Appendix for test report

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1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP/EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.34	32.21	33	PASS
		MCH	28.82	31.69	33	PASS
		HCH	28.44	31.31	33	PASS
	GSM/TM2	LCH	24.15	27.02	33	PASS
		MCH	24.23	27.1	33	PASS
		HCH	24.16	27.03	33	PASS

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.22	26.09	33	PASS
		MCH	22.51	25.38	33	PASS
		HCH	23.37	26.24	33	PASS

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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

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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	0.12	13	PASS
		MCH	0.15	13	PASS
		HCH	0.14	13	PASS
	GSM/TM2	LCH	2.89	13	PASS
		MCH	2.88	13	PASS
		HCH	2.85	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.25	13	PASS
		MCH	3.4	13	PASS
		HCH	3.08	13	PASS

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3Appendix_C: Modulation Characteristics

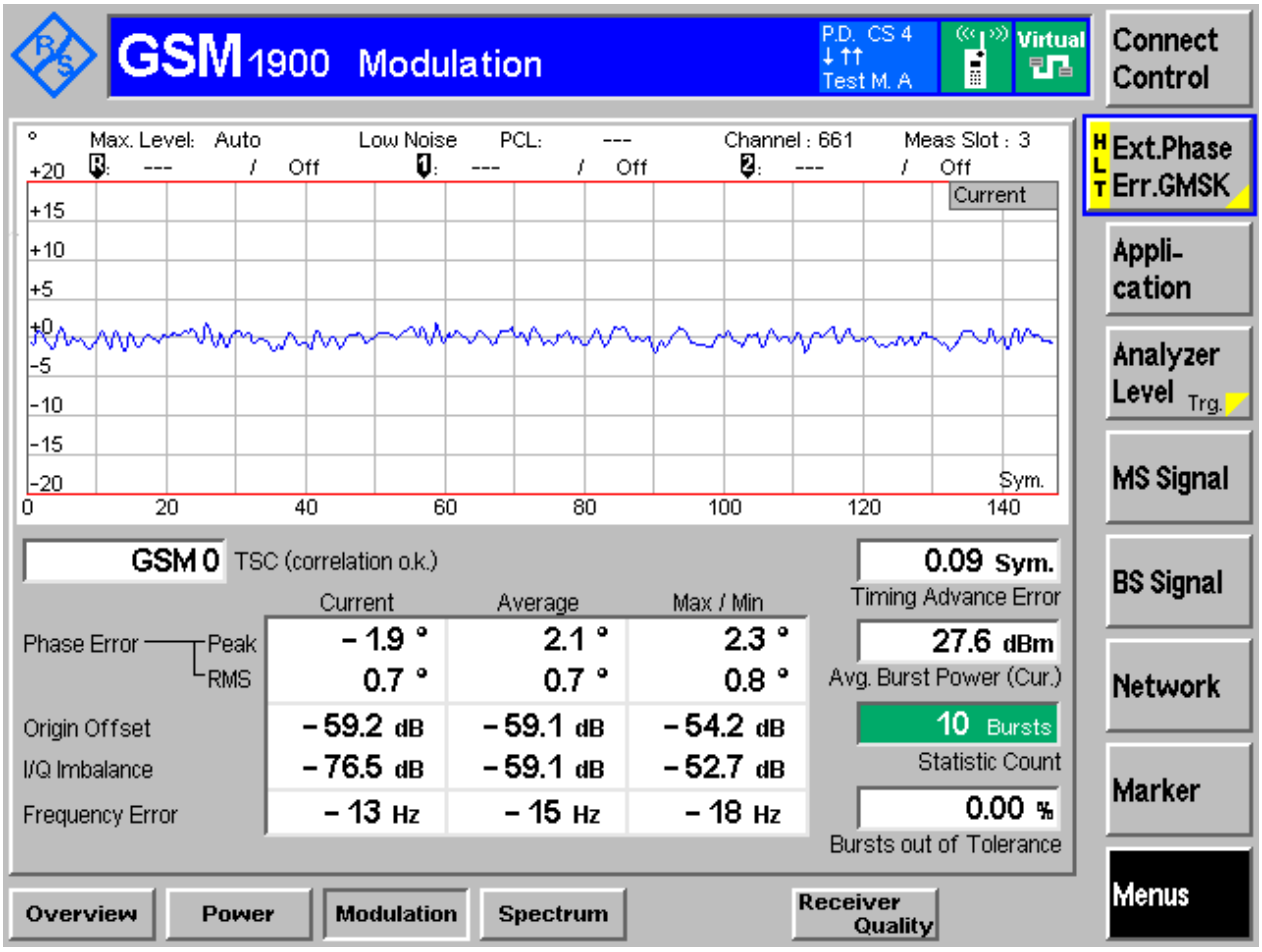
Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM1900

3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



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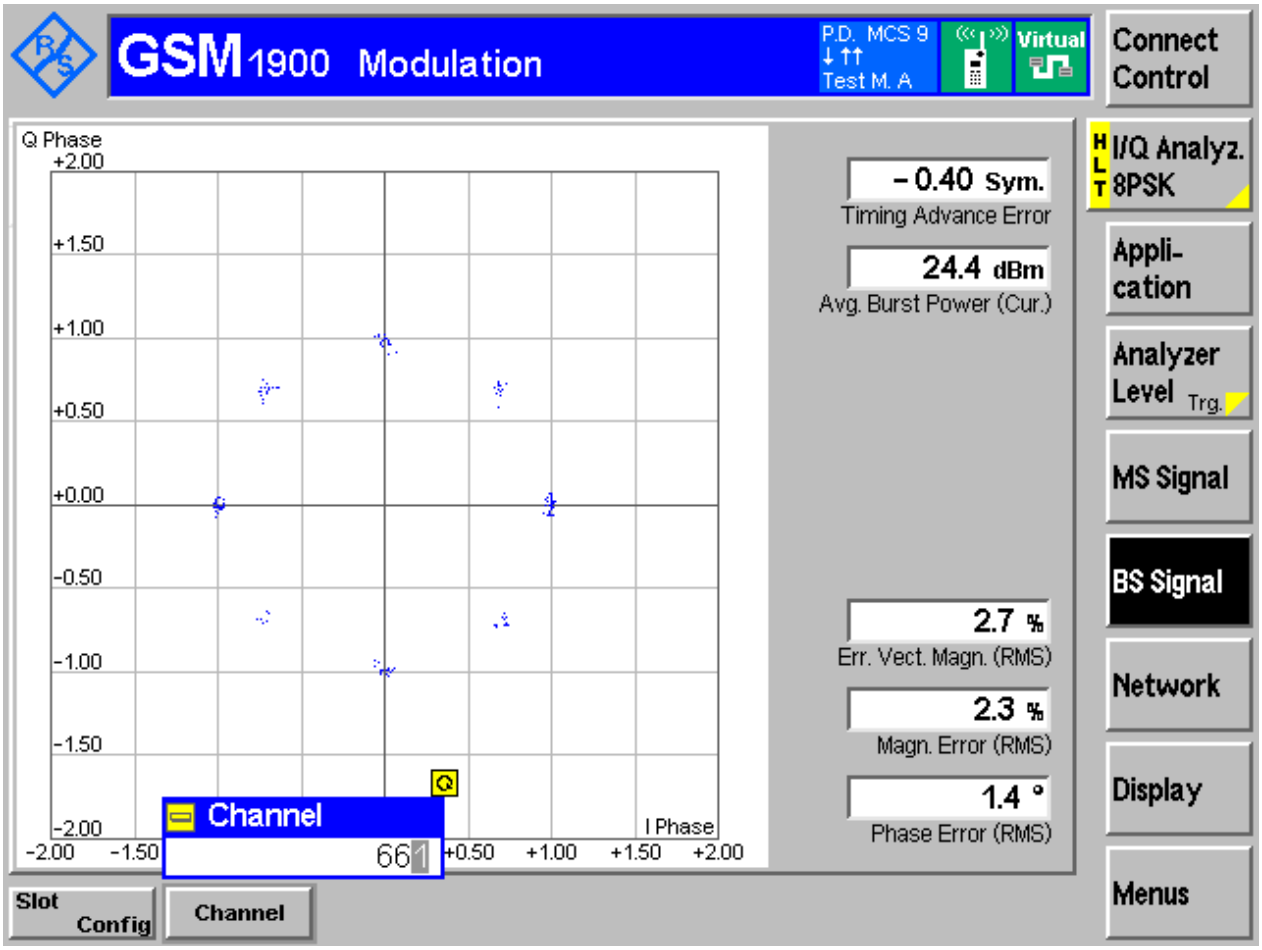
3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = MCH



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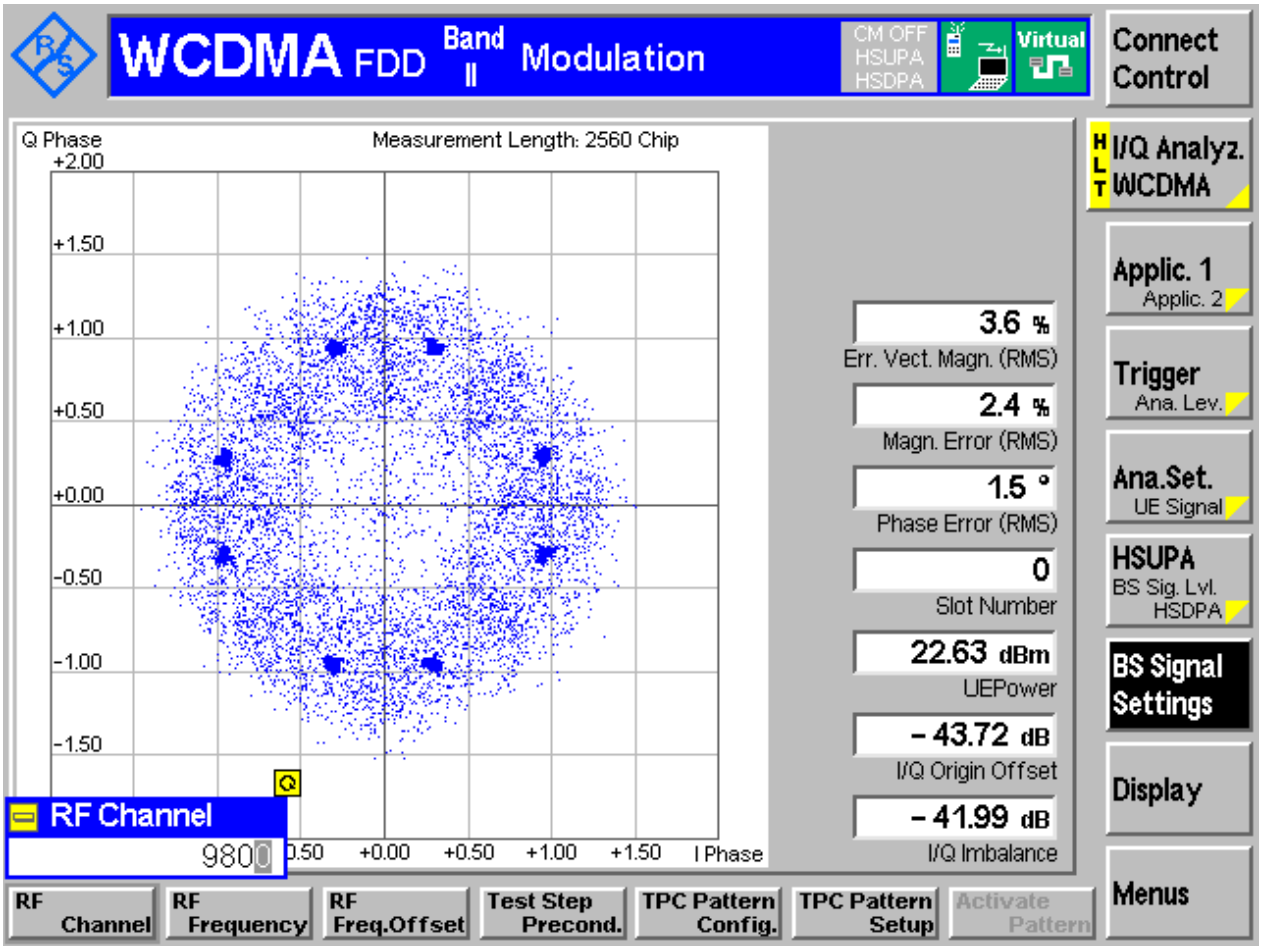
3.1.2 Test Band = WCDMA1900

3.1.2.1 Test Mode = UMTS/TM1

3.1.2.1.1 Test Channel = MCH



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4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM1900	GSM/TM1	LCH	244.49	313.99	Pass
		MCH	247.98	318.06	Pass
		HCH	245.60	318.45	Pass
	GSM/TM2	LCH	247.51	312.06	Pass
		MCH	241.78	310.53	Pass
		HCH	244.96	311.55	Pass
WCDMA1900	UMTS/TM1	LCH	4.10	4.67	Pass
		MCH	4.10	4.66	Pass
		HCH	4.08	4.67	Pass

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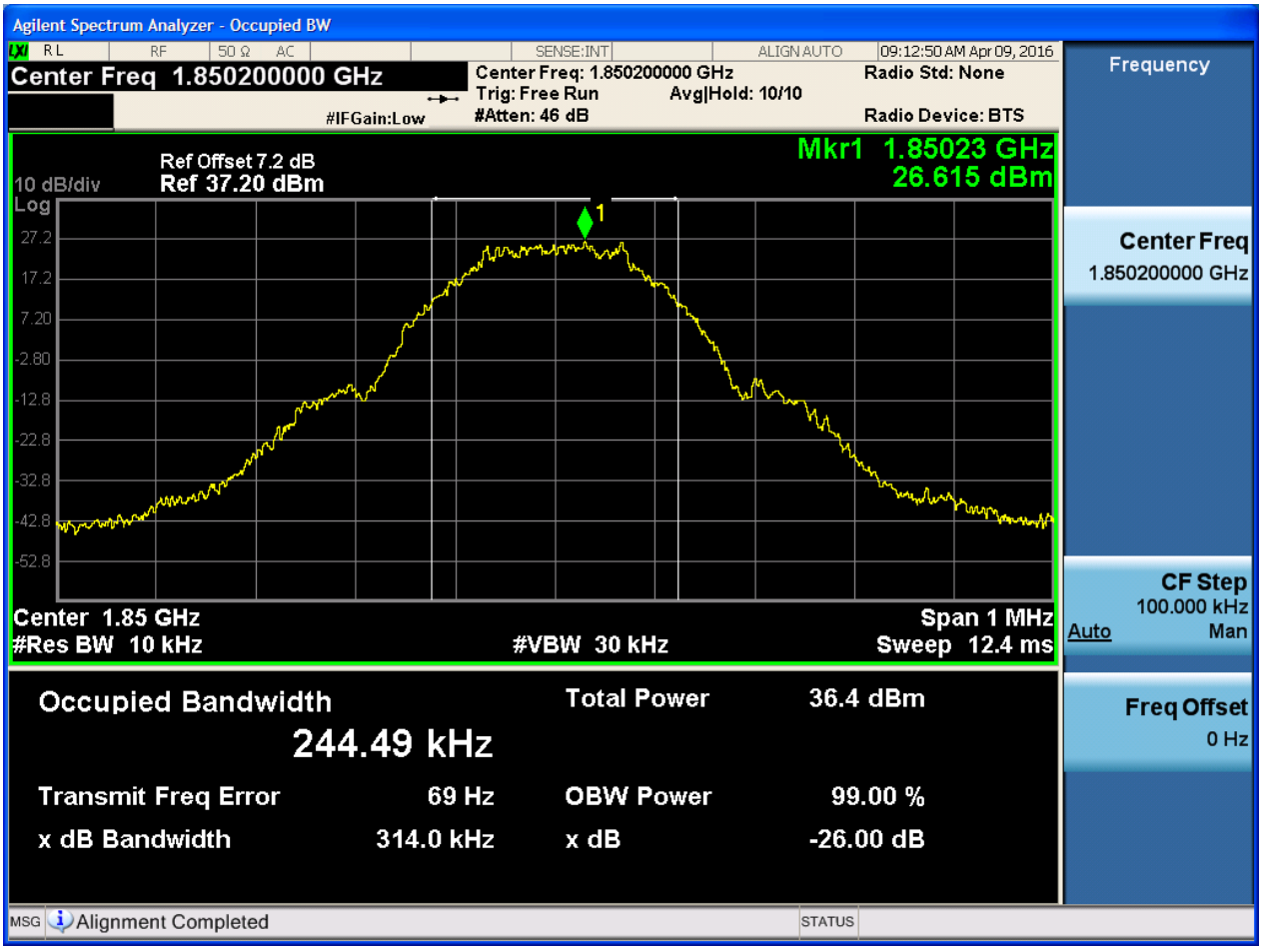
Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM1900

4.1.1.1 Test Mode = GSM/TM1

4.1.1.1.1 Test Channel = LCH



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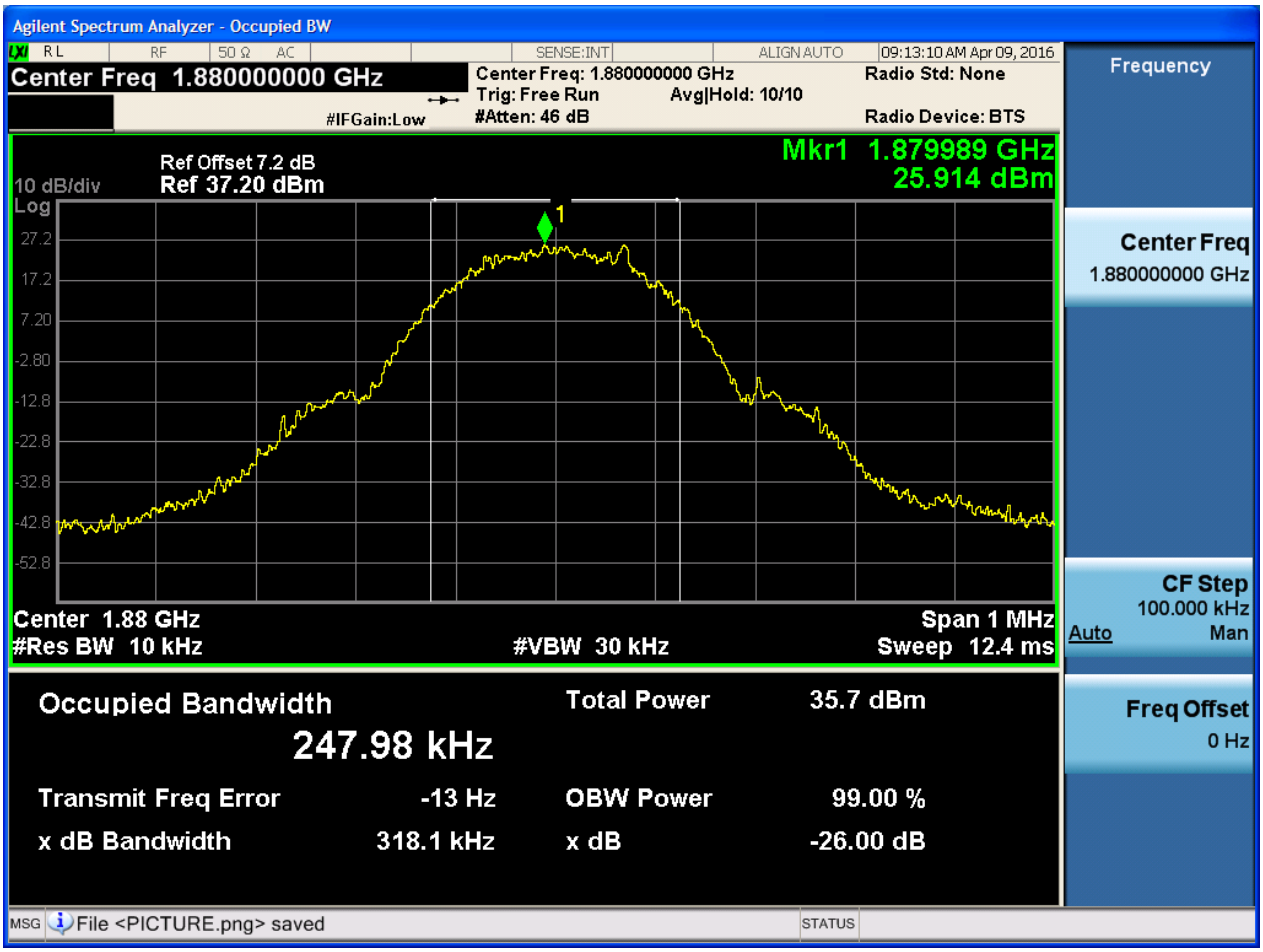
4.1.1.1.2 Test Channel = MCH



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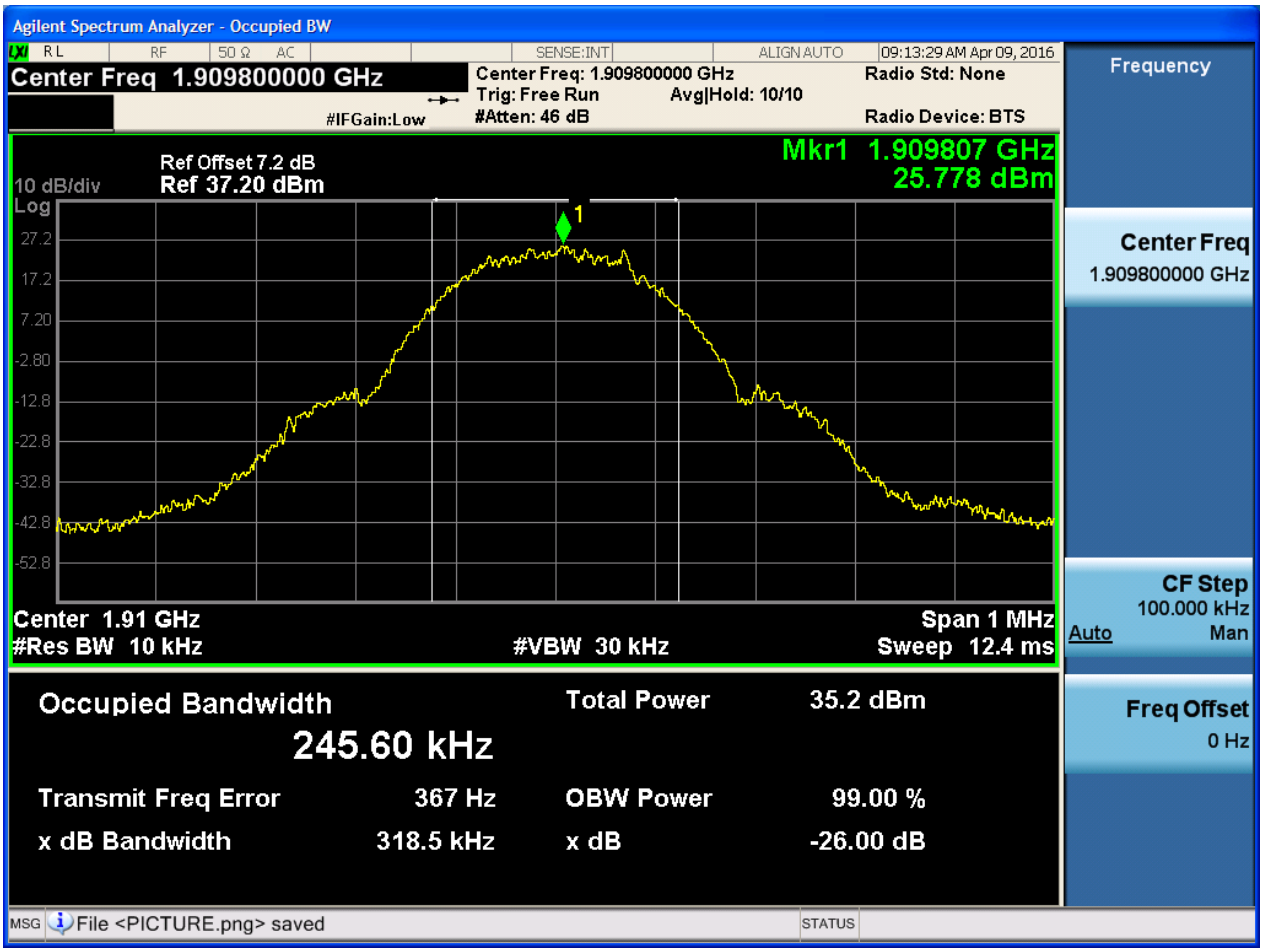
4.1.1.1.3 Test Channel = HCH



