Appendix for test report

1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.8	28.55	38.5	PASS
		MCH	33.18	28.93	38.5	PASS
		HCH	33.39	29.14	38.5	PASS
	GSM/TM2	LCH	27.63	23.38	38.5	PASS
		MCH	27.7	23.45	38.5	PASS
		HCH	27.71	23.46	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	30.58	30.68	33	PASS
		MCH	30.4	30.50	33	PASS
		HCH	30.76	30.86	33	PASS
	GSM/TM2	LCH	26.68	26.78	33	PASS
		MCH	26.63	26.73	33	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
		HCH	26.72	26.82	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
GSM1900	GSM/TM1	LCH	0.45	13	PASS
		MCH	0.44	13	PASS
		HCH	0.38	13	PASS
	GSM/TM2	LCH	3.51	13	PASS
		MCH	3.52	13	PASS
		HCH	3.69	13	PASS
GSM850	GSM/TM1	LCH	0.37	13	PASS
		MCH	0.34	13	PASS
		HCH	0.31	13	PASS
	GSM/TM2	LCH	3.23	13	PASS
		MCH	3.14	13	PASS
		HCH	3.17	13	PASS

3Appendix_C: Modulation Characteristics

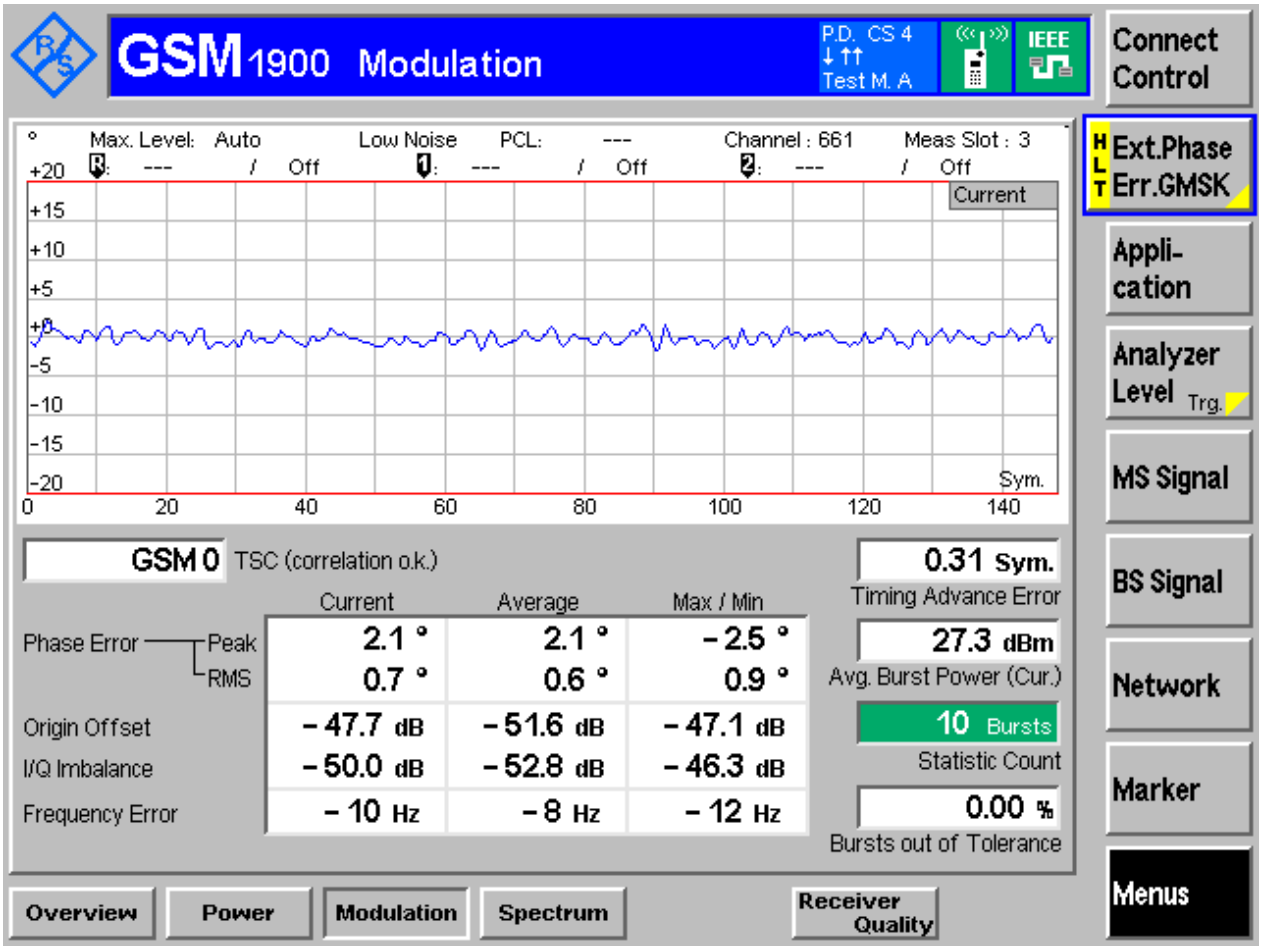
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM1900

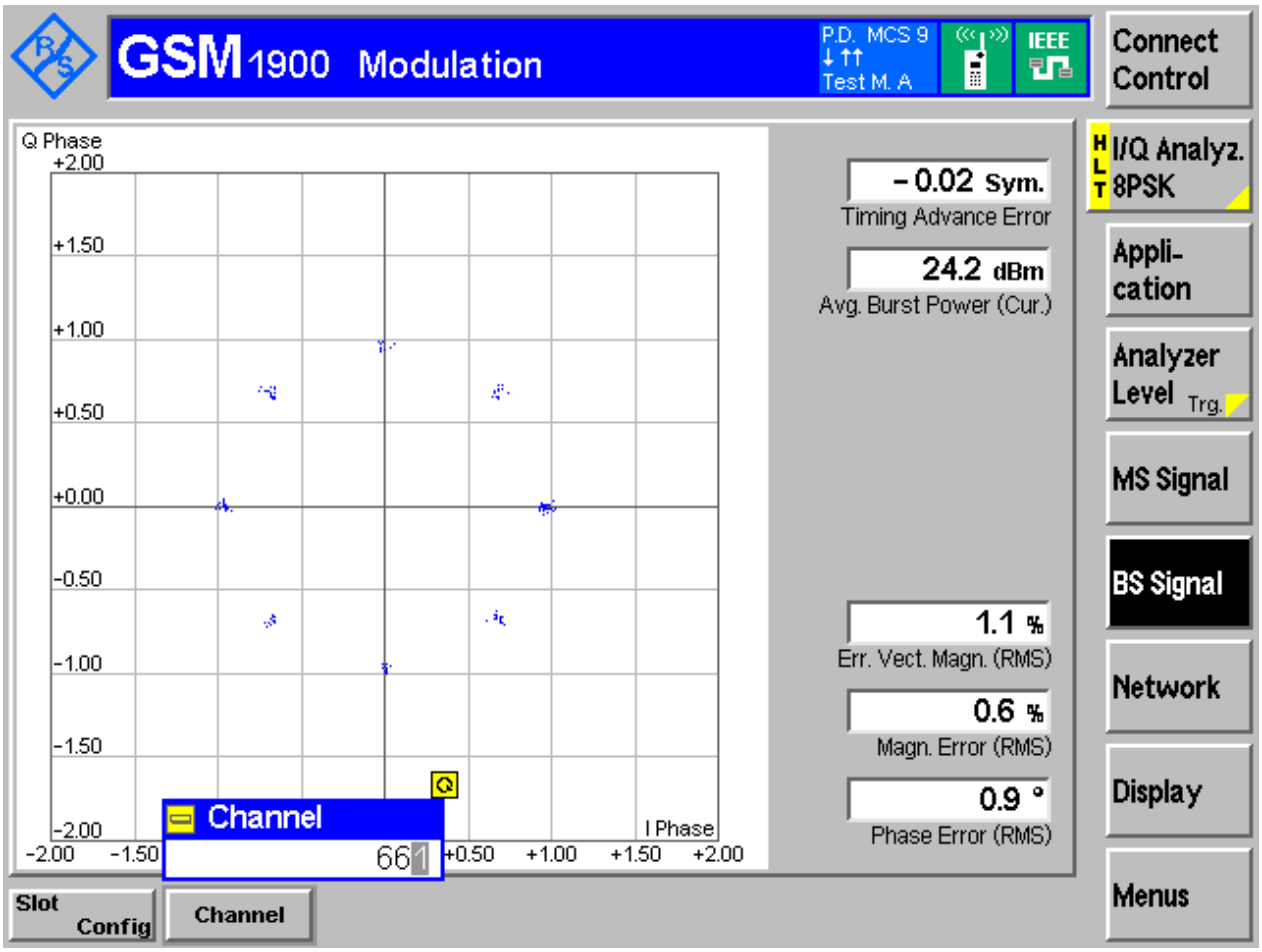
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

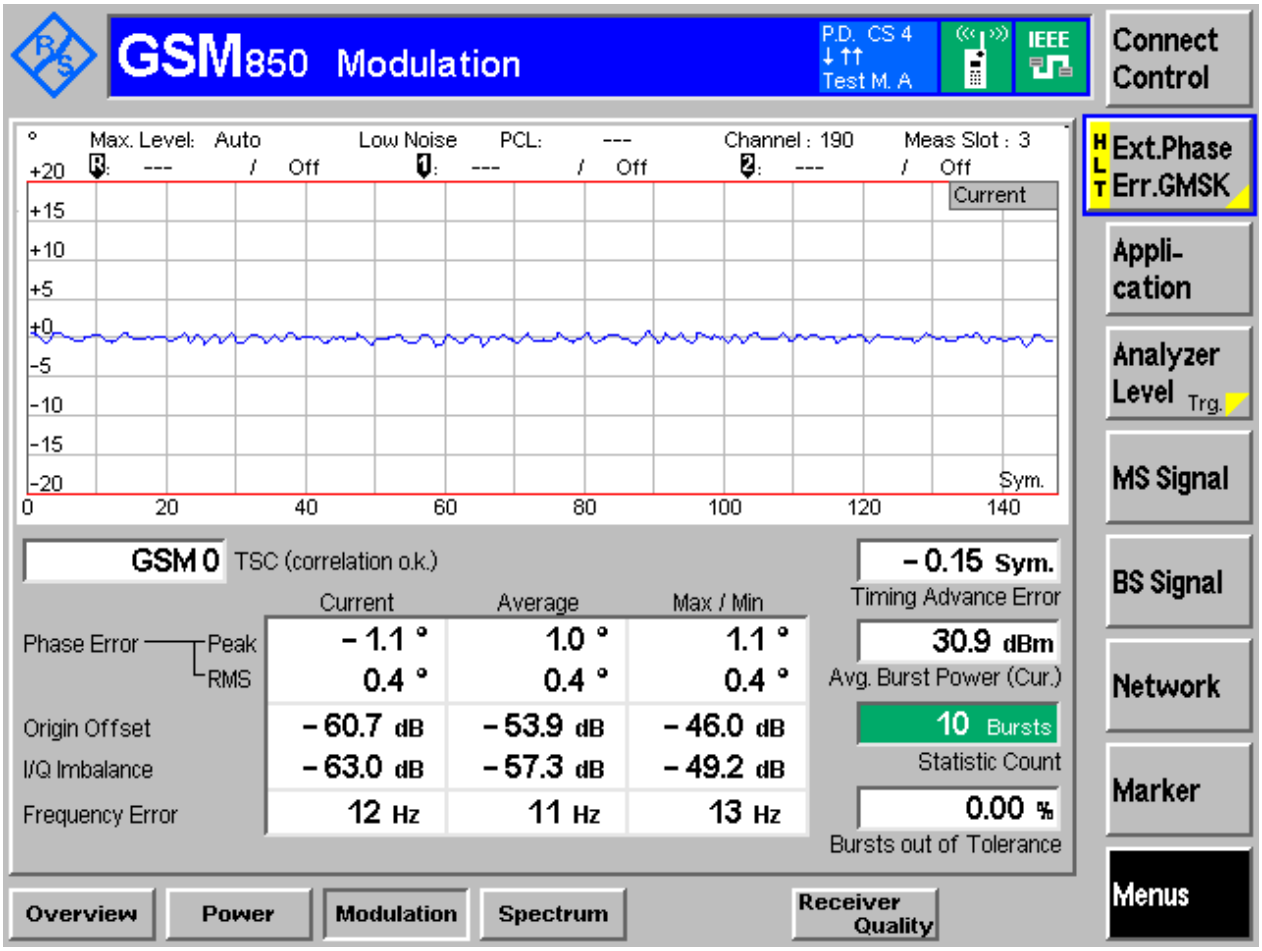
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM850

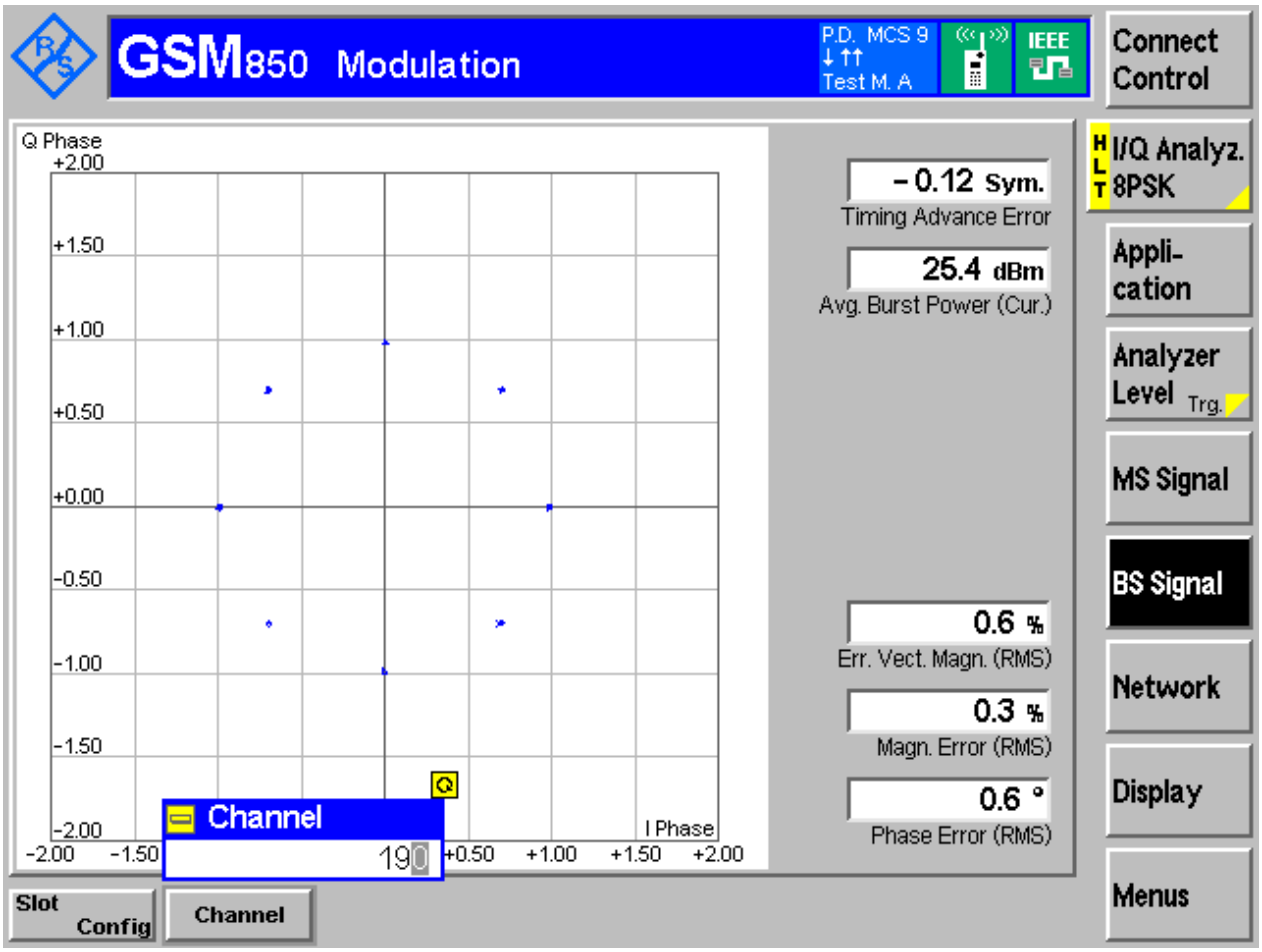
3.1.2.1 Test Mode = GSM/TM1

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	241.38	318.11	Pass
		MCH	243.23	318.55	Pass
		HCH	246.92	319.51	Pass
	GSM/TM2	LCH	238.71	312.8	Pass
		MCH	237.28	299.30	Pass
		HCH	239.31	301.2	Pass
GSM1900	GSM/TM1	LCH	244.85	314.04	Pass
		MCH	246.96	317.28	Pass
		HCH	245.77	318.56	Pass
	GSM/TM2	LCH	243.5	310.0	Pass
		MCH	242.59	314.20	Pass
		HCH	239.74	311.38	Pass

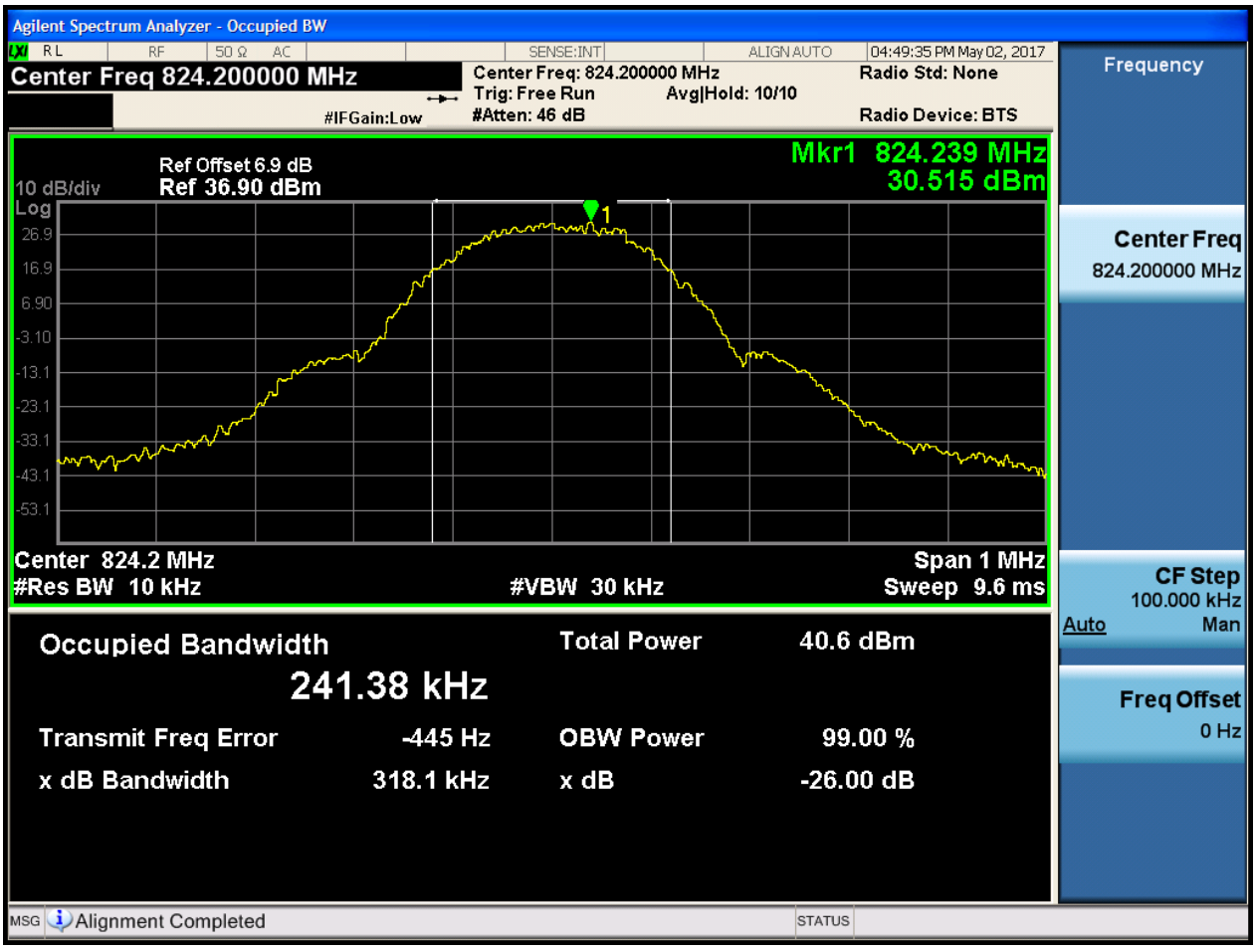
Part II - Test Plots

4.1 For GSM

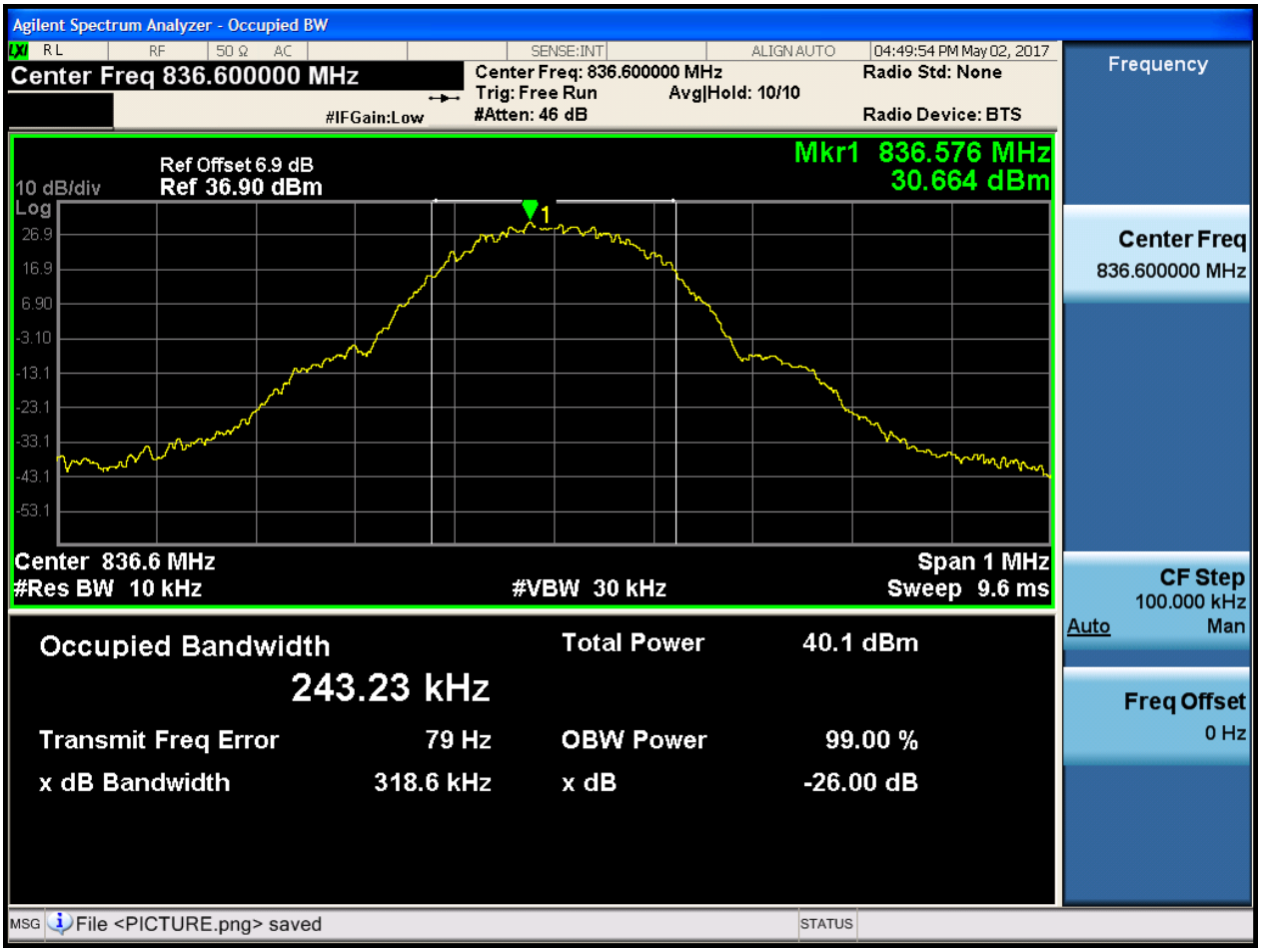
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

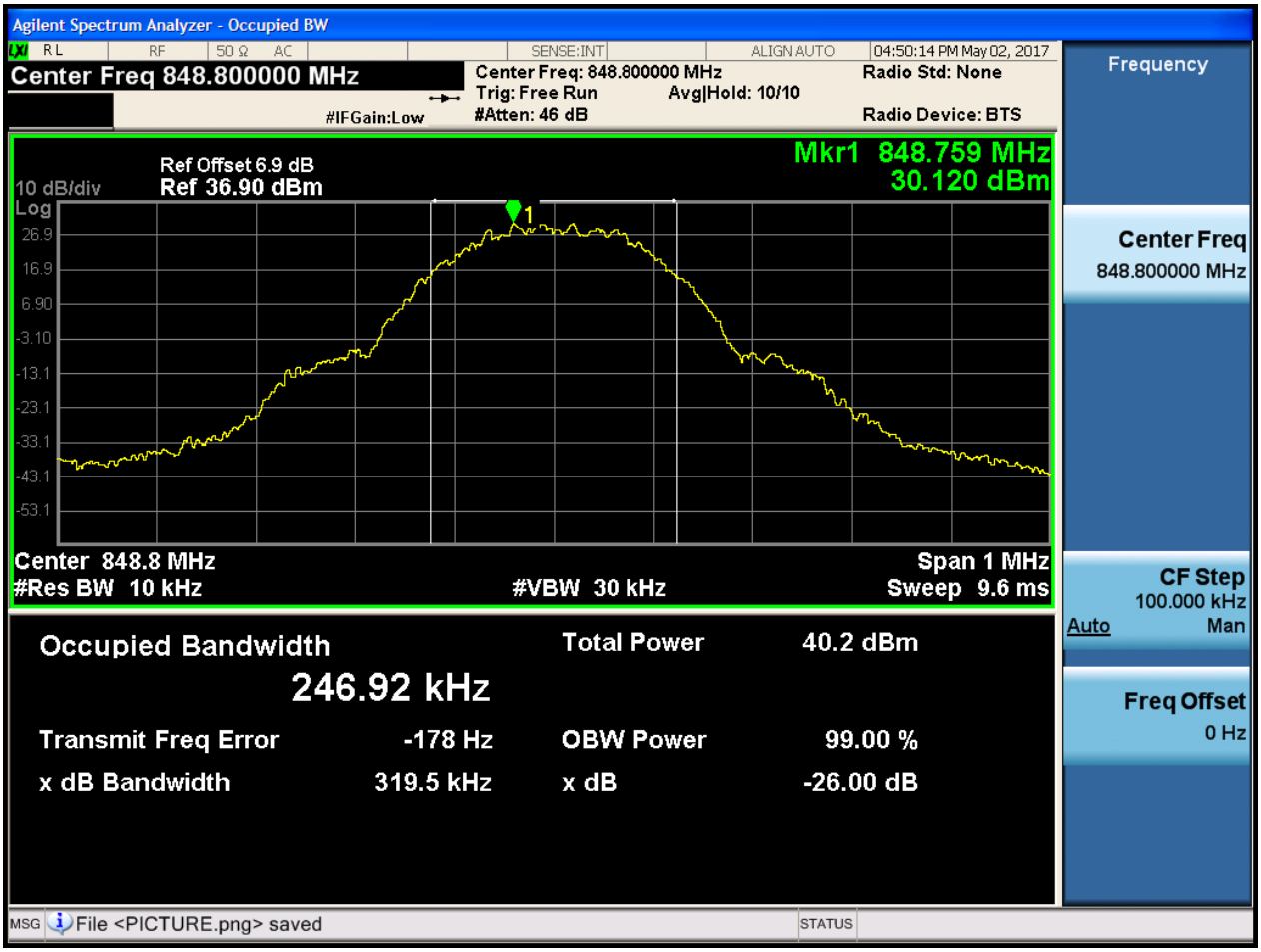
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

