



Appendix for test report

1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured [dBm]	ERP/EI RP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/T M1	LCH	32.36	28.61	38.5	PASS
		MCH	32.48	28.73	38.5	PASS
		HCH	32.43	28.68	38.5	PASS
GSM1900	GSM/T M1	LCH	29.65	30.05	33	PASS
		MCH	29.71	30.11	33	PASS
		HCH	29.78	30.18	33	PASS

Test Band	Test Mode	Test Channel	Measure d[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/T M1	LCH	23.83	20.08	38.5	PASS
		MCH	24.01	20.26	38.5	PASS
		HCH	23.84	20.09	38.5	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: $RBW > emission\ bandwidth$, $VBW > 3 \times RBW$.

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	0.18	13	PASS
		MCH	0.21	13	PASS
		HCH	0.2	13	PASS
GSM1900	GSM/TM1	LCH	0.18	13	PASS
		MCH	0.18	13	PASS
		HCH	0.17	13	PASS

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA850	UMTS/TM1	LCH	3.07	13	PASS
		MCH	3.16	13	PASS
		HCH	2.85	13	PASS

3Appendix_C: Modulation Characteristics

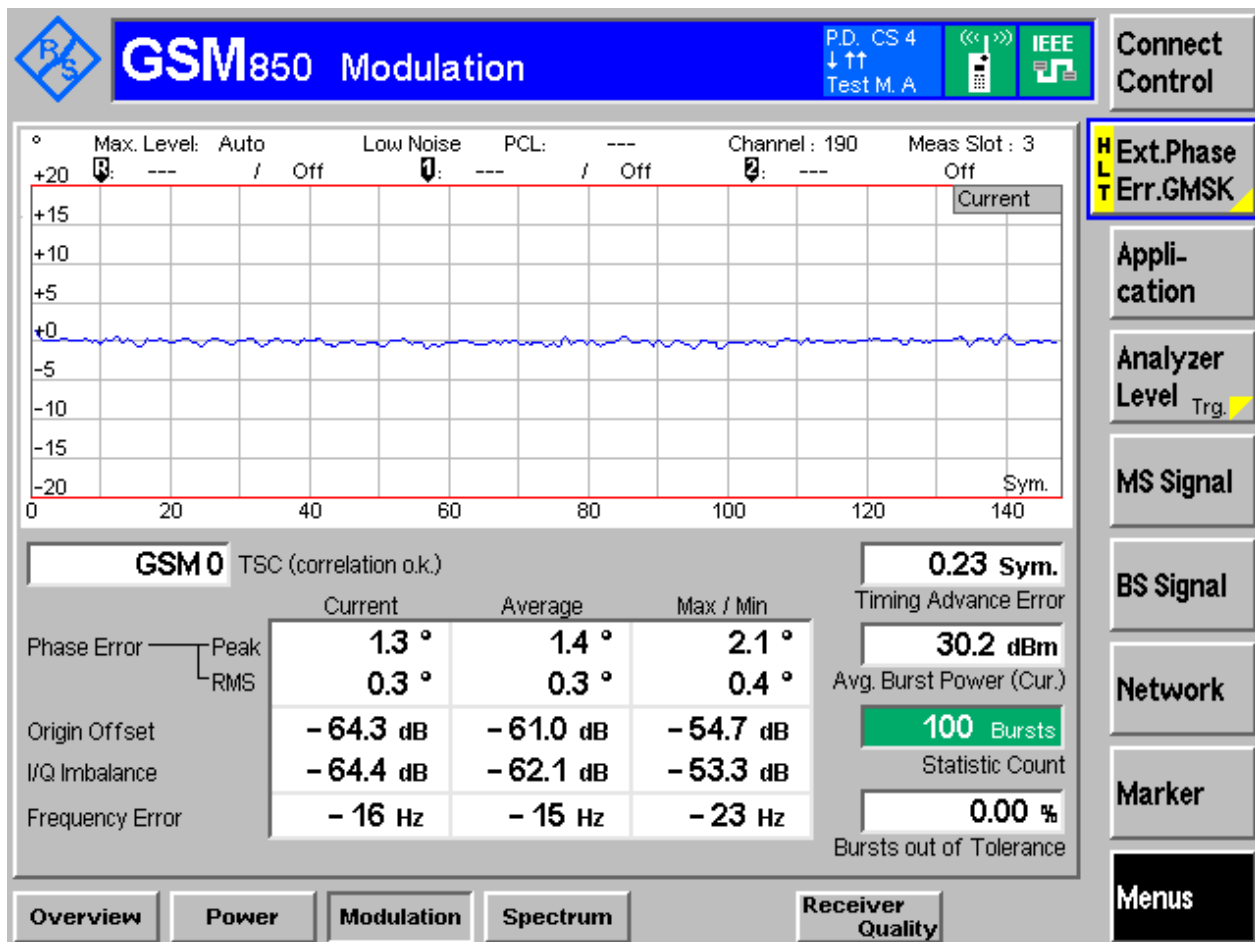
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

3.1.1.1 Test Mode = GSM/TM1

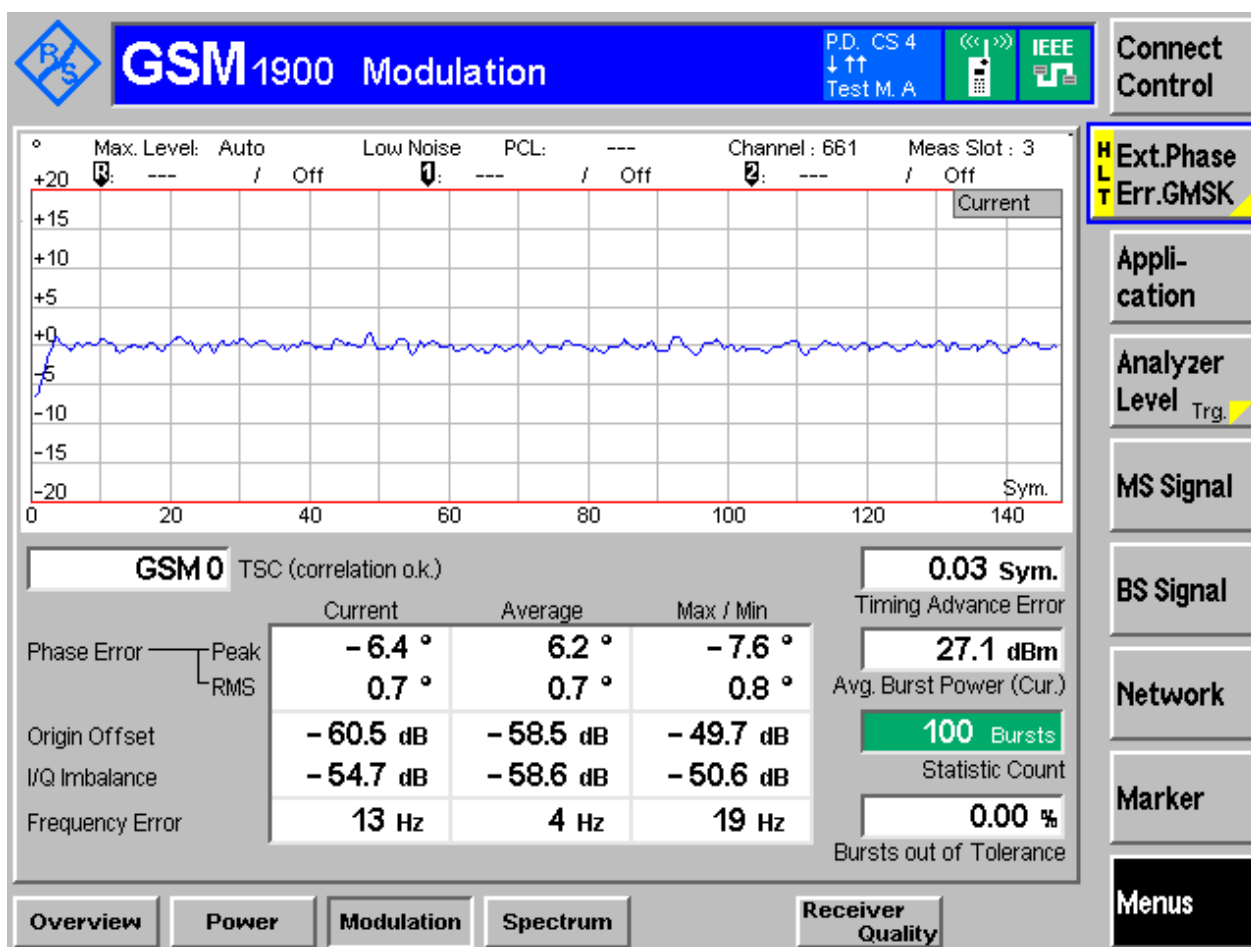
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH

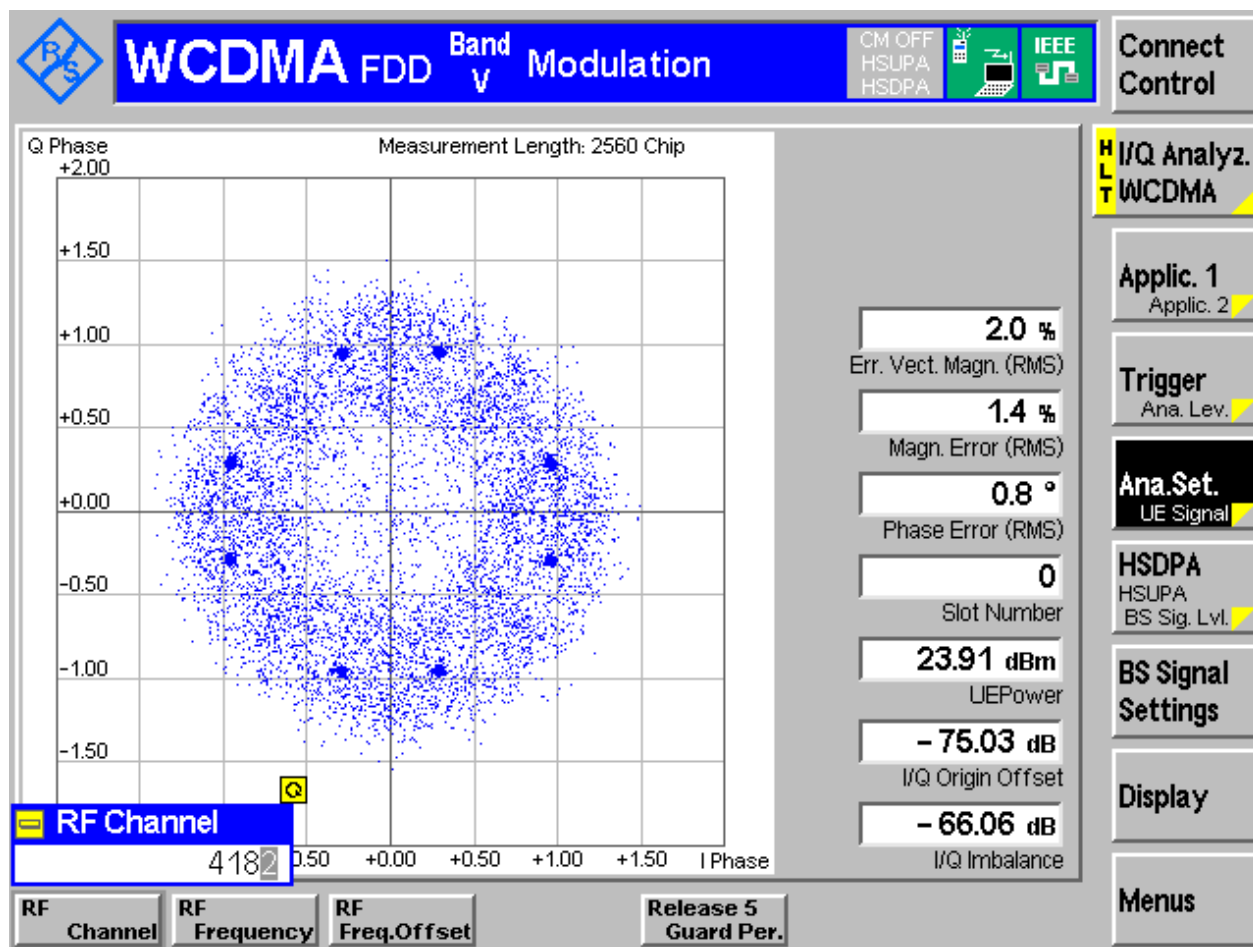


3.2 For UMTS

3.2.1 Test Band = WCDMA850

3.2.1.1 Test Mode = UMTS/TM1

3.2.1.1.1 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	244.79	316.26	Pass
		MCH	249.98	316.33	Pass
		HCH	246.34	318.18	Pass
GSM1900	GSM/TM1	LCH	245.74	317.17	Pass
		MCH	247.19	322.73	Pass
		HCH	242.76	317.55	Pass

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.15	4.69	Pass
		MCH	4.16	4.70	Pass
		HCH	4.16	4.70	Pass



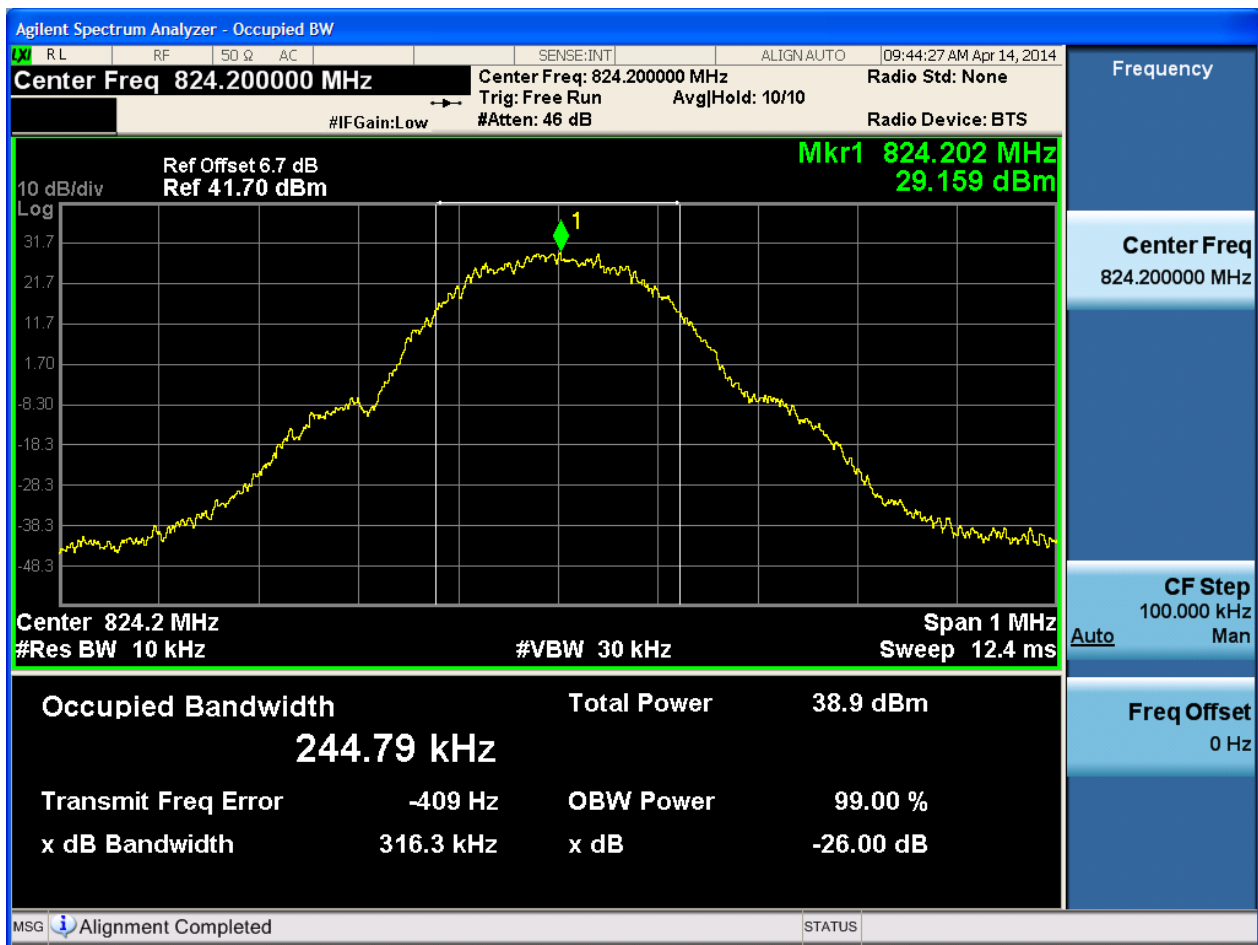
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

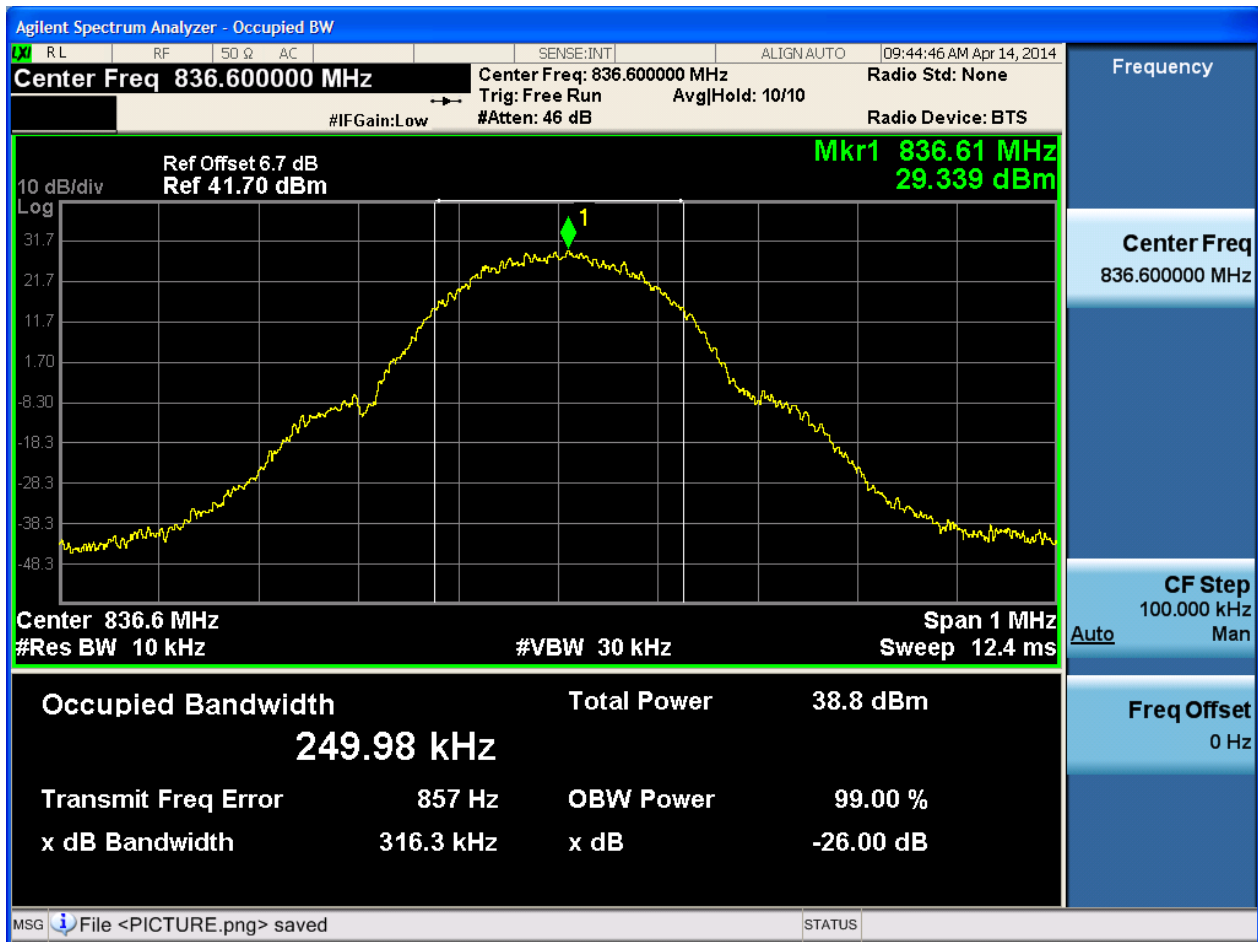
4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



