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 [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.91	29.75	38.5	PASS
		MCH	32.85	29.61	38.5	PASS
		HCH	32.91	29.68	38.5	PASS
	GSM/TM2	LCH	26.72	23.12	38.5	PASS
		MCH	27.15	23.54	38.5	PASS
		HCH	26.76	23.27	38.5	PASS
Test Band	**Test Mode**	**Test Channel**	**Measured[dBm]**	**EIRP [dBm]**	**Limit [dBm]**	**Verdict**
GSM1900	GSM/TM1	LCH	30.14	30.69	33	PASS
		MCH	30.25	30.77	33	PASS
		HCH	30.12	30.58	33	PASS
	GSM/TM2	LCH	26.72	27.12	33	PASS
		MCH	26.97	27.25	33	PASS
		HCH	26.94	27.21	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:

SET Span=1.5*OBW

SET RBW=1%of the OBW,not to exceed 1MHz

SET VBW>= 3*RBW

SET Sweep time=auto-couple.

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	0.21	13	PASS
		MCH	0.18	13	PASS
		HCH	0.20	13	PASS
	GSM/TM2	LCH	2.79	13	PASS
		MCH	2.92	13	PASS
		HCH	2.93	13	PASS
GSM1900	GSM/TM1	LCH	0.28	13	PASS
		MCH	0.30	13	PASS
		HCH	0.28	13	PASS
	GSM/TM2	LCH	3.07	13	PASS
		MCH	2.86	13	PASS
		HCH	2.93	13	PASS

3Appendix_C: Modulation Characteristics

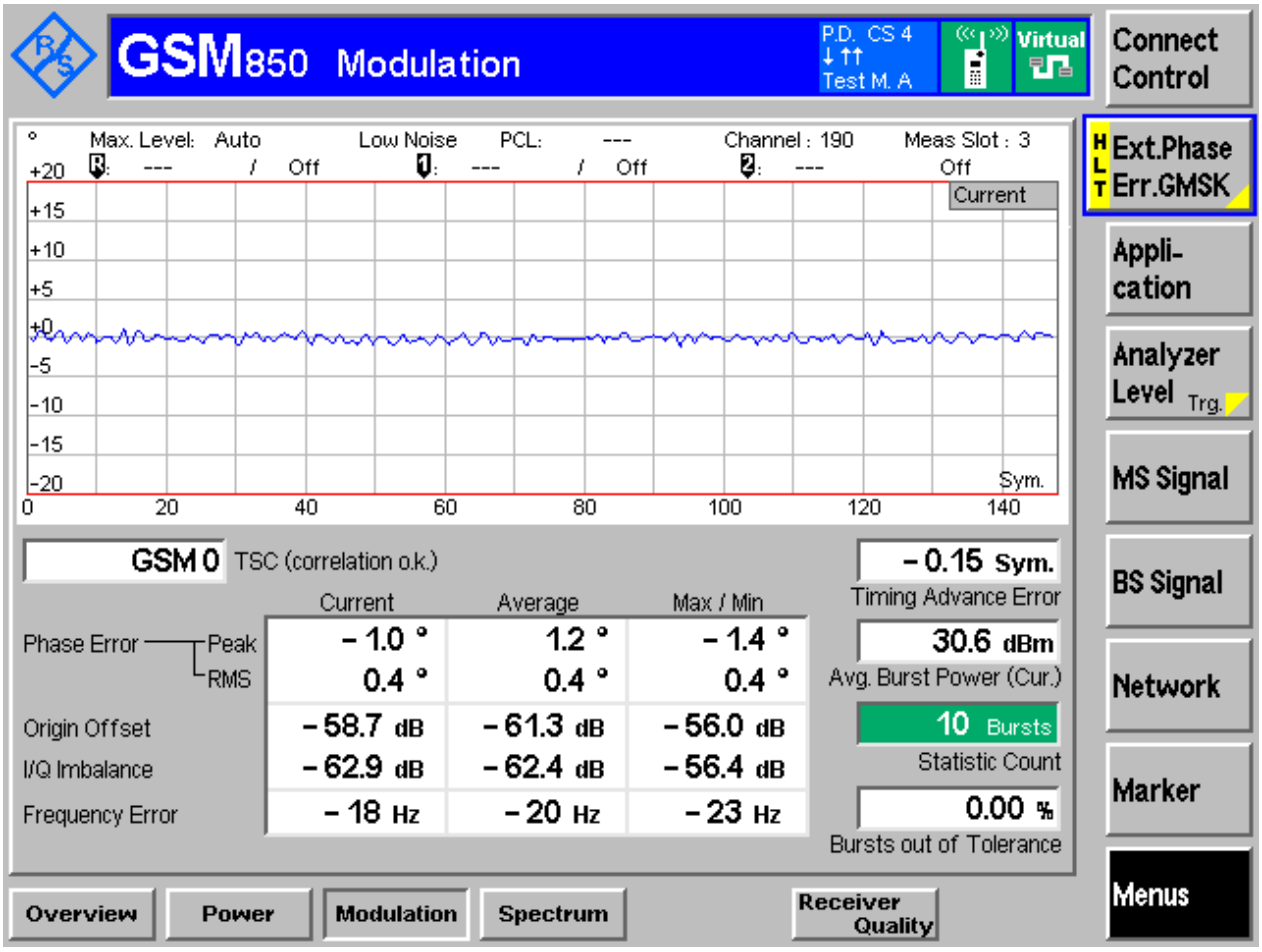
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

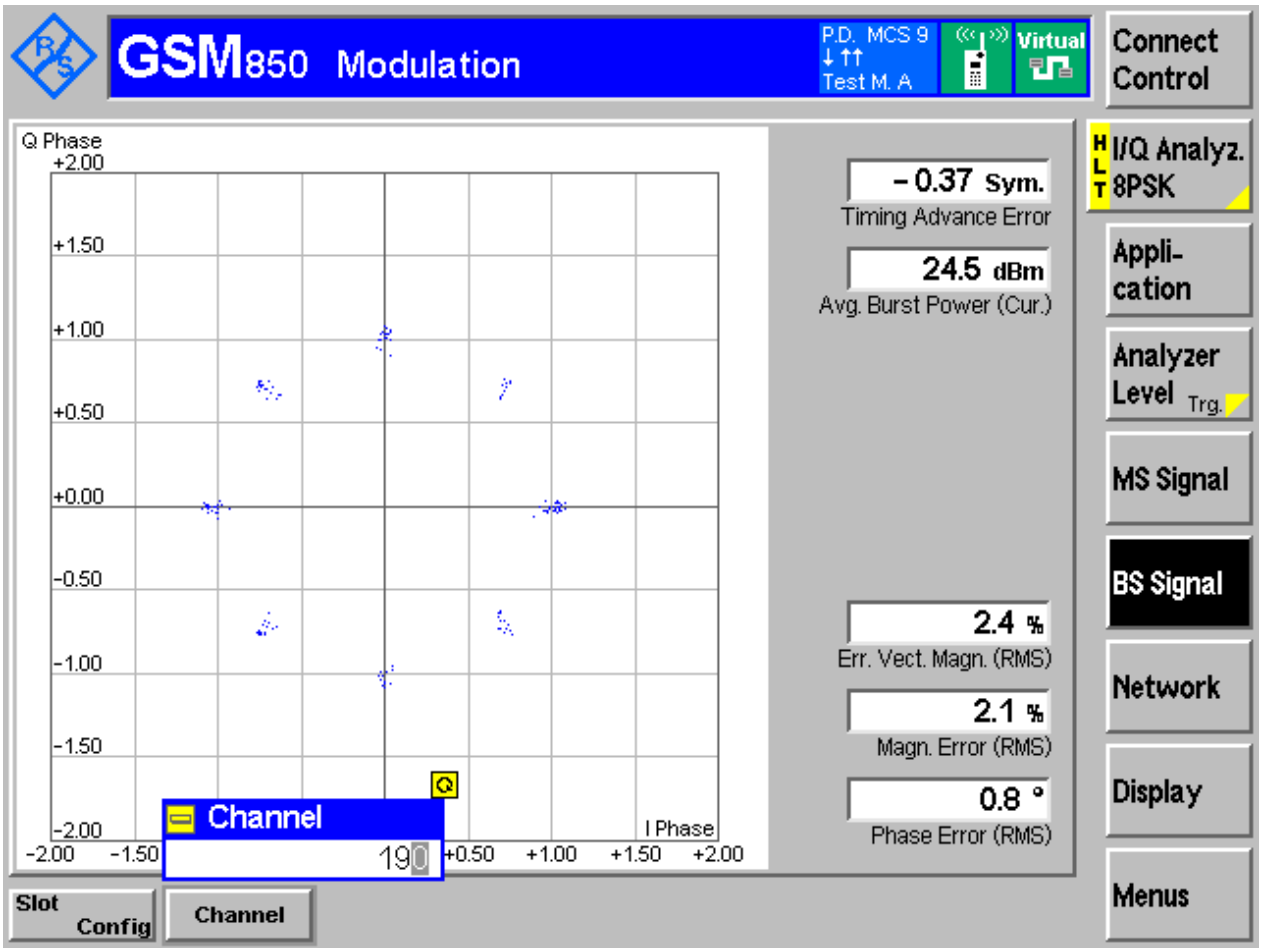
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

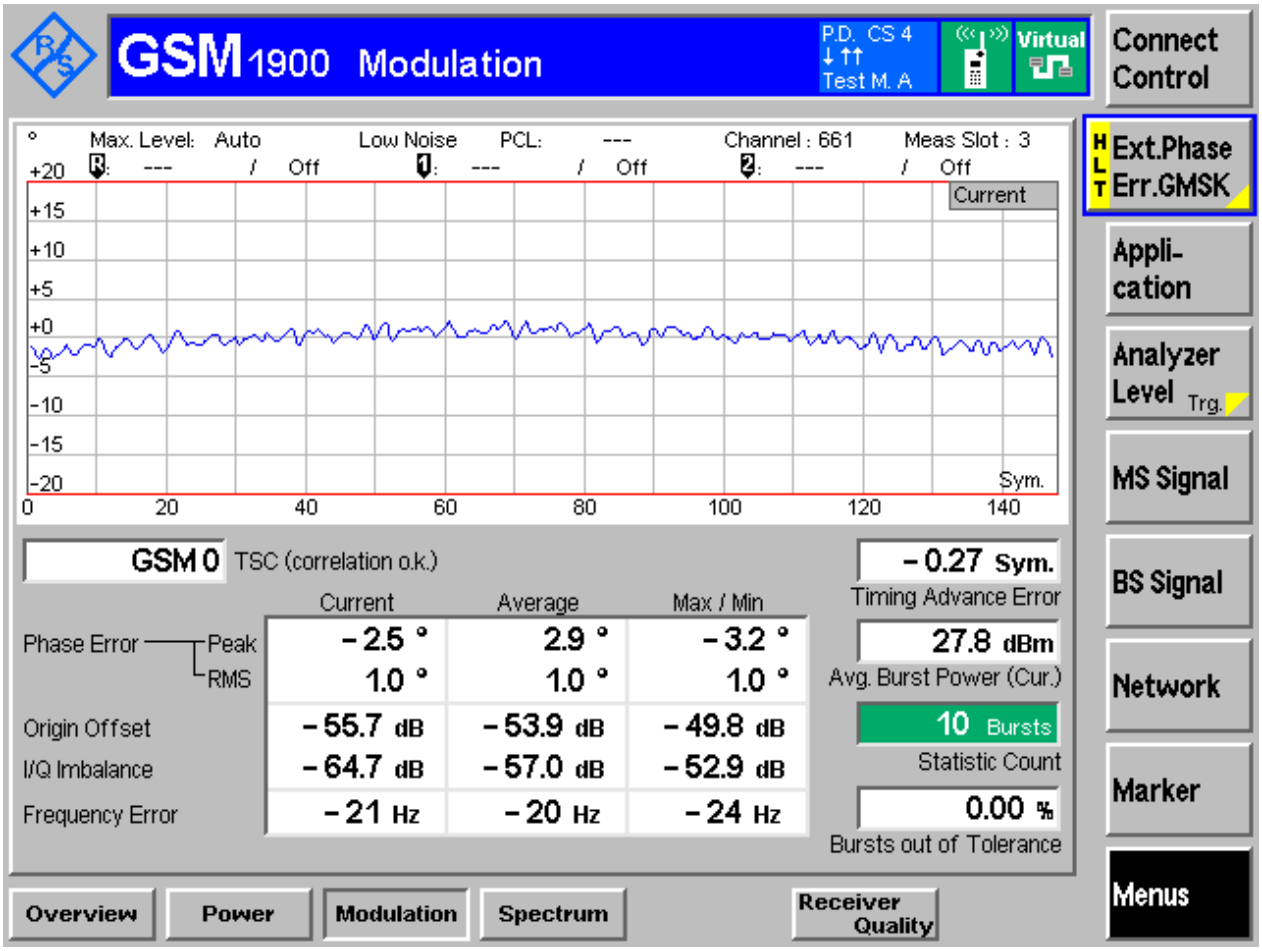
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

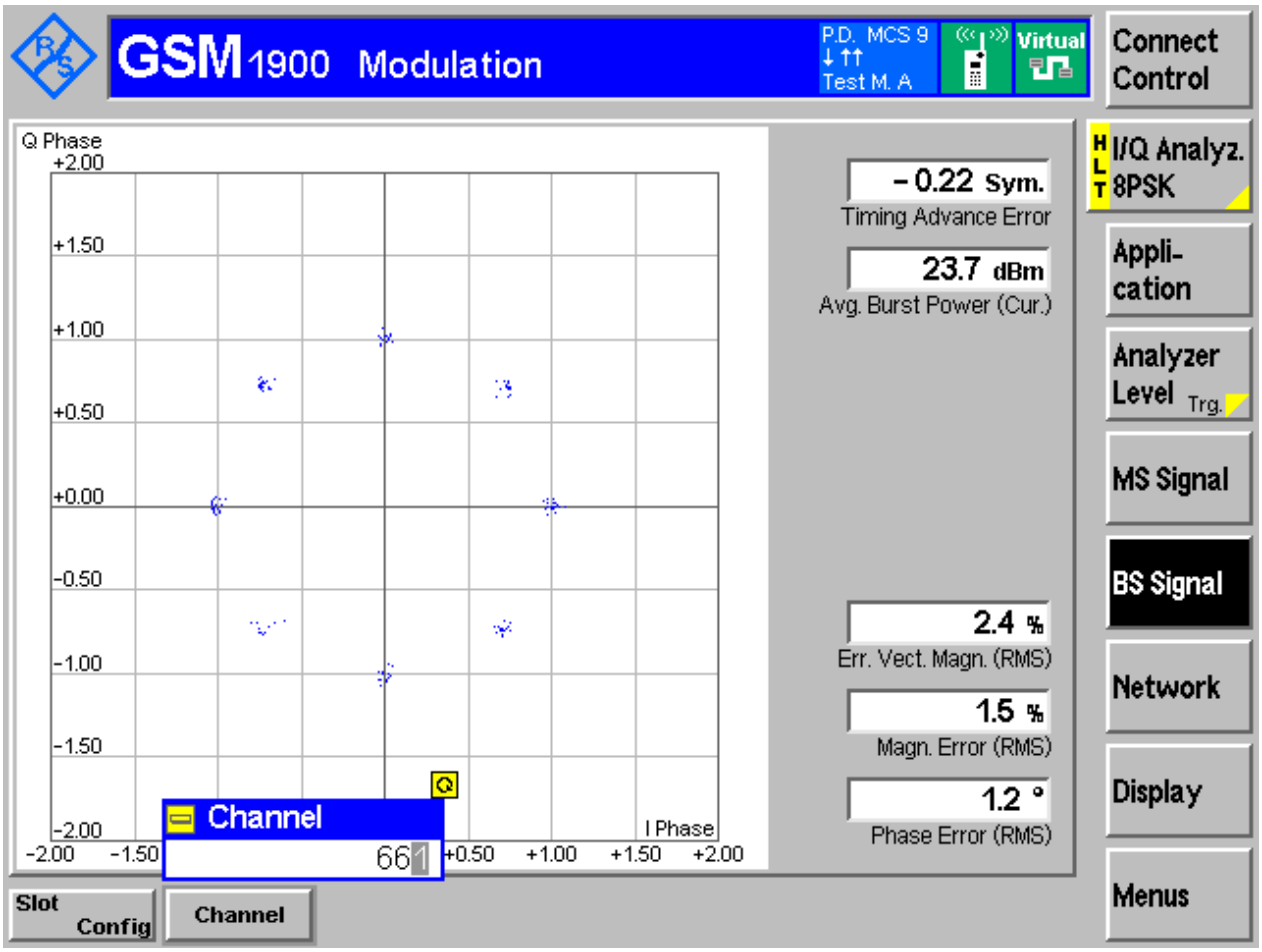
3.1.2.1 Test Mode = GSM/TM1

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	245.97	317.12	Pass
		MCH	247.90	316.01	Pass
		HCH	244.76	318.78	Pass
	GSM/TM2	LCH	251.61	325.24	Pass
		MCH	255.37	322.33	Pass
		HCH	252.11	321.15	Pass
GSM1900	GSM/TM1	LCH	243.05	313.31	Pass
		MCH	244.90	318.55	Pass
		HCH	243.20	310.29	Pass
	GSM/TM2	LCH	252.63	326.15	Pass
		MCH	252.47	322.90	Pass
		HCH	251.29	321.71	Pass

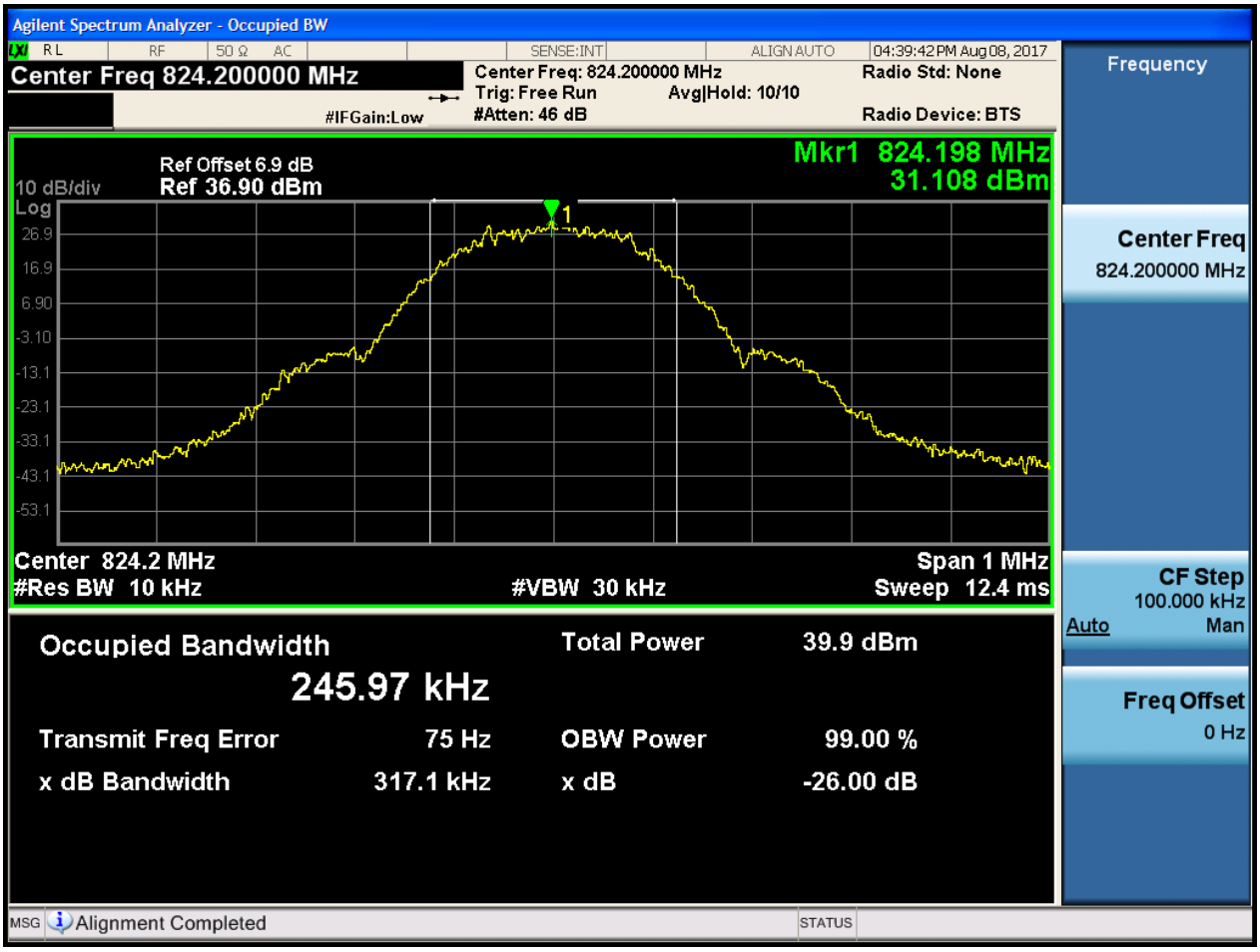
Part II - Test Plots

4.1 For GSM

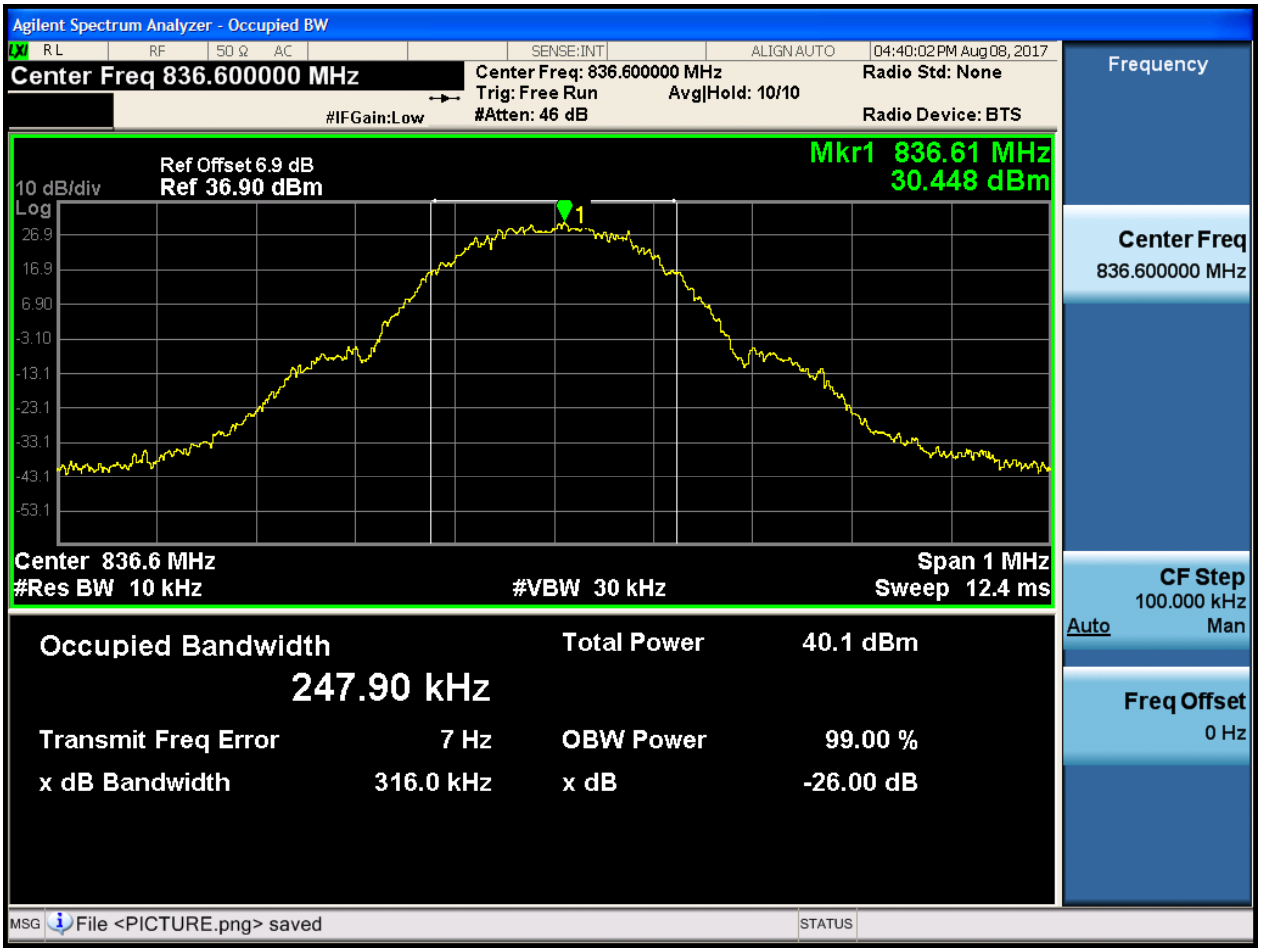
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

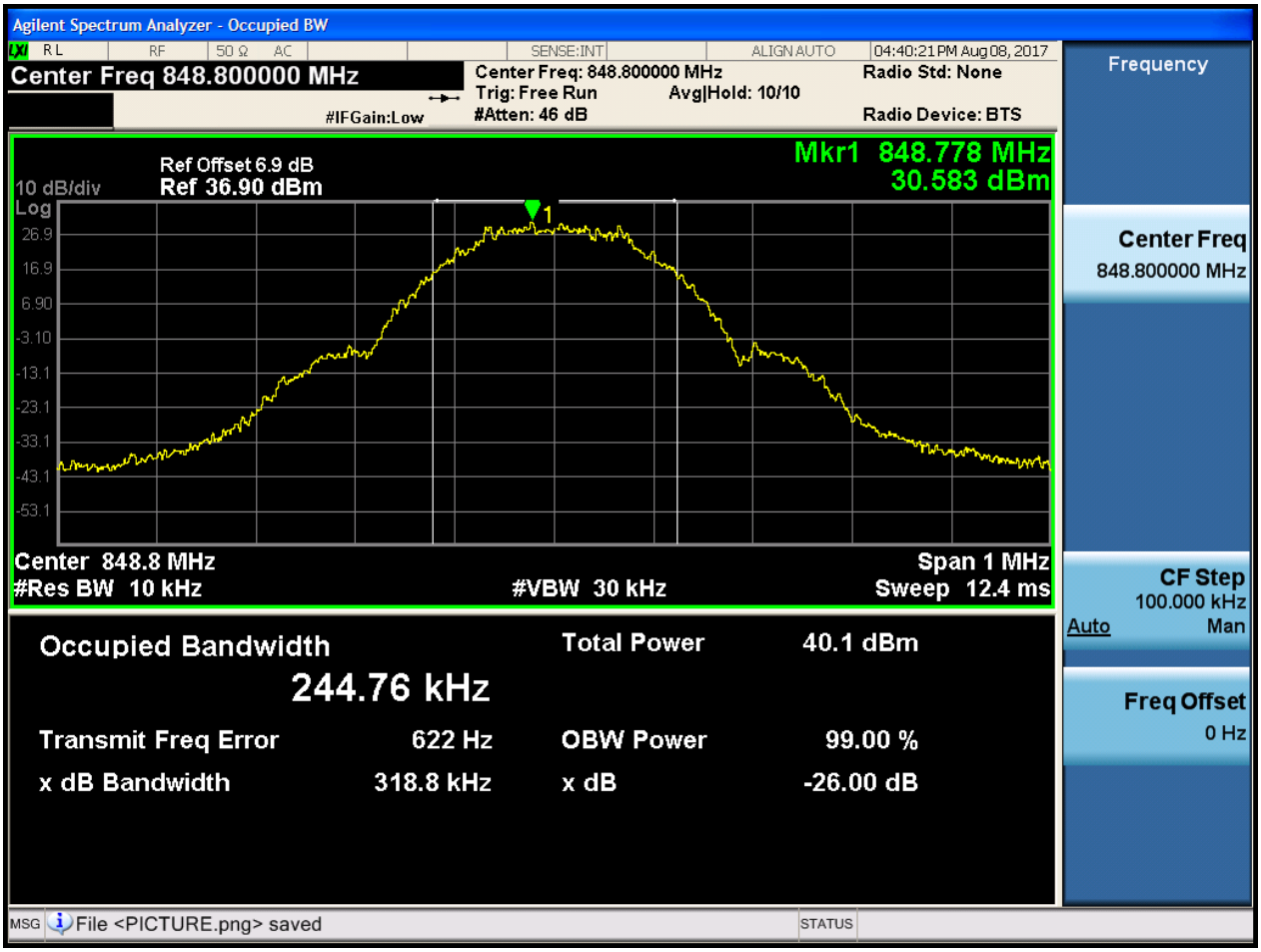
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

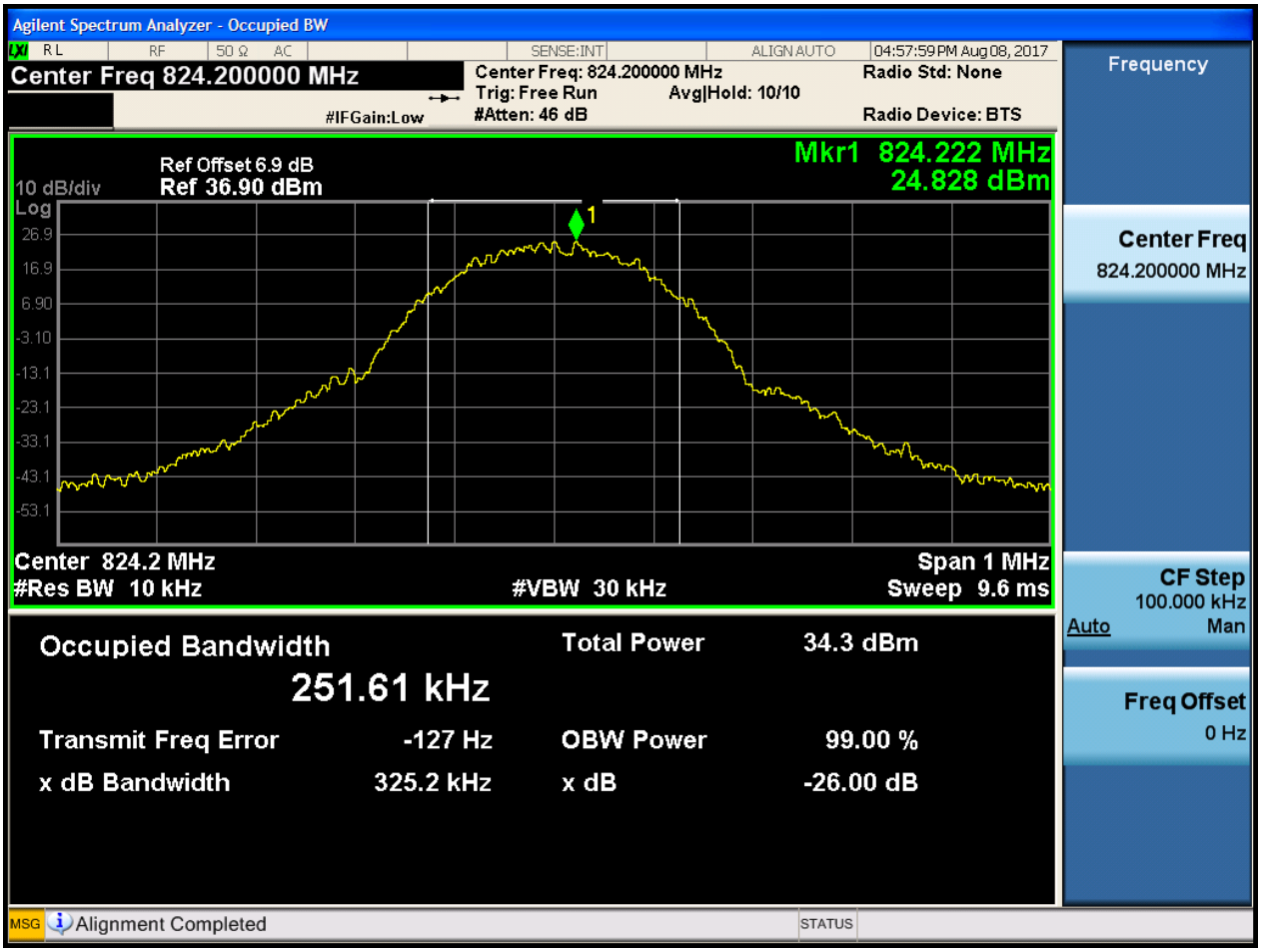


4.1.1.1.3 Test Channel = HCH

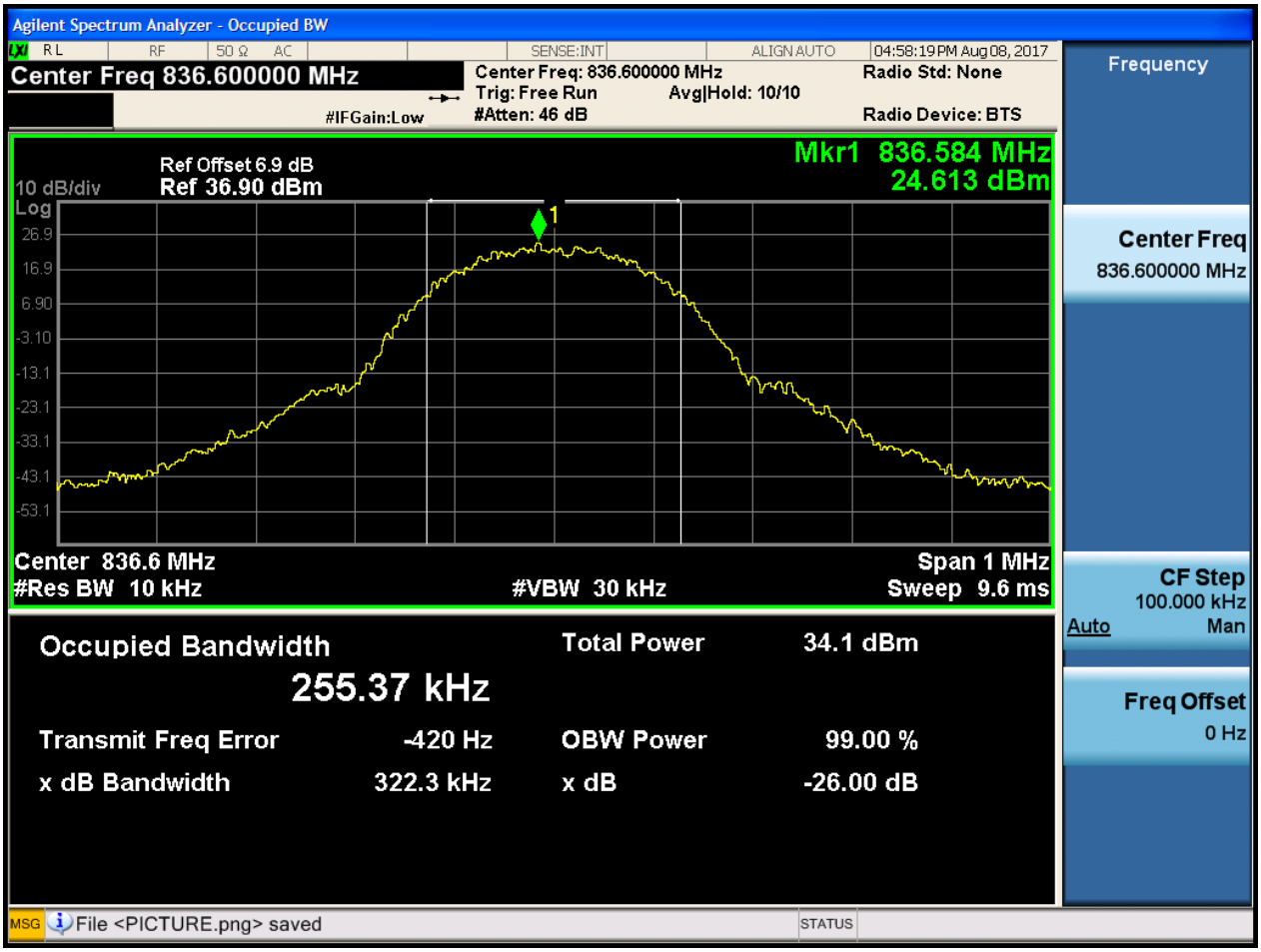


4.1.1.2 Test Mode = GSM/TM2

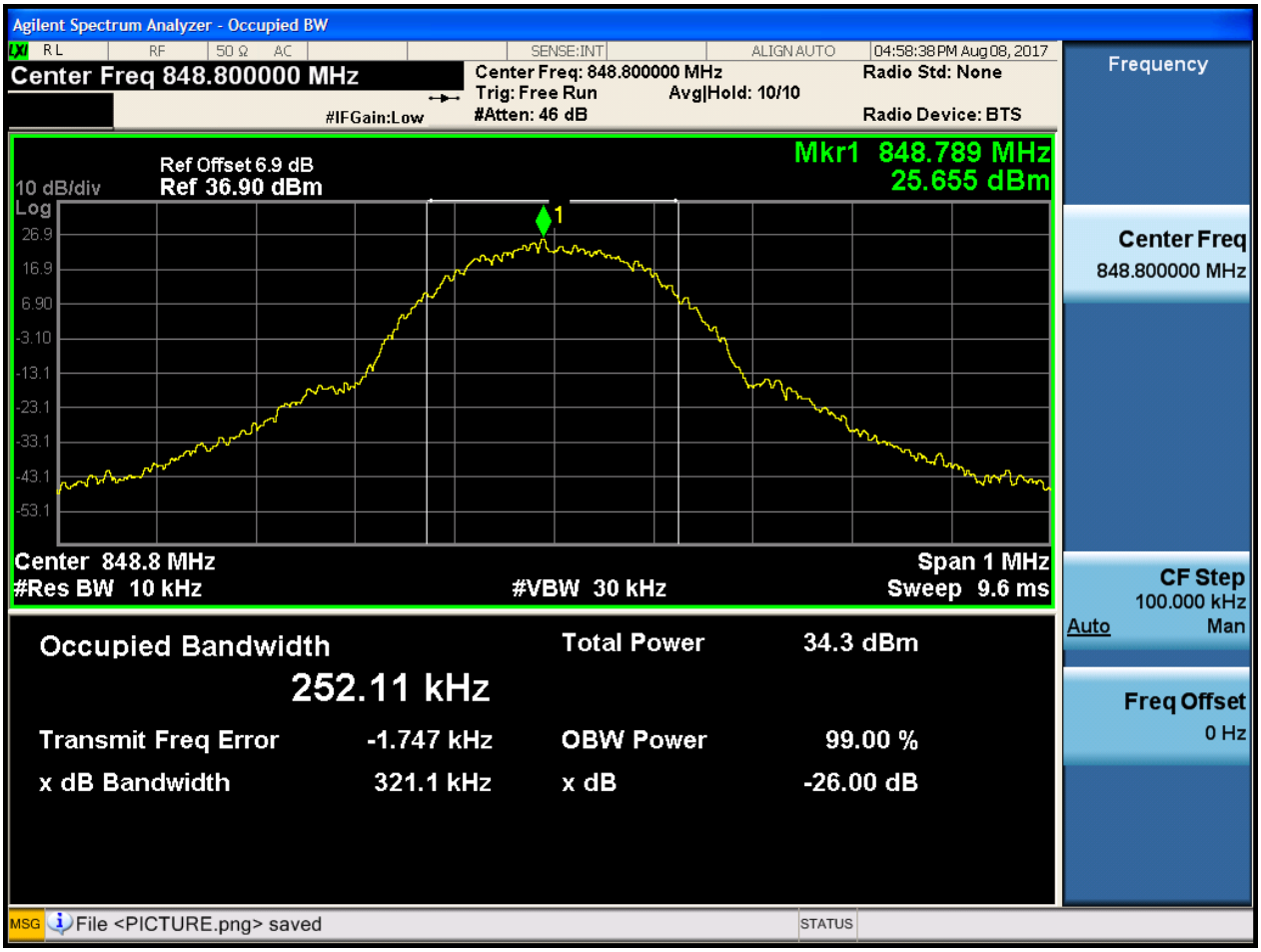
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



