



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	32.34	31.69	38.5	PASS
		MCH	32.53	31.88	38.5	PASS
		HCH	32.64	31.99	38.5	PASS
	GSM/TM2	LCH	26.39	25.74	38.5	PASS
		MCH	26.4	25.75	38.5	PASS
		HCH	26.33	25.68	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	30.21	31.41	33	PASS
		MCH	29.86	31.06	33	PASS
		HCH	30.31	31.51	33	PASS
	GSM/TM2	LCH	25.91	27.11	33	PASS
		MCH	25.85	27.05	33	PASS



Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
		HCH	25.93	27.13	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,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

Note2: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS



2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
GSM1900	GSM/TM1	LCH	0.39	13	PASS
		MCH	0.37	13	PASS
		HCH	0.34	13	PASS
	GSM/TM2	LCH	3.39	13	PASS
		MCH	3.45	13	PASS
		HCH	3.27	13	PASS

3Appendix_C: Modulation Characteristics

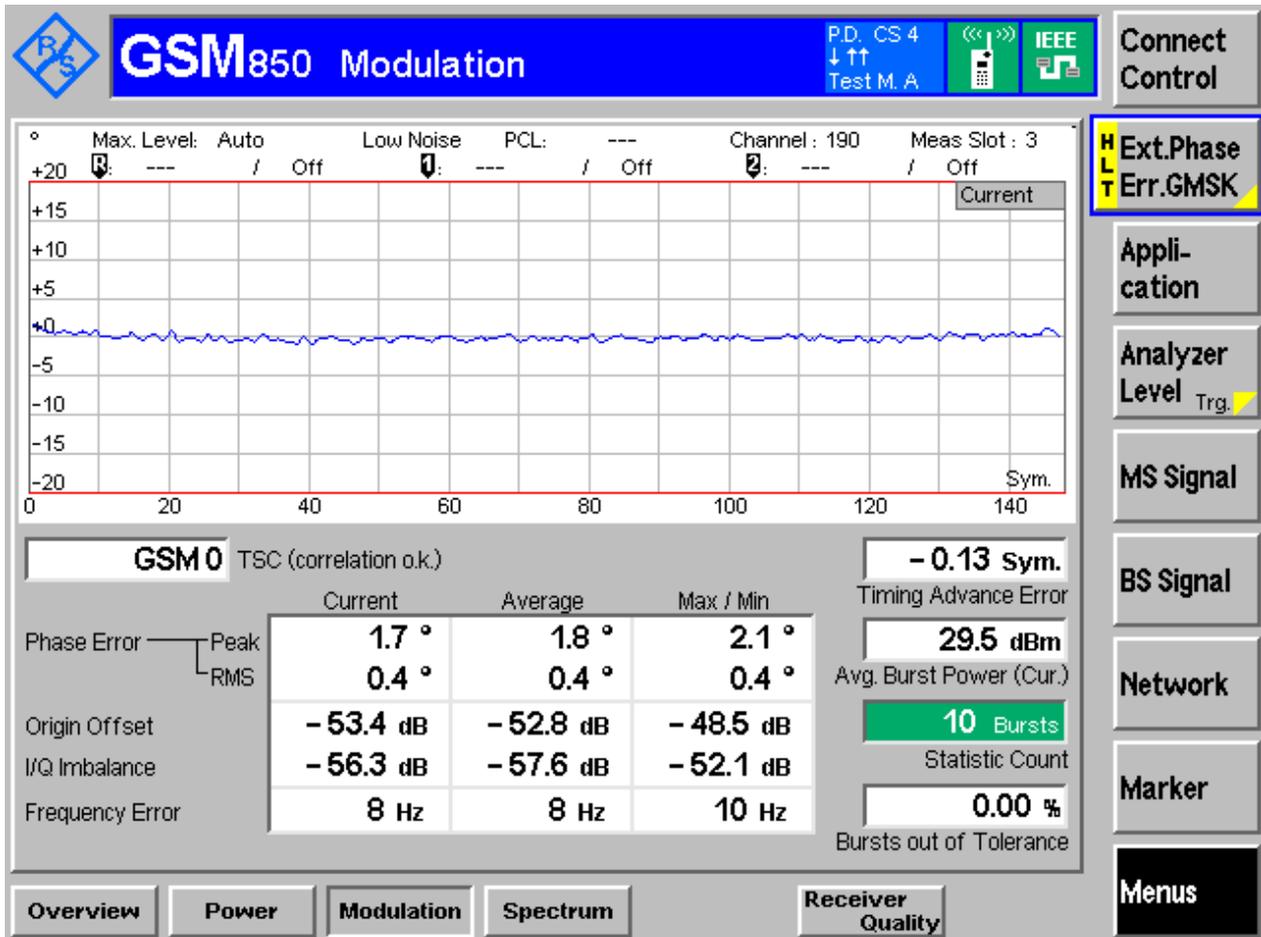
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

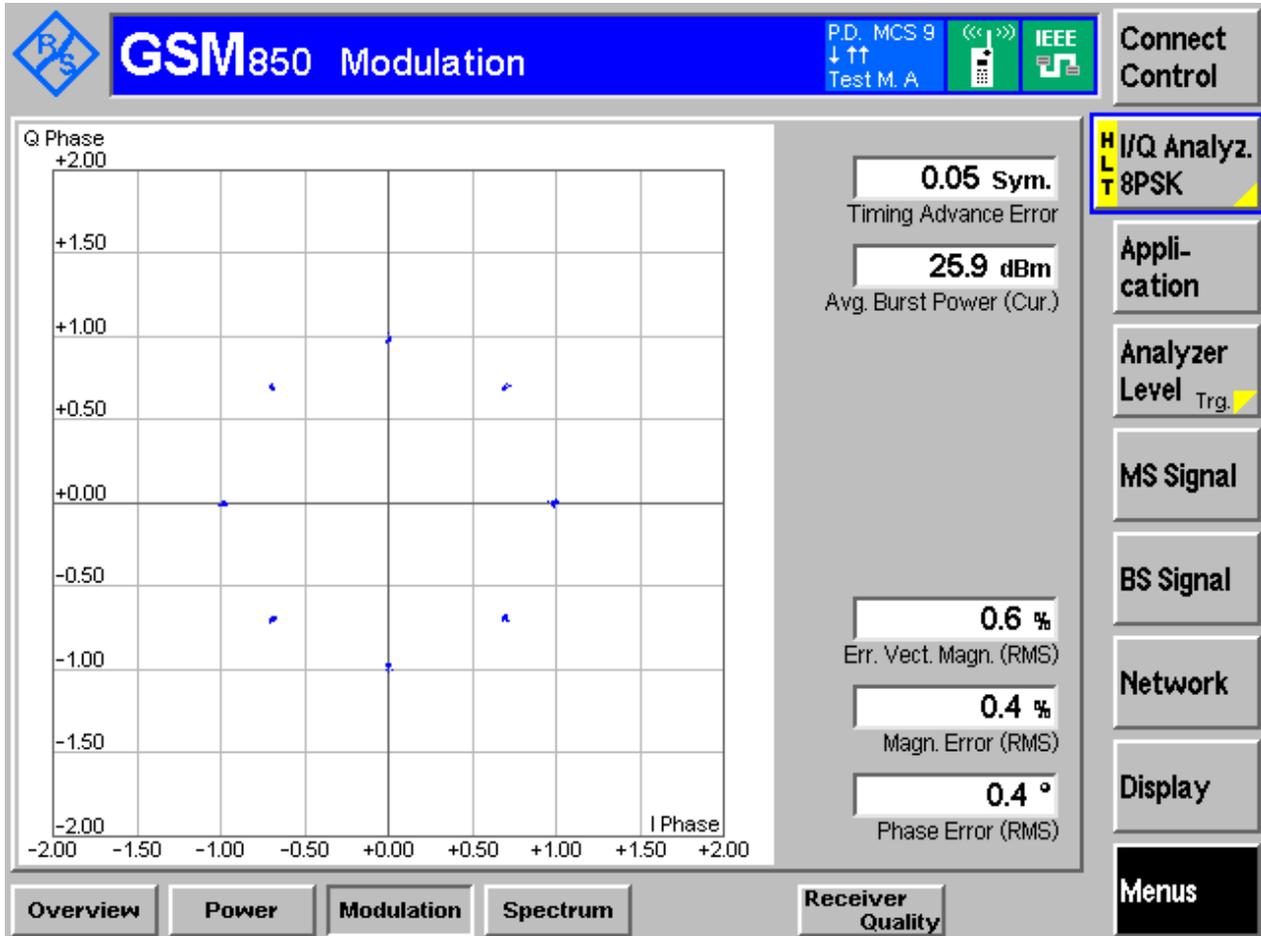
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3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

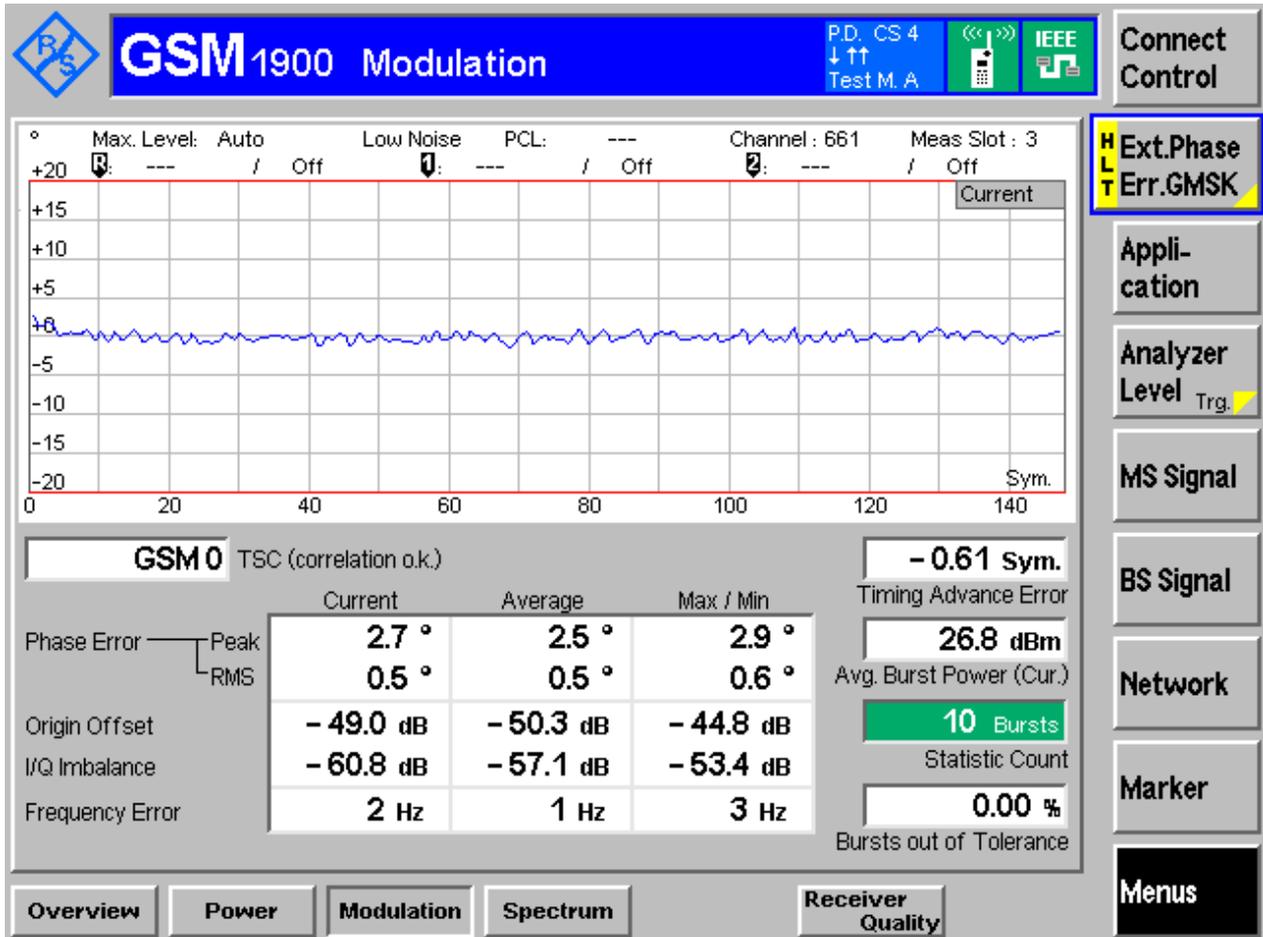
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

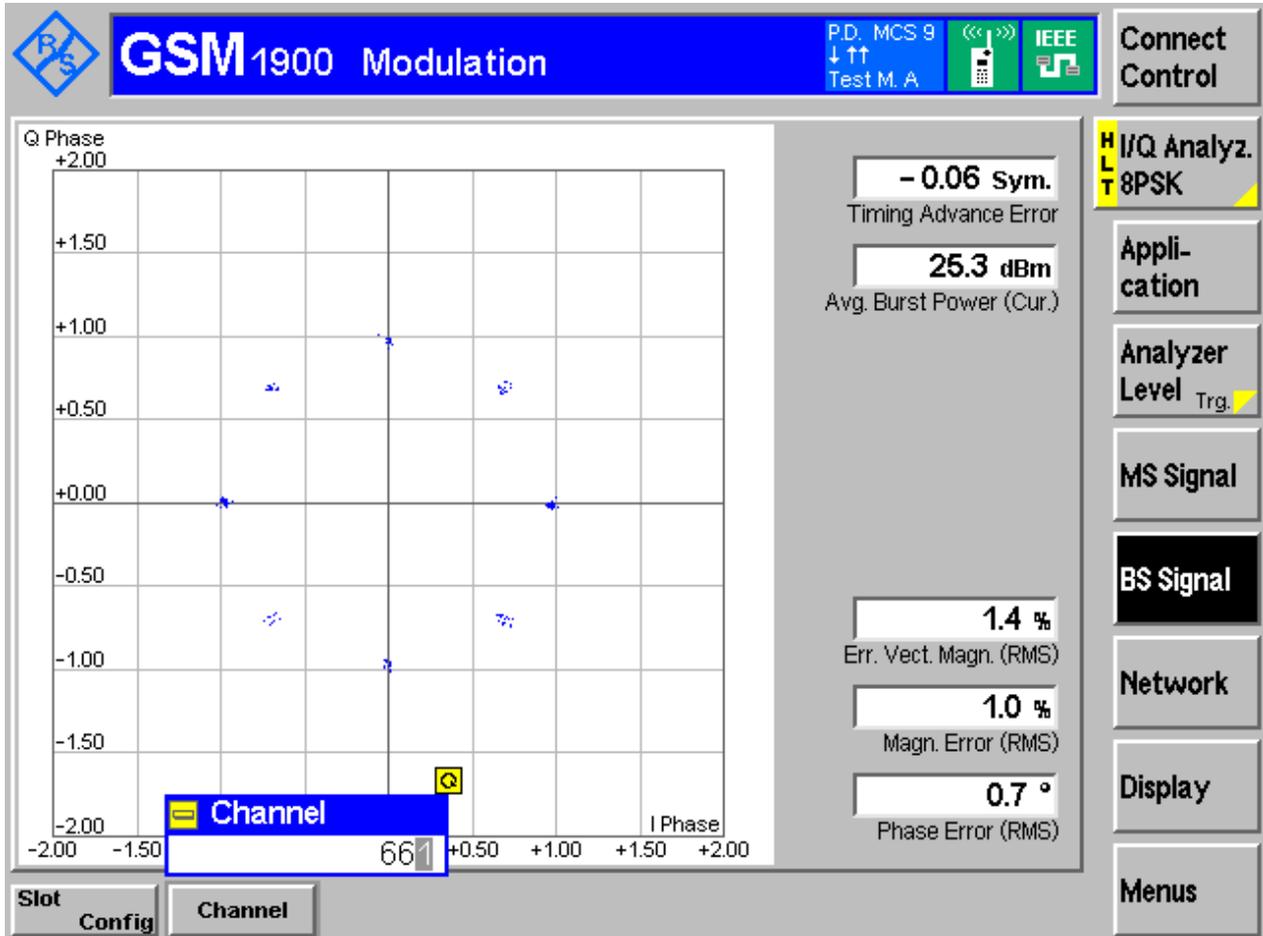
3.1.2.1 Test Mode = GSM/TM1

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	244.25	324.04	Pass
		MCH	241.89	317.46	Pass
		HCH	242.99	313.85	Pass
	GSM/TM2	LCH	246.73	311.55	Pass
		MCH	246.24	315.66	Pass
		HCH	239.76	314.93	Pass
GSM1900	GSM/TM1	LCH	248.15	311.90	Pass
		MCH	244.79	315.19	Pass
		HCH	247.73	324.07	Pass
	GSM/TM2	LCH	244.90	313.70	Pass
		MCH	243.13	299.70	Pass
		HCH	239.49	308.82	Pass



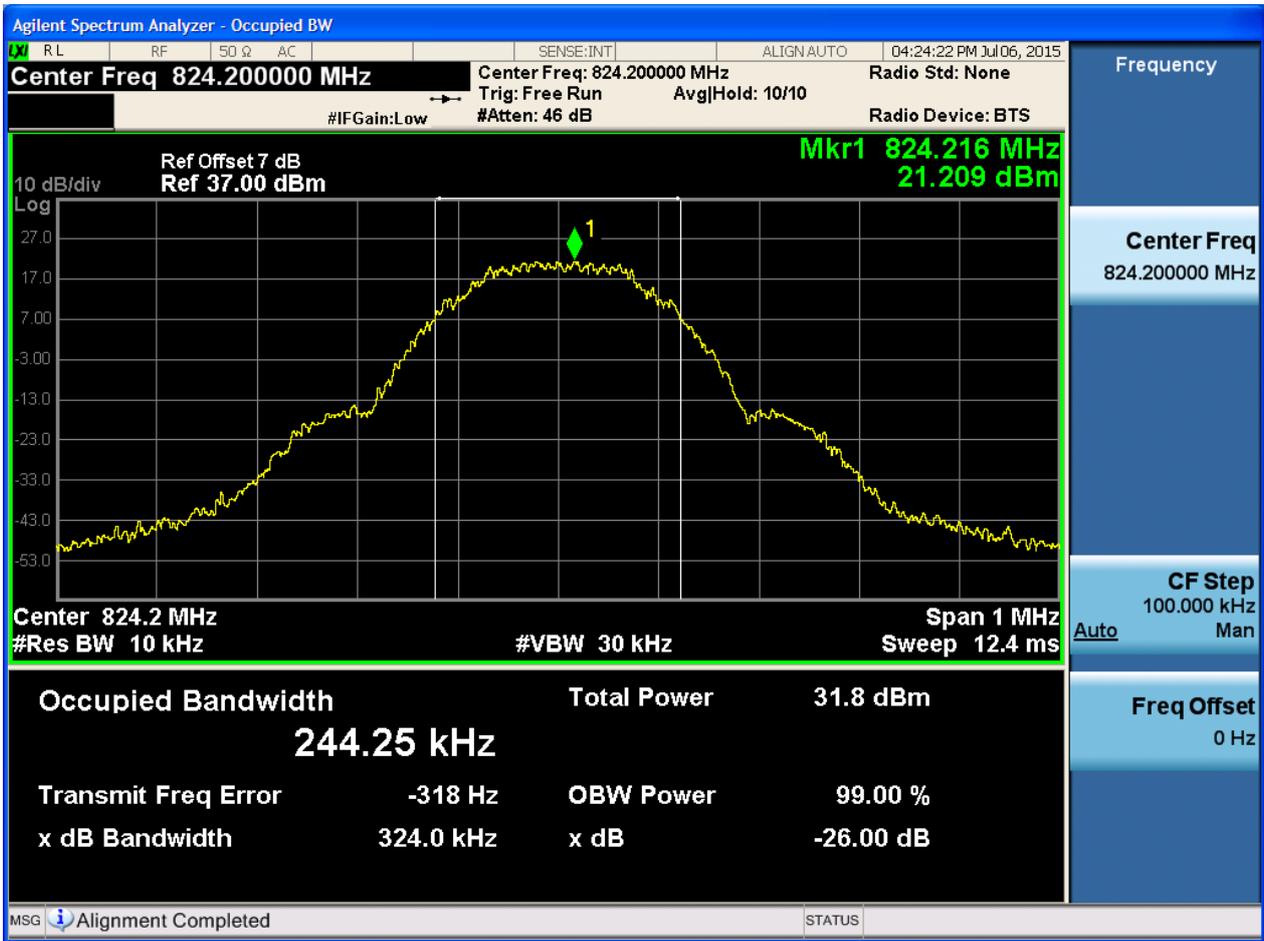
Part II - Test Plots

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4.1.1 Test Band = GSM850

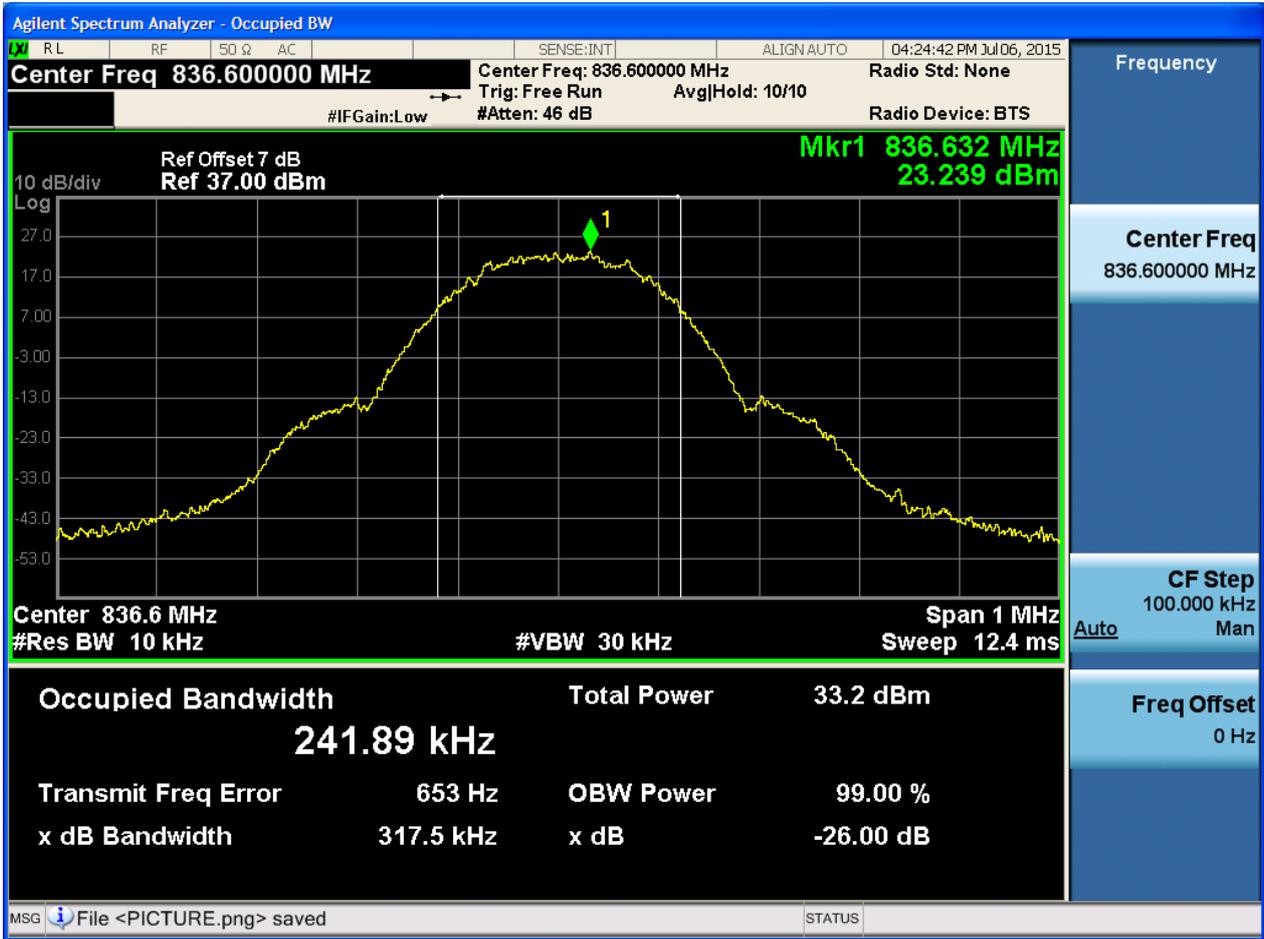
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



