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	31.84	27.69	38.5	PASS
		MCH	31.85	27.7	38.5	PASS
		HCH	31.82	27.67	38.5	PASS
	GSM/TM2	LCH	25.33	21.18	38.5	PASS
		MCH	25.31	21.16	38.5	PASS
		HCH	25.25	21.1	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.13	31.13	33	PASS
		MCH	29.28	31.28	33	PASS
		HCH	29.21	31.21	33	PASS
	GSM/TM2	LCH	24.02	26.02	33	PASS
		MCH	23.96	25.96	33	PASS
		HCH	23.93	25.93	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
GSM1900	GSM/TM1	LCH	0.15	13	PASS
		MCH	0.14	13	PASS
		HCH	0.15	13	PASS
	GSM/TM2	LCH	3.2	13	PASS
		MCH	3.24	13	PASS
		HCH	3.09	13	PASS

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3Appendix_C: Modulation Characteristics

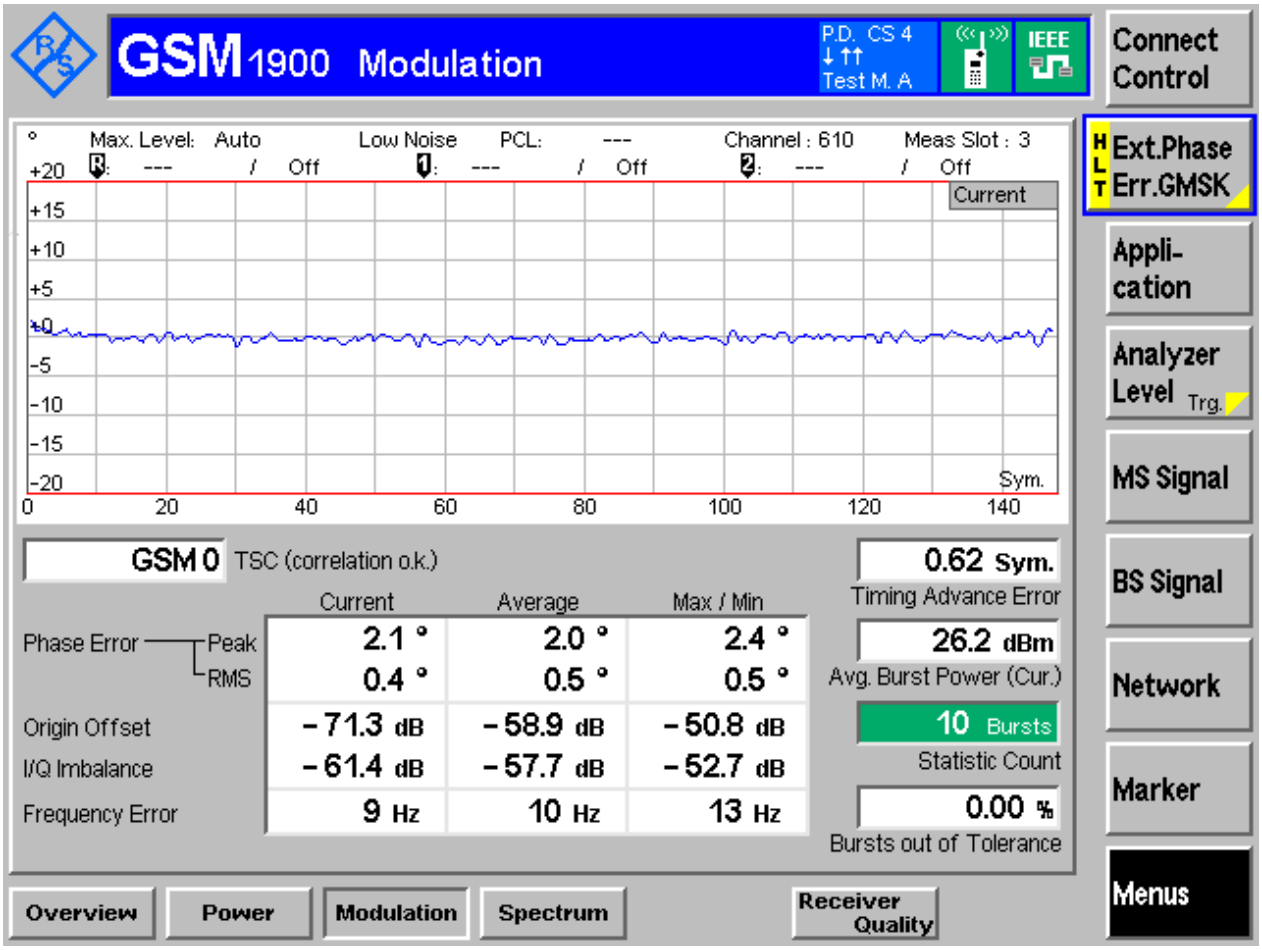
Part I - Test Plots

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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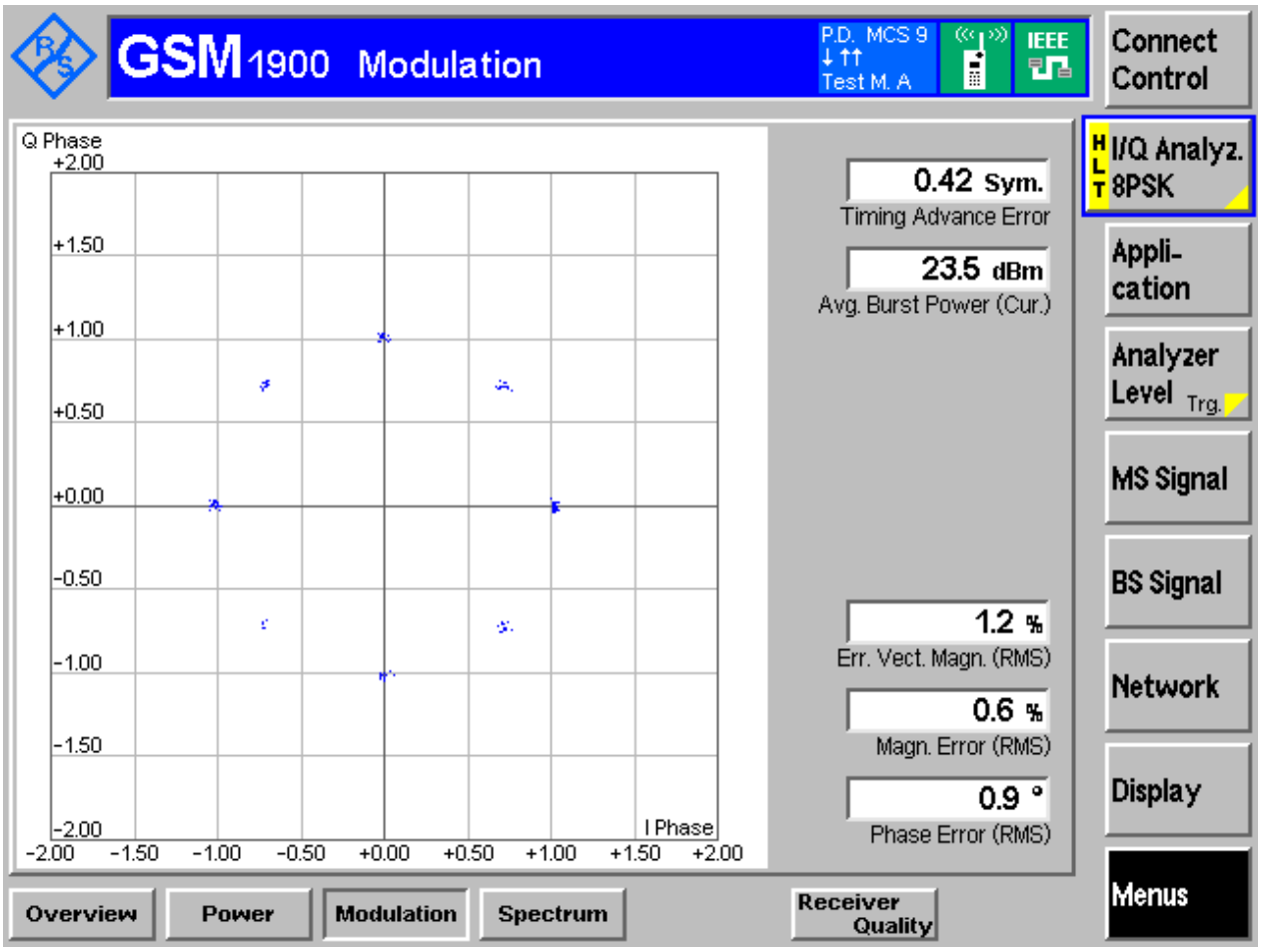
3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = MCH



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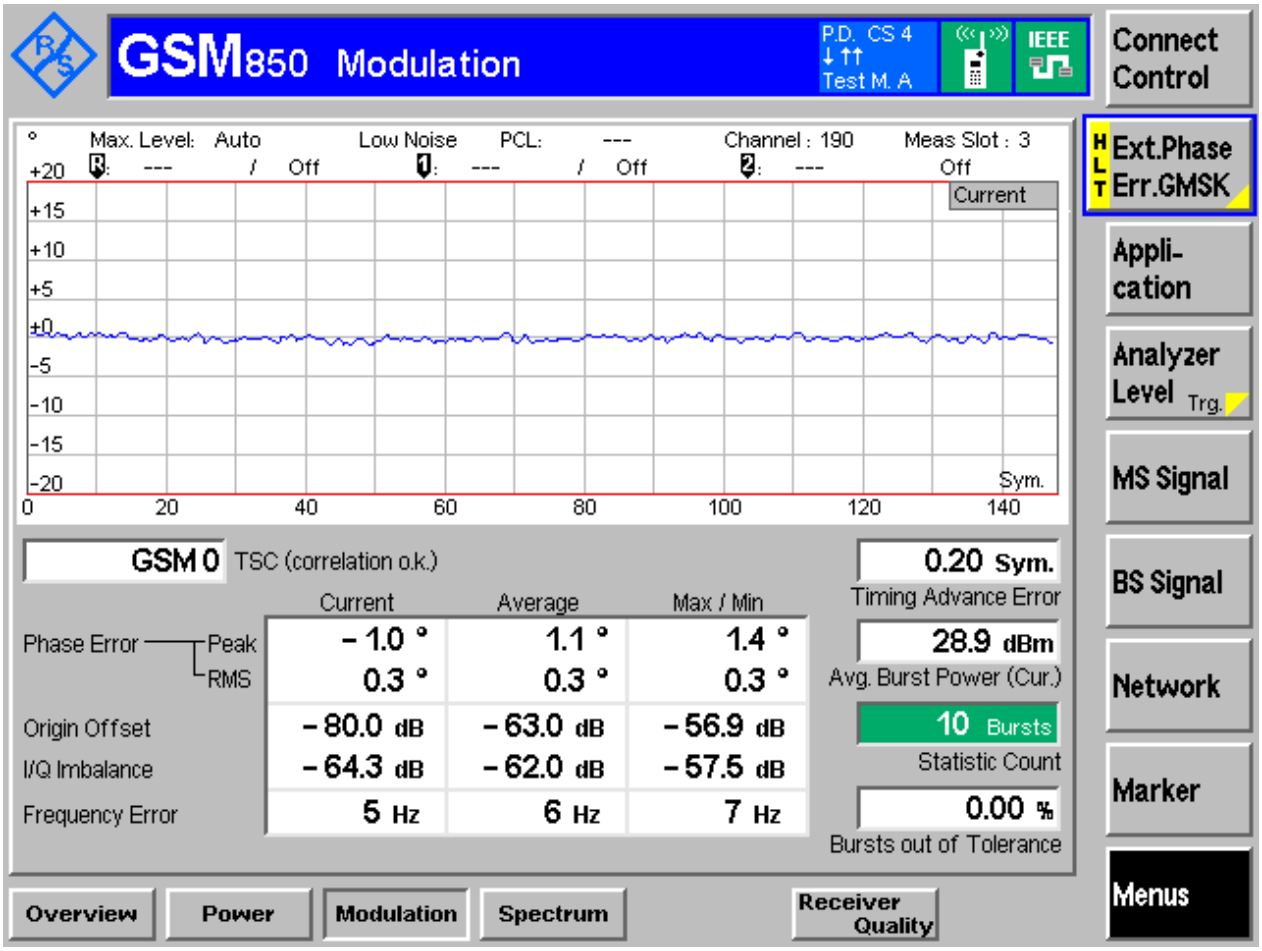
3.1.2 Test Band = GSM850

