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	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.35	27.2	38.5	PASS
		MCH	32.59	27.44	38.5	PASS
		HCH	32.71	27.56	38.5	PASS
	GSM/TM2	LCH	26.78	21.63	38.5	PASS
		MCH	26.96	21.81	38.5	PASS
		HCH	26.89	21.74	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.8	30.3	33	PASS
		MCH	29.55	30.05	33	PASS
		HCH	29.4	29.9	33	PASS
	GSM/TM2	LCH	25.25	25.75	33	PASS
		MCH	25.23	25.73	33	PASS
		HCH	25.19	25.69	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
GSM850	GSM/TM1	LCH	0.31	13	PASS
		MCH	0.22	13	PASS
		HCH	0.26	13	PASS
	GSM/TM2	LCH	3.07	13	PASS
		MCH	3.09	13	PASS
		HCH	3.14	13	PASS
GSM1900	GSM/TM1	LCH	0.37	13	PASS
		MCH	0.31	13	PASS
		HCH	0.27	13	PASS
	GSM/TM2	LCH	2.72	13	PASS
		MCH	2.68	13	PASS
		HCH	2.71	13	PASS

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3Appendix_C: Modulation Characteristics

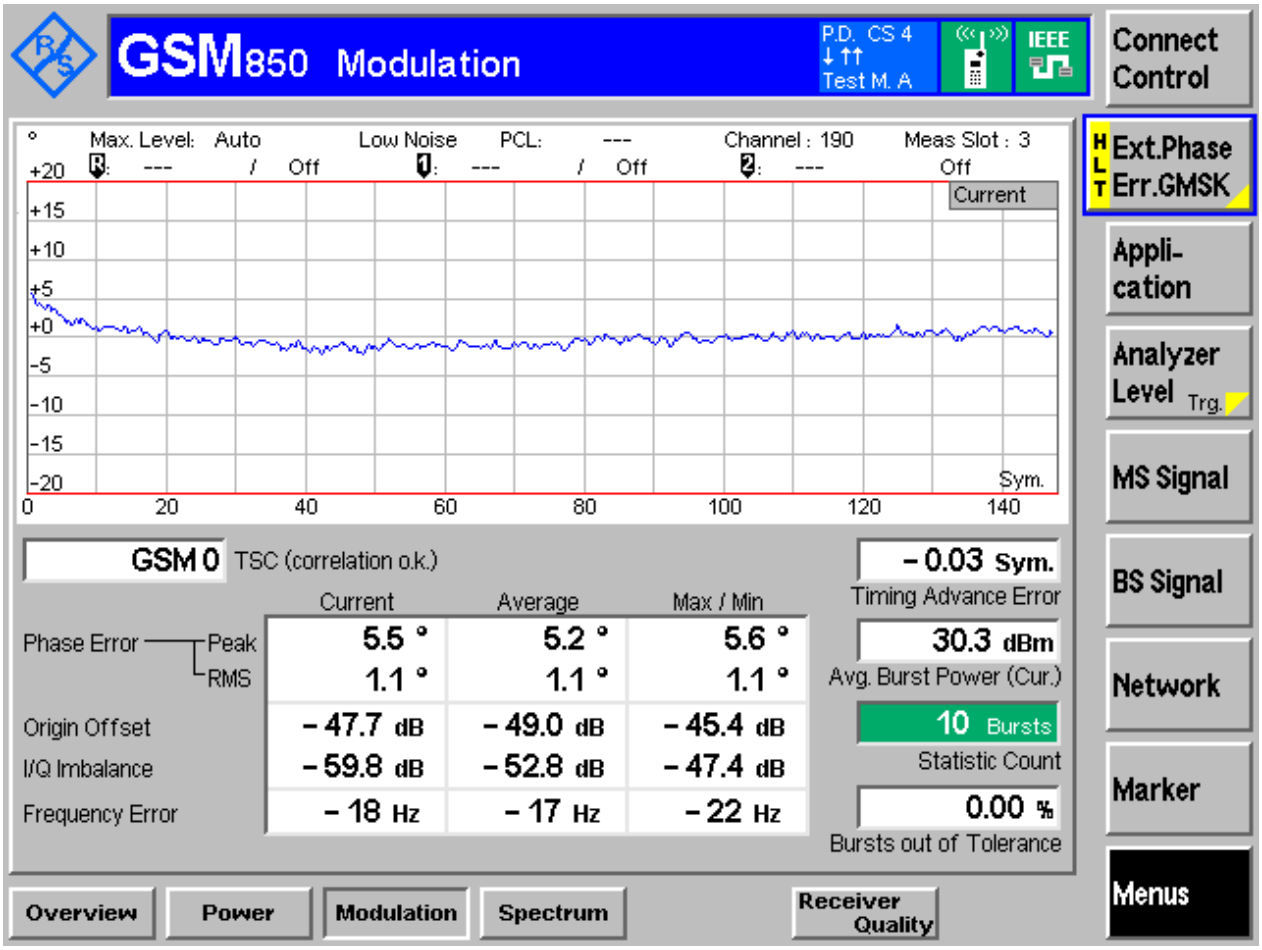
Part I - Test Plots

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



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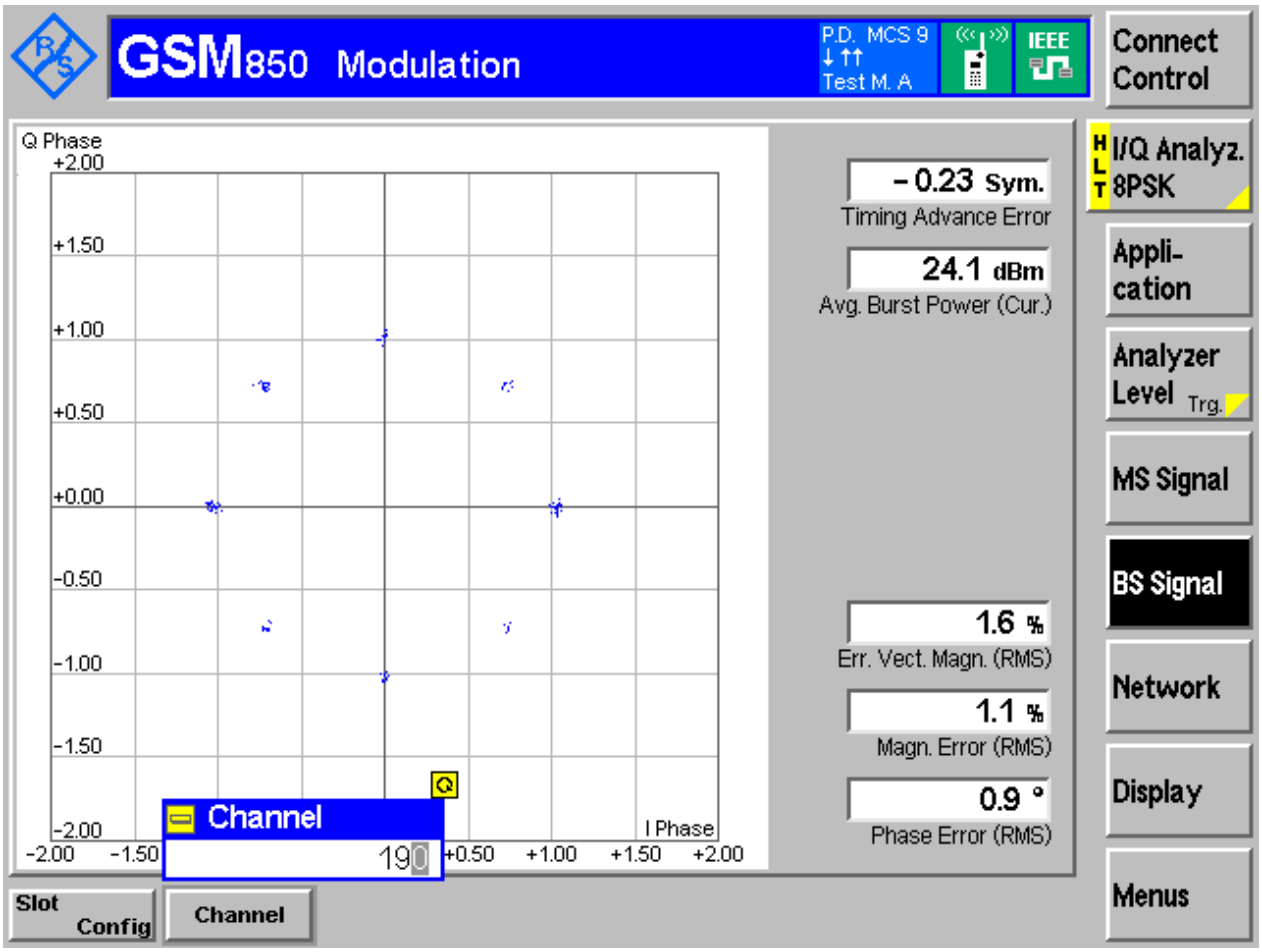
3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = MCH



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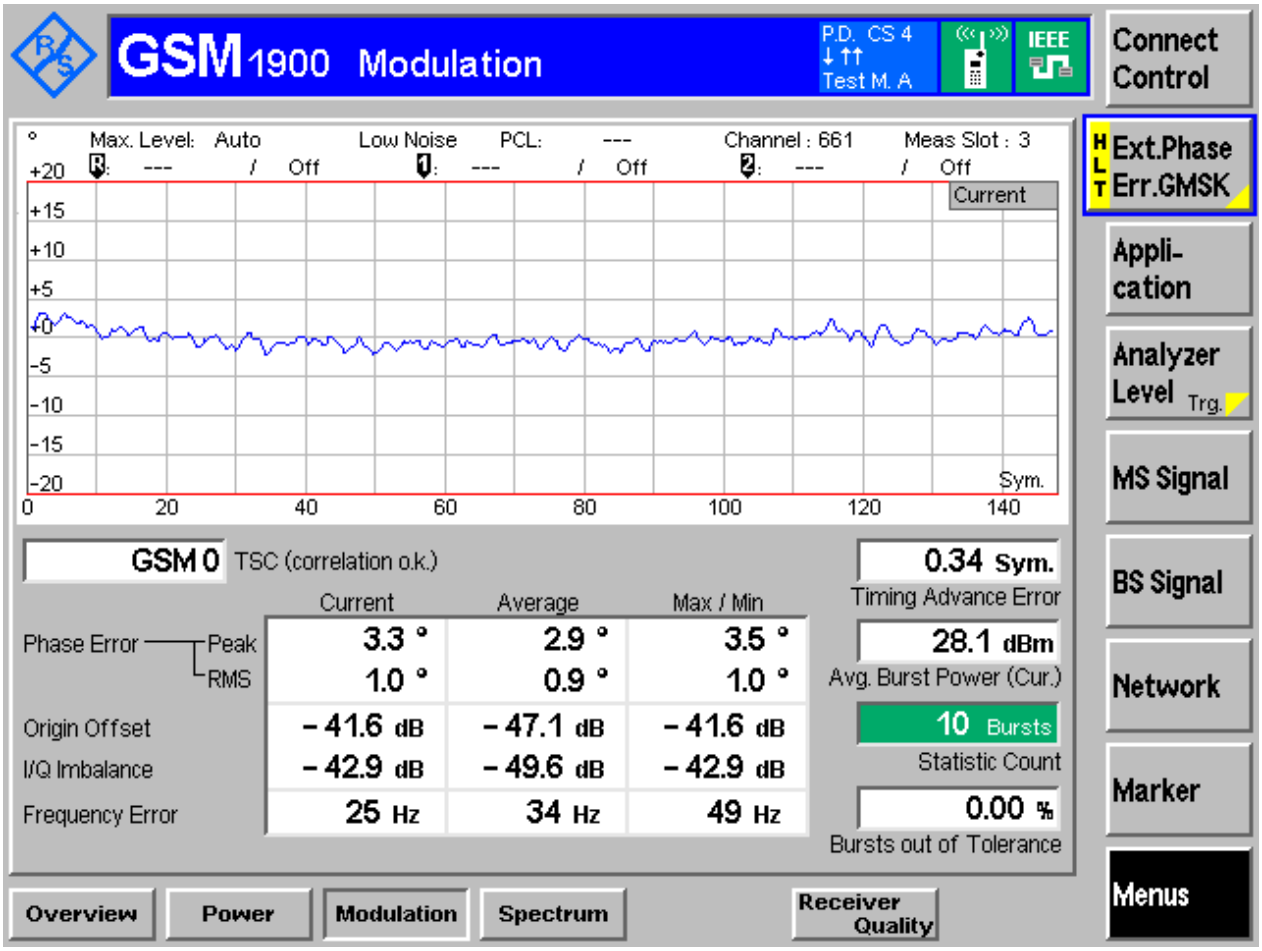
3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



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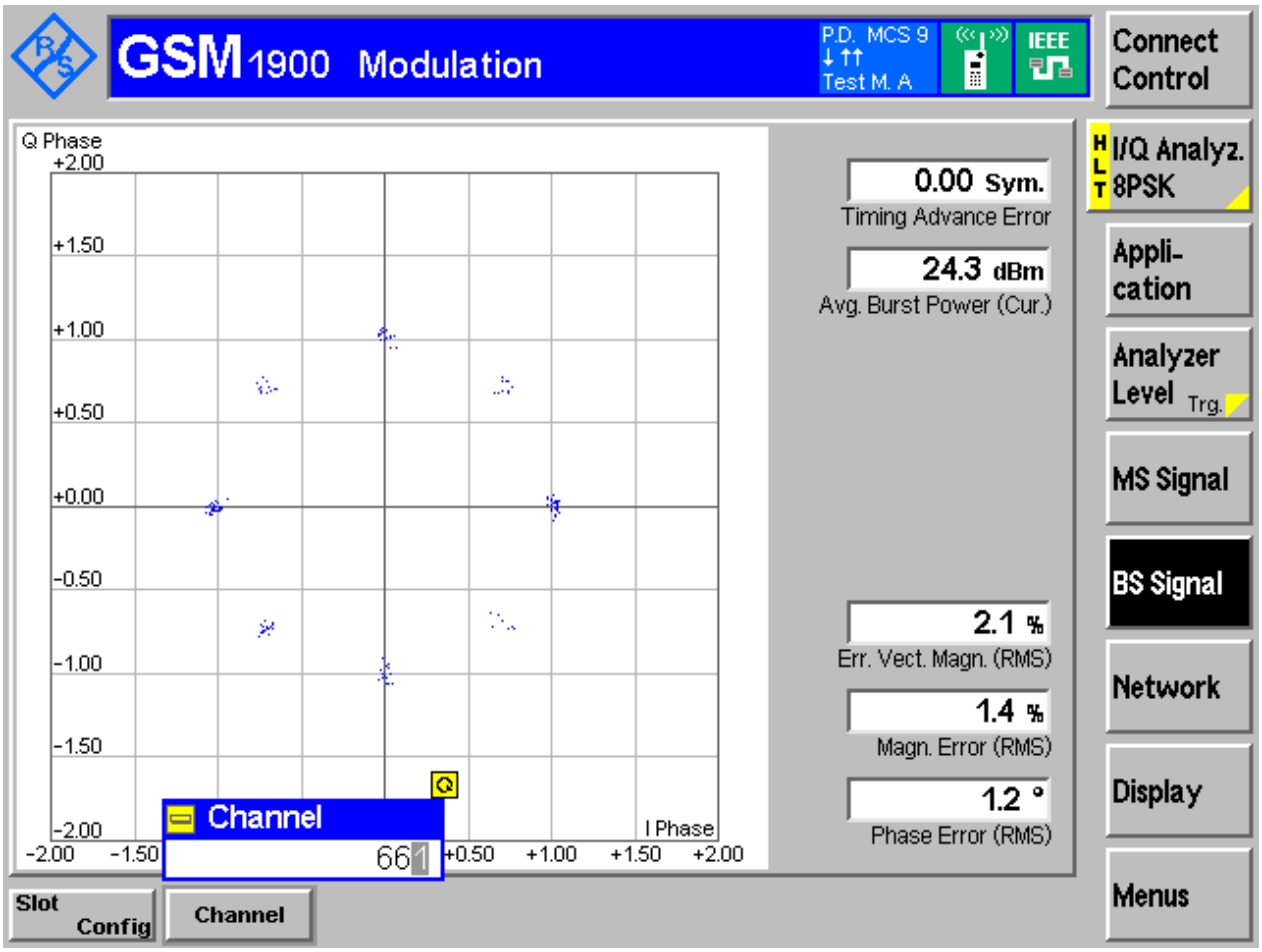
3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 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
GSM850	GSM/TM1	LCH	243.30	313.09	Pass
		MCH	242.54	310.62	Pass
		HCH	245.47	313.17	Pass
	GSM/TM2	LCH	239.96	308.93	Pass
		MCH	239.92	302.51	Pass
		HCH	244.06	300.32	Pass
GSM1900	GSM/TM1	LCH	243.42	307.94	Pass
		MCH	244.77	319.33	Pass
		HCH	244.23	317.79	Pass
	GSM/TM2	LCH	246.43	305.50	Pass
		MCH	250.99	313.52	Pass
		HCH	249.74	315.09	Pass

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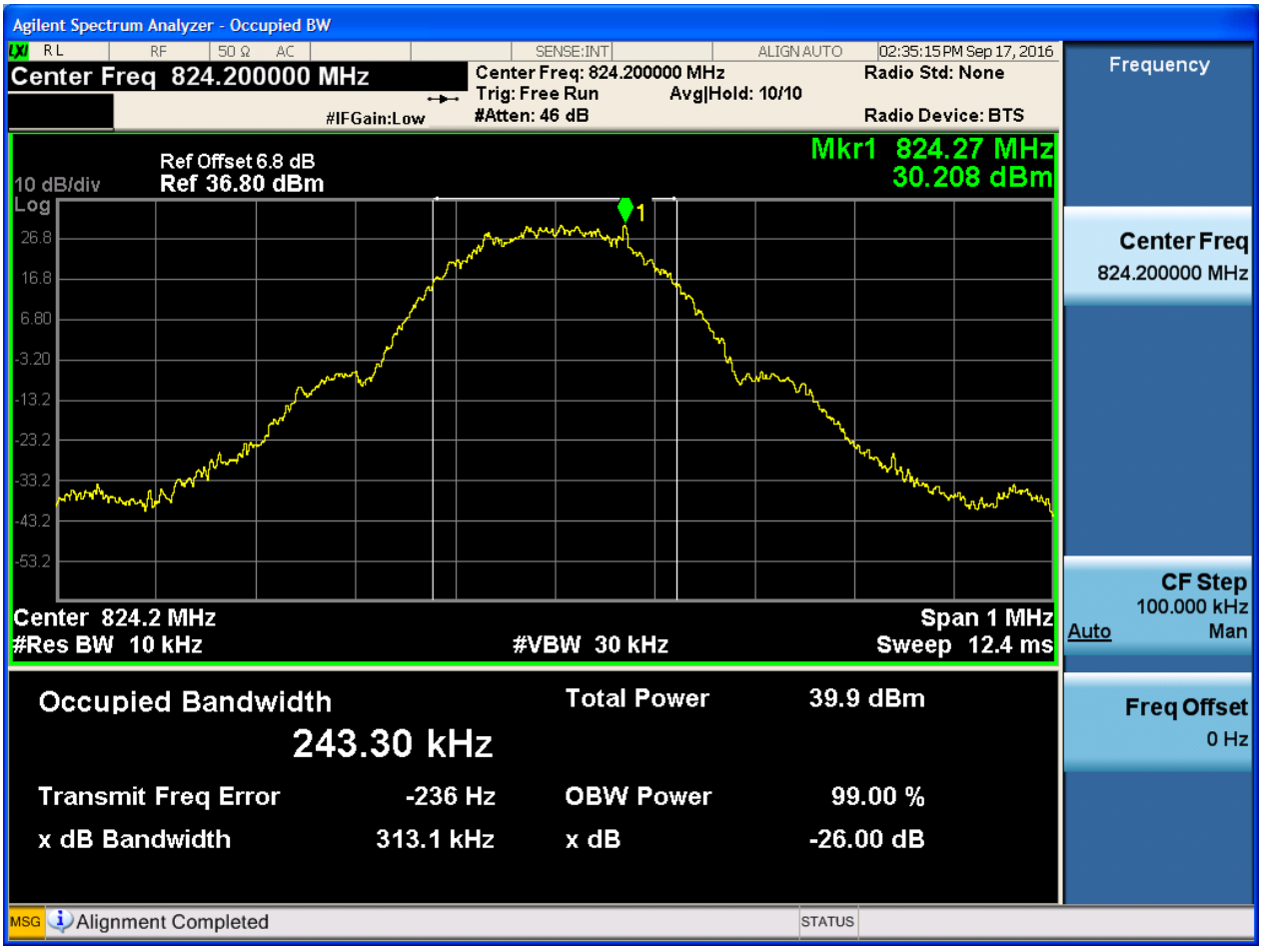
Part II - Test Plots

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



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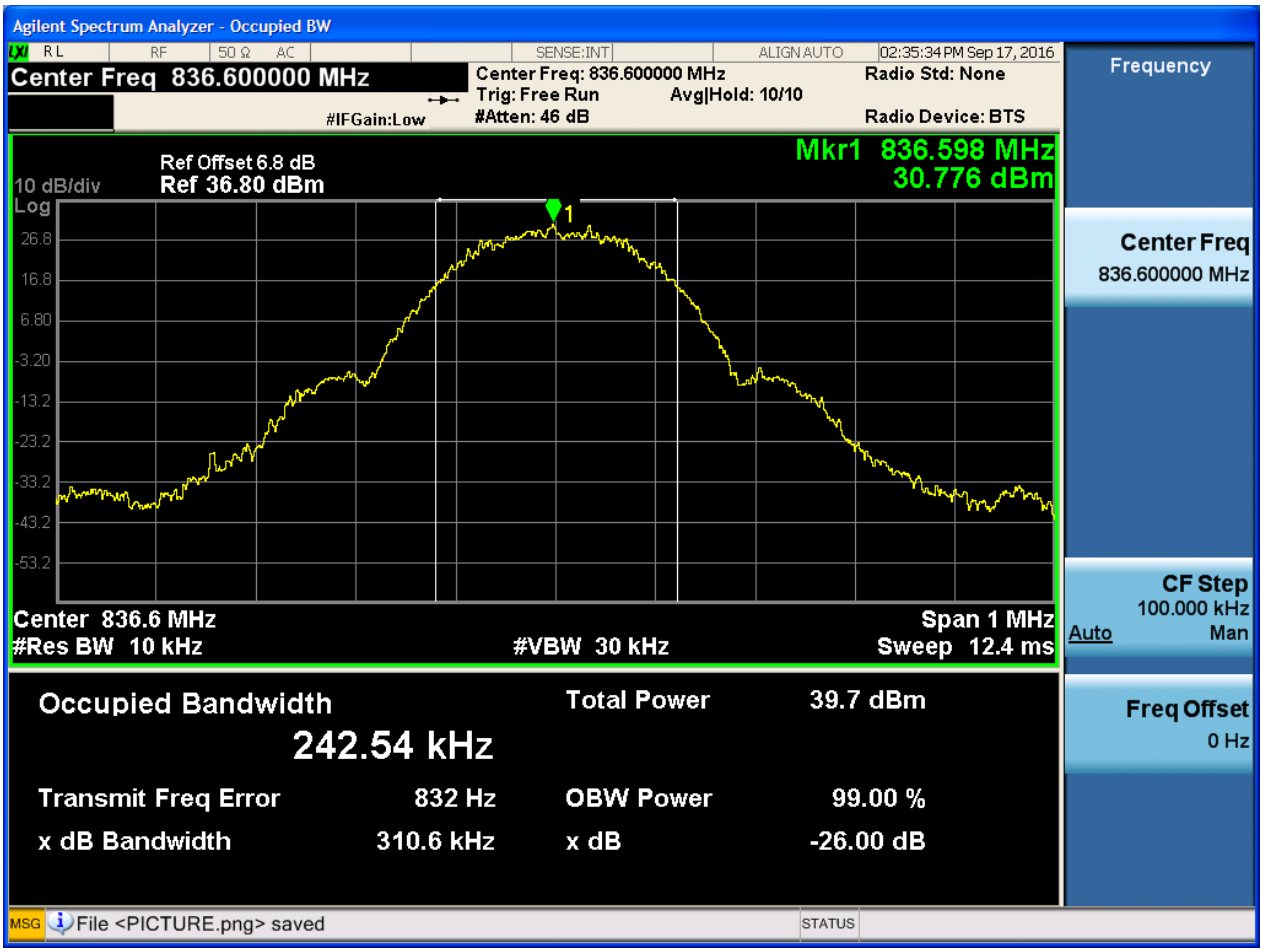
4.1.1.1.2 Test Channel = MCH



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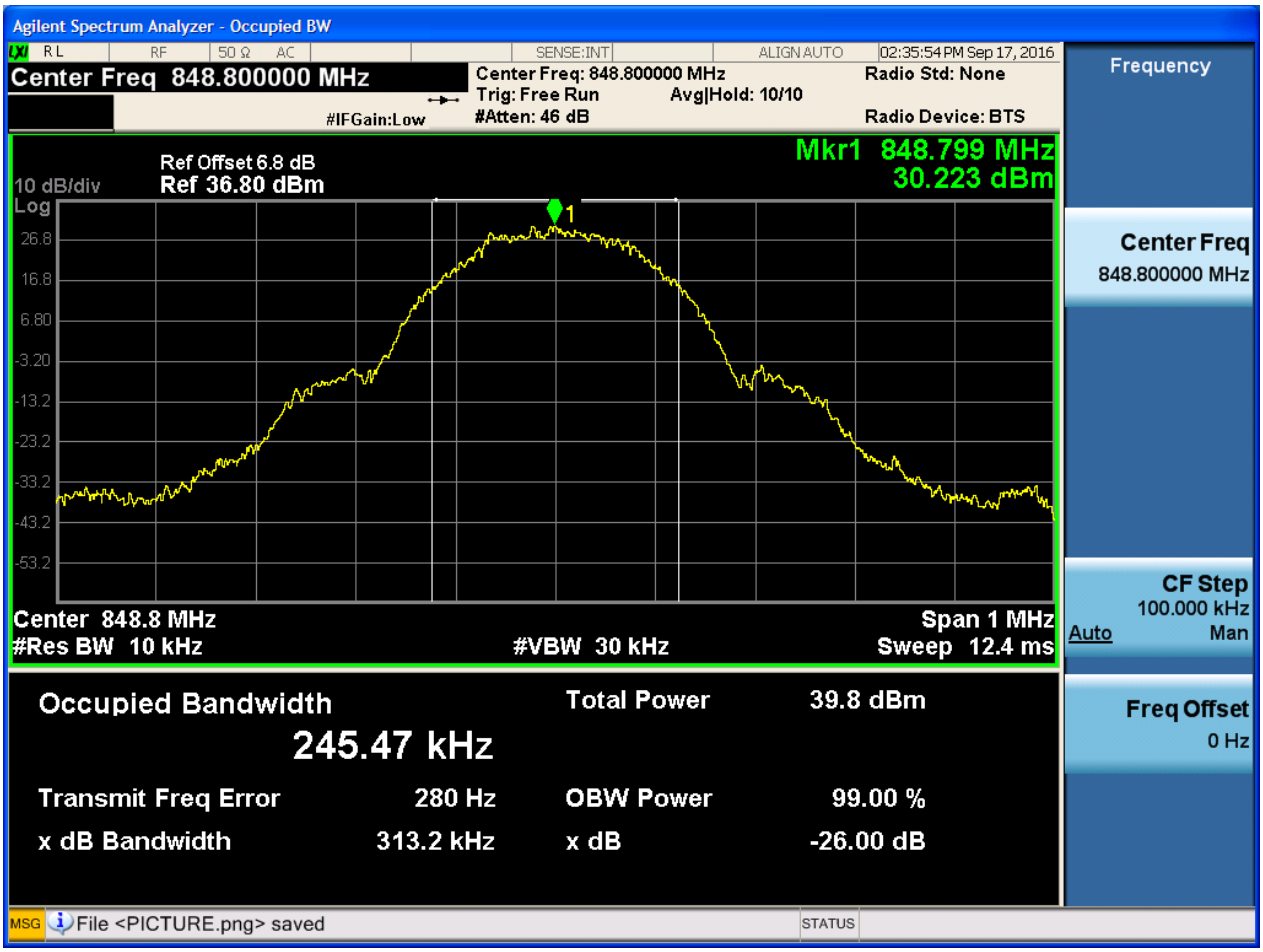
4.1.1.1.3 Test Channel = HCH



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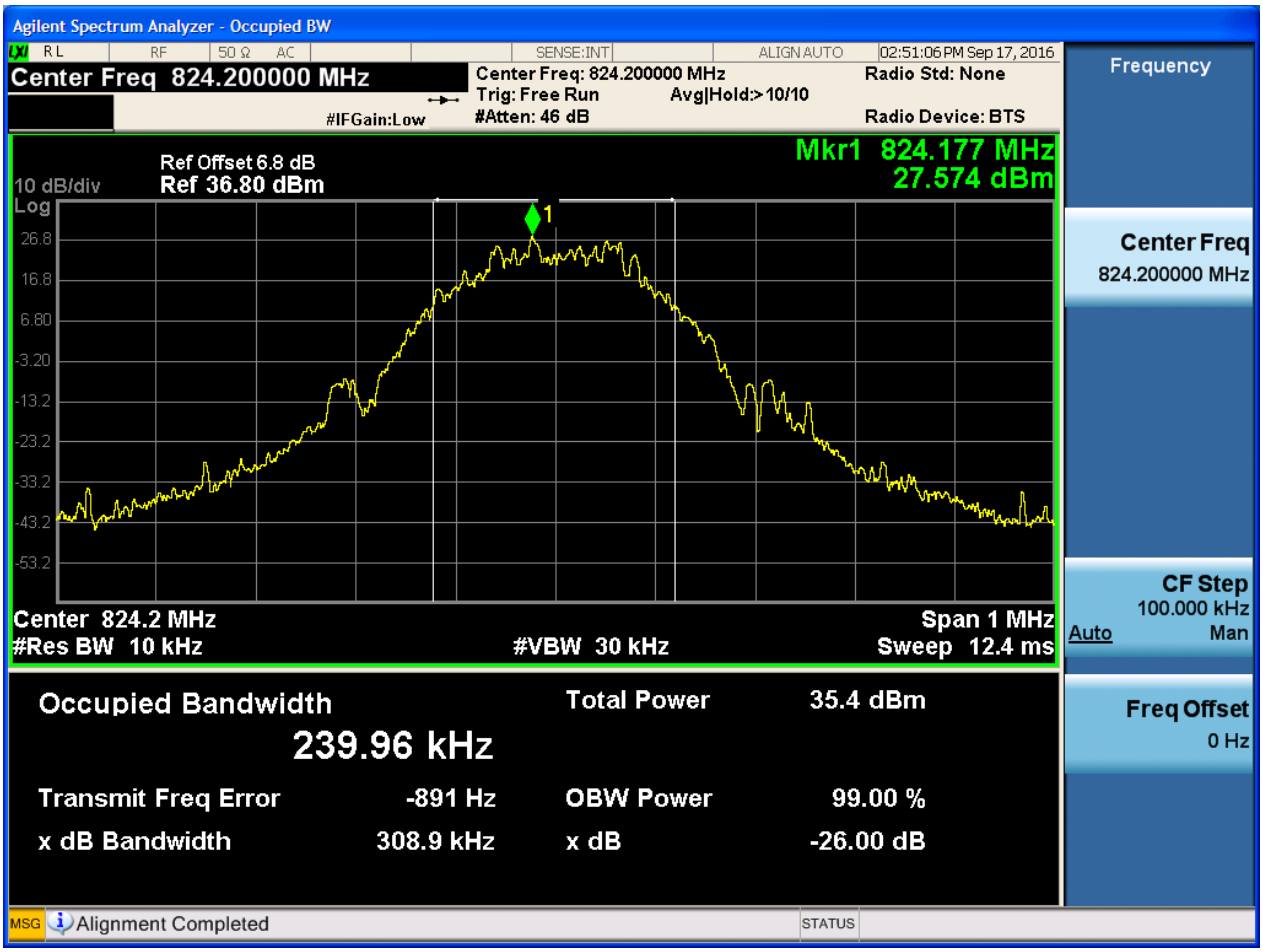
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



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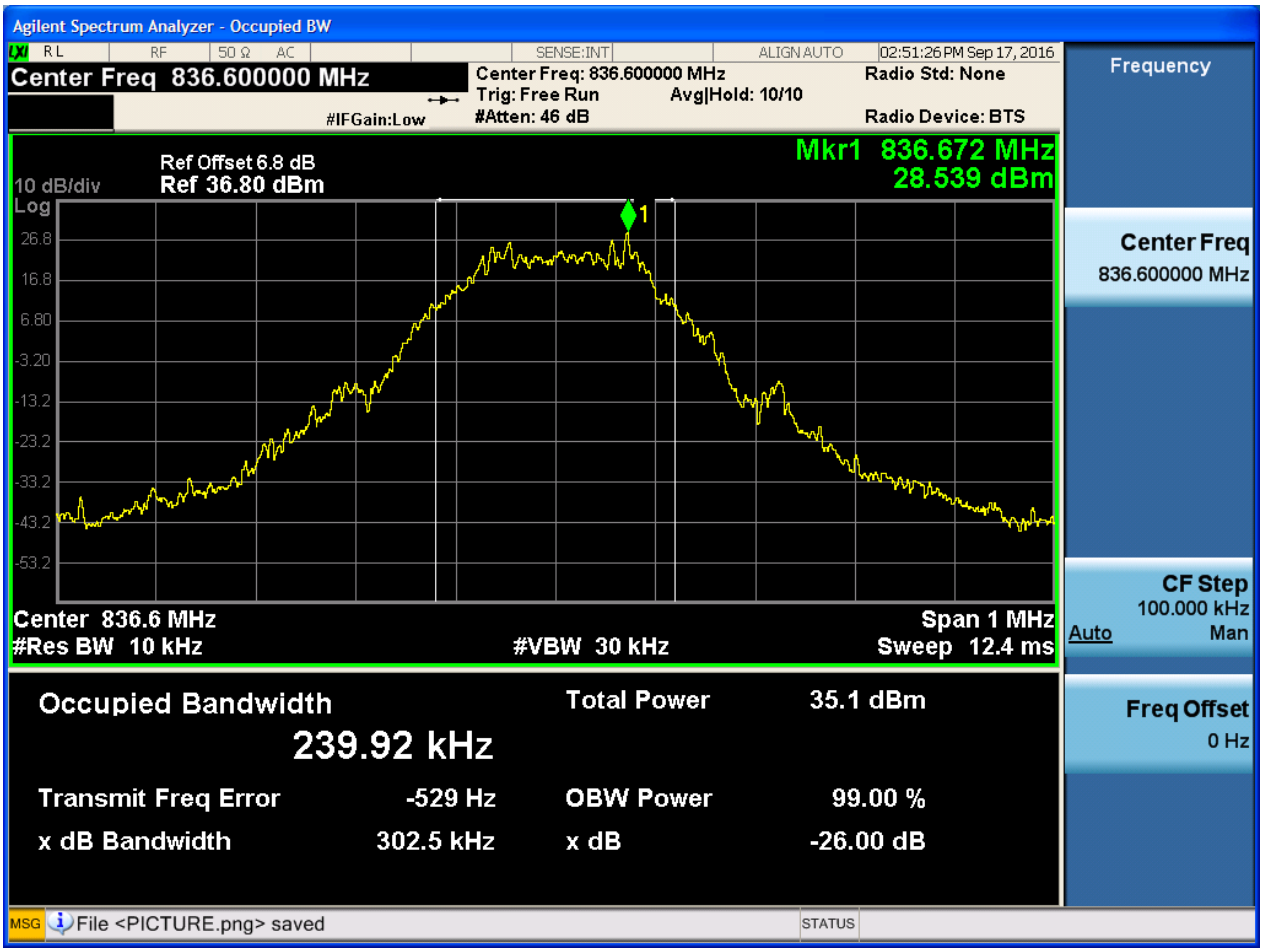
4.1.1.2.2 Test Channel = MCH