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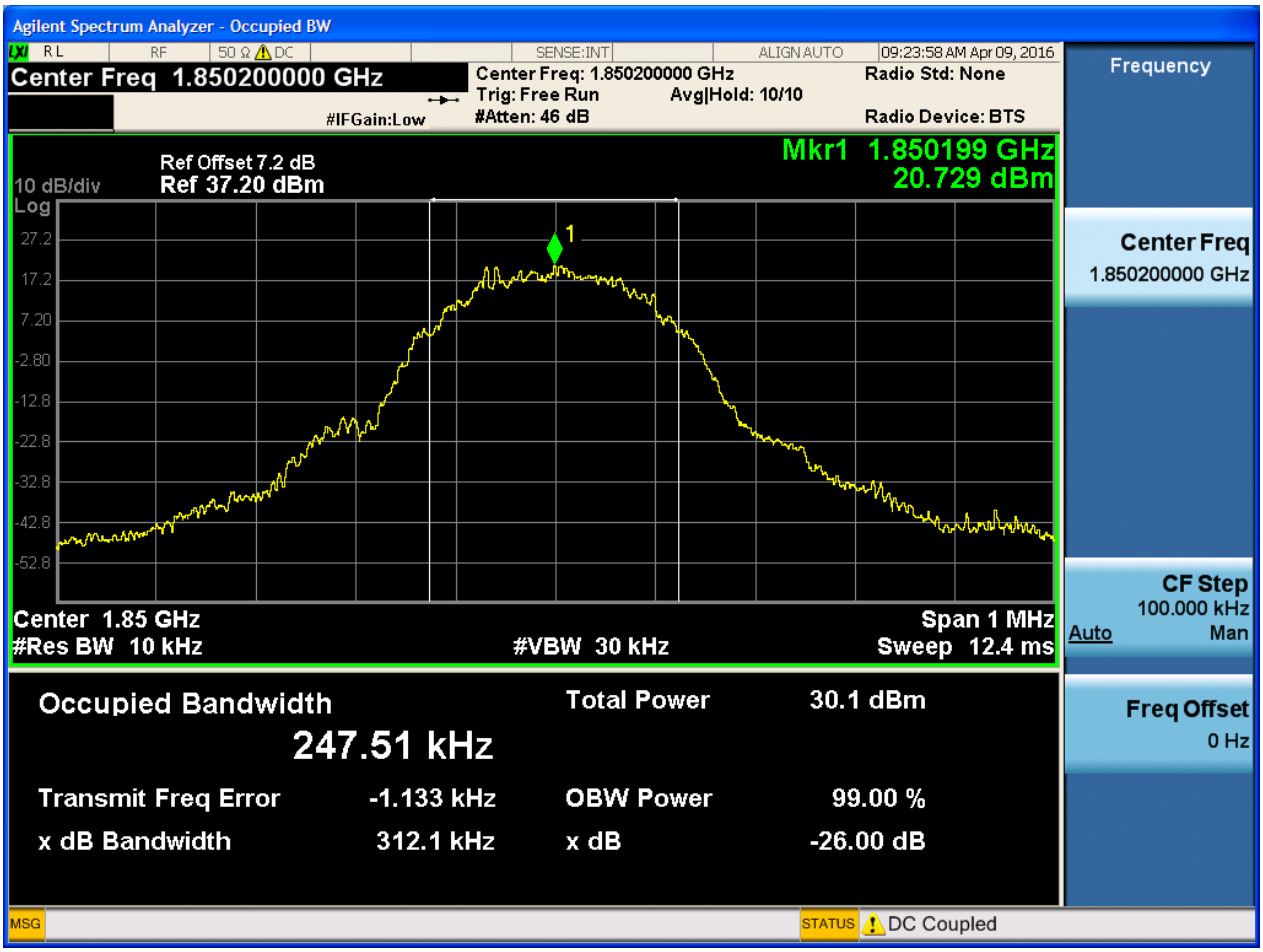
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



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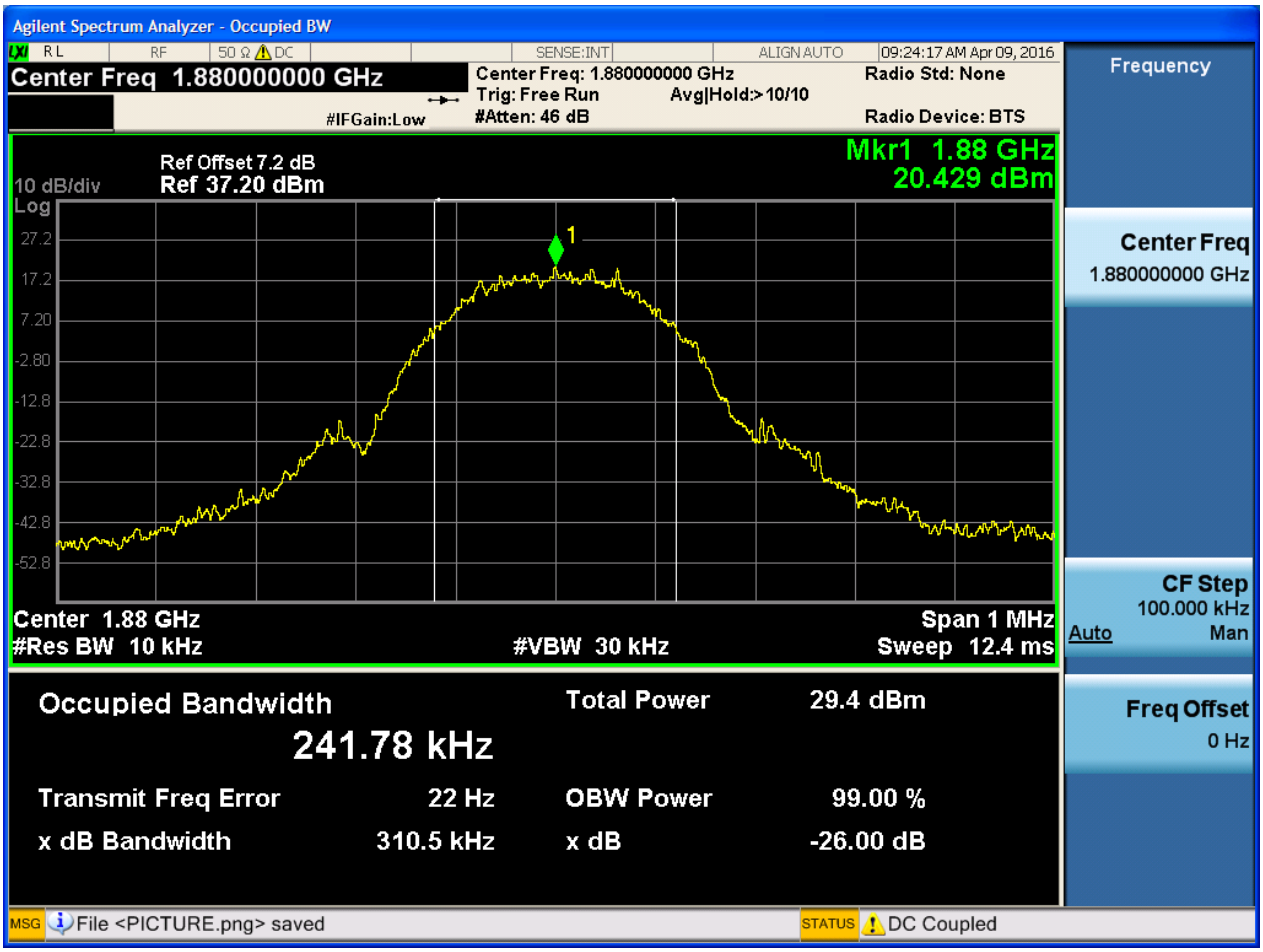
4.1.1.2.2 Test Channel = MCH



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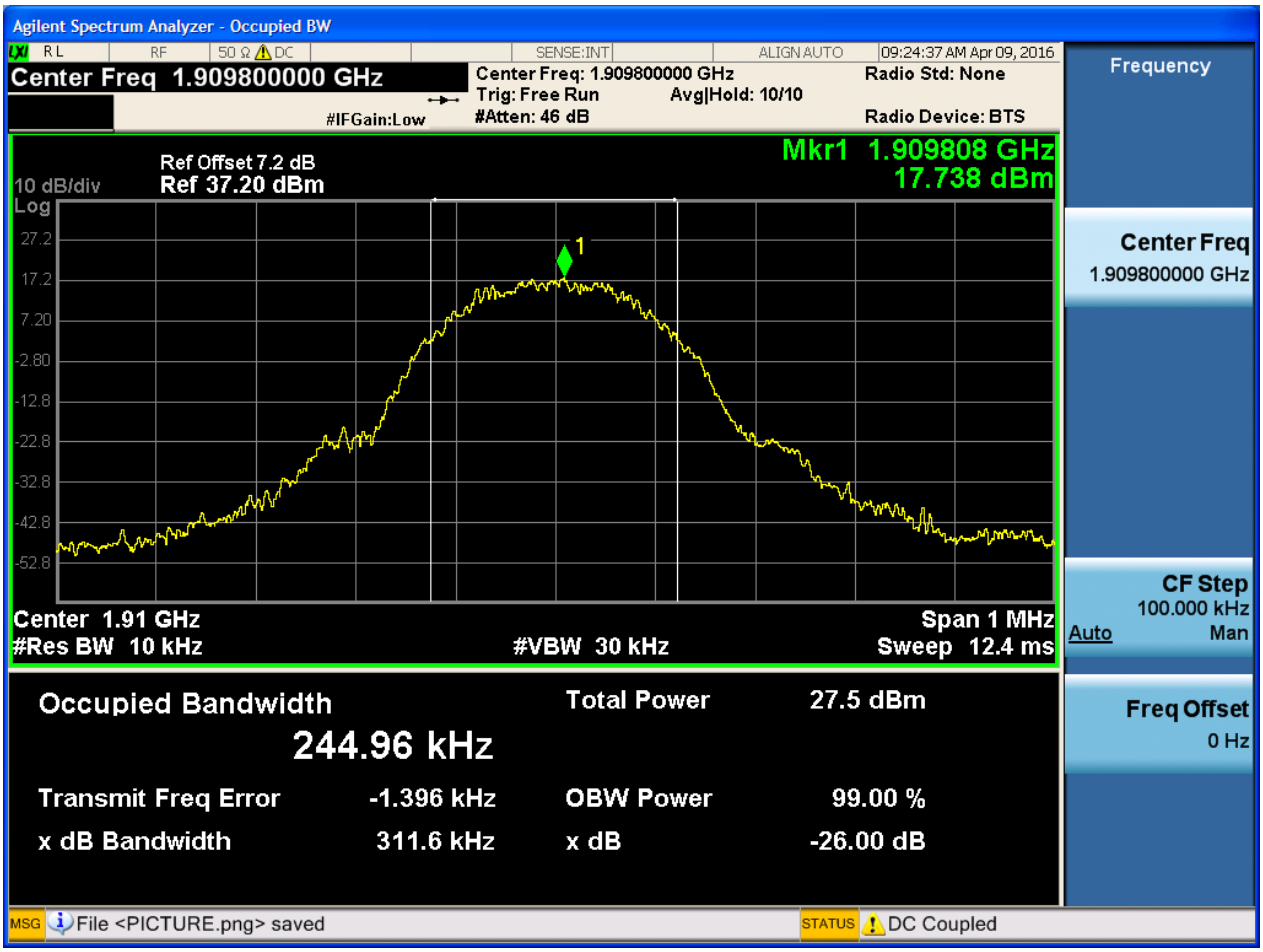
4.1.1.2.3 Test Channel = HCH



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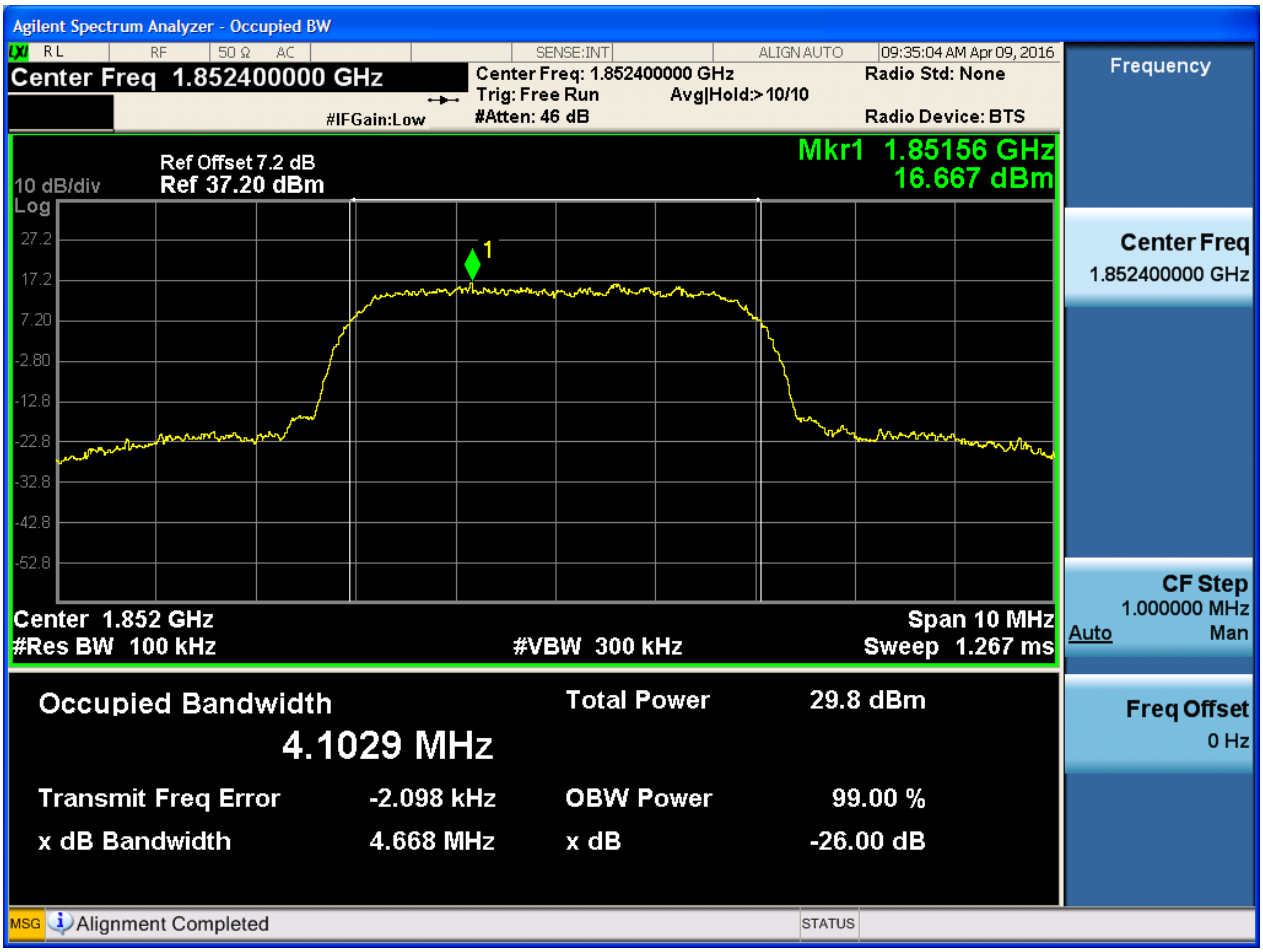
4.1.2Test Band = WCDMA1900

4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



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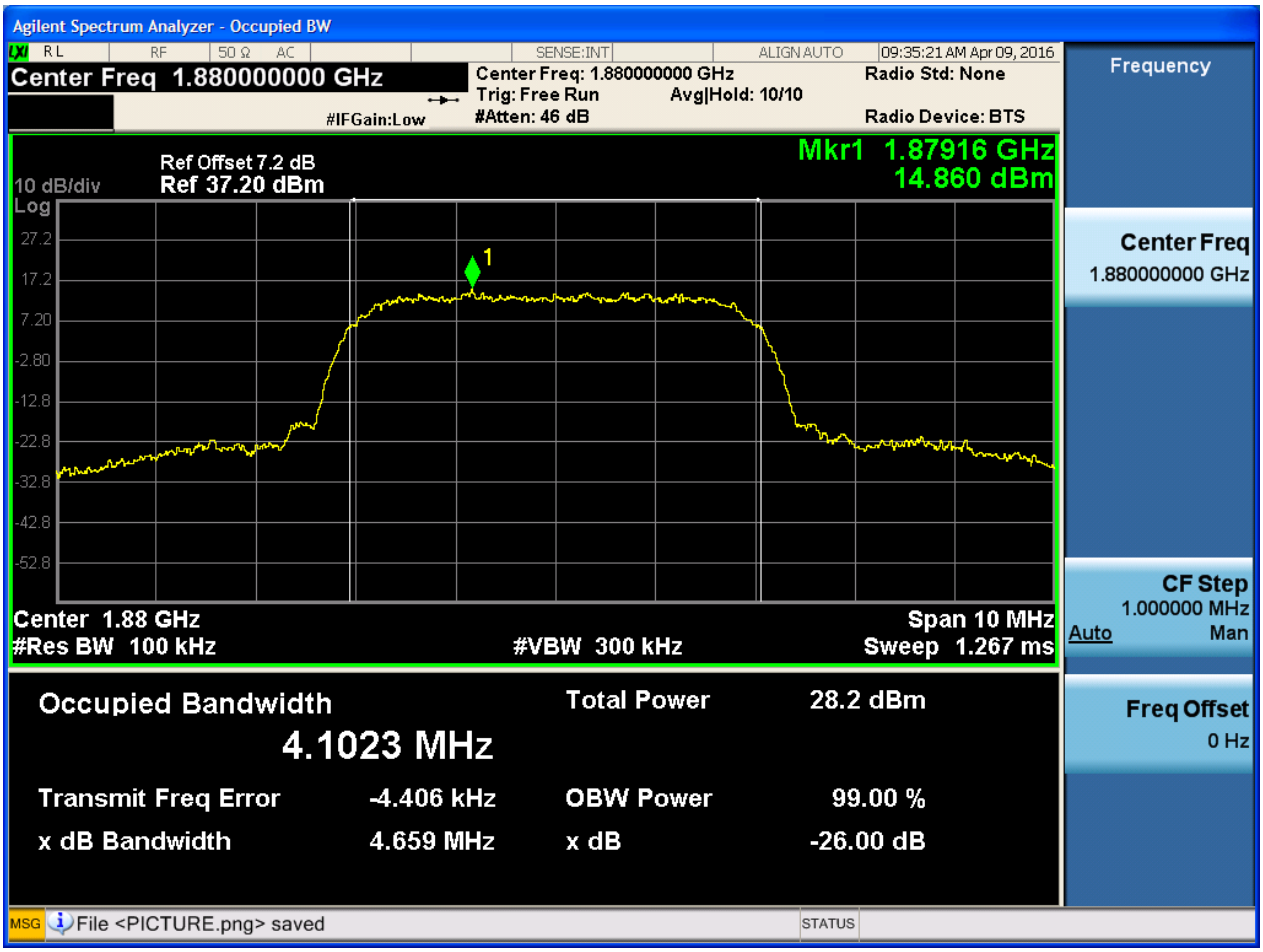
4.1.2.1.2 Test Channel = MCH



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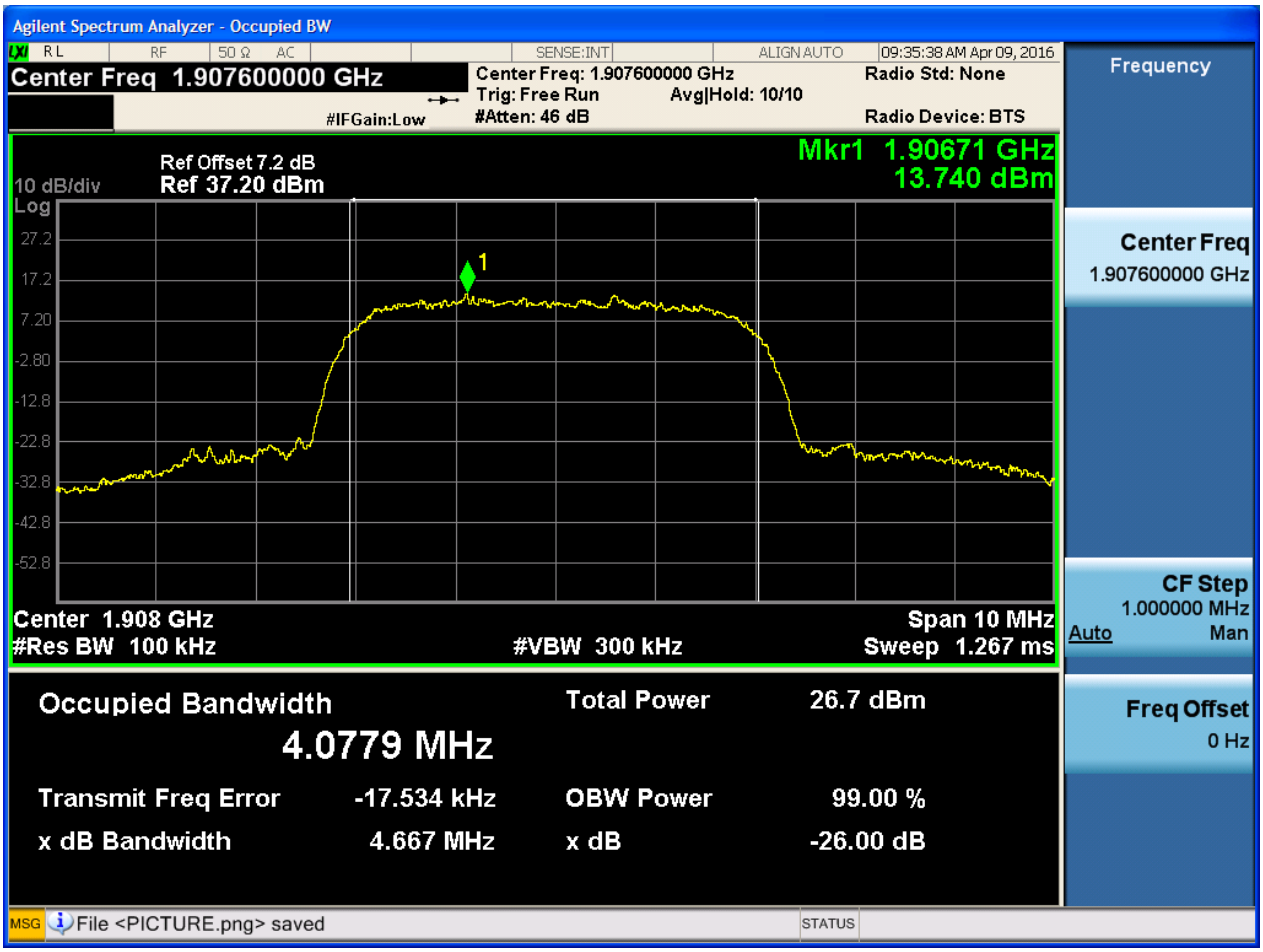
4.1.2.1.3 Test Channel = HCH