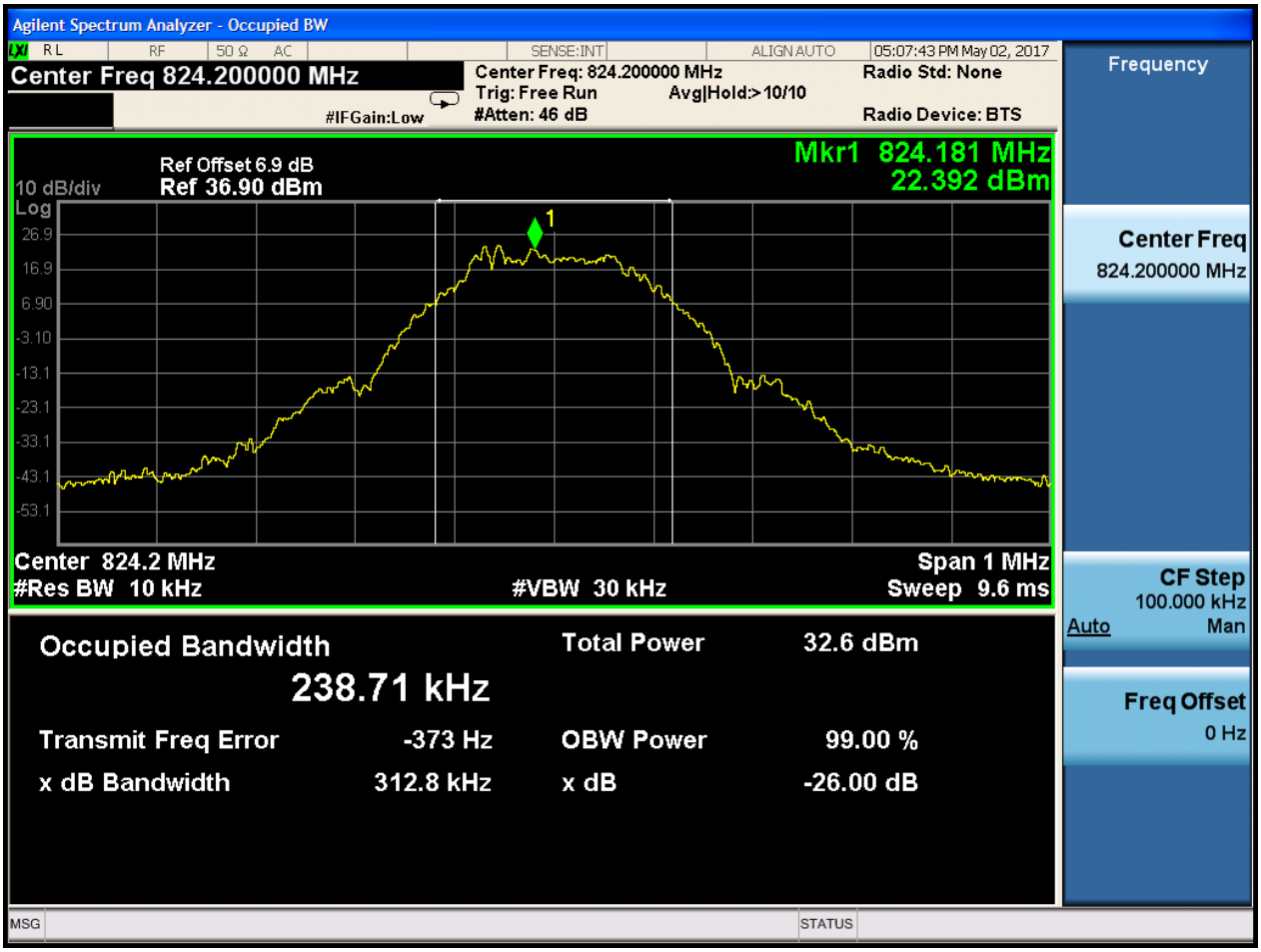


4.1.1.1.3 Test Channel = HCH

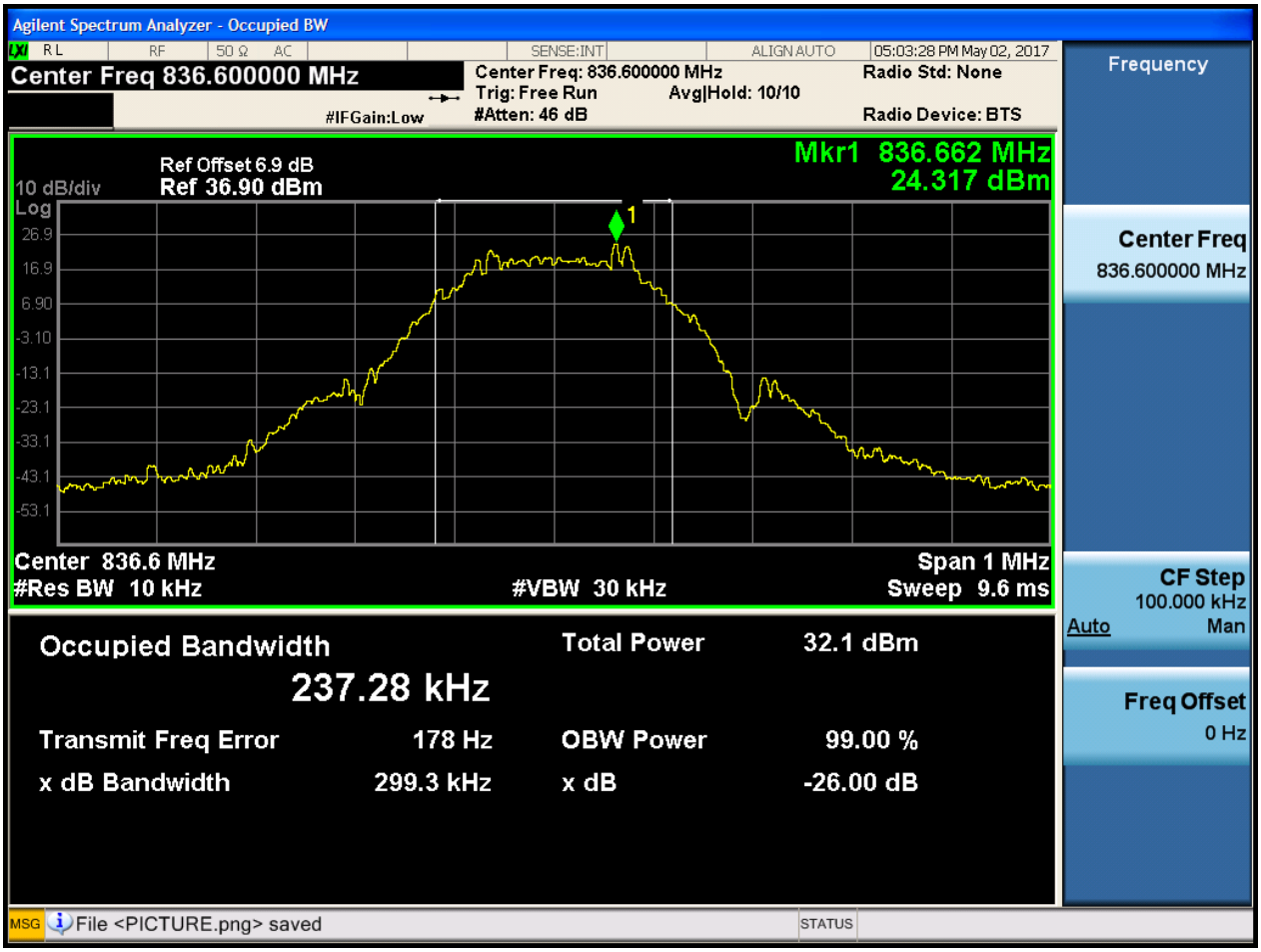


4.1.1.2 Test Mode = GSM/TM2

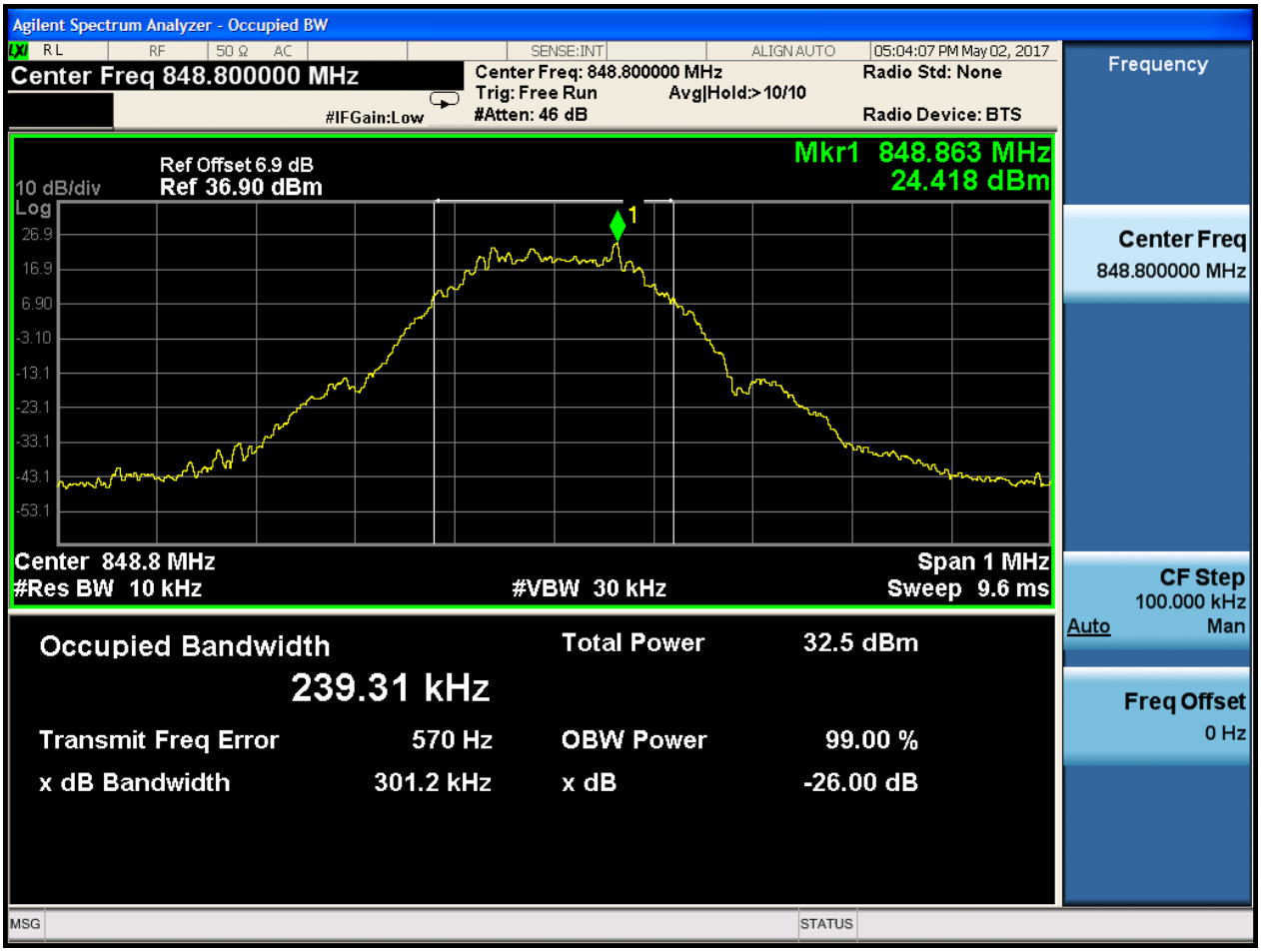
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



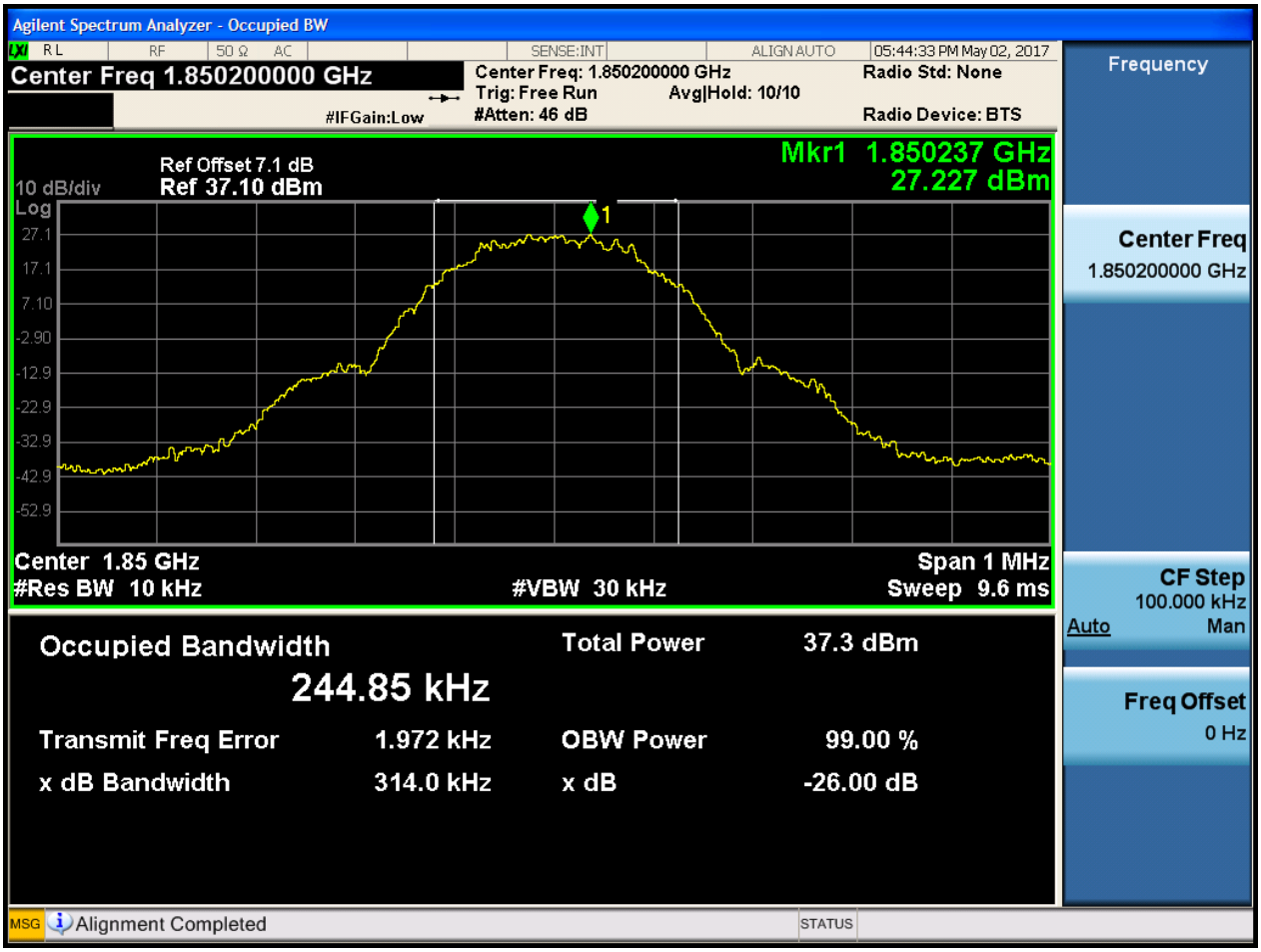
4.1.1.2.3 Test Channel = HCH



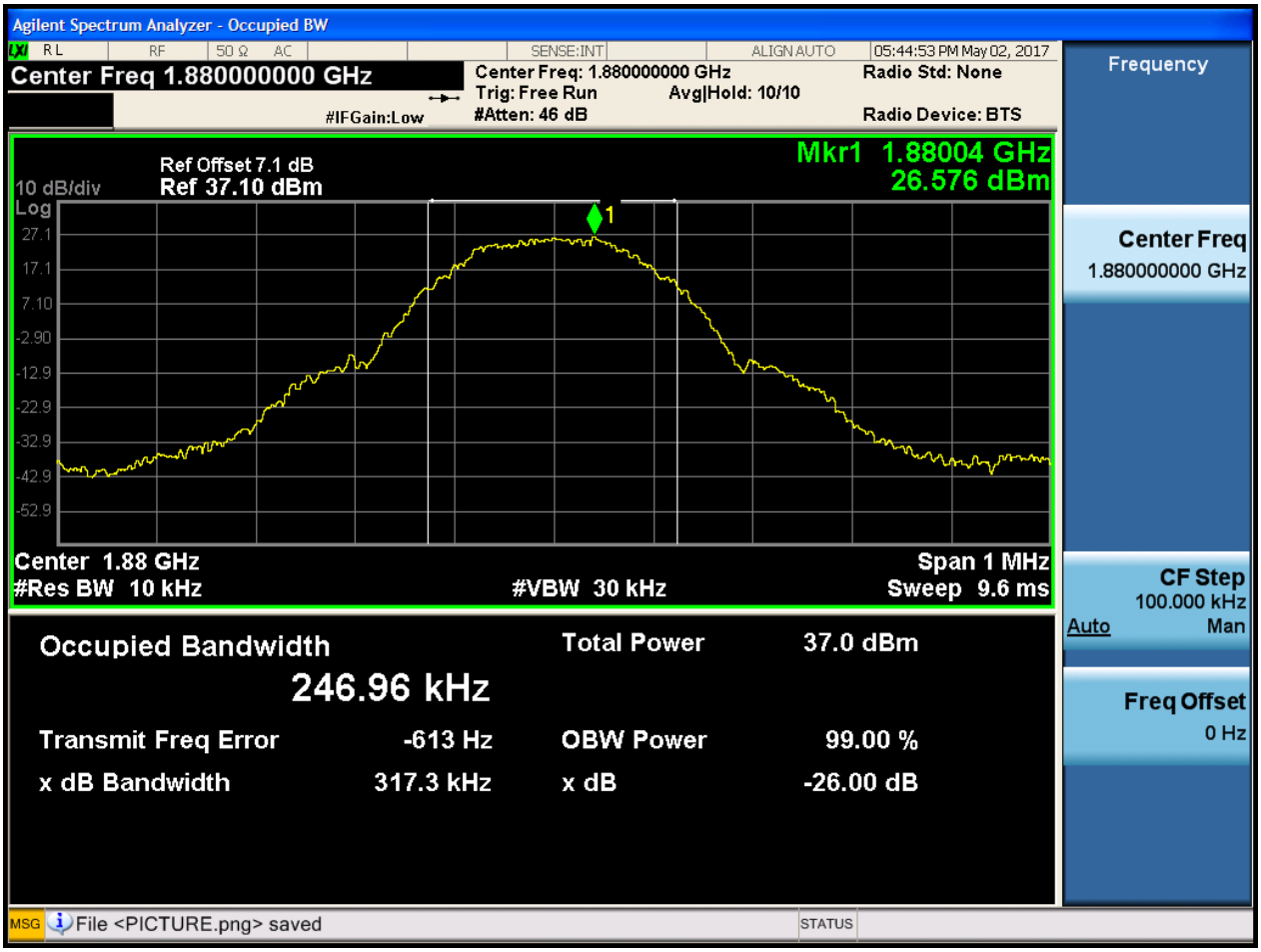
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

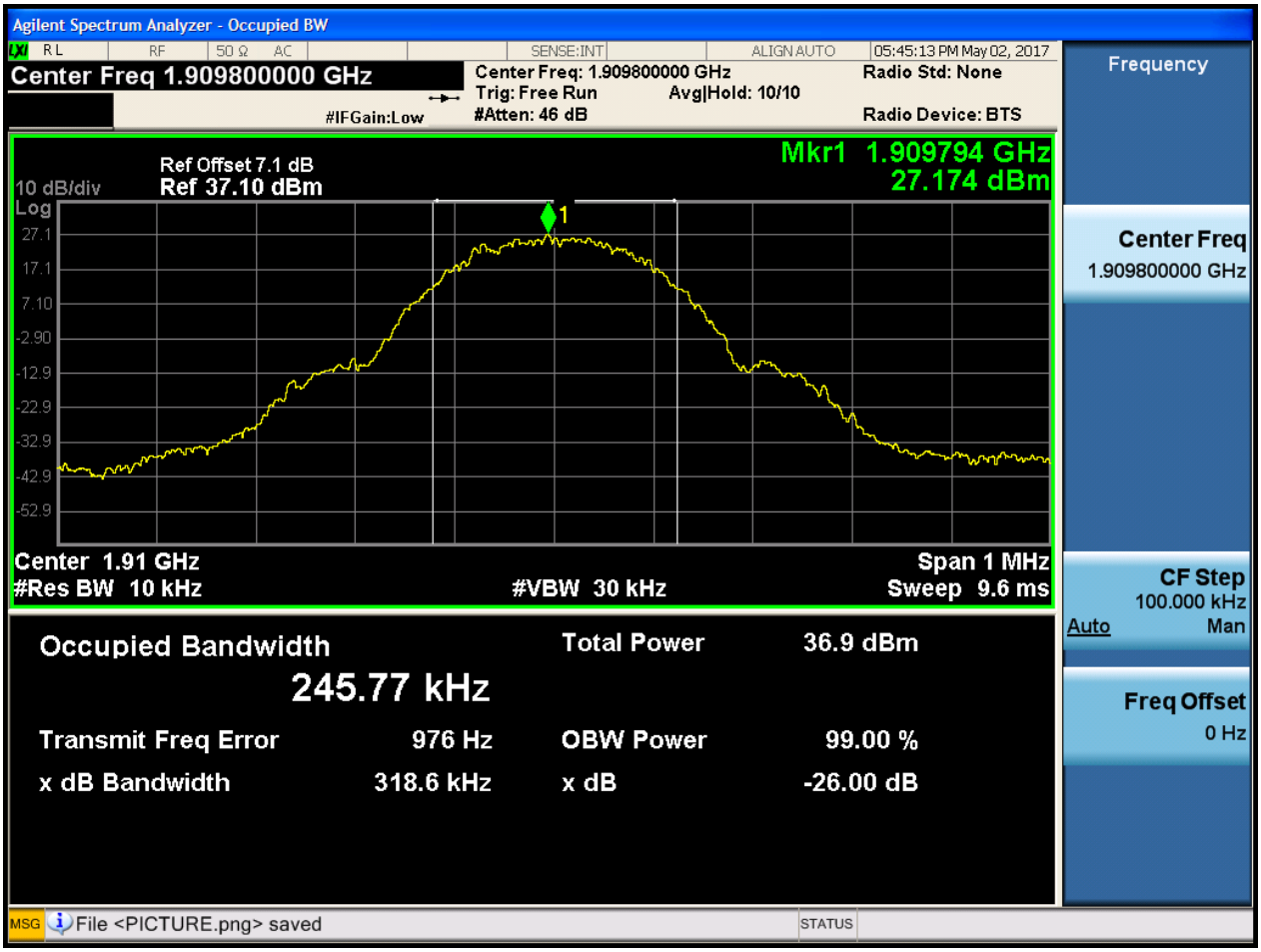
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

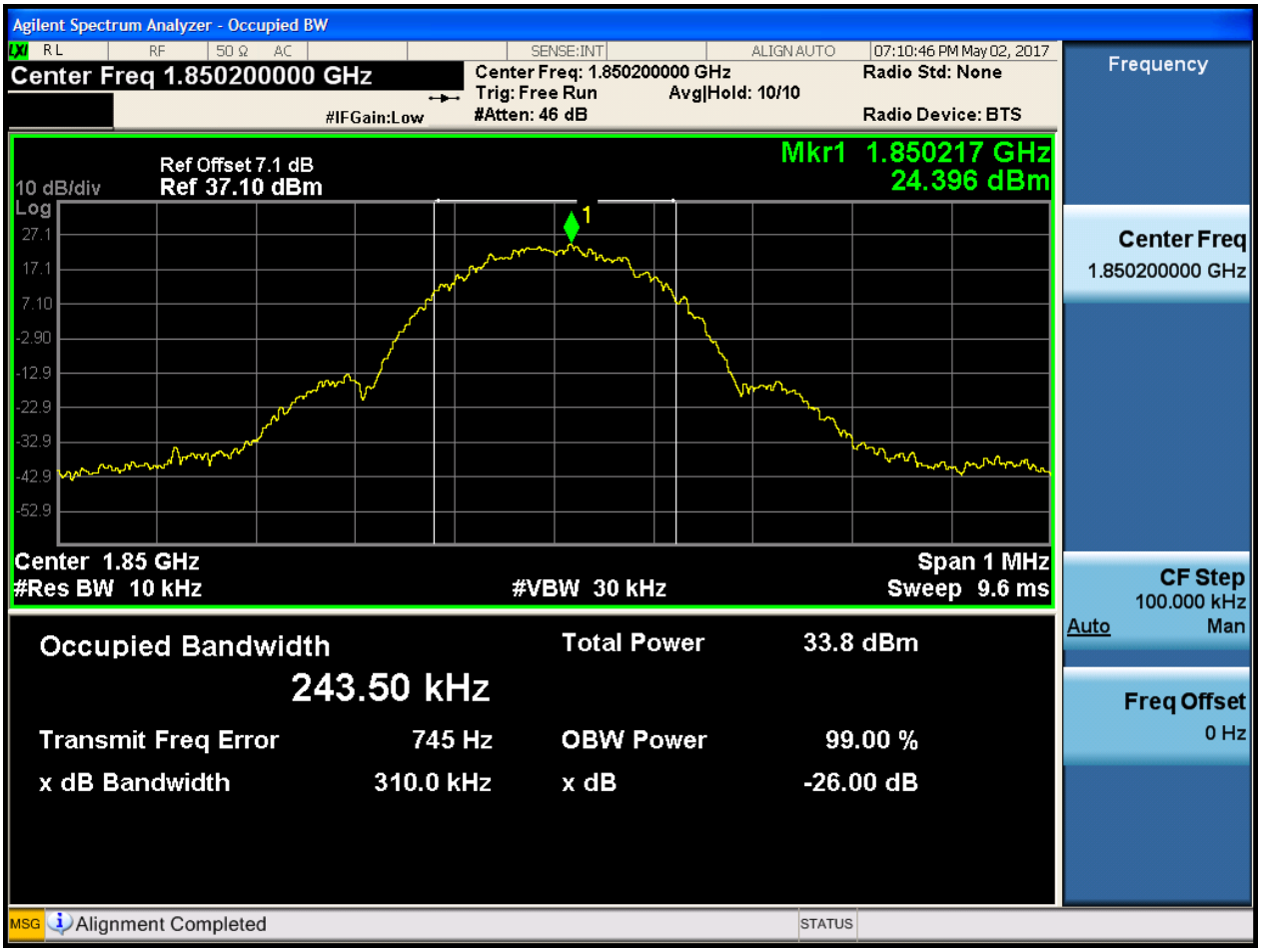


4.1.2.1.3 Test Channel = HCH

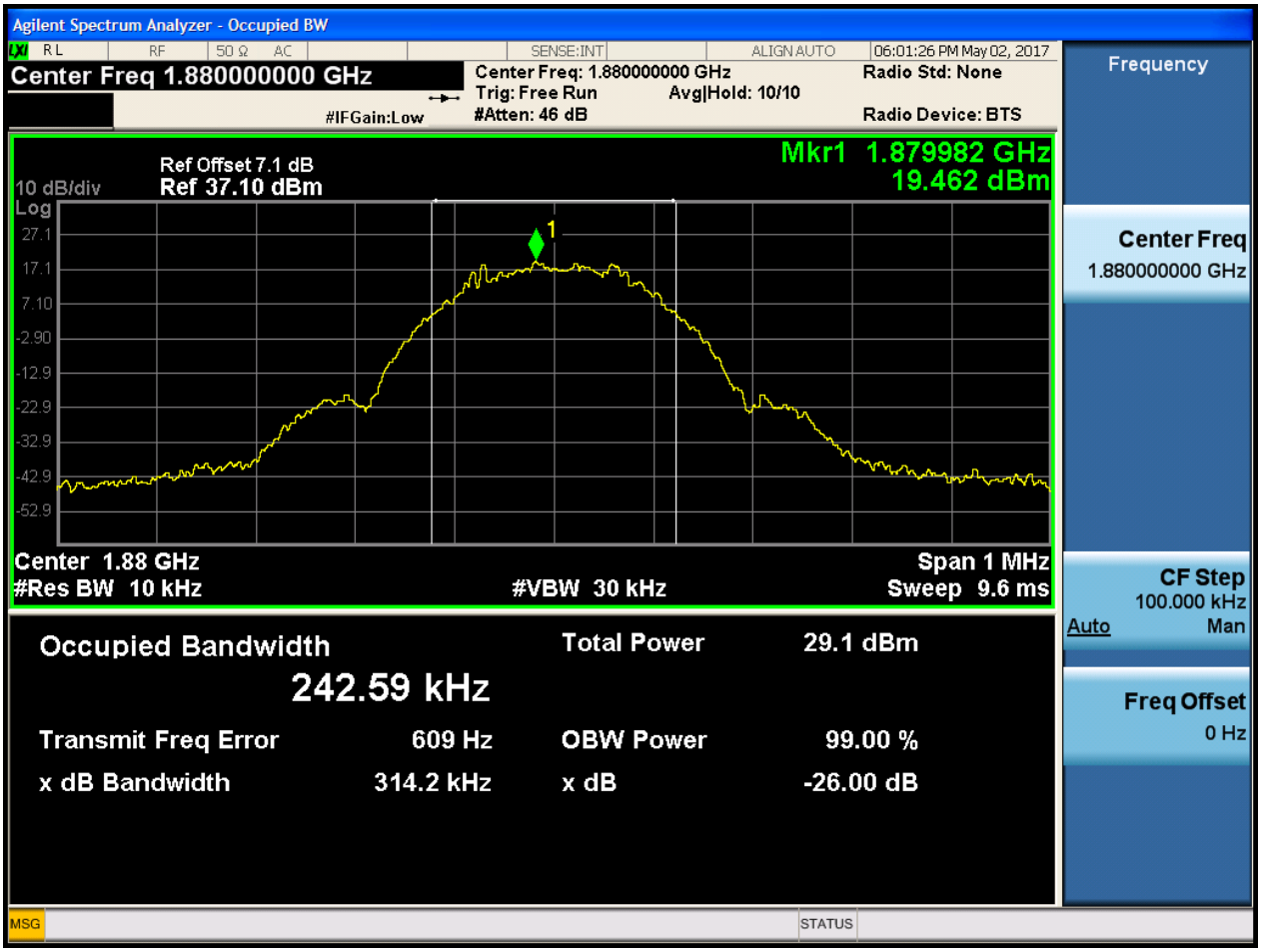


4.1.2.2 Test Mode = GSM/TM2

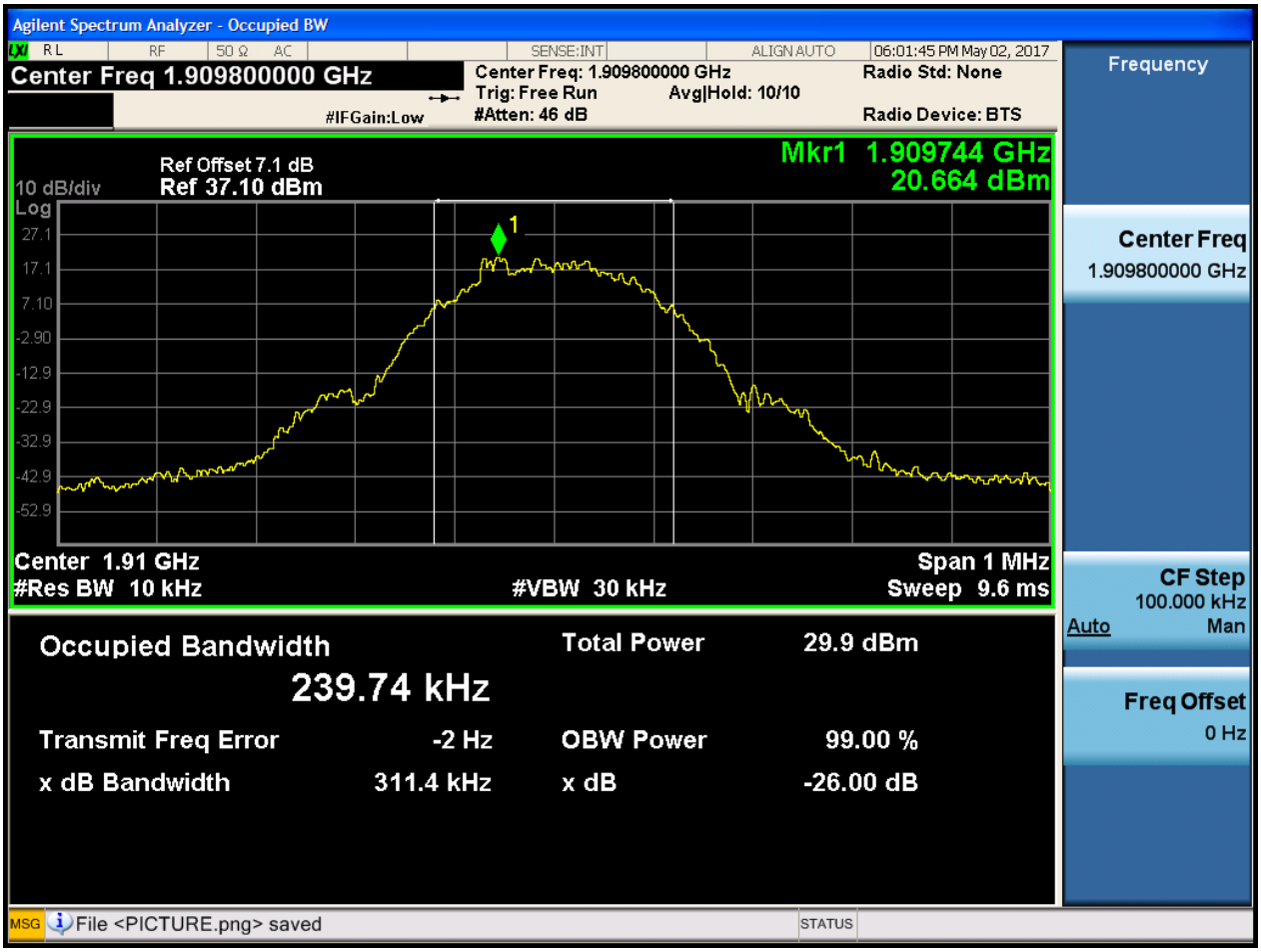
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

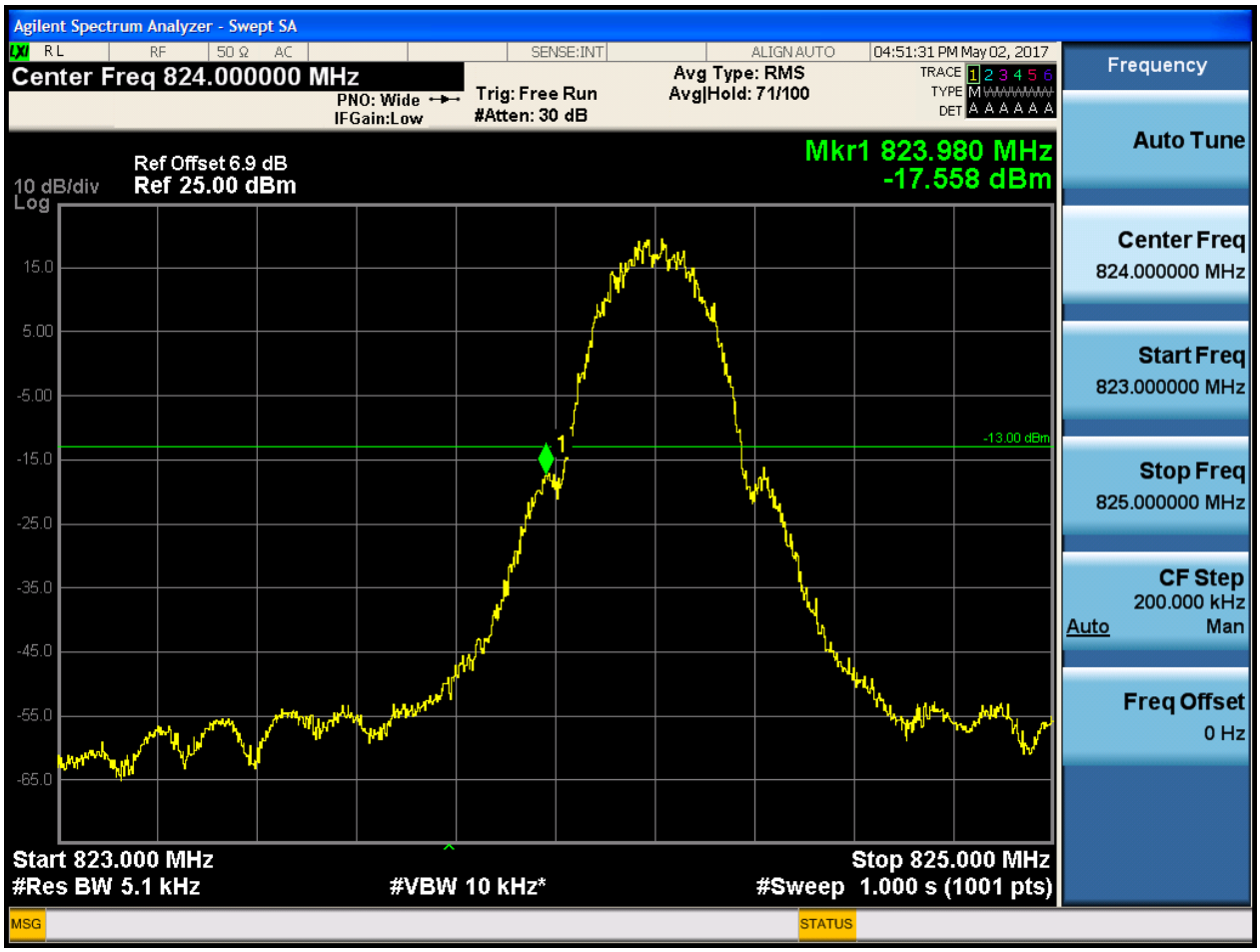
Part I - Test Plots

5.1 For GSM

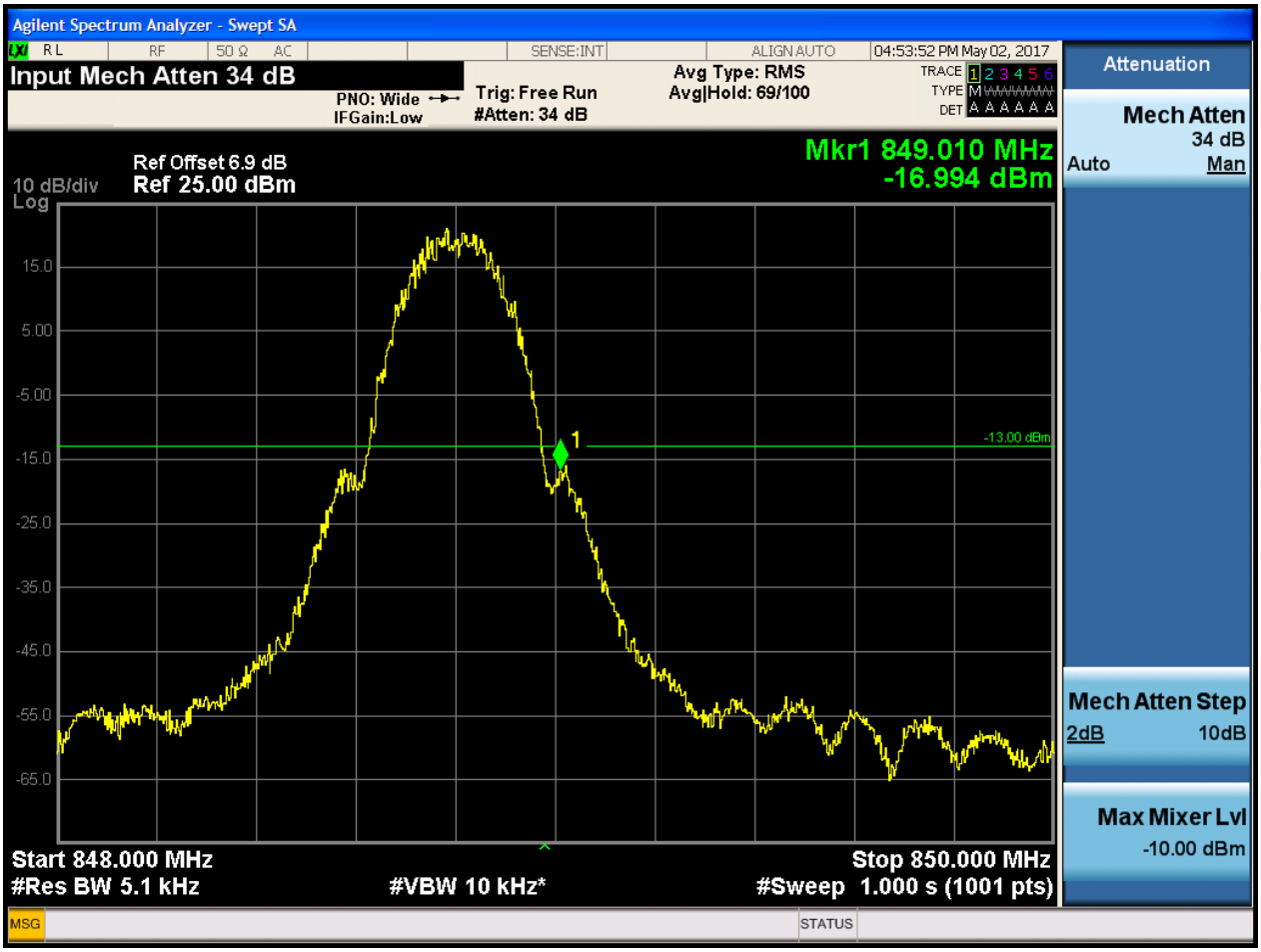
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