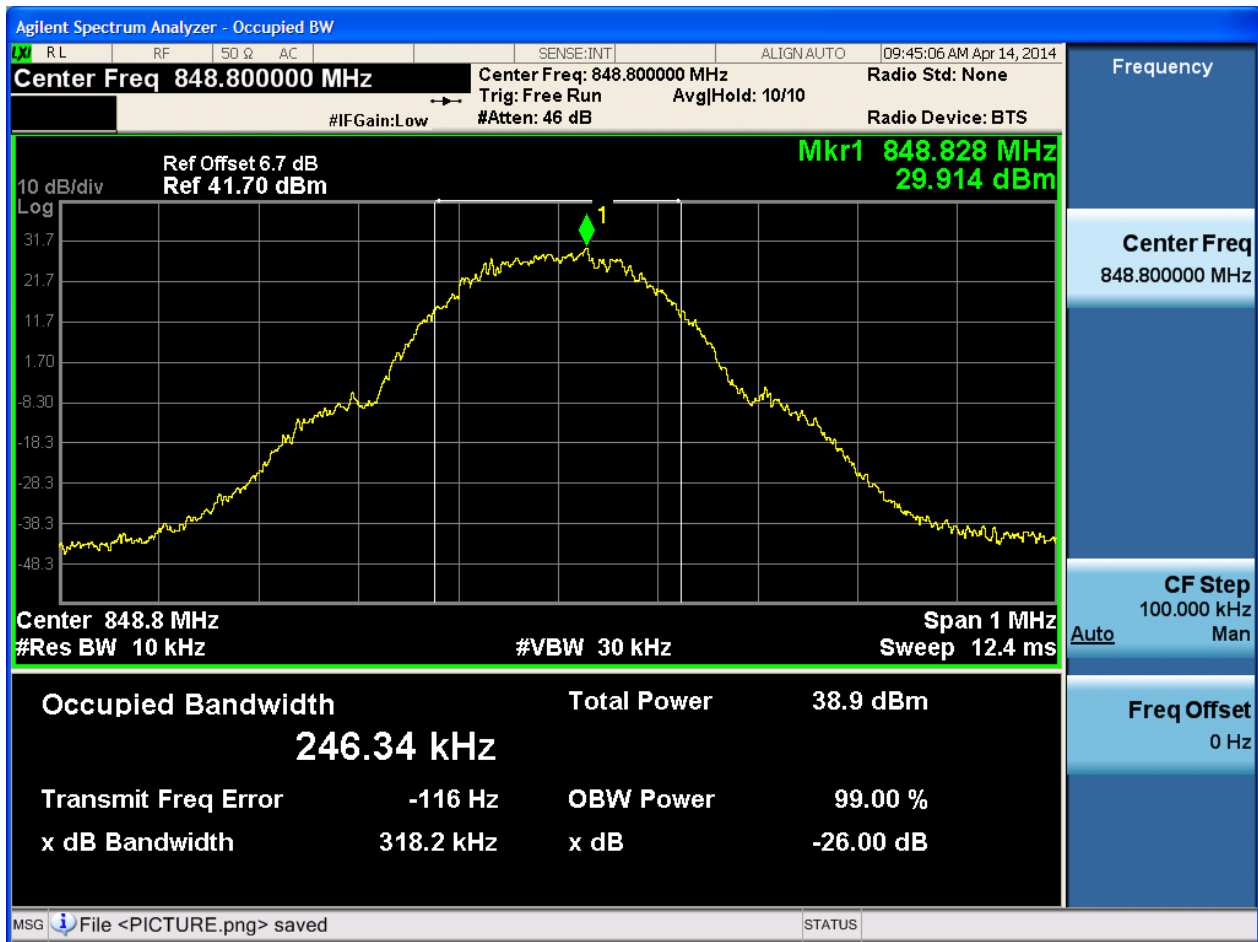


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

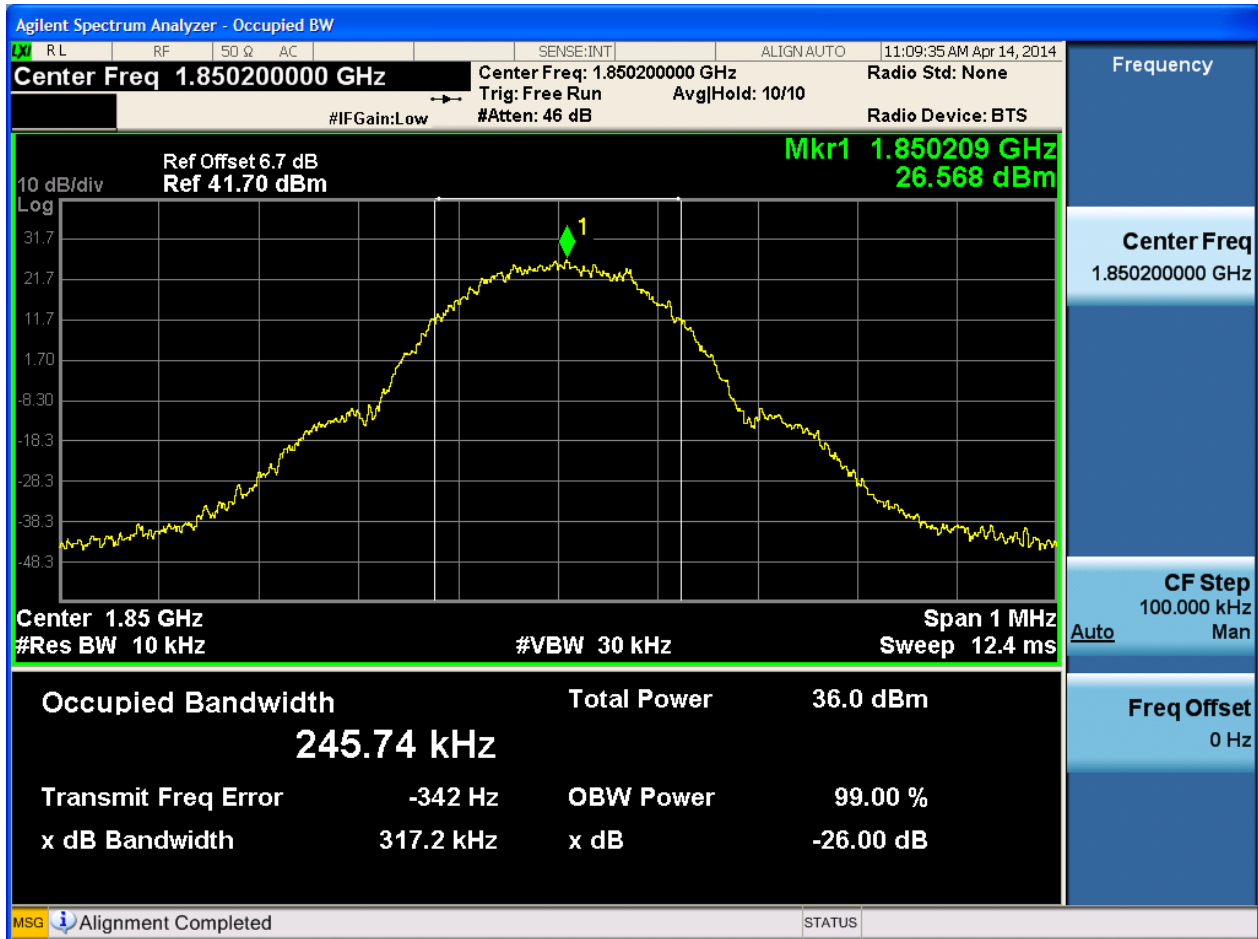




4.1.2 Test Band = GSM1900

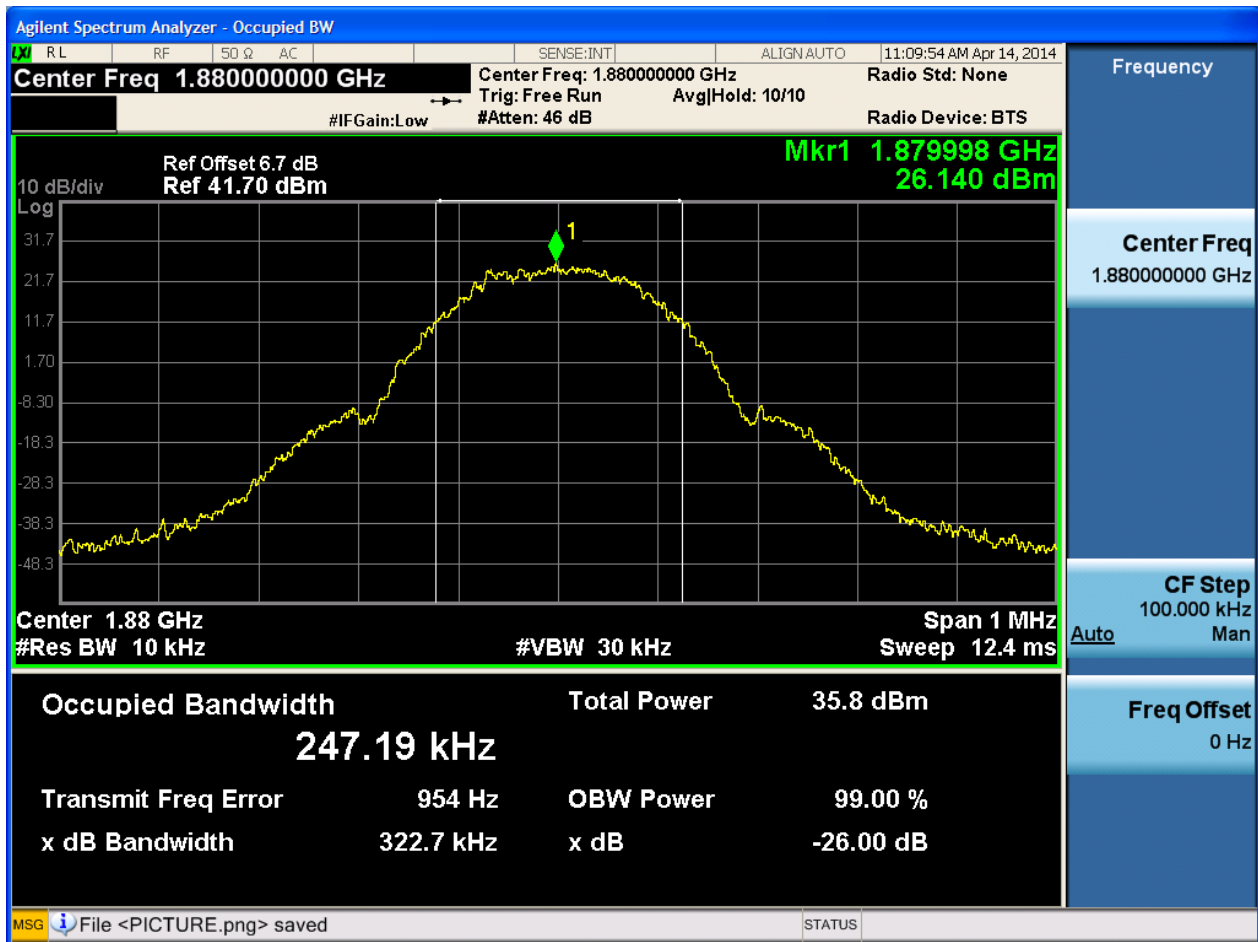
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



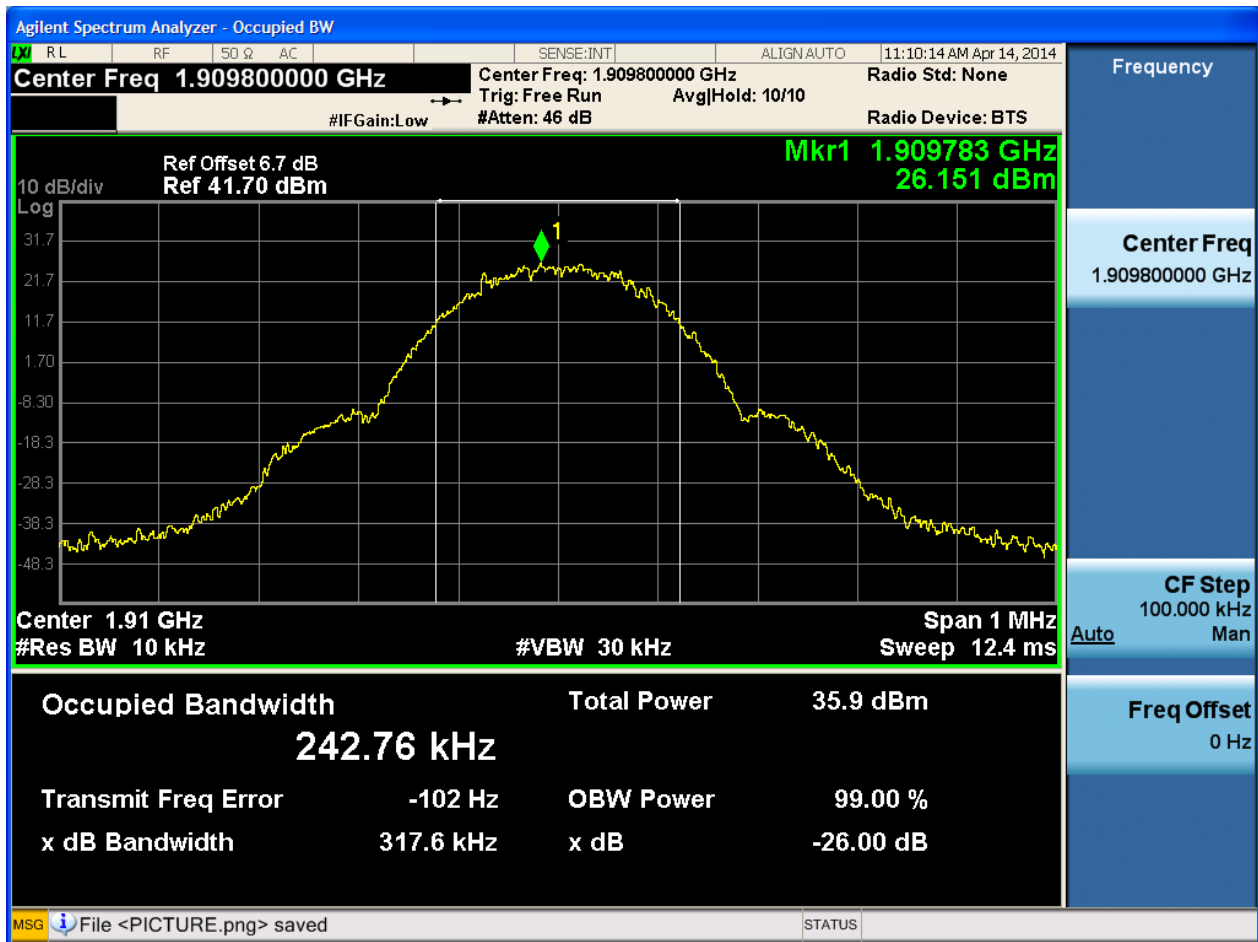


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH



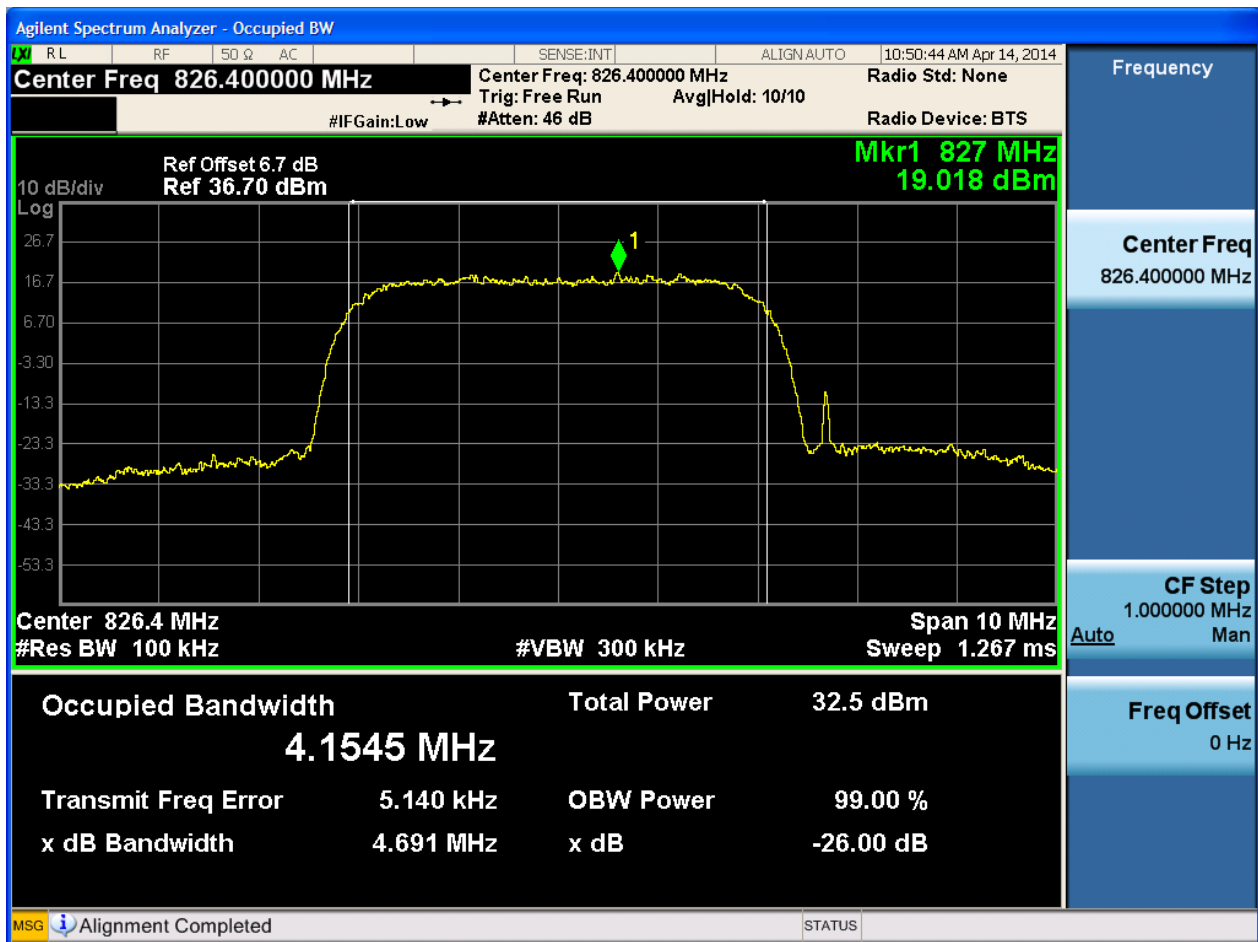


4.2 For UMTS

4.2.1 Test Band = WCDMA850

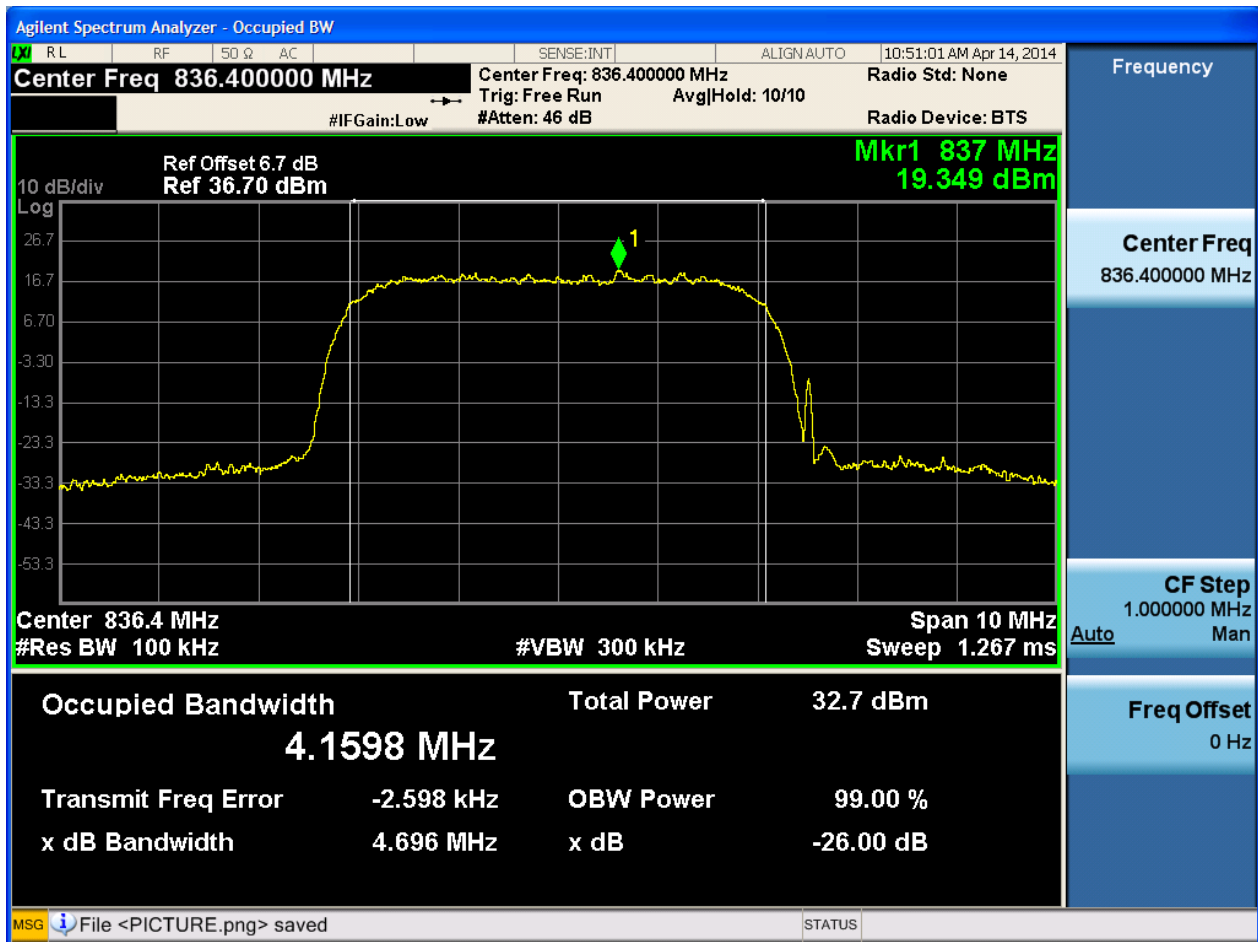
4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



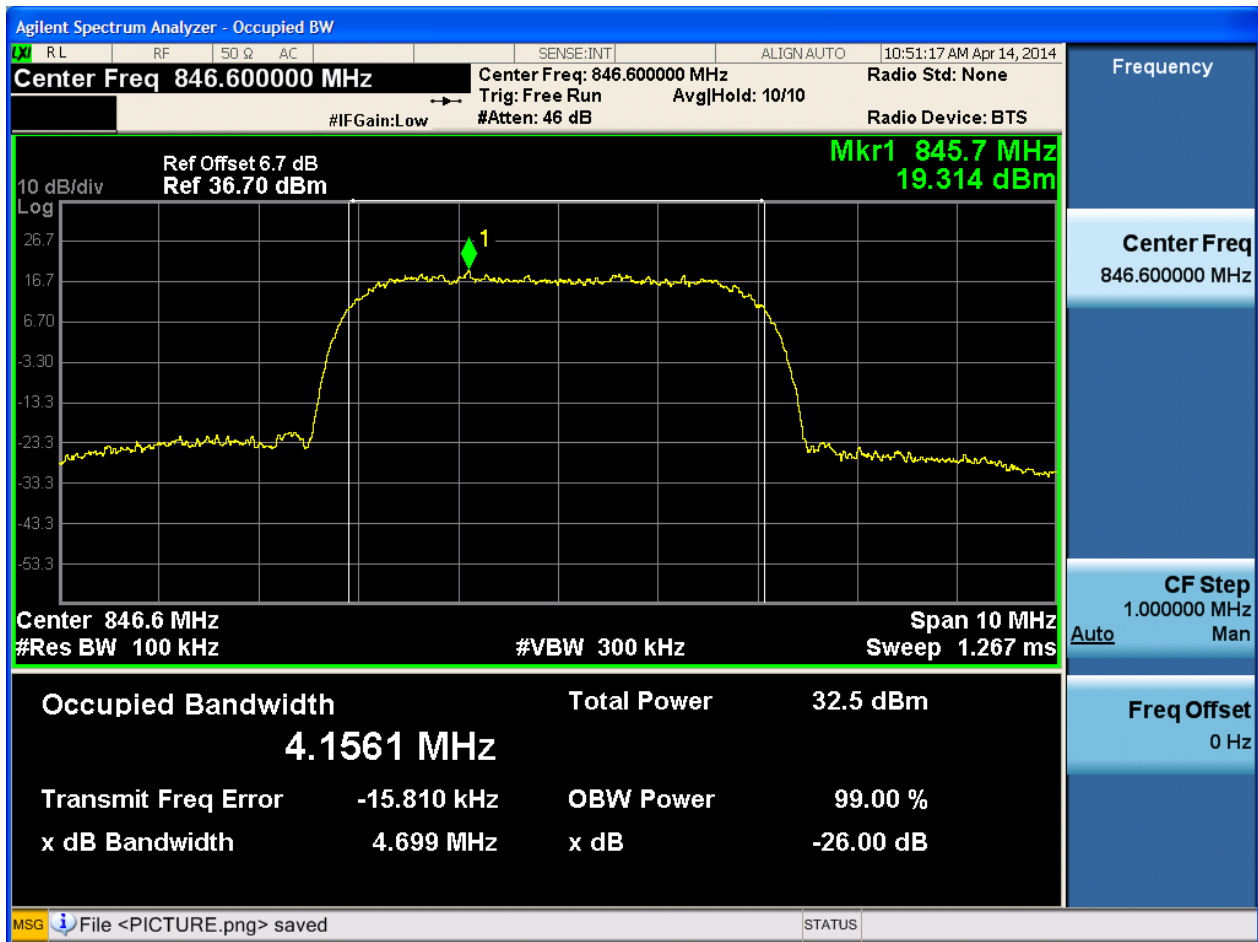


4.2.1.1.2 Test Channel = MCH





4.2.1.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

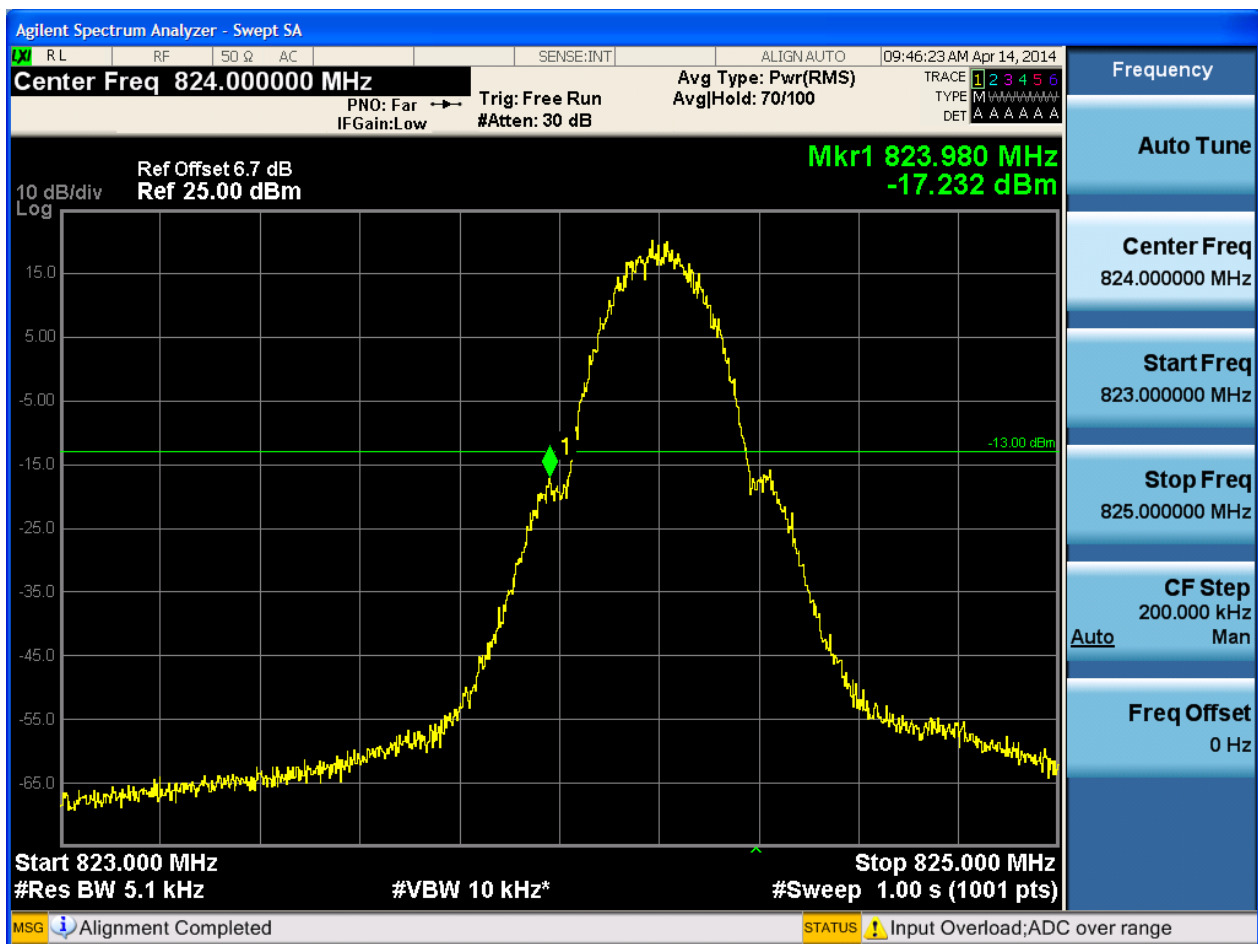
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM850

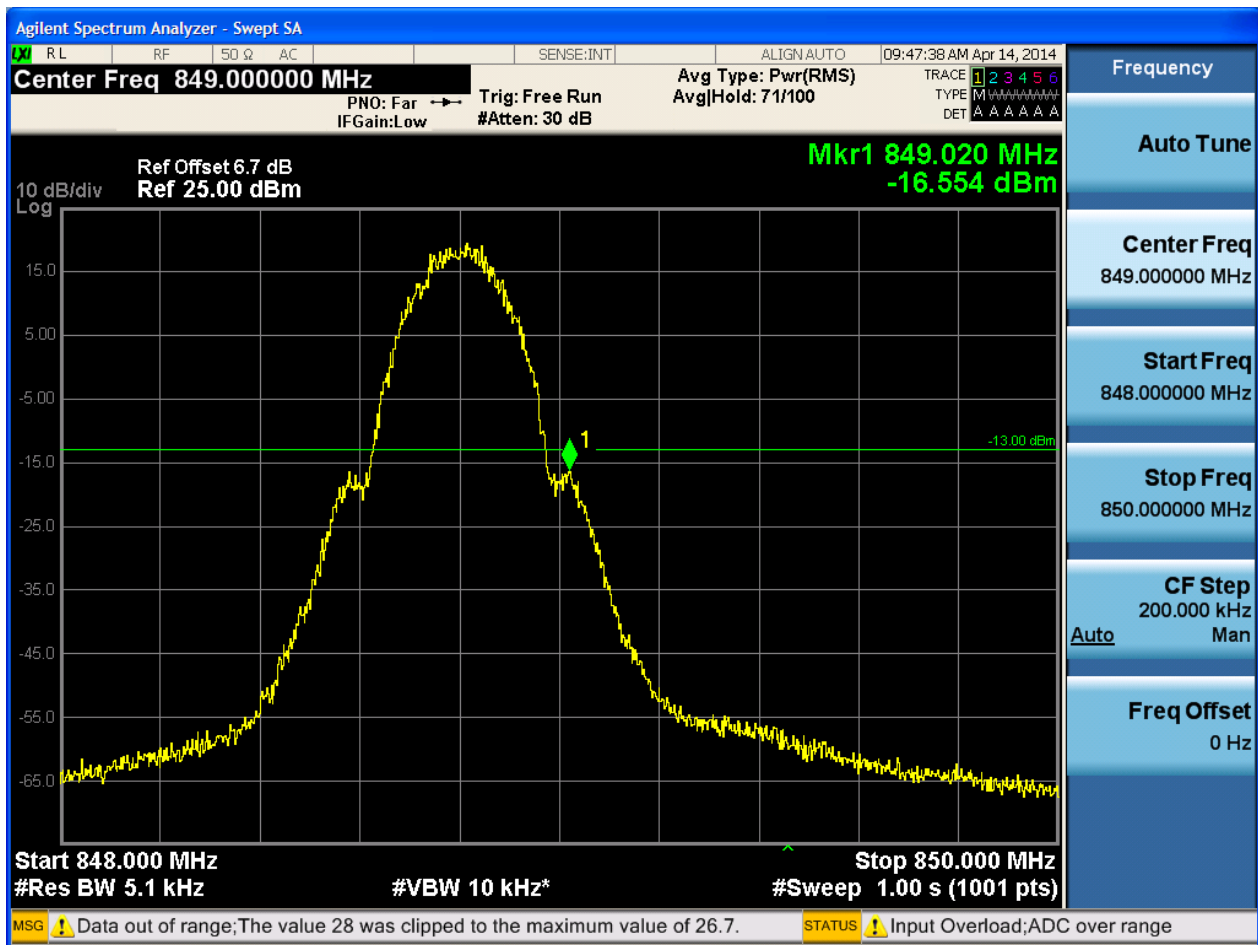
5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH





