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	32.66	29.12	38.5	PASS
		MCH	32.64	29.08	38.5	PASS
		HCH	32.54	28.94	38.5	PASS
	GSM/TM2	LCH	26.64	23.01	38.5	PASS
		MCH	26.73	23.14	38.5	PASS
		HCH	26.67	23.05	38.5	PASS

Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.83	29.33	33	PASS
		MCH	29.70	29.21	33	PASS
		HCH	29.55	29.09	33	PASS
	GSM/TM2	LCH	25.60	25.11	33	PASS
		MCH	25.59	25.08	33	PASS
		HCH	25.54	25.04	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 wxceed 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	0.11	13	PASS
		HCH	0.11	13	PASS
	GSM/TM2	LCH	3.26	13	PASS
		MCH	3.16	13	PASS
		HCH	3.13	13	PASS
GSM1900	GSM/TM1	LCH	0.12	13	PASS
		MCH	0.12	13	PASS
		HCH	0.12	13	PASS
	GSM/TM2	LCH	3.08	13	PASS
		MCH	3.2	13	PASS
		HCH	3.12	13	PASS

3Appendix_C: Modulation Characteristics

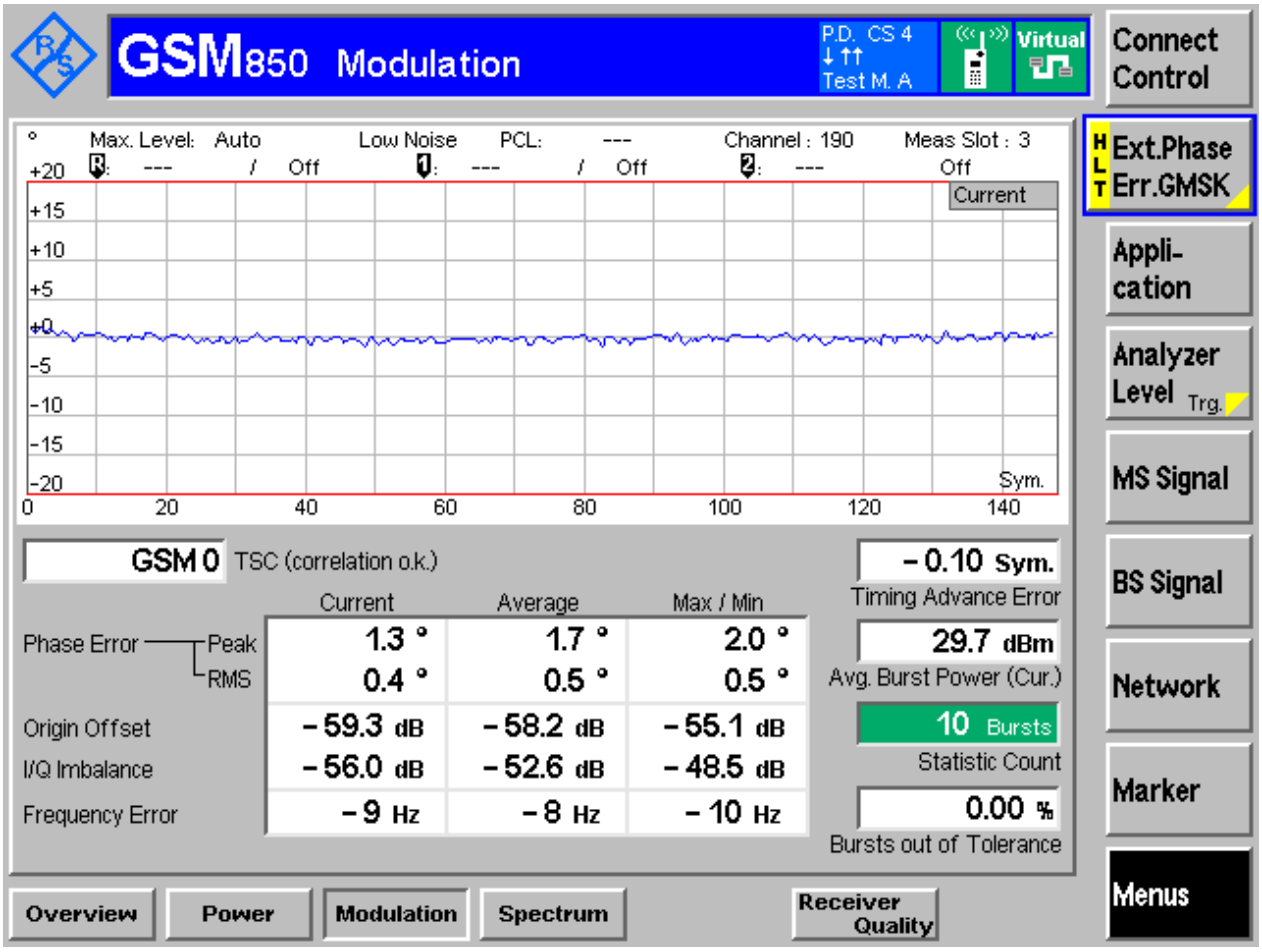
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

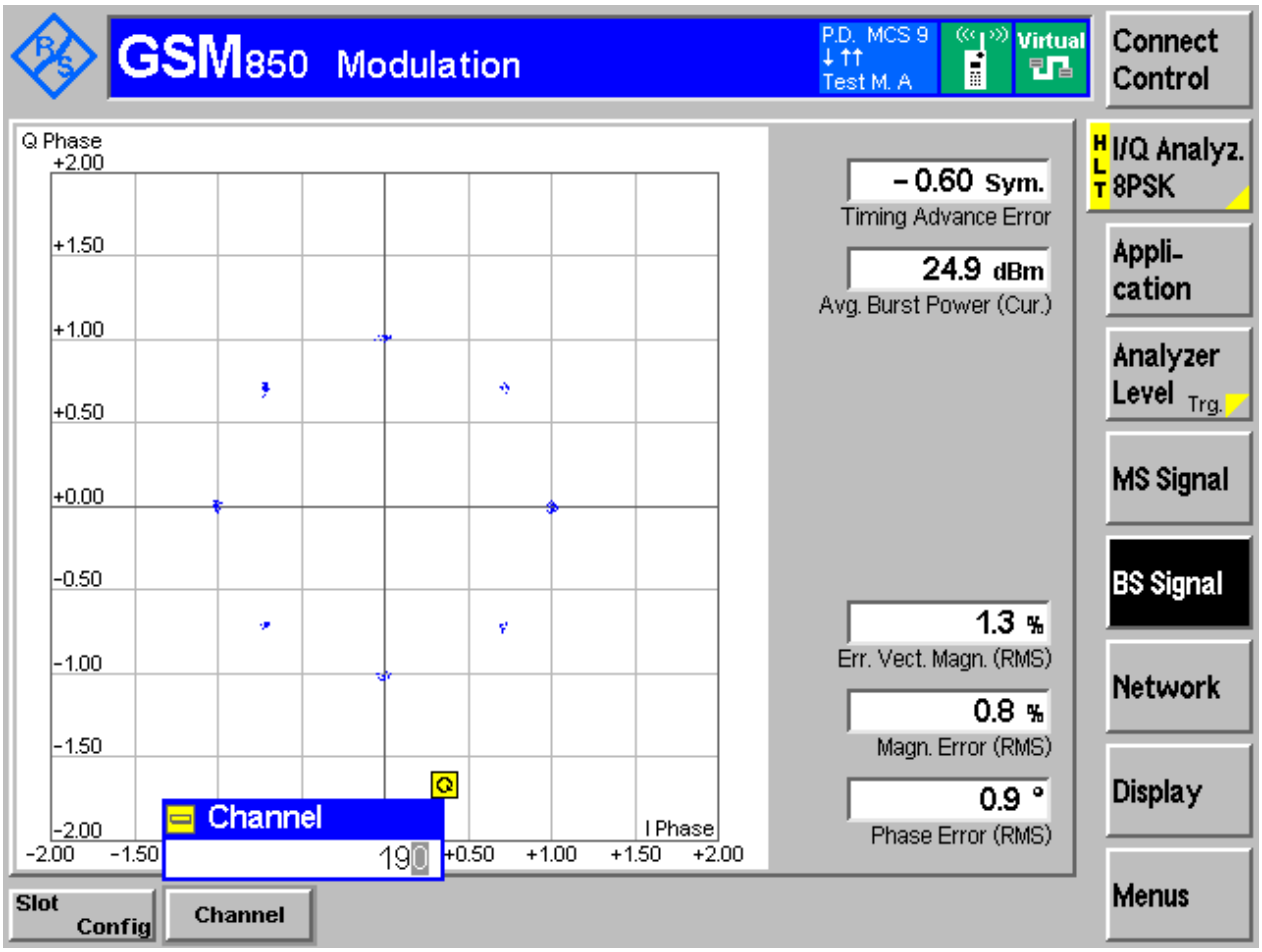
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

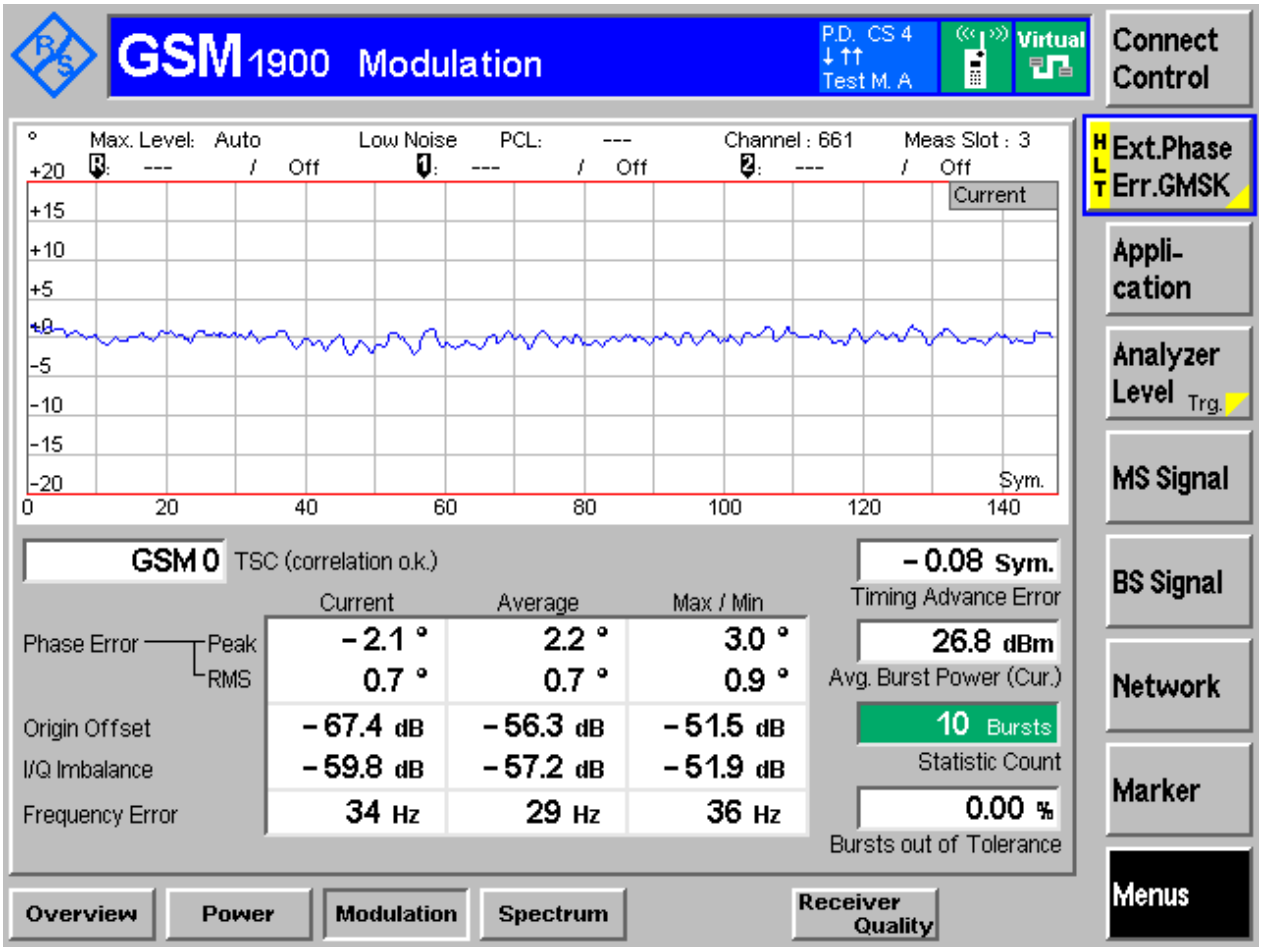
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

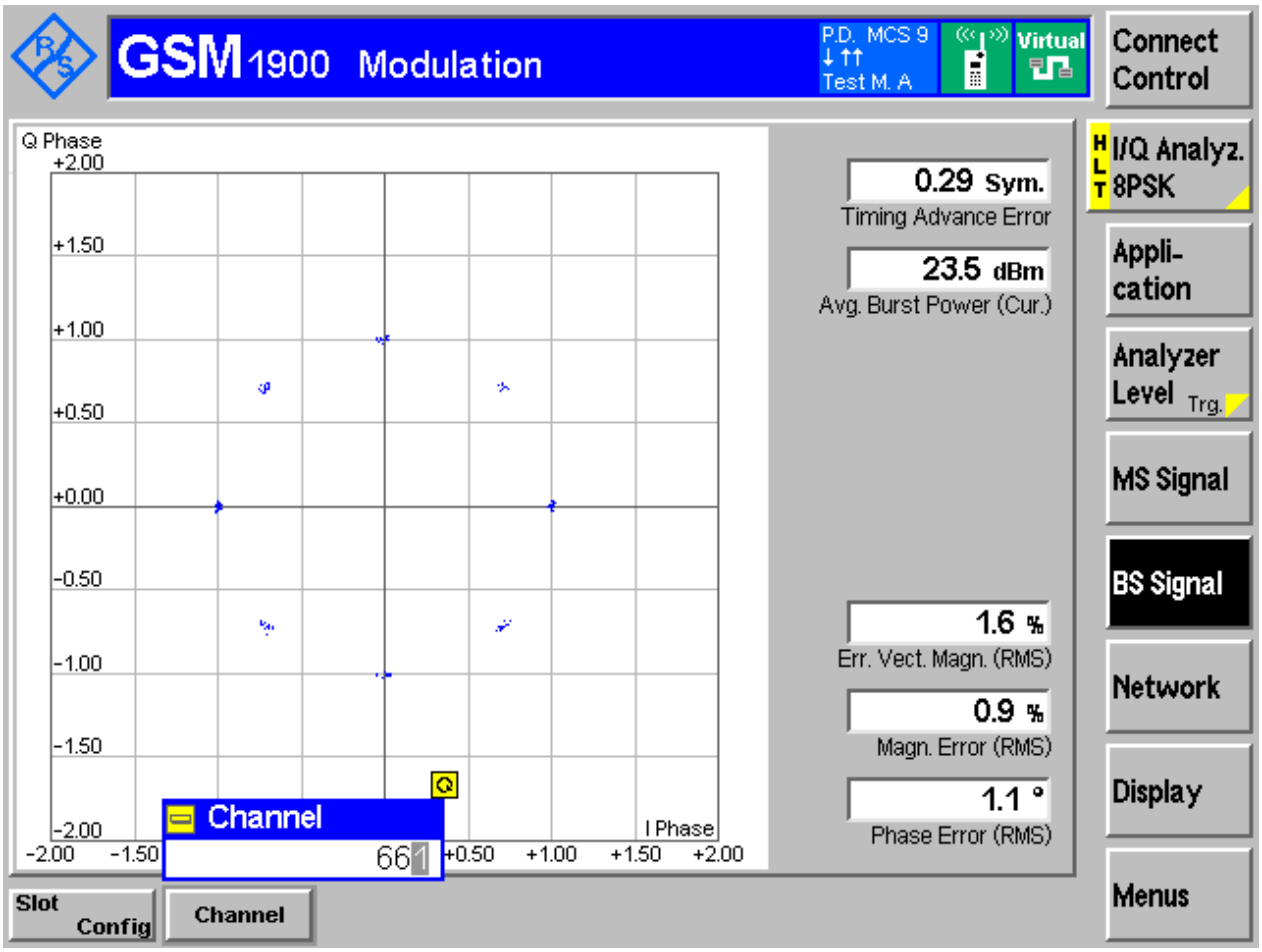
3.1.2.1 Test Mode = GSM/TM1

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	246.91	320.07	Pass
		MCH	246.05	318.39	Pass
		HCH	244.25	315.18	Pass
	GSM/TM2	LCH	247.59	319.93	Pass
		MCH	249.31	315.37	Pass
		HCH	244.96	317.13	Pass
GSM1900	GSM/TM1	LCH	244.11	318.85	Pass
		MCH	245.37	315.96	Pass
		HCH	243.98	318.39	Pass
	GSM/TM2	LCH	244.53	318.49	Pass
		MCH	243.74	309.78	Pass
		HCH	245.37	307.96	Pass

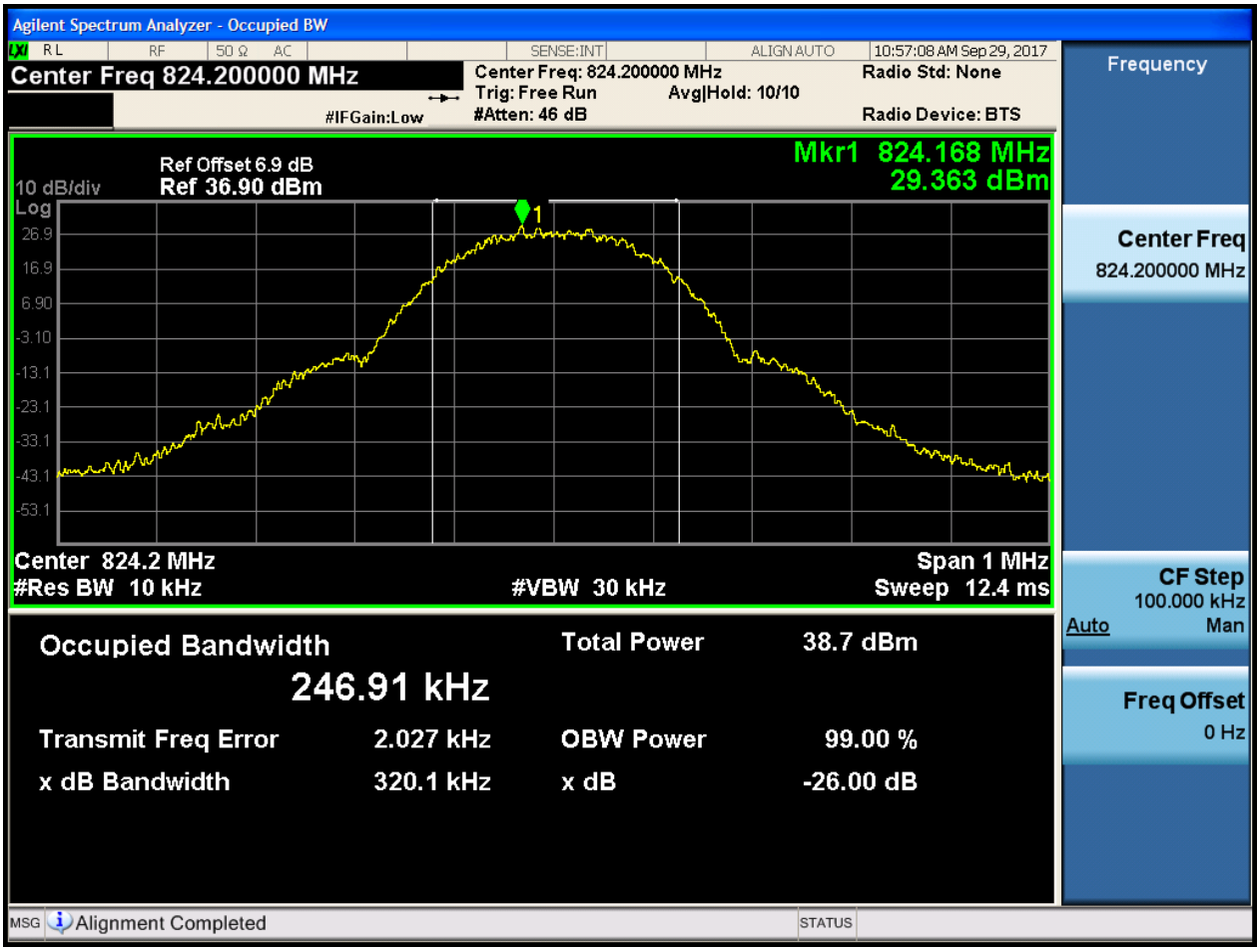
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

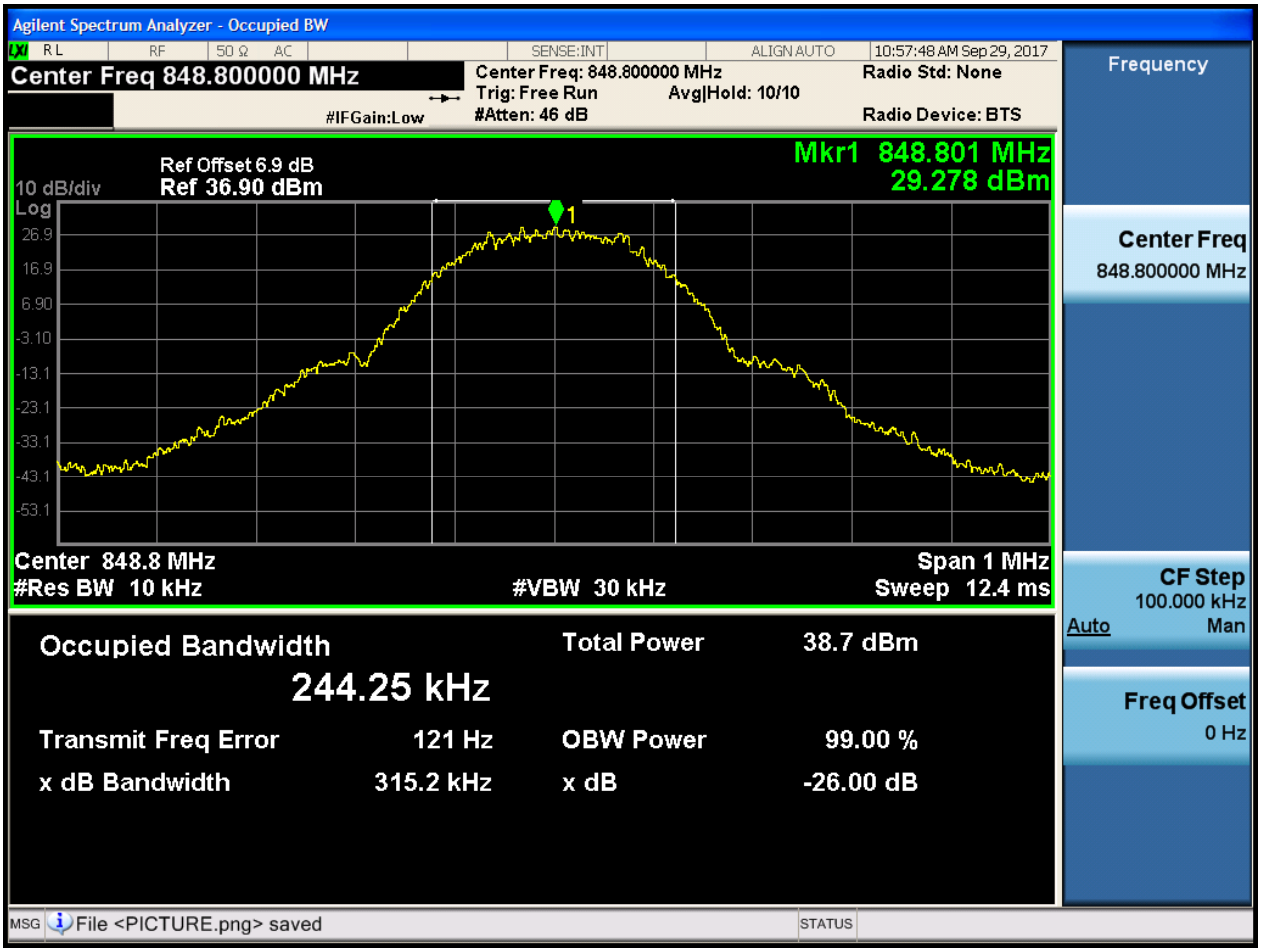
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



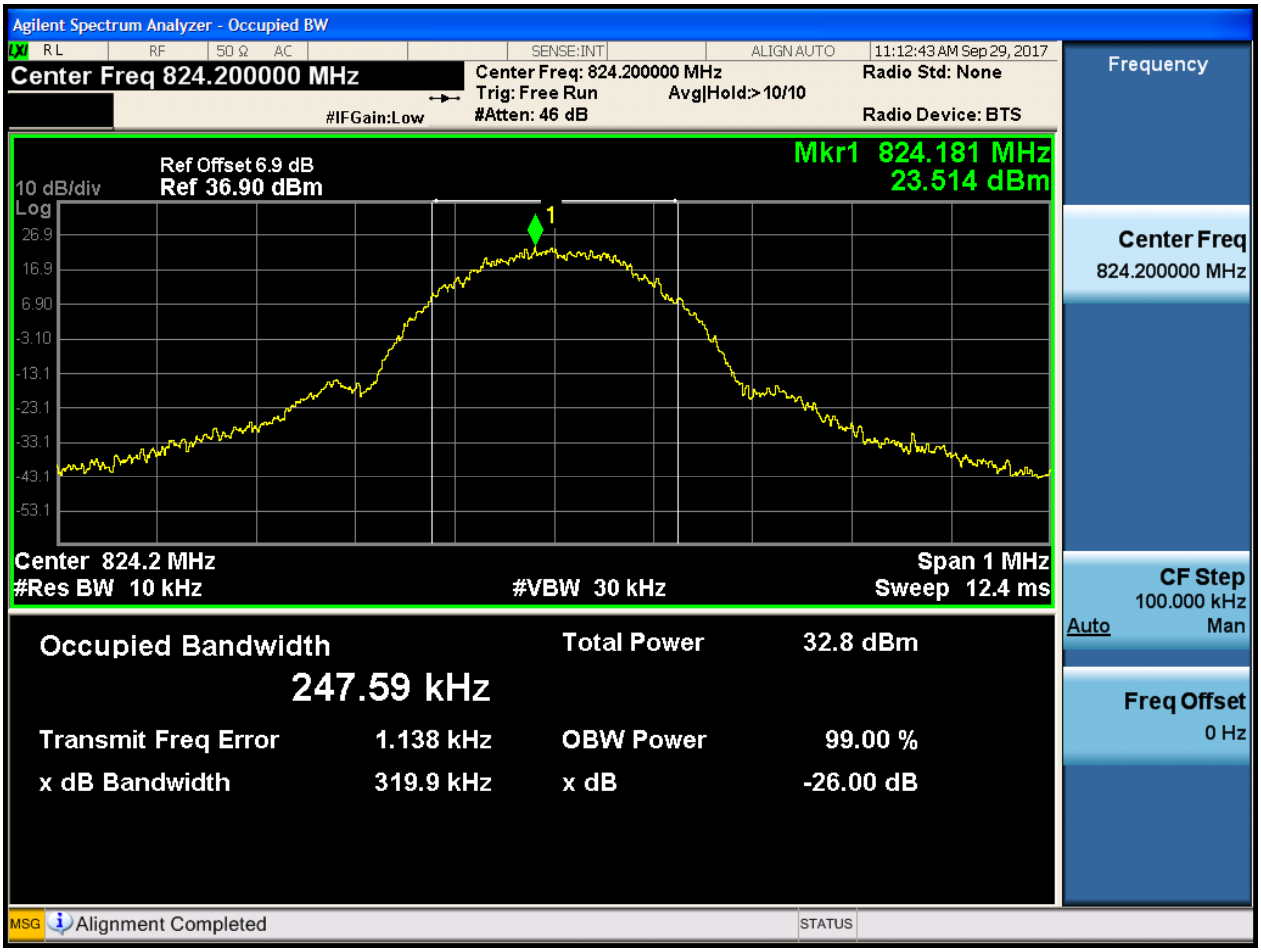
4.1.1.1.2 Test Channel = MCH

4.1.1.1.3 Test Channel = HCH

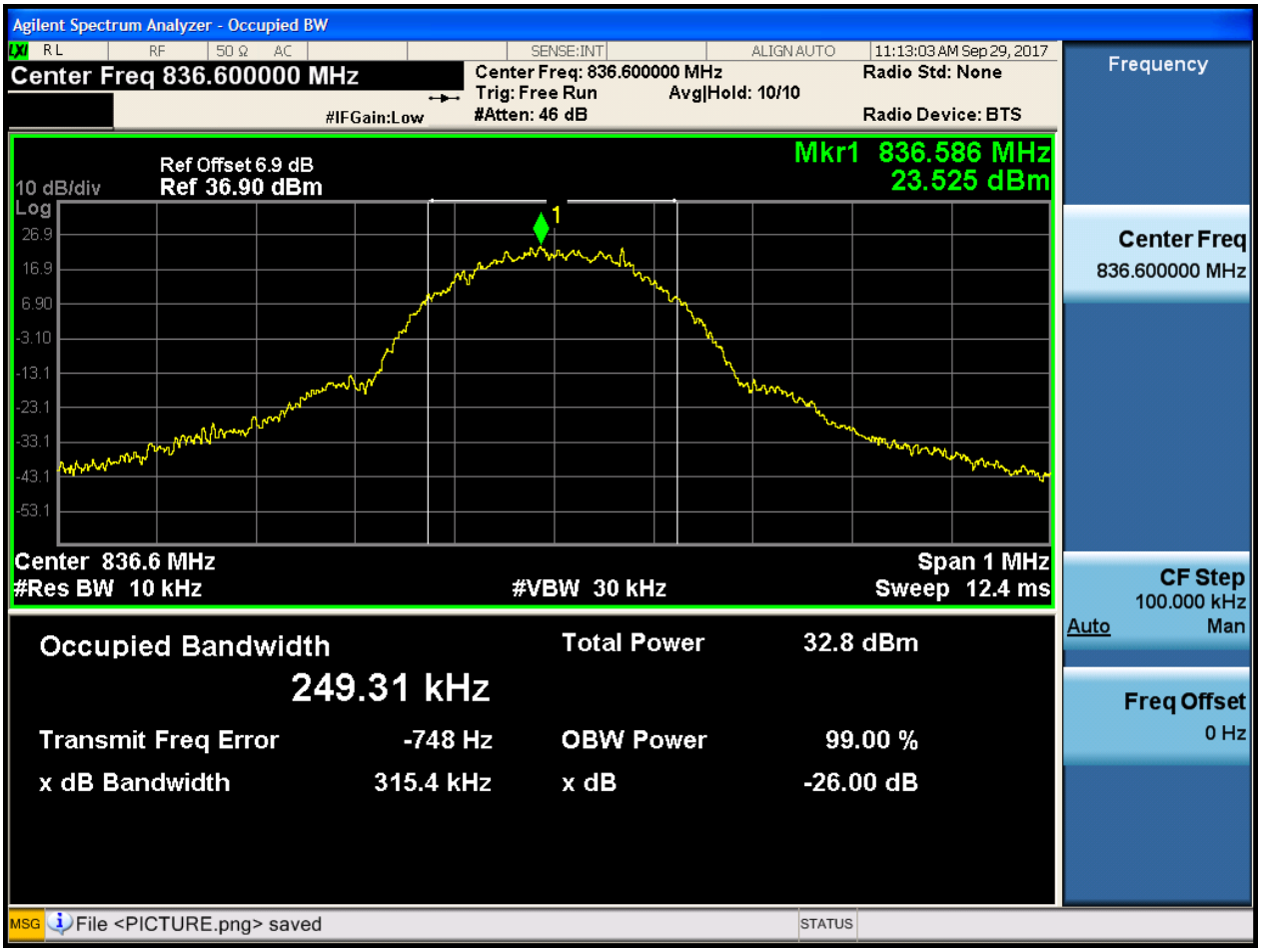


4.1.1.2 Test Mode = GSM/TM2

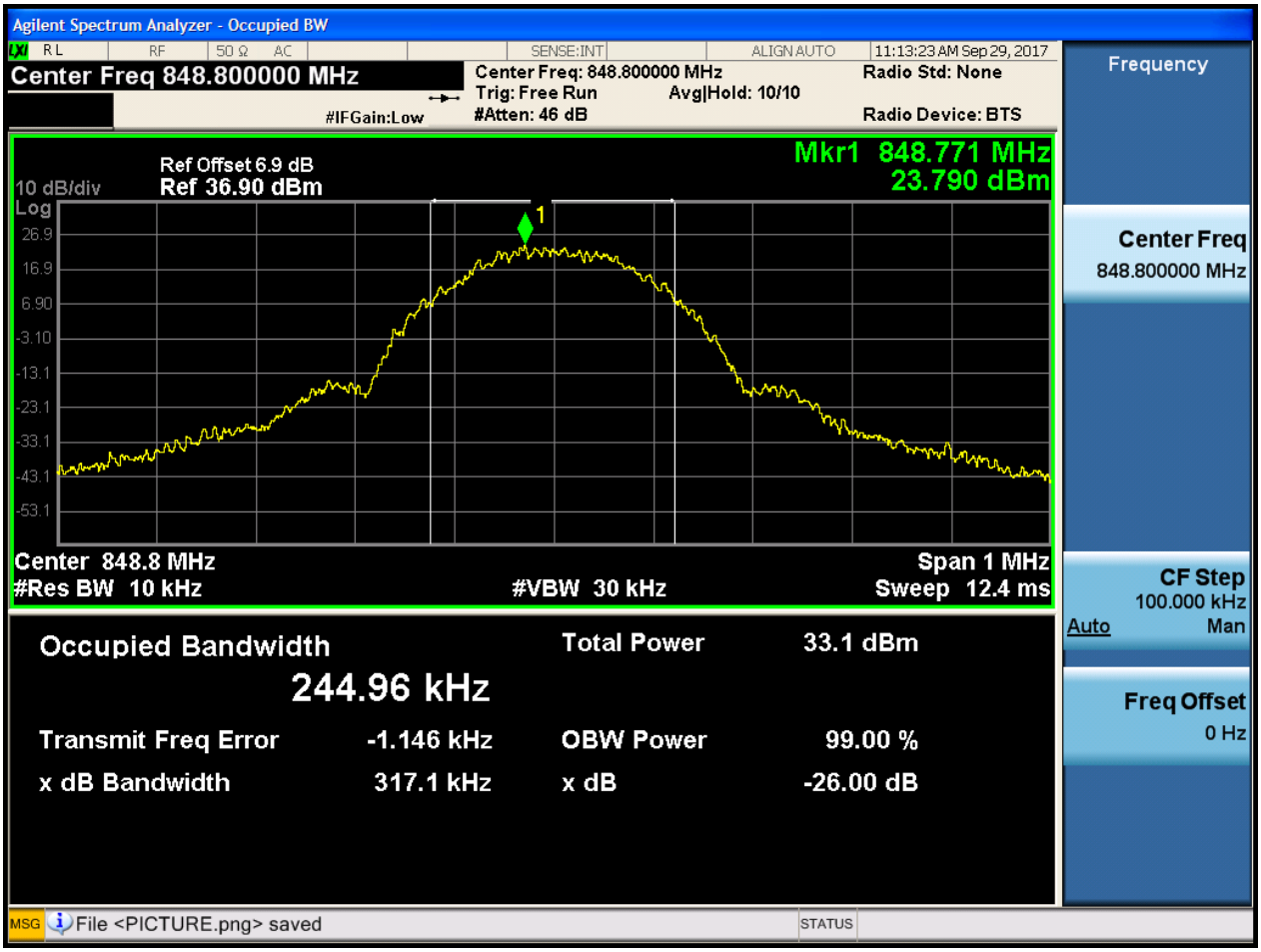
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



