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	32.25	27.08	38.5	PASS
		MCH	32.47	27.29	38.5	PASS
		HCH	32.56	27.43	38.5	PASS
	GSM/TM2	LCH	25.38	20.41	38.5	PASS
		MCH	25.31	20.37	38.5	PASS
		HCH	25.34	20.27	38.5	PASS
Test Band	**Test Mode**	**Test Channel**	**Measured[dBm]**	**EIRP [dBm]**	**Limit [dBm]**	**Verdict**
GSM1900	GSM/TM1	LCH	29.83	27.16	33	PASS
		MCH	29.87	27.30	33	PASS
		HCH	29.97	27.43	33	PASS
	GSM/TM2	LCH	23.94	21.09	33	PASS
		MCH	23.97	21.14	33	PASS
		HCH	23.95	21.26	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	0.12	13	PASS
		MCH	0.12	13	PASS
		HCH	0.12	13	PASS
	GSM/TM2	LCH	3.05	13	PASS
		MCH	3.13	13	PASS
		HCH	3.15	13	PASS
GSM1900	GSM/TM1	LCH	0.13	13	PASS
		MCH	0.15	13	PASS
		HCH	0.13	13	PASS
	GSM/TM2	LCH	3	13	PASS
		MCH	2.92	13	PASS
		HCH	2.95	13	PASS

3Appendix_C: Modulation Characteristics

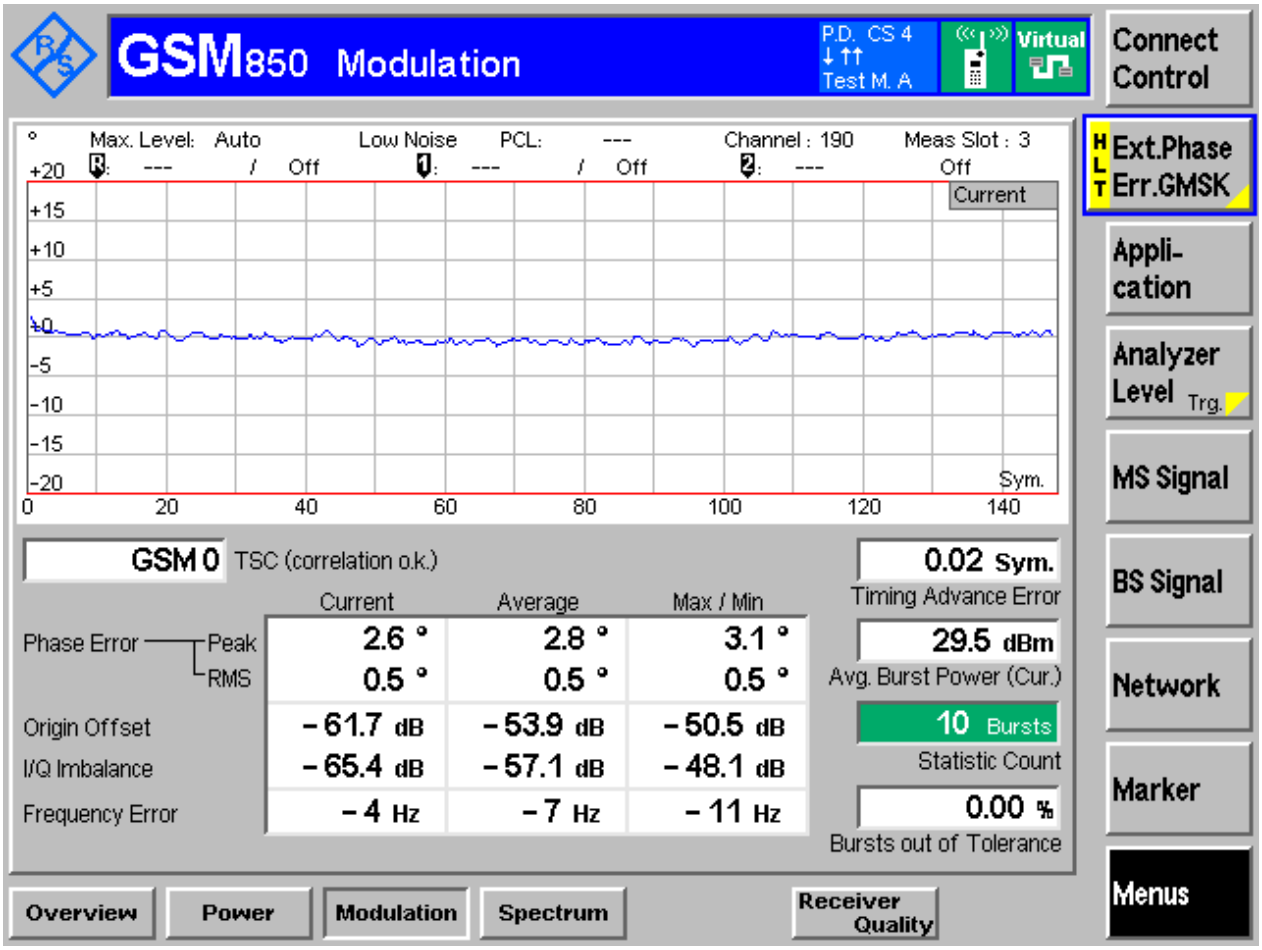
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

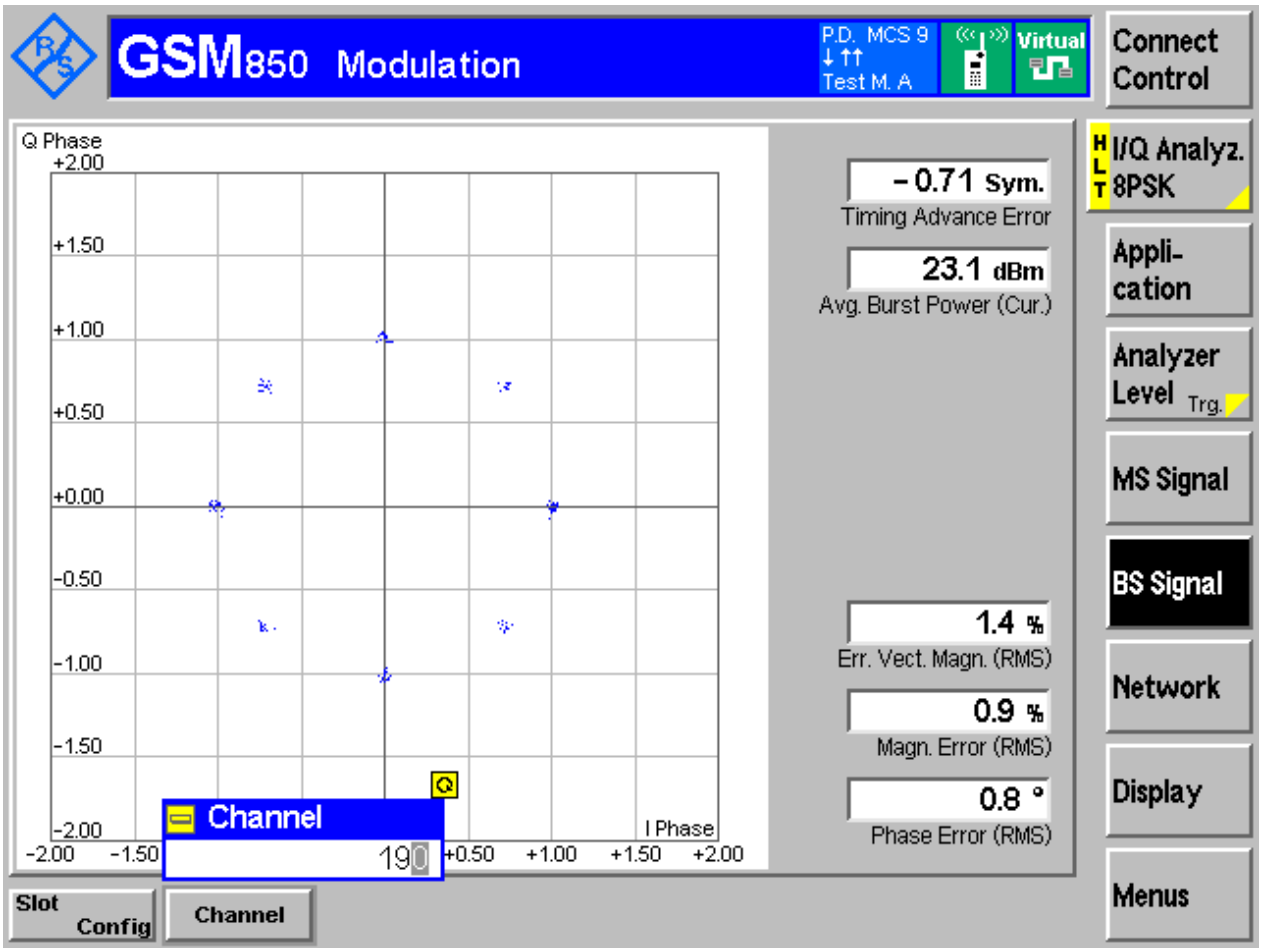
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

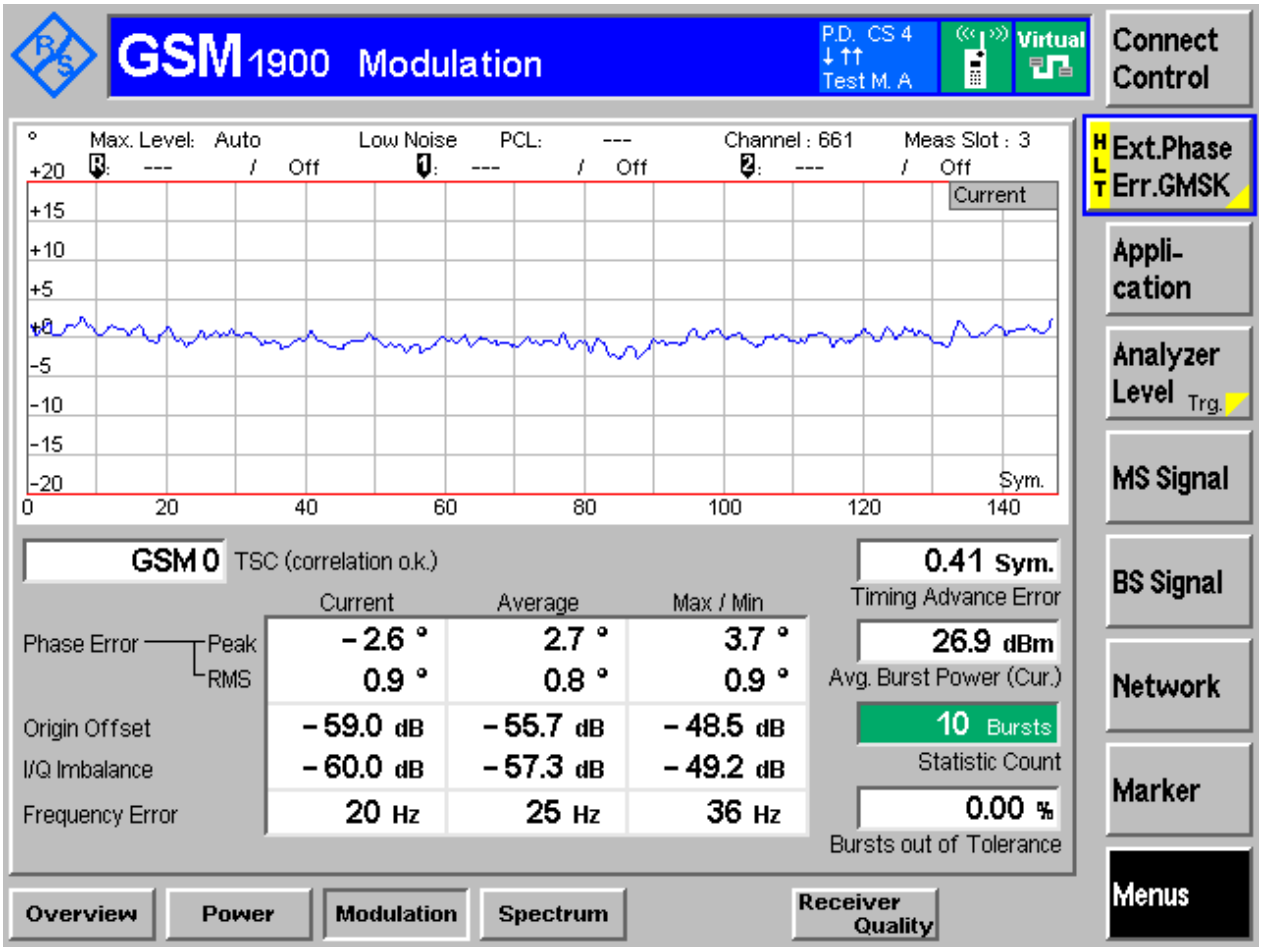
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

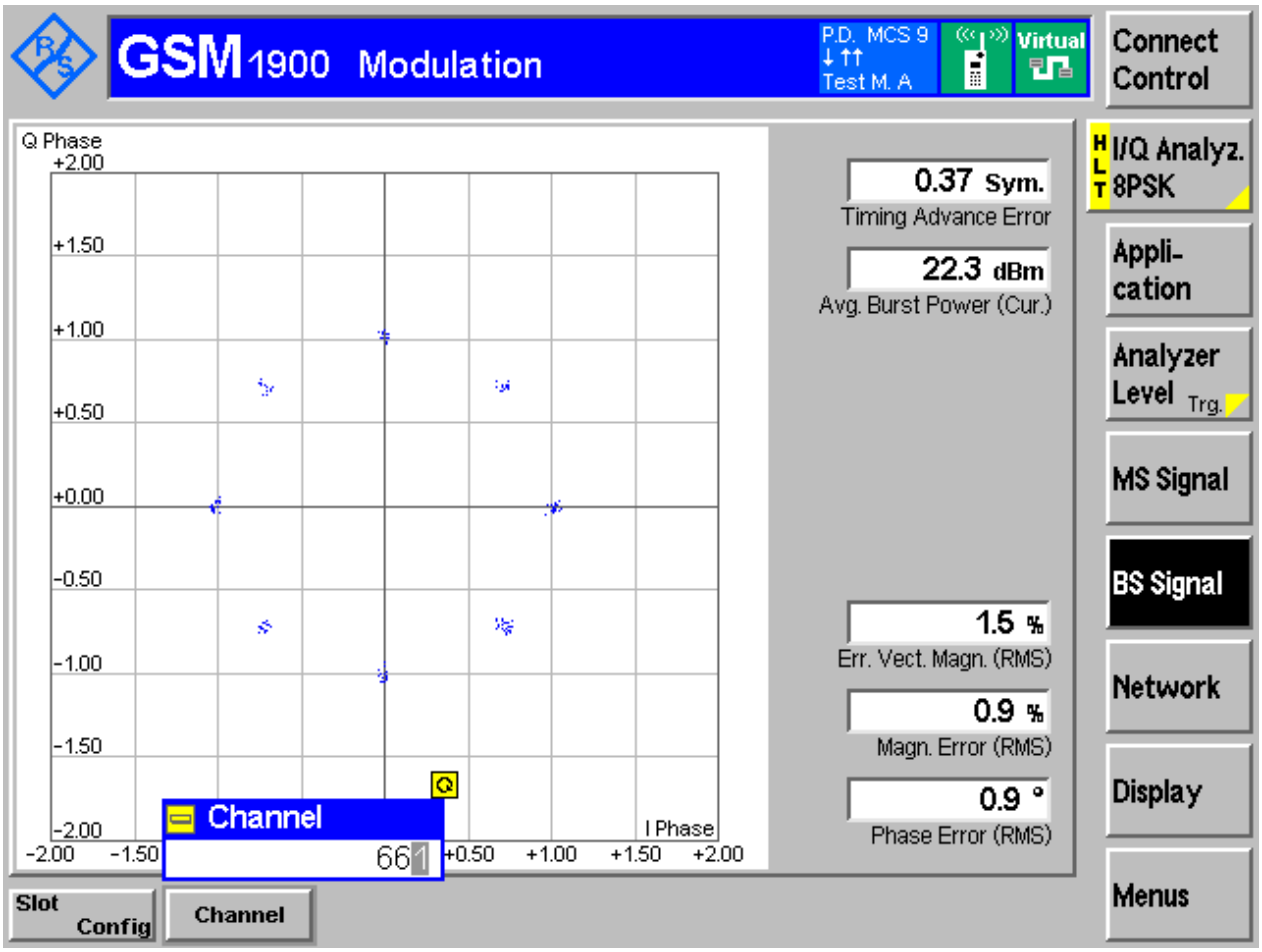
3.1.2.1 Test Mode = GSM/TM1

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	242.93	312.83	Pass
		MCH	246.45	319.35	Pass
		HCH	243.72	317.66	Pass
	GSM/TM2	LCH	243.41	316.58	Pass
		MCH	243.35	310.95	Pass
		HCH	248.46	322.96	Pass
GSM1900	GSM/TM1	LCH	240.95	315.73	Pass
		MCH	249.95	317.93	Pass
		HCH	246.30	313.48	Pass
	GSM/TM2	LCH	246.82	313.89	Pass
		MCH	247.60	317.92	Pass
		HCH	246.85	315.09	Pass

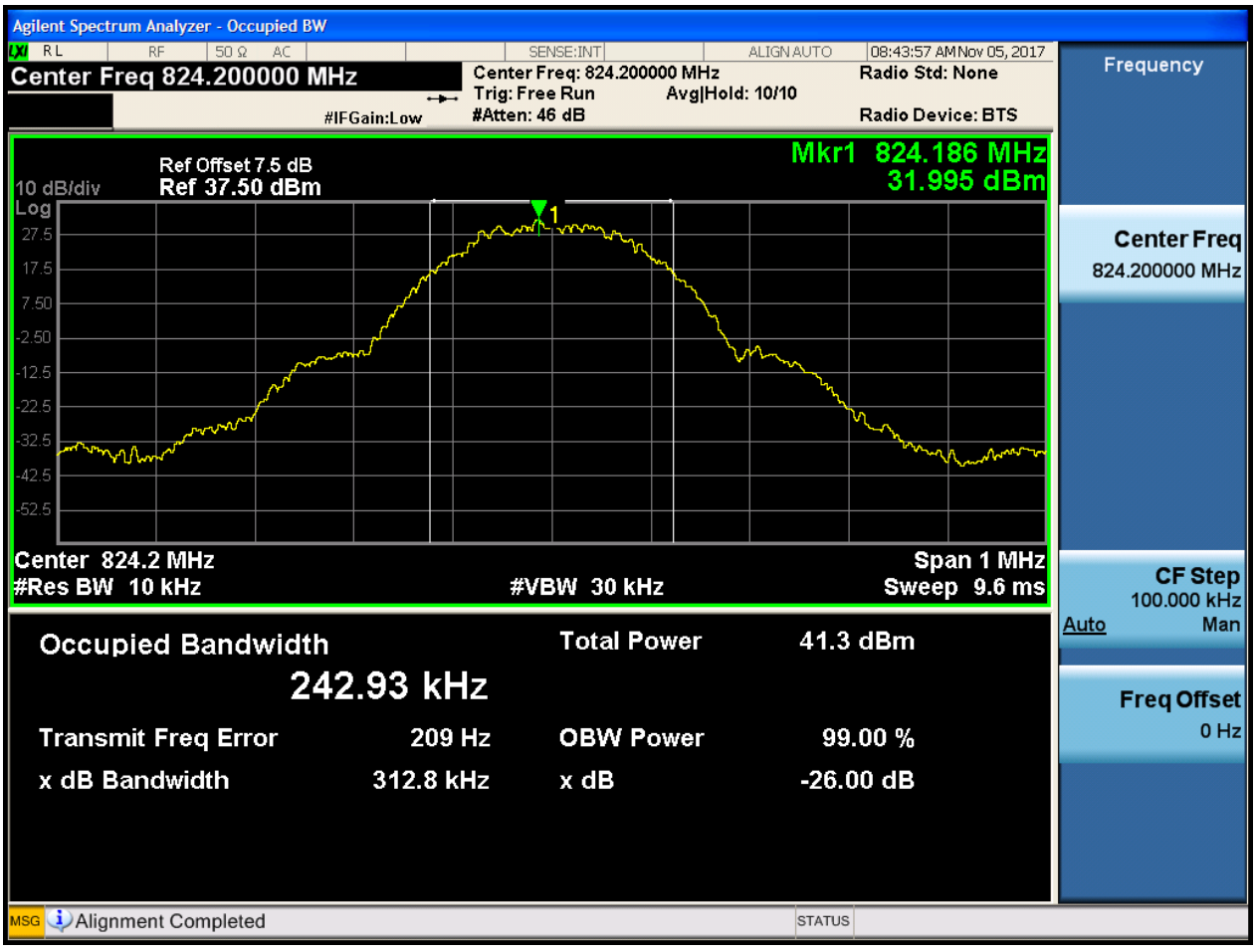
Part II - Test Plots

4.1 For GSM

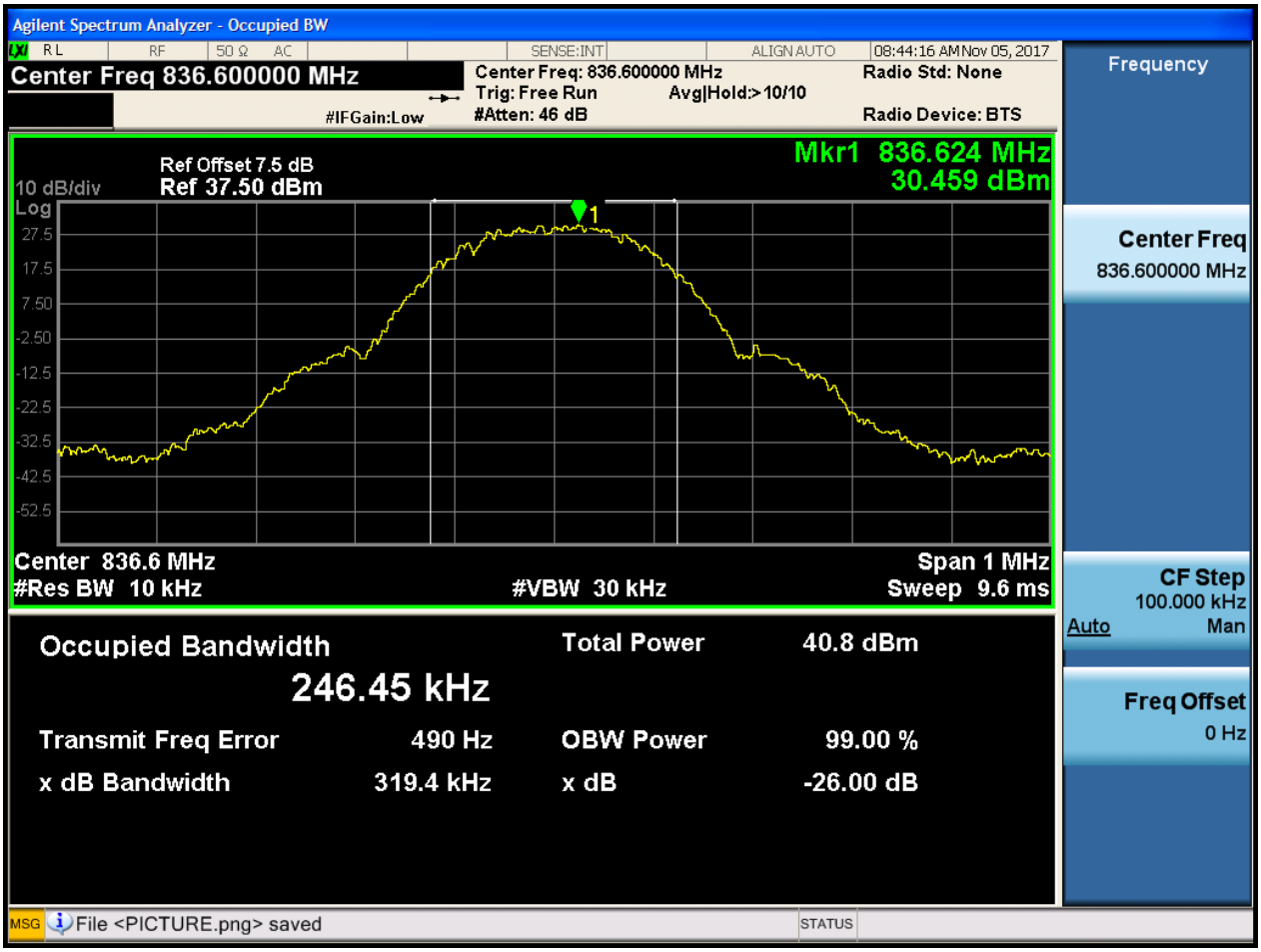
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

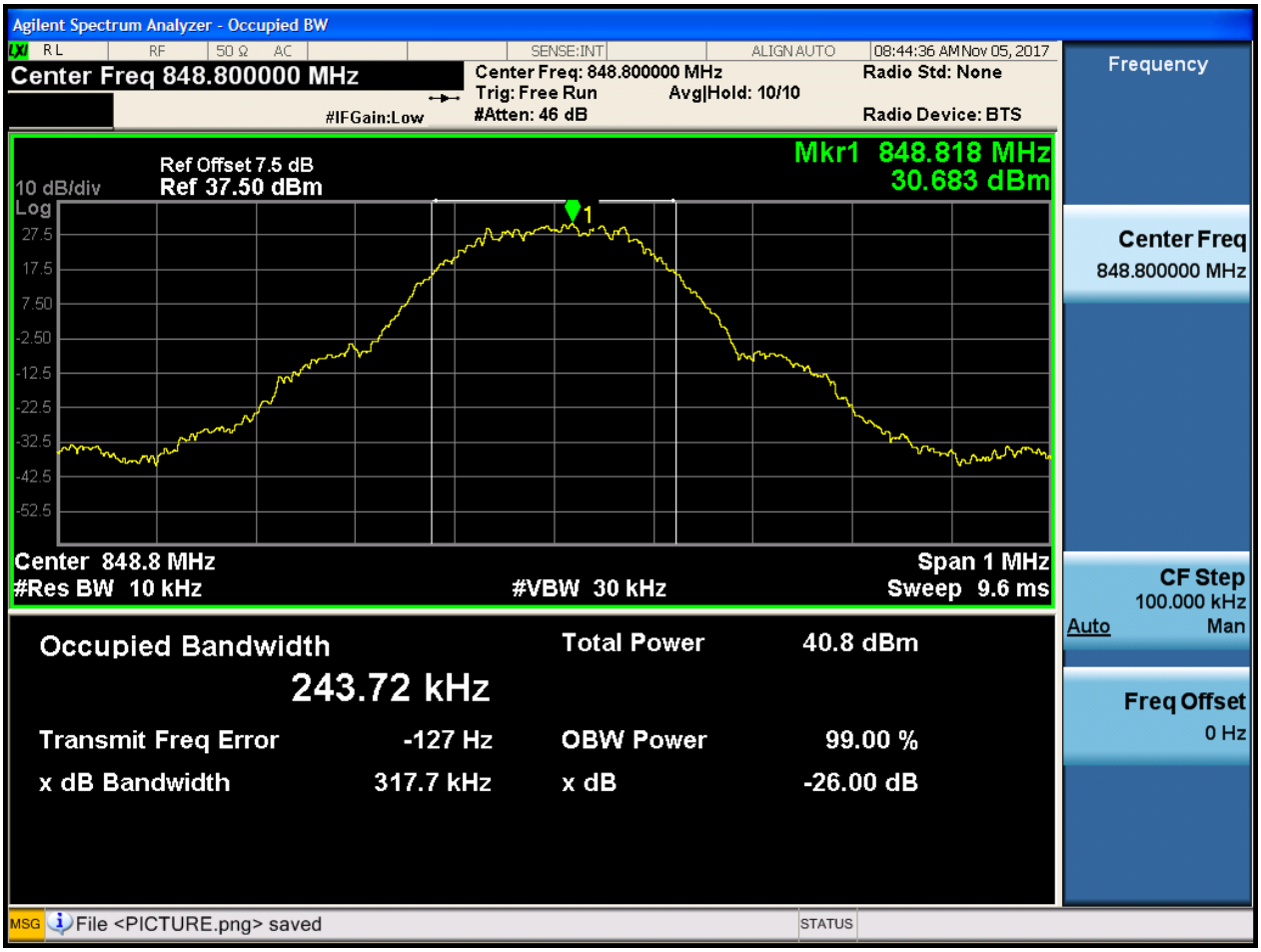
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