5.1.1.1.2 Test Channel = HCH

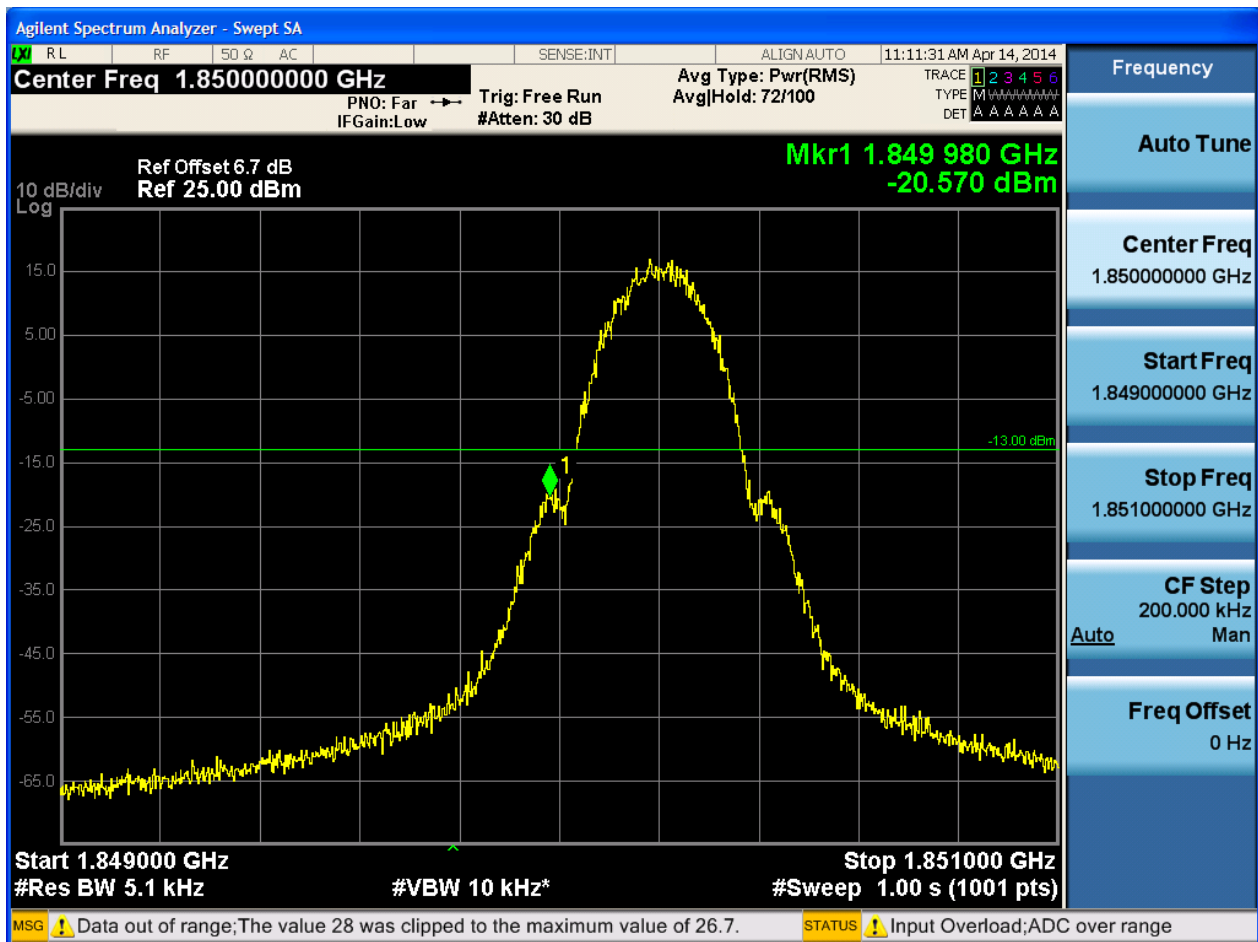




5.1.2 Test Band = GSM1900

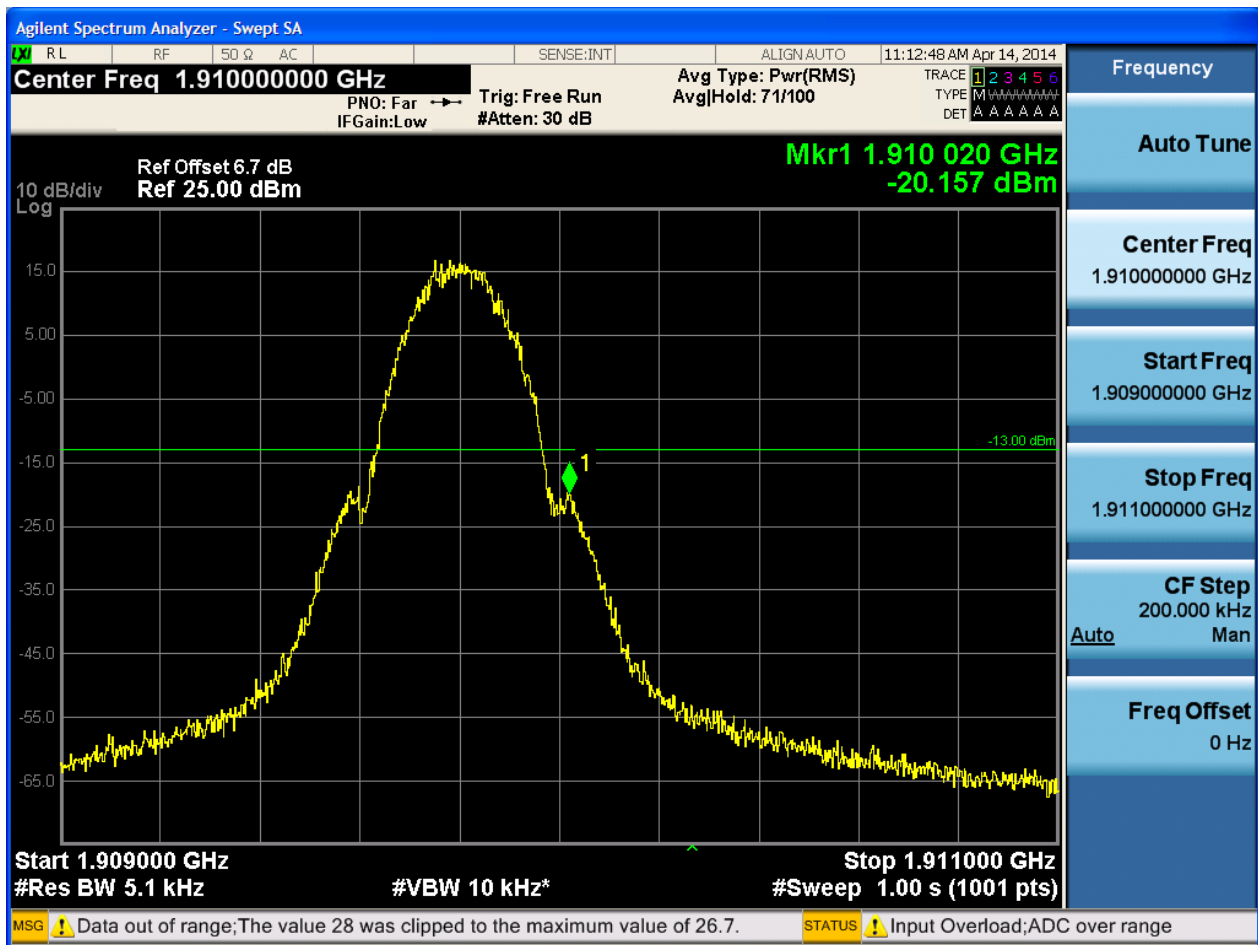
5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH





5.1.2.1.2 Test Channel = HCH



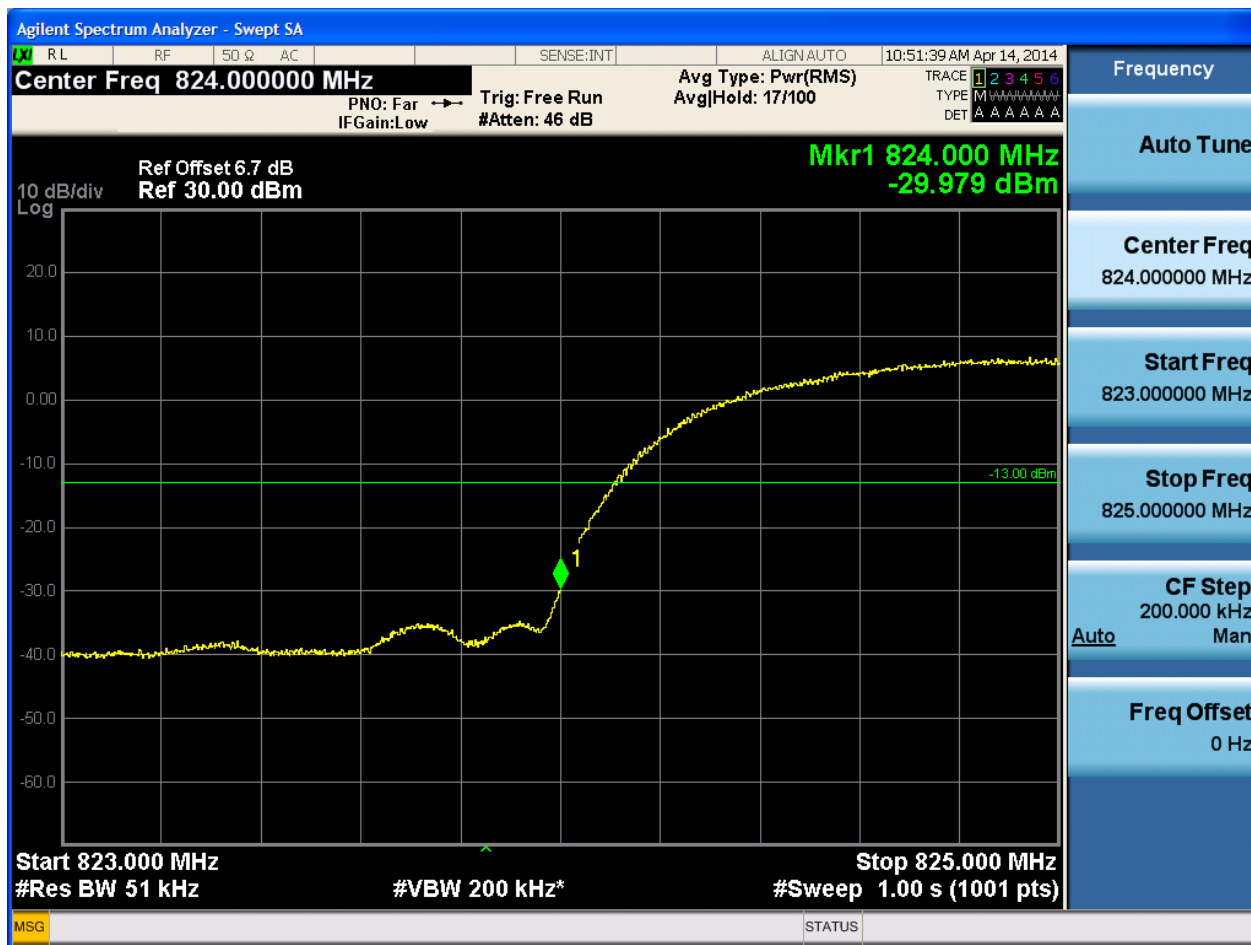


5.2 For UMTS

5.2.1 Test Band = WCDMA850

5.2.1.1 Test Mode = UMTS/TM1

5.2.1.1.1 Test Channel = LCH



5.2.1.1.2 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.

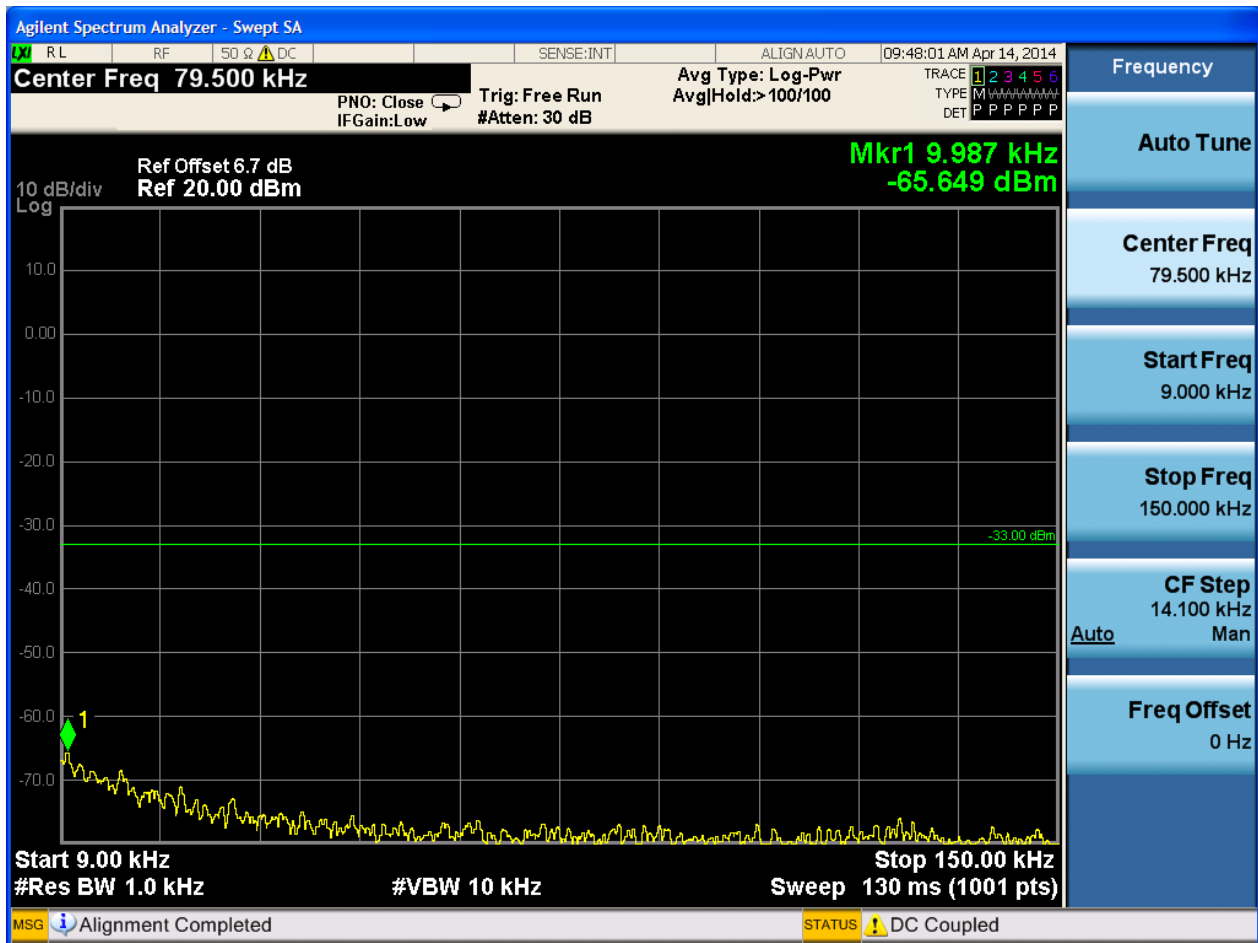
Part I - Test Plots

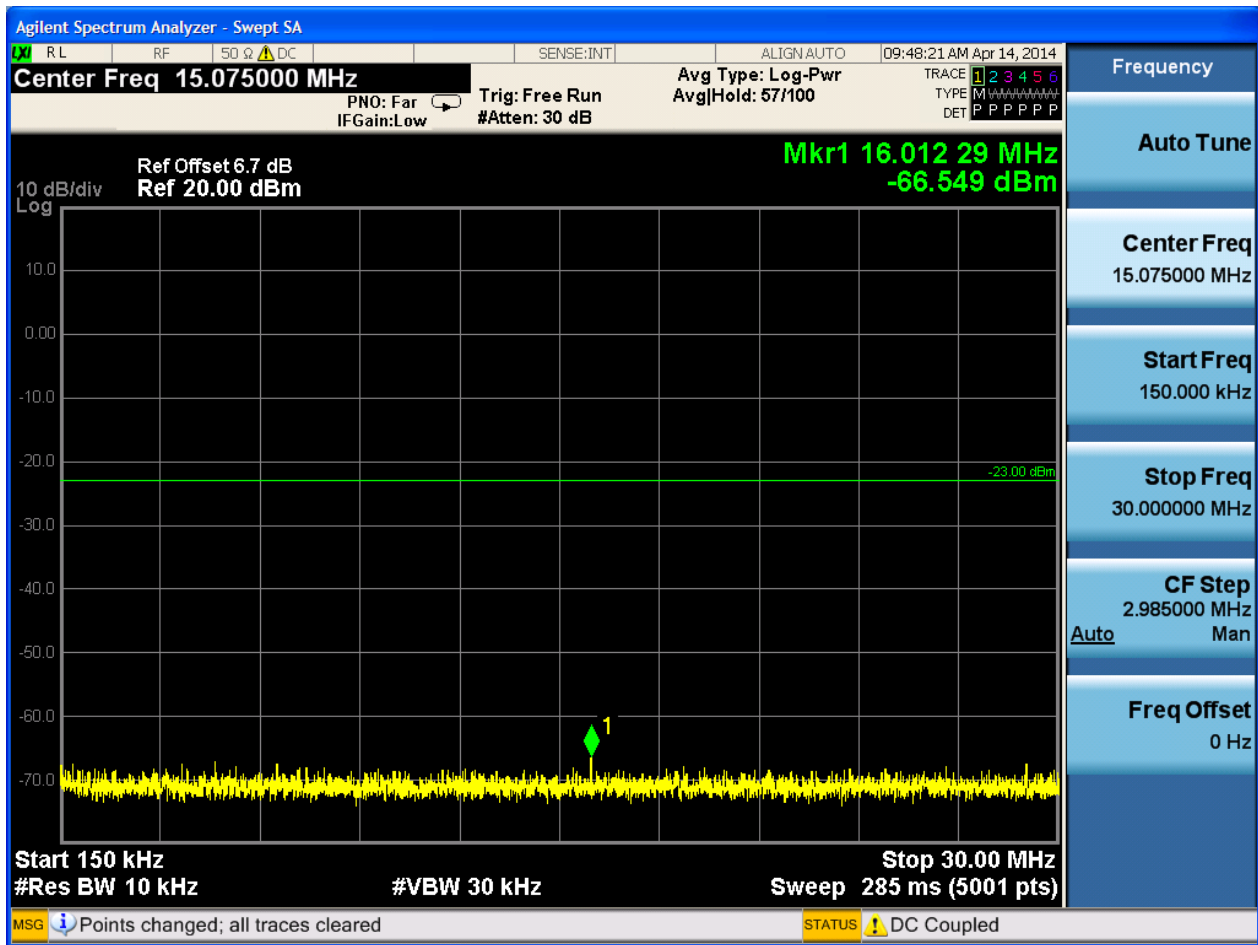
6.1 For GSM

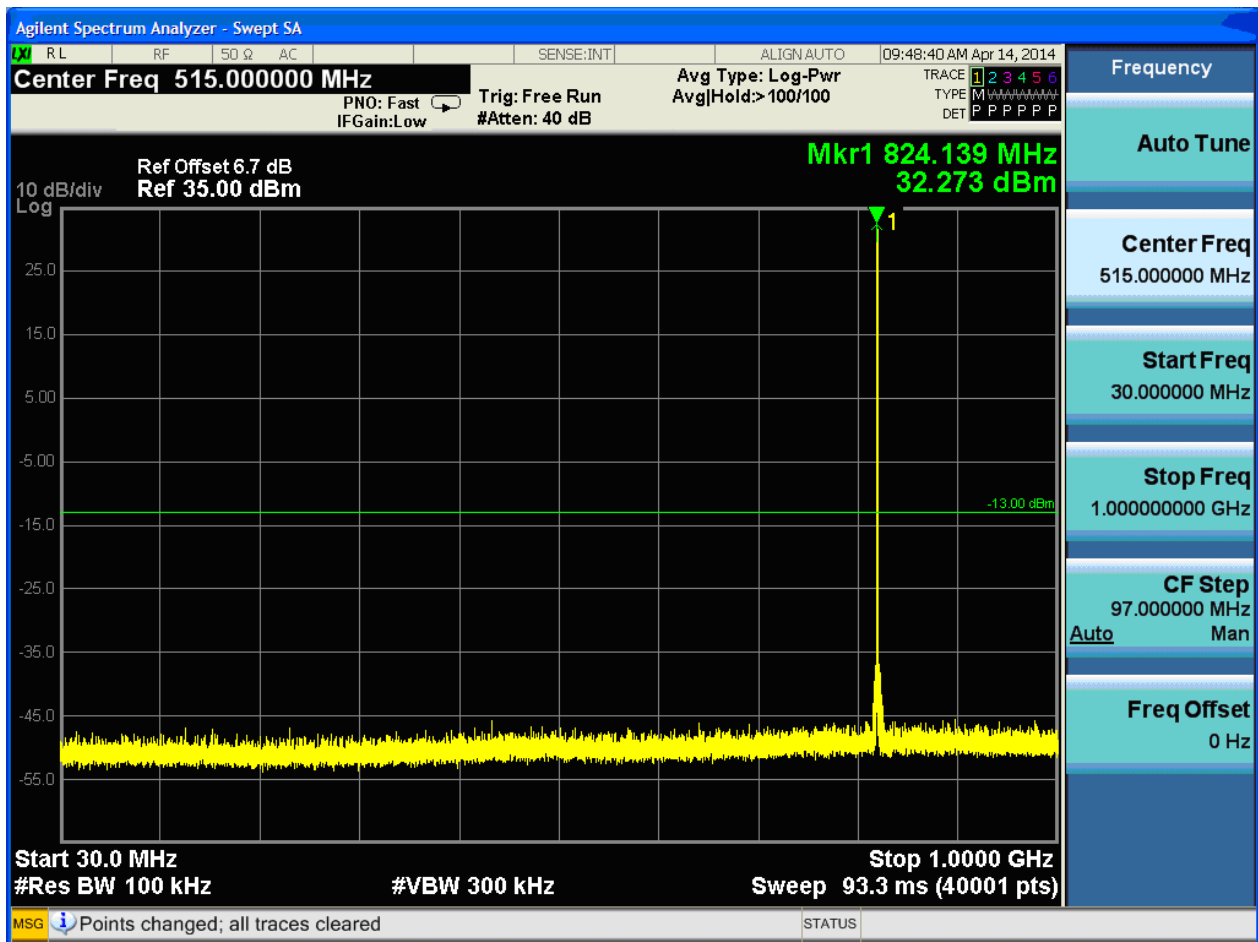
6.1.1 Test Band = GSM850

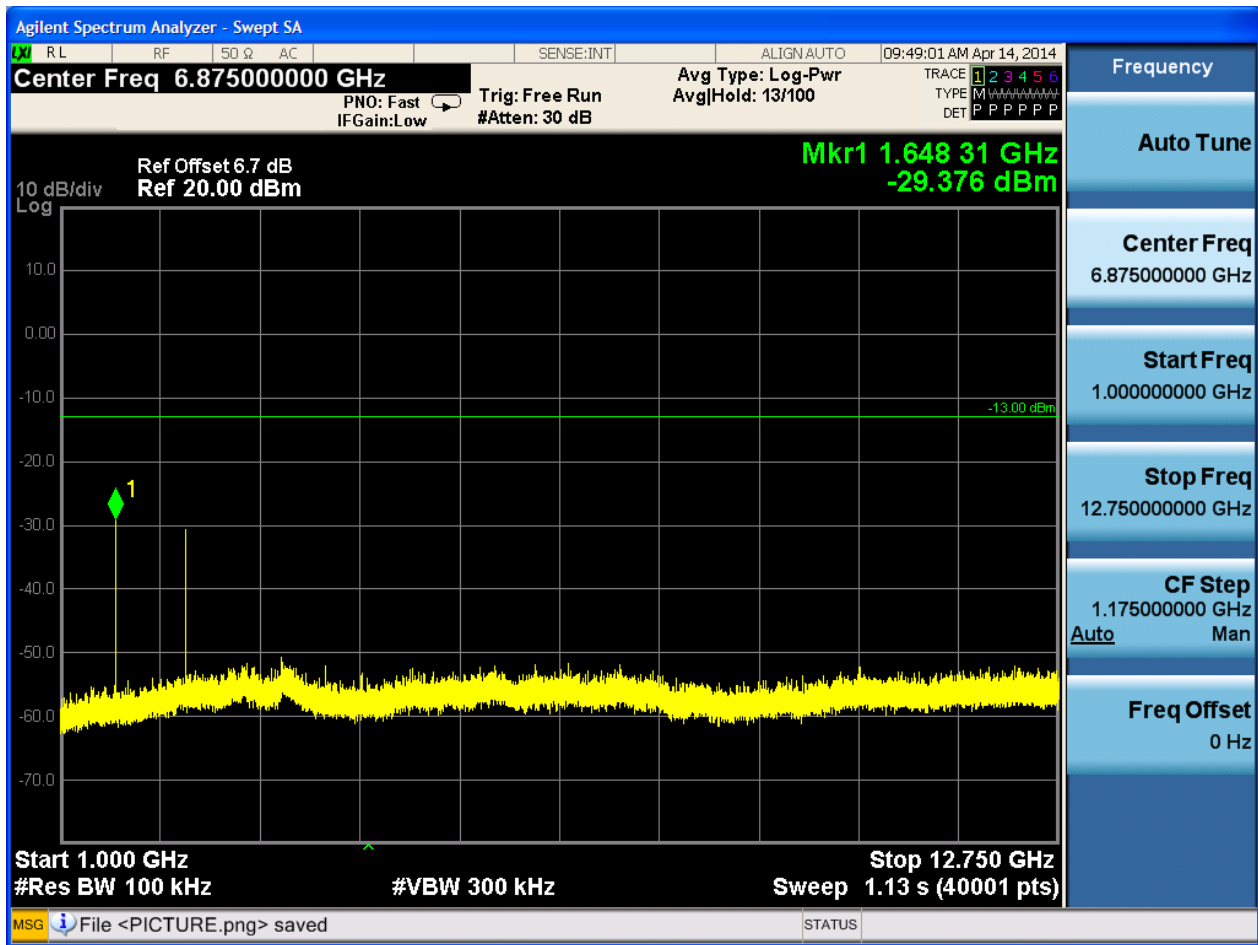
6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH



