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	33.11	30.12	38.5	PASS
		MCH	33.05	30.06	38.5	PASS
		HCH	32.96	29.97	38.5	PASS
	GSM/TM2	LCH	26.9	23.91	38.5	PASS
		MCH	26.94	23.95	38.5	PASS
		HCH	26.95	23.96	38.5	PASS
Test Band	**Test Mode**	**Test Channel**	**Conducted Power [dBm]**	**EIRP [dBm]**	**Limit [dBm]**	**Verdict**
GSM1900	GSM/TM1	LCH	29.87	31.63	33	PASS
		MCH	29.51	31.27	33	PASS
		HCH	29.33	31.09	33	PASS
	GSM/TM2	LCH	25.6	27.36	33	PASS
		MCH	25.59	27.35	33	PASS
		HCH	25.55	27.31	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: 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	0.22	13	PASS
		MCH	0.22	13	PASS
		HCH	0.21	13	PASS
	GSM/TM2	LCH	2.94	13	PASS
		MCH	2.85	13	PASS
		HCH	2.82	13	PASS

3Appendix_C: Modulation Characteristics

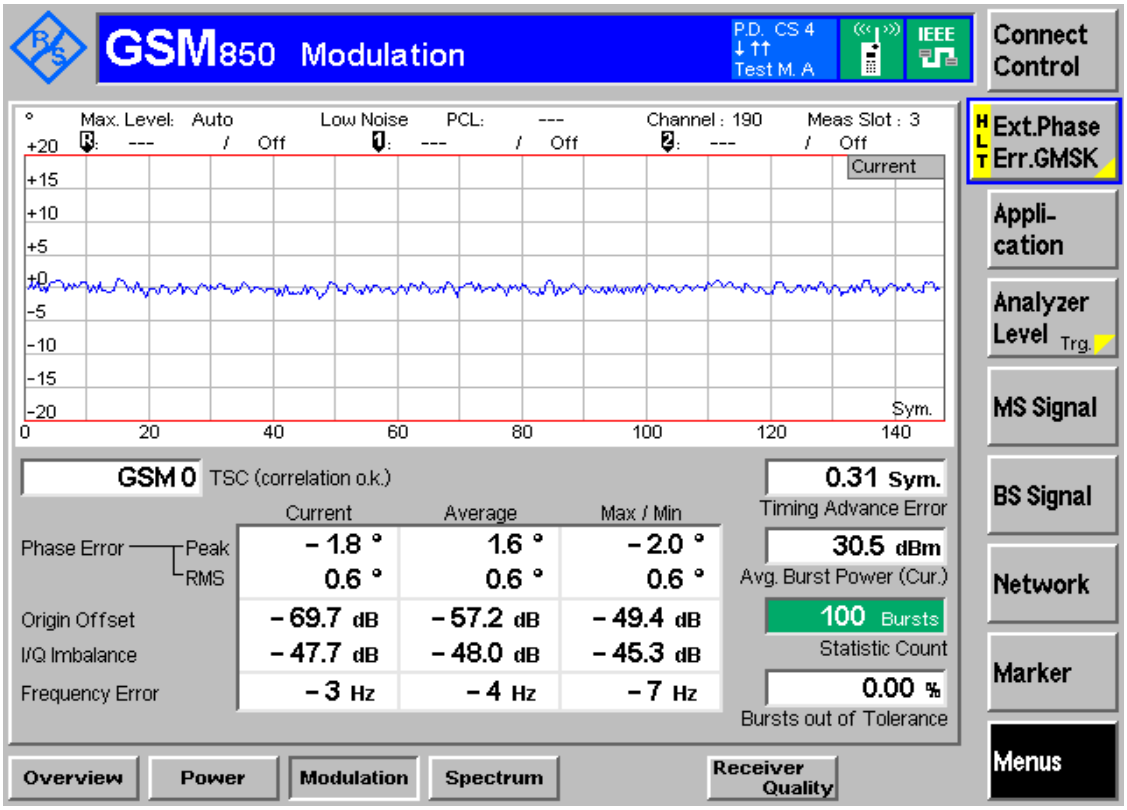
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

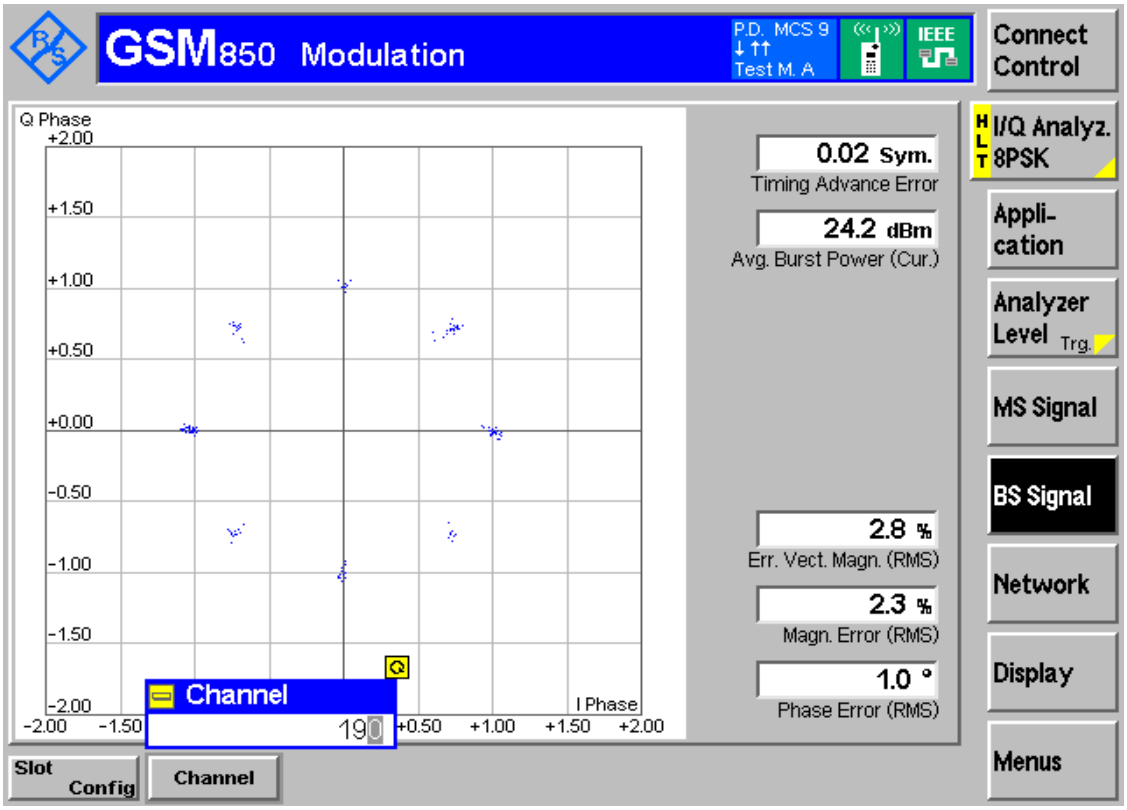
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

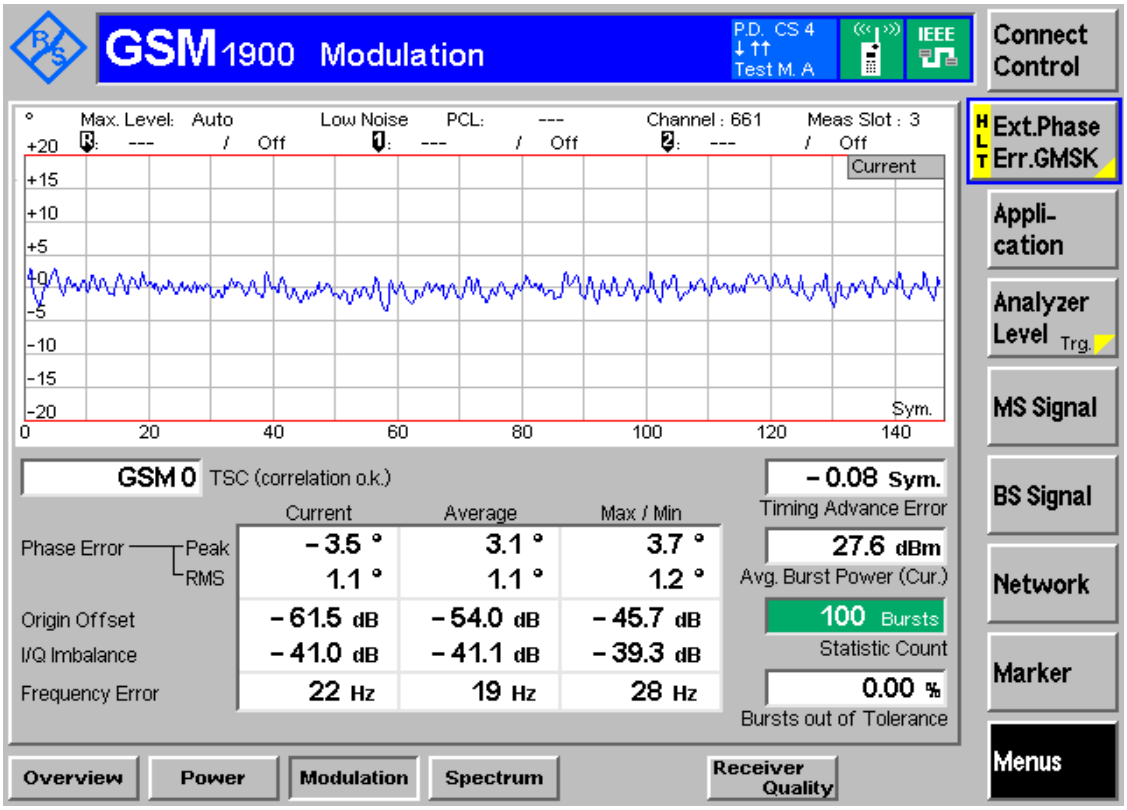
3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

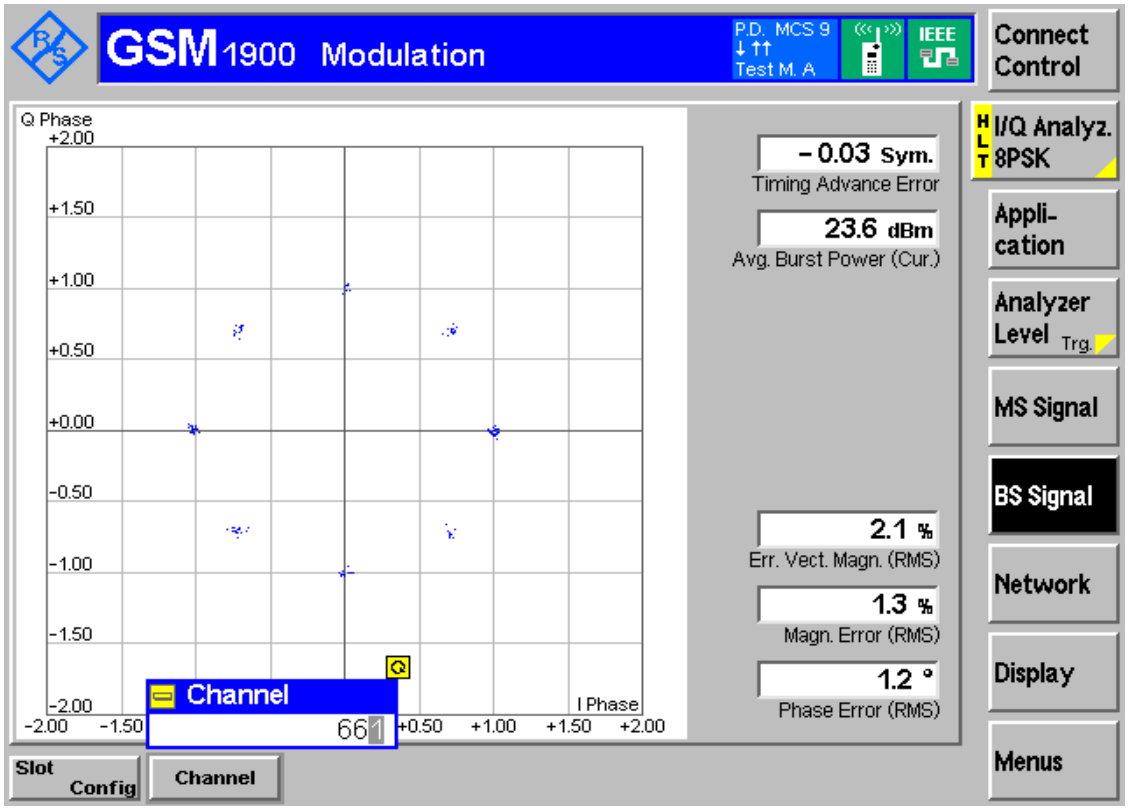
3.1.2.1 Test Mode = GSM/TM1

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	241.28	314.19	Pass
		MCH	242.82	316.08	Pass
		HCH	243.06	310.69	Pass
	GSM/TM2	LCH	237.90	301.85	Pass
		MCH	236.47	288.09	Pass
		HCH	235.25	298.21	Pass
GSM1900	GSM/TM1	LCH	245.05	312.06	Pass
		MCH	243.29	314.72	Pass
		HCH	241.80	312.01	Pass
	GSM/TM2	LCH	247.56	318.58	Pass
		MCH	245.64	315.10	Pass
		HCH	240.84	310.06	Pass

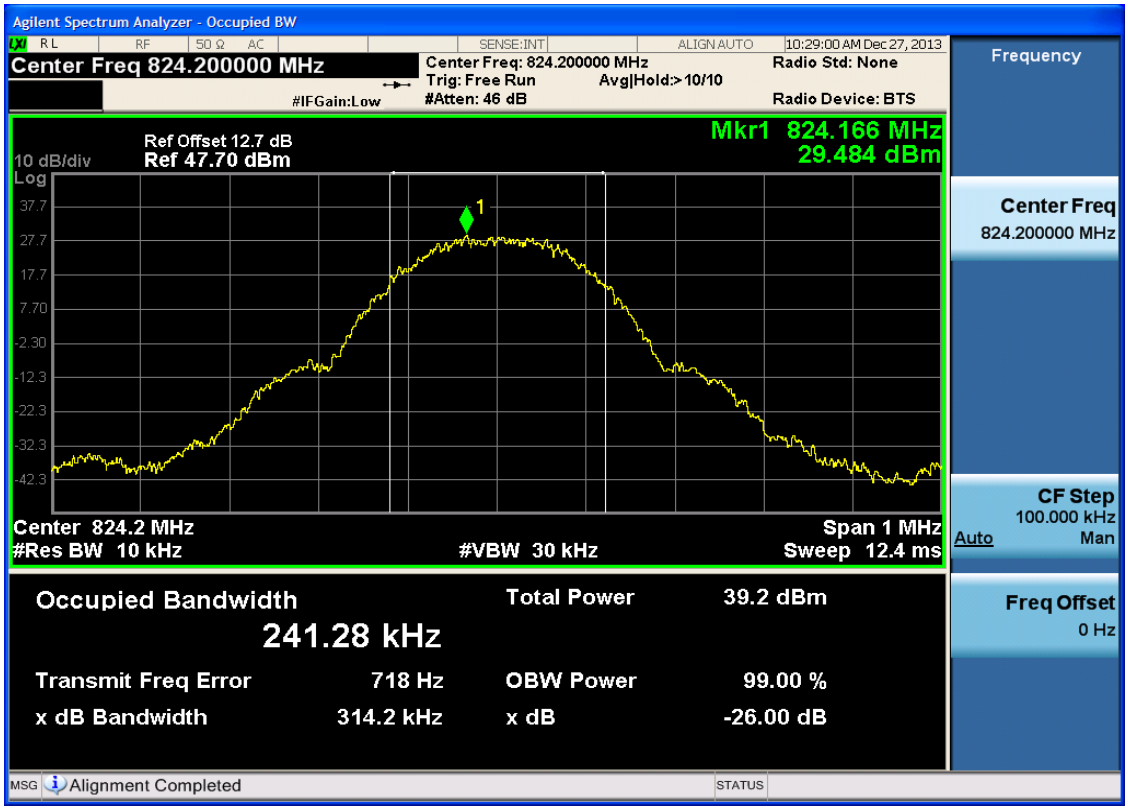
Part II - Test Plots

4.1 For GSM

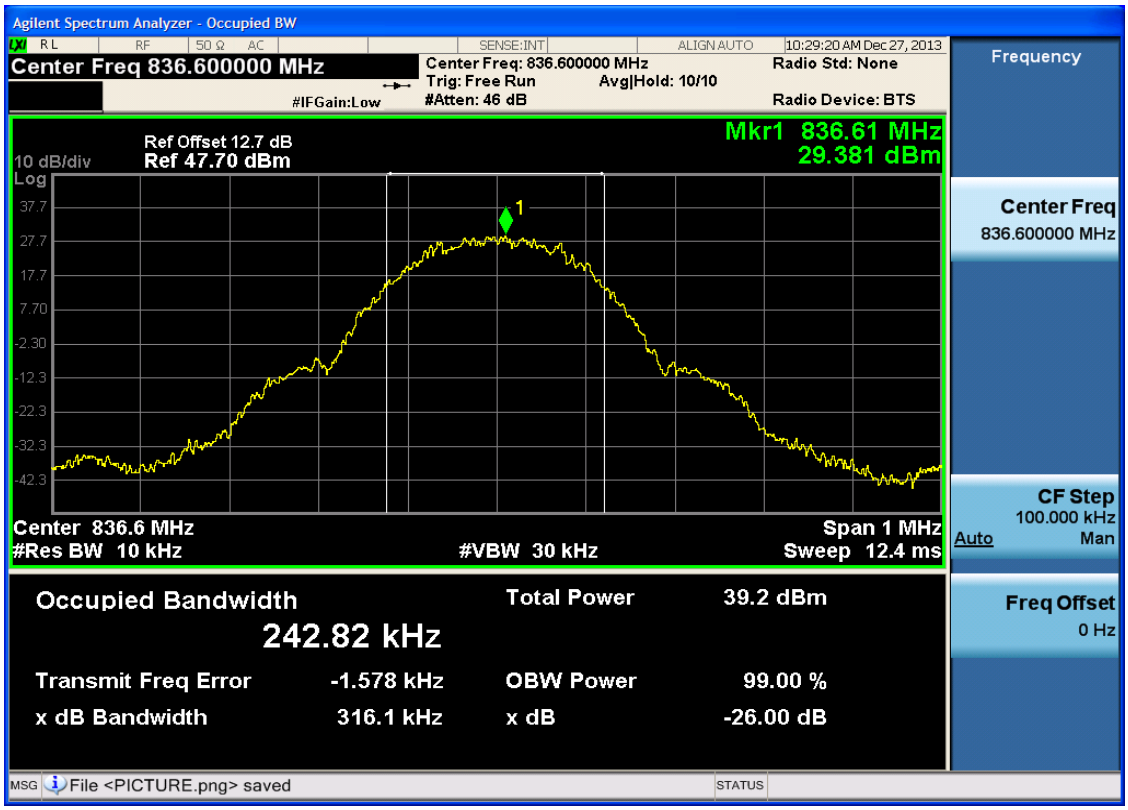
4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/TM1

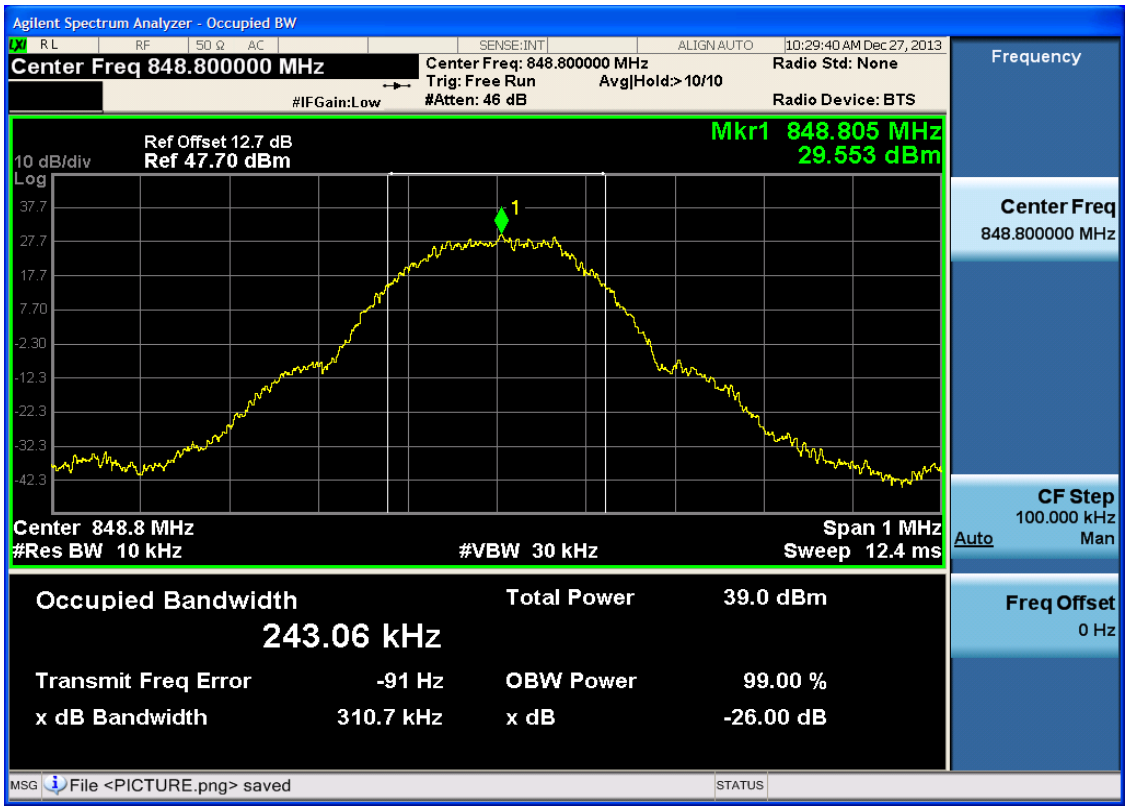
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH

