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	31.7	29.05	38.5	PASS
		MCH	32.08	29.43	38.5	PASS
		HCH	32.16	29.51	38.5	PASS
	GSM/TM2	LCH	25.94	23.29	38.5	PASS
		MCH	25.92	23.27	38.5	PASS
		HCH	25.93	23.28	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.36	29.86	33	PASS
		MCH	29.29	29.79	33	PASS
		HCH	29.32	29.82	33	PASS
	GSM/TM2	LCH	25.44	25.94	33	PASS
		MCH	25.48	25.98	33	PASS
		HCH	25.38	25.88	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	0.36	13	PASS
		MCH	0.33	13	PASS
		HCH	0.34	13	PASS
	GSM/TM2	LCH	2.94	13	PASS
		MCH	2.78	13	PASS
		HCH	2.86	13	PASS
GSM1900	GSM/TM1	LCH	0.38	13	PASS
		MCH	0.4	13	PASS
		HCH	0.37	13	PASS
	GSM/TM2	LCH	2.98	13	PASS
		MCH	3.07	13	PASS
		HCH	2.95	13	PASS

3Appendix_C: Modulation Characteristics

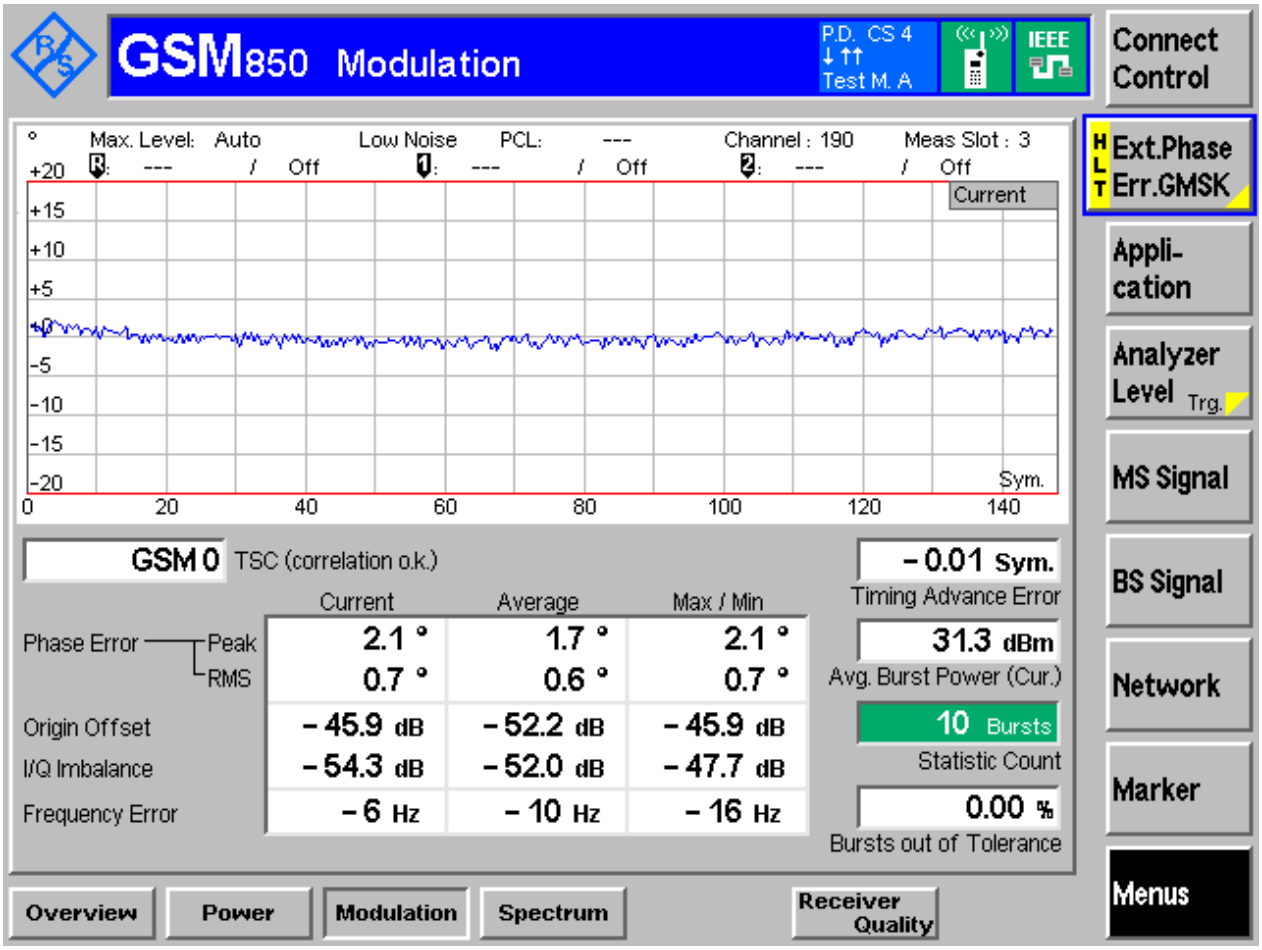
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

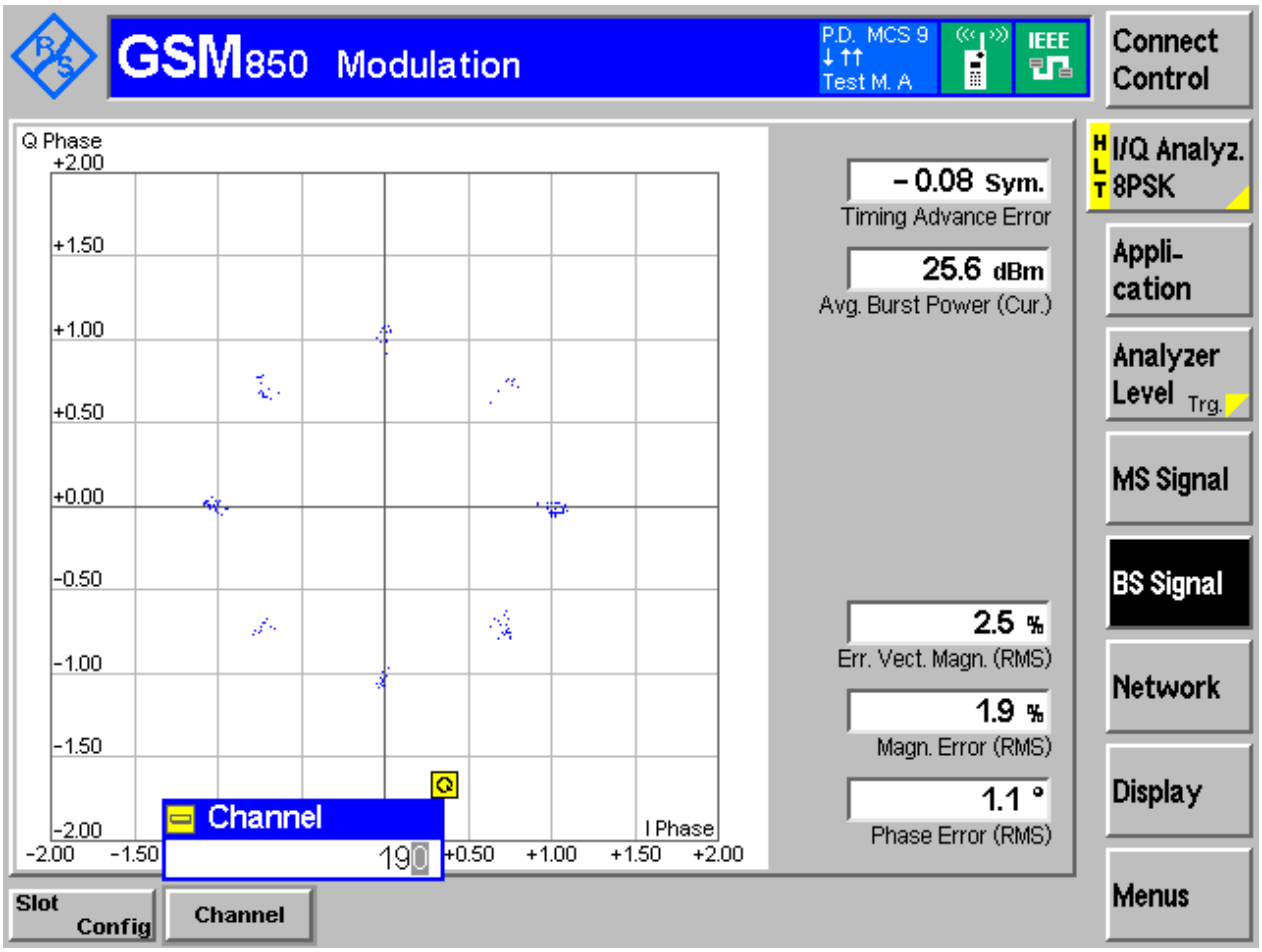
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

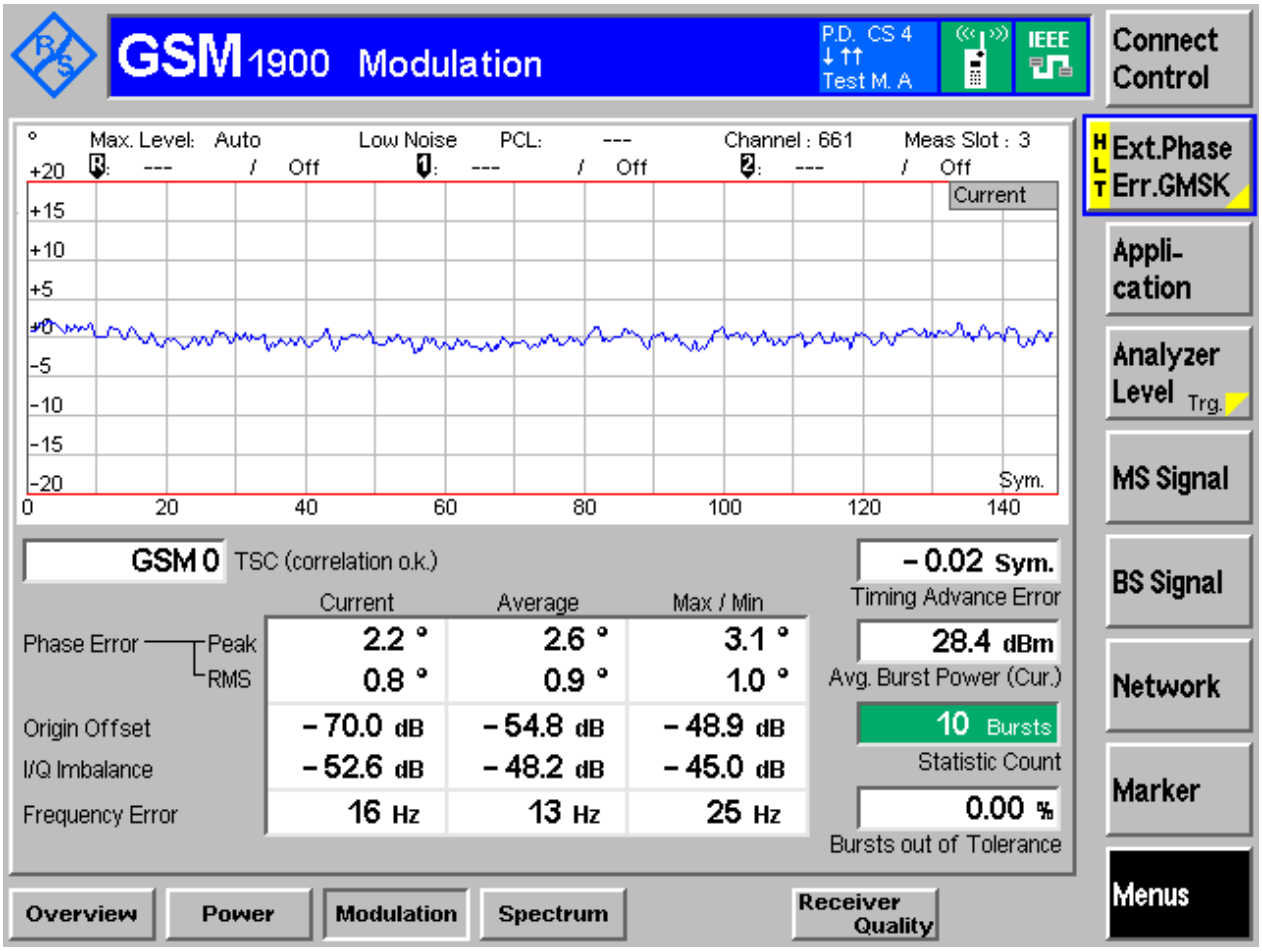
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

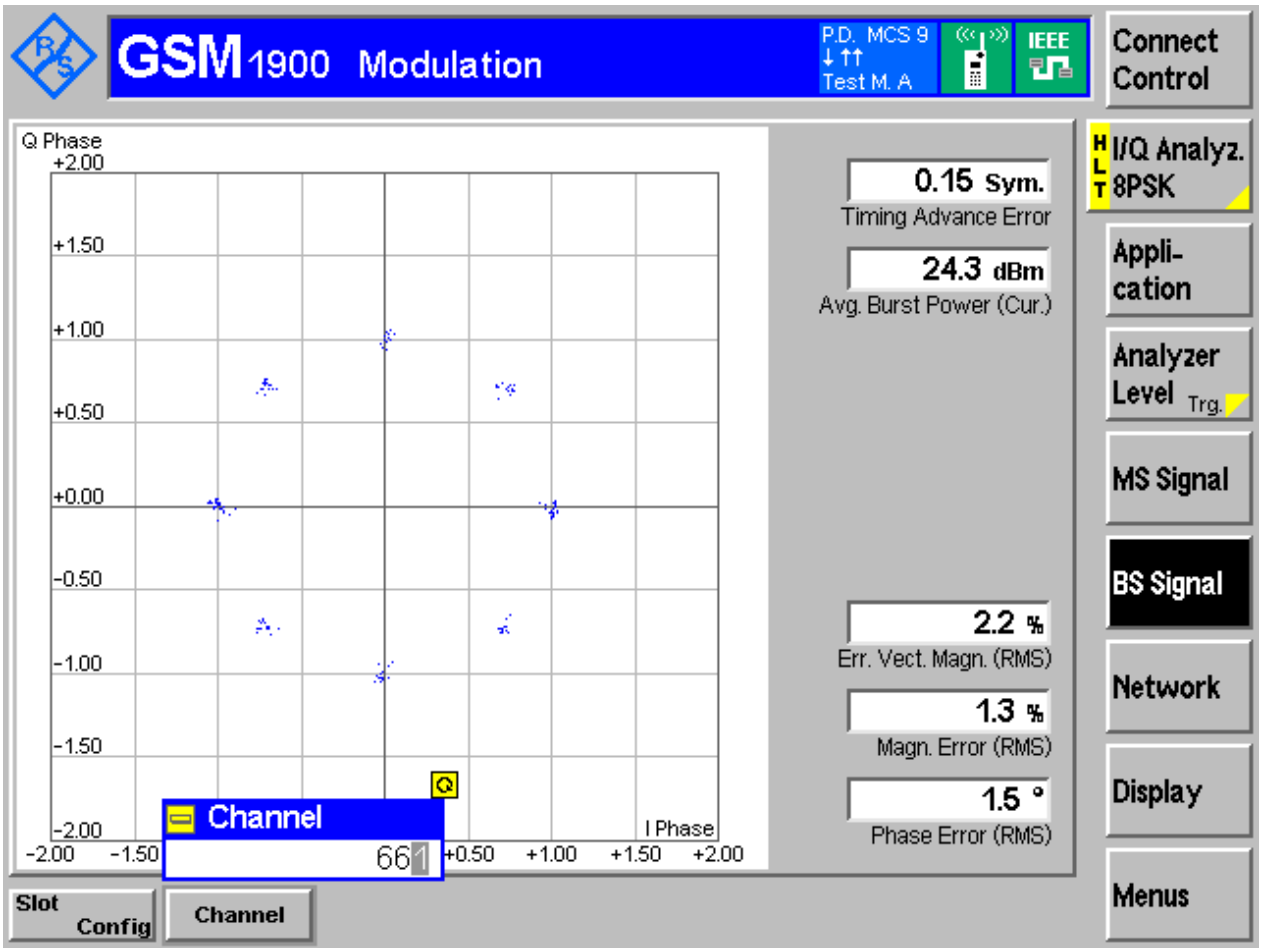
3.1.2.1 Test Mode = GSM/TM1

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	244.12	314.28	Pass
		MCH	246.47	311.02	Pass
		HCH	243.50	306.99	Pass
	GSM/TM2	LCH	247.76	309.71	Pass
		MCH	251.39	322.22	Pass
		HCH	247.23	317.80	Pass
GSM1900	GSM/TM1	LCH	244.21	317.42	Pass
		MCH	243.52	308.89	Pass
		HCH	244.62	316.81	Pass
	GSM/TM2	LCH	248.60	313.50	Pass
		MCH	247.67	314.96	Pass
		HCH	246.06	315.91	Pass

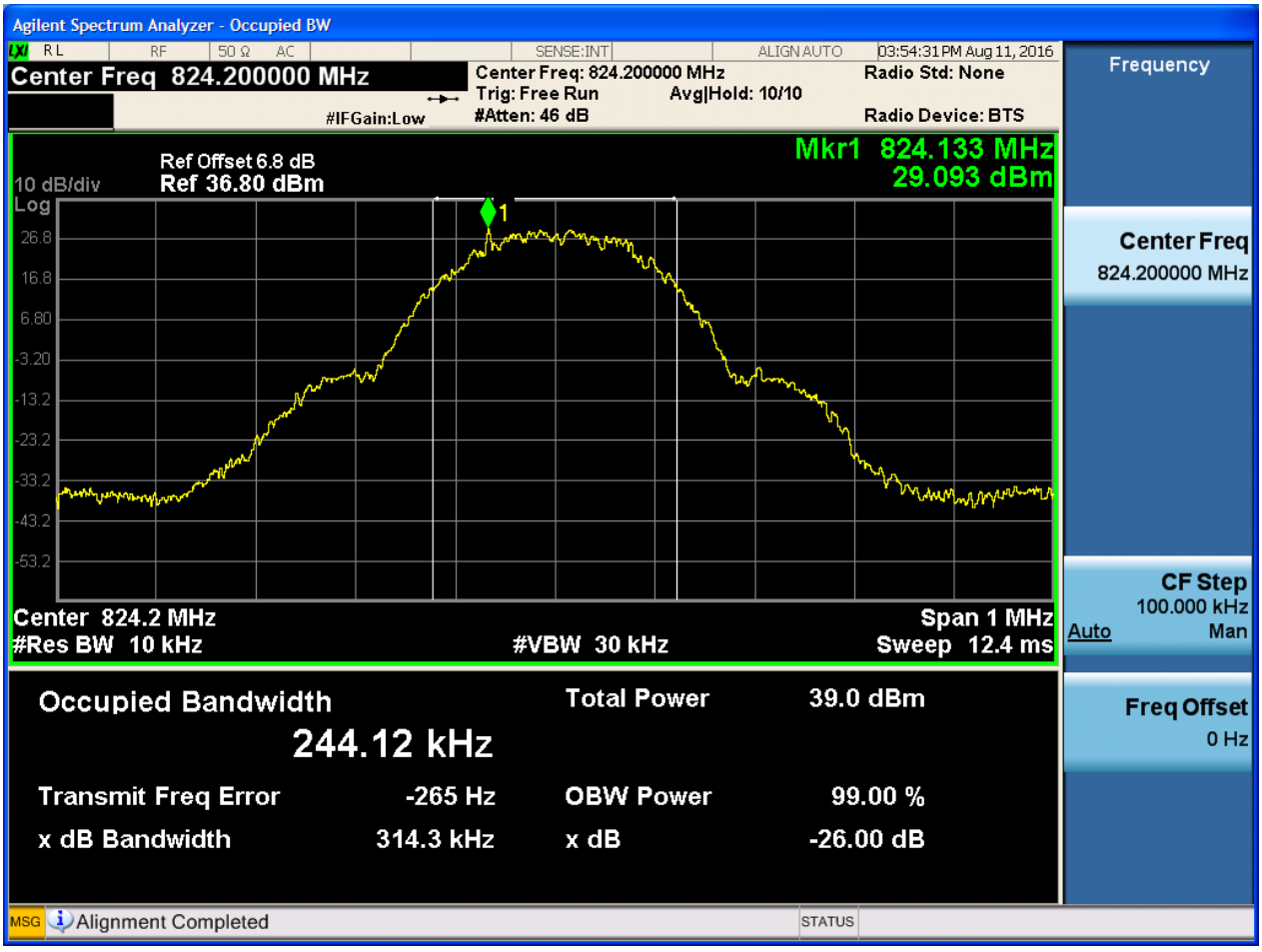
Part II - Test Plots

4.1 For GSM

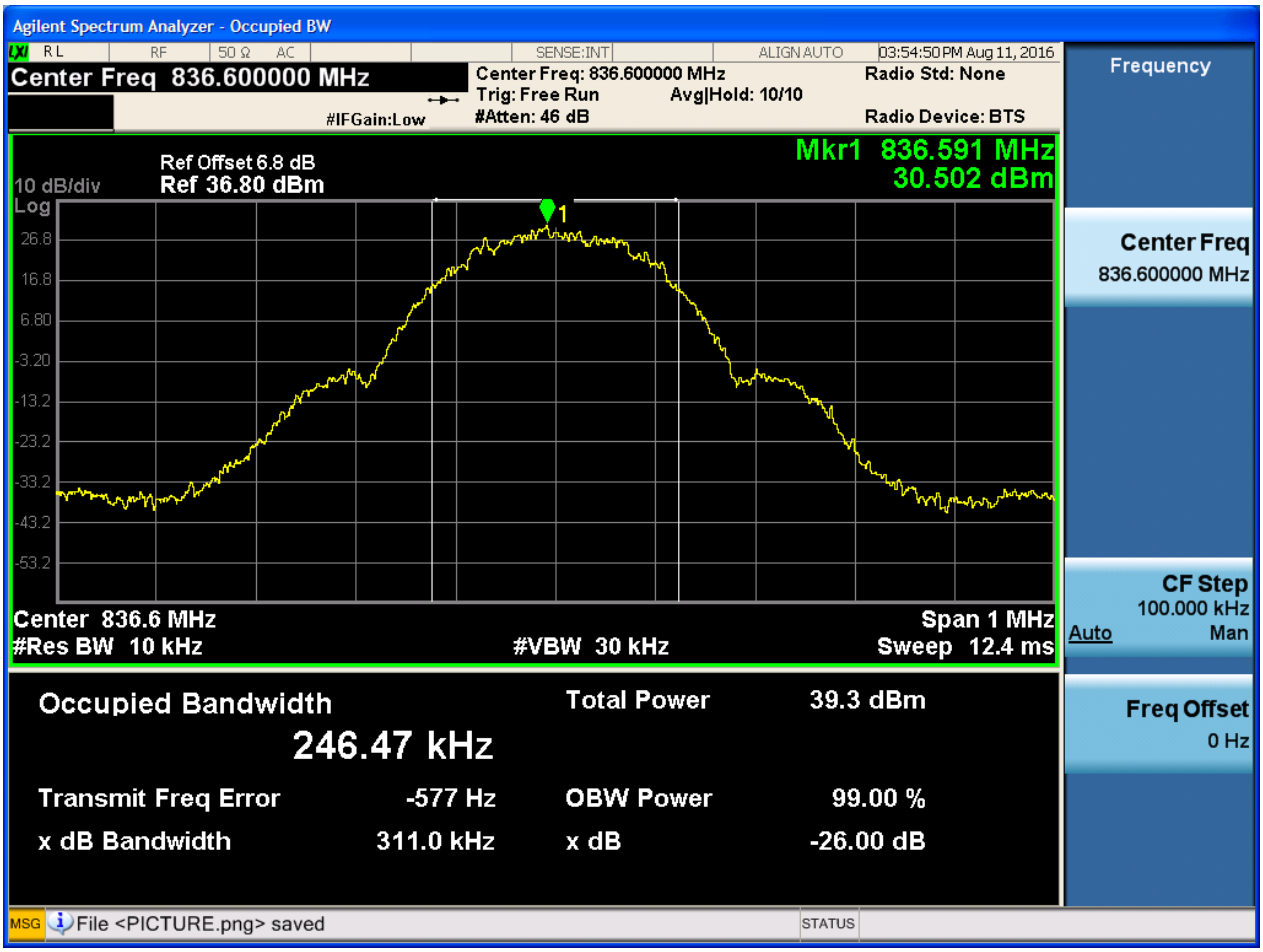
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

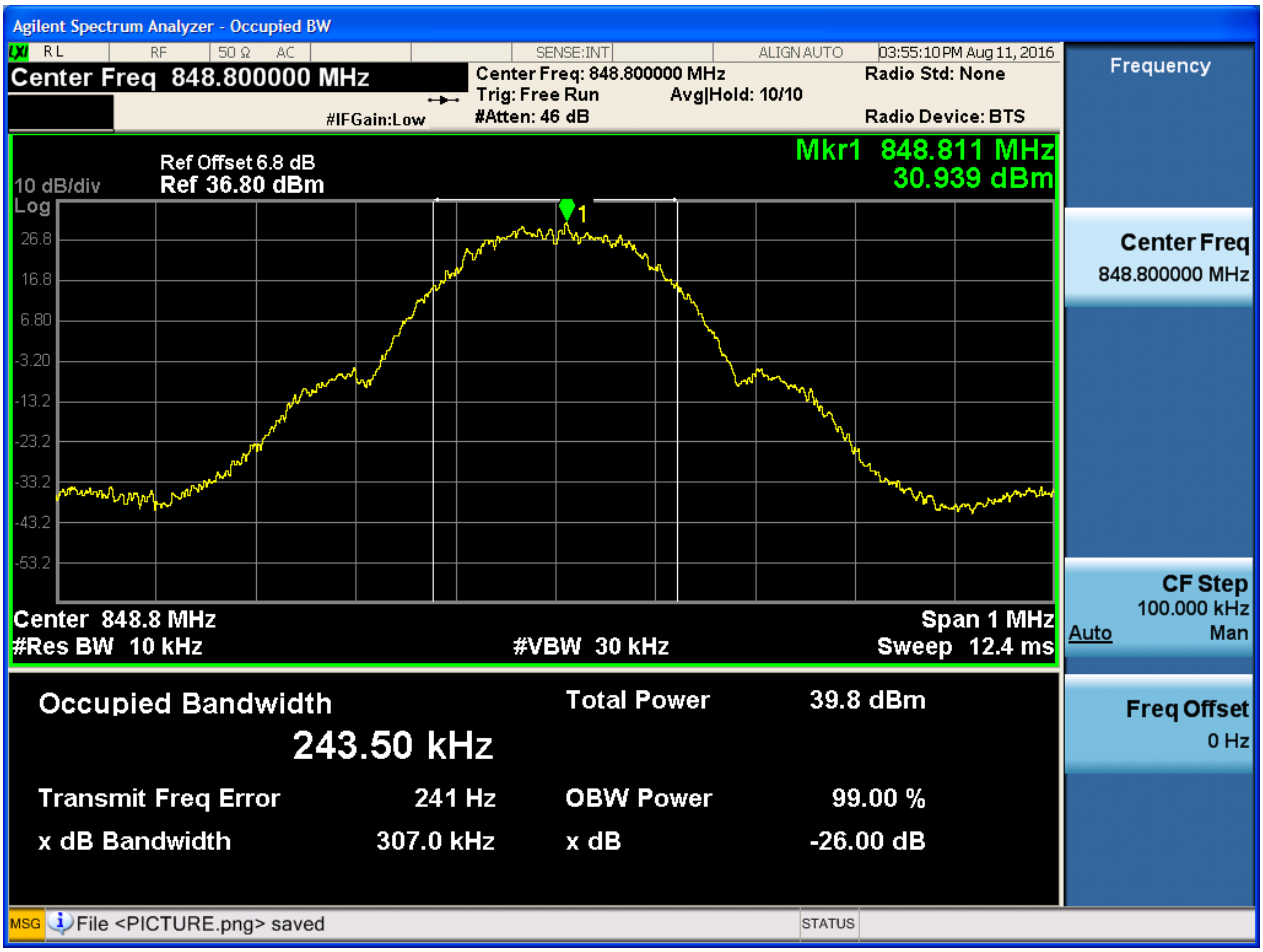
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

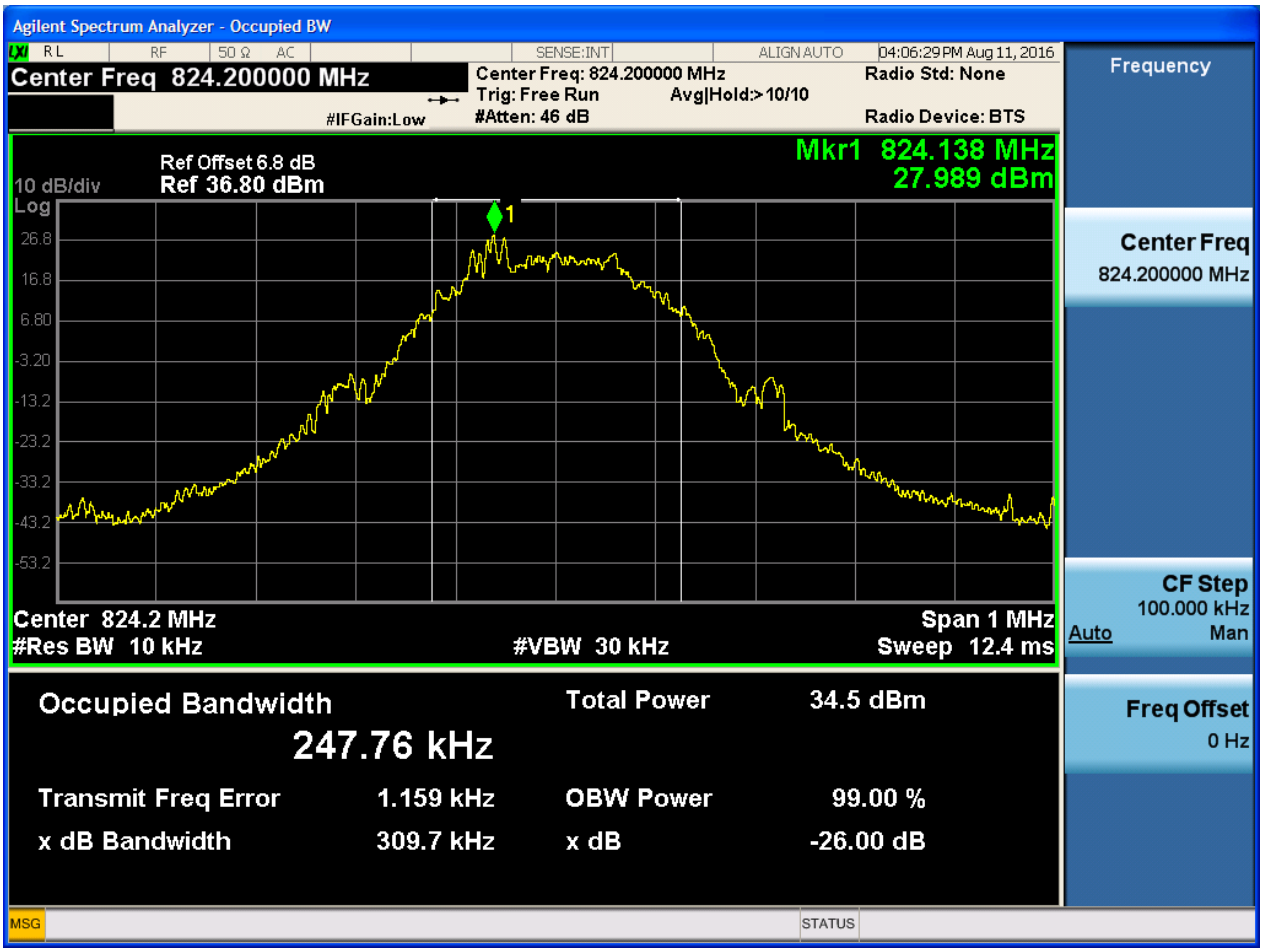


4.1.1.1.3 Test Channel = HCH

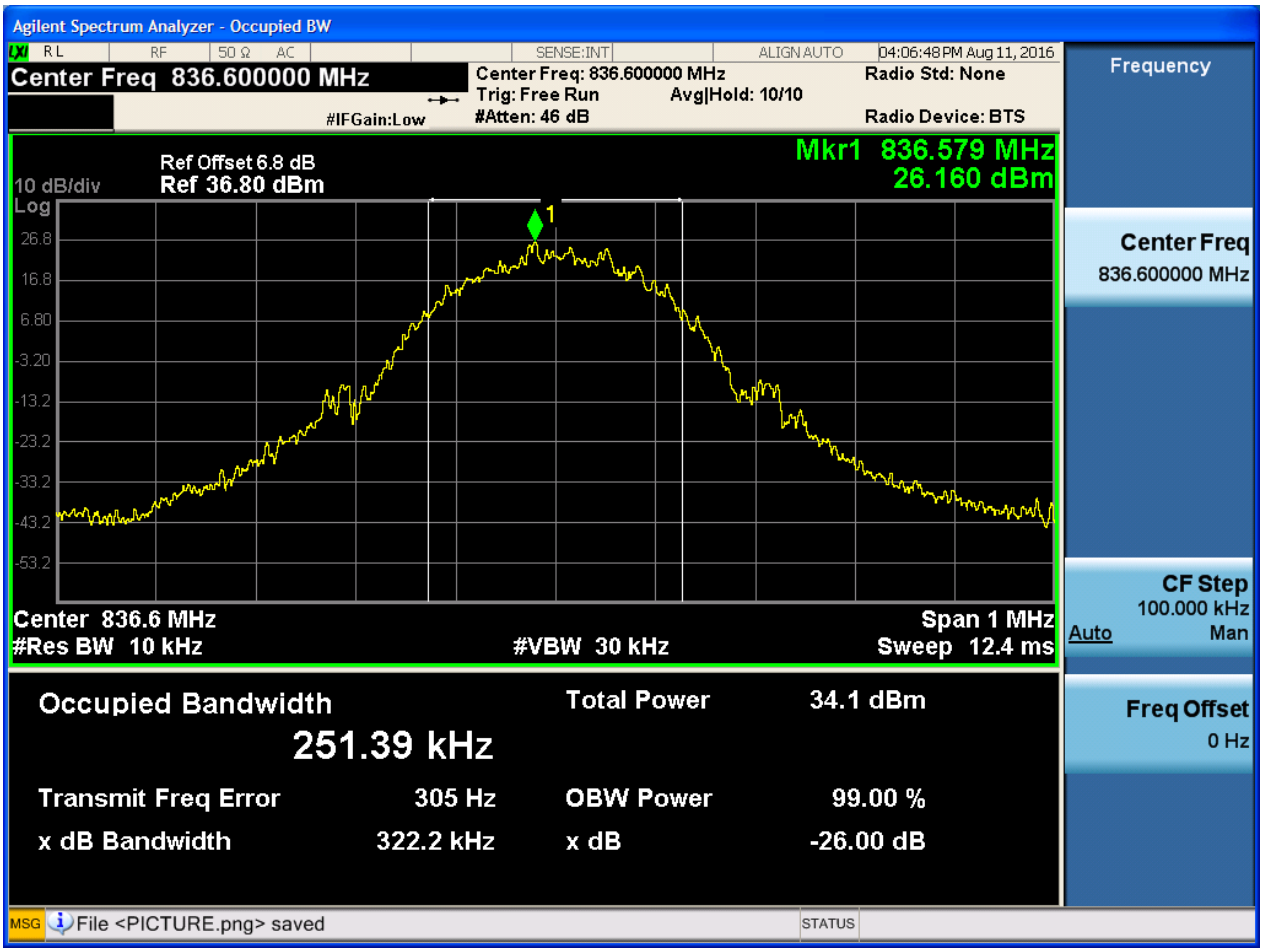


4.1.1.2 Test Mode = GSM/TM2

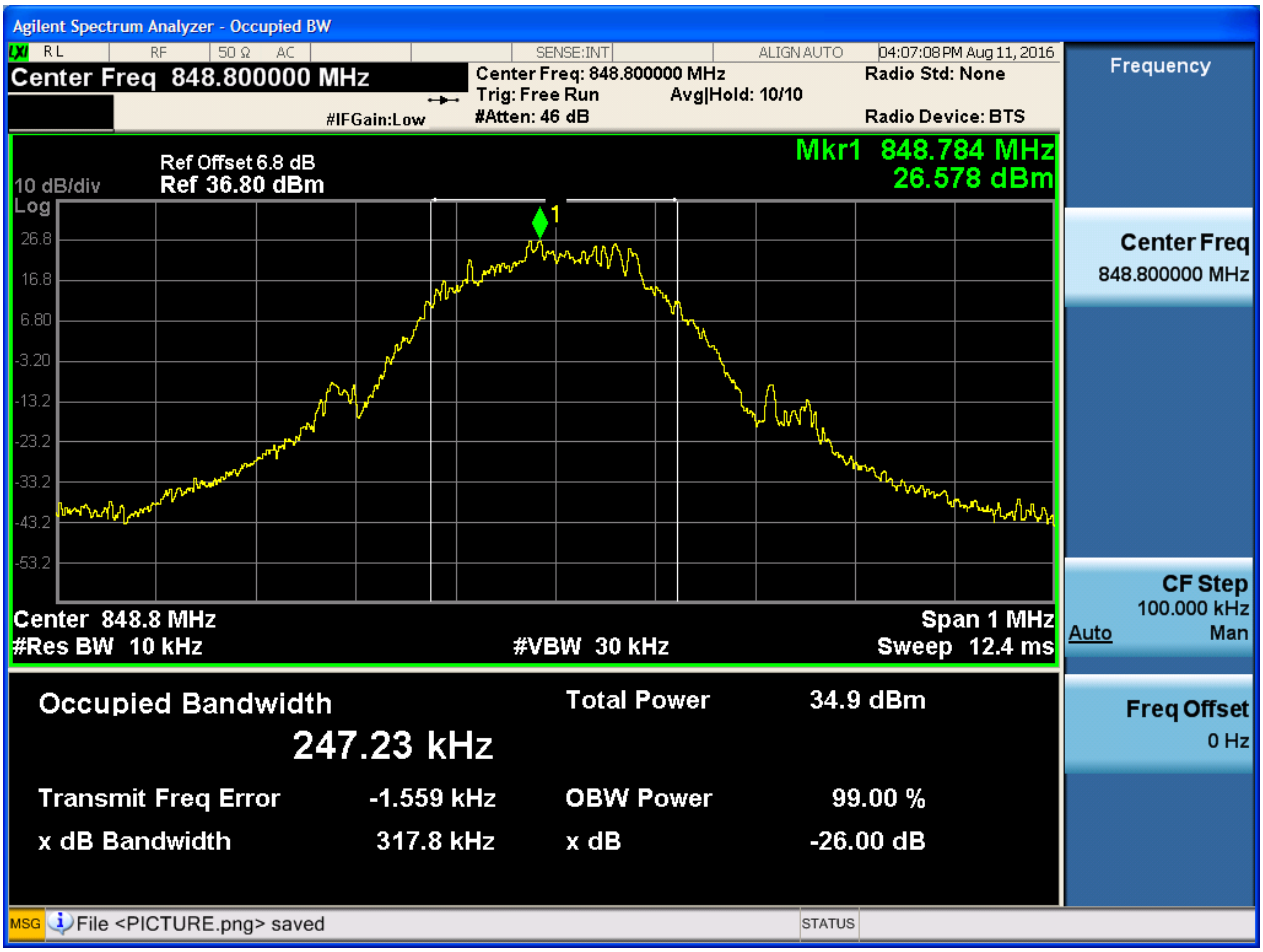
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