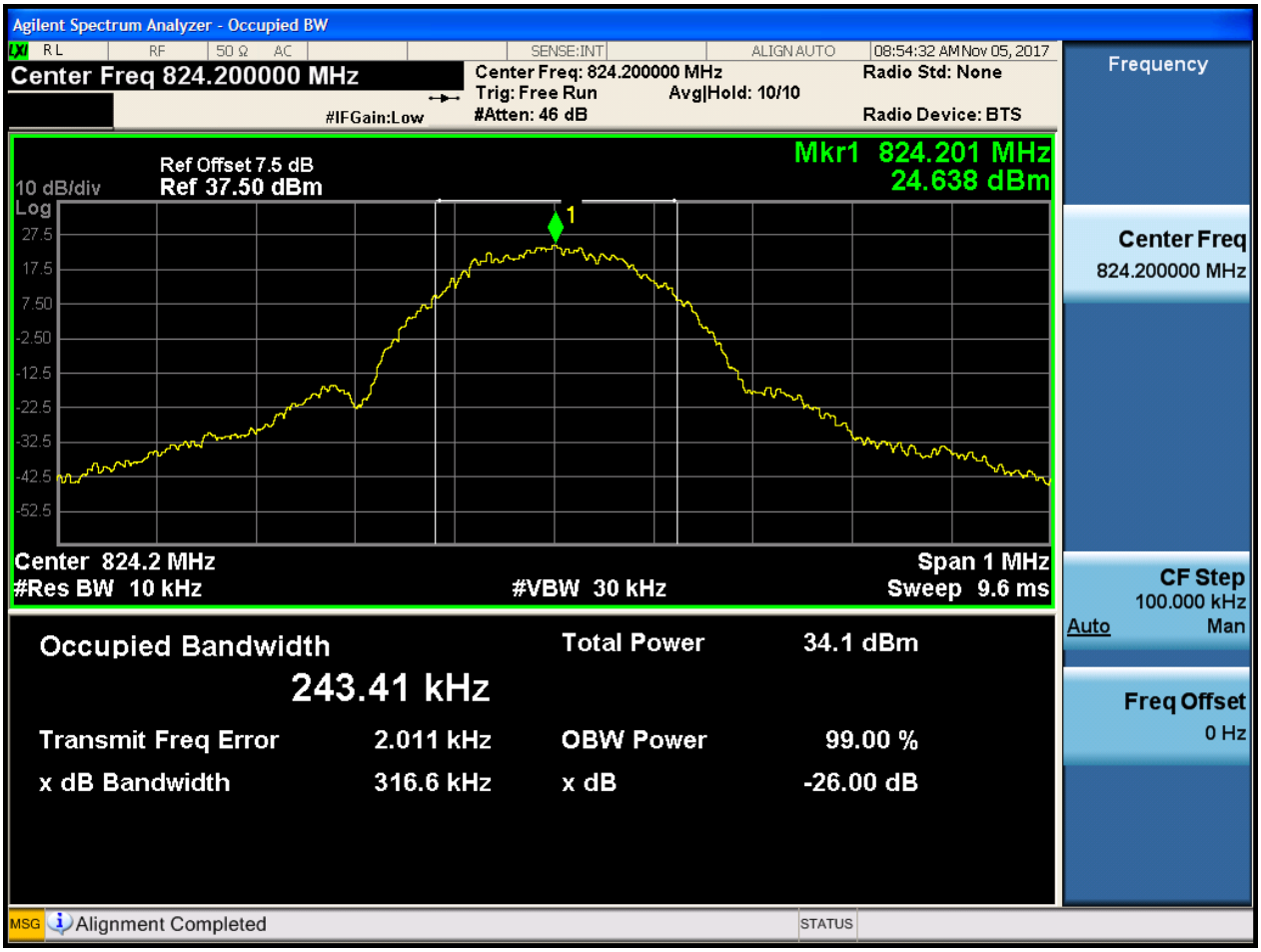


4.1.1.1.3 Test Channel = HCH

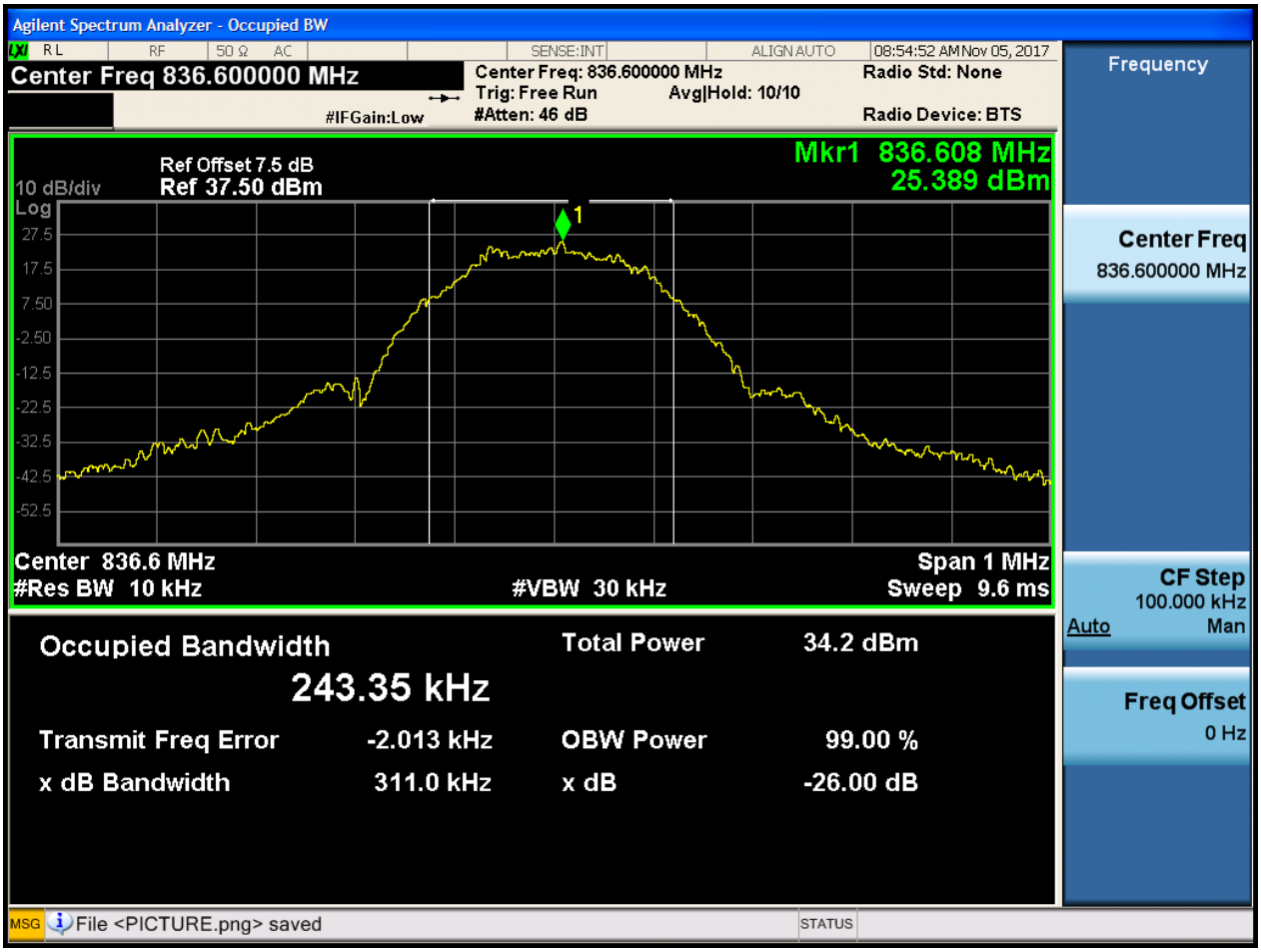


4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH

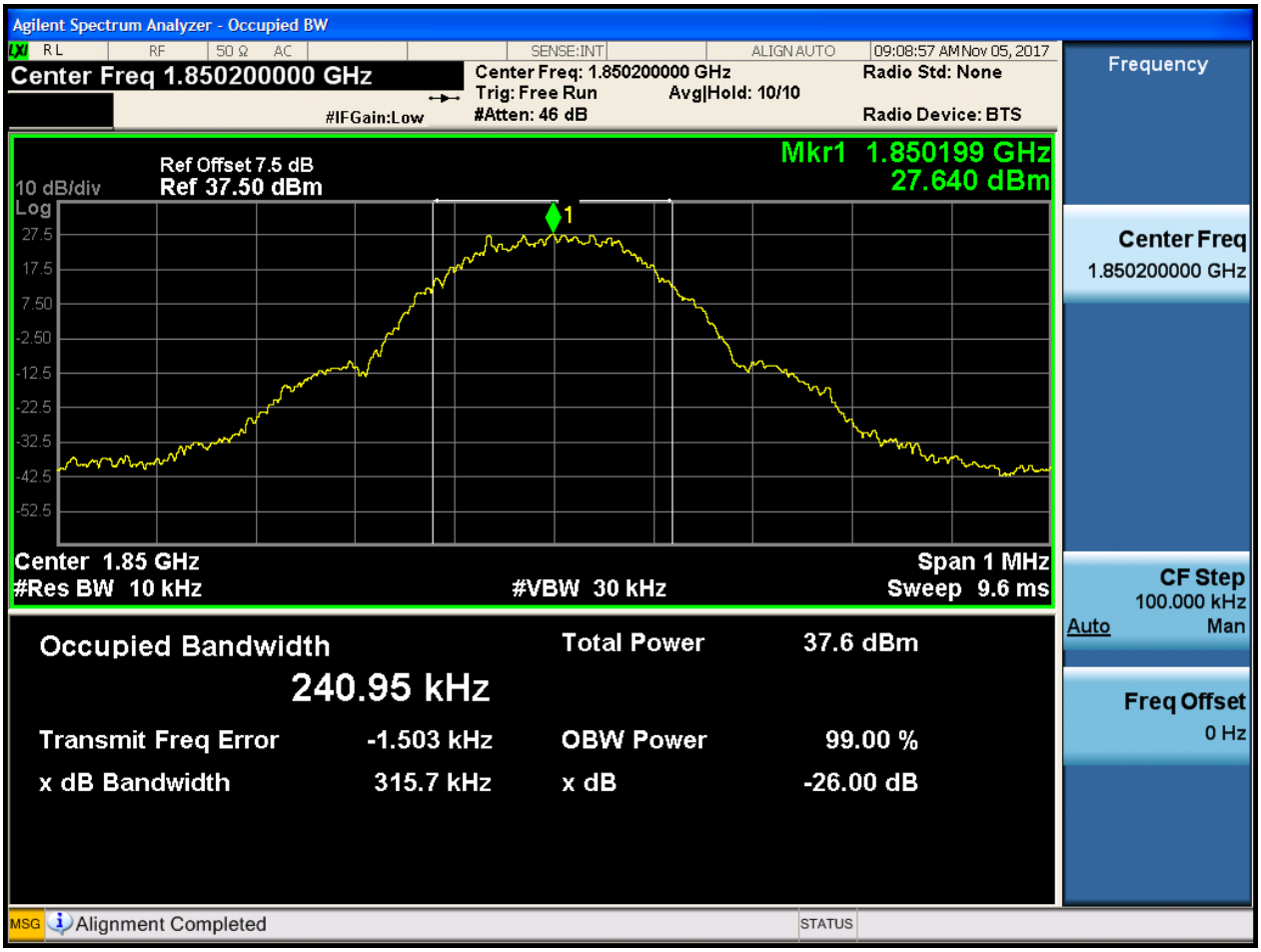


4.1.1.2.3 Test Channel = HCH

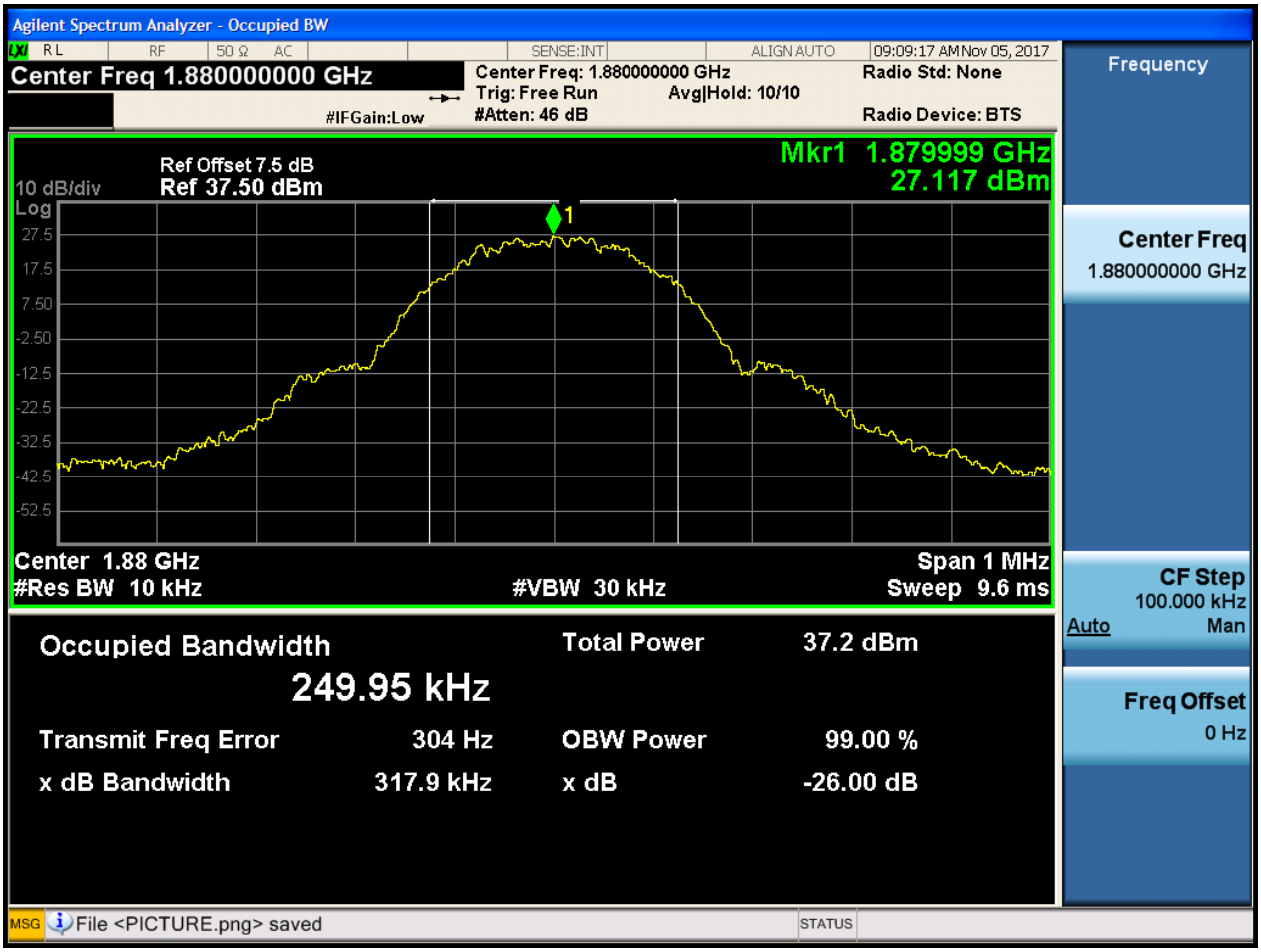
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

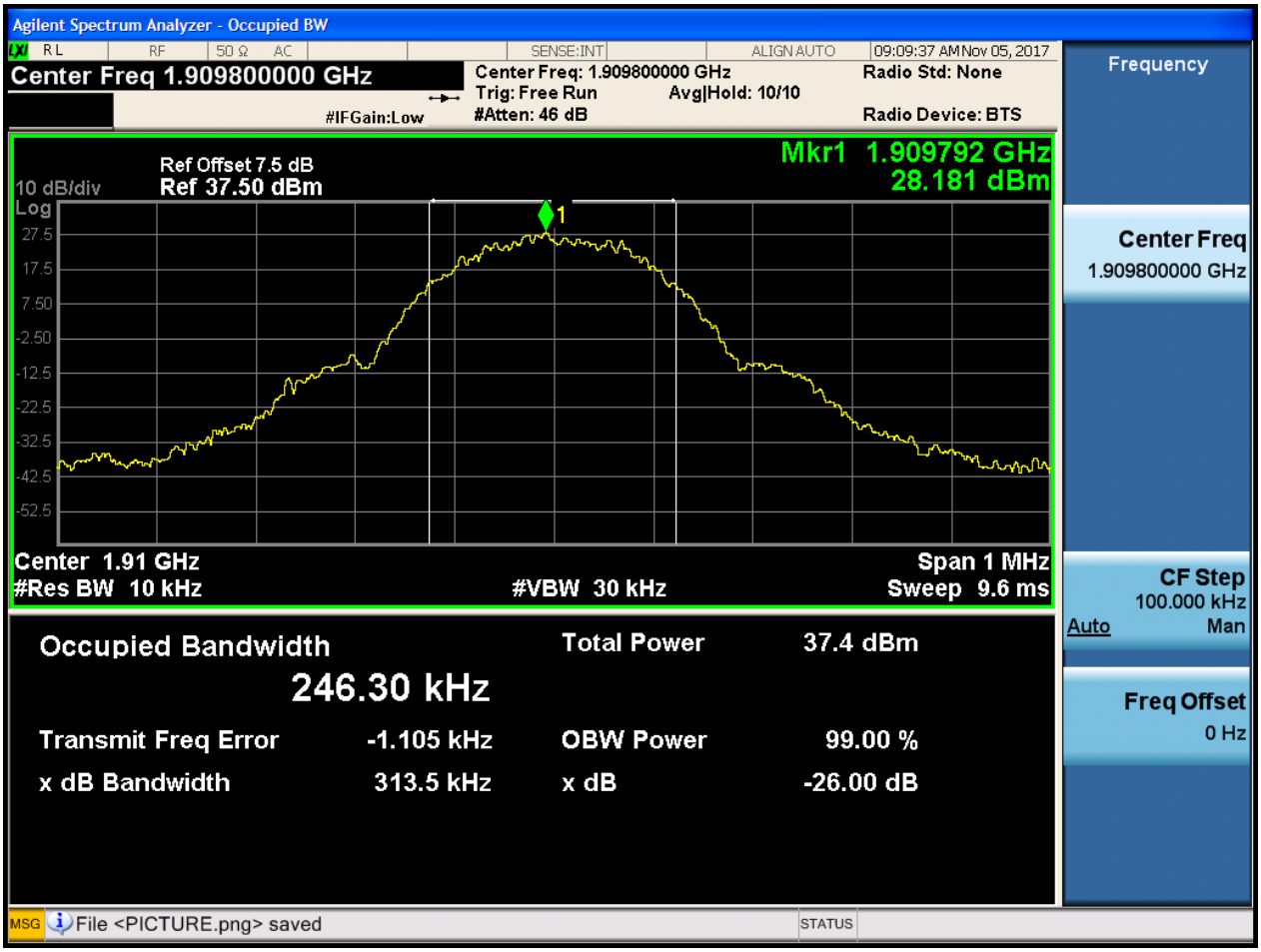
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

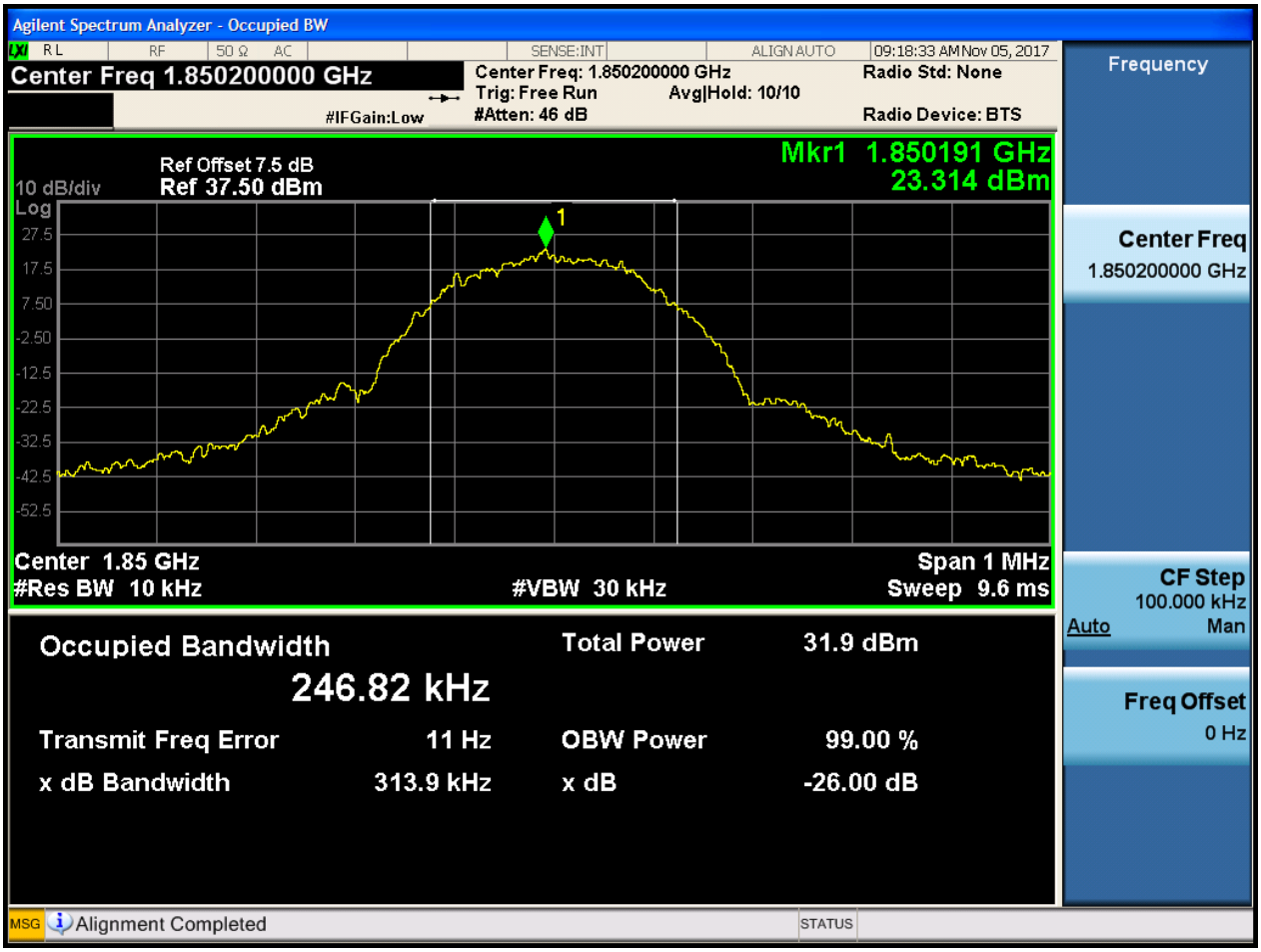


4.1.2.1.3 Test Channel = HCH

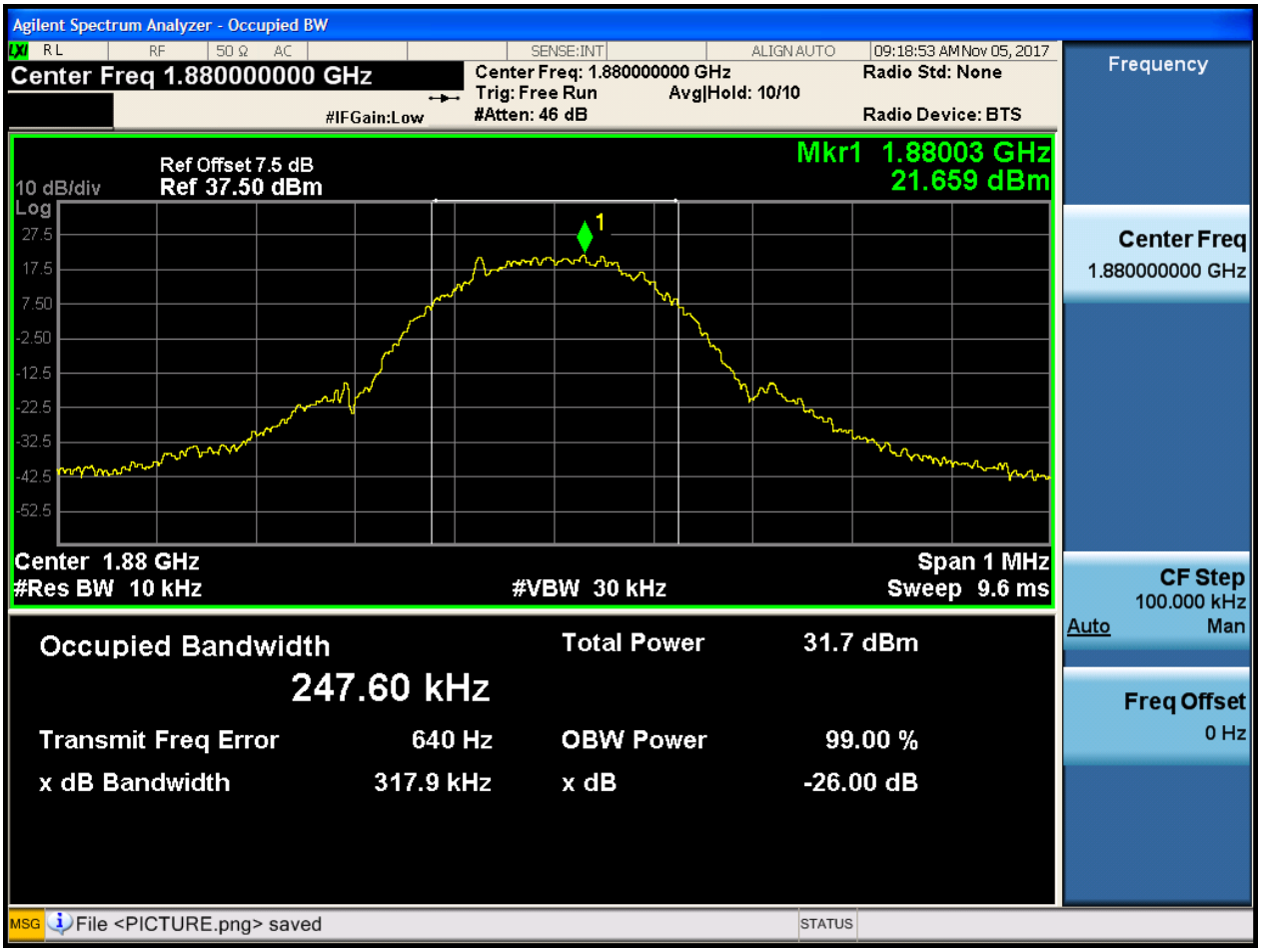


4.1.2.2 Test Mode = GSM/TM2

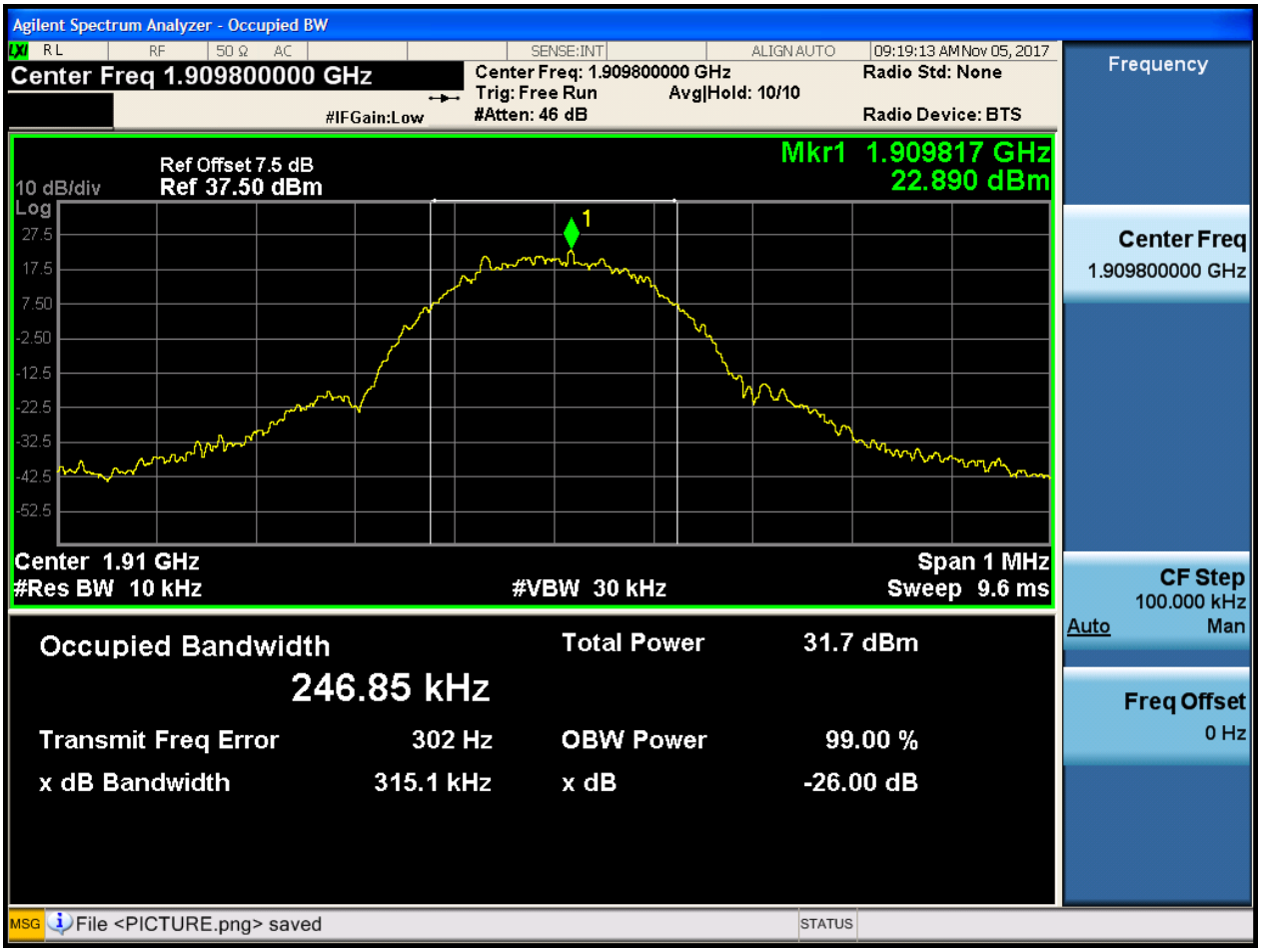
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

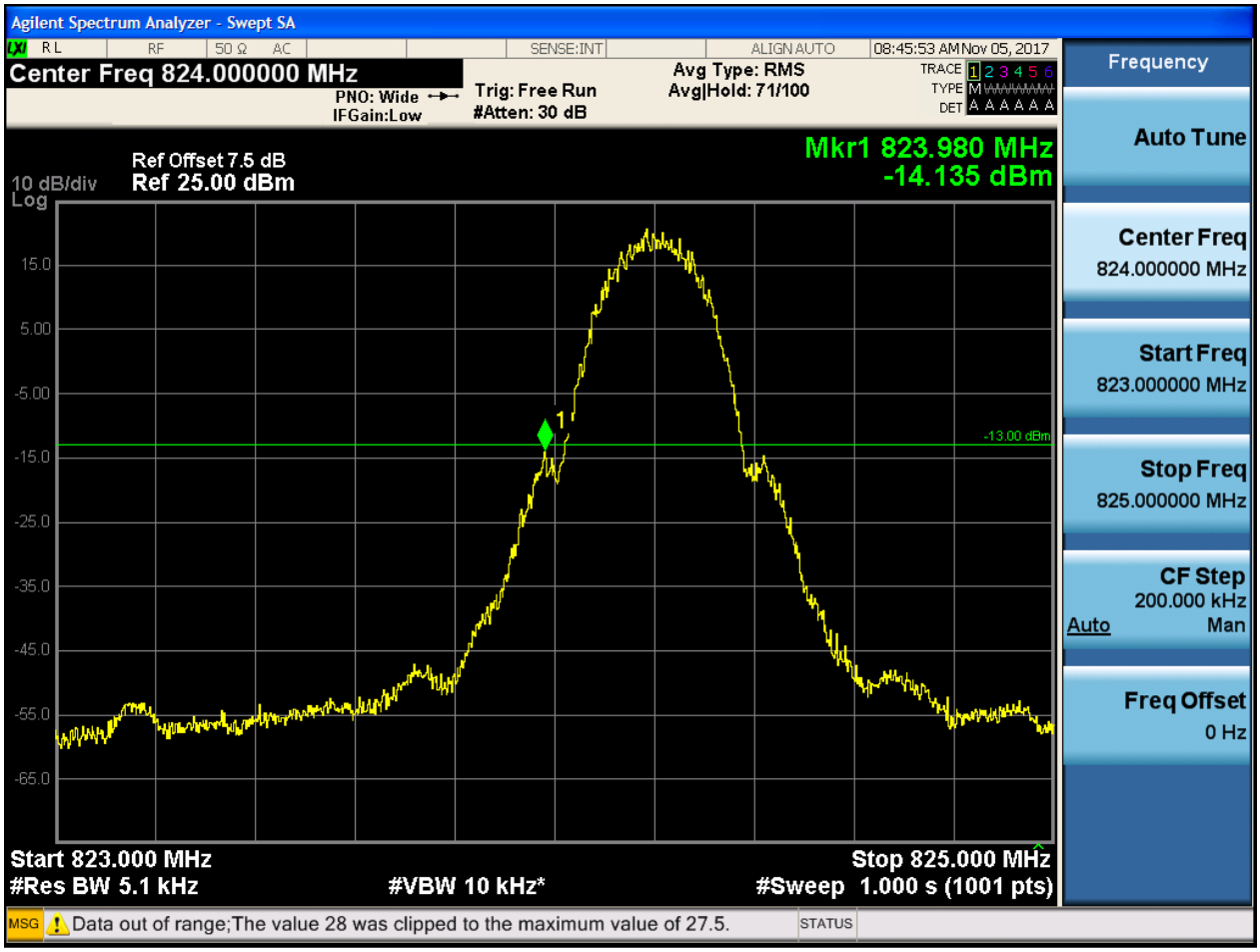
Part I - Test Plots

5.1 For GSM

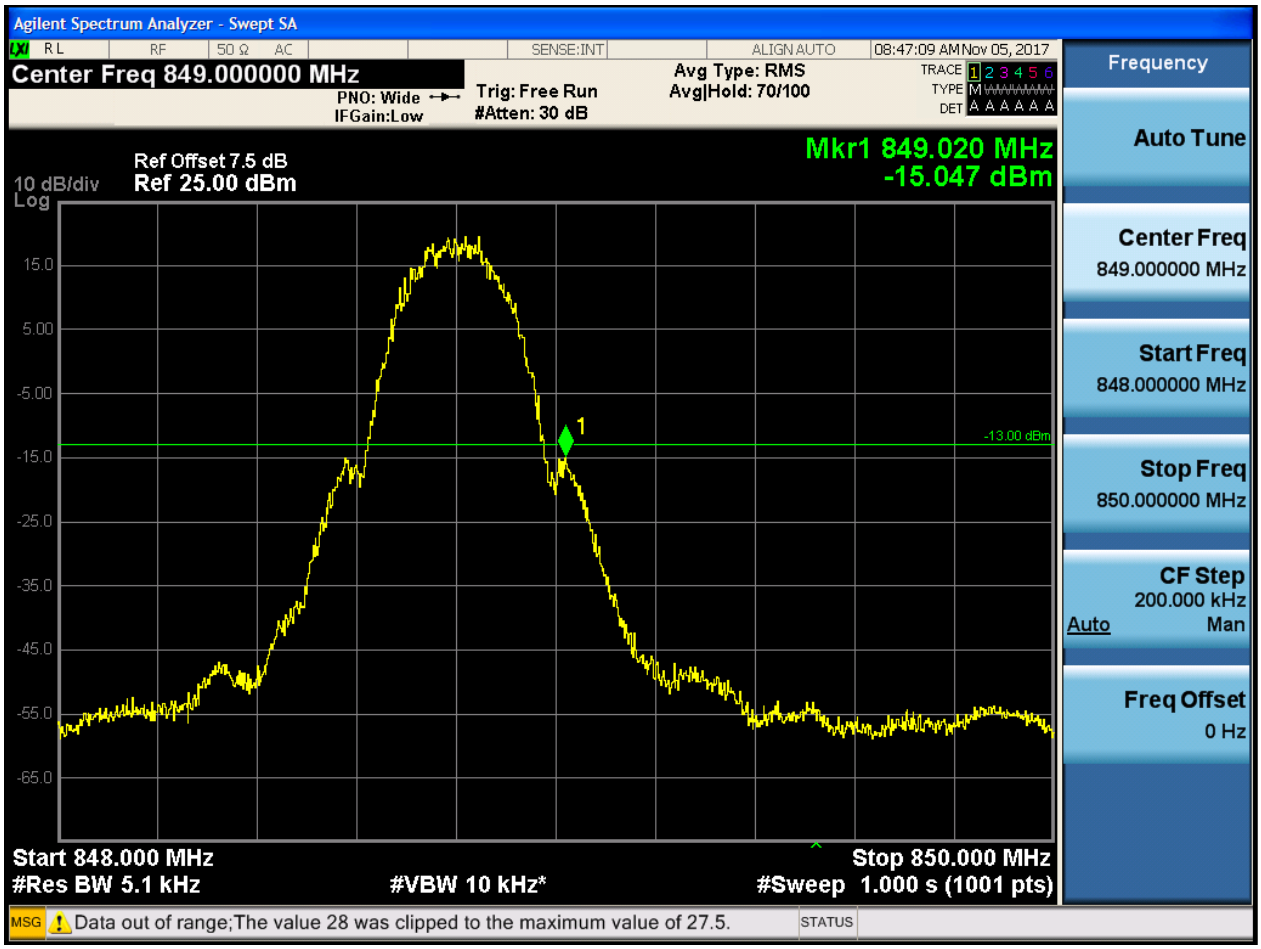
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