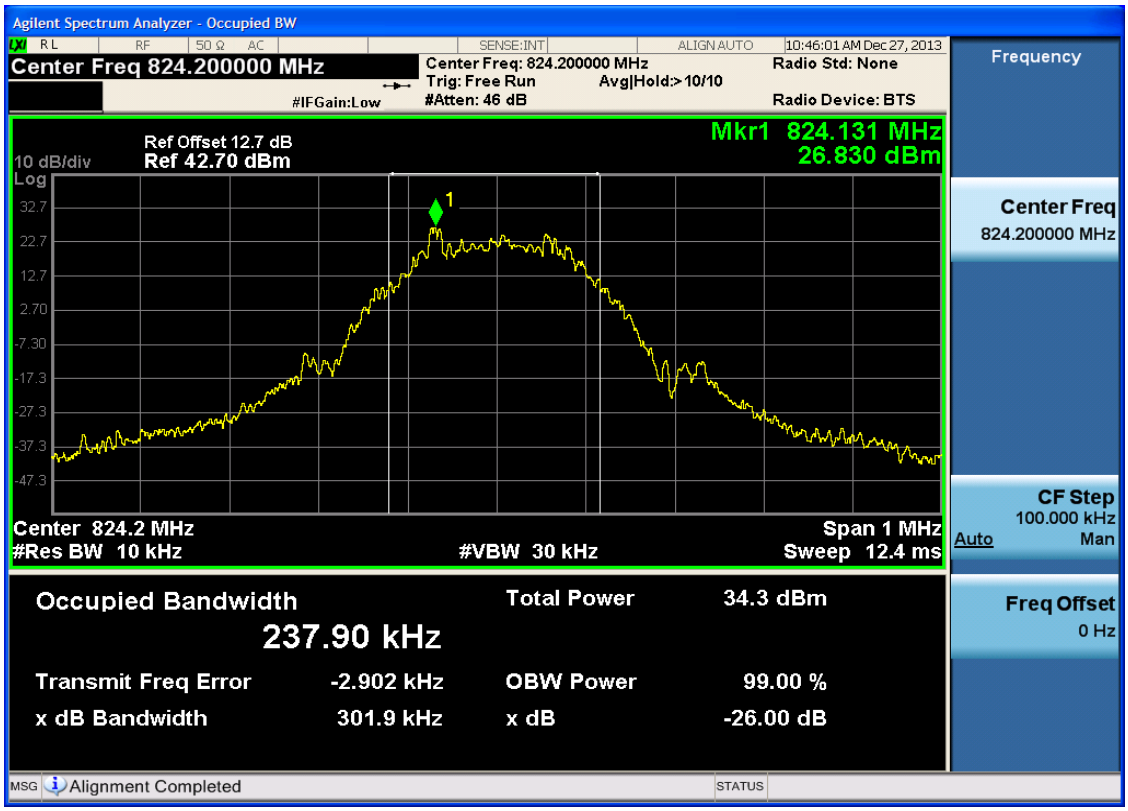


4.1.1.1.3 Test Channel = HCH

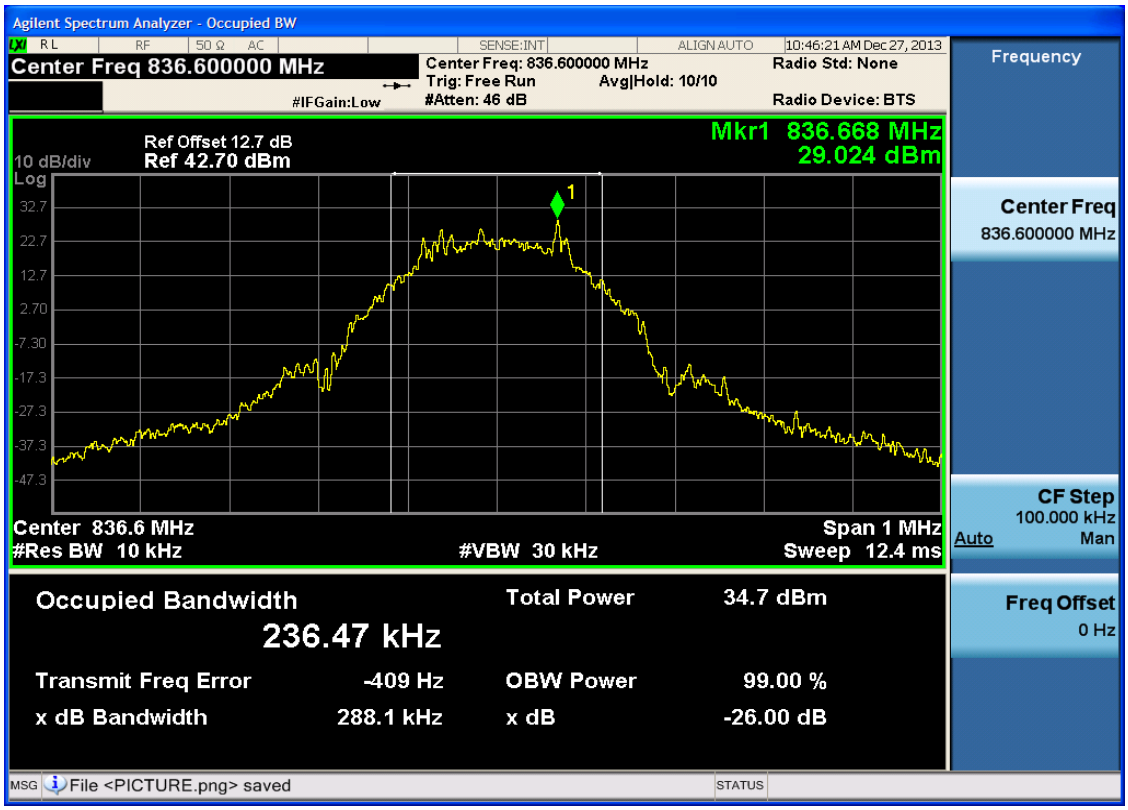


4.1.1.2 Test Mode = GSM/TM2

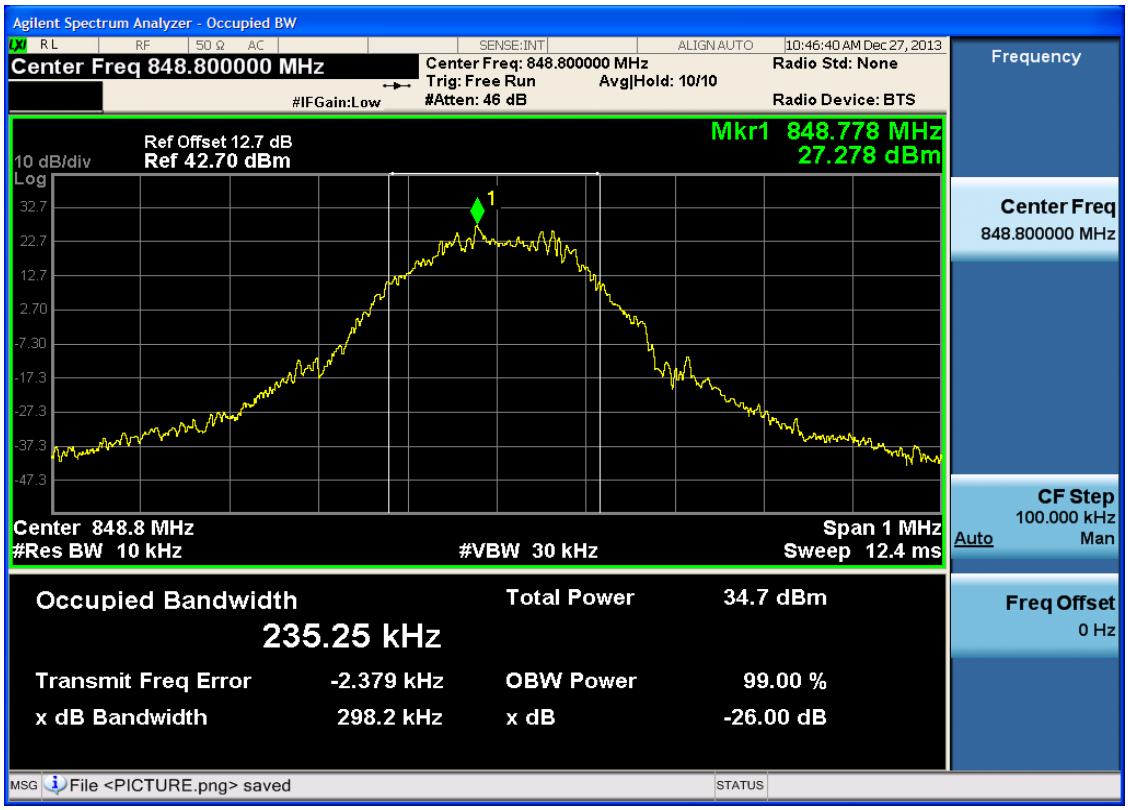
4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH



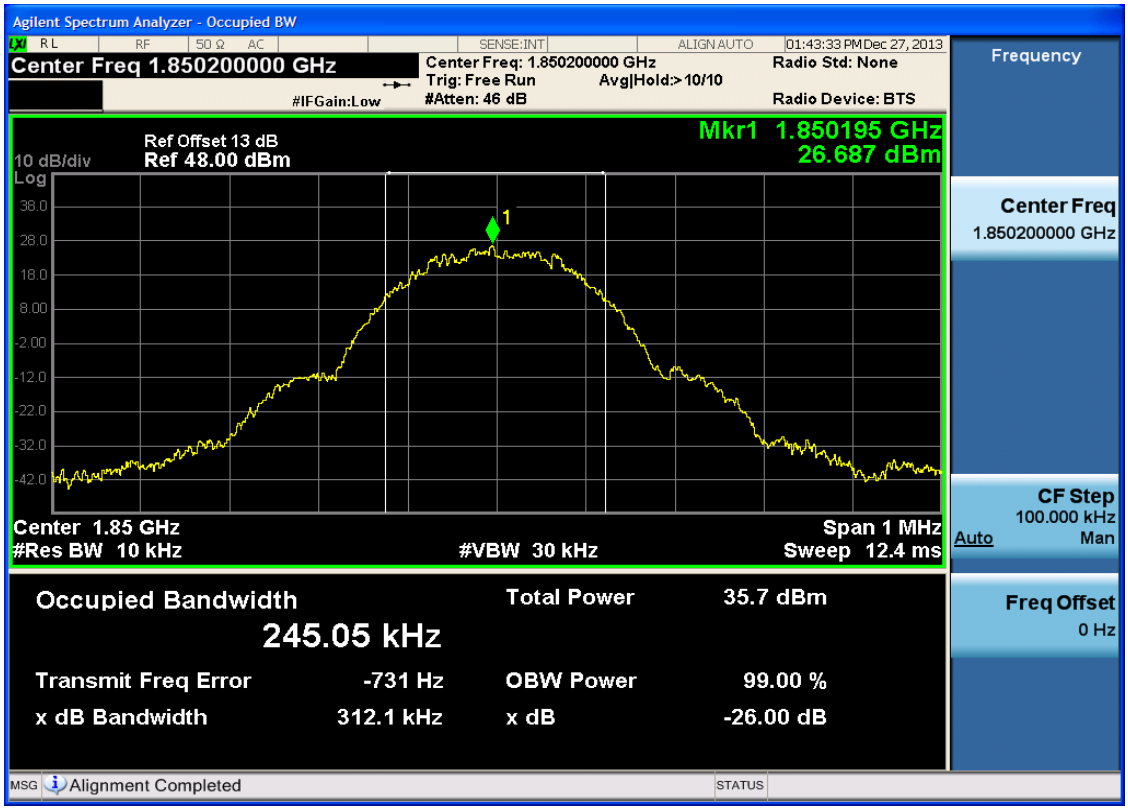
4.1.1.2.3 Test Channel = HCH



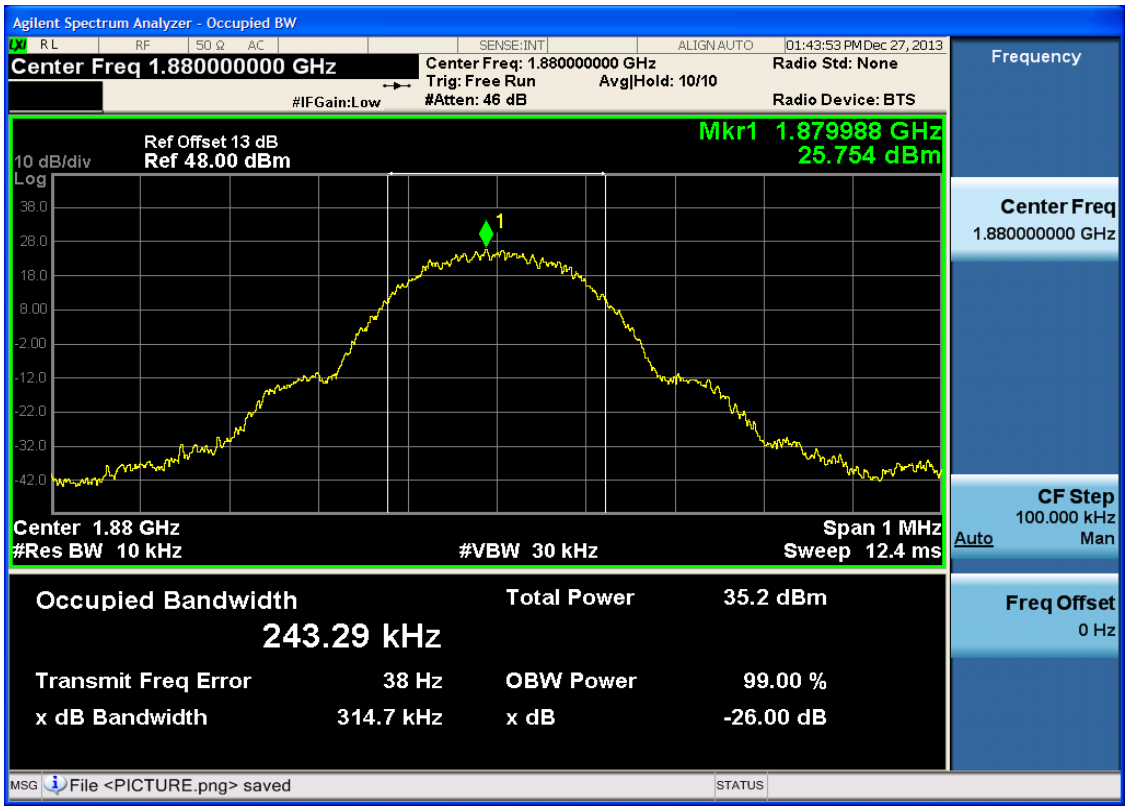
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

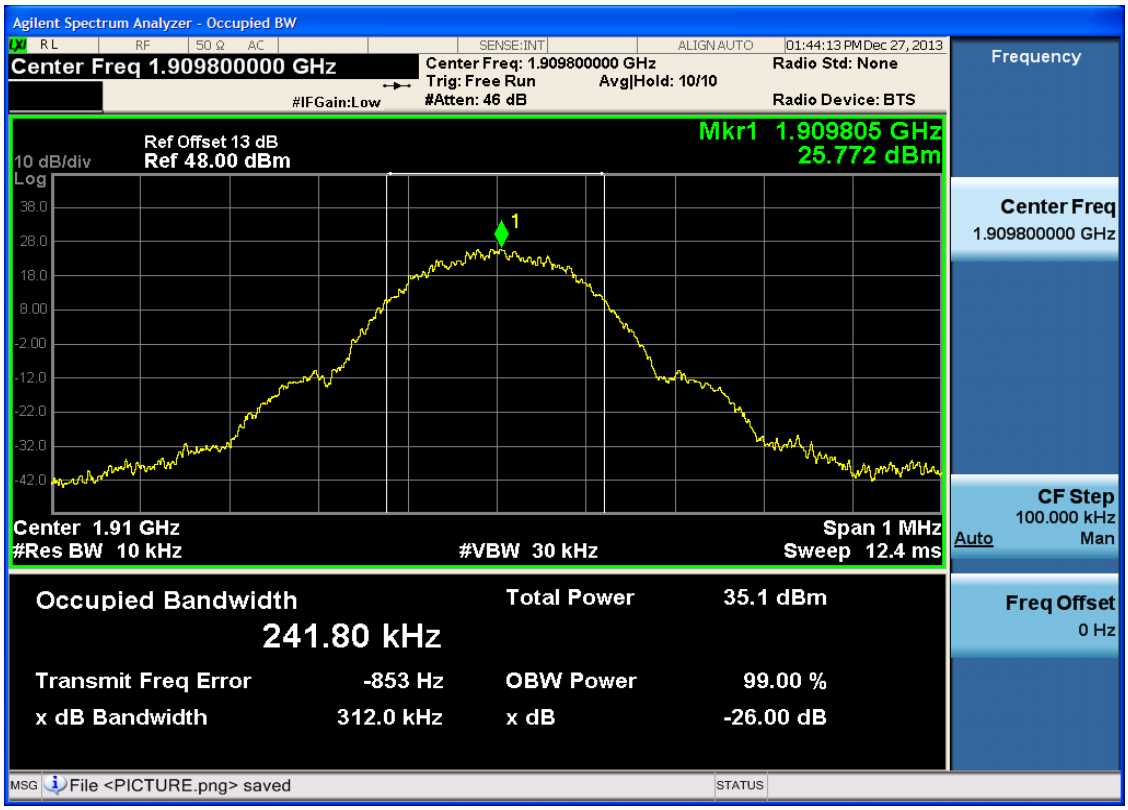
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH

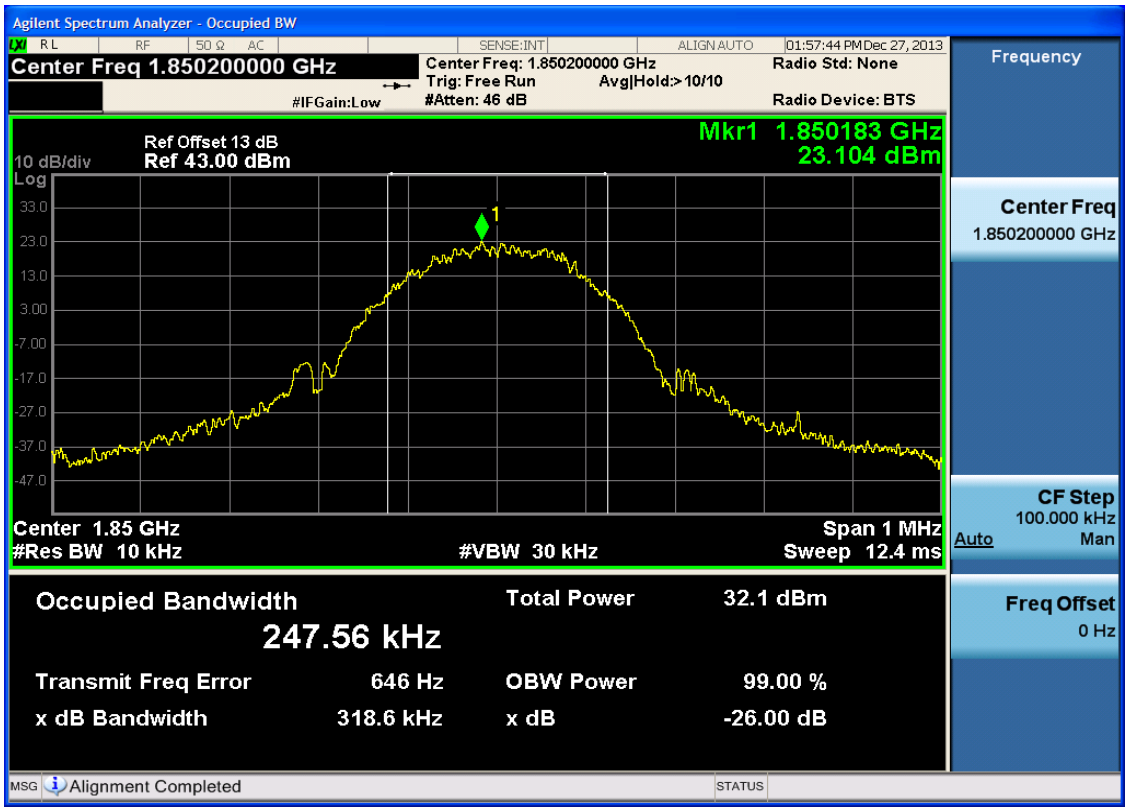


4.1.2.1.3 Test Channel = HCH

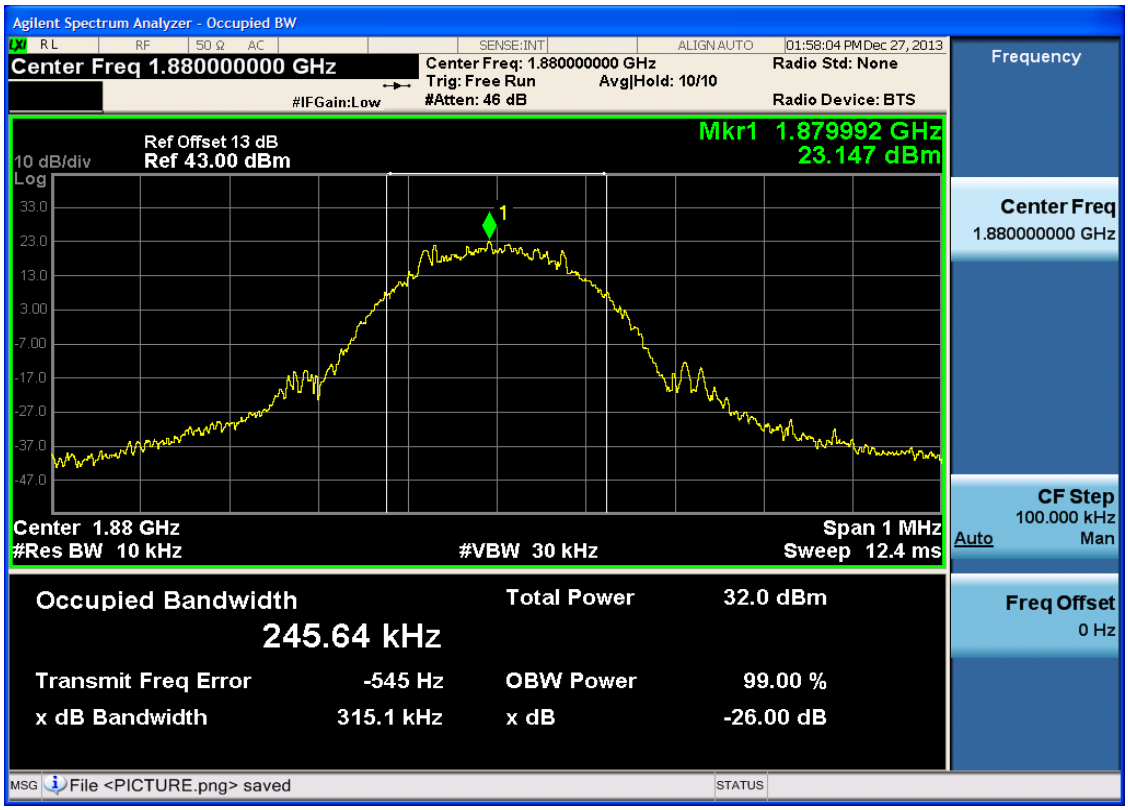


4.1.2.2 Test Mode = GSM/TM2

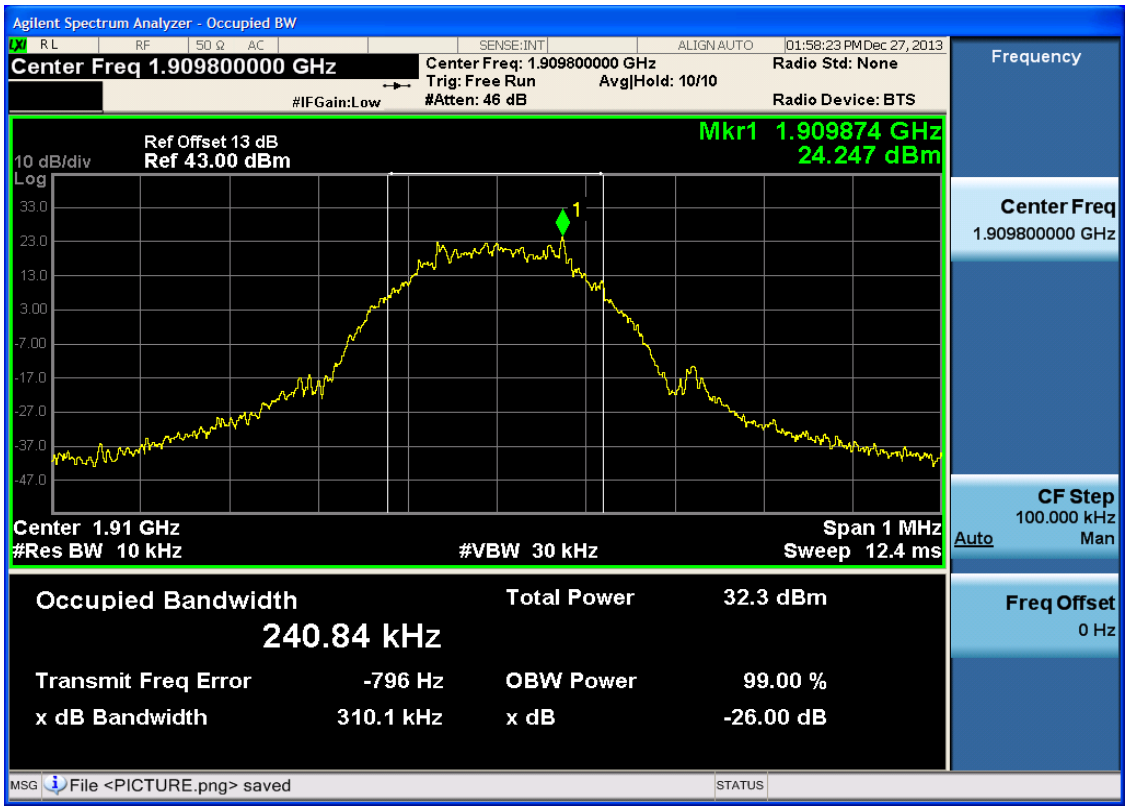
4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