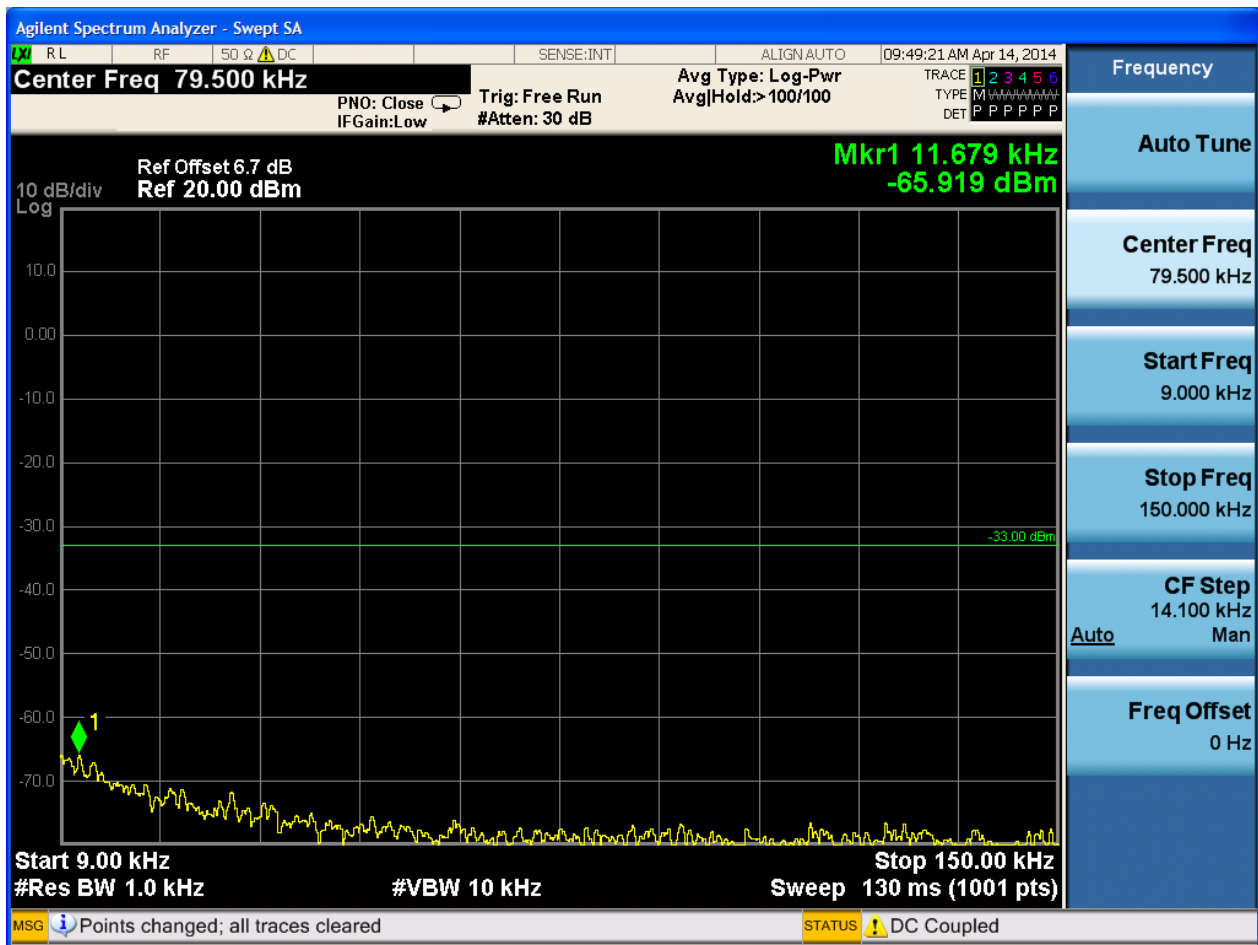


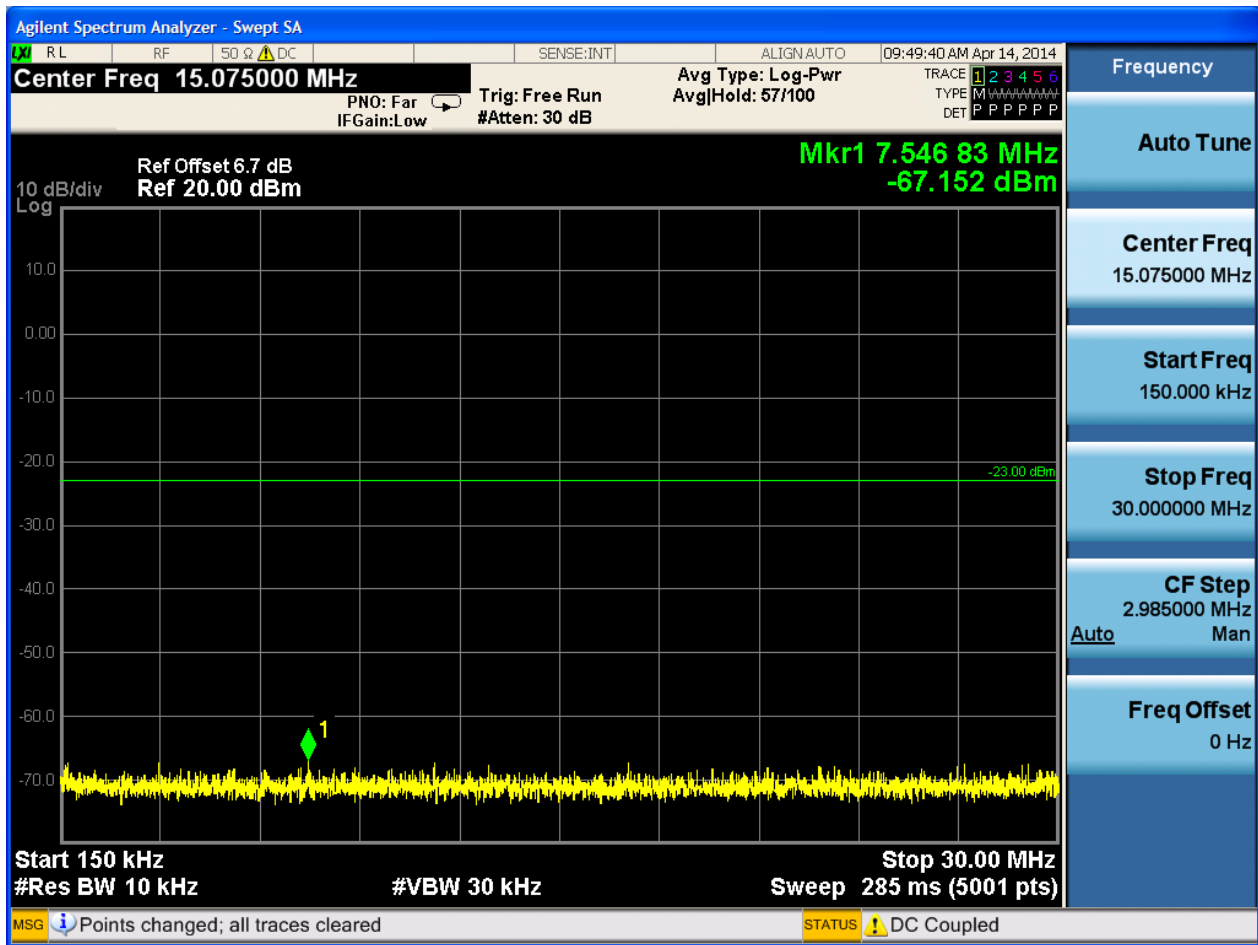


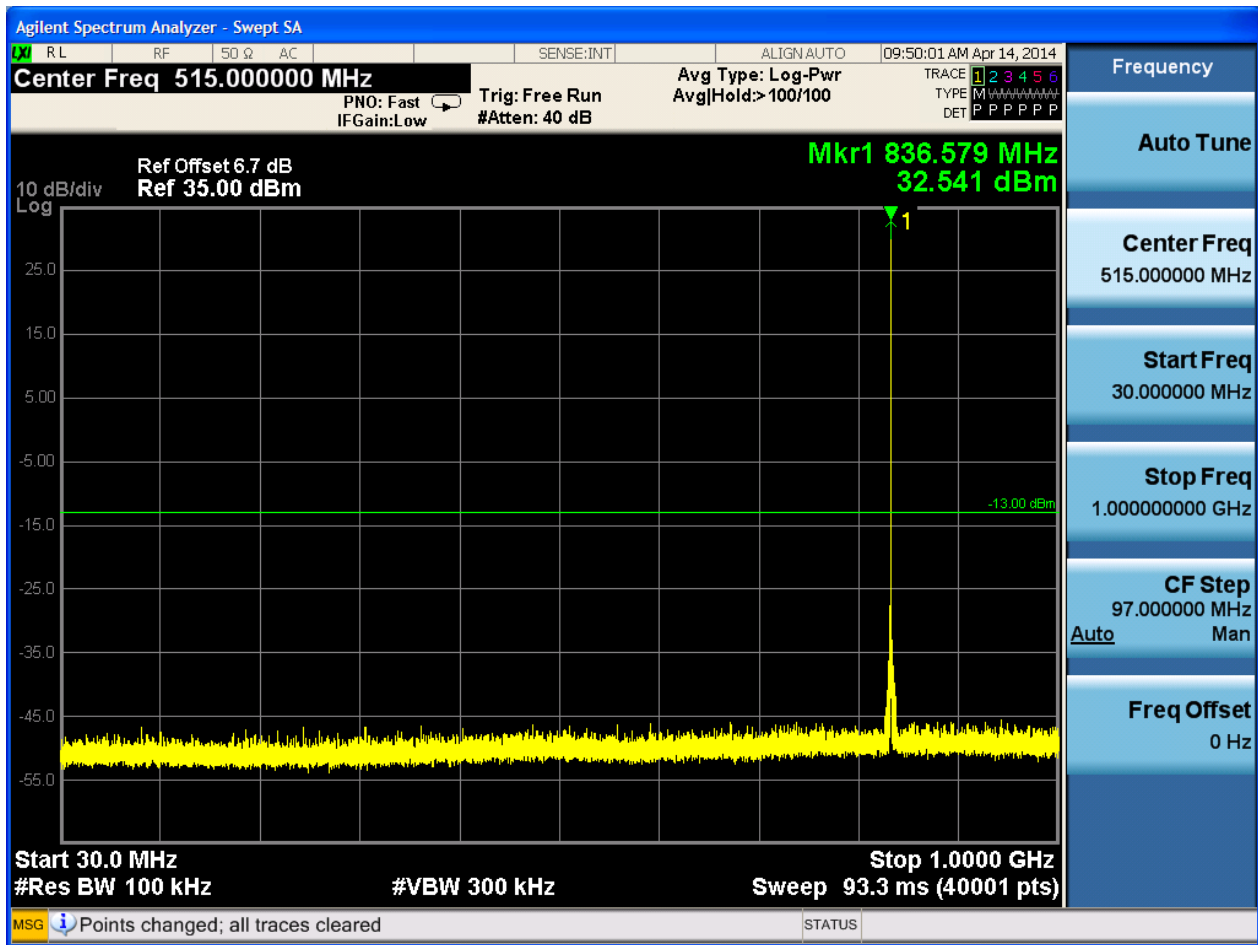


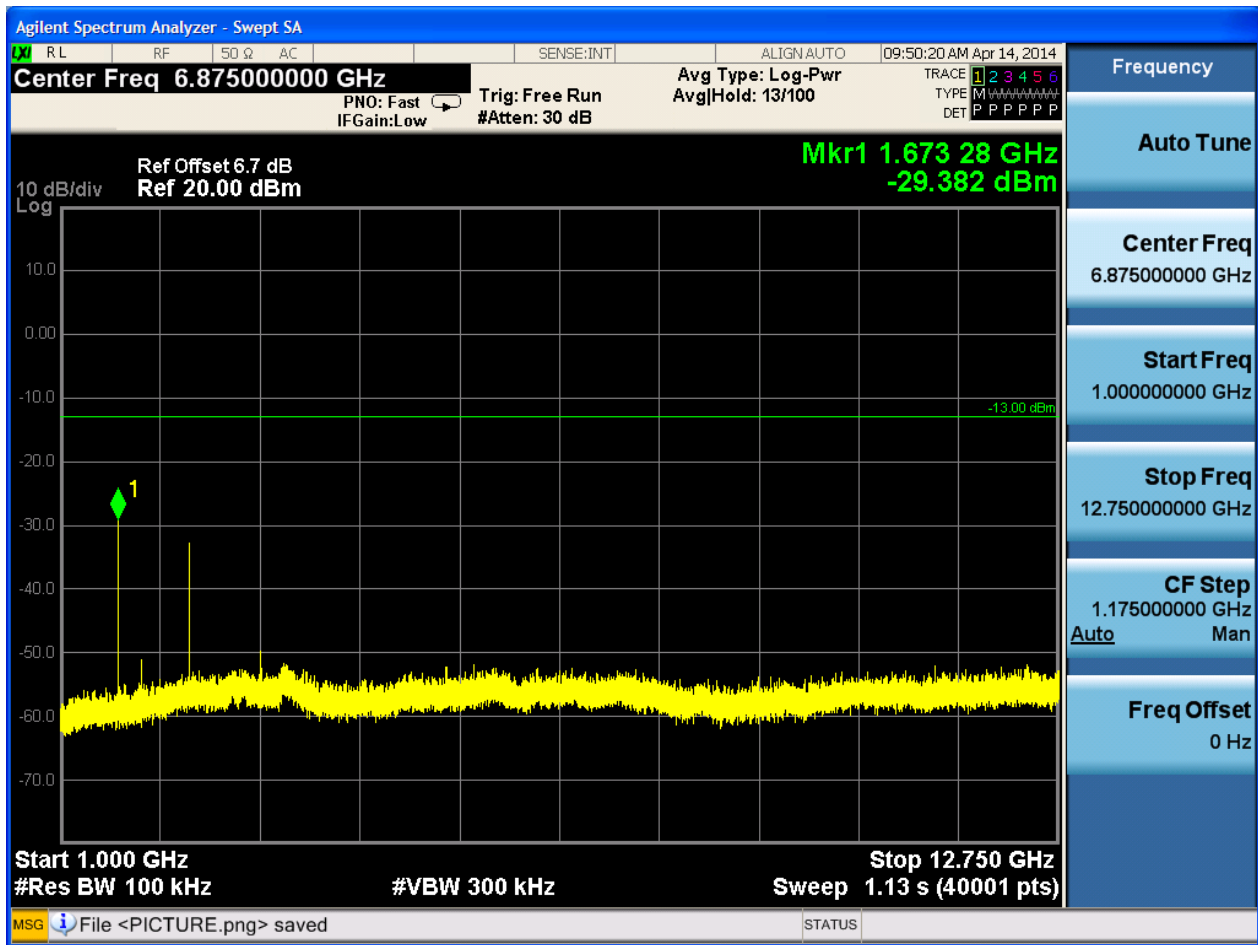


6.1.1.1.2 Test Channel = MCH



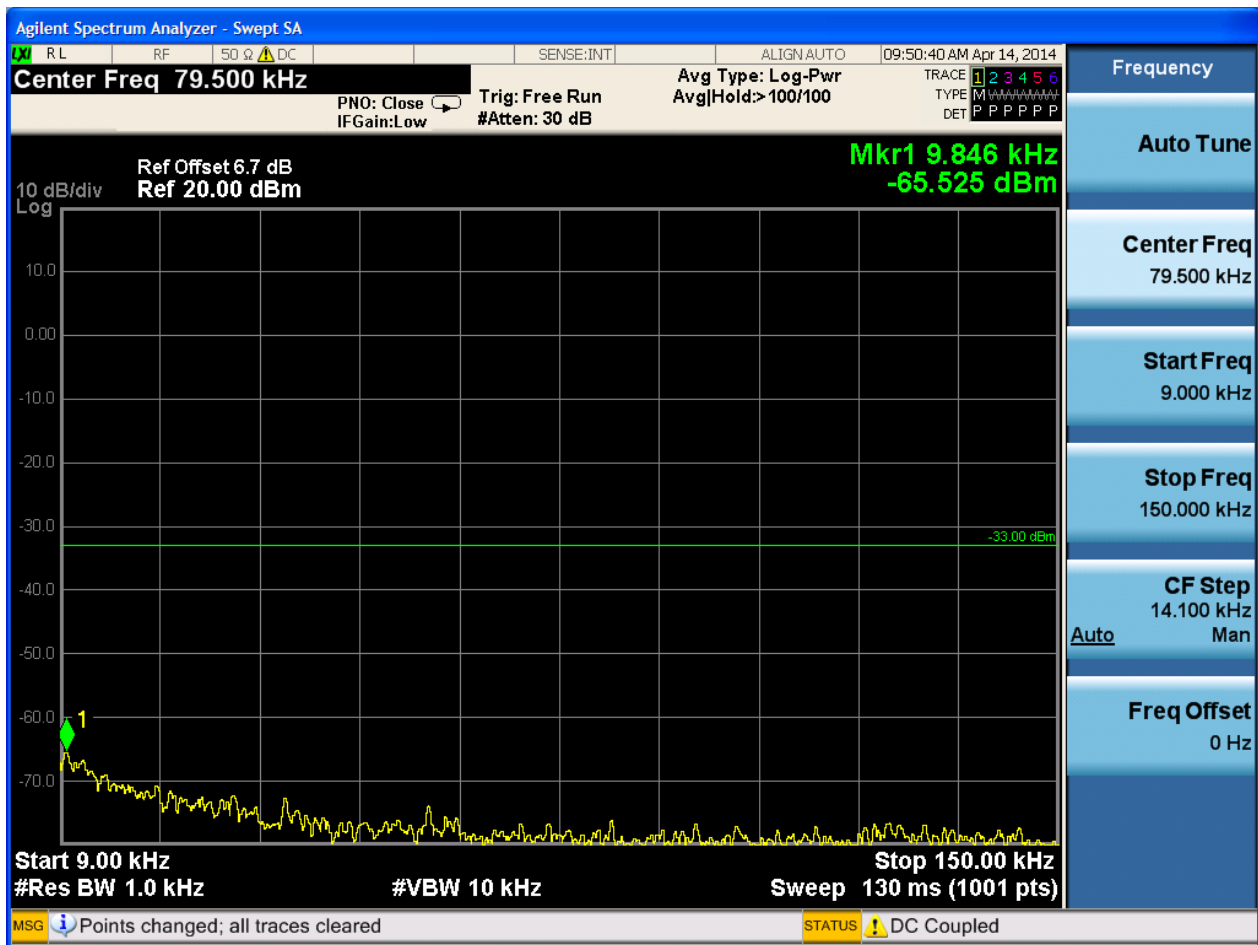


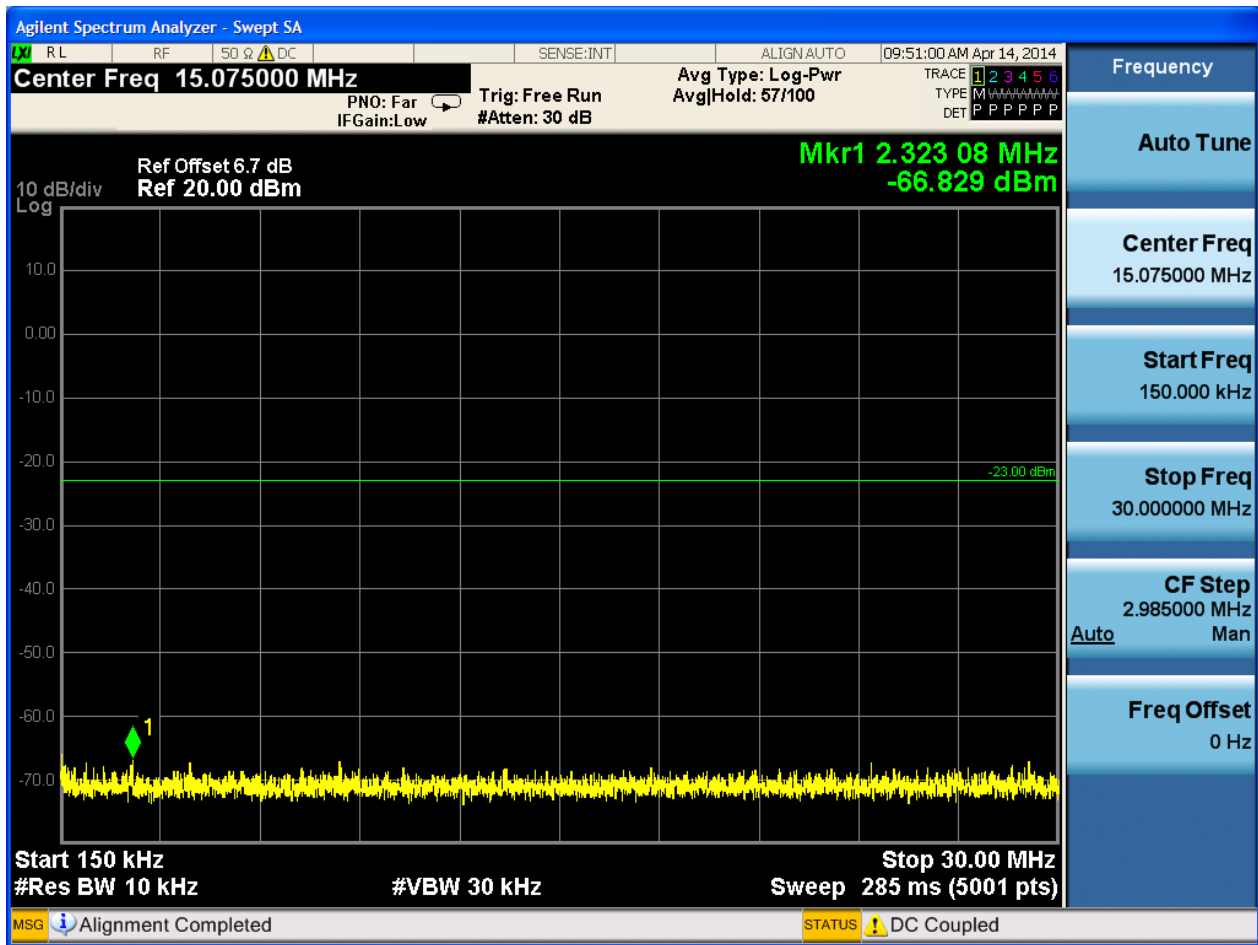