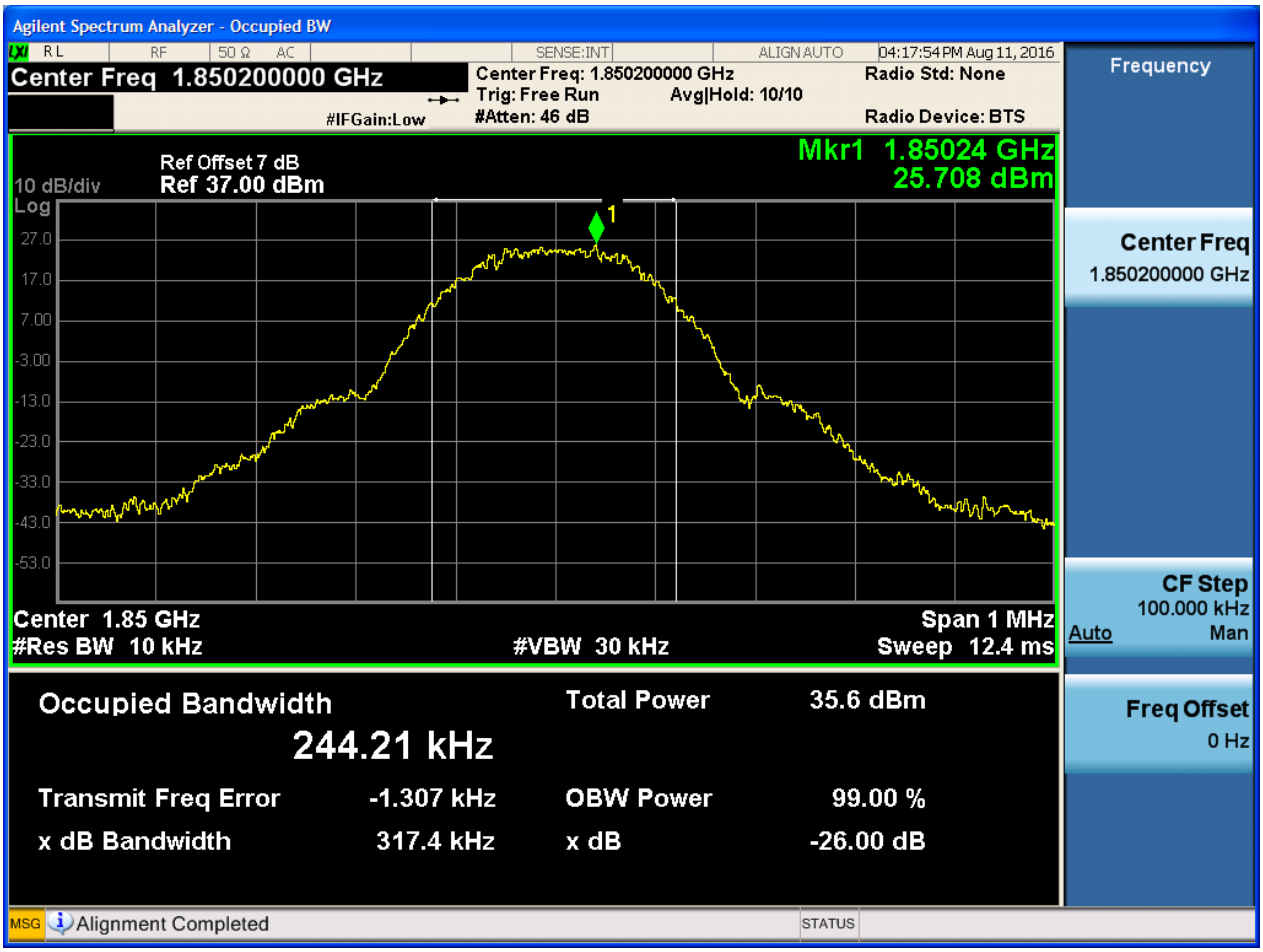
4.1.1.2.3 Test Channel = HCH



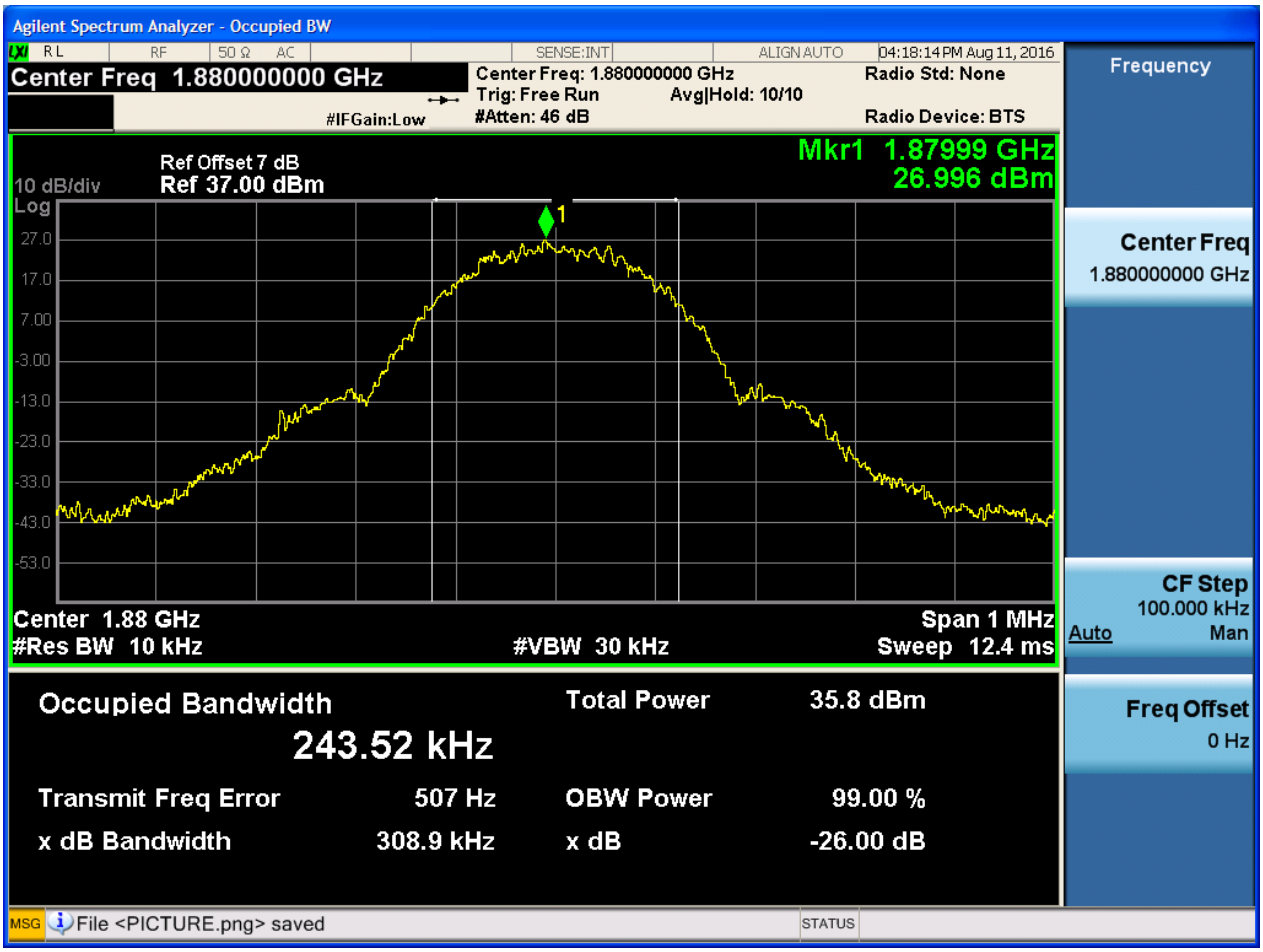
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

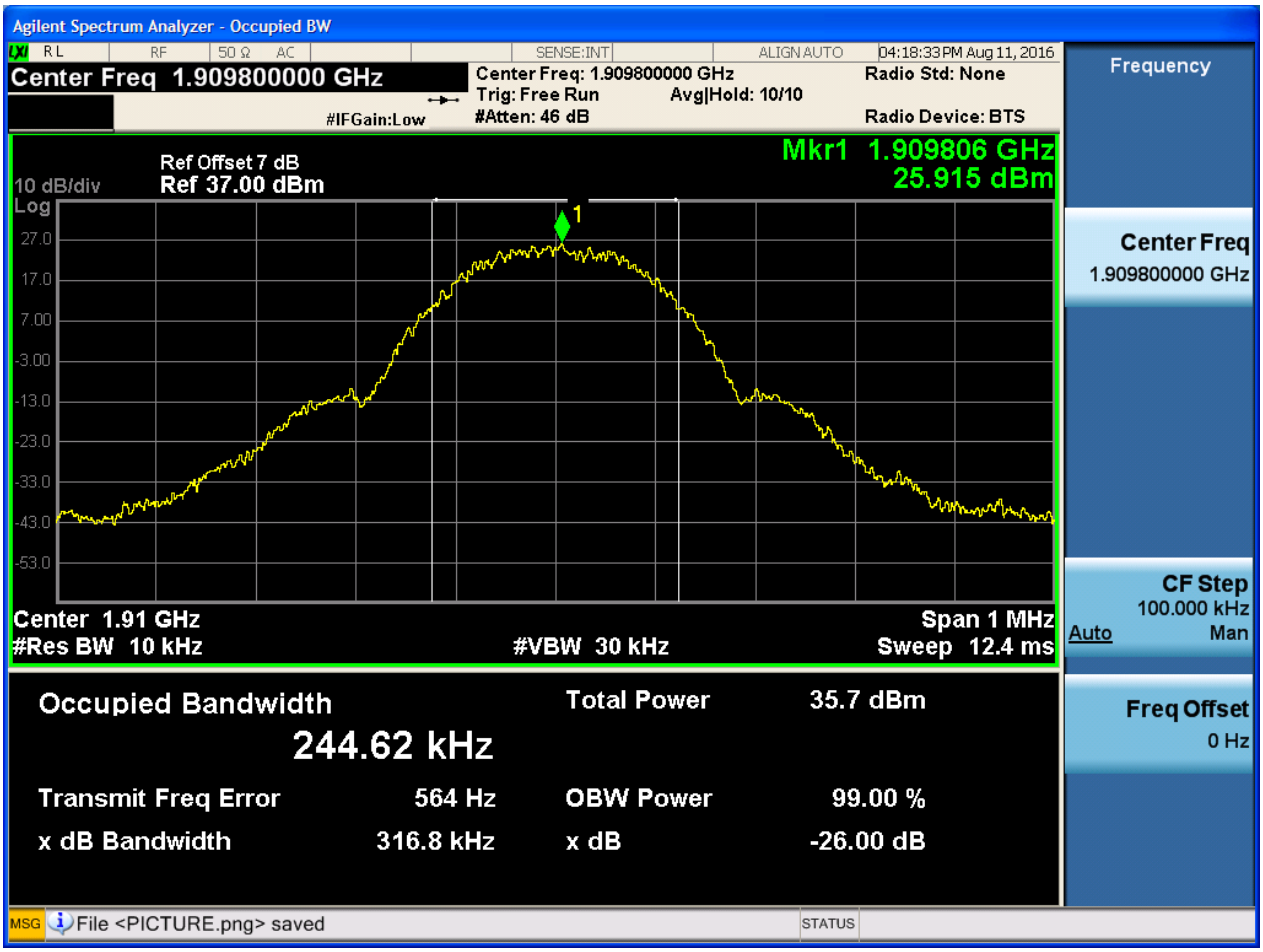
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

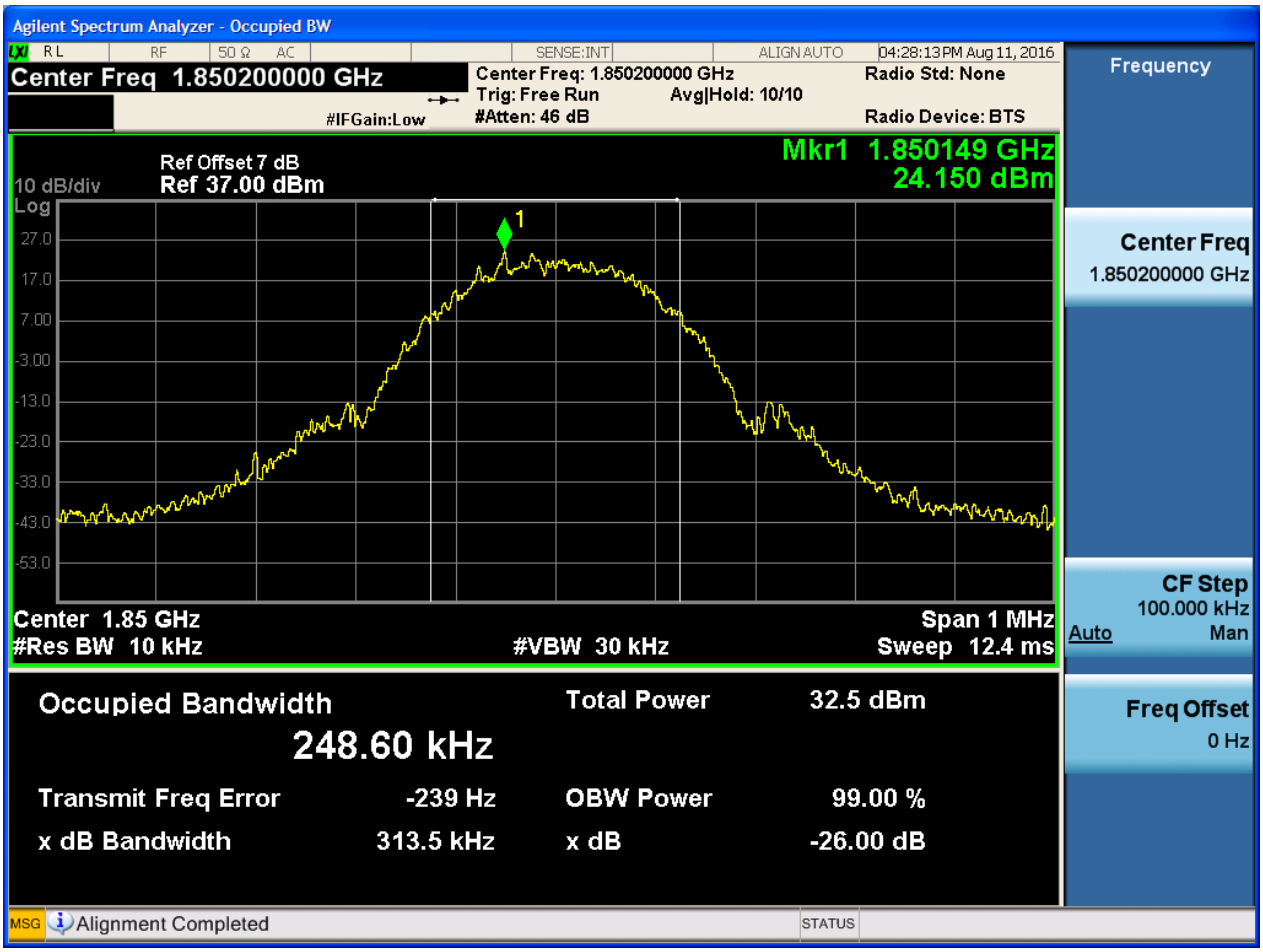


4.1.2.1.3 Test Channel = HCH

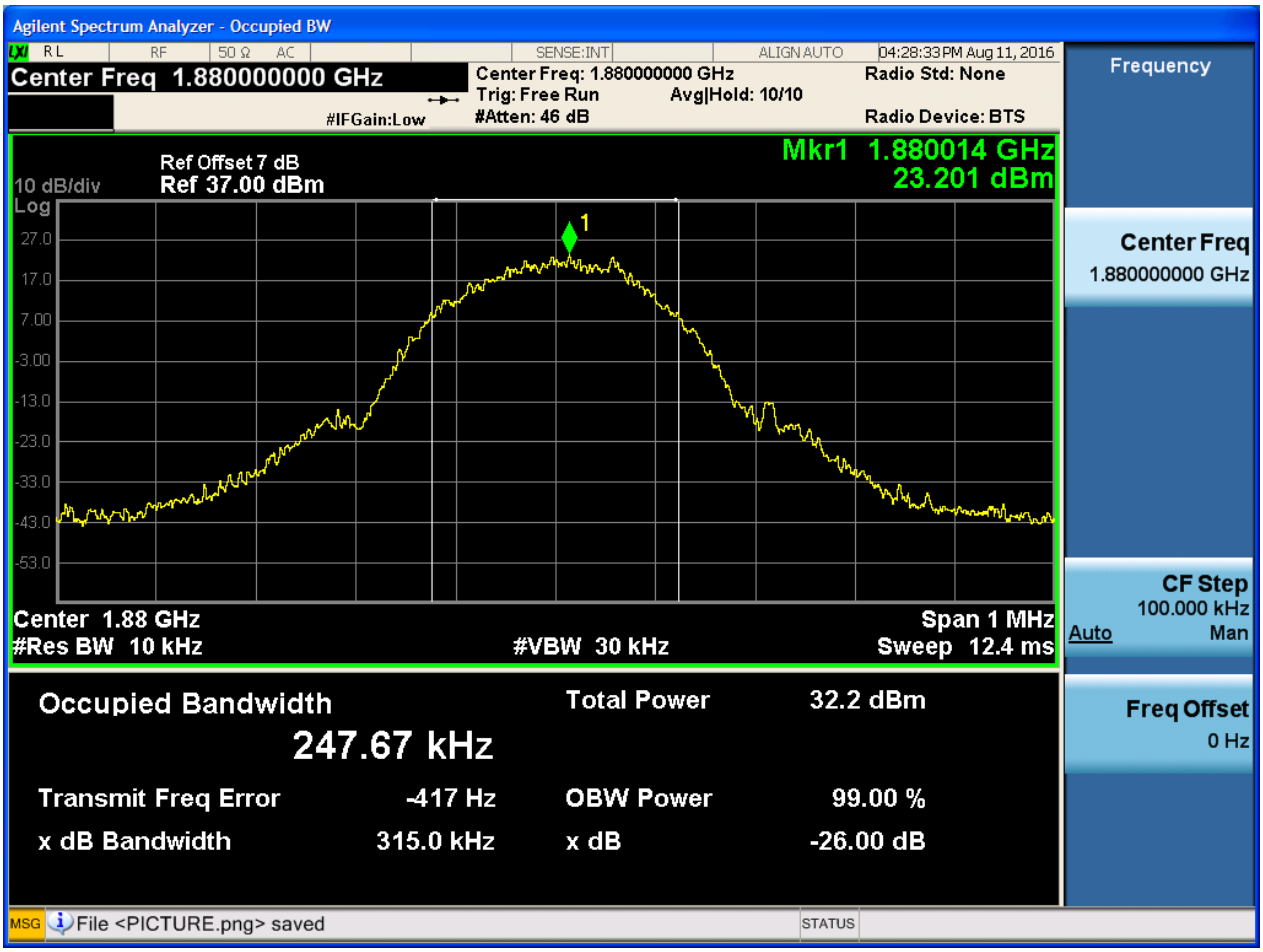


4.1.2.2 Test Mode = GSM/TM2

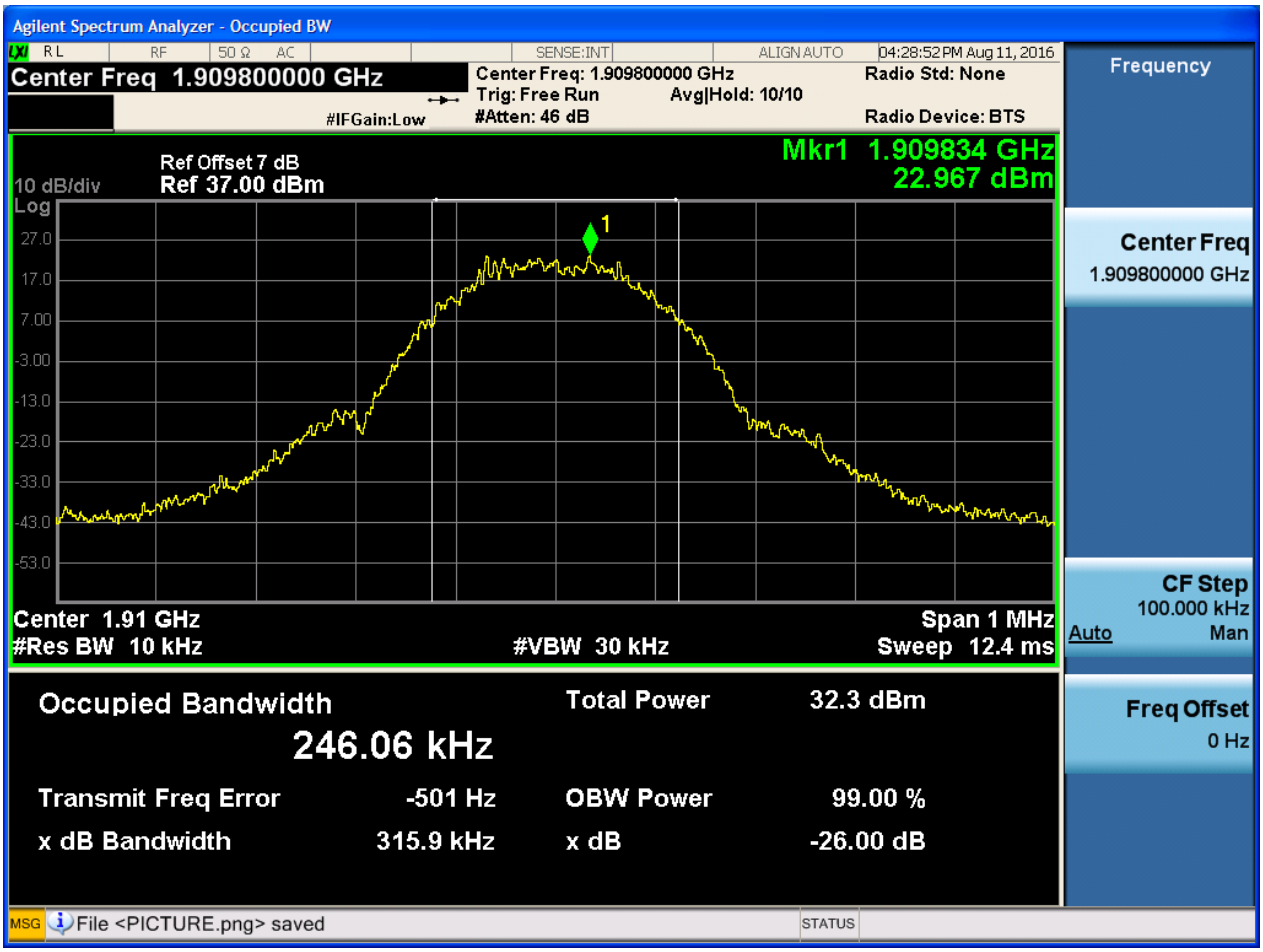
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

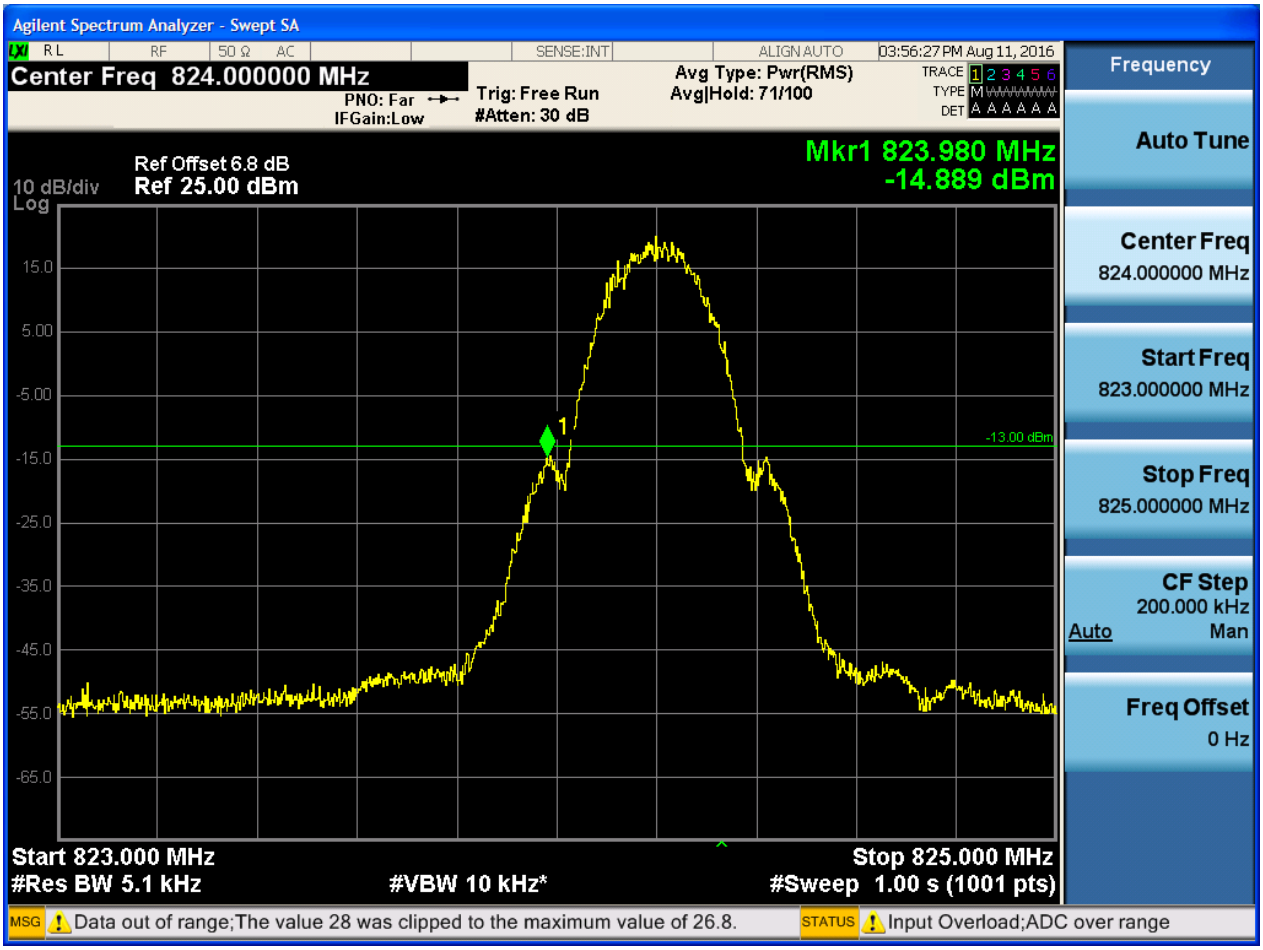
Part I - Test Plots

5.1 For GSM

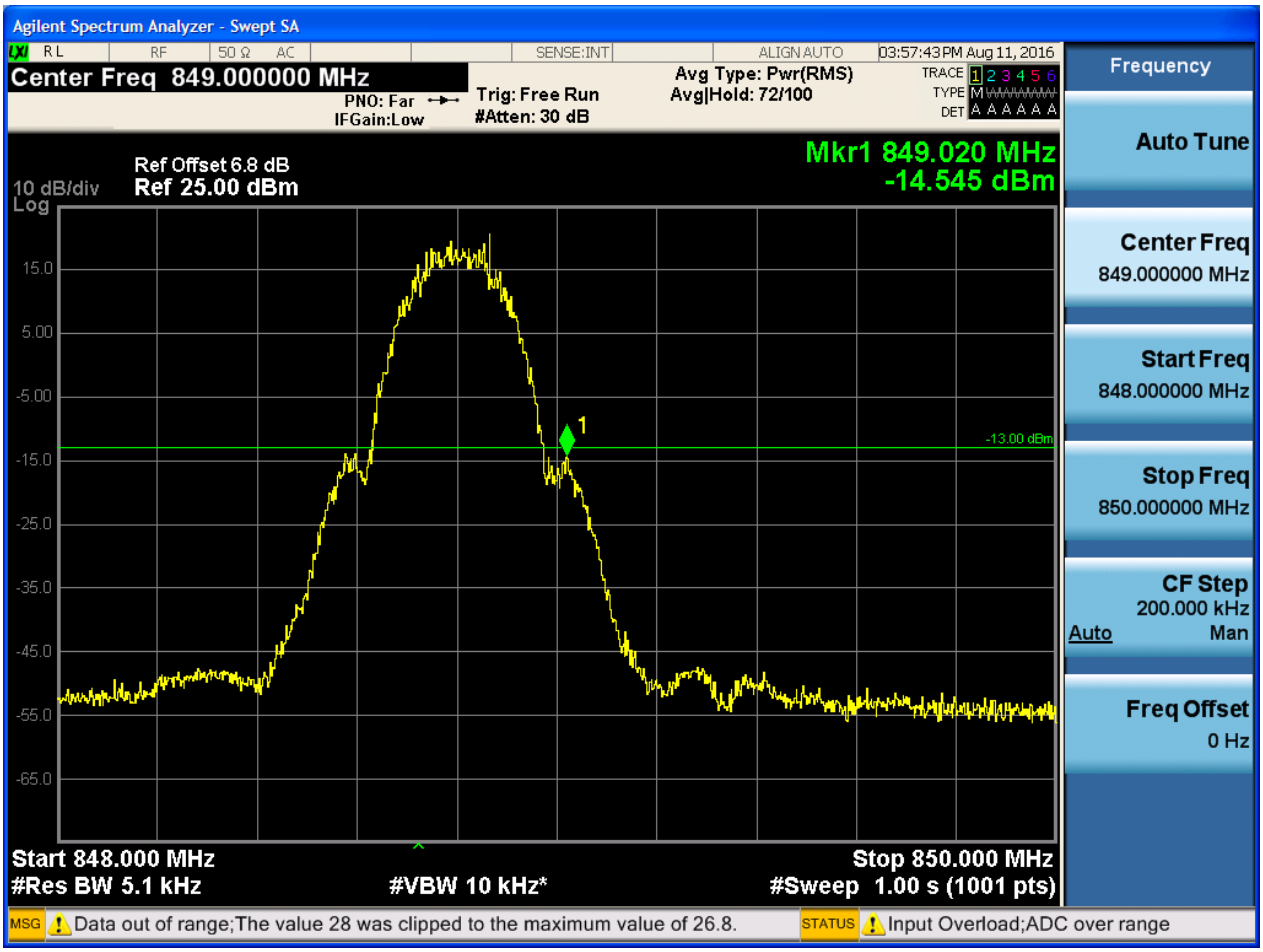
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