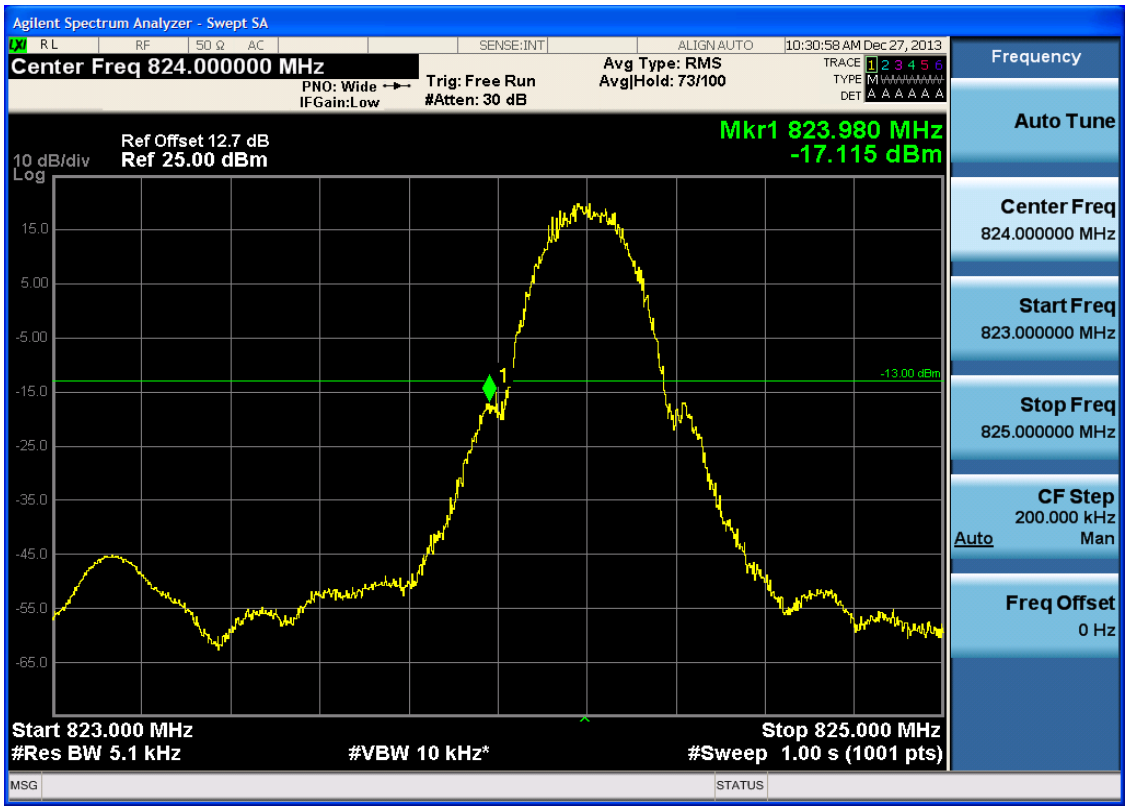
Part I - Test Plots

5.1 For GSM

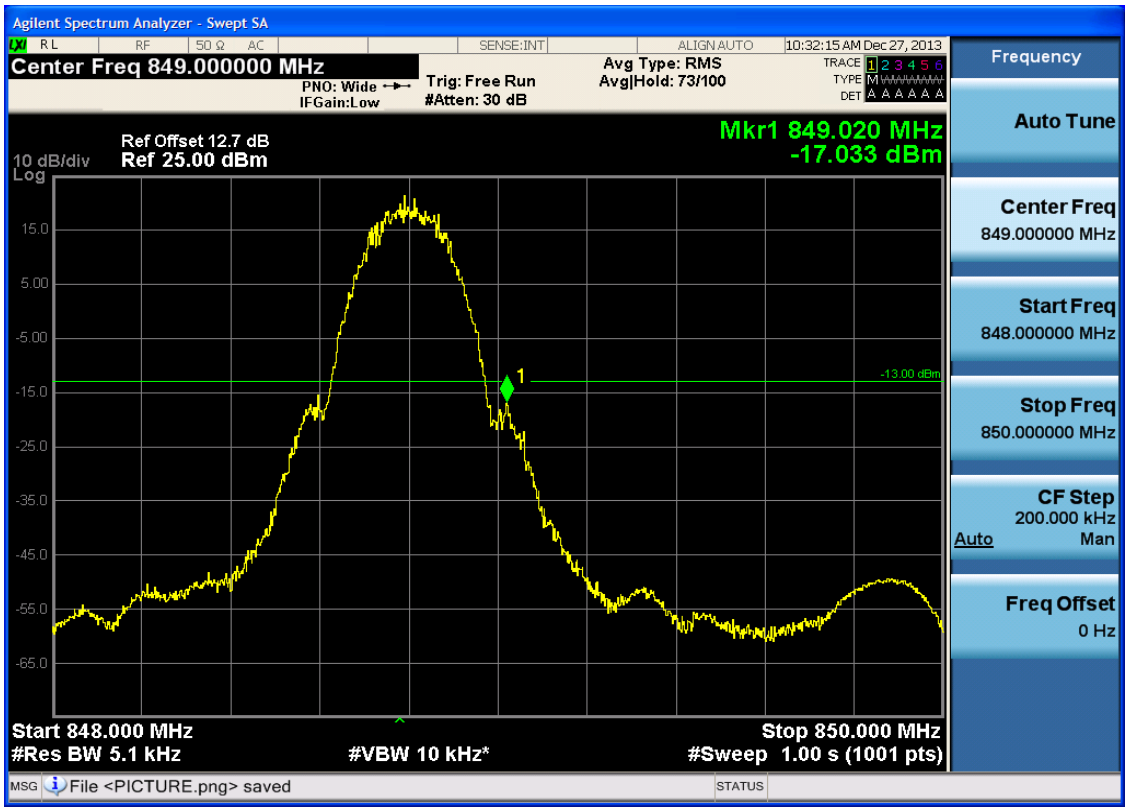
5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH

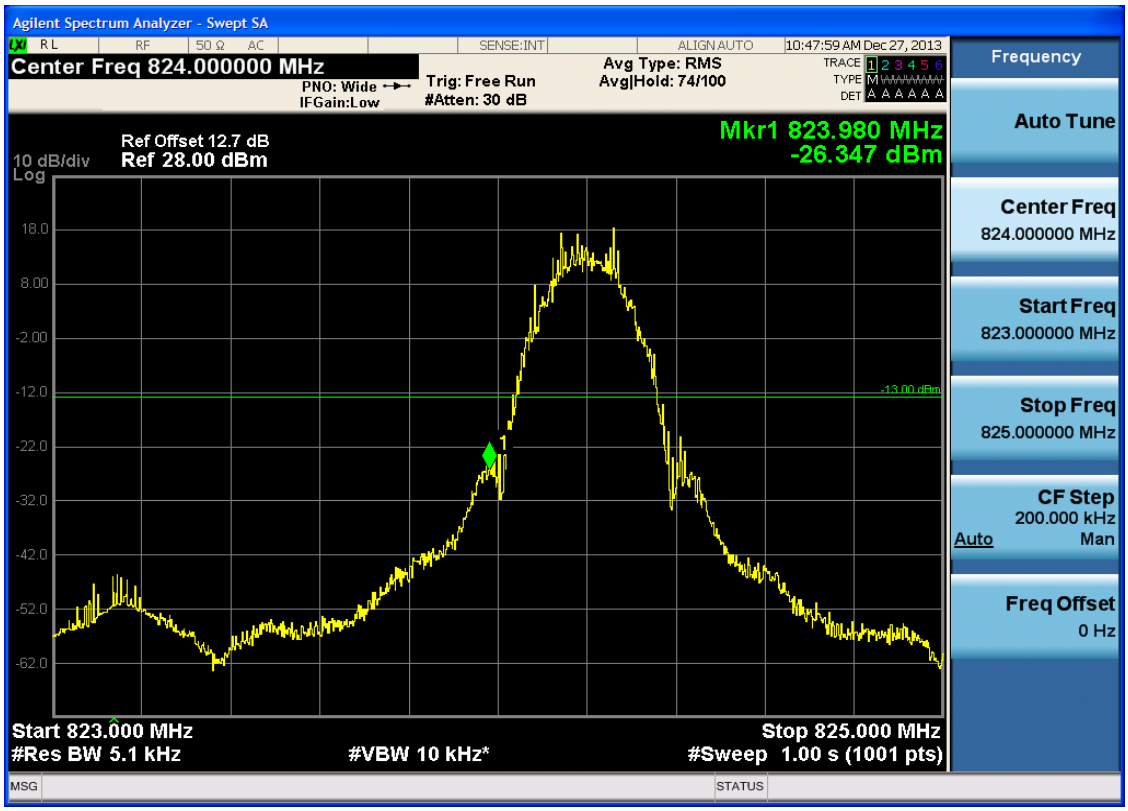


5.1.1.1.2 Test Channel = HCH

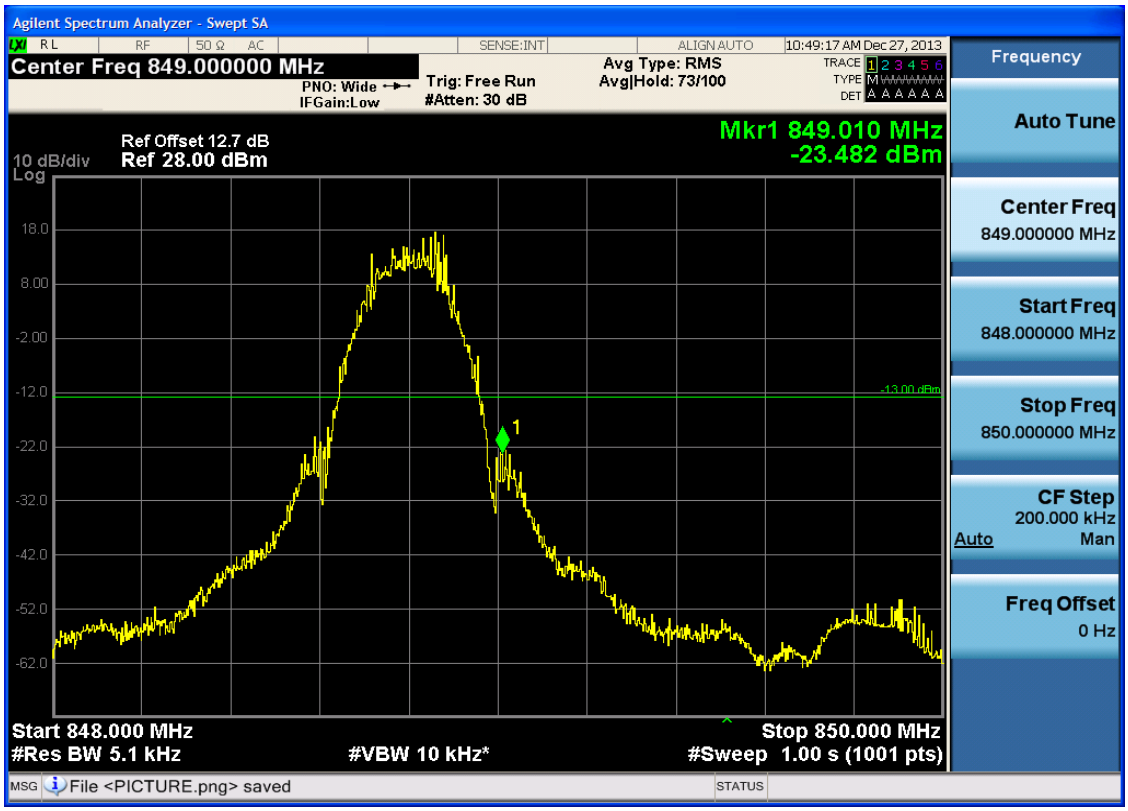


5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



5.1.1.2.2 Test Channel = HCH

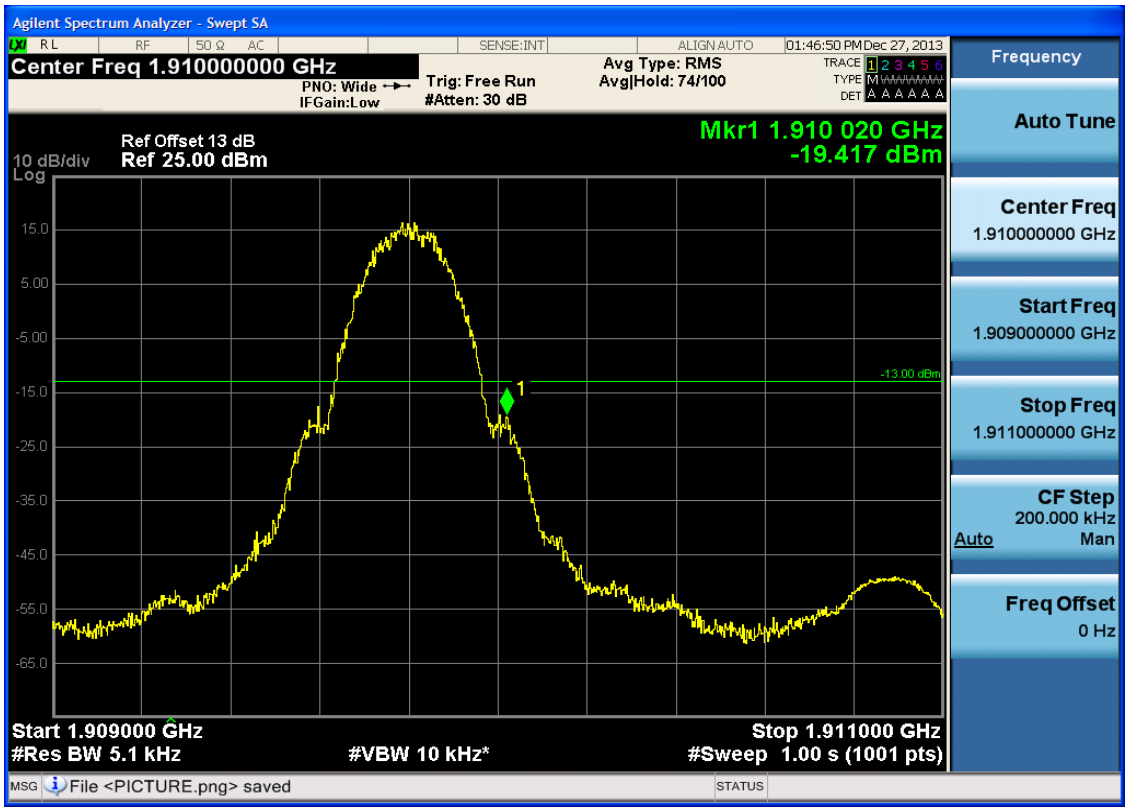


5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

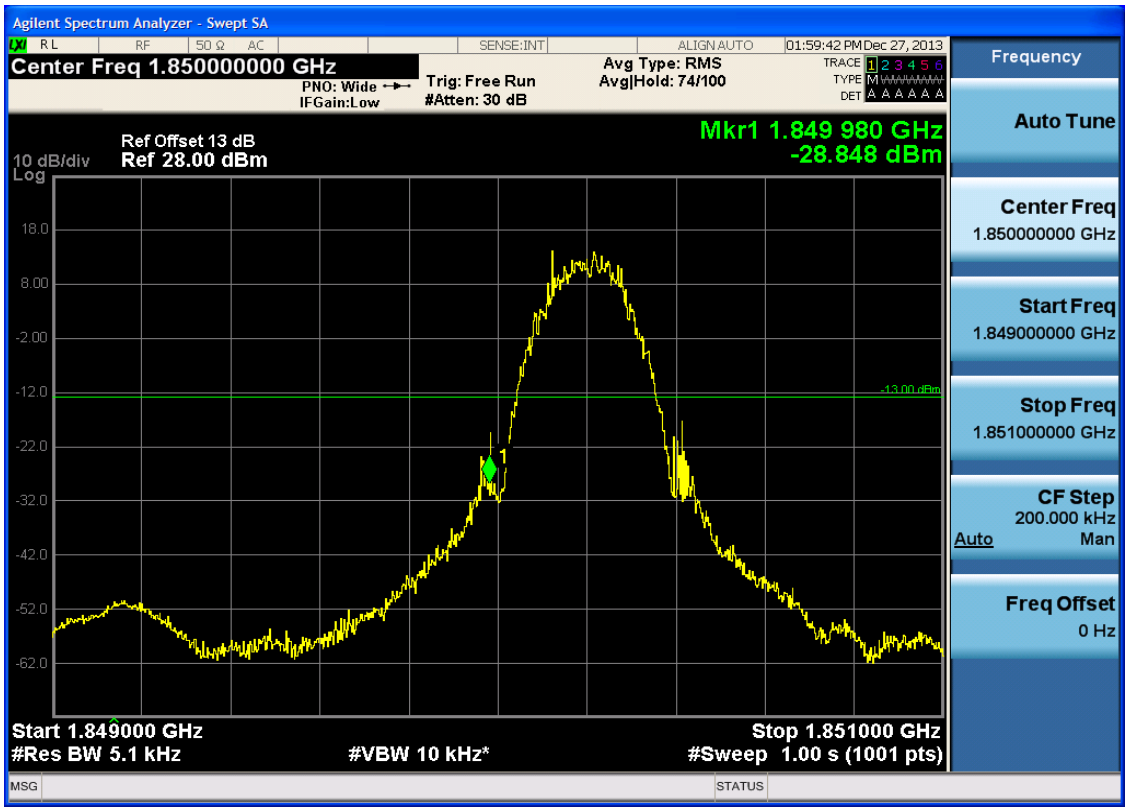
5.1.2.1.1 Test Channel = LCH

5.1.2.1.2 Test Channel = HCH

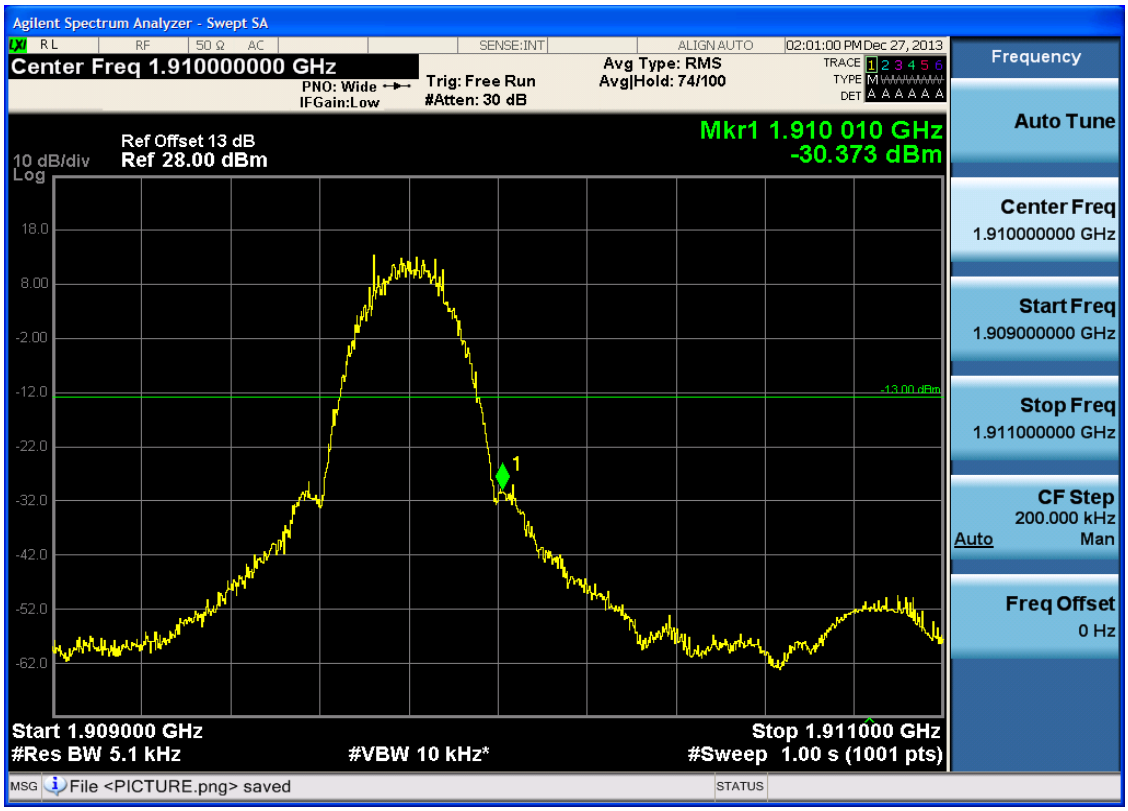


5.1.2.2 Test Mode = GSM/TM2

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.