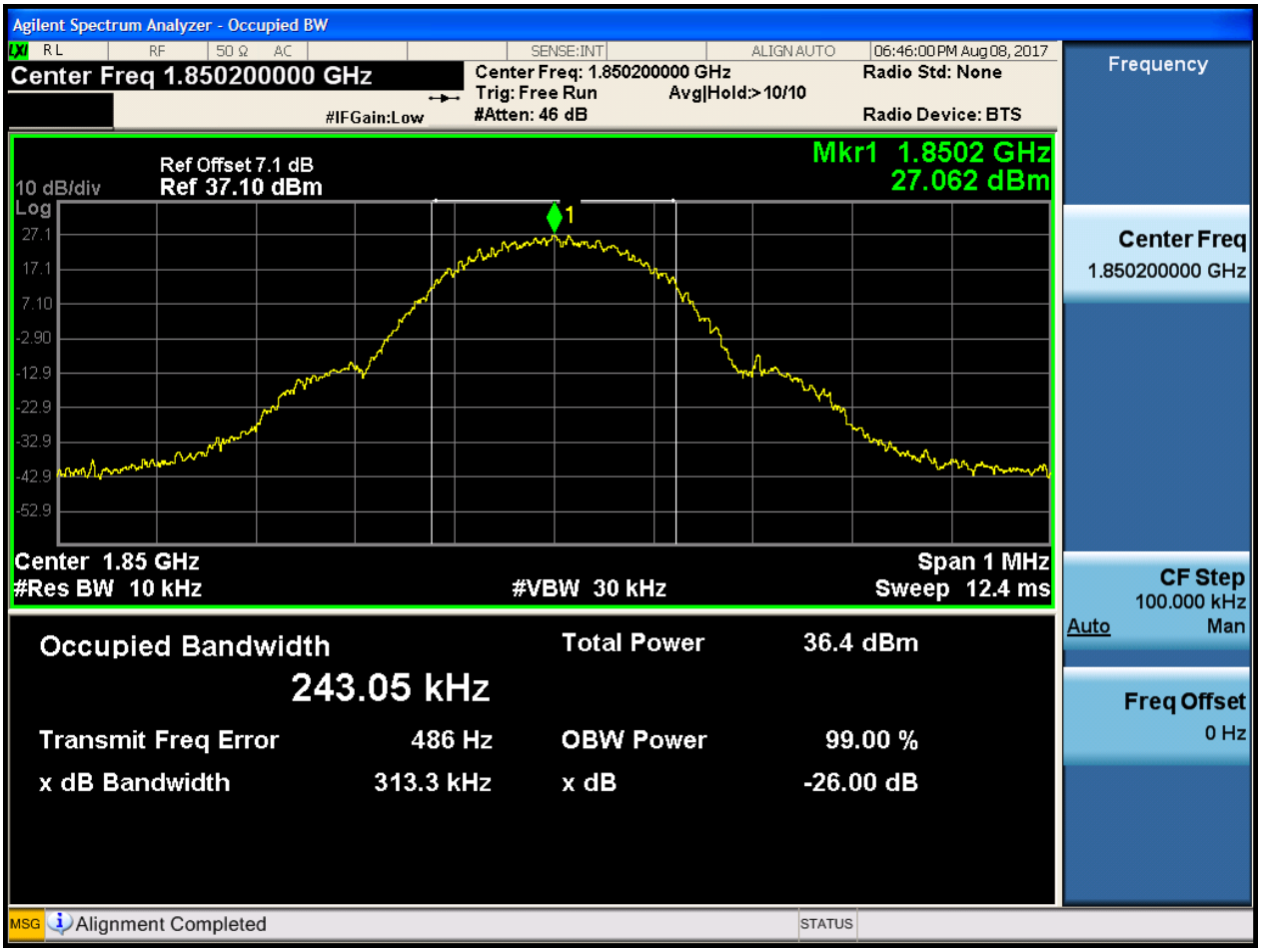
4.1.1.2.3 Test Channel = HCH



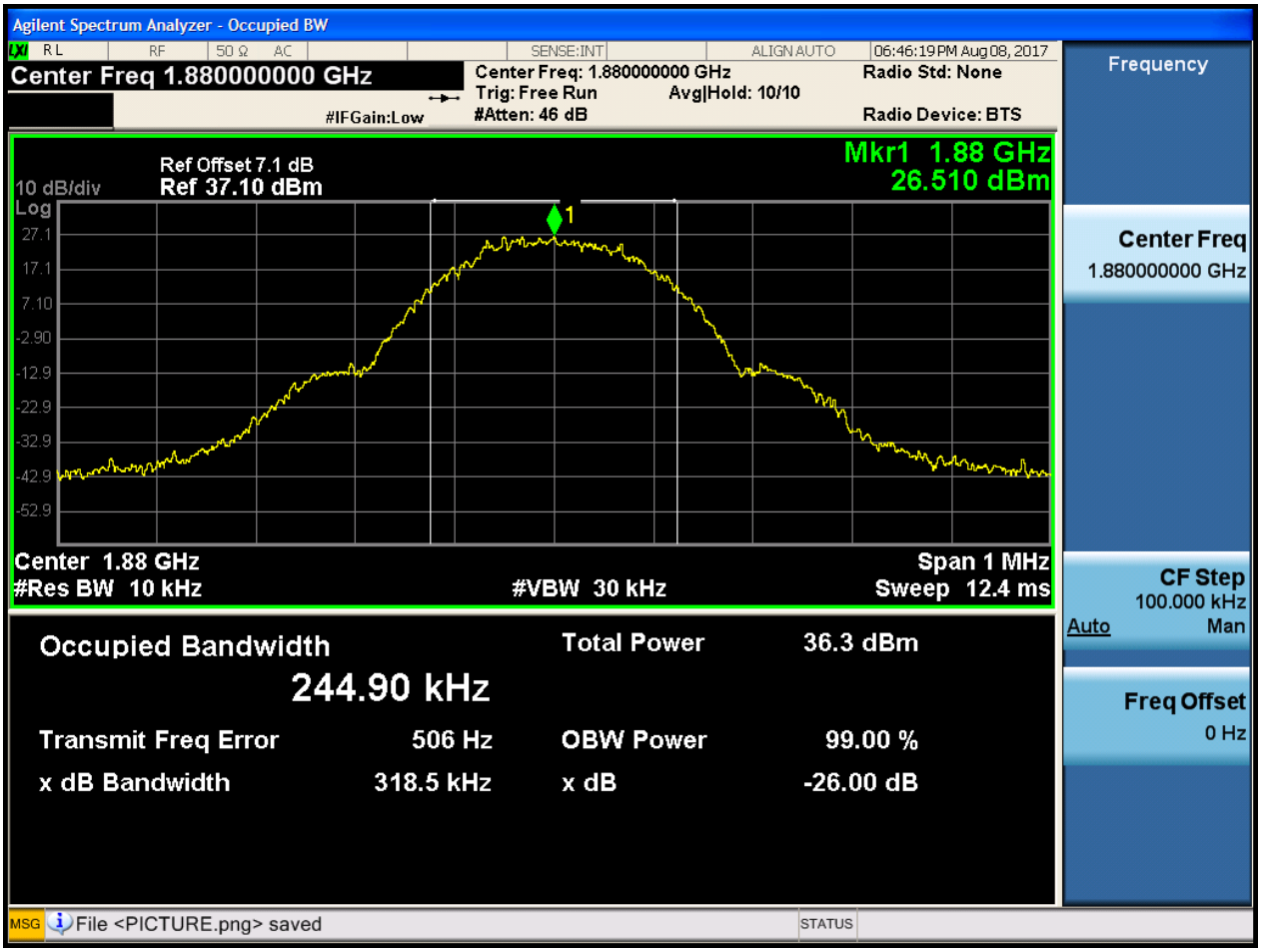
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

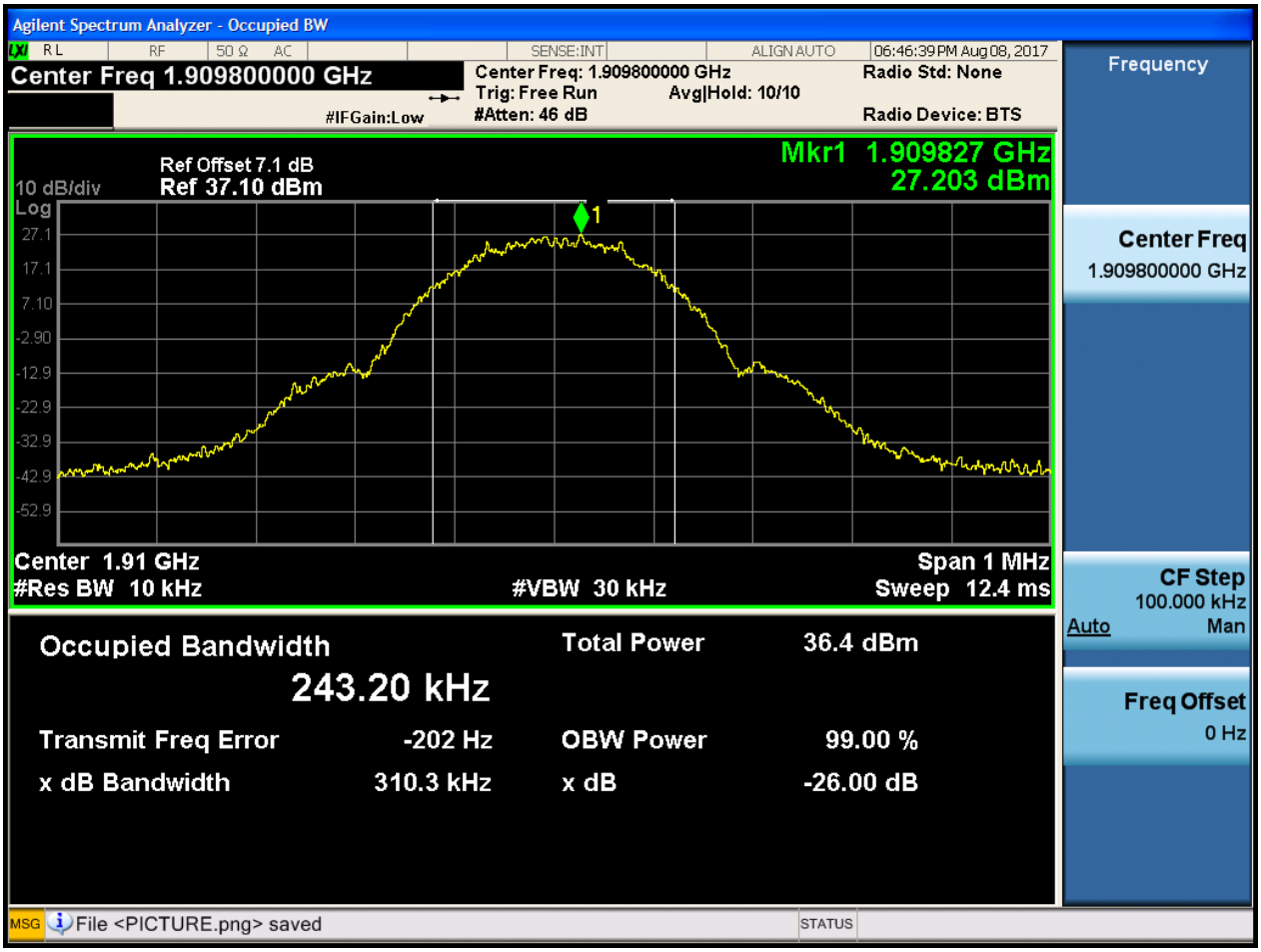
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

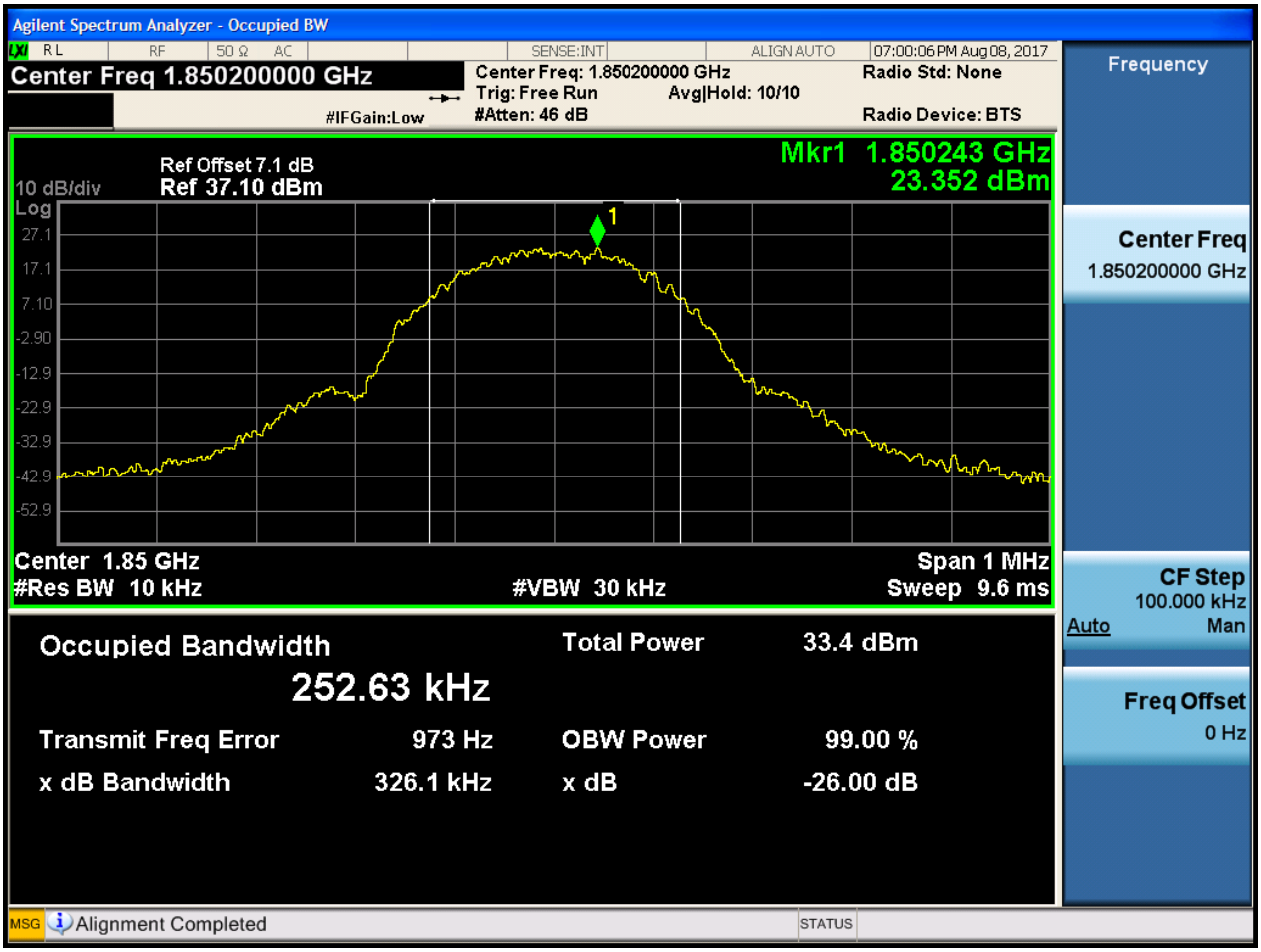


4.1.2.1.3 Test Channel = HCH

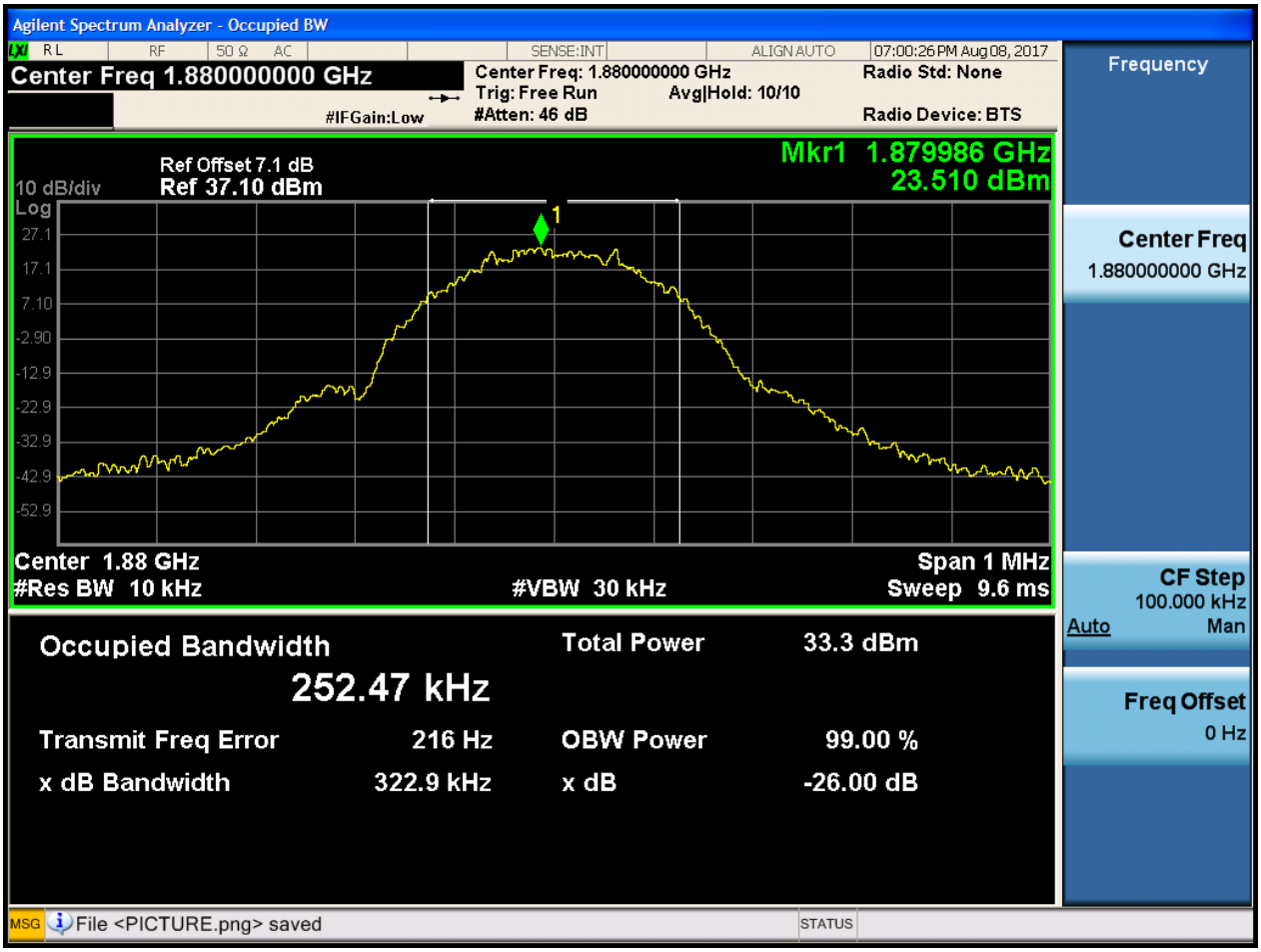


4.1.2.2 Test Mode = GSM/TM2

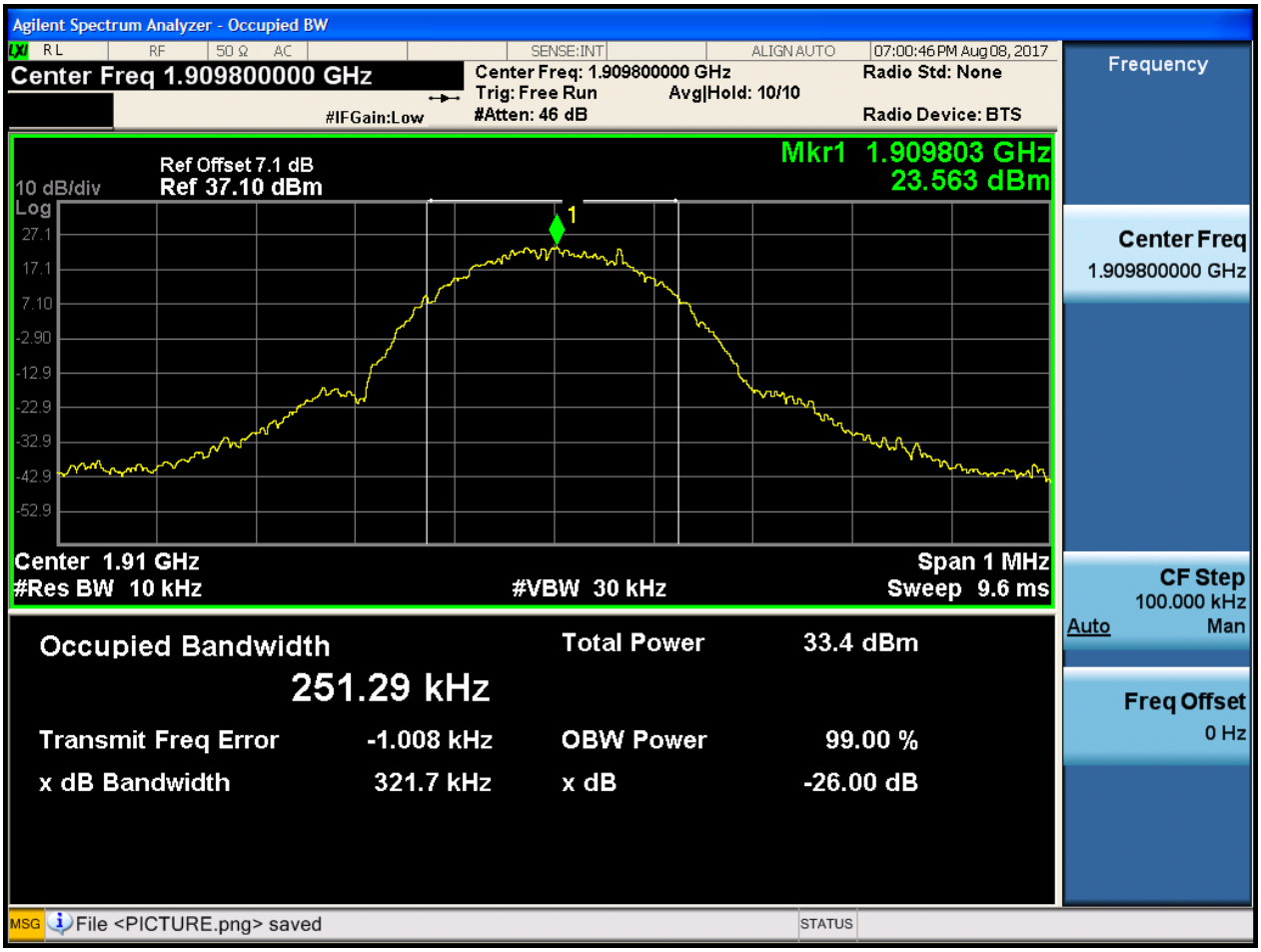
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

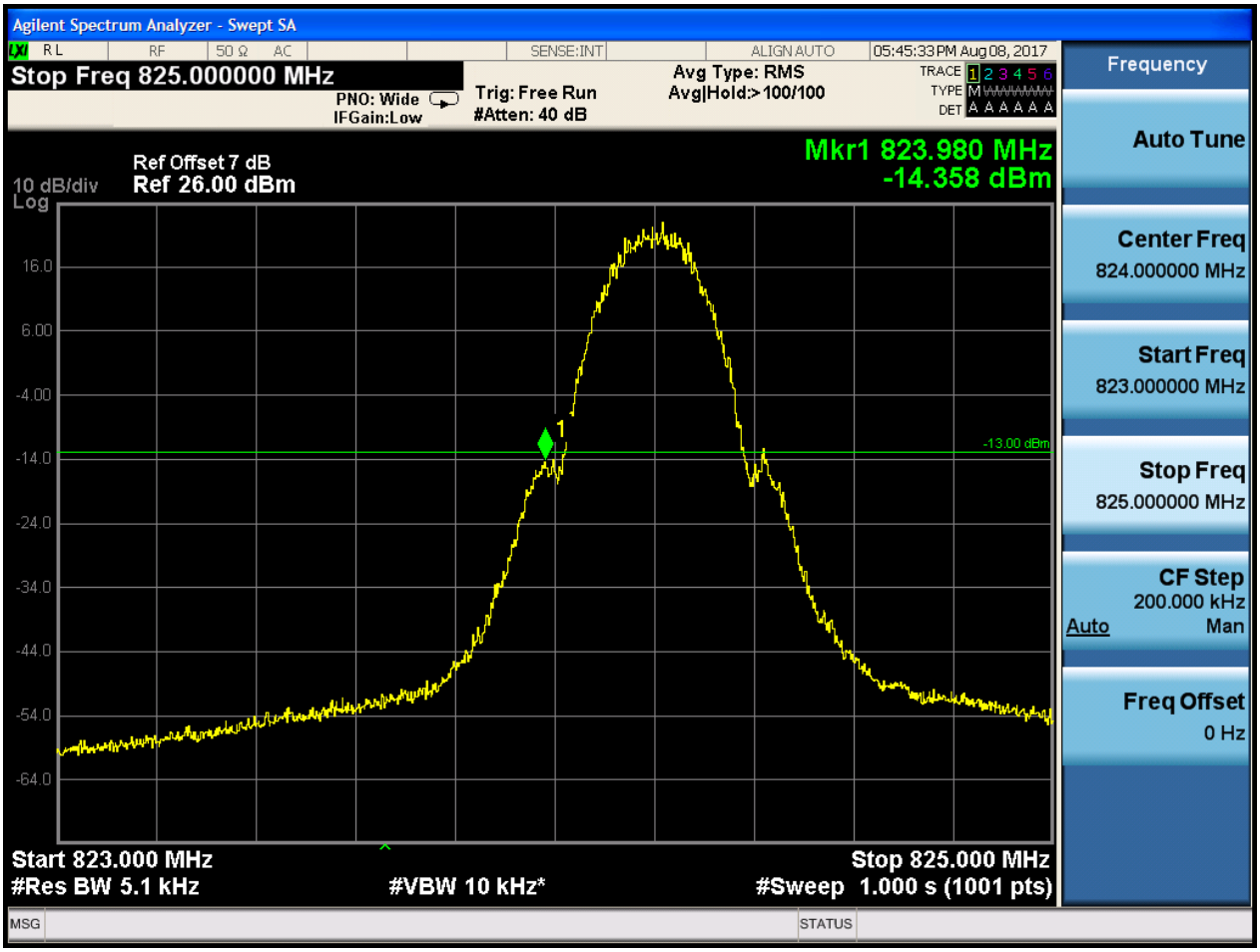
Part I - Test Plots

5.1 For GSM

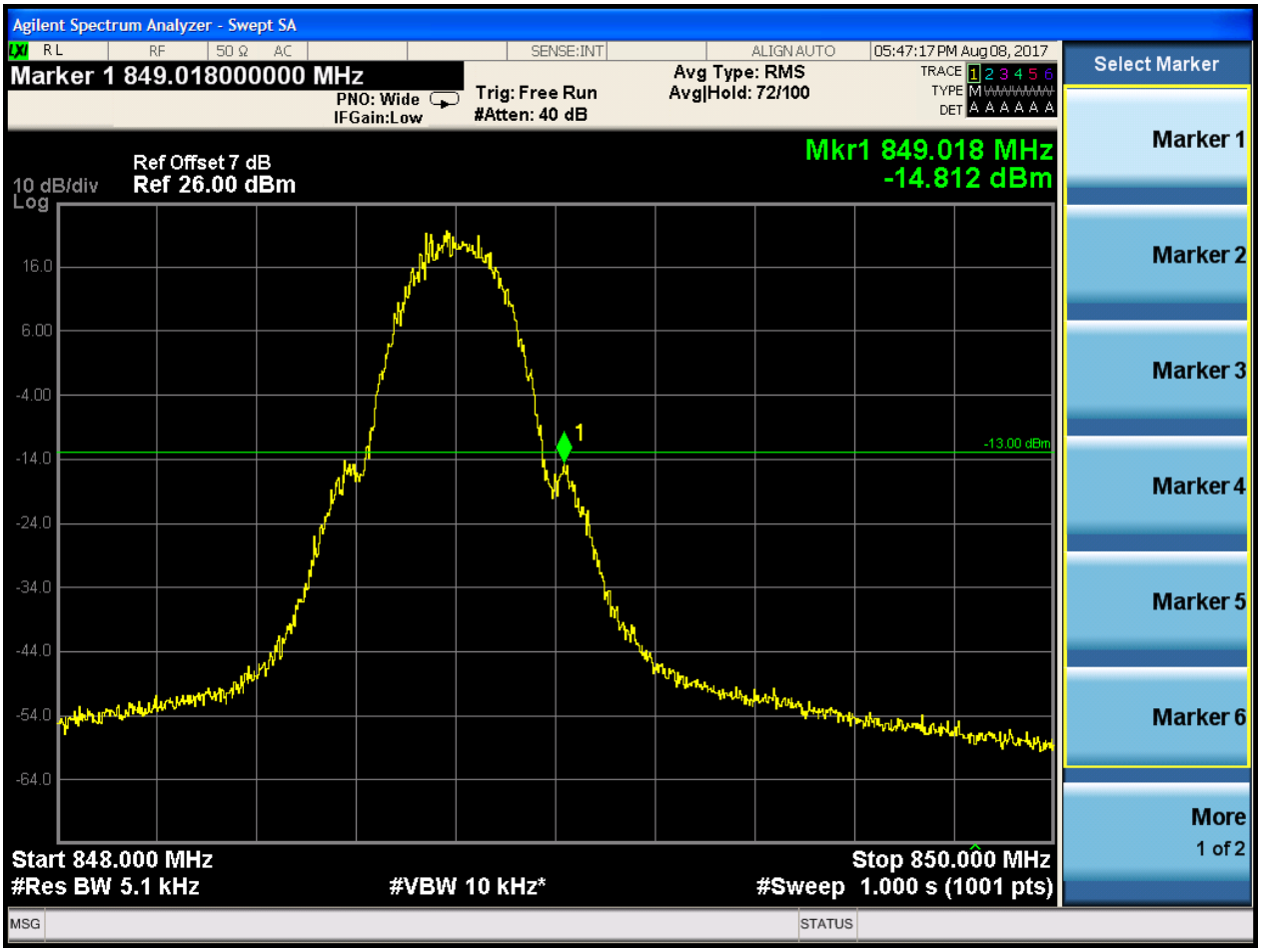
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

