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	Tx Slot	Measured [dBm]	ERP /EIRP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	1 Tx Slot	31.81	28.16	38.5	PASS
		MCH	1 Tx Slot	31.8	28.15	38.5	PASS
		HCH	1 Tx Slot	32.33	28.68	38.5	PASS
	GSM/TM2	LCH	1 Tx Slot	25.93	22.28	38.5	PASS
		MCH	1 Tx Slot	25.87	22.22	38.5	PASS
		HCH	1 Tx Slot	25.89	22.24	38.5	PASS
GSM1900	GSM/TM1	LCH	1 Tx Slot	28.69	31.69	33	PASS
		MCH	1 Tx Slot	28.75	31.75	33	PASS
		HCH	1 Tx Slot	29	32	33	PASS
	GSM/TM2	LCH	1 Tx Slot	24.5	27.5	33	PASS
		MCH	1 Tx Slot	24.53	27.53	33	PASS
		HCH	1 Tx Slot	24.56	27.56	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: RBW > emission bandwidth, VBW > 3 x RBW.

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	.13	13	PASS
		MCH	.16	13	PASS
		HCH	.17	13	PASS
	GSM/TM2	LCH	3.03	13	PASS
		MCH	2.9	13	PASS
		HCH	2.97	13	PASS
GSM1900	GSM/TM1	LCH	.15	13	PASS
		MCH	.15	13	PASS
		HCH	.15	13	PASS
	GSM/TM2	LCH	3.24	13	PASS
		MCH	3.17	13	PASS
		HCH	3.13	13	PASS

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3Appendix_C: Modulation Characteristics

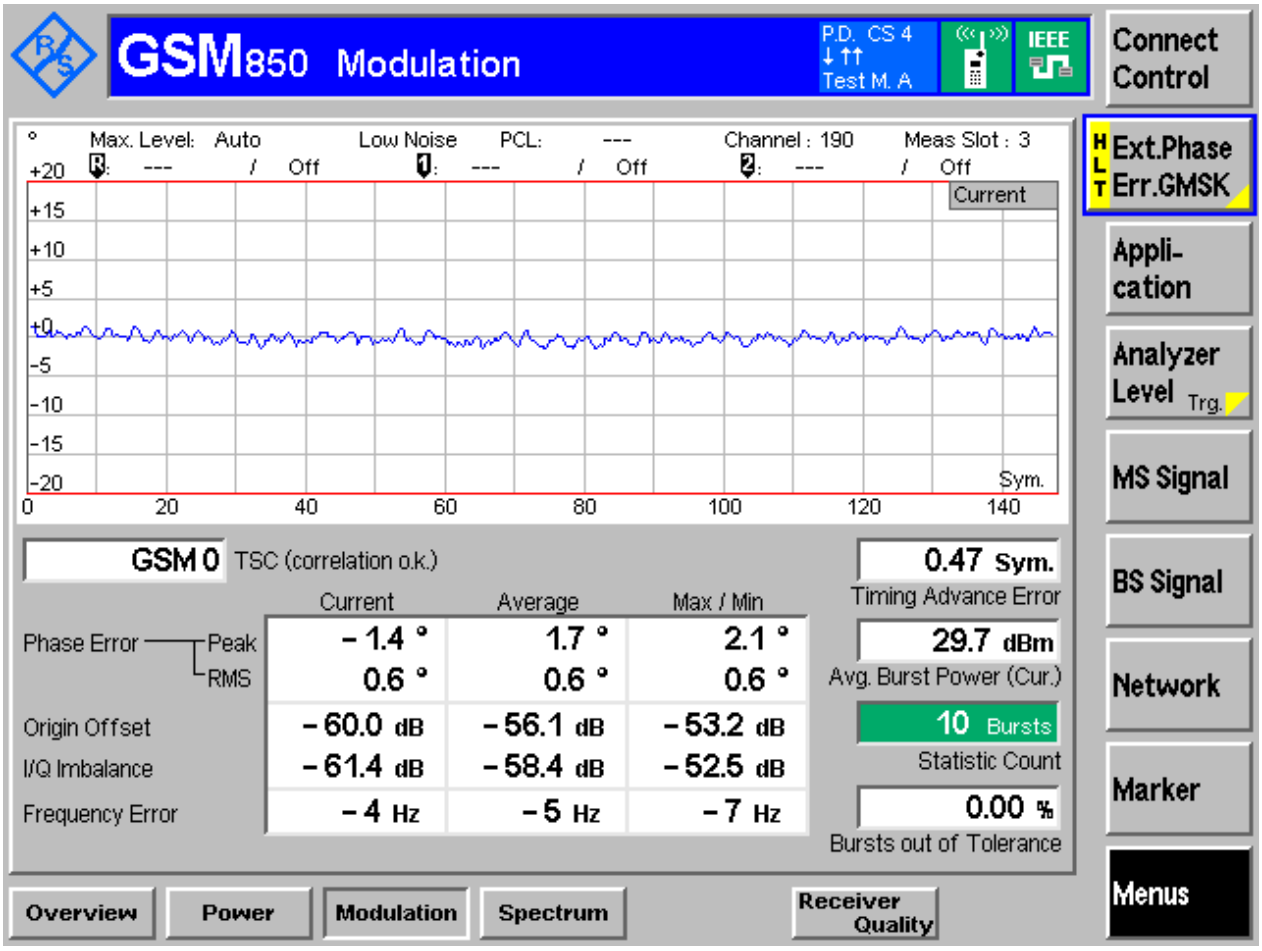
Part I - Test Plots

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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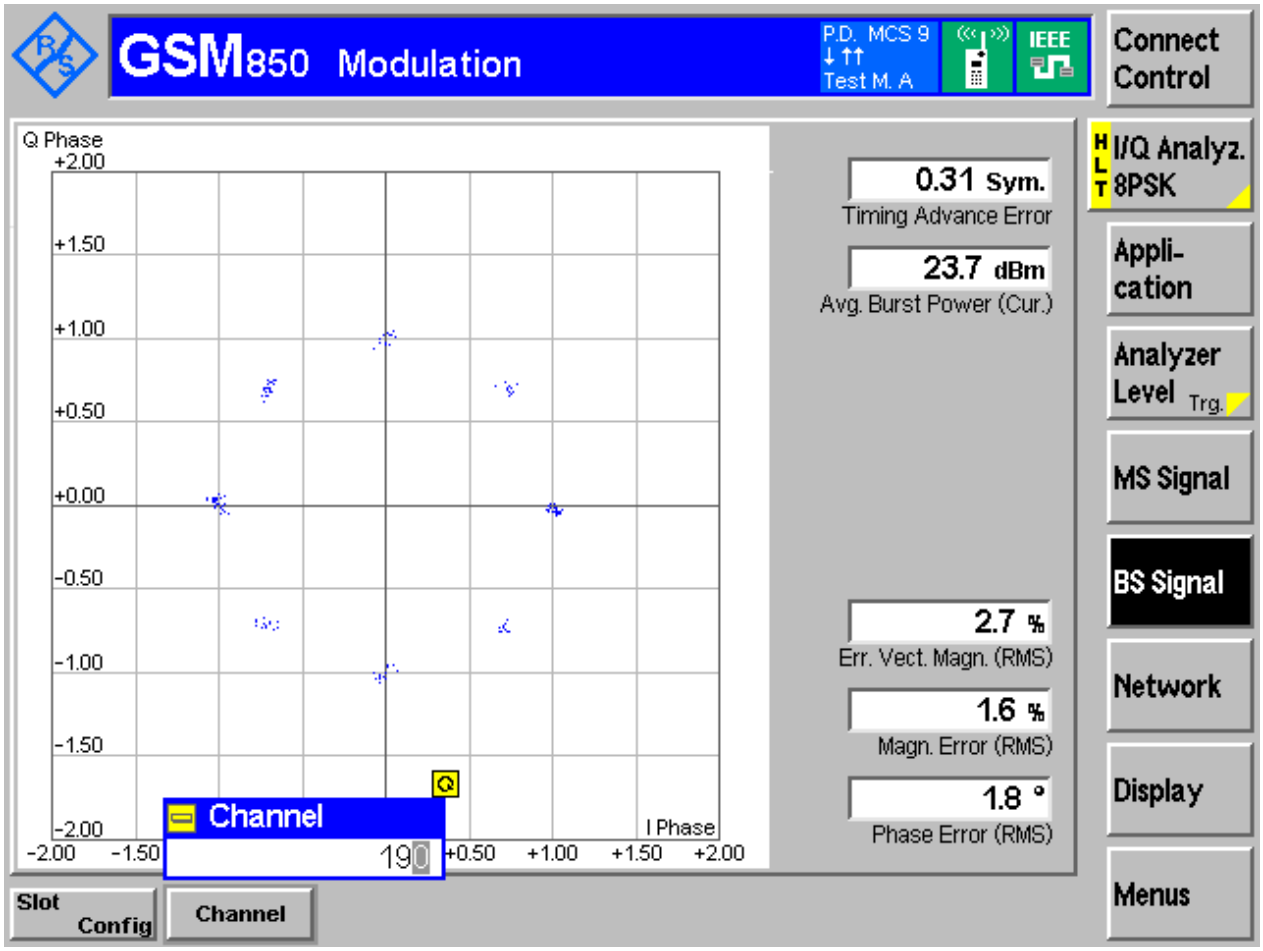
3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = MCH



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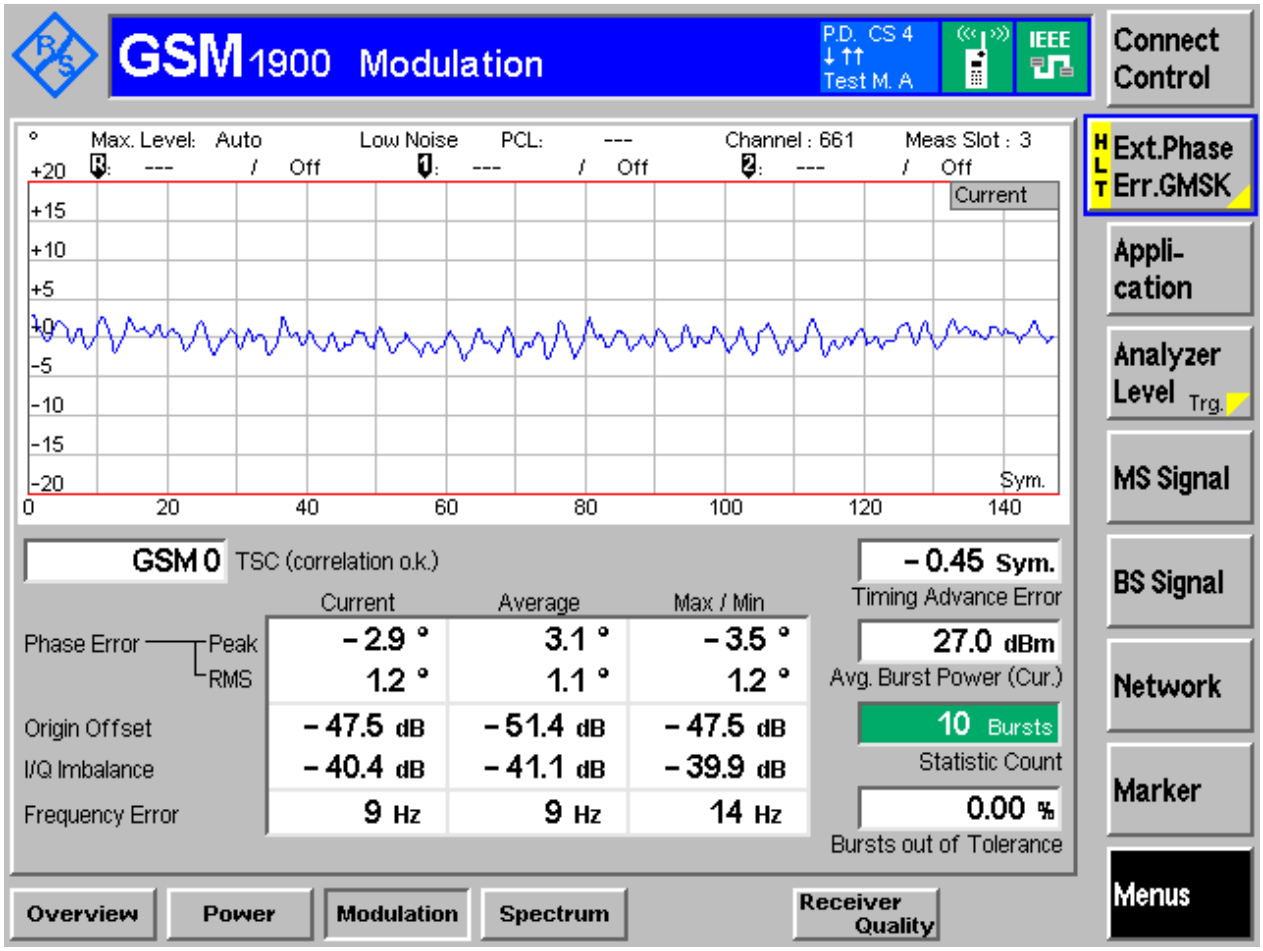
3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



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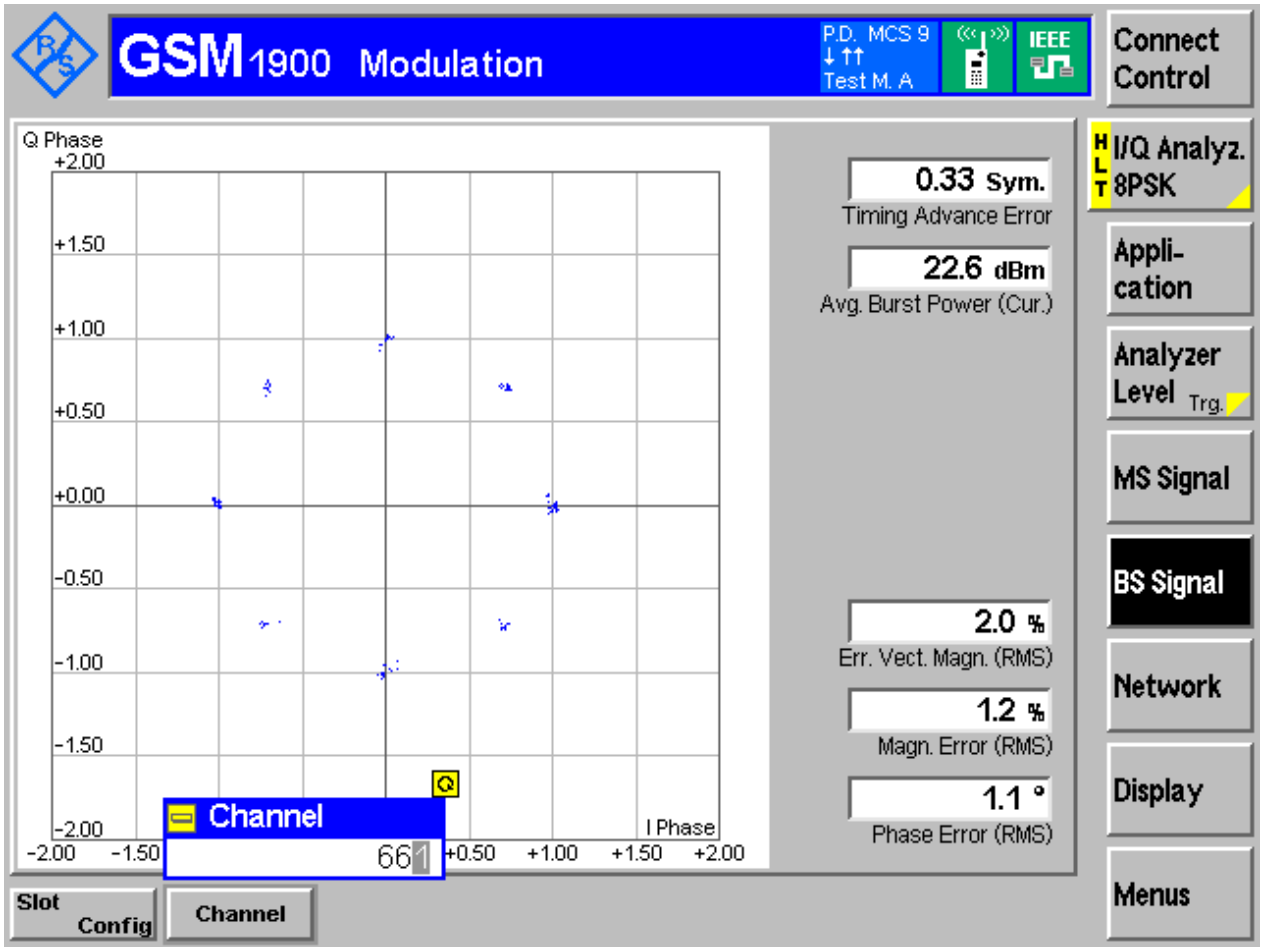
3.1.2.2 Test Mode = GSM/TM2

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	242.85	317.36	Pass
		MCH	244.87	313.24	Pass
		HCH	244.08	316.07	Pass
	GSM/TM2	LCH	248.00	299.45	Pass
		MCH	242.68	309.48	Pass
		HCH	240.89	304.13	Pass
GSM1900	GSM/TM1	LCH	245.78	314.41	Pass
		MCH	242.94	319.35	Pass
		HCH	241.09	303.22	Pass
	GSM/TM2	LCH	247.04	306.96	Pass
		MCH	240.89	298.13	Pass
		HCH	246.19	313.97	Pass

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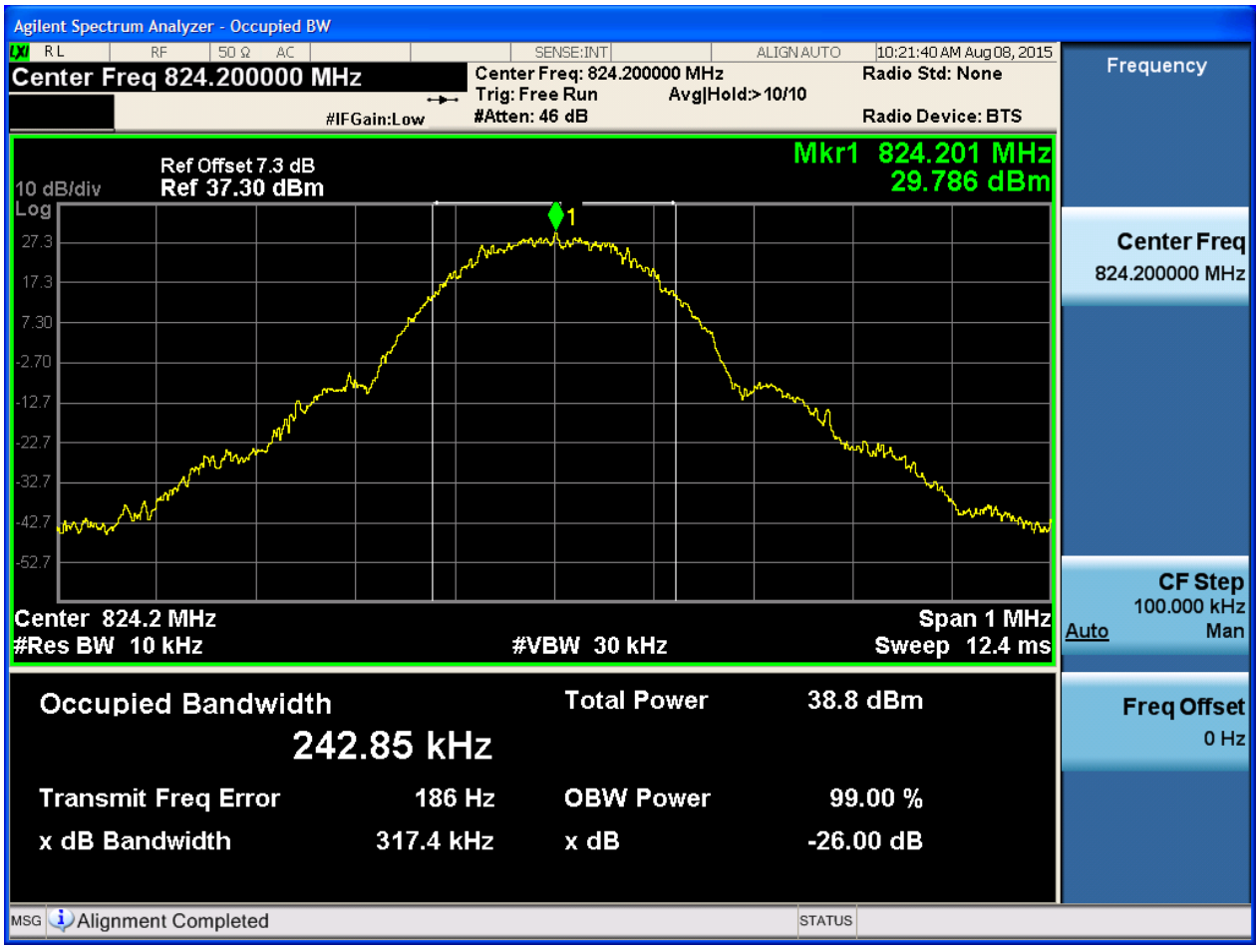
Part II - Test Plots

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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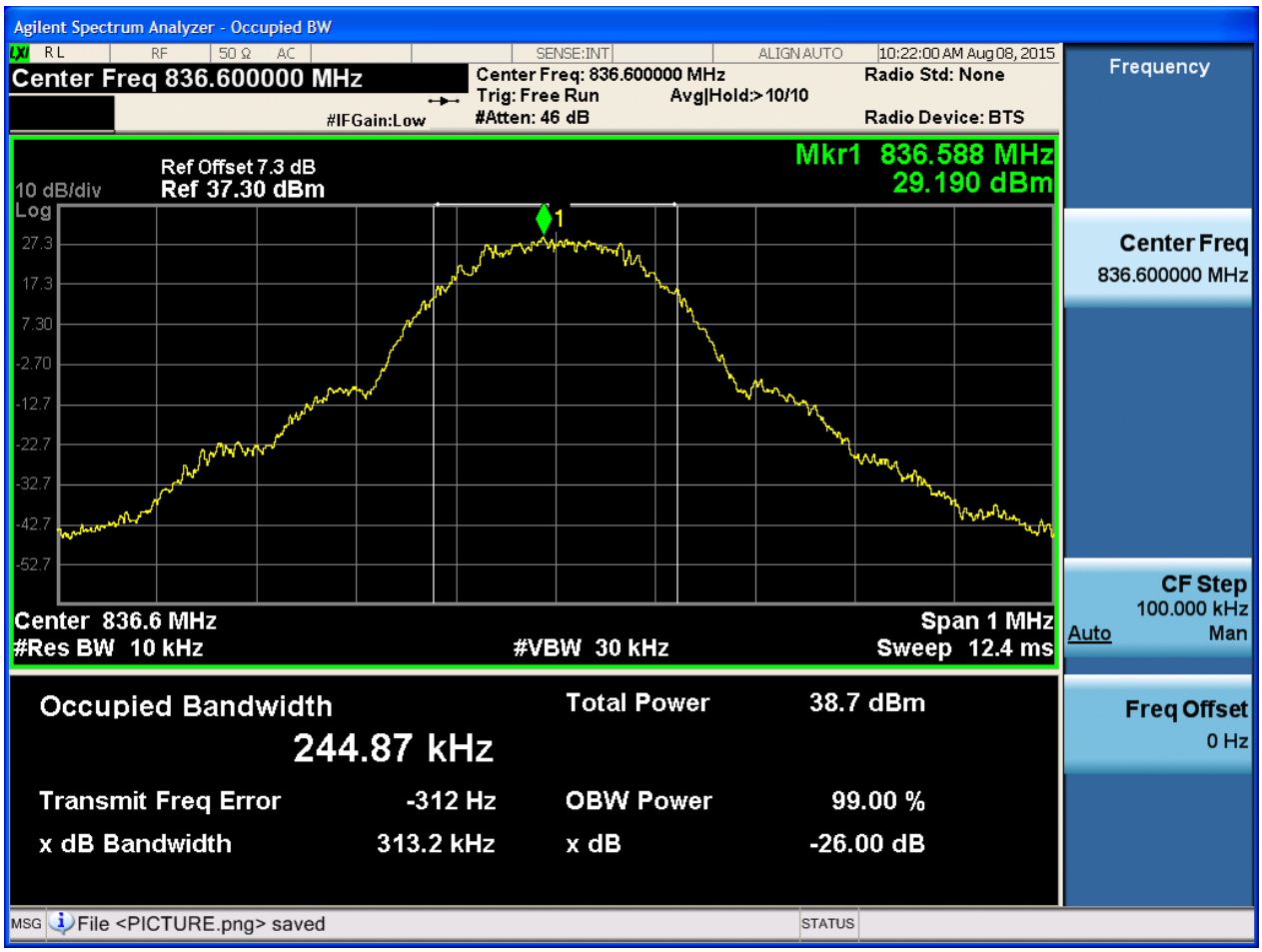
4.1.1.1.2 Test Channel = MCH



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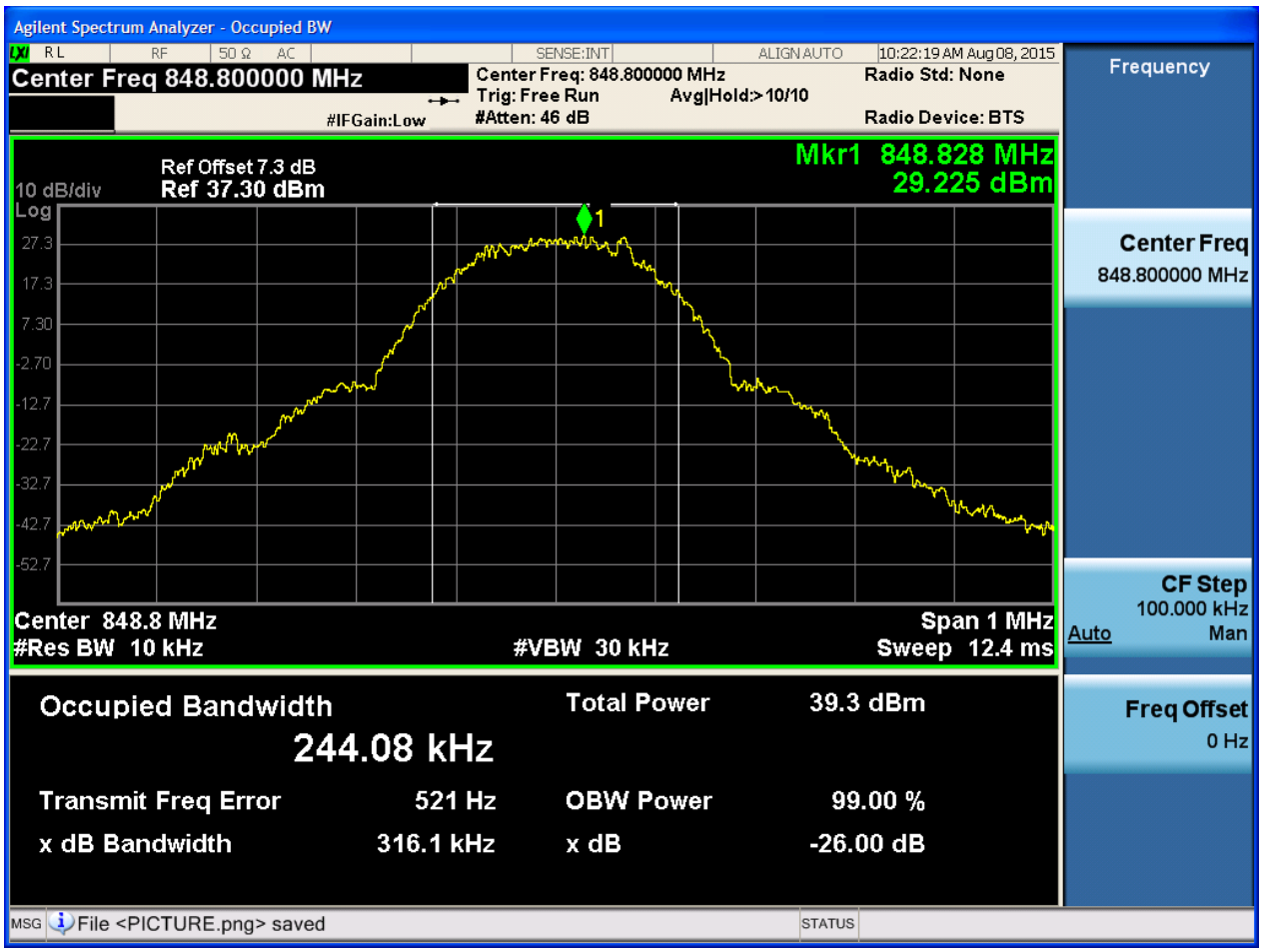
4.1.1.1.3 Test Channel = HCH



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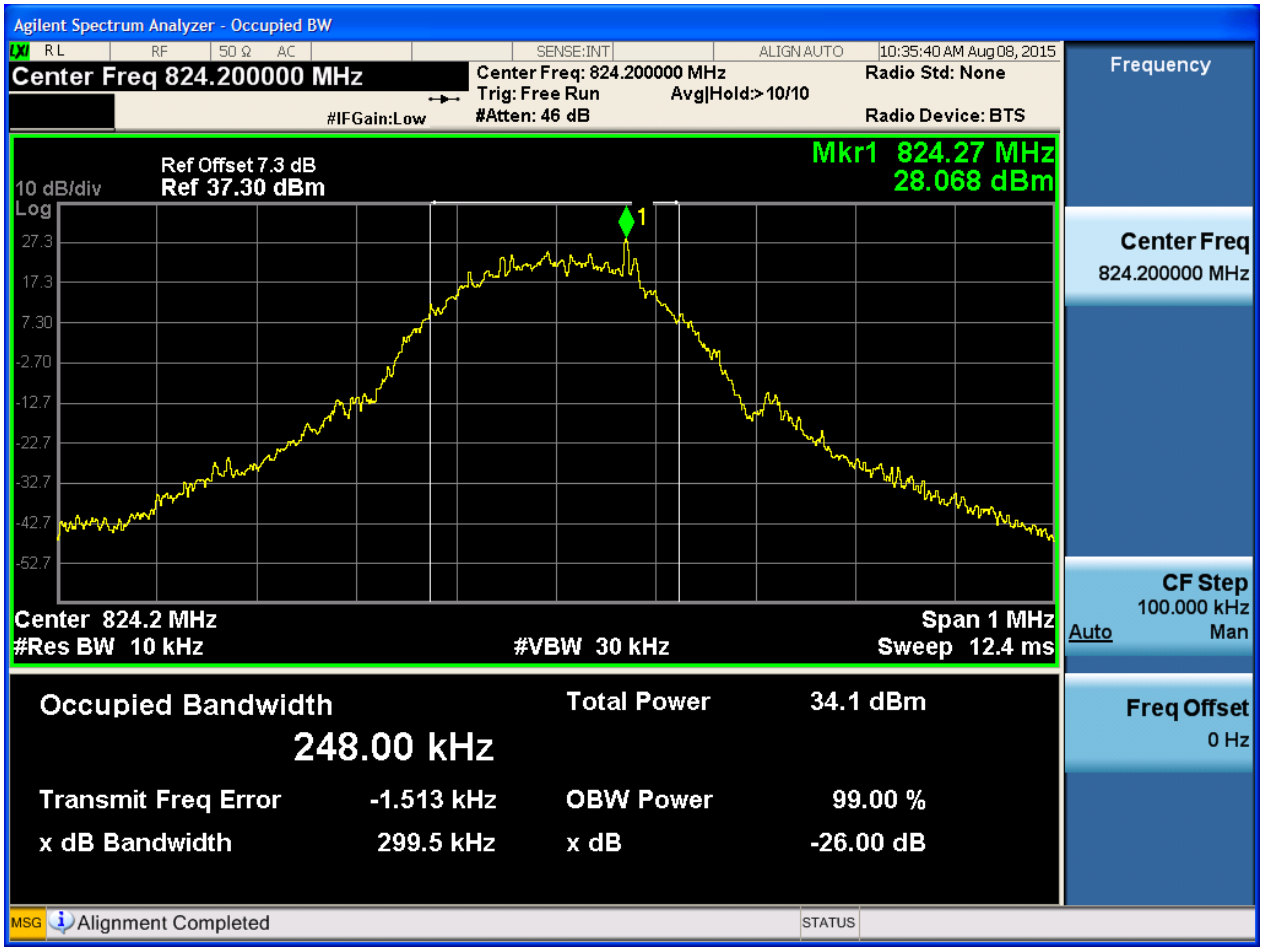
4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



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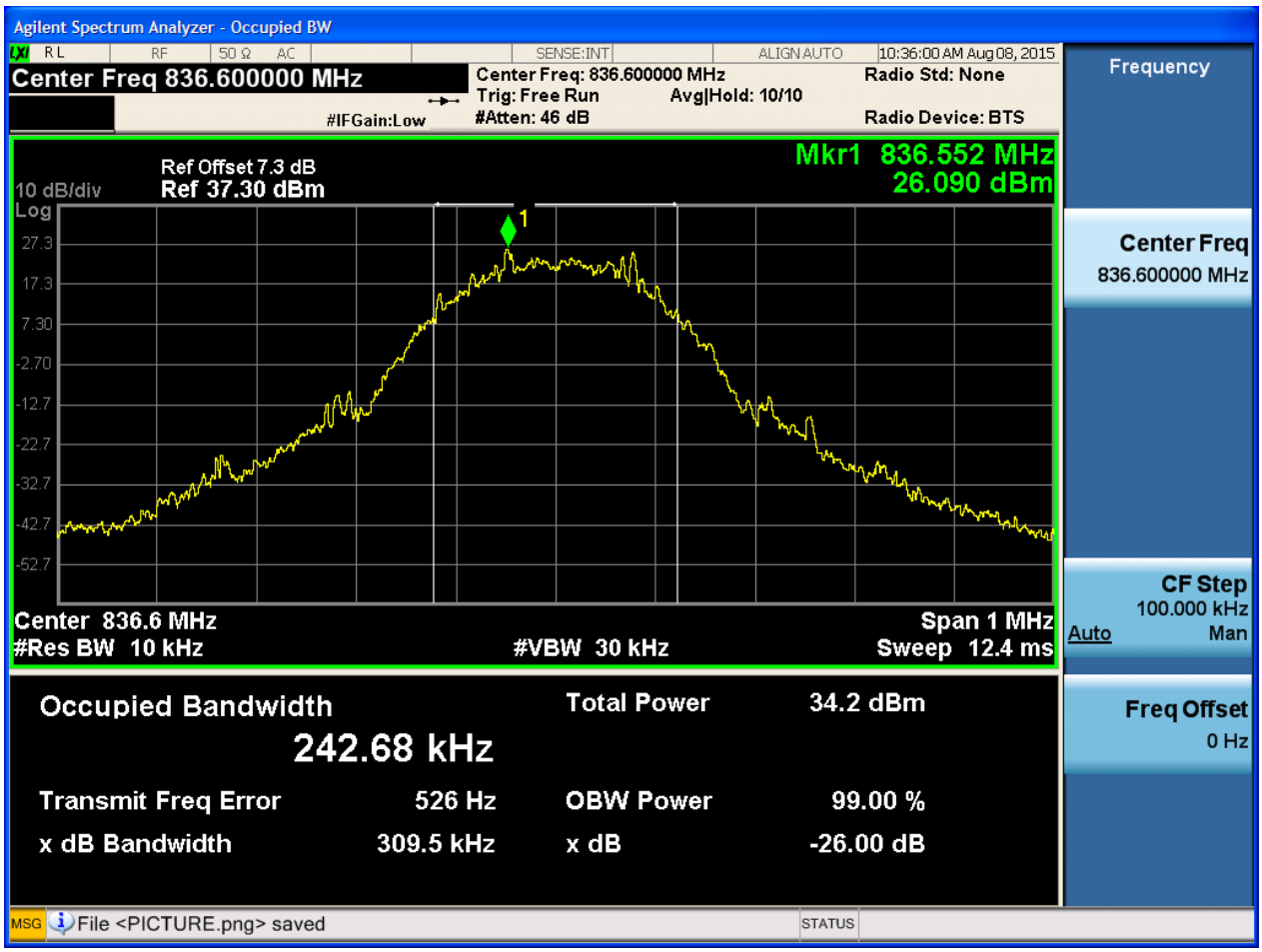
4.1.1.2.2 Test Channel = MCH