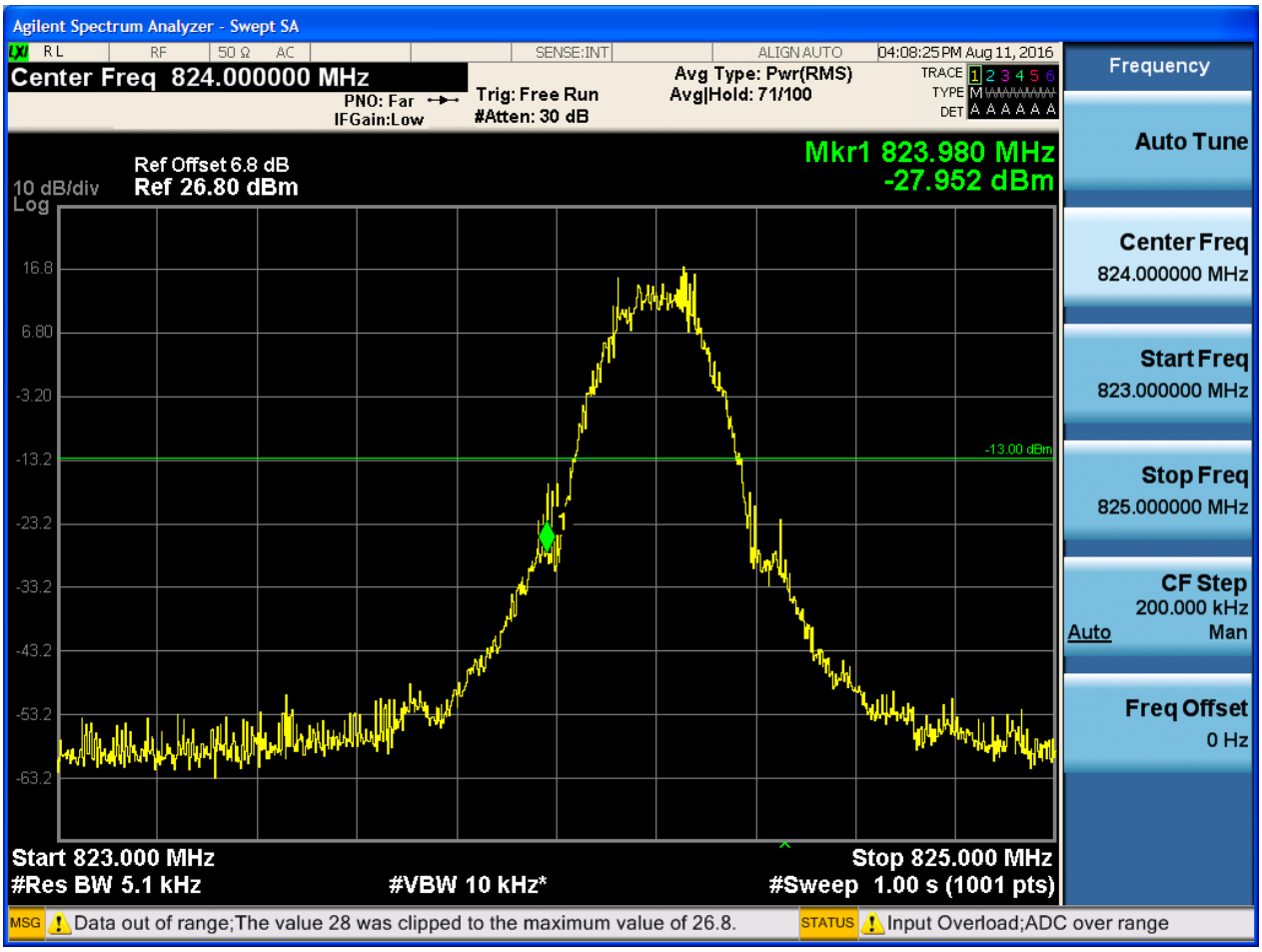


5.1.1.1.2 Test Channel = HCH

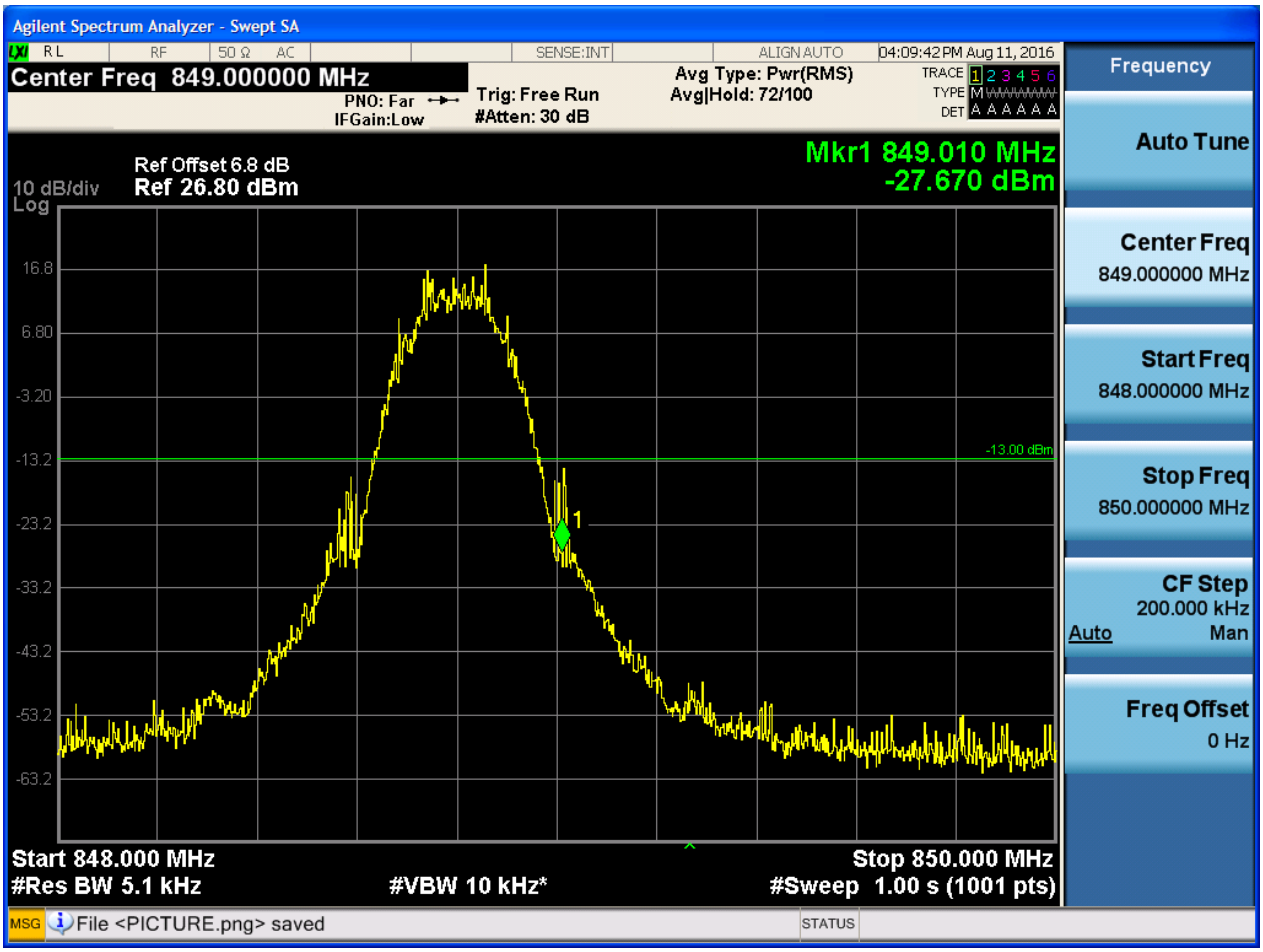


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



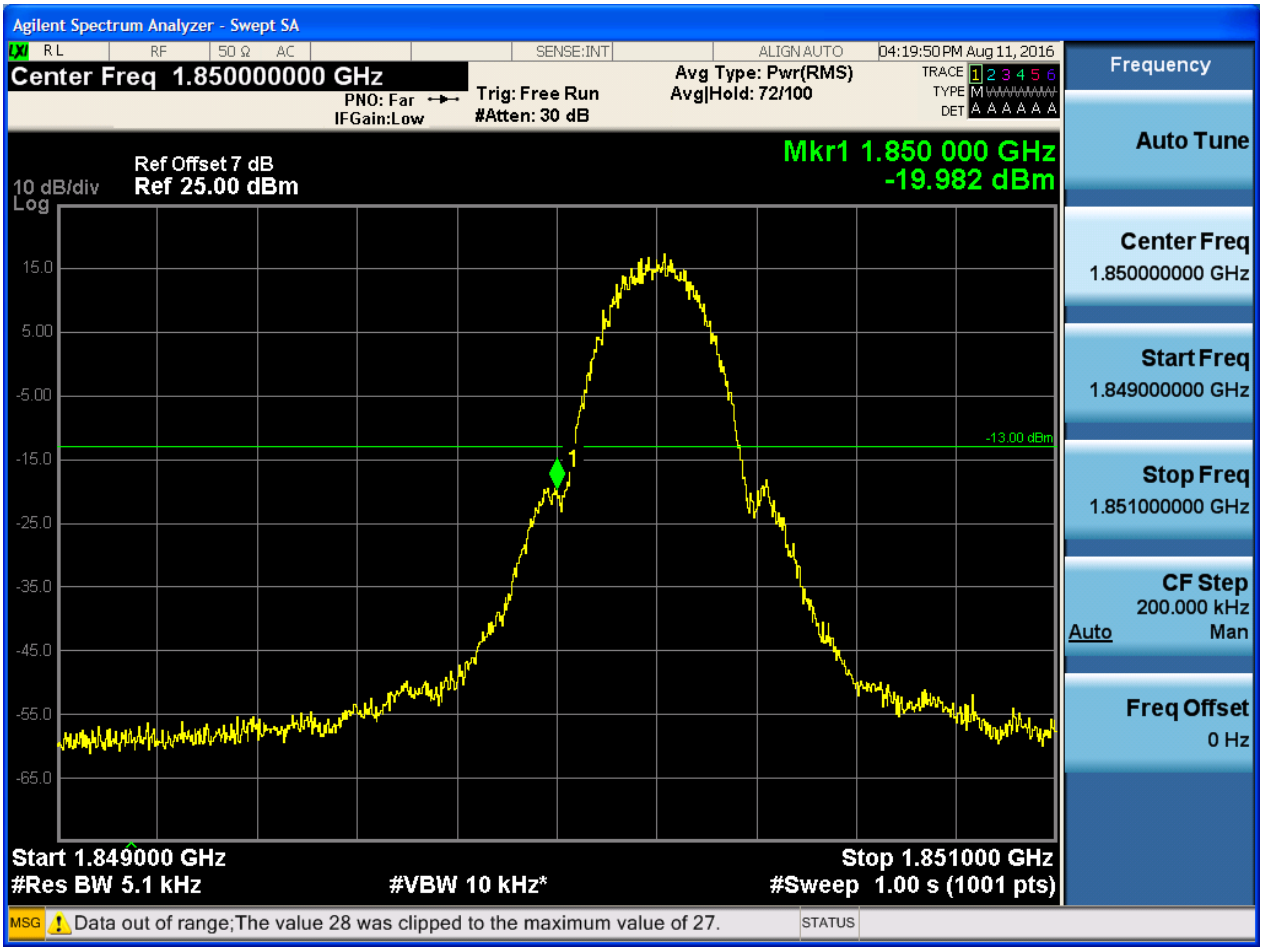
5.1.1.2.2 Test Channel = HCH



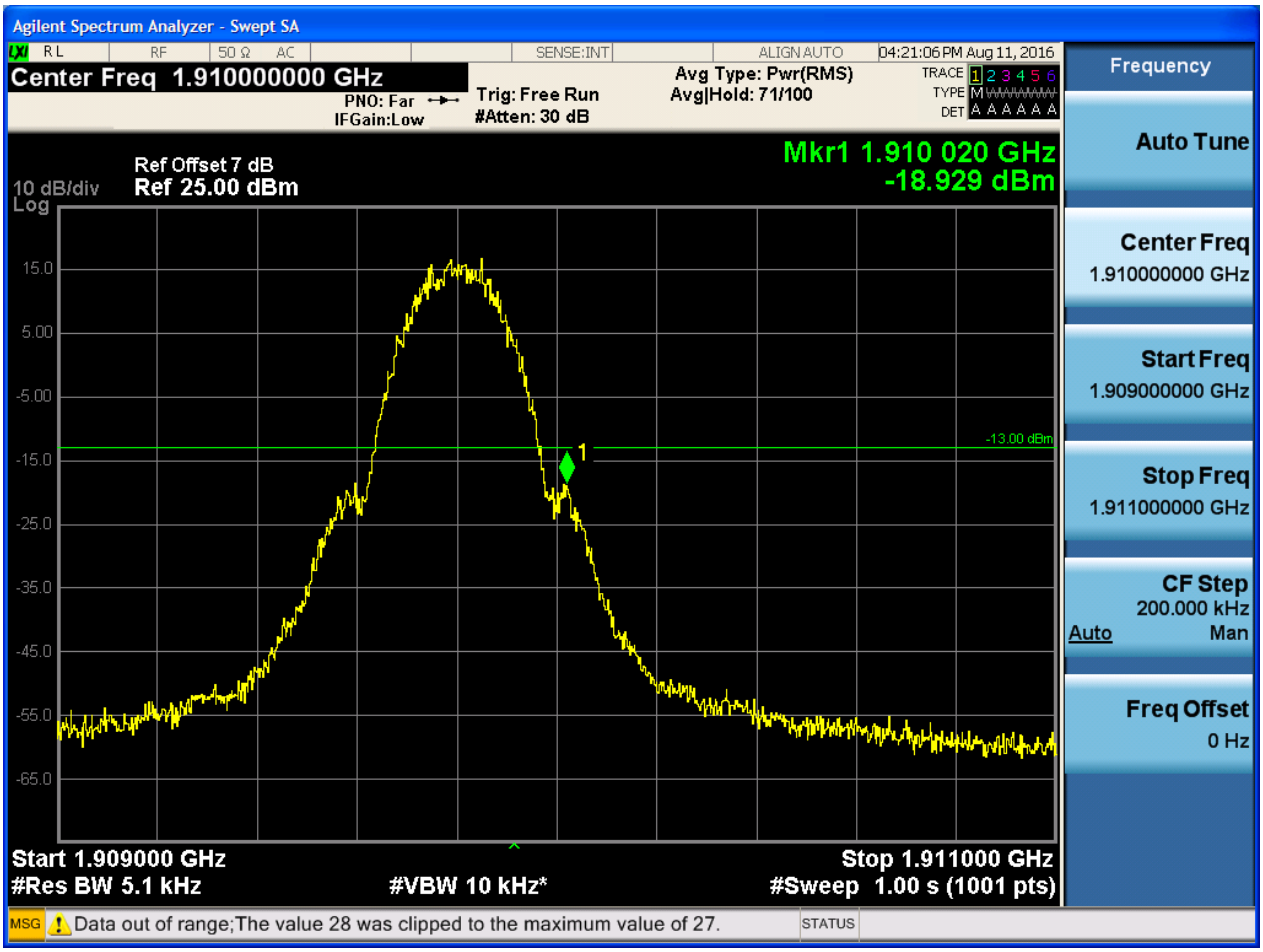
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

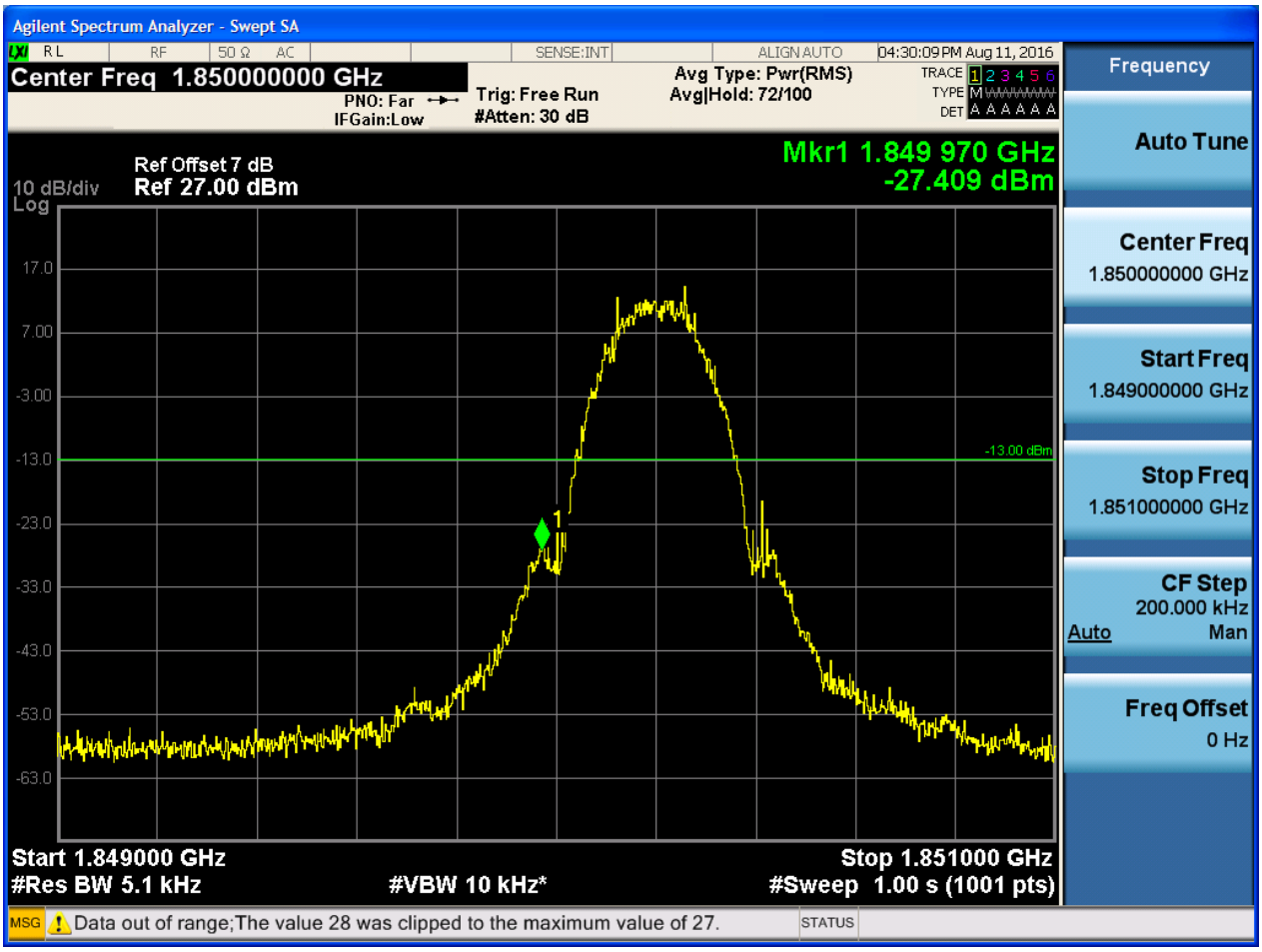


5.1.2.1.2 Test Channel = HCH

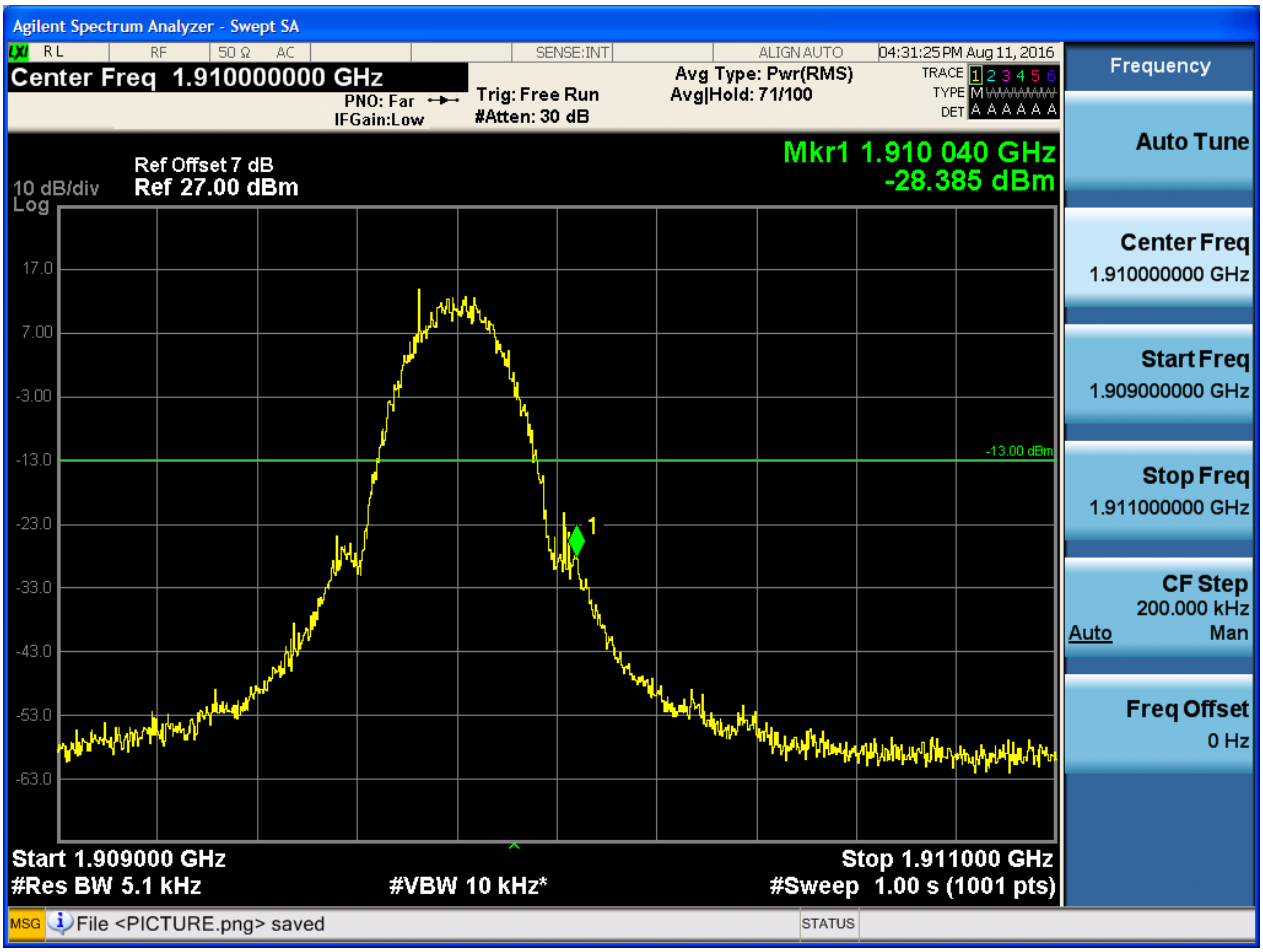


5.1.2.2 Test Mode = GSM/TM2

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.

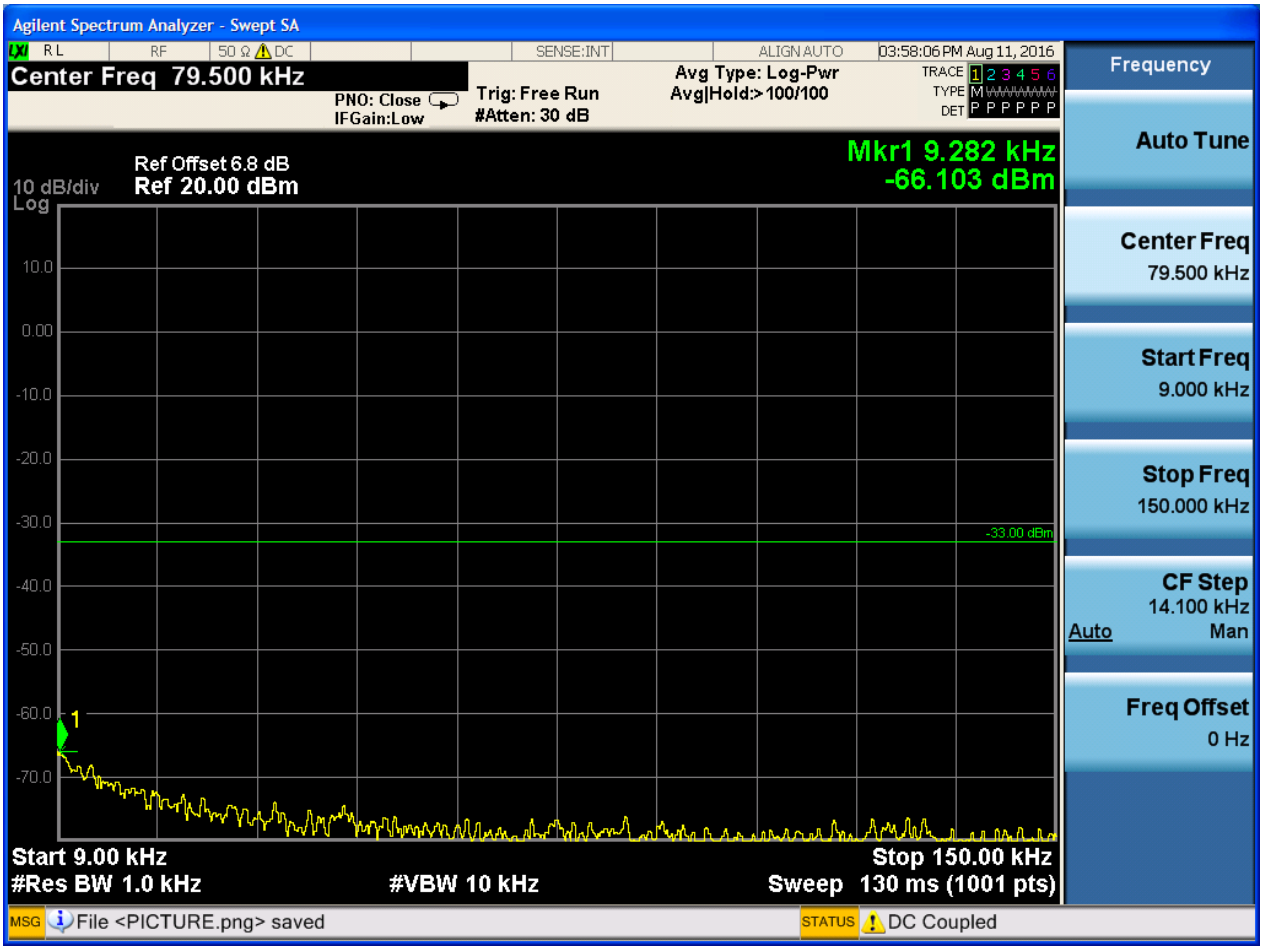
Part I - Test Plots

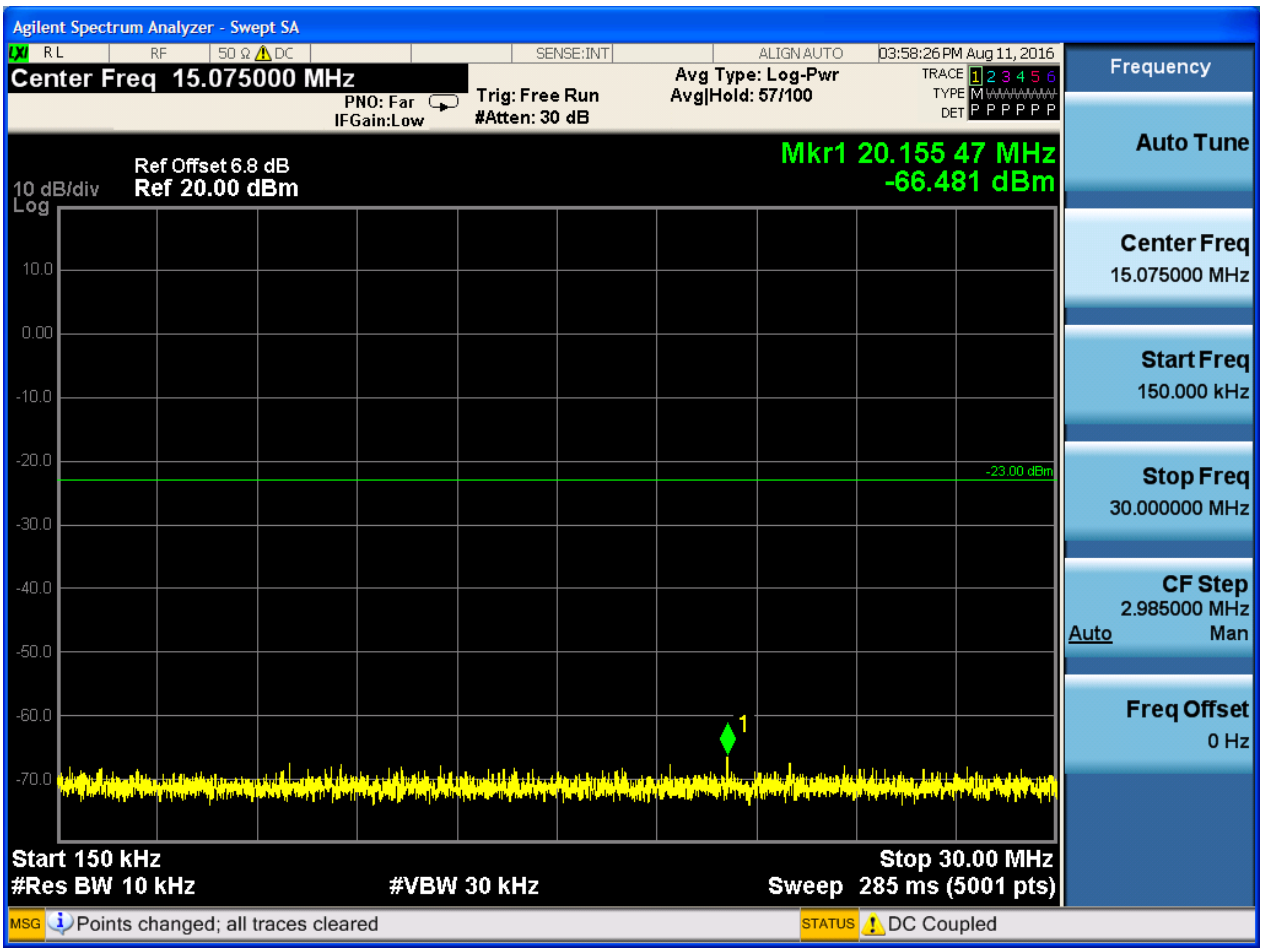
6.1 For GSM

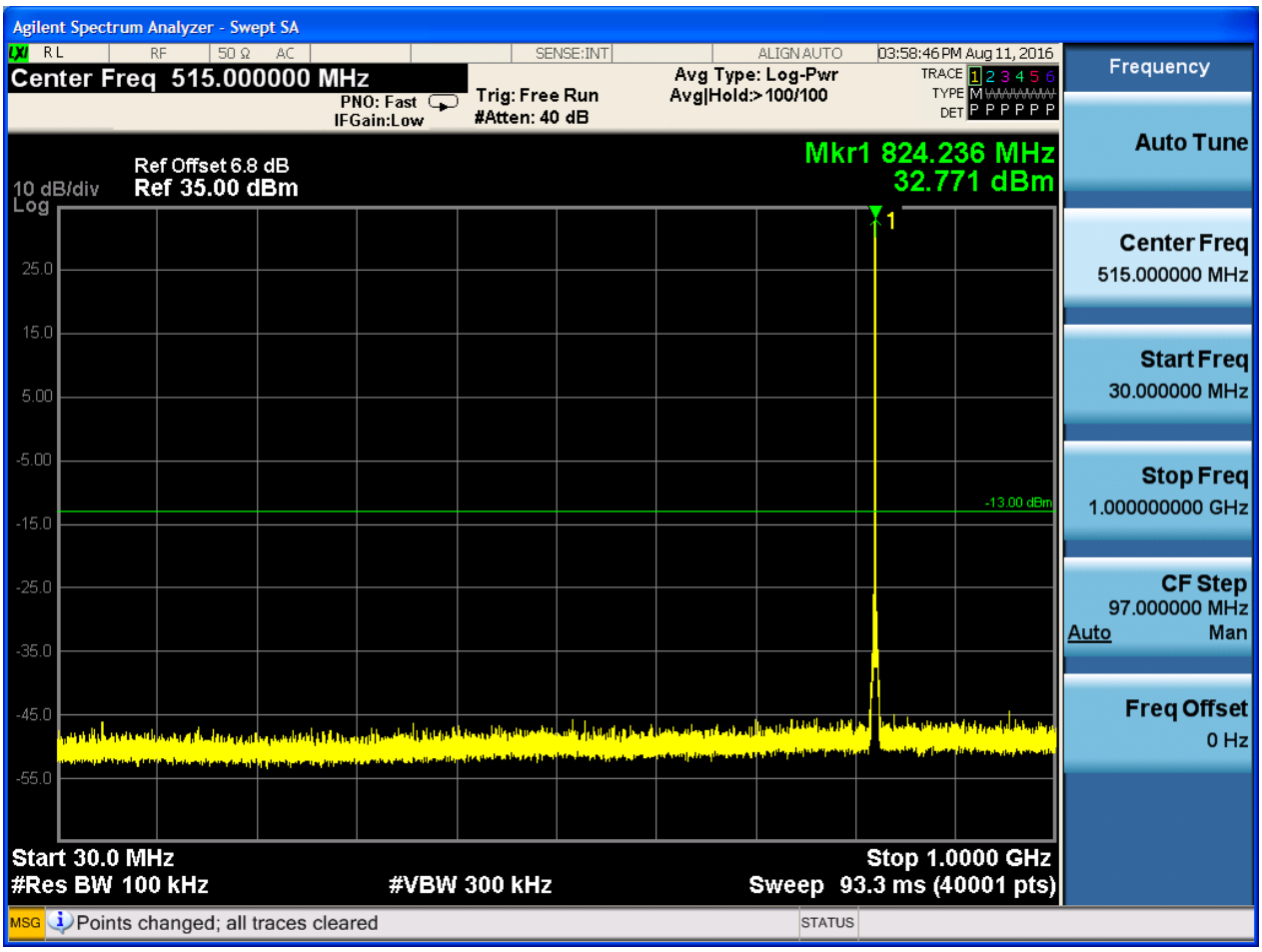
6.1.1 Test Band = GSM850

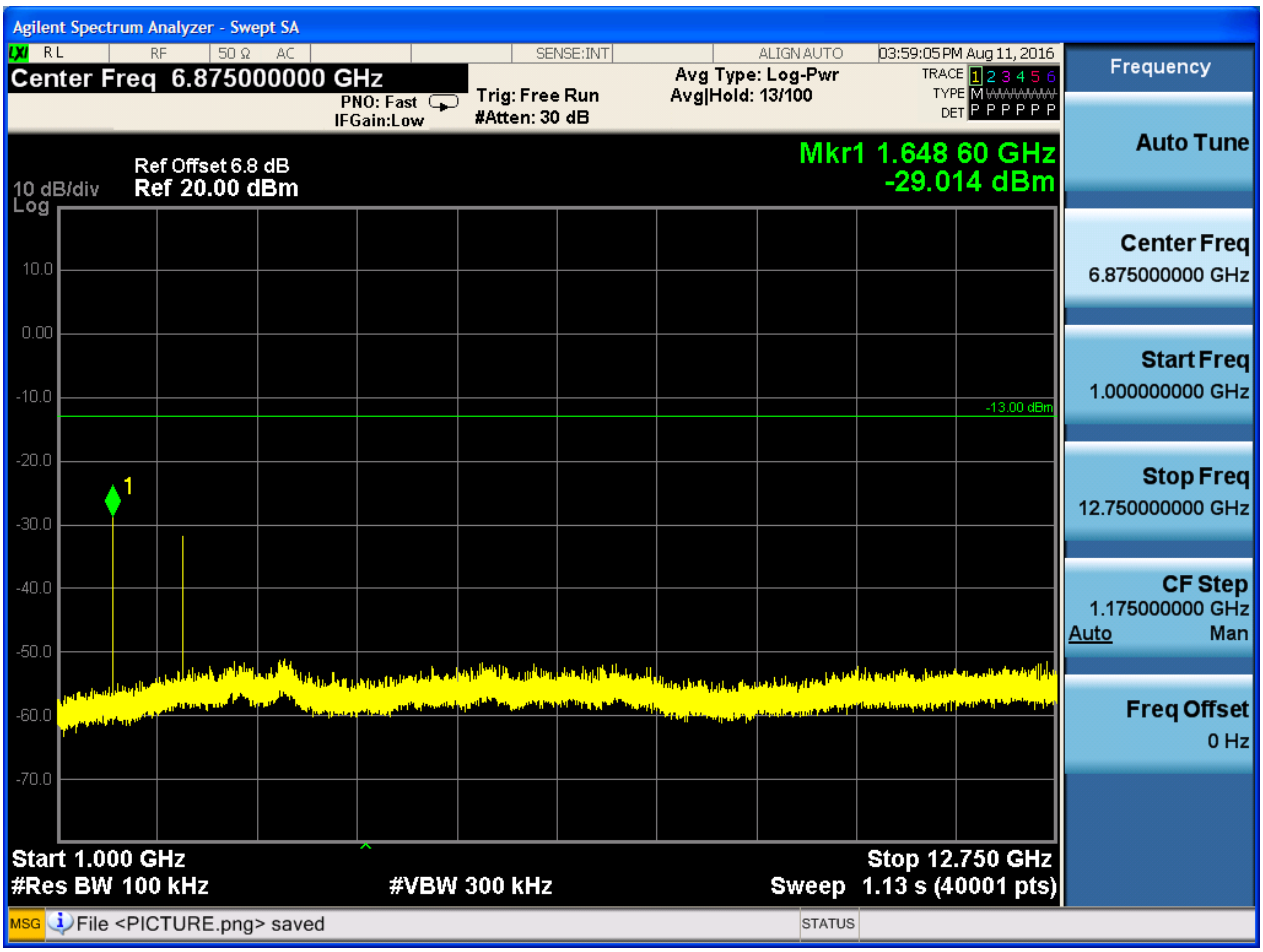
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