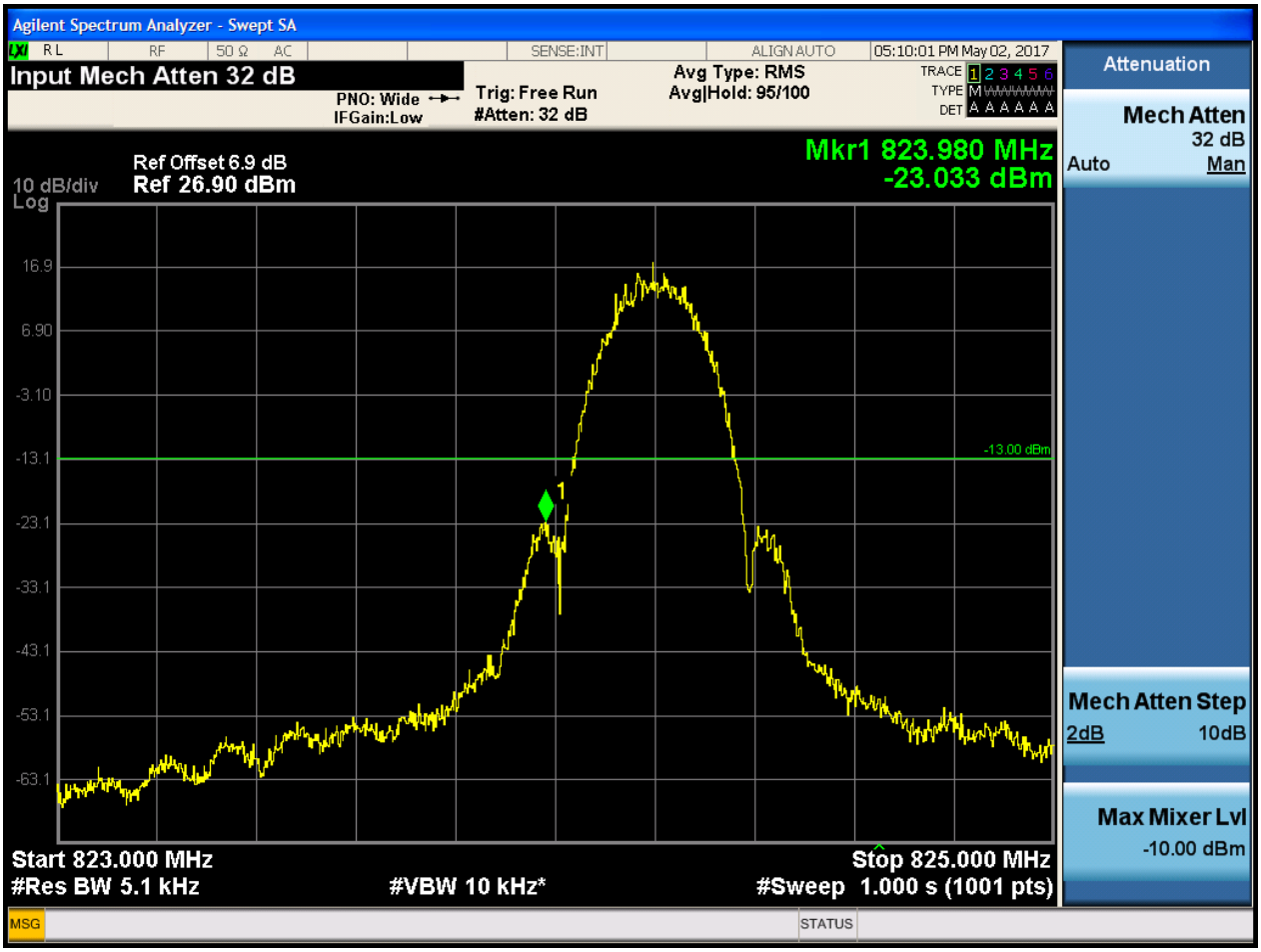


5.1.1.1.2 Test Channel = HCH

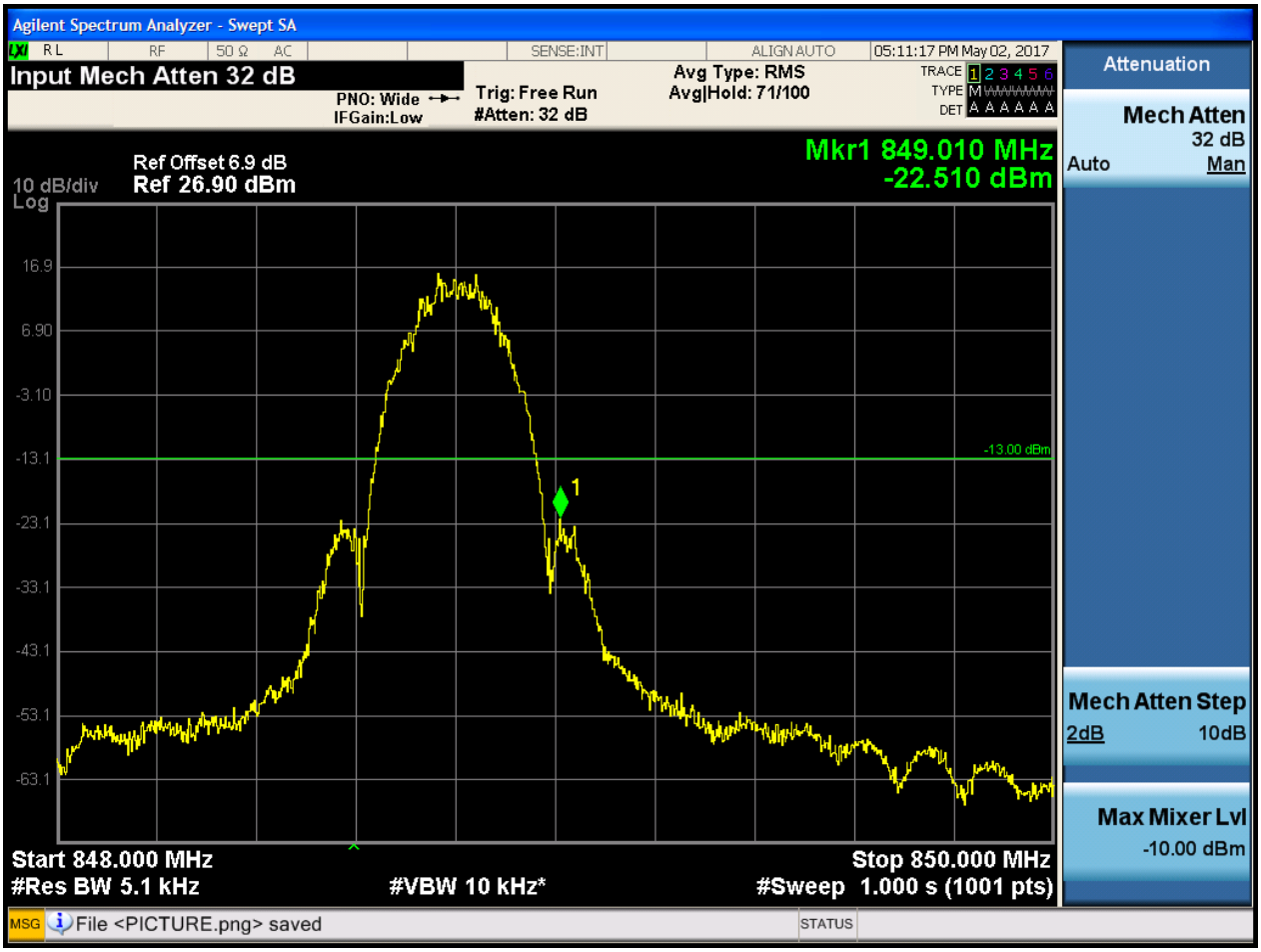


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



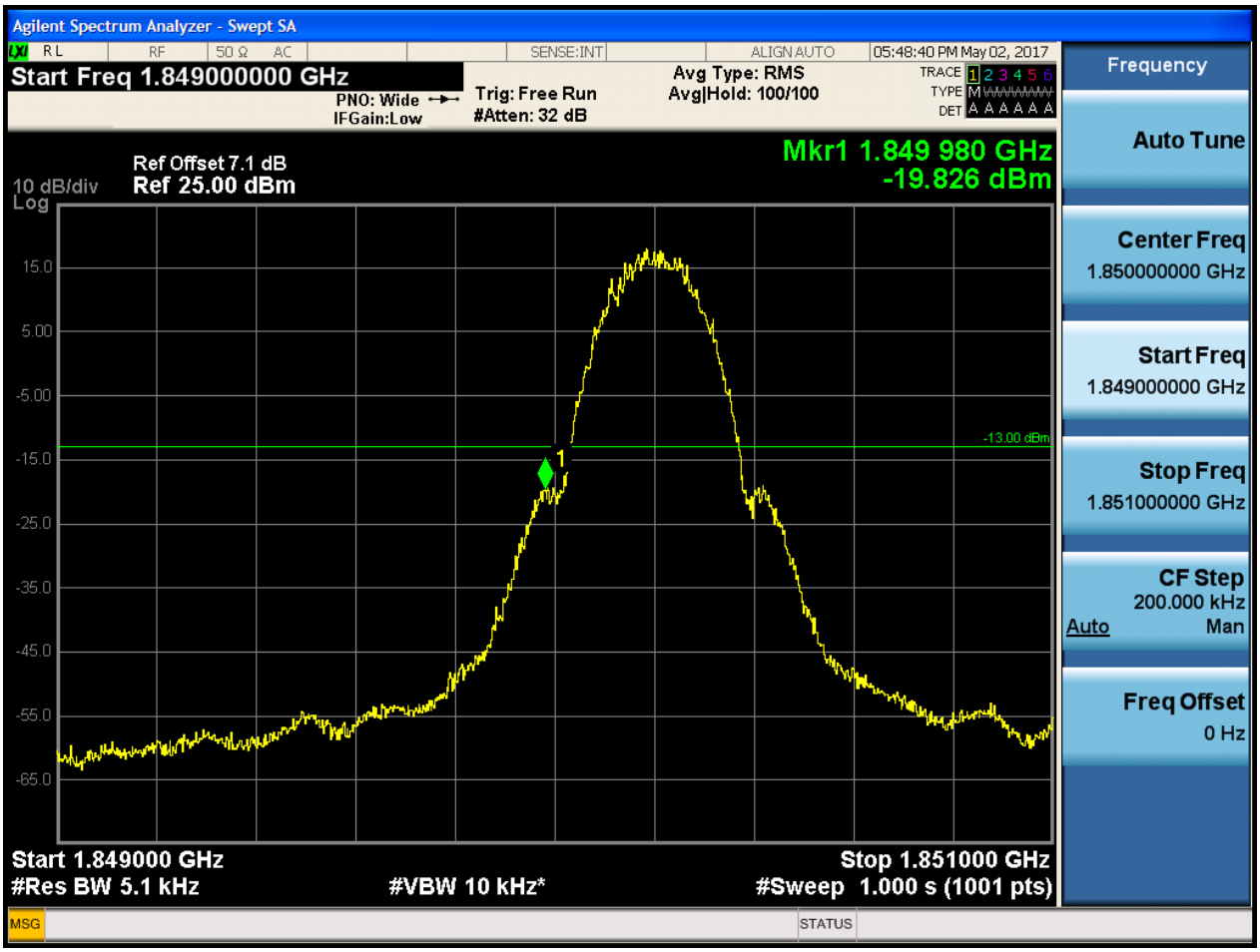
5.1.1.2.2 Test Channel = HCH



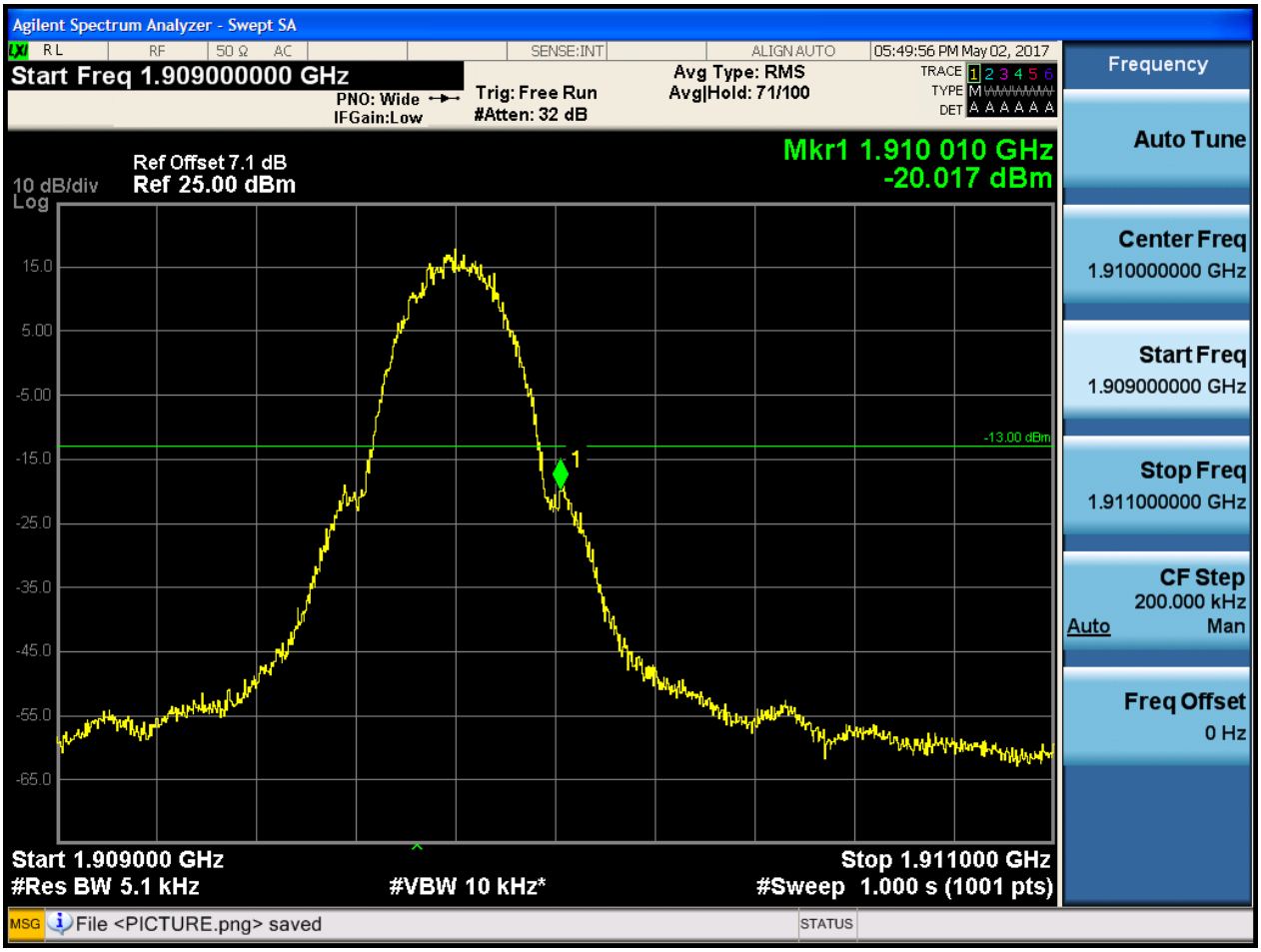
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

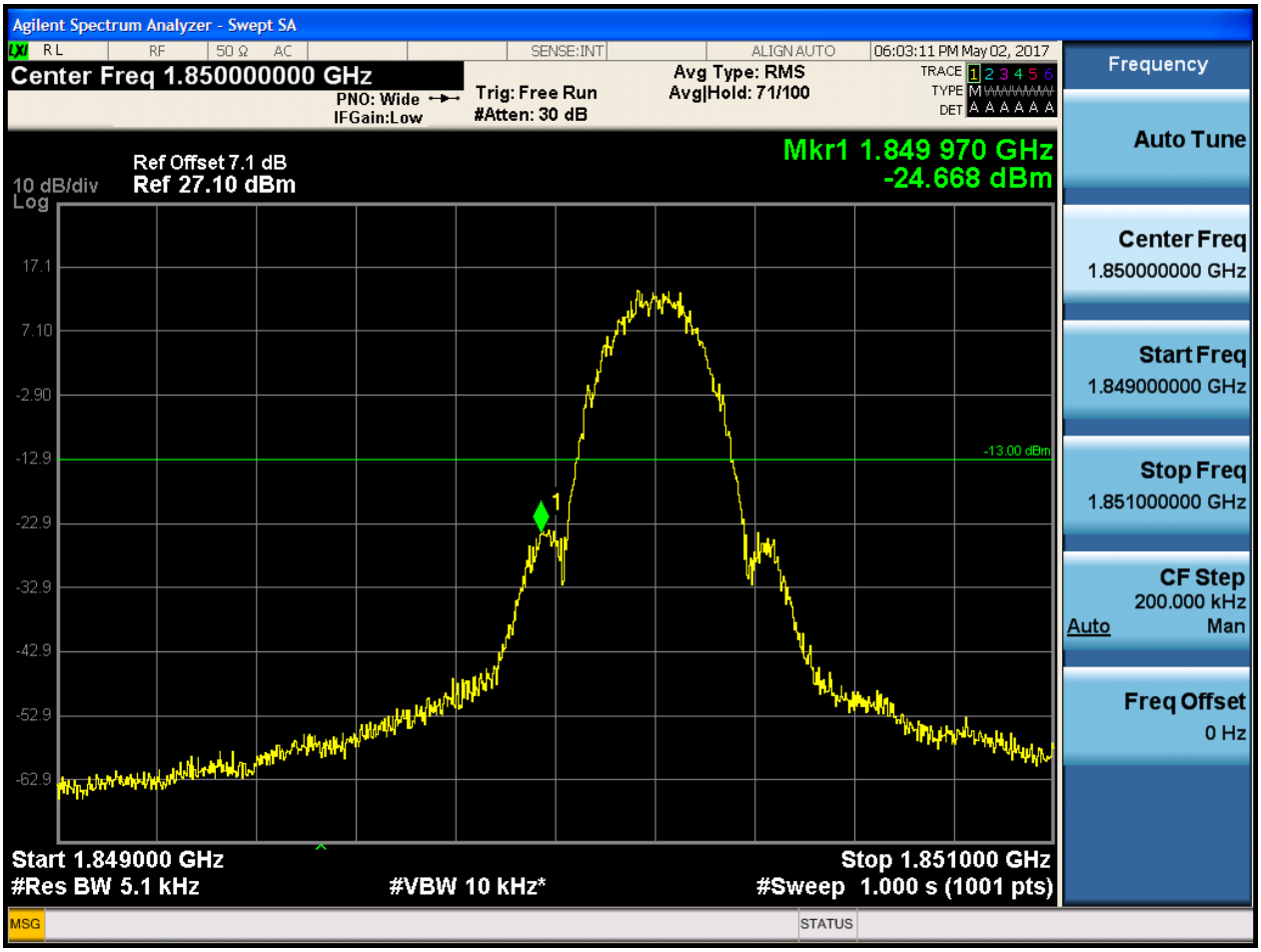


5.1.2.1.2 Test Channel = HCH

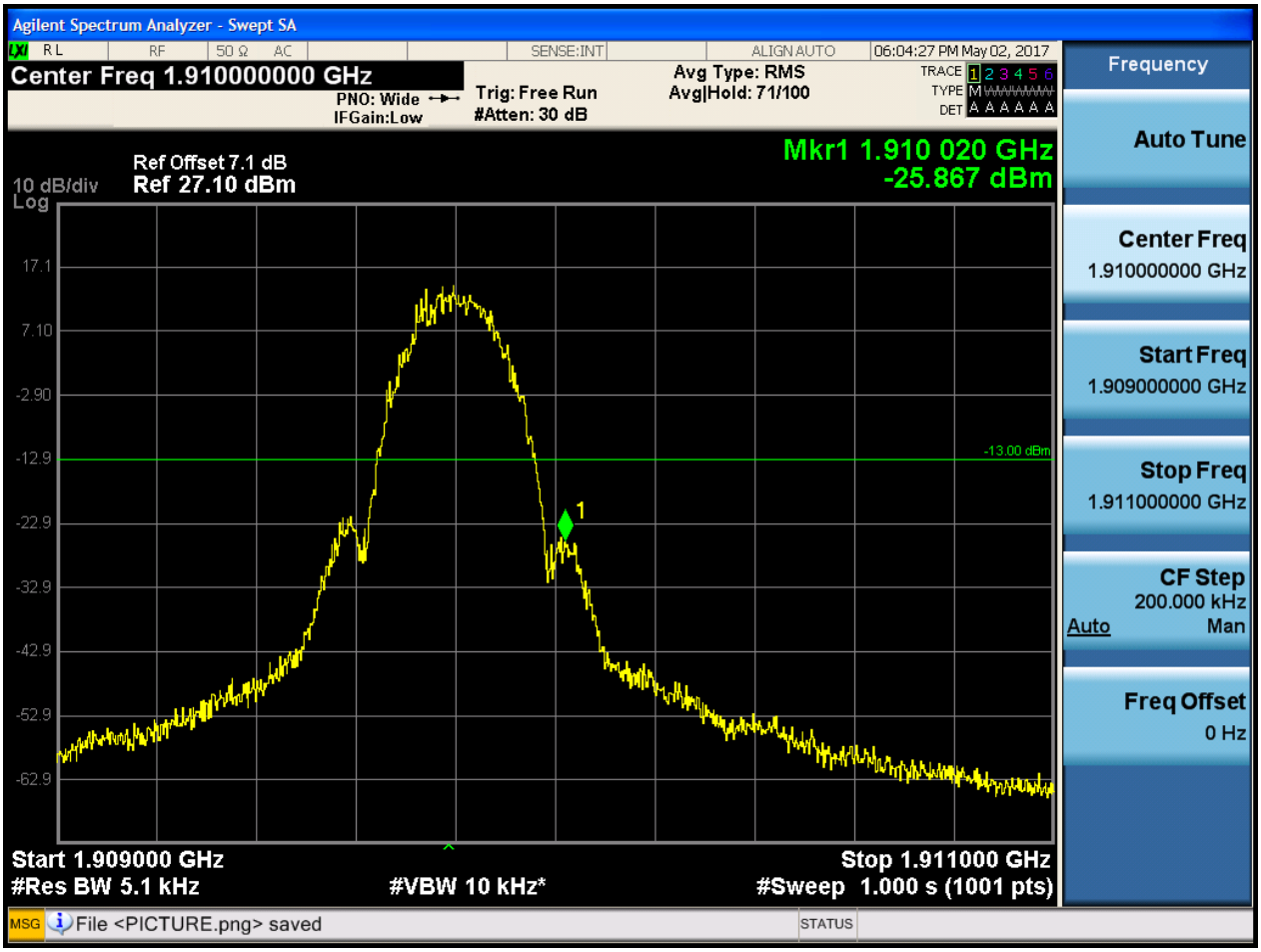


5.1.2.2 Test Mode = GSM/TM2

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.