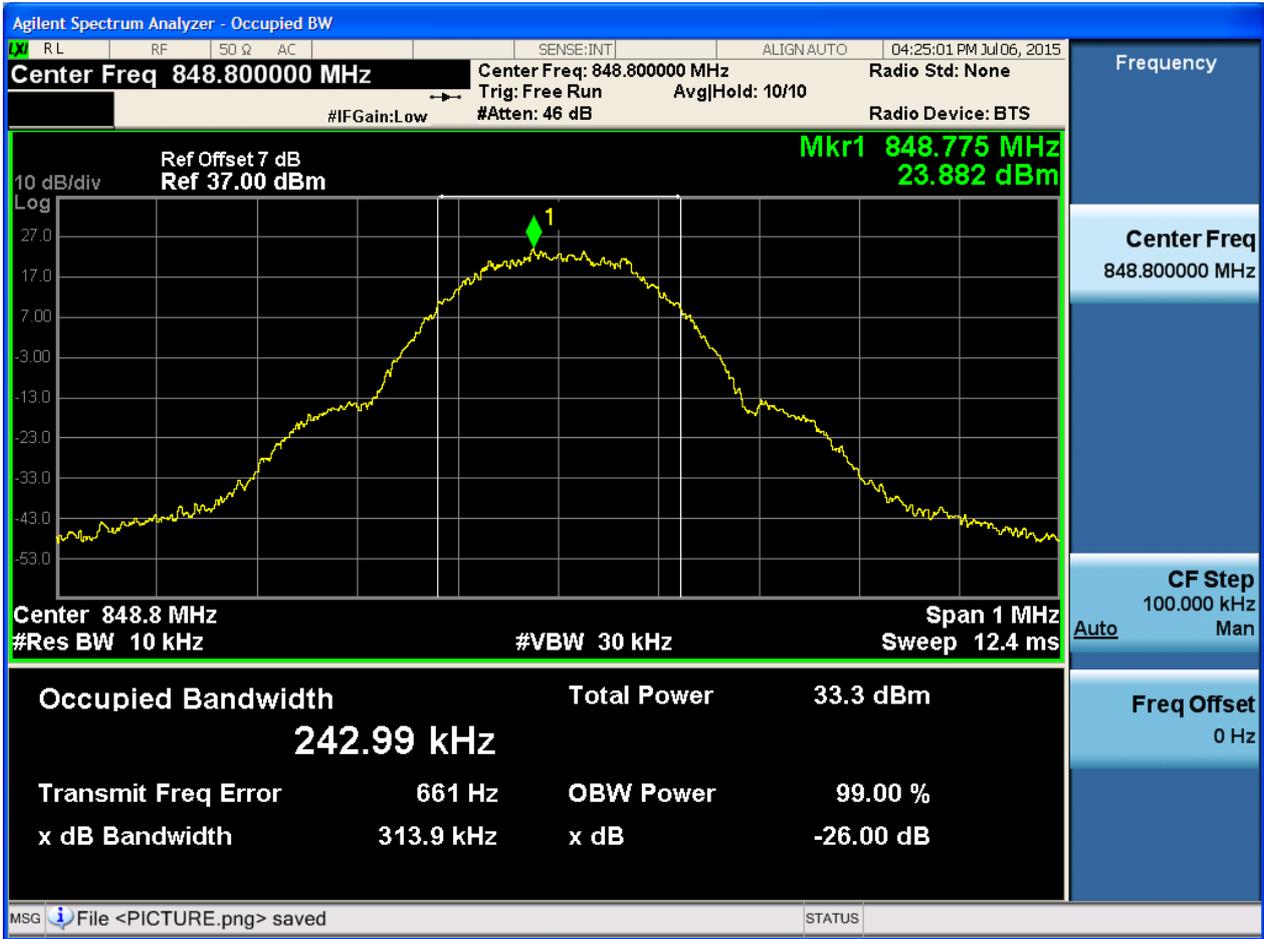


4.1.1.1.2 Test Channel = MCH





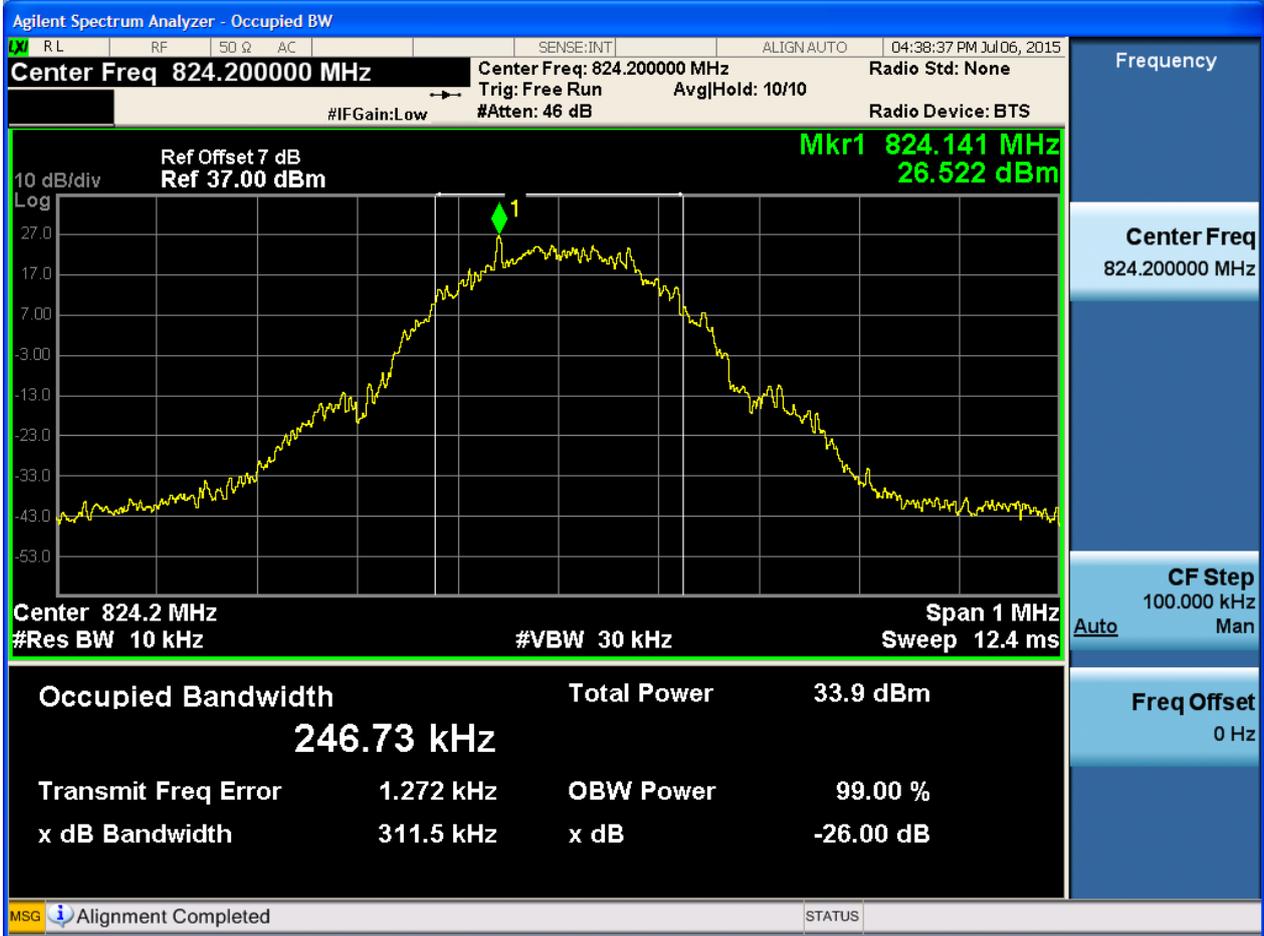
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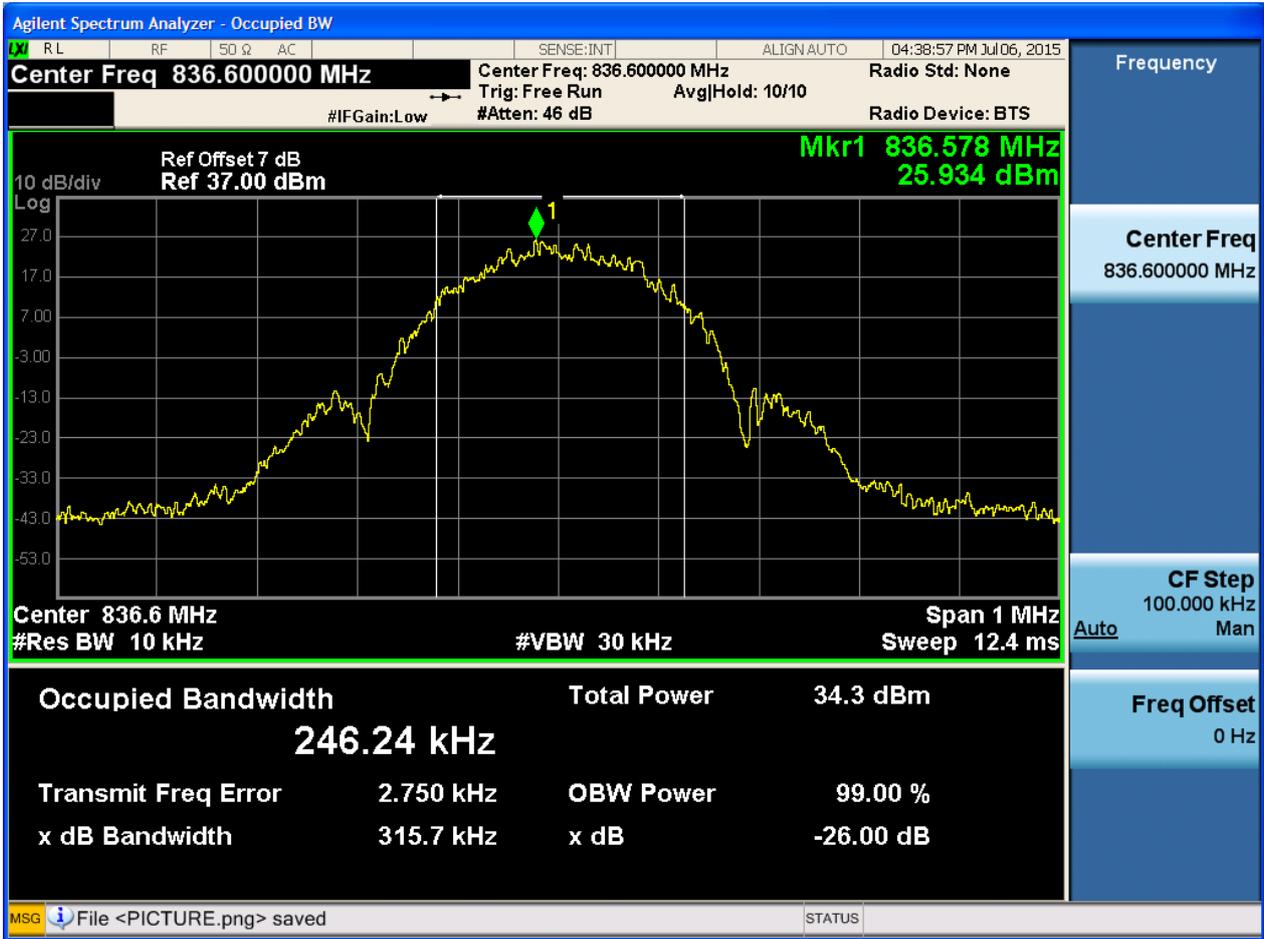
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4.1.1.2.1 Test Channel = LCH



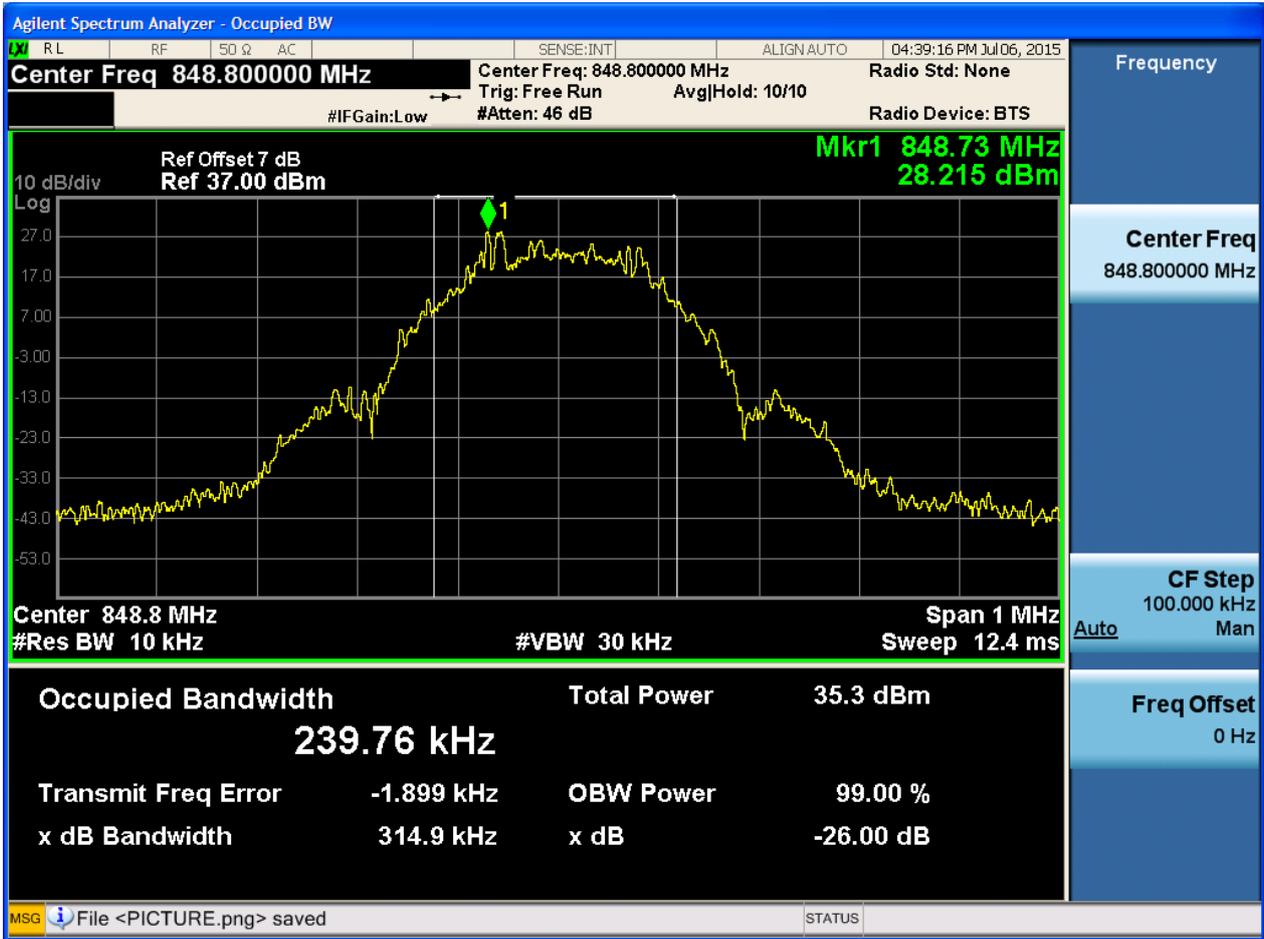


4.1.1.2.2 Test Channel = MCH





4.1.1.2.3 Test Channel = HCH





4.1.2 Test Band = GSM1900

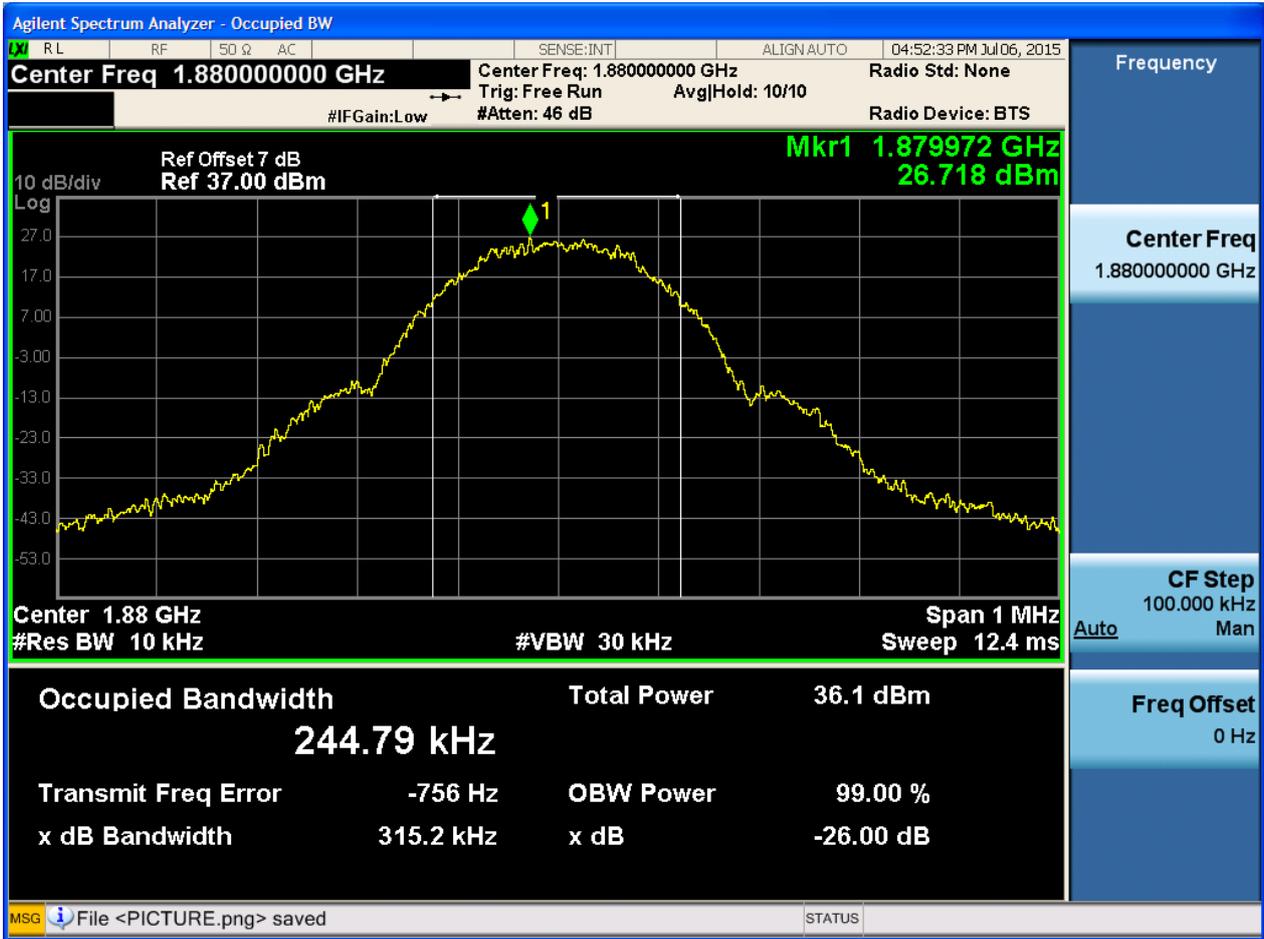
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



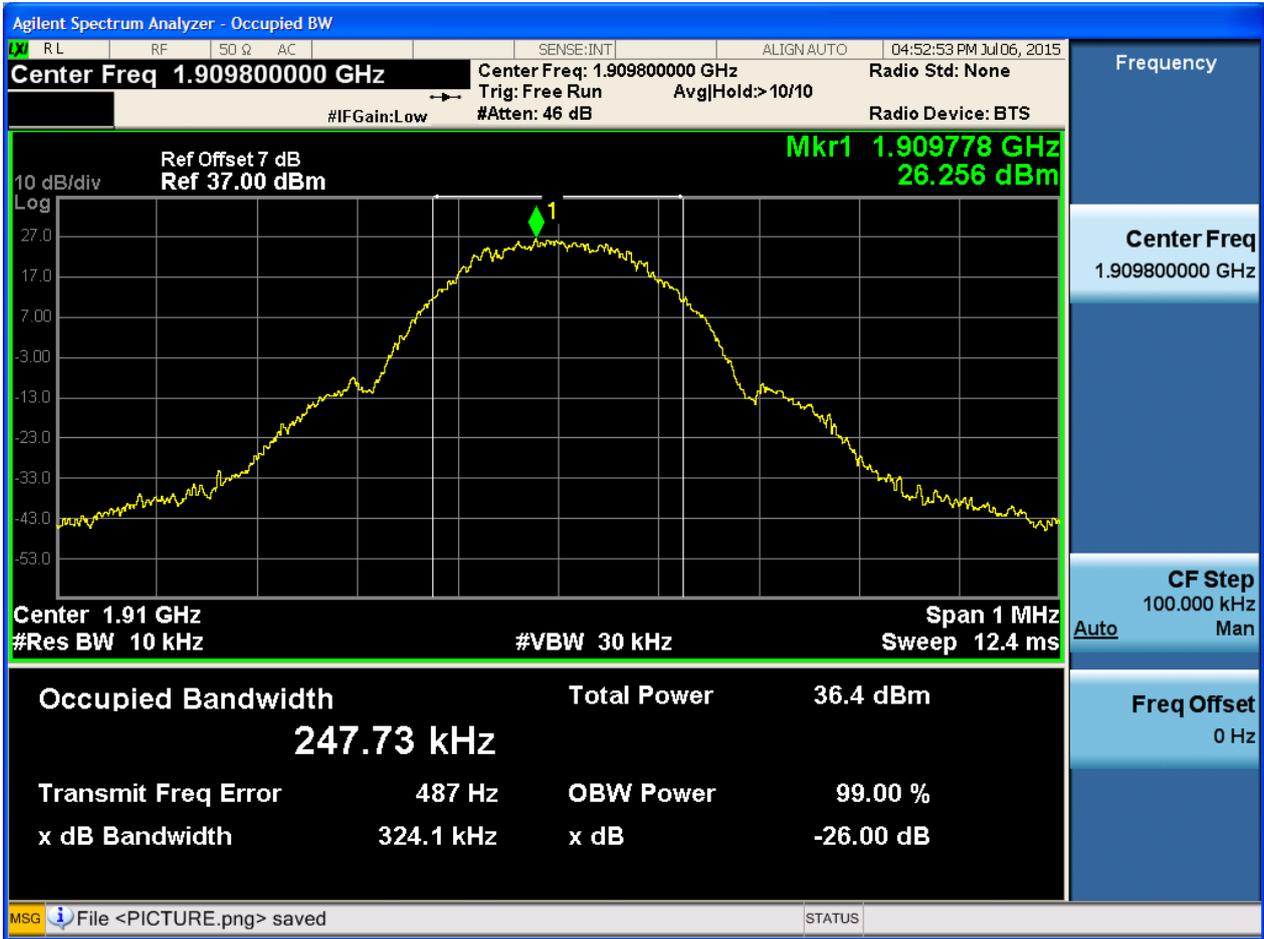


4.1.2.1.2 Test Channel = MCH





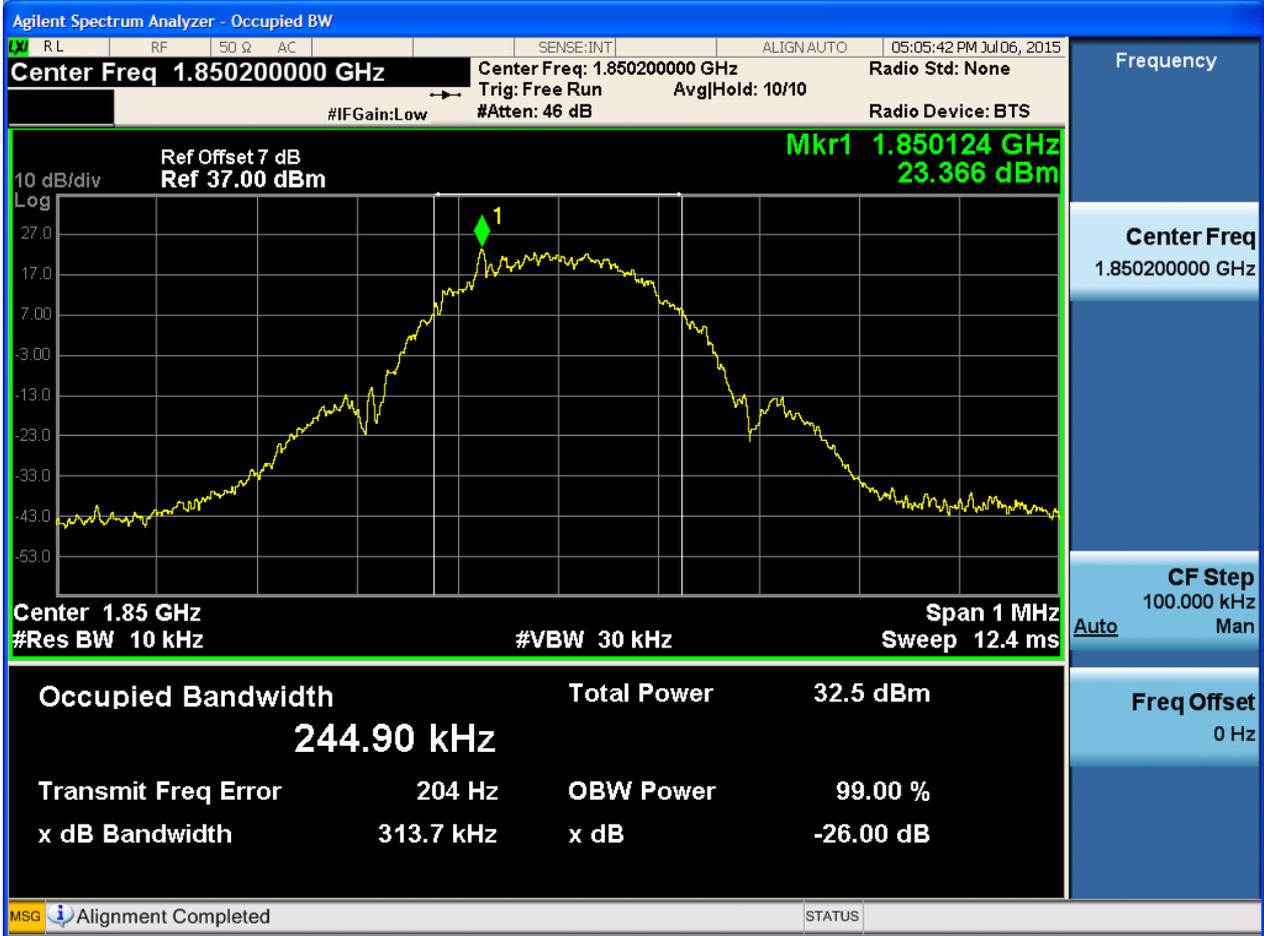
4.1.2.1.3 Test Channel = HCH





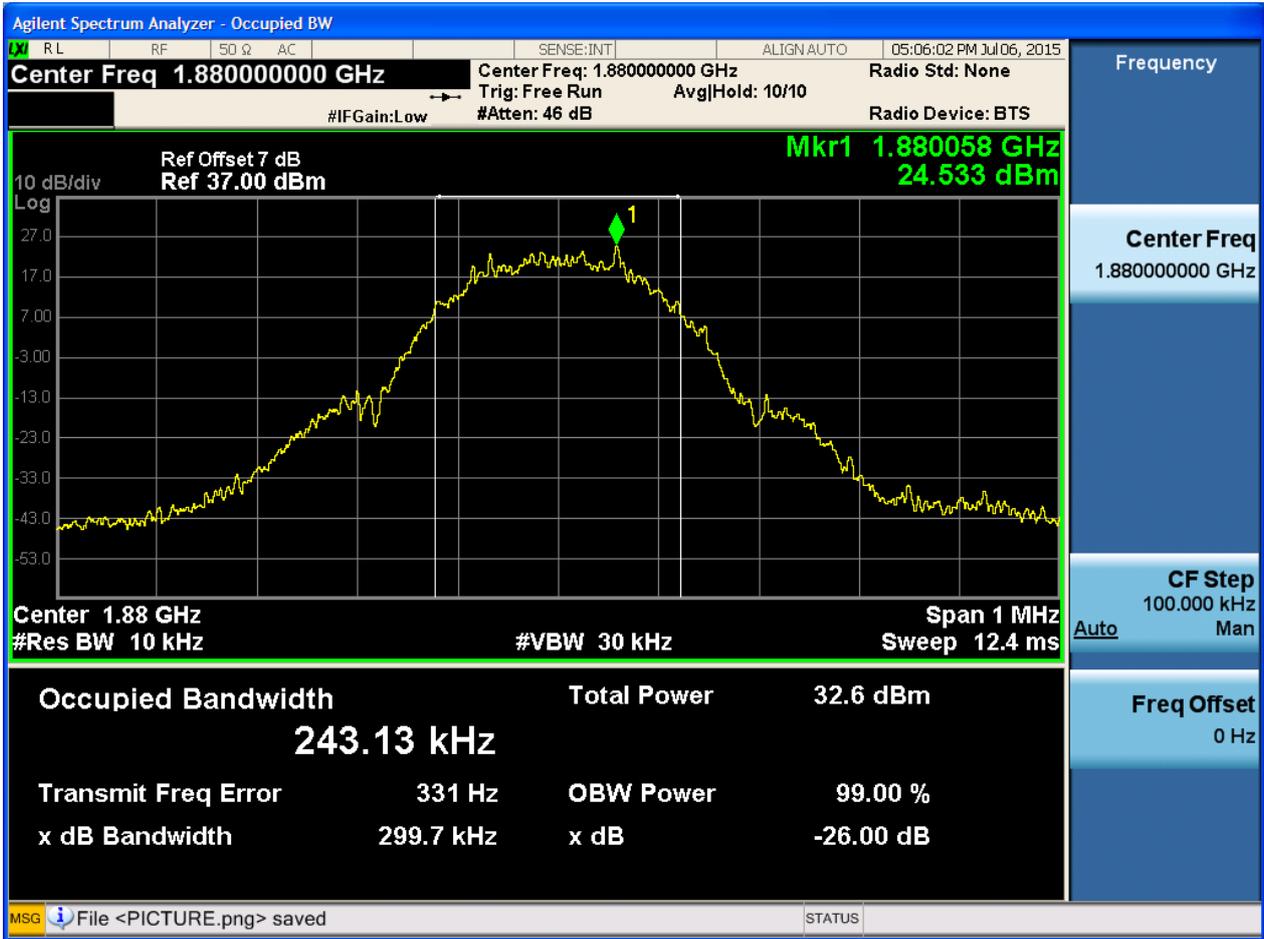
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



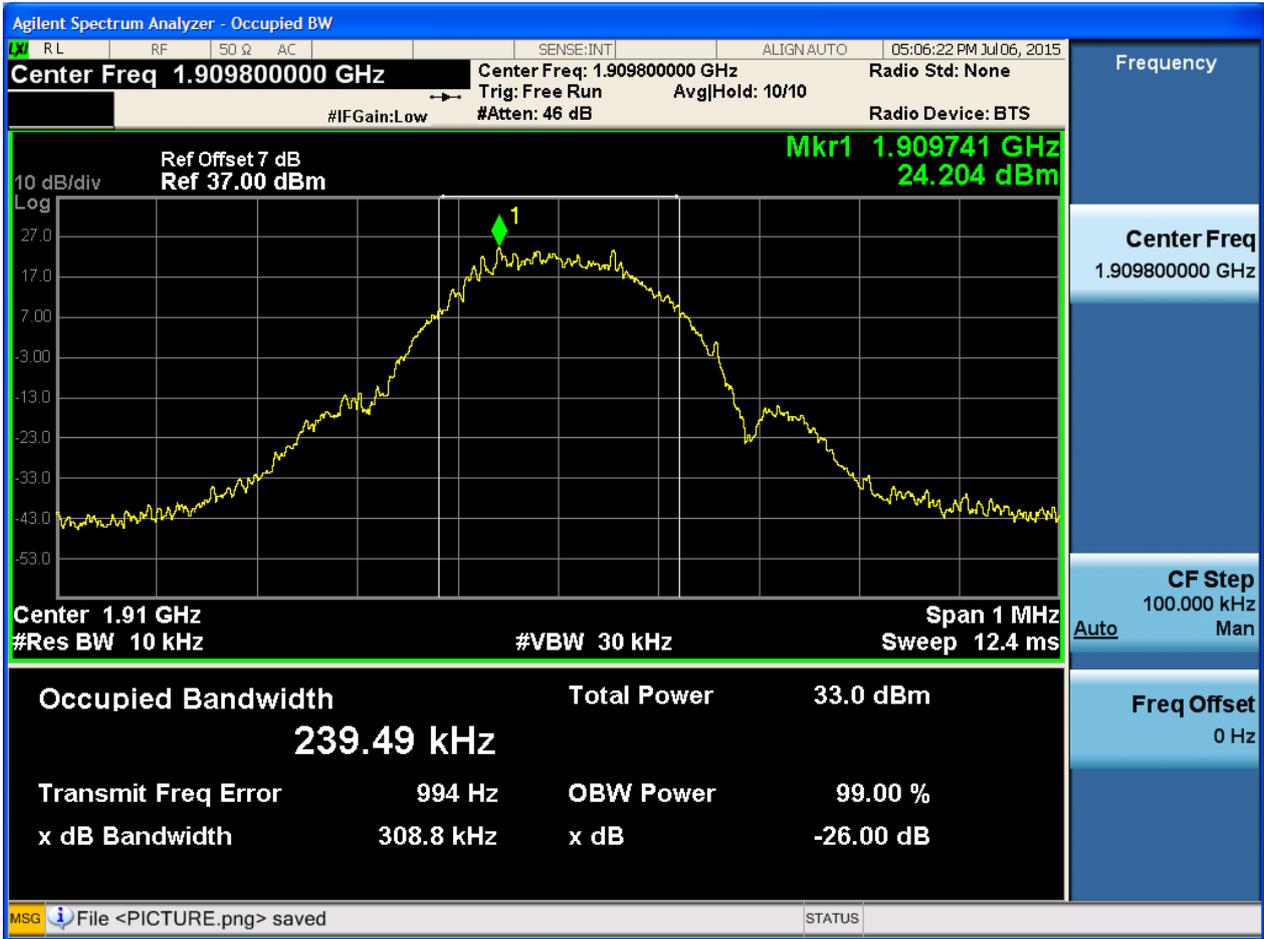


4.1.2.2.2 Test Channel = MCH





4.1.2.2.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

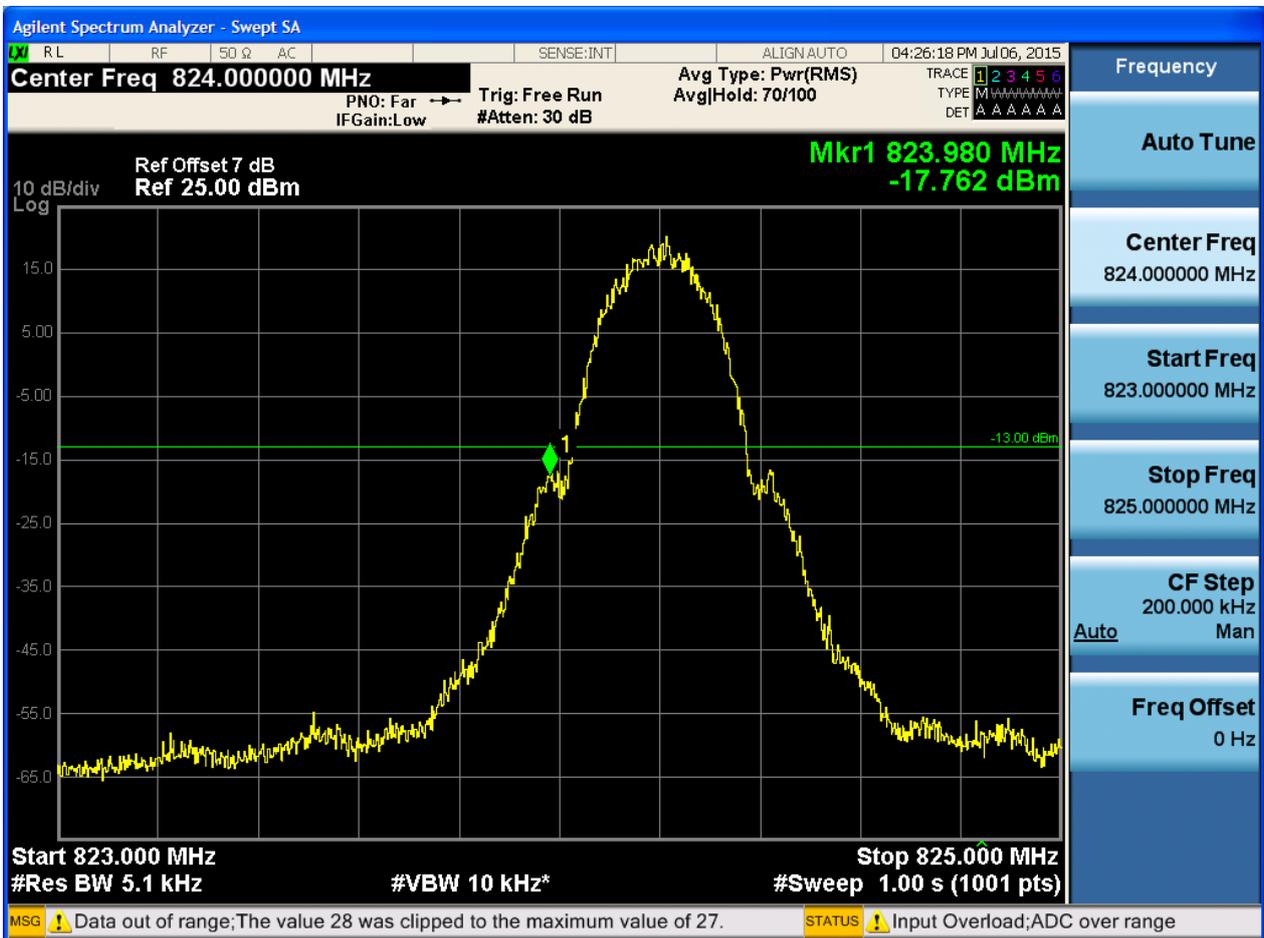
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM850