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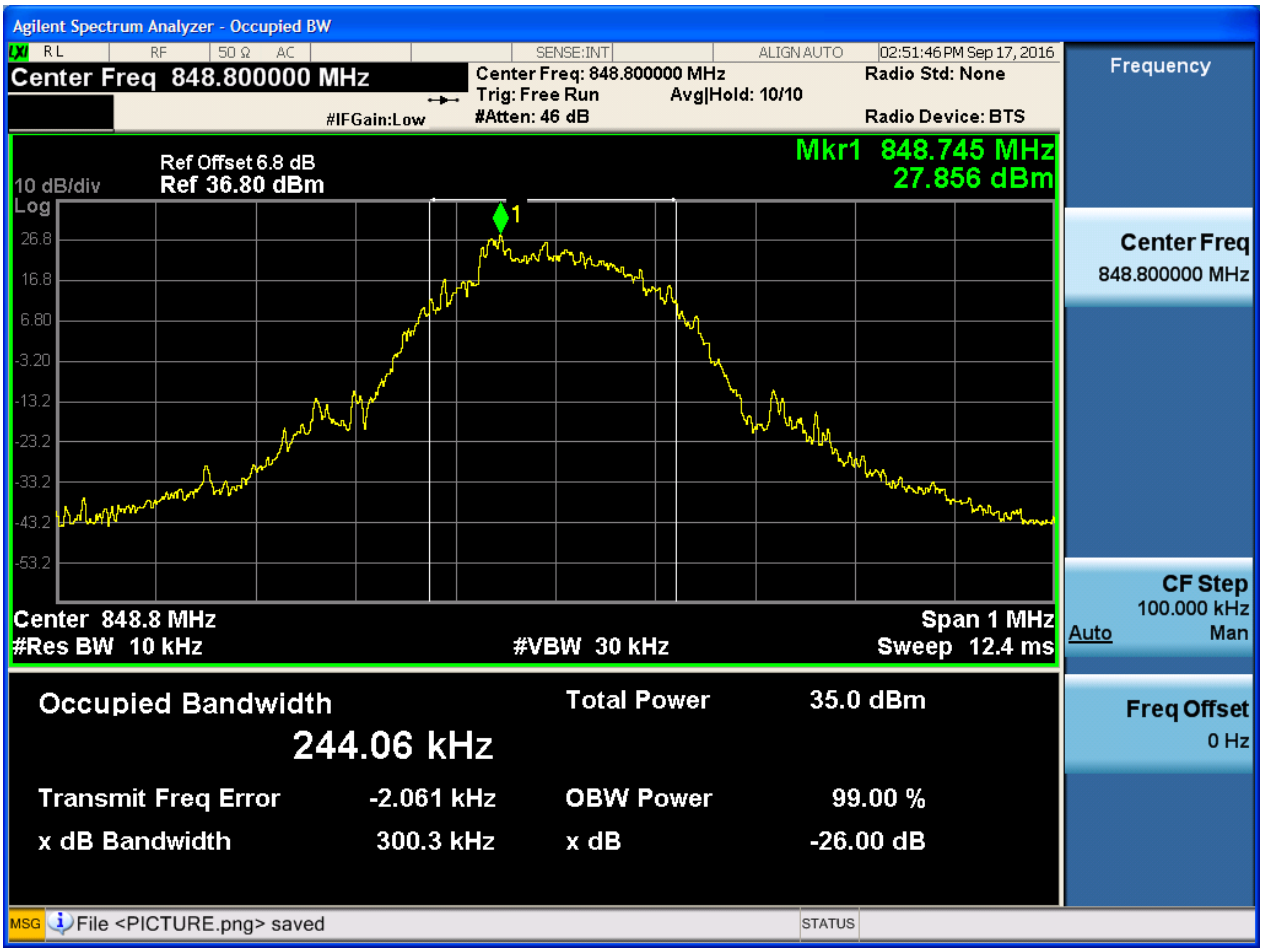
4.1.1.2.3 Test Channel = HCH



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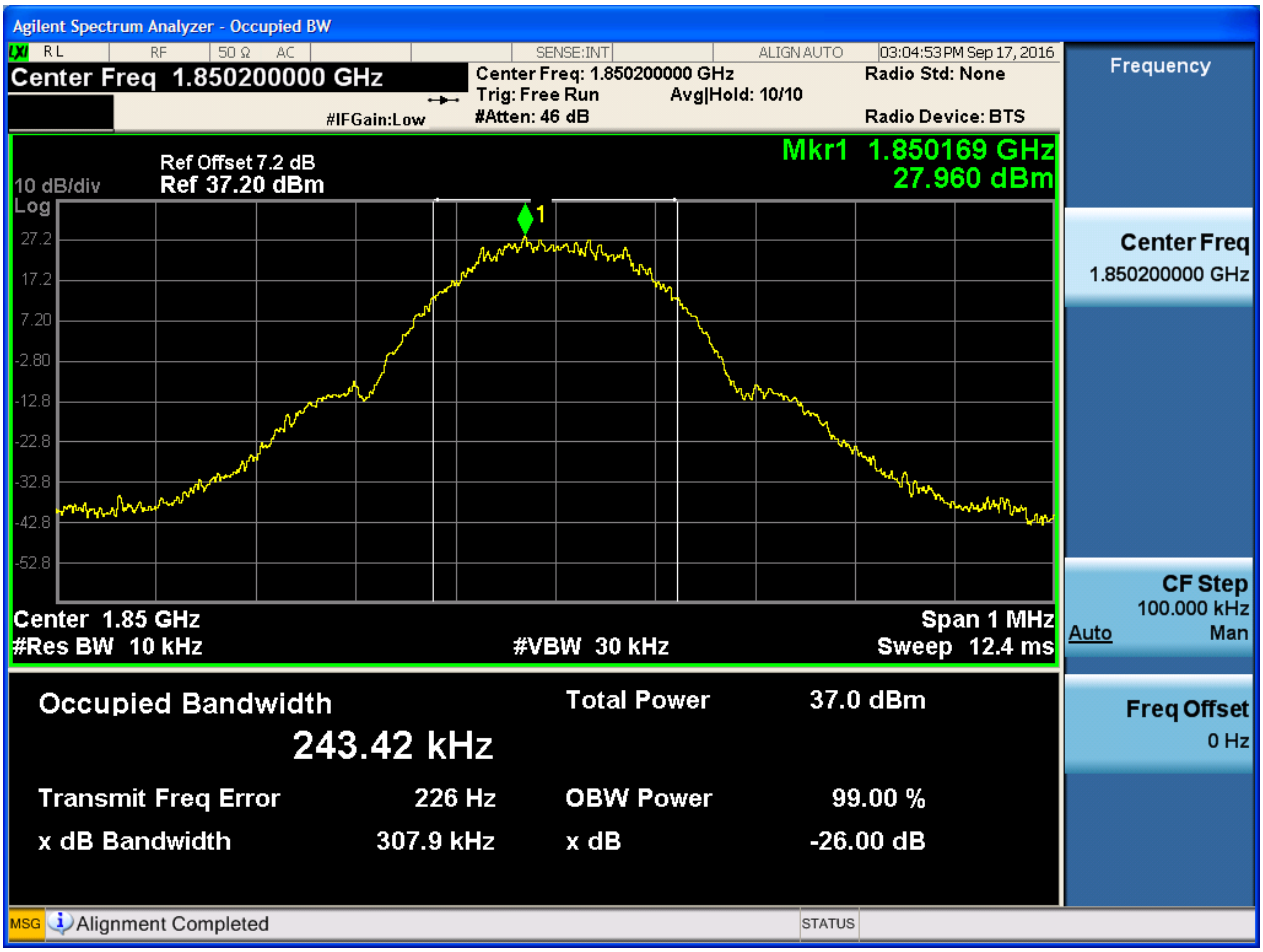
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



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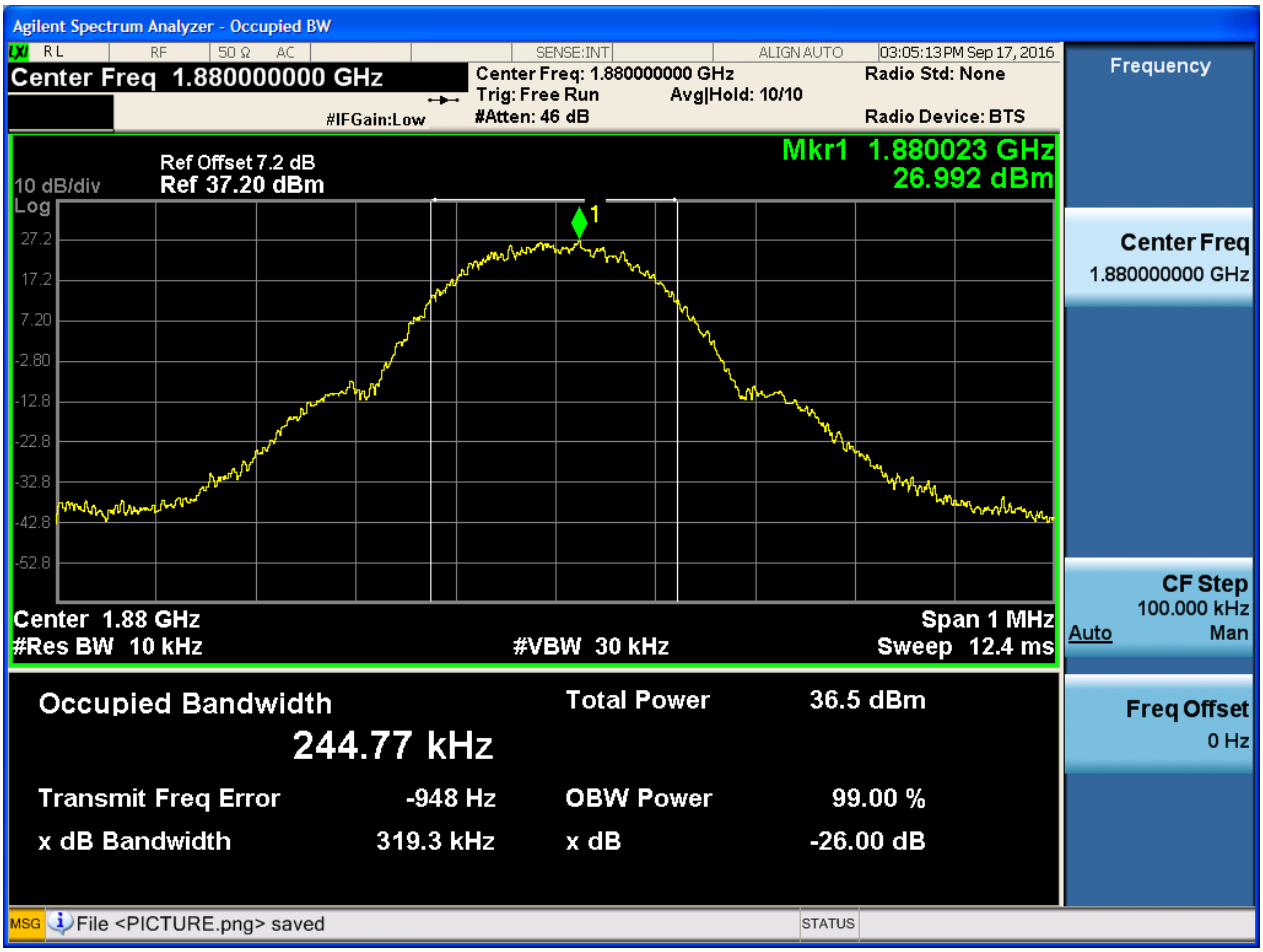
4.1.2.1.2 Test Channel = MCH



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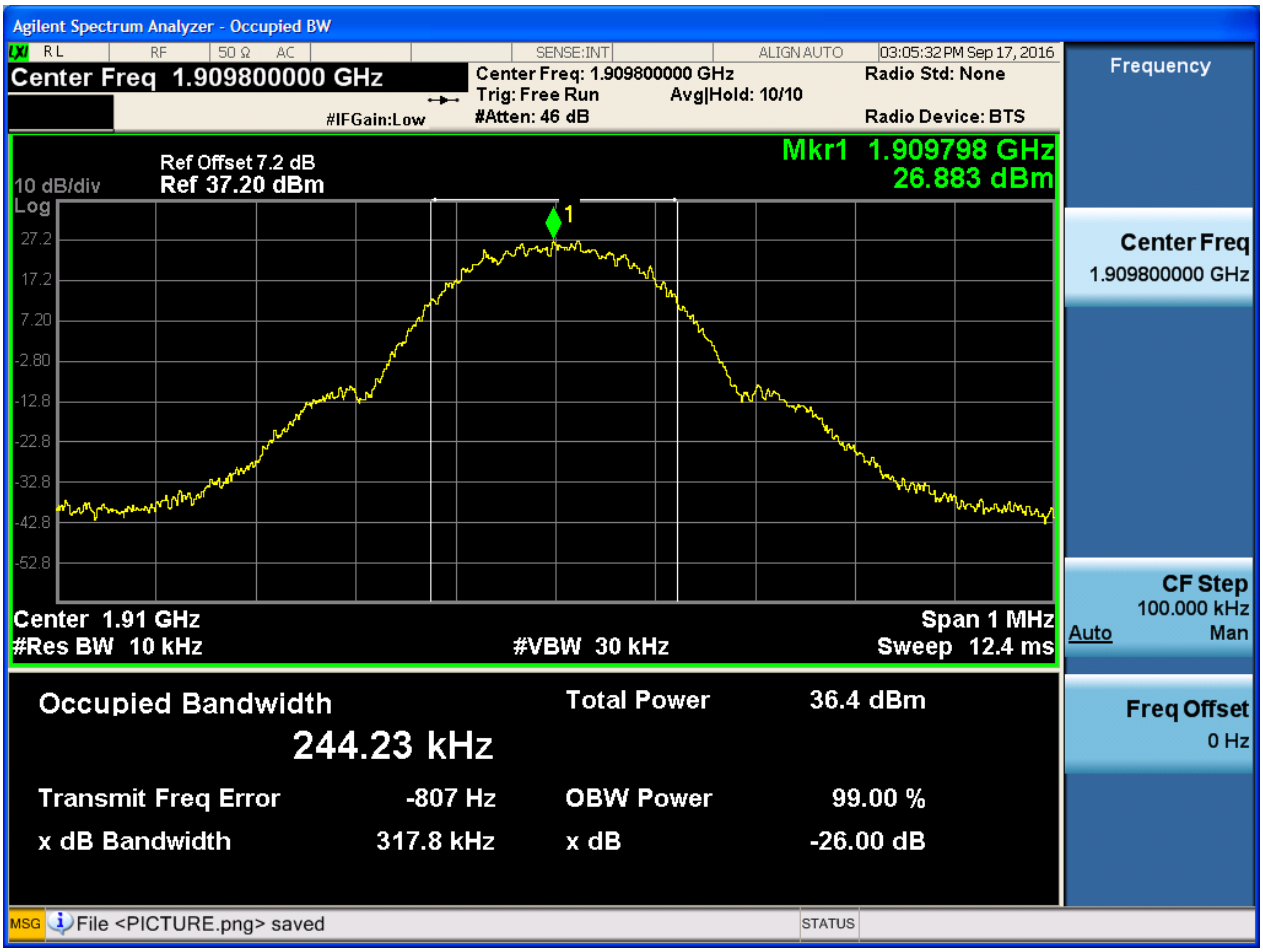
4.1.2.1.3 Test Channel = HCH



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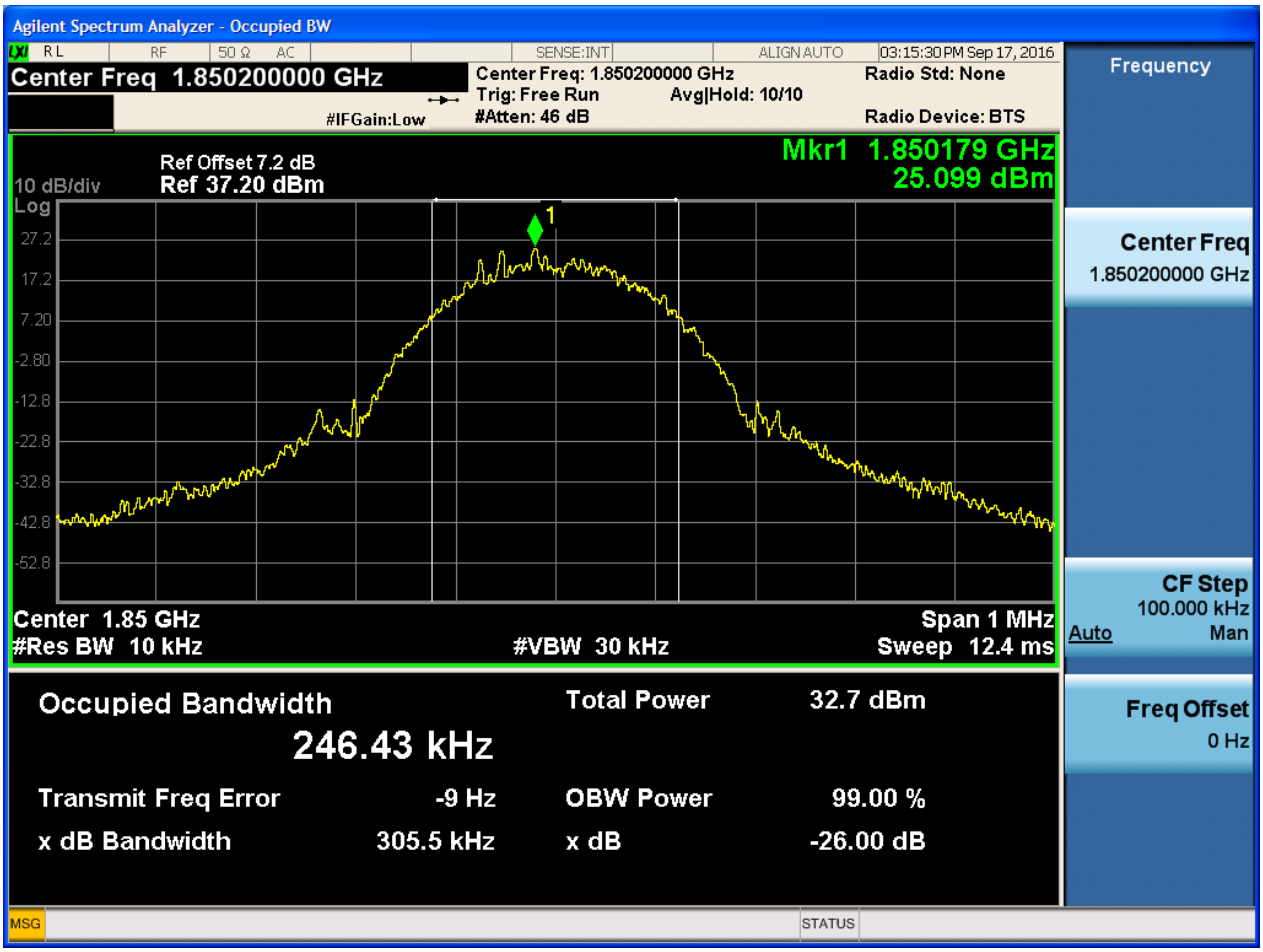
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



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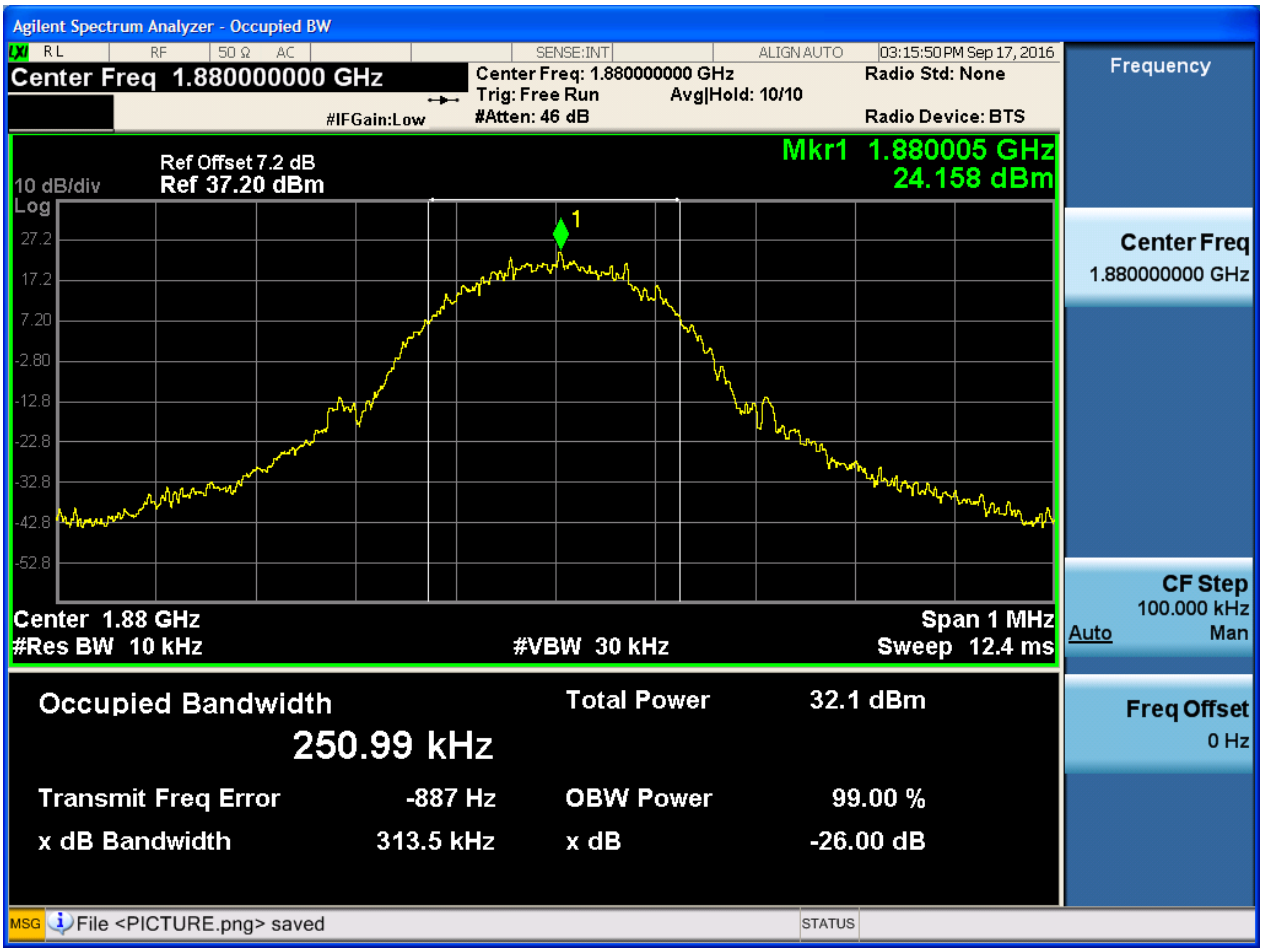
4.1.2.2.2 Test Channel = MCH



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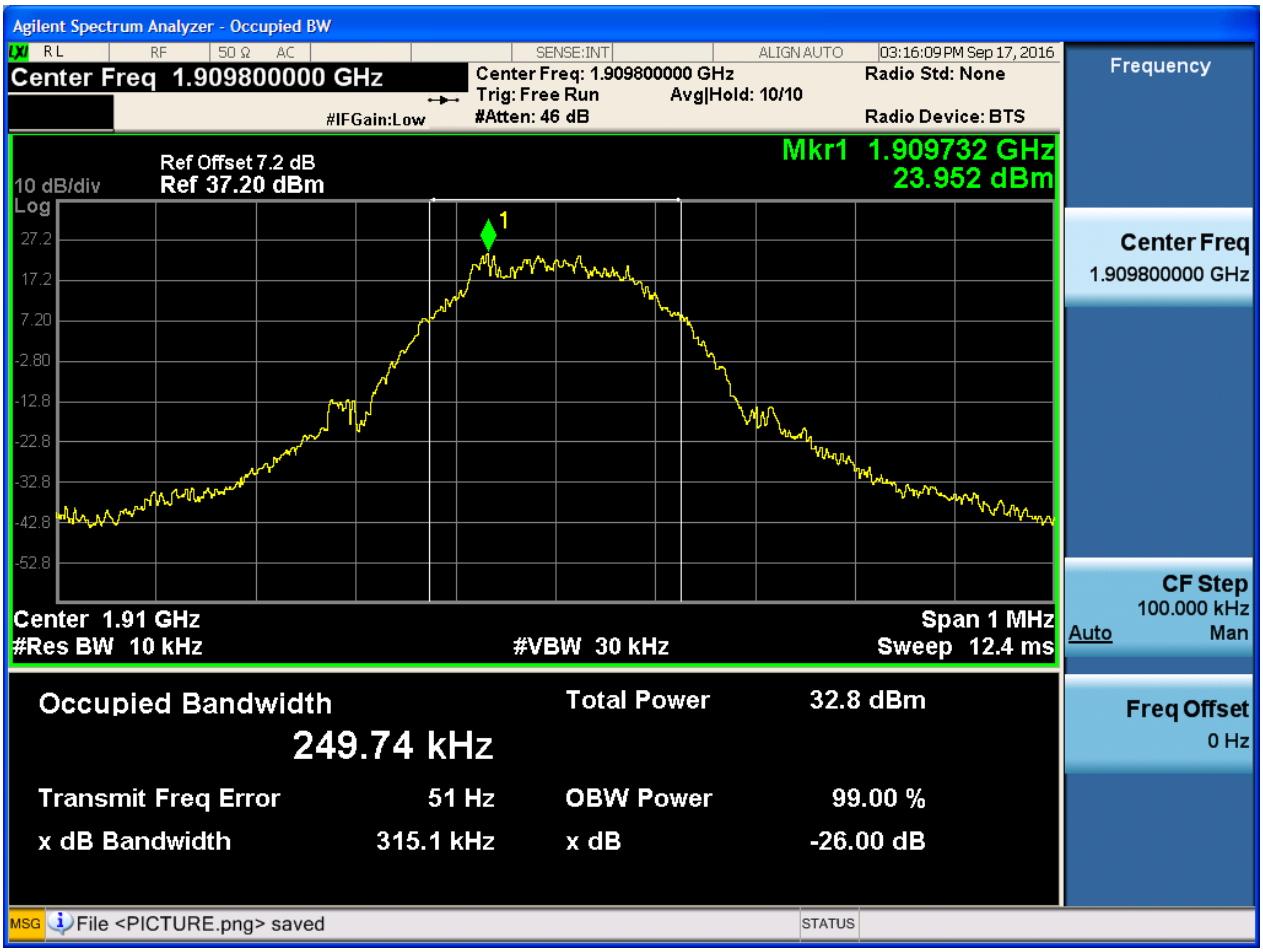
4.1.2.2.3 Test Channel = HCH



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5Appendix_E: Band Edges Compliance

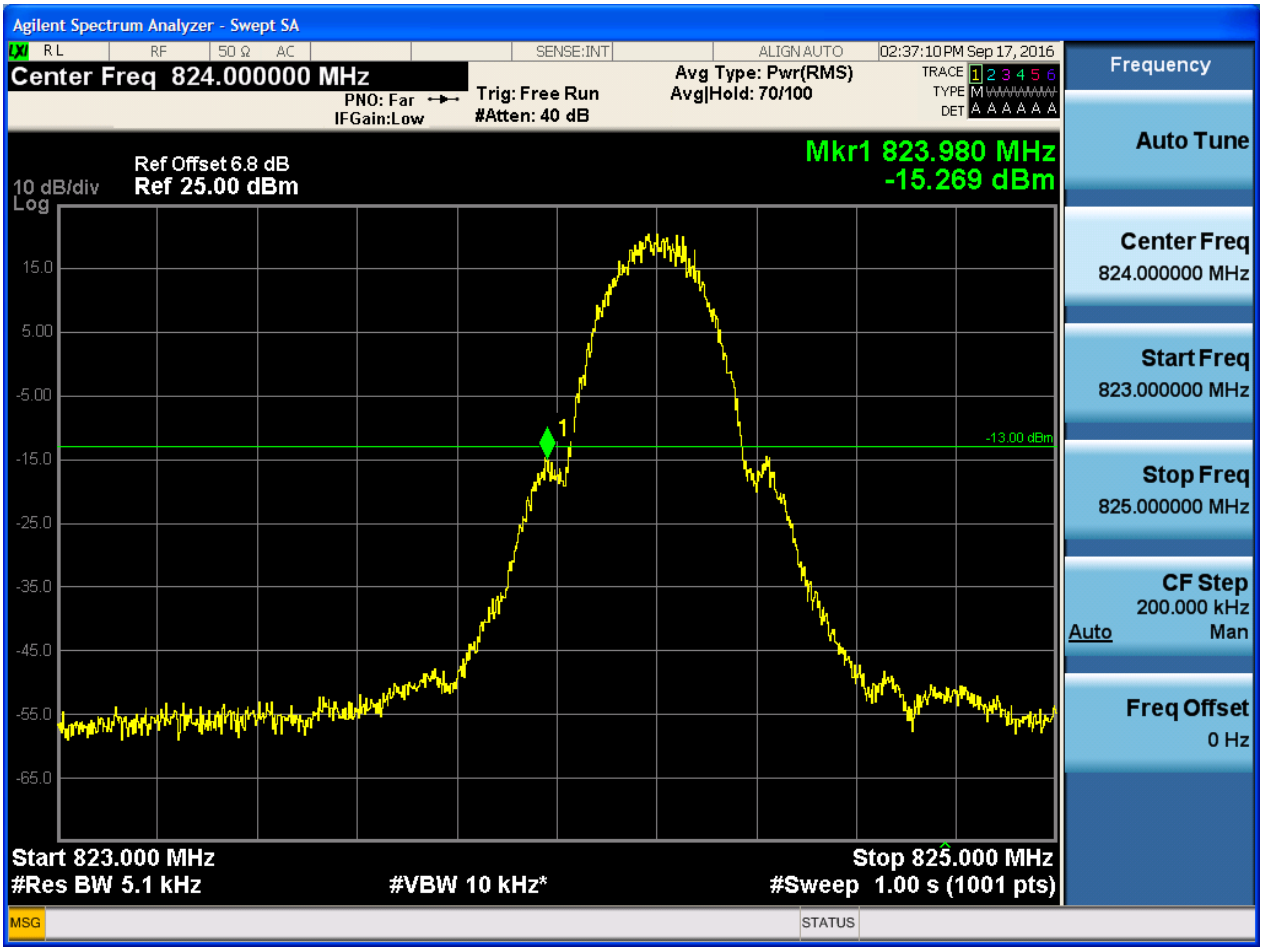
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM850

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



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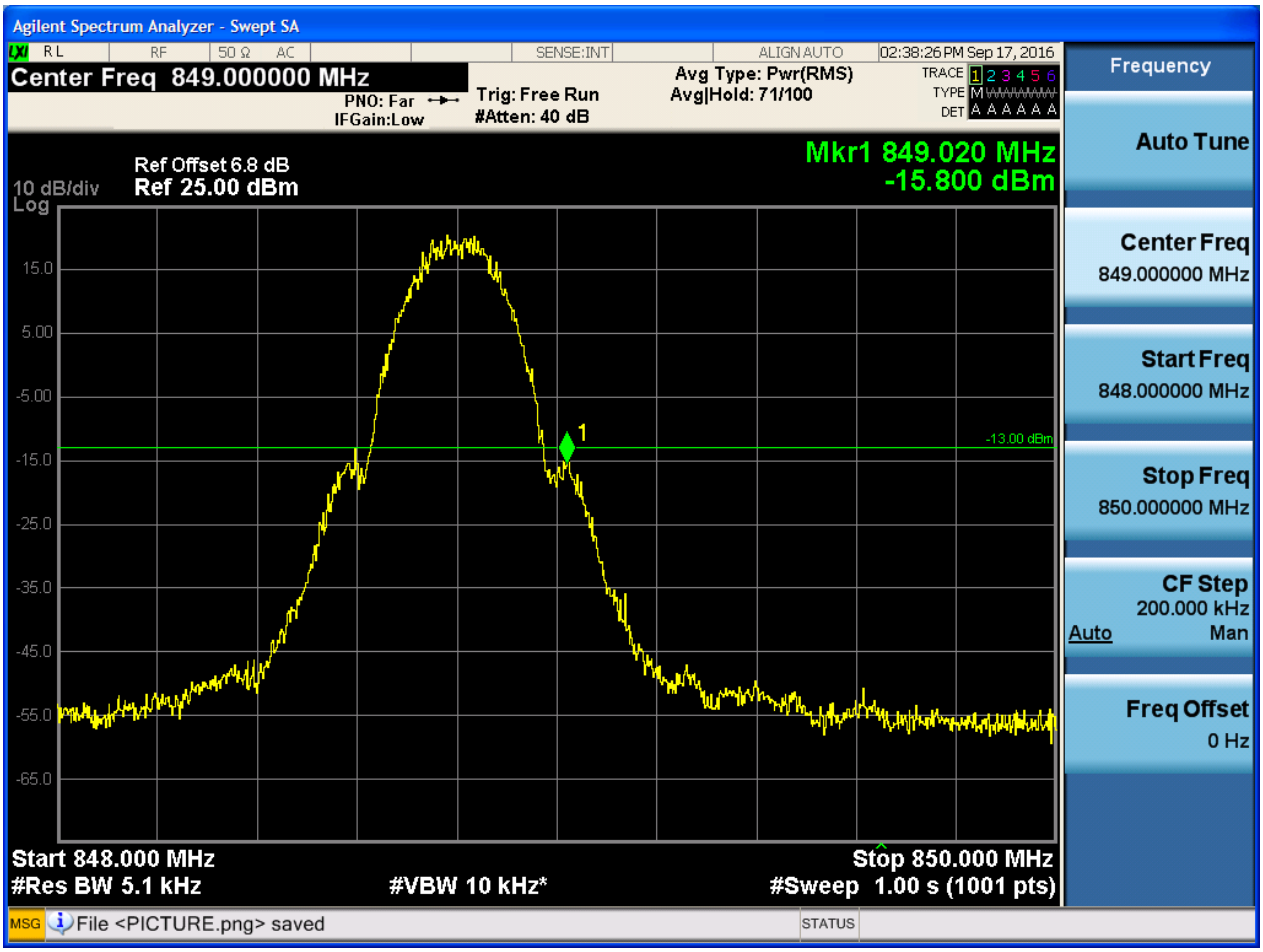
5.1.1.1.2 Test Channel = HCH



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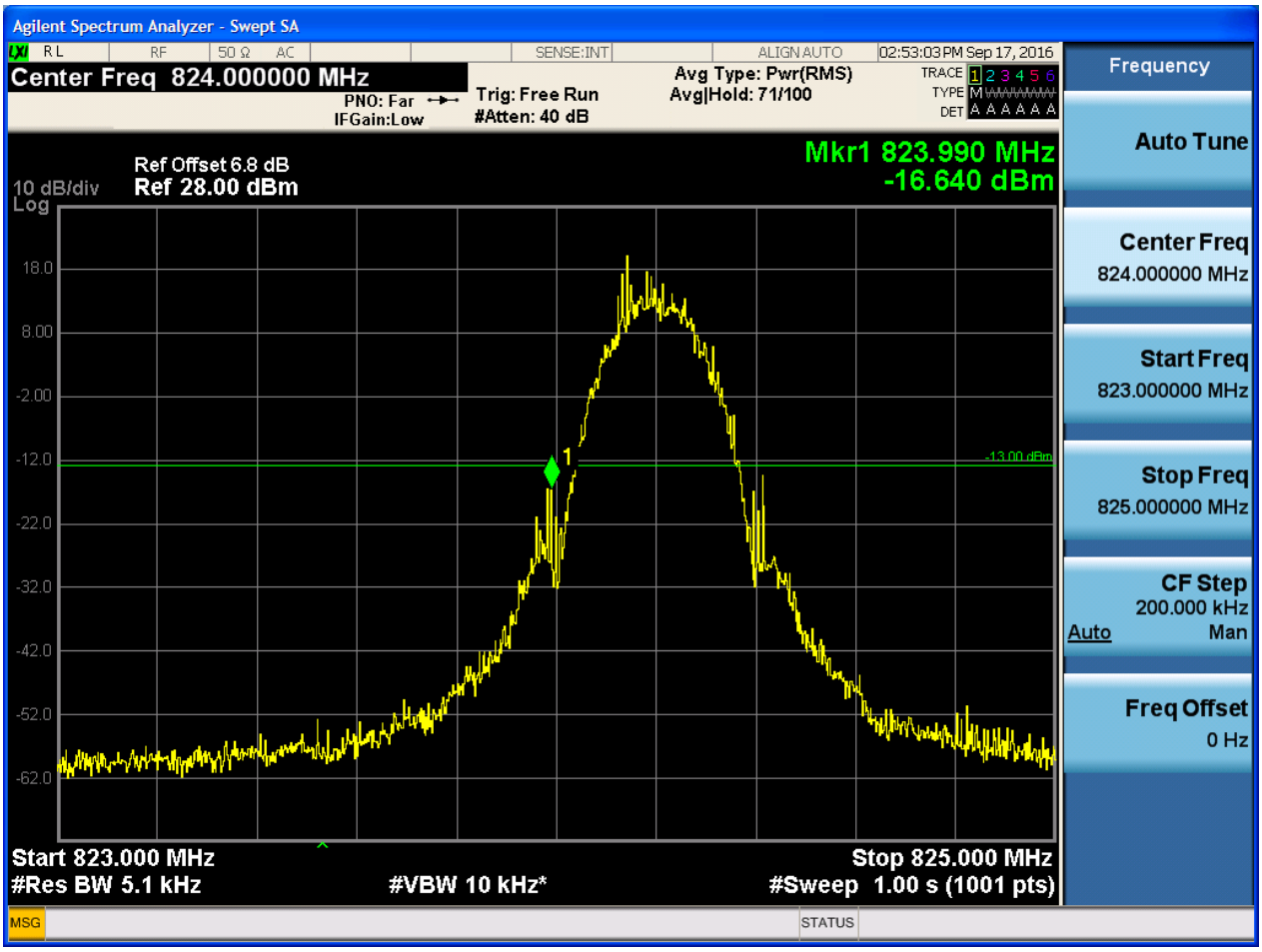
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



