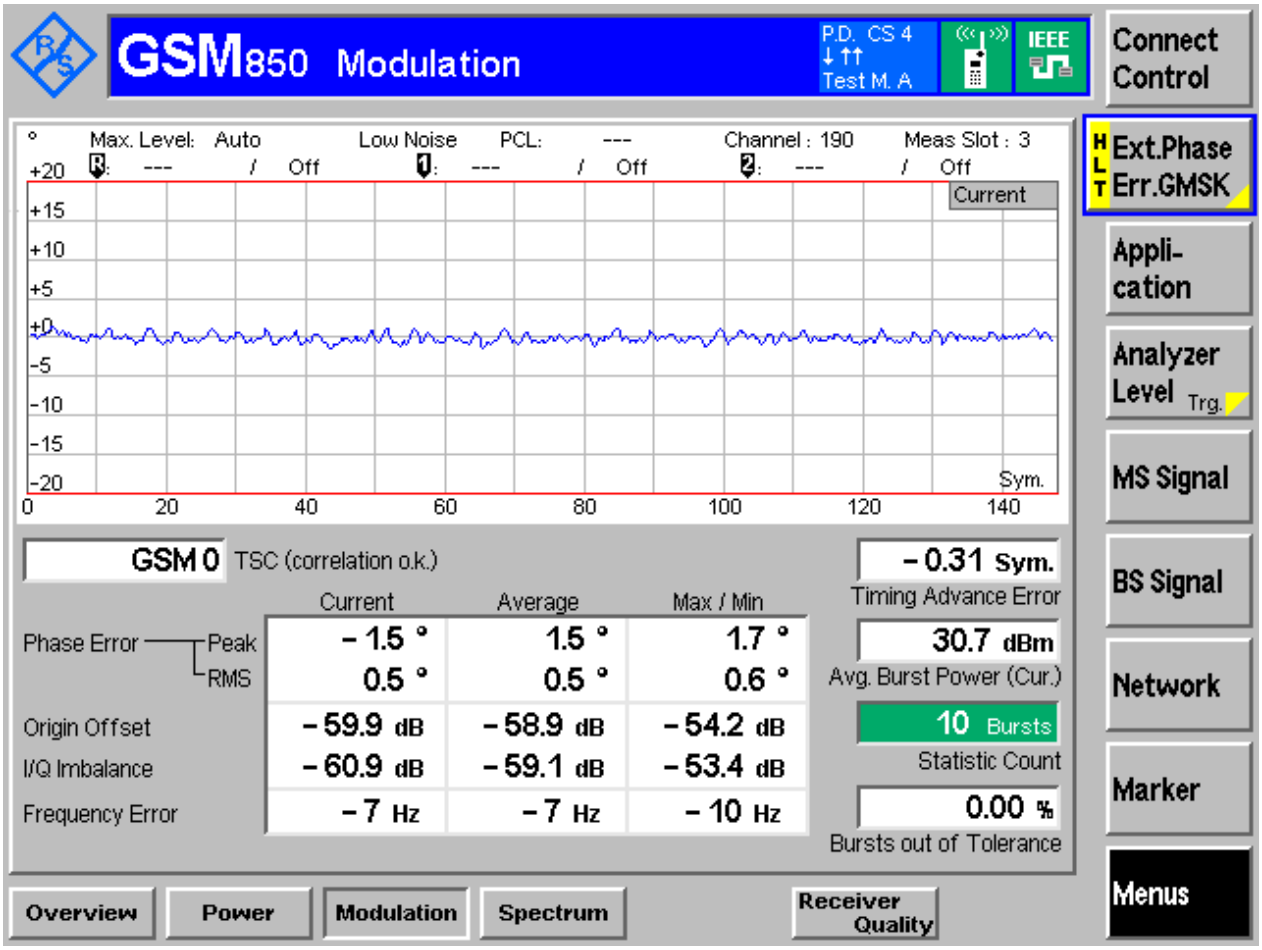
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

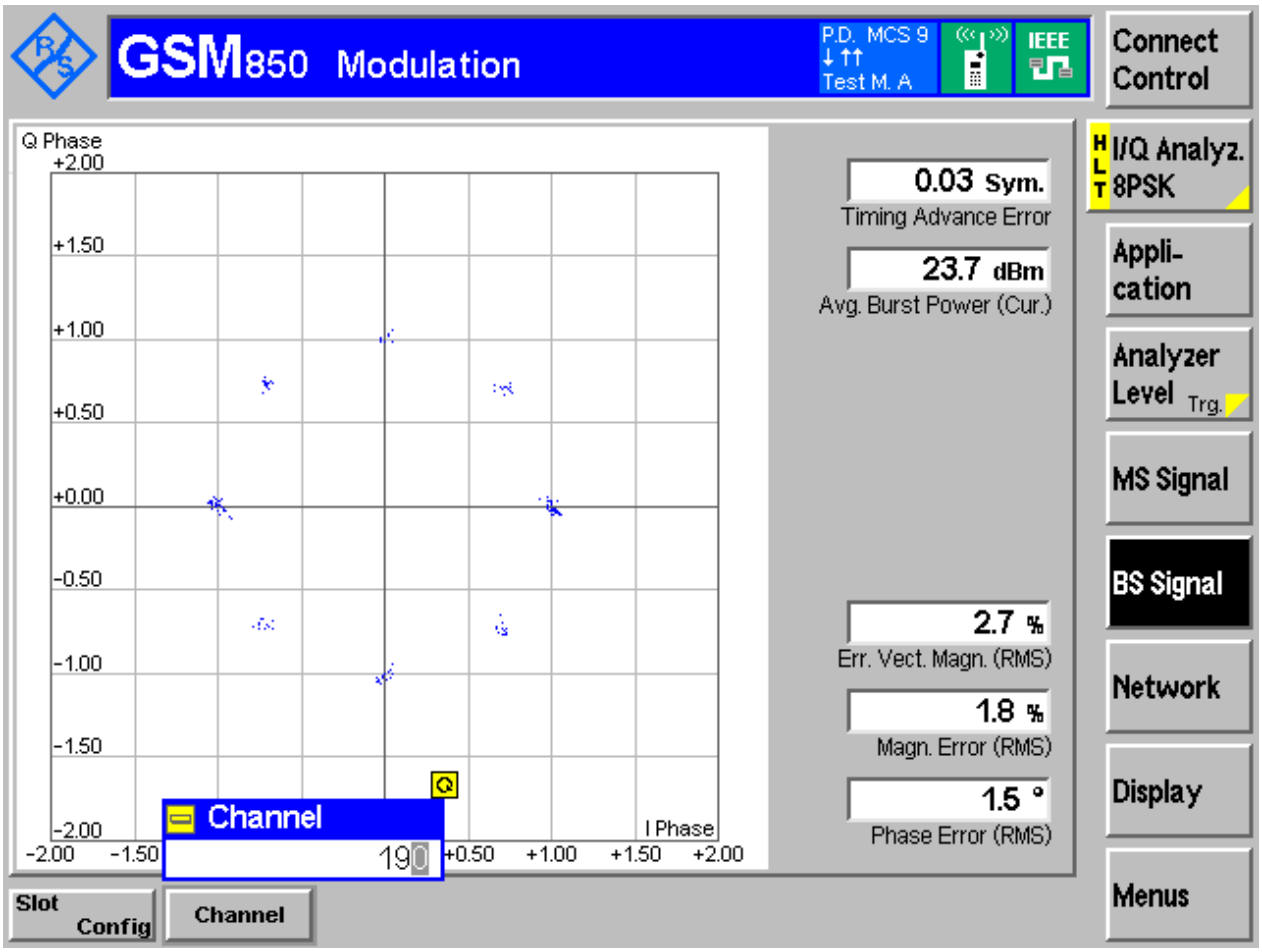
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

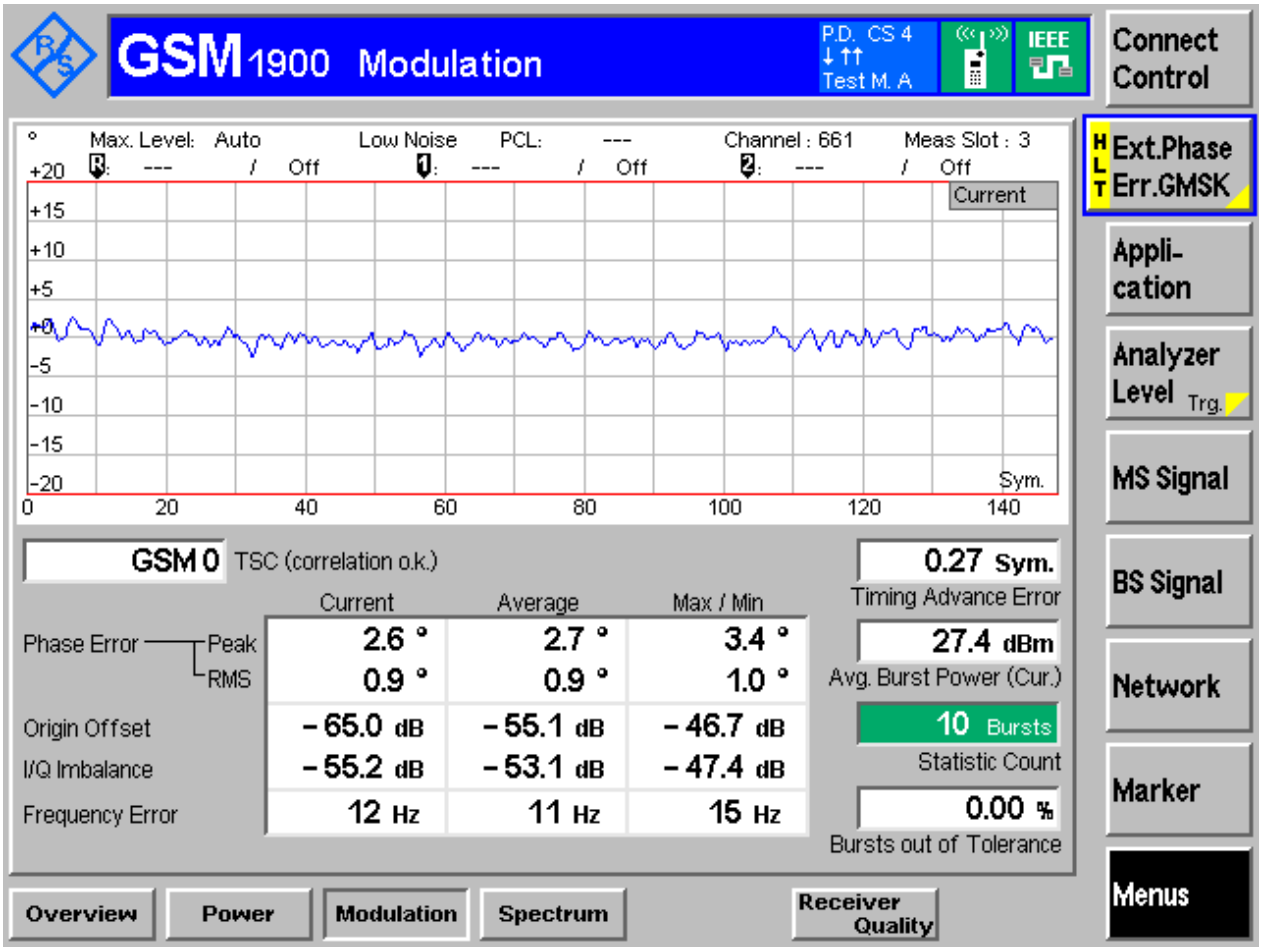
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

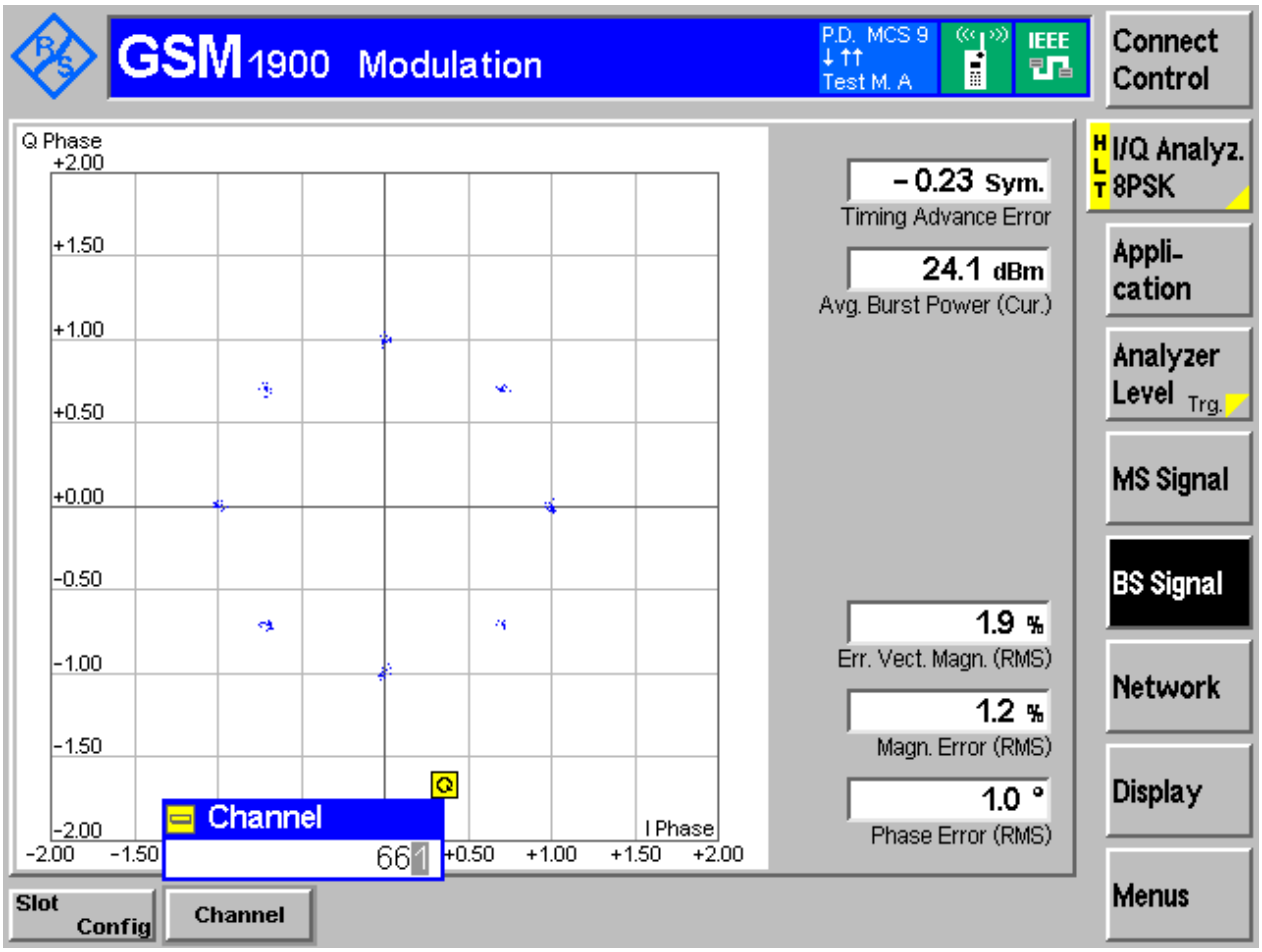
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	242.31	318.06	Pass
		MCH	240.34	314.26	Pass
		HCH	242.48	314.93	Pass
	GSM/TM2	LCH	246.95	313.62	Pass
		MCH	248.59	325.91	Pass
		HCH	248.64	319.64	Pass
GSM1900	GSM/TM1	LCH	242.85	316.84	Pass
		MCH	244.20	315.02	Pass
		HCH	241.35	311.77	Pass
	GSM/TM2	LCH	248.18	310.07	Pass
		MCH	247.99	306.07	Pass
		HCH	248.33	324.61	Pass

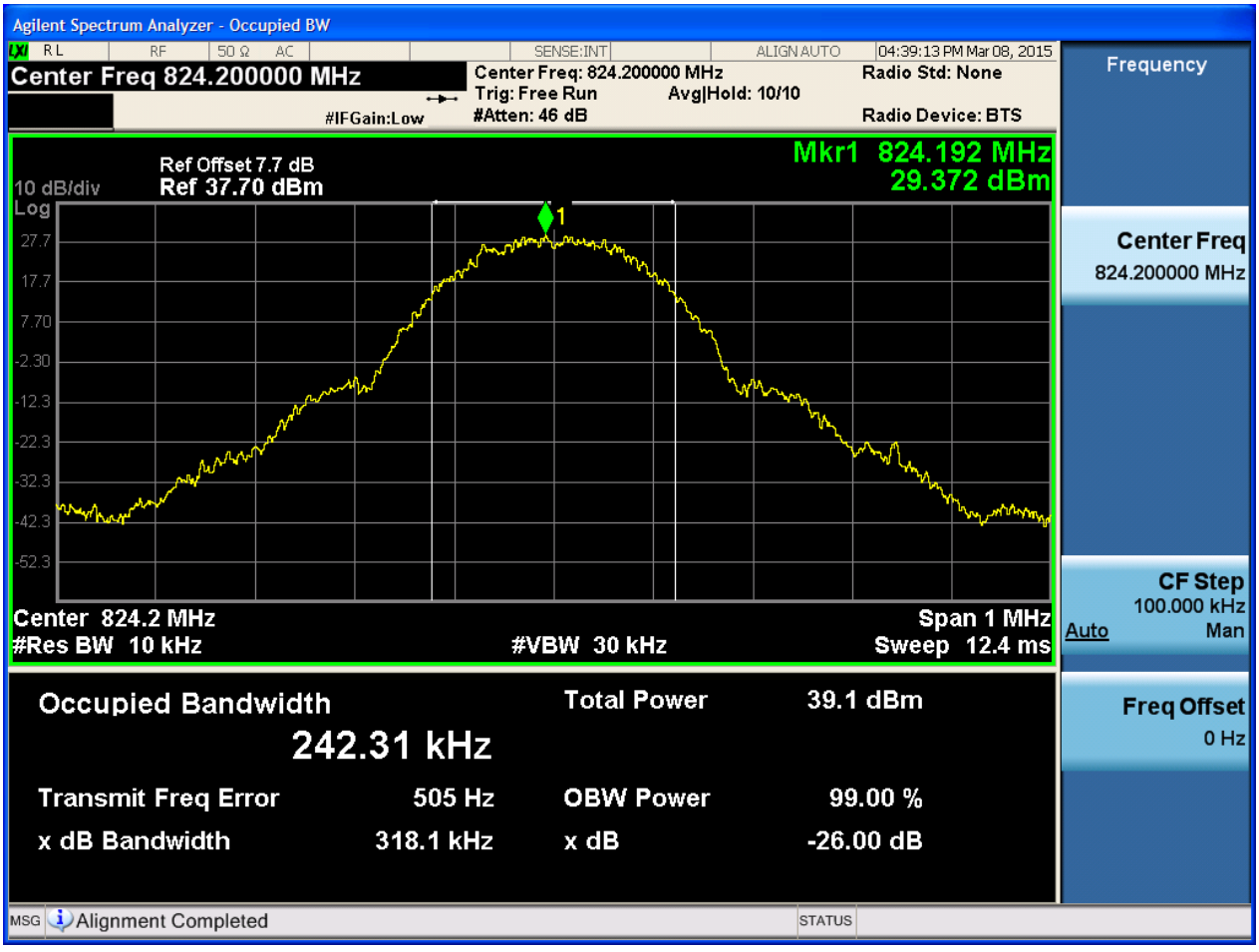
Part II - Test Plots

4.1 For GSM

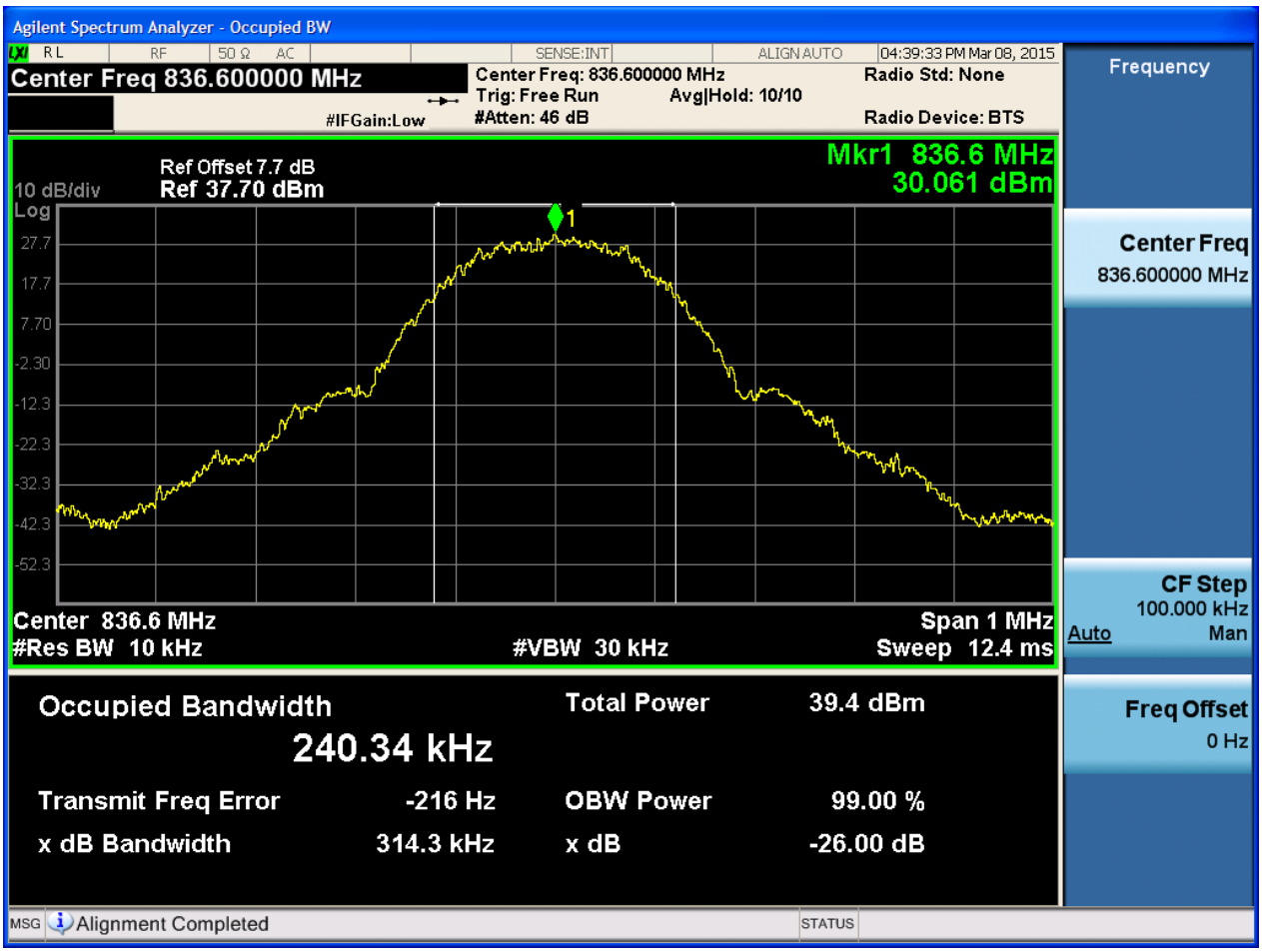
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

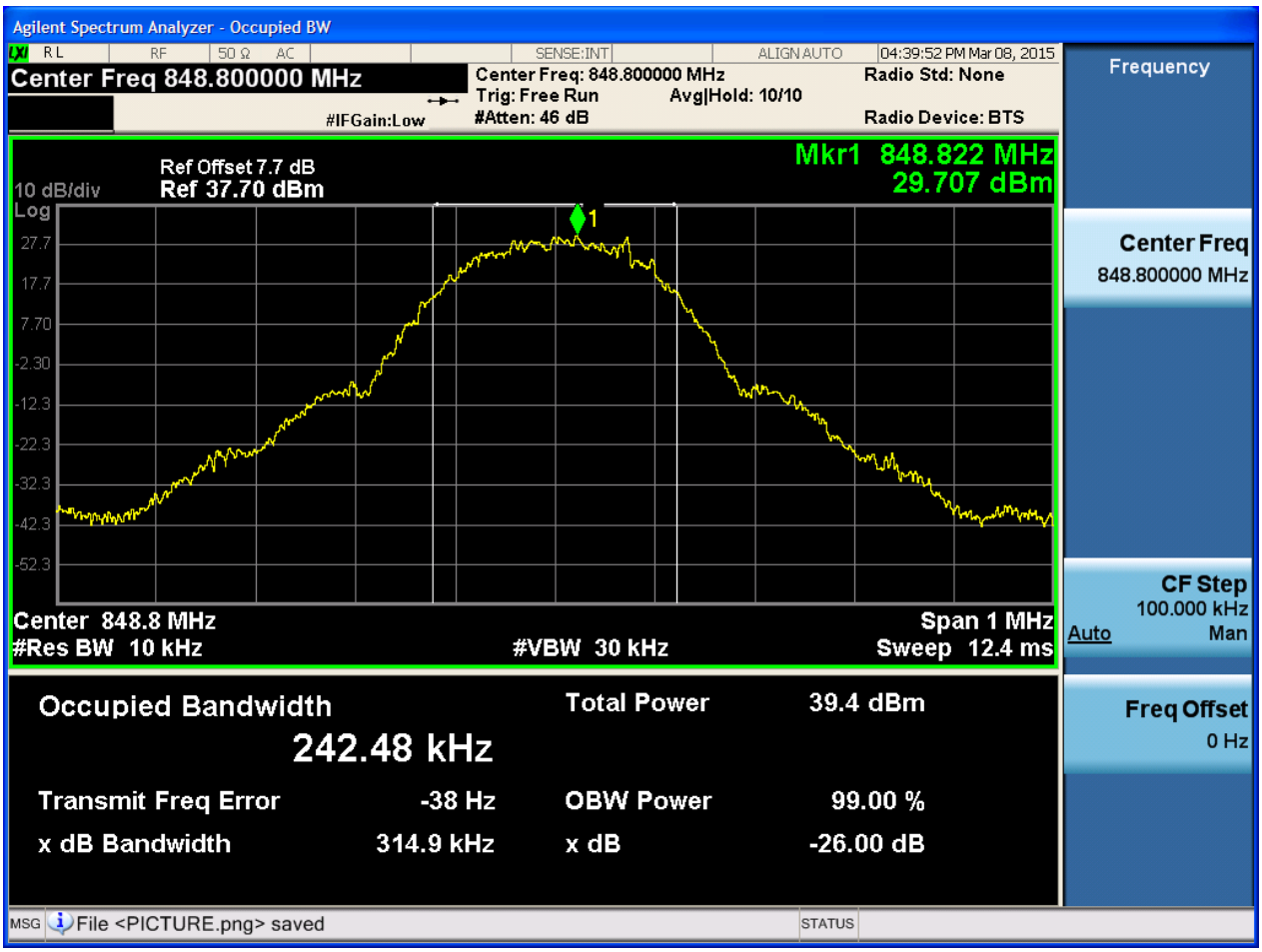
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

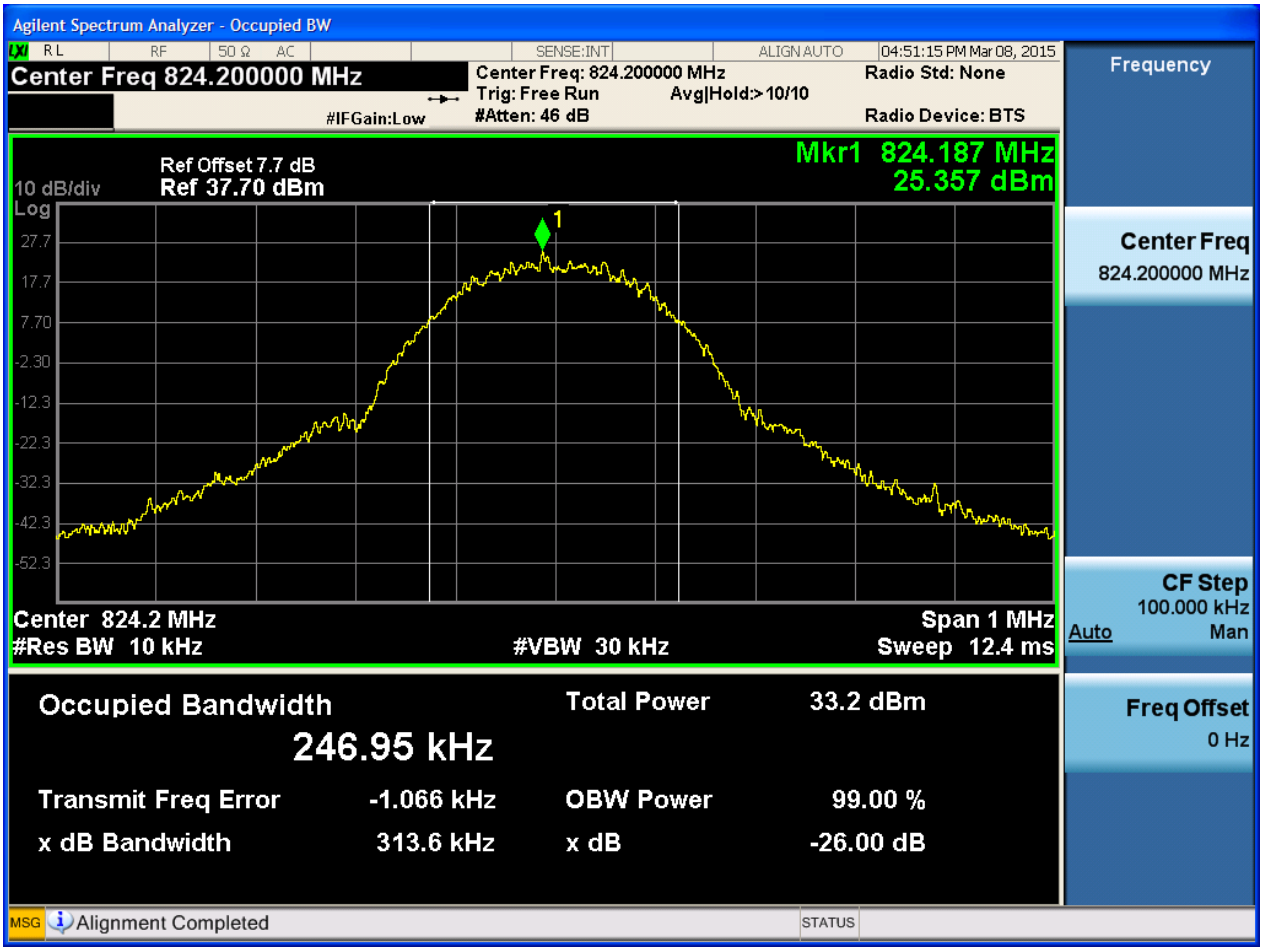


4.1.1.1.3 Test Channel = HCH

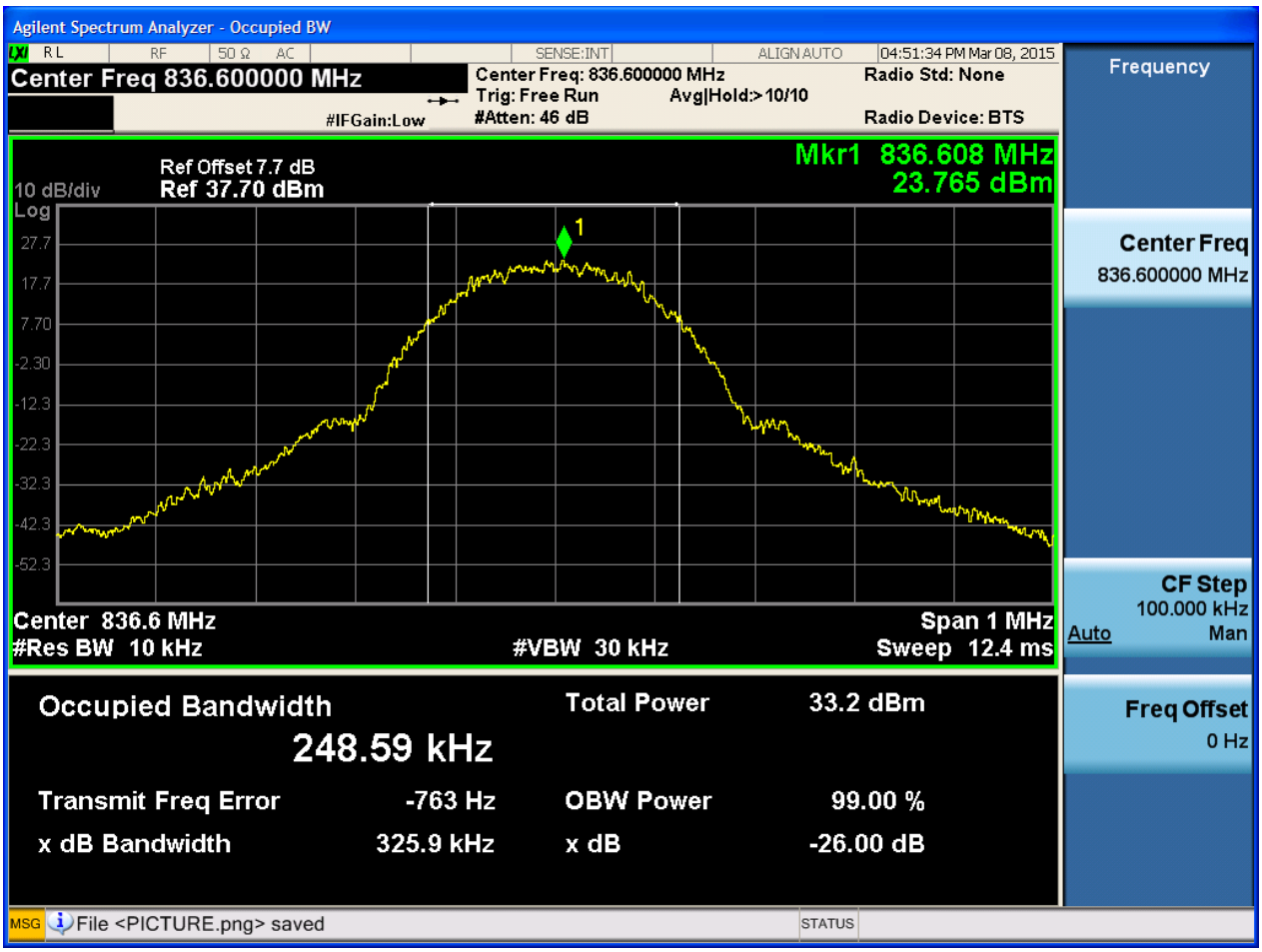


4.1.1.2 Test Mode = GSM/TM2

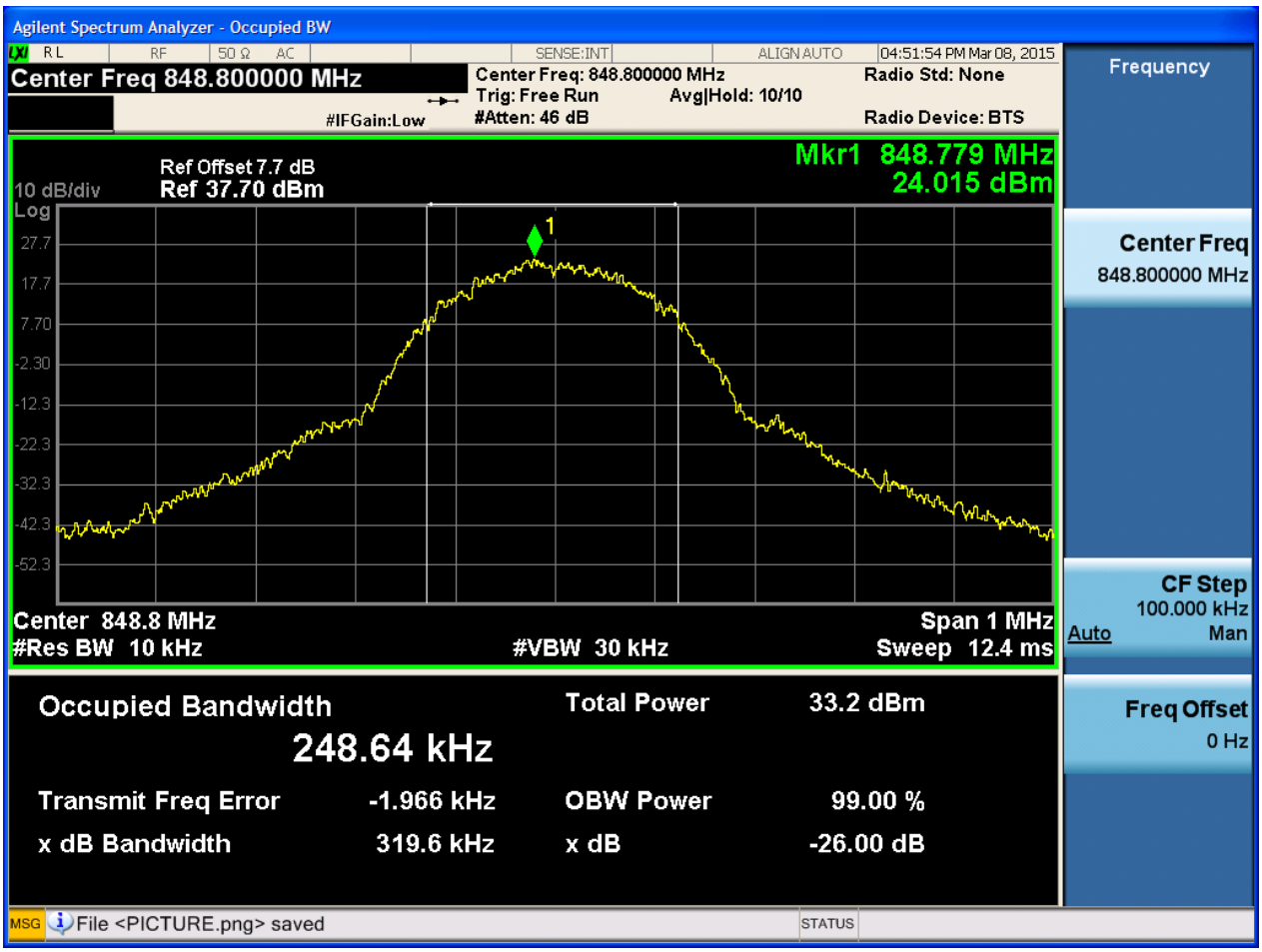
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