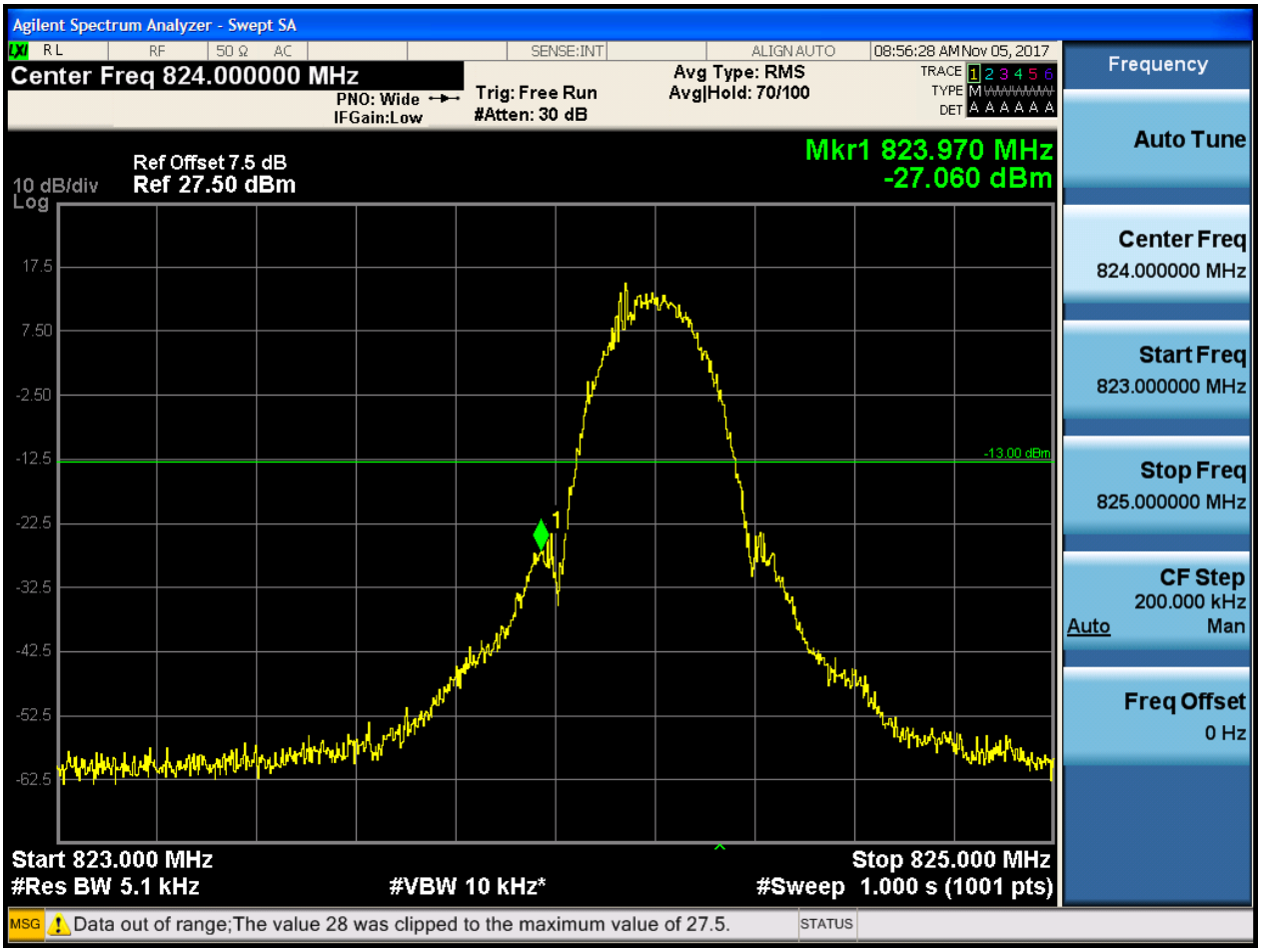


5.1.1.1.2 Test Channel = HCH

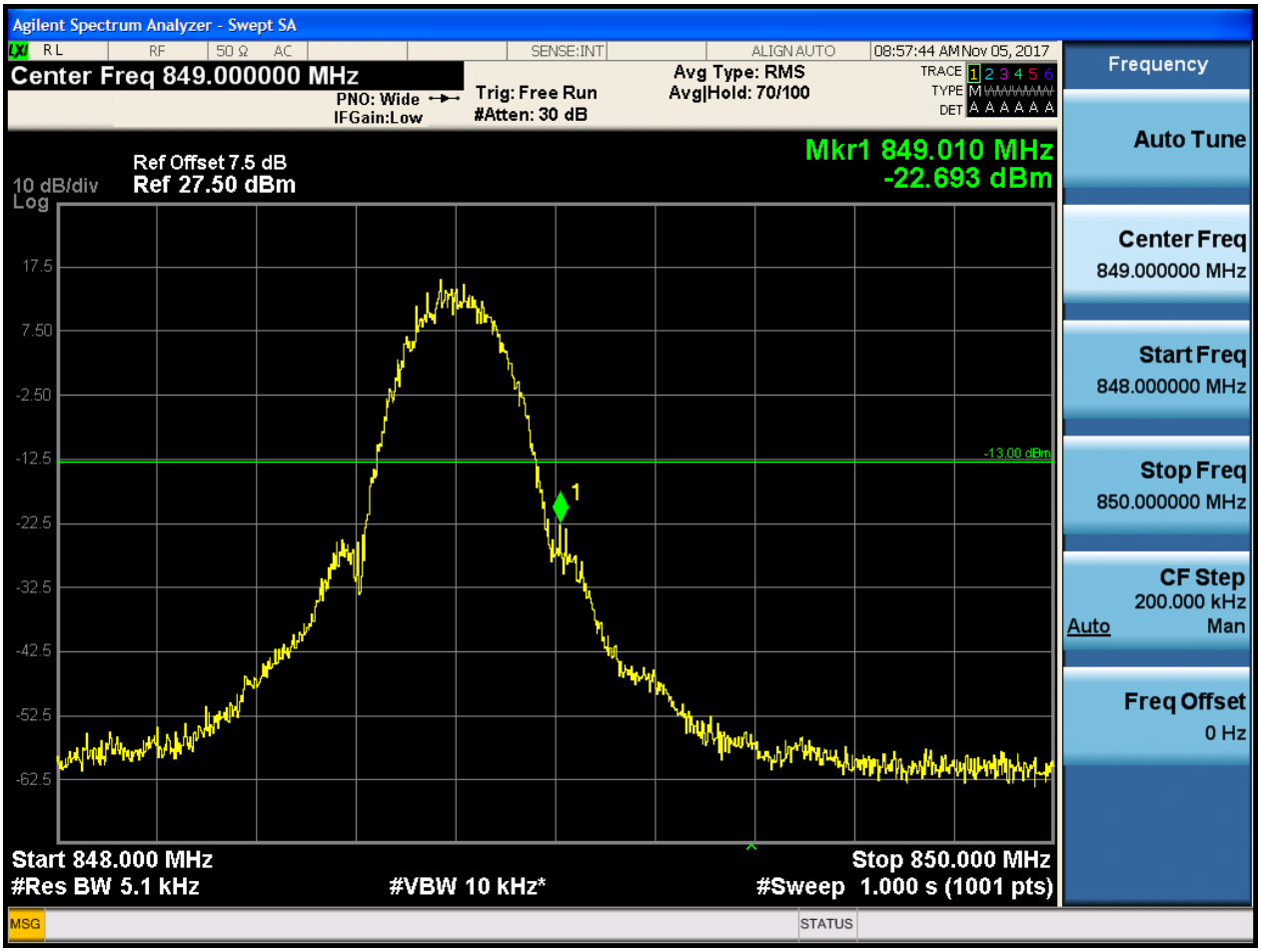


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



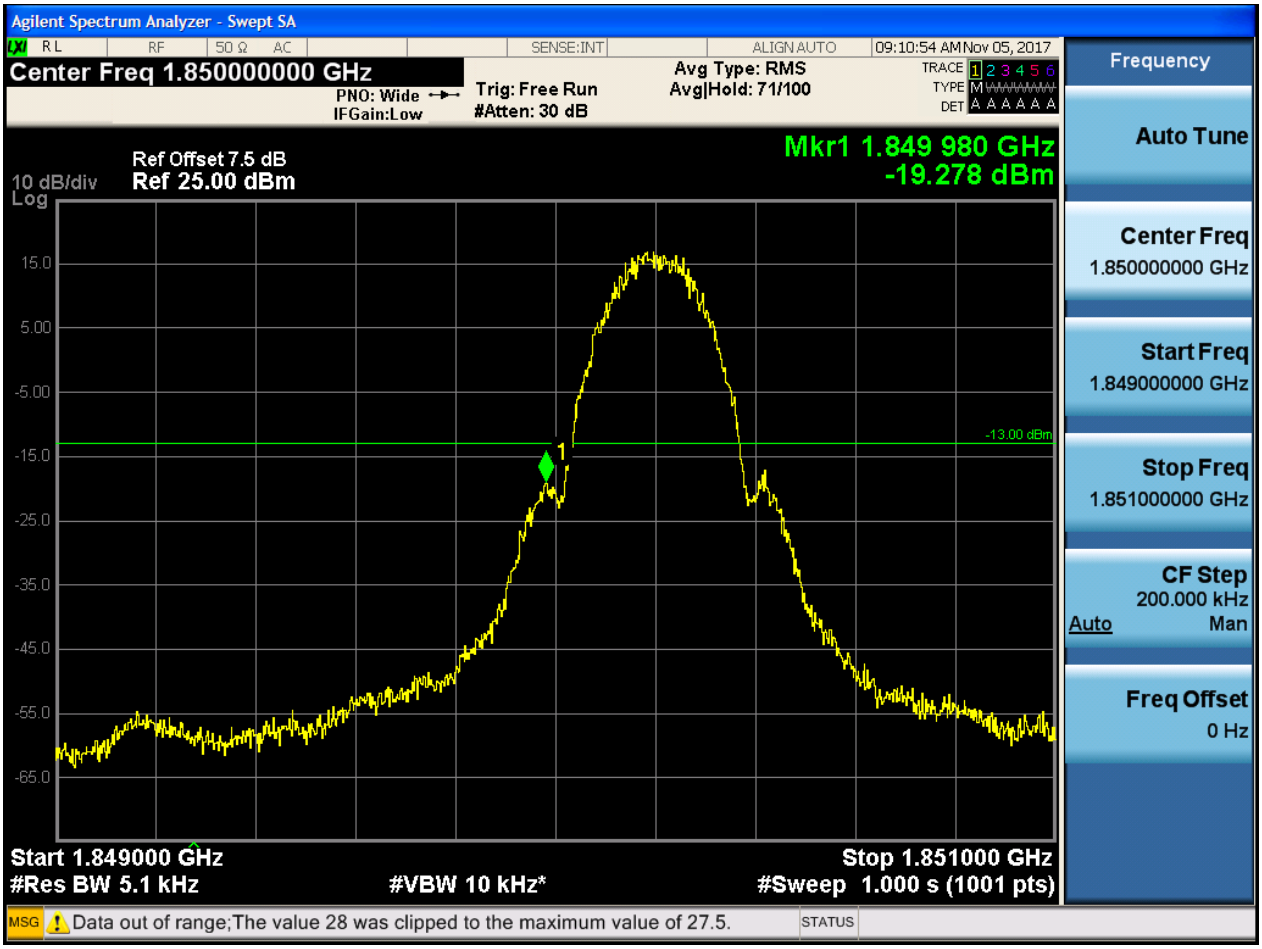
5.1.1.2.2 Test Channel = HCH



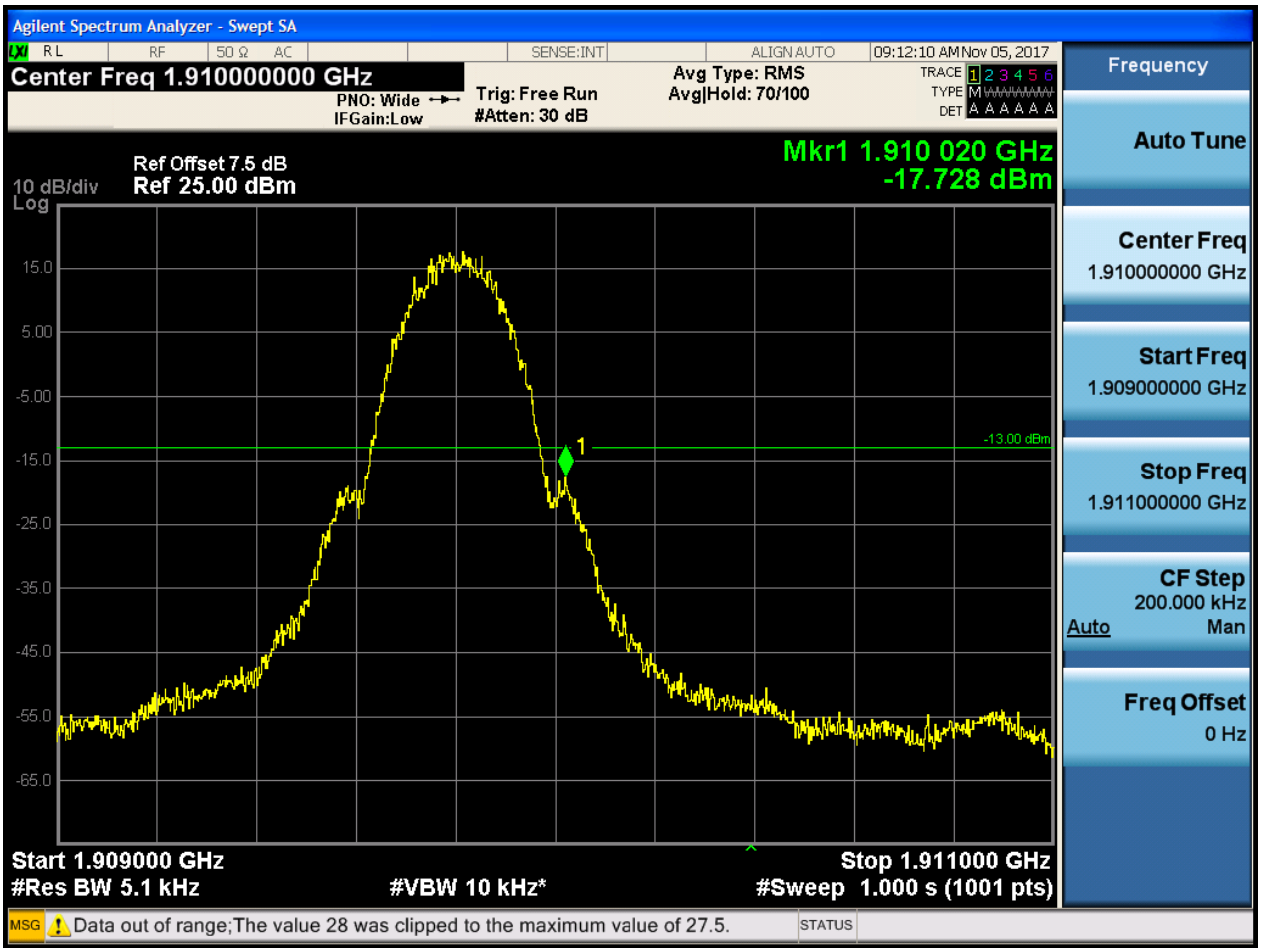
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

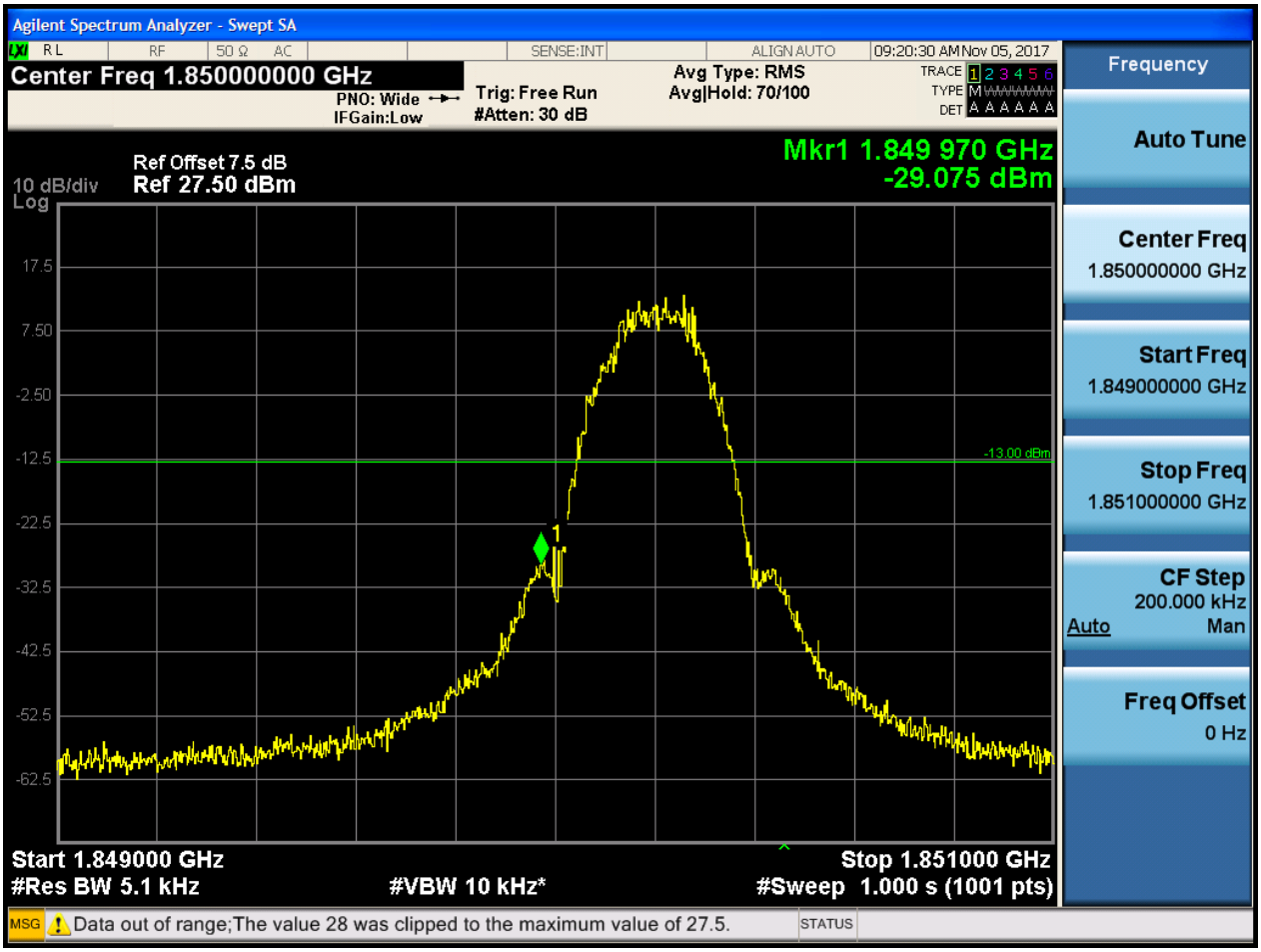


5.1.2.1.2 Test Channel = HCH

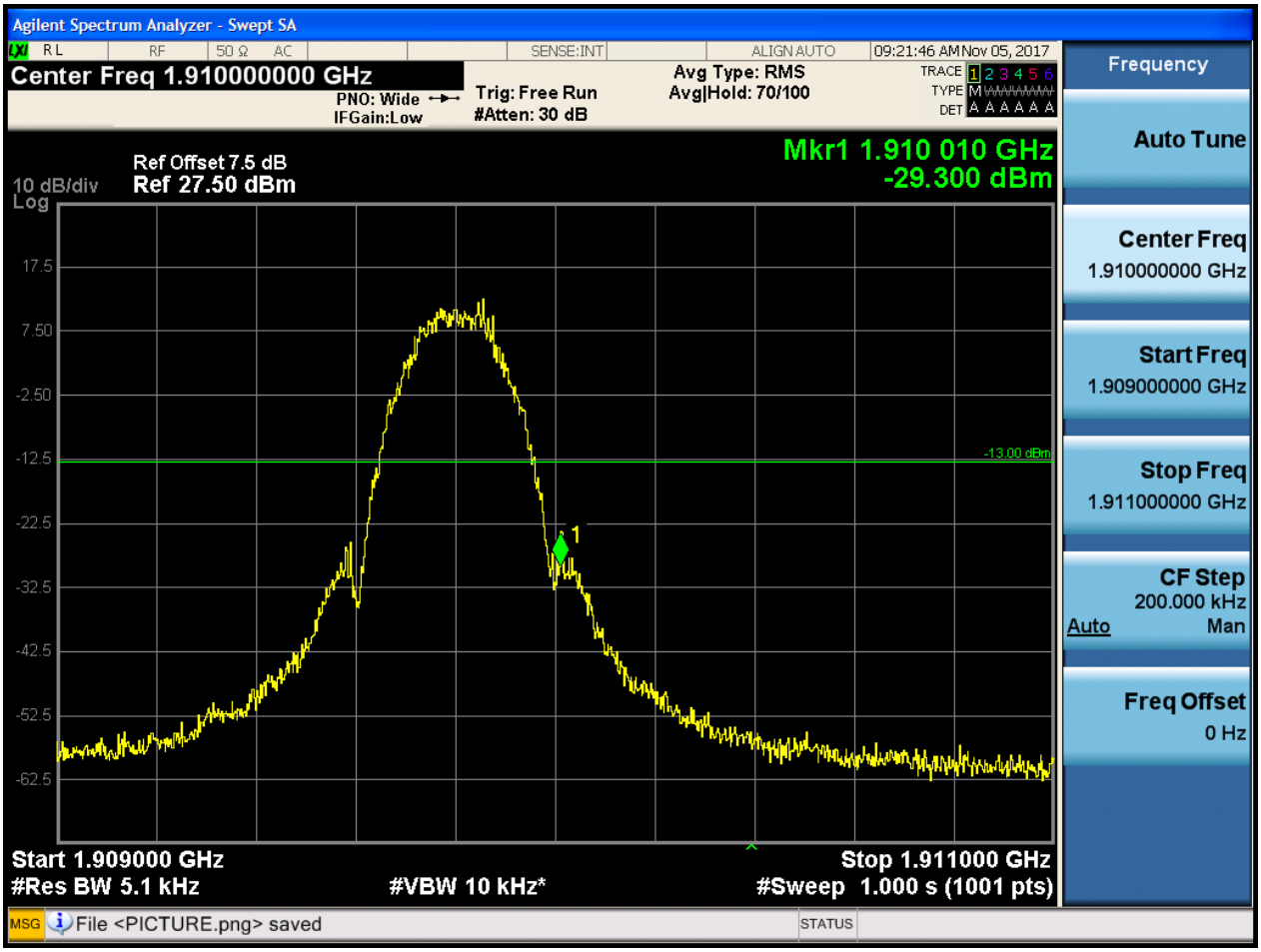


5.1.2.2 Test Mode = GSM/TM2

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.

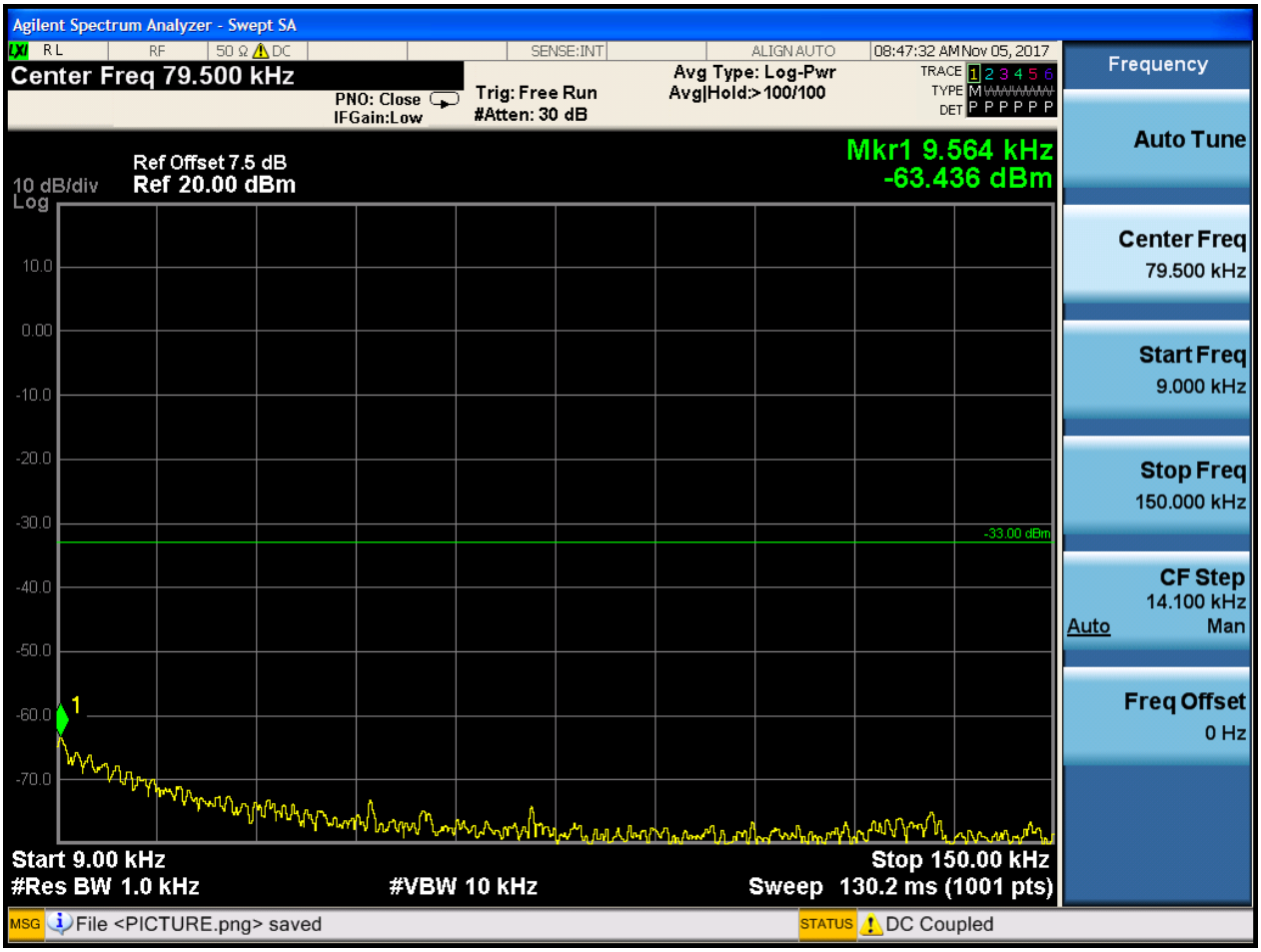
Part I - Test Plots

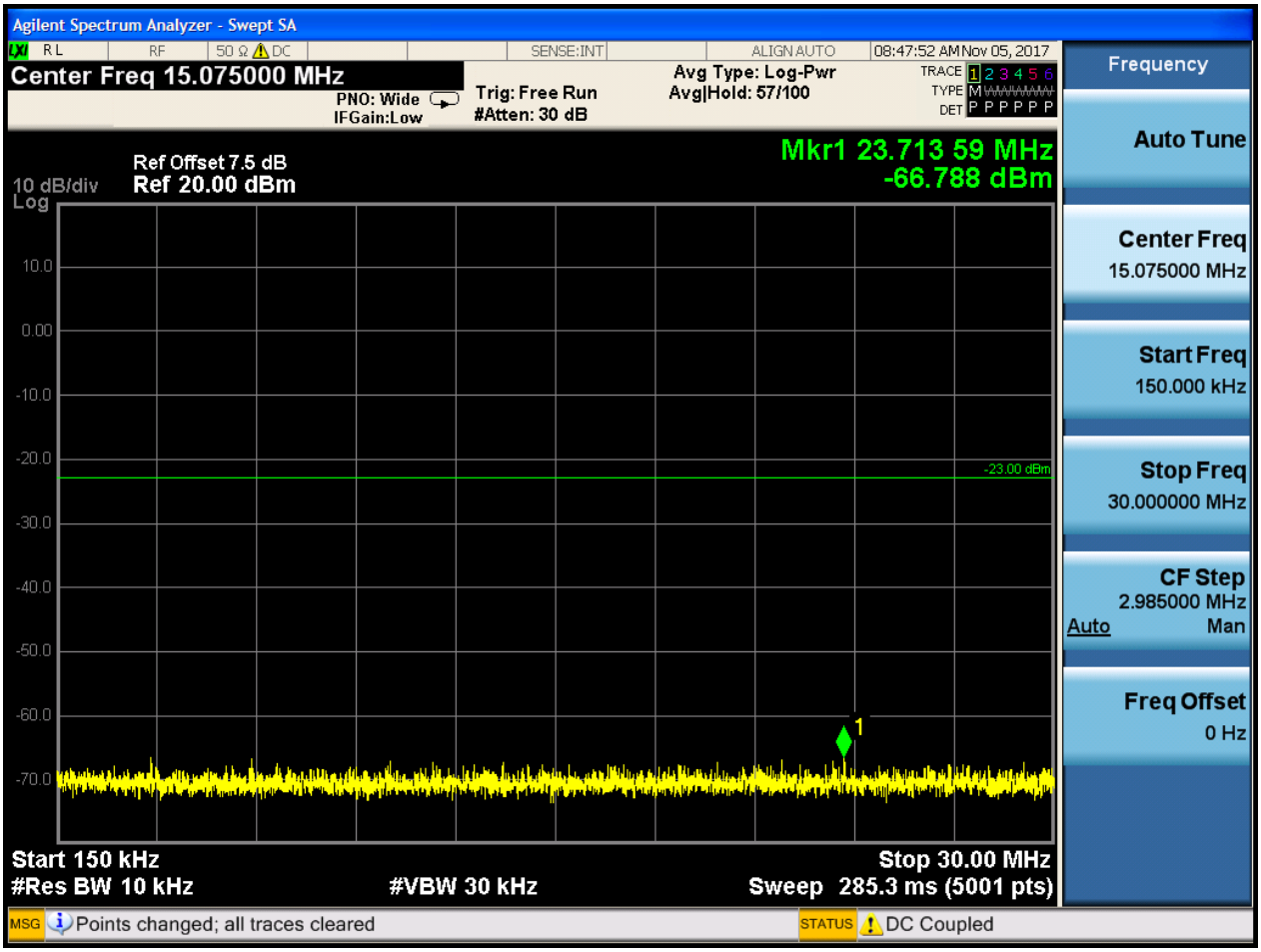
6.1 For GSM

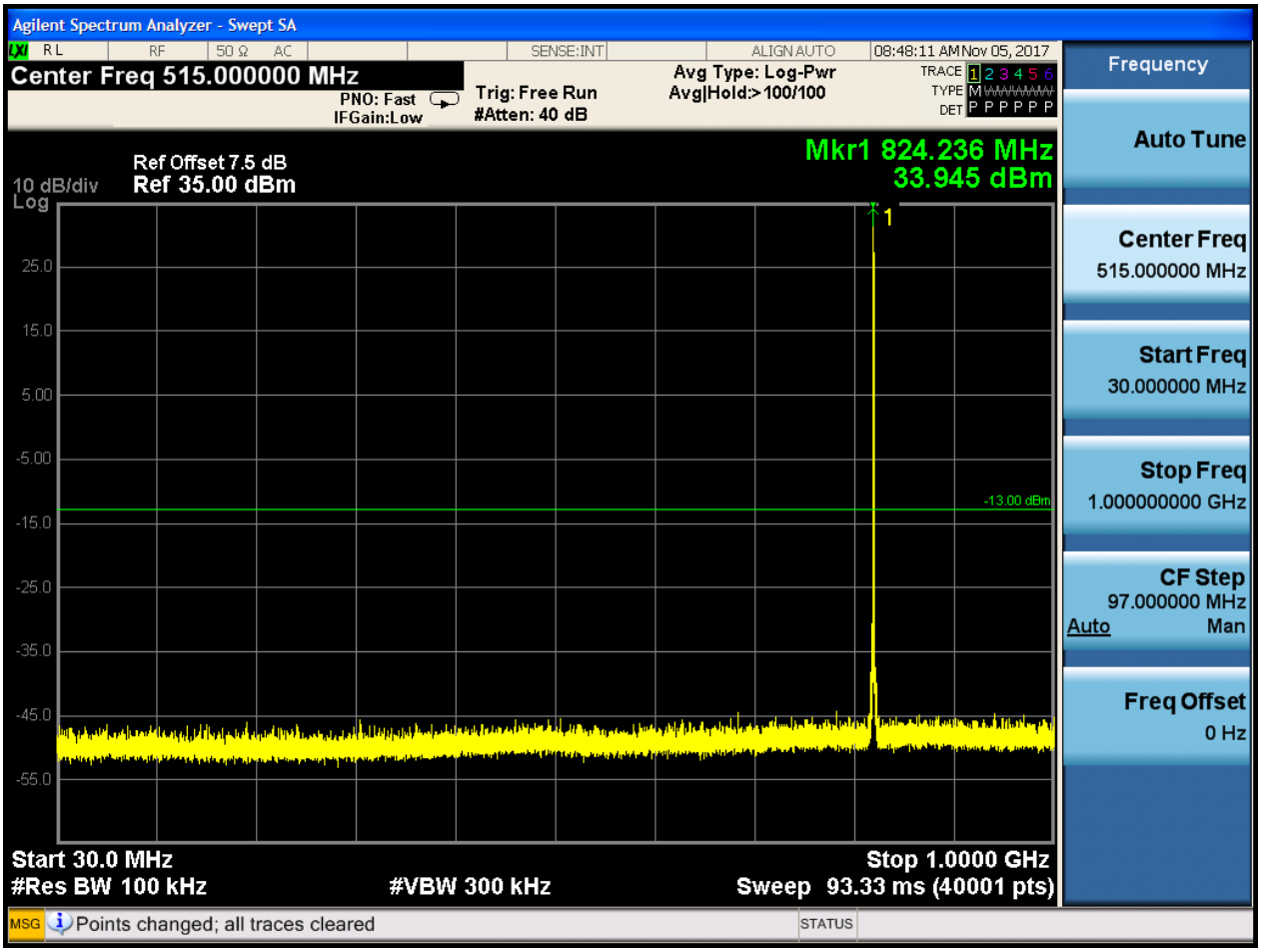
6.1.1 Test Band = GSM850

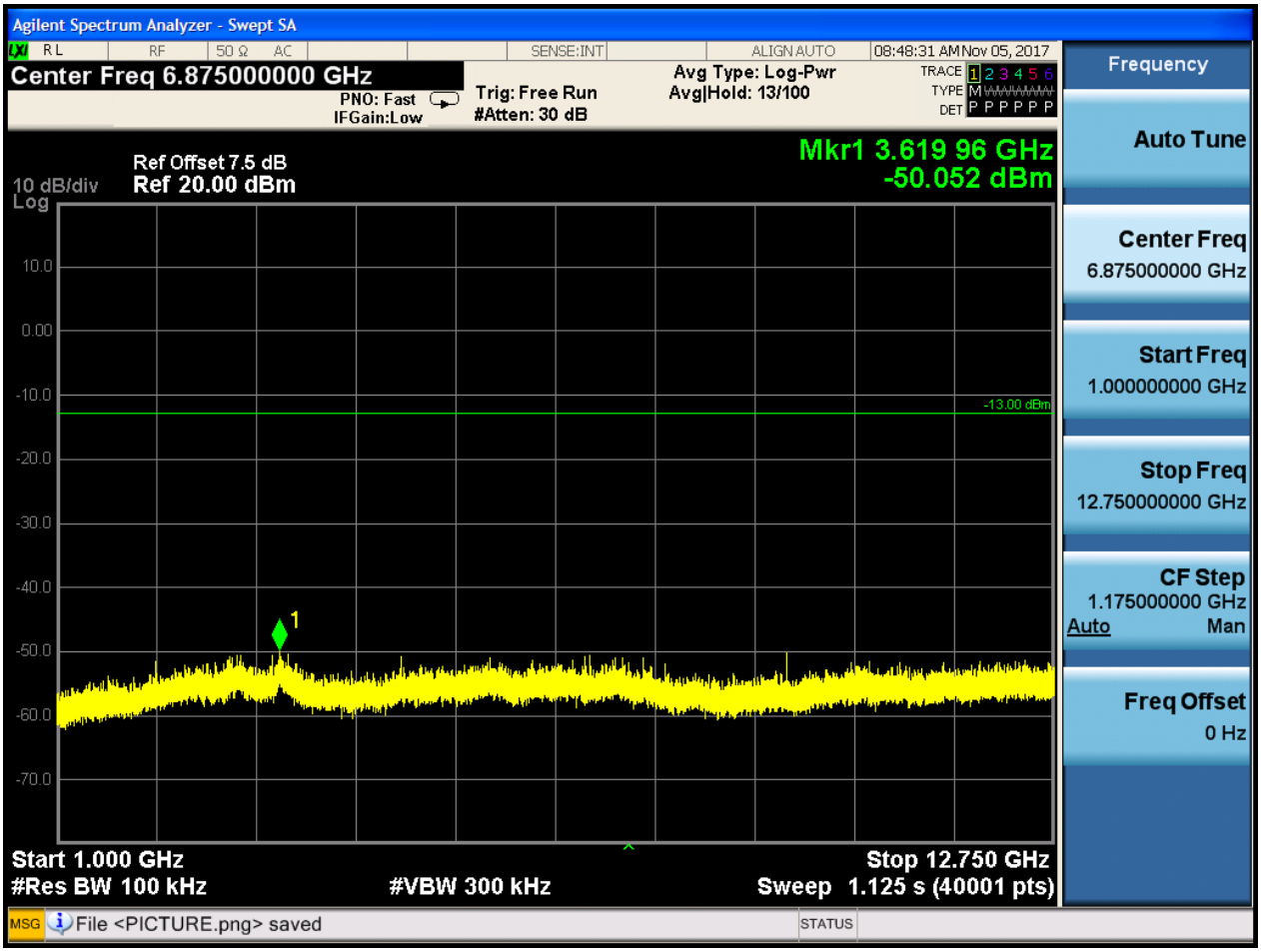
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