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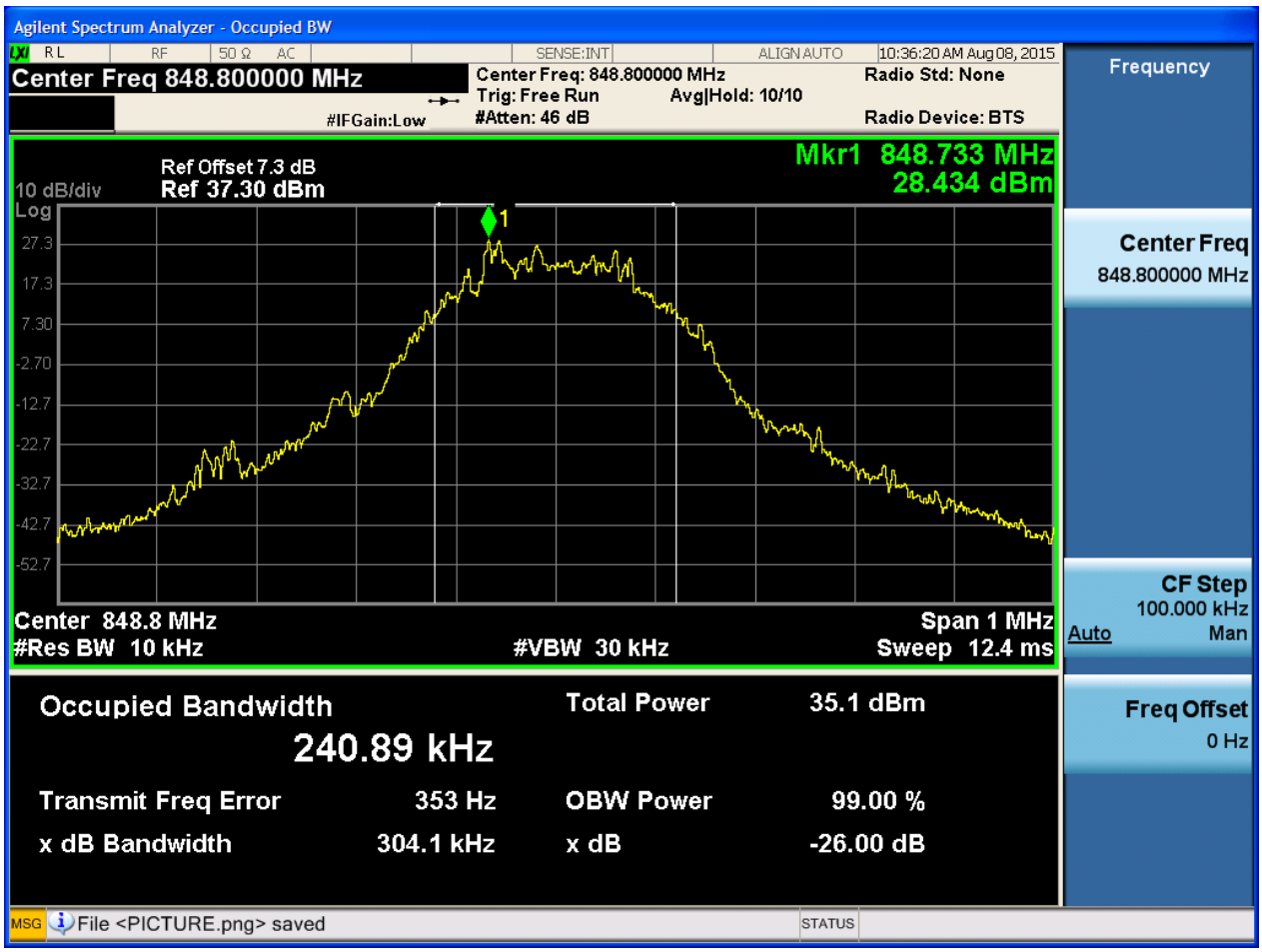
4.1.1.2.3 Test Channel = HCH



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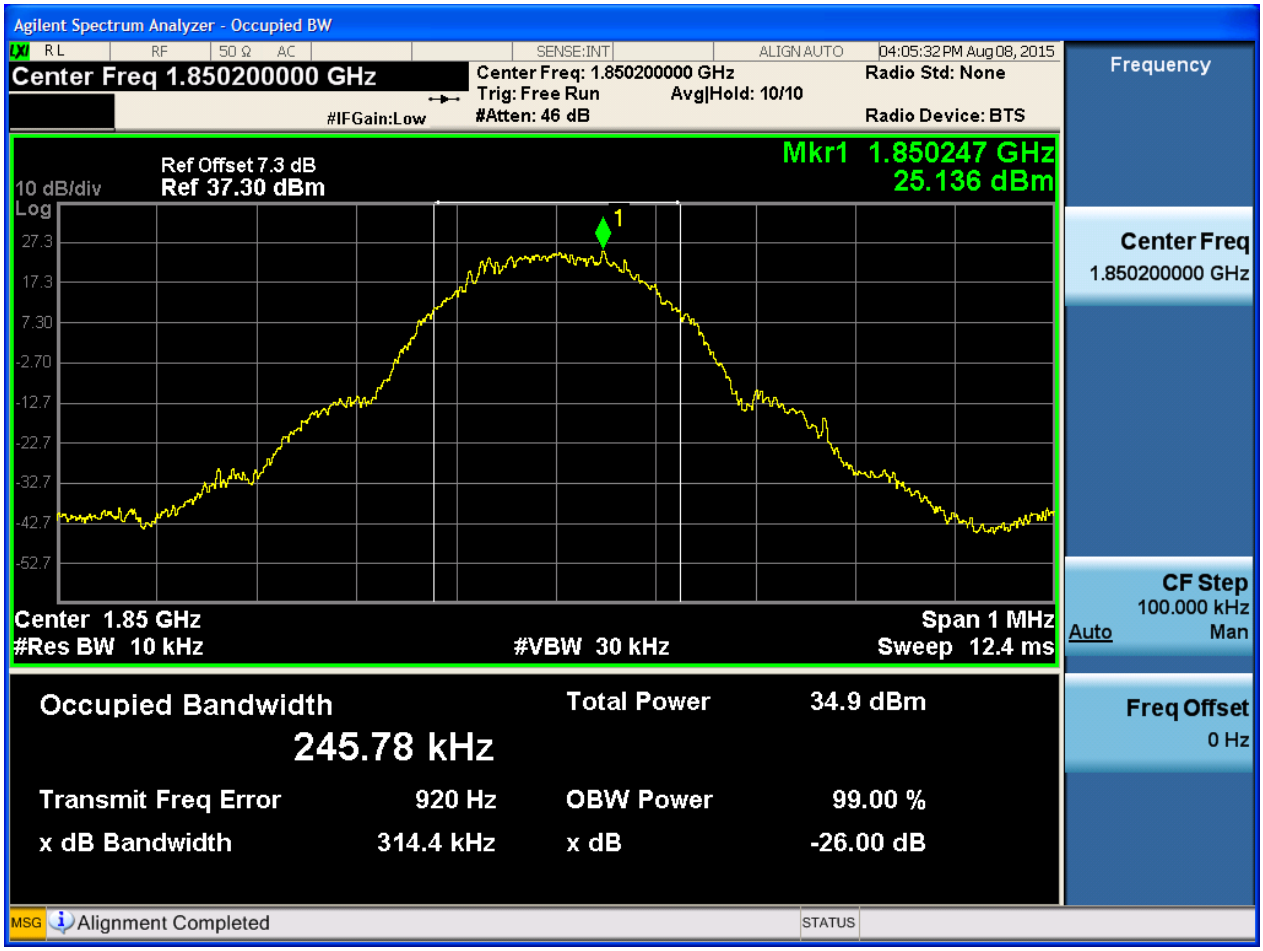
4.1.2 Test Band = GSM1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



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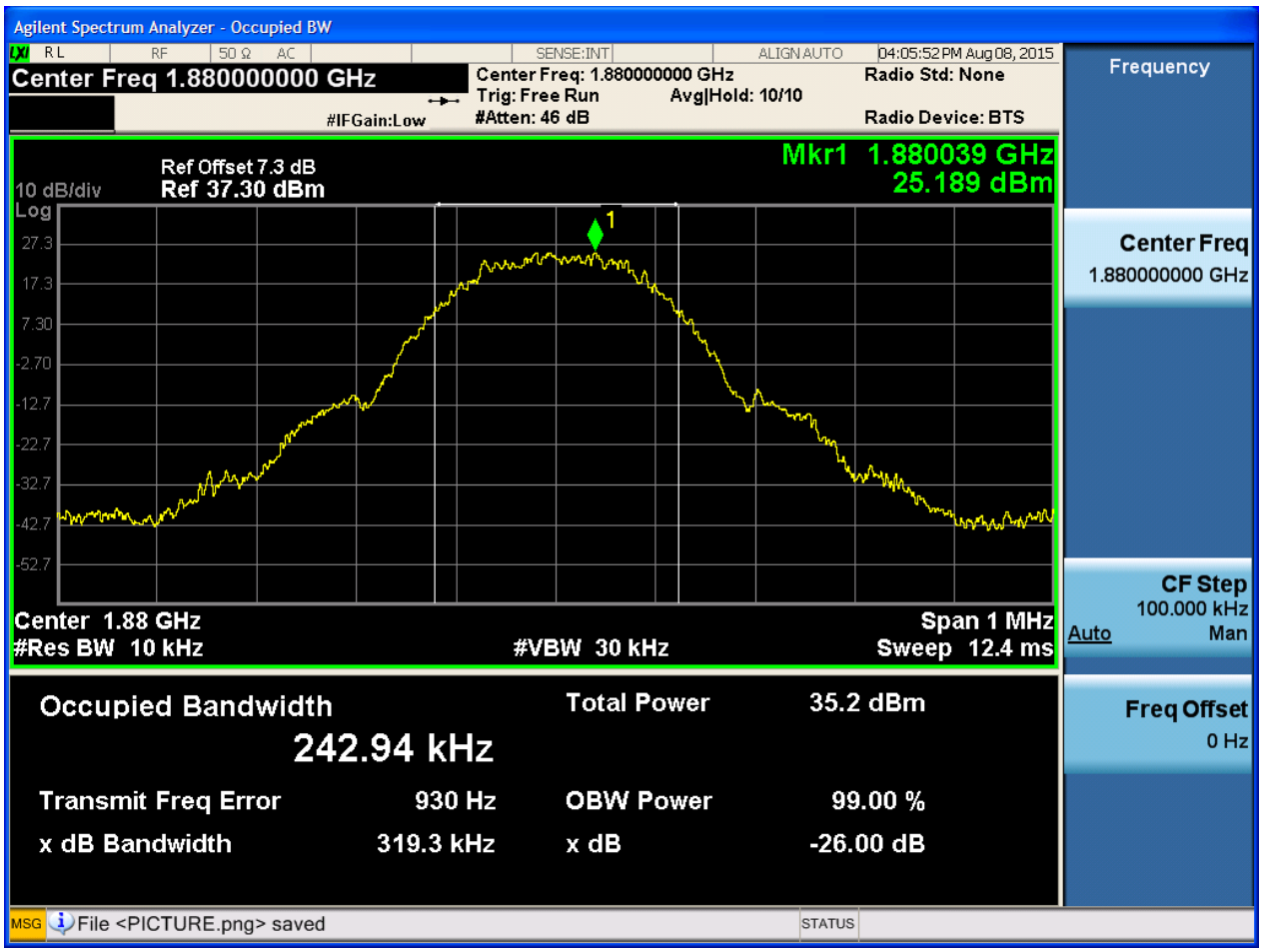
4.1.2.1.2 Test Channel = MCH



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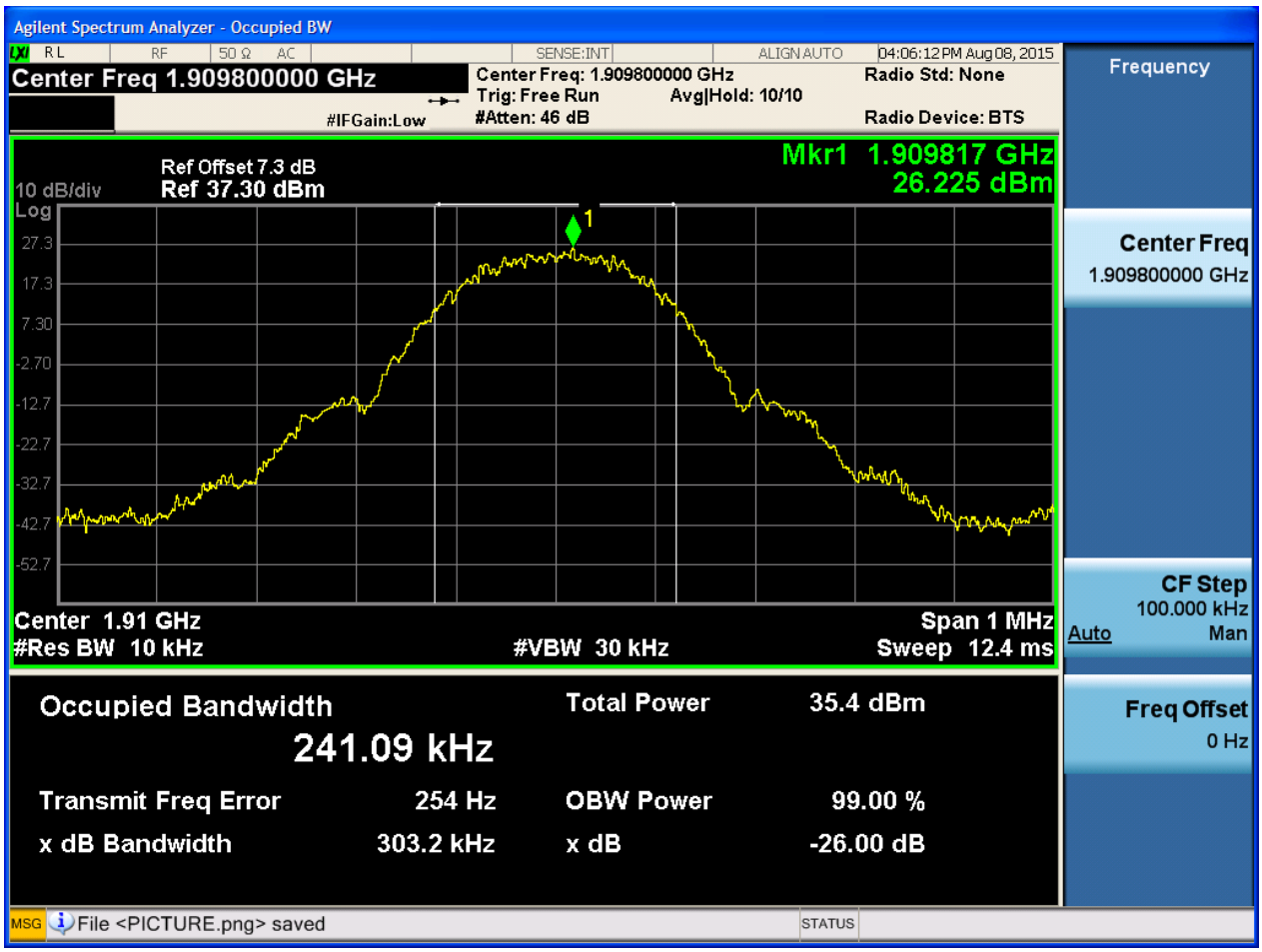
4.1.2.1.3 Test Channel = HCH



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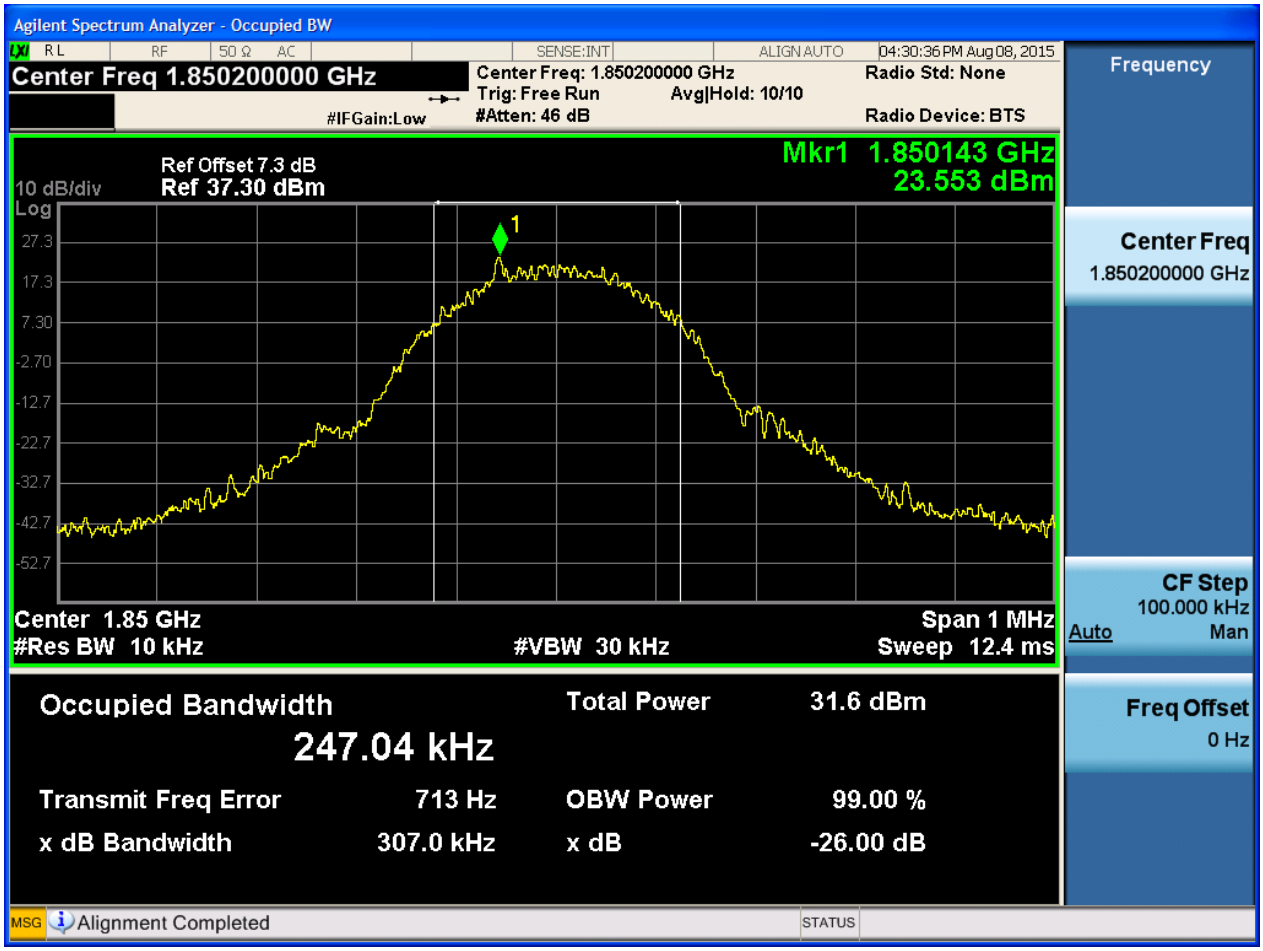
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



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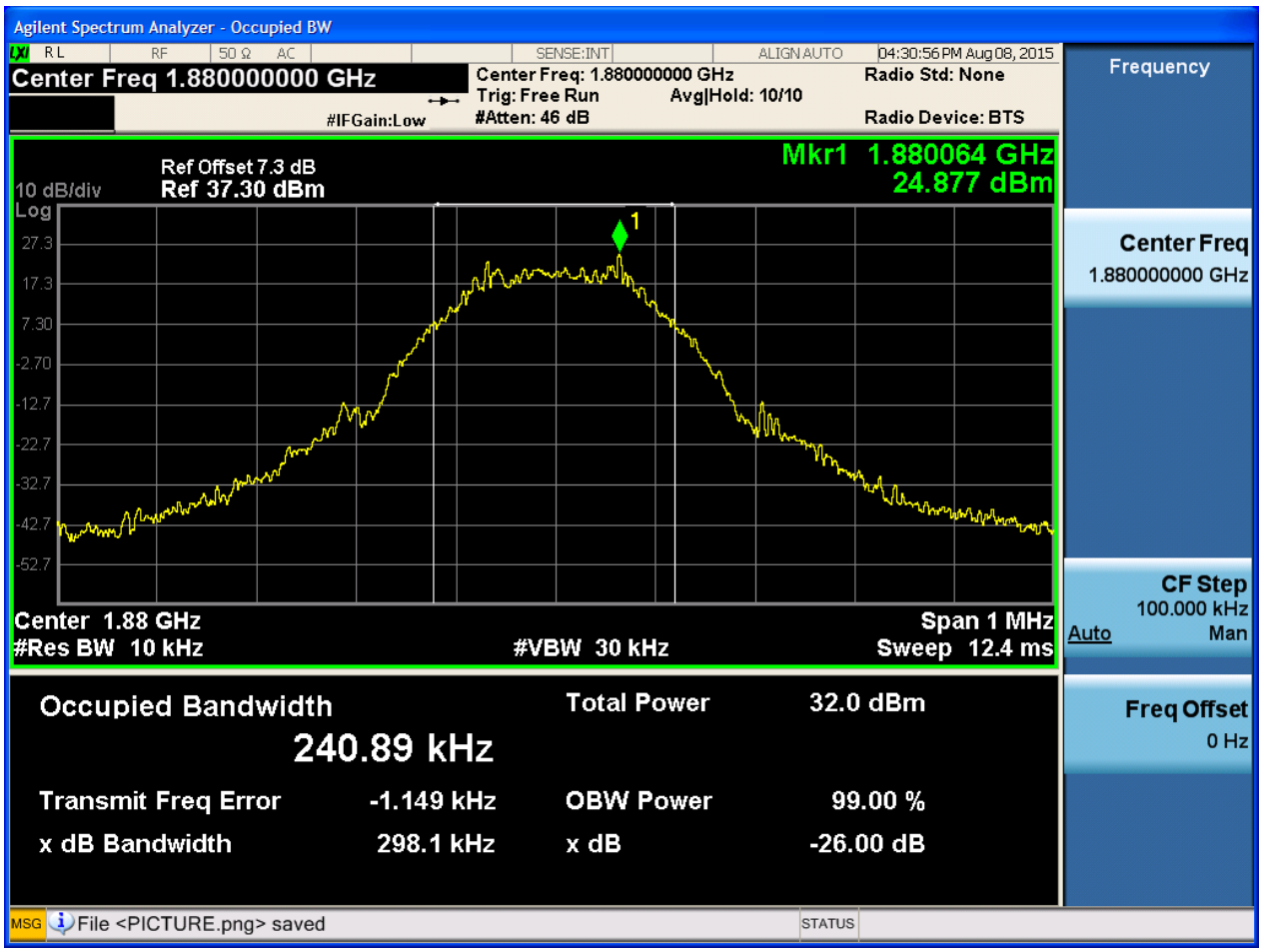
4.1.2.2.2 Test Channel = MCH



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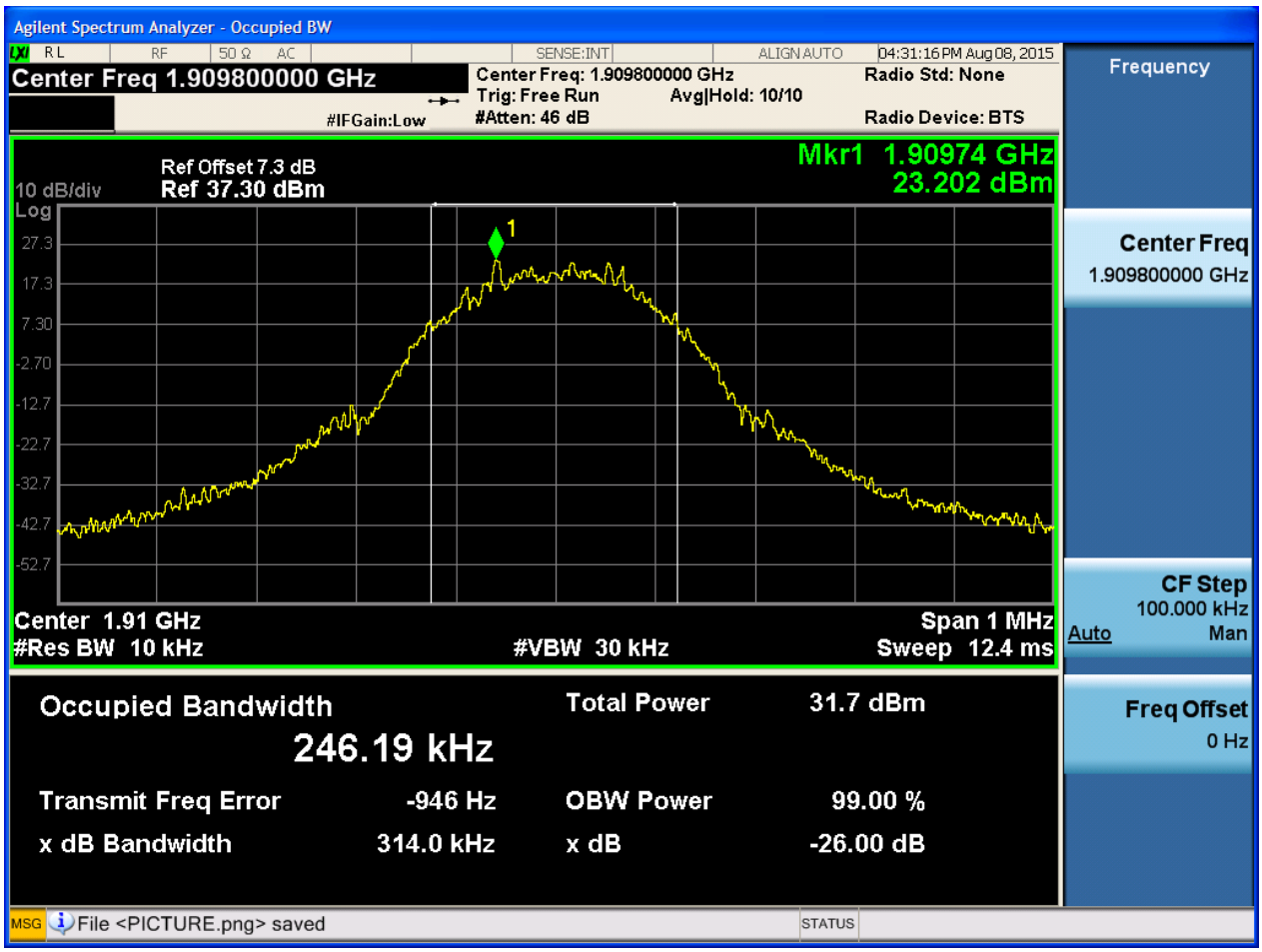
4.1.2.2.3 Test Channel = HCH



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5Appendix_E: Band Edges Compliance

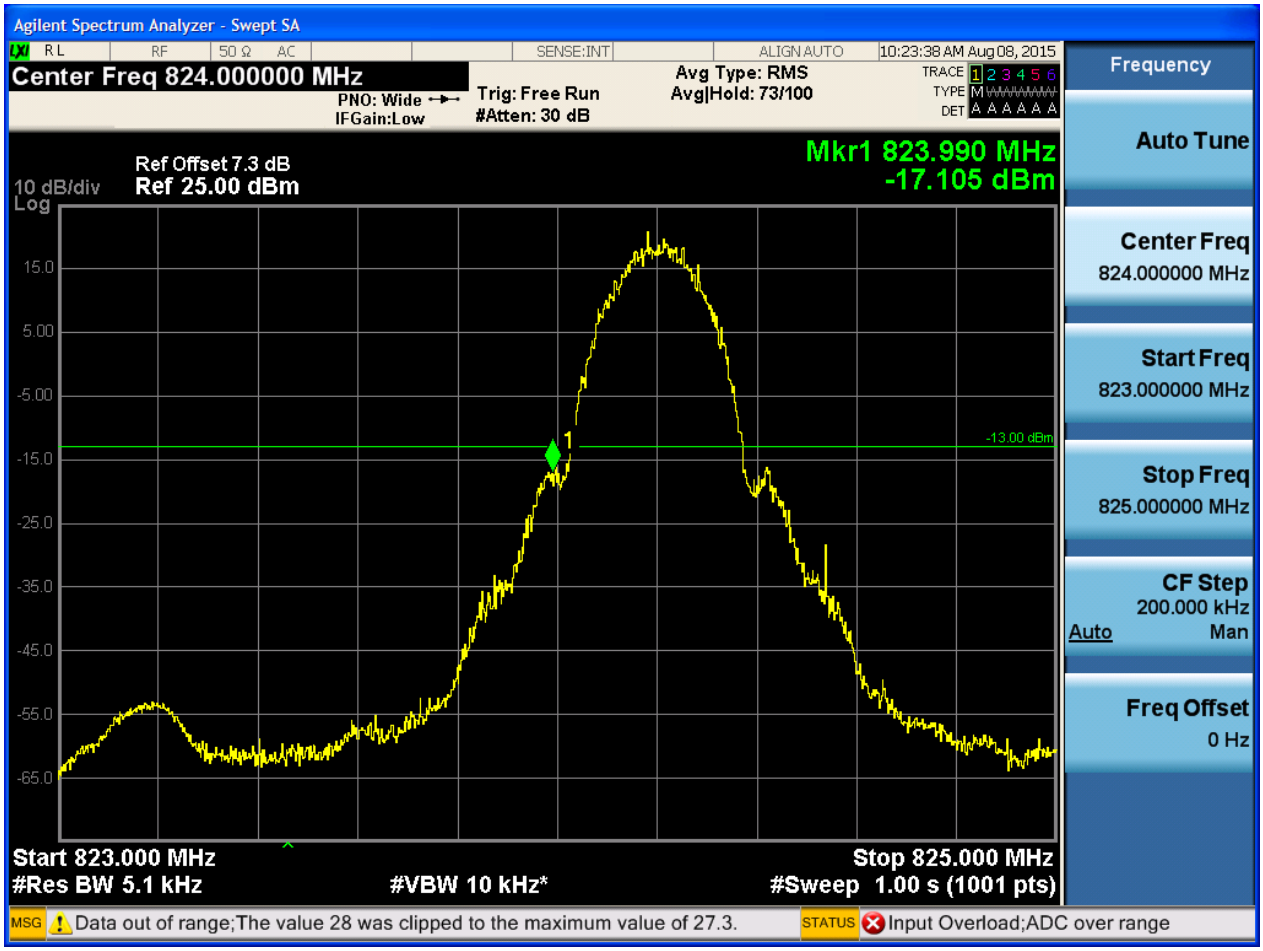
Part I - Test Plots

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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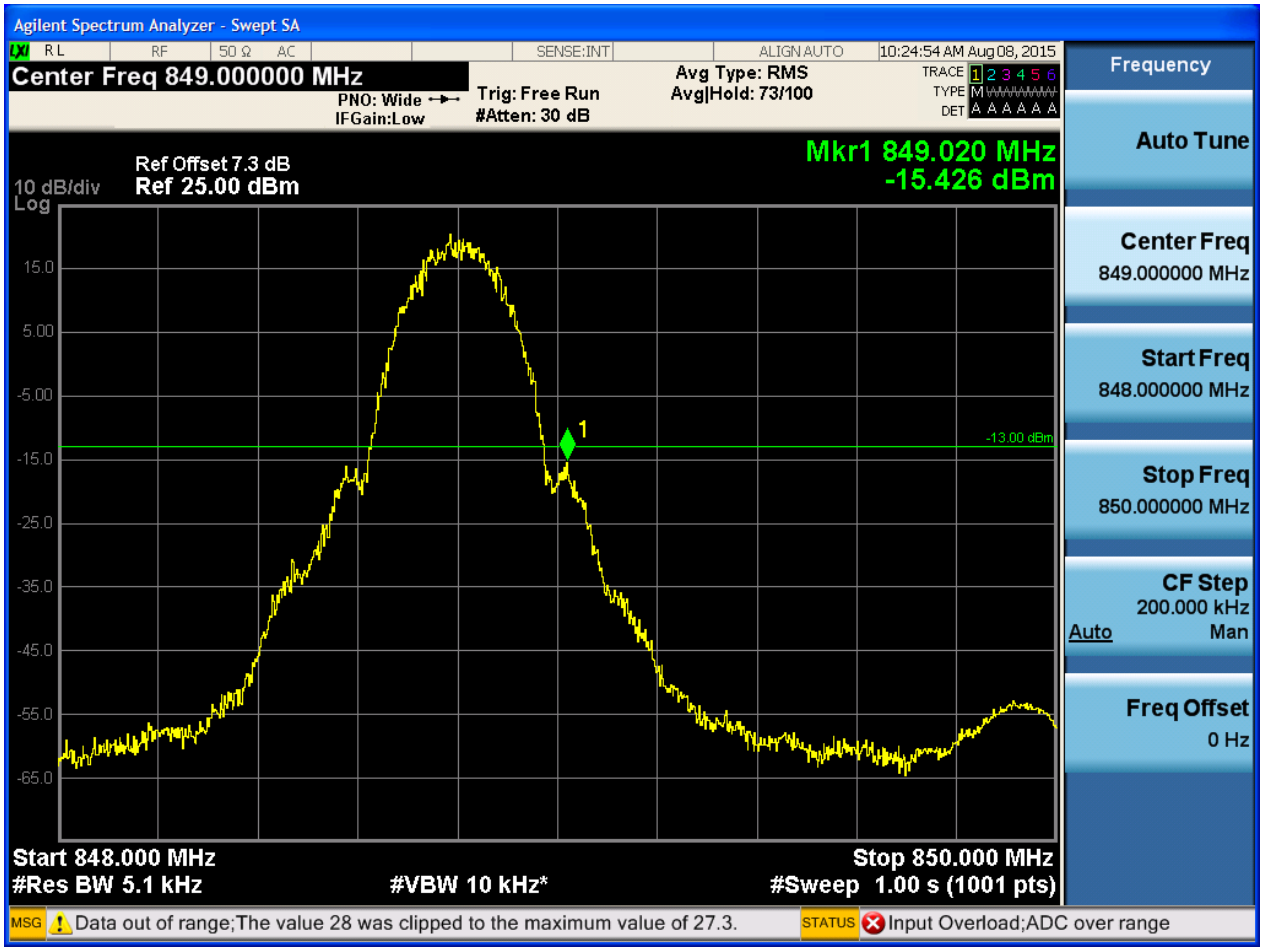
5.1.1.1.2 Test Channel = HCH