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5Appendix_E: Band Edges Compliance

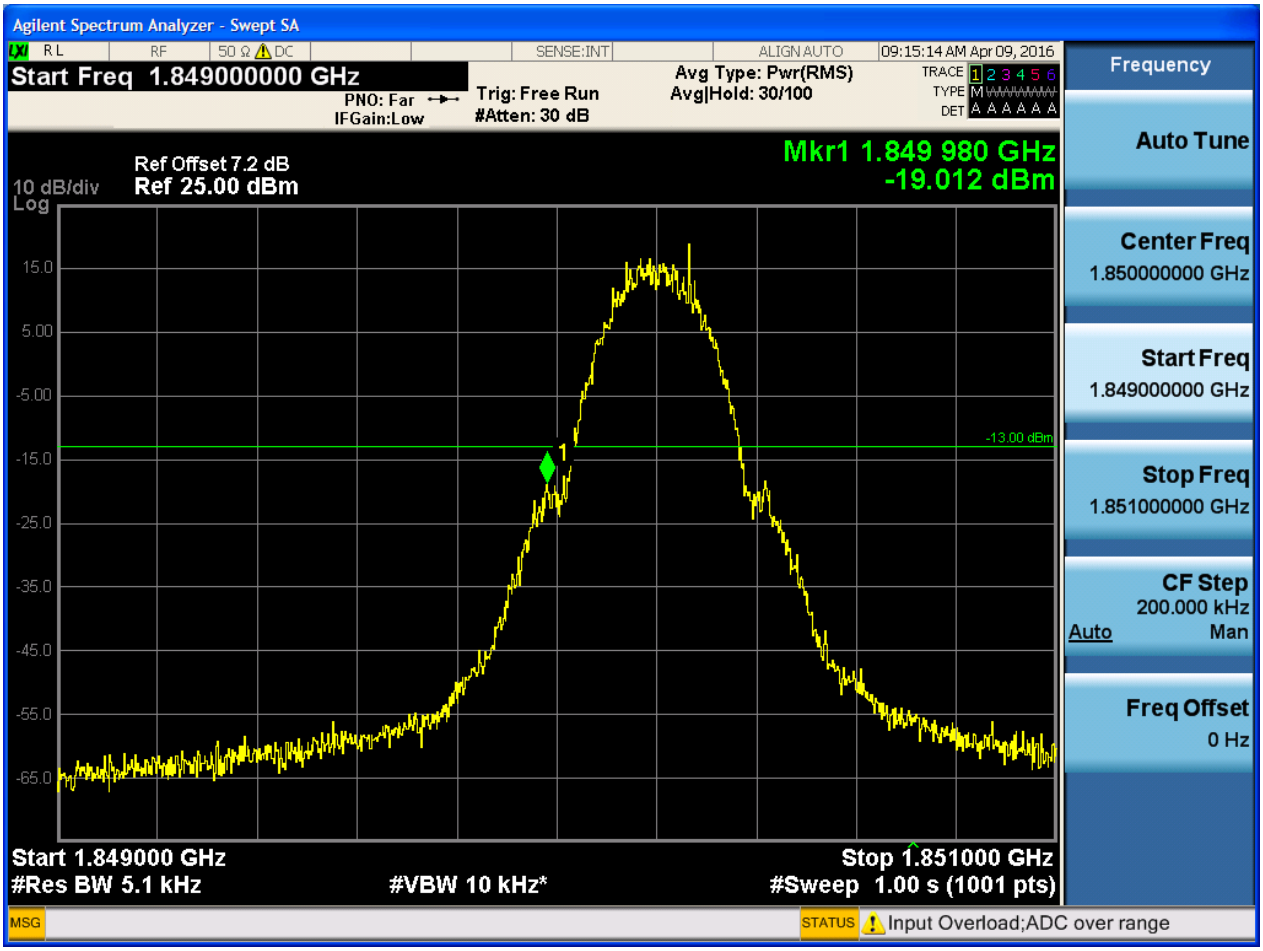
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM1900

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



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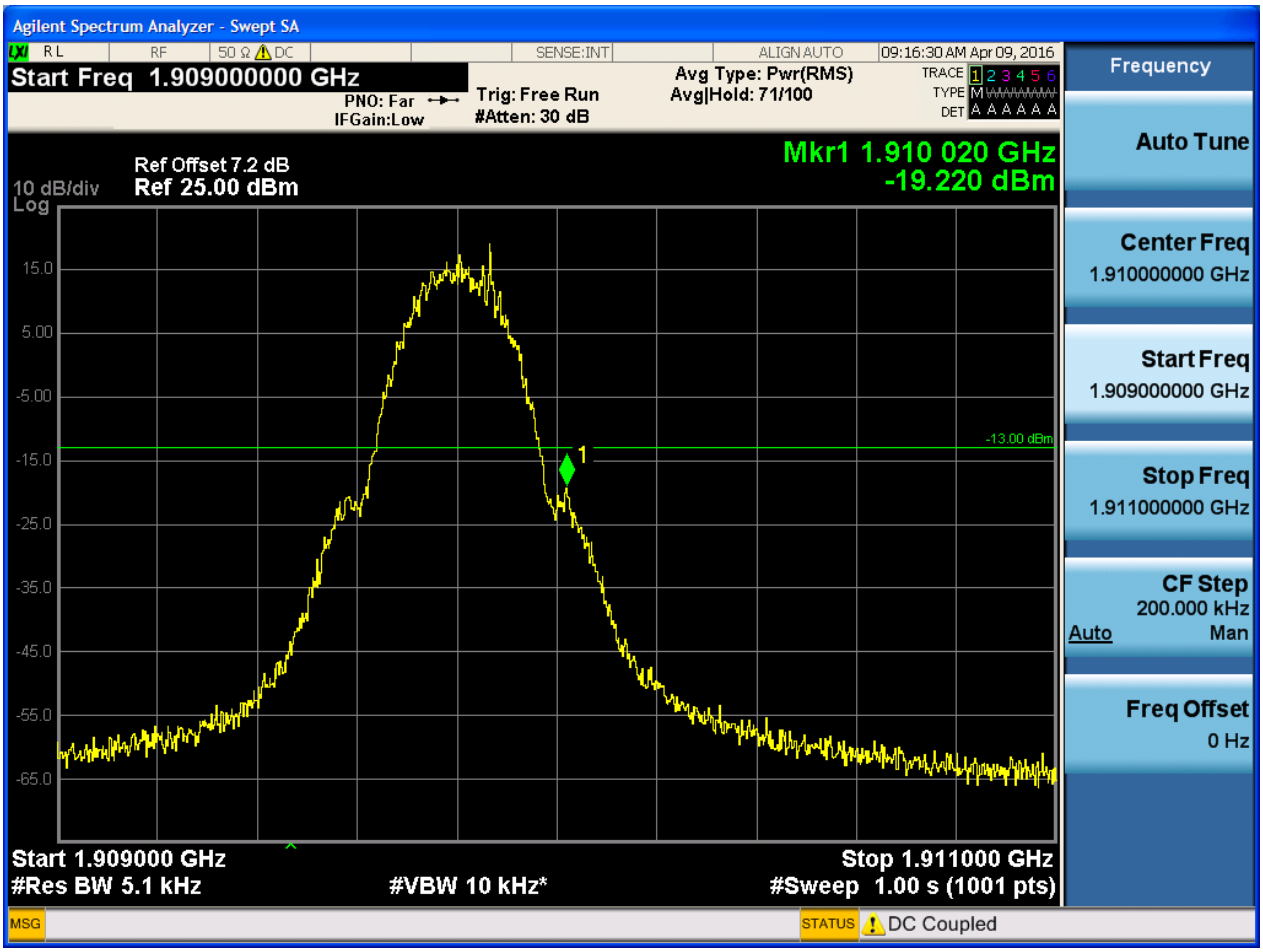
5.1.1.1.2 Test Channel = HCH



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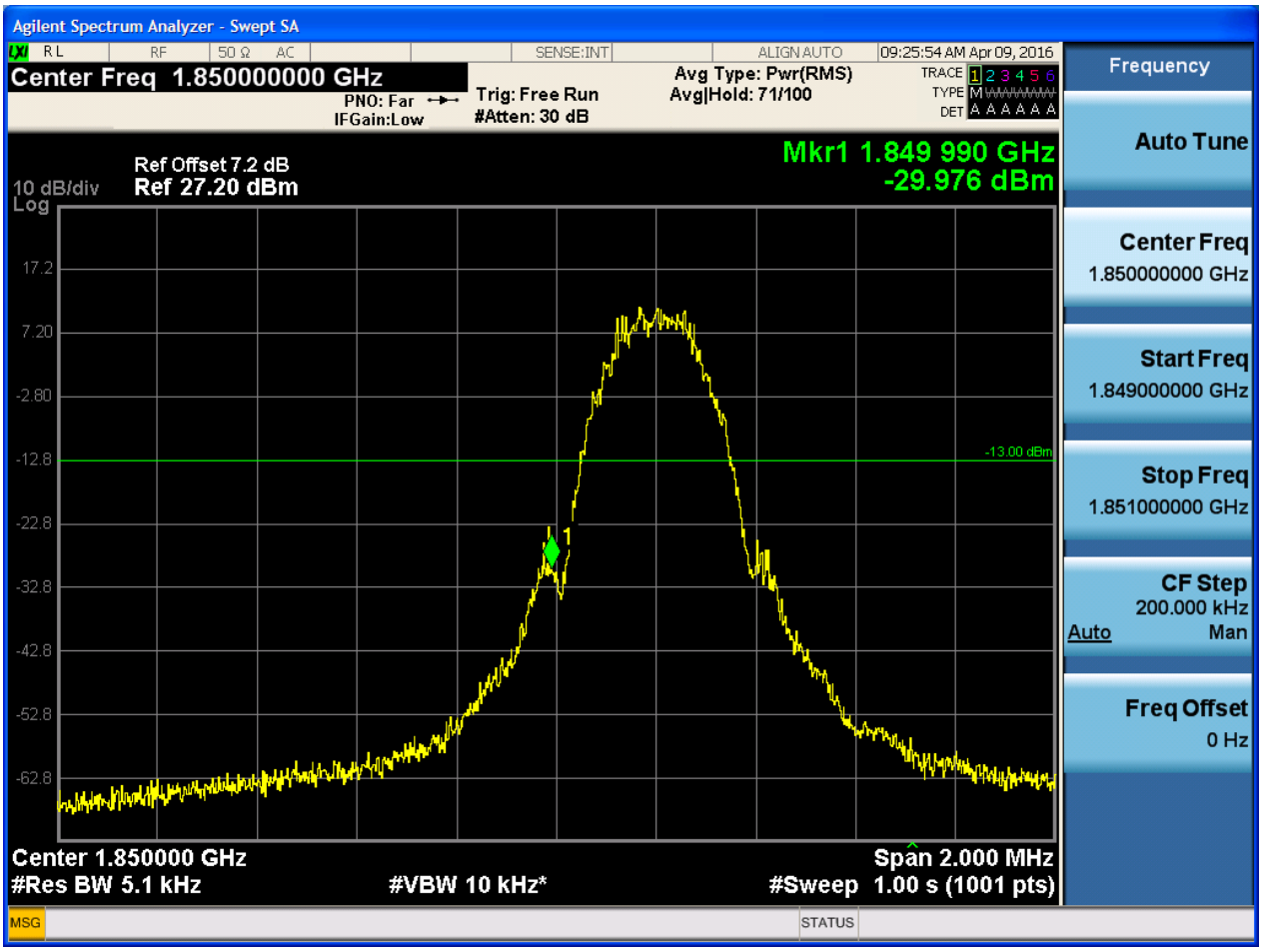
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



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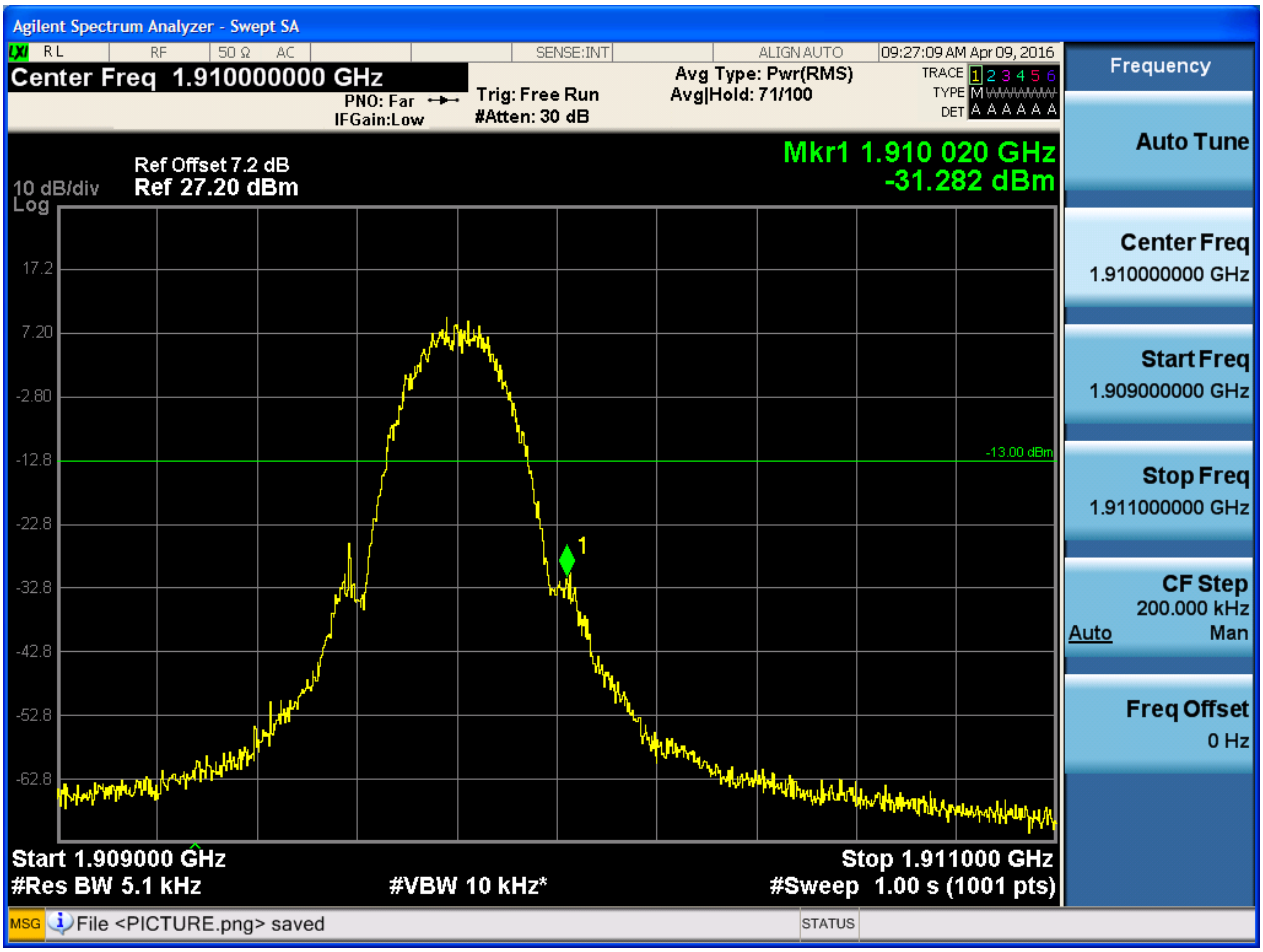
5.1.1.2.2 Test Channel = HCH



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5.1.2 Test Band = WCDMA1900

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH

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5.1.2.1.2 Test Channel = HCH

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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.

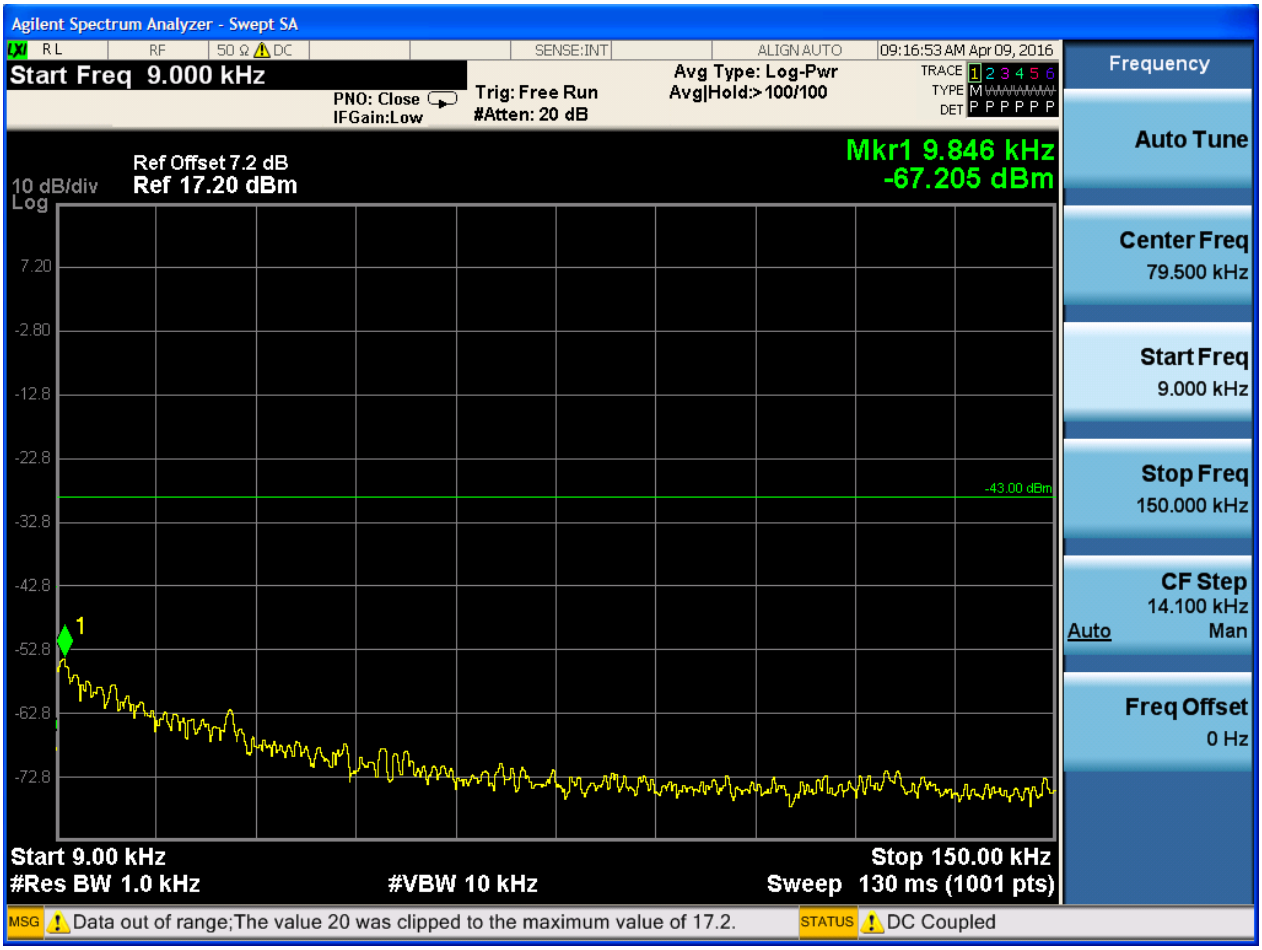
Part I - Test Plots

6.1 For GSM

6.1.1 Test Band = GSM1900

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH



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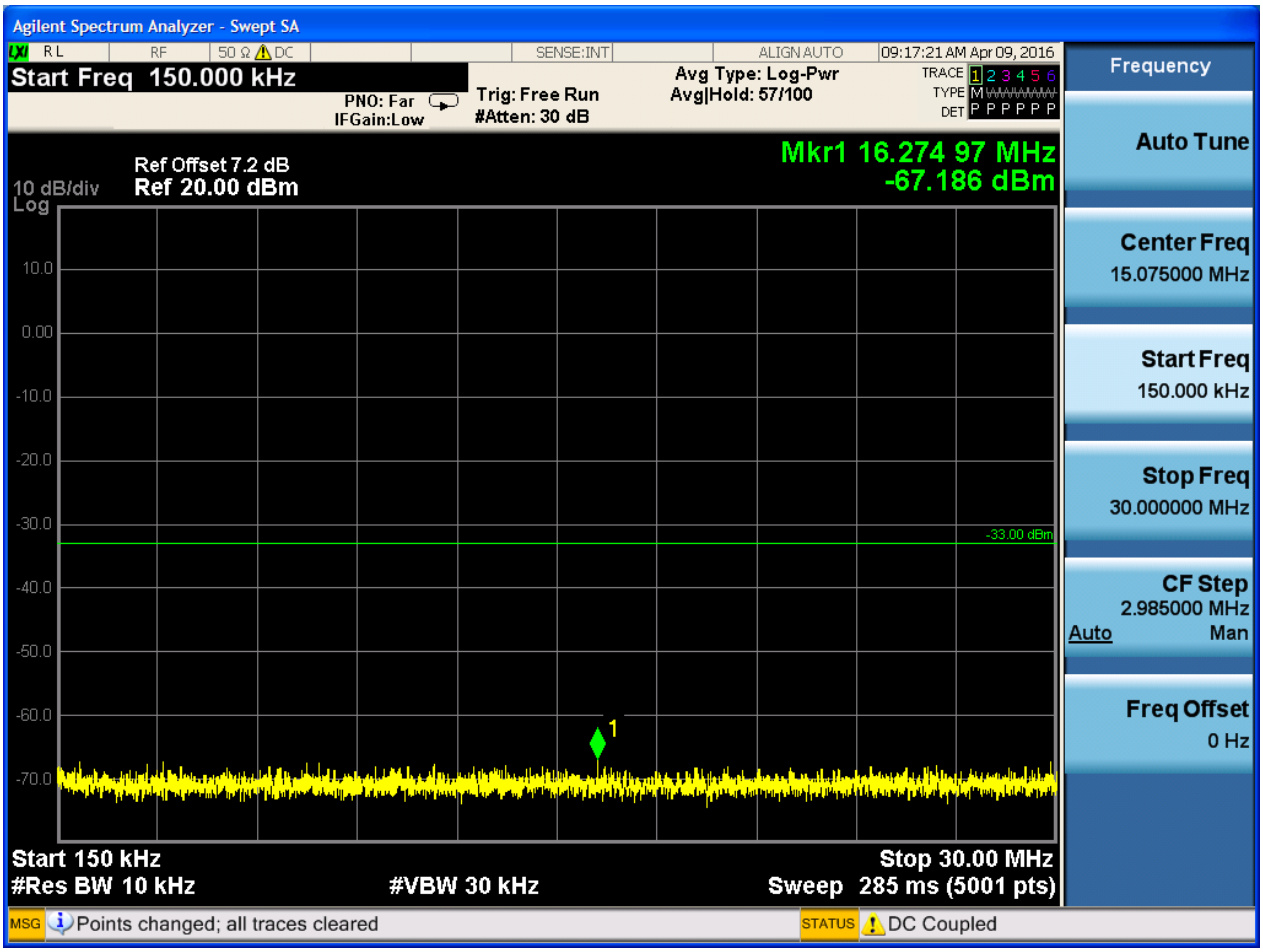