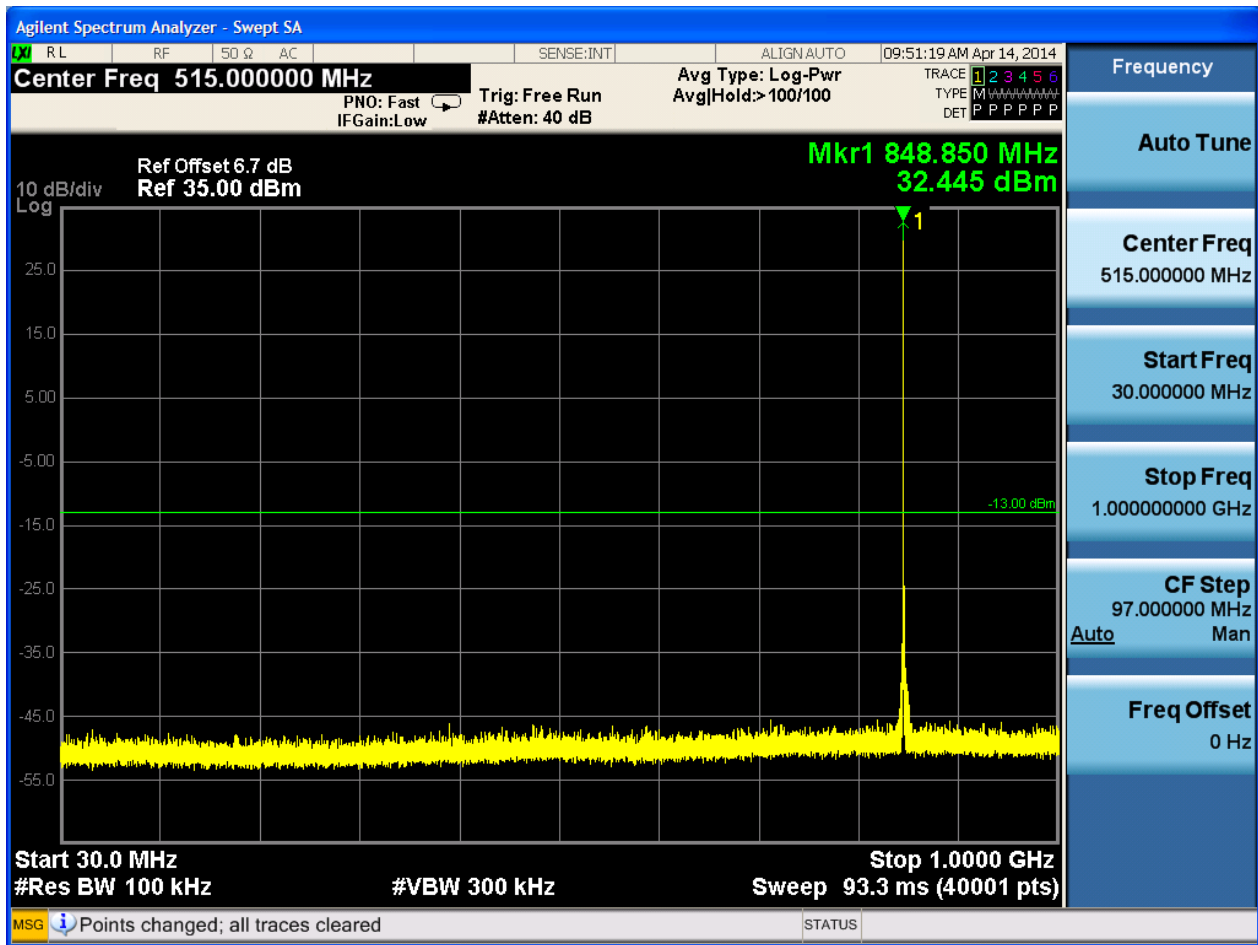


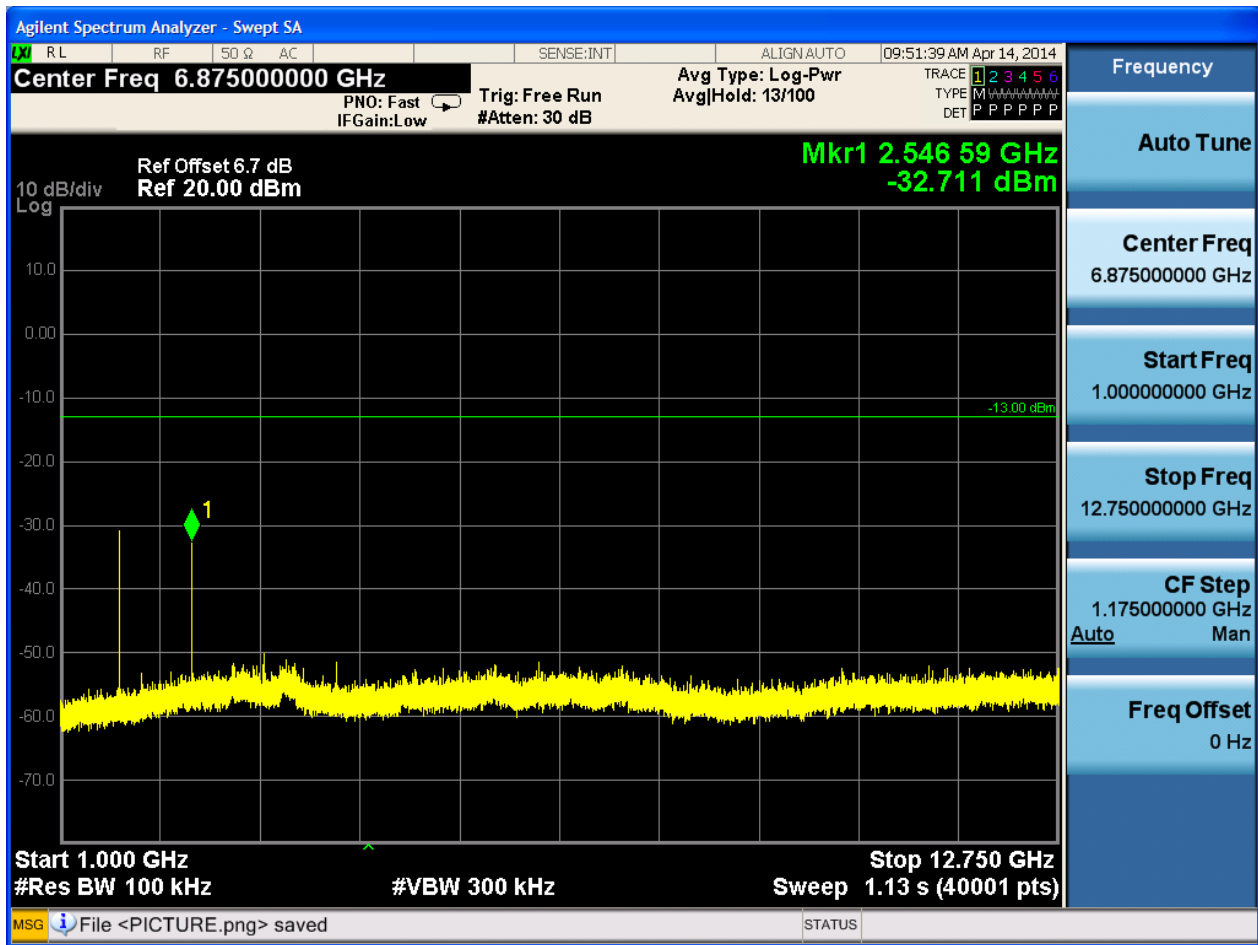


6.1.1.1.3 Test Channel = HCH









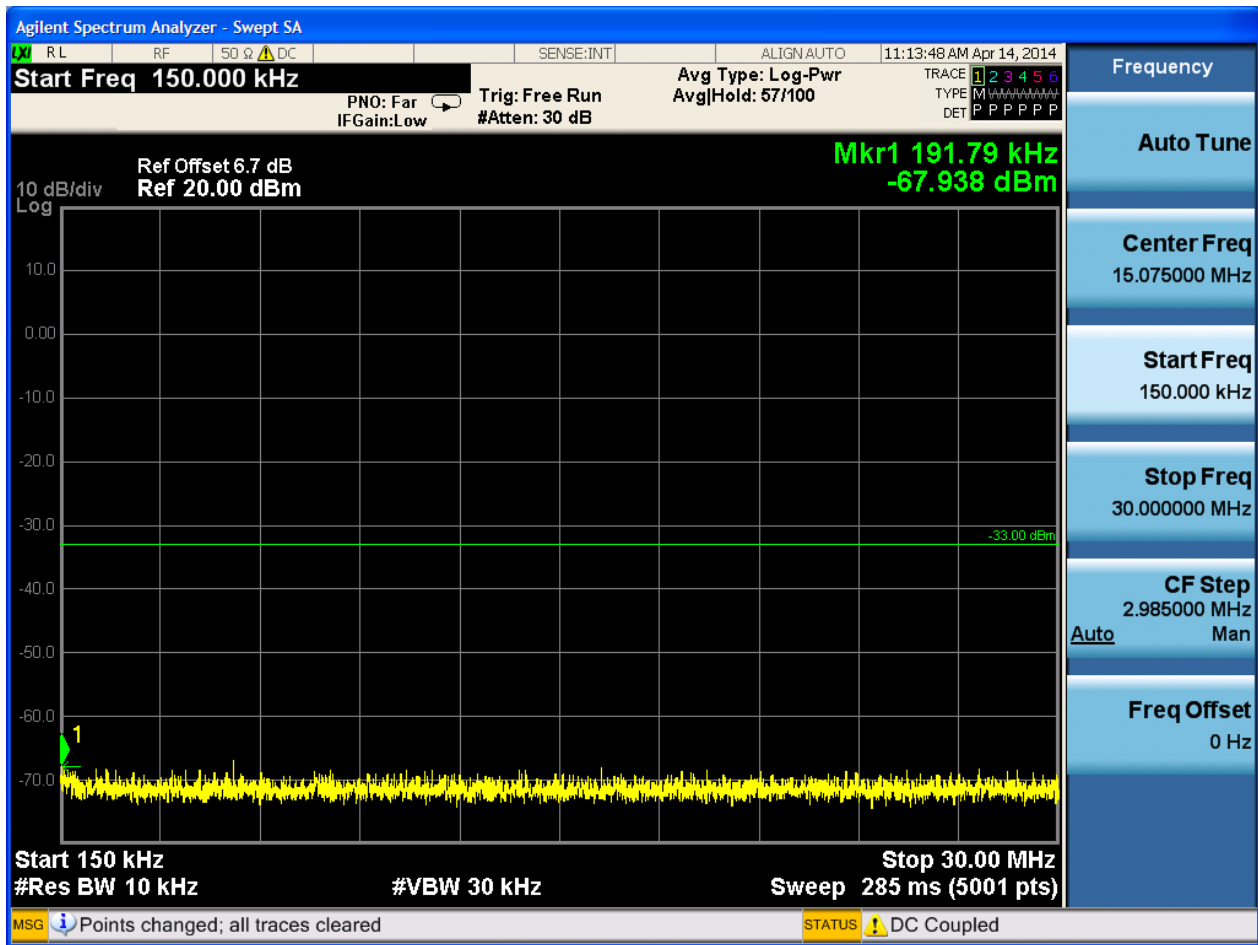


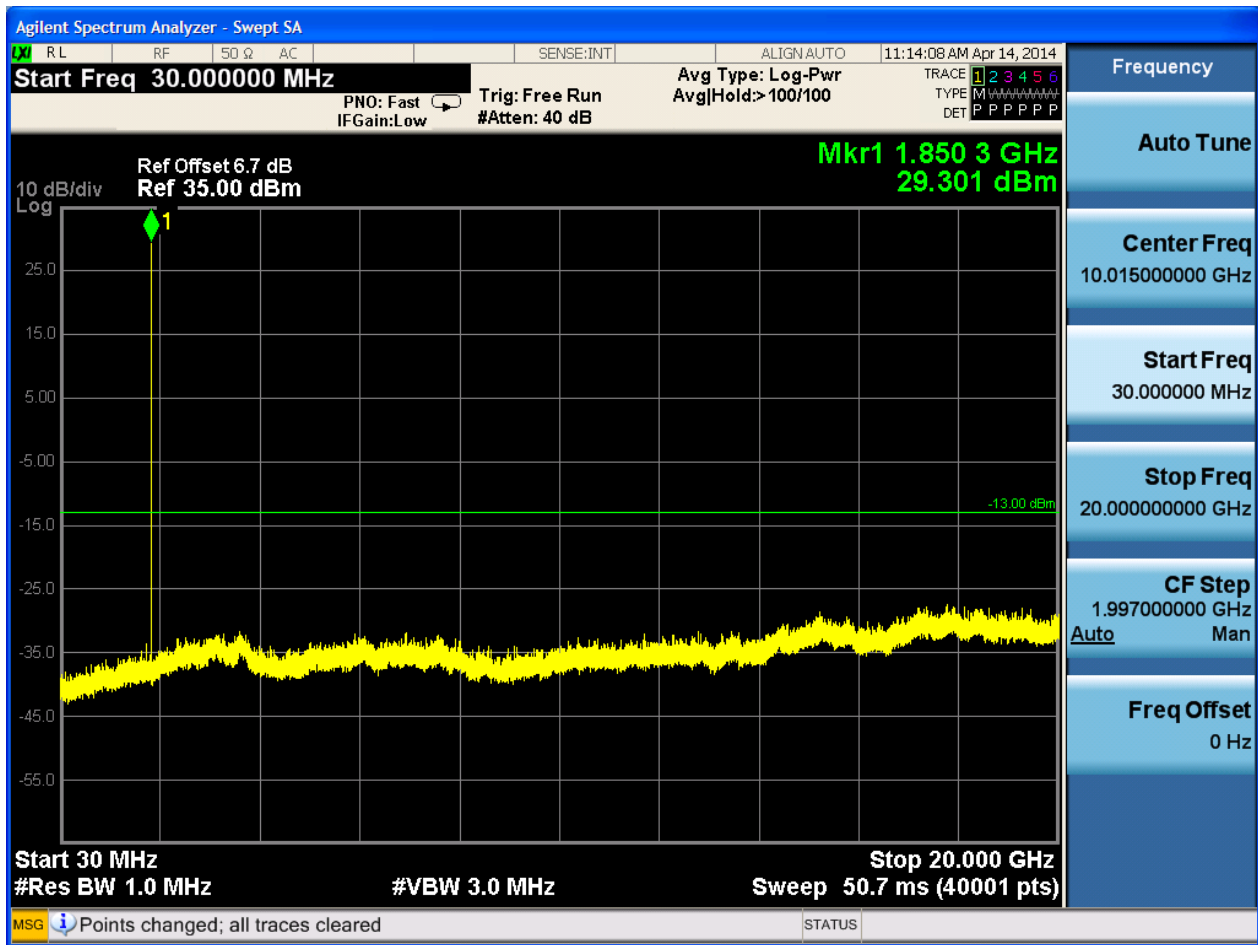
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