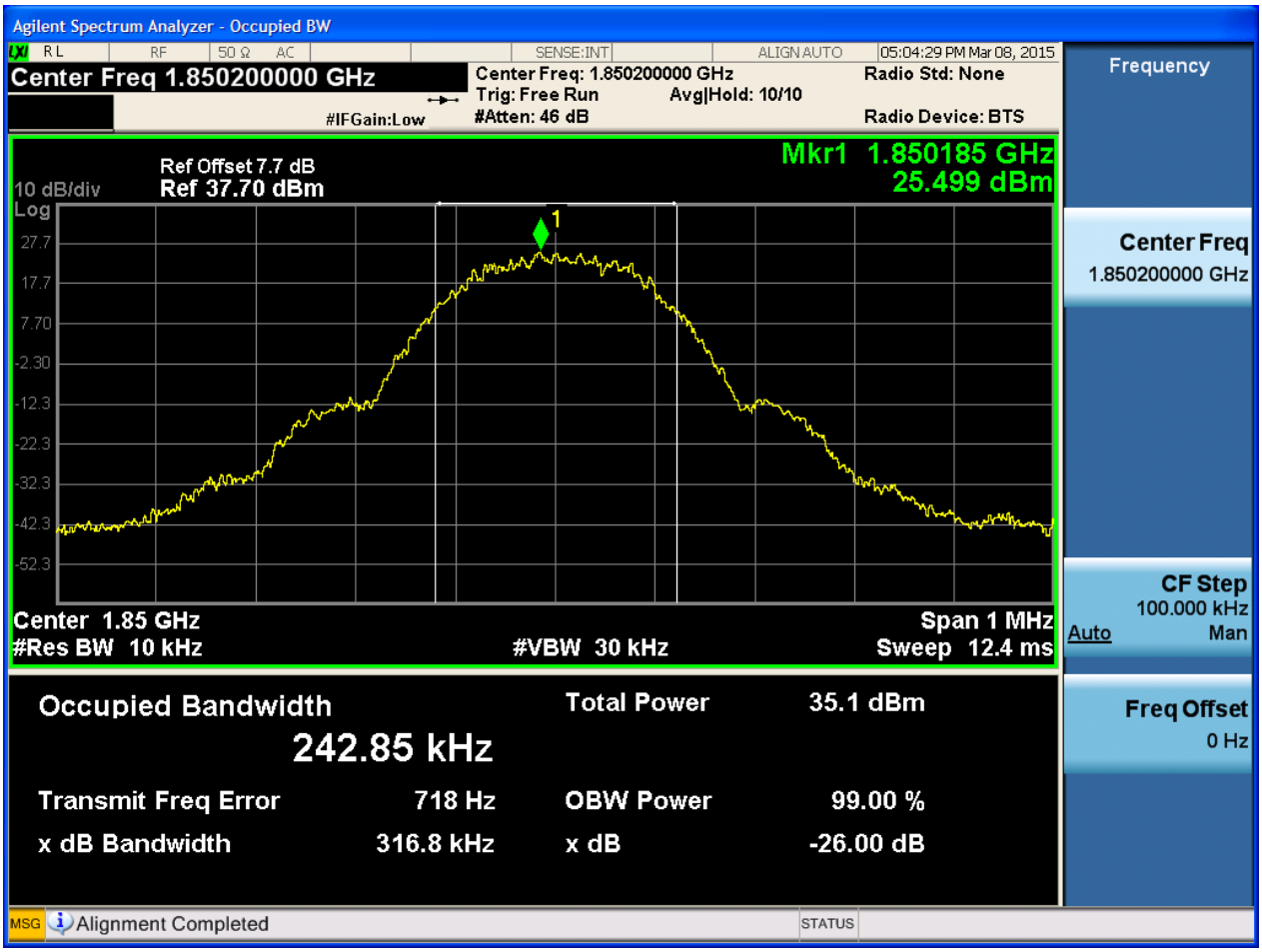
4.1.1.2.3 Test Channel = HCH



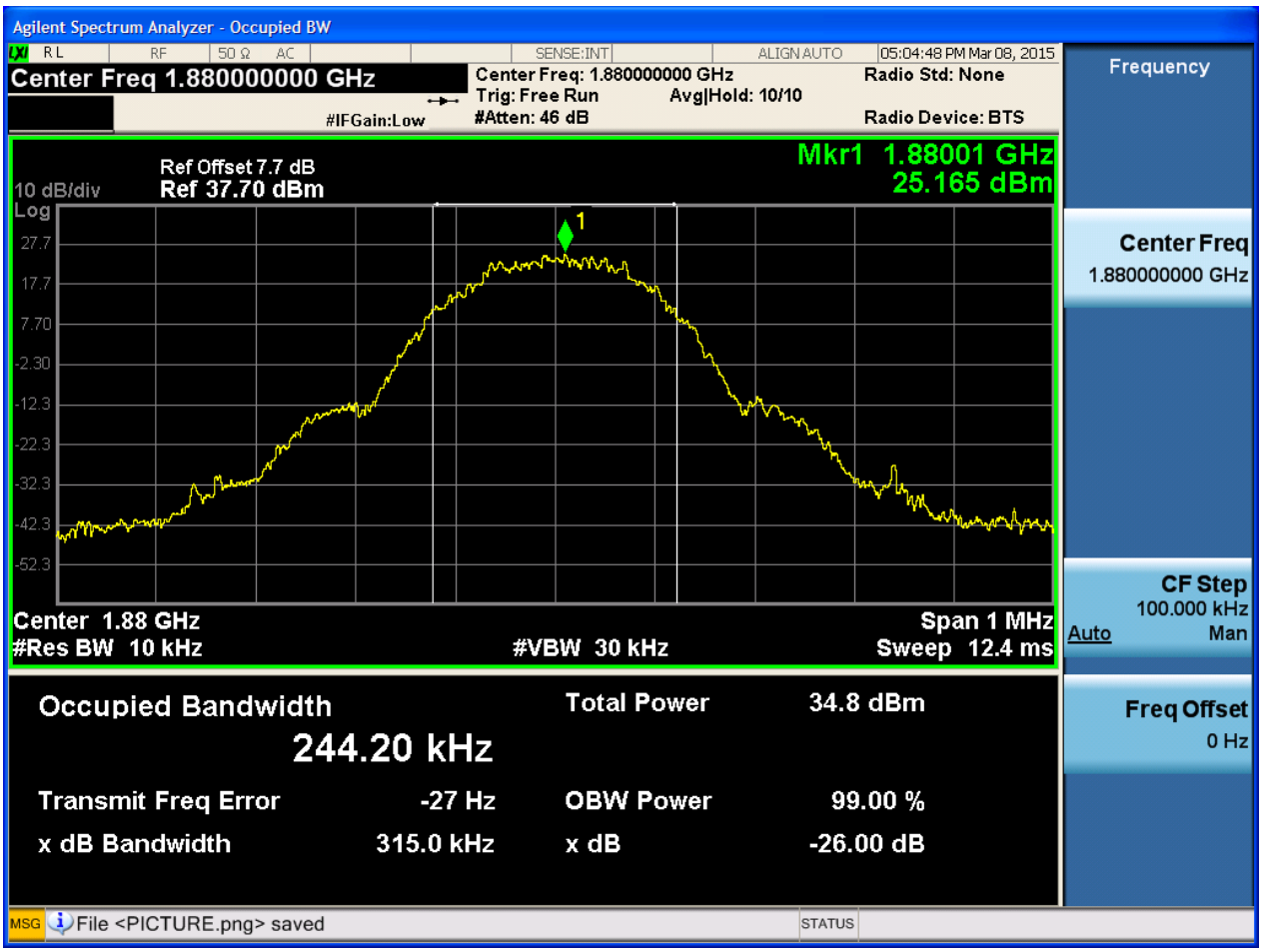
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

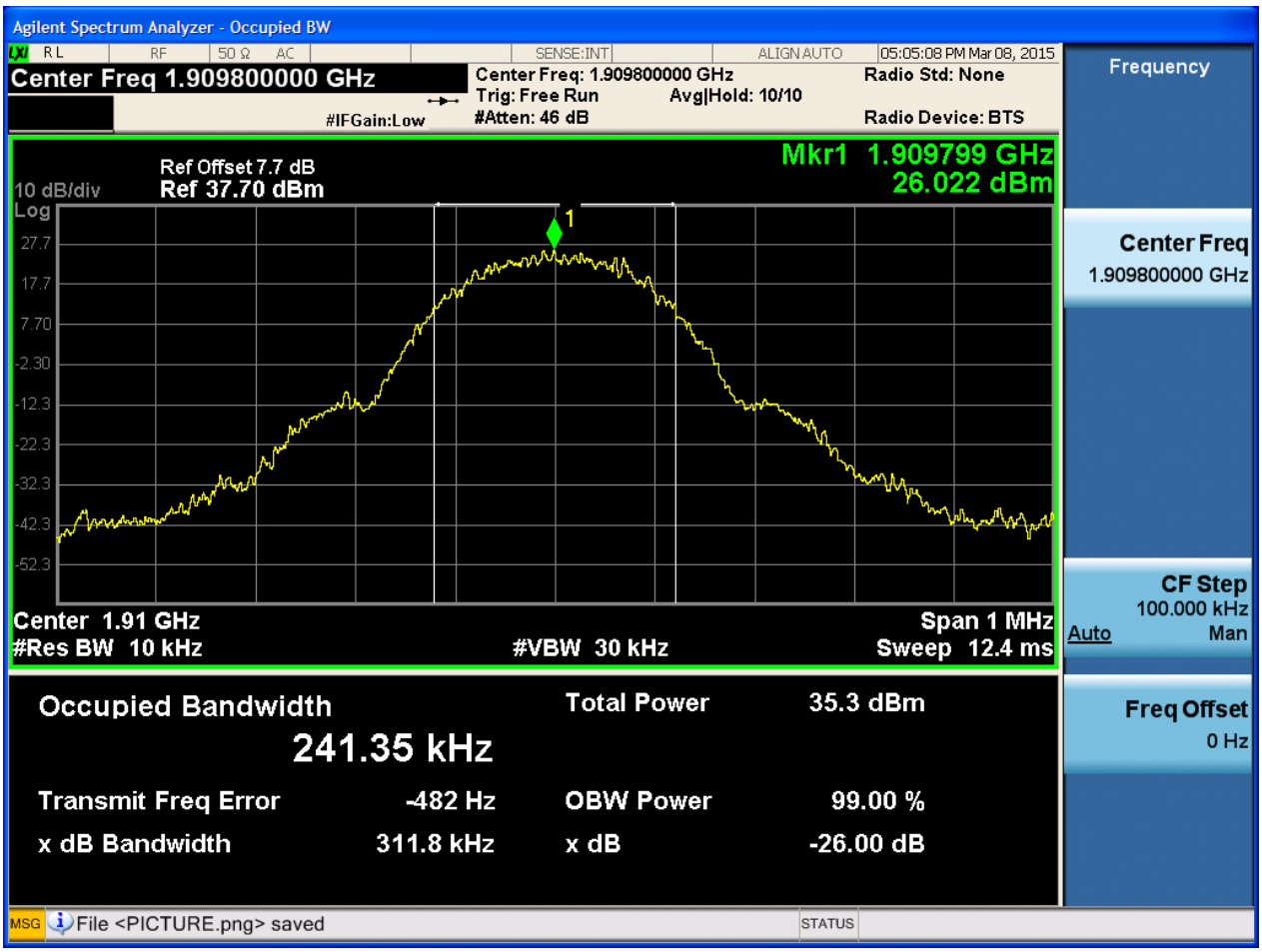
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

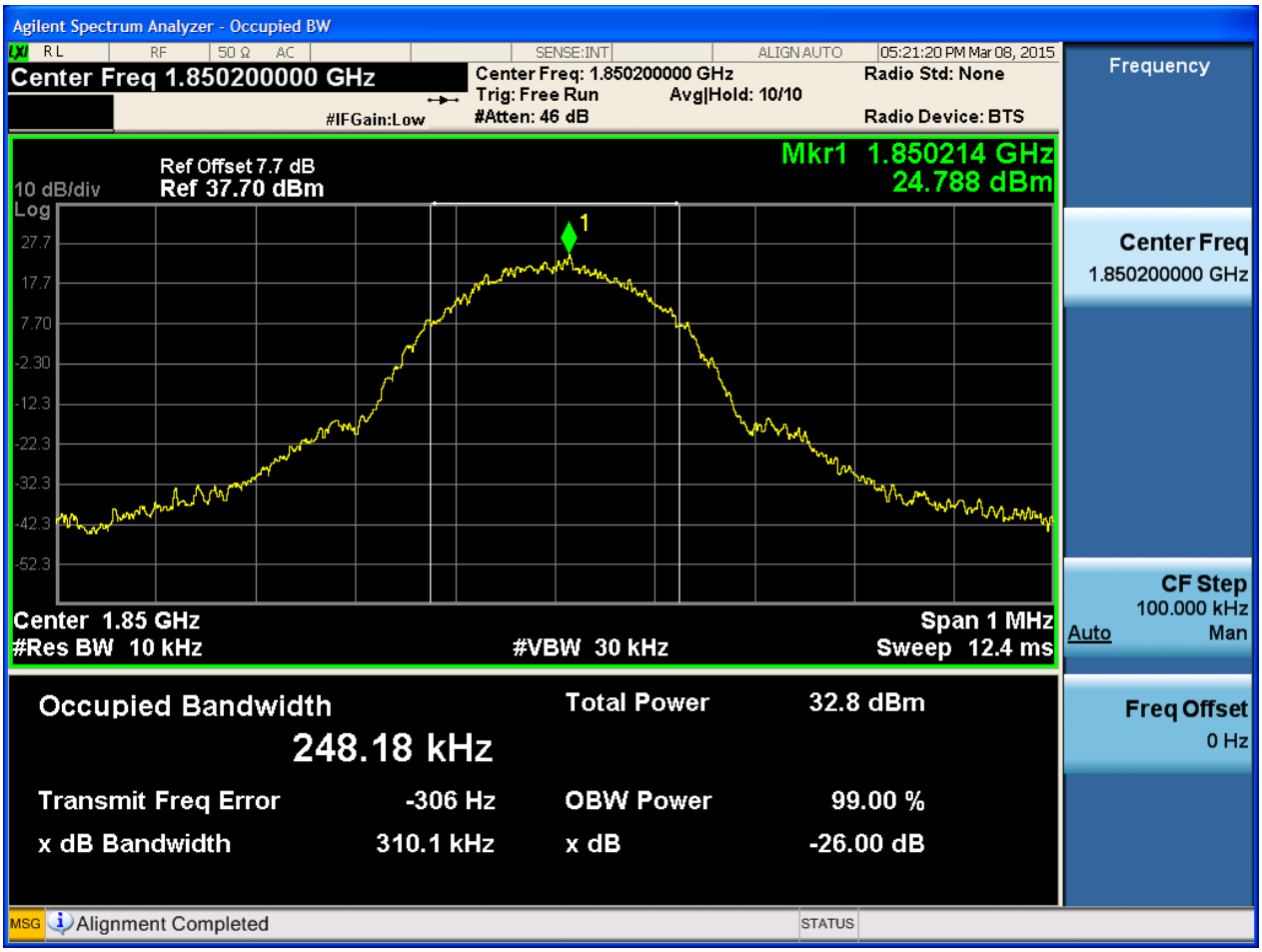


4.1.2.1.3 Test Channel = HCH

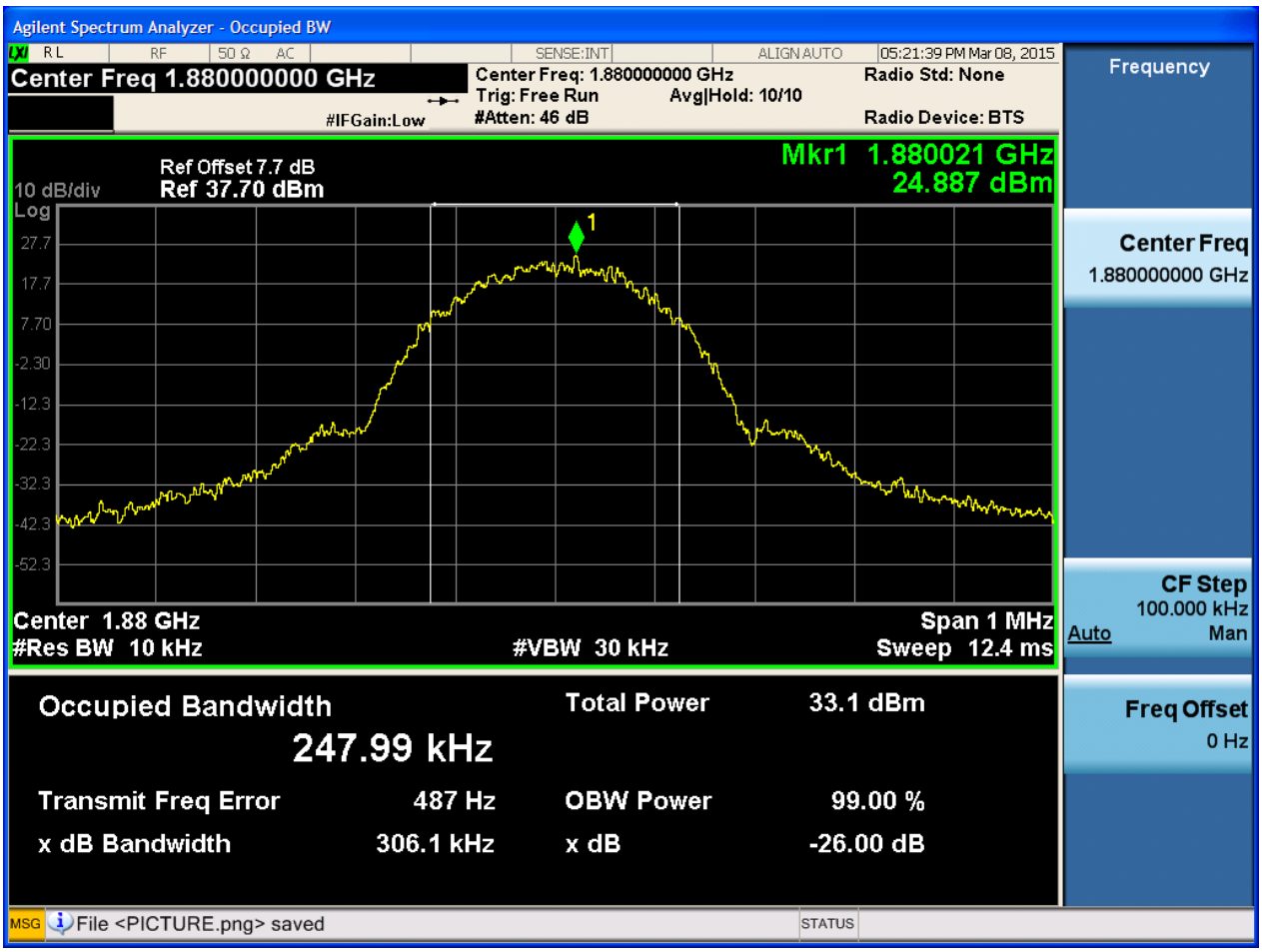


4.1.2.2 Test Mode = GSM/TM2

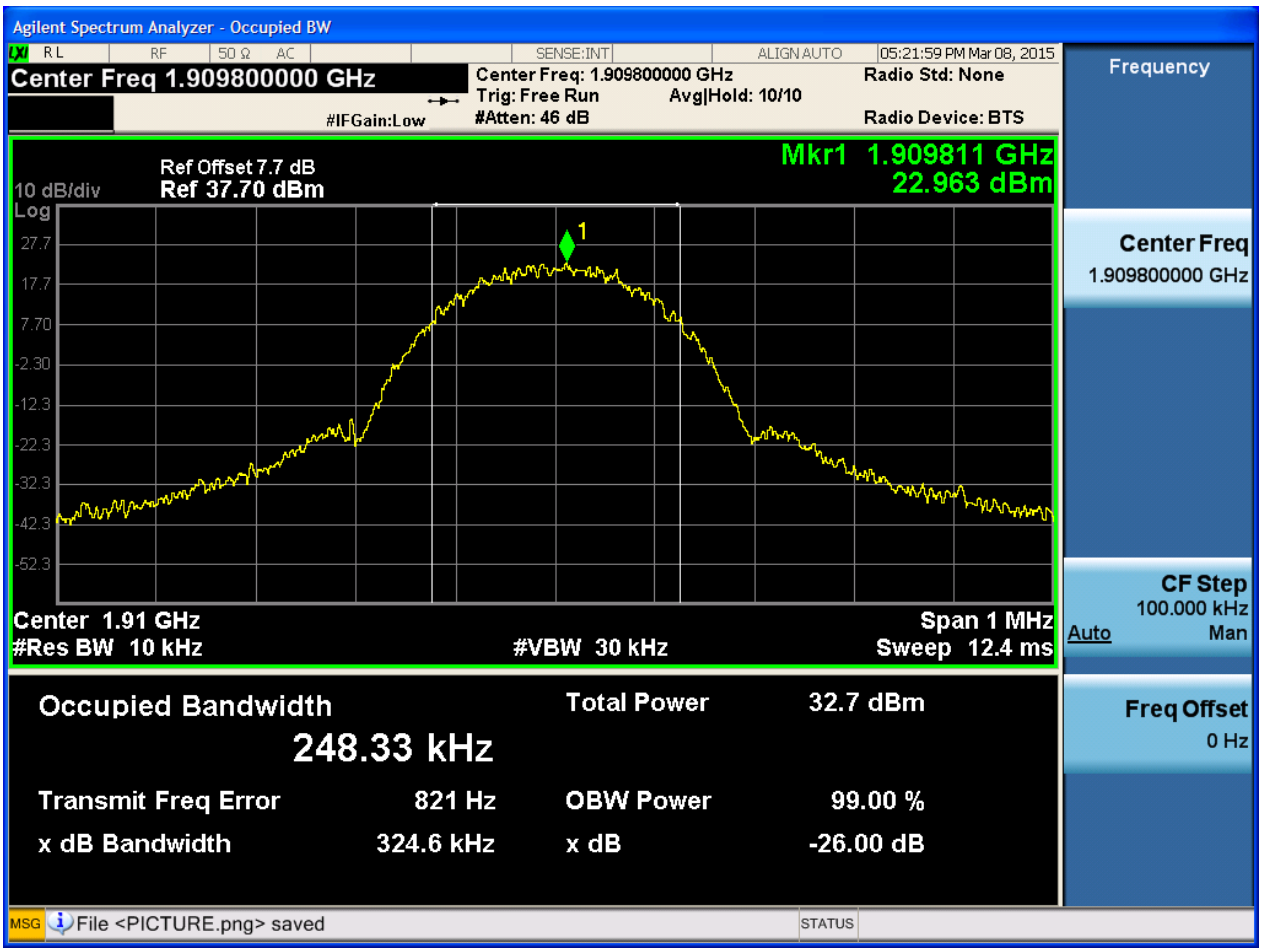
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

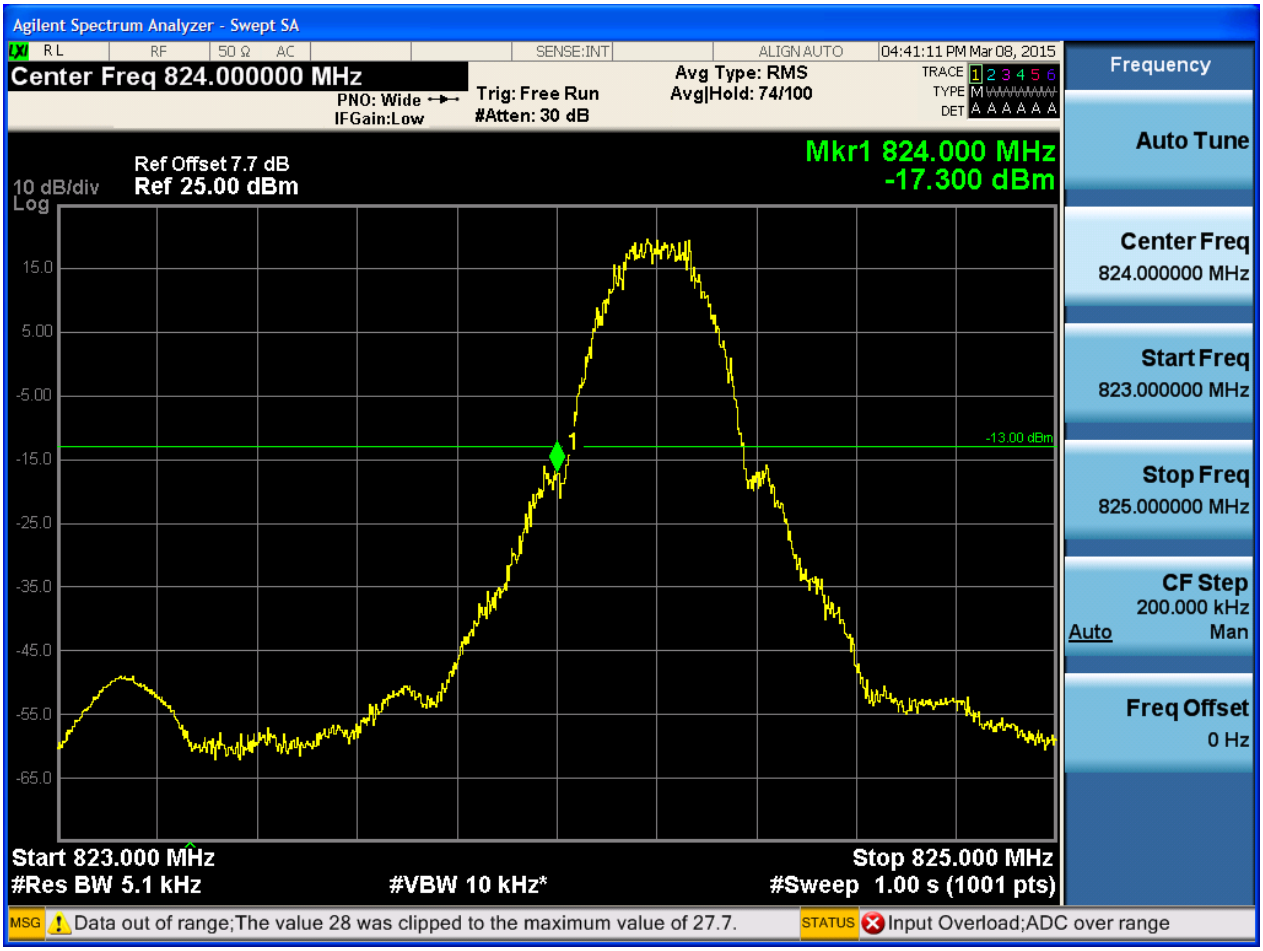
Part I - Test Plots

5.1 For GSM

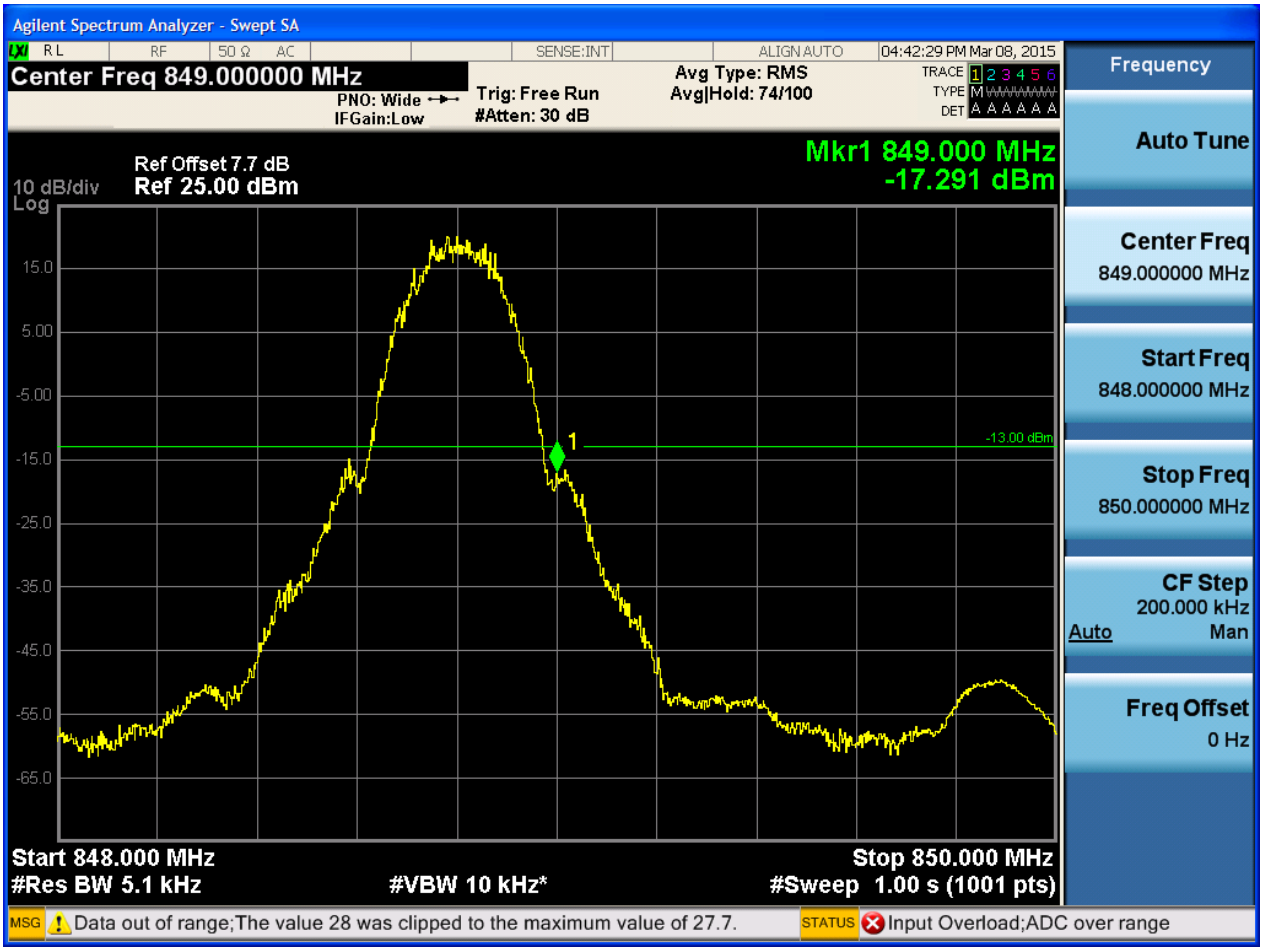
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