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



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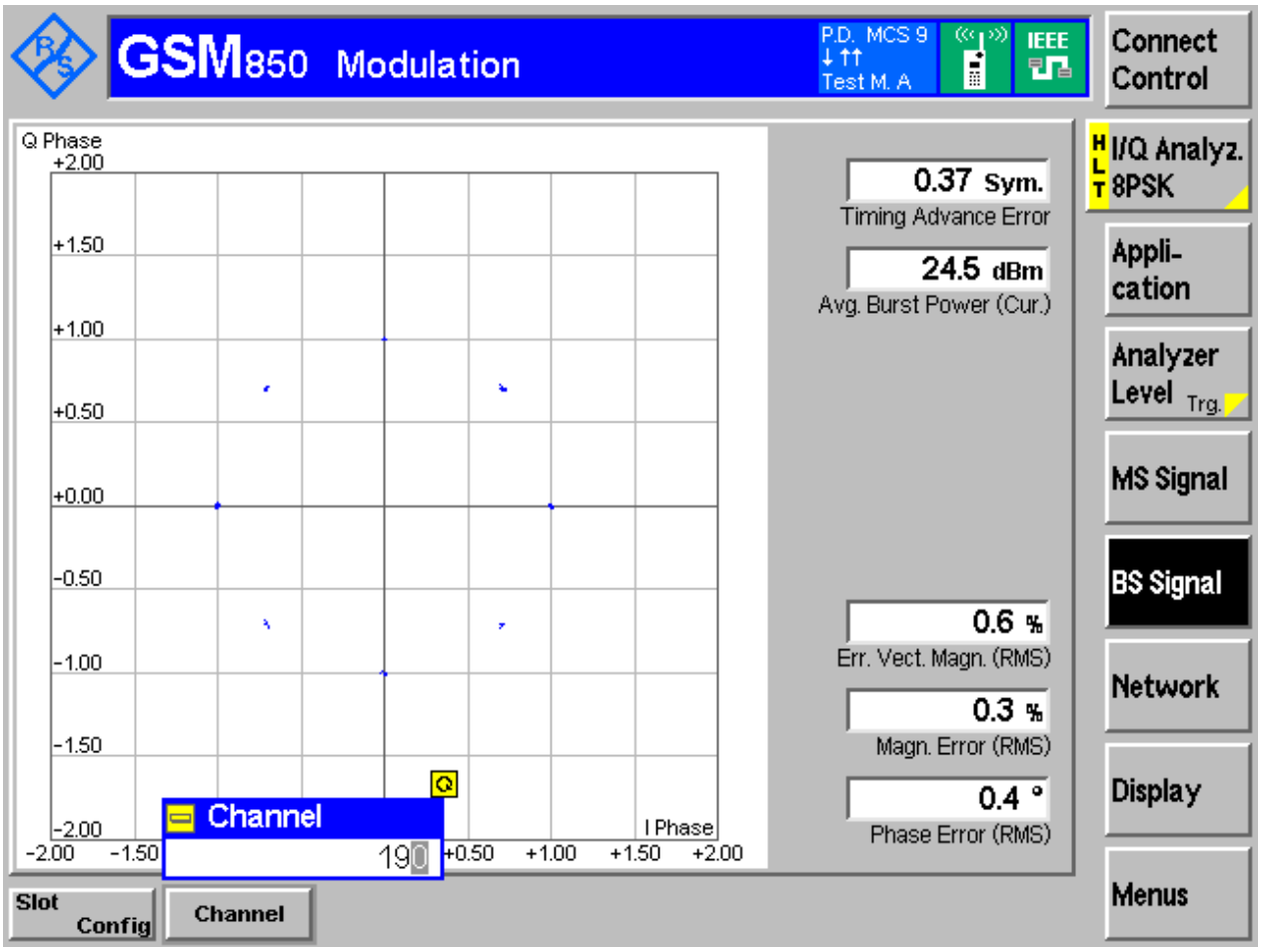
3.1.2.2 Test Mode = GSM/TM2

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
GSM1900	GSM/TM1	LCH	246.53	316.17	Pass
		MCH	249.86	313.50	Pass
		HCH	245.79	315.53	Pass
	GSM/TM2	LCH	243.51	312.69	Pass
		MCH	239.29	309.95	Pass
		HCH	235.76	308.14	Pass
GSM850	GSM/TM1	LCH	242.15	314.18	Pass
		MCH	246.79	318.74	Pass
		HCH	243.21	317.63	Pass
	GSM/TM2	LCH	237.14	304.78	Pass
		MCH	234.13	294.45	Pass
		HCH	245.10	308.81	Pass

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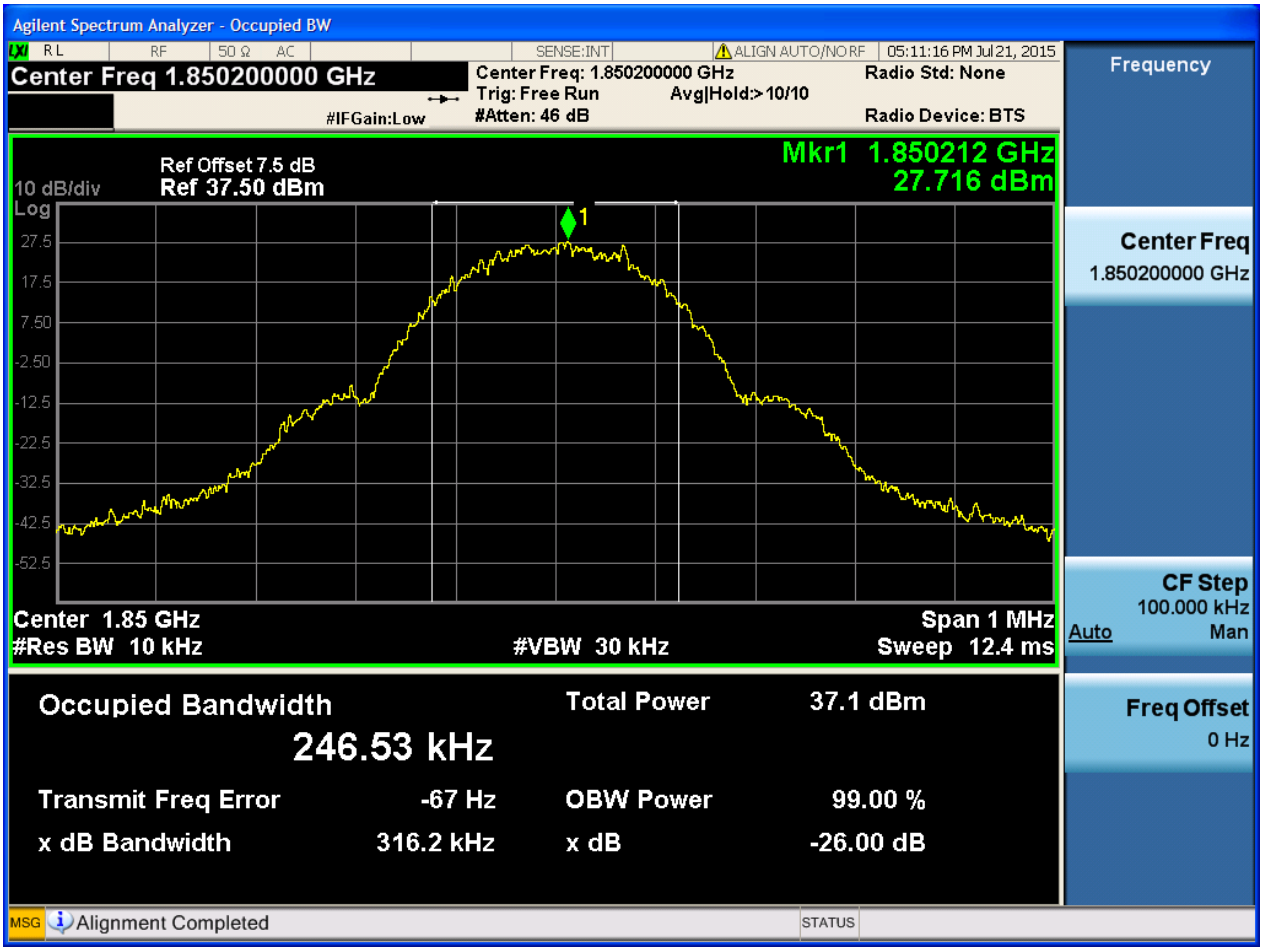
Part II - Test Plots

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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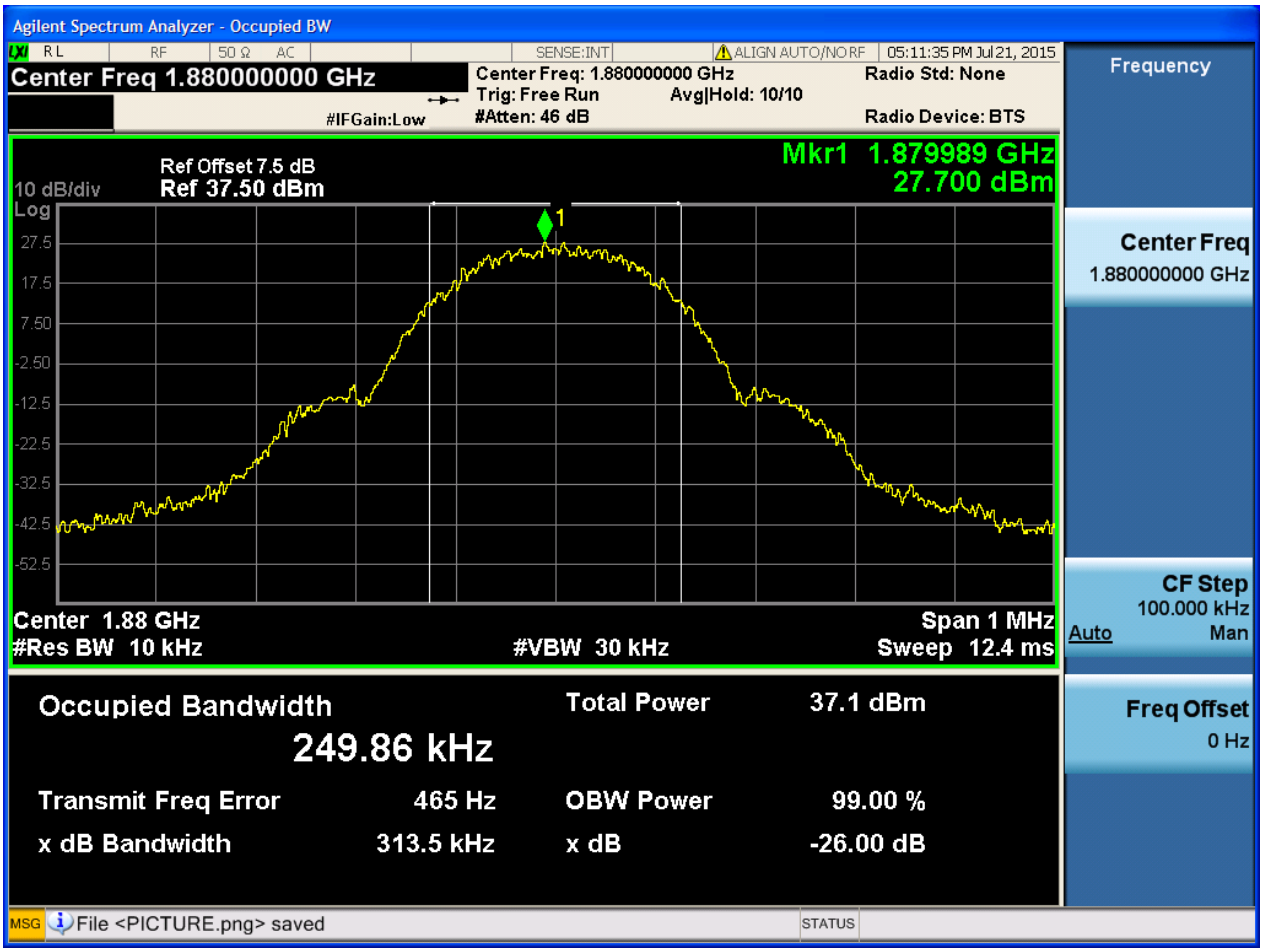
4.1.1.1.2 Test Channel = MCH