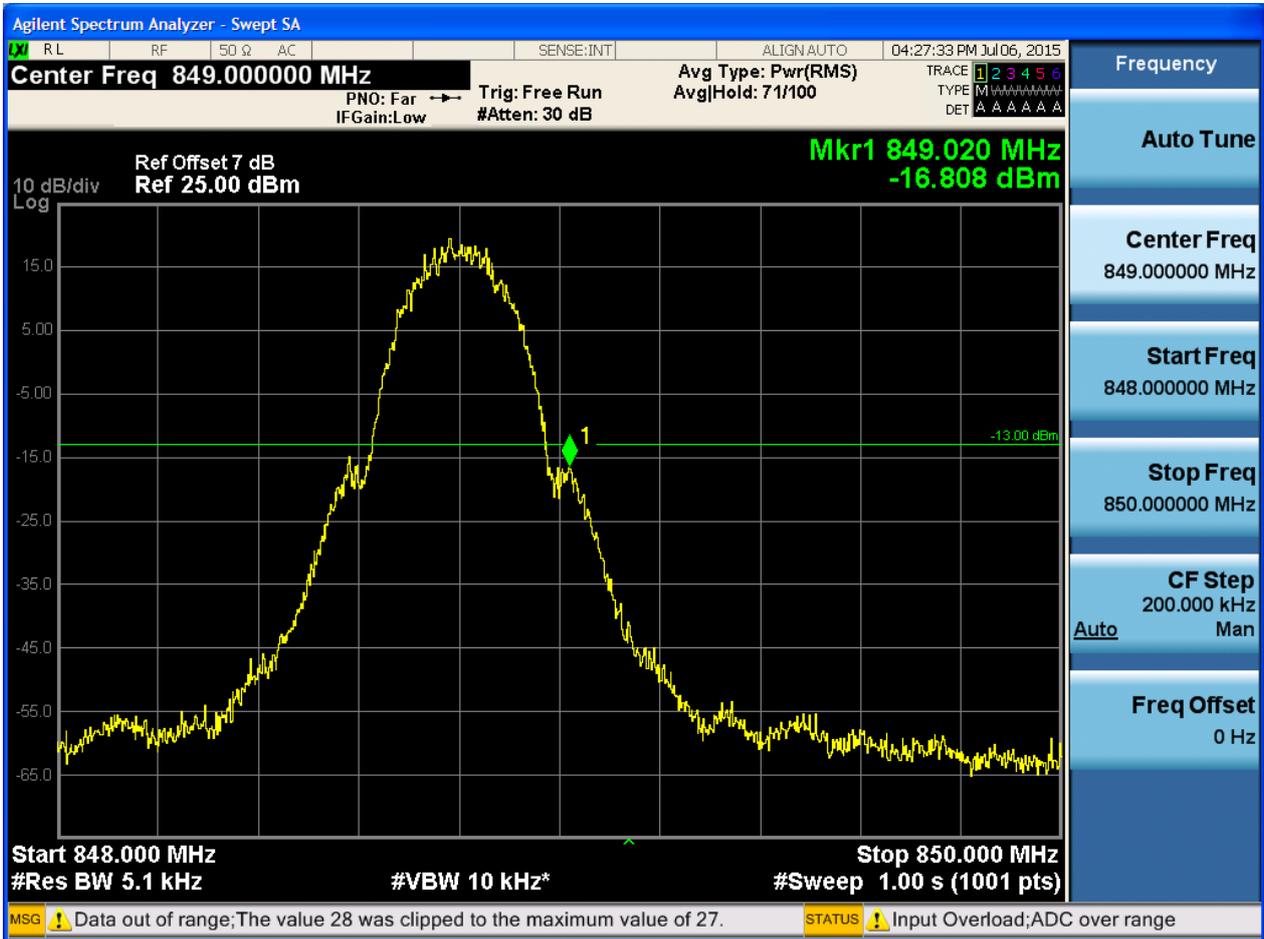
5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH





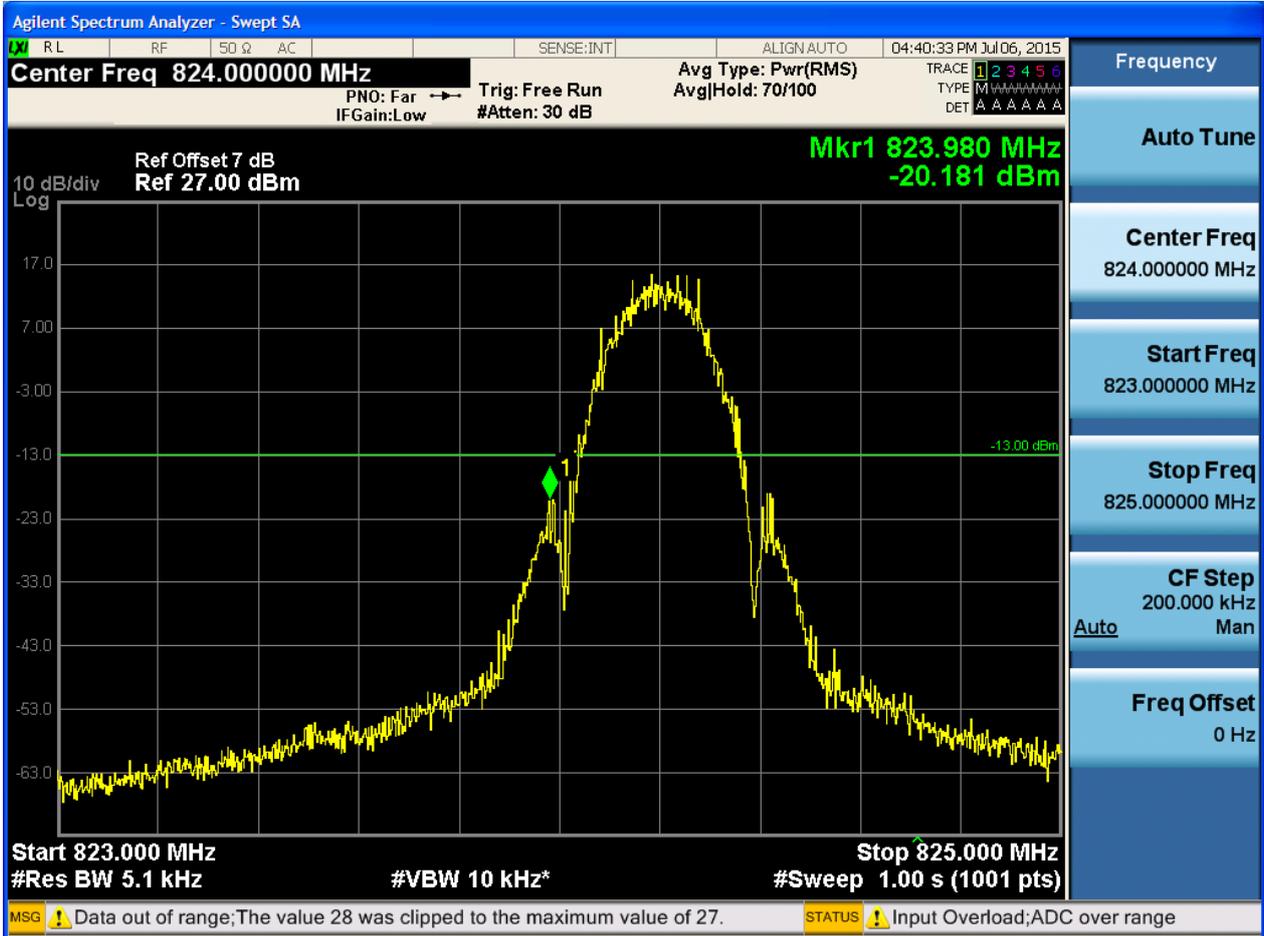
5.1.1.1.2 Test Channel = HCH





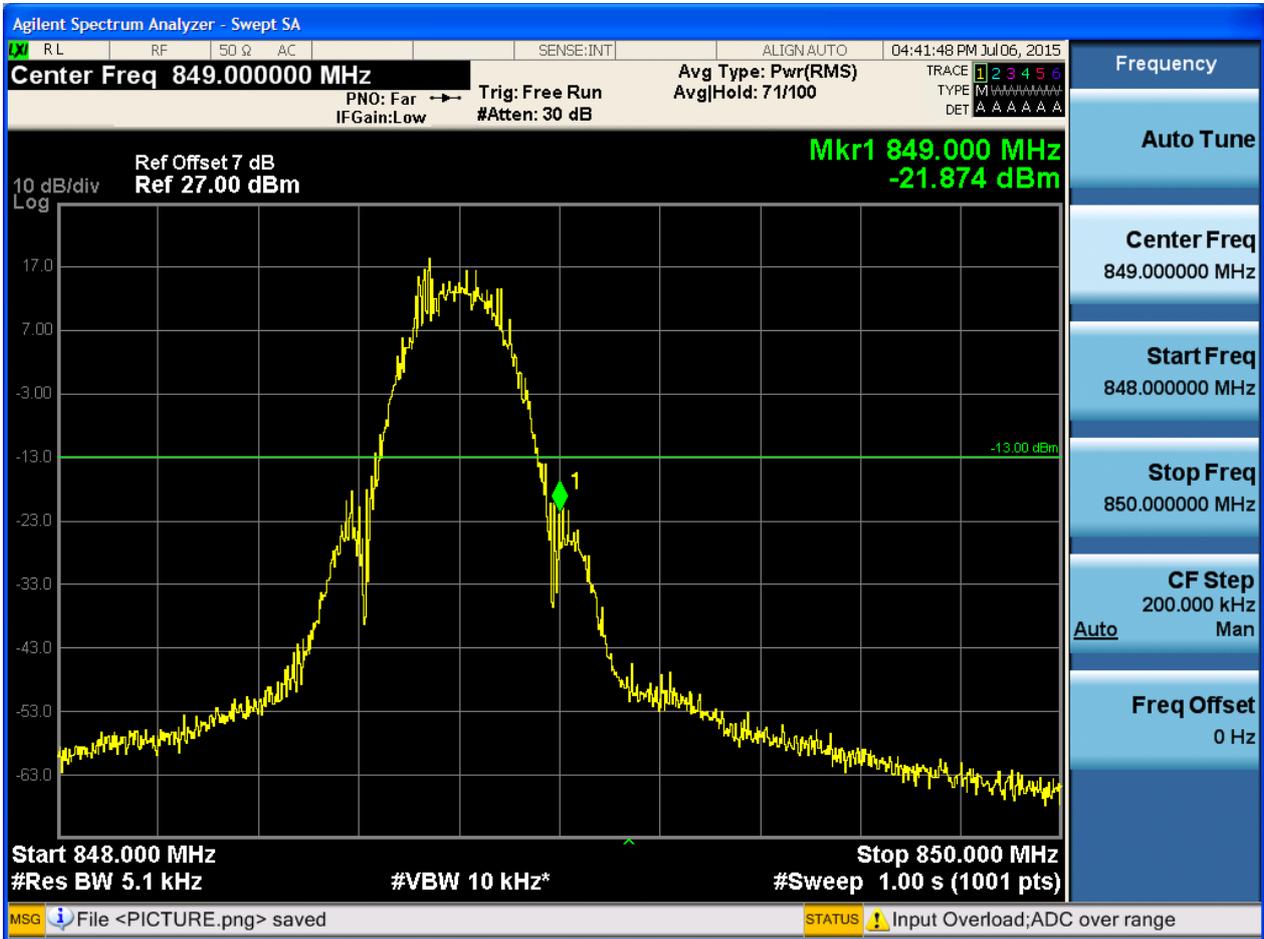
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5.1.1.2.1 Test Channel = LCH





5.1.1.2.2 Test Channel = HCH

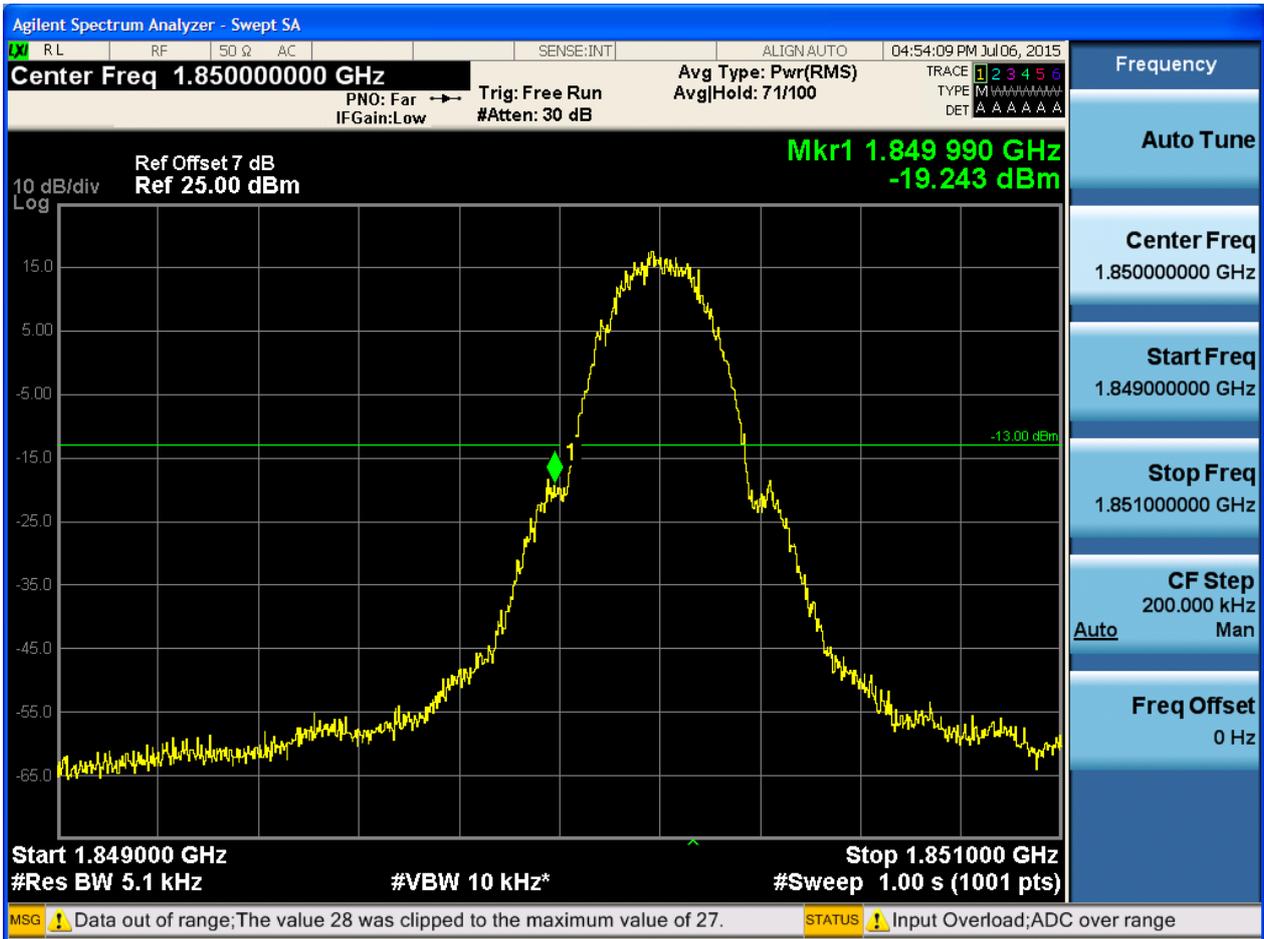




5.1.2 Test Band = GSM1900

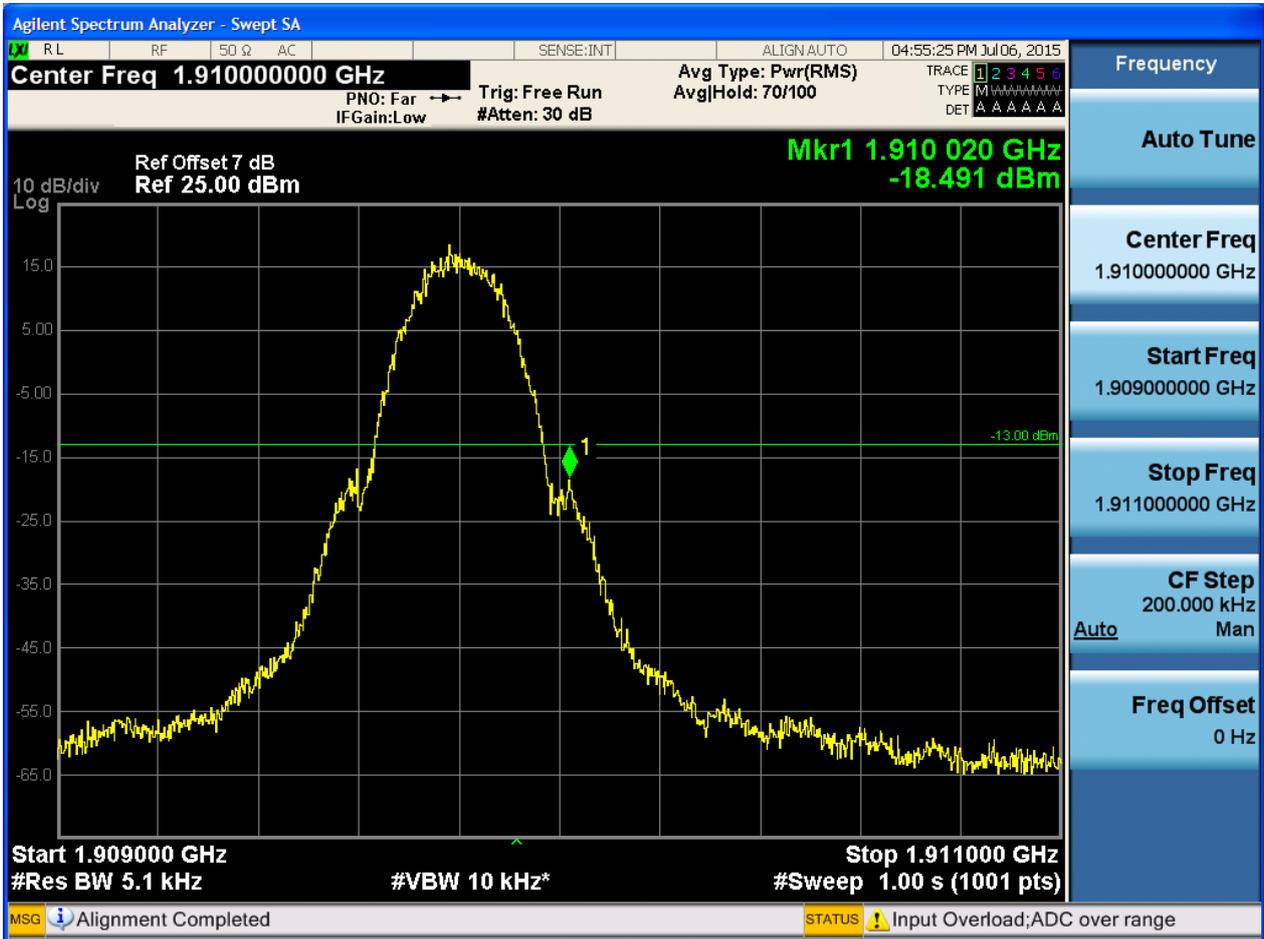
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5.1.2.1.1 Test Channel = LCH





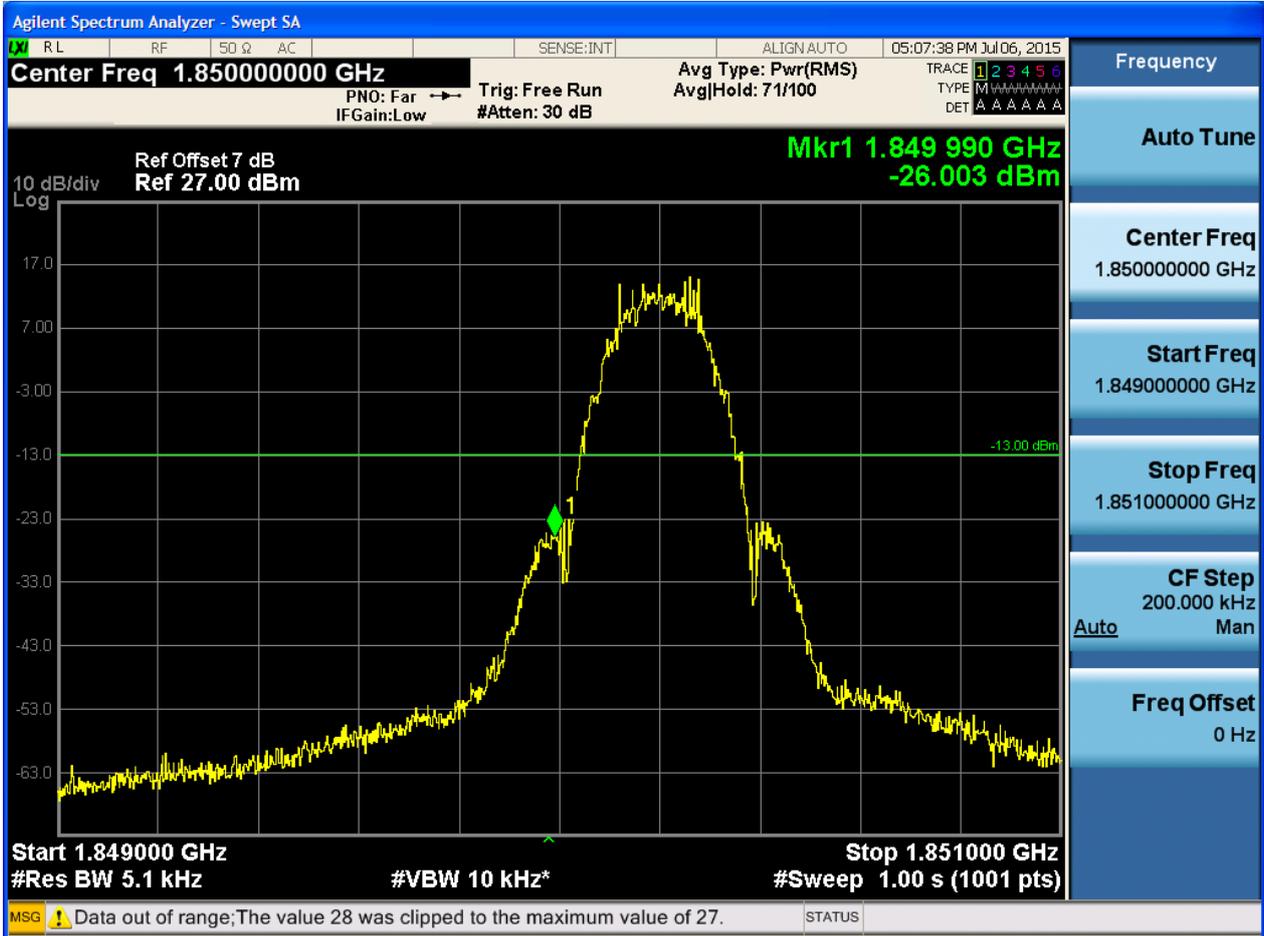
5.1.2.1.2 Test Channel = HCH





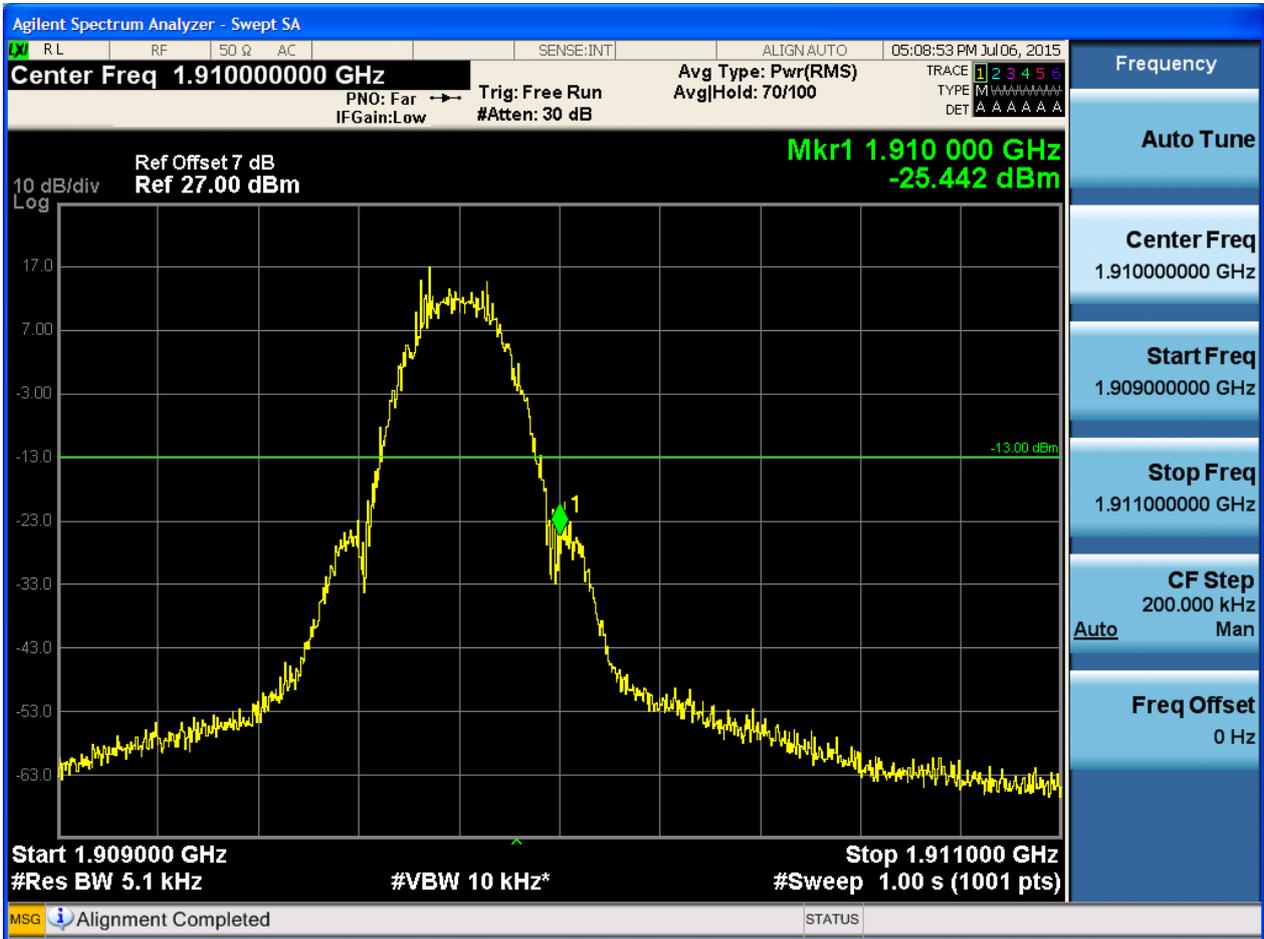
5.1.2.2 Test Mode = GSM/TM2

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.