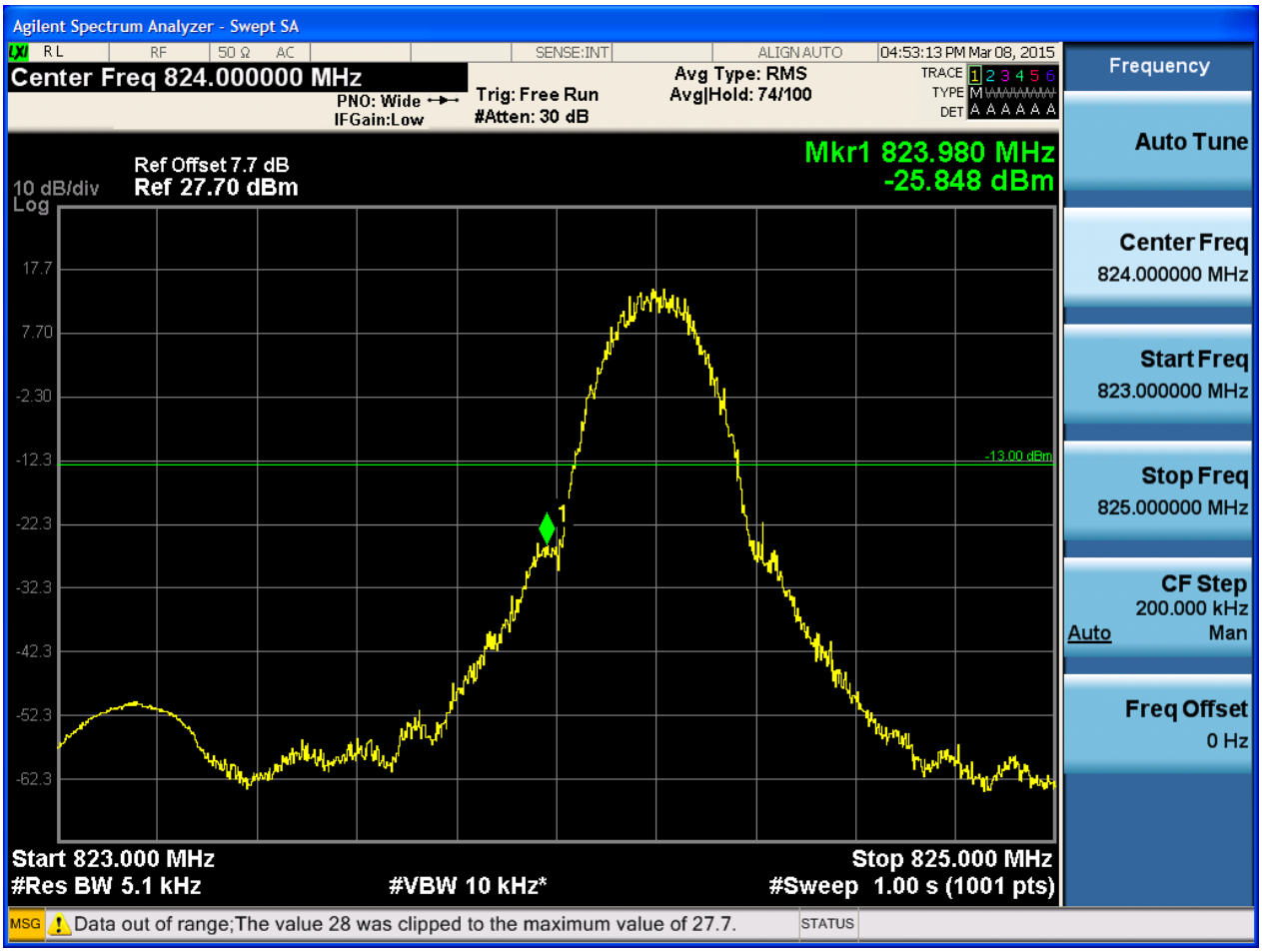


5.1.1.1.2 Test Channel = HCH

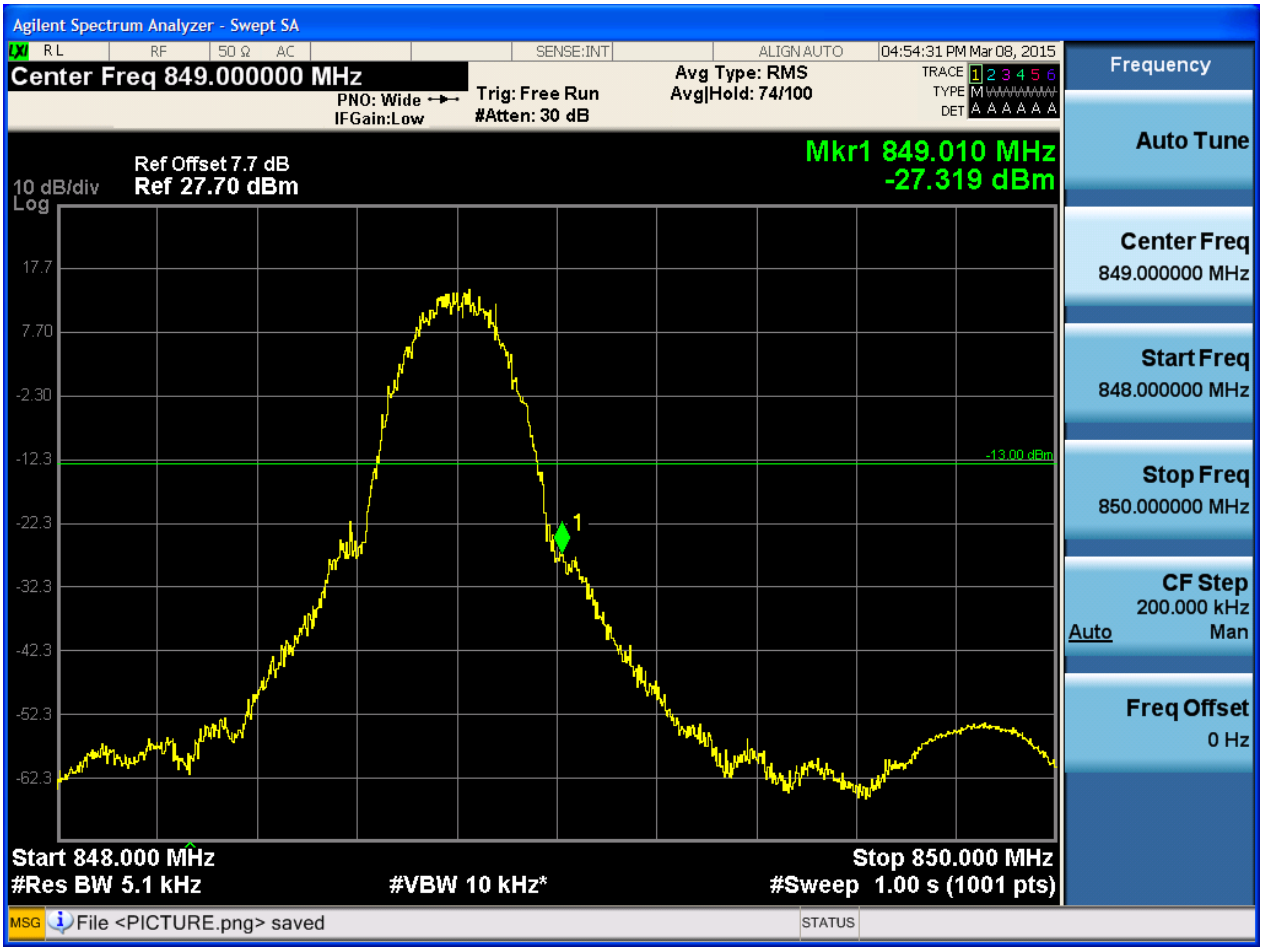


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



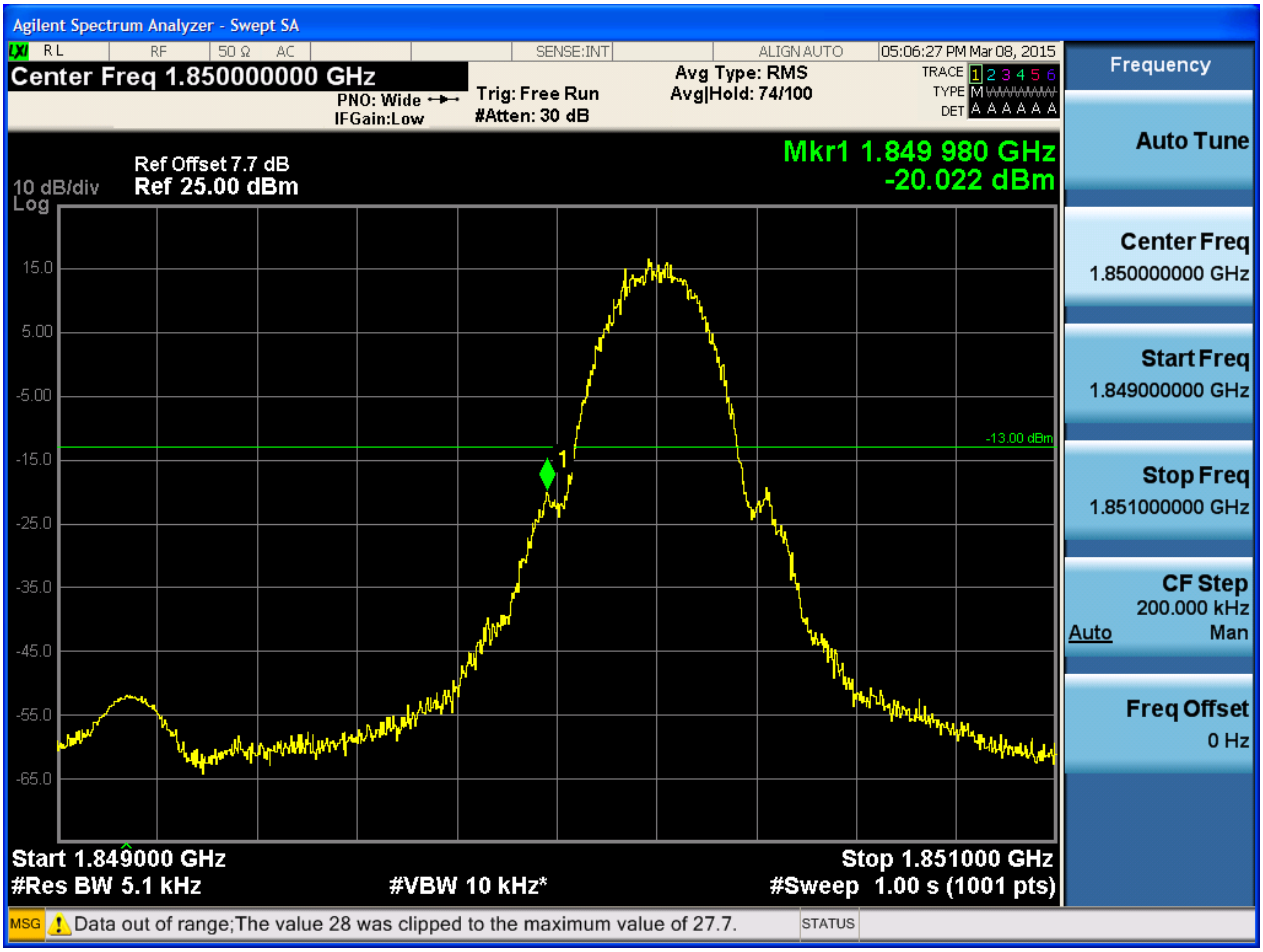
5.1.1.2.2 Test Channel = HCH



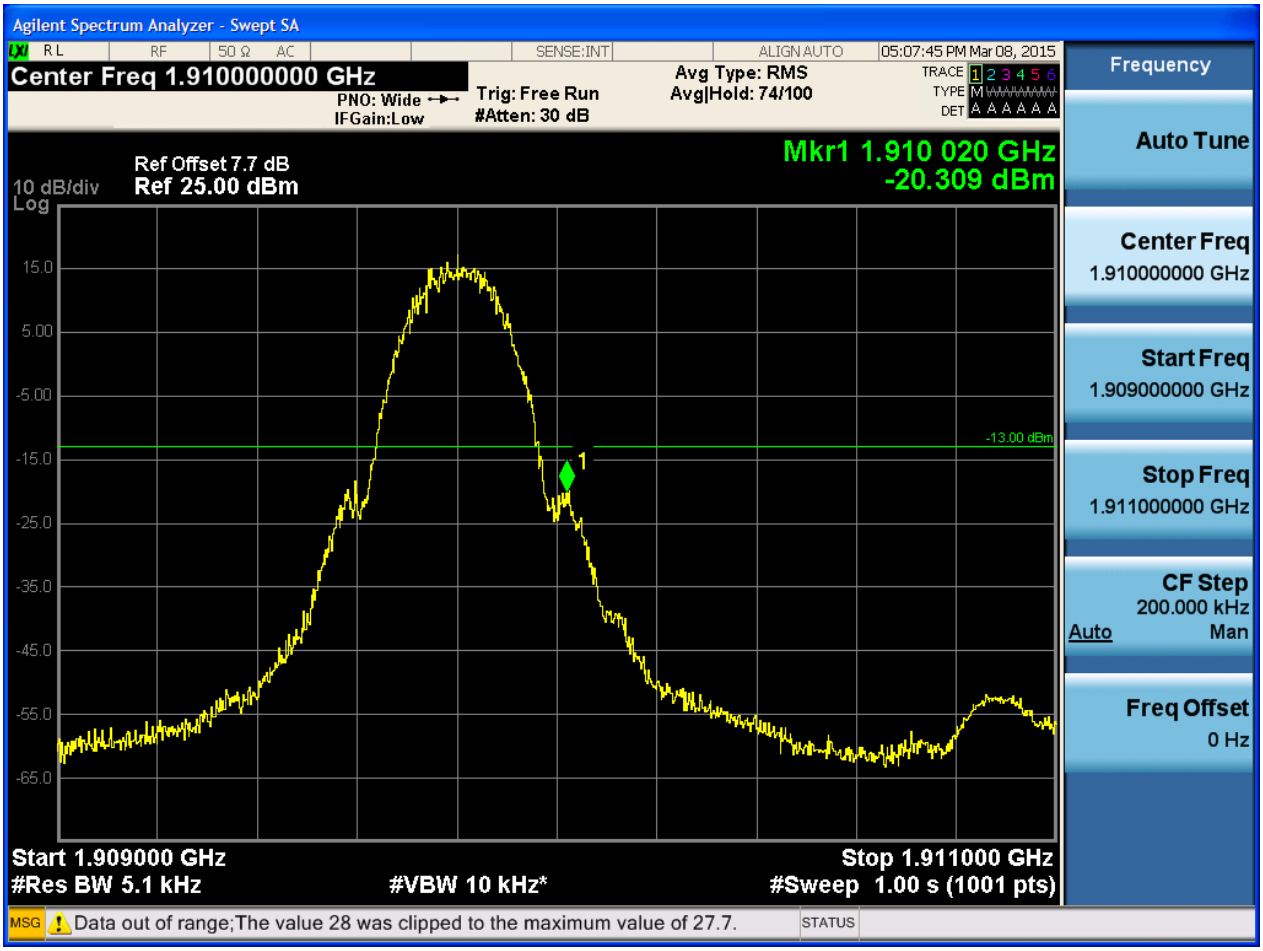
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

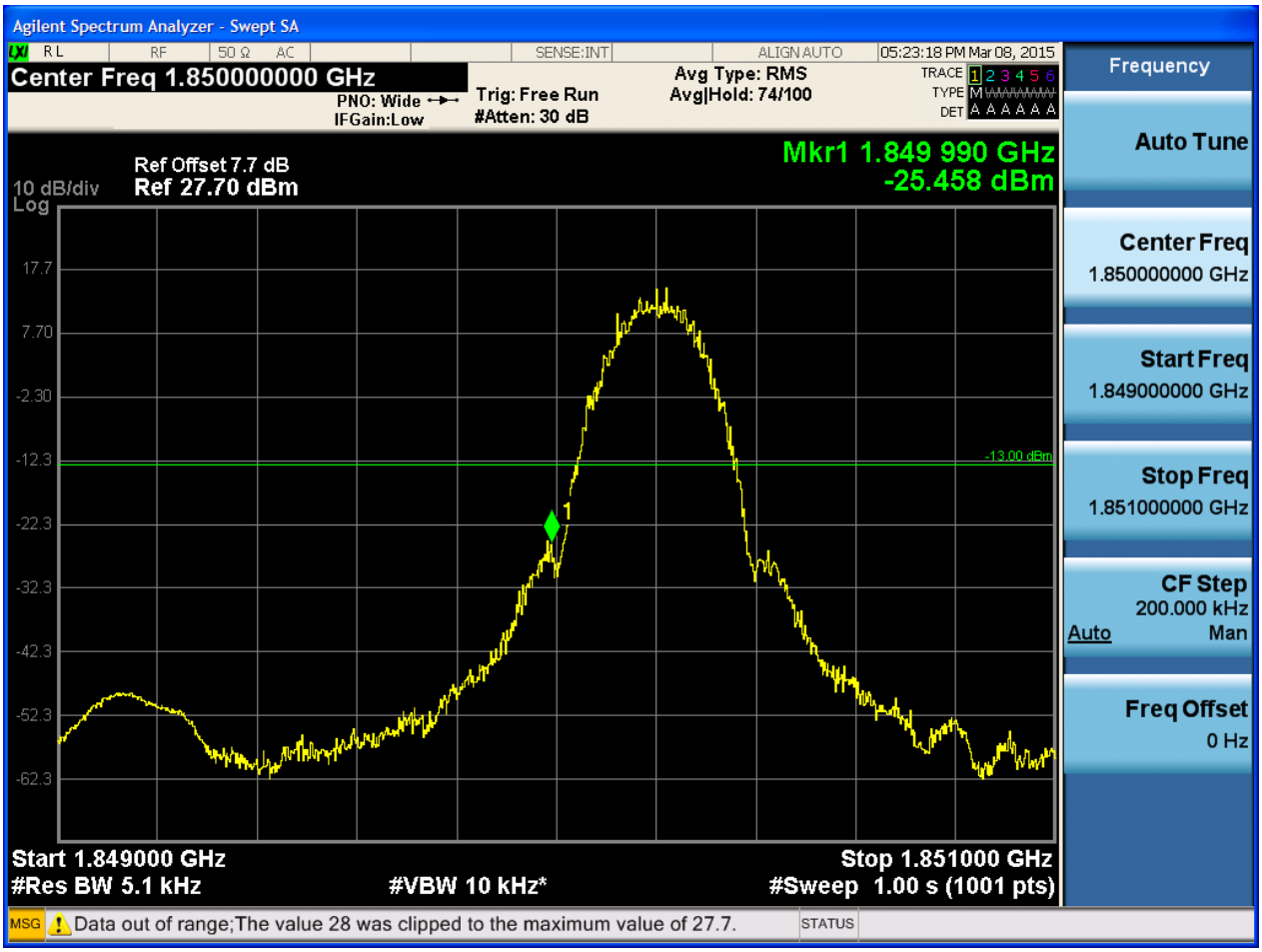


5.1.2.1.2 Test Channel = HCH

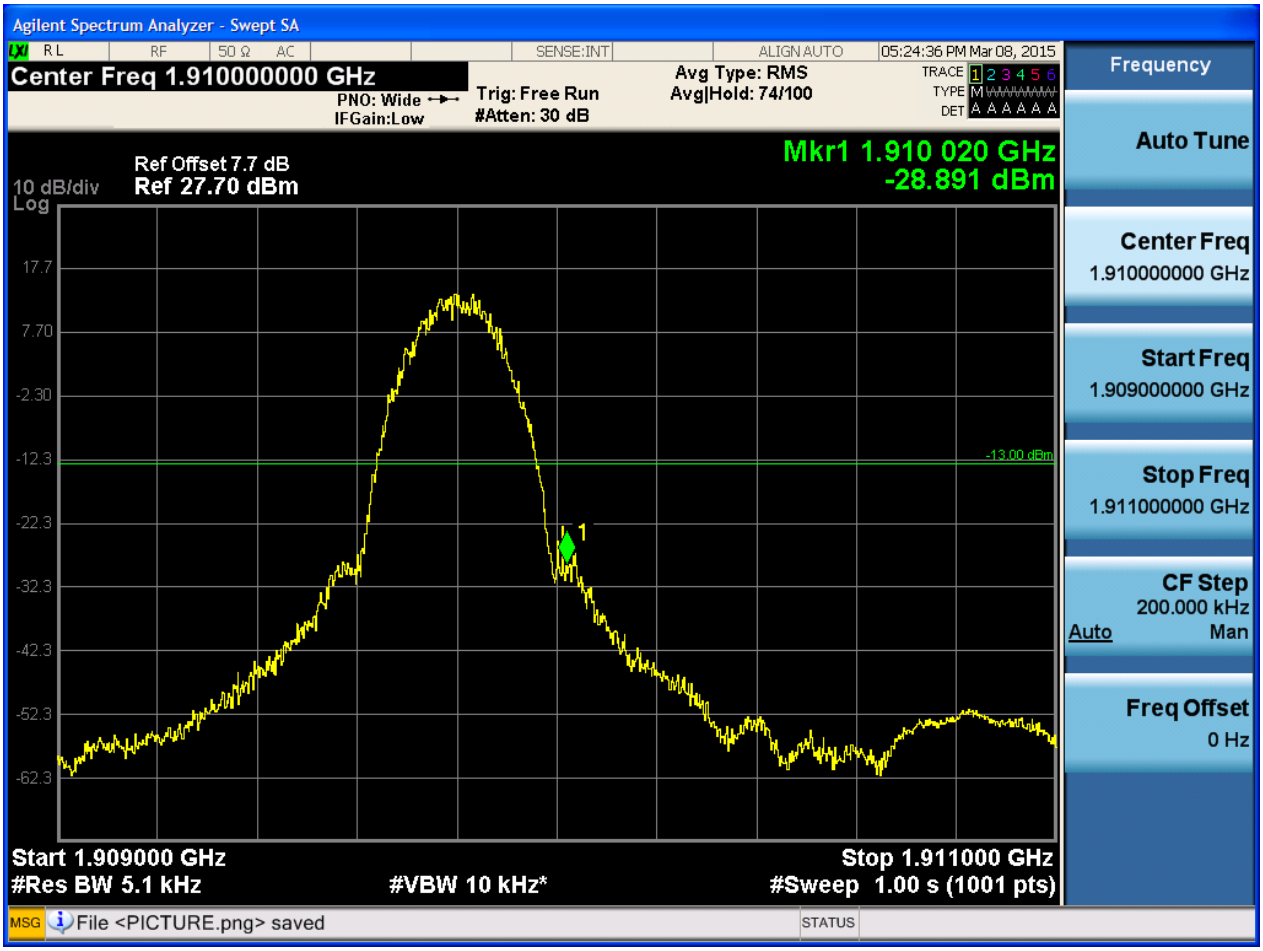


5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



5.1.2.2.2 Test Channel = HCH



6Appendix_F: 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.

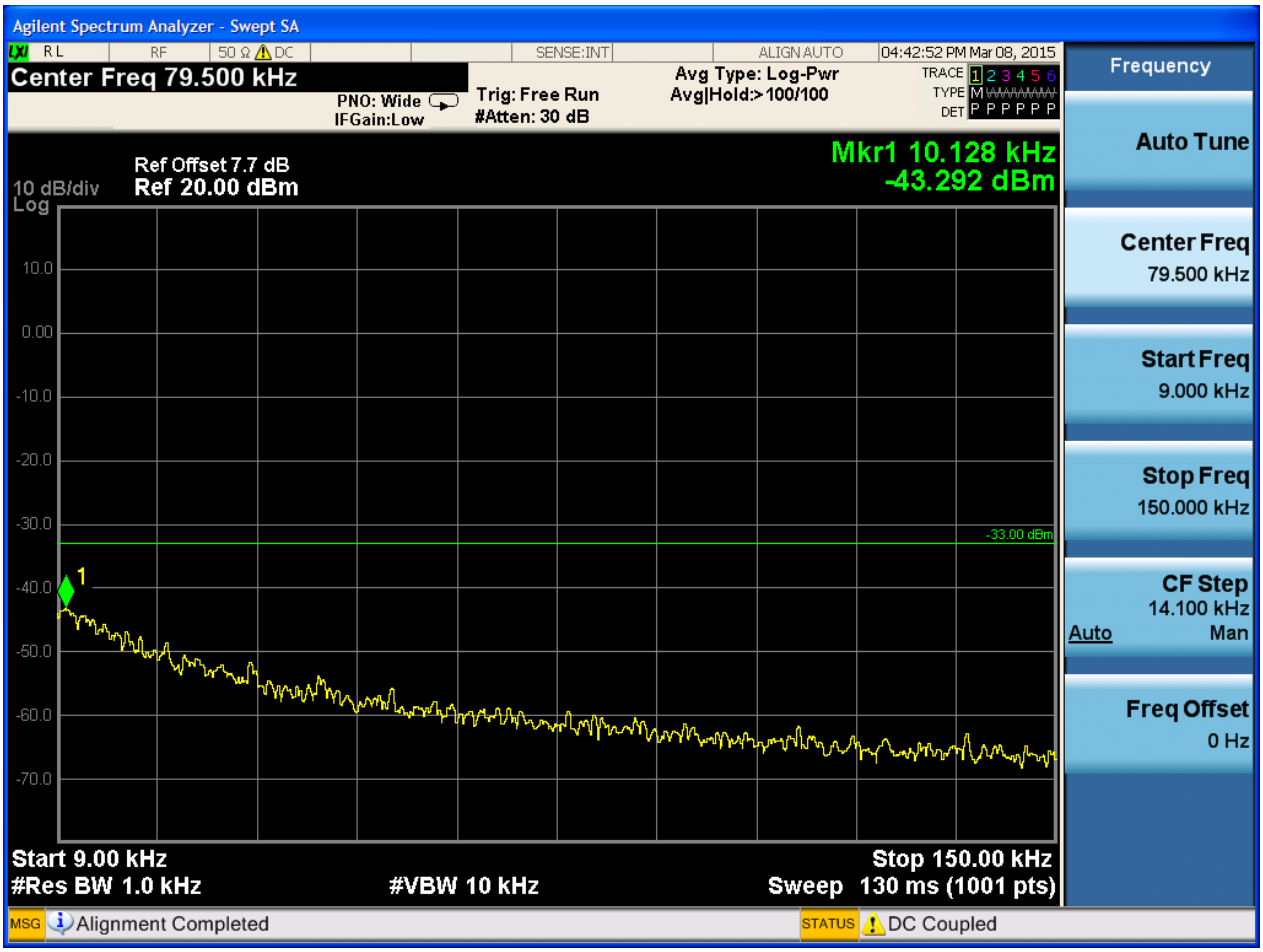
Part I - Test Plots

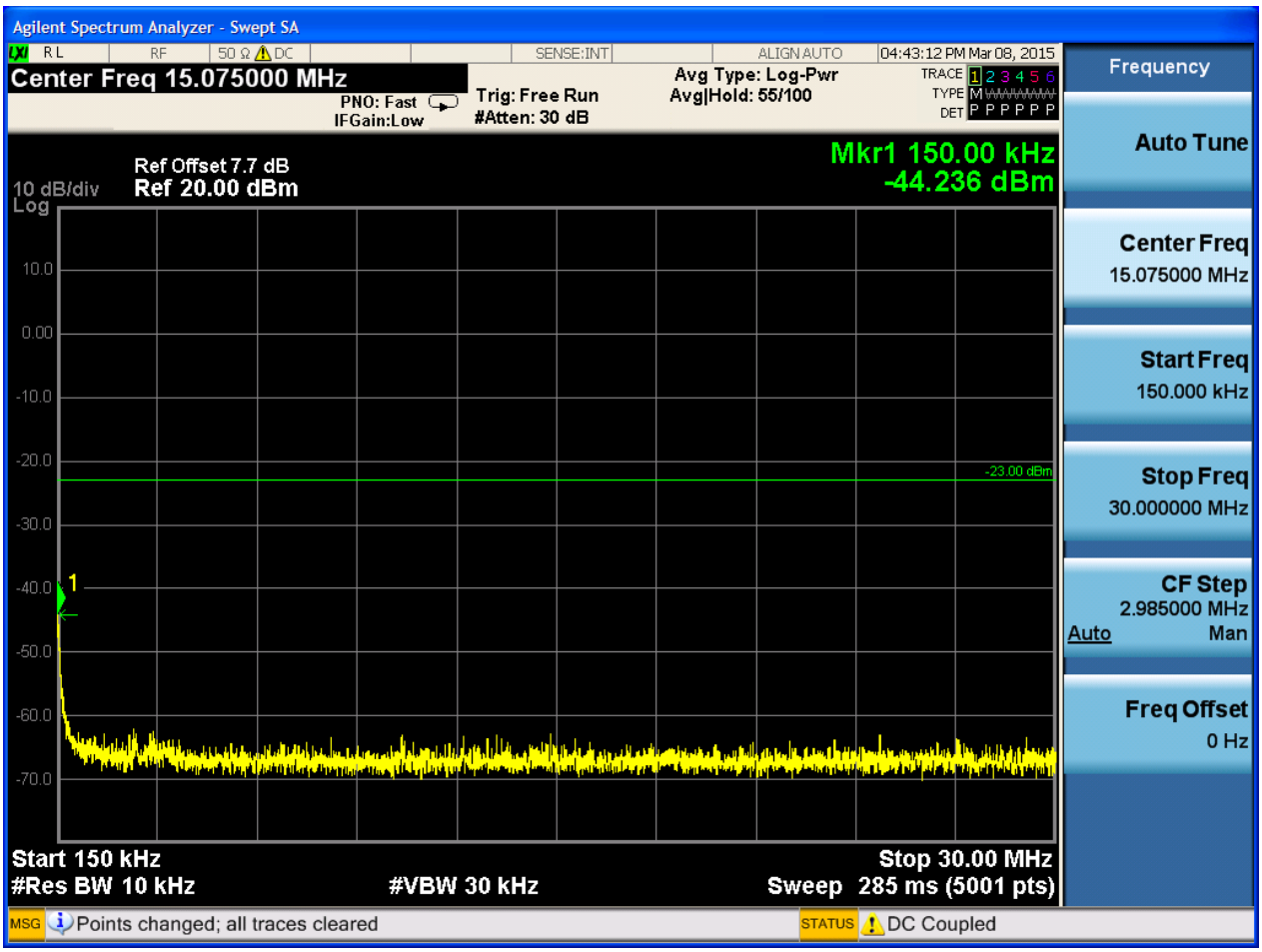
6.1 For GSM

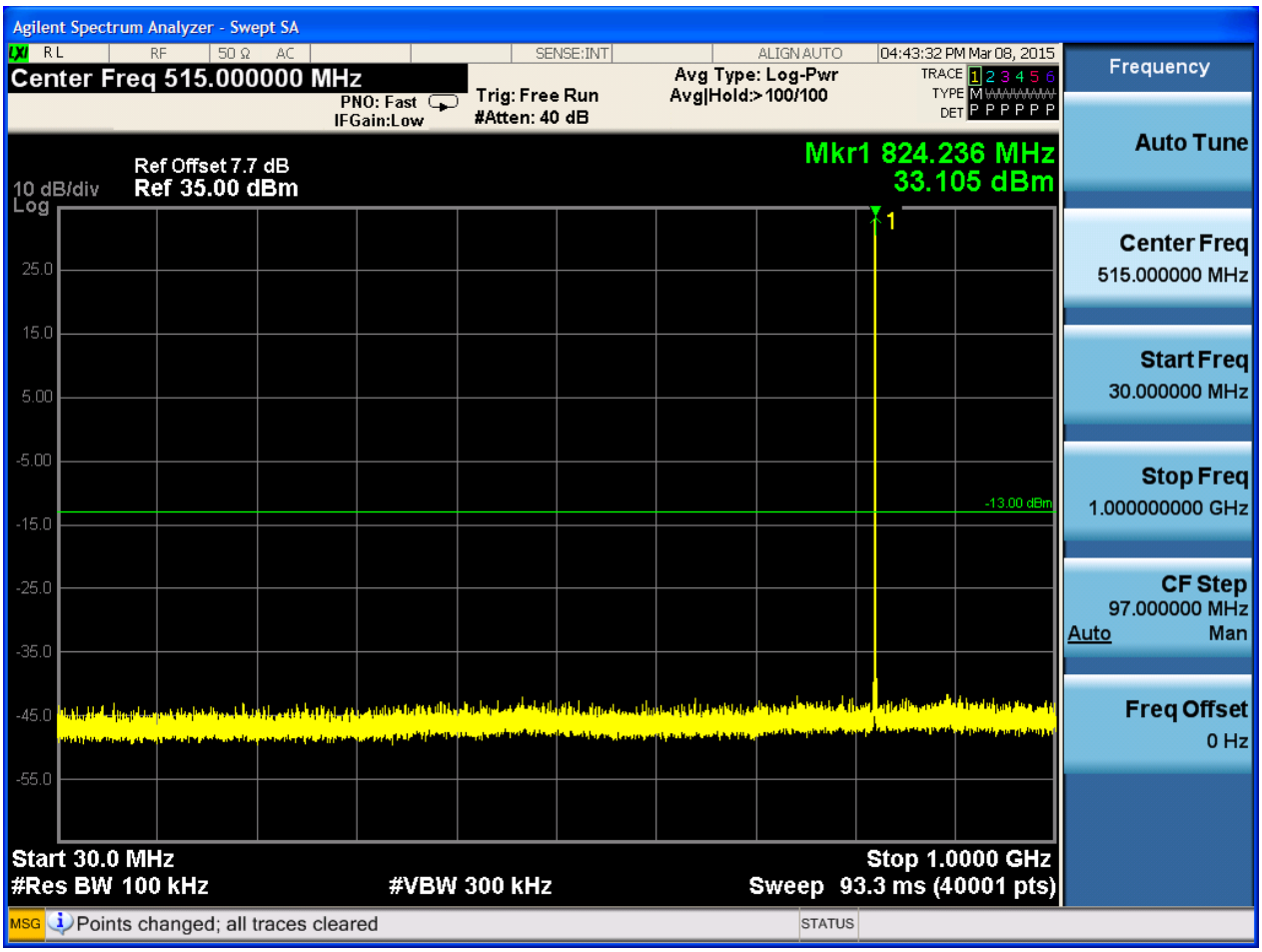
6.1.1 Test Band = GSM850

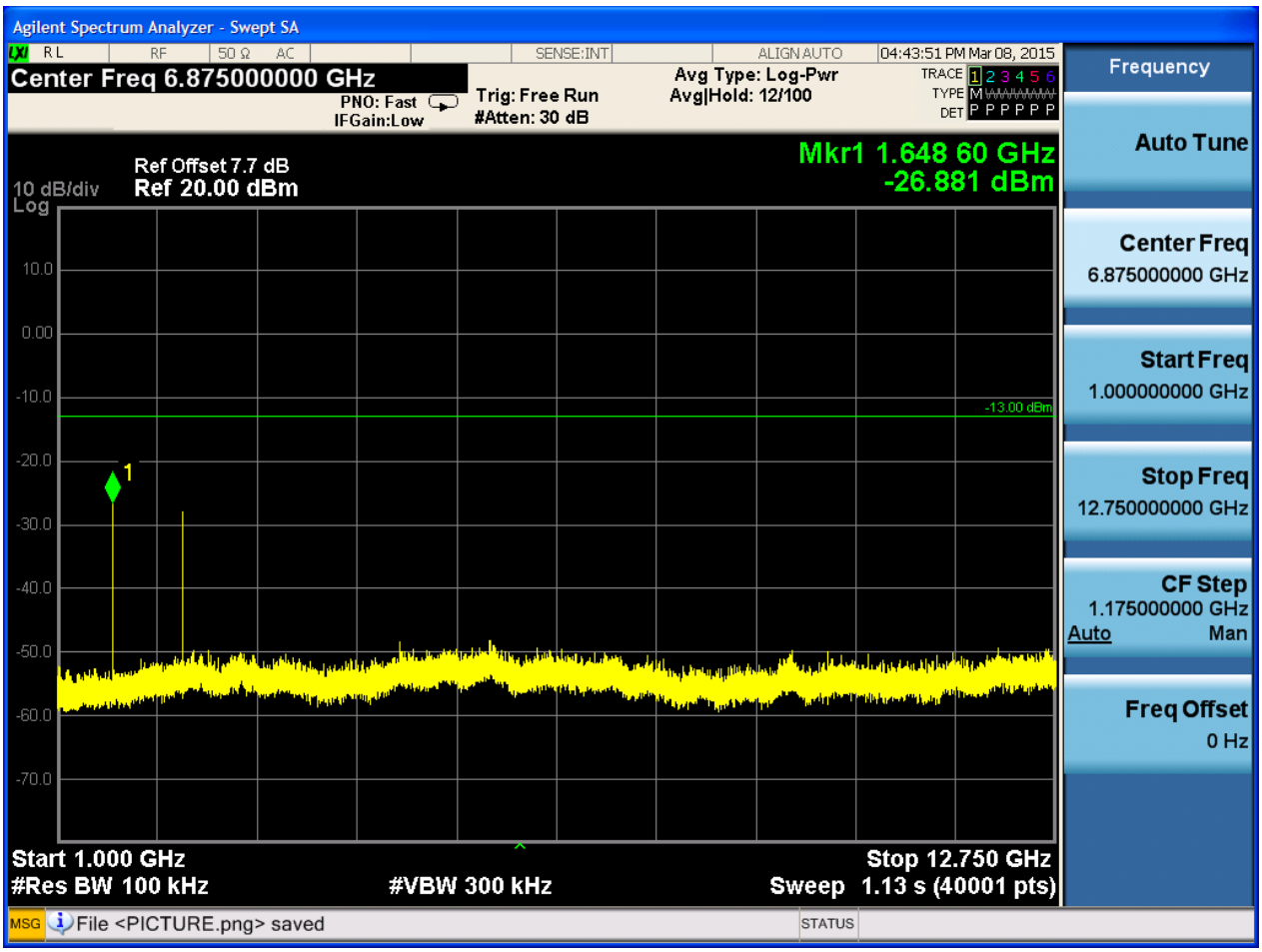
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