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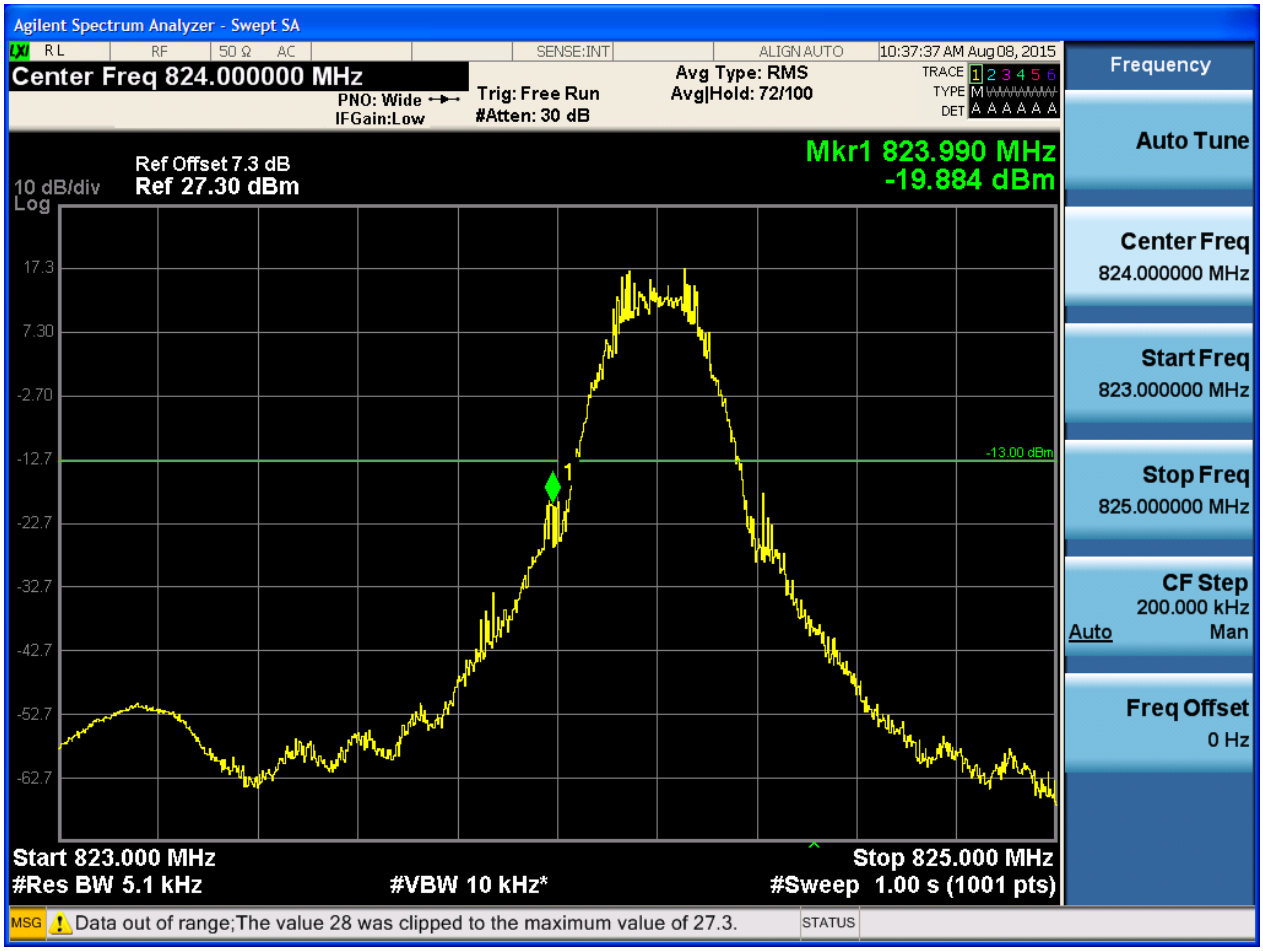
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



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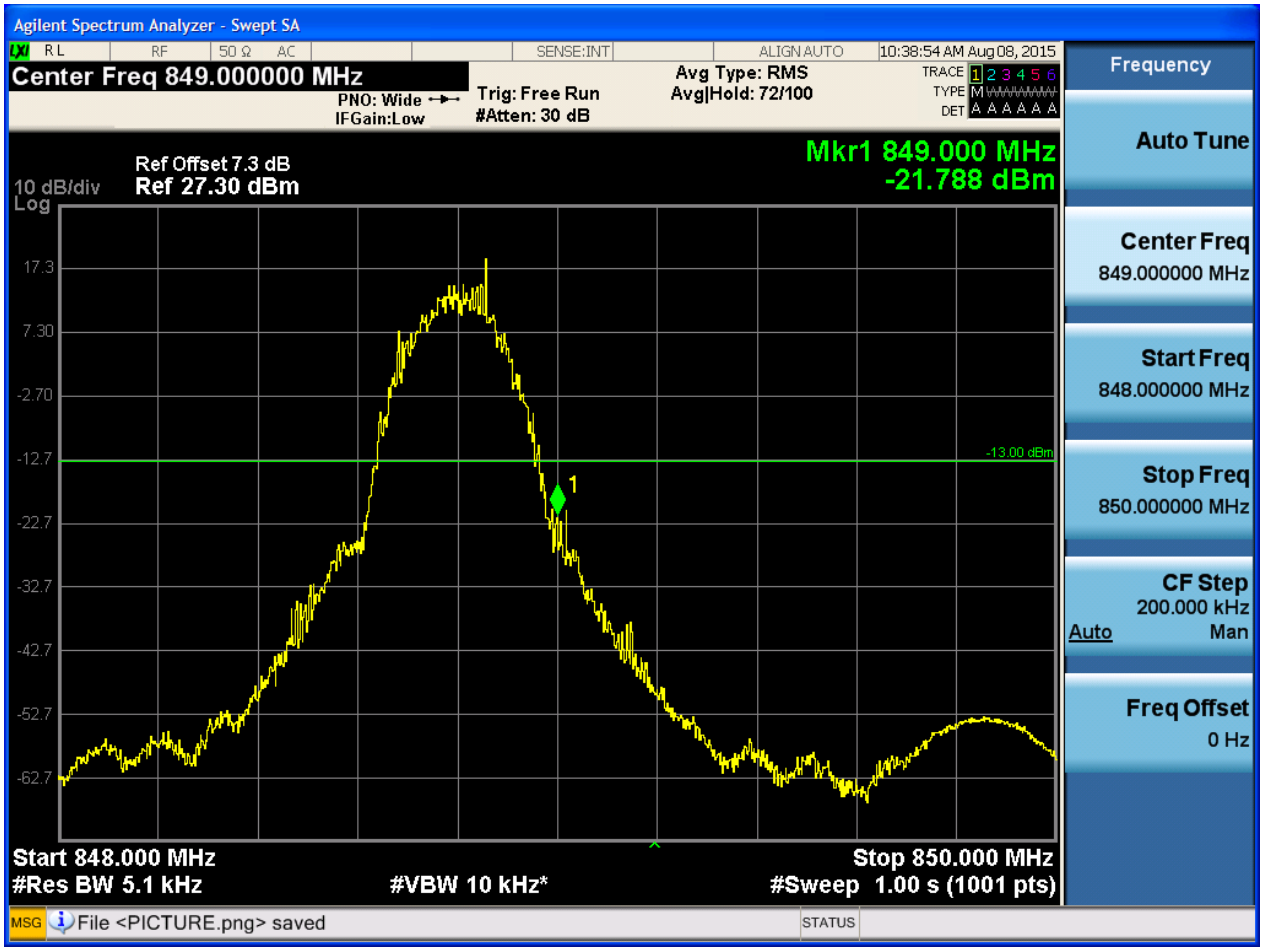
5.1.1.2.2 Test Channel = HCH



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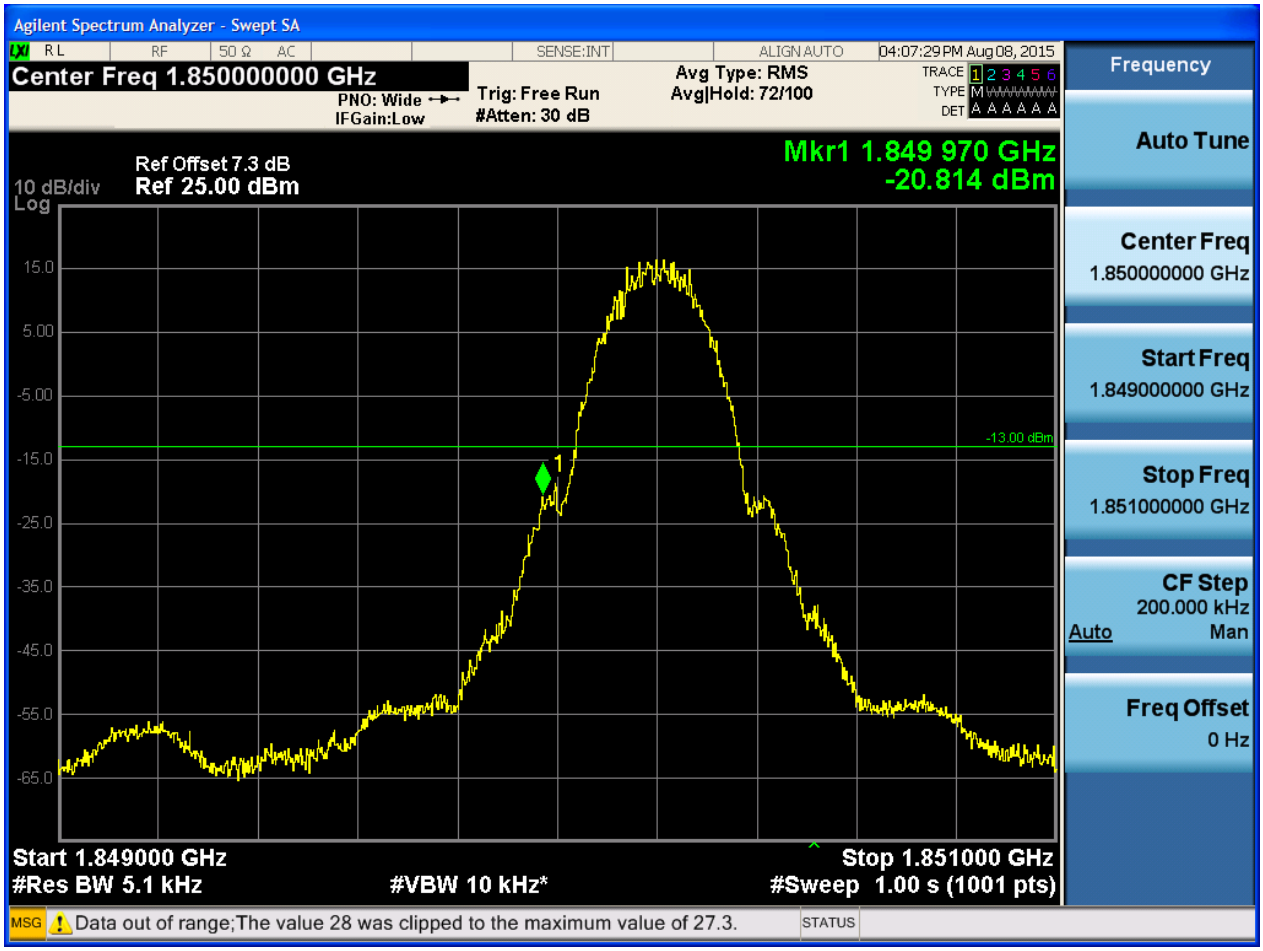
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



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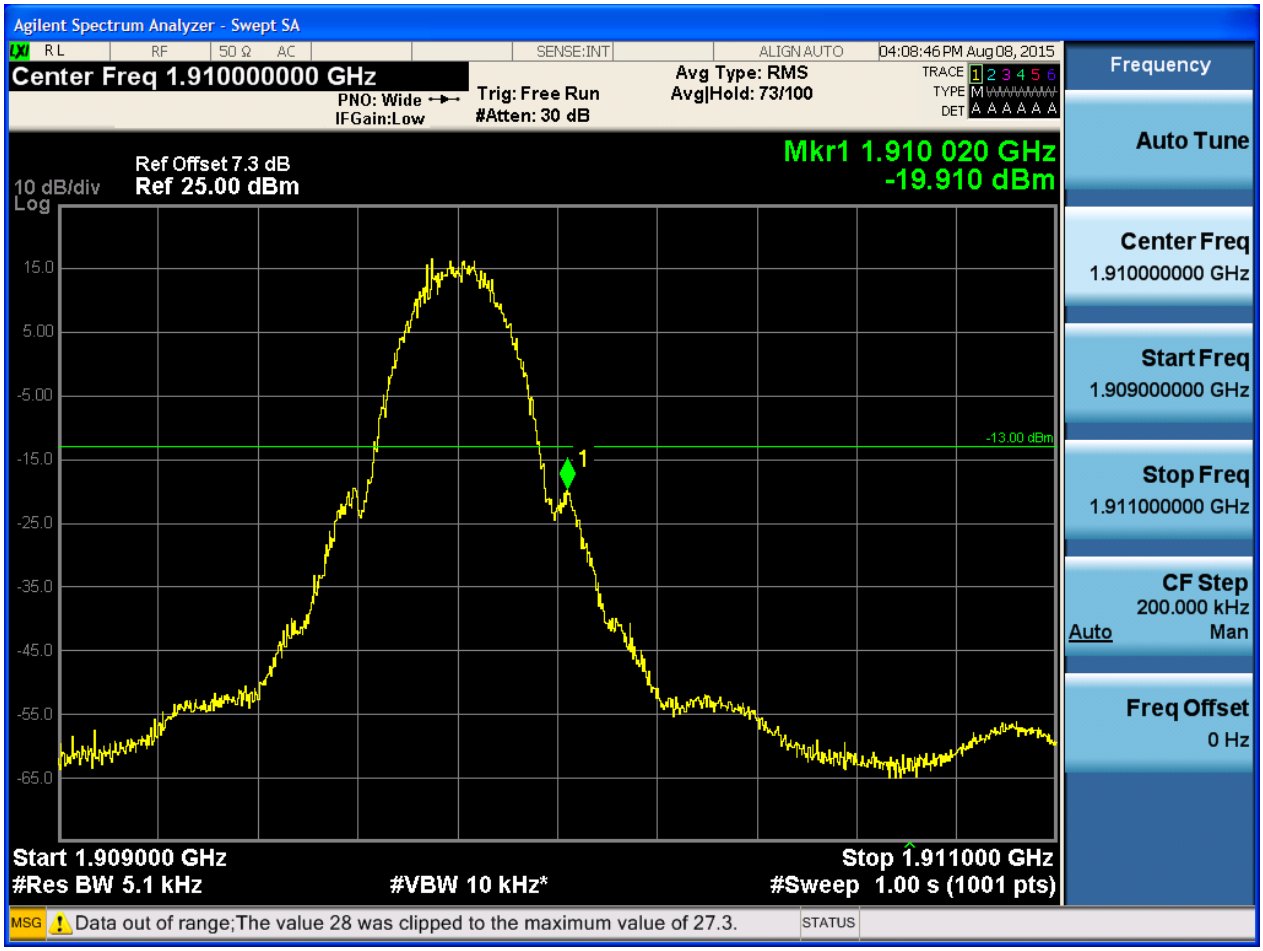
5.1.2.1.2 Test Channel = HCH



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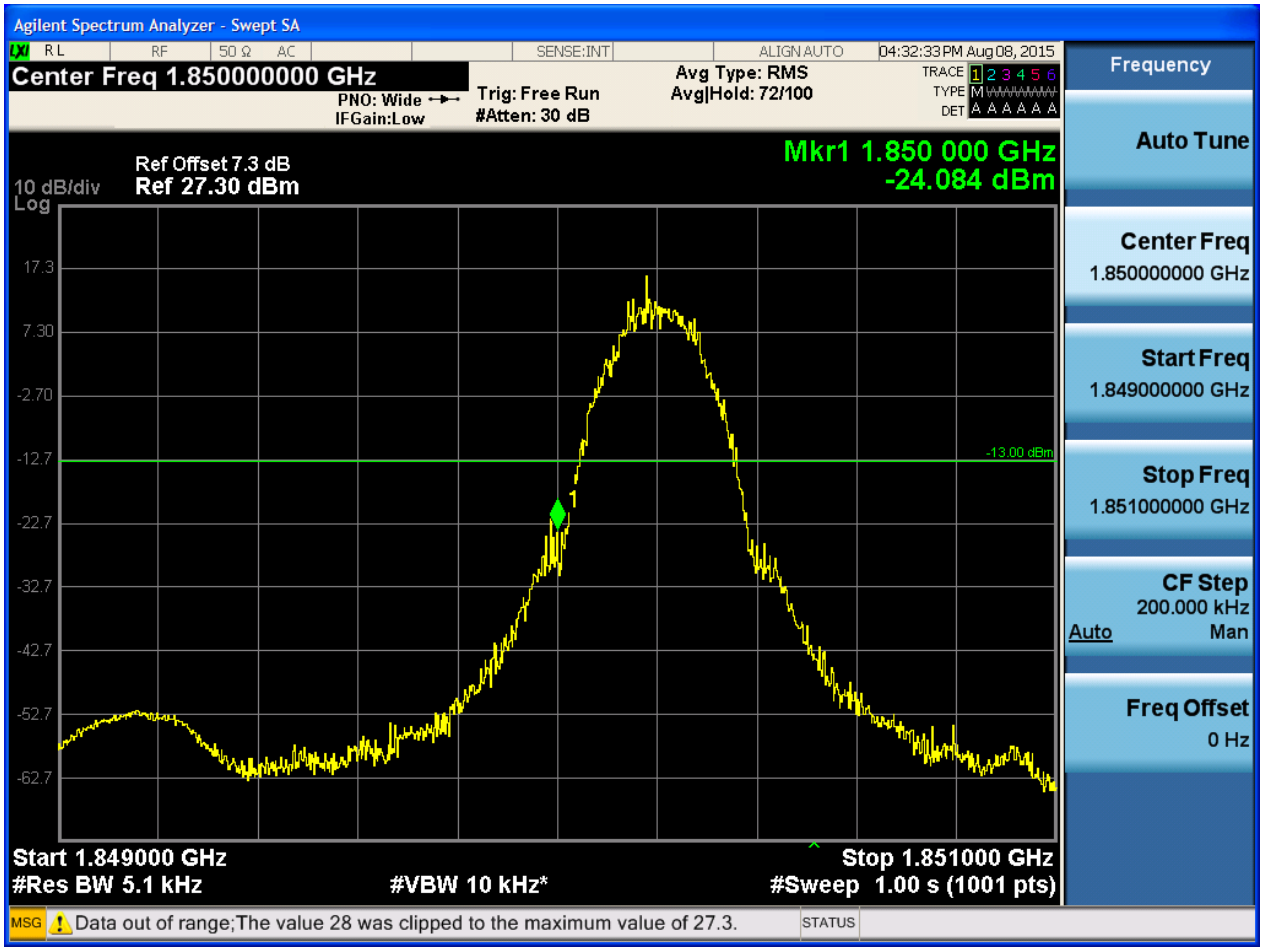
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



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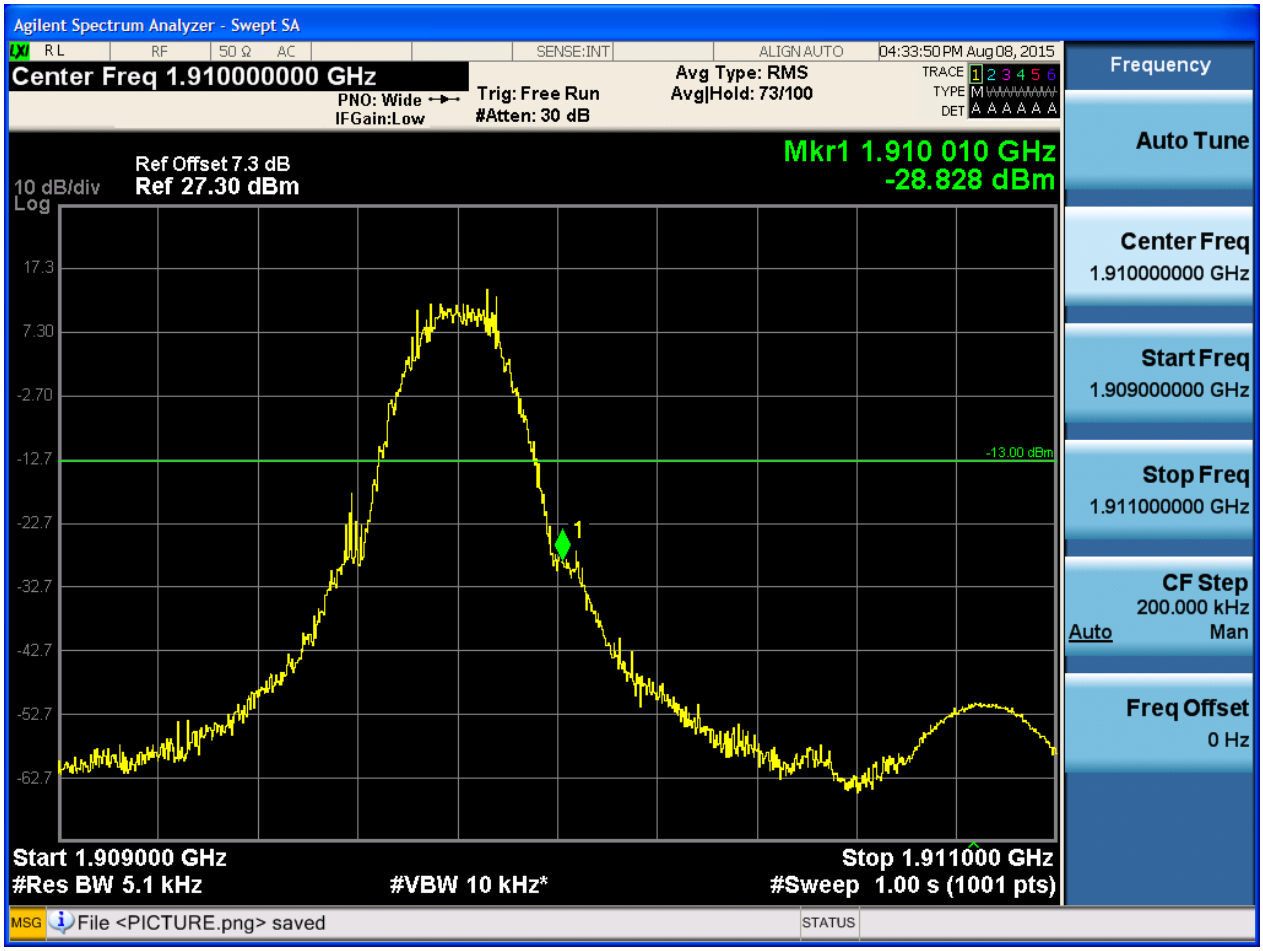
5.1.2.2.2 Test Channel = HCH



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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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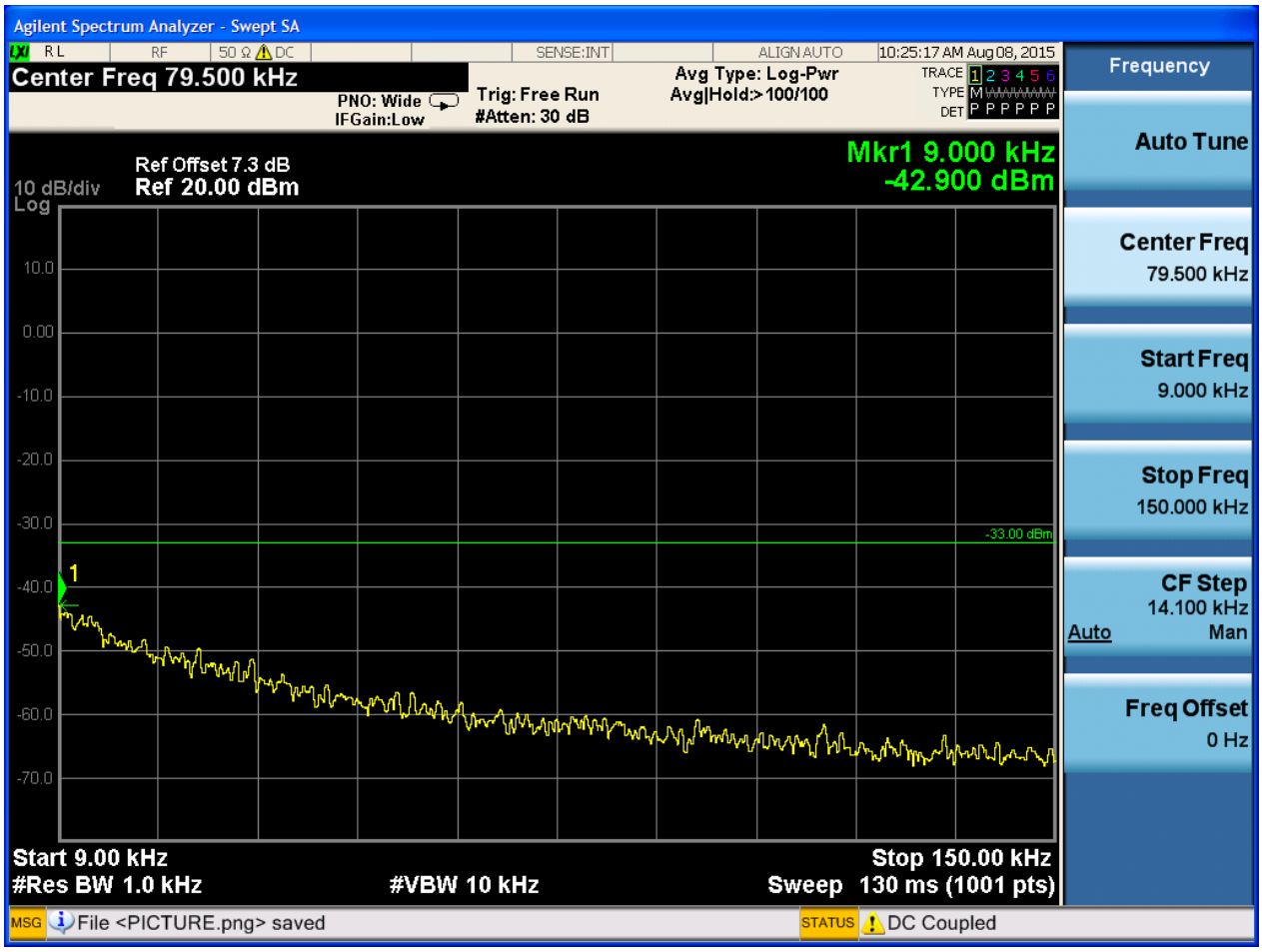

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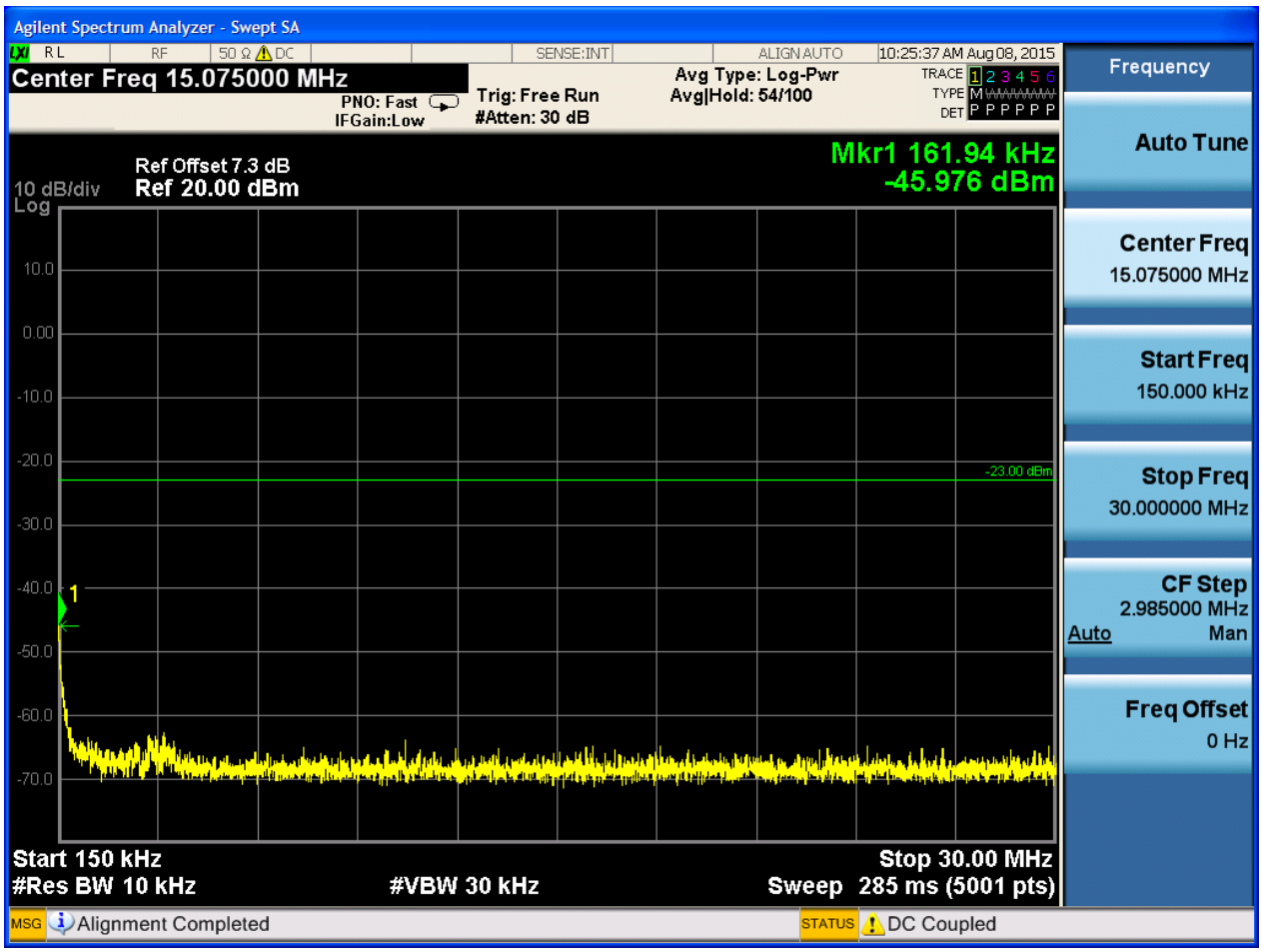

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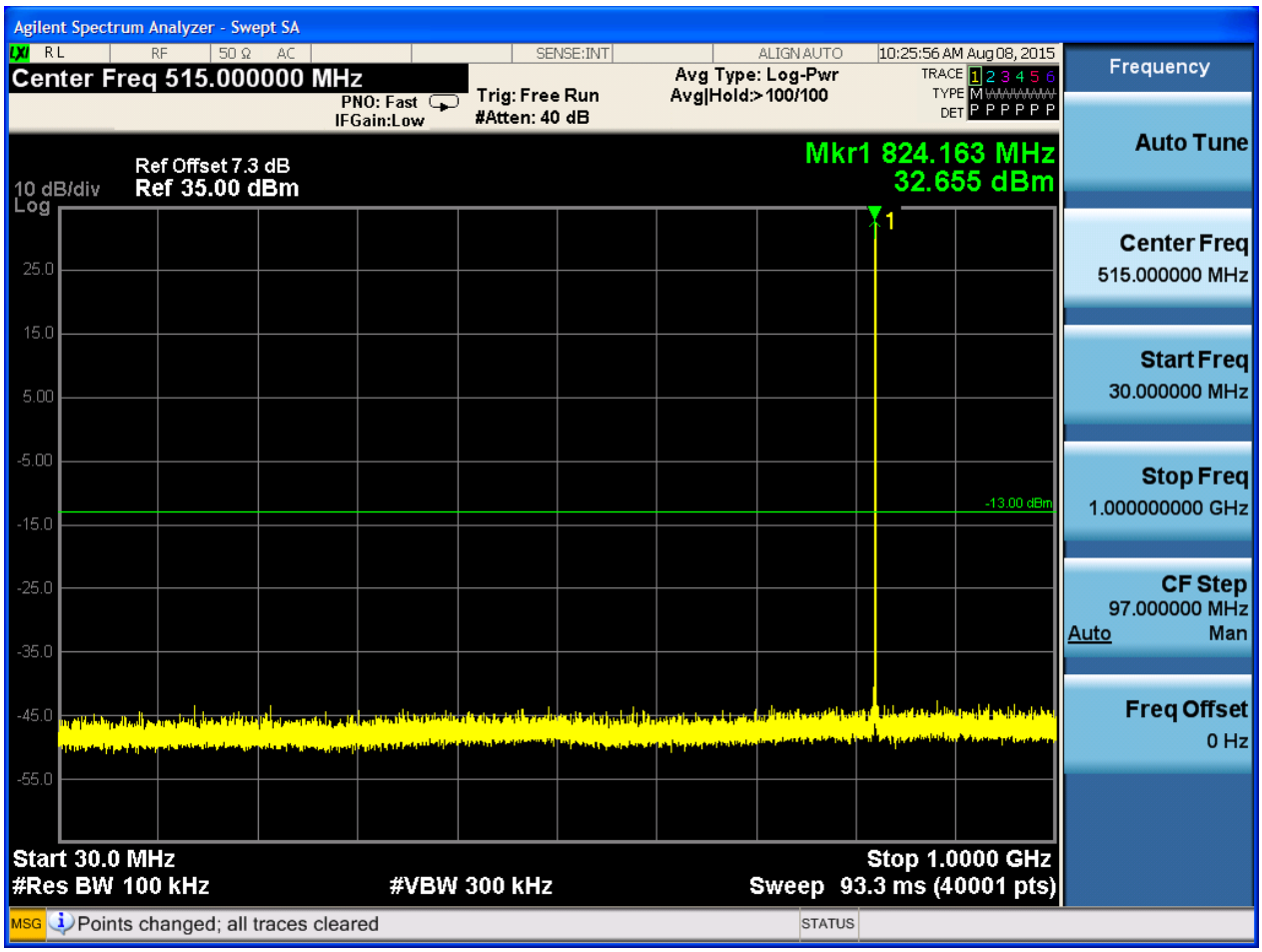