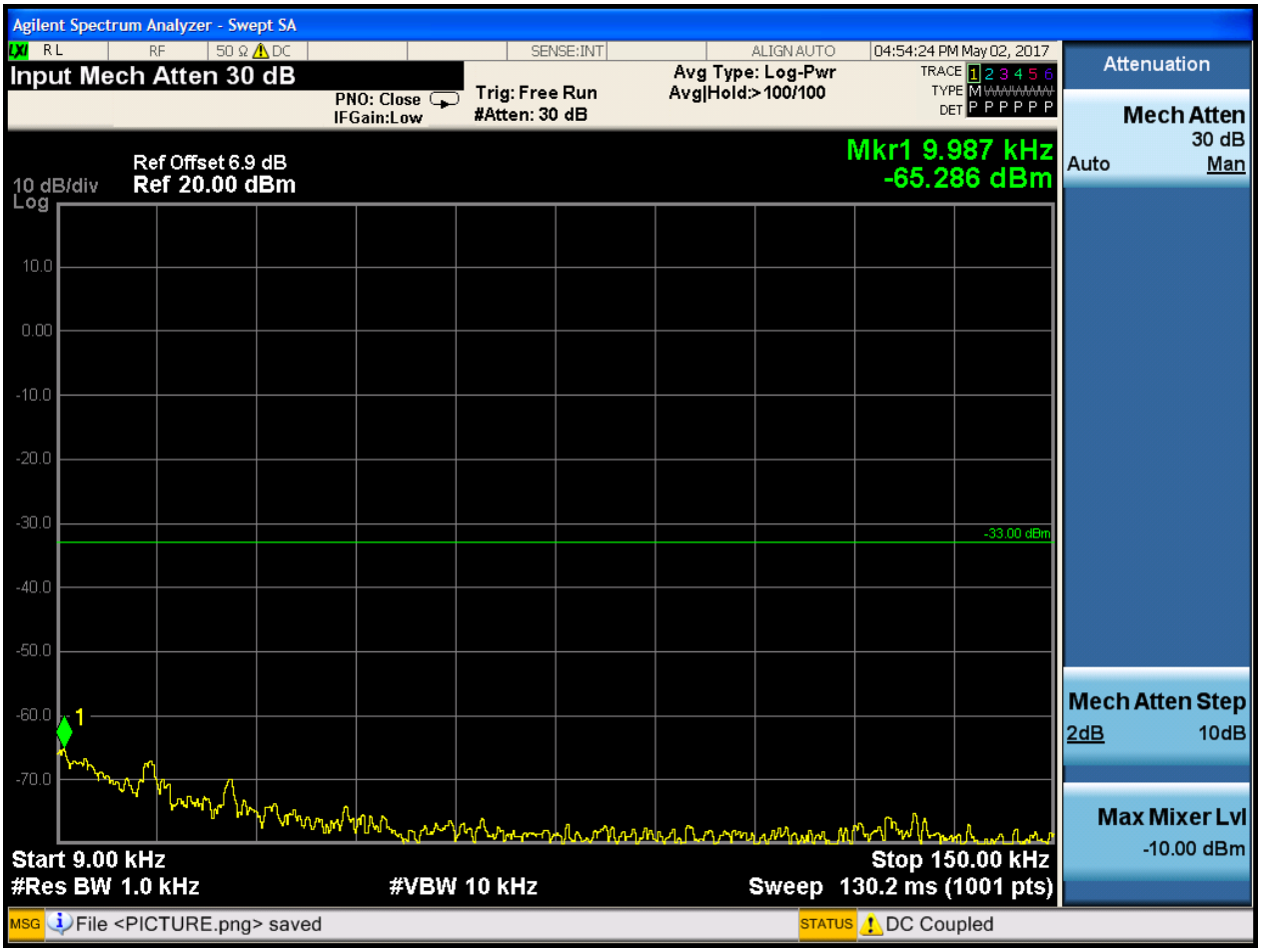
Part I - Test Plots

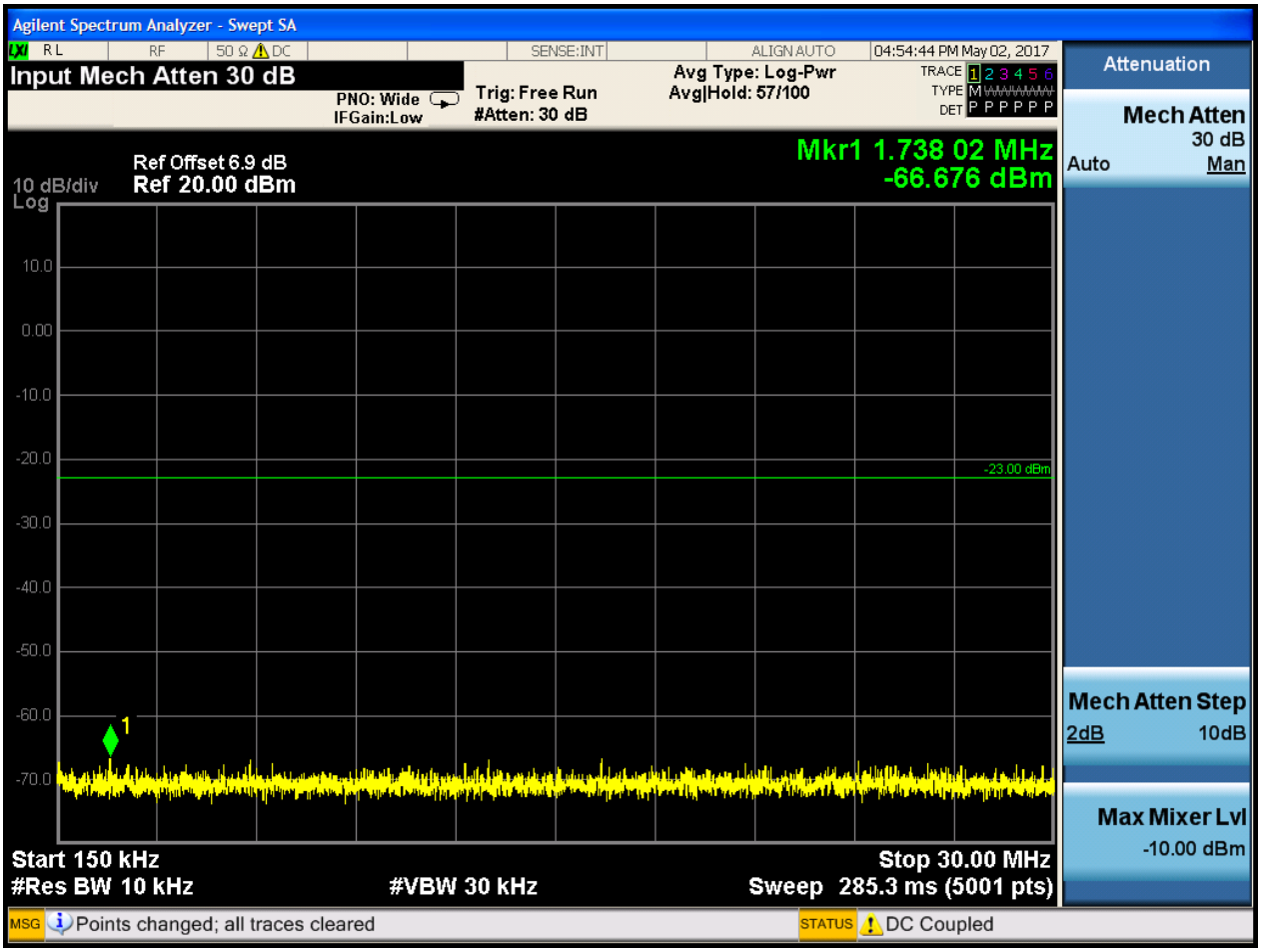
6.1 For GSM

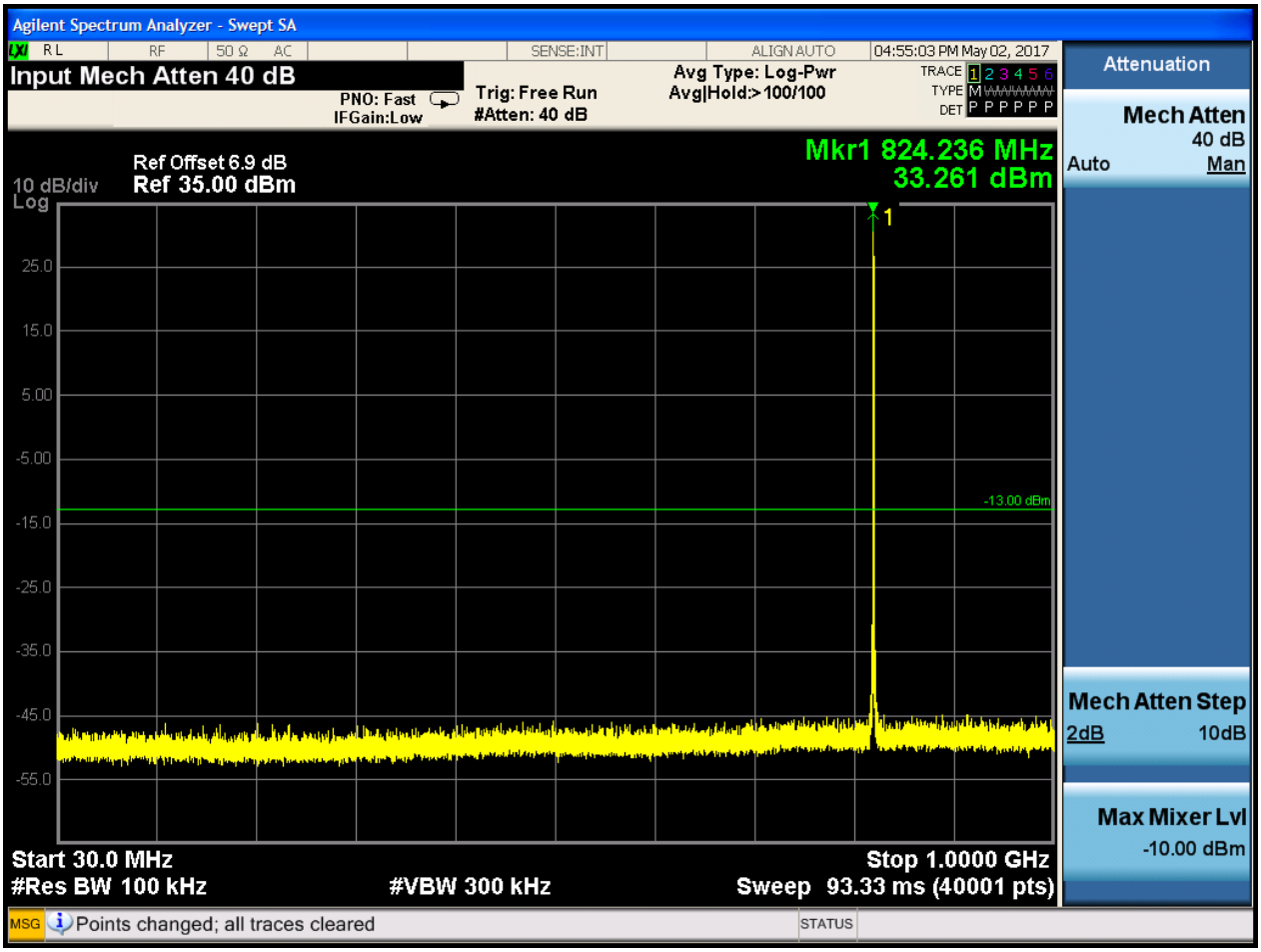
6.1.1 Test Band = GSM850

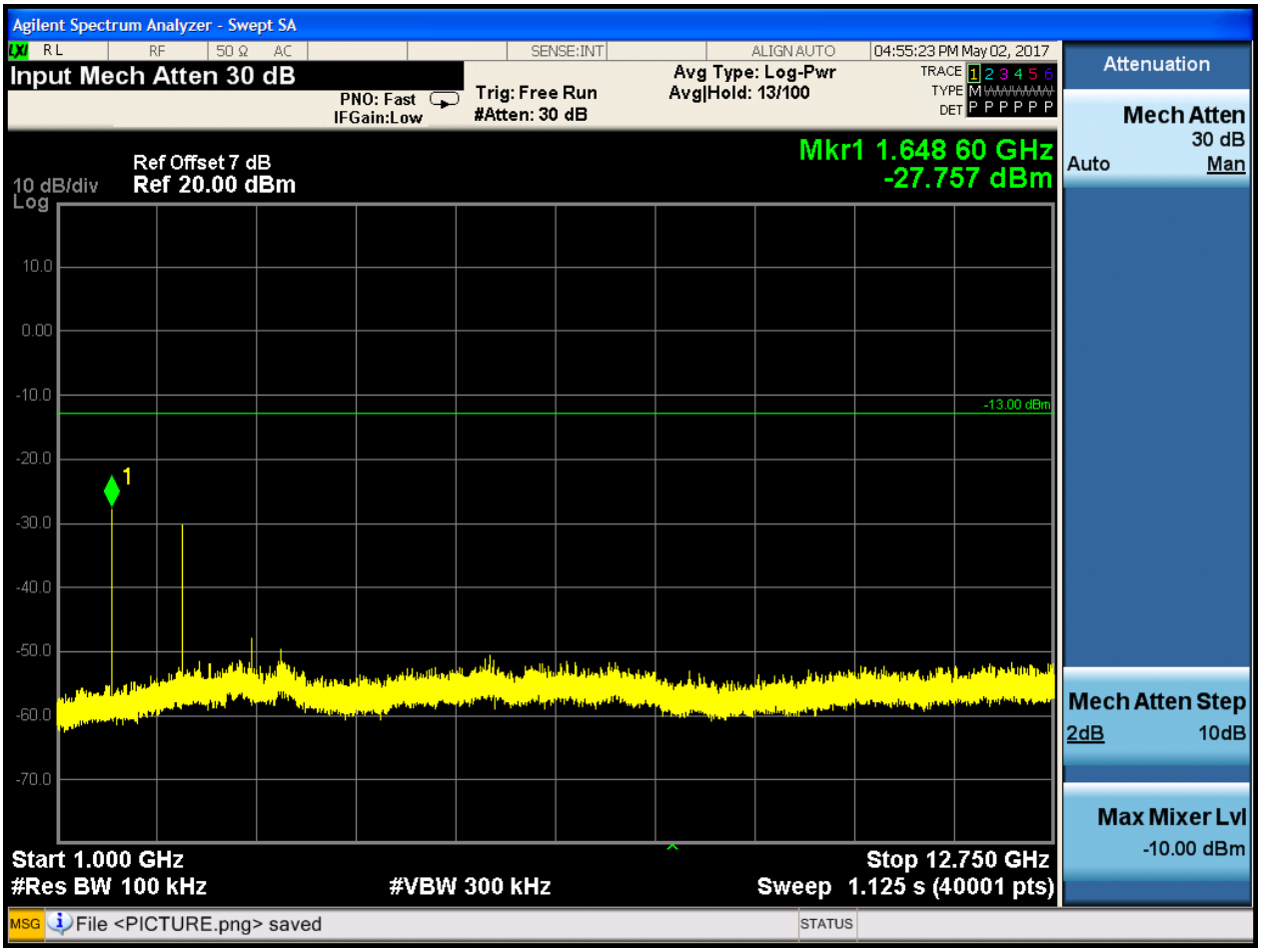
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