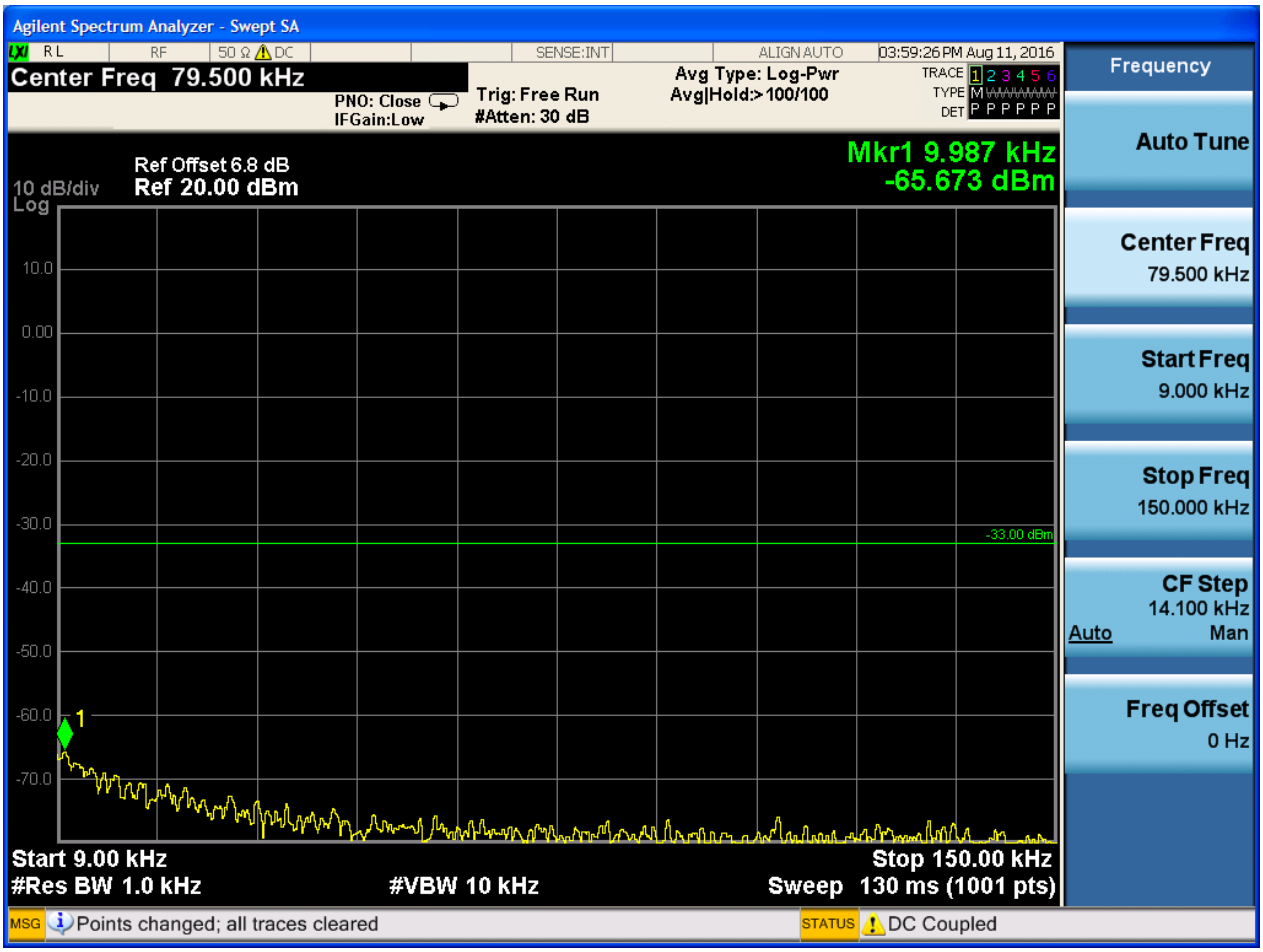


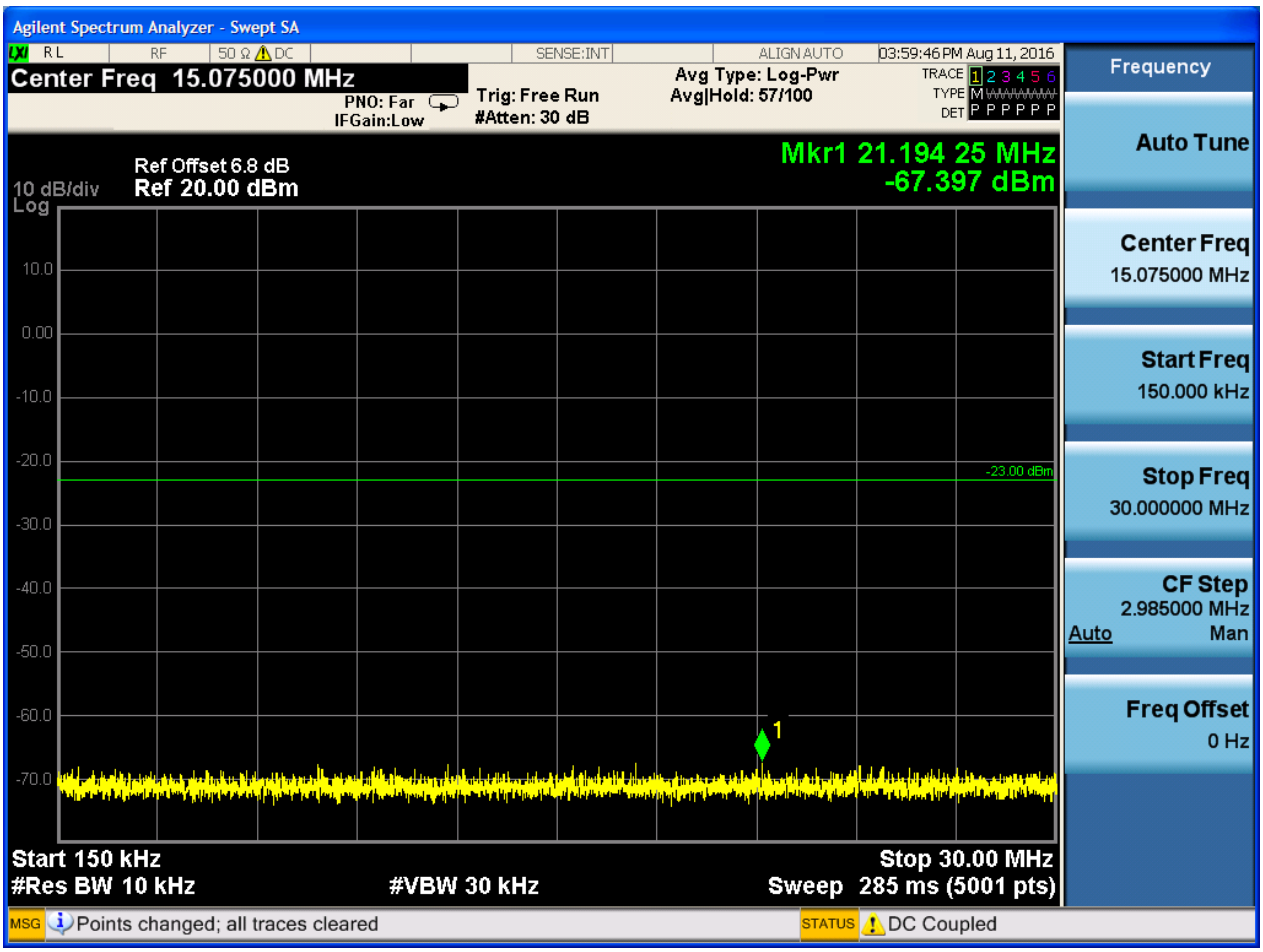


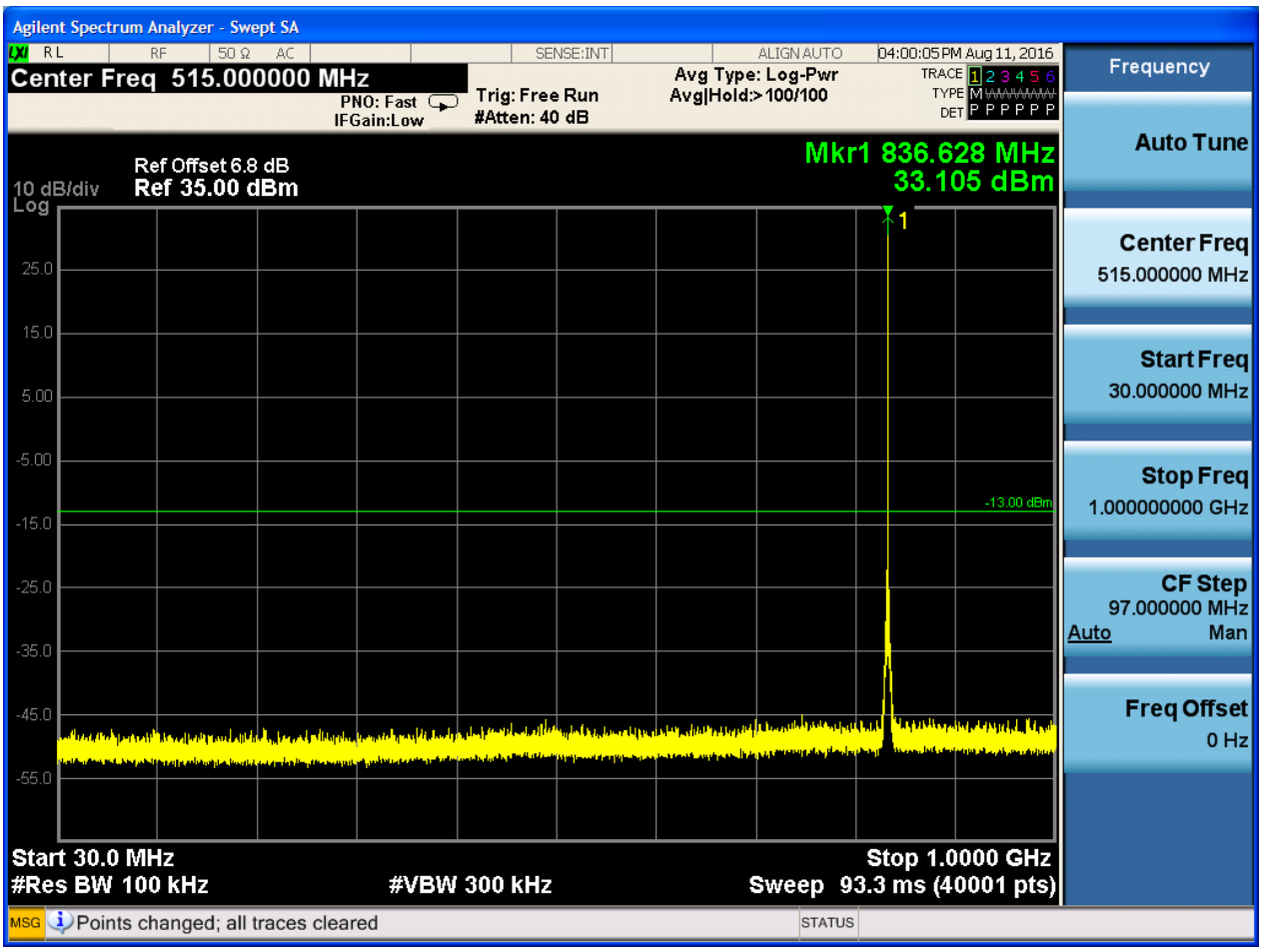


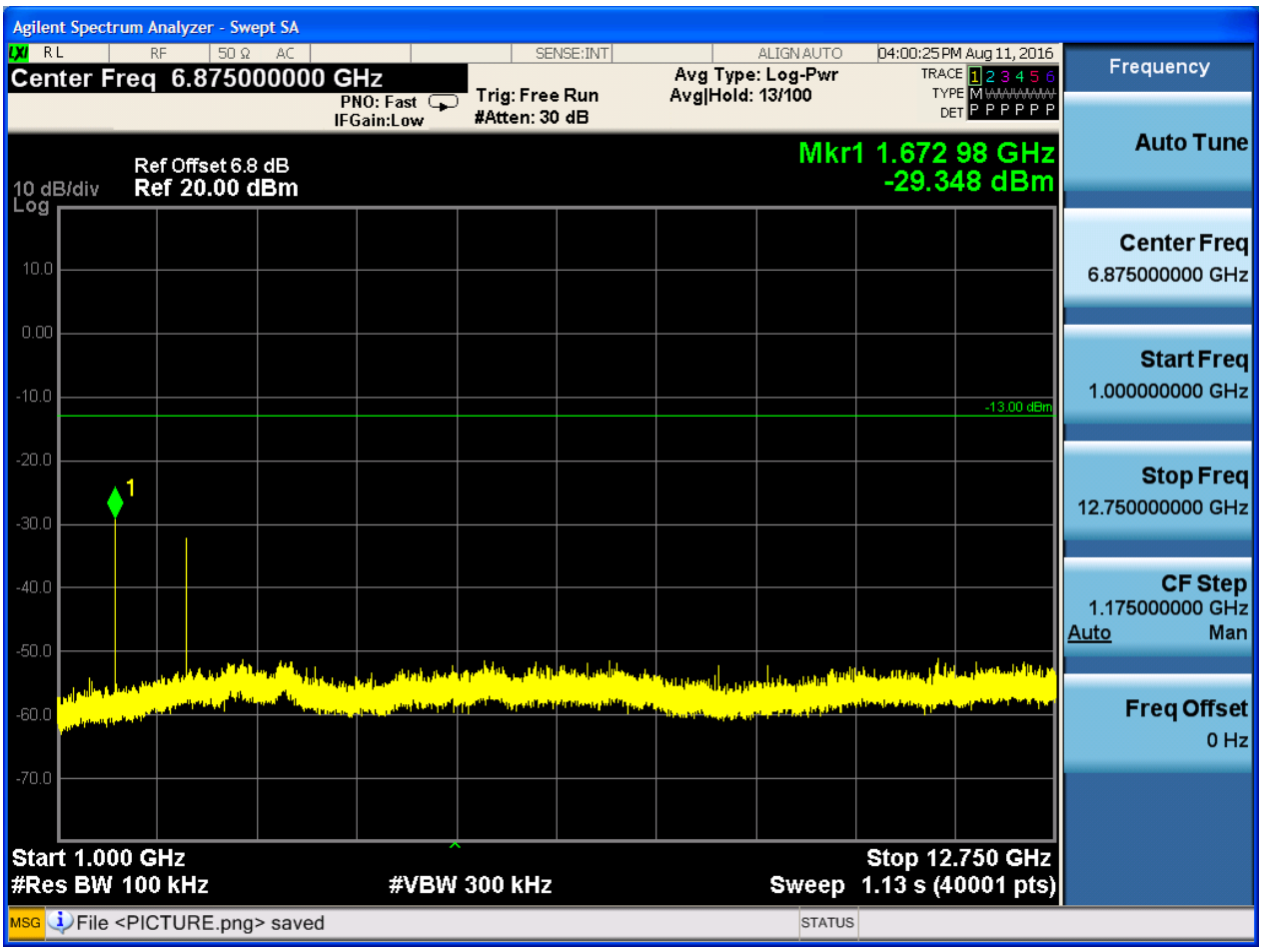


6.1.1.1.2 Test Channel = MCH

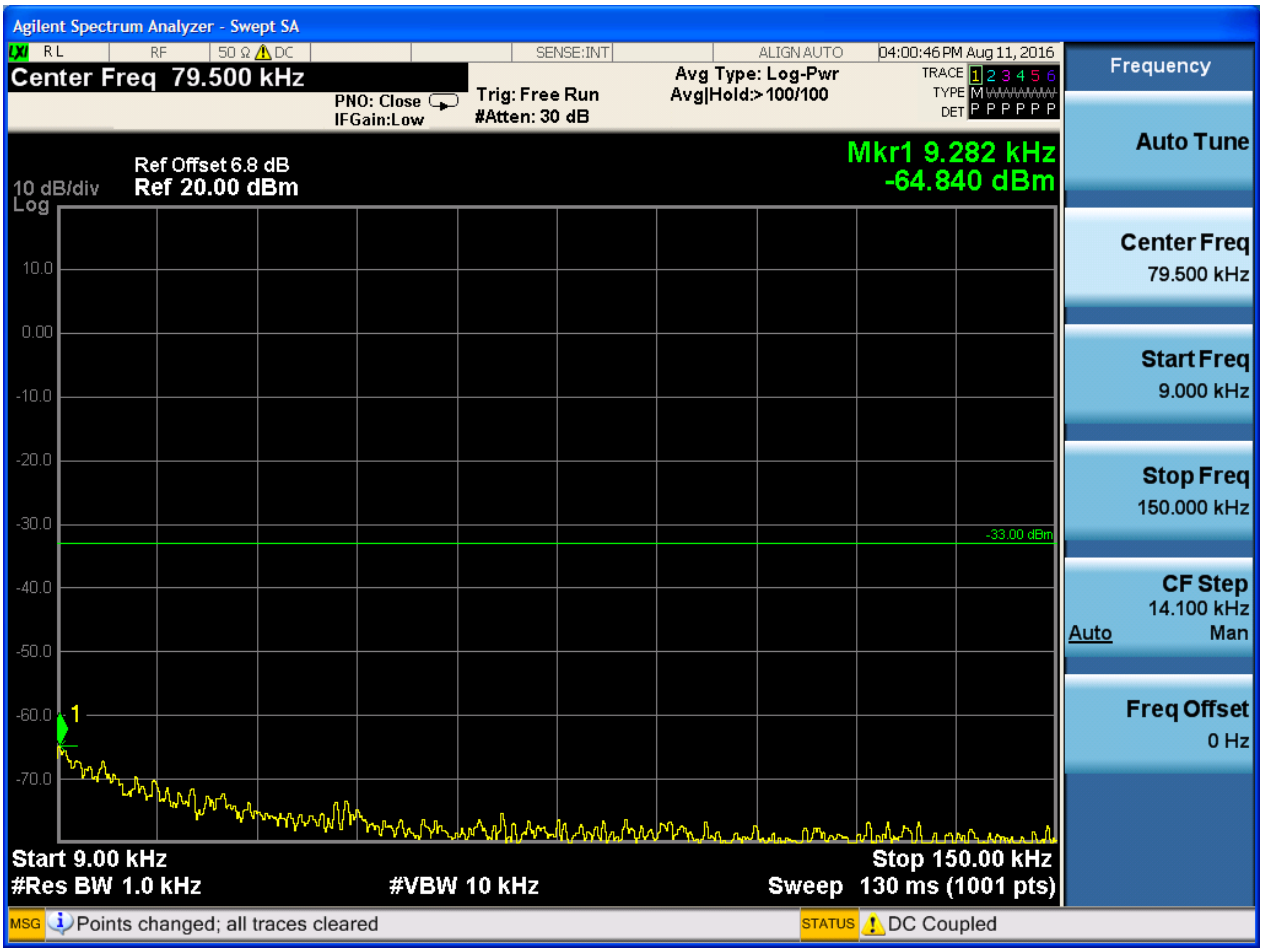


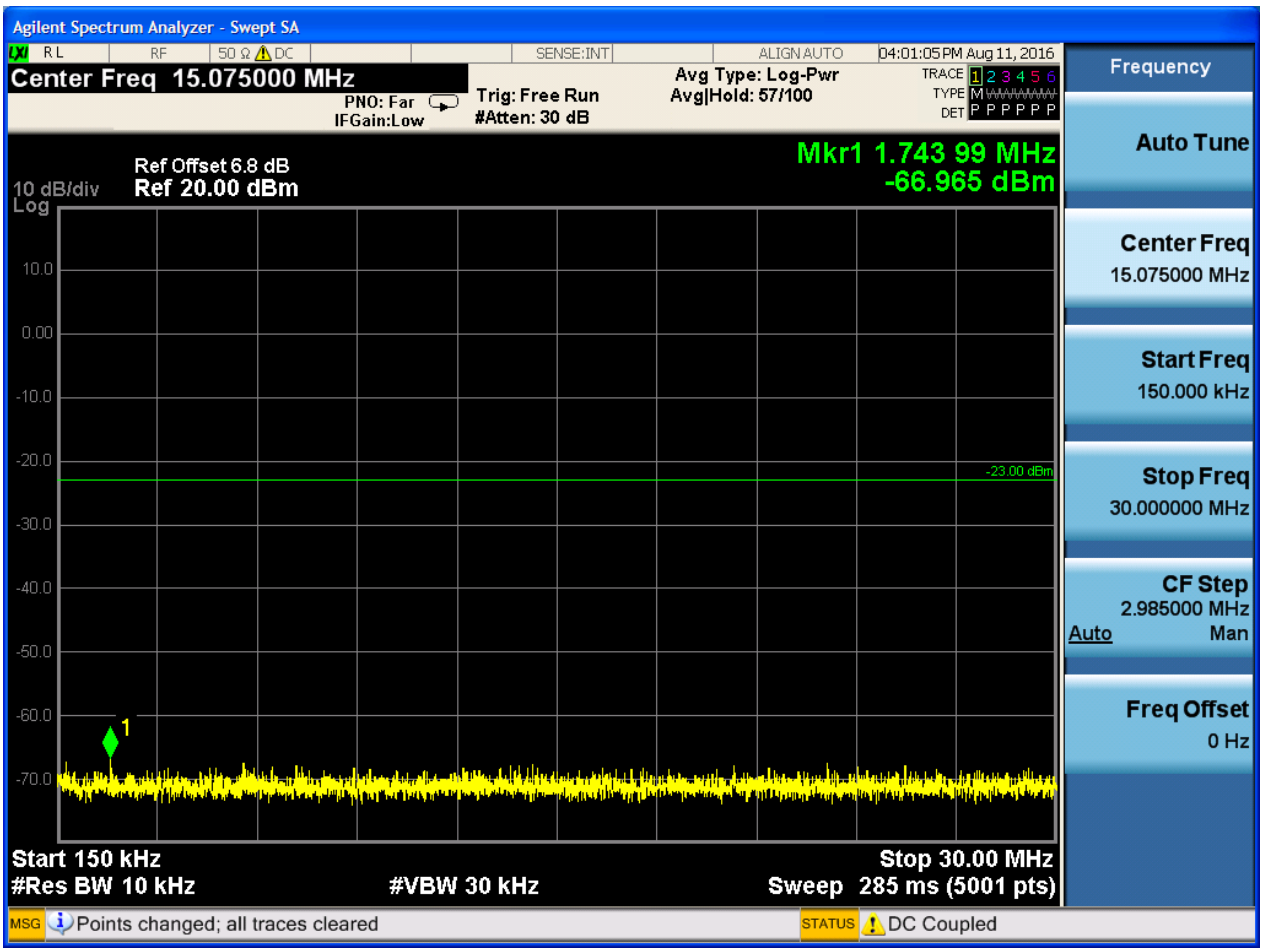


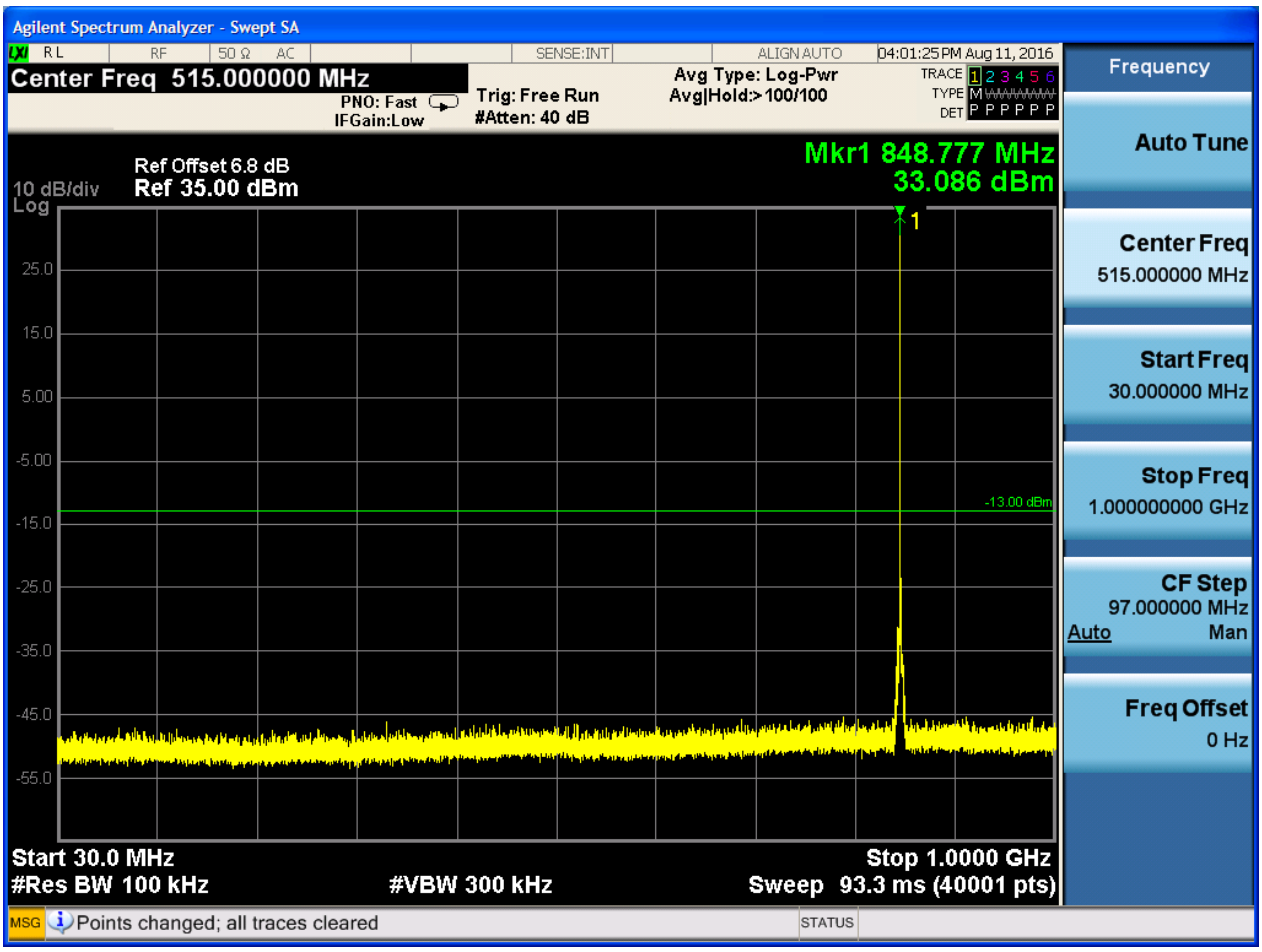


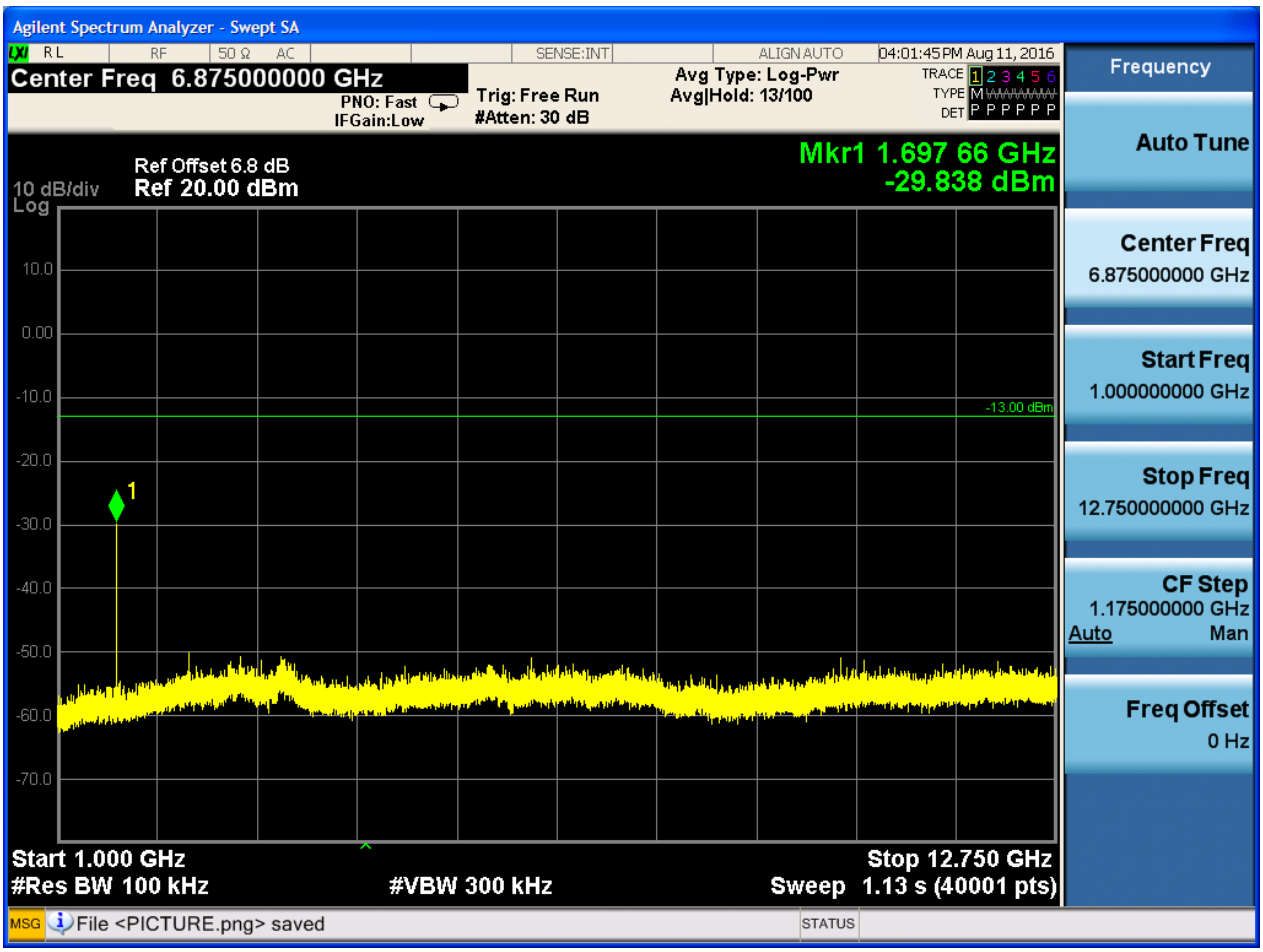


6.1.1.1.3 Test Channel = HCH



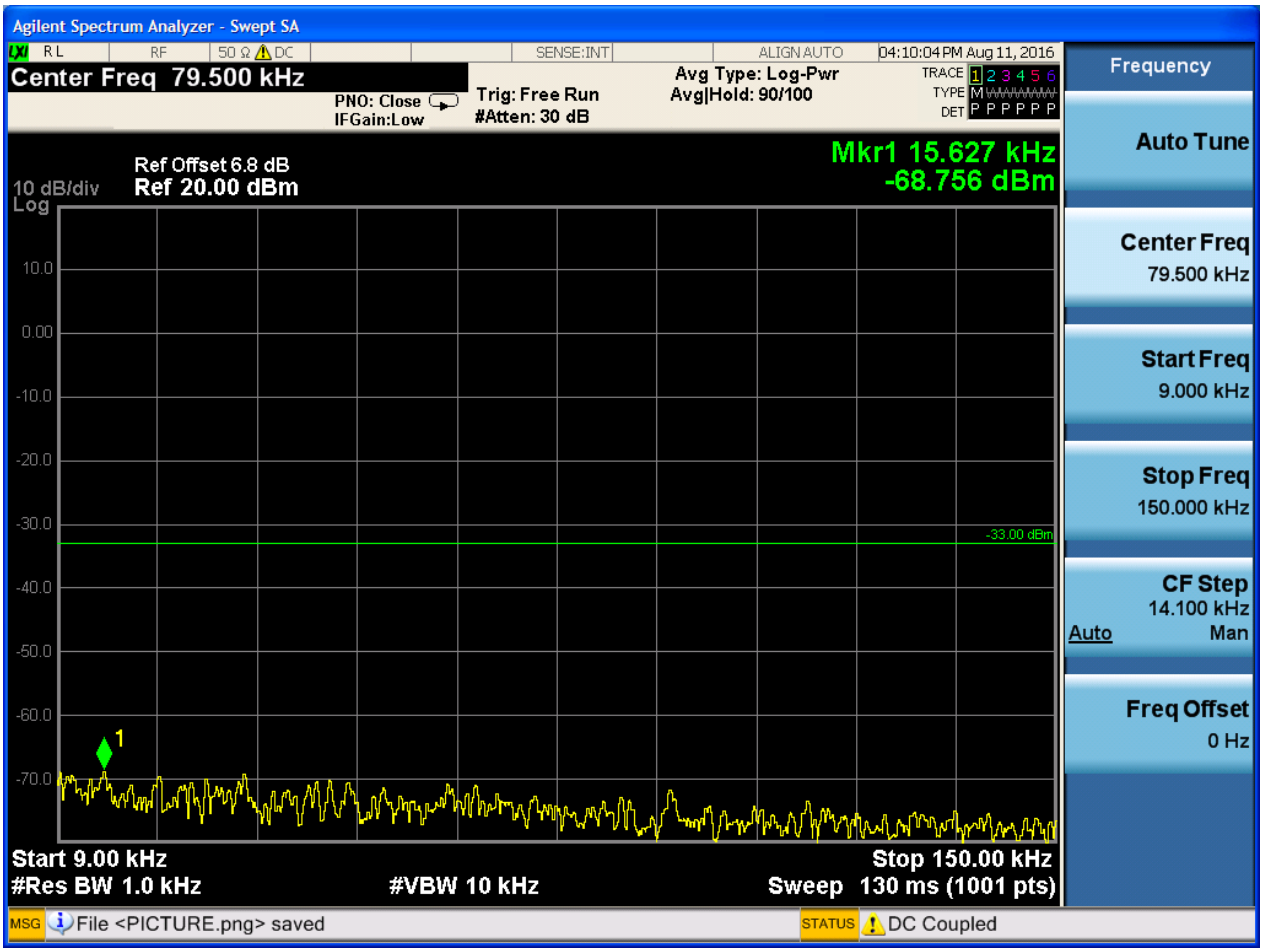


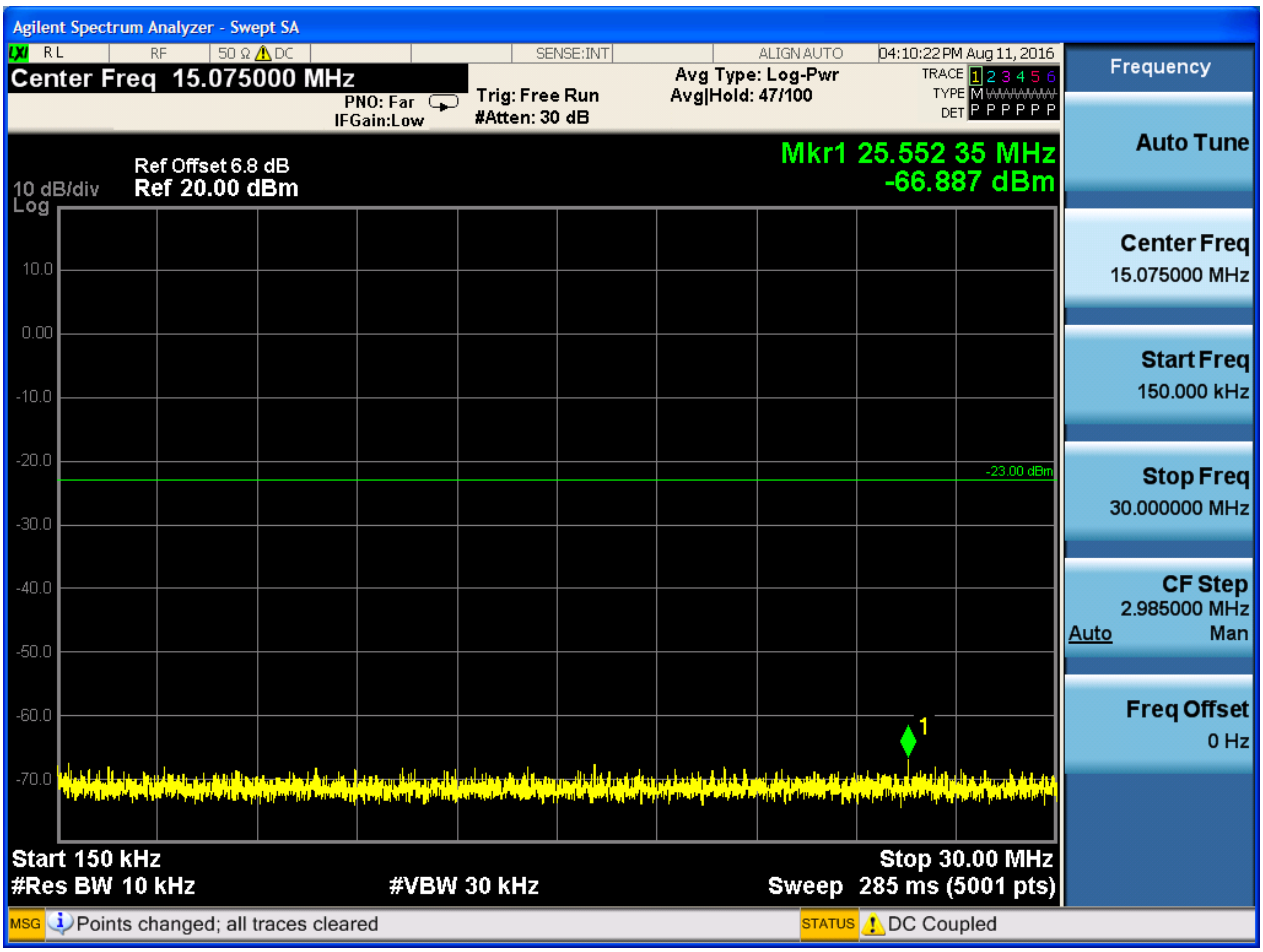


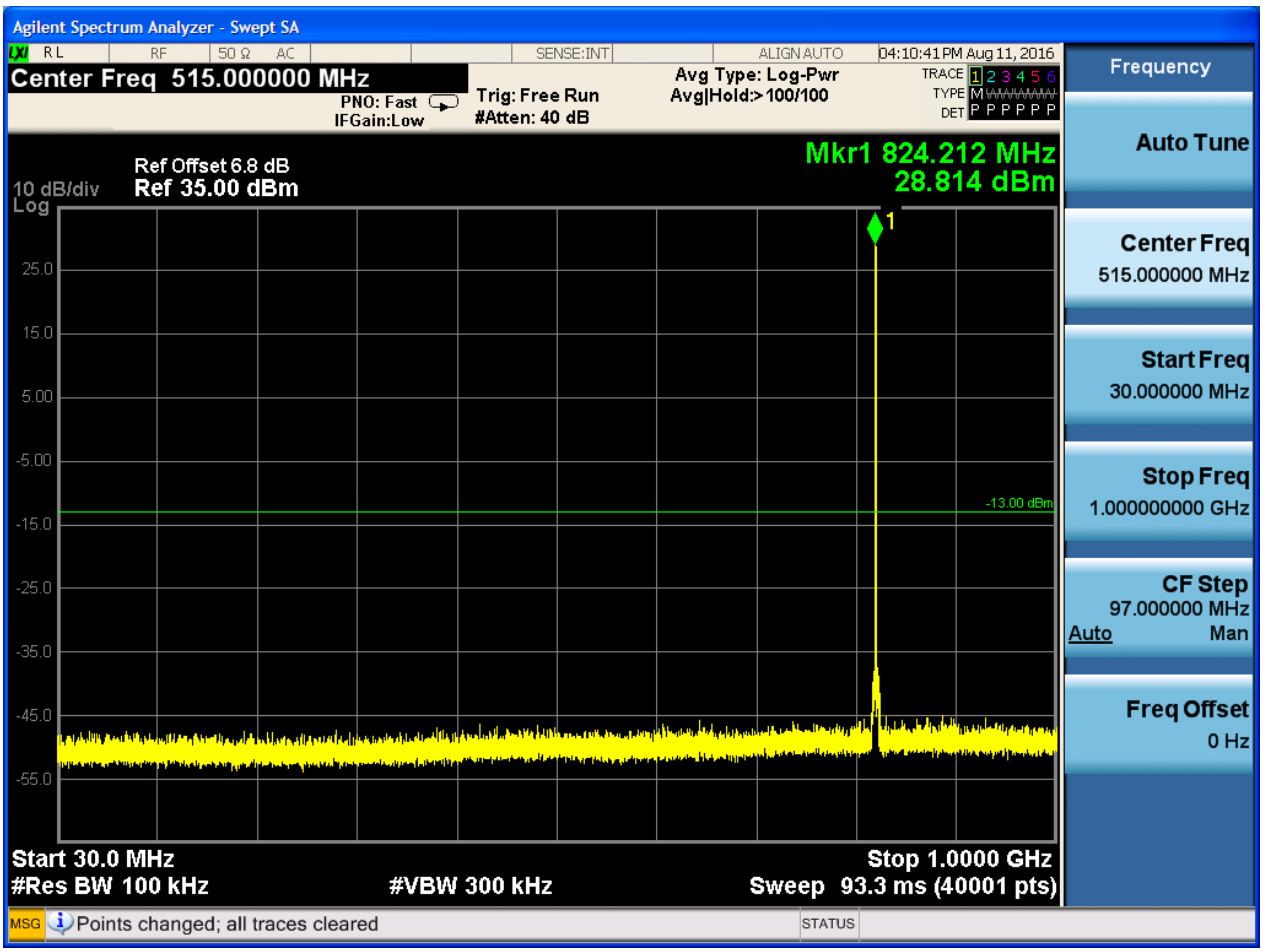


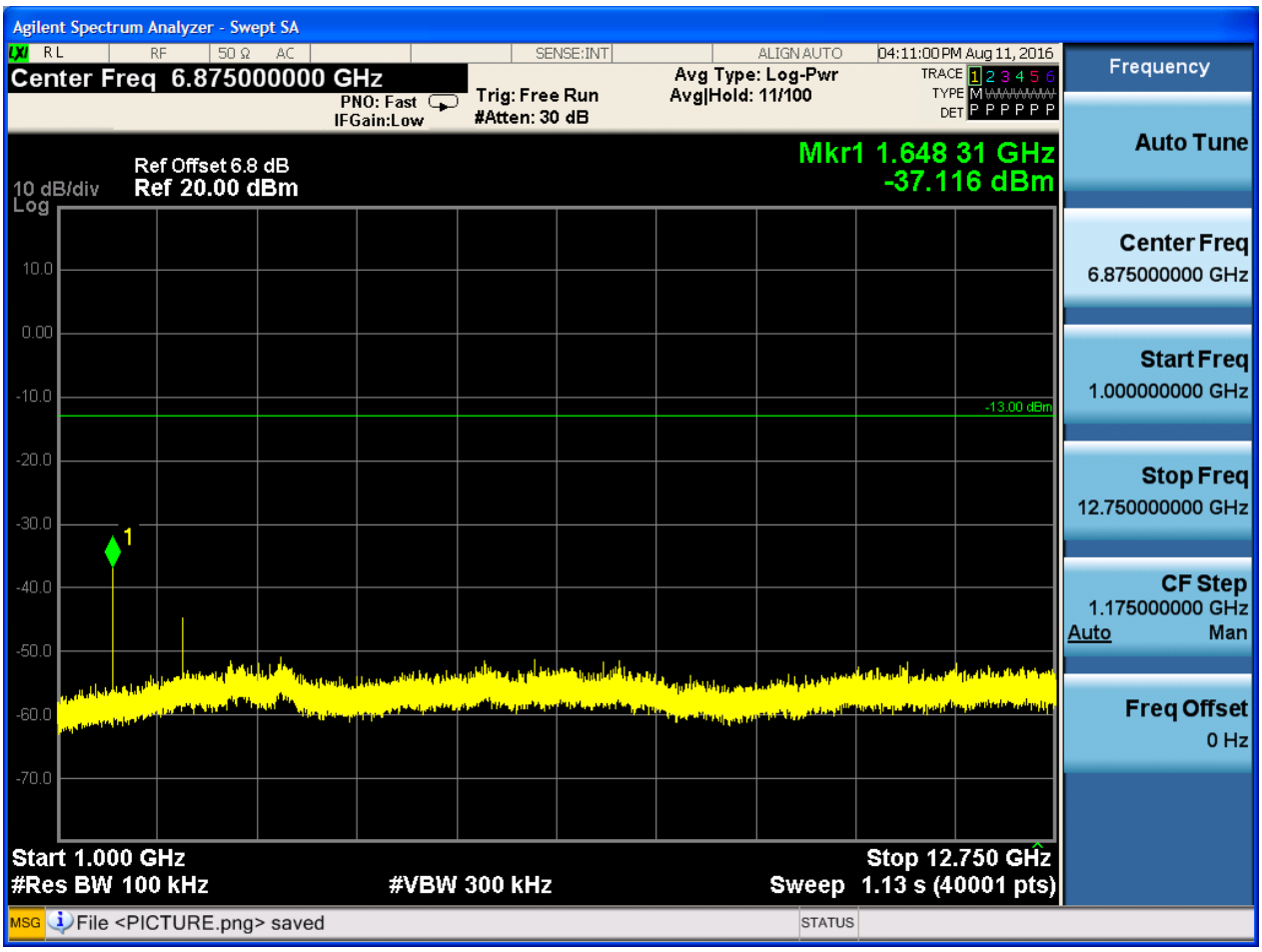
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