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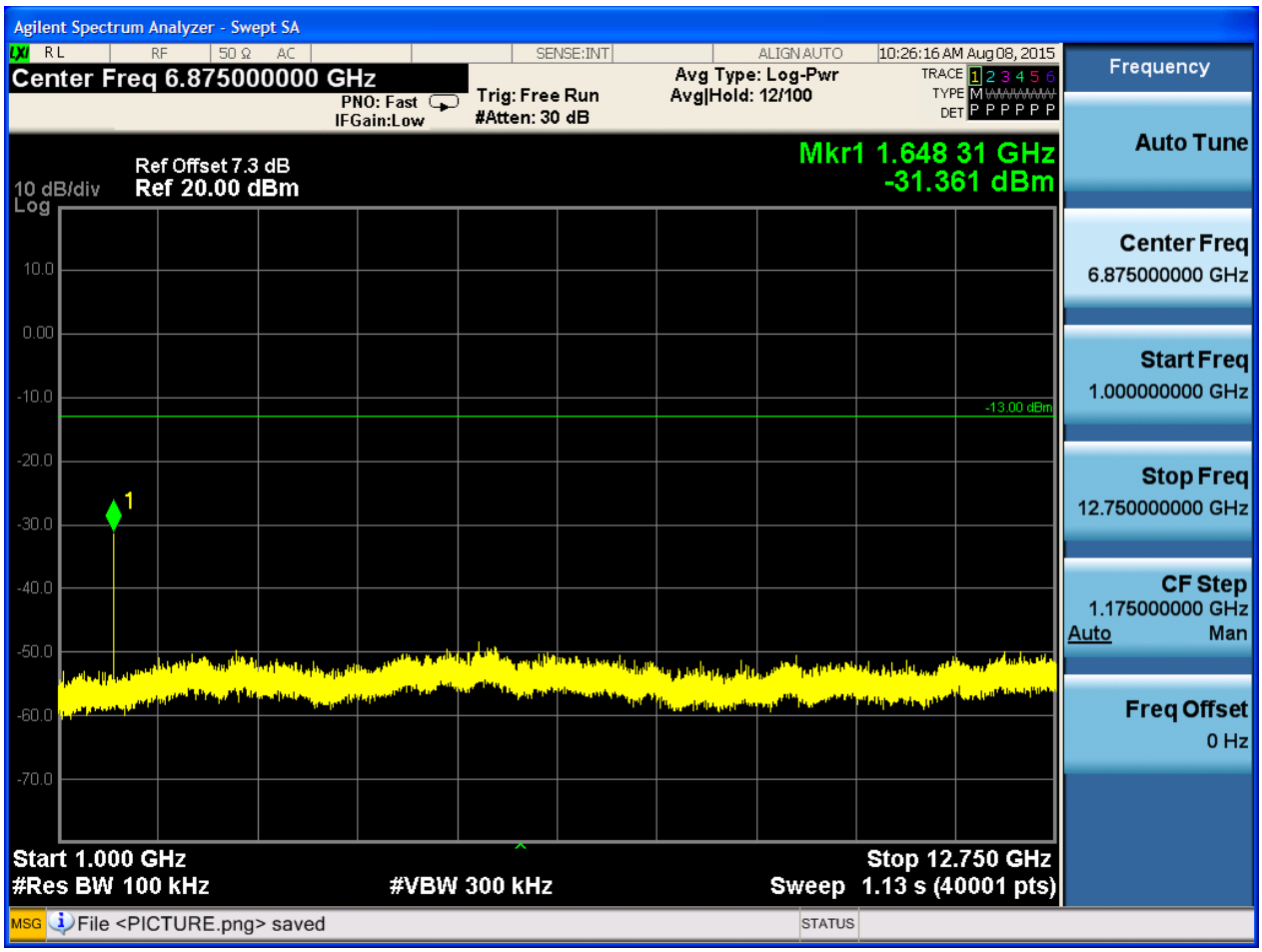

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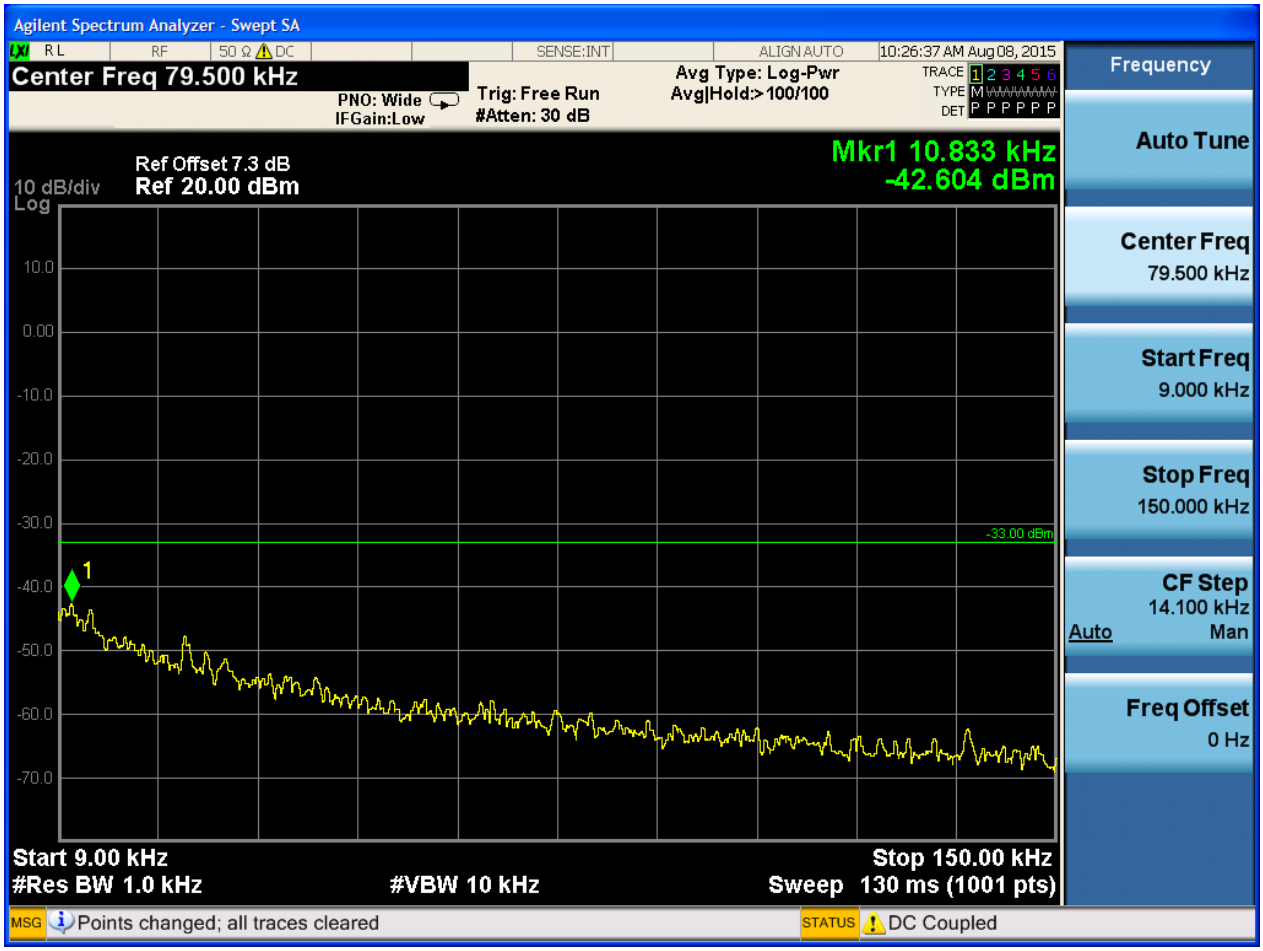
6.1.1.1.2 Test Channel = MCH



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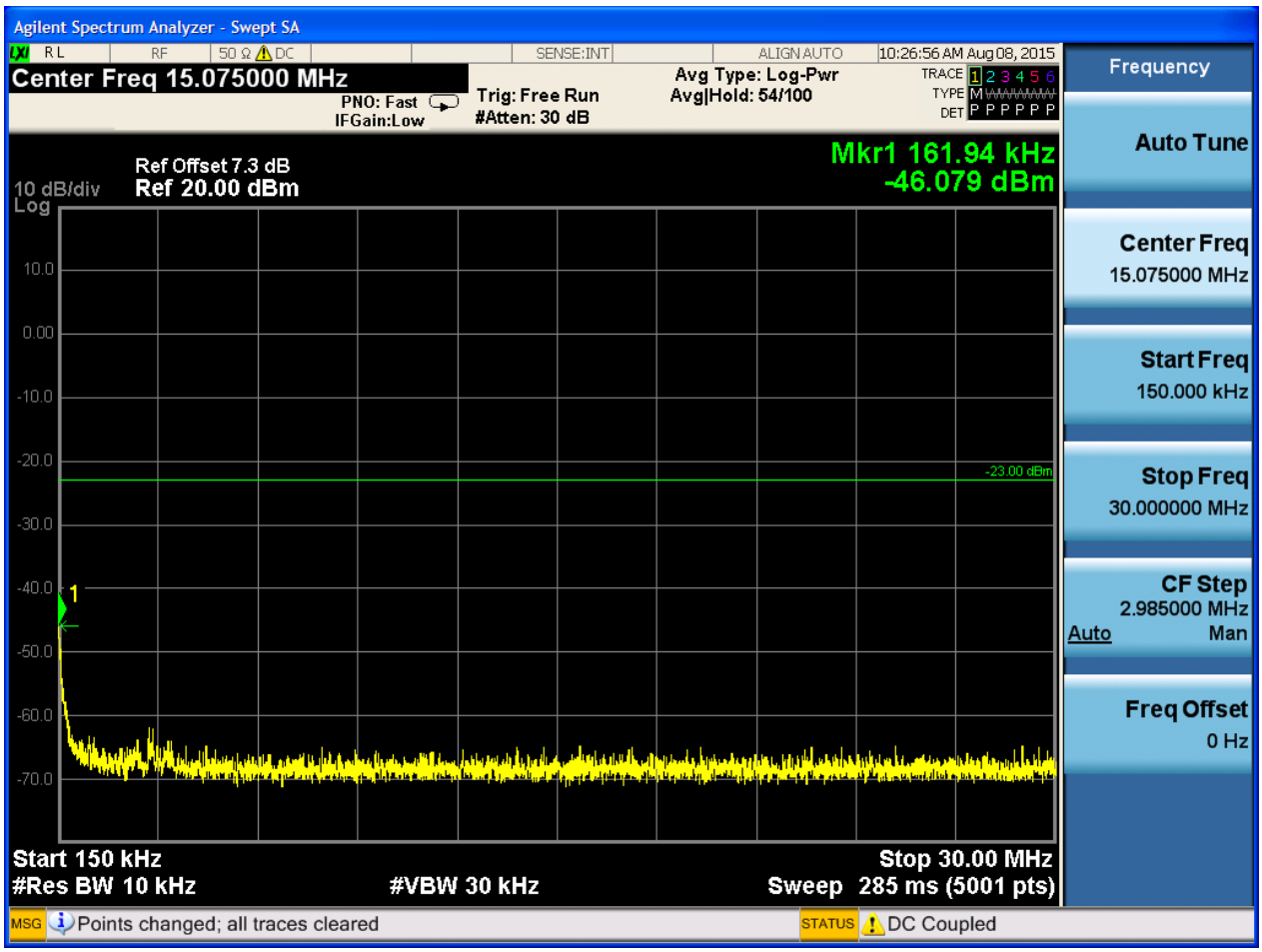

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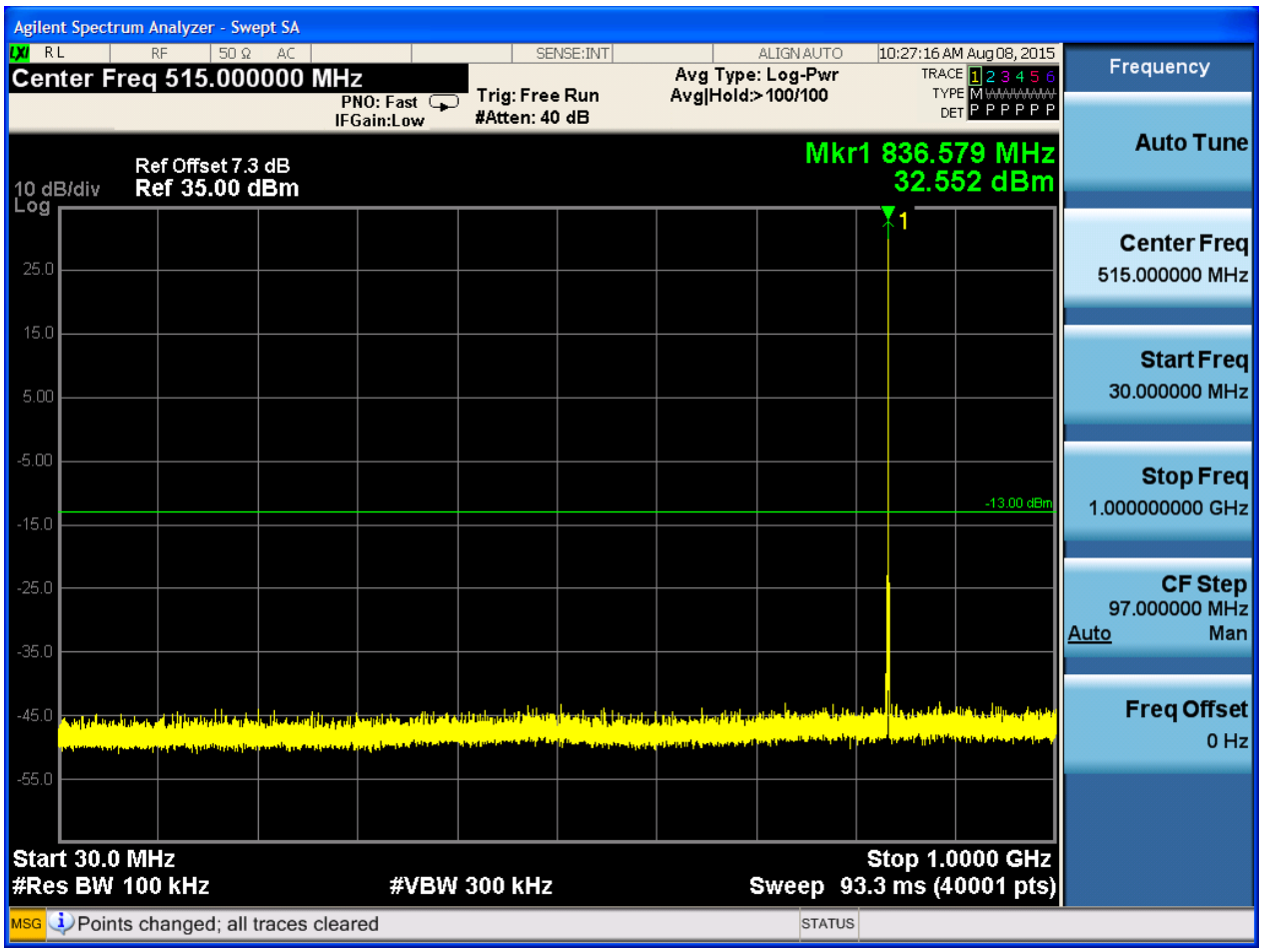

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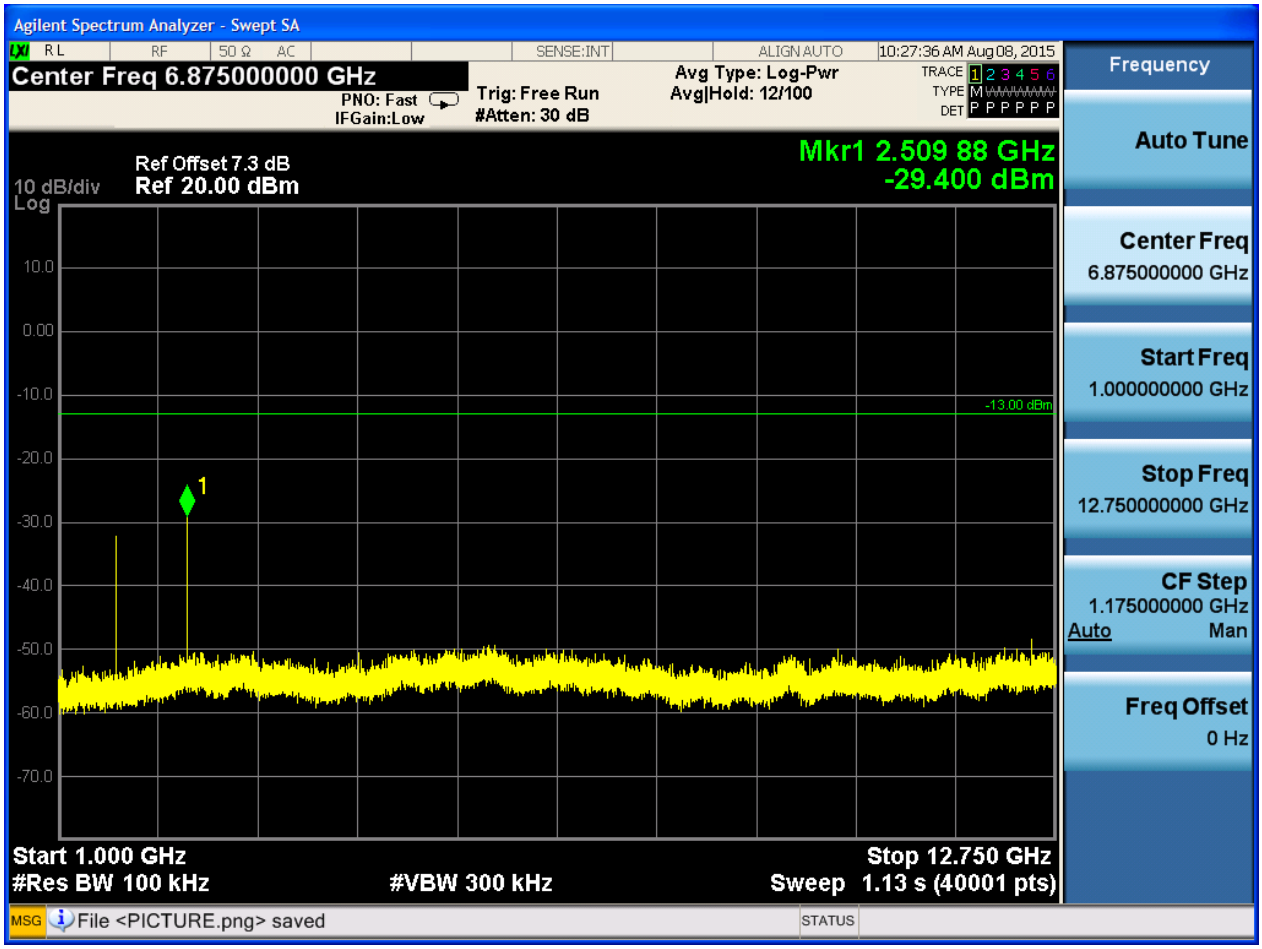

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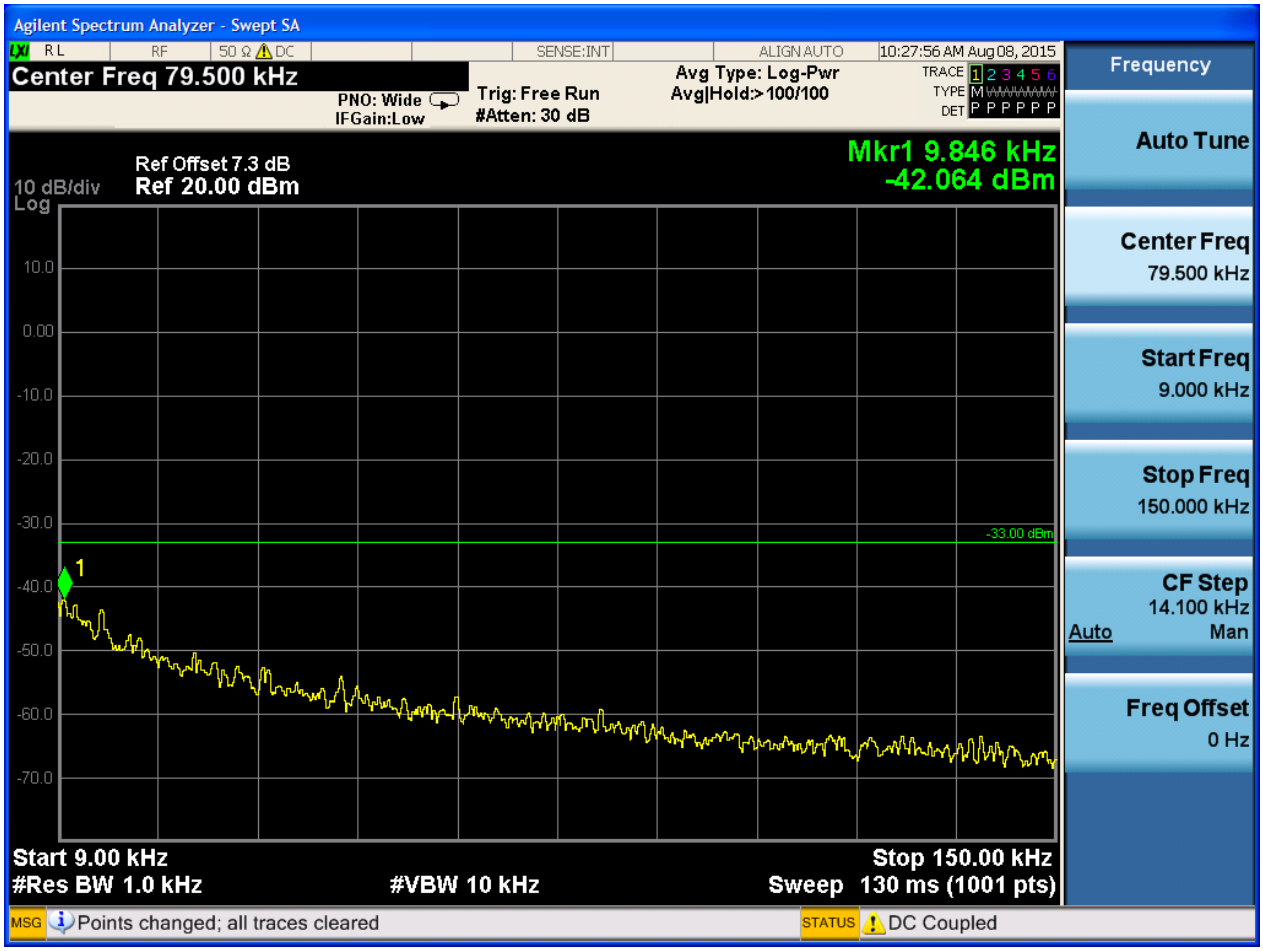
6.1.1.1.3 Test Channel = HCH



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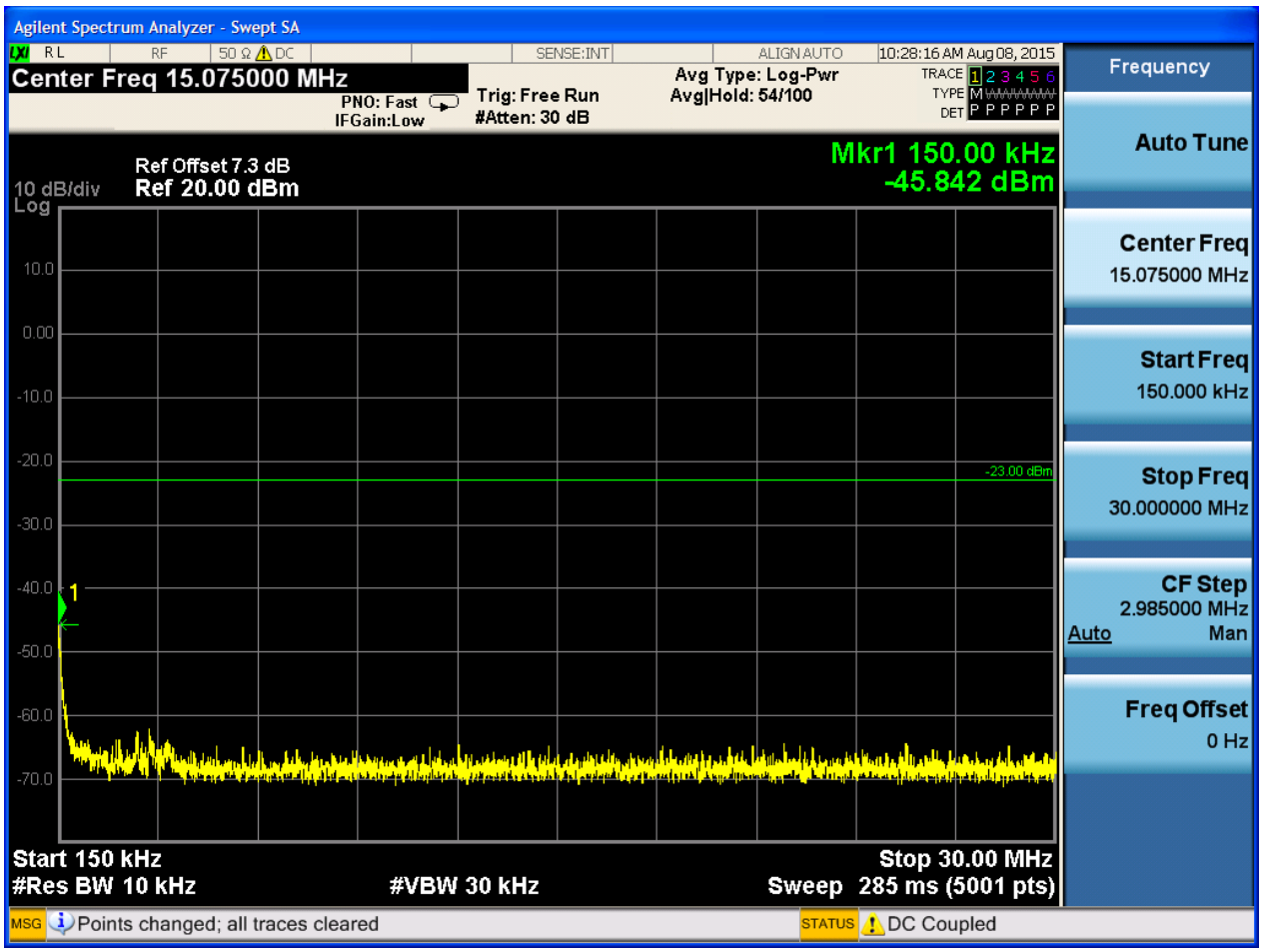

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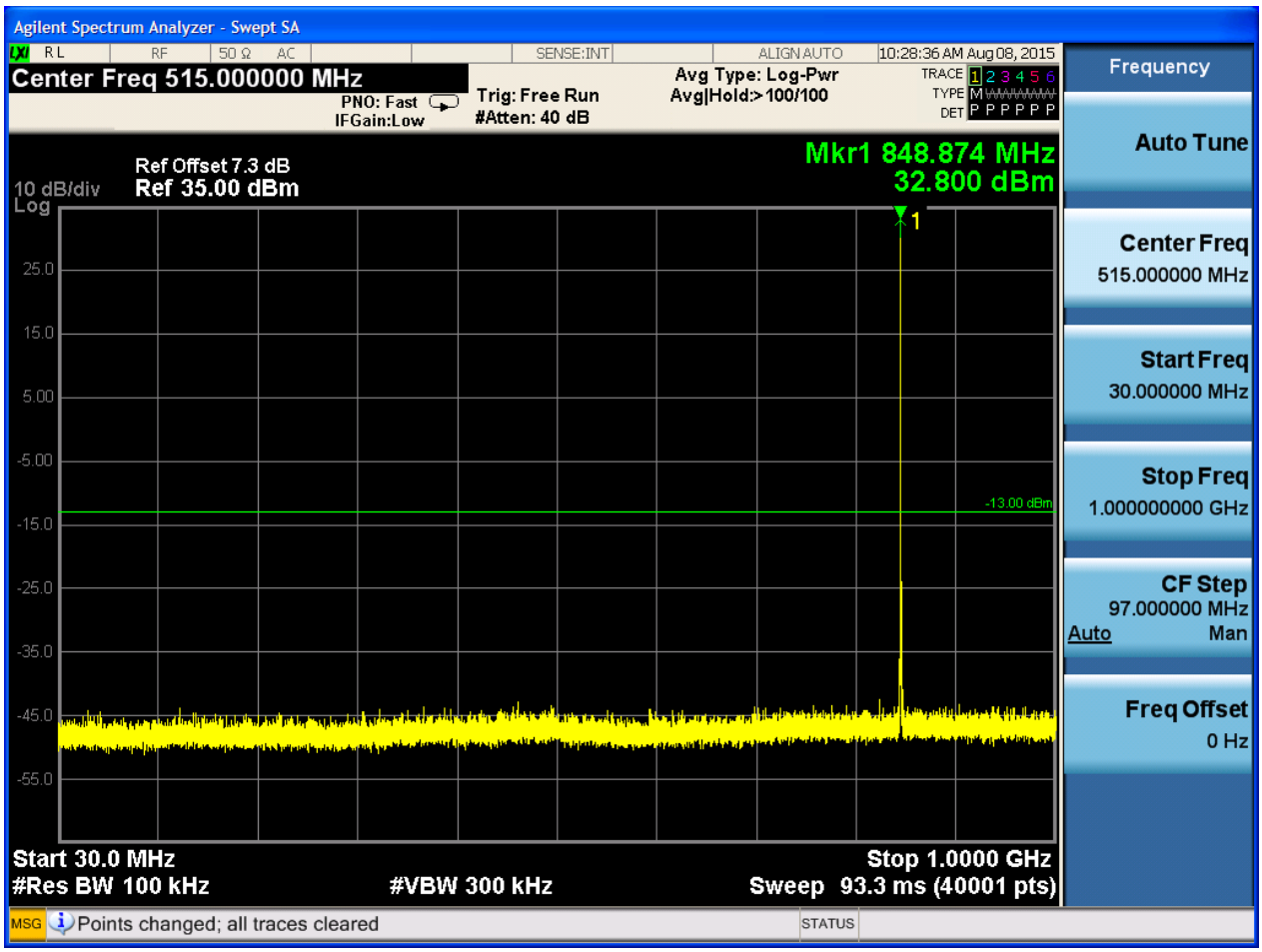

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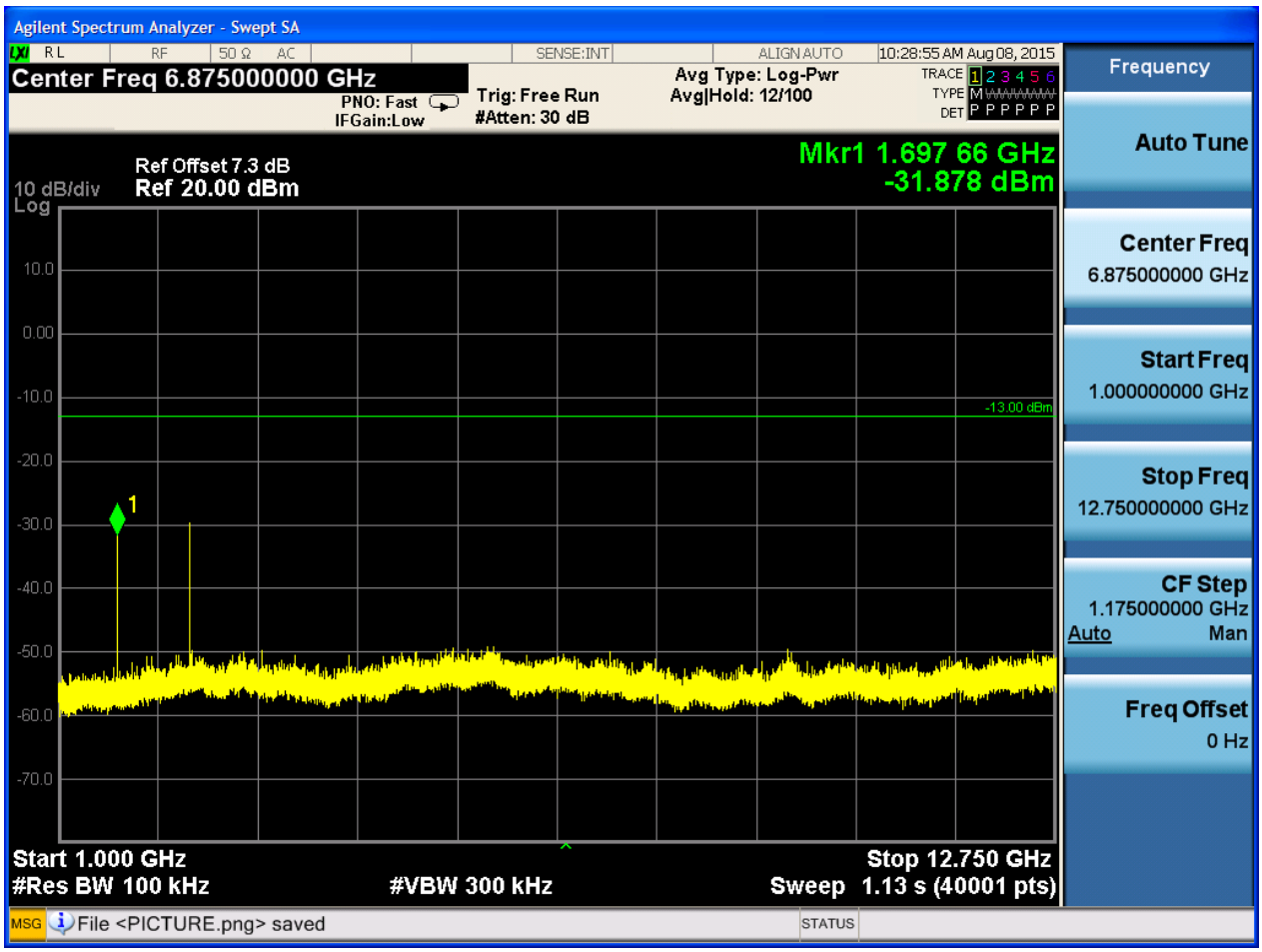