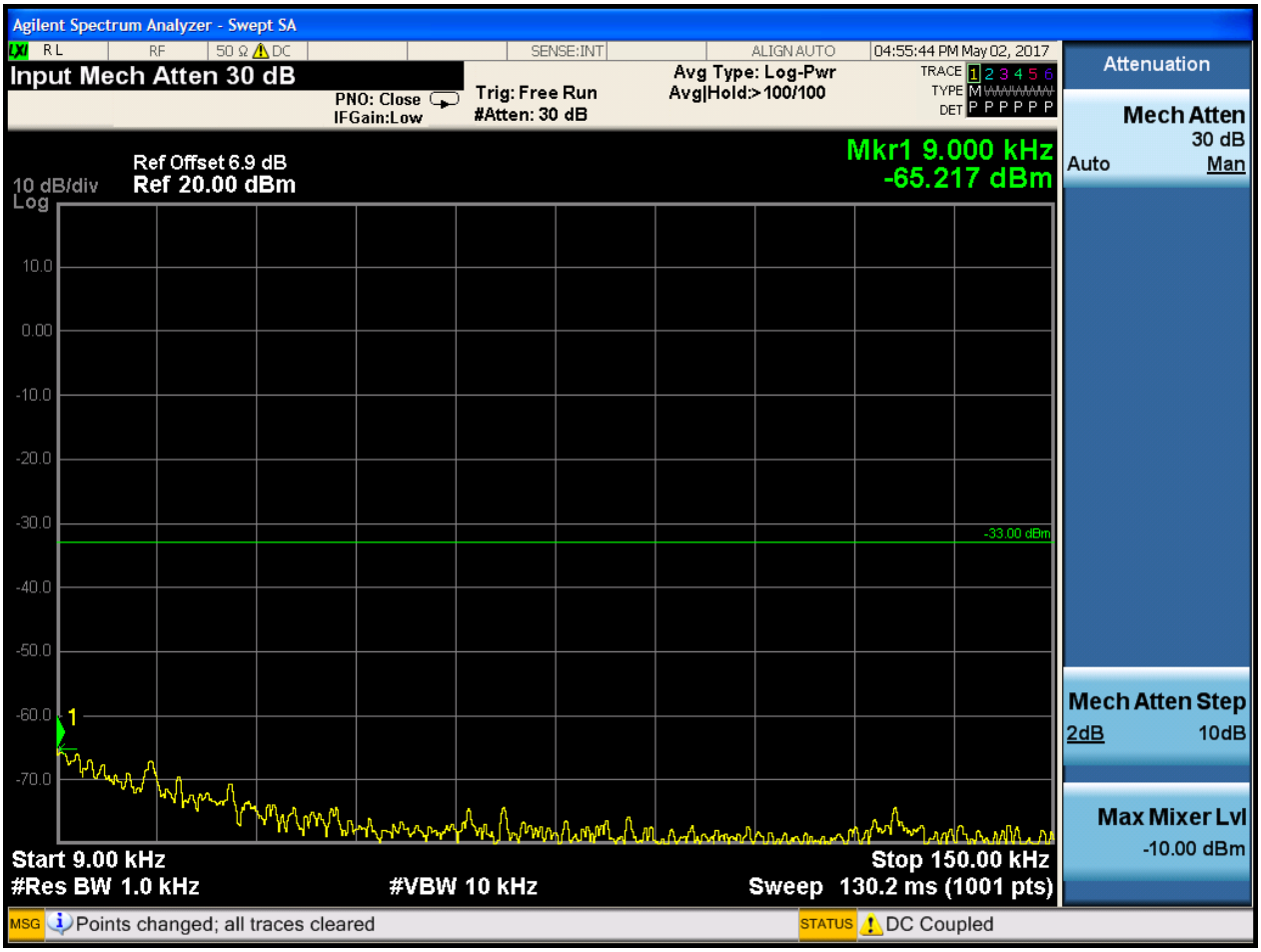


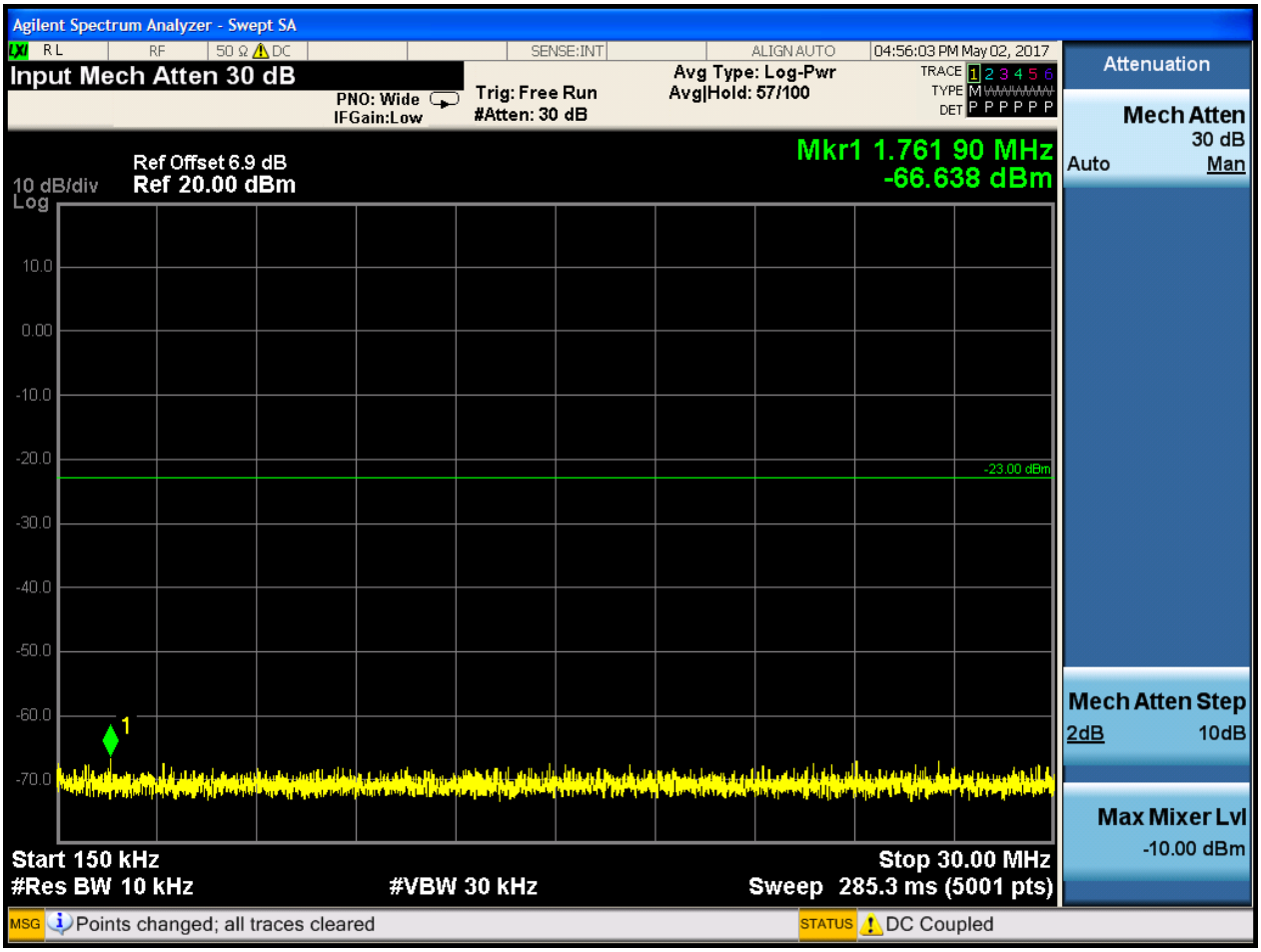


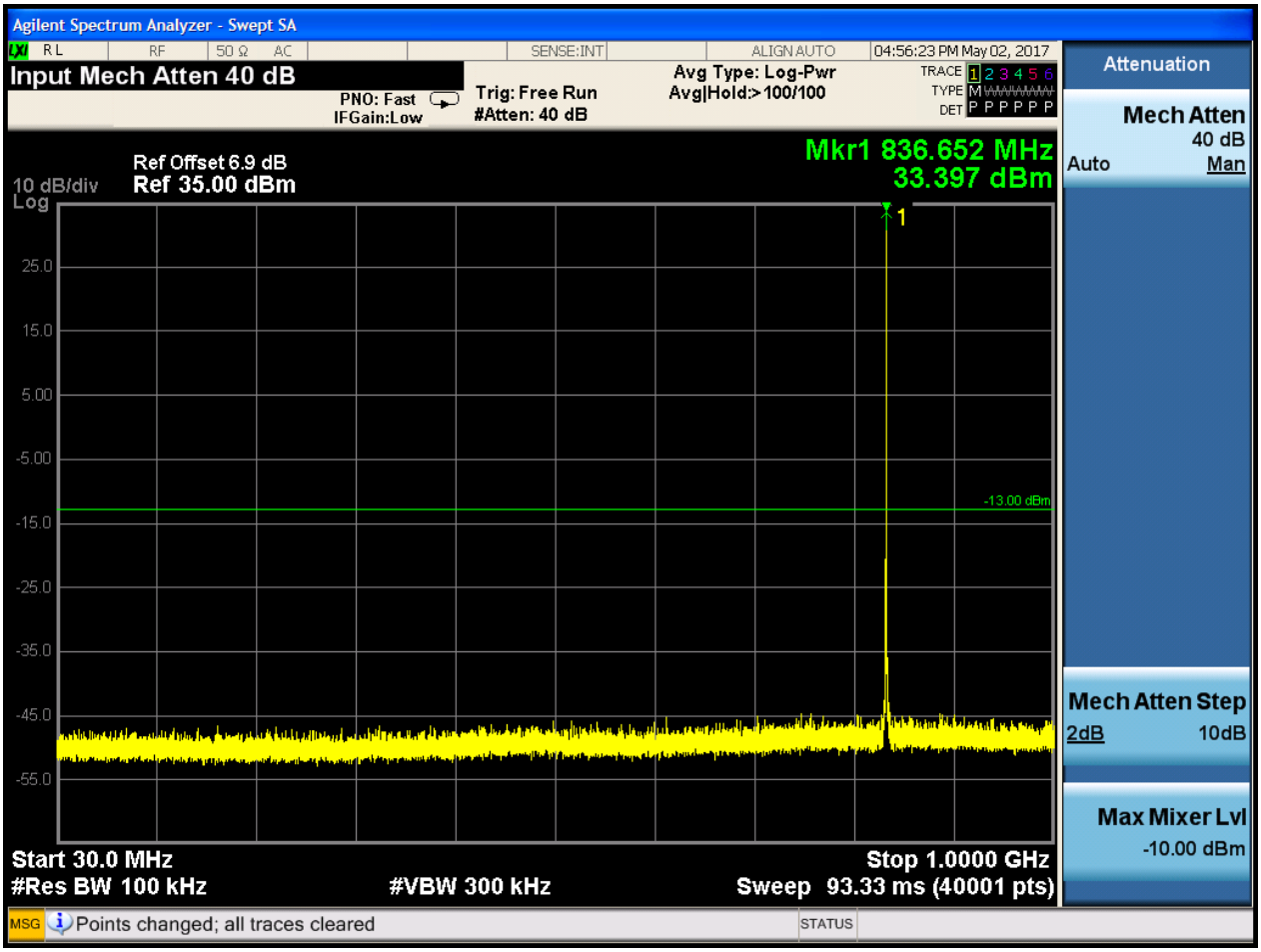


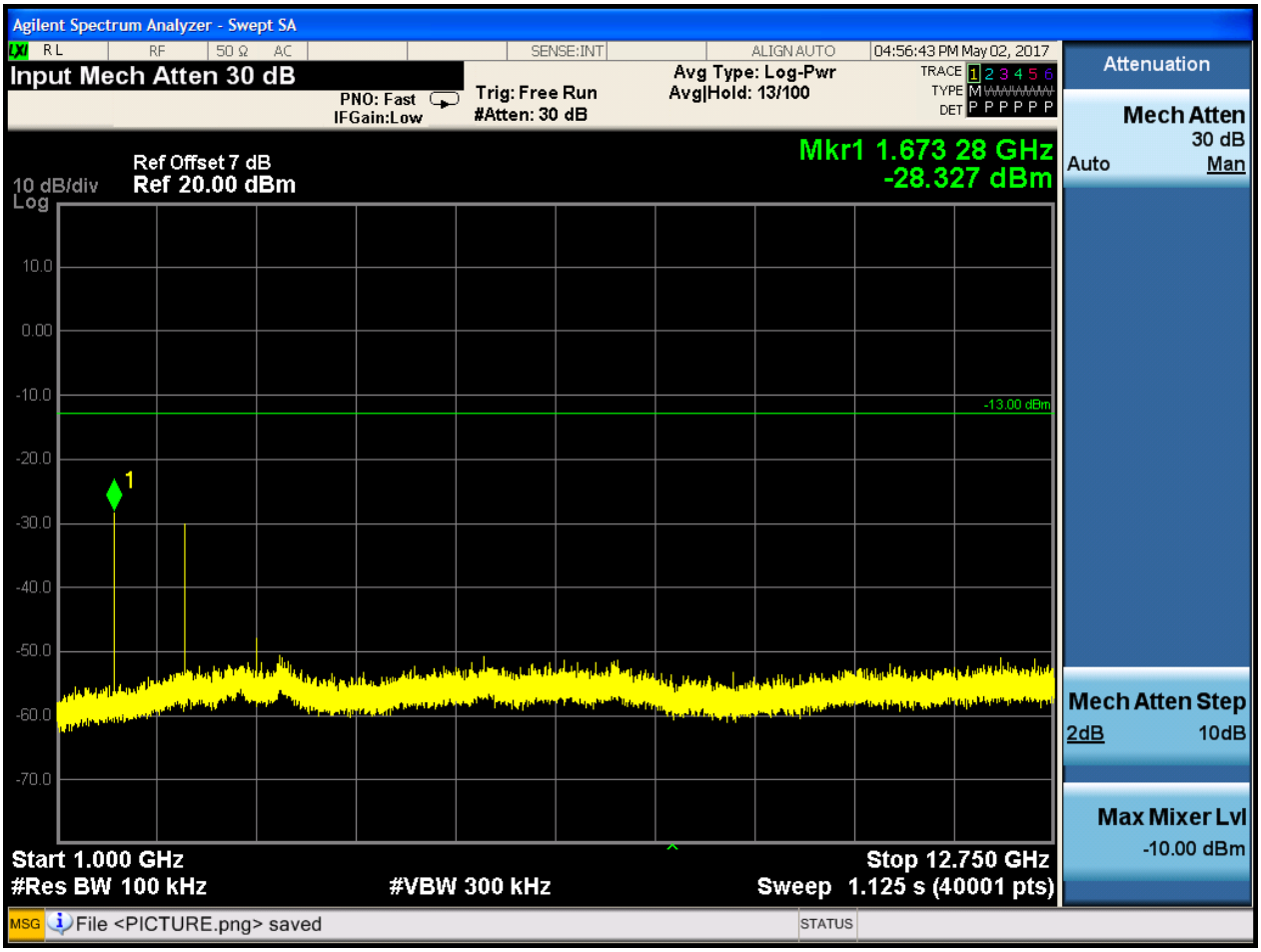


6.1.1.1.2 Test Channel = MCH

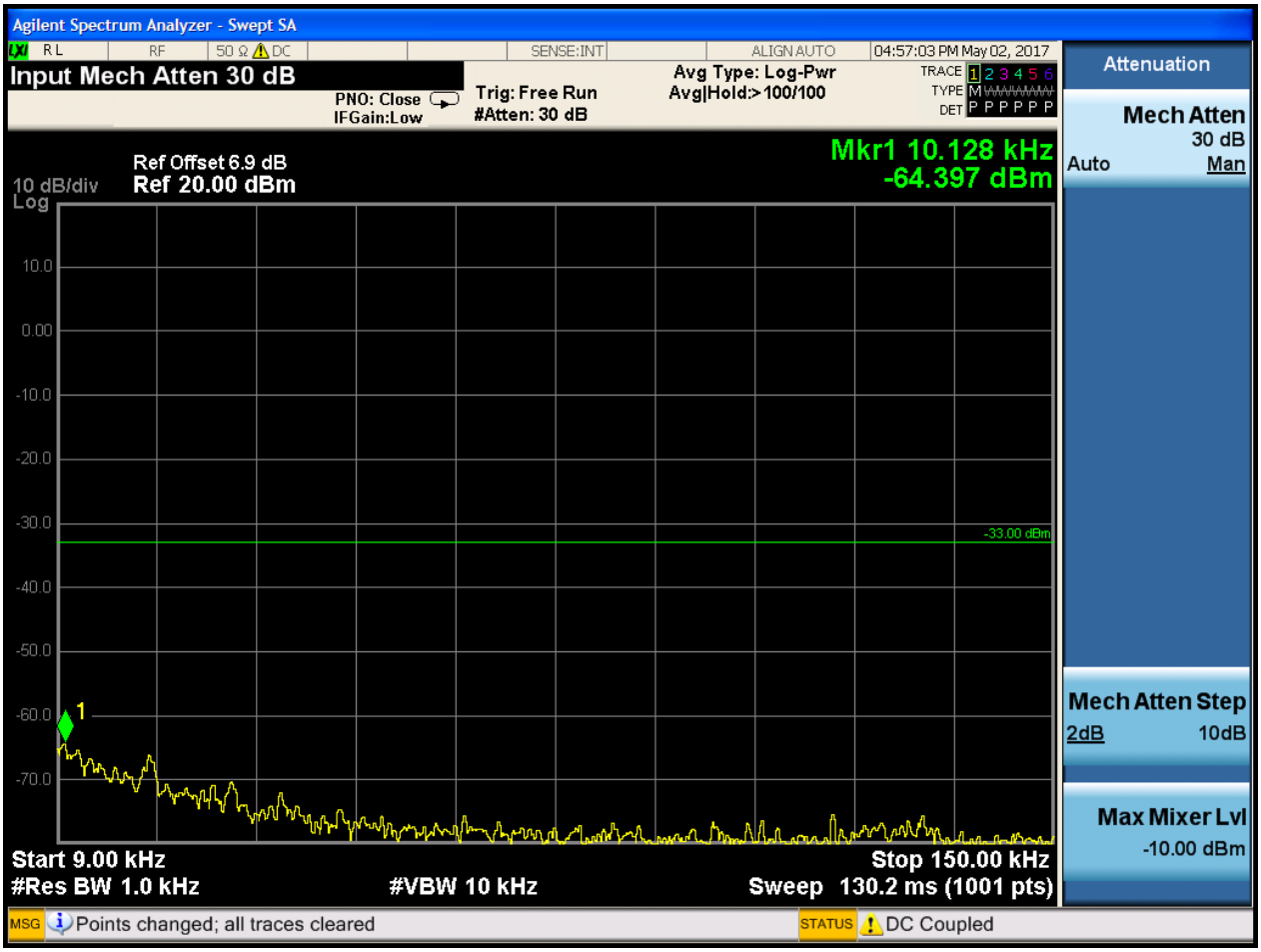


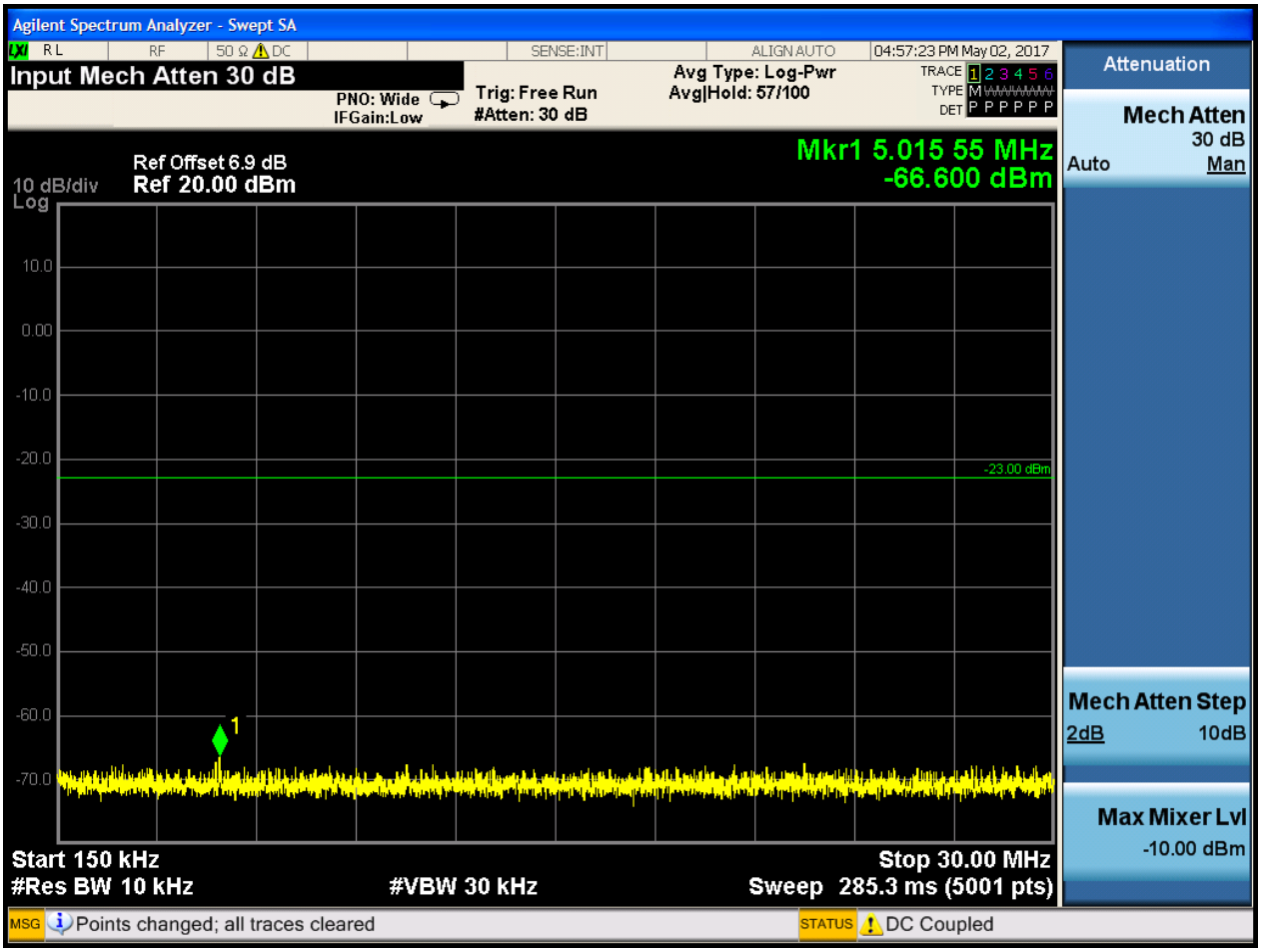


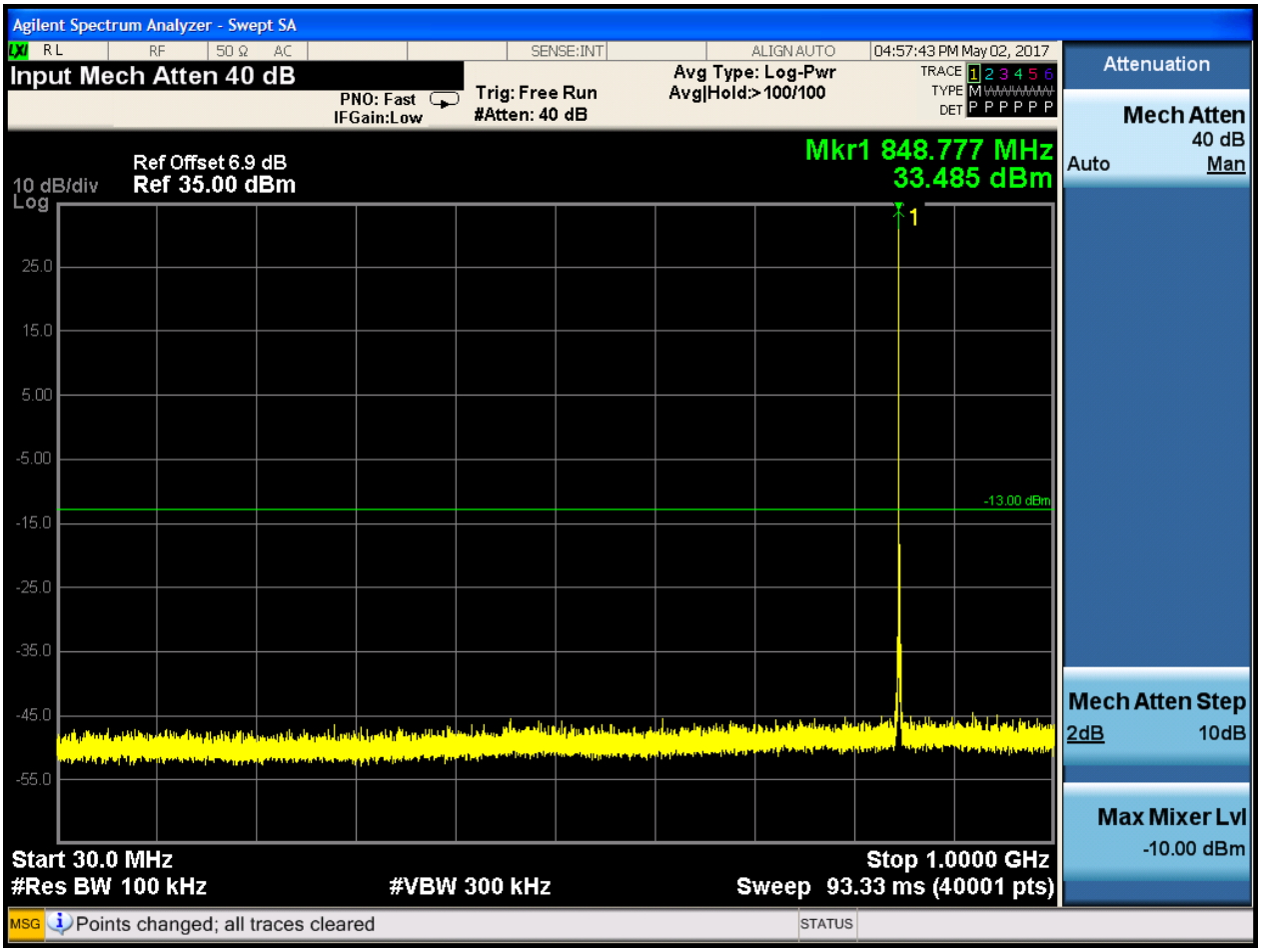


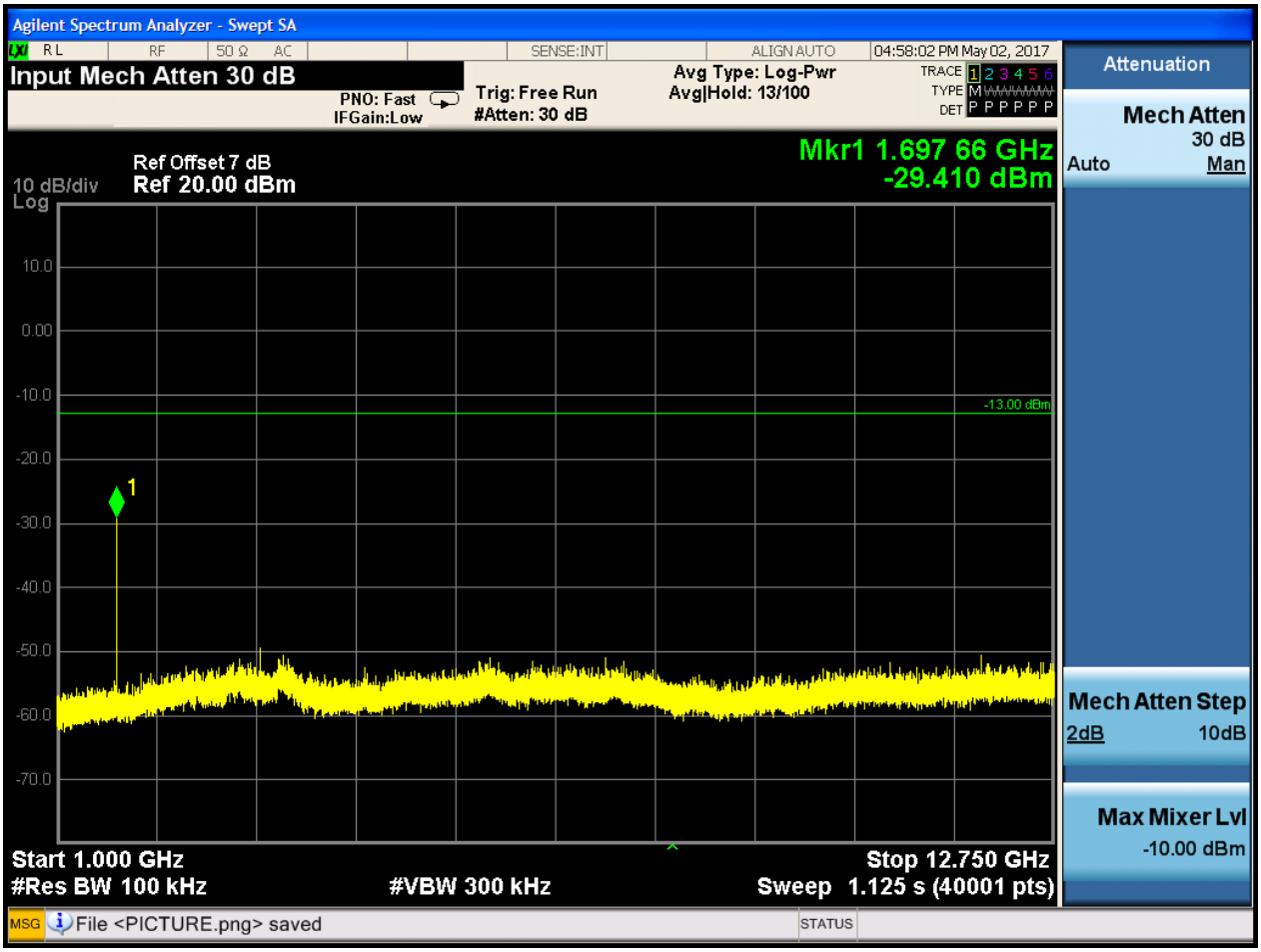


6.1.1.1.3 Test Channel = HCH



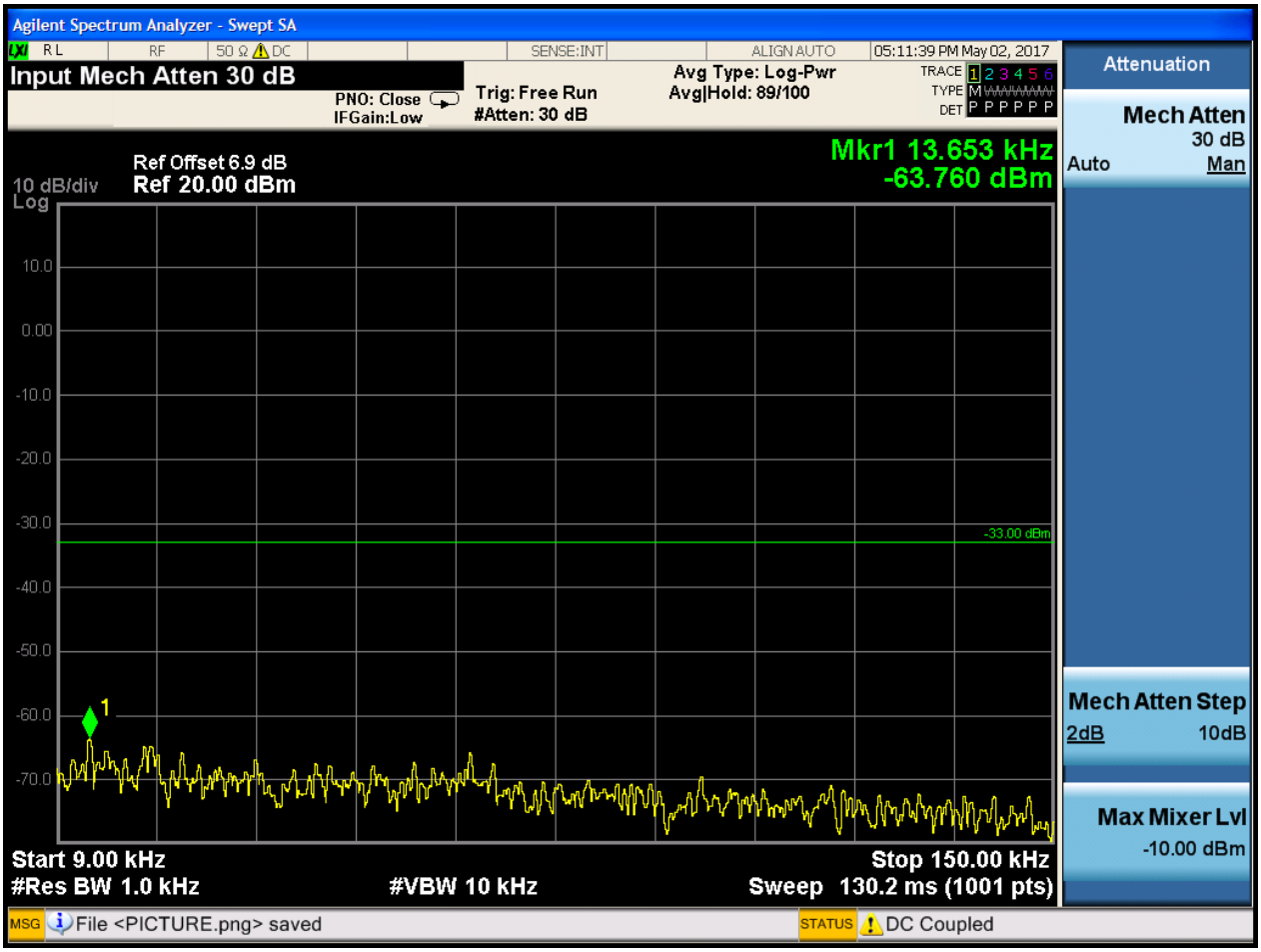


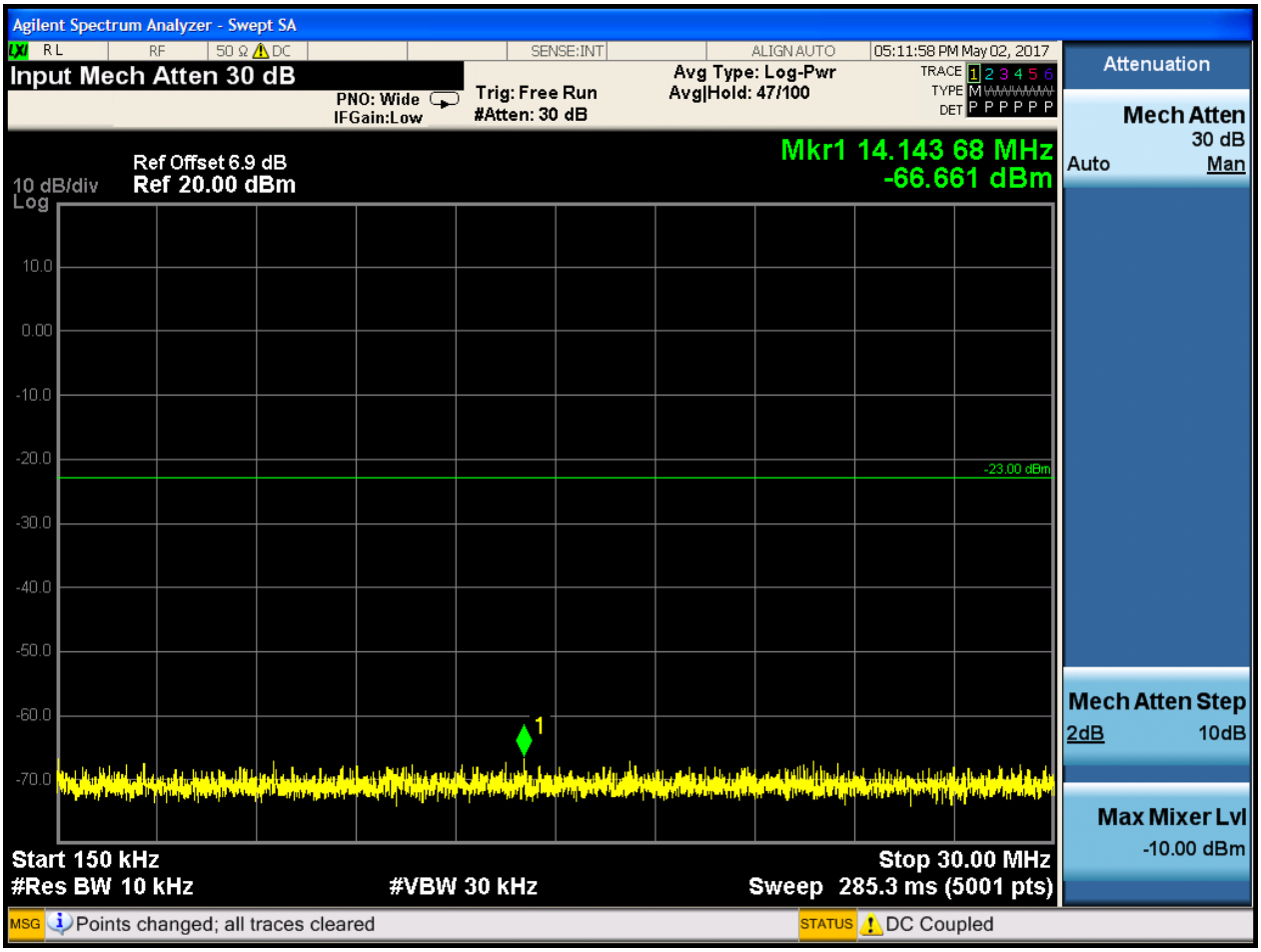


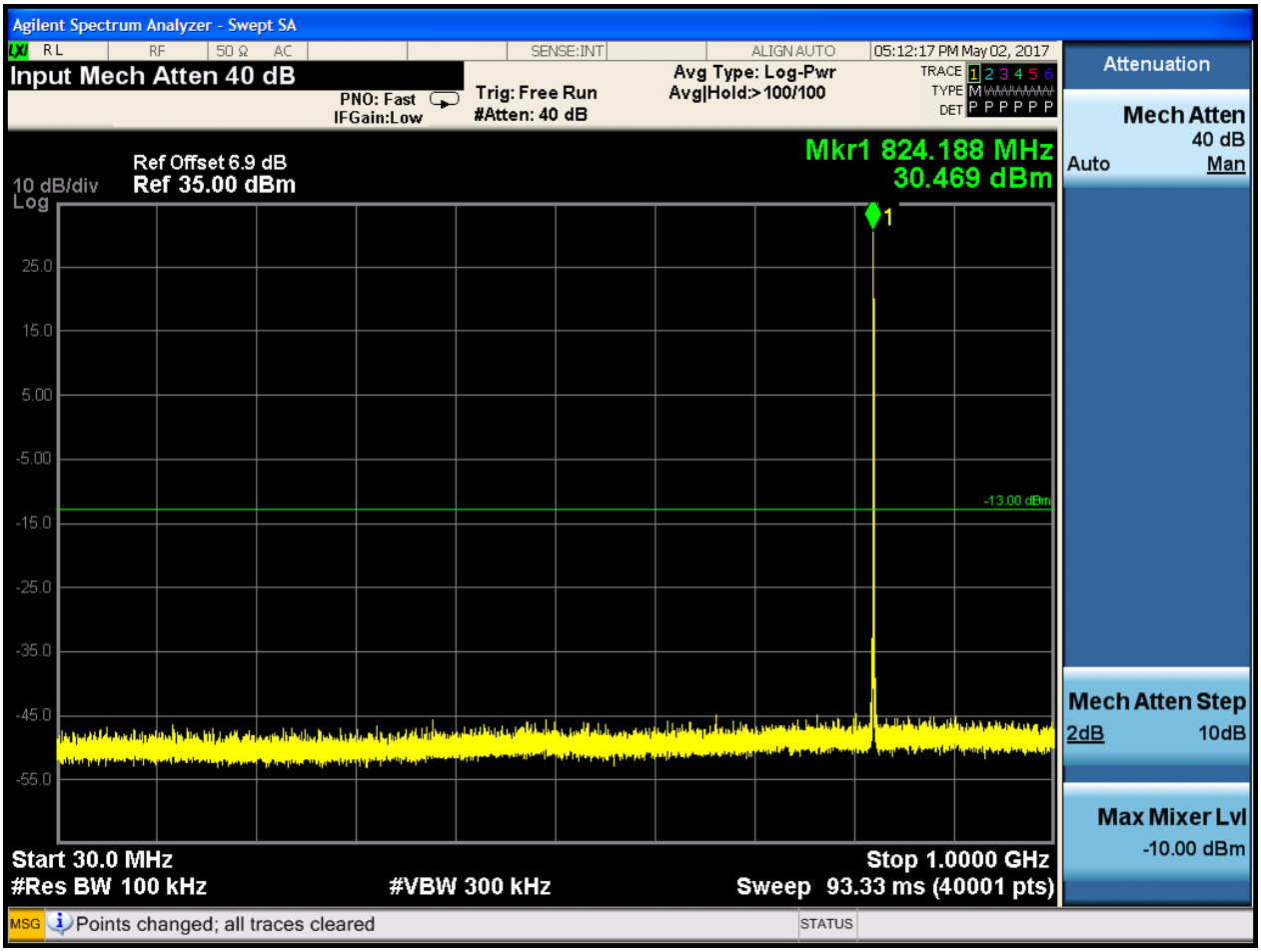


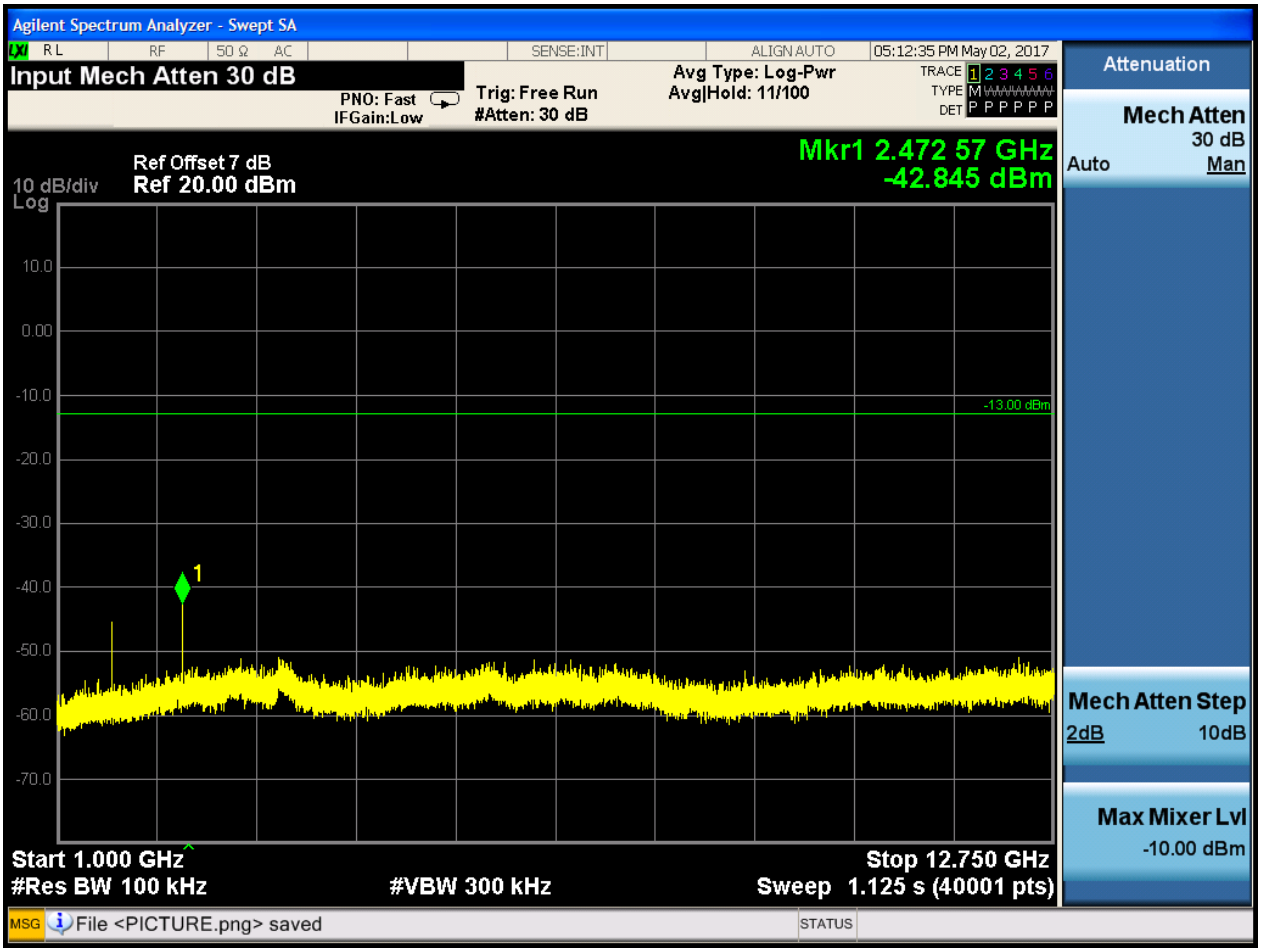
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