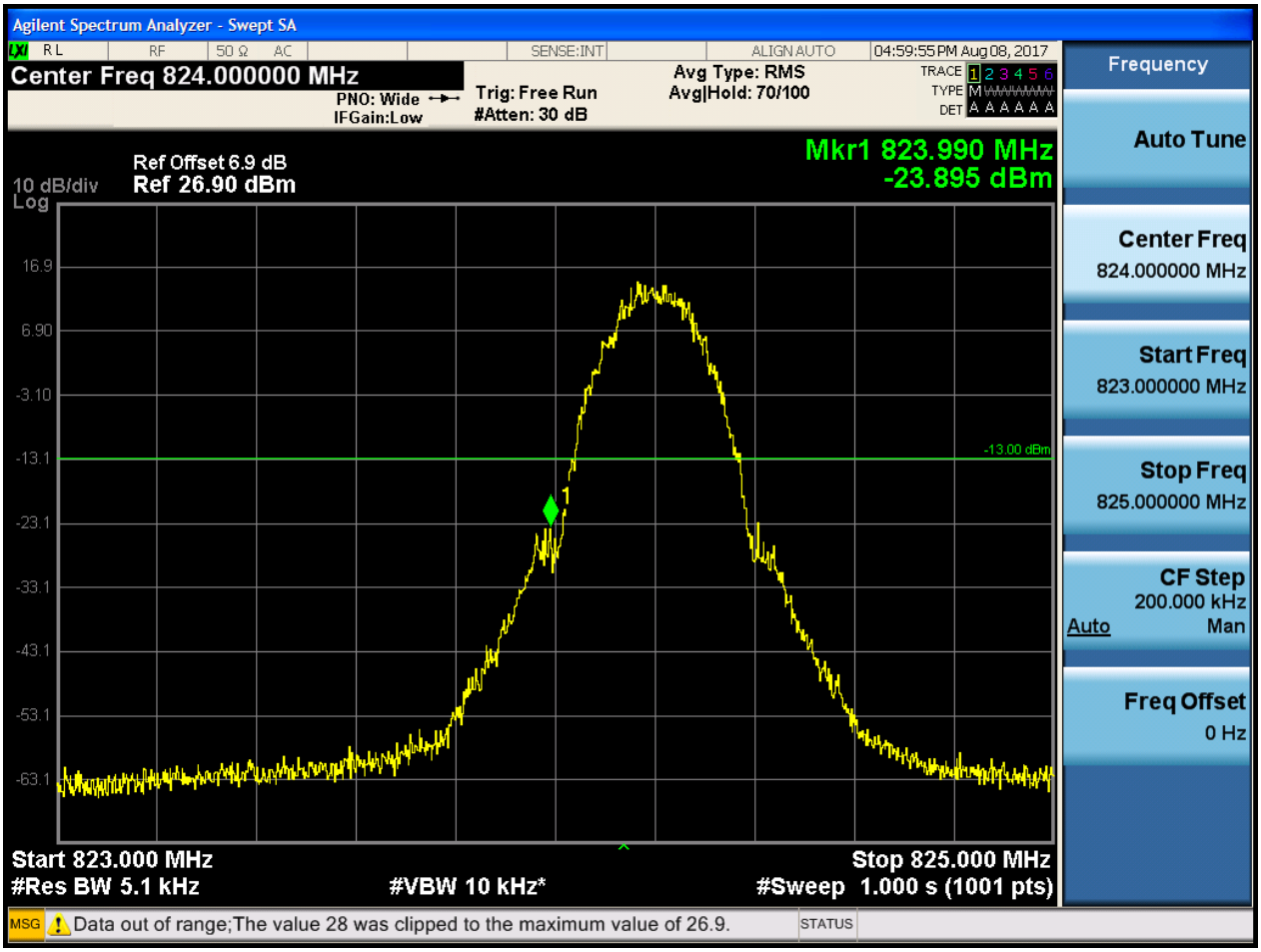


5.1.1.1.2 Test Channel = HCH

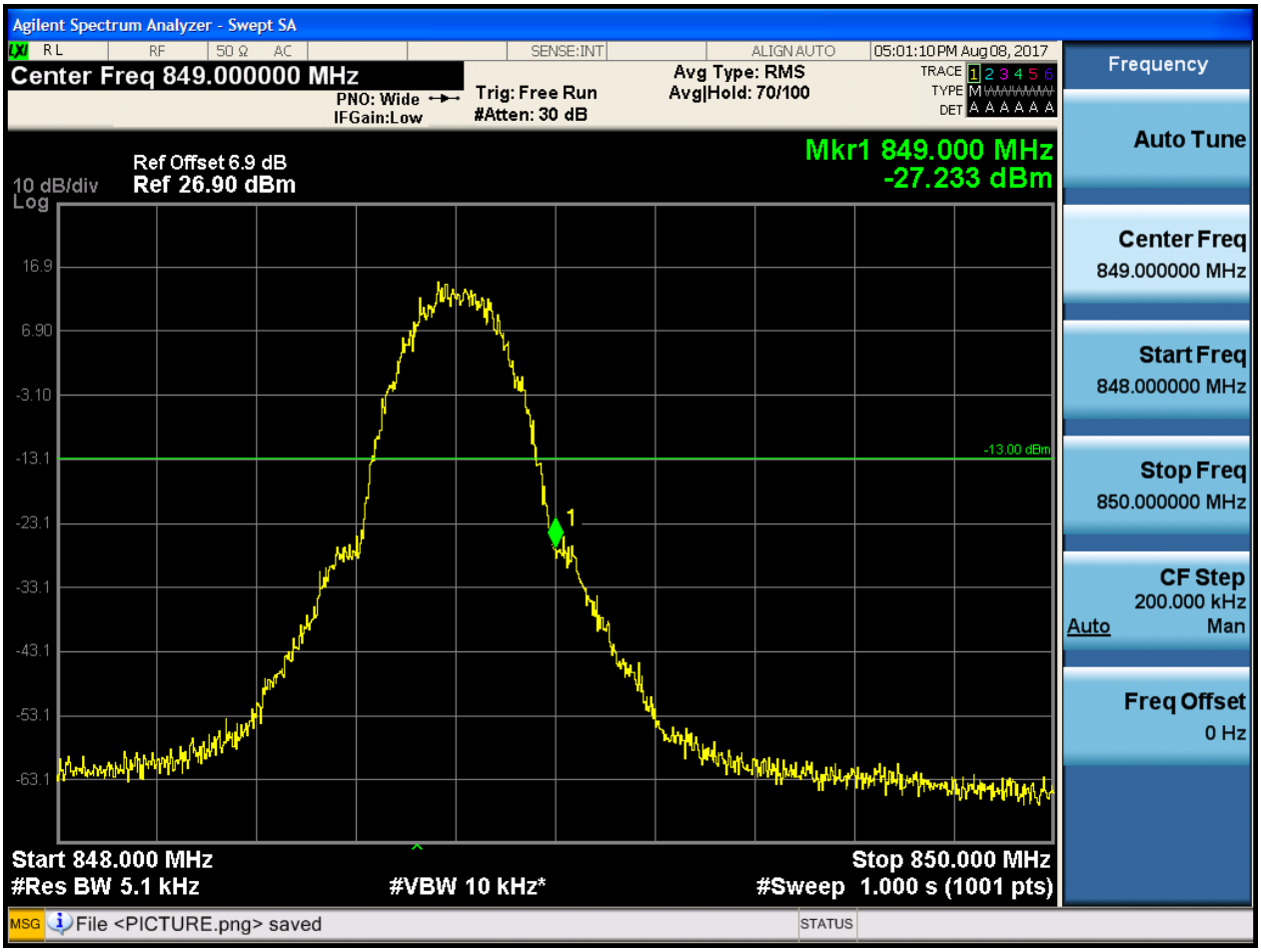


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



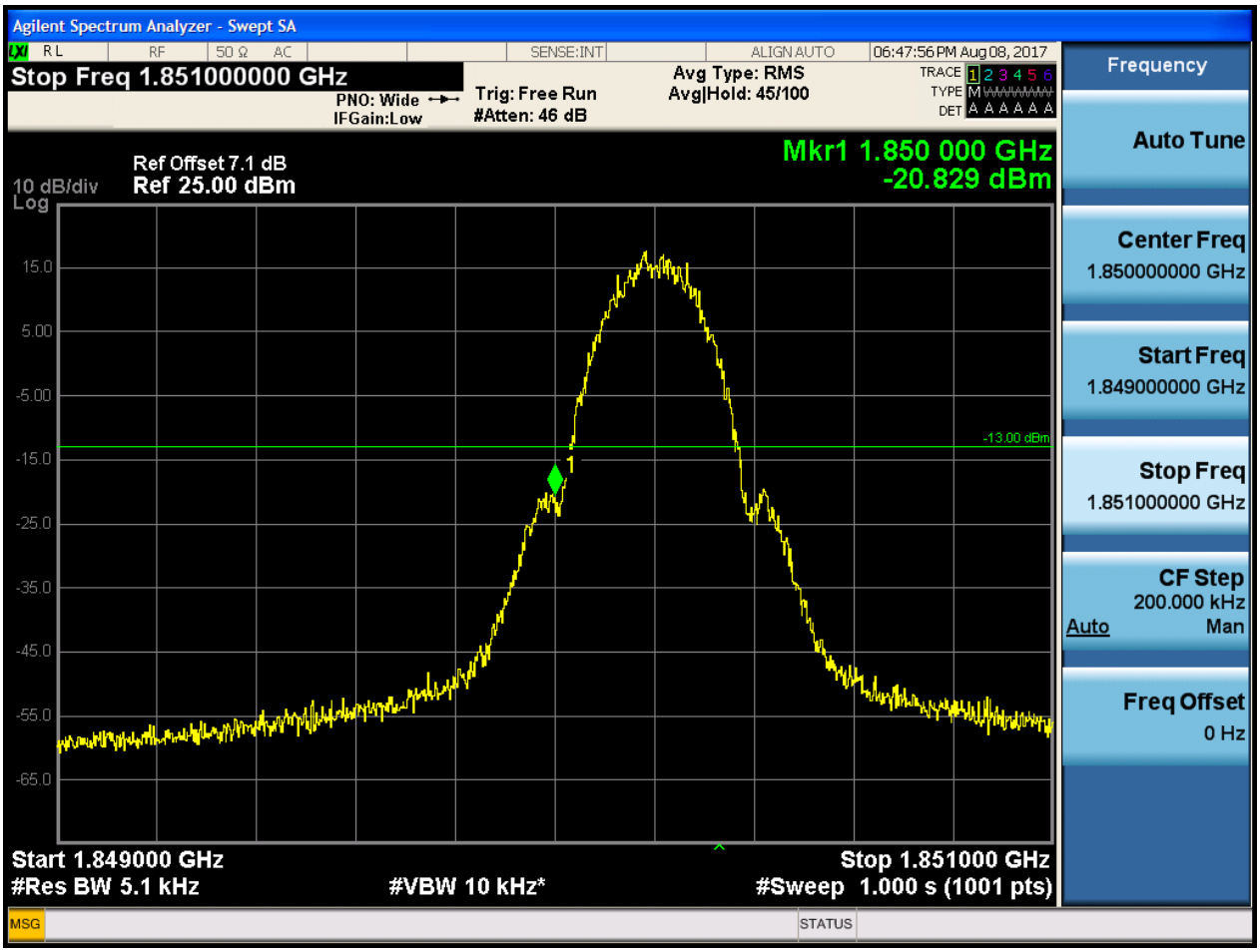
5.1.1.2.2 Test Channel = HCH



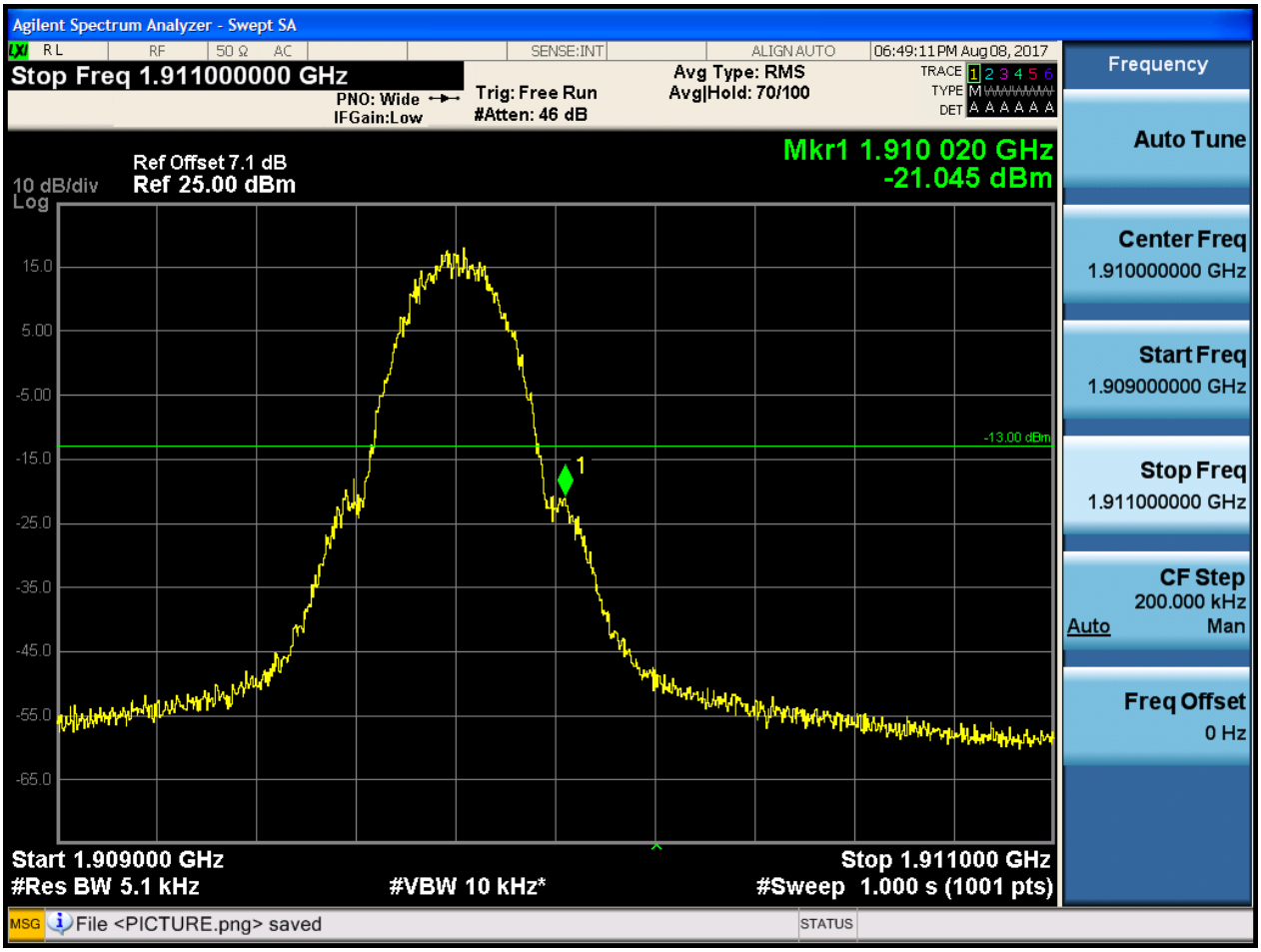
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

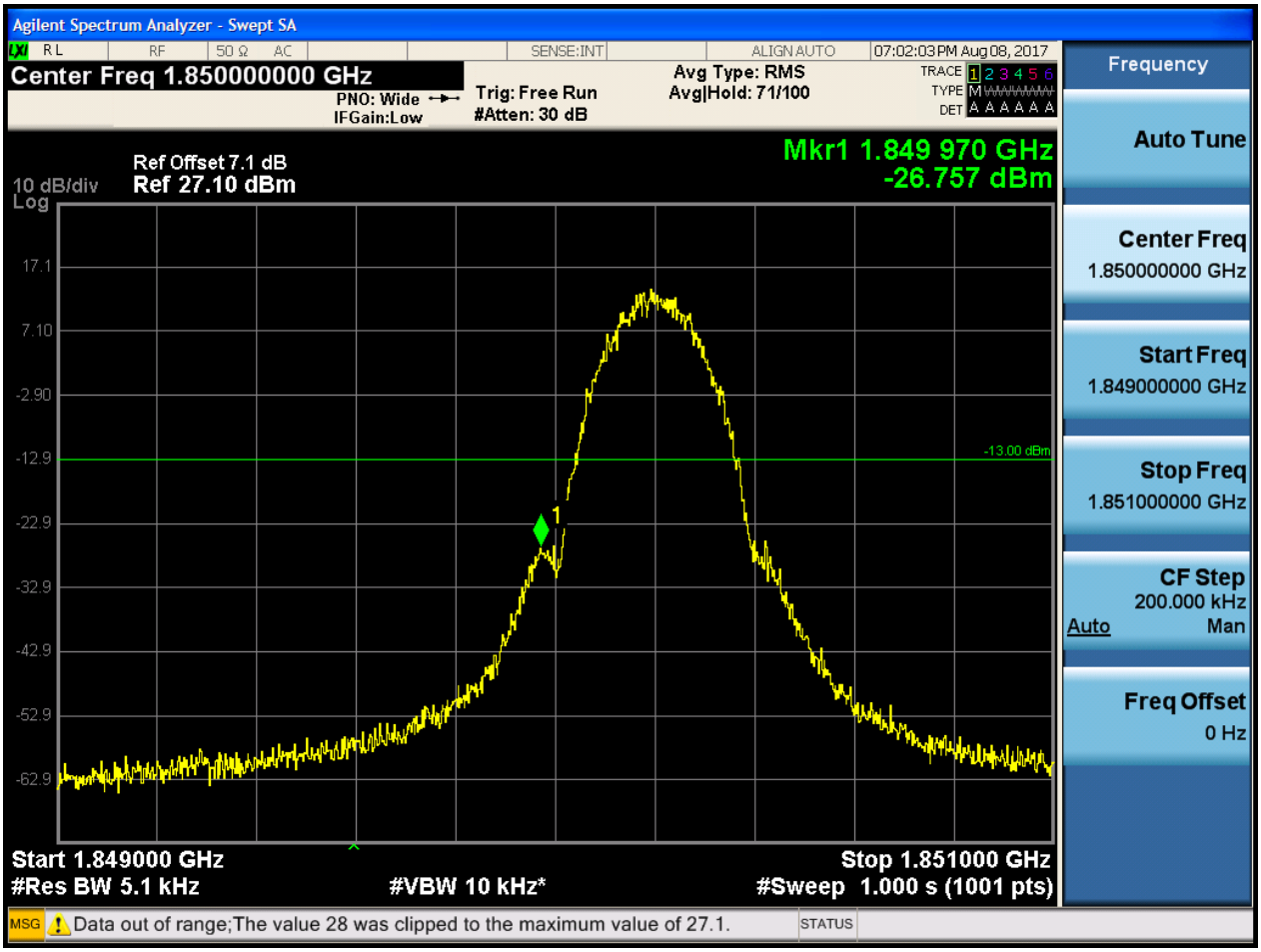


5.1.2.1.2 Test Channel = HCH

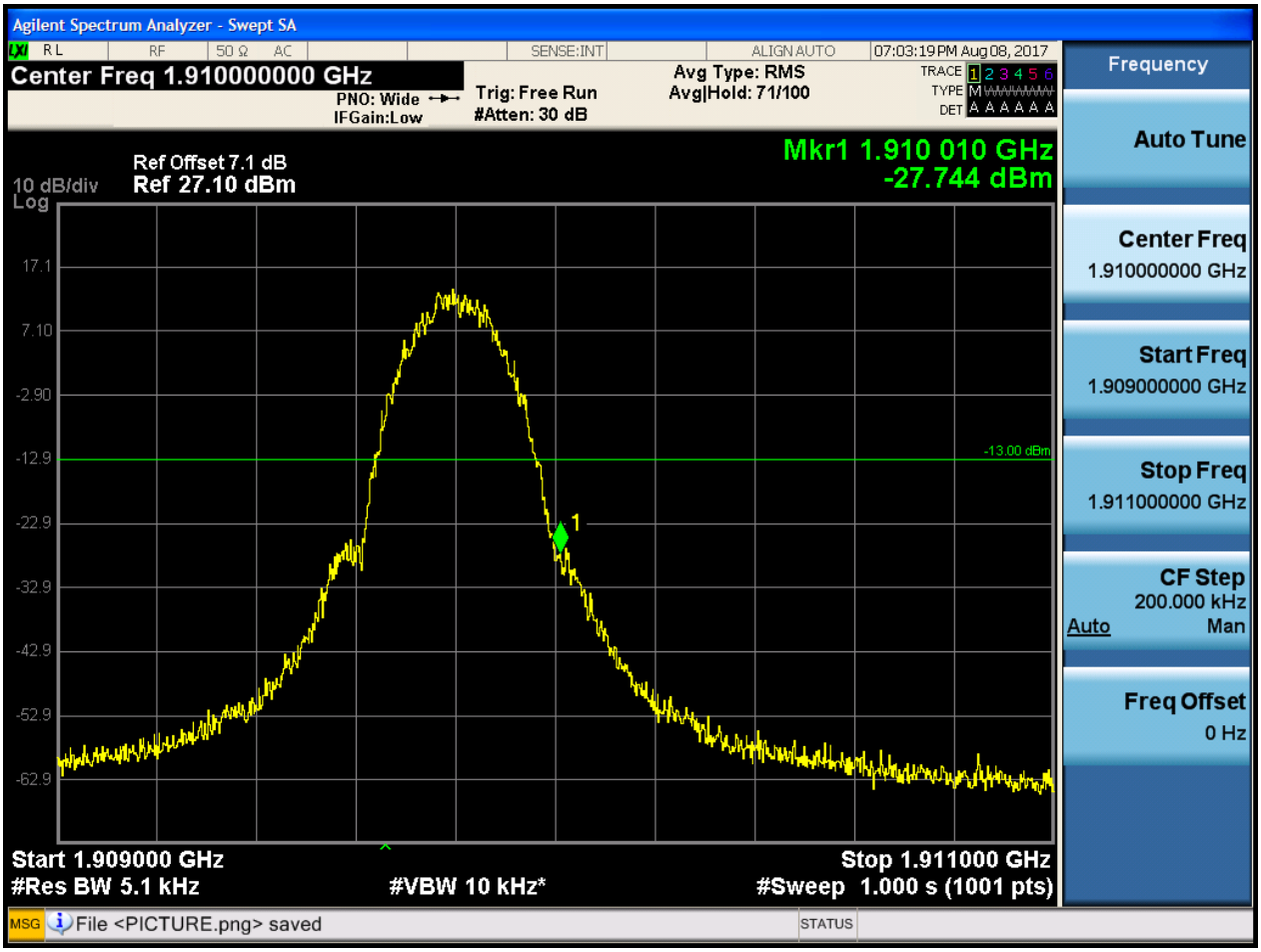


5.1.2.2 Test Mode = GSM/TM2

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.

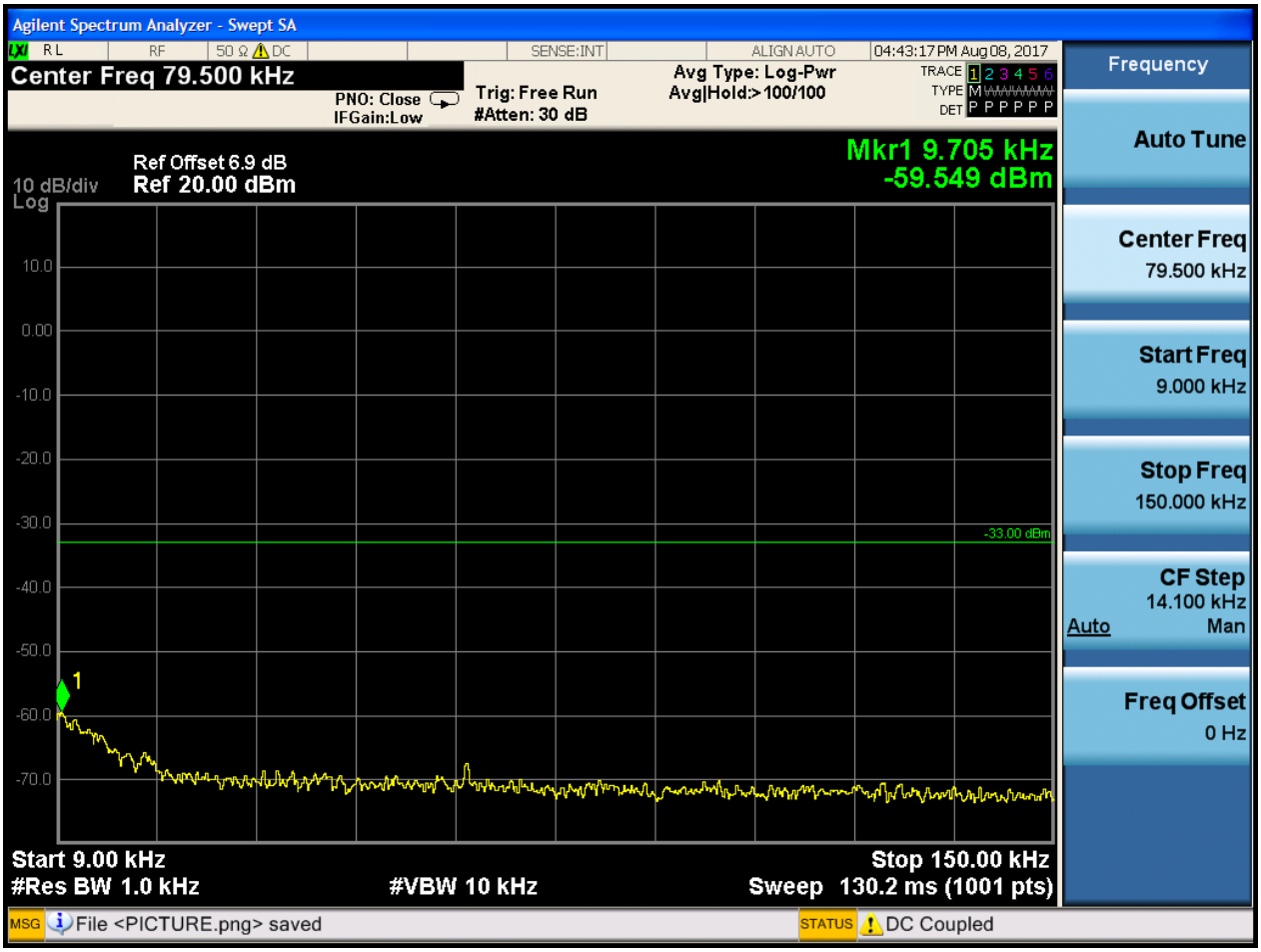
Part I - Test Plots

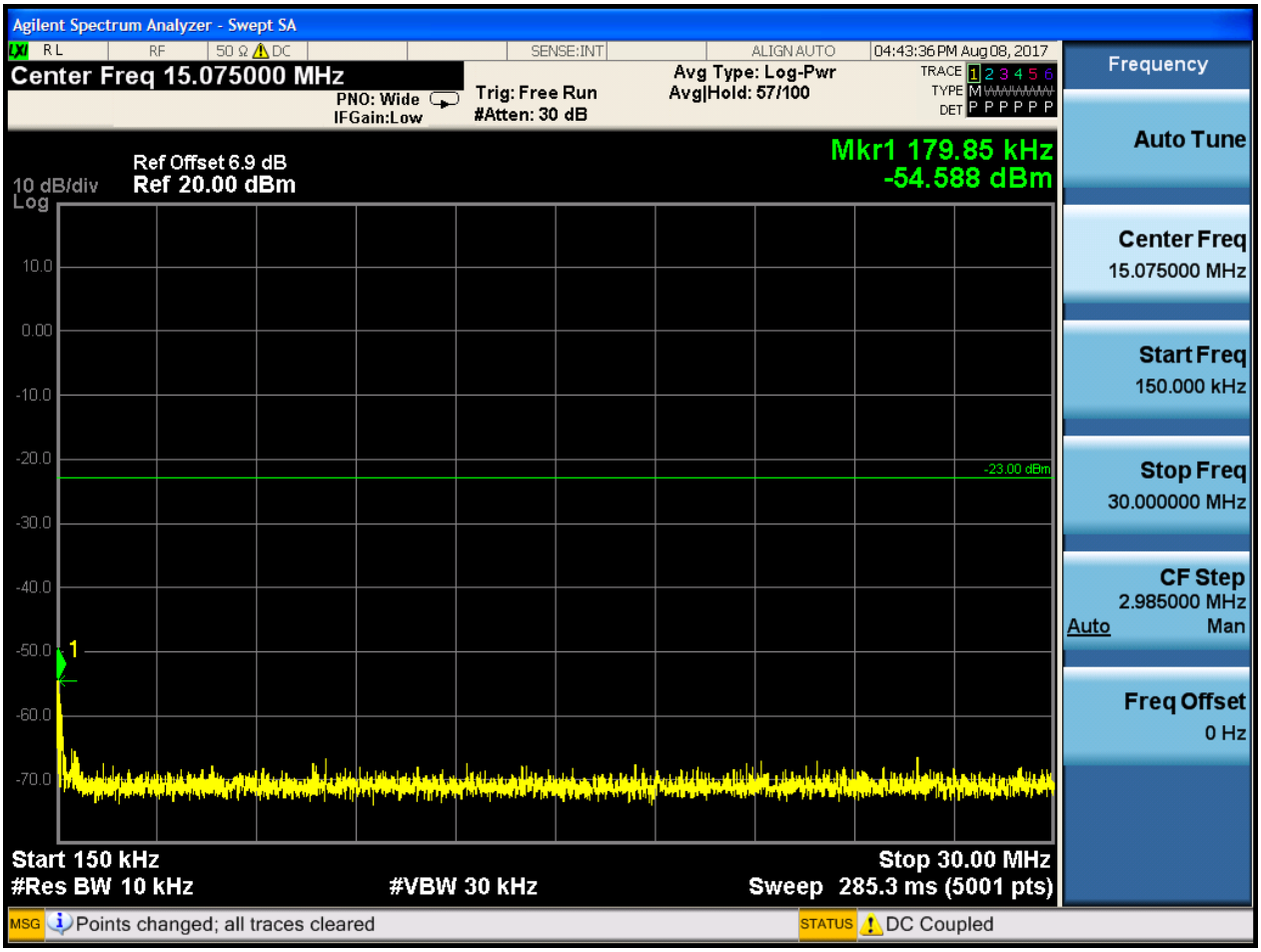
6.1 For GSM

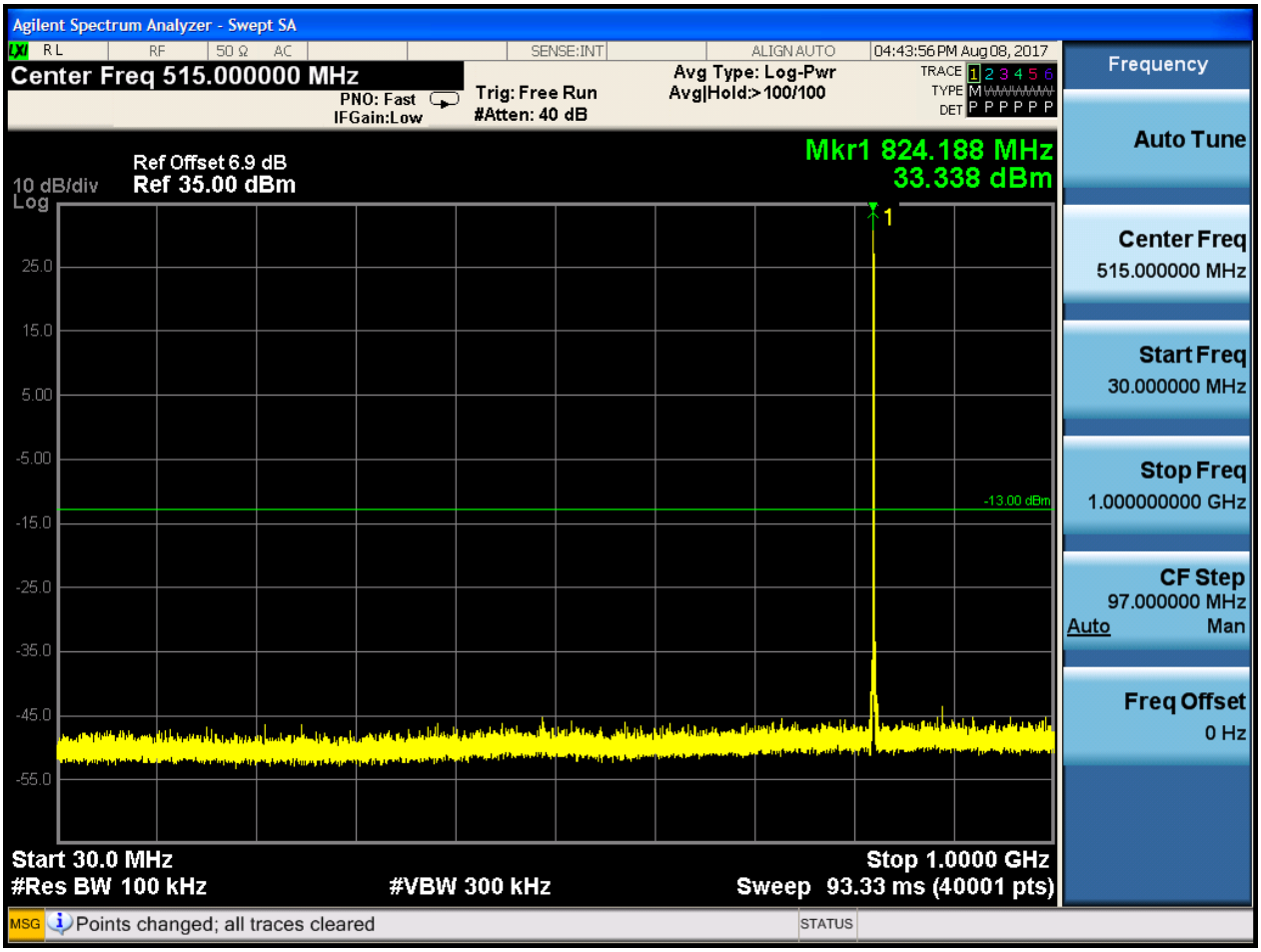
6.1.1 Test Band = GSM850

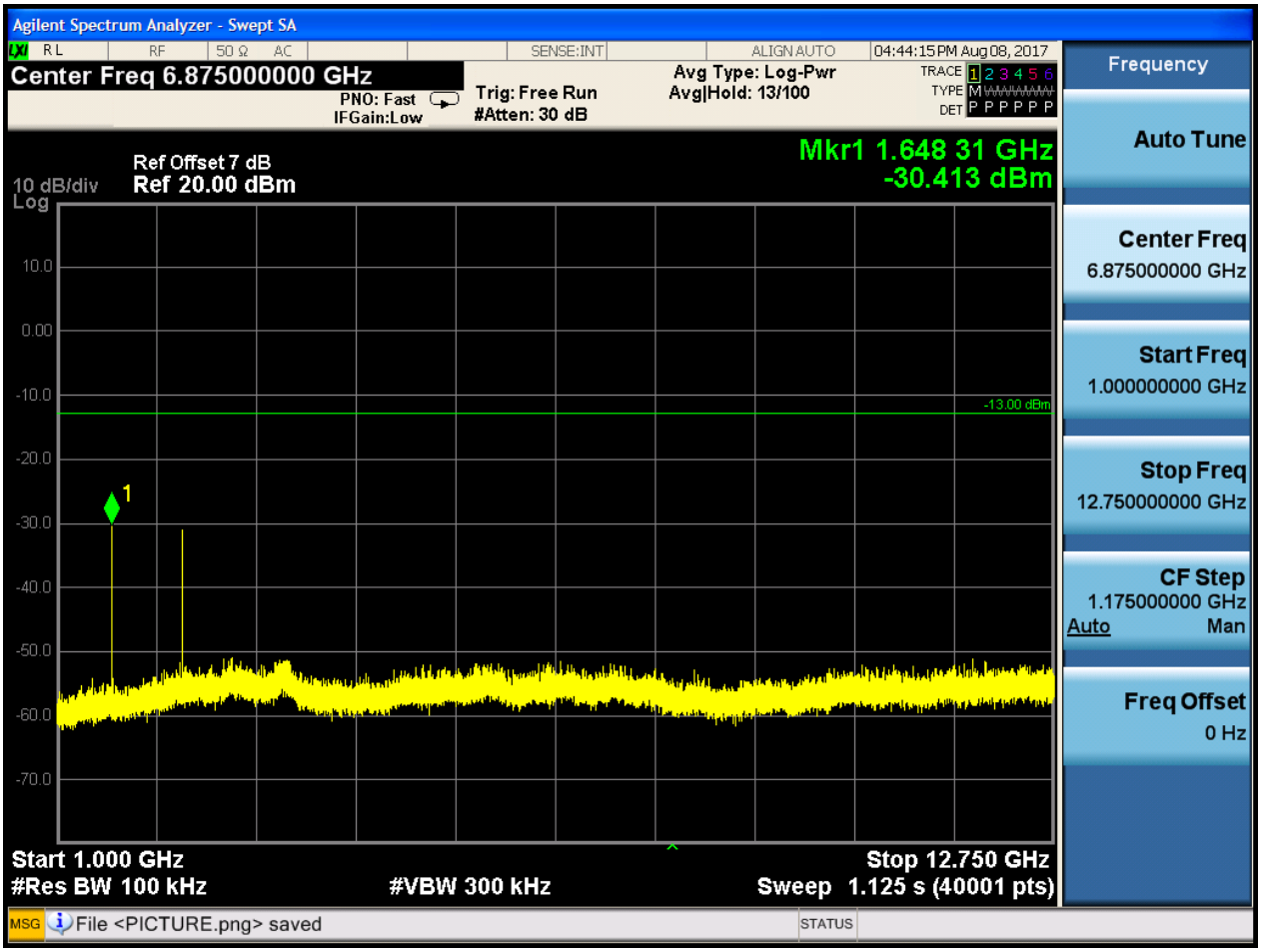
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