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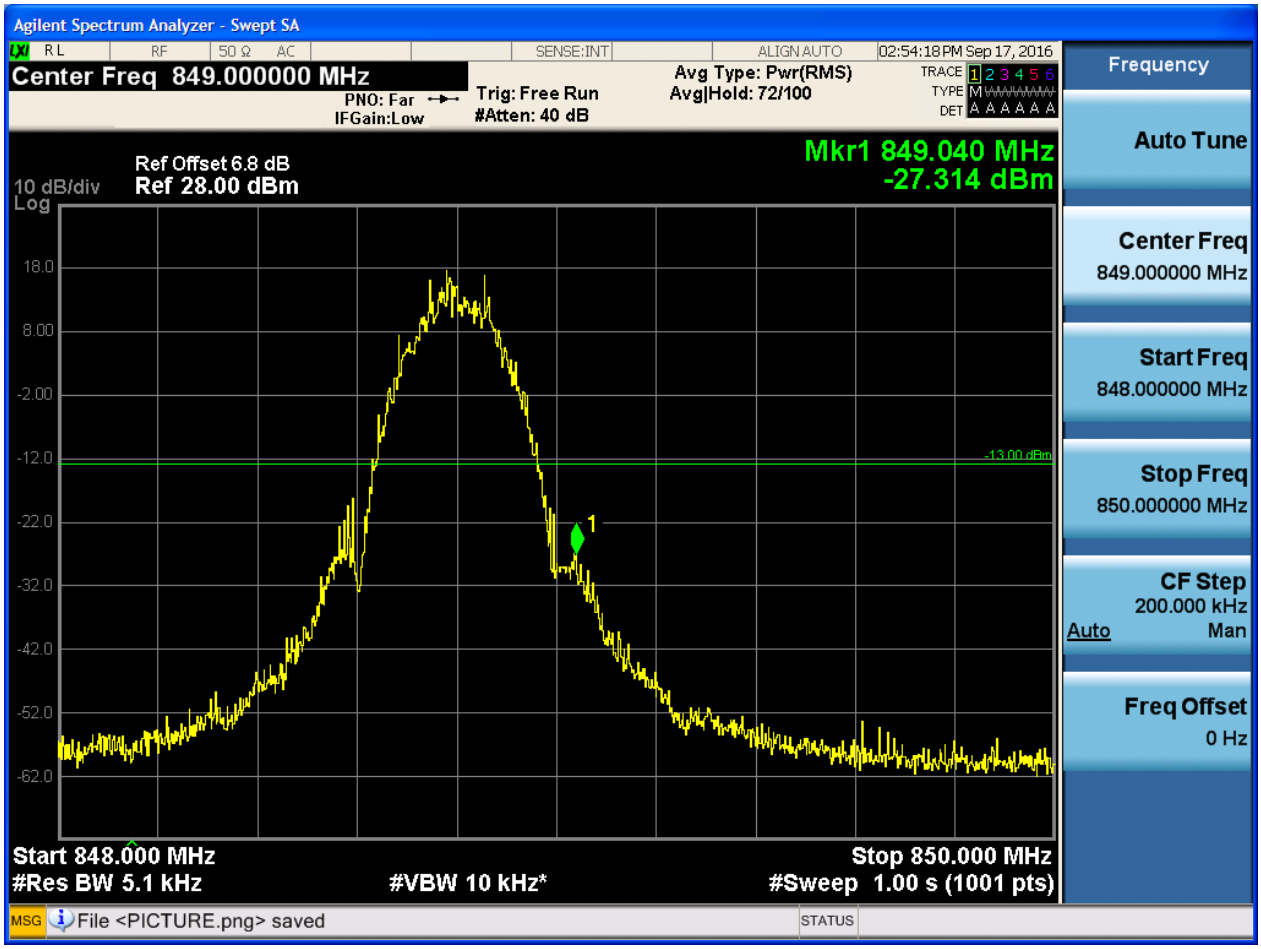
5.1.1.2.2 Test Channel = HCH



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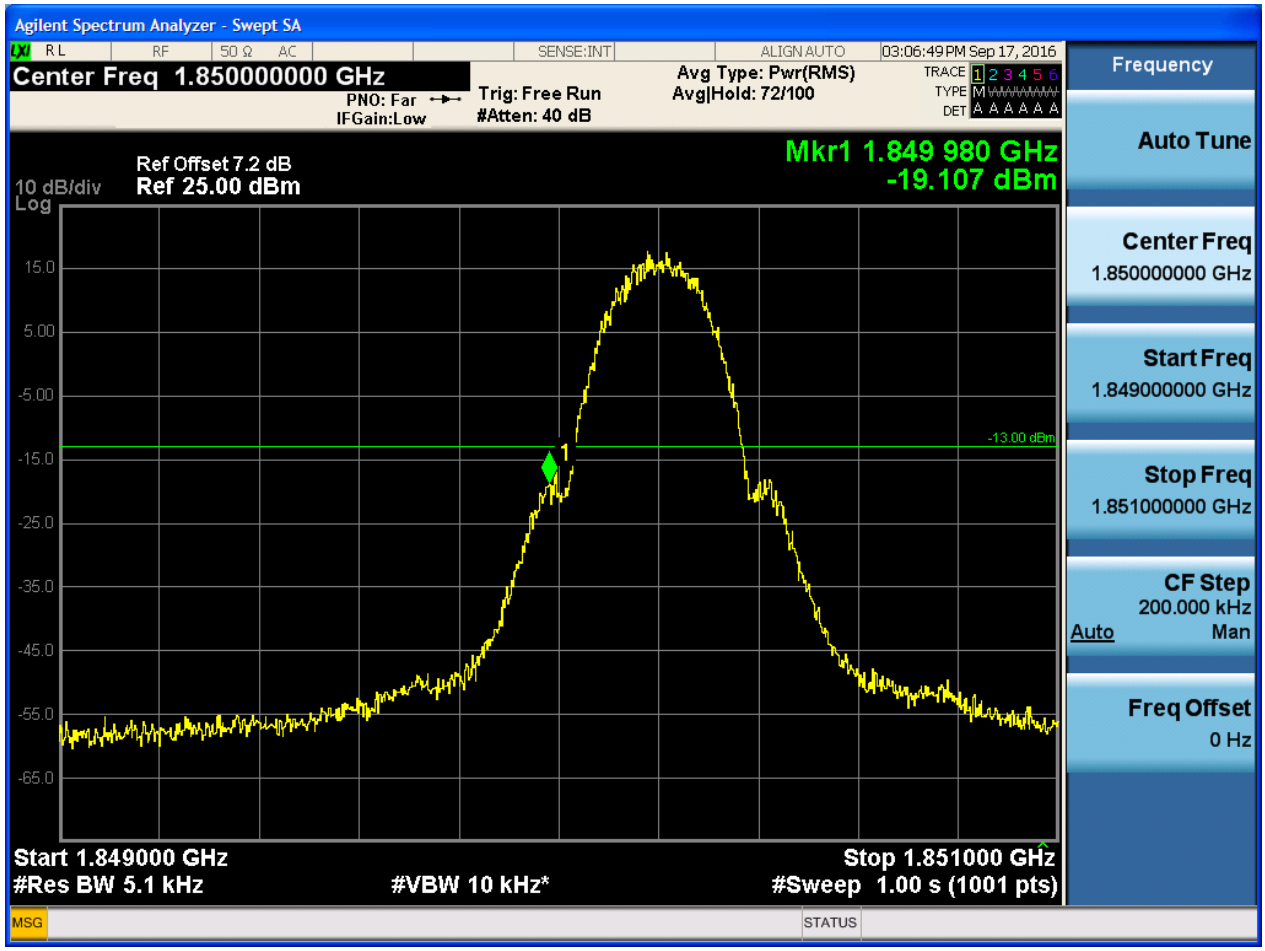
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



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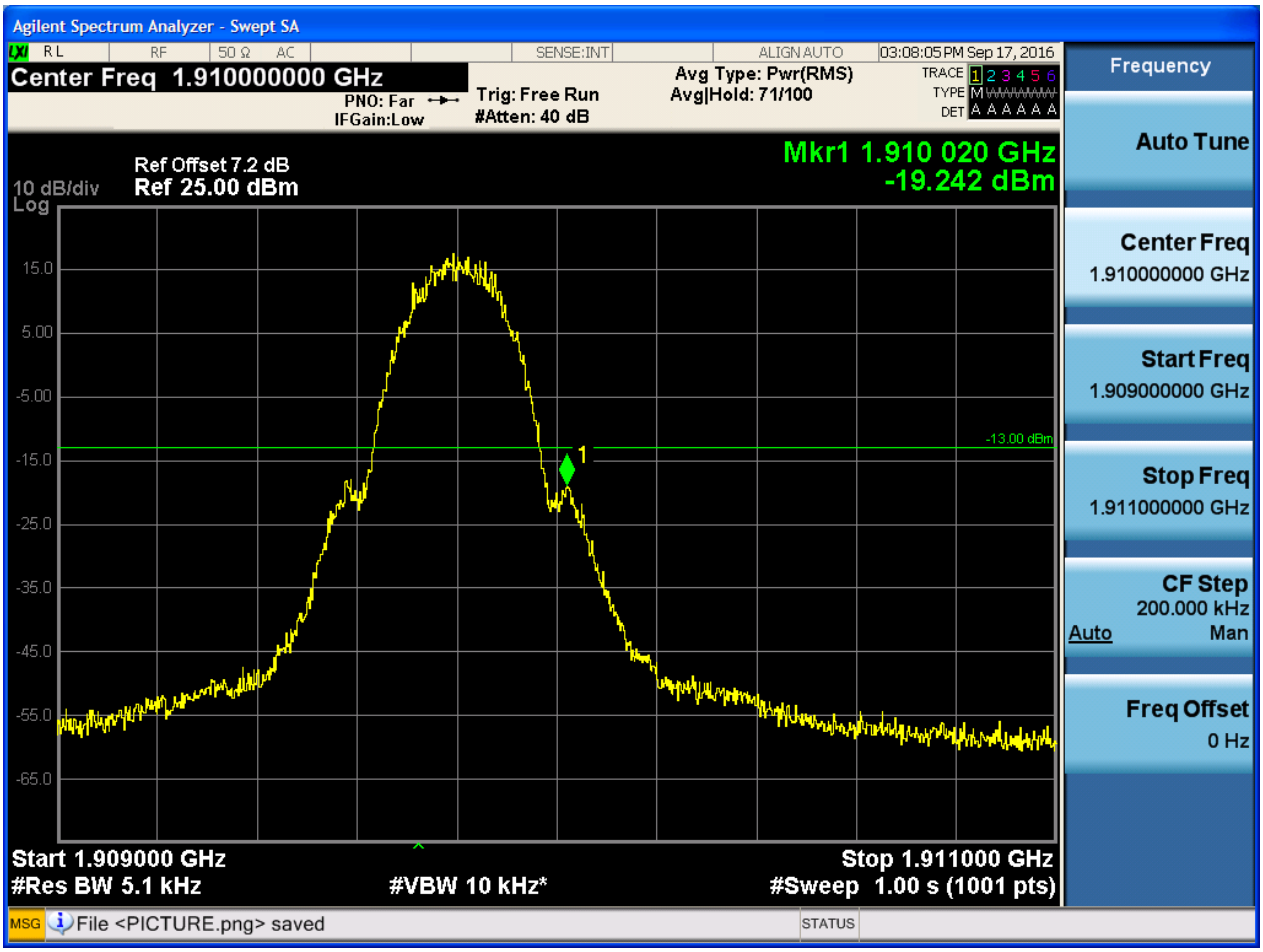
5.1.2.1.2 Test Channel = HCH



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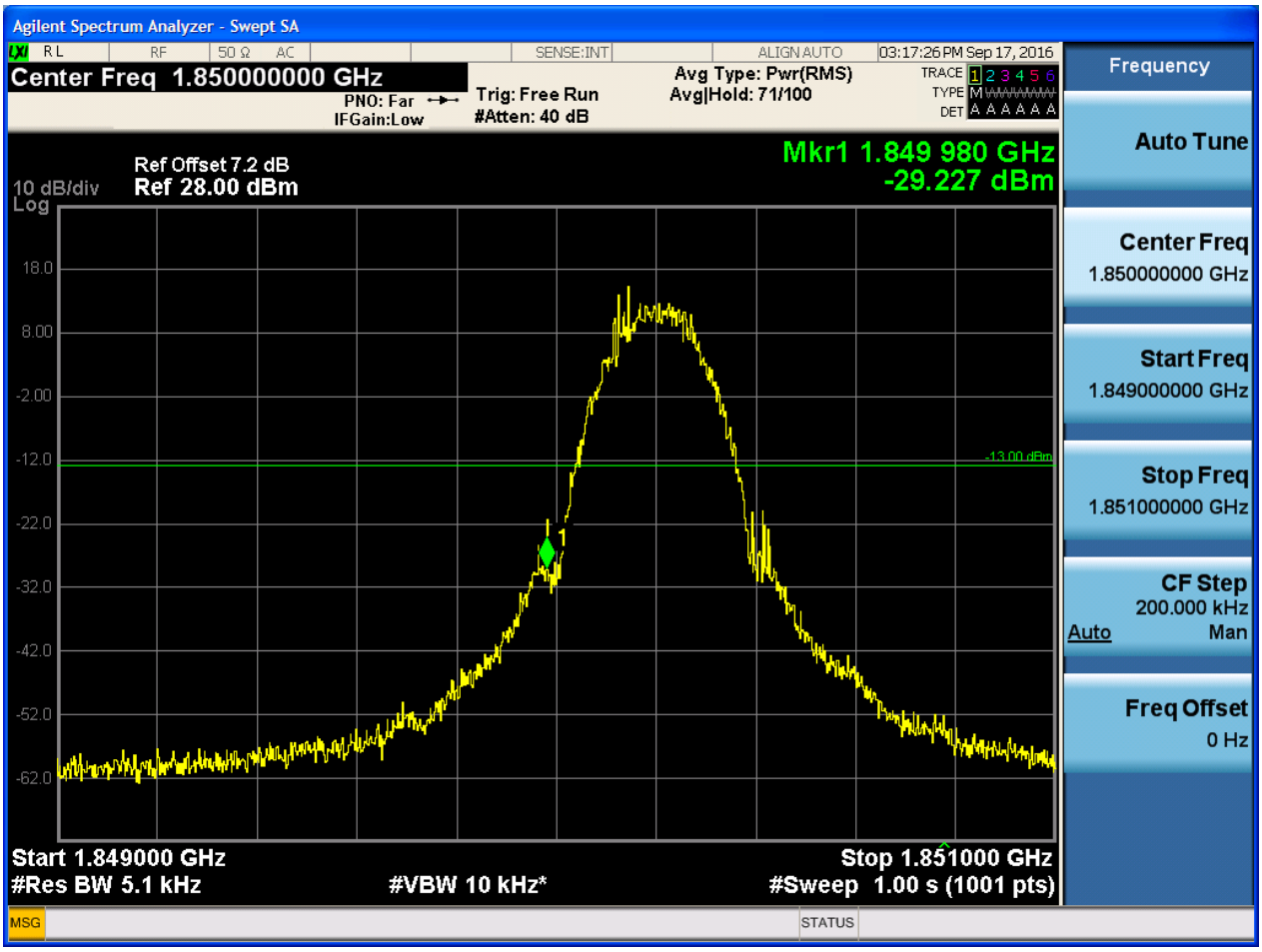
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



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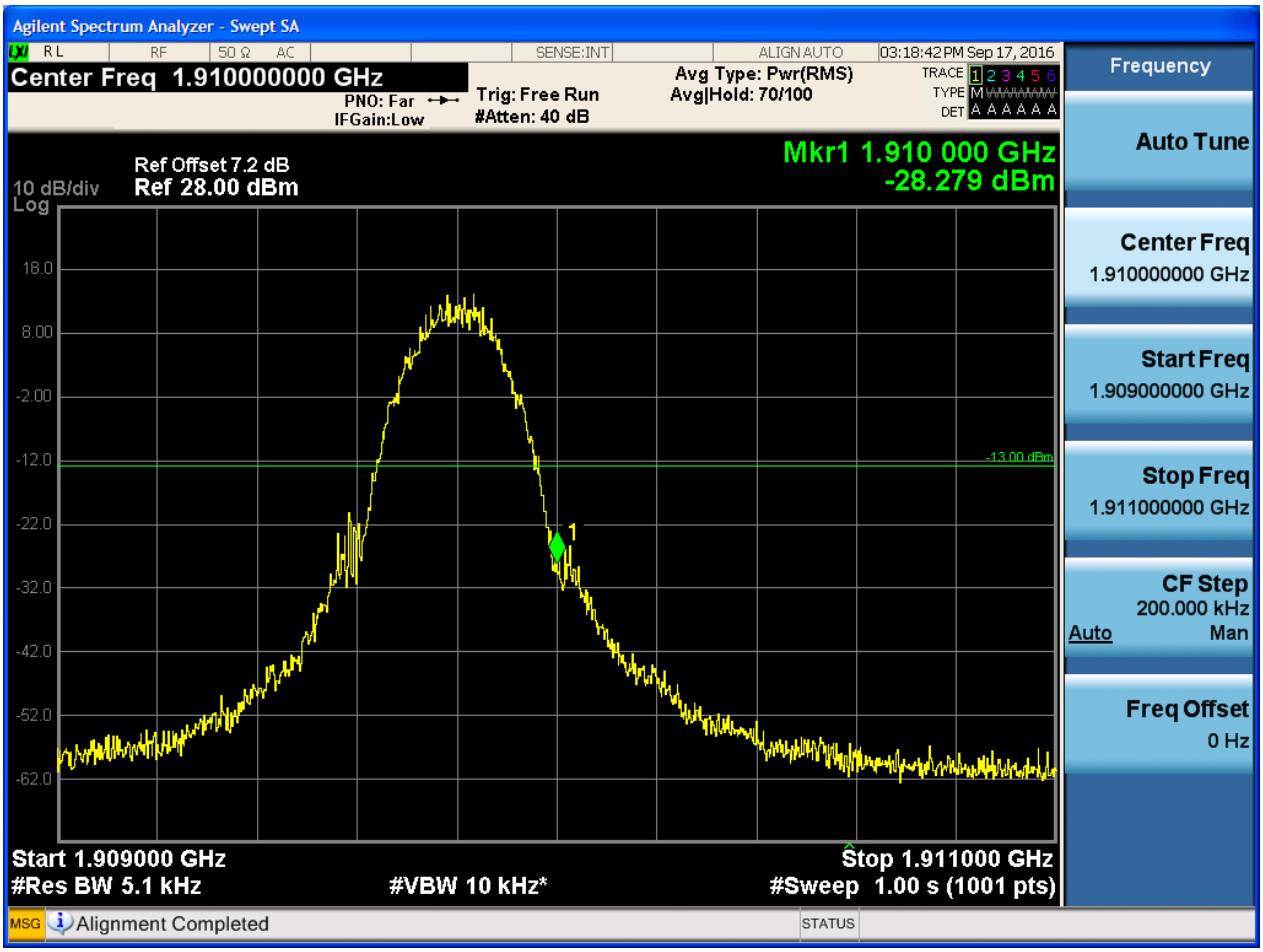
5.1.2.2.2 Test Channel = HCH



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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 = GSM850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

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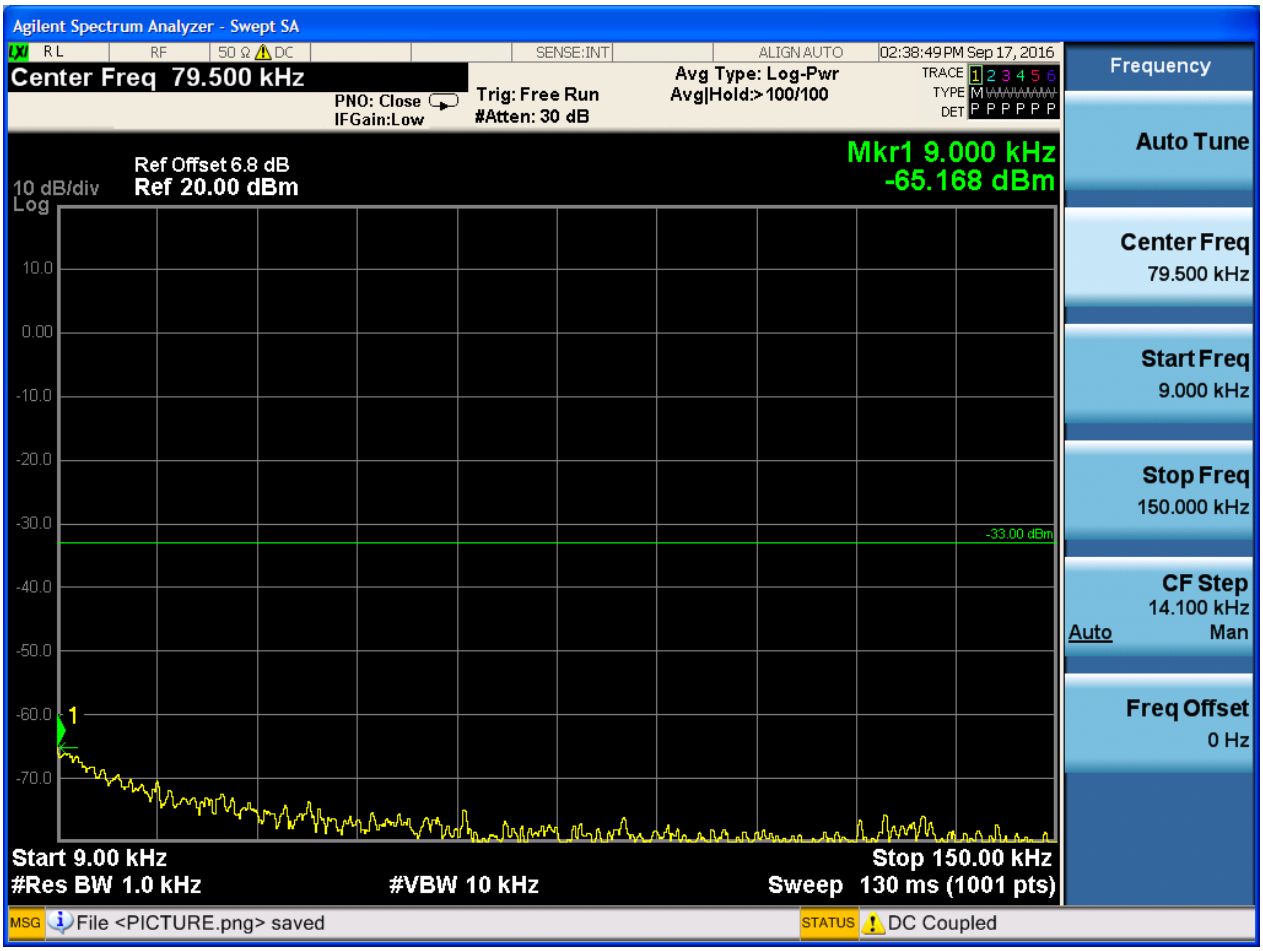

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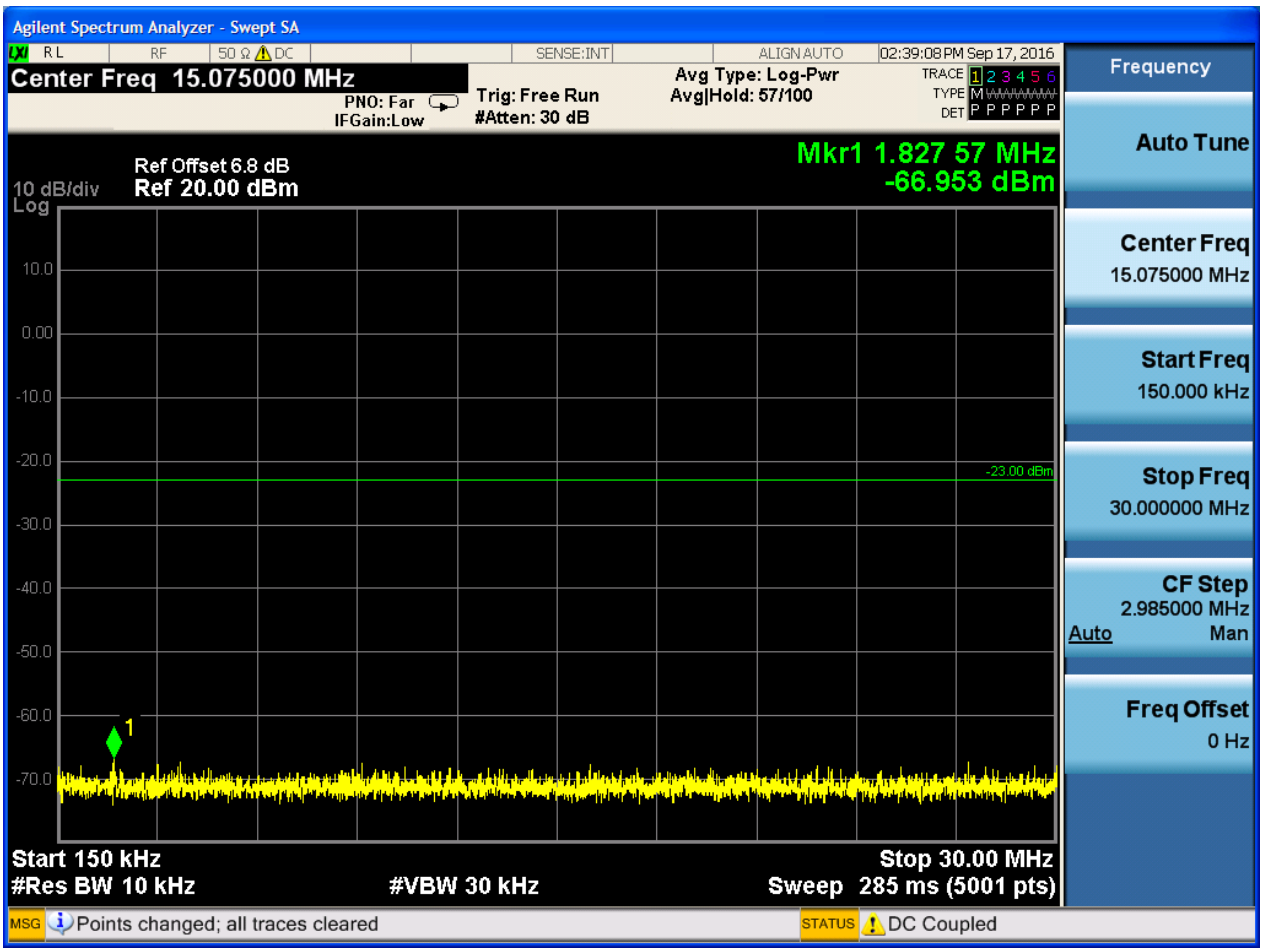

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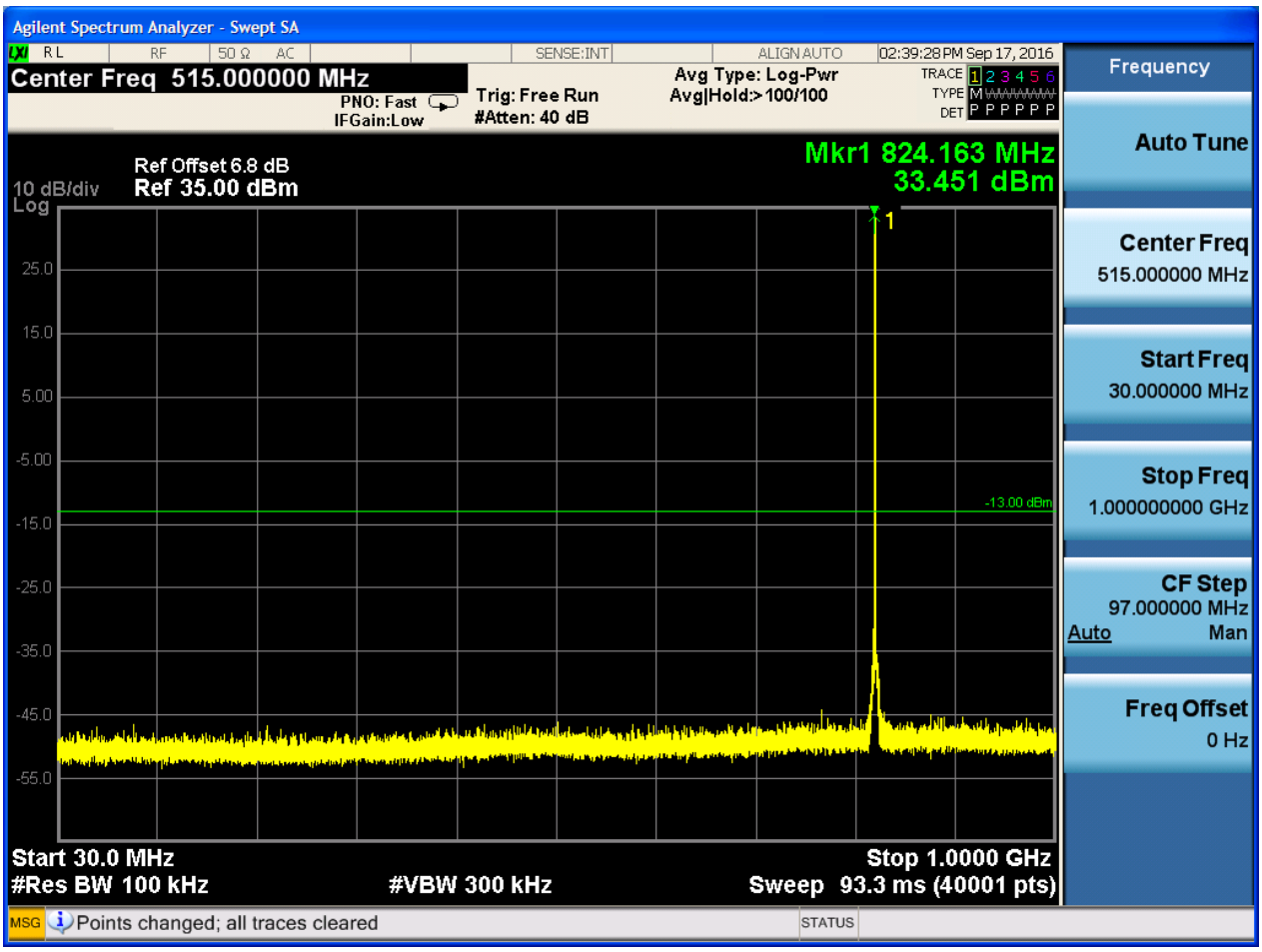

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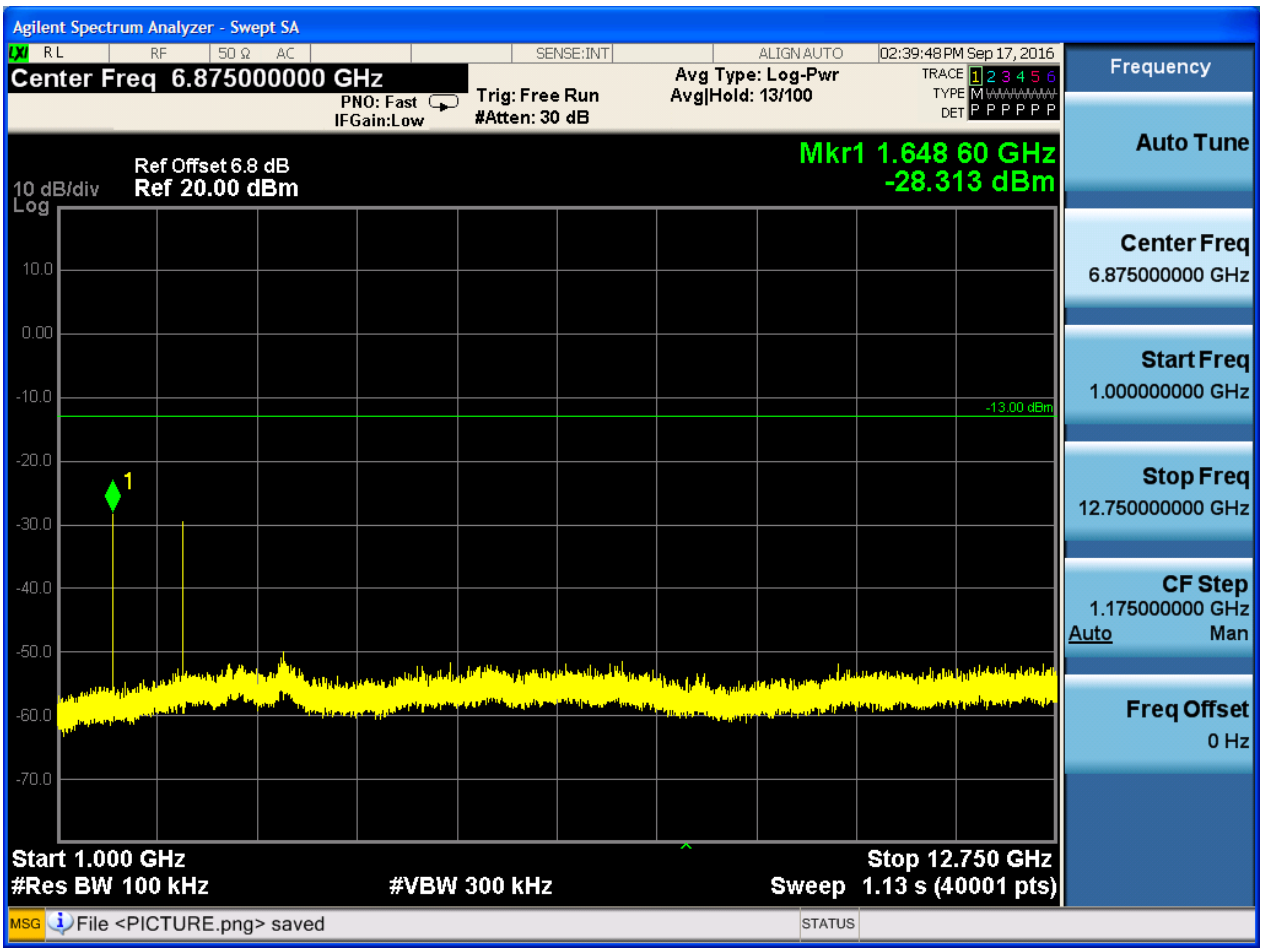

