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	32.85	32.03	38.5	PASS
		MCH	32.68	31.86	38.5	PASS
		HCH	32.6	31.78	38.5	PASS
	GSM/TM2	LCH	27.28	26.46	38.5	PASS
		MCH	27.23	26.41	38.5	PASS
		HCH	27.25	26.43	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	30.01	30.42	33	PASS
		MCH	29.72	30.13	33	PASS
		HCH	29.31	29.72	33	PASS
	GSM/TM2	LCH	25.87	26.28	33	PASS
		MCH	25.76	26.17	33	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
		HCH	25.77	26.18	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	0.14	13	PASS
		MCH	0.13	13	PASS
		HCH	0.14	13	PASS
	GSM/TM2	LCH	2.68	13	PASS
		MCH	2.81	13	PASS
		HCH	2.93	13	PASS
GSM1900	GSM/TM1	LCH	0.12	13	PASS
		MCH	0.15	13	PASS
		HCH	0.13	13	PASS
	GSM/TM2	LCH	2.6	13	PASS
		MCH	2.67	13	PASS
		HCH	2.62	13	PASS

3Appendix_C: Modulation Characteristics

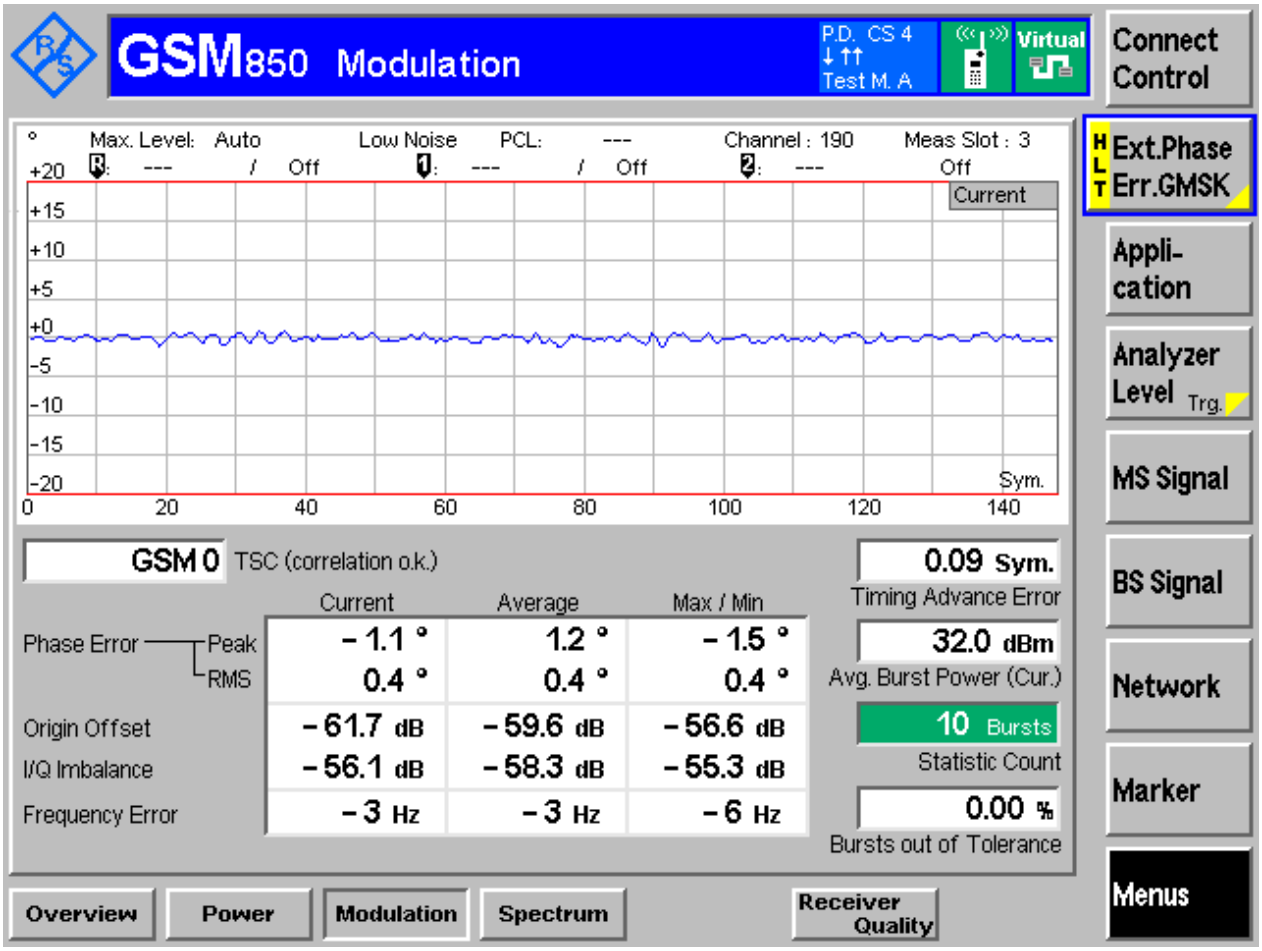
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

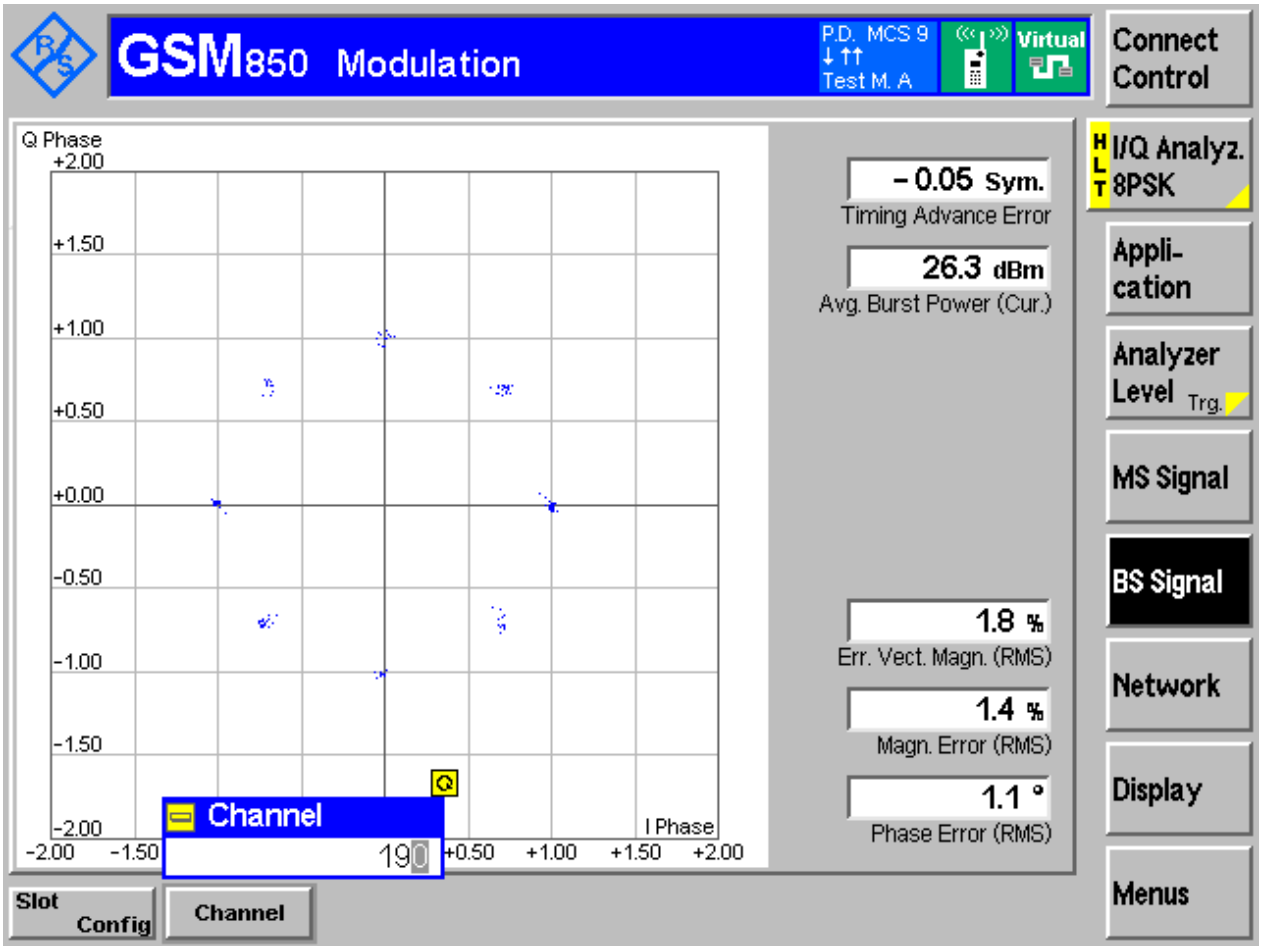
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

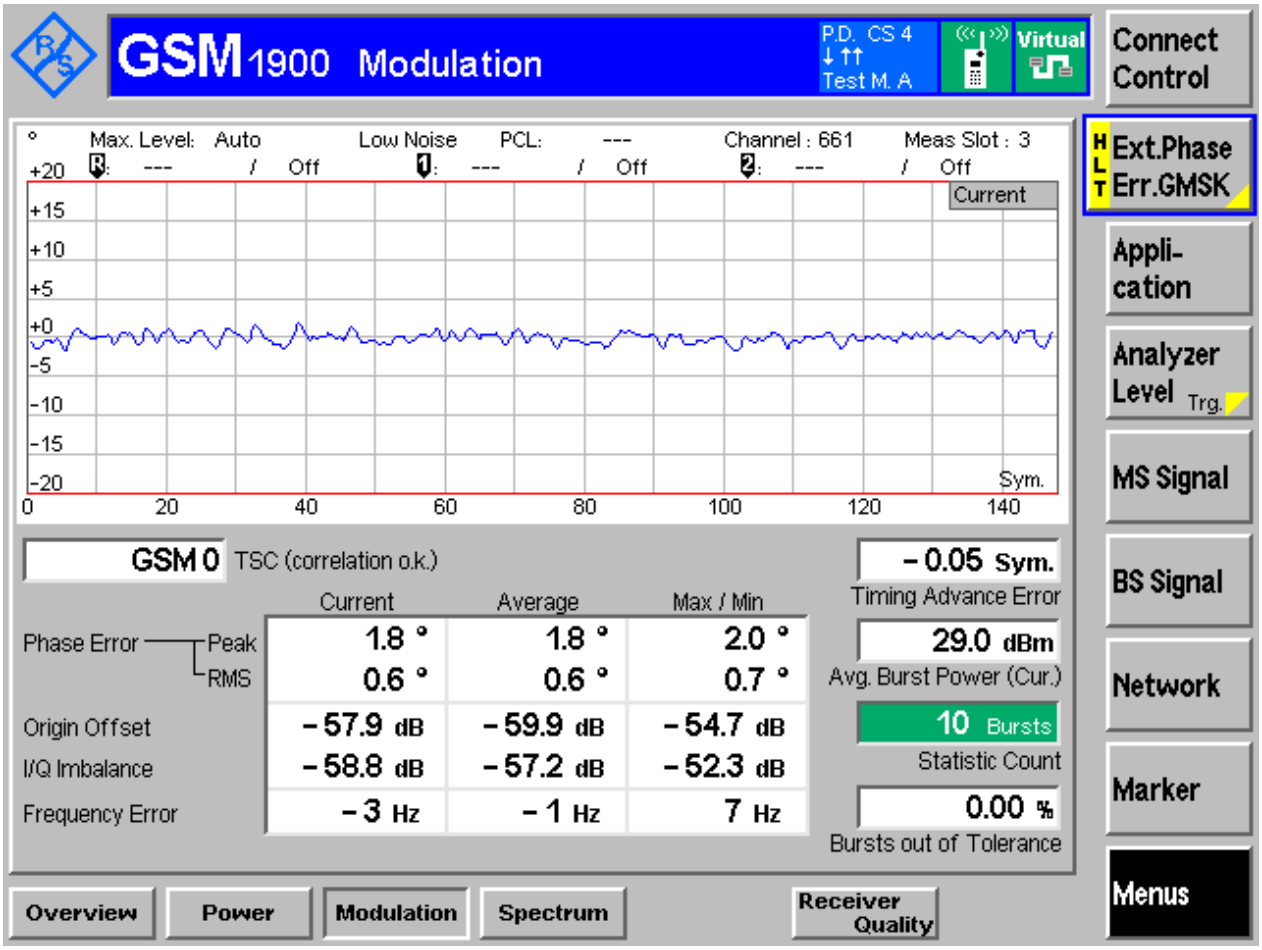
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

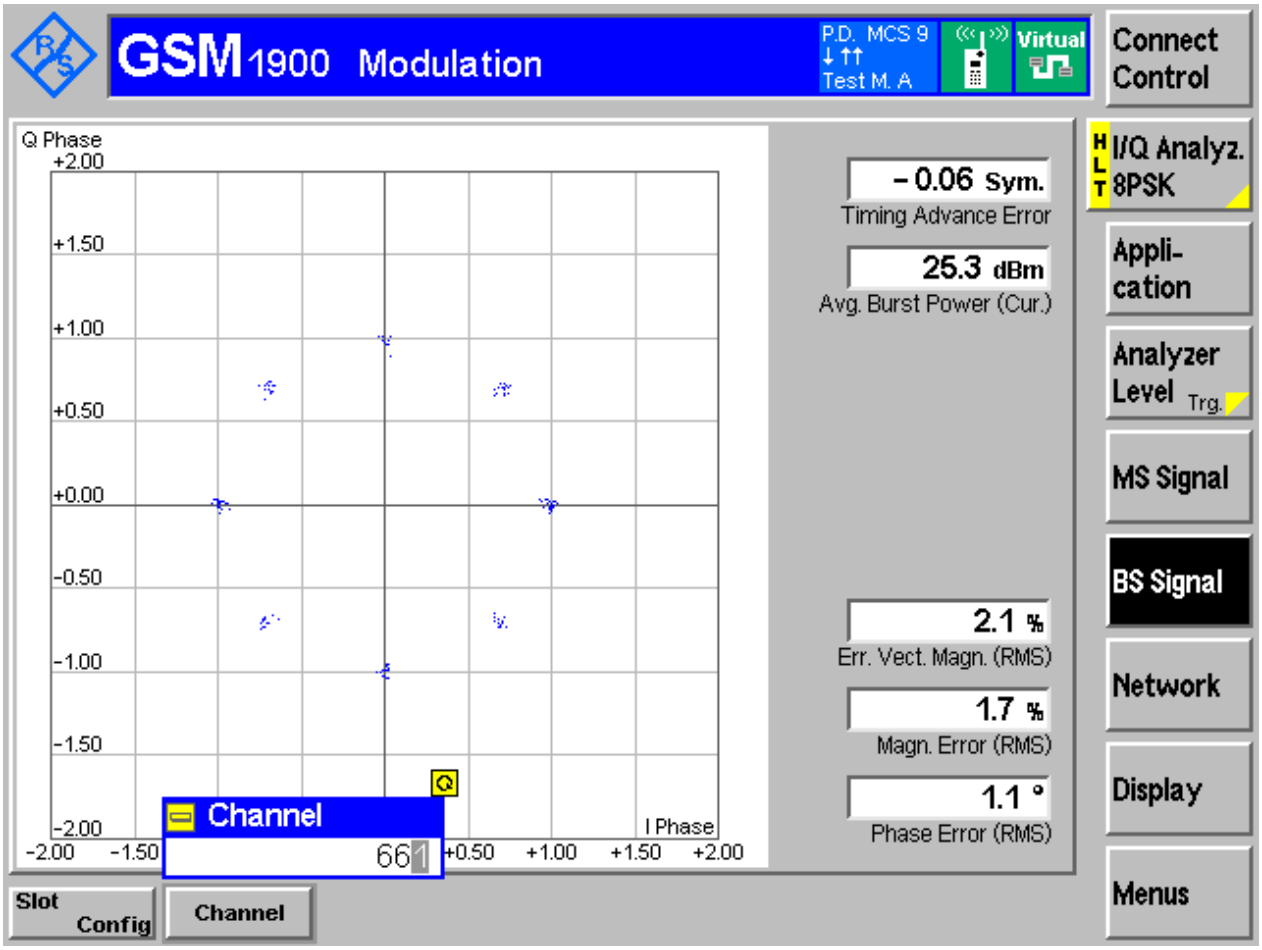
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	245.78	316.79	Pass
		MCH	242.15	320.87	Pass
		HCH	244.14	319.92	Pass
	GSM/TM2	LCH	251.82	313.77	Pass
		MCH	251.81	321.44	Pass
		HCH	247.64	316.41	Pass
GSM1900	GSM/TM1	LCH	244.62	316.19	Pass
		MCH	245.43	314.90	Pass
		HCH	246.02	314.87	Pass
	GSM/TM2	LCH	246.77	316.42	Pass
		MCH	249.74	314.67	Pass
		HCH	245.94	321.06	Pass

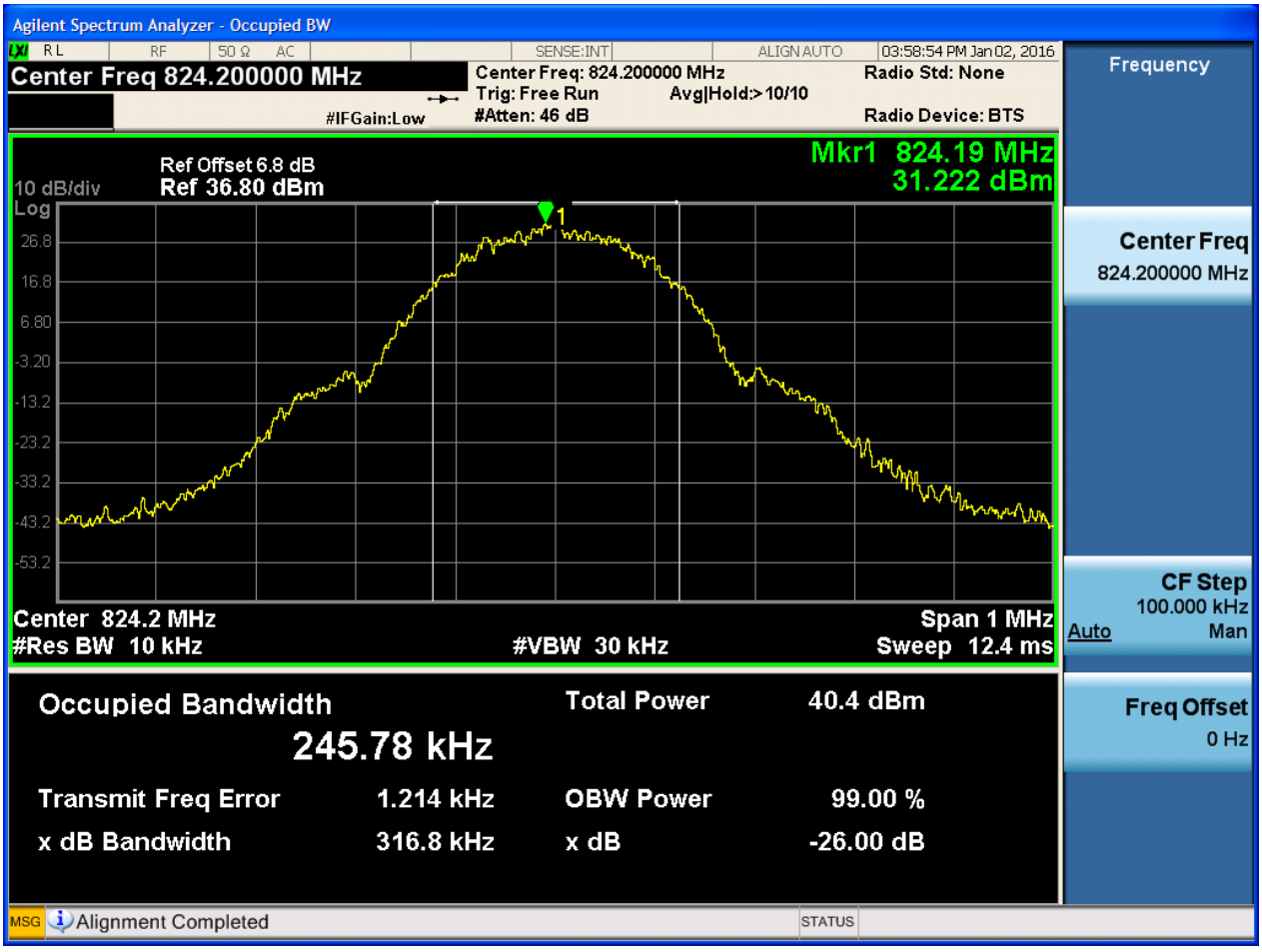
Part II - Test Plots

4.1 For GSM

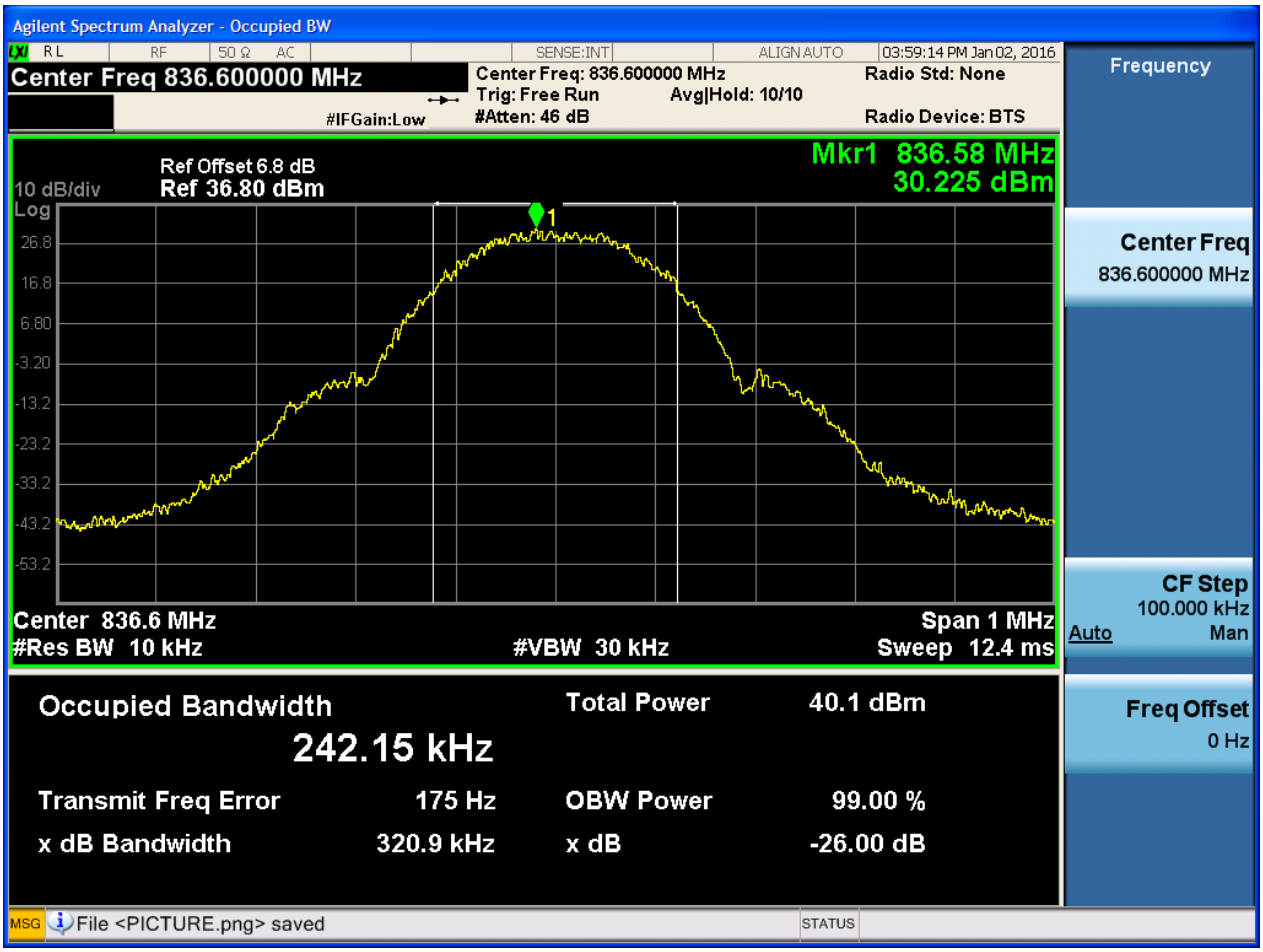
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

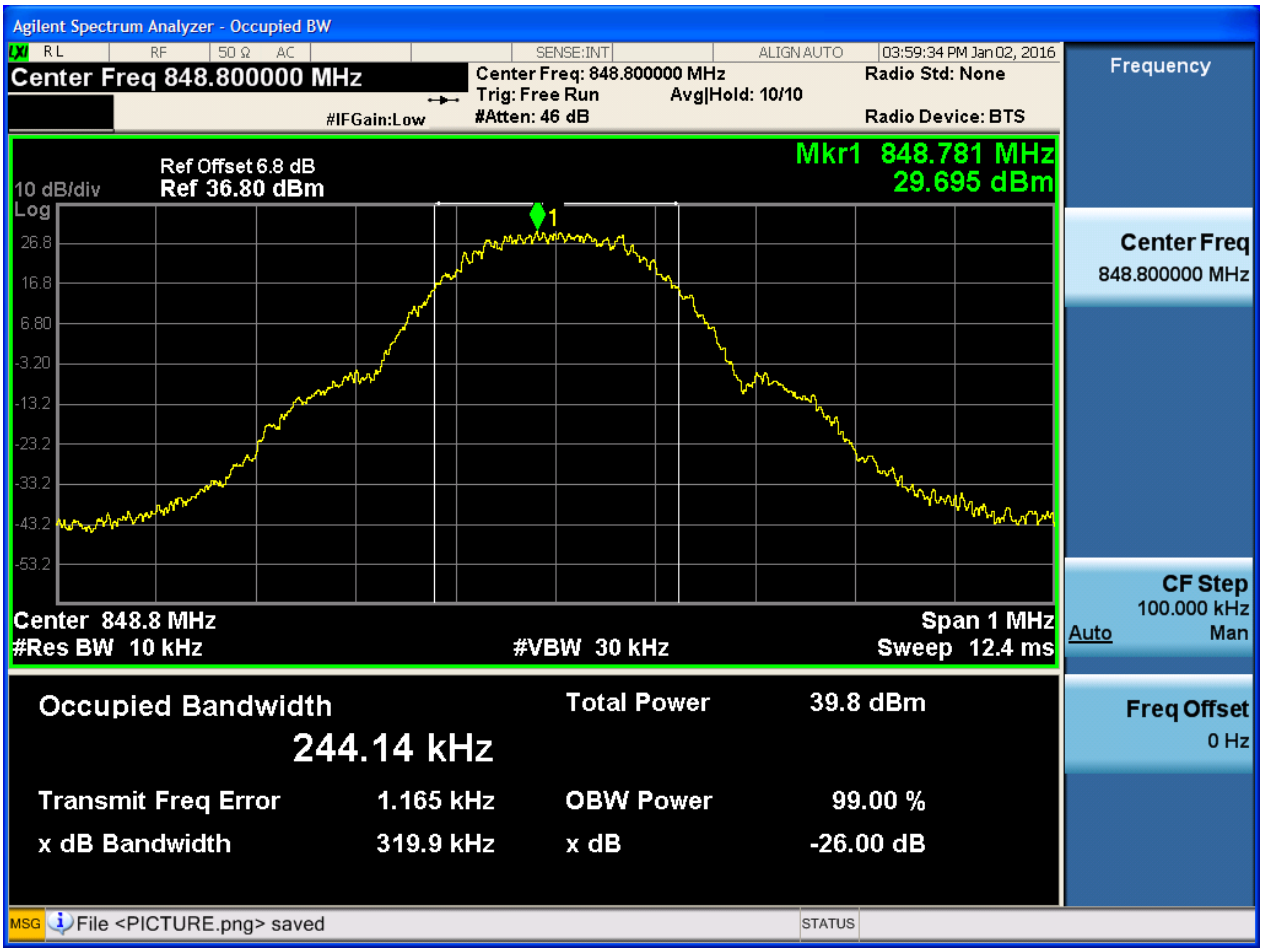
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

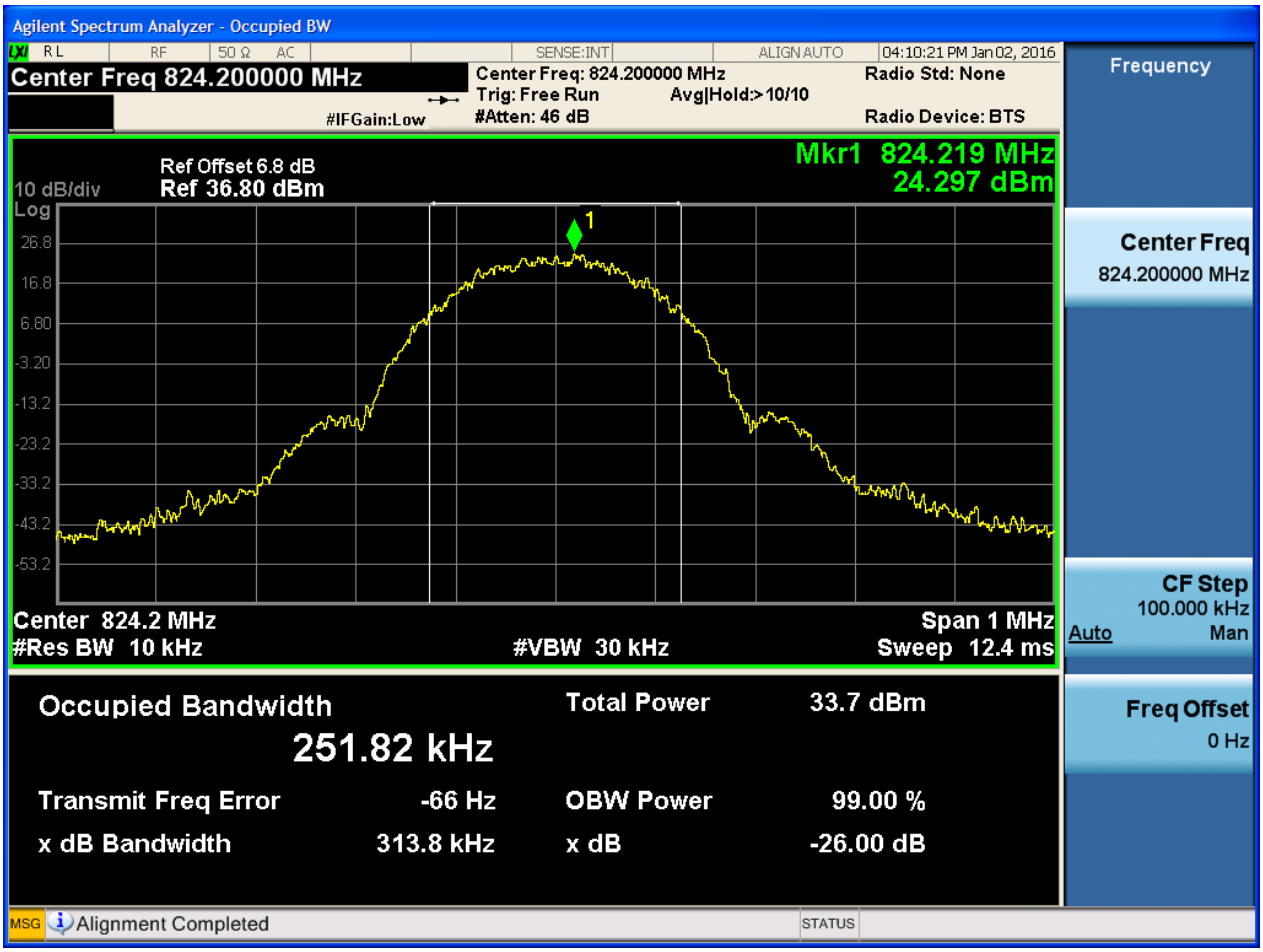


4.1.1.1.3 Test Channel = HCH

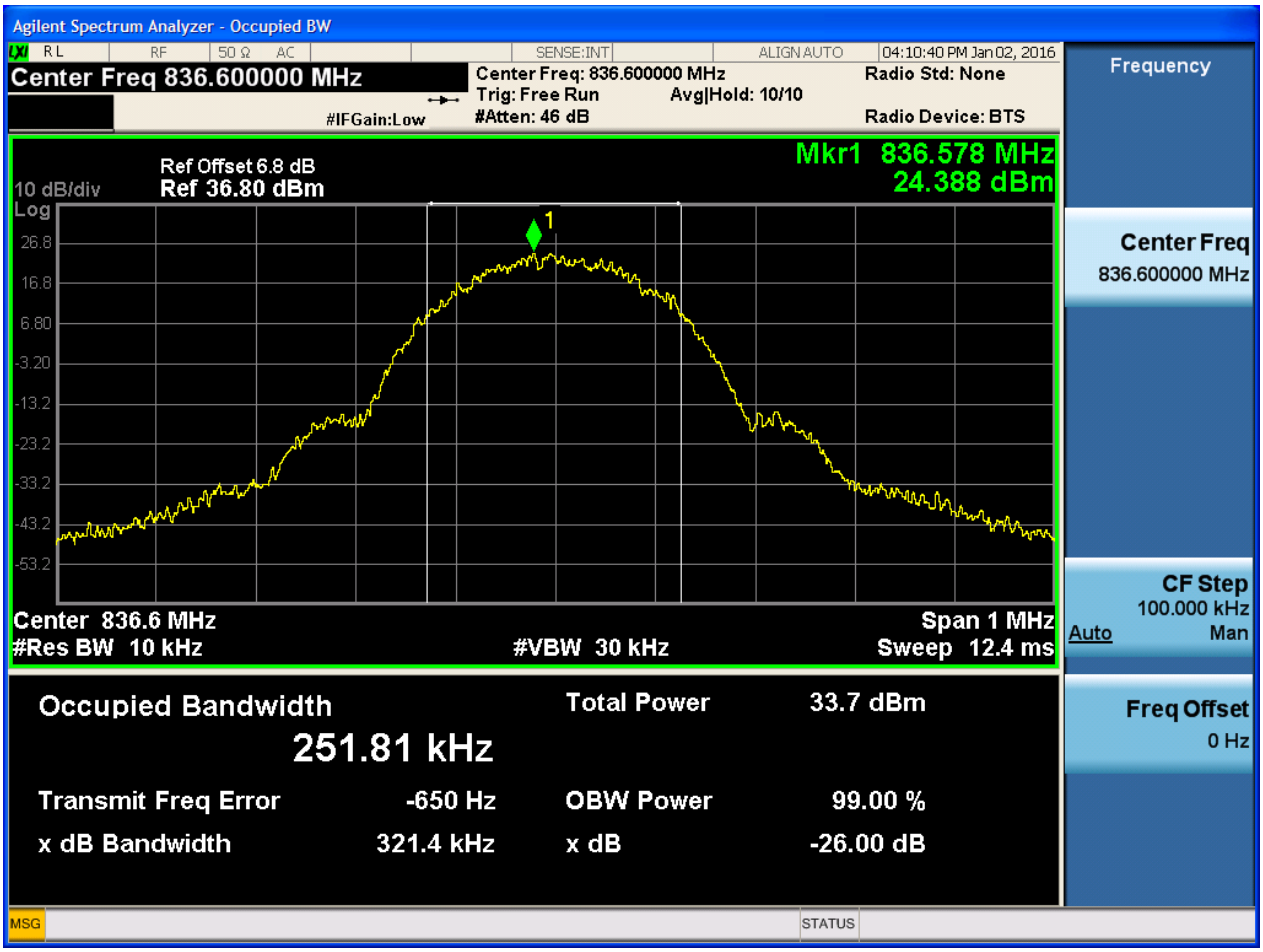


4.1.1.2 Test Mode = GSM/TM2

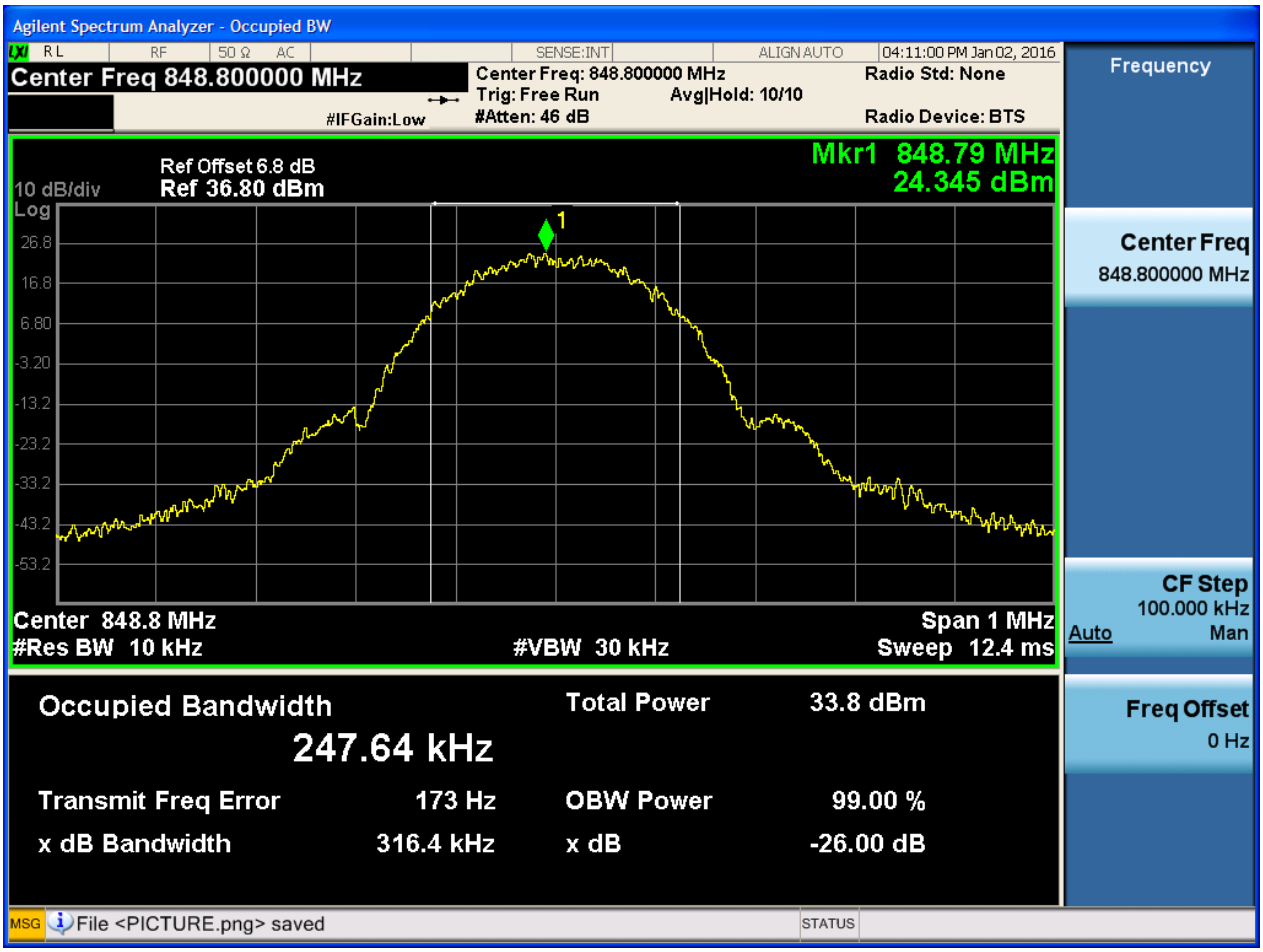
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