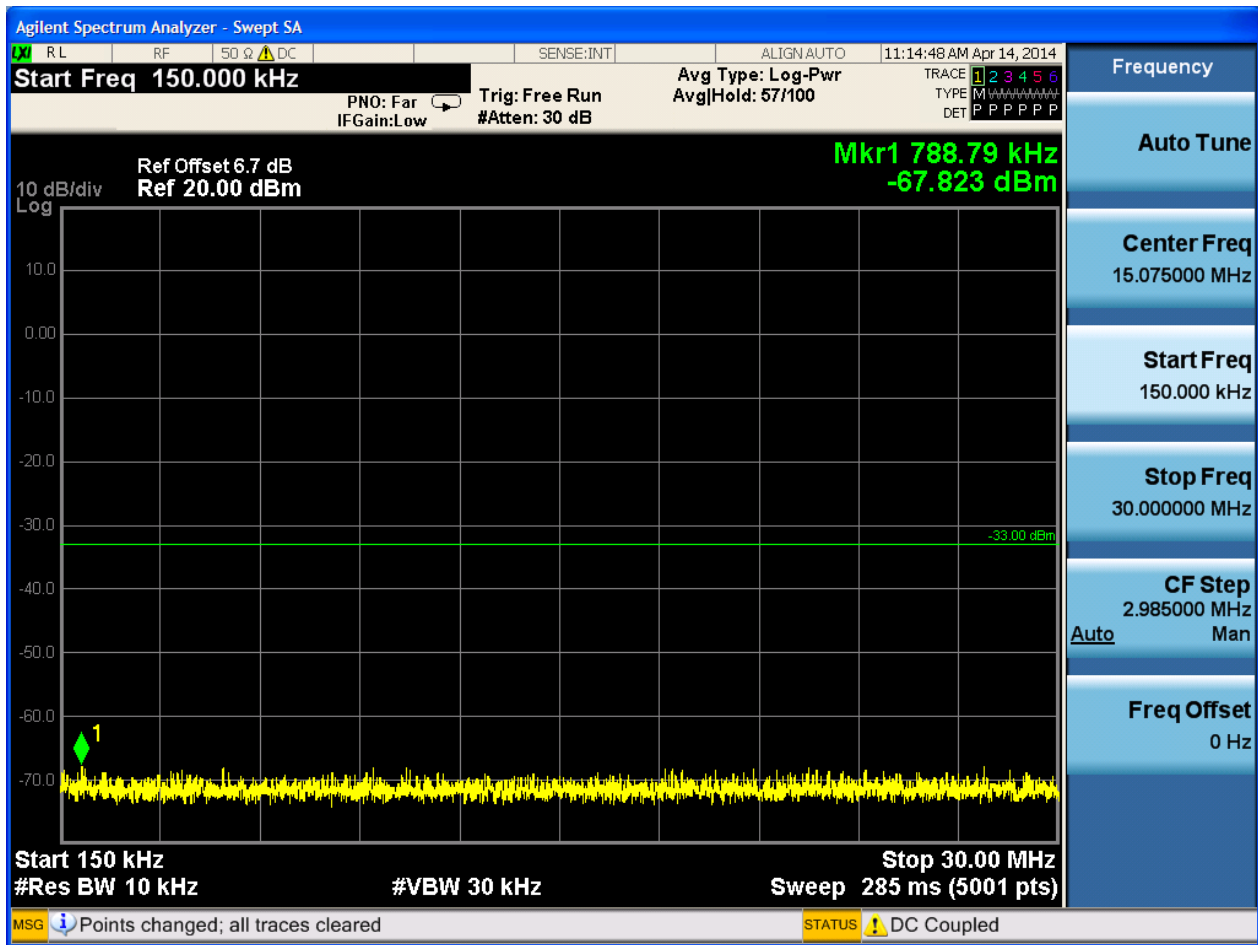


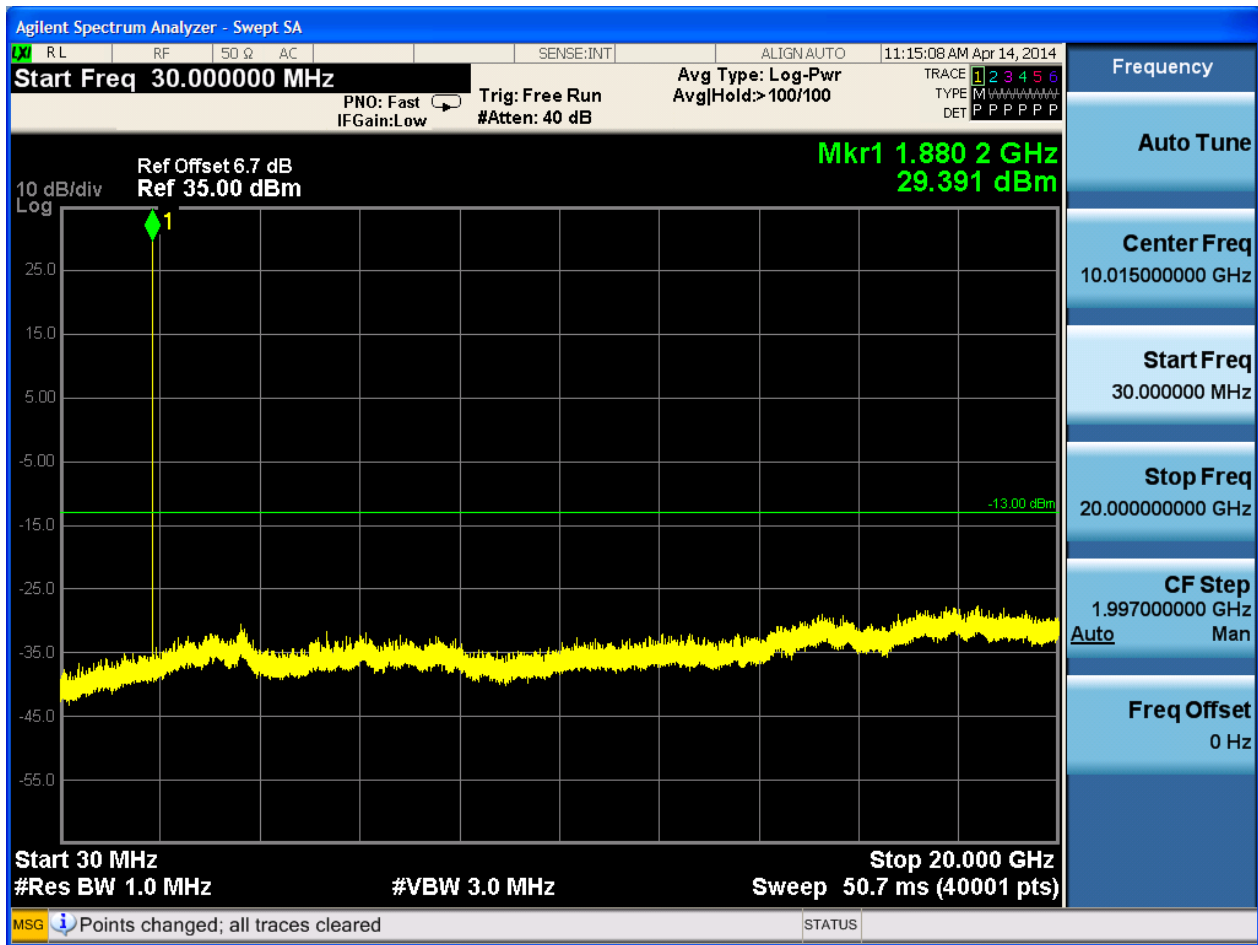




6.1.2.1.2 Test Channel = MCH

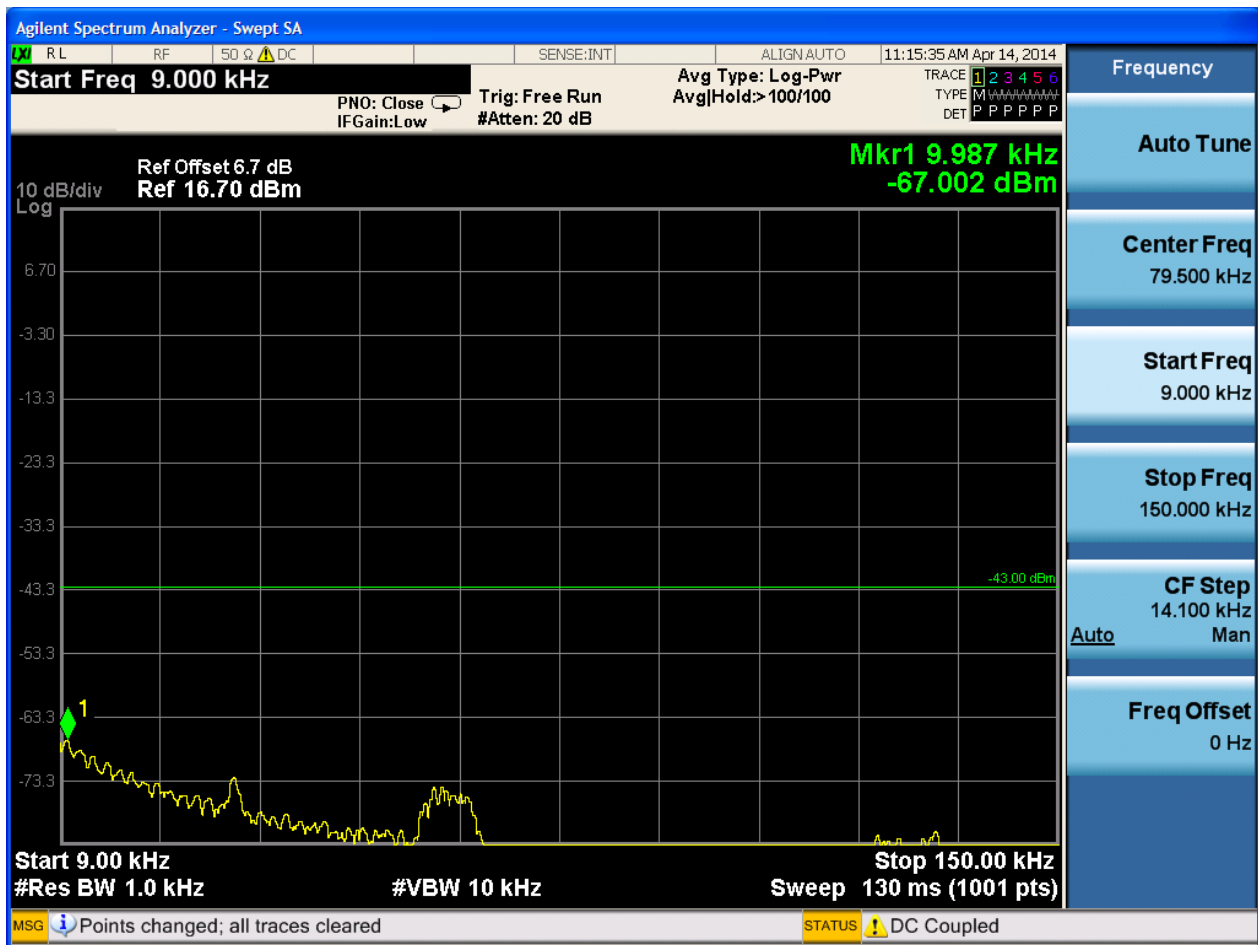


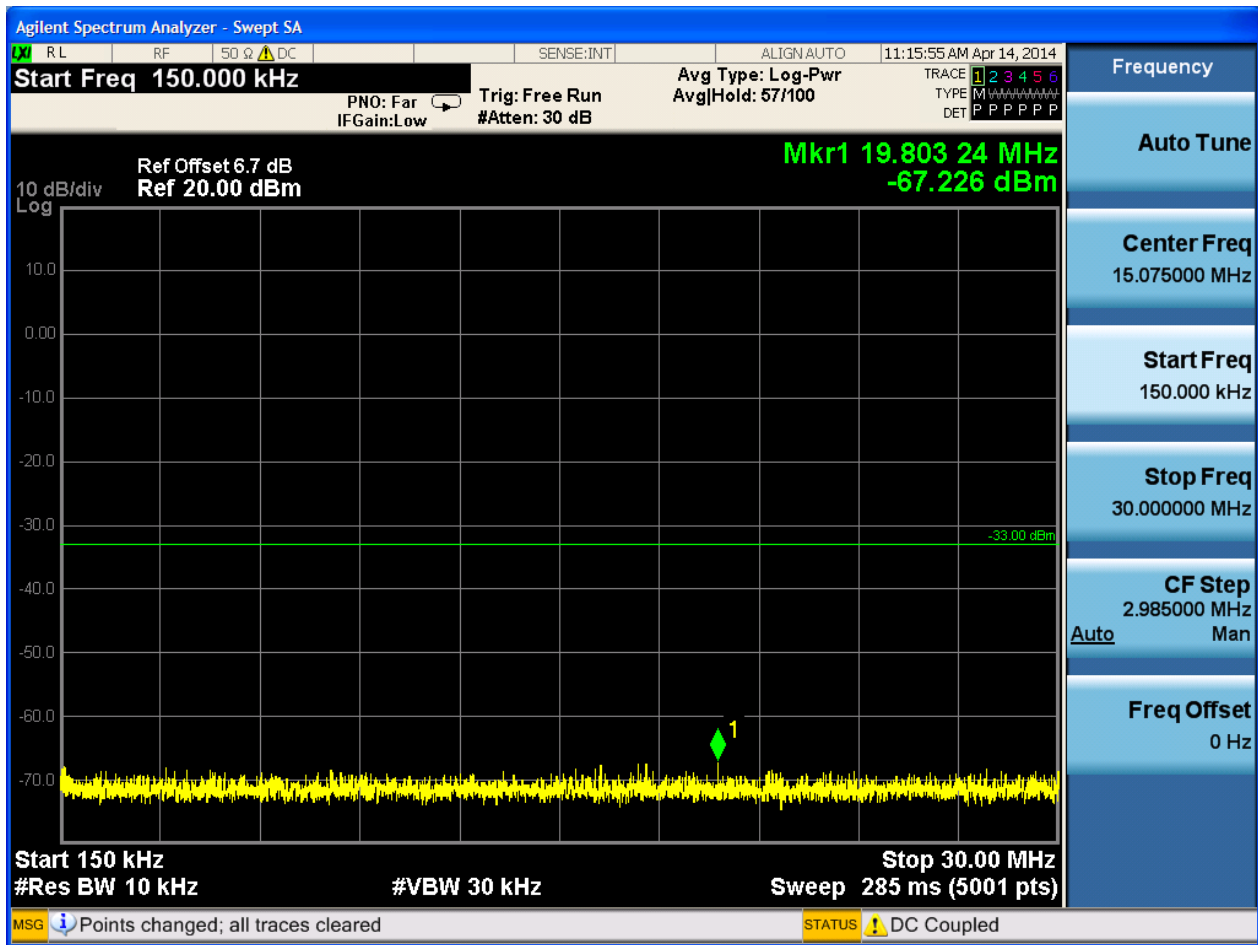


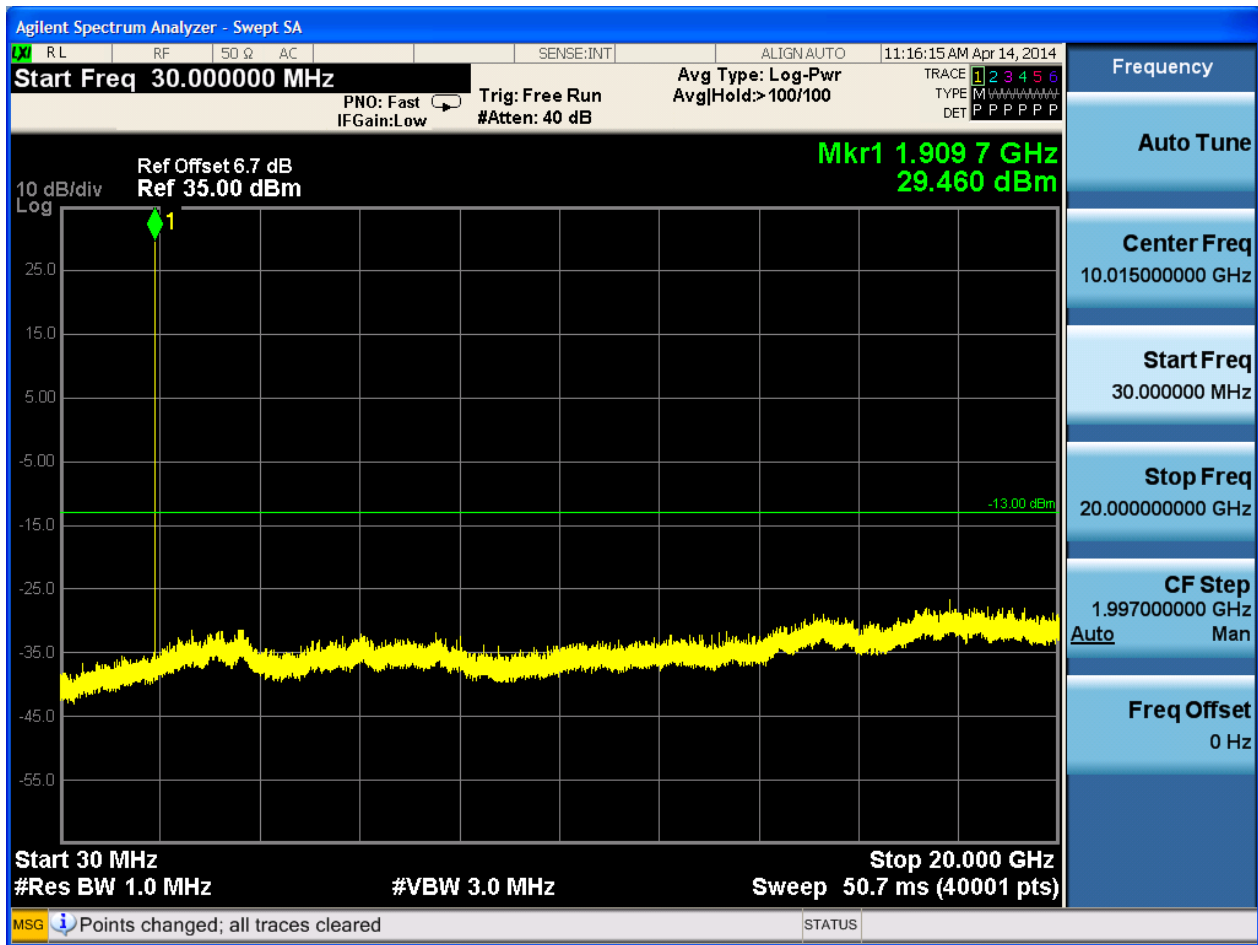




6.1.2.1.3 Test Channel = HCH







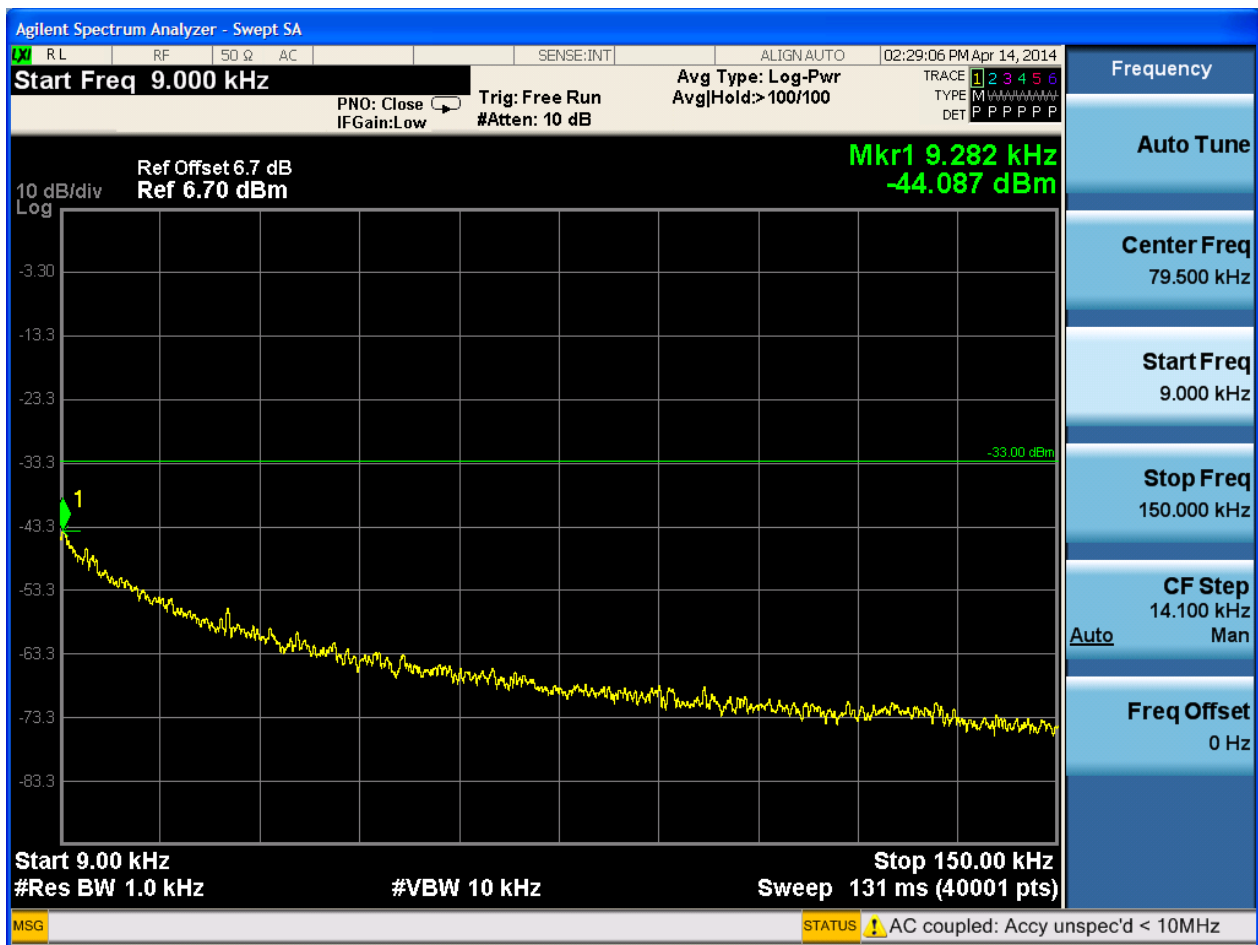


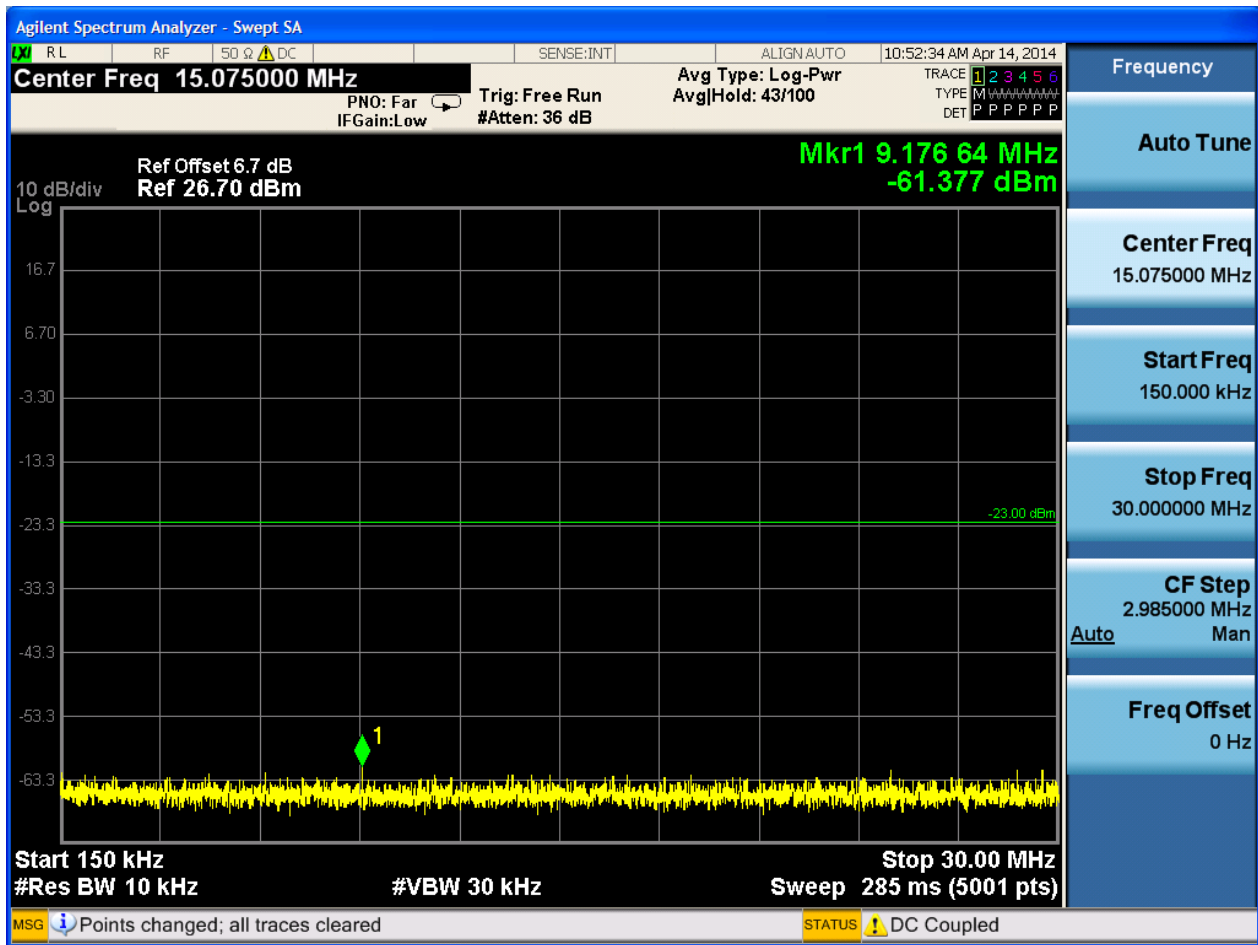
6.2 For UMTS

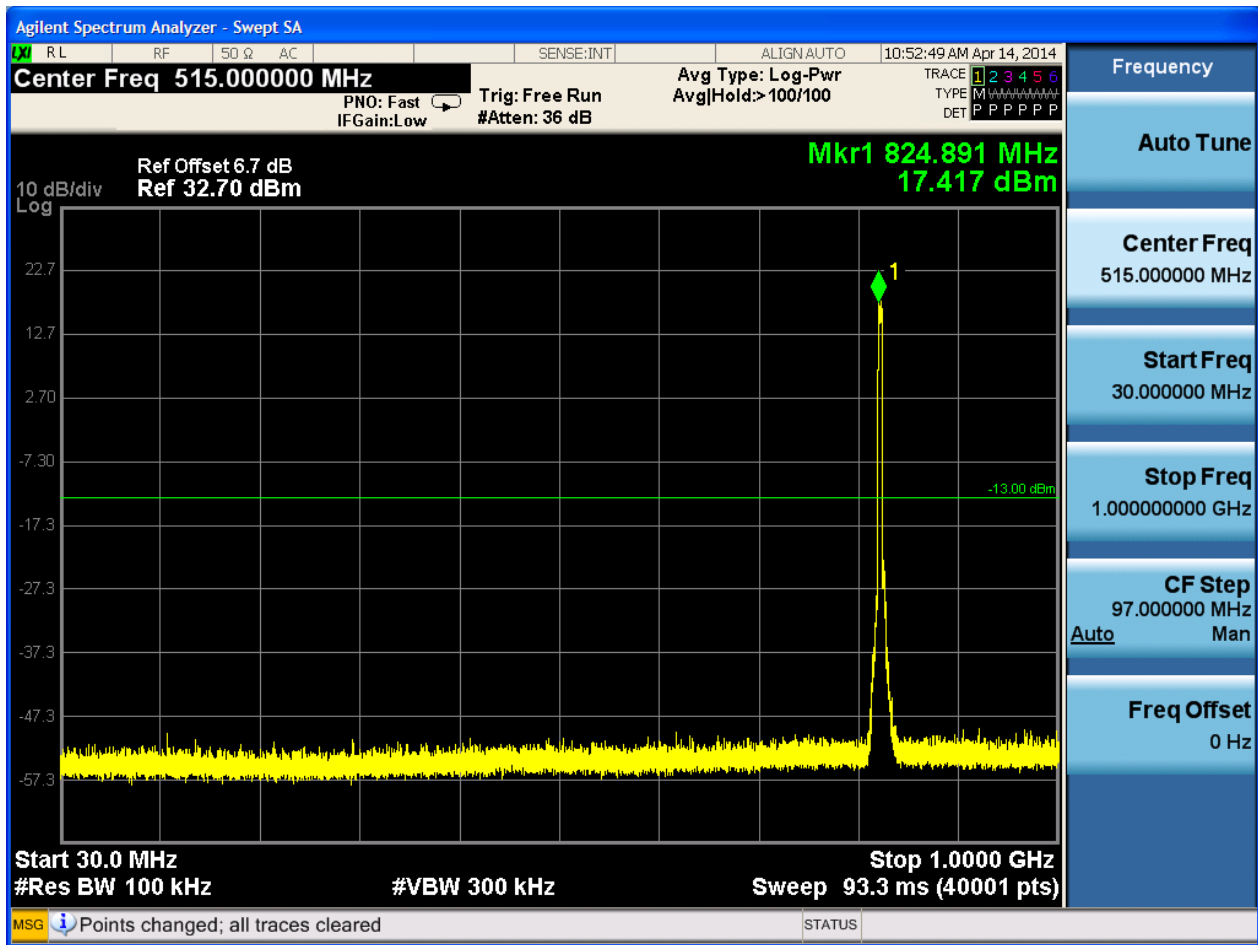
6.2.1 Test Band = WCDMA850

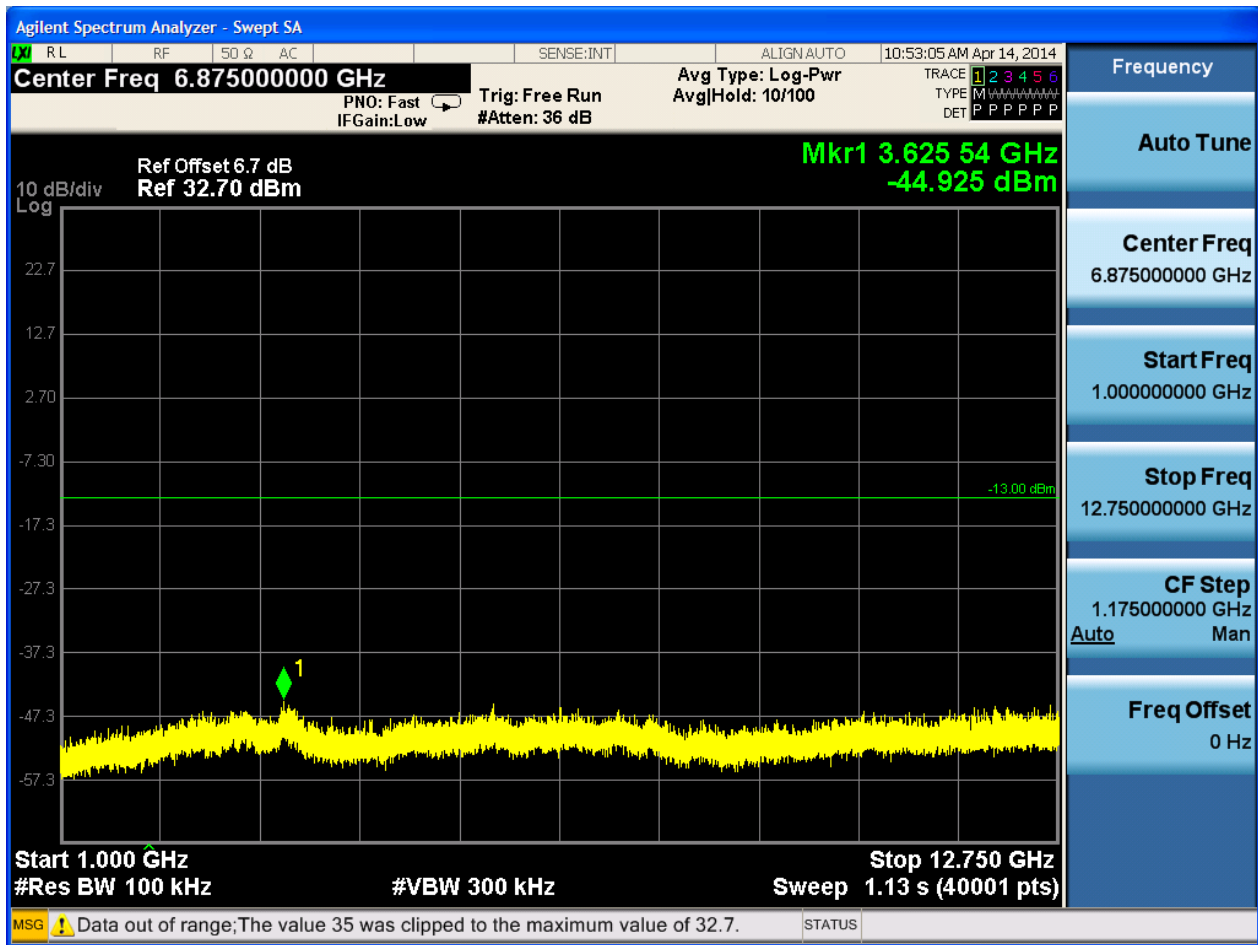
6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH