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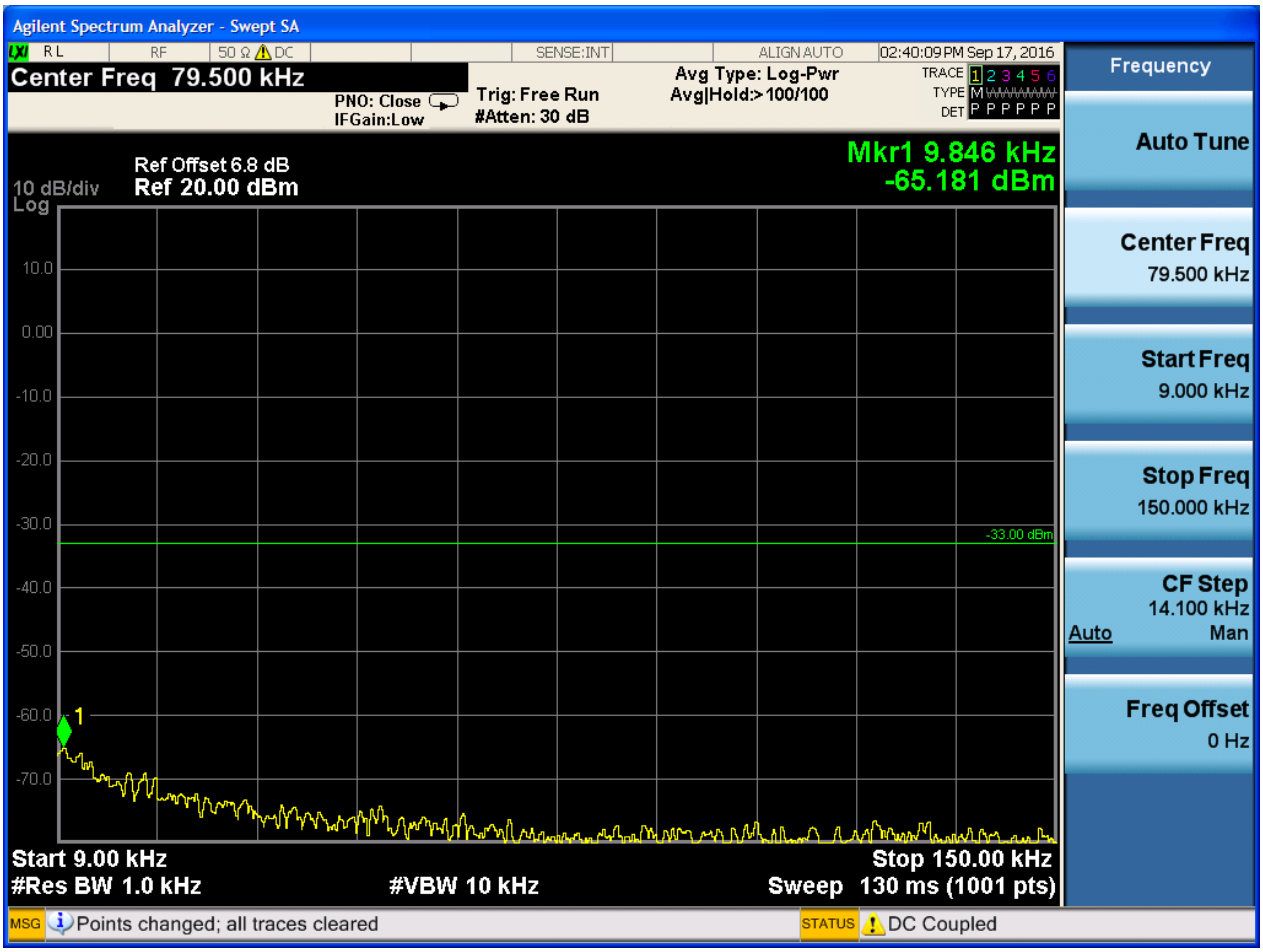
6.1.1.1.2 Test Channel = MCH



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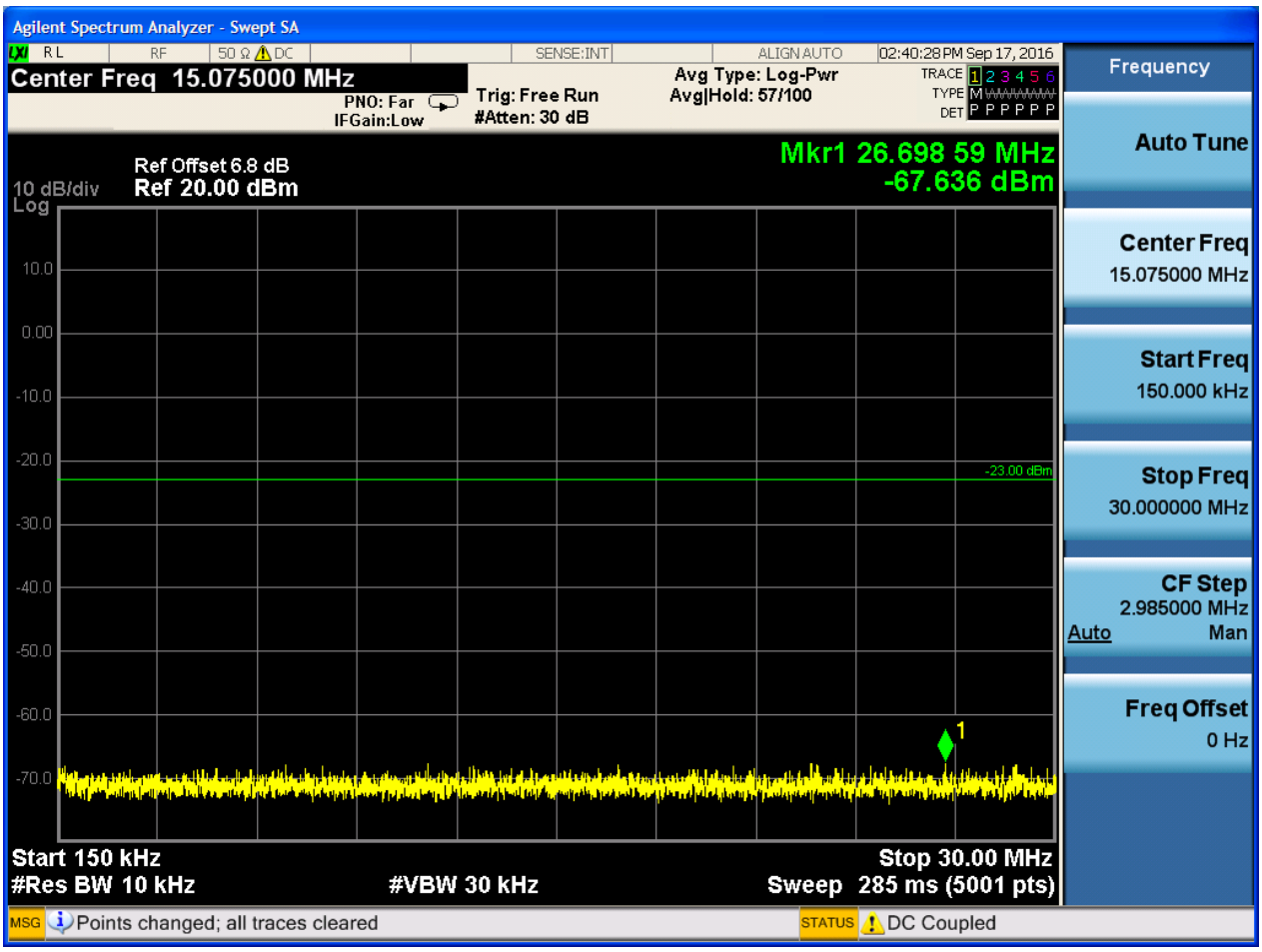

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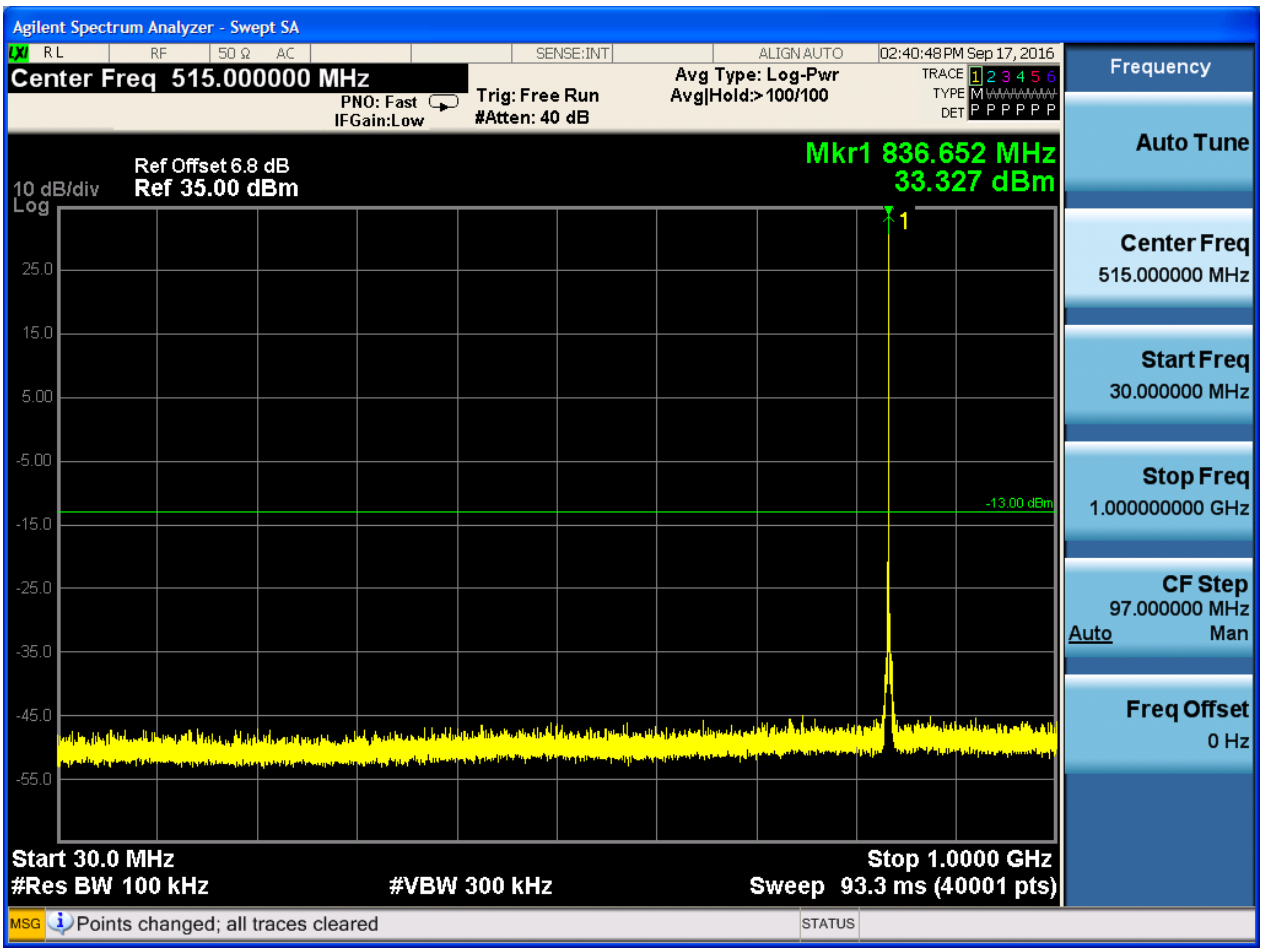

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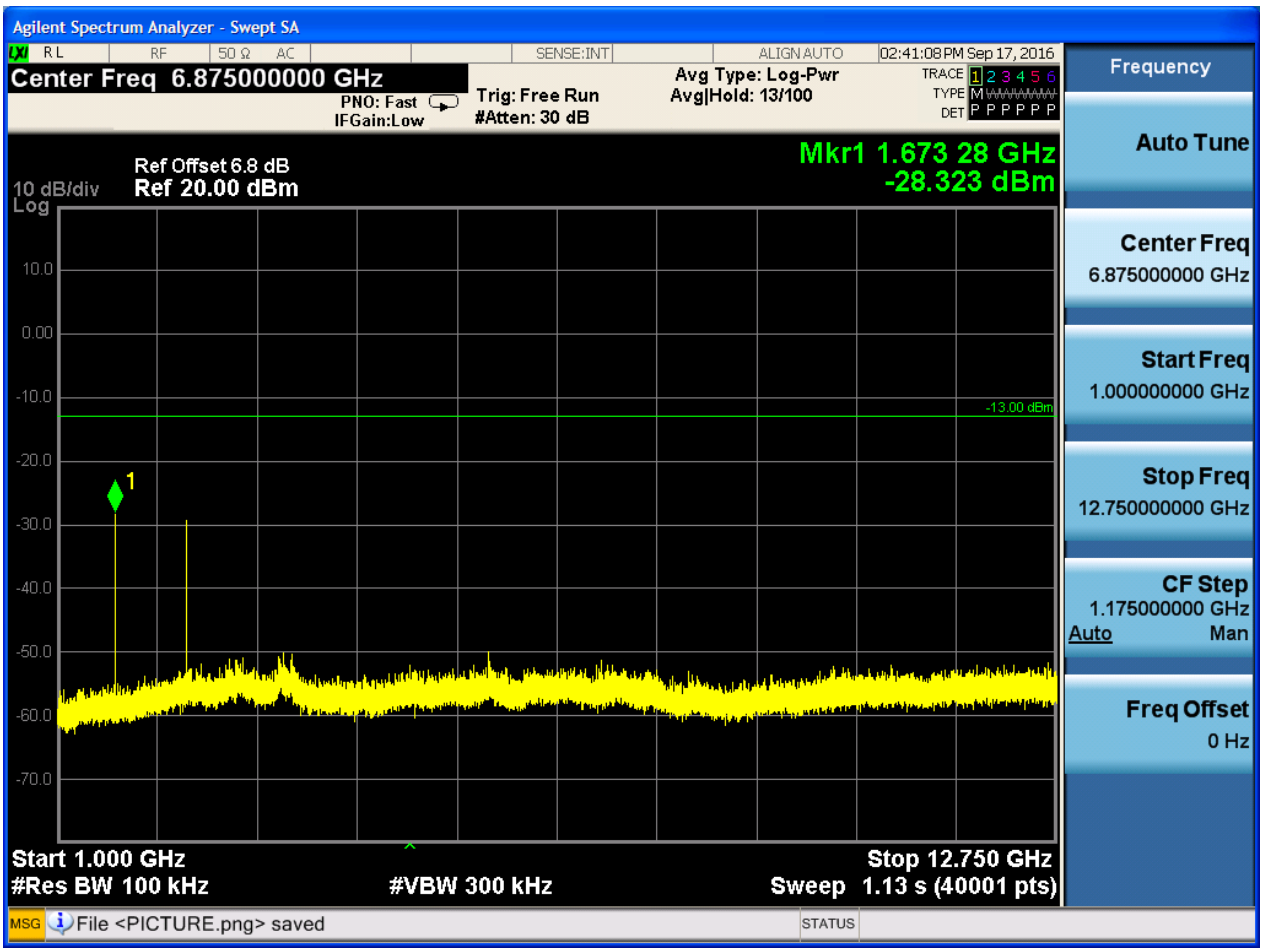

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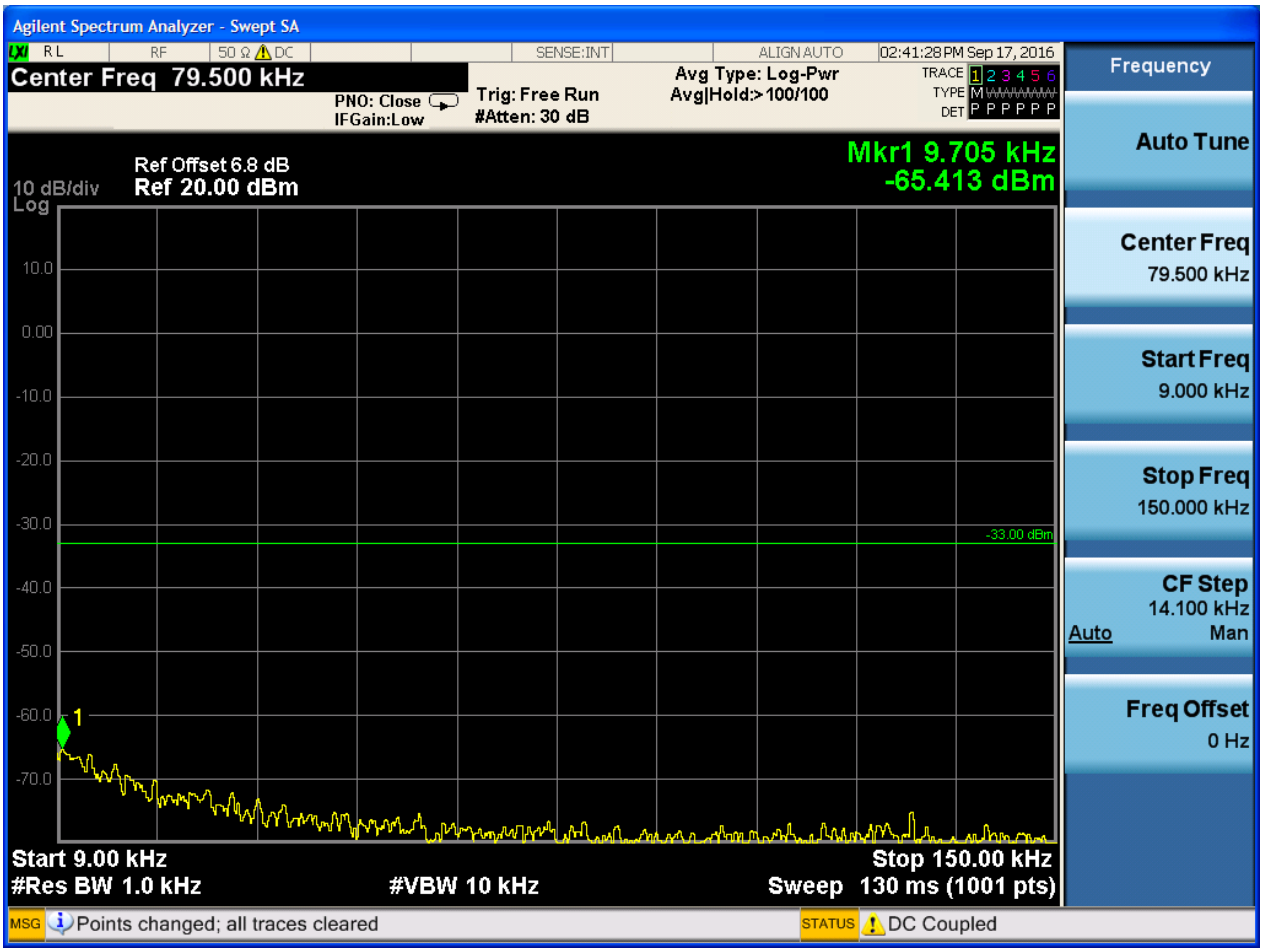
6.1.1.1.3 Test Channel = HCH



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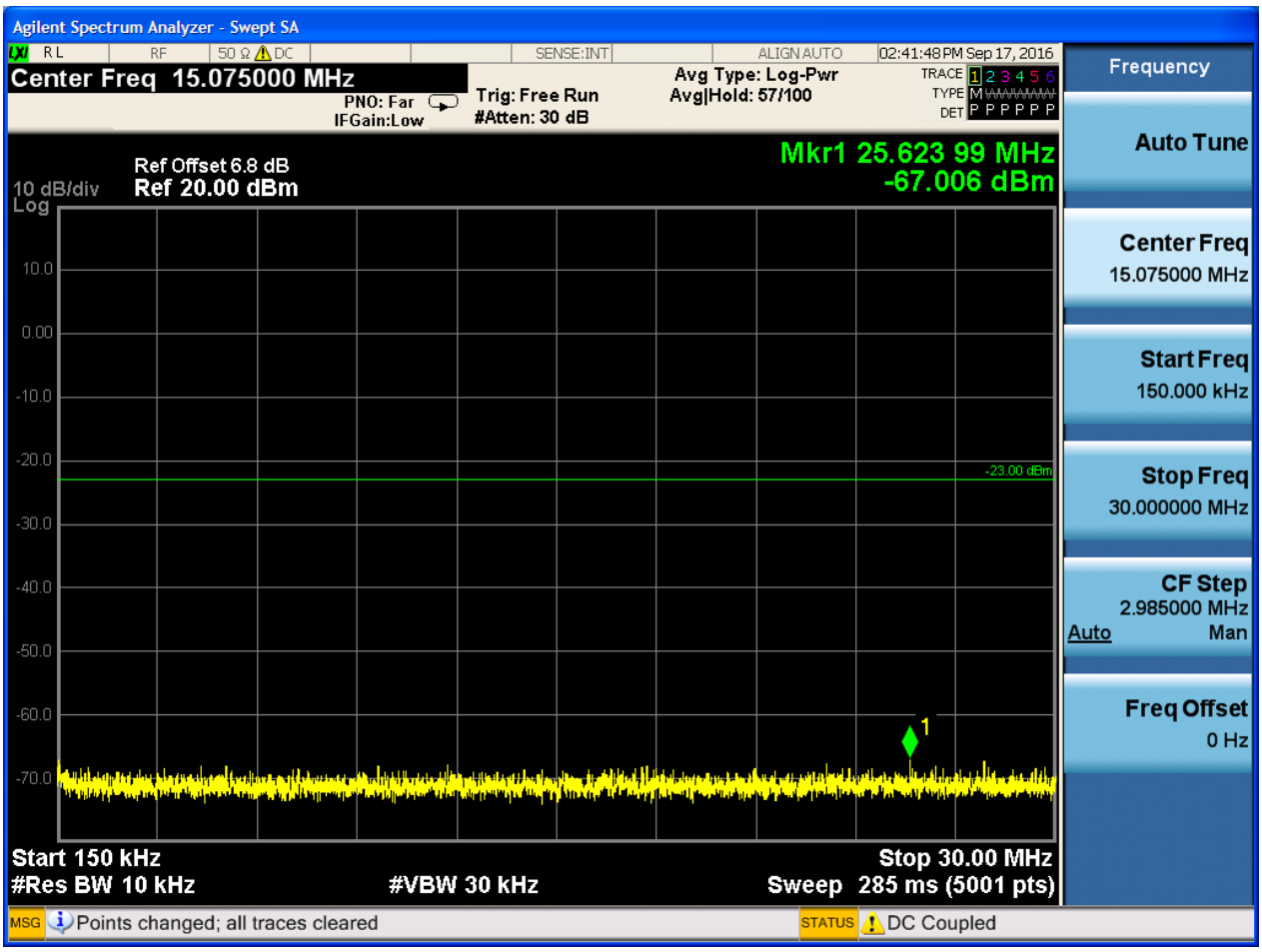

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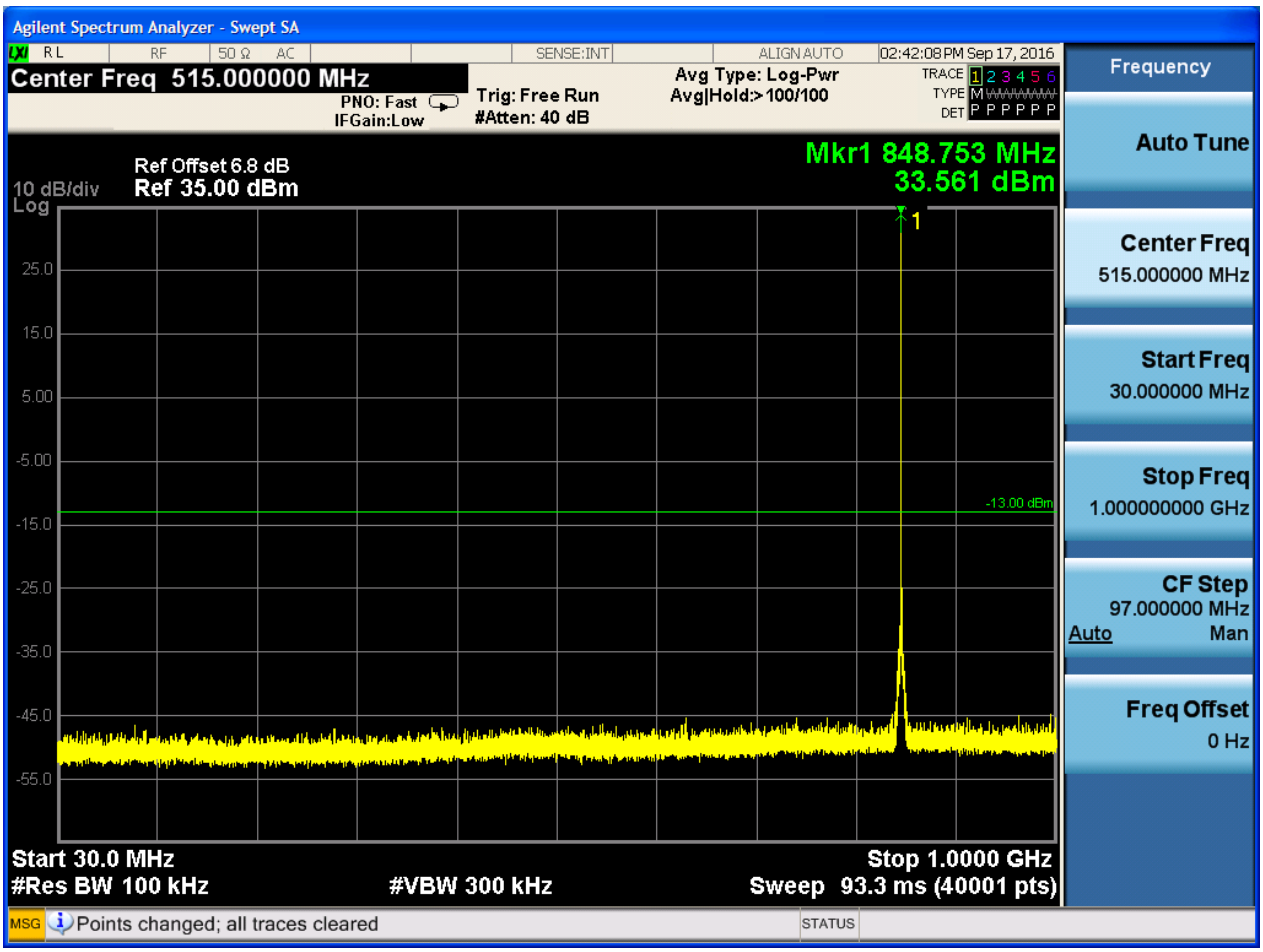

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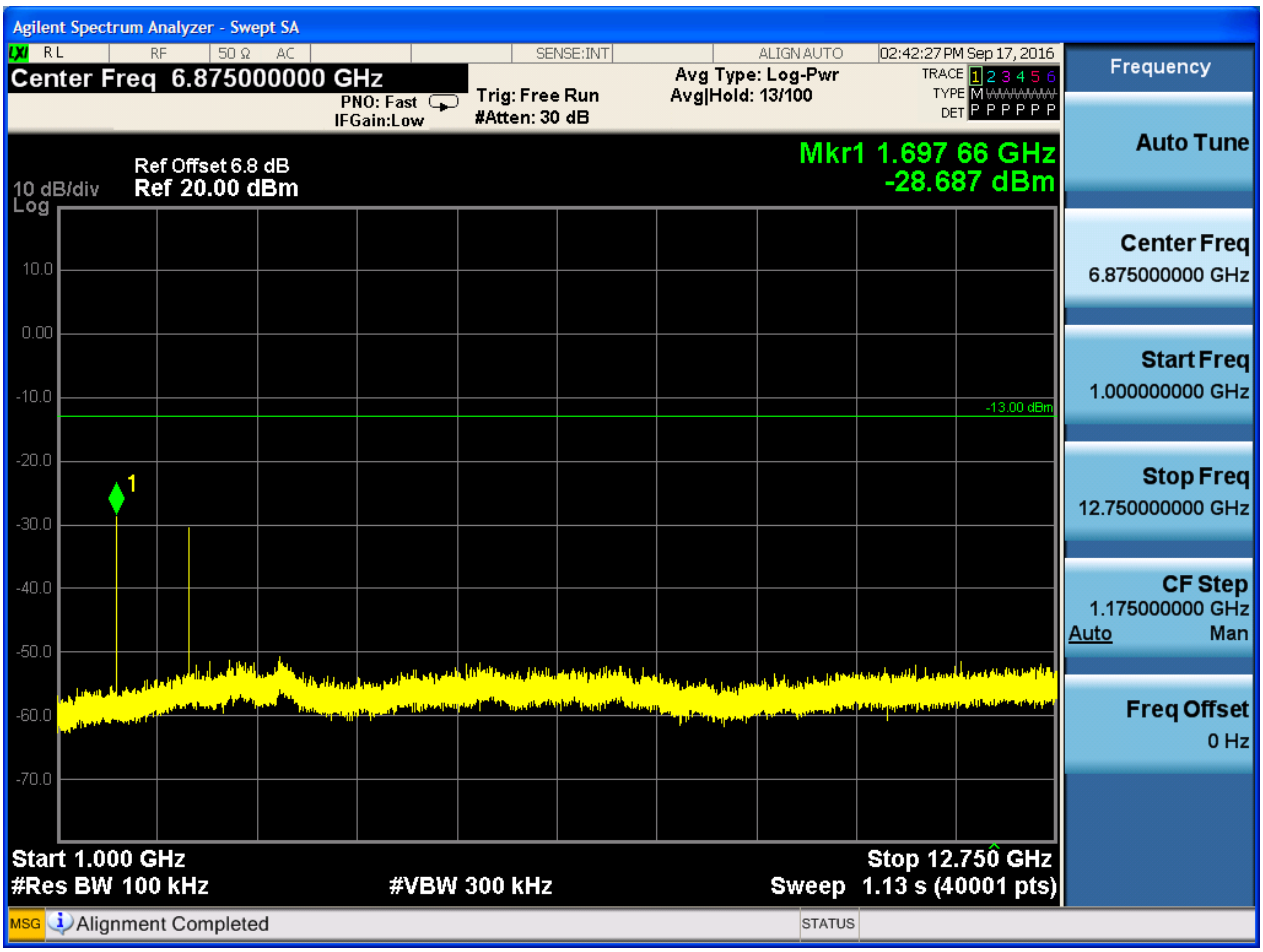

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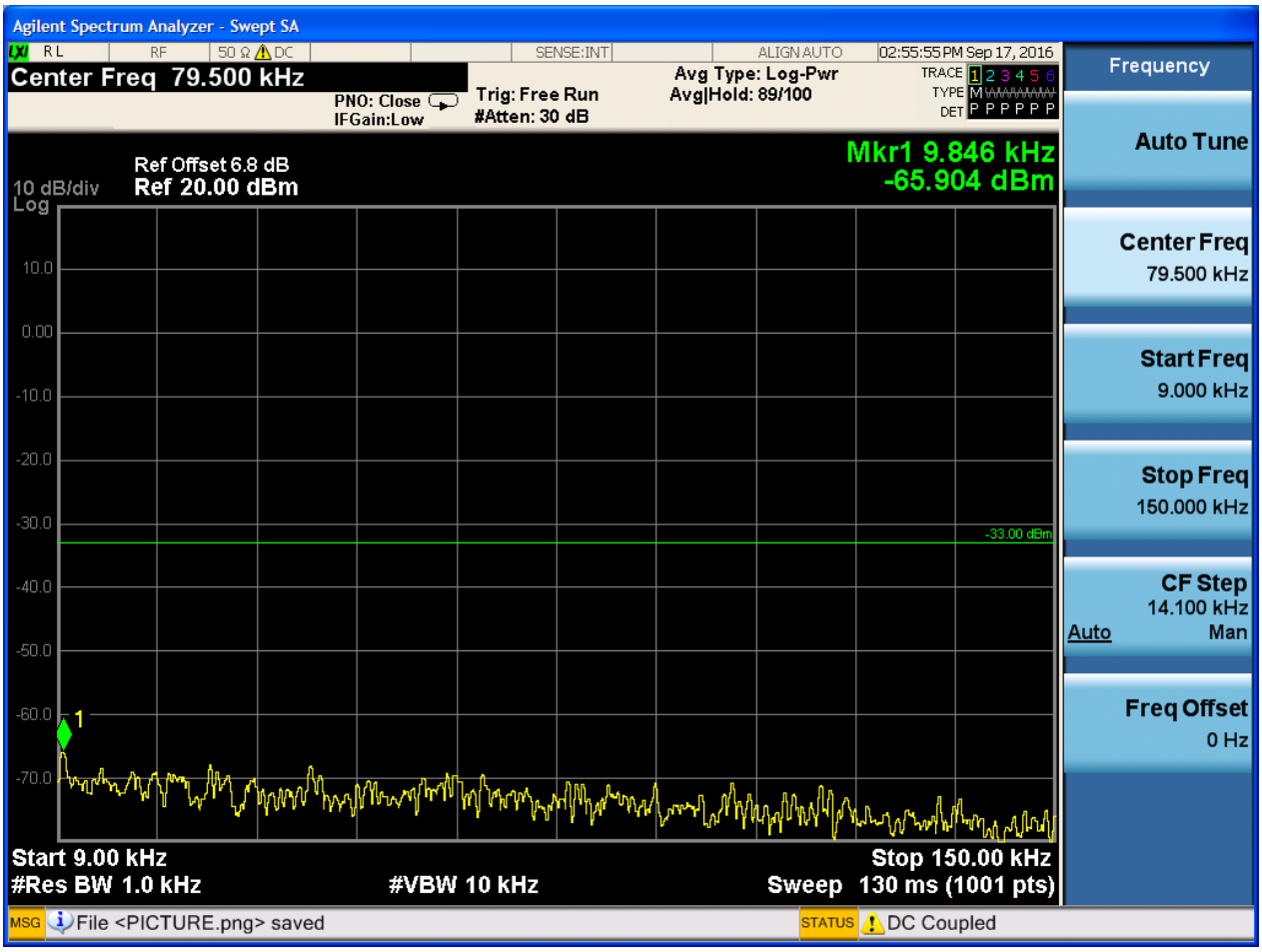
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



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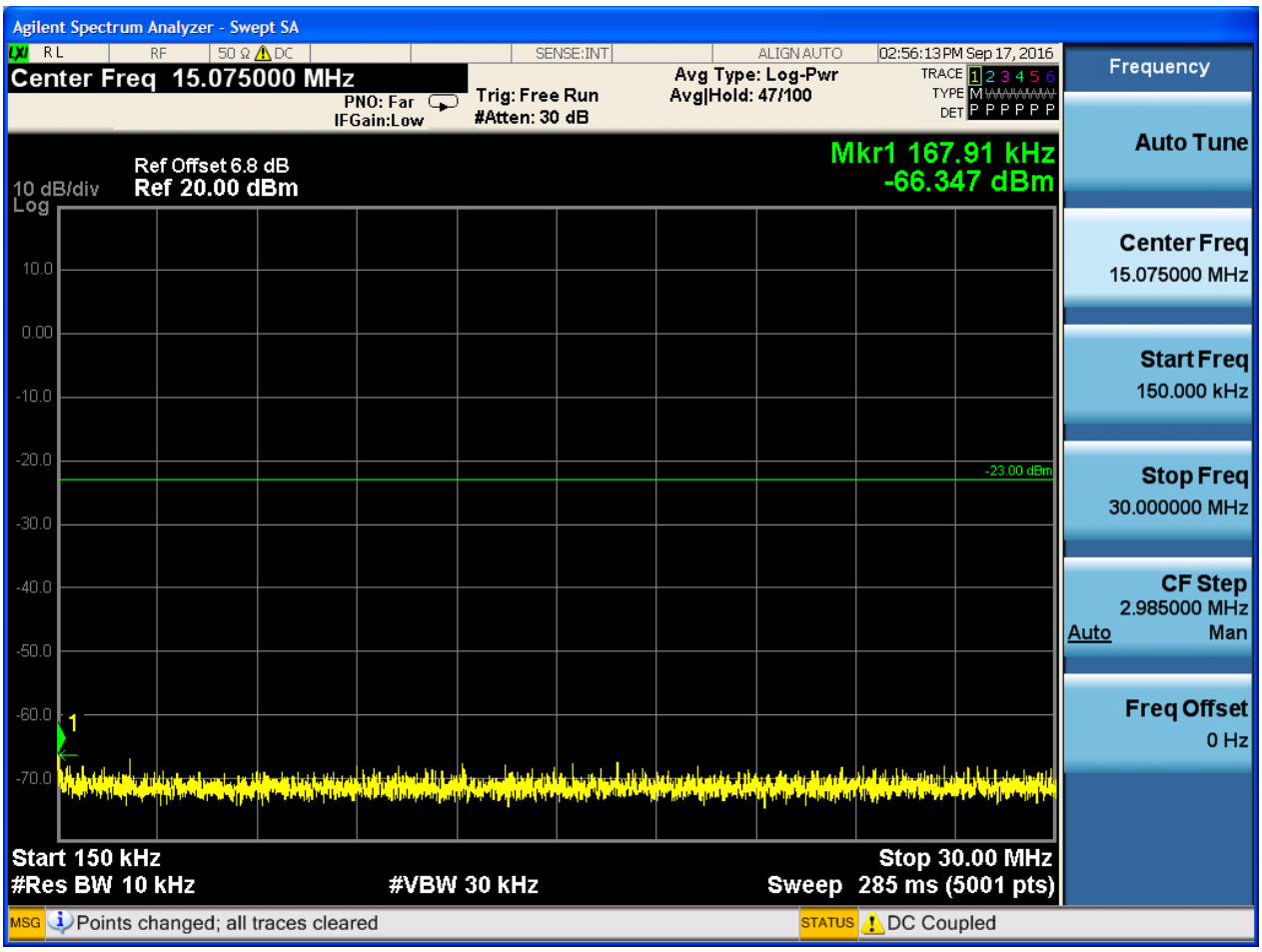