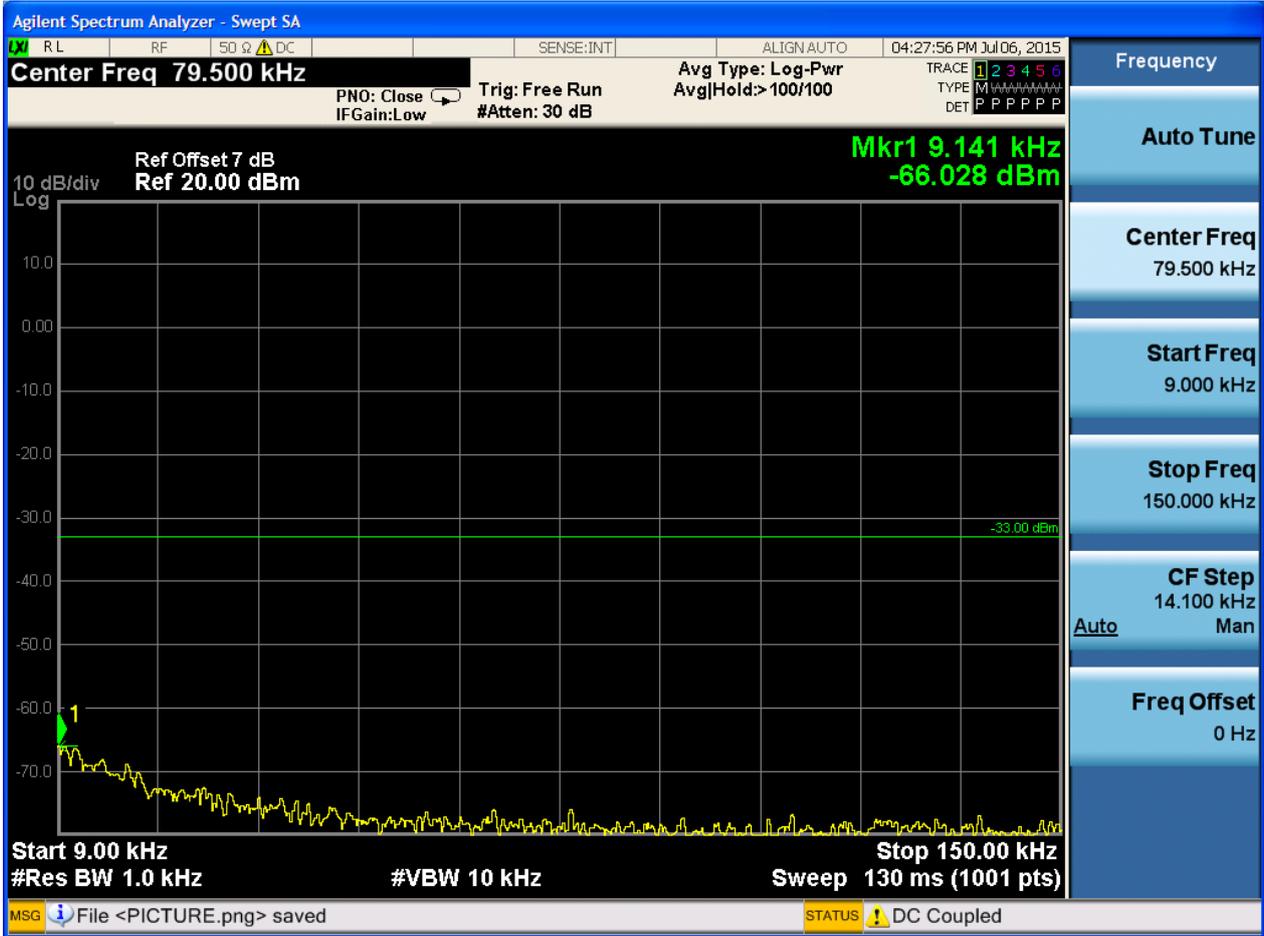
Part I - Test Plots

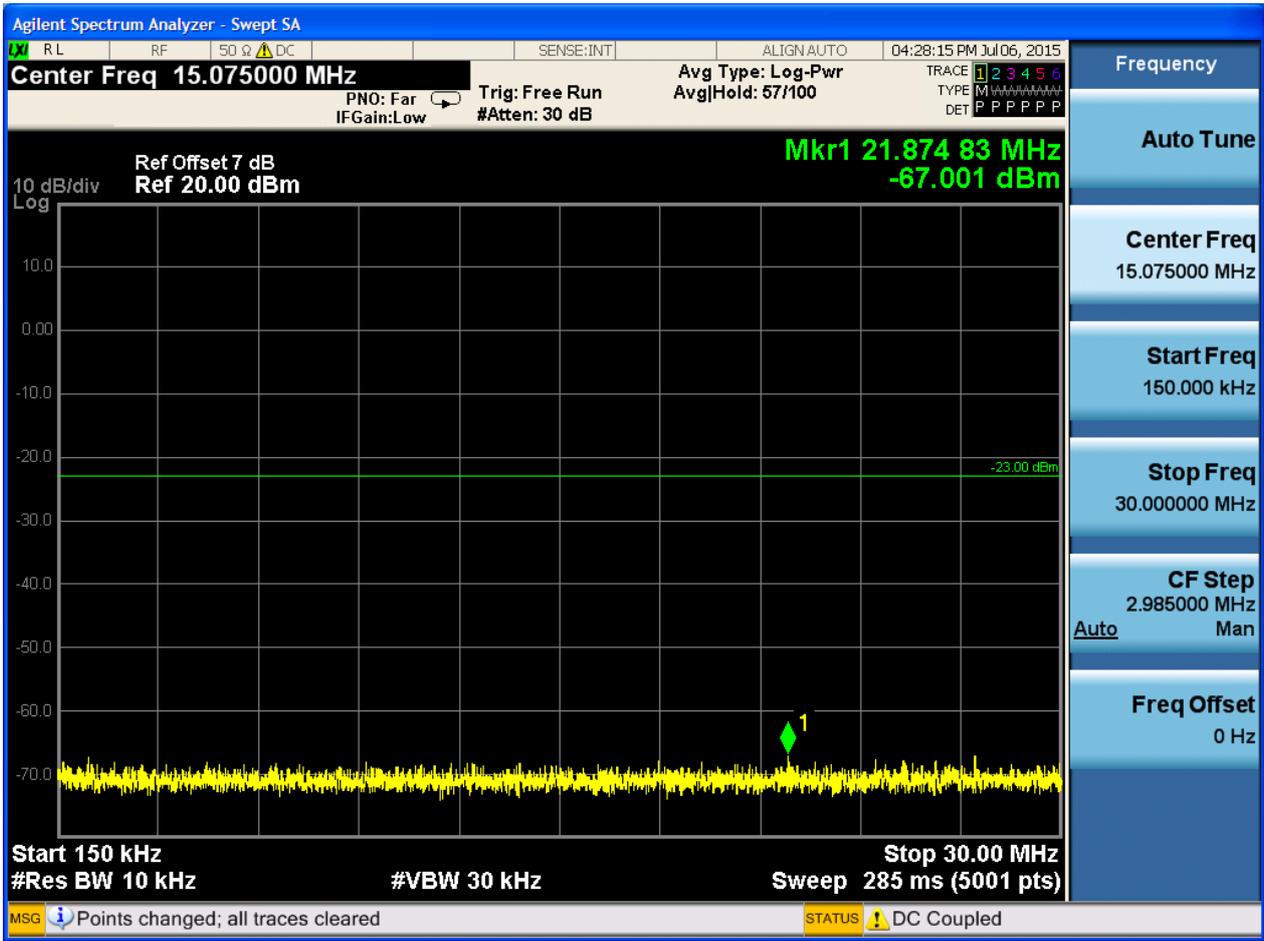
6.1 For GSM

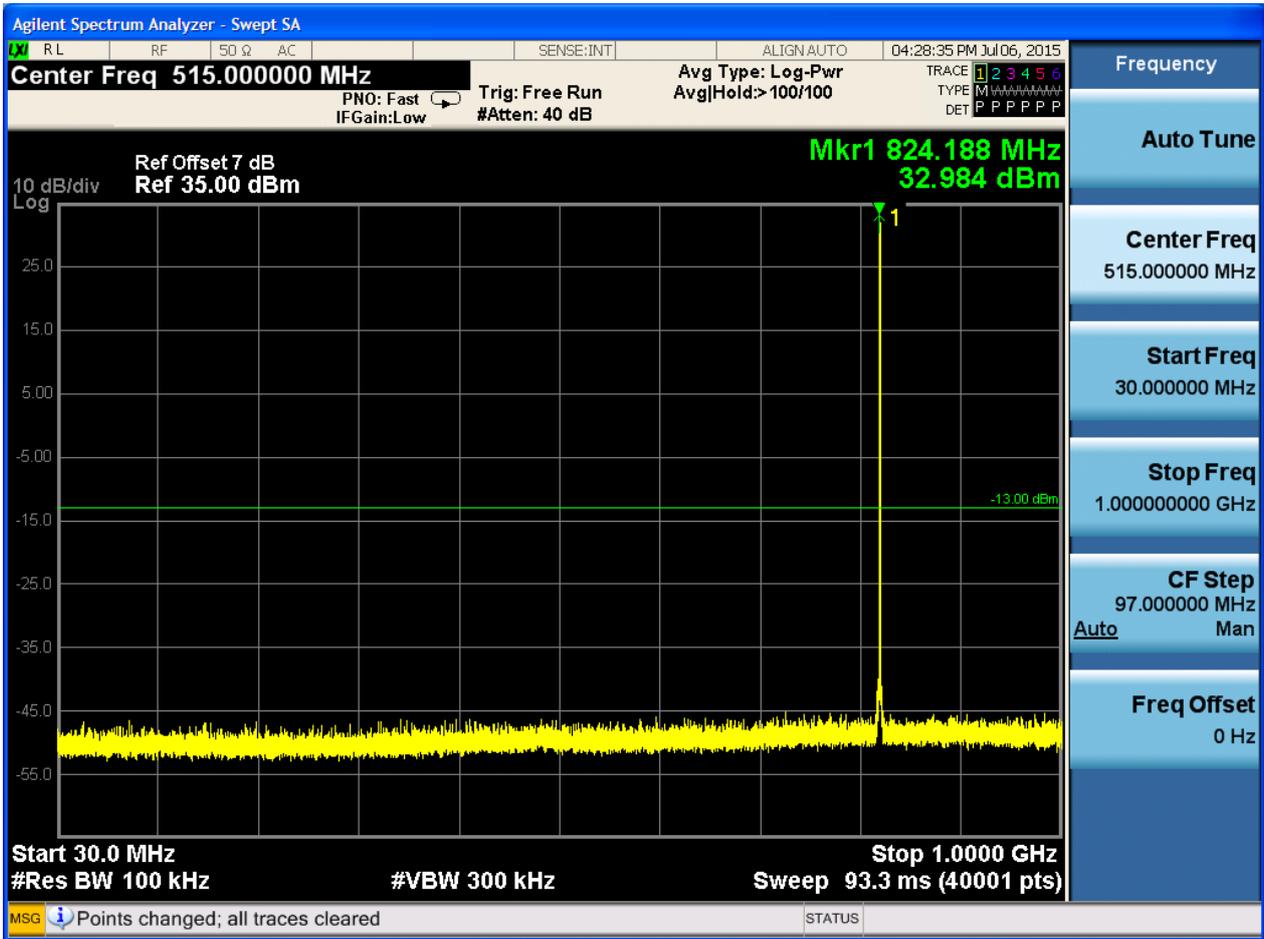
6.1.1 Test Band = GSM850

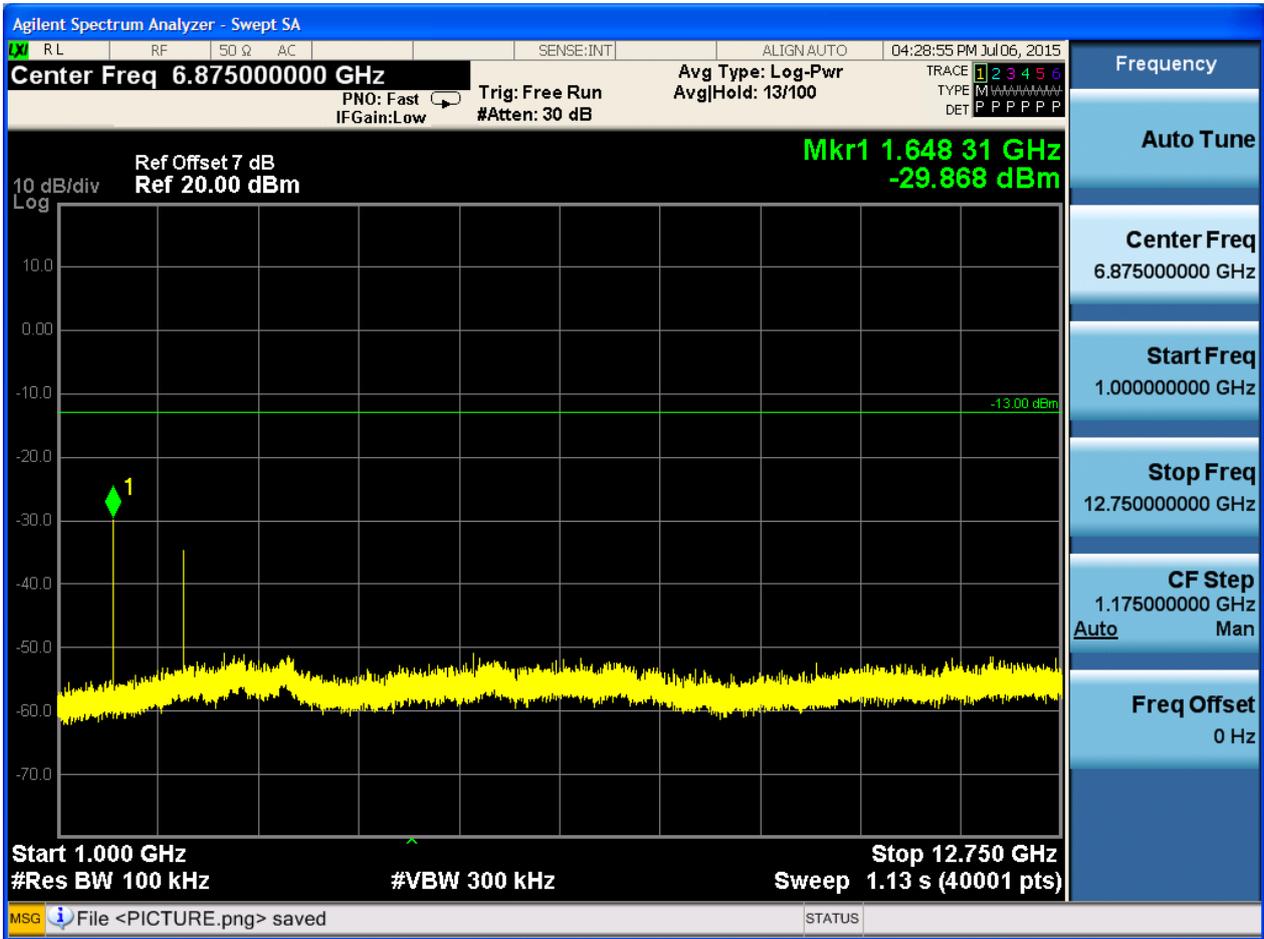
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