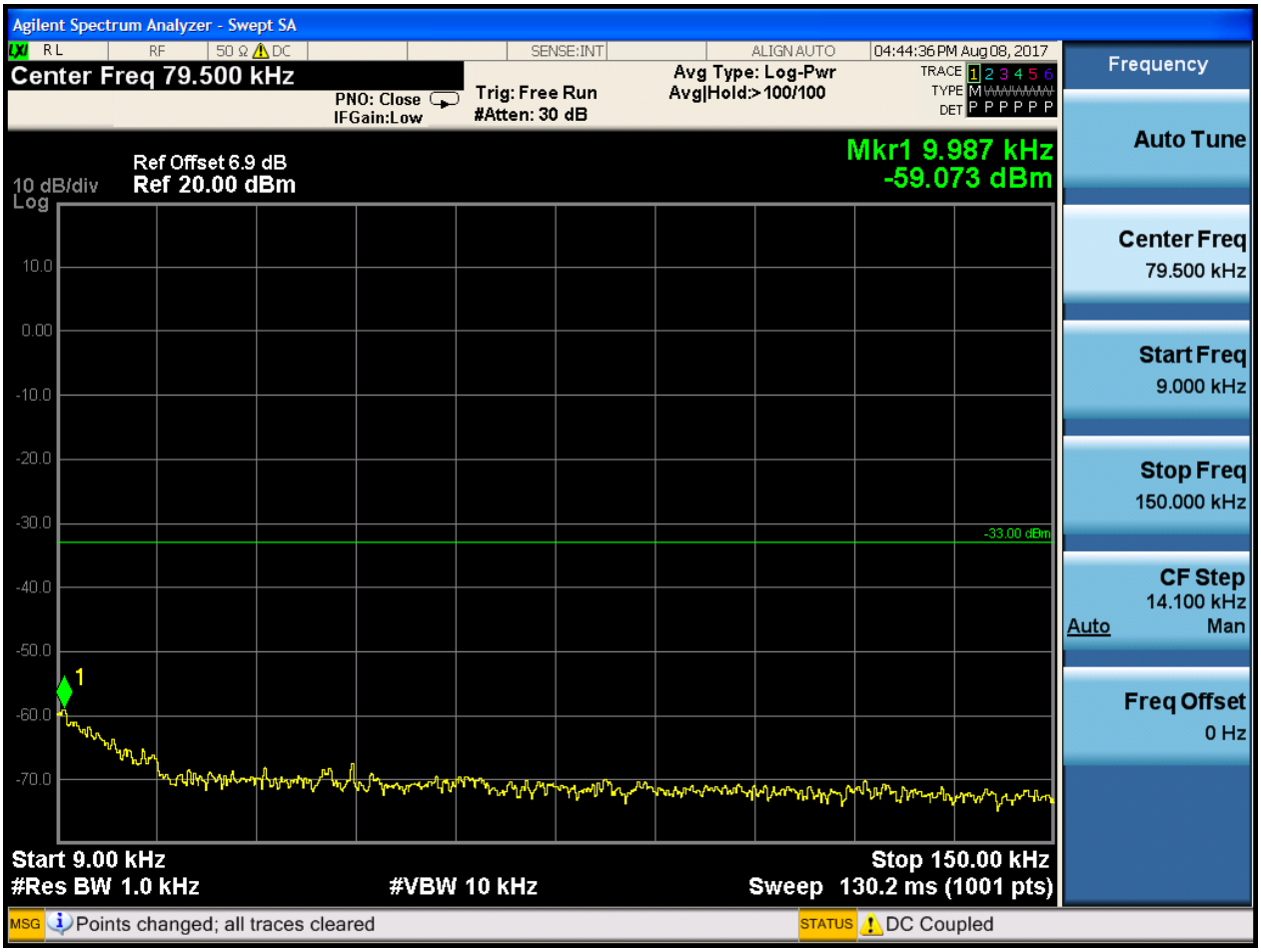


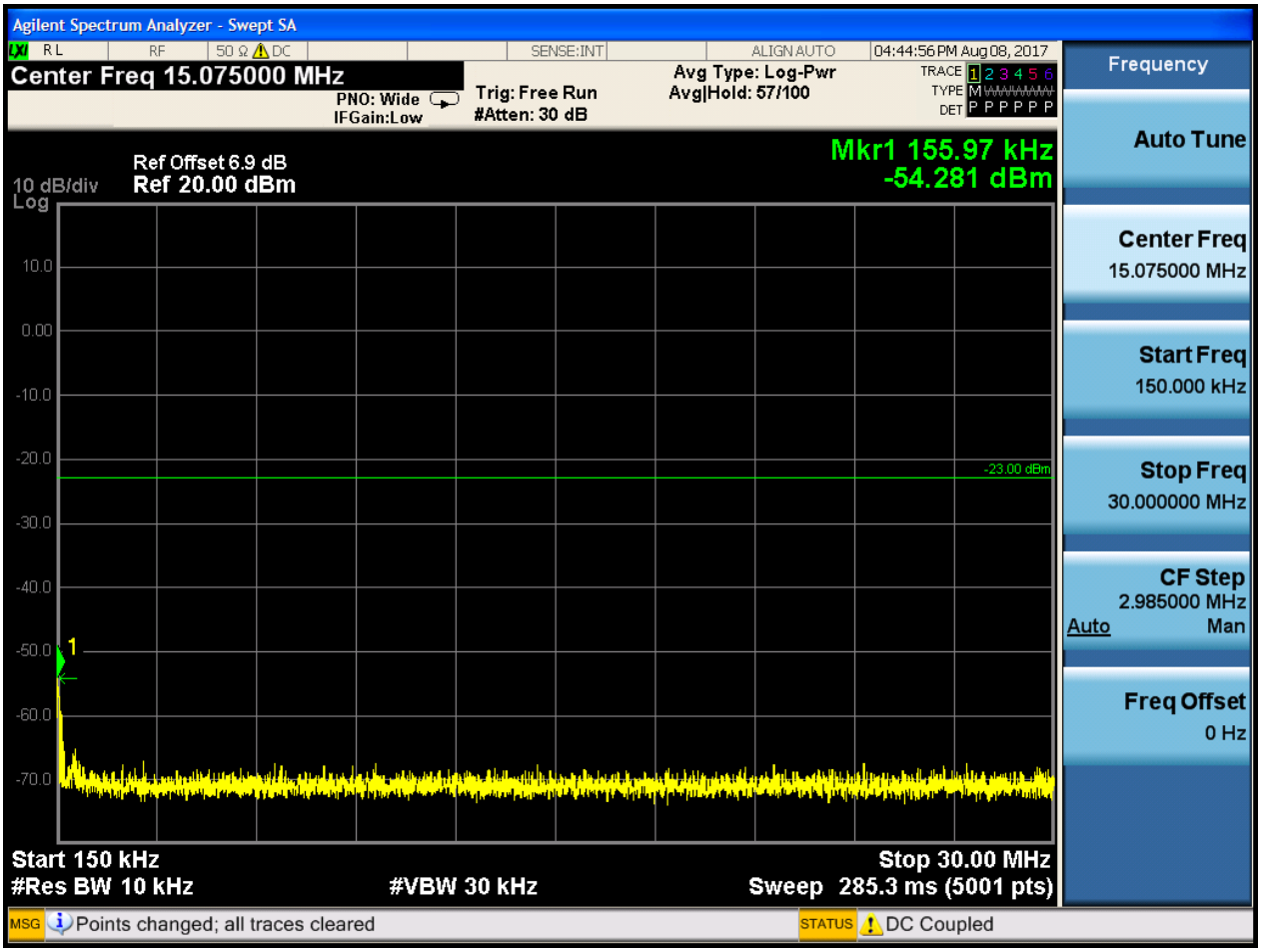


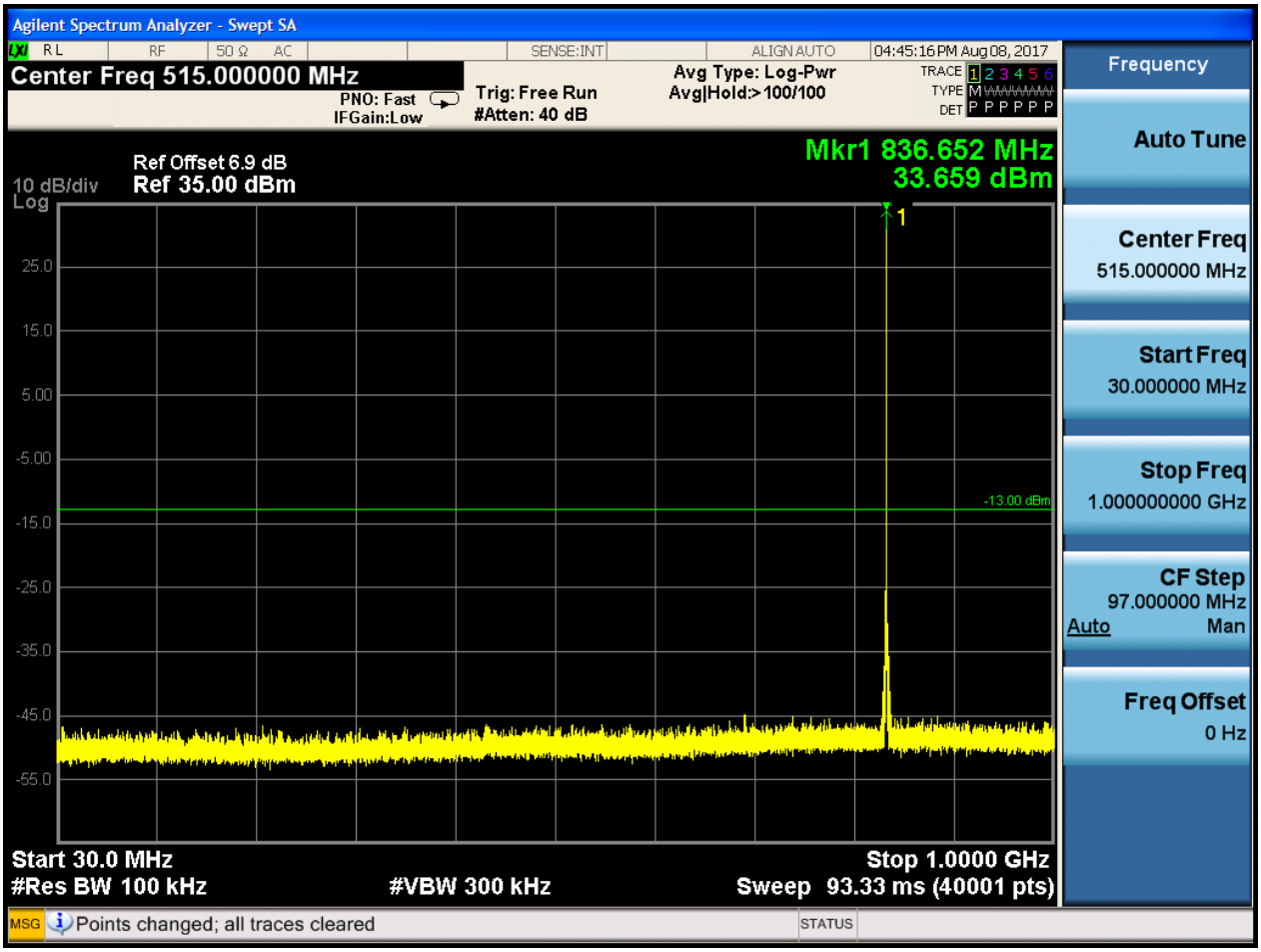


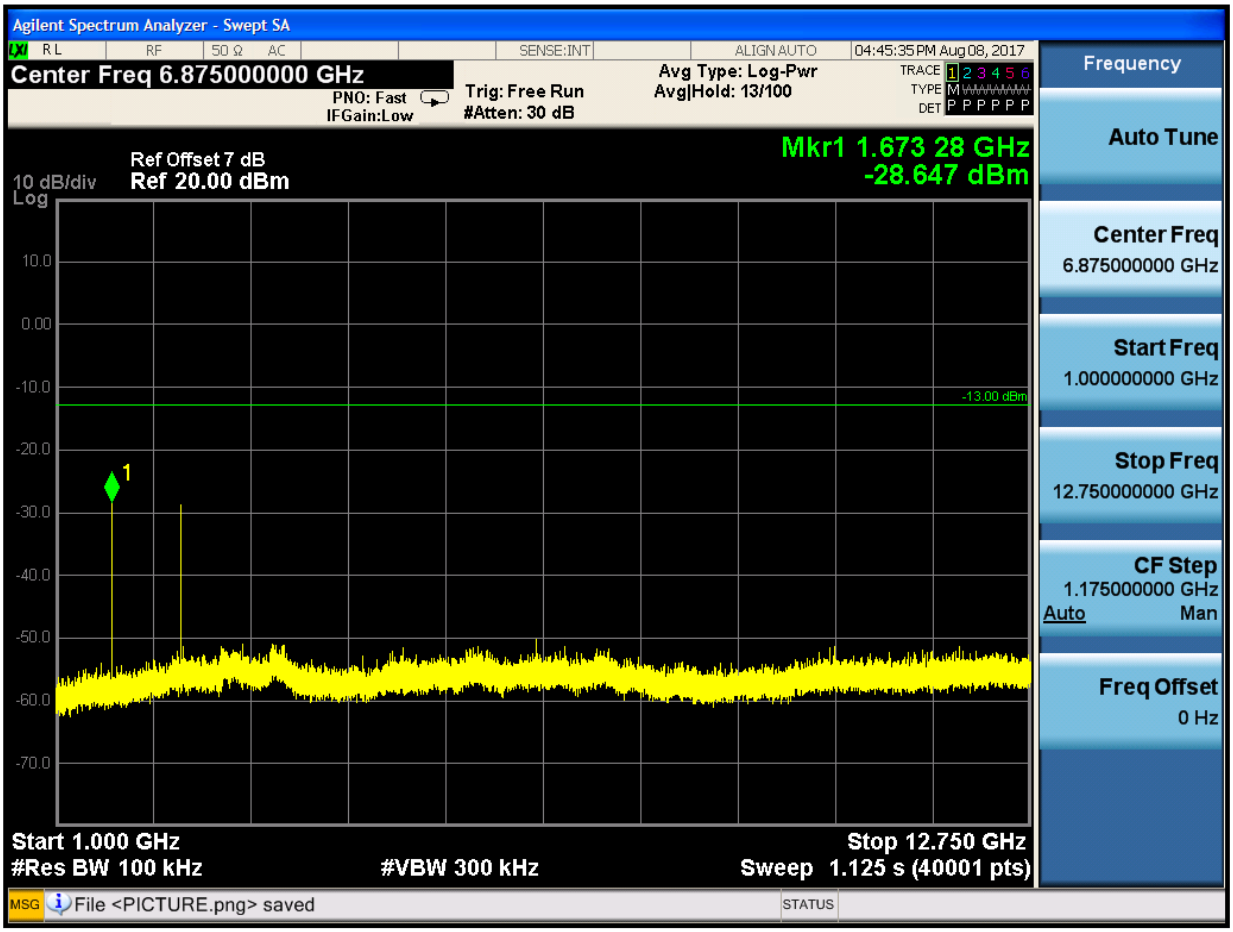


6.1.1.1.2 Test Channel = MCH

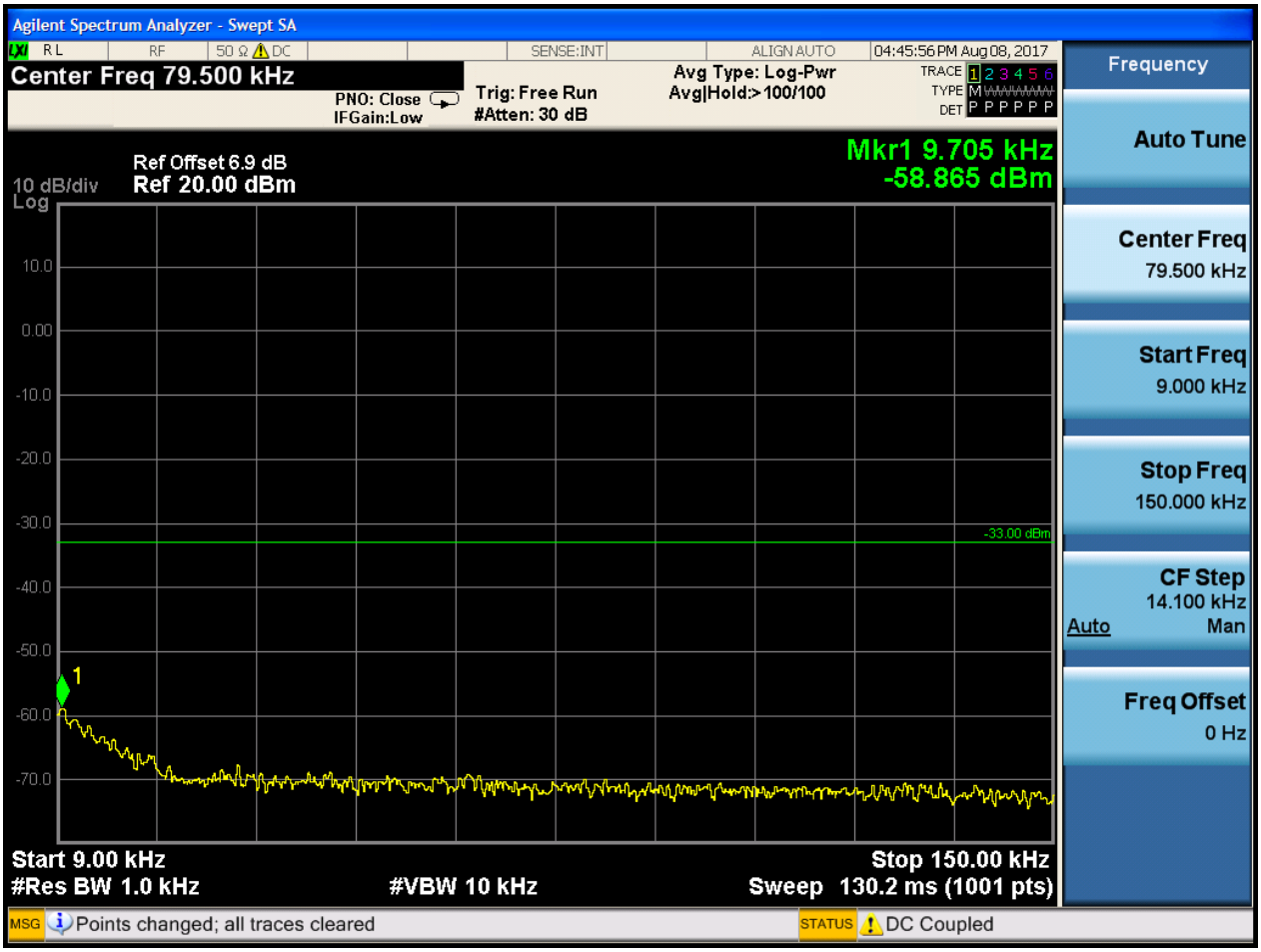


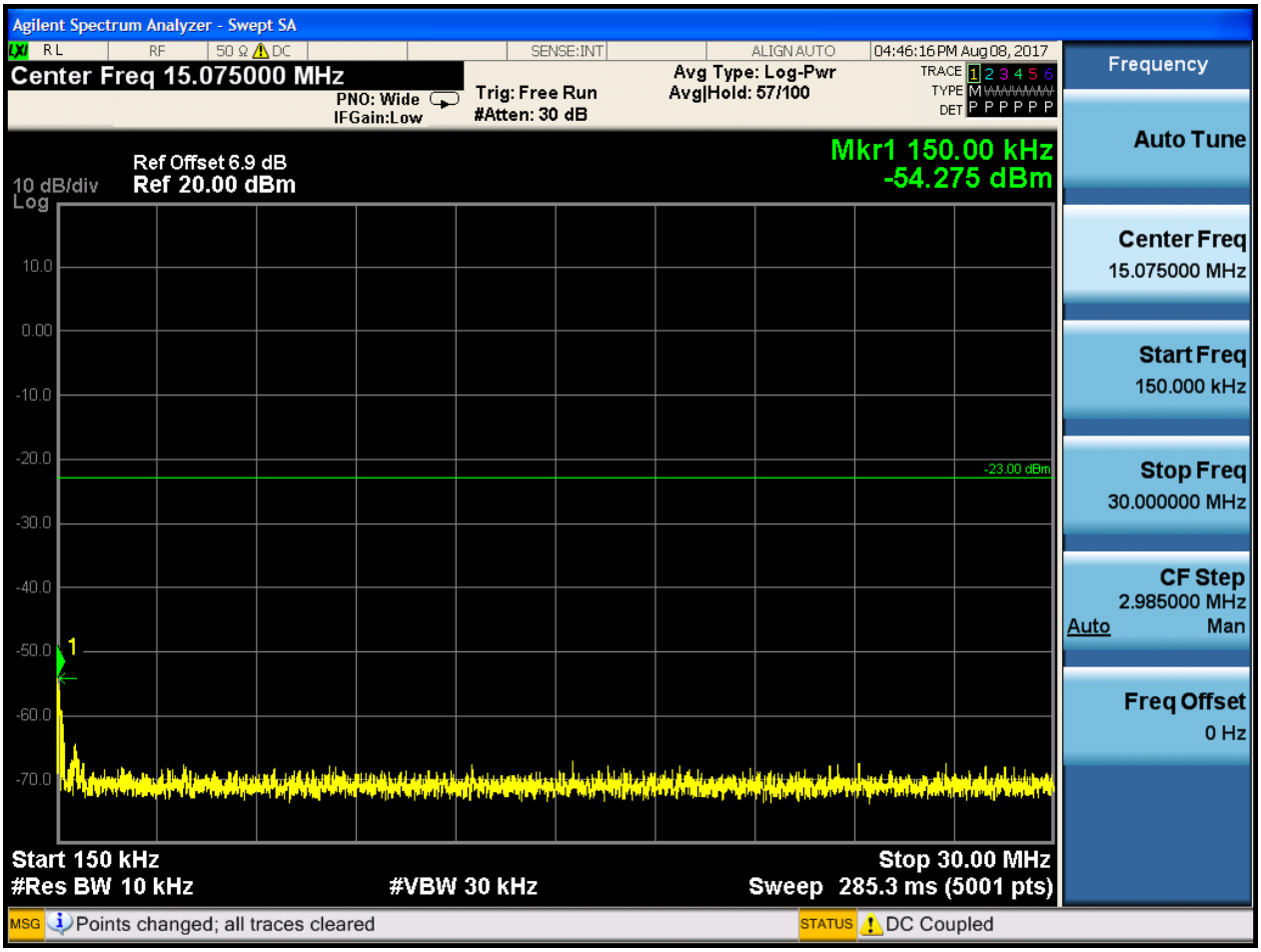


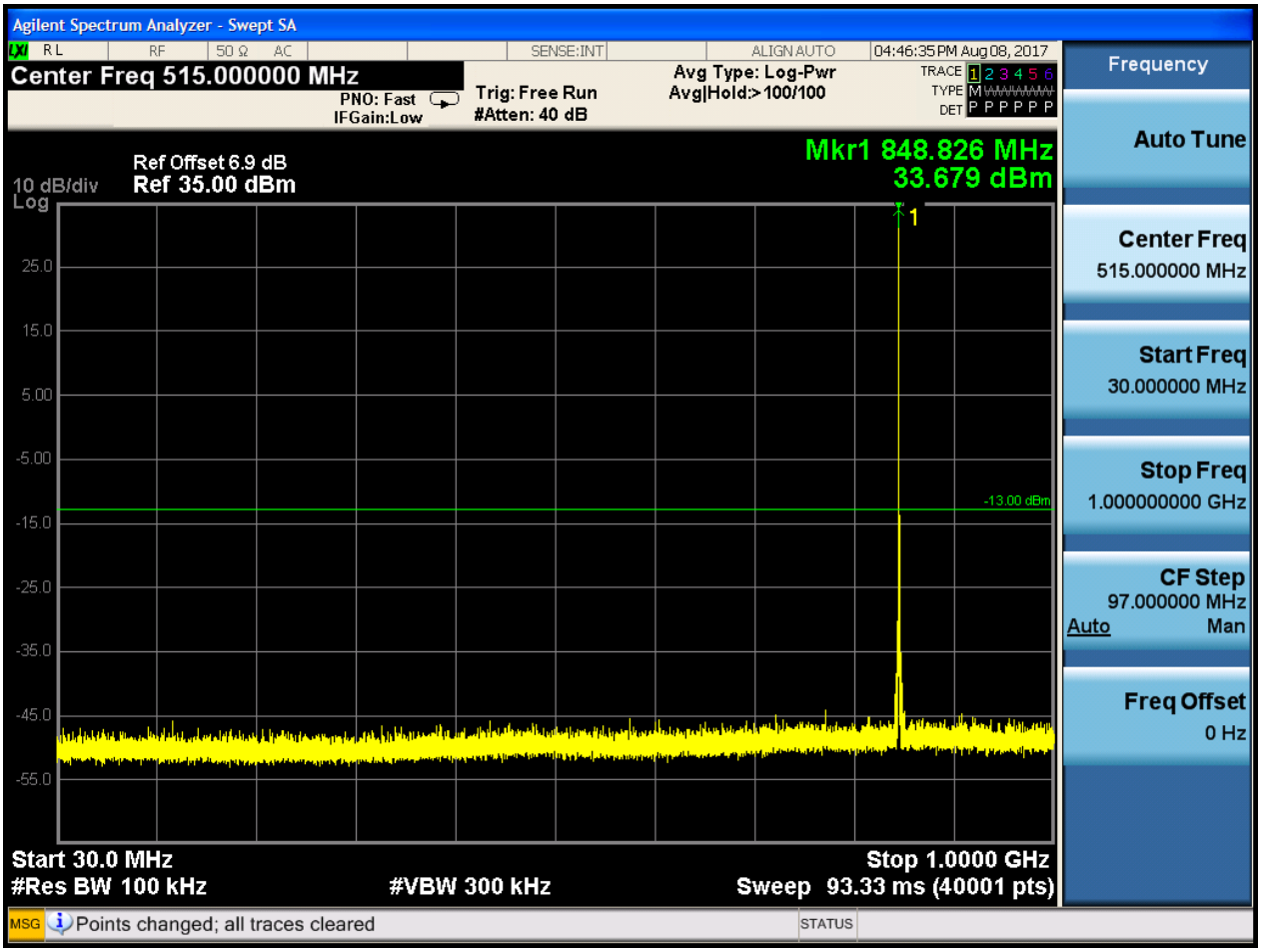


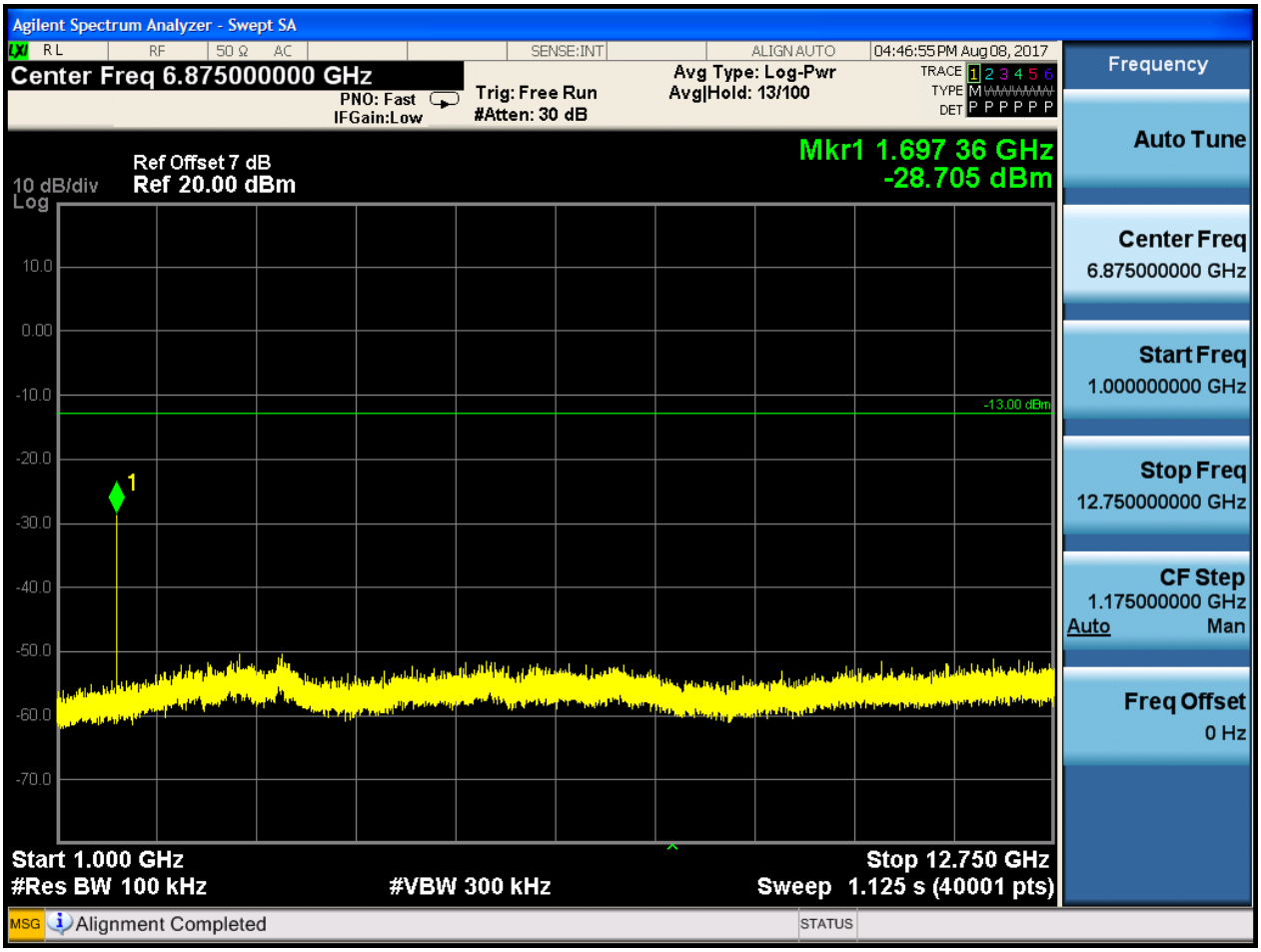


6.1.1.1.3 Test Channel = HCH



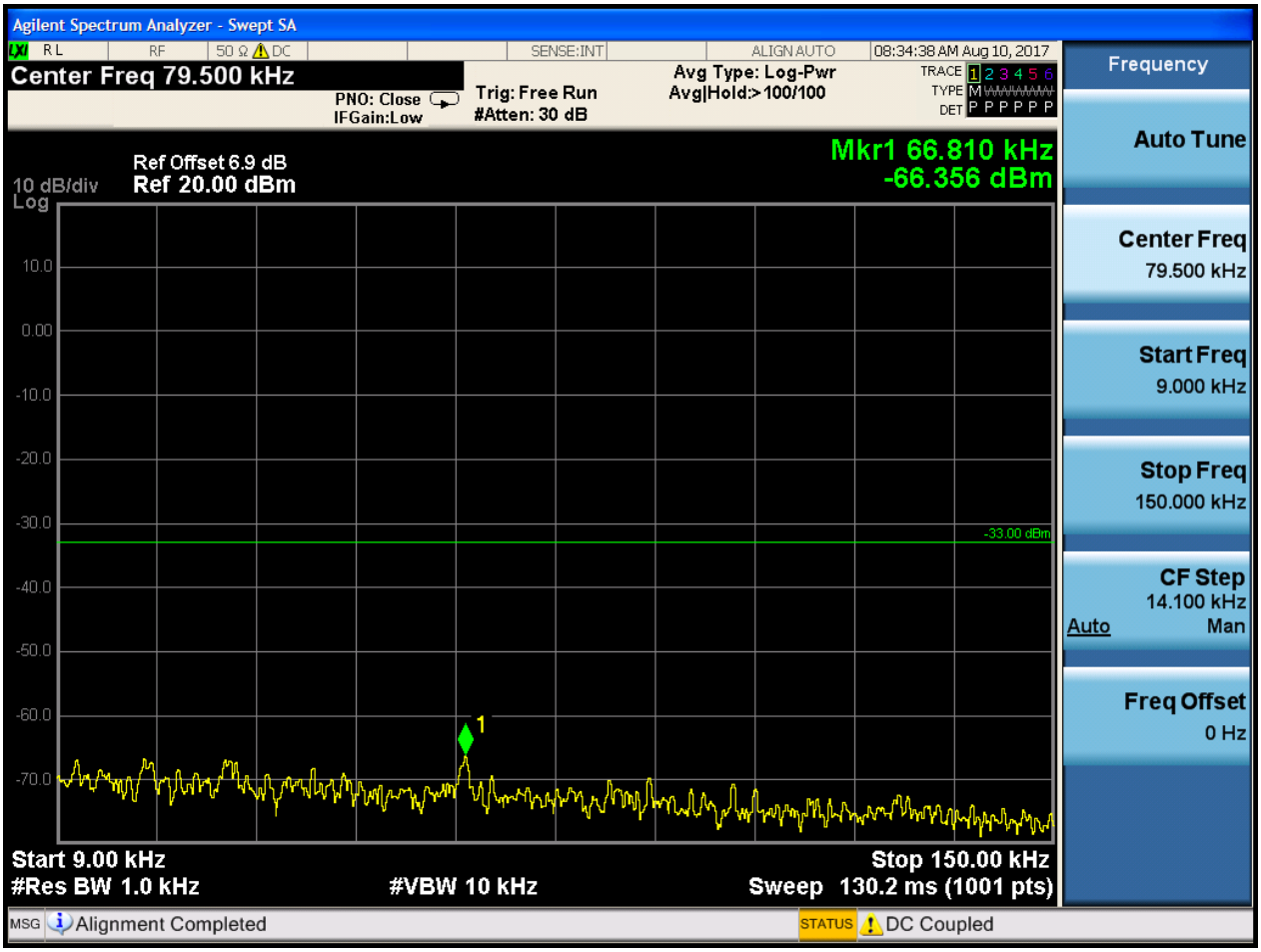


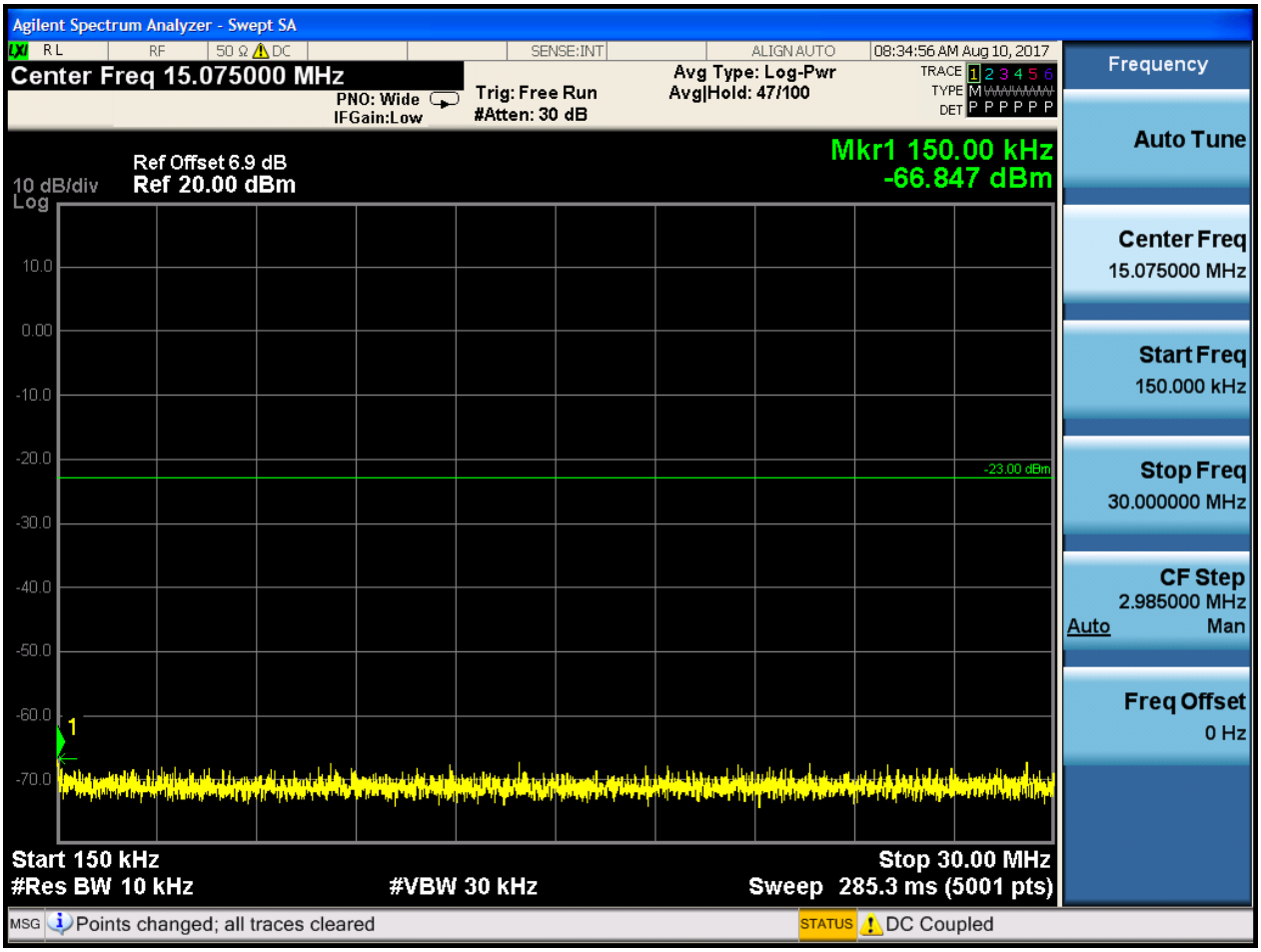


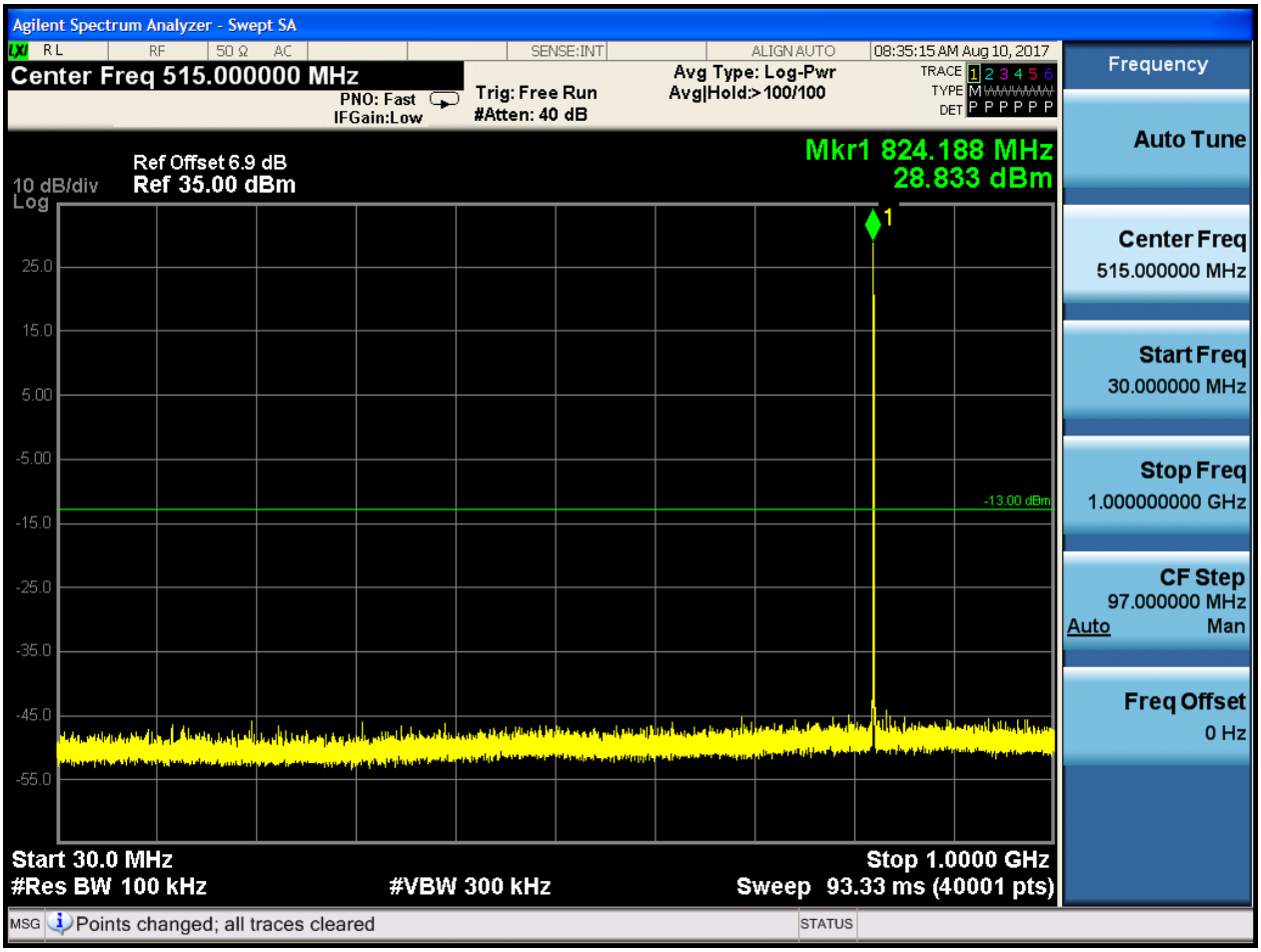


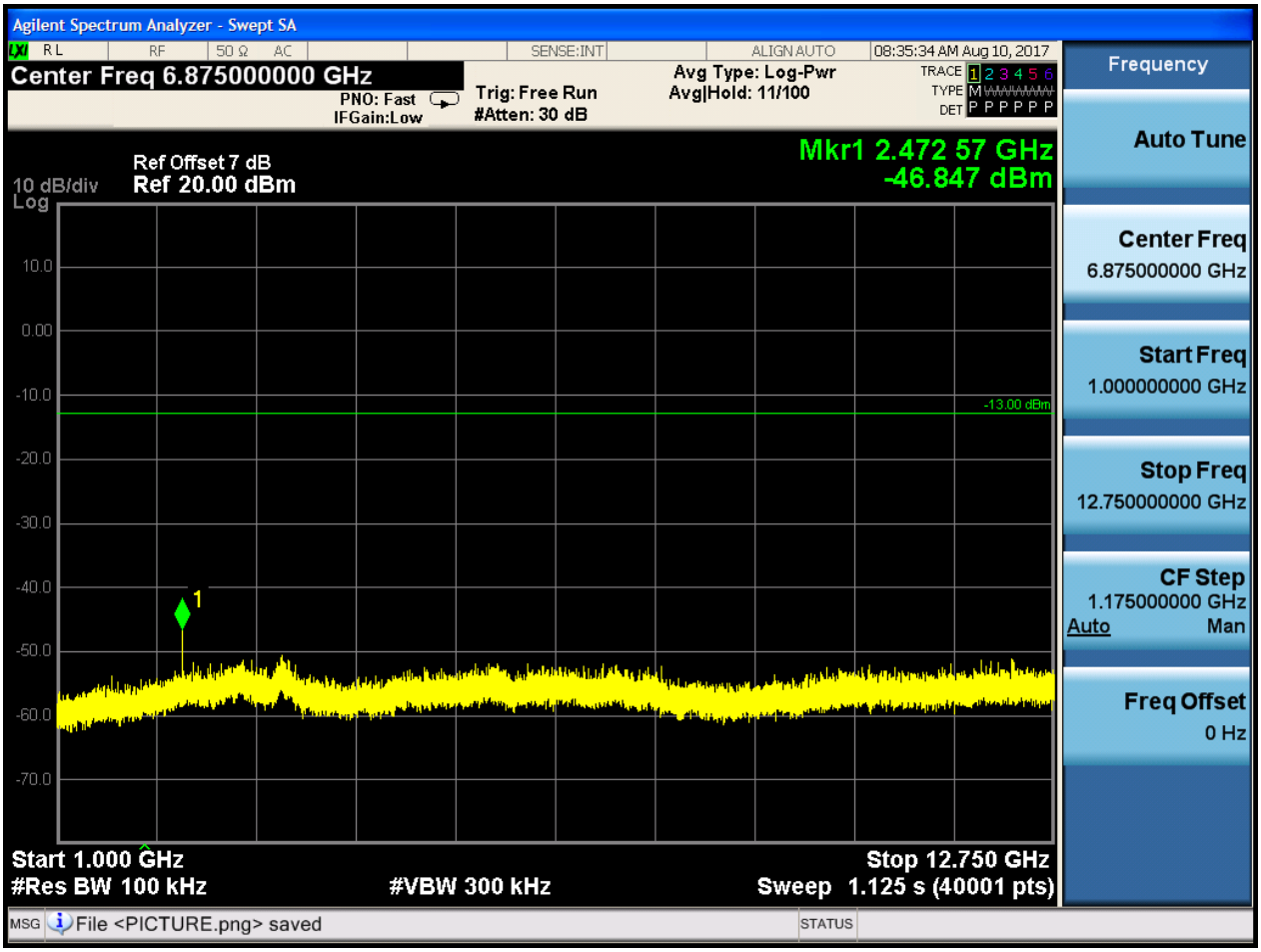
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