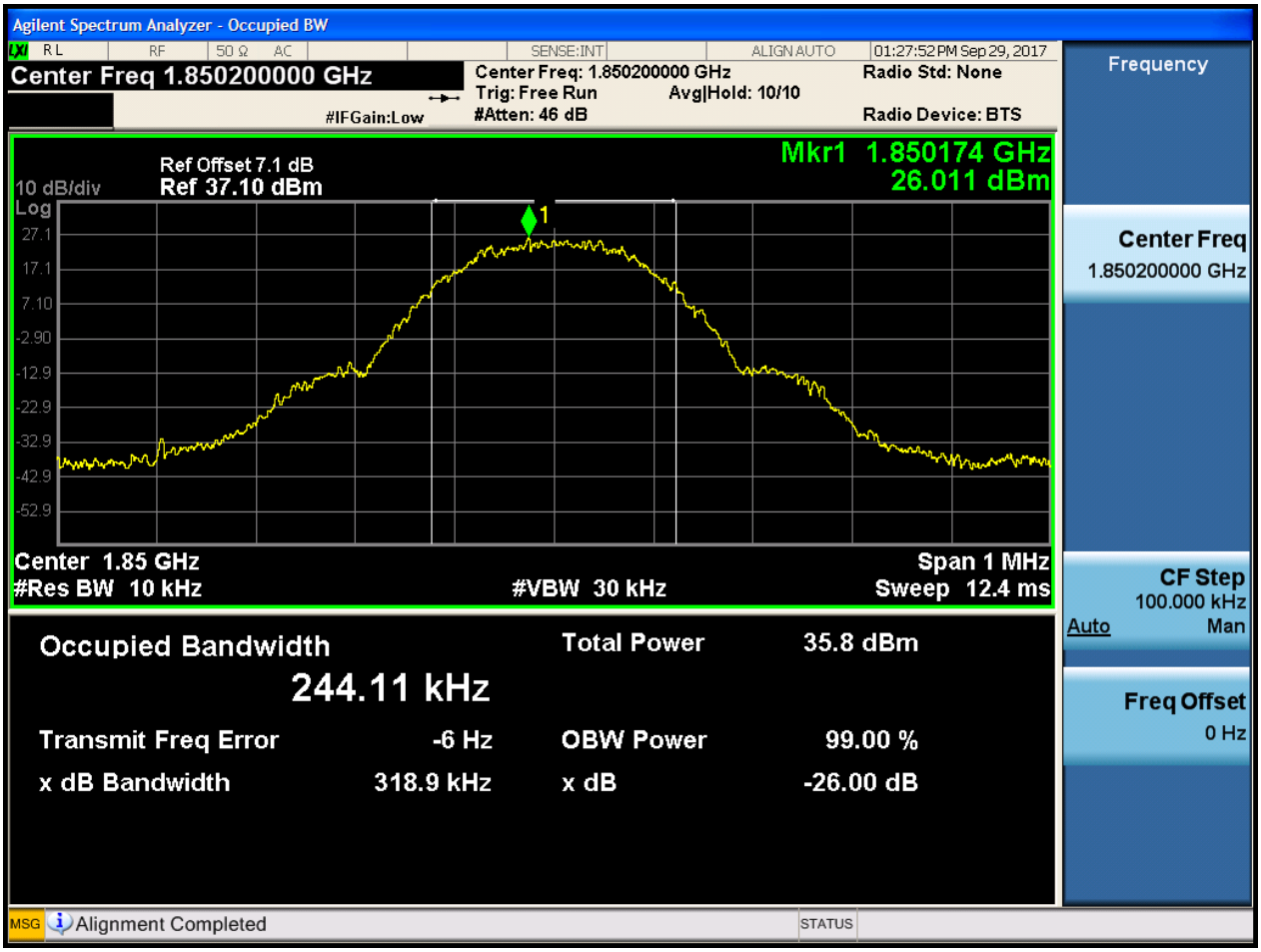
4.1.1.2.3 Test Channel = HCH



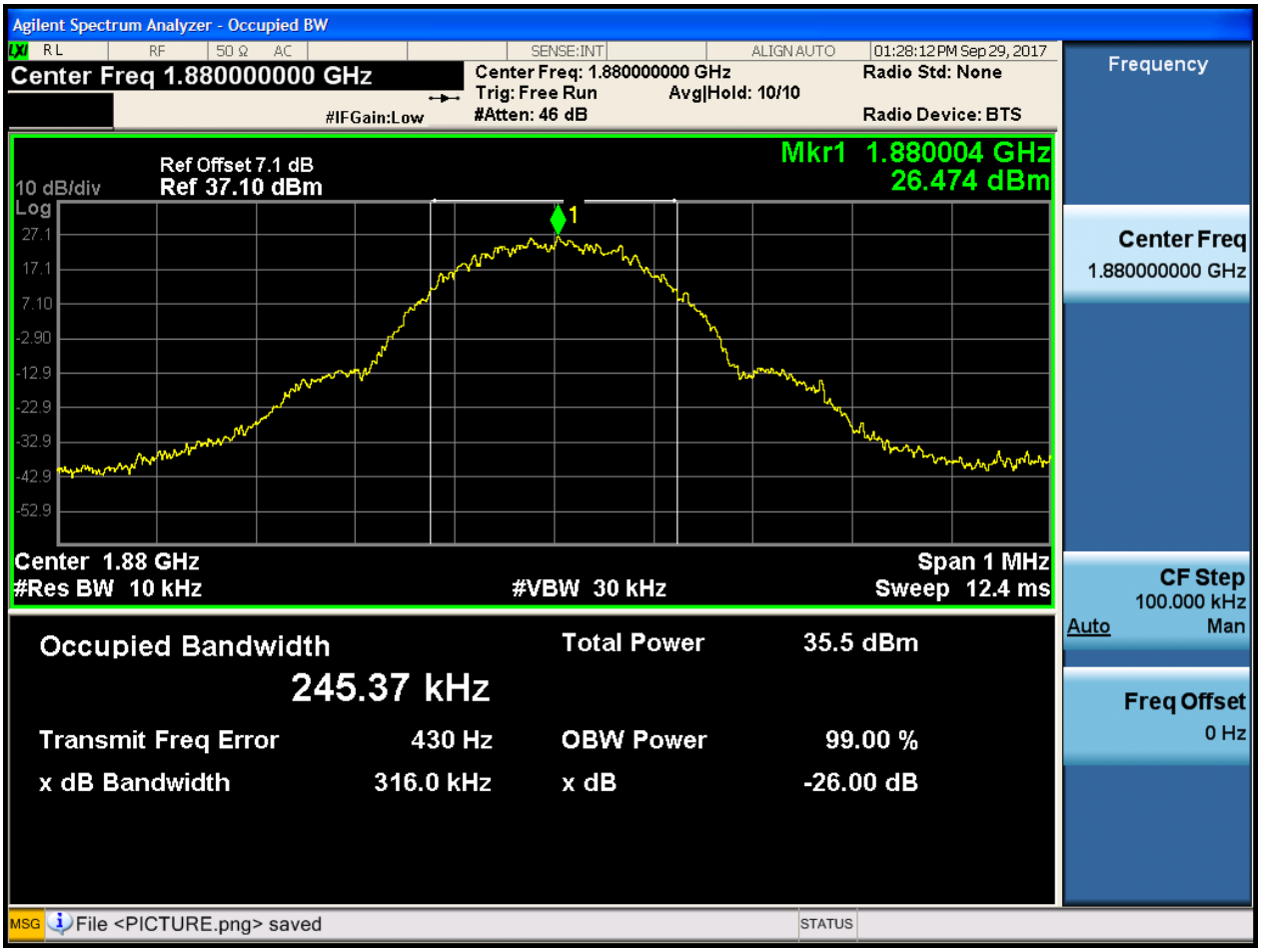
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

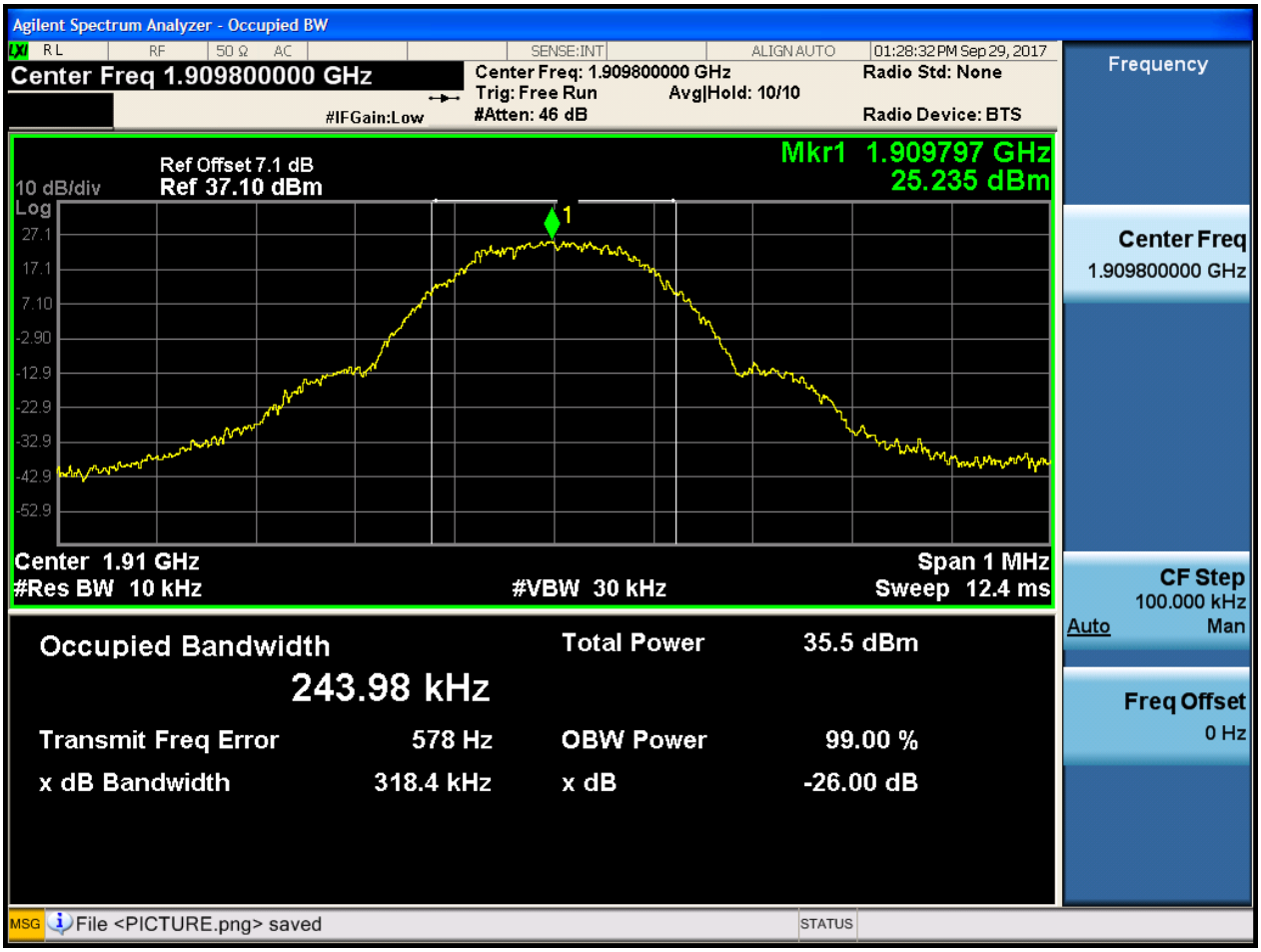
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

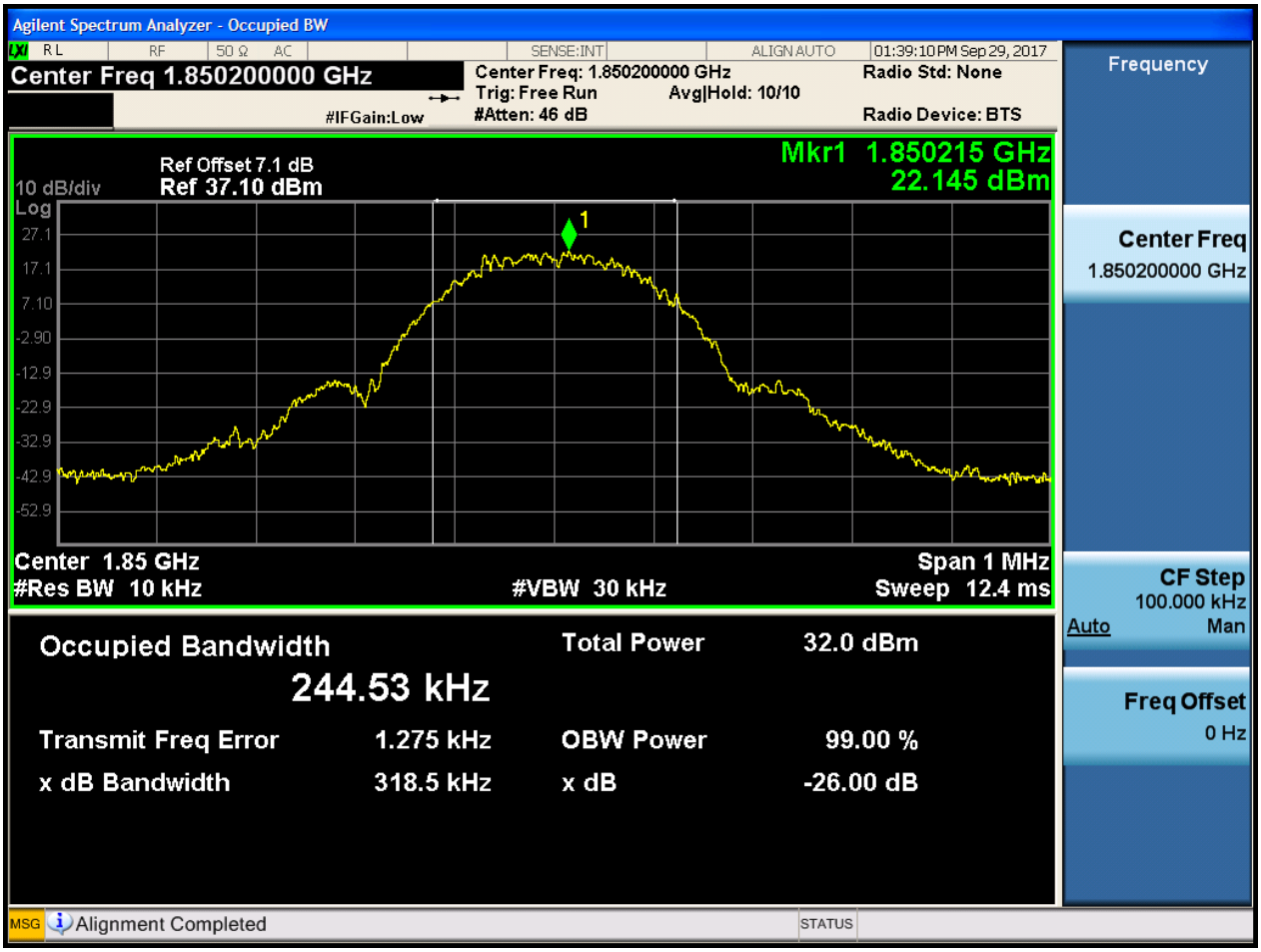


4.1.2.1.3 Test Channel = HCH

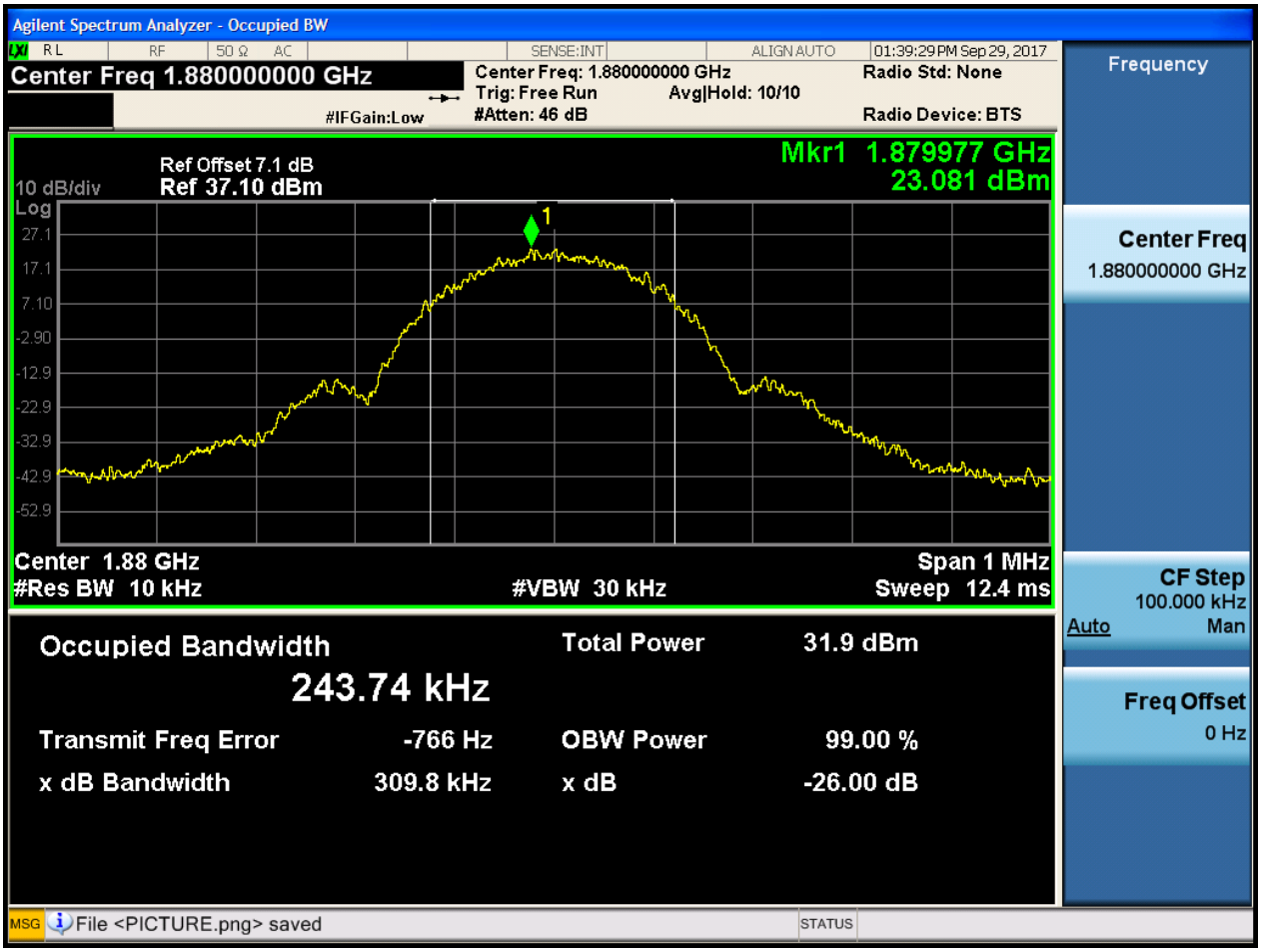


4.1.2.2 Test Mode = GSM/TM2

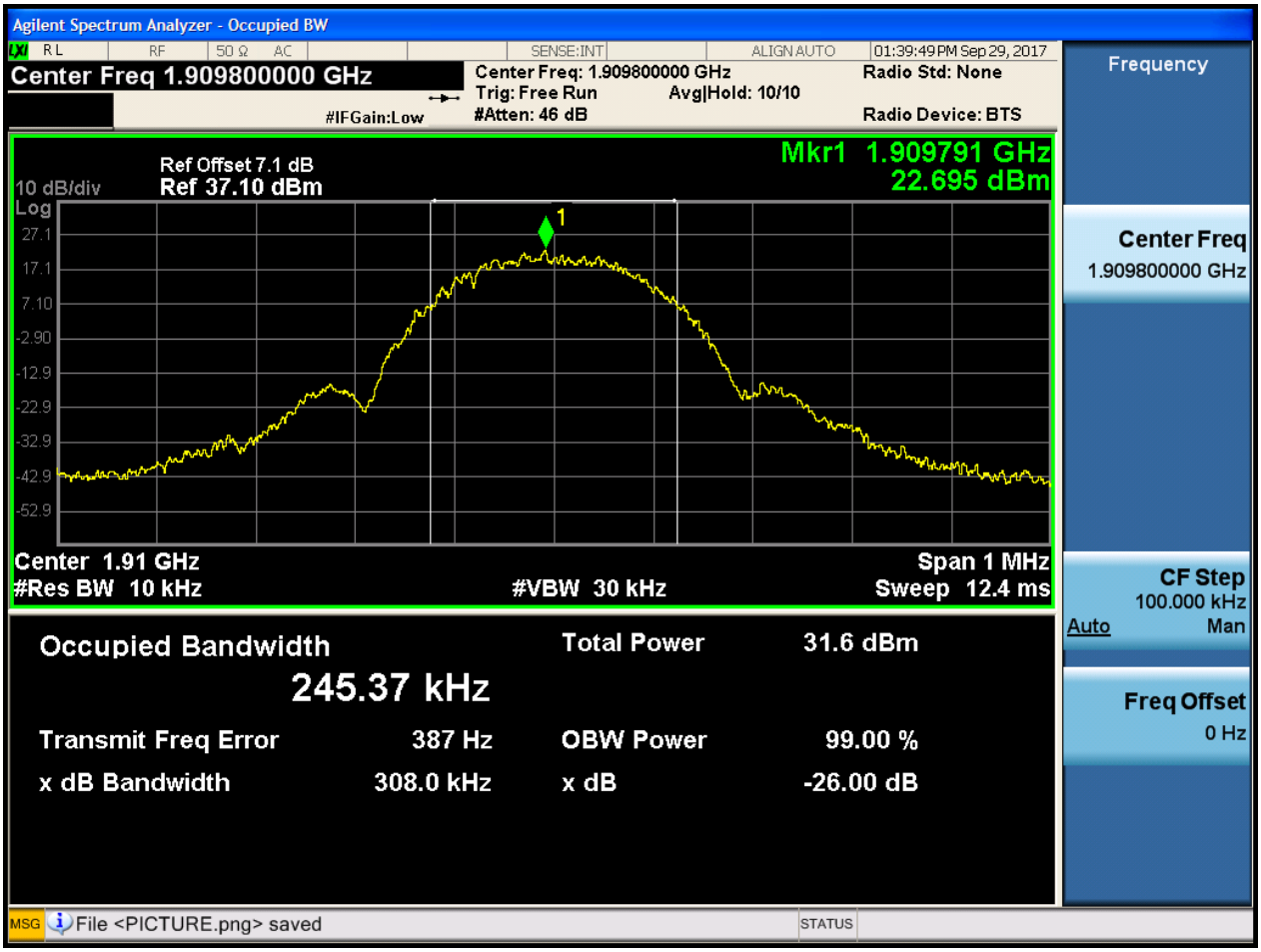
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

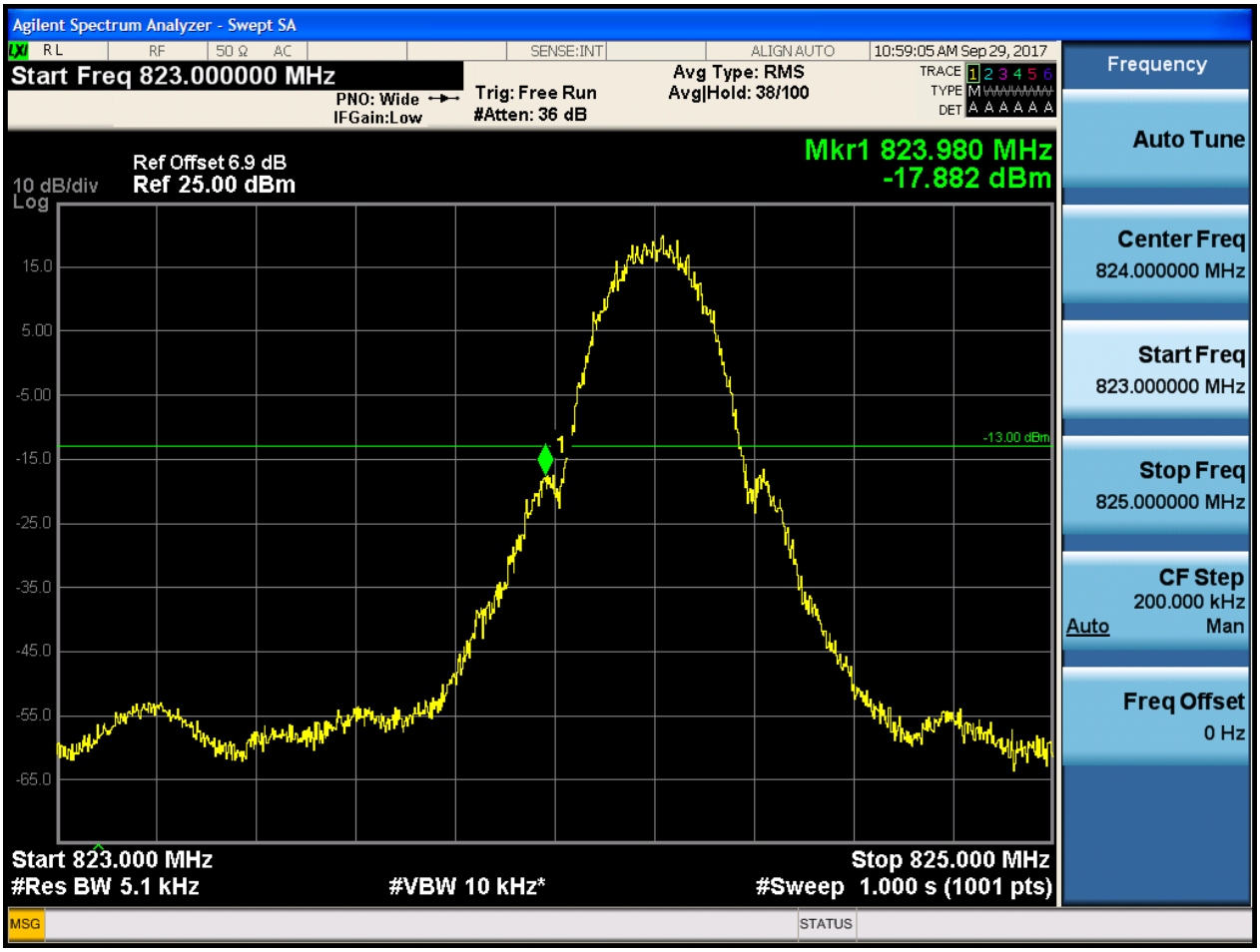
Part I - Test Plots

5.1 For GSM

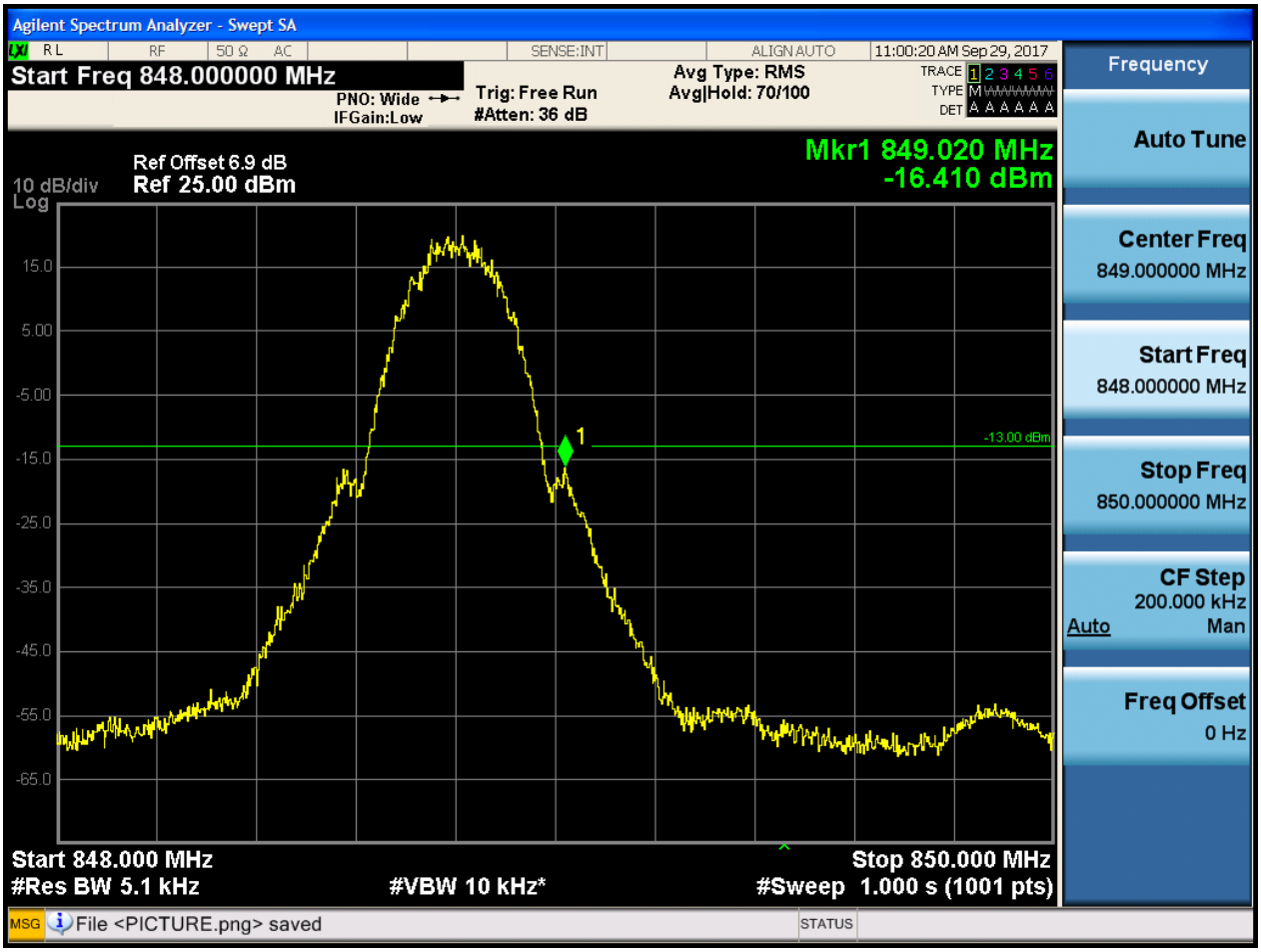
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