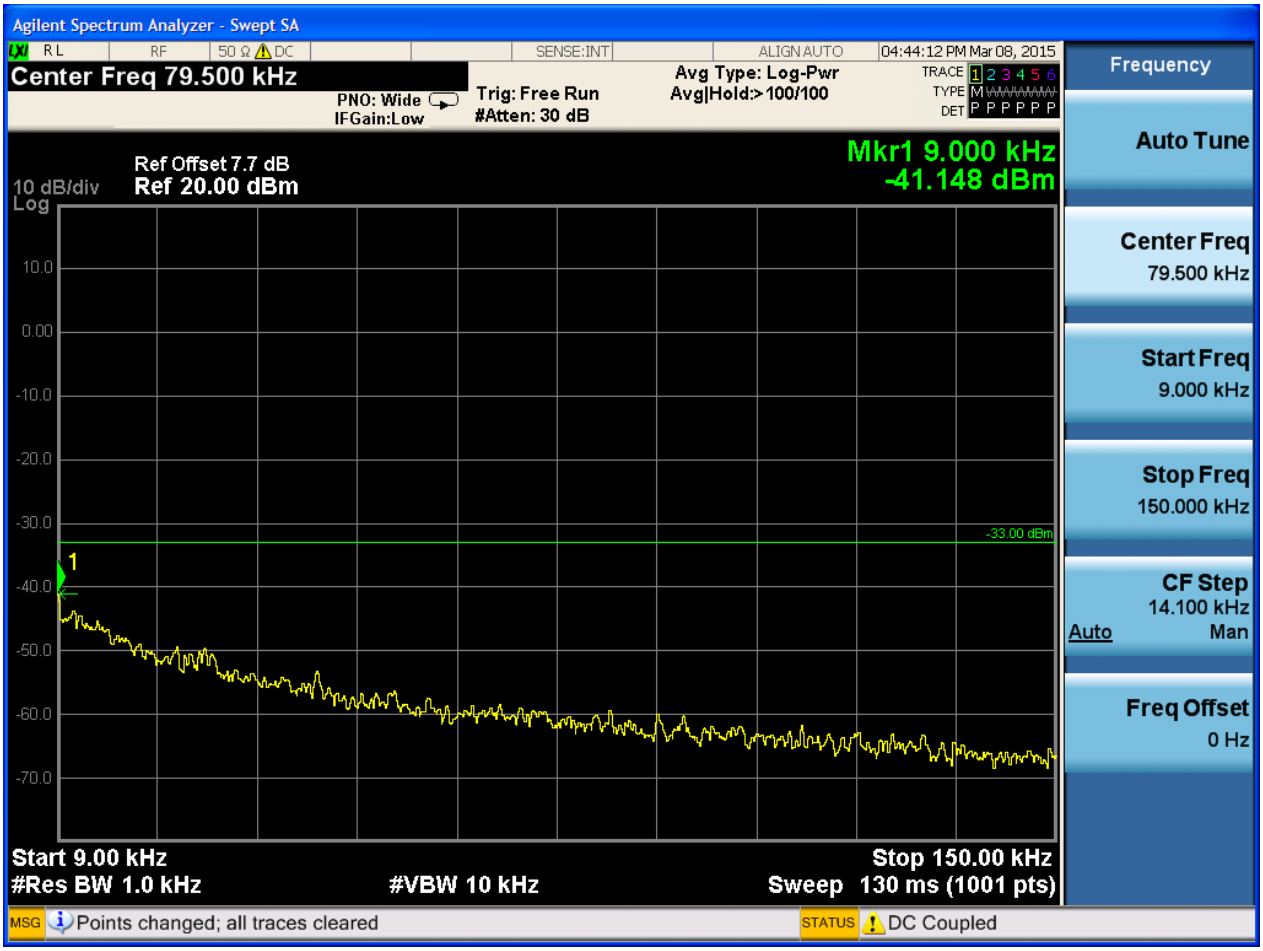


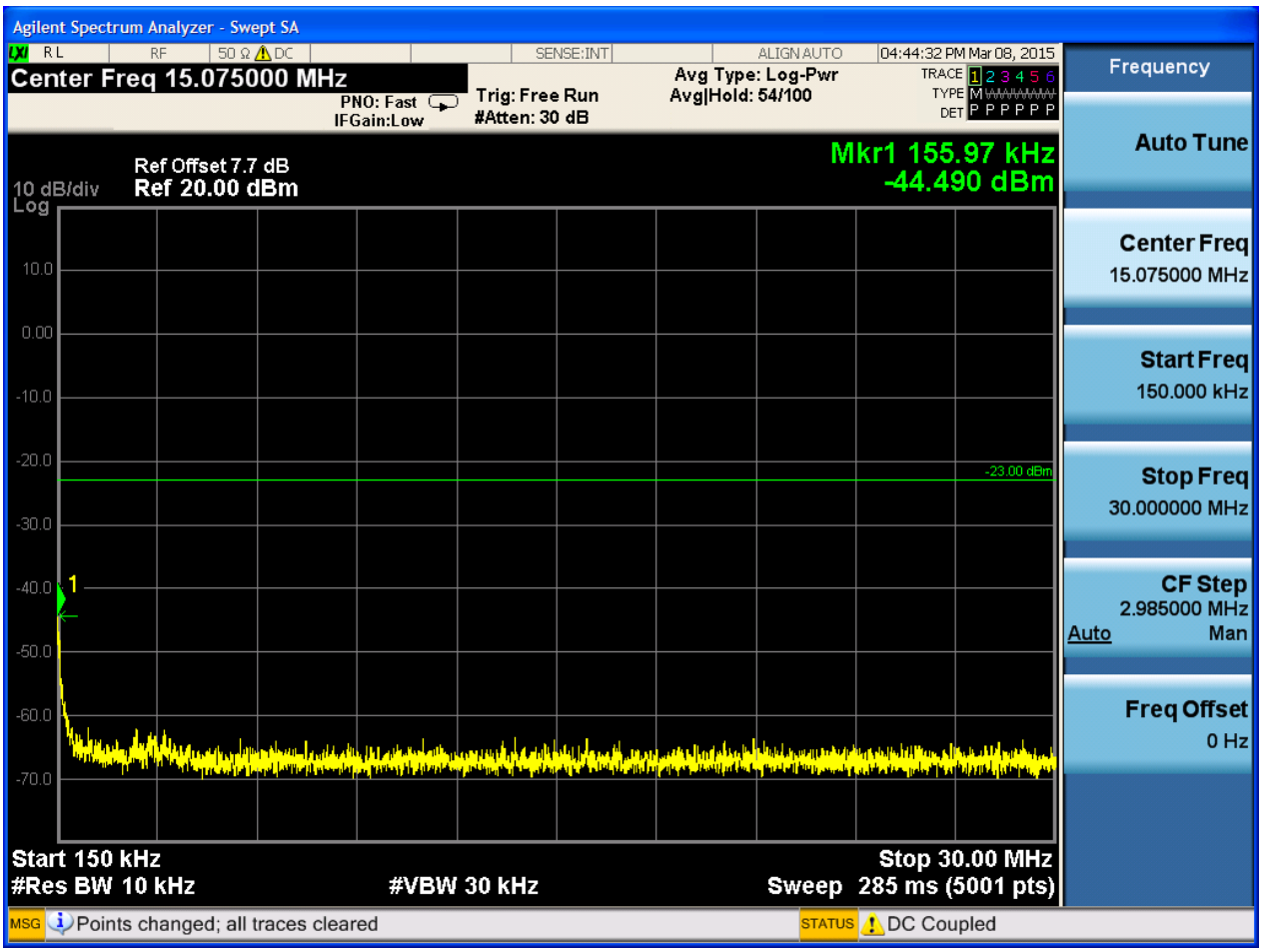


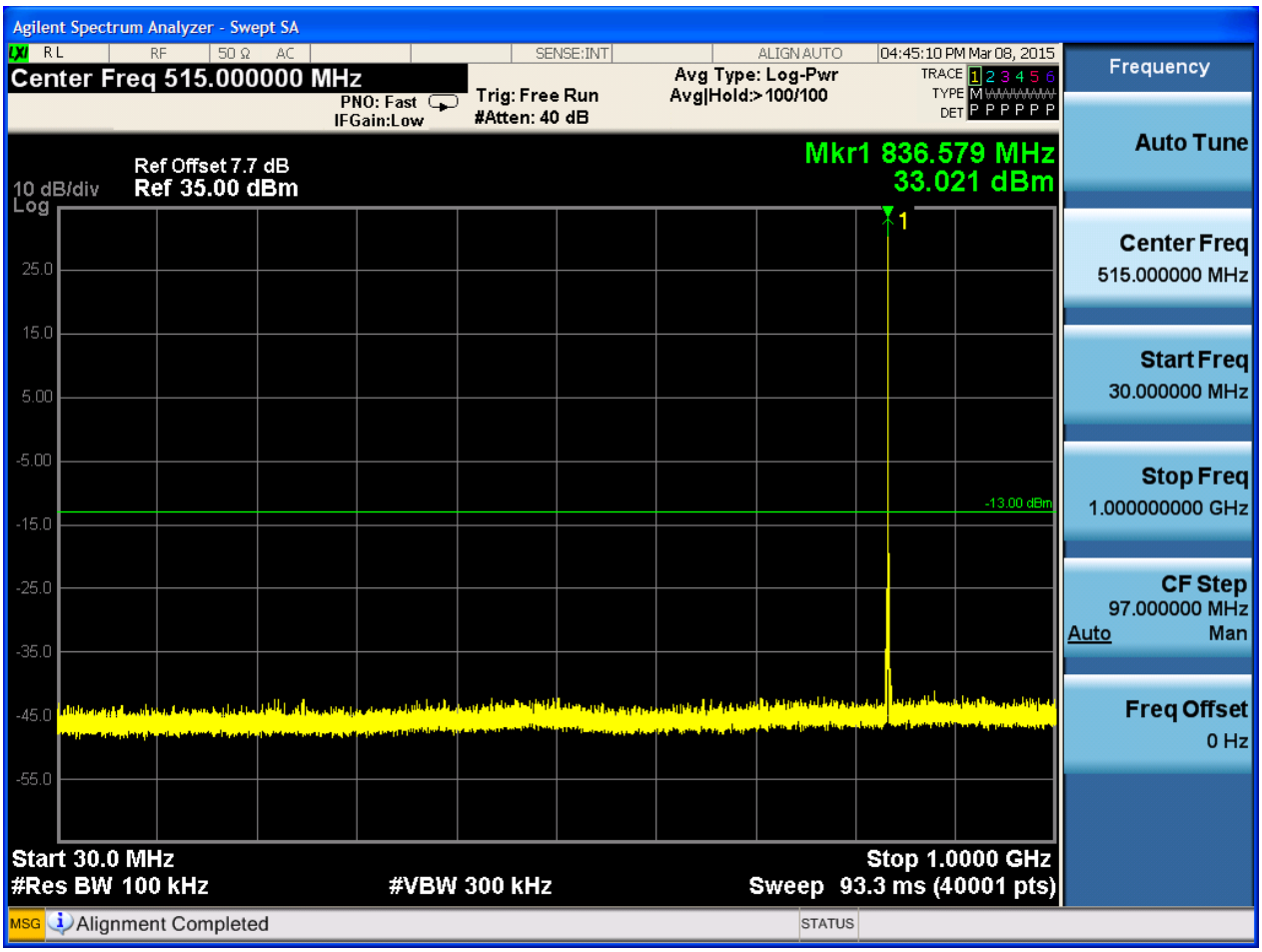


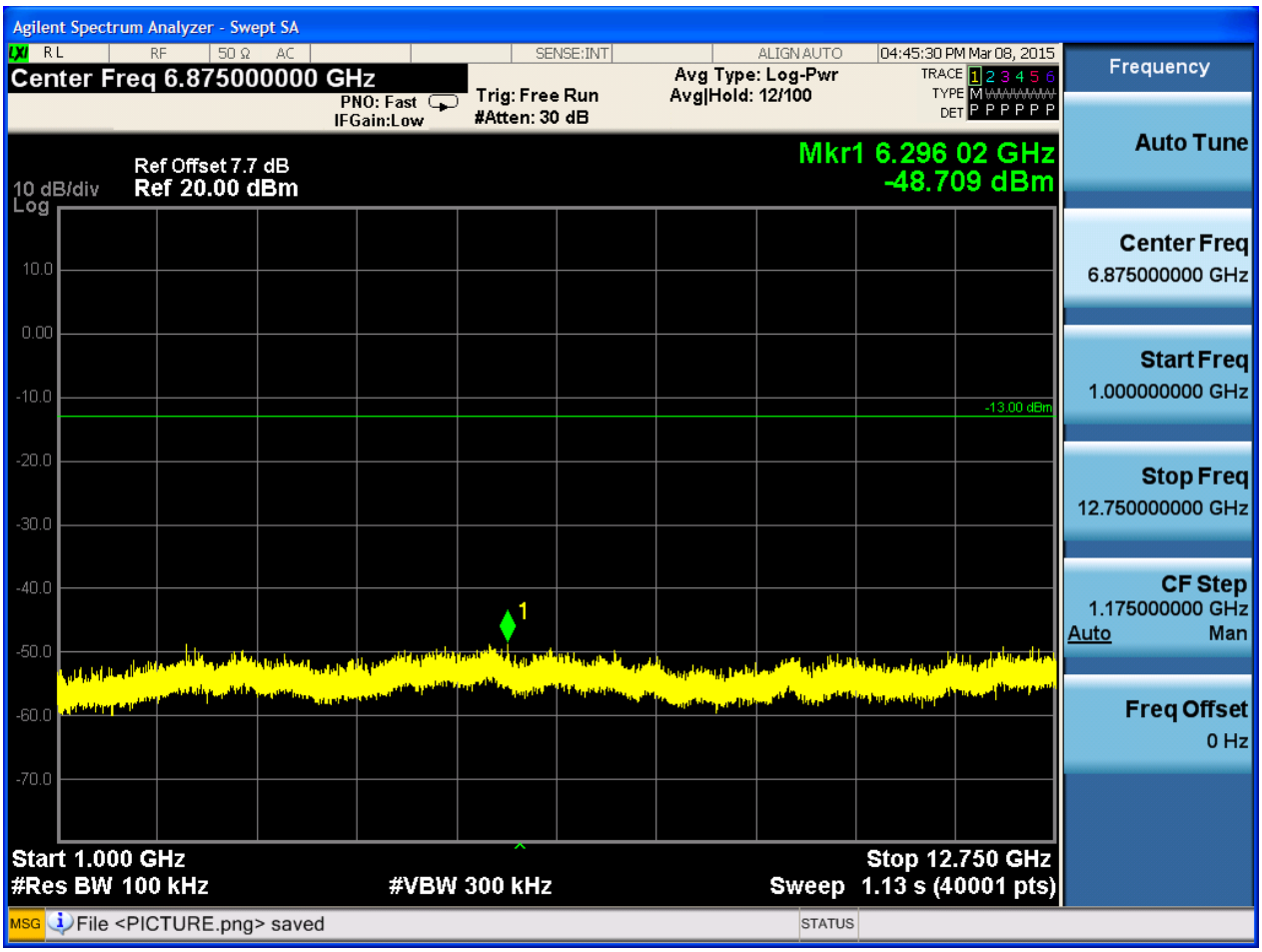


6.1.1.1.2 Test Channel = MCH

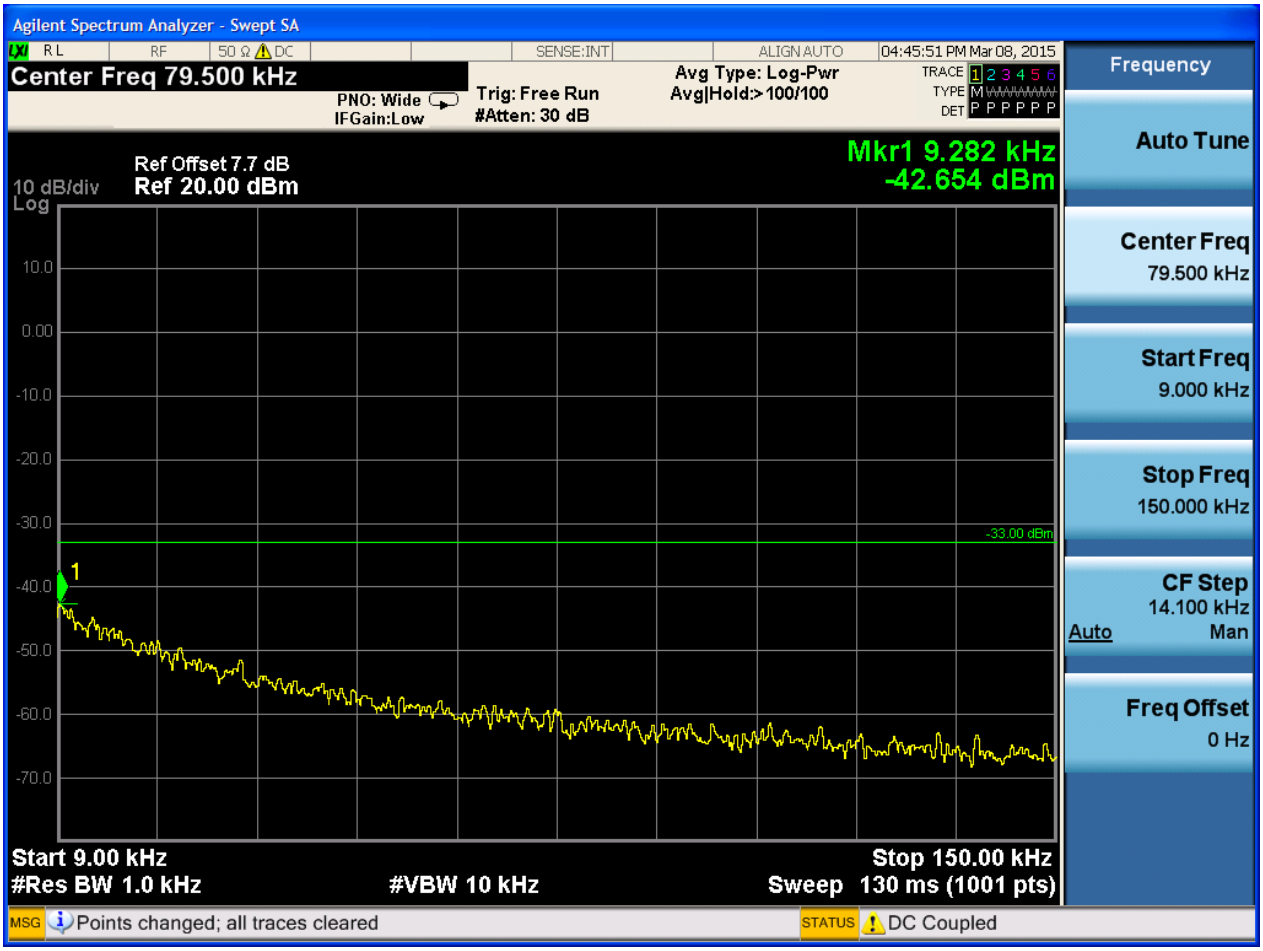


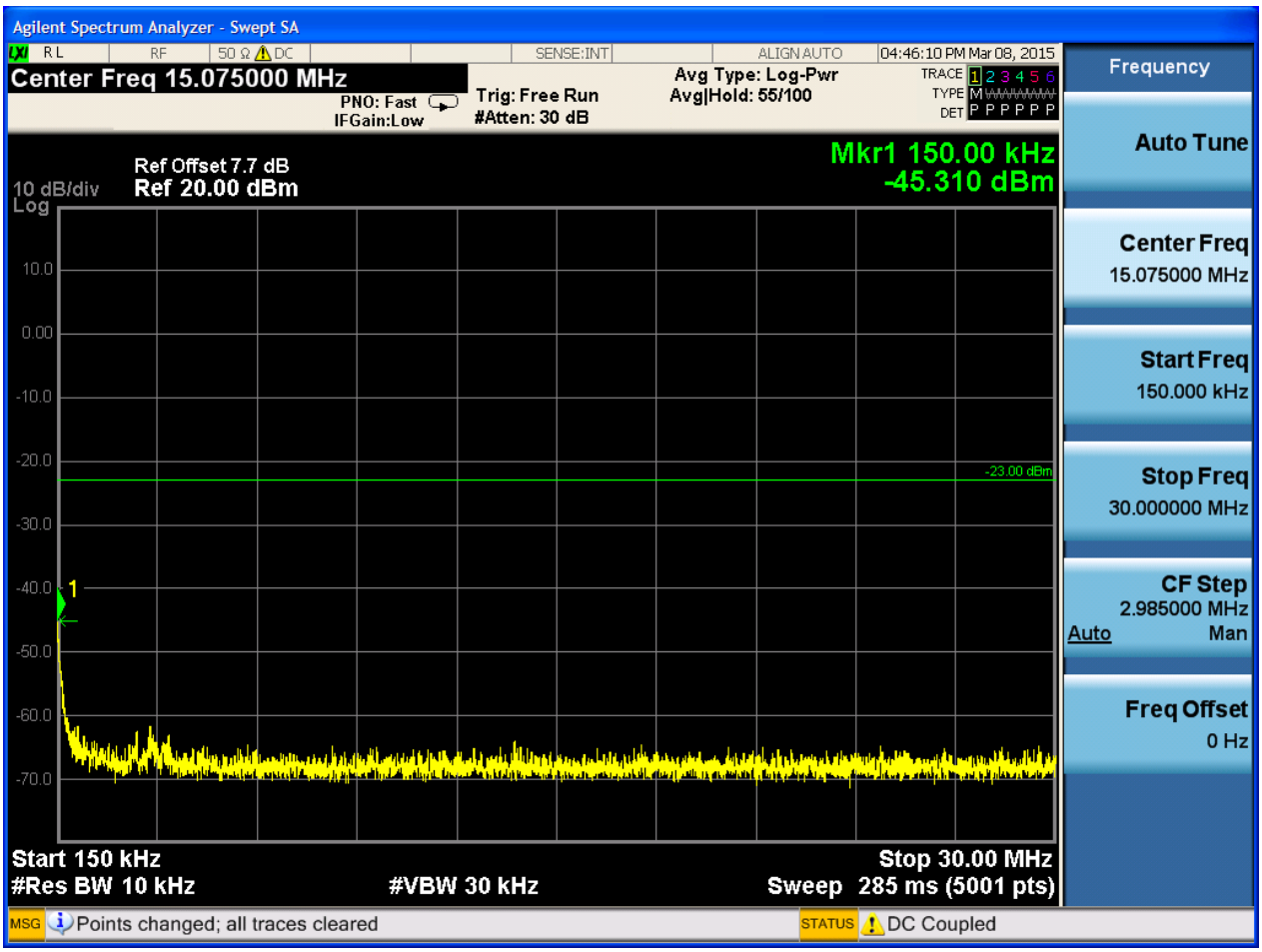


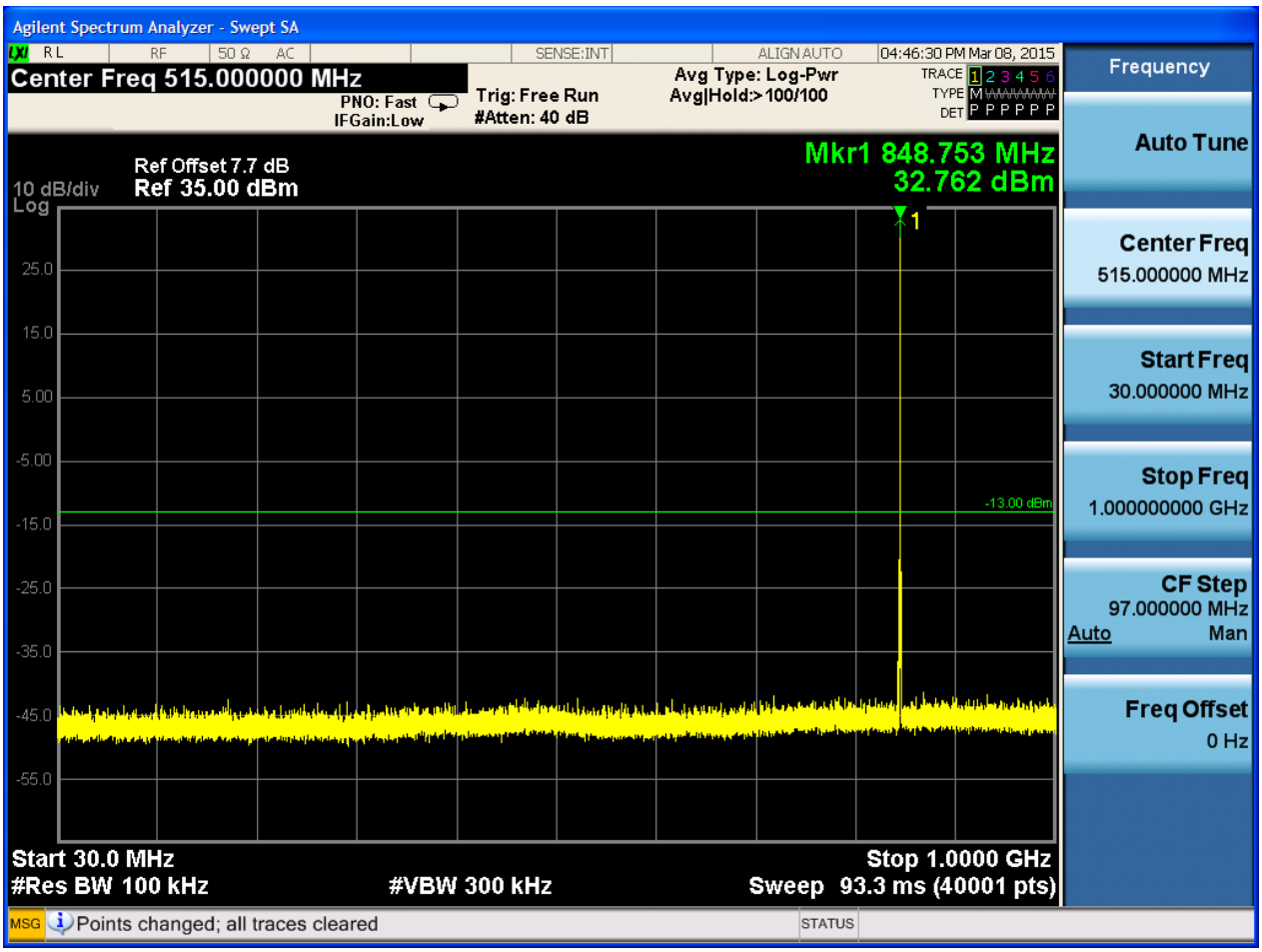


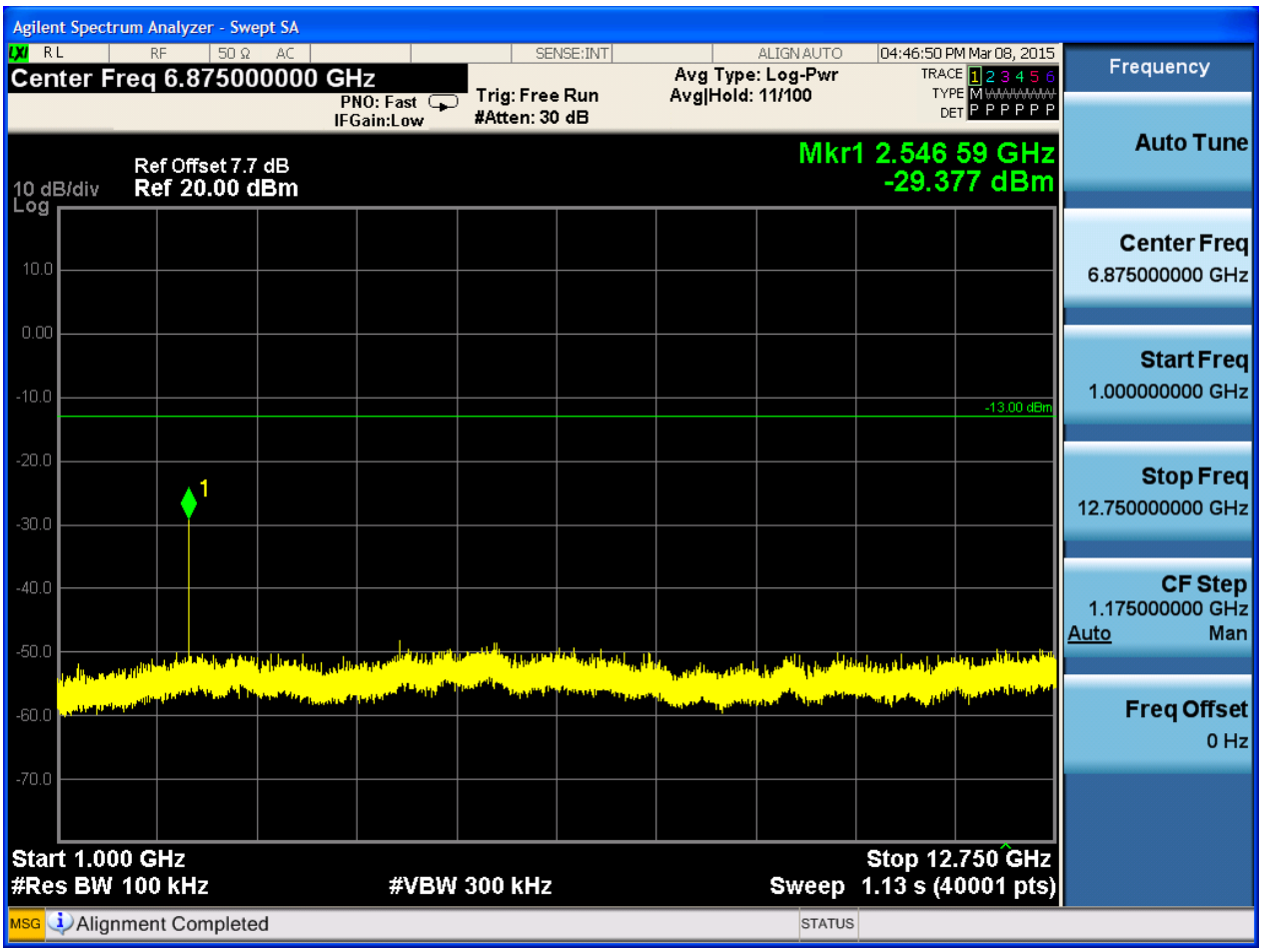


6.1.1.1.3 Test Channel = HCH



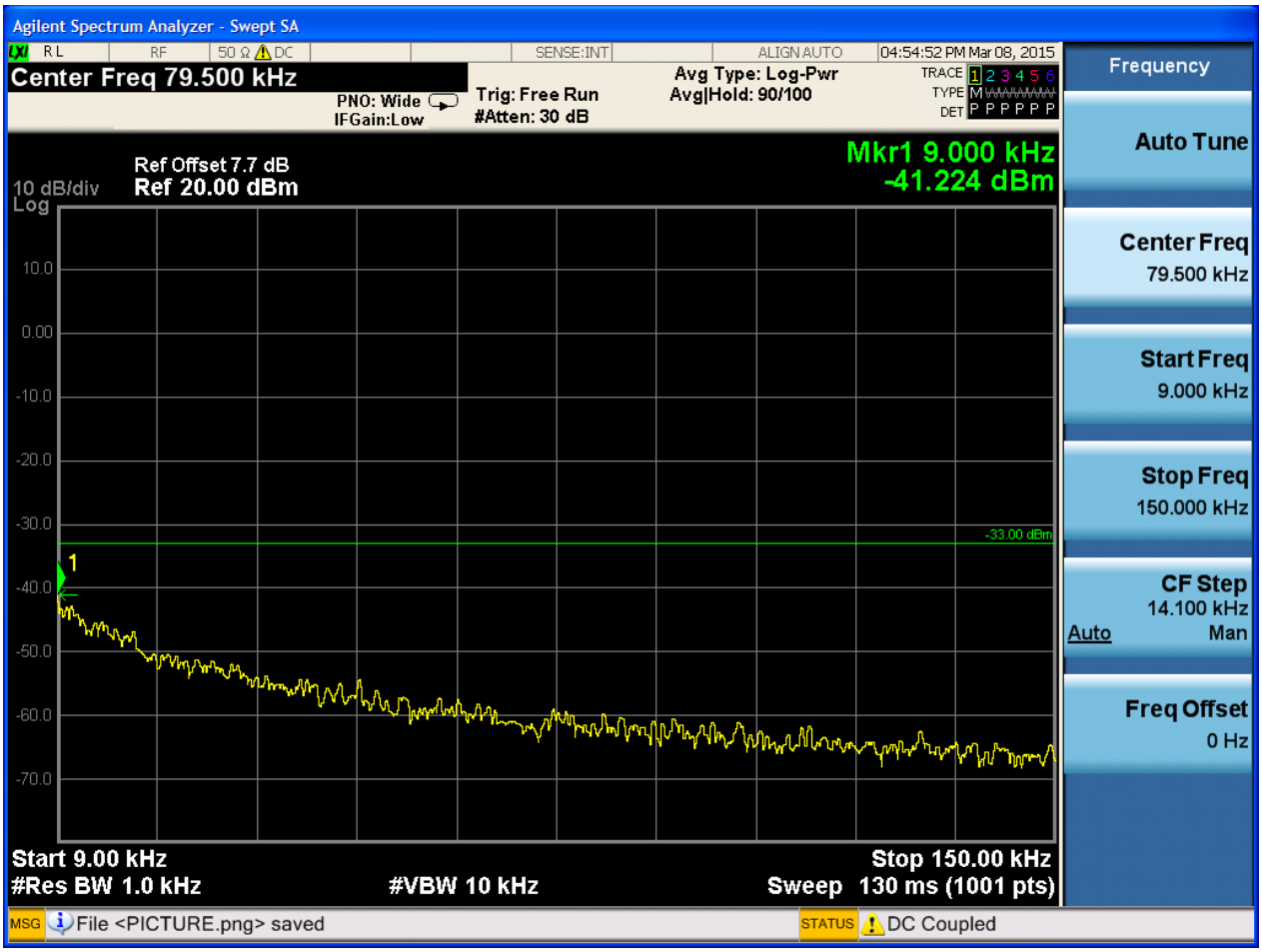


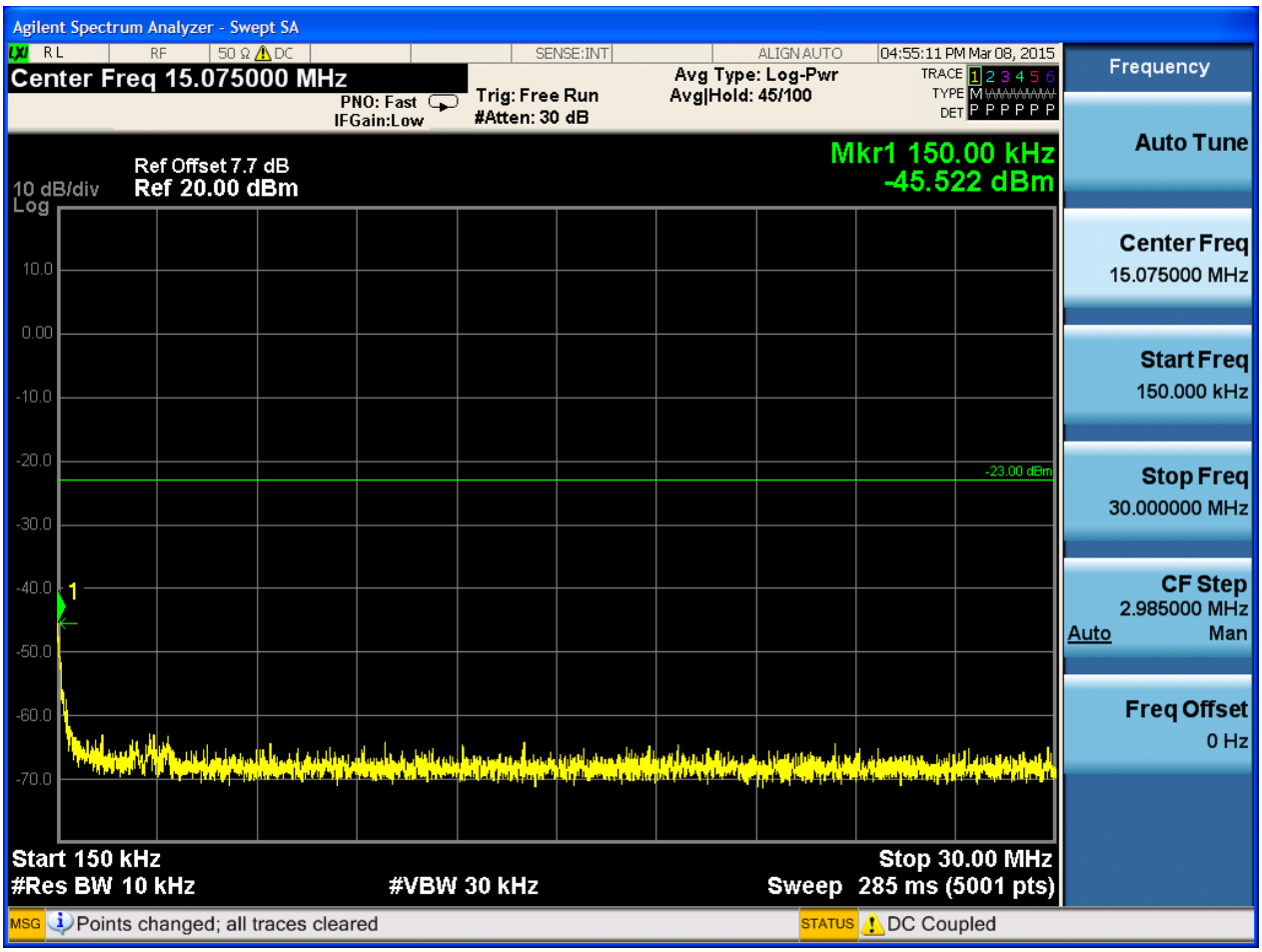


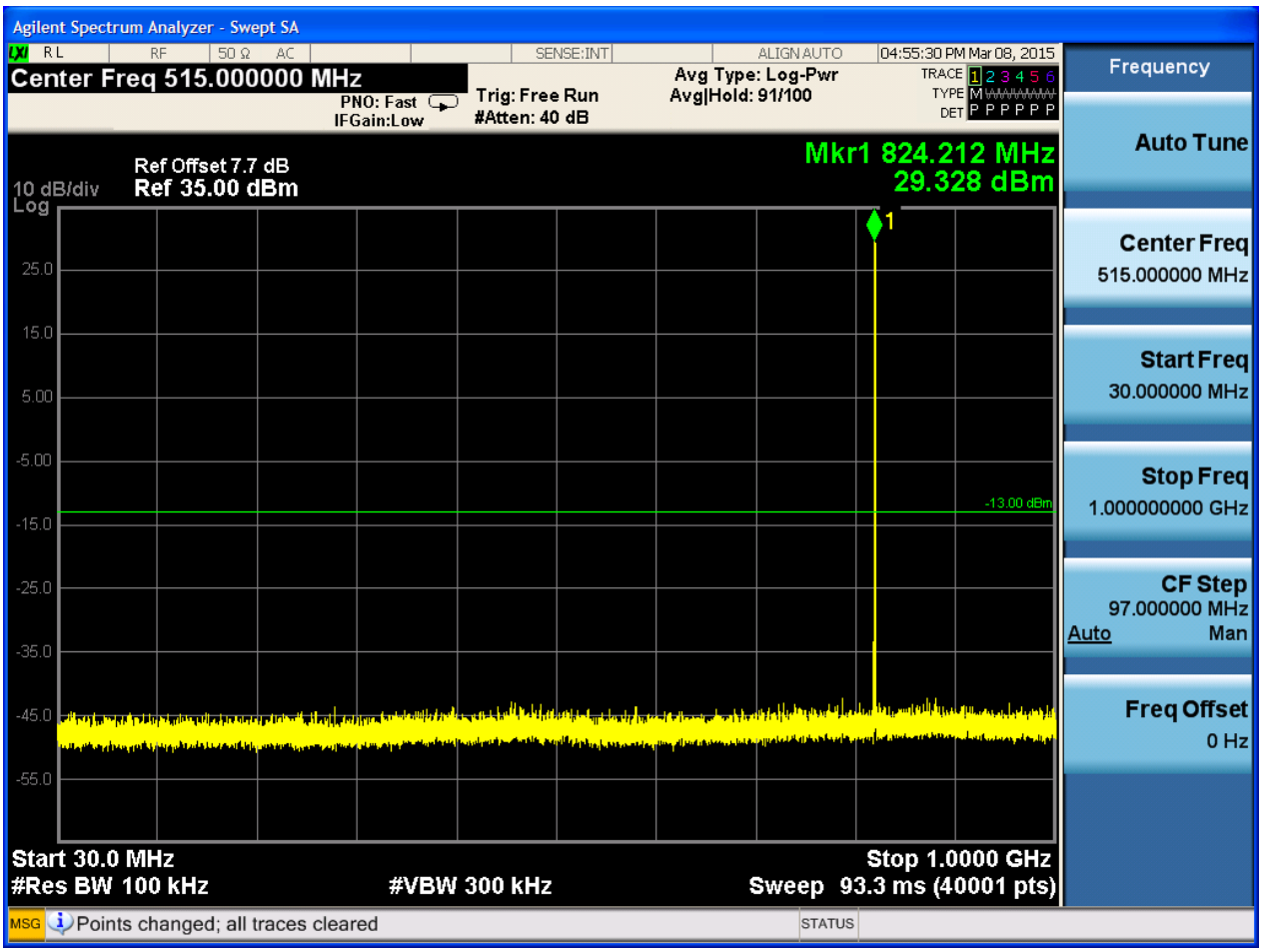


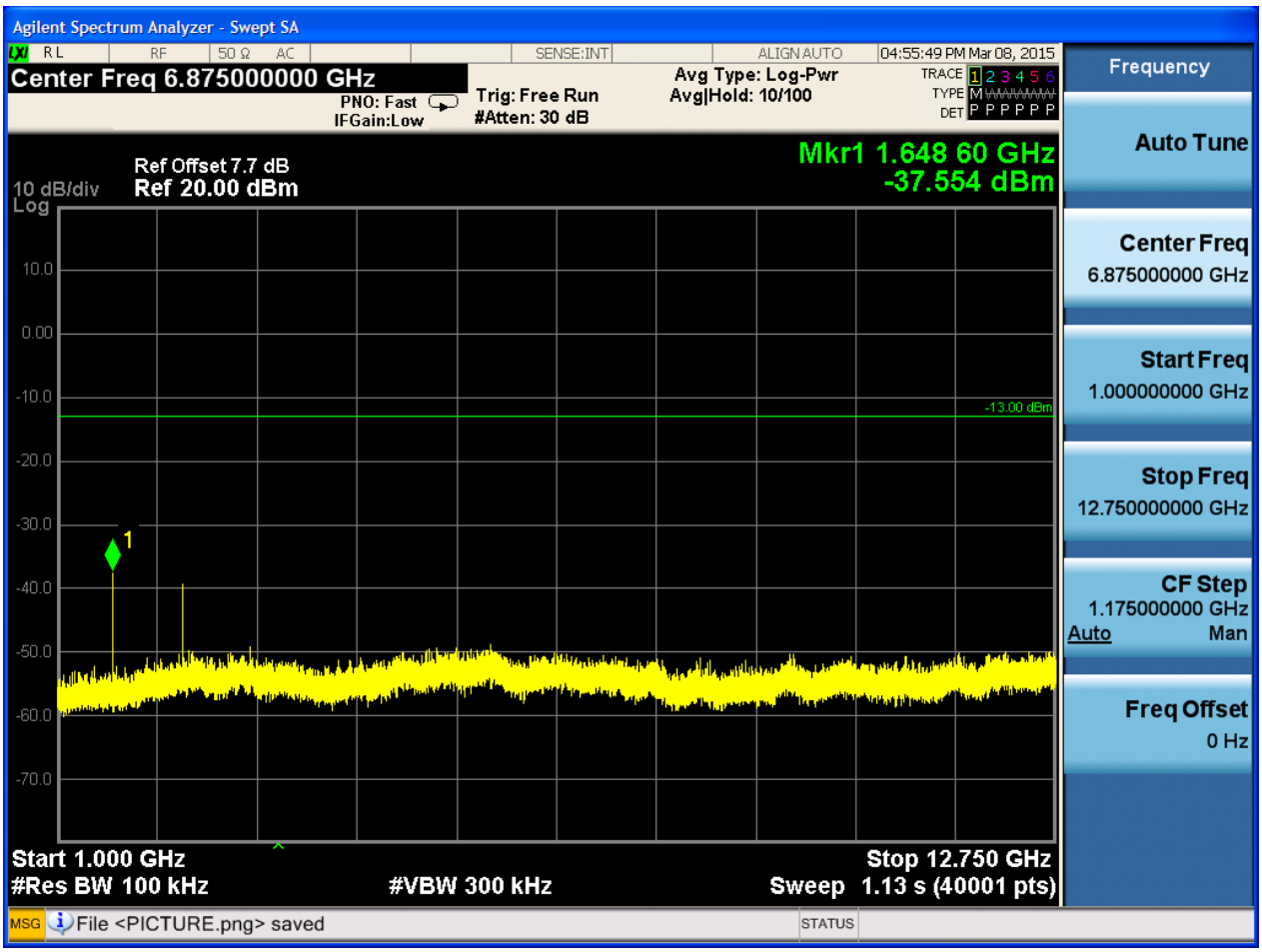
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