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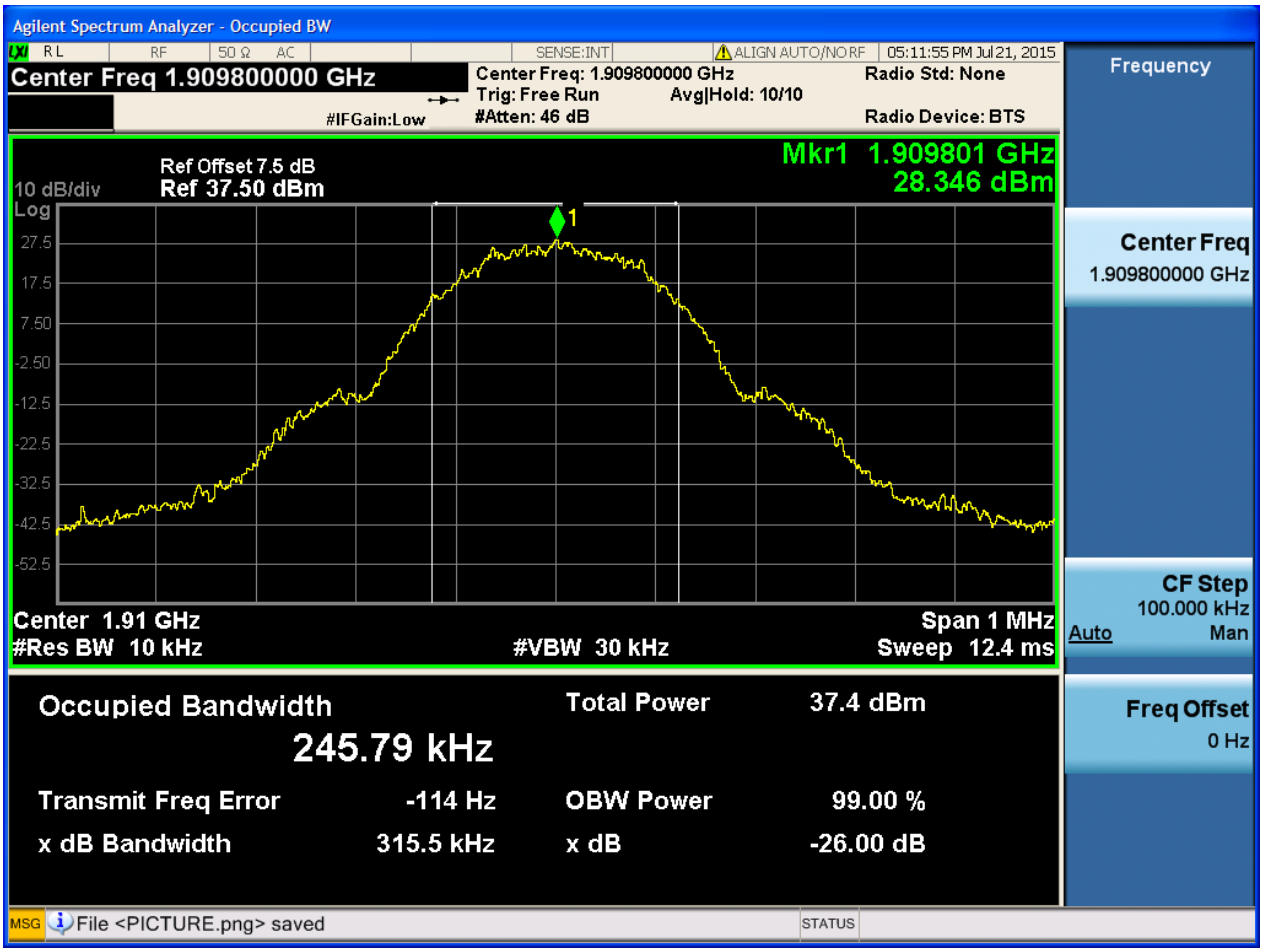
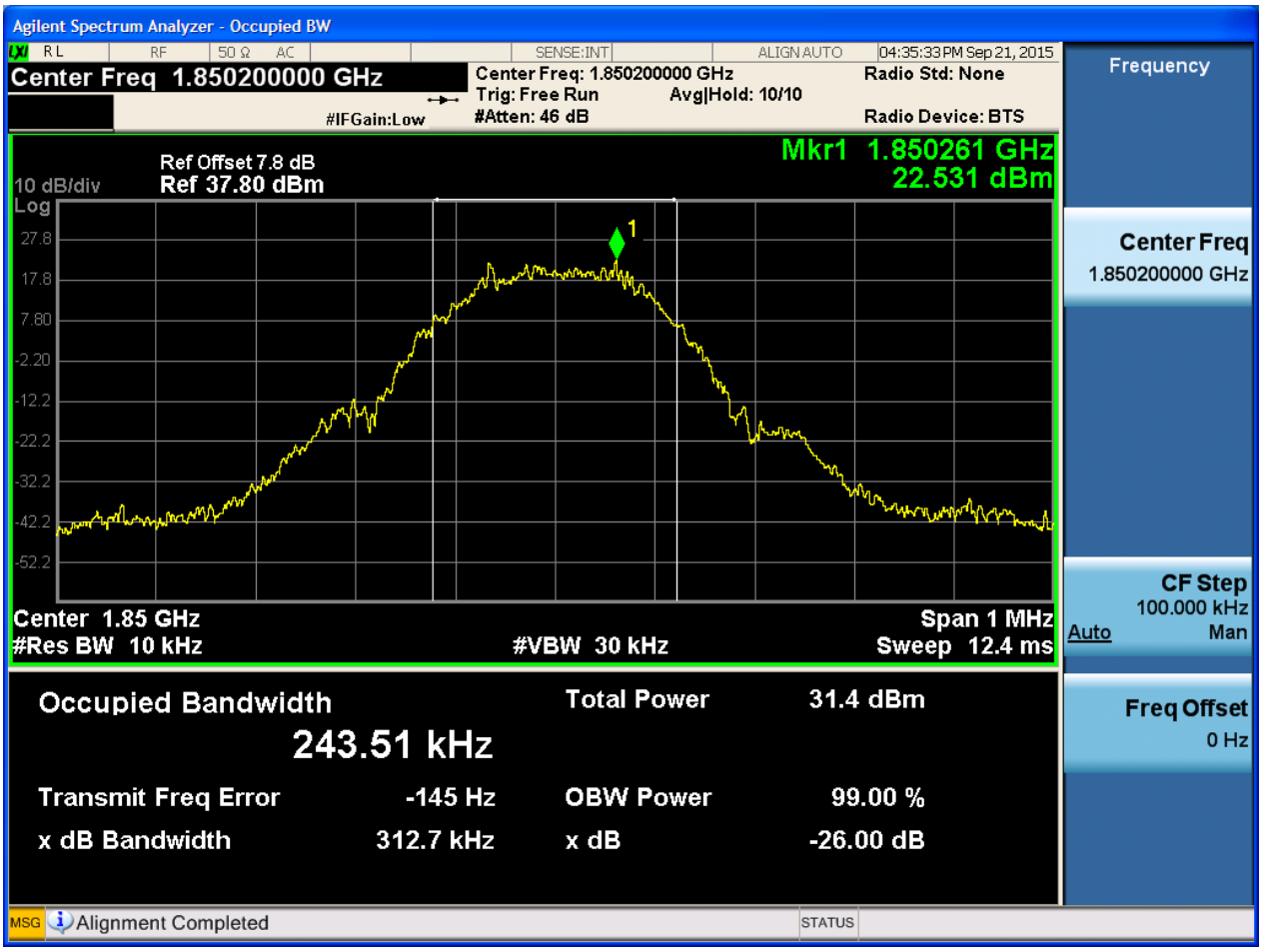
4.1.1.1.3 Test Channel = HCH