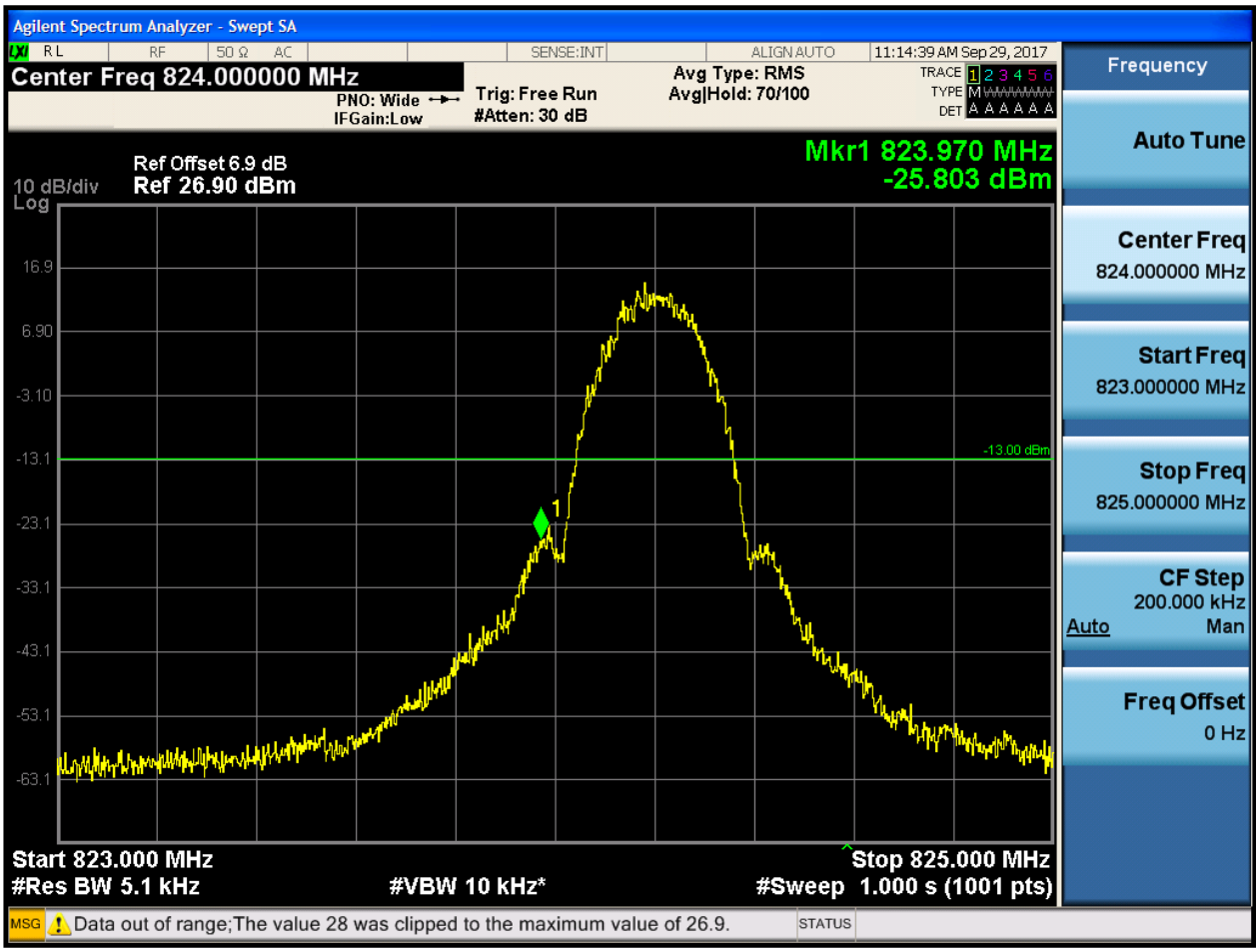


5.1.1.1.2 Test Channel = HCH

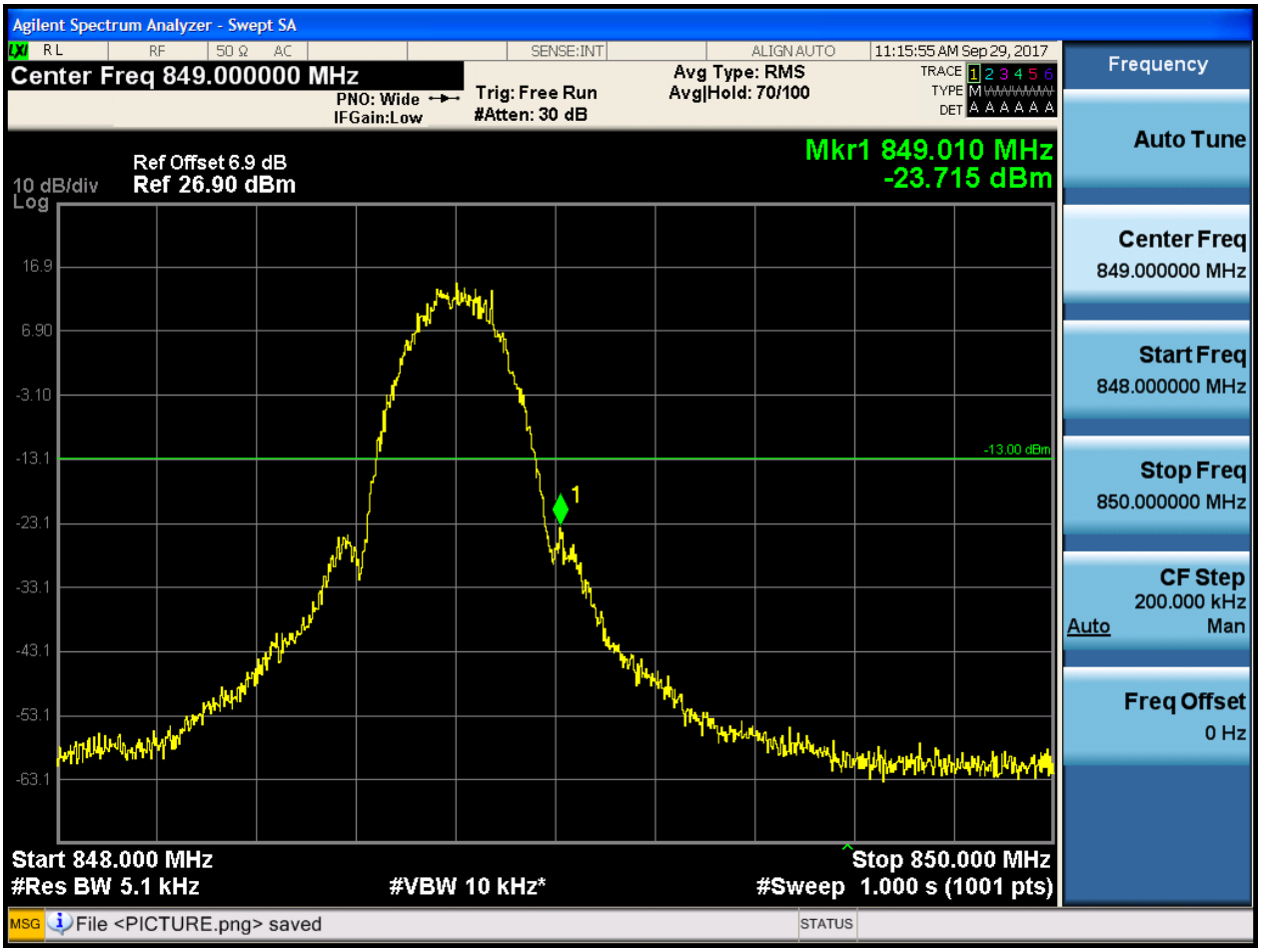


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



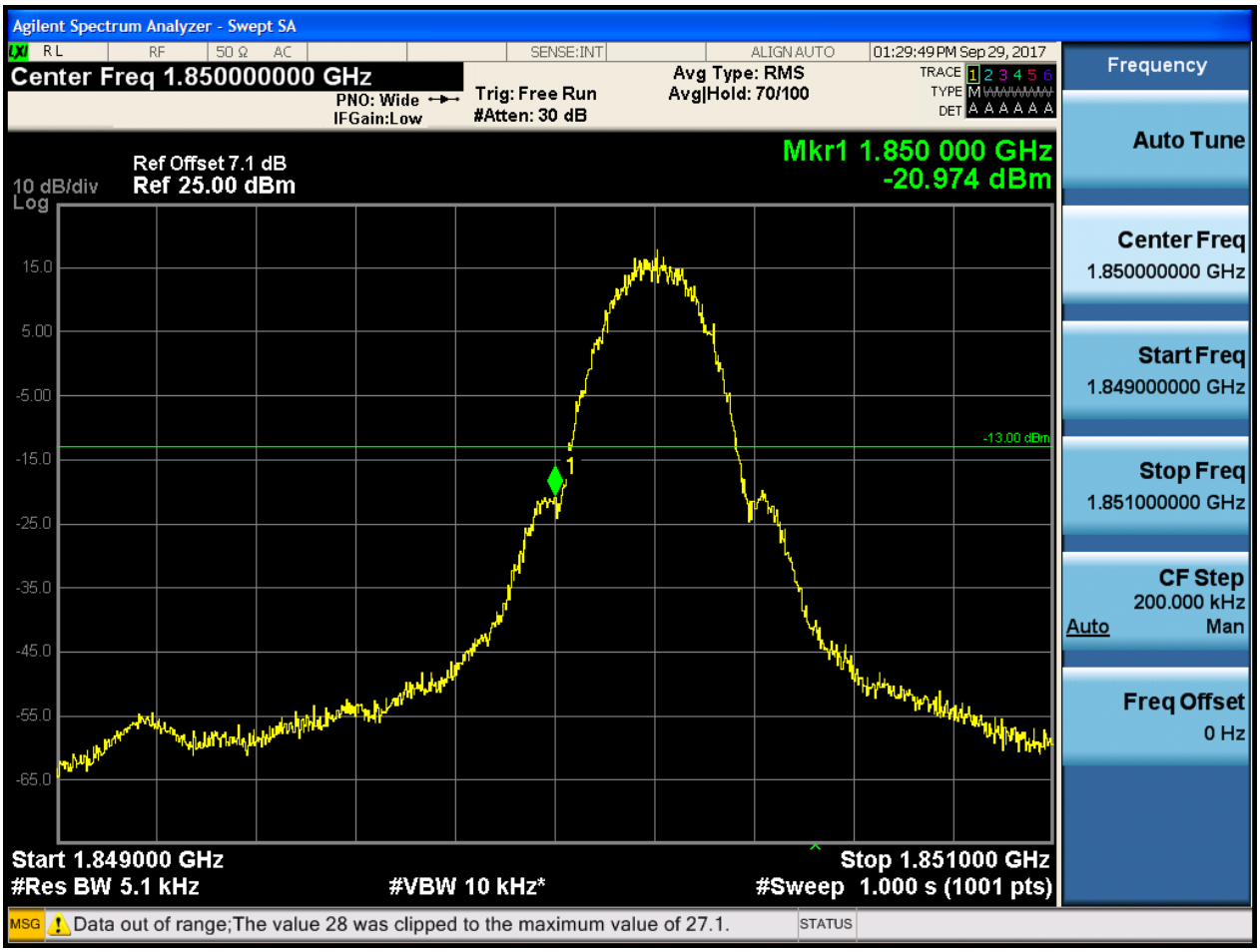
5.1.1.2.2 Test Channel = HCH



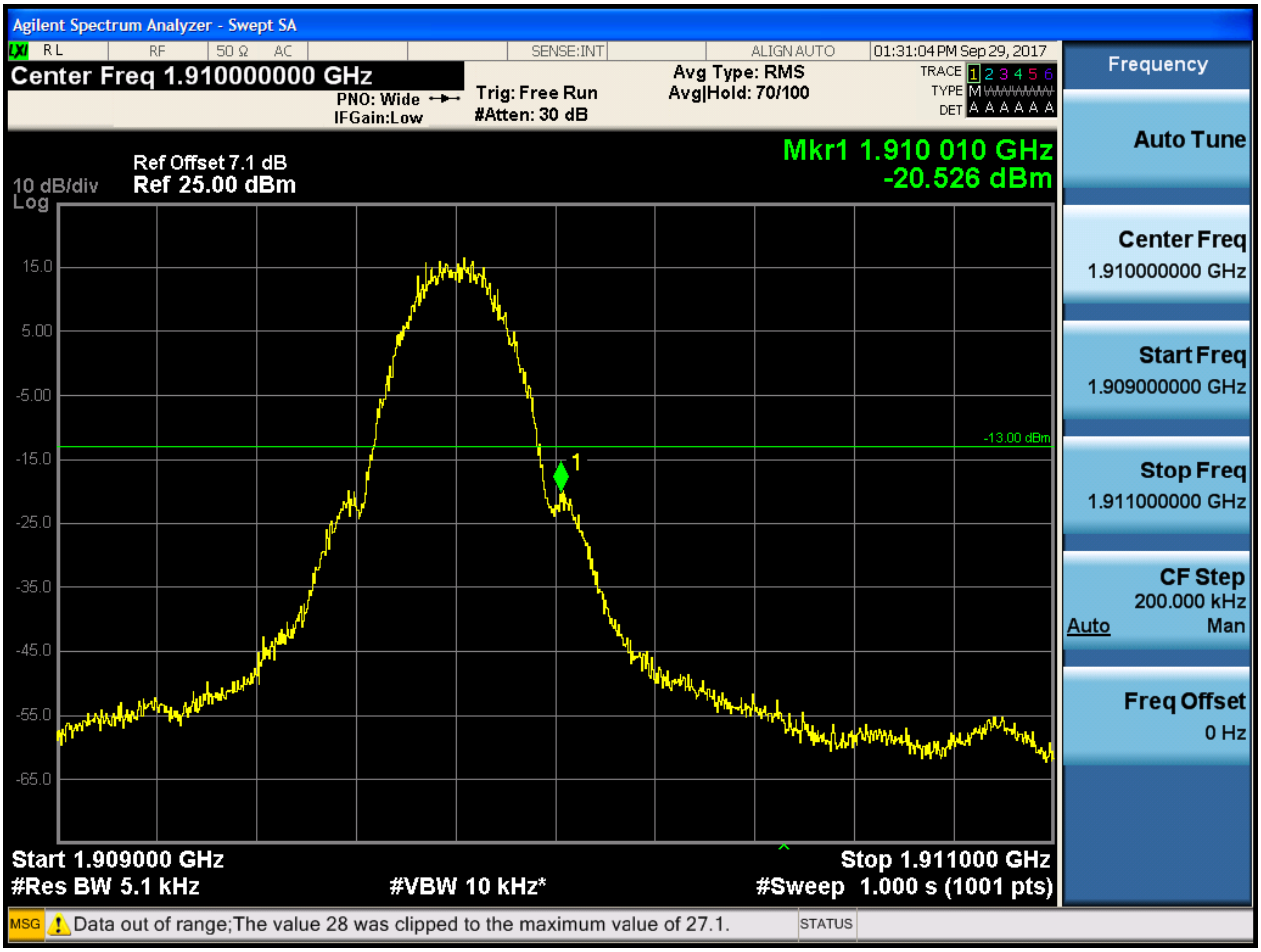
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

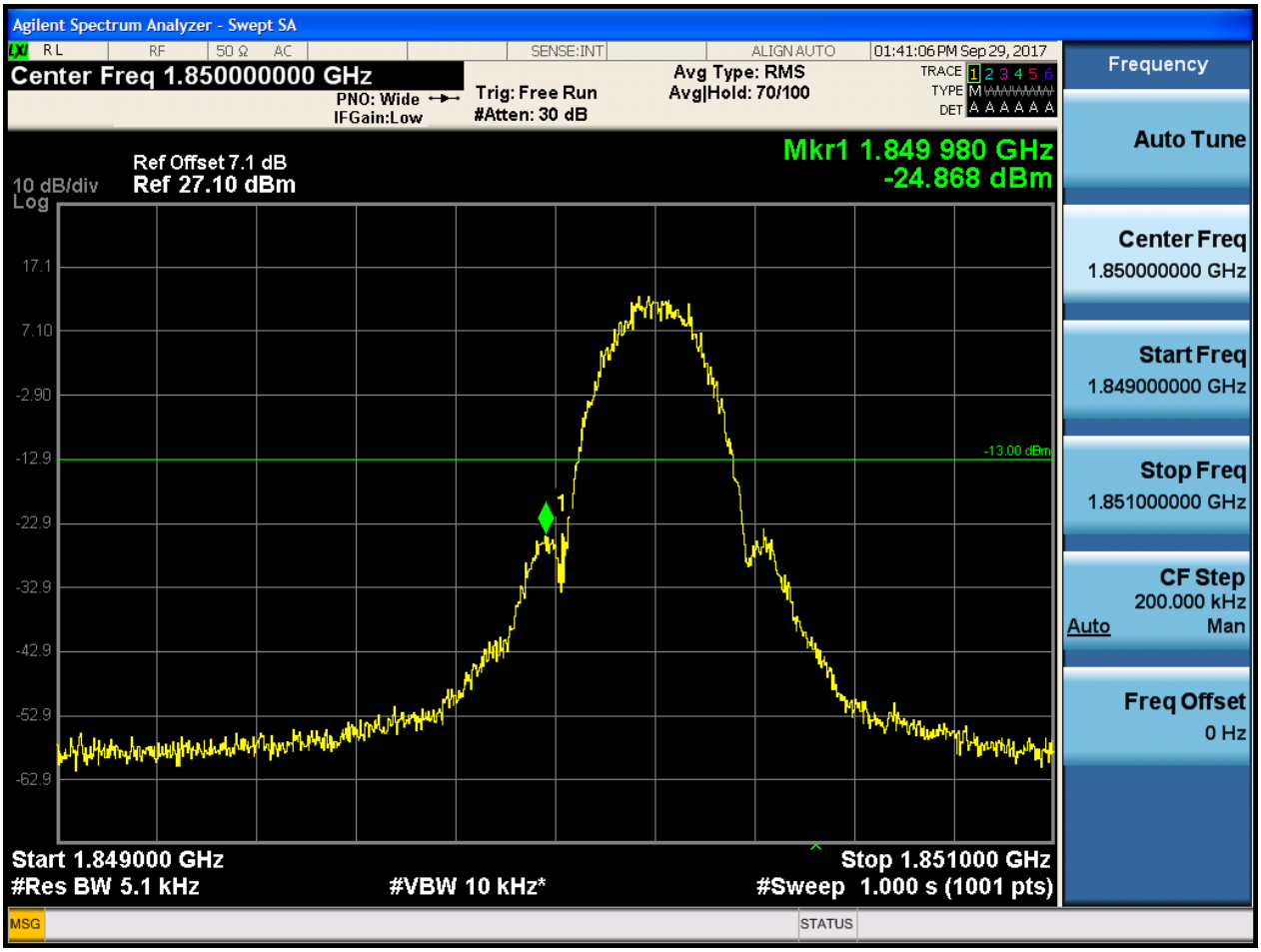


5.1.2.1.2 Test Channel = HCH

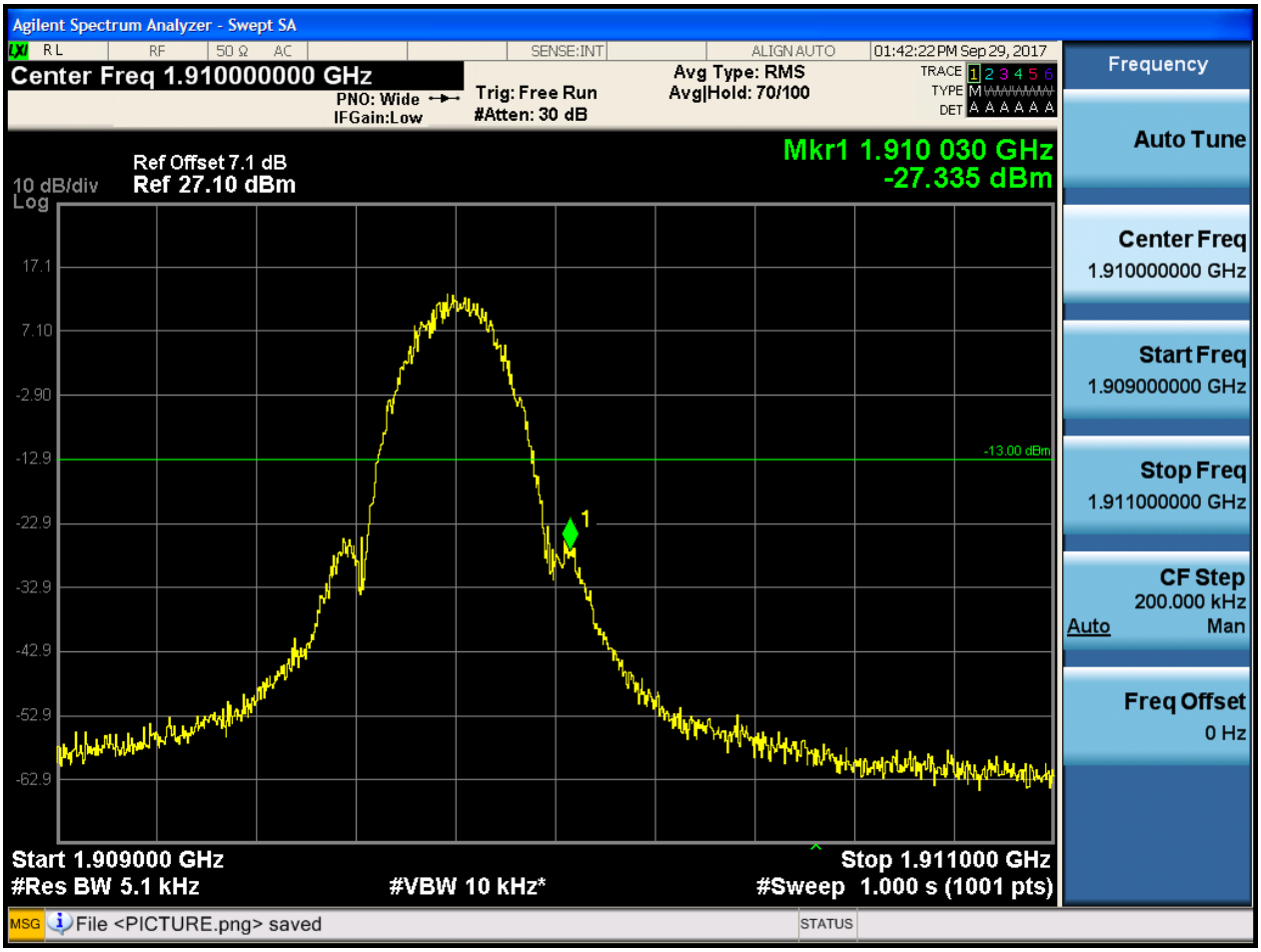


5.1.2.2 Test Mode = GSM/TM2

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.

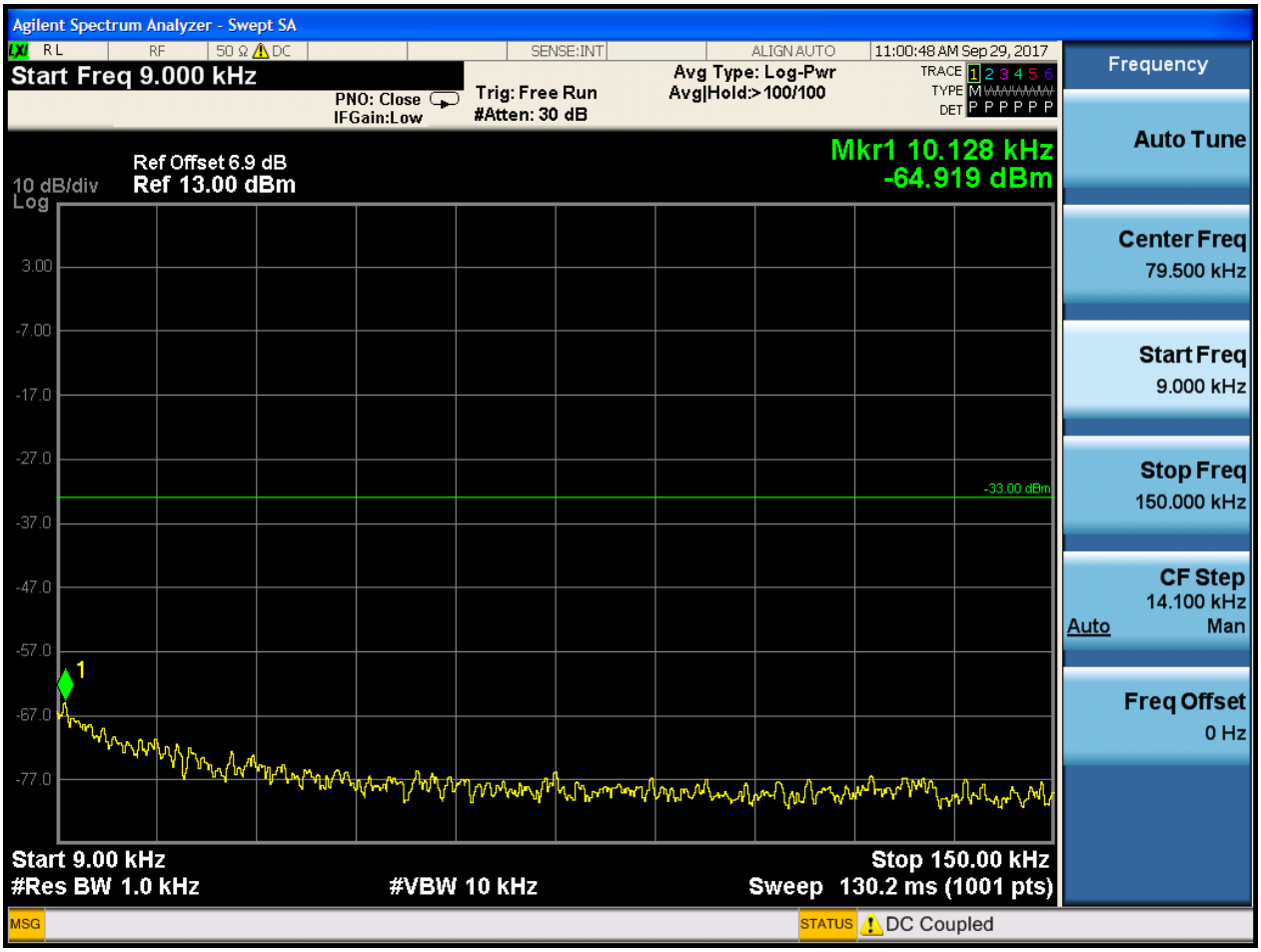
Part I - Test Plots

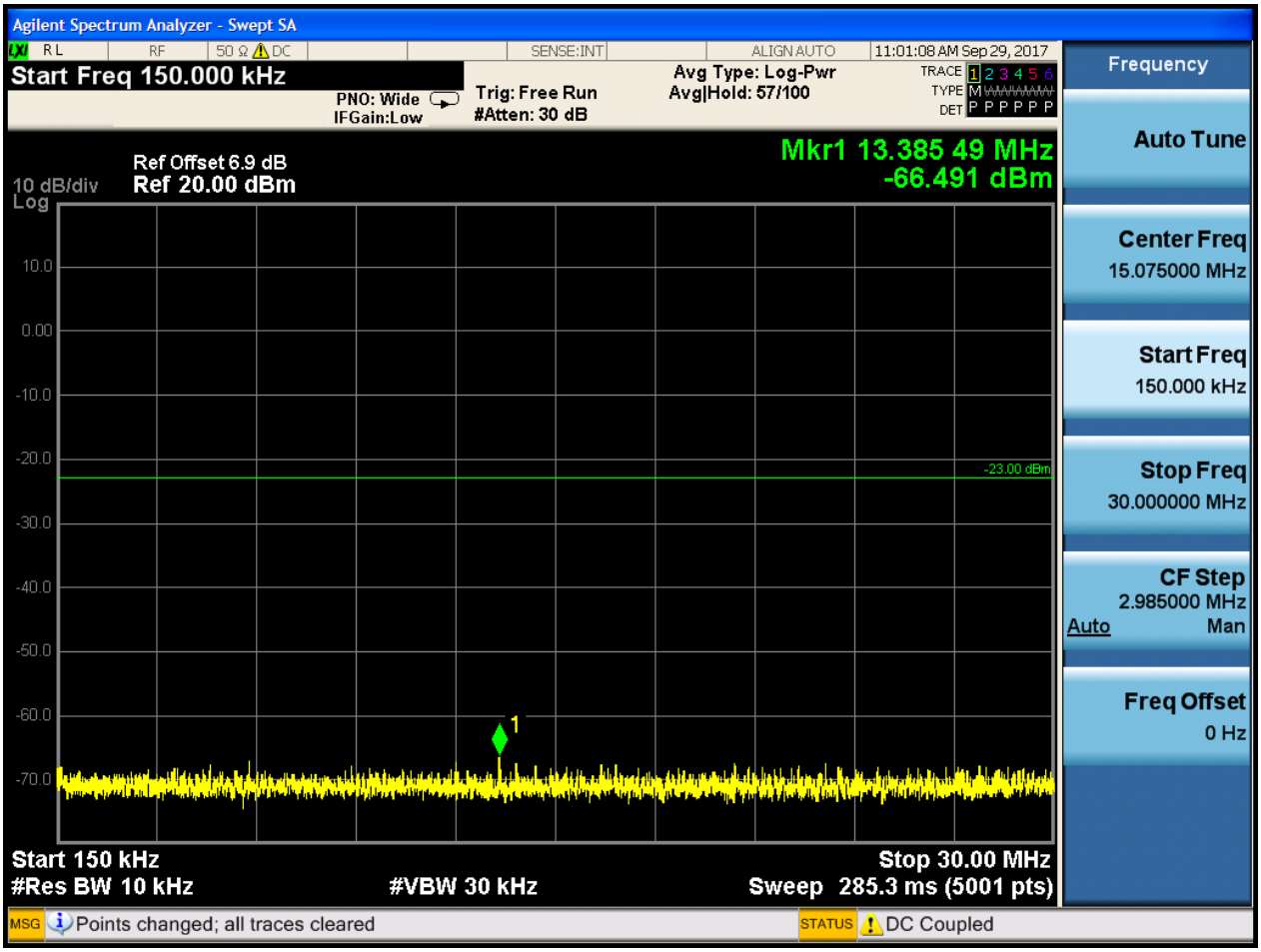
6.1 For GSM

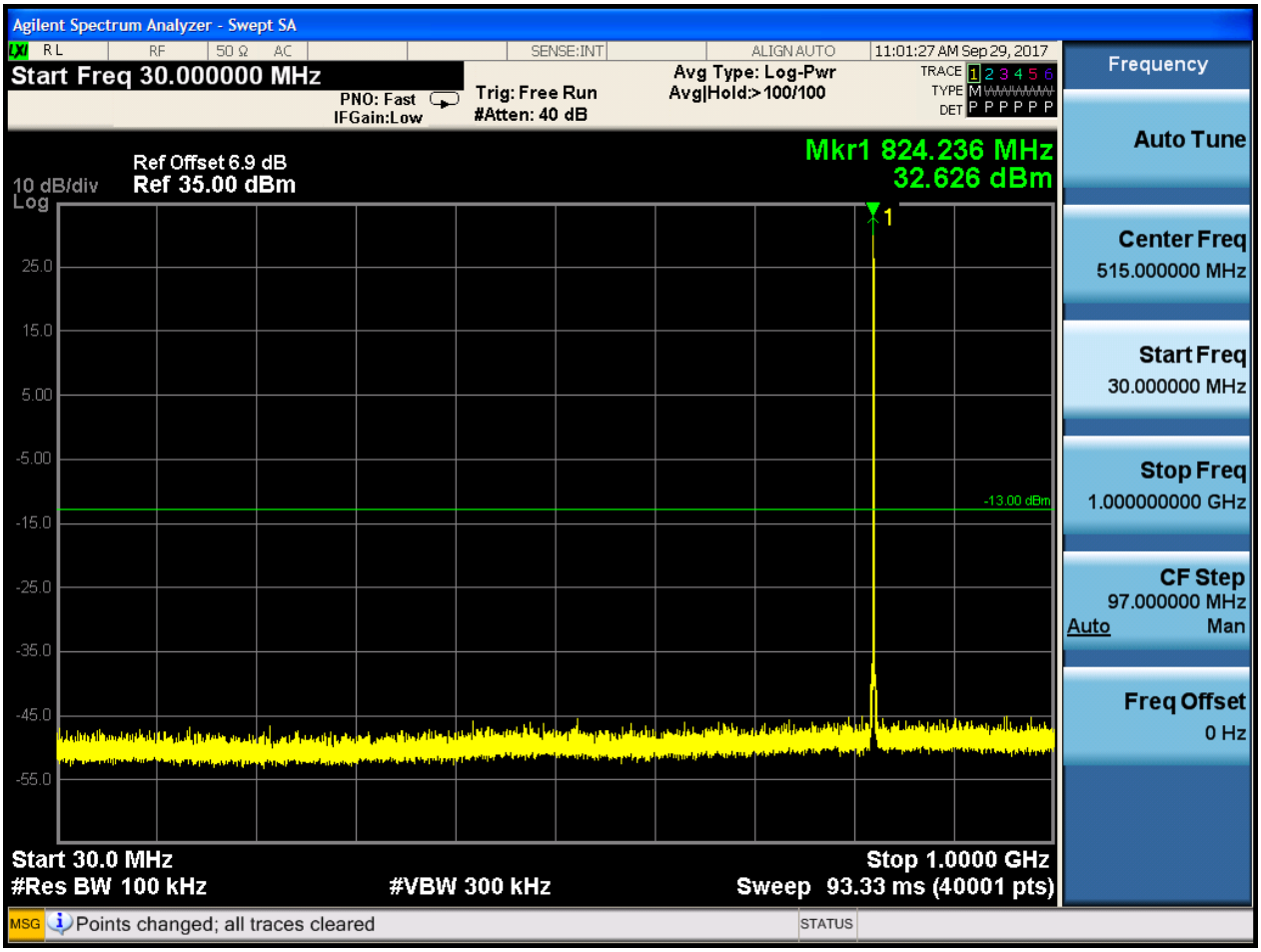
6.1.1 Test Band = GSM850

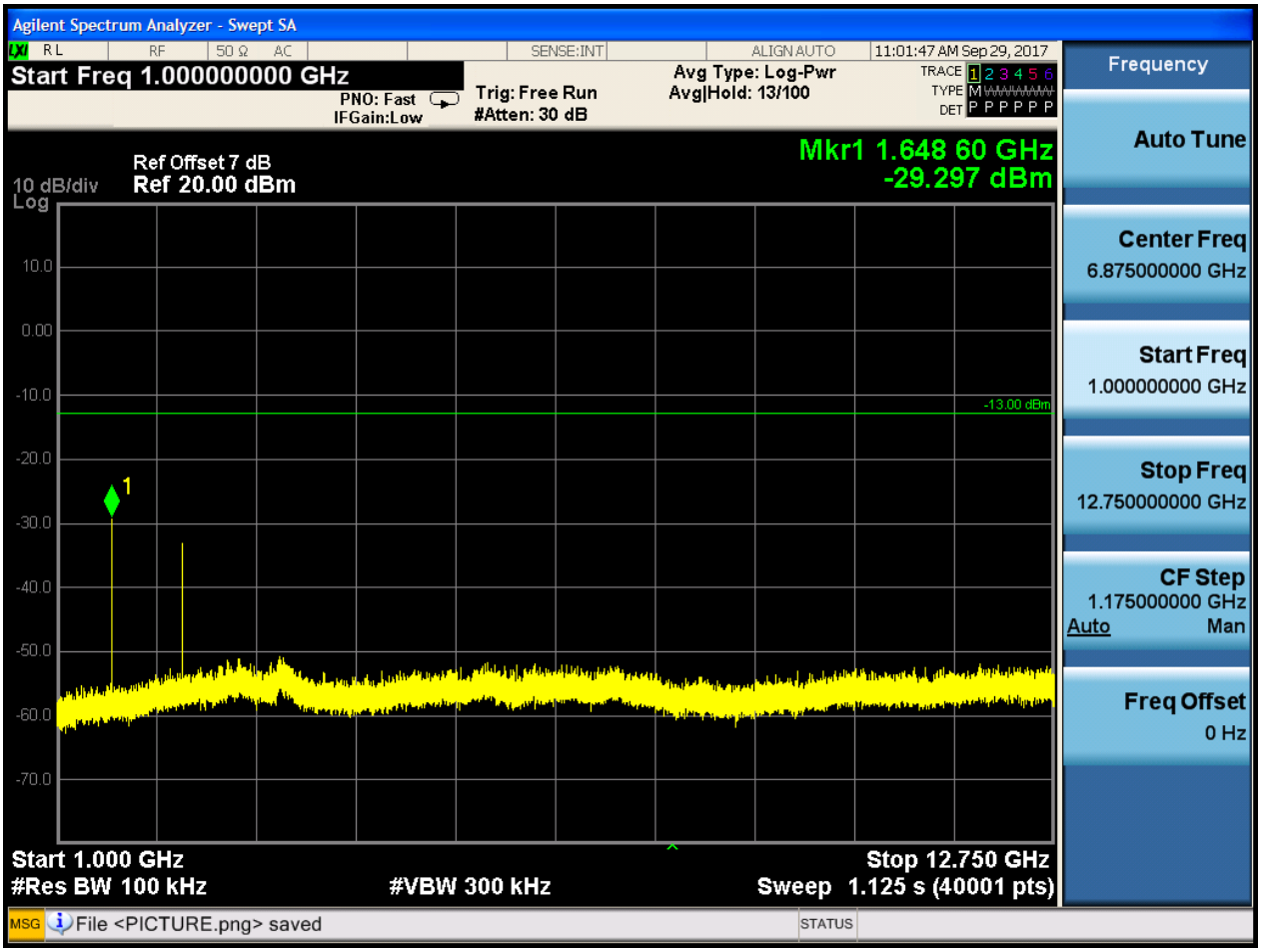
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