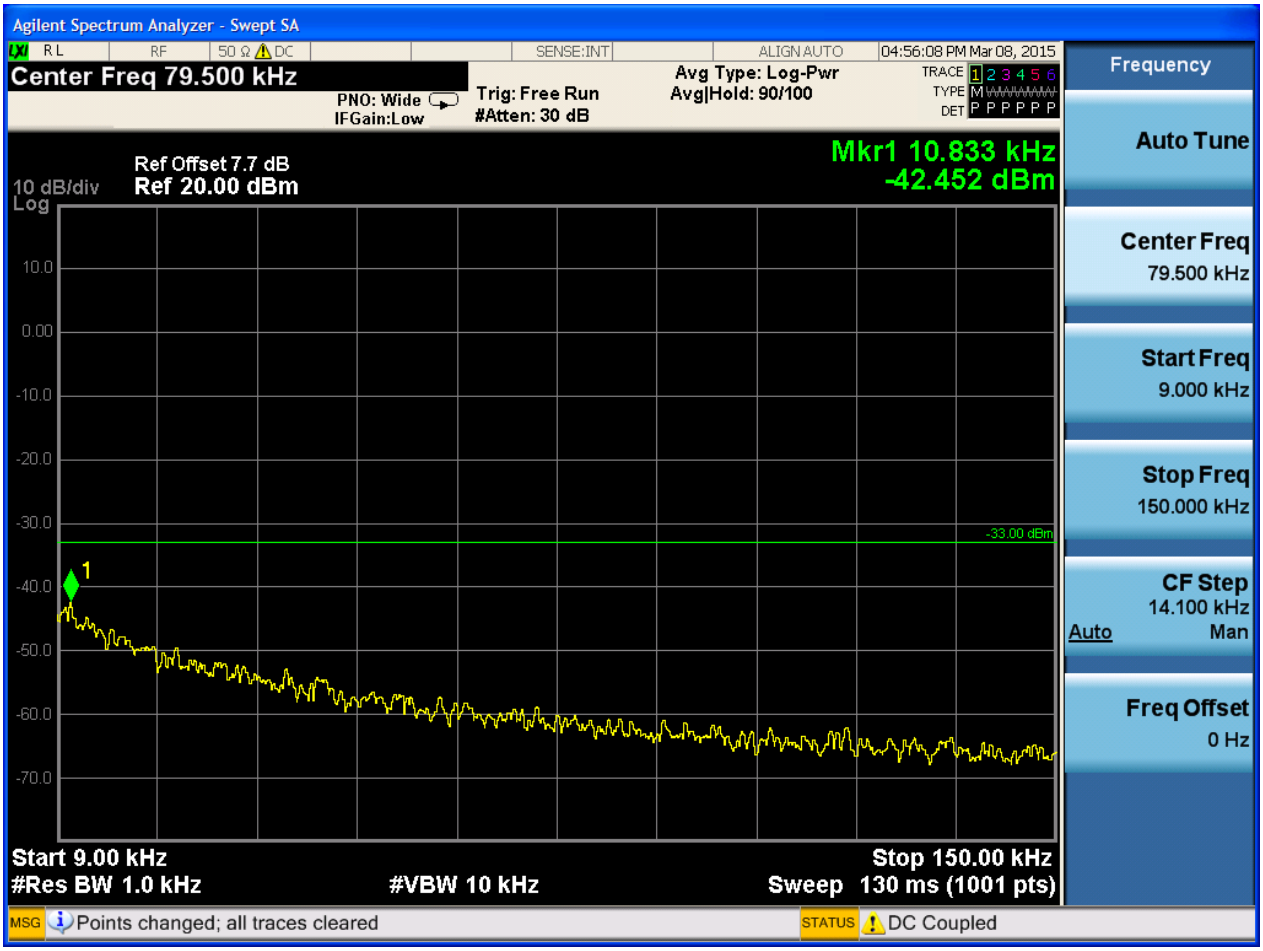


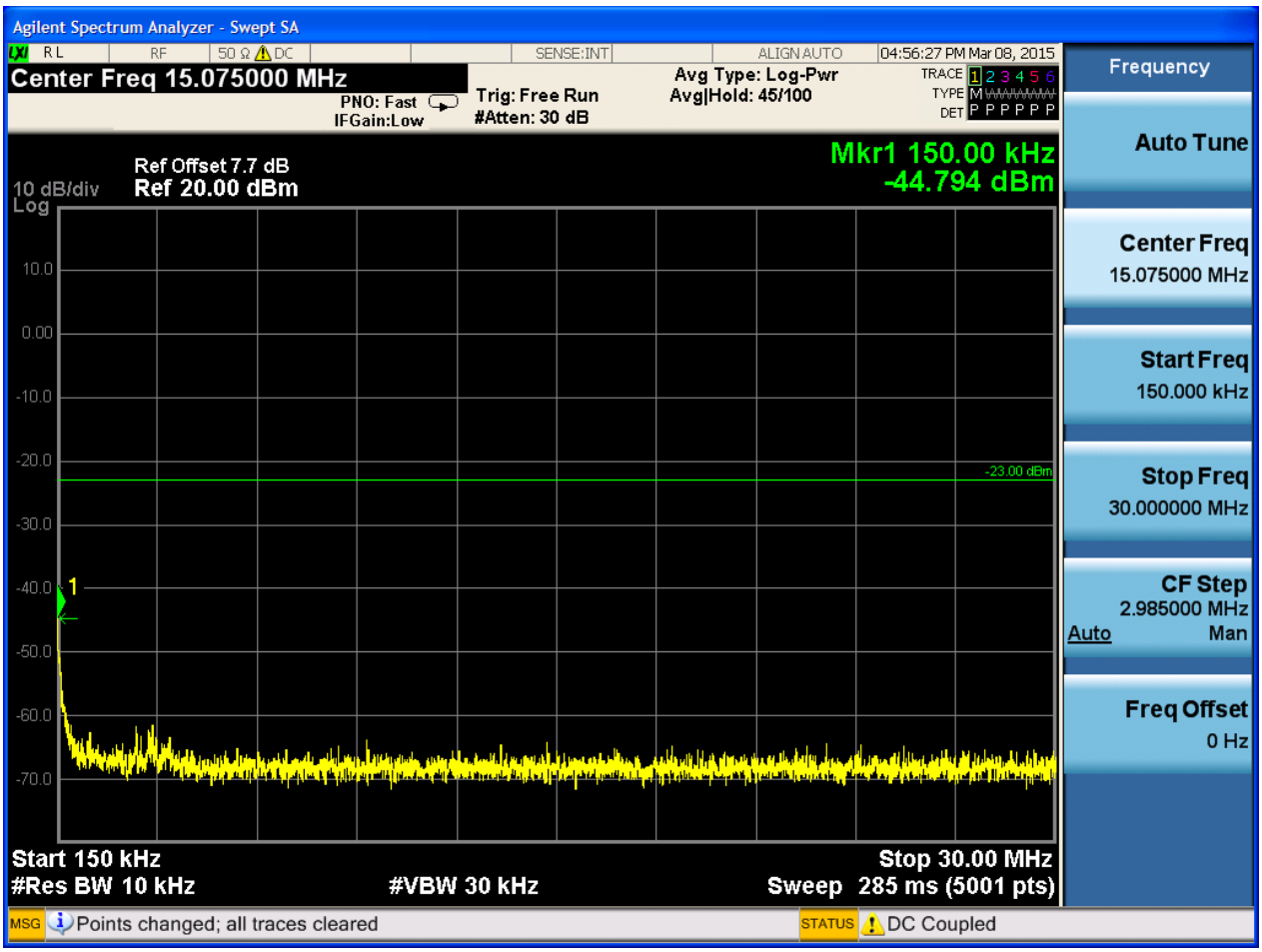


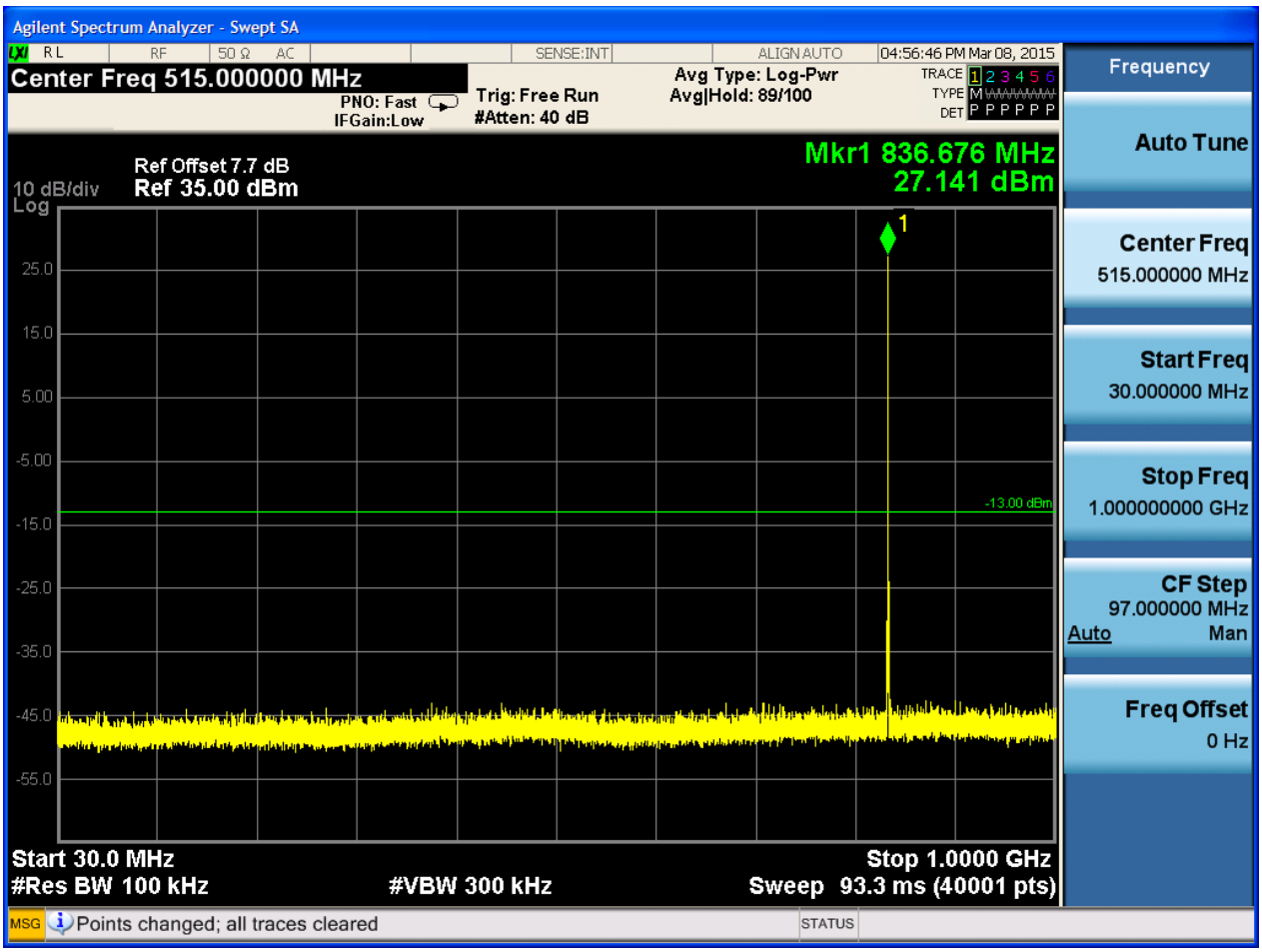


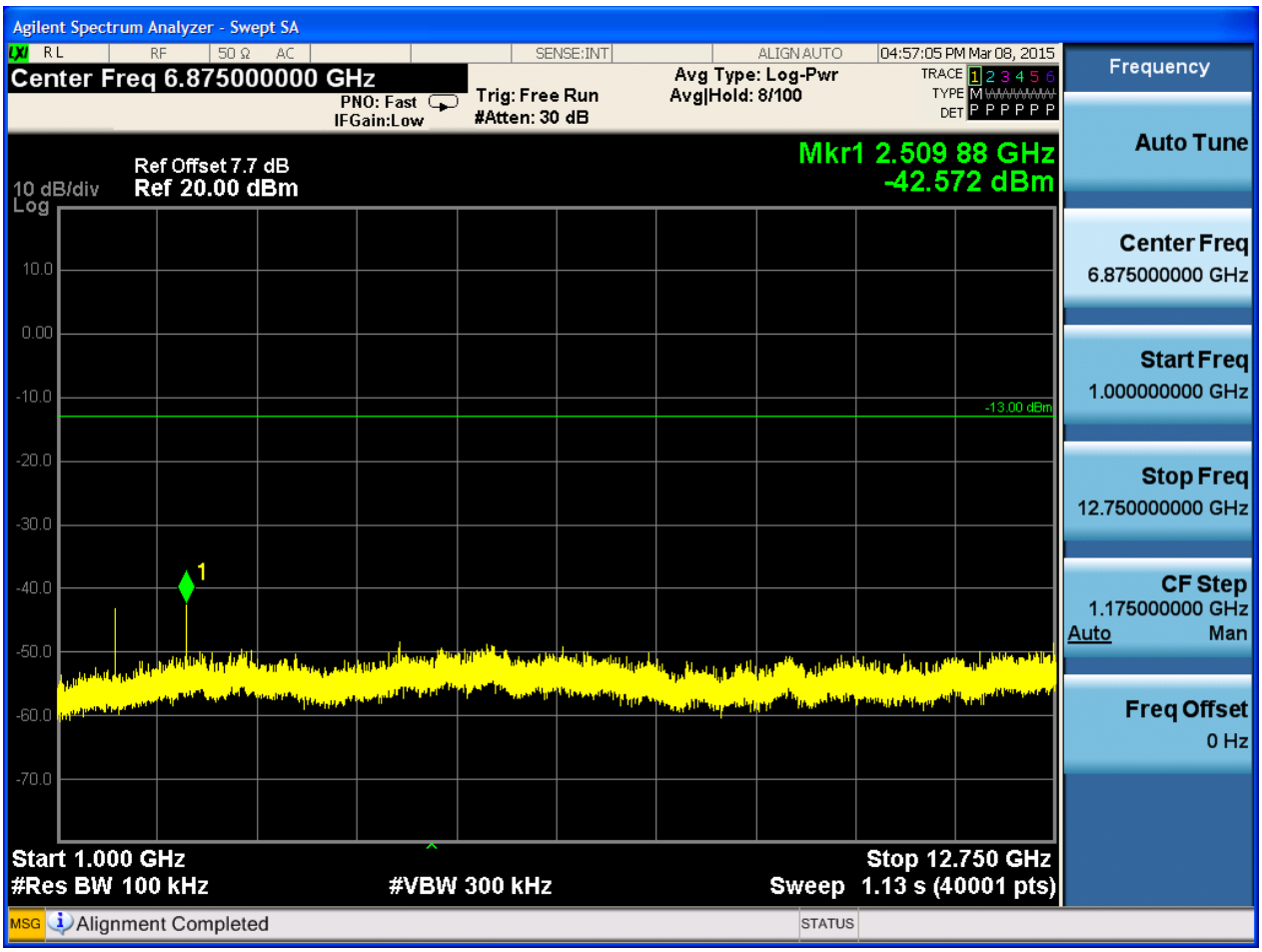


6.1.1.2.2 Test Channel = MCH

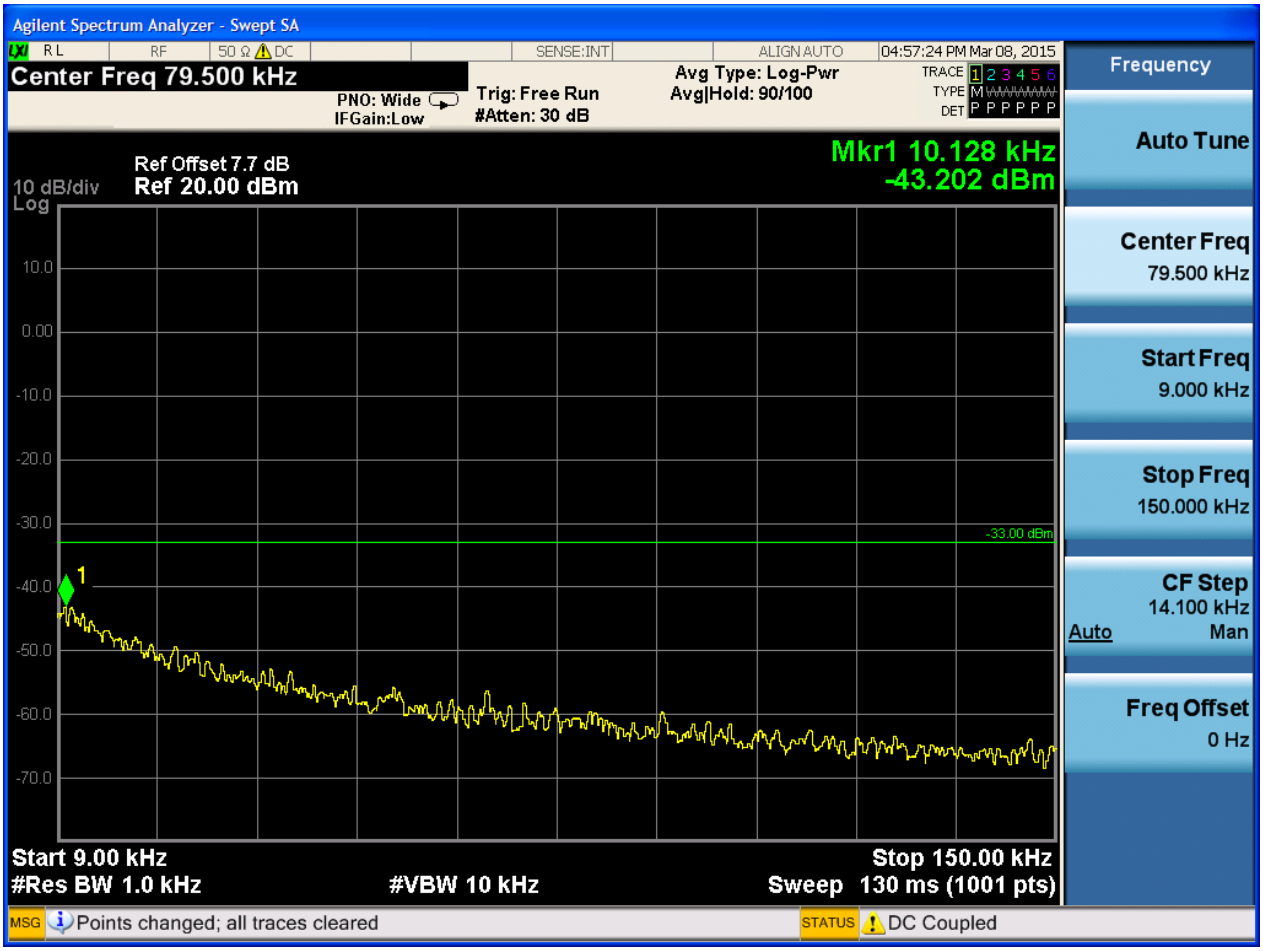


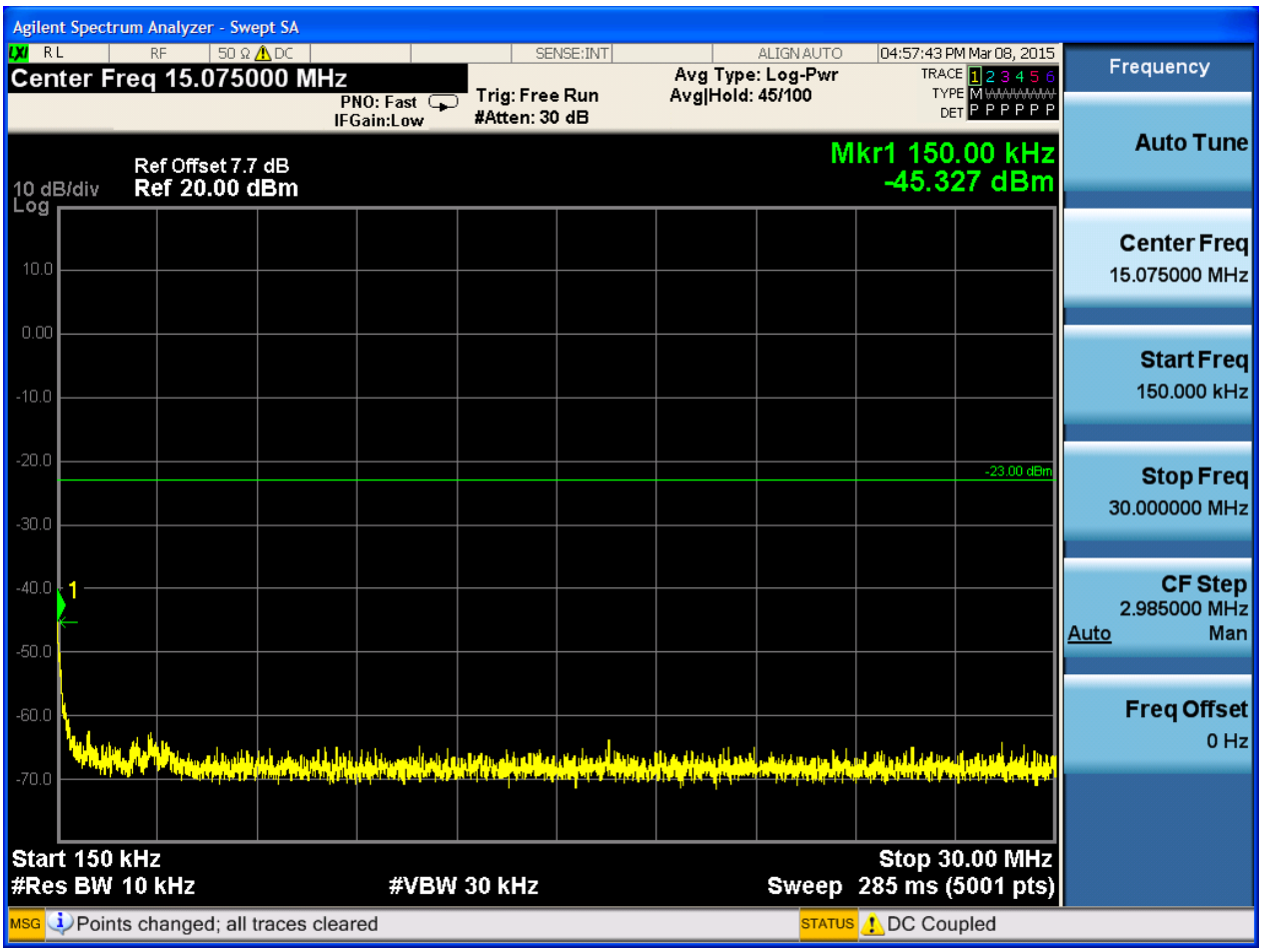


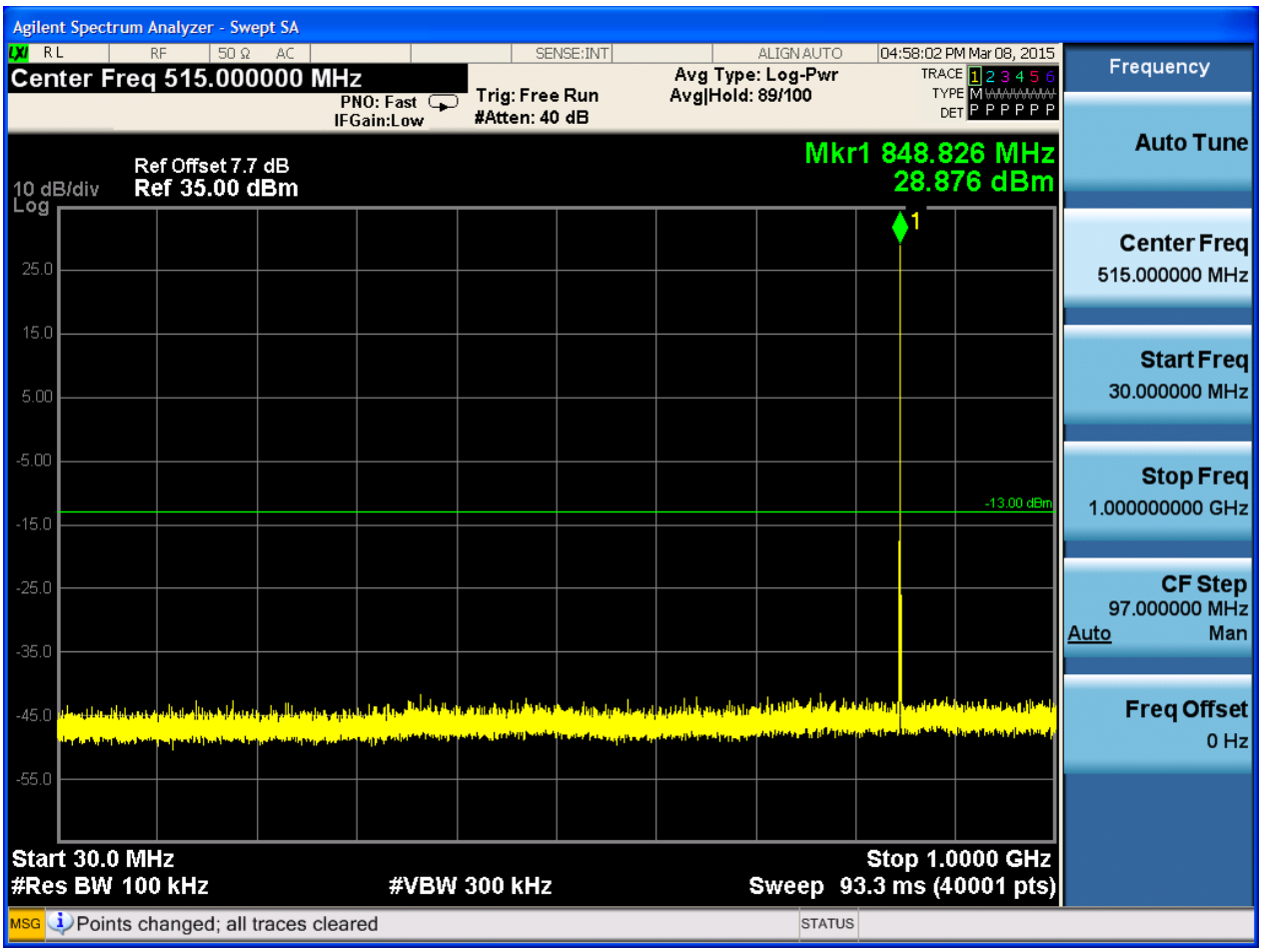


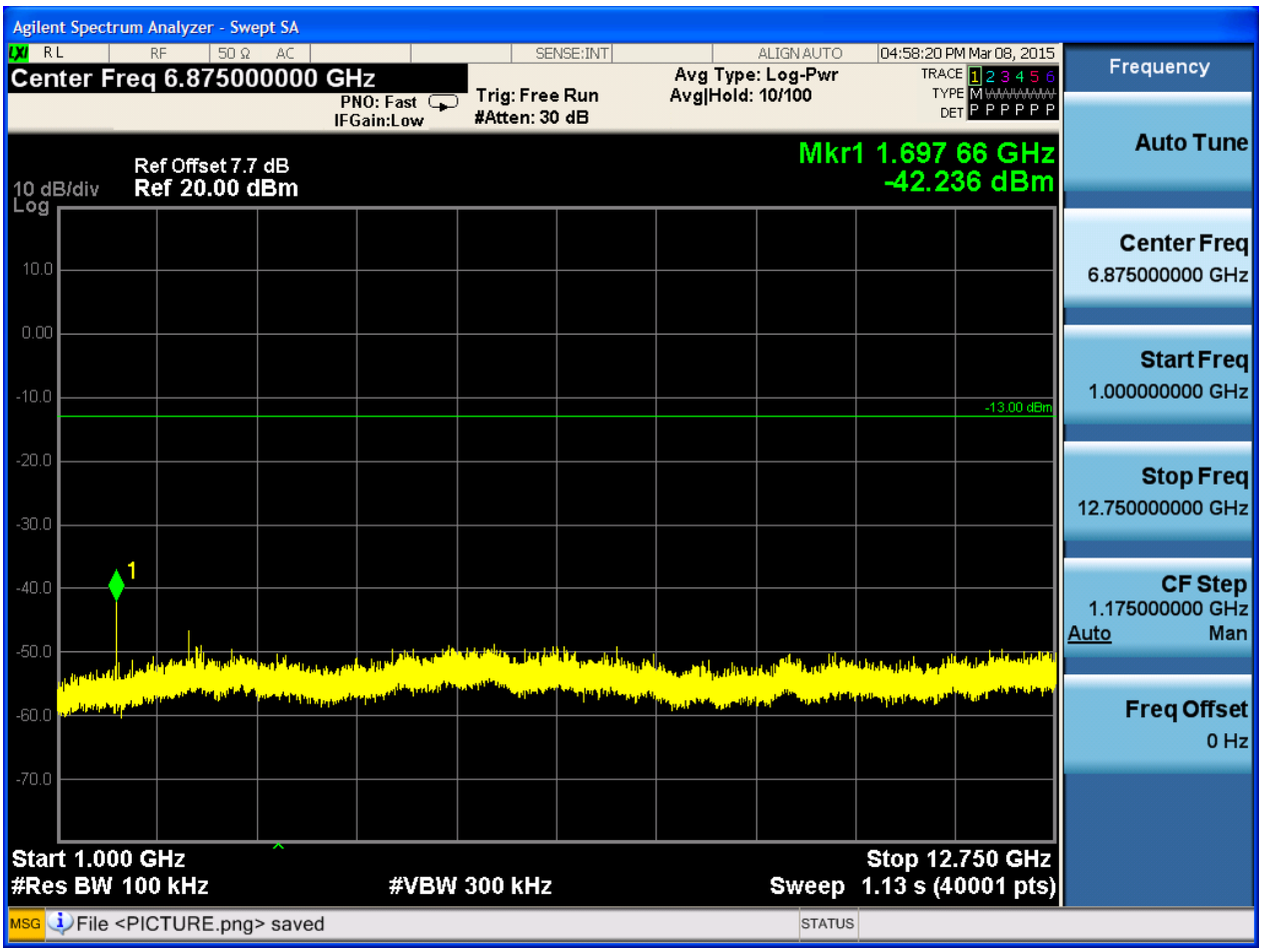


6.1.1.2.3 Test Channel = HCH





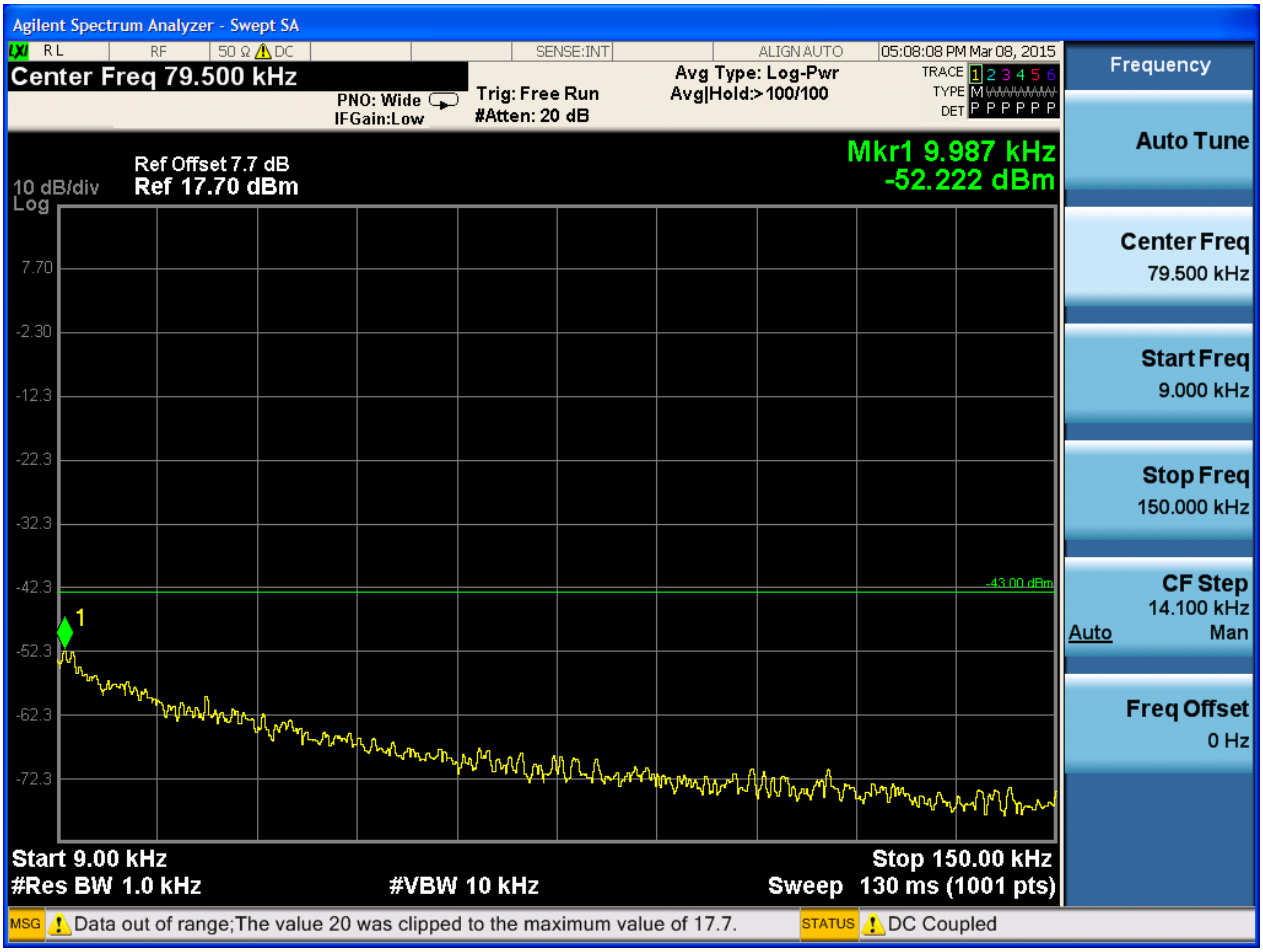


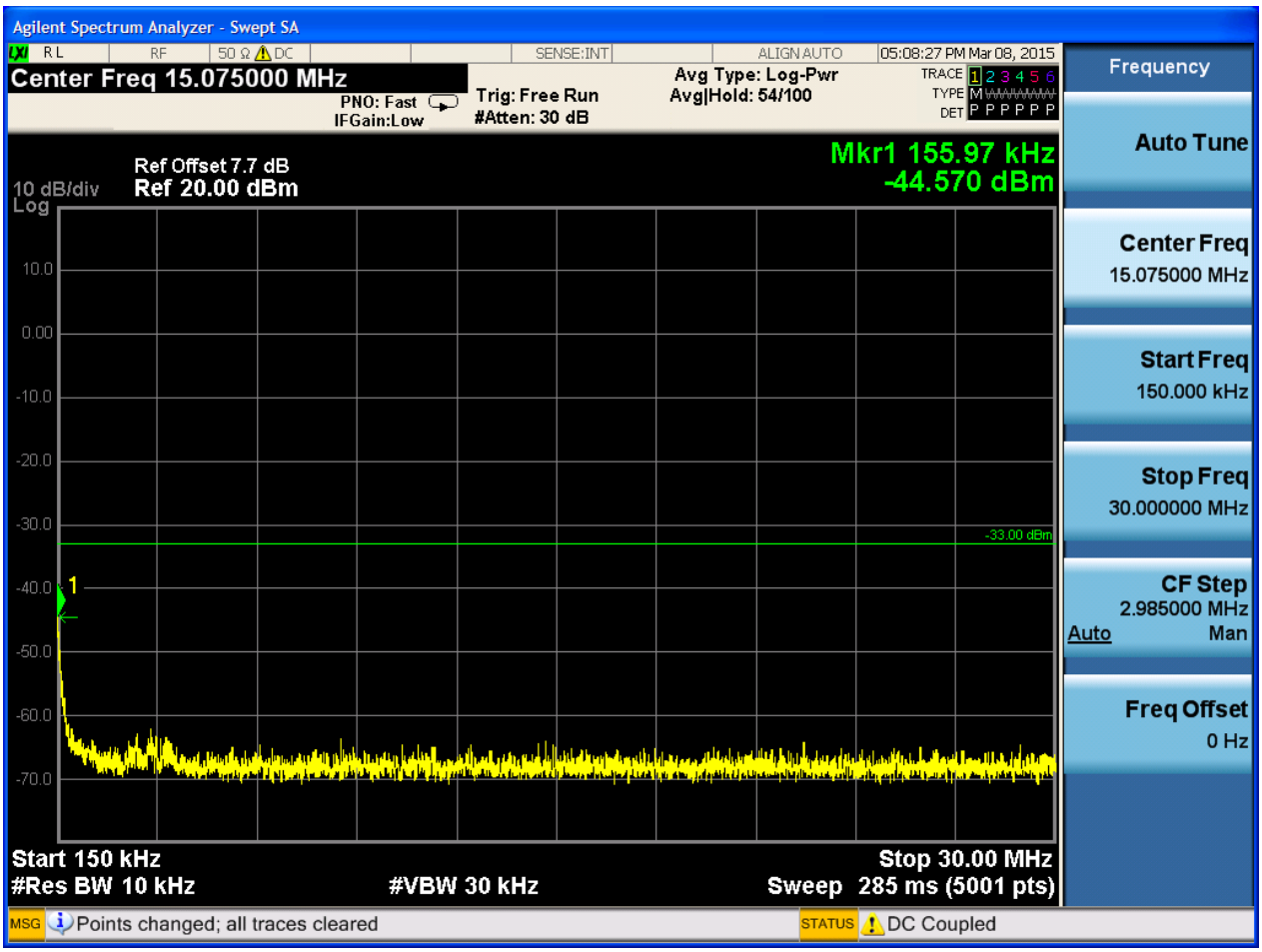


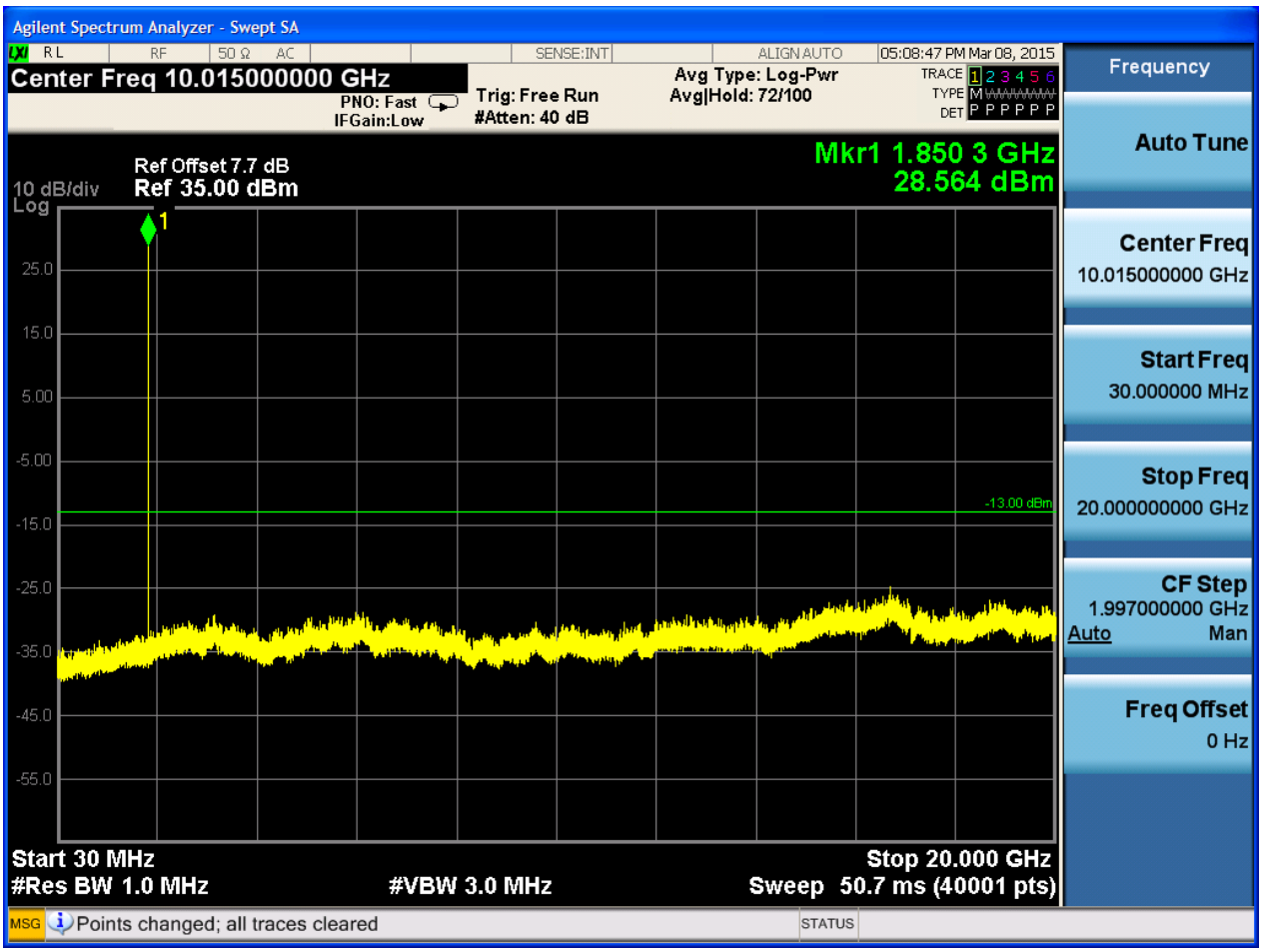
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