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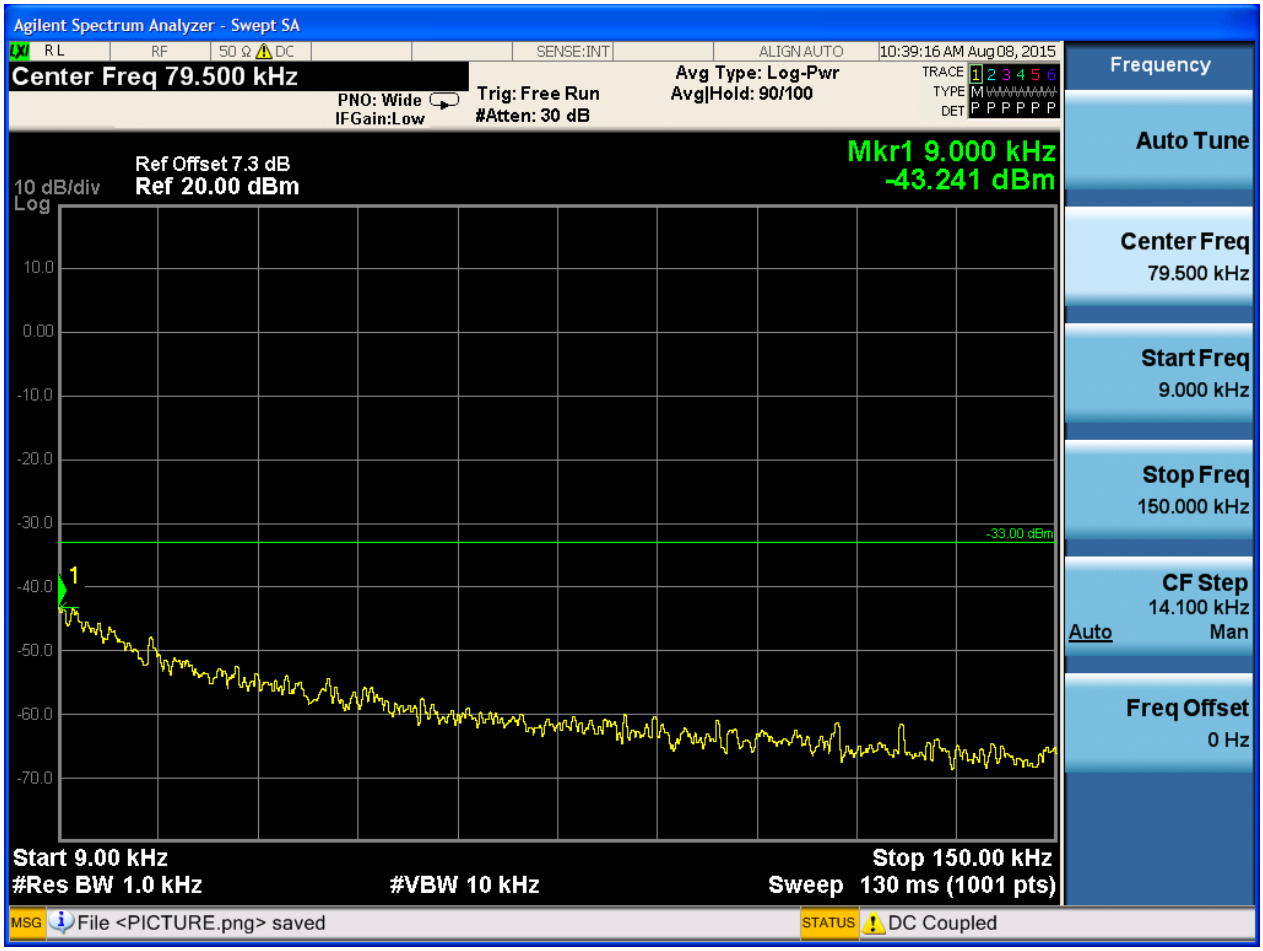
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



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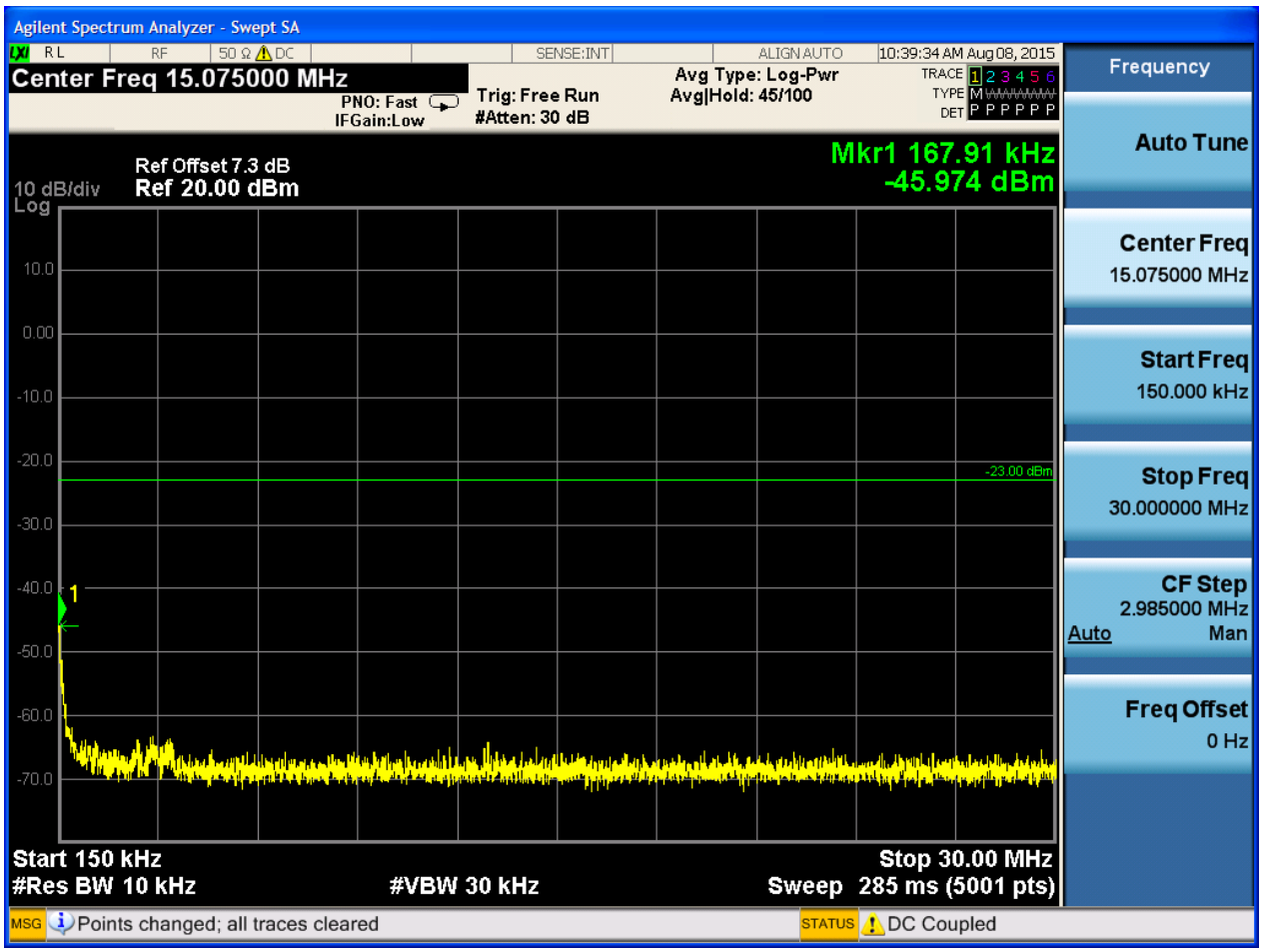

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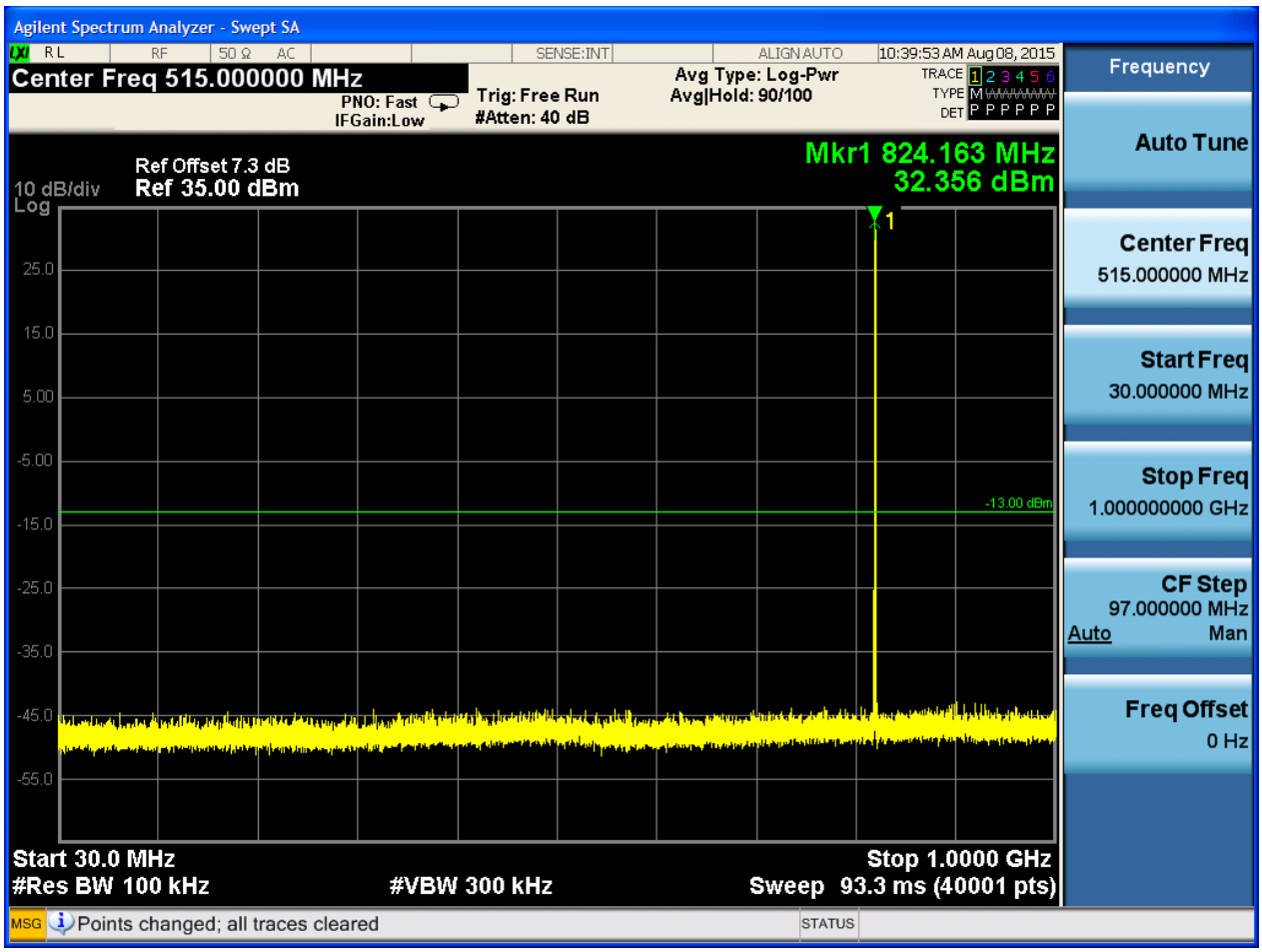

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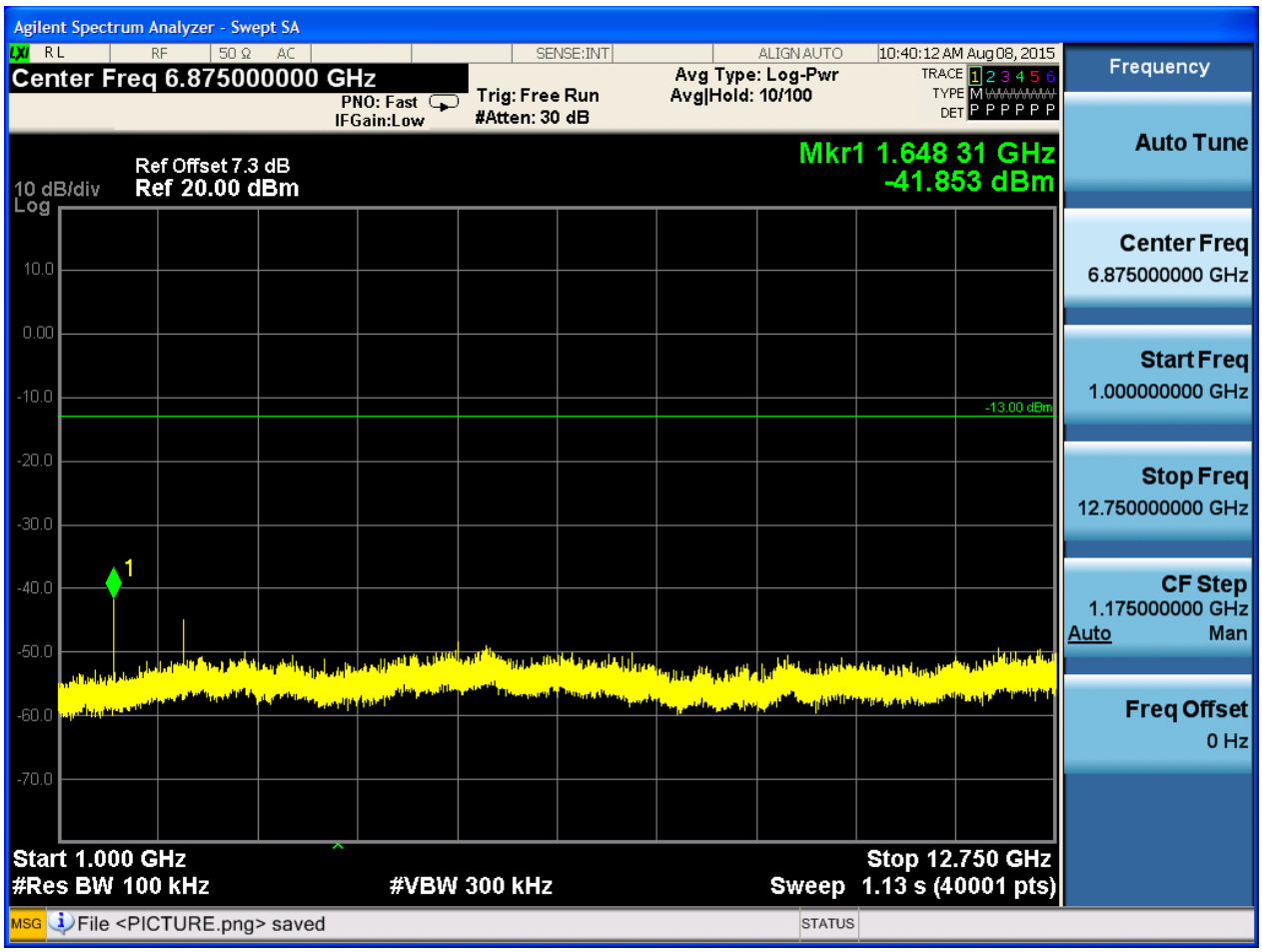

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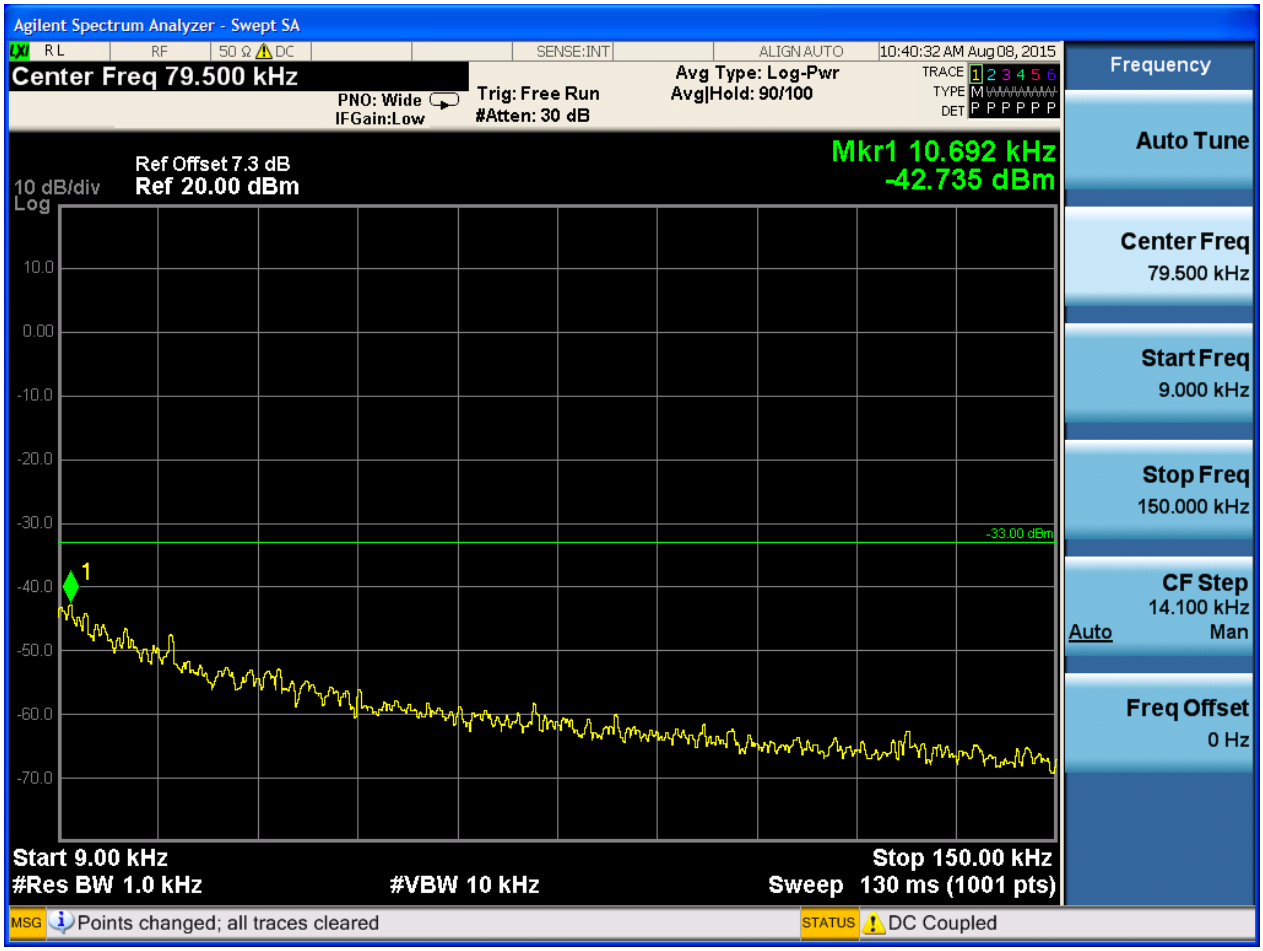
6.1.1.2.2 Test Channel = MCH



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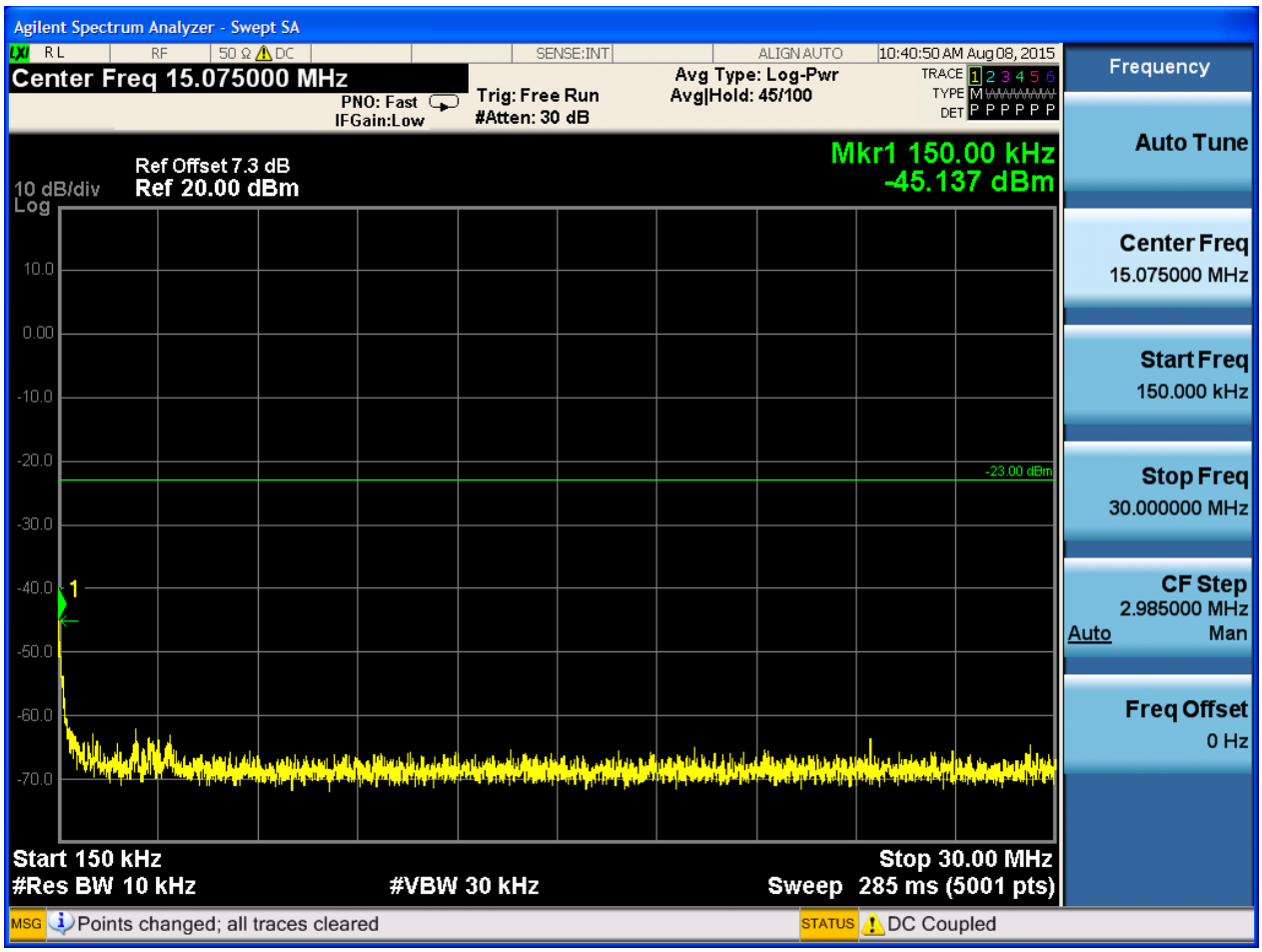

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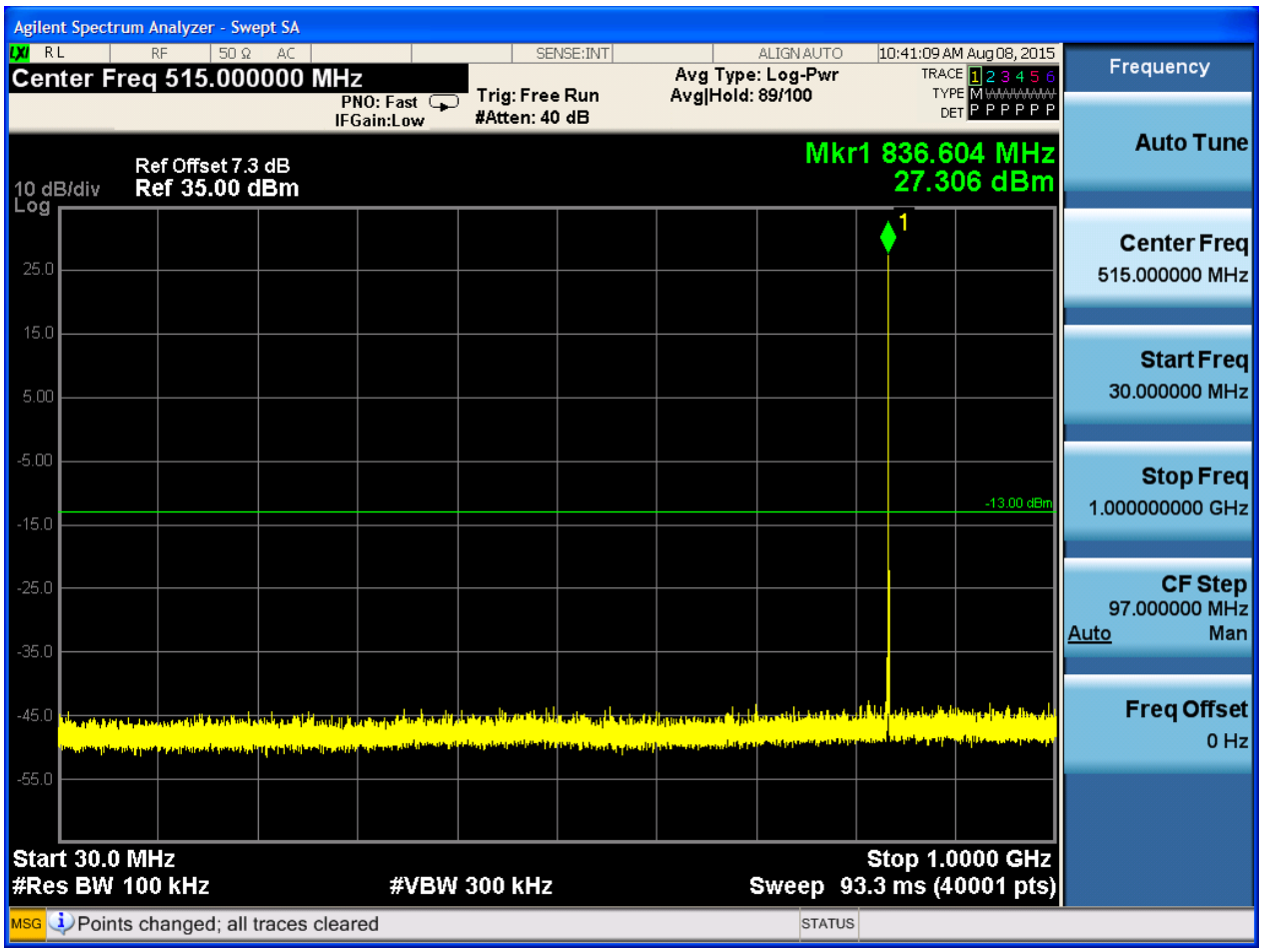

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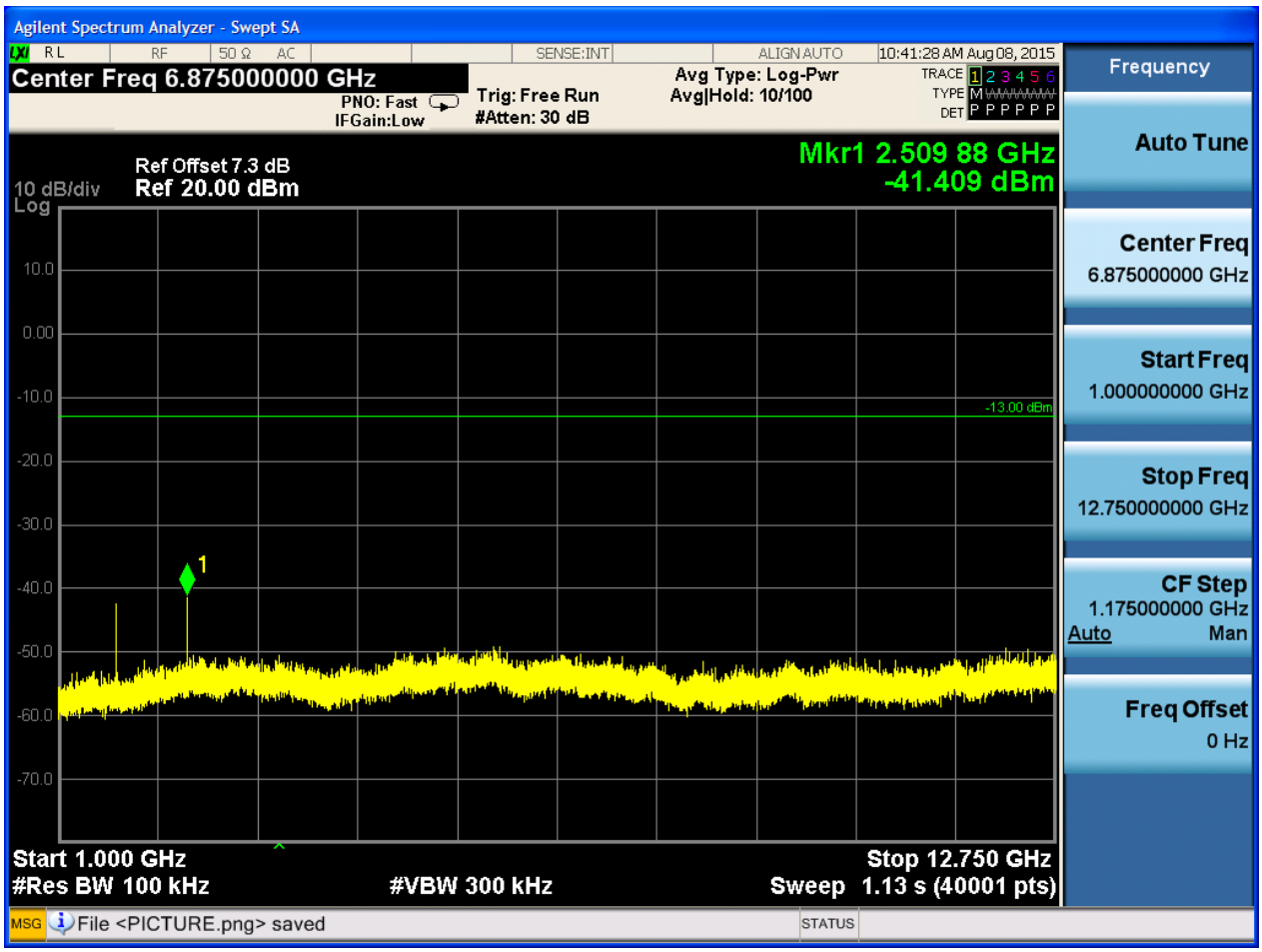

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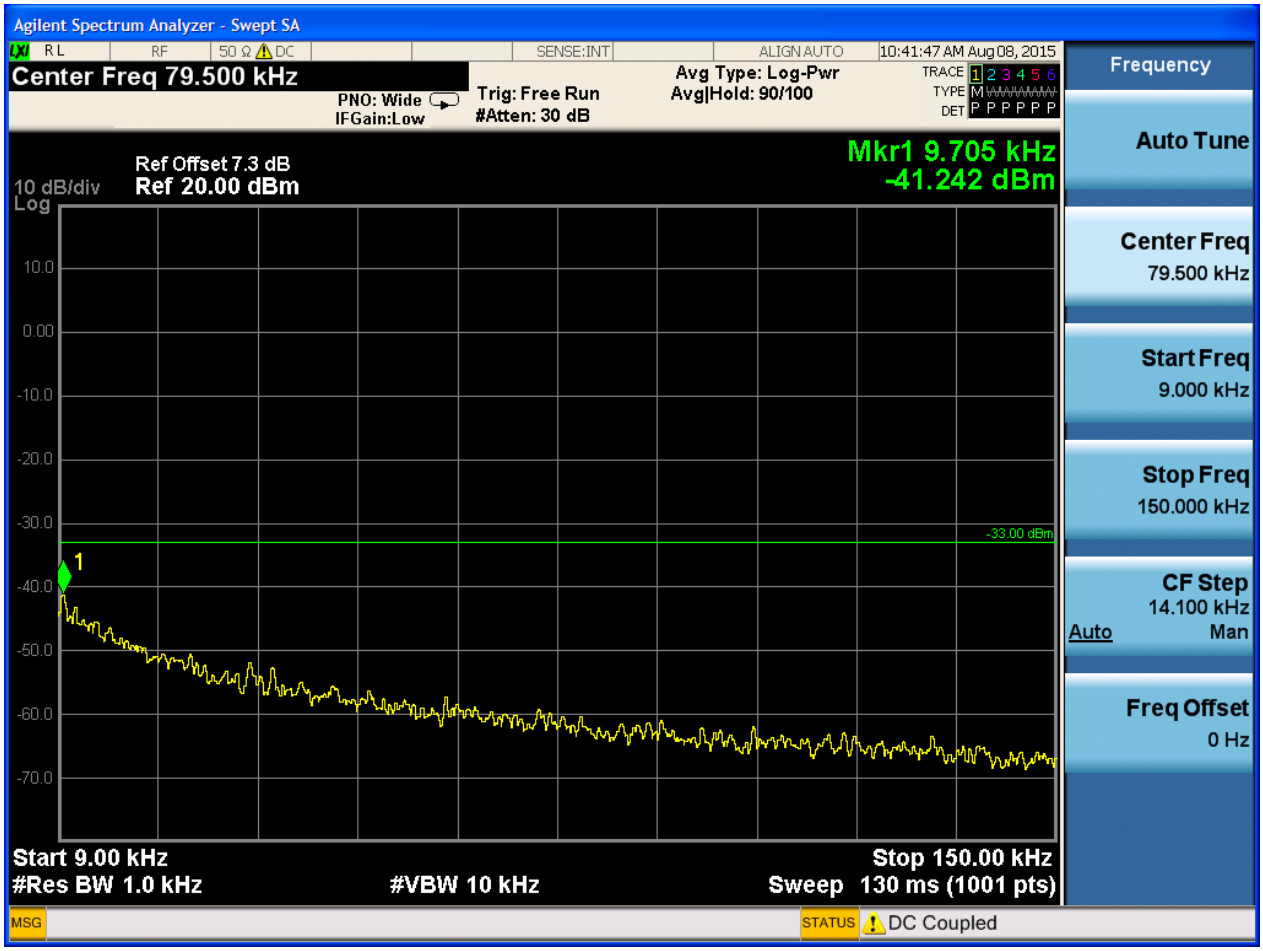
6.1.1.2.3 Test Channel = HCH