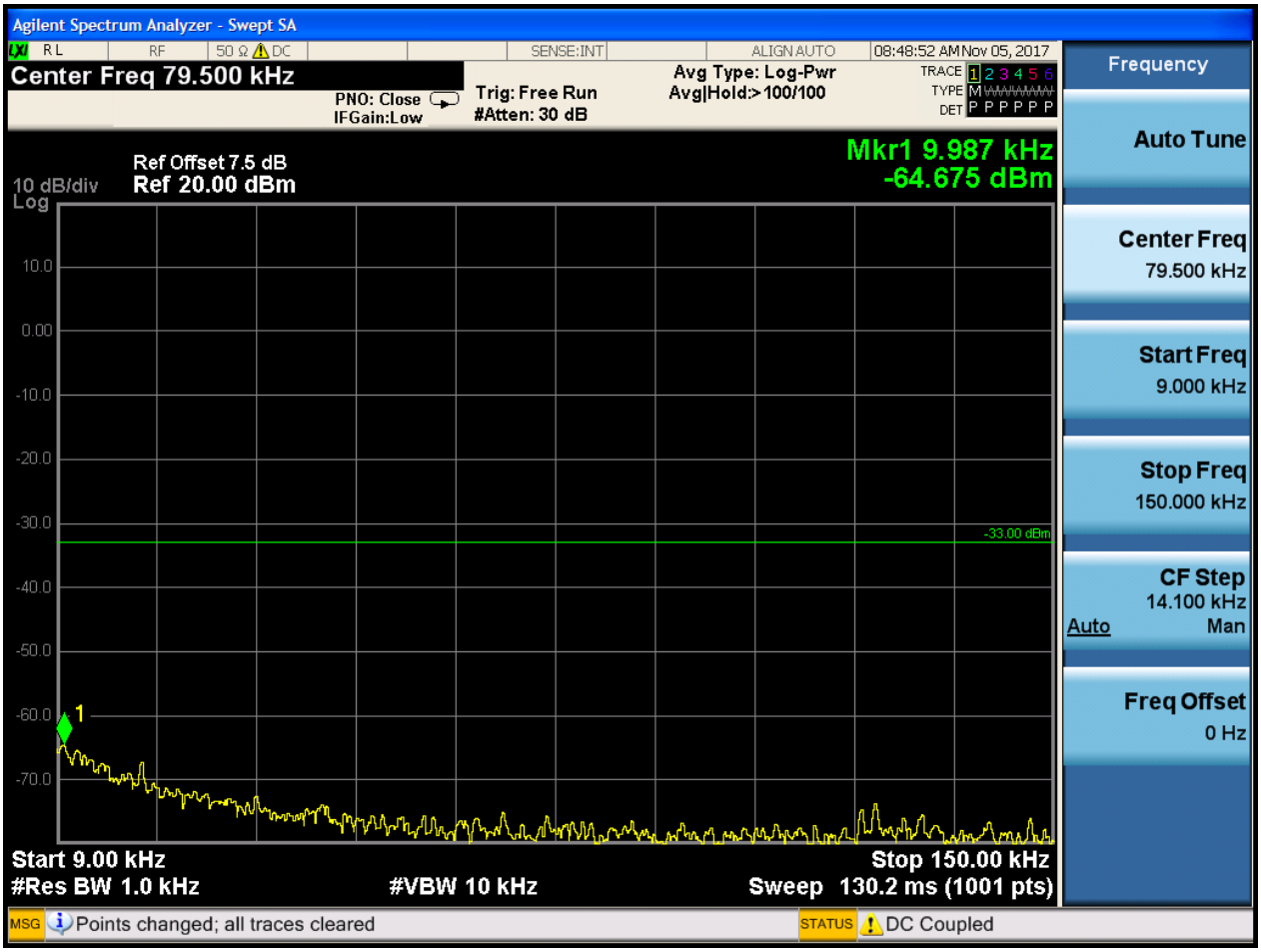


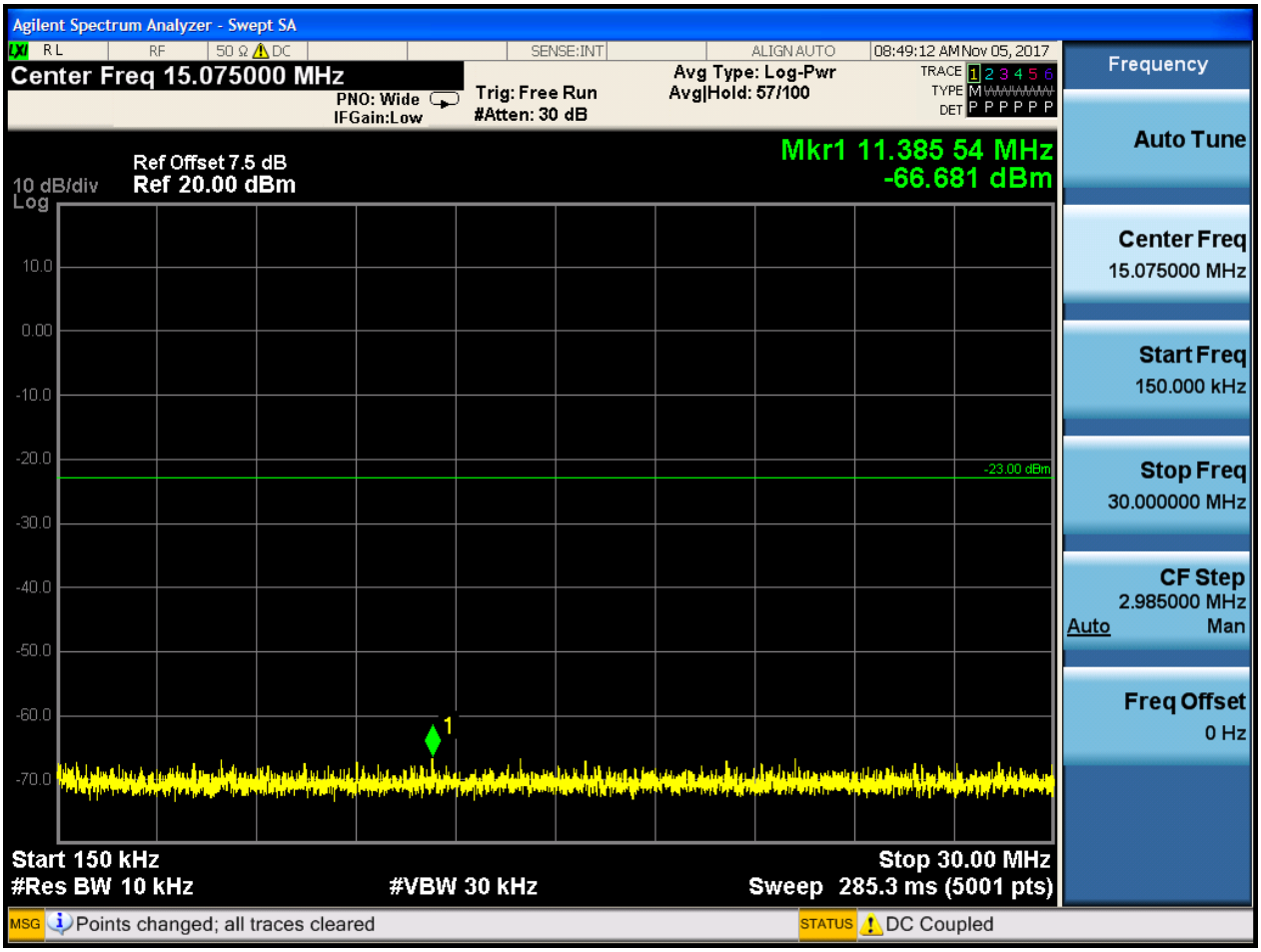


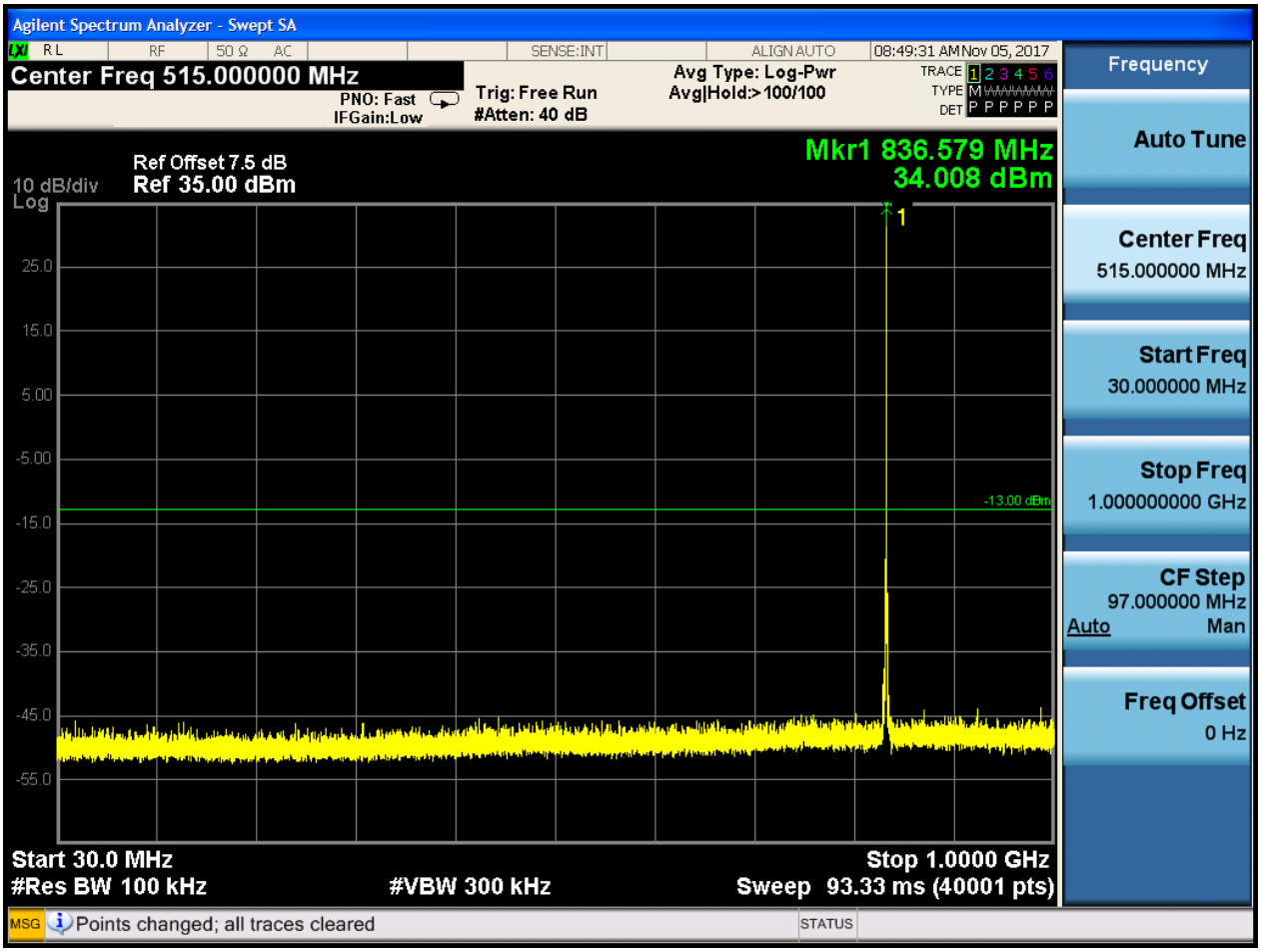


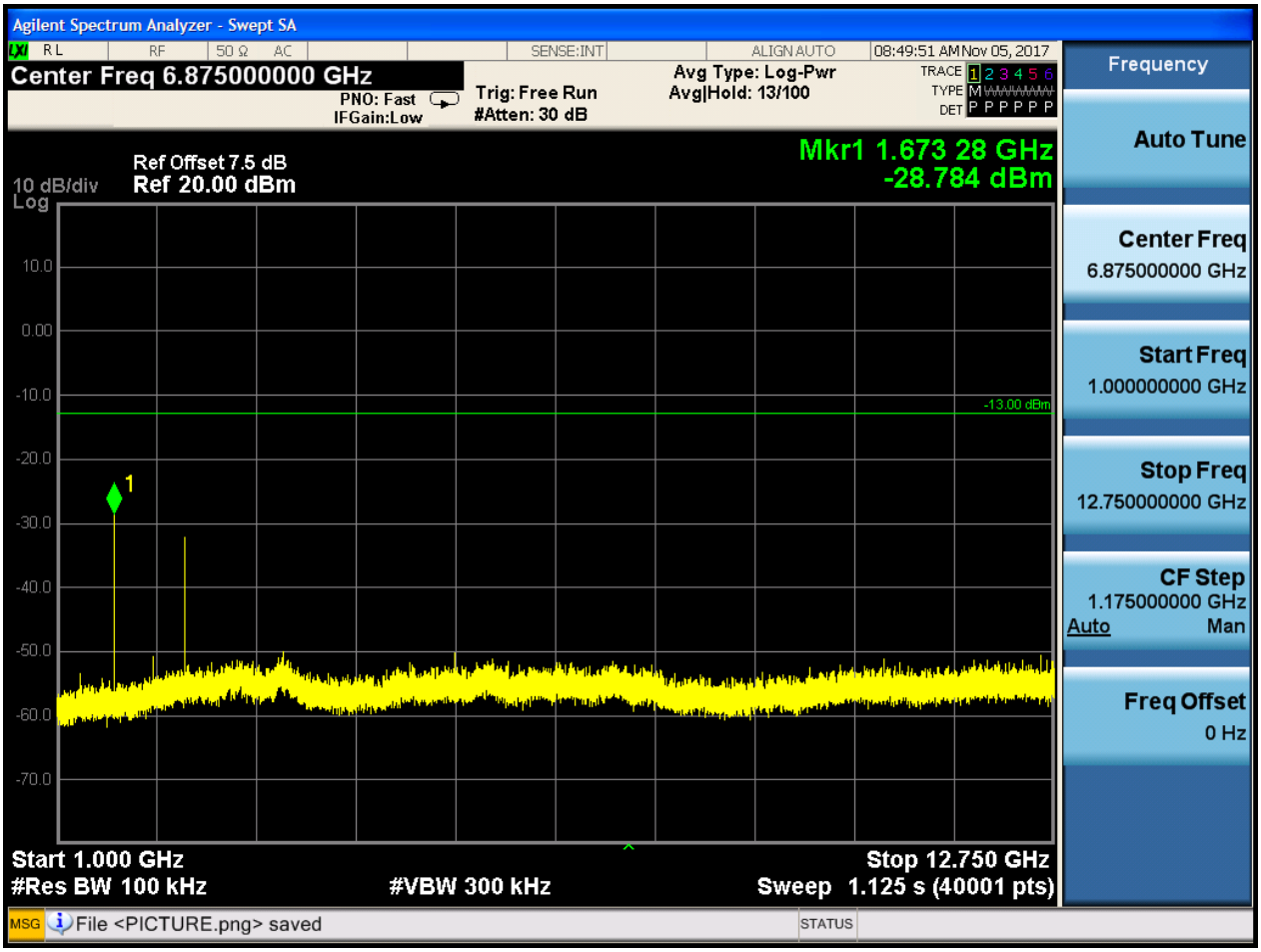


6.1.1.1.2 Test Channel = MCH

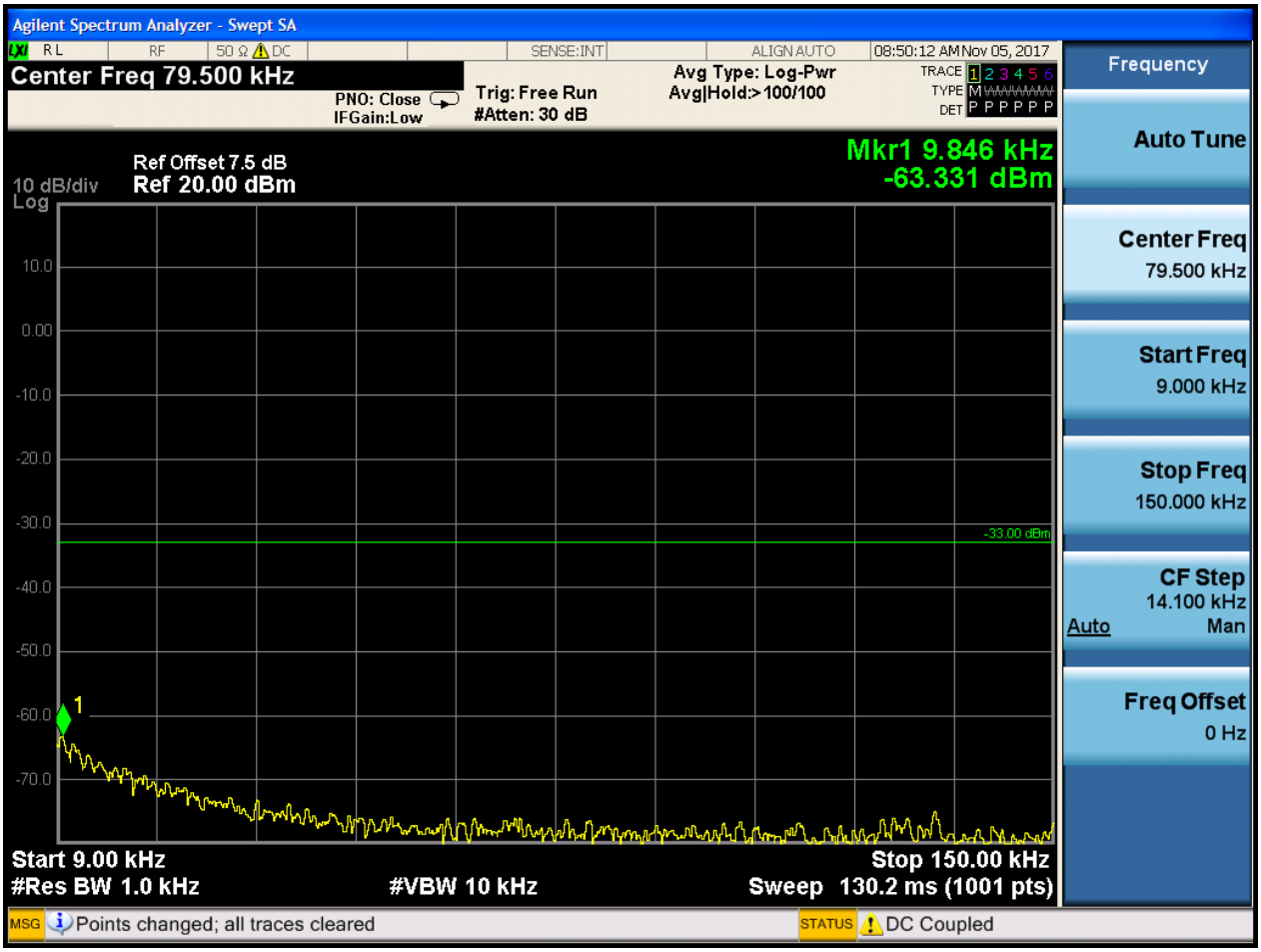


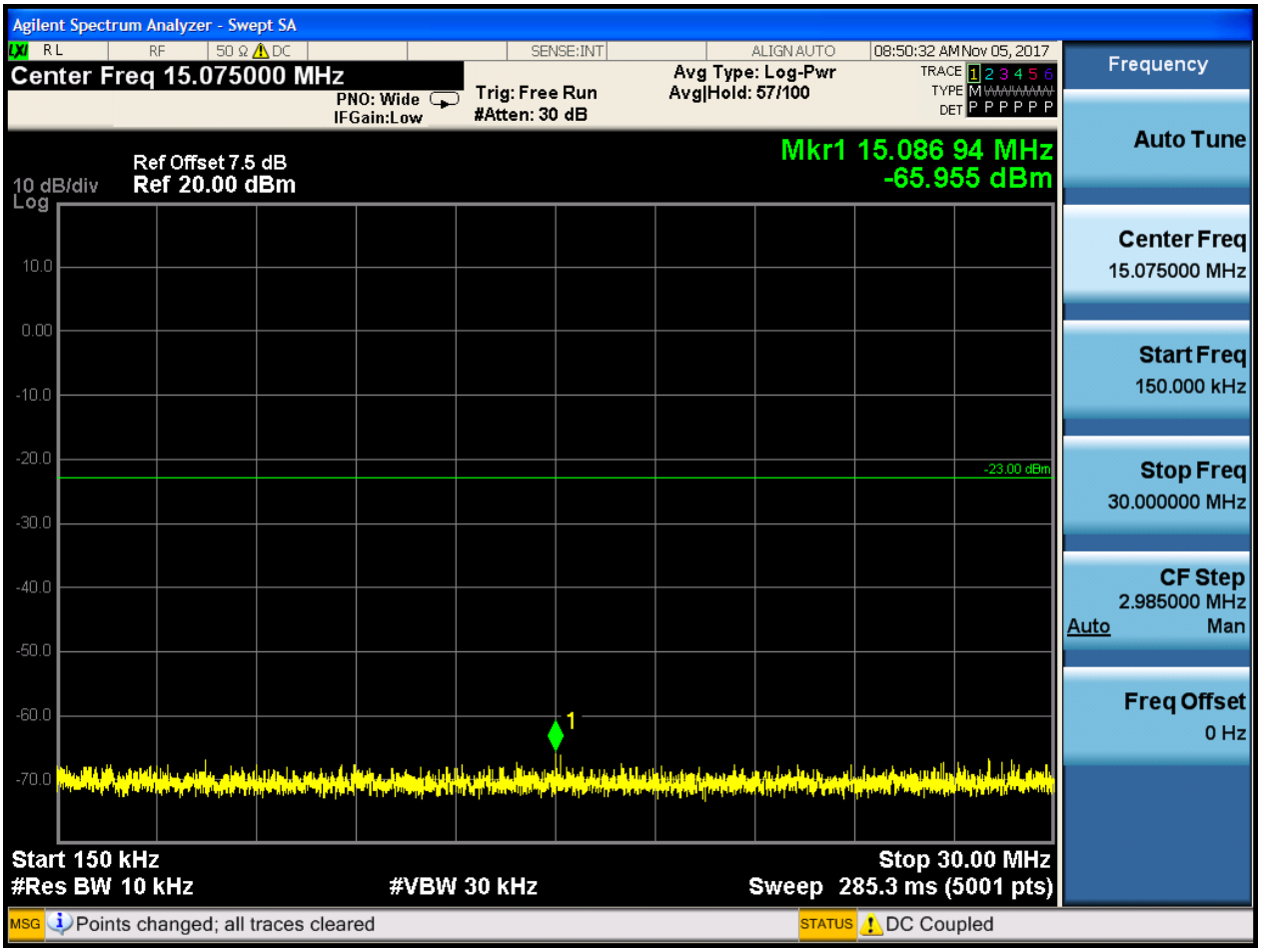


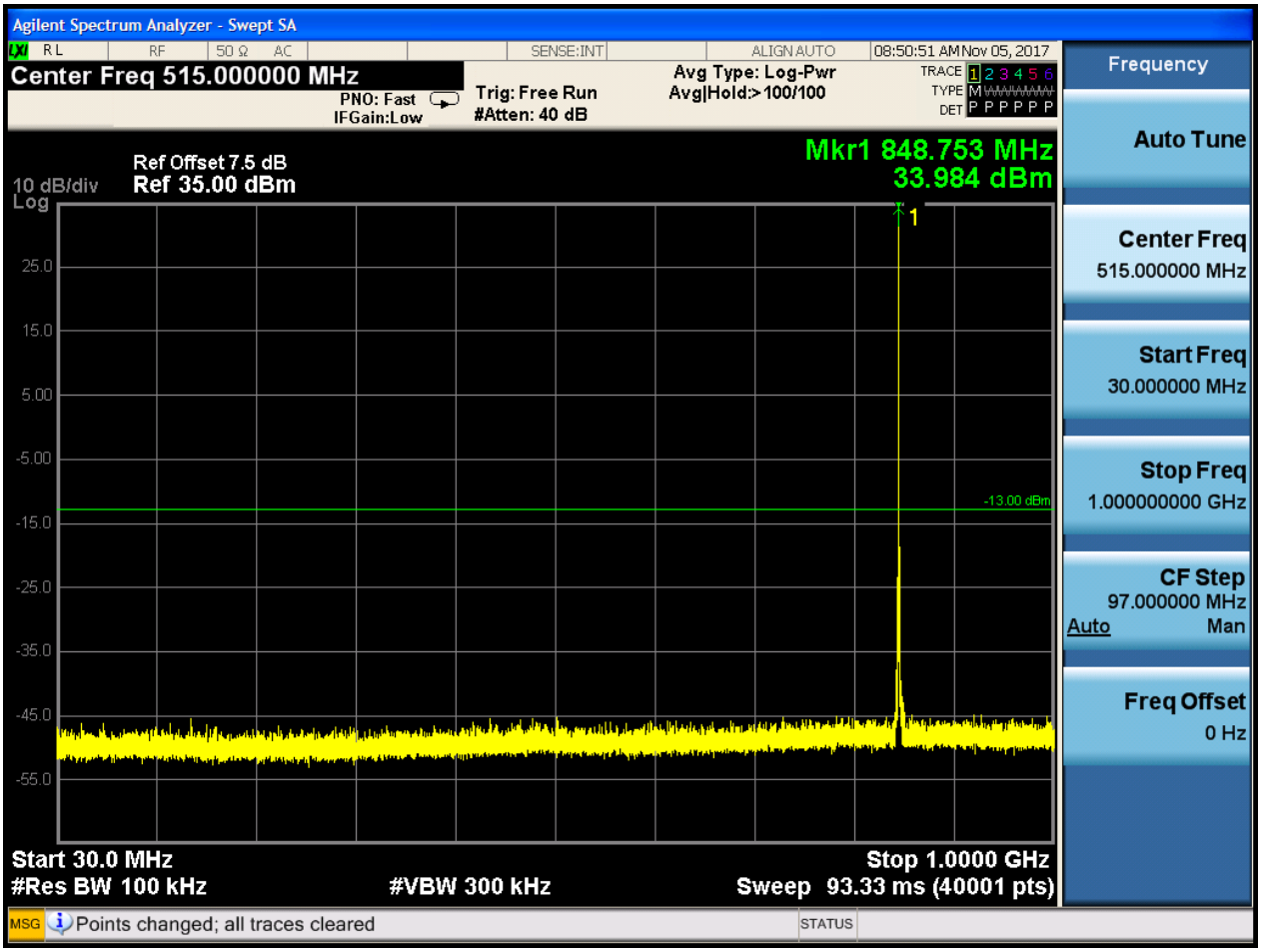


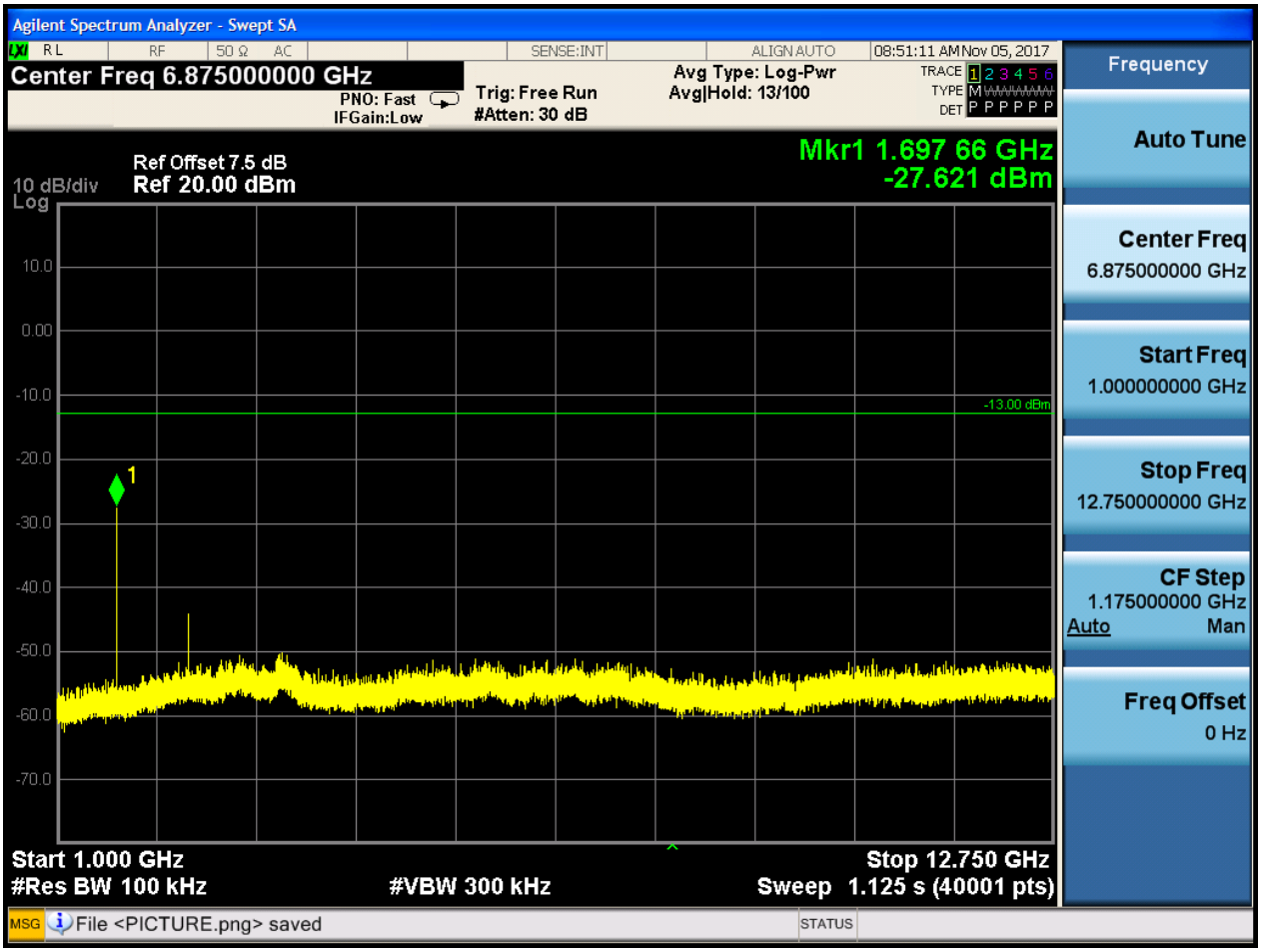


6.1.1.1.3 Test Channel = HCH



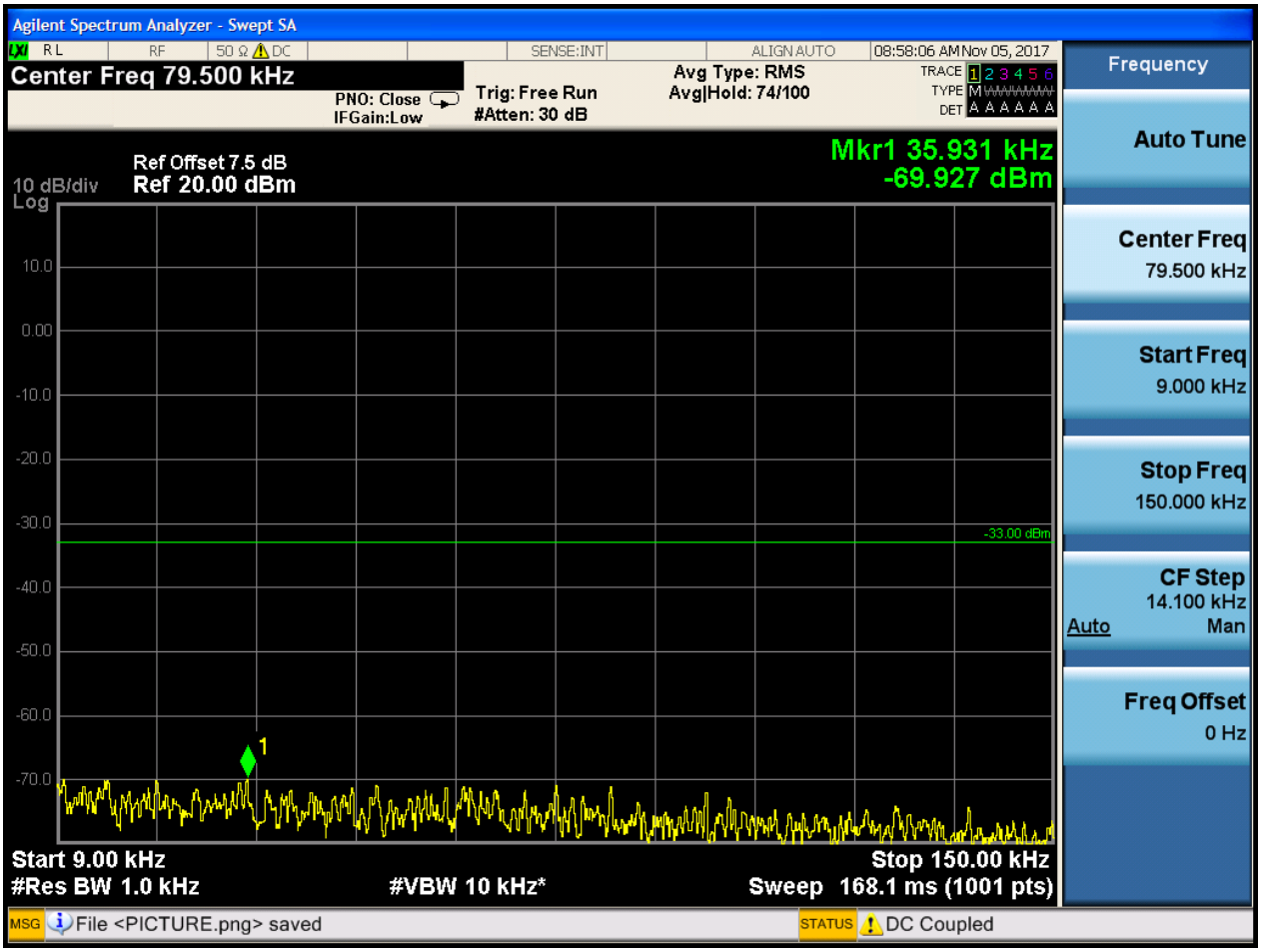


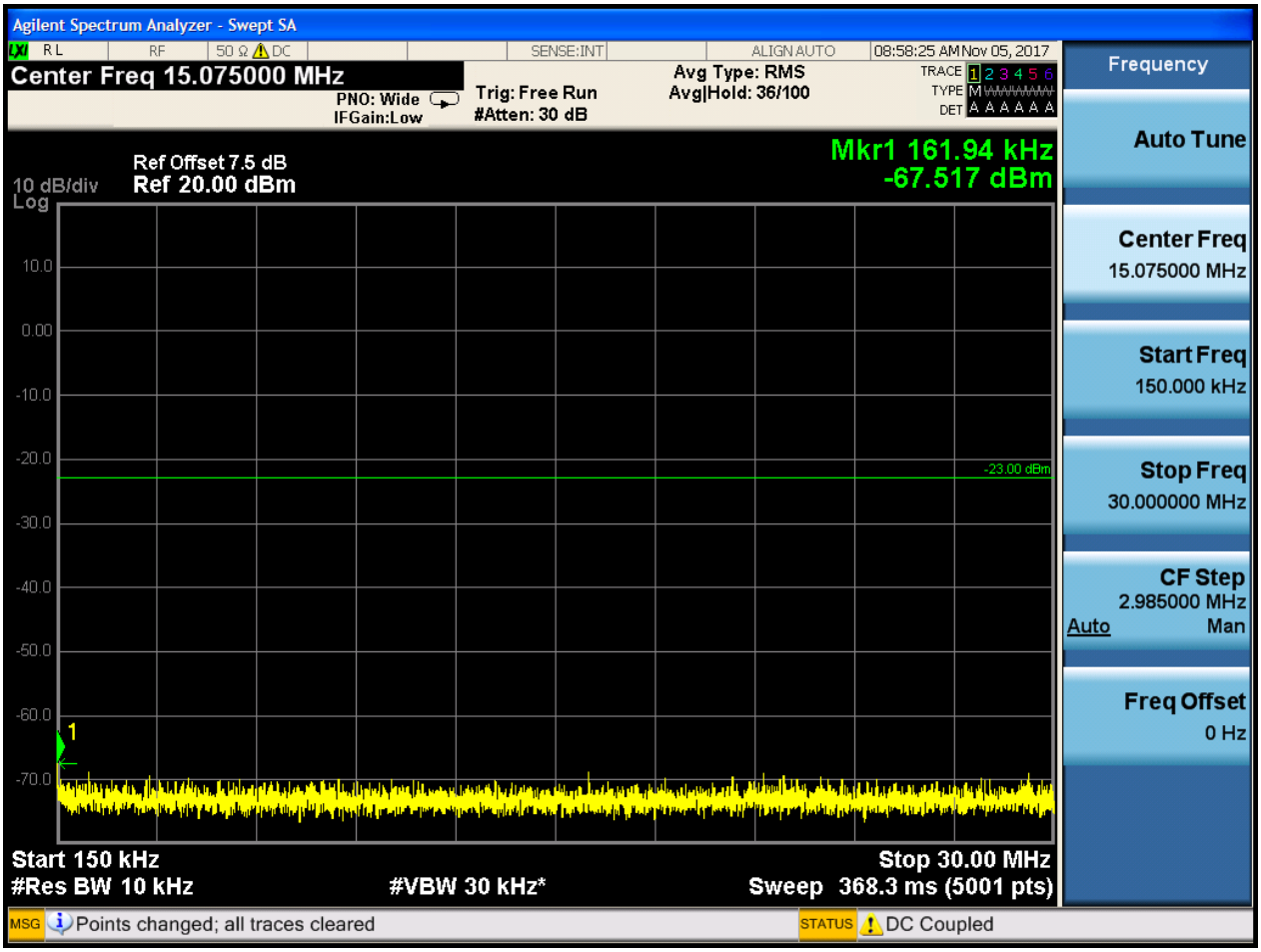


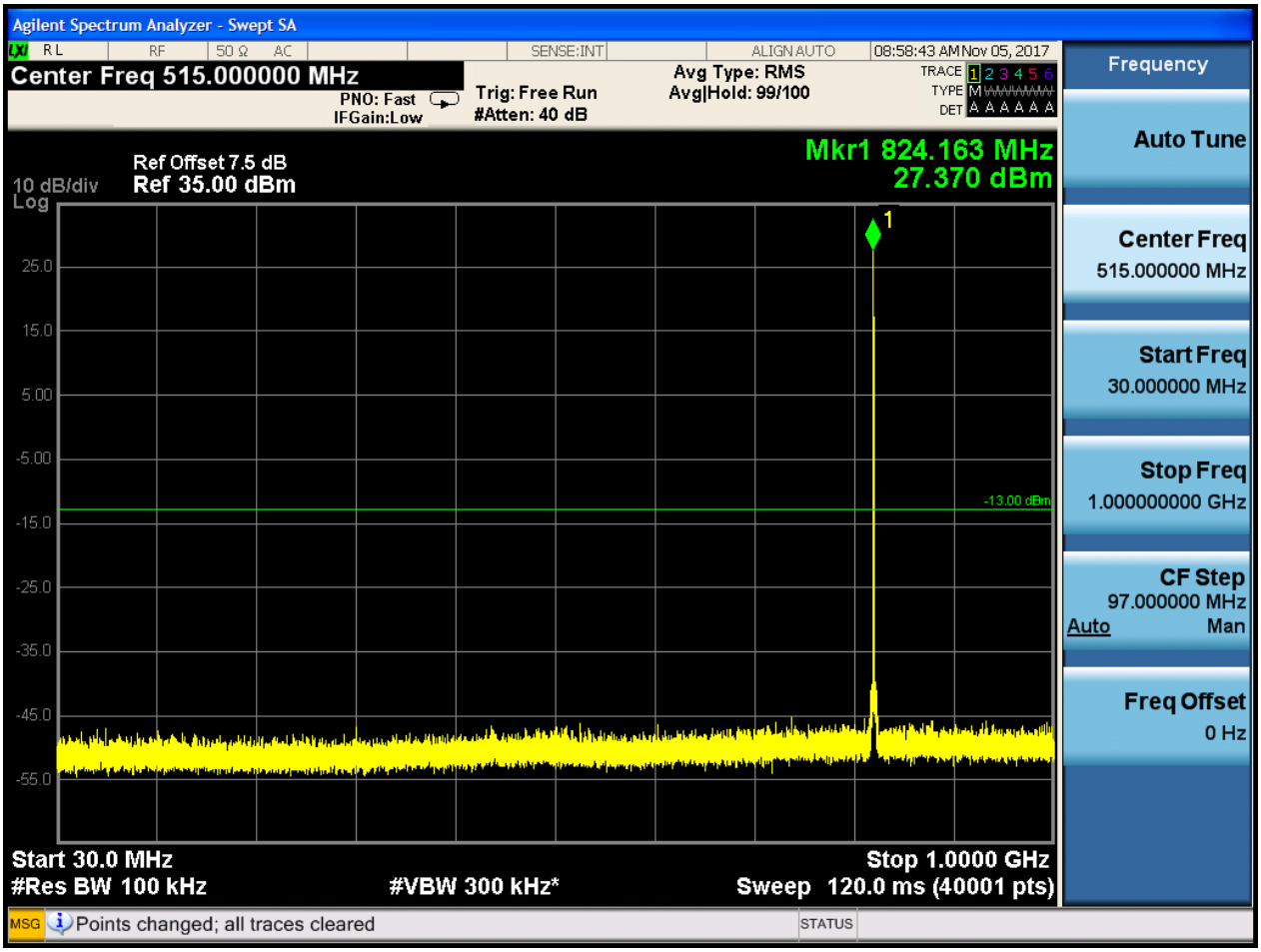


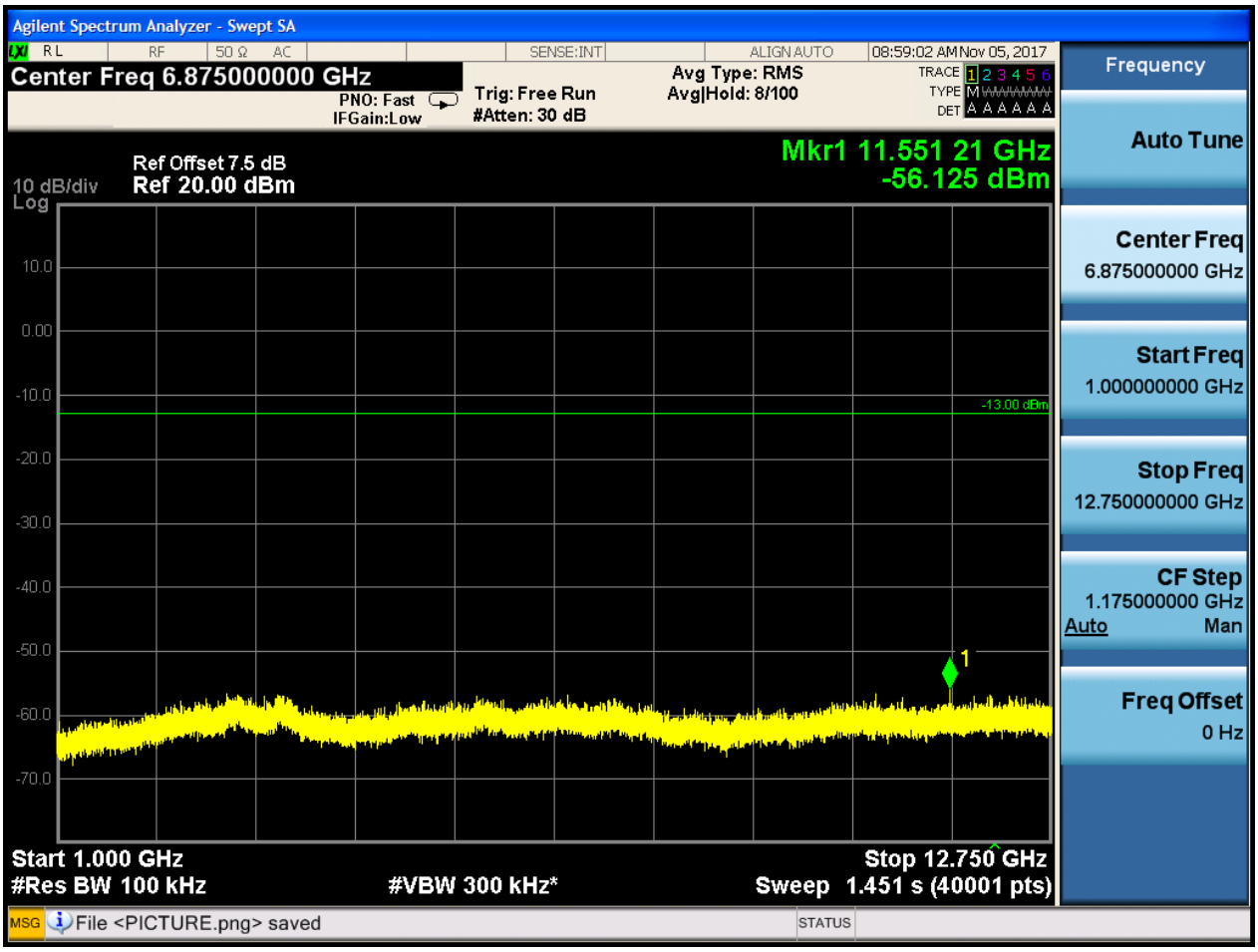
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