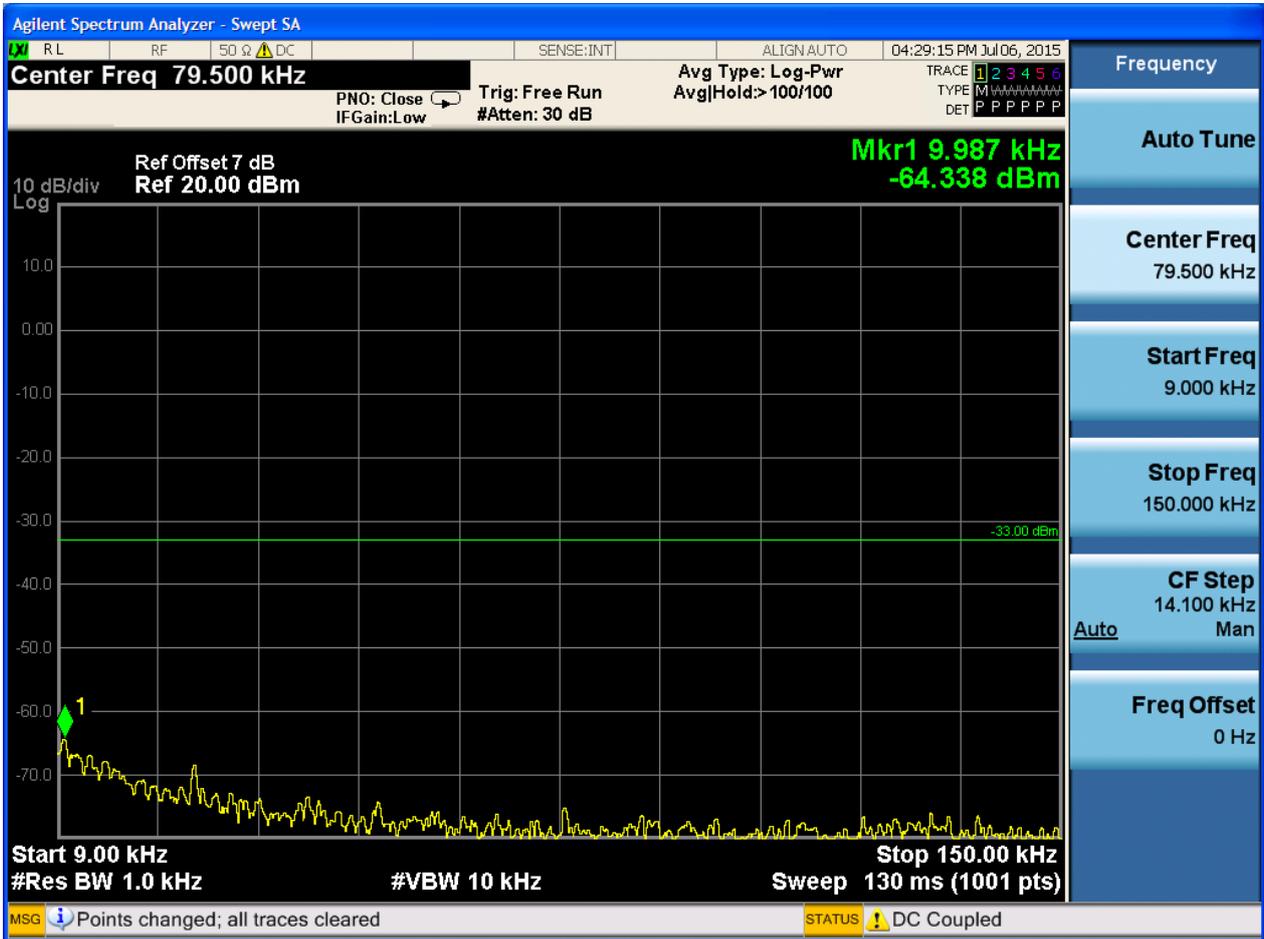


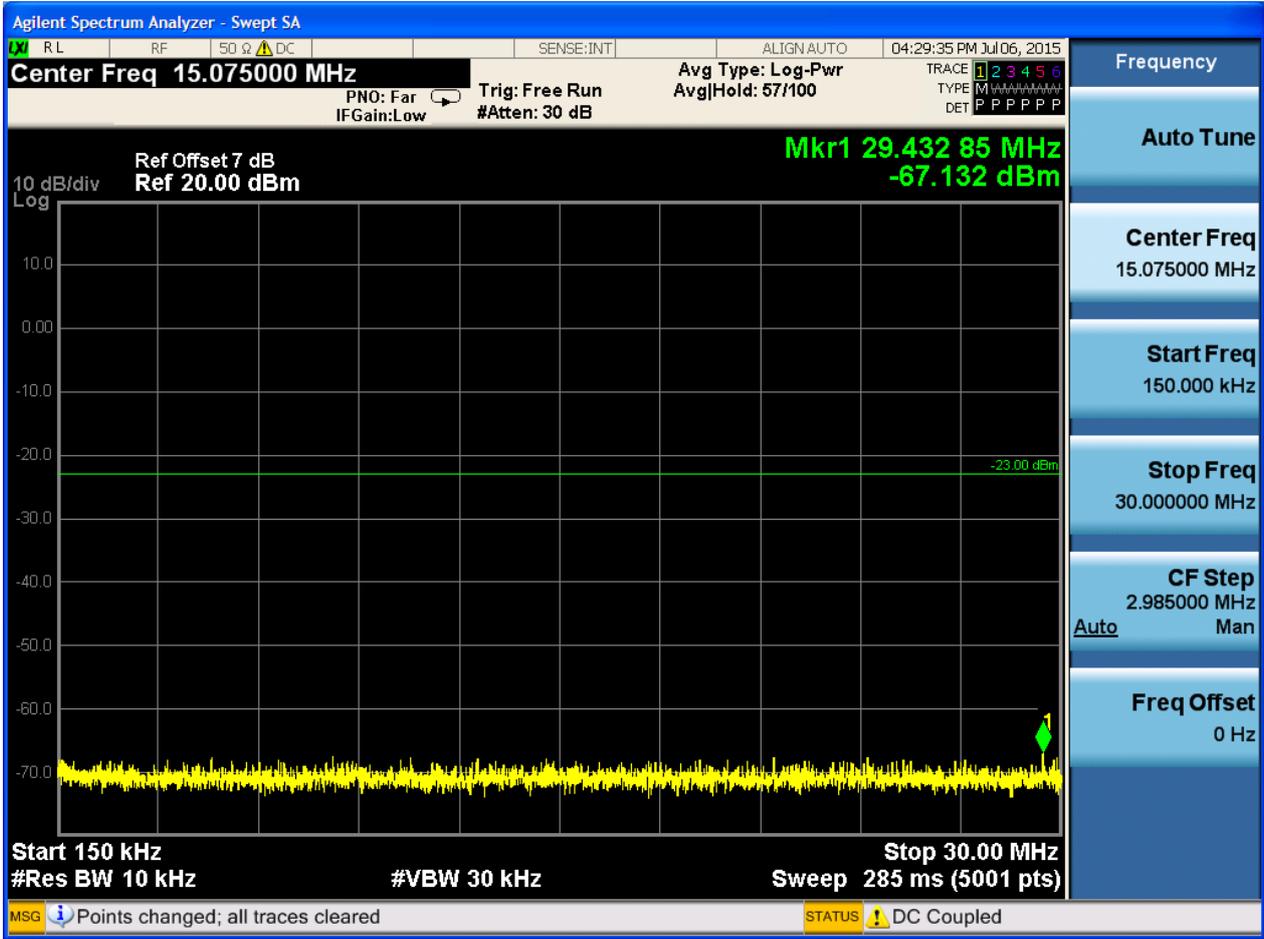


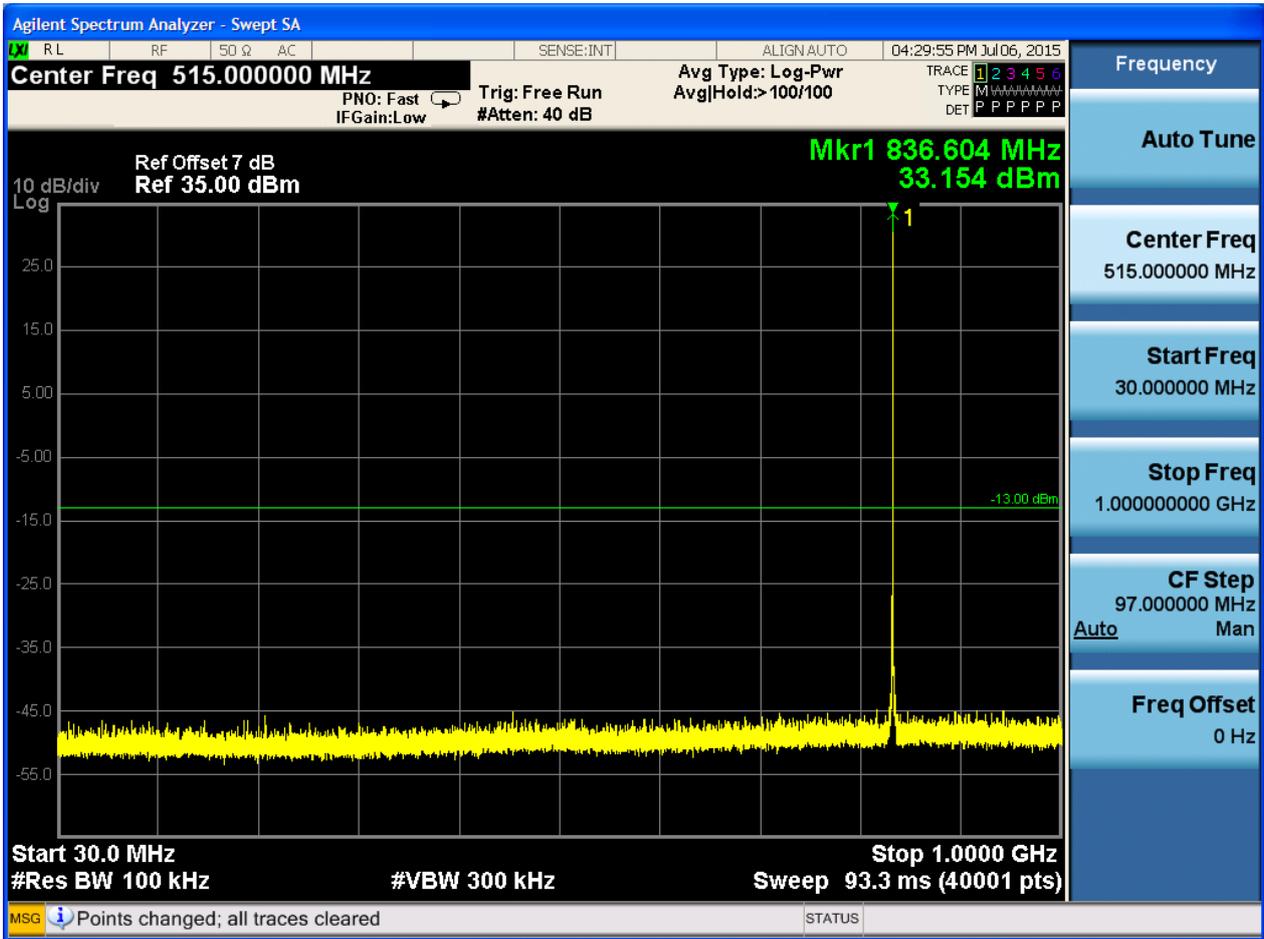


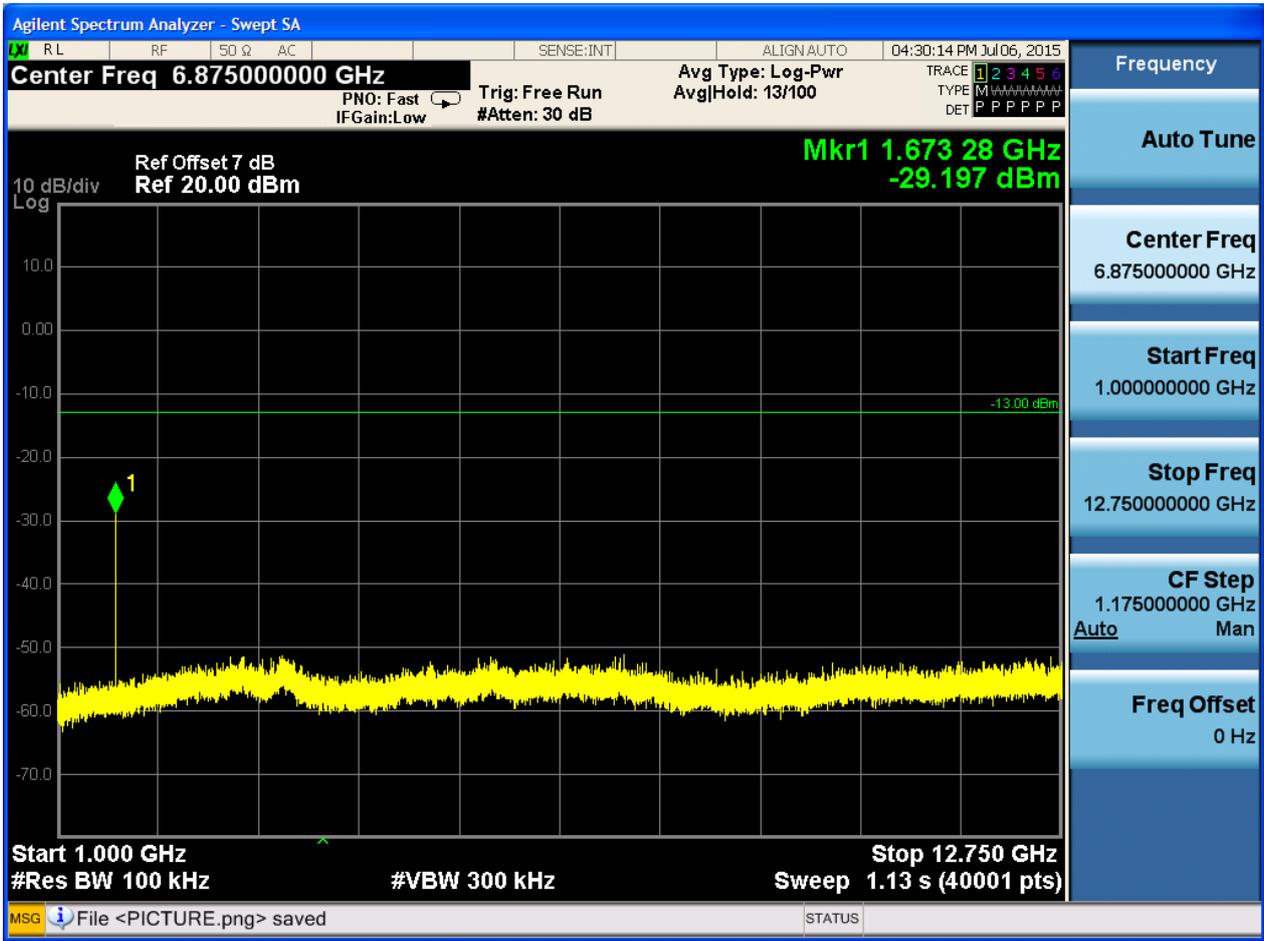


6.1.1.1.2 Test Channel = MCH

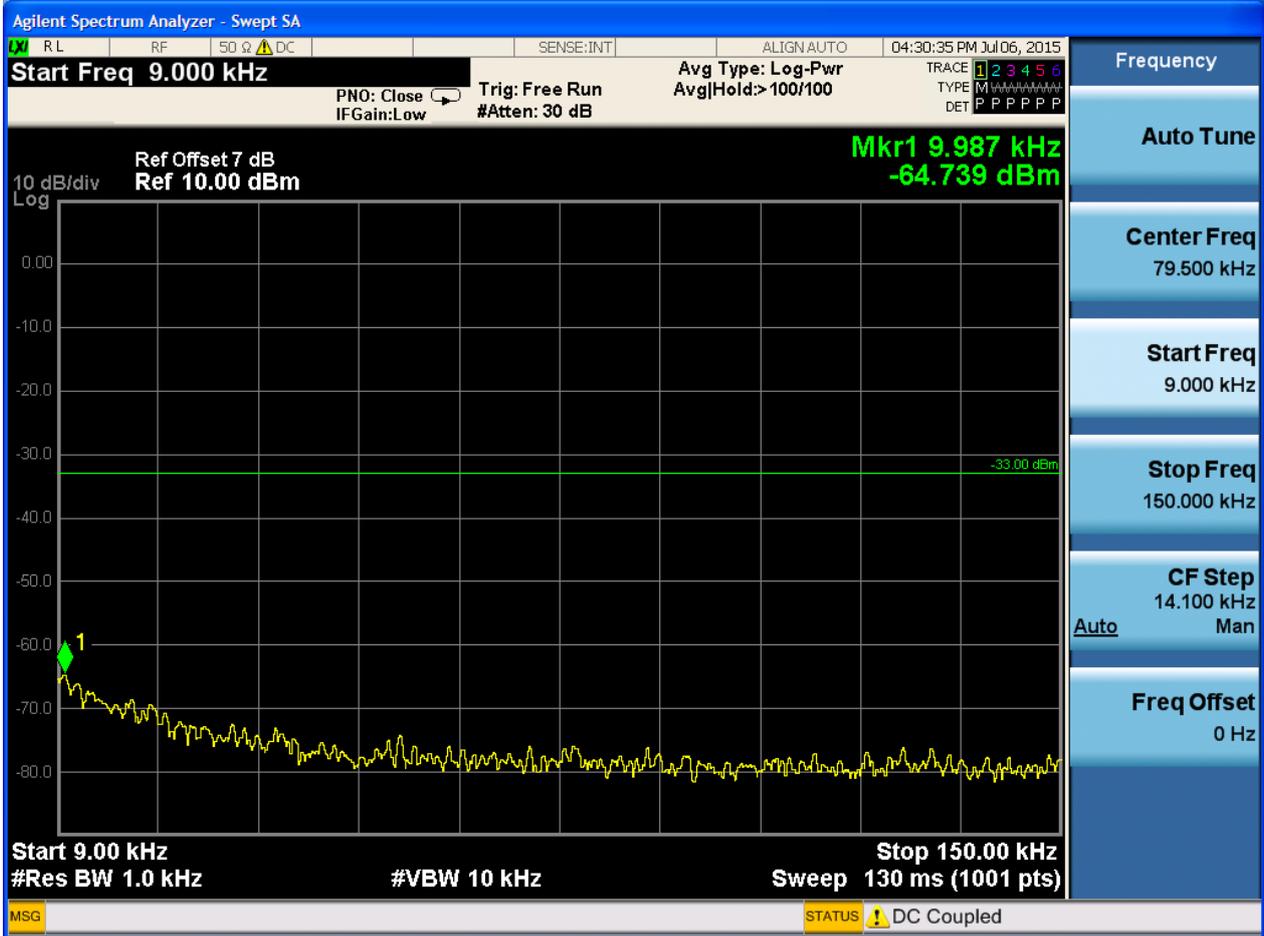


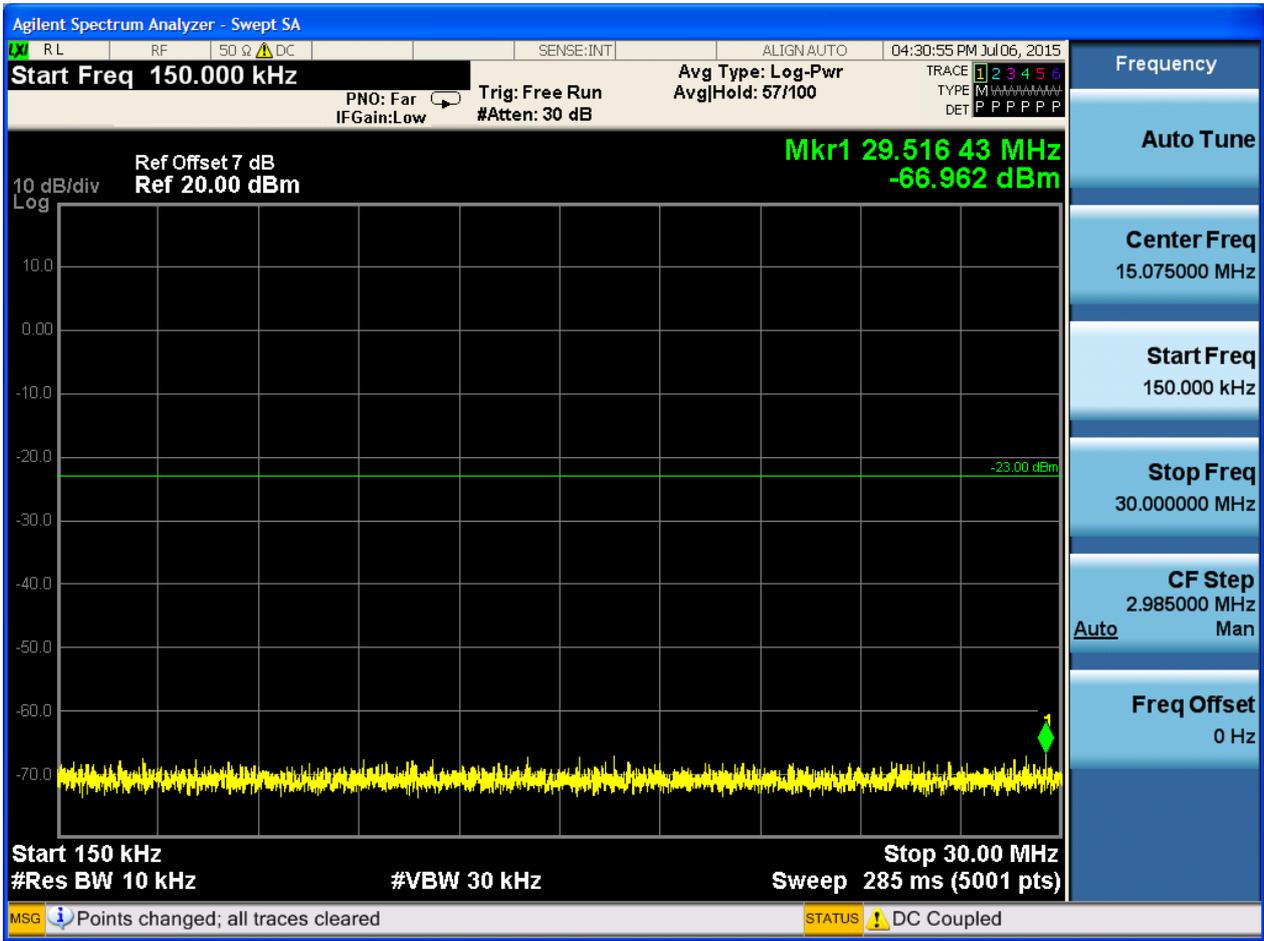


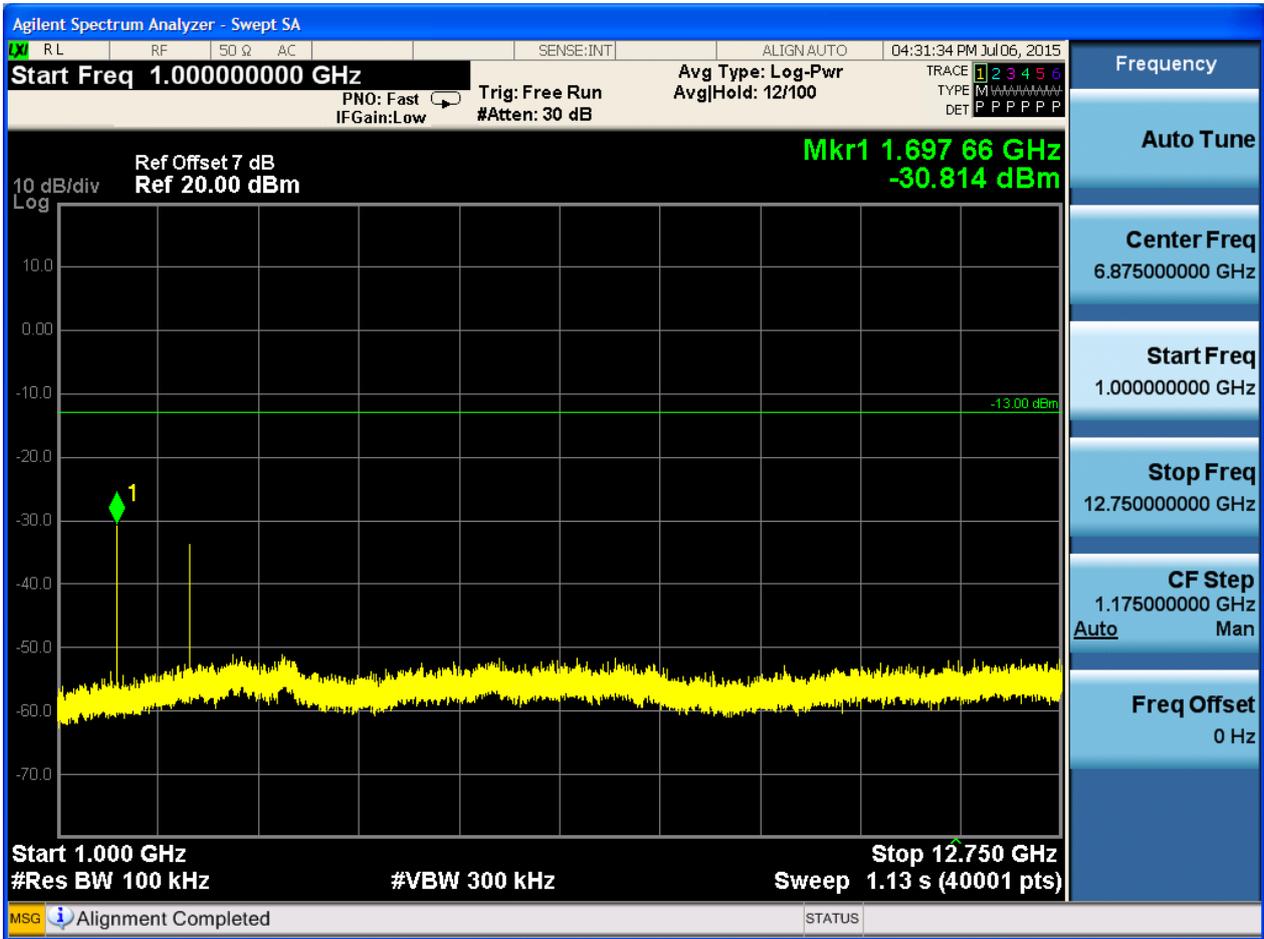




6.1.1.1.3 Test Channel = HCH



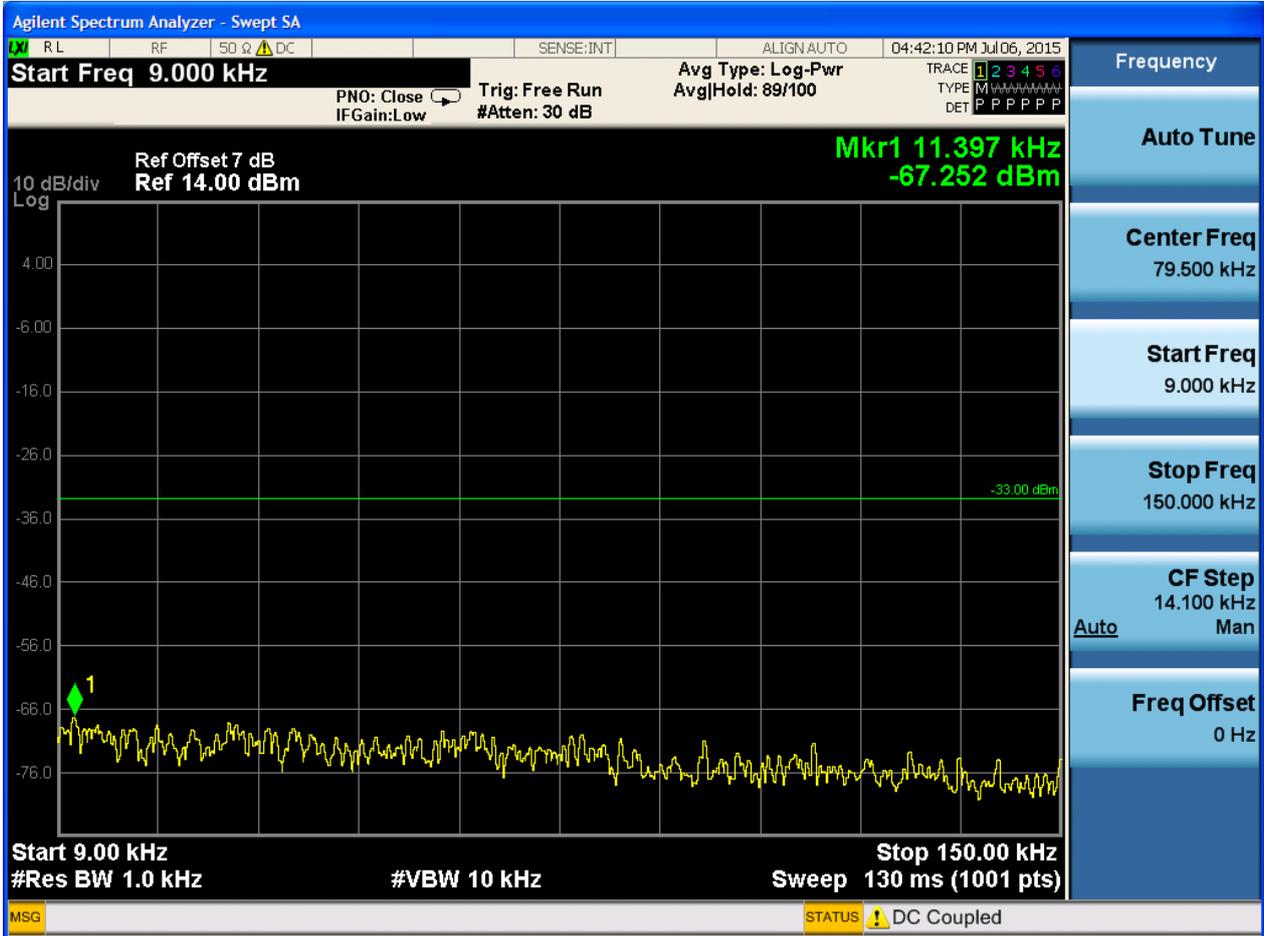


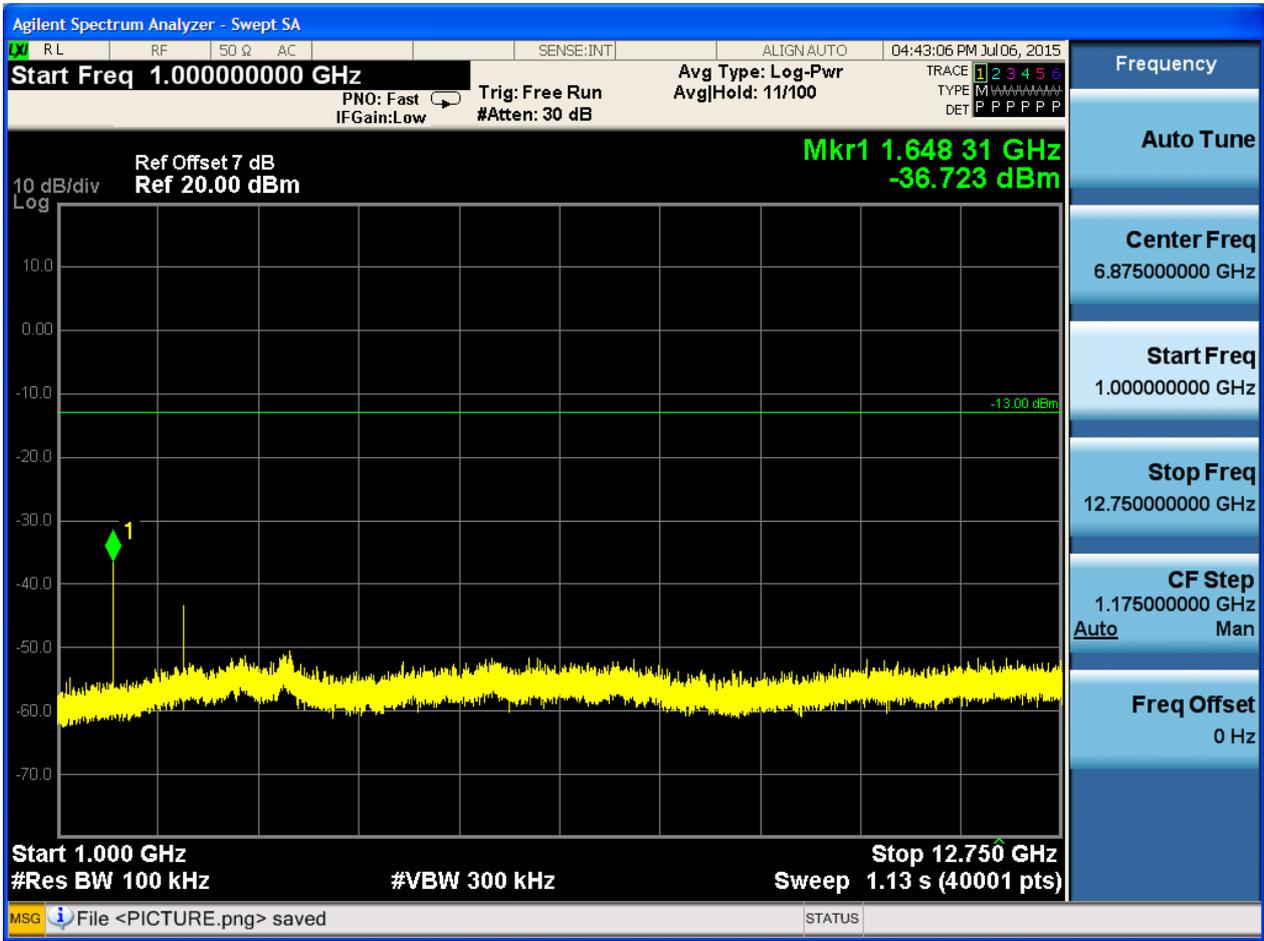




6.1.1.2 Test Mode = GSM/TM2