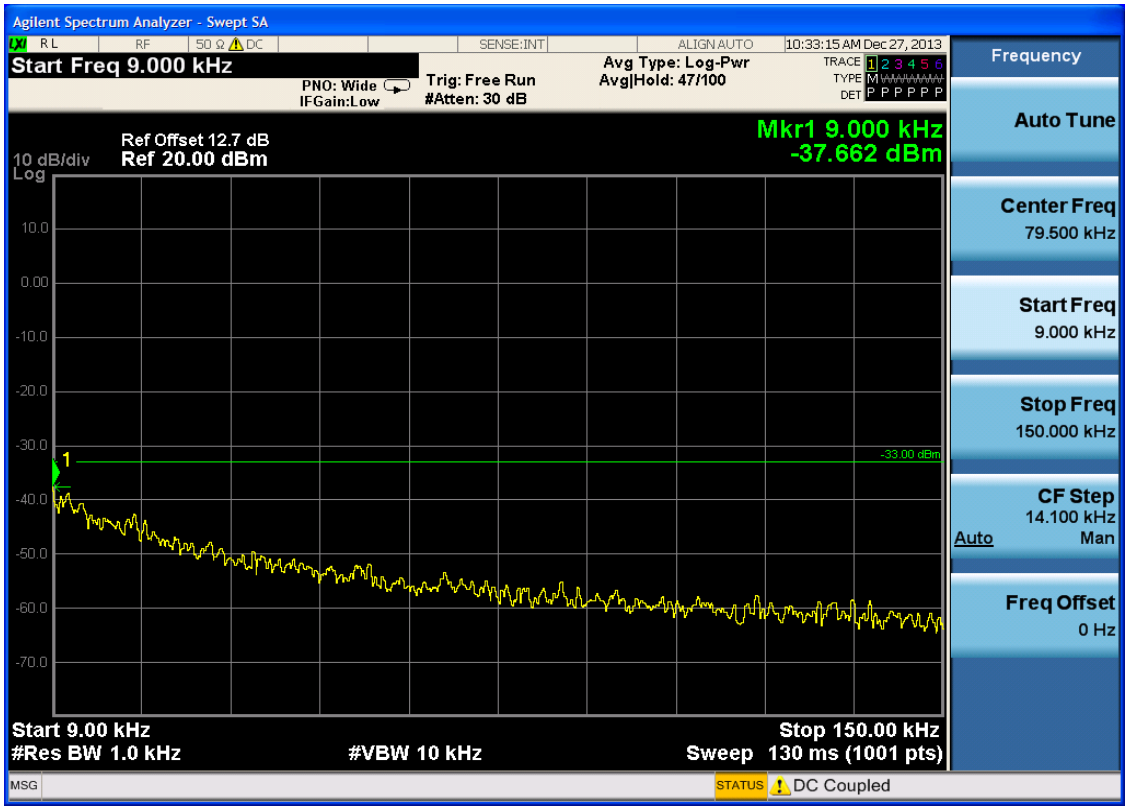
Part I - Test Plots

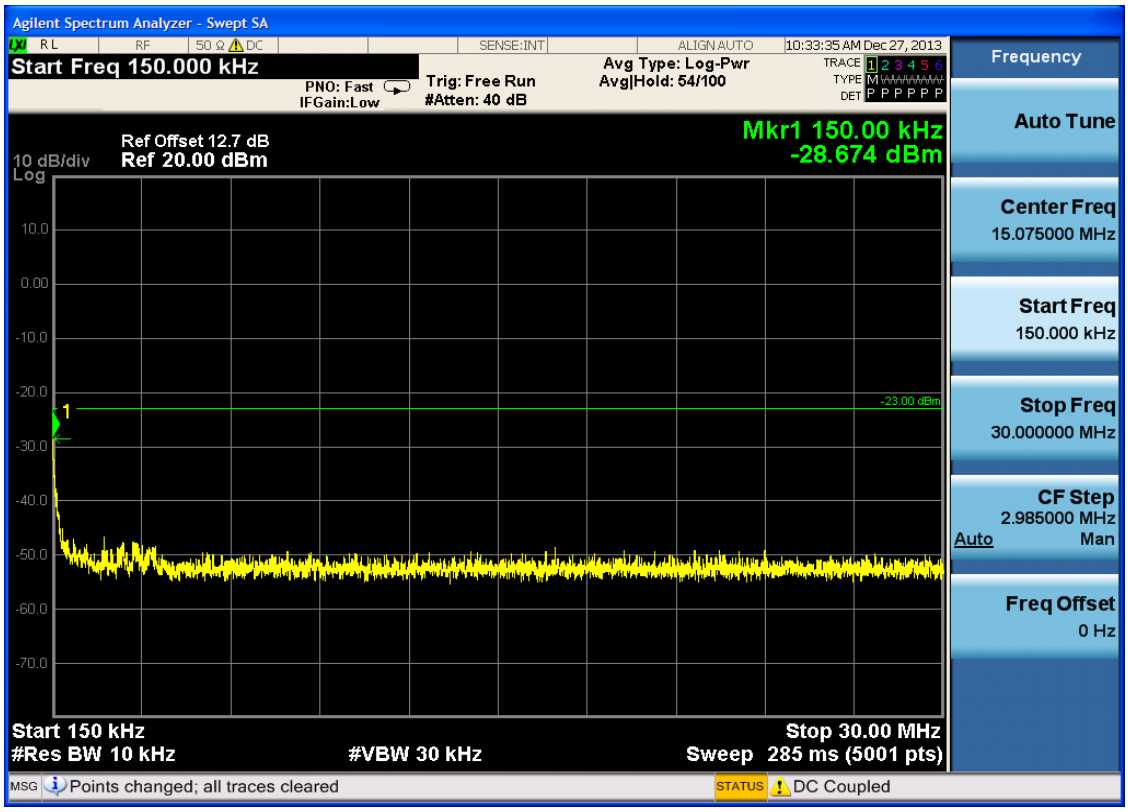
6.1 For GSM

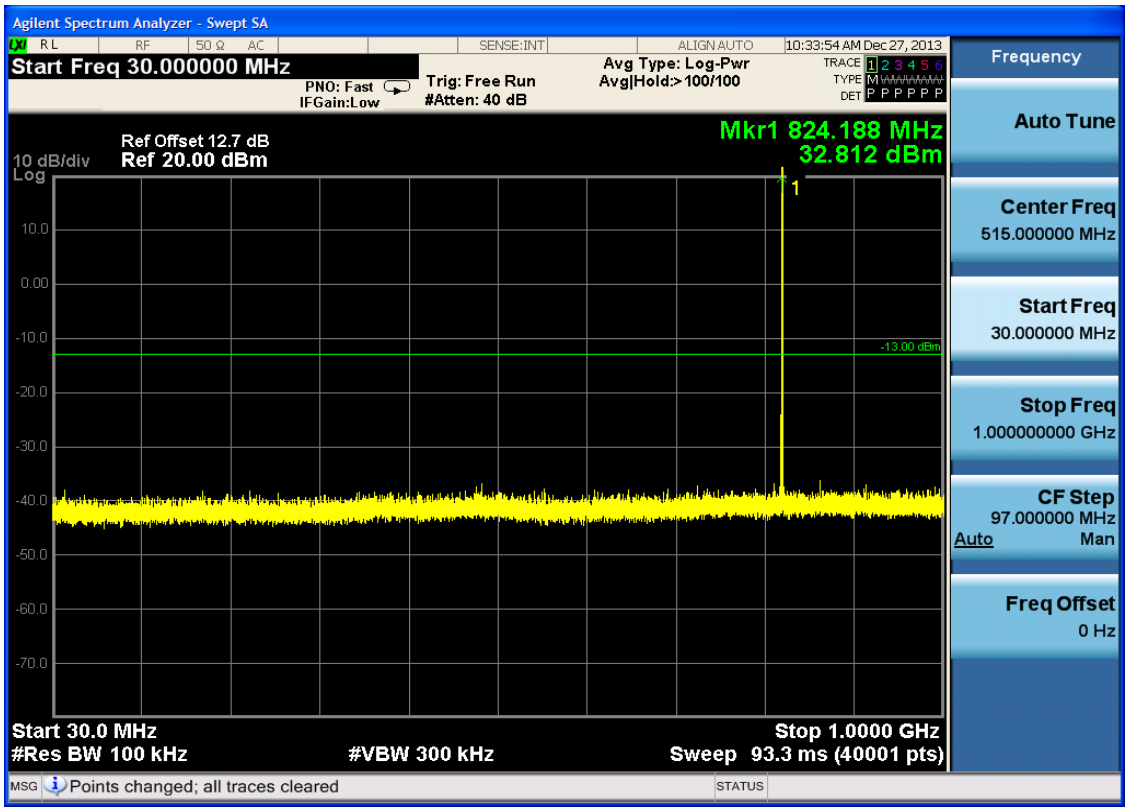
6.1.1 Test Band = GSM850

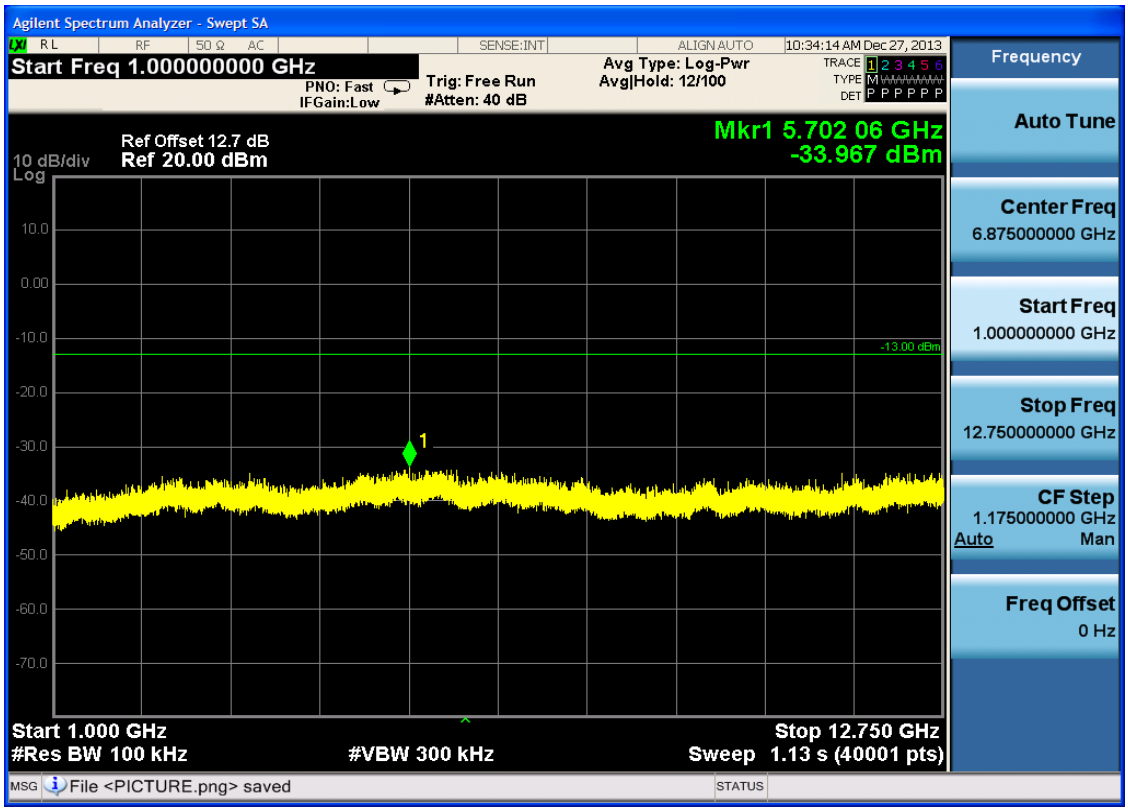
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