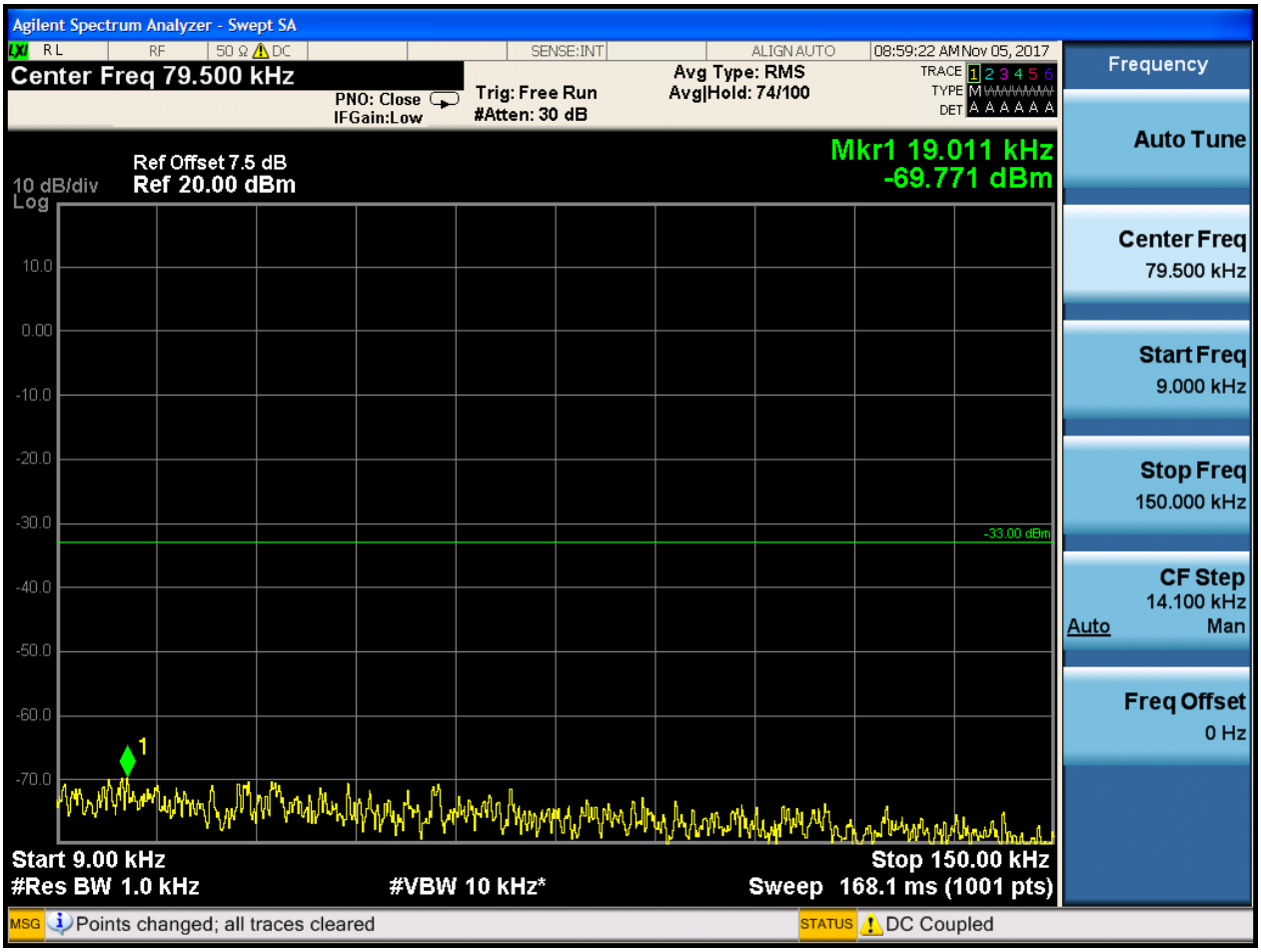


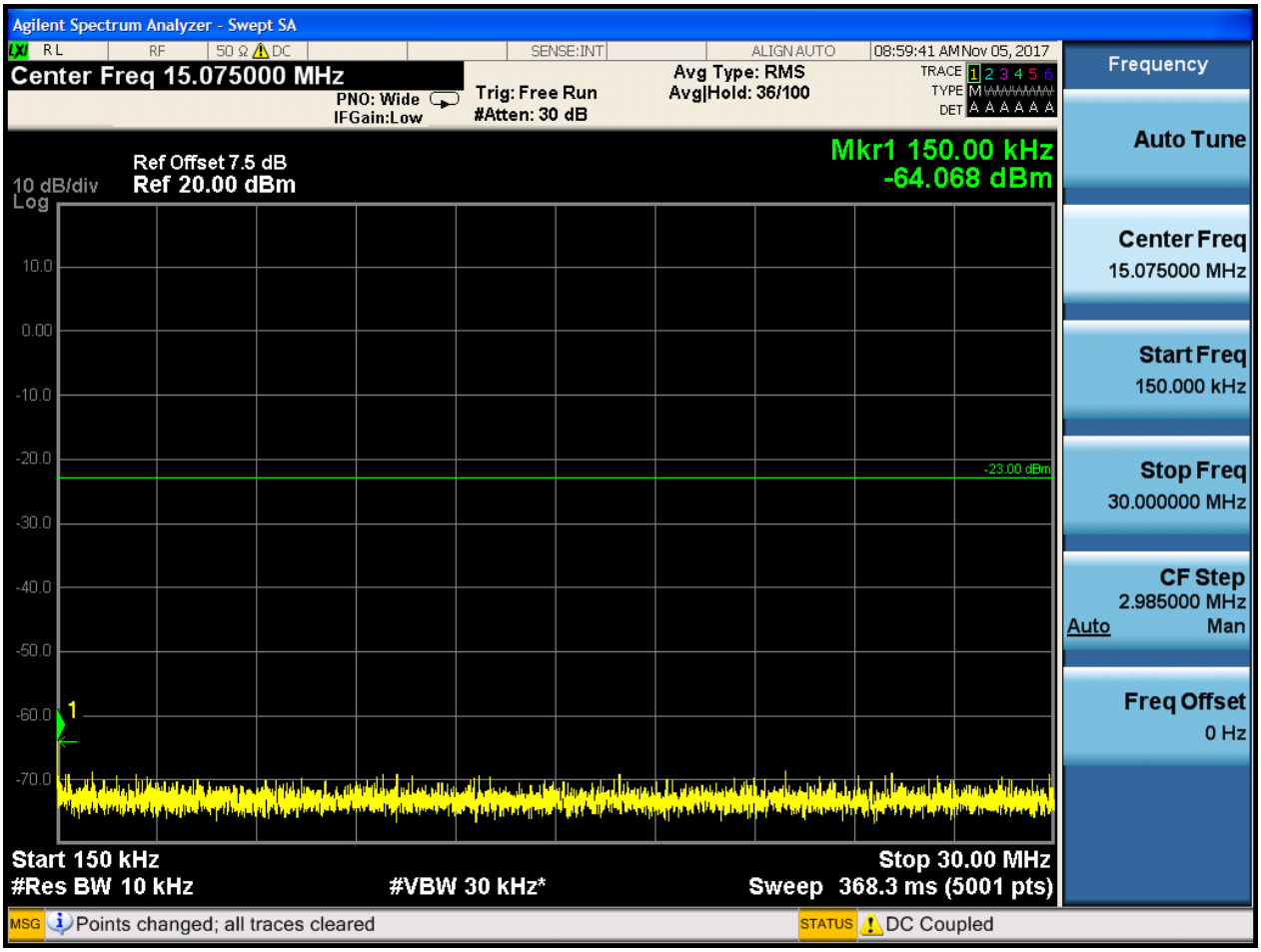


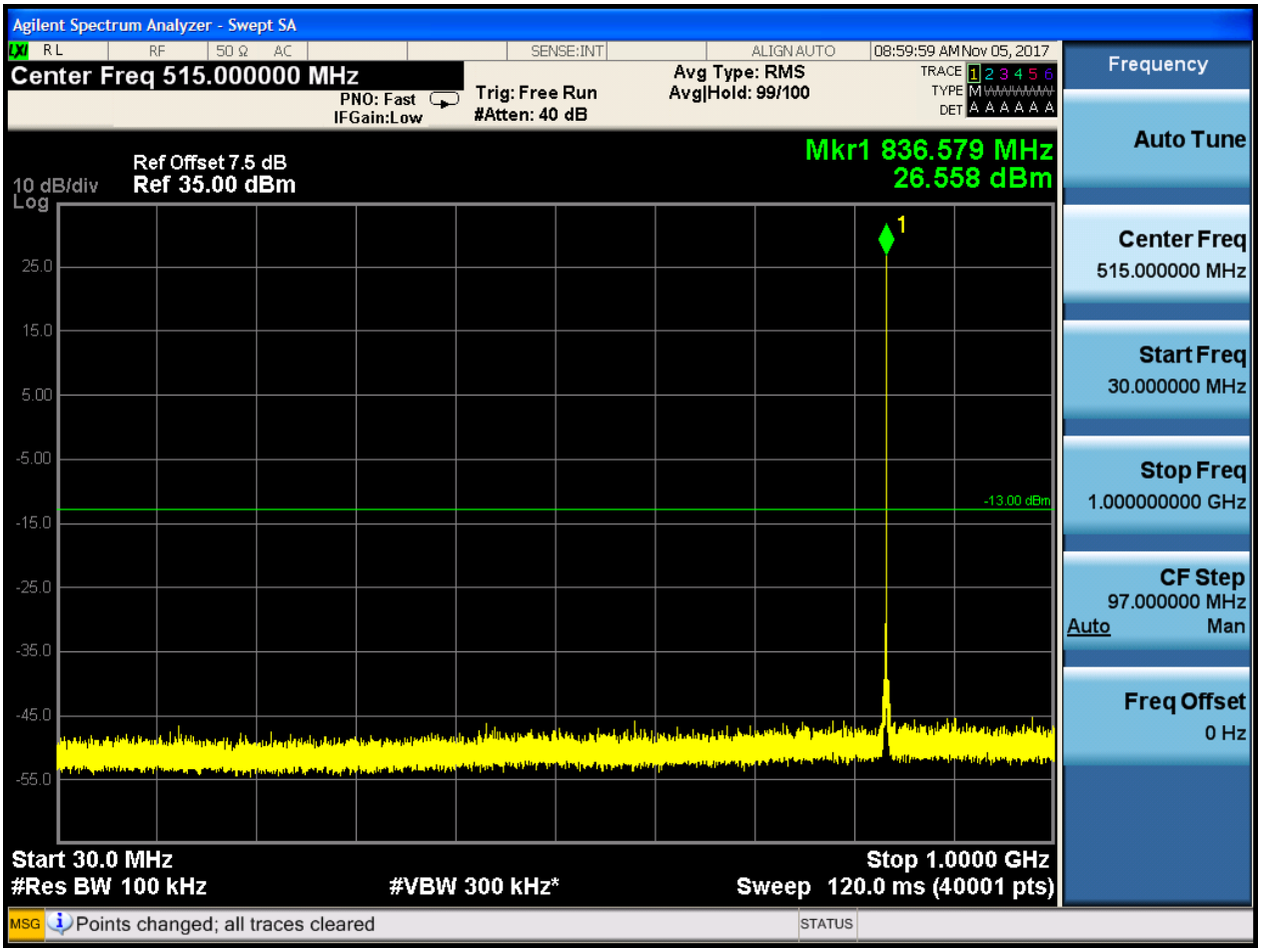


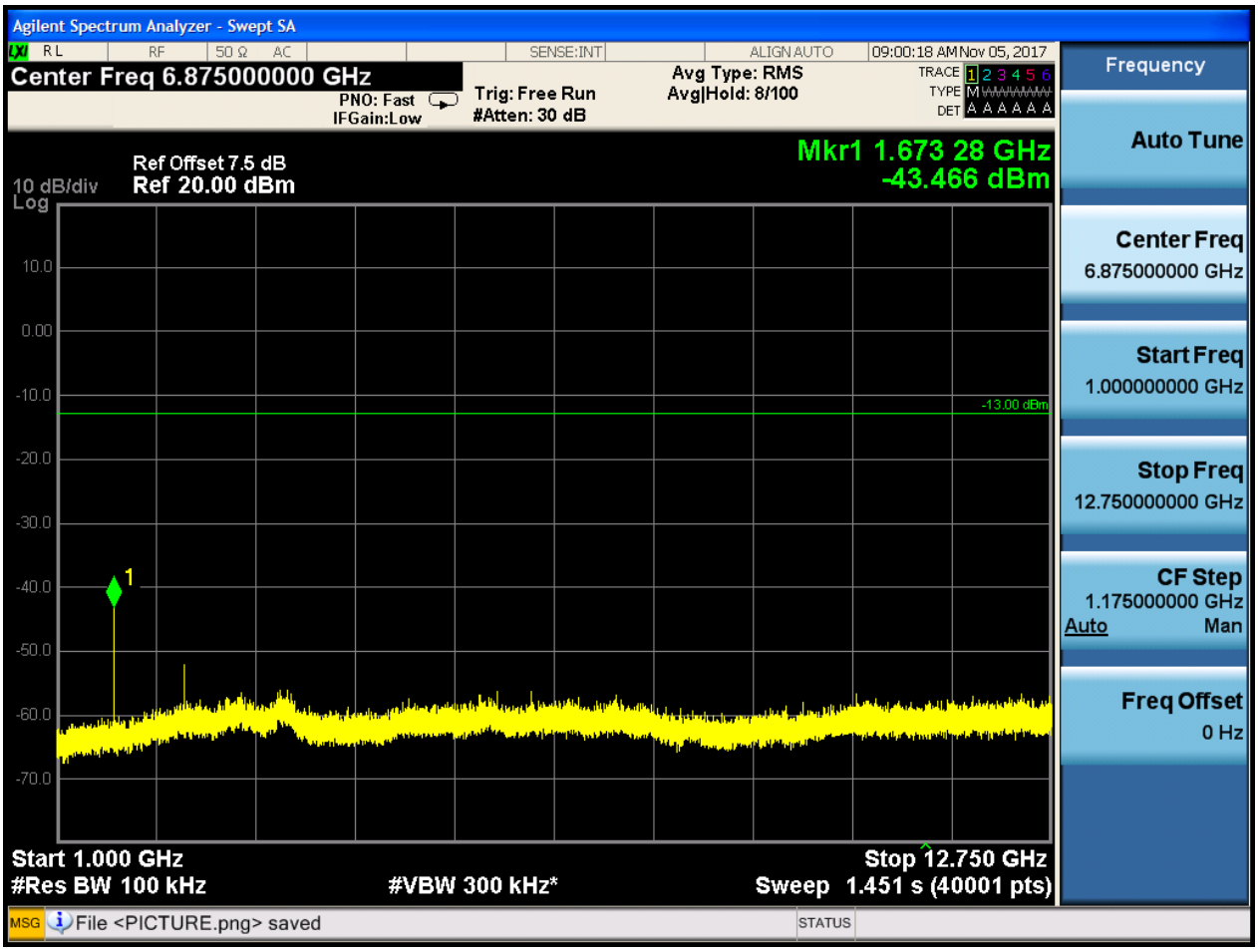


6.1.1.2.2 Test Channel = MCH

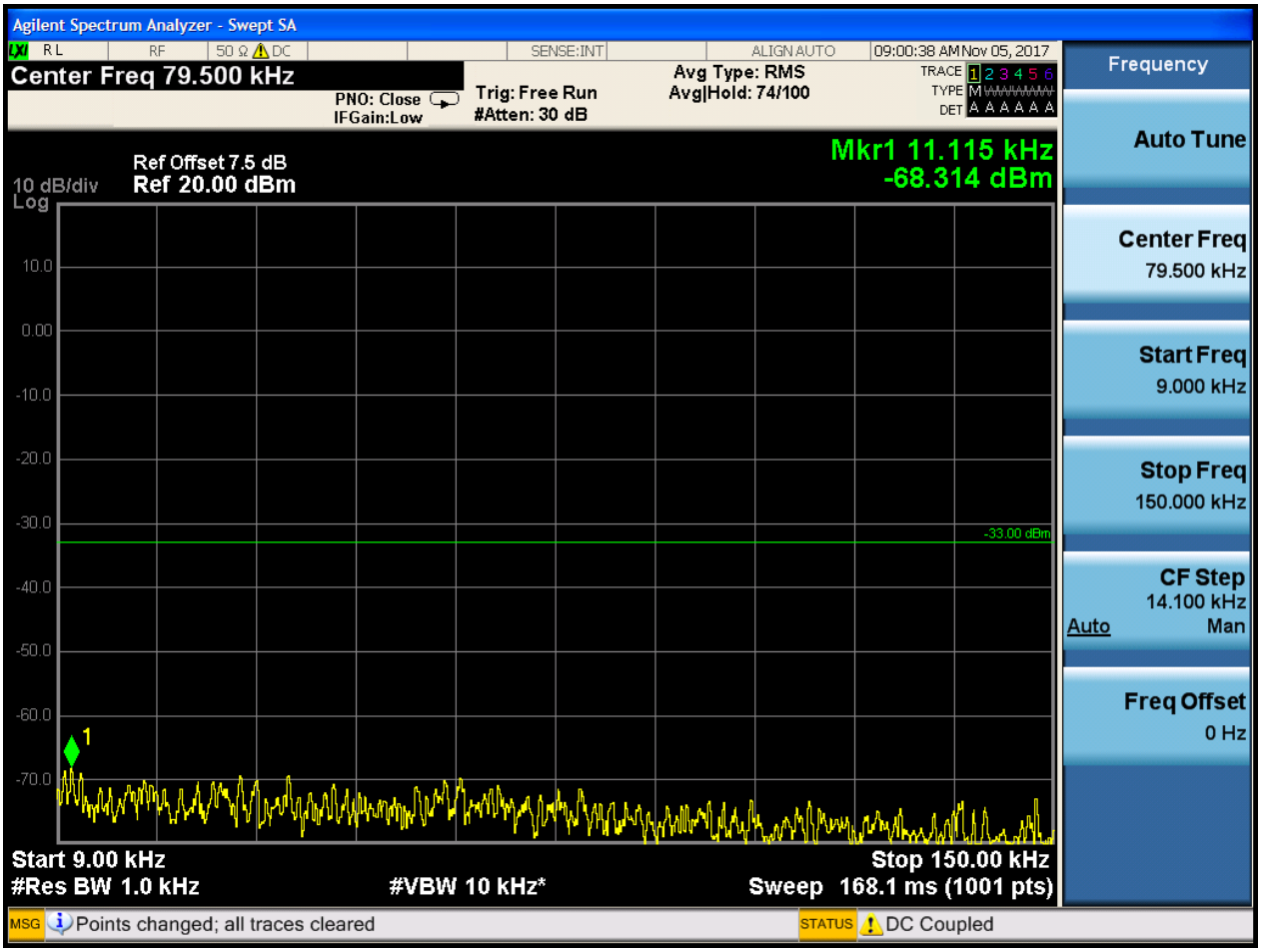


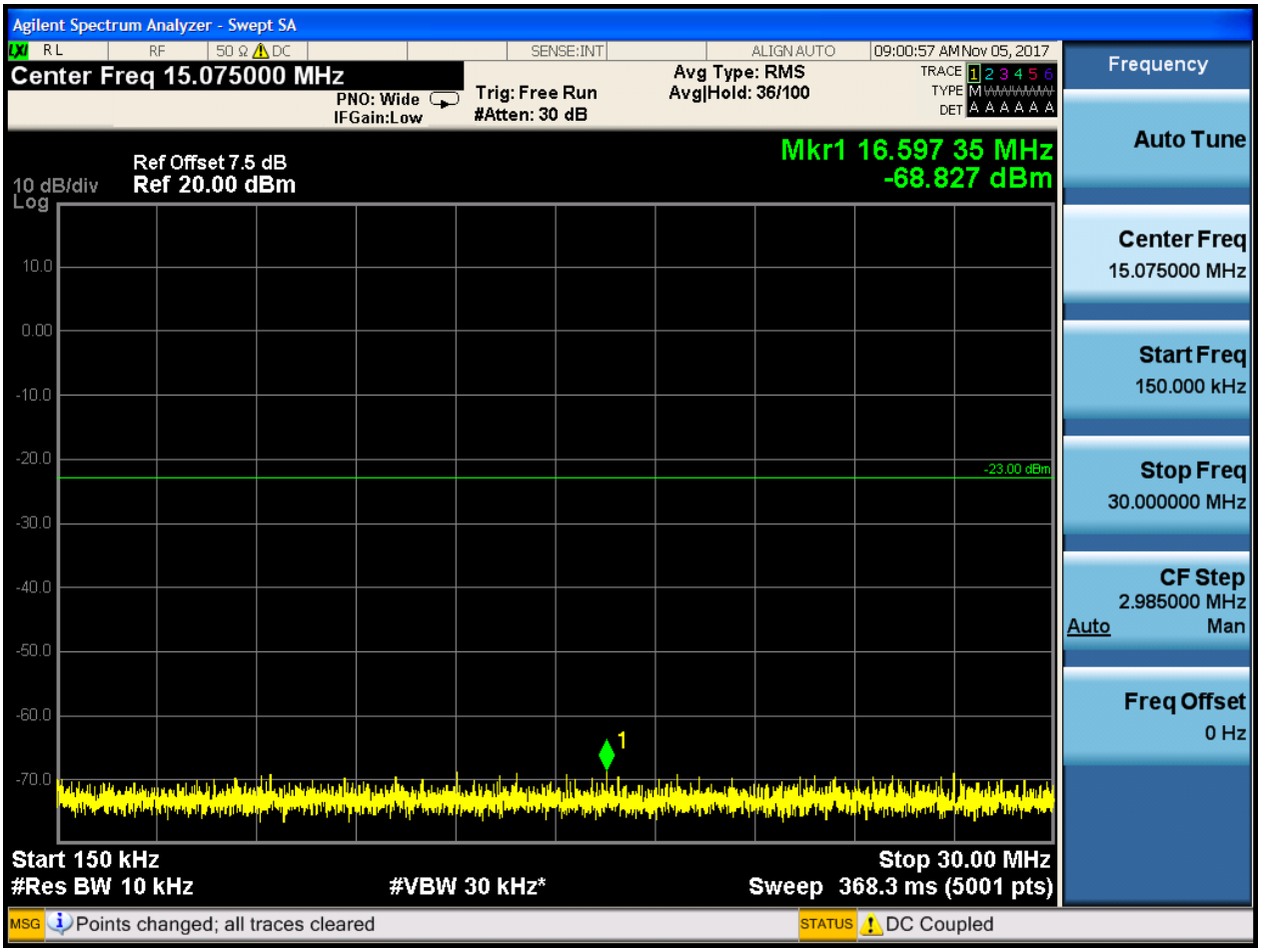


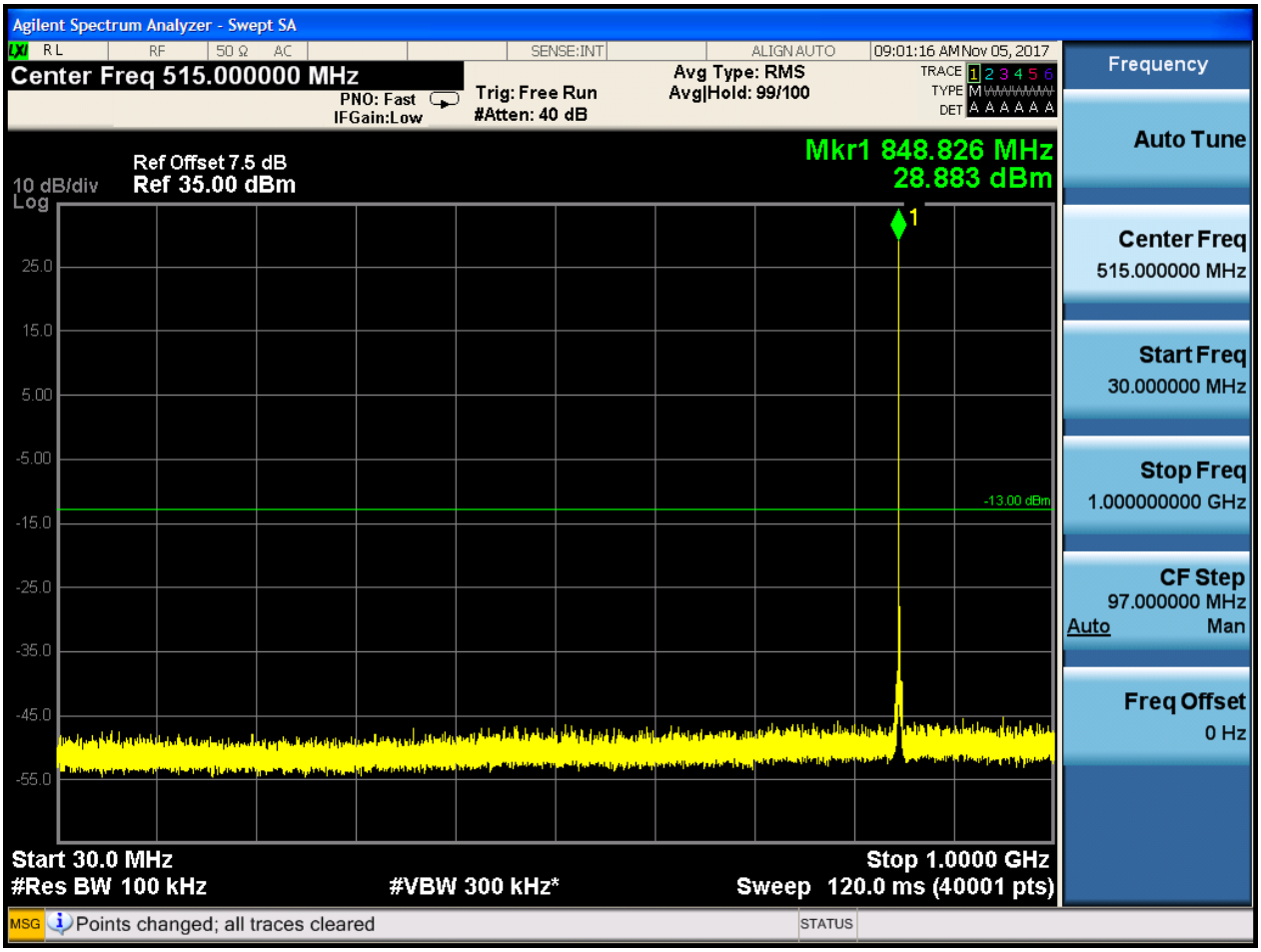


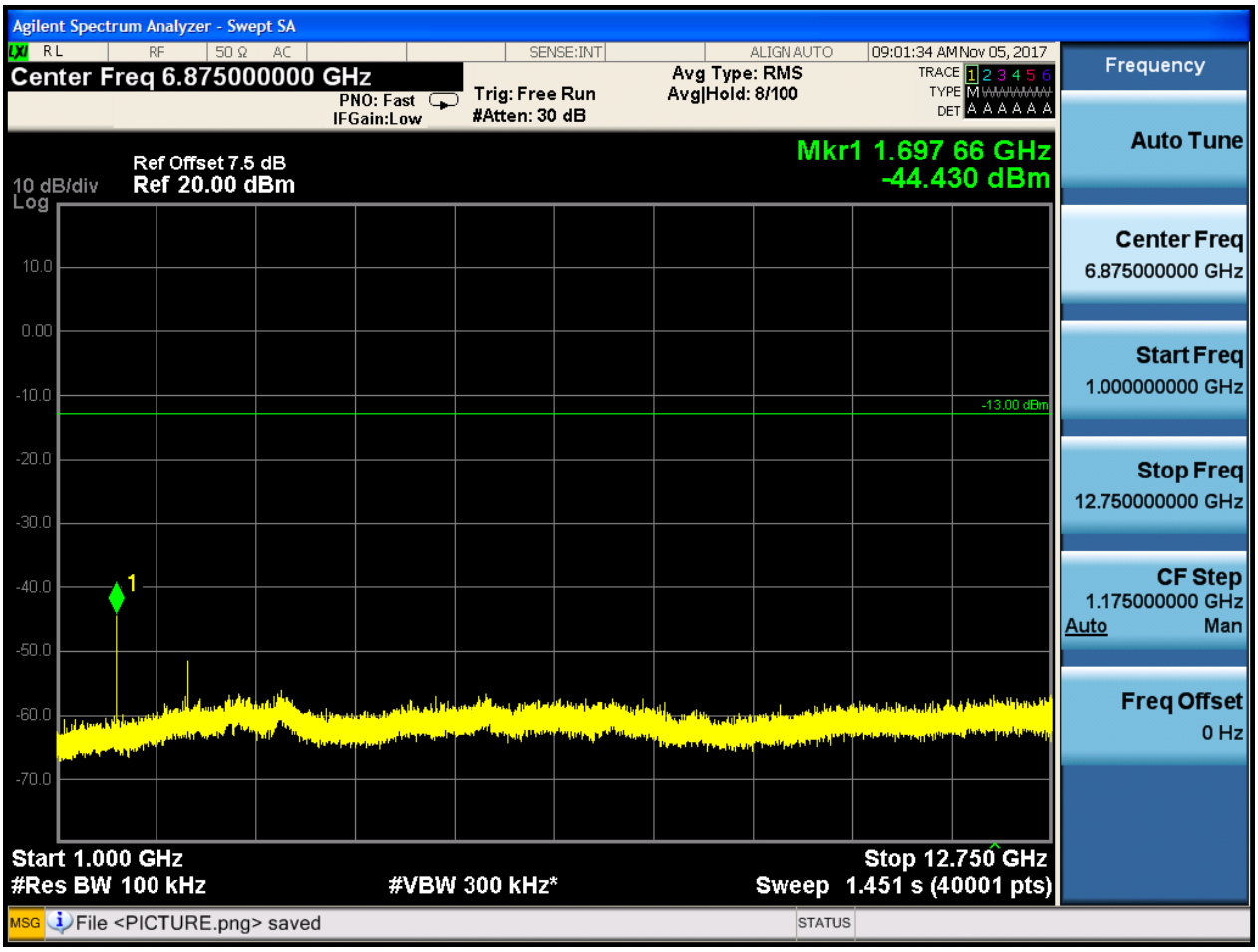


6.1.1.2.3 Test Channel = HCH





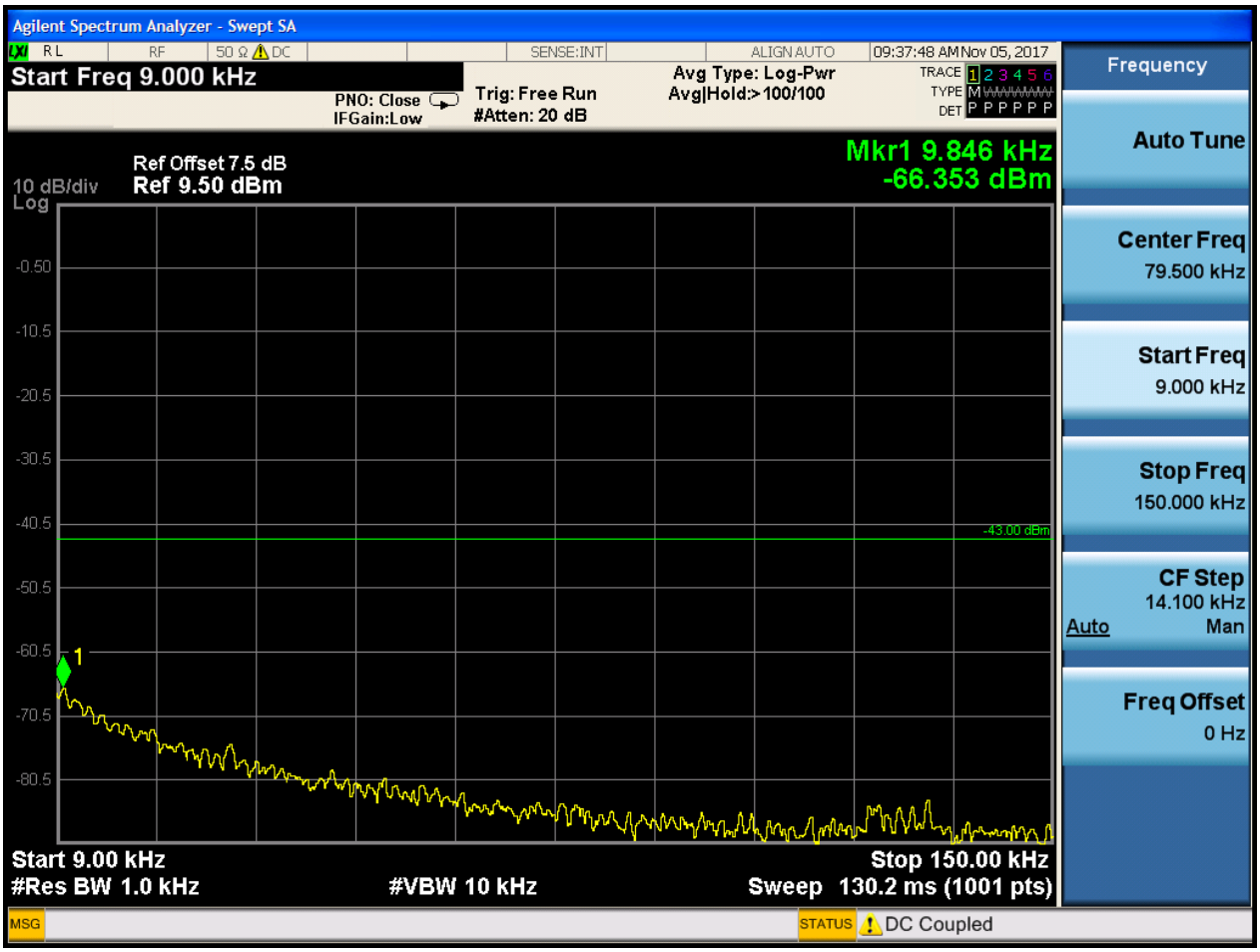


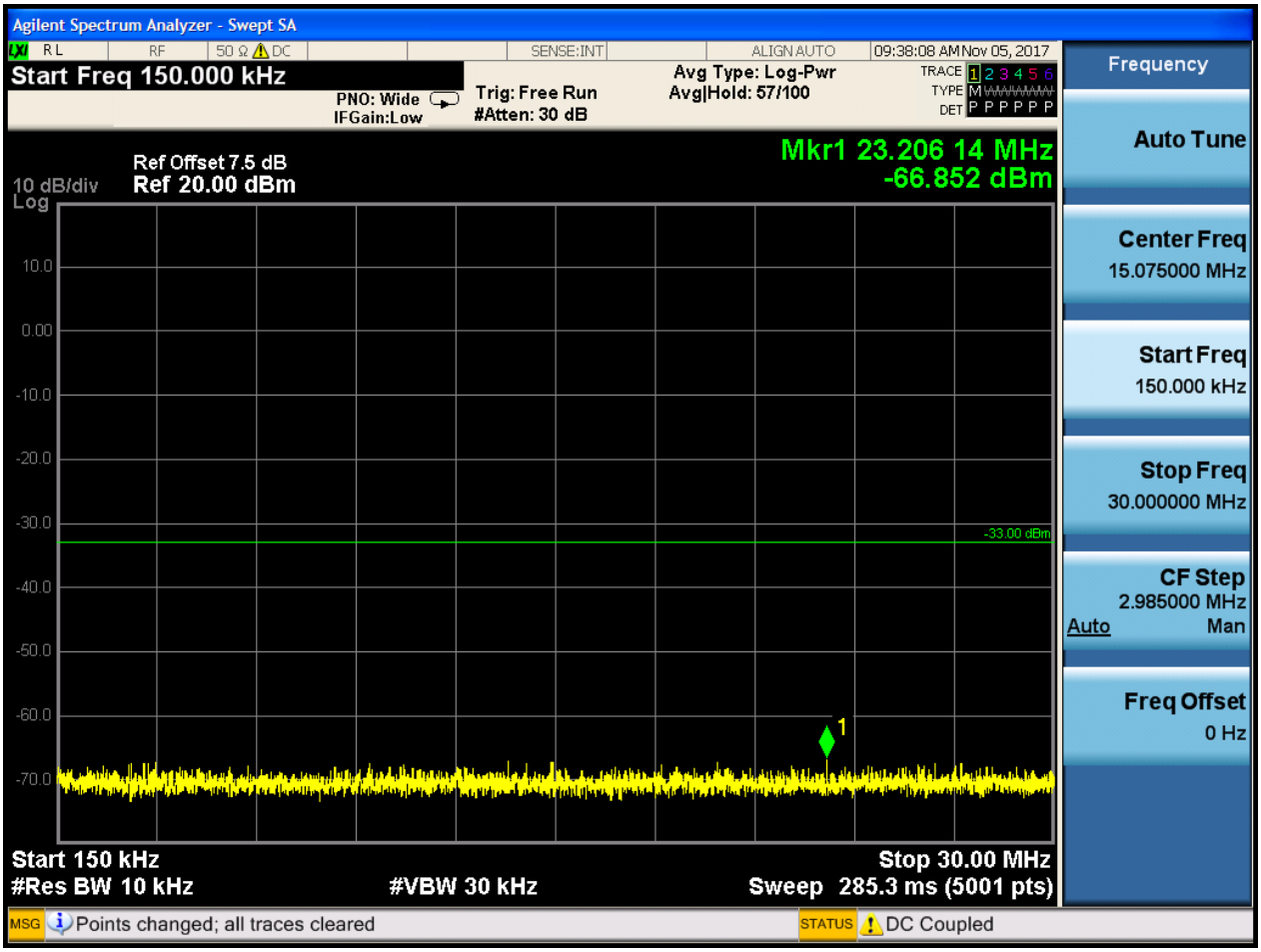


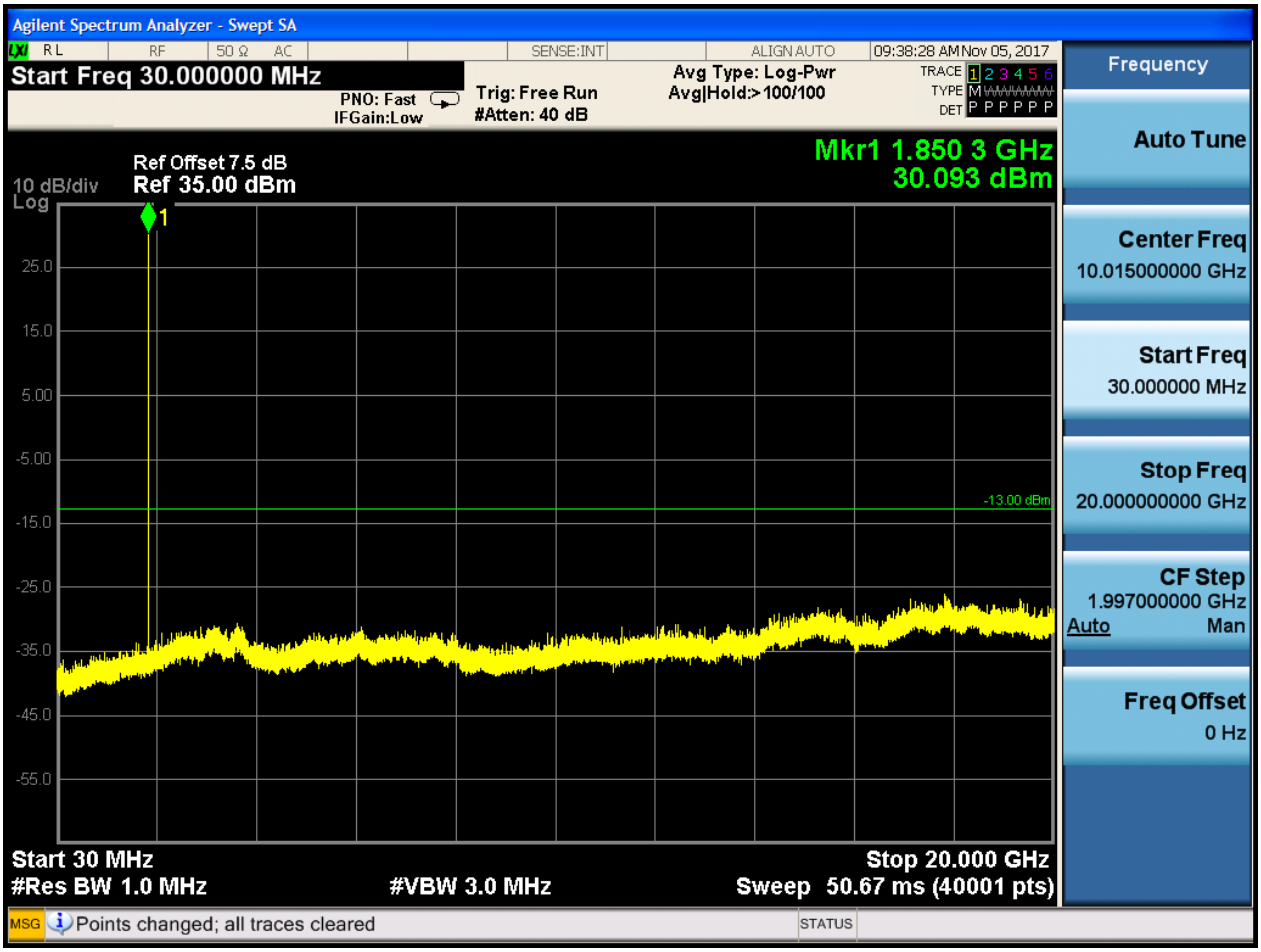
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