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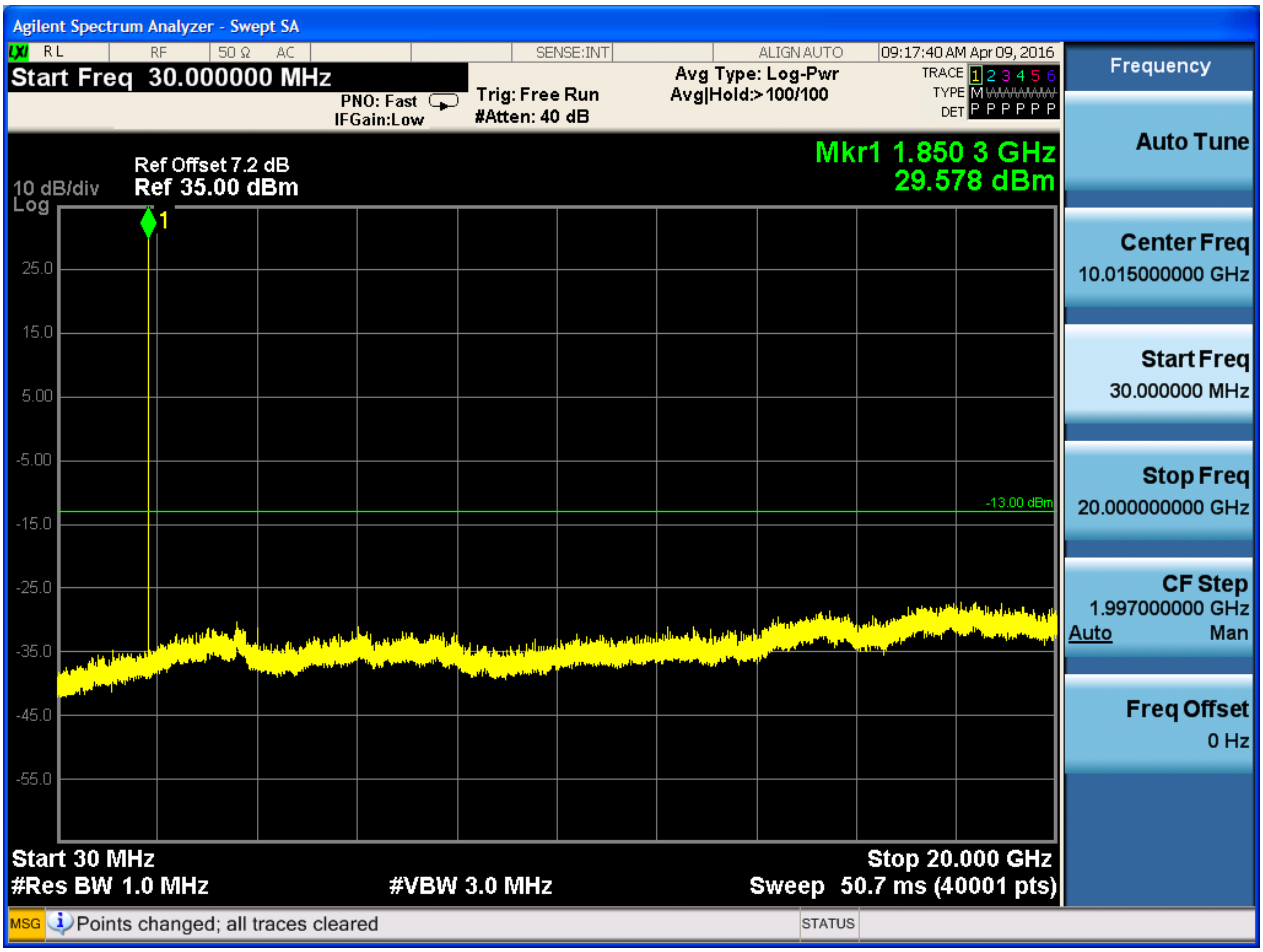

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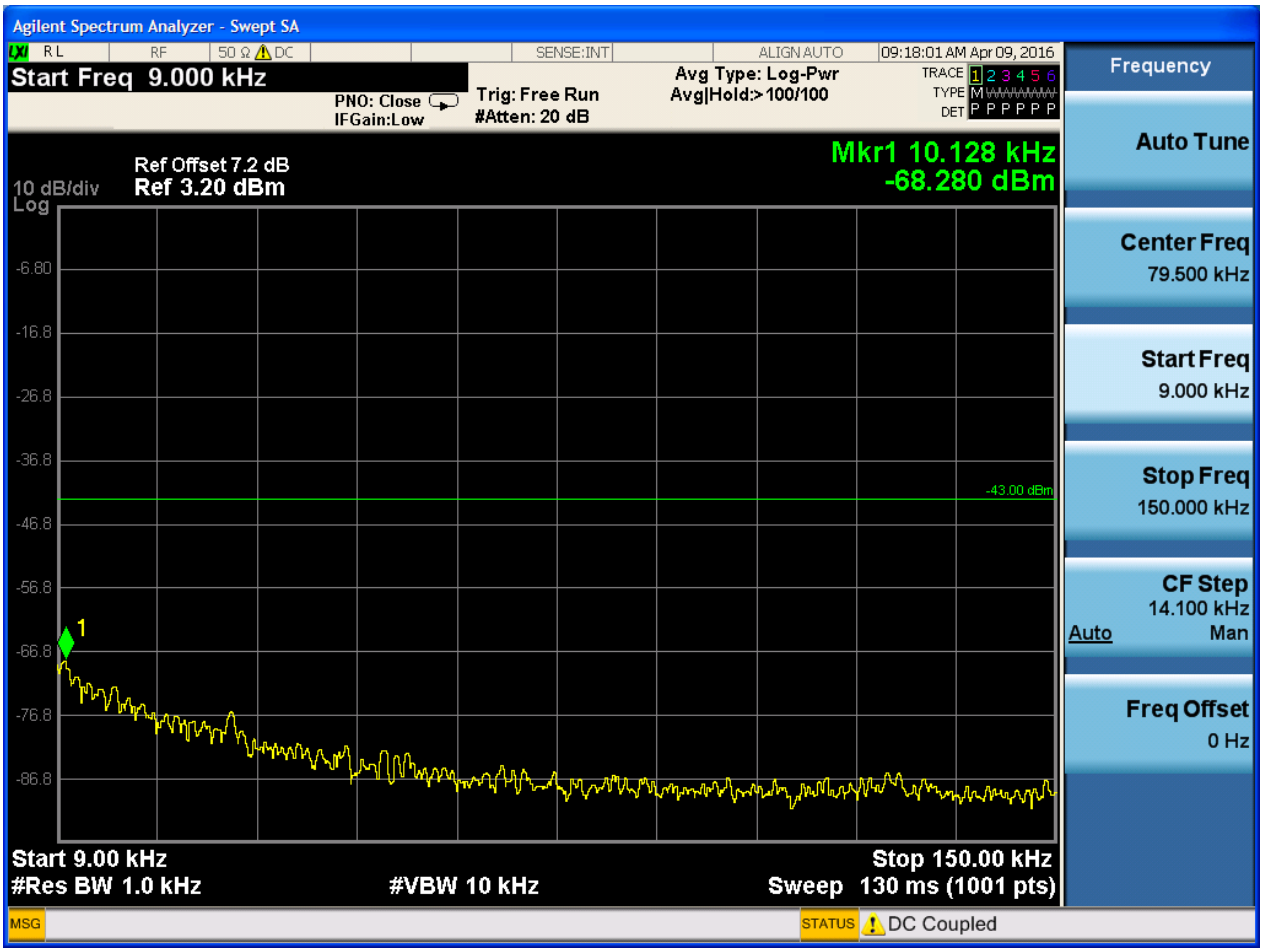
6.1.1.1.2 Test Channel = MCH



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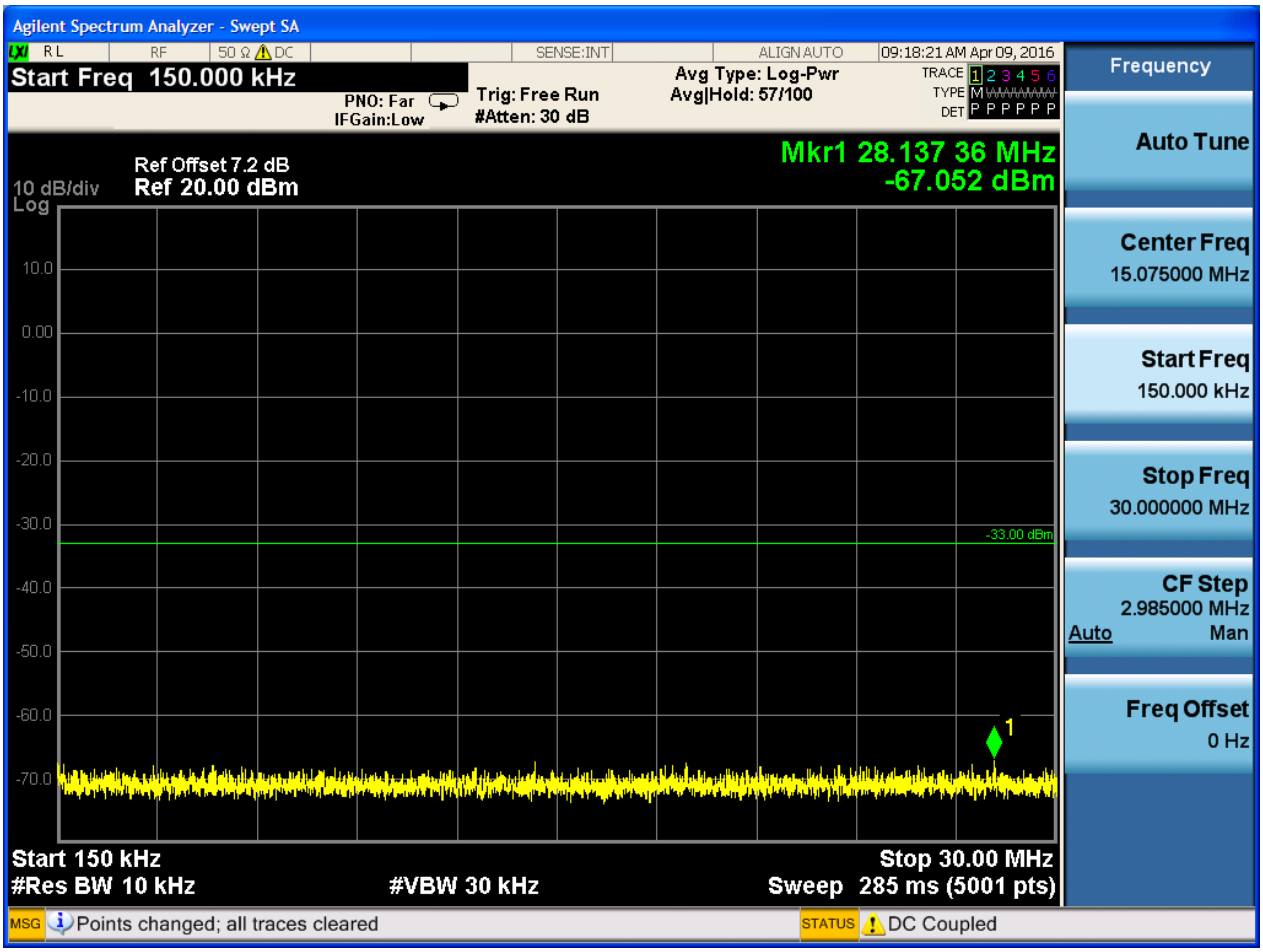

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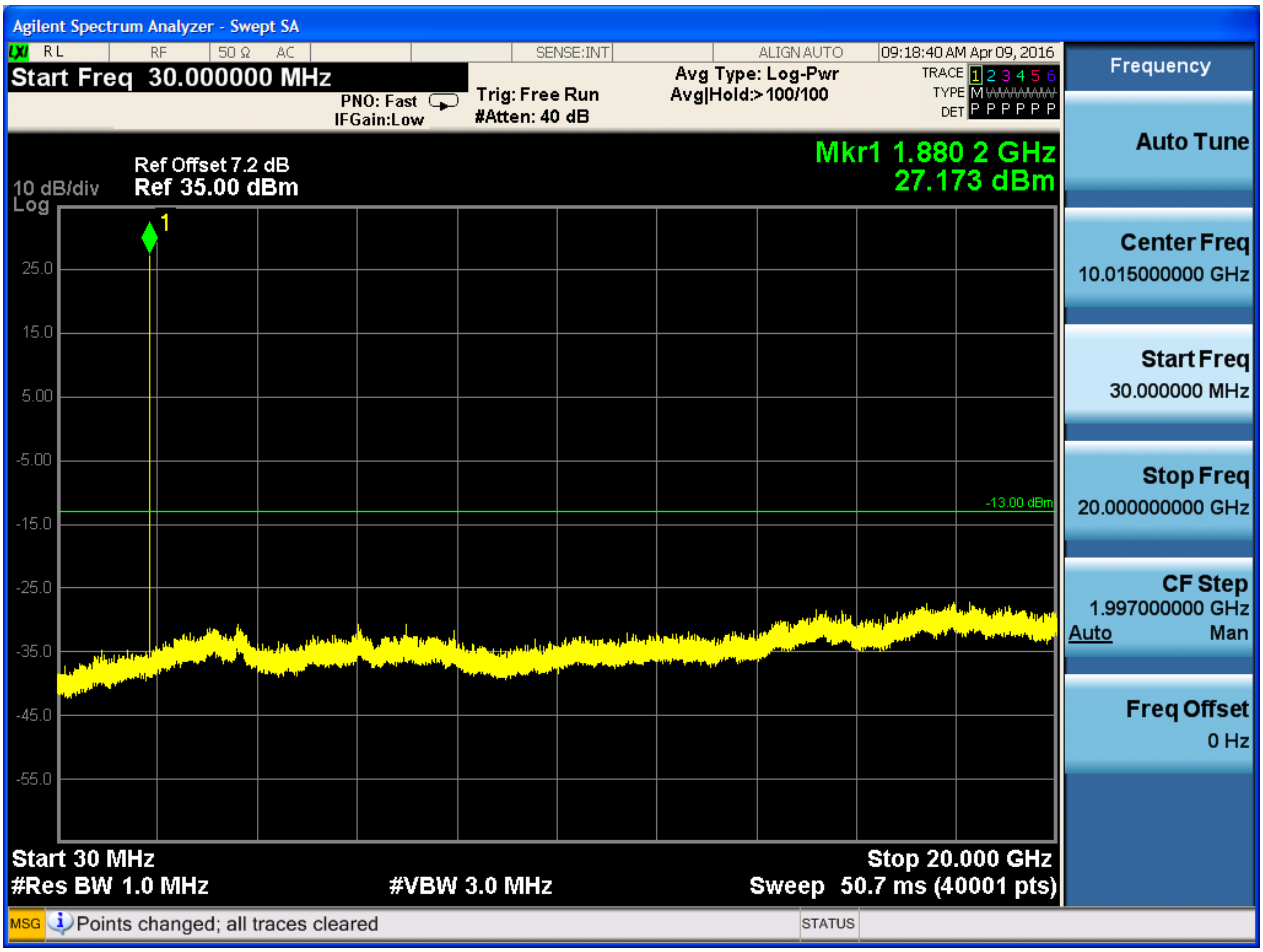

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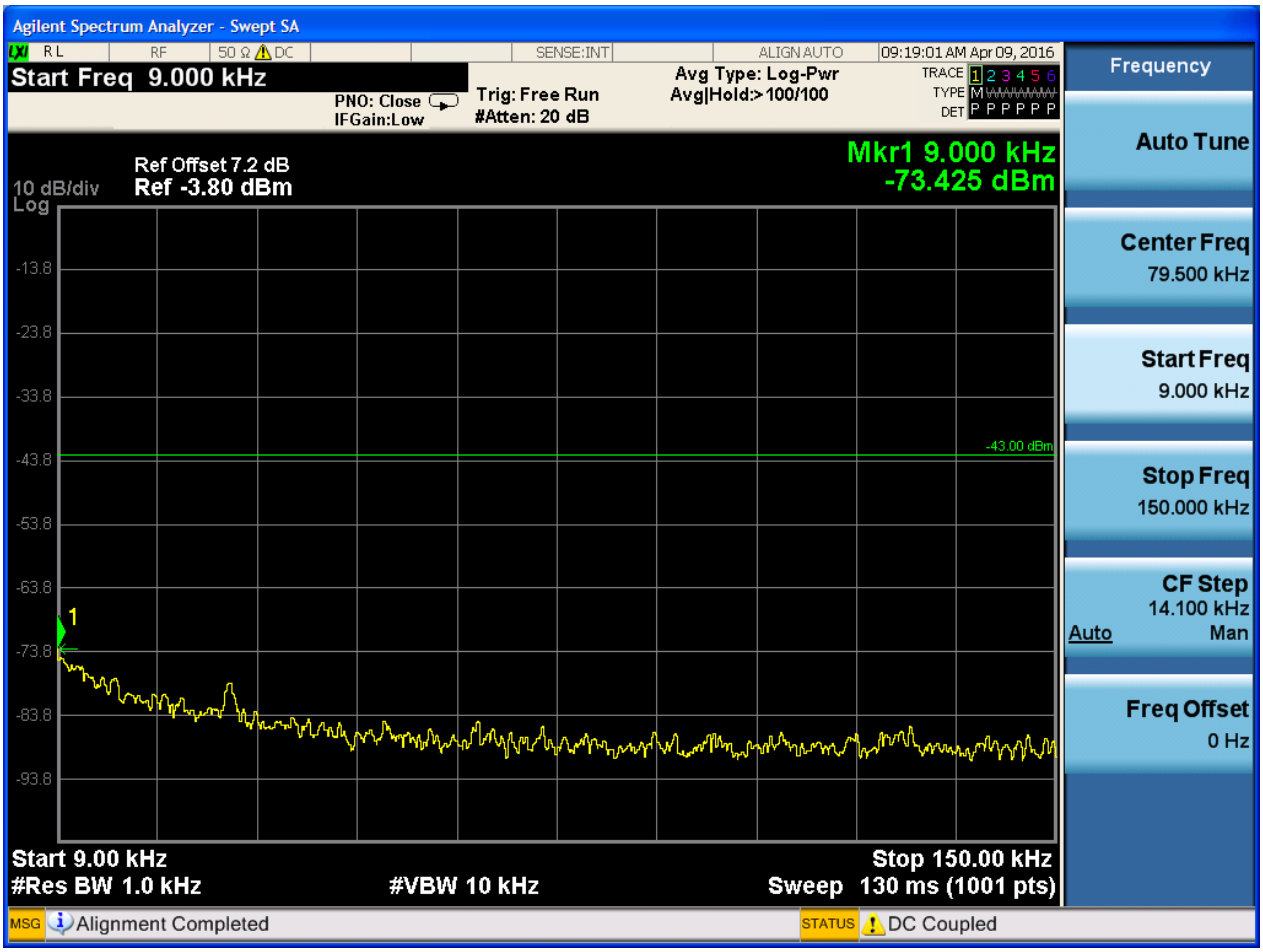
6.1.1.1.3 Test Channel = HCH



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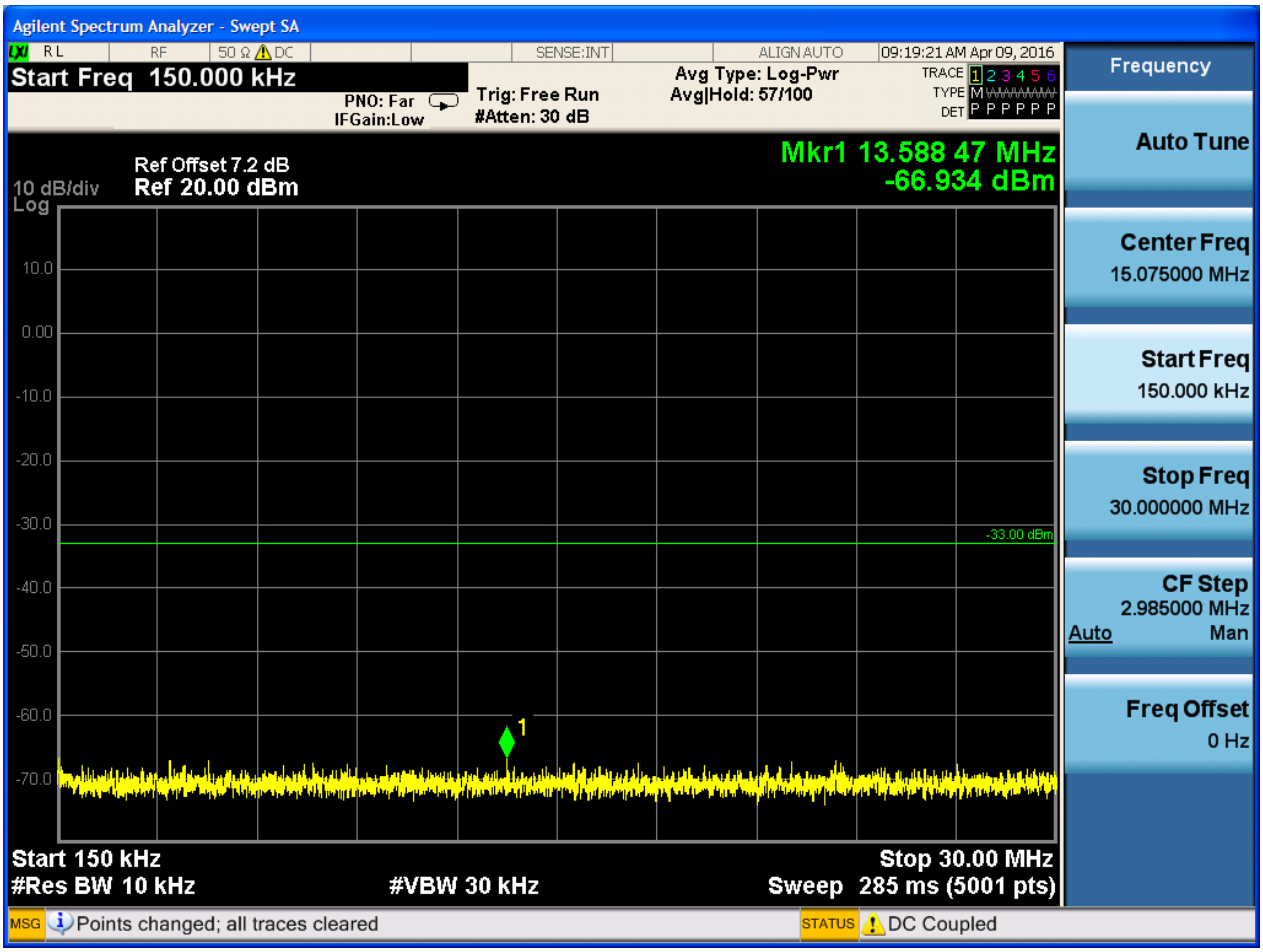