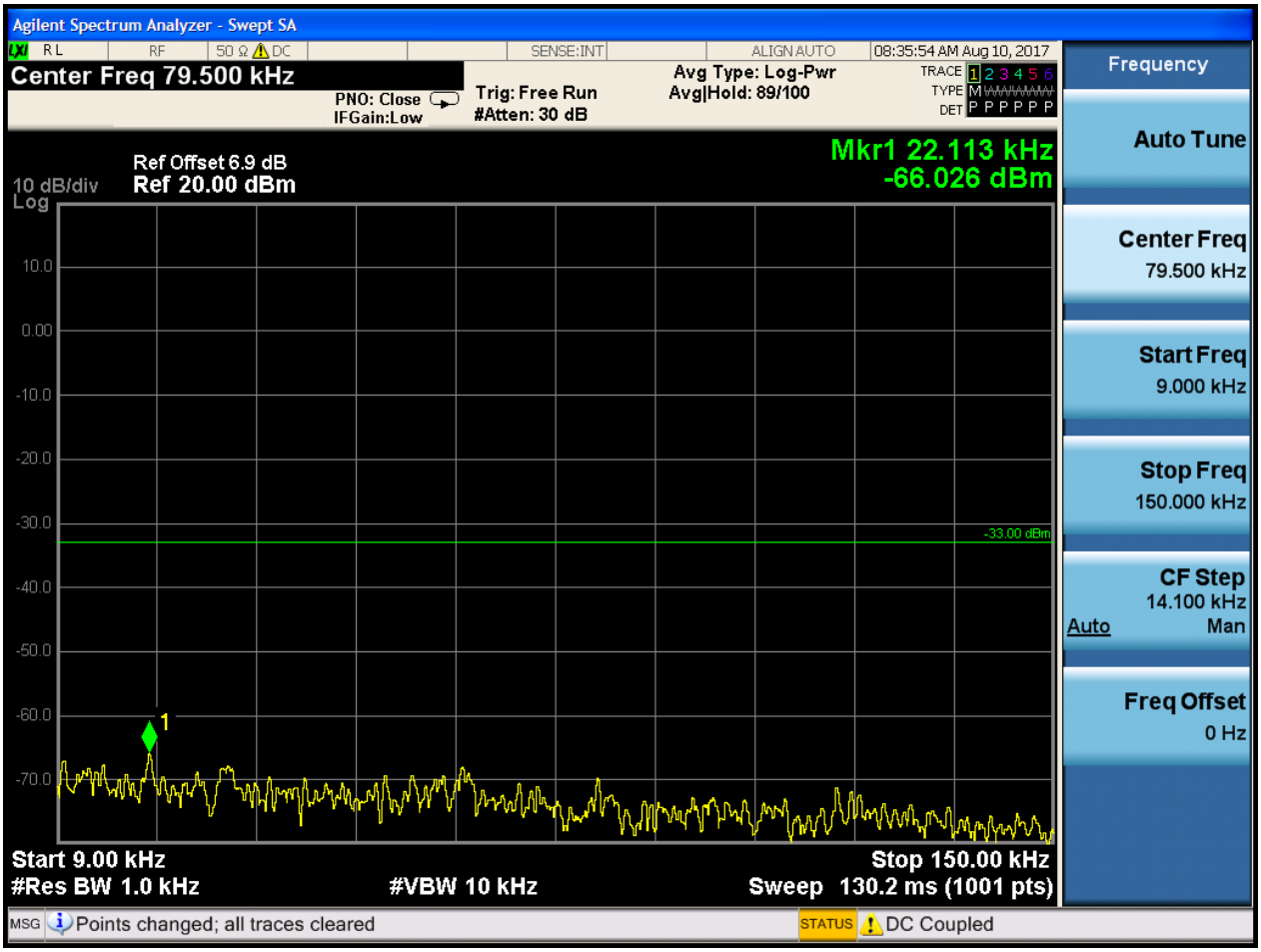


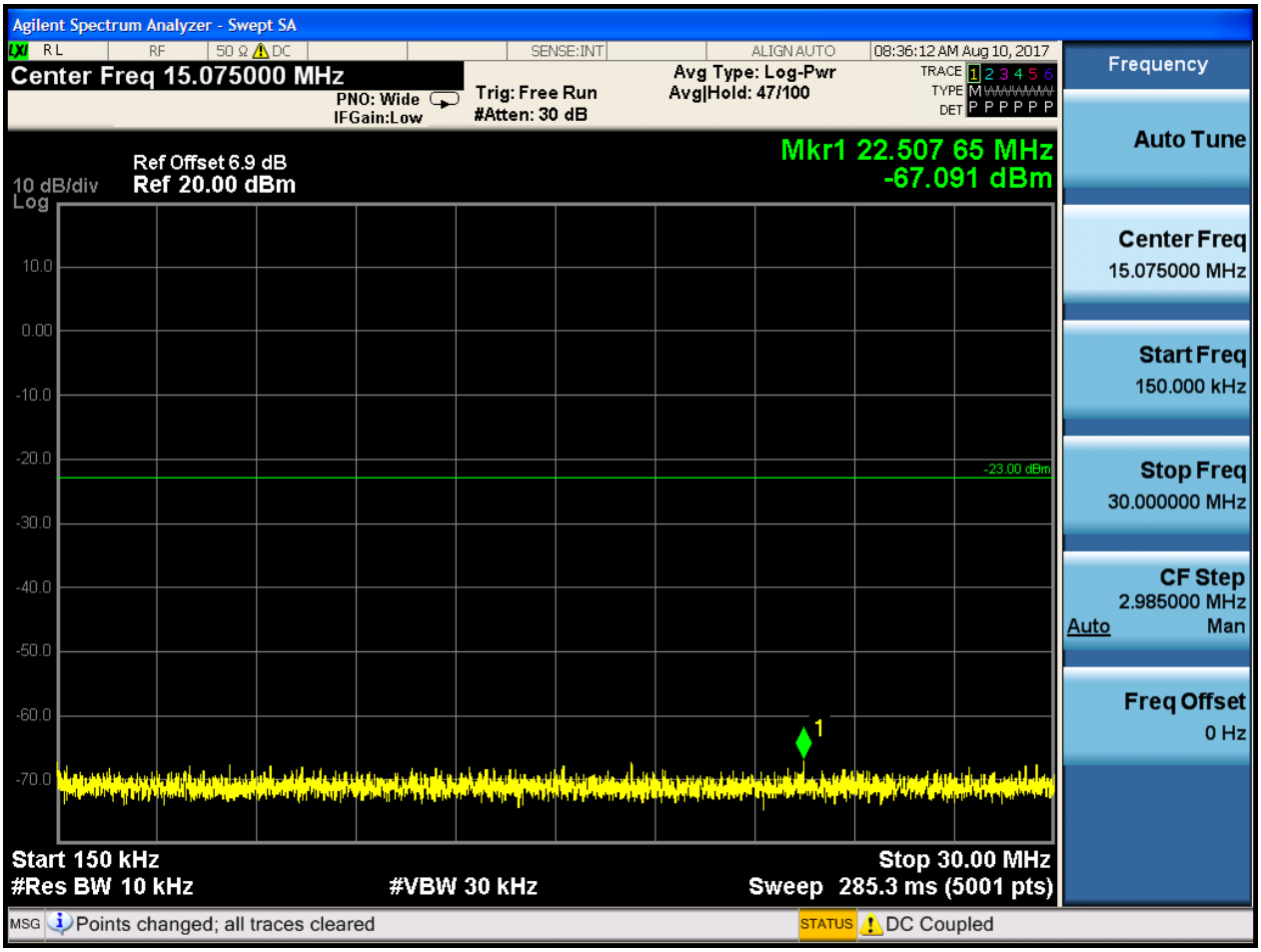


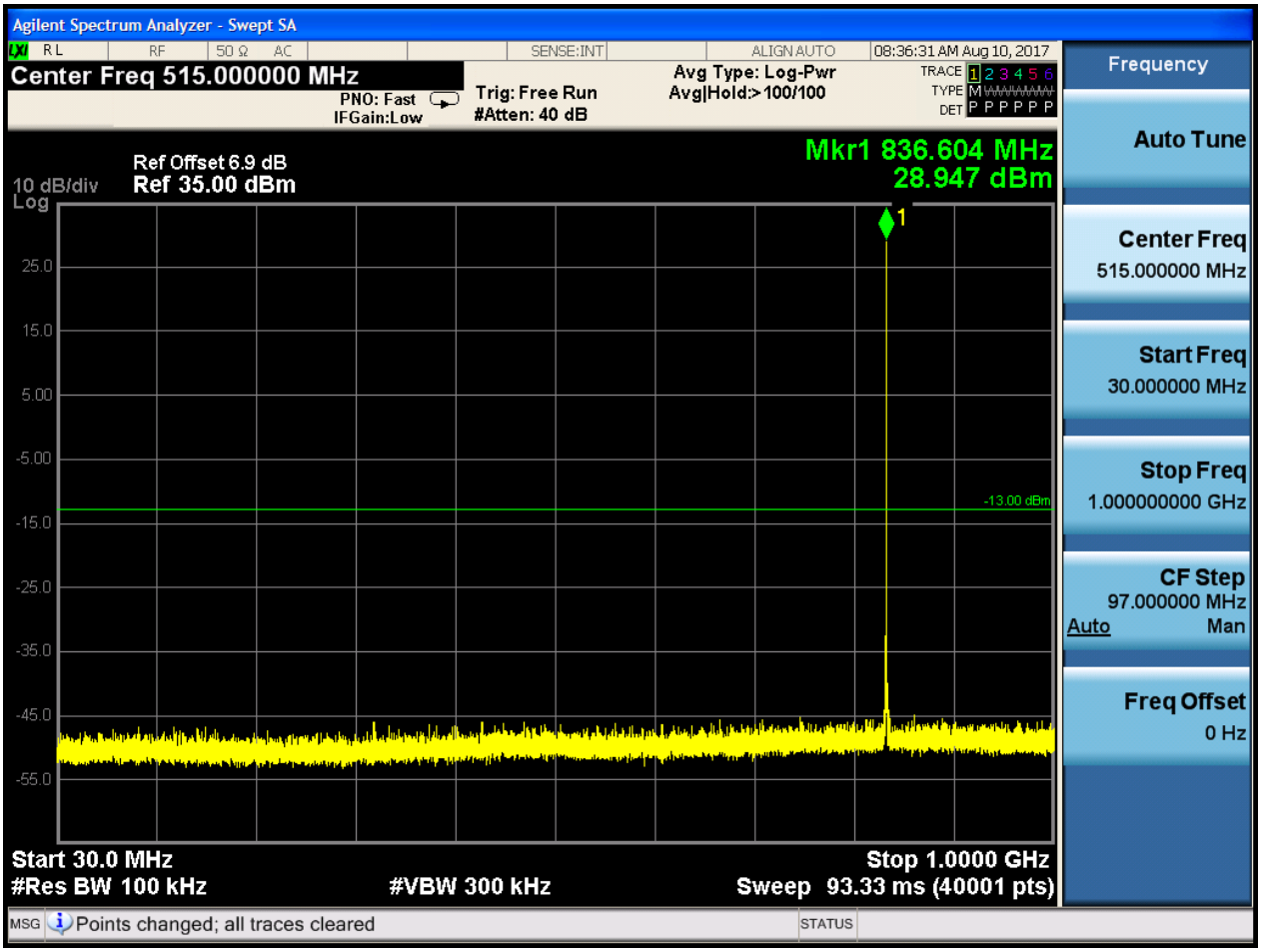


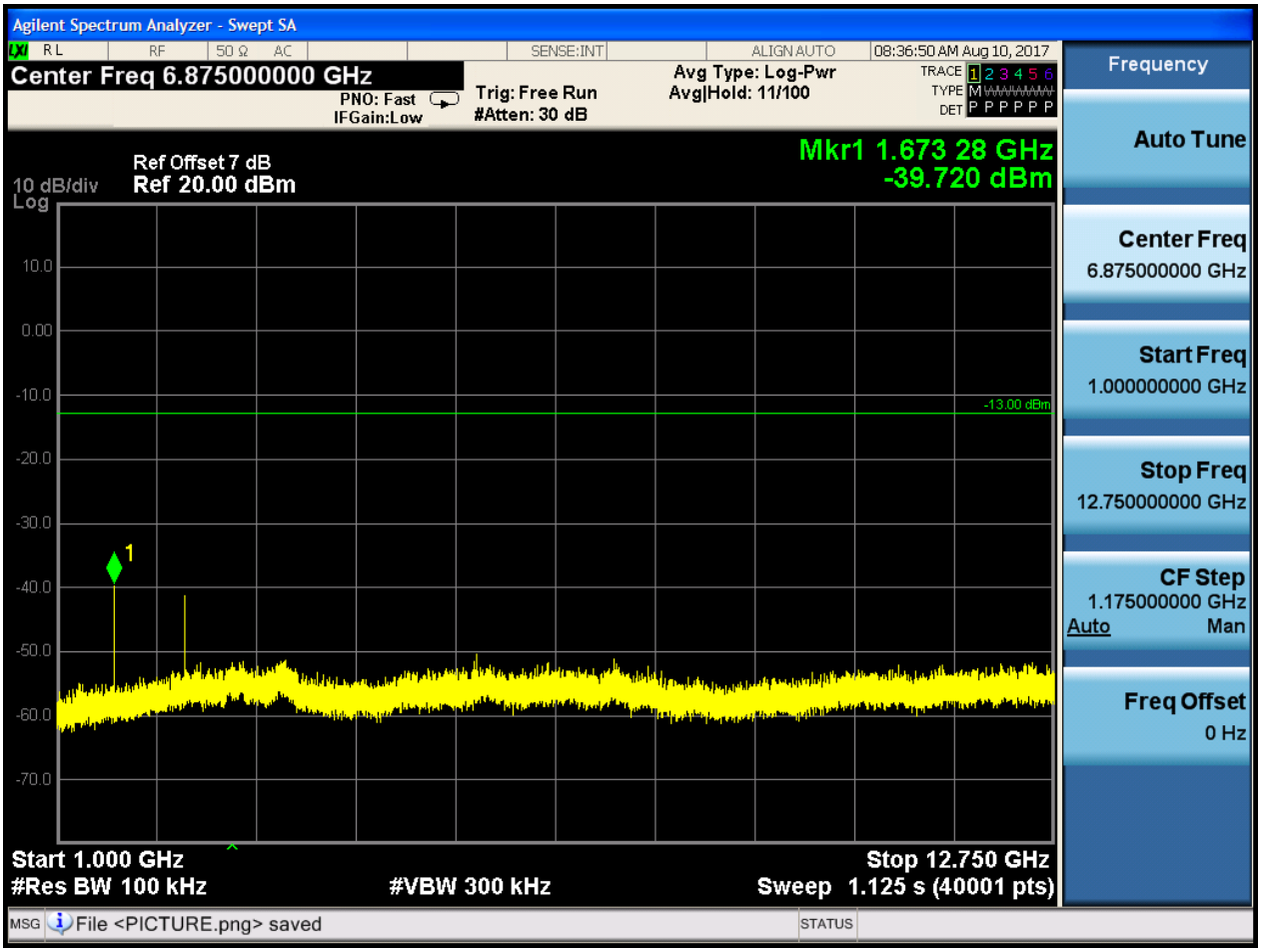


6.1.1.2.2 Test Channel = MCH

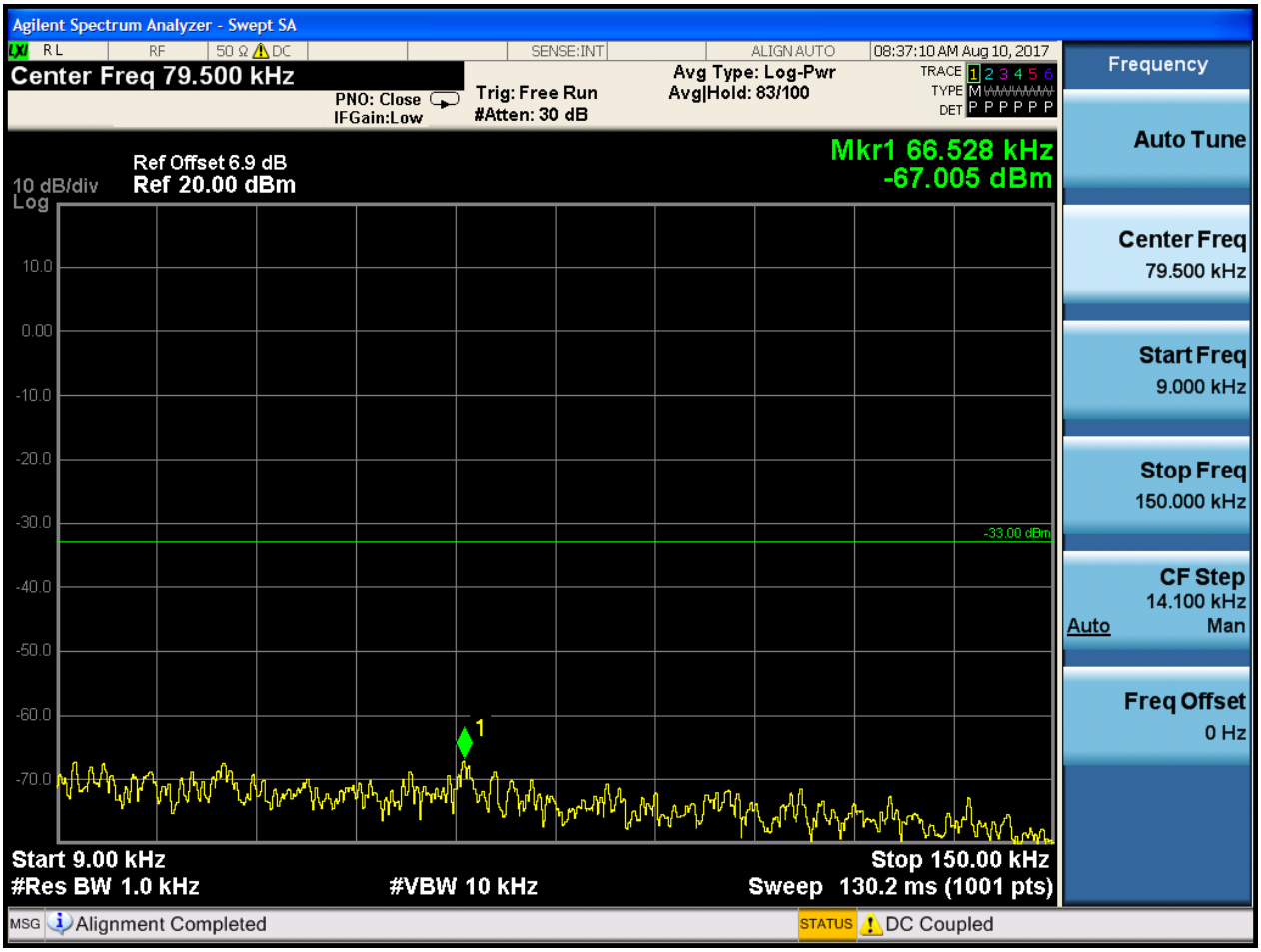


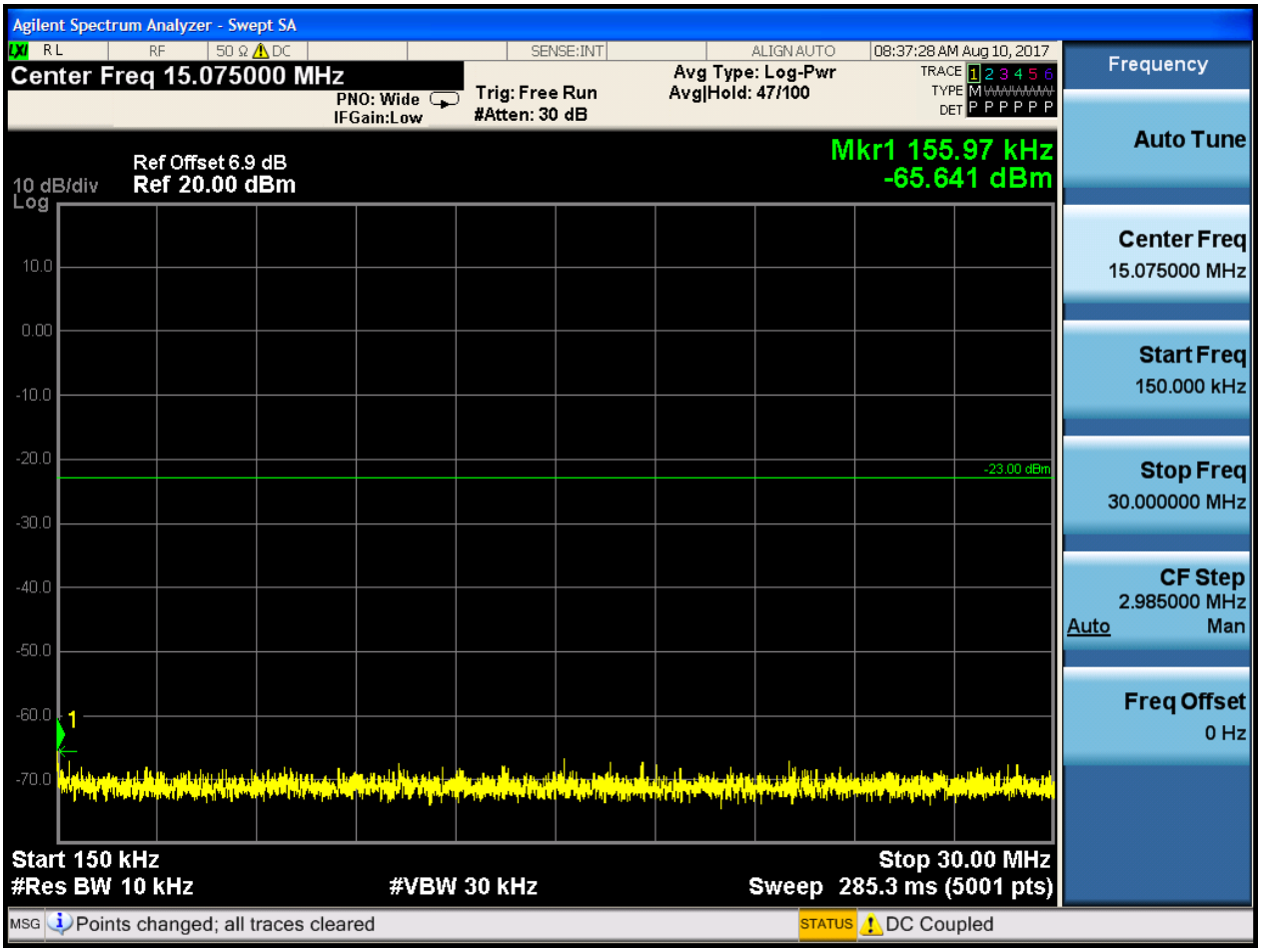


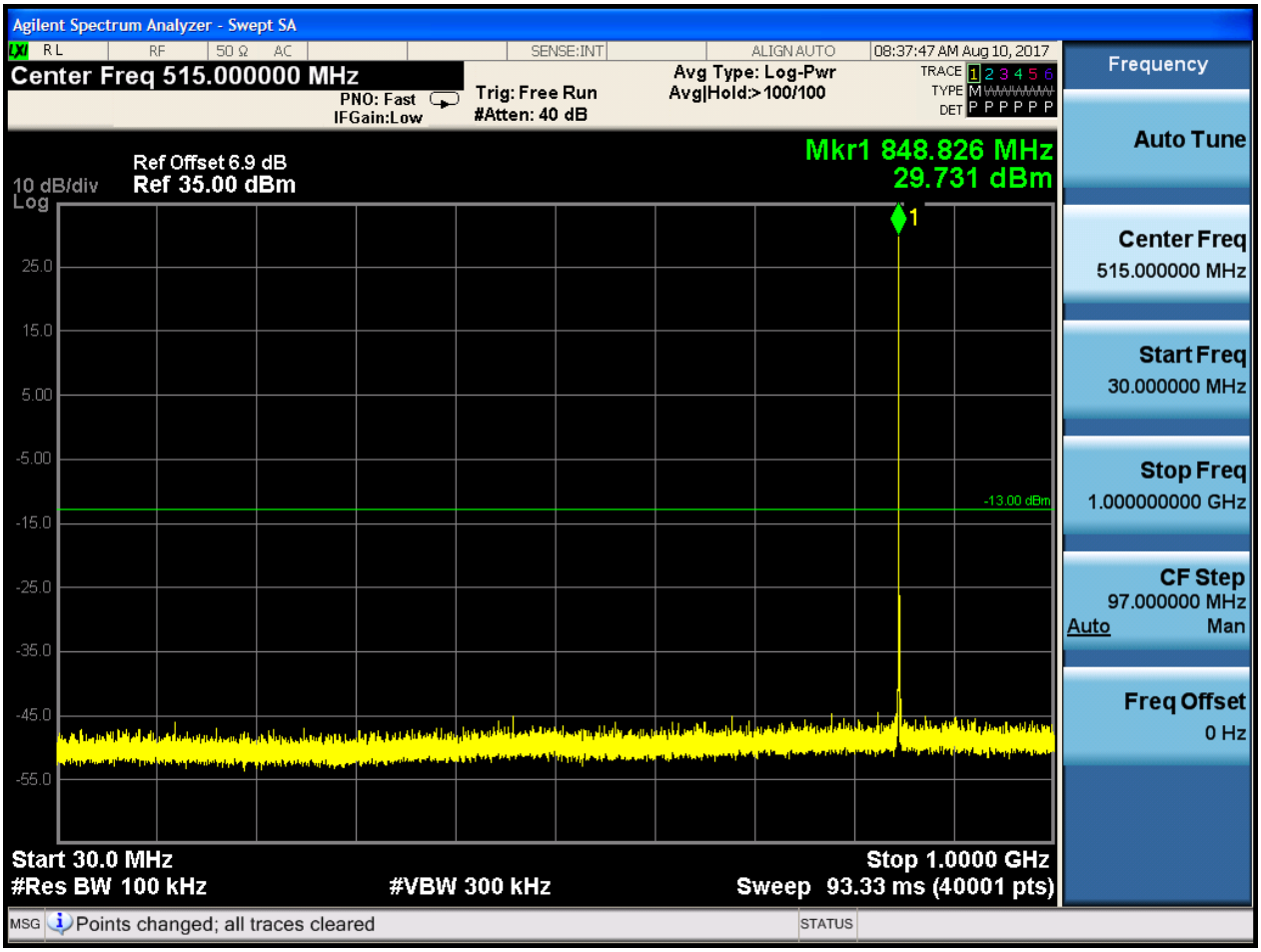


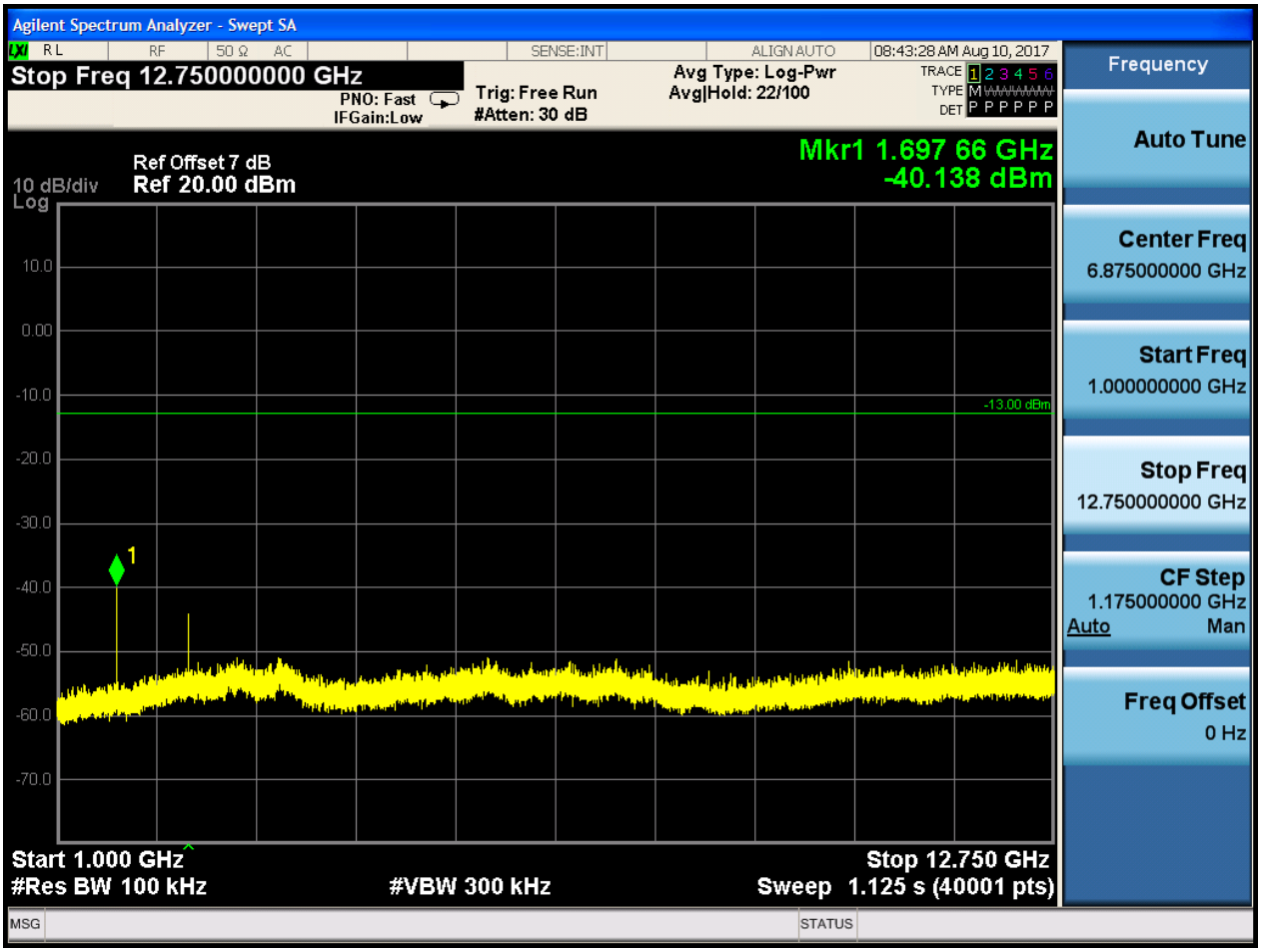


6.1.1.2.3 Test Channel = HCH





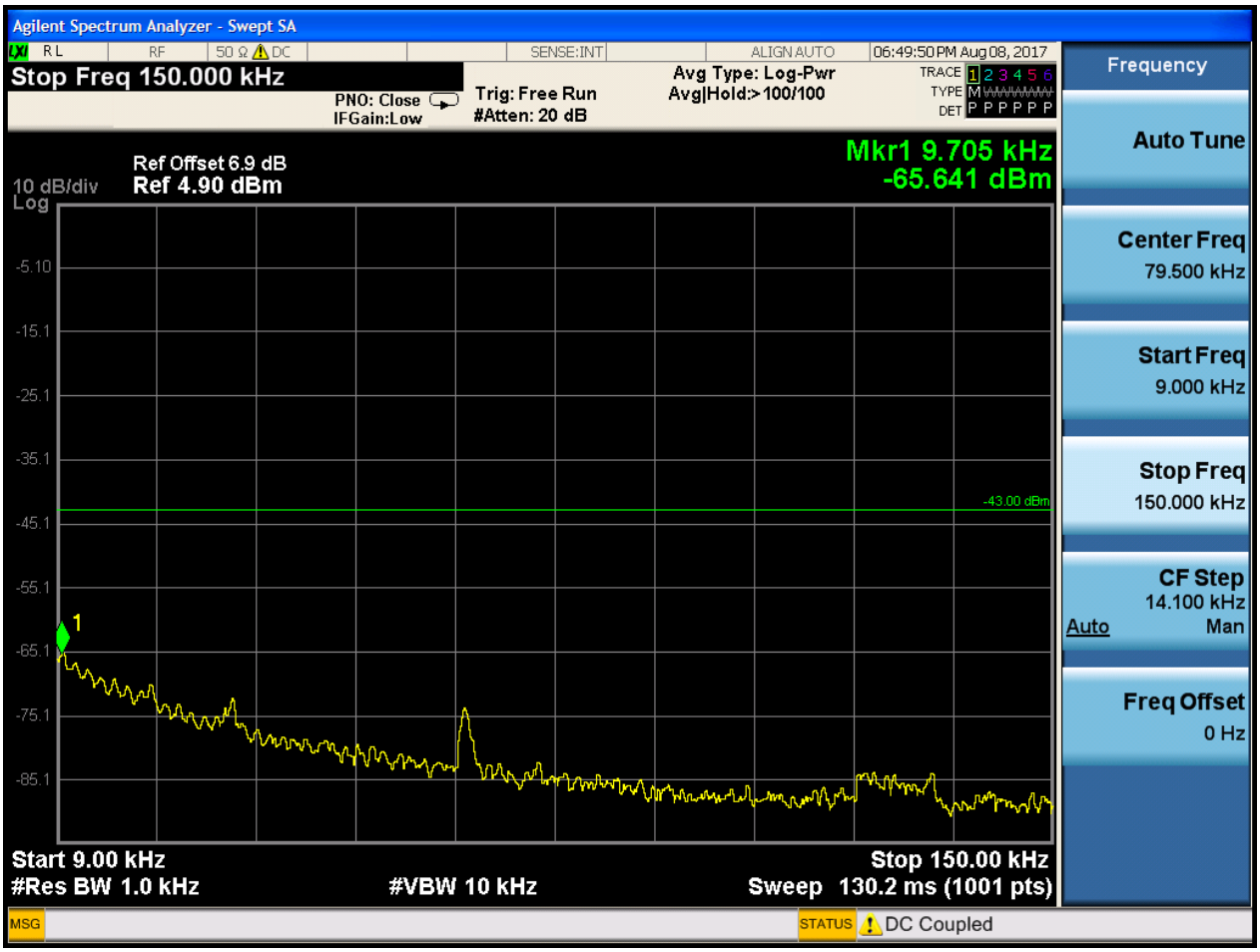


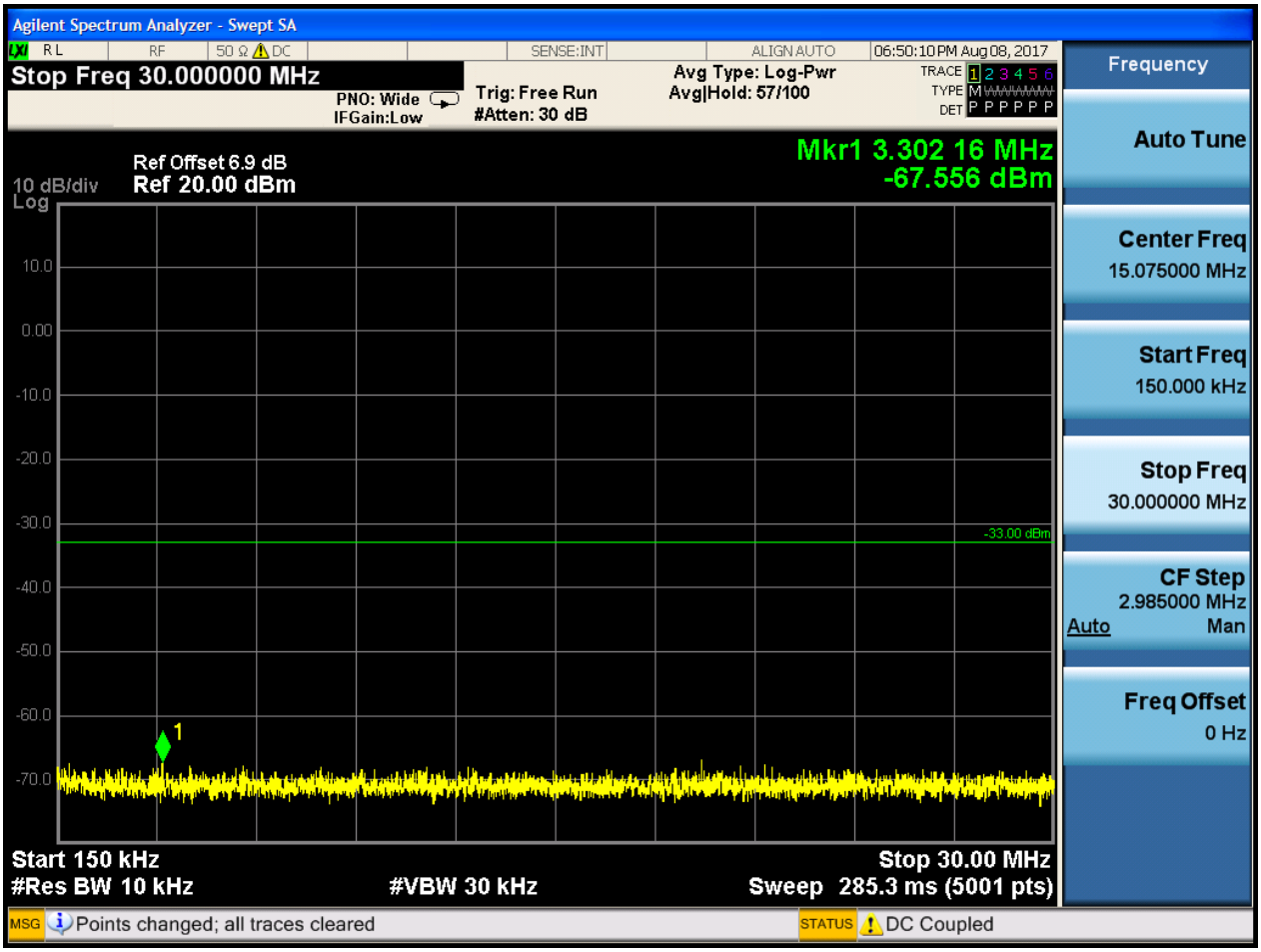


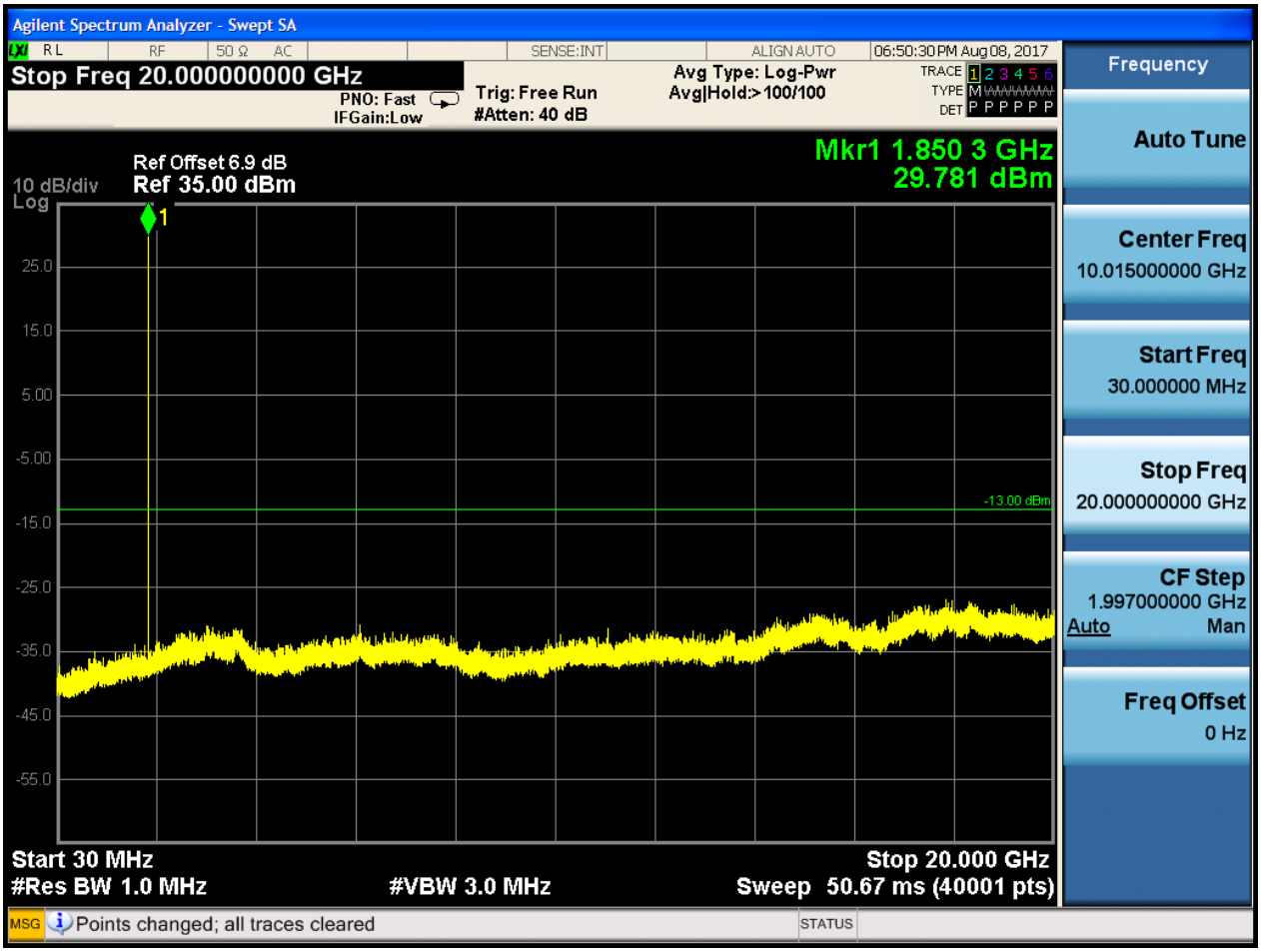
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