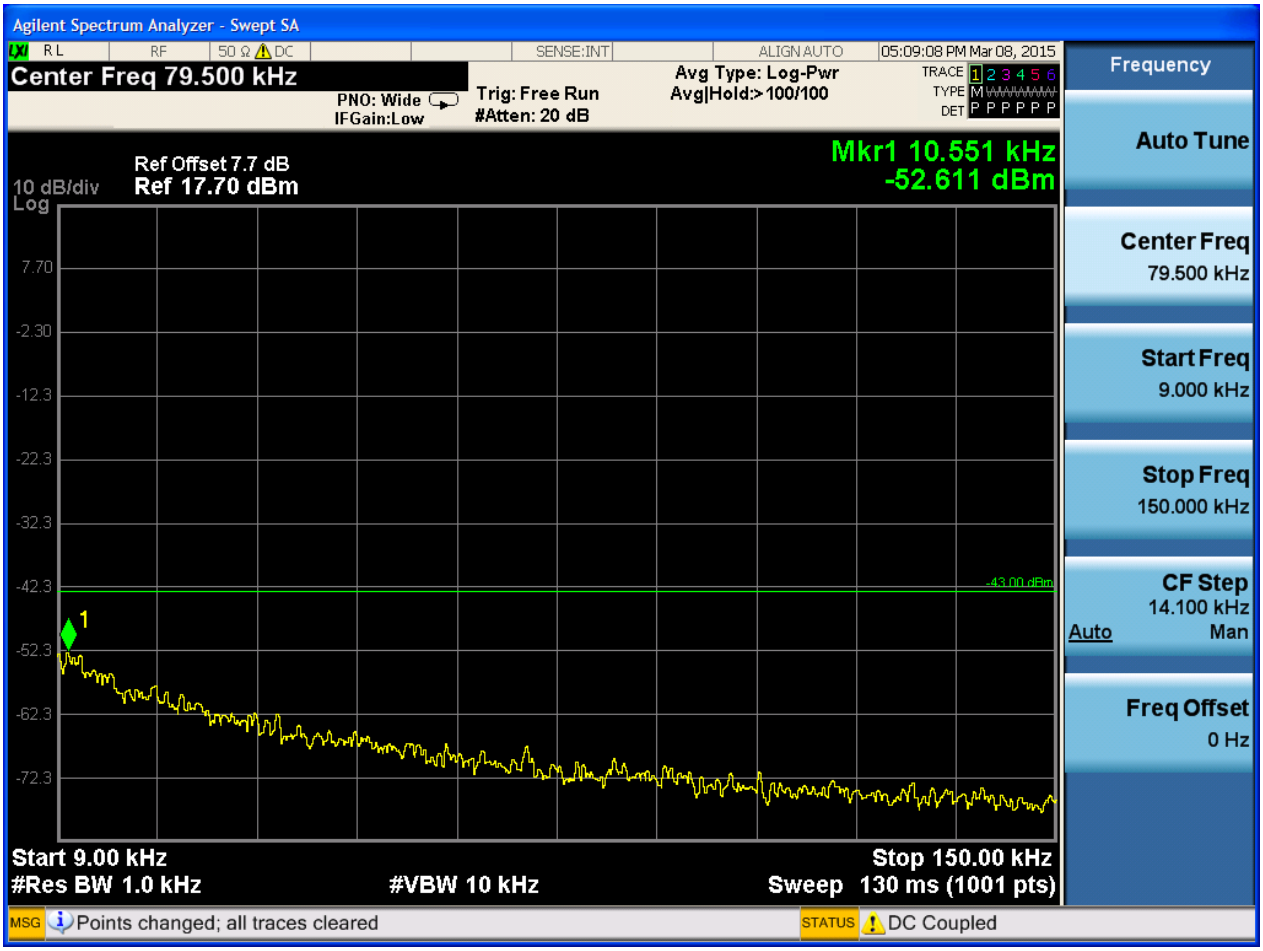
6.1.2.1.1 Test Channel = LCH

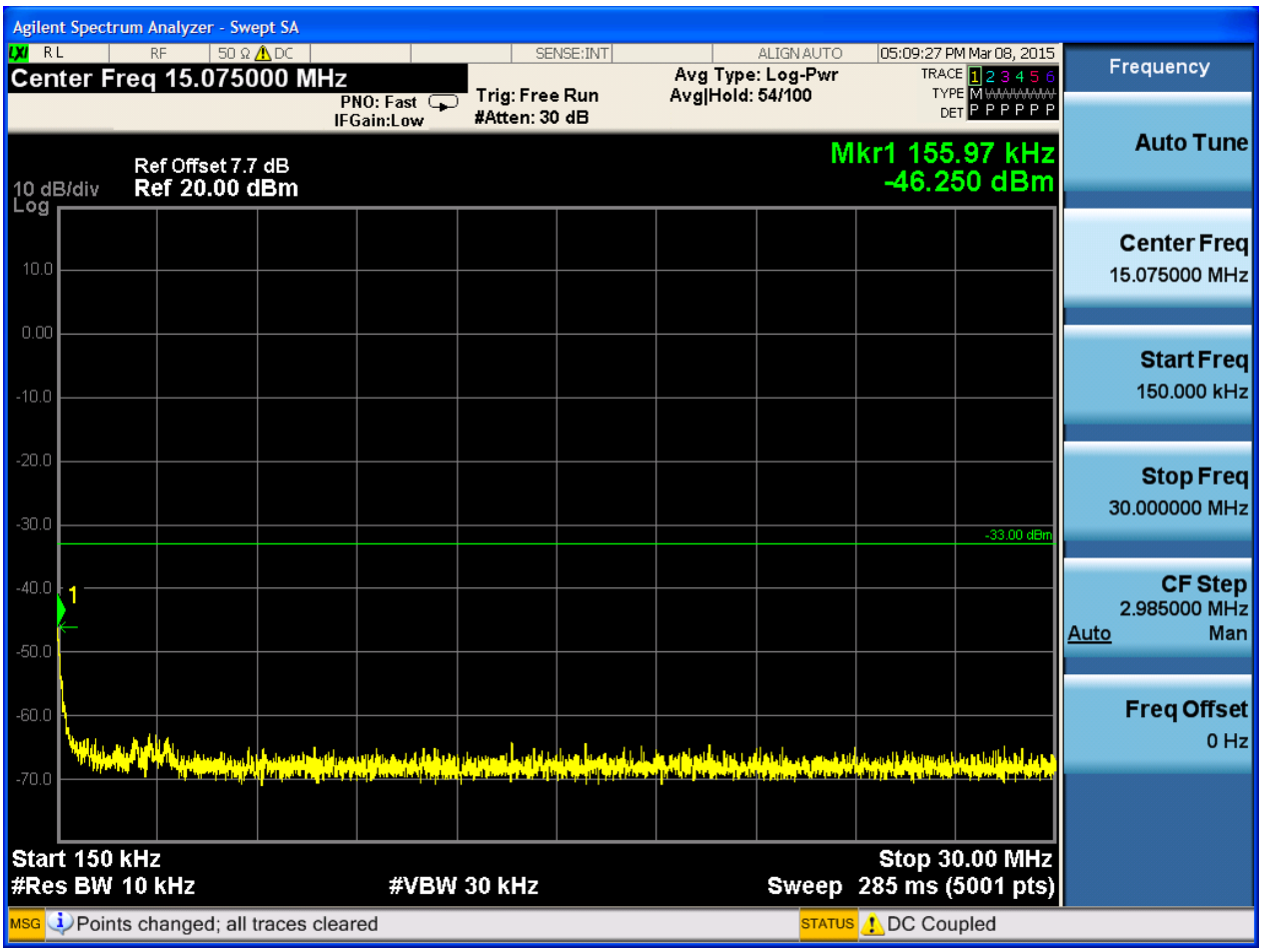


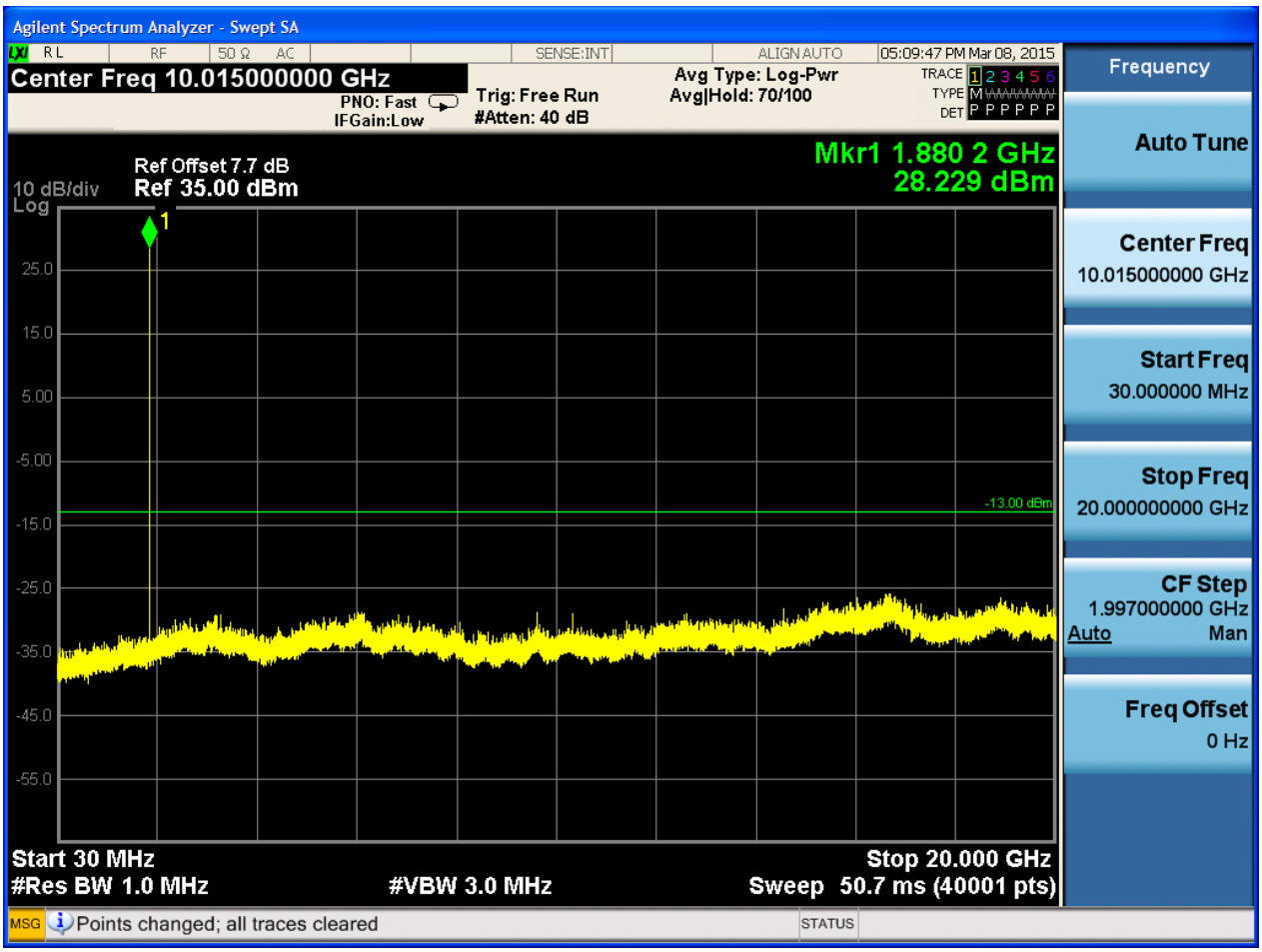




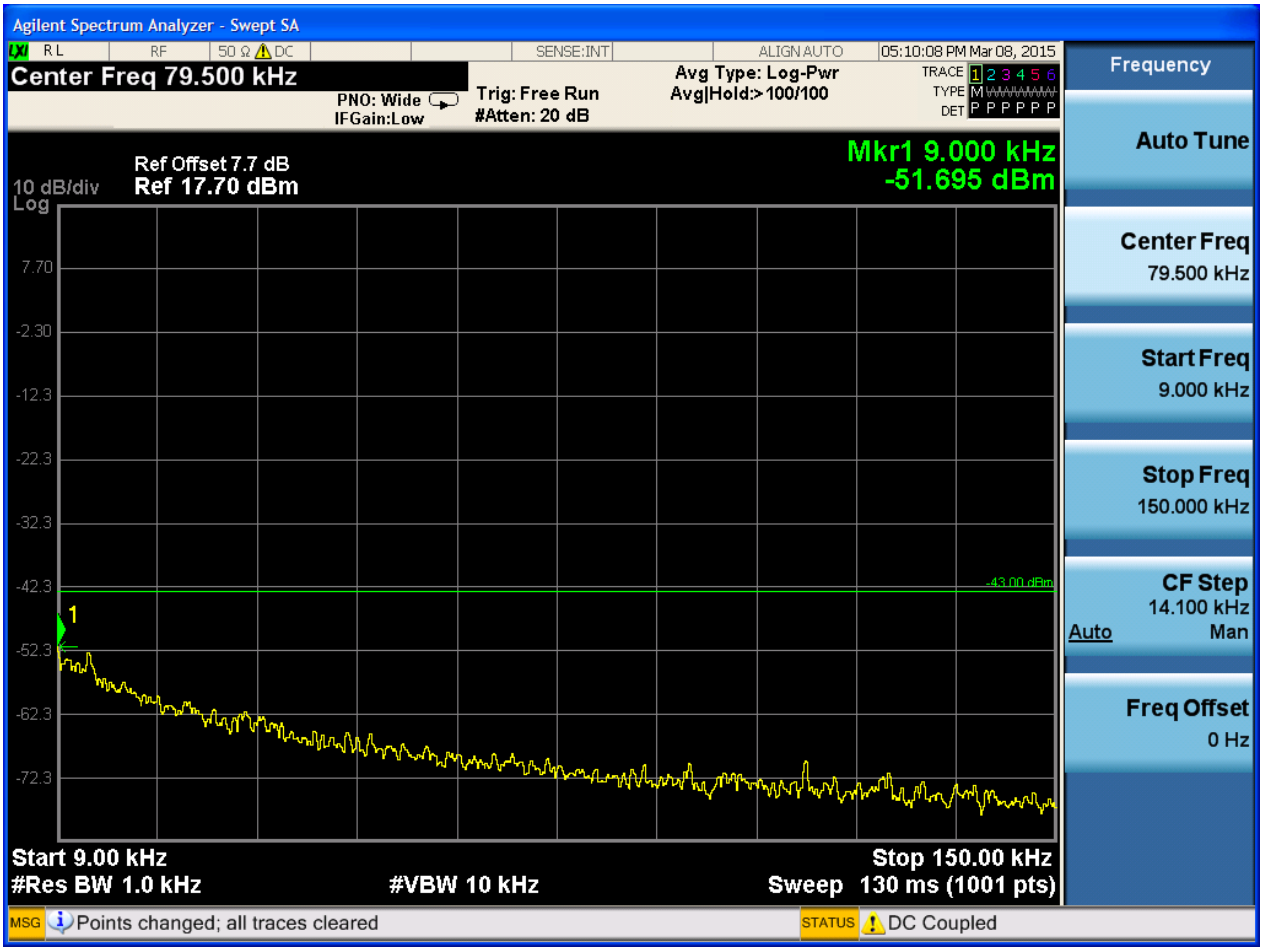
6.1.2.1.2 Test Channel = MCH

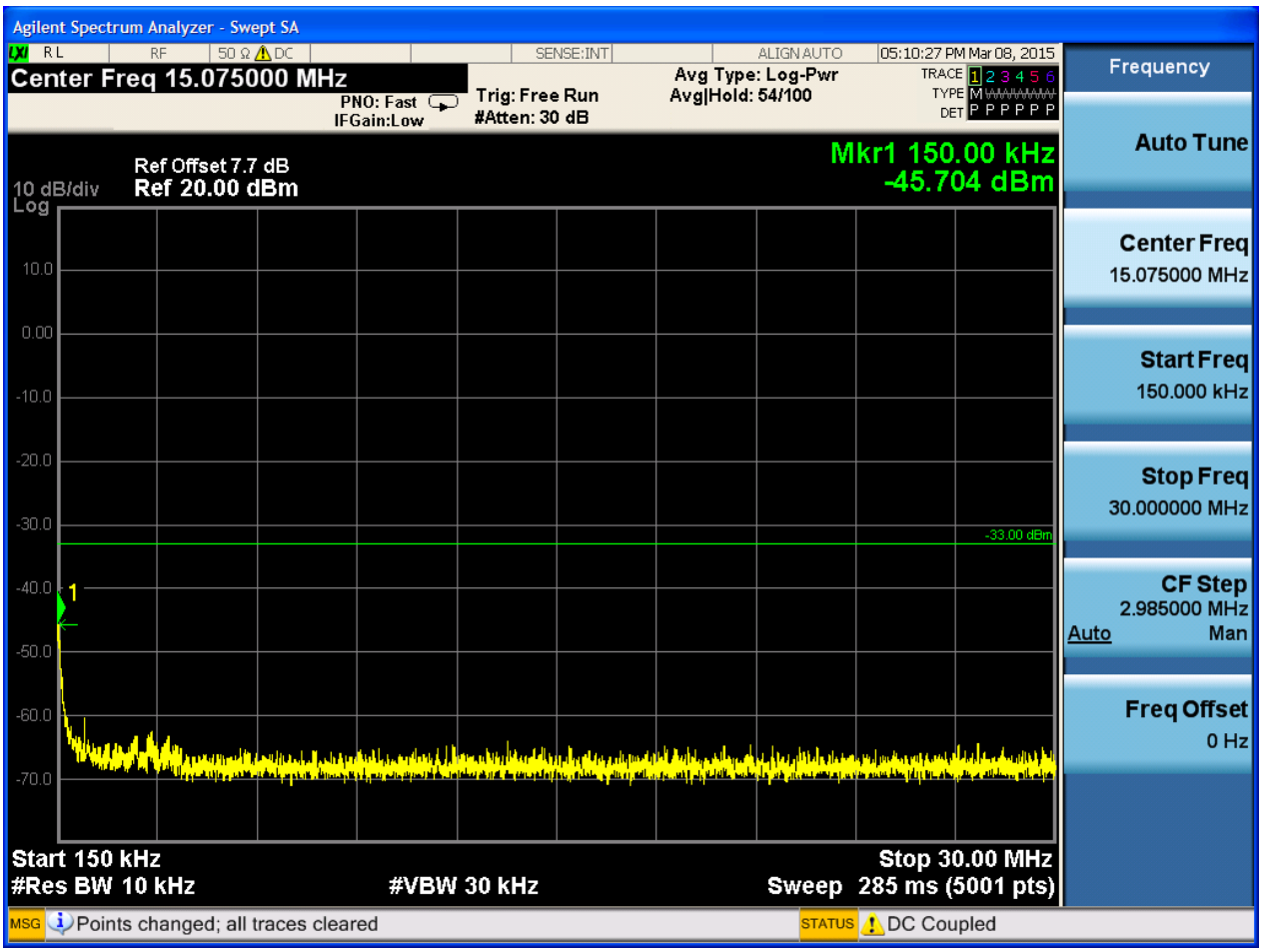


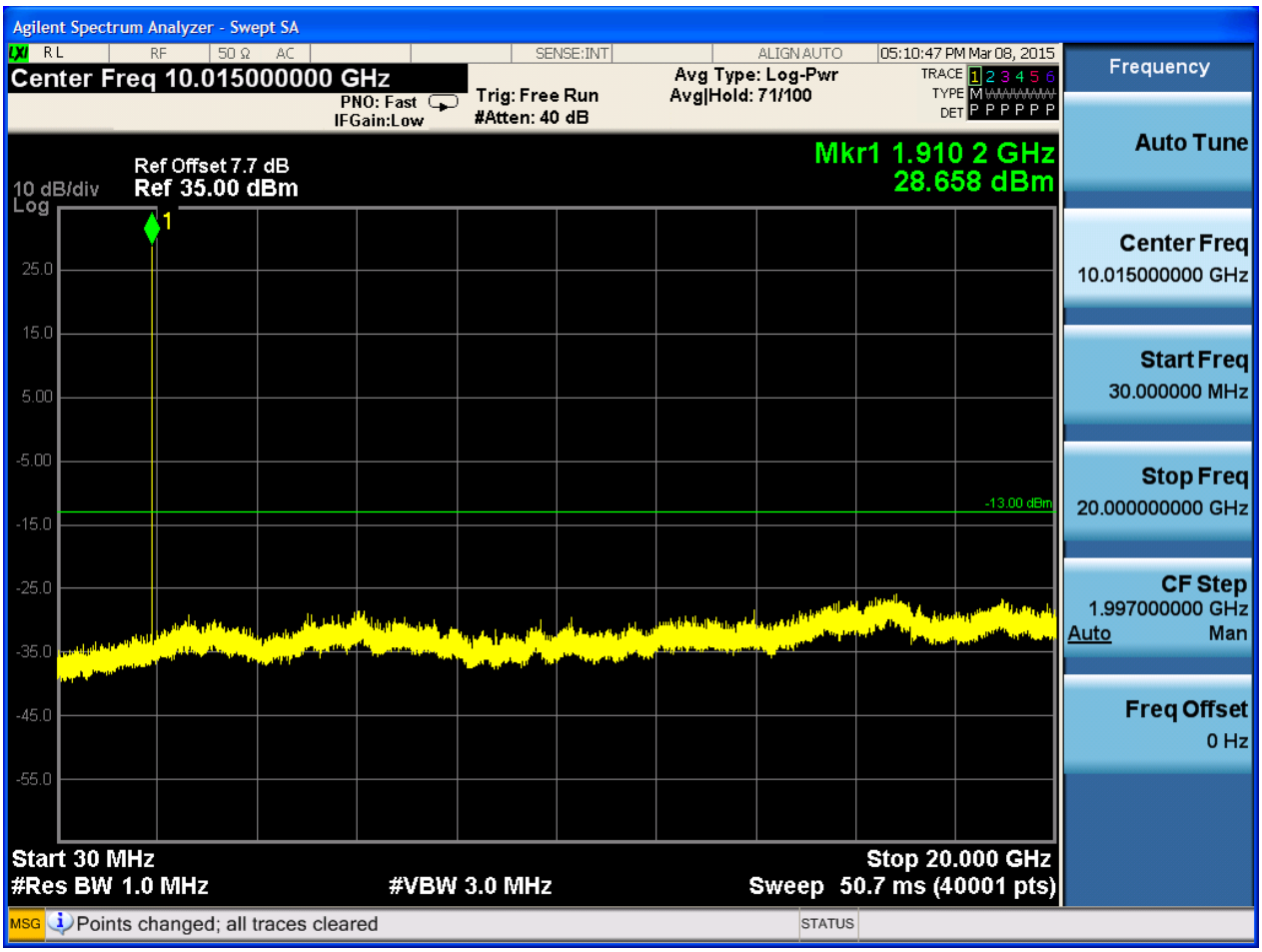




6.1.2.1.3 Test Channel = HCH

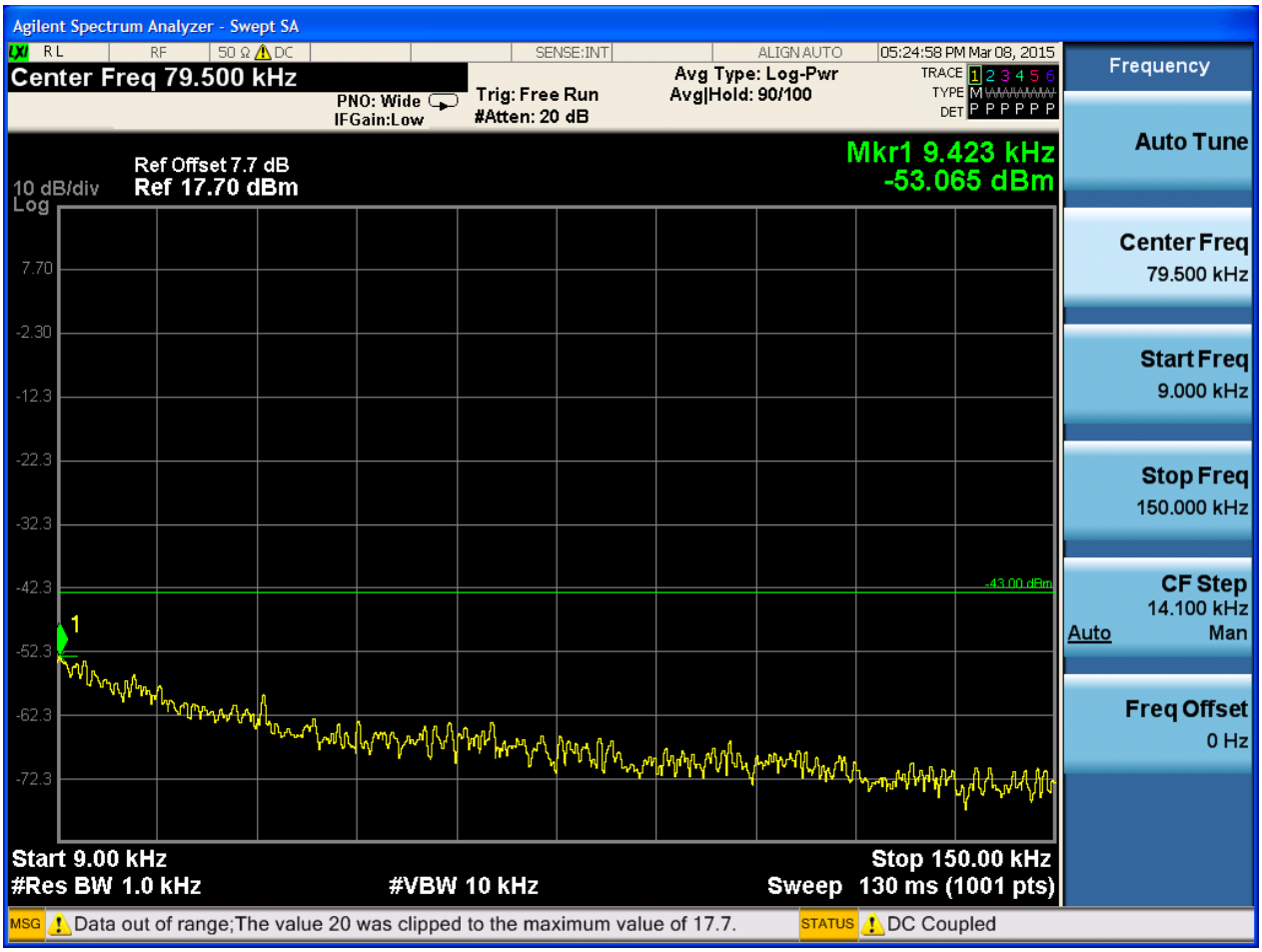


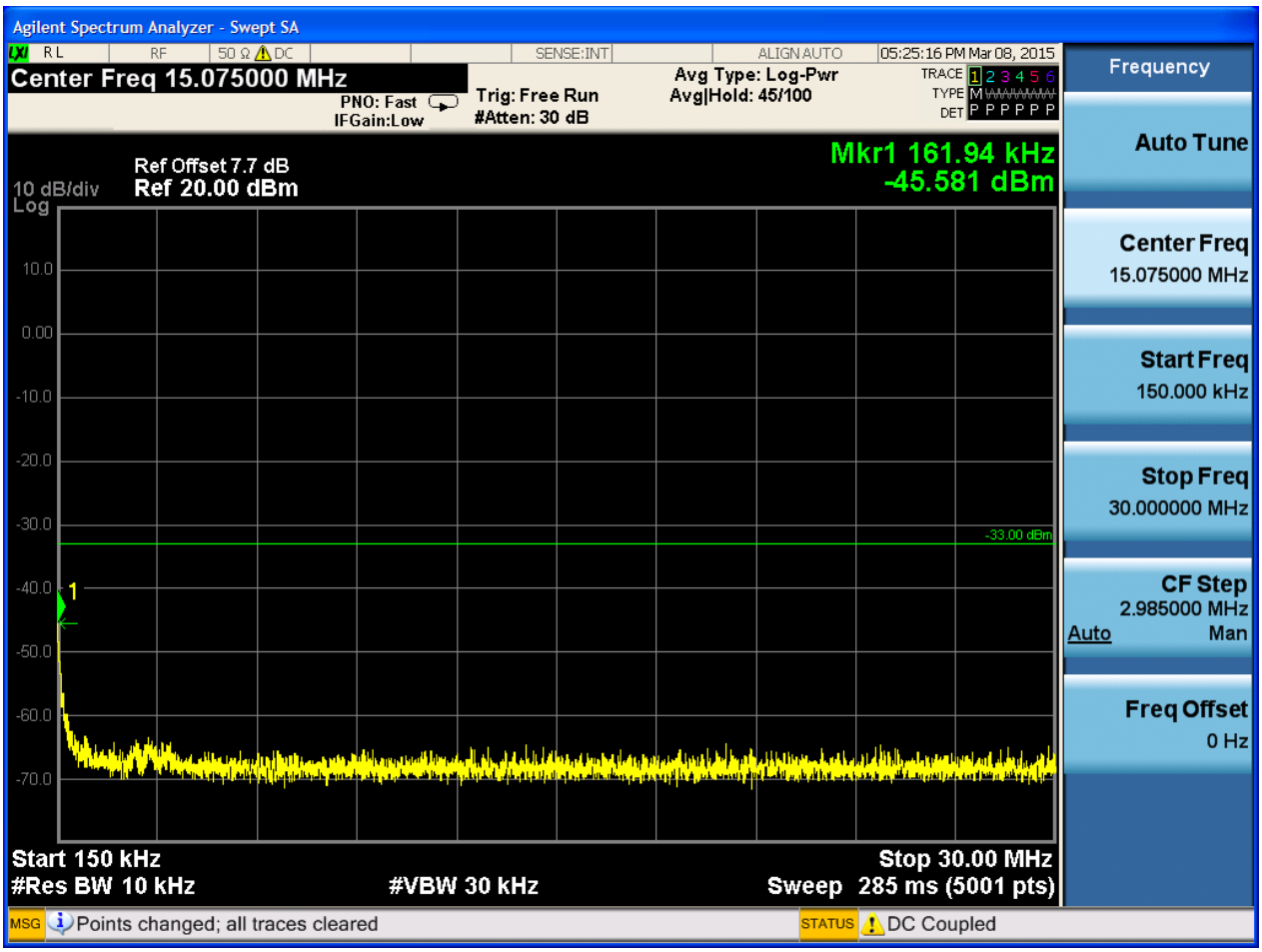


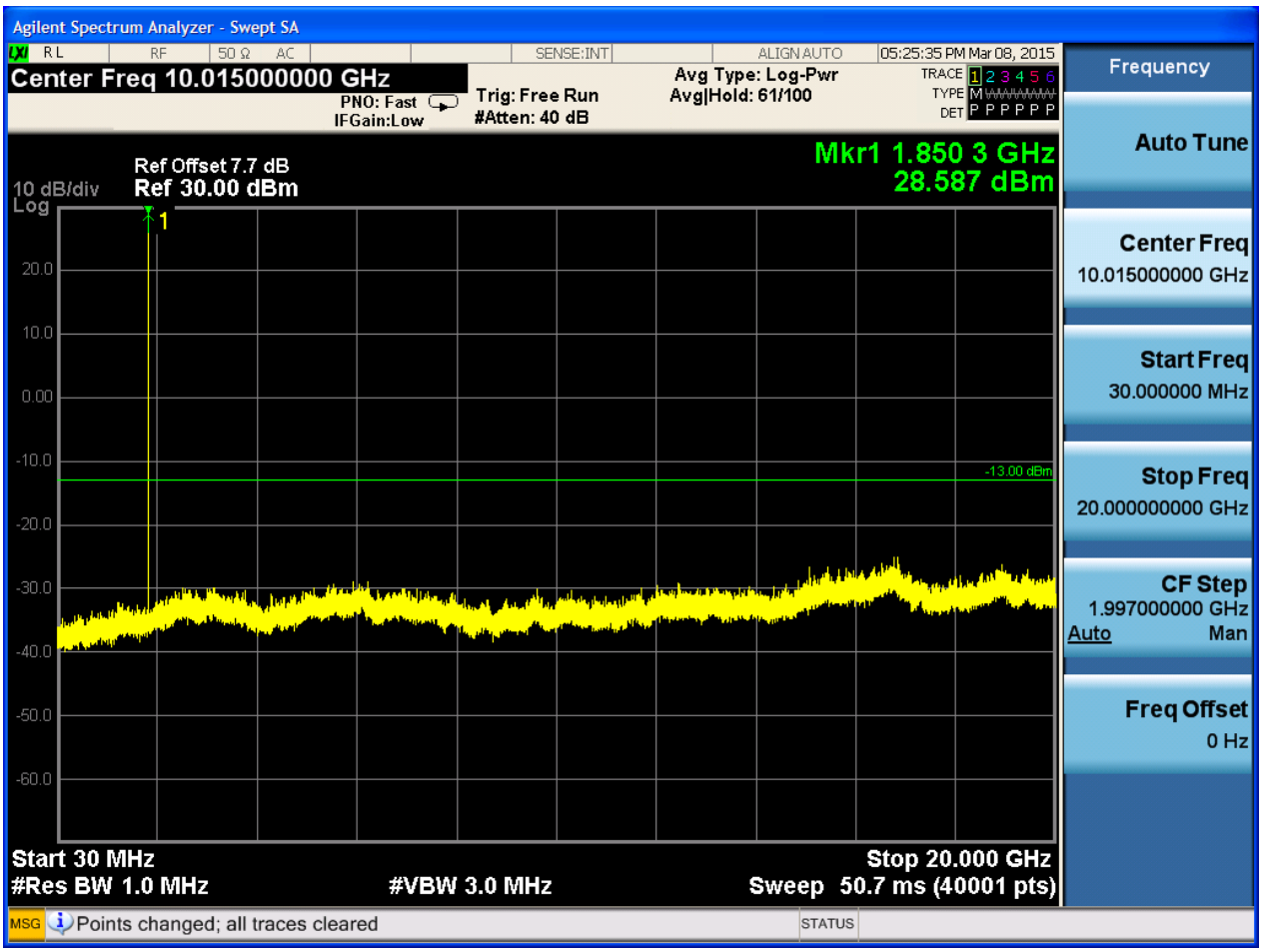


6.1.2.2 Test Mode = GSM/TM2

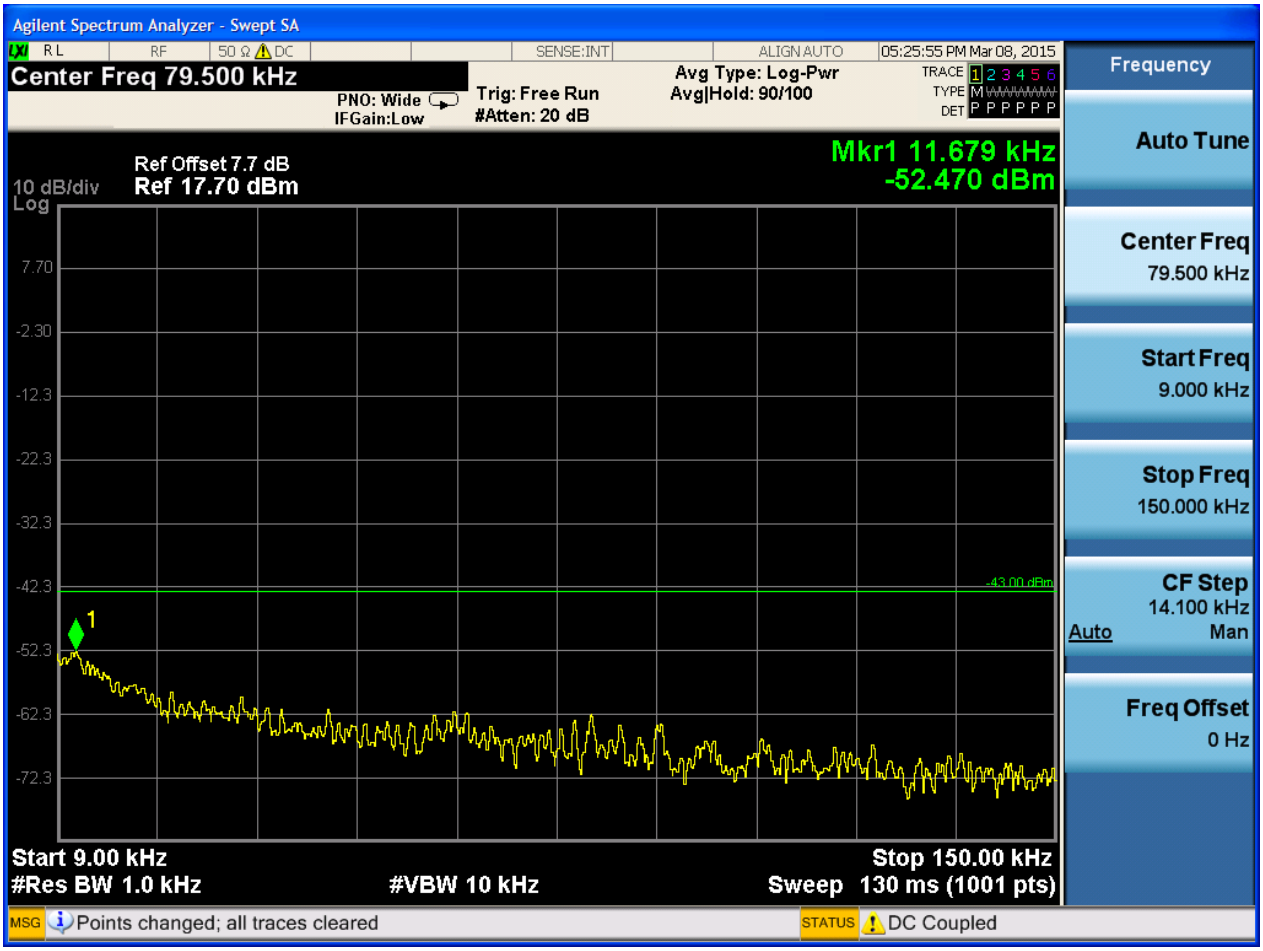
6.1.2.2.1 Test Channel = LCH