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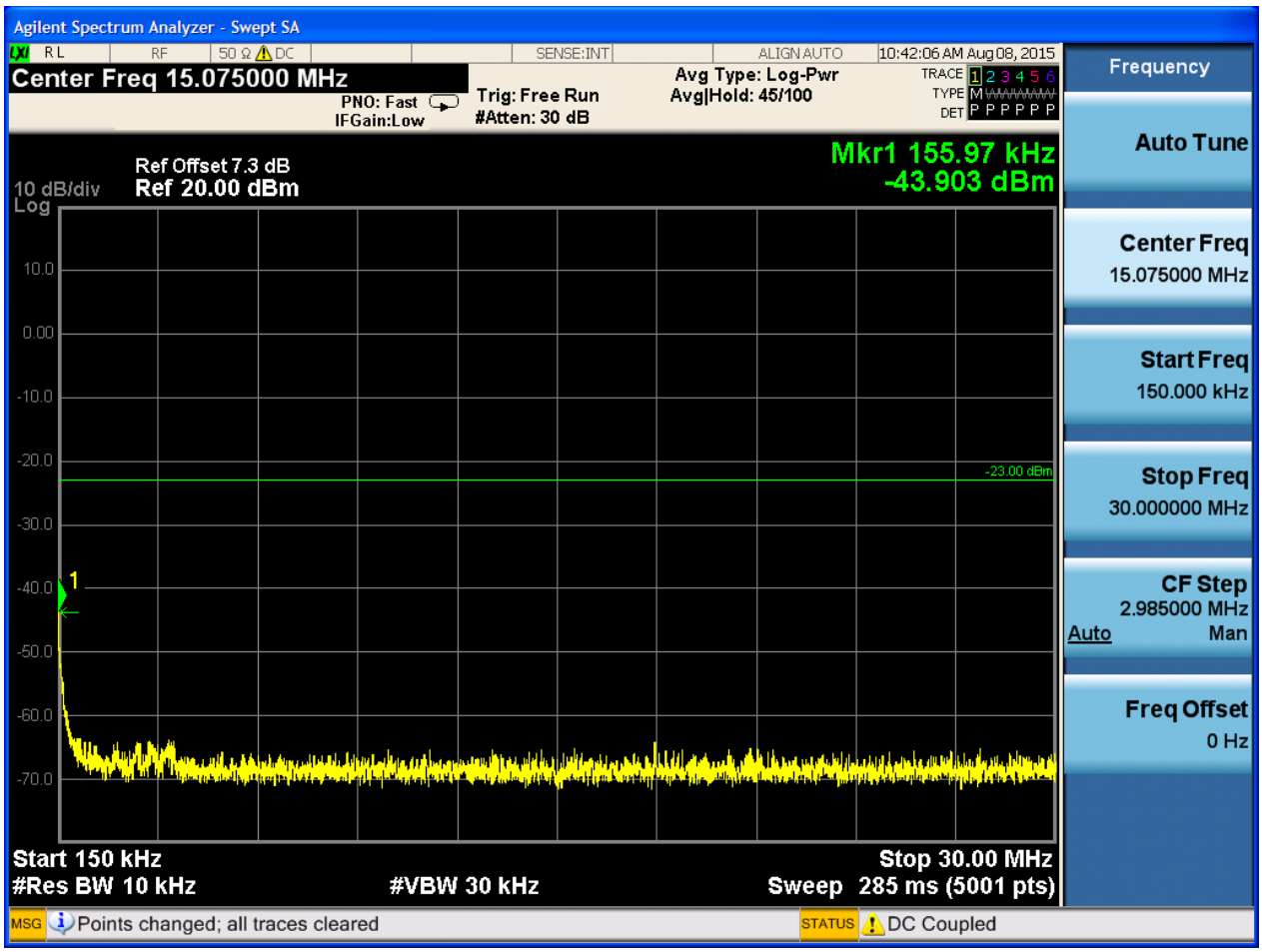

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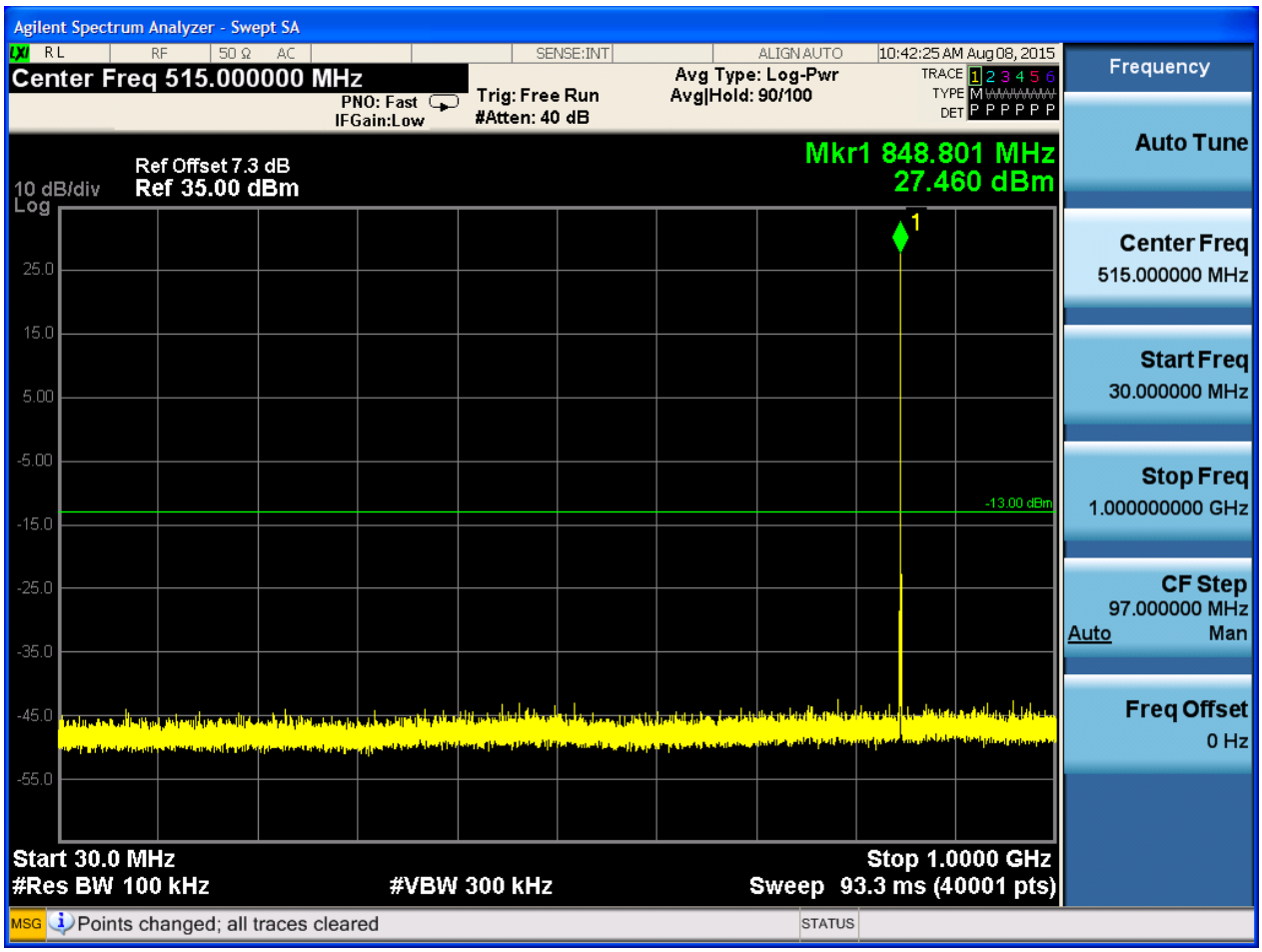

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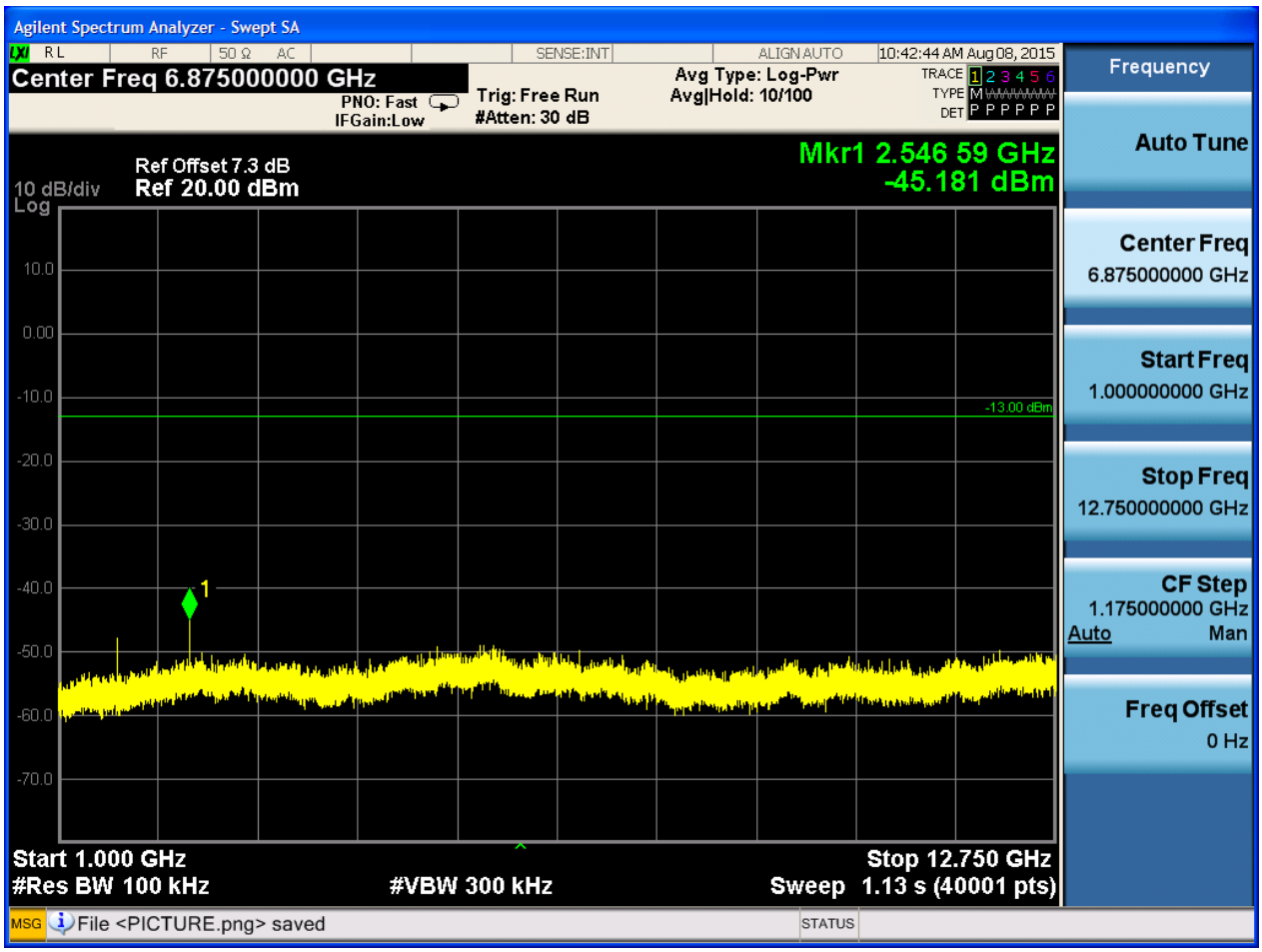

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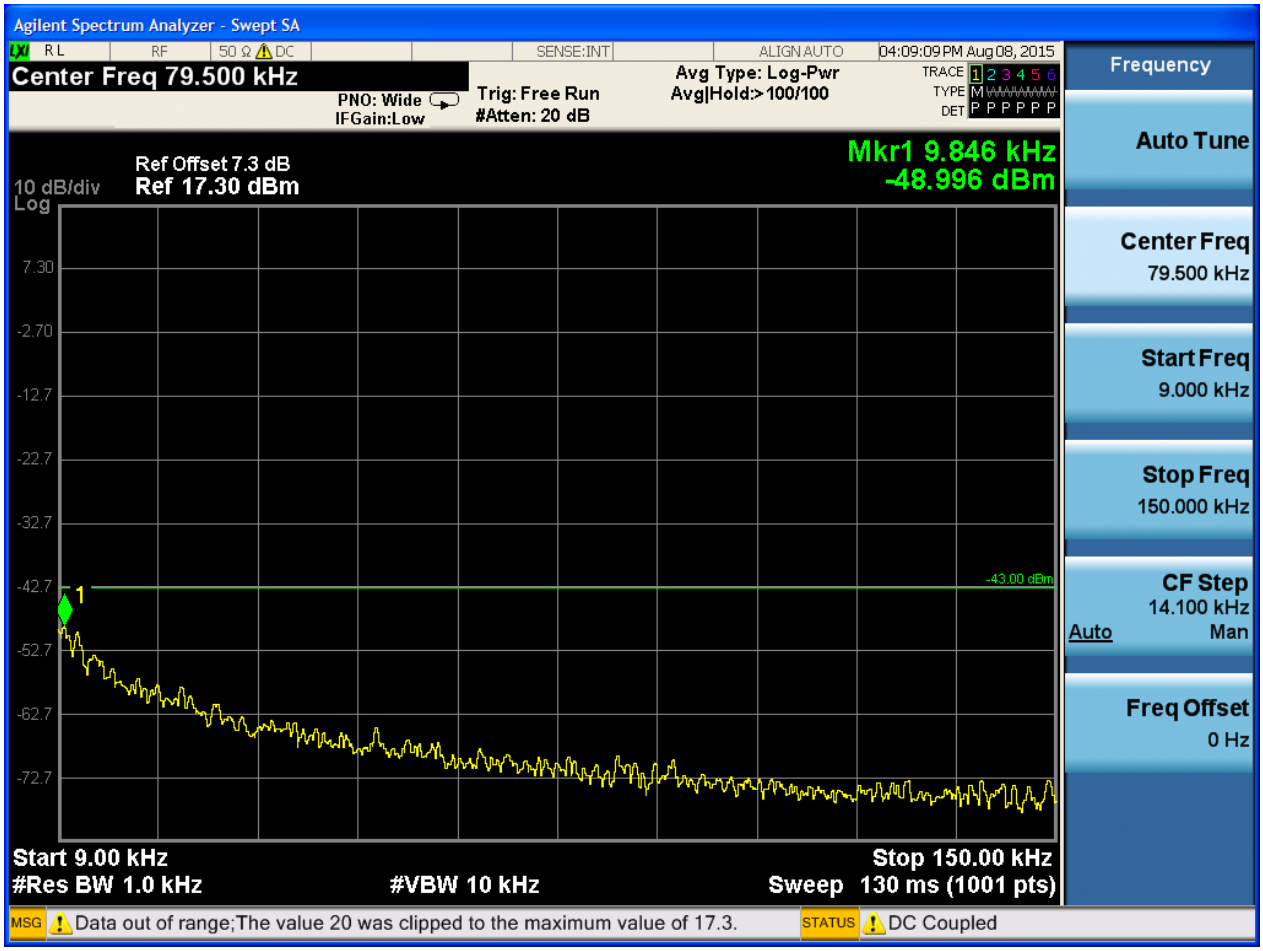
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



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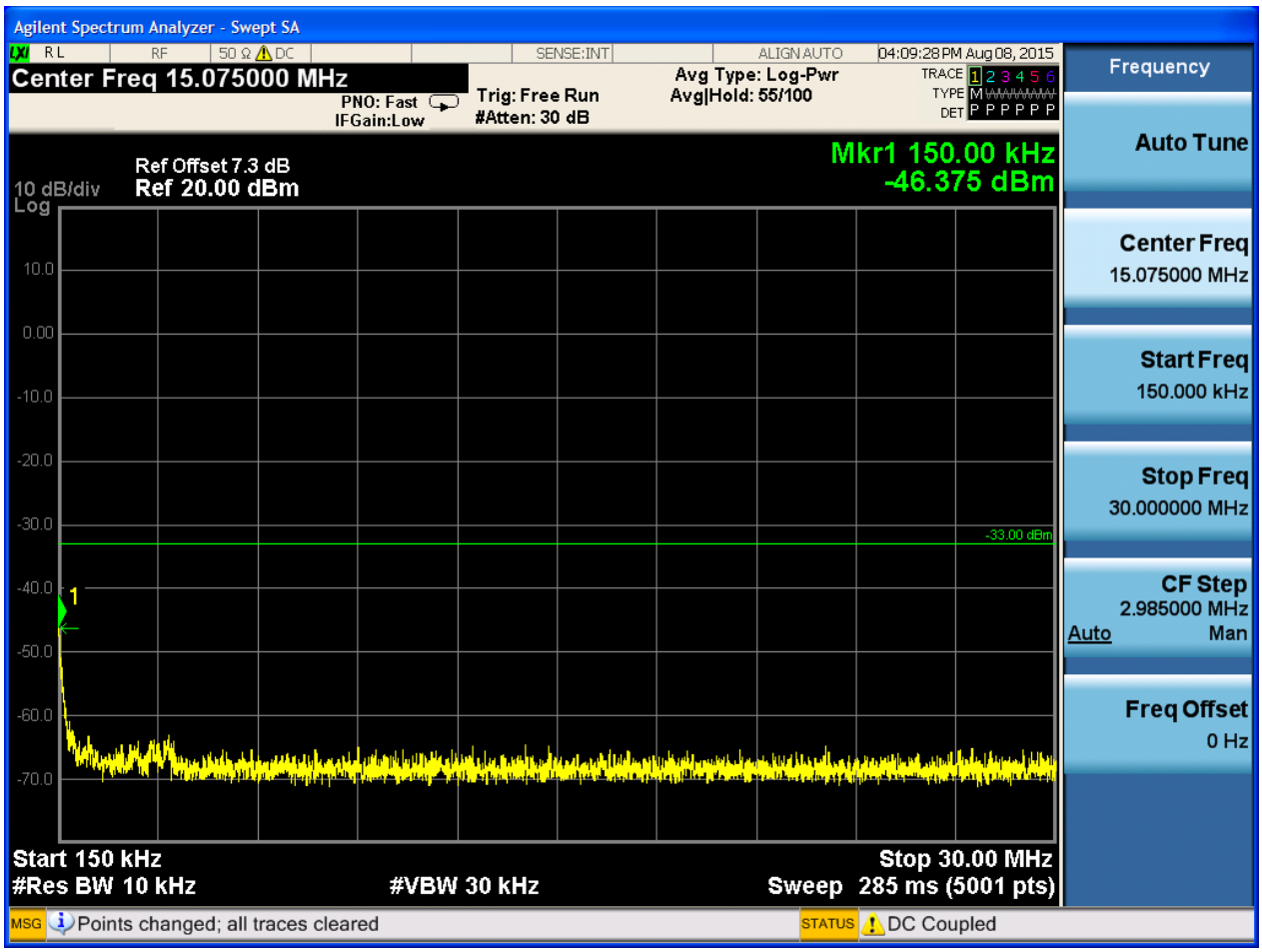

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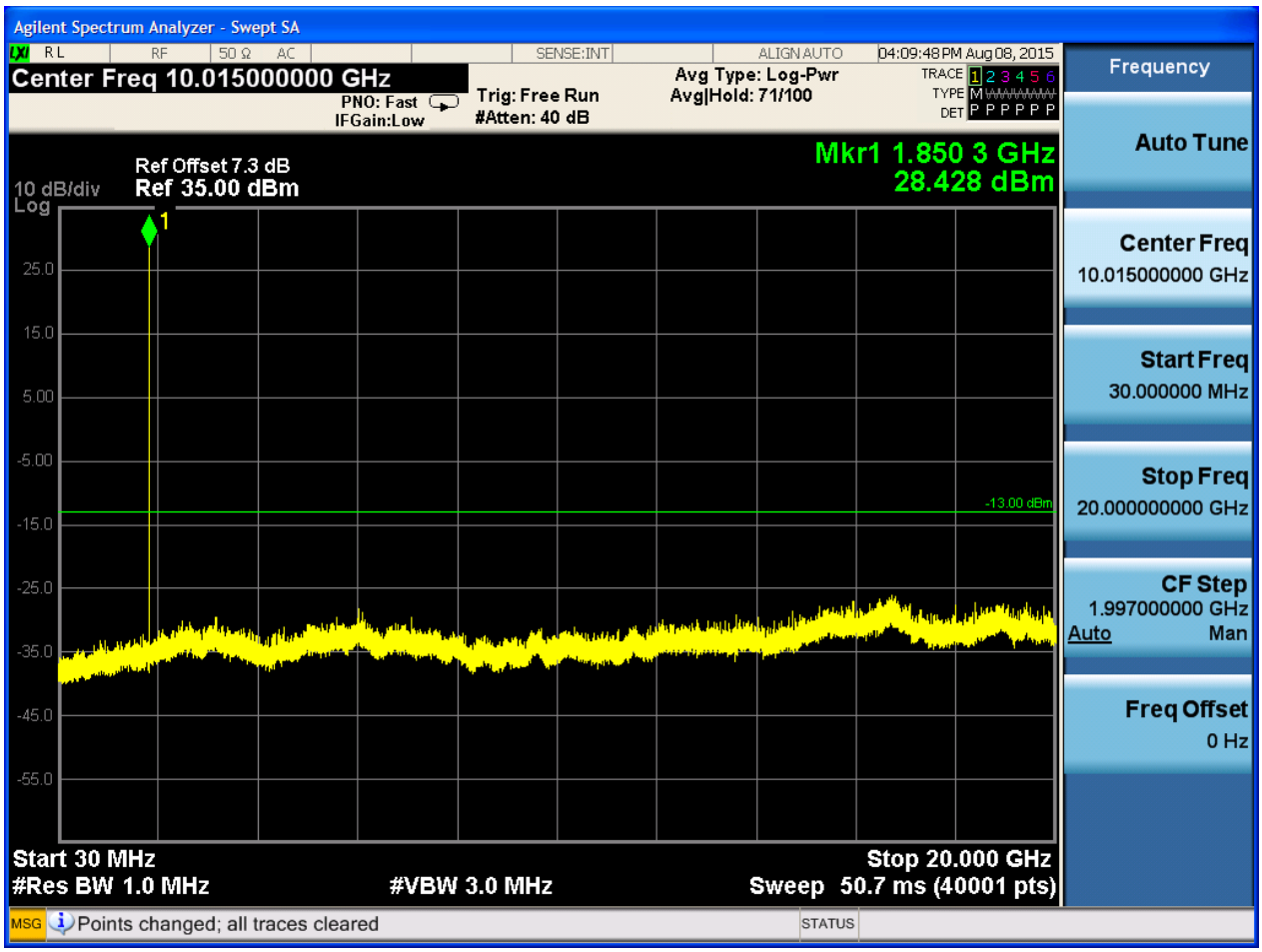

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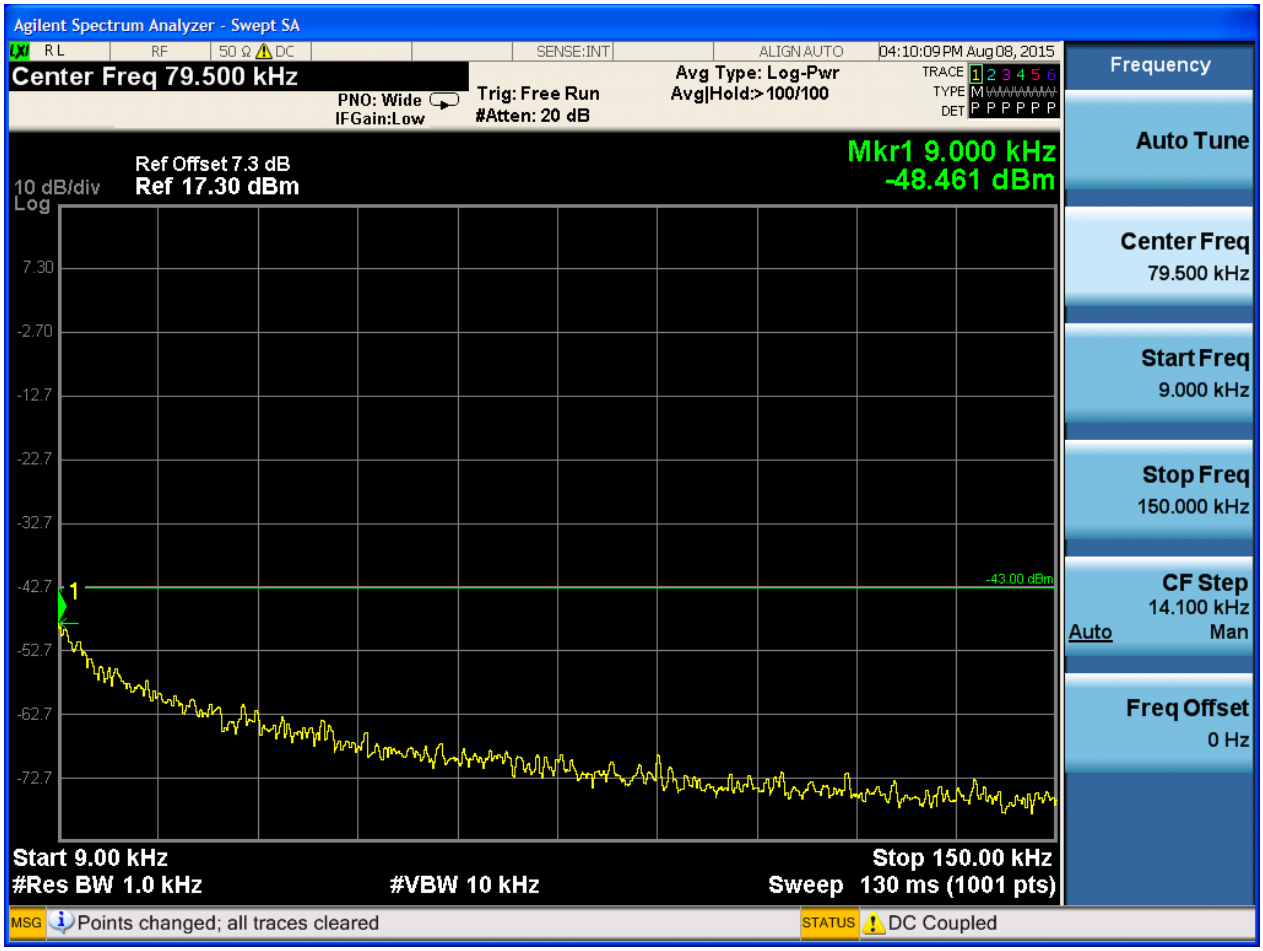
6.1.2.1.2 Test Channel = MCH



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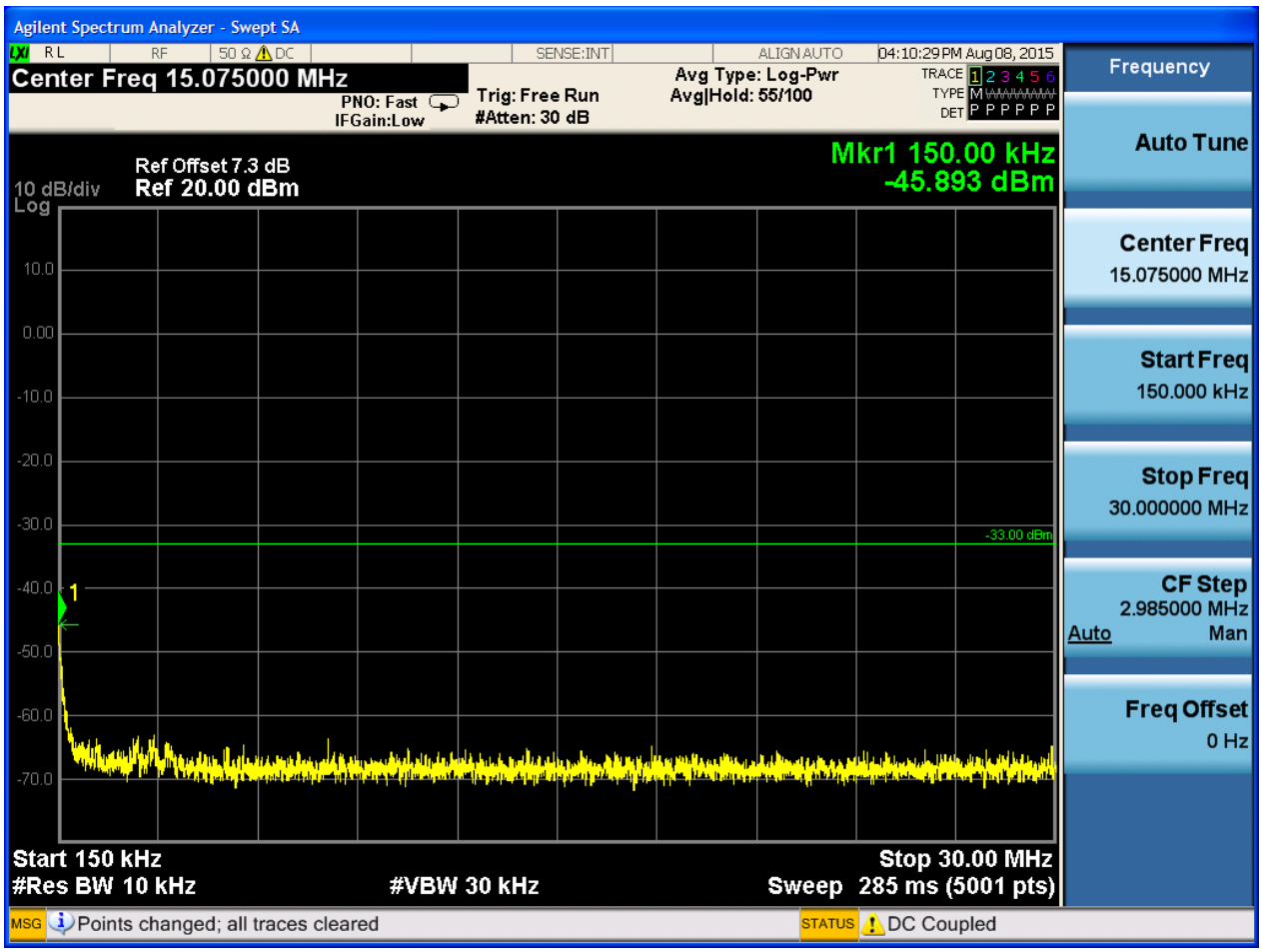

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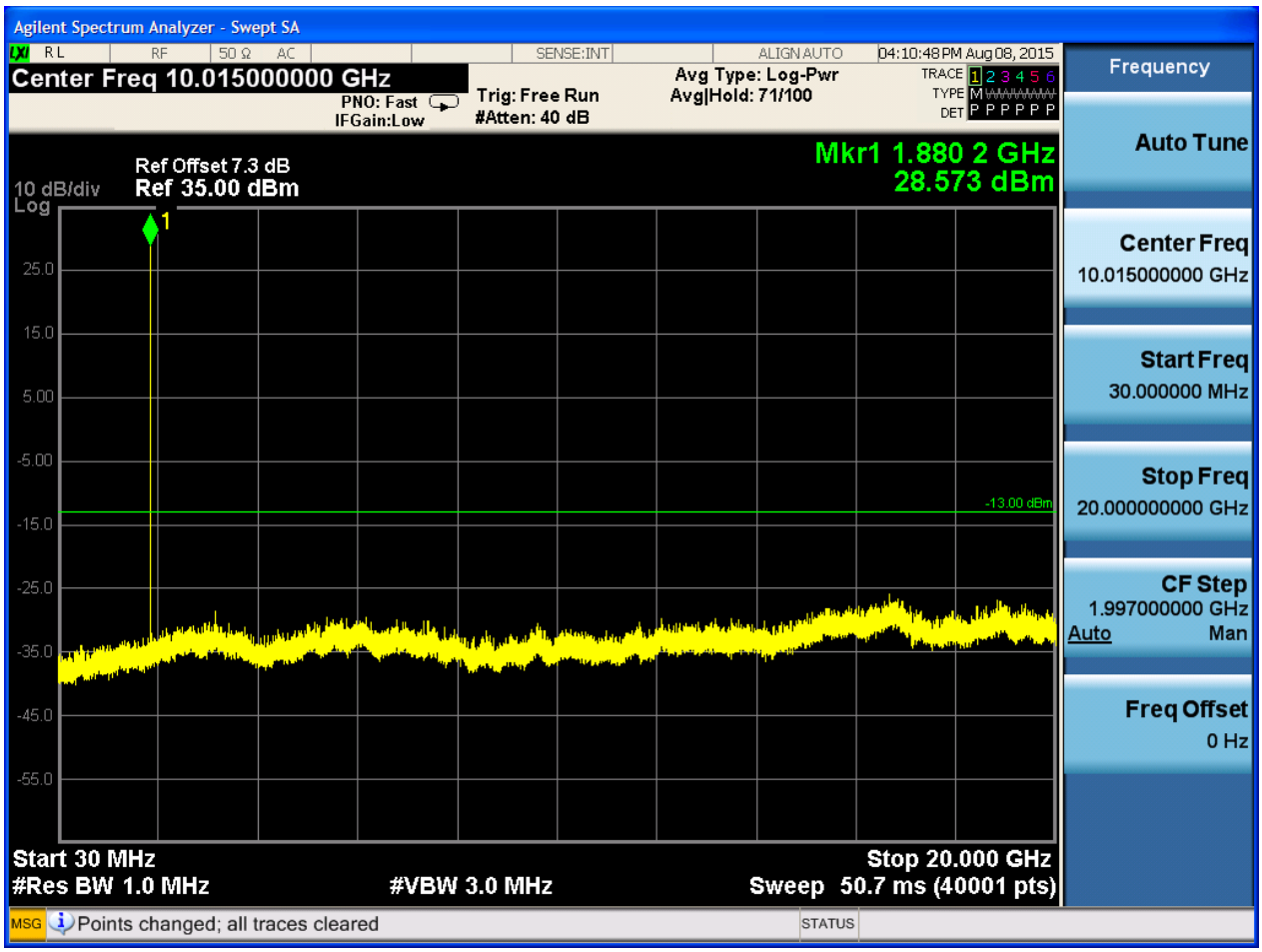