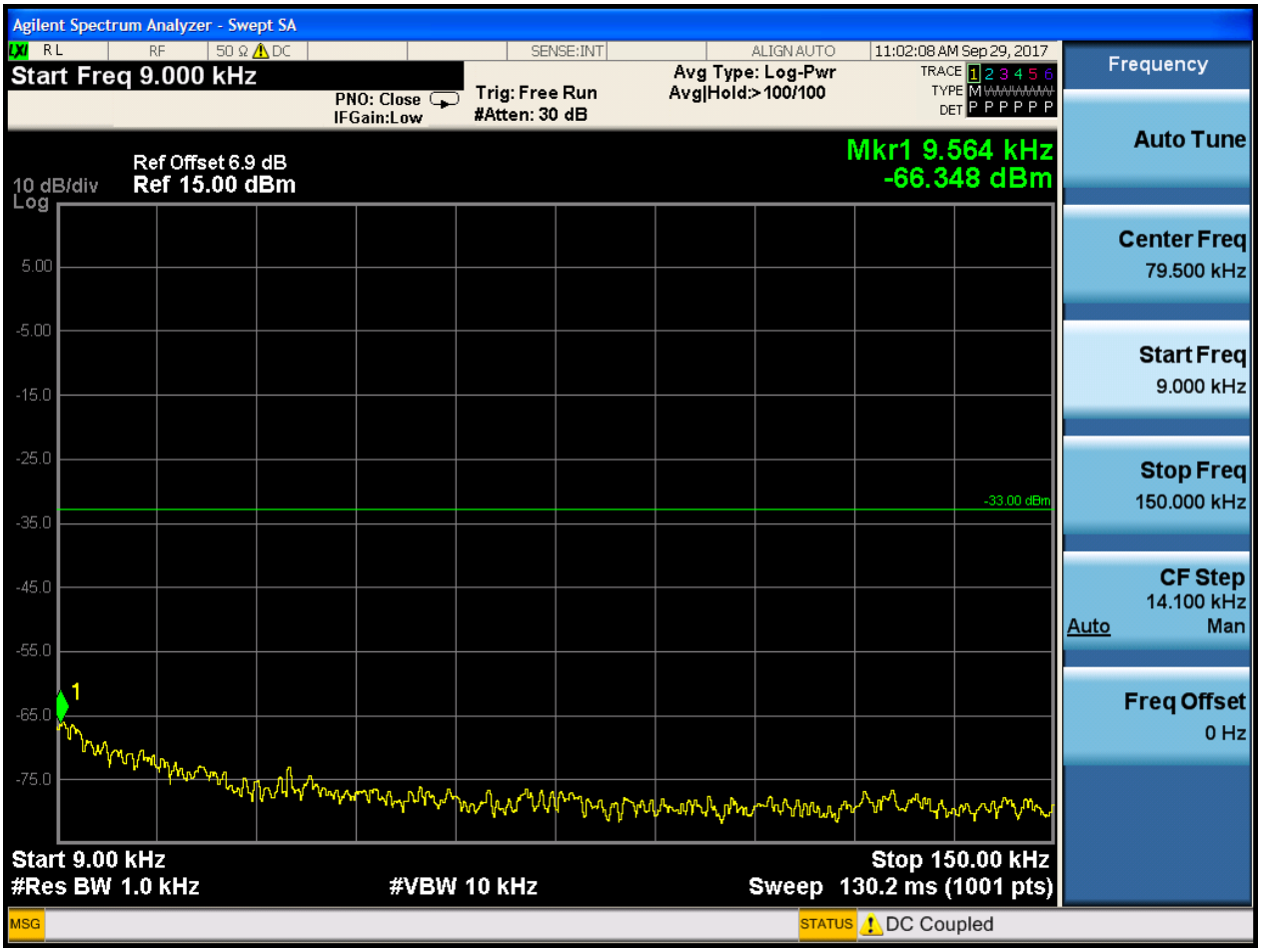


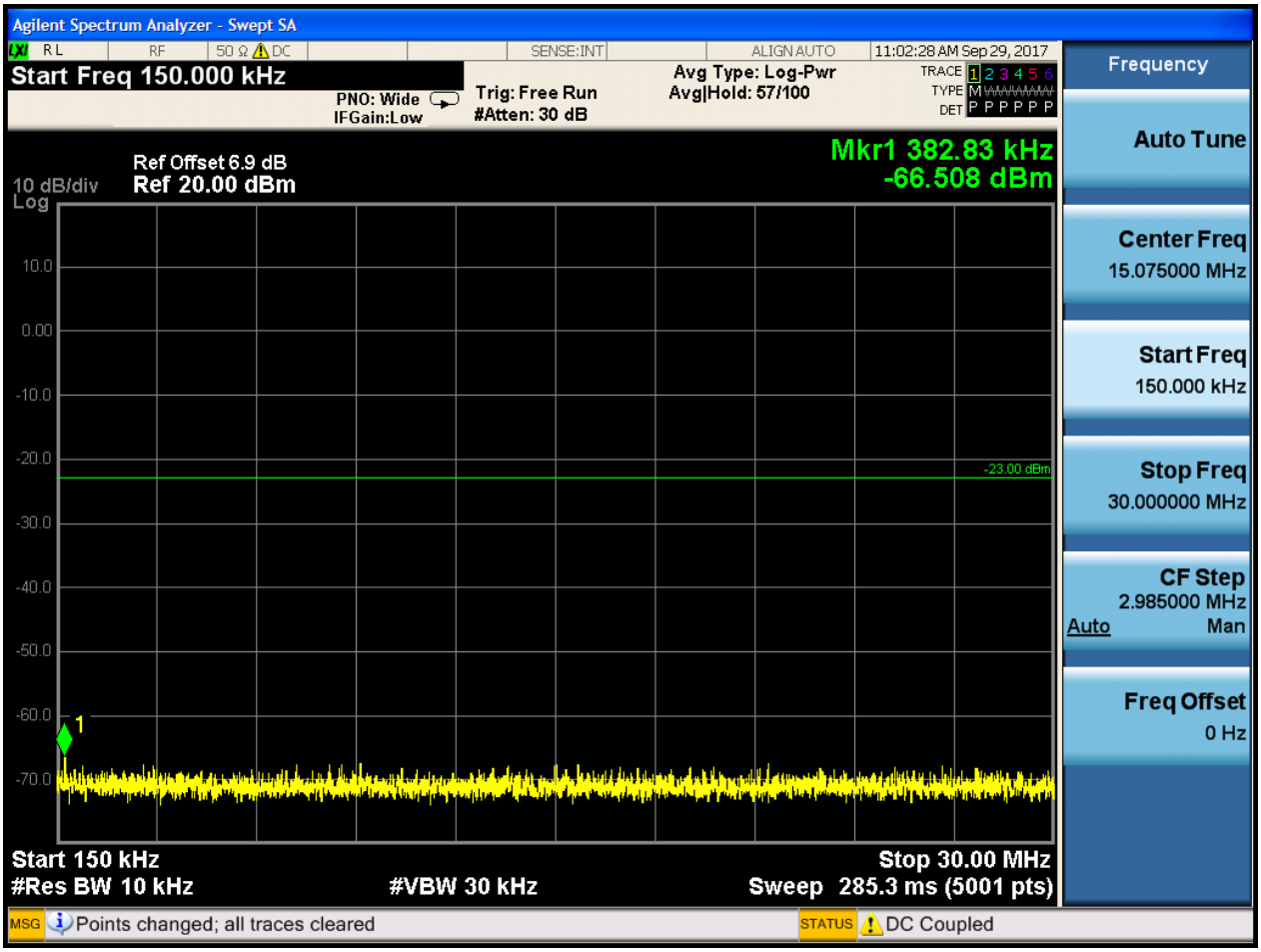


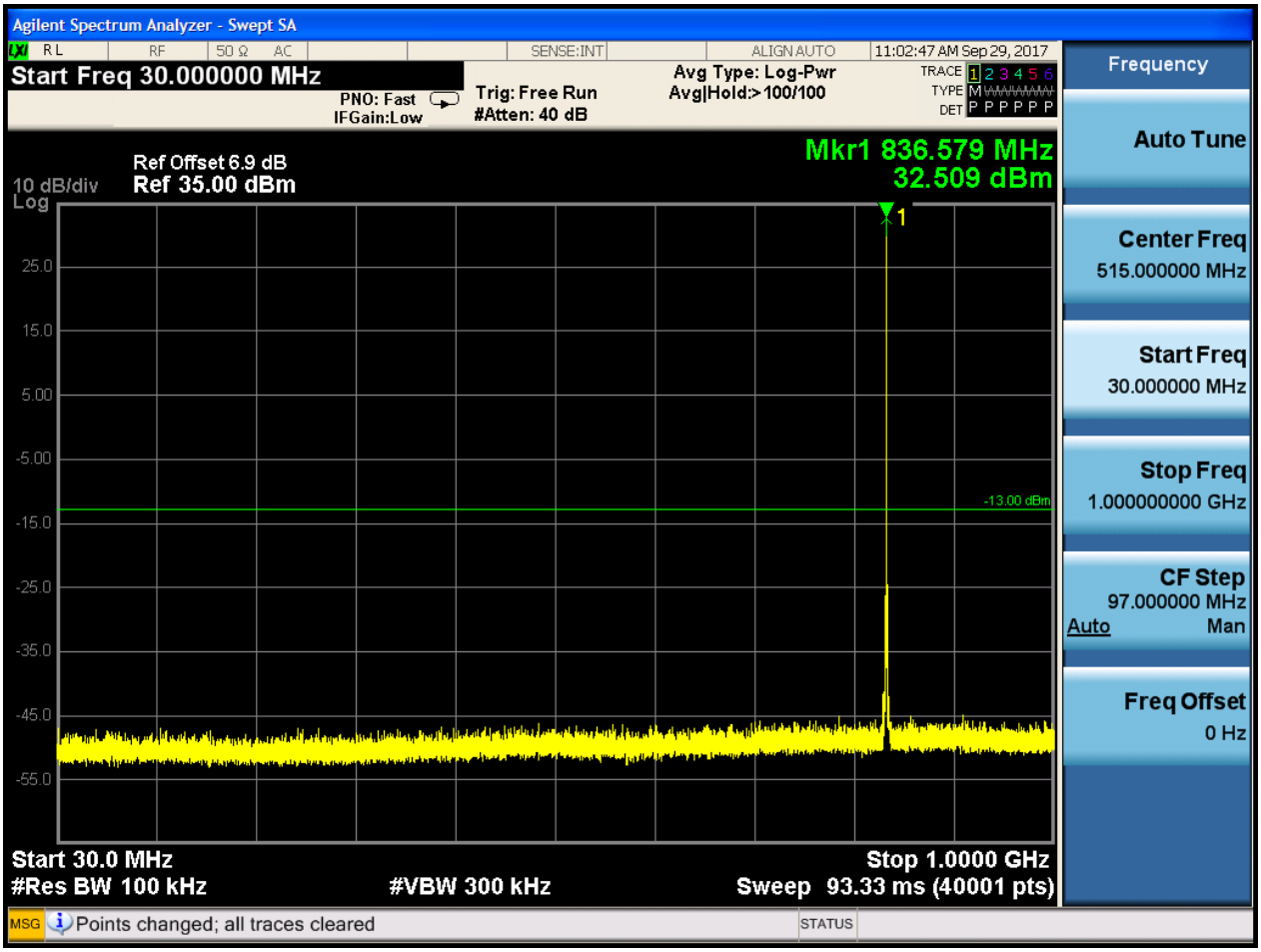


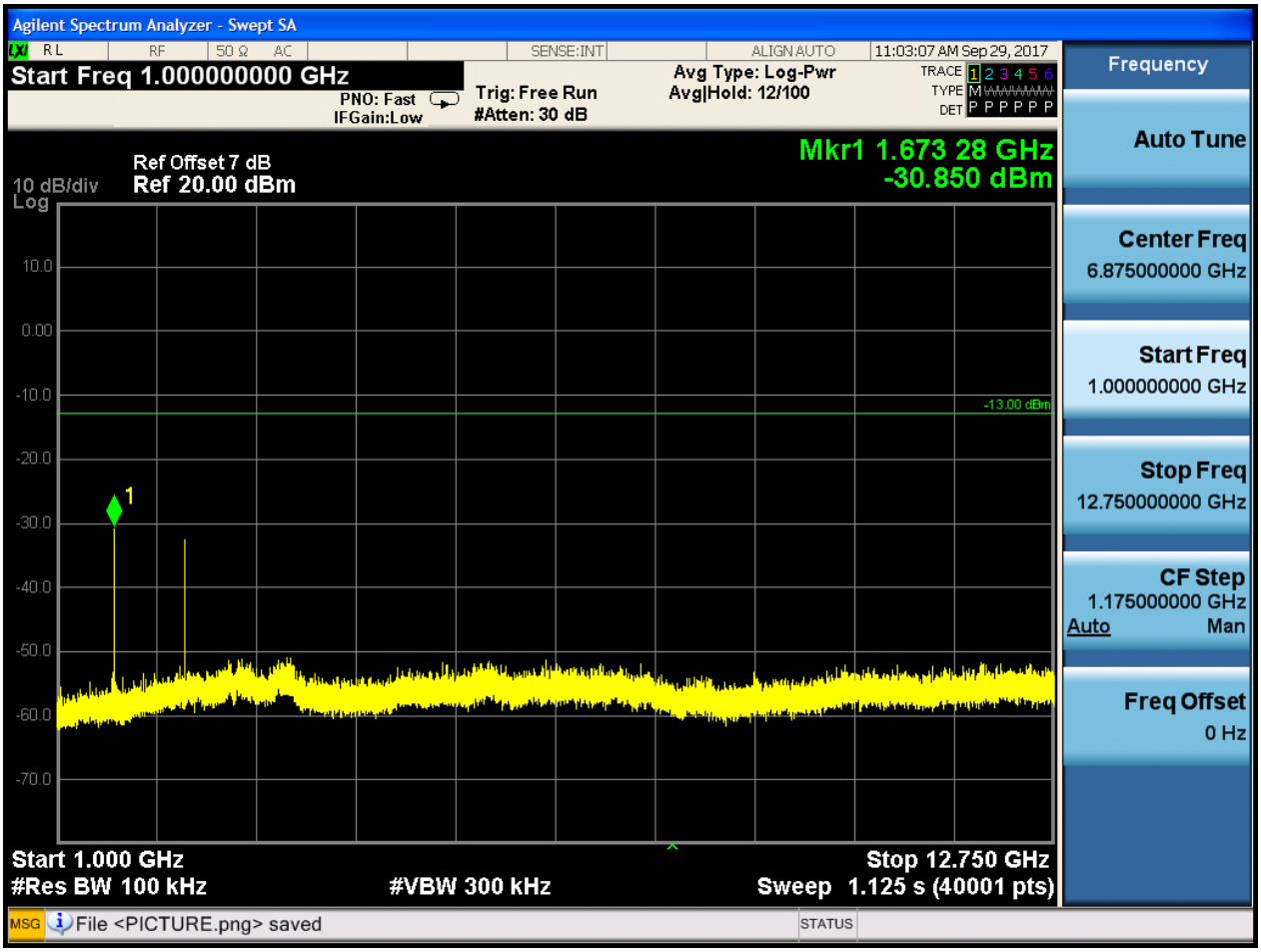


6.1.1.1.2 Test Channel = MCH

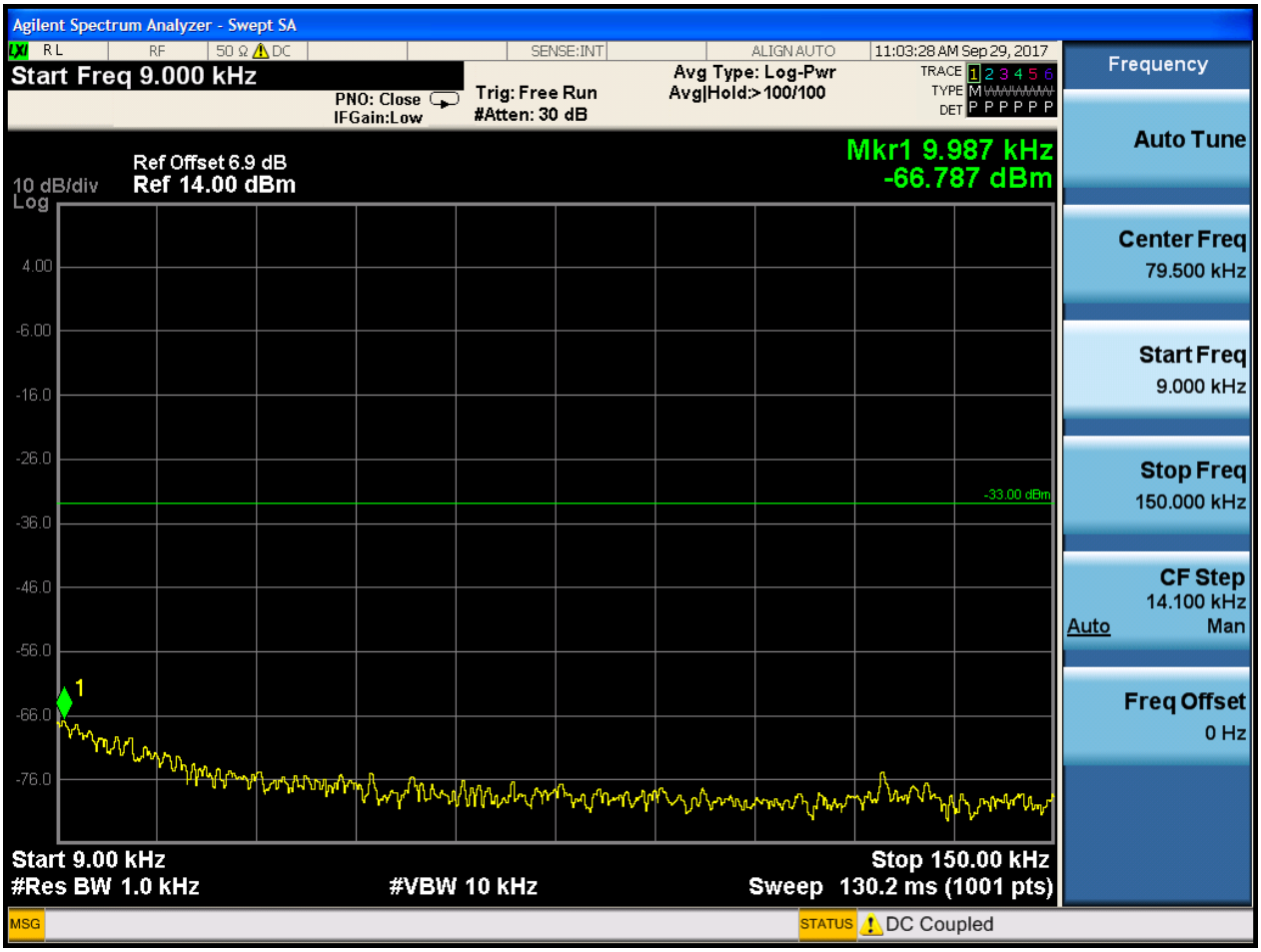


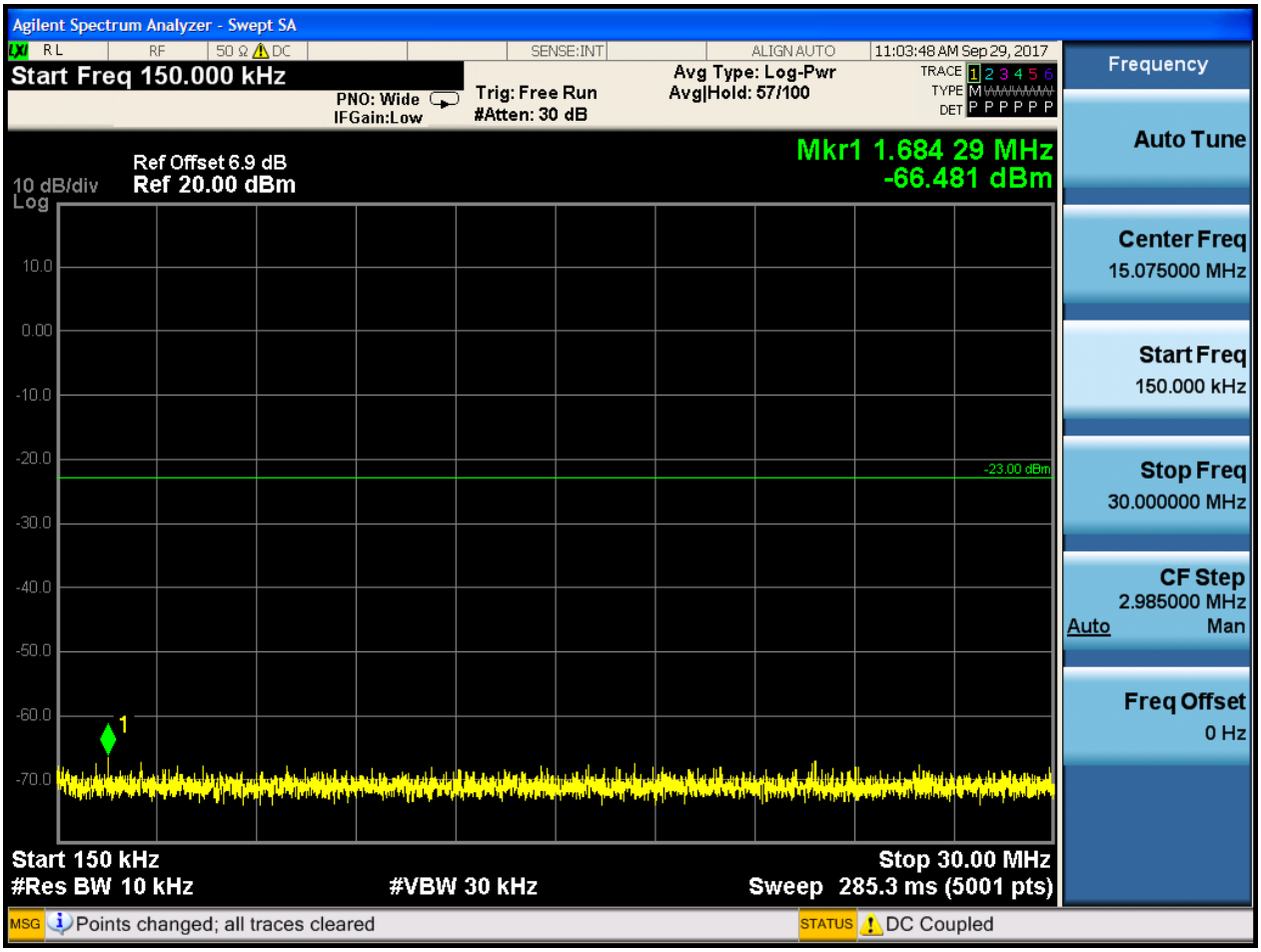


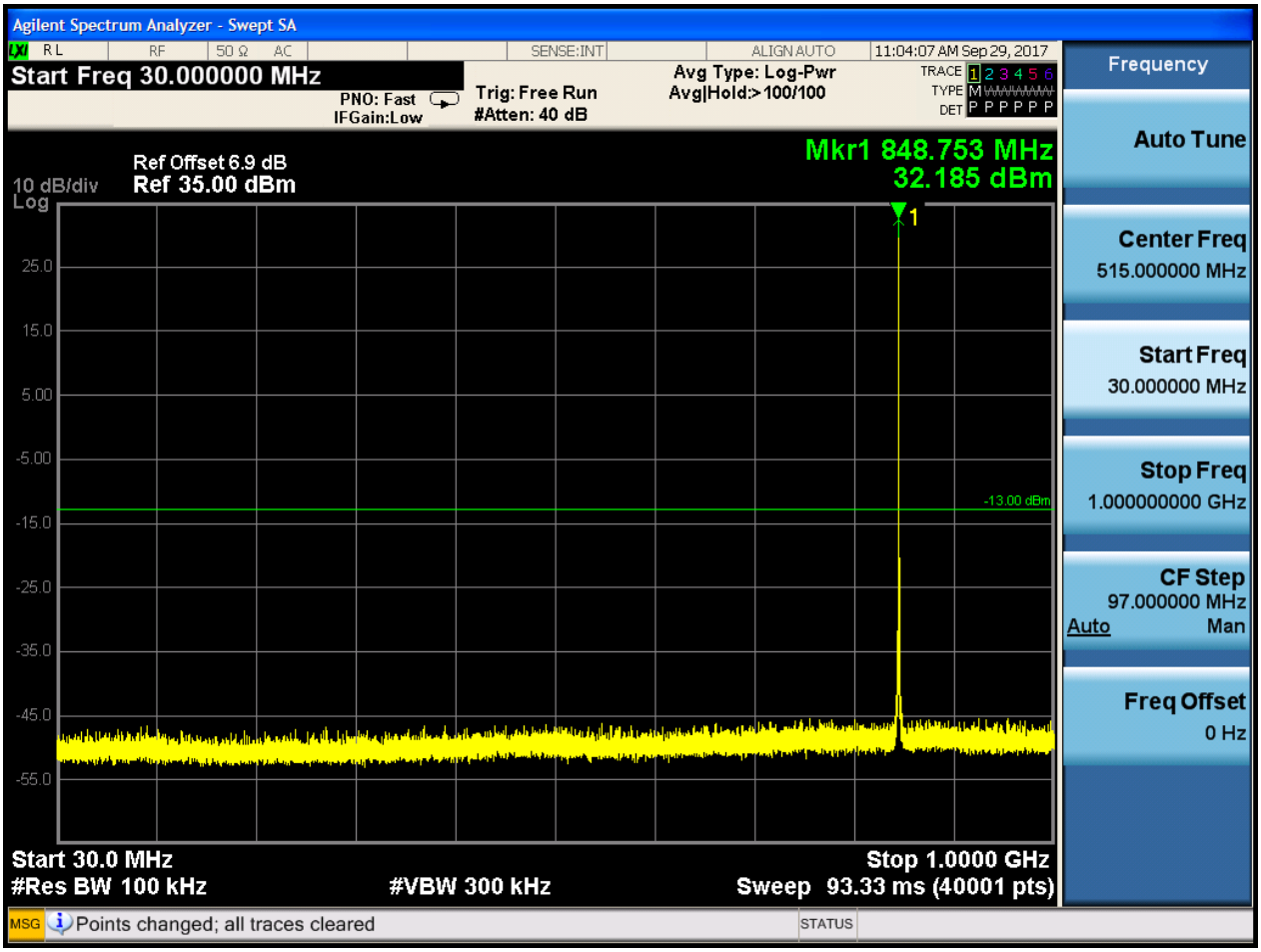


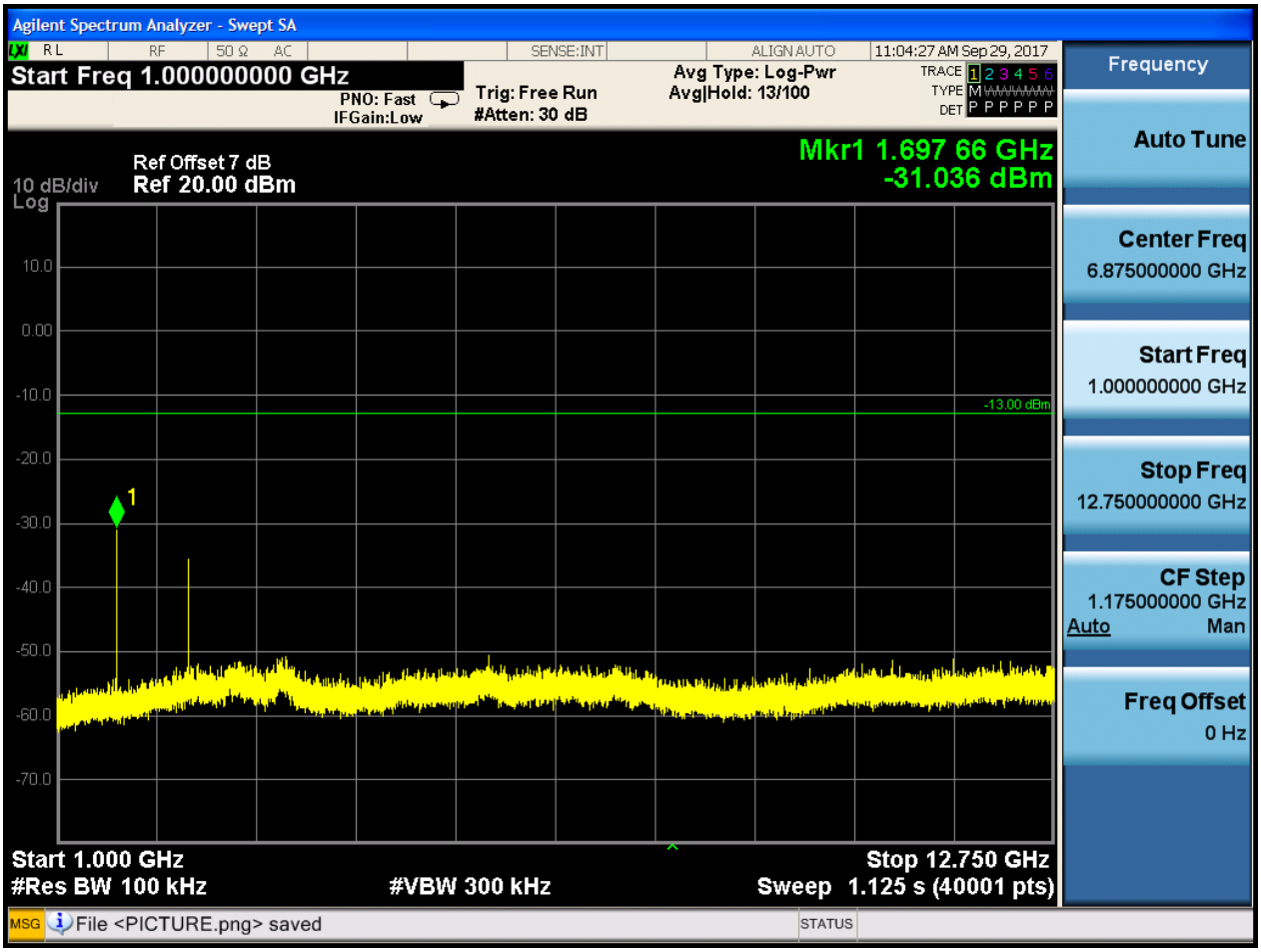


6.1.1.1.3 Test Channel = HCH



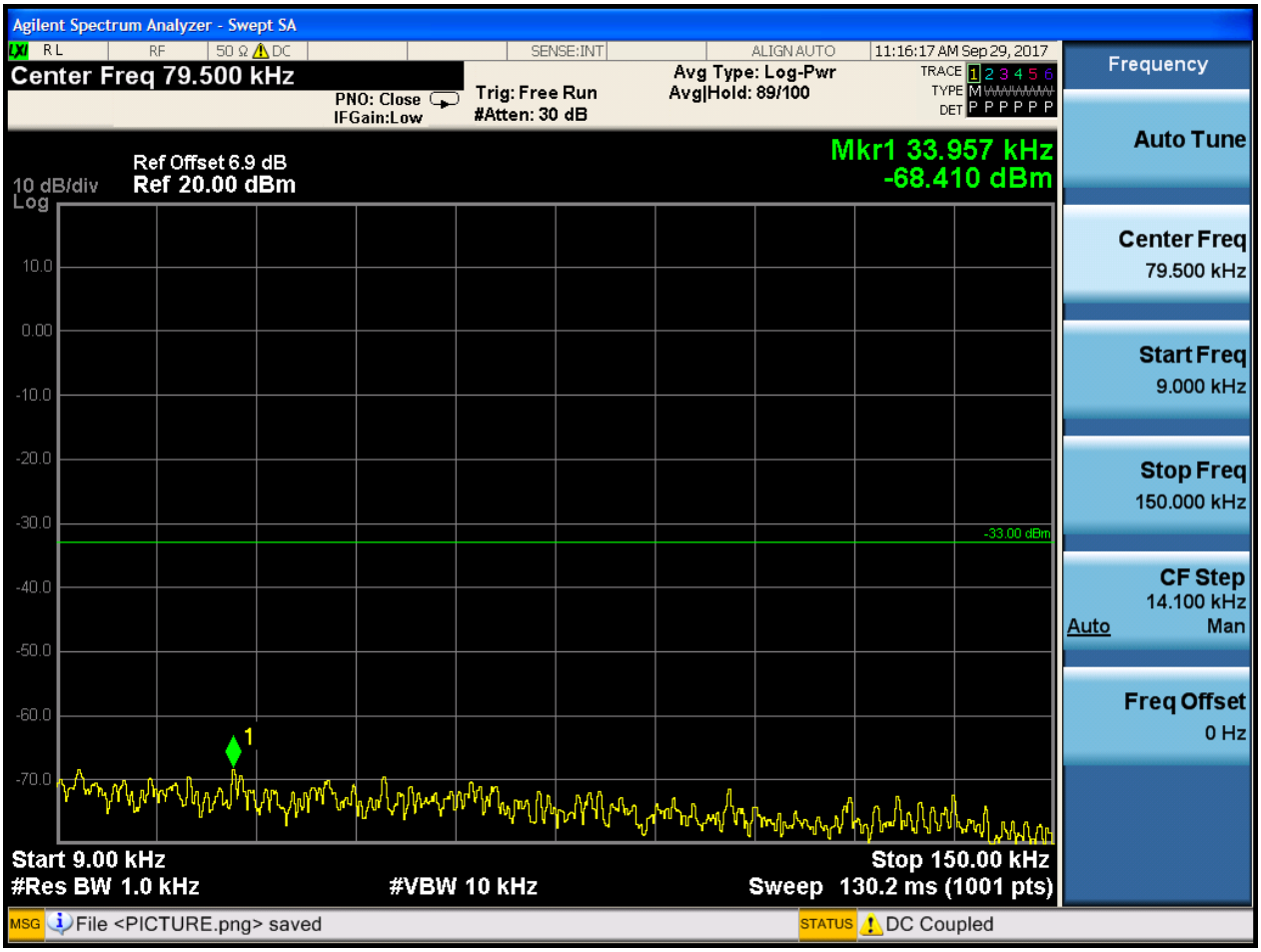


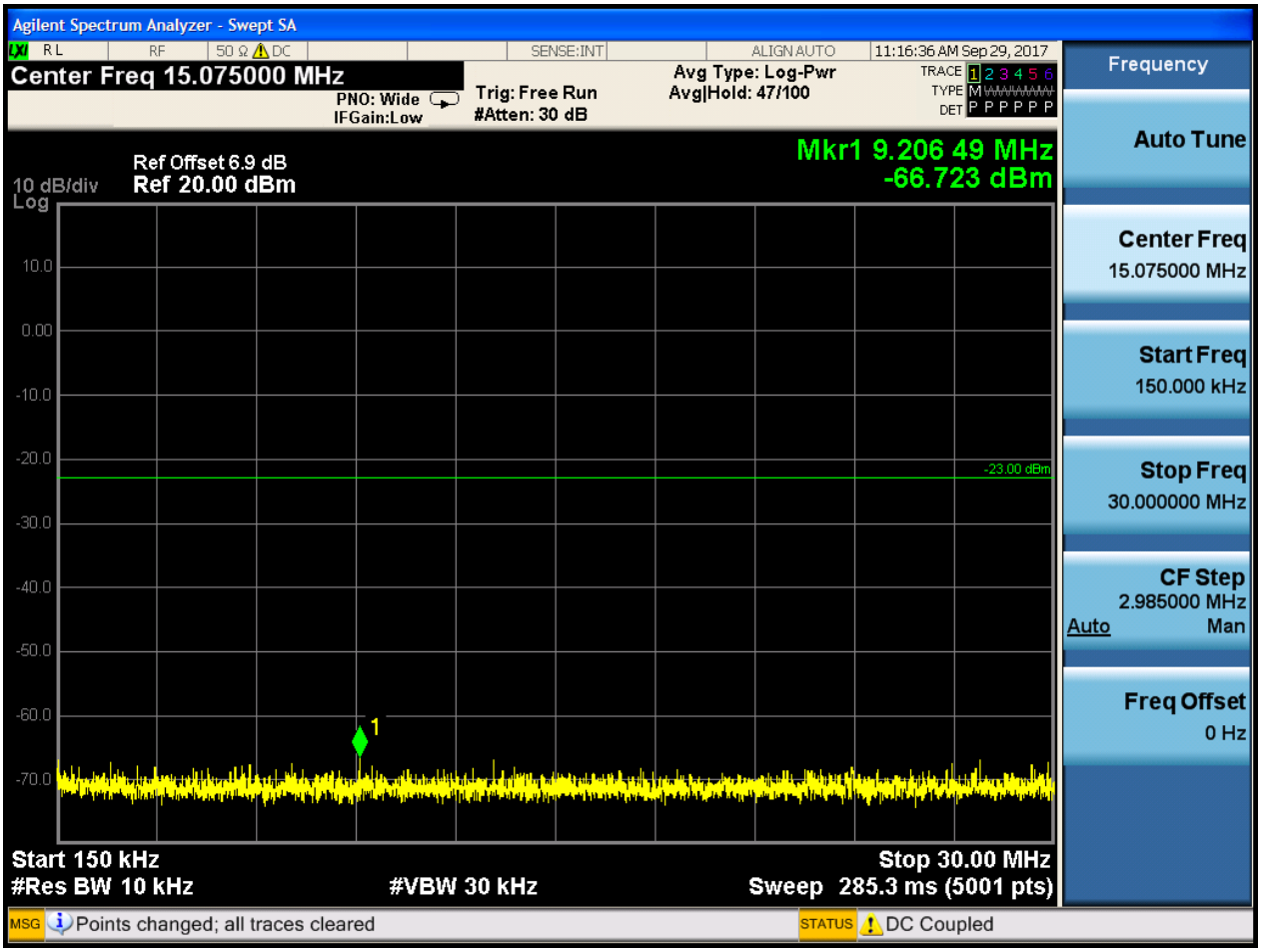


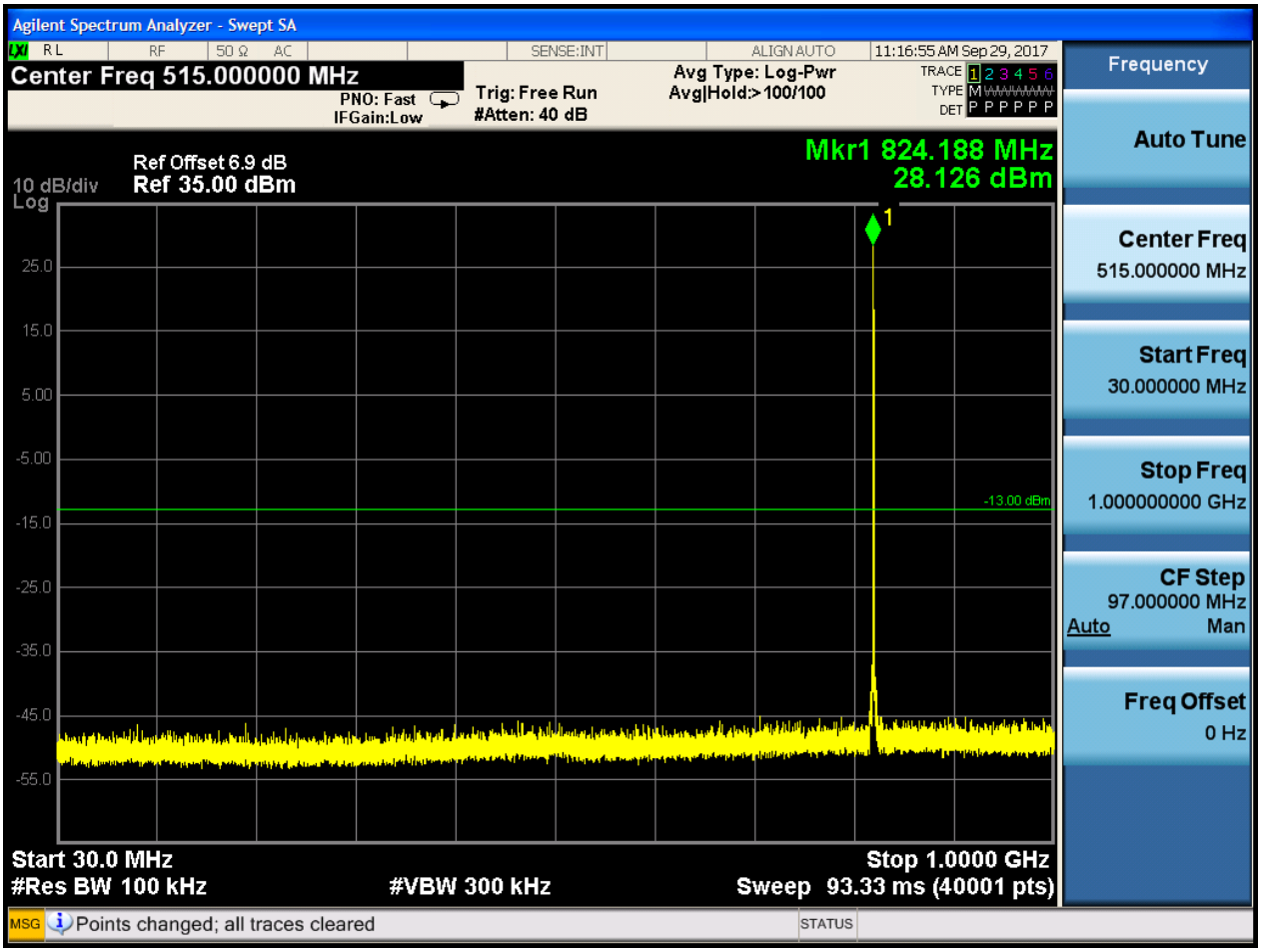


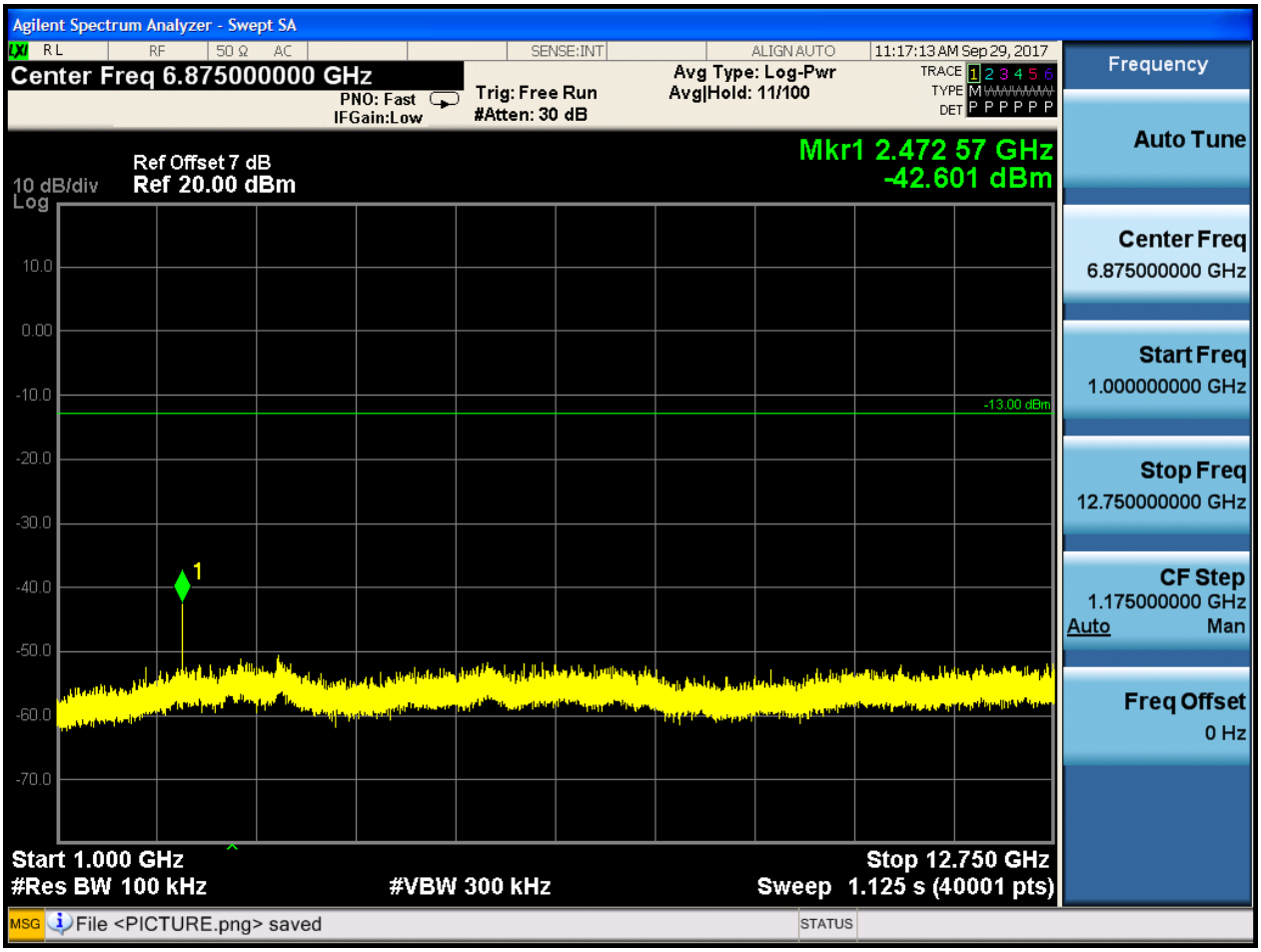
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