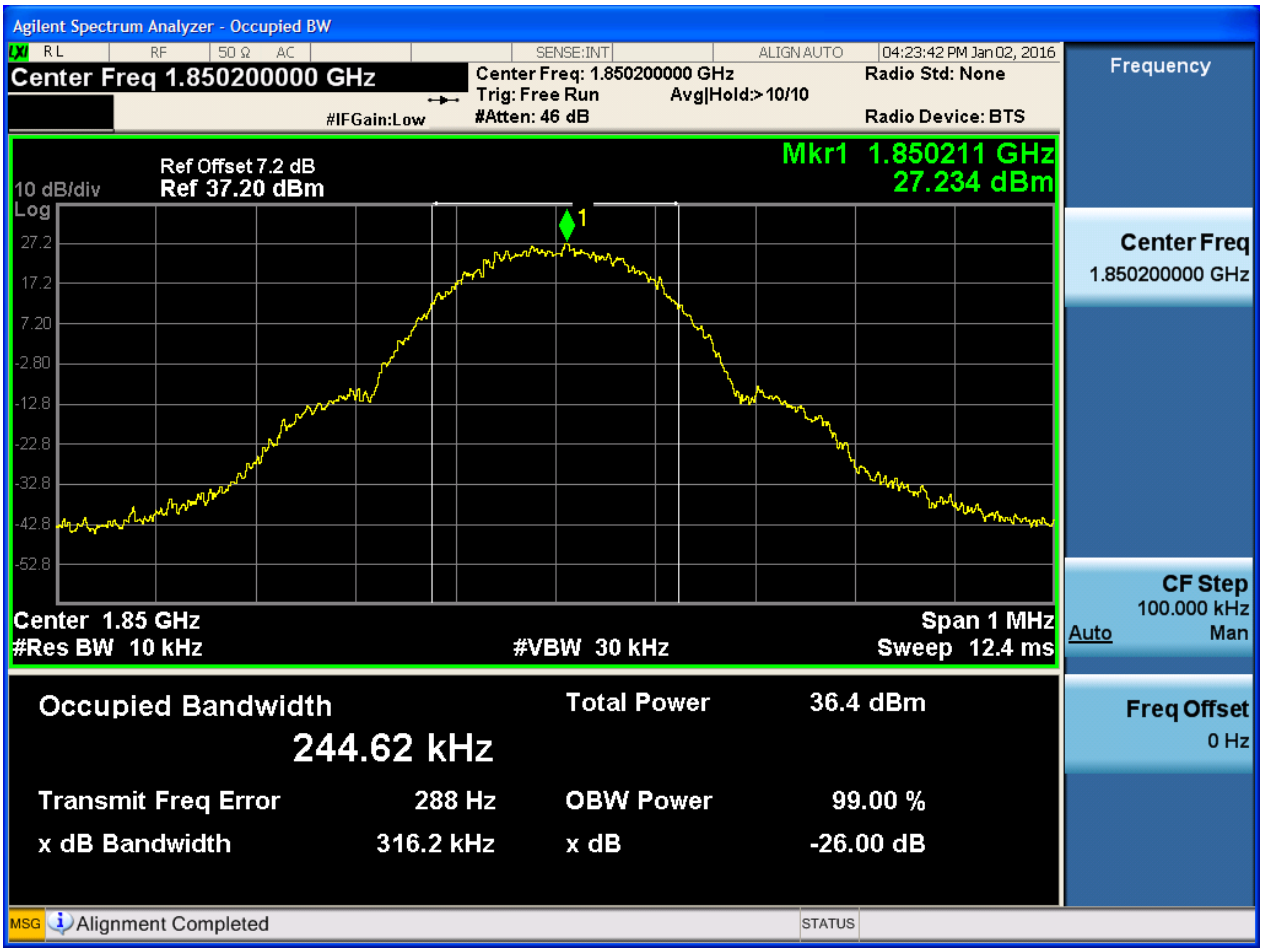
4.1.1.2.3 Test Channel = HCH



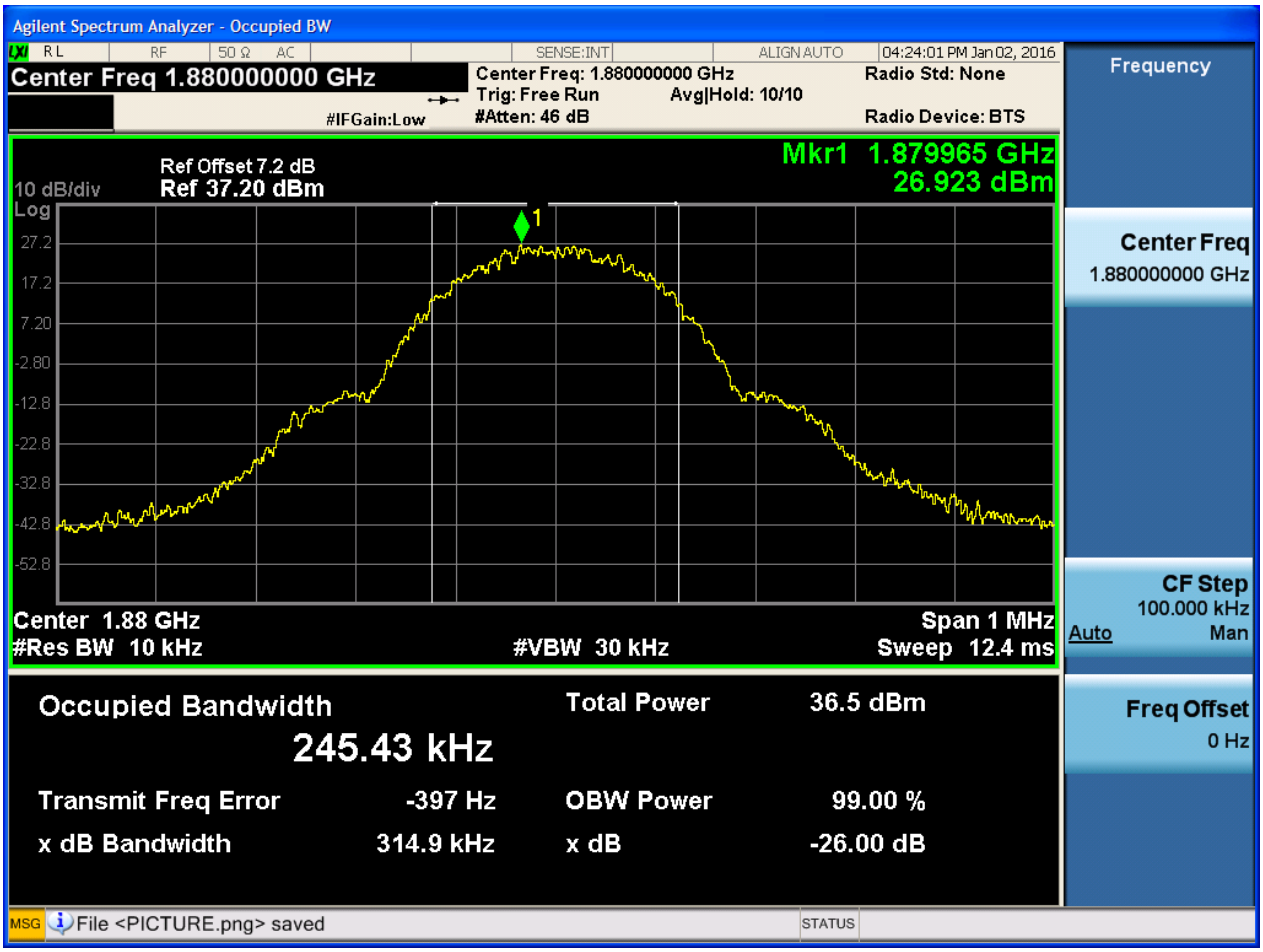
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

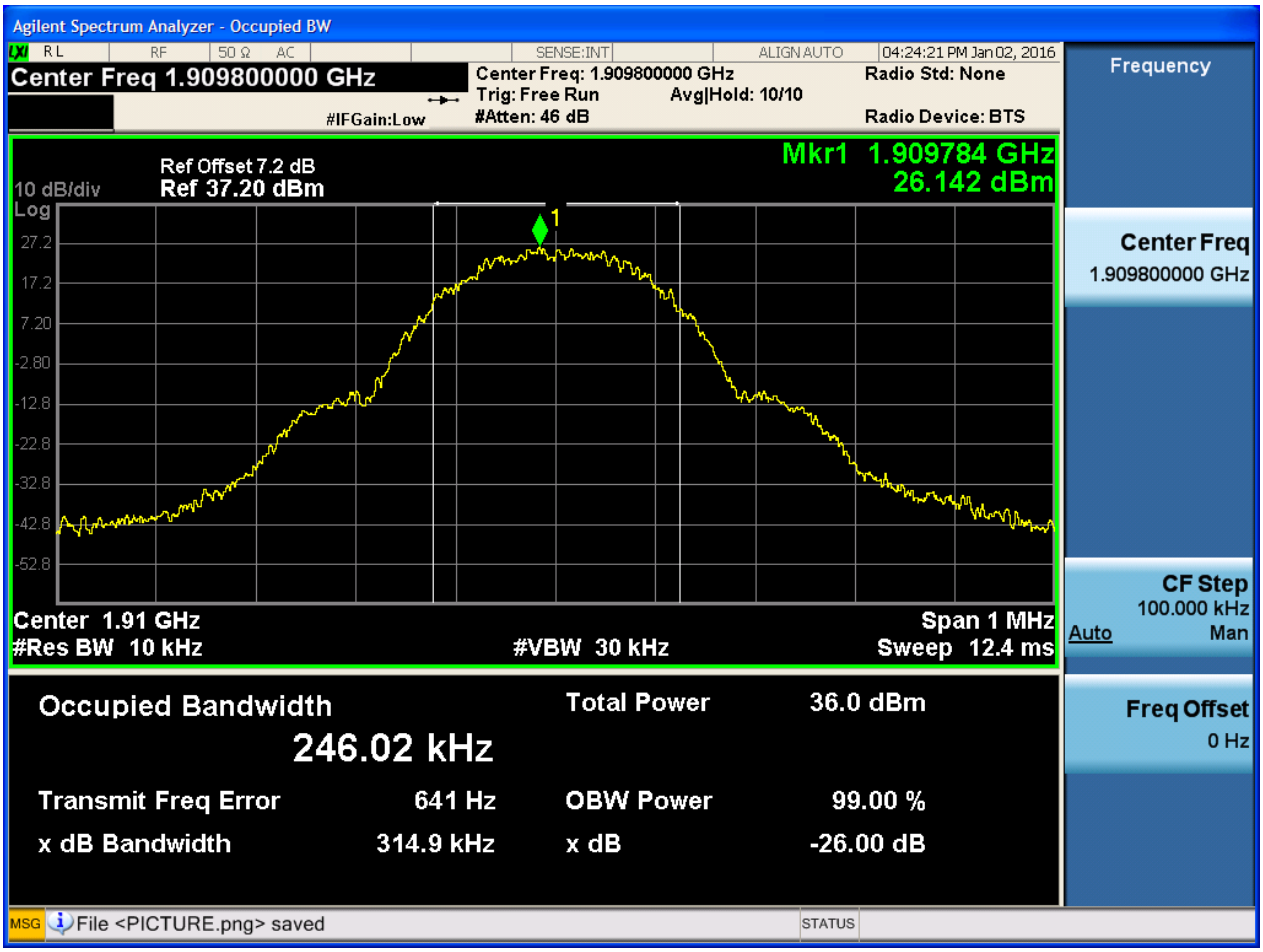
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

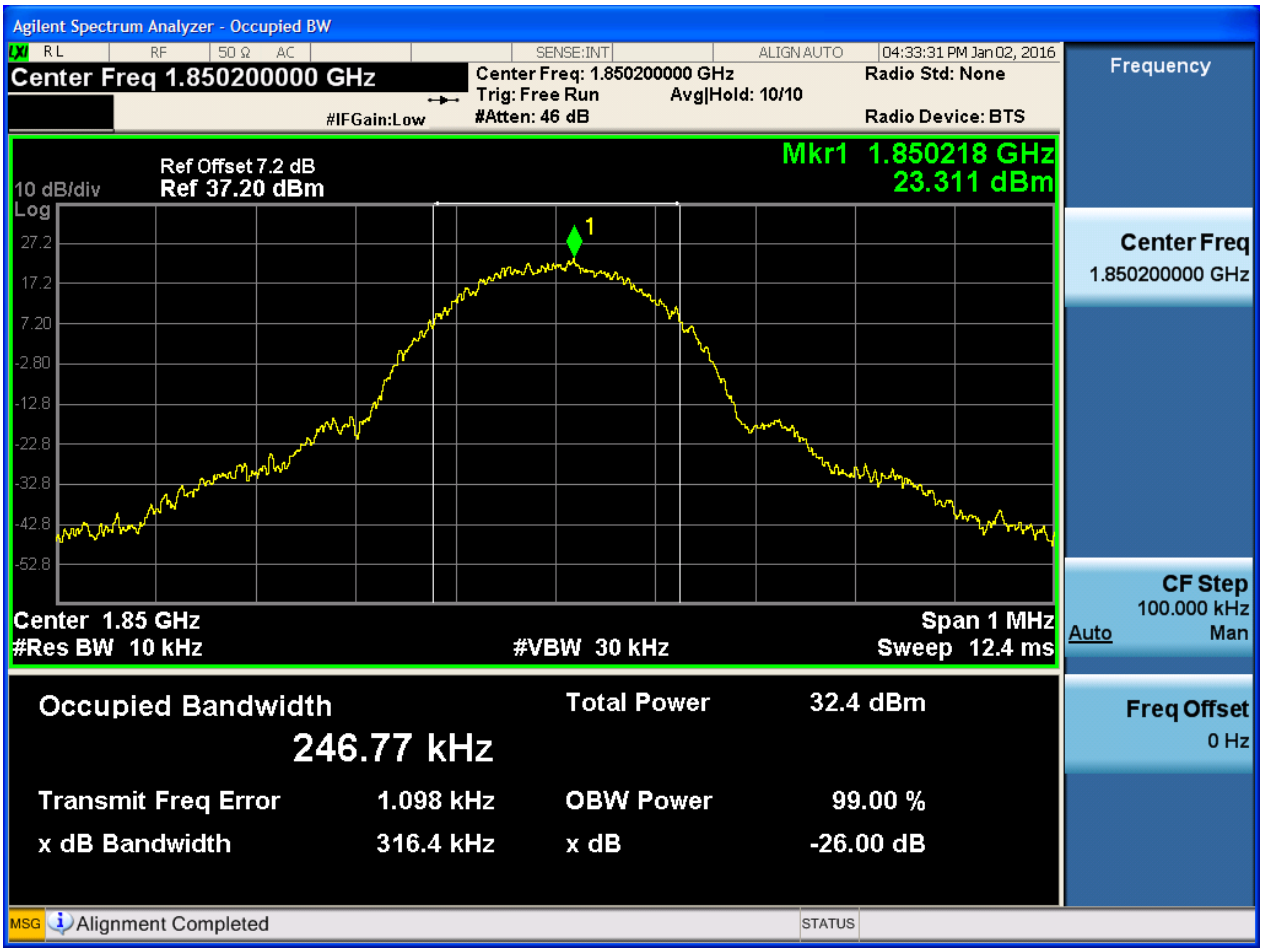


4.1.2.1.3 Test Channel = HCH

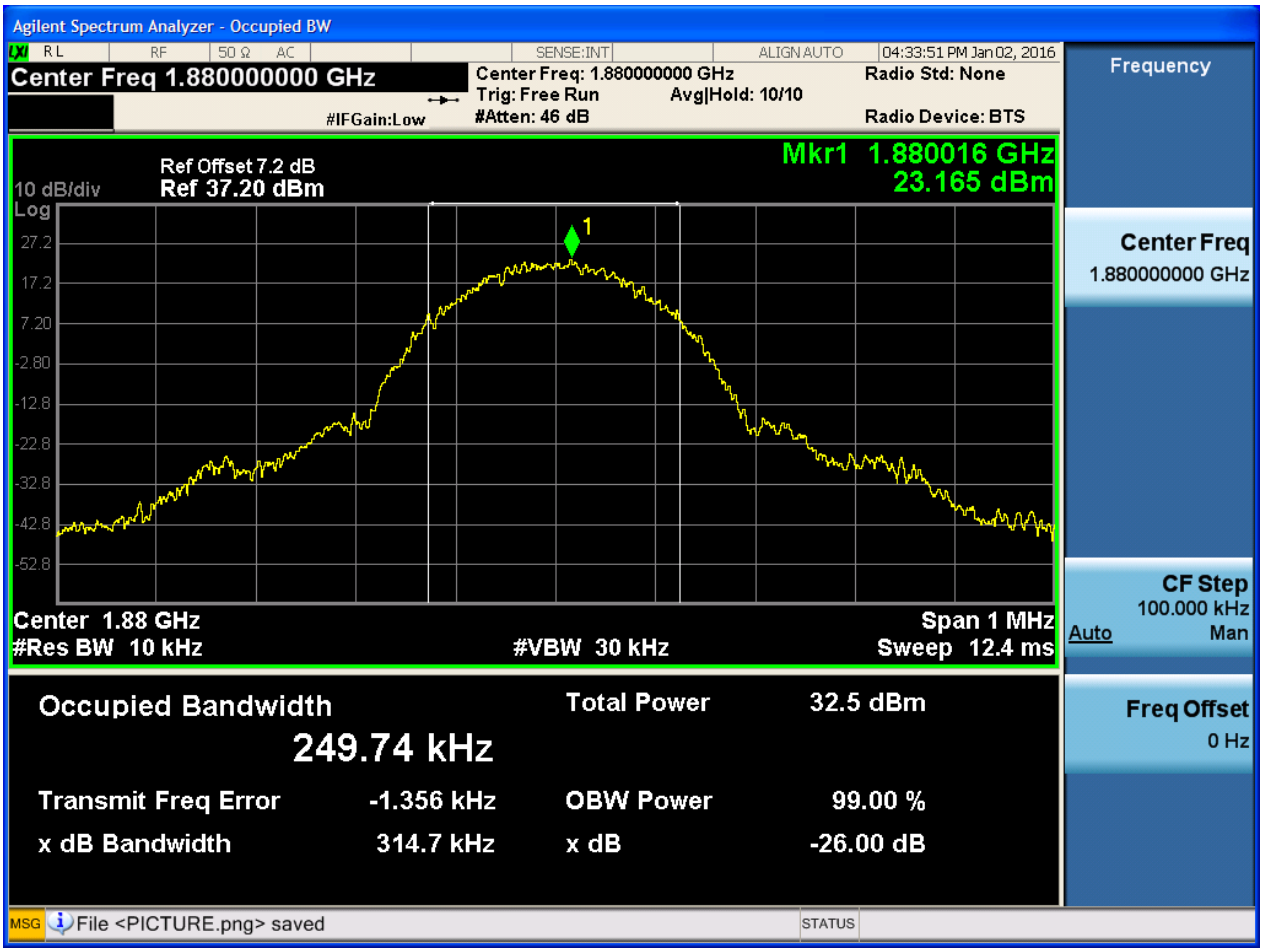


4.1.2.2 Test Mode = GSM/TM2

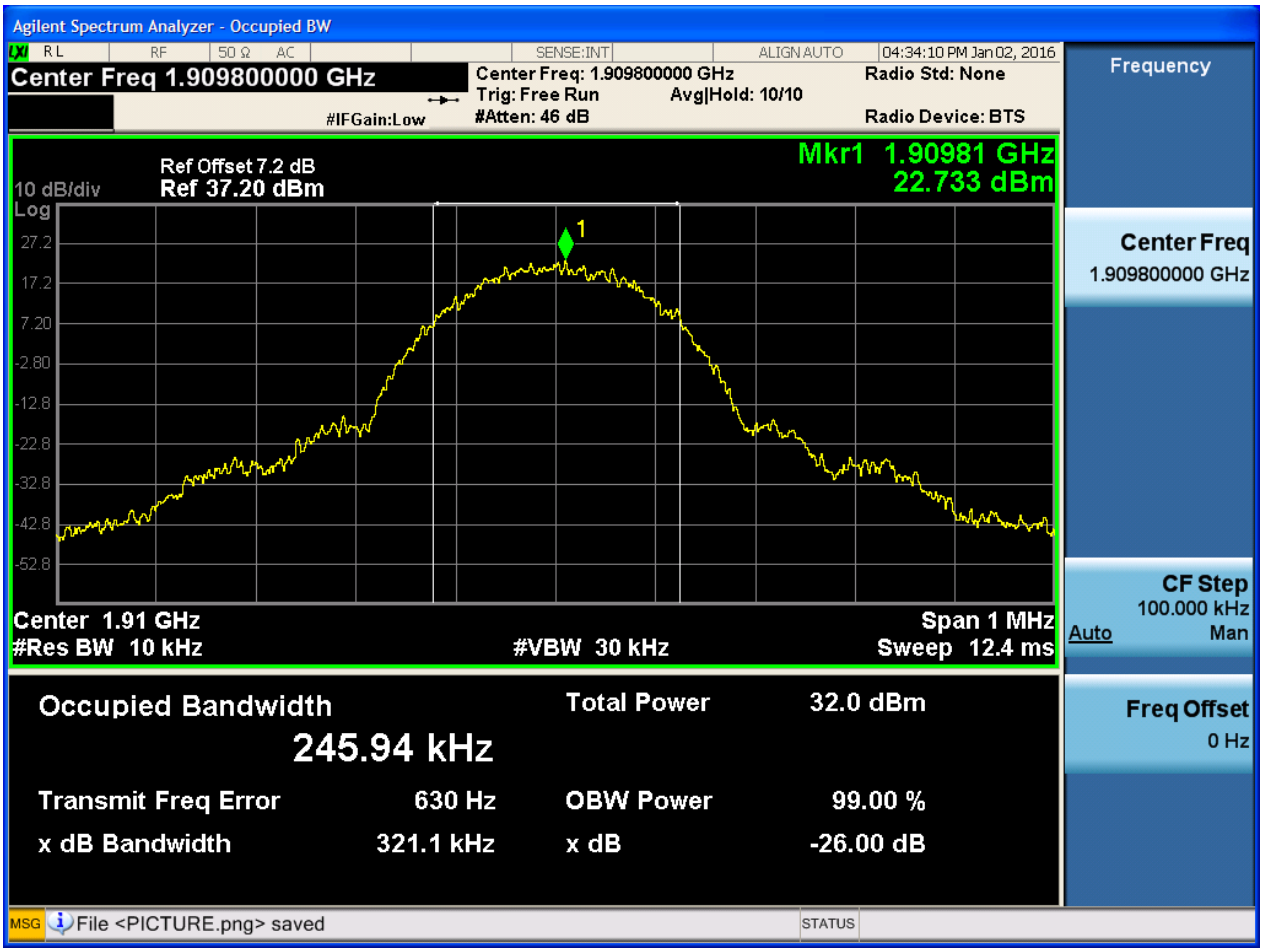
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

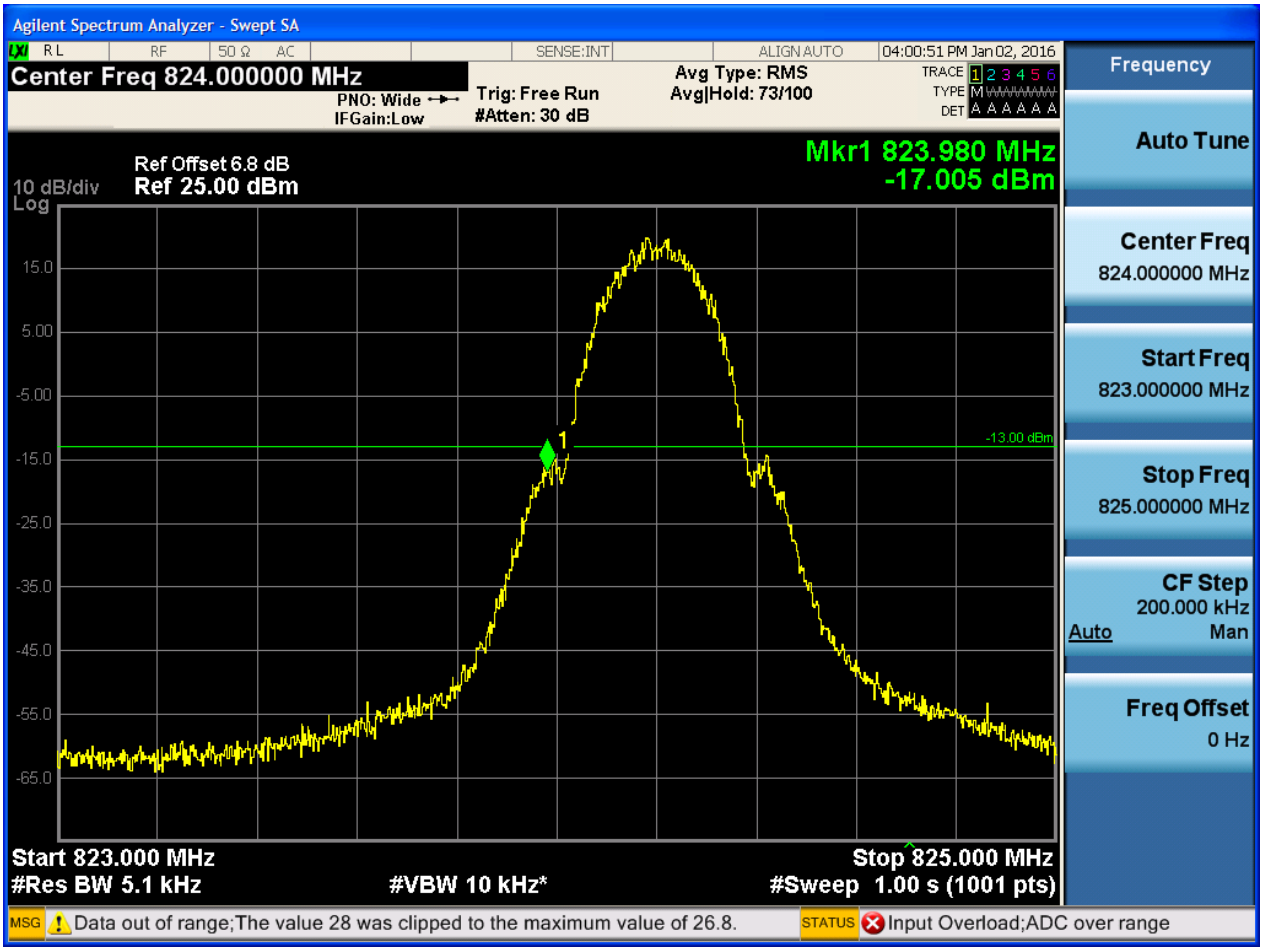
Part I - Test Plots

5.1 For GSM

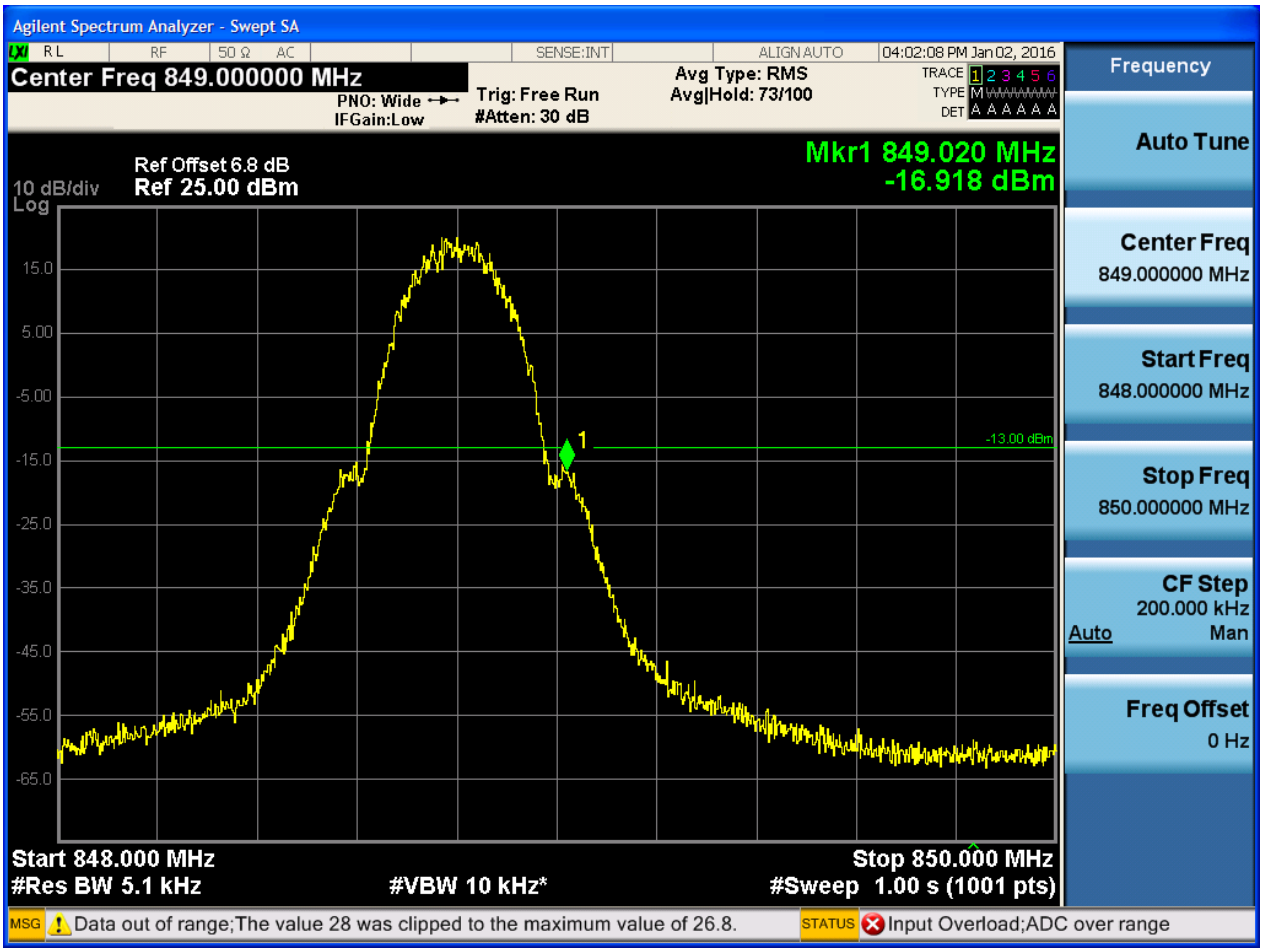
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