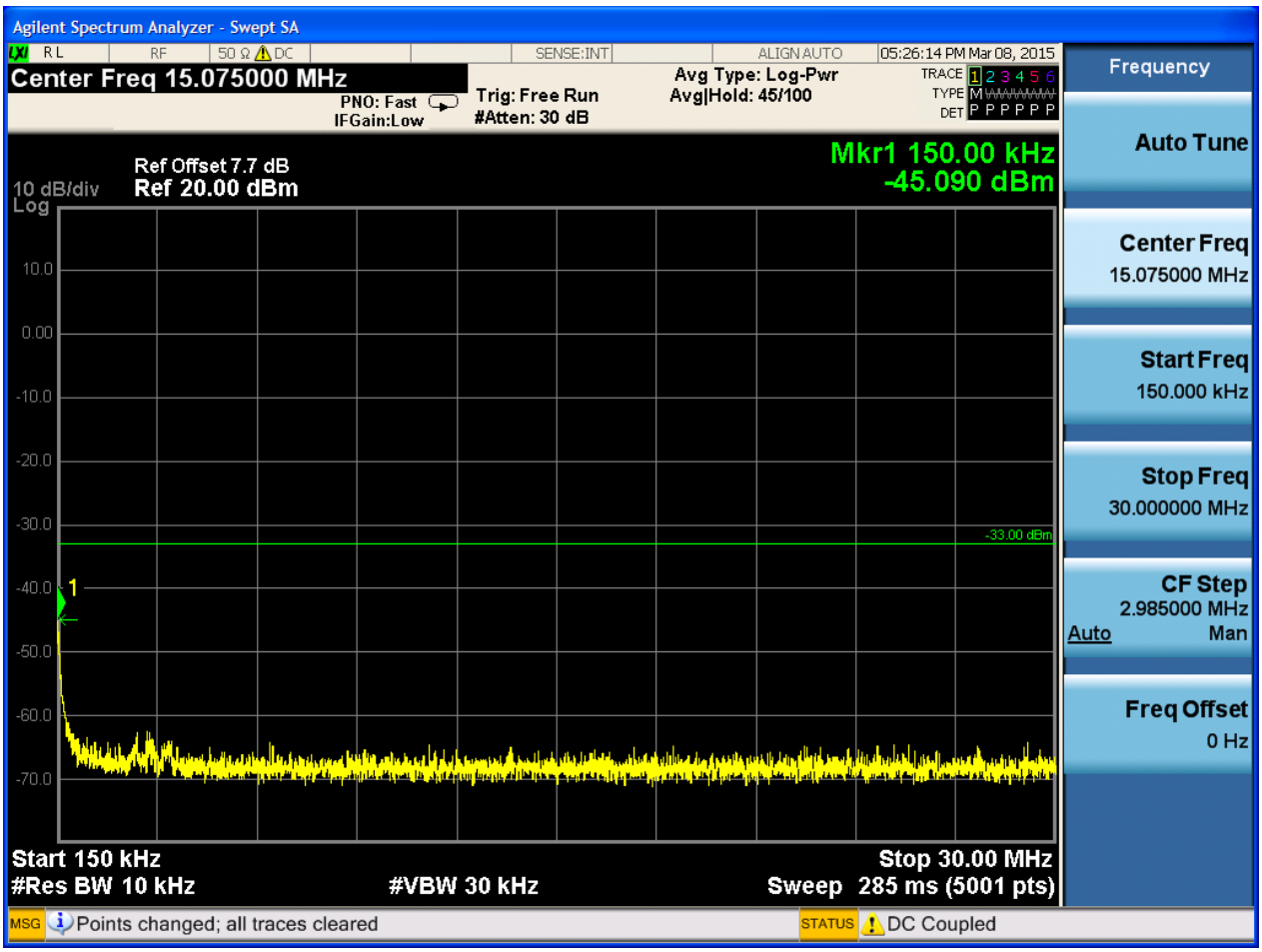


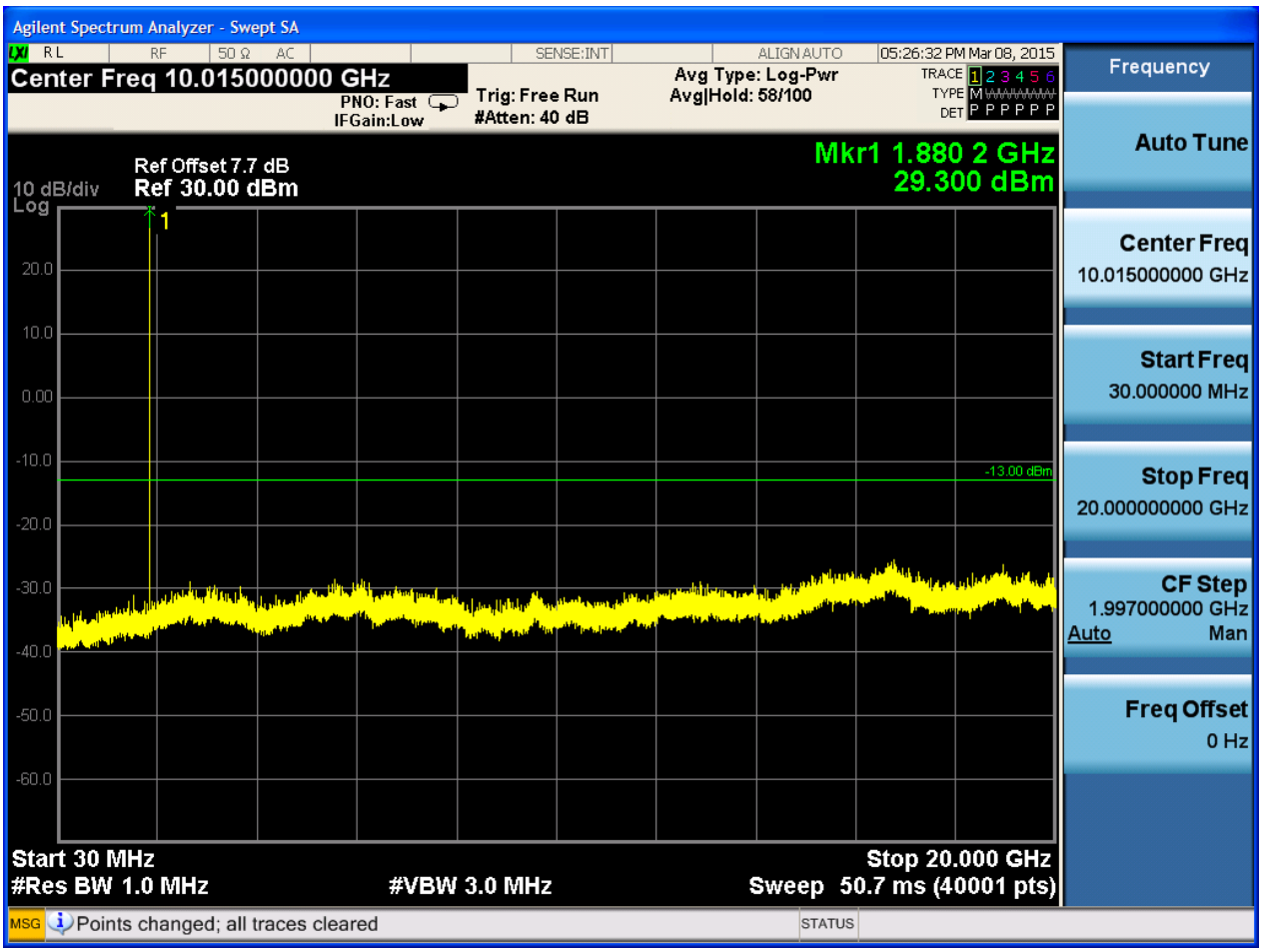




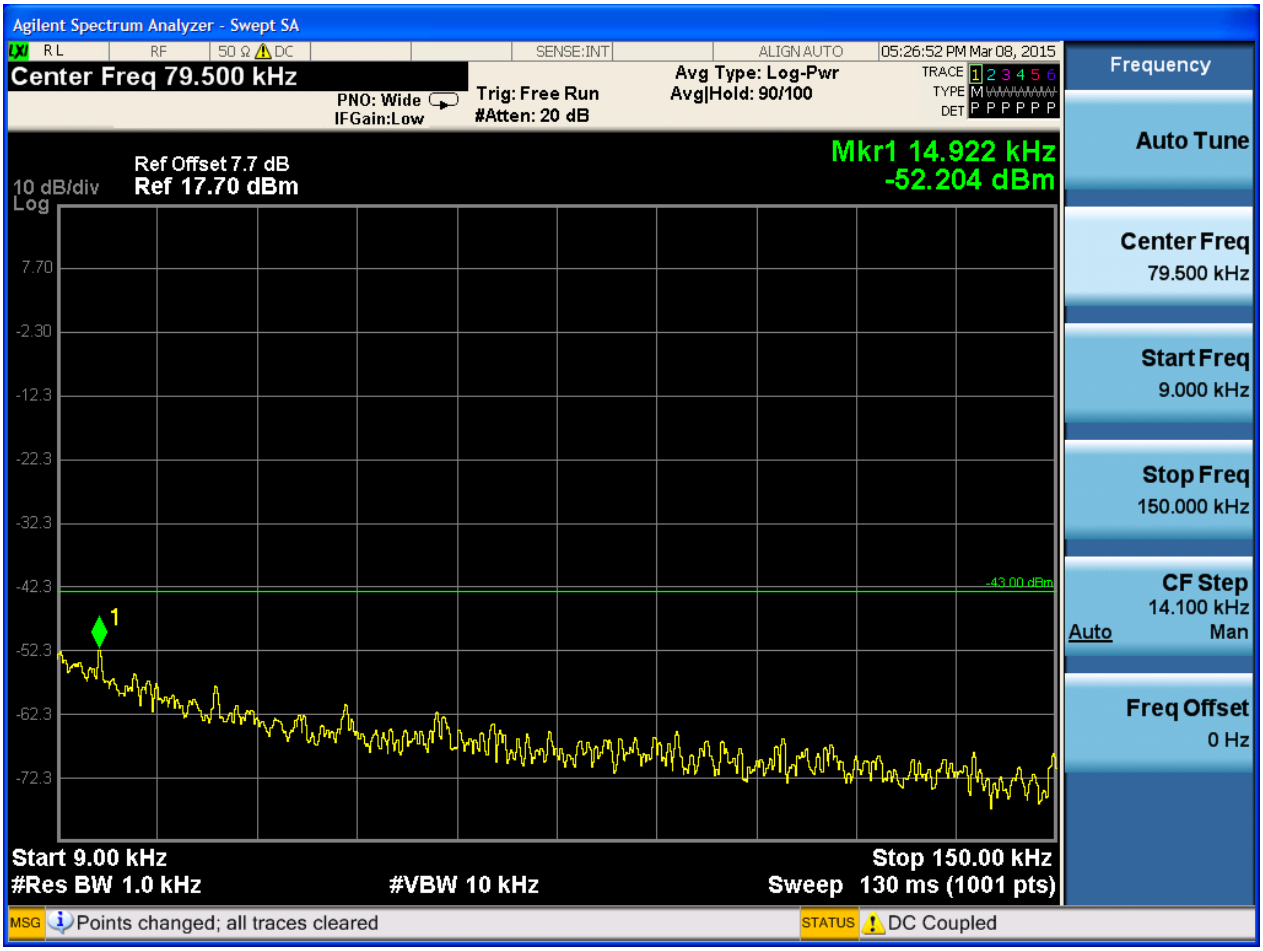
6.1.2.2.2 Test Channel = MCH

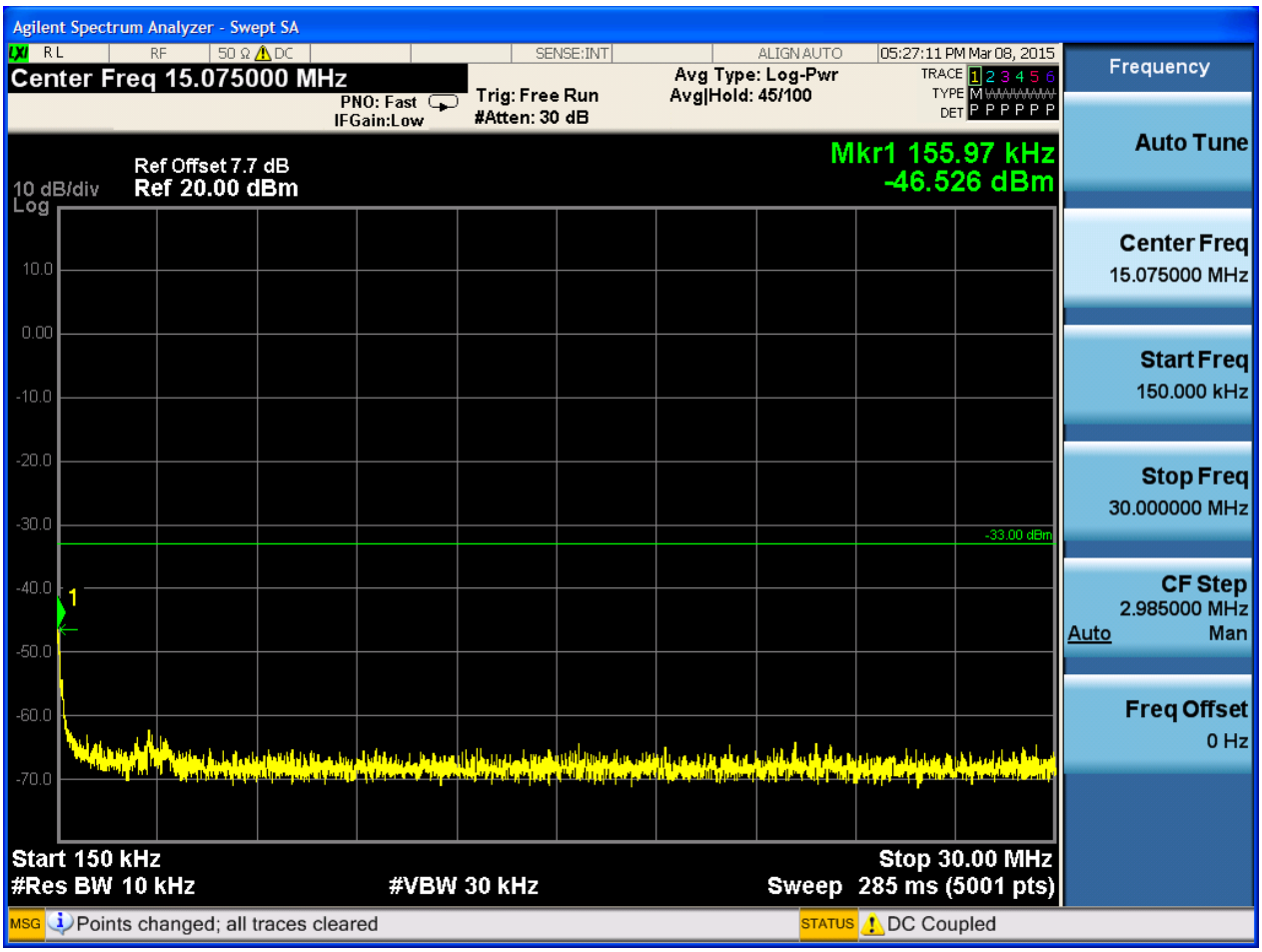


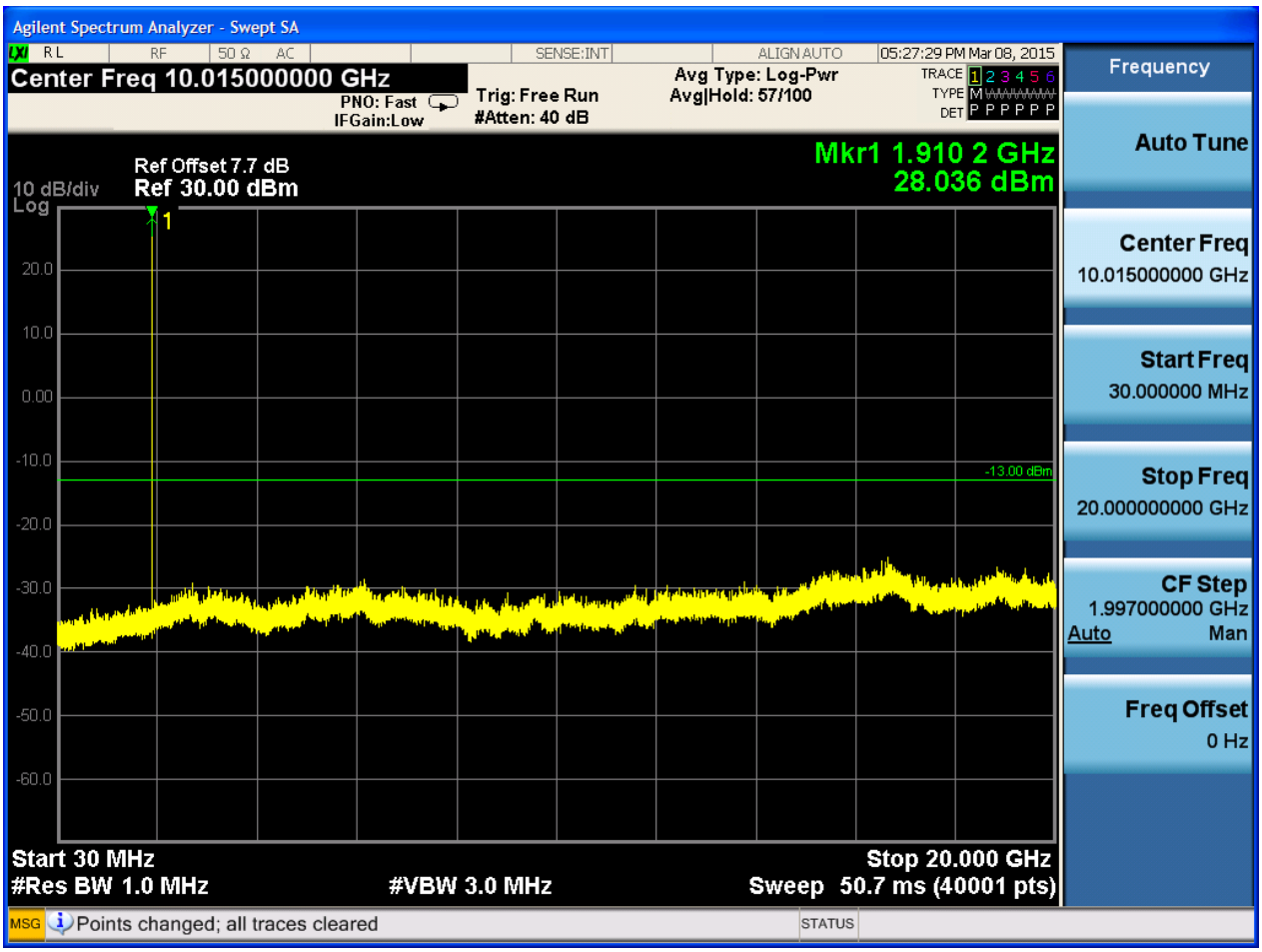




6.1.2.2.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note:

9kHz~150kHz, VBW = 200Hz, VBW = 600 Hz, Detector: PK

150kHz~30MHz, VBW = 9kHz, VBW = 30k Hz, Detector: PK

30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

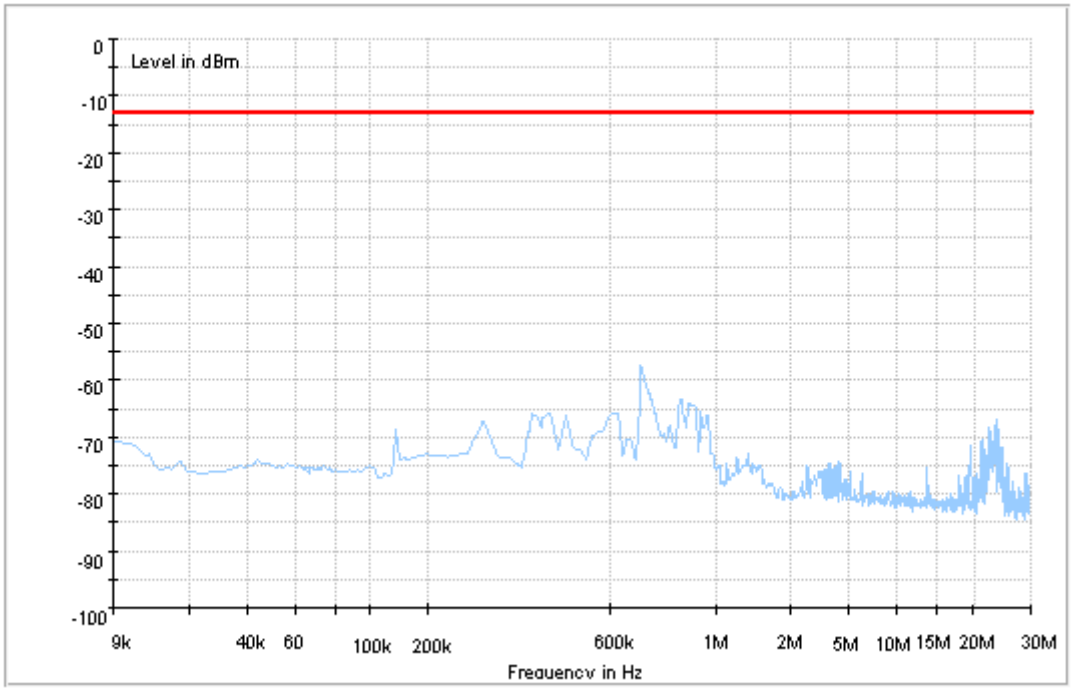
We tested all modes, but the data presented below is the worst case.