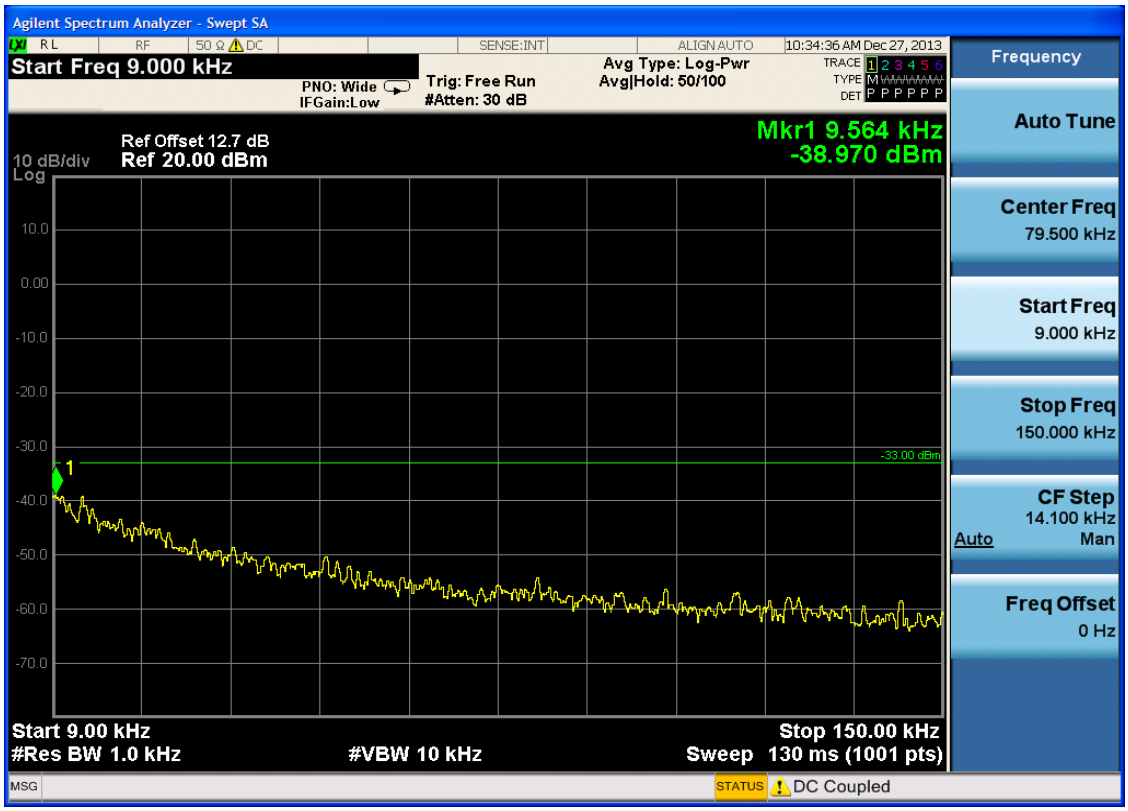


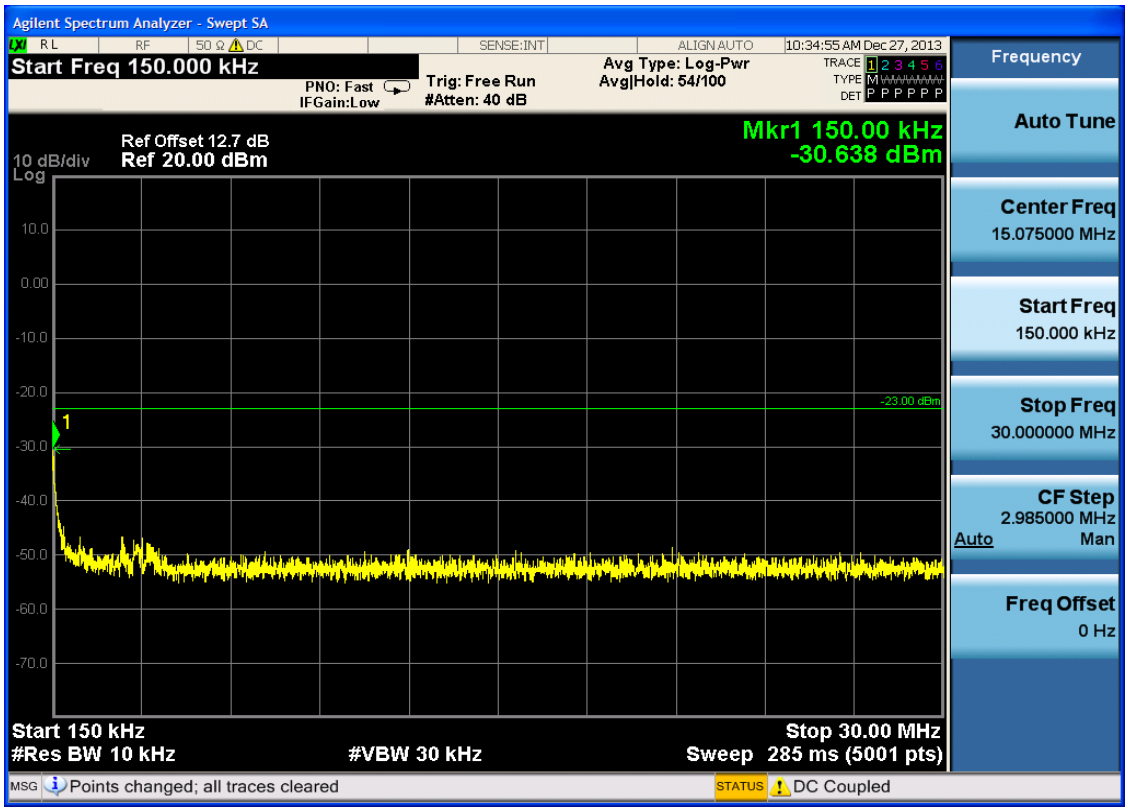


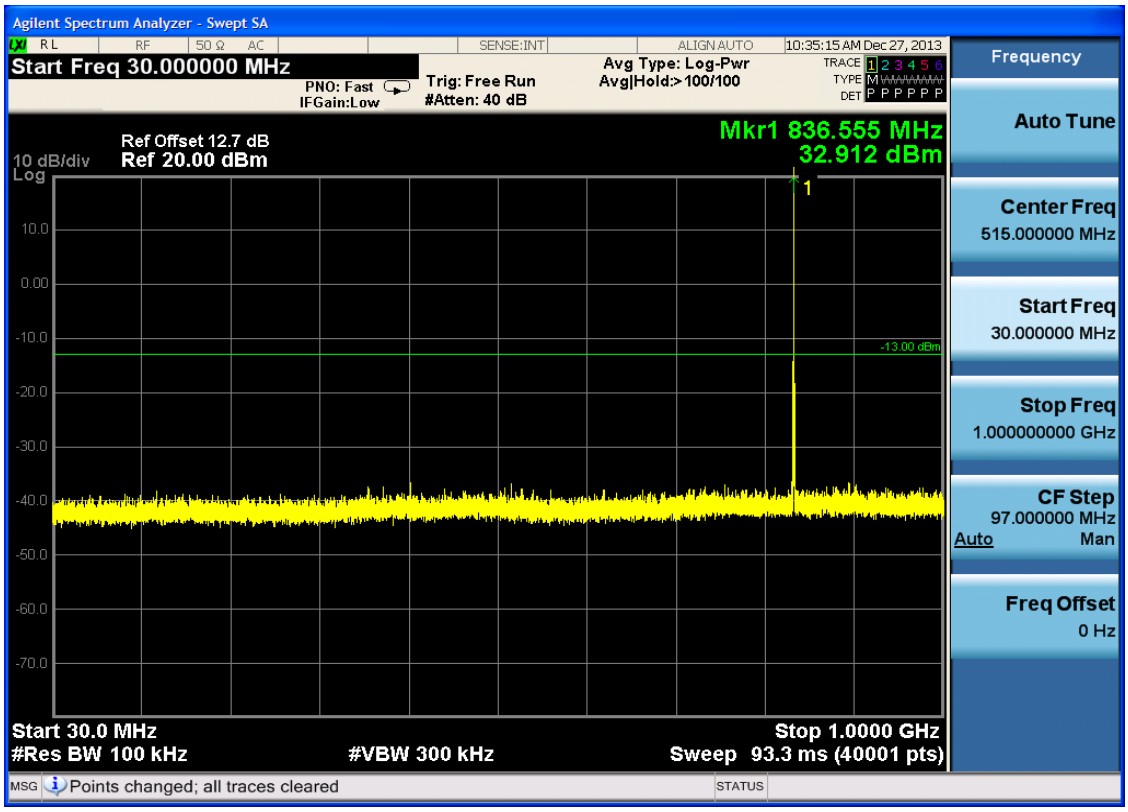


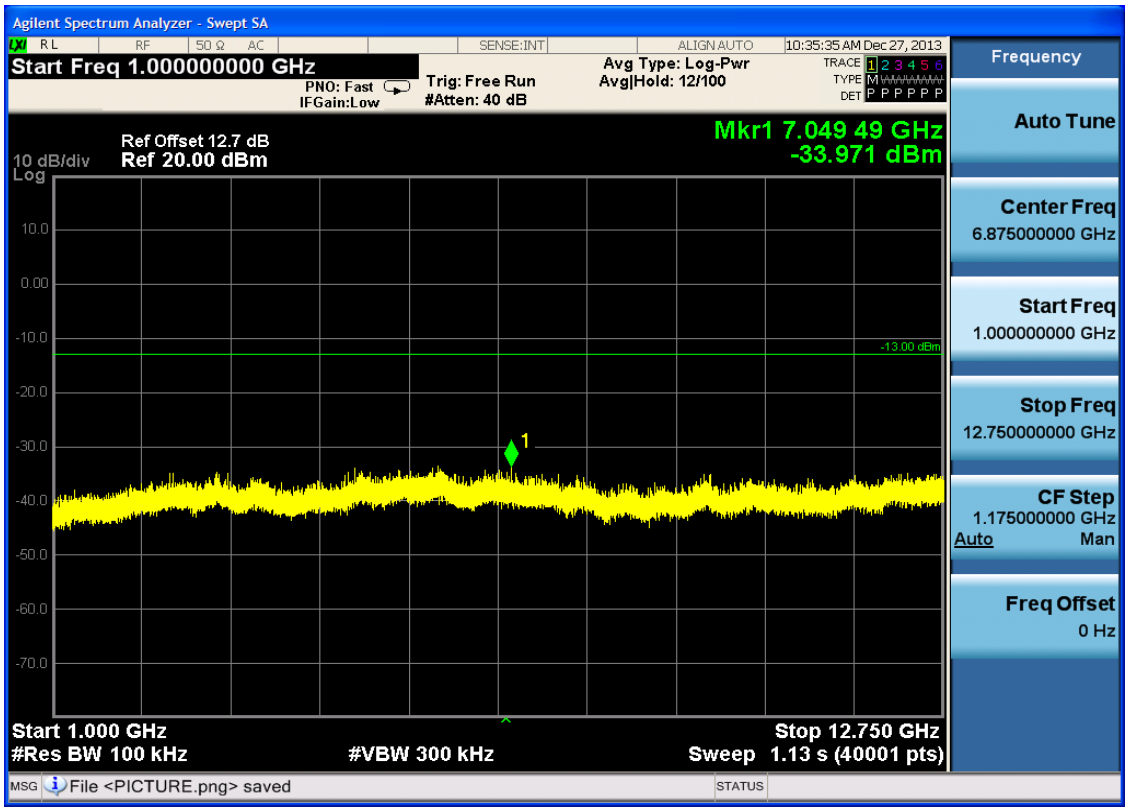


6.1.1.1.2 Test Channel = MCH

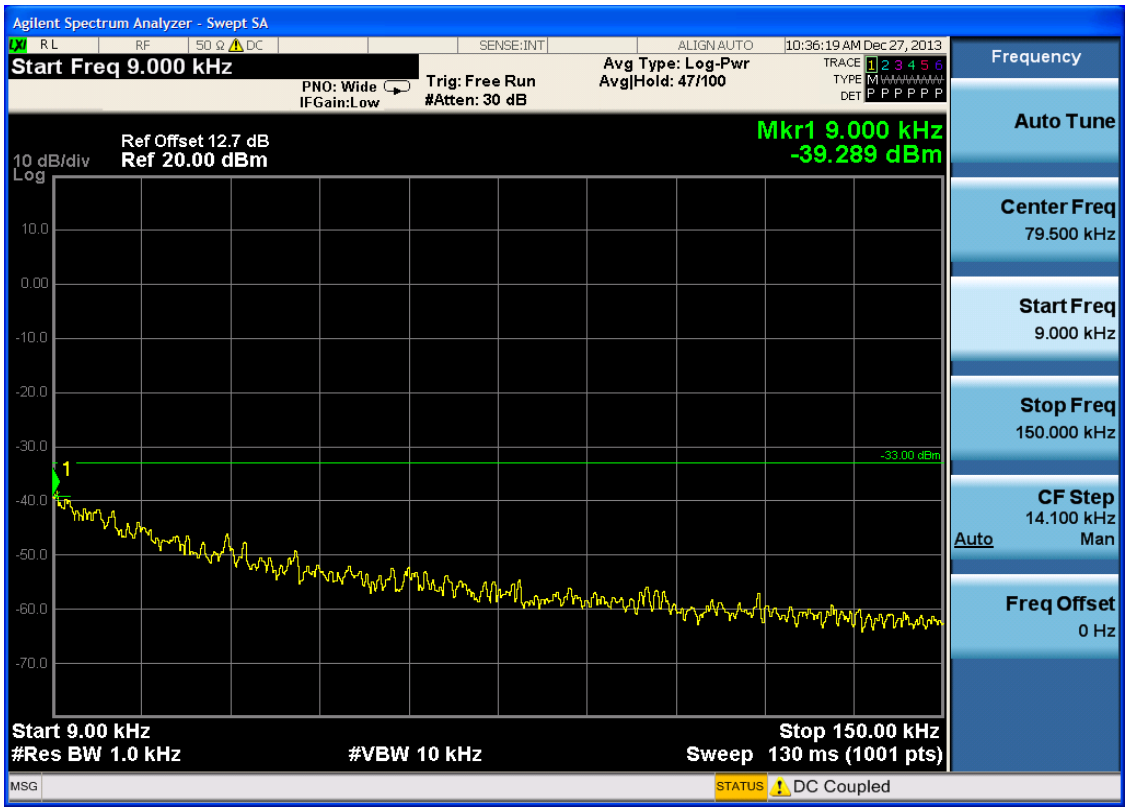


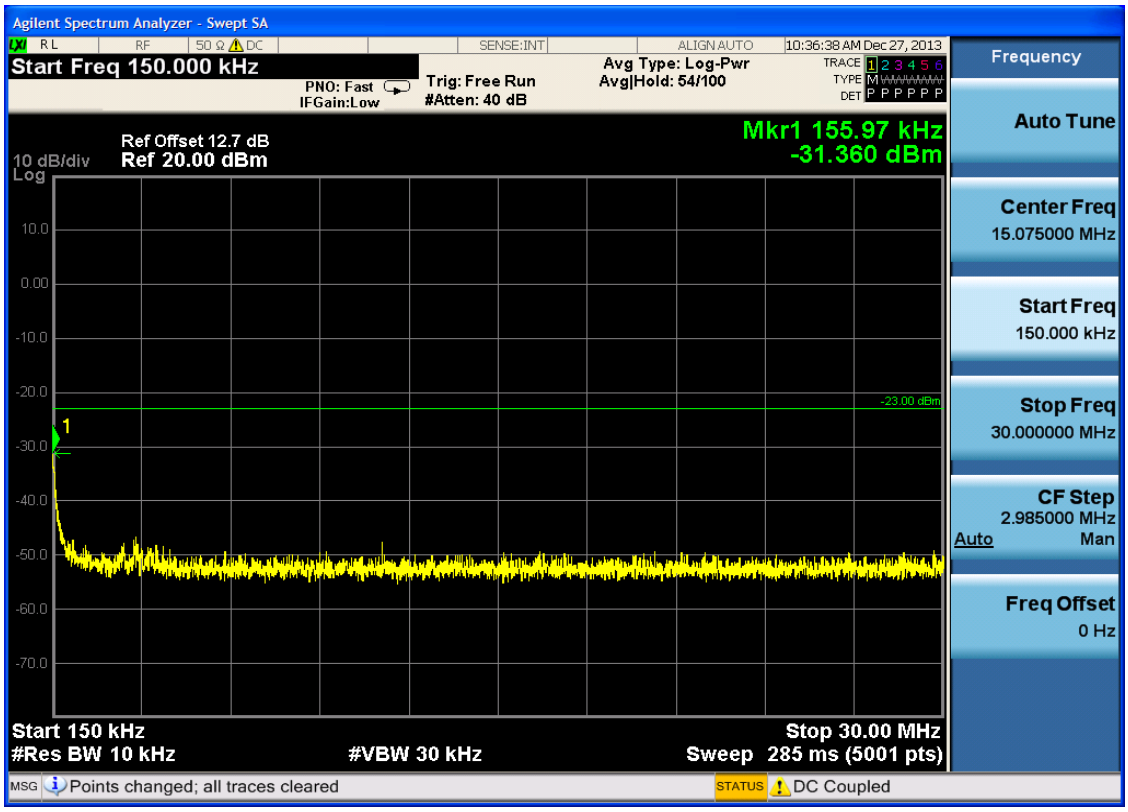


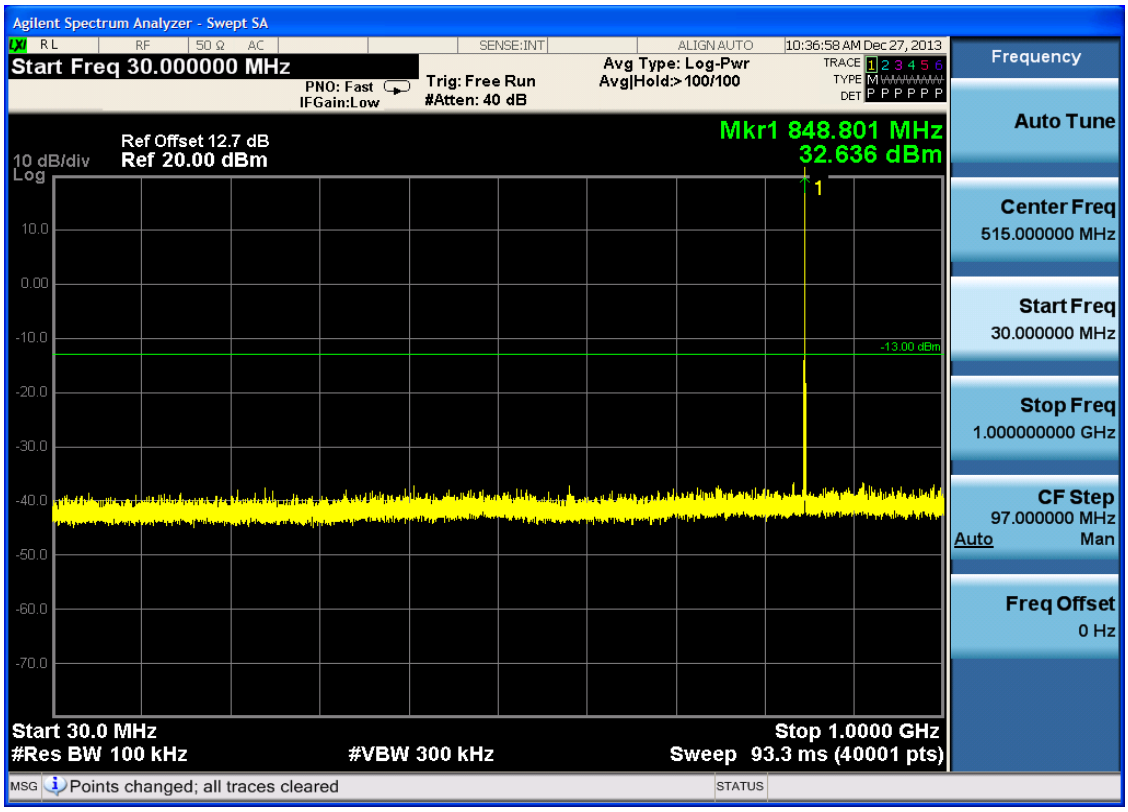


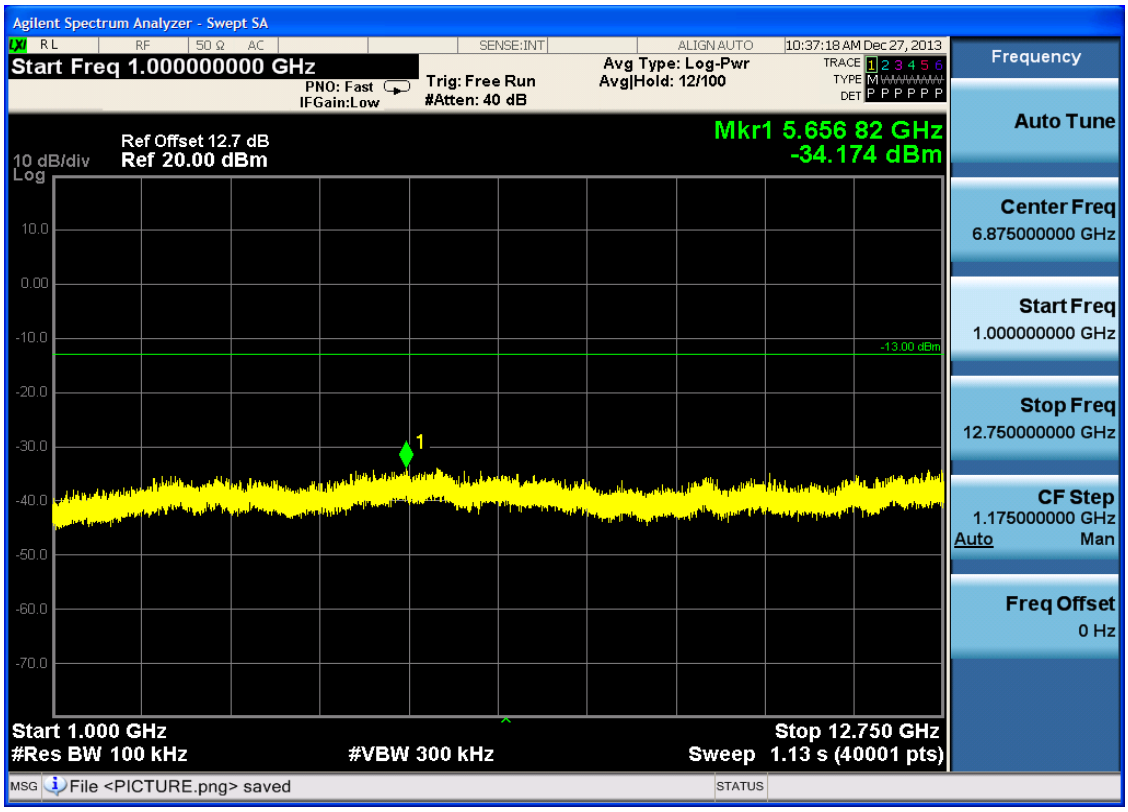


6.1.1.1.3 Test Channel = HCH



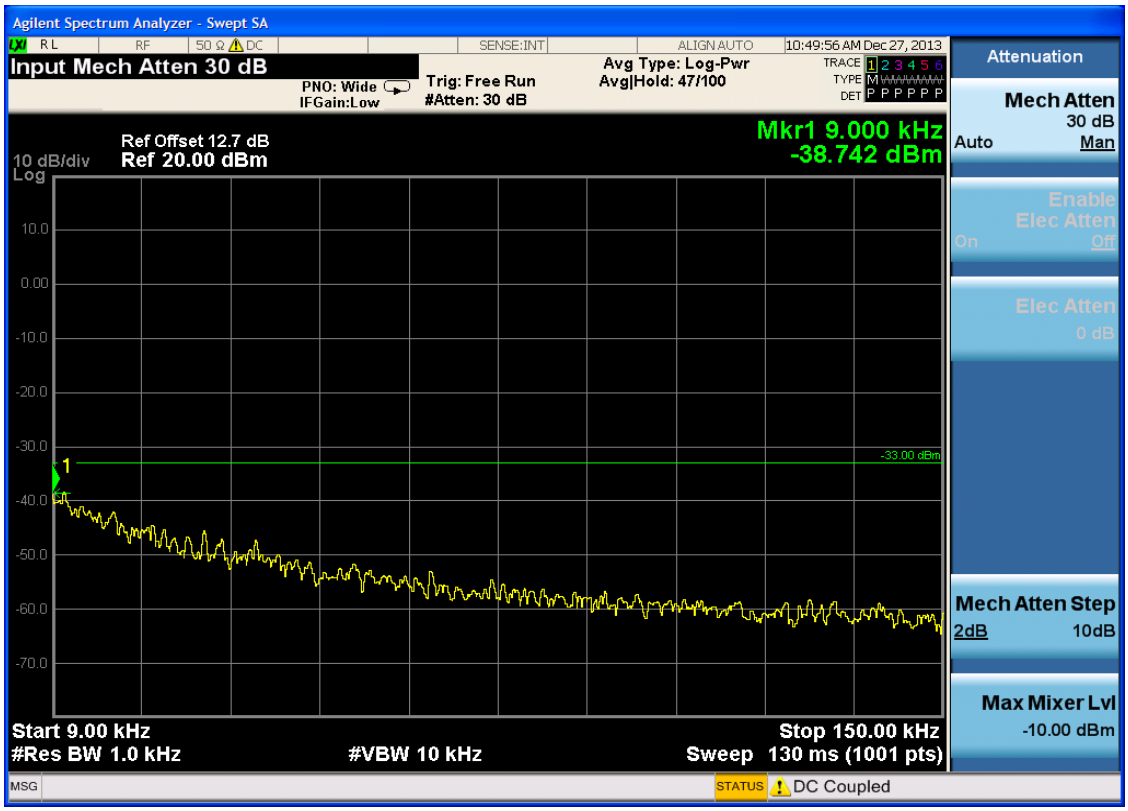


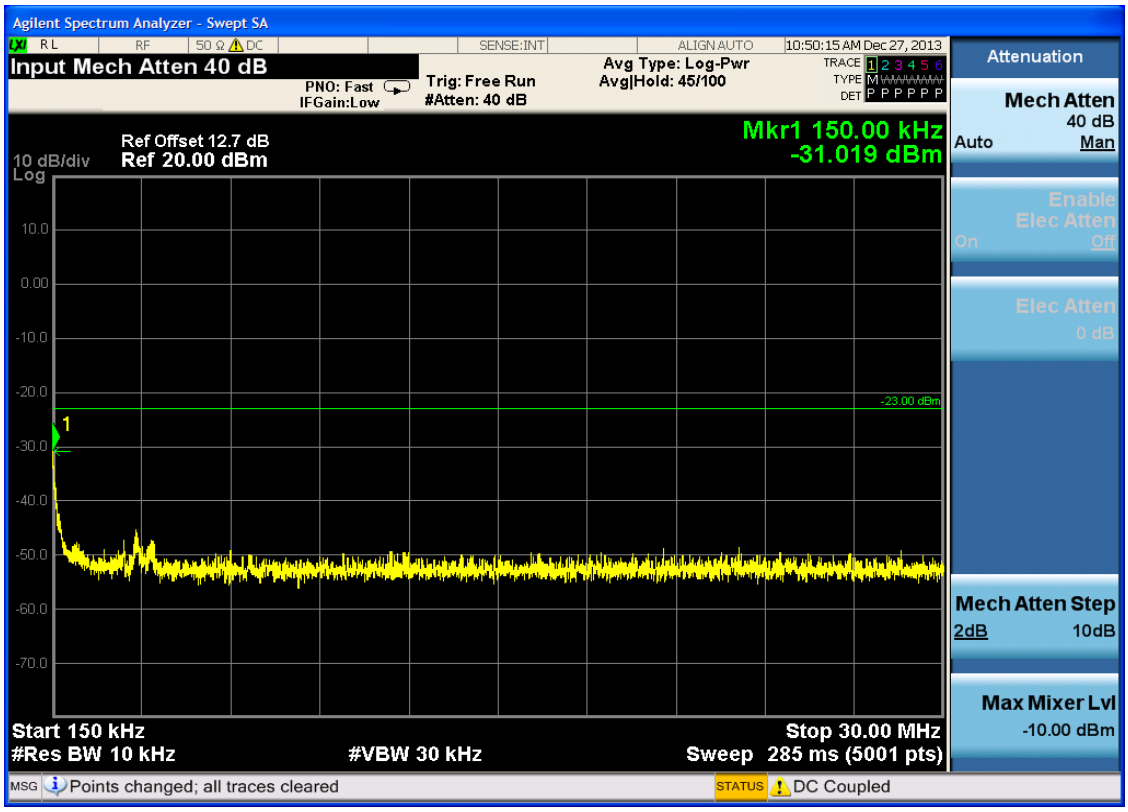


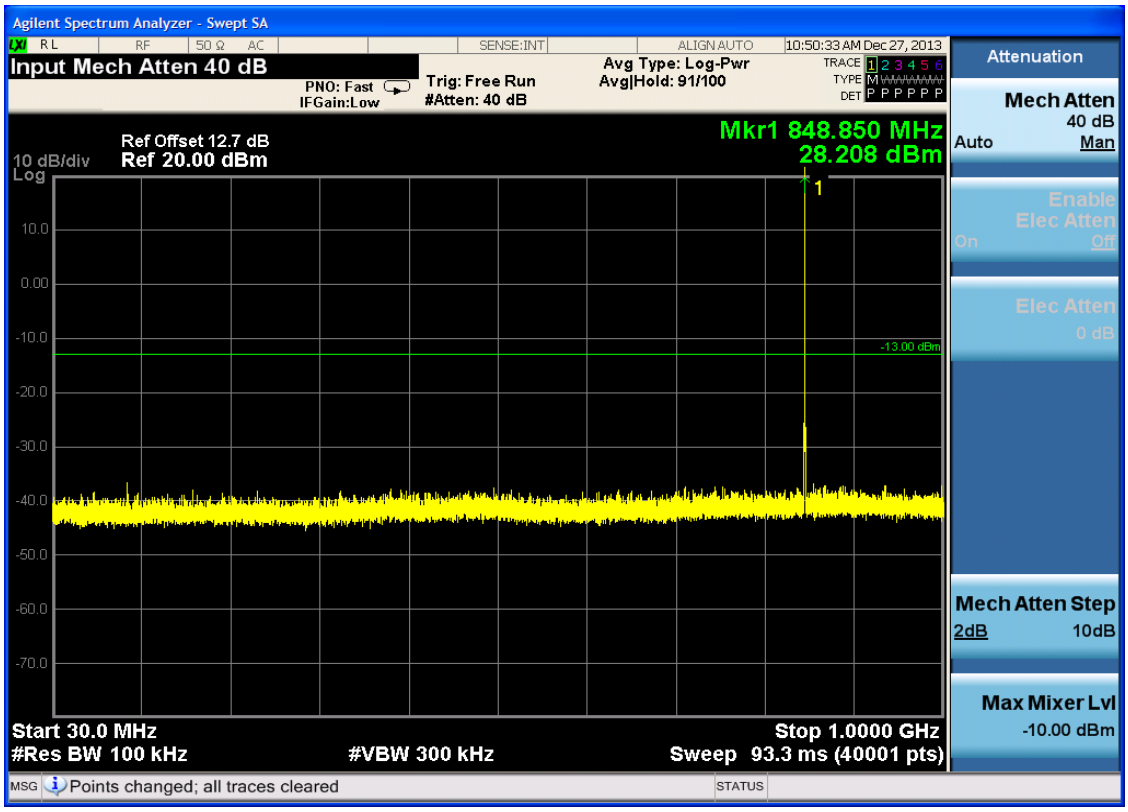


6.1.1.2 Test Mode = GSM/TM2

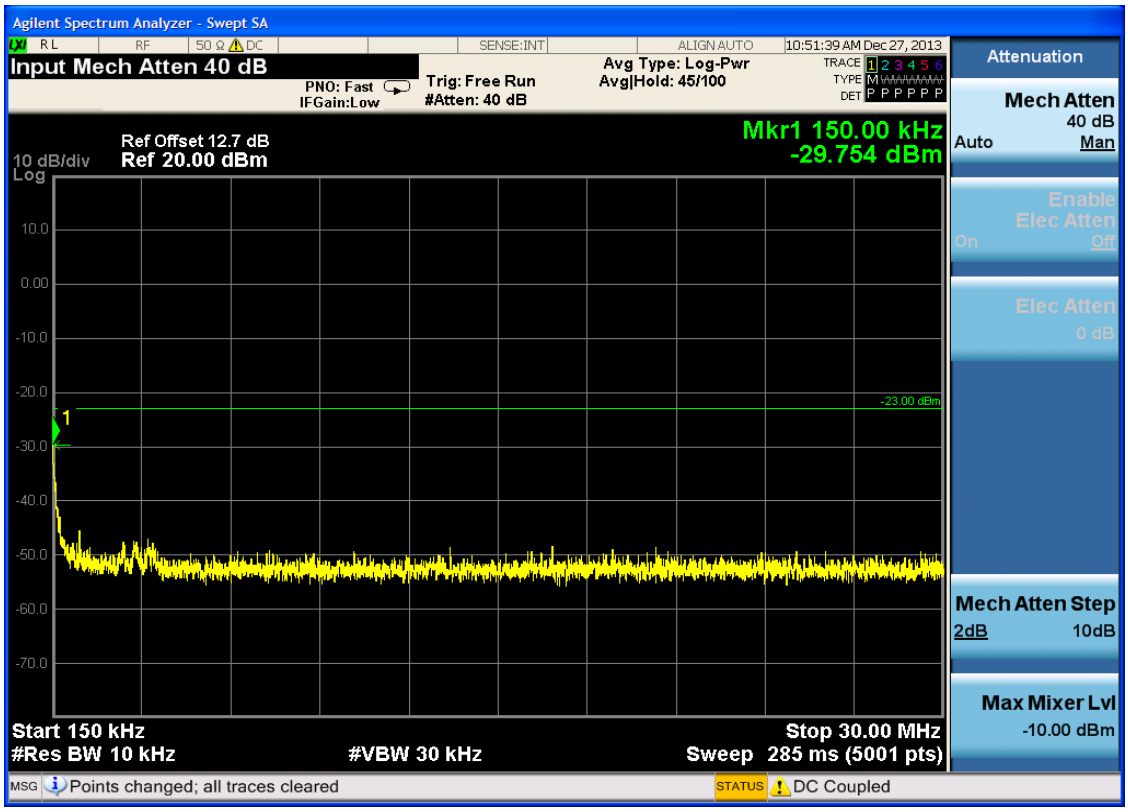
6.1.1.2.1 Test Channel = LCH

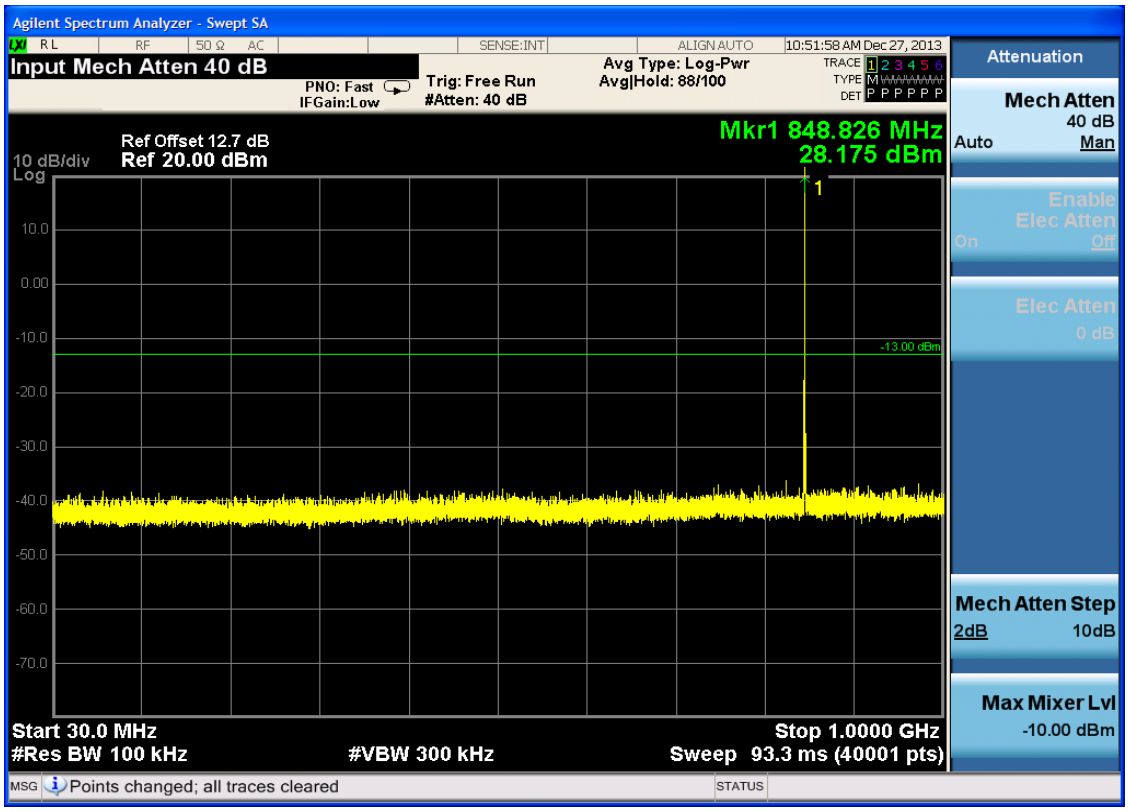


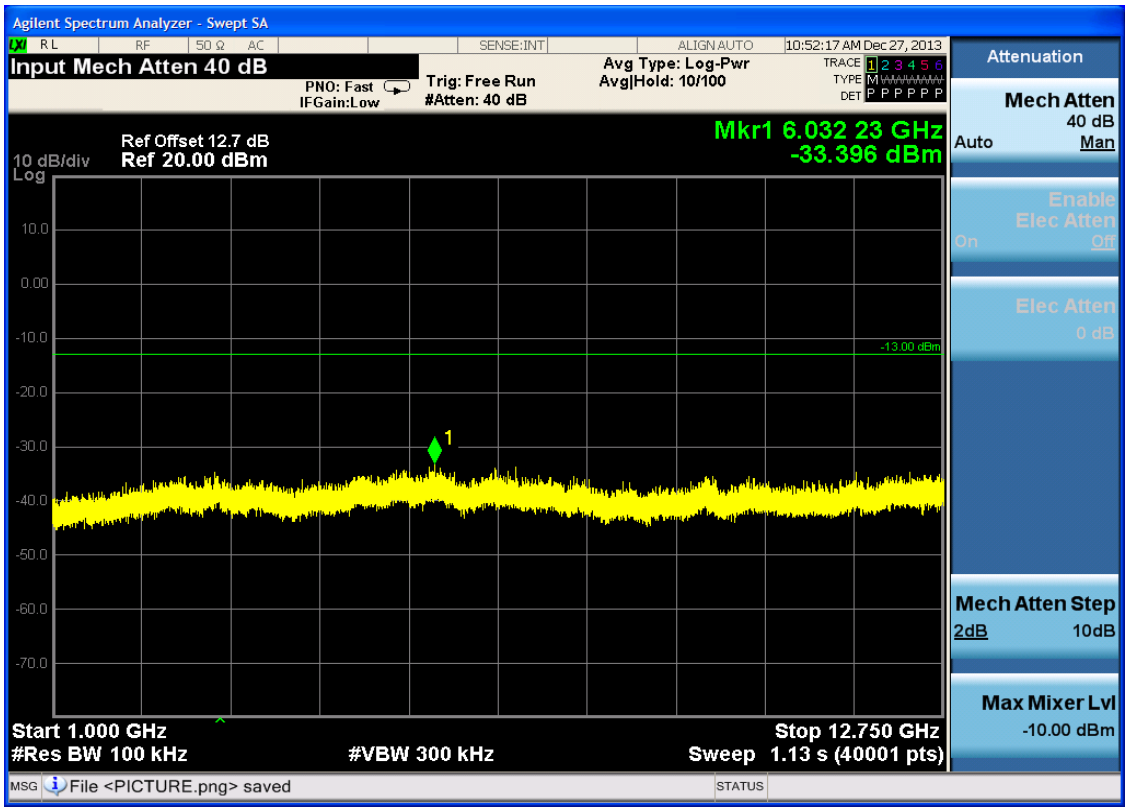




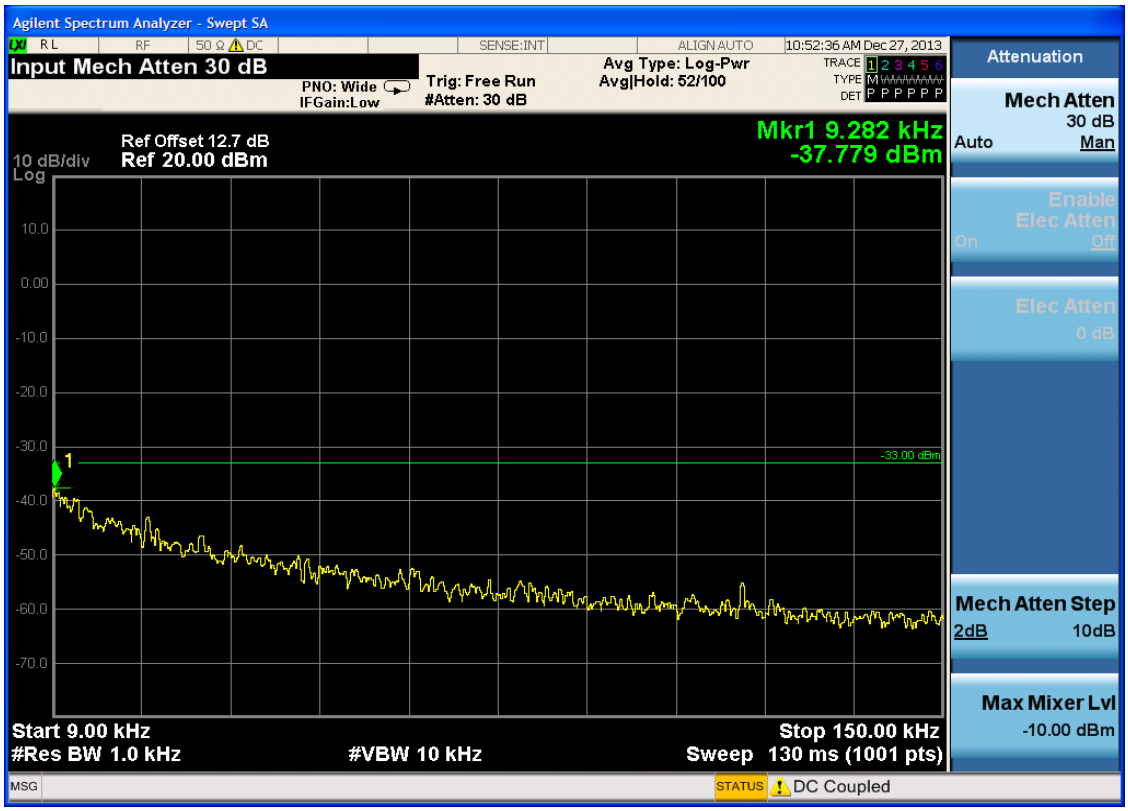
6.1.1.2.2 Test Channel = MCH

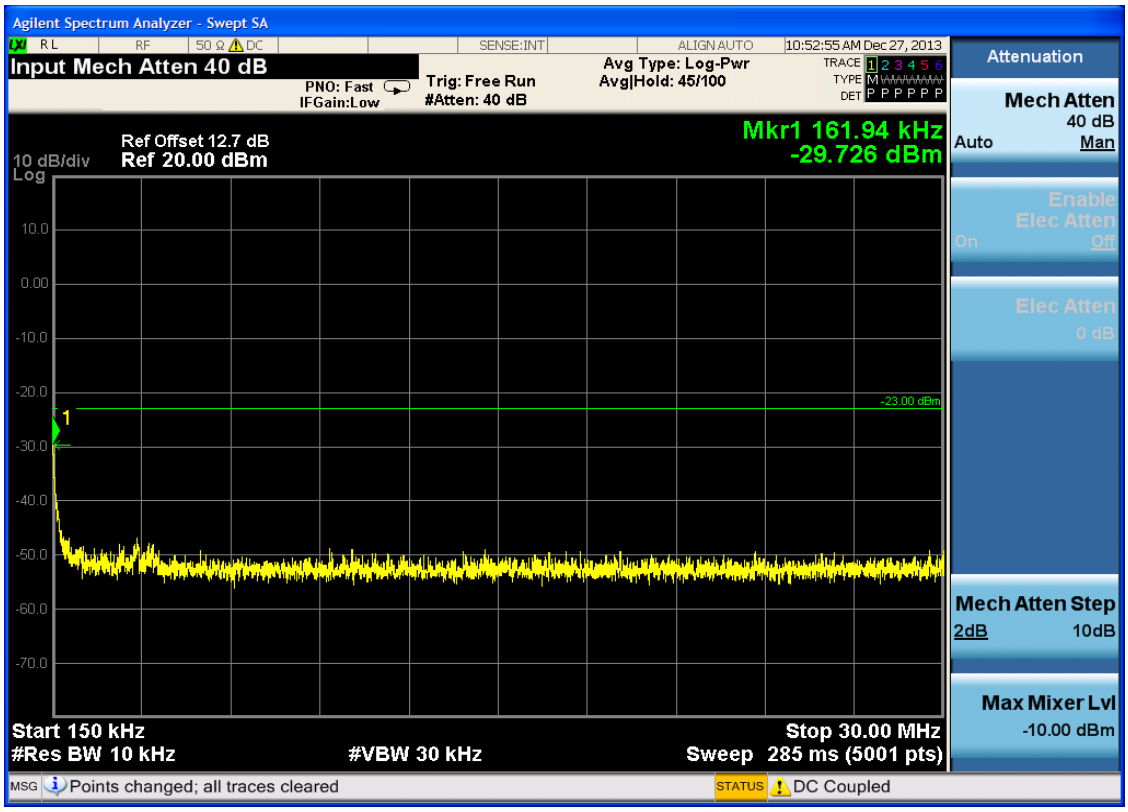


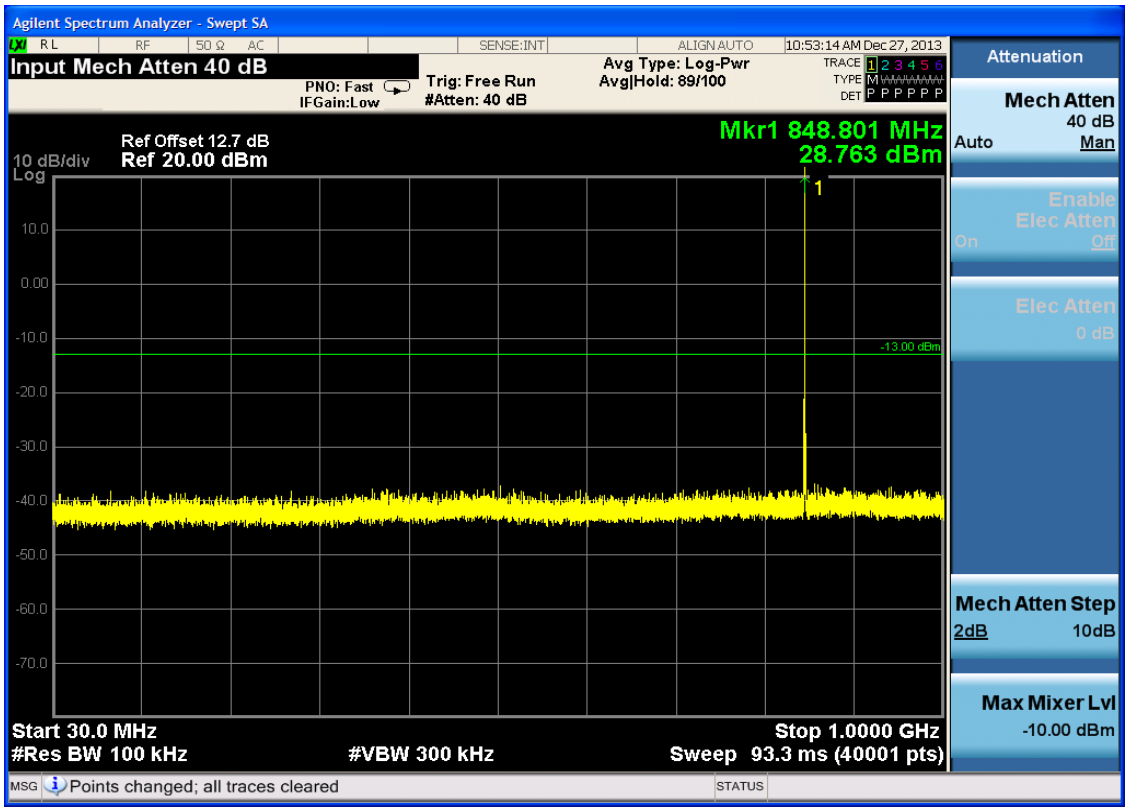


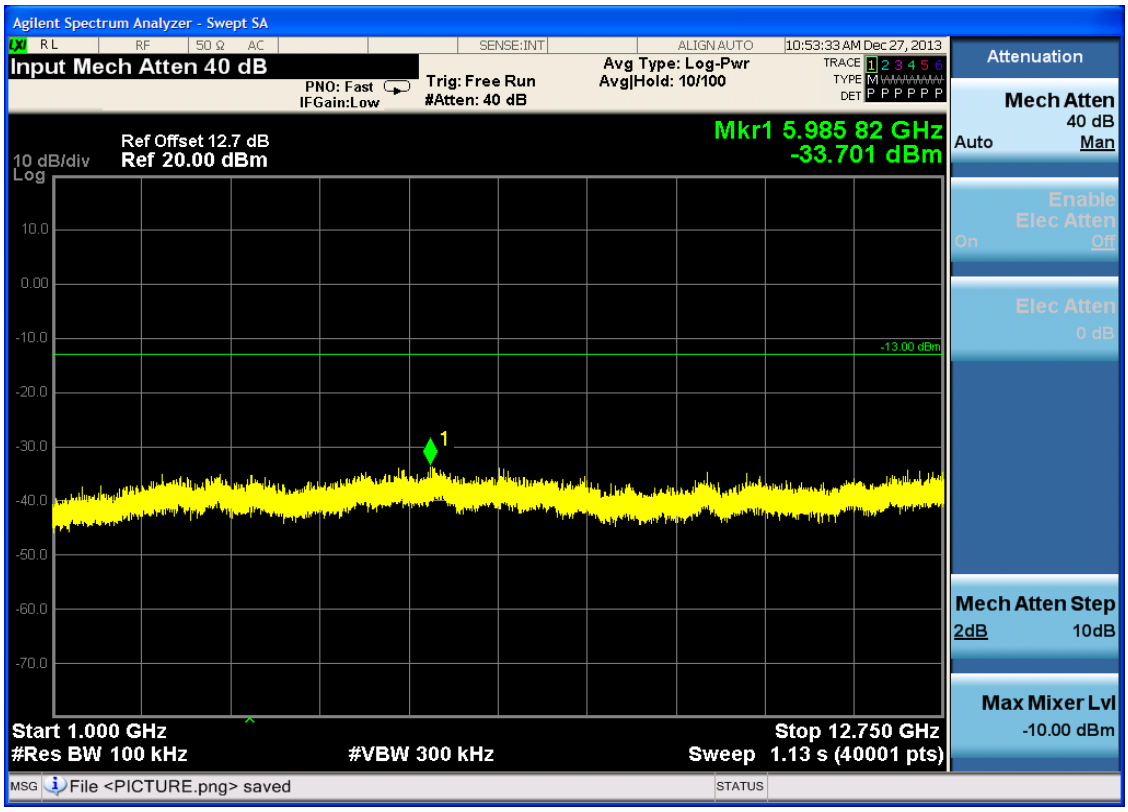


6.1.1.2.3 Test Channel = HCH





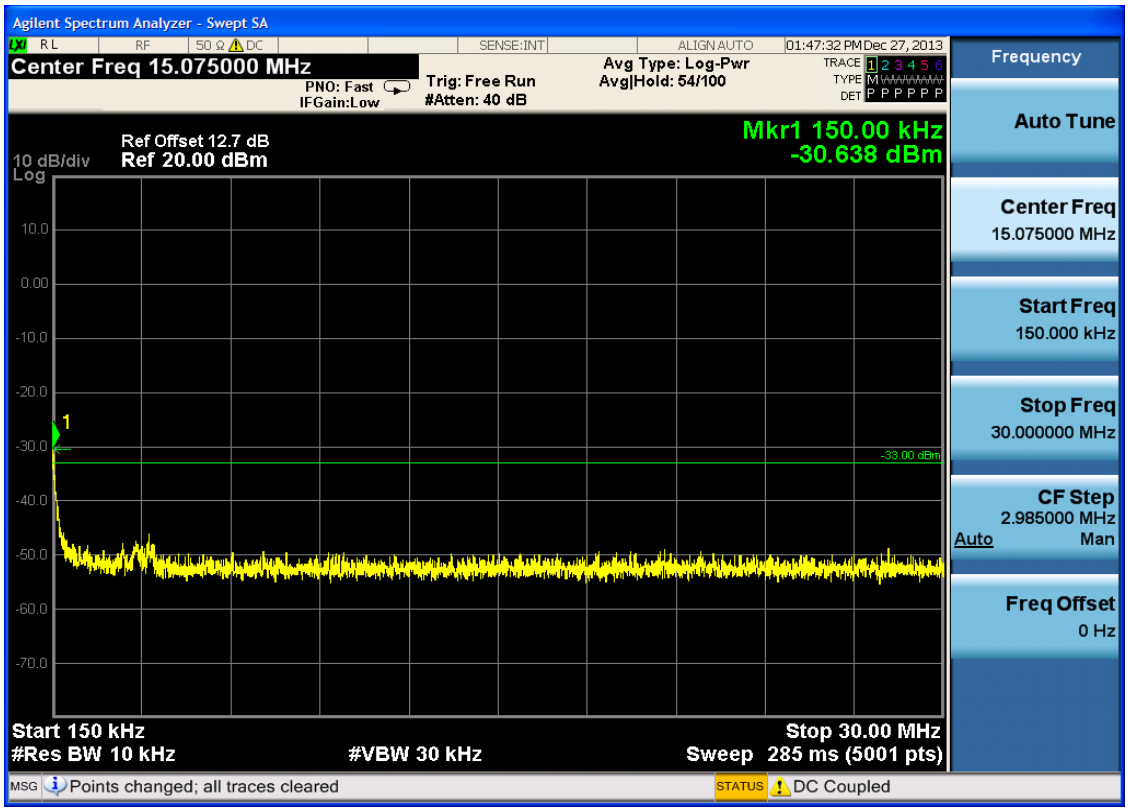


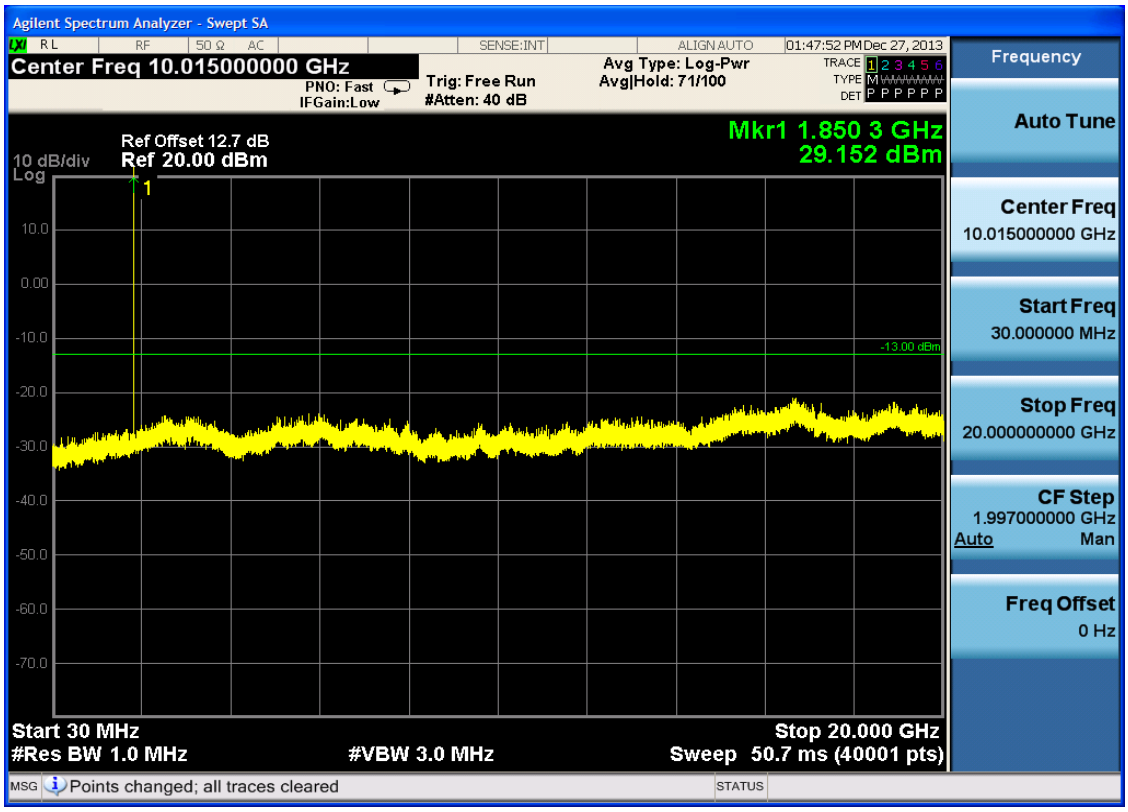


6.1.2 Test Band = GSM1900

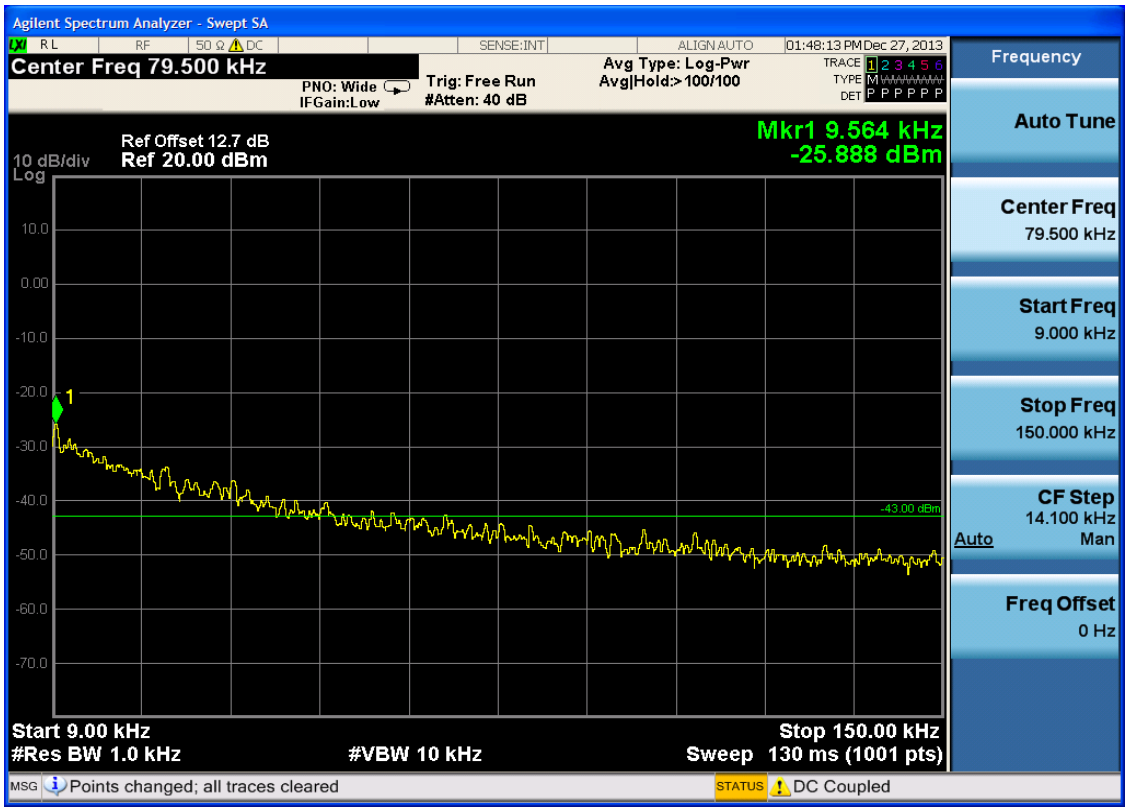
6.1.2.1 Test Mode = GSM/TM1

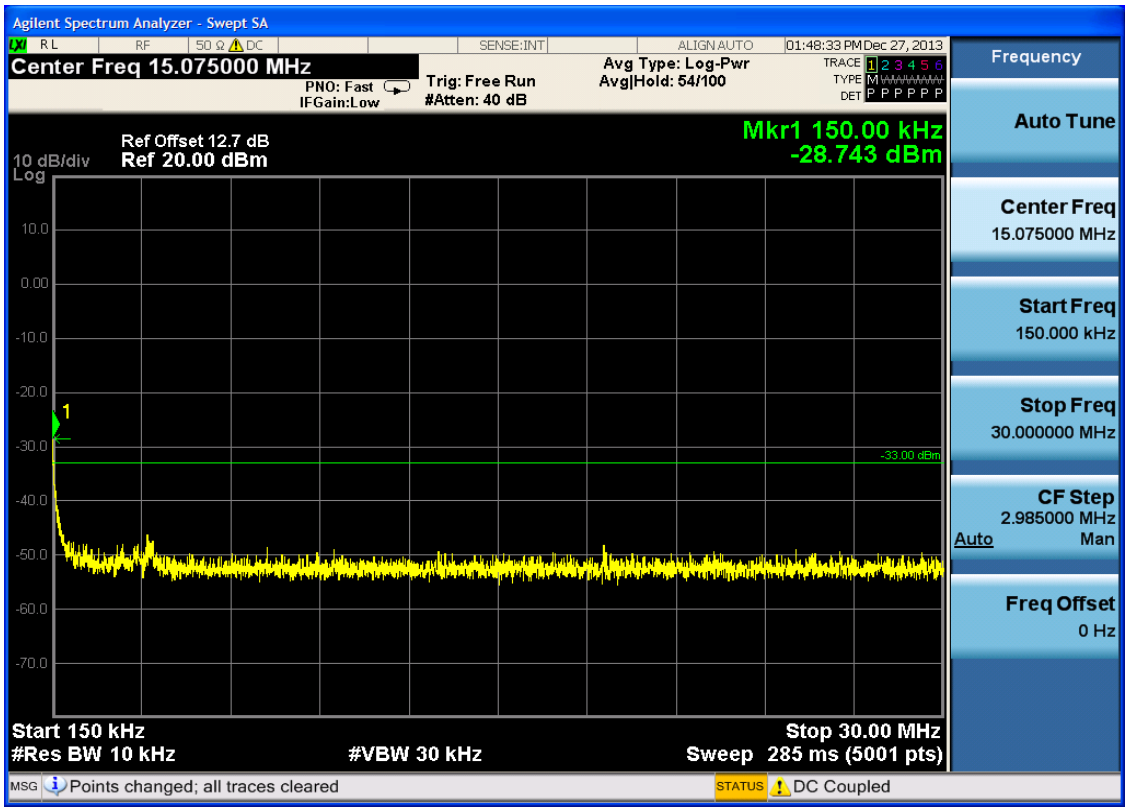
6.1.2.1.1 Test Channel = LCH

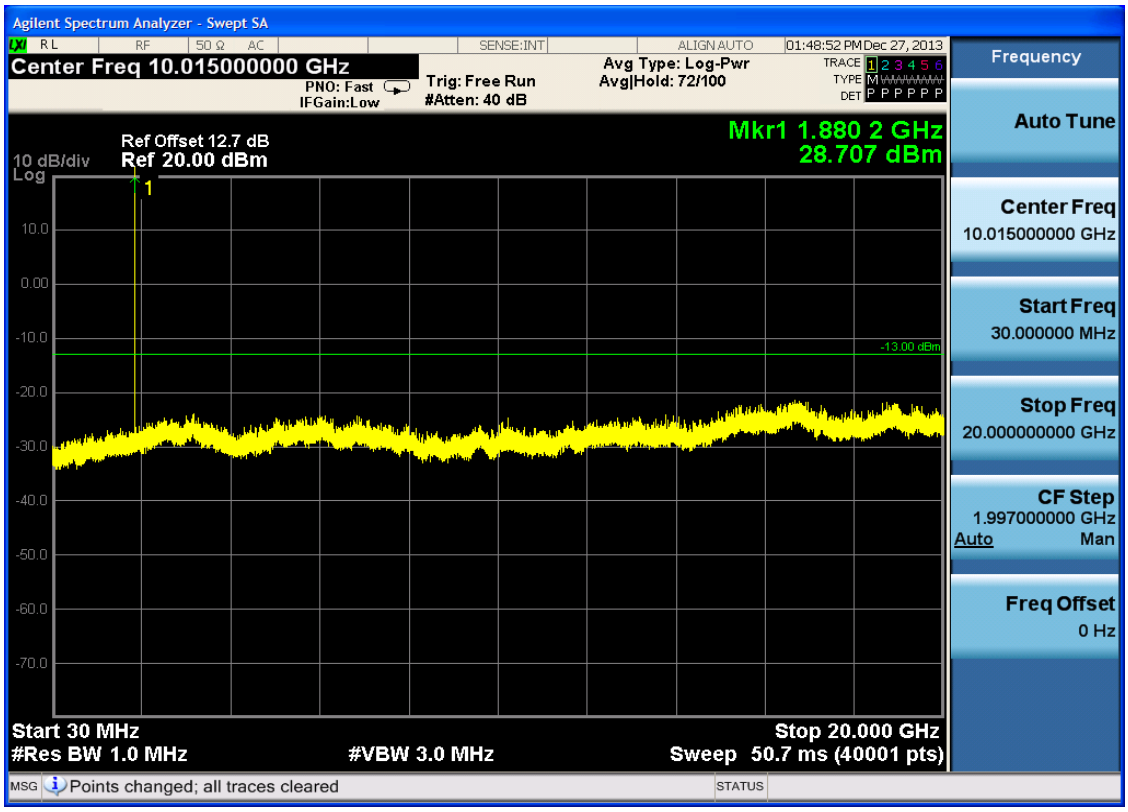




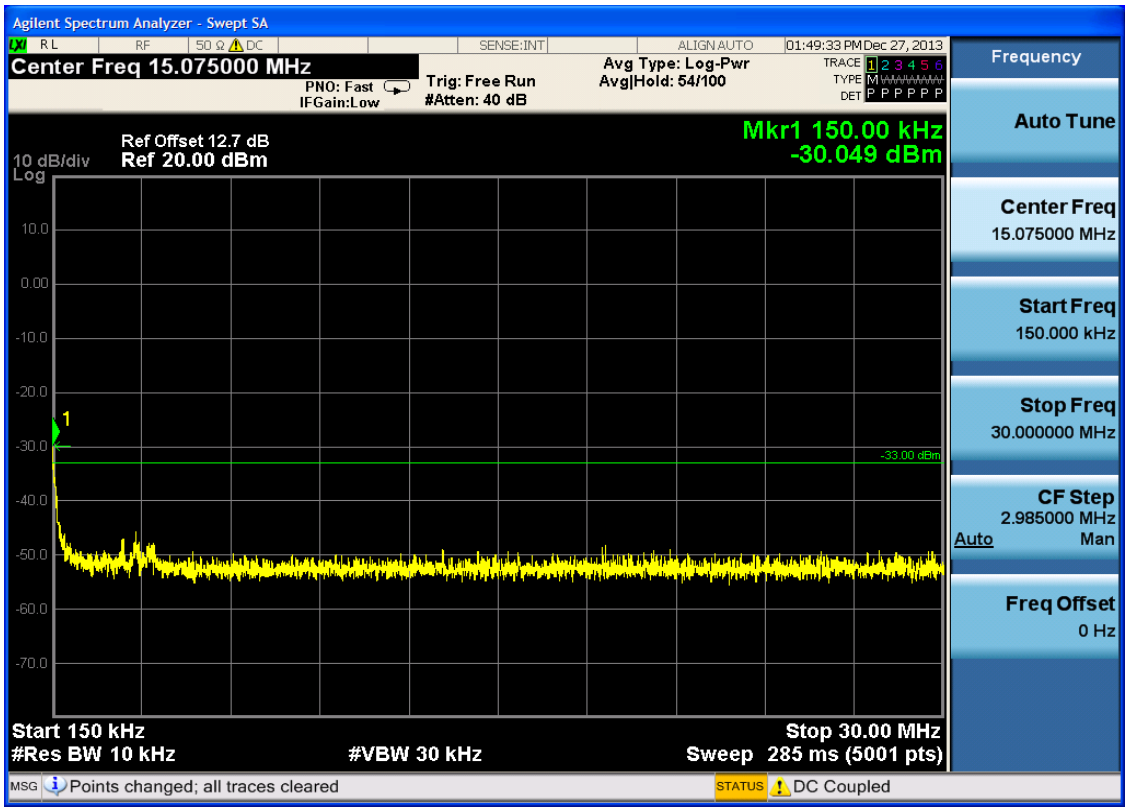
6.1.2.1.2 Test Channel = MCH





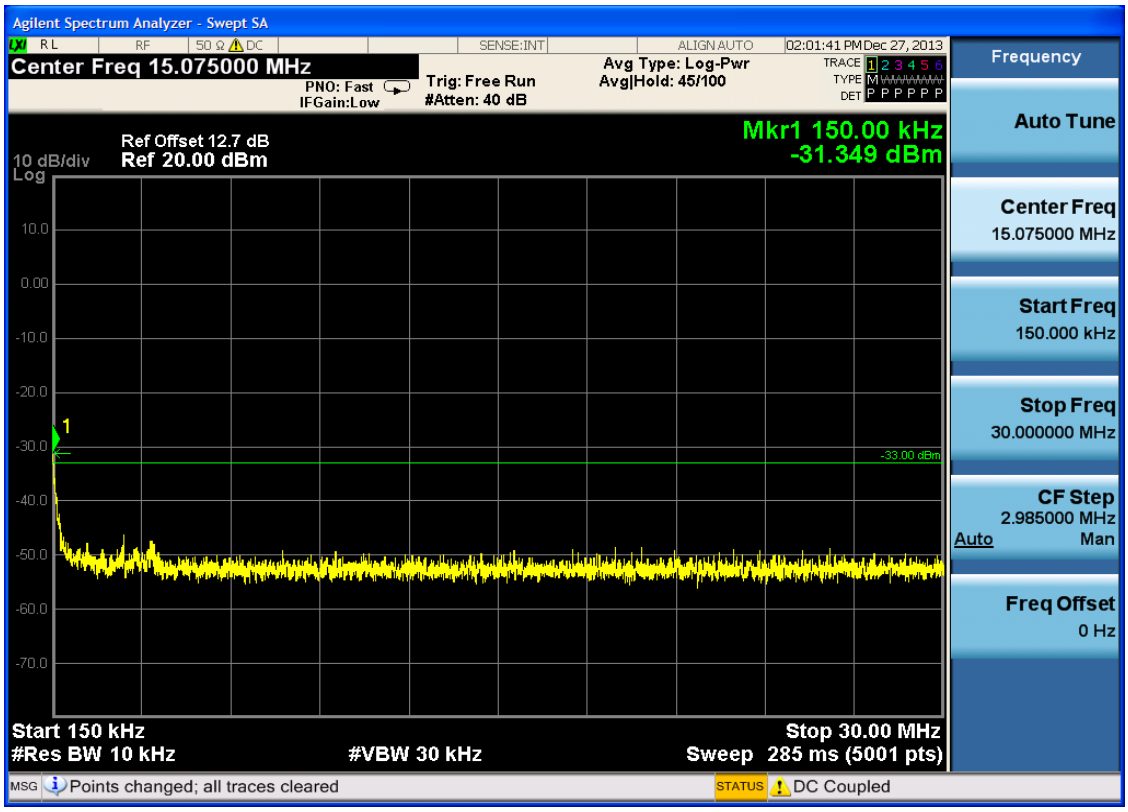


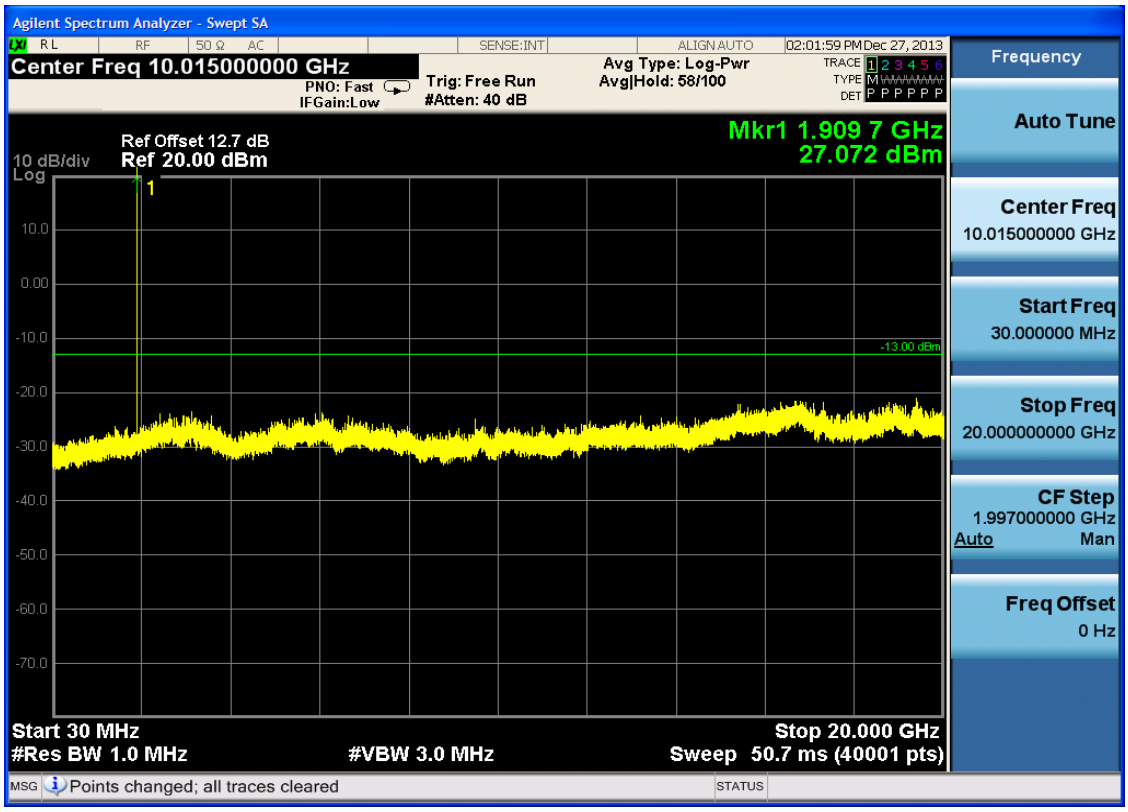
6.1.2.1.3 Test Channel = HCH



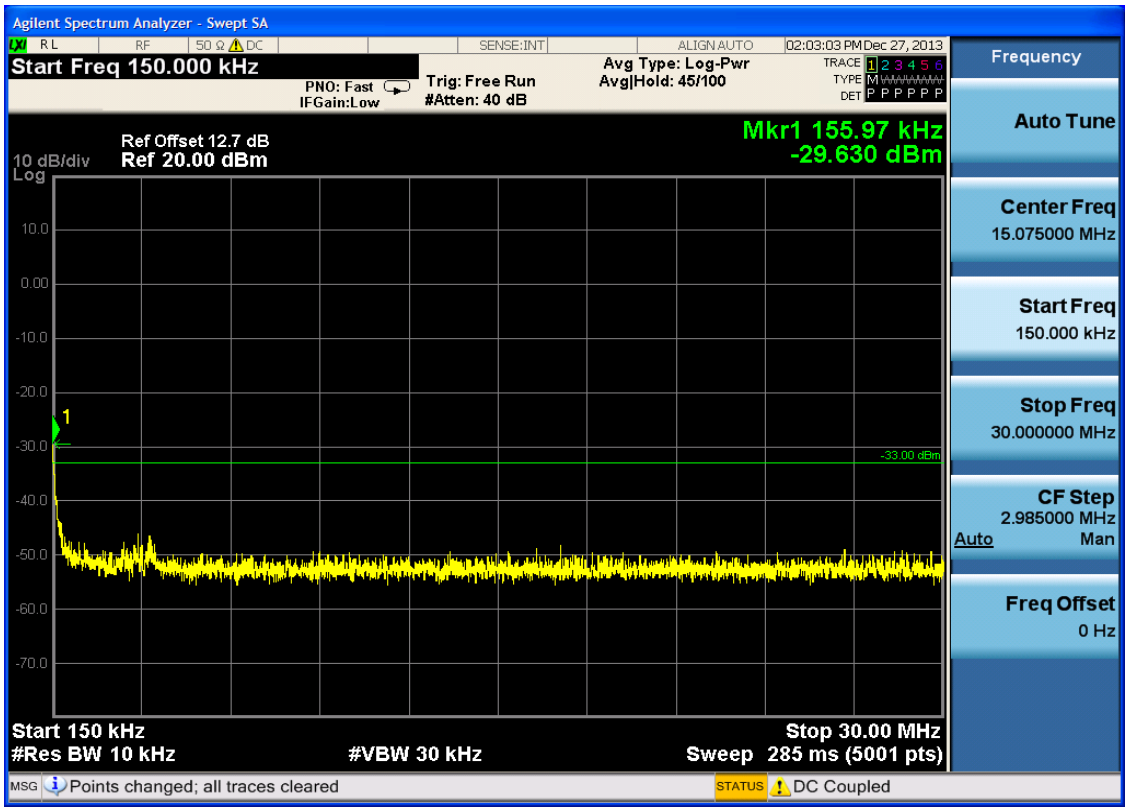
6.1.2.2 Test Mode = GSM/TM2

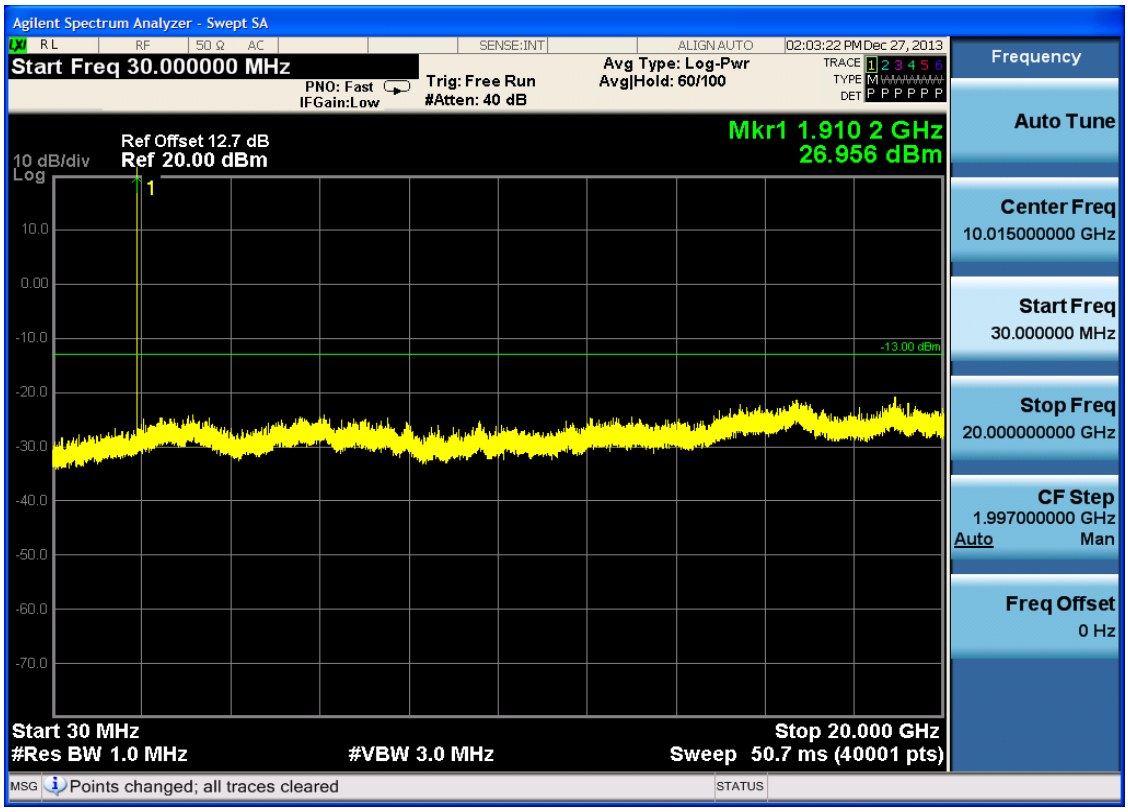
6.1.2.2.1 Test Channel = LCH



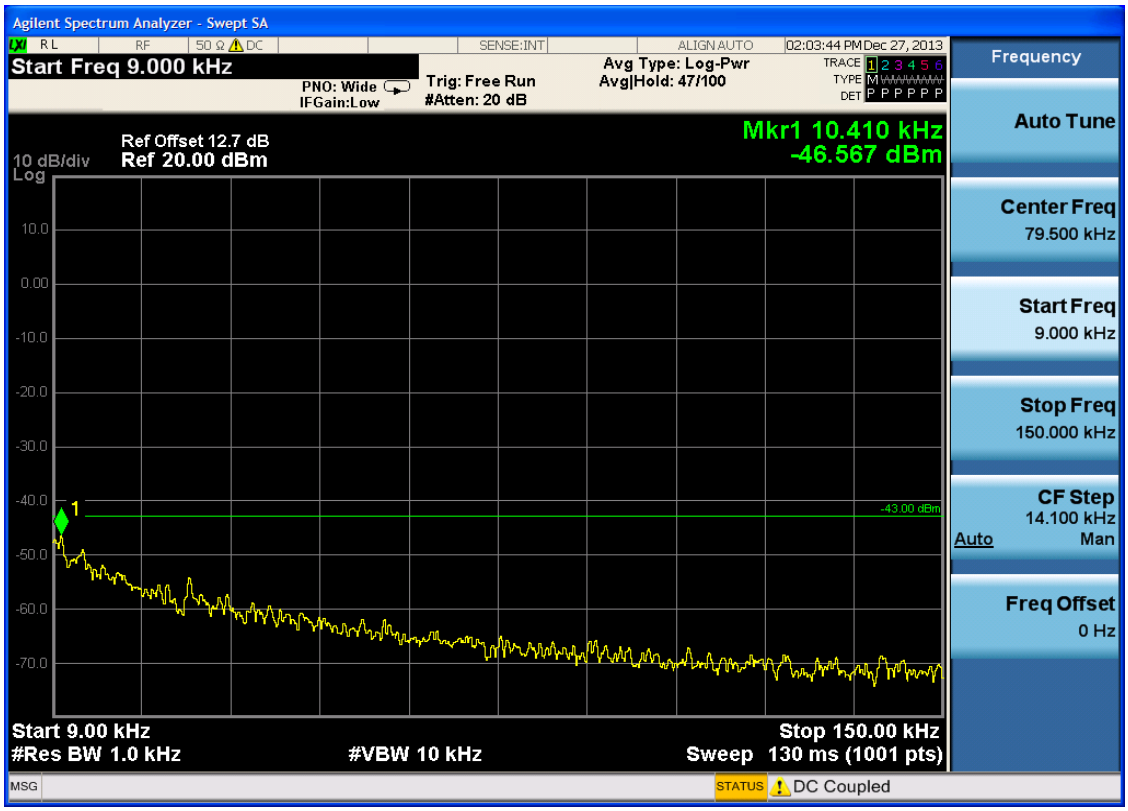


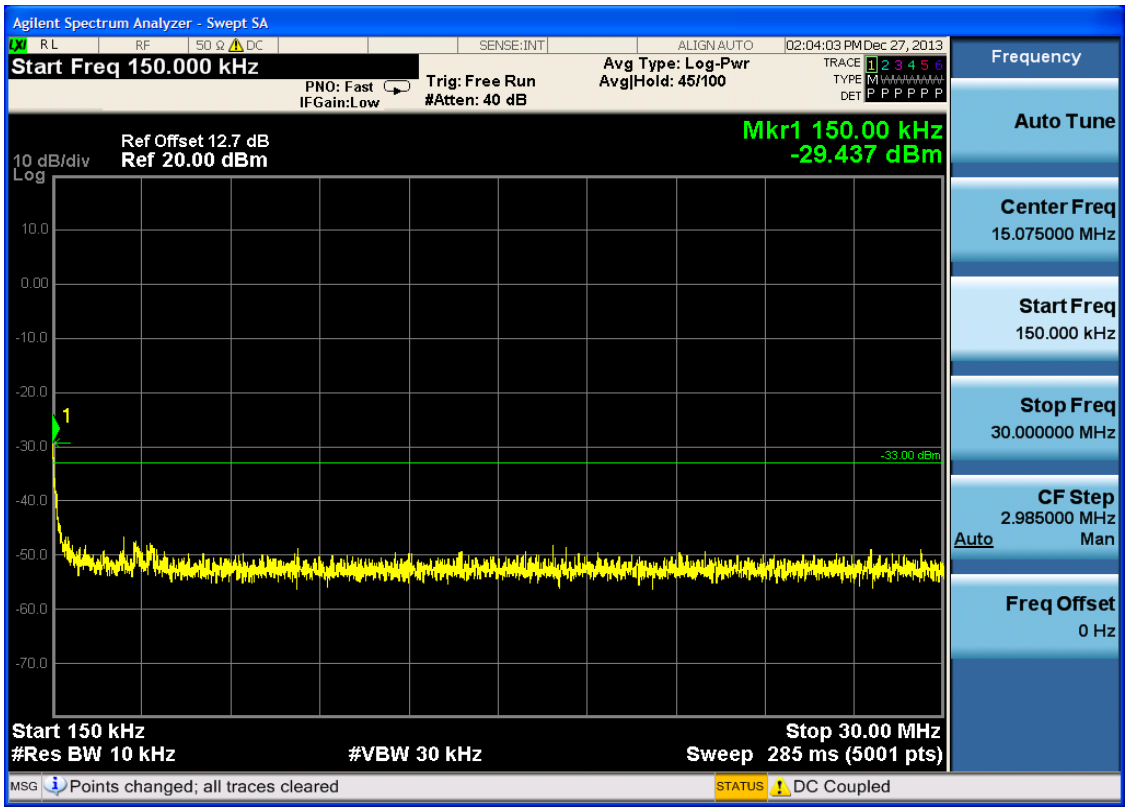
6.1.2.2.2 Test Channel = MCH