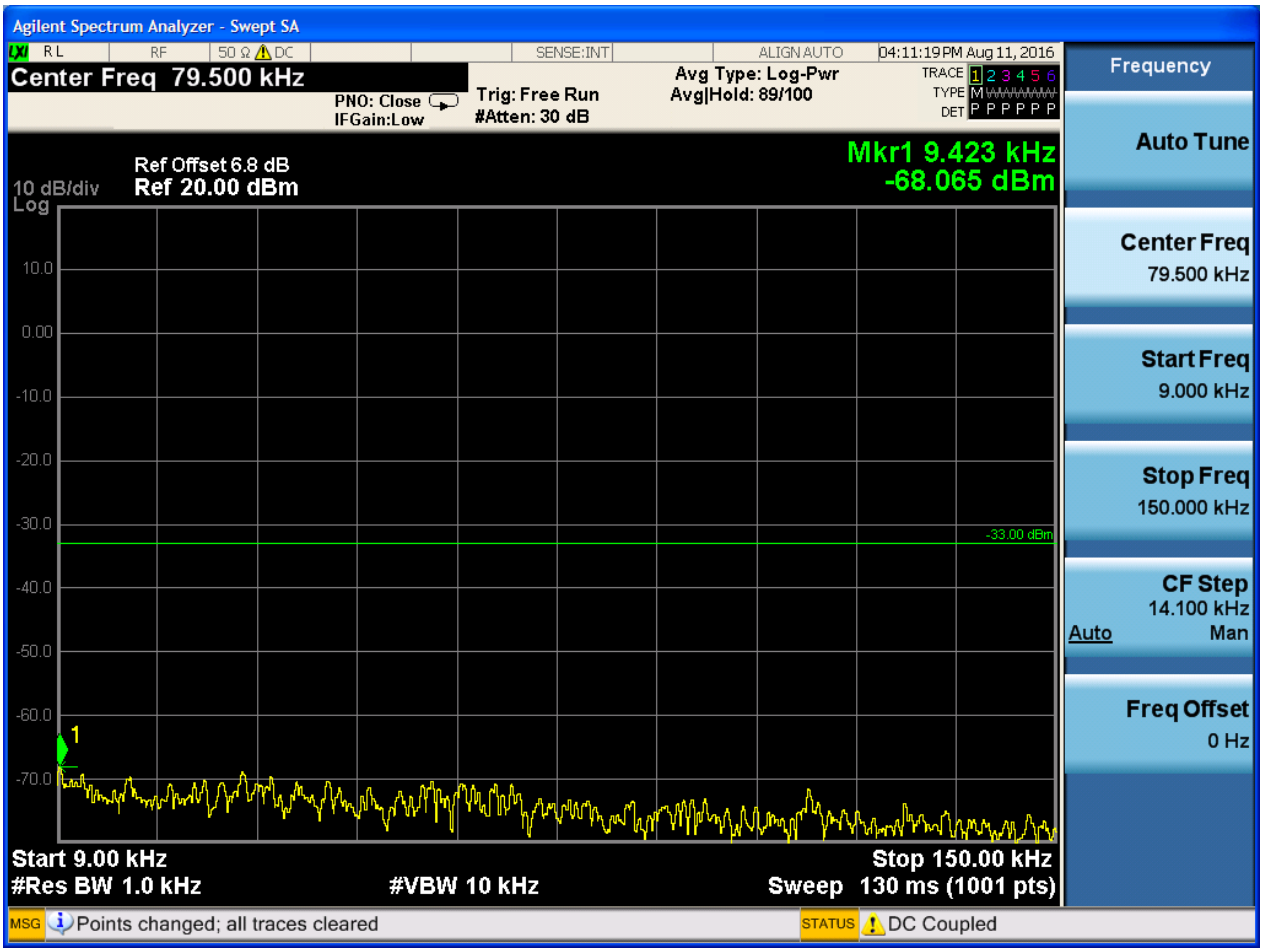


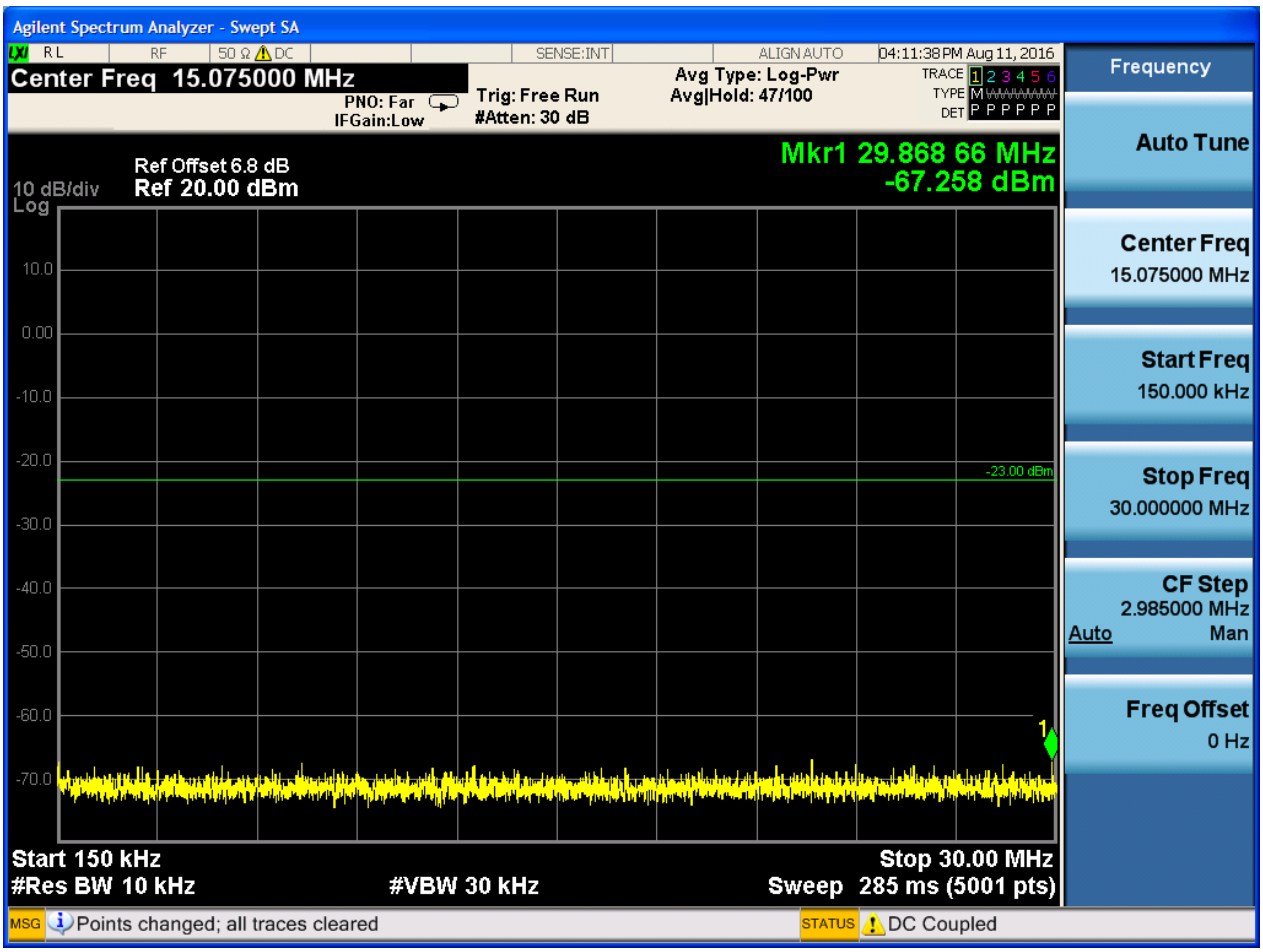


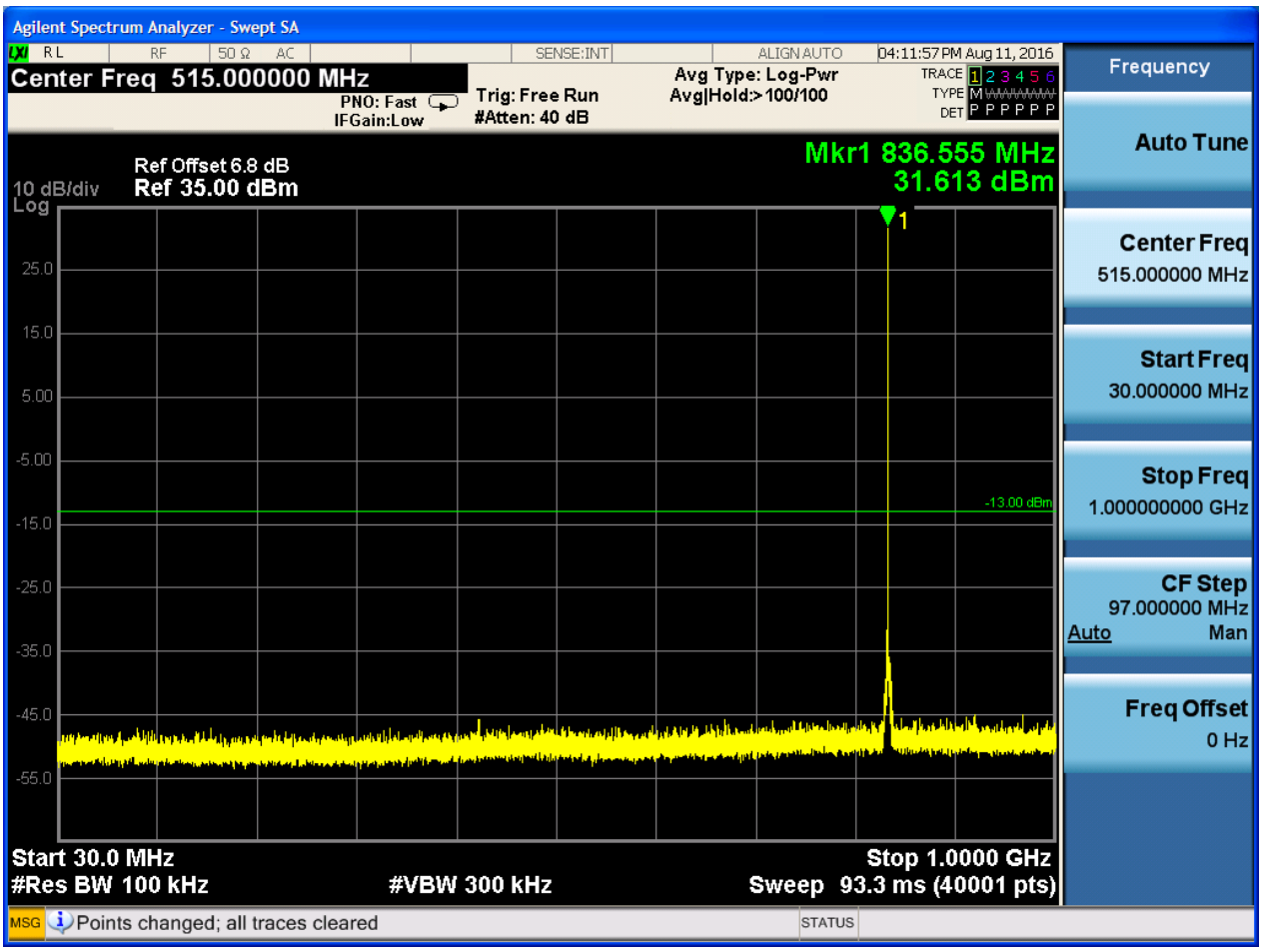


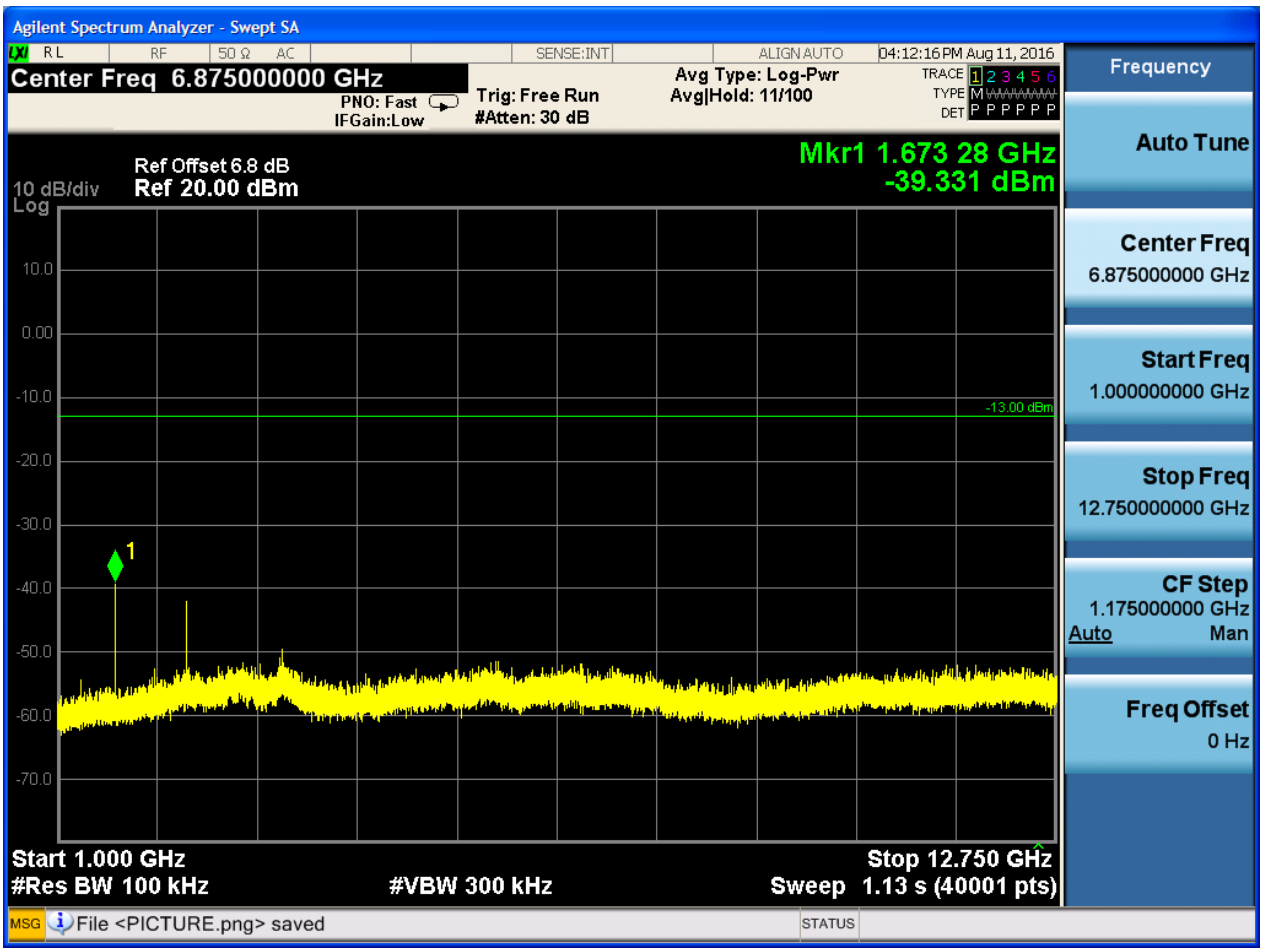


6.1.1.2.2 Test Channel = MCH

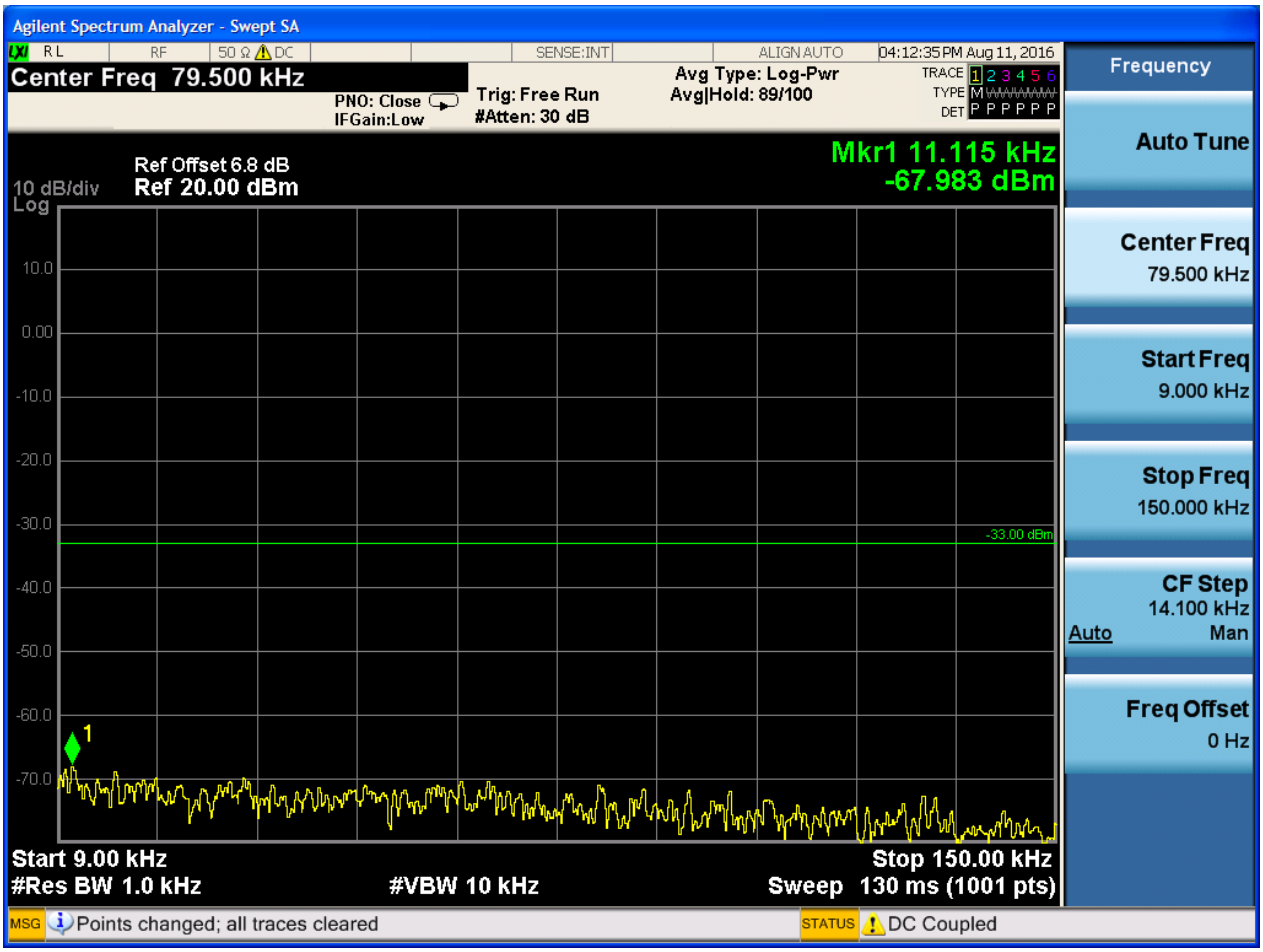


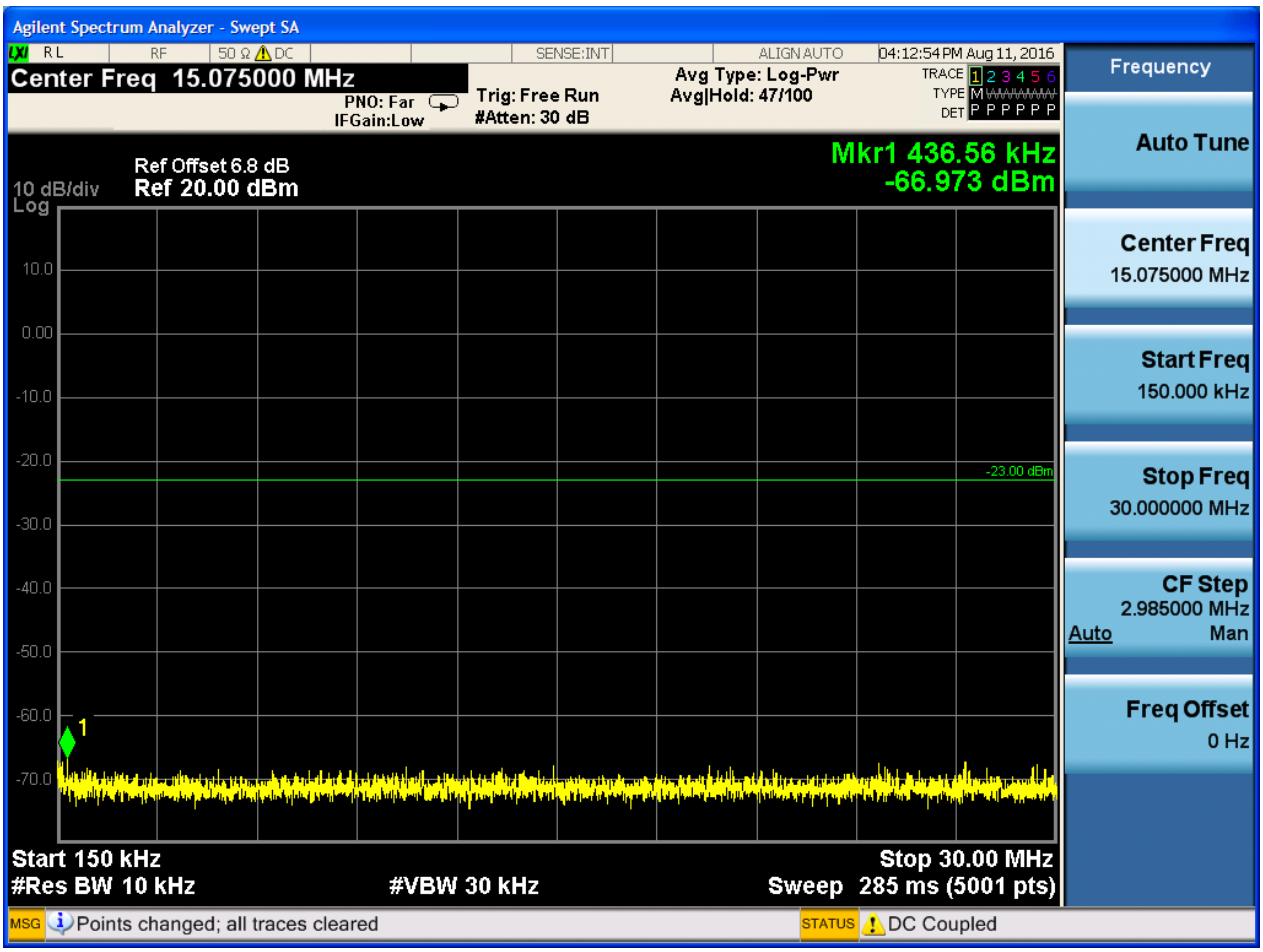


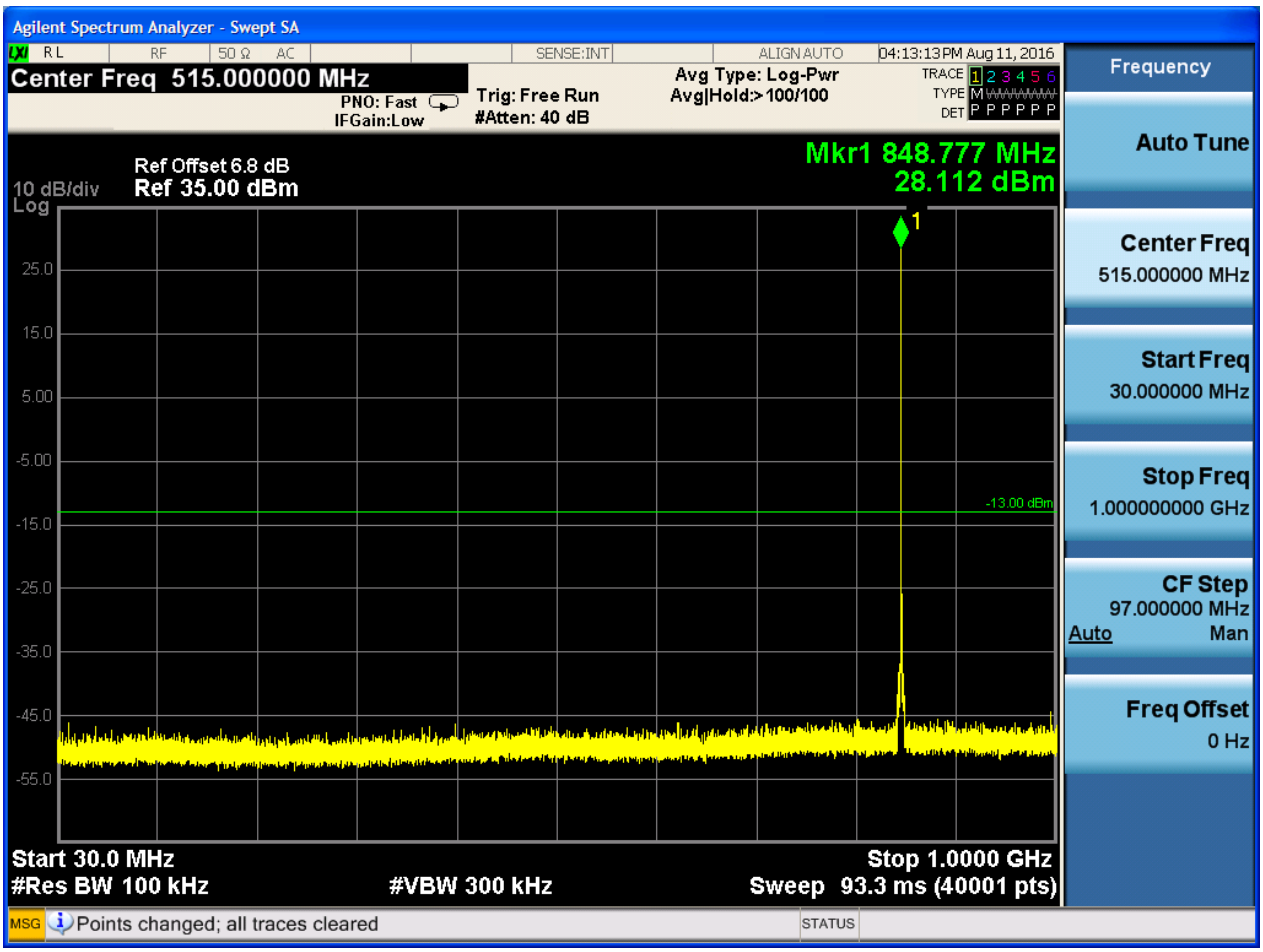


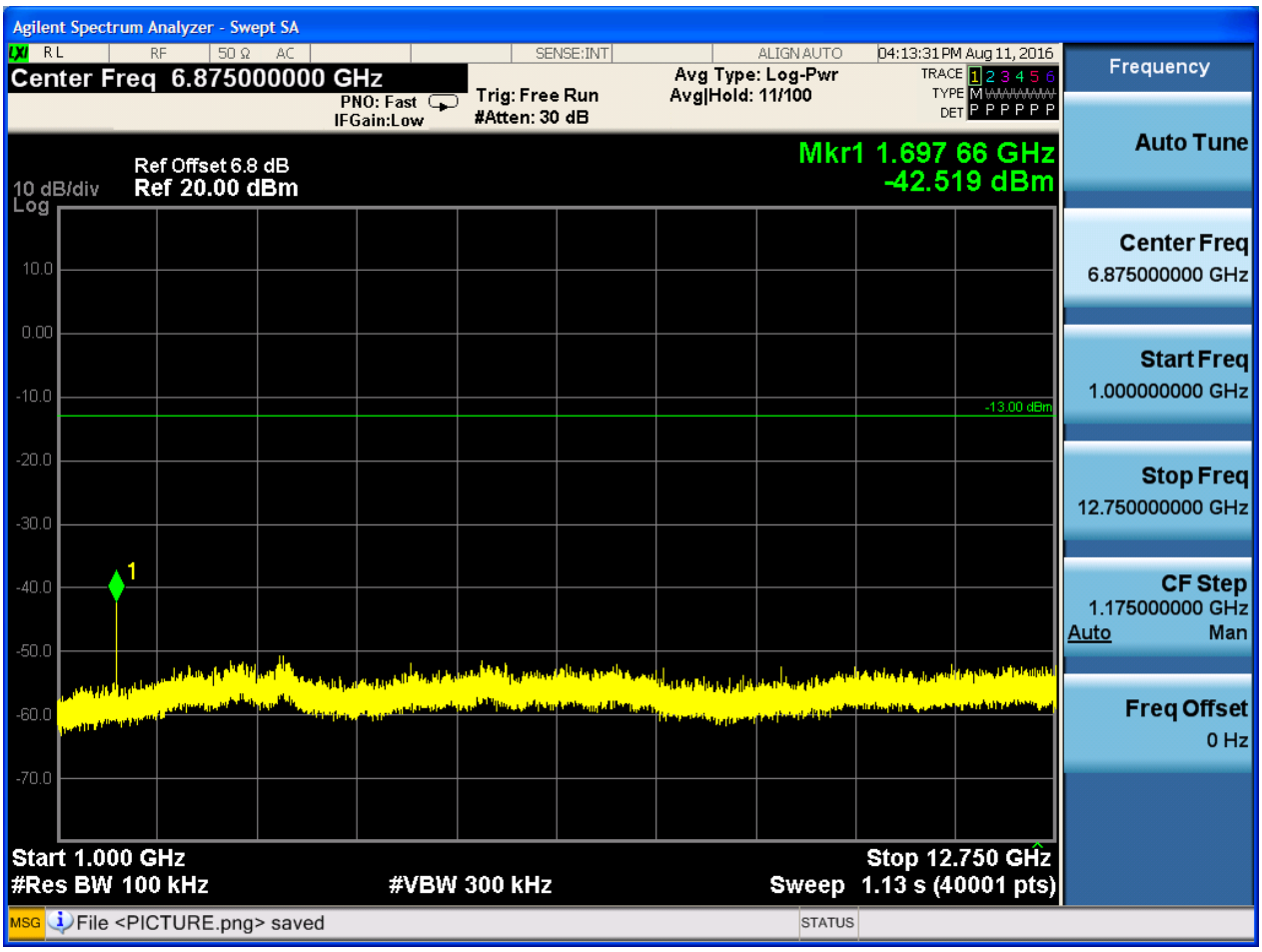


6.1.1.2.3 Test Channel = HCH





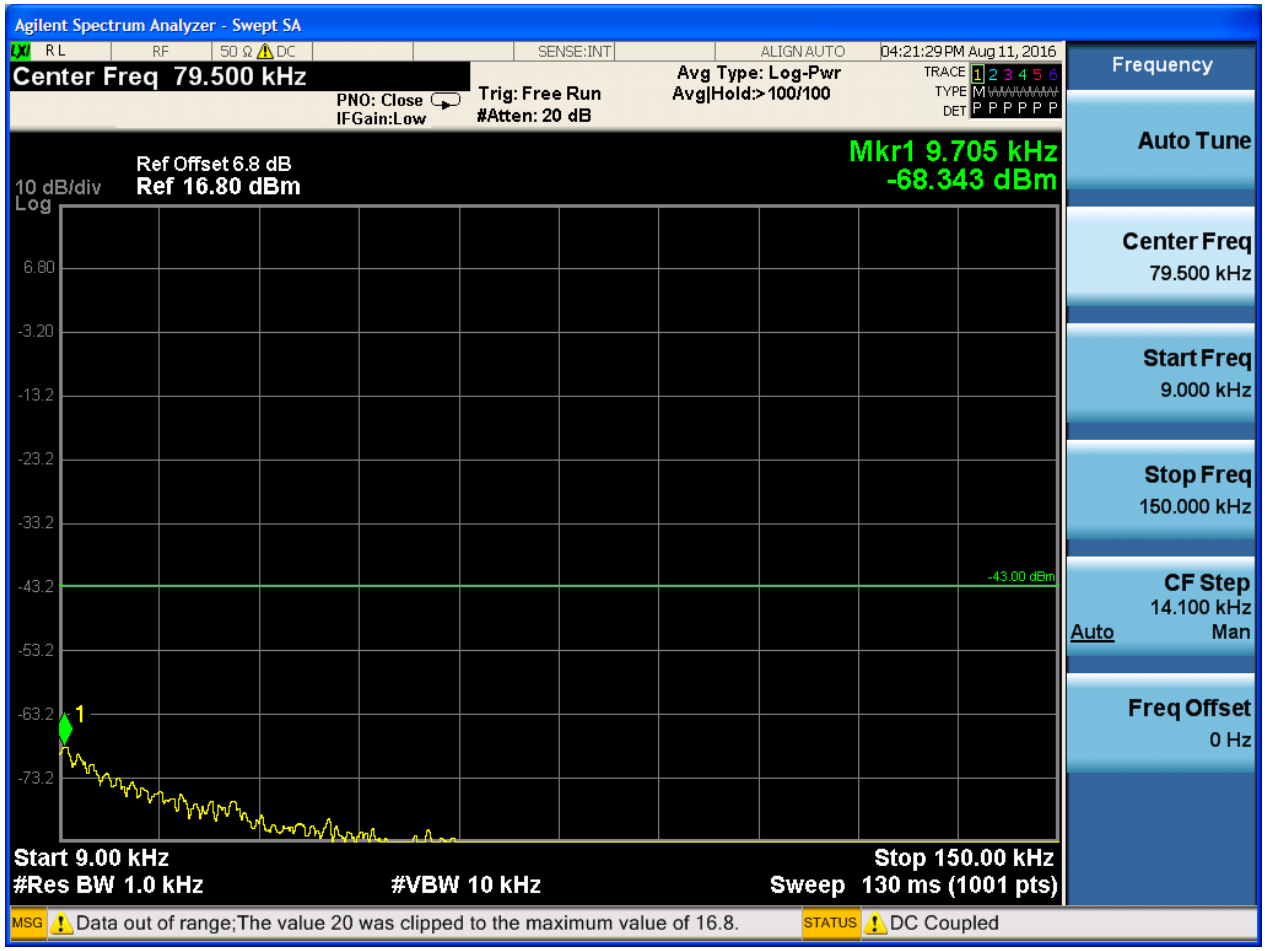


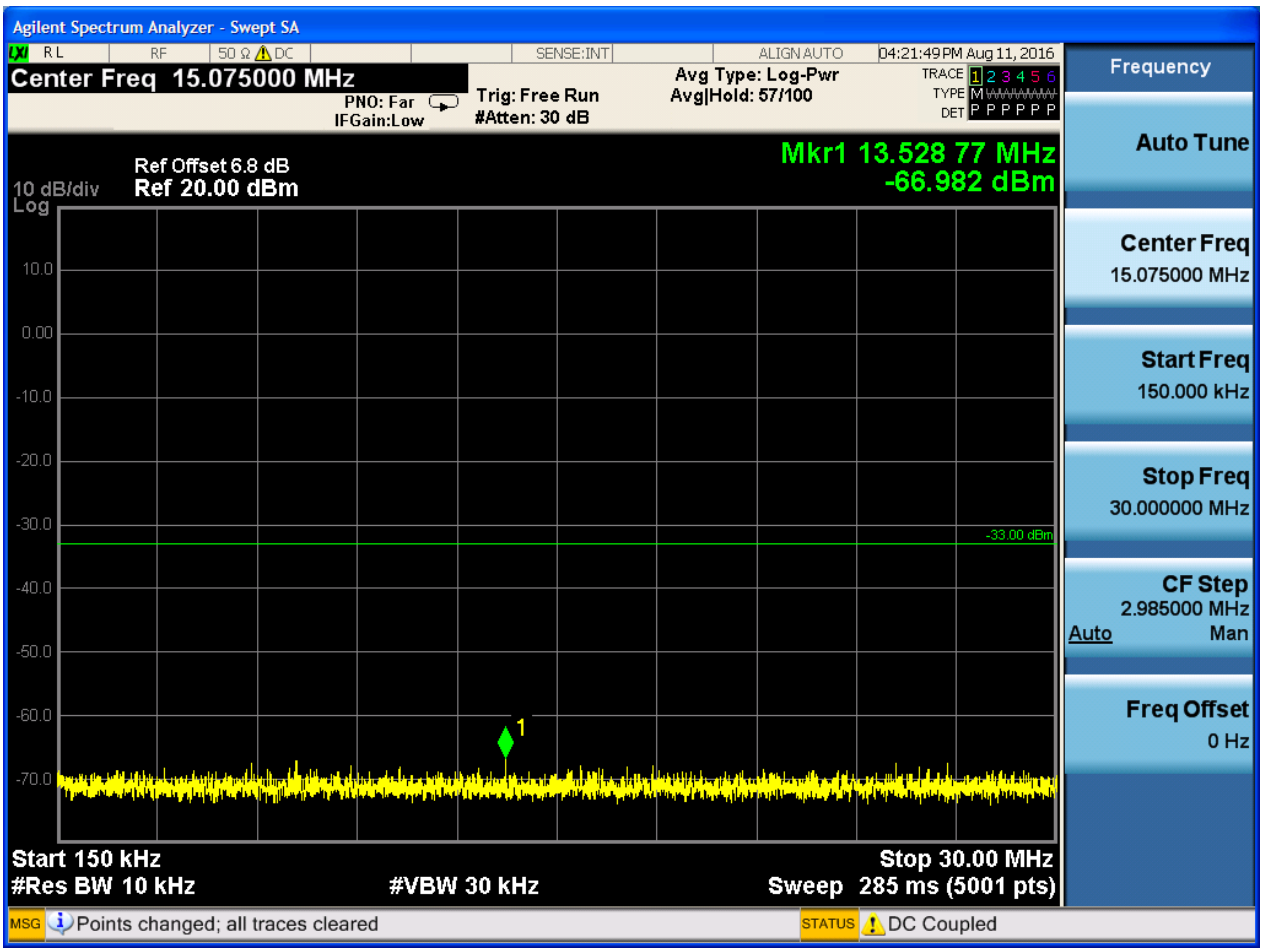


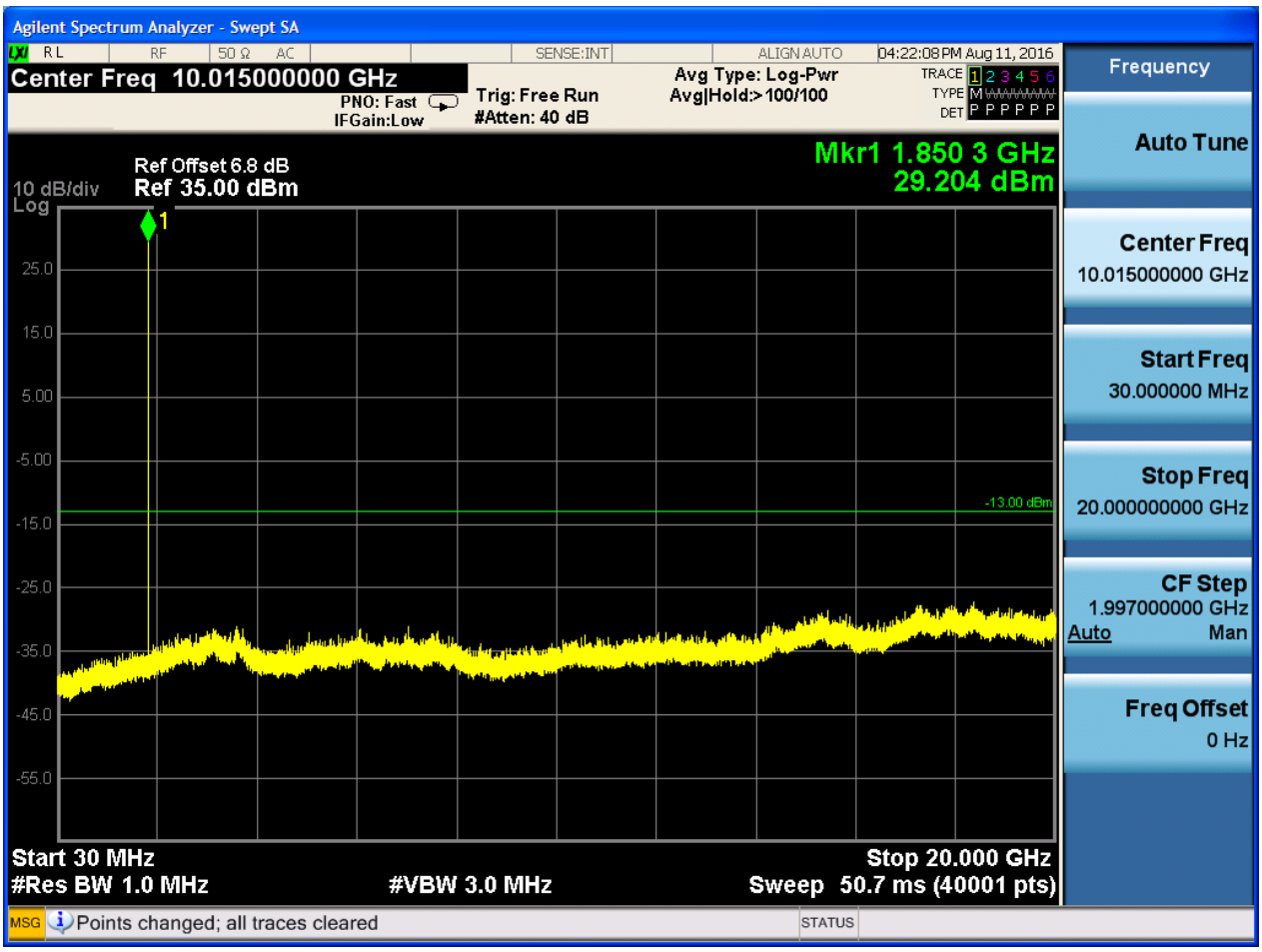
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