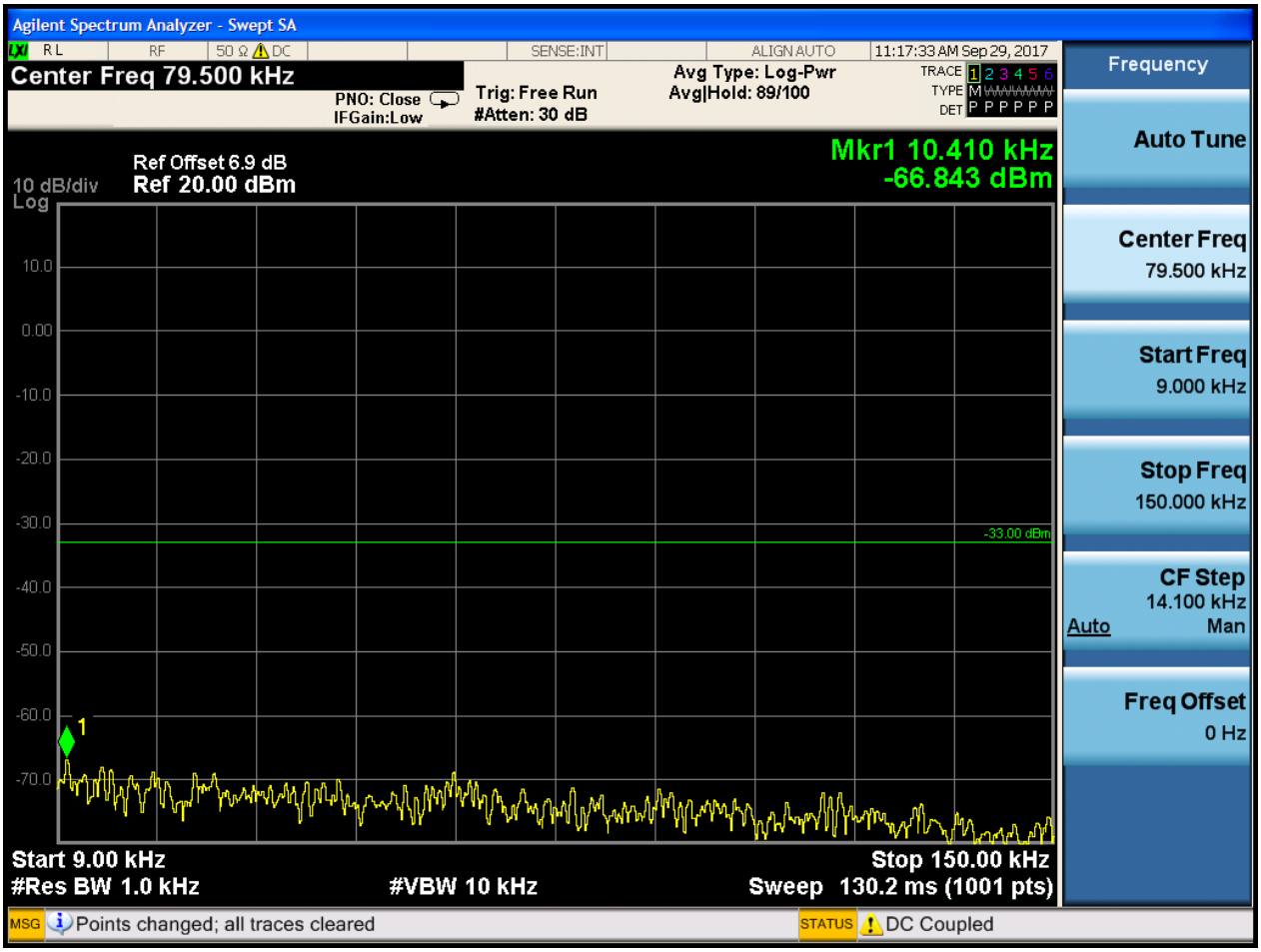


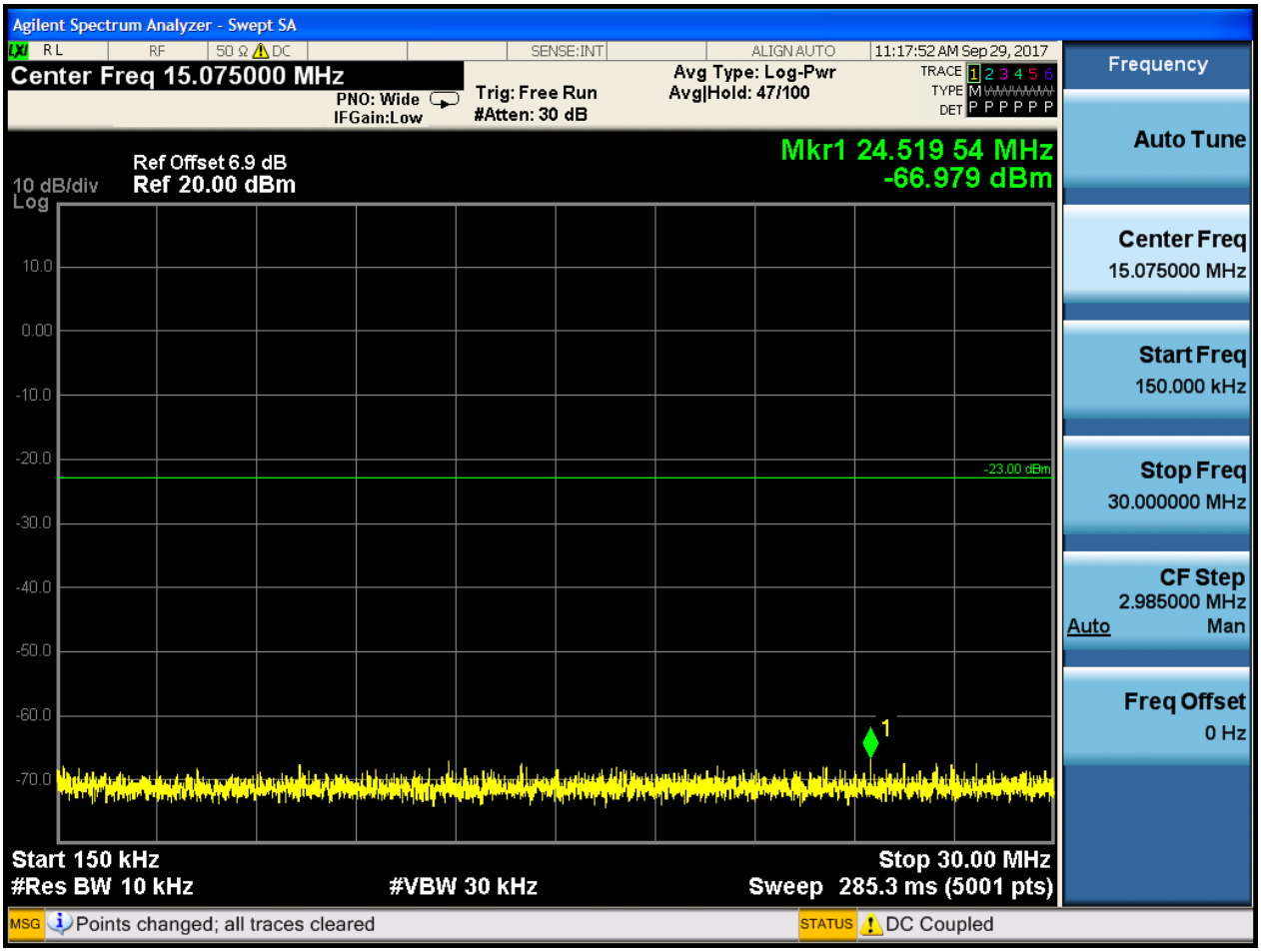


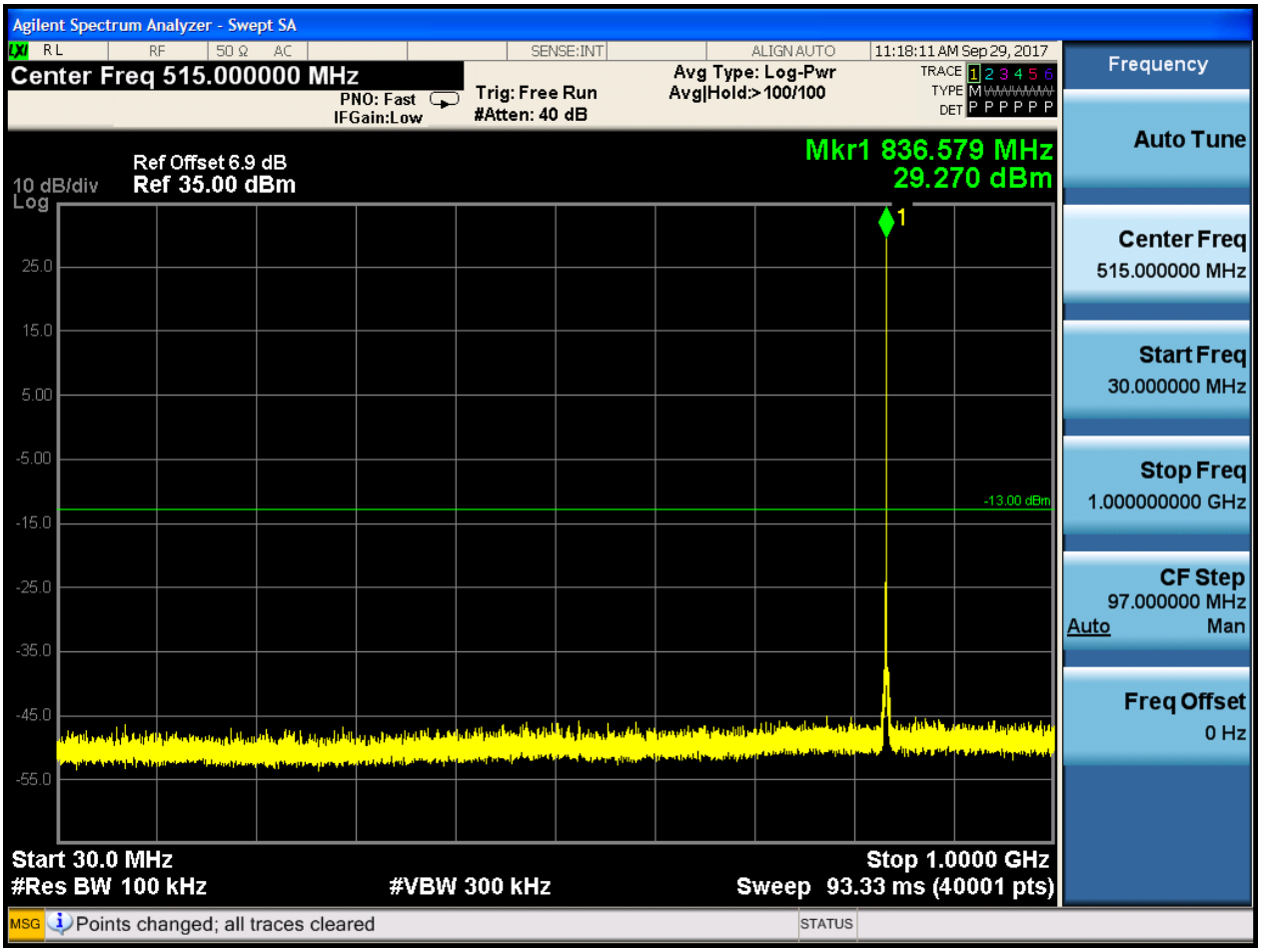


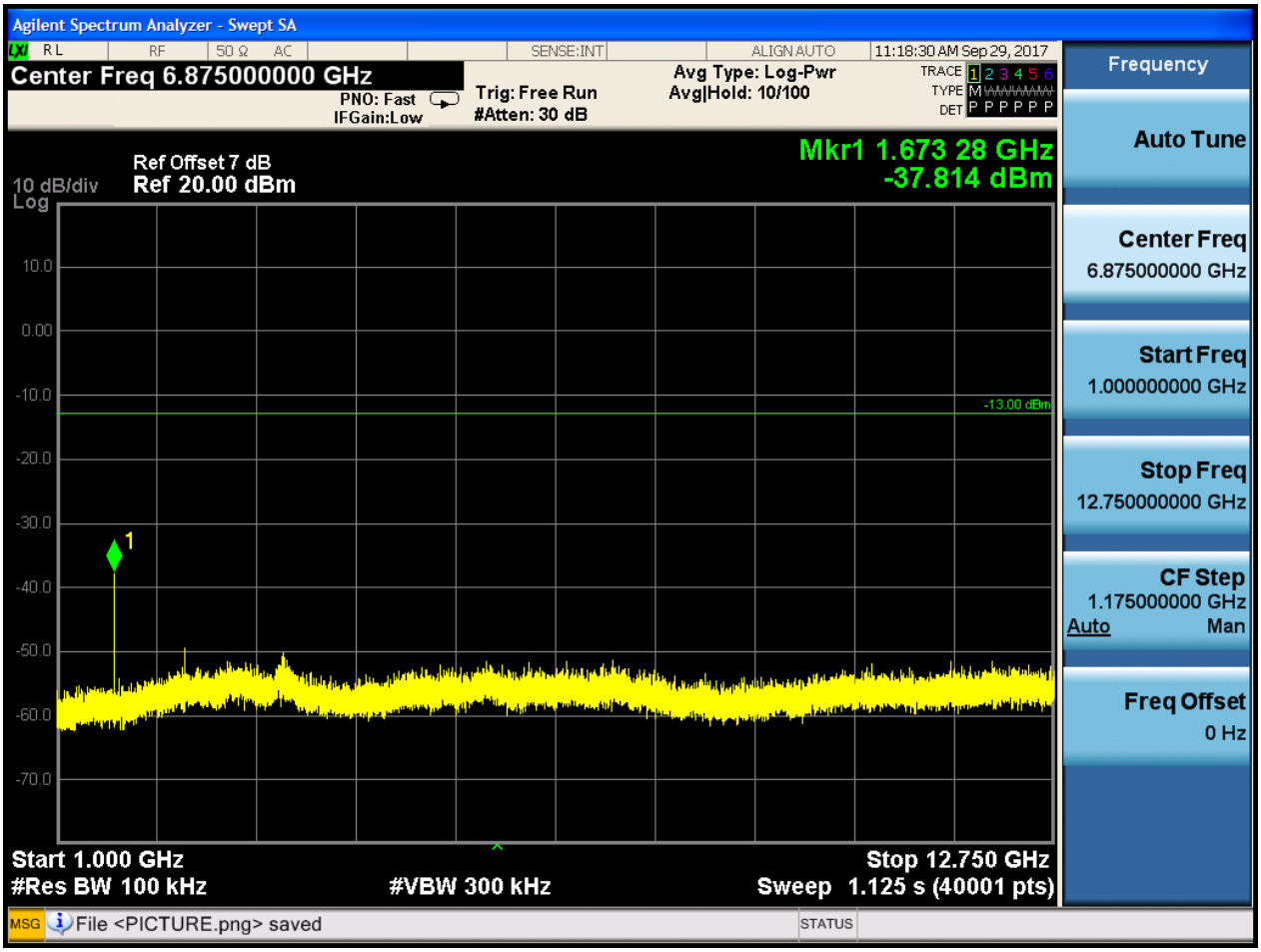


6.1.1.2.2 Test Channel = MCH

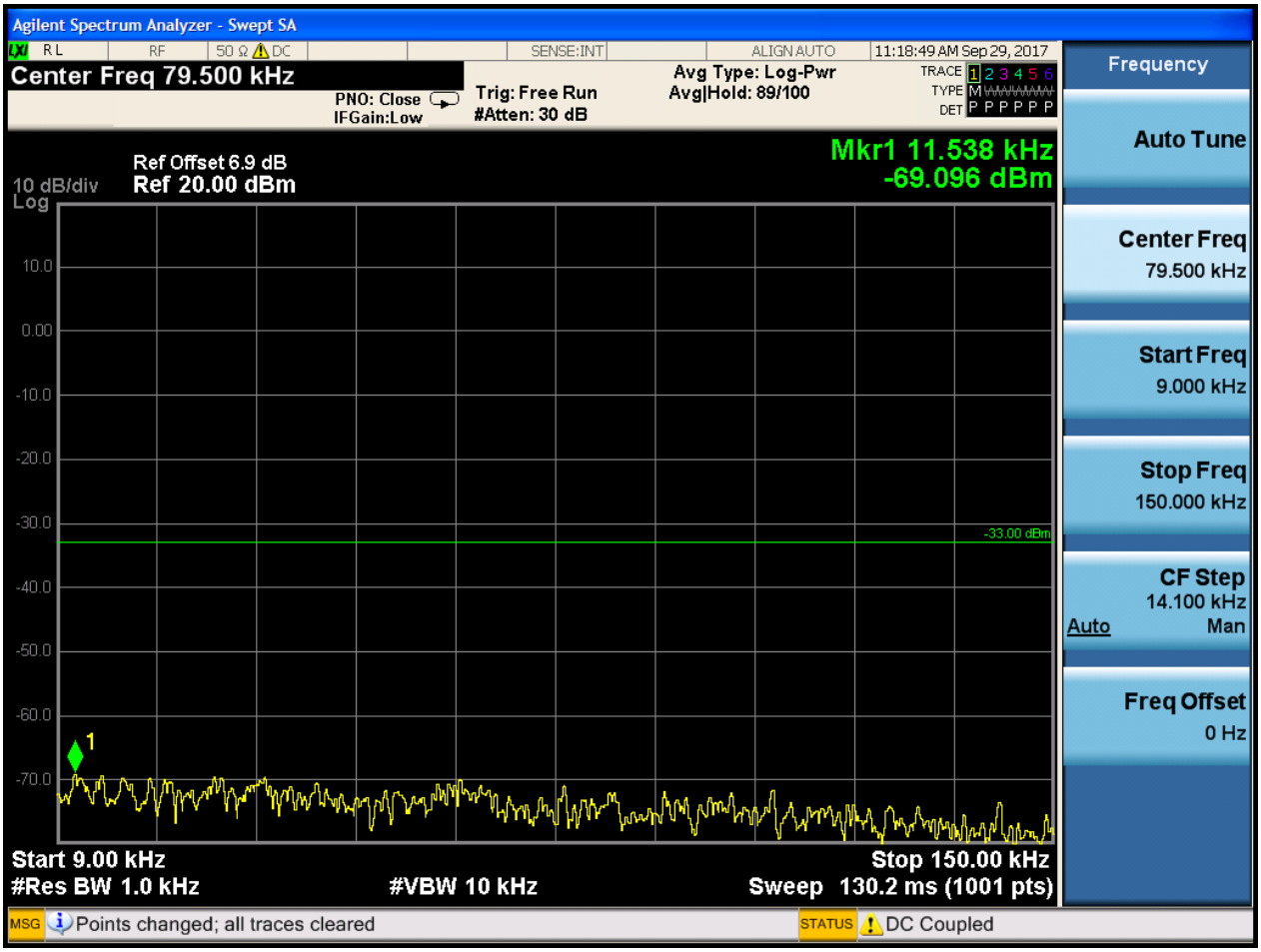


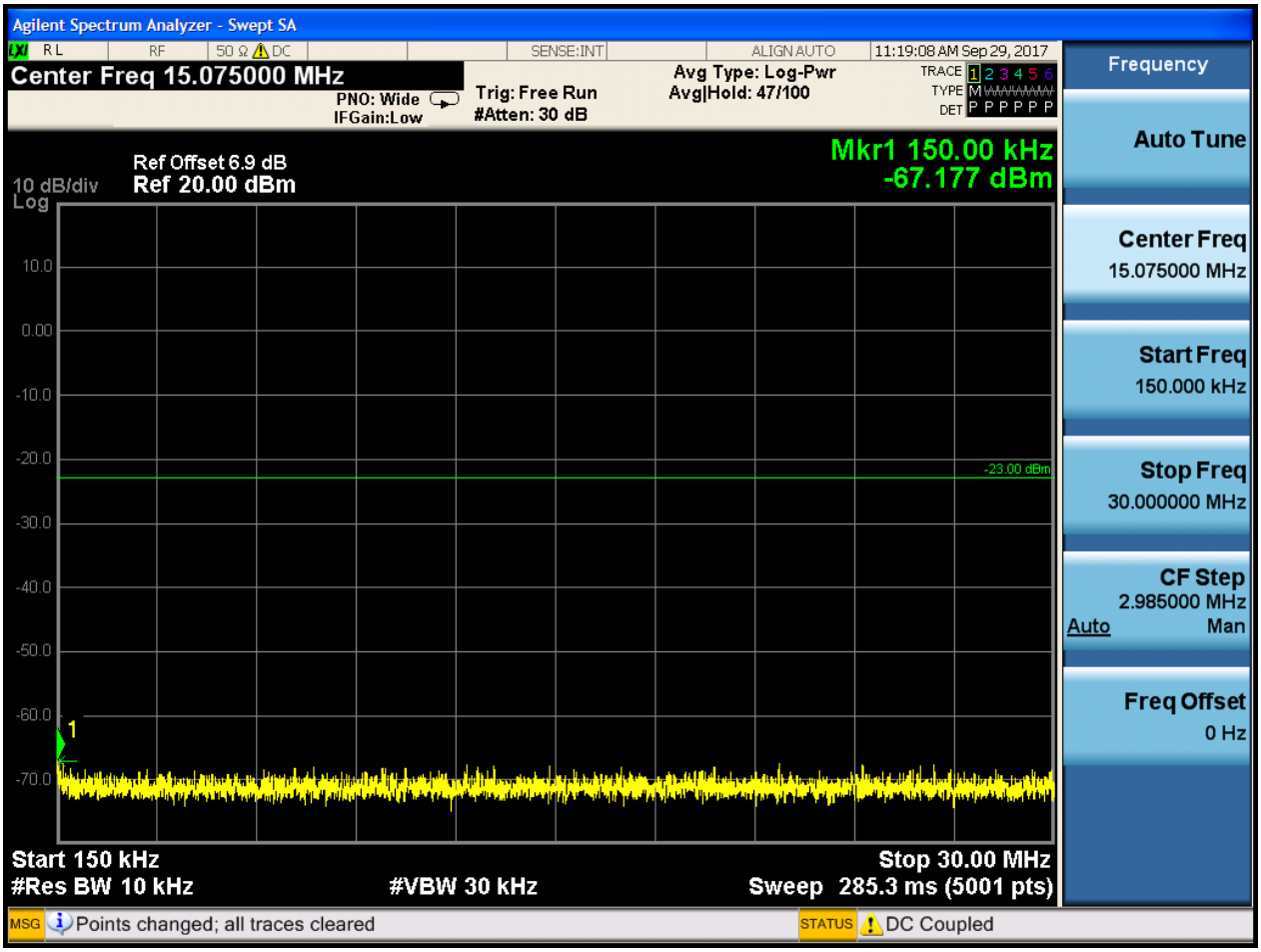


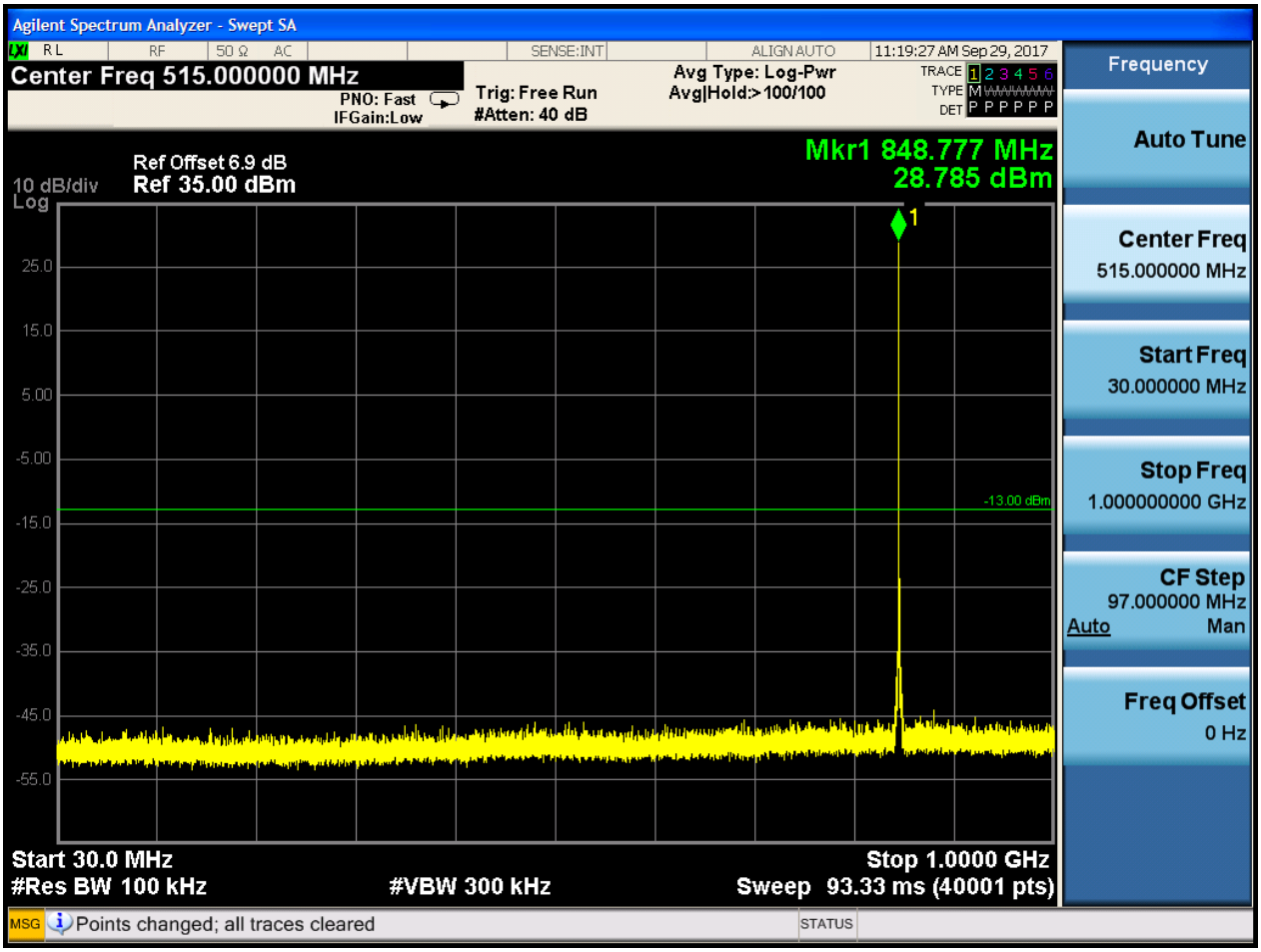


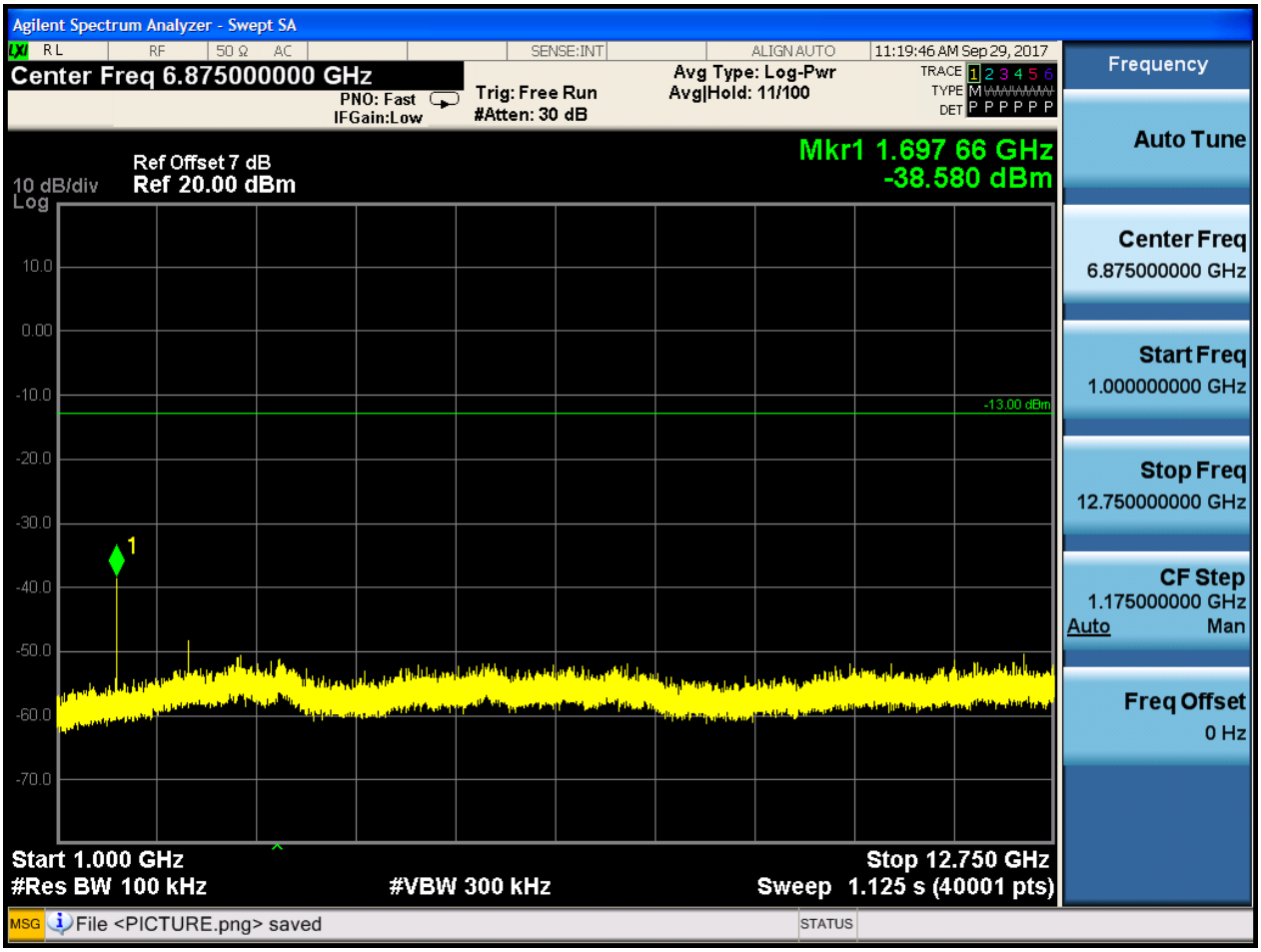


6.1.1.2.3 Test Channel = HCH





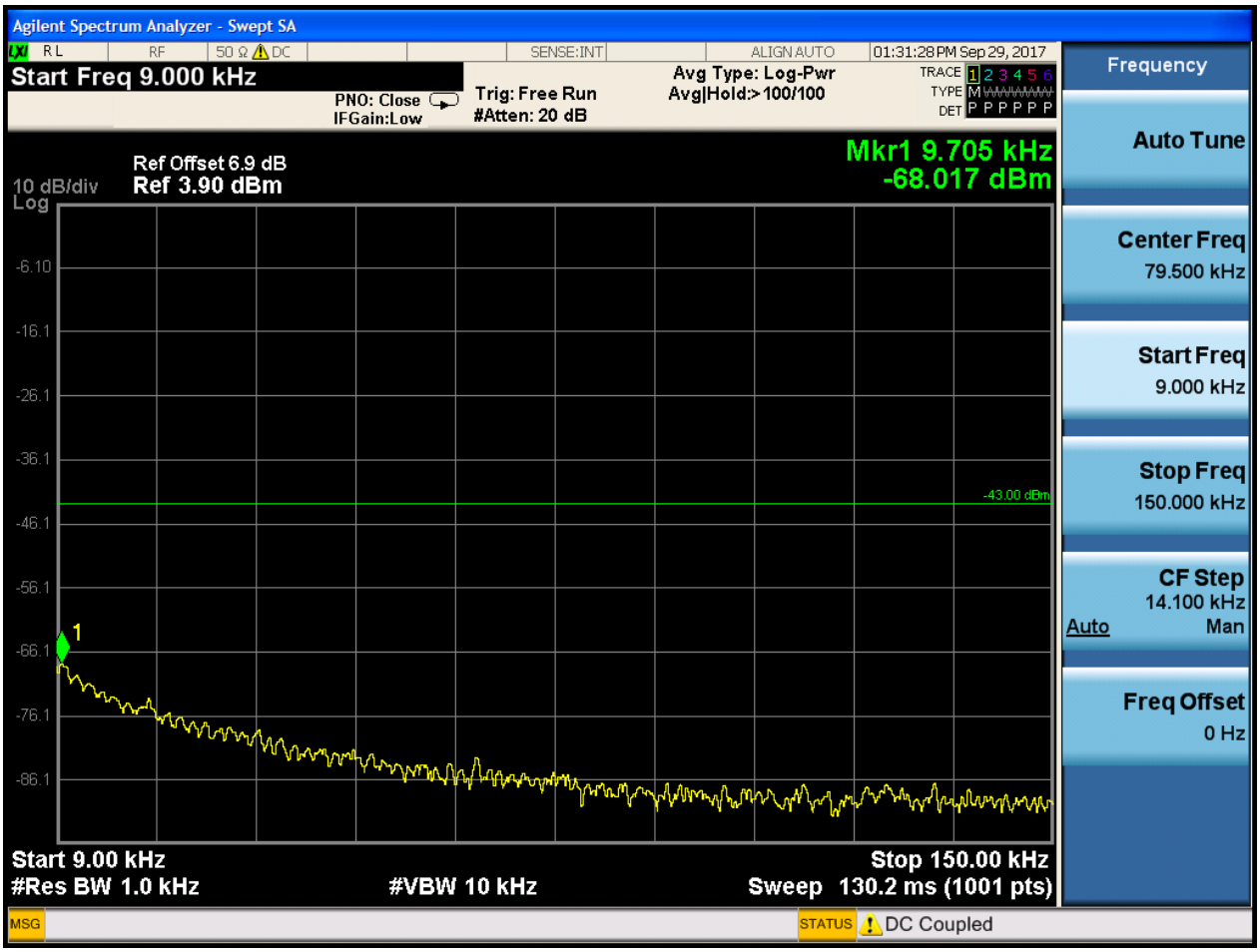


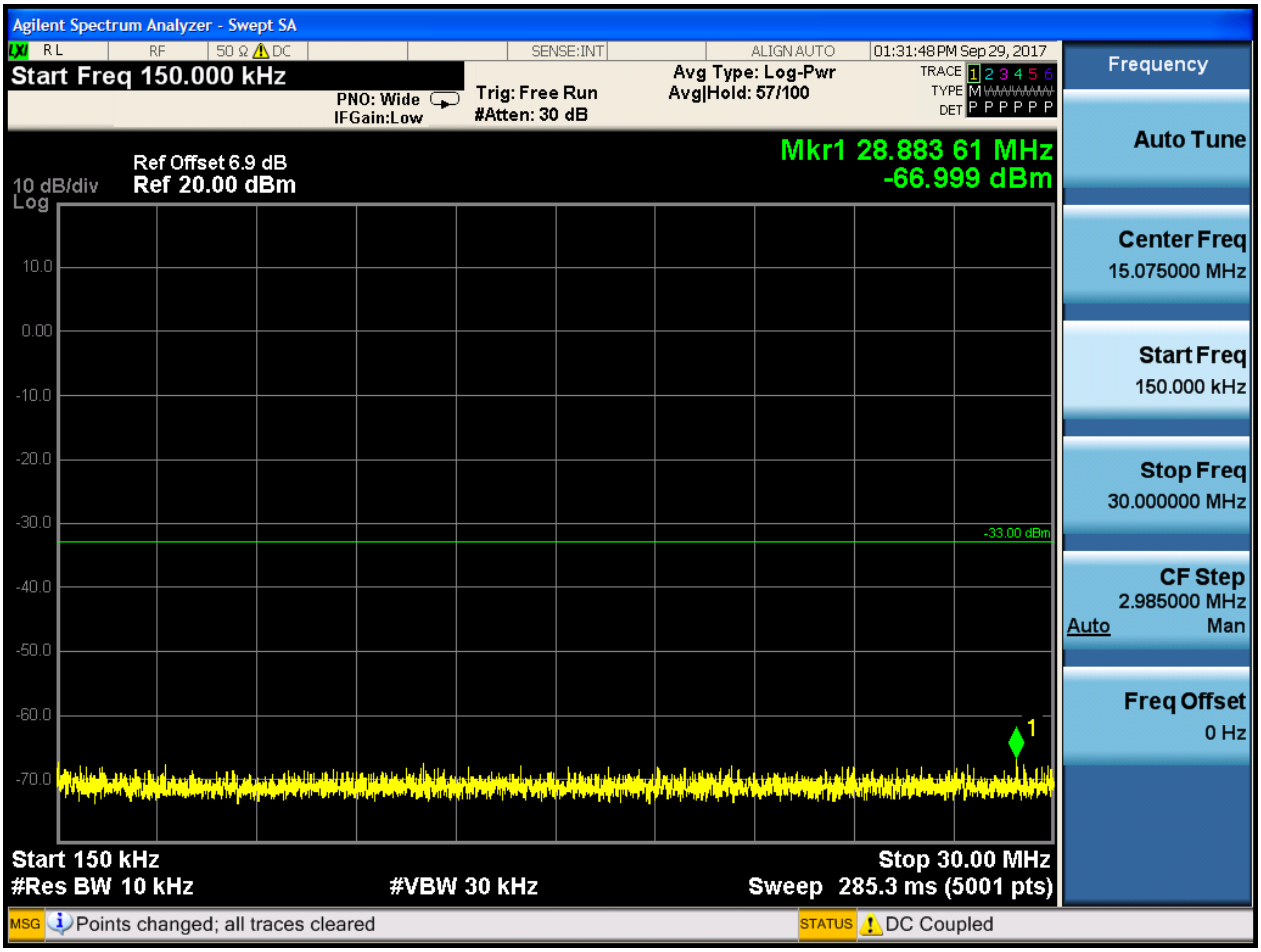


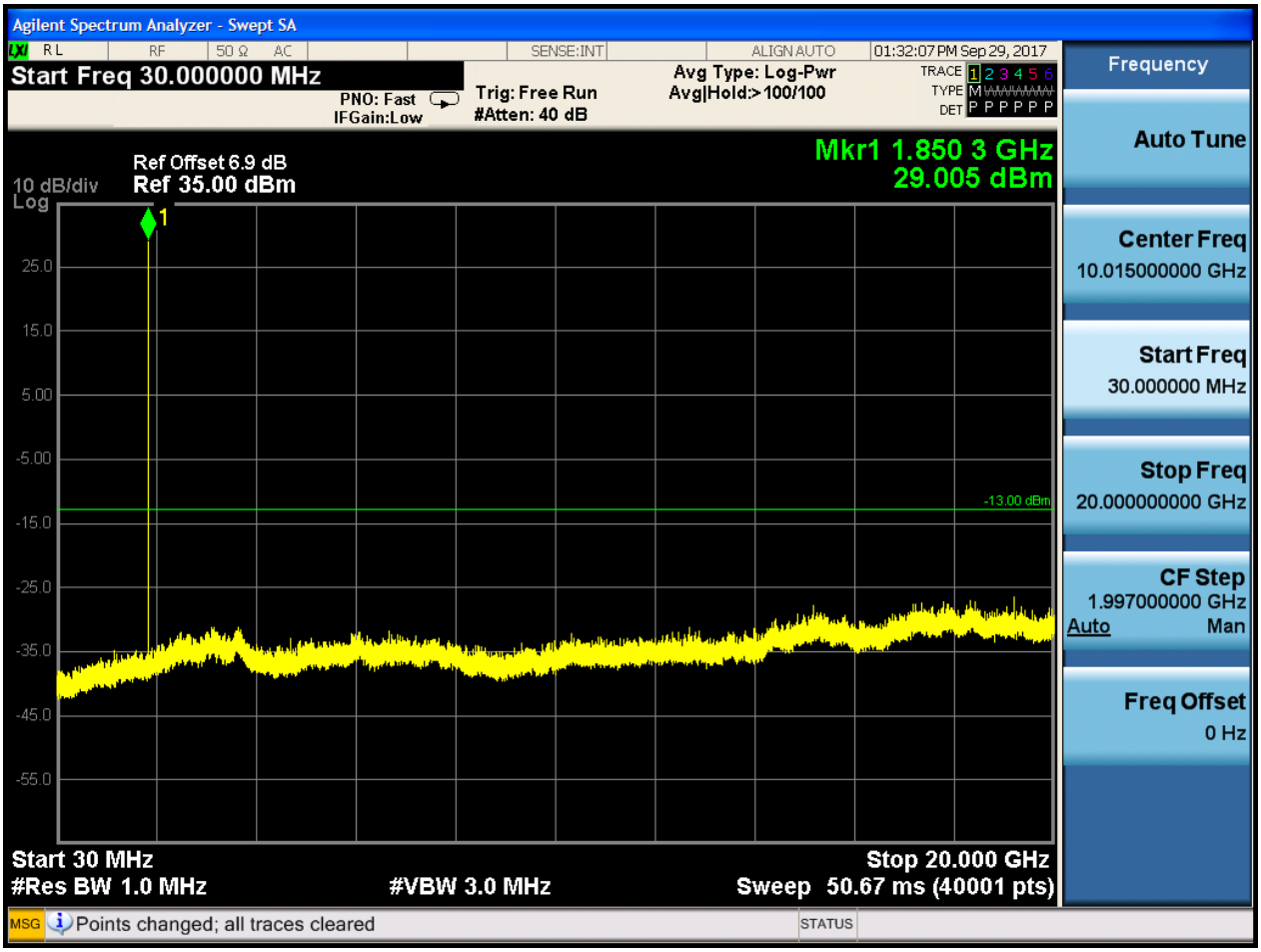
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