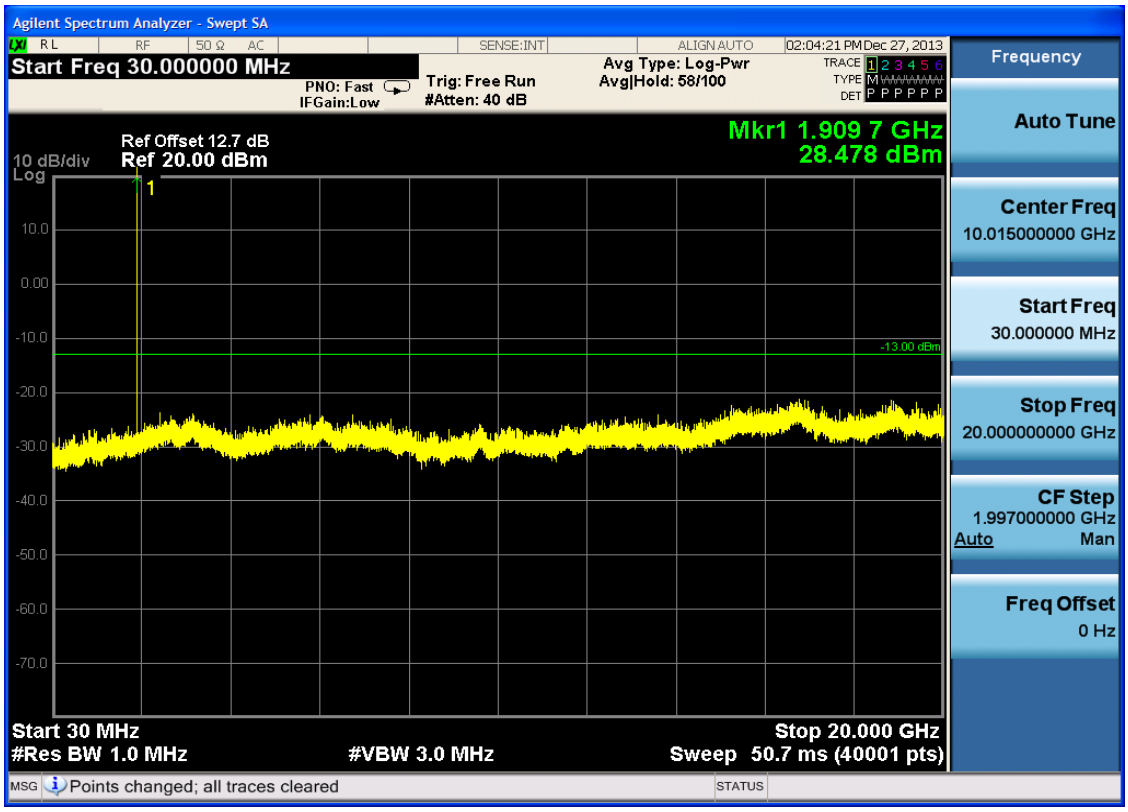


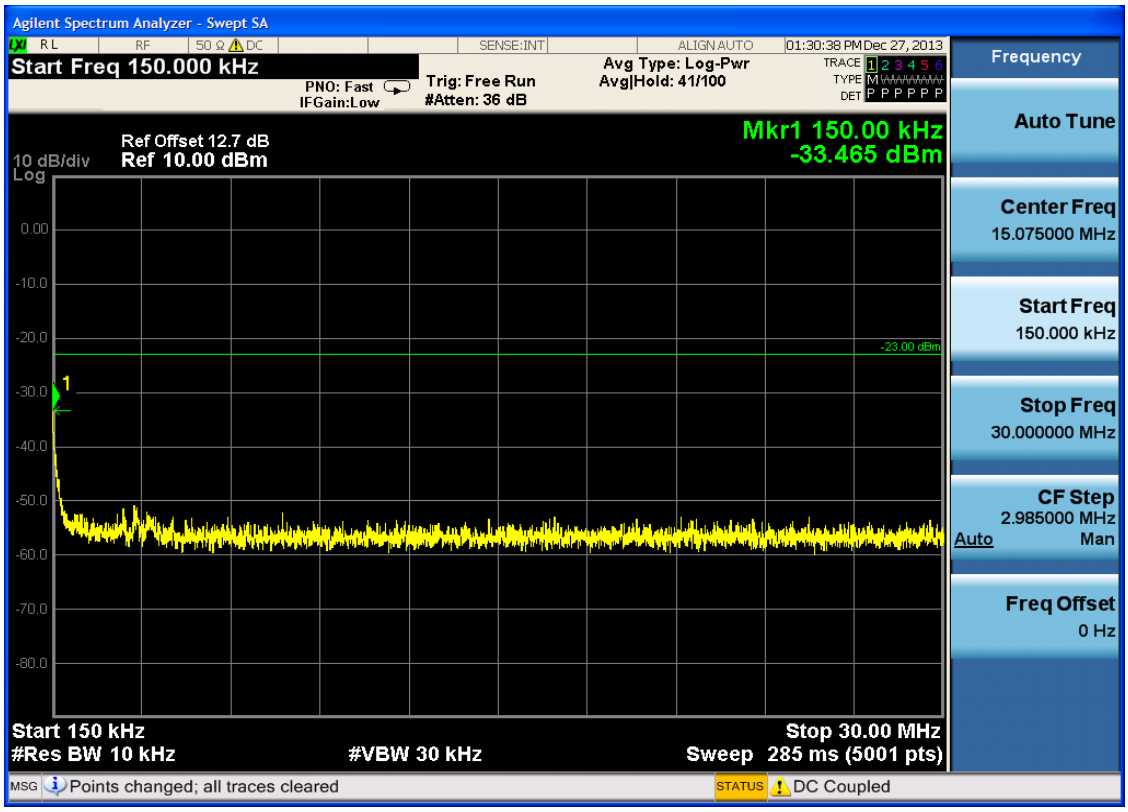


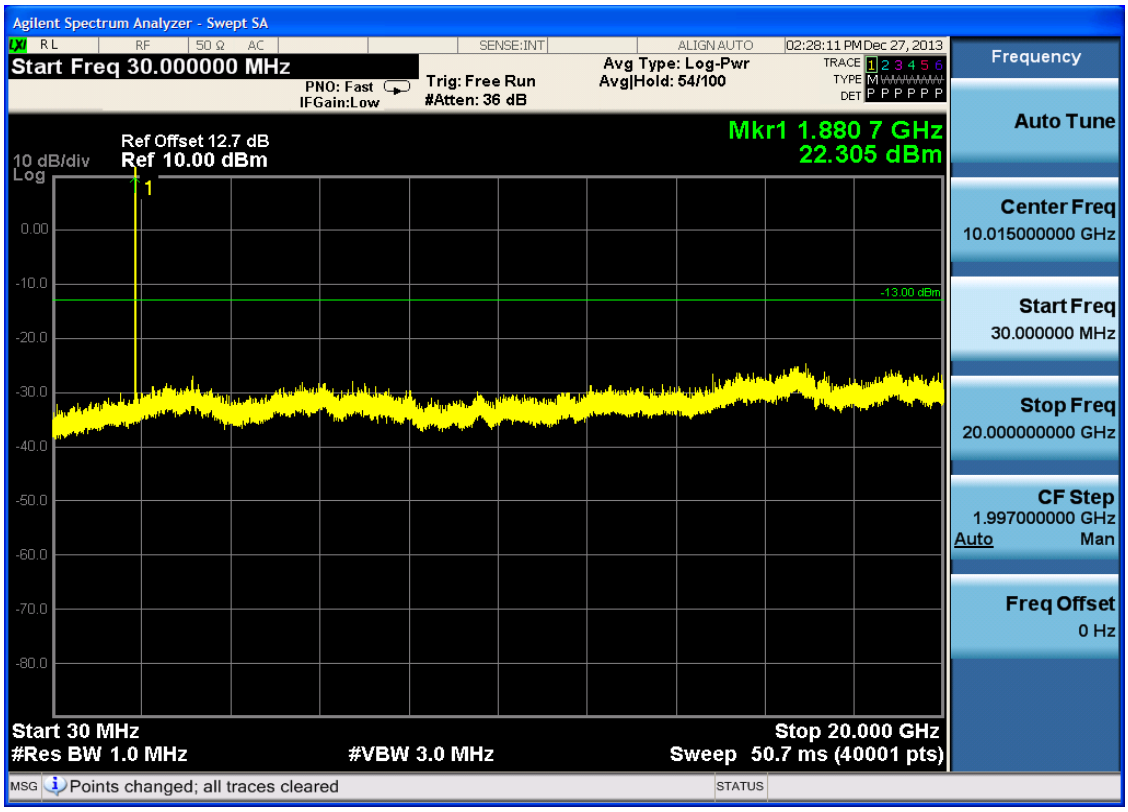
6.1.2.2.3 Test Channel = HCH

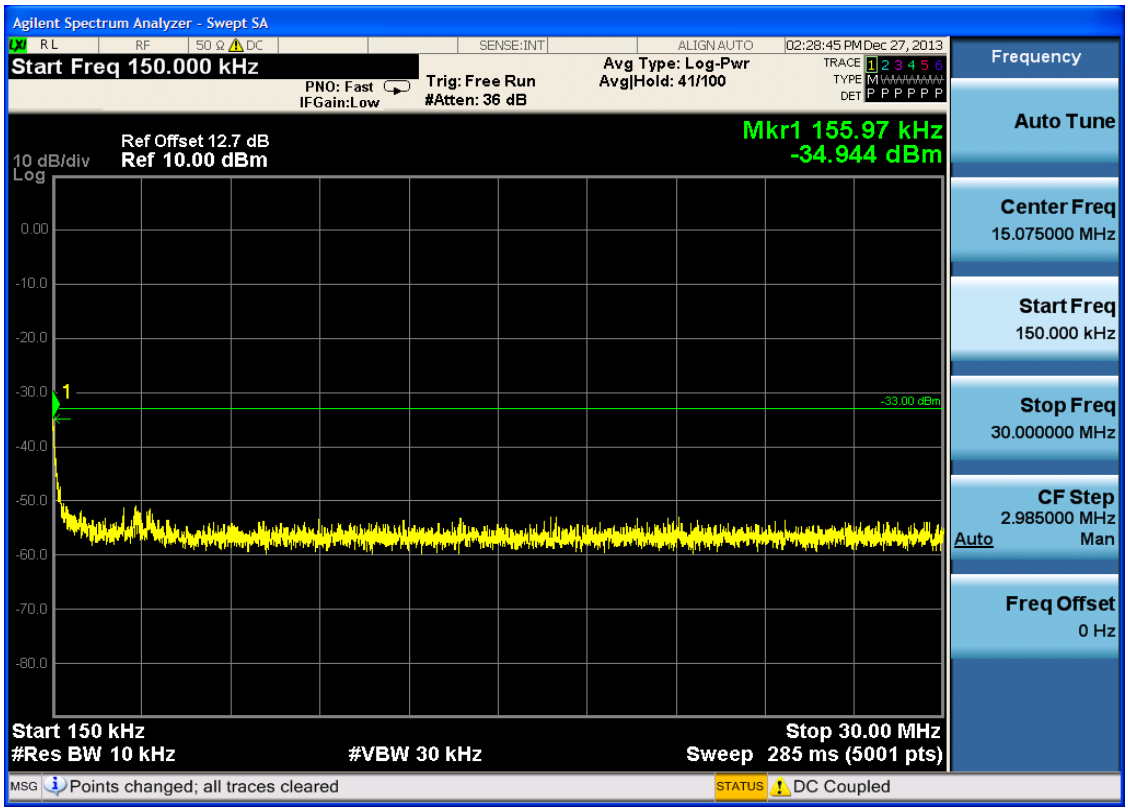












7Appendix_G: Field Strength of Spurious Radiation

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

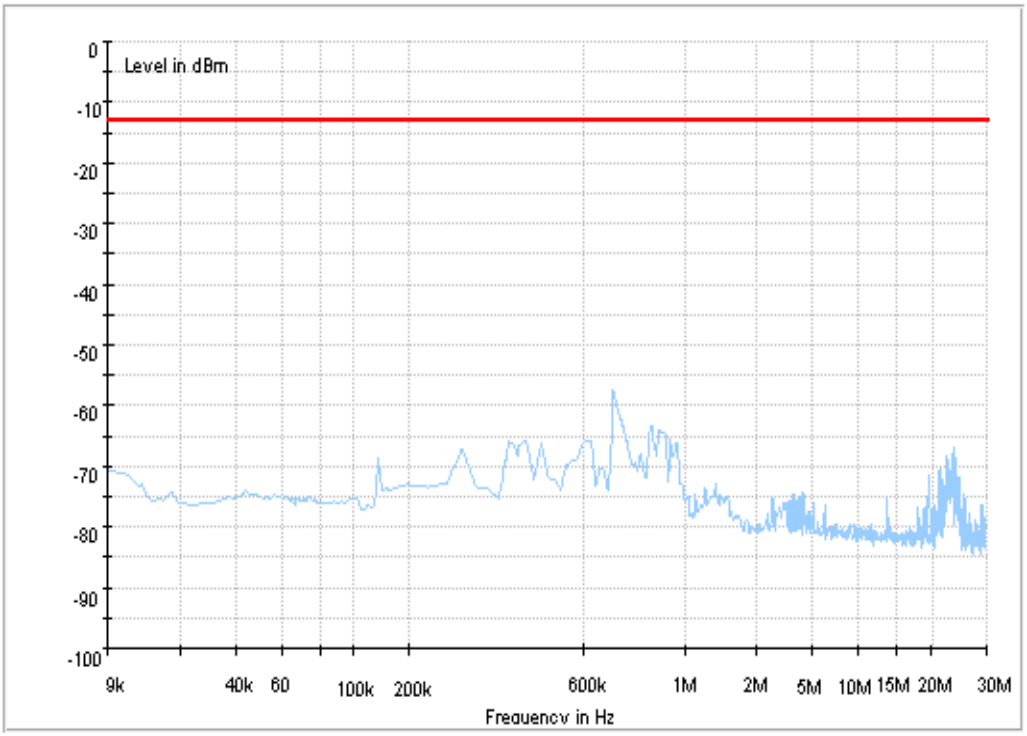
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

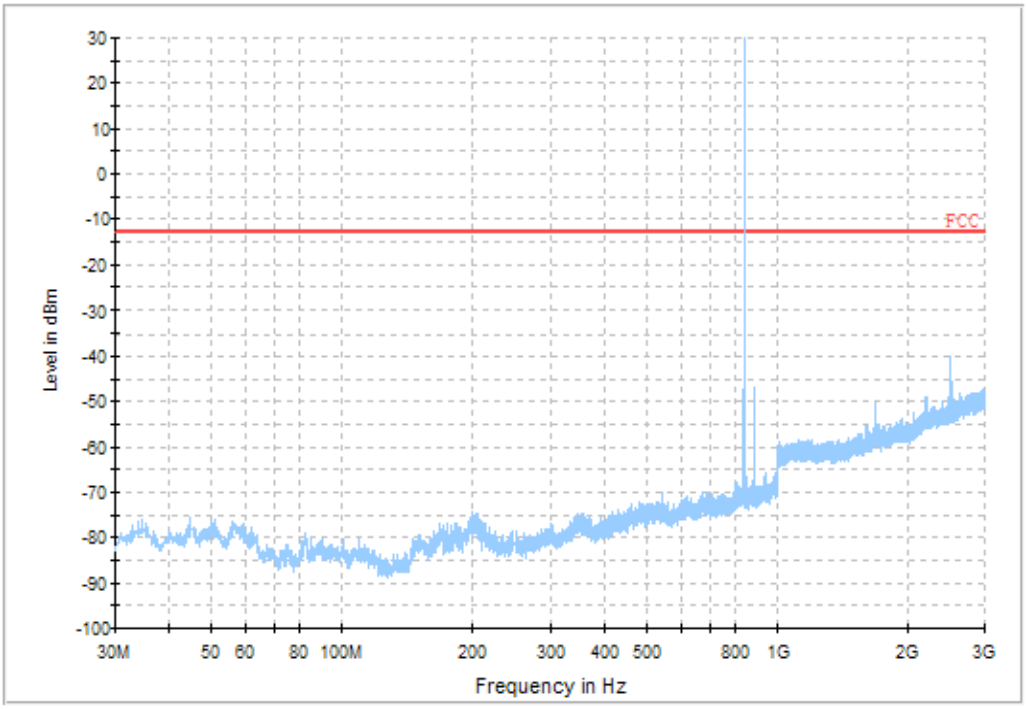
7.1 For GSM

7.1.1 Test Band = GSM850

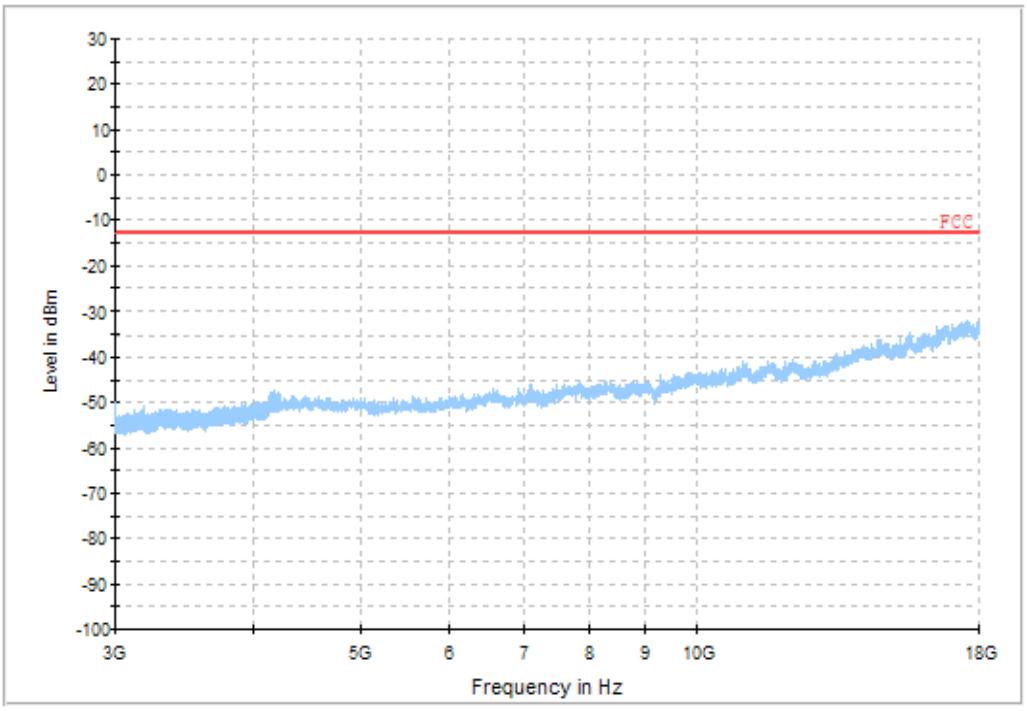
7.1.1.2 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

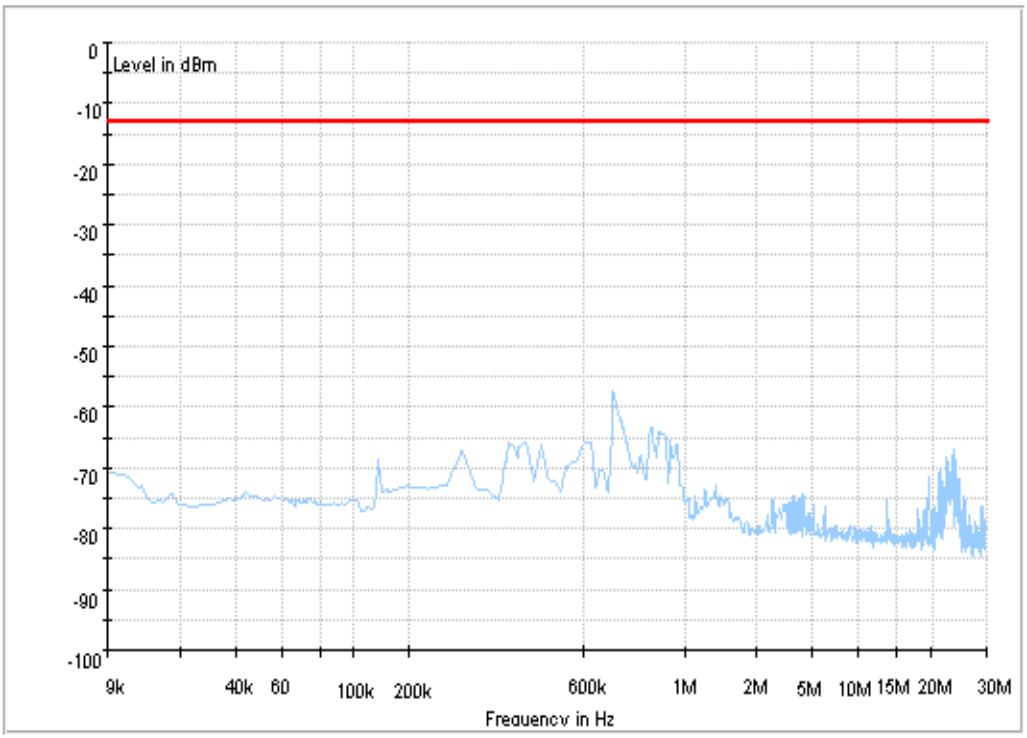


Copy of FCC PART22 GSM850_H

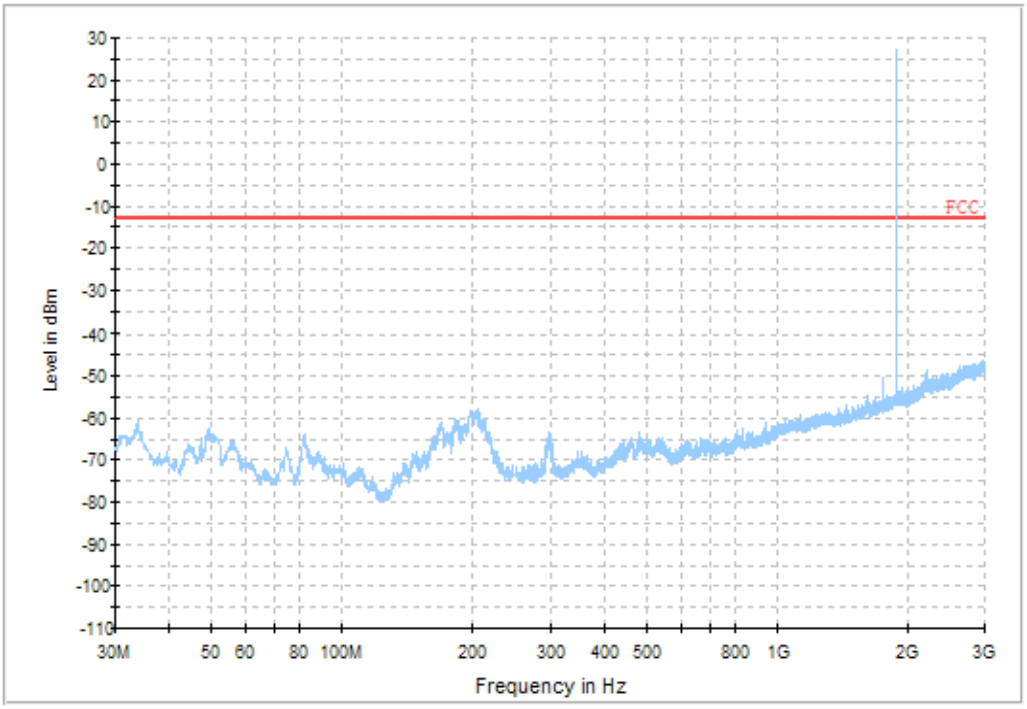


7.1.2 Test Band = GSM1900

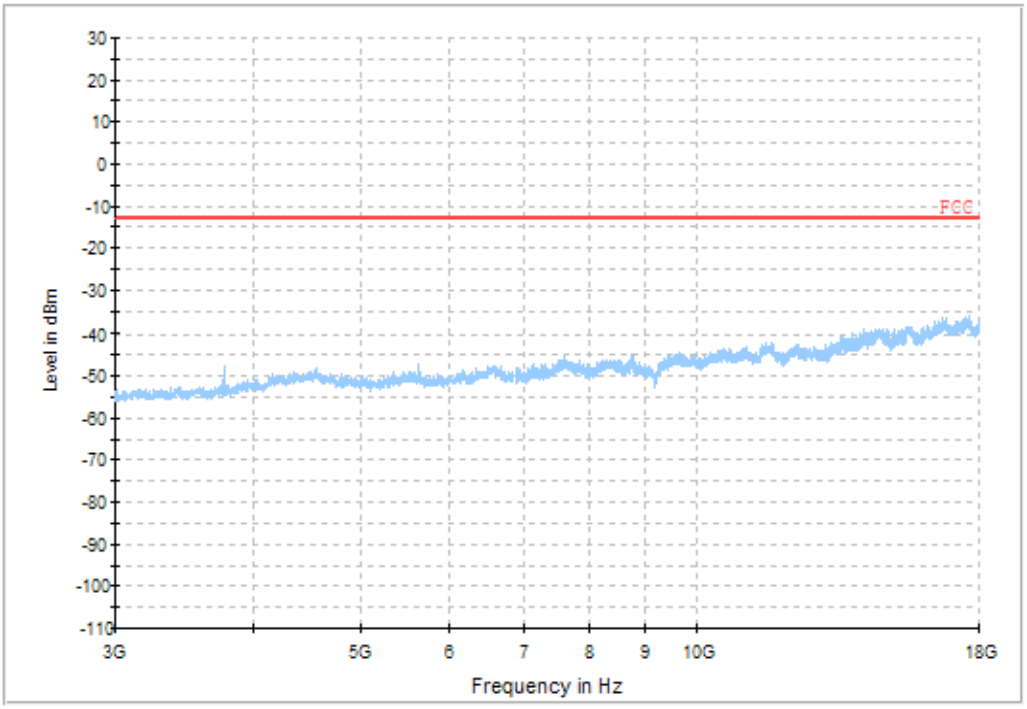
7.1.2.2 Test Mode = GSM/TM1

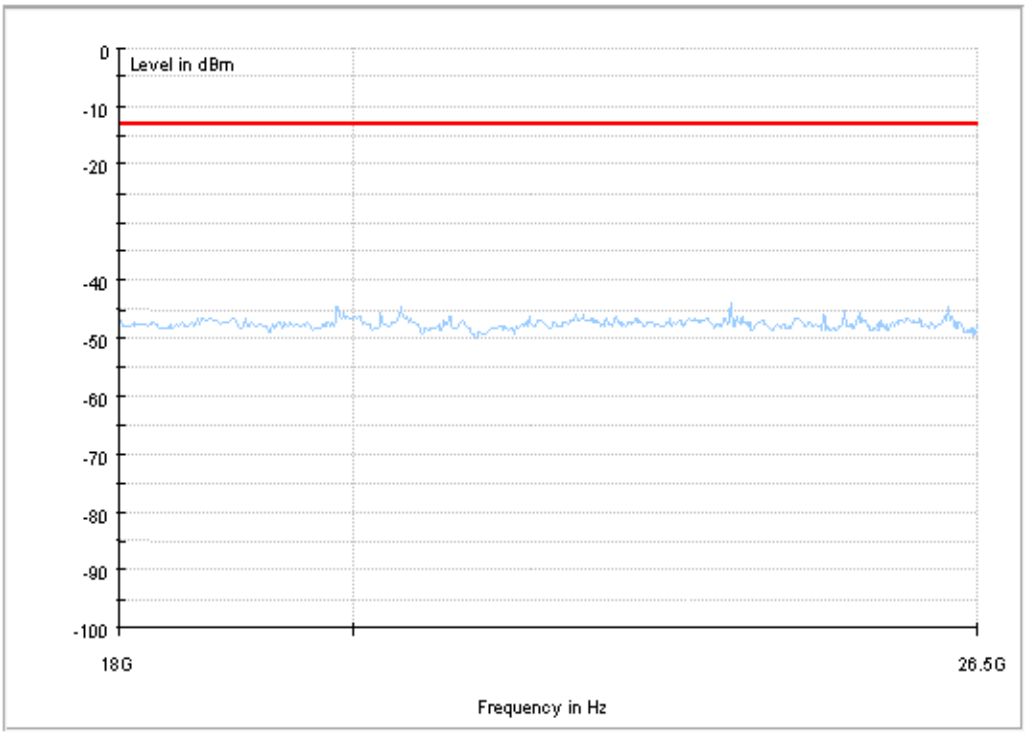


Copy of FCC PART24 GSM1900_L



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	-10.98	-0.01332	PASS
				VN	-11.75	-0.01426	PASS
				VH	-9.56	-0.0116	PASS
		MCH	TN	VL	-7.1	-0.00849	PASS
				VN	-6.91	-0.00826	PASS
				VH	-5.17	-0.00618	PASS
		HCH	TN	VL	-7.94	-0.00935	PASS
				VN	-9.62	-0.01133	PASS
				VH	-6.72	-0.00792	PASS
	GSM/TM2	LCH	TN	VL	-12.33	-0.01496	PASS
				VN	-6.94	-0.00842	PASS
				VH	-6.46	-0.00784	PASS
		MCH	TN	VL	-6.01	-0.00718	PASS
				VN	-9.4	-0.01124	PASS
				VH	-9.81	-0.01173	PASS
		HCH	TN	VL	-3.78	-0.00445	PASS
				VN	-6.49	-0.00765	PASS
				VH	-8.27	-0.00974	PASS
GSM1900	GSM/TM1	LCH	TN	VL	-2.26	-0.00122	PASS
				VN	-10.14	-0.00548	PASS
				VH	-10.33	-0.00558	PASS
		MCH	TN	VL	8.98	0.00478	PASS
				VN	22.28	0.01185	PASS
				VH	15.43	0.00821	PASS
		HCH	TN	VL	2.32	0.00121	PASS
				VN	5.94	0.00311	PASS
				VH	9.56	0.00501	PASS