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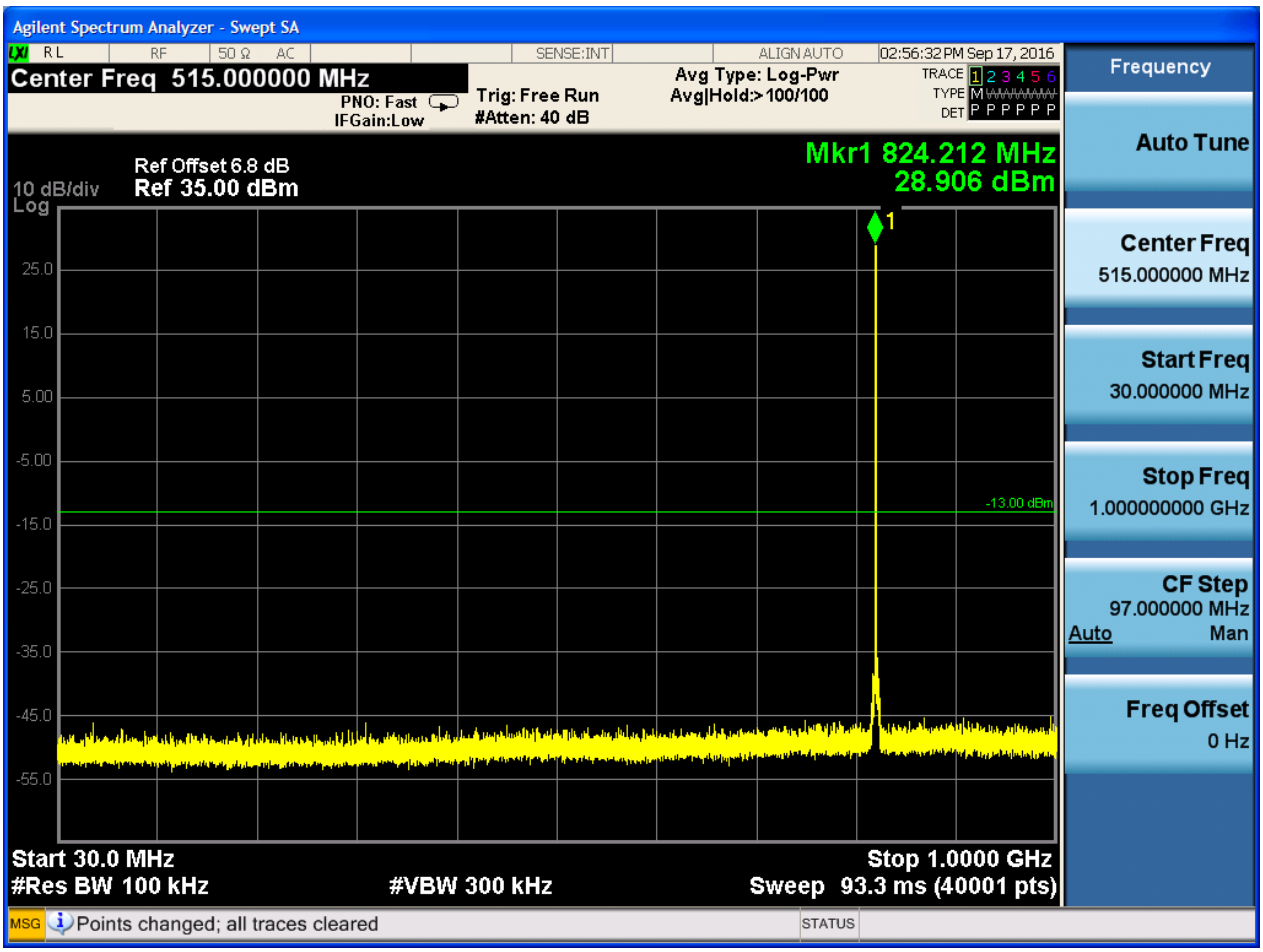

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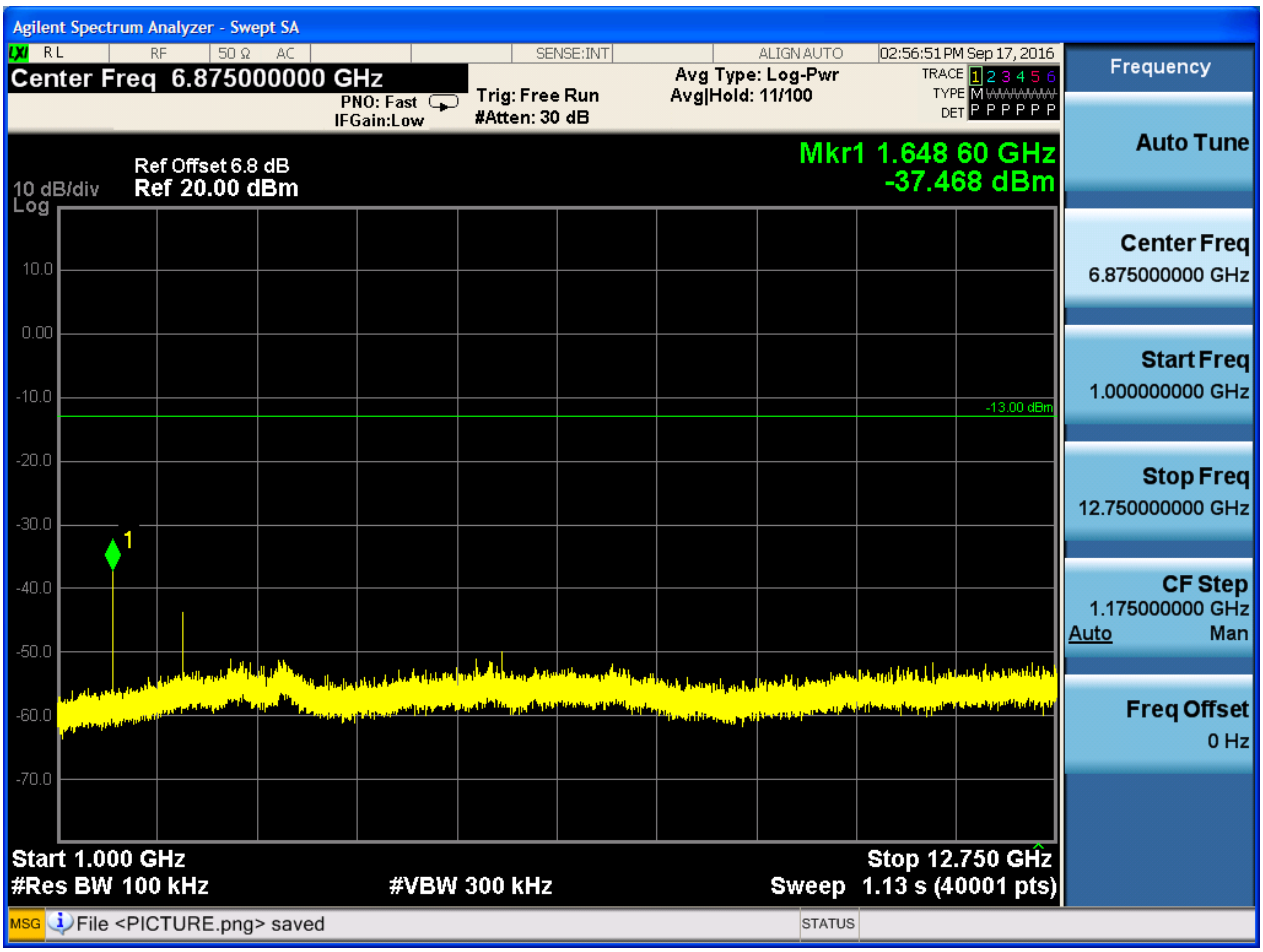

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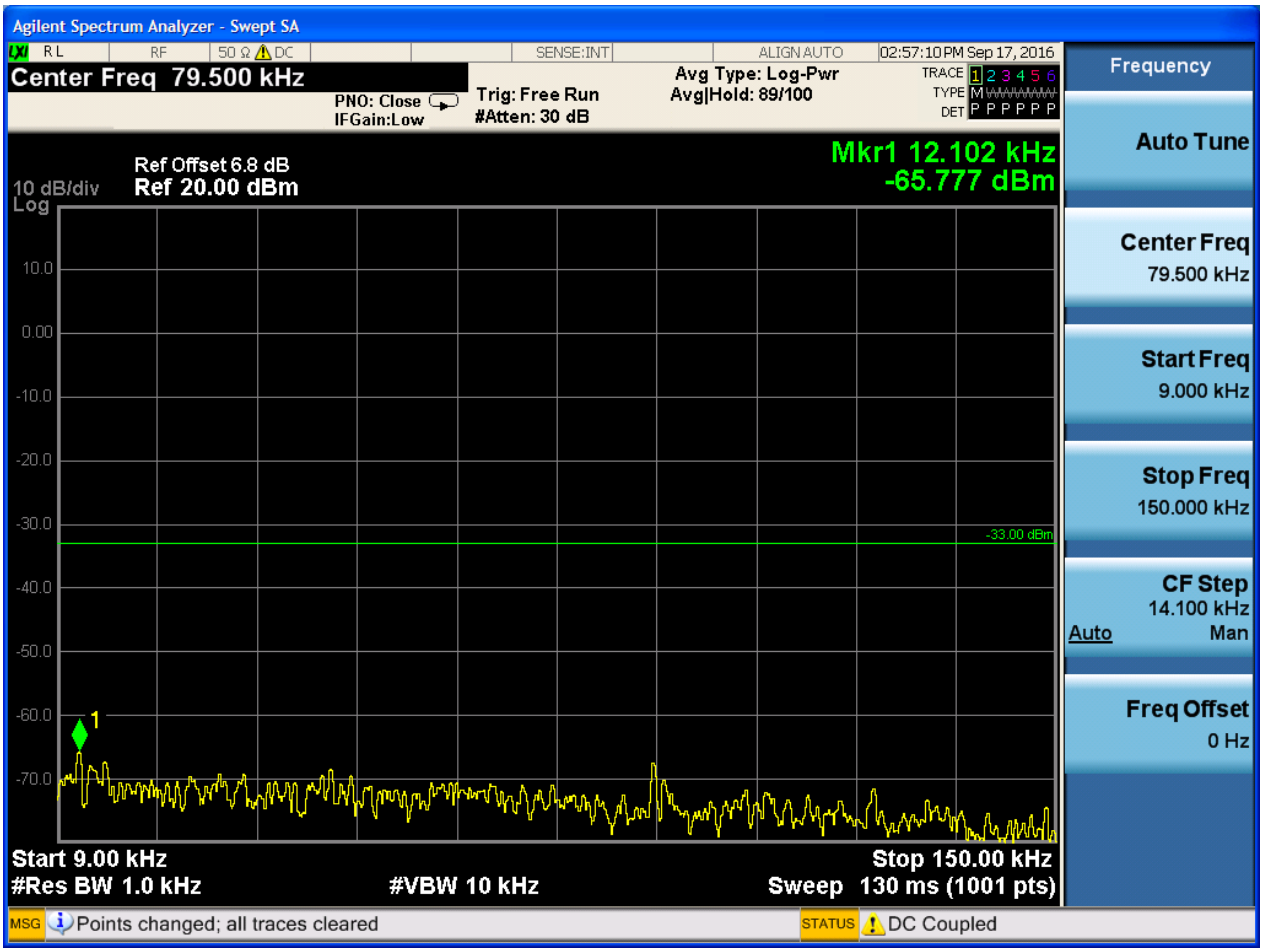
6.1.1.2.2 Test Channel = MCH



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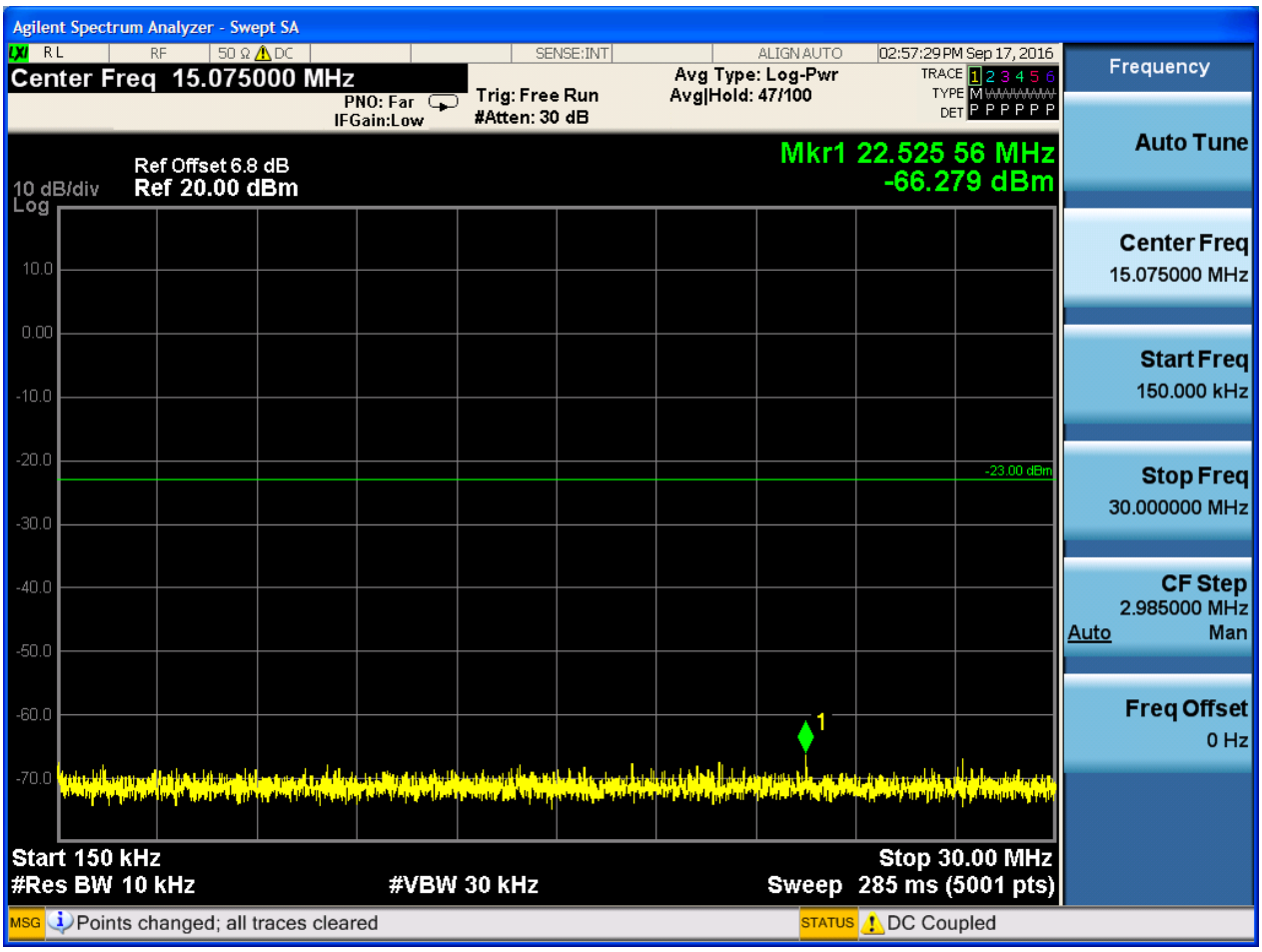

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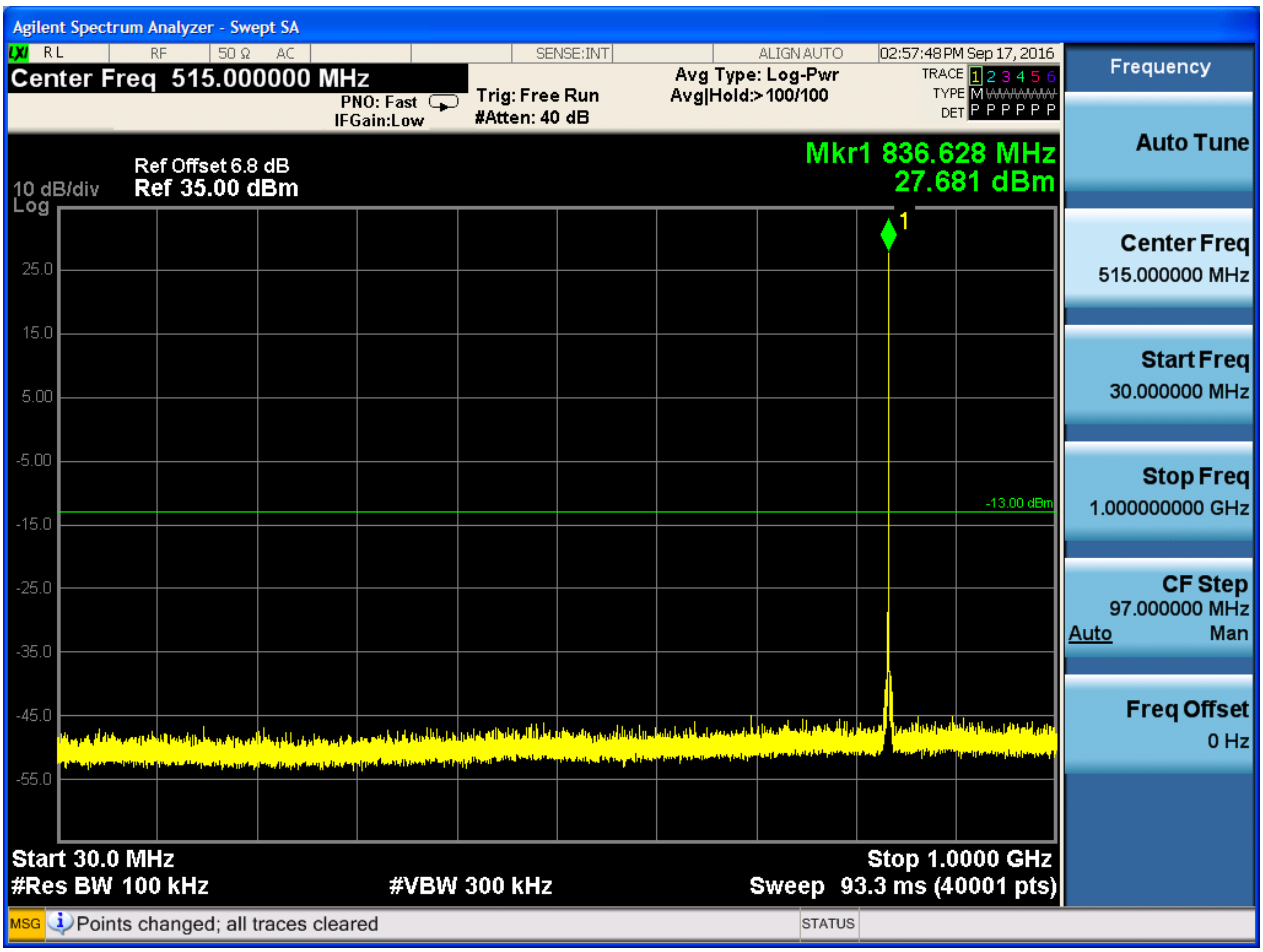

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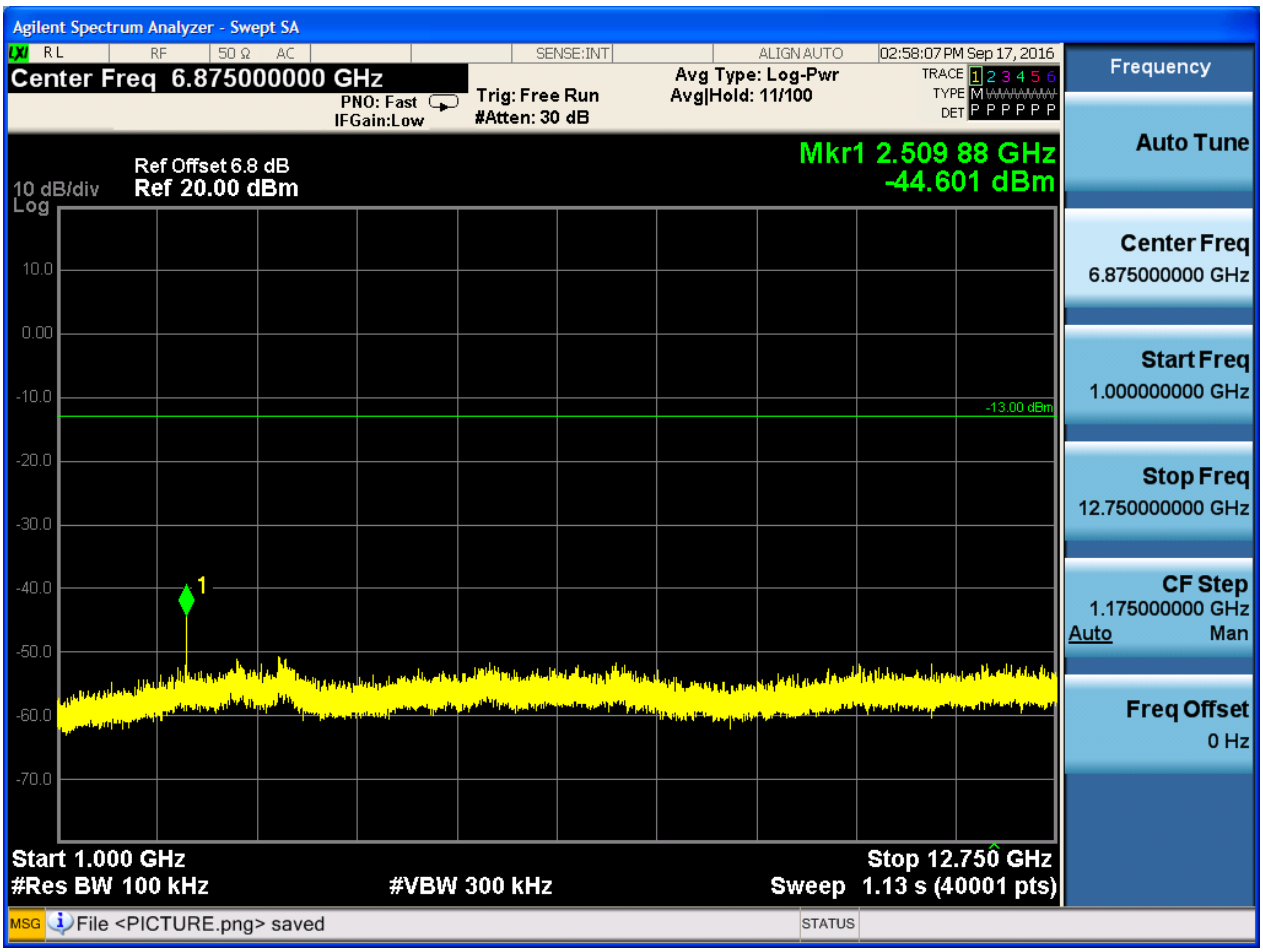

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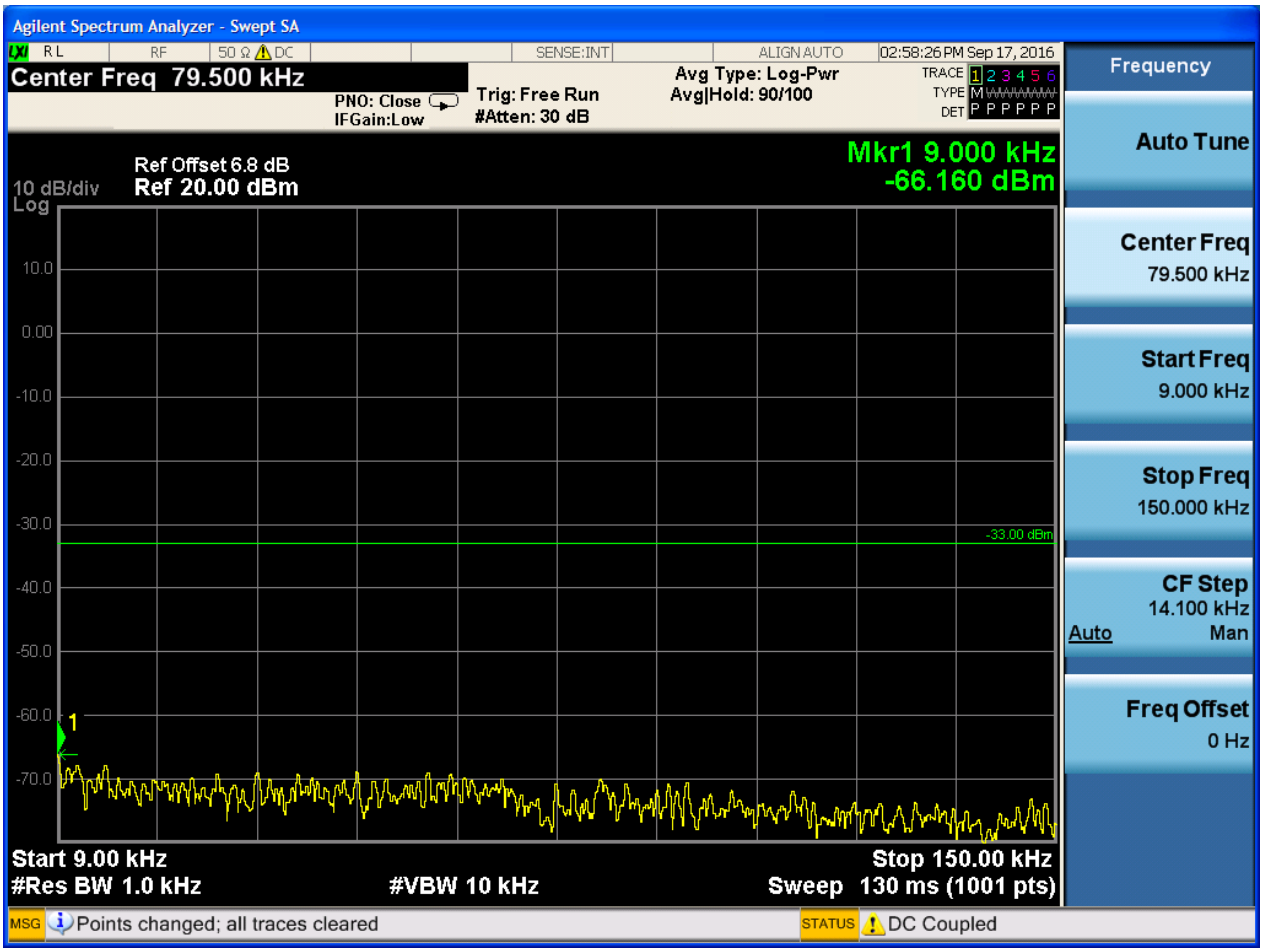
6.1.1.2.3 Test Channel = HCH



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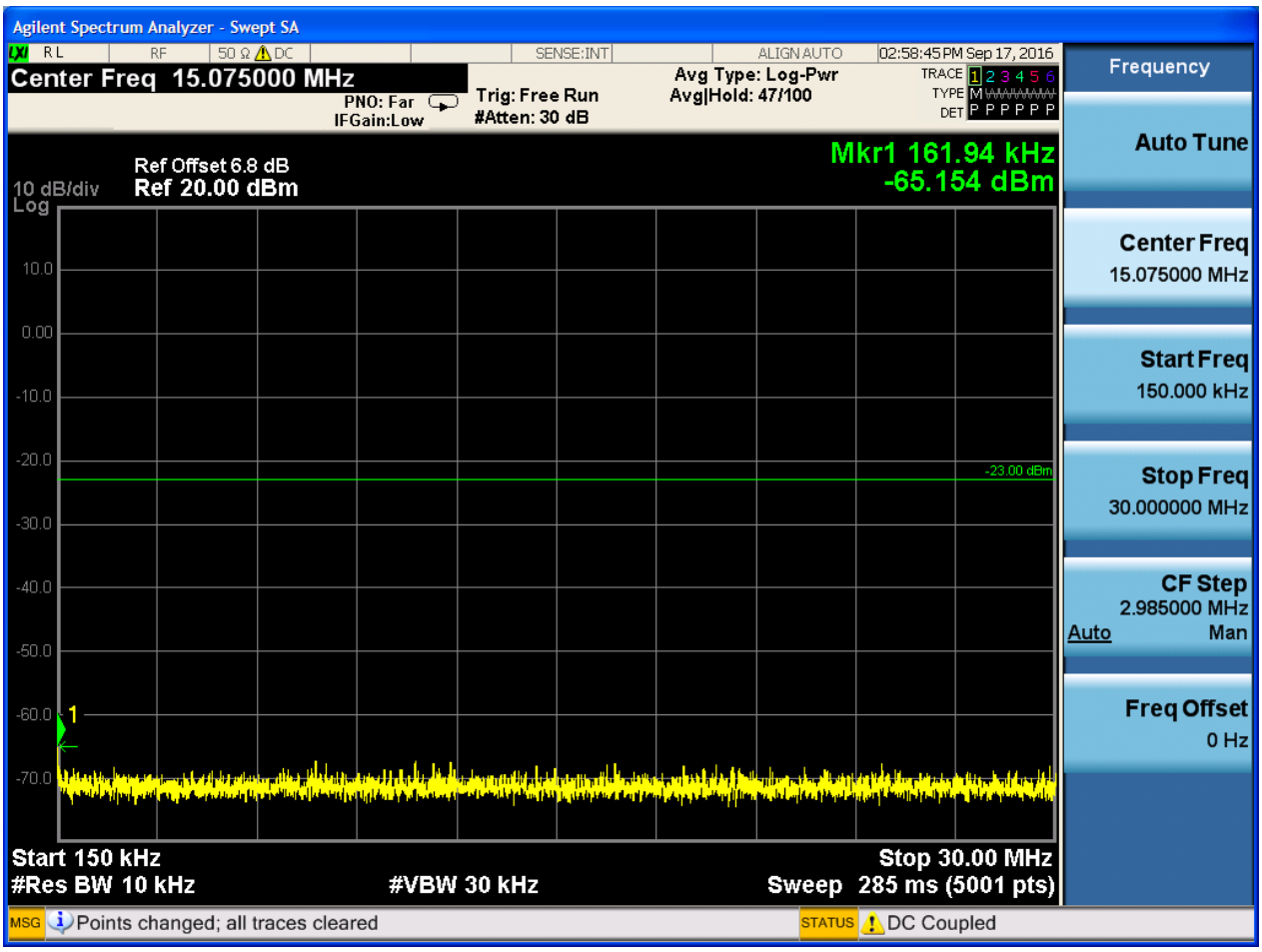

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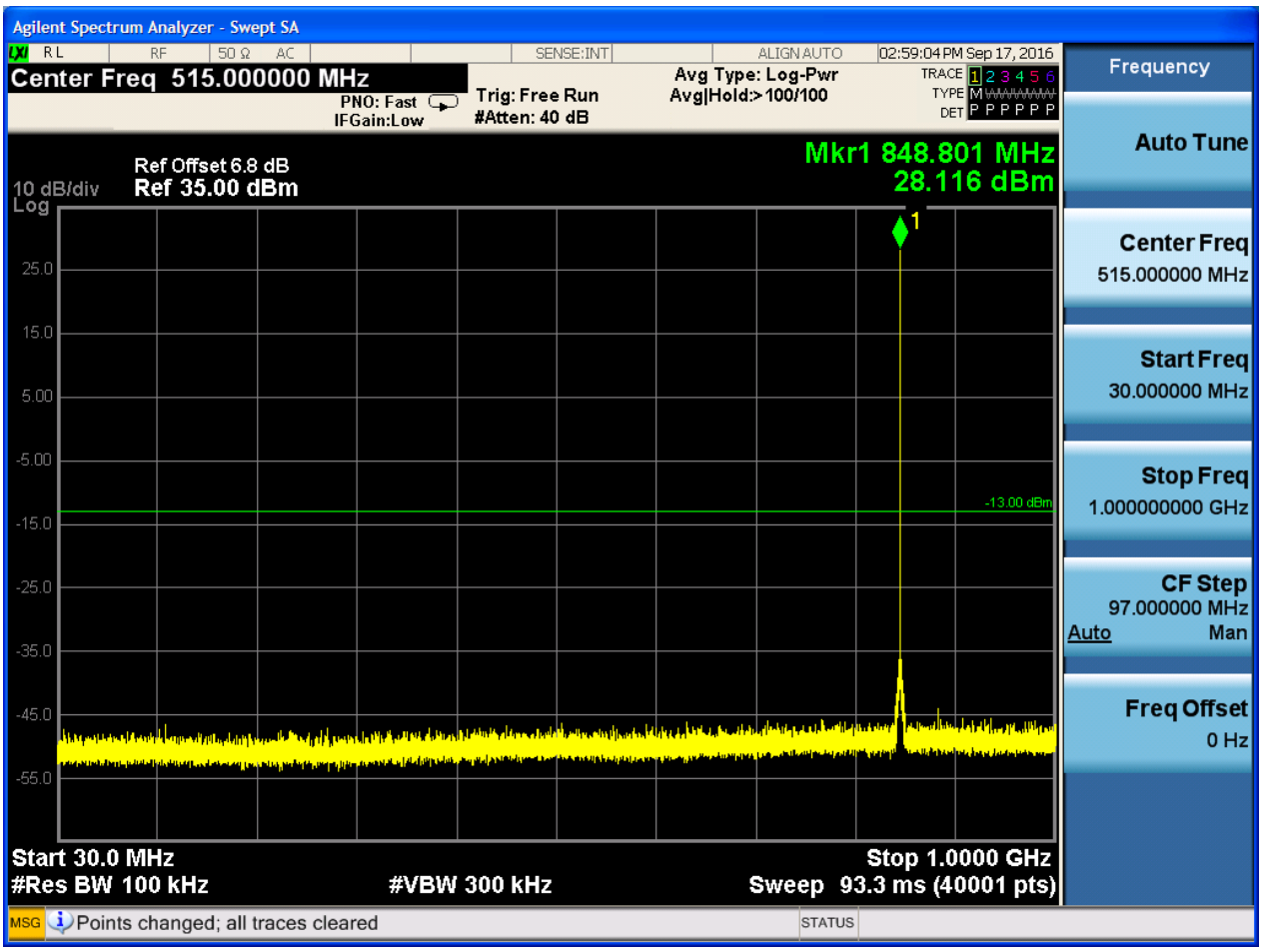

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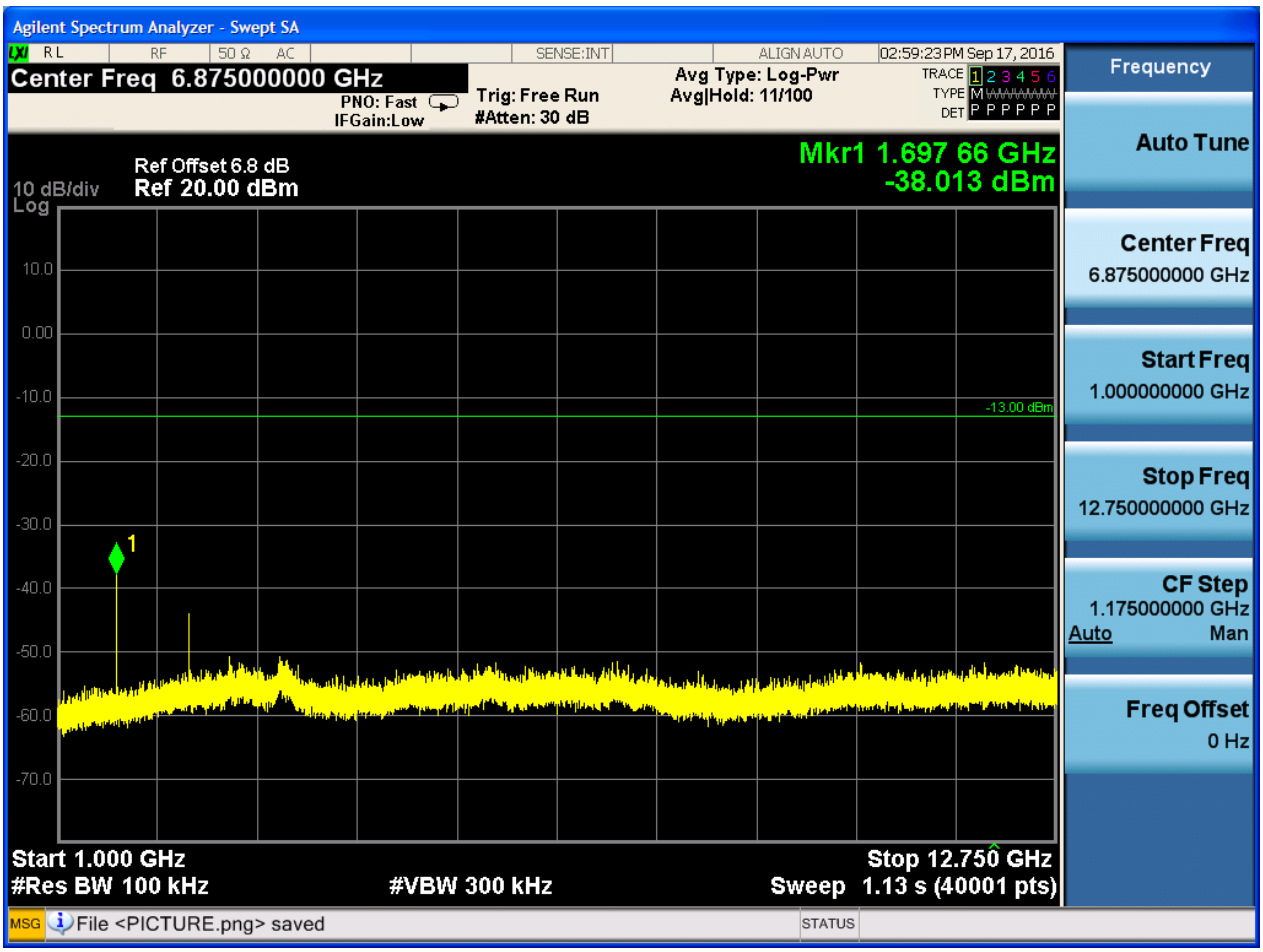