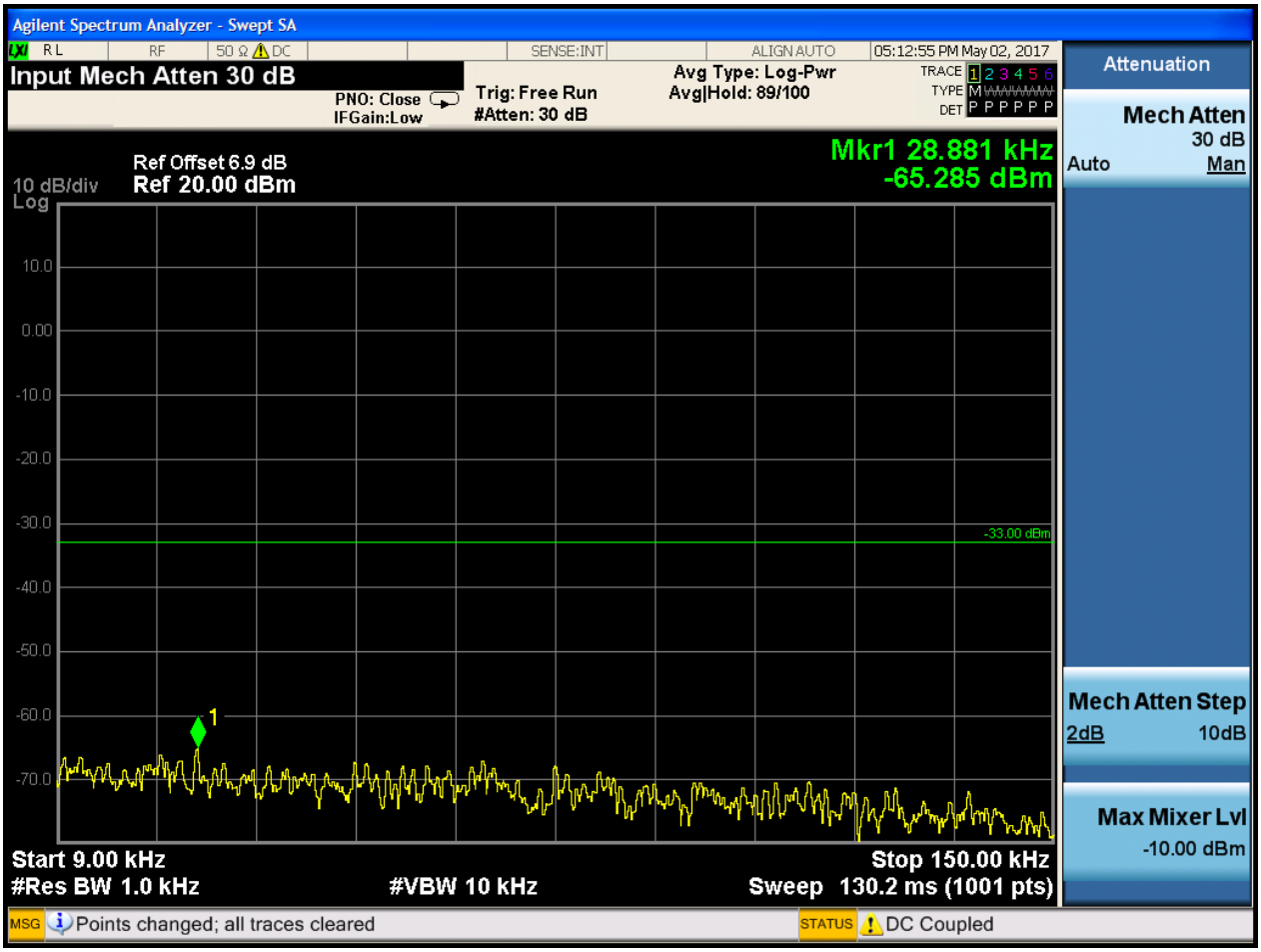


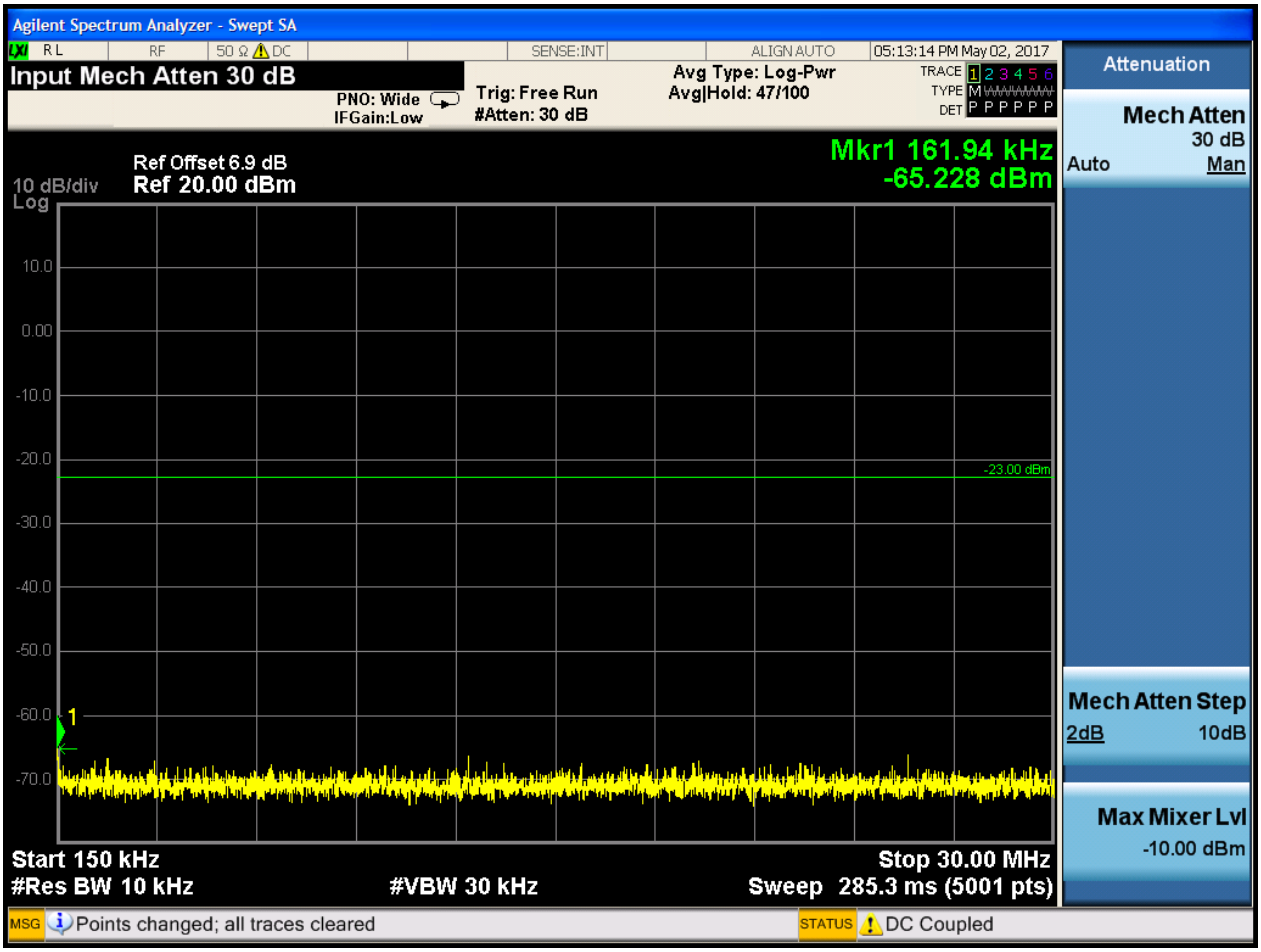


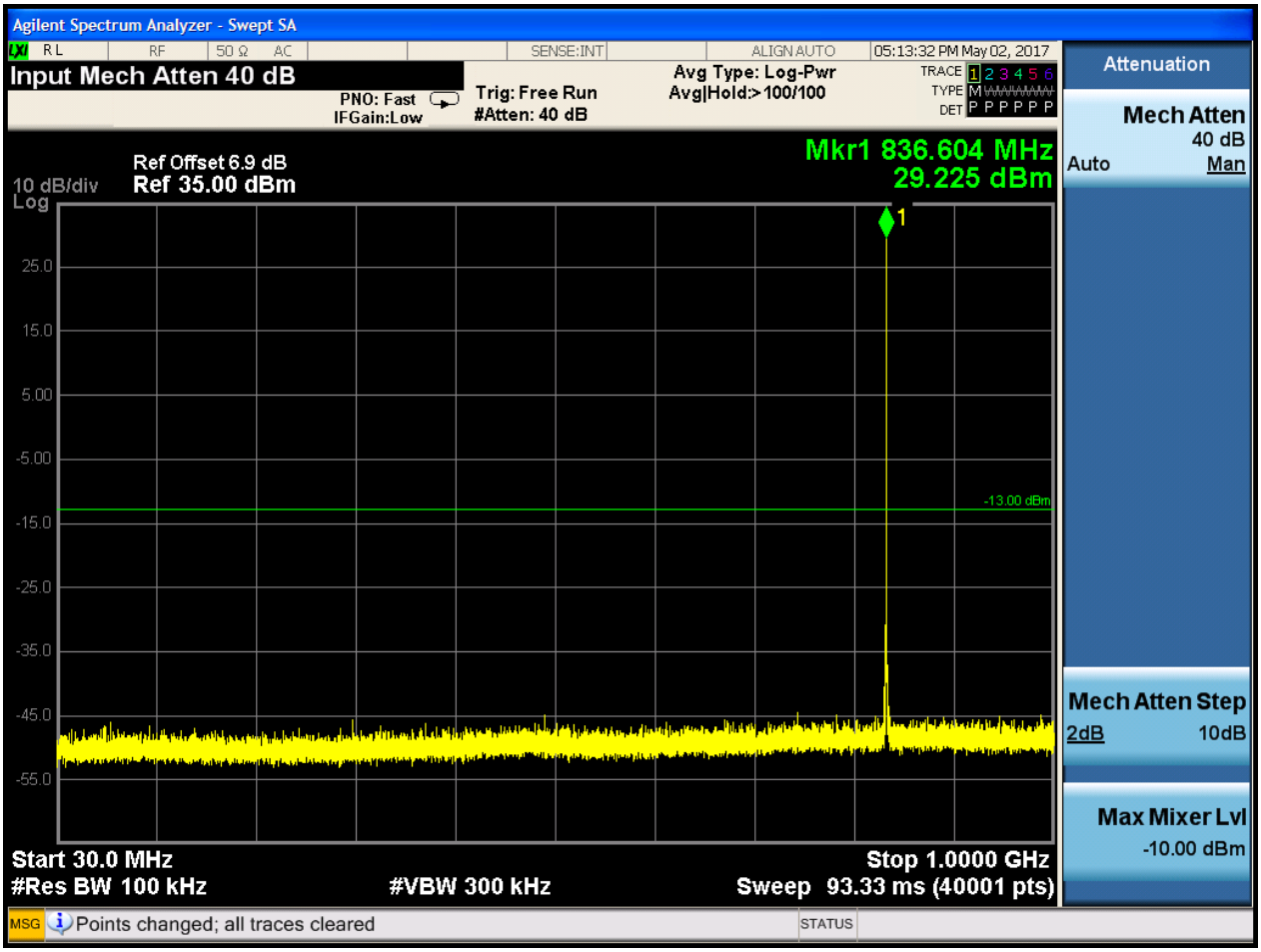


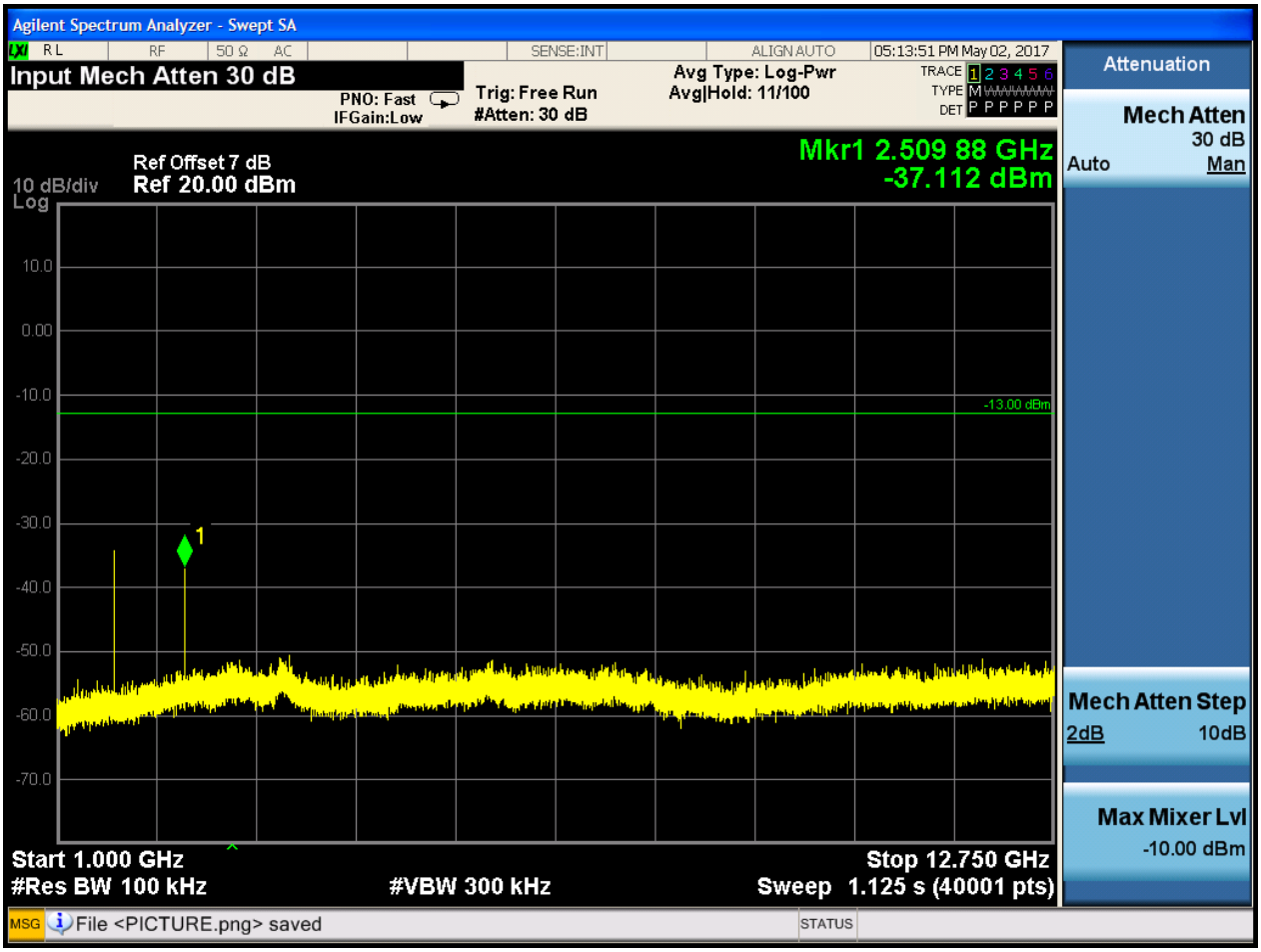


6.1.1.2.2 Test Channel = MCH

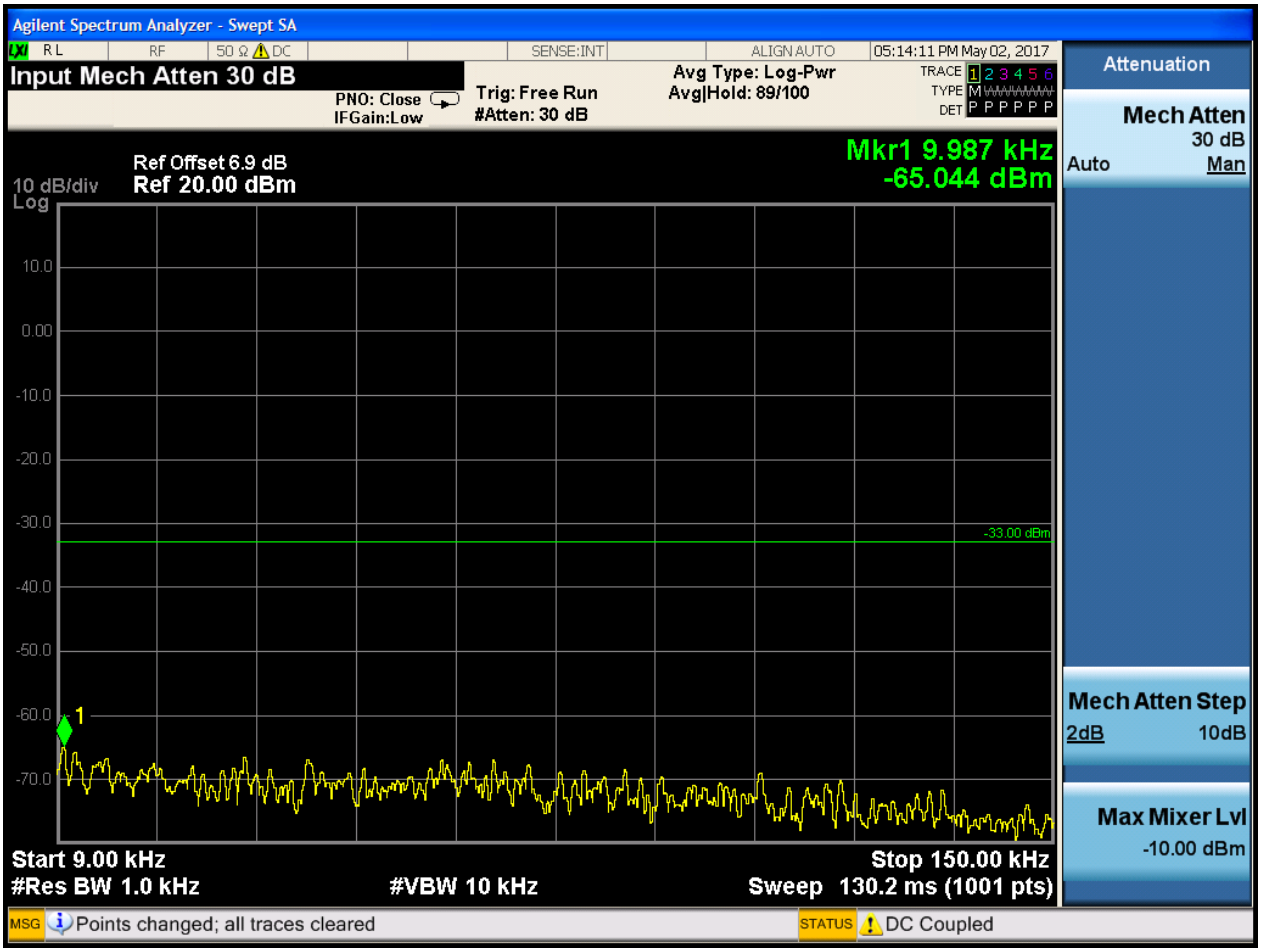


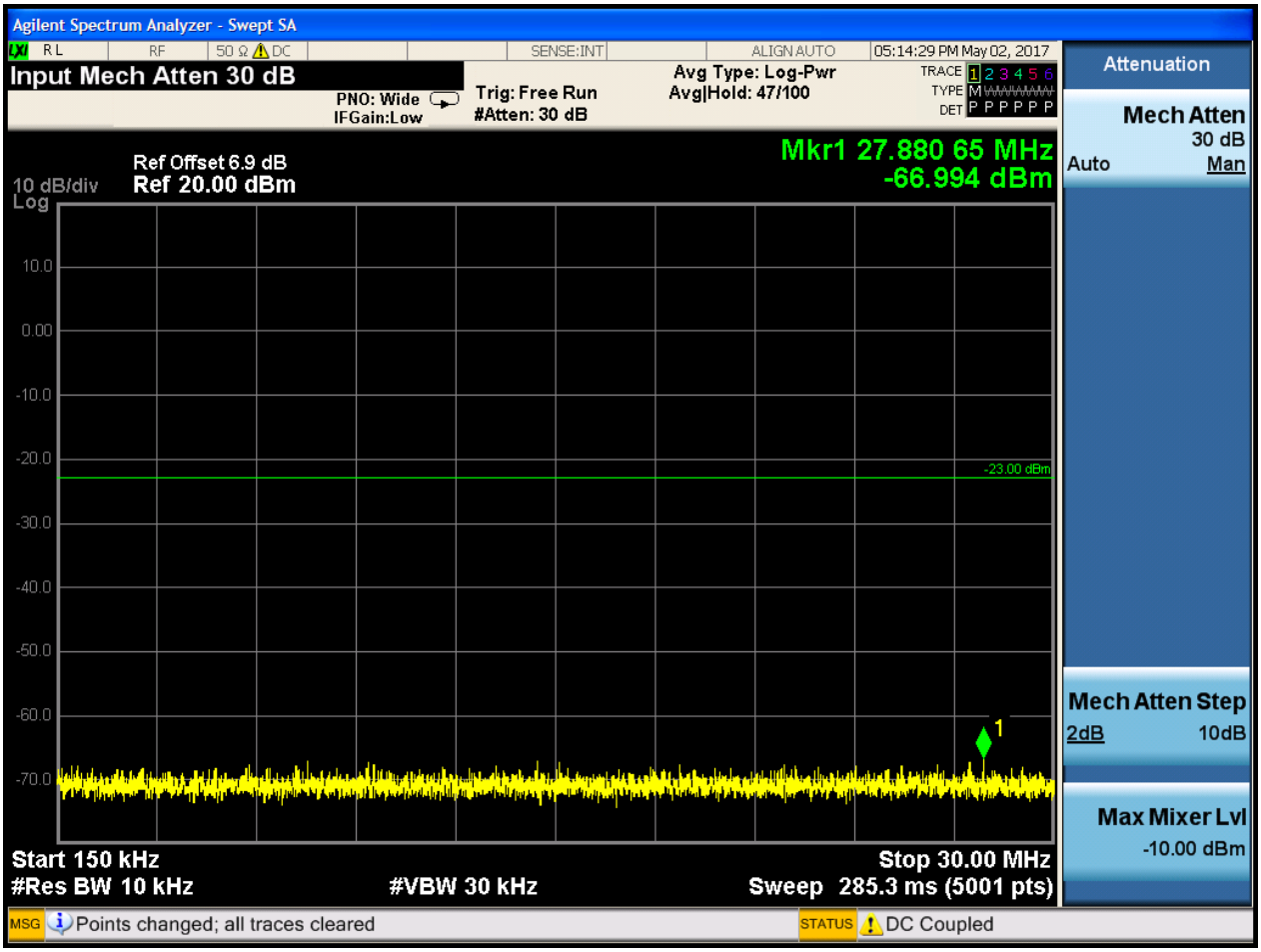


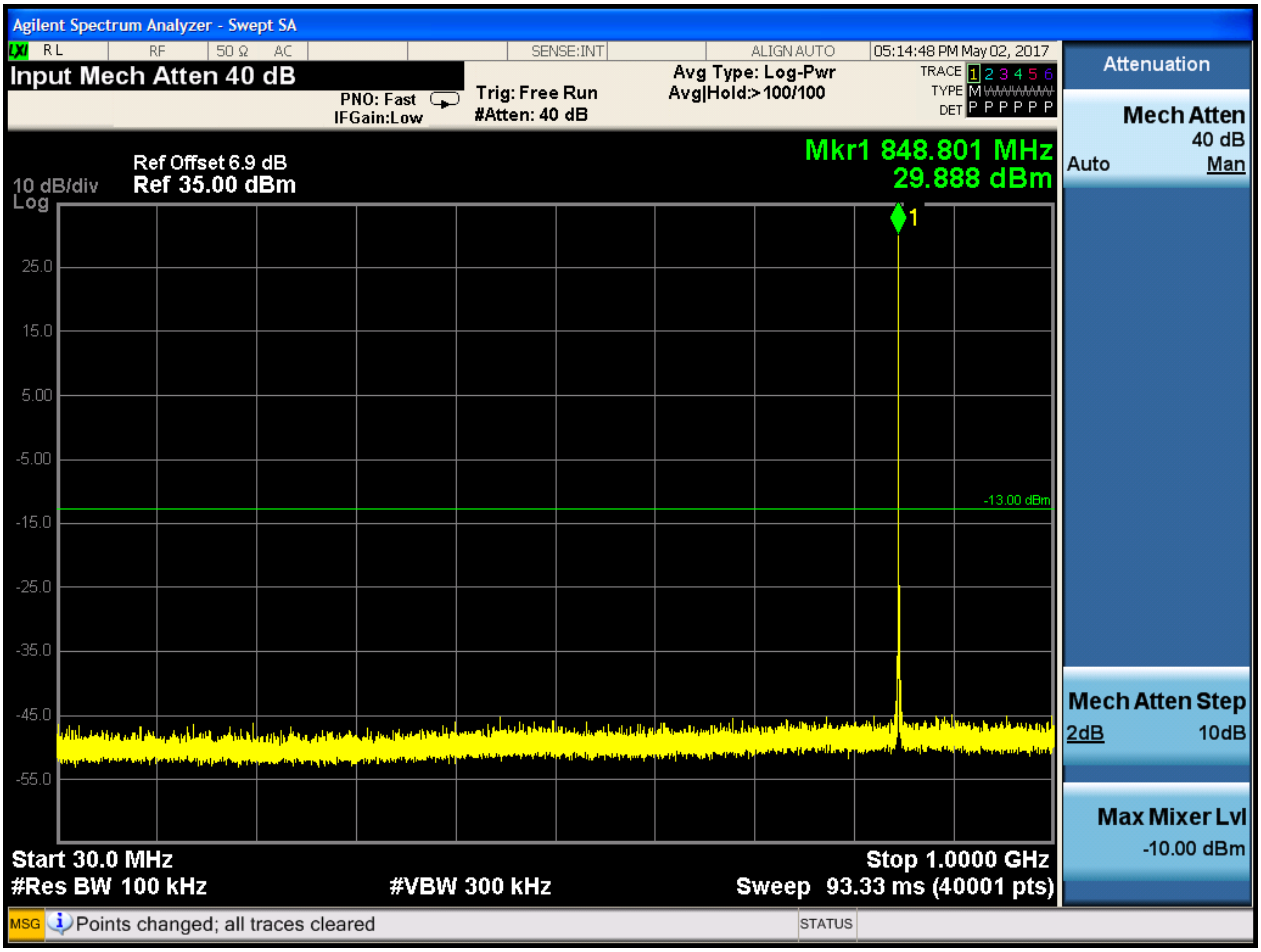


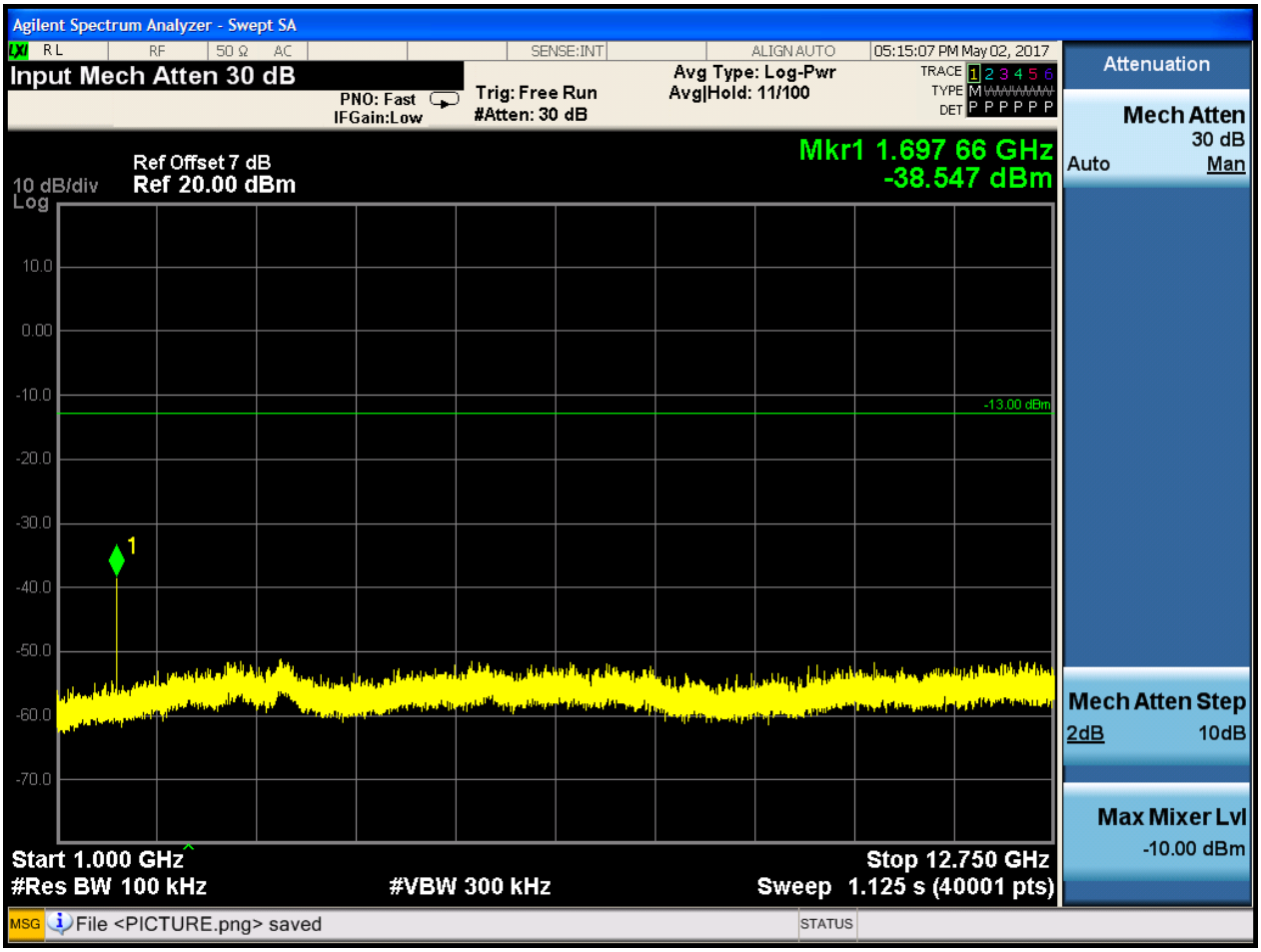


6.1.1.2.3 Test Channel = HCH





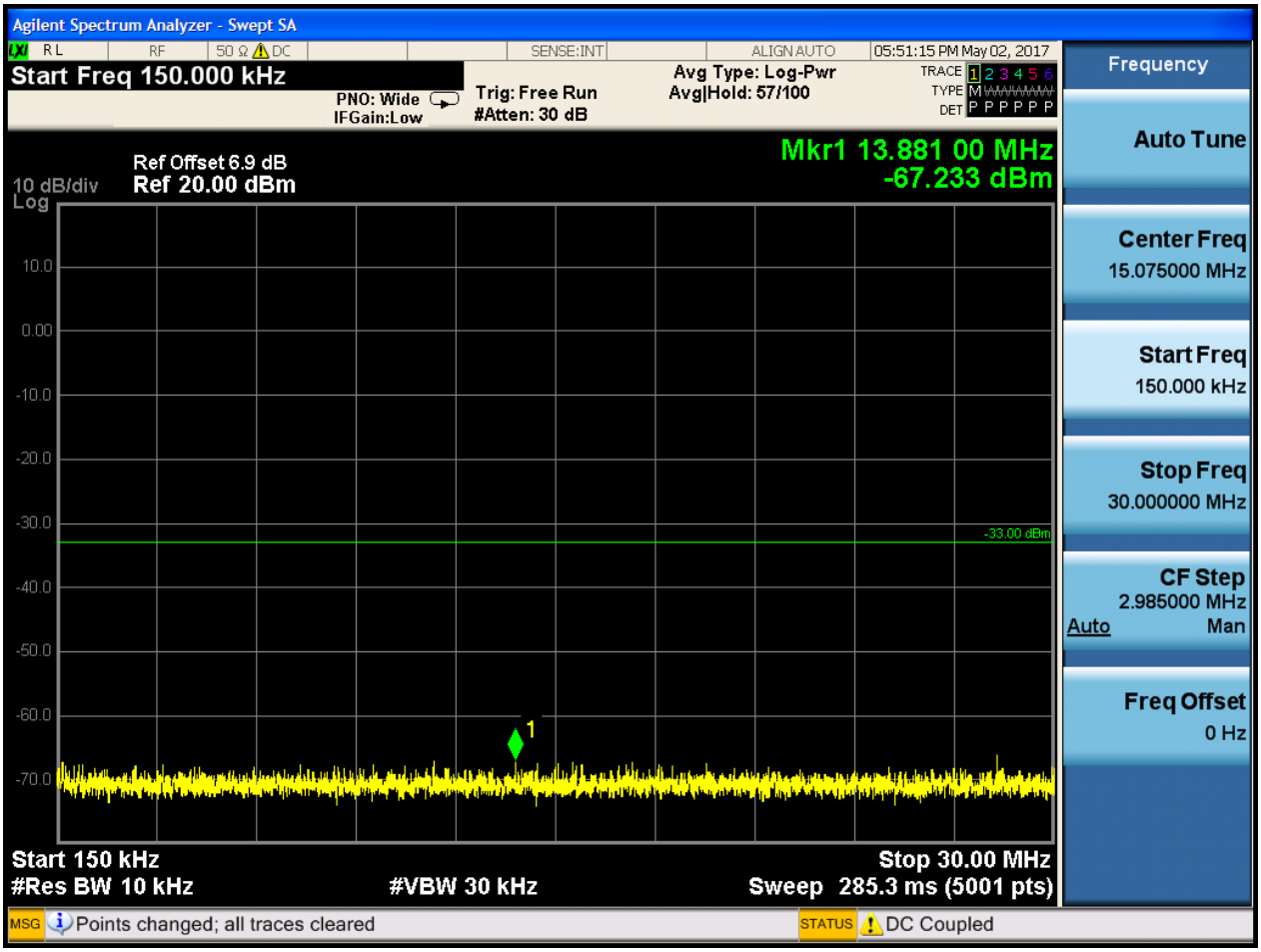


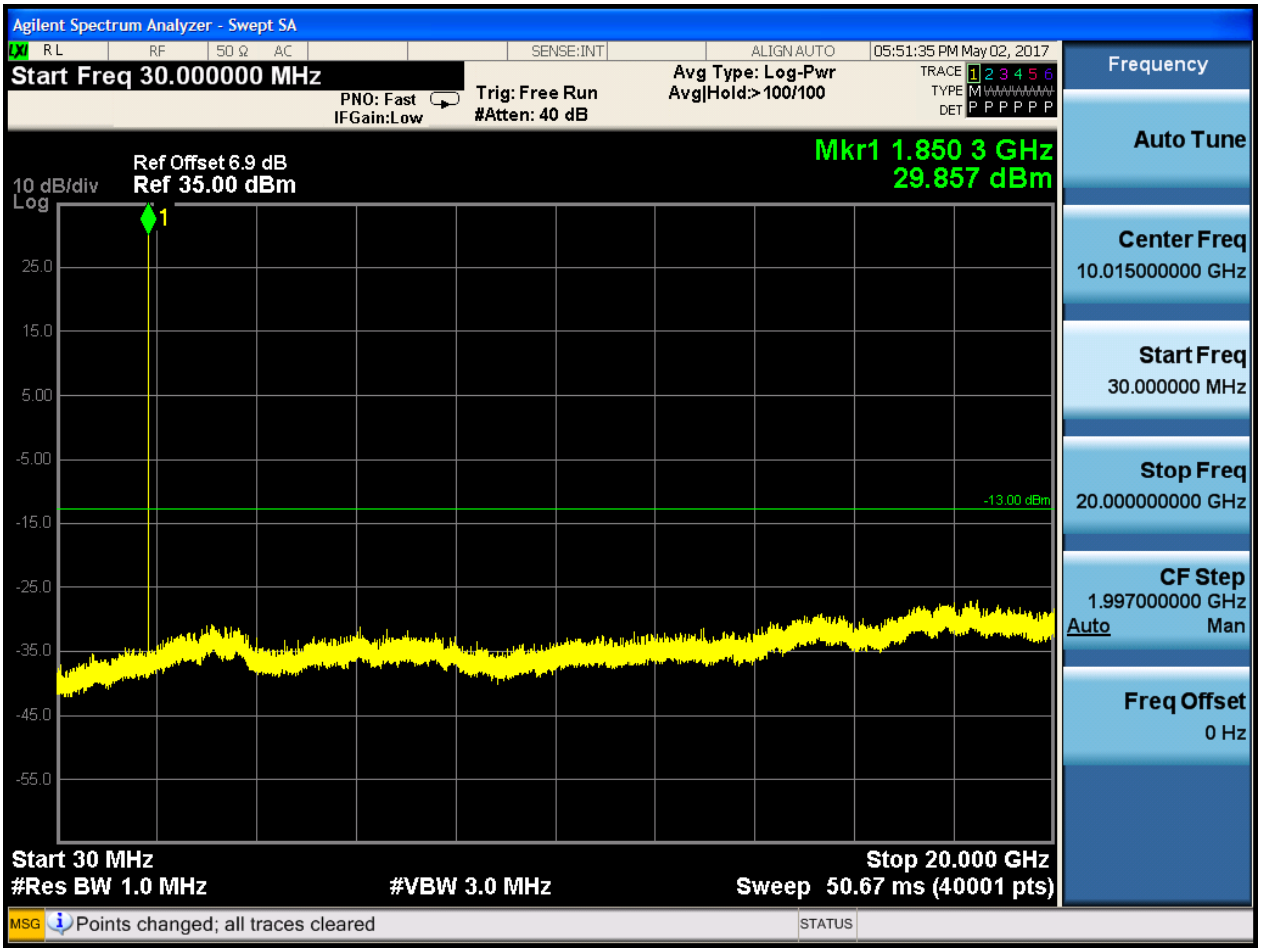


6.1.2 Test Band = GSM1900

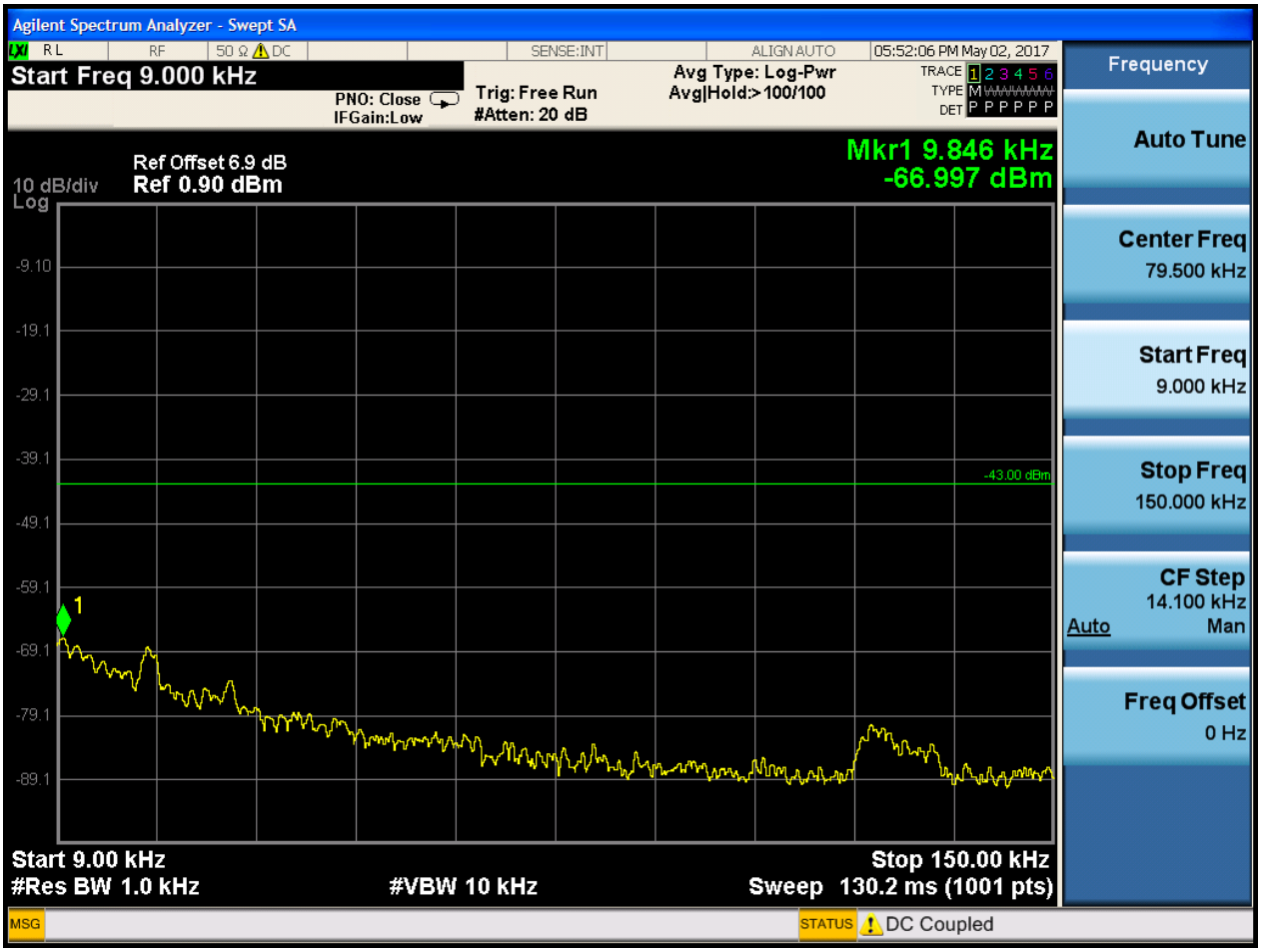
6.1.2.1 Test Mode = GSM/TM1

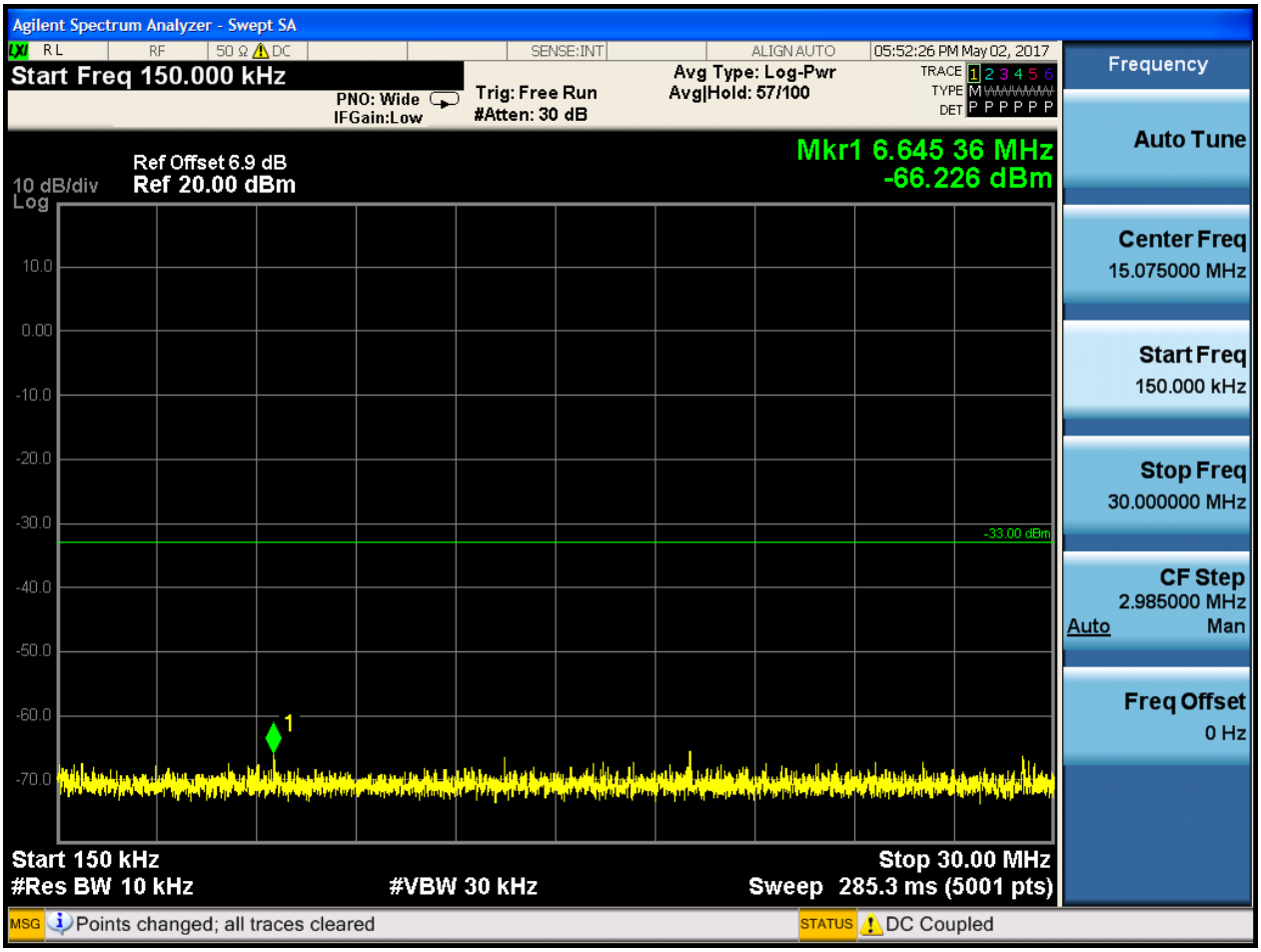
6.1.2.1.1 Test Channel = LCH

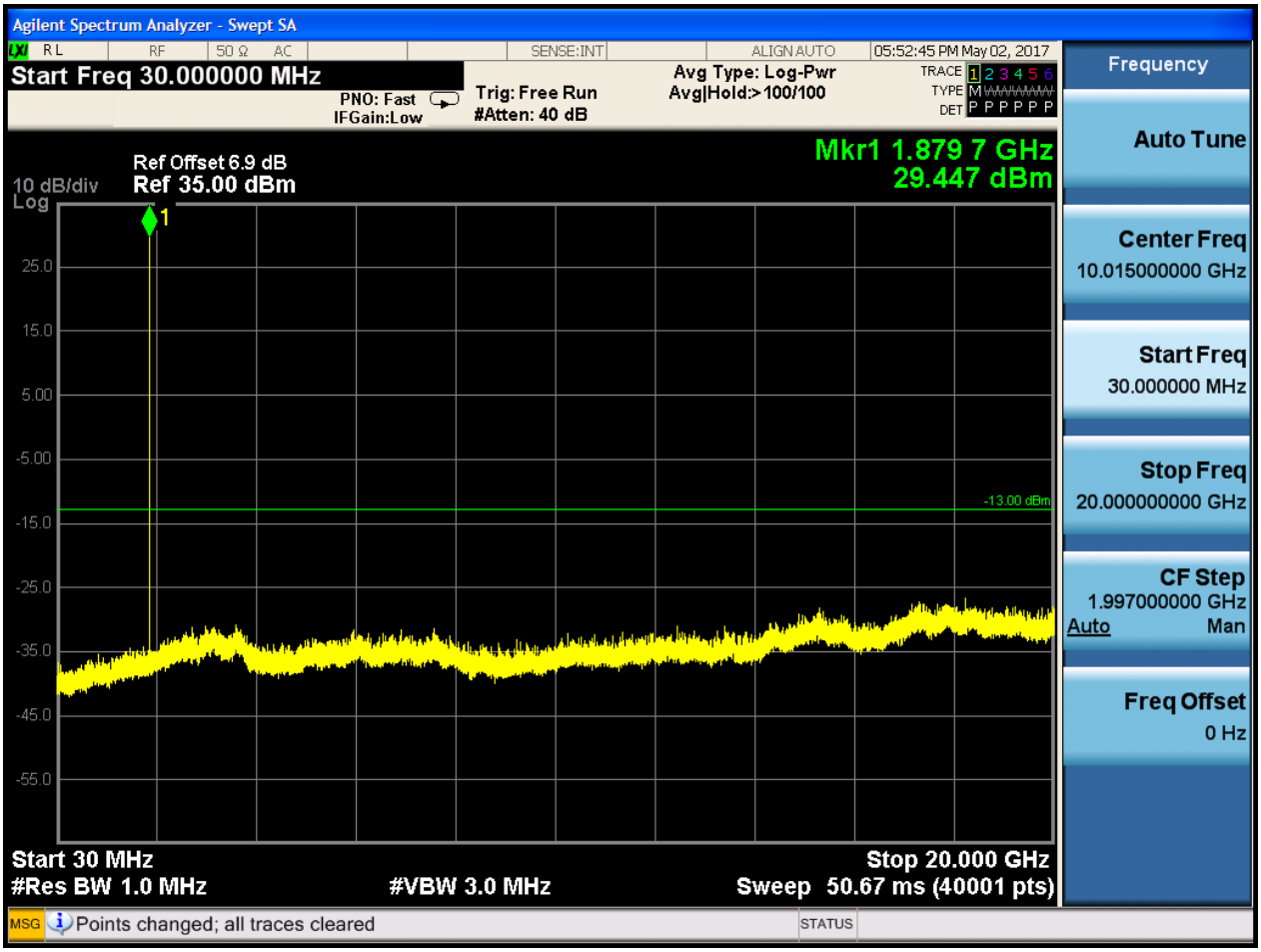




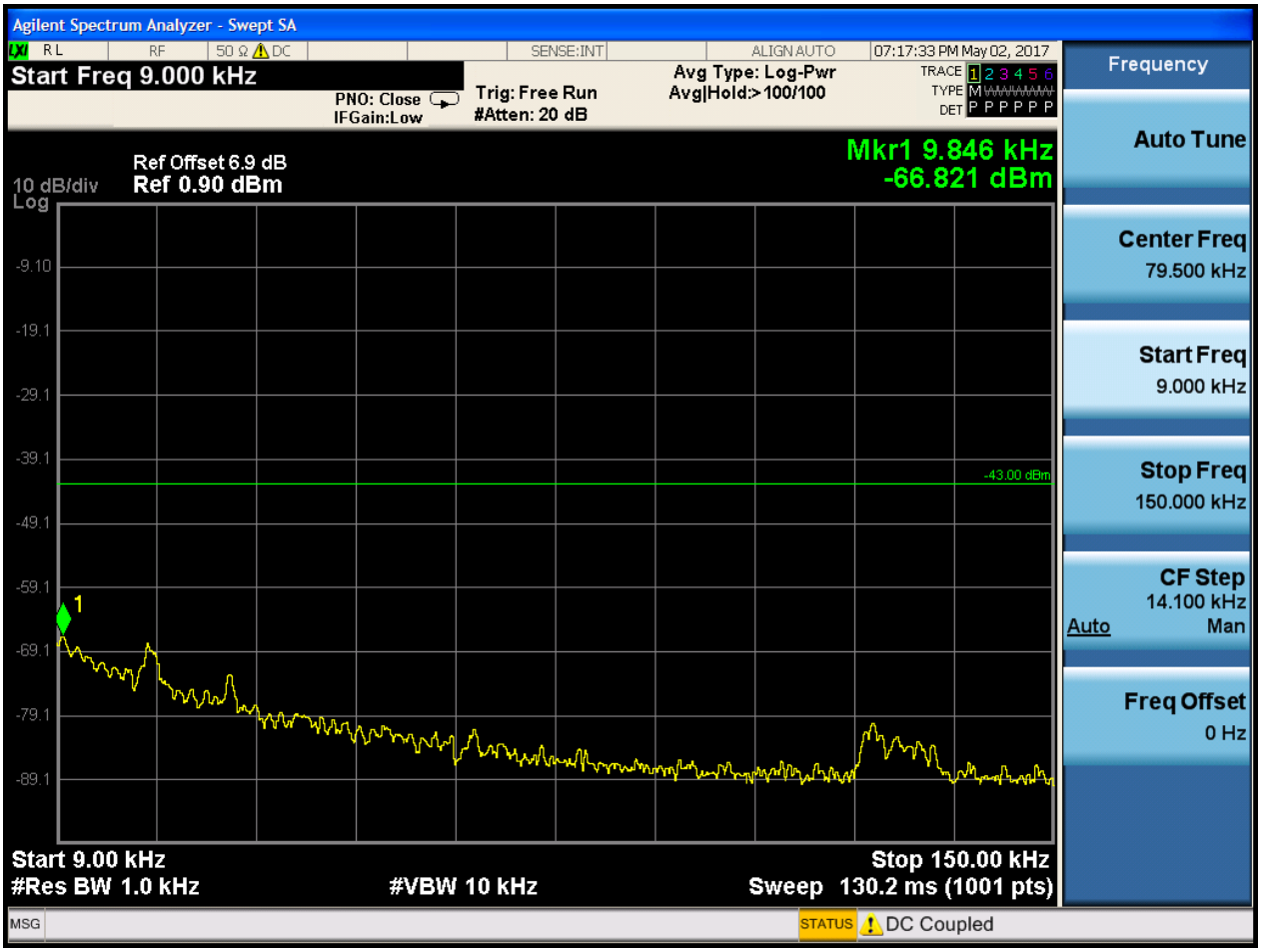
6.1.2.1.2 Test Channel = MCH

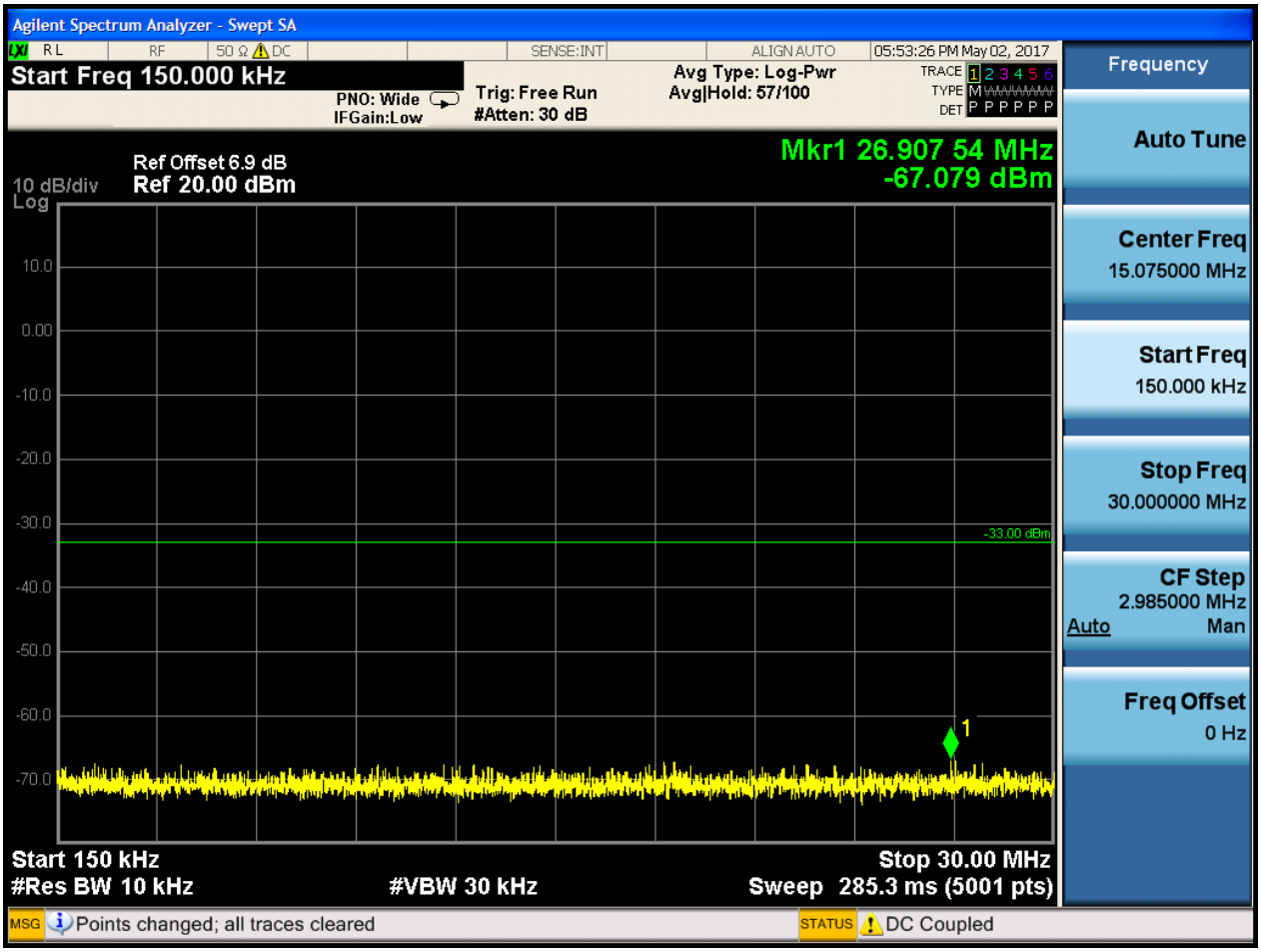


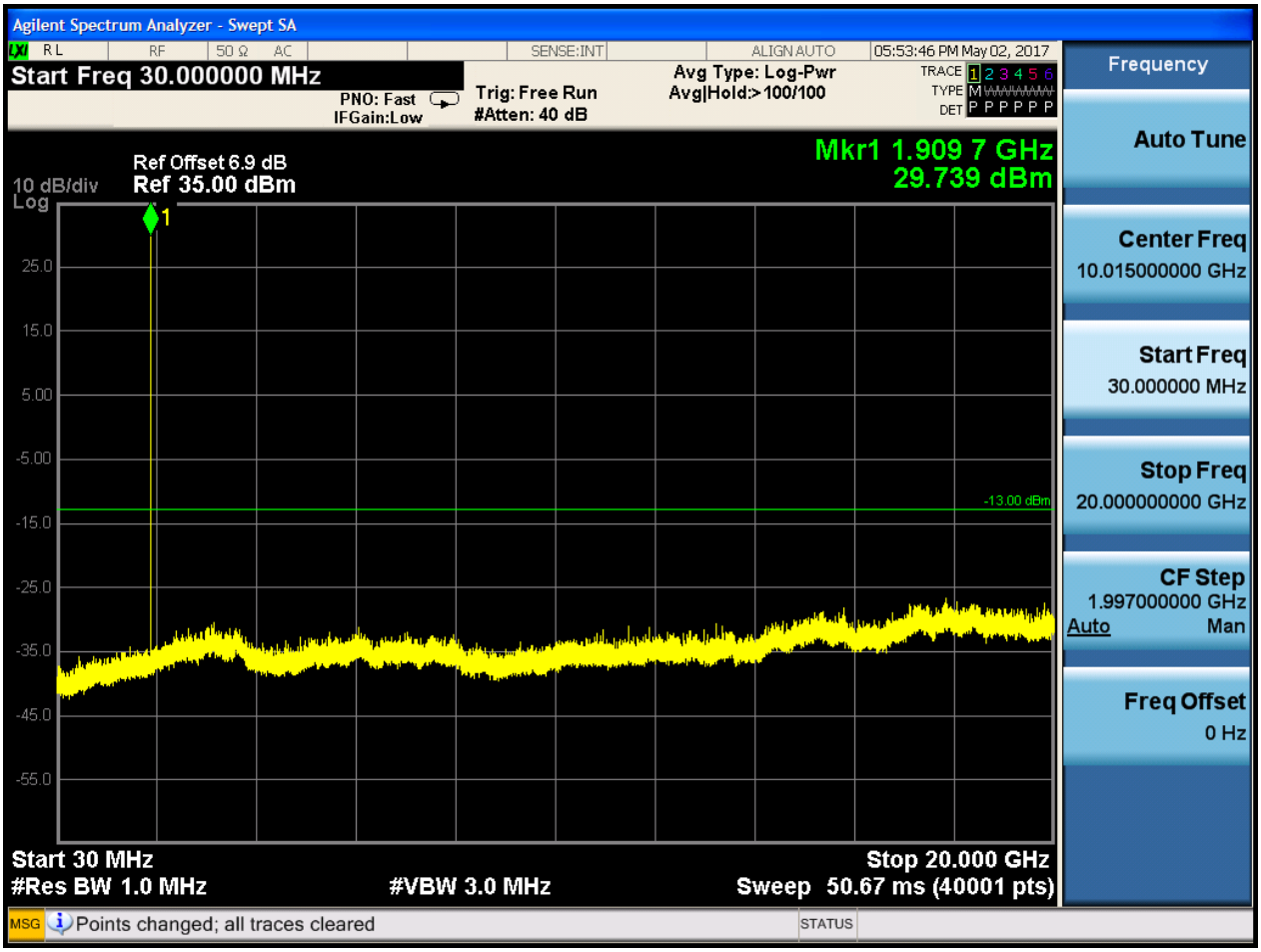




6.1.2.1.3 Test Channel = HCH

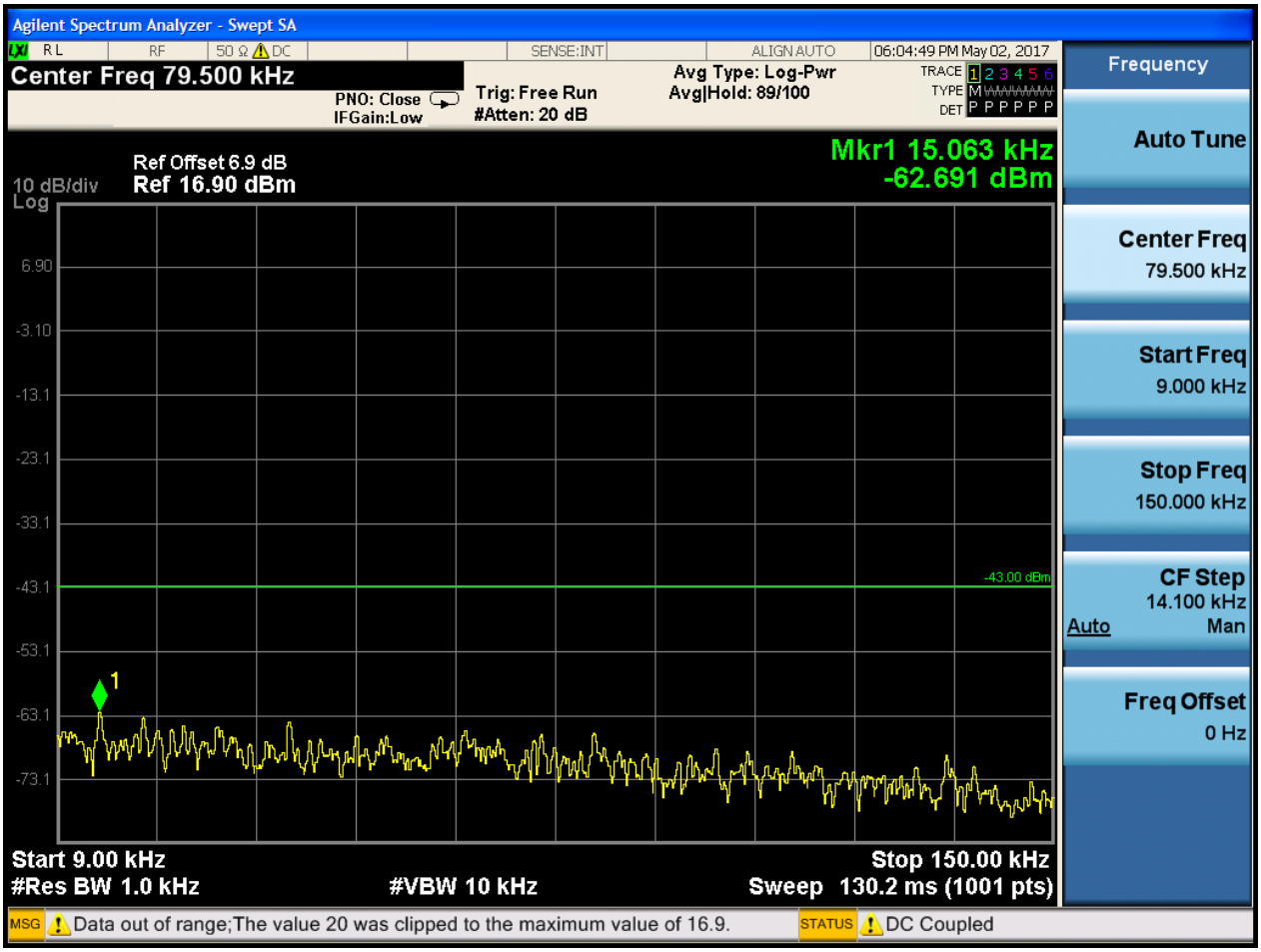


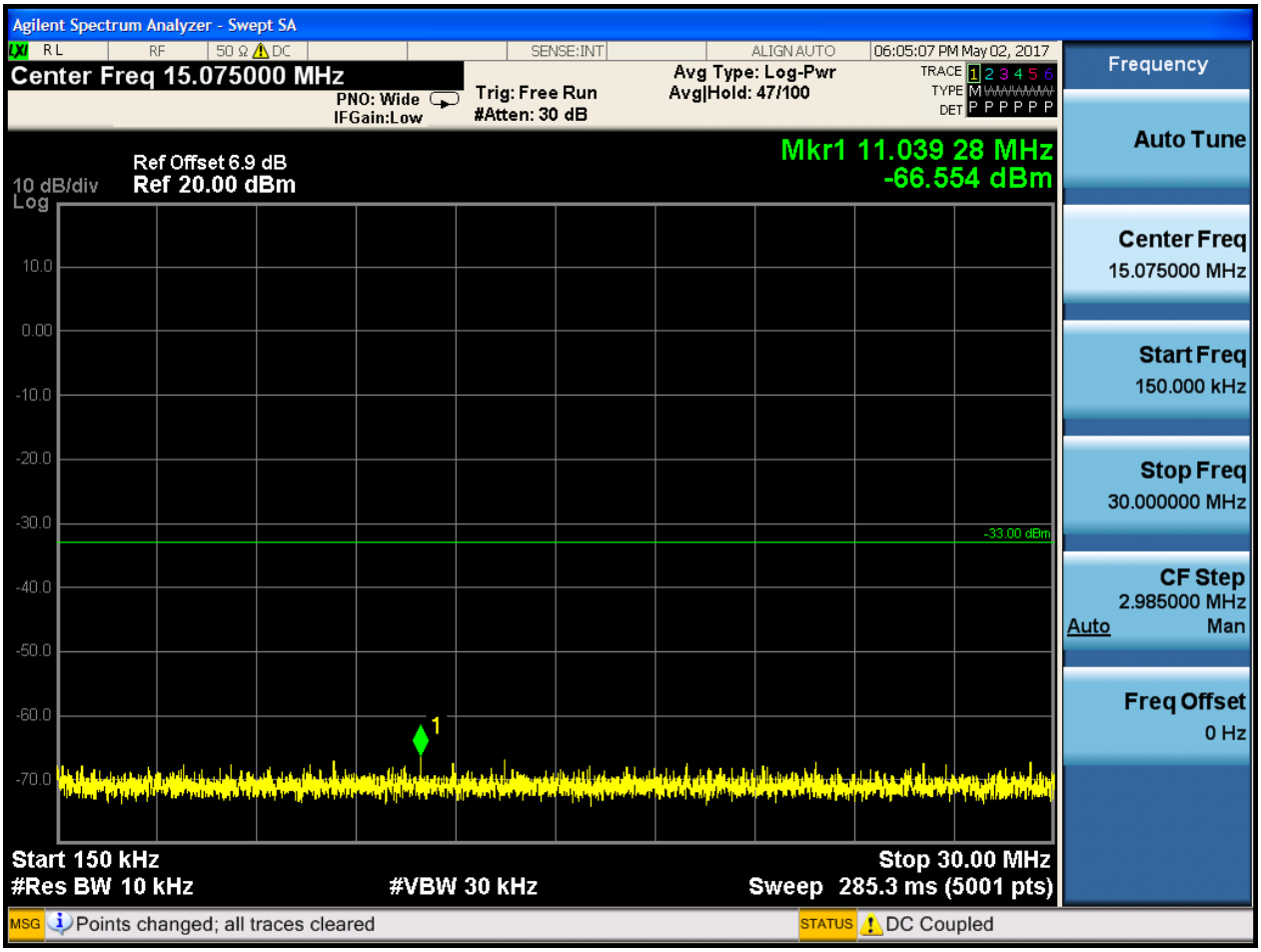


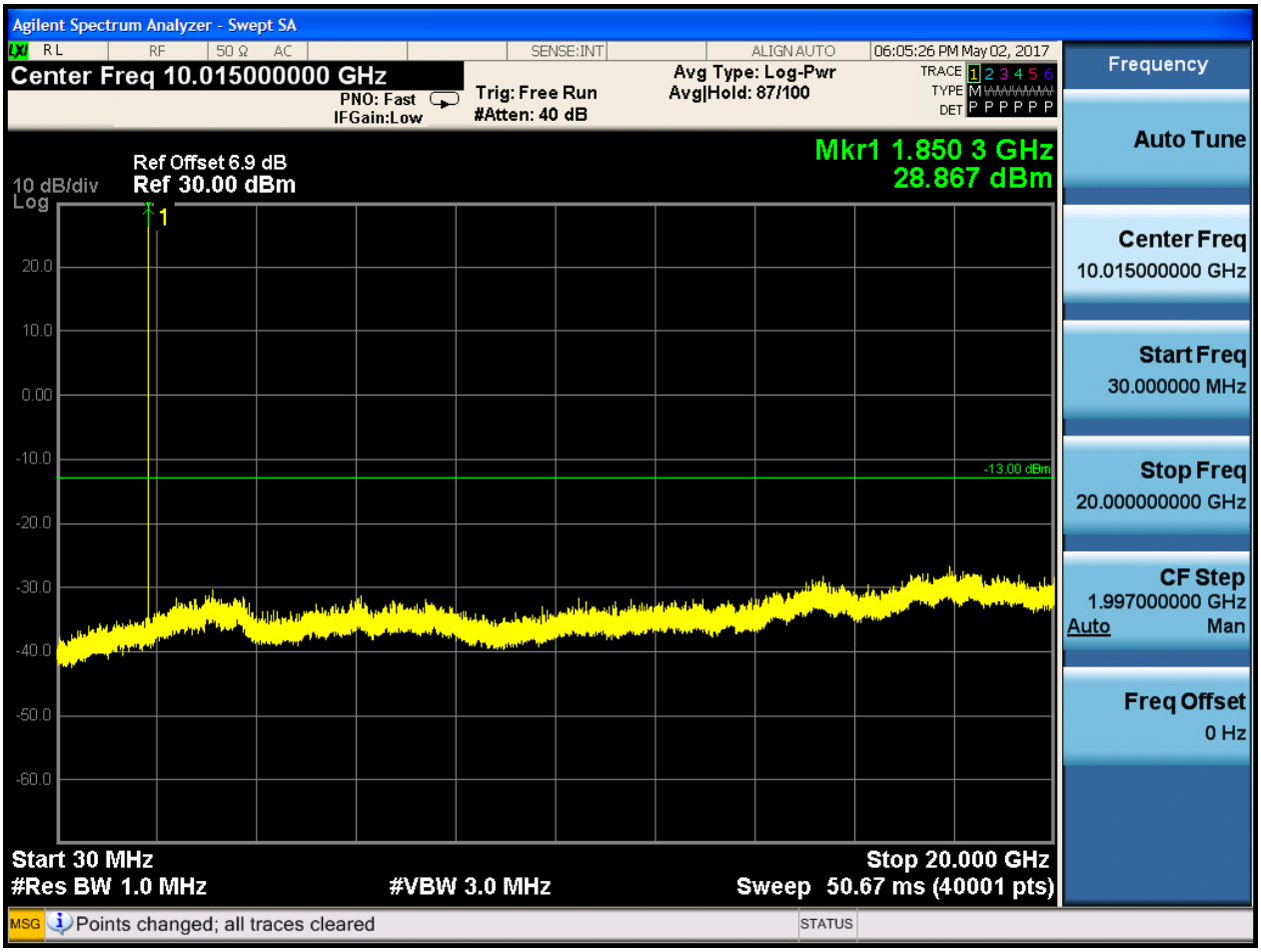


6.1.2.2 Test Mode = GSM/TM2

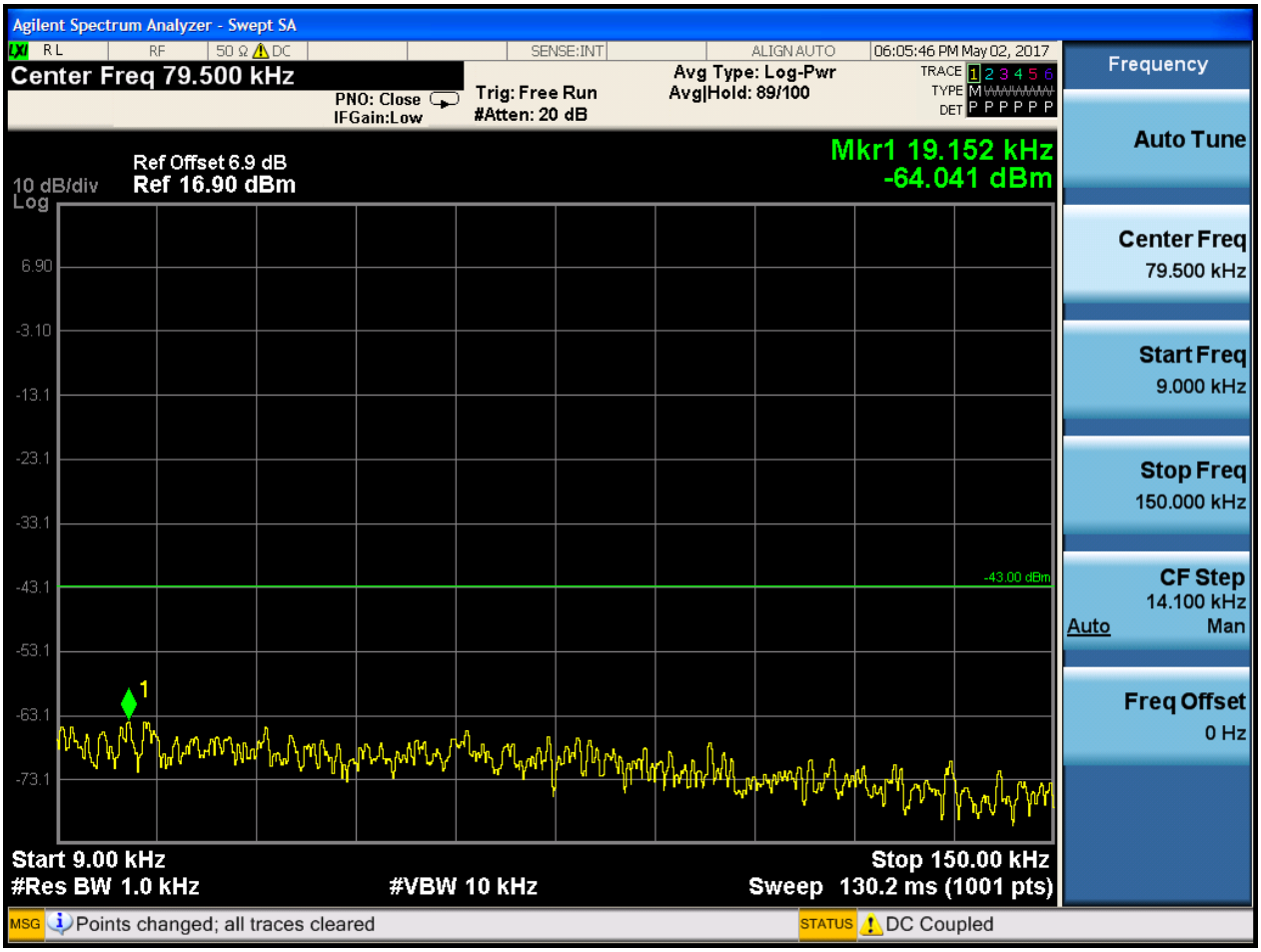
6.1.2.2.1 Test Channel = LCH

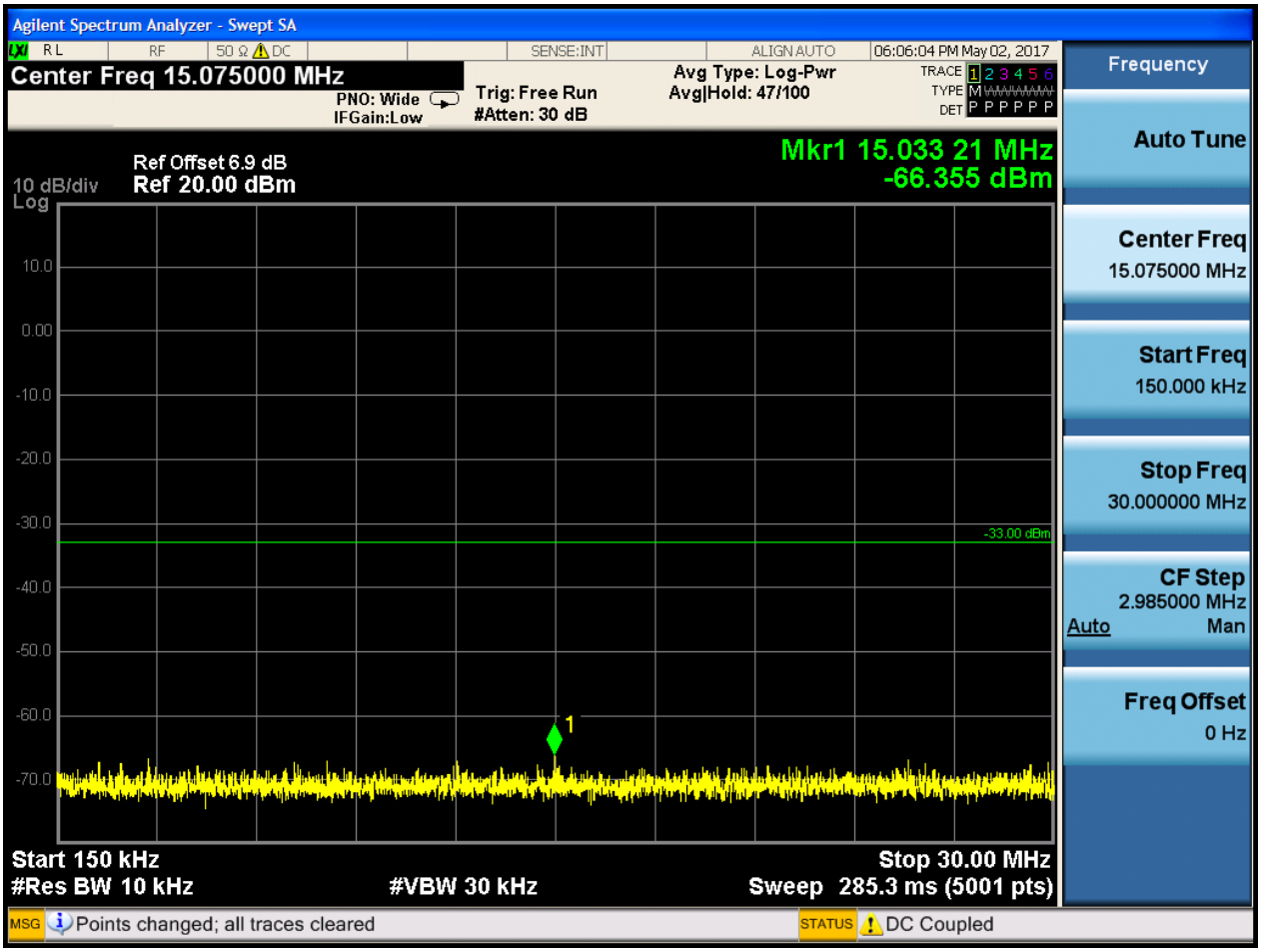


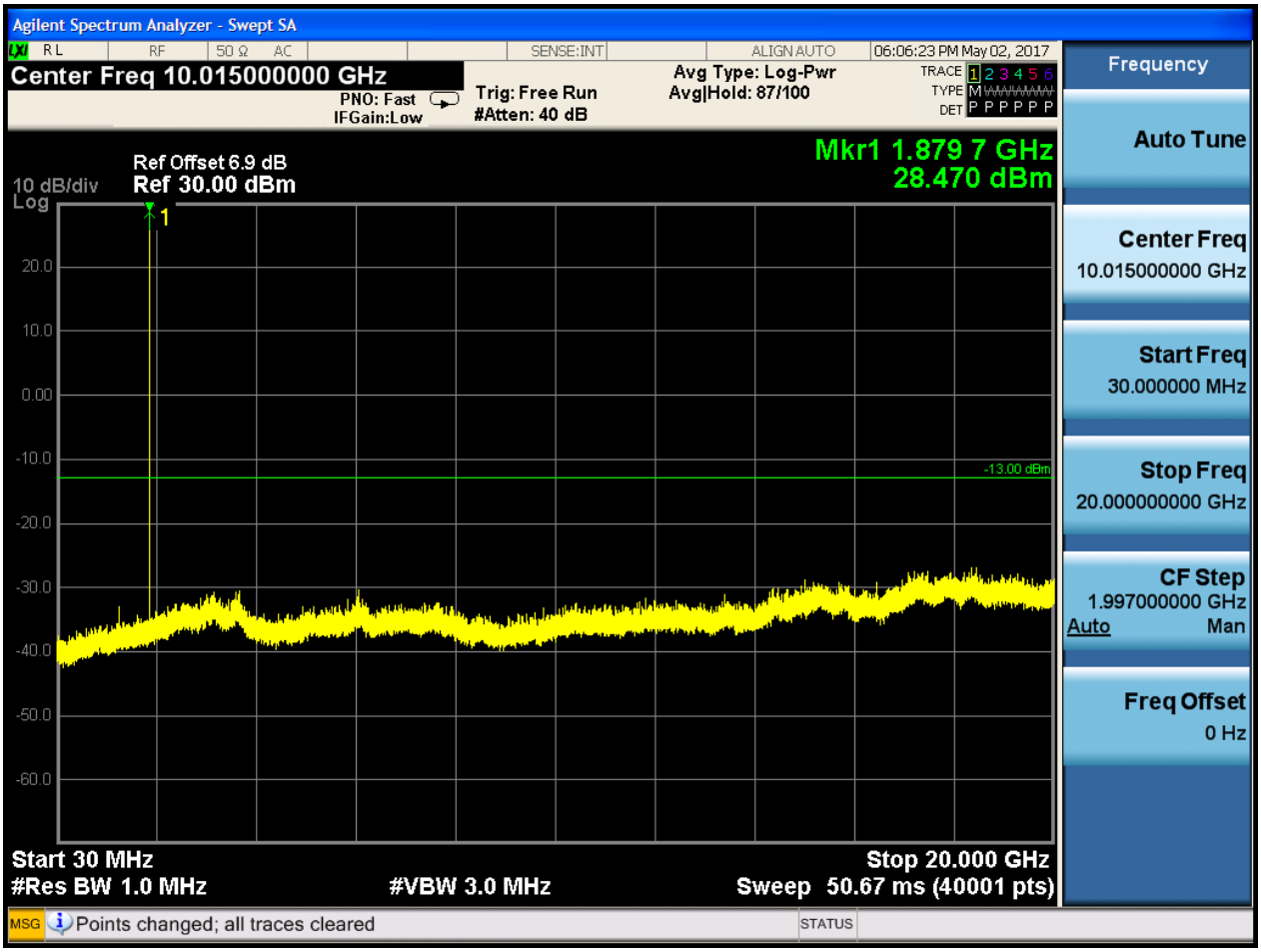




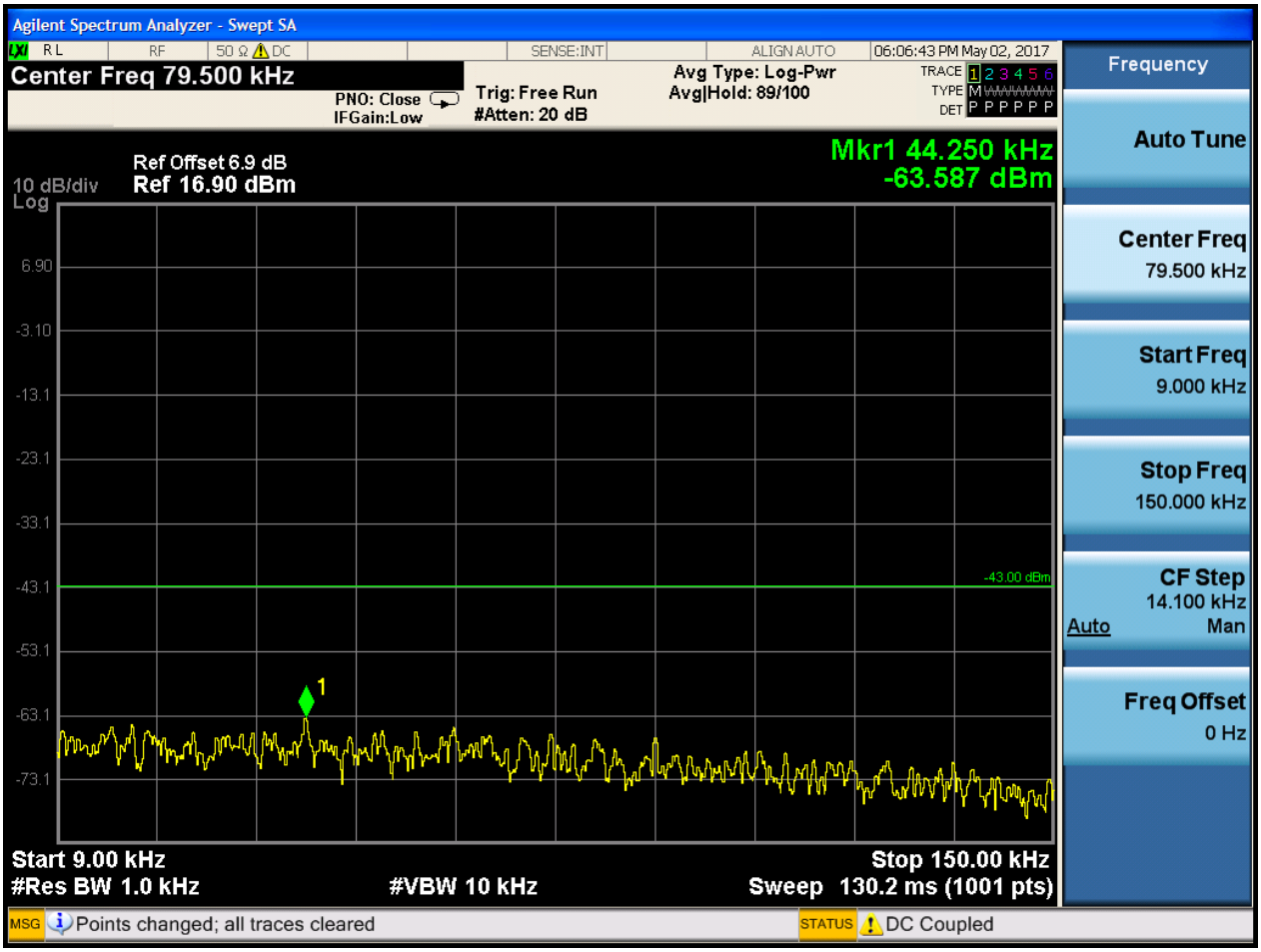
6.1.2.2.2 Test Channel = MCH

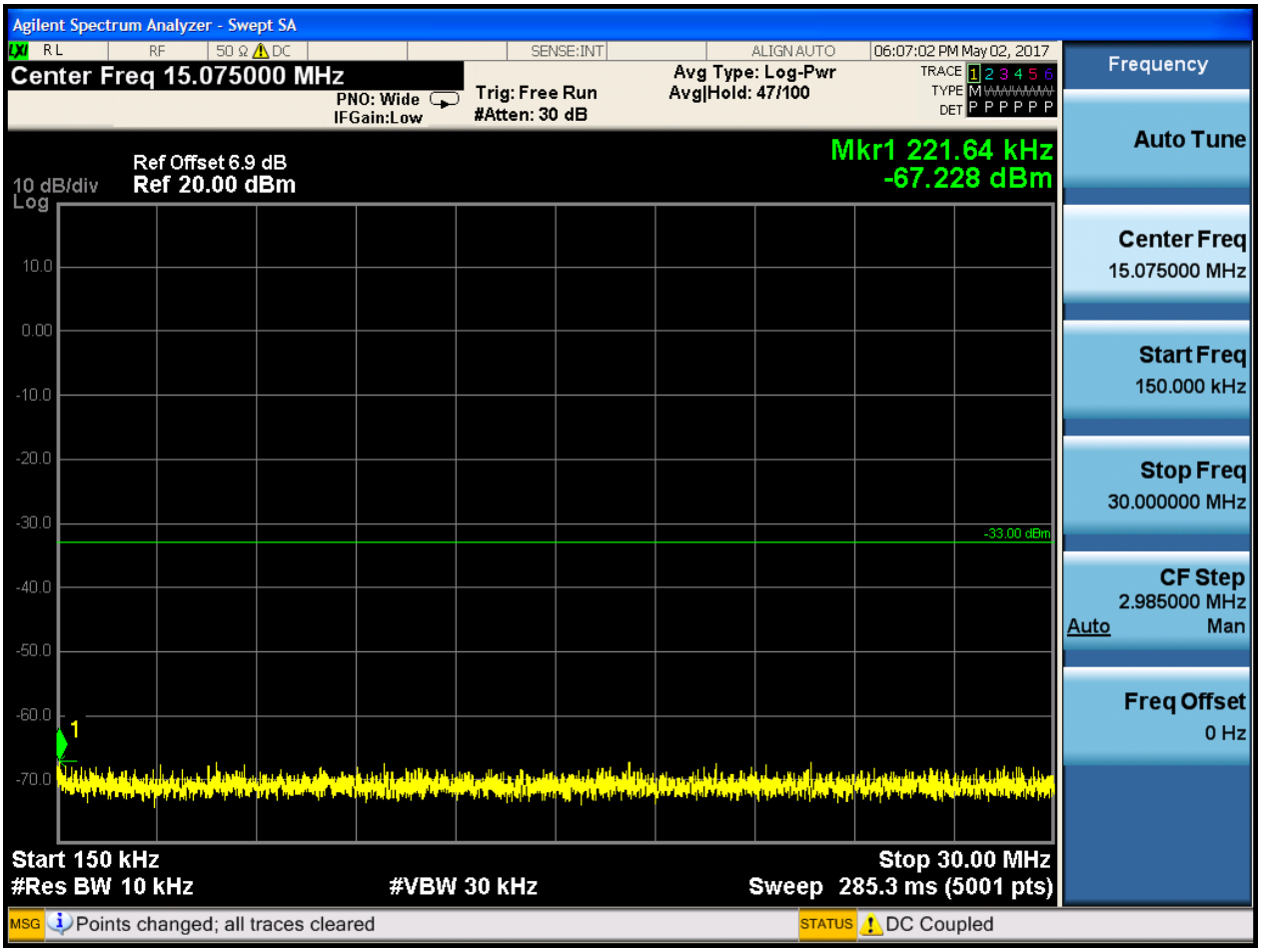


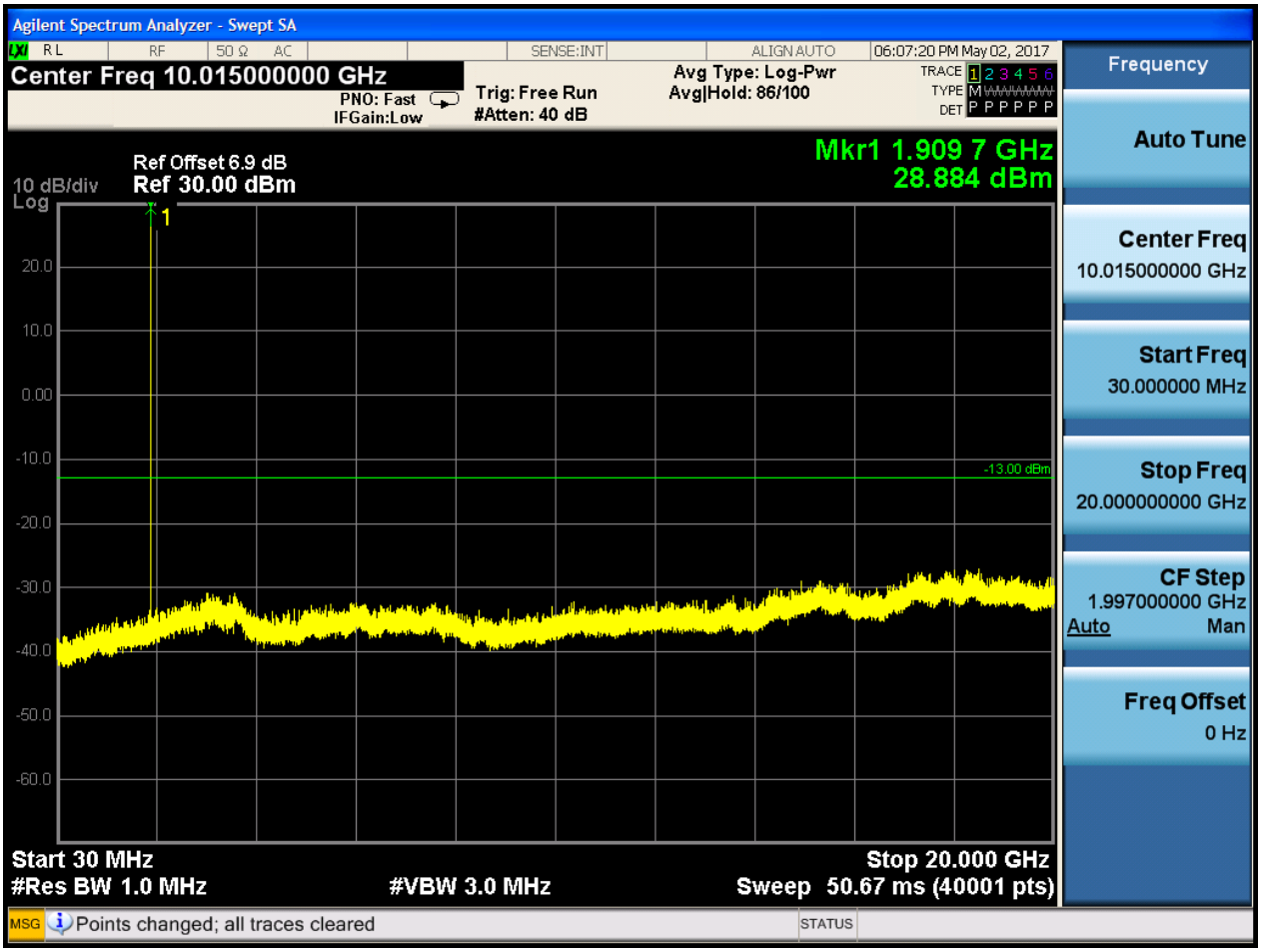




6.1.2.2.3 Test Channel = HCH







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

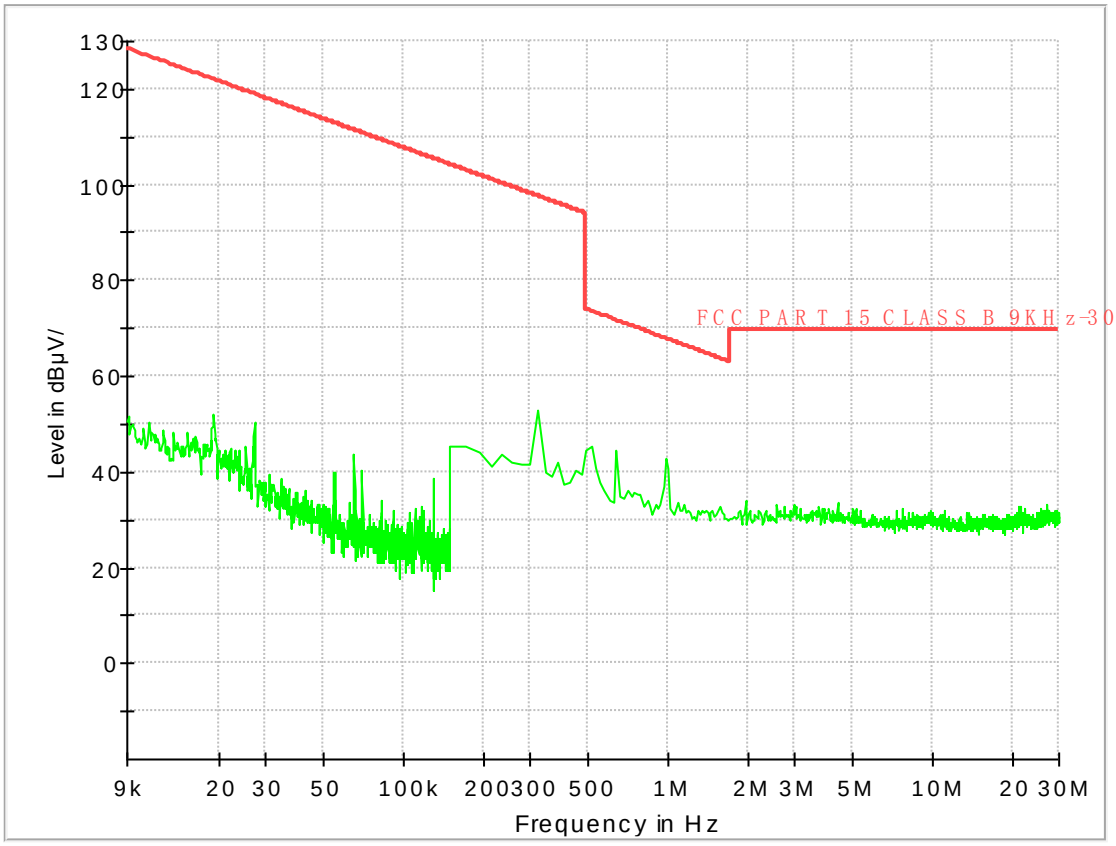
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

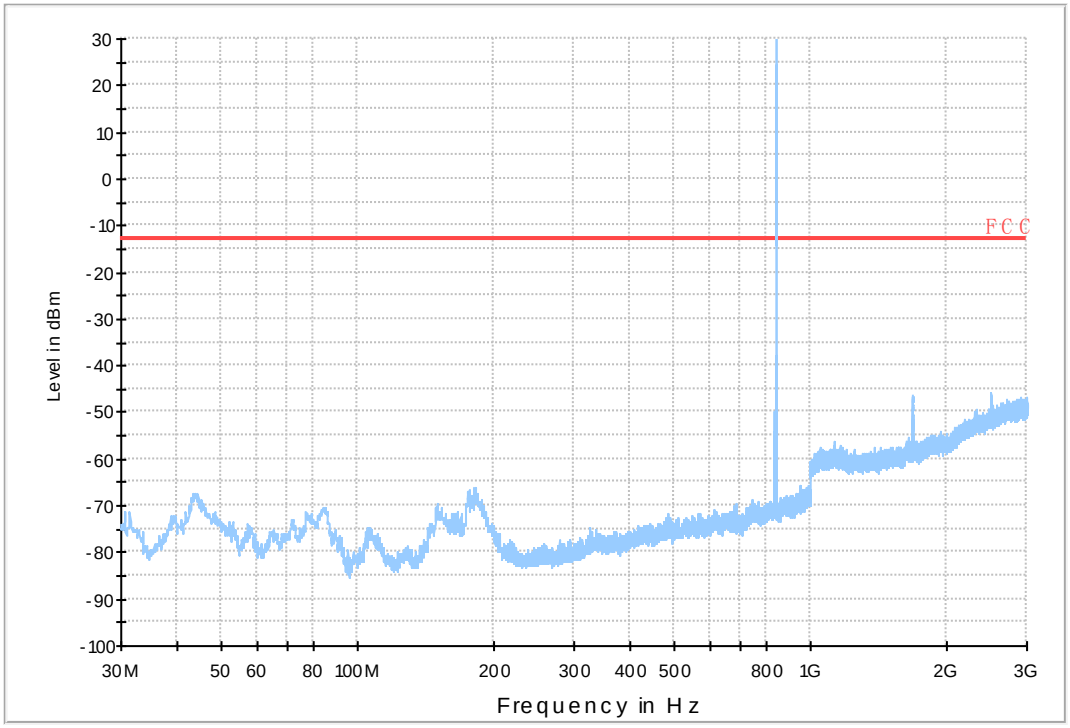
7.1 For GSM

7.1.1 Test Band = GSM850

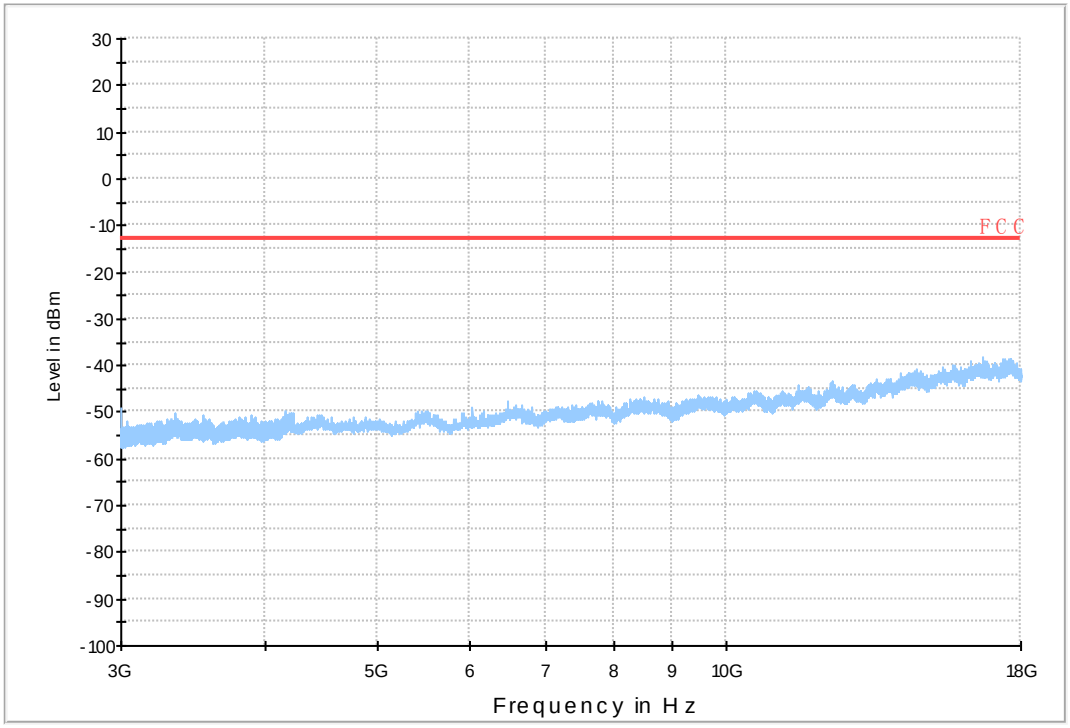
7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

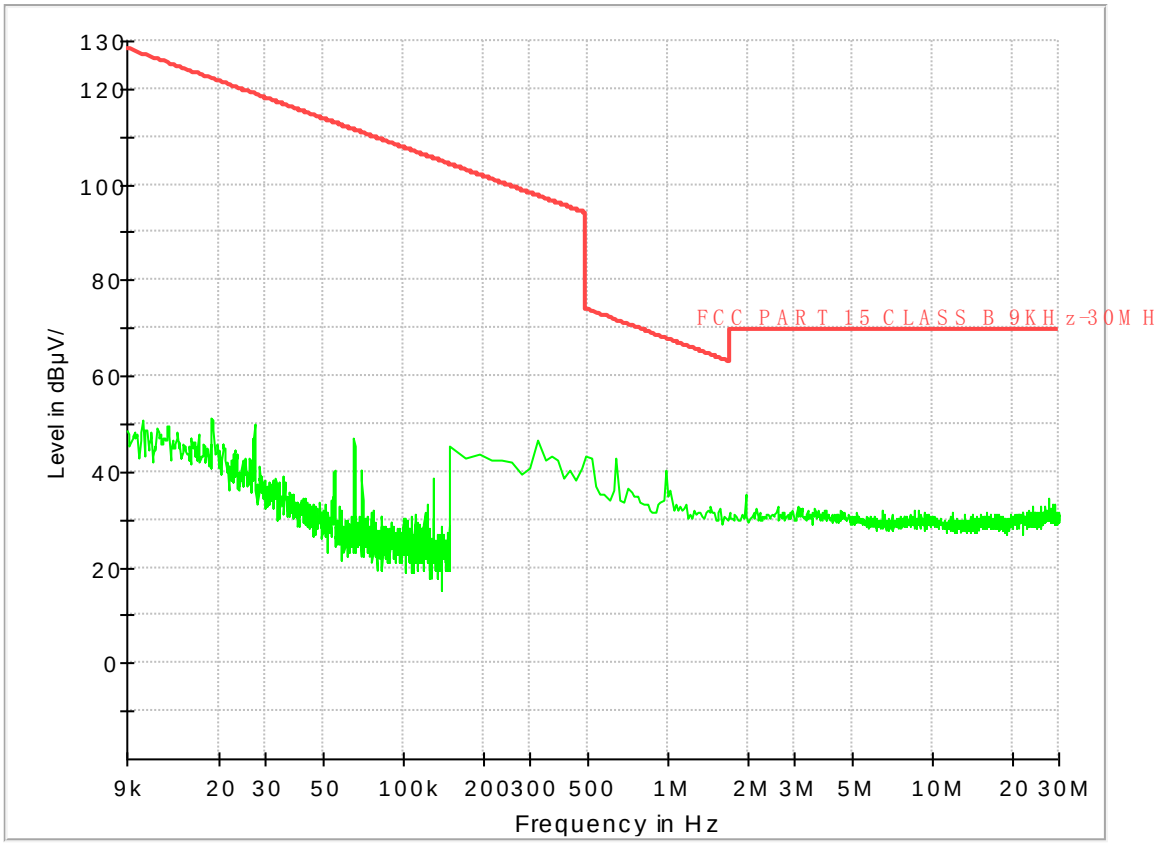


Copy of FCC PART22 GSM850_H

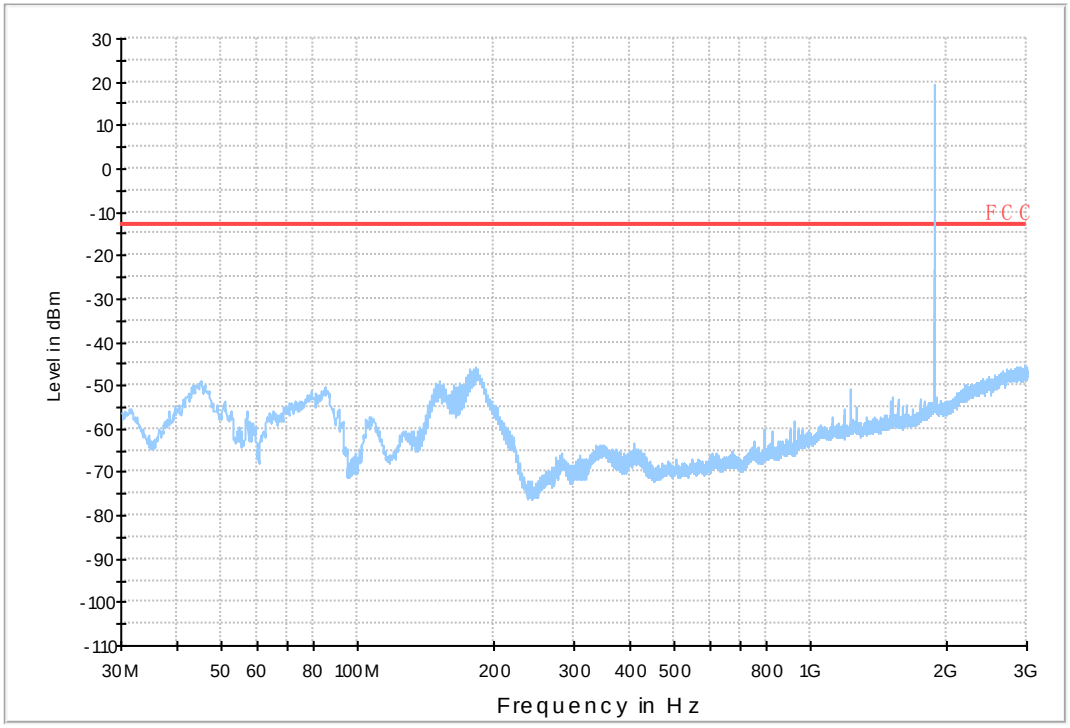


7.1.2 Test Band = GSM1900

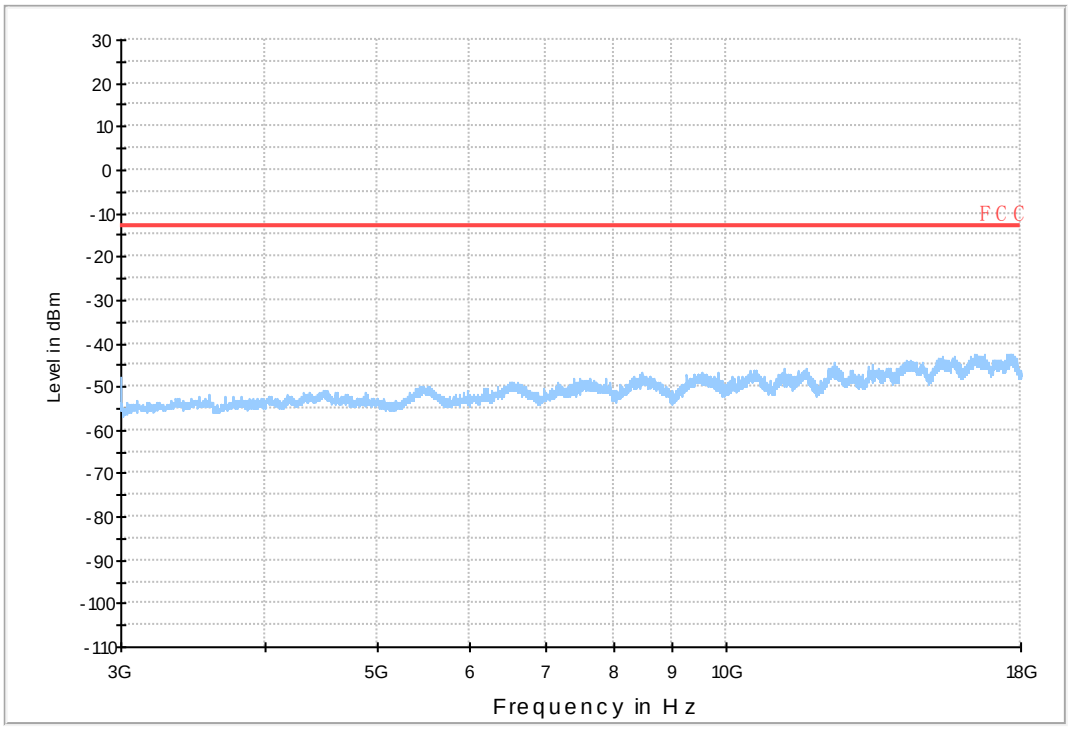
7.1.2.1 Test Mode = GSM/TM1

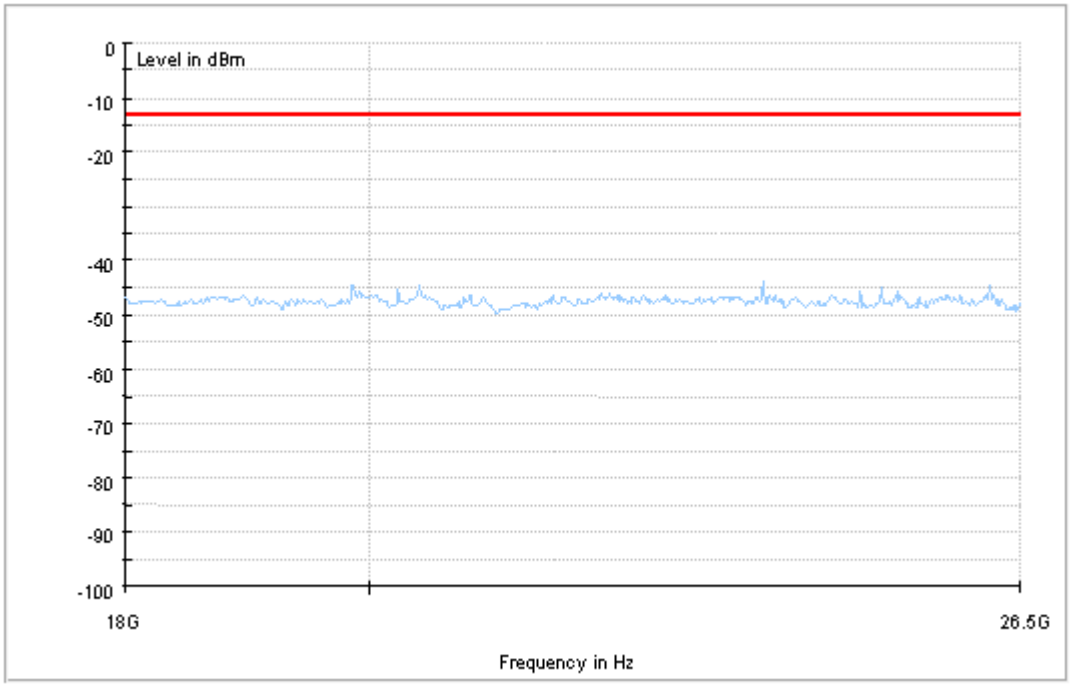


Copy of FCC PART24 GSM1900_L