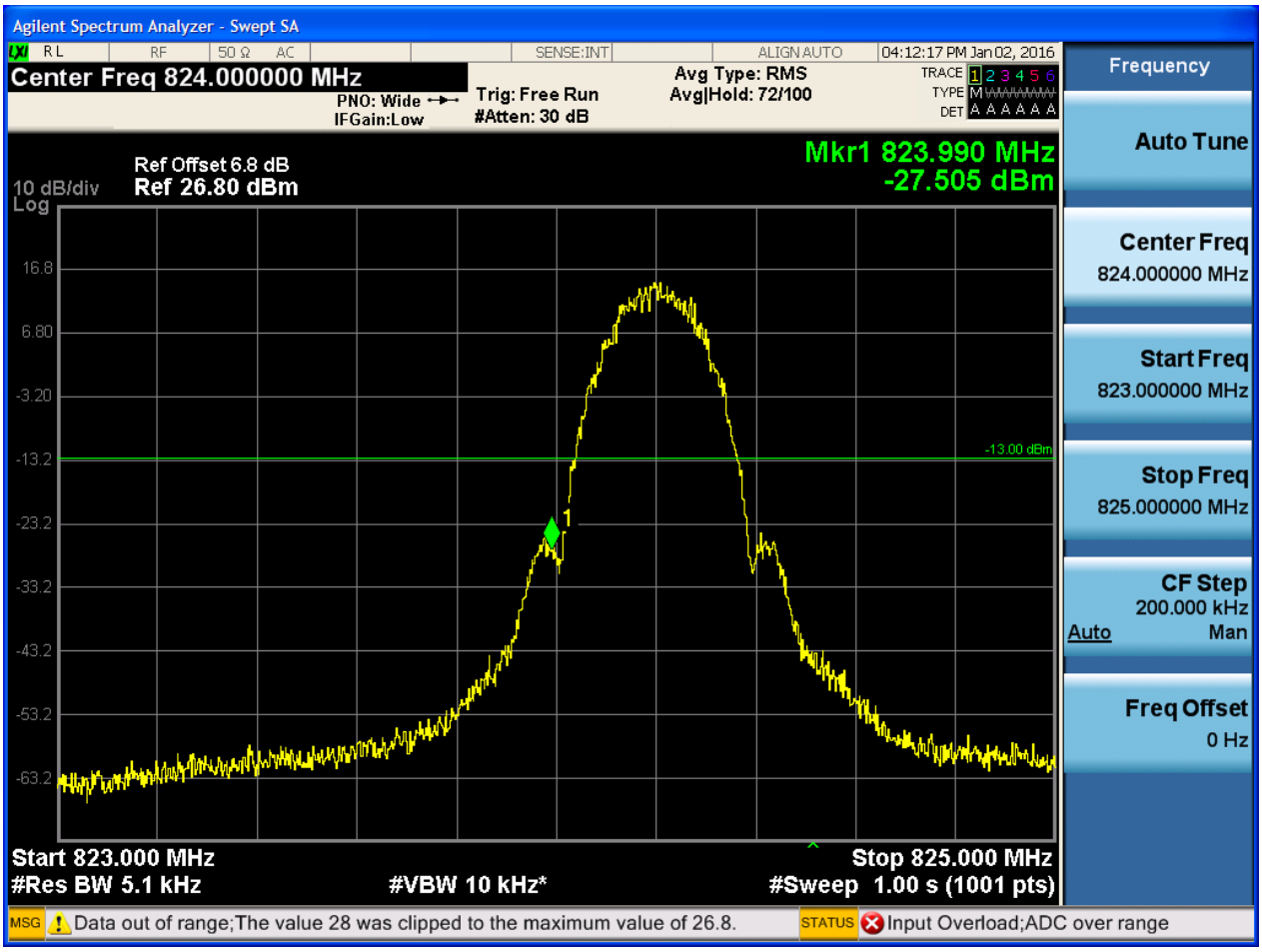


5.1.1.1.2 Test Channel = HCH

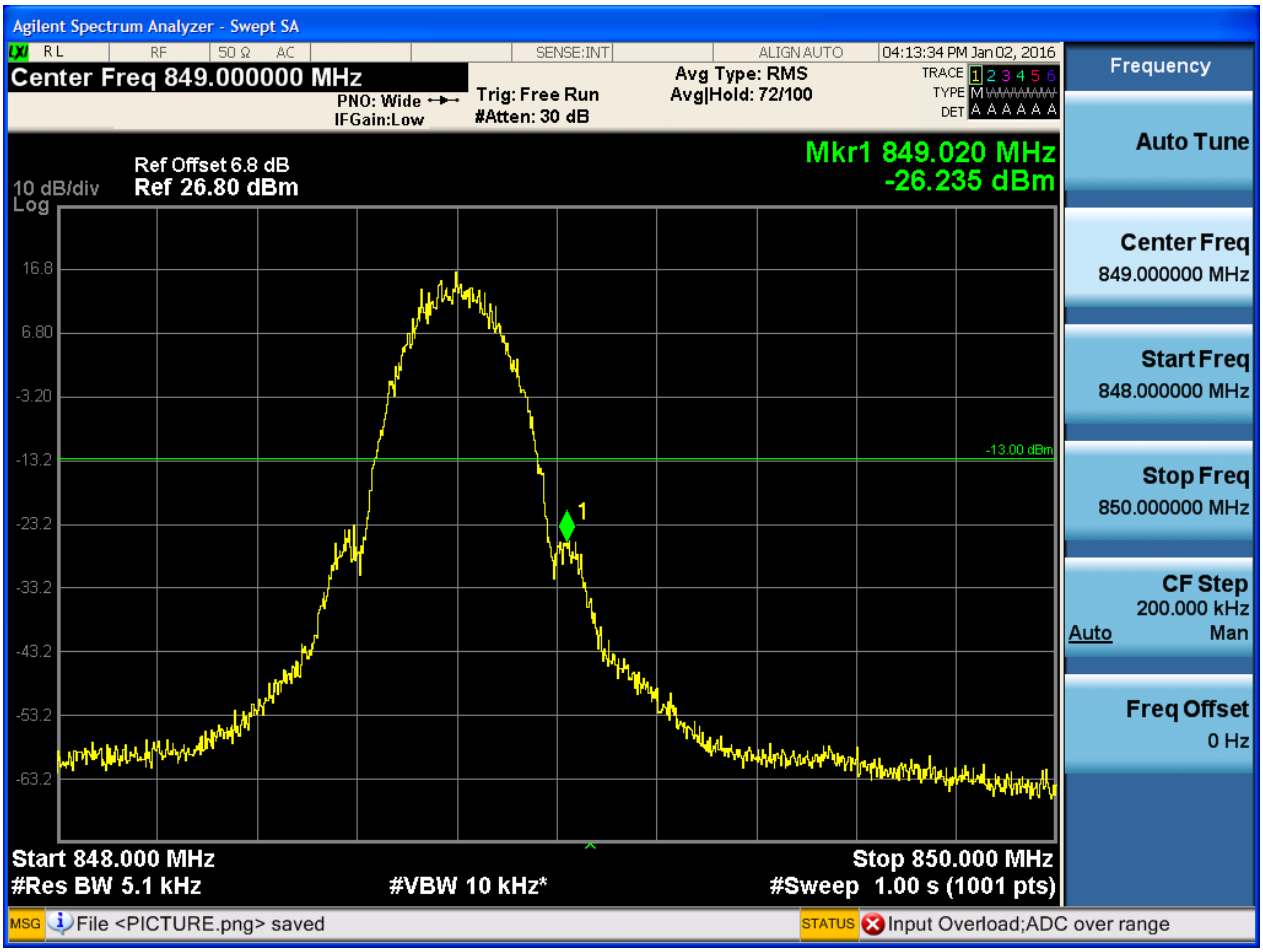


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



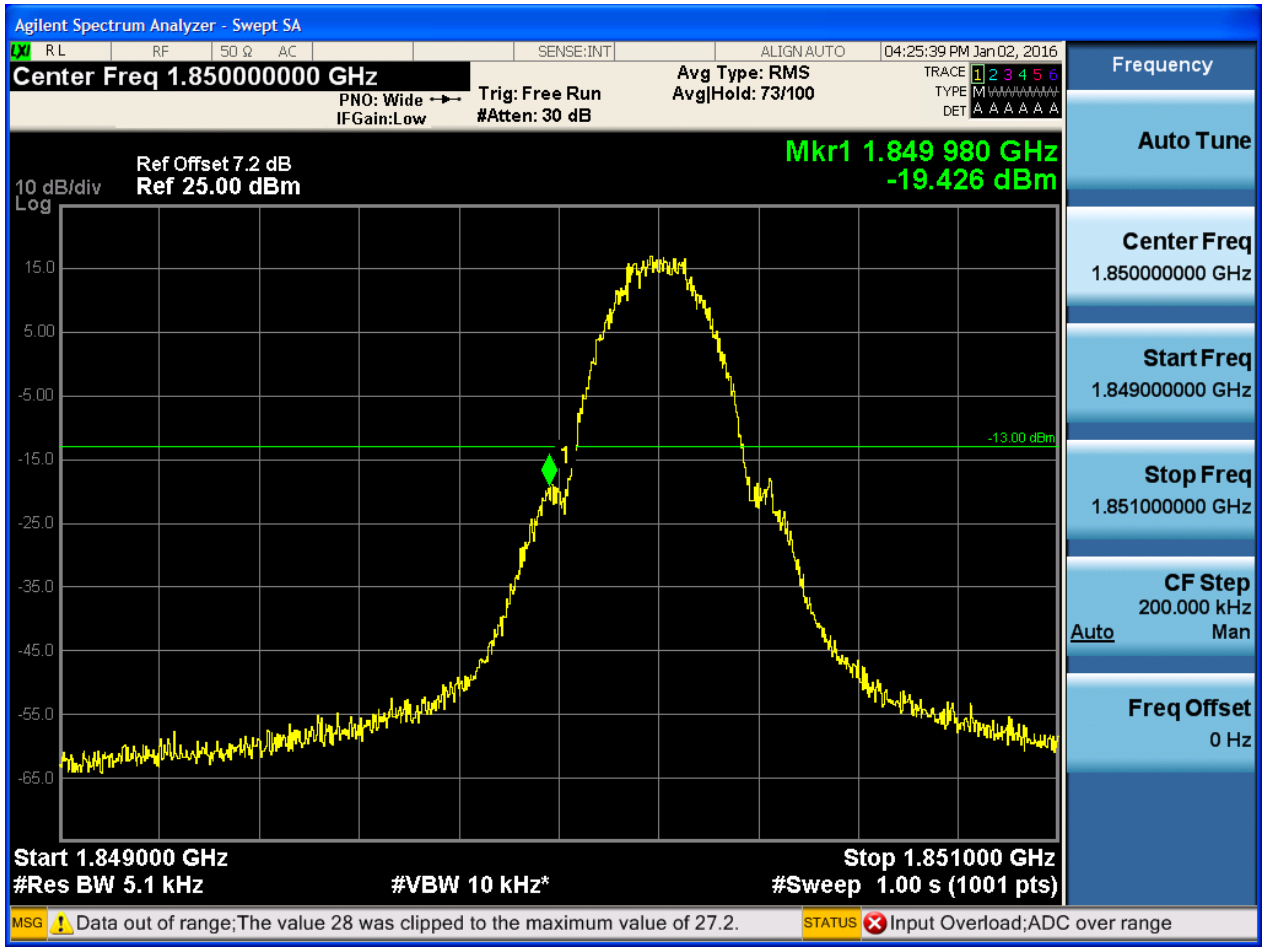
5.1.1.2.2 Test Channel = HCH



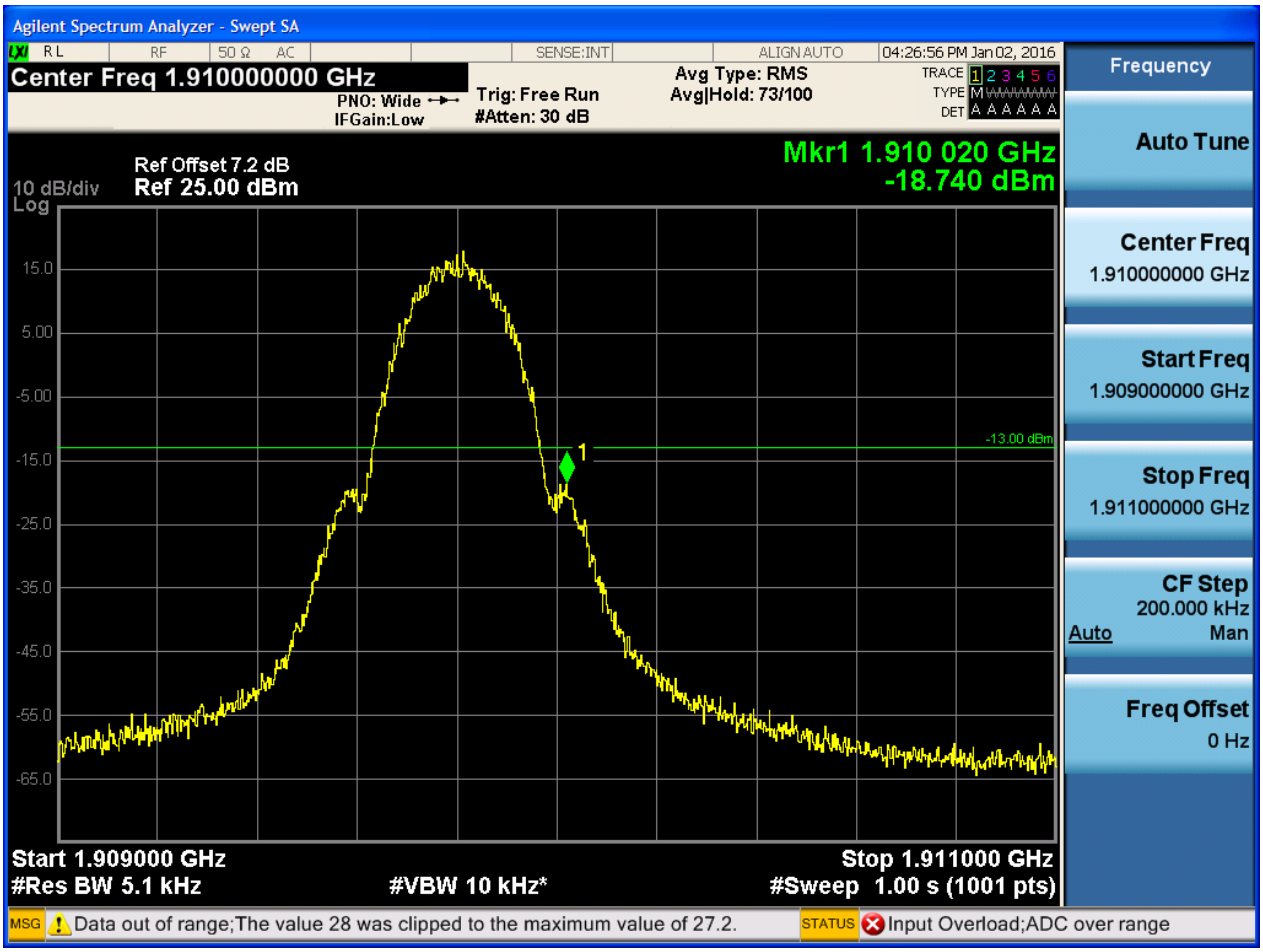
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH

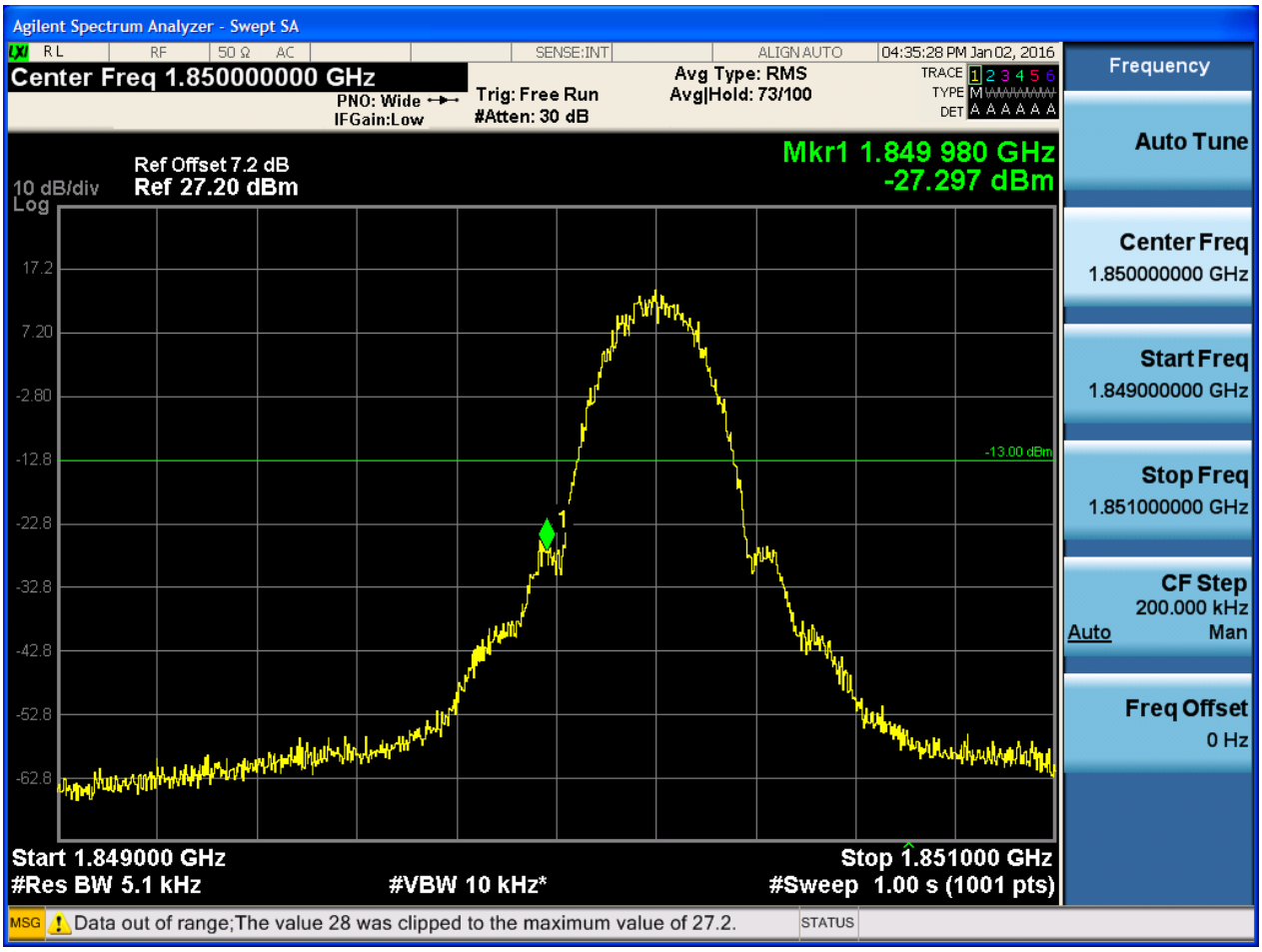


5.1.2.1.2 Test Channel = HCH

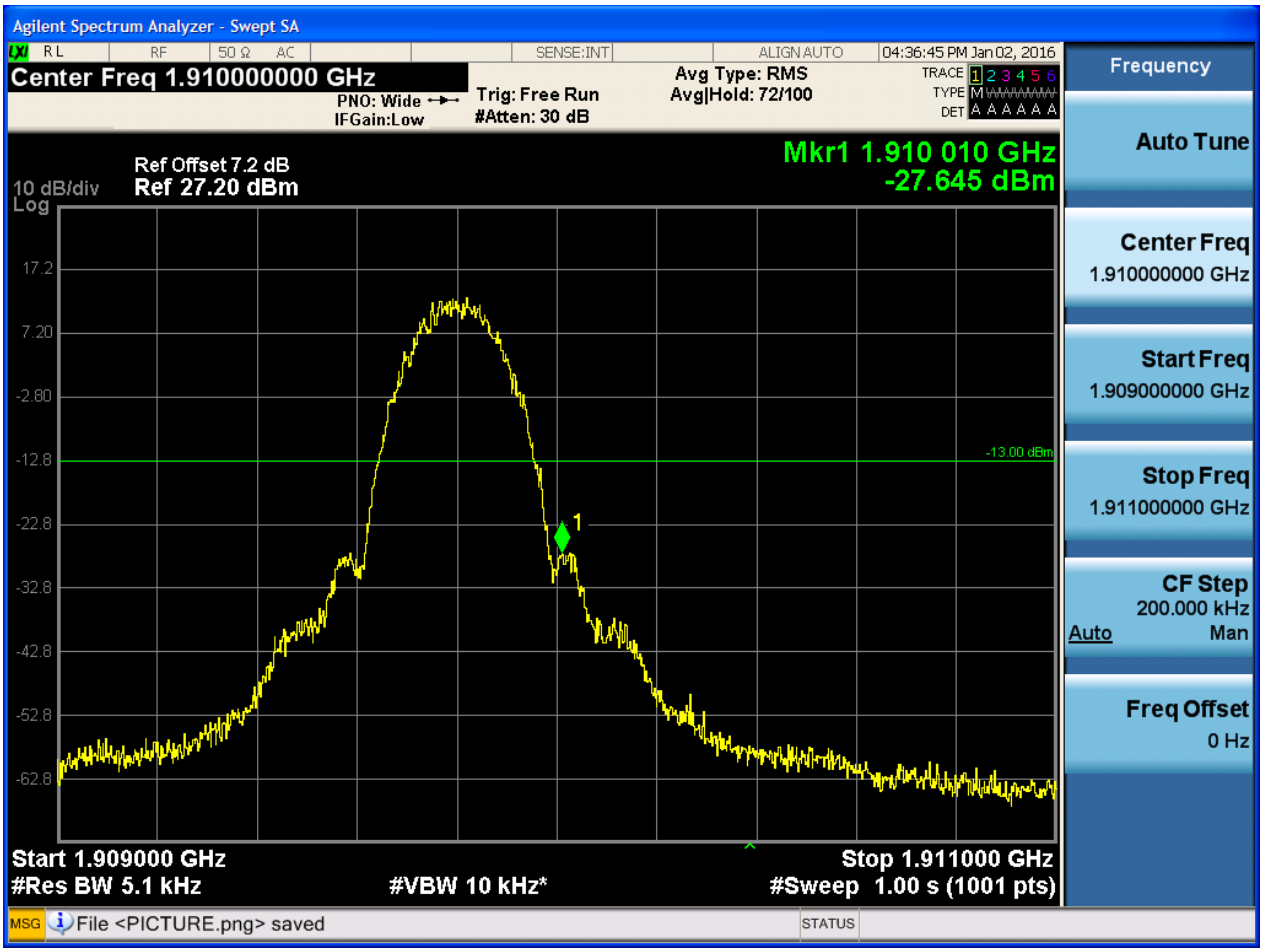


5.1.2.2 Test Mode = GSM/TM2

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.

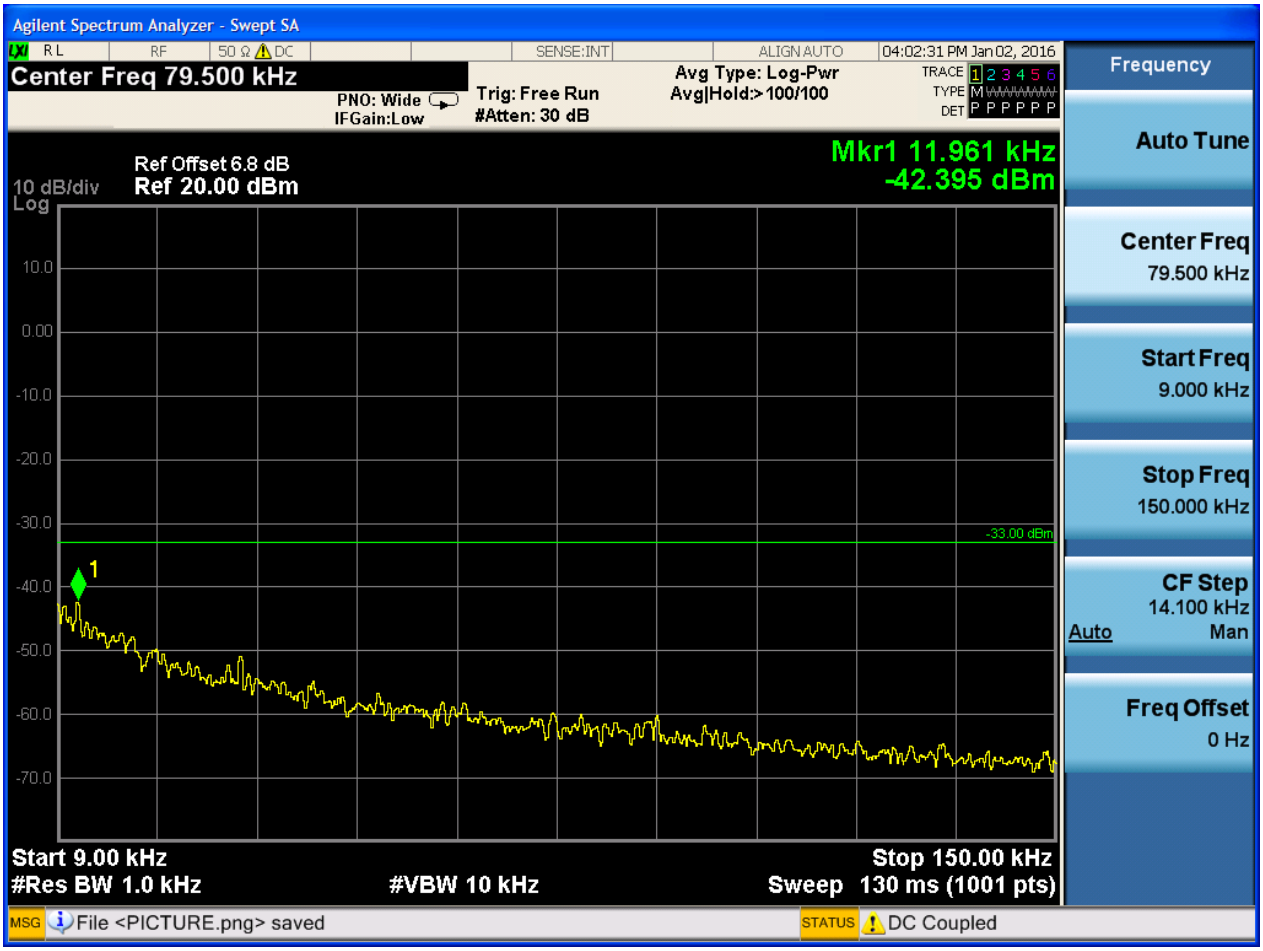
Part I - Test Plots

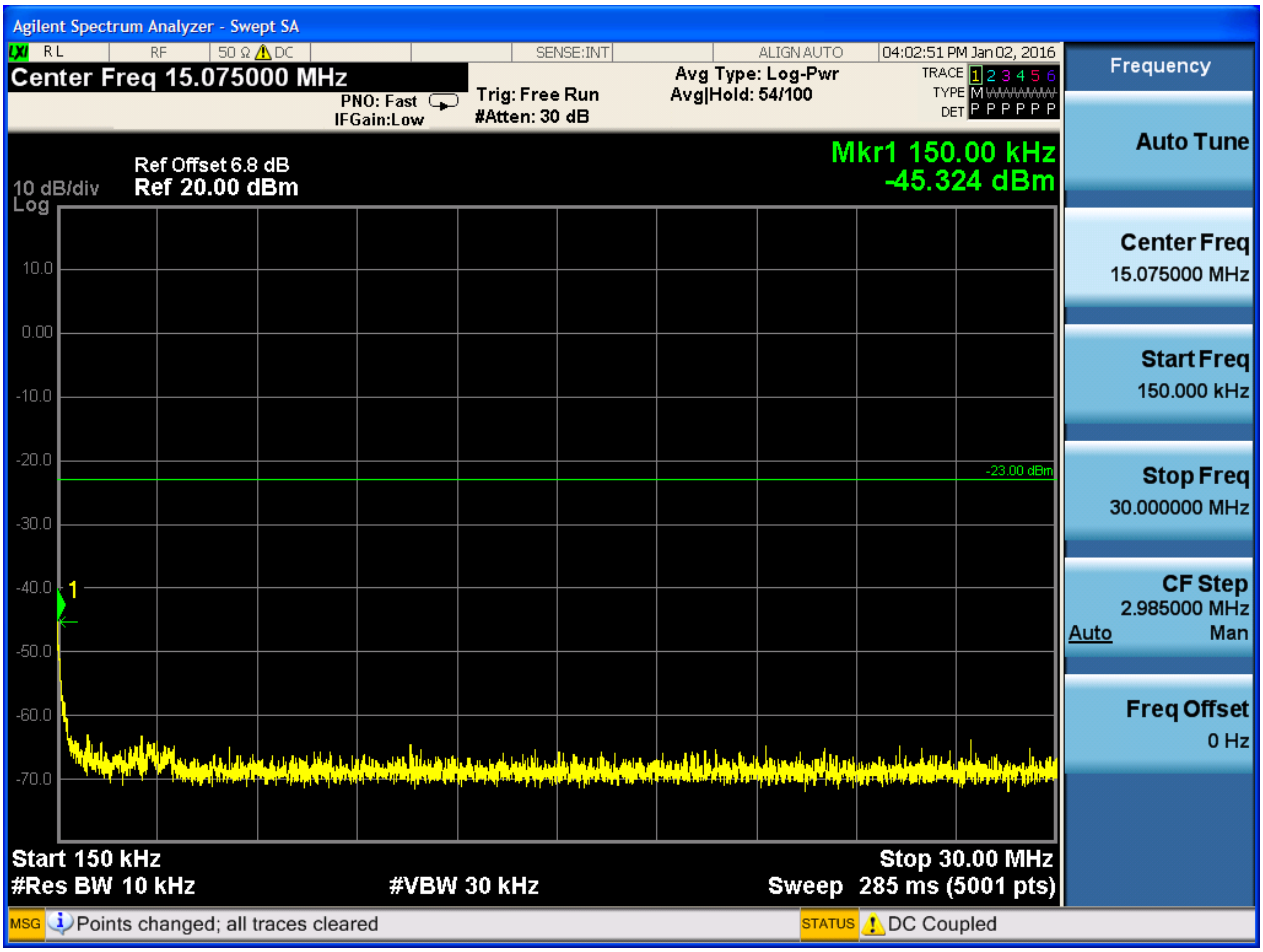
6.1 For GSM

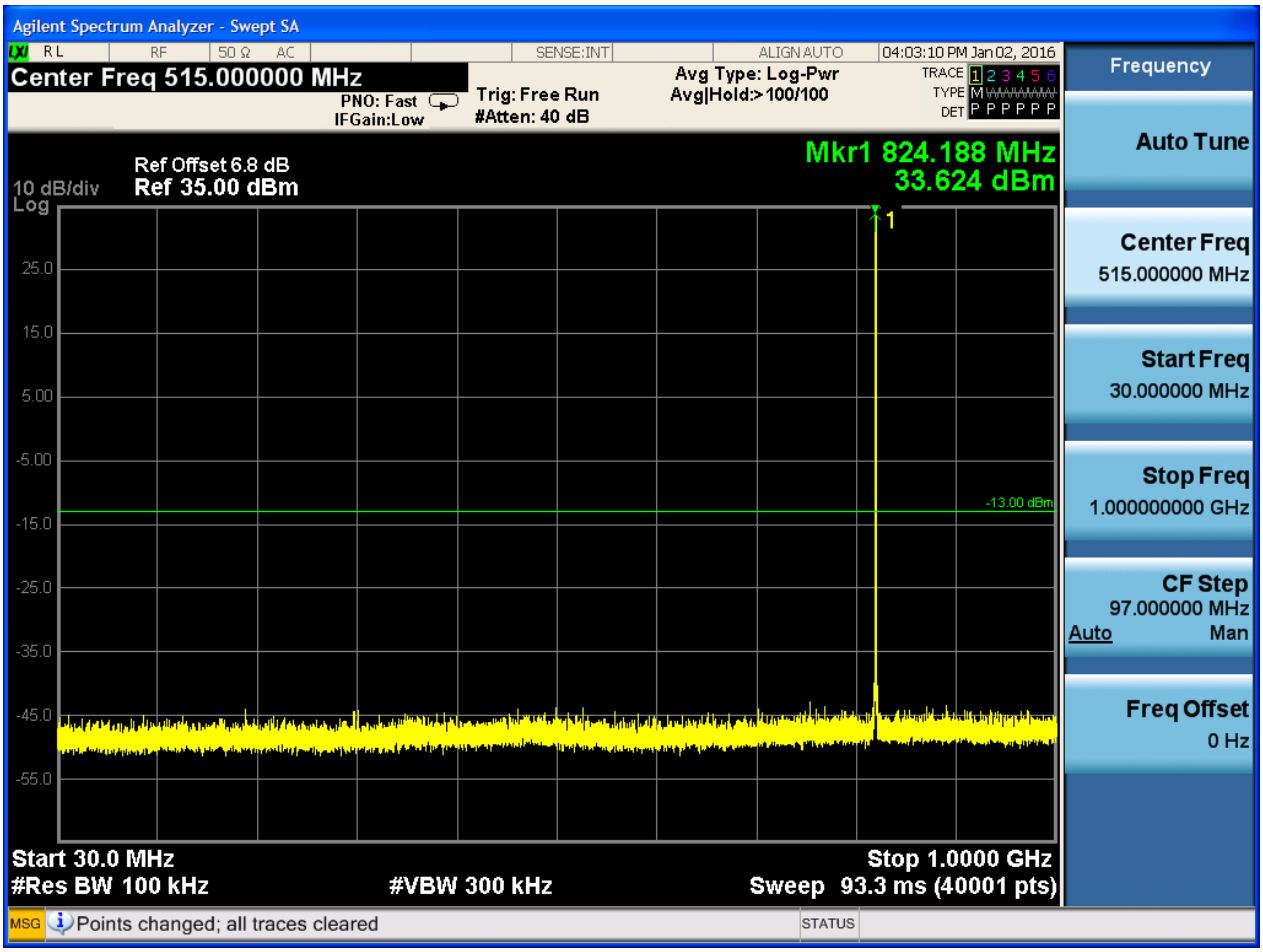
6.1.1 Test Band = GSM850

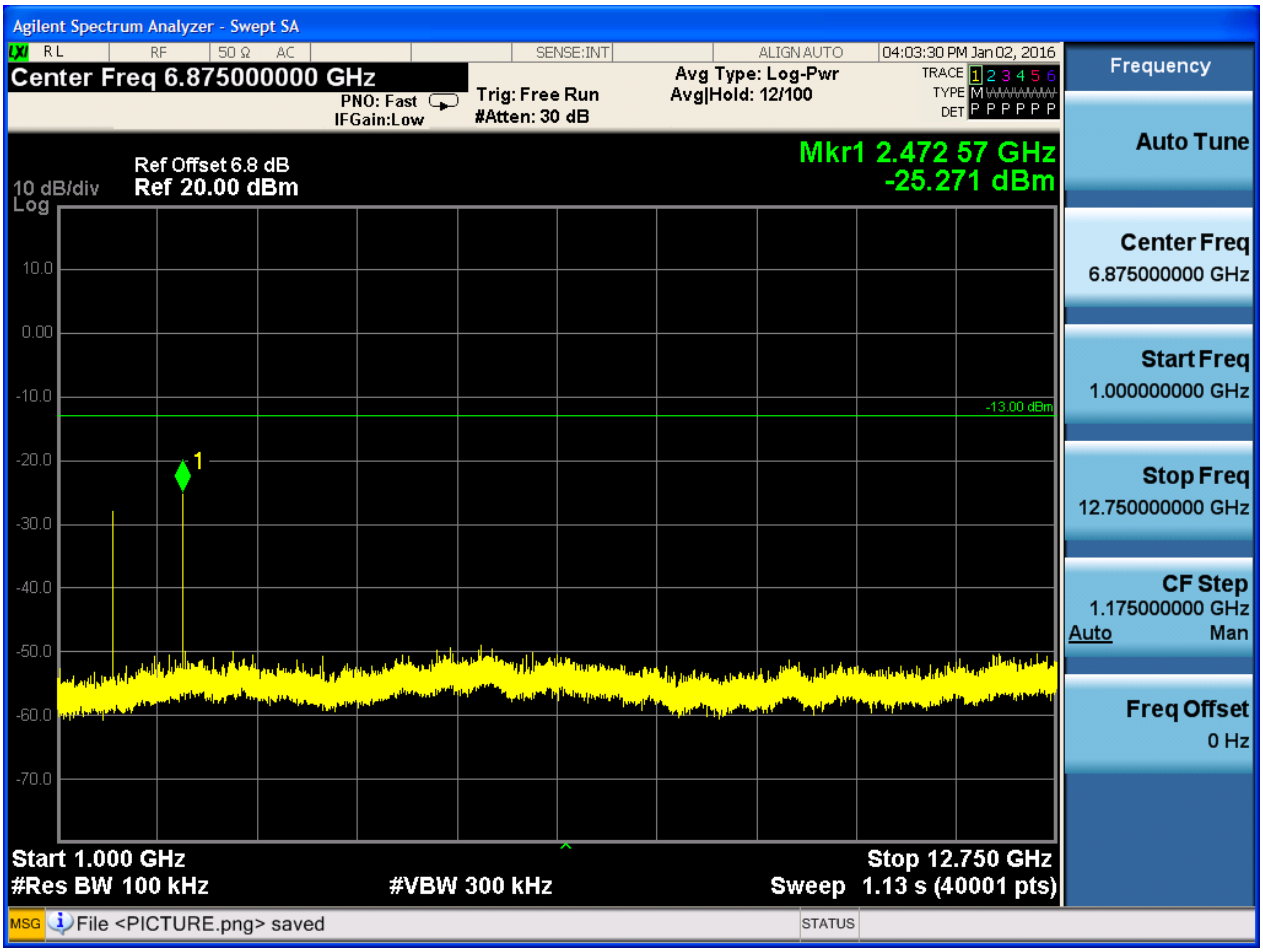
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