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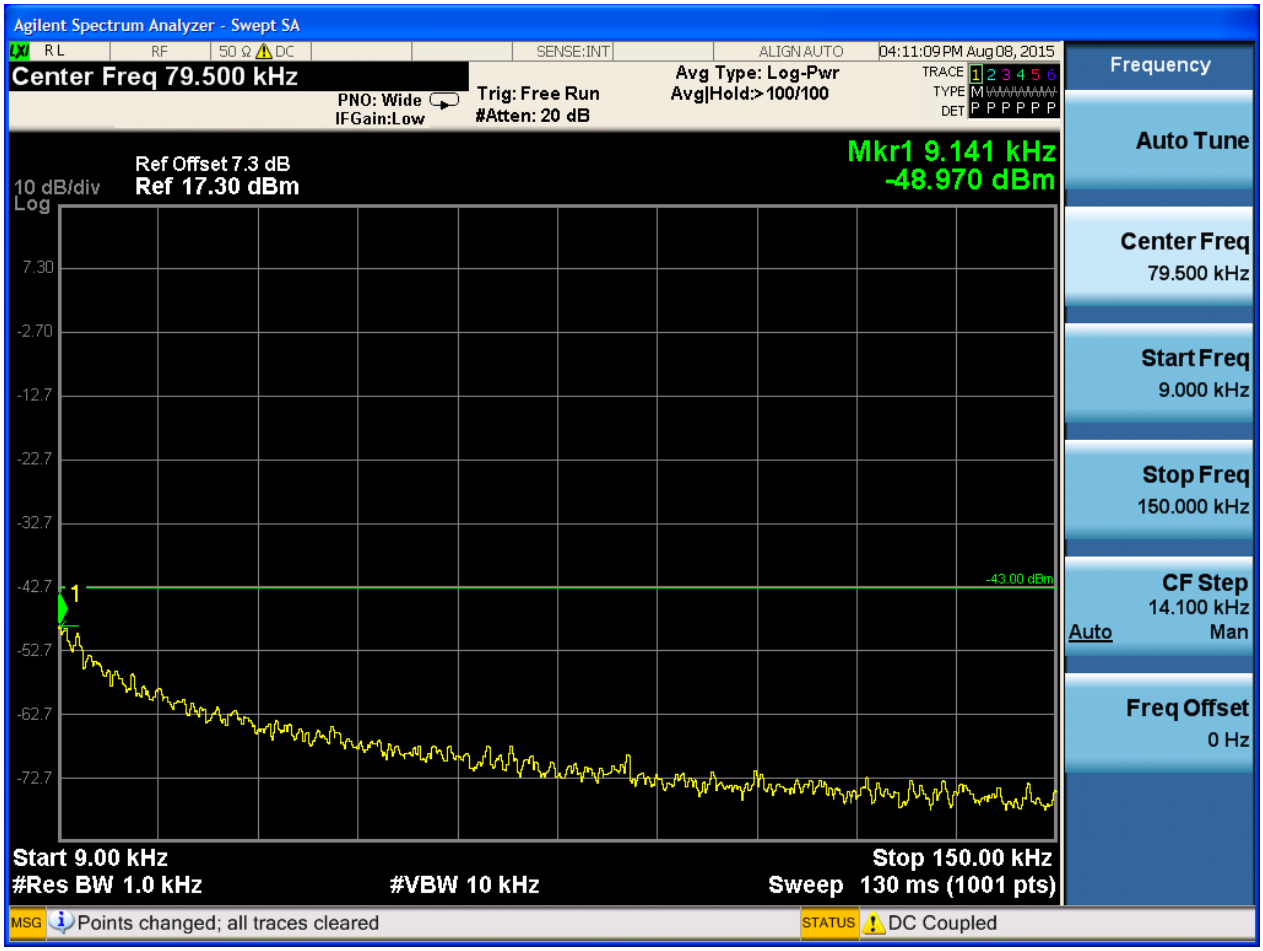
6.1.2.1.3 Test Channel = HCH



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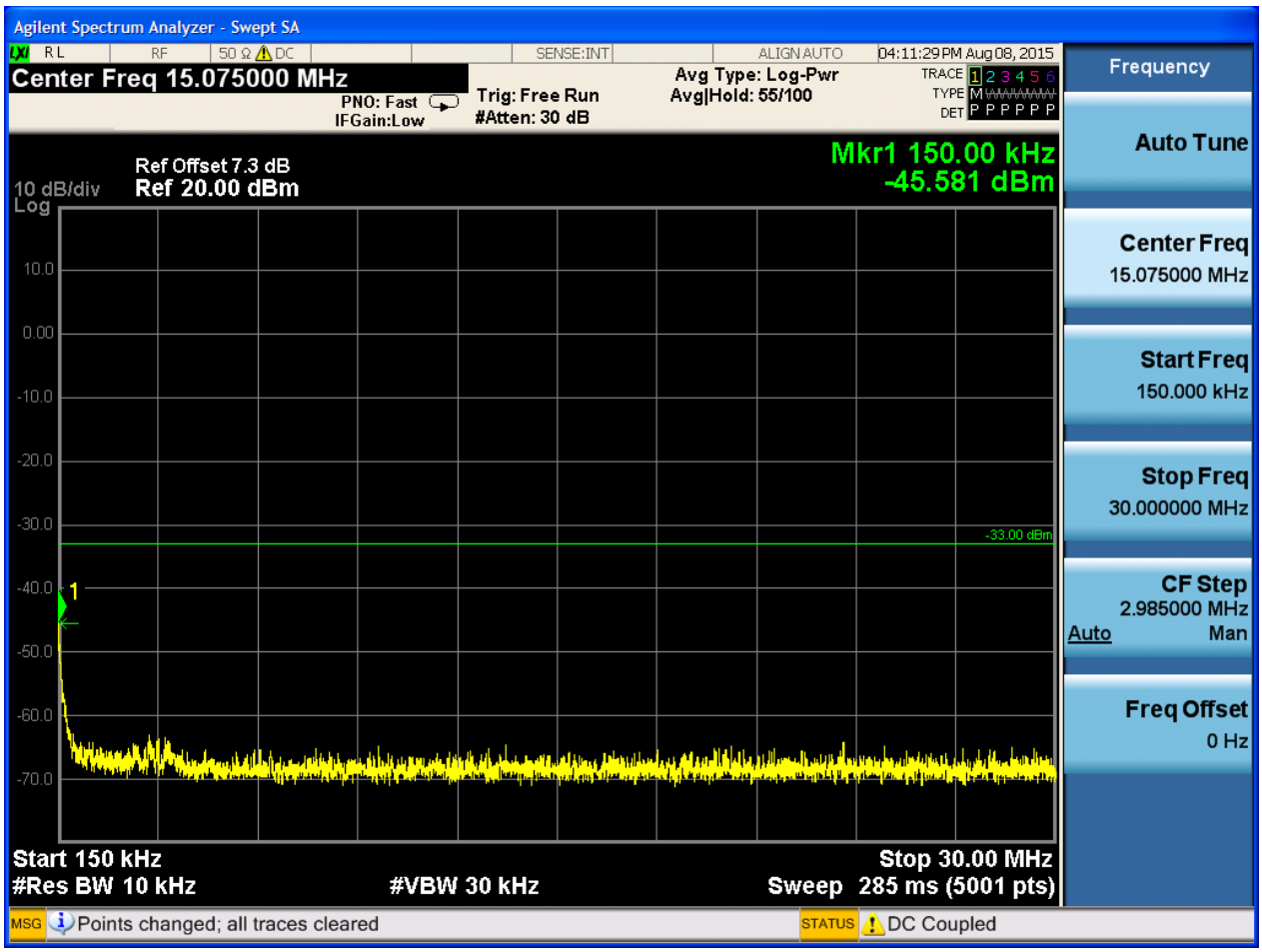

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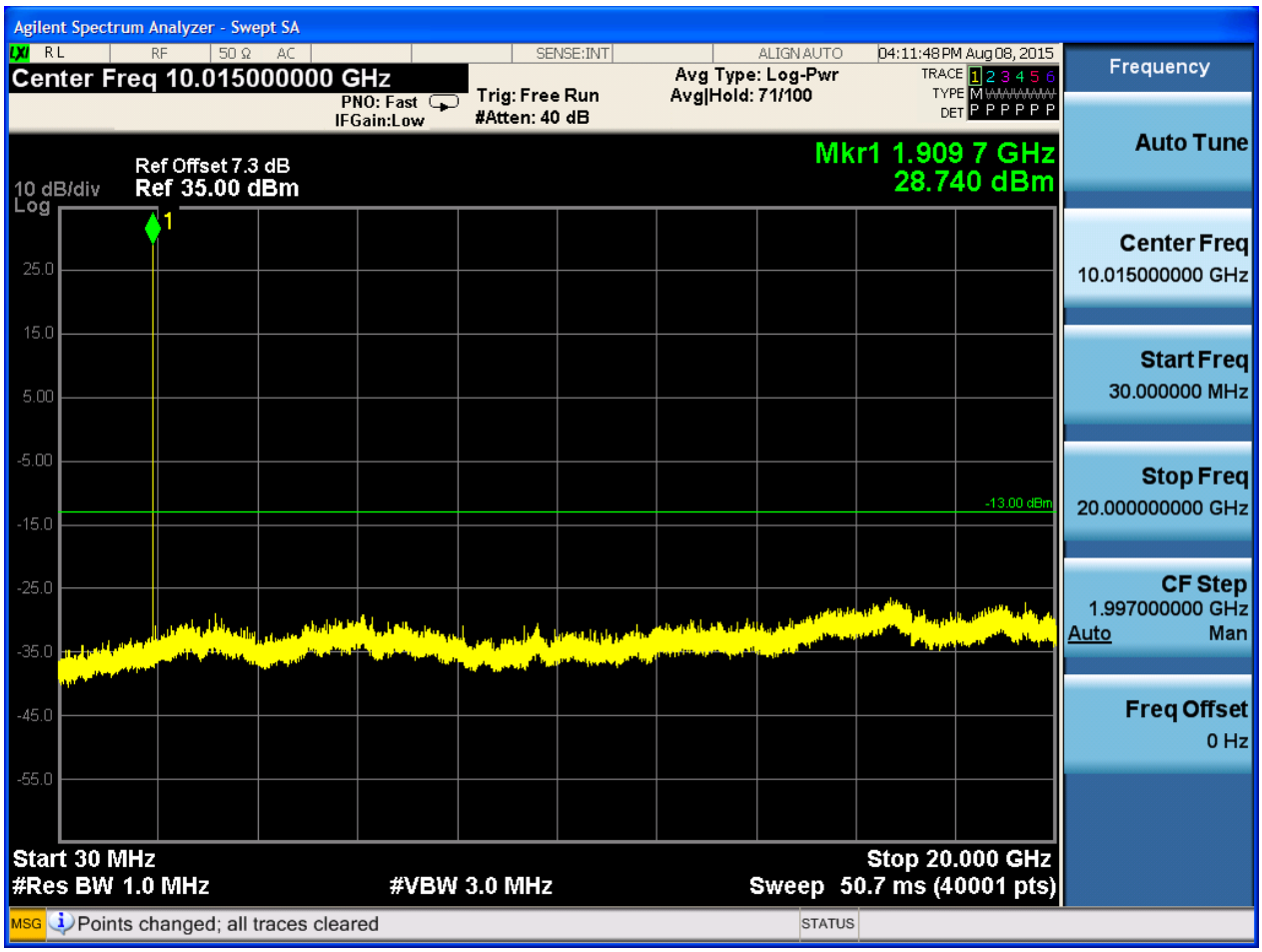

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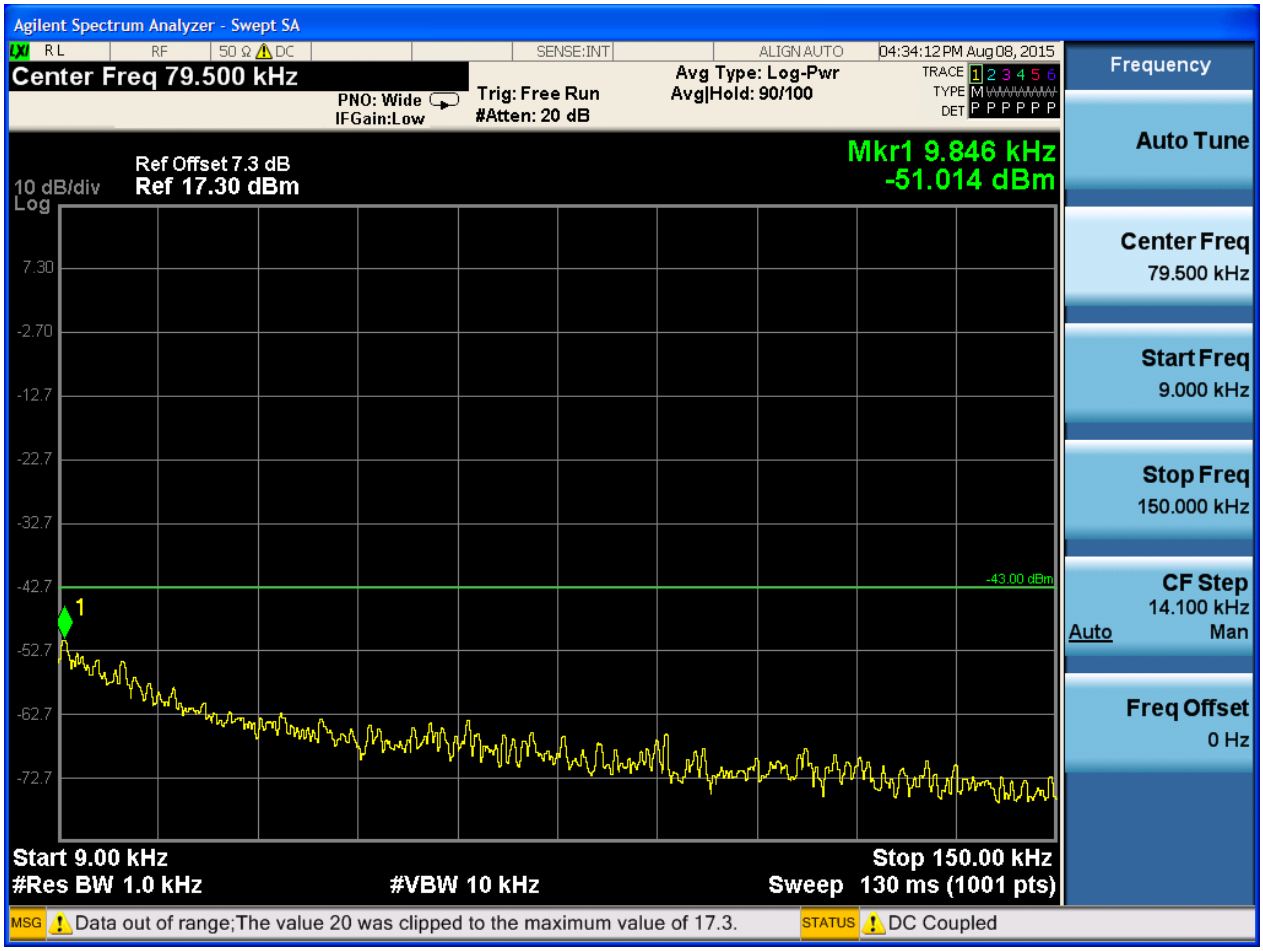
6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH



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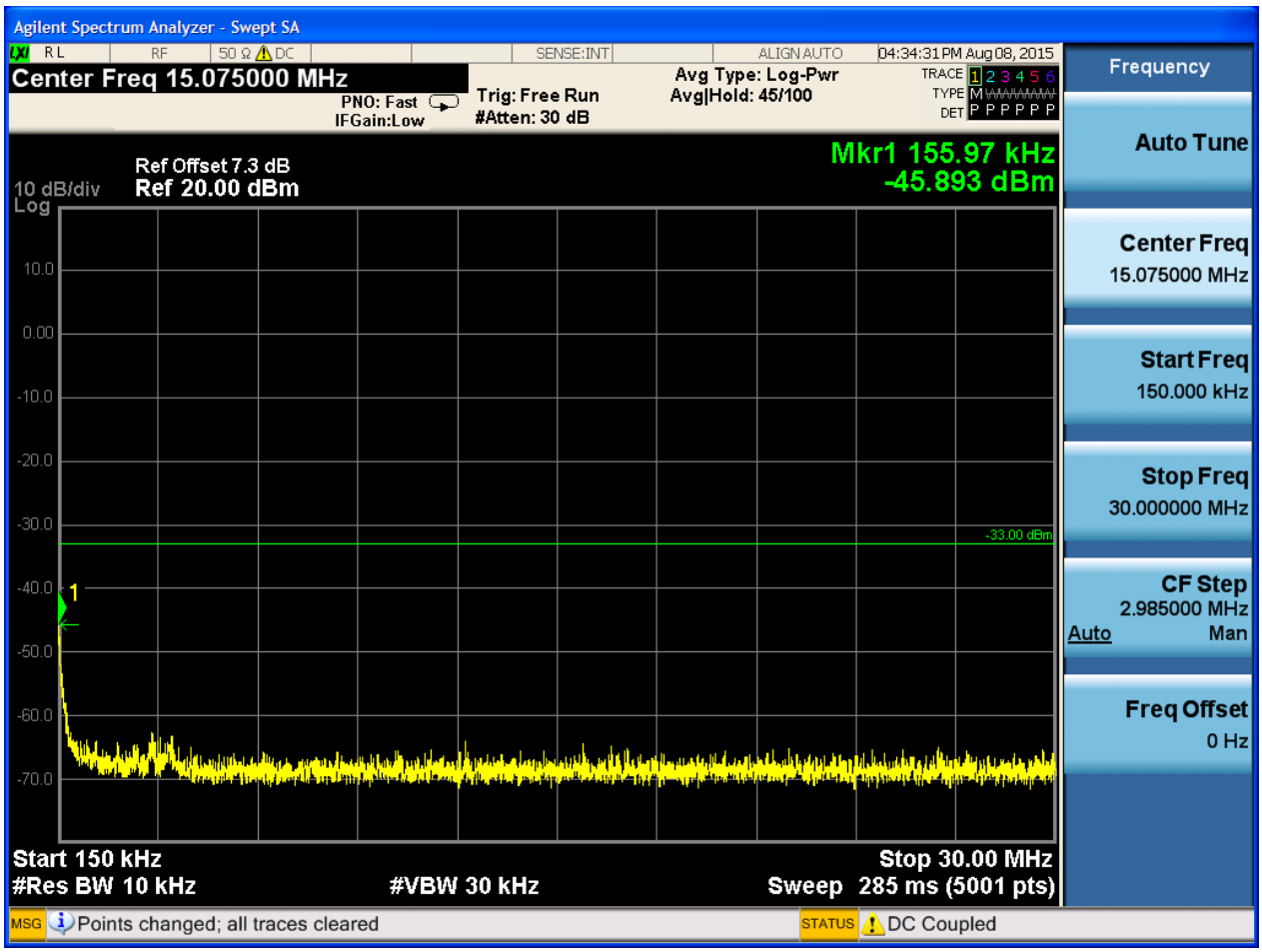

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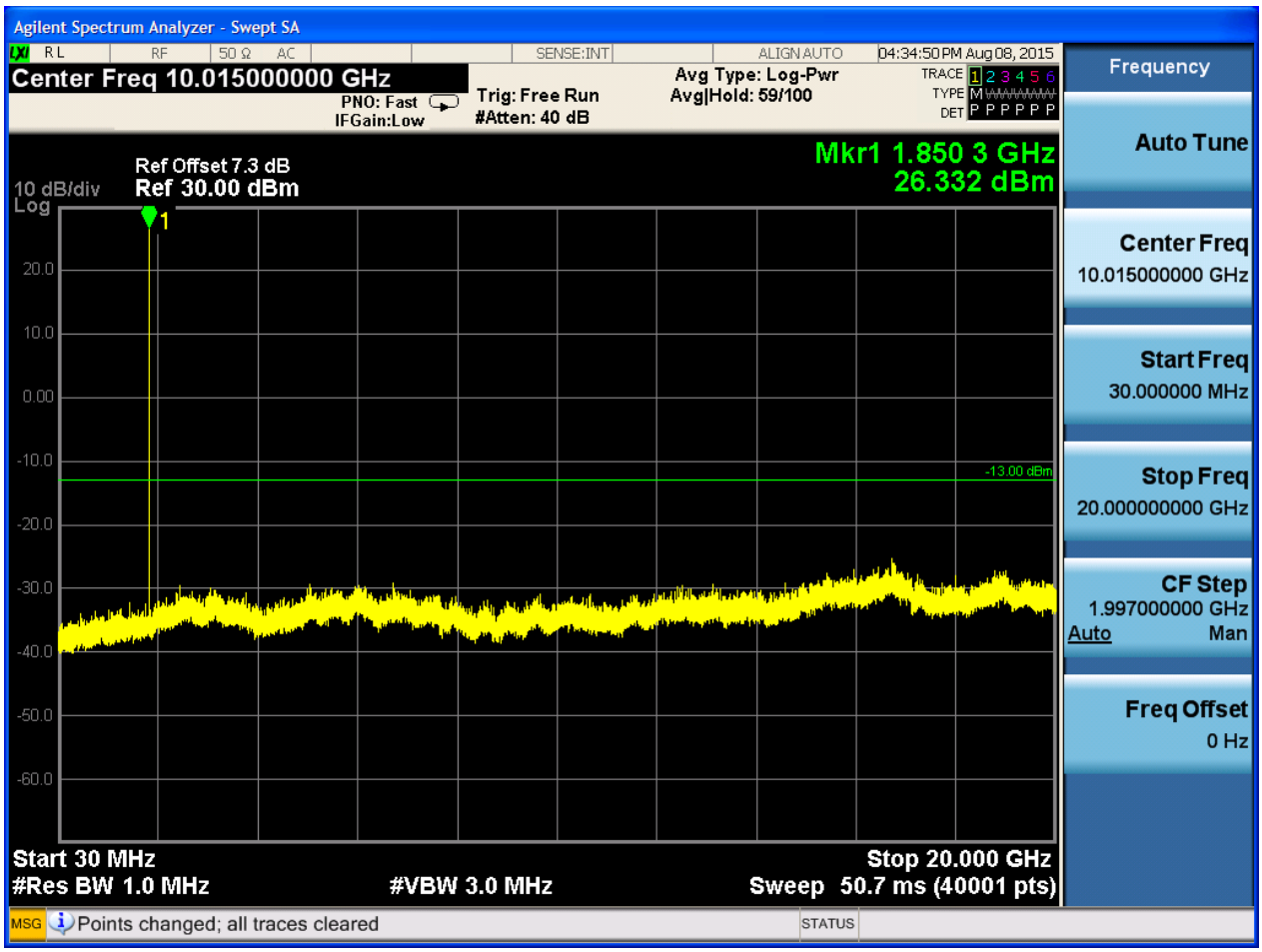

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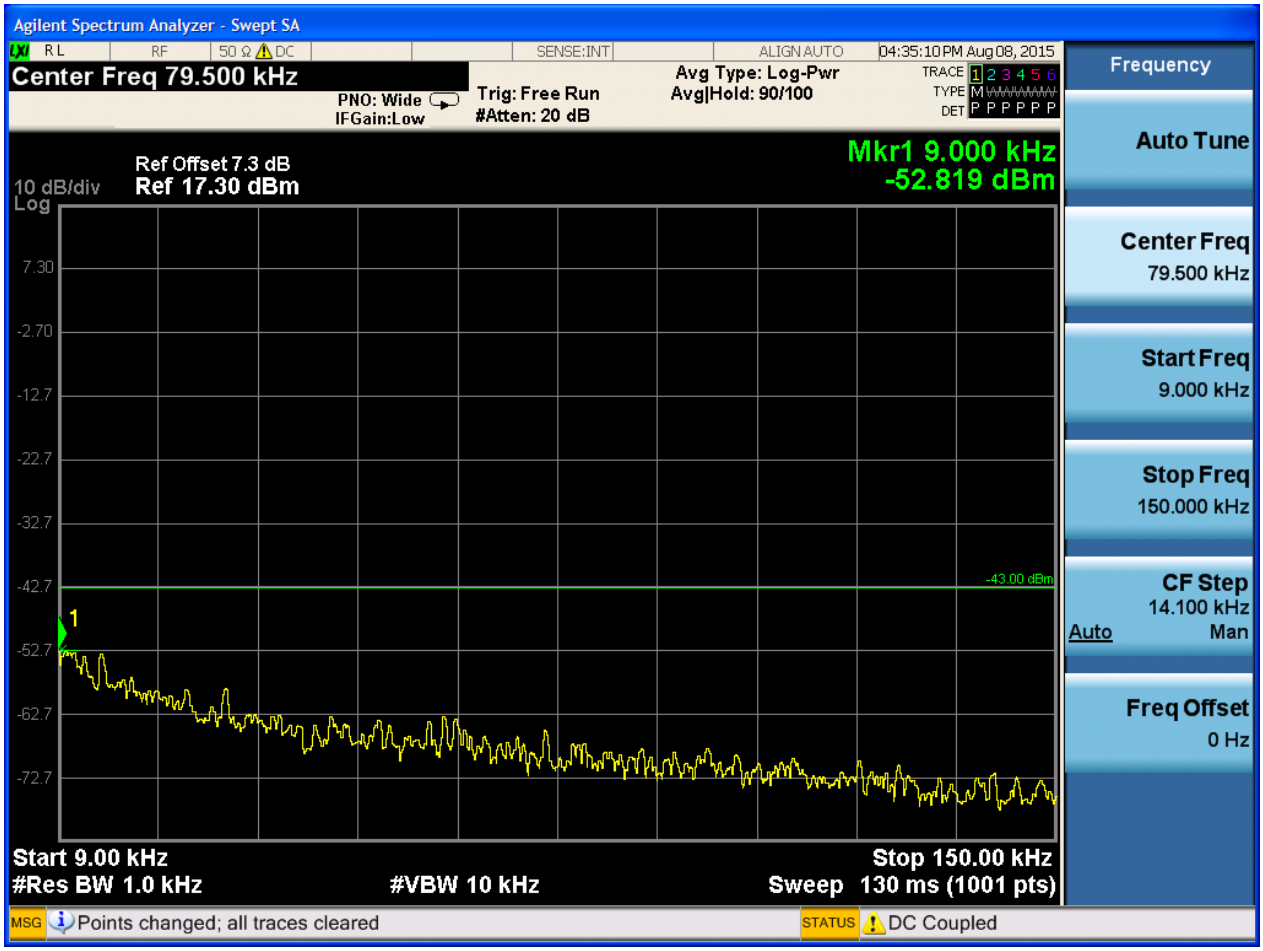
6.1.2.2.2 Test Channel = MCH



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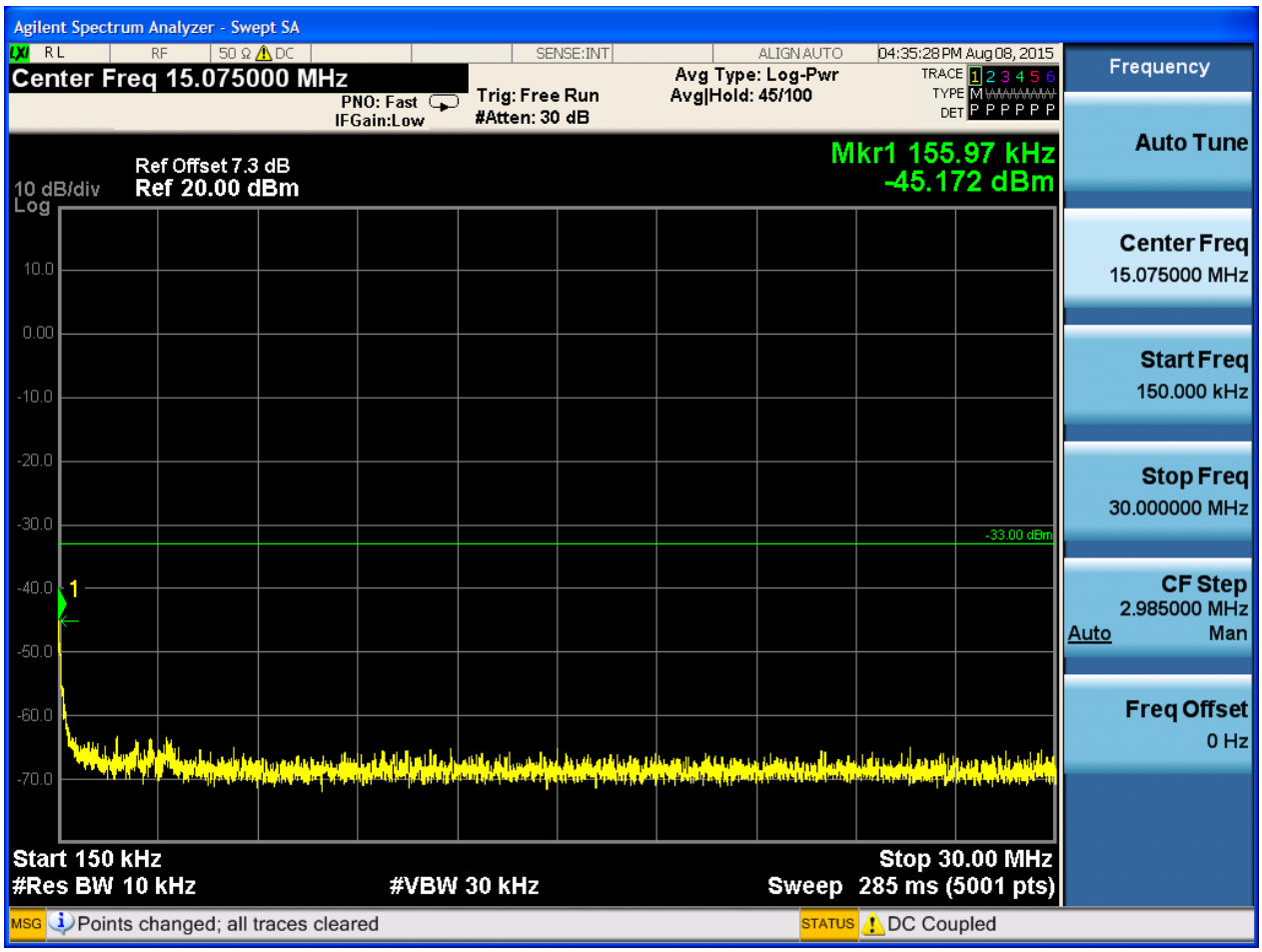

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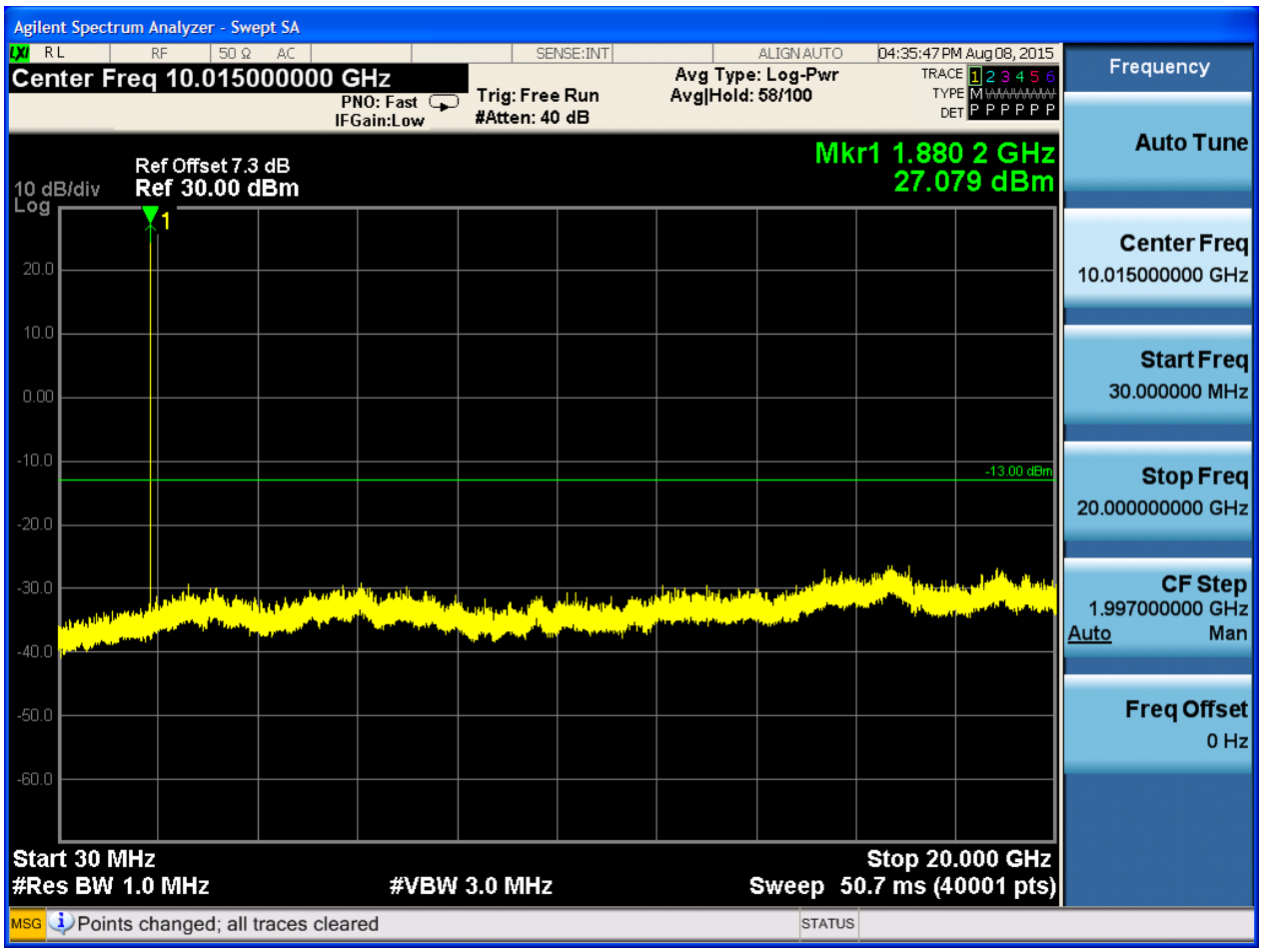