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	10.20	0.01238	PASS
				VN	12.01	0.01457	PASS
				VH	15.05	0.01826	PASS
		MCH	TN	VL	10.72	0.01281	PASS
				VN	9.75	0.01165	PASS
				VH	8.91	0.01065	PASS
		HCH	TN	VL	10.78	0.0127	PASS
				VN	12.98	0.01529	PASS
				VH	11.24	0.01324	PASS
	GSM/TM2	LCH	TN	VL	9.20	0.01116	PASS
				VN	24.60	0.02985	PASS
				VH	19.37	0.0235	PASS
		MCH	TN	VL	9.14	0.01093	PASS
				VN	19.05	0.02277	PASS
				VH	15.37	0.01837	PASS
		HCH	TN	VL	14.33	0.01688	PASS
				VN	12.14	0.0143	PASS
				VH	19.18	0.0226	PASS
GSM1900	GSM/TM1	LCH	TN	VL	8.91	0.00482	PASS
				VN	0.06	0.00003	PASS
				VH	0.97	0.00052	PASS
		MCH	TN	VL	-7.04	-0.00374	PASS
				VN	-4.91	-0.00261	PASS
				VH	-5.62	-0.00299	PASS
		HCH	TN	VL	-2.45	-0.00128	PASS
				VN	-5.55	-0.00291	PASS
				VH	-4.26	-0.00223	PASS
	GSM/TM2	LCH	TN	VL	-5.84	-0.00316	PASS
				VN	0.52	0.00028	PASS
				VH	0.32	0.00017	PASS
		MCH	TN	VL	4.68	0.00249	PASS
				VN	3.68	0.00196	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	-2.49	-0.00132	PASS
		HCH	TN	VL	-0.65	-0.00034	PASS
				VN	-3.36	-0.00176	PASS
				VH	1.87	0.00098	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	10.27	0.01246	PASS
				-20	14.53	0.01763	PASS
				-10	12.91	0.01566	PASS
				0	19.11	0.02319	PASS
				10	12.20	0.0148	PASS
				20	12.20	0.0148	PASS
				30	14.98	0.01818	PASS
				40	11.11	0.01348	PASS
				50	10.27	0.01246	PASS
		MCH	VN	-30	8.52	0.01018	PASS
				-20	13.37	0.01598	PASS
				-10	12.07	0.01443	PASS
				0	10.98	0.01312	PASS
				10	12.20	0.01458	PASS
				20	10.98	0.01312	PASS
				30	9.81	0.01173	PASS
				40	11.62	0.01389	PASS
				50	11.43	0.01366	PASS
		HCH	VN	-30	12.46	0.01468	PASS
				-20	8.85	0.01043	PASS
				-10	19.11	0.02251	PASS
				0	13.30	0.01567	PASS
				10	11.75	0.01384	PASS
				20	12.33	0.01453	PASS
				30	11.56	0.01362	PASS
				40	11.56	0.01362	PASS
				50	6.97	0.00821	PASS
	GSM/TM2	LCH	VN	-30	13.82	0.01677	PASS
				-20	16.63	0.02018	PASS
				-10	15.76	0.01912	PASS
				0	20.18	0.02448	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	18.89	0.02292	PASS
				20	13.43	0.01629	PASS
				30	14.37	0.01744	PASS