Part I - Test Plots

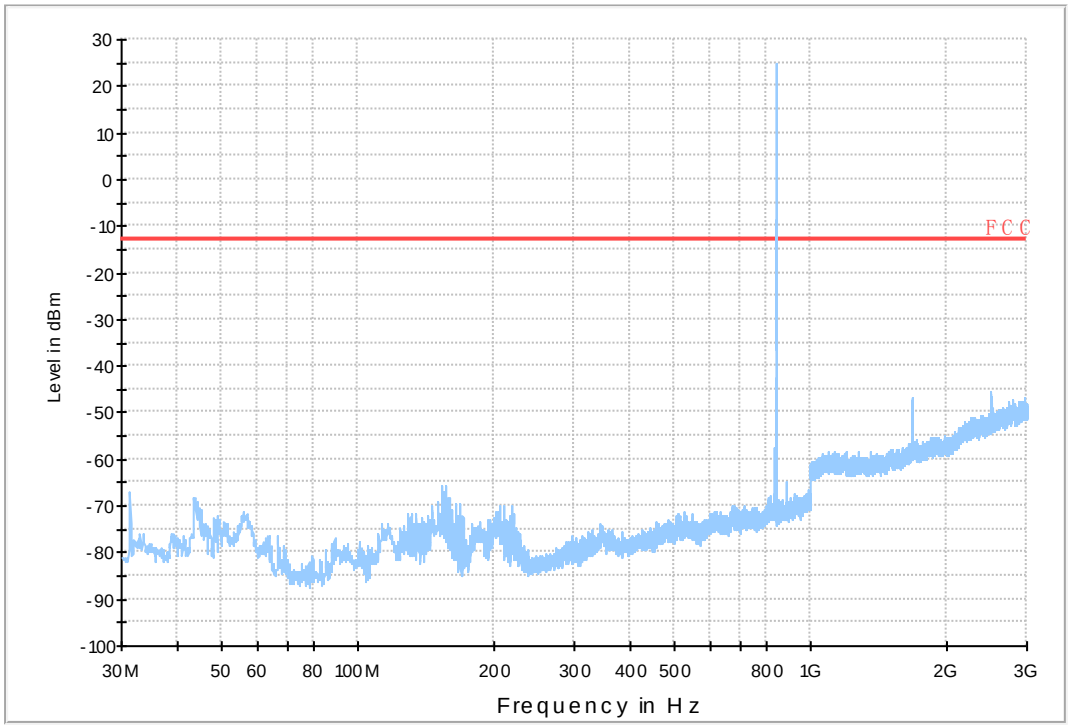
7.1 For GSM

7.1.1 Test Band = GSM850

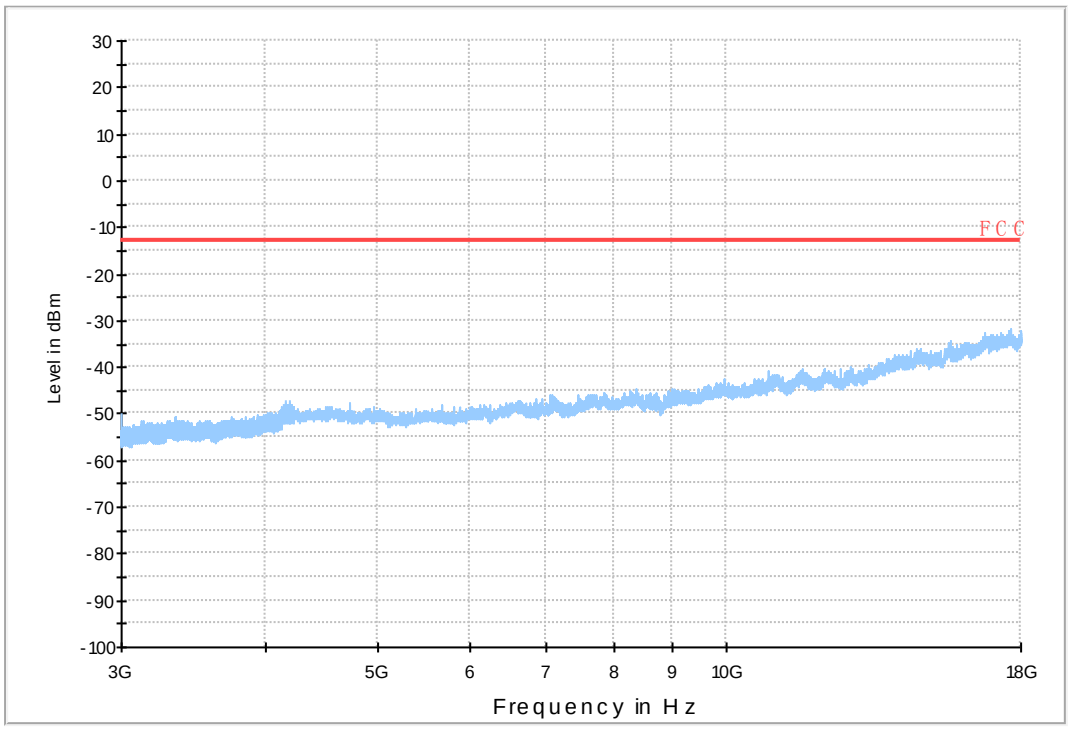
7.1.1.1 Test Mode = GSM/TM1



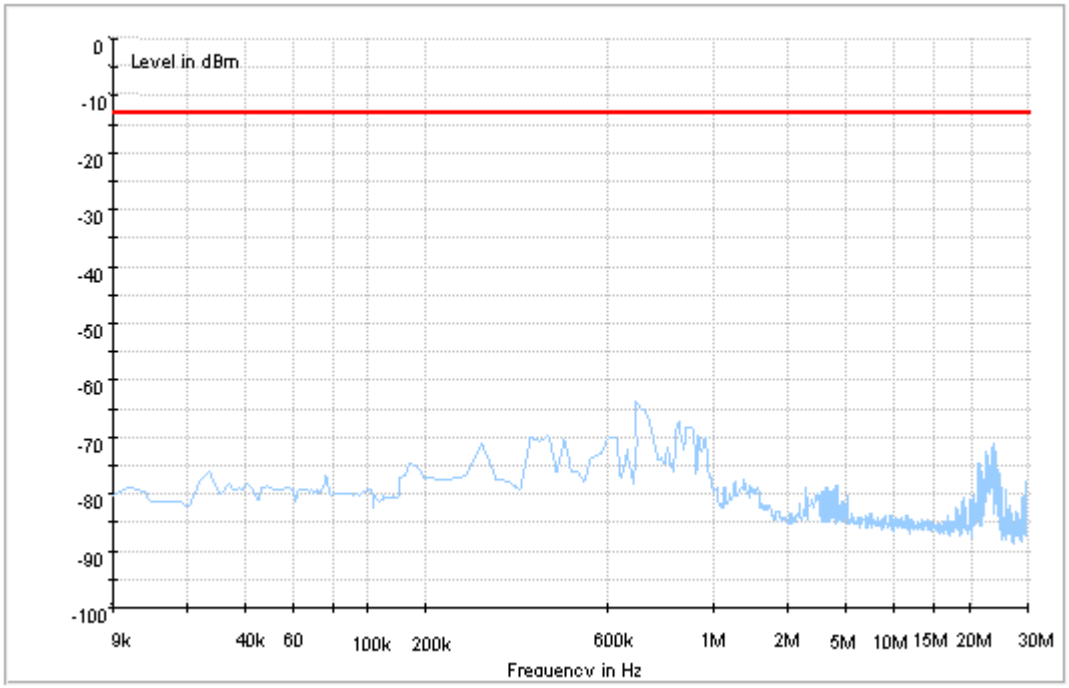
Copy of FCC PART22 GSM850_L



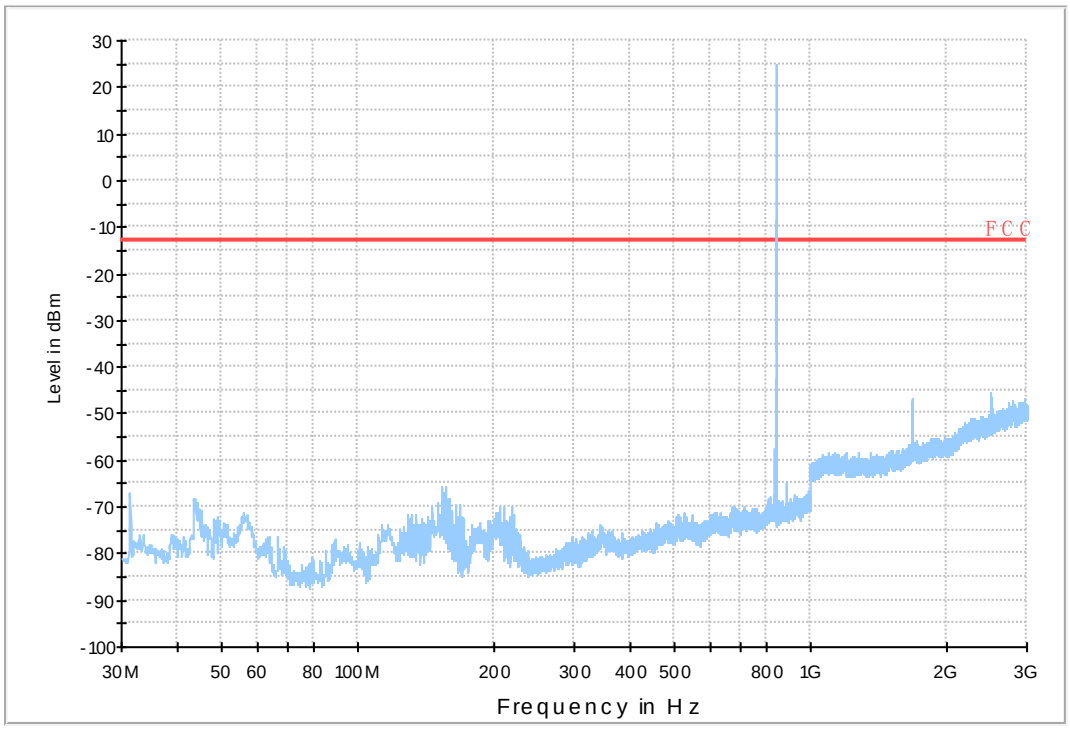
Copy of FCC PART22 GSM850_H



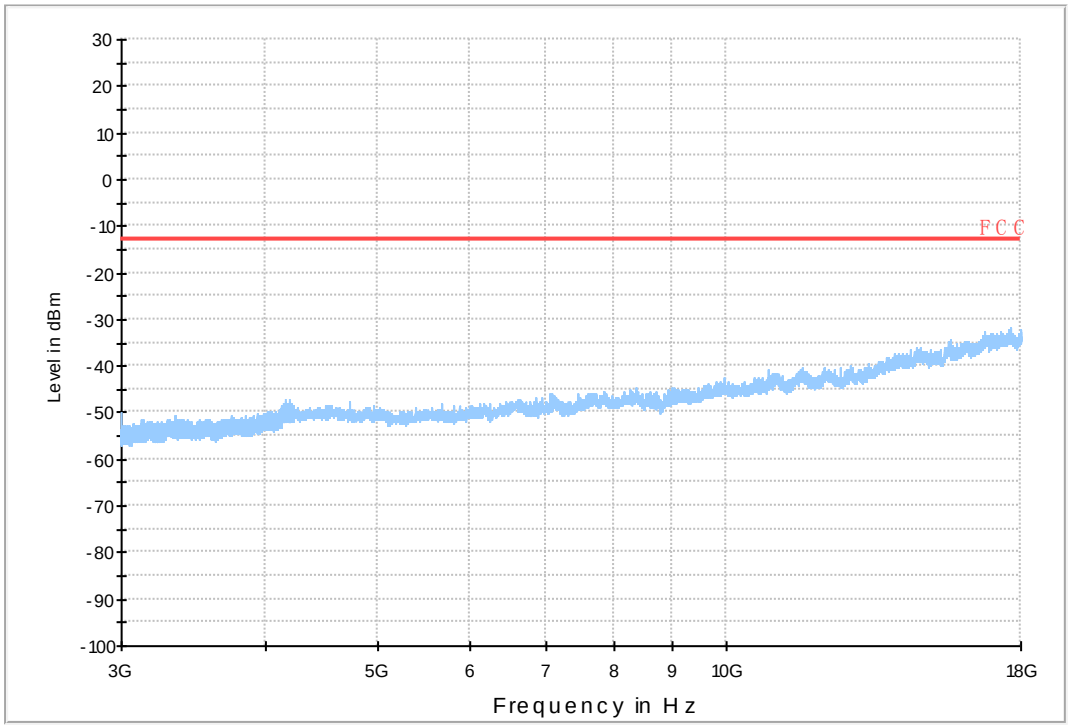
7.1.1.2 Test Mode = GSM/TM2



Copy of FCC PART22 GSM850_L

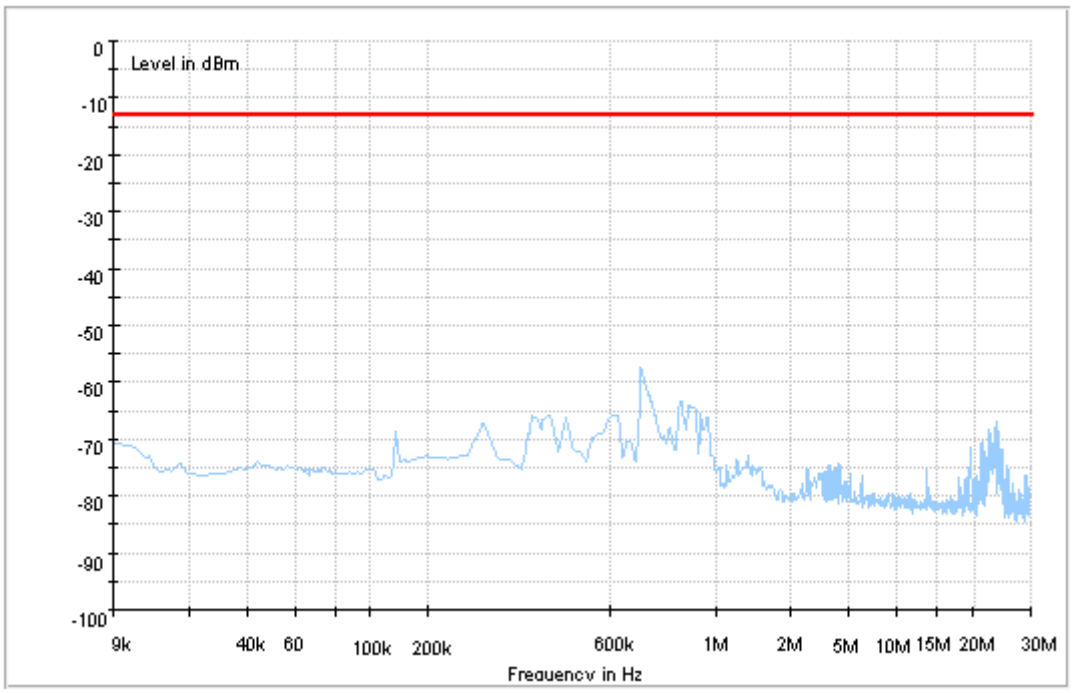


Copy of FCC PART22 GSM850_H

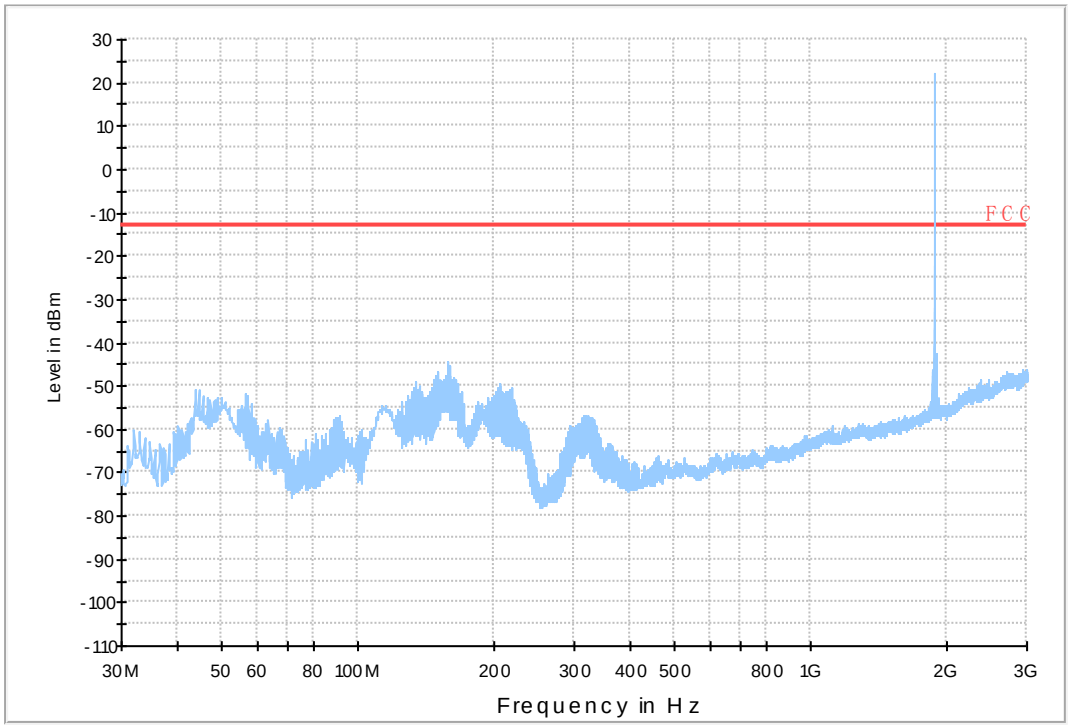


7.1.2 Test Band = GSM1900

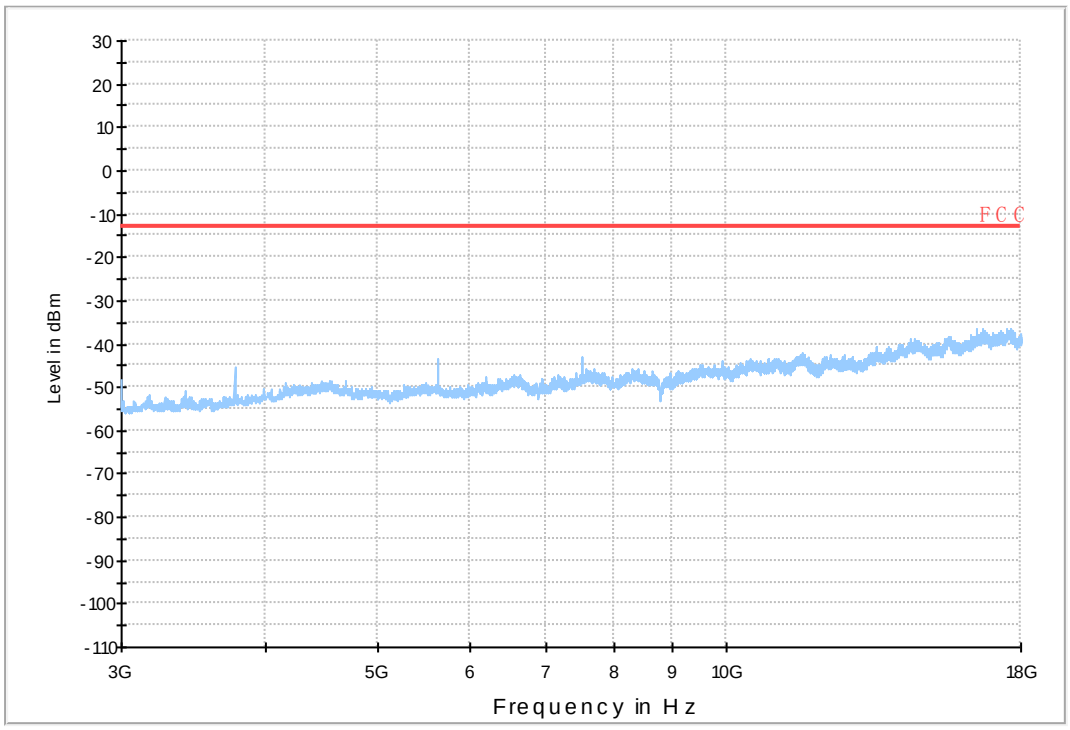
7.1.2.1 Test Mode = GSM/TM1

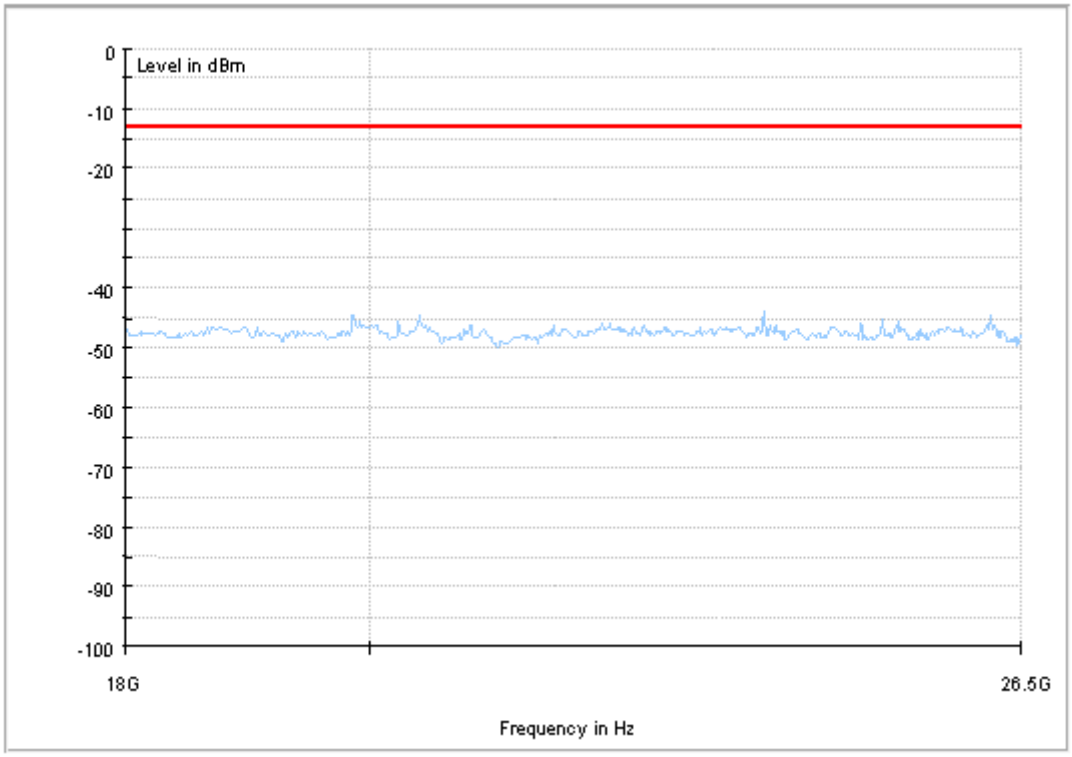


Copy of FCC PART24 GSM1900_L

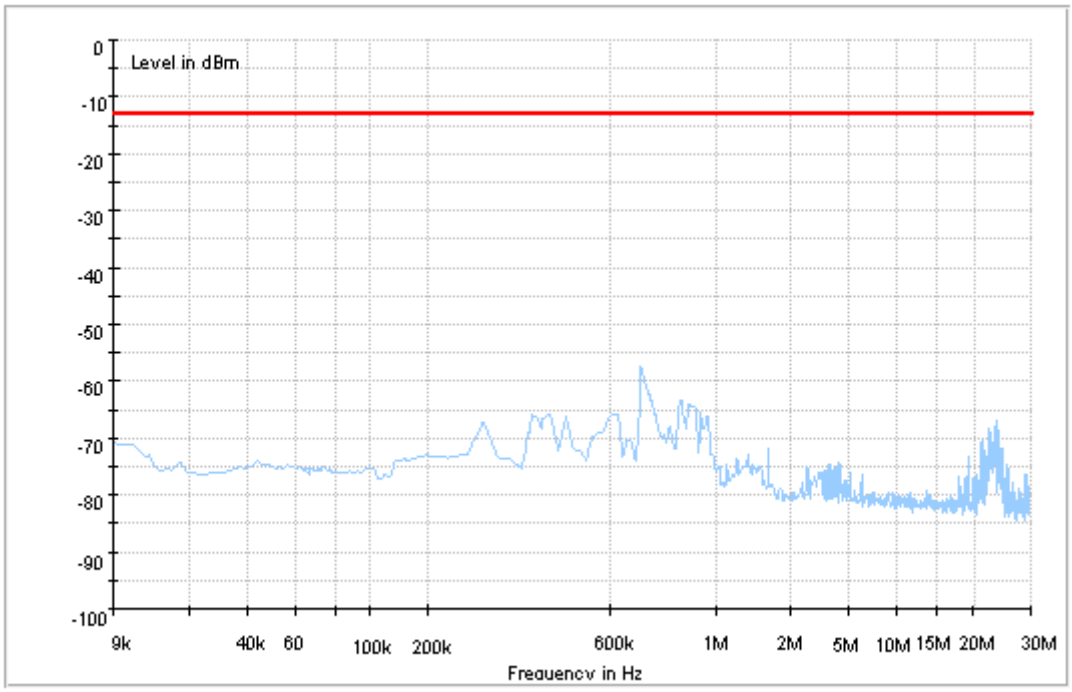


Copy of FCC PART24 GSM1900_H

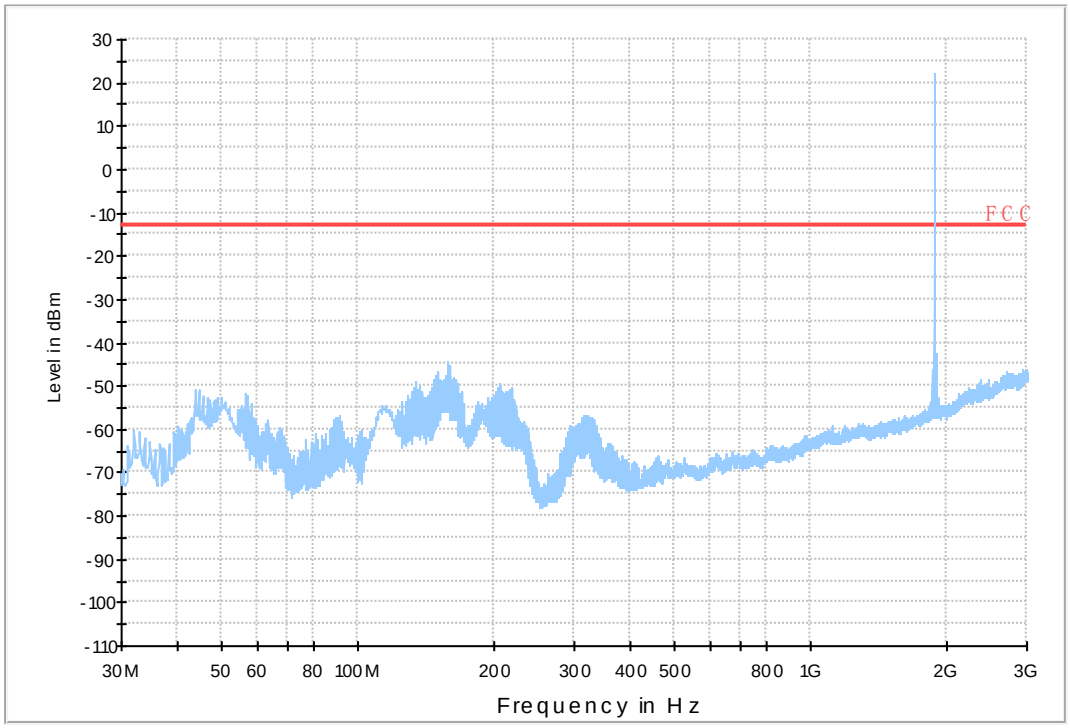




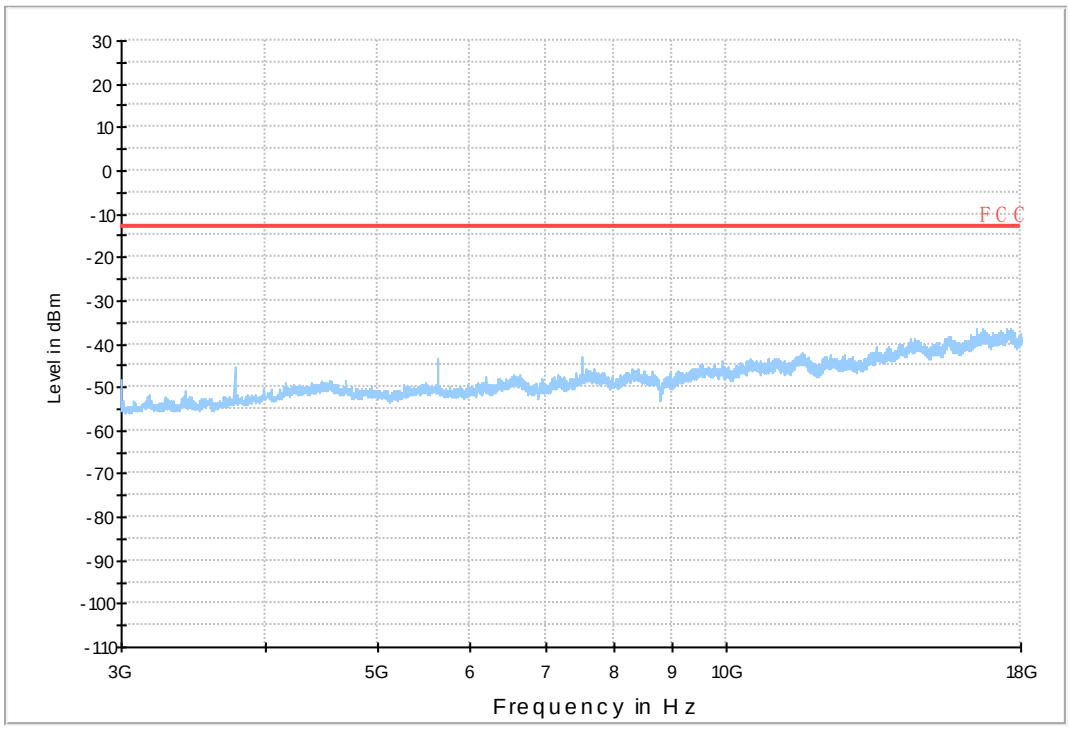
7.1.2.2 Test Mode = GSM/TM2

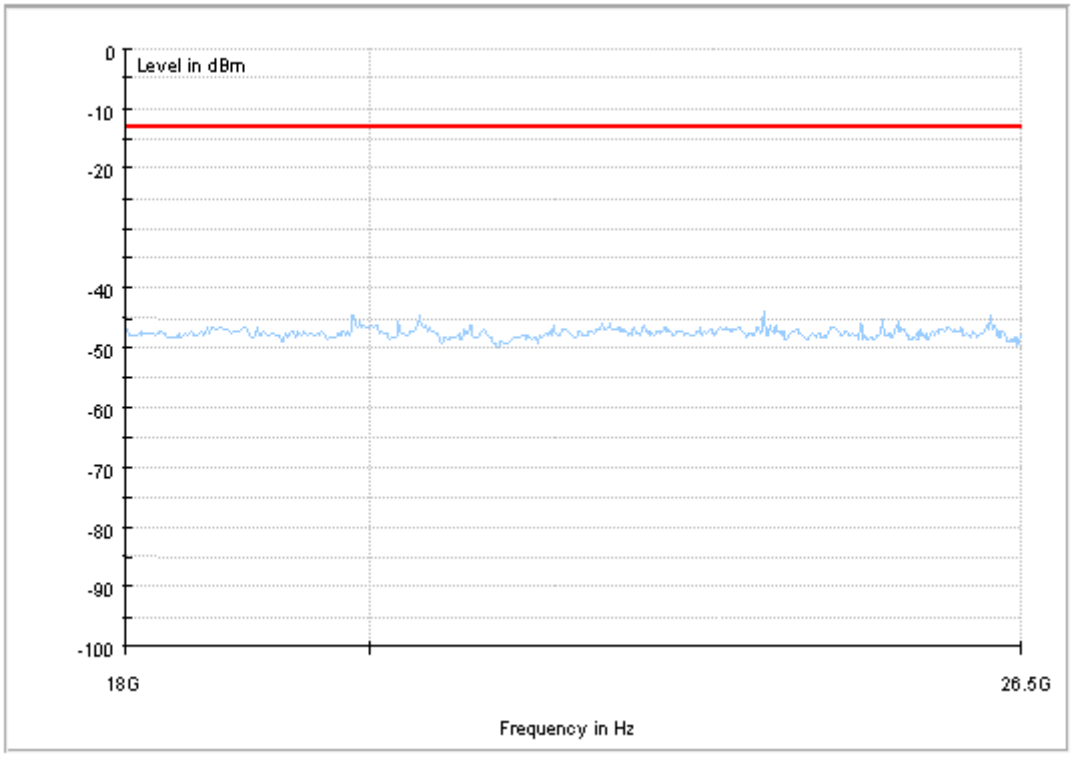


Copy of FCC PART24 GSM1900_L



Copy of FCC PART24 GSM1900_H





8Appendix_H: Frequency Stability

8.1 For GSM

8.1.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	GSM/TM1	LCH	TN	VL	-0.77	-0.00093	PASS
				VN	-2.2	-0.00267	PASS
				VH	-0.45	-0.00055	PASS
		MCH	TN	VL	1.61	0.00192	PASS
				VN	0.52	0.00062	PASS
				VH	2.13	0.00255	PASS
		HCH	TN	VL	1.16	0.00137	PASS
				VN	1.16	0.00137	PASS
				VH	-1.1	-0.0013	PASS
	GSM/TM2	LCH	TN	VL	-7.81	-0.00948	PASS
				VN	0.29	0.00035	PASS
				VH	-7.65	-0.00928	PASS
		MCH	TN	VL	-7.52	-0.00899	PASS
				VN	-7.85	-0.00938	PASS
				VH	-3.65	-0.00436	PASS
		HCH	TN	VL	1.19	0.0014	PASS
				VN	-2.87	-0.00338	PASS
				VH	-6.33	-0.00746	PASS
GSM1900	GSM/TM1	LCH	TN	VL	28.73	0.01553	PASS
				VN	28.86	0.0156	PASS
				VH	24.15	0.01305	PASS
		MCH	TN	VL	26.54	0.01412	PASS
				VN	26.35	0.01402	PASS
				VH	26.6	0.01415	PASS
		HCH	TN	VL	37.58	0.01968	PASS
				VN	40.29	0.0211	PASS
				VH	40.23	0.02107	PASS
	GSM/TM2	LCH	TN	VL	15.5	0.00838	PASS
				VN	14.21	0.00768	PASS
				VH	7.17	0.00388	PASS
		MCH	TN	VL	22.34	0.01188	PASS
				VN	18.31	0.00974	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	19.53	0.01039	PASS
		HCH	TN	VL	35.71	0.0187	PASS
				VN	36.84	0.01929	PASS
				VH	40.71	0.02132	PASS

8.1.2Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	GSM/TM1	LCH	VN	-30	-4.65	-0.00564	PASS
				-20	-3.29	-0.00399	PASS
				-10	0.52	0.00063	PASS
				0	0.45	0.00055	PASS
				10	0.13	0.00016	PASS
				20	-0.26	-0.00032	PASS
				30	-2.26	-0.00274	PASS
				40	1.49	0.00181	PASS
				50	-0.19	-0.00023	PASS
		MCH	VN	-30	-2.07	-0.00247	PASS
				-20	2.71	0.00324	PASS
				-10	2.91	0.00348	PASS
				0	1.23	0.00147	PASS
				10	0.65	0.00078	PASS
				20	-2.78	-0.00332	PASS
				30	0.84	0.001	PASS
				40	2.78	0.00332	PASS
				50	0.9	0.00108	PASS
		HCH	VN	-30	1.16	0.00137	PASS
				-20	1.68	0.00198	PASS
				-10	3.23	0.00381	PASS
				0	1.36	0.0016	PASS
				10	3.55	0.00418	PASS
				20	3.87	0.00456	PASS
				30	-2	-0.00236	PASS
				40	0.77	0.00091	PASS
				50	0.84	0.00099	PASS
	GSM/TM2	LCH	VN	-30	-2	-0.00243	PASS
				-20	-5	-0.00607	PASS
				-10	-5.65	-0.00686	PASS
				0	-8.56	-0.01039	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-0.45	-0.00055	PASS
				20	-9.59	-0.01164	PASS
				30	-9.23	-0.0112	PASS
				40	-6.23	-0.00756	PASS
				50	-2.78	-0.00337	PASS
		MCH	VN	-30	-5.23	-0.00625	PASS
				-20	-0.45	-0.00054	PASS
				-10	-4.42	-0.00528	PASS
				0	-5.81	-0.00694	PASS
				10	-0.65	-0.00078	PASS
				20	1.29	0.00154	PASS
				30	-1.52	-0.00182	PASS
				40	-1	-0.0012	PASS
				50	3.68	0.0044	PASS
		HCH	VN	-30	-1.58	-0.00186	PASS
				-20	-1.84	-0.00217	PASS
				-10	-6.07	-0.00715	PASS
				0	-2.74	-0.00323	PASS
				10	-7.07	-0.00833	PASS
				20	-10.14	-0.01195	PASS
				30	-7.39	-0.00871	PASS
				40	-0.61	-0.00072	PASS
				50	-7.72	-0.0091	PASS
GSM1900	GSM/TM1	LCH	VN	-30	24.47	0.01323	PASS
				-20	19.24	0.0104	PASS
				-10	21.63	0.01169	PASS
				0	27.57	0.0149	PASS
				10	25.63	0.01385	PASS
				20	22.54	0.01218	PASS
				30	22.41	0.01211	PASS
				40	17.43	0.00942	PASS
				50	27.7	0.01497	PASS
		MCH	VN	-30	26.02	0.01384	PASS
				-20	24.09	0.01281	PASS
				-10	25.63	0.01363	PASS
				0	25.96	0.01381	PASS
				10	32.16	0.01711	PASS
				20	23.12	0.0123	PASS
				30	29.51	0.0157	PASS
				40	26.8	0.01426	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	24.92	0.01326	PASS
		HCH	VN	-30	41.2	0.02157	PASS
				-20	44.17	0.02313	PASS
				-10	45.52	0.02383	PASS
				0	38.87	0.02035	PASS
				10	47.4	0.02482	PASS
				20	48.24	0.02526	PASS
				30	42.75	0.02238	PASS
				40	44.43	0.02326	PASS
				50	45.07	0.0236	PASS
	GSM/TM2	LCH	VN	-30	20.24	0.01094	PASS
				-20	15.82	0.00855	PASS
				-10	21.02	0.01136	PASS
				0	16.76	0.00906	PASS
				10	23.79	0.01286	PASS
				20	19.18	0.01037	PASS
				30	12.07	0.00652	PASS
				40	17.14	0.00926	PASS
				50	14.01	0.00757	PASS
		MCH	VN	-30	24.21	0.01288	PASS
				-20	9.91	0.00527	PASS
				-10	18.18	0.00967	PASS
				0	15.82	0.00841	PASS
				10	15.88	0.00845	PASS
				20	21.57	0.01147	PASS
				30	11.04	0.00587	PASS
				40	24.73	0.01315	PASS
				50	15.56	0.00828	PASS
		HCH	VN	-30	34.03	0.01782	PASS
				-20	27.22	0.01425	PASS
				-10	38.94	0.02039	PASS
				0	38.42	0.02012	PASS
				10	36.13	0.01892	PASS
				20	39.26	0.02056	PASS
				30	40.94	0.02144	PASS
				40	33.29	0.01743	PASS
				50	32.54	0.01704	PASS

END