	GSM/TM2	LCH	TN	VL	-14.21	-0.00768	PASS
				VN	-28.12	-0.0152	PASS
				VH	-22.12	-0.01196	PASS
		MCH	TN	VL	-2.16	-0.00115	PASS
				VN	0.1	0.00005	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	9.33	0.00496	PASS
		HCH	TN	VL	2.03	0.00106	PASS
				VN	-2.32	-0.00121	PASS
				VH	-9.72	-0.00509	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	-9.69	-0.01176	PASS
				-20	-10.85	-0.01316	PASS
				-10	-10.72	-0.01301	PASS
				0	-9.43	-0.01144	PASS
				10	-10.33	-0.01253	PASS
				20	-10.4	-0.01262	PASS
				30	-10.14	-0.0123	PASS
				40	-10.72	-0.01301	PASS
				50	-9.43	-0.01144	PASS
		MCH	VN	-30	-3.29	-0.00393	PASS
				-20	-6.39	-0.00764	PASS
				-10	-2.78	-0.00332	PASS
				0	-4.78	-0.00571	PASS
				10	-6.52	-0.00779	PASS
				20	-3.16	-0.00378	PASS
				30	-3.87	-0.00463	PASS
				40	-5.1	-0.0061	PASS
				50	-7.68	-0.00918	PASS
		HCH	VN	-30	-2.52	-0.00297	PASS
				-20	-5.68	-0.00669	PASS
				-10	-5.29	-0.00623	PASS
				0	-9.94	-0.01171	PASS
				10	-6.84	-0.00806	PASS
				20	-6.33	-0.00746	PASS
				30	-7.81	-0.0092	PASS
				40	-5.81	-0.00684	PASS
				50	-7.36	-0.00867	PASS
	GSM/TM2	LCH	VN	-30	-11.82	-0.01434	PASS
				-20	-5.07	-0.00615	PASS
				-10	-6.2	-0.00752	PASS
				0	-10.2	-0.01238	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-13.82	-0.01677	PASS
				20	-12.88	-0.01563	PASS
				30	-12.11	-0.01469	PASS
				40	-9.98	-0.01211	PASS
				50	-13.46	-0.01633	PASS
		MCH	VN	-30	-9.75	-0.01165	PASS
				-20	-8.23	-0.00984	PASS
				-10	-6.2	-0.00741	PASS
				0	-9.17	-0.01096	PASS
				10	-9.75	-0.01165	PASS
				20	-11.88	-0.0142	PASS
				30	-13.82	-0.01652	PASS
				40	-14.82	-0.01771	PASS
				50	-15.27	-0.01825	PASS
		HCH	VN	-30	-5.97	-0.00703	PASS
				-20	-9.33	-0.01099	PASS