4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



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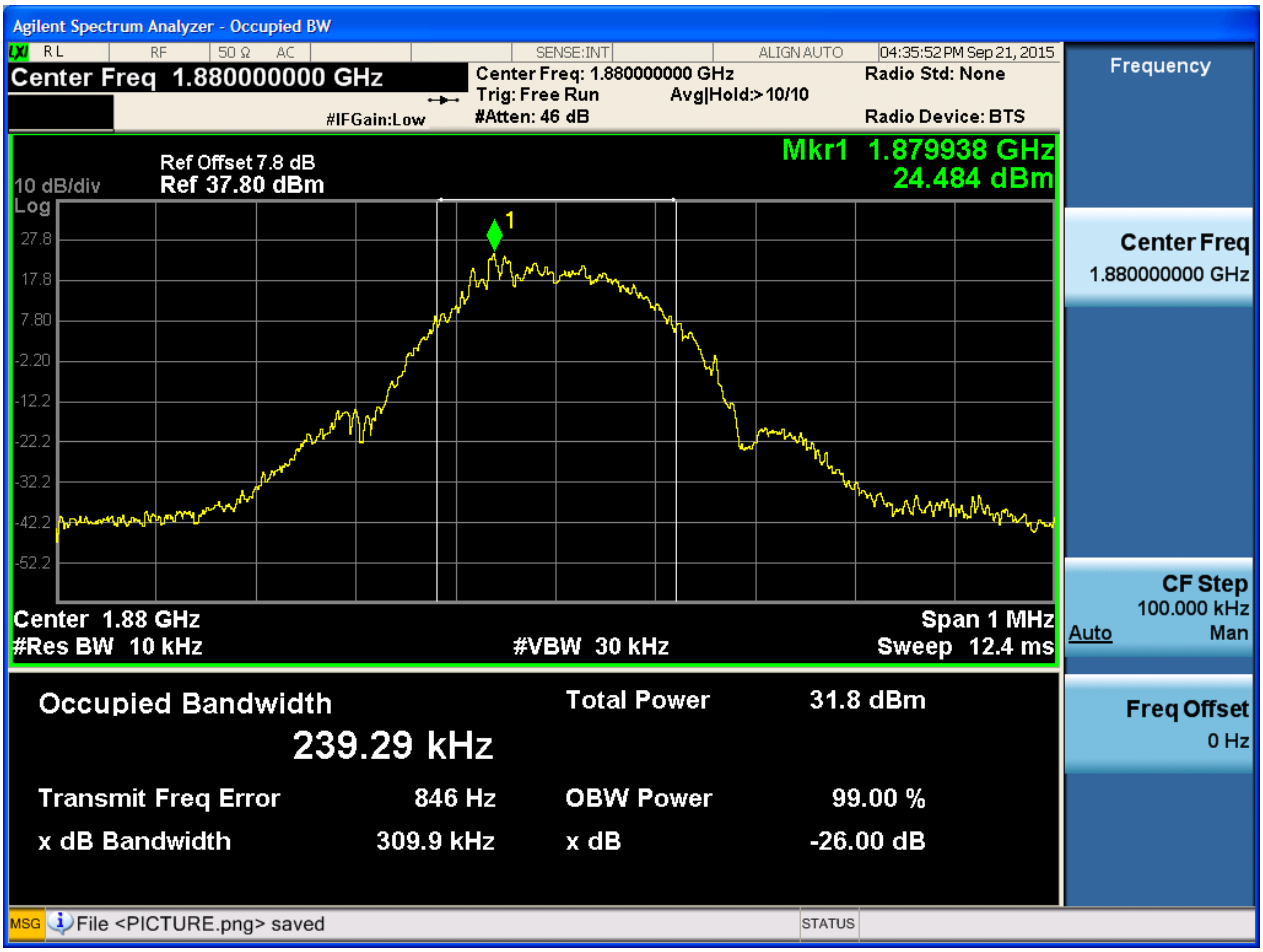
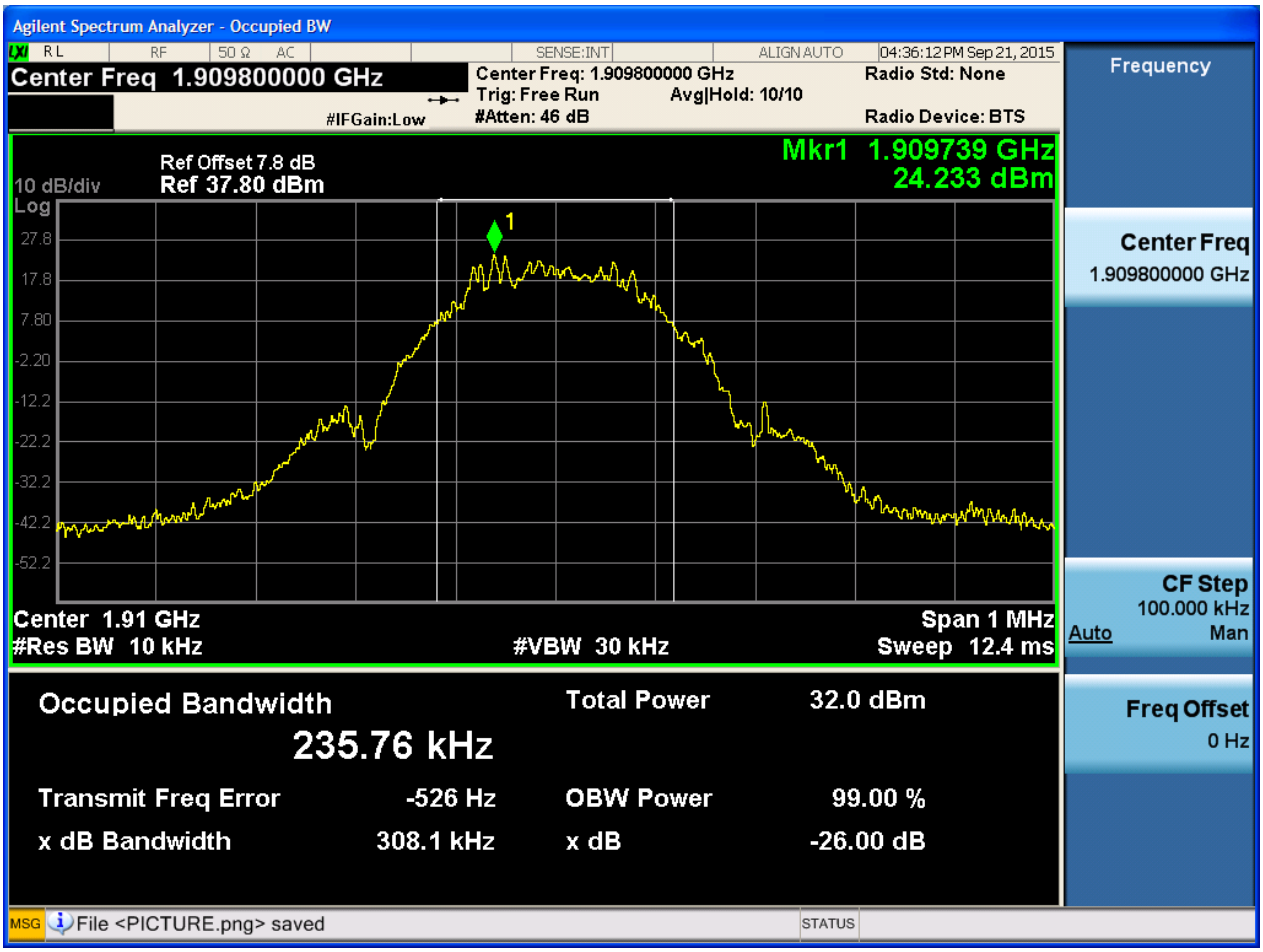
4.1.1.2.2 Test Channel = MCH



4.1.1.2.3 Test Channel = HCH



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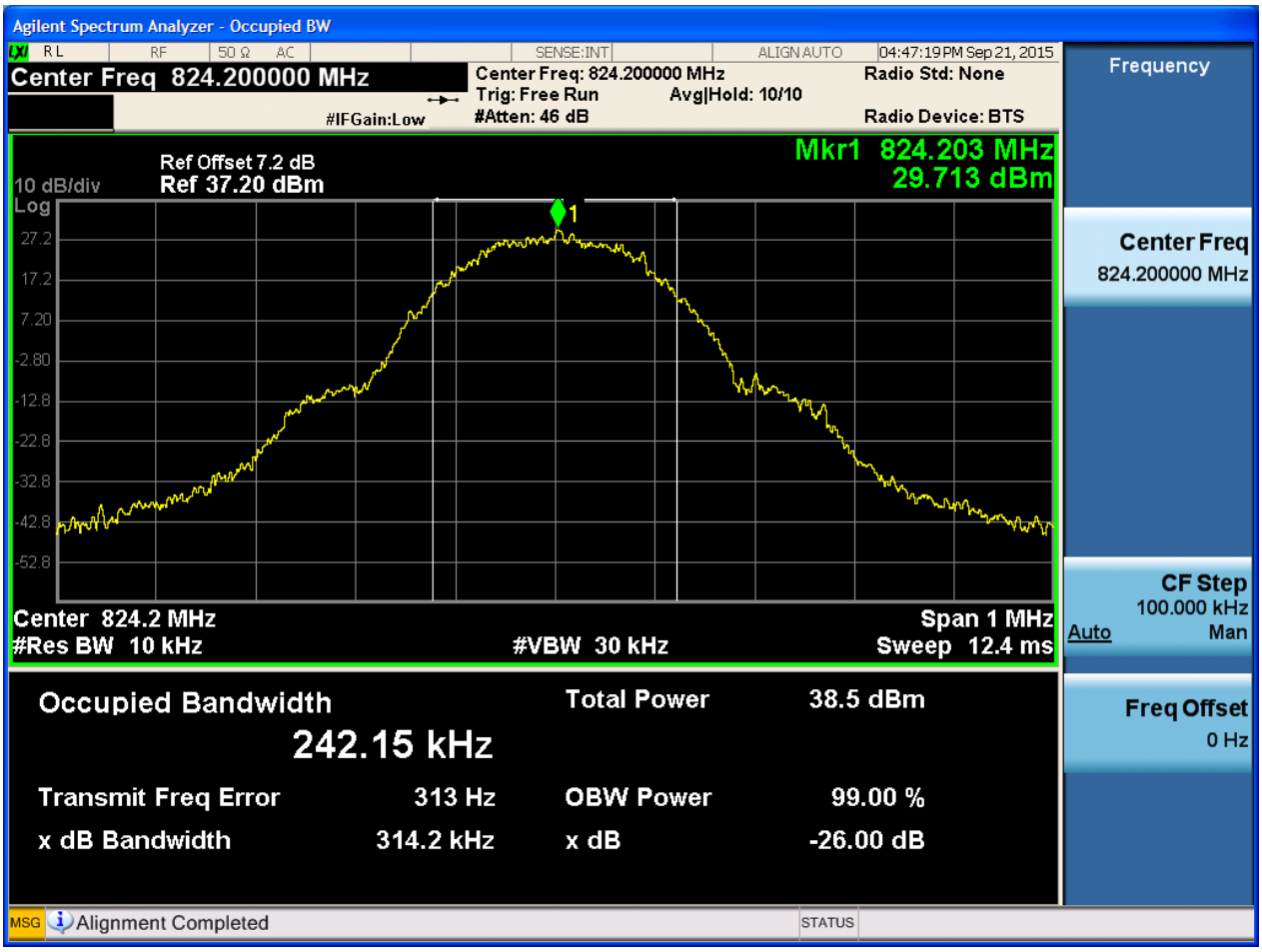
4.1.2 Test Band = GSM850

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH



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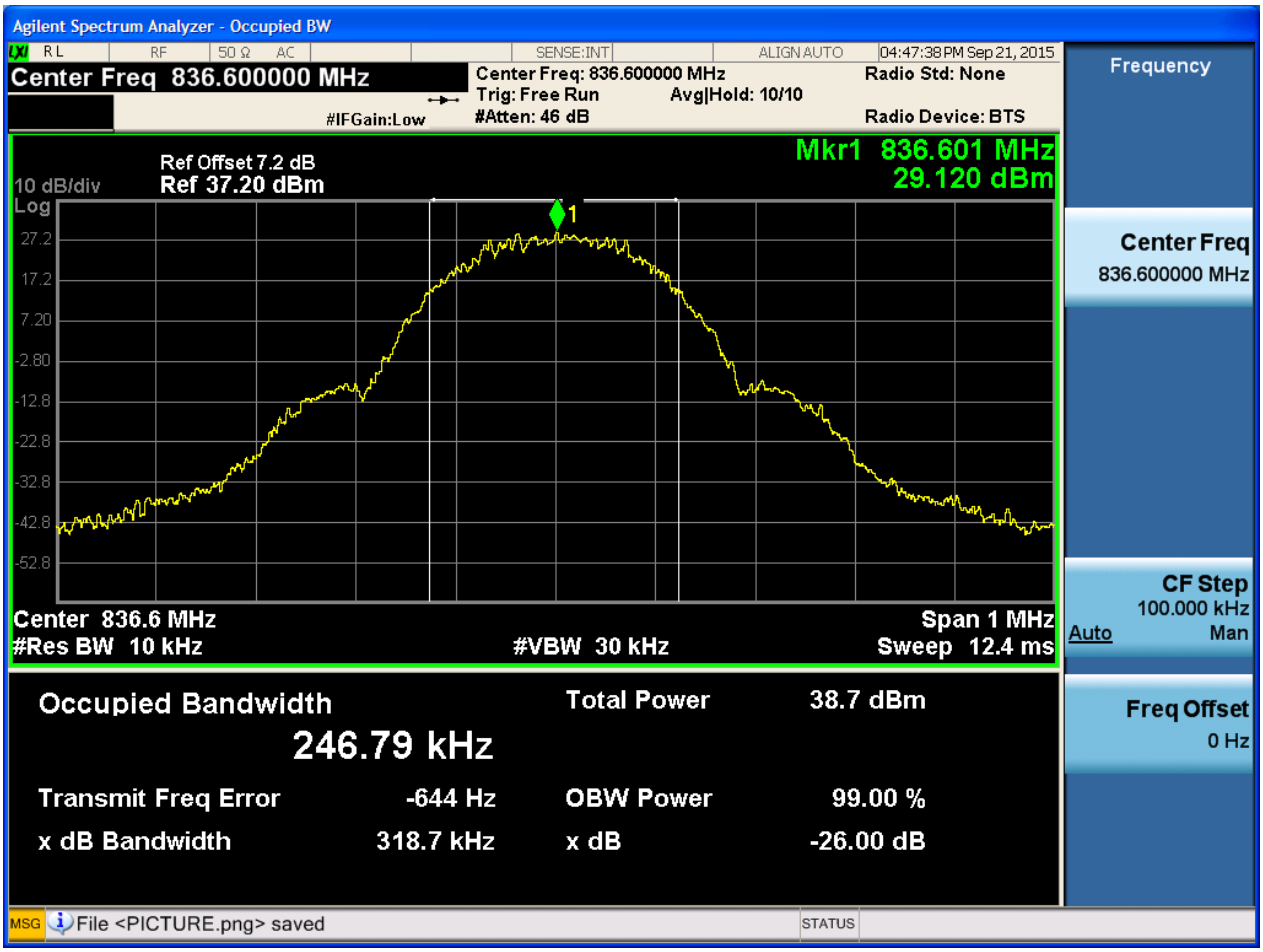
4.1.2.1.2 Test Channel = MCH