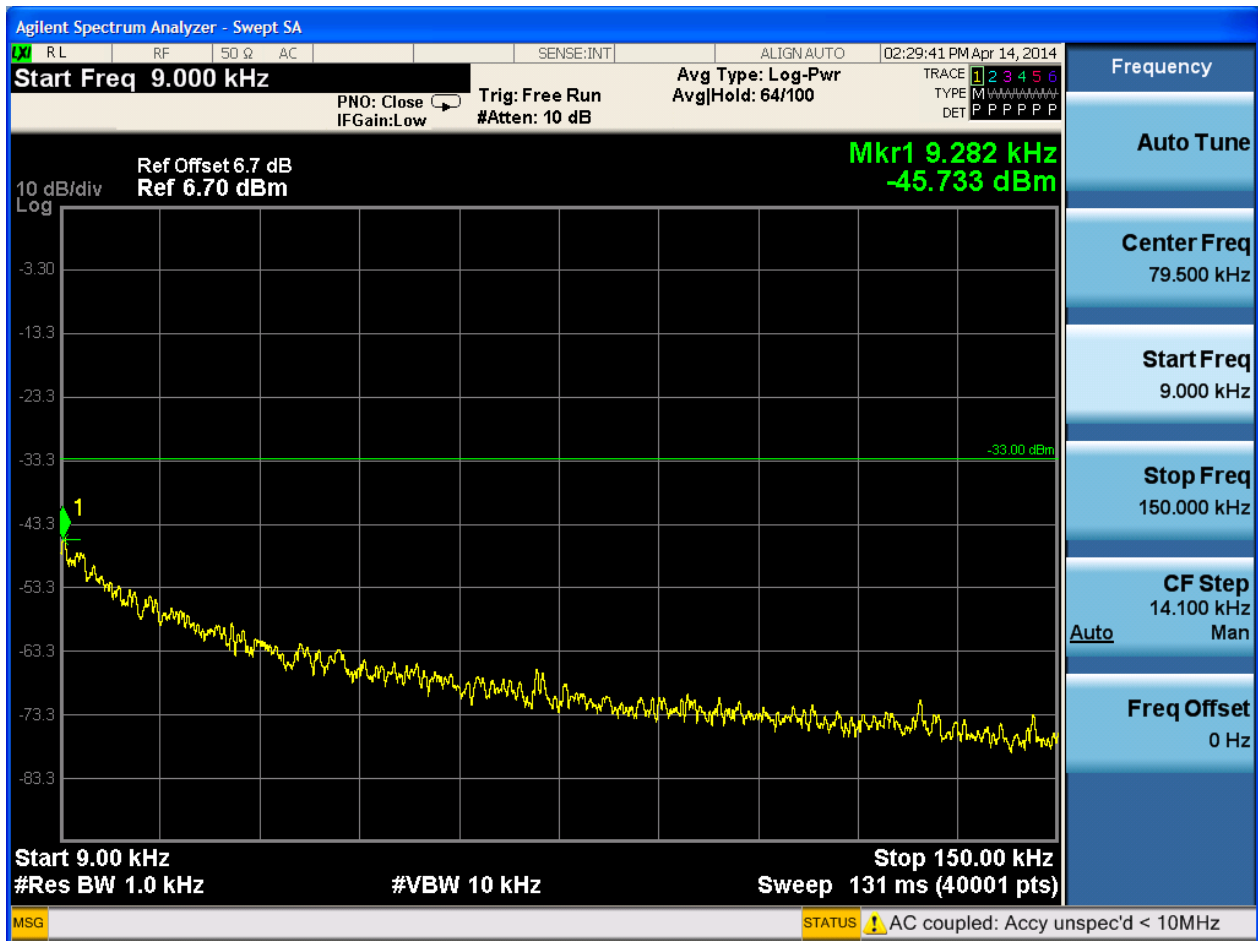


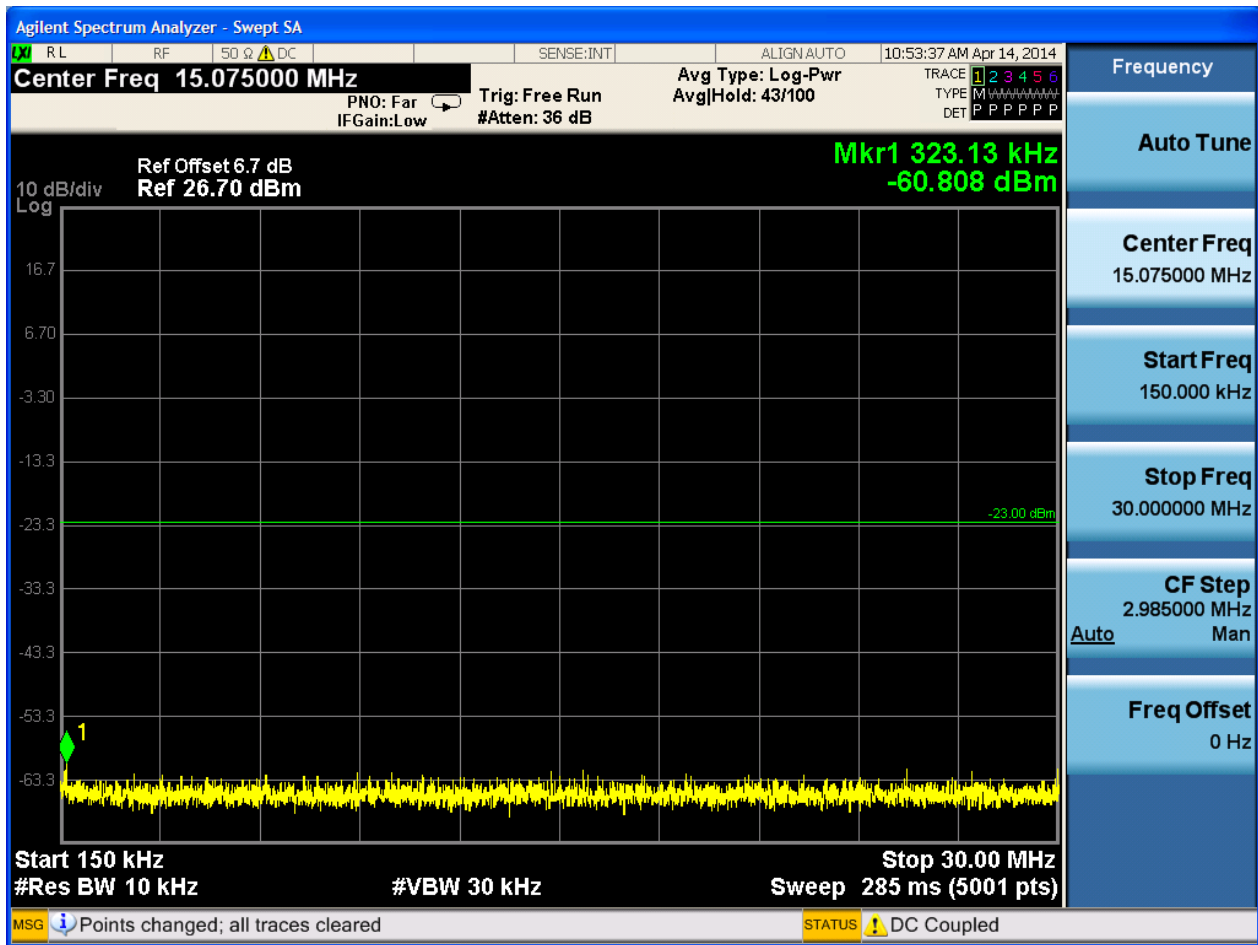


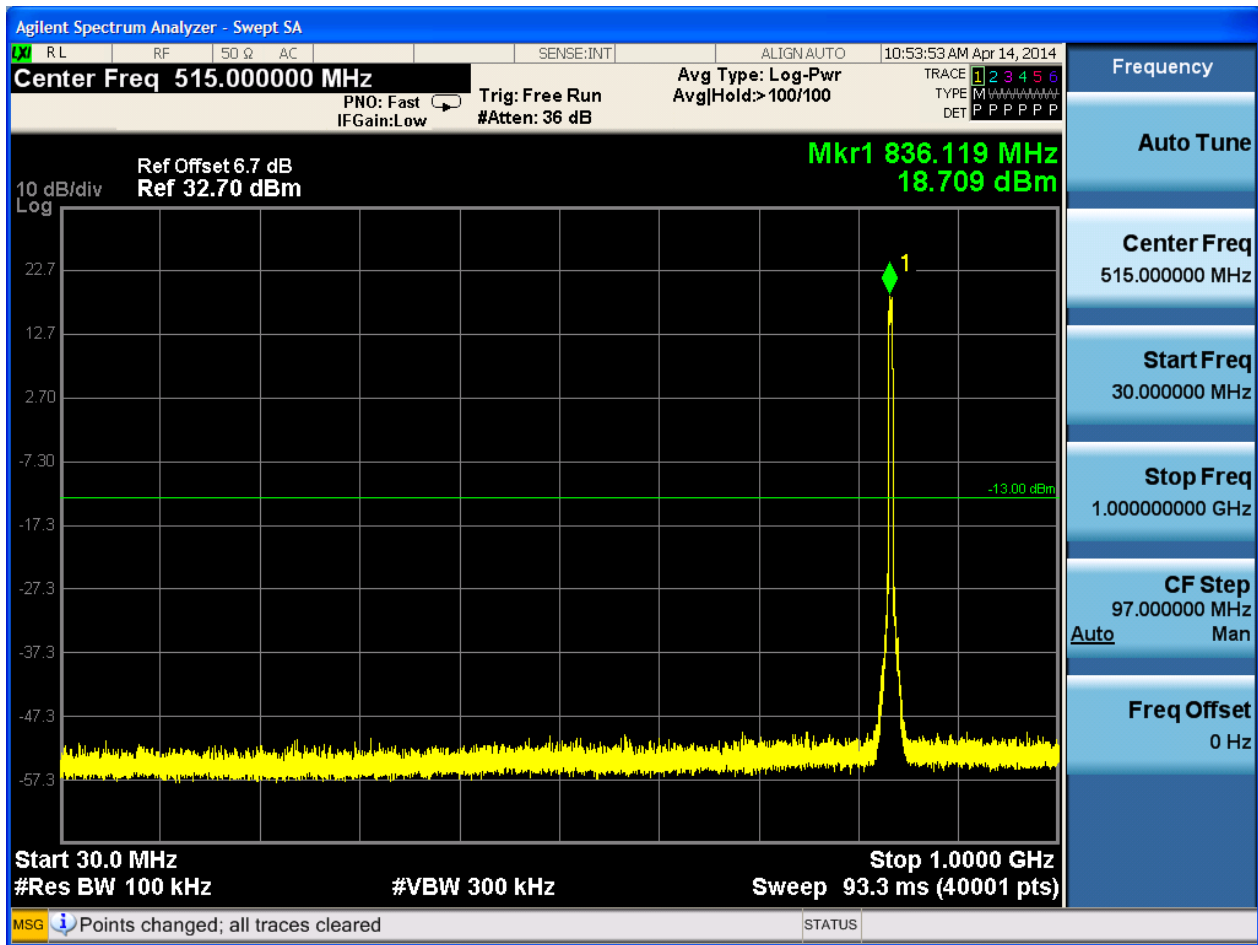


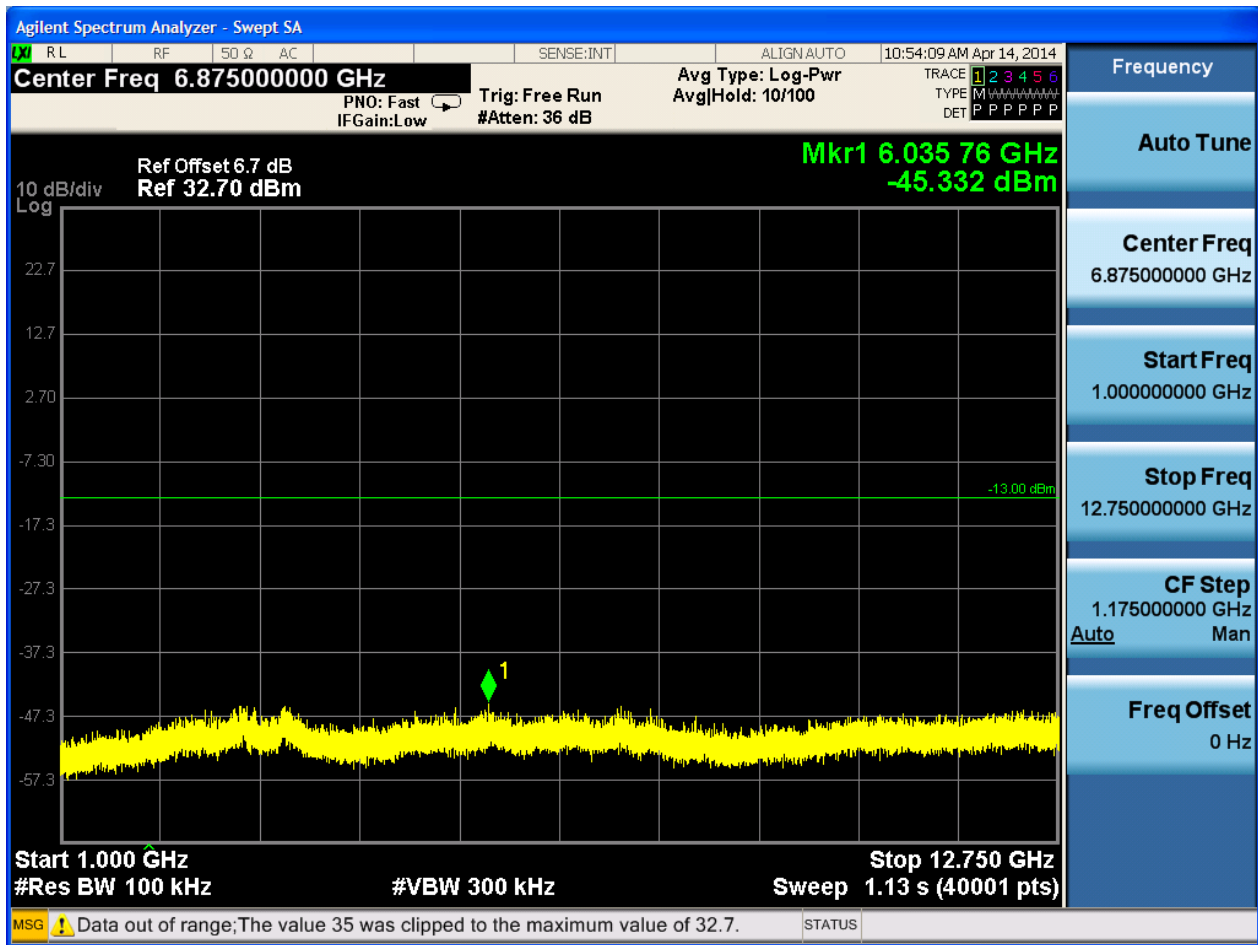


6.2.1.1.2 Test Channel = MCH



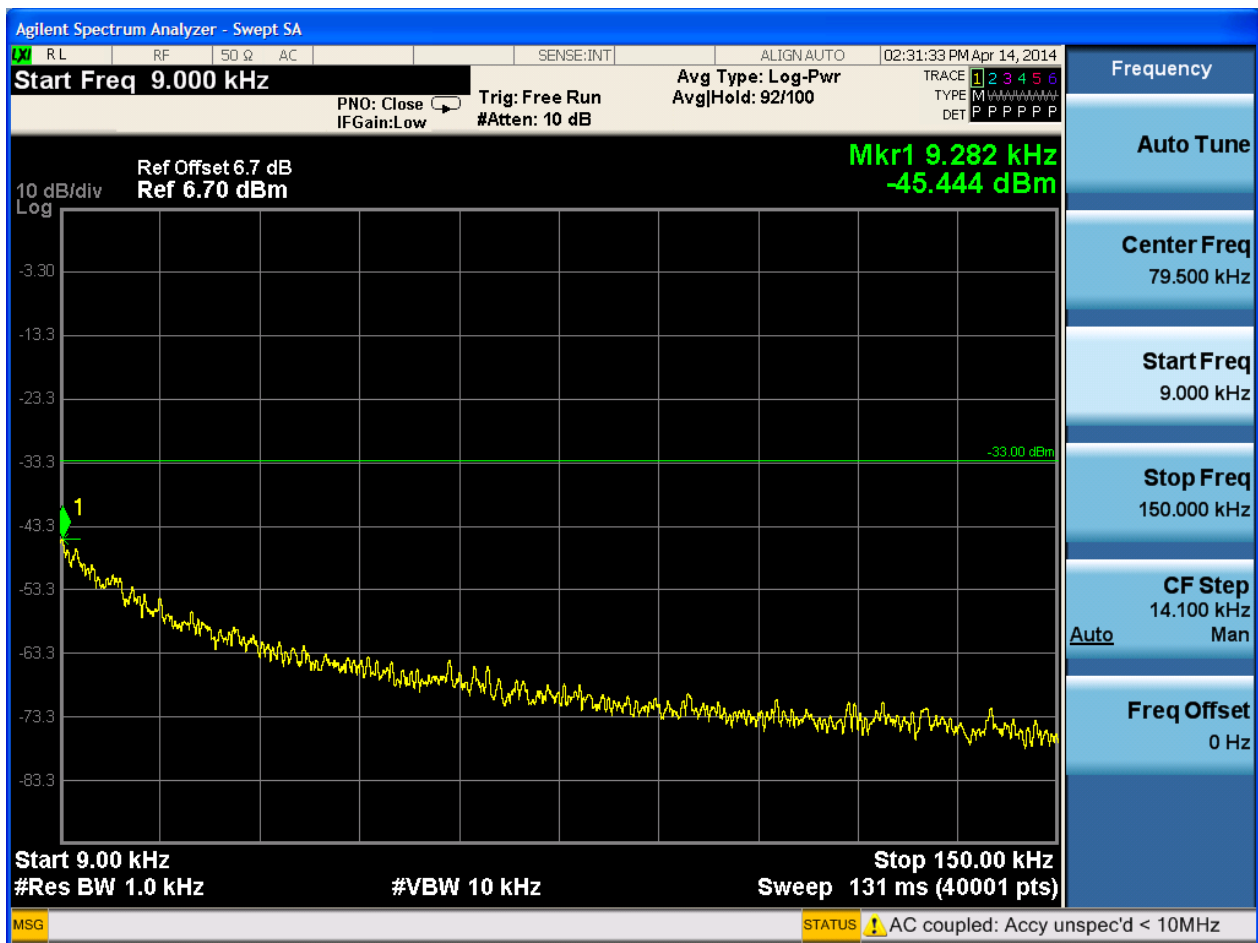


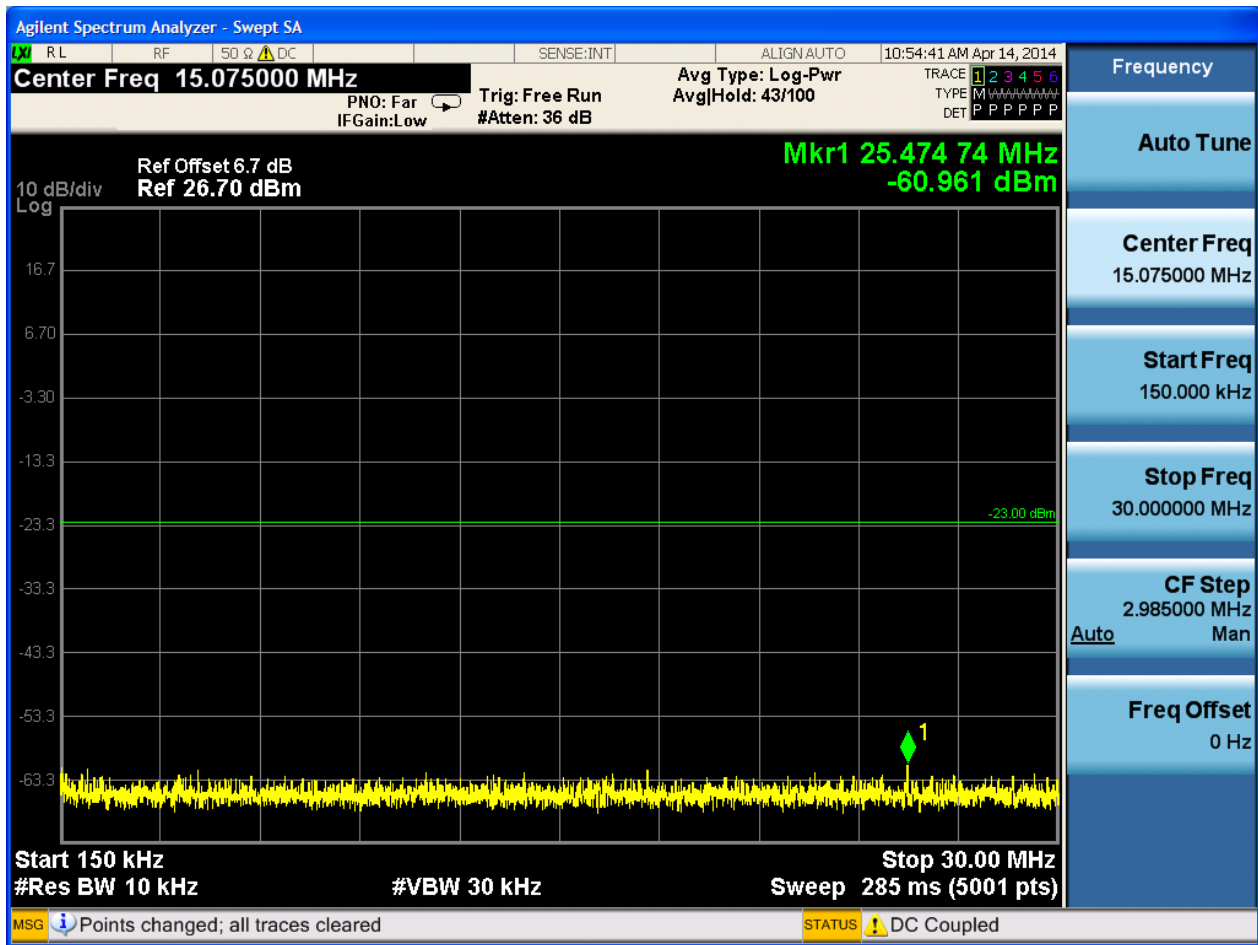


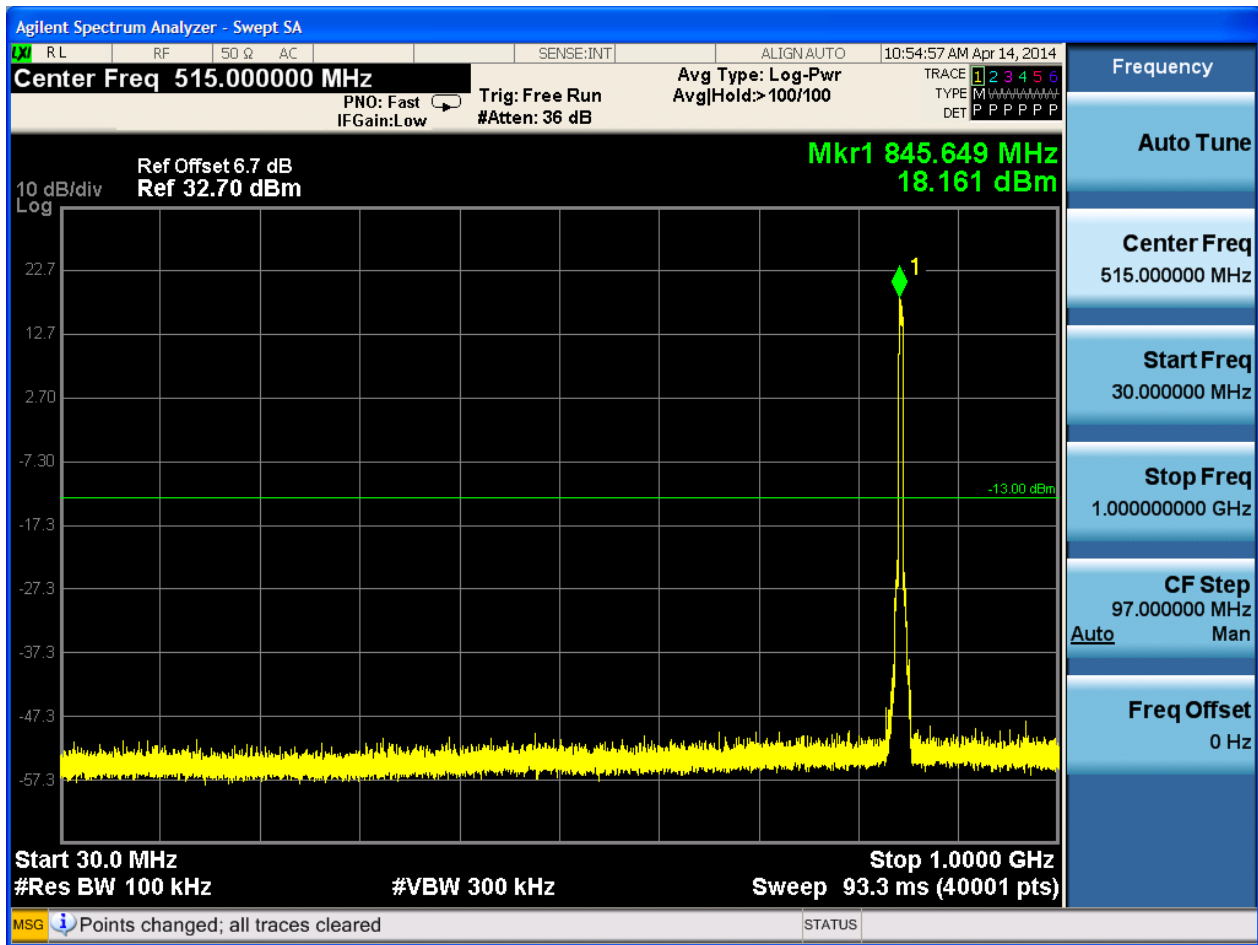


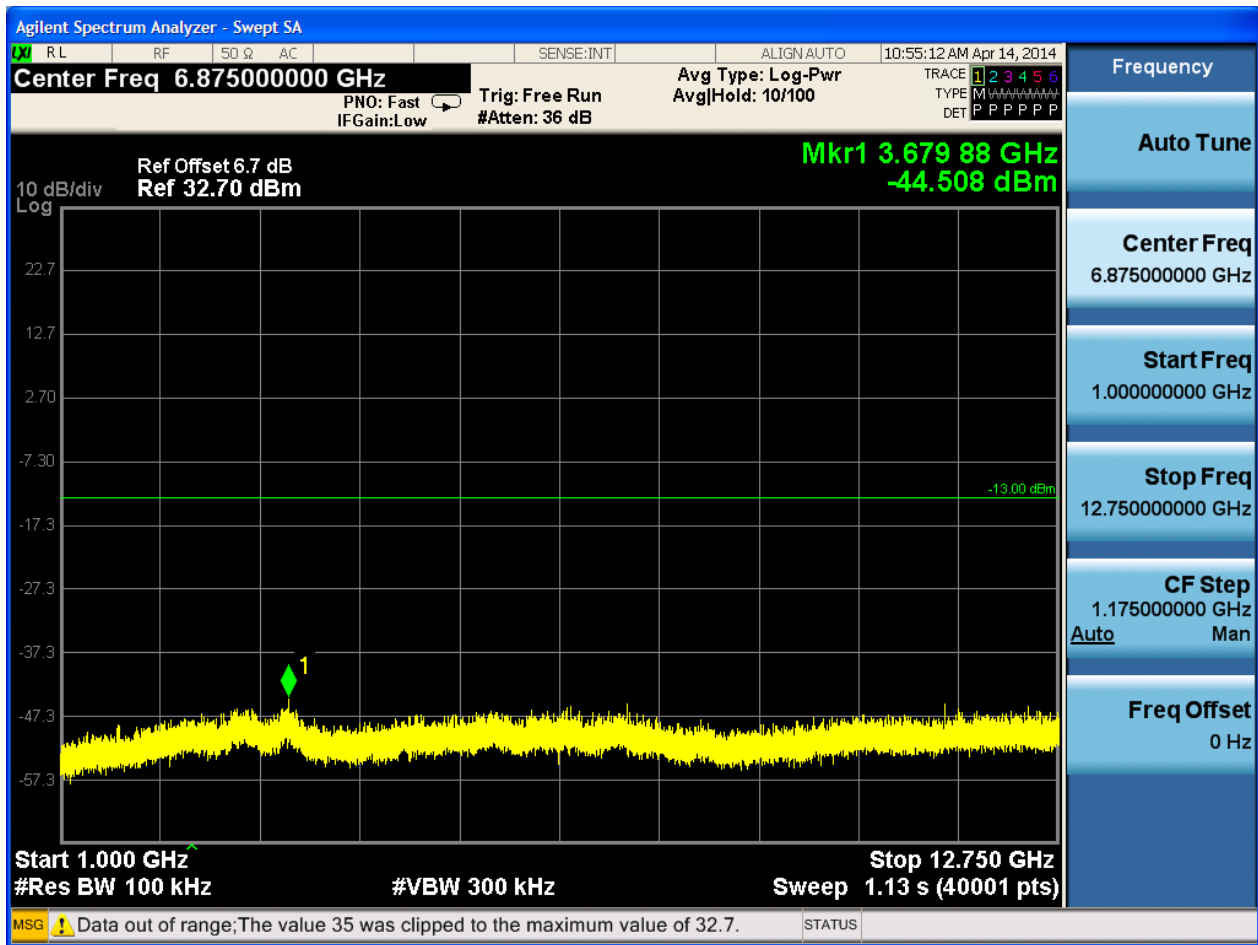


6.2.1.1.3 Test Channel = HCH









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

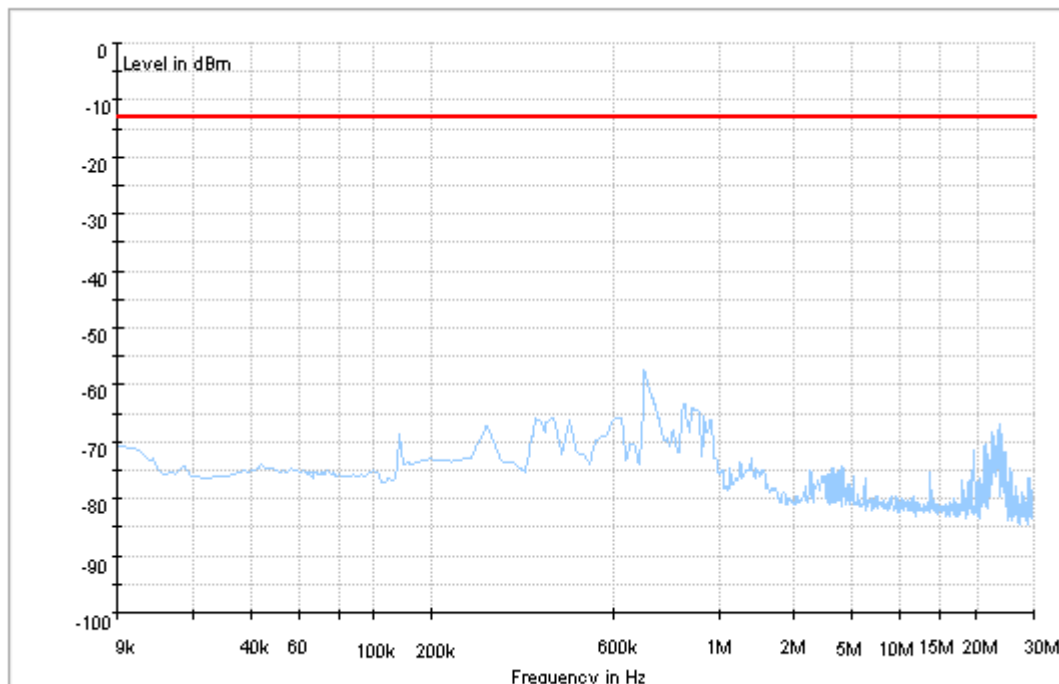
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