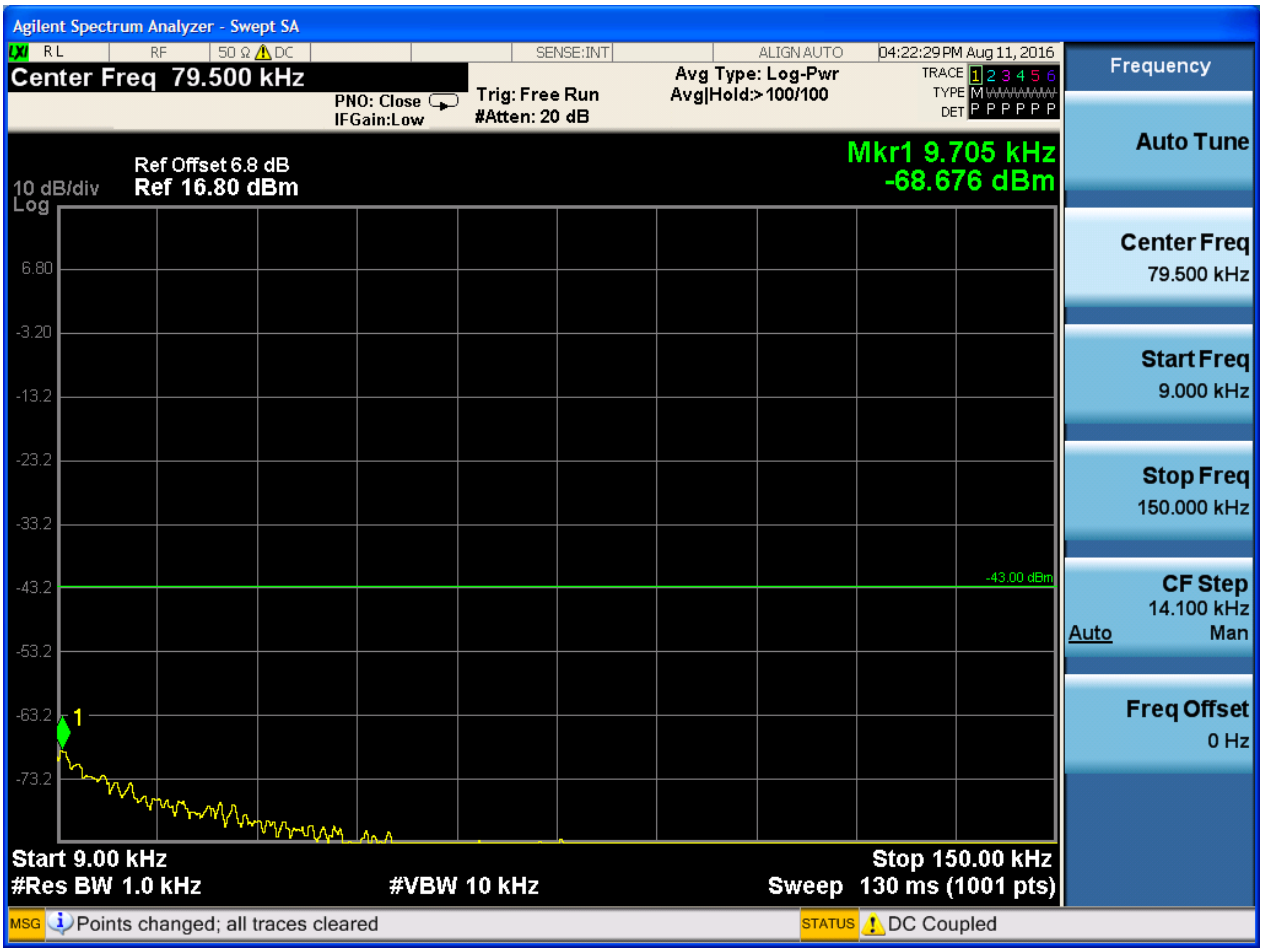
6.1.2.1.1 Test Channel = LCH

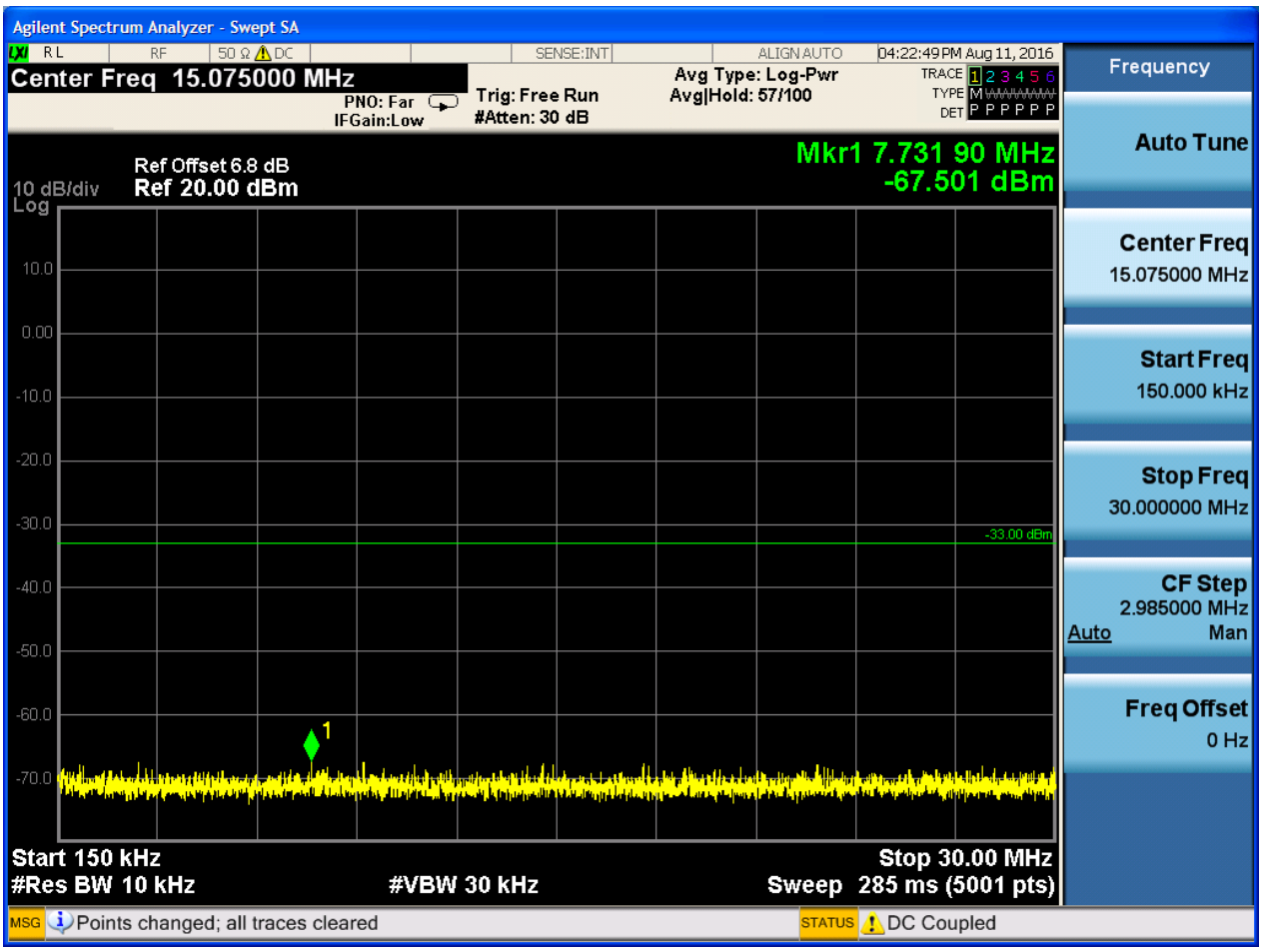


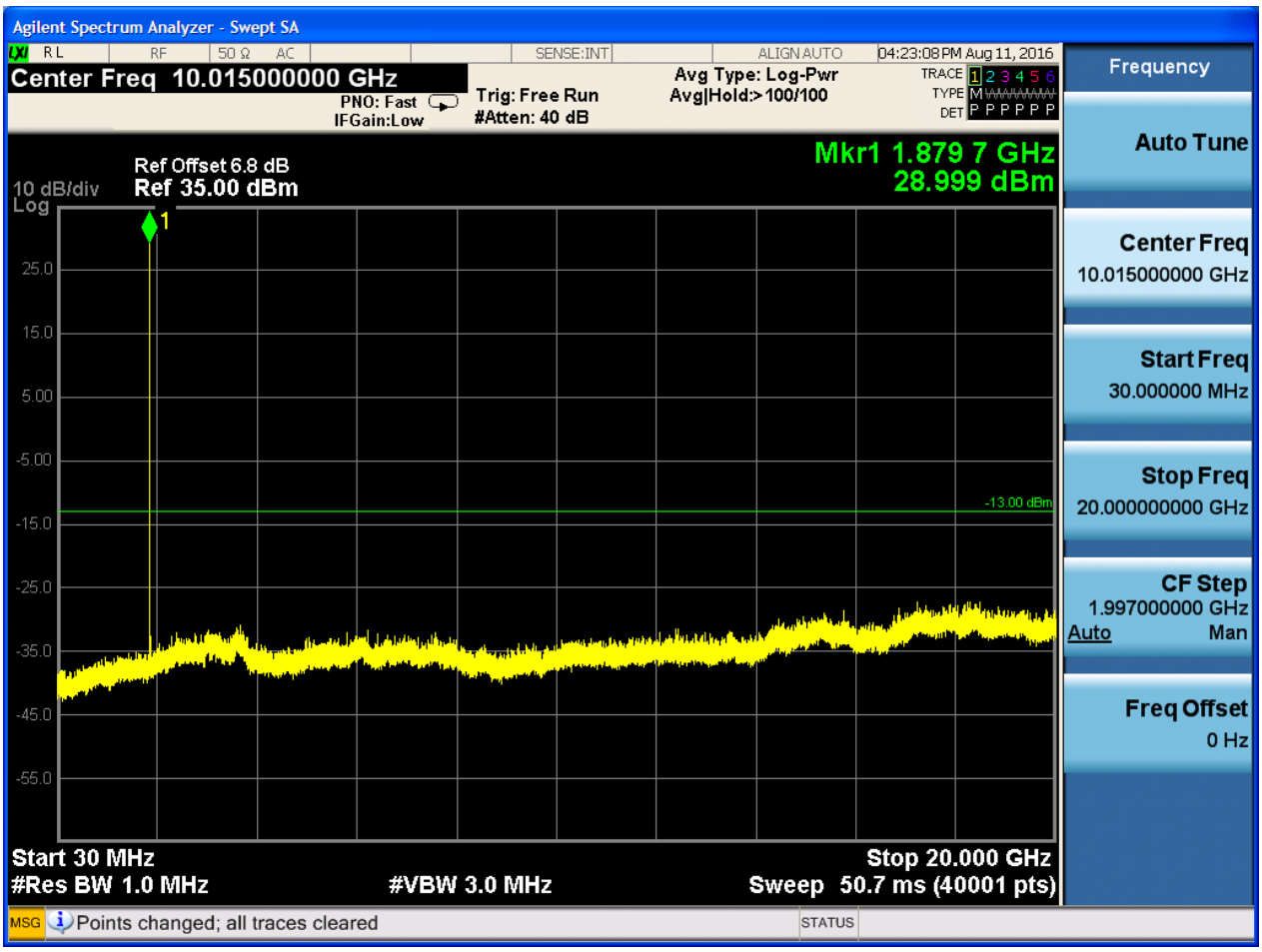




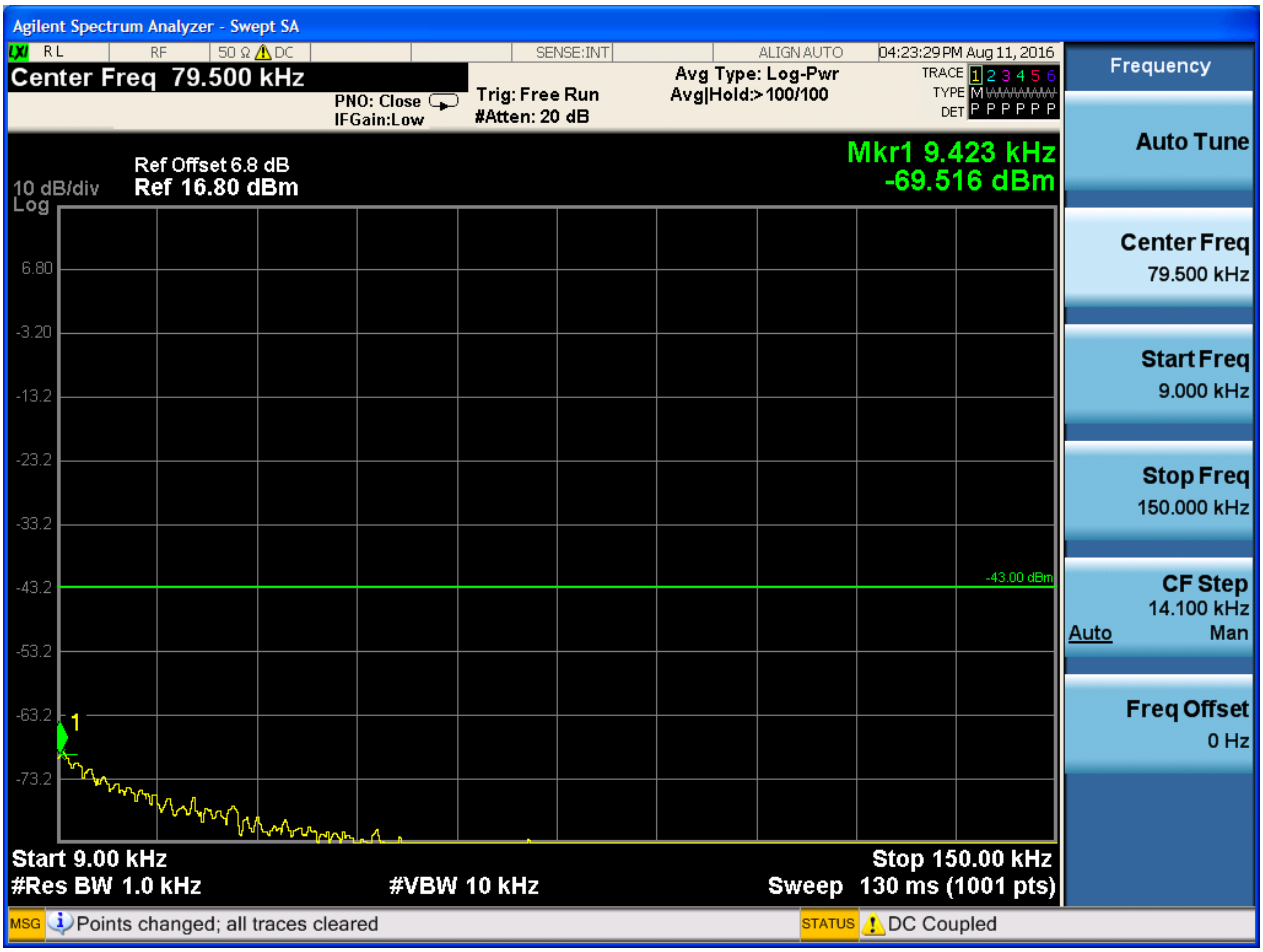
6.1.2.1.2 Test Channel = MCH

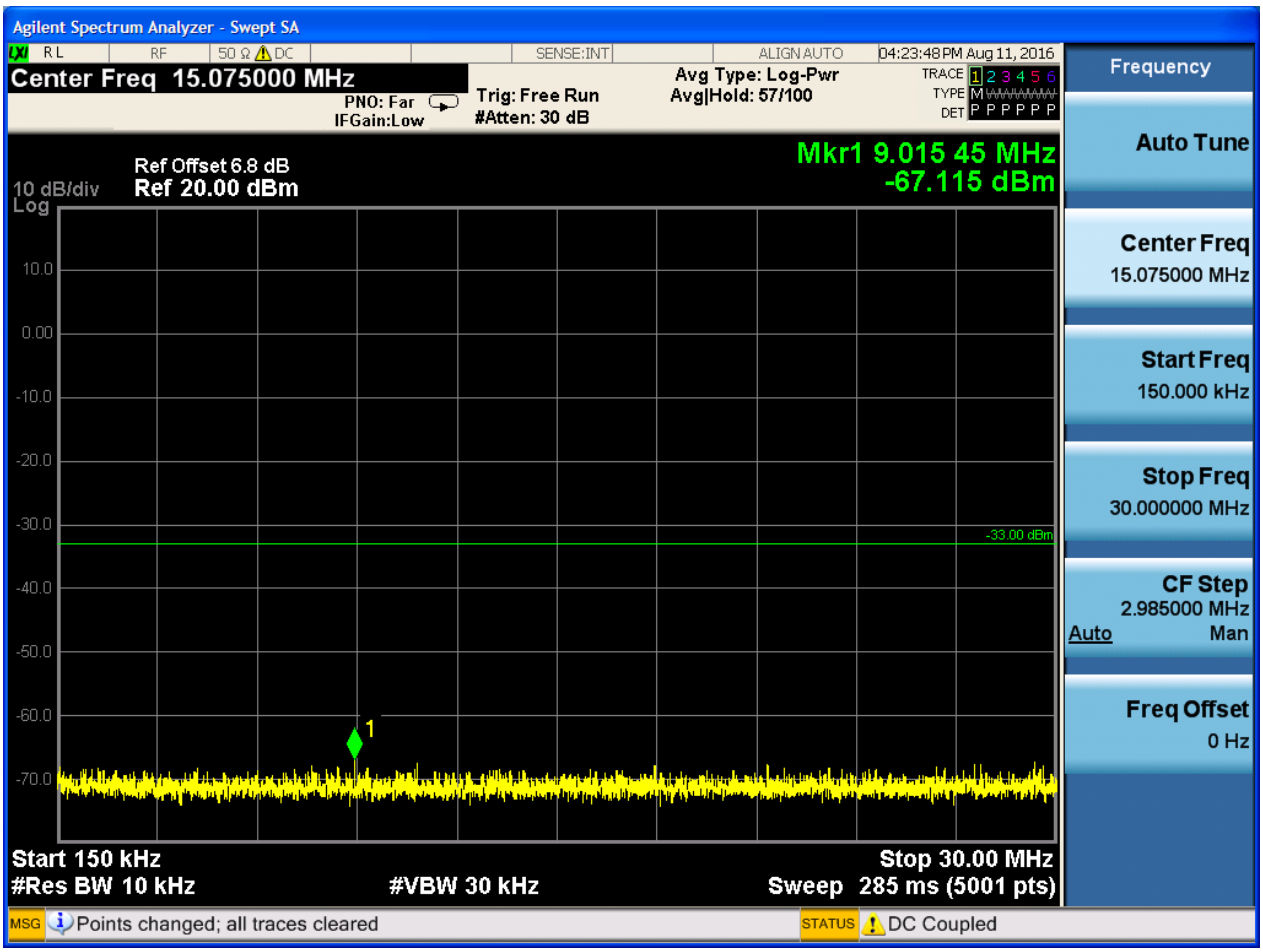


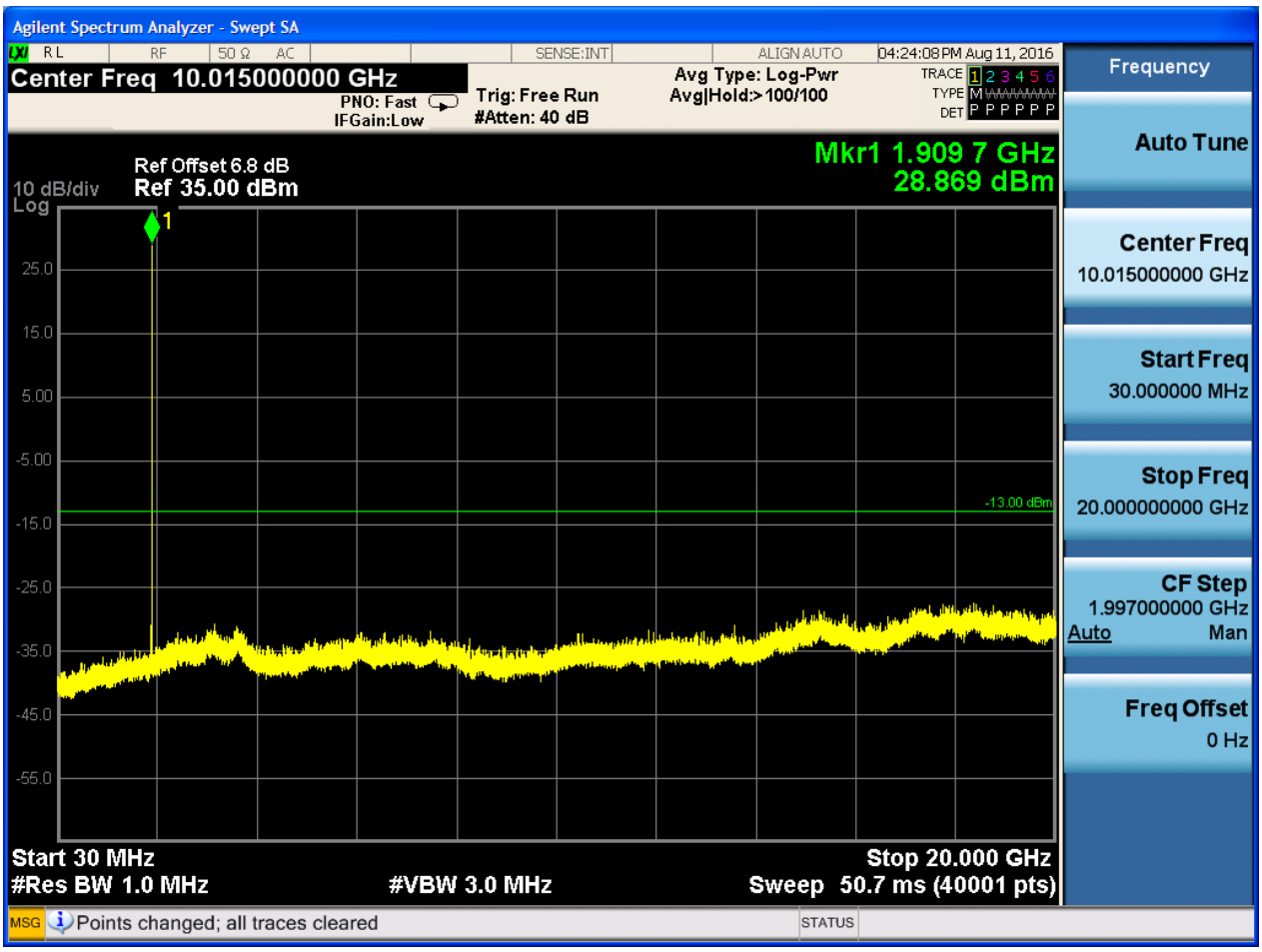




6.1.2.1.3 Test Channel = HCH

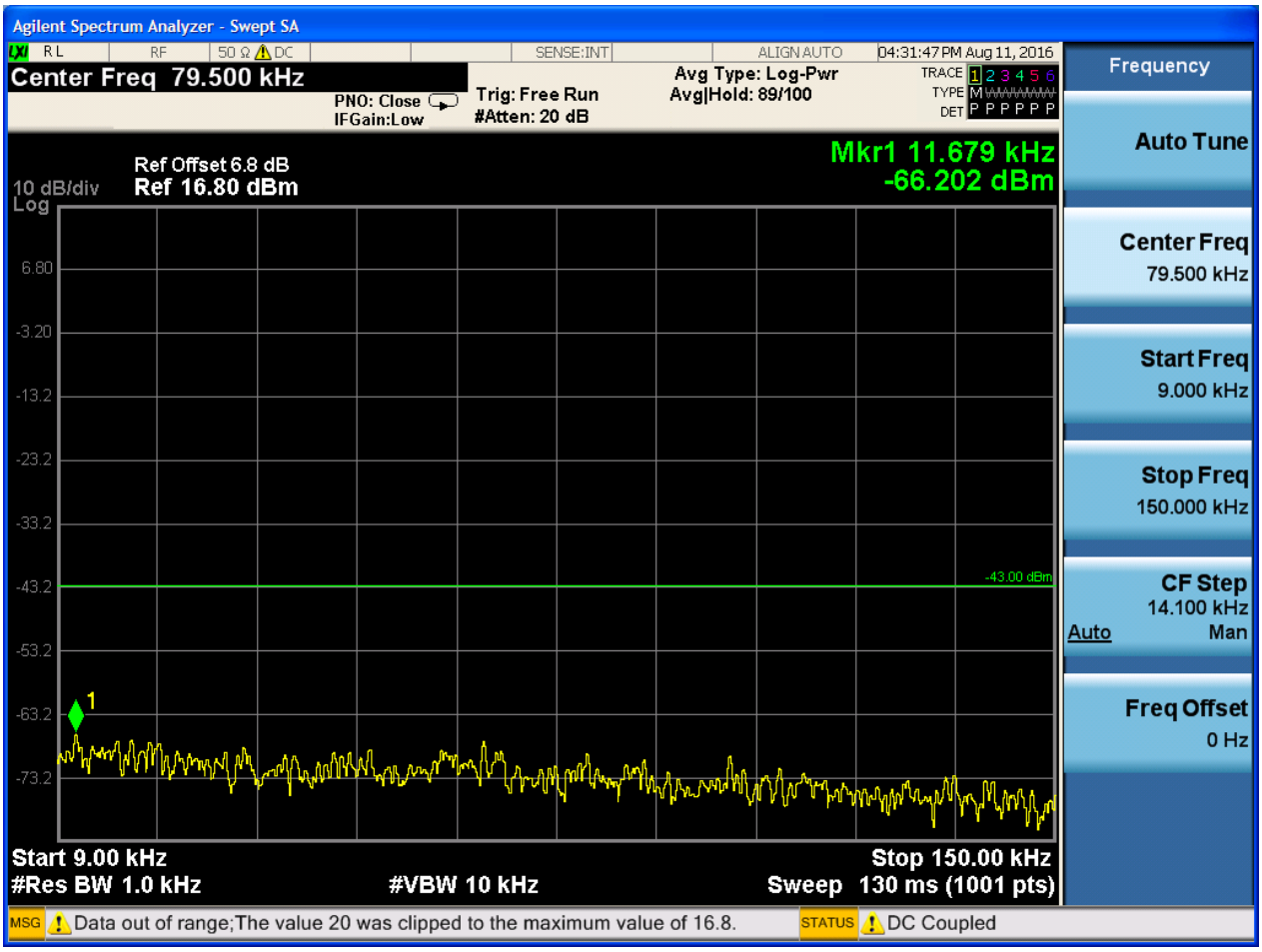


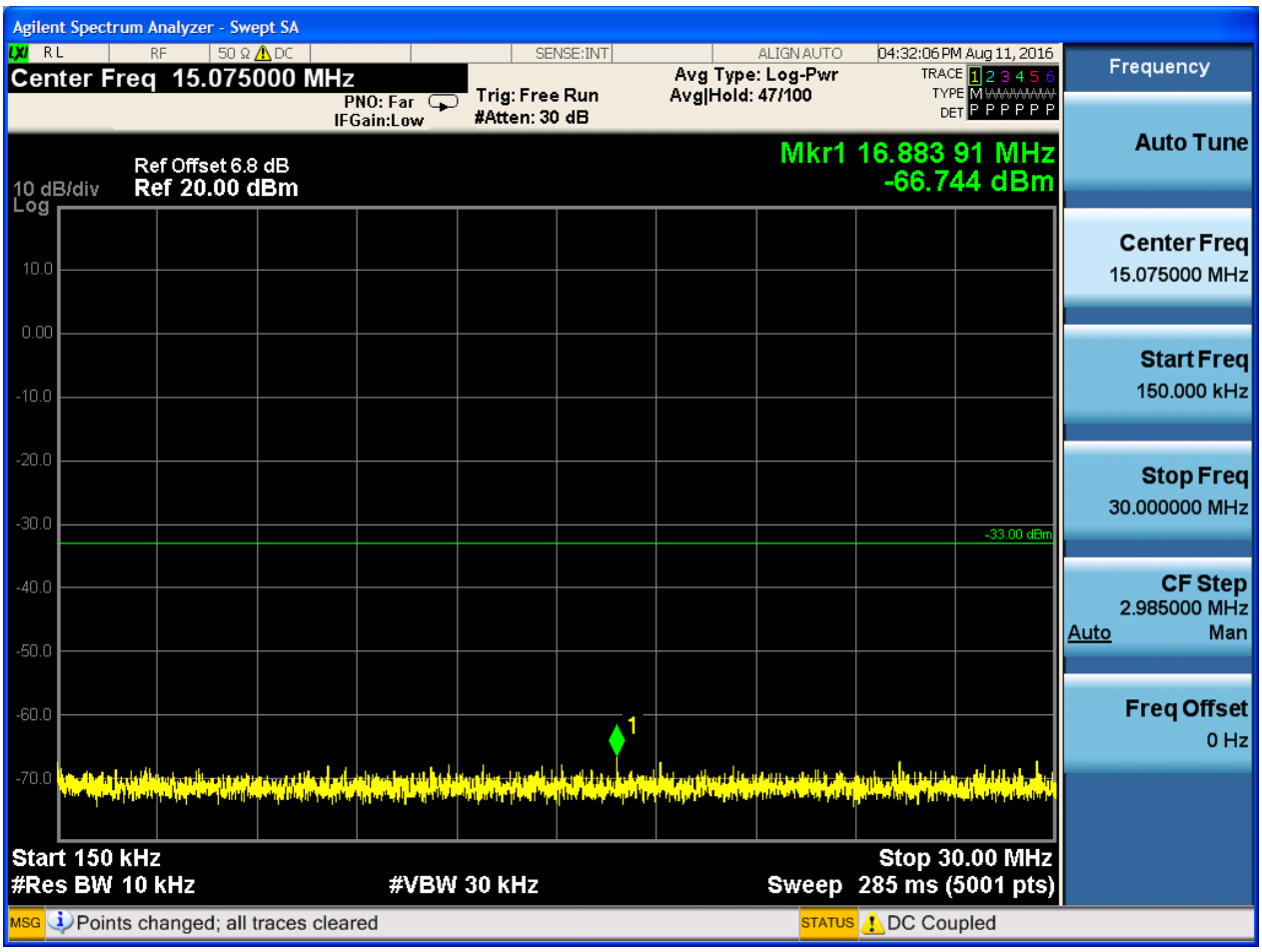


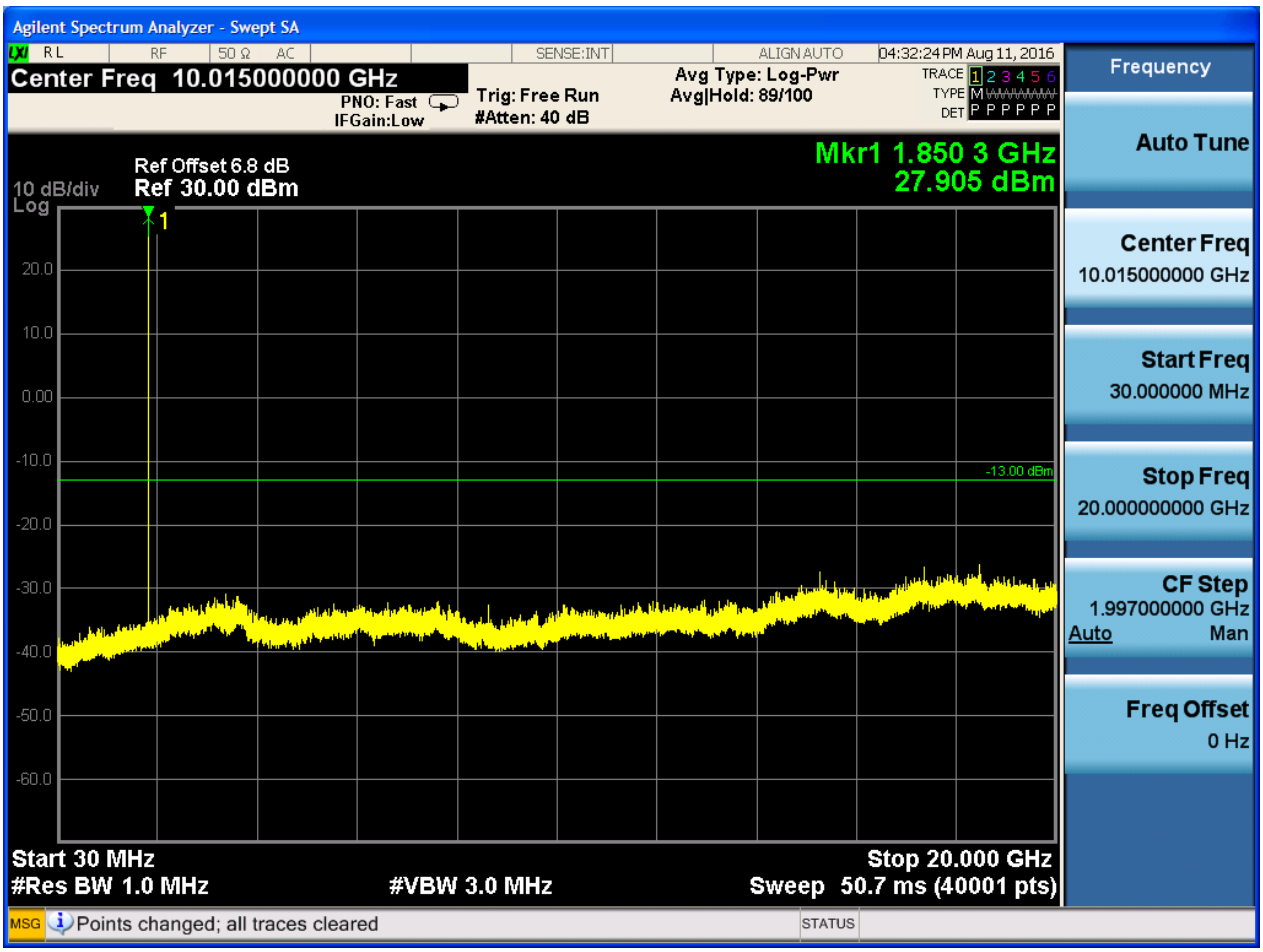


6.1.2.2 Test Mode = GSM/TM2