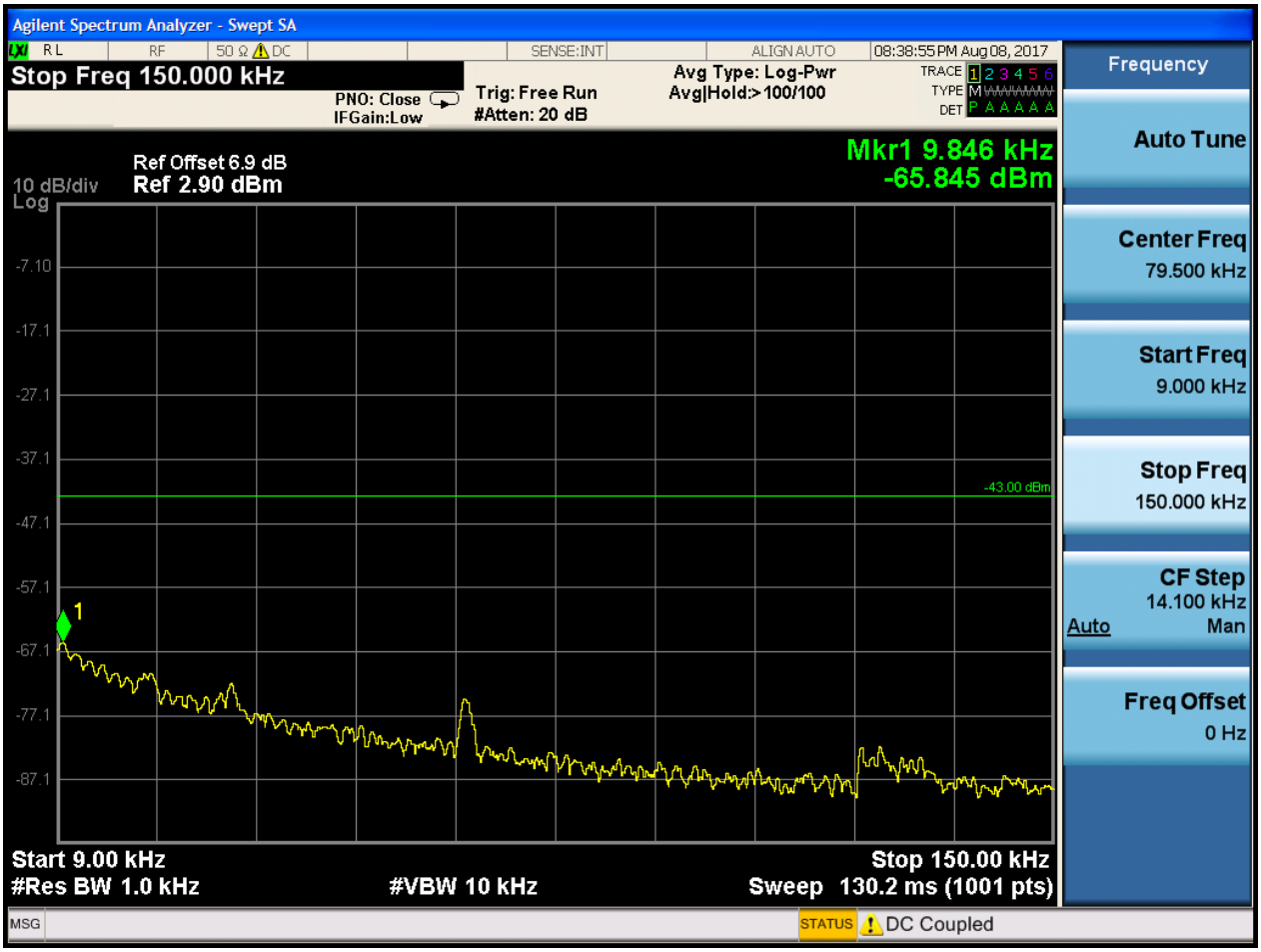
6.1.2.1.1 Test Channel = LCH

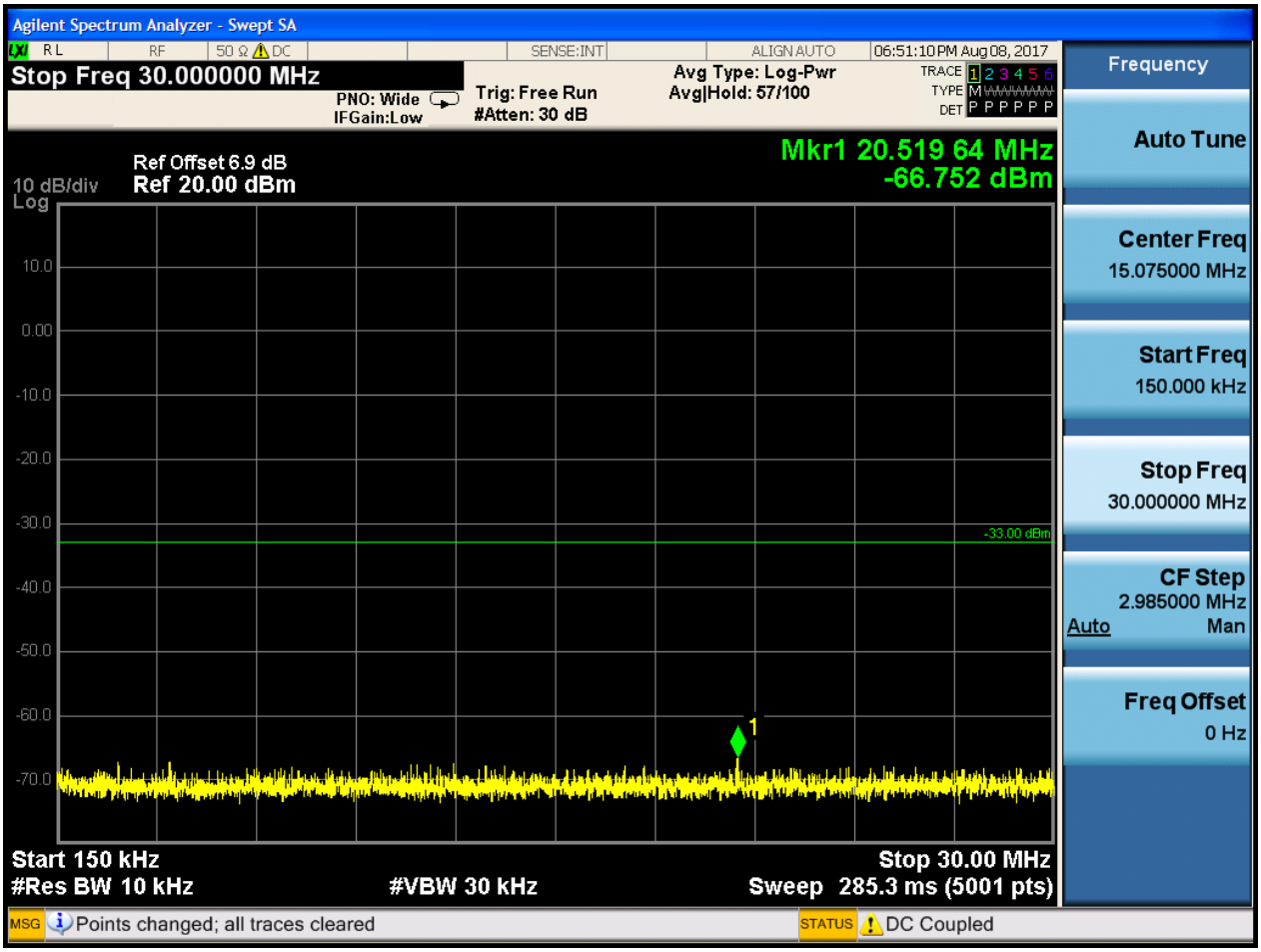


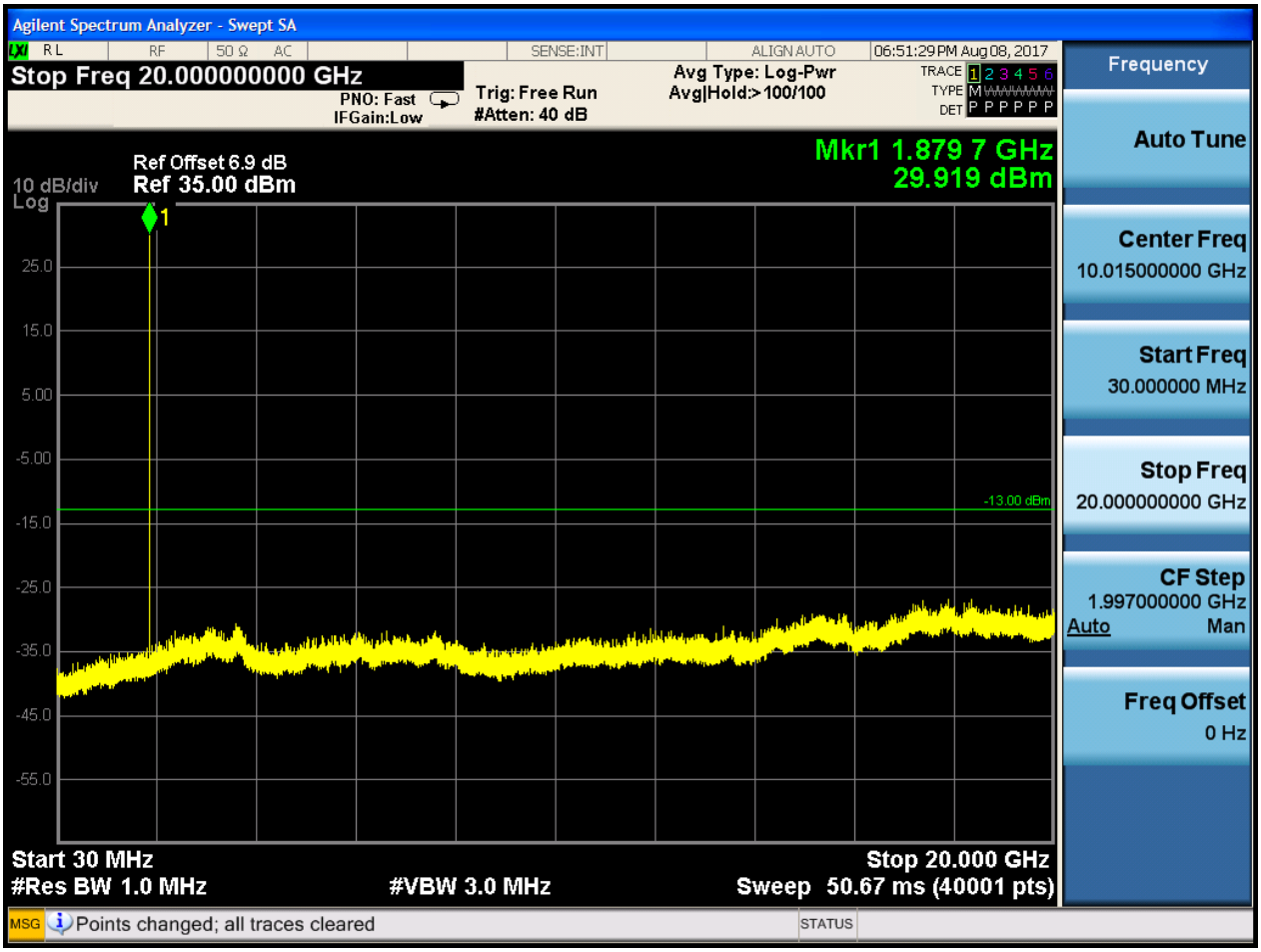




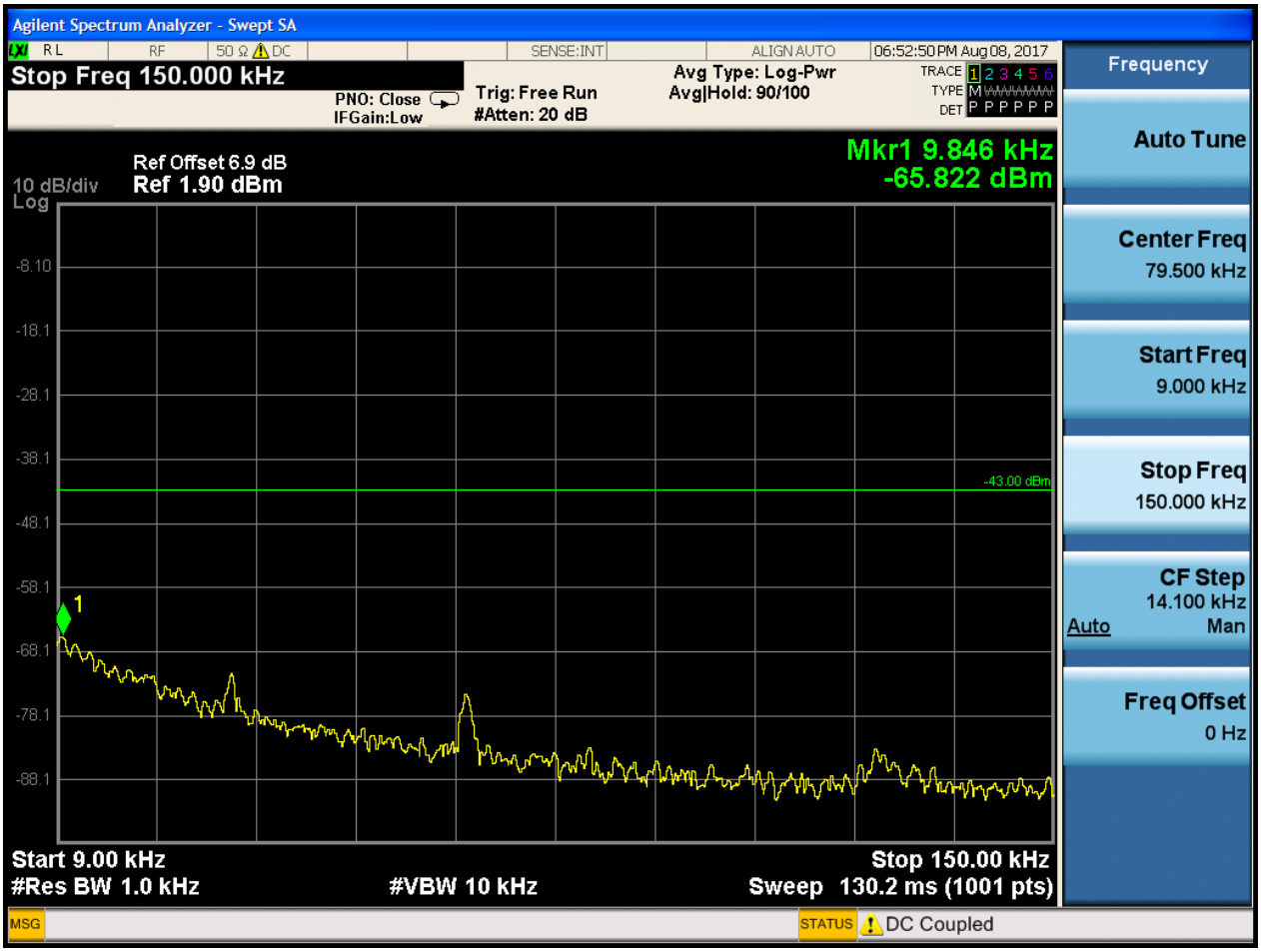
6.1.2.1.2 Test Channel = MCH

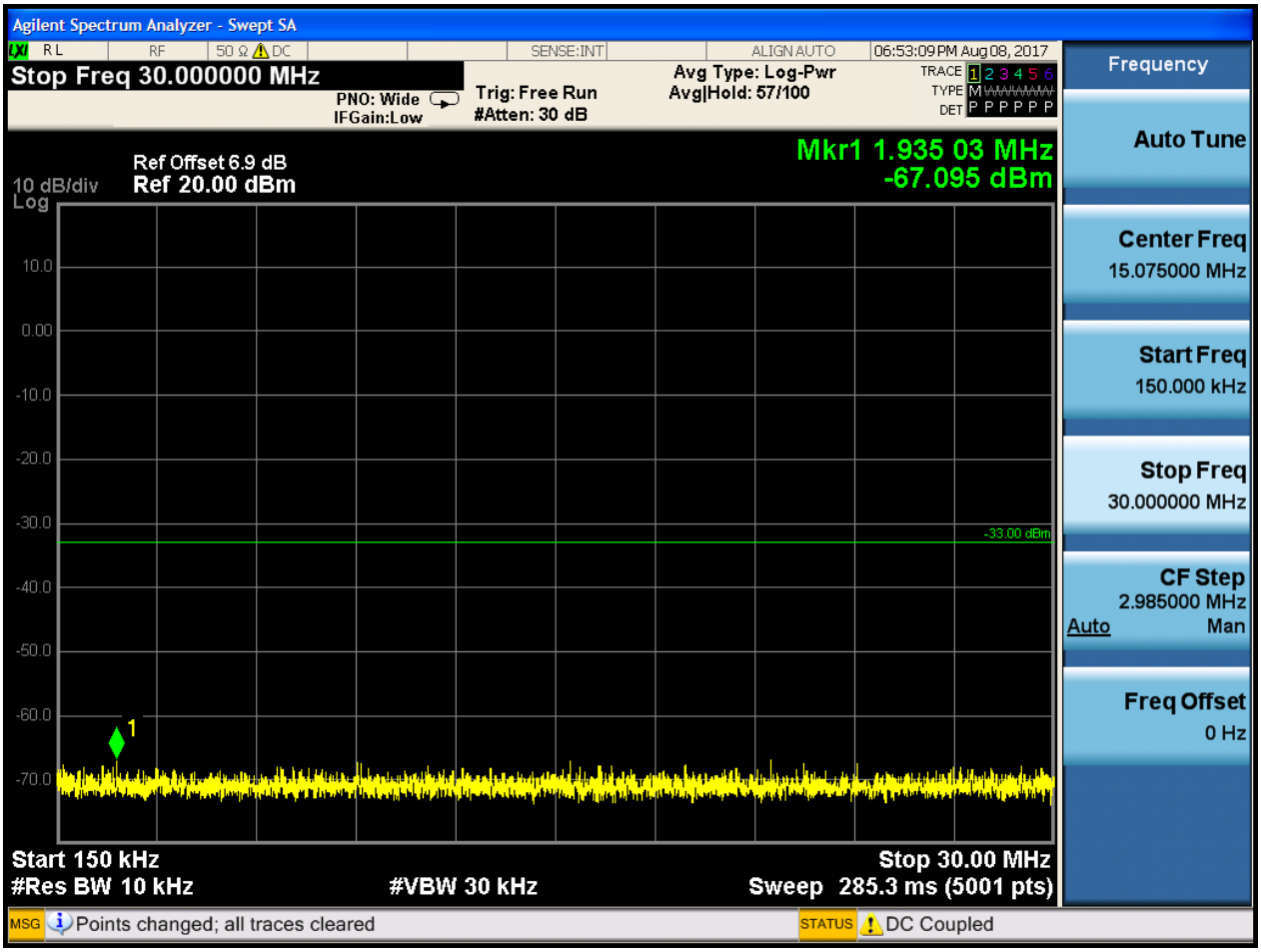


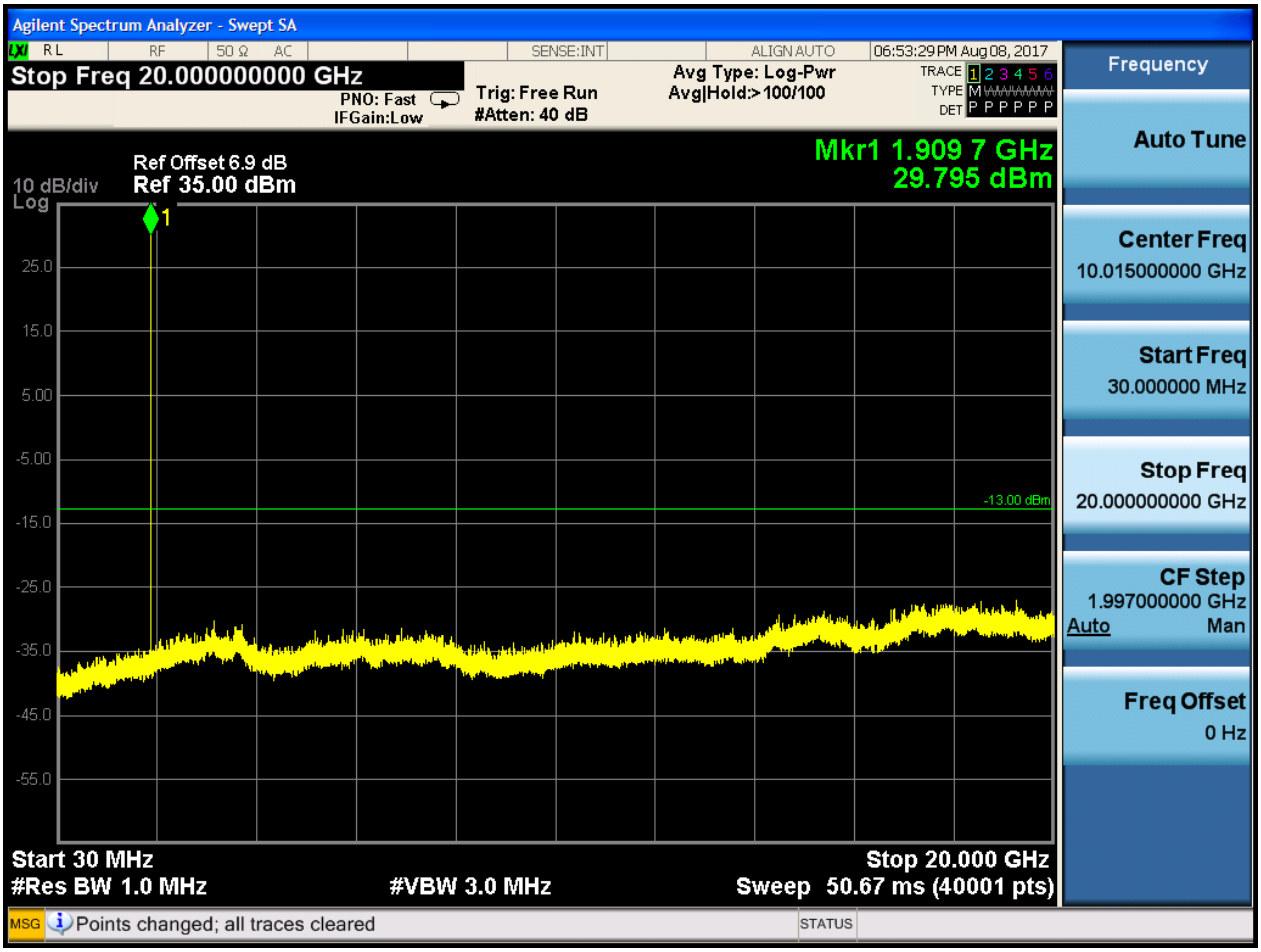




6.1.2.1.3 Test Channel = HCH

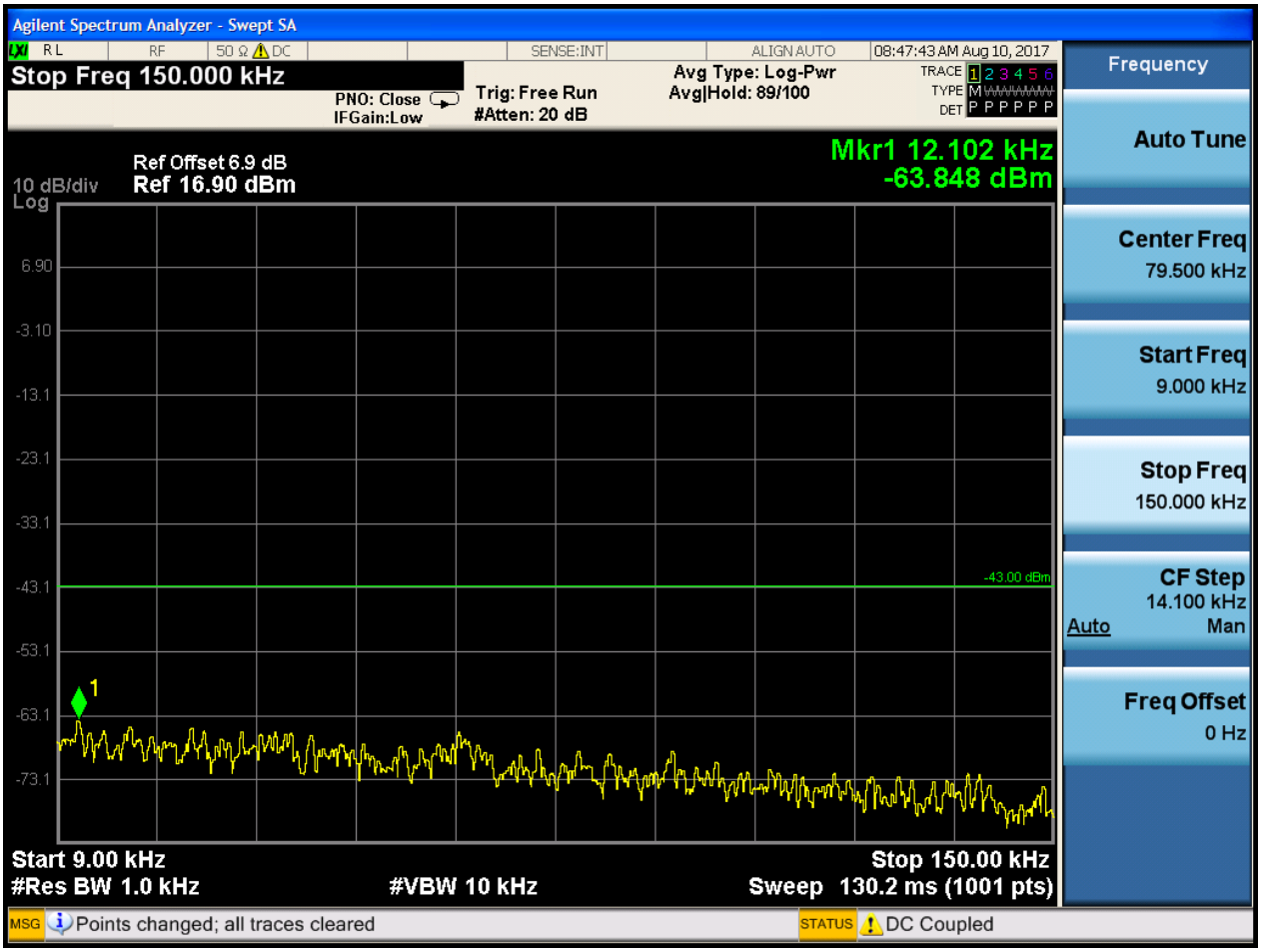


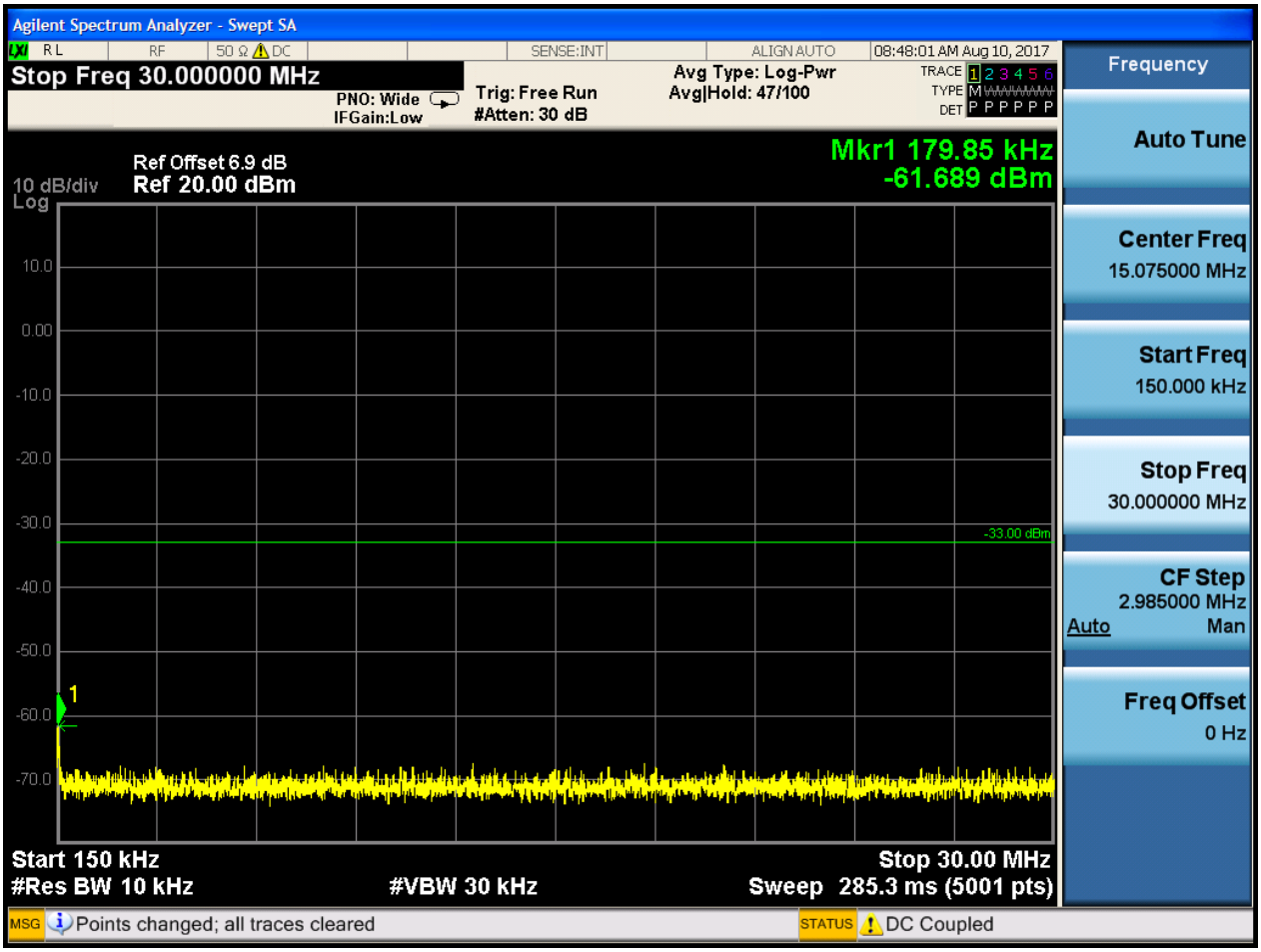


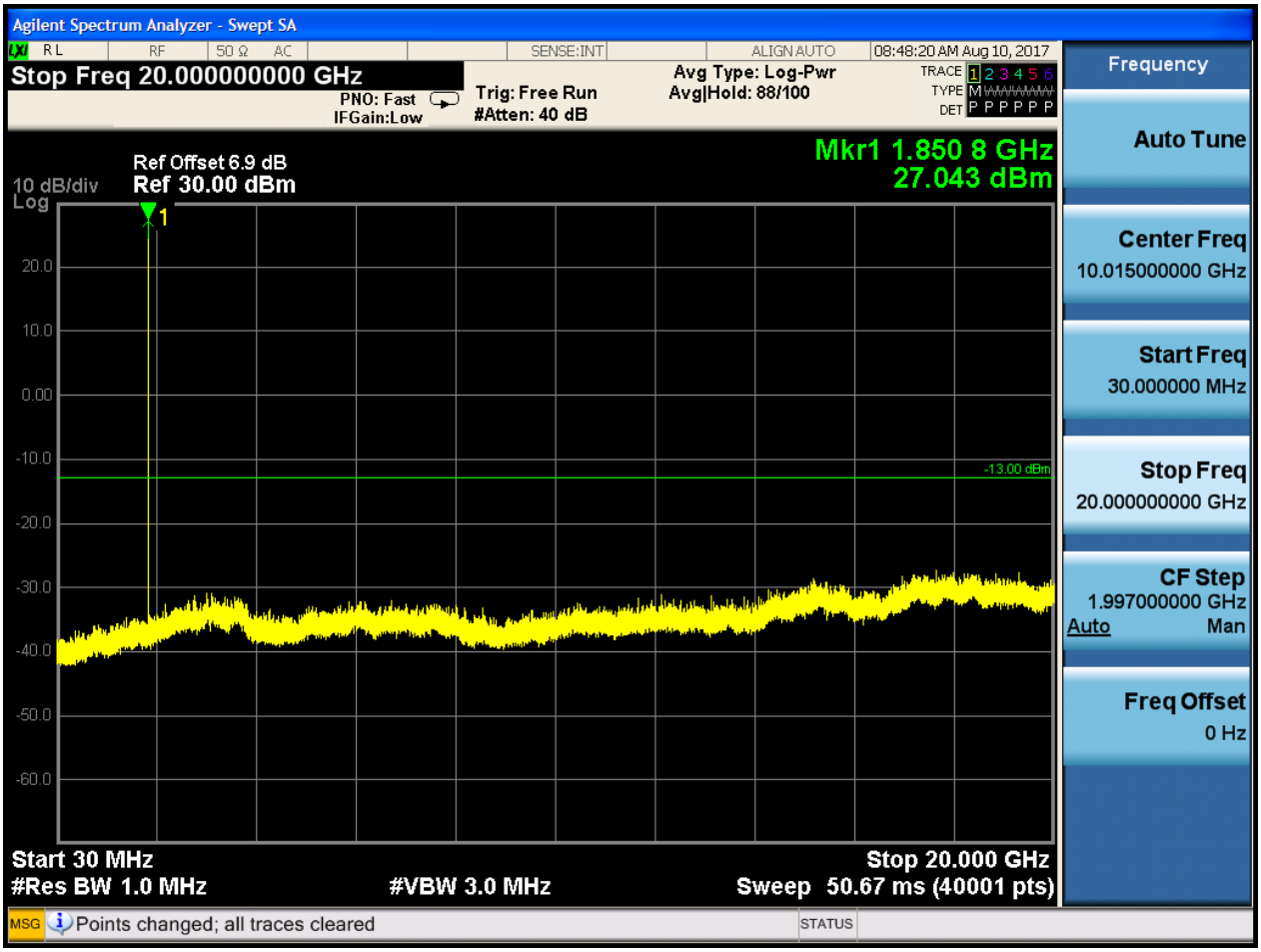


6.1.2.2 Test Mode = GSM/TM2

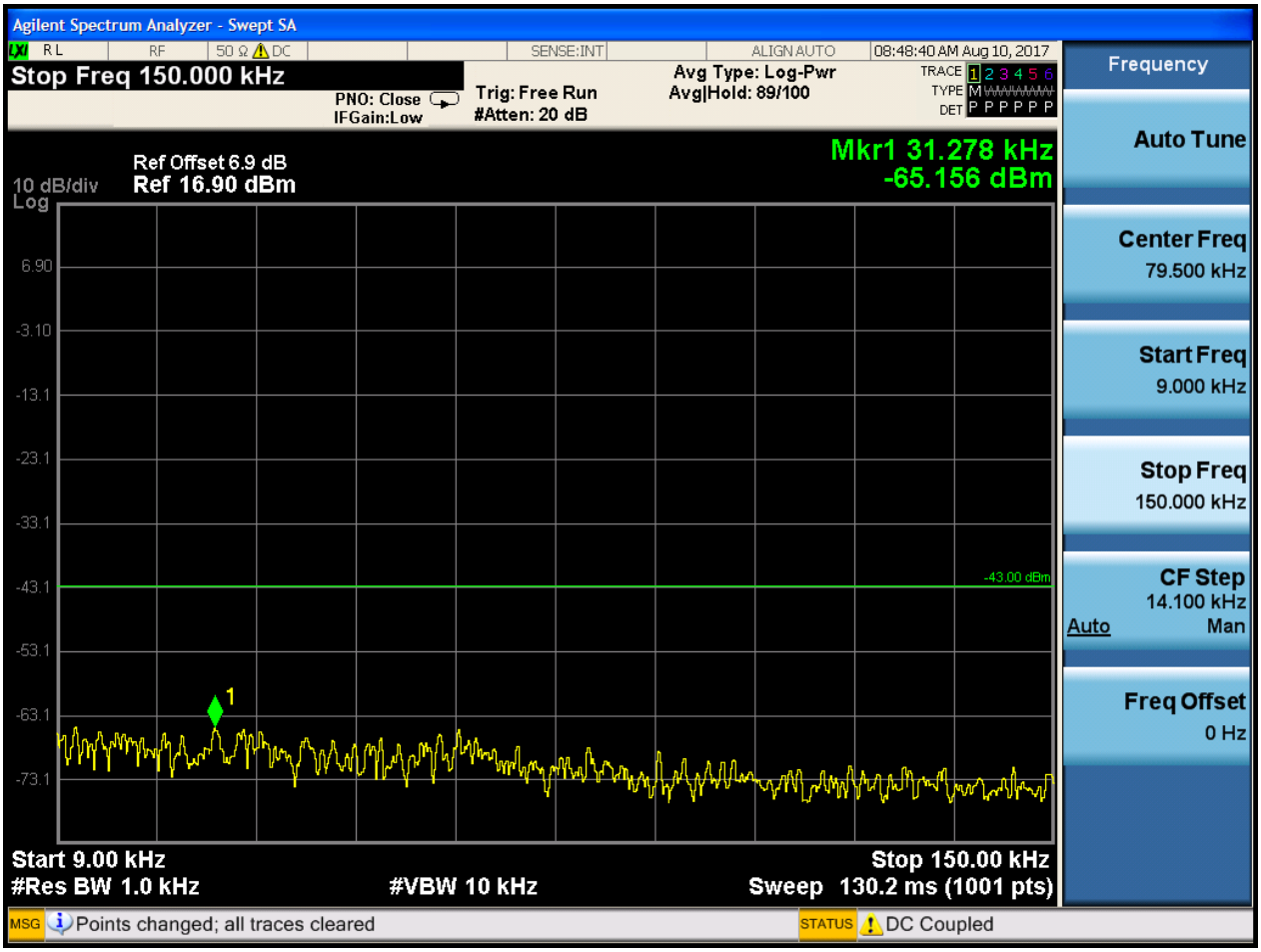
6.1.2.2.1 Test Channel = LCH

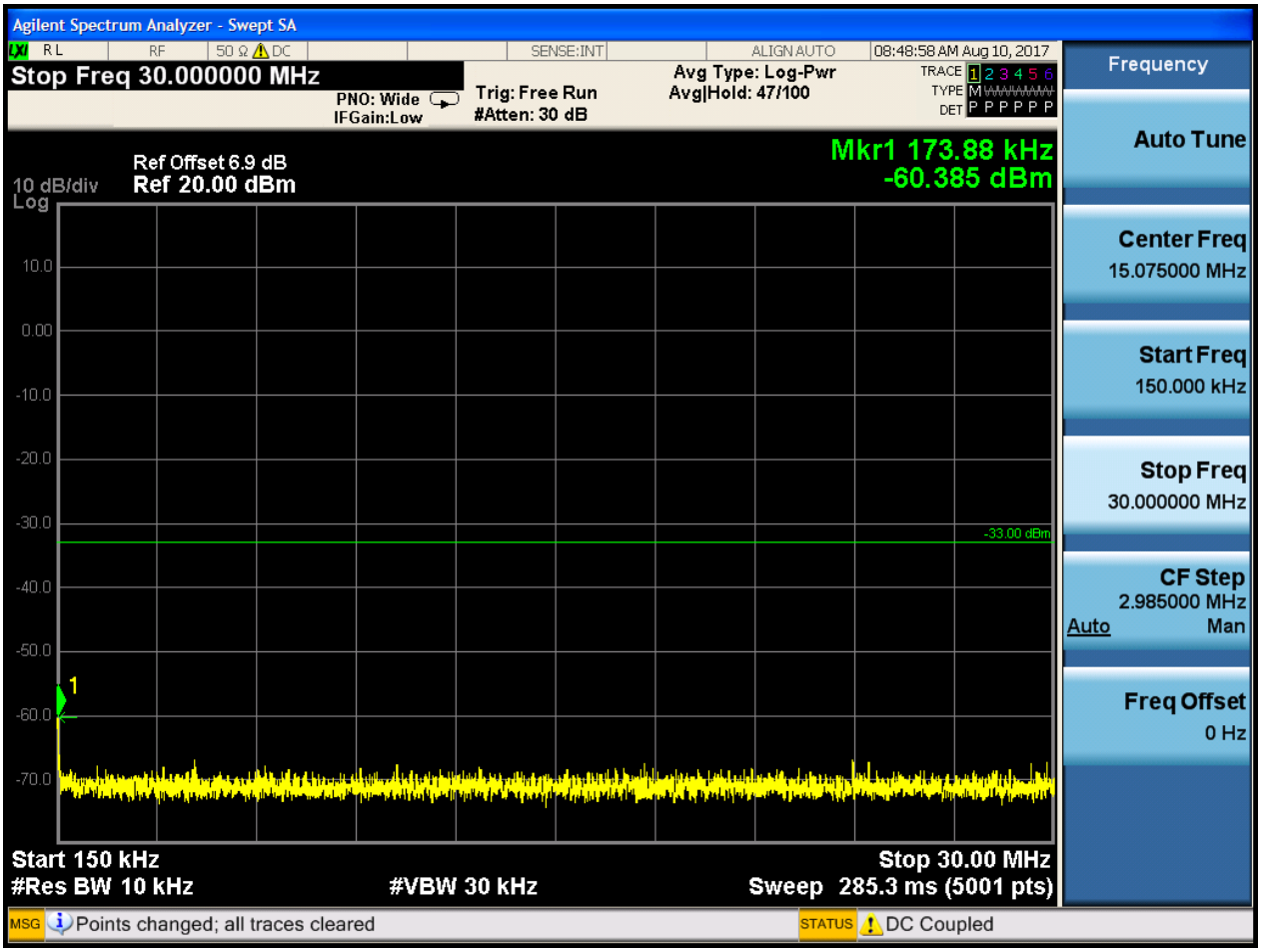