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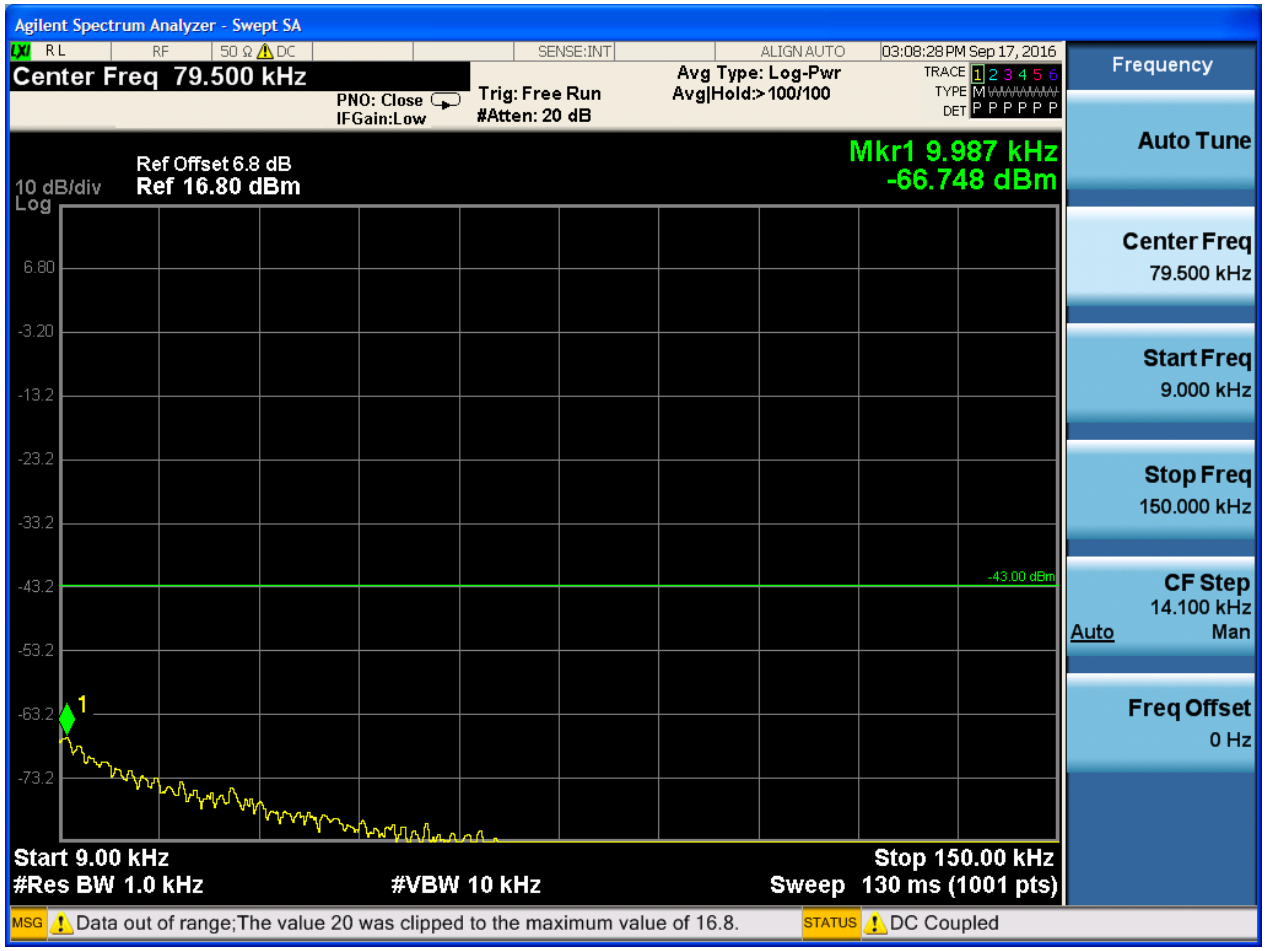
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



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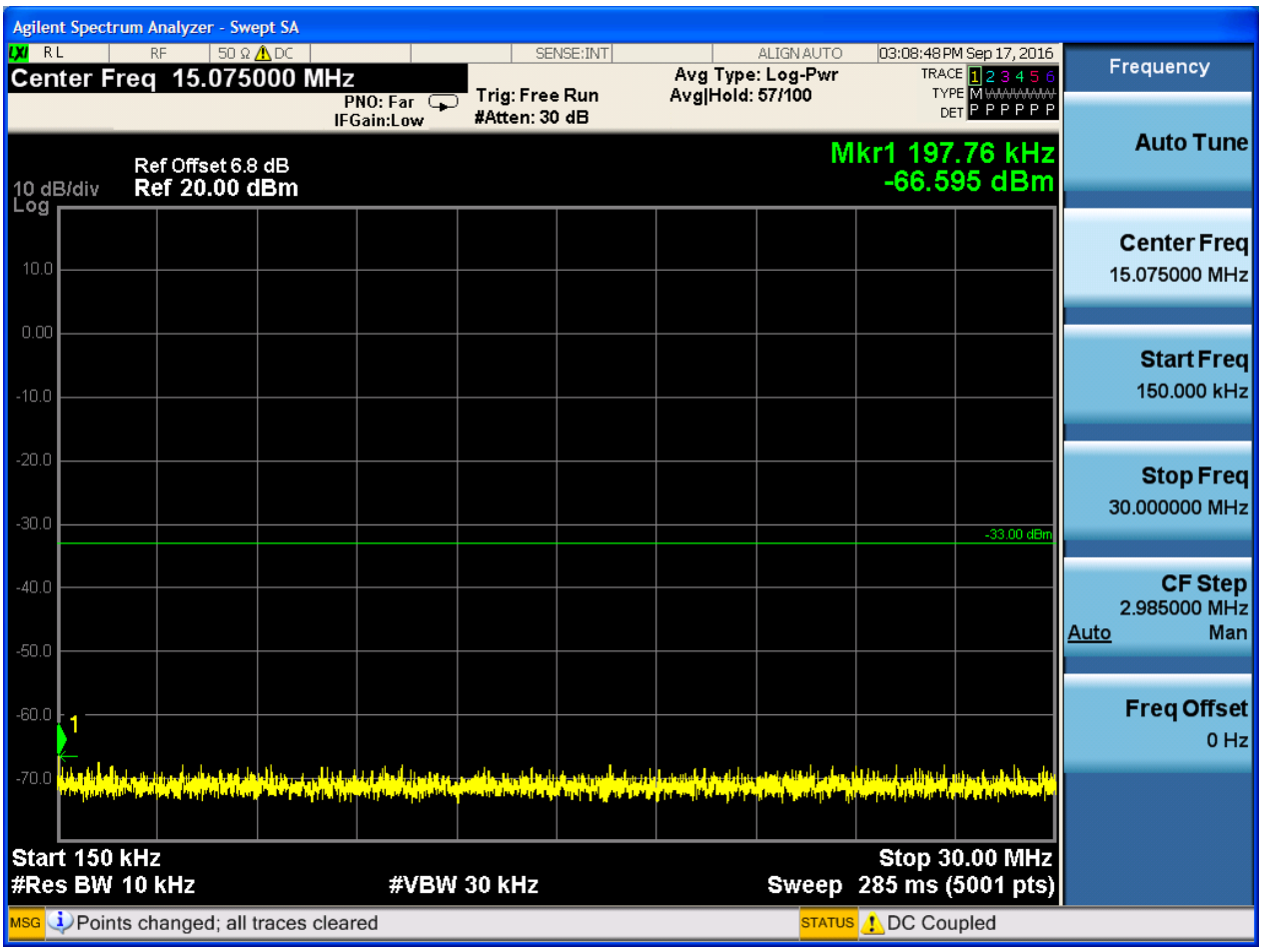

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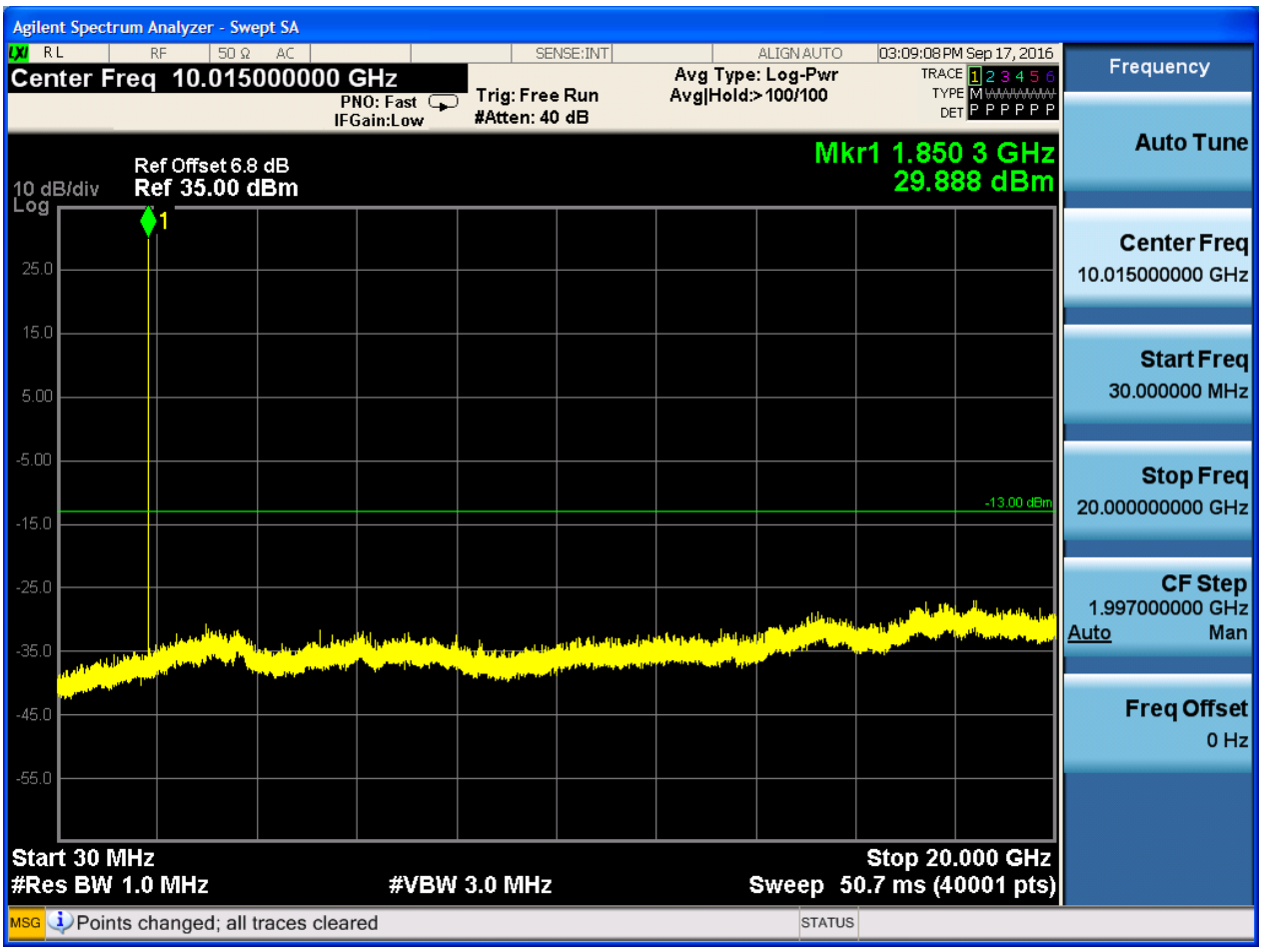

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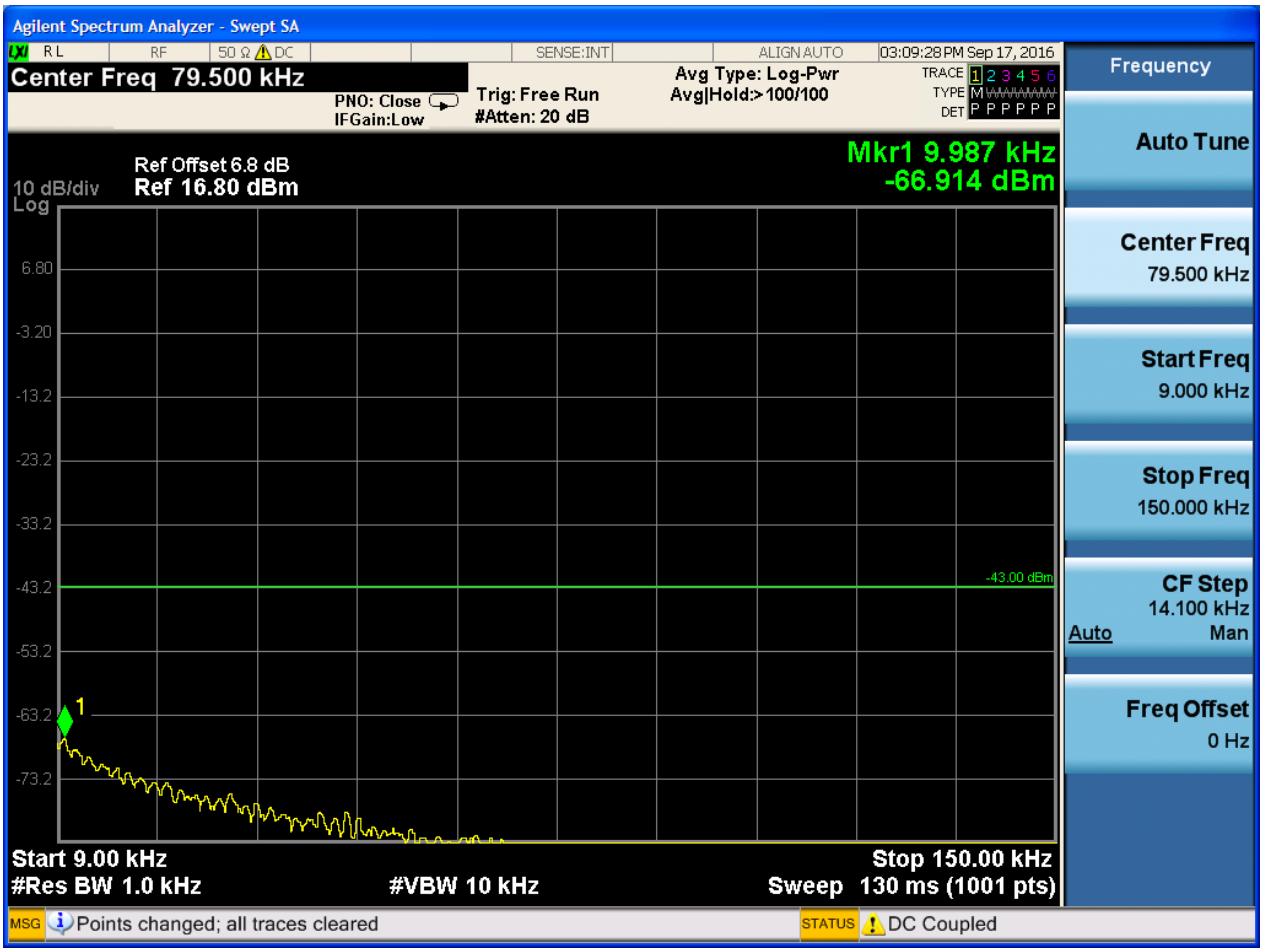
6.1.2.1.2 Test Channel = MCH



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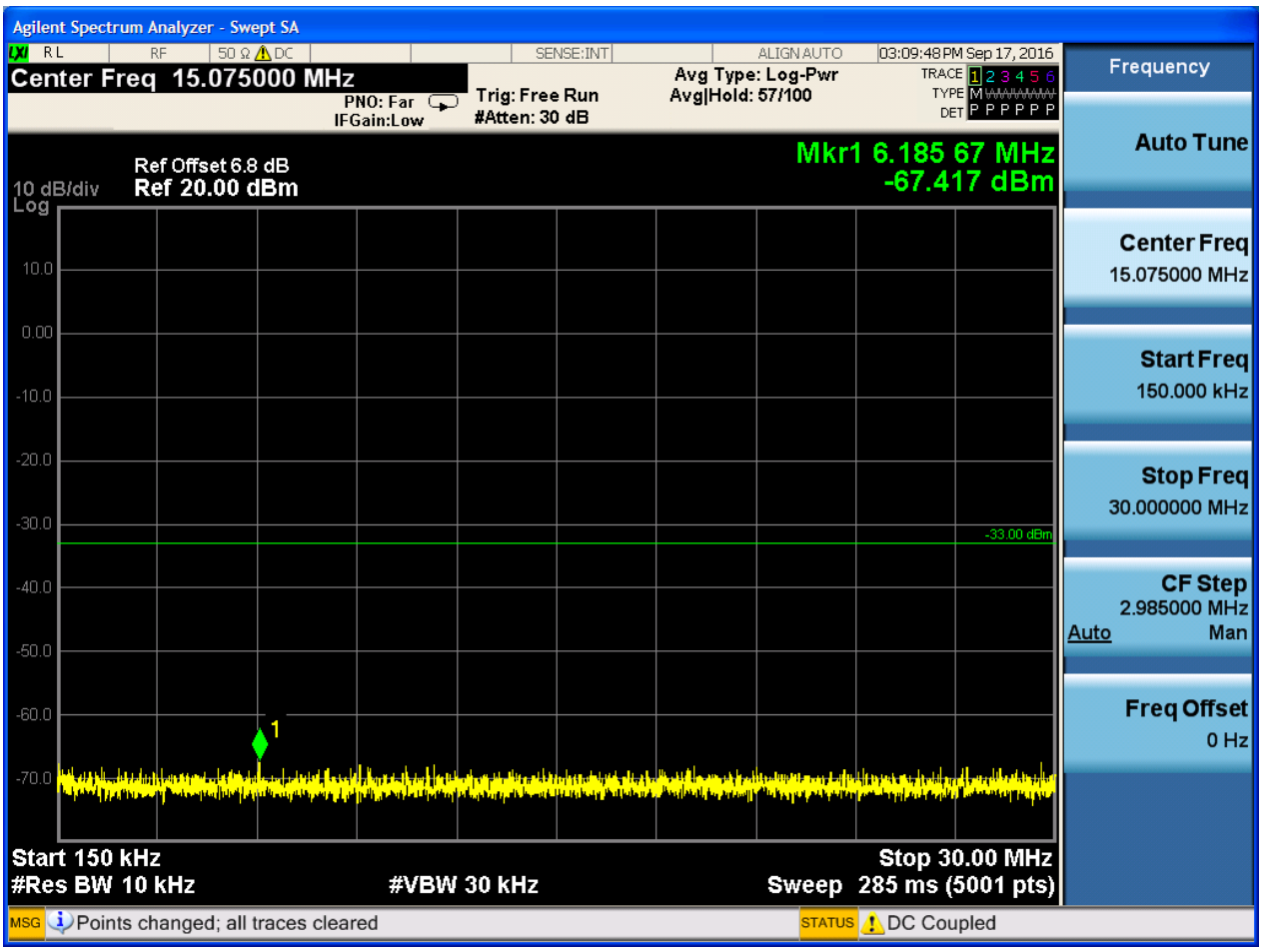

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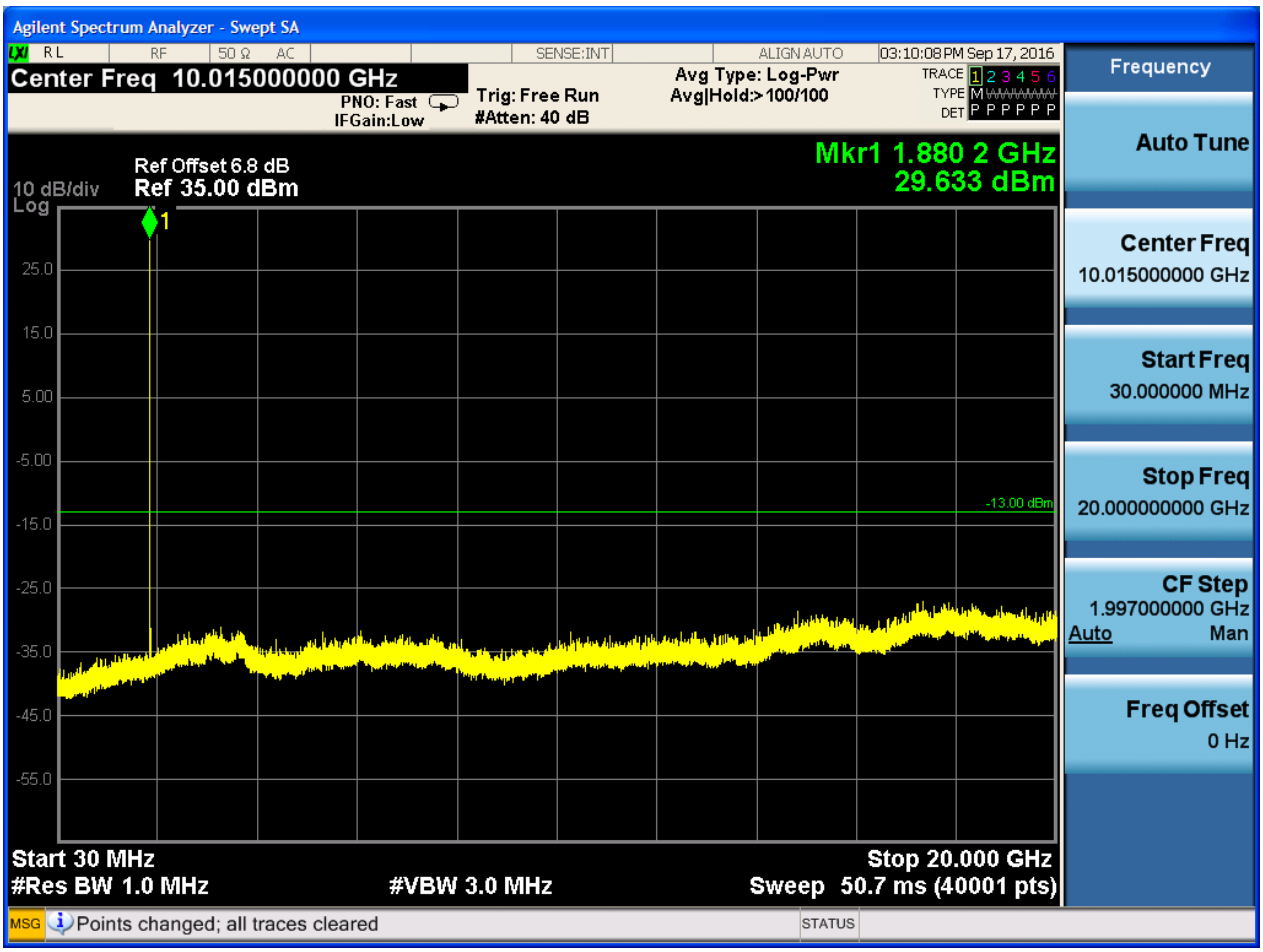

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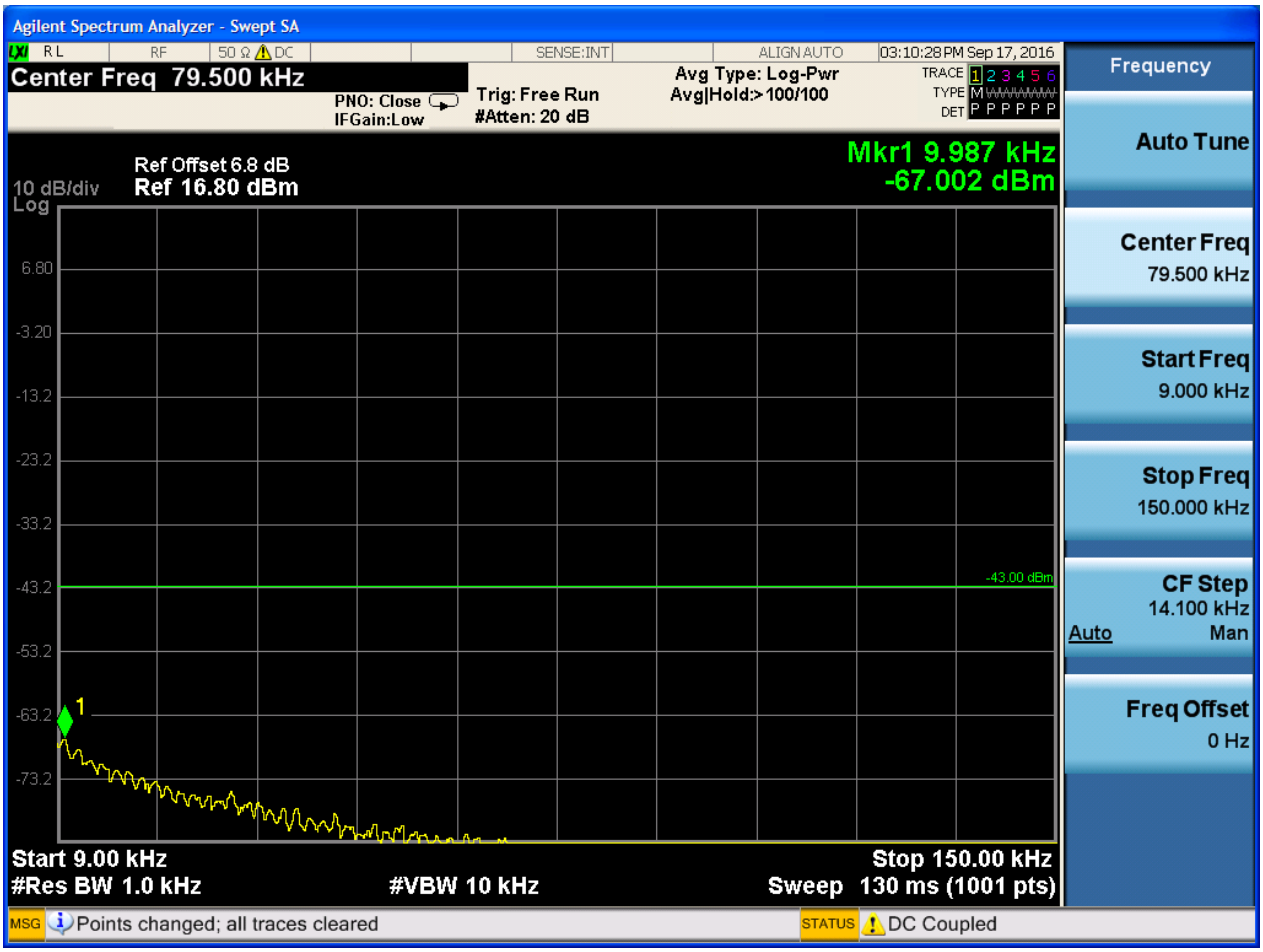
6.1.2.1.3 Test Channel = HCH



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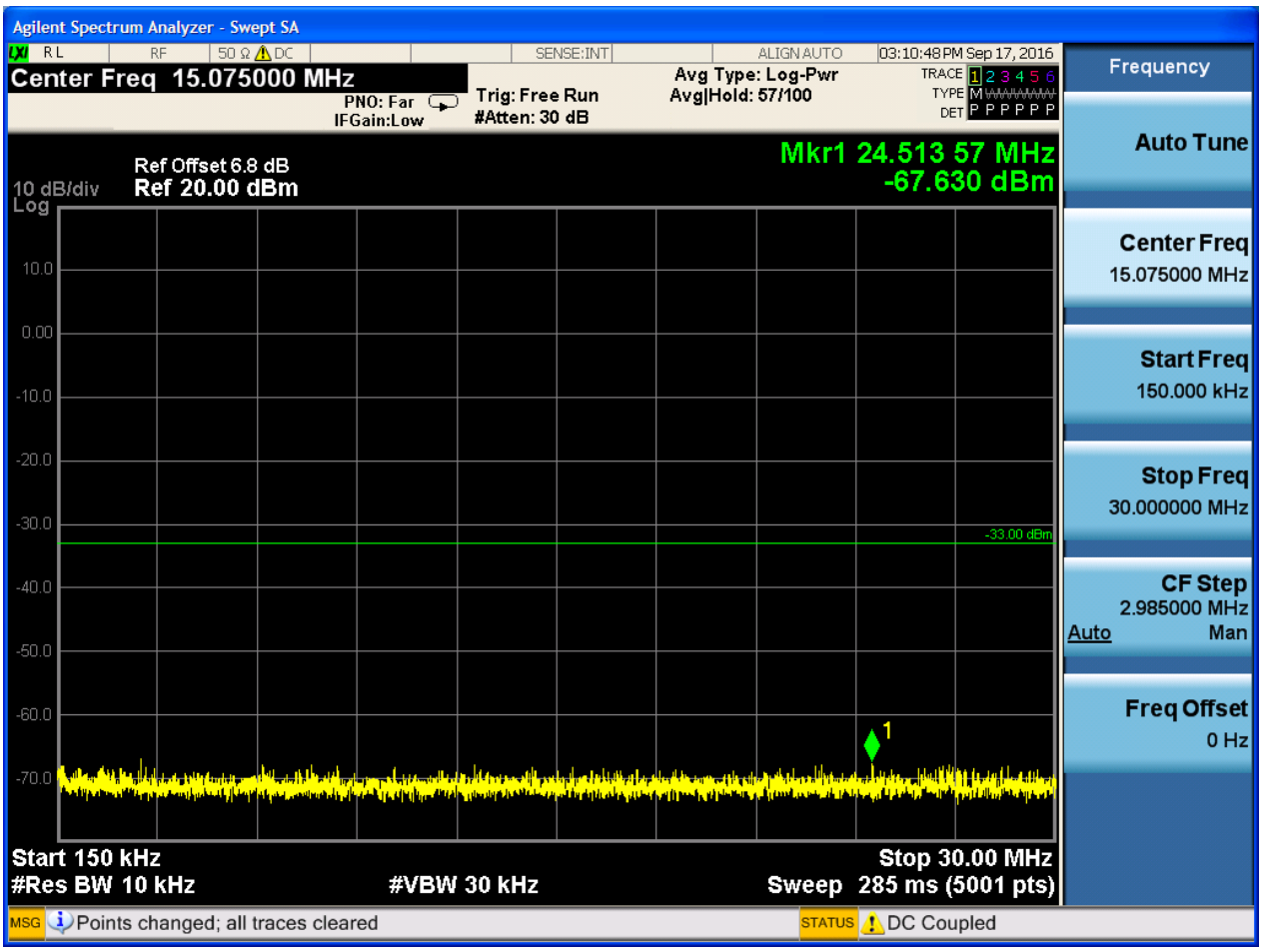

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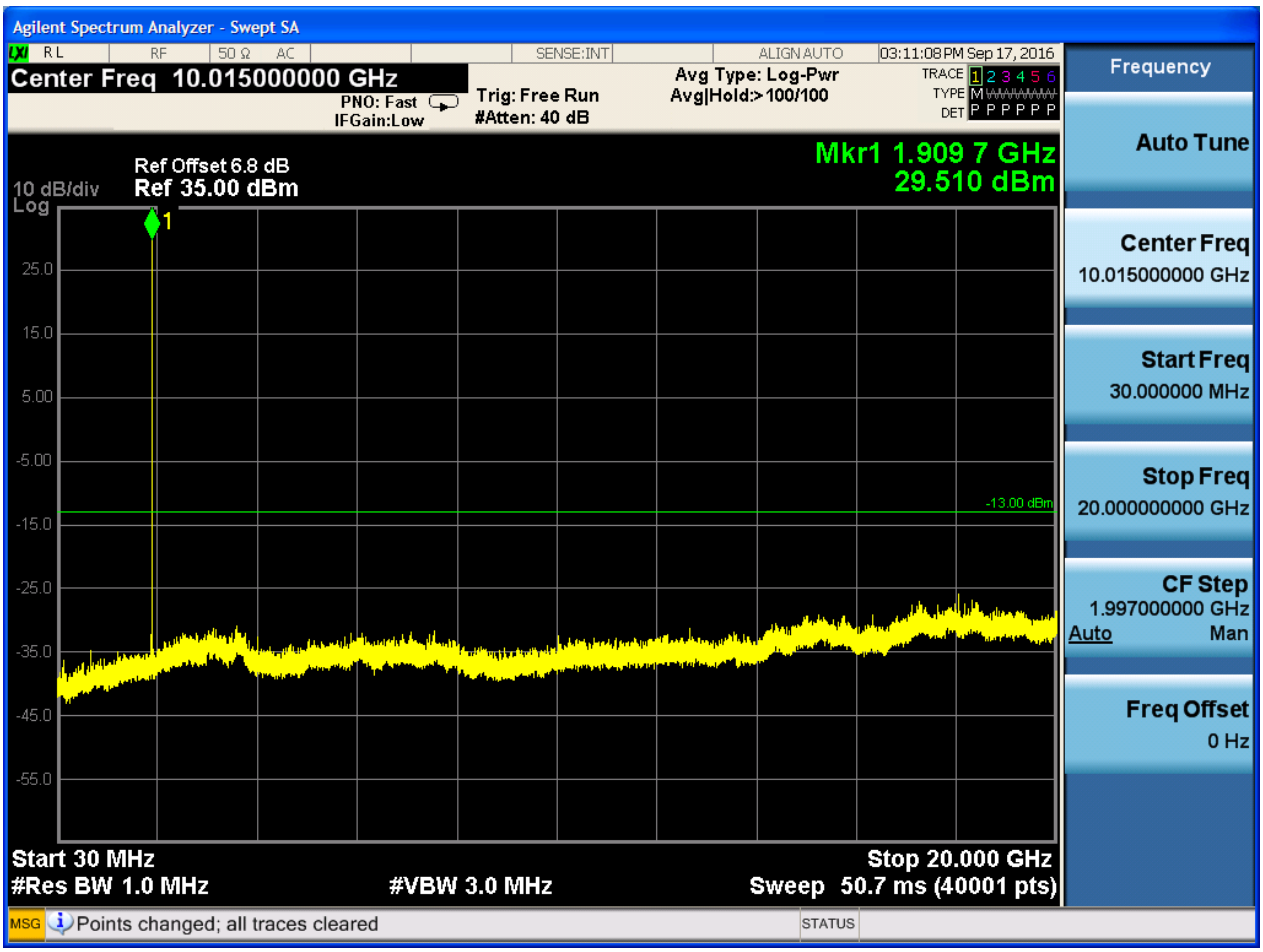

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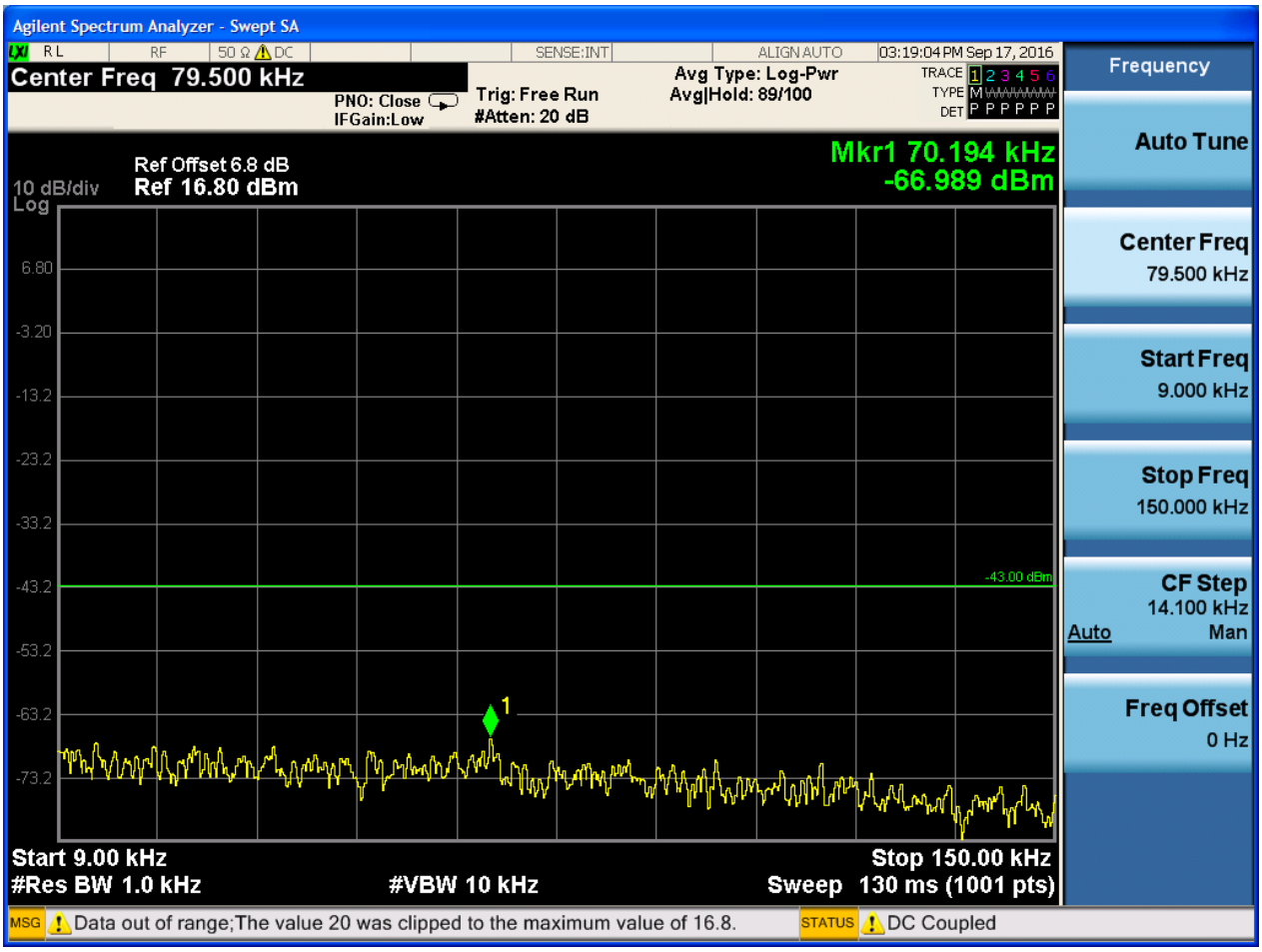
6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH