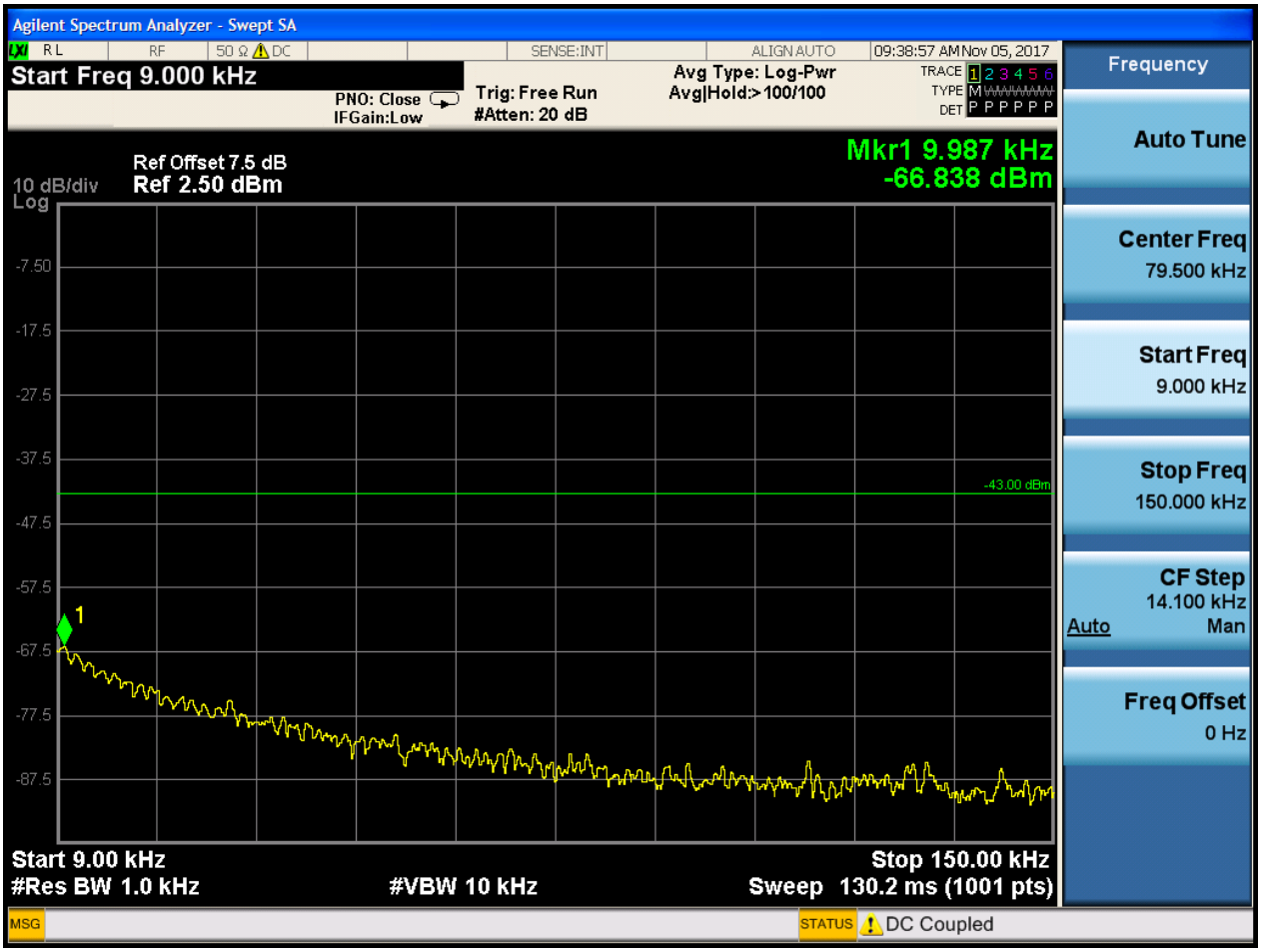
6.1.2.1.1 Test Channel = LCH

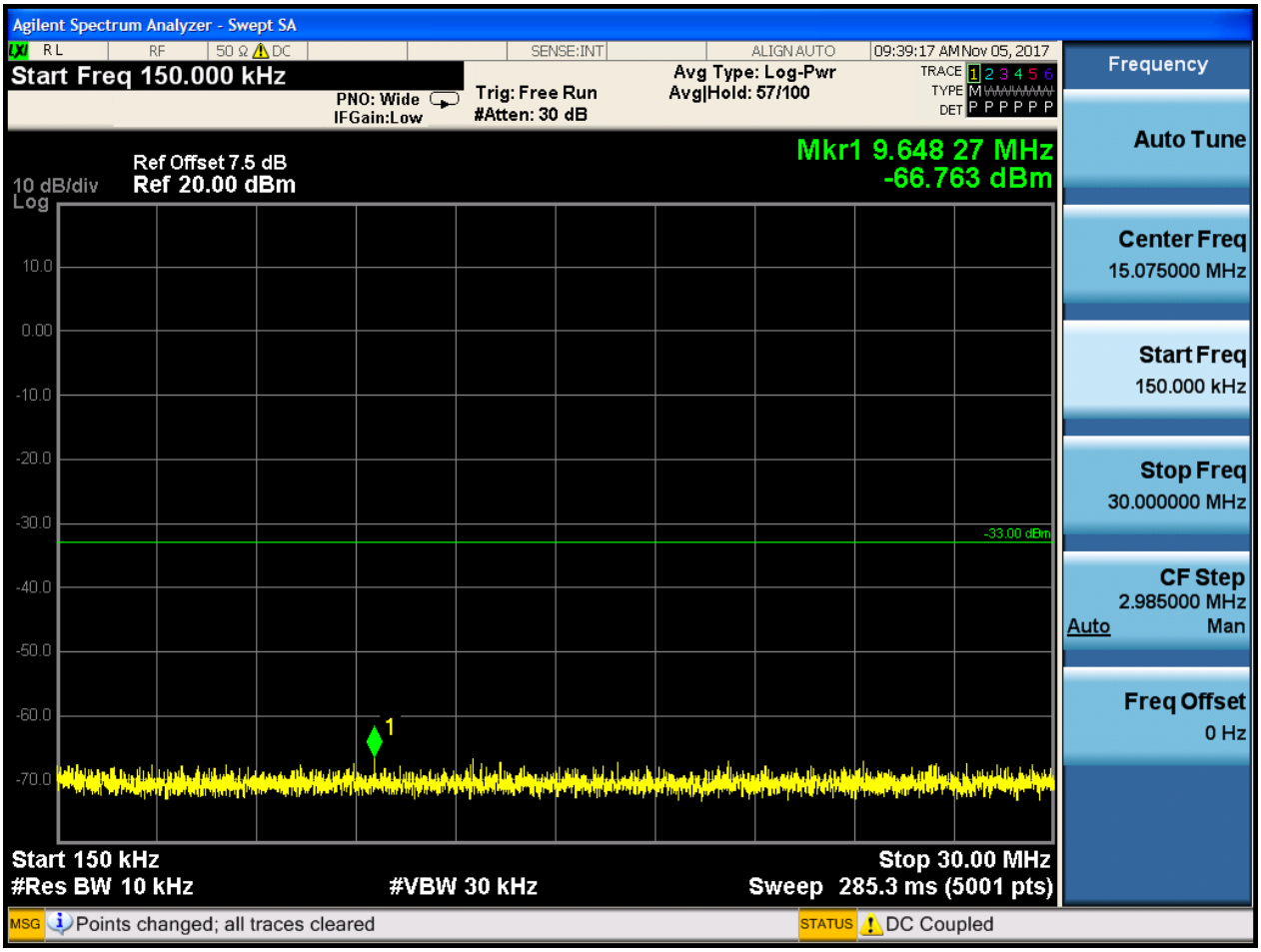


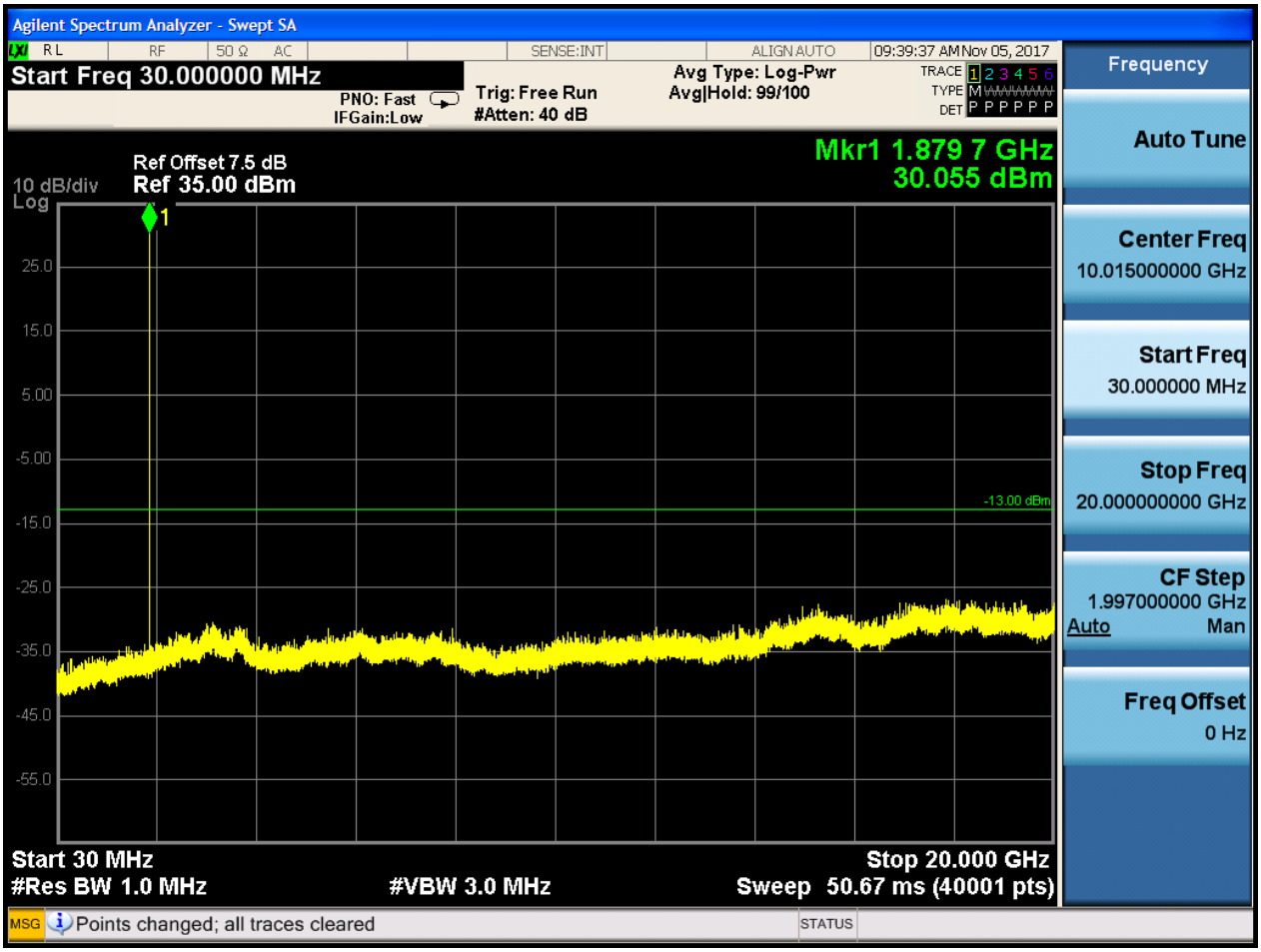




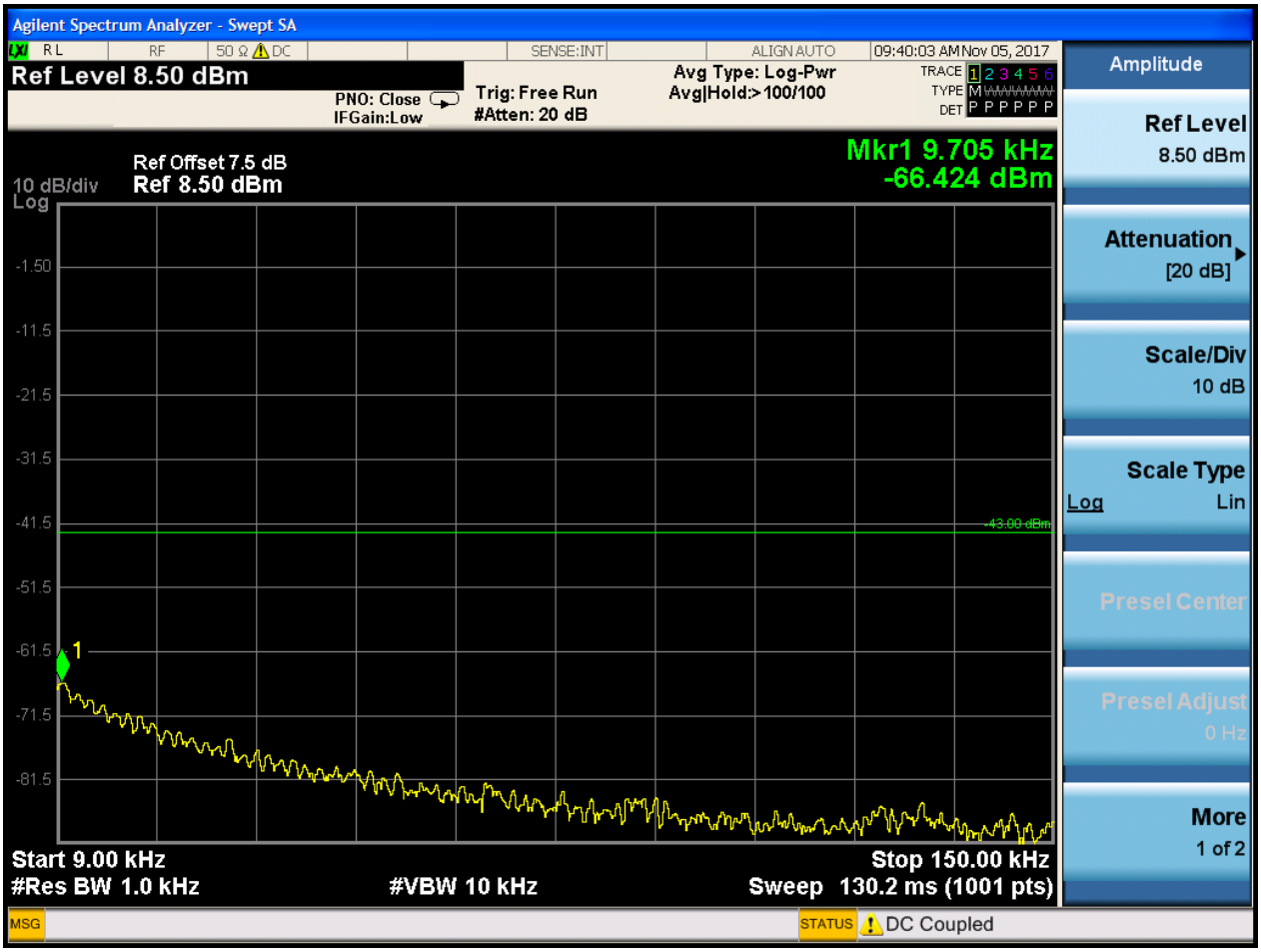
6.1.2.1.2 Test Channel = MCH

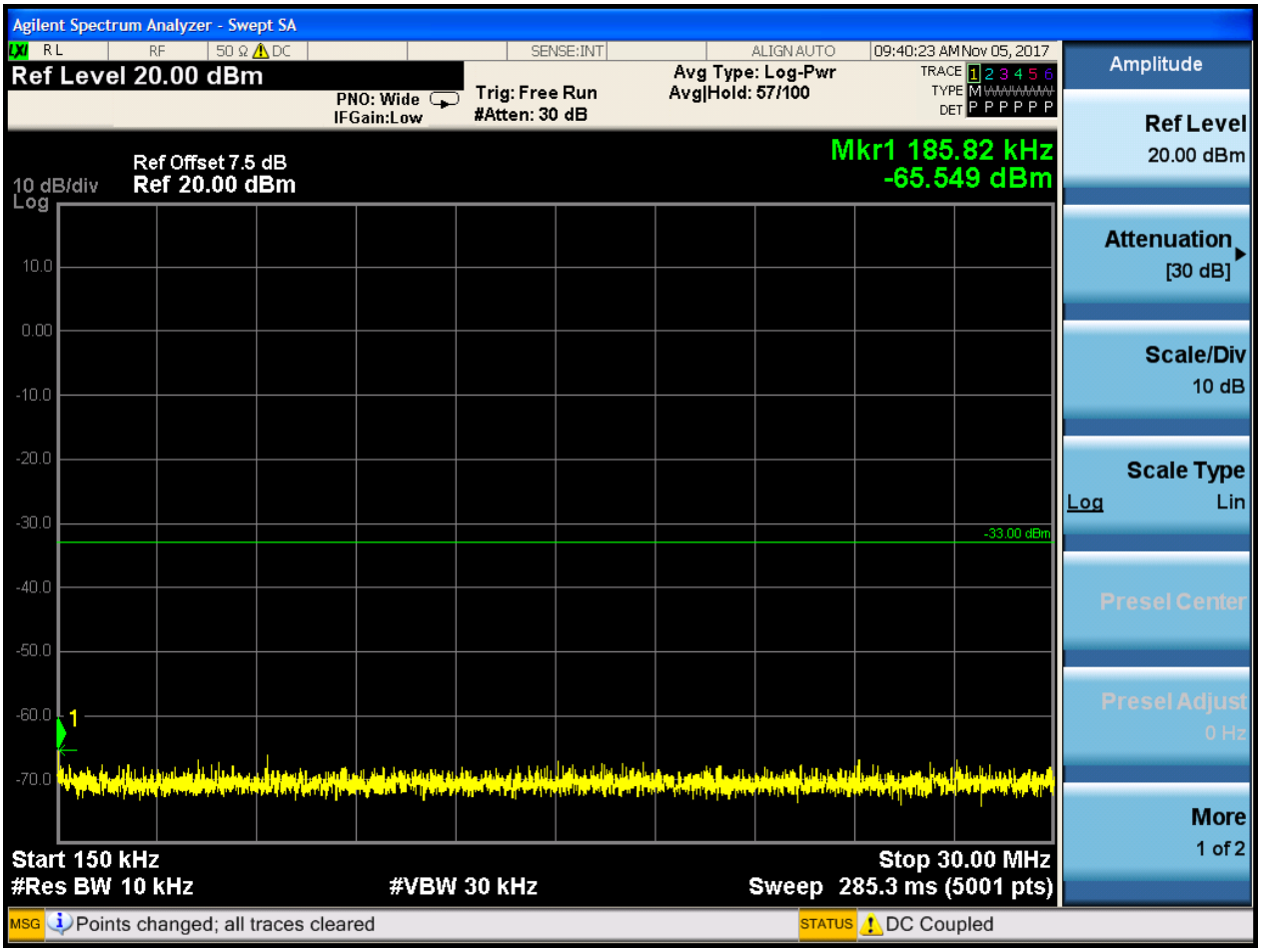


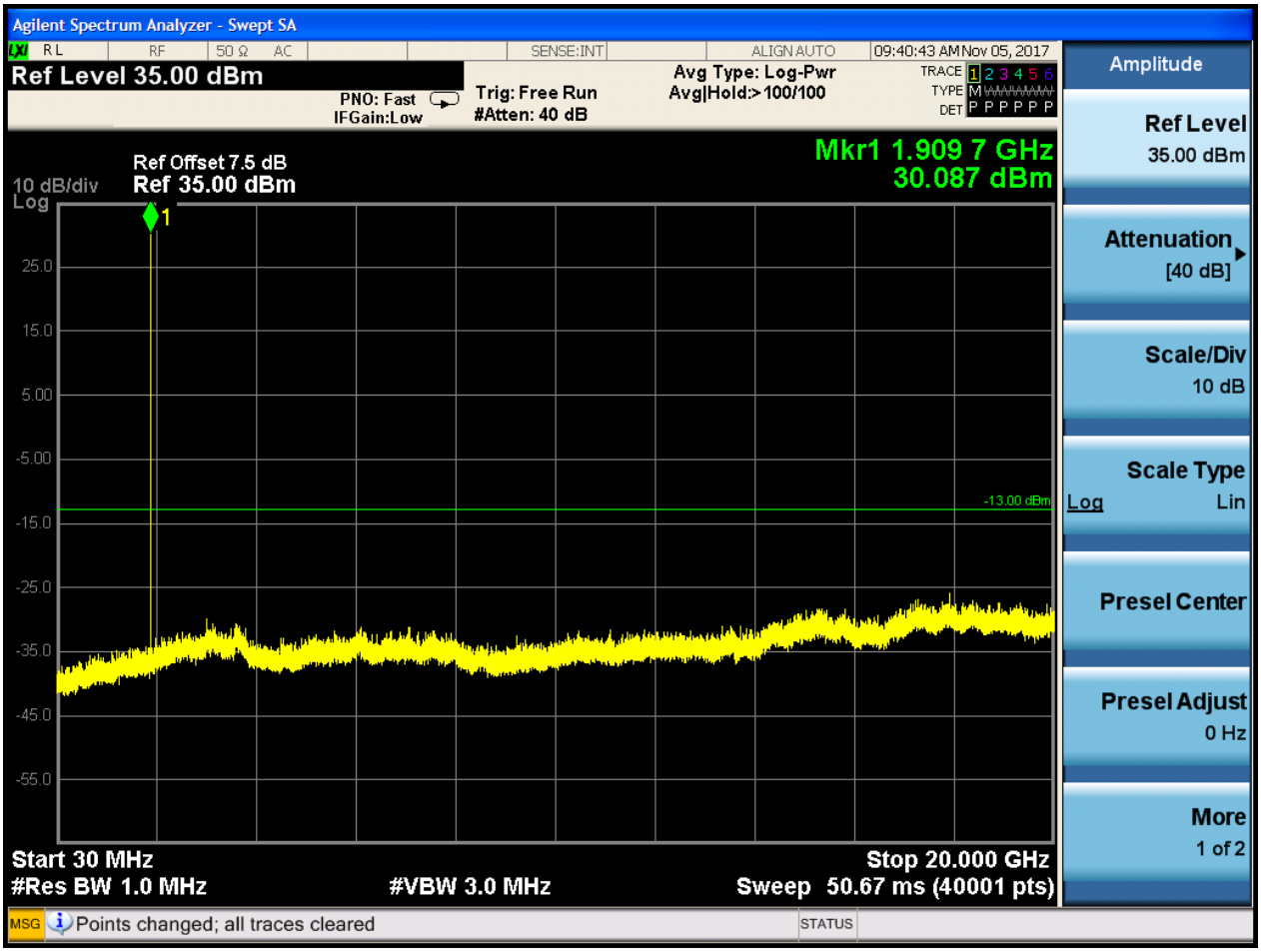




6.1.2.1.3 Test Channel = HCH

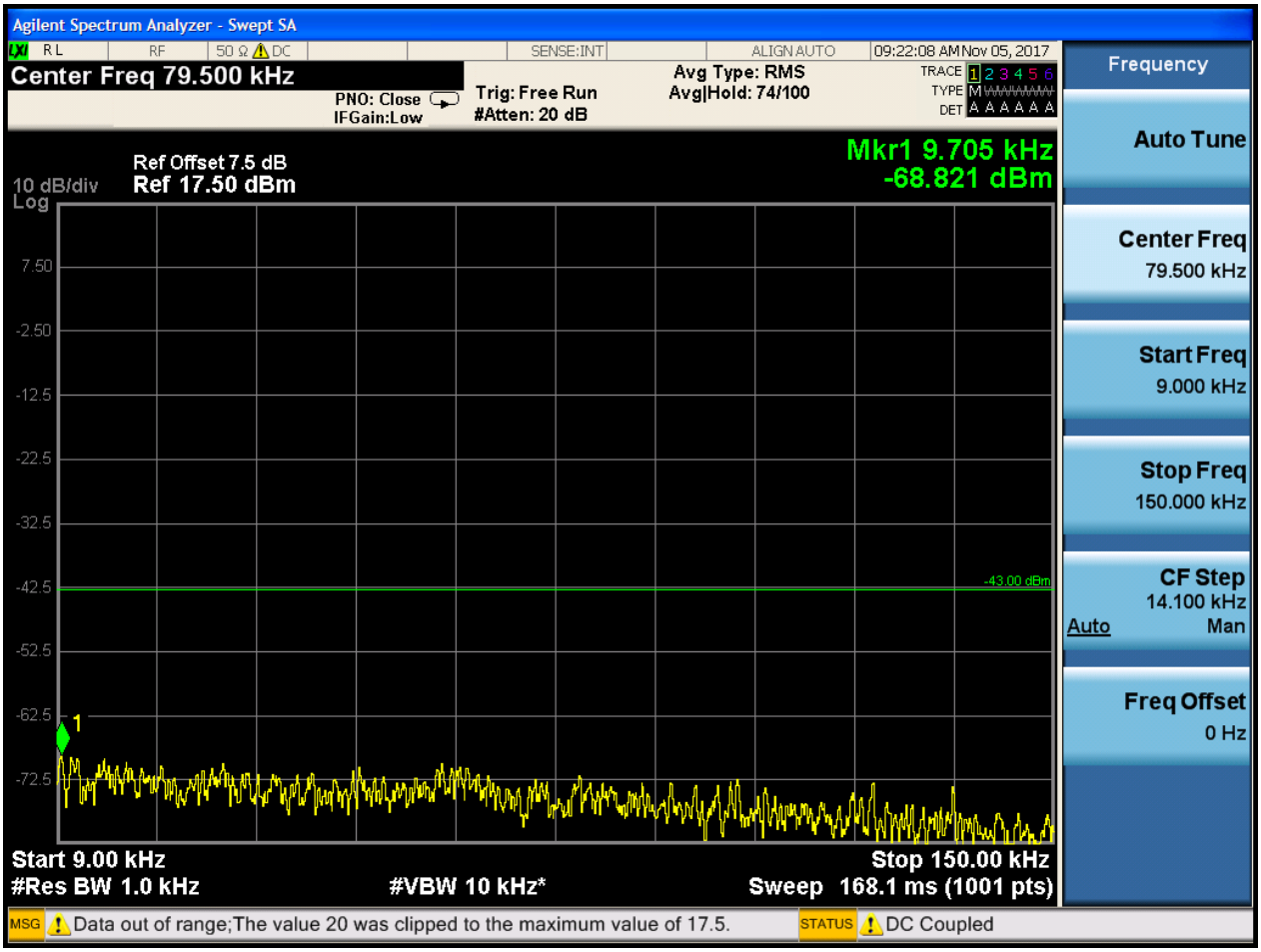


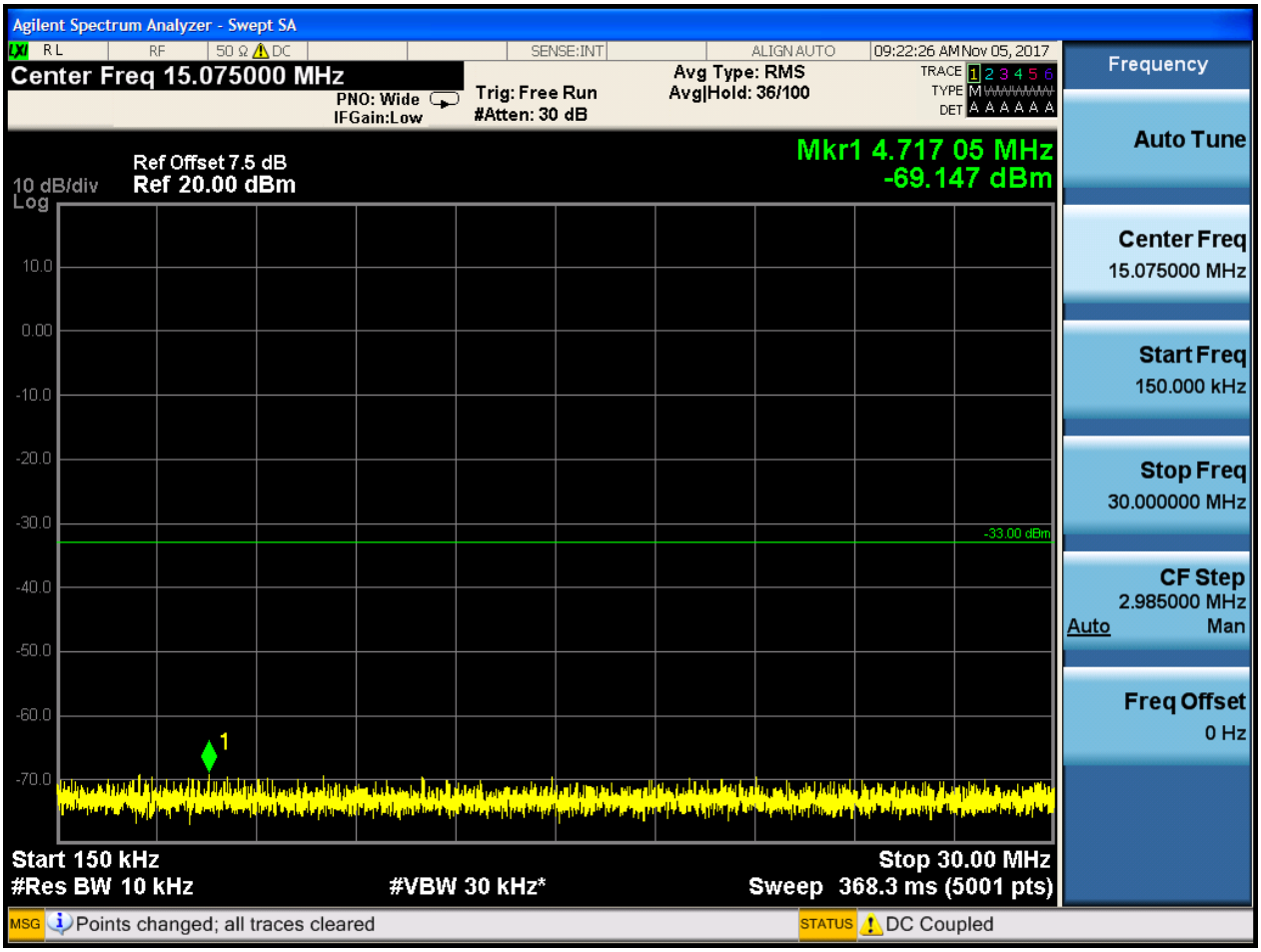


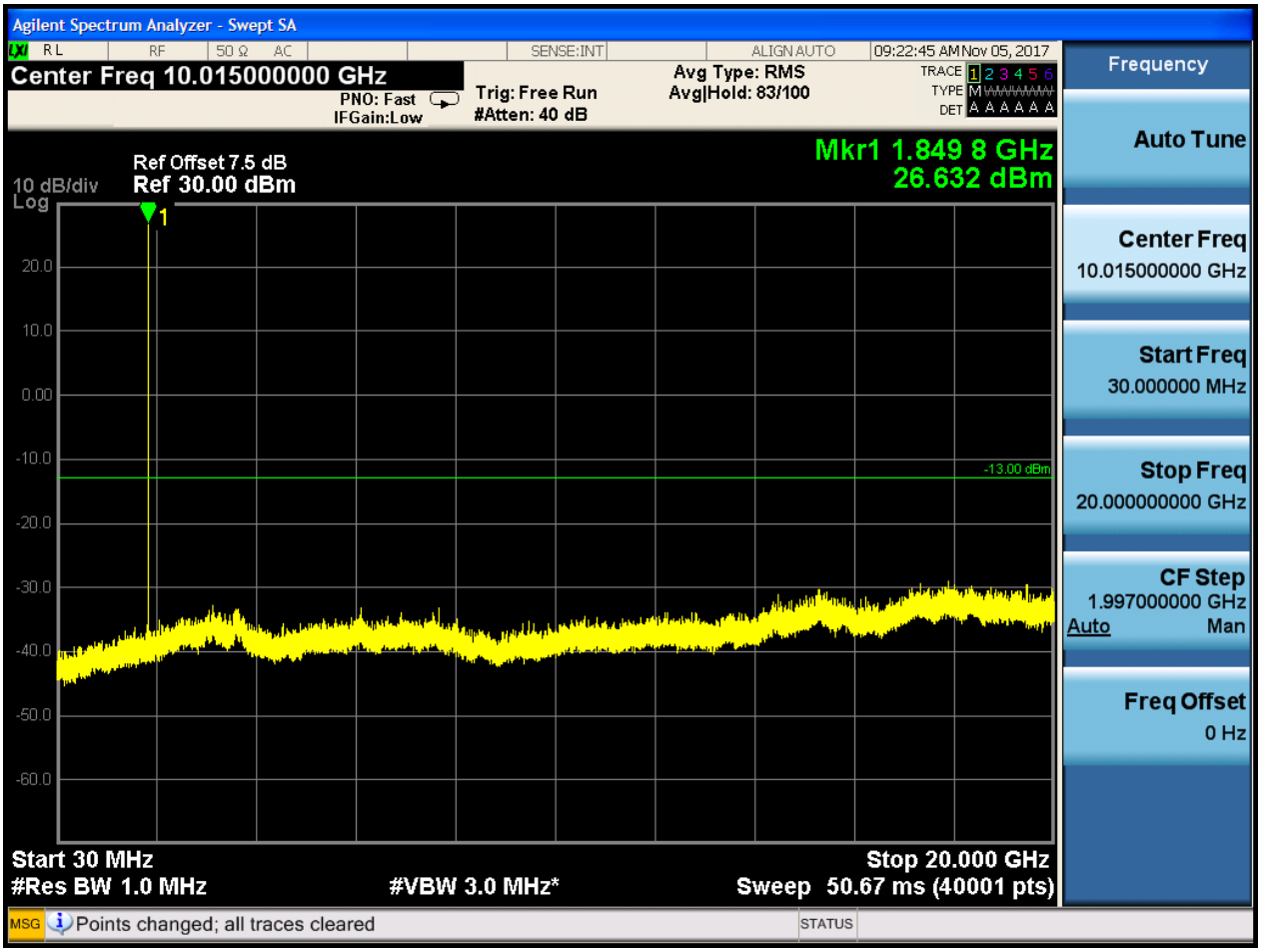


6.1.2.2 Test Mode = GSM/TM2

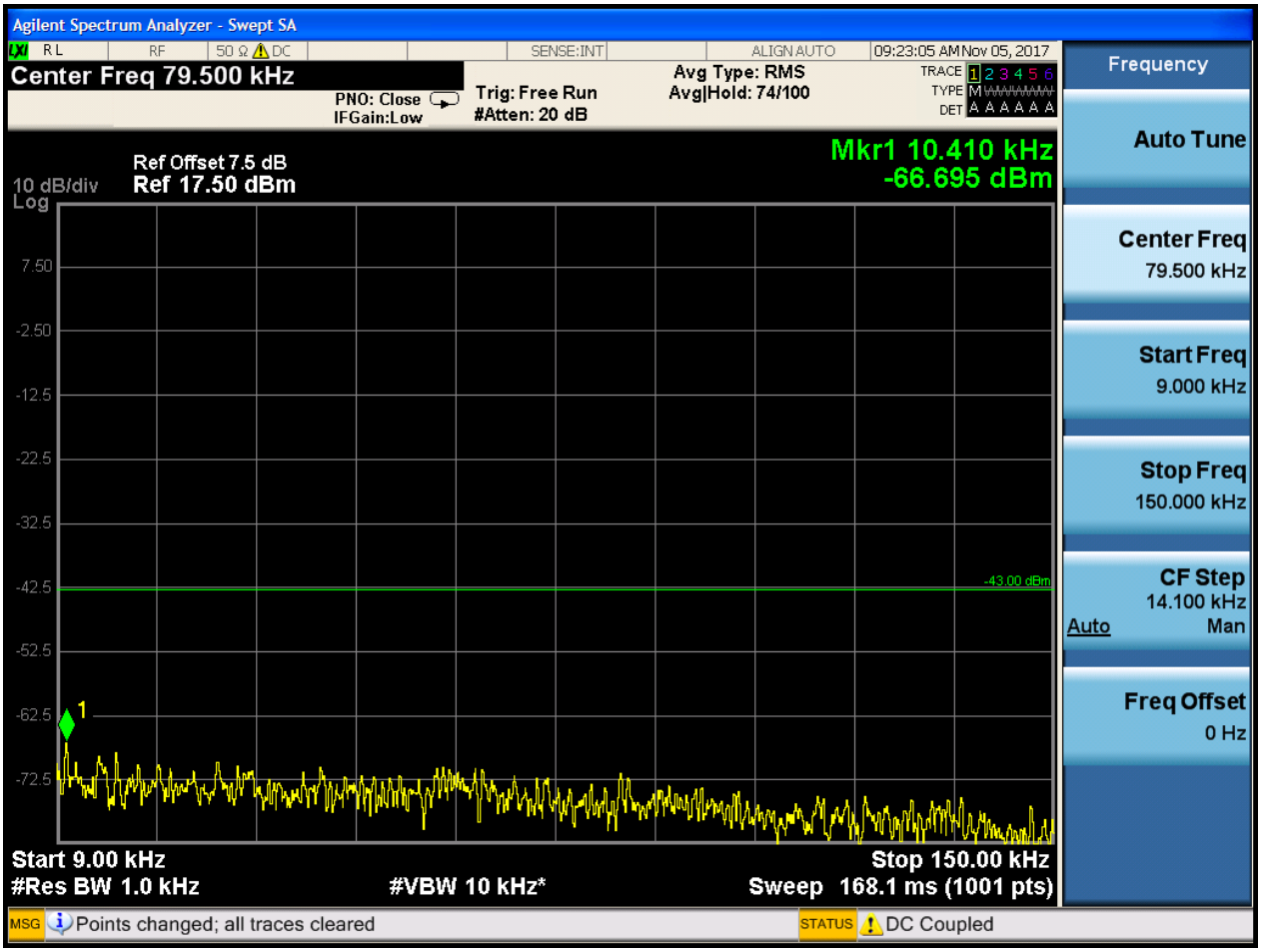
6.1.2.2.1 Test Channel = LCH

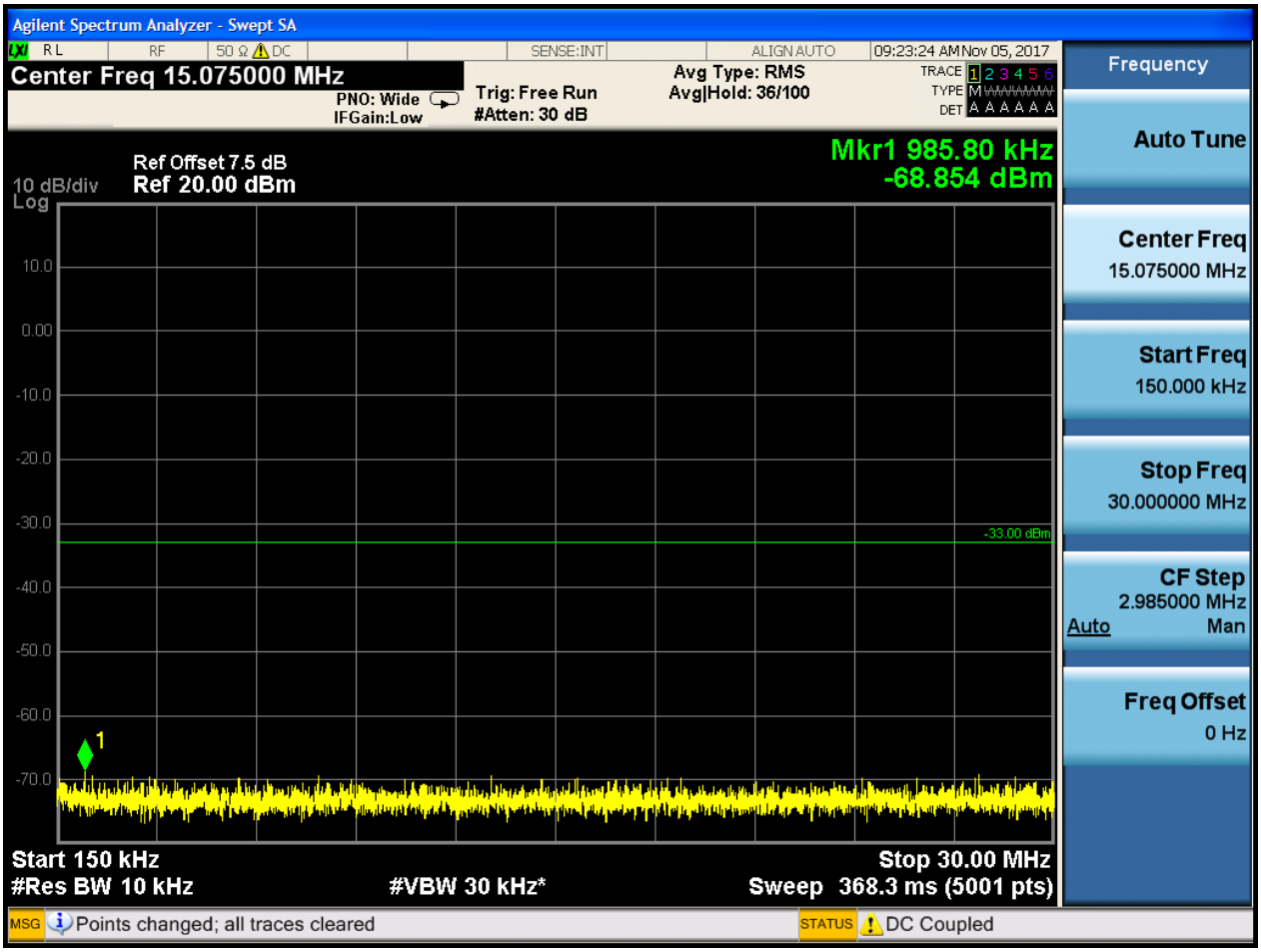


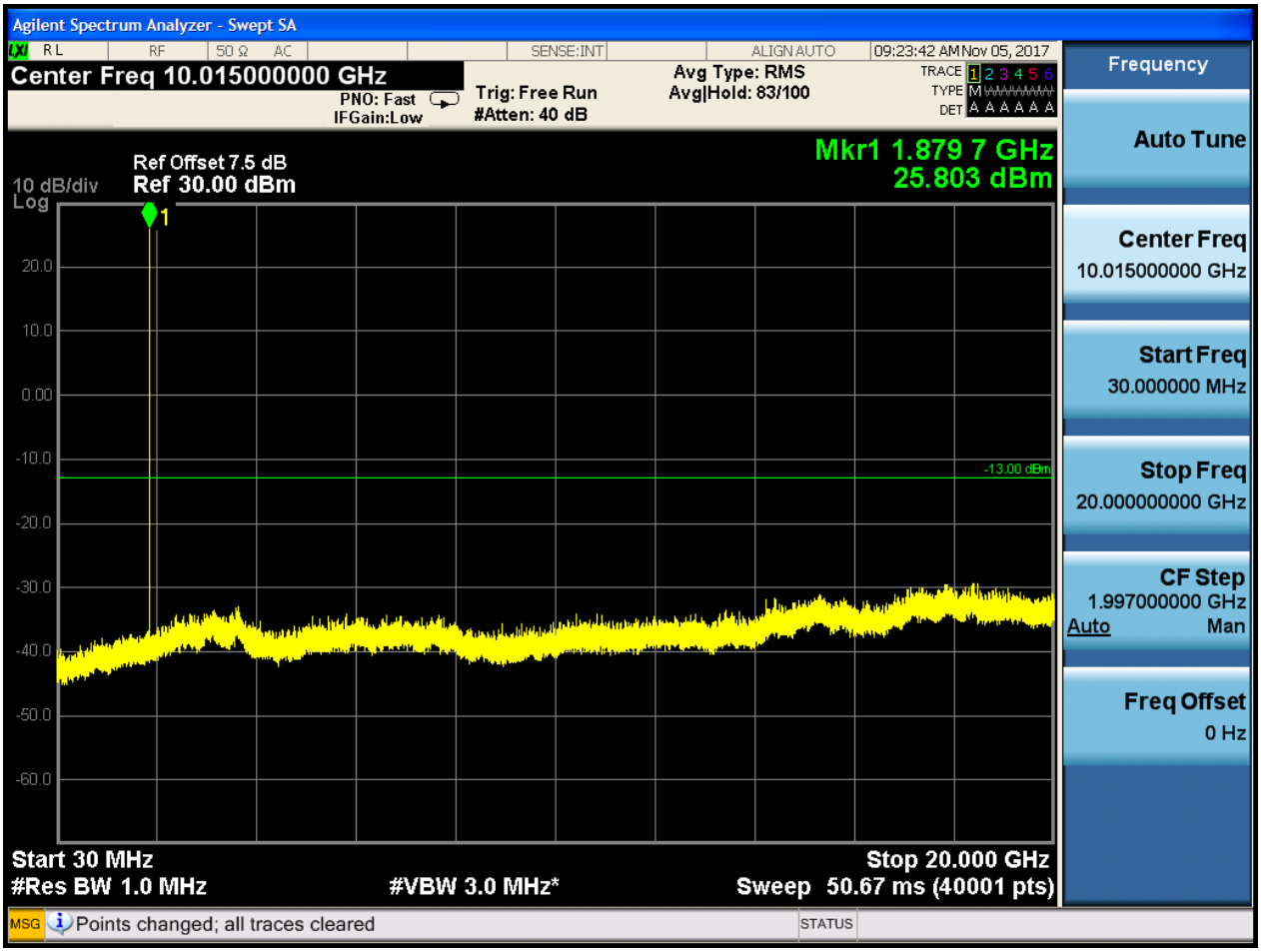




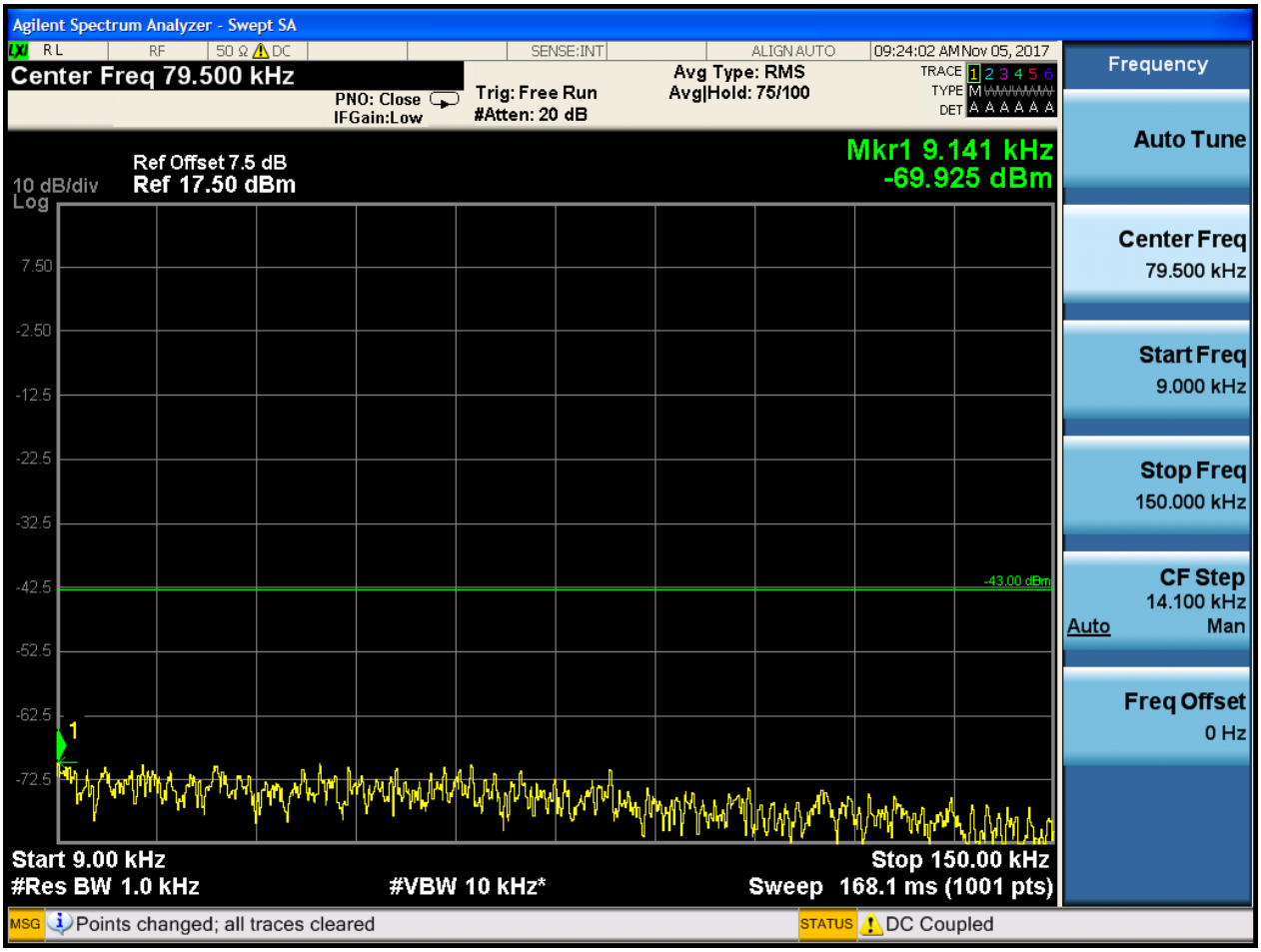