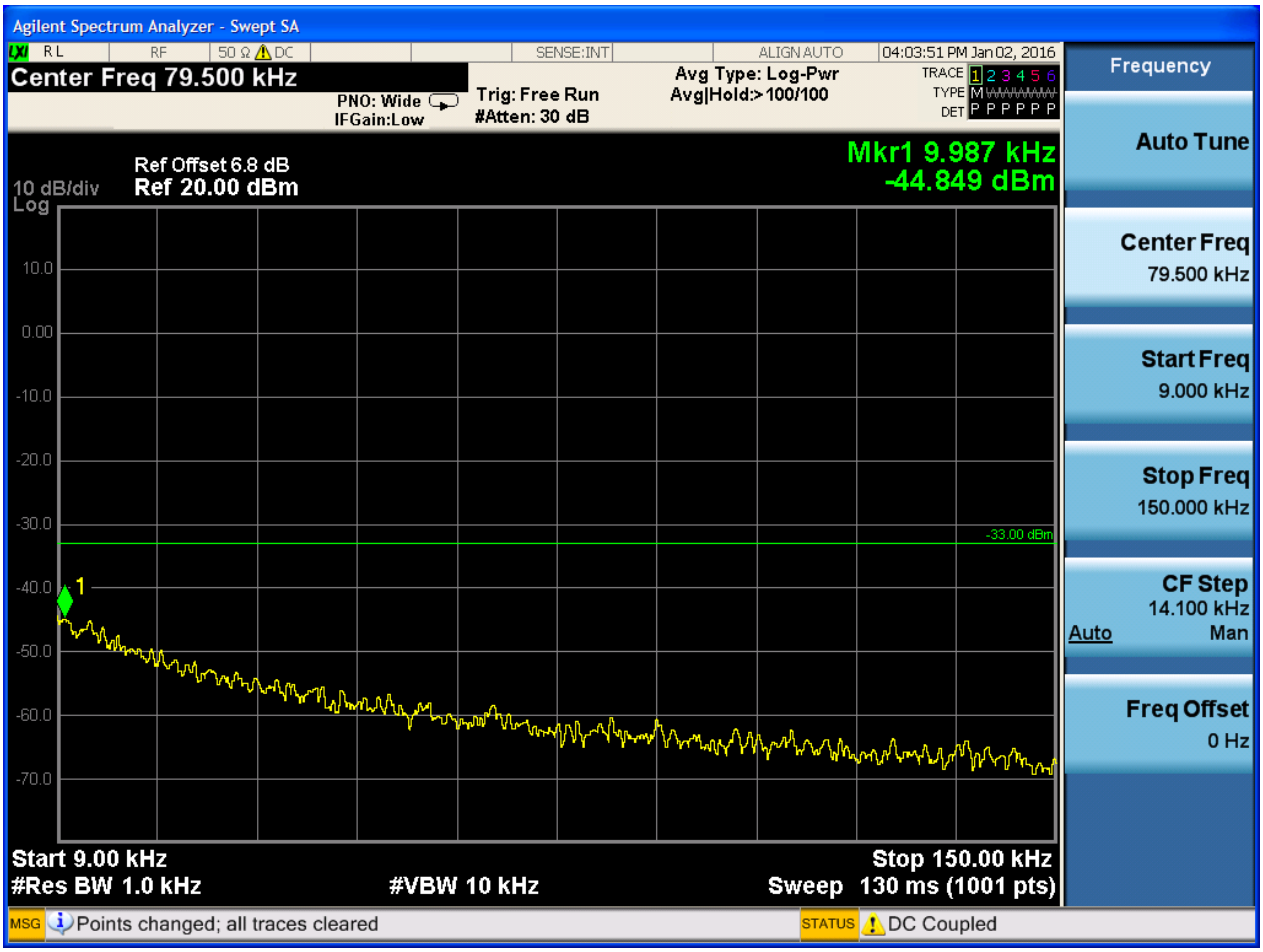


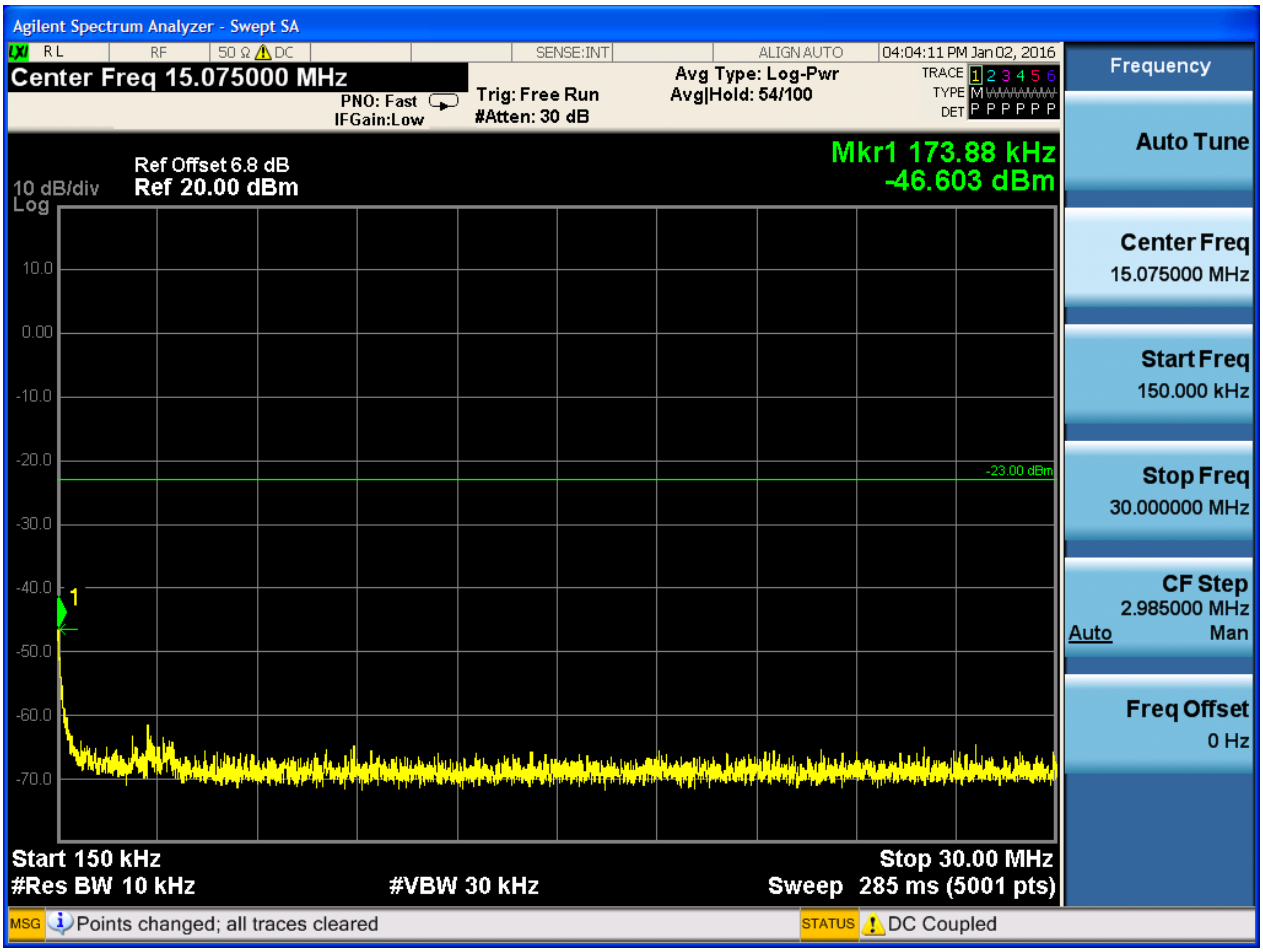


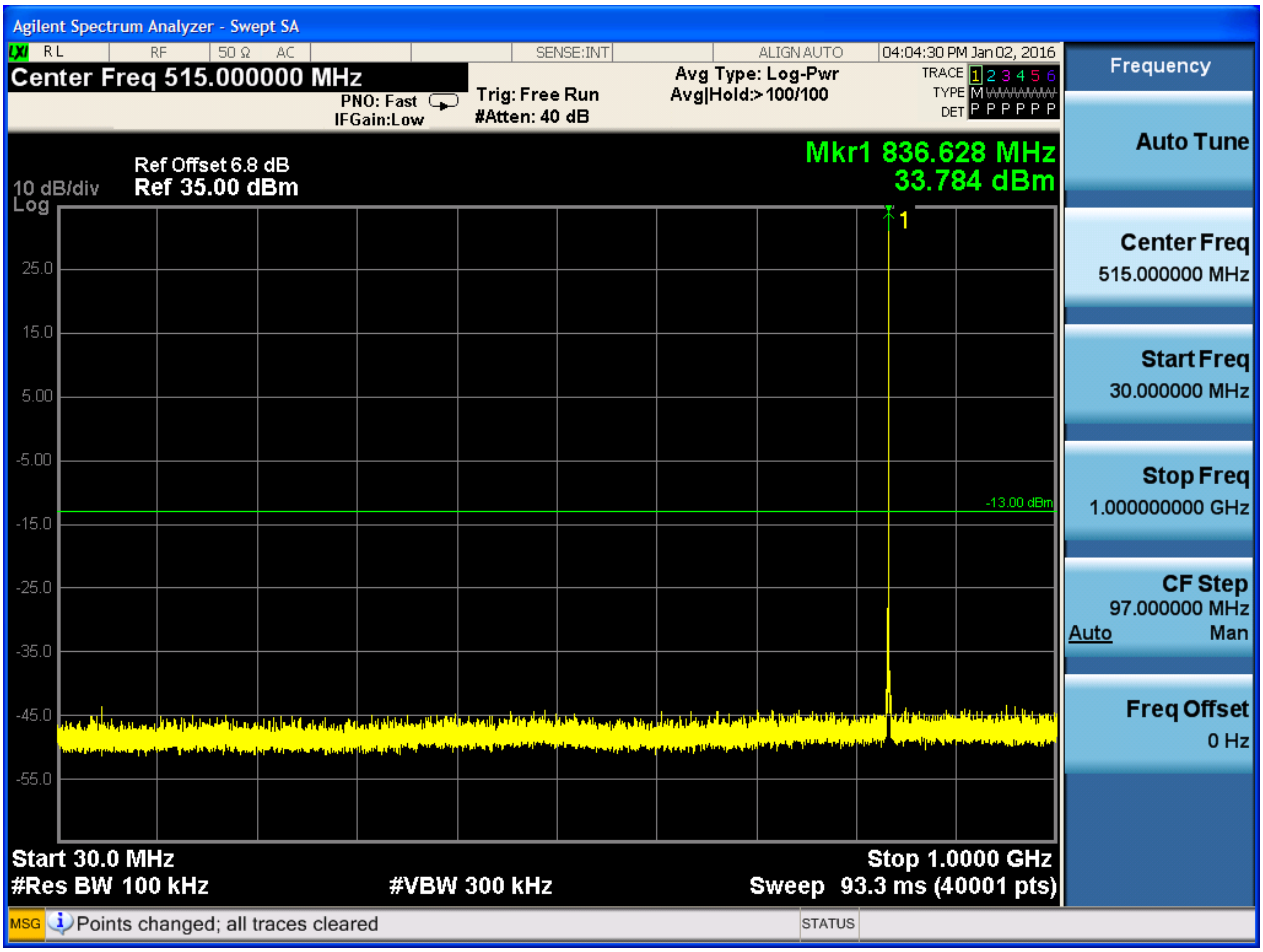


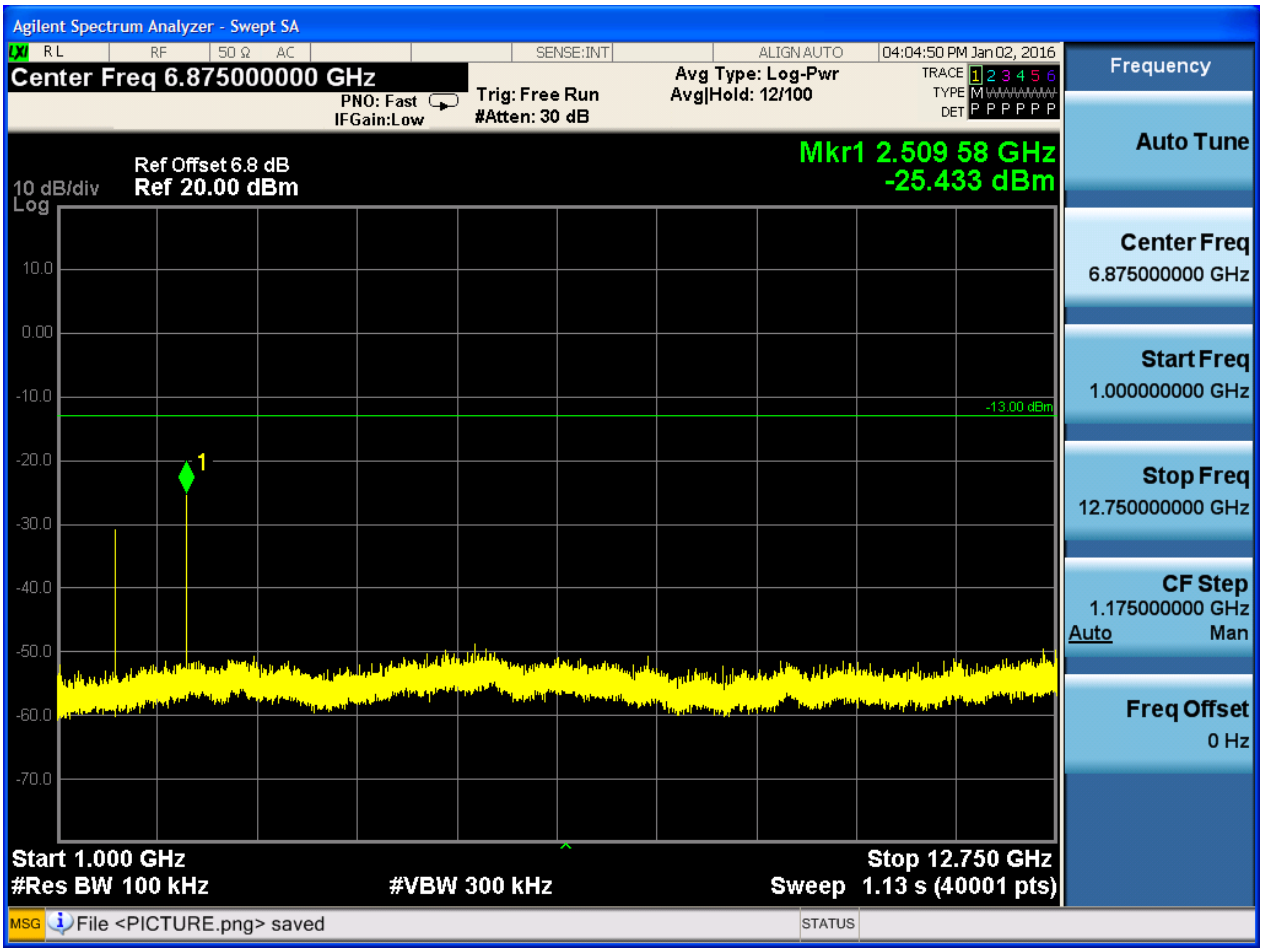


6.1.1.1.2 Test Channel = MCH

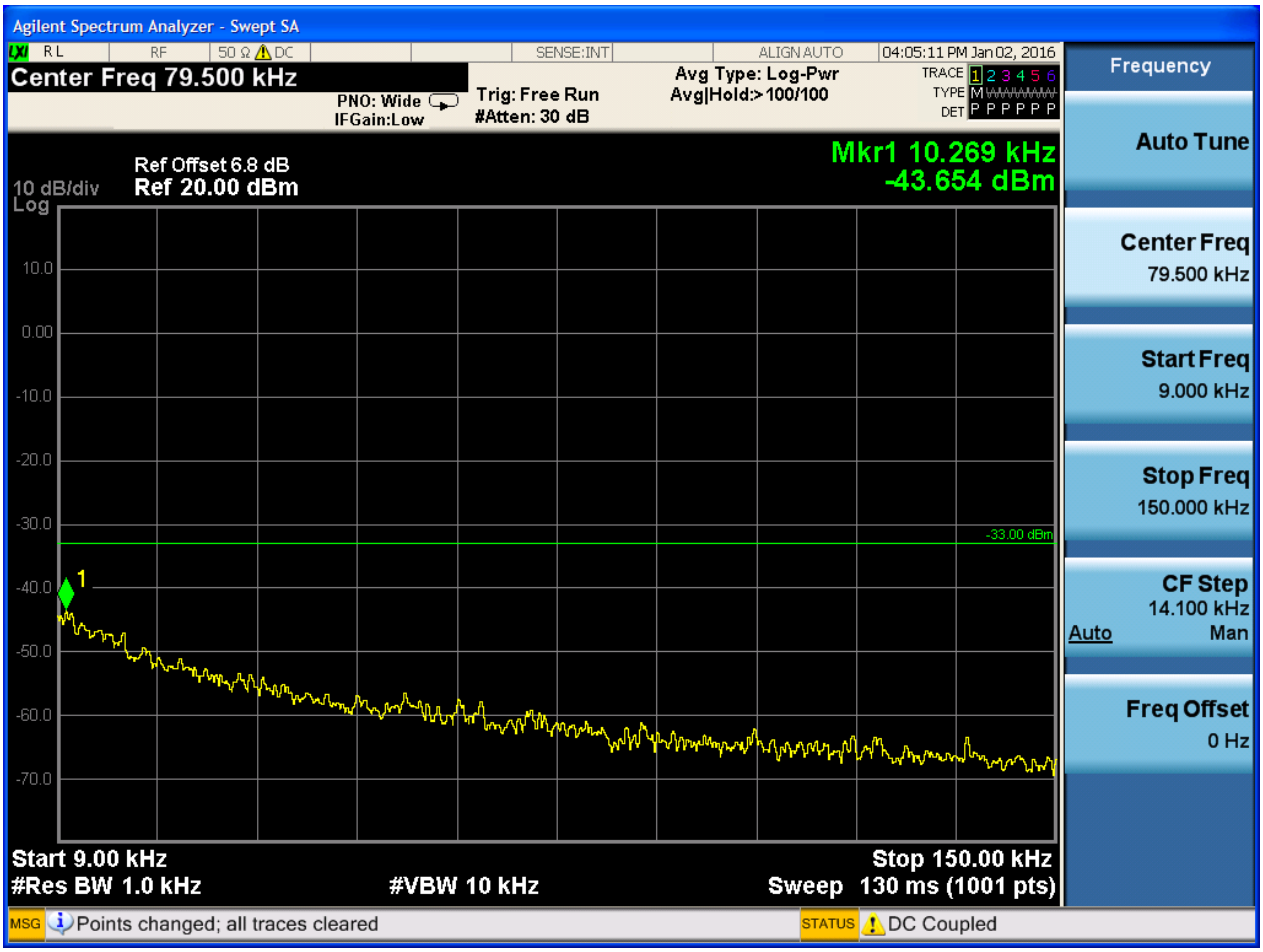


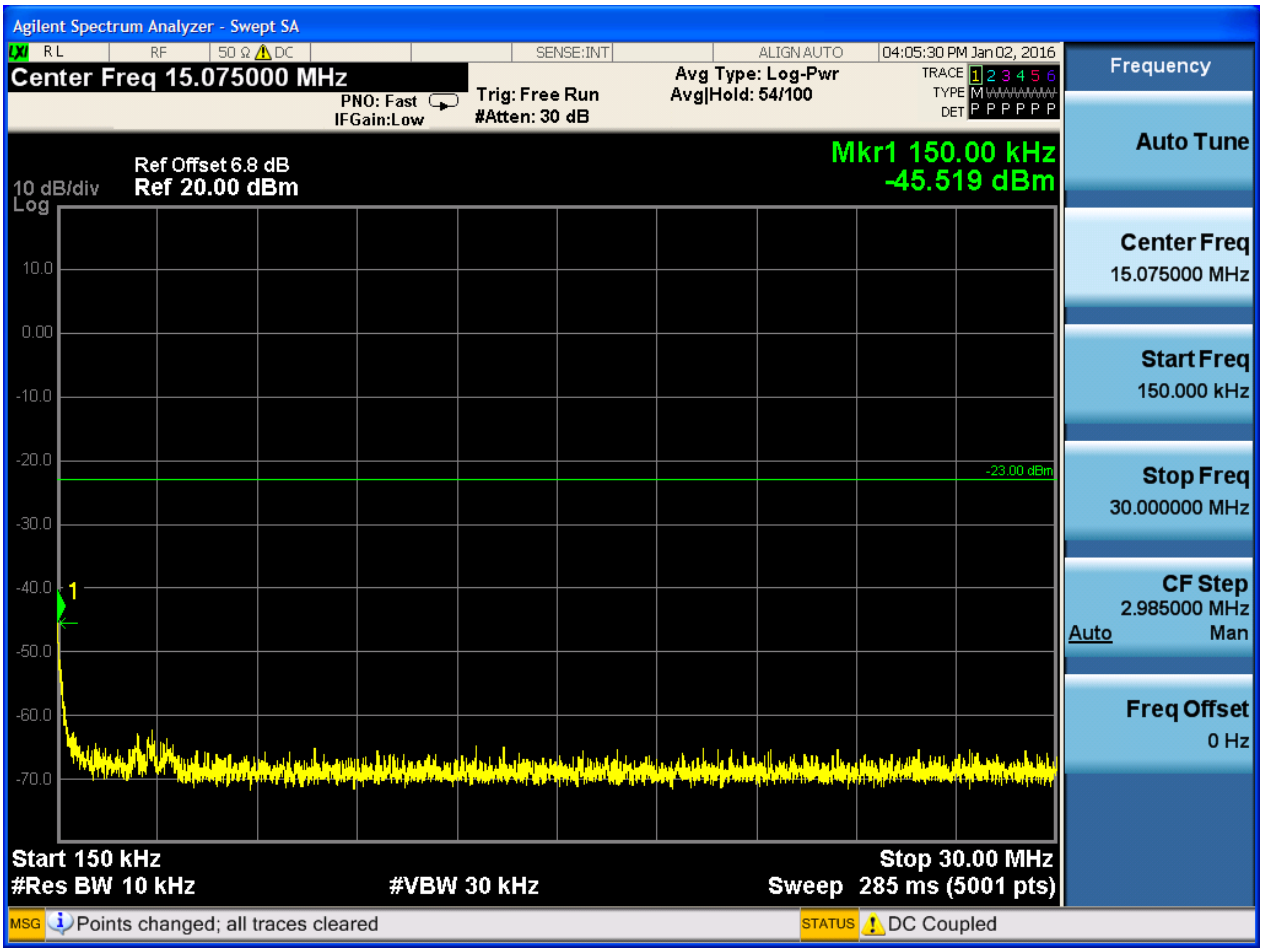


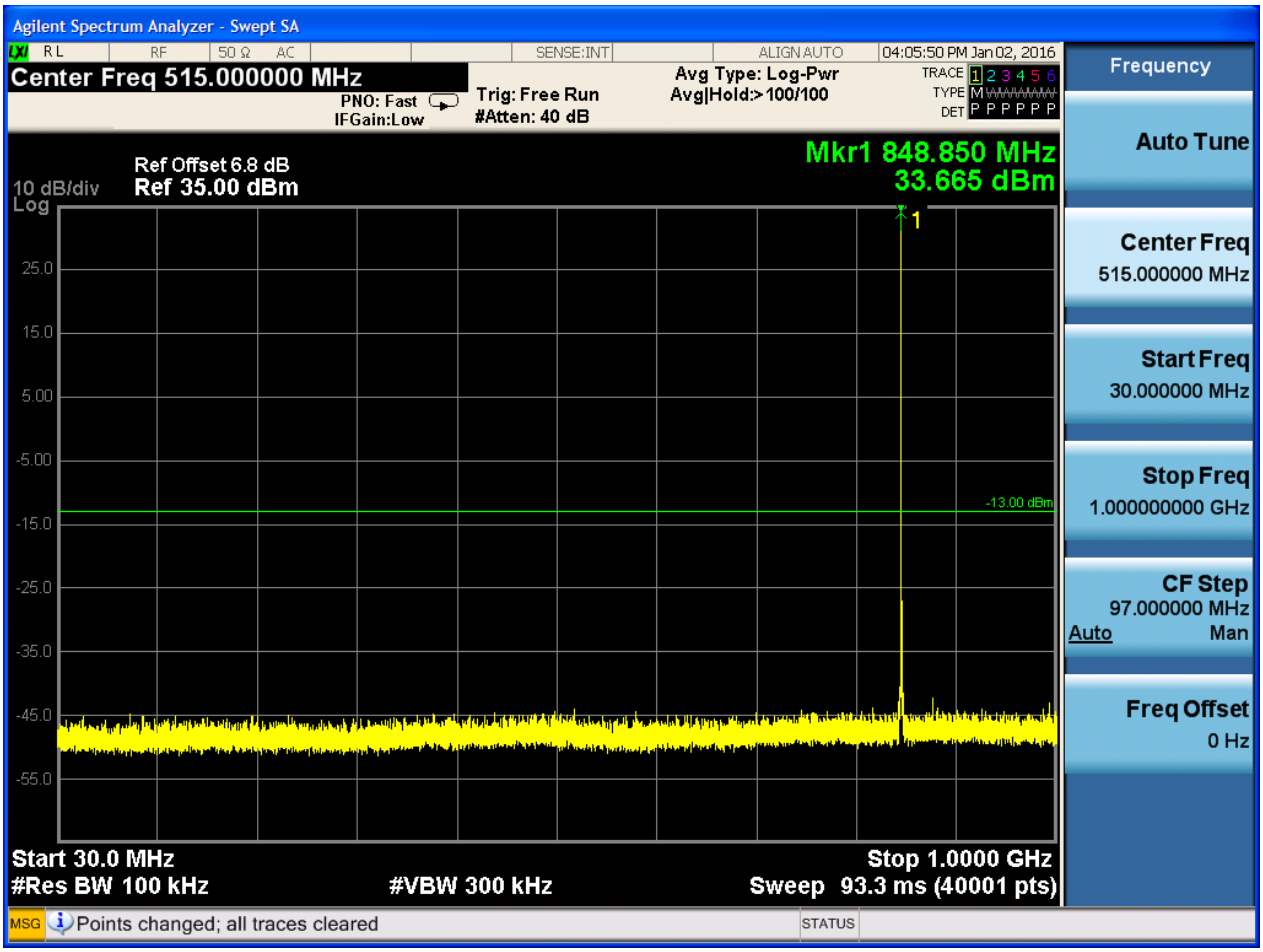


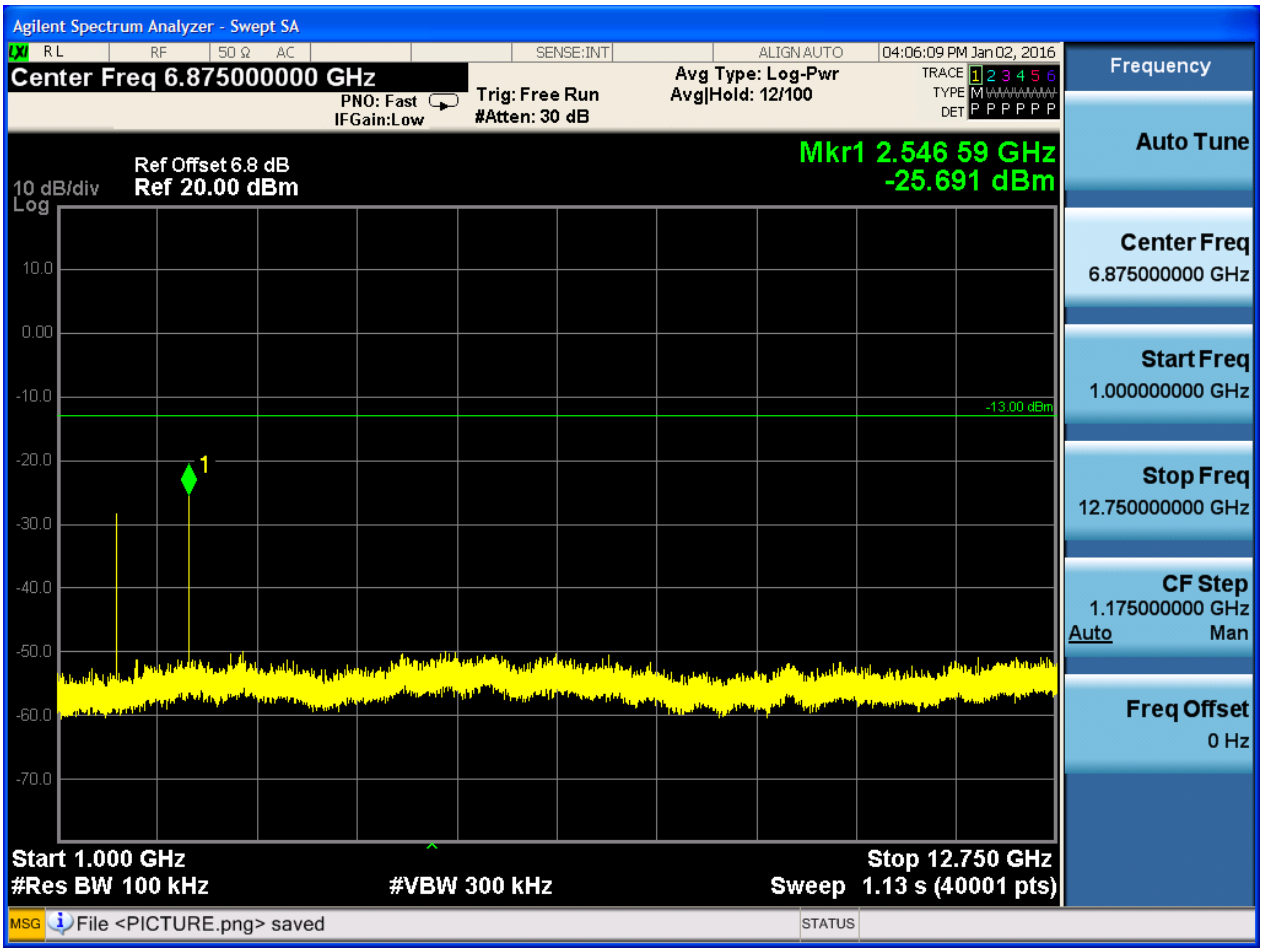


6.1.1.1.3 Test Channel = HCH



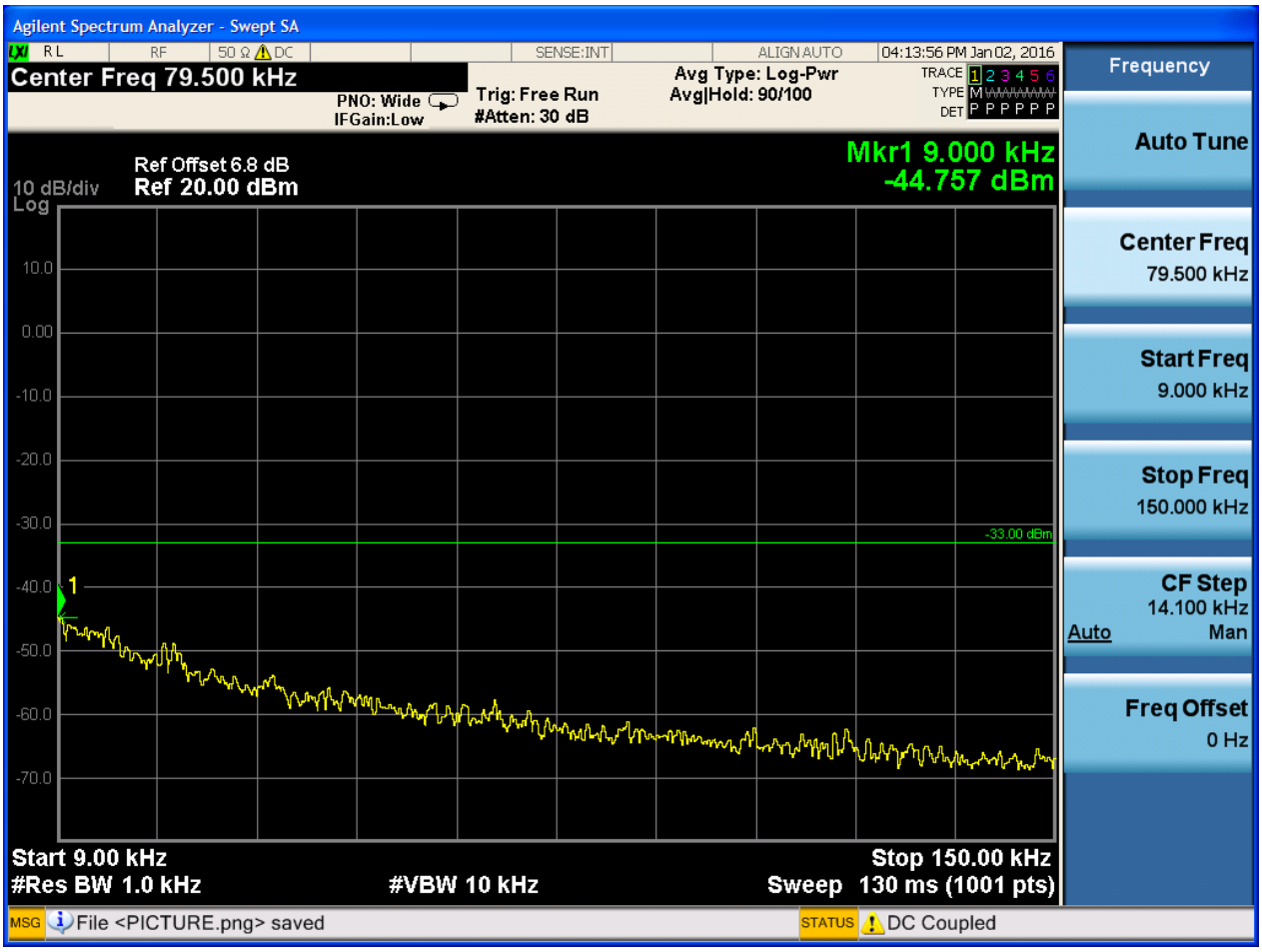


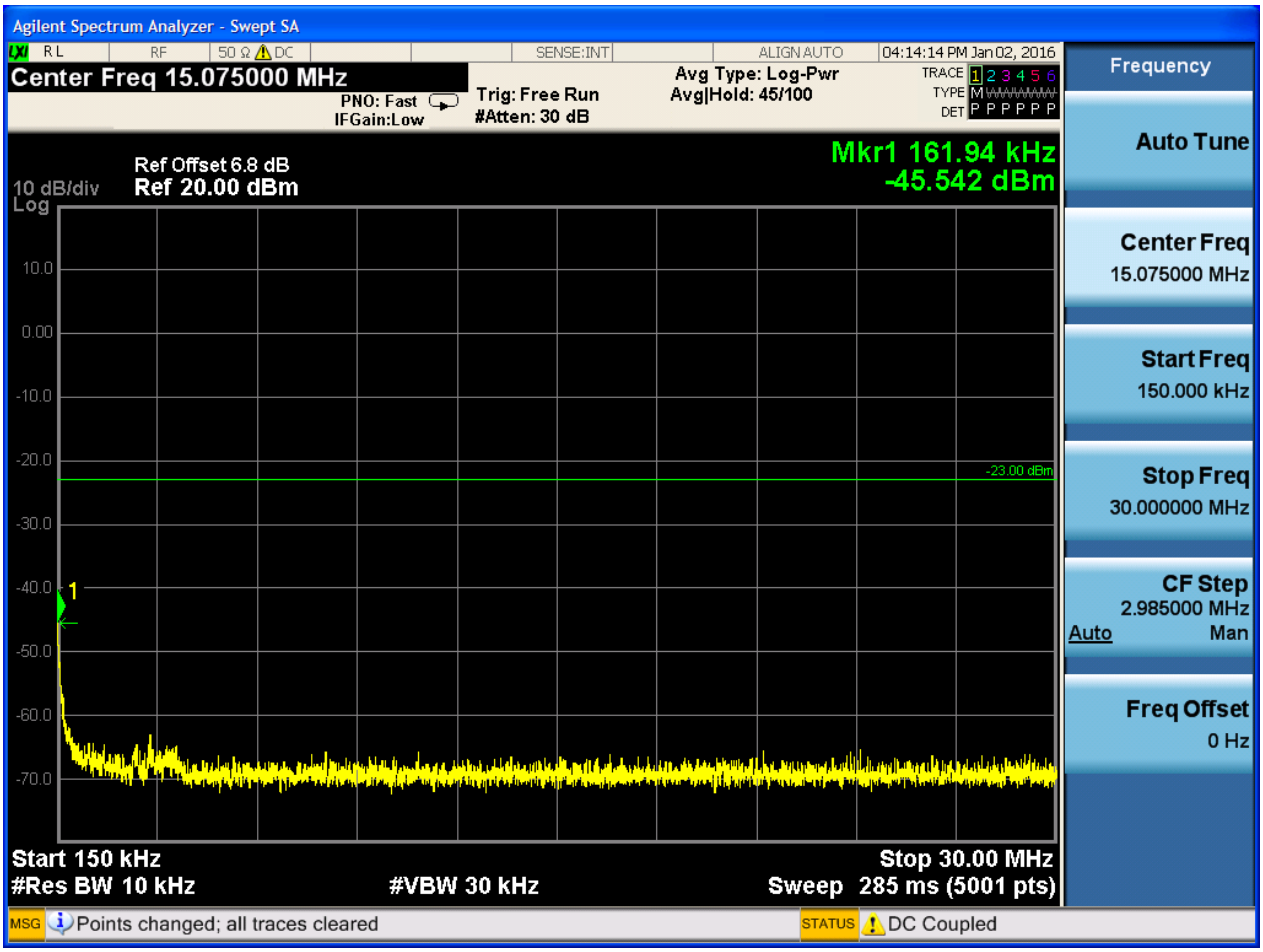


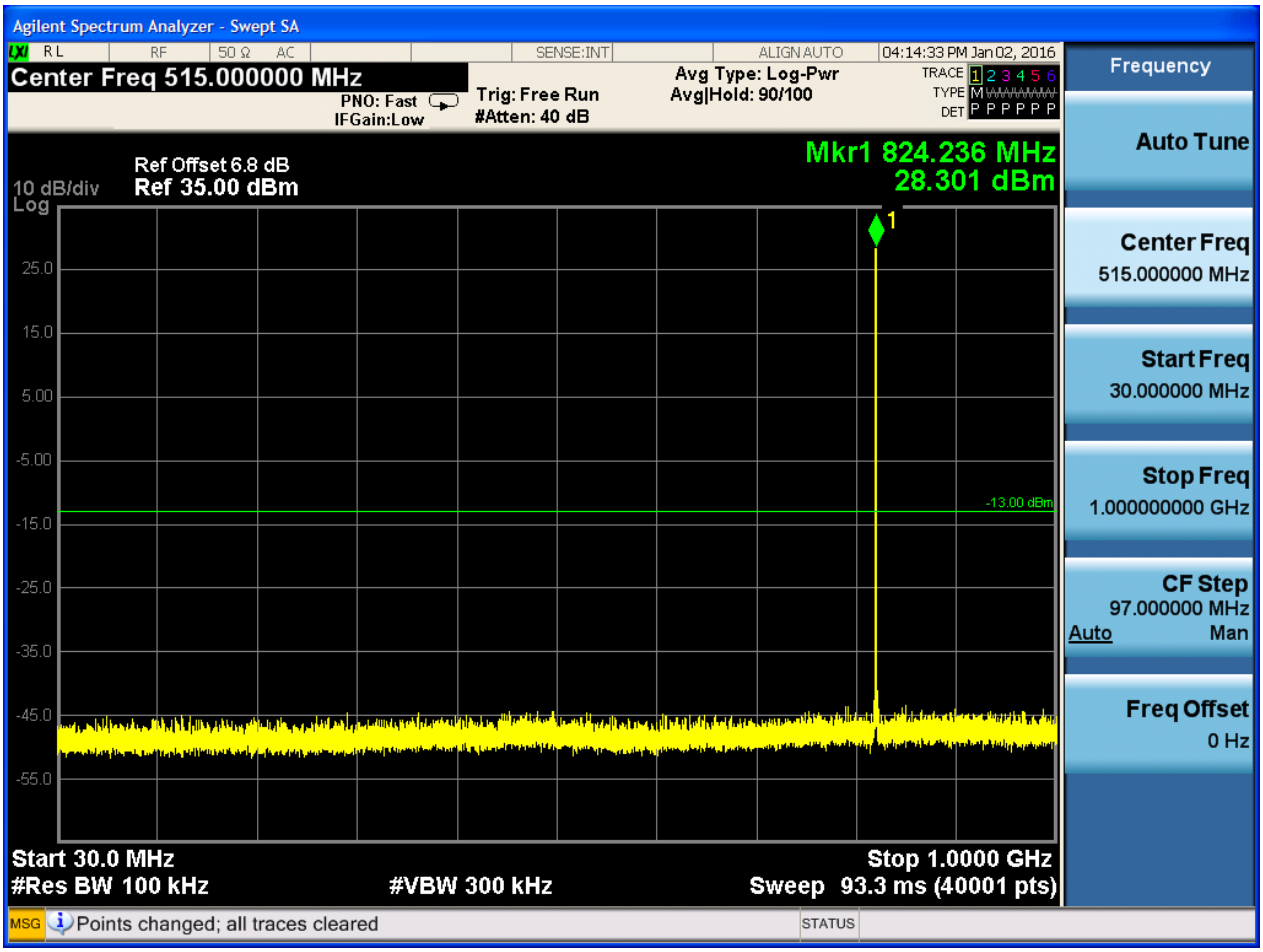


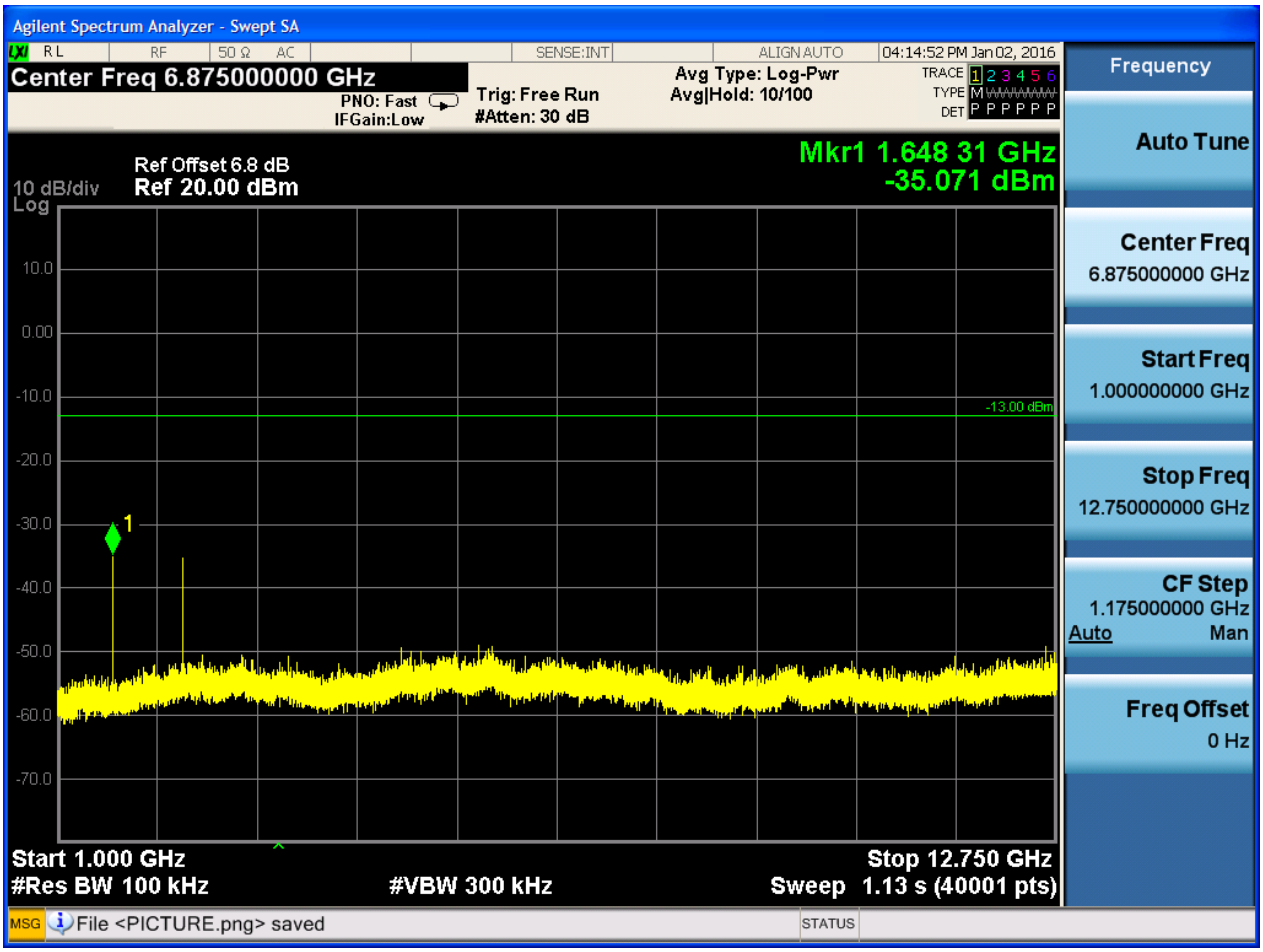
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH