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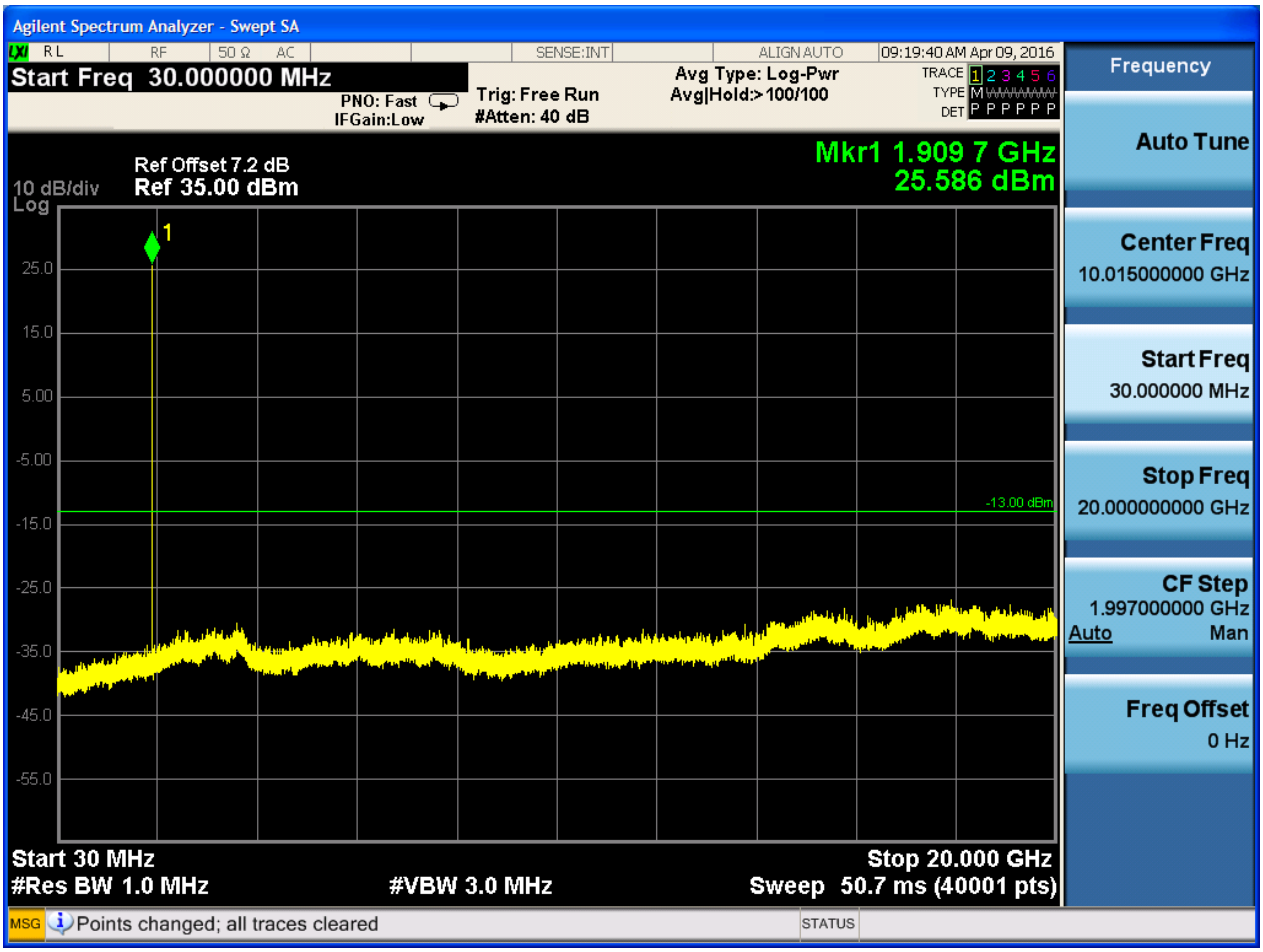

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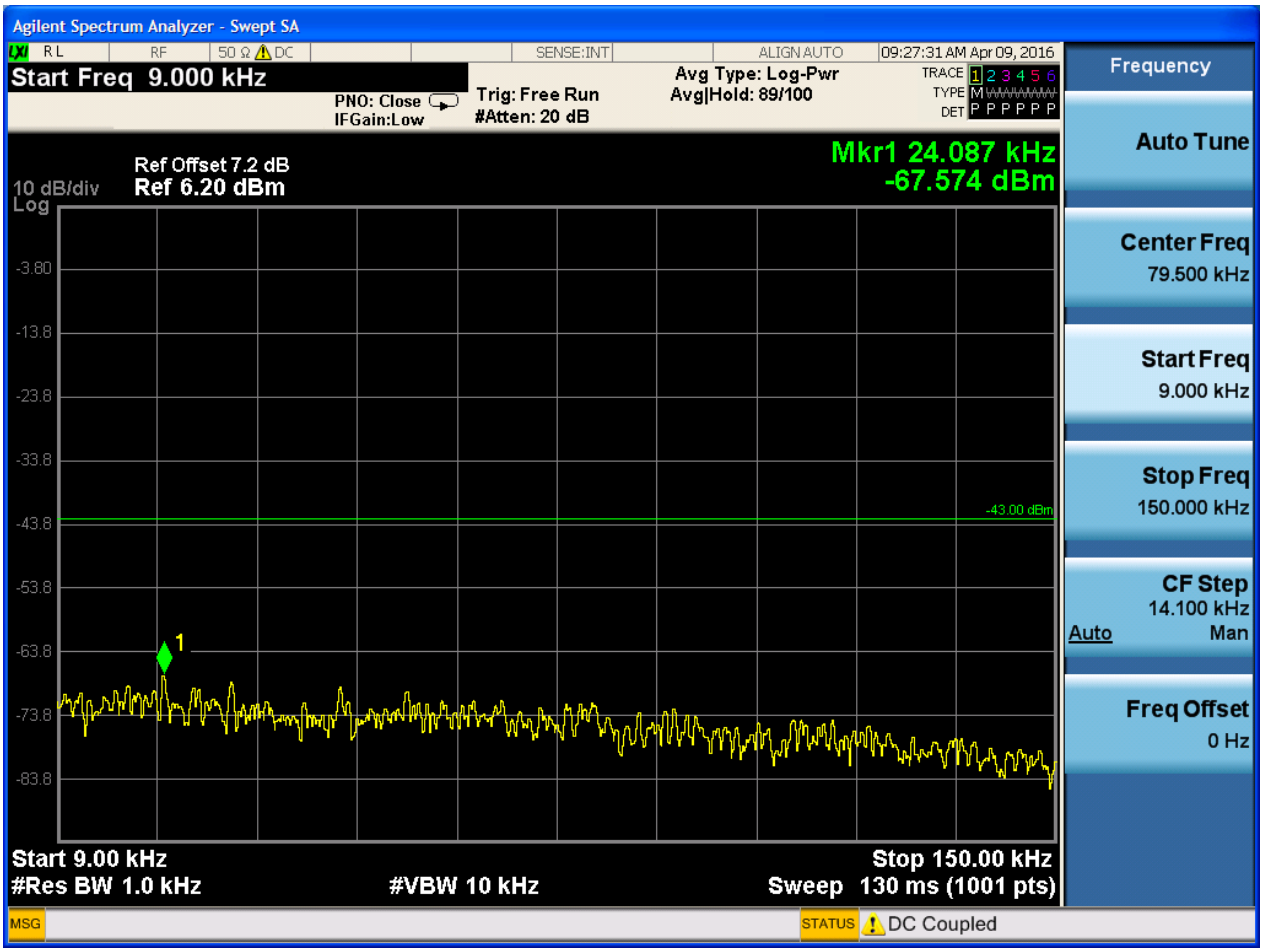
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



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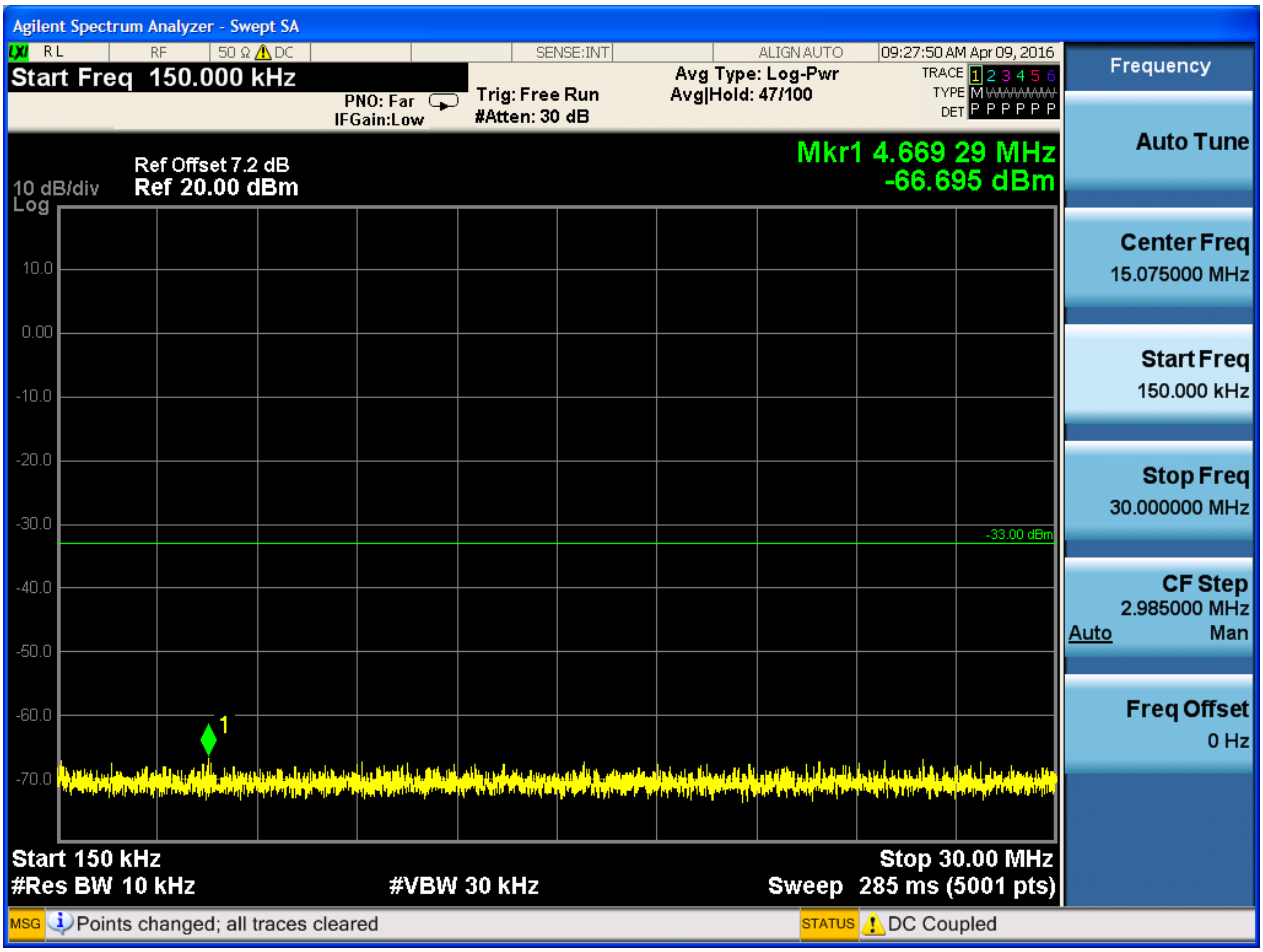

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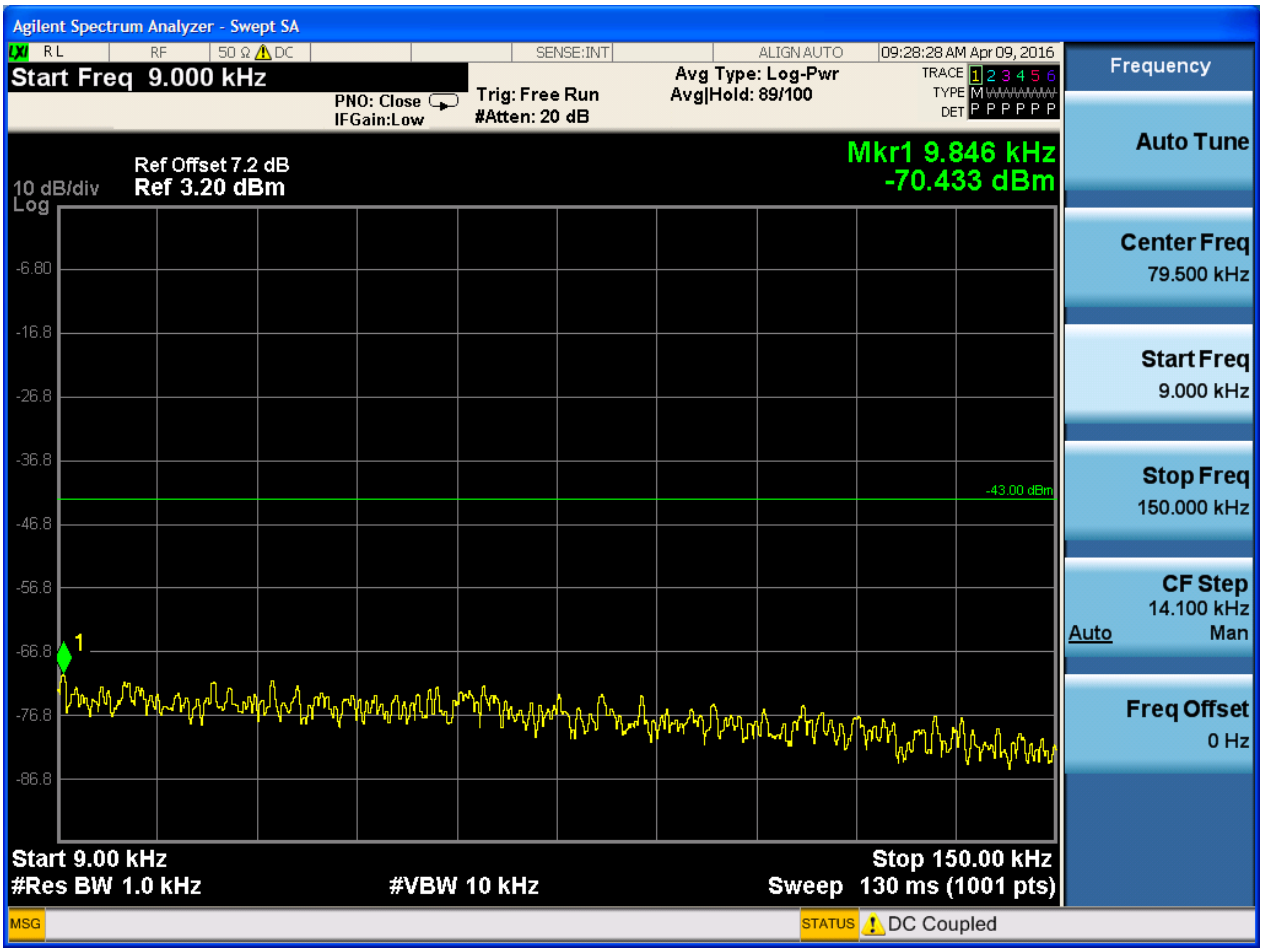
6.1.1.2.2 Test Channel = MCH



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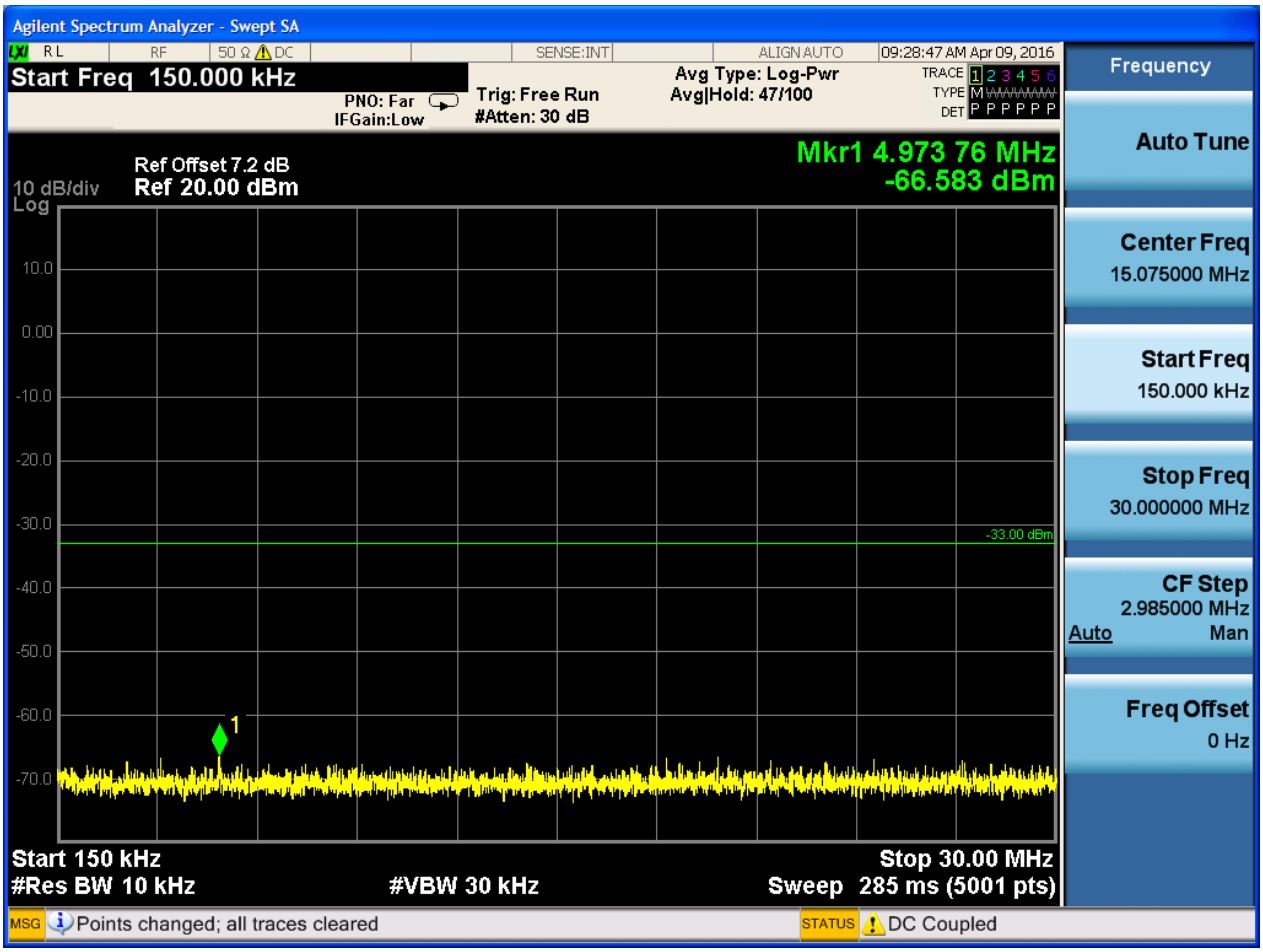

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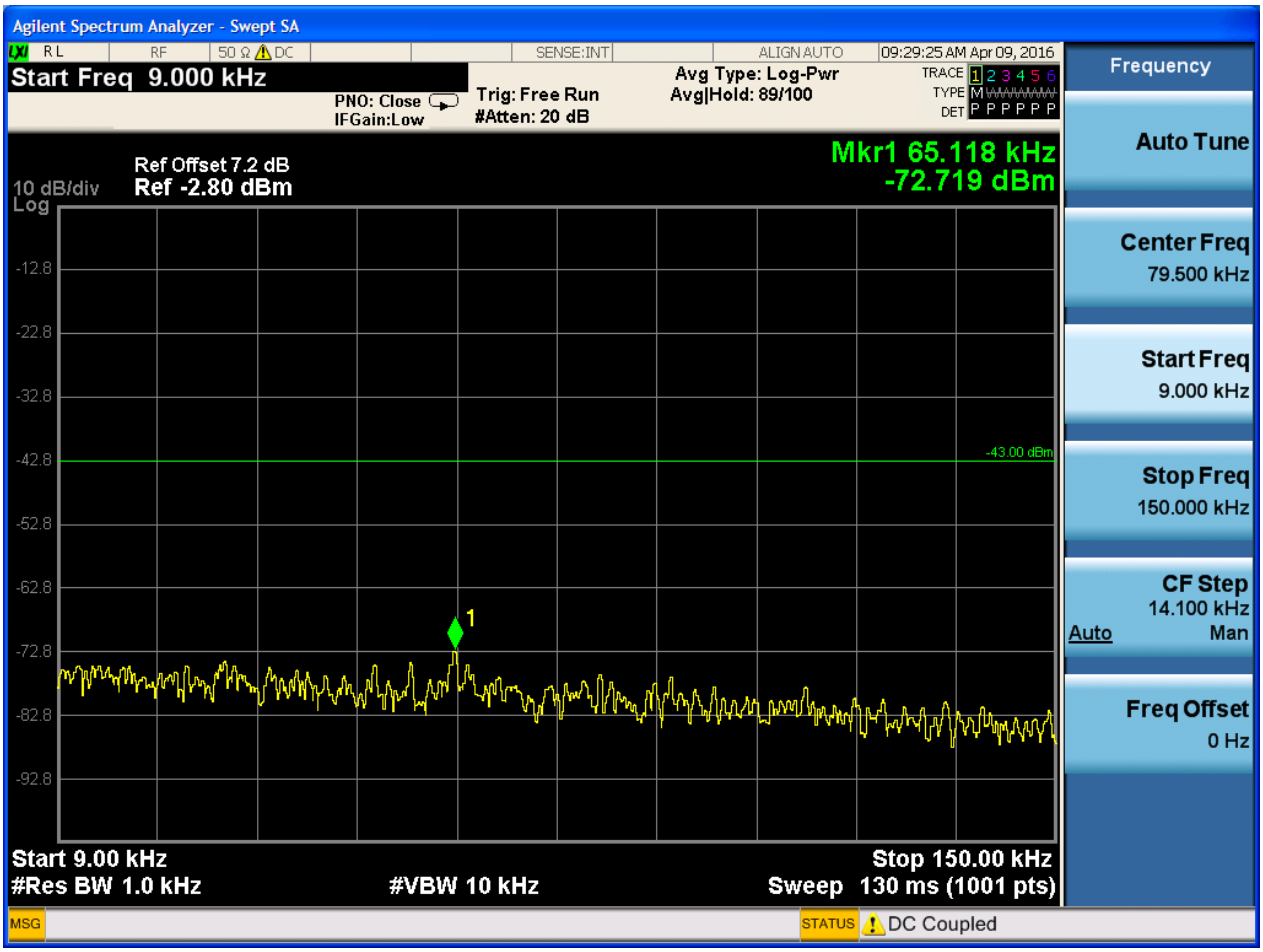
6.1.1.2.3 Test Channel = HCH