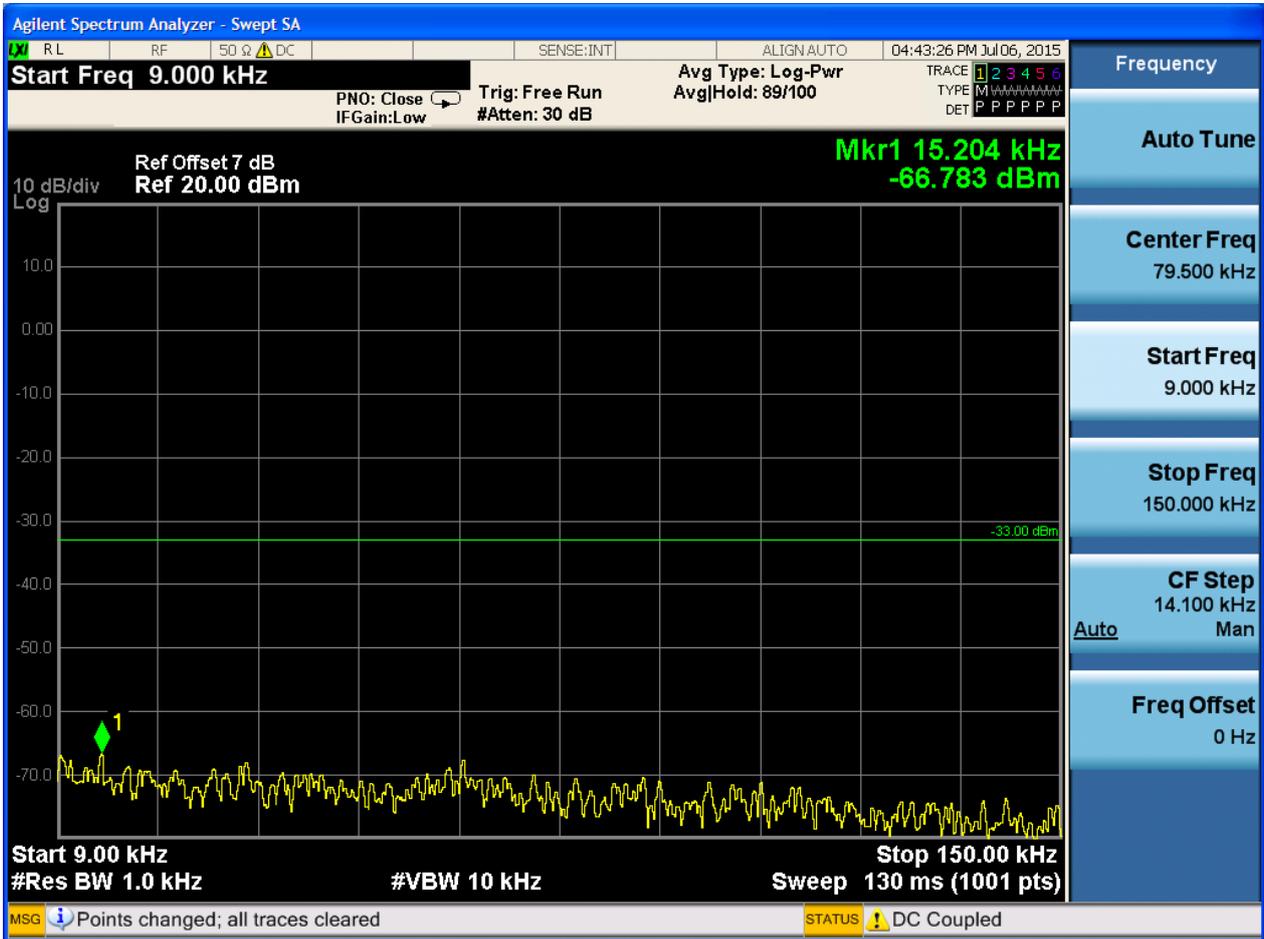
6.1.1.2.1 Test Channel = LCH

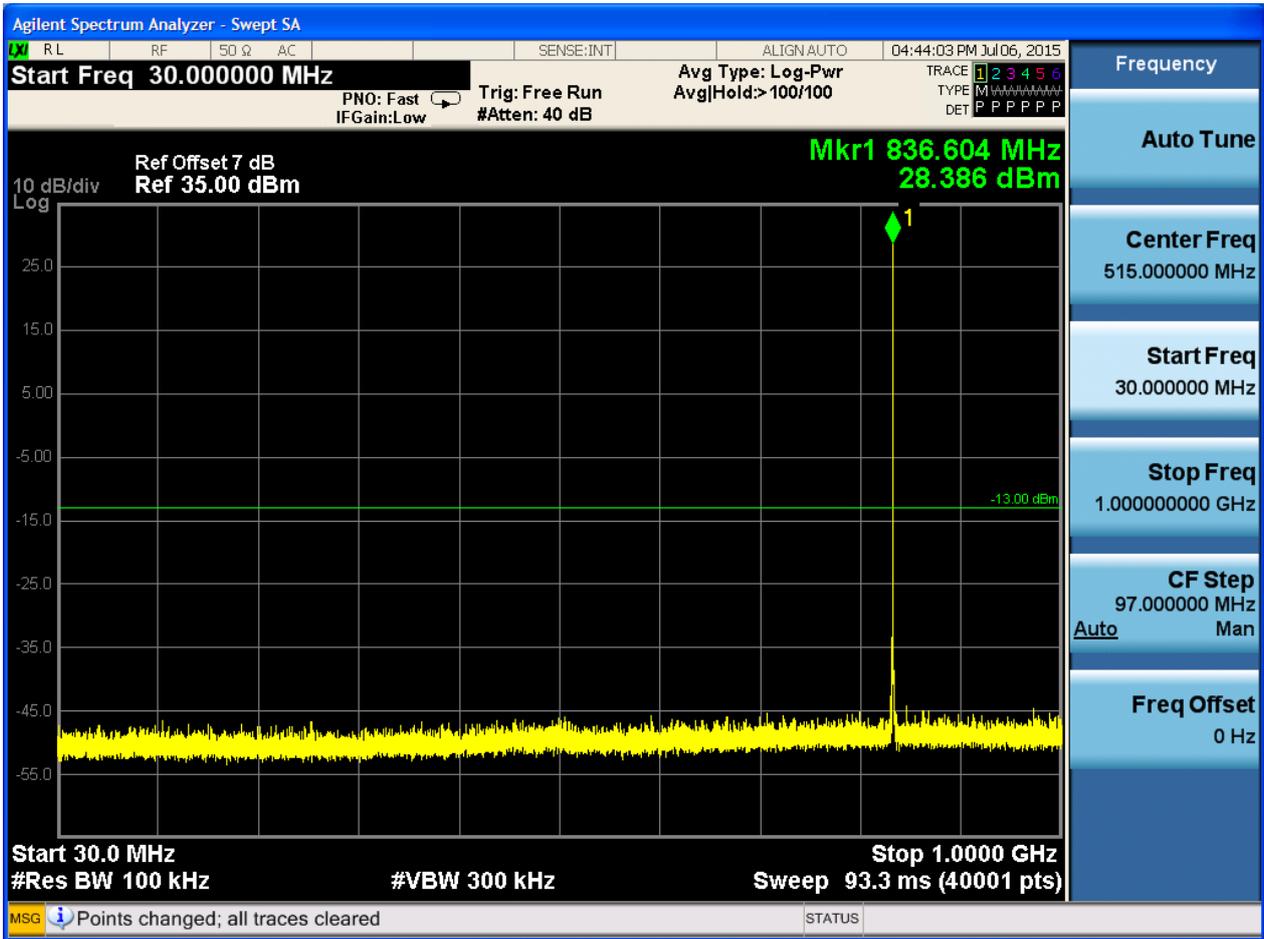


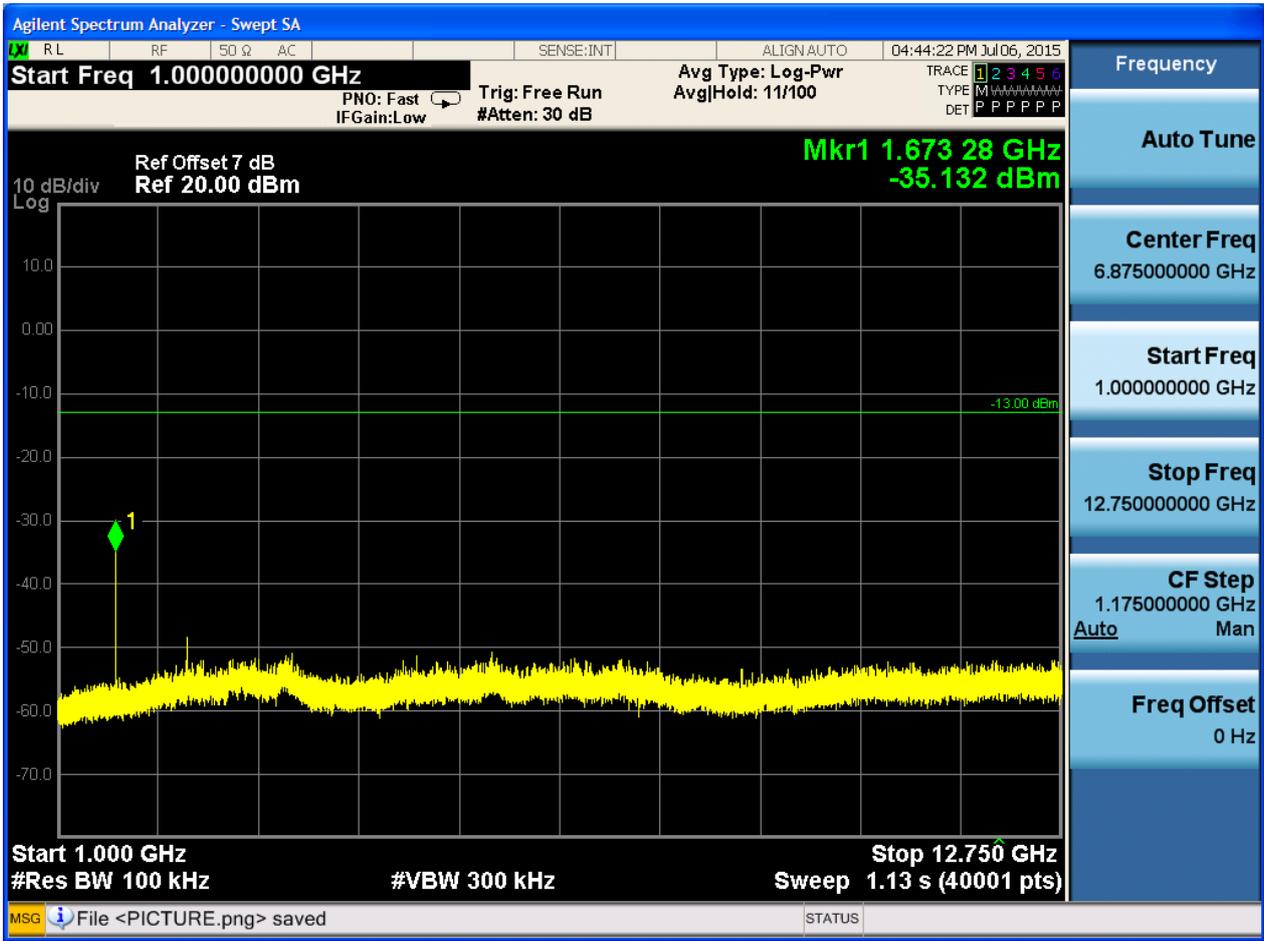




6.1.1.2.2 Test Channel = MCH

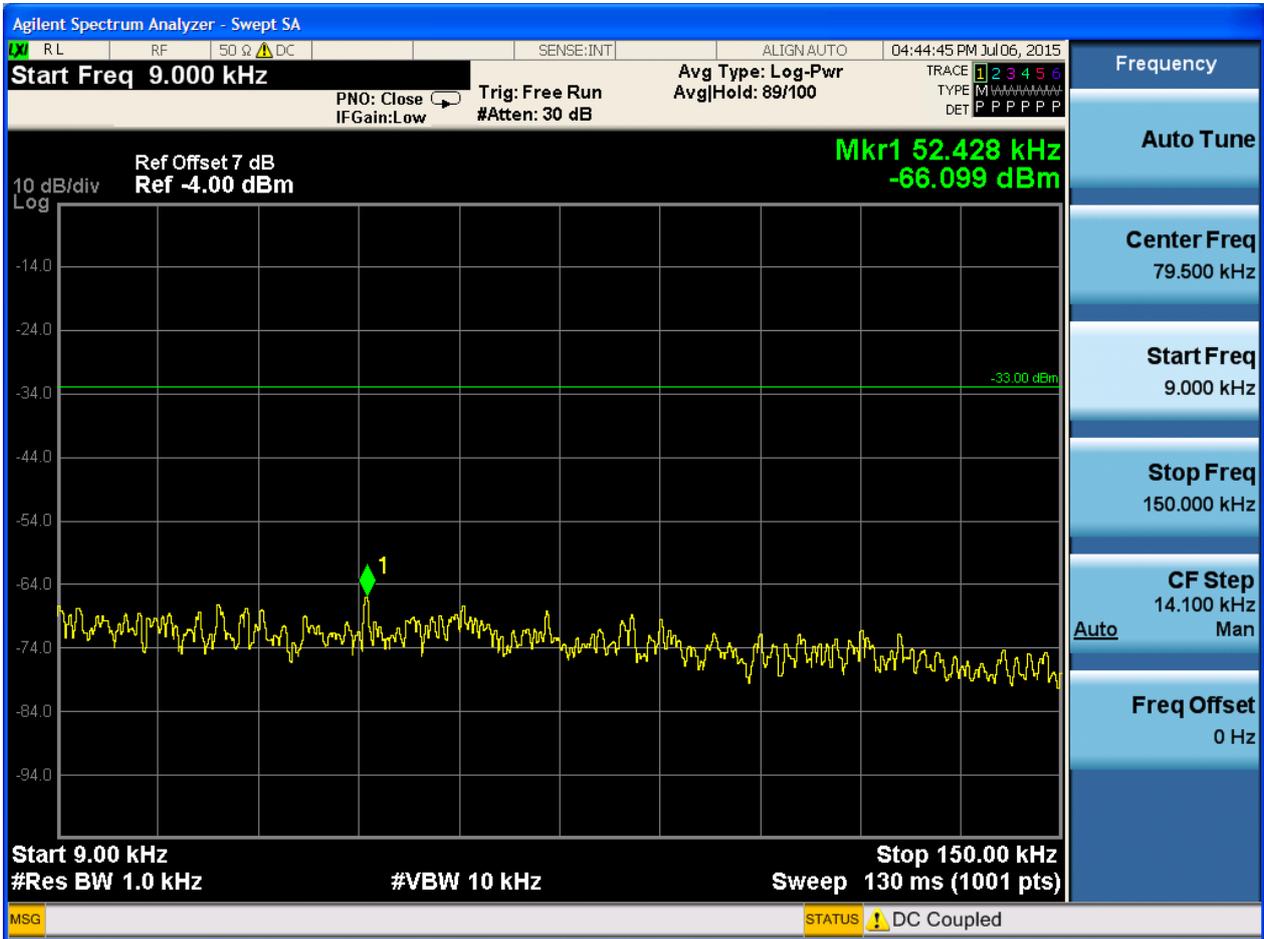


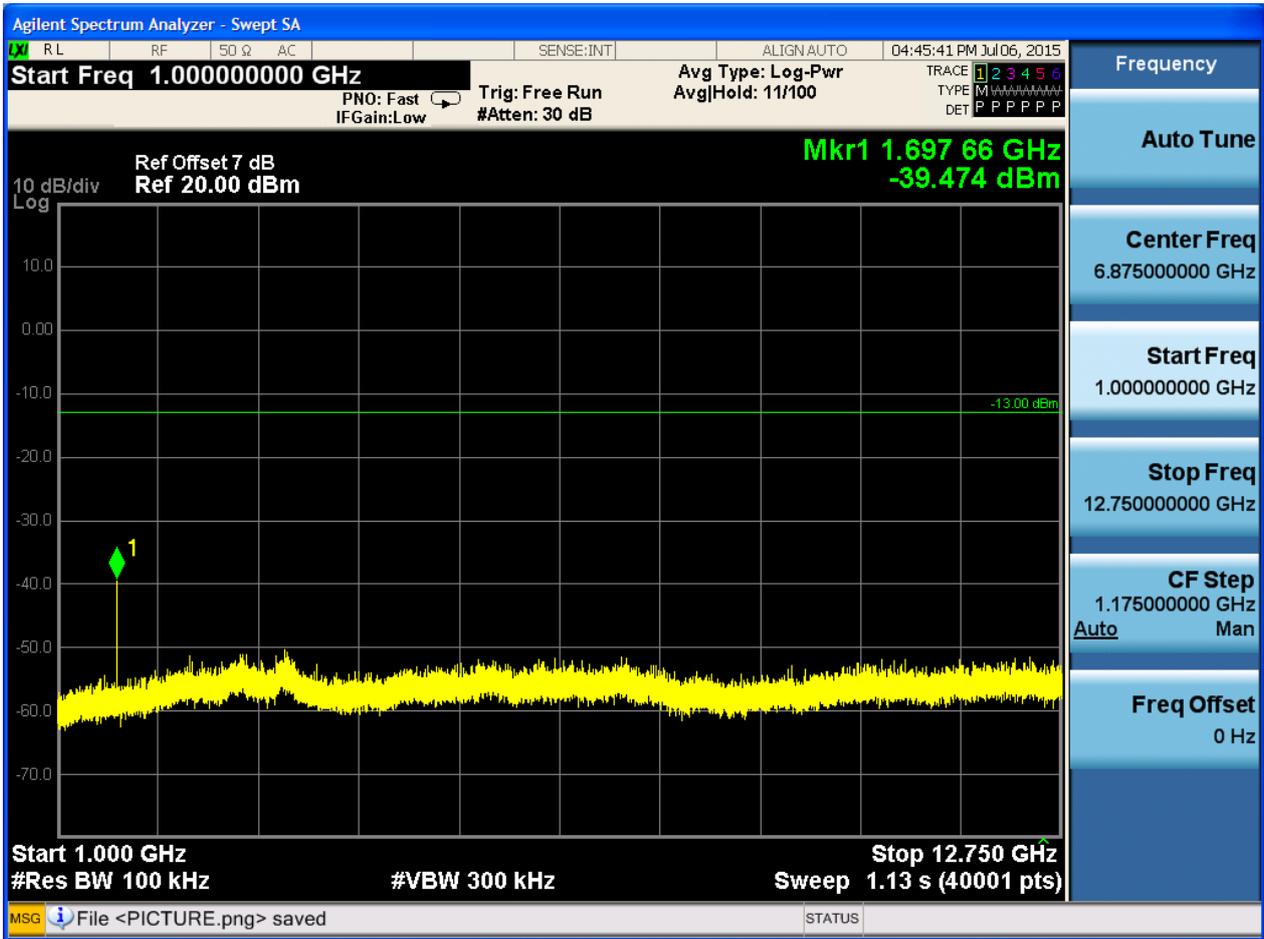






6.1.1.2.3 Test Channel = HCH



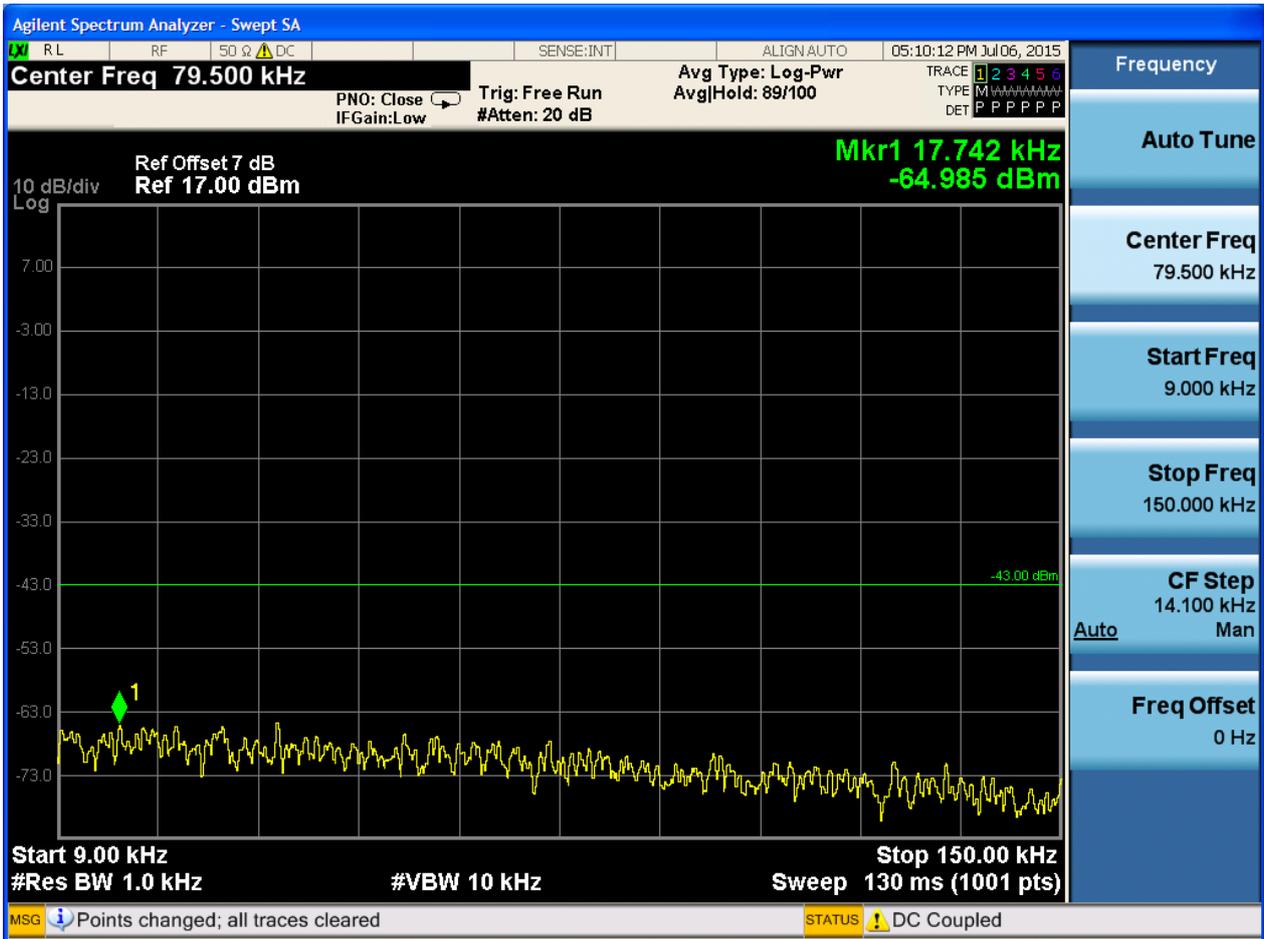


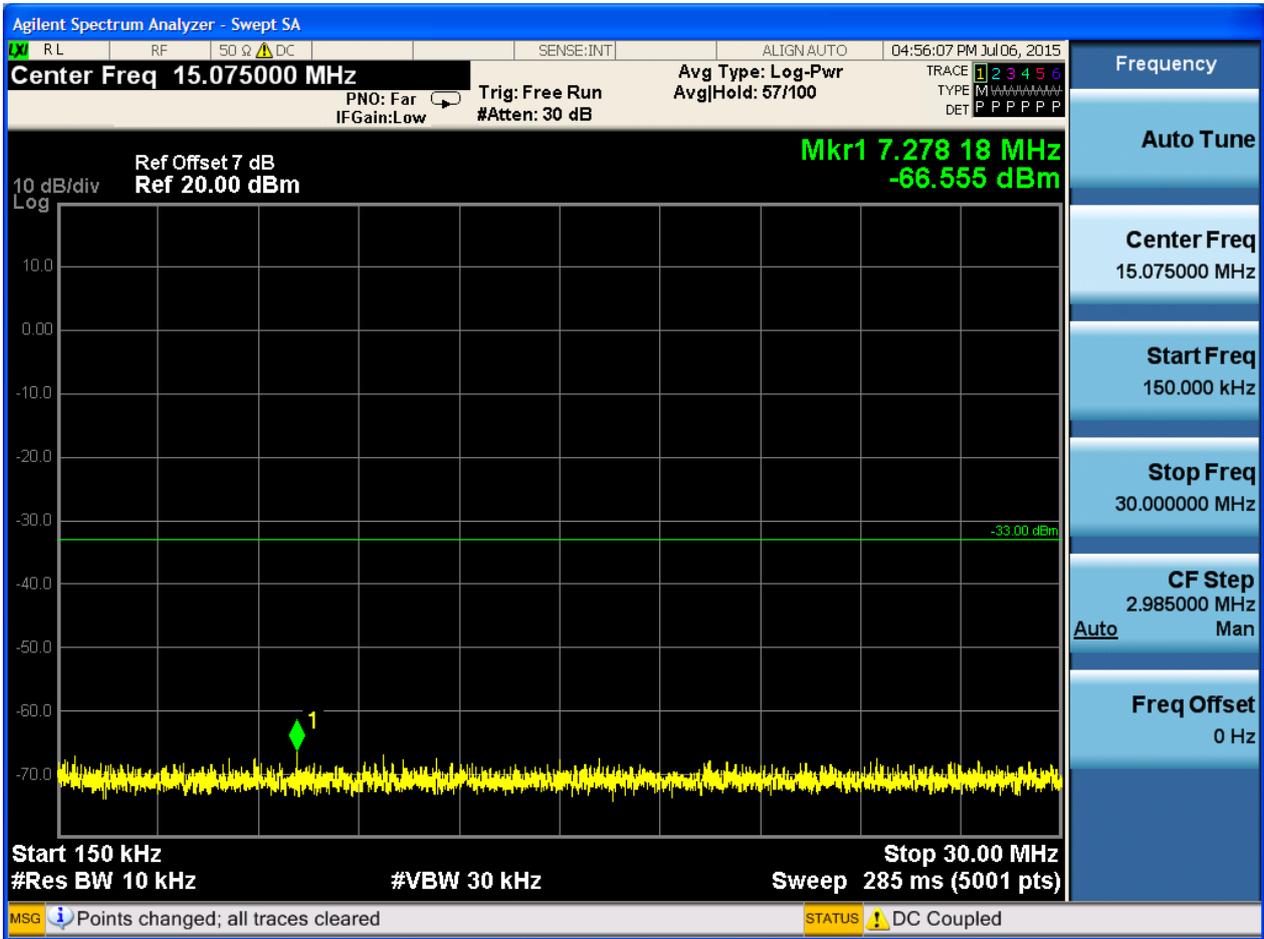


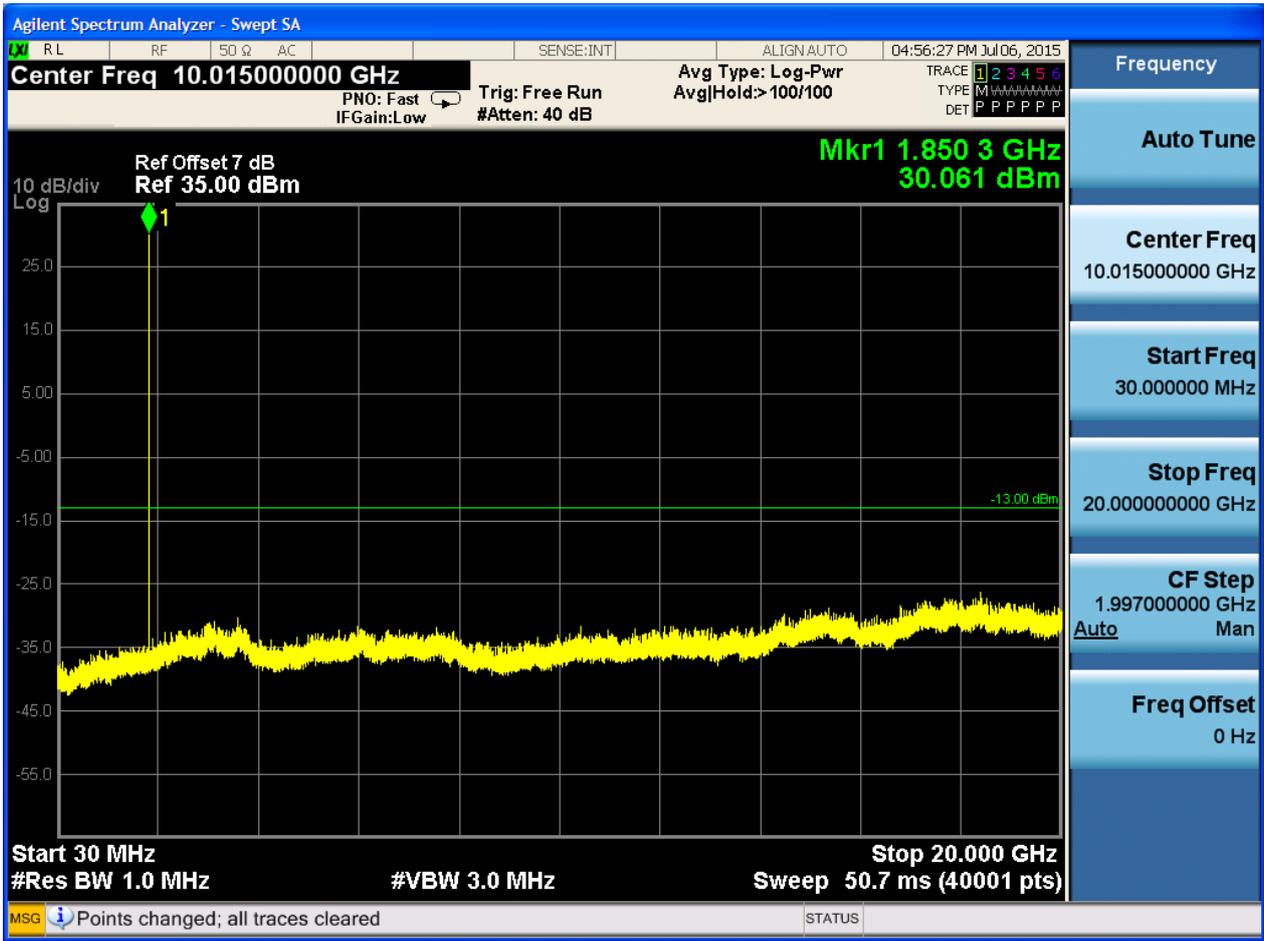
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH