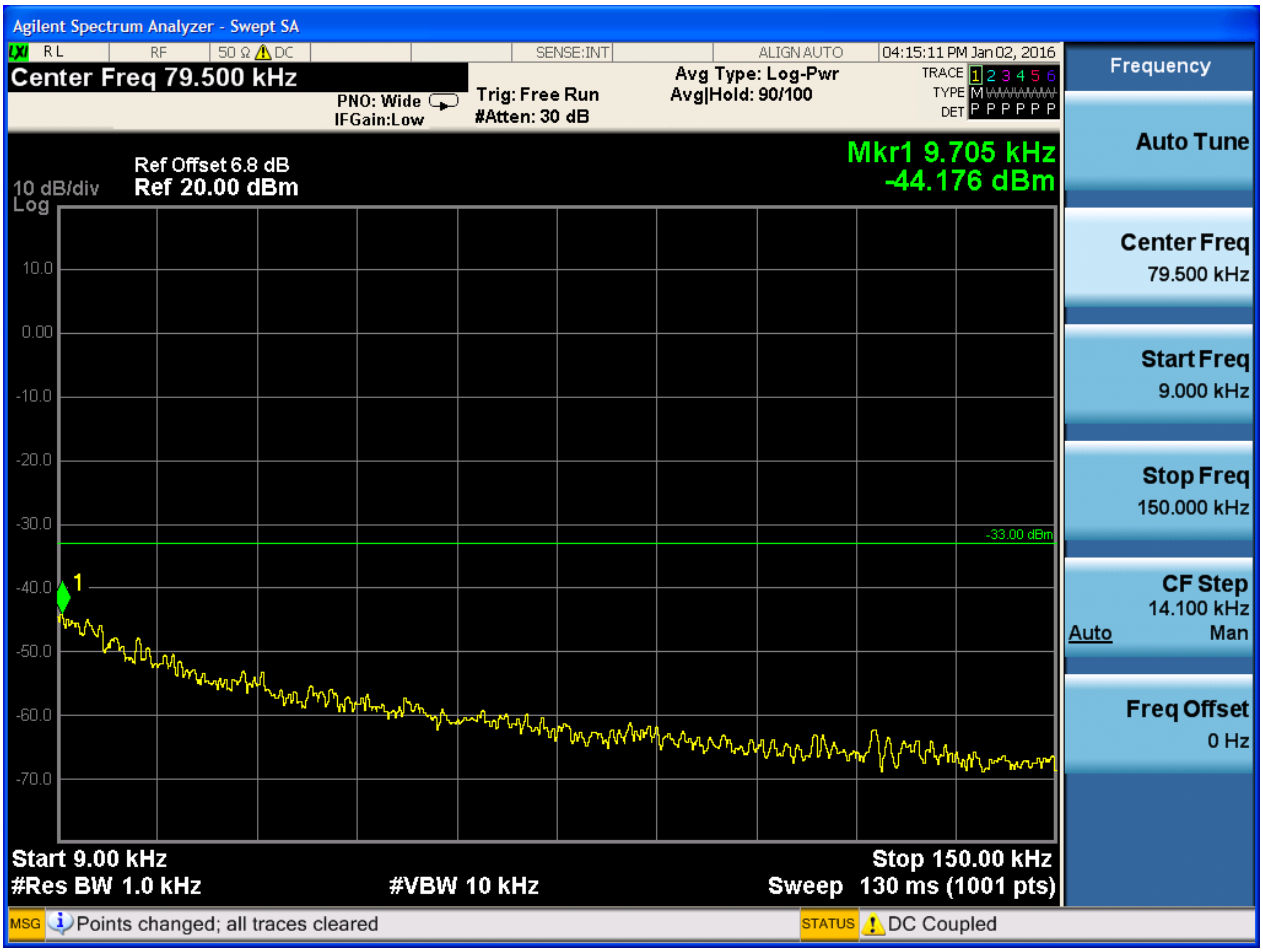


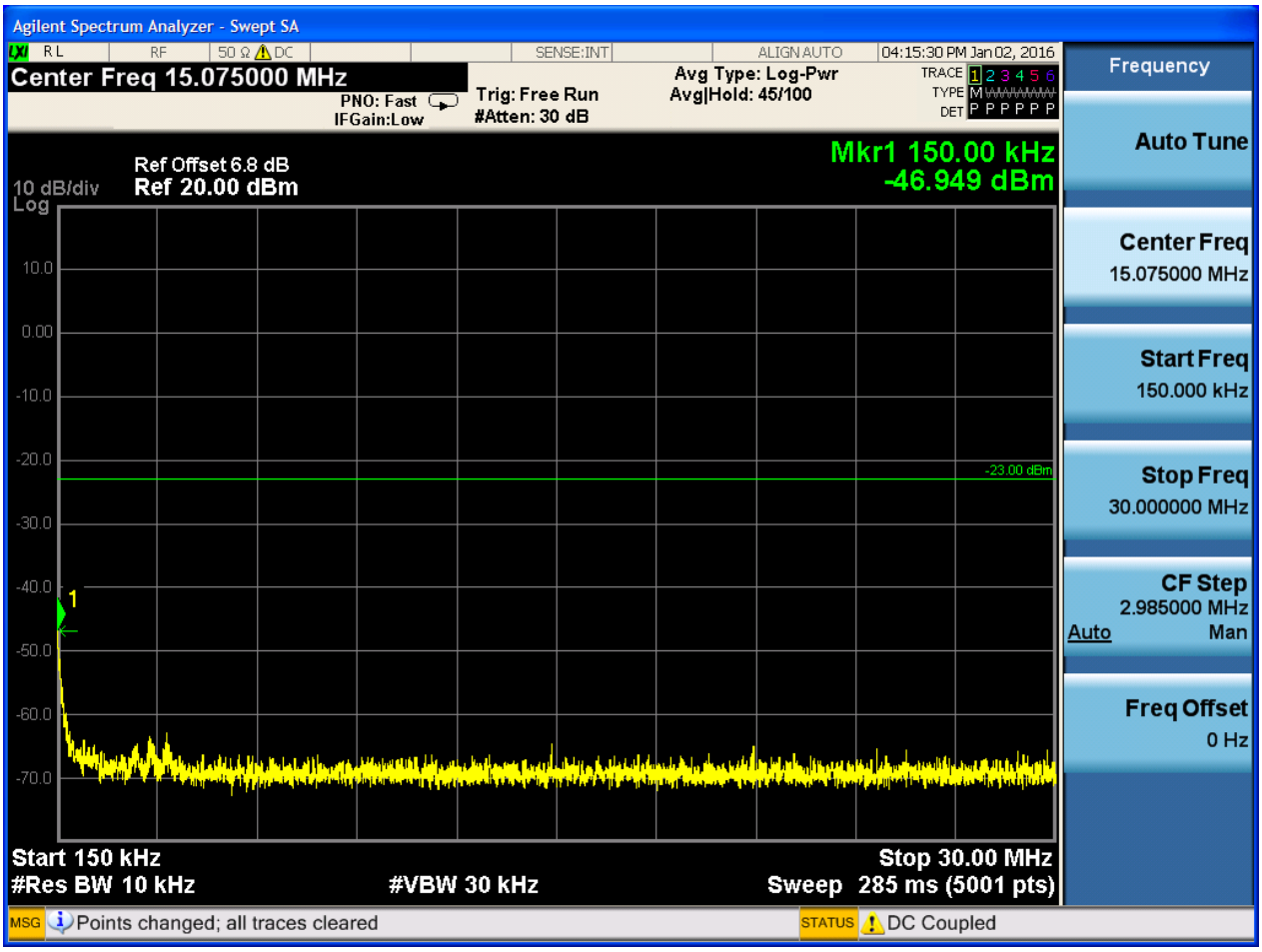


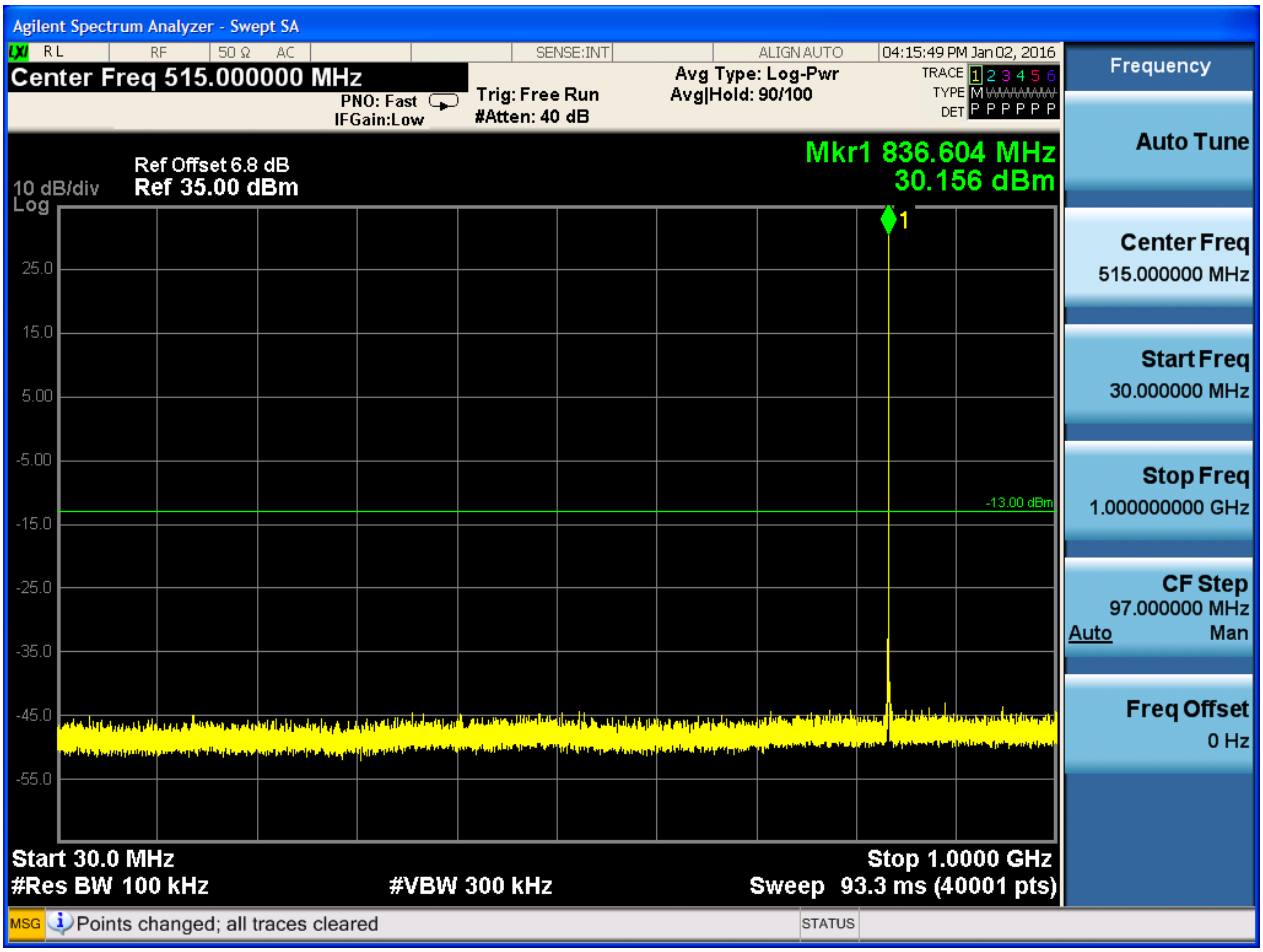


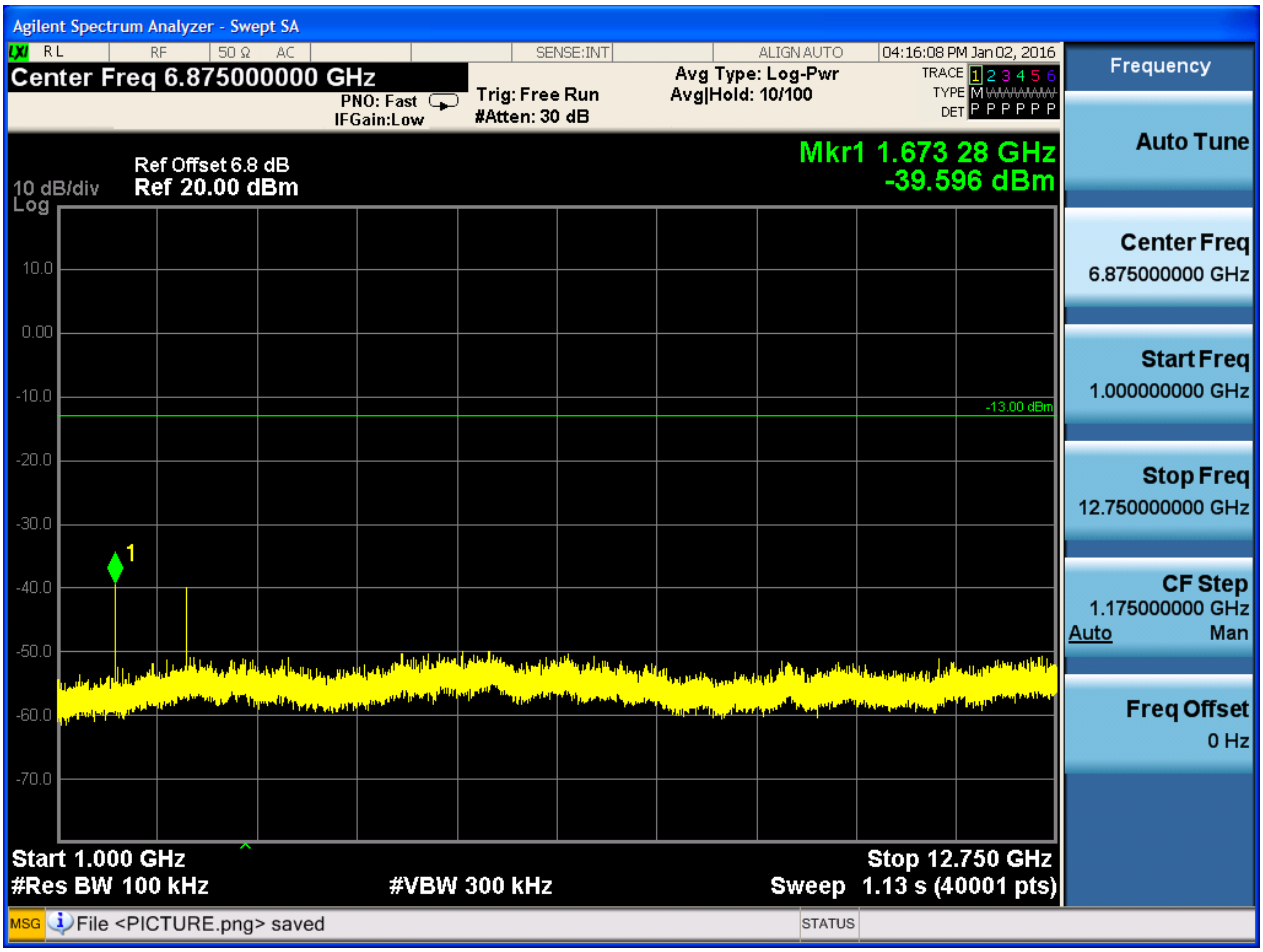


6.1.1.2.2 Test Channel = MCH

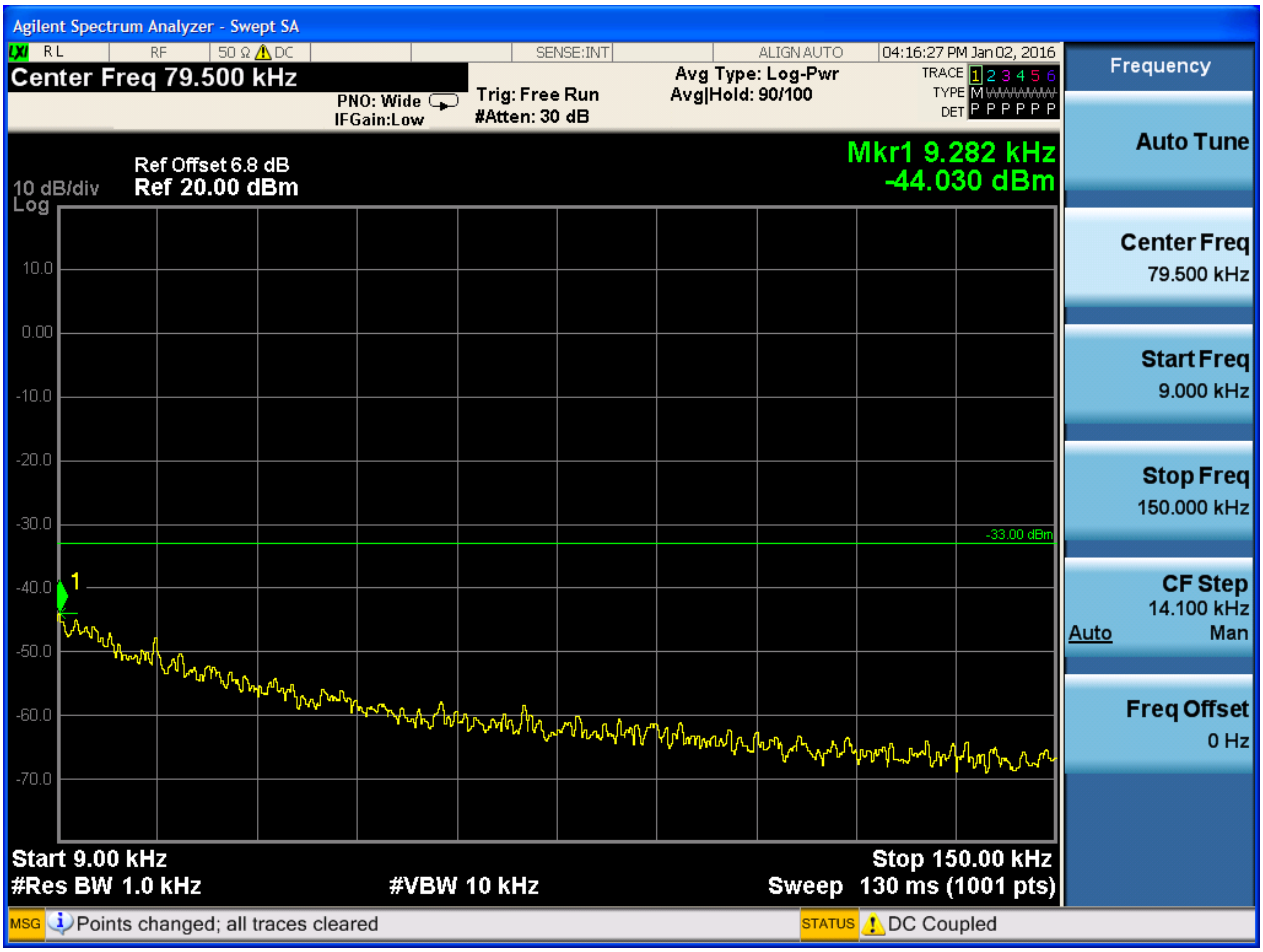


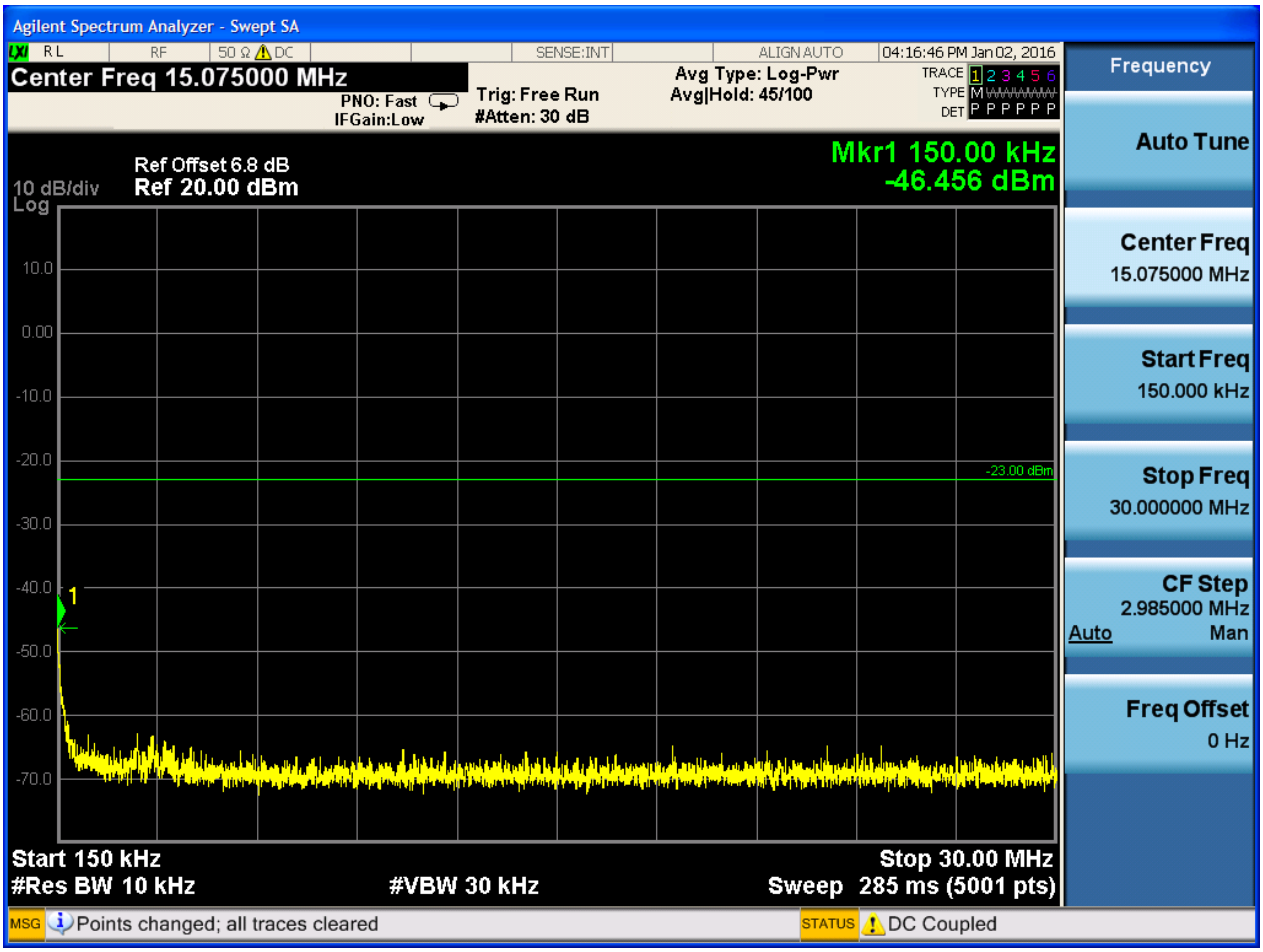


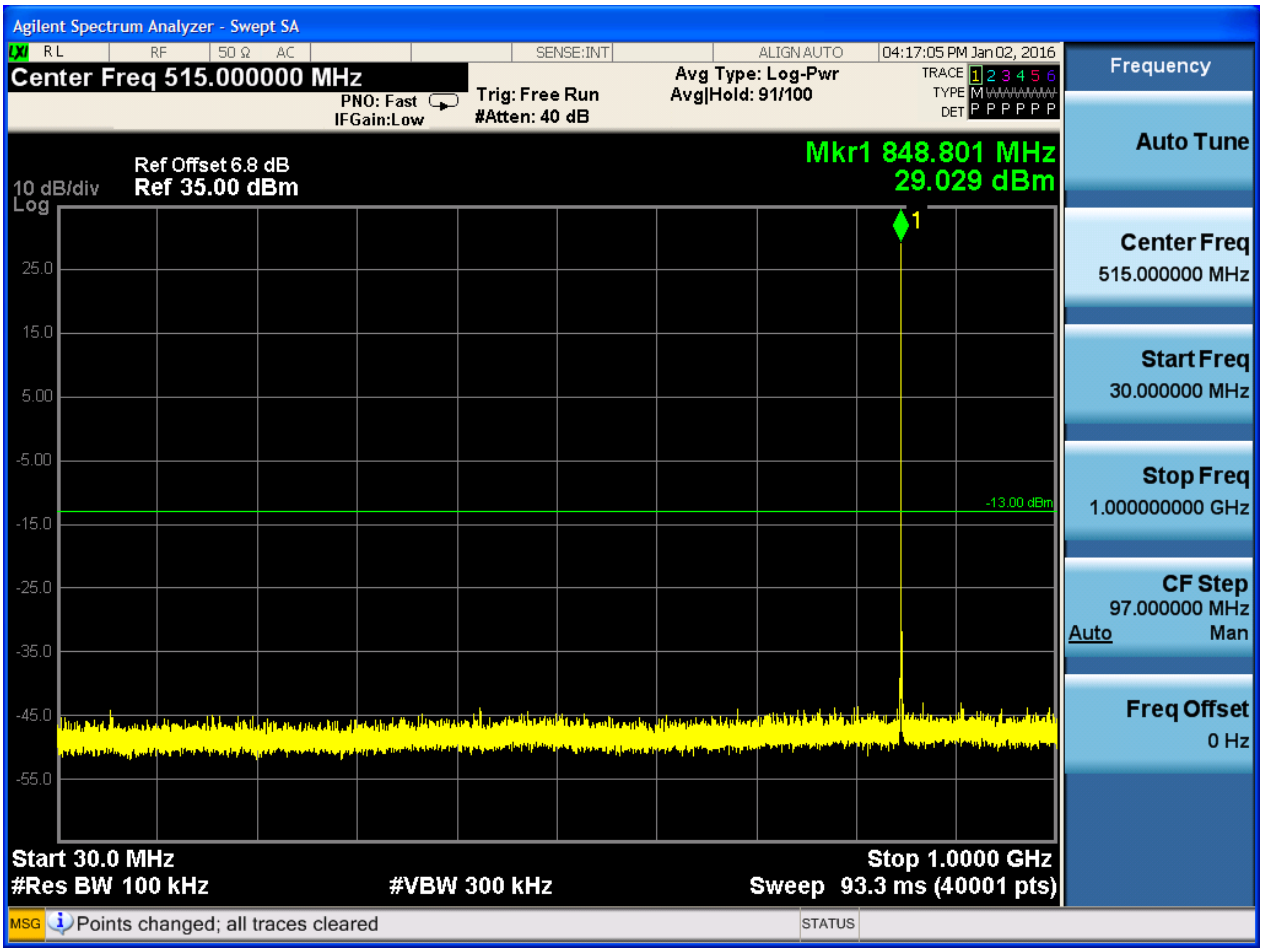


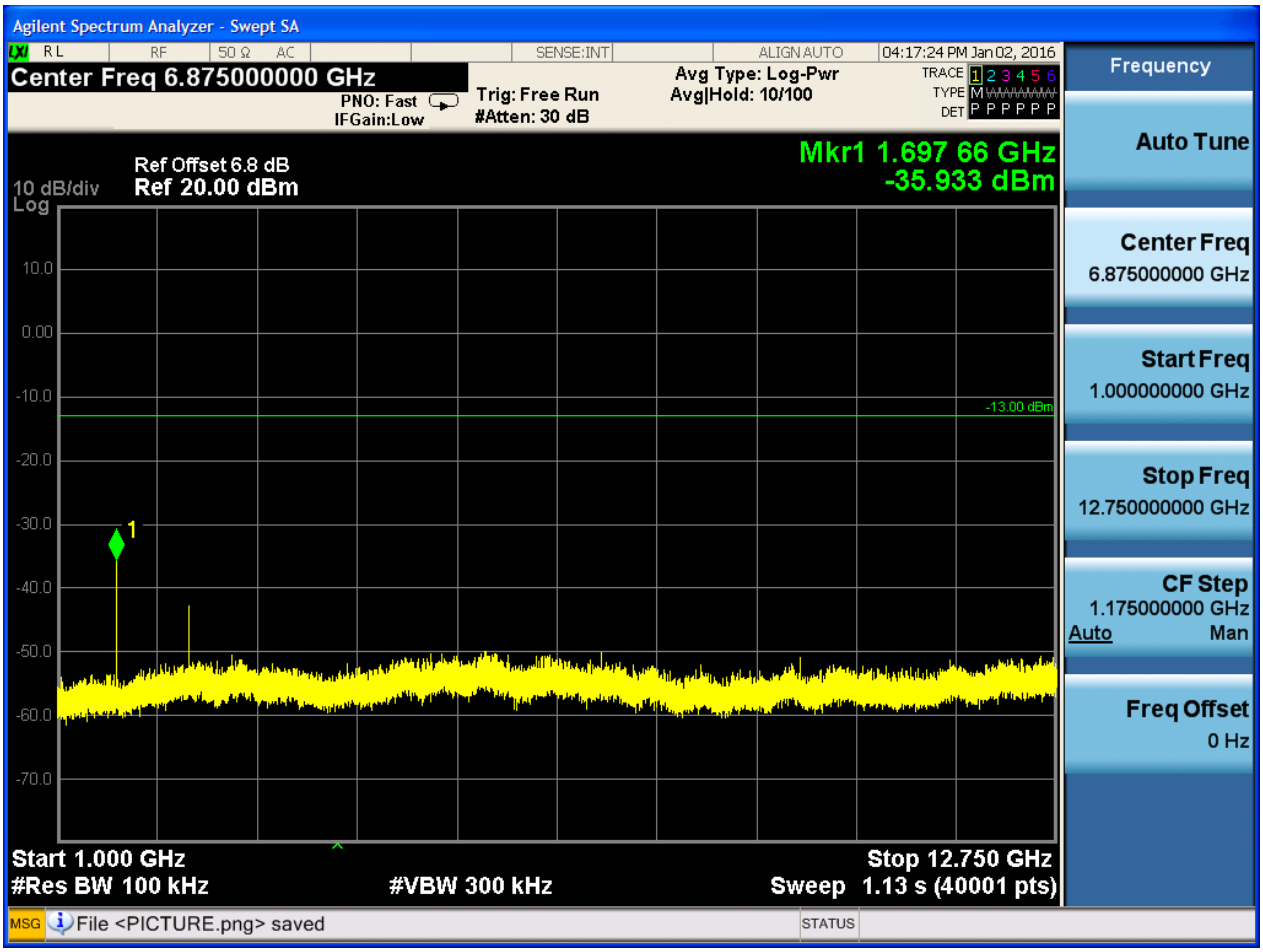


6.1.1.2.3 Test Channel = HCH





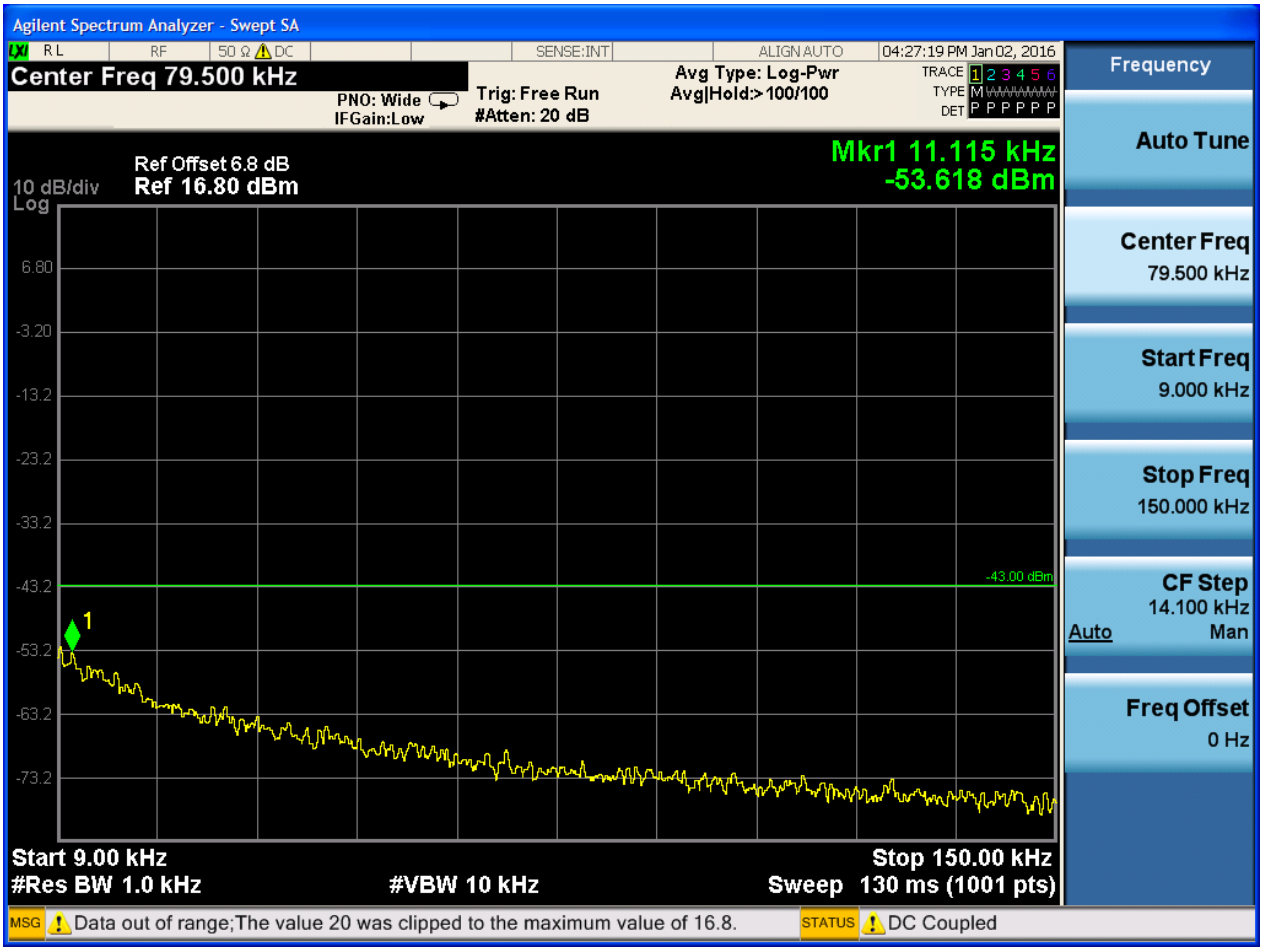


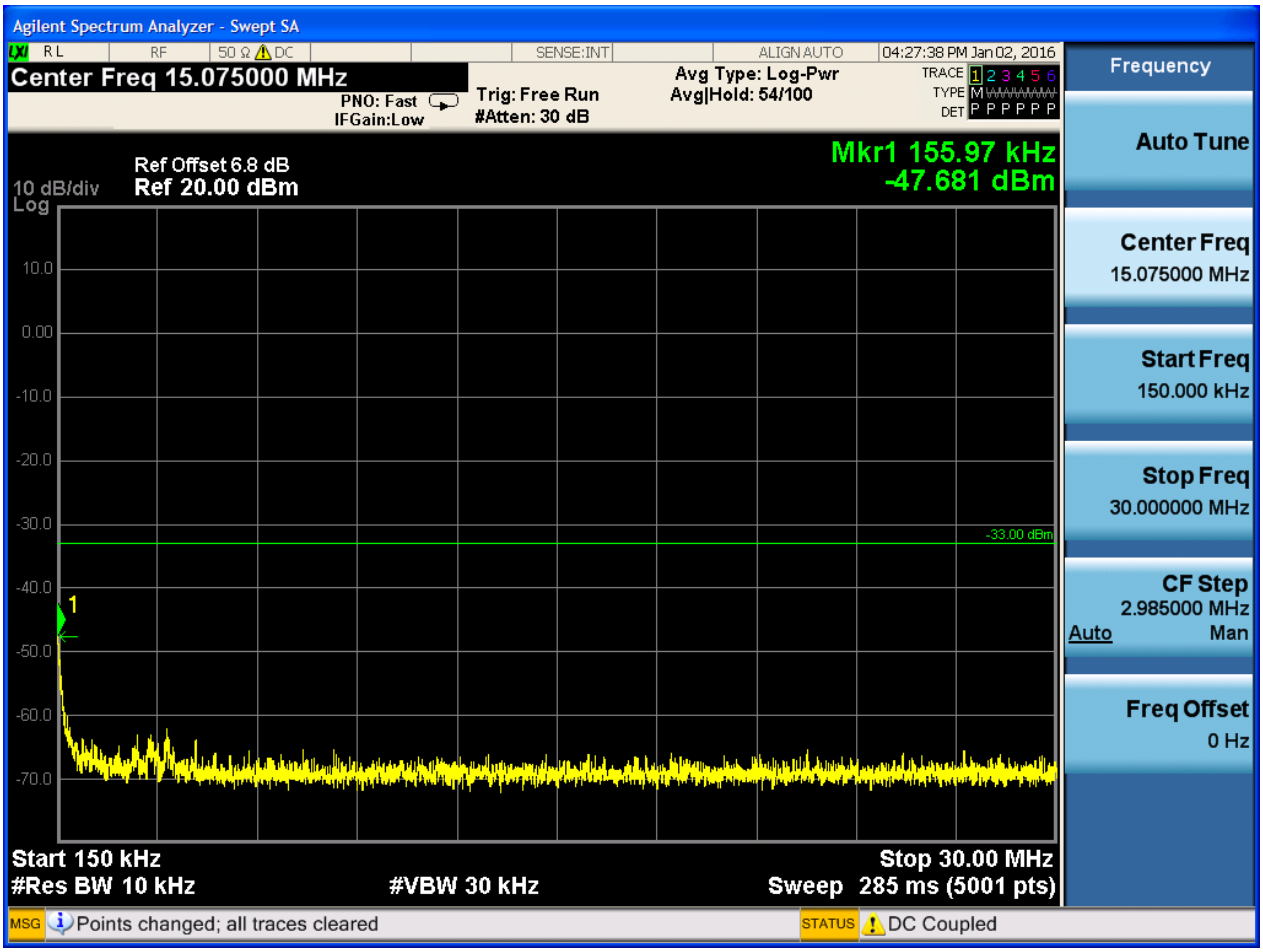


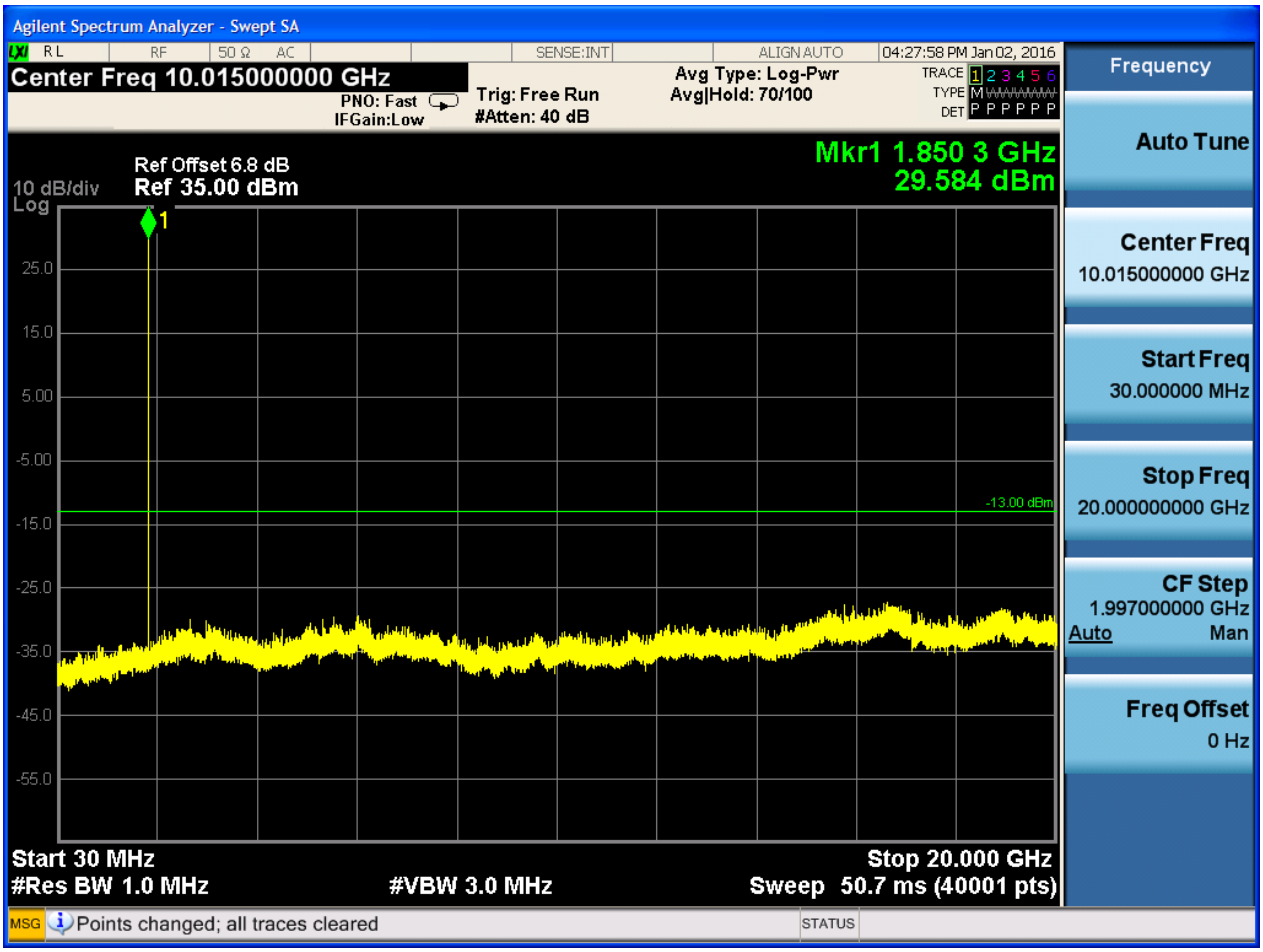
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