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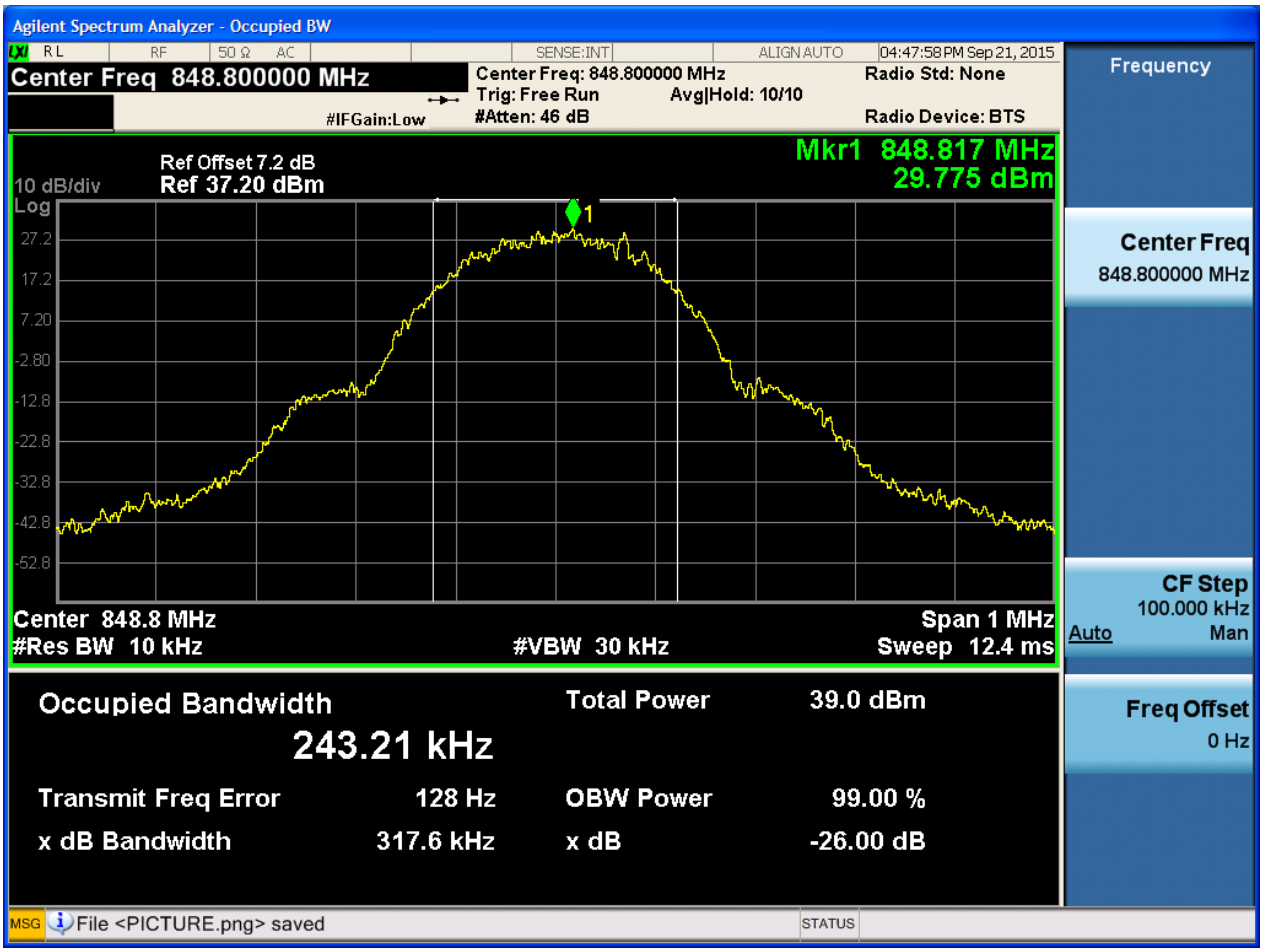
4.1.2.1.3 Test Channel = HCH



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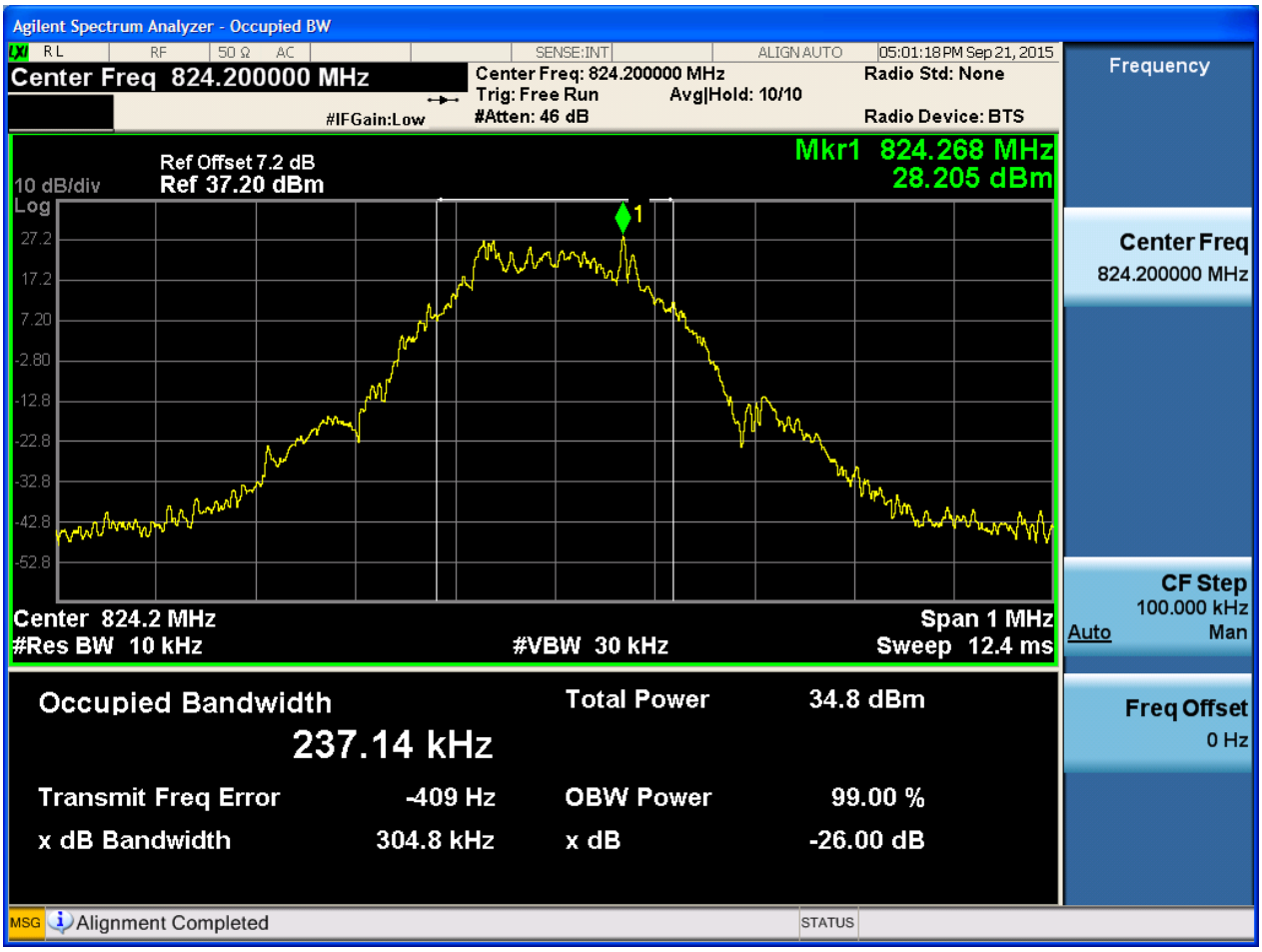
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