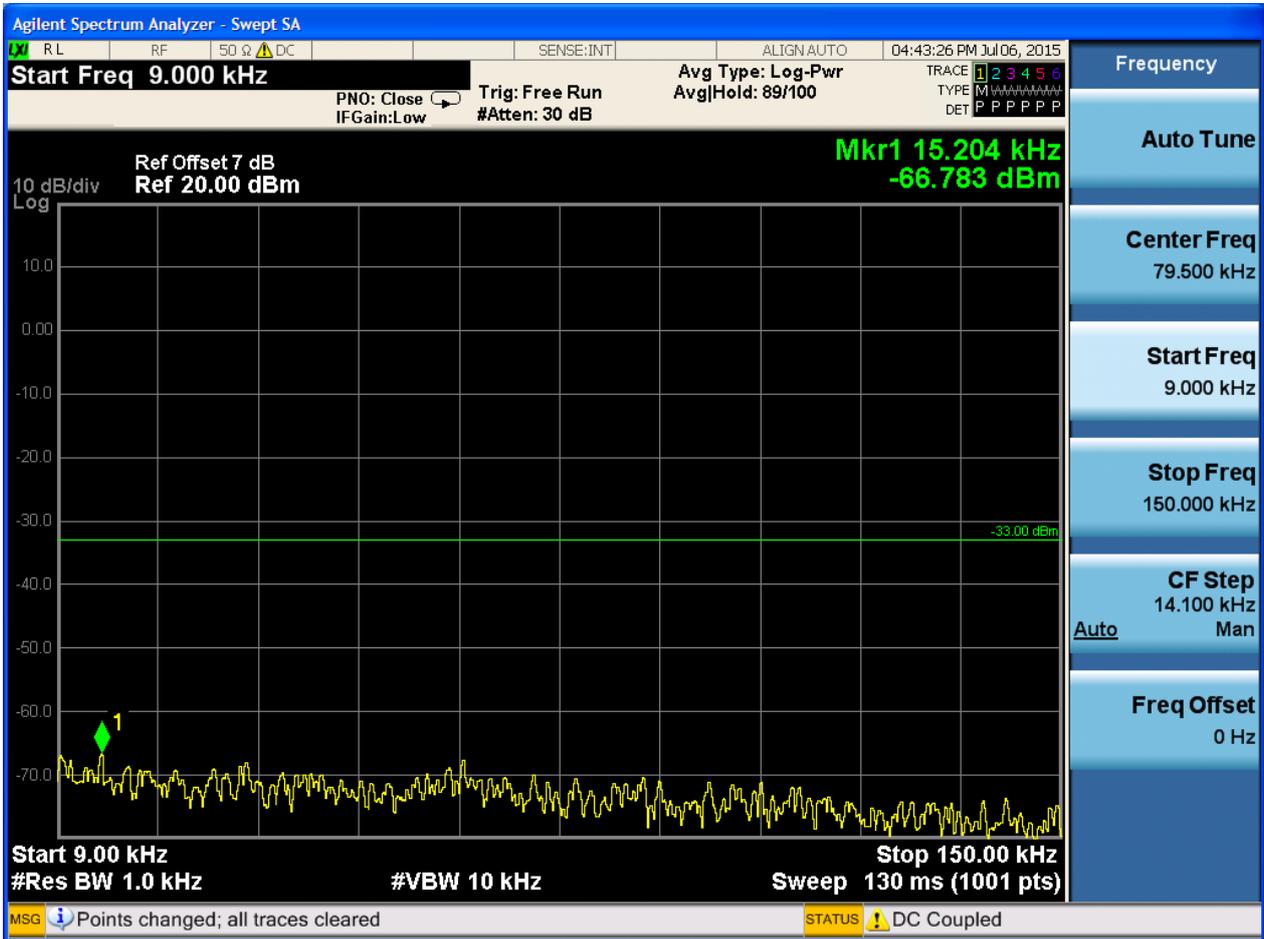


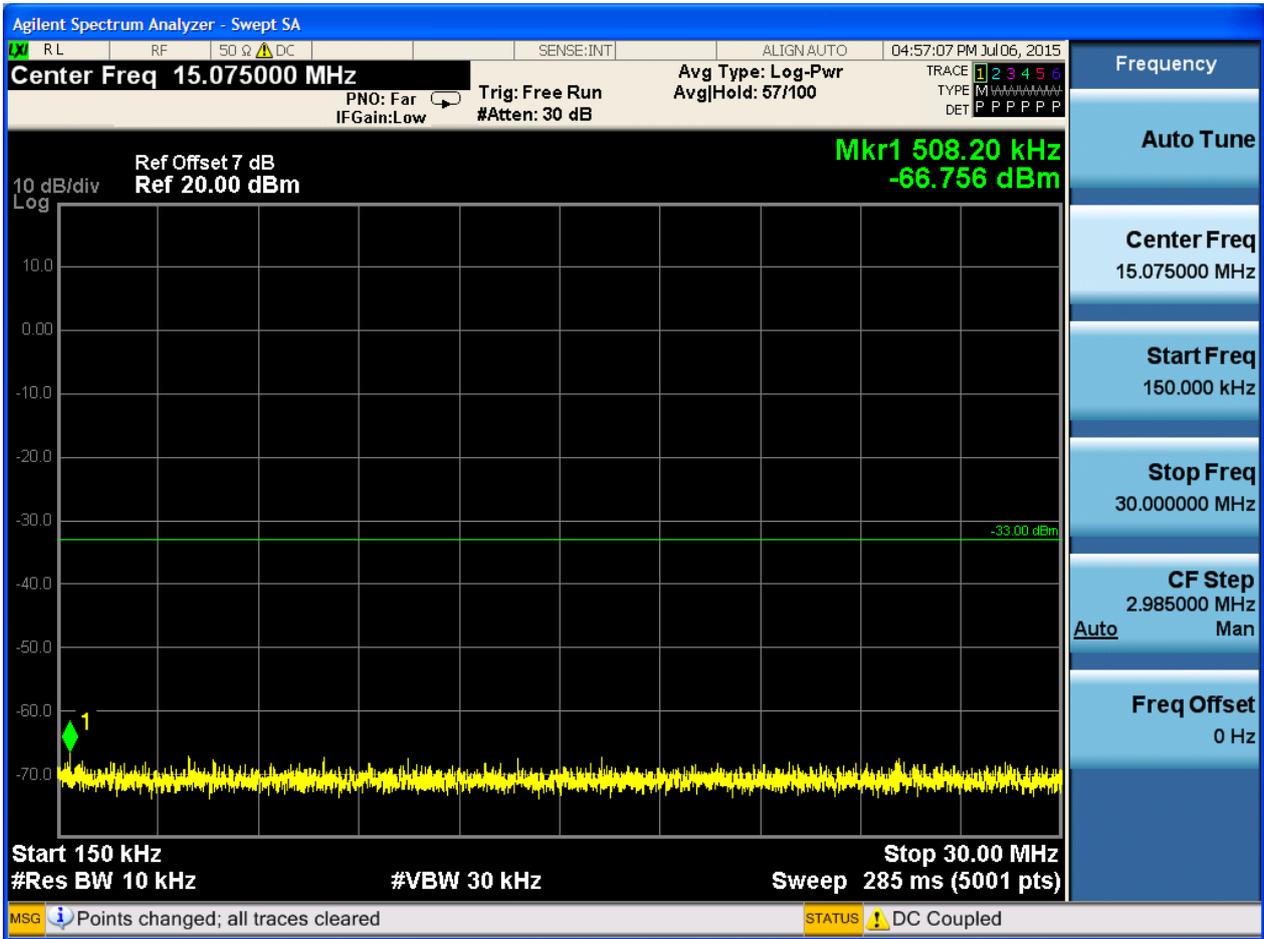


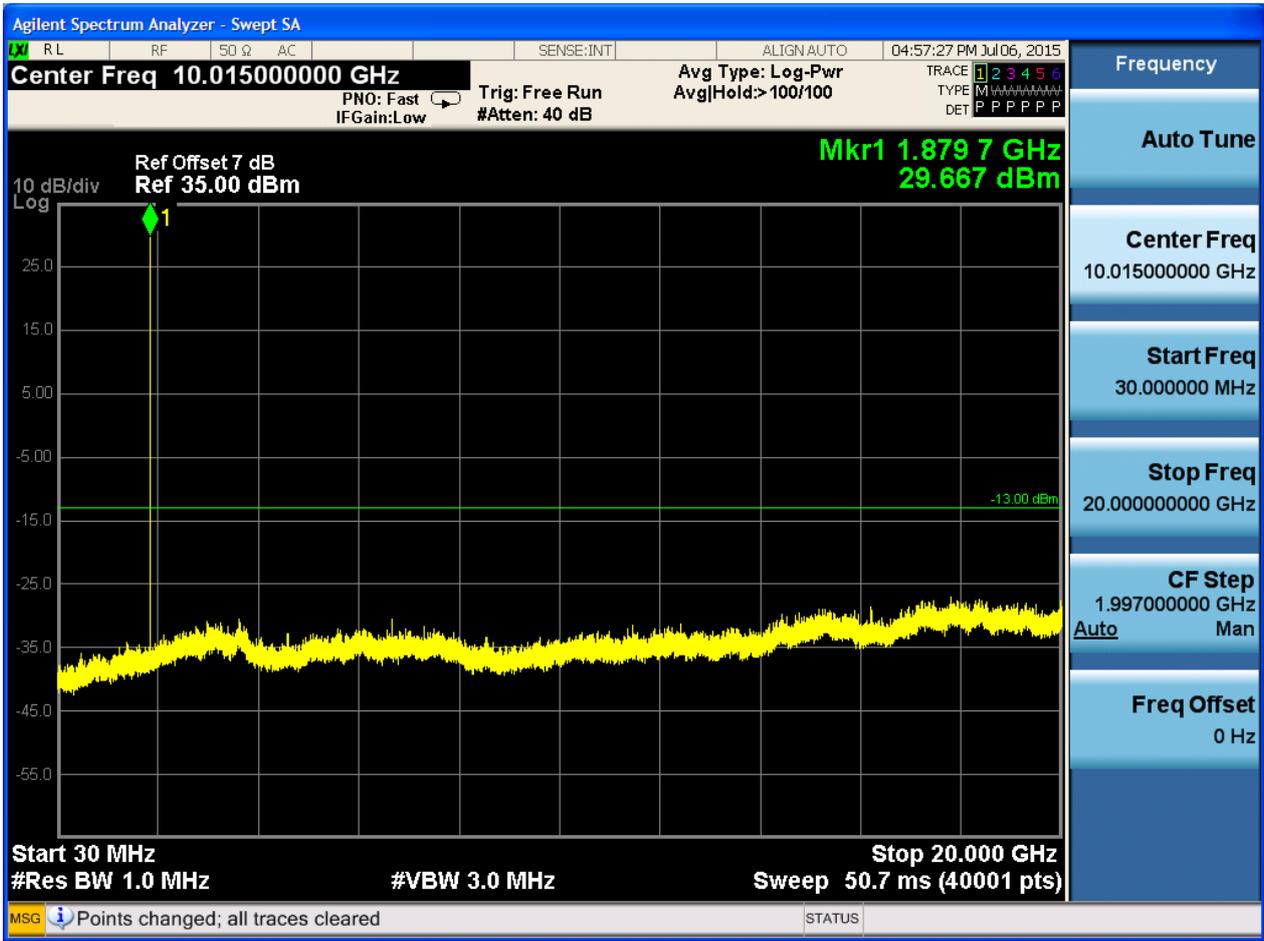




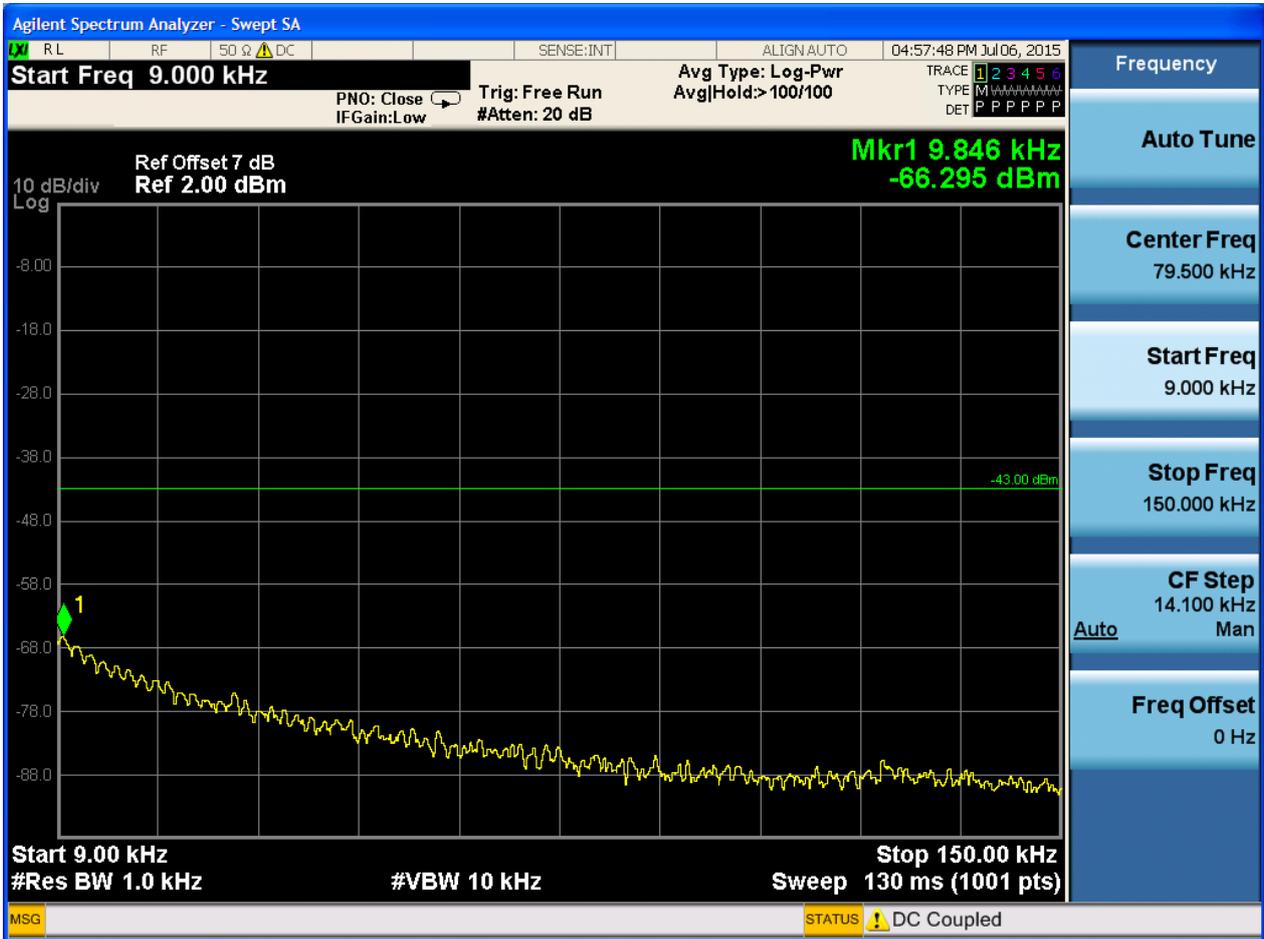
6.1.2.1.2 Test Channel = MCH

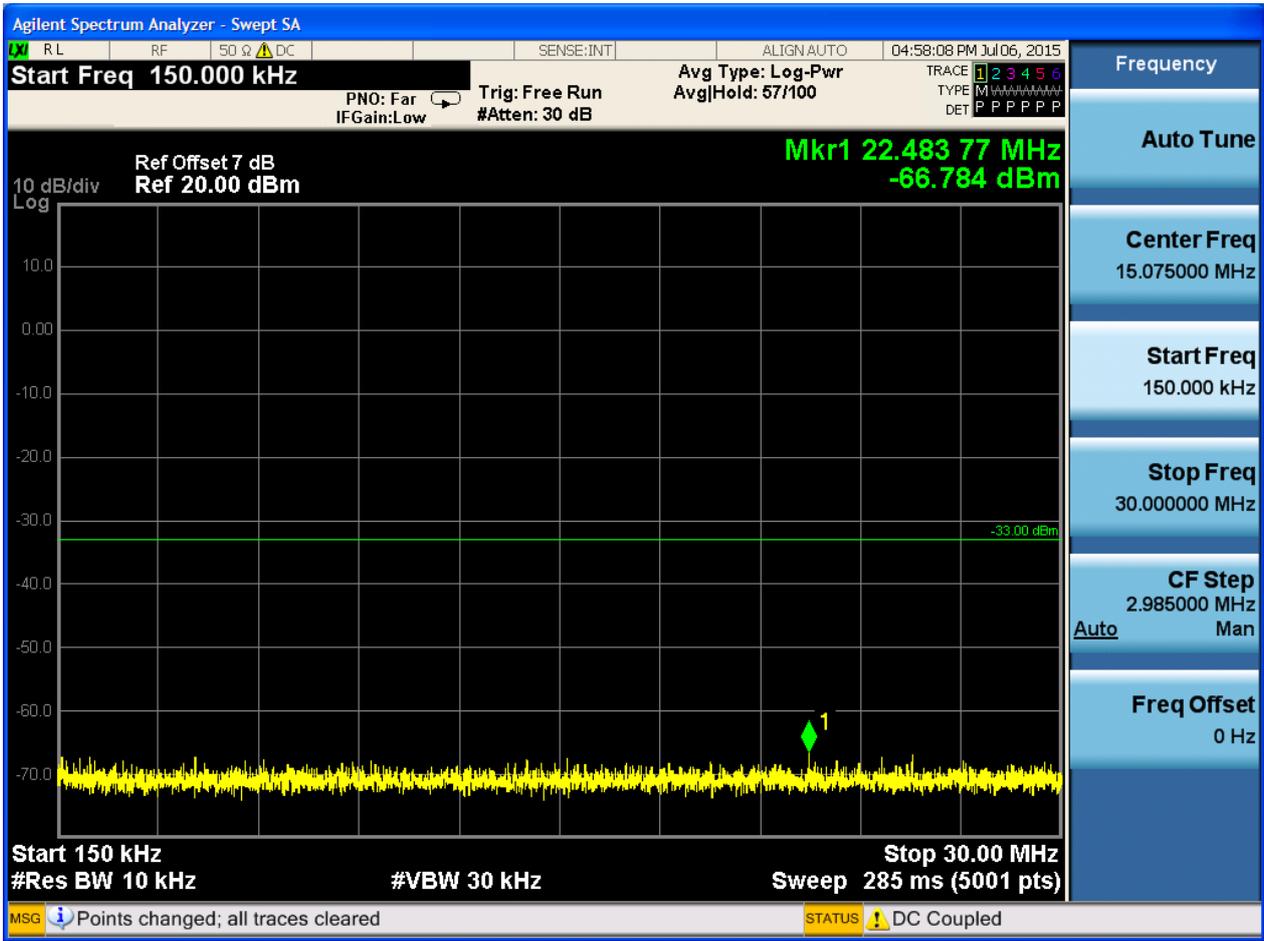




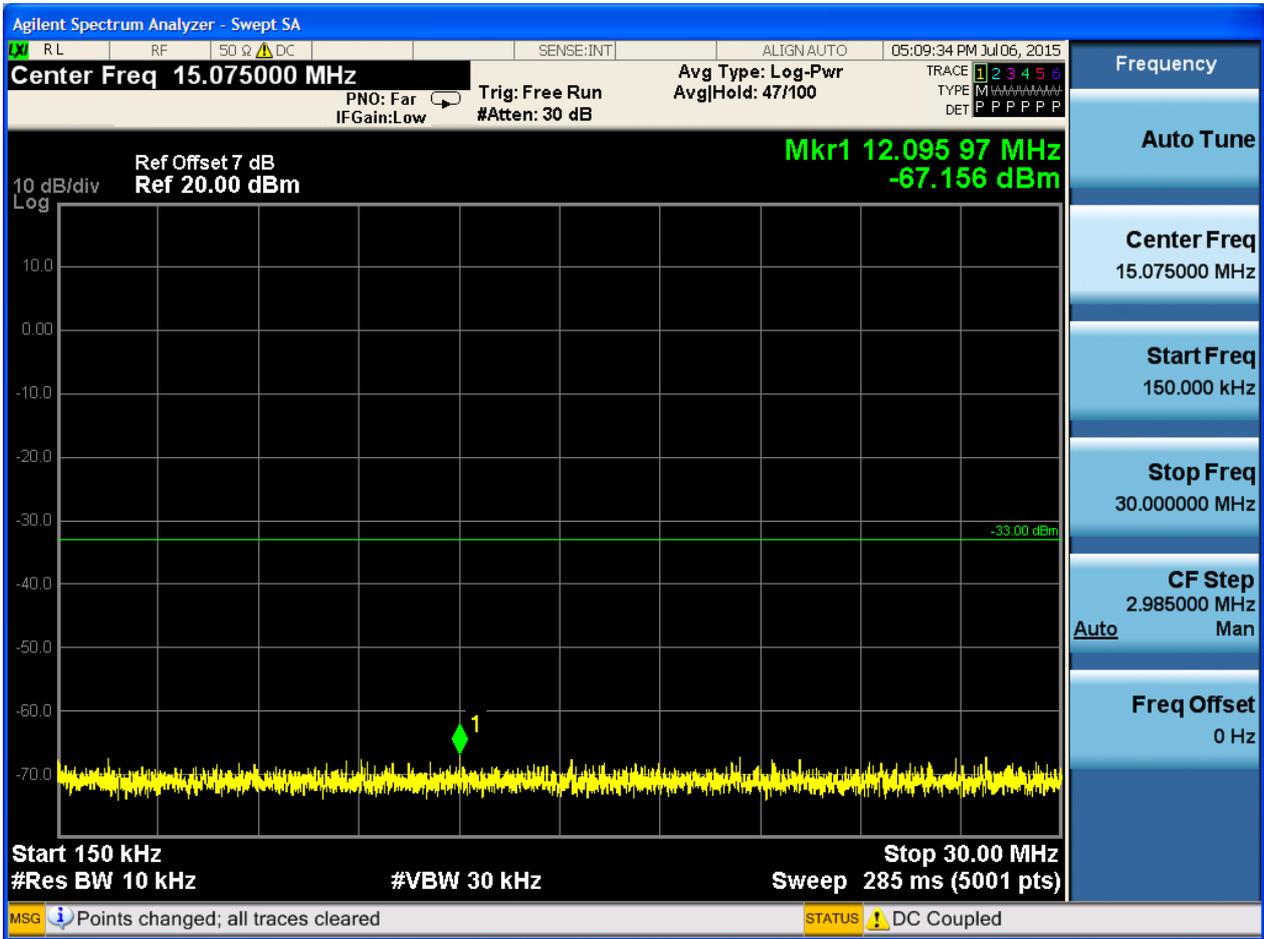


6.1.2.1.3 Test Channel = HCH





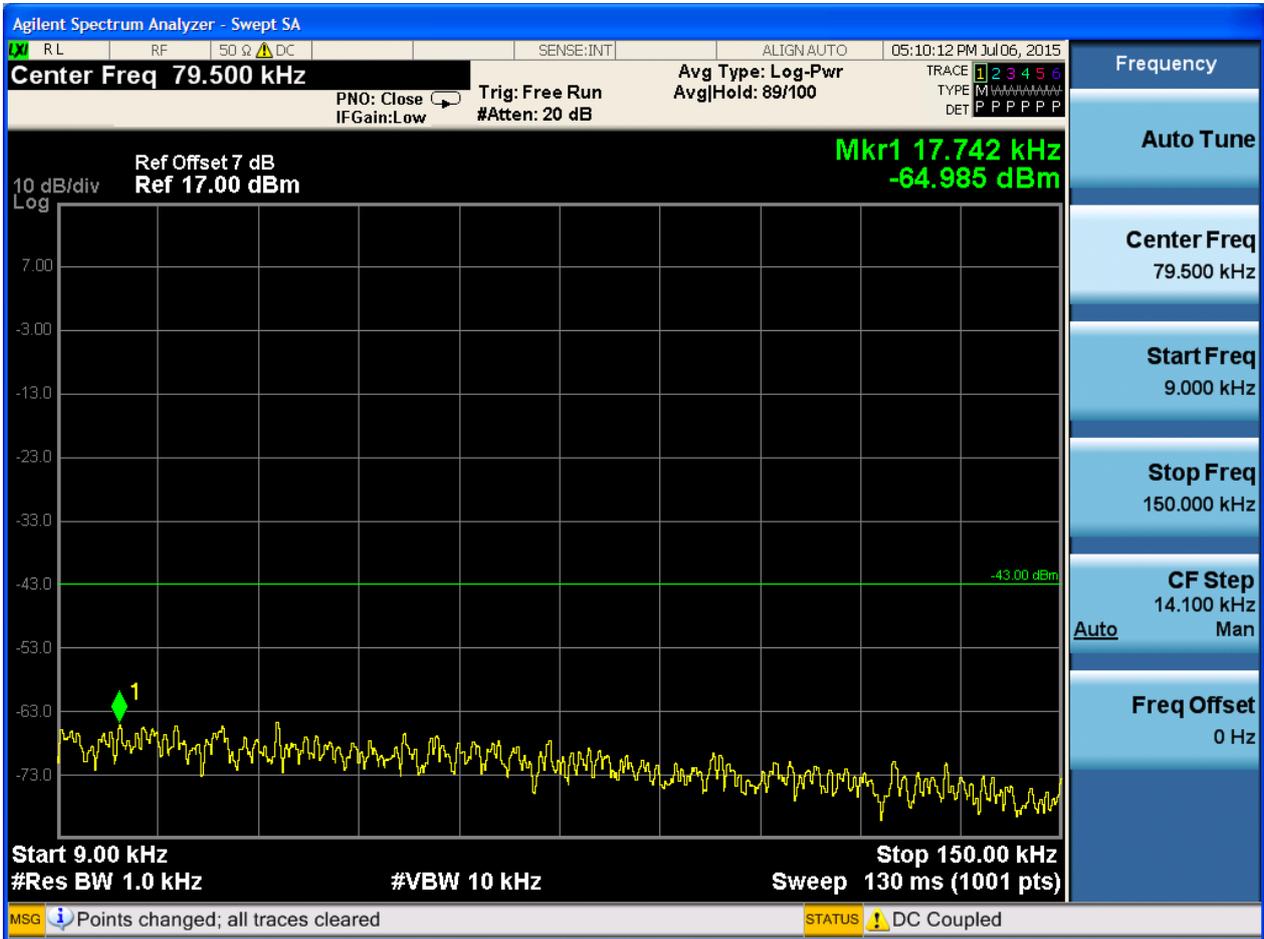


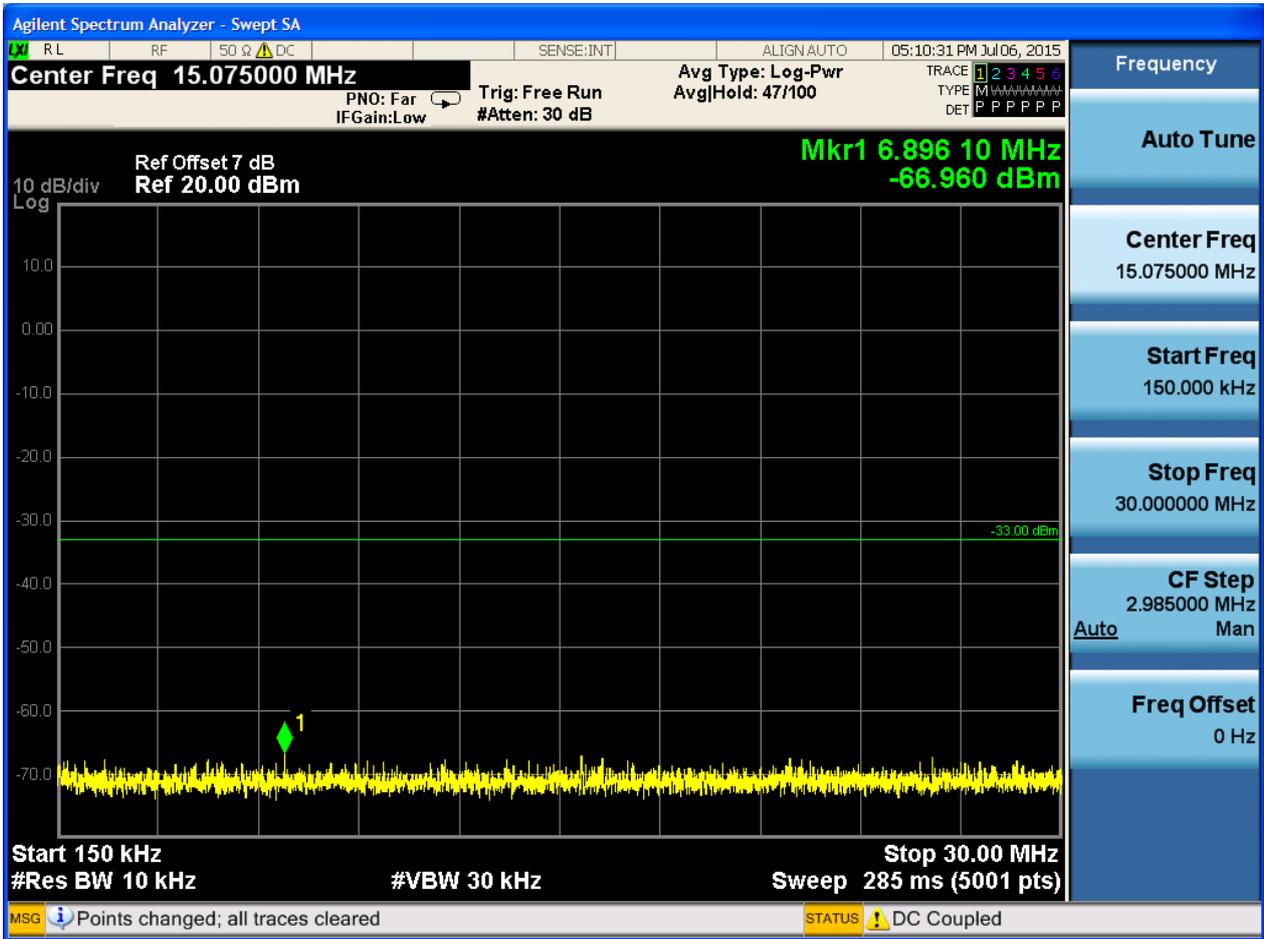


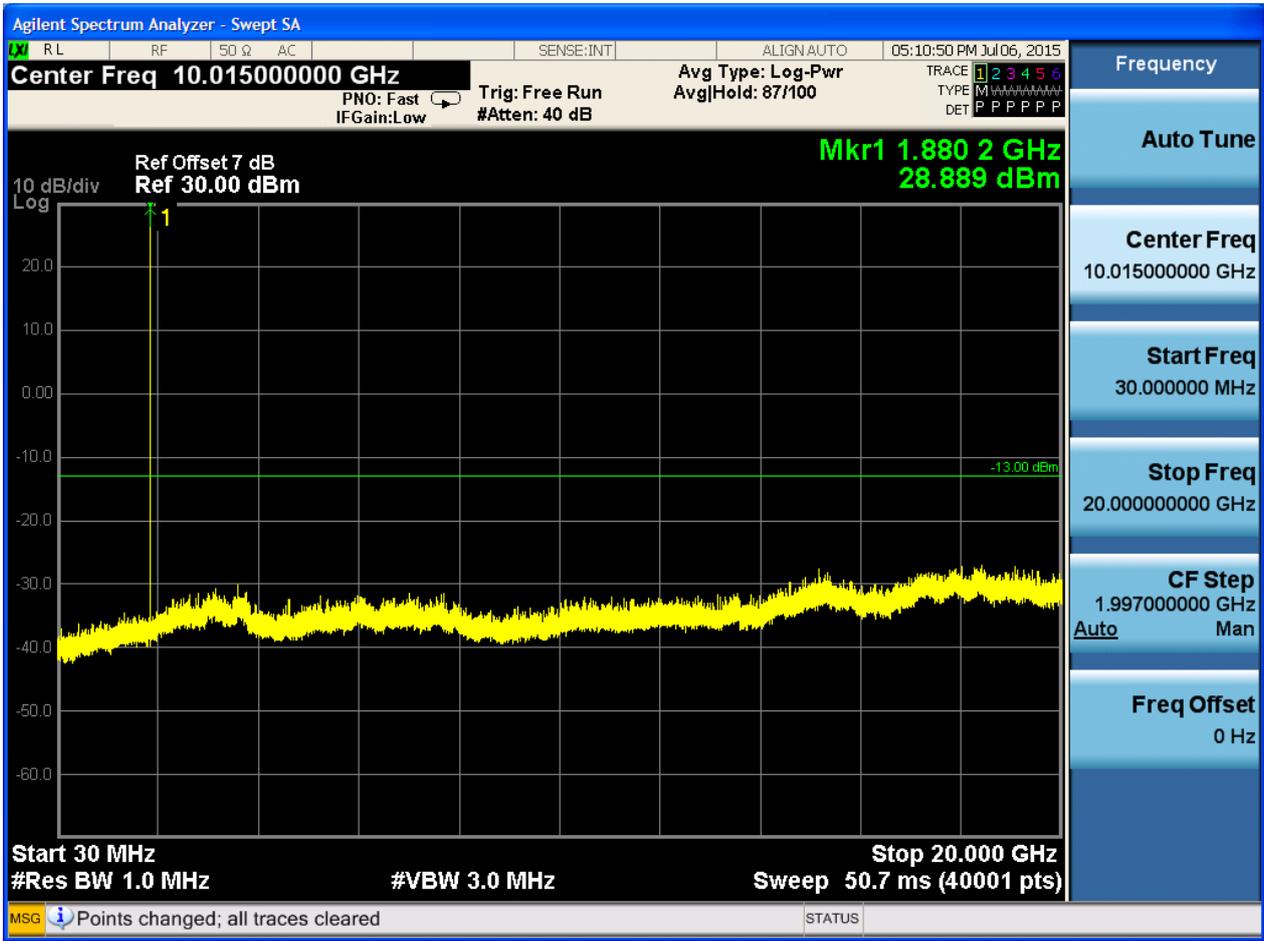




6.1.2.2.2 Test Channel = MCH

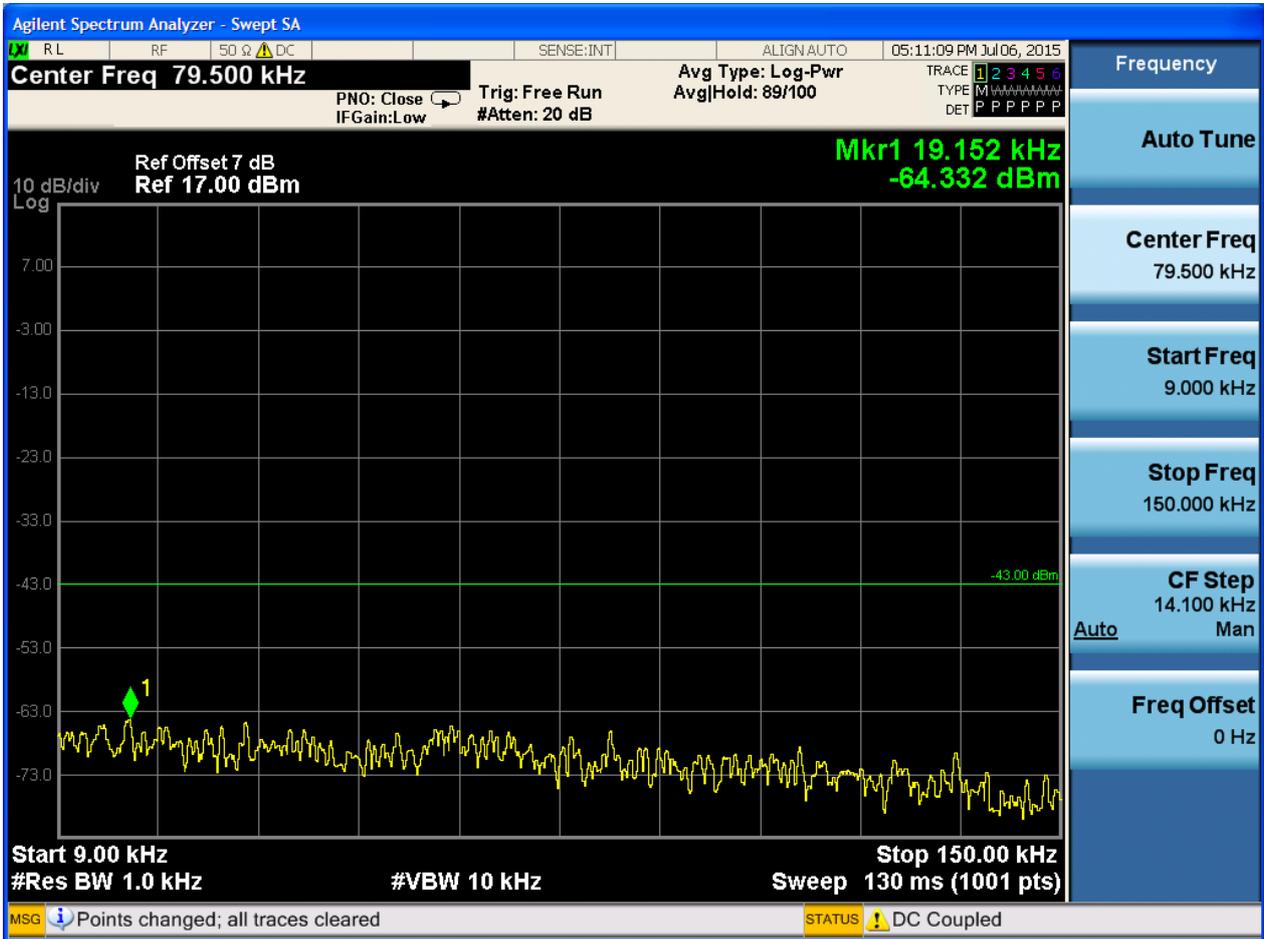


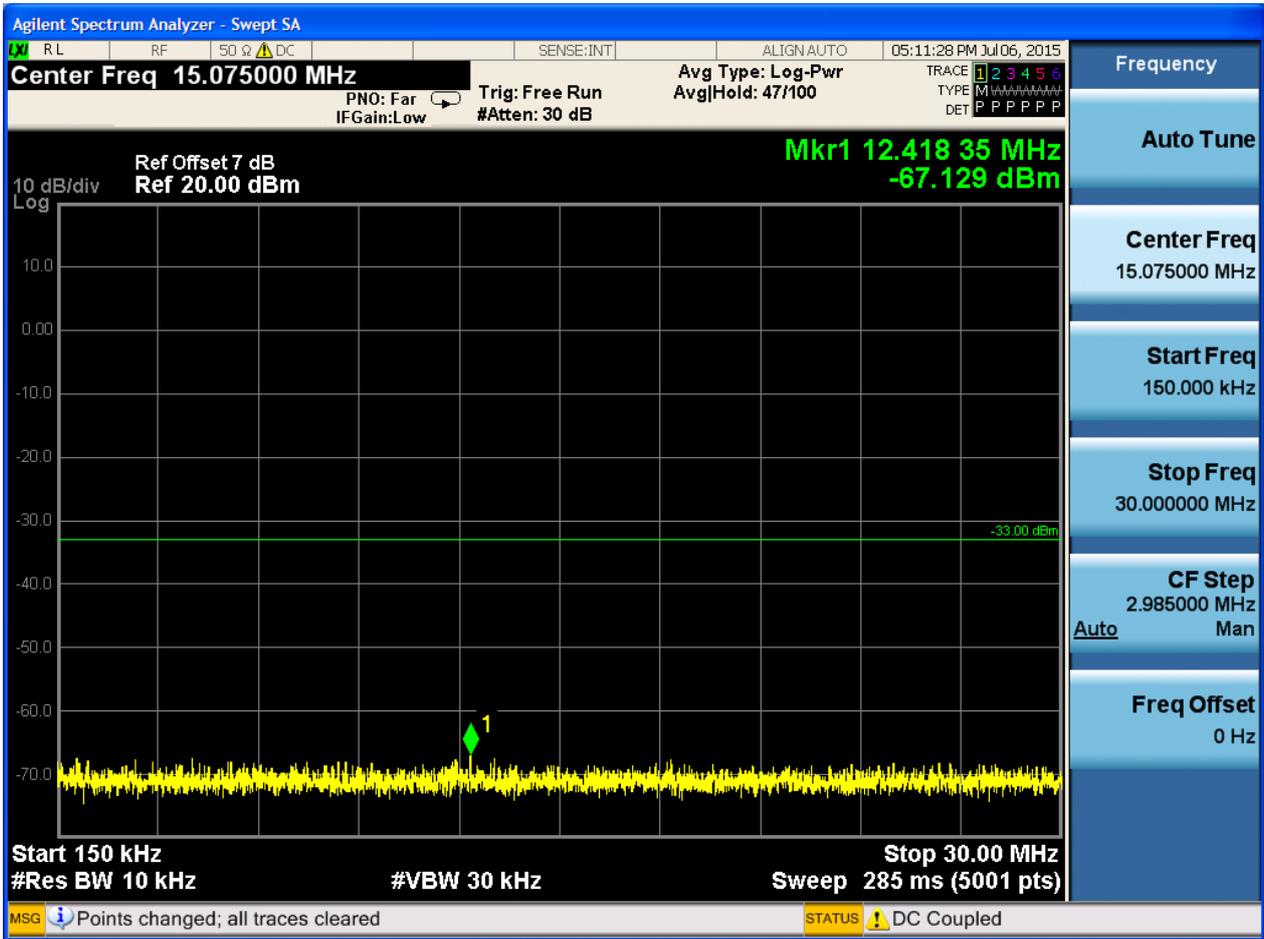


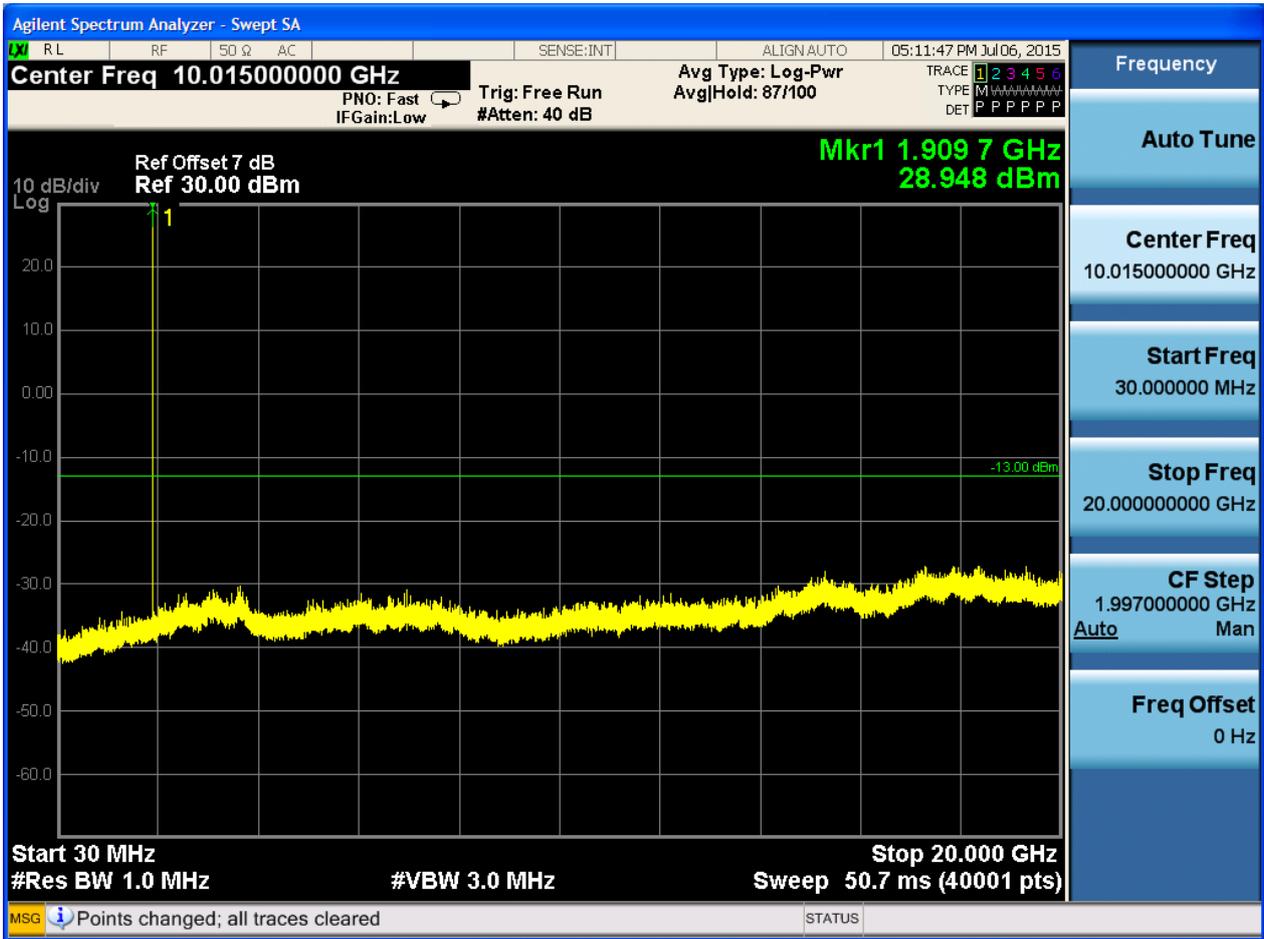




6.1.2.2.3 Test Channel = HCH









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

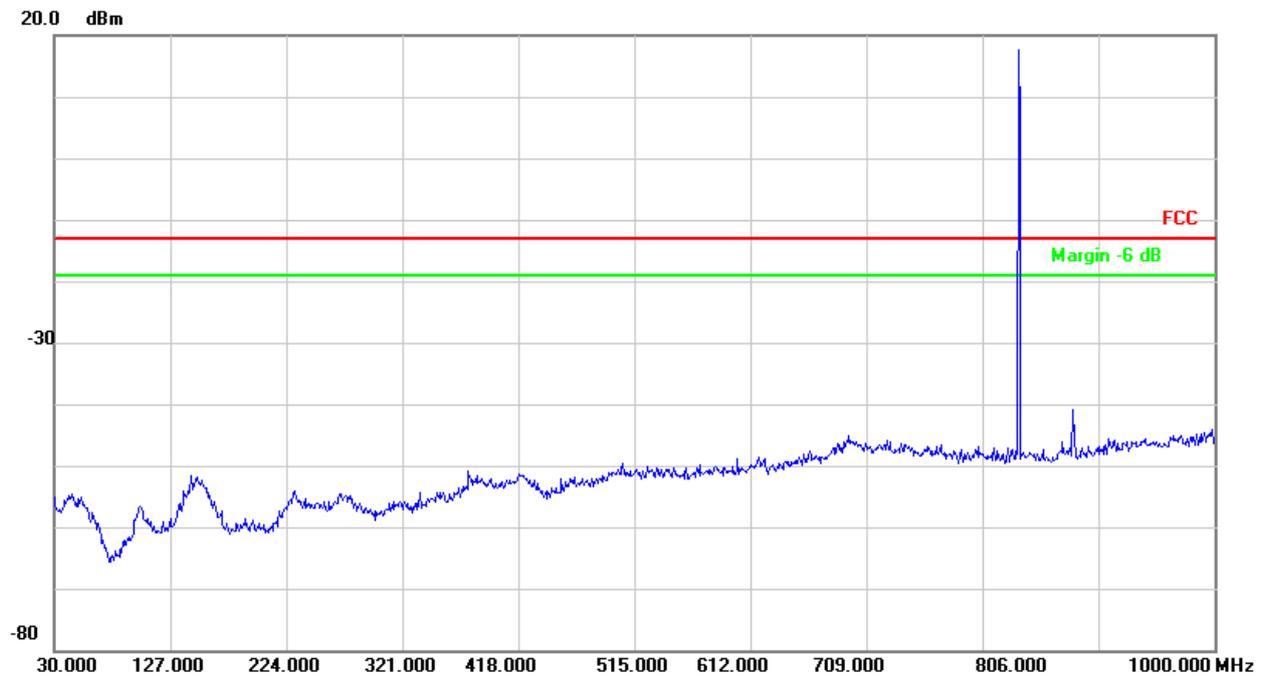
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

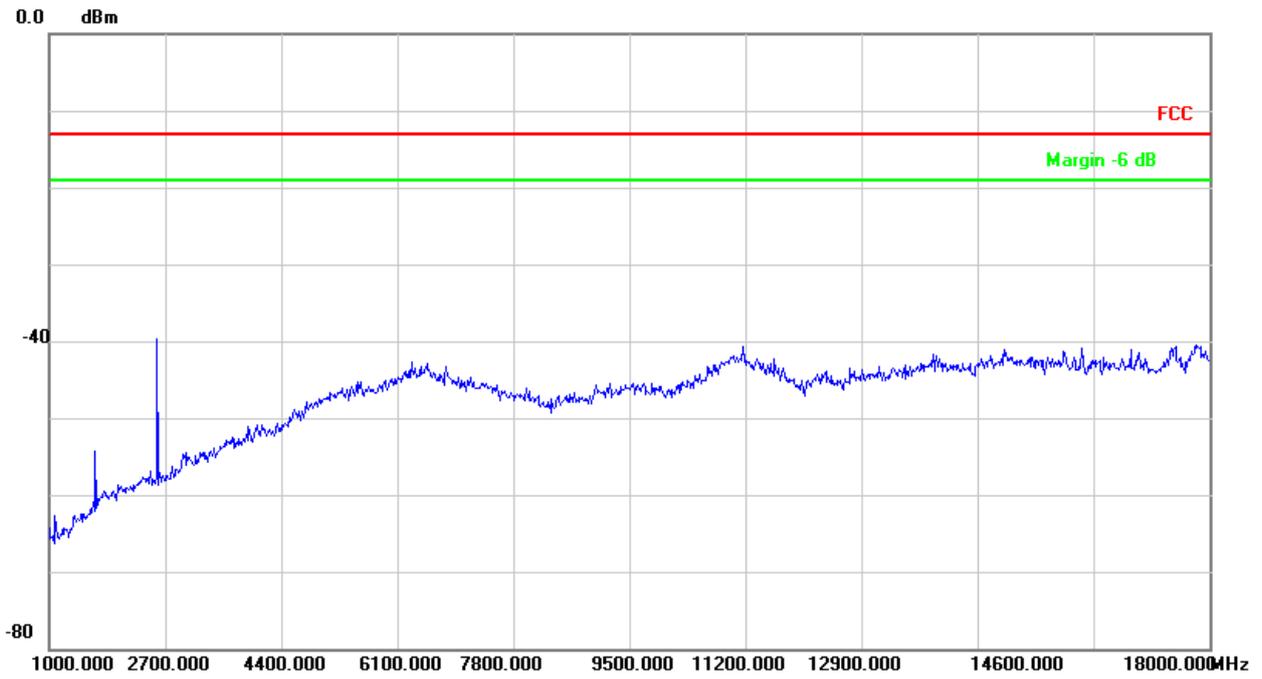
Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM850

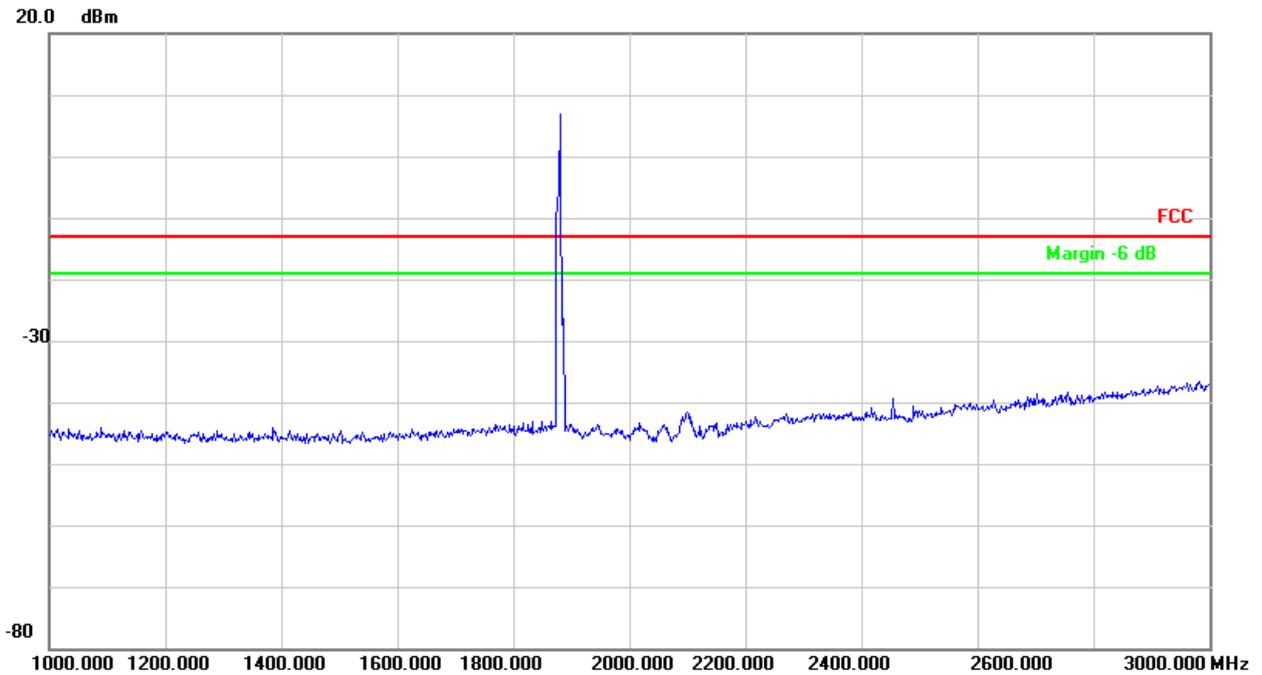
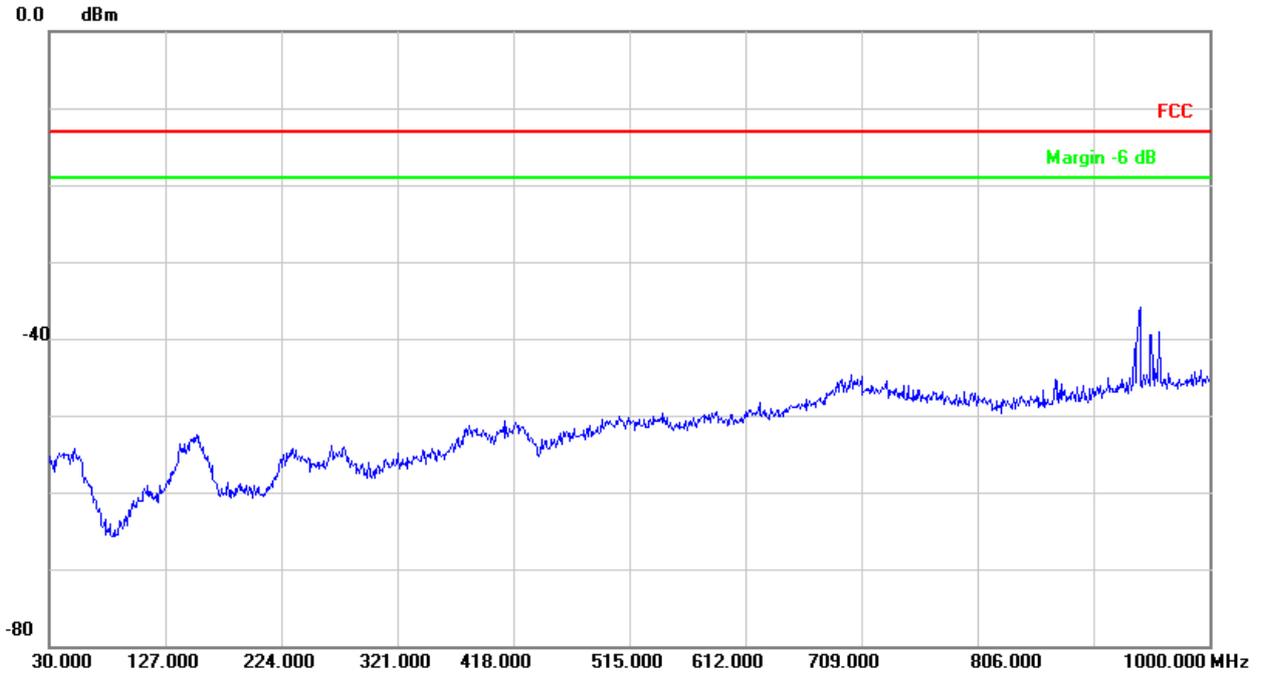
7.1.1.1 Test Mode = GSM/TM1

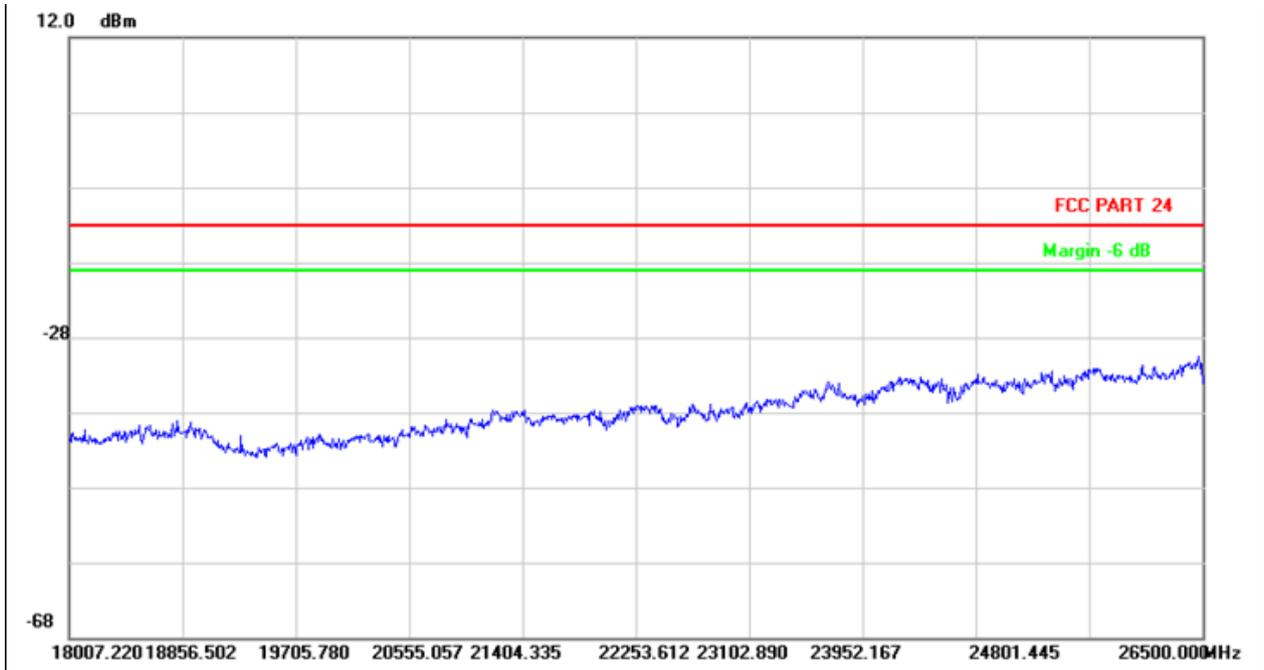
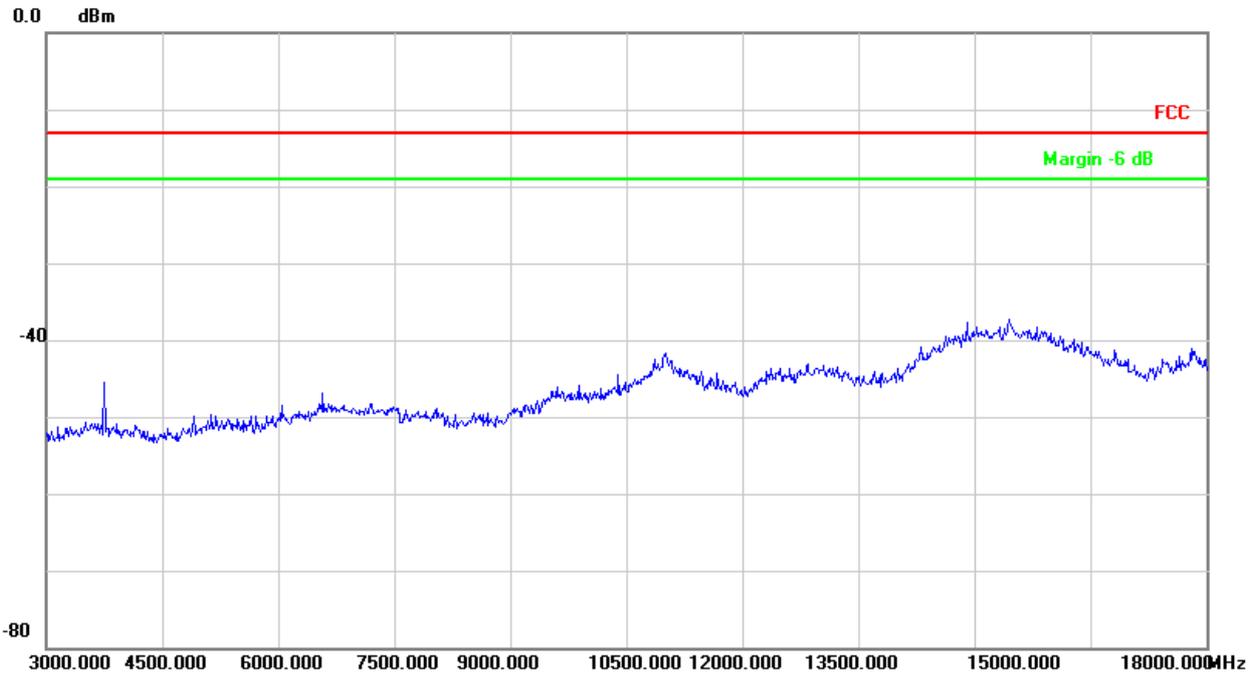




7.1.2 Test Band = GSM1900

7.1.2.1 Test Mode = GSM/TM1







8Appendix_H: Frequency Stability

8.1 For GSM

8.1.1 Frequency 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	7.3	0.00886	PASS
				VN	5.94	0.00721	PASS
				VH	6.91	0.00838	PASS
		MCH	TN	VL	5.68	0.00679	PASS
				VN	12.59	0.01505	PASS
				VH	7.1	0.00849	PASS
		HCH	TN	VL	5.49	0.00647	PASS
				VN	2.84	0.00335	PASS
				VH	-2.07	-0.00244	PASS
	GSM/TM2	LCH	TN	VL	5.29	0.00642	PASS
				VN	6.97	0.00846	PASS
				VH	5.23	0.00635	PASS
		MCH	TN	VL	8.56	0.01023	PASS
				VN	7.01	0.00838	PASS
				VH	11.75	0.01404	PASS
		HCH	TN	VL	9.85	0.0116	PASS
				VN	8.17	0.00963	PASS
				VH	7.59	0.00894	PASS
GSM1900	GSM/TM1	LCH	TN	VL	16.21	0.00876	PASS
				VN	15.76	0.00852	PASS
				VH	15.05	0.00813	PASS
		MCH	TN	VL	13.88	0.00738	PASS
				VN	10.27	0.00546	PASS
				VH	10.98	0.00584	PASS
		HCH	TN	VL	0.45	0.00024	PASS
				VN	2.26	0.00118	PASS
				VH	0.06	0.00003	PASS
	GSM/TM2	LCH	TN	VL	19.18	0.01037	PASS
				VN	21.53	0.01164	PASS
				VH	19.6	0.01059	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		MCH	TN	VL	20.6	0.01096	PASS
				VN	22.28	0.01185	PASS
				VH	20.92	0.01113	PASS
		HCH	TN	VL	4.39	0.0023	PASS
				VN	5.94	0.00311	PASS
				VH	8.3	0.00435	PASS

8.1.2 Frequency 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	5.68	0.00689	PASS
				-20	4.91	0.00596	PASS
				-10	8.14	0.00988	PASS
				0	6.26	0.0076	PASS
				10	5.42	0.00658	PASS
				20	8.27	0.01003	PASS
				30	6.46	0.00784	PASS
				40	7.49	0.00909	PASS
				50	3.36	0.00408	PASS
		MCH	VN	-30	13.3	0.0159	PASS
				-20	9.56	0.01143	PASS
				-10	12.79	0.01529	PASS