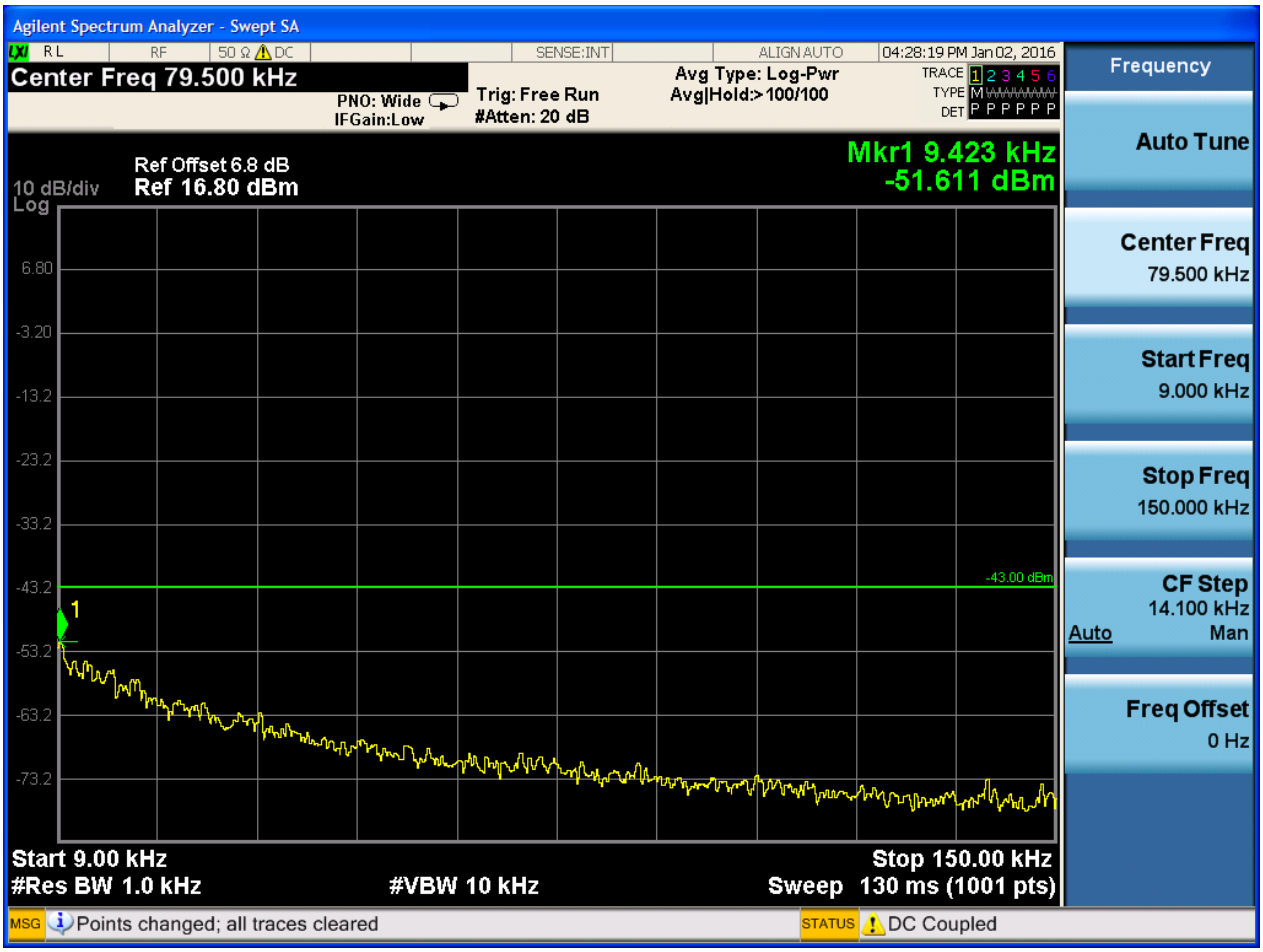
6.1.2.1.1 Test Channel = LCH

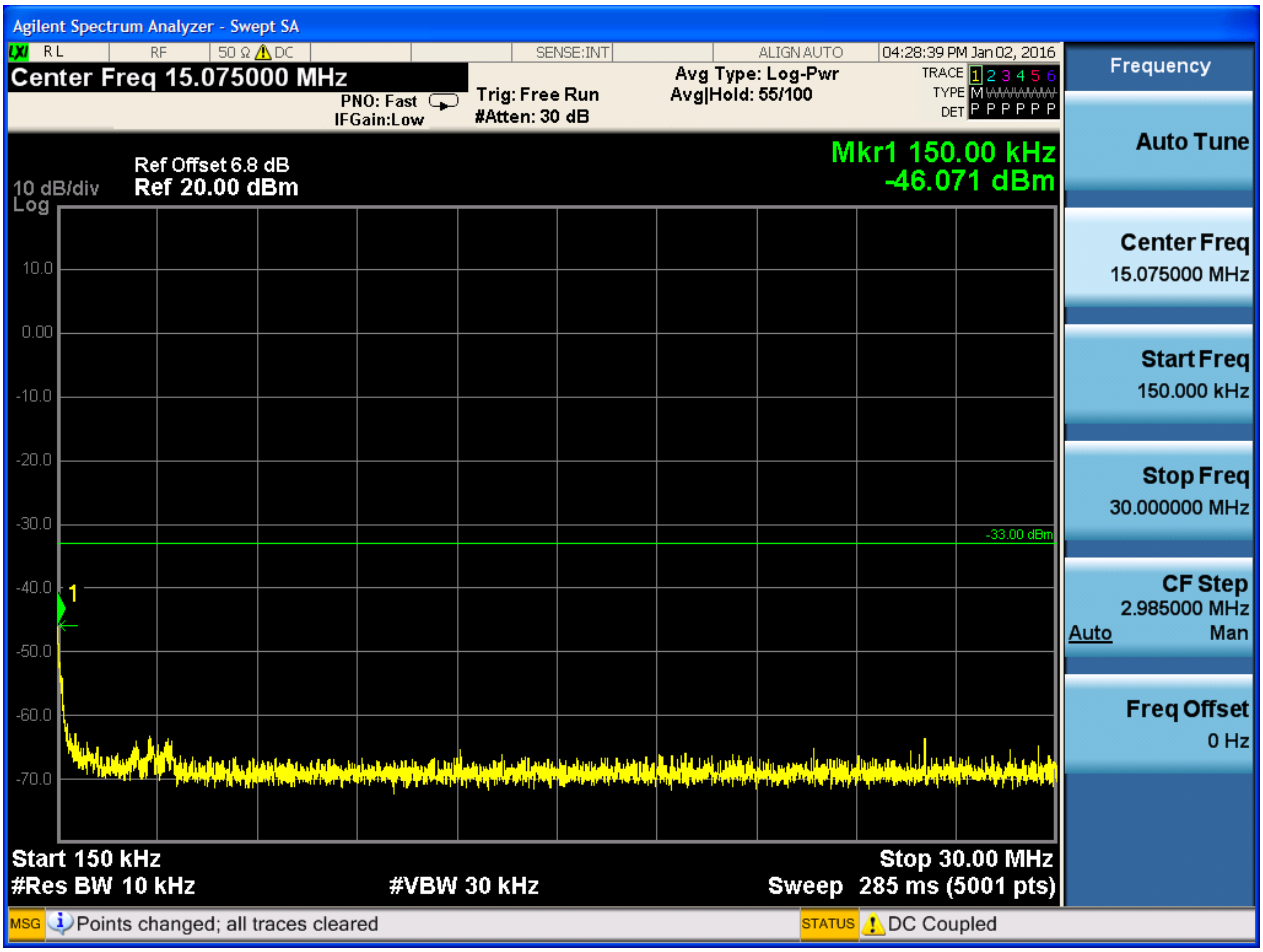


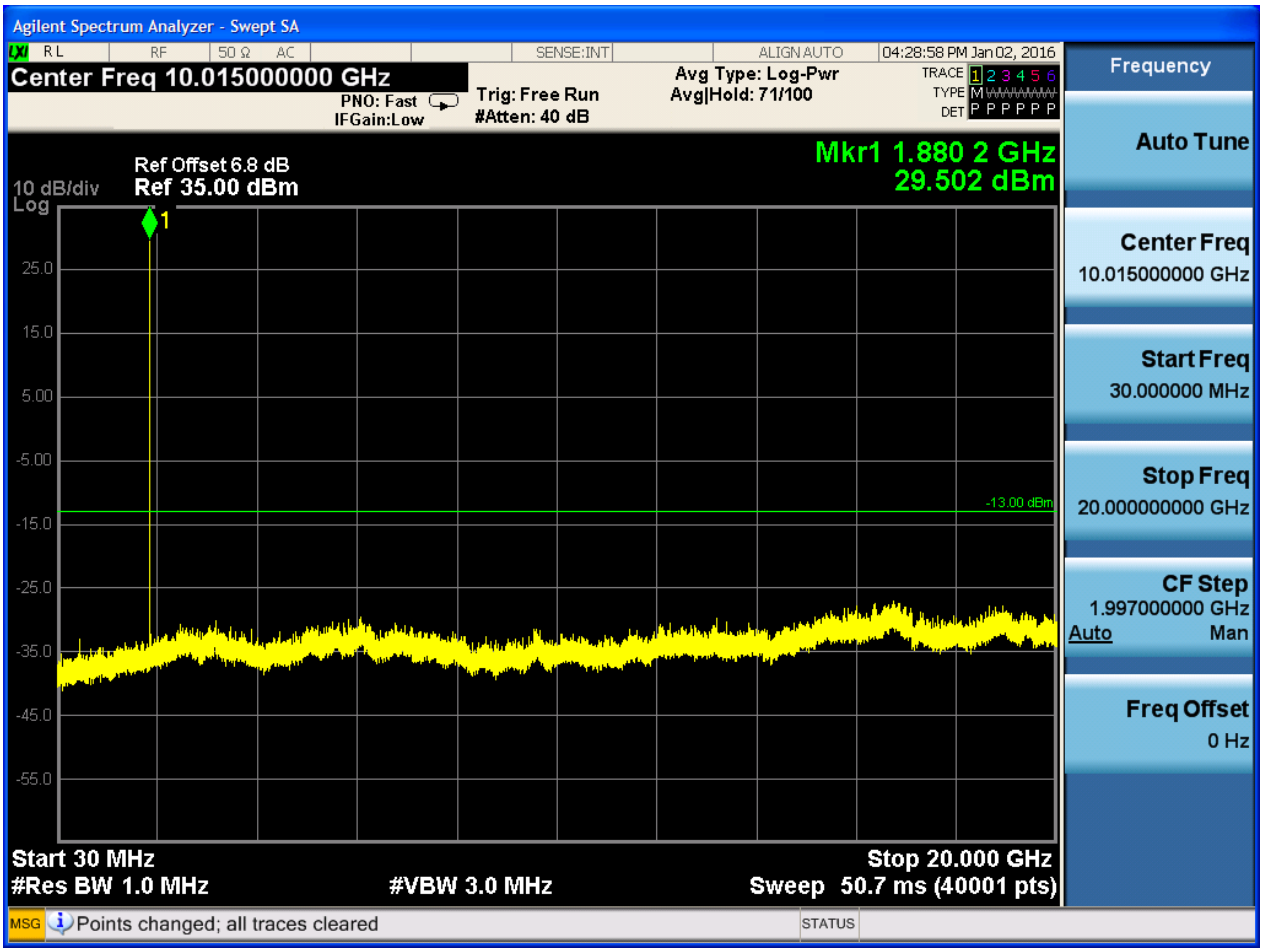




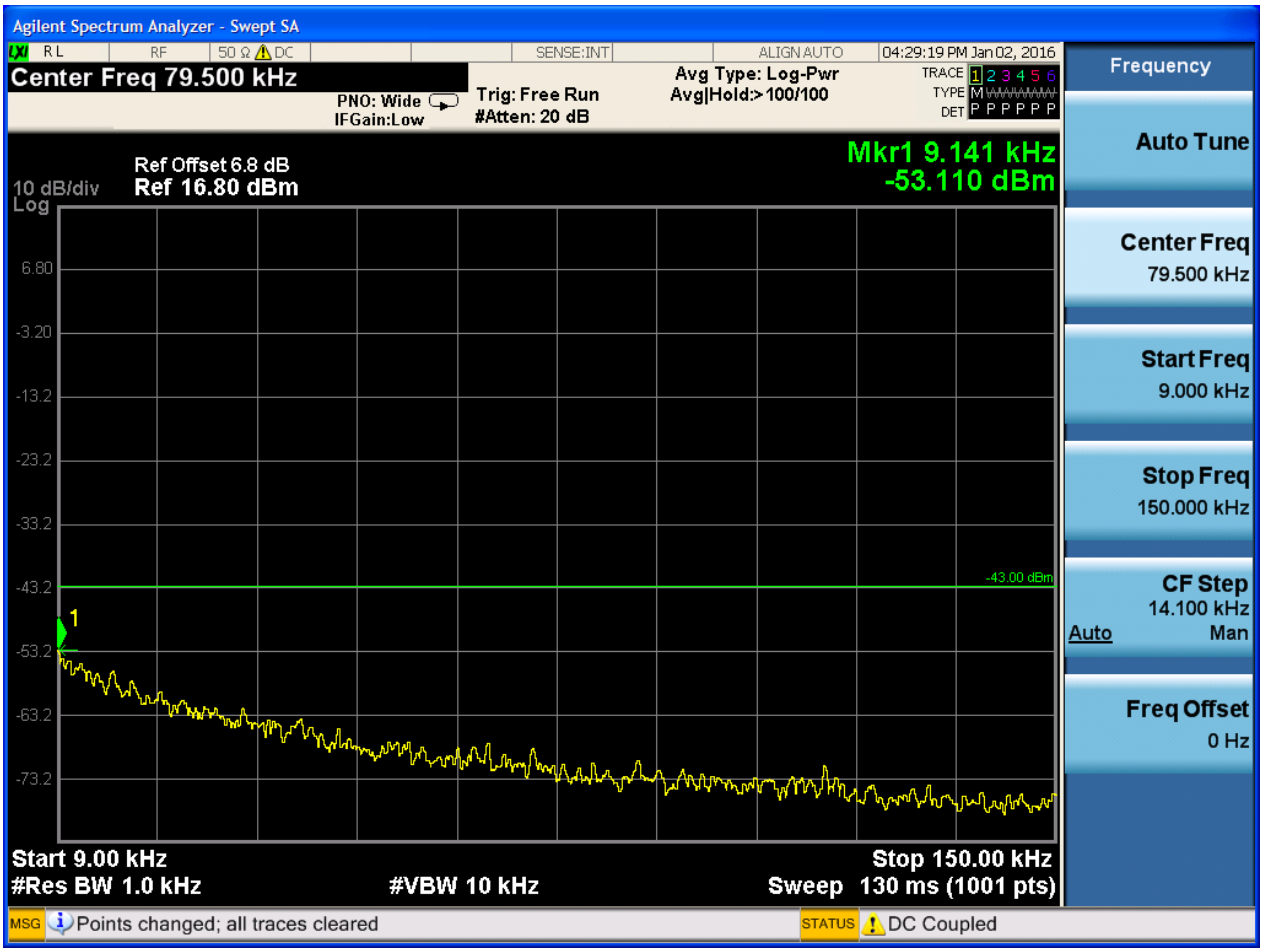
6.1.2.1.2 Test Channel = MCH

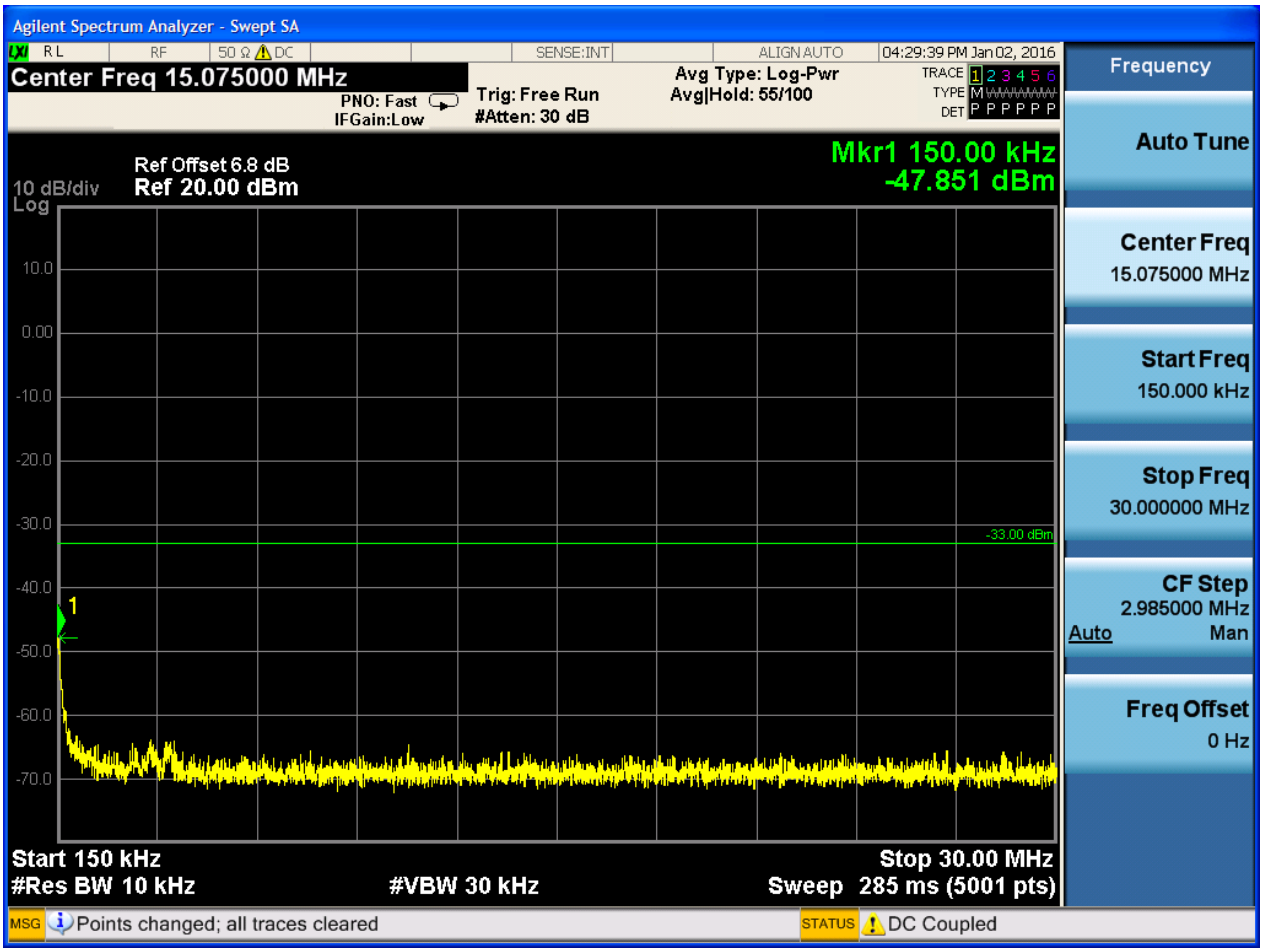


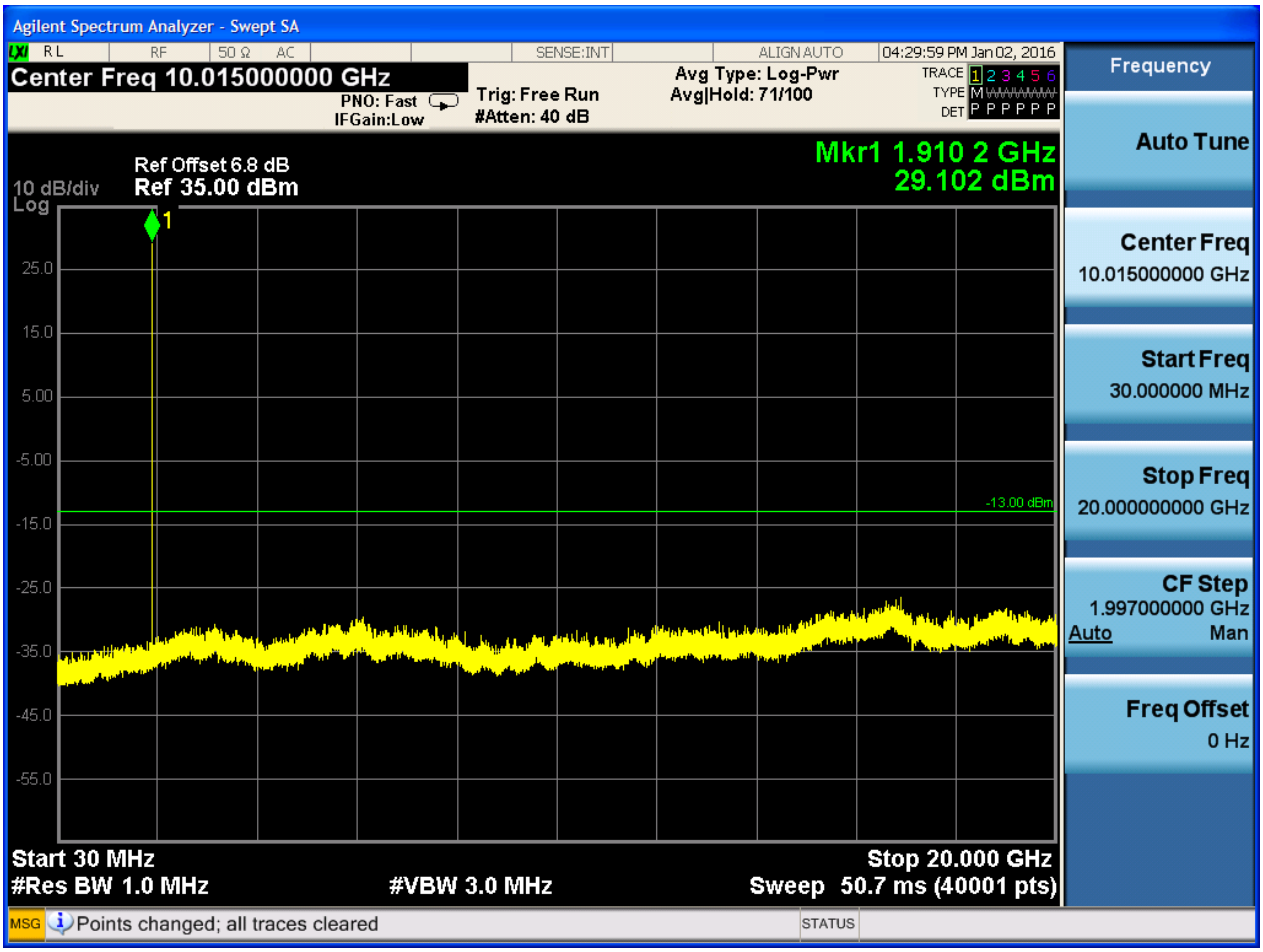




6.1.2.1.3 Test Channel = HCH

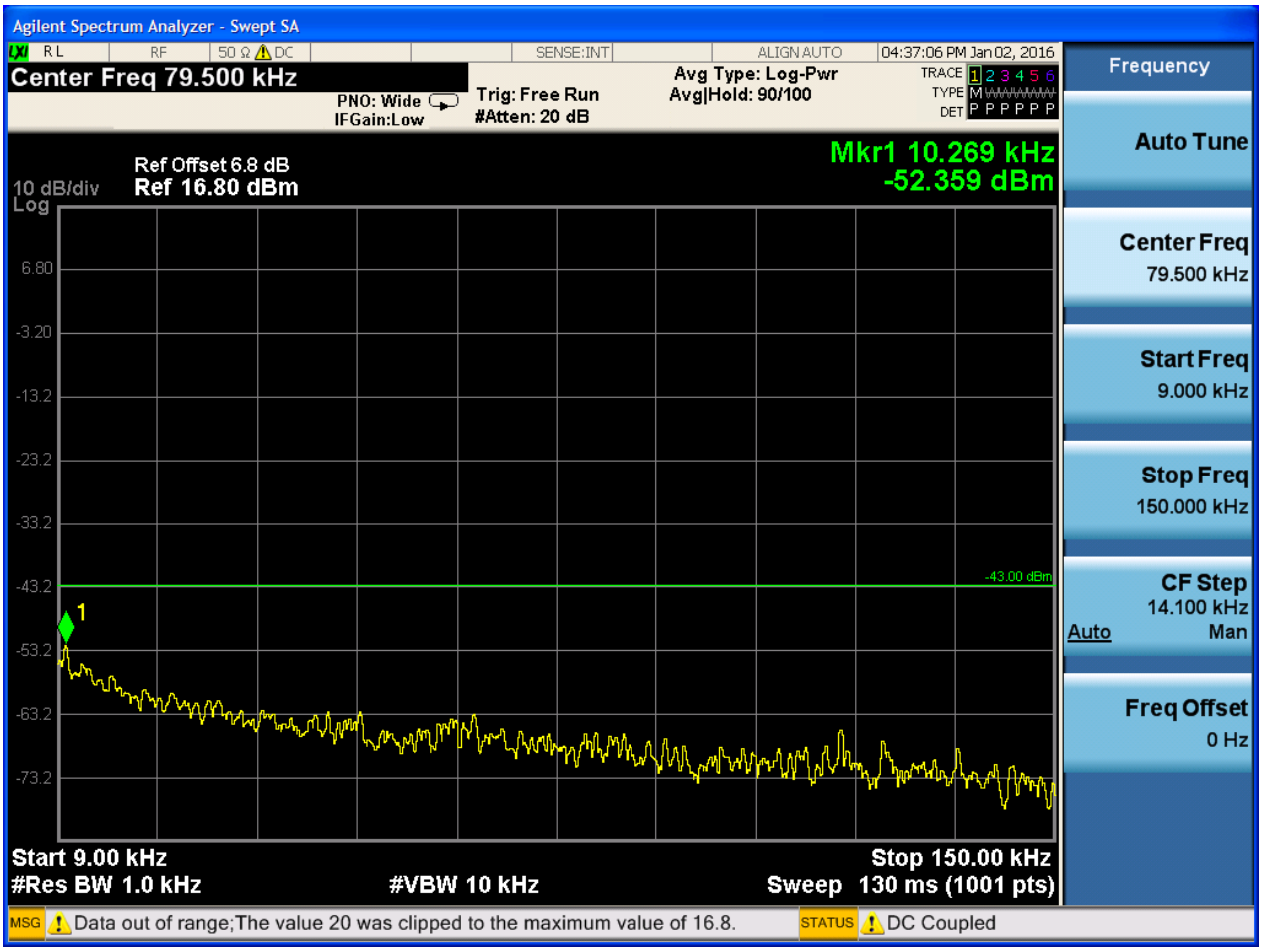


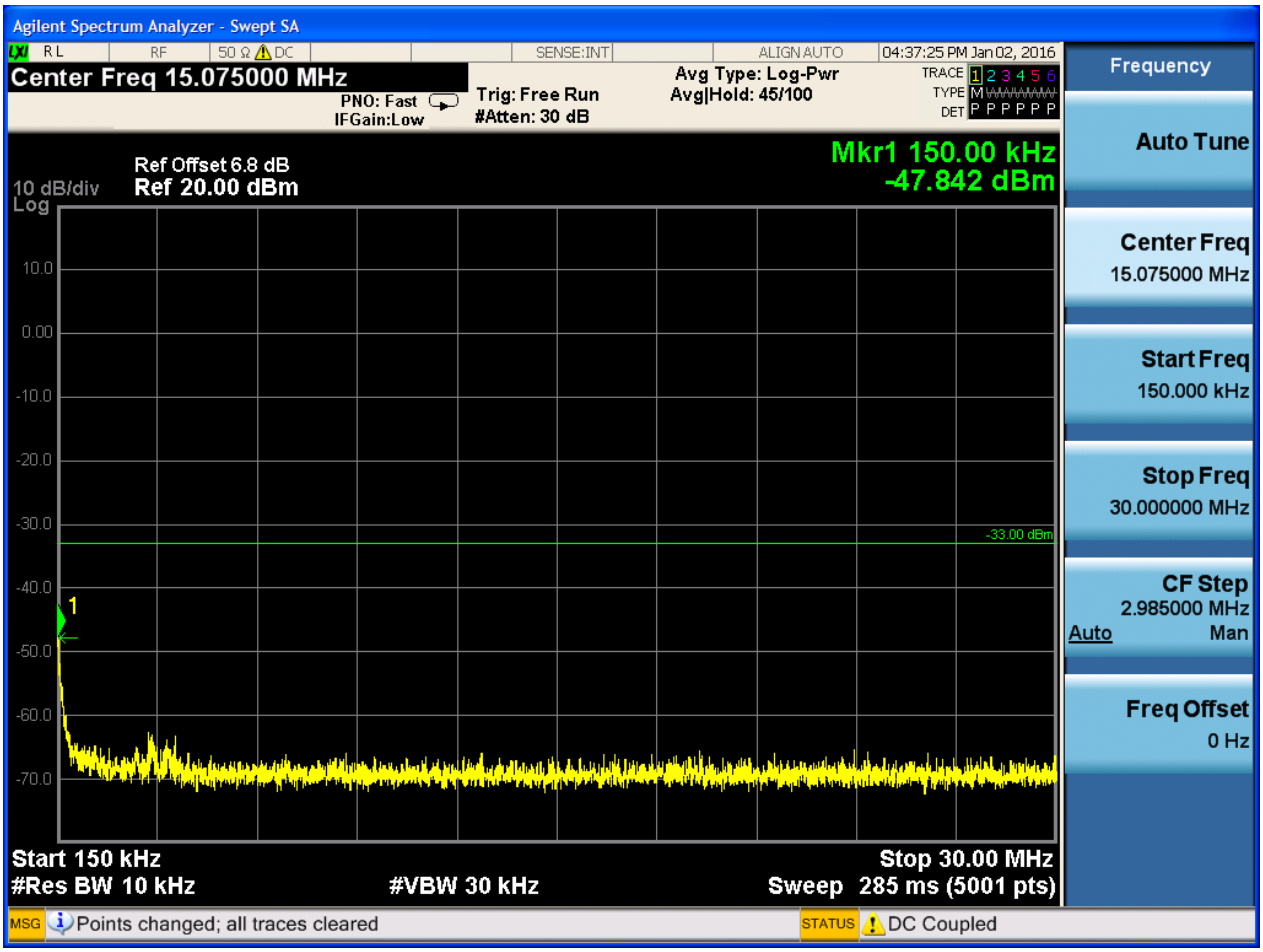


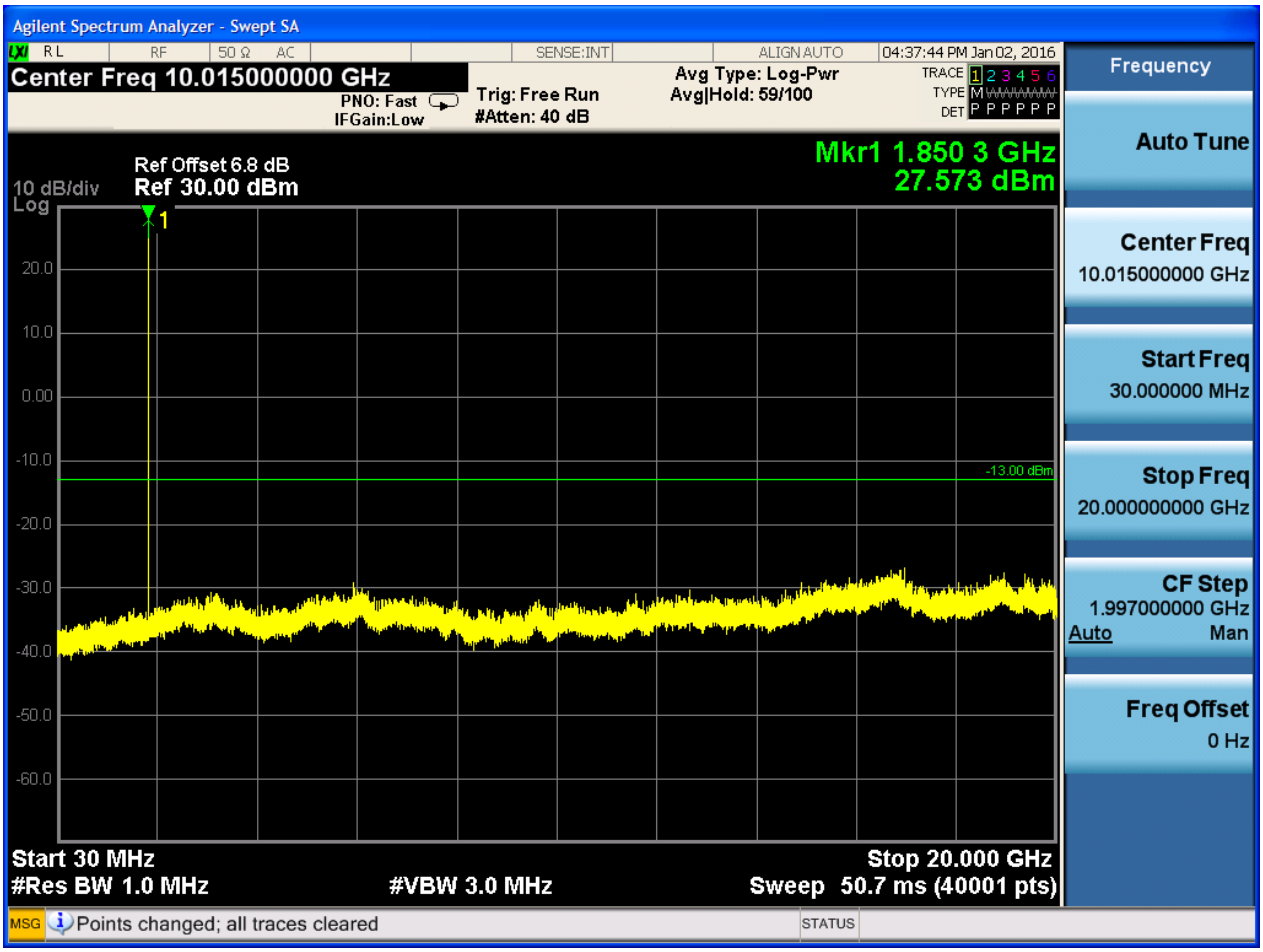


6.1.2.2 Test Mode = GSM/TM2

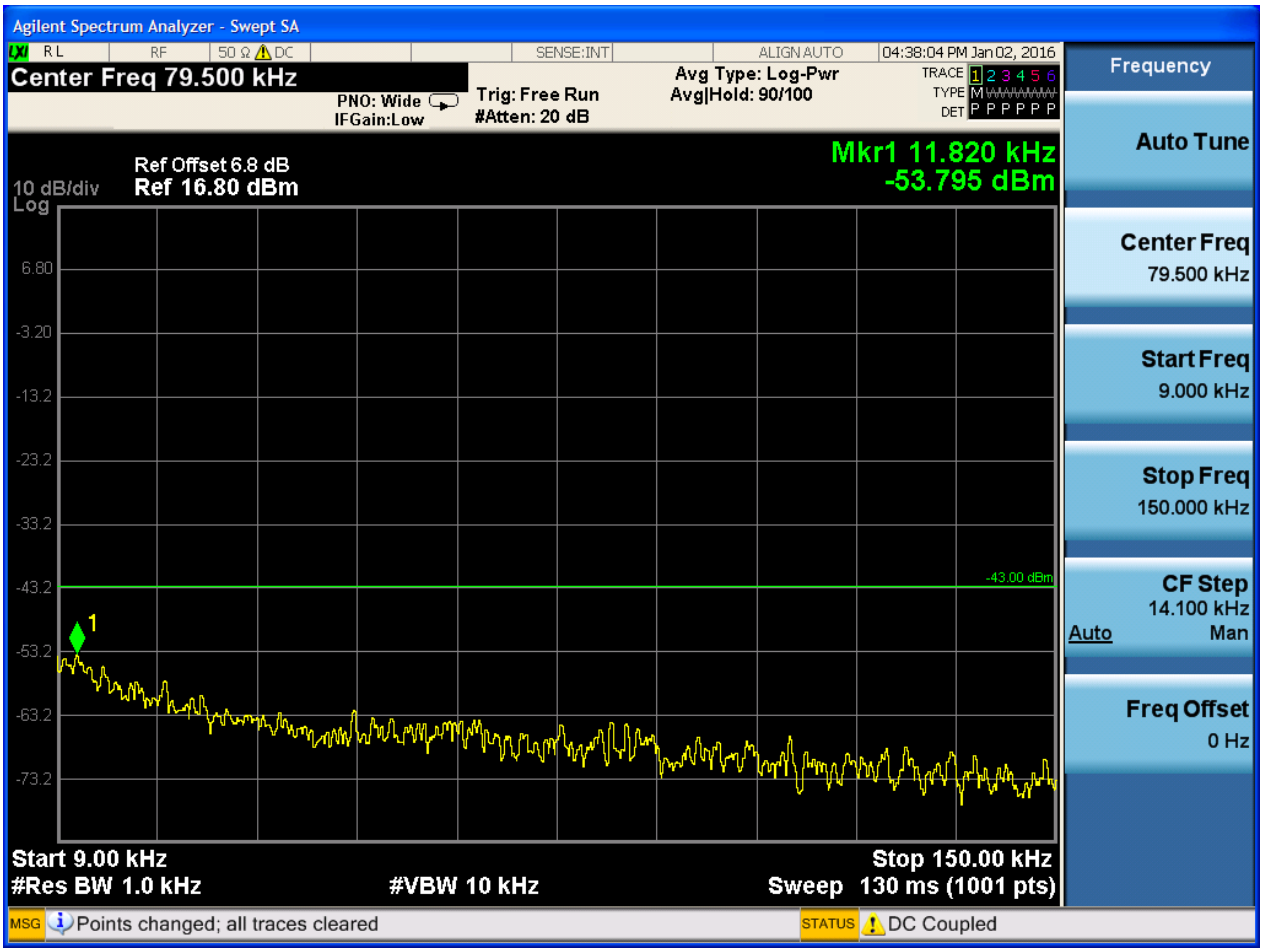
6.1.2.2.1 Test Channel = LCH

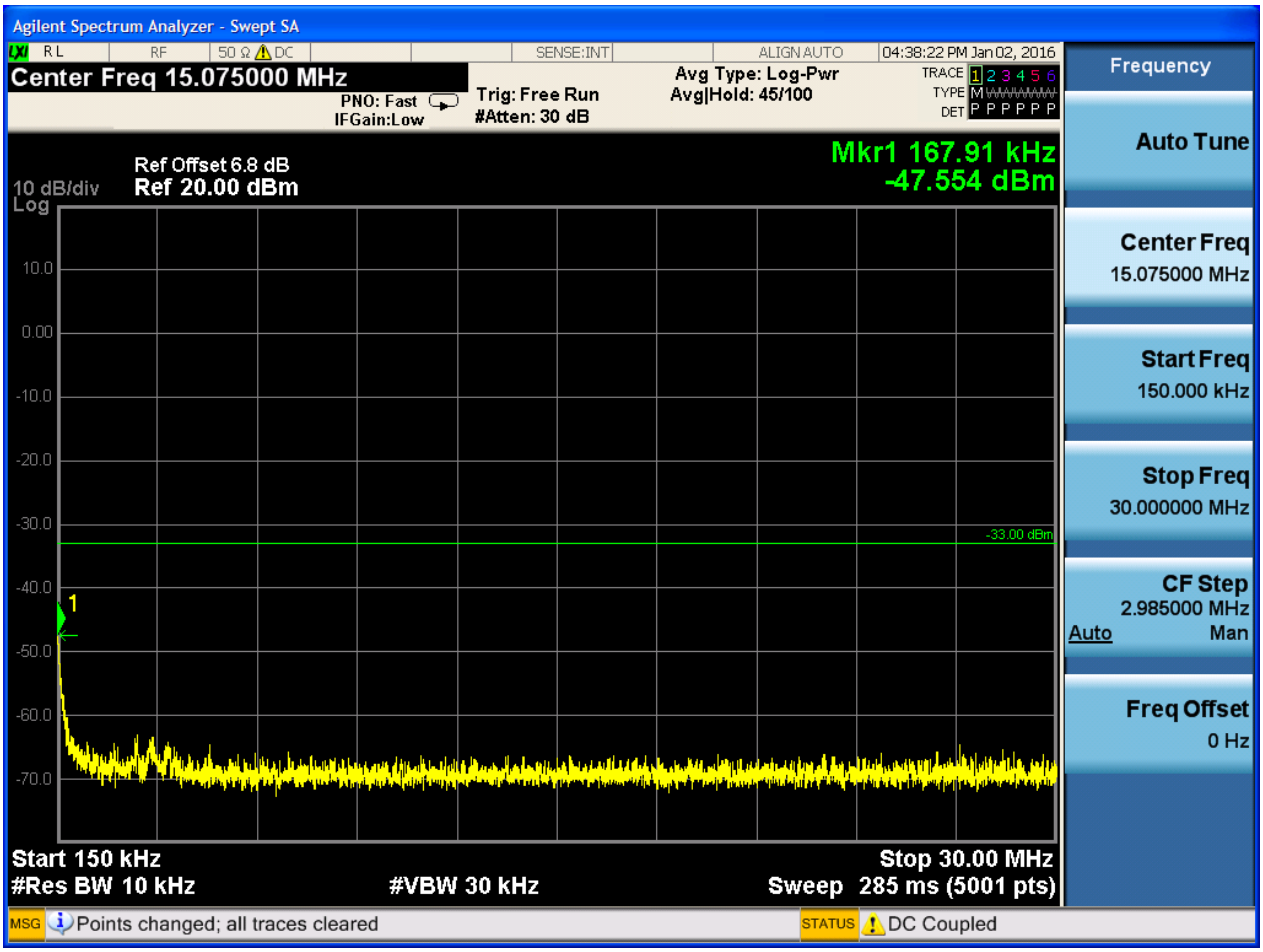


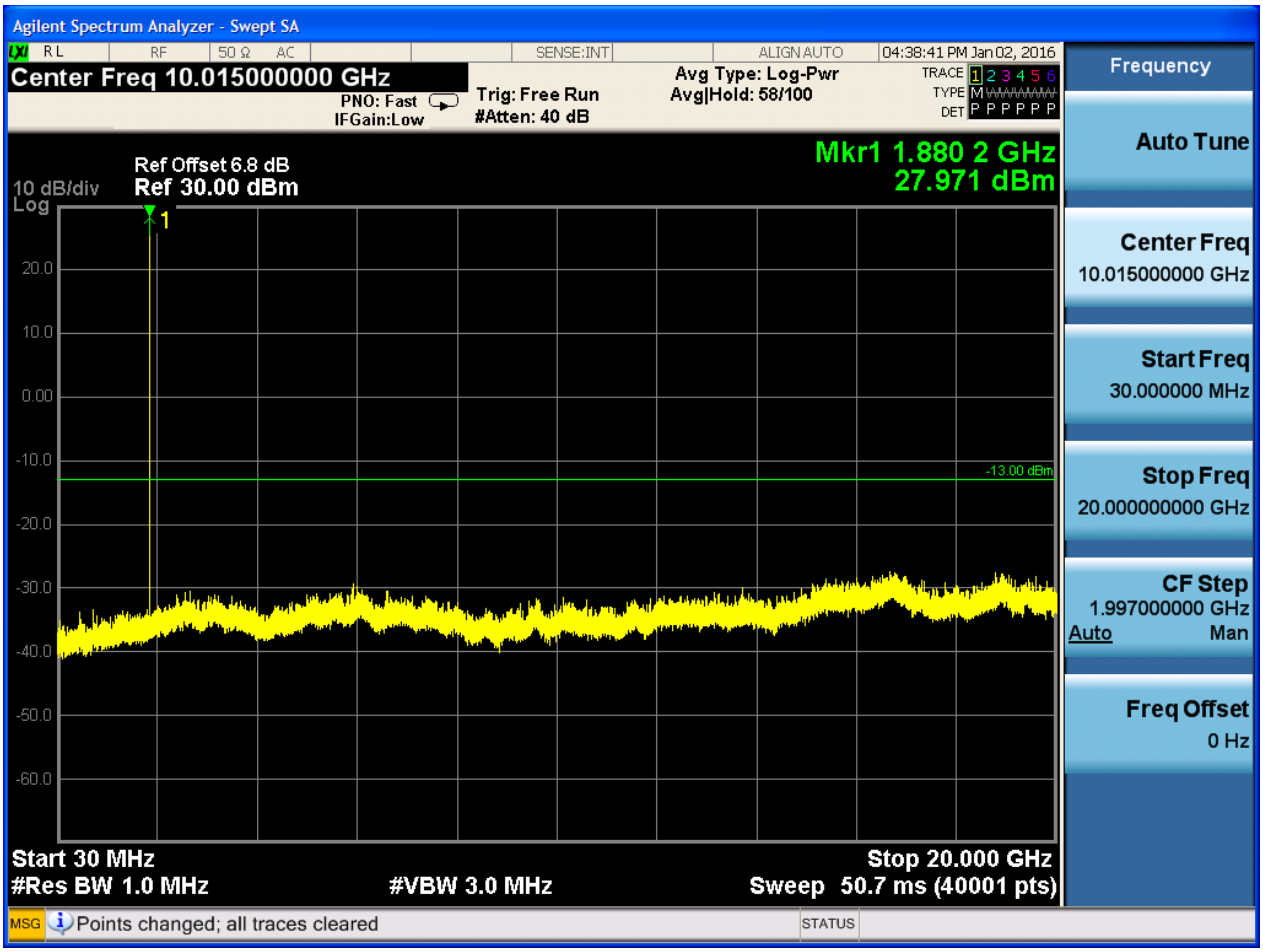




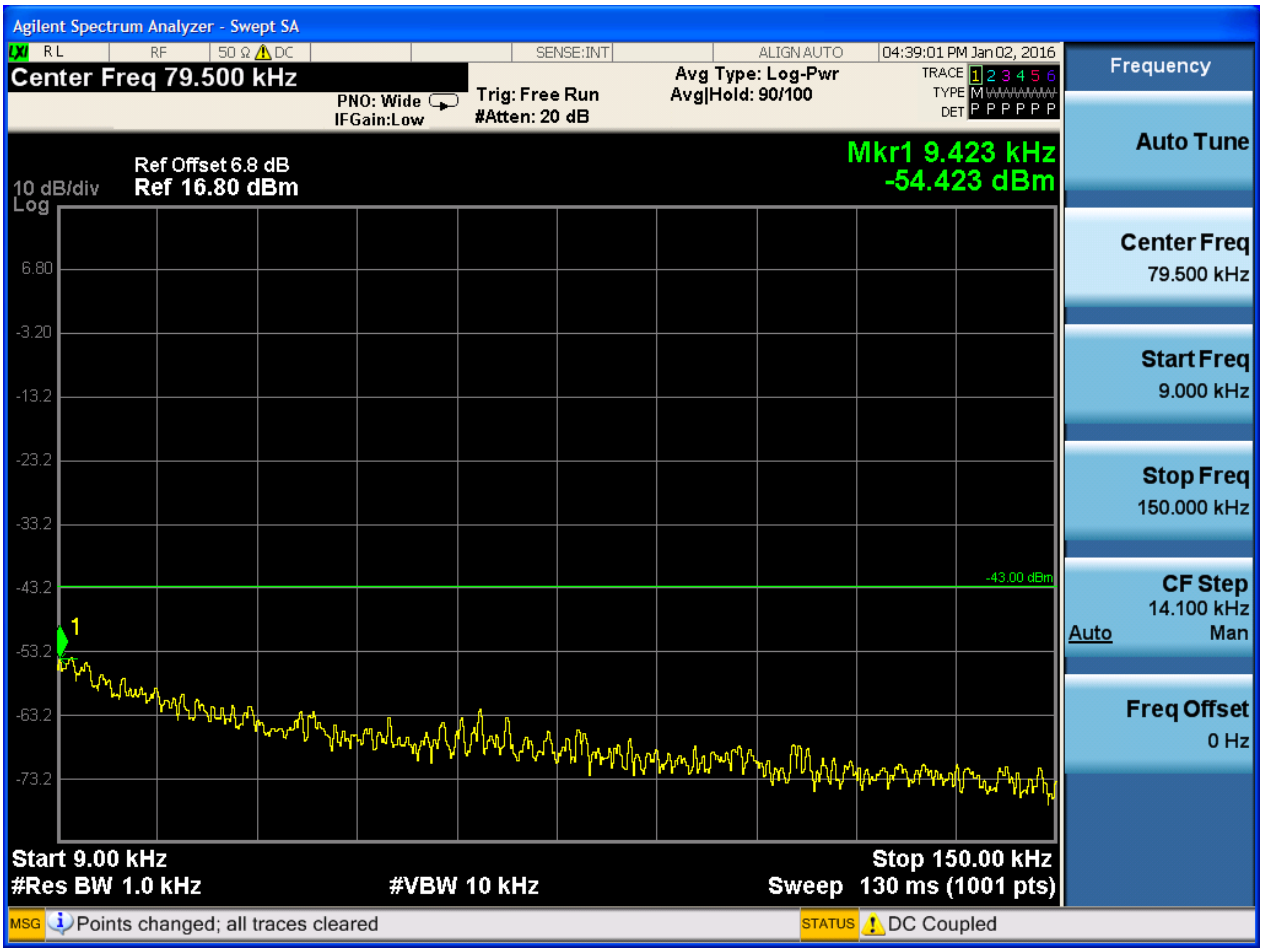
6.1.2.2.2 Test Channel = MCH

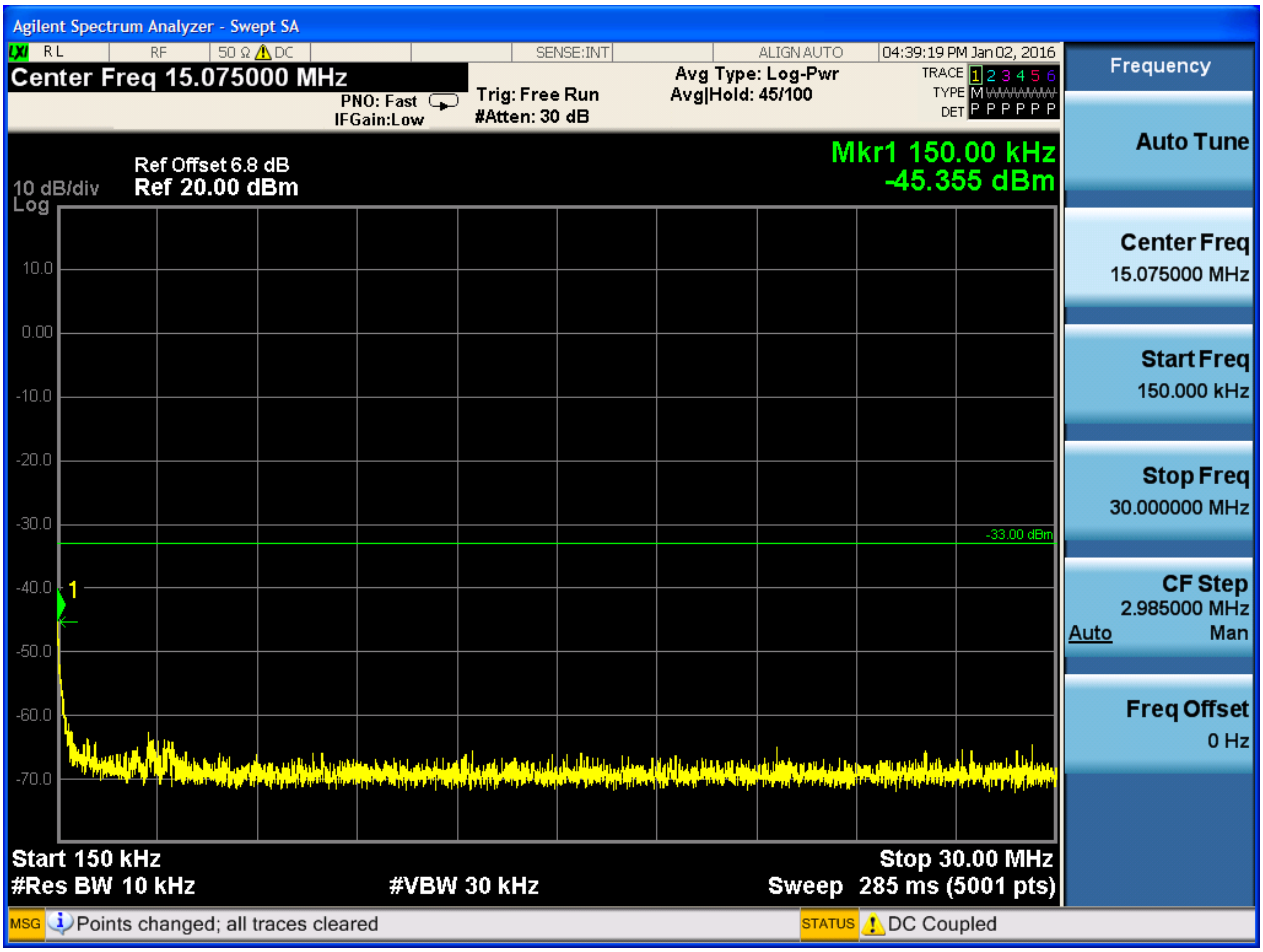


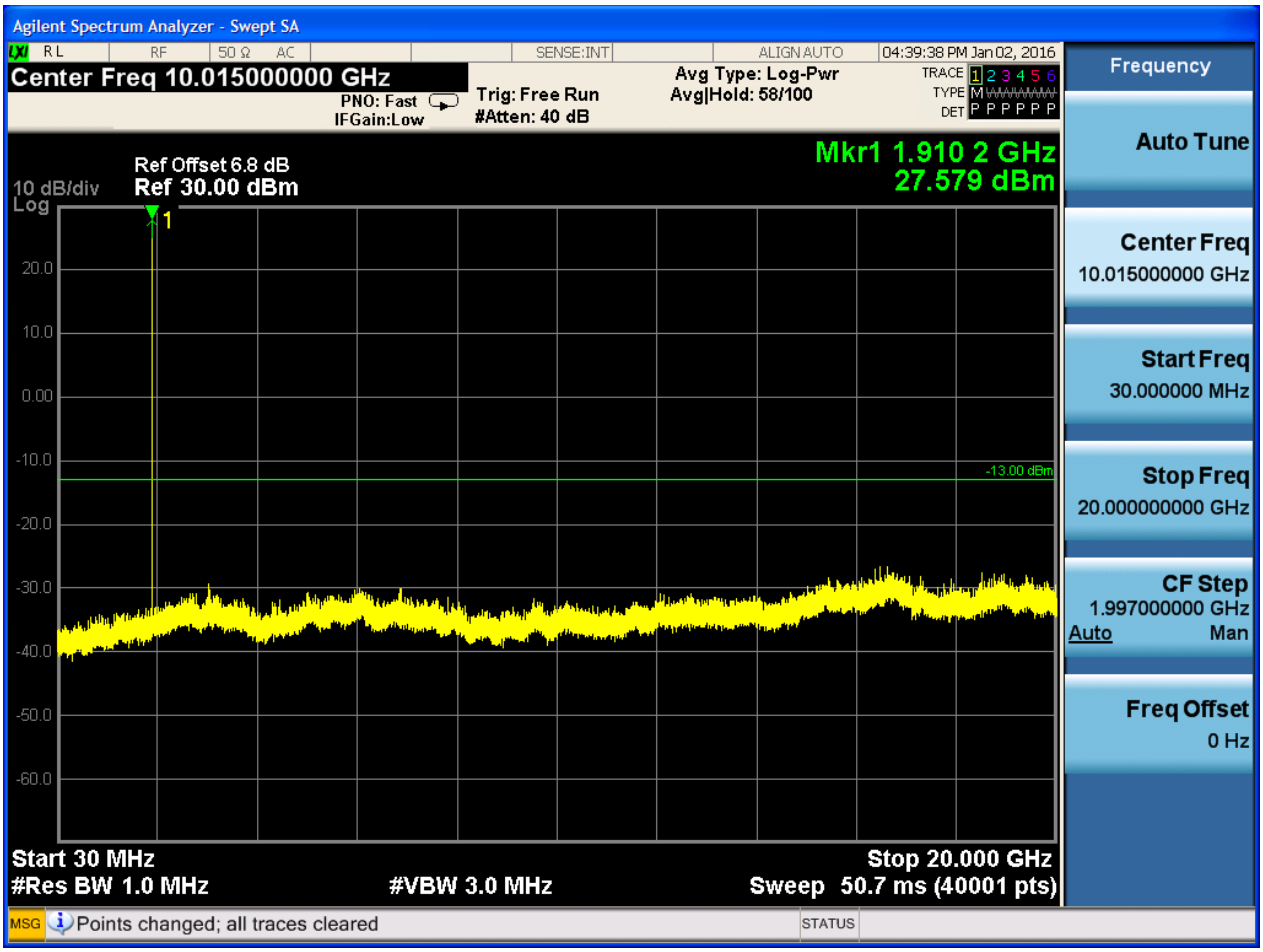




6.1.2.2.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note:

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

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

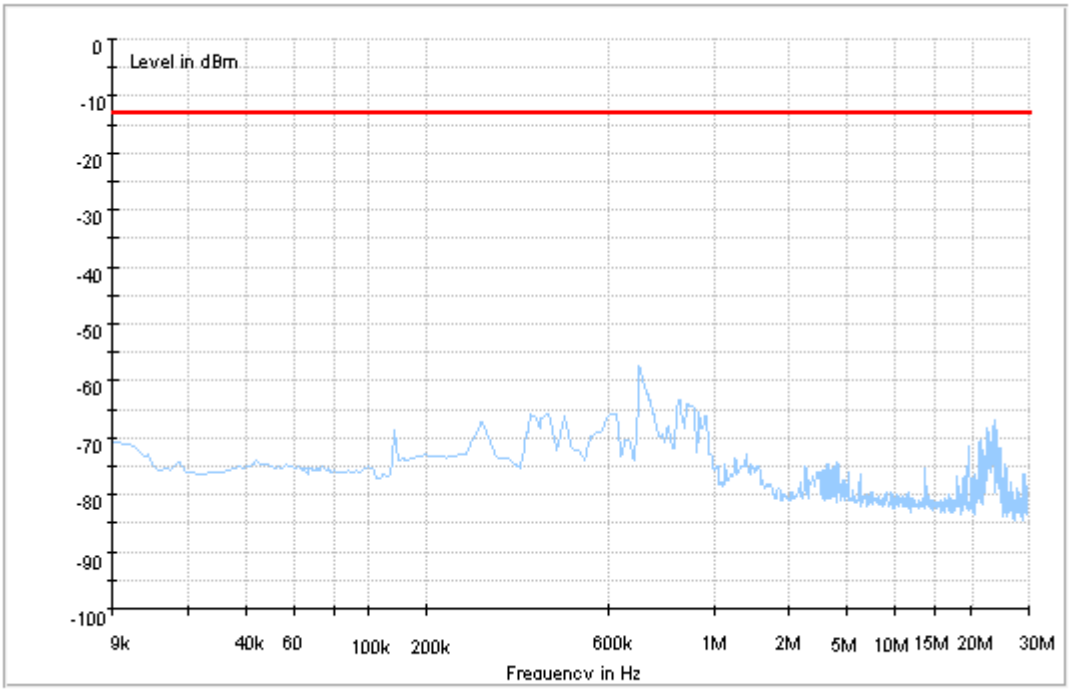
30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

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

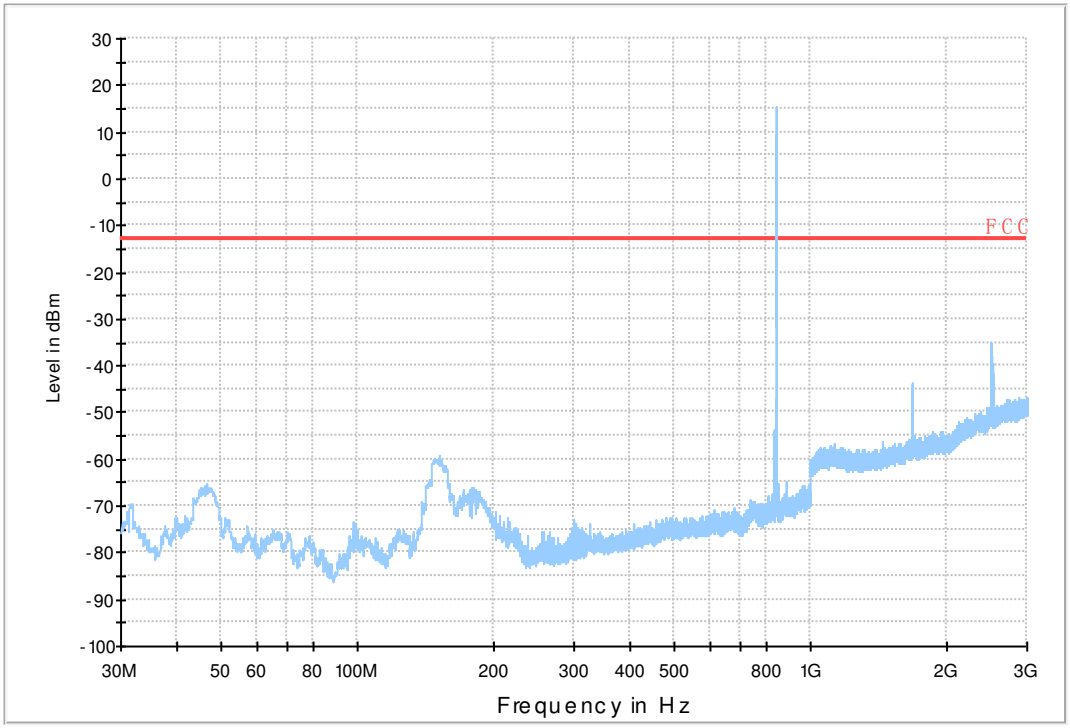
Part I - Test Plots

7.1 For GSM

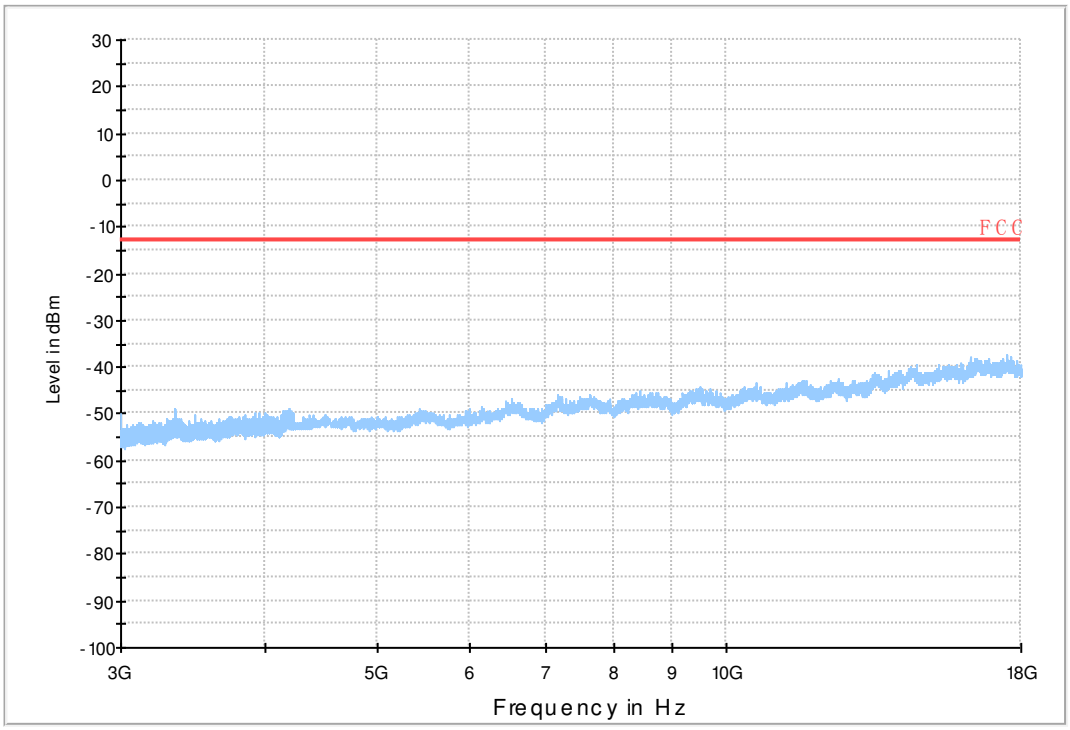
7.1.1 Test Band = GSM850



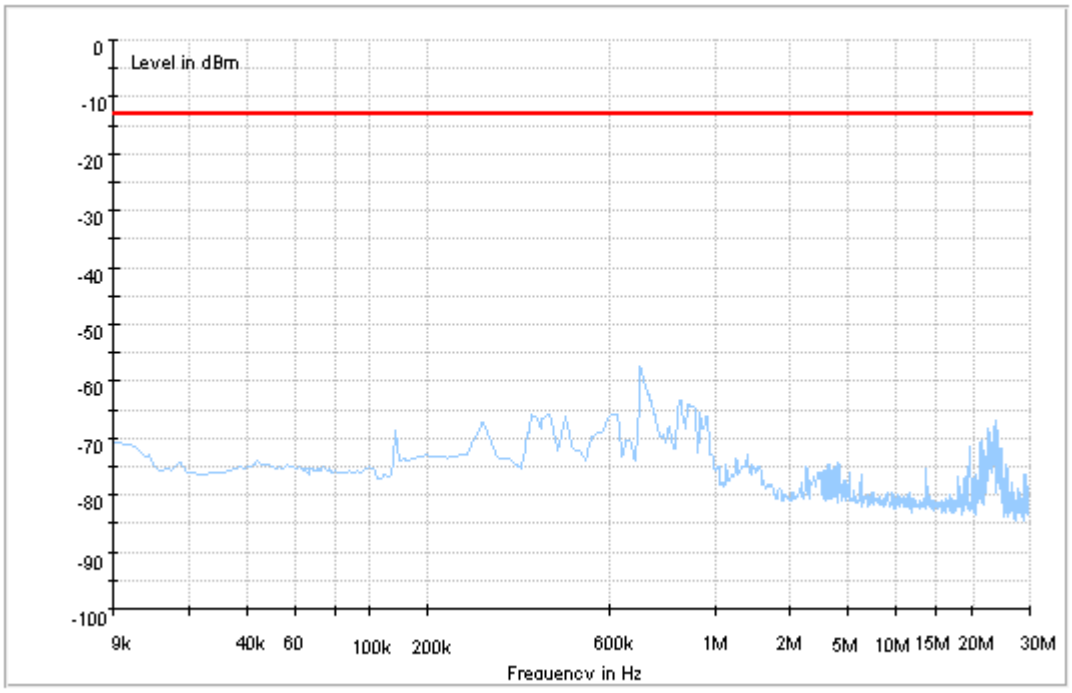
Copy of FCC PART22 GSM850_L



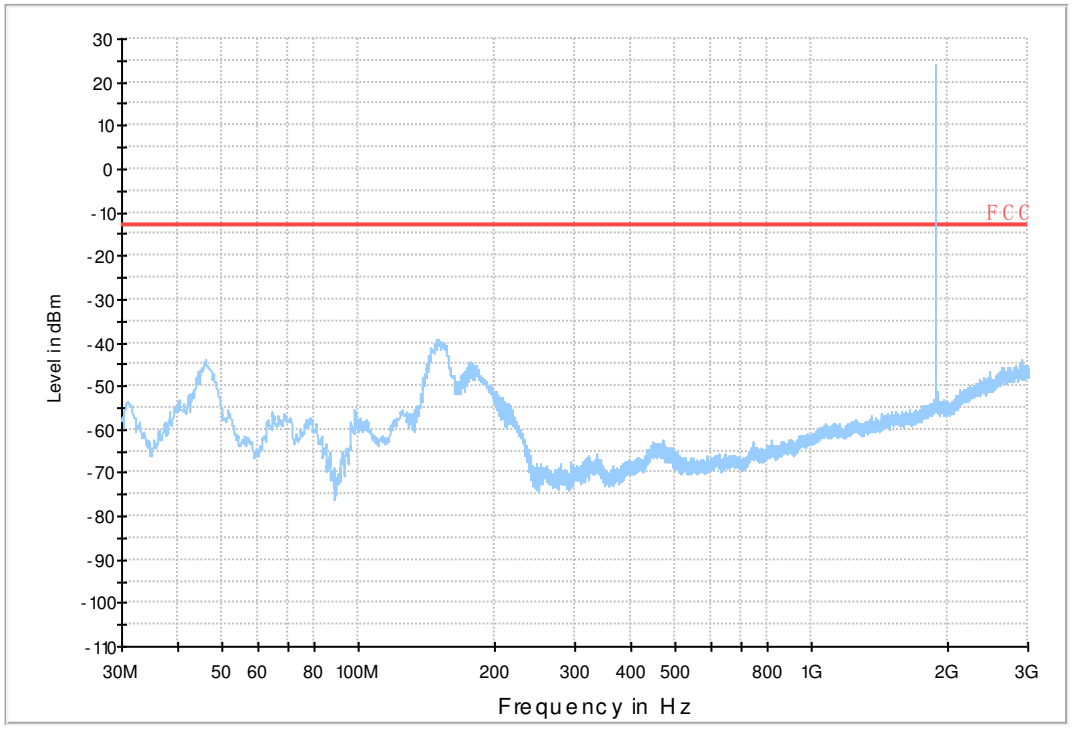
Copy of FCC PART22 GSM850_H



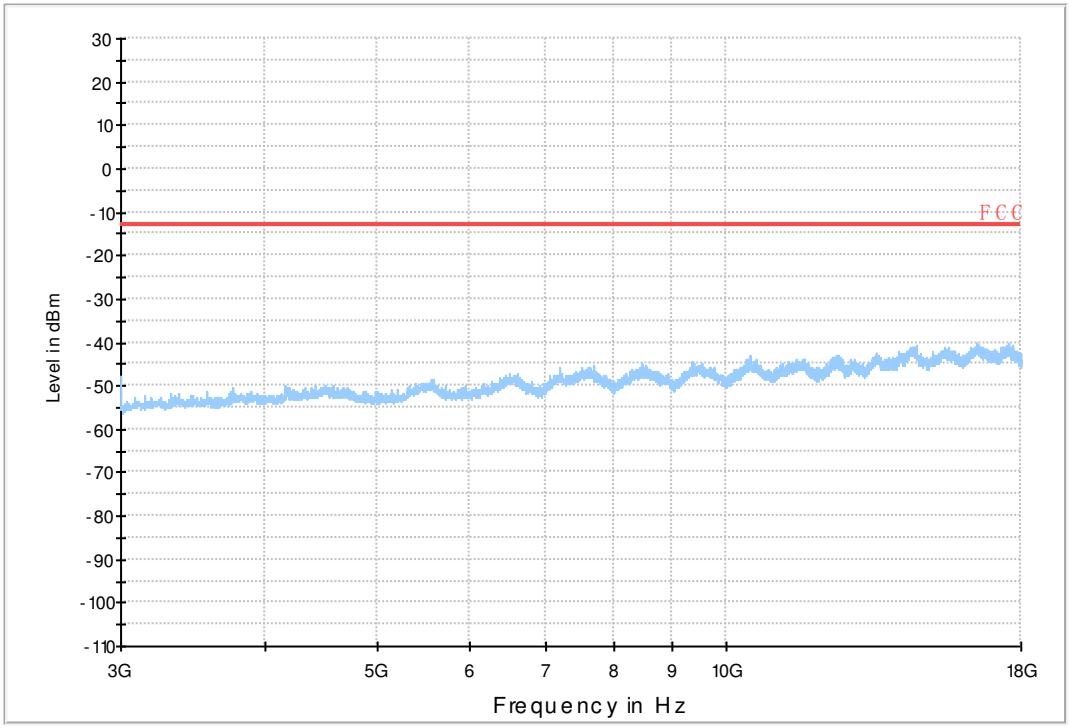
7.1.2 Test Band = GSM1900

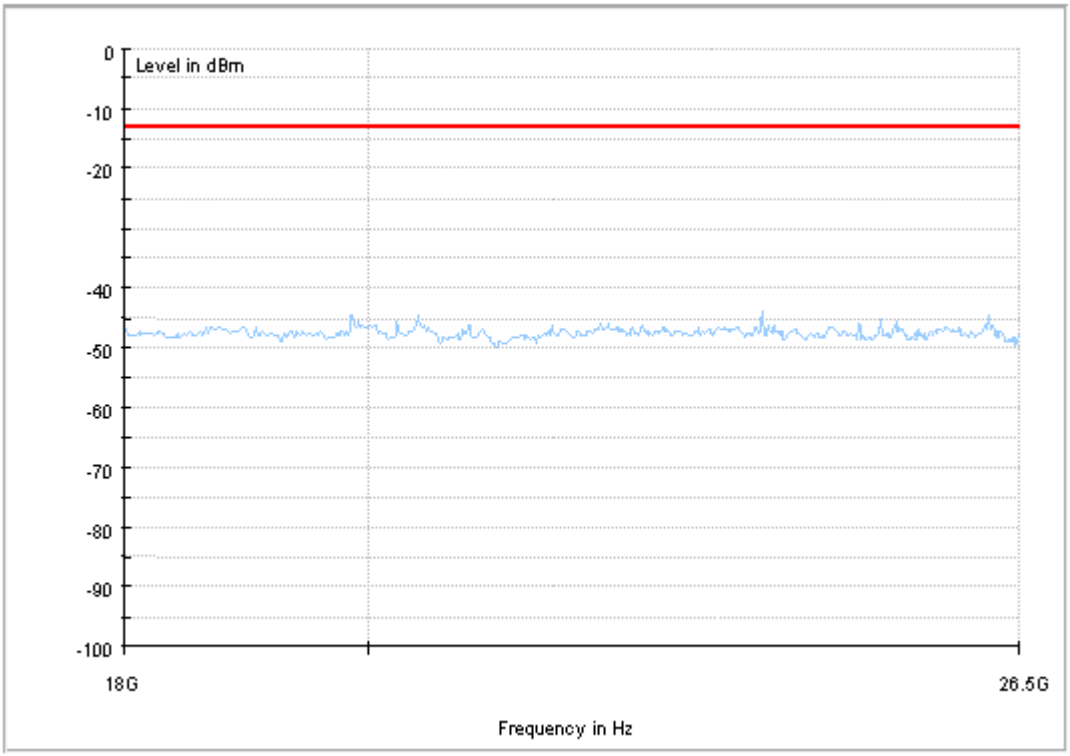


Copy of FCC PART24 GSM1900_L



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	10.36	0.01257	PASS
				VN	3.20	0.00388	PASS
				VH	4.52	0.00548	PASS
		MCH	TN	VL	5.29	0.00632	PASS
				VN	3.00	0.00359	PASS
				VH	3.33	0.00398	PASS
		HCH	TN	VL	-0.03	-0.00004	PASS
				VN	2.07	0.00244	PASS
				VH	6.97	0.00821	PASS