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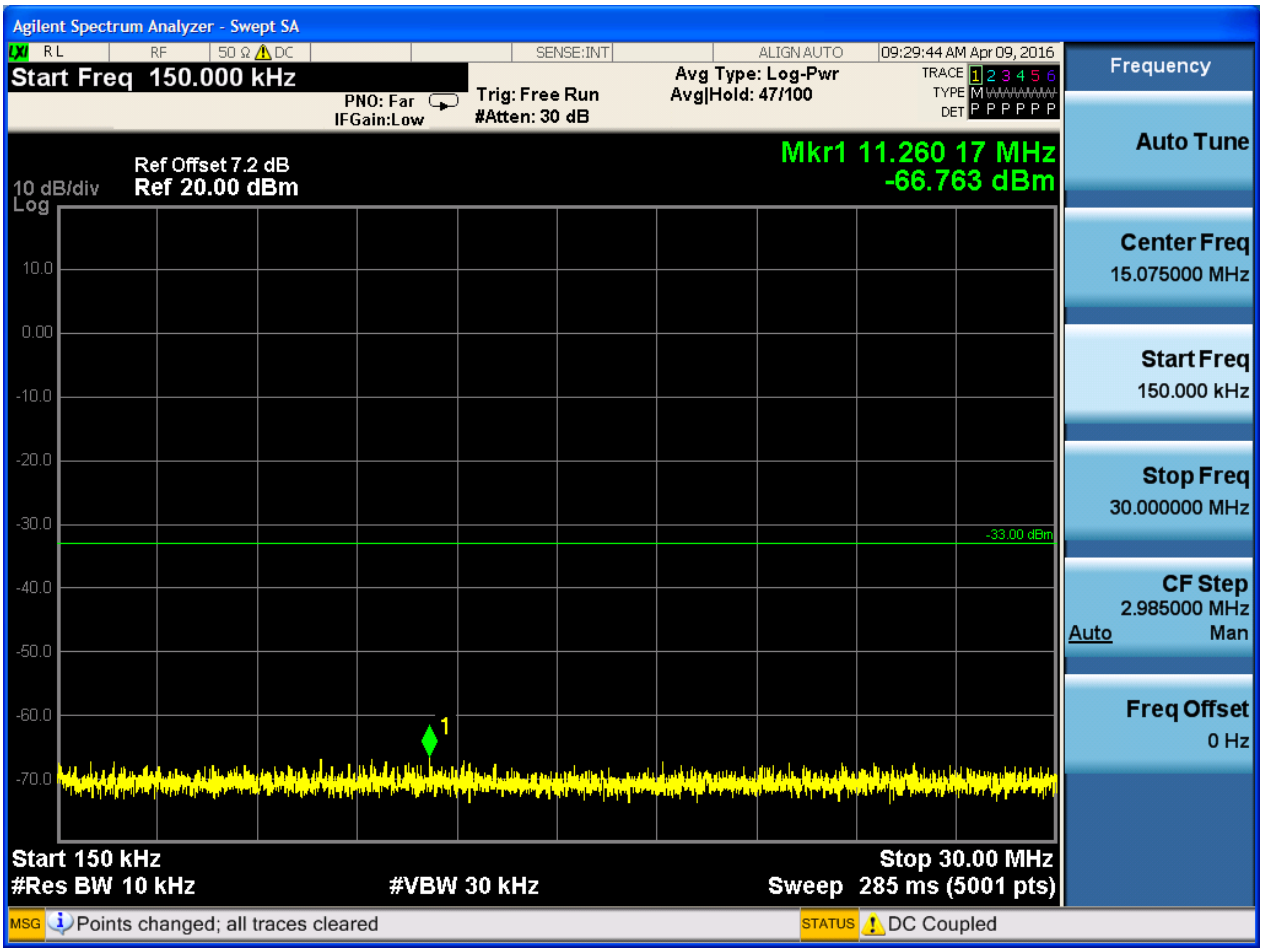

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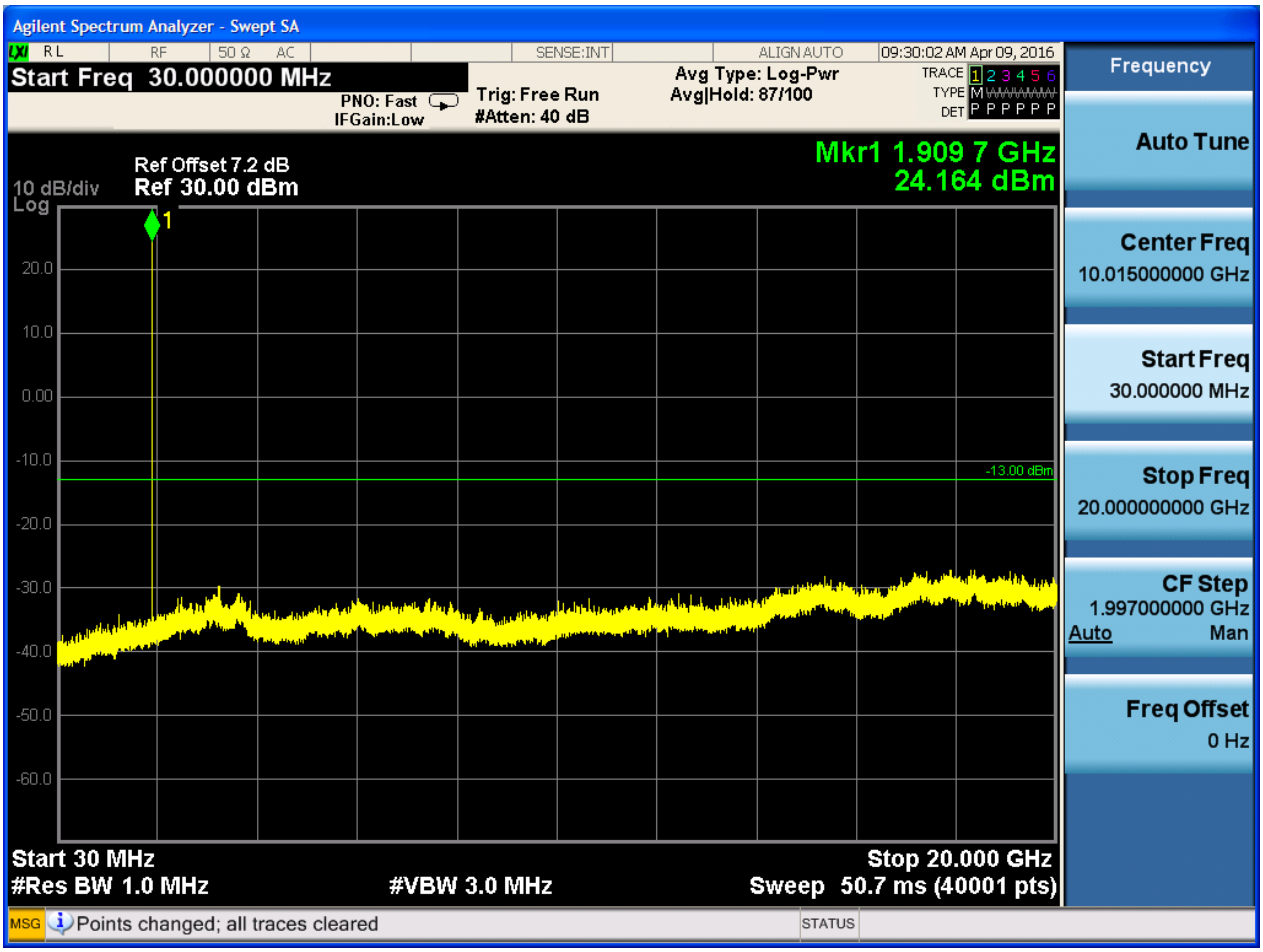

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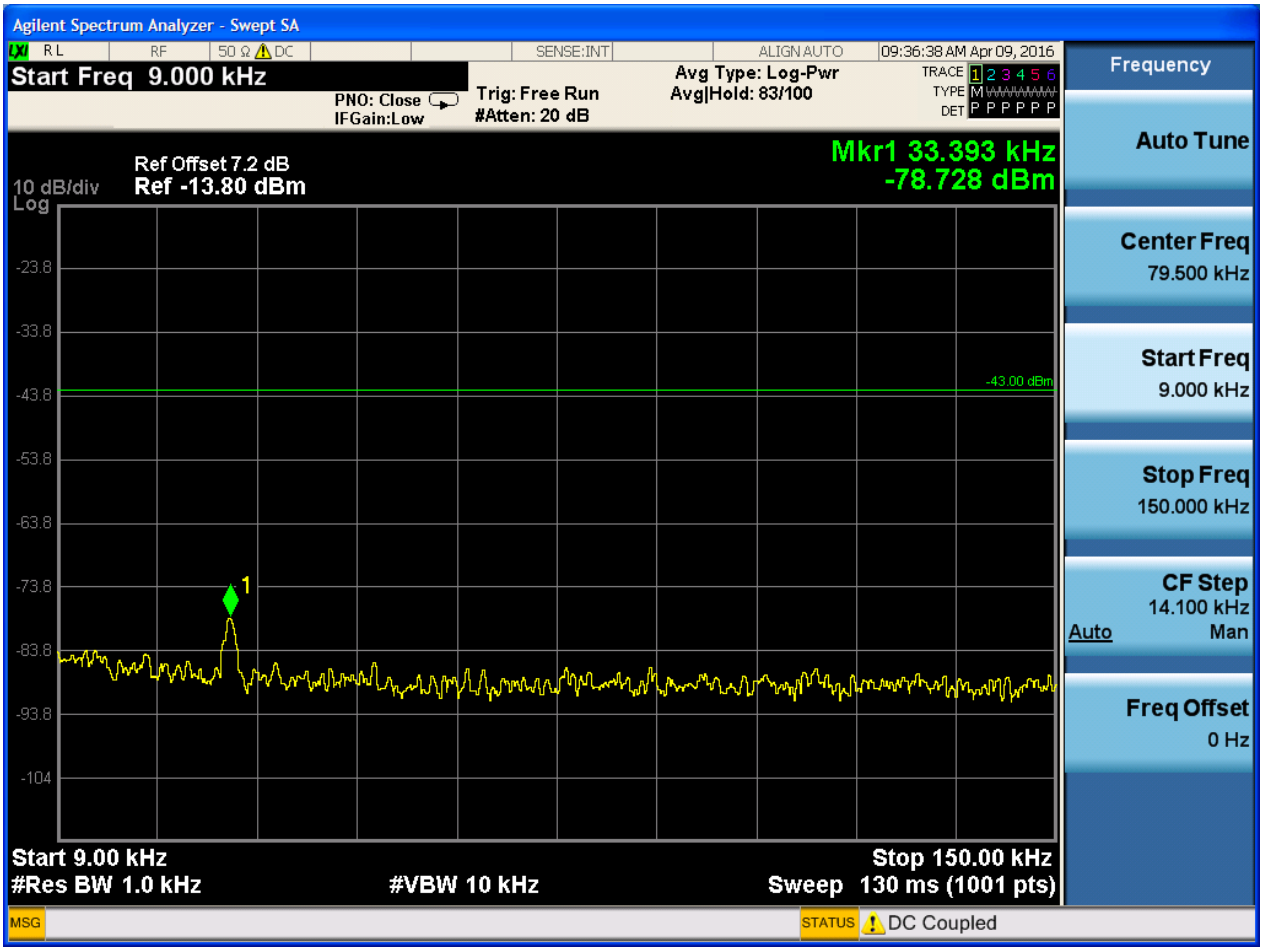
6.1.2 Test Band = WCDMA1900

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH



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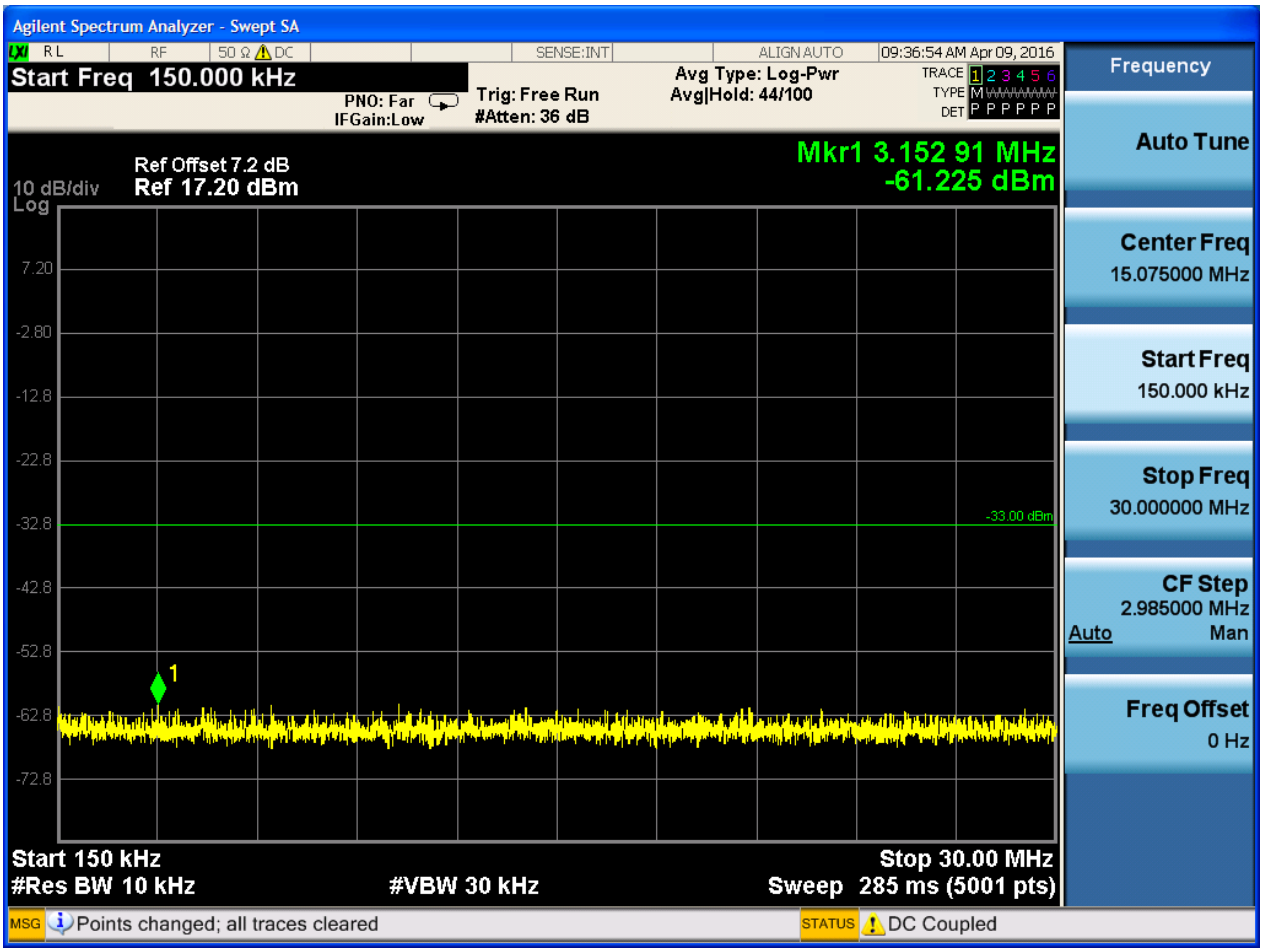

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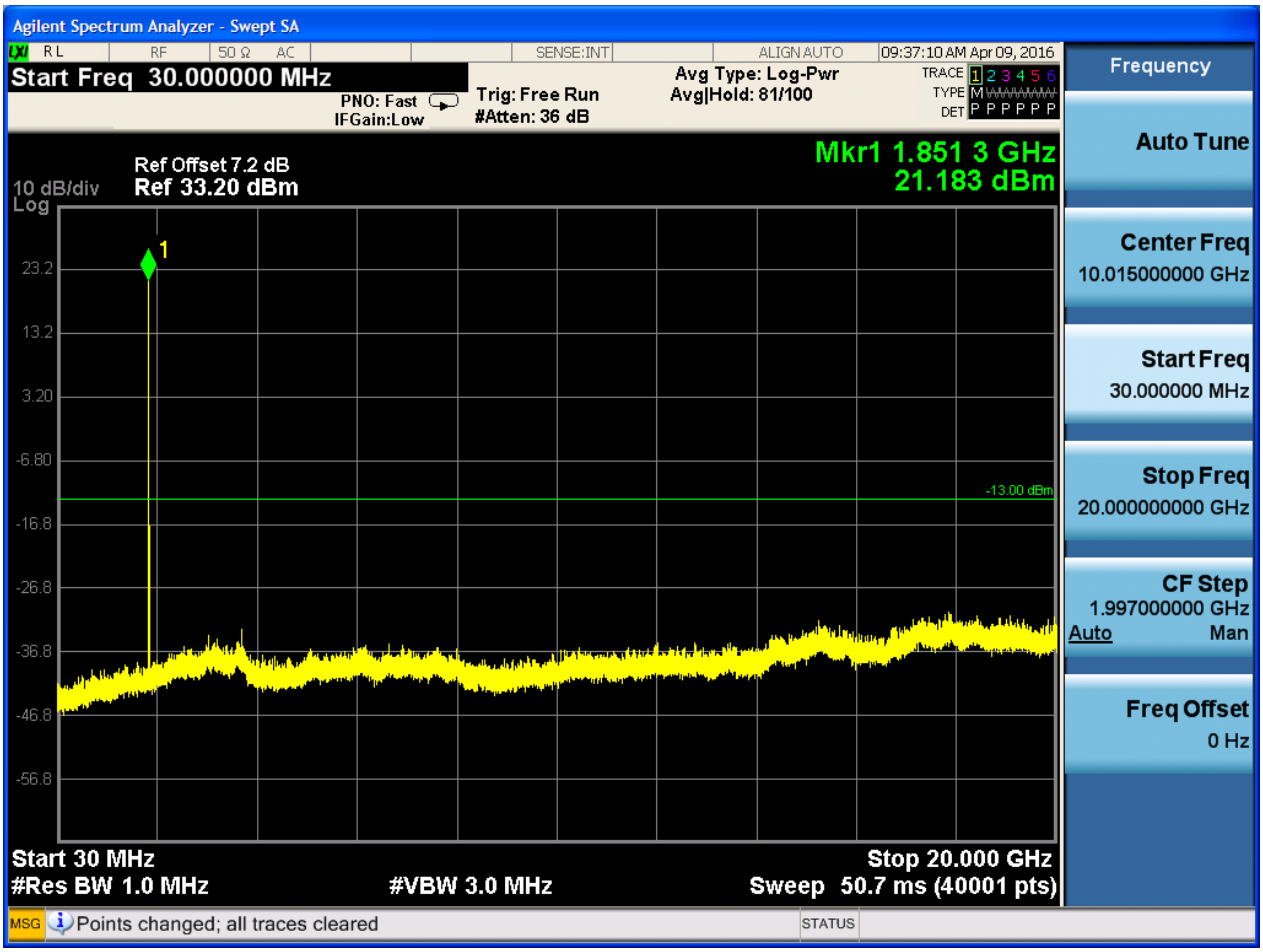

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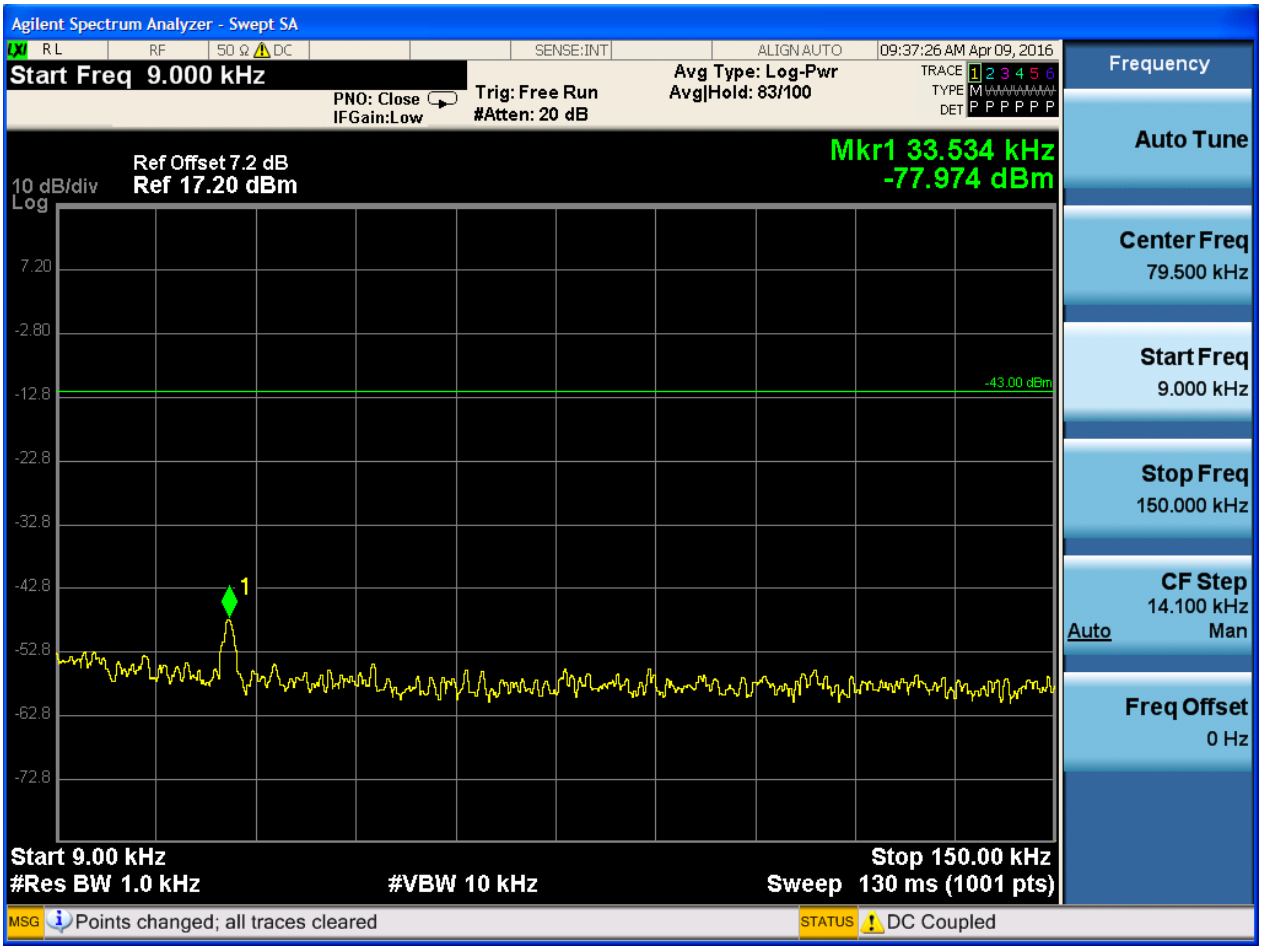
6.1.2.1.2 Test Channel = MCH