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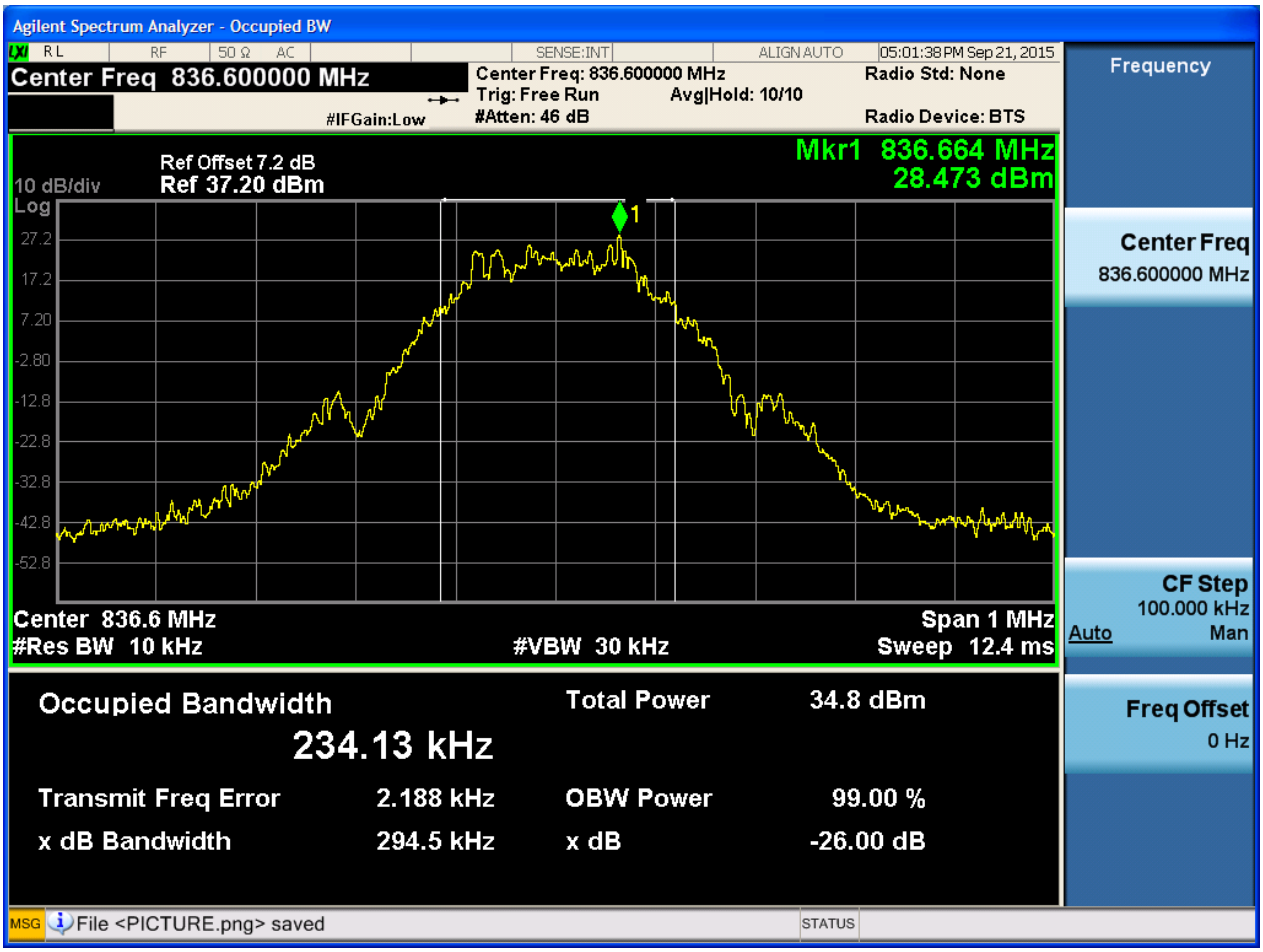
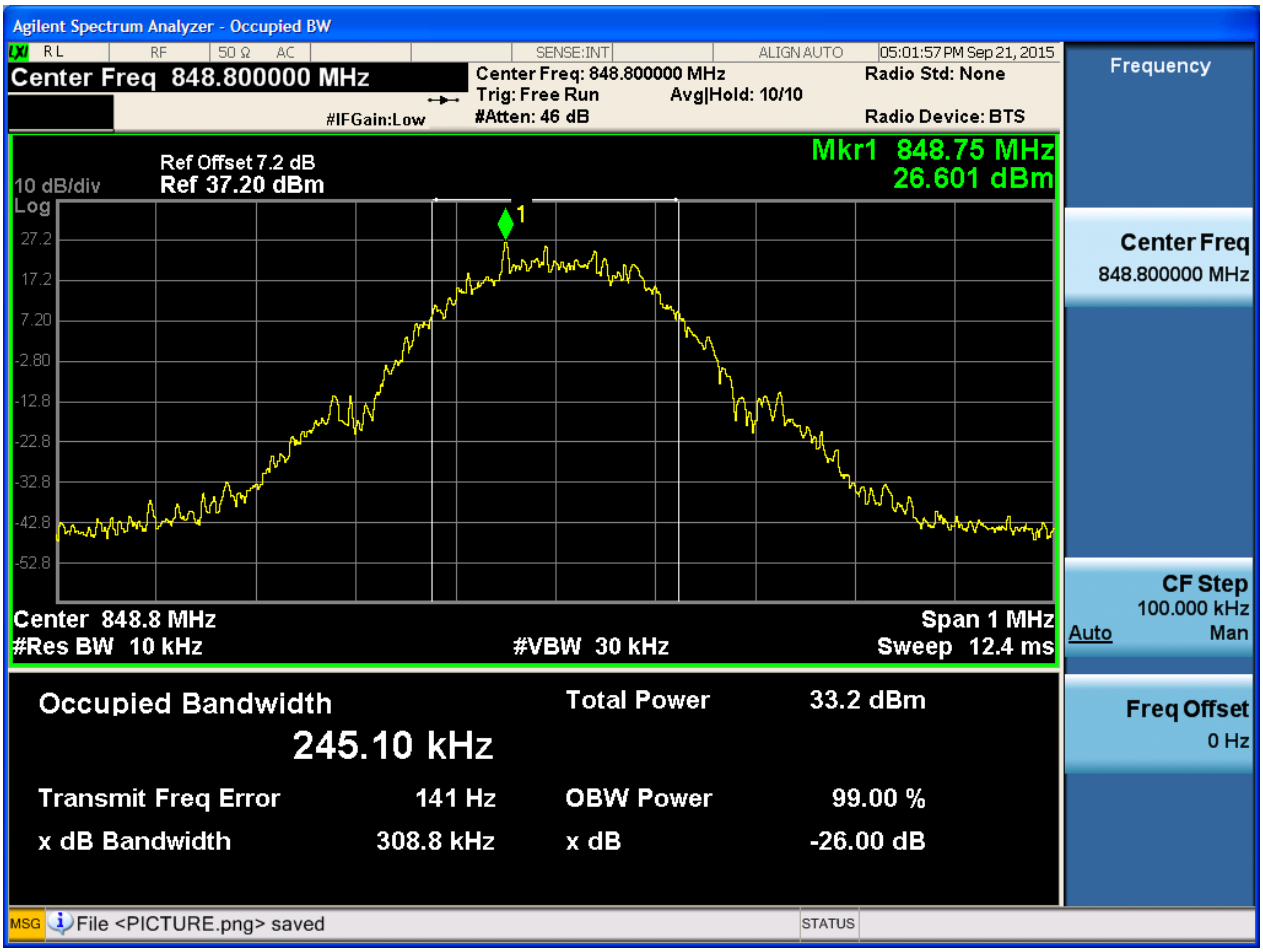
4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

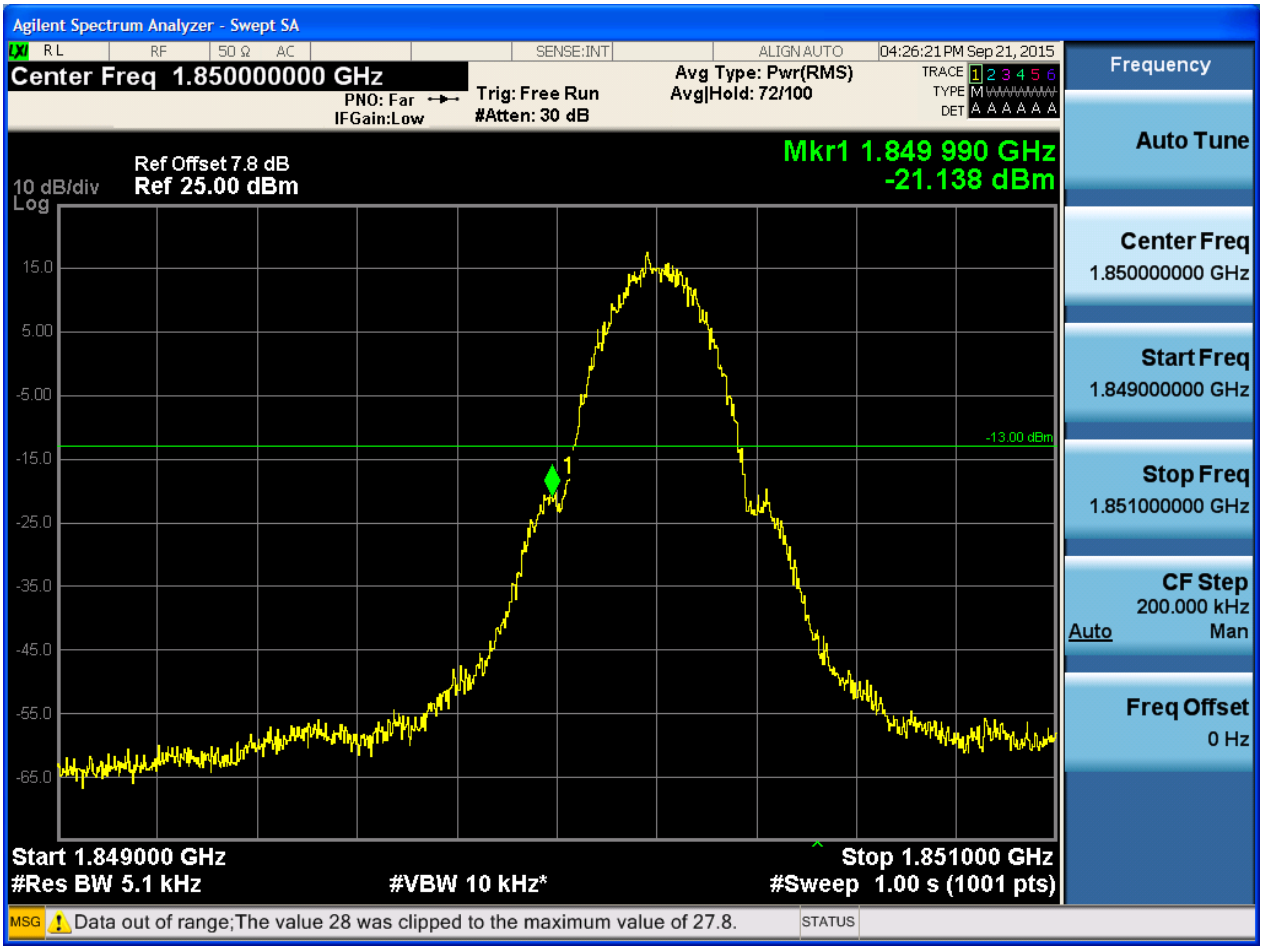
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM1900

5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



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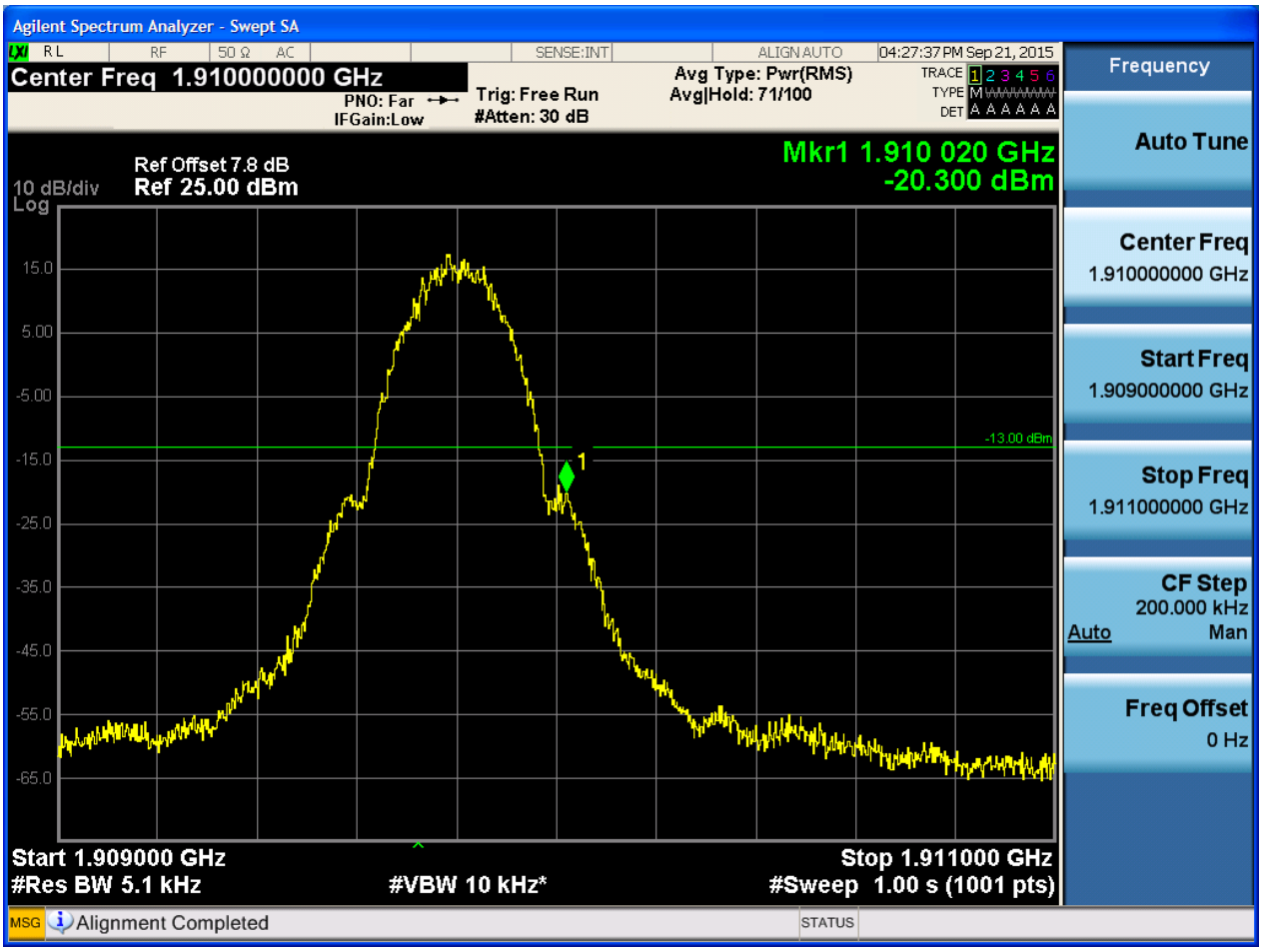
5.1.1.1.2 Test Channel = HCH