6.1.2.2.2 Test Channel = MCH

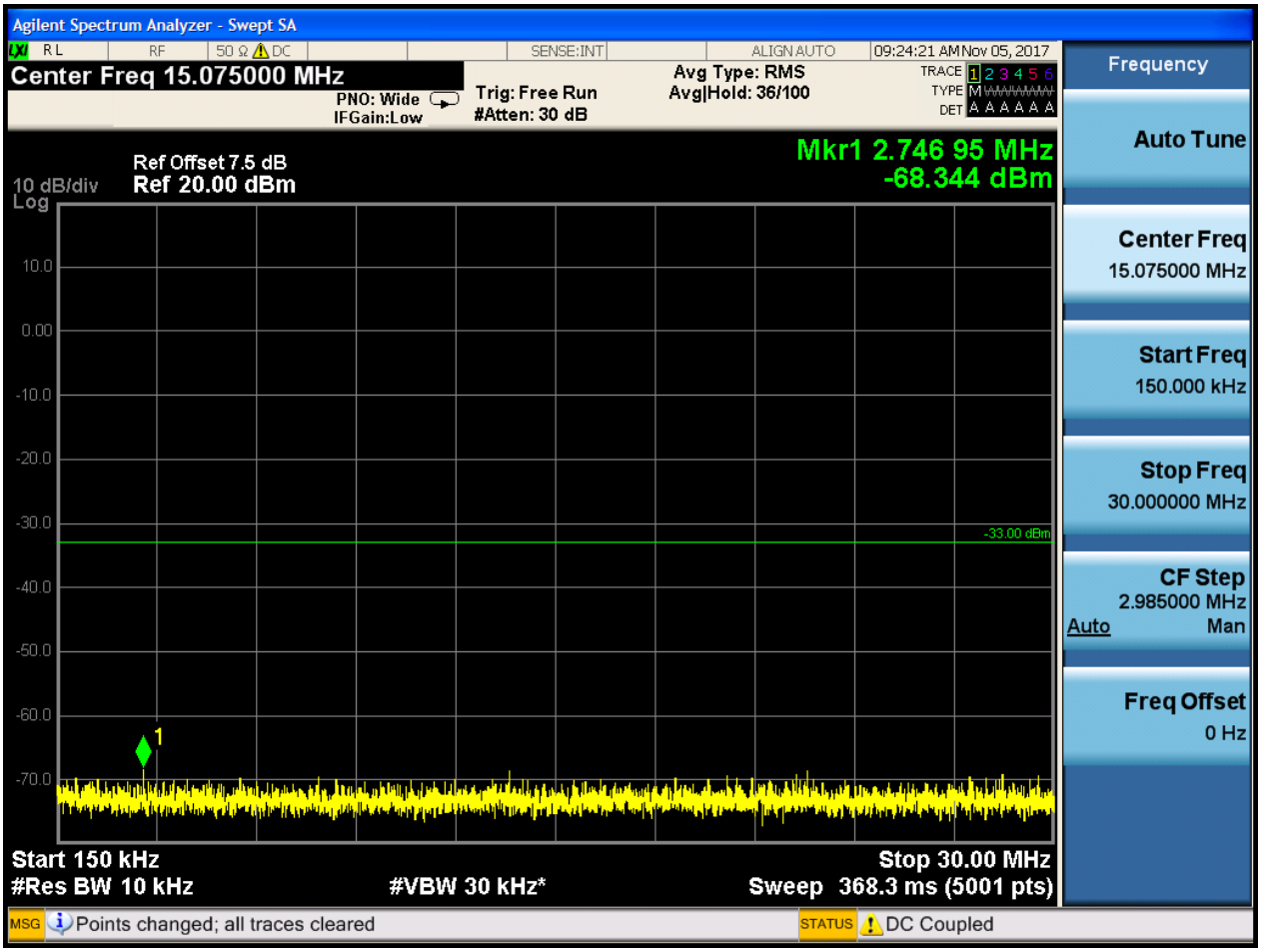


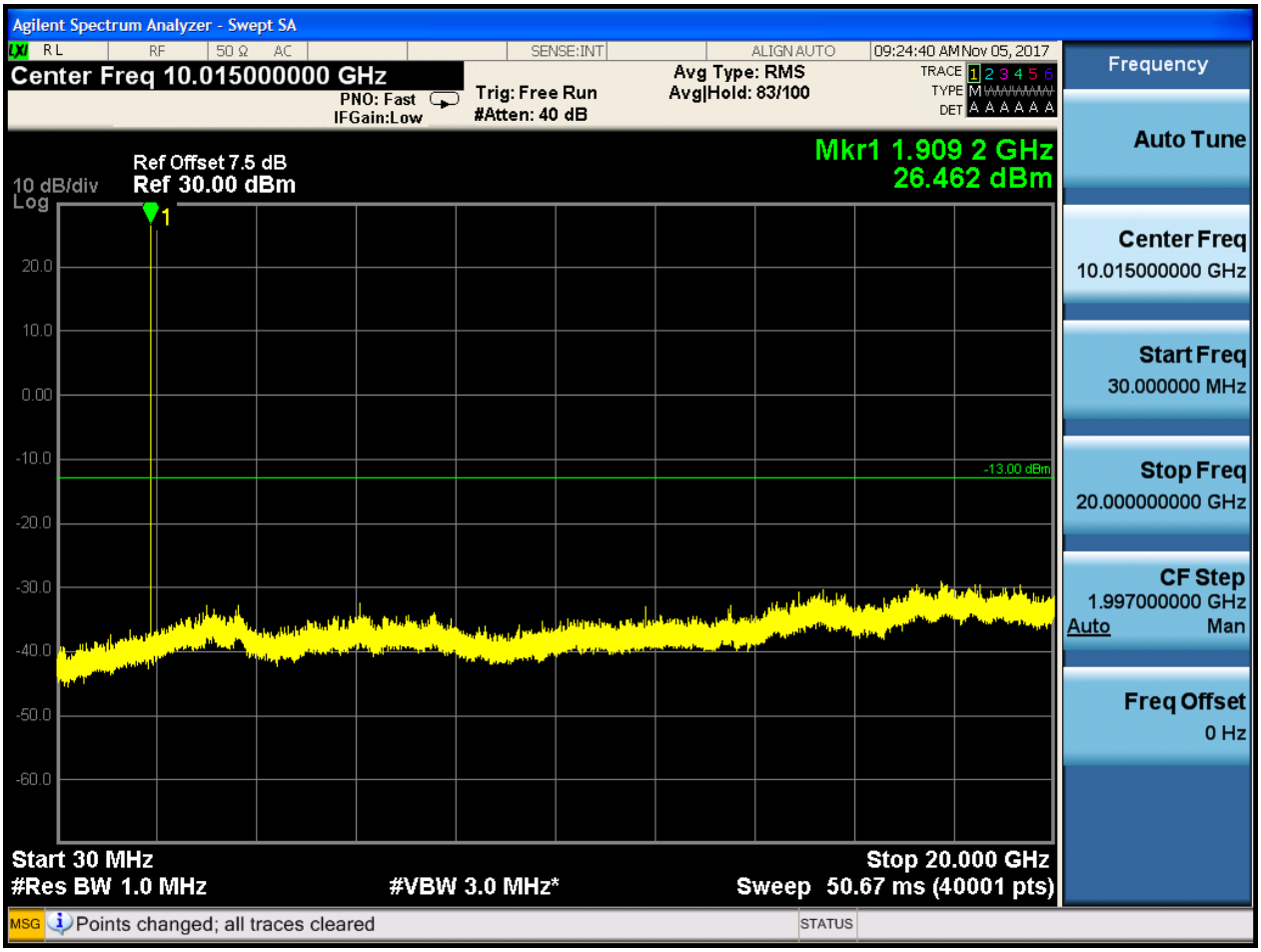




6.1.2.2.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

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

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

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

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

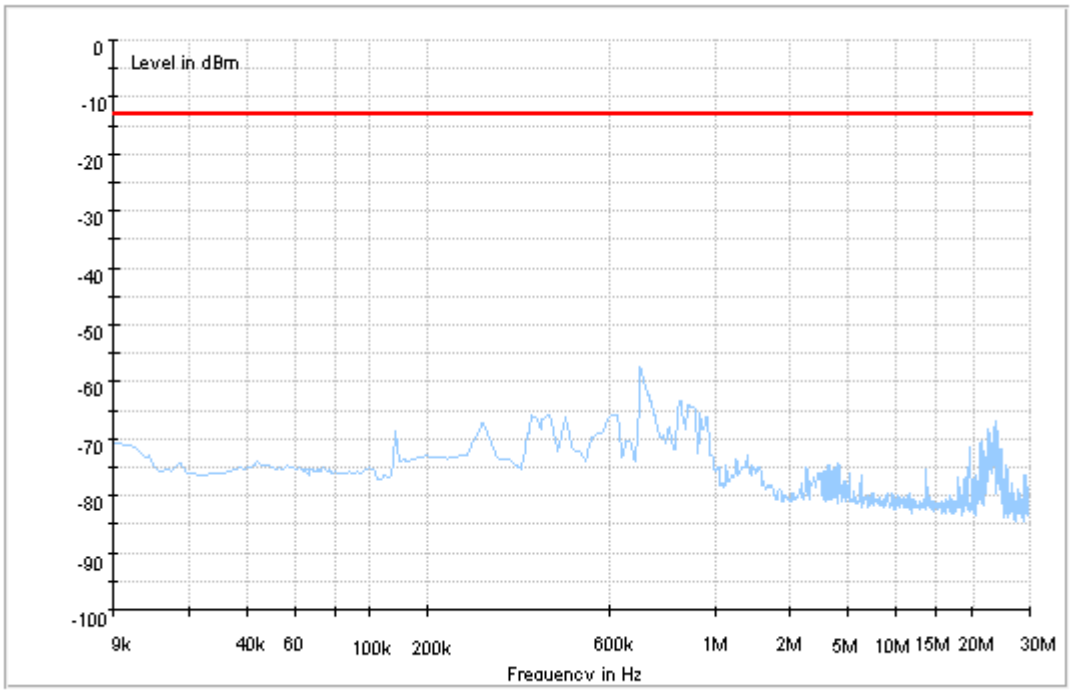
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

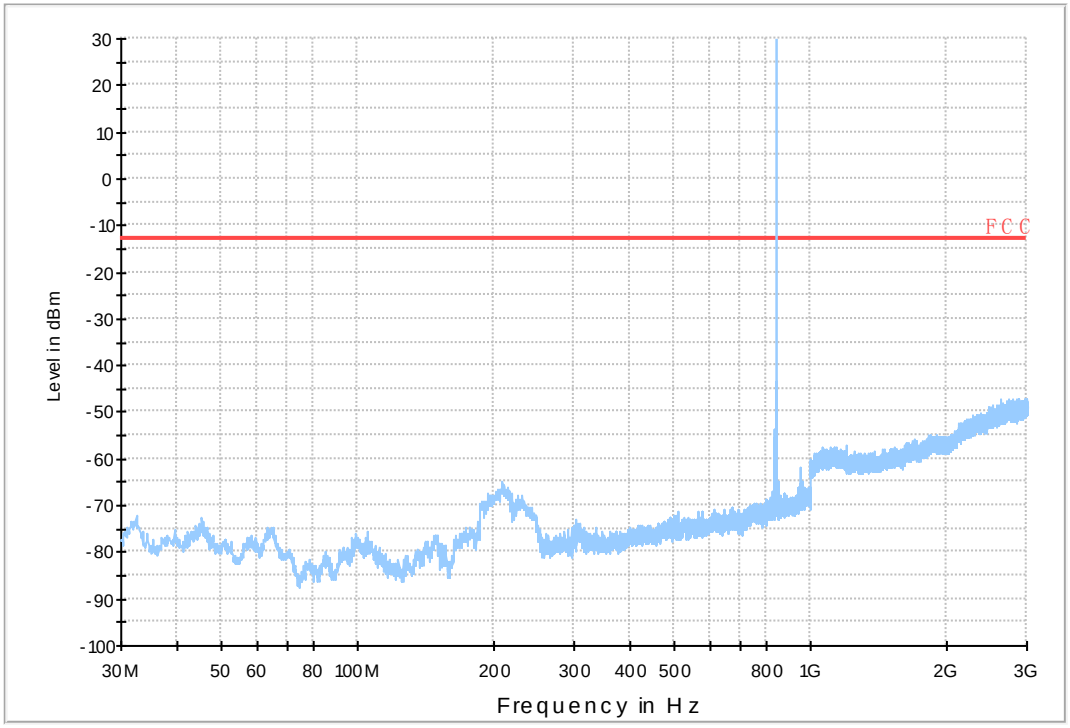
7.1 For GSM

7.1.1 Test Band = GSM850_ANT1

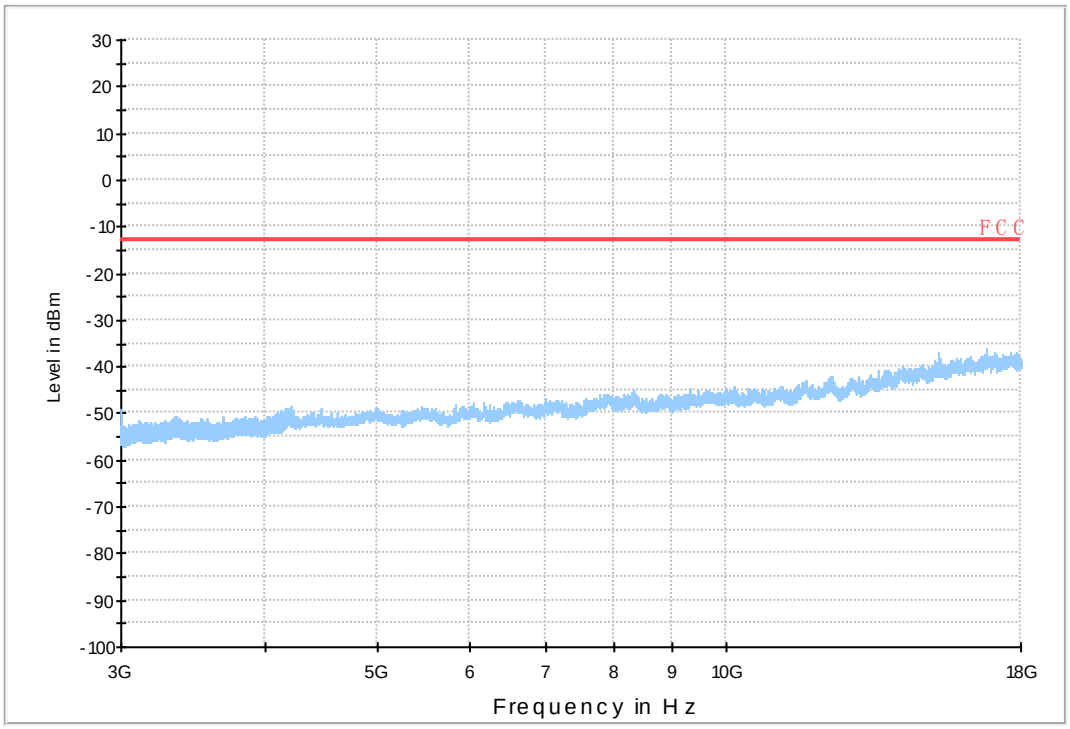
7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