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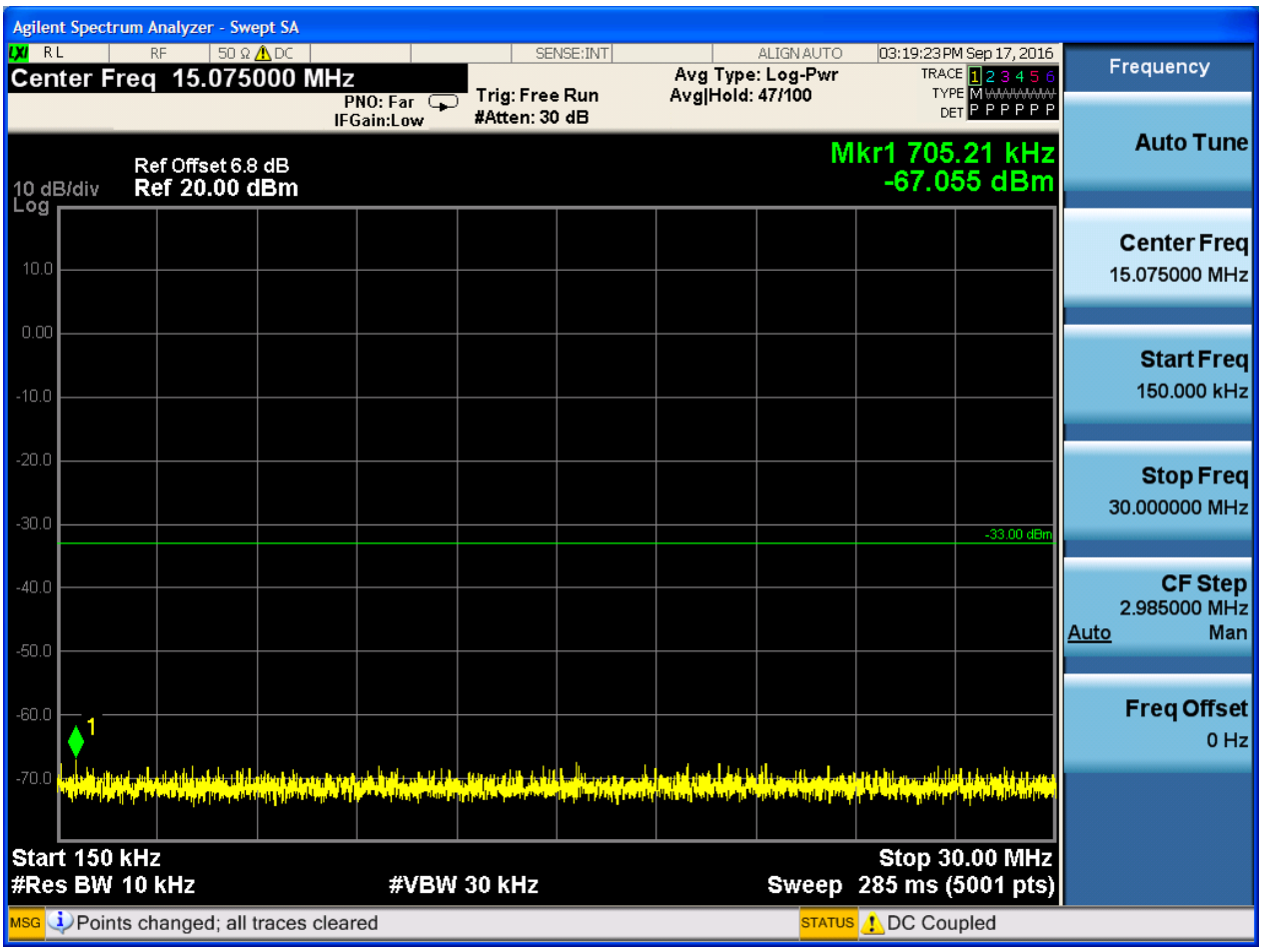

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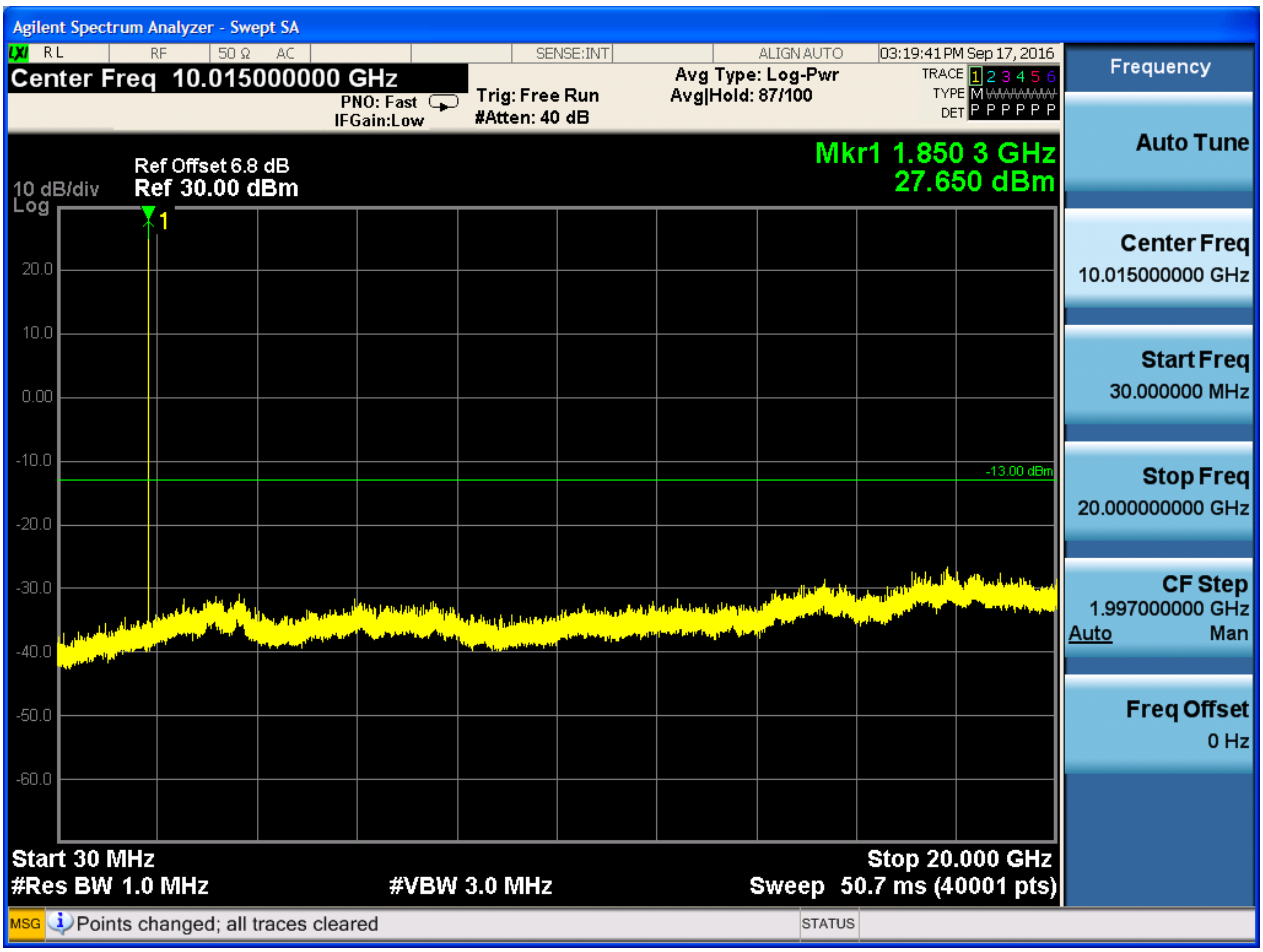

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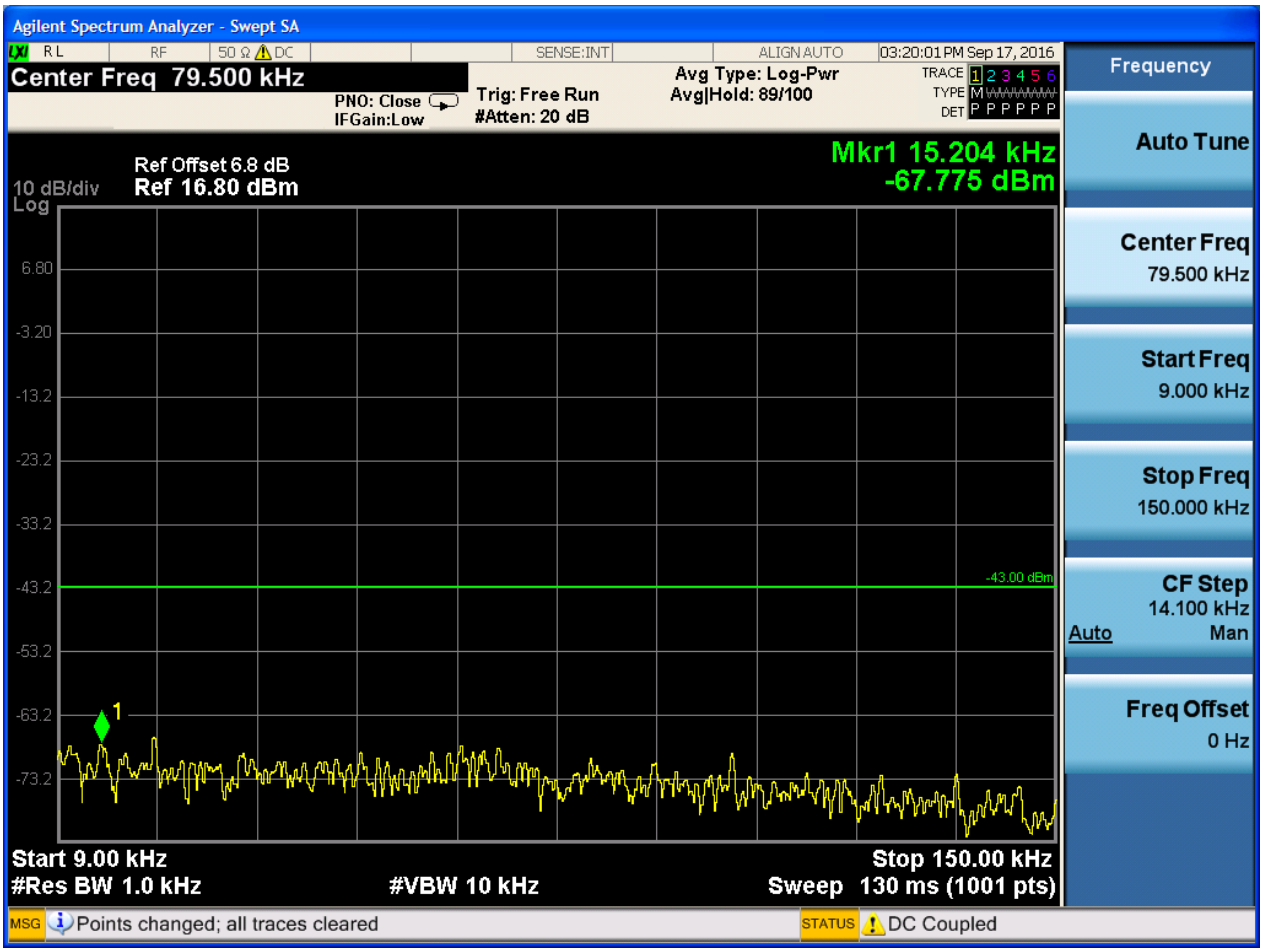
6.1.2.2.2 Test Channel = MCH



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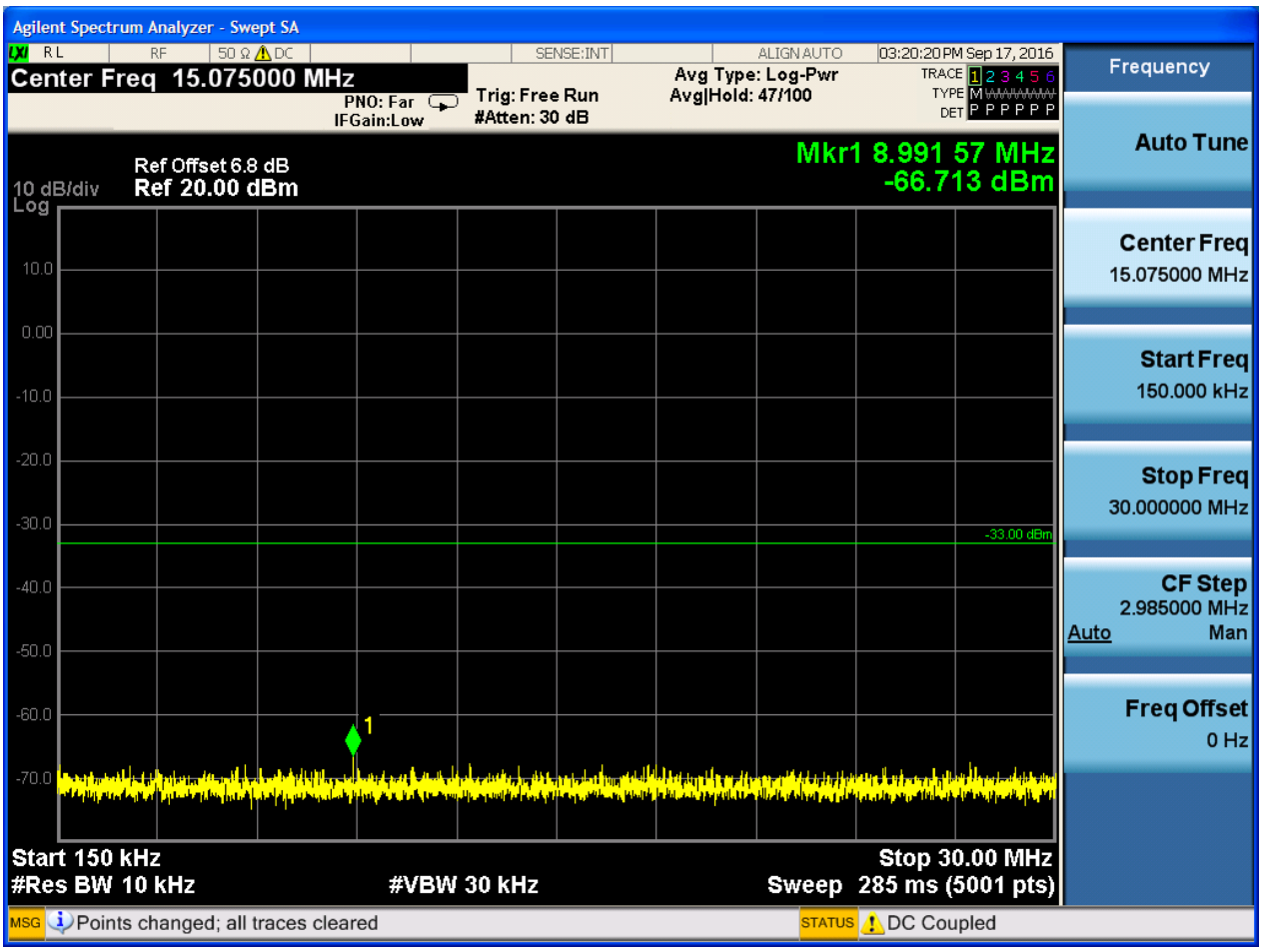

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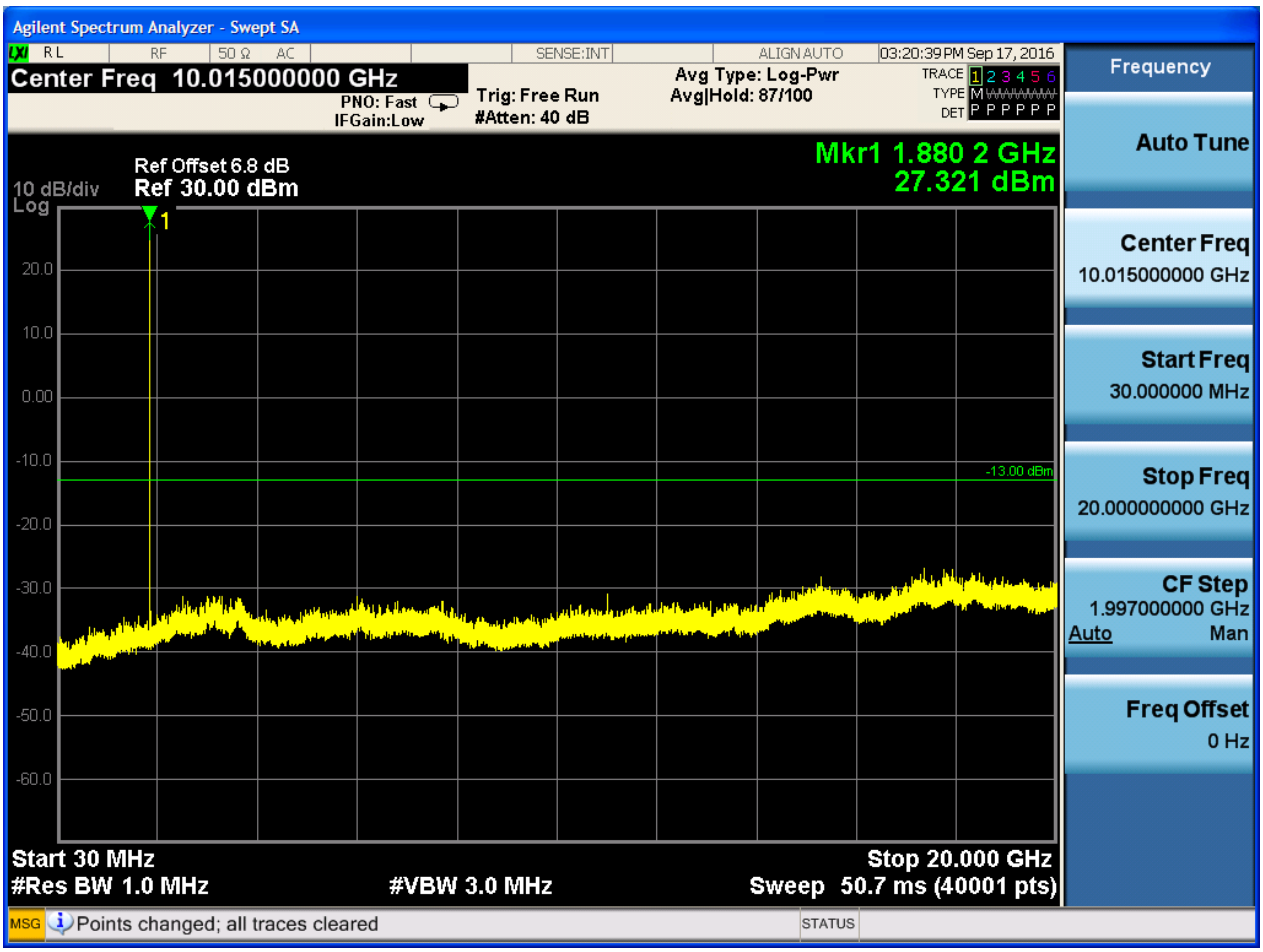

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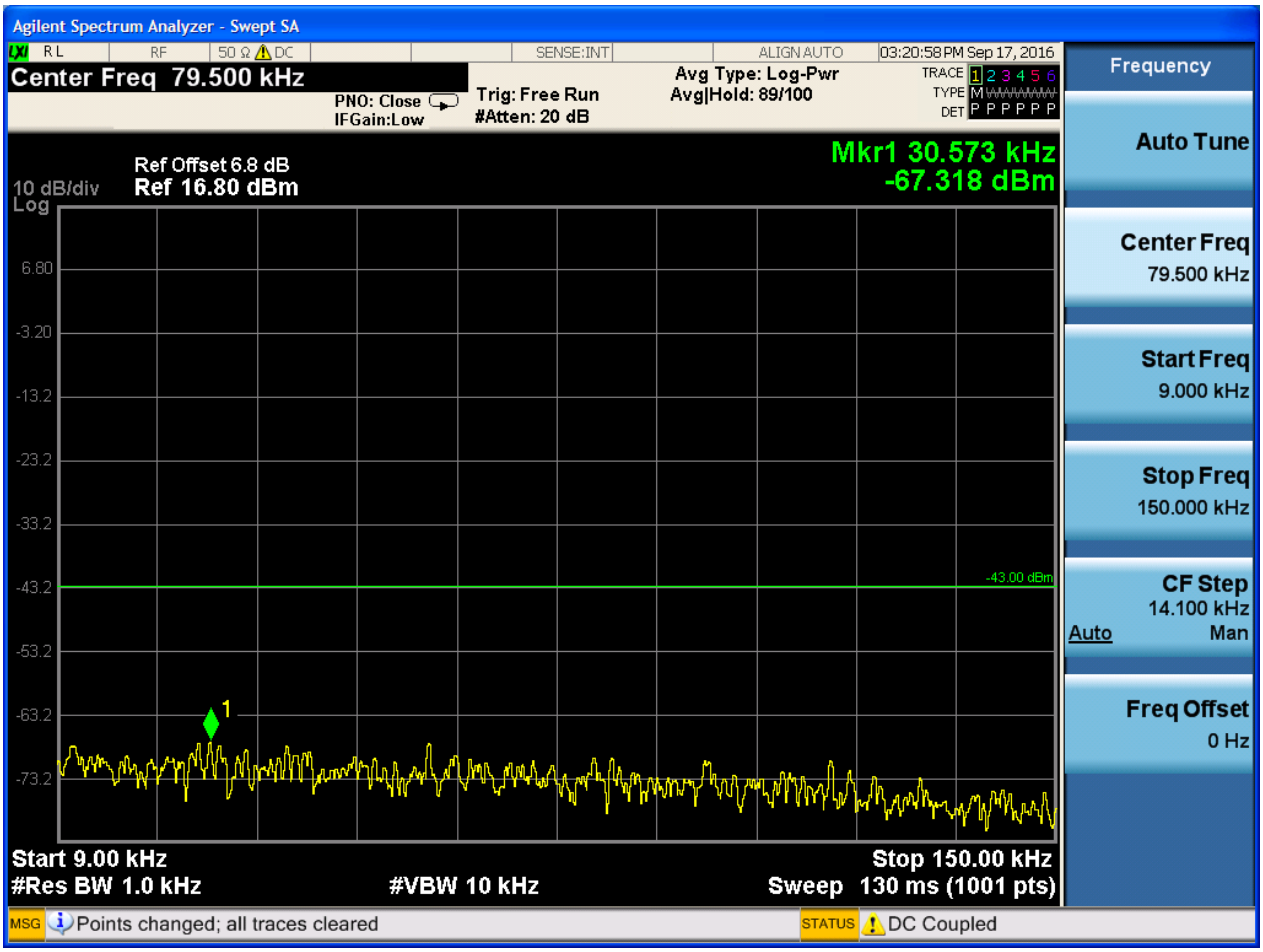
6.1.2.2.3 Test Channel = HCH



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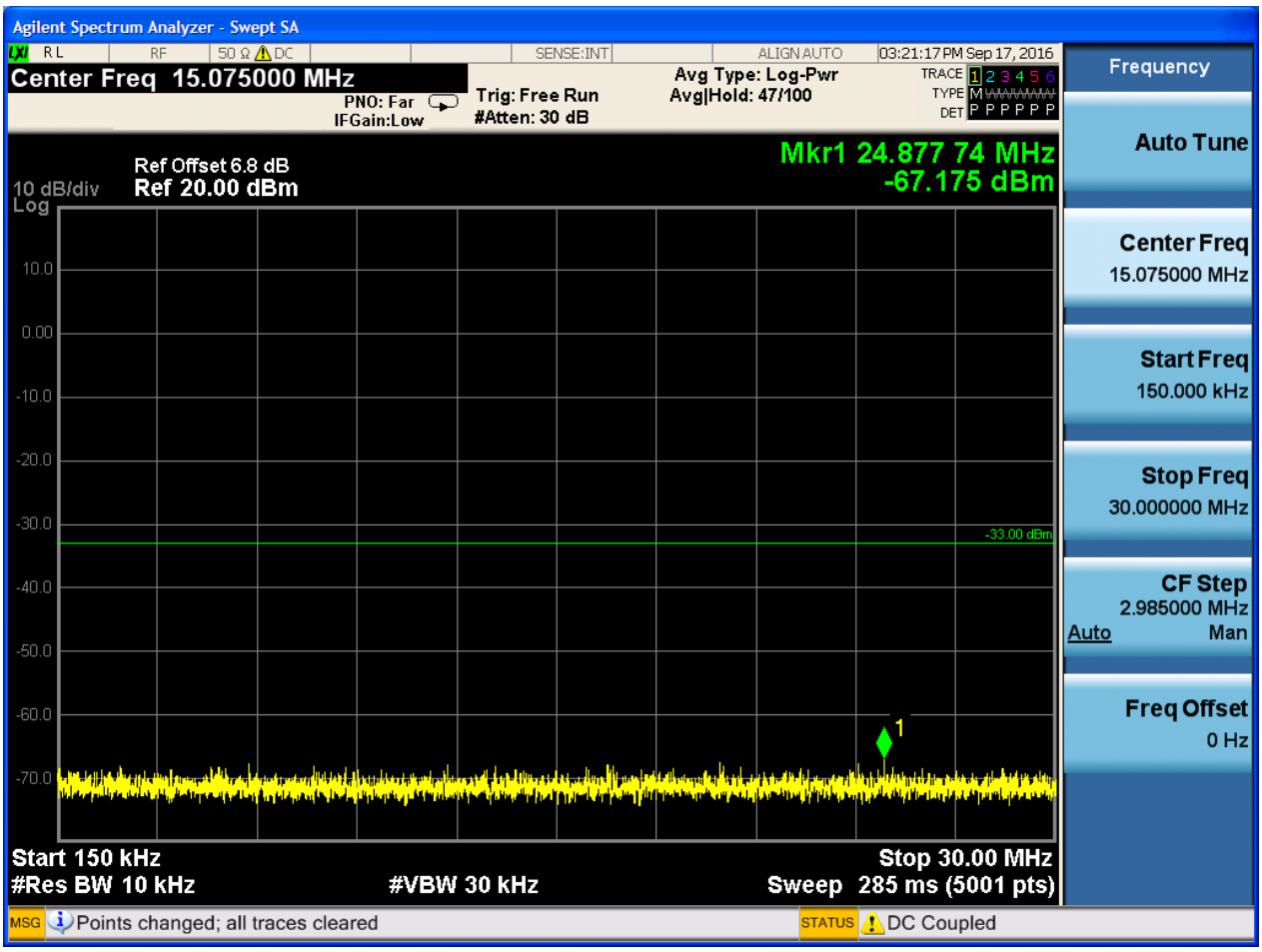

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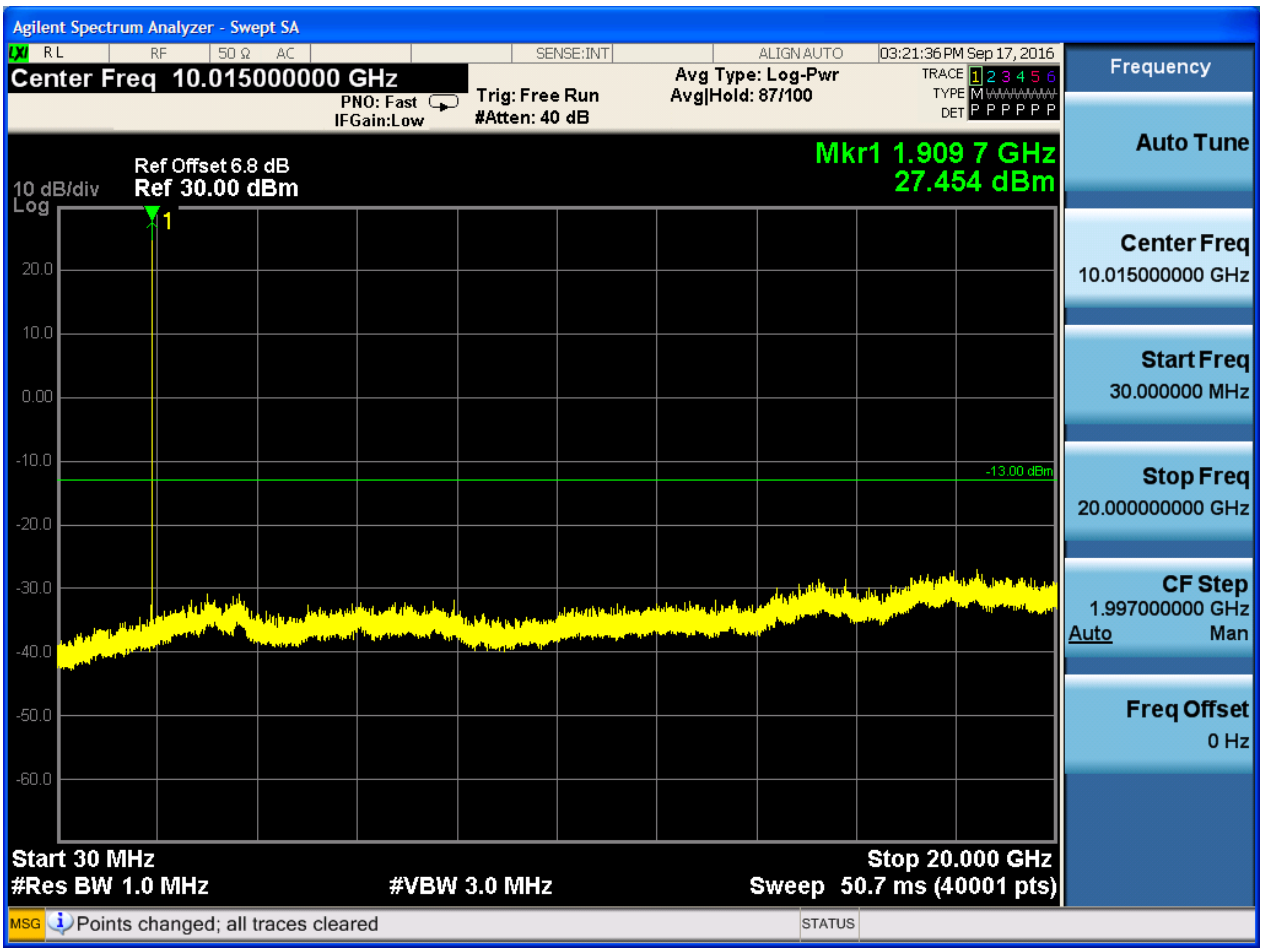

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7Appendix_G: Field Strength of Spurious Radiation

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

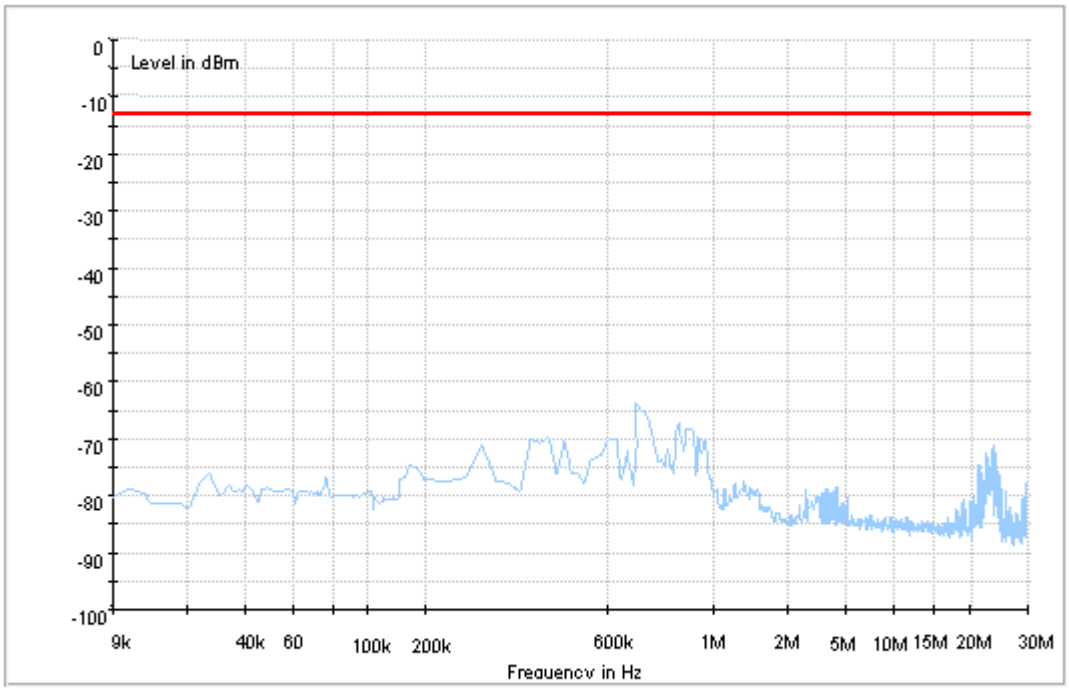
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM850