				0	8.85	0.01058	PASS
				10	10.78	0.01289	PASS
				20	8.14	0.00973	PASS
				30	2.13	0.00255	PASS
				40	8.01	0.00957	PASS
				50	3.55	0.00424	PASS
		HCH	VN	-30	0.71	0.00084	PASS
				-20	5.1	0.00601	PASS
				-10	12.27	0.01446	PASS
				0	8.14	0.00959	PASS
				10	8.91	0.0105	PASS
				20	9.3	0.01096	PASS
				30	3.23	0.00381	PASS
				40	-0.77	-0.00091	PASS
				50	10.78	0.0127	PASS
	GSM/TM2	LCH	VN	-30	4.29	0.00521	PASS
				-20	6.01	0.00729	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict		
				-10	6.36	0.00772	PASS		
				0	8.72	0.01058	PASS		
				10	6.23	0.00756	PASS		
				20	3.16	0.00383	PASS		
				30	9.2	0.01116	PASS		
				40	6.59	0.008	PASS		
				50	11.78	0.01429	PASS		
		MCH	VN			-30	11.07	0.01323	PASS
						-20	10.75	0.01285	PASS
						-10	12.17	0.01455	PASS
						0	6.88	0.00822	PASS
						10	8.91	0.01065	PASS
						20	10.36	0.01238	PASS
						30	8.1	0.00968	PASS
		HCH	VN			40	9.01	0.01077	PASS
						50	14.14	0.0169	PASS
						-30	4.23	0.00498	PASS
						-20	2.65	0.00312	PASS
						-10	8.01	0.00944	PASS
						0	5.59	0.00659	PASS
						10	5.91	0.00696	PASS
		GSM1900	GSM/TM1	LCH	VN	20	3.91	0.00461	PASS
						30	10.78	0.0127	PASS
						40	8.23	0.0097	PASS
						50	8.27	0.00974	PASS
						-30	2.84	0.00153	PASS
						-20	3.62	0.00196	PASS
-10	3.68					0.00199	PASS		
0	0.77			0.00042	PASS				
MCH	VN					10	-2.52	-0.00136	PASS
						20	4.65	0.00251	PASS
						30	0.52	0.00028	PASS
						40	-7.1	-0.00384	PASS
						50	8.98	0.00485	PASS
						-30	10.98	0.00584	PASS
		-20	11.24			0.00598	PASS		
-10	-2.2	-0.00117	PASS						
0	-1.49	-0.00079	PASS						
10	-5.42	-0.00288	PASS						
20	6.65	0.00354	PASS						



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict	
				30	1.03	0.00055	PASS	
				40	4.58	0.00244	PASS	
				50	-6.07	-0.00323	PASS	
		HCH	VN	-30	-18.79	-0.00984	PASS	
				-20	-11.62	-0.00608	PASS	
				-10	-12.91	-0.00676	PASS	
				0	-14.66	-0.00768	PASS	
				10	-4.65	-0.00243	PASS	
				20	-6.59	-0.00345	PASS	
				30	-10.85	-0.00568	PASS	
				40	-14.85	-0.00778	PASS	
				50	-16.47	-0.00862	PASS	
		GSM/TM2	LCH	VN	-30	14.98	0.0081	PASS
					-20	13.72	0.00742	PASS
					-10	16.3	0.00881	PASS
	0				18.08	0.00977	PASS	
	10				16.95	0.00916	PASS	
	20				19.05	0.0103	PASS	
	30				19.37	0.01047	PASS	
	40				17.72	0.00958	PASS	
	MCH		VN	-30	18.85	0.01003	PASS	
				-20	22.89	0.01218	PASS	
				-10	21.79	0.01159	PASS	
				0	26.25	0.01396	PASS	
				10	23.83	0.01268	PASS	
				20	21.53	0.01145	PASS	
				30	23.28	0.01238	PASS	
	HCH	VN	-30	7.78	0.00407	PASS		
			-20	6.1	0.00319	PASS		
			-10	8.17	0.00428	PASS		
			0	7.26	0.0038	PASS		
			10	6.1	0.00319	PASS		
			20	5.75	0.00301	PASS		
			30	6.26	0.00328	PASS		
			40	4.29	0.00225	PASS		
	50	6.39	0.00335	PASS				



END