	GSM/TM2	LCH	TN	VL	4.07	0.0022	PASS
				VN	7.01	0.00379	PASS
				VH	-2.55	-0.00138	PASS
		MCH	TN	VL	-2.62	-0.00139	PASS
				VN	-3.97	-0.00211	PASS
				VH	-5.91	-0.00314	PASS
		HCH	TN	VL	0.26	0.00014	PASS
				VN	0.10	0.00005	PASS
				VH	1.55	0.00081	PASS
GSM1900	GSM/TM1	LCH	TN	VL	14.79	0.00799	PASS
				VN	12.59	0.0068	PASS
				VH	16.01	0.00865	PASS
		MCH	TN	VL	16.85	0.00896	PASS
				VN	13.04	0.00694	PASS
				VH	15.56	0.00828	PASS
		HCH	TN	VL	16.98	0.00889	PASS
				VN	14.27	0.00747	PASS
				VH	17.82	0.00933	PASS
	GSM/TM2	LCH	TN	VL	6.72	0.00363	PASS
				VN	14.11	0.00763	PASS
				VH	5.46	0.00295	PASS
		MCH	TN	VL	11.33	0.00603	PASS
				VN	7.26	0.00386	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	10.4	0.00553	PASS
		HCH	TN	VL	6.88	0.0036	PASS
				VN	10.94	0.00573	PASS
				VH	1	0.00052	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	2.58	0.00313	PASS
				-20	4.23	0.00513	PASS
				-10	0.29	0.00035	PASS
				0	2.39	0.0029	PASS
				10	5.59	0.00678	PASS
				20	-4.39	-0.00533	PASS
				30	0.42	0.00051	PASS
				40	0.26	0.00032	PASS
				50	6.88	0.00835	PASS
		MCH	VN	-30	10.40	0.01243	PASS
				-20	4.33	0.00518	PASS
				-10	7.33	0.00876	PASS
				0	6.36	0.0076	PASS
				10	5.20	0.00622	PASS
				20	4.00	0.00478	PASS
				30	1.74	0.00208	PASS
				40	5.55	0.00663	PASS
				50	7.14	0.00853	PASS
		HCH	VN	-30	5.88	0.00693	PASS
				-20	5.07	0.00597	PASS
				-10	7.39	0.00871	PASS
				0	-0.87	-0.00102	PASS
				10	-1.16	-0.00137	PASS
				20	5.52	0.0065	PASS
				30	7.30	0.0086	PASS
				40	3.26	0.00384	PASS
				50	0.84	0.00099	PASS
	GSM/TM2	LCH	VN	-30	4.88	0.00264	PASS
				-20	3.07	0.00166	PASS
				-10	1.13	0.00061	PASS
				0	2.16	0.00117	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	9.56	0.00517	PASS
				20	-2.23	-0.00121	PASS
				30	1.90	0.00103	PASS
				40	3.07	0.00166	PASS
				50	4.07	0.0022	PASS
		MCH	VN	-30	0.68	0.00036	PASS
				-20	2.62	0.00139	PASS
				-10	-0.45	-0.00024	PASS