7.1.1.1 Test Mode = GSM_Ant1



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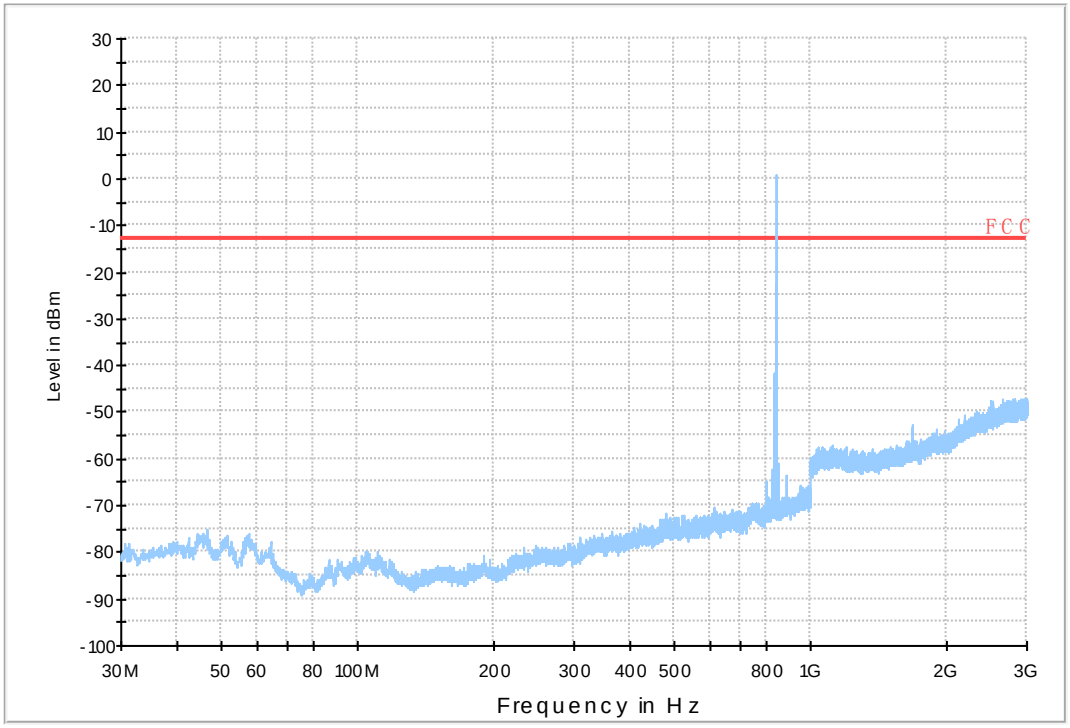
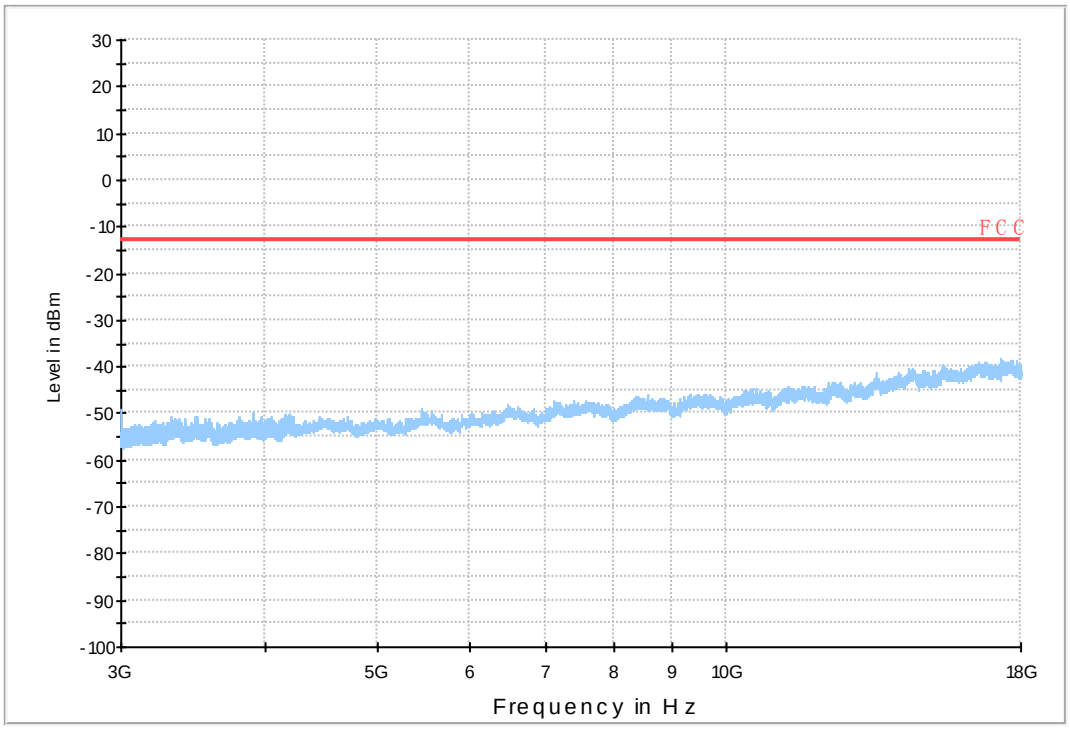
Copy of FCC PART22 GSM850_L



Copy of FCC PART22 GSM850_H



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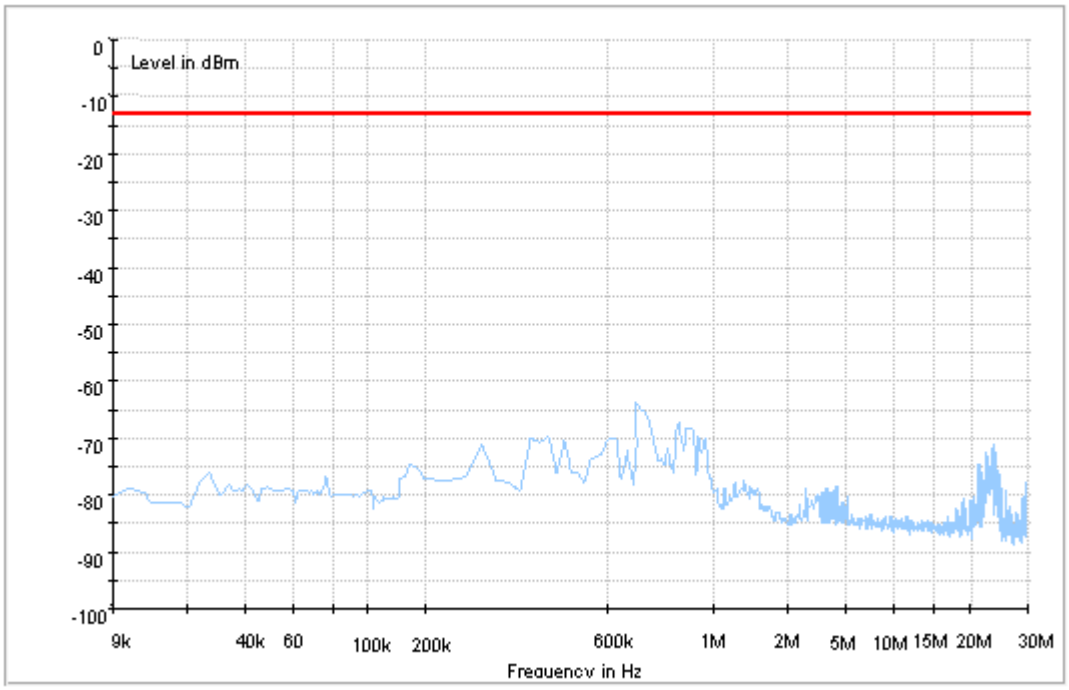
7.1.1.2 Test Mode = GSM_Ant2



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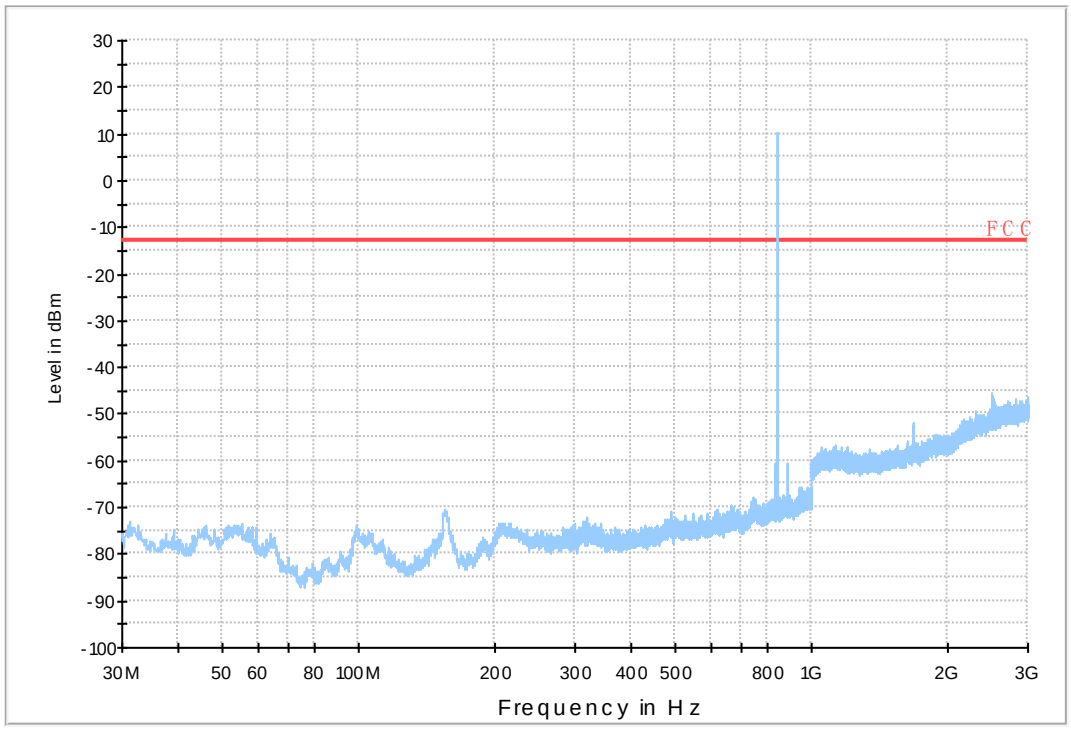

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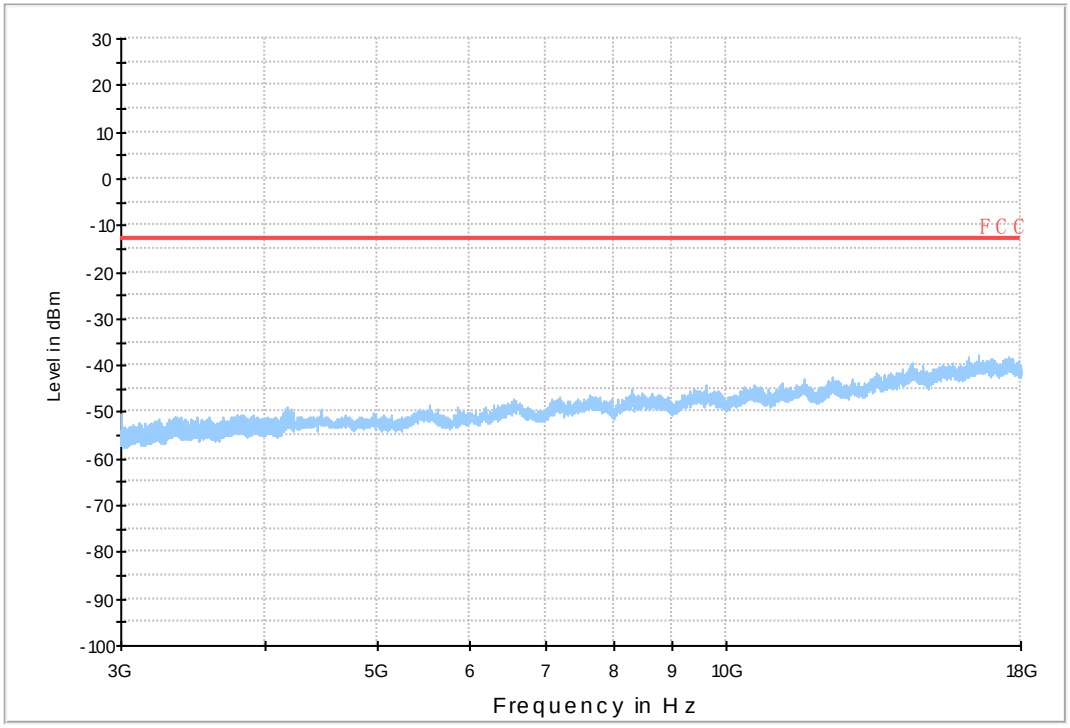

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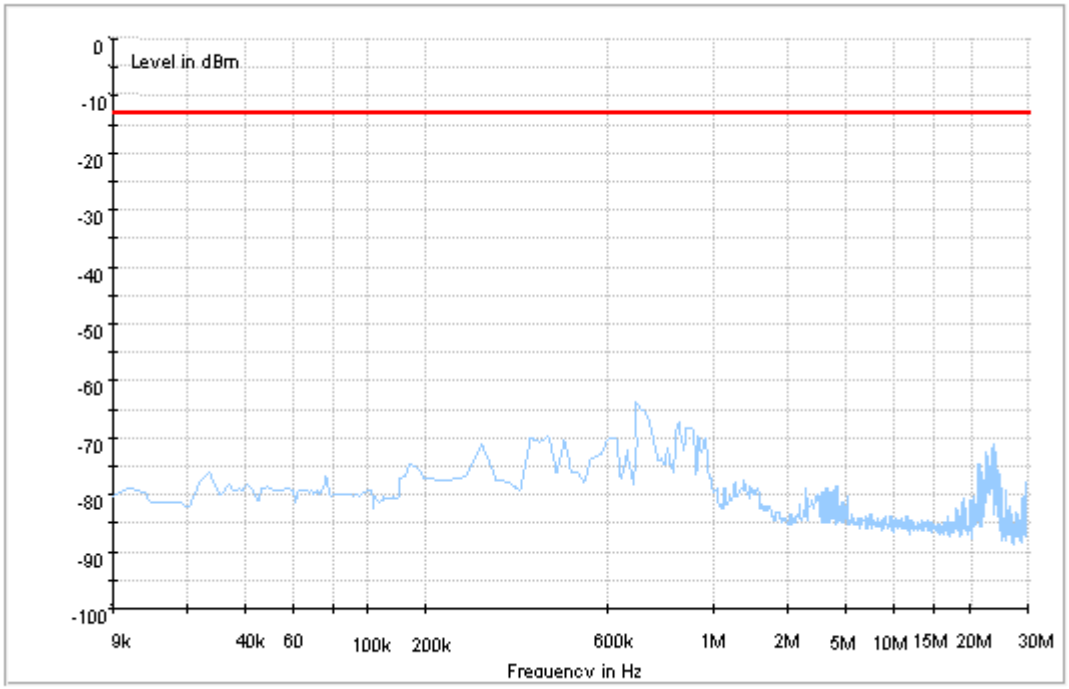
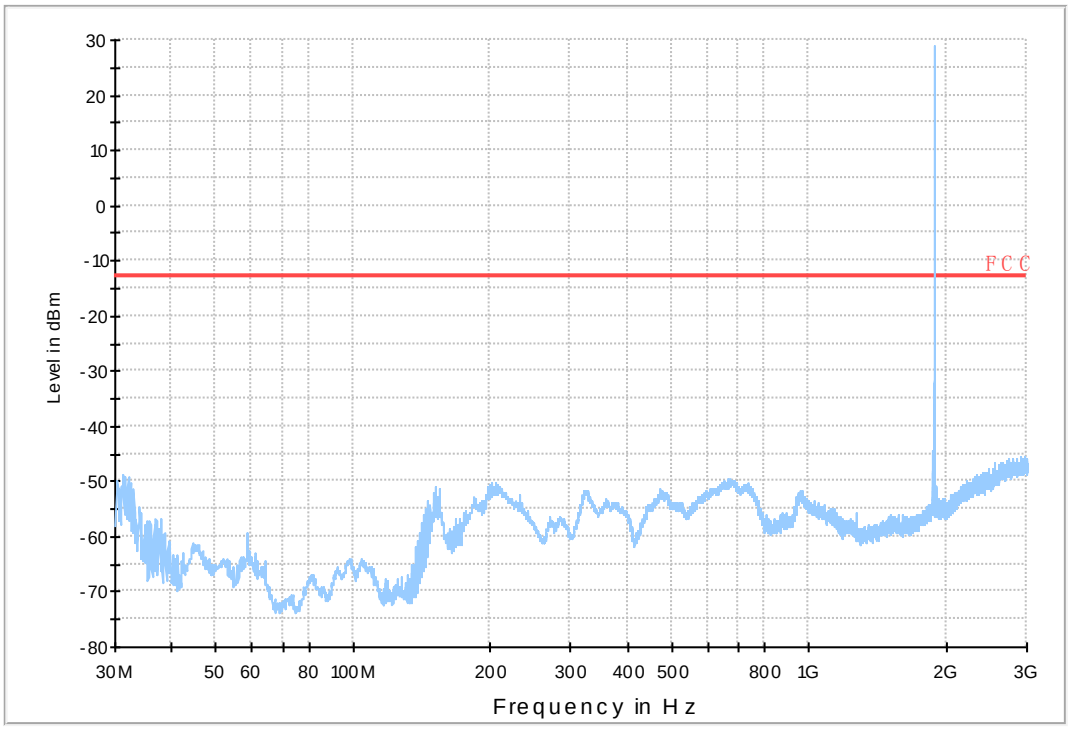
7.1.2 Test Band = GSM1900

7.1.2.1 Test Mode = GSM_Ant1



Copy of FCC PART24 GSM1900_L



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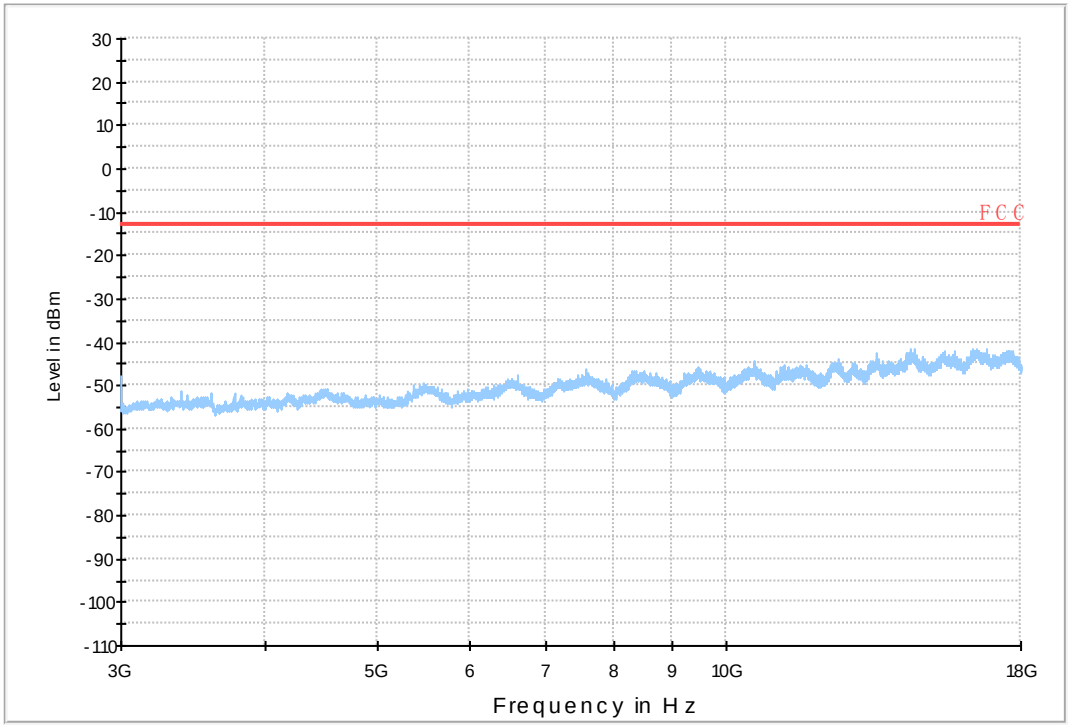
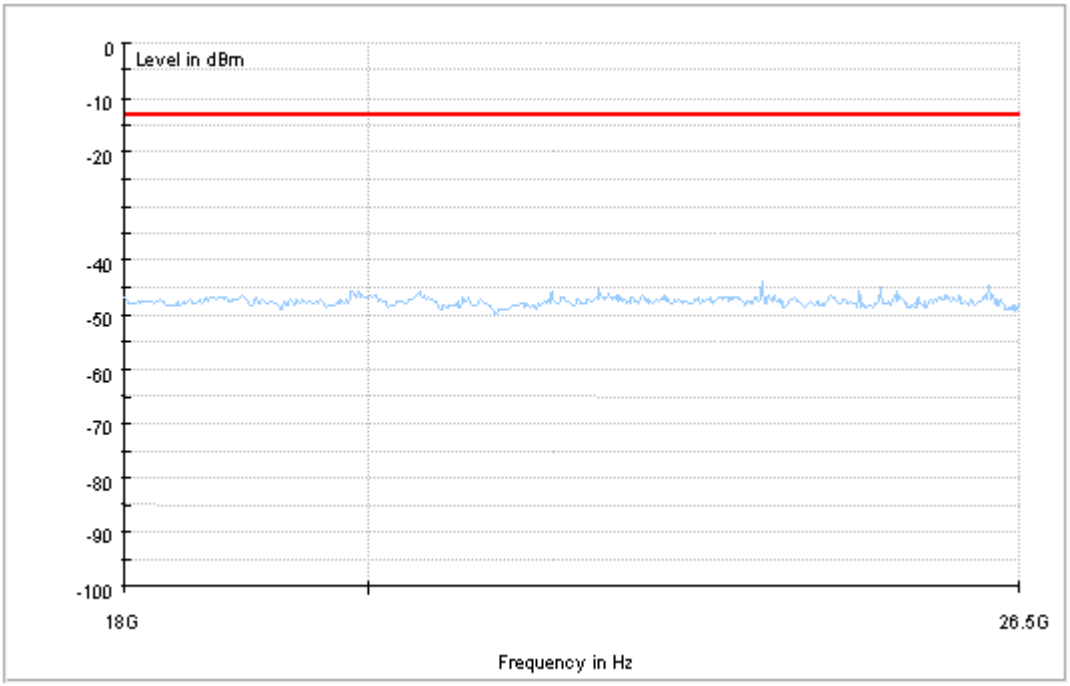
Copy of FCC PART24 GSM1900_H





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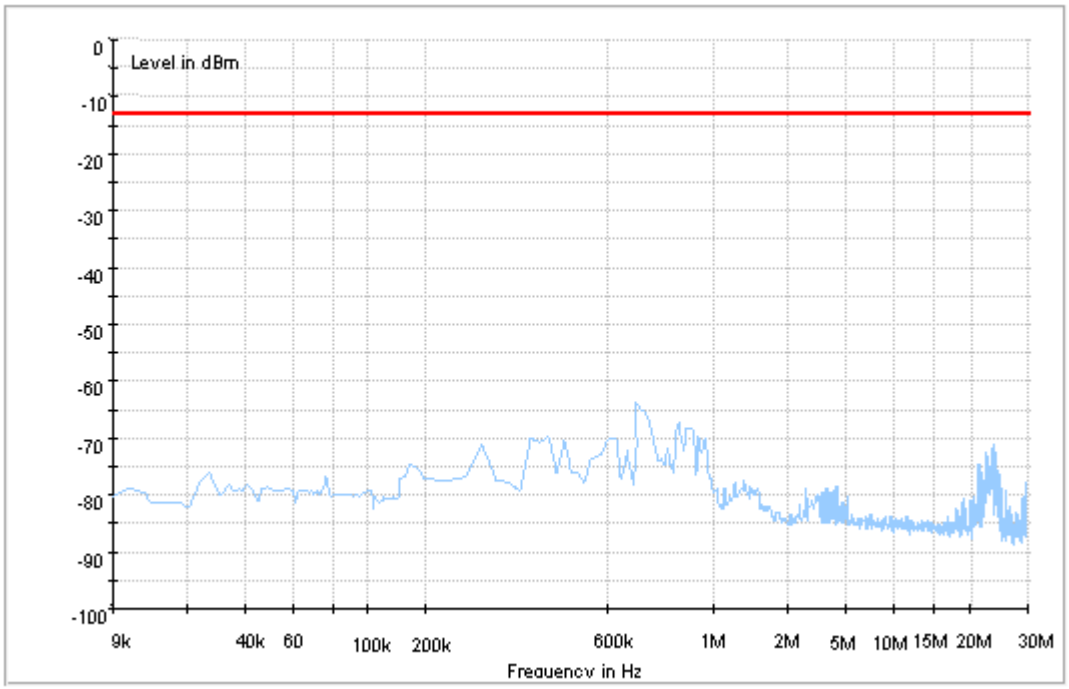
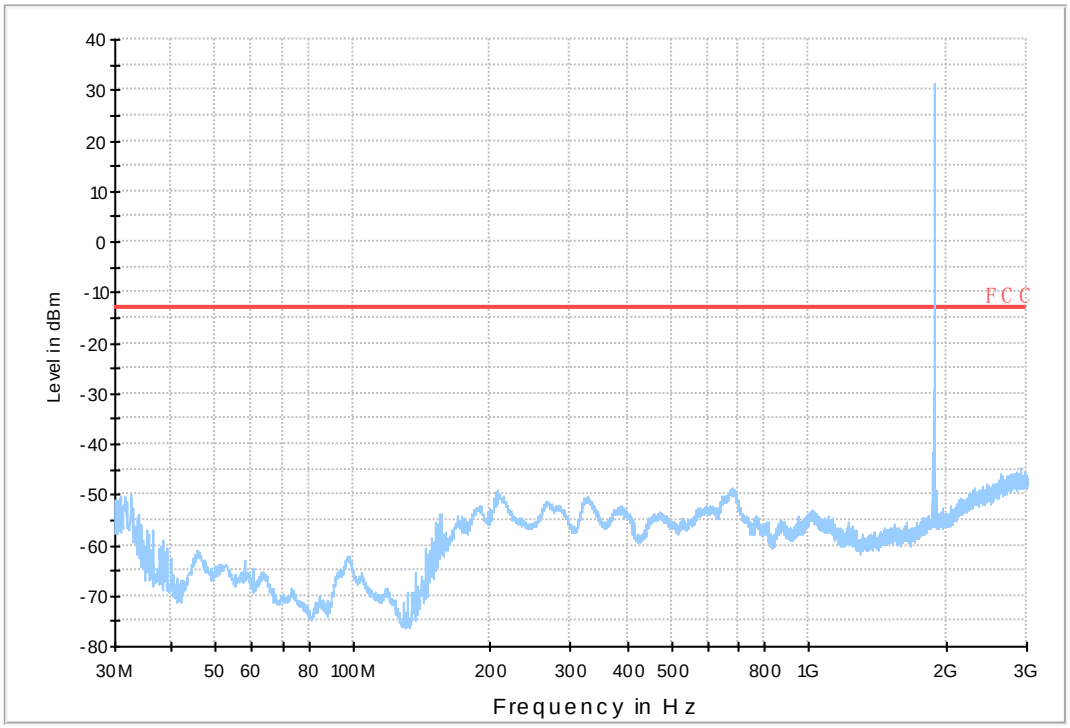
7.1.2.2 Test Mode = GSM_Ant2



Copy of FCC PART24 GSM1900_L



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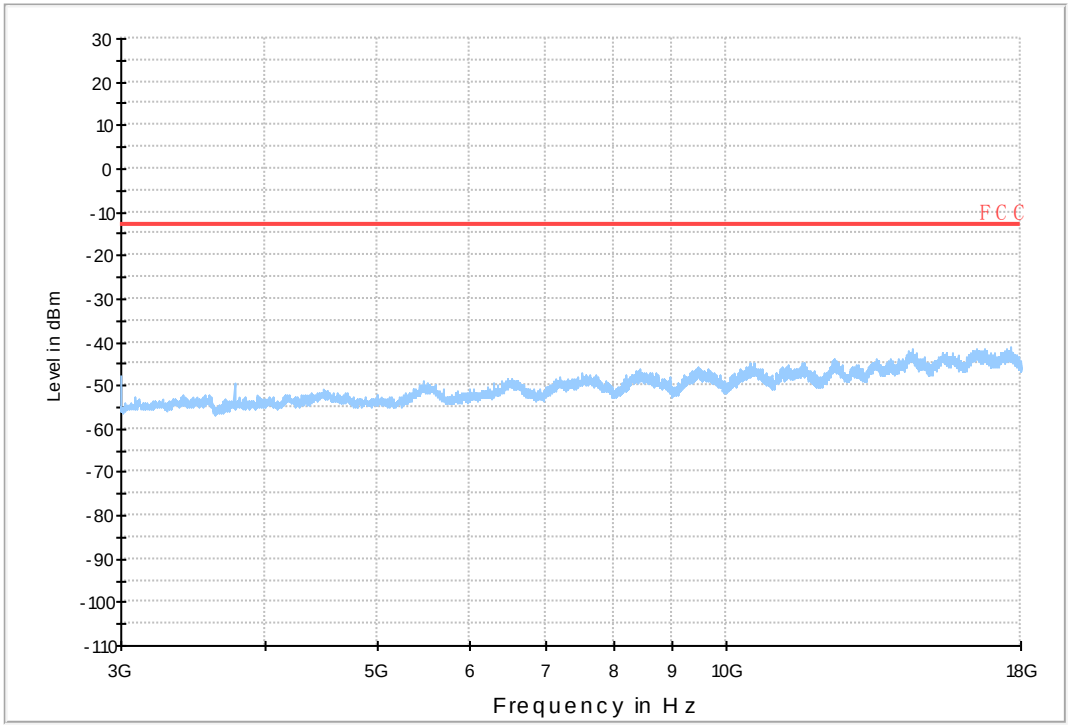
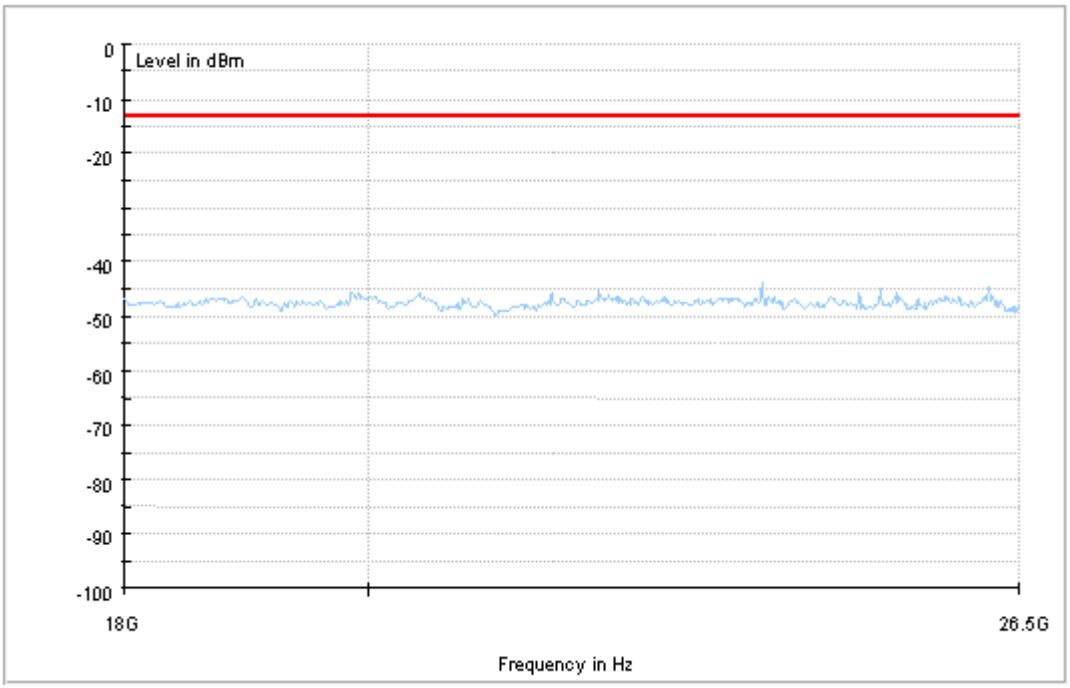
Copy of FCC PART24 GSM1900_H





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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
GSM850	GSM/TM1	LCH	TN	VL	-20.66	-0.02507	PASS
				VN	-24.09	-0.02923	PASS
				VH	-25.51	-0.03095	PASS
		MCH	TN	VL	-22.15	-0.02648	PASS
				VN	-19.95	-0.02385	PASS
				VH	-22.86	-0.02732	PASS
		HCH	TN	VL	-12.53	-0.01476	PASS
				VN	-16.66	-0.01963	PASS
				VH	-18.47	-0.02176	PASS
	GSM/TM2	LCH	TN	VL	-11.24	-0.01364	PASS
				VN	-11.40	-0.01383	PASS
				VH	-9.17	-0.01113	PASS
		MCH	TN	VL	-18.24	-0.0218	PASS
				VN	-14.69	-0.01756	PASS
				VH	-18.08	-0.02161	PASS
		HCH	TN	VL	-19.21	-0.02263	PASS
				VN	-23.47	-0.02765	PASS
				VH	-12.79	-0.01507	PASS
GSM1900	GSM/TM1	LCH	TN	VL	20.86	0.01127	PASS
				VN	27.83	0.01504	PASS
				VH	21.89	0.01183	PASS
		MCH	TN	VL	32.67	0.01738	PASS
				VN	37.32	0.01985	PASS
				VH	31.19	0.01659	PASS
		HCH	TN	VL	44.68	0.0234	PASS
				VN	39.97	0.02093	PASS
				VH	32.41	0.01697	PASS
	GSM/TM2	LCH	TN	VL	-1.03	-0.00056	PASS
				VN	1.29	0.0007	PASS
				VH	20.70	0.01119	PASS
		MCH	TN	VL	21.99	0.0117	PASS
				VN	25.25	0.01343	PASS

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	14.95	0.00795	PASS
		HCH	TN	VL	16.24	0.0085	PASS
				VN	37.10	0.01943	PASS
				VH	24.50	0.01283	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	-16.53	-0.02006	PASS
				-20	-19.50	-0.02366	PASS
				-10	-18.27	-0.02217	PASS
				0	-20.86	-0.02531	PASS
				10	-16.01	-0.01942	PASS
				20	-20.28	-0.02461	PASS
				30	-20.47	-0.02484	PASS
				40	-18.85	-0.02287	PASS
				50	-19.24	-0.02334	PASS
		MCH	VN	-30	-21.37	-0.02554	PASS
				-20	-23.05	-0.02755	PASS
				-10	-20.28	-0.02424	PASS
				0	-18.60	-0.02223	PASS
				10	-15.82	-0.01891	PASS
				20	-19.76	-0.02362	PASS
				30	-20.02	-0.02393	PASS
				40	-21.70	-0.02594	PASS
				50	-21.37	-0.02554	PASS
		HCH	VN	-30	-22.34	-0.02632	PASS
				-20	-18.34	-0.02161	PASS
				-10	-16.40	-0.01932	PASS
				0	-21.63	-0.02548	PASS
				10	-18.21	-0.02145	PASS
				20	-20.08	-0.02366	PASS
				30	-15.50	-0.01826	PASS
				40	-18.98	-0.02236	PASS
				50	-26.15	-0.03081	PASS
	GSM/TM2	LCH	VN	-30	-14.56	-0.01767	PASS
				-20	-18.79	-0.0228	PASS
				-10	-17.98	-0.02182	PASS
				0	-12.98	-0.01575	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-19.08	-0.02315	PASS
				20	-24.50	-0.02973	PASS
				30	-18.63	-0.0226	PASS
				40	-22.70	-0.02754	PASS
				50	-18.85	-0.02287	PASS
		MCH	VN	-30	-15.56	-0.0186	PASS
				-20	-16.79	-0.02007	PASS
				-10	-16.18	-0.01934	PASS
				0	-18.44	-0.02204	PASS
				10	-18.21	-0.02177	PASS
				20	-17.43	-0.02083	PASS
				30	-19.31	-0.02308	PASS
				40	-26.15	-0.03126	PASS
				50	-11.07	-0.01323	PASS
		HCH	VN	-30	-19.44	-0.0229	PASS
				-20	-13.92	-0.0164	PASS
				-10	-21.60	-0.02545	PASS
				0	-16.27	-0.01917	PASS
				10	-16.85	-0.01985	PASS
				20	-17.18	-0.02024	PASS
				30	-18.02	-0.02123	PASS
				40	-18.53	-0.02183	PASS
				50	-15.92	-0.01876	PASS
GSM1900	GSM/TM1	LCH	VN	-30	12.14	0.00656	PASS
				-20	10.59	0.00572	PASS
				-10	14.08	0.00761	PASS
				0	14.79	0.00799	PASS
				10	12.72	0.00687	PASS
				20	19.50	0.01054	PASS
				30	14.85	0.00803	PASS
				40	18.60	0.01005	PASS
				50	8.98	0.00485	PASS
		MCH	VN	-30	41.39	0.02202	PASS
				-20	39.78	0.02116	PASS
				-10	31.19	0.01659	PASS
				0	31.83	0.01693	PASS
				10	27.06	0.01439	PASS
				20	13.17	0.00701	PASS
				30	32.93	0.01752	PASS
				40	31.64	0.01683	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	21.50	0.01144	PASS
		HCH	VN	-30	38.61	0.02022	PASS
				-20	41.00	0.02147	PASS
				-10	31.64	0.01657	PASS
				0	24.80	0.01299	PASS
				10	41.71	0.02184	PASS
				20	35.26	0.01846	PASS
				30	37.26	0.01951	PASS
				40	42.17	0.02208	PASS
				50	39.07	0.02046	PASS
	GSM/TM2	LCH	VN	-30	4.97	0.00269	PASS
				-20	3.16	0.00171	PASS
				-10	10.59	0.00572	PASS
				0	13.79	0.00745	PASS
				10	3.10	0.00168	PASS
				20	6.65	0.00359	PASS
				30	11.69	0.00632	PASS
				40	12.01	0.00649	PASS
				50	6.94	0.00375	PASS
		MCH	VN	-30	10.11	0.00538	PASS
				-20	15.24	0.00811	PASS
				-10	33.48	0.01781	PASS
				0	30.54	0.01624	PASS
				10	23.73	0.01262	PASS
				20	22.47	0.01195	PASS
				30	27.12	0.01443	PASS
				40	9.10	0.00484	PASS
				50	18.18	0.00967	PASS
		HCH	VN	-30	29.41	0.0154	PASS
				-20	12.46	0.00652	PASS
				-10	28.38	0.01486	PASS
				0	13.88	0.00727	PASS
				10	21.60	0.01131	PASS
				20	25.99	0.01361	PASS
				30	26.73	0.014	PASS
				40	49.62	0.02598	PASS
				50	22.44	0.01175	PASS

END

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