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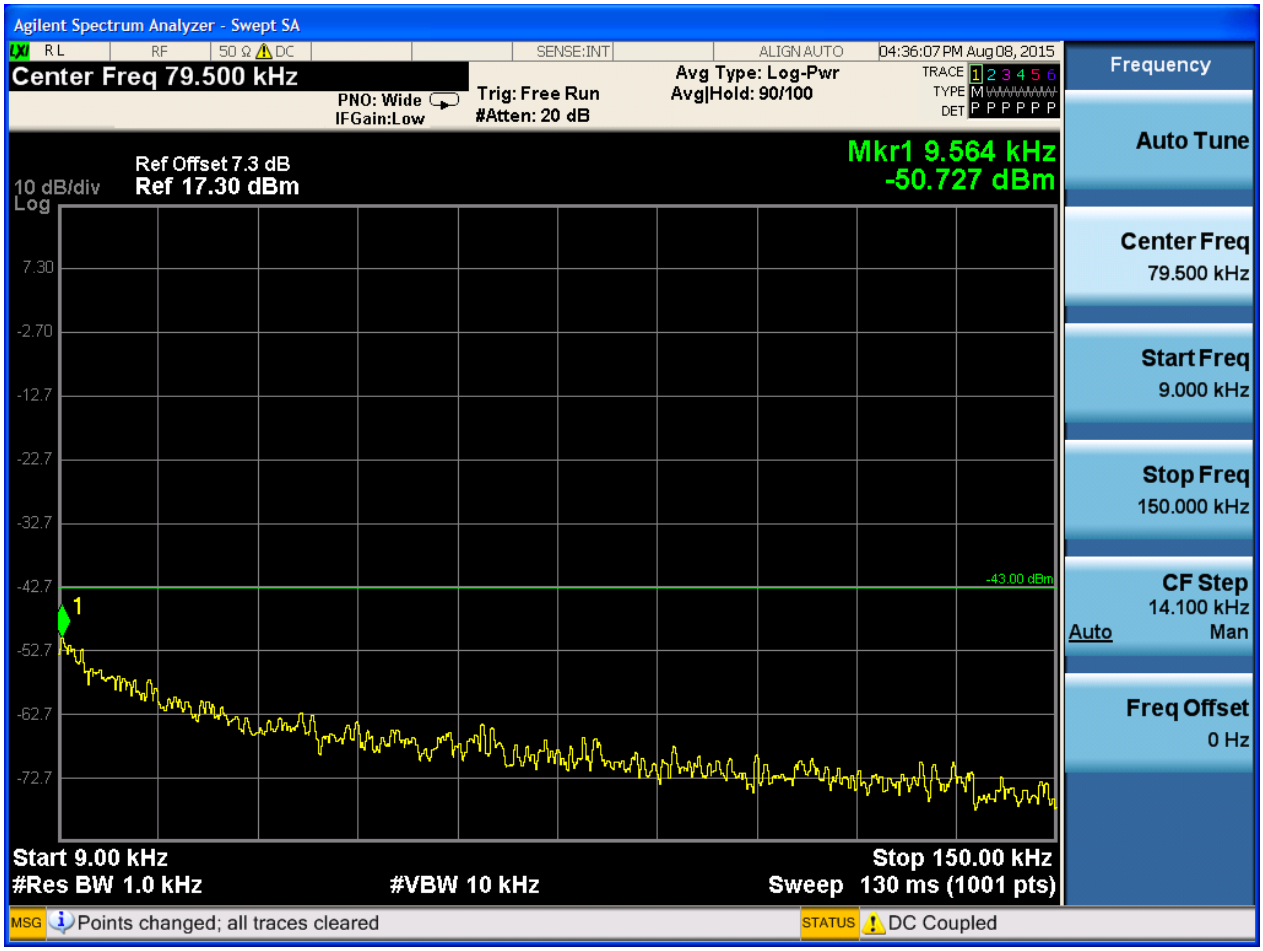
6.1.2.2.3 Test Channel = HCH



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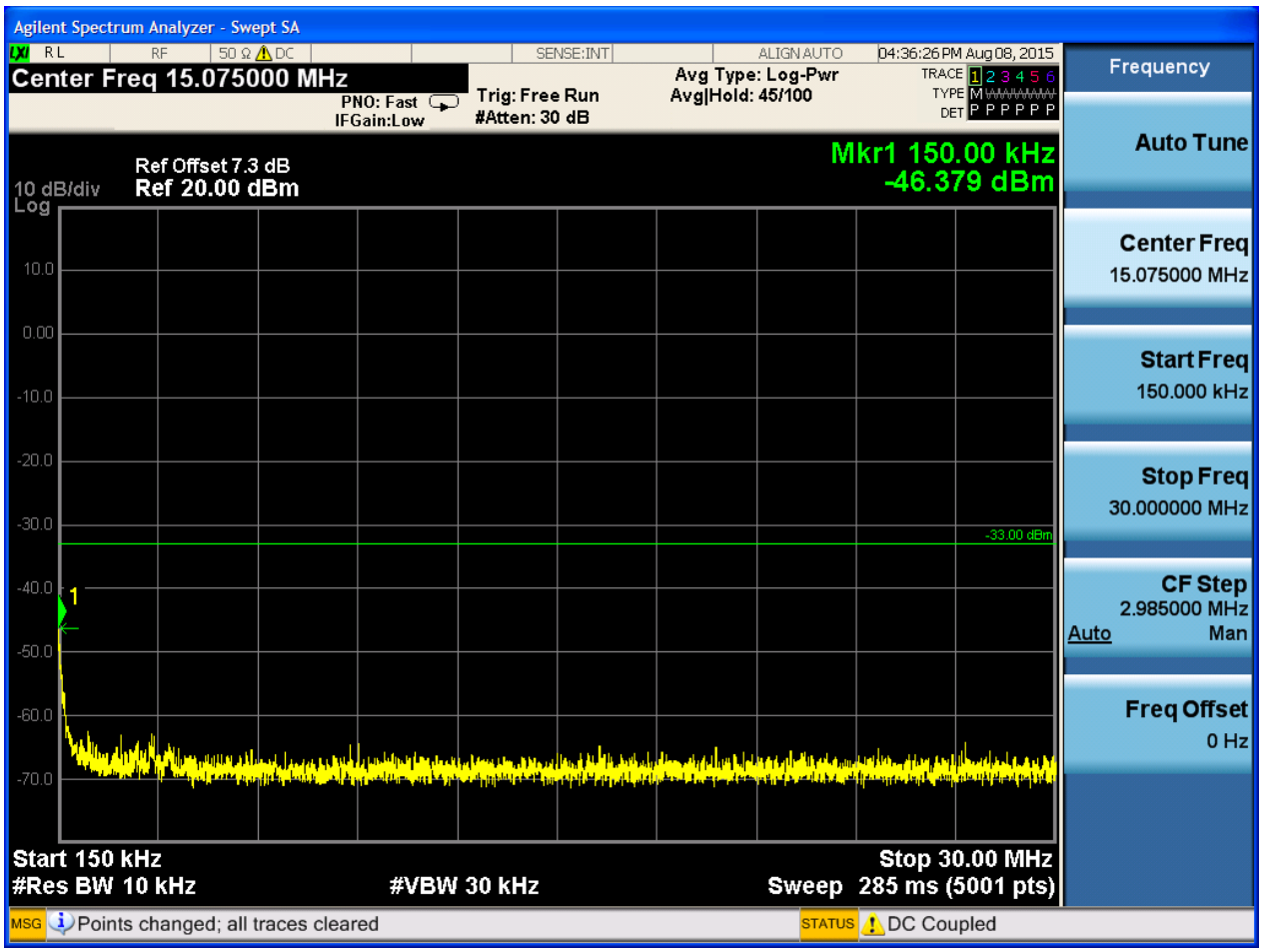

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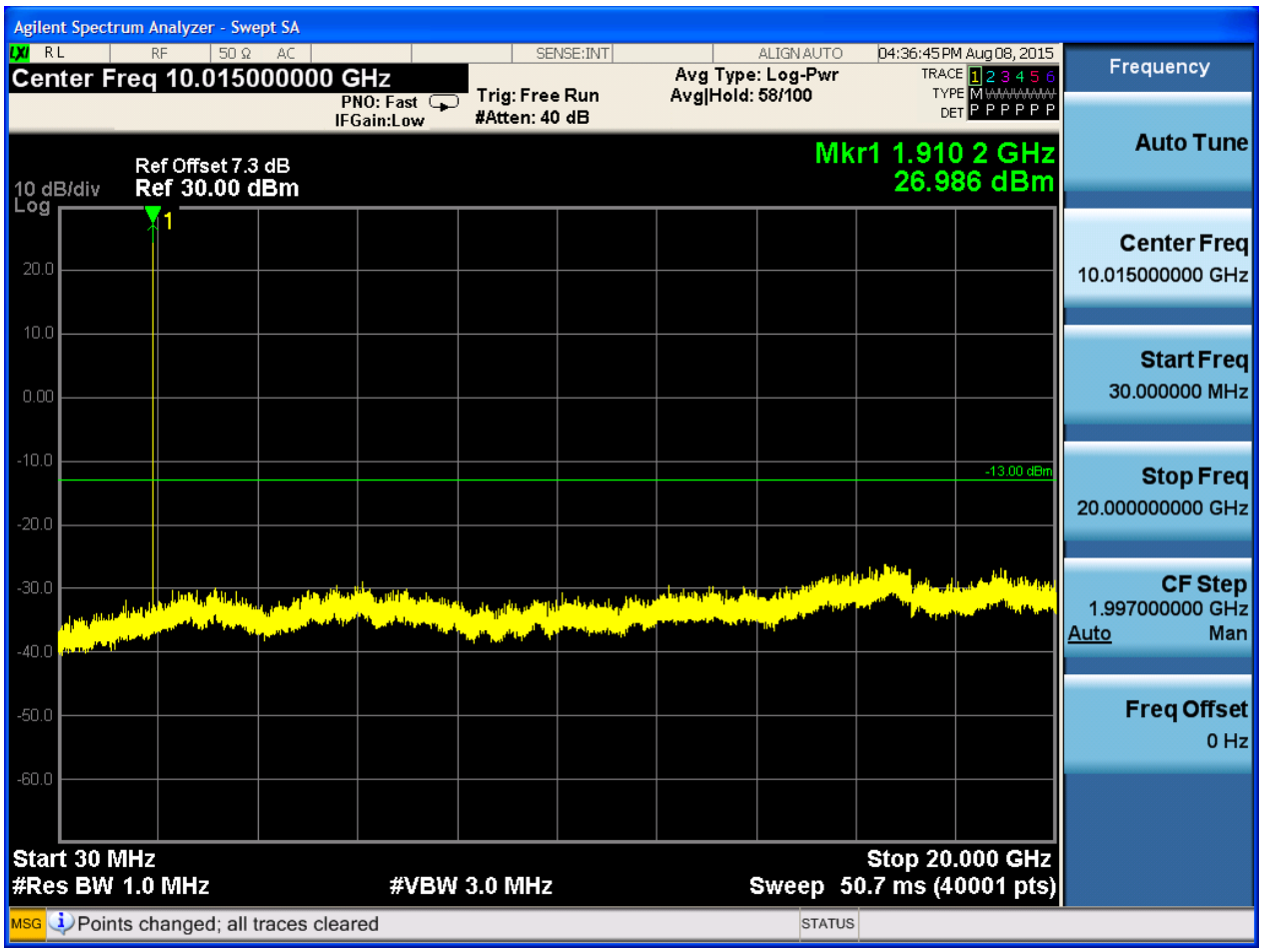

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7Appendix_G: Field Strength of Spurious Radiation

Note:

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

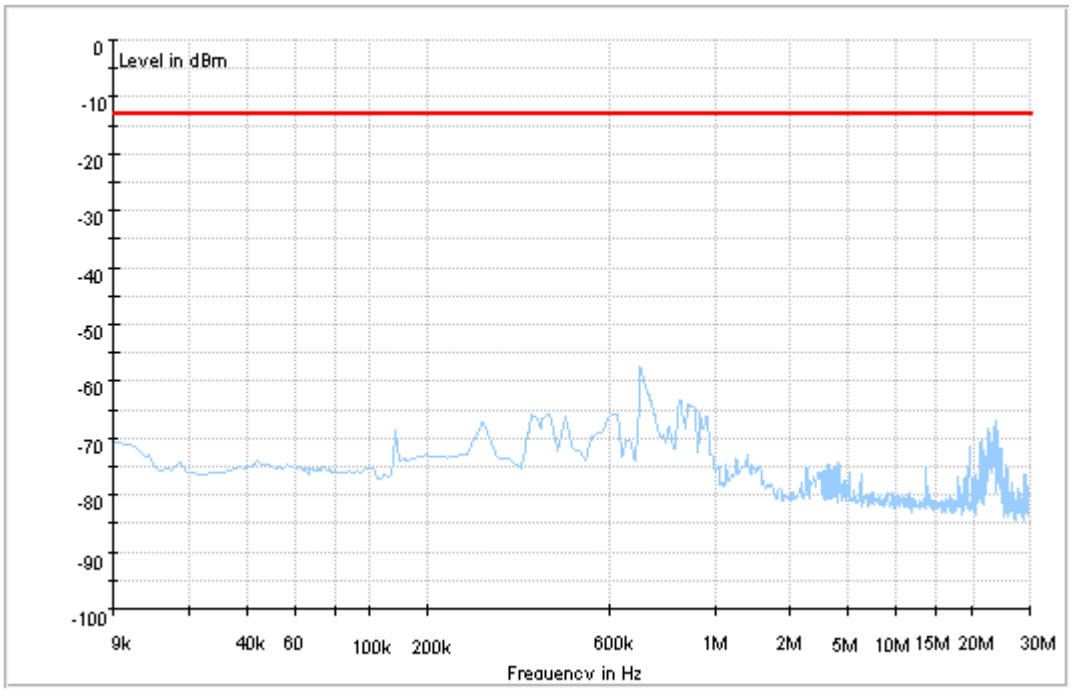
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM850

7.1.1.1 Test Mode = GSM/TM1



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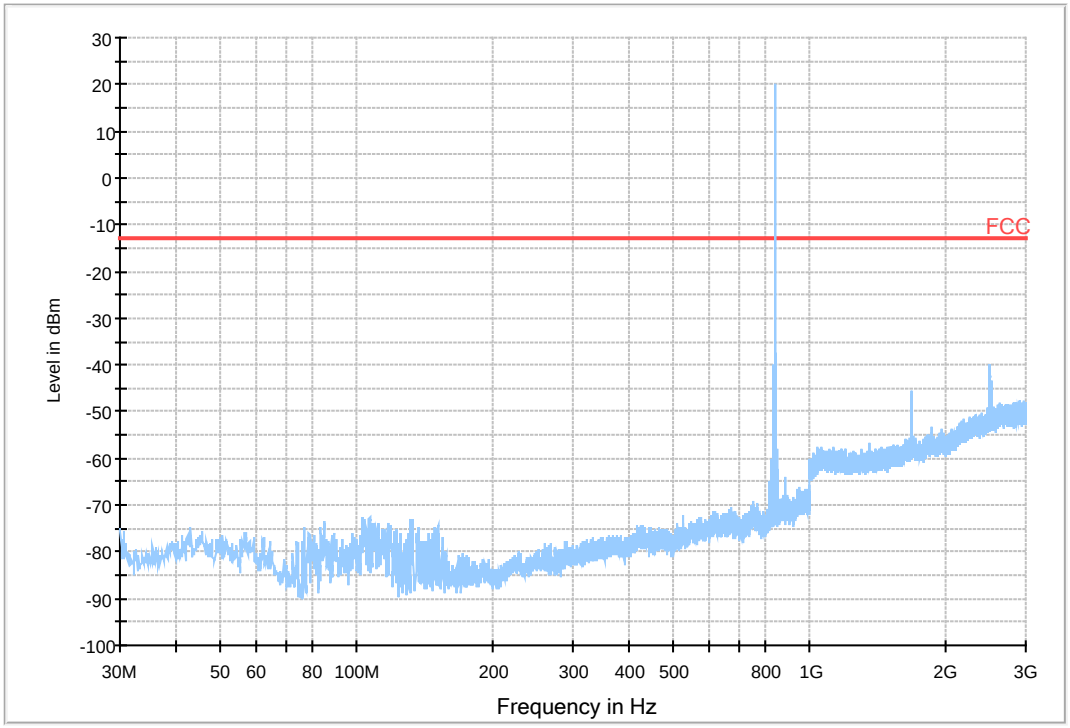
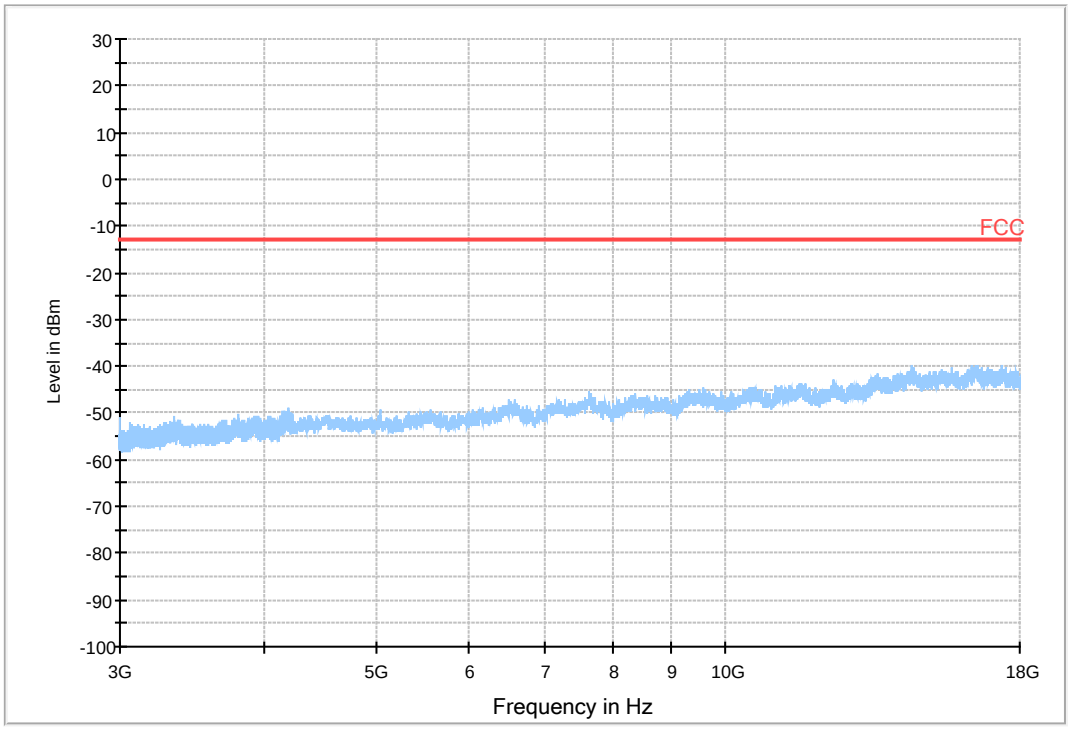
Copy of FCC PART22 GSM850_L



Copy of FCC PART22 GSM850_H



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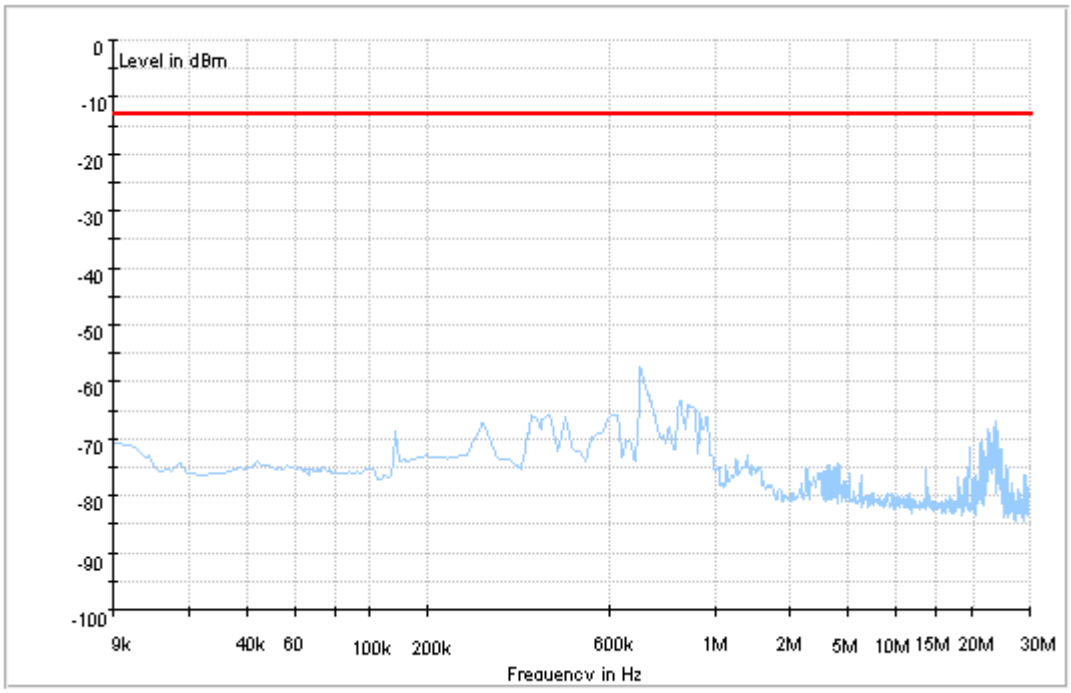
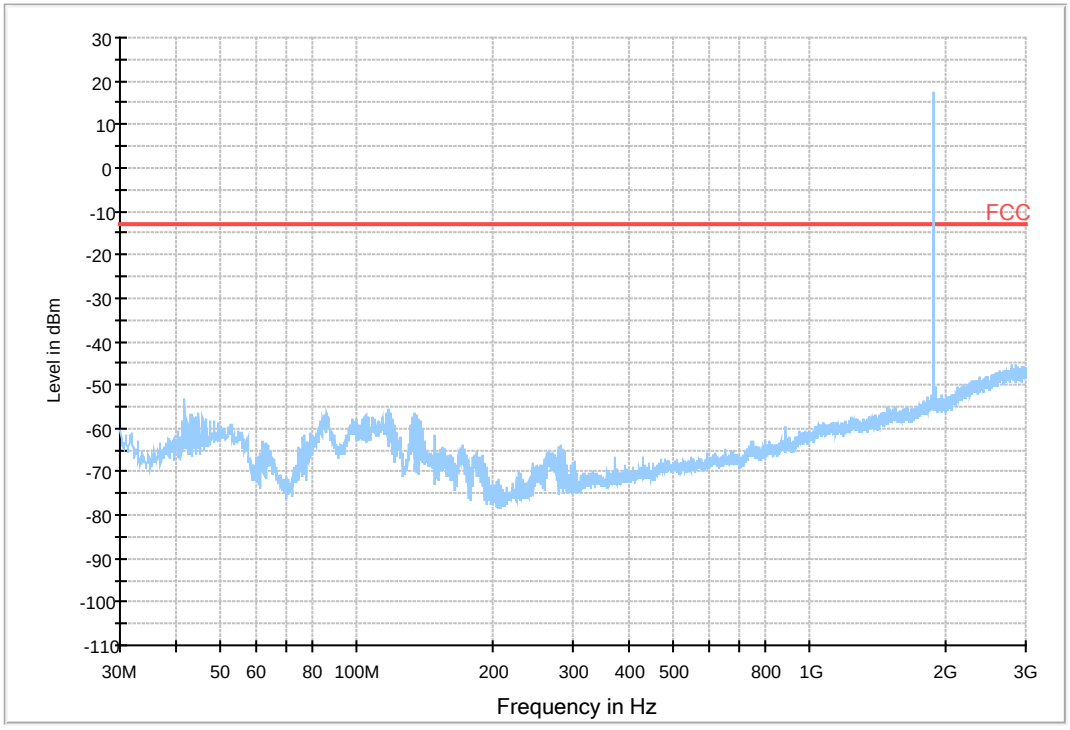
7.1.2 Test Band = GSM1900

7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART24 GSM1900_L



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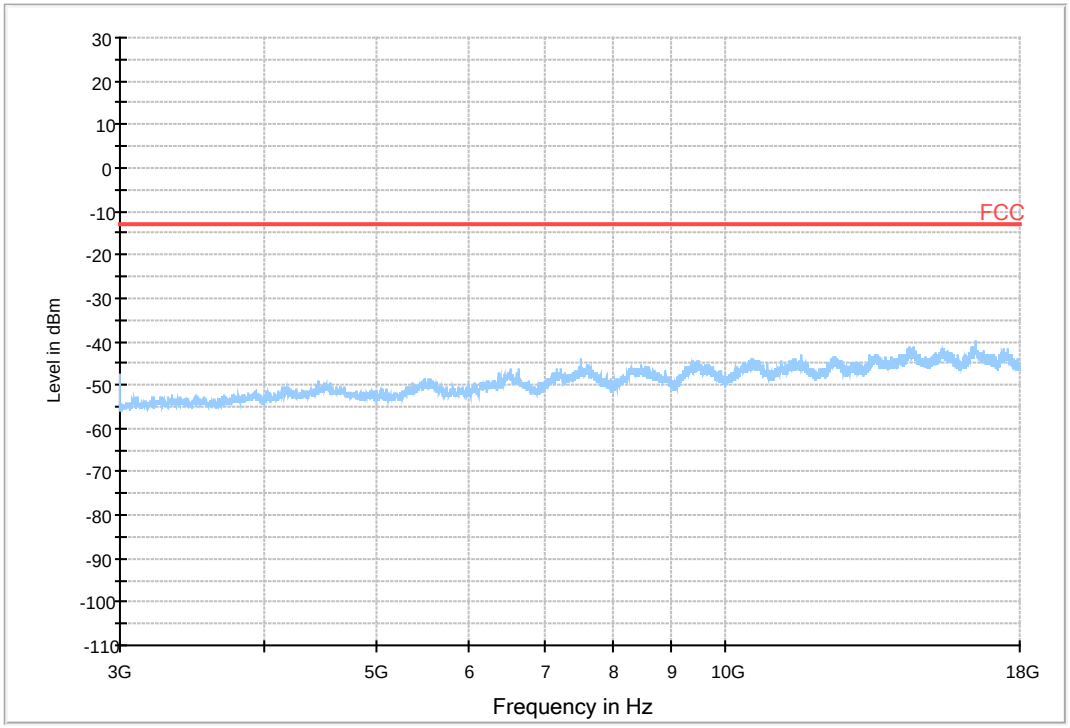
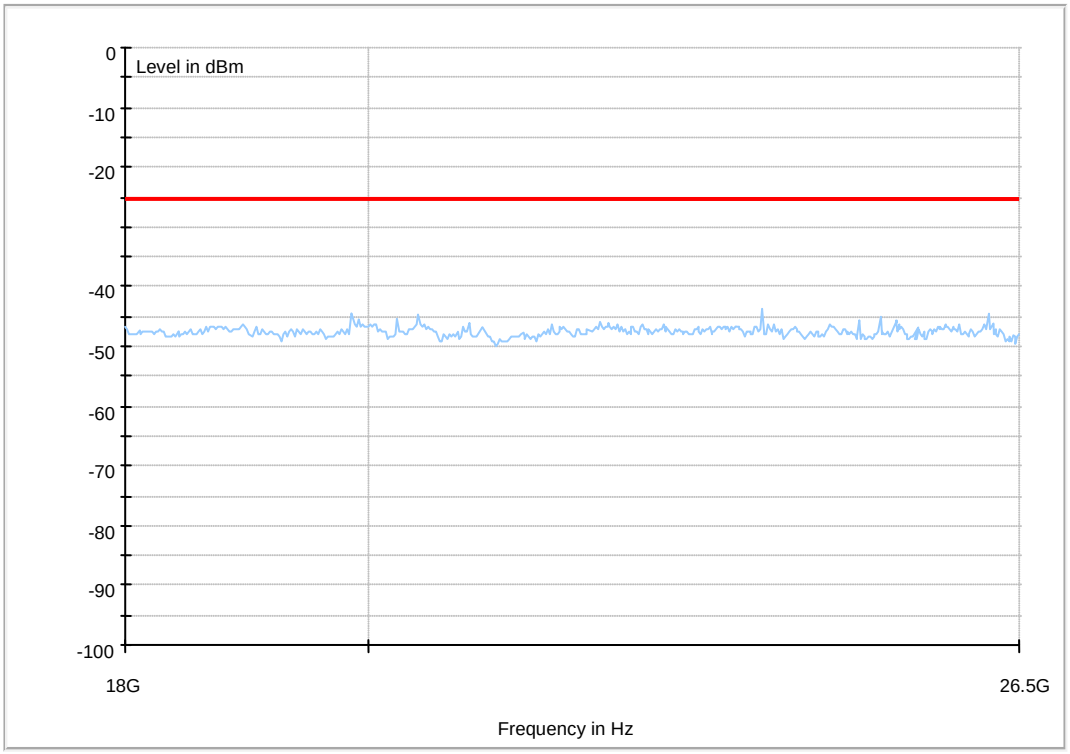
Copy of FCC PART24 GSM1900_H





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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	-2.45	-0.00297	PASS
				VN	-0.71	-0.00086	PASS
				VH	-4.78	-0.0058	PASS
		MCH	TN	VL	-4.07	-0.00486	PASS
				VN	-1.74	-0.00208	PASS
				VH	-2.84	-0.00339	PASS
		HCH	TN	VL	-1.29	-0.00152	PASS
				VN	-3.87	-0.00456	PASS
				VH	-3.42	-0.00403	PASS
	GSM/TM2	LCH	TN	VL	-9.78	-0.01187	PASS
				VN	-14.04	-0.01703	PASS
				VH	-8.62	-0.01046	PASS
		MCH	TN	VL	-4.10	-0.0049	PASS
				VN	-16.43	-0.01964	PASS
				VH	-10.17	-0.01216	PASS
		HCH	TN	VL	-13.24	-0.0156	PASS
				VN	-3.71	-0.00437	PASS
				VH	-1.29	-0.00152	PASS
GSM1900	GSM/TM1	LCH	TN	VL	3.62	0.00196	PASS
				VN	7.81	0.00422	PASS
				VH	5.17	0.00279	PASS
		MCH	TN	VL	12.59	0.0067	PASS
				VN	13.56	0.00721	PASS
				VH	20.15	0.01072	PASS
		HCH	TN	VL	8.46	0.00443	PASS
				VN	6.26	0.00328	PASS
				VH	-1.42	-0.00074	PASS
	GSM/TM2	LCH	TN	VL	5.26	0.00284	PASS
				VN	-1.10	-0.00059	PASS
				VH	-0.32	-0.00017	PASS
		MCH	TN	VL	5.71	0.00304	PASS

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VN	14.85	0.0079	PASS
				VH	11.20	0.00596	PASS
		HCH	TN	VL	-1.42	-0.00074	PASS
				VN	-9.56	-0.00501	PASS
				VH	-0.71	-0.00037	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	-4.20	-0.0051	PASS
				-20	-7.88	-0.00956	PASS
				-10	-5.10	-0.00619	PASS
				0	-7.49	-0.00909	PASS
				10	-5.29	-0.00642	PASS
				20	-4.71	-0.00571	PASS
				30	-2.78	-0.00337	PASS
				40	-7.10	-0.00861	PASS
				50	-4.78	-0.0058	PASS
		MCH	VN	-30	-1.29	-0.00154	PASS
				-20	-1.29	-0.00154	PASS
				-10	-1.74	-0.00208	PASS
				0	-4.20	-0.00502	PASS
				10	-4.97	-0.00594	PASS
				20	-2.52	-0.00301	PASS
				30	-2.65	-0.00317	PASS
				40	-5.04	-0.00602	PASS
				50	-6.20	-0.00741	PASS
		HCH	VN	-30	-3.10	-0.00365	PASS
				-20	-1.42	-0.00167	PASS
				-10	-2.97	-0.0035	PASS
				0	-0.90	-0.00106	PASS
				10	-1.81	-0.00213	PASS
				20	-4.13	-0.00487	PASS
				30	-1.68	-0.00198	PASS
				40	-1.81	-0.00213	PASS
				50	-1.10	-0.0013	PASS
	GSM/TM2	LCH	VN	-30	-23.50	-0.02851	PASS
				-20	-22.54	-0.02735	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	-19.11	-0.02319	PASS
				0	-12.20	-0.0148	PASS
				10	-17.95	-0.02178	PASS
				20	-16.34	-0.01983	PASS
				30	-16.53	-0.02006	PASS
				40	-15.63	-0.01896	PASS
				50	-14.82	-0.01798	PASS
		MCH	VN	-30	-9.33	-0.01115	PASS
				-20	-7.85	-0.00938	PASS
				-10	-12.91	-0.01543	PASS
				0	-5.88	-0.00703	PASS
				10	-6.17	-0.00738	PASS
				20	-7.07	-0.00845	PASS
				30	-10.36	-0.01238	PASS
				40	-7.36	-0.0088	PASS
				50	-11.11	-0.01328	PASS
		HCH	VN	-30	-12.82	-0.0151	PASS
				-20	-13.17	-0.01552	PASS
				-10	-17.56	-0.02069	PASS
				0	-10.01	-0.01179	PASS
				10	-9.91	-0.01168	PASS
				20	-7.52	-0.00886	PASS
				30	-15.95	-0.01879	PASS
				40	-4.10	-0.00483	PASS
				50	-8.33	-0.00981	PASS
GSM1900	GSM/TM1	LCH	VN	-30	10.53	0.00569	PASS
				-20	9.43	0.0051	PASS
				-10	12.53	0.00677	PASS
				0	8.14	0.0044	PASS
				10	10.59	0.00572	PASS
				20	7.30	0.00395	PASS
				30	10.14	0.00548	PASS
				40	2.39	0.00129	PASS
				50	6.20	0.00335	PASS
		MCH	VN	-30	9.56	0.00509	PASS
				-20	25.96	0.01381	PASS
				-10	20.99	0.01116	PASS
				0	14.59	0.00776	PASS
				10	10.59	0.00563	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	13.50	0.00718	PASS
				30	15.17	0.00807	PASS
				40	20.28	0.01079	PASS
				50	11.95	0.00636	PASS
		HCH	VN	-30	0.84	0.00044	PASS
				-20	-6.72	-0.00352	PASS
				-10	0.65	0.00034	PASS
				0	-0.45	-0.00024	PASS
				10	-1.87	-0.00098	PASS
				20	2.71	0.00142	PASS
				30	-11.95	-0.00626	PASS
				40	2.39	0.00125	PASS
				50	0.58	0.0003	PASS
	GSM/TM2	LCH	VN	-30	5.10	0.00276	PASS
				-20	0.84	0.00045	PASS
				-10	13.82	0.00747	PASS
				0	12.88	0.00696	PASS
				10	4.00	0.00216	PASS
				20	-2.29	-0.00124	PASS
				30	-4.46	-0.00241	PASS
				40	1.65	0.00089	PASS
				50	1.74	0.00094	PASS
		MCH	VN	-30	-1.29	-0.00069	PASS
				-20	8.27	0.0044	PASS
				-10	16.21	0.00862	PASS
				0	9.17	0.00488	PASS
				10	9.17	0.00488	PASS
				20	21.21	0.01128	PASS
				30	0.68	0.00036	PASS
				40	1.42	0.00076	PASS
				50	4.88	0.0026	PASS
		HCH	VN	-30	-3.65	-0.00191	PASS
				-20	0.97	0.00051	PASS
				-10	-9.65	-0.00505	PASS
				0	7.14	0.00374	PASS
				10	-5.68	-0.00297	PASS
				20	-3.94	-0.00206	PASS
				30	-0.81	-0.00042	PASS
				40	-3.68	-0.00193	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	-7.59	-0.00397	PASS

END

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