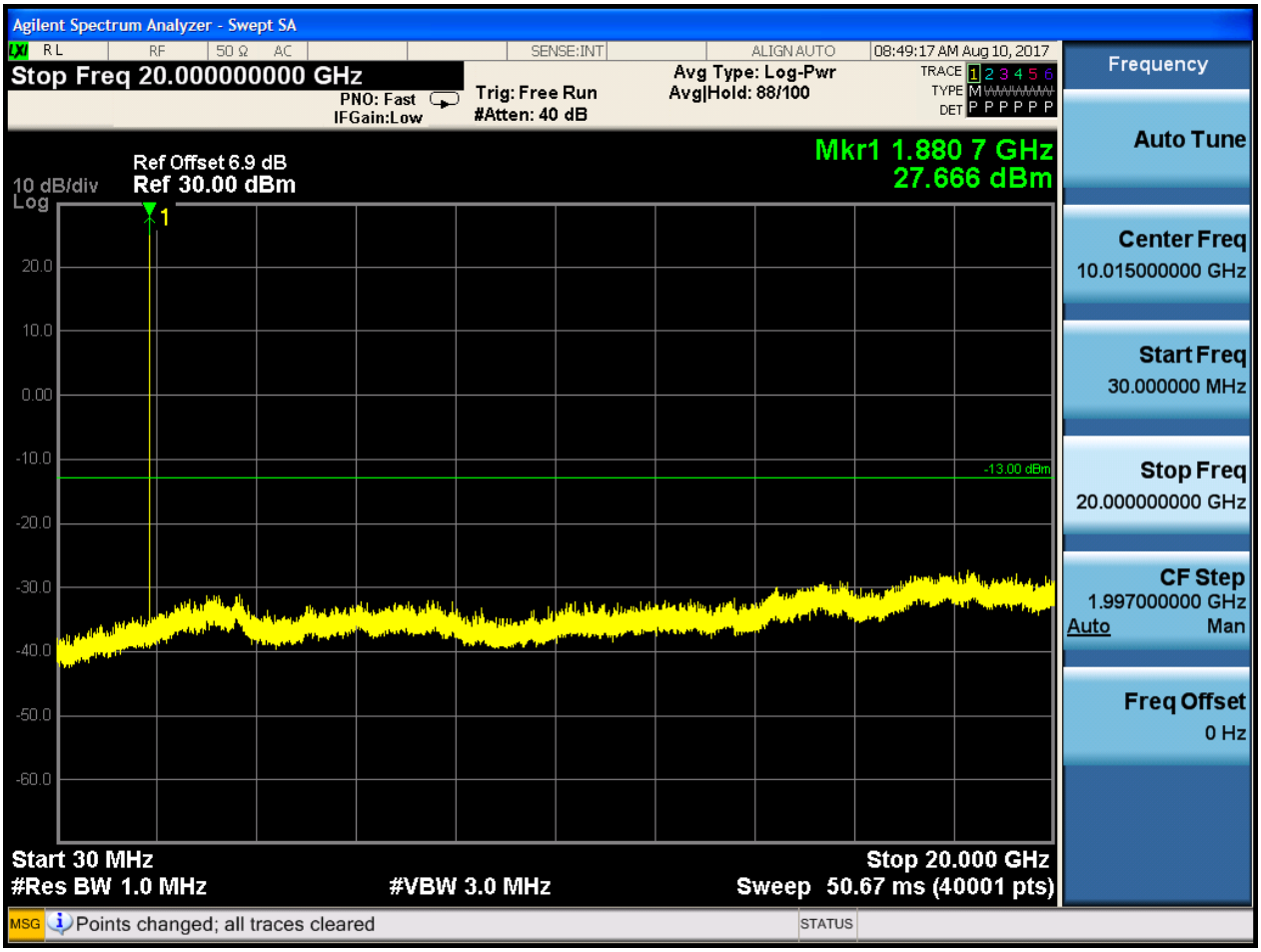




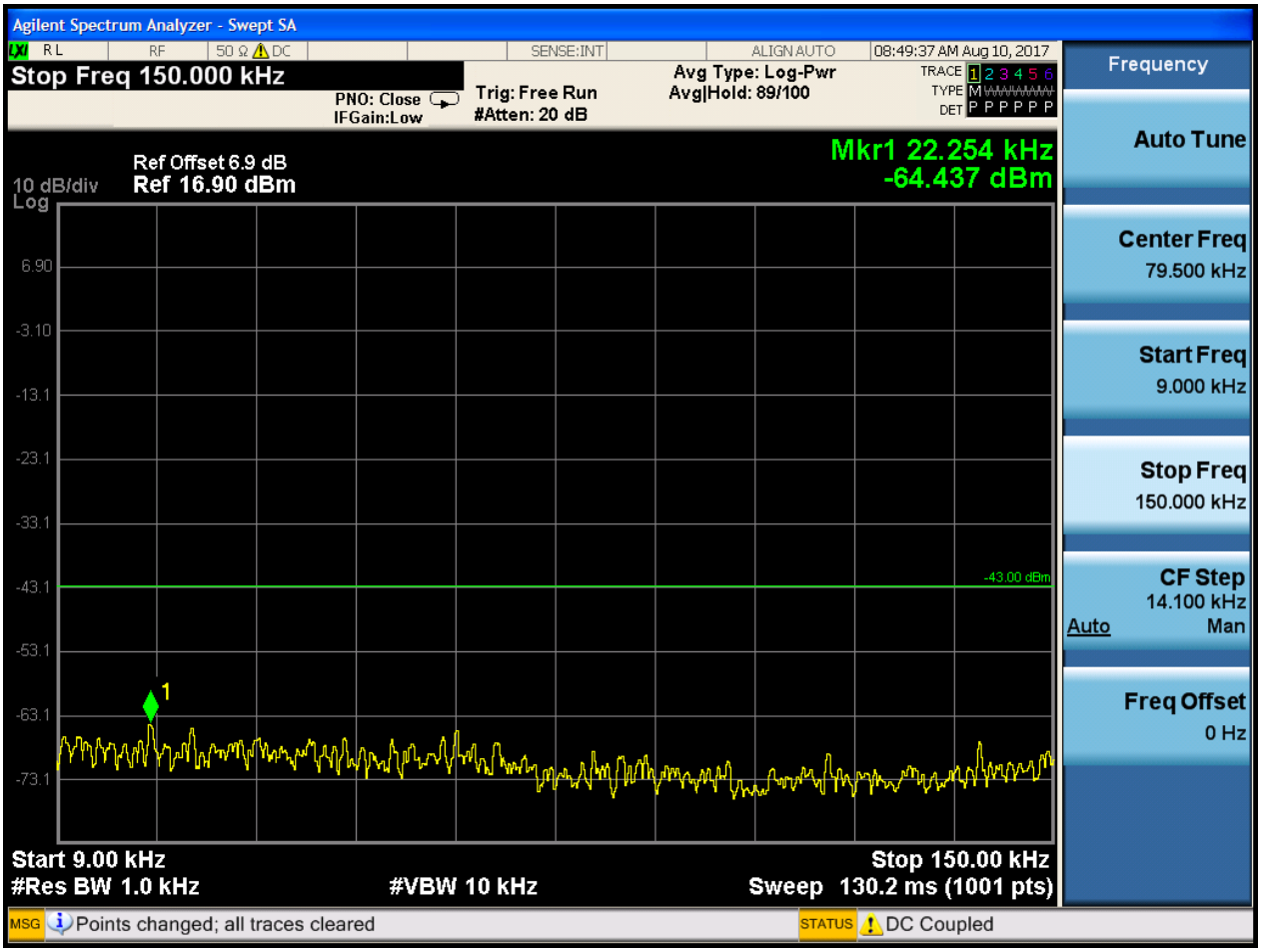
6.1.2.2.2 Test Channel = MCH

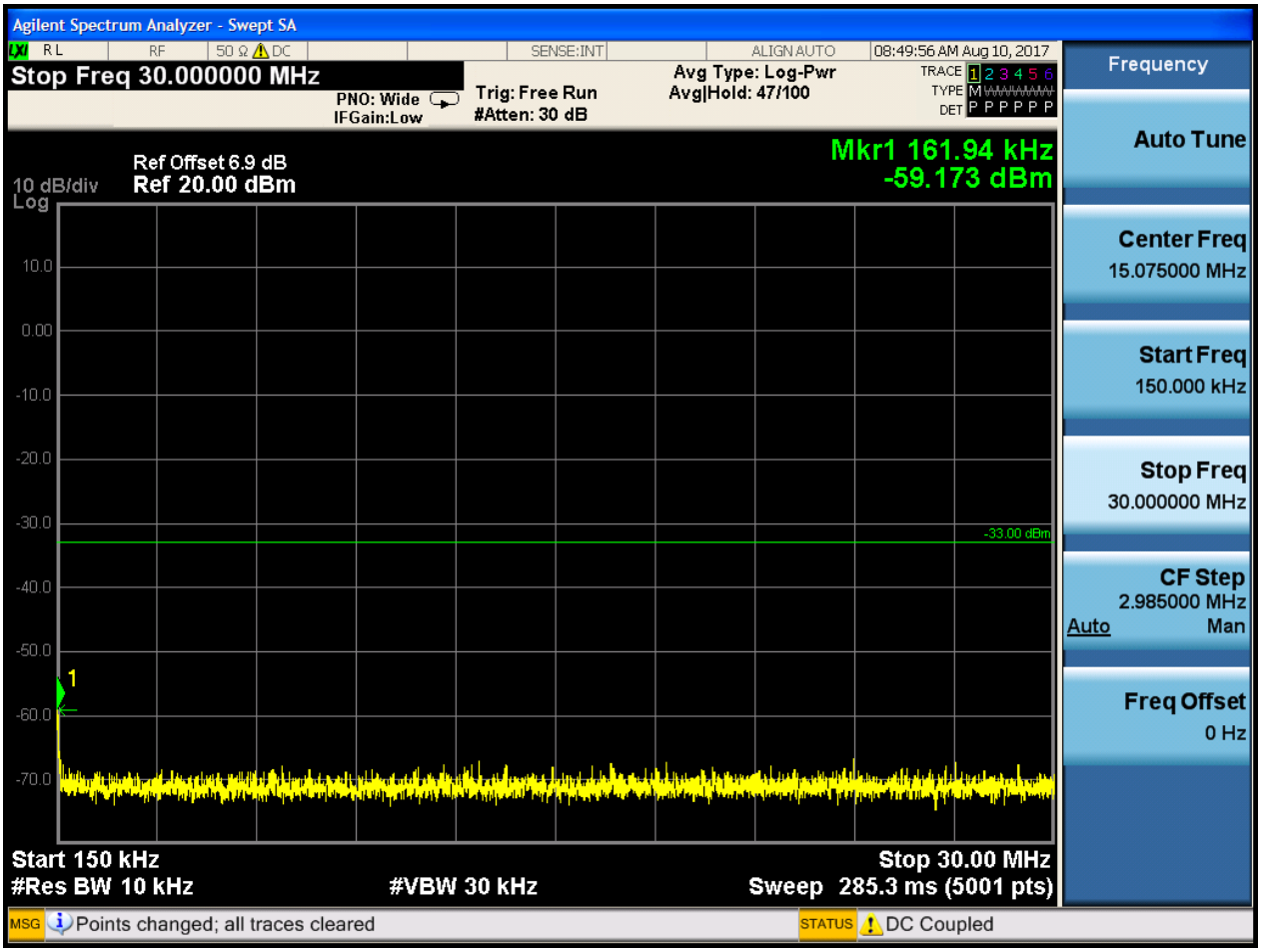


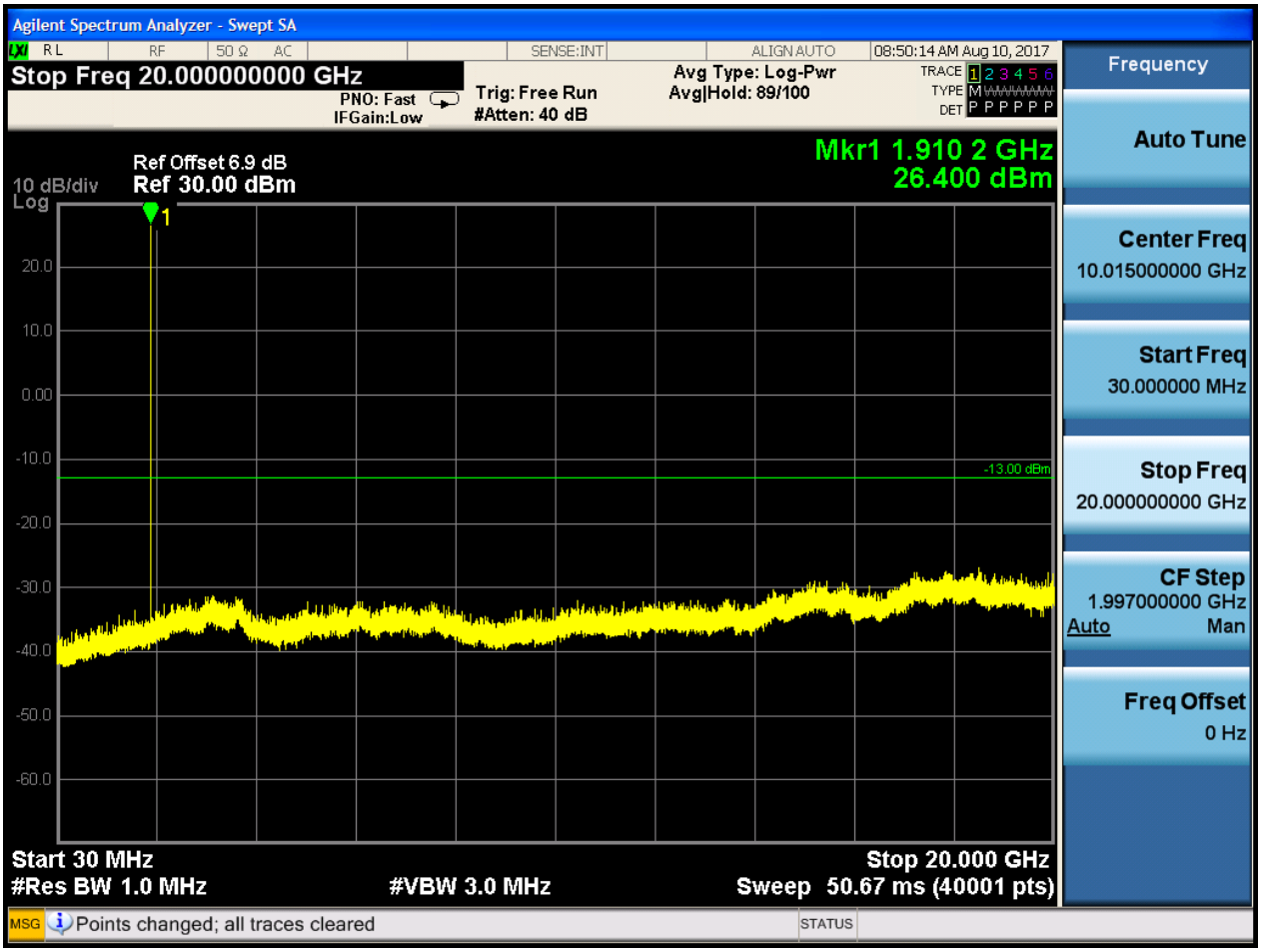




6.1.2.2.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

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

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

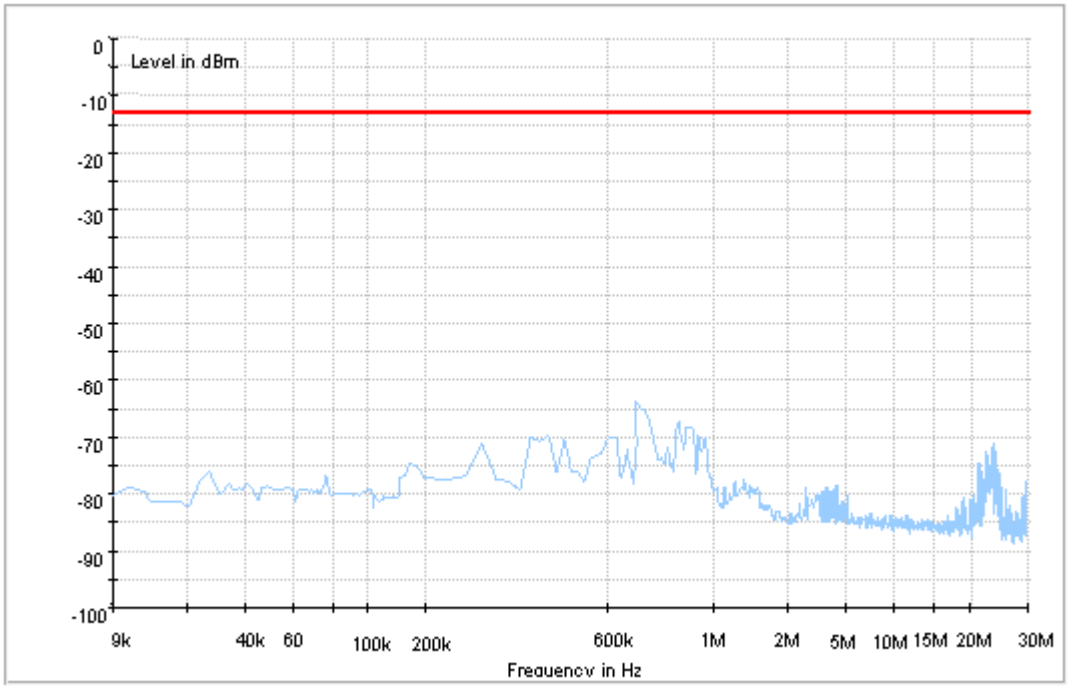
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

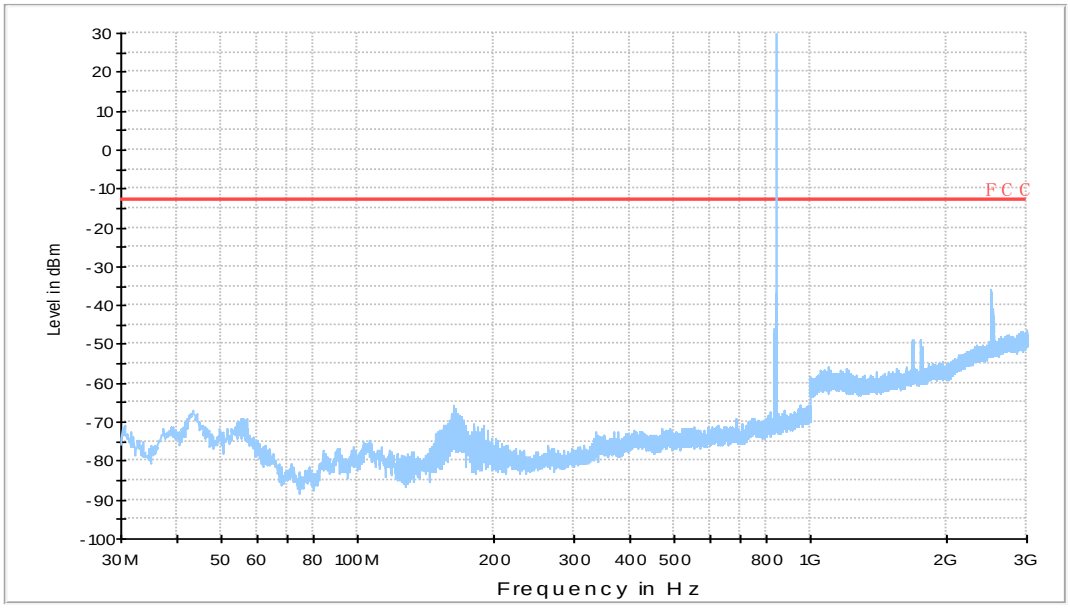
7.1 For GSM

7.1.1 Test Band = GSM850_ANT1

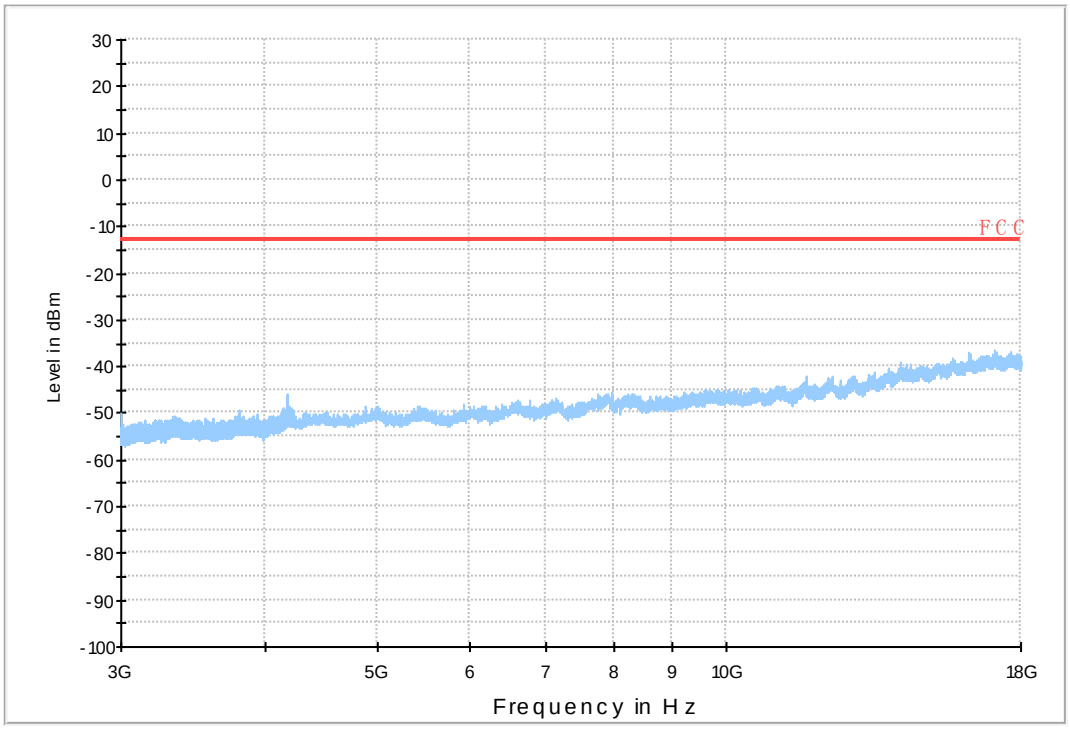
7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