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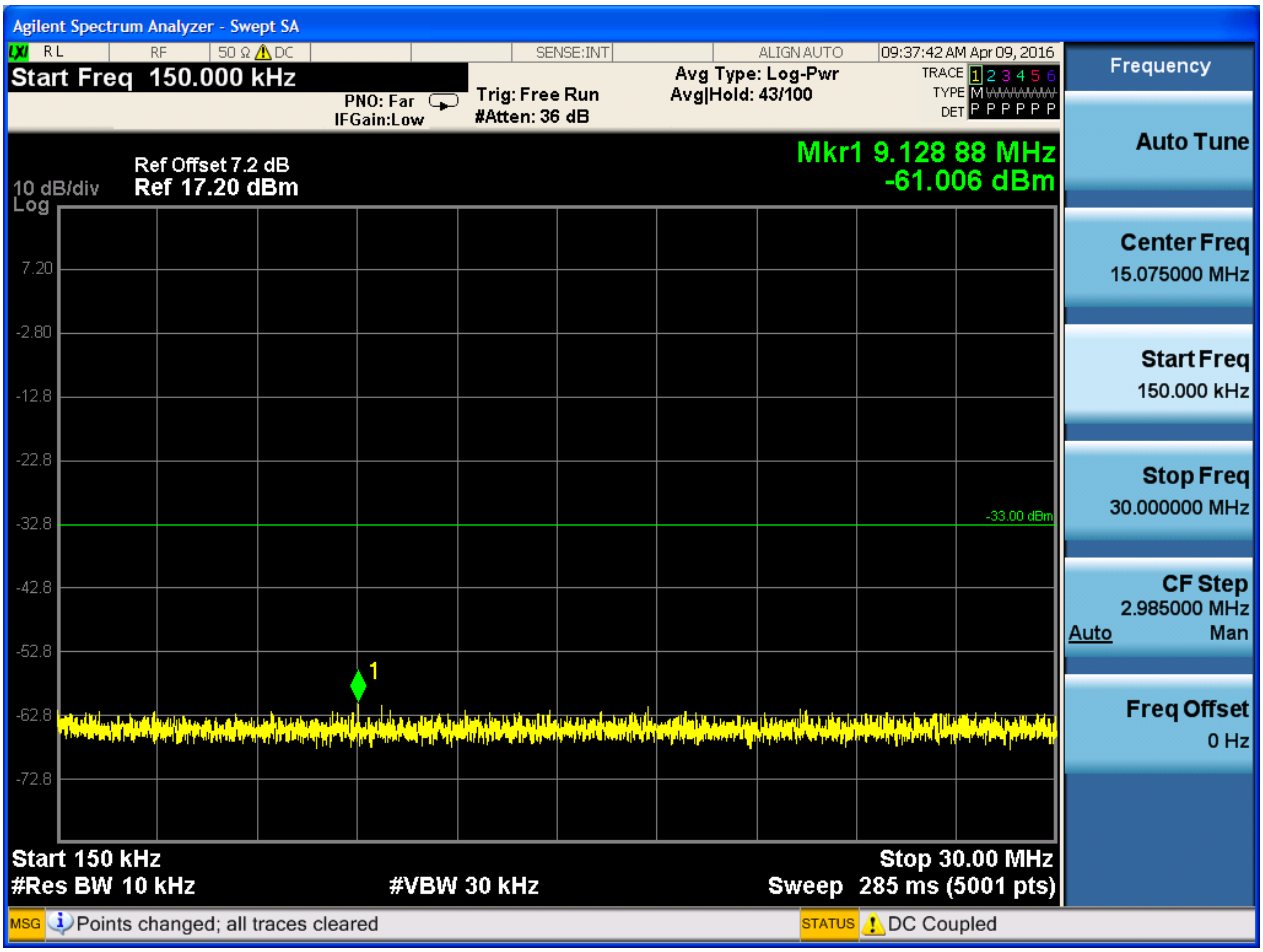

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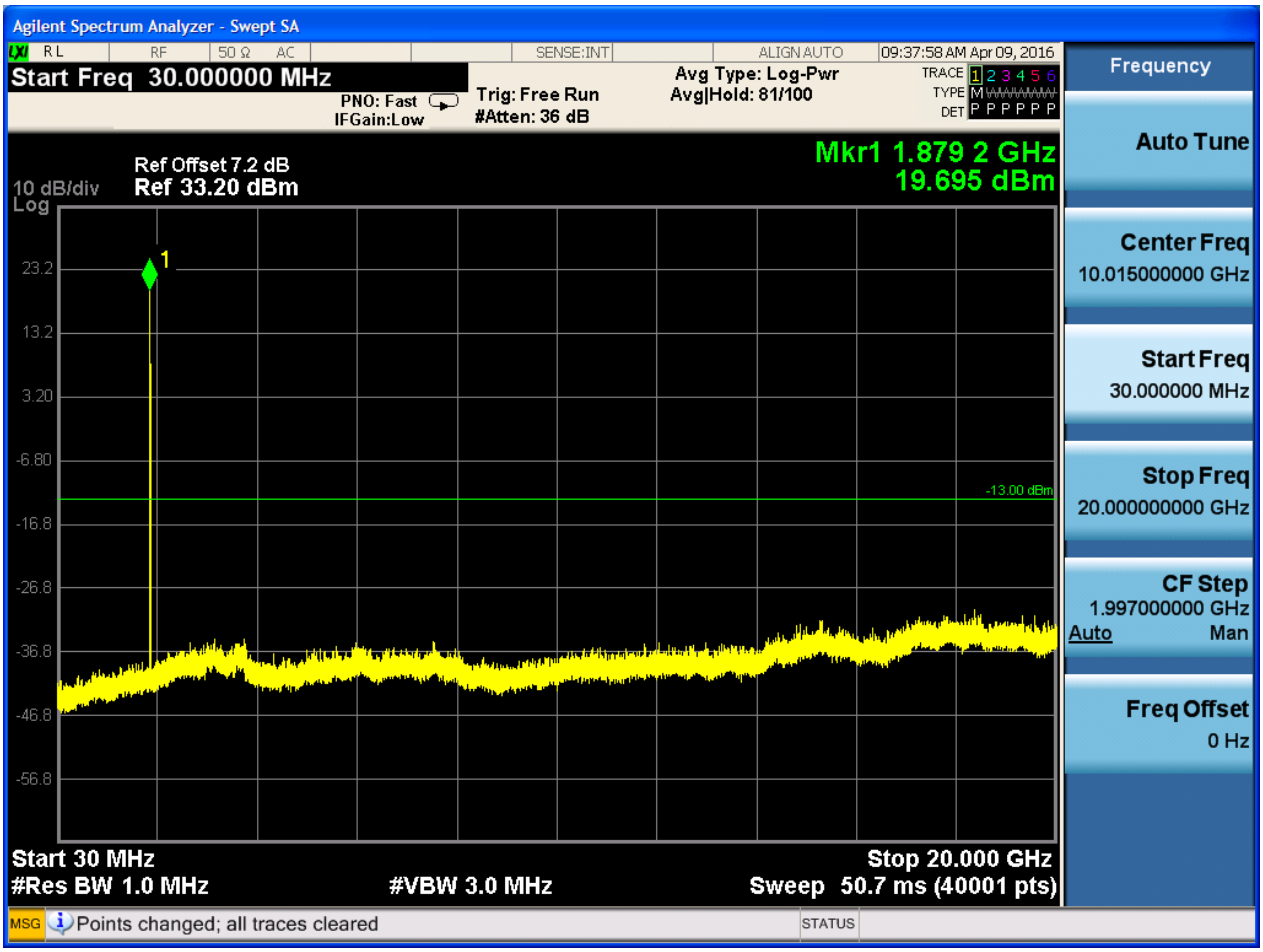

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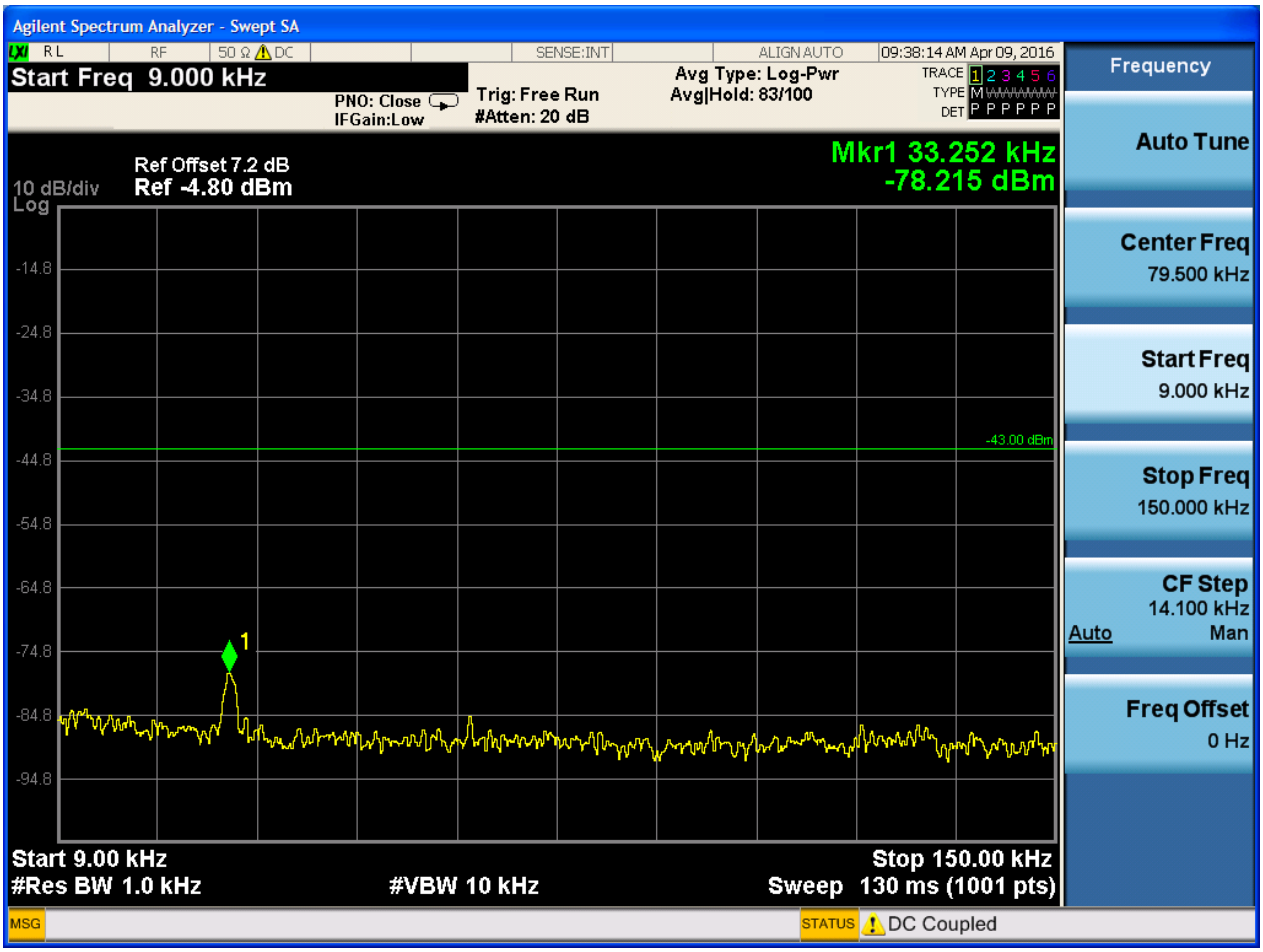
6.1.2.1.3 Test Channel = HCH



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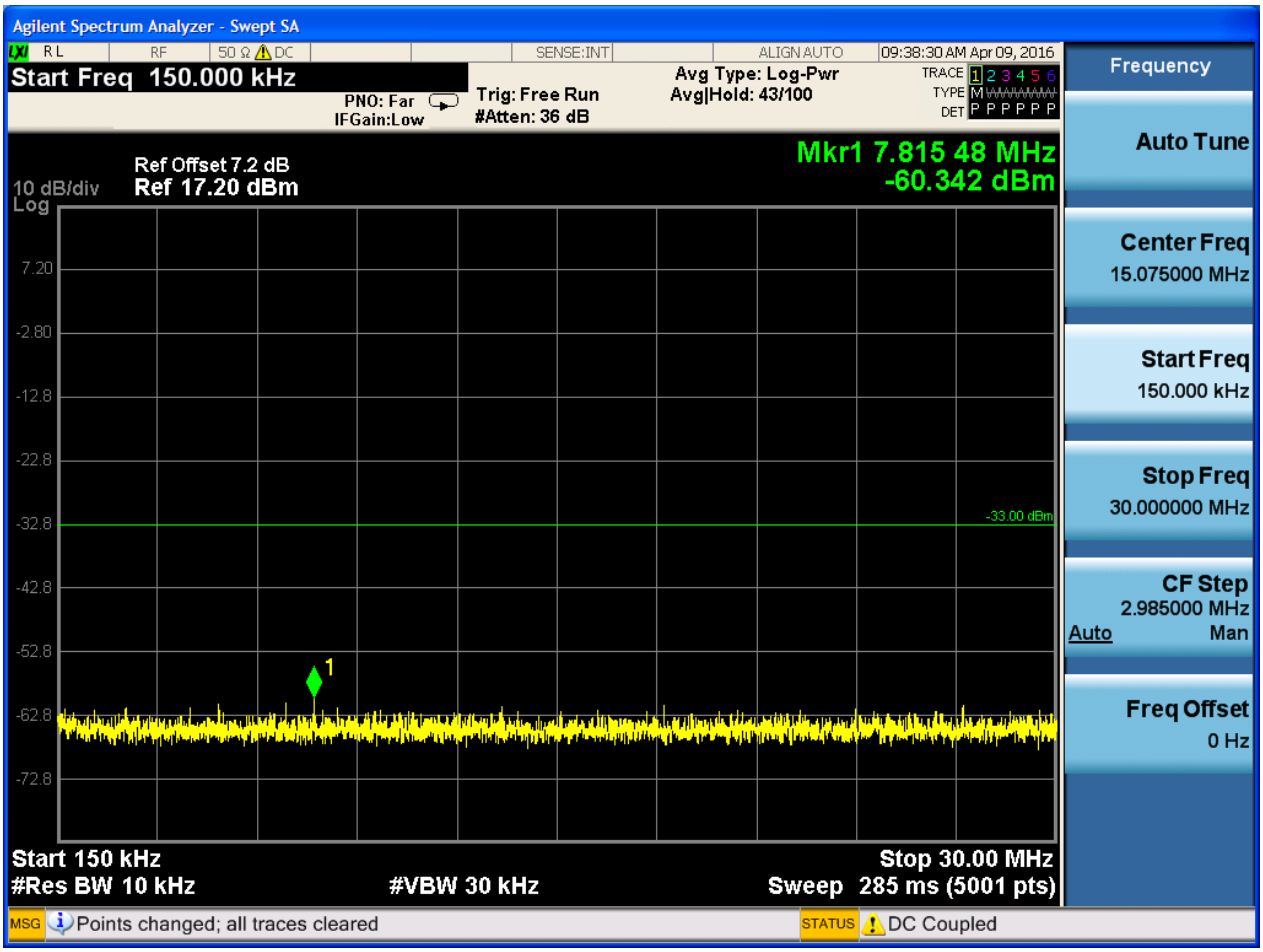

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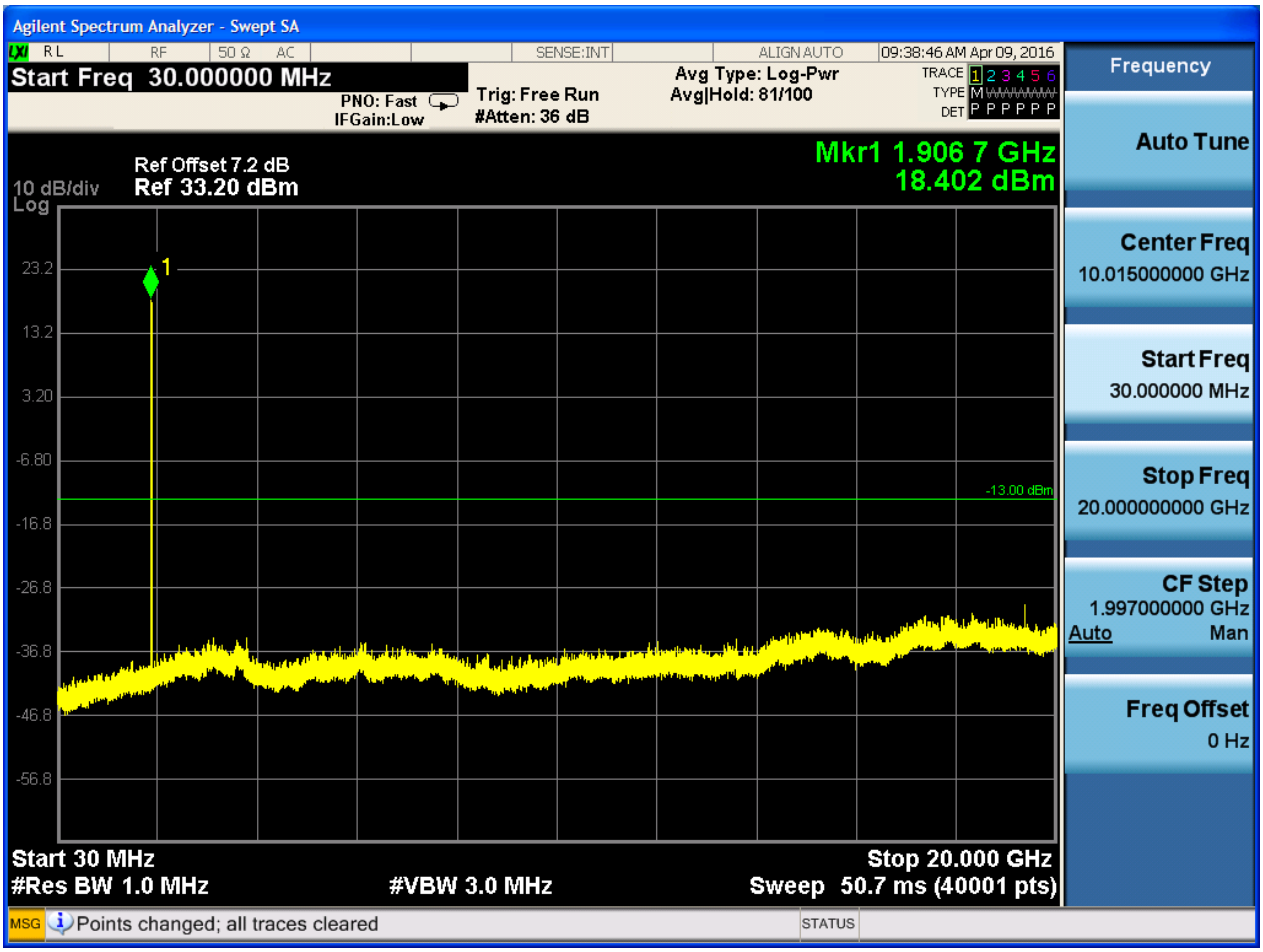

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7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes, but the data presented below is the worst case.