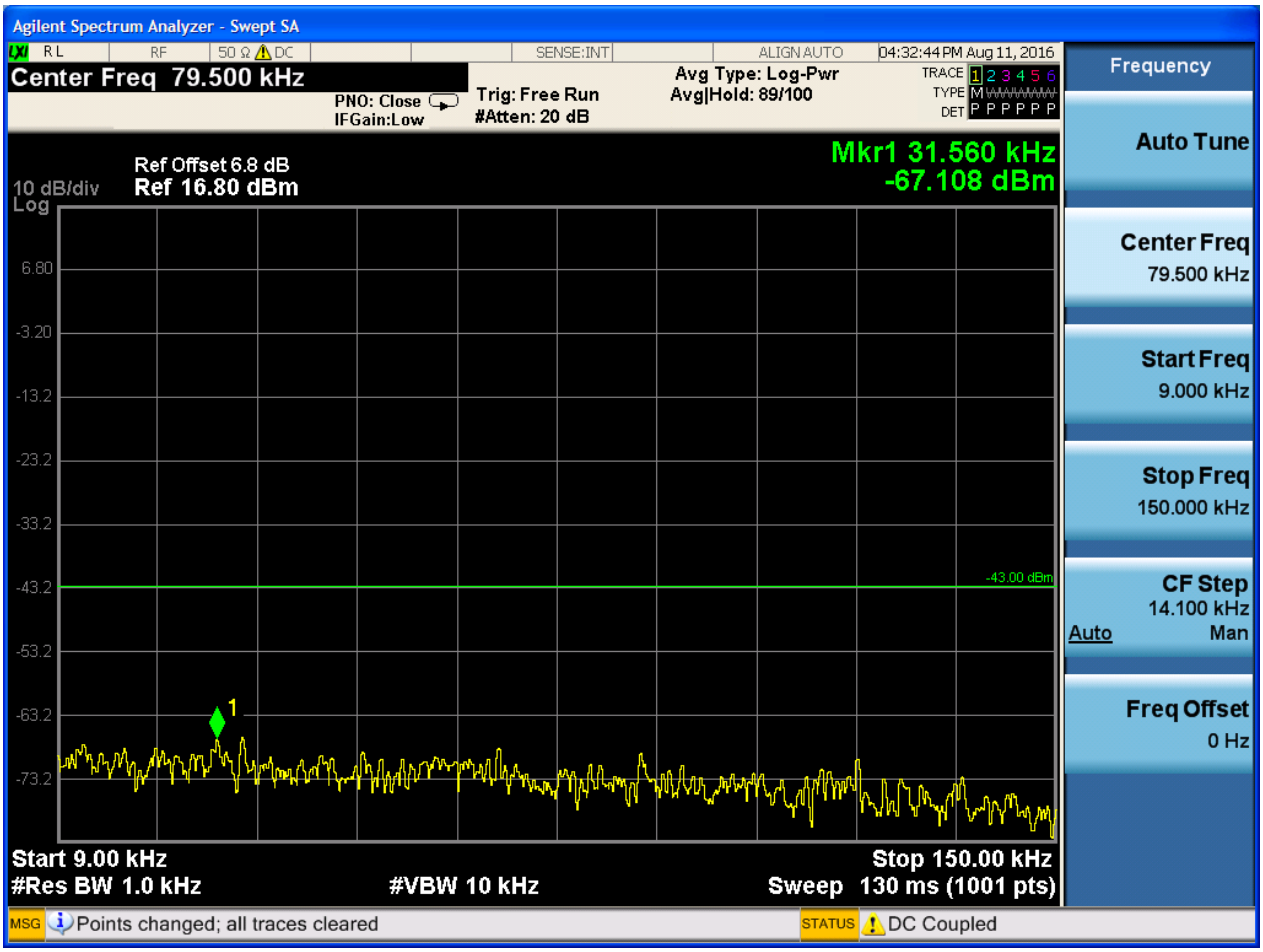
6.1.2.2.1 Test Channel = LCH

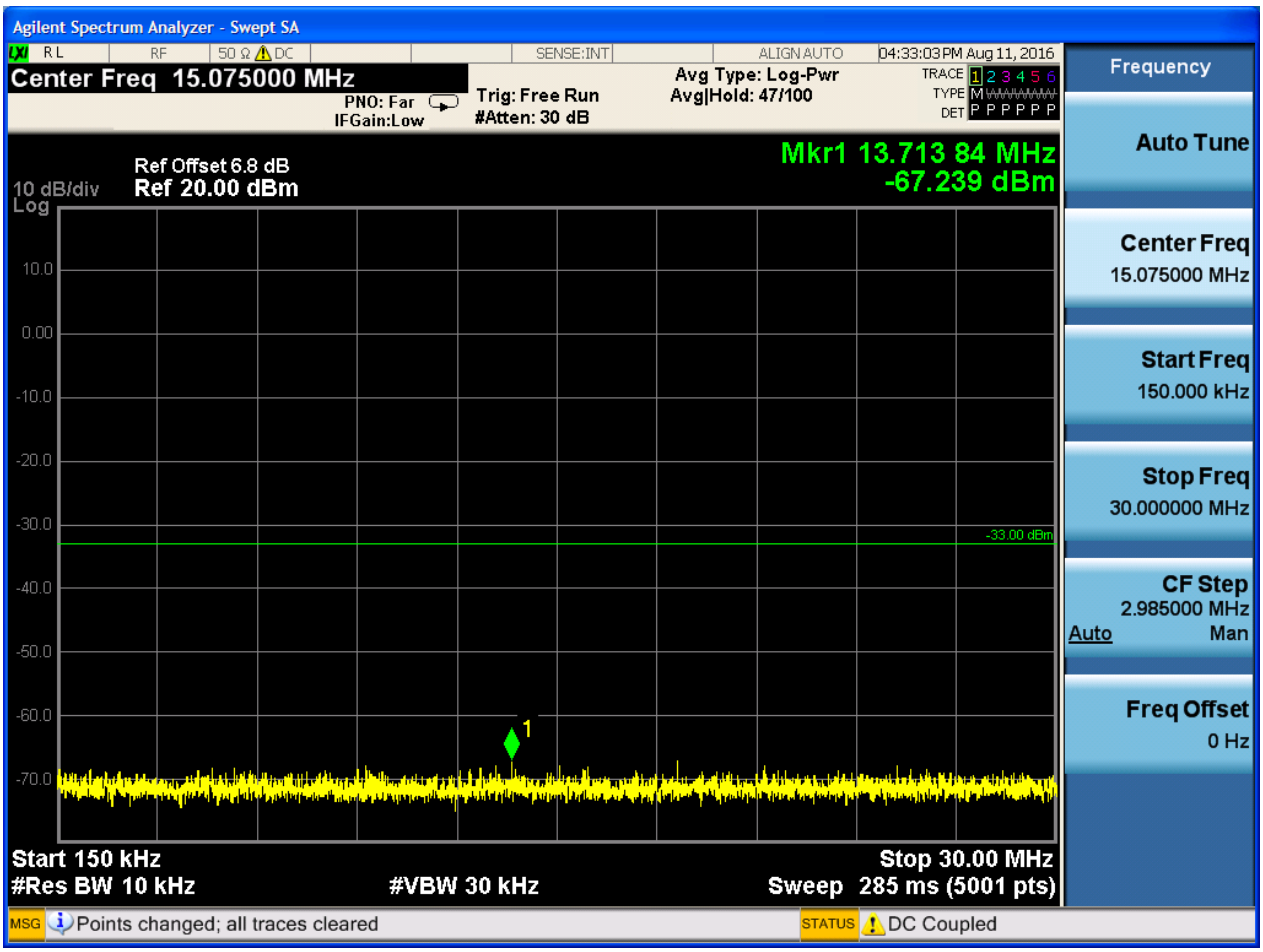


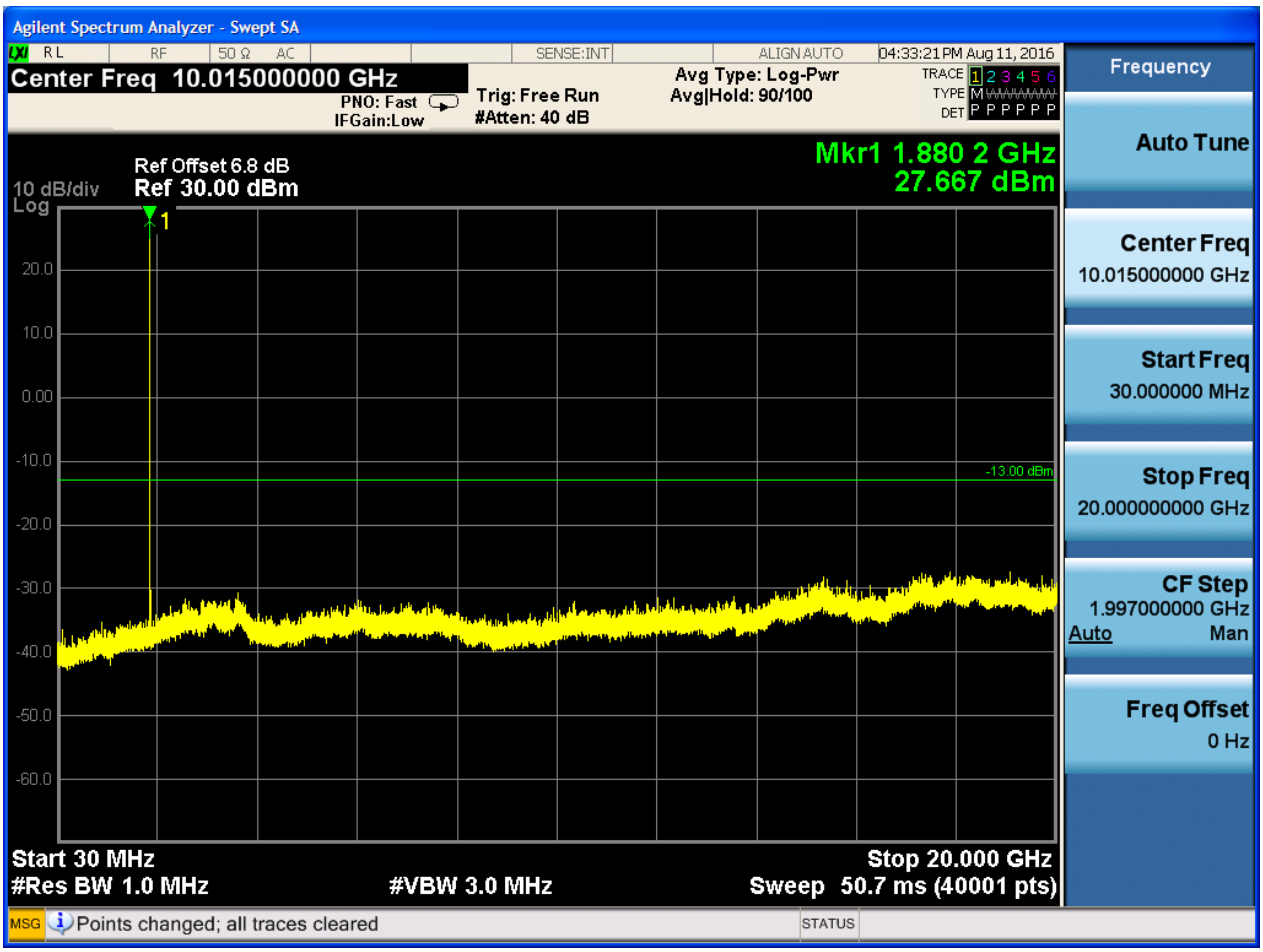




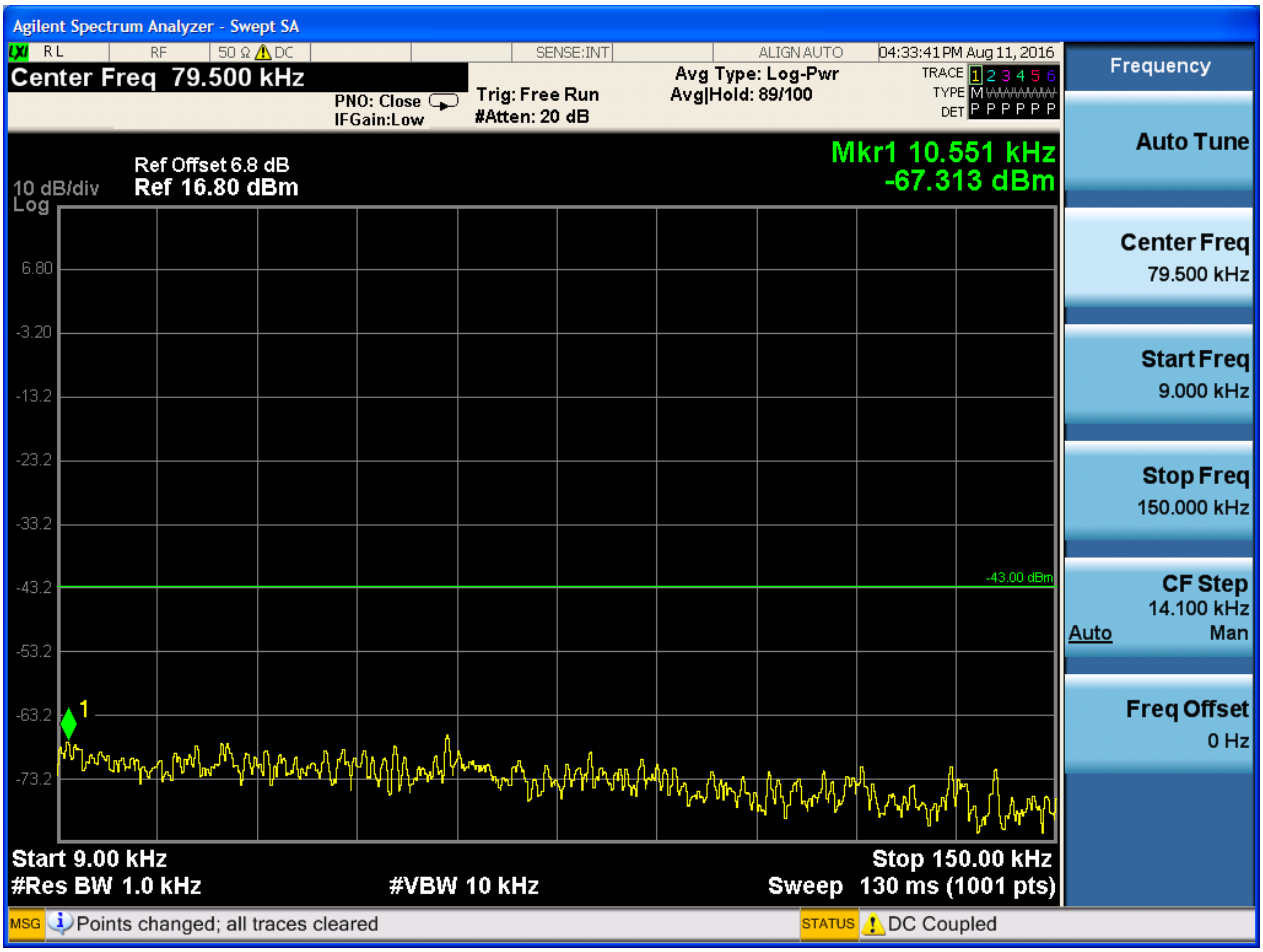
6.1.2.2.2 Test Channel = MCH

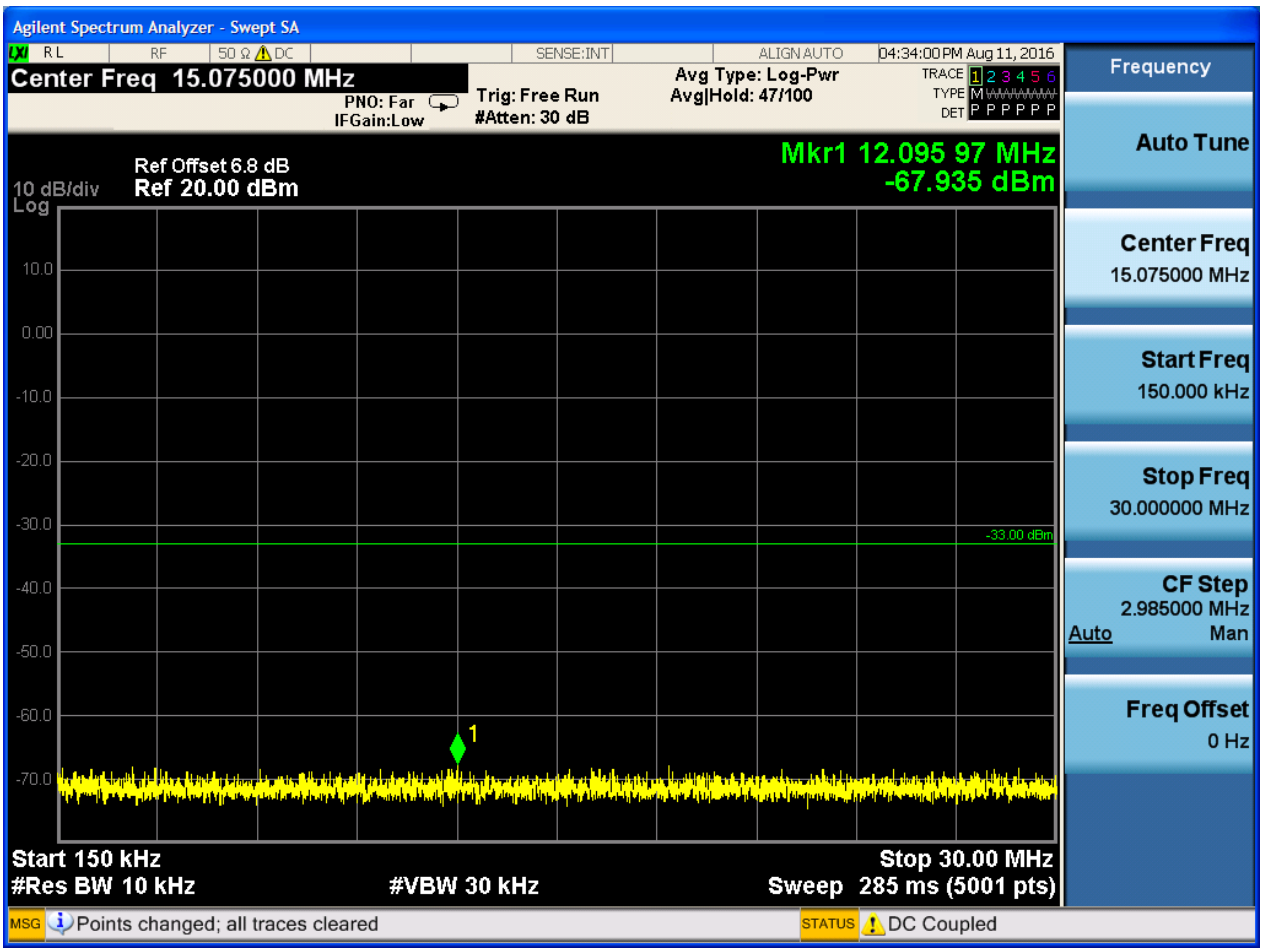


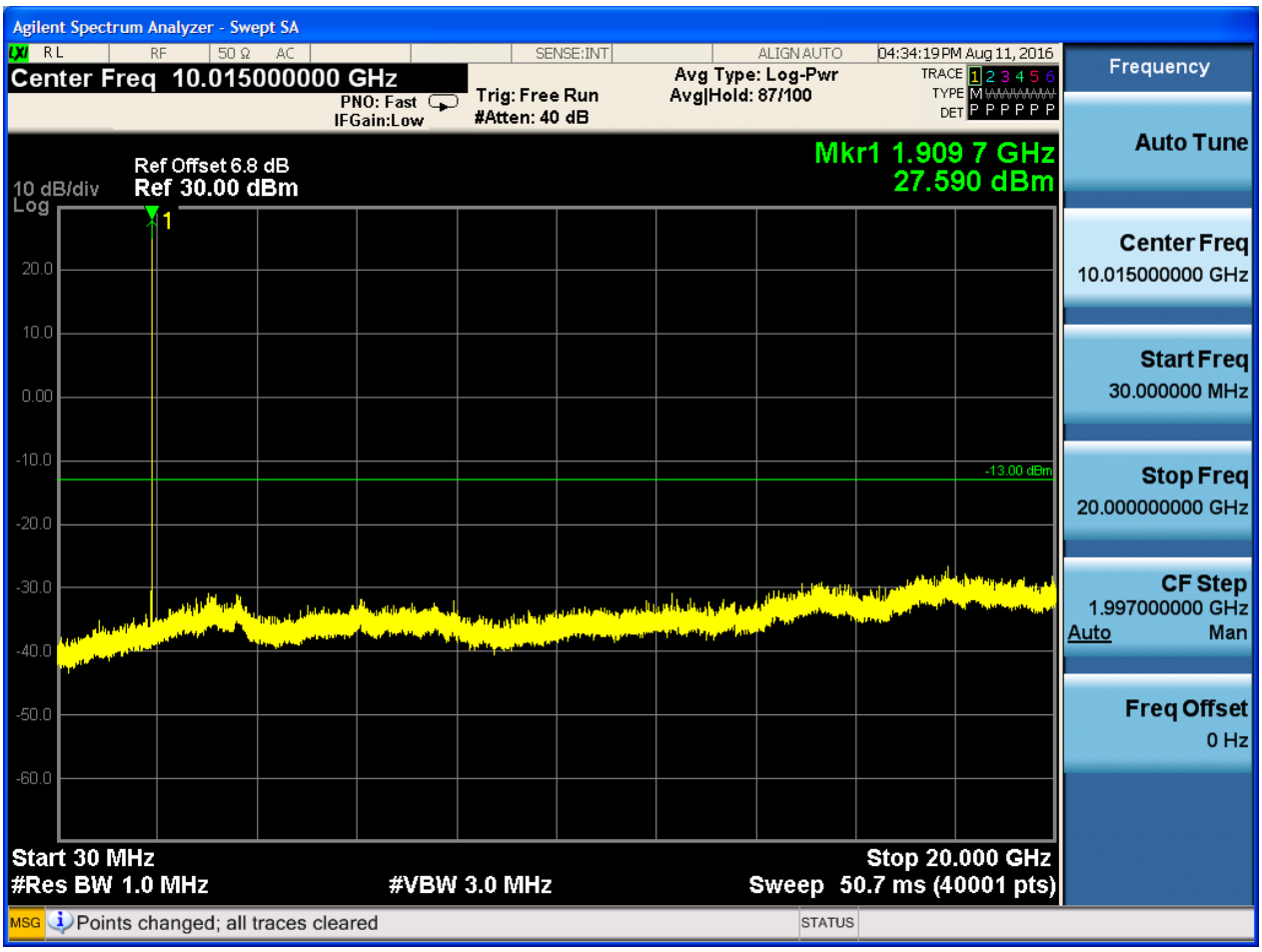




6.1.2.2.3 Test Channel = HCH







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

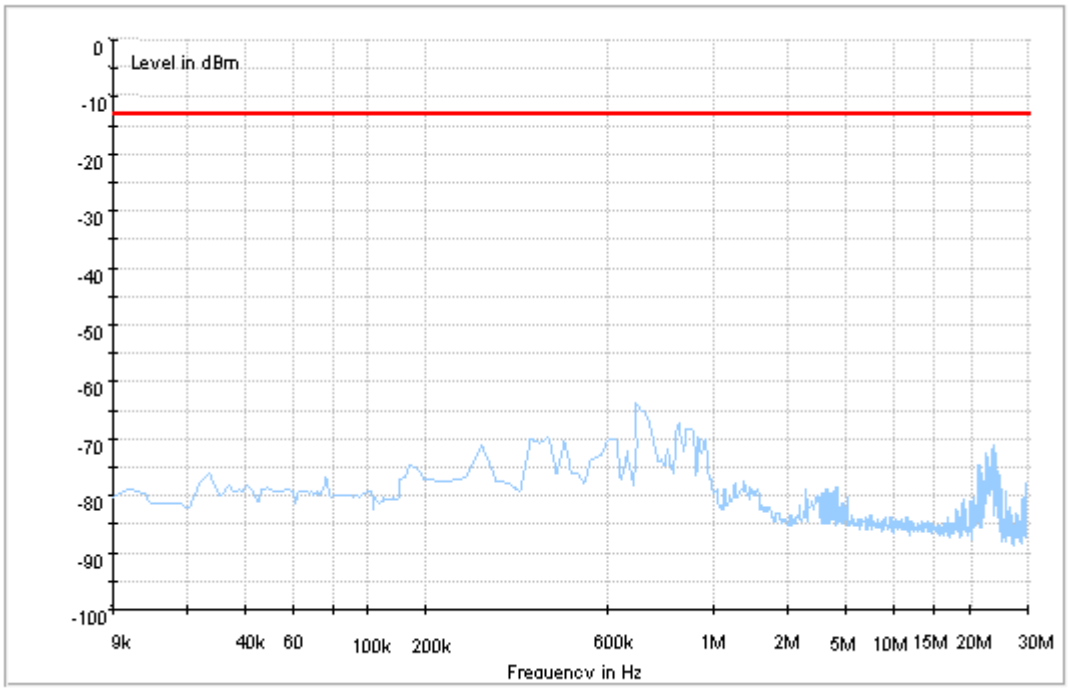
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