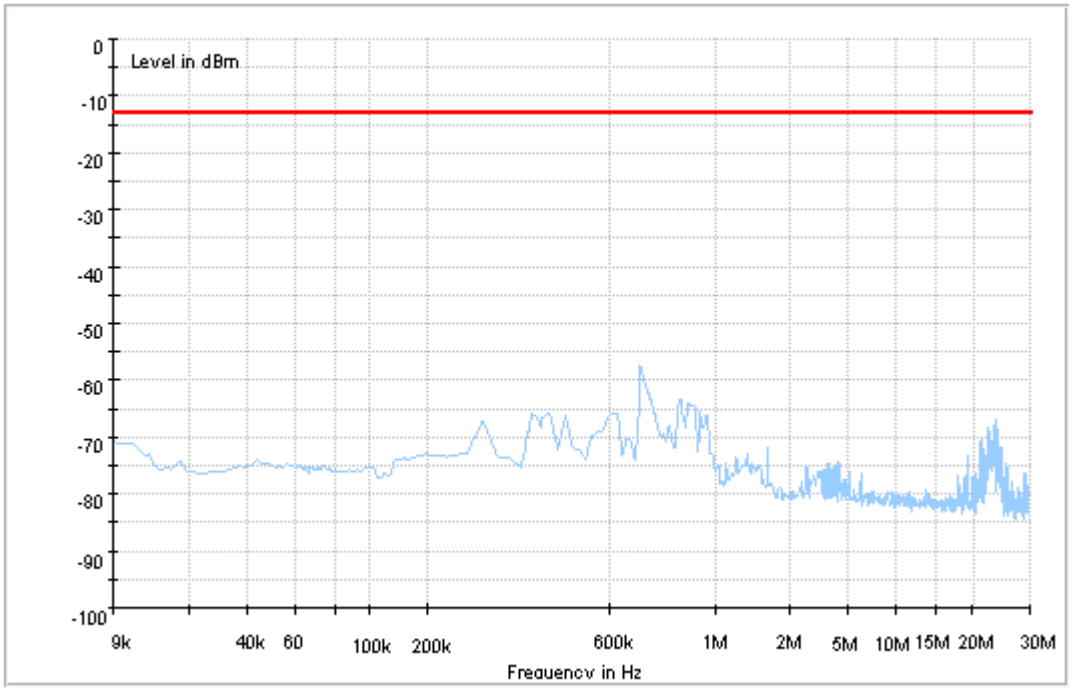


Copy of FCC PART22 GSM850_H

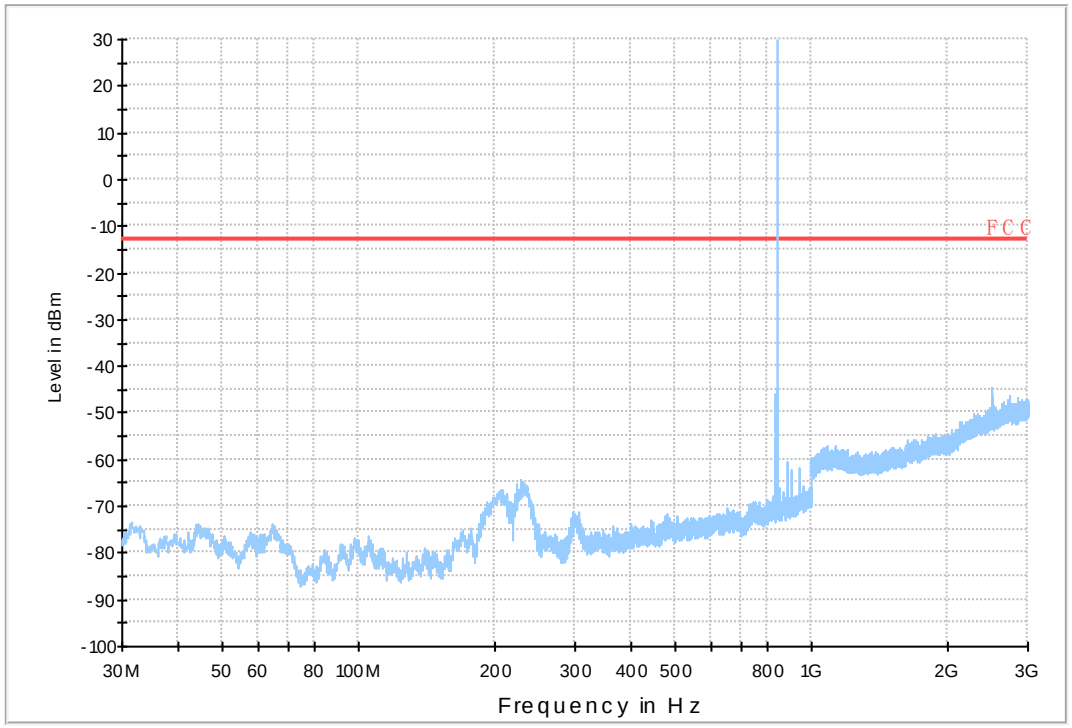


7.1.2 Test Band = GSM850_ANT2

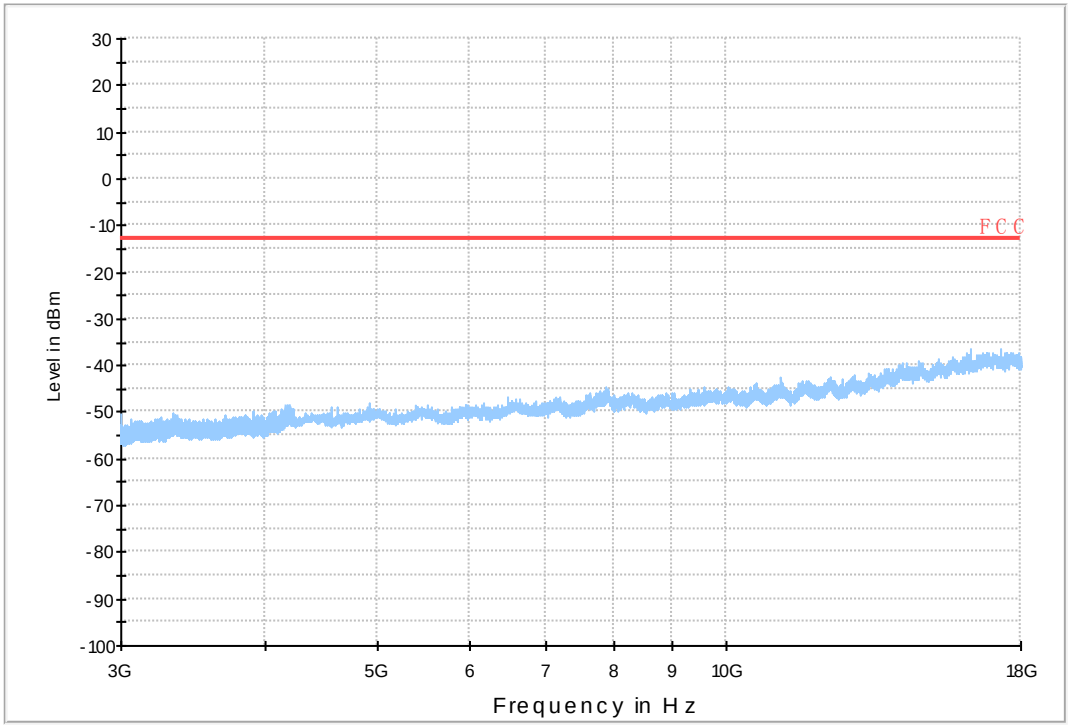
7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

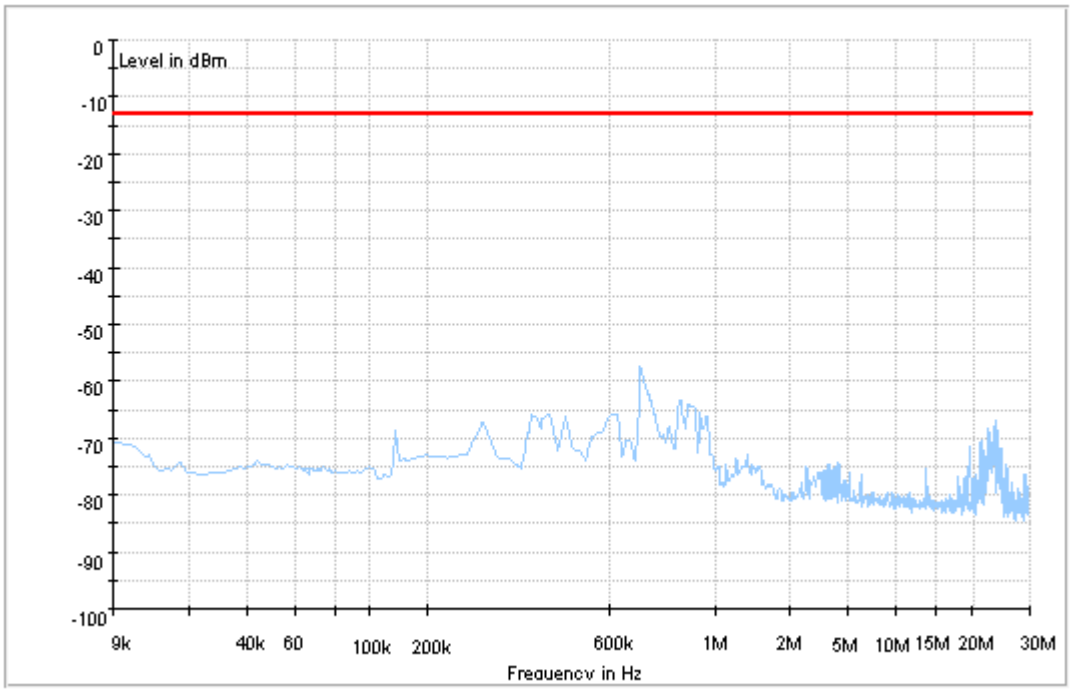


Copy of FCC PART22 GSM850_H

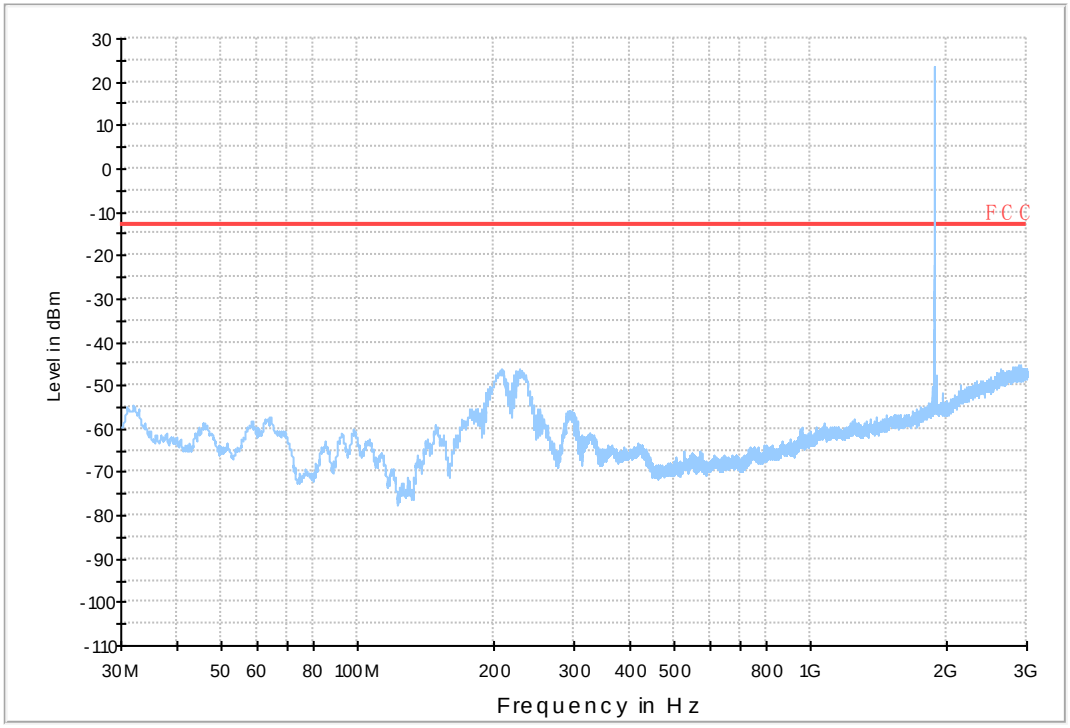


7.1.3 Test Band = GSM1900_ANT1

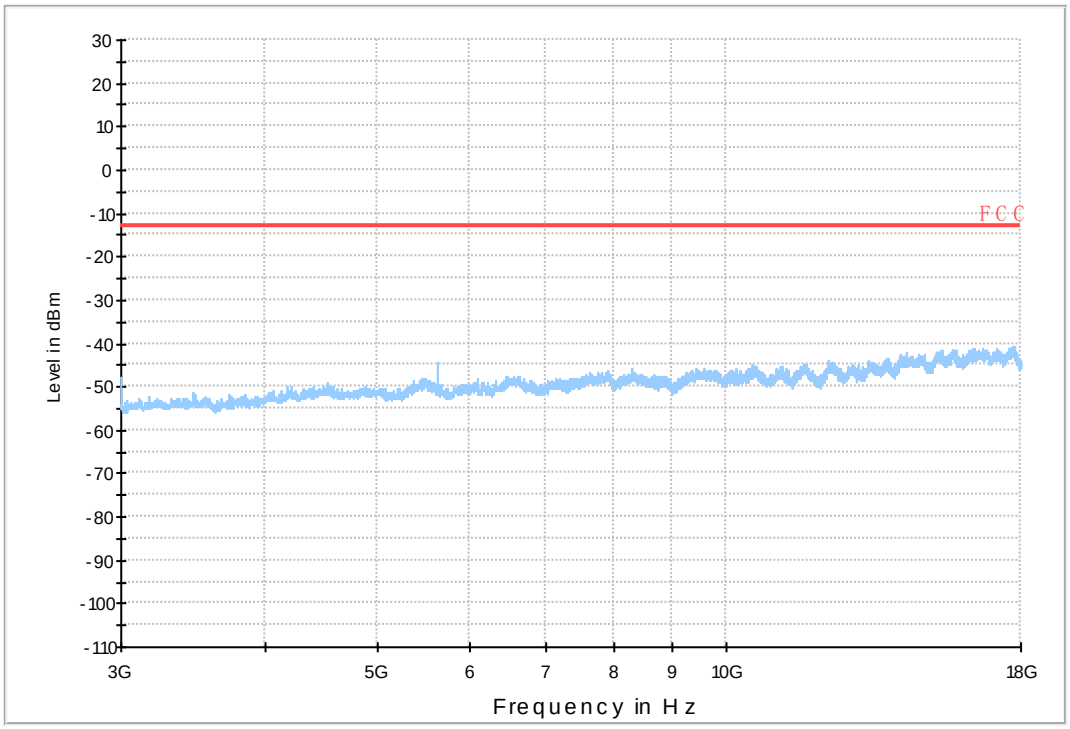
7.1.3.1 Test Mode = GSM/TM1

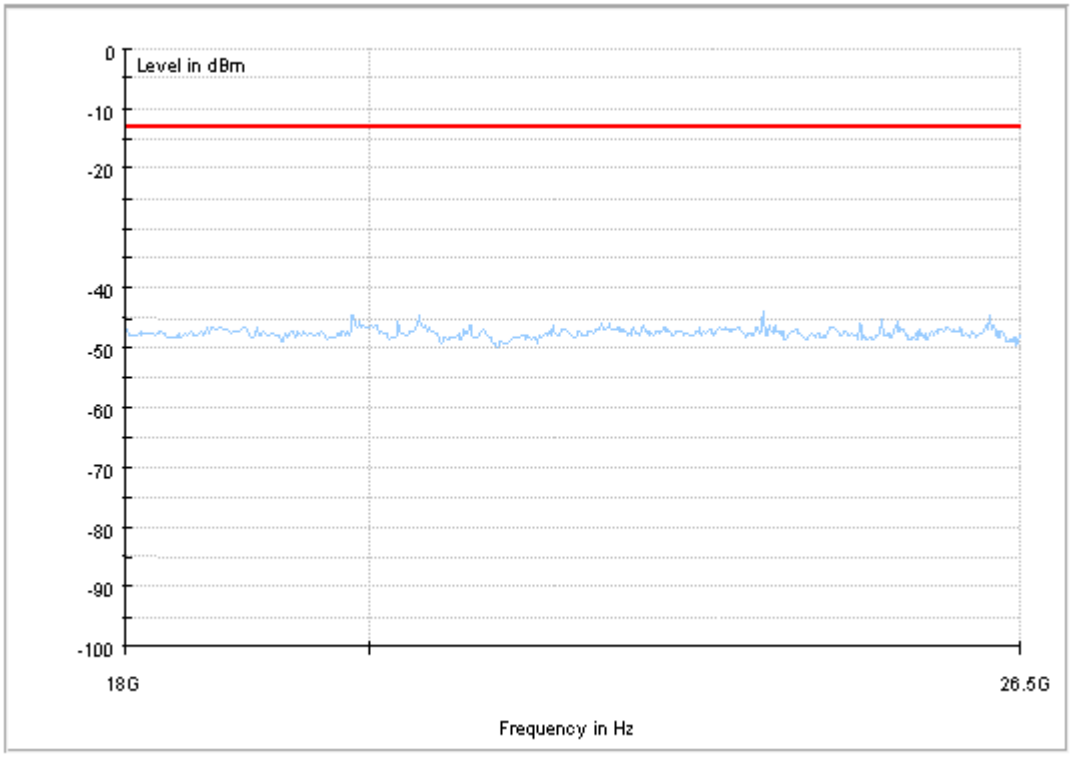


Copy of FCC PART24 GSM1900_L



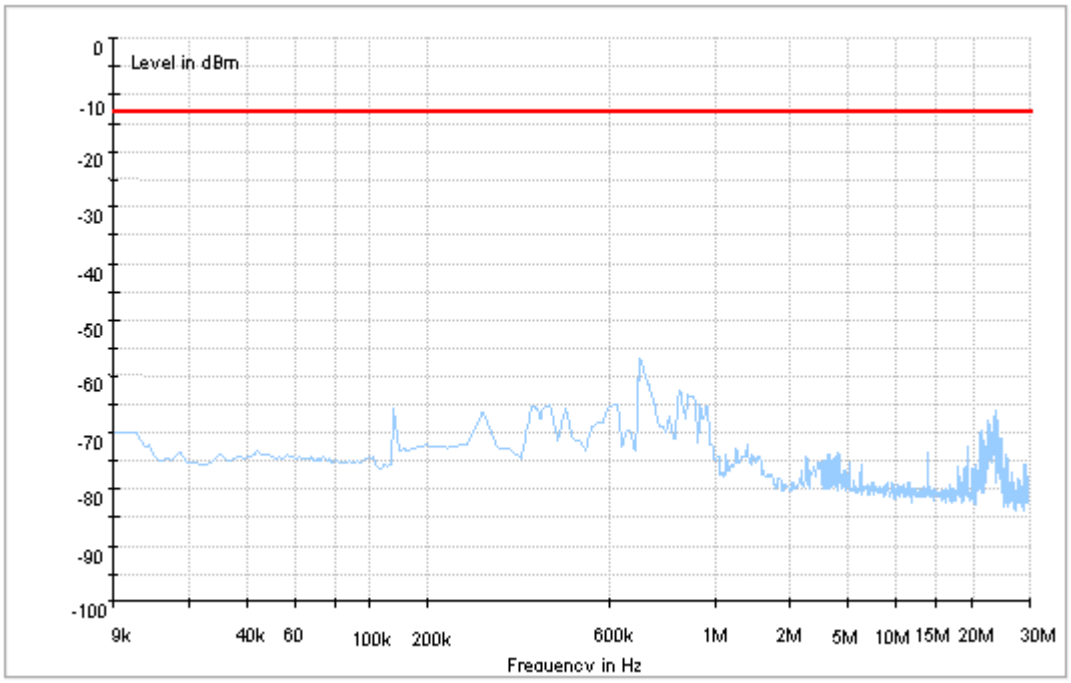
Copy of FCC PART24 GSM1900_H



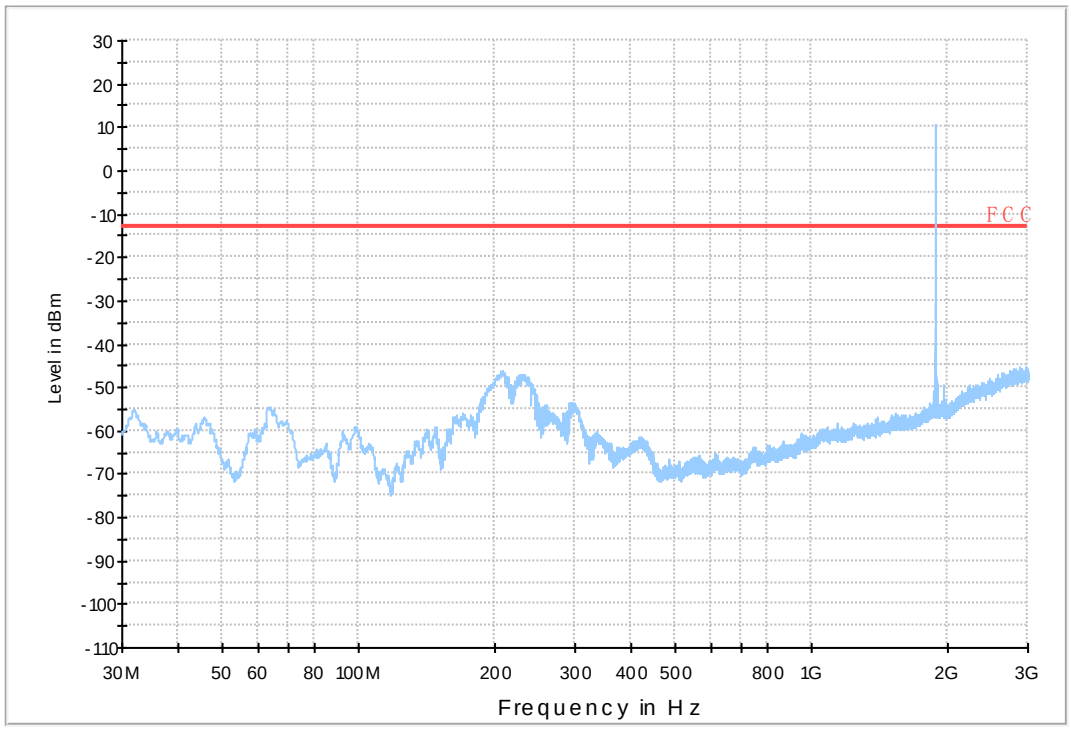


7.1.4 Test Band = GSM1900_ANT2

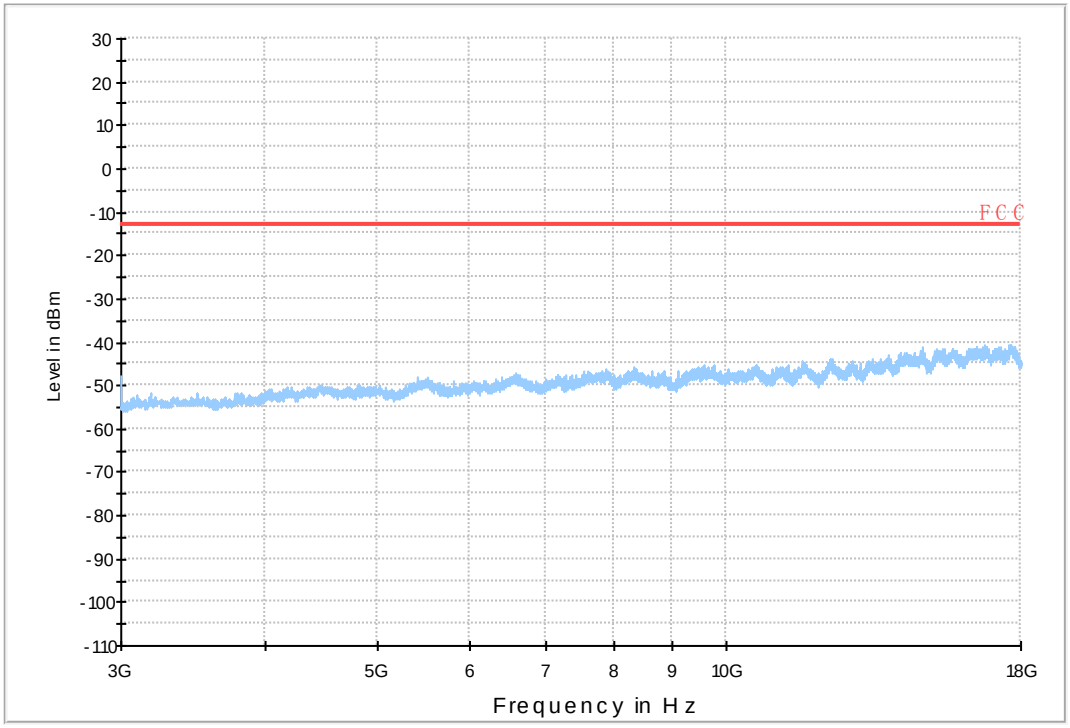
7.1.4.1 Test Mode = GSM/TM1

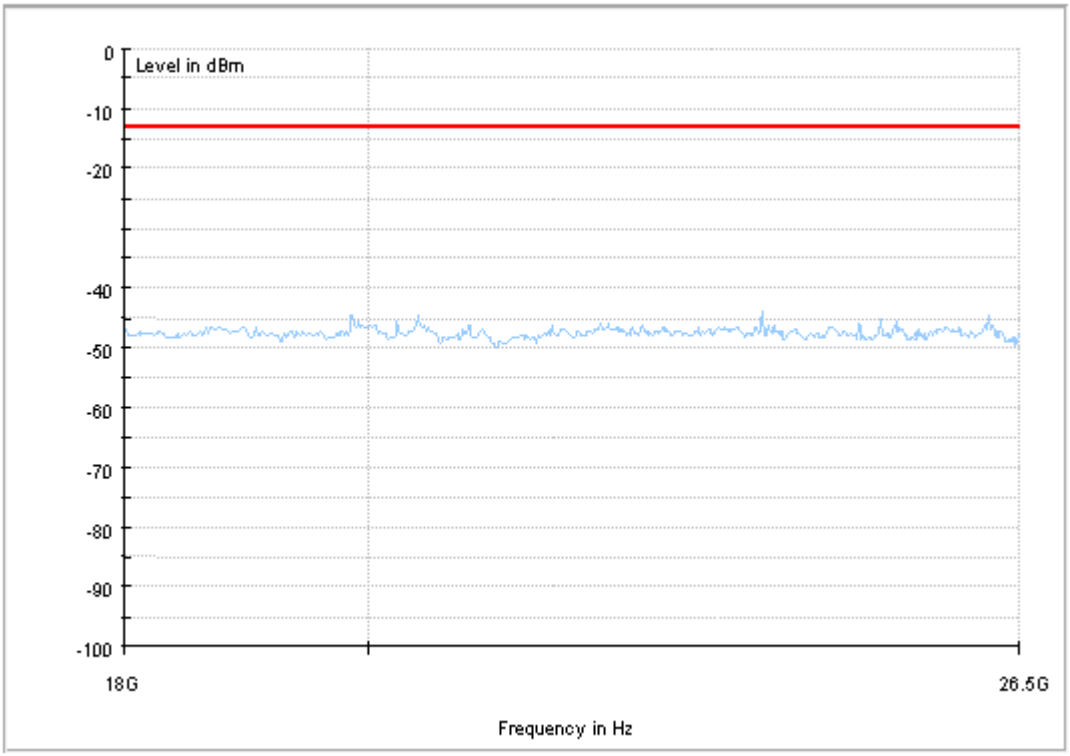


Copy of FCC PART24 GSM1900_L



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	-13.04	-0.01582	PASS
				VN	-19.69	-0.02389	PASS
				VH	-16.14	-0.01958	PASS
		MCH	TN	VL	-10.33	-0.01235	PASS
				VN	-9.81	-0.01173	PASS
				VH	-13.11	-0.01567	PASS
		HCH	TN	VL	-8.33	-0.00981	PASS
				VN	-11.17	-0.01316	PASS
				VH	-12.46	-0.01468	PASS
	GSM/TM2	LCH	TN	VL	-12.3	-0.01492	PASS
				VN	-10.82	-0.01313	PASS
				VH	-15.95	-0.01935	PASS
		MCH	TN	VL	-14.4	-0.01721	PASS
				VN	-15.43	-0.01844	PASS
				VH	-15.5	-0.01853	PASS
		HCH	TN	VL	-12.01	-0.01415	PASS
				VN	-11.01	-0.01297	PASS
				VH	-13.17	-0.01552	PASS
GSM1900	GSM/TM1	LCH	TN	VL	29.57	0.01598	PASS
				VN	25.57	0.01382	PASS
				VH	30.74	0.01661	PASS
		MCH	TN	VL	30.35	0.01614	PASS
				VN	41.65	0.02215	PASS
				VH	16.34	0.00869	PASS
		HCH	TN	VL	39.32	0.02059	PASS
				VN	36.22	0.01897	PASS
				VH	42.42	0.02221	PASS
	GSM/TM2	LCH	TN	VL	26.22	0.01417	PASS
				VN	26.86	0.01452	PASS
				VH	25.38	0.01372	PASS
		MCH	TN	VL	40.49	0.02154	PASS
				VN	19.47	0.01036	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	21.95	0.01168	PASS
		HCH	TN	VL	28.28	0.01481	PASS
				VN	19.47	0.01019	PASS
				VH	20.95	0.01097	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	-13.37	-0.01622	PASS
				-20	-11.36	-0.01378	PASS
				-10	-15.63	-0.01896	PASS
				0	-12.2	-0.0148	PASS
				10	-15.76	-0.01912	PASS
				20	-12.79	-0.01552	PASS
				30	-12.72	-0.01543	PASS
				40	-22.34	-0.02711	PASS
				50	-12.46	-0.01512	PASS
		MCH	VN	-30	-12.2	-0.01458	PASS
				-20	-13.43	-0.01605	PASS
				-10	-12.07	-0.01443	PASS
				0	-8.52	-0.01018	PASS
				10	-13.88	-0.01659	PASS
				20	-14.59	-0.01744	PASS
				30	-11.69	-0.01397	PASS
				40	-10.91	-0.01304	PASS
				50	-12.01	-0.01436	PASS
		HCH	VN	-30	-10.72	-0.01263	PASS
				-20	-13.11	-0.01545	PASS
				-10	-13.11	-0.01545	PASS
				0	-12.79	-0.01507	PASS
				10	-10.33	-0.01217	PASS
				20	-13.24	-0.0156	PASS
				30	-11.56	-0.01362	PASS
				40	-11.82	-0.01393	PASS
				50	-14.72	-0.01734	PASS
	GSM/TM2	LCH	VN	-30	-10.01	-0.01215	PASS
				-20	-16.34	-0.01983	PASS
				-10	-15.11	-0.01833	PASS
				0	-13.72	-0.01665	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-11.33	-0.01375	PASS
				20	-7.52	-0.00912	PASS
				30	-11.66	-0.01415	PASS
				40	-10.01	-0.01215	PASS
				50	-11.27	-0.01367	PASS
		MCH	VN	-30	-12.24	-0.01463	PASS
				-20	-7.23	-0.00864	PASS
				-10	-13.85	-0.01656	PASS
				0	-18.05	-0.02158	PASS
				10	-13.01	-0.01555	PASS
				20	-7.78	-0.0093	PASS
				30	-7.14	-0.00853	PASS
				40	-8.2	-0.0098	PASS
				50	-9.49	-0.01134	PASS
		HCH	VN	-30	-12.24	-0.01442	PASS
				-20	-19.21	-0.02263	PASS
				-10	-11.17	-0.01316	PASS
				0	-20.21	-0.02381	PASS
				10	-7.43	-0.00875	PASS
				20	-13.98	-0.01647	PASS
				30	-7.01	-0.00826	PASS
				40	-18.6	-0.02191	PASS
				50	-11.59	-0.01365	PASS
GSM1900	GSM/TM1	LCH	VN	-30	31.9	0.01724	PASS
				-20	31.12	0.01682	PASS
				-10	34.61	0.01871	PASS
				0	24.54	0.01326	PASS
				10	28.15	0.01521	PASS
				20	32.41	0.01752	PASS
				30	30.28	0.01637	PASS
				40	29.77	0.01609	PASS
				50	20.4	0.01103	PASS
		MCH	VN	-30	26.8	0.01426	PASS
				-20	27.44	0.0146	PASS
				-10	26.67	0.01419	PASS
				0	29.57	0.01573	PASS
				10	33.58	0.01786	PASS
				20	23.96	0.01274	PASS
				30	40.42	0.0215	PASS
				40	25.76	0.0137	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	44.23	0.02353	PASS
		HCH	VN	-30	37.71	0.01975	PASS
				-20	34.68	0.01816	PASS
				-10	23.05	0.01207	PASS
				0	31.58	0.01654	PASS
				10	32.93	0.01724	PASS
				20	29.06	0.01522	PASS
				30	34.48	0.01805	PASS
				40	36.22	0.01897	PASS
				50	41.78	0.02188	PASS
	GSM/TM2	LCH	VN	-30	26.93	0.01456	PASS
				-20	24.76	0.01338	PASS
				-10	13.3	0.00719	PASS
				0	32.9	0.01778	PASS
				10	15.17	0.0082	PASS
				20	35.35	0.01911	PASS
				30	36	0.01946	PASS
				40	16.79	0.00907	PASS
				50	21.5	0.01162	PASS
		MCH	VN	-30	26.09	0.01388	PASS
				-20	15.46	0.00822	PASS
				-10	31.87	0.01695	PASS
				0	22.92	0.01219	PASS
				10	35.06	0.01865	PASS
				20	24.34	0.01295	PASS
				30	26.99	0.01436	PASS
				40	26.64	0.01417	PASS
				50	16.21	0.00862	PASS
		HCH	VN	-30	18.66	0.00977	PASS
				-20	33.45	0.01751	PASS
				-10	27.12	0.0142	PASS
				0	29.09	0.01523	PASS
				10	44.39	0.02324	PASS
				20	31.16	0.01632	PASS
				30	28.28	0.01481	PASS
				40	35.58	0.01863	PASS
				50	22.21	0.01163	PASS

END