				-10	-10.62	-0.01251	PASS
				0	-5.13	-0.00604	PASS
				10	-8.59	-0.01012	PASS
				20	-5.13	-0.00604	PASS
				30	-7.39	-0.00871	PASS
				40	-9.17	-0.0108	PASS
				50	-1.16	-0.00137	PASS
GSM1900	GSM/TM1	LCH	VN	-30	-10.33	-0.00558	PASS
				-20	-1.81	-0.00098	PASS
				-10	-4.97	-0.00269	PASS
				0	-7.75	-0.00419	PASS
				10	-3.03	-0.00164	PASS
				20	-8.59	-0.00464	PASS
				30	-13.56	-0.00733	PASS
				40	-12.66	-0.00684	PASS
				50	-4.52	-0.00244	PASS
		MCH	VN	-30	22.54	0.01199	PASS
				-20	20.6	0.01096	PASS
				-10	14.14	0.00752	PASS
				0	21.37	0.01137	PASS
				10	21.05	0.0112	PASS
				20	18.14	0.00965	PASS
				30	19.5	0.01037	PASS
				40	24.34	0.01295	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	18.73	0.00996	PASS
		HCH	VN	-30	3.62	0.0019	PASS
				-20	6.97	0.00365	PASS
				-10	6.97	0.00365	PASS
				0	8.33	0.00436	PASS
				10	7.55	0.00395	PASS
				20	7.17	0.00375	PASS
				30	8.78	0.0046	PASS
				40	10.33	0.00541	PASS
				50	4.78	0.0025	PASS
	GSM/TM2	LCH	VN	-30	-25.47	-0.01377	PASS
				-20	-27.48	-0.01485	PASS
				-10	-21.28	-0.0115	PASS
				0	-25.86	-0.01398	PASS
				10	-24.21	-0.01309	PASS
				20	-22.89	-0.01237	PASS
				30	-36.35	-0.01965	PASS
				40	-21.44	-0.01159	PASS
				50	-27.51	-0.01487	PASS
		MCH	VN	-30	9.91	0.00527	PASS
				-20	18.98	0.0101	PASS
				-10	10.98	0.00584	PASS
				0	7.75	0.00412	PASS
				10	5.75	0.00306	PASS
				20	14.88	0.00791	PASS
				30	6.94	0.00369	PASS
				40	1.78	0.00095	PASS
				50	16.24	0.00864	PASS
		HCH	VN	-30	1.26	0.00066	PASS
				-20	-11.59	-0.00607	PASS
				-10	-14.24	-0.00746	PASS
				0	-14.43	-0.00756	PASS
				10	-3.36	-0.00176	PASS
				20	-4.36	-0.00228	PASS
				30	-9.62	-0.00504	PASS
				40	-1.23	-0.00064	PASS
				50	0.16	0.00008	PASS

END