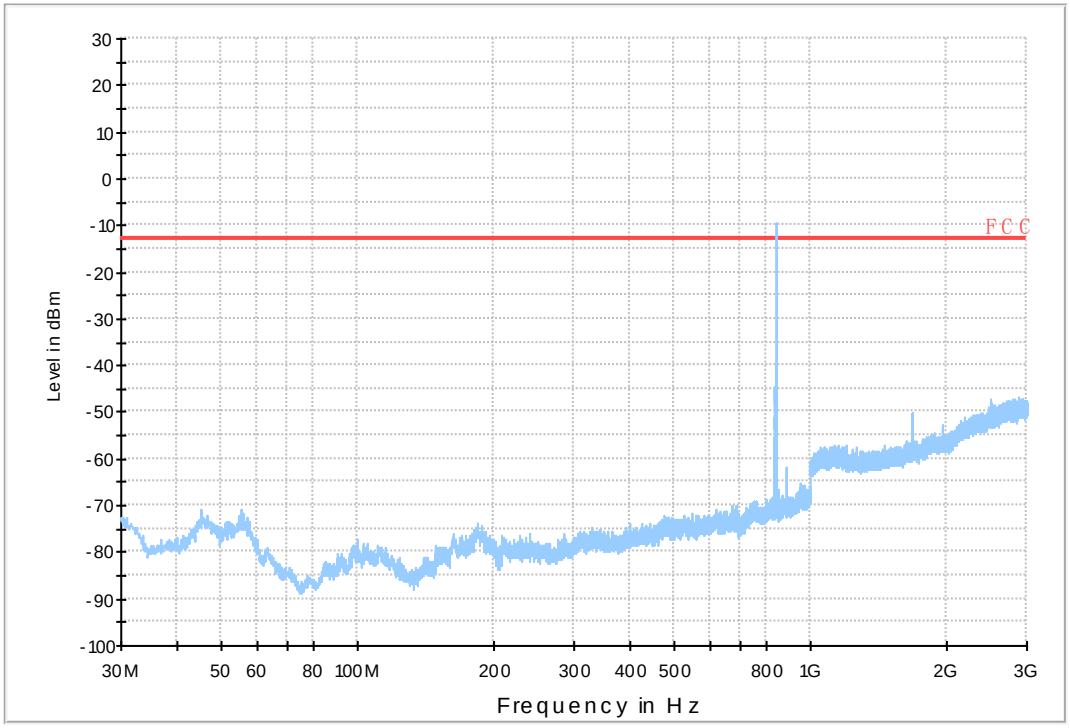
7.1 For GSM

7.1.1 Test Band = GSM850_Ant1

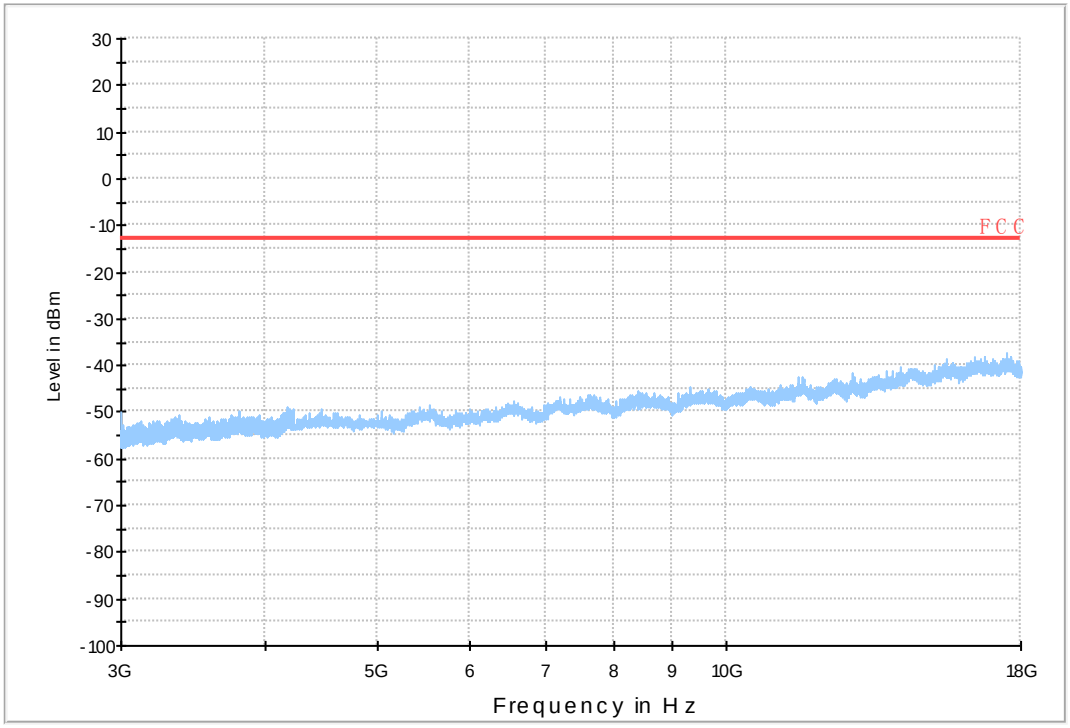
7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

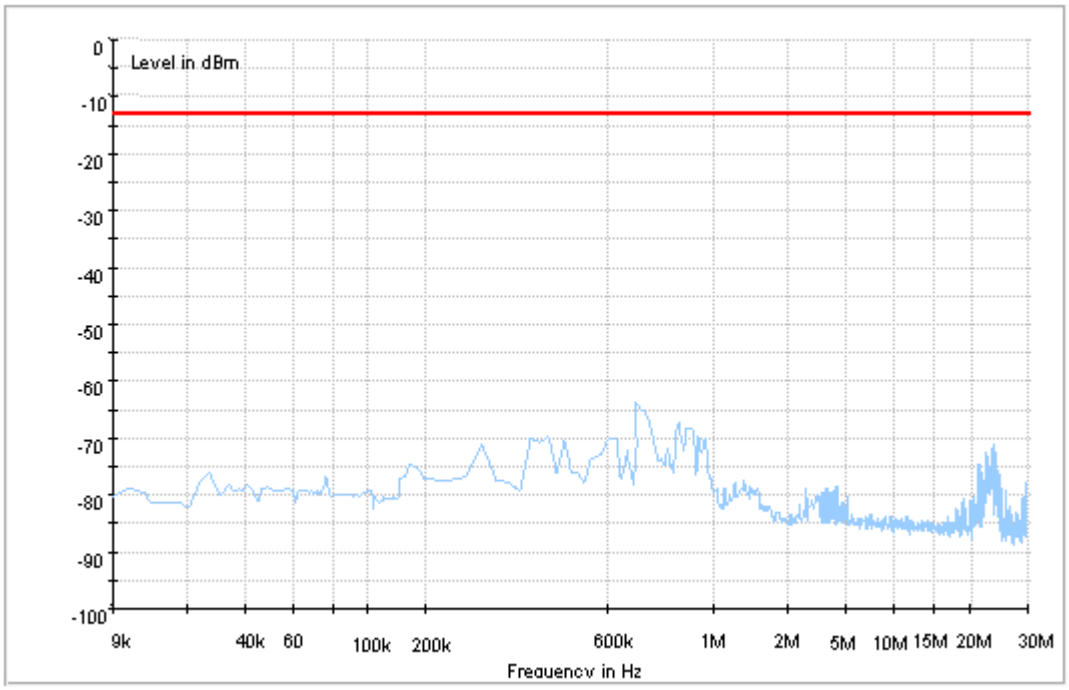


Copy of FCC PART22 GSM850_H

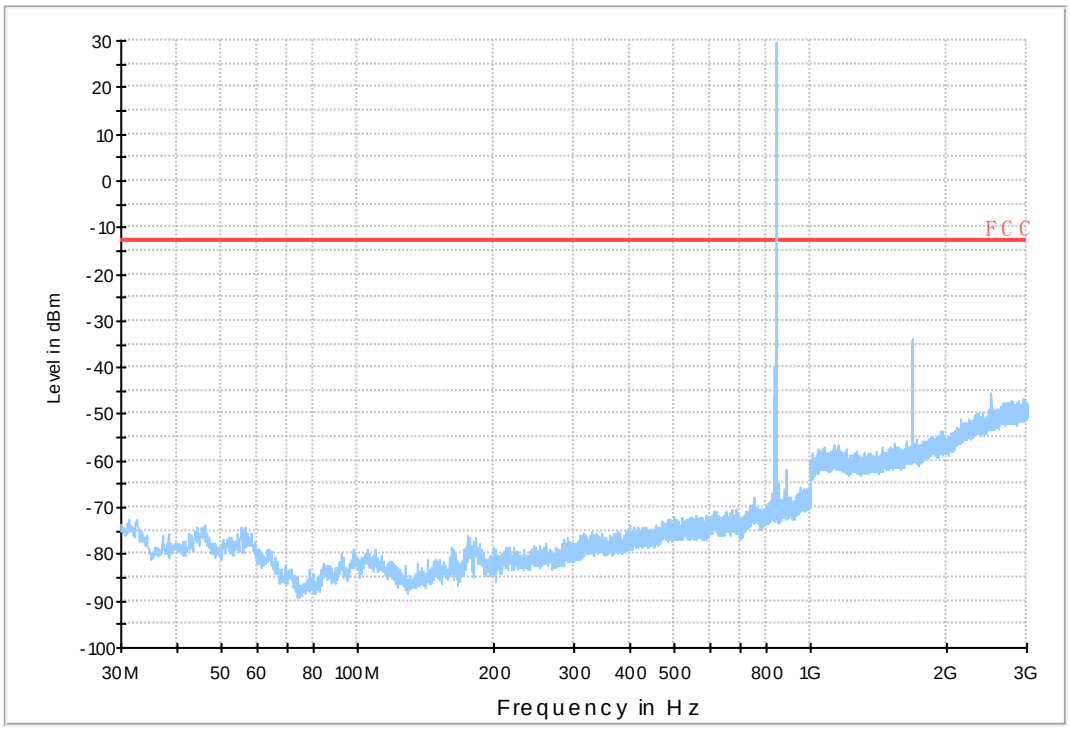


7.1.2 Test Band = GSM850_Ant2

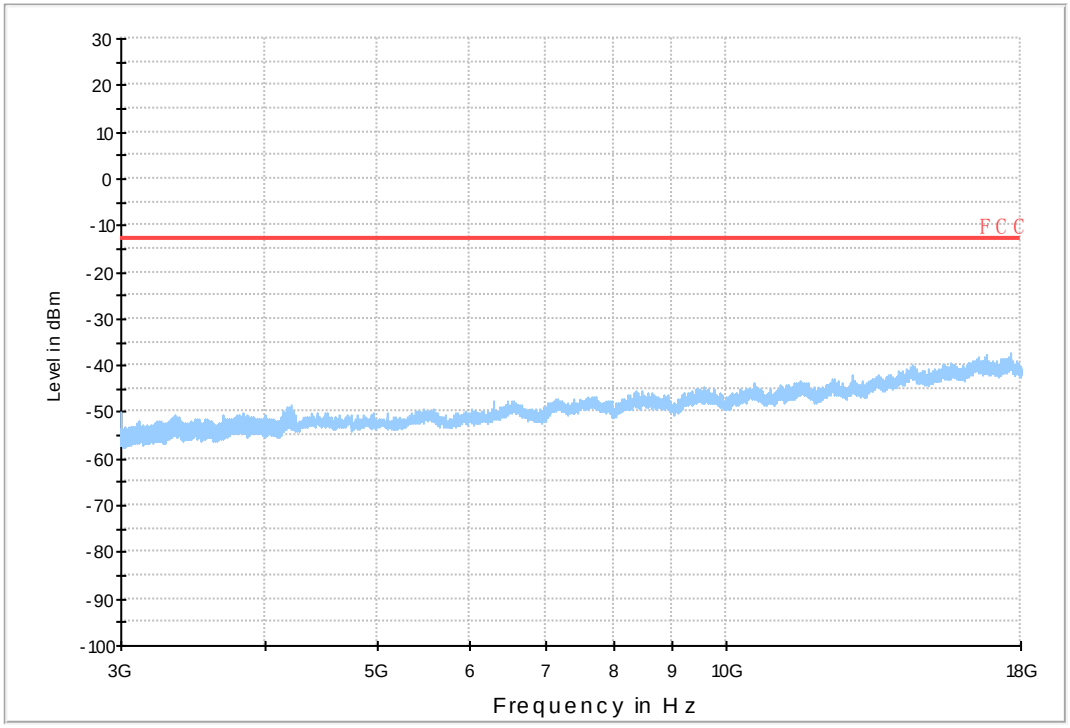
7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

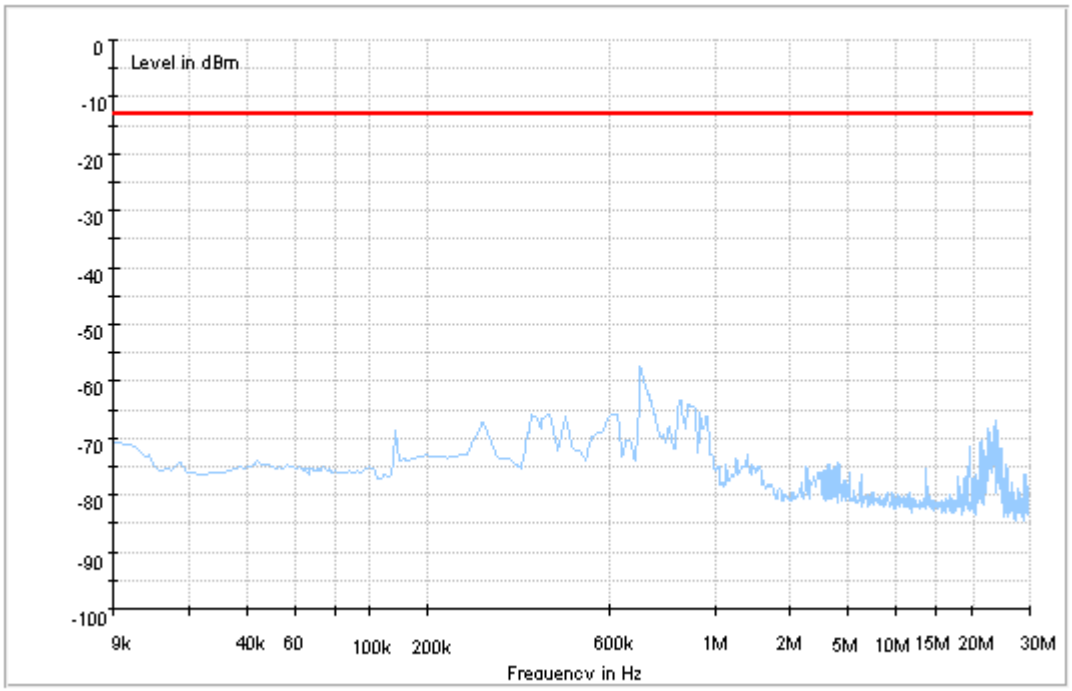


Copy of FCC PART22 GSM850_H

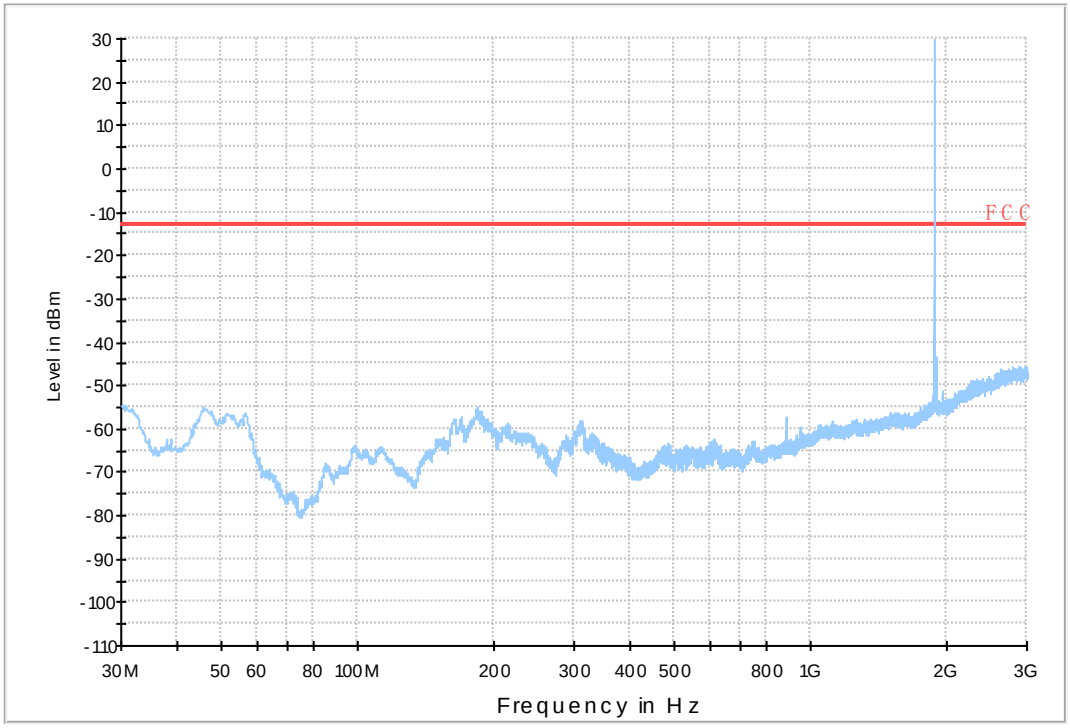


7.1.3 Test Band = GSM1900_Ant1

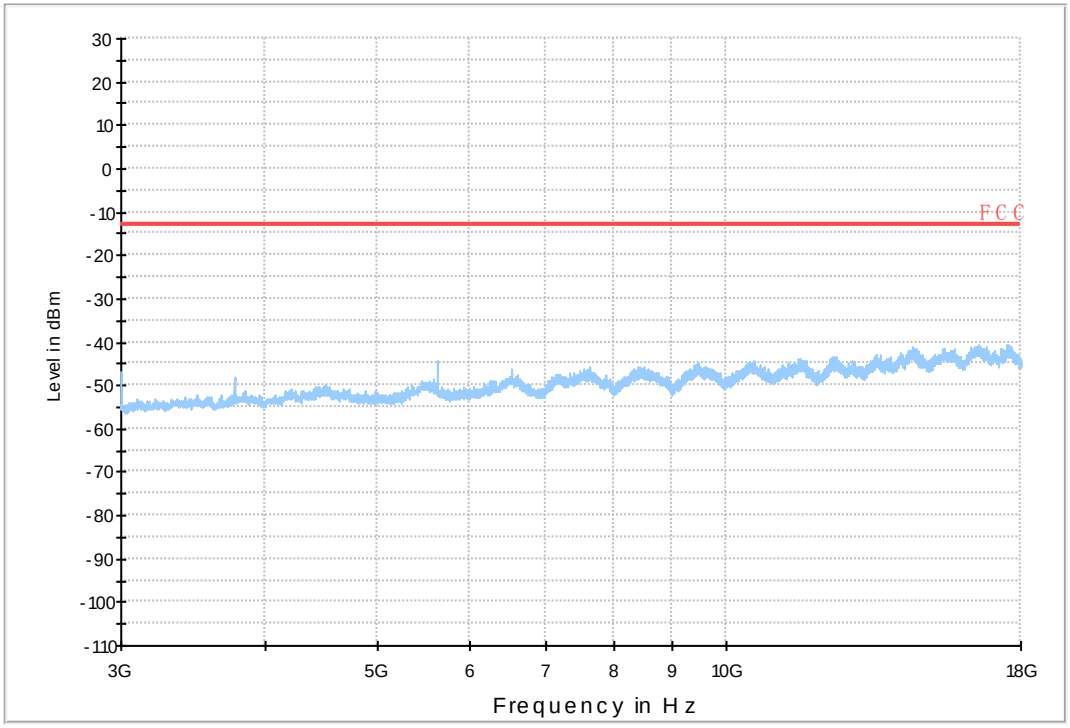
7.1.3.1 Test Mode = GSM/TM1

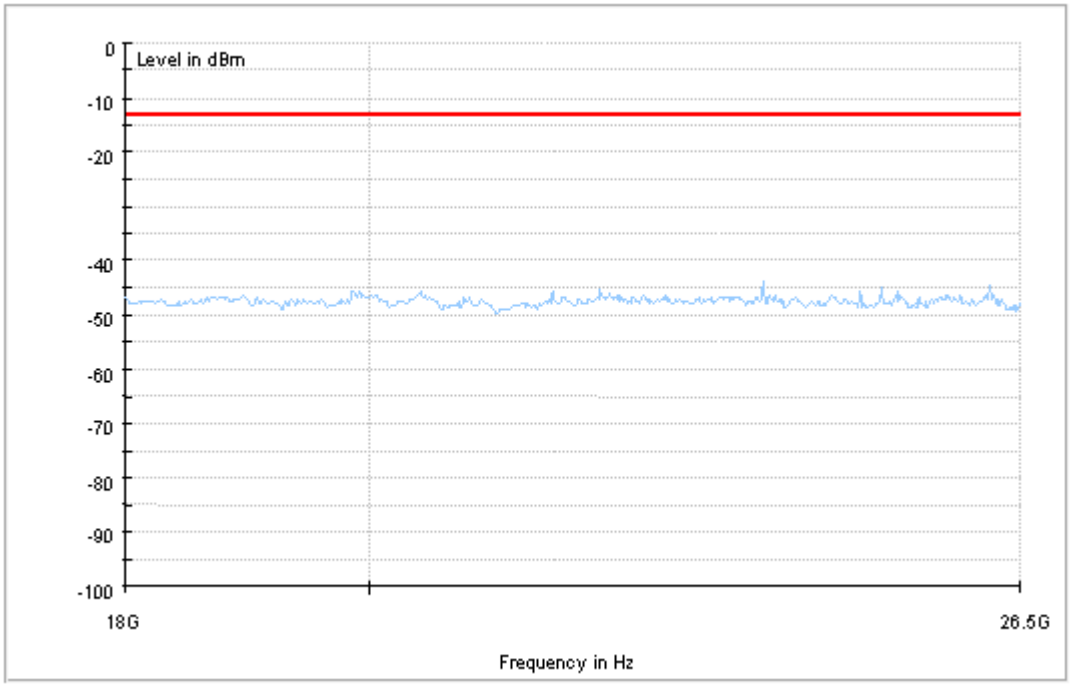


Copy of FCC PART24 GSM1900_L



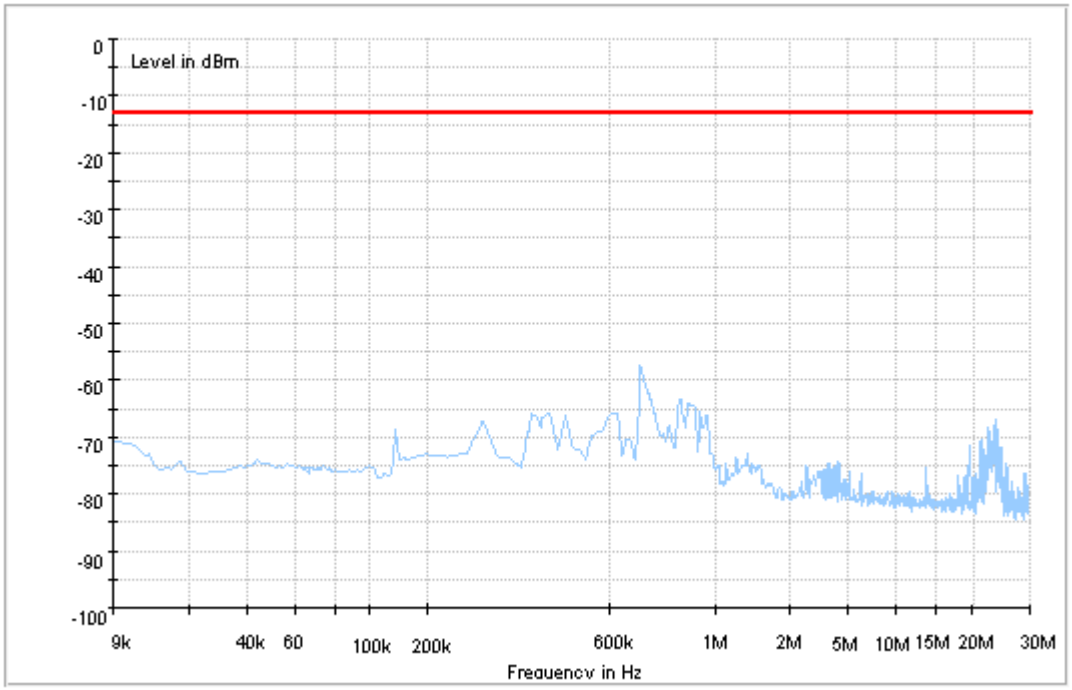
Copy of FCC PART24 GSM1900_H



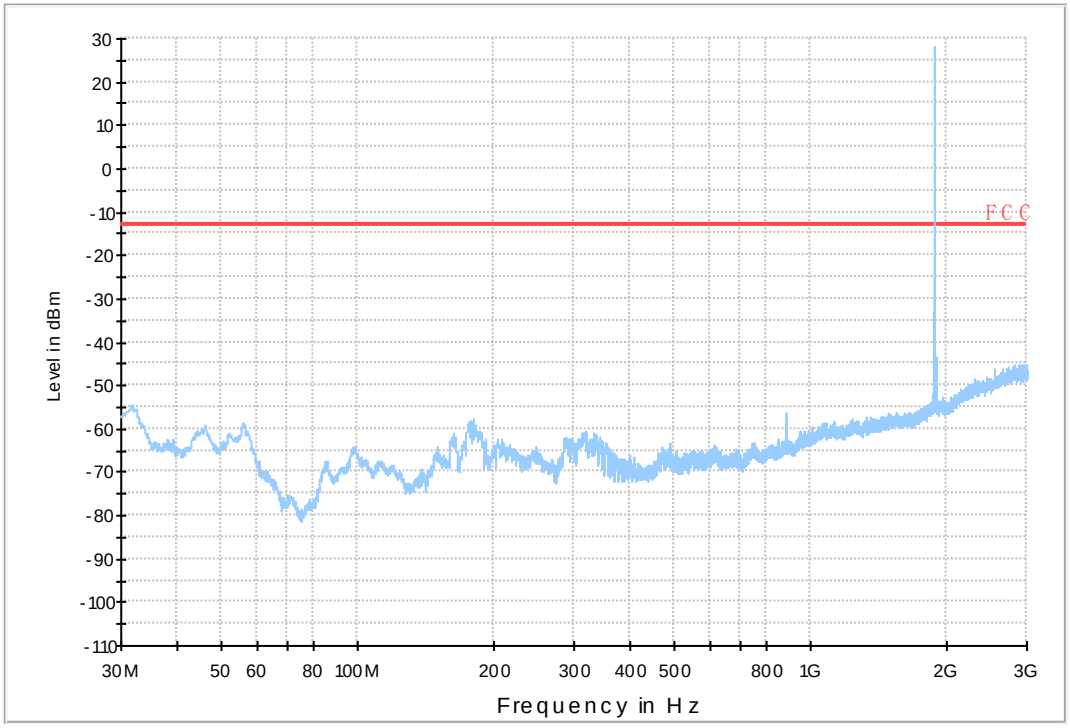


7.1.4 Test Band = GSM1900_Ant2

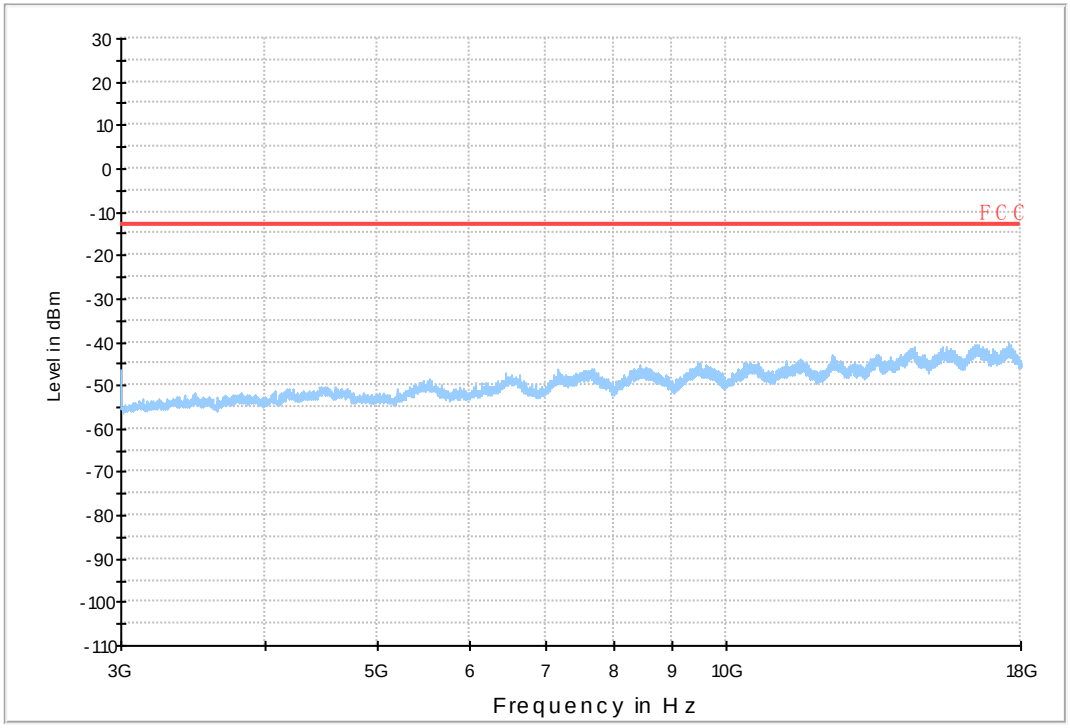
7.1.4.1 Test Mode = GSM/TM1

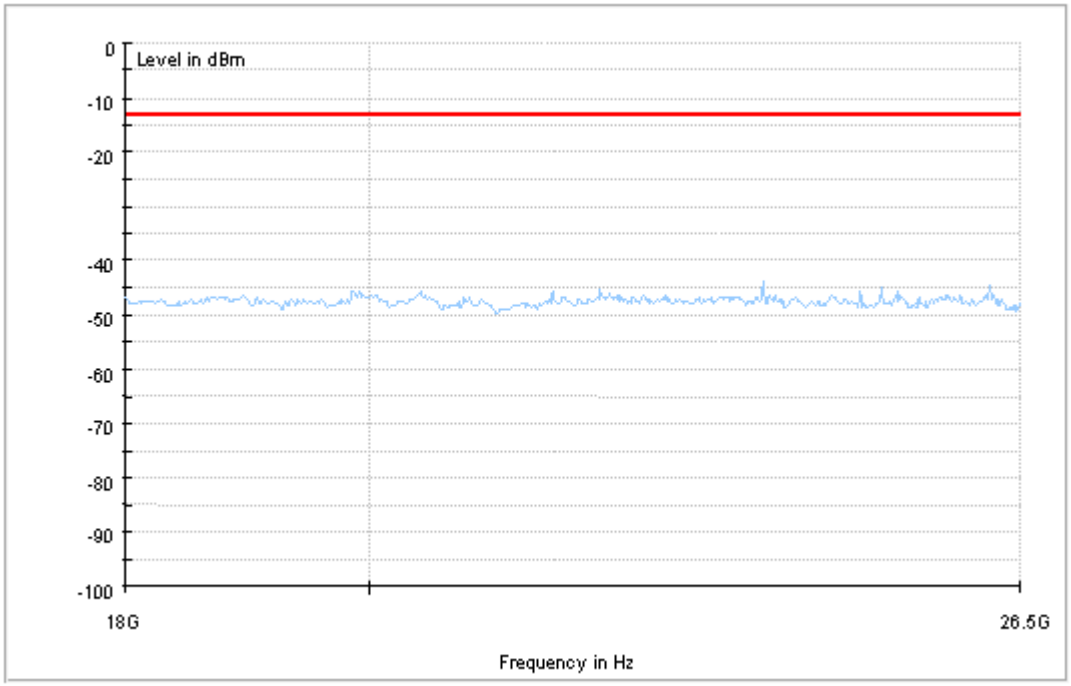


Copy of FCC PART24 GSM1900_L



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	-11.62	-0.0141	PASS
				VN	-12.85	-0.01559	PASS
				VH	-6.78	-0.00823	PASS
		MCH	TN	VL	-13.56	-0.01621	PASS
				VN	-5.94	-0.0071	PASS
				VH	-2.78	-0.00332	PASS
		HCH	TN	VL	-6.33	-0.00746	PASS
				VN	-6.20	-0.0073	PASS
				VH	-4.78	-0.00563	PASS
	GSM/TM2	LCH	TN	VL	-16.05	-0.01947	PASS
				VN	-17.79	-0.02158	PASS
				VH	-16.24	-0.0197	PASS
		MCH	TN	VL	-10.82	-0.01293	PASS
				VN	-15.53	-0.01856	PASS
				VH	-6.72	-0.00803	PASS
		HCH	TN	VL	-11.20	-0.0132	PASS
				VN	-7.88	-0.00928	PASS
				VH	-7.52	-0.00886	PASS
GSM1900	GSM/TM1	LCH	TN	VL	11.49	0.00621	PASS
				VN	8.33	0.0045	PASS
				VH	19.69	0.01064	PASS
		MCH	TN	VL	15.56	0.00828	PASS
				VN	10.40	0.00553	PASS
				VH	9.17	0.00488	PASS
		HCH	TN	VL	20.53	0.01075	PASS
				VN	16.47	0.00862	PASS
				VH	20.34	0.01065	PASS
	GSM/TM2	LCH	TN	VL	-3.03	-0.00164	PASS
				VN	-13.46	-0.00727	PASS
				VH	-15.40	-0.00832	PASS
		MCH	TN	VL	-9.75	-0.00519	PASS
				VN	-0.58	-0.00031	PASS
				VH	2.03	0.00108	PASS
		HCH	TN	VL	19.79	0.01036	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VN	5.55	0.00291	PASS
				VH	1.32	0.00069	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	-5.62	-0.00682	PASS
				-20	-6.52	-0.00791	PASS
				-10	-8.52	-0.01034	PASS
				0	-10.53	-0.01278	PASS
				10	-3.87	-0.0047	PASS
				20	-9.23	-0.0112	PASS
				30	-11.17	-0.01355	PASS
				40	-9.04	-0.01097	PASS
				50	-8.72	-0.01058	PASS
		MCH	VN	-30	-12.91	-0.01543	PASS
				-20	-6.72	-0.00803	PASS
				-10	-8.52	-0.01018	PASS
				0	-3.16	-0.00378	PASS
				10	-11.95	-0.01428	PASS
				20	-6.20	-0.00741	PASS
				30	-11.43	-0.01366	PASS
				40	-8.72	-0.01042	PASS
				50	-9.62	-0.0115	PASS
		HCH	VN	-30	-5.23	-0.00616	PASS
				-20	-12.59	-0.01483	PASS
				-10	-7.94	-0.00935	PASS
				0	-5.04	-0.00594	PASS
				10	-8.72	-0.01027	PASS
				20	-7.49	-0.00882	PASS
				30	-6.84	-0.00806	PASS
				40	-15.37	-0.01811	PASS
				50	-6.01	-0.00708	PASS
	GSM/TM2	LCH	VN	-30	-11.27	-0.01367	PASS
				-20	-15.05	-0.01826	PASS
				-10	-12.85	-0.01559	PASS
				0	-9.27	-0.01125	PASS
				10	-7.23	-0.00877	PASS
				20	-10.46	-0.01269	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	-11.98	-0.01454	PASS
				40	-5.23	-0.00635	PASS
				50	-19.73	-0.02394	PASS
		MCH	VN	-30	-18.11	-0.02165	PASS
				-20	-14.82	-0.01771	PASS
				-10	-12.43	-0.01486	PASS
				0	-11.95	-0.01428	PASS
				10	-13.98	-0.01671	PASS
				20	-8.68	-0.01038	PASS
				30	-6.72	-0.00803	PASS
				40	-4.55	-0.00544	PASS
				50	-14.50	-0.01733	PASS
		HCH	VN	-30	-16.27	-0.01917	PASS
				-20	-15.85	-0.01867	PASS
				-10	-8.78	-0.01034	PASS
				0	-11.43	-0.01347	PASS
				10	-16.72	-0.0197	PASS
				20	-23.15	-0.02727	PASS
				30	-13.20	-0.01555	PASS
				40	-10.33	-0.01217	PASS
				50	-13.85	-0.01632	PASS
GSM1900	GSM/TM1	LCH	VN	-30	13.50	0.0073	PASS
				-20	12.85	0.00695	PASS
				-10	13.11	0.00709	PASS
				0	7.94	0.00429	PASS
				10	10.78	0.00583	PASS
				20	6.65	0.00359	PASS
				30	4.78	0.00258	PASS
				40	16.98	0.00918	PASS
				50	11.75	0.00635	PASS
		MCH	VN	-30	11.88	0.00632	PASS
				-20	20.99	0.01116	PASS
				-10	6.84	0.00364	PASS
				0	14.08	0.00749	PASS
				10	14.08	0.00749	PASS
				20	4.65	0.00247	PASS
				30	18.47	0.00982	PASS
				40	22.79	0.01212	PASS
				50	8.85	0.00471	PASS
		HCH	VN	-30	13.30	0.00696	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	18.02	0.00944	PASS
				-10	10.46	0.00548	PASS
				0	18.73	0.00981	PASS
				10	23.70	0.01241	PASS
				20	15.95	0.00835	PASS
				30	16.47	0.00862	PASS
				40	12.72	0.00666	PASS
				50	18.66	0.00977	PASS
	GSM/TM2	LCH	VN	-30	-4.91	-0.00265	PASS
				-20	-0.03	-0.00002	PASS
				-10	-6.68	-0.00361	PASS
				0	-4.16	-0.00225	PASS
				10	-13.04	-0.00705	PASS
				20	-4.49	-0.00243	PASS
				30	-1.97	-0.00106	PASS
				40	5.94	0.00321	PASS
				50	-16.08	-0.00869	PASS
		MCH	VN	-30	8.23	0.00438	PASS
				-20	-4.13	-0.0022	PASS
				-10	4.04	0.00215	PASS
				0	-4.29	-0.00228	PASS
				10	-8.68	-0.00462	PASS
				20	-1.65	-0.00088	PASS
				30	11.49	0.00611	PASS
				40	-8.52	-0.00453	PASS
				50	-2.58	-0.00137	PASS
		HCH	VN	-30	0.48	0.00025	PASS
				-20	6.26	0.00328	PASS
				-10	-10.91	-0.00571	PASS
				0	-0.74	-0.00039	PASS
				10	11.82	0.00619	PASS
				20	8.91	0.00467	PASS
				30	1.29	0.00068	PASS
				40	2.55	0.00134	PASS
				50	4.58	0.0024	PASS

END