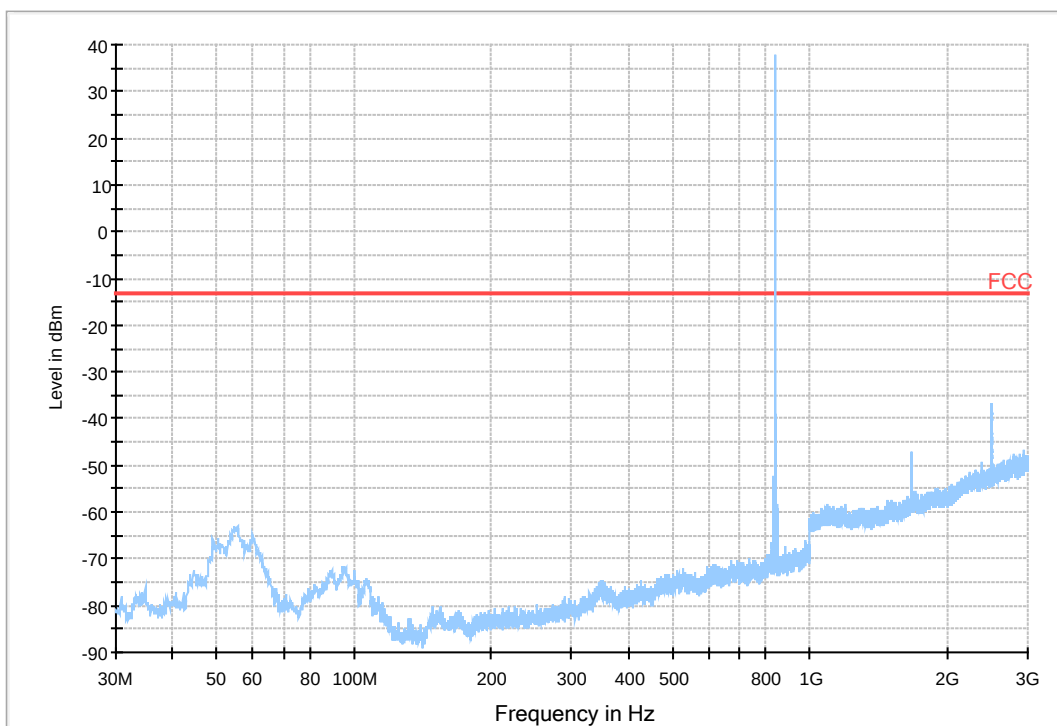
7.1 For GSM

7.1.1 Test Band = GSM850

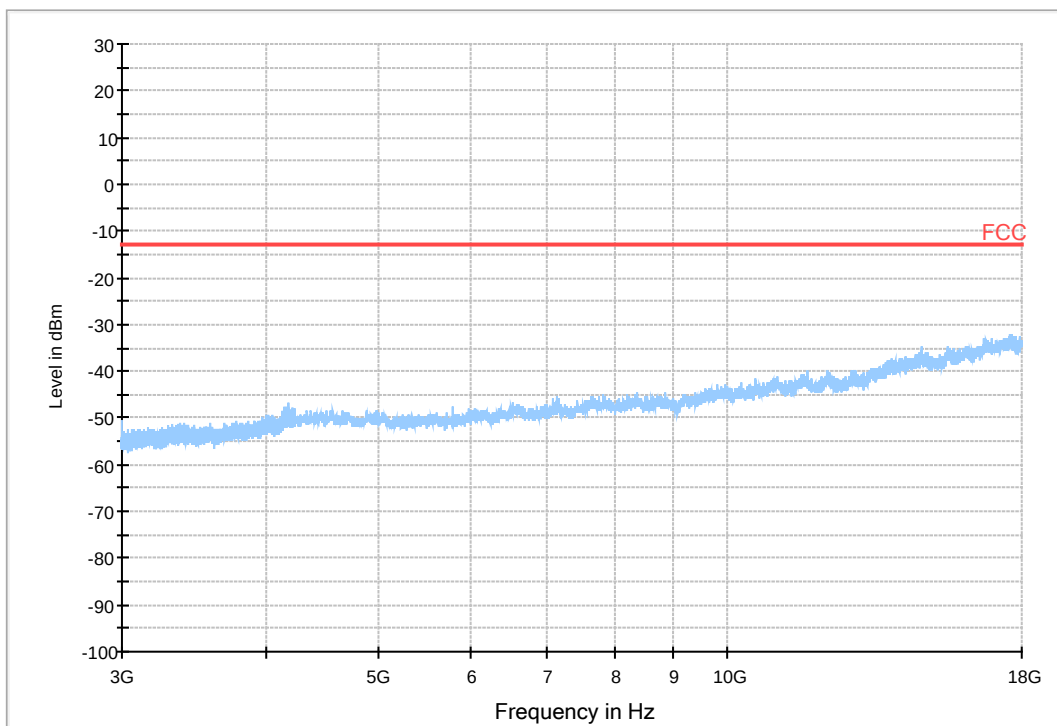
7.1.1.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L

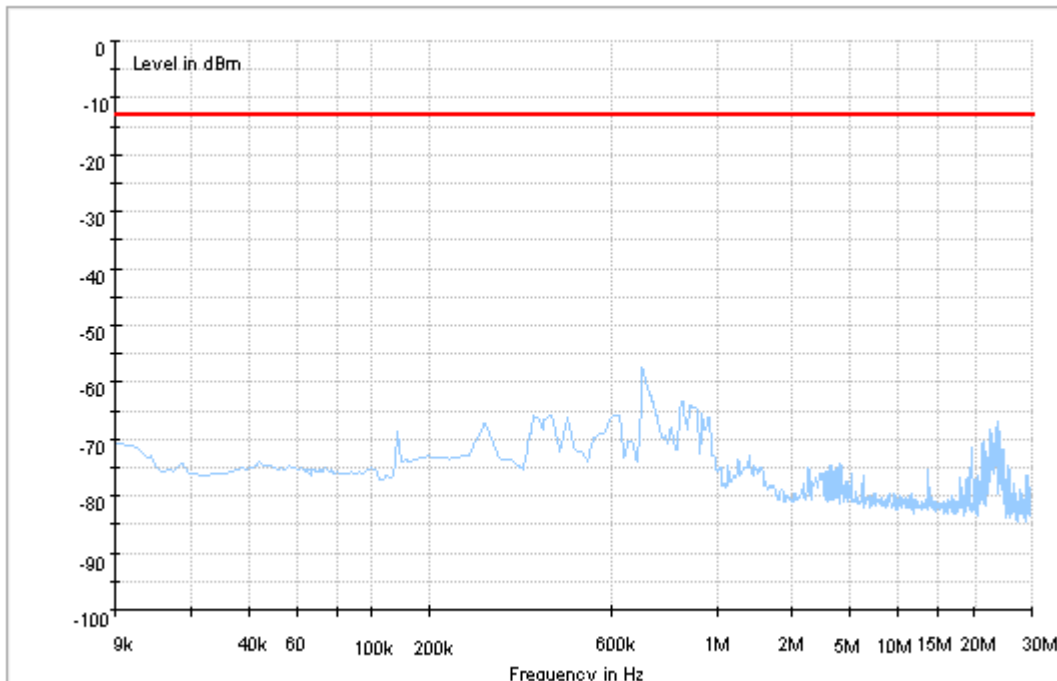


Copy of FCC PART22 GSM850_H

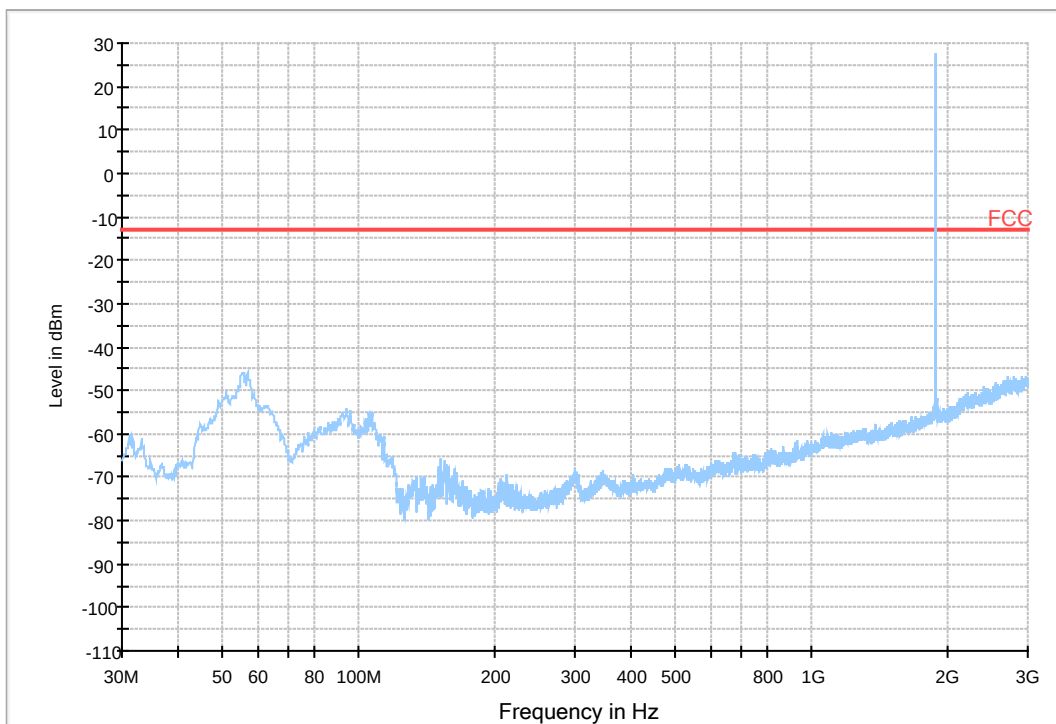


7.1.2 Test Band = GSM1900

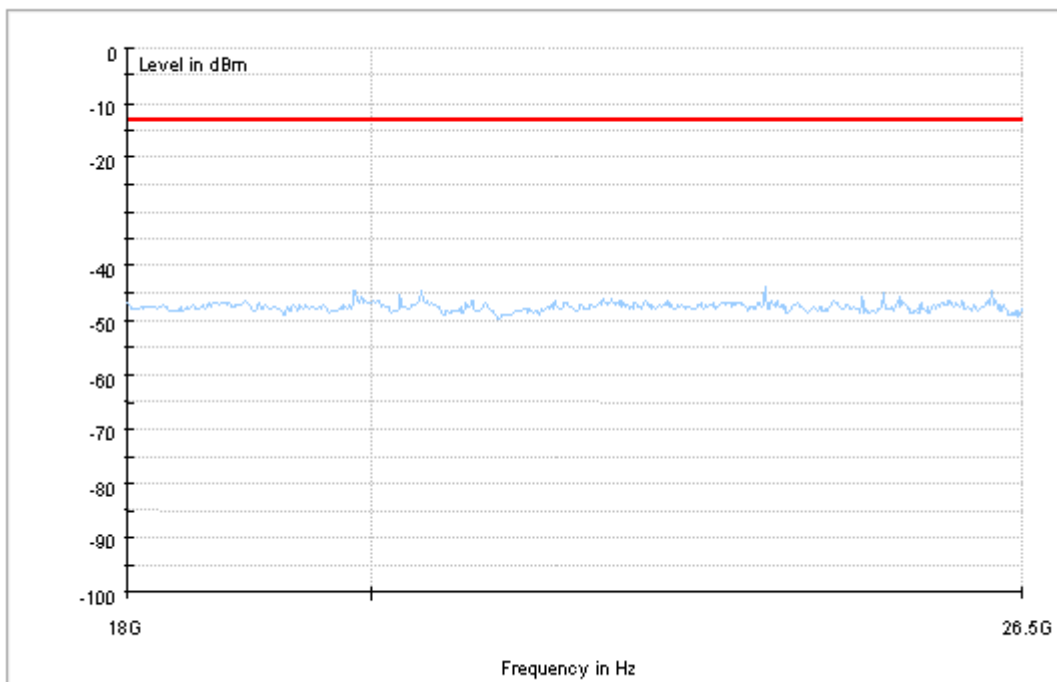
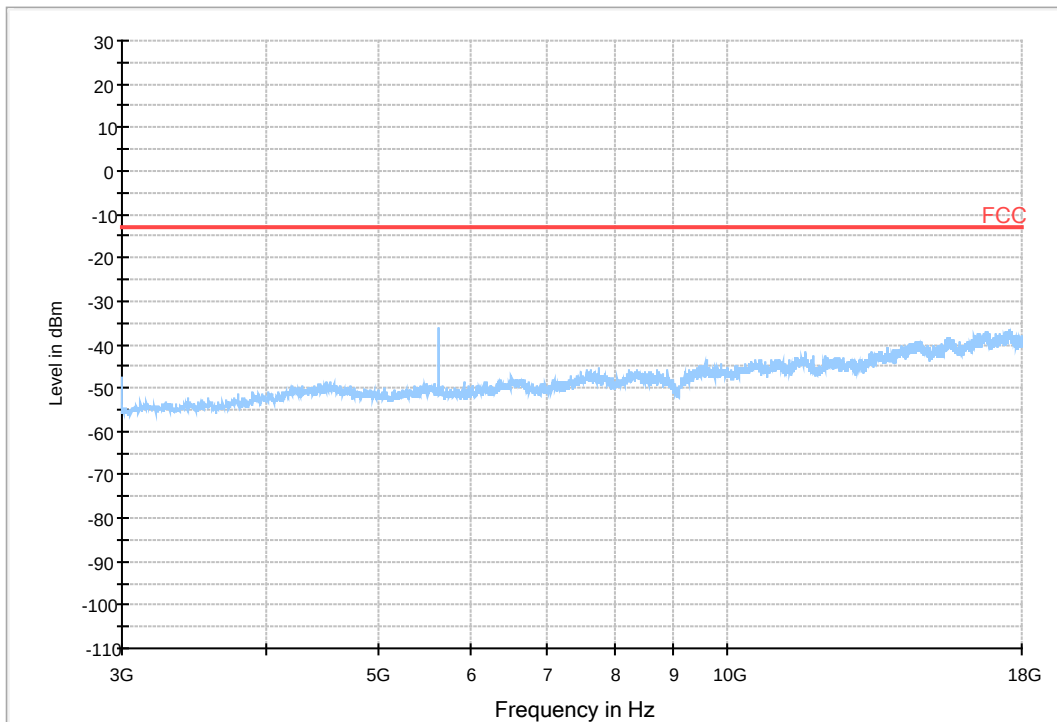
7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART24 GSM1900_L



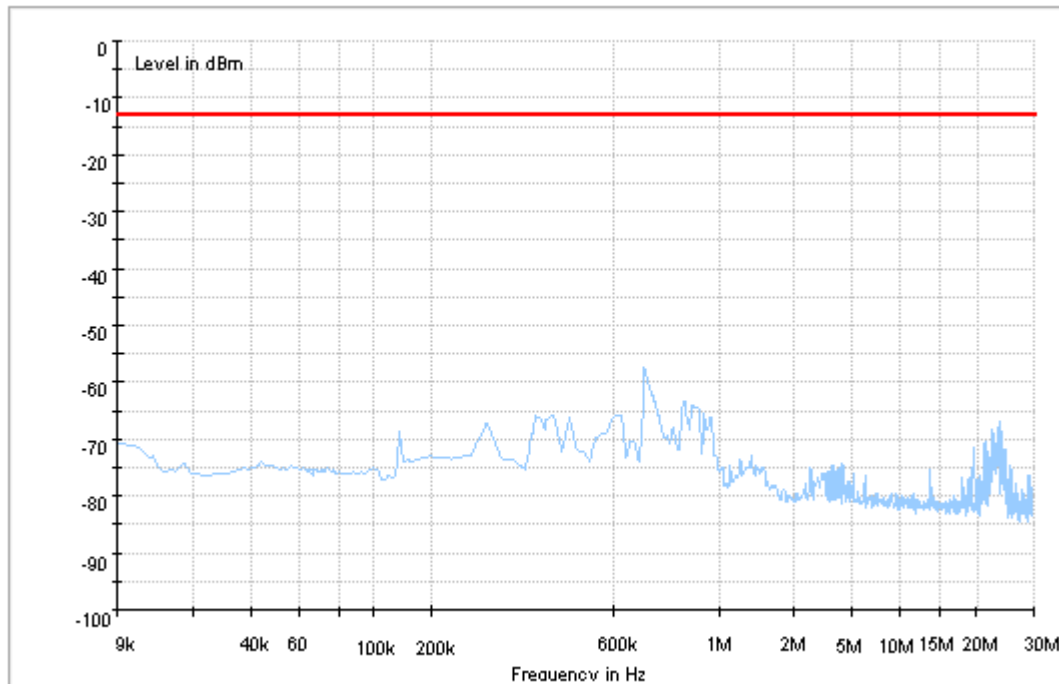
Copy of FCC PART24 GSM1900_H



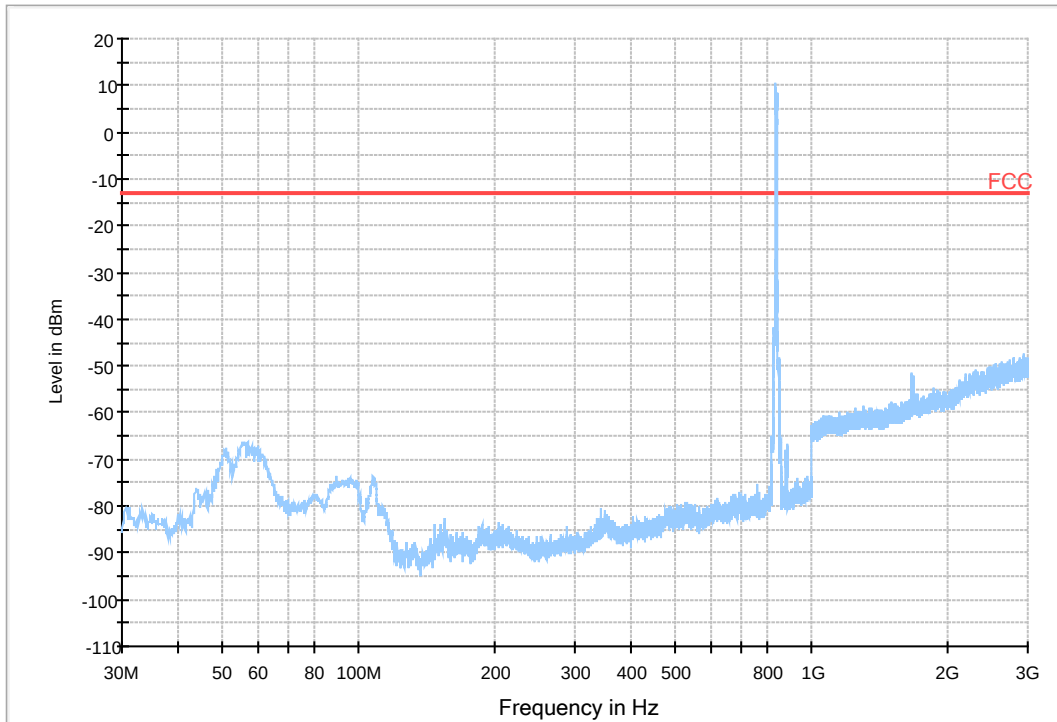
7.2 For UMTS

7.2.1 Test Band = WCDMA850

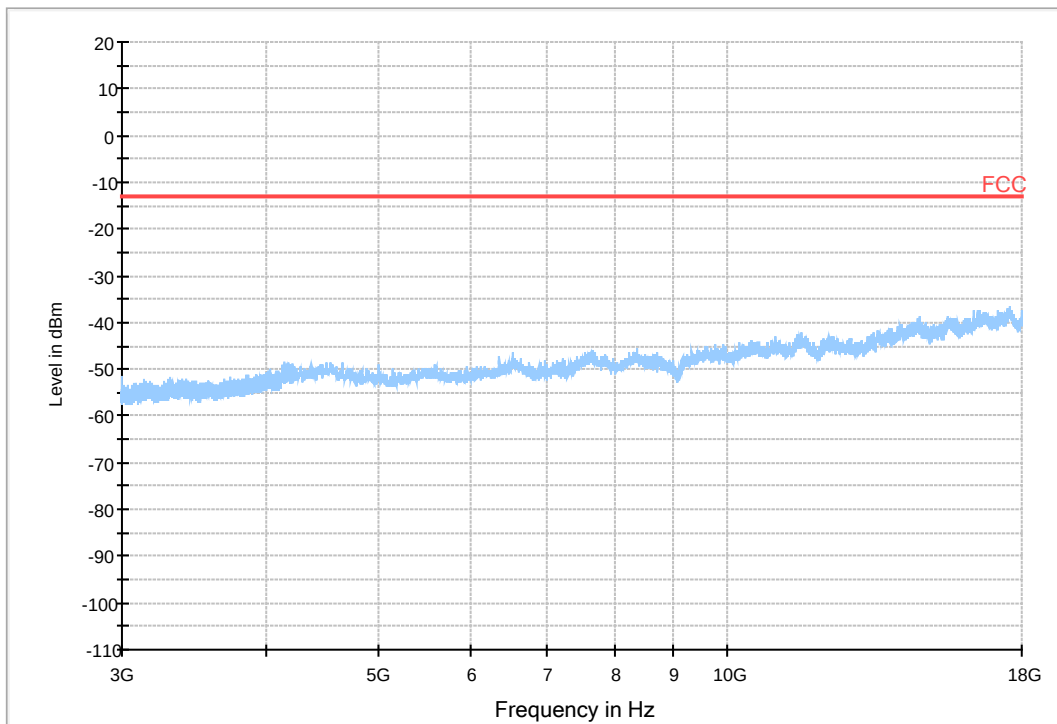
7.2.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 WCDMA850_L



Copy of FCC PART22 WCDMA850_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	-16.14	-0.01958	PASS
				VN	-27.70	-0.03361	PASS
				VH	-14.92	-0.0181	PASS
		MCH	TN	VL	-13.75	-0.01644	PASS
				VN	-18.79	-0.02246	PASS
				VH	-19.18	-0.02293	PASS
		HCH	TN	VL	-4.78	-0.00563	PASS
				VN	-15.43	-0.01818	PASS
				VH	-13.50	-0.0159	PASS
GSM1900	GSM/TM1	LCH	TN	VL	45.39	0.02453	PASS
				VN	32.67	0.01766	PASS
				VH	26.67	0.01441	PASS
		MCH	TN	VL	32.22	0.01714	PASS
				VN	42.55	0.02263	PASS
				VH	18.85	0.01003	PASS
		HCH	TN	VL	27.83	0.01457	PASS
				VN	34.22	0.01792	PASS
				VH	40.68	0.0213	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	-12.59	-0.01528	PASS
				-20	-14.98	-0.01818	PASS
				-10	-19.95	-0.02421	PASS
				0	-19.63	-0.02382	PASS
				10	-24.60	-0.02985	PASS
				20	-16.53	-0.02006	PASS
				30	-19.37	-0.0235	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	-13.50	-0.01638	PASS
				50	-14.40	-0.01747	PASS
		MCH	VN	-30	-11.11	-0.01328	PASS
				-20	-12.14	-0.01451	PASS
				-10	-10.85	-0.01297	PASS
				0	-16.72	-0.01999	PASS
				10	-18.73	-0.02239	PASS
				20	-13.11	-0.01567	PASS
				30	-14.59	-0.01744	PASS
				40	-12.01	-0.01436	PASS
				50	-14.72	-0.0176	PASS
		HCH	VN	-30	-11.82	-0.01393	PASS
				-20	-15.43	-0.01818	PASS
				-10	-8.98	-0.01058	PASS
				0	-10.85	-0.01278	PASS
				10	-11.88	-0.014	PASS
				20	-13.69	-0.01613	PASS
				30	-16.66	-0.01963	PASS
				40	-14.79	-0.01742	PASS
				50	-7.17	-0.00845	PASS
GSM1900	GSM/TM1	LCH	VN	-30	34.48	0.01864	PASS
				-20	43.07	0.02328	PASS
				-10	29.51	0.01595	PASS
				0	36.10	0.01951	PASS
				10	29.70	0.01605	PASS
				20	35.51	0.01919	PASS
				30	40.87	0.02209	PASS
				40	31.58	0.01707	PASS
				50	23.76	0.01284	PASS
		MCH	VN	-30	34.03	0.0181	PASS
				-20	34.42	0.01831	PASS
				-10	35.26	0.01876	PASS
				0	35.84	0.01906	PASS
				10	43.97	0.02339	PASS
				20	33.84	0.018	PASS
				30	37.45	0.01992	PASS
				40	28.28	0.01504	PASS
				50	30.61	0.01628	PASS
		HCH	VN	-30	32.41	0.01697	PASS
				-20	33.38	0.01748	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	35.00	0.01833	PASS
				0	40.23	0.02107	PASS
				10	25.63	0.01342	PASS
				20	26.99	0.01413	PASS
				30	47.46	0.02485	PASS
				40	33.25	0.01741	PASS
				50	35.77	0.01873	PASS

8.2 For UMTS

8.2.1 Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA850	UMTS/TM1	LCH	TN	VL	-0.67	-0.00081	PASS
				VN	1.46	0.00177	PASS
				VH	0.26	0.00031	PASS
		MCH	TN	VL	3.27	0.00391	PASS
				VN	-4.32	-0.00516	PASS
				VH	-0.56	-0.00067	PASS
		HCH	TN	VL	5.51	0.00651	PASS
				VN	4.14	0.00489	PASS
				VH	2.73	0.00322	PASS

8.2.2 Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA850	UMTS/TM1	LCH	VN	-30	-4.17	-0.00505	PASS
				-20	-1.45	-0.00175	PASS
				-10	-0.17	-0.00021	PASS
				0	-1.95	-0.00236	PASS
				10	-1.40	-0.00169	PASS
				20	0.55	0.00067	PASS
				30	0.67	0.00081	PASS
				40	-1.69	-0.00205	PASS
				50	-0.40	-0.00048	PASS
		MCH	VN	-30	-0.23	-0.00027	PASS
				-20	0.32	0.00038	PASS
				-10	-0.47	-0.00056	PASS
				0	0.18	0.00022	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	3.60	0.0043	PASS
				20	-0.34	-0.00041	PASS
				30	-2.43	-0.00291	PASS
				40	0.84	0.001	PASS
				50	0.81	0.00097	PASS
		HCH	VN	-30	1.21	0.00143	PASS
				-20	3.31	0.00391	PASS
				-10	-2.27	-0.00268	PASS
				0	1.46	0.00172	PASS
				10	1.85	0.00219	PASS
				20	0.89	0.00105	PASS
				30	-1.28	-0.00151	PASS
				40	2.30	0.00272	PASS
				50	3.75	0.00443	PASS

END