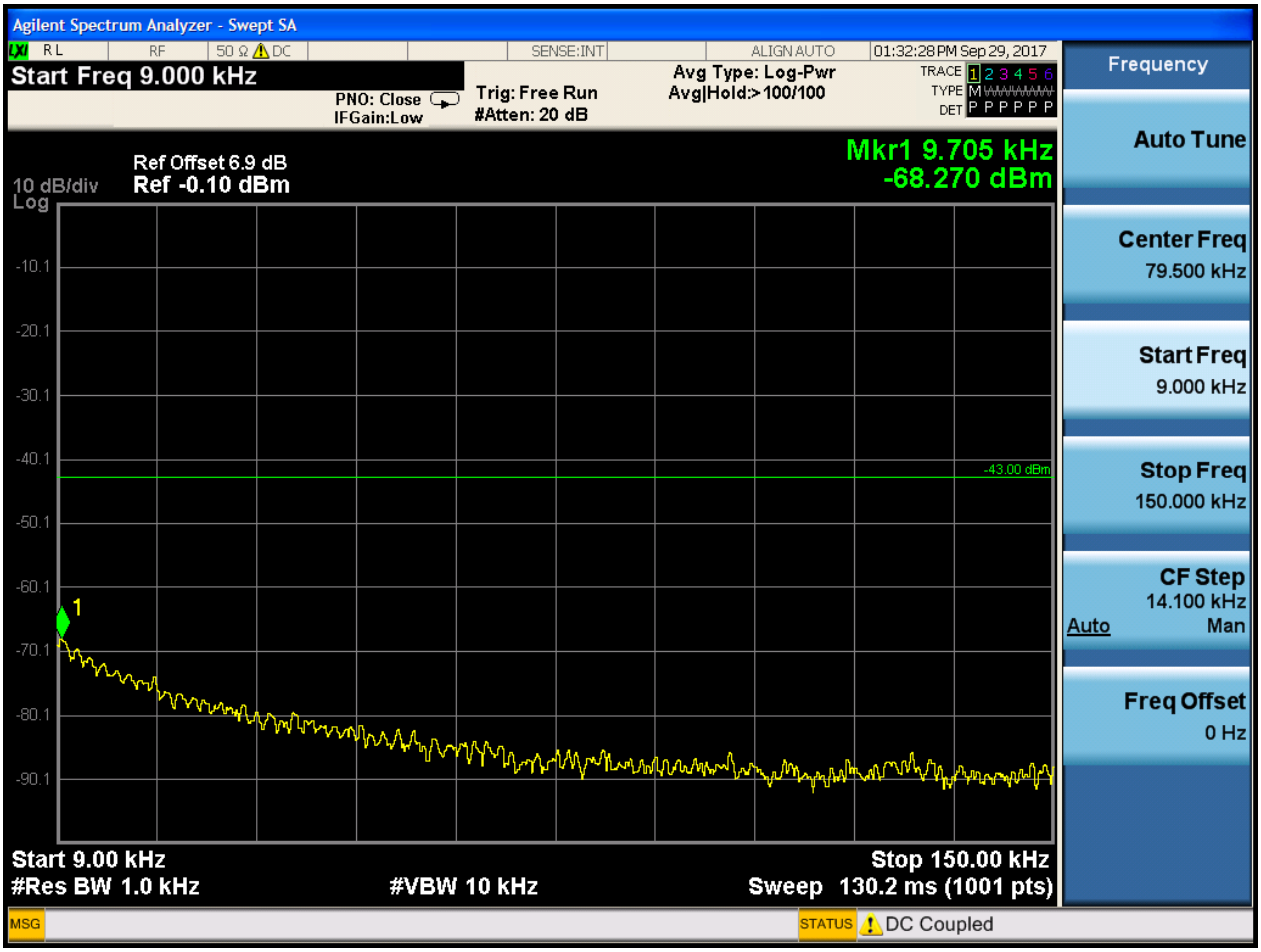
6.1.2.1.1 Test Channel = LCH

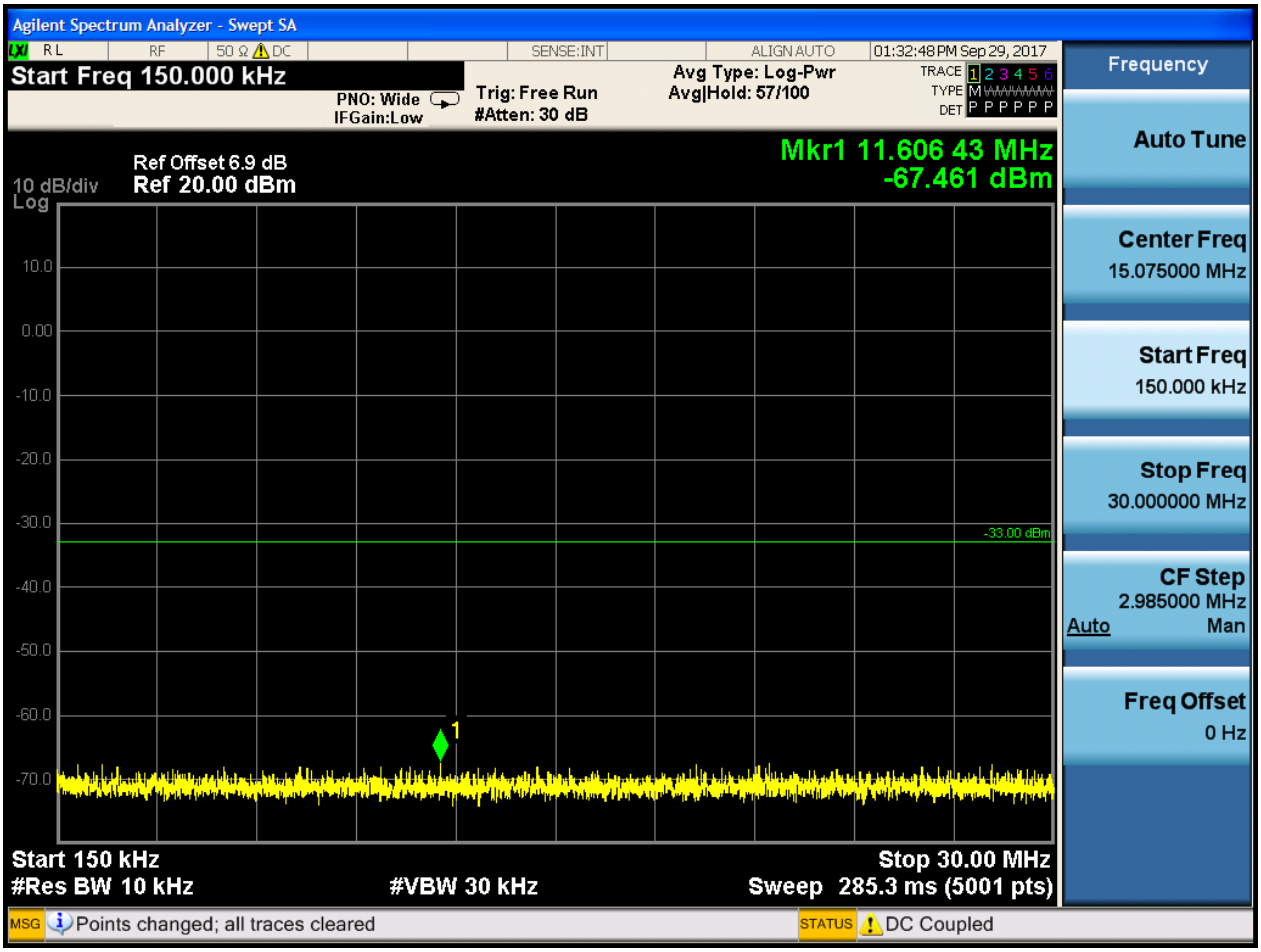


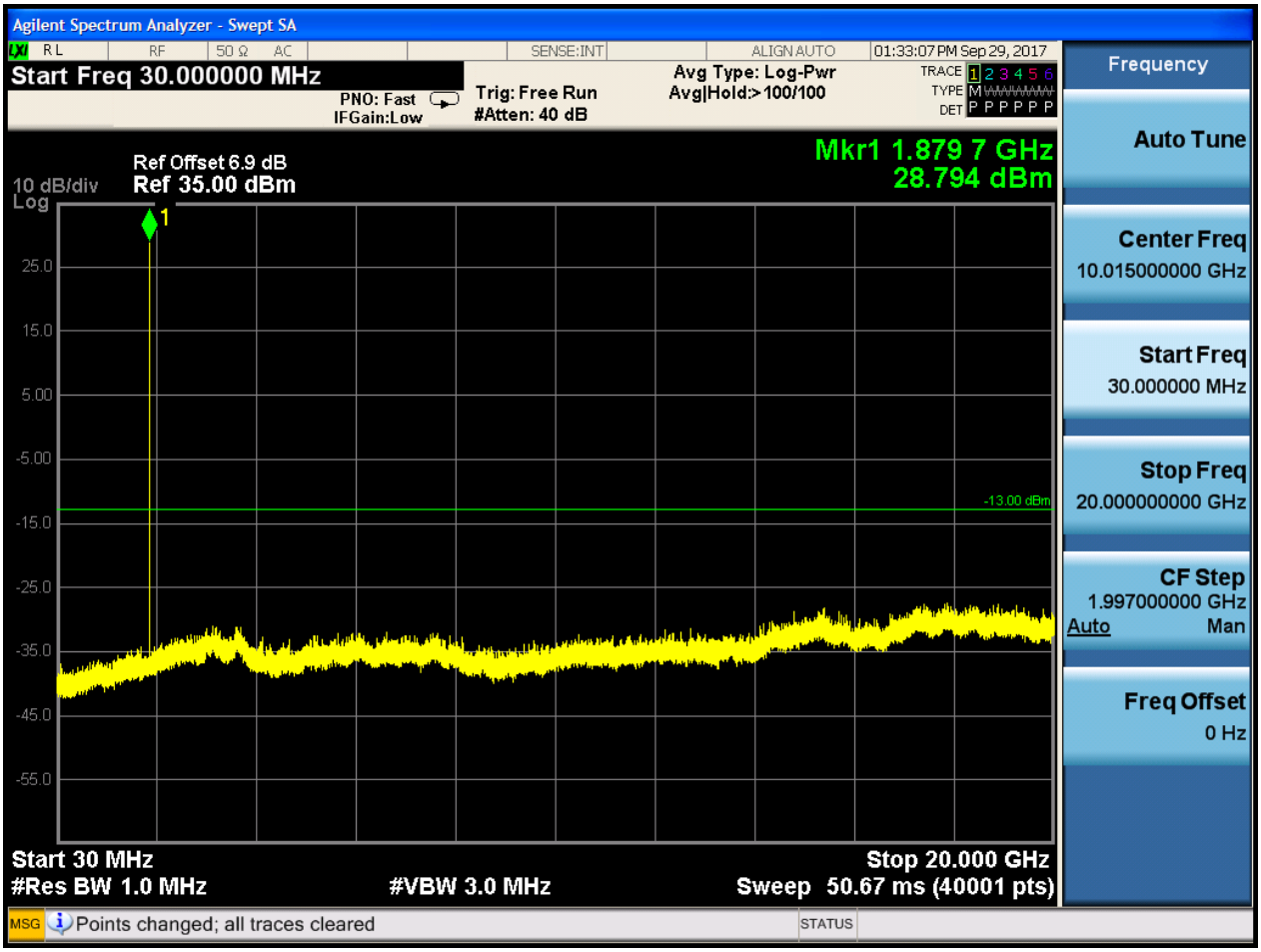




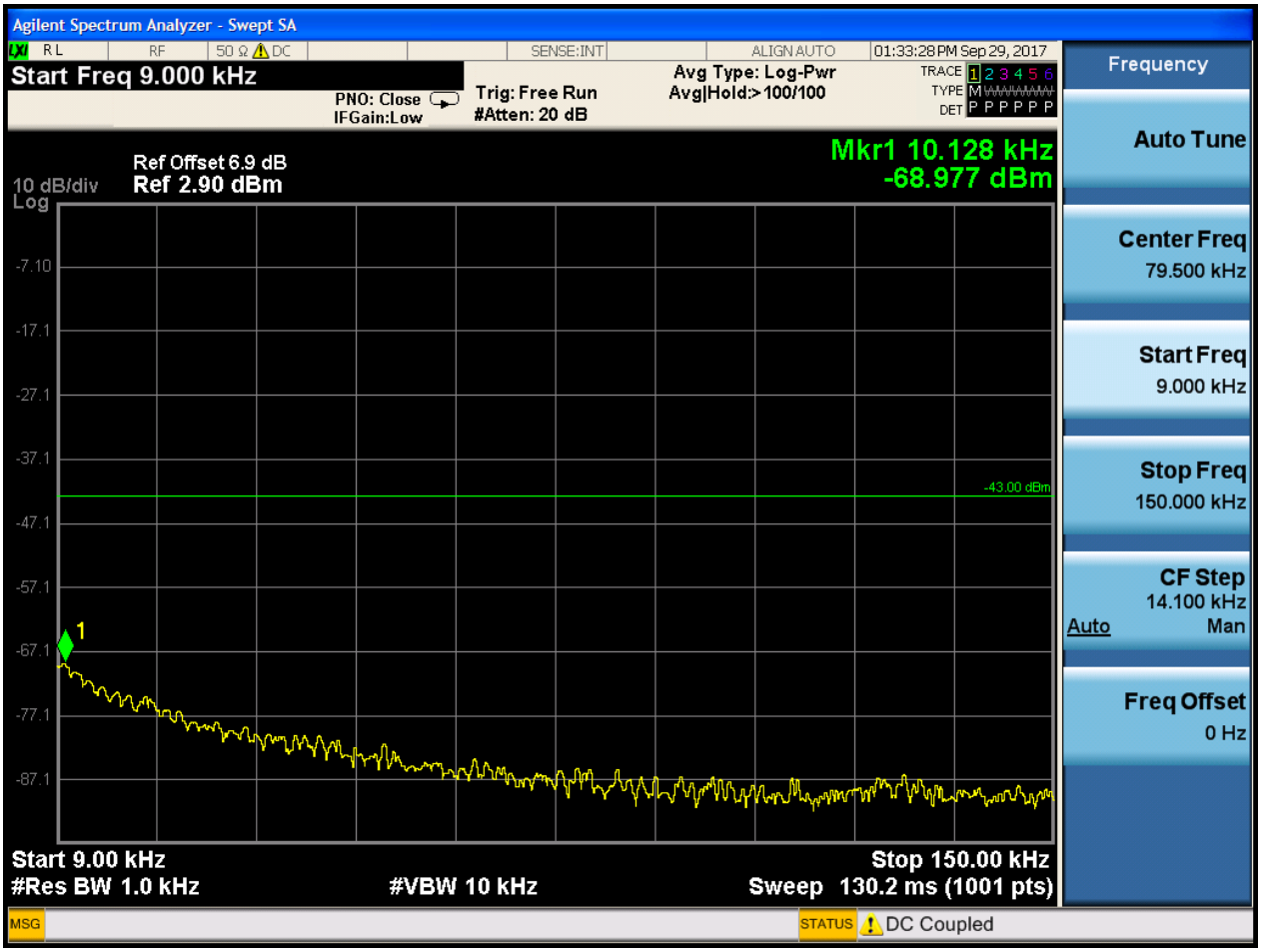
6.1.2.1.2 Test Channel = MCH

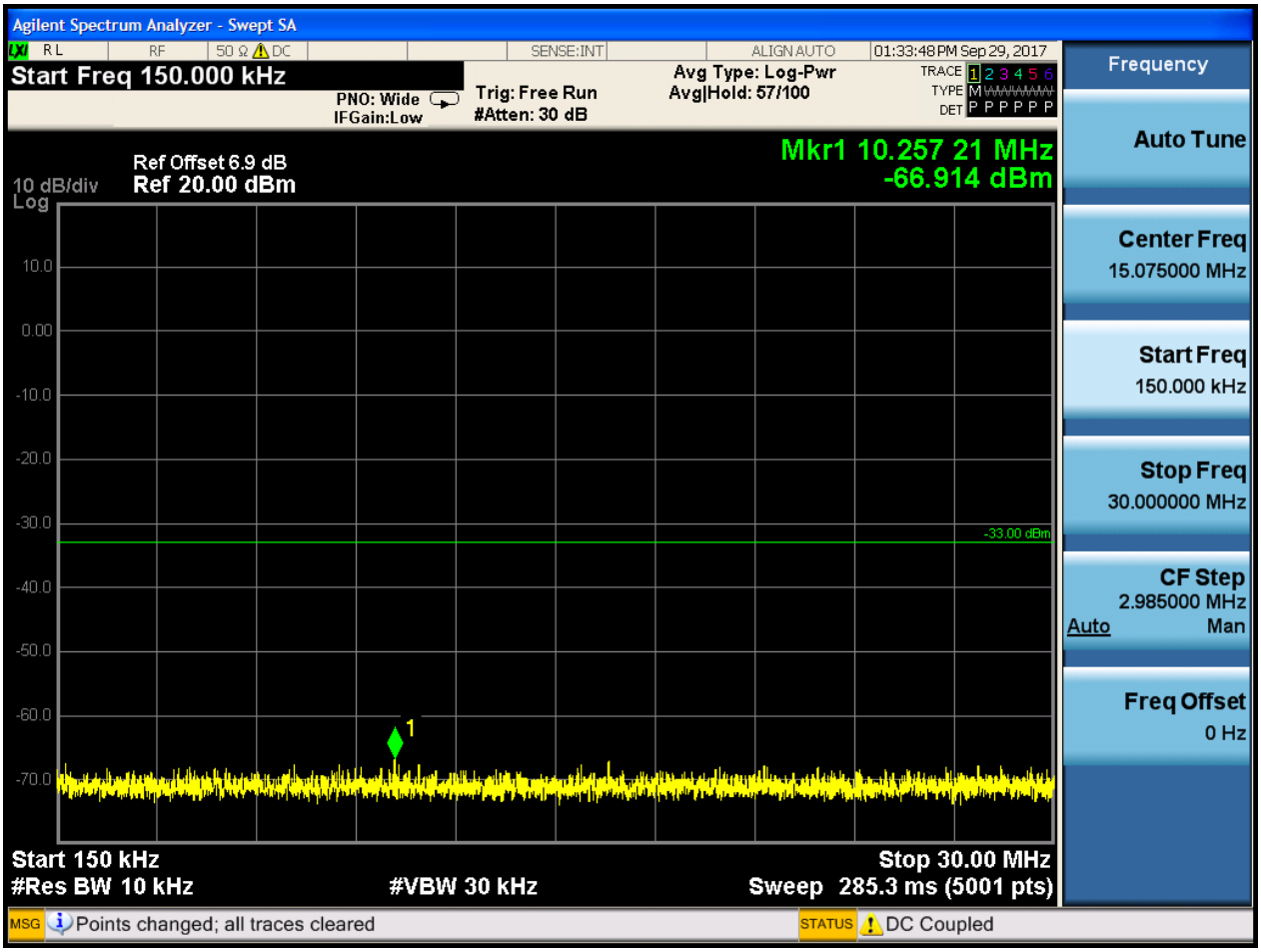


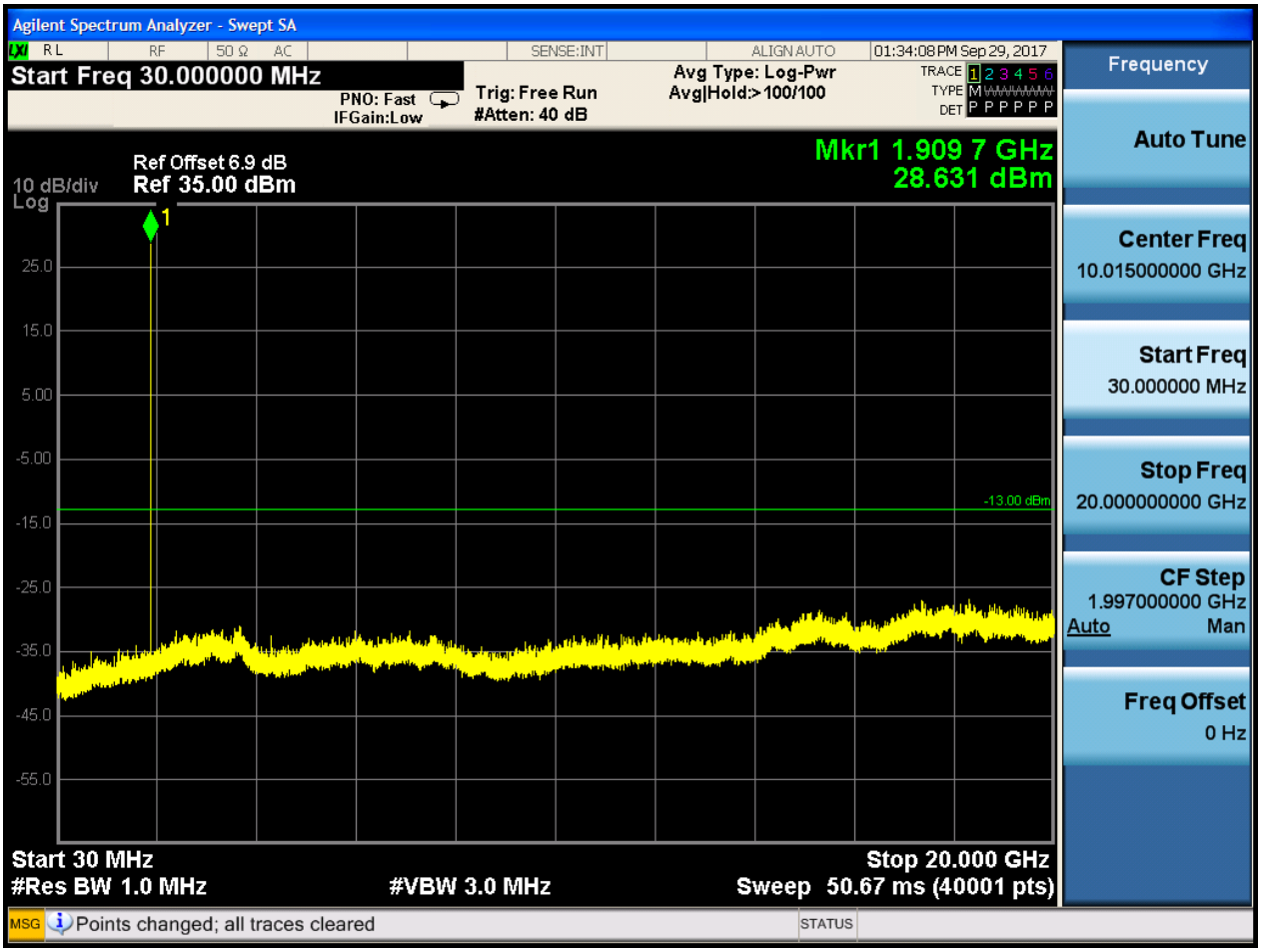




6.1.2.1.3 Test Channel = HCH

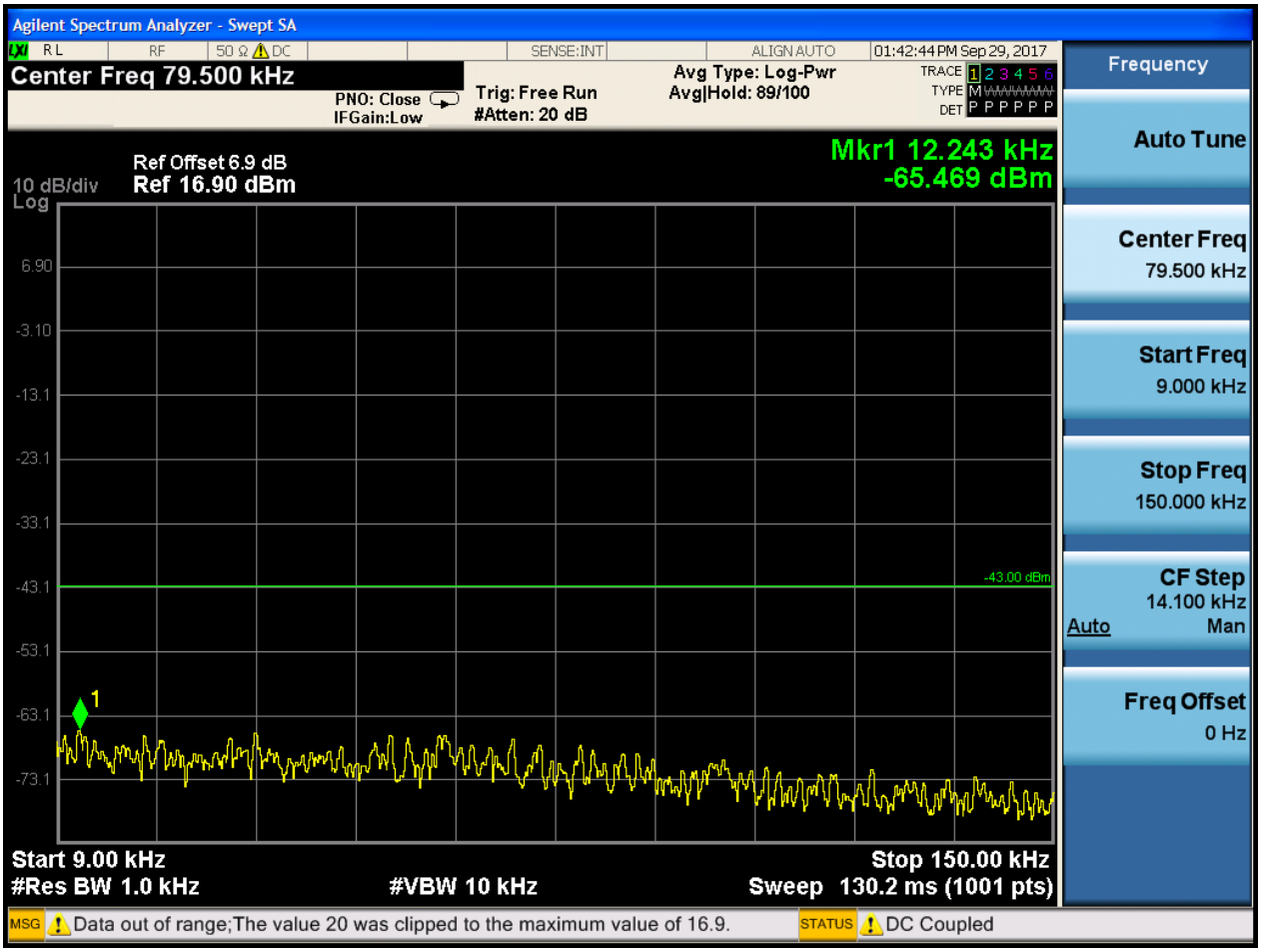


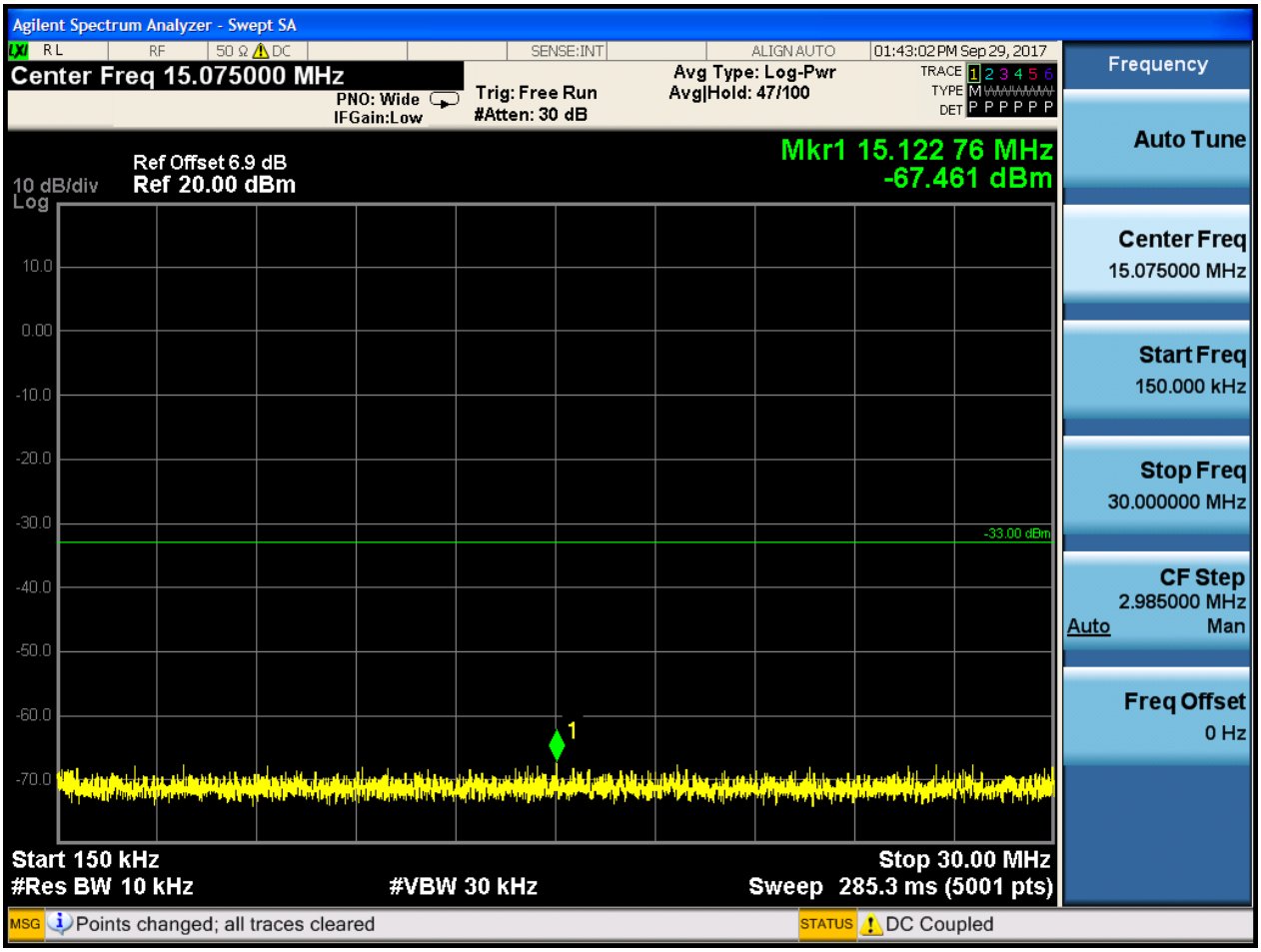


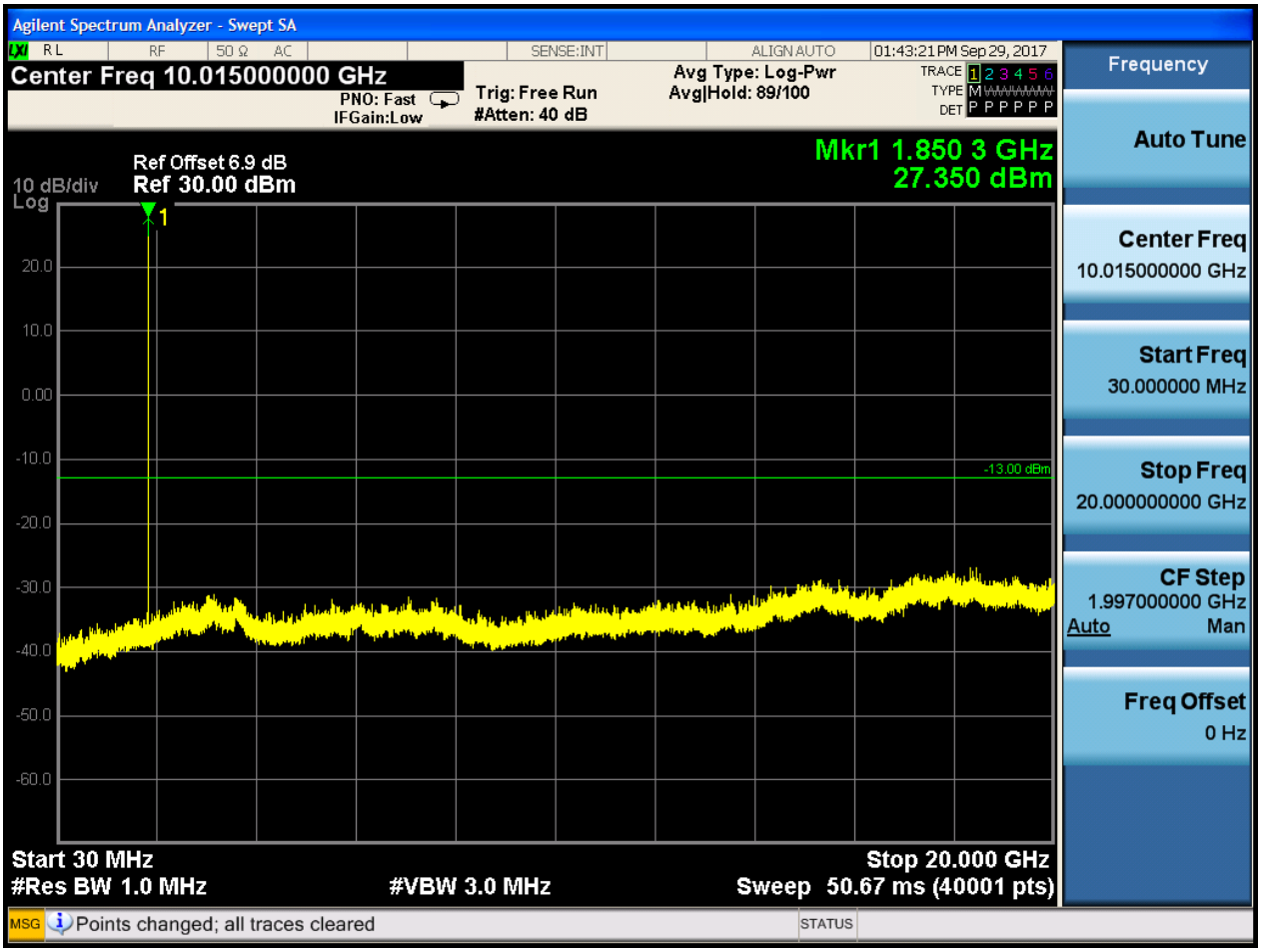


6.1.2.2 Test Mode = GSM/TM2

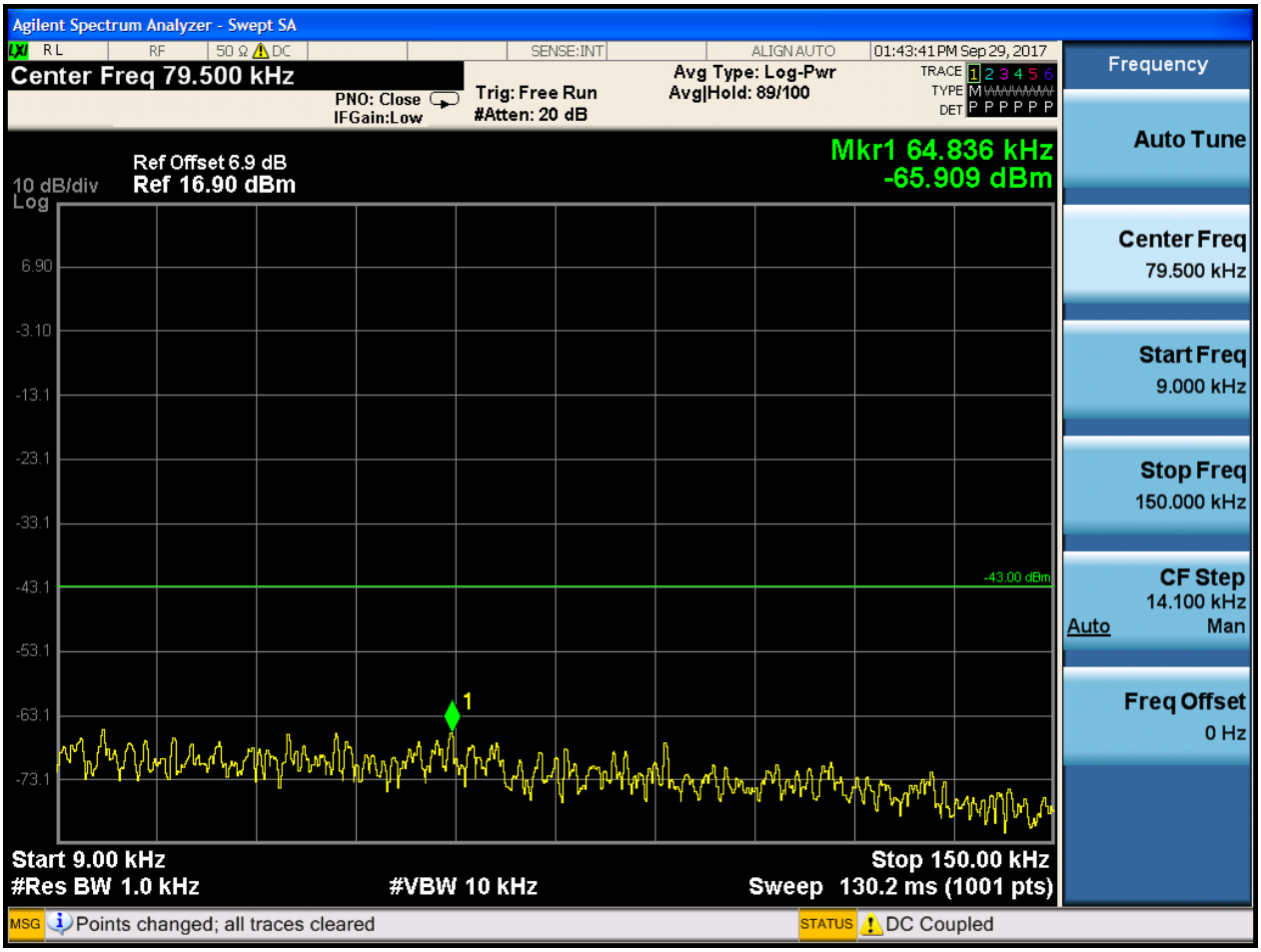
6.1.2.2.1 Test Channel = LCH