				0	-2.71	-0.00144	PASS
				10	10.40	0.00553	PASS
				20	1.07	0.00057	PASS
				30	0.29	0.00015	PASS
				40	2.91	0.00155	PASS
				50	1.84	0.00098	PASS
		HCH	VN	-30	3.87	0.00203	PASS
				-20	1.74	0.00091	PASS
				-10	5.71	0.00299	PASS
				0	6.94	0.00363	PASS
				10	-8.36	-0.00438	PASS
				20	0.10	0.00005	PASS
				30	1.03	0.00054	PASS
				40	-0.48	-0.00025	PASS
				50	-0.68	-0.00036	PASS
GSM1900	GSM/TM1	LCH	VN	-30	20.6	0.01113	PASS
				-20	8.27	0.00447	PASS
				-10	12.53	0.00677	PASS
				0	16.14	0.00872	PASS
				10	17.69	0.00956	PASS
				20	9.3	0.00503	PASS
				30	21.63	0.01169	PASS
				40	14.98	0.0081	PASS
				50	17.95	0.0097	PASS
		MCH	VN	-30	28.48	0.01515	PASS
				-20	29.06	0.01546	PASS
				-10	14.46	0.00769	PASS
				0	24.73	0.01315	PASS
				10	11.11	0.00591	PASS
				20	15.76	0.00838	PASS
				30	23.96	0.01274	PASS
				40	14.01	0.00745	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	4.33	0.0023	PASS
		HCH	VN	-30	4.97	0.0026	PASS
				-20	19.31	0.01011	PASS
				-10	20.73	0.01085	PASS
				0	9.1	0.00476	PASS
				10	12.91	0.00676	PASS
				20	22.21	0.01163	PASS
				30	11.49	0.00602	PASS
				40	17.89	0.00937	PASS
				50	27.96	0.01464	PASS
	GSM/TM2	LCH	VN	-30	9.98	0.00539	PASS
				-20	6.23	0.00337	PASS
				-10	-2.07	-0.00112	PASS
				0	18.37	0.00993	PASS
				10	5.65	0.00305	PASS
				20	1.42	0.00077	PASS
				30	12.11	0.00655	PASS
				40	3.23	0.00175	PASS
				50	11.85	0.0064	PASS
		MCH	VN	-30	3.68	0.00196	PASS
				-20	15.63	0.00831	PASS
				-10	9.69	0.00515	PASS
				0	7.33	0.0039	PASS
				10	4.42	0.00235	PASS
				20	15.85	0.00843	PASS
				30	10.07	0.00536	PASS
				40	7.01	0.00373	PASS
				50	7.39	0.00393	PASS
		HCH	VN	-30	-0.52	-0.00027	PASS
				-20	22.73	0.0119	PASS
				-10	15.82	0.00828	PASS
				0	17.37	0.0091	PASS
				10	9.72	0.00509	PASS
				20	-0.94	-0.00049	PASS
				30	14.24	0.00746	PASS
				40	-8.07	-0.00423	PASS
				50	6.52	0.00341	PASS