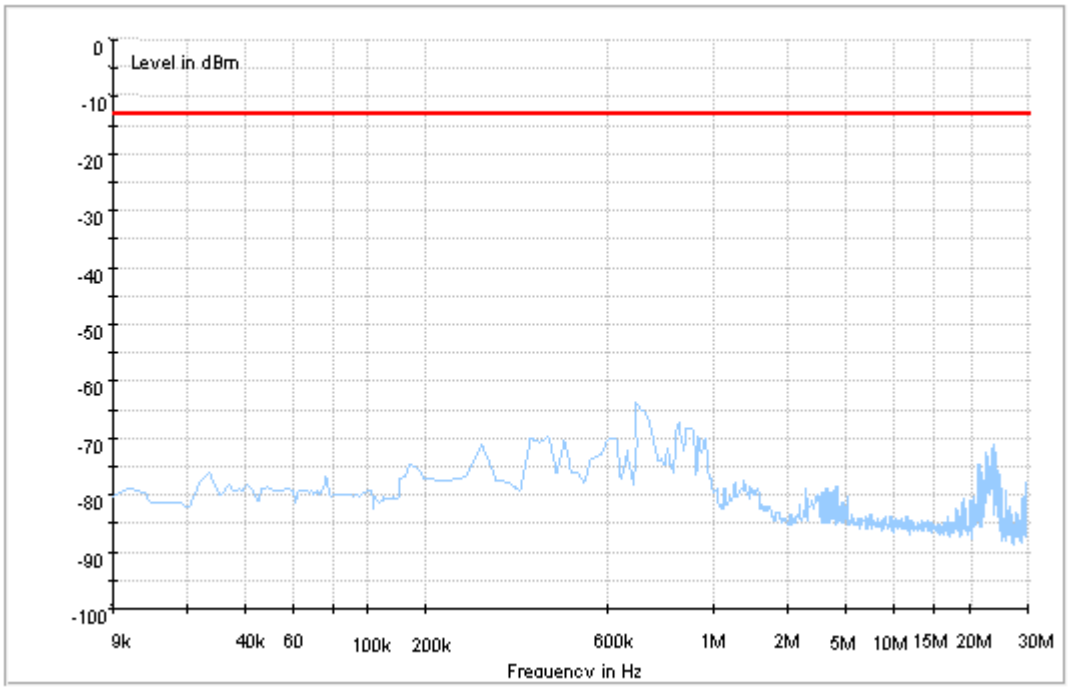


Copy of FCC PART22 GSM850_H

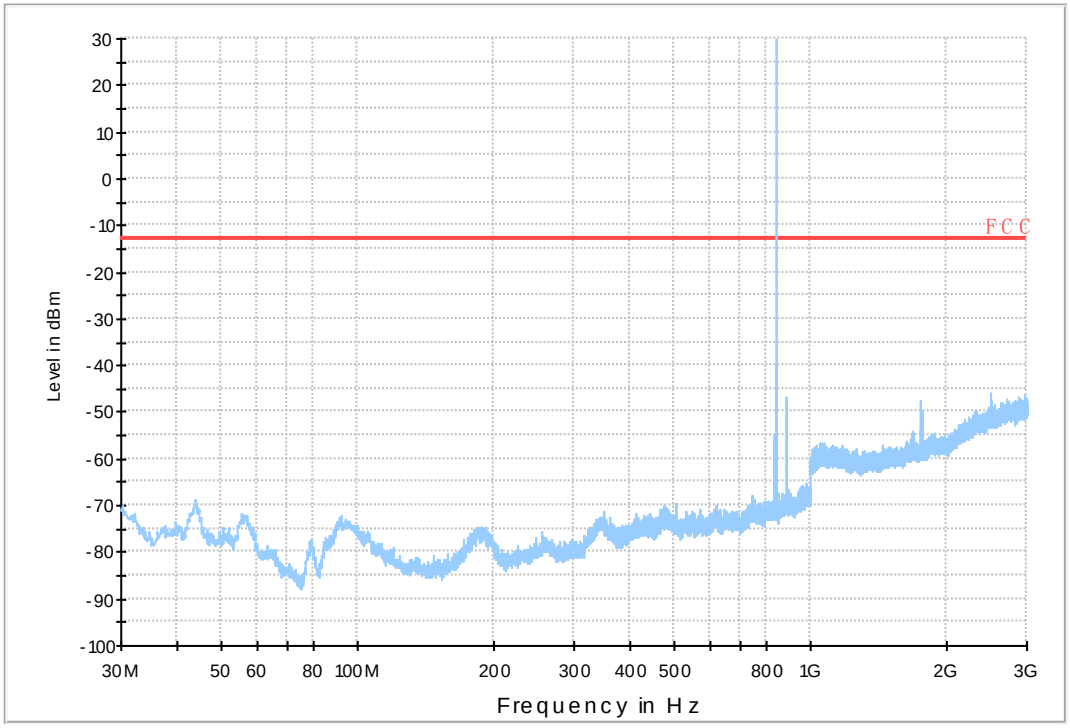


7.1.2 Test Band = GSM850_ANT2

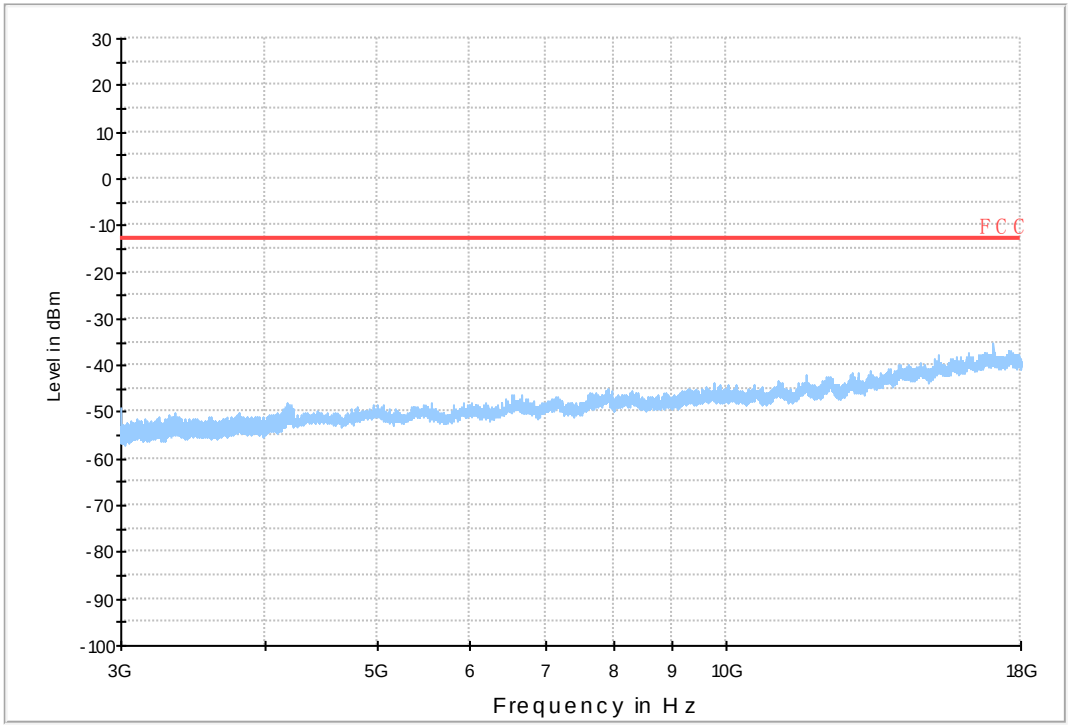
7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

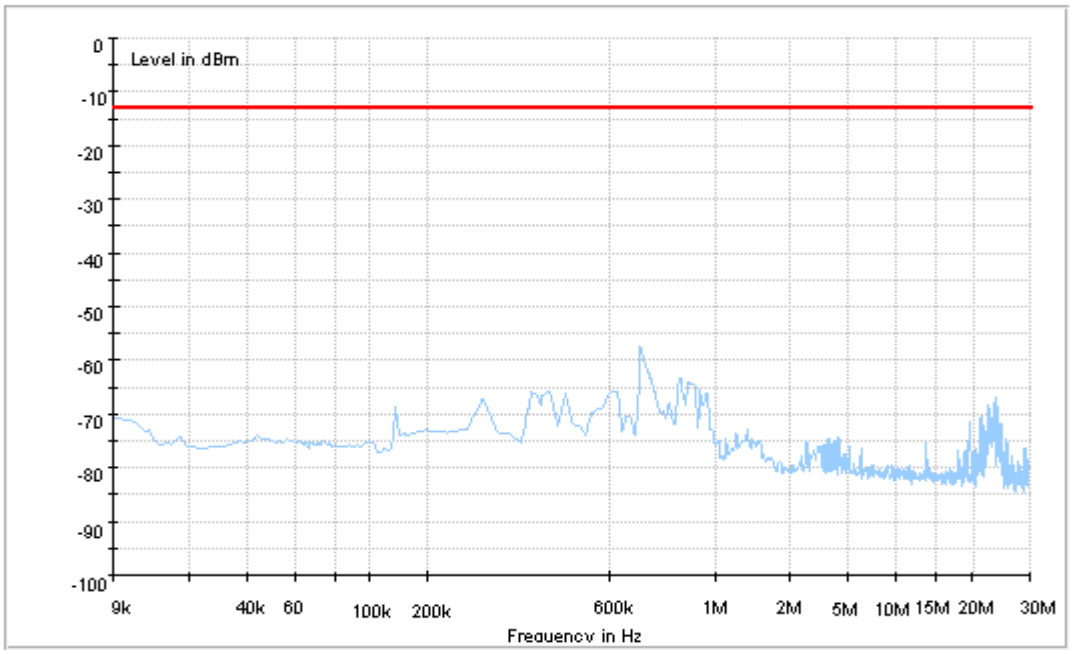


Copy of FCC PART22 GSM850_H

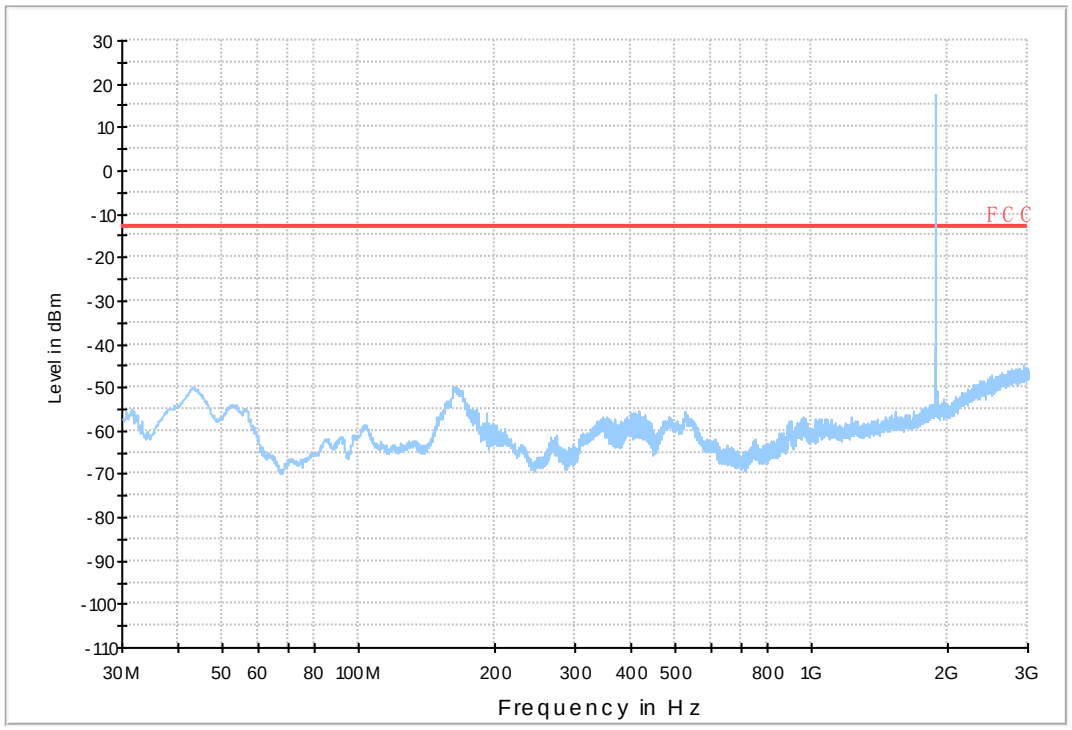


7.1.3 Test Band = GSM1900_ANT1

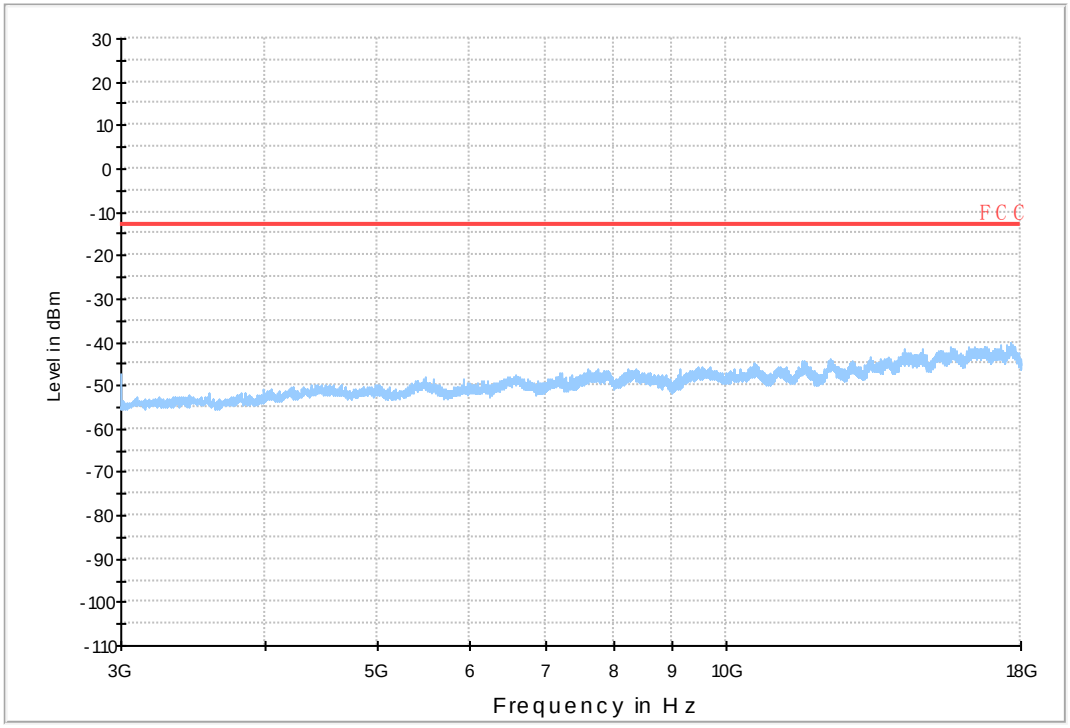
7.1.3.1 Test Mode = GSM/TM1

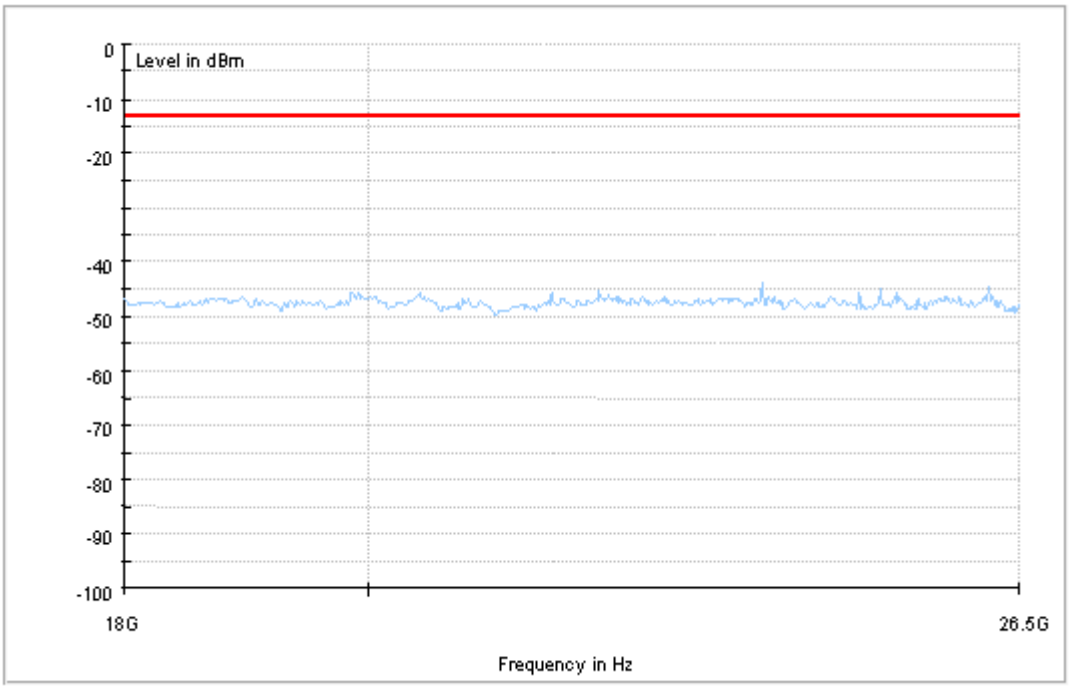


Copy of FCC PART24 GSM1900_L



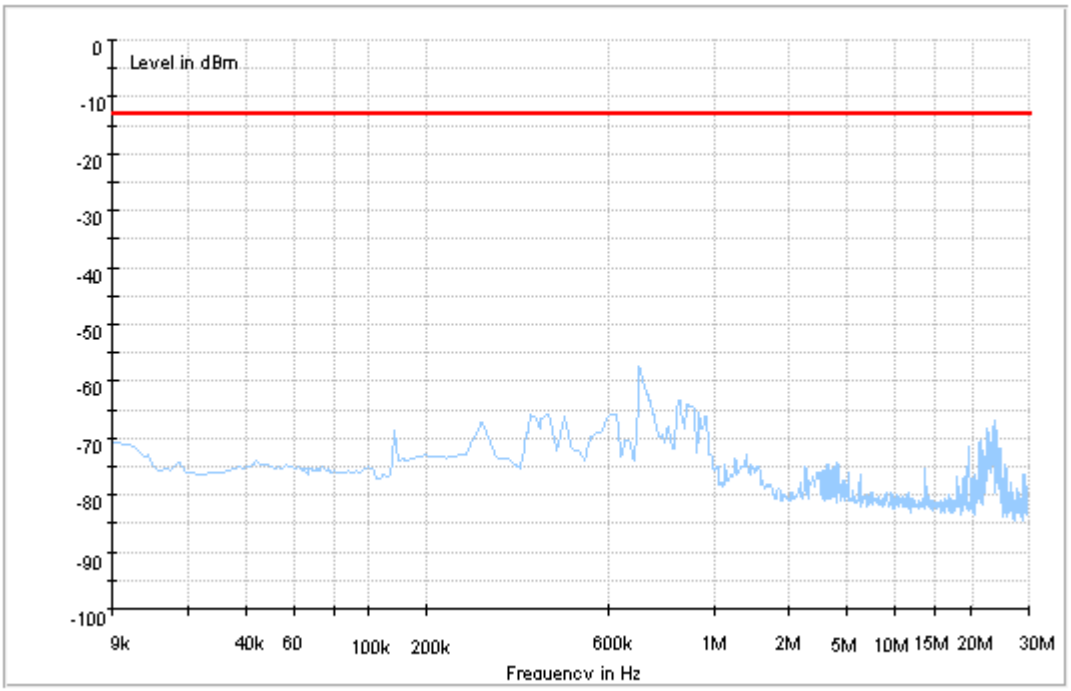
Copy of FCC PART24 GSM1900_H



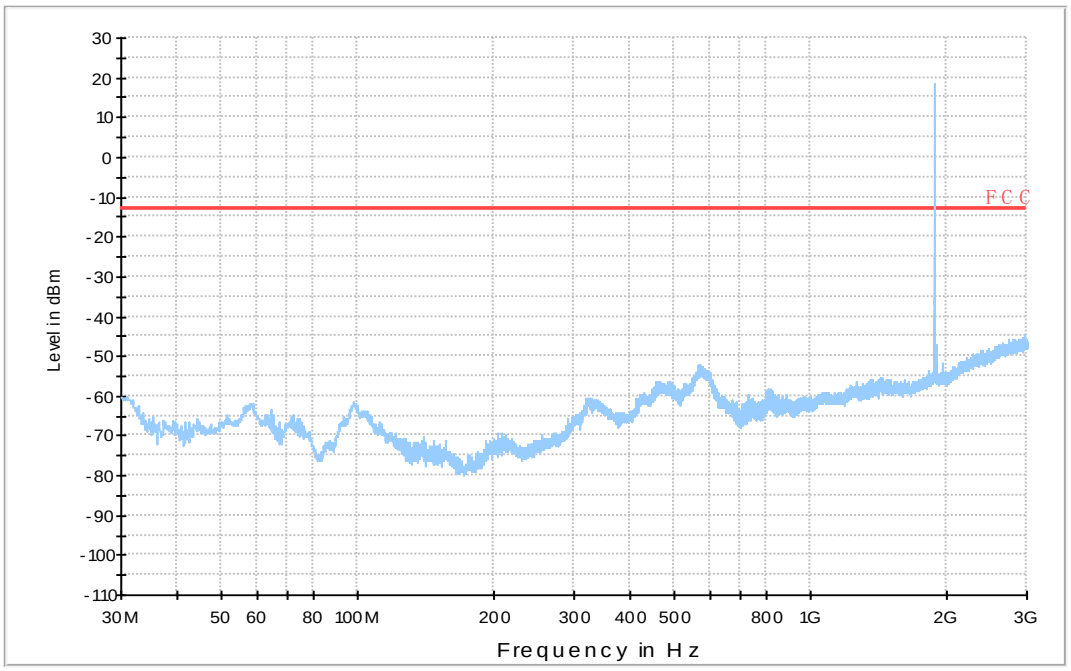


7.1.4 Test Band = GSM1900_ANT2

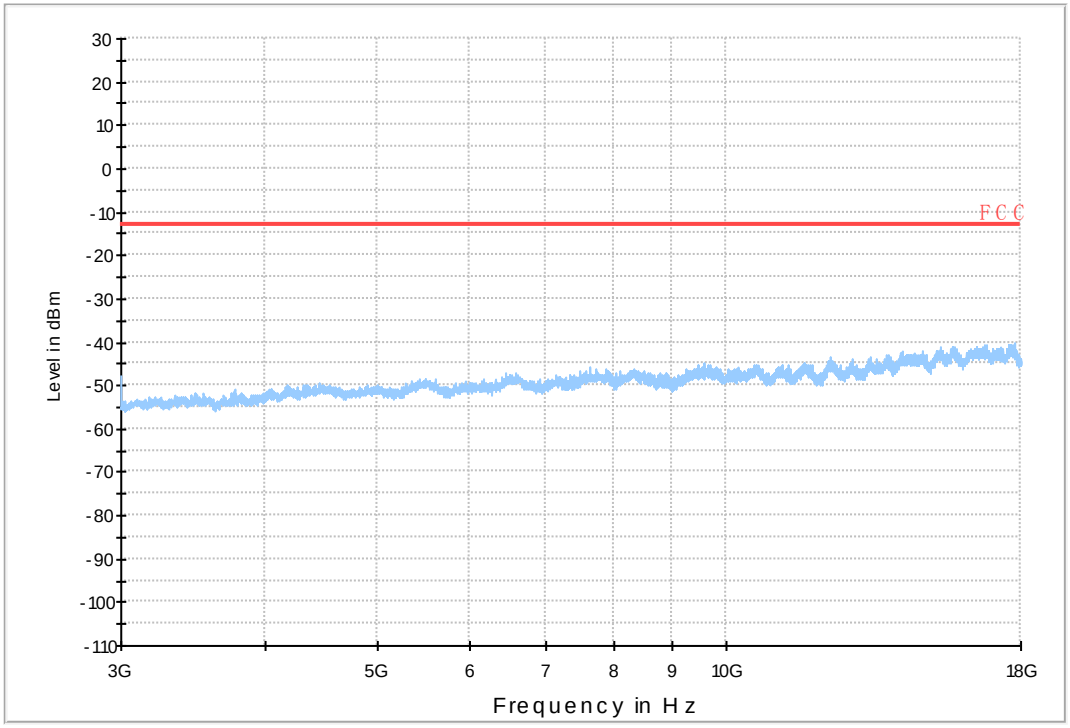
7.1.4.1 Test Mode = GSM/TM1

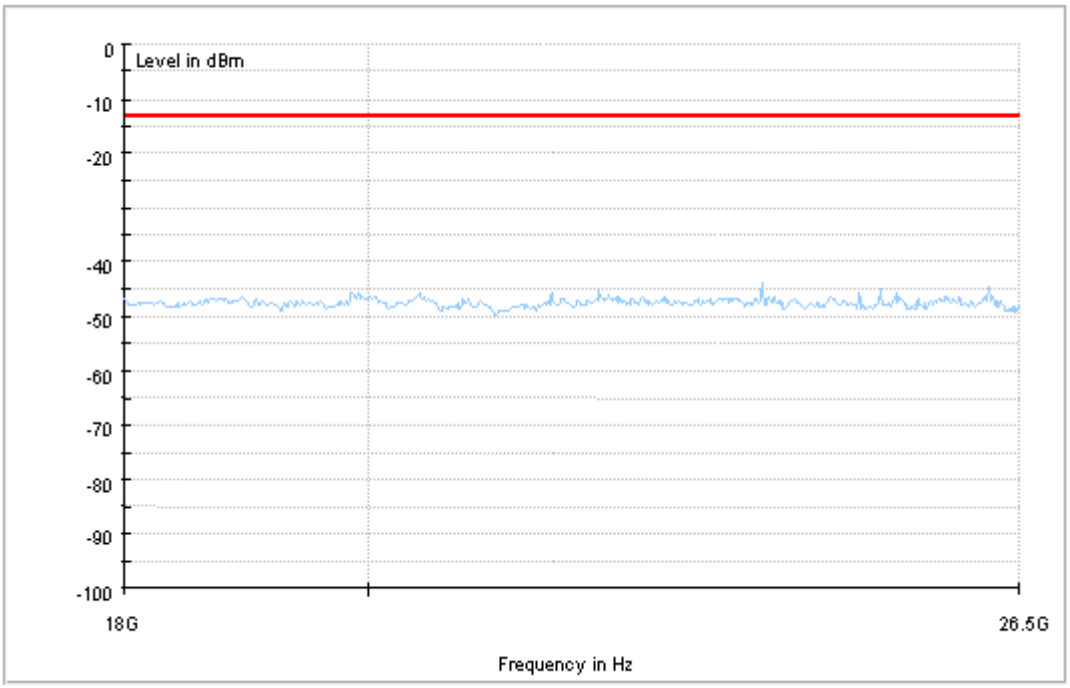


Copy of FCC PART24 GSM1900_L



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	-16.66	-0.02021	PASS
				VN	-11.95	-0.0145	PASS
				VH	-12.85	-0.01559	PASS
		MCH	TN	VL	-18.92	-0.02262	PASS
				VN	-20.79	-0.02485	PASS
				VH	-22.28	-0.02663	PASS
		HCH	TN	VL	-13.62	-0.01605	PASS
				VN	-8.85	-0.01043	PASS
				VH	-12.07	-0.01422	PASS
	GSM/TM2	LCH	TN	VL	-6.39	-0.00775	PASS
				VN	-10.01	-0.01215	PASS
				VH	-10.01	-0.01215	PASS
		MCH	TN	VL	-17.69	-0.02115	PASS
				VN	-10.30	-0.01231	PASS
				VH	-14.17	-0.01694	PASS
		HCH	TN	VL	-7.23	-0.00852	PASS
				VN	-6.23	-0.00734	PASS
				VH	-4.20	-0.00495	PASS
GSM1900	GSM/TM1	LCH	TN	VL	-63.02	-0.03406	PASS
				VN	-60.18	-0.03253	PASS
				VH	-60.63	-0.03277	PASS
		MCH	TN	VL	-10.53	-0.0056	PASS
				VN	-18.79	-0.00999	PASS
				VH	-21.57	-0.01147	PASS
		HCH	TN	VL	-33.84	-0.01772	PASS
				VN	-32.93	-0.01724	PASS
				VH	-37.65	-0.01971	PASS
	GSM/TM2	LCH	TN	VL	-28.38	-0.01534	PASS
				VN	-39.13	-0.02115	PASS
				VH	-52.11	-0.02816	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		MCH	TN	VL	1.26	0.00067	PASS
				VN	7.46	0.00397	PASS
				VH	-8.98	-0.00478	PASS
		HCH	TN	VL	-8.52	-0.00446	PASS
				VN	-12.27	-0.00642	PASS
				VH	-5.00	-0.00262	PASS

8.1.2Frequency Error vs. Temperature:

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM850	-30	GSM/TM1	LCH	VN	-10.91	-0.01324	PASS
			MCH	VN	-18.92	-0.02262	PASS
			HCH	VN	-9.81	-0.01156	PASS
	-20	GSM/TM1	LCH	VN	-11.36	-0.01378	PASS
			MCH	VN	-21.83	-0.02609	PASS
			HCH	VN	-11.95	-0.01408	PASS
	-10	GSM/TM1	LCH	VN	-11.11	-0.01348	PASS
			MCH	VN	-21.18	-0.02532	PASS
			HCH	VN	-10.78	-0.0127	PASS
	0	GSM/TM1	LCH	VN	-9.62	-0.01167	PASS
			MCH	VN	-19.95	-0.02385	PASS
			HCH	VN	-10.72	-0.01263	PASS
	10	GSM/TM1	LCH	VN	-11.75	-0.01426	PASS
			MCH	VN	-16.08	-0.01922	PASS
			HCH	VN	-11.62	-0.01369	PASS
	20	GSM/TM1	LCH	VN	-12.66	-0.01536	PASS
			MCH	VN	-20.66	-0.0247	PASS
			HCH	VN	-8.27	-0.00974	PASS
	30	GSM/TM1	LCH	VN	-11.17	-0.01355	PASS
			MCH	VN	-17.95	-0.02146	PASS
			HCH	VN	-6.33	-0.00746	PASS
	40	GSM/TM1	LCH	VN	-14.40	-0.01747	PASS
			MCH	VN	-20.79	-0.02485	PASS
			HCH	VN	-8.27	-0.00974	PASS
	50	GSM/TM1	LCH	VN	-13.04	-0.01582	PASS
			MCH	VN	-23.89	-0.02856	PASS
			HCH	VN	-8.98	-0.01058	PASS

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
	-30	GSM/TM2	LCH	VN	-12.49	-0.01515	PASS
			MCH	VN	-18.69	-0.02234	PASS
			HCH	VN	-8.65	-0.01019	PASS
	-20	GSM/TM2	LCH	VN	-12.66	-0.01536	PASS
			MCH	VN	-14.85	-0.01775	PASS
			HCH	VN	-10.30	-0.01213	PASS
	-10	GSM/TM2	LCH	VN	-9.62	-0.01167	PASS
			MCH	VN	-18.37	-0.02196	PASS
			HCH	VN	-9.98	-0.01176	PASS
	0	GSM/TM2	LCH	VN	-3.07	-0.00372	PASS
			MCH	VN	-10.27	-0.01228	PASS
			HCH	VN	-3.52	-0.00415	PASS
	10	GSM/TM2	LCH	VN	-10.40	-0.01262	PASS
			MCH	VN	-13.62	-0.01628	PASS
			HCH	VN	-7.10	-0.00836	PASS
	20	GSM/TM2	LCH	VN	-10.43	-0.01265	PASS
			MCH	VN	-12.95	-0.01548	PASS
			HCH	VN	-13.59	-0.01601	PASS
	30	GSM/TM2	LCH	VN	-11.04	-0.01339	PASS
			MCH	VN	-19.98	-0.02388	PASS
			HCH	VN	-1.68	-0.00198	PASS
	40	GSM/TM2	LCH	VN	-2.55	-0.00309	PASS
			MCH	VN	-13.82	-0.01652	PASS
			HCH	VN	-3.03	-0.00357	PASS
	50	GSM/TM2	LCH	VN	-6.26	-0.0076	PASS
			MCH	VN	-17.24	-0.02061	PASS
			HCH	VN	-8.88	-0.01046	PASS
GSM1900	-30	GSM/TM1	LCH	VN	-55.34	-0.02991	PASS
			MCH	VN	-12.27	-0.00653	PASS
			HCH	VN	-32.03	-0.01677	PASS
	-20	GSM/TM1	LCH	VN	-55.08	-0.02977	PASS
			MCH	VN	-12.33	-0.00656	PASS
			HCH	VN	-35.32	-0.01849	PASS
	-10	GSM/TM1	LCH	VN	-58.82	-0.03179	PASS
			MCH	VN	-11.43	-0.00608	PASS
			HCH	VN	-38.29	-0.02005	PASS
	0	GSM/TM1	LCH	VN	-61.67	-0.03333	PASS
			MCH	VN	-14.33	-0.00762	PASS
			HCH	VN	-41.26	-0.0216	PASS
	10	GSM/TM1	LCH	VN	-62.25	-0.03365	PASS

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			MCH	VN	-8.59	-0.00457	PASS
			HCH	VN	-36.61	-0.01917	PASS
	20	GSM/TM1	LCH	VN	-58.31	-0.03152	PASS
			MCH	VN	-11.43	-0.00608	PASS
			HCH	VN	-32.74	-0.01714	PASS
	30	GSM/TM1	LCH	VN	-55.27	-0.02987	PASS
			MCH	VN	-17.89	-0.00952	PASS
			HCH	VN	-42.62	-0.02232	PASS
	40	GSM/TM1	LCH	VN	-58.95	-0.03186	PASS
			MCH	VN	-13.56	-0.00721	PASS
			HCH	VN	-38.68	-0.02025	PASS
	50	GSM/TM1	LCH	VN	-56.95	-0.03078	PASS
			MCH	VN	-14.85	-0.0079	PASS
			HCH	VN	-45.98	-0.02408	PASS
	-30	GSM/TM2	LCH	VN	-38.48	-0.0208	PASS
			MCH	VN	-1.78	-0.00095	PASS
			HCH	VN	-6.01	-0.00315	PASS
	-20	GSM/TM2	LCH	VN	-30.87	-0.01668	PASS
			MCH	VN	5.46	0.0029	PASS
			HCH	VN	-2.68	-0.0014	PASS
	-10	GSM/TM2	LCH	VN	-43.20	-0.02335	PASS
			MCH	VN	-1.32	-0.0007	PASS
			HCH	VN	-6.72	-0.00352	PASS
	0	GSM/TM2	LCH	VN	-44.91	-0.02427	PASS
			MCH	VN	9.14	0.00486	PASS
			HCH	VN	-1.78	-0.00093	PASS
	10	GSM/TM2	LCH	VN	-38.23	-0.02066	PASS
			MCH	VN	-3.45	-0.00184	PASS
			HCH	VN	-15.92	-0.00834	PASS
	20	GSM/TM2	LCH	VN	-26.02	-0.01406	PASS
			MCH	VN	-6.94	-0.00369	PASS
			HCH	VN	-8.39	-0.00439	PASS
	30	GSM/TM2	LCH	VN	-38.97	-0.02106	PASS
			MCH	VN	-6.72	-0.00357	PASS
			HCH	VN	-10.75	-0.00563	PASS
	40	GSM/TM2	LCH	VN	-40.16	-0.02171	PASS
			MCH	VN	-8.27	-0.0044	PASS
			HCH	VN	-6.81	-0.00357	PASS
	50	GSM/TM2	LCH	VN	-33.54	-0.01813	PASS
			MCH	VN	-4.42	-0.00235	PASS

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			HCH	VN	-18.63	-0.00975	PASS

END