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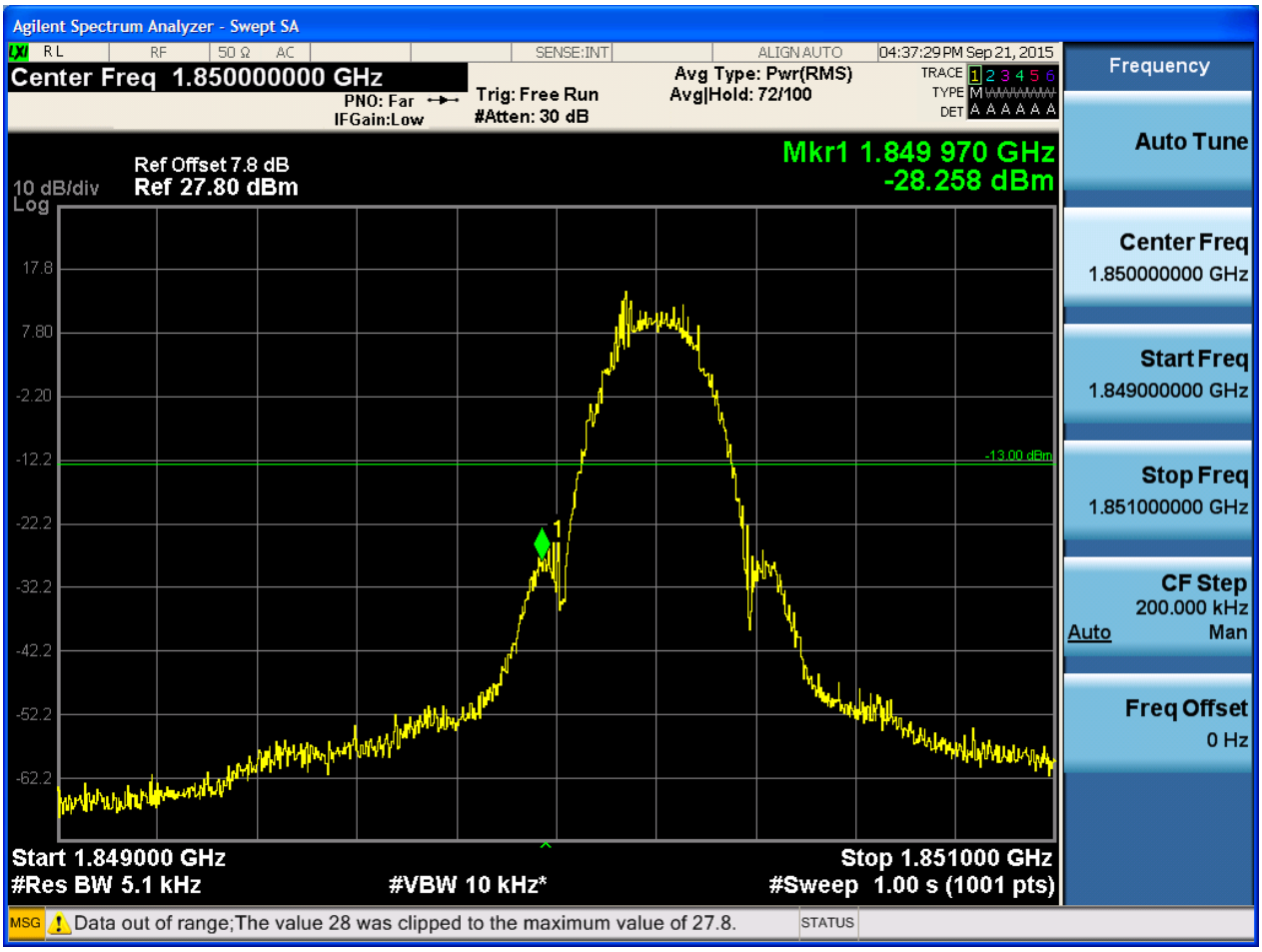
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



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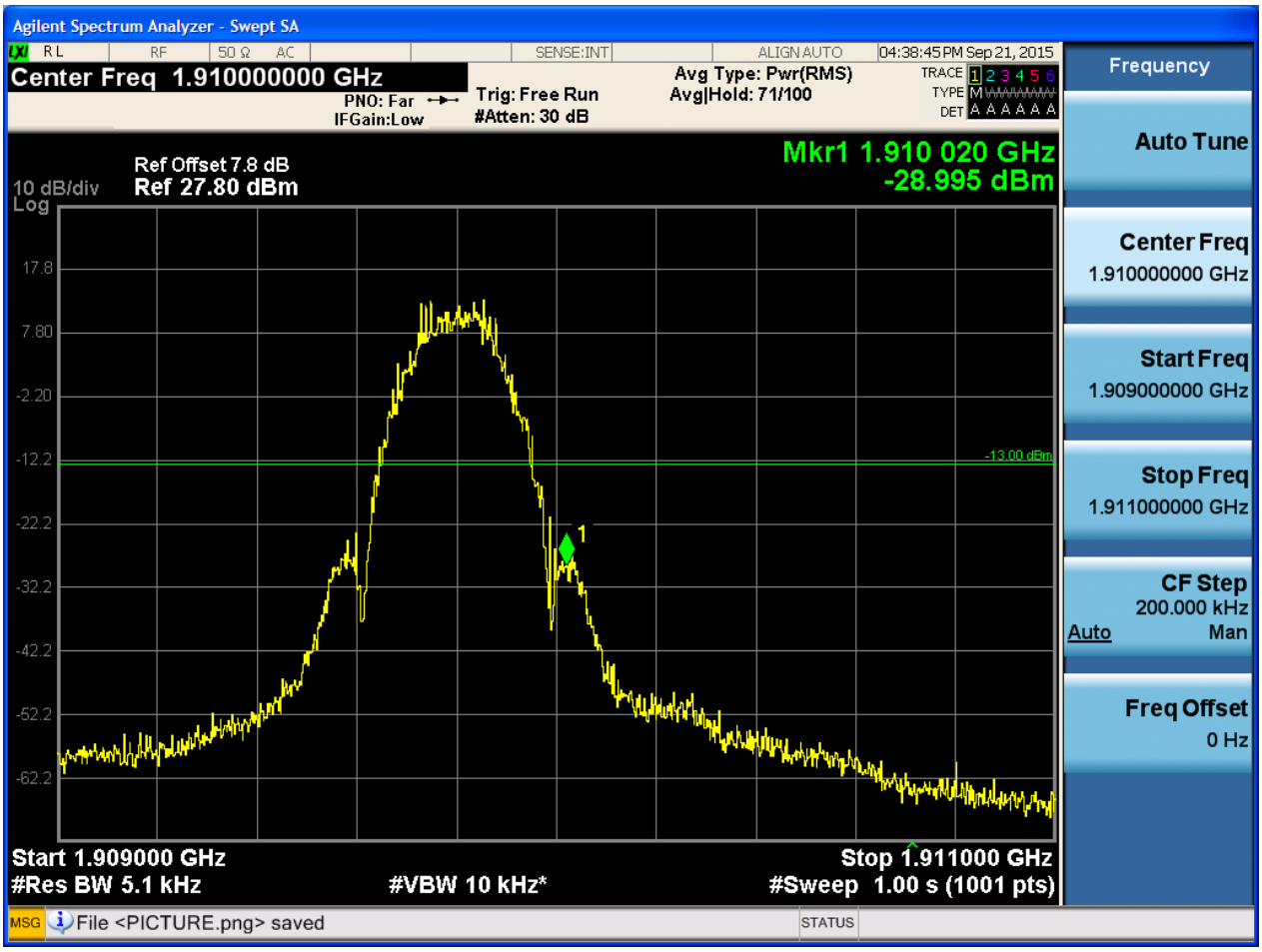
5.1.1.2.2 Test Channel = HCH



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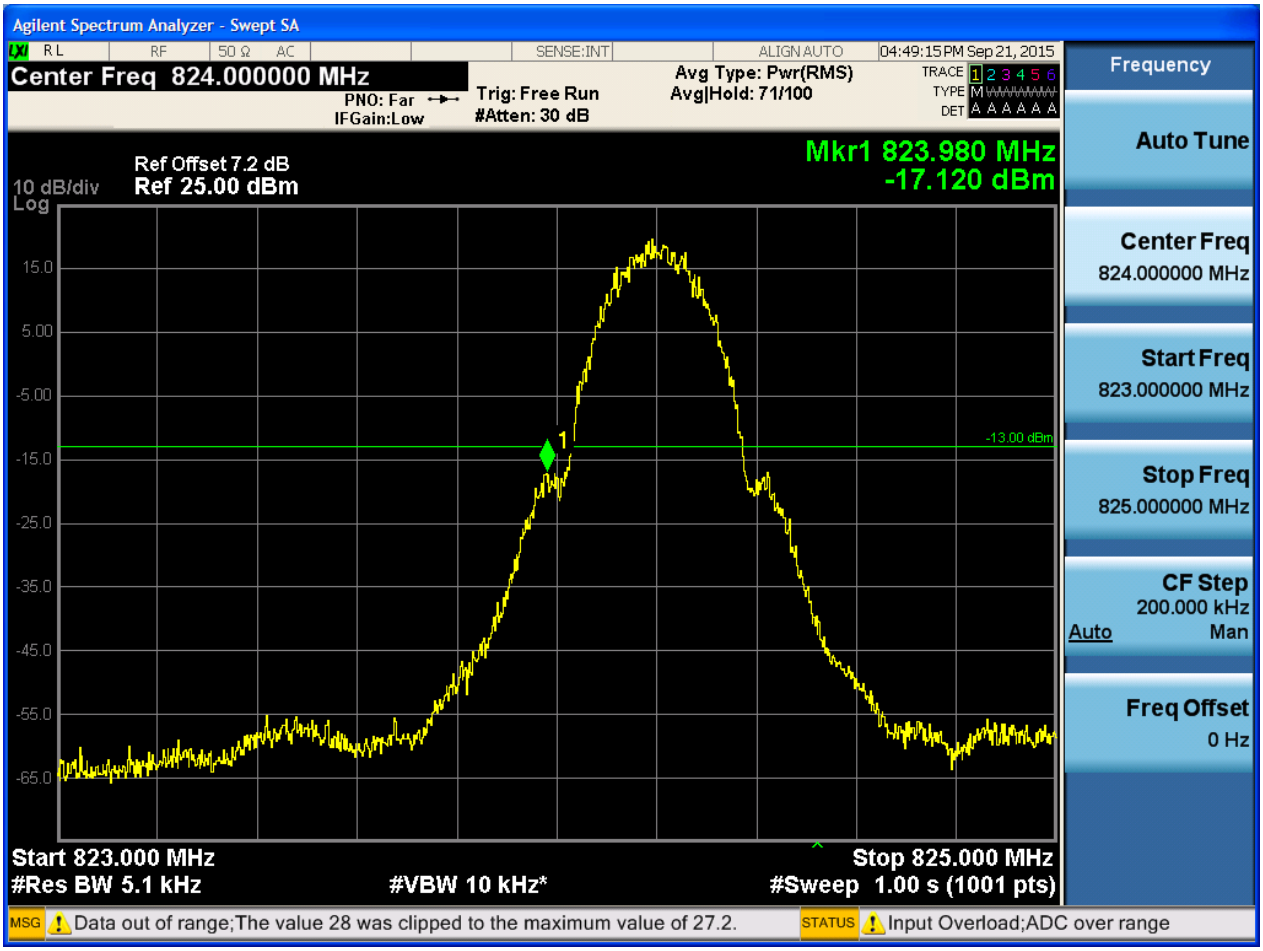
5.1.2 Test Band = GSM850