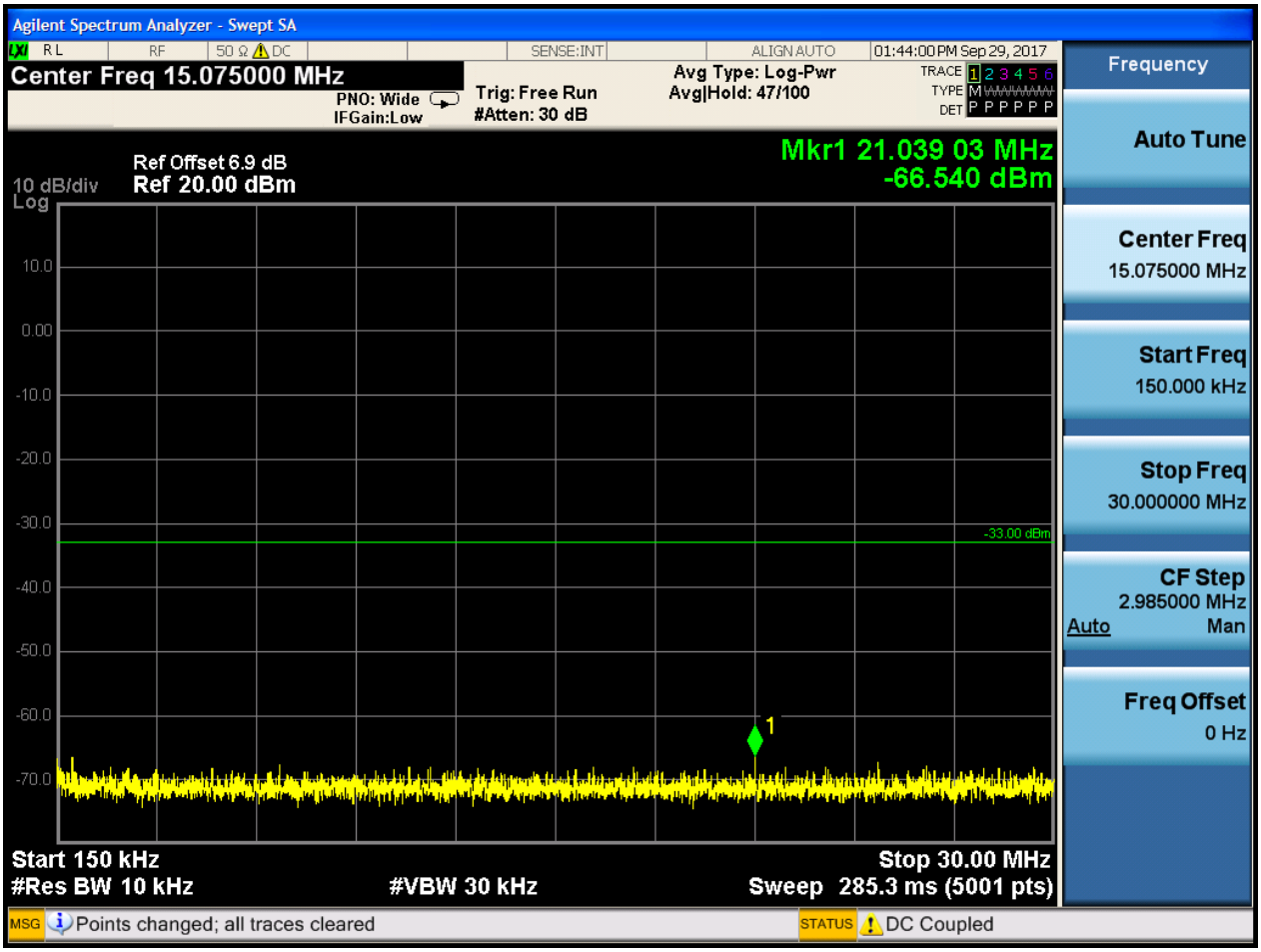


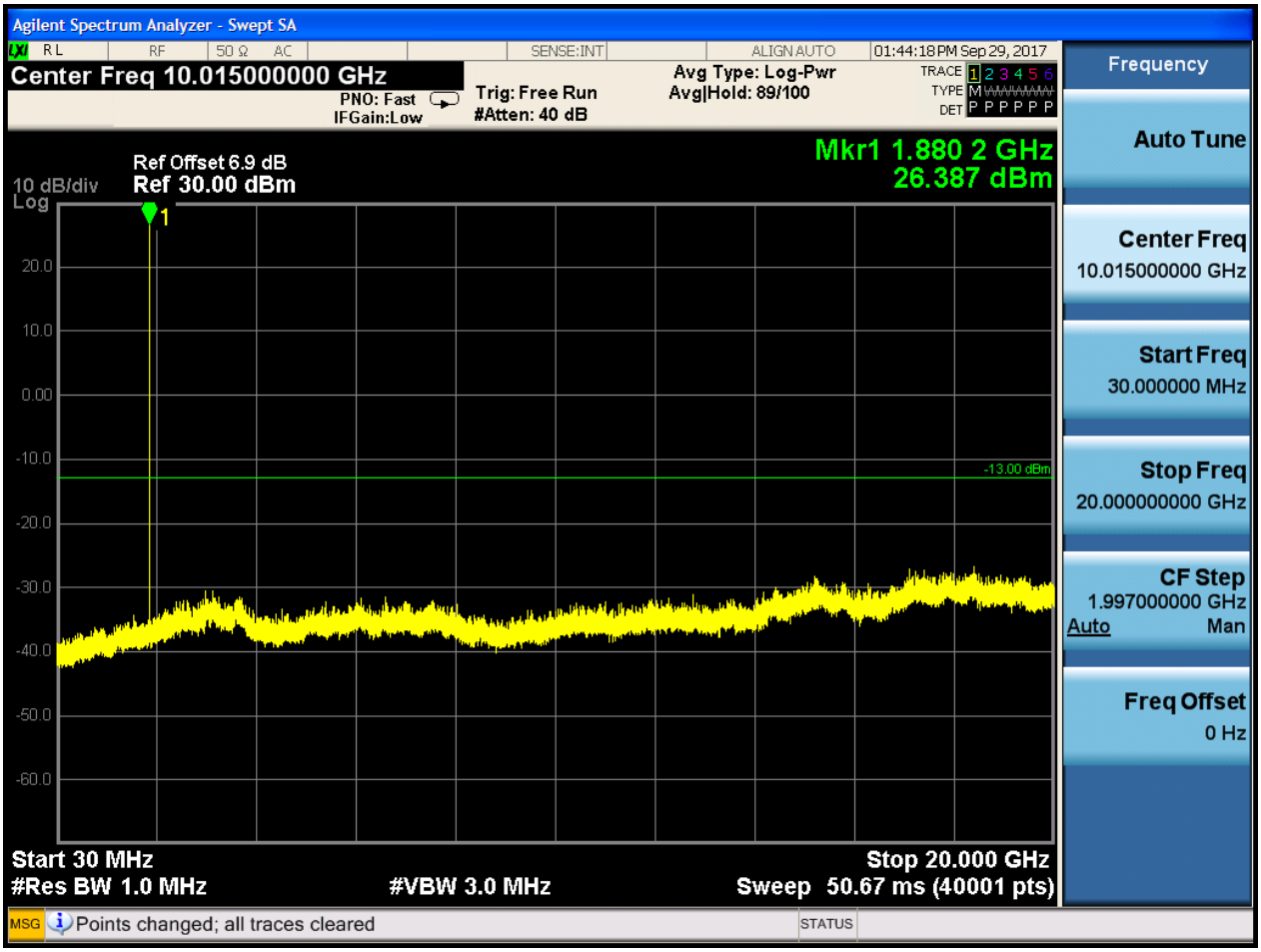




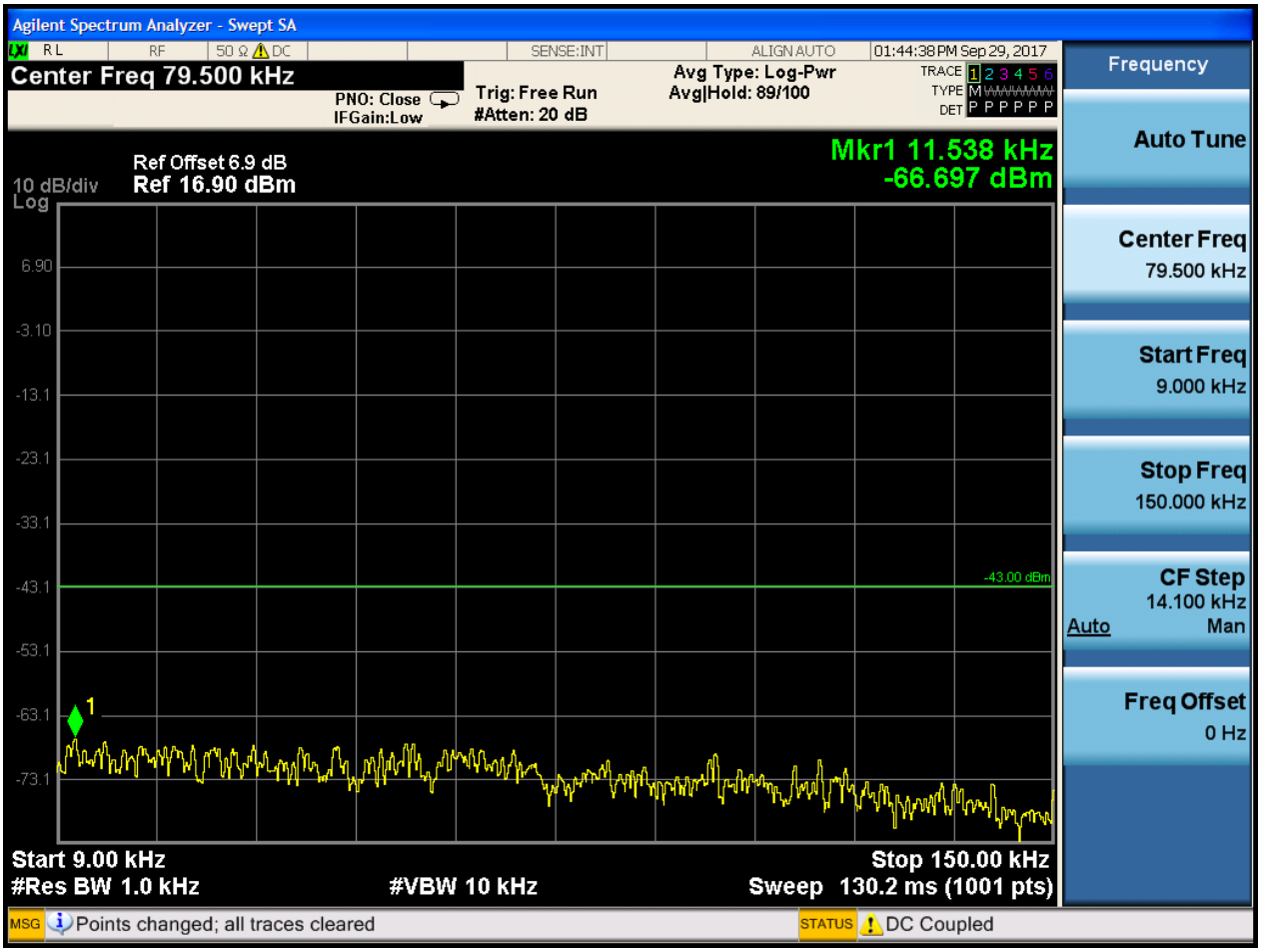
6.1.2.2.2 Test Channel = MCH

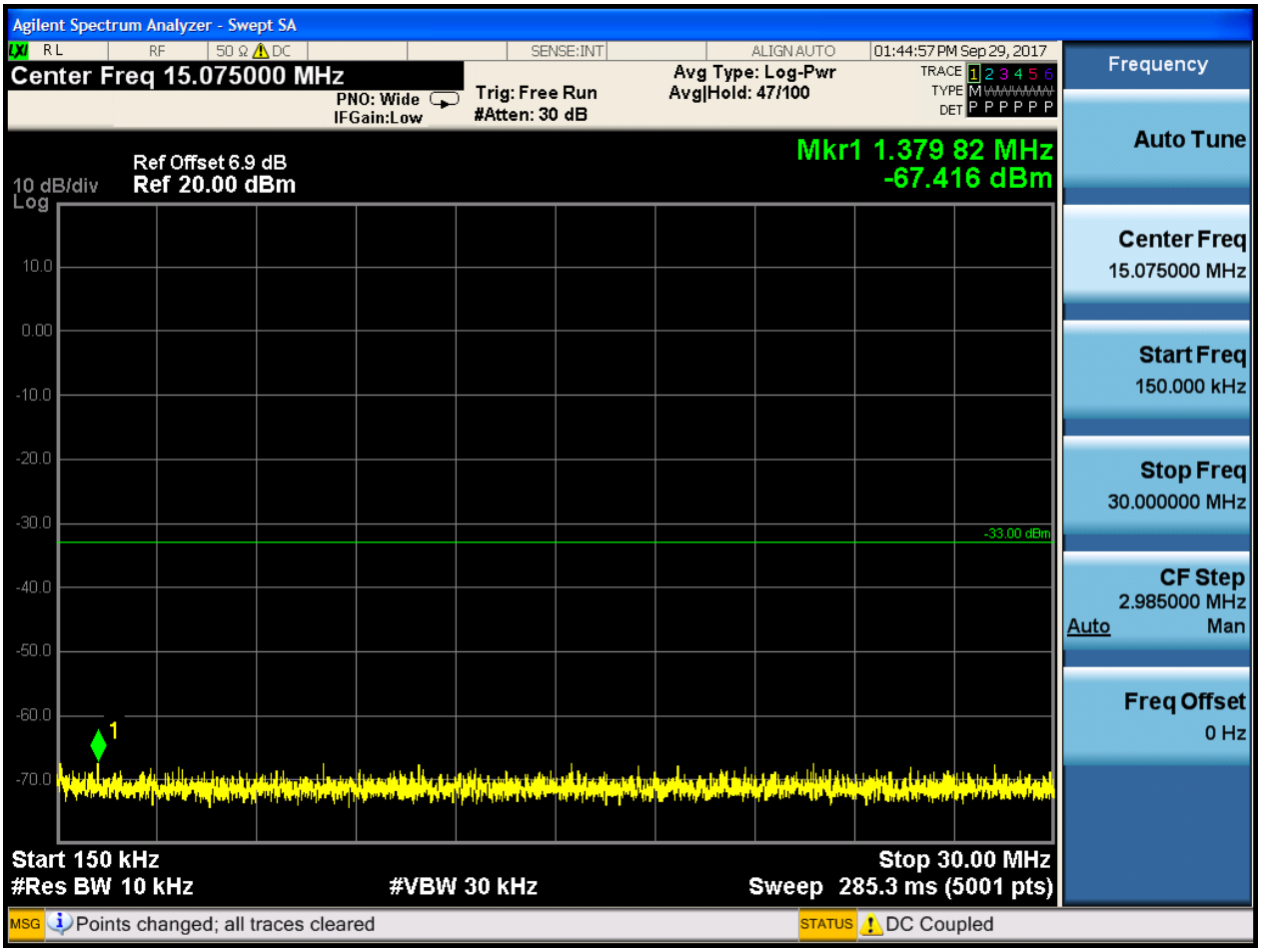


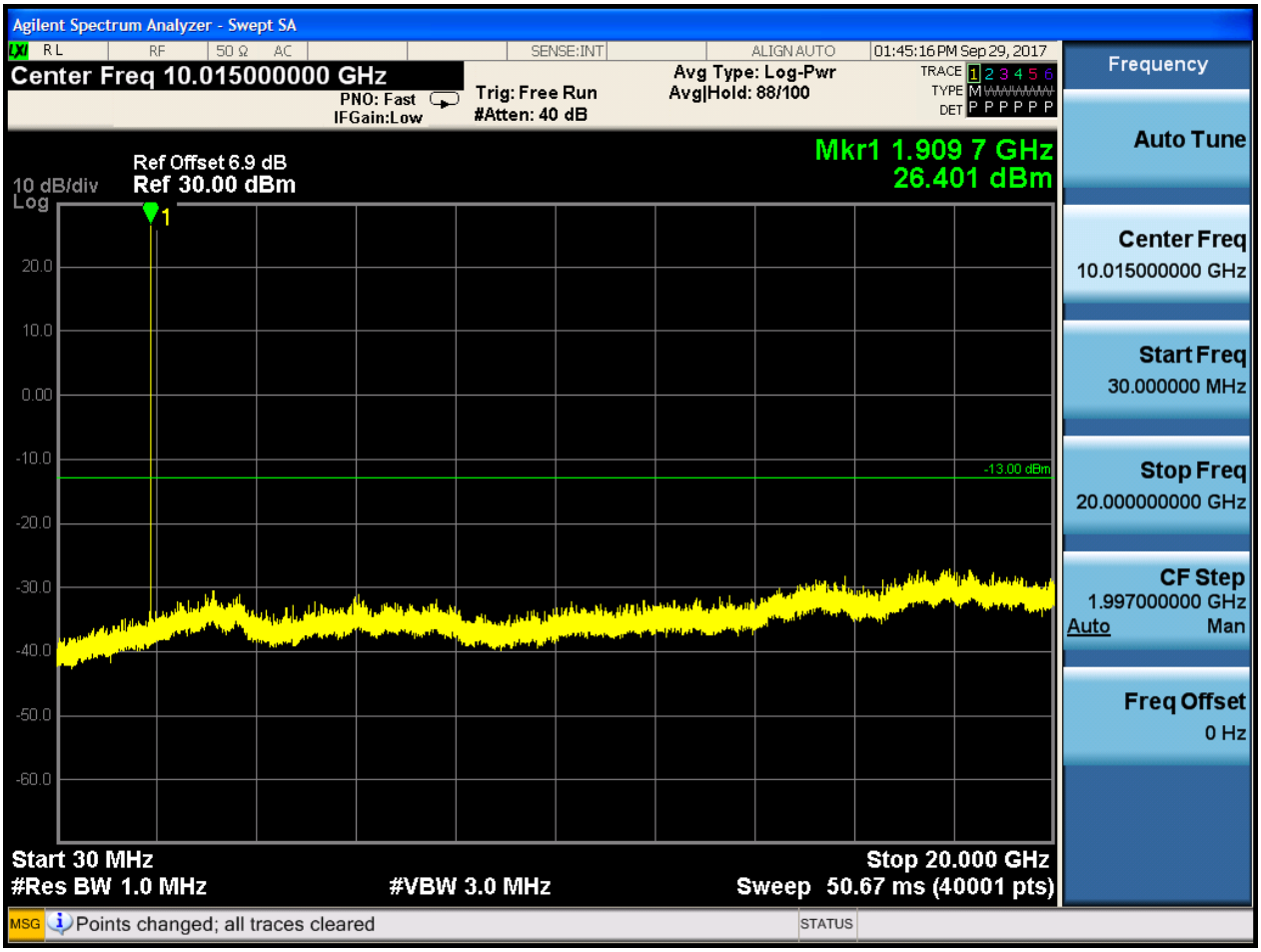




6.1.2.2.3 Test Channel = HCH







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

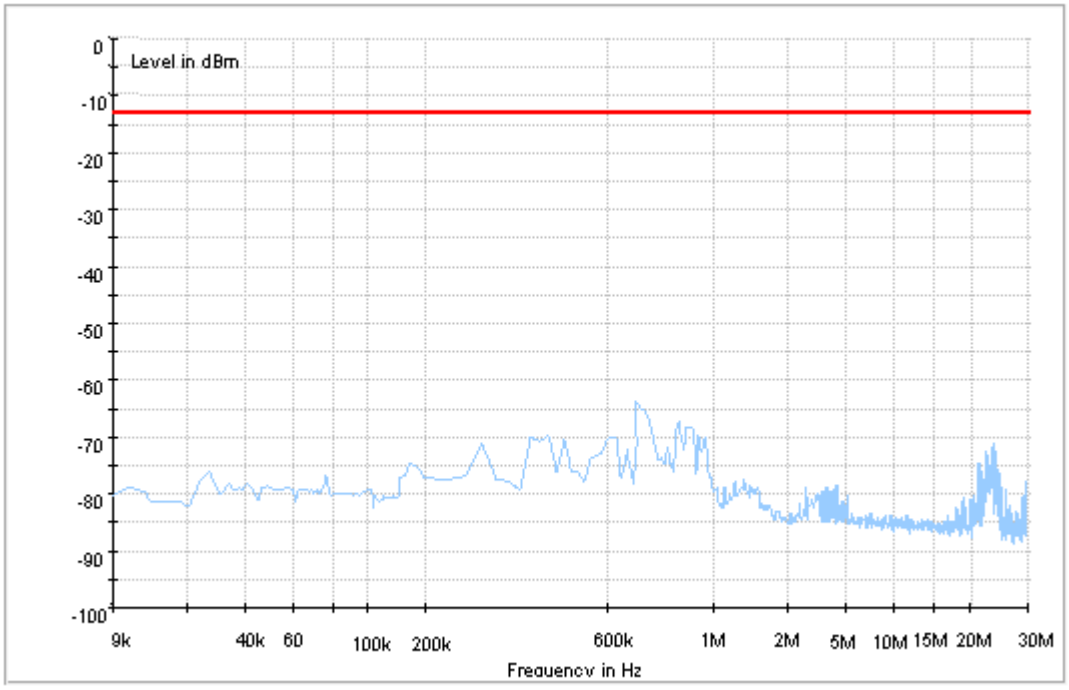
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

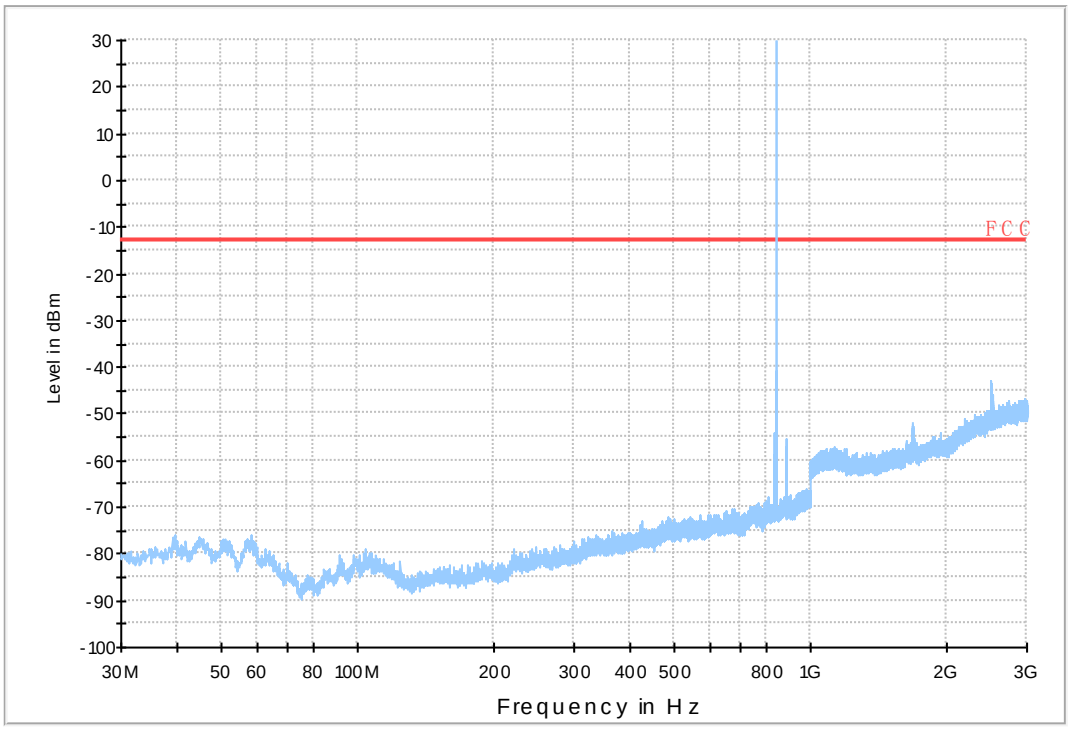
7.1 For GSM

7.1.1 Test Band = GSM850_ANT1

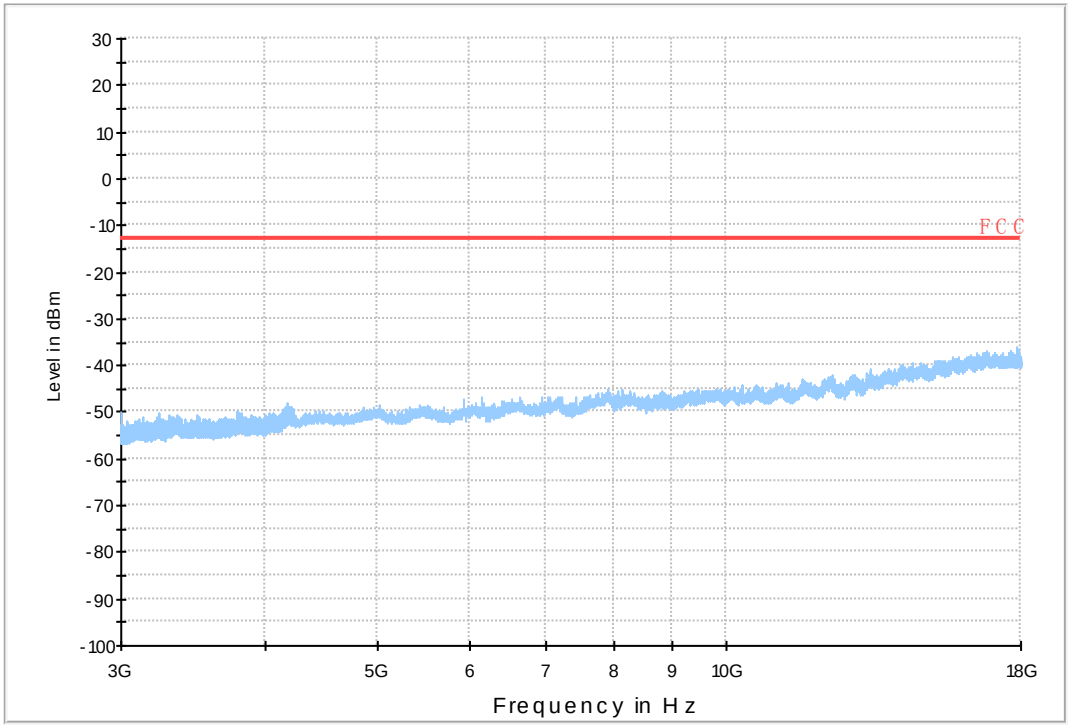
7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