				40	14.82	0.01798	PASS
				50	10.40	0.01262	PASS
		MCH	VN	-30	16.24	0.01941	PASS
				-20	18.50	0.02211	PASS
				-10	17.92	0.02142	PASS
				0	9.10	0.01088	PASS
				10	12.53	0.01498	PASS
				20	15.17	0.01813	PASS
				30	12.88	0.0154	PASS
				40	7.07	0.00845	PASS
				50	20.37	0.02435	PASS
		HCH	VN	-30	22.60	0.02663	PASS
				-20	18.63	0.02195	PASS
				-10	15.92	0.01876	PASS
				0	12.95	0.01526	PASS
				10	23.31	0.02746	PASS
				20	20.15	0.02374	PASS
				30	11.04	0.01301	PASS
				40	17.56	0.02069	PASS
				50	19.63	0.02313	PASS
GSM1900	GSM/TM1	LCH	VN	-30	1.55	0.00084	PASS
				-20	-2.32	-0.00125	PASS
				-10	-0.19	-0.0001	PASS
				0	-1.74	-0.00094	PASS
				10	1.10	0.00059	PASS
				20	-1.61	-0.00087	PASS
				30	-0.90	-0.00049	PASS
				40	-4.07	-0.0022	PASS
				50	-1.36	-0.00074	PASS
		MCH	VN	-30	0.52	0.00028	PASS
				-20	5.88	0.00313	PASS
				-10	-5.81	-0.00309	PASS
				0	-1.55	-0.00082	PASS
				10	-3.23	-0.00172	PASS
				20	-9.62	-0.00512	PASS
				30	4.13	0.0022	PASS
				40	-1.36	-0.00072	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	-2.00	-0.00106	PASS
		HCH	VN	-30	0.65	0.00034	PASS
				-20	-0.84	-0.00044	PASS
				-10	-6.26	-0.00328	PASS
				0	-2.52	-0.00132	PASS
				10	-2.65	-0.00139	PASS
				20	-2.07	-0.00108	PASS
				30	-4.46	-0.00234	PASS
				40	4.33	0.00227	PASS
				50	-1.16	-0.00061	PASS
	GSM/TM2	LCH	VN	-30	2.36	0.00128	PASS
				-20	12.82	0.00693	PASS
				-10	0.87	0.00047	PASS
				0	4.58	0.00248	PASS
				10	11.46	0.00619	PASS
				20	-8.75	-0.00473	PASS
				30	1.94	0.00105	PASS
				40	-1.61	-0.00087	PASS
				50	1.74	0.00094	PASS
		MCH	VN	-30	1.87	0.00099	PASS
				-20	-7.46	-0.00397	PASS
				-10	-2.23	-0.00119	PASS
				0	-4.29	-0.00228	PASS
				10	-3.81	-0.00203	PASS
				20	1.58	0.00084	PASS
				30	-9.69	-0.00515	PASS
				40	3.00	0.0016	PASS
				50	1.71	0.00091	PASS
		HCH	VN	-30	3.65	0.00191	PASS
				-20	-2.20	-0.00115	PASS
				-10	-3.13	-0.00164	PASS
				0	-10.62	-0.00556	PASS
				10	6.75	0.00353	PASS
				20	-5.75	-0.00301	PASS
				30	-10.65	-0.00558	PASS
				40	5.84	0.00306	PASS
				50	-11.98	-0.00627	PASS

END