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

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

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

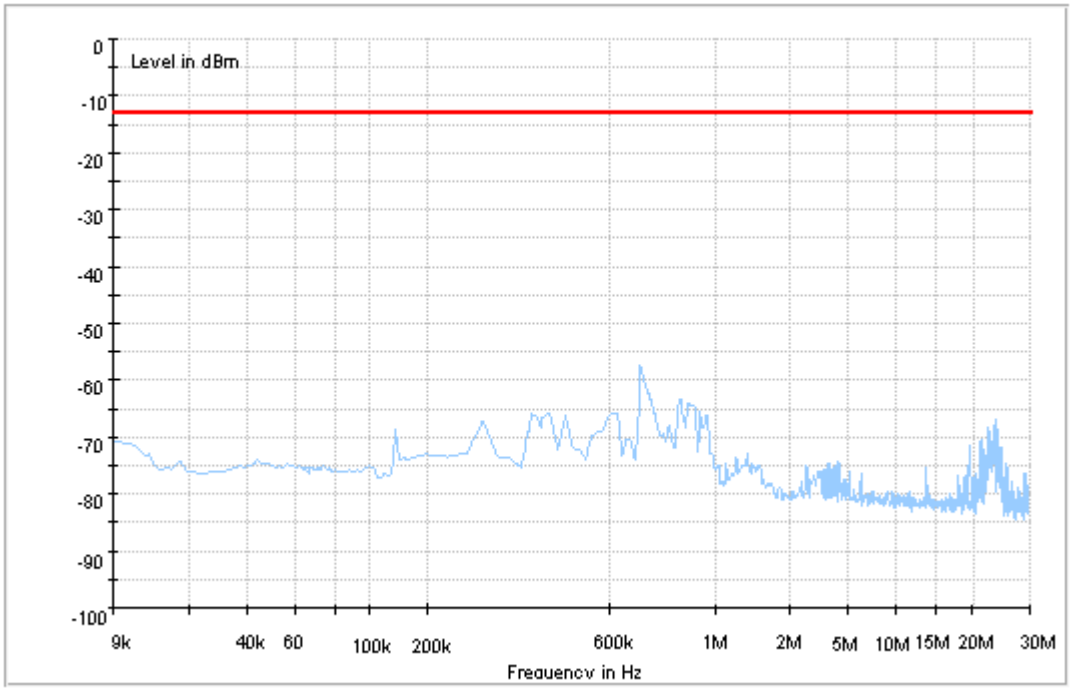
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM1900

7.1.1.1 Test Mode = GSM/TM1



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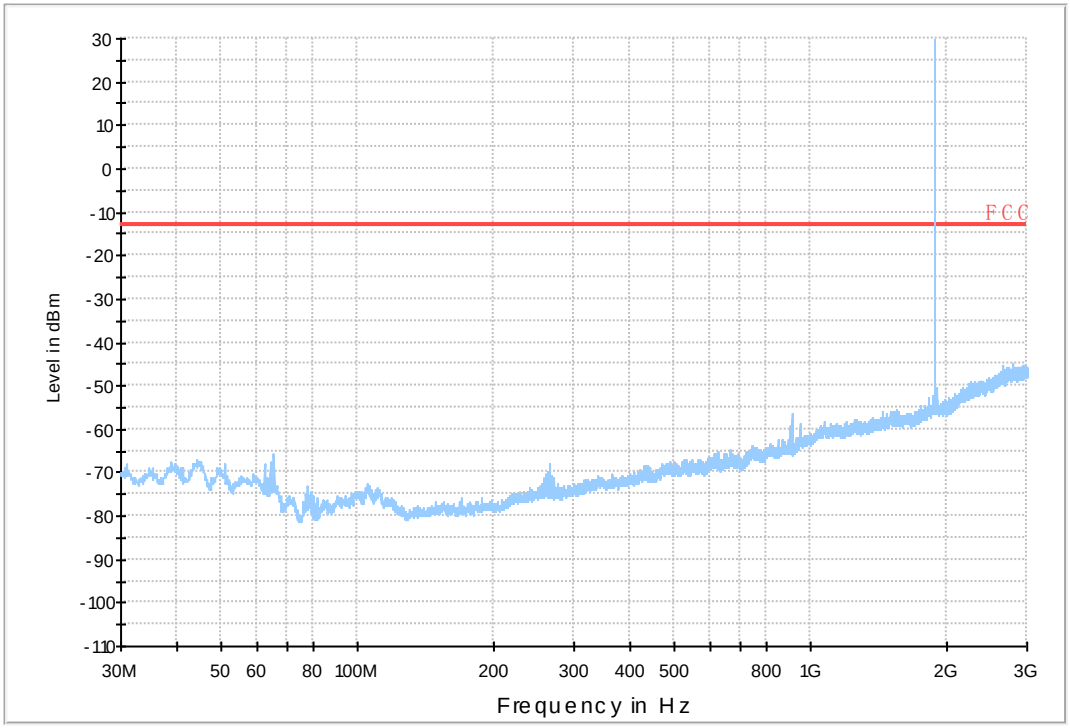
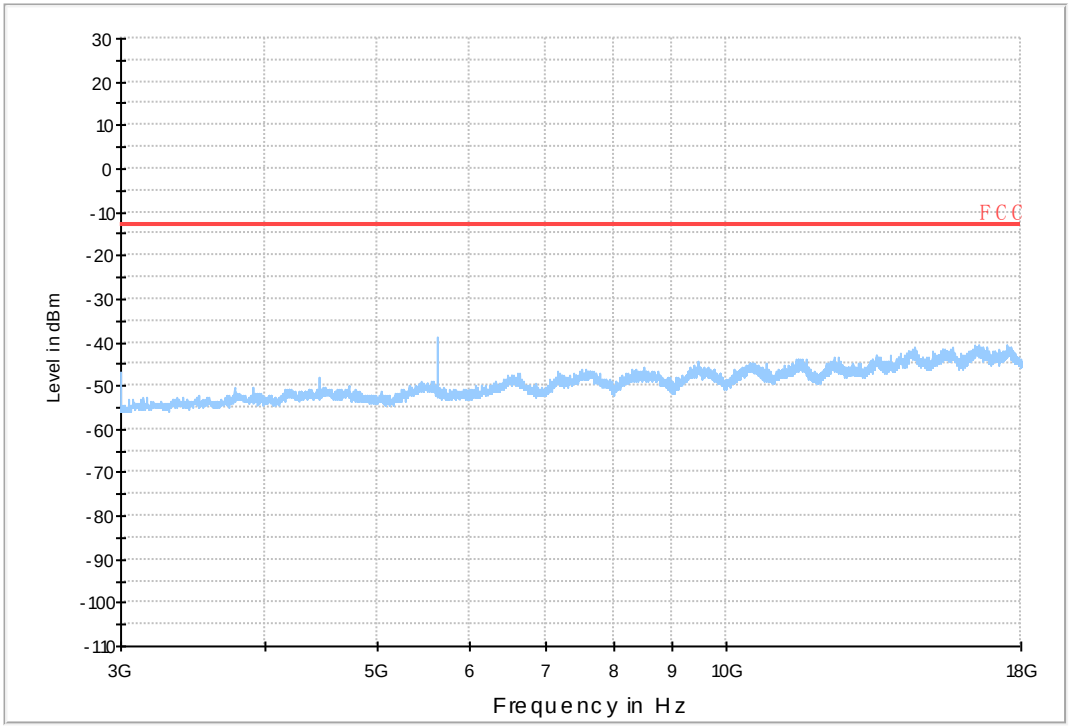
Copy of FCC PART24 GSM1900_L



Copy of FCC PART24 GSM1900_H



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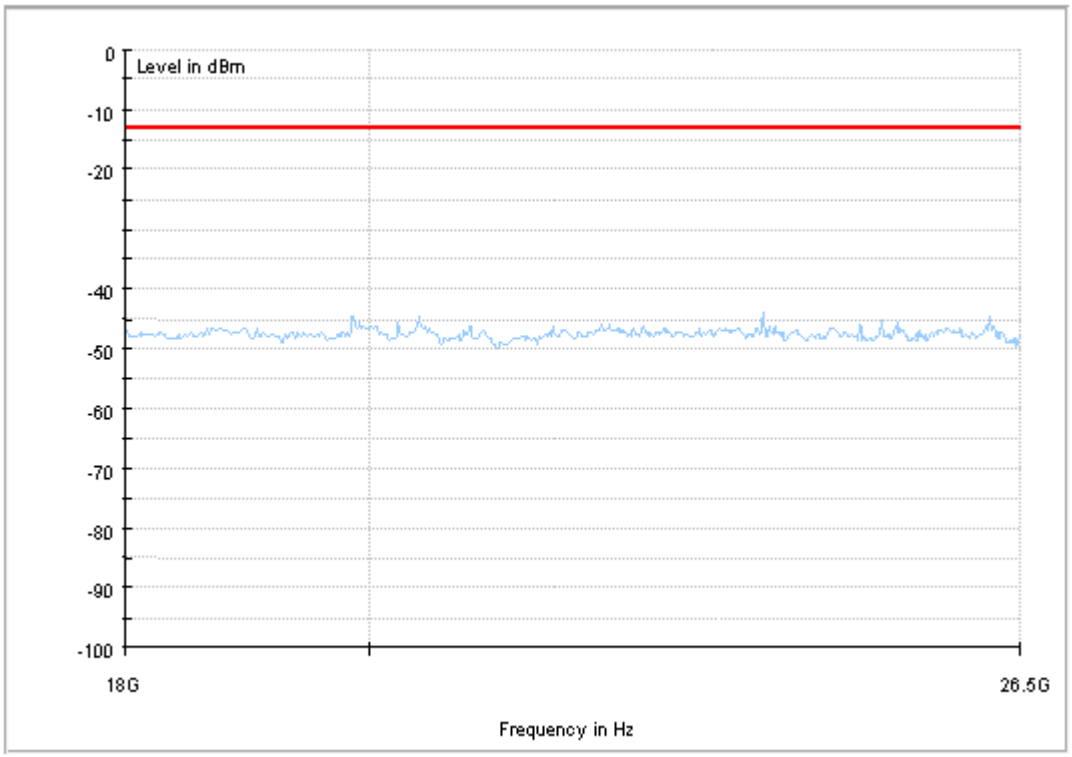

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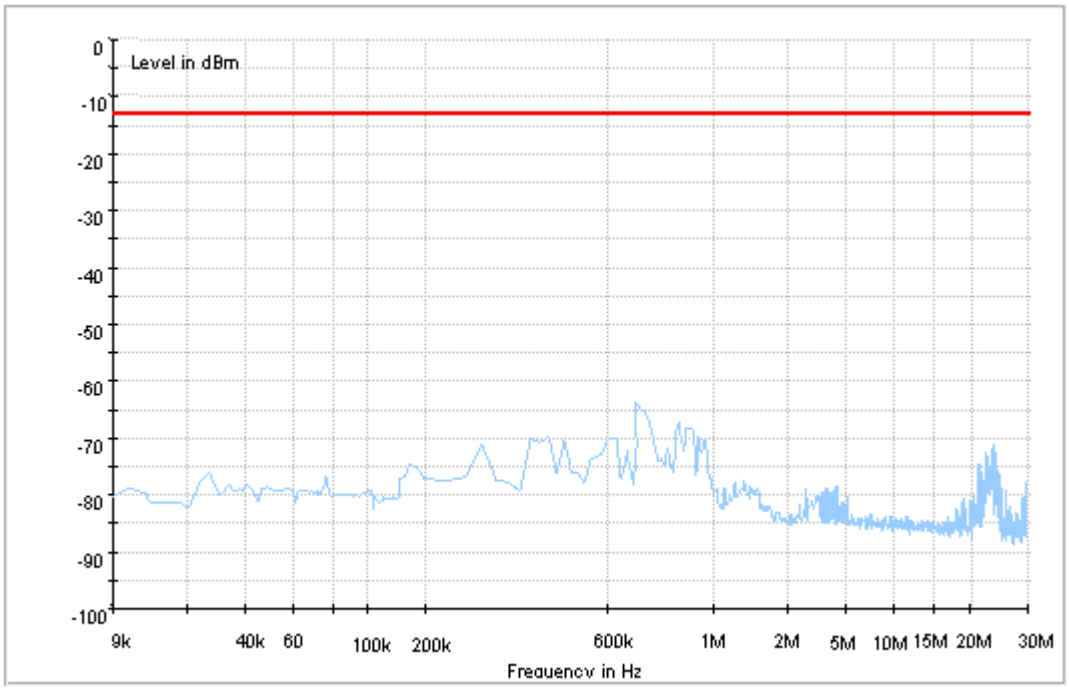
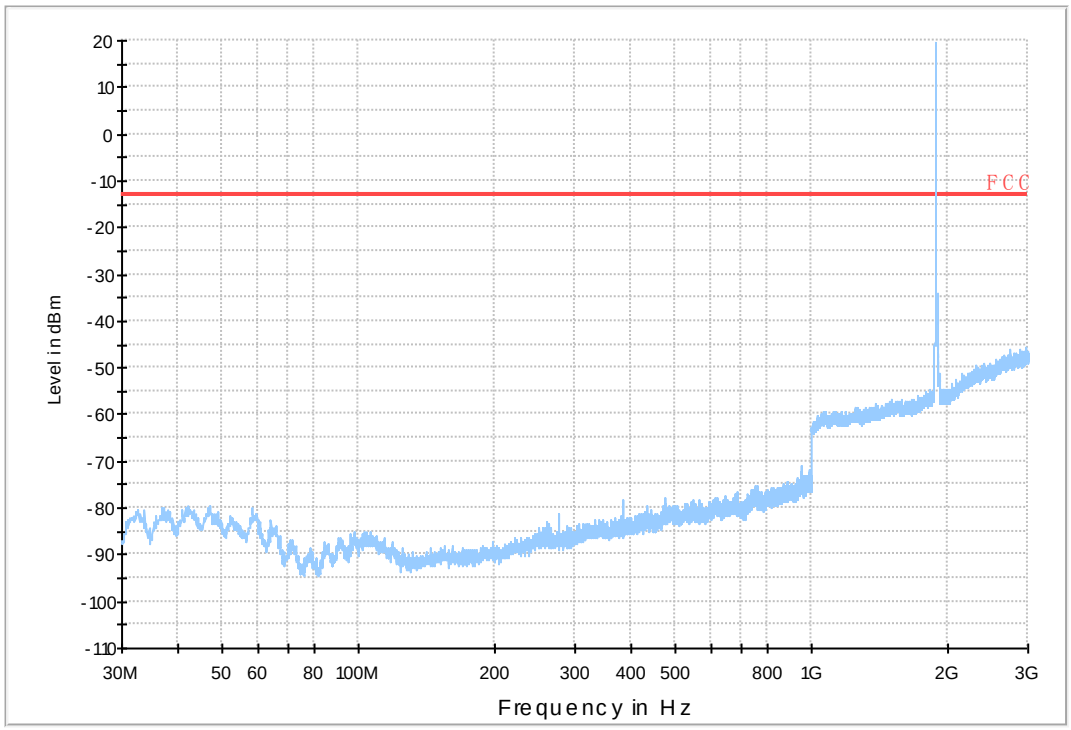
7.1.2 Test Band = WCDMA1900

7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART24 WCDMA1900_L



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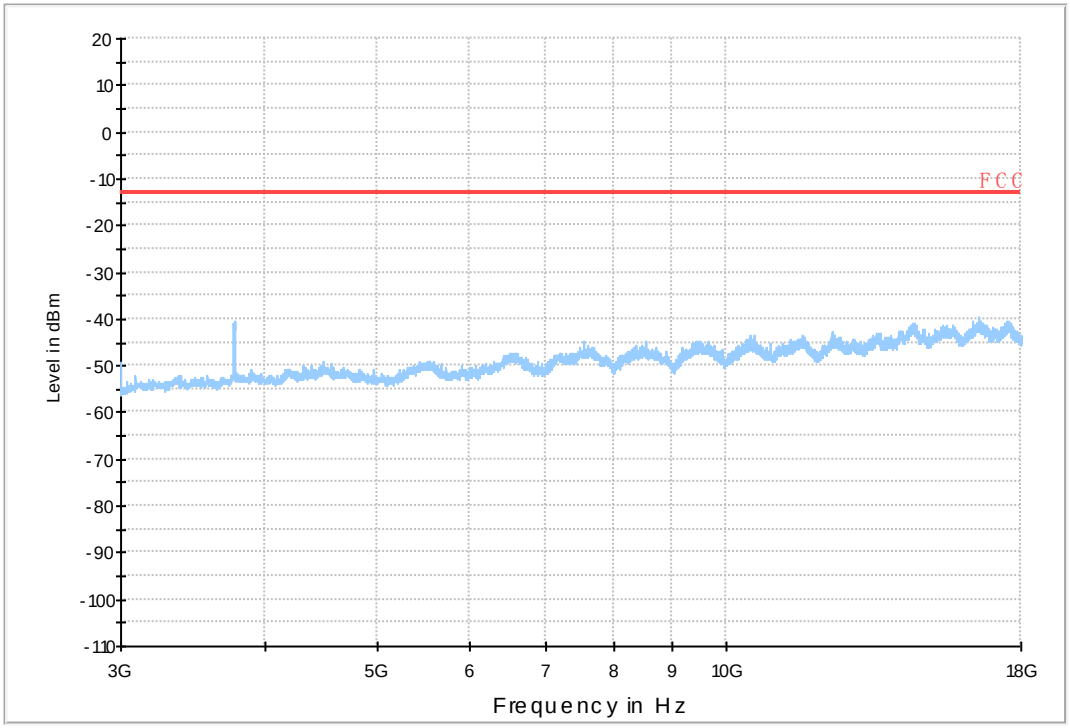
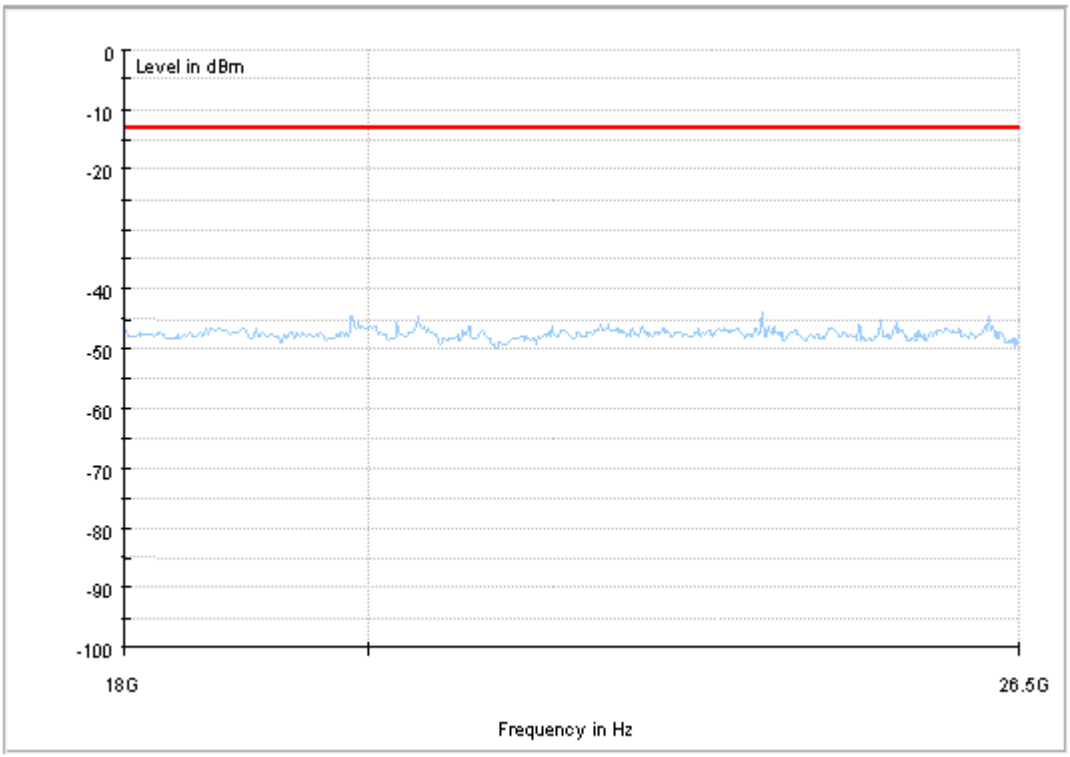
Copy of FCC PART24 WCDMA1900_H





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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
GSM1900	GSM/TM1	LCH	TN	VL	-10.98	-0.00593	PASS
				VN	-26.99	-0.01459	PASS
				VH	-25.7	-0.01389	PASS
		MCH	TN	VL	-8.59	-0.00457	PASS
				VN	-19.37	-0.0103	PASS
				VH	-23.57	-0.01254	PASS
		HCH	TN	VL	-27.83	-0.01457	PASS
				VN	-34.8	-0.01822	PASS
				VH	-39.71	-0.02079	PASS
	GSM/TM2	LCH	TN	VL	-8.07	-0.00436	PASS
				VN	-12.46	-0.00673	PASS
				VH	2.1	0.00114	PASS
		MCH	TN	VL	-0.58	-0.00031	PASS
				VN	1.42	0.00076	PASS
				VH	-0.87	-0.00046	PASS
		HCH	TN	VL	-25.41	-0.01331	PASS
				VN	-16.76	-0.00878	PASS
				VH	-18.76	-0.00982	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	4.58	0.00247	PASS
				VN	2.91	0.00157	PASS
				VH	-0.78	-0.00042	PASS
		MCH	TN	VL	5.16	0.00274	PASS
				VN	0.52	0.00028	PASS
				VH	6.16	0.00328	PASS
		HCH	TN	VL	10.04	0.00526	PASS
				VN	7.6	0.00398	PASS
				VH	14.85	0.00778	PASS

8.1.2Frequency Error vs. Temperature:

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
GSM1900	GSM/TM1	LCH	VN	-30	-16.59	-0.00897	PASS
				-20	-27.64	-0.01494	PASS
				-10	-23.12	-0.0125	PASS
				0	-5.88	-0.00318	PASS
				10	-26.73	-0.01445	PASS
				20	-23.89	-0.01291	PASS
				30	-26.15	-0.01413	PASS
				40	-28.35	-0.01532	PASS
				50	-16.01	-0.00865	PASS
		MCH	VN	-30	-13.3	-0.00707	PASS
				-20	-7.88	-0.00419	PASS
				-10	-22.92	-0.01219	PASS
				0	-17.24	-0.00917	PASS
				10	-25.57	-0.0136	PASS
				20	-18.4	-0.00979	PASS
				30	-22.79	-0.01212	PASS
				40	-20.15	-0.01072	PASS
				50	-23.37	-0.01243	PASS
		HCH	VN	-30	-31.38	-0.01643	PASS
				-20	-45.78	-0.02397	PASS
				-10	-23.57	-0.01234	PASS
				0	-23.25	-0.01217	PASS
				10	-39.97	-0.02093	PASS
				20	-34.8	-0.01822	PASS
				30	-44.75	-0.02343	PASS
				40	-34.87	-0.01826	PASS
				50	-33.84	-0.01772	PASS
	GSM/TM2	LCH	VN	-30	0.87	0.00047	PASS
				-20	4.13	0.00223	PASS
				-10	-8.65	-0.00468	PASS
				0	-5.88	-0.00318	PASS
				10	-0.97	-0.00052	PASS
				20	0.48	0.00026	PASS
				30	-1.52	-0.00082	PASS
				40	-6.33	-0.00342	PASS
				50	-11.59	-0.00626	PASS
		MCH	VN	-30	2.78	0.00148	PASS
				-20	-2.49	-0.00132	PASS
				-10	5.75	0.00306	PASS
				0	-3.33	-0.00177	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-14.95	-0.00795	PASS
				20	-10.72	-0.0057	PASS
				30	-7.65	-0.00407	PASS
				40	-7.88	-0.00419	PASS
				50	-8.3	-0.00441	PASS
		HCH	VN	-30	-11.17	-0.00585	PASS
				-20	-10.82	-0.00567	PASS
				-10	-14.3	-0.00749	PASS
				0	-21.57	-0.01129	PASS
				10	-17.63	-0.00923	PASS
				20	-14.37	-0.00752	PASS
				30	-14.82	-0.00776	PASS
				40	-19.31	-0.01011	PASS
				50	-9.07	-0.00475	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	6.29	0.0034	PASS
				-20	10.09	0.00545	PASS
				-10	11.28	0.00609	PASS
				0	7.83	0.00423	PASS
				10	-4.55	-0.00246	PASS
				20	12.28	0.00663	PASS
				30	9.2	0.00497	PASS
				40	6.35	0.00343	PASS
				50	6.04	0.00326	PASS
		MCH	VN	-30	12.27	0.00653	PASS
				-20	0.85	0.00045	PASS
				-10	10.57	0.00562	PASS
				0	8.73	0.00464	PASS
				10	8.67	0.00461	PASS
				20	6.85	0.00364	PASS
				30	5.86	0.00312	PASS
				40	12.41	0.0066	PASS
				50	16.91	0.00899	PASS
		HCH	VN	-30	1.85	0.00097	PASS
				-20	13.57	0.00711	PASS
				-10	7.52	0.00394	PASS
				0	2.56	0.00134	PASS
				10	3.74	0.00196	PASS
				20	3.02	0.00158	PASS
				30	-4.58	-0.0024	PASS
				40	14.27	0.00748	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	8.93	0.00468	PASS

END

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