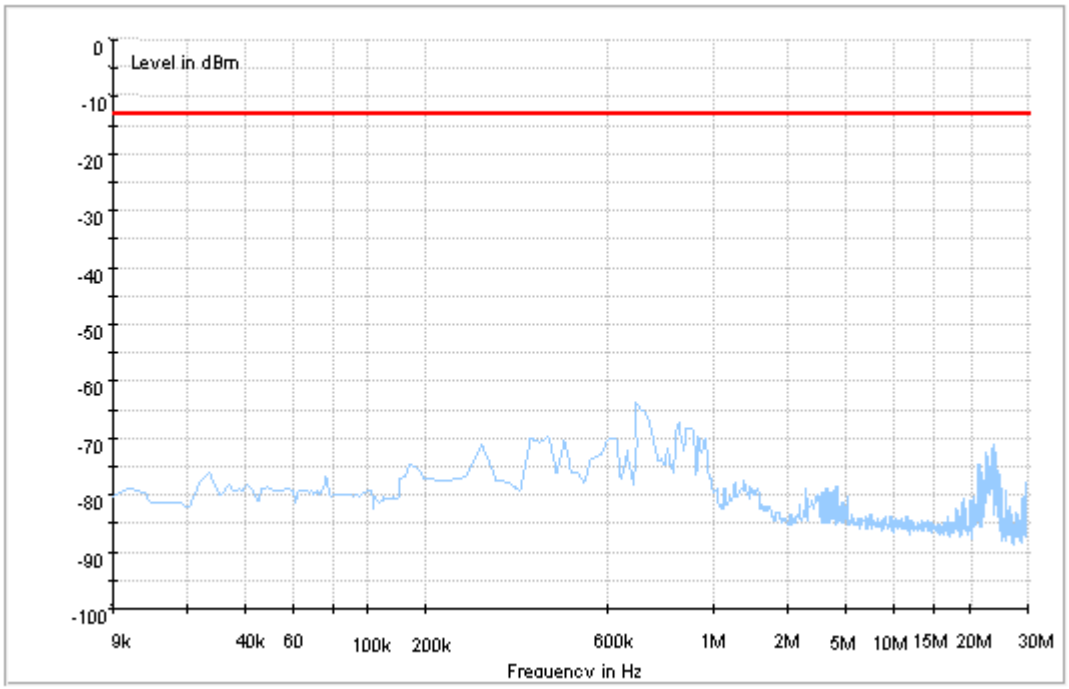


Copy of FCC PART22 GSM850_H

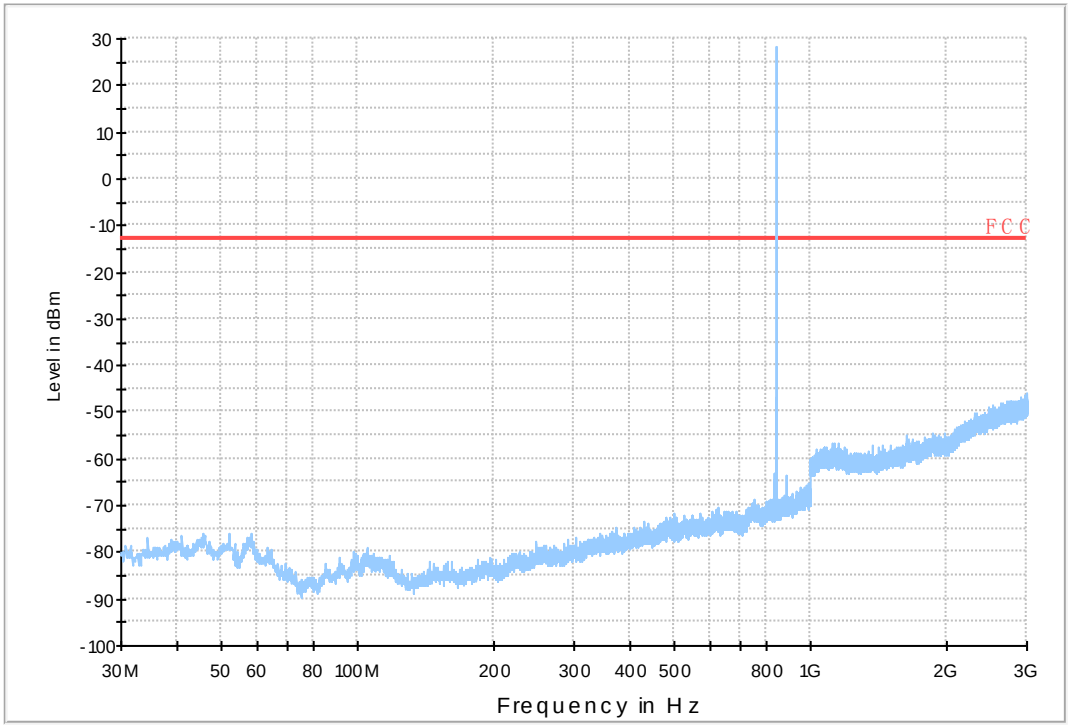


7.1.2 Test Band = GSM850_ANT2

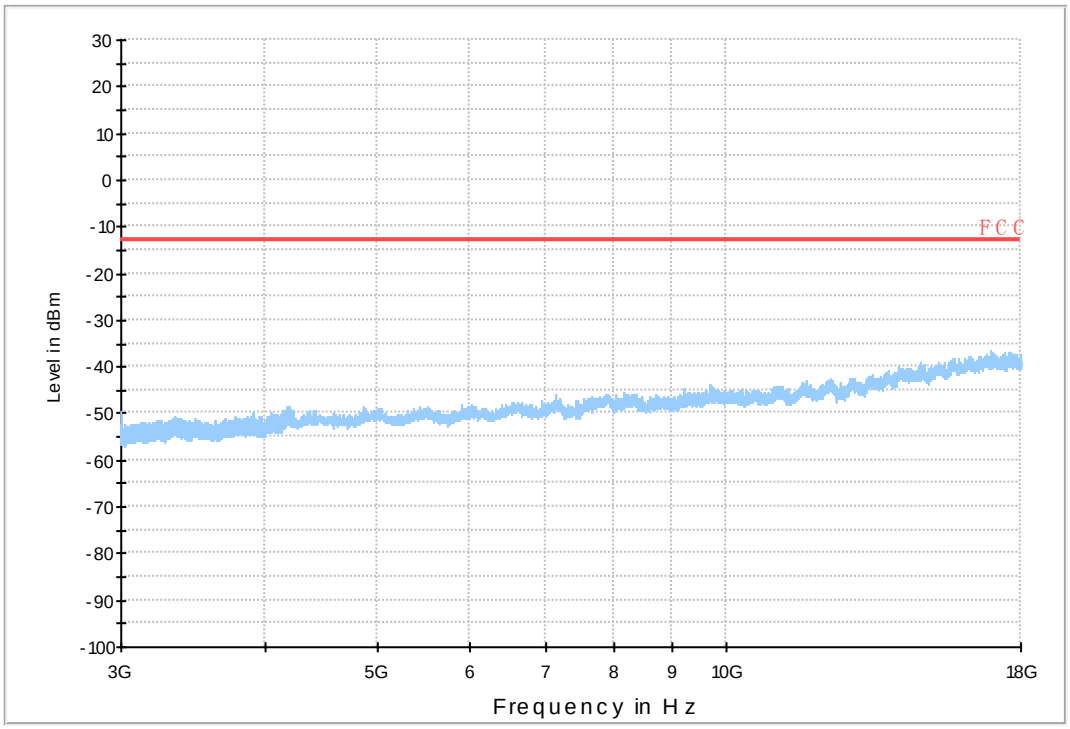
7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

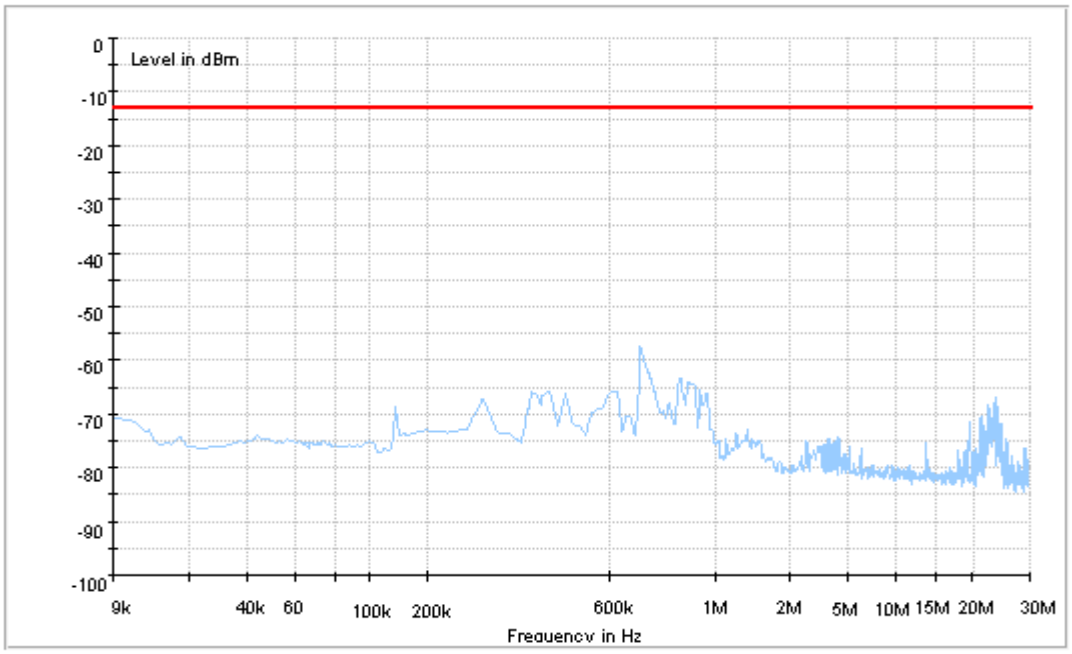


Copy of FCC PART22 GSM850_H

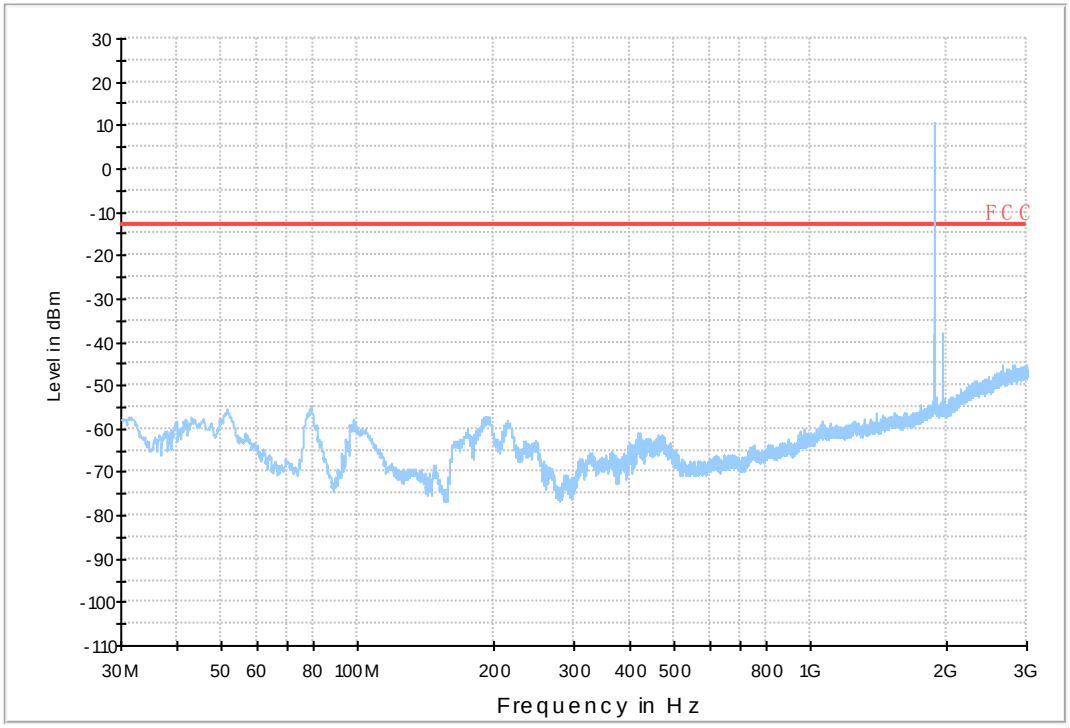


7.1.3 Test Band = GSM1900_ANT1

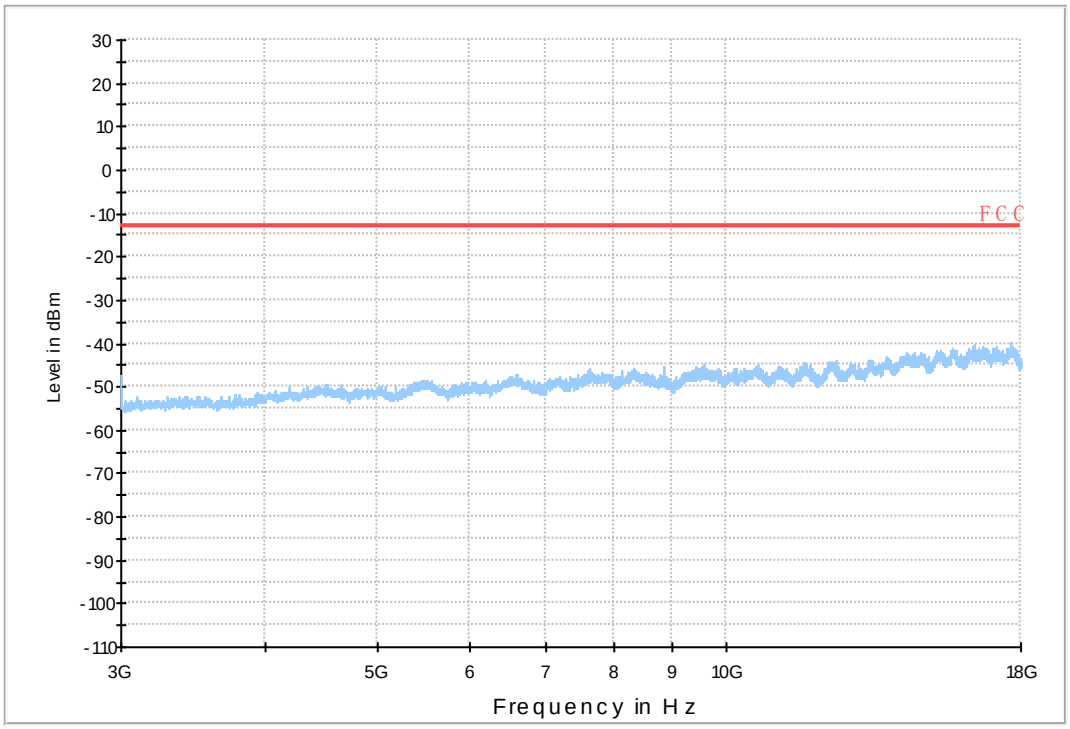
7.1.3.1 Test Mode = GSM/TM1

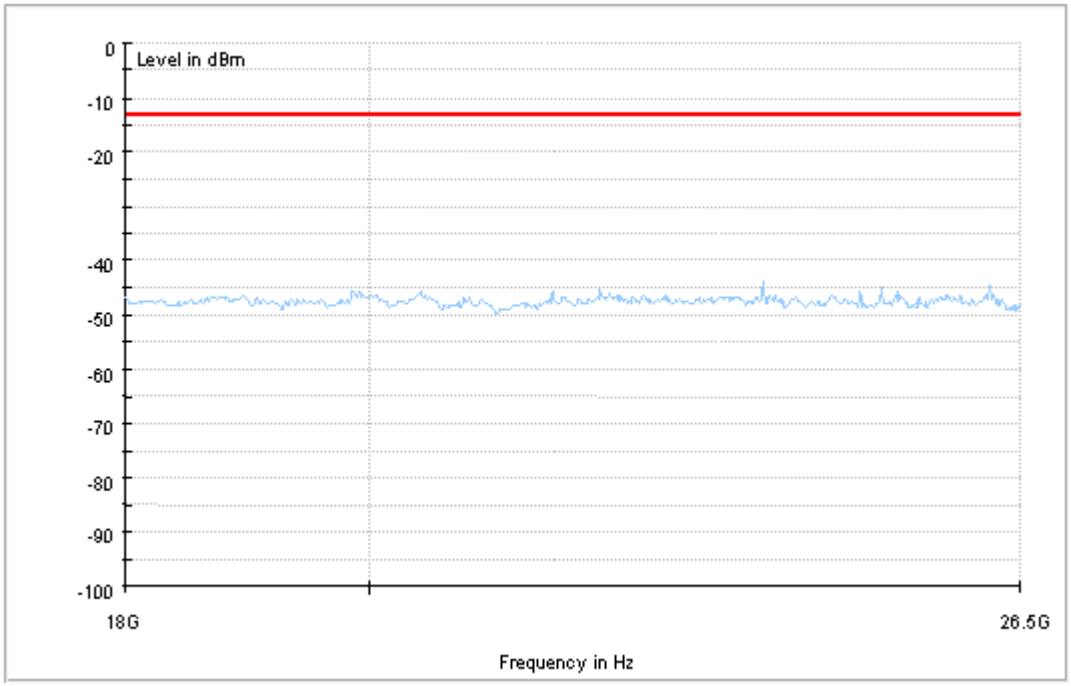


Copy of FCC PART24 GSM1900_L



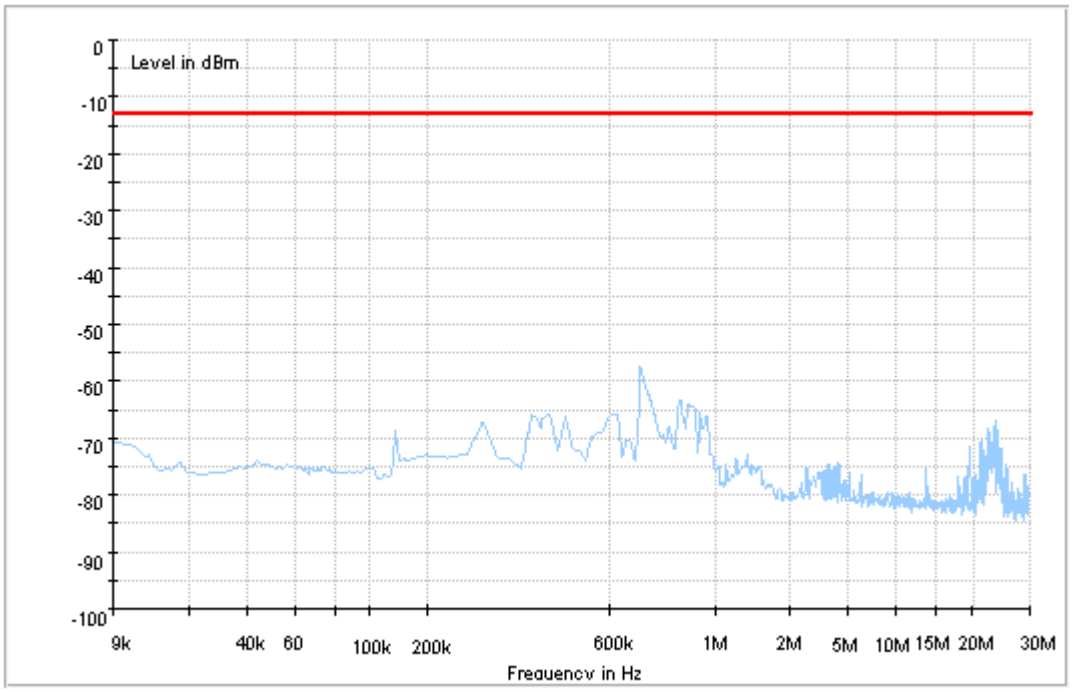
Copy of FCC PART24 GSM1900_H



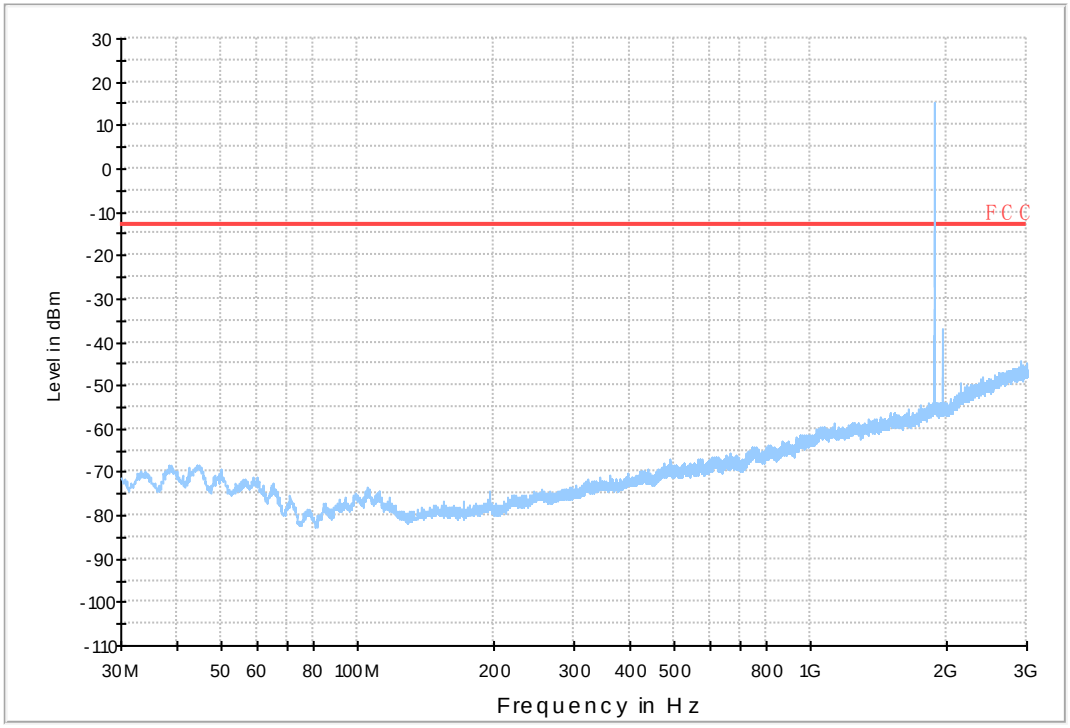


7.1.4 Test Band = GSM1900_ANT2

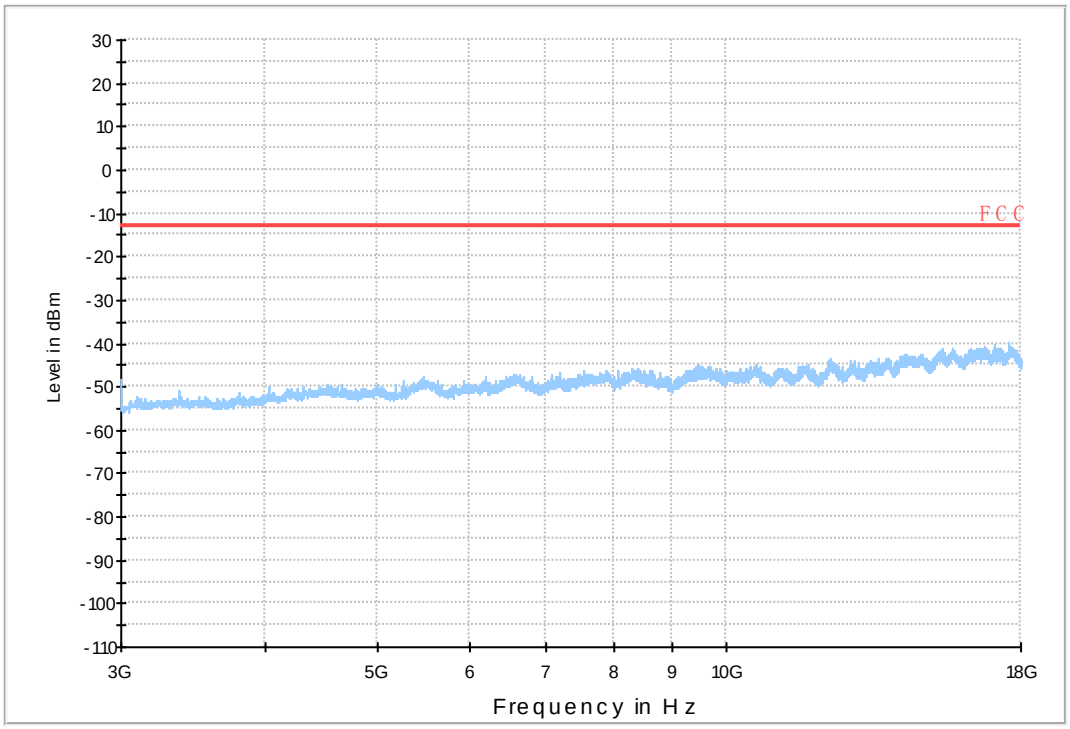
7.1.4.1 Test Mode = GSM/TM1

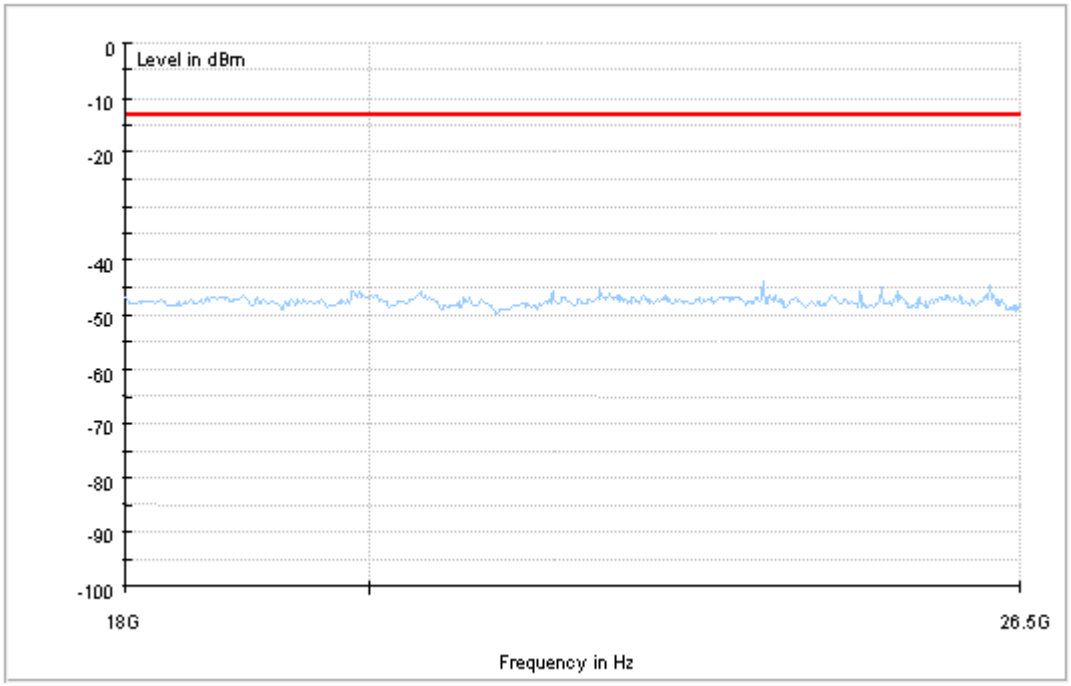


Copy of FCC PART24 GSM1900_L



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	-14.33	-0.01739	PASS
				VN	-16.53	-0.02006	PASS
				VH	-13.69	-0.01661	PASS
		MCH	TN	VL	-12.72	-0.0152	PASS
				VN	-13.75	-0.01644	PASS
				VH	-11.62	-0.01389	PASS
		HCH	TN	VL	-10.33	-0.01217	PASS
				VN	-11.49	-0.01354	PASS
				VH	-13.43	-0.01582	PASS
	GSM/TM2	LCH	TN	VL	-12.59	-0.01528	PASS
				VN	-11.01	-0.01336	PASS
				VH	-10.04	-0.01218	PASS
		MCH	TN	VL	-15.59	-0.01863	PASS
				VN	-11.75	-0.01404	PASS
				VH	-12.30	-0.0147	PASS
		HCH	TN	VL	-16.40	-0.01932	PASS
				VN	-20.15	-0.02374	PASS
				VH	-10.82	-0.01275	PASS
GSM1900	GSM/TM1	LCH	TN	VL	14.92	0.00806	PASS
				VN	29.19	0.01578	PASS
				VH	24.86	0.01344	PASS
		MCH	TN	VL	37.90	0.02016	PASS
				VN	26.35	0.01402	PASS
				VH	36.81	0.01958	PASS
		HCH	TN	VL	41.97	0.02198	PASS
				VN	44.43	0.02326	PASS
				VH	33.32	0.01745	PASS
	GSM/TM2	LCH	TN	VL	18.31	0.0099	PASS
				VN	17.82	0.00963	PASS
				VH	21.24	0.01148	PASS
		MCH	TN	VL	25.86	0.01376	PASS
				VN	36.90	0.01963	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	14.69	0.00781	PASS
		HCH	TN	VL	27.48	0.01439	PASS
				VN	16.50	0.00864	PASS
				VH	33.87	0.01773	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	-6.97	-0.00846	PASS
			MCH	VN	-17.50	-0.02092	PASS
			HCH	VN	-14.14	-0.01666	PASS
	-20	GSM/TM1	LCH	VN	-13.75	-0.01668	PASS
			MCH	VN	-7.43	-0.00888	PASS
			HCH	VN	-13.30	-0.01567	PASS
	-10	GSM/TM1	LCH	VN	-9.36	-0.01136	PASS
			MCH	VN	-18.98	-0.02269	PASS
			HCH	VN	-14.33	-0.01688	PASS
	0	GSM/TM1	LCH	VN	-10.27	-0.01246	PASS
			MCH	VN	-13.43	-0.01605	PASS
			HCH	VN	-13.04	-0.01536	PASS
	10	GSM/TM1	LCH	VN	-14.08	-0.01708	PASS
			MCH	VN	-9.62	-0.0115	PASS
			HCH	VN	-14.21	-0.01674	PASS
	20	GSM/TM1	LCH	VN	-13.37	-0.01622	PASS
			MCH	VN	-15.82	-0.01891	PASS
			HCH	VN	-16.72	-0.0197	PASS
	30	GSM/TM1	LCH	VN	-9.49	-0.01151	PASS
			MCH	VN	-14.79	-0.01768	PASS
			HCH	VN	-12.01	-0.01415	PASS
	40	GSM/TM1	LCH	VN	-10.27	-0.01246	PASS
			MCH	VN	-13.88	-0.01659	PASS
			HCH	VN	-19.63	-0.02313	PASS
	50	GSM/TM1	LCH	VN	-16.59	-0.02013	PASS
			MCH	VN	-8.59	-0.01027	PASS
			HCH	VN	-16.47	-0.0194	PASS
	-30	GSM/TM2	LCH	VN	-9.10	-0.01104	PASS
			MCH	VN	-10.36	-0.01238	PASS
			HCH	VN	-22.79	-0.02685	PASS
	-20	GSM/TM2	LCH	VN	-9.62	-0.01167	PASS

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			MCH	VN	-12.24	-0.01463	PASS
			HCH	VN	-21.50	-0.02533	PASS
	-10	GSM/TM2	LCH	VN	-8.39	-0.01018	PASS
			MCH	VN	-14.95	-0.01787	PASS
			HCH	VN	-12.46	-0.01468	PASS
	0	GSM/TM2	LCH	VN	-9.20	-0.01116	PASS
			MCH	VN	-10.88	-0.01301	PASS
			HCH	VN	-10.01	-0.01179	PASS
	10	GSM/TM2	LCH	VN	-13.30	-0.01614	PASS
			MCH	VN	-14.63	-0.01749	PASS
			HCH	VN	-15.85	-0.01867	PASS
	20	GSM/TM2	LCH	VN	-10.91	-0.01324	PASS
			MCH	VN	-15.05	-0.01799	PASS
			HCH	VN	-11.85	-0.01396	PASS
	30	GSM/TM2	LCH	VN	-11.88	-0.01441	PASS
			MCH	VN	-19.15	-0.02289	PASS
			HCH	VN	-12.85	-0.01514	PASS
	40	GSM/TM2	LCH	VN	-13.75	-0.01668	PASS
			MCH	VN	-13.50	-0.01614	PASS
			HCH	VN	-17.24	-0.02031	PASS
	50	GSM/TM2	LCH	VN	-19.73	-0.02394	PASS
			MCH	VN	-14.69	-0.01756	PASS
			HCH	VN	-10.27	-0.0121	PASS
GSM1900	-30	GSM/TM1	LCH	VN	28.48	0.01539	PASS
			MCH	VN	31.32	0.01666	PASS
			HCH	VN	46.36	0.02427	PASS
	-20	GSM/TM1	LCH	VN	23.44	0.01267	PASS
			MCH	VN	32.54	0.01731	PASS
			HCH	VN	34.74	0.01819	PASS
	-10	GSM/TM1	LCH	VN	23.25	0.01257	PASS
			MCH	VN	32.61	0.01735	PASS
			HCH	VN	36.22	0.01897	PASS
	0	GSM/TM1	LCH	VN	20.02	0.01082	PASS
			MCH	VN	35.45	0.01886	PASS
			HCH	VN	41.26	0.0216	PASS
	10	GSM/TM1	LCH	VN	31.83	0.0172	PASS
			MCH	VN	15.63	0.00831	PASS
			HCH	VN	30.99	0.01623	PASS
	20	GSM/TM1	LCH	VN	23.63	0.01277	PASS
			MCH	VN	39.07	0.02078	PASS

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			HCH	VN	27.18	0.01423	PASS
	30	GSM/TM1	LCH	VN	20.60	0.01113	PASS
			MCH	VN	26.99	0.01436	PASS
			HCH	VN	38.87	0.02035	PASS
	40	GSM/TM1	LCH	VN	18.47	0.00998	PASS
			MCH	VN	33.19	0.01765	PASS
			HCH	VN	29.57	0.01548	PASS
	50	GSM/TM1	LCH	VN	30.28	0.01637	PASS
			MCH	VN	37.13	0.01975	PASS
			HCH	VN	38.55	0.02019	PASS
	-30	GSM/TM2	LCH	VN	23.70	0.01281	PASS
			MCH	VN	28.73	0.01528	PASS
			HCH	VN	16.79	0.00879	PASS
	-20	GSM/TM2	LCH	VN	16.47	0.0089	PASS
			MCH	VN	21.79	0.01159	PASS
			HCH	VN	35.51	0.01859	PASS
	-10	GSM/TM2	LCH	VN	16.01	0.00865	PASS
			MCH	VN	25.83	0.01374	PASS
			HCH	VN	48.56	0.02543	PASS
	0	GSM/TM2	LCH	VN	35.22	0.01904	PASS
			MCH	VN	24.67	0.01312	PASS
			HCH	VN	33.32	0.01745	PASS
	10	GSM/TM2	LCH	VN	22.73	0.01229	PASS
			MCH	VN	18.40	0.00979	PASS
			HCH	VN	27.70	0.0145	PASS
	20	GSM/TM2	LCH	VN	18.53	0.01002	PASS
			MCH	VN	21.99	0.0117	PASS
			HCH	VN	40.45	0.02118	PASS
	30	GSM/TM2	LCH	VN	19.98	0.0108	PASS
			MCH	VN	32.16	0.01711	PASS
			HCH	VN	24.18	0.01266	PASS
	40	GSM/TM2	LCH	VN	21.24	0.01148	PASS
			MCH	VN	32.25	0.01715	PASS
			HCH	VN	30.32	0.01588	PASS
	50	GSM/TM2	LCH	VN	19.95	0.01078	PASS
			MCH	VN	23.05	0.01226	PASS
			HCH	VN	51.63	0.02703	PASS

END