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



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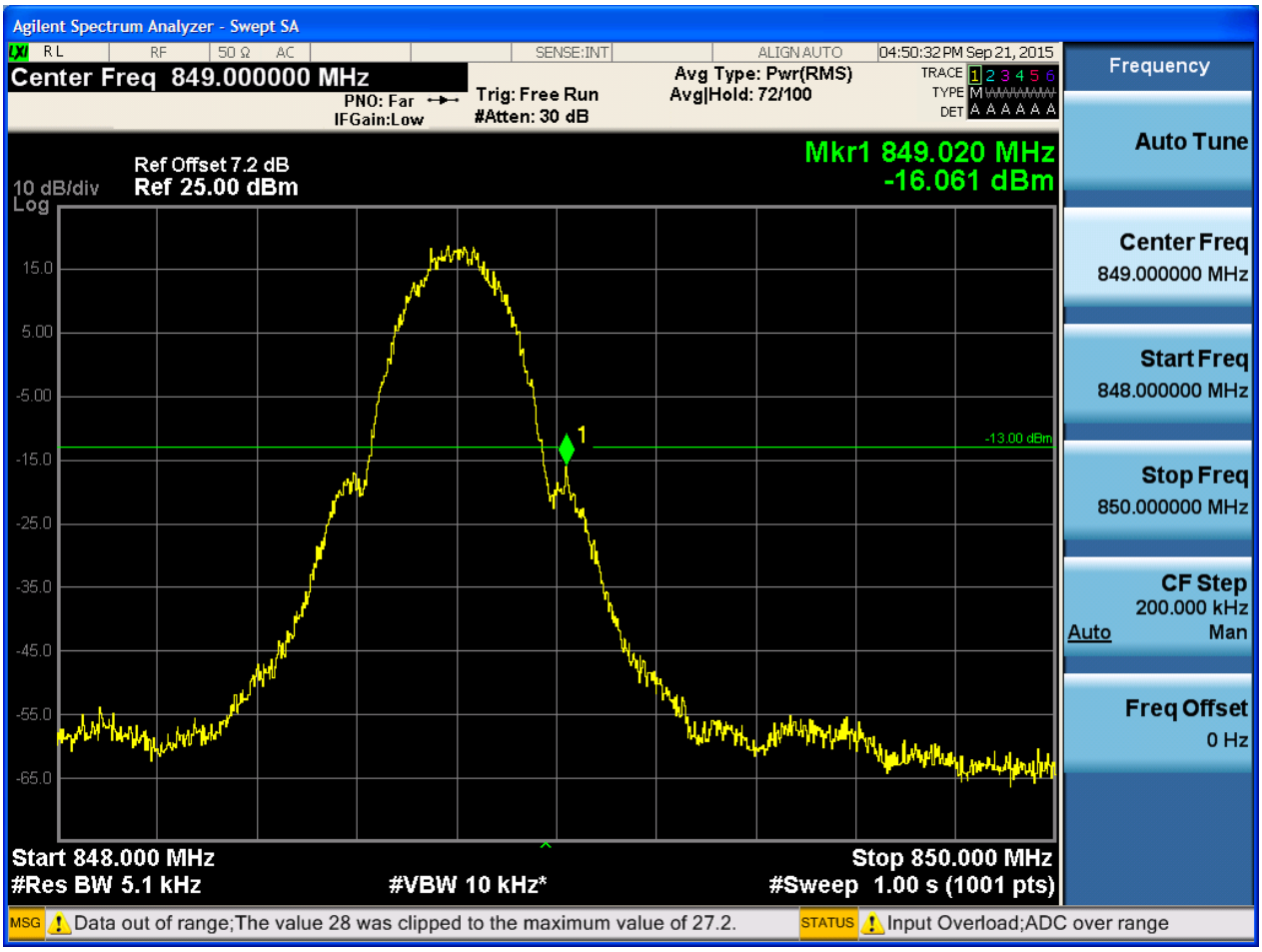
5.1.2.1.2 Test Channel = HCH



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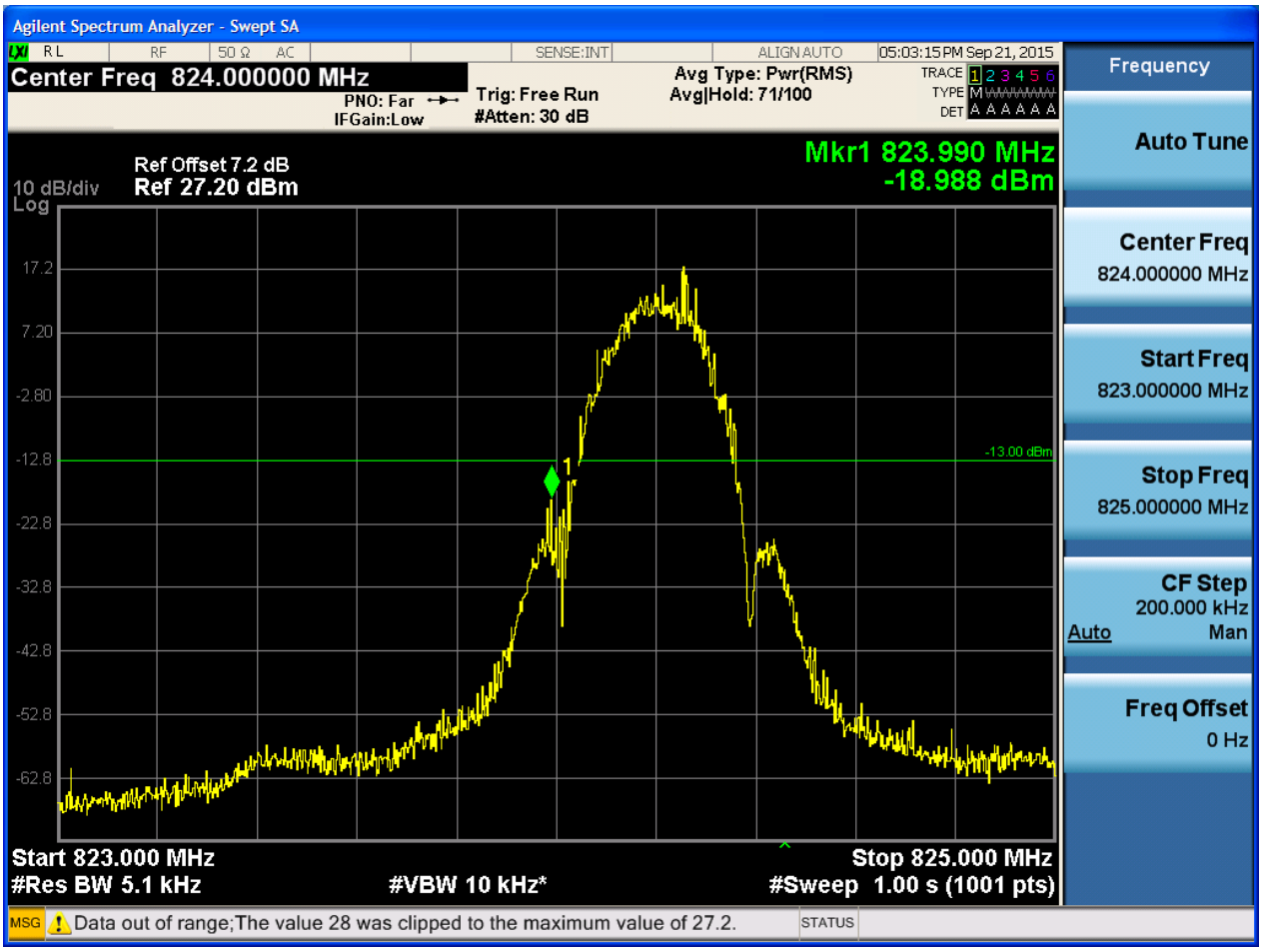
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



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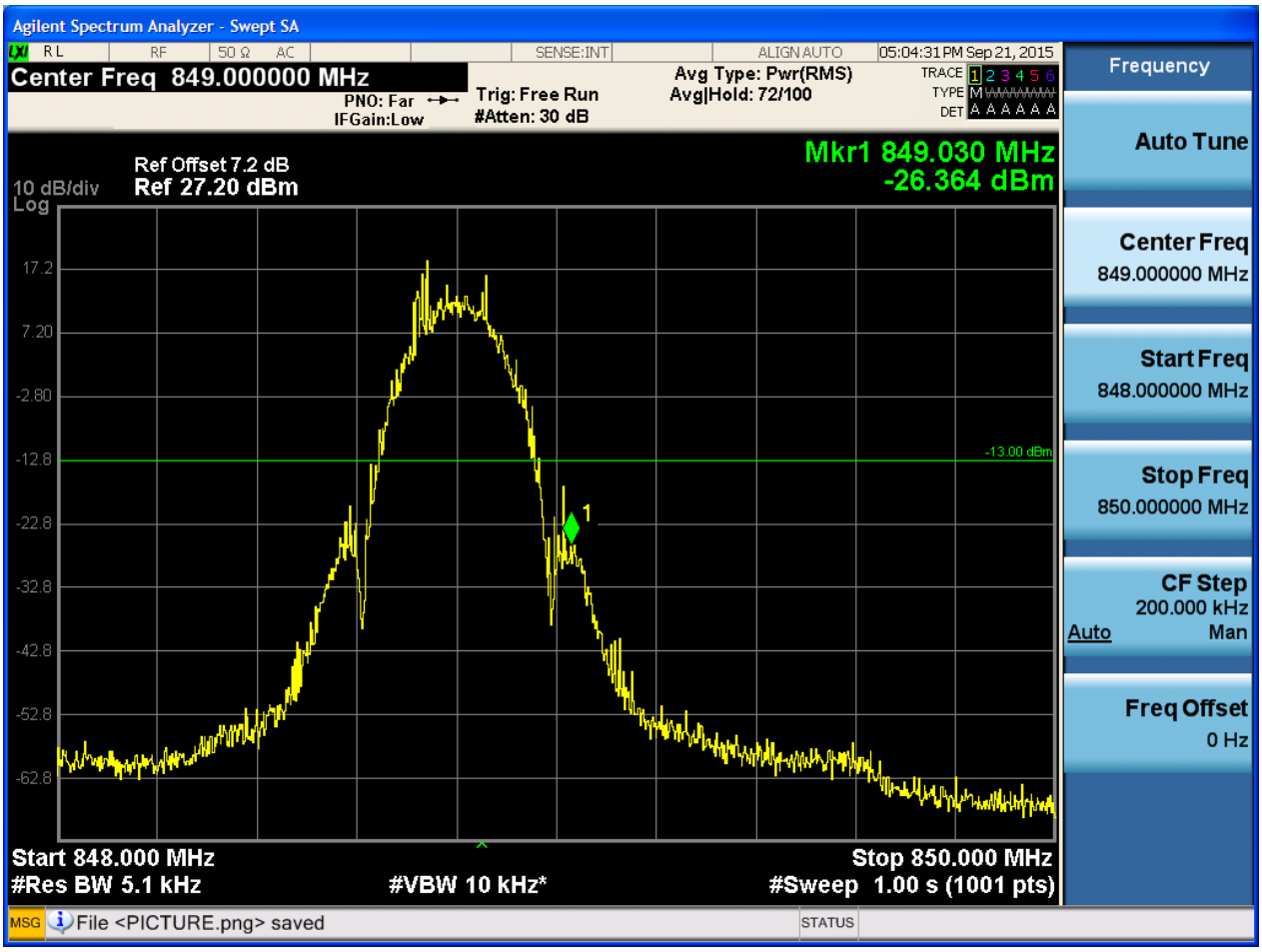
5.1.2.2.2 Test Channel = HCH



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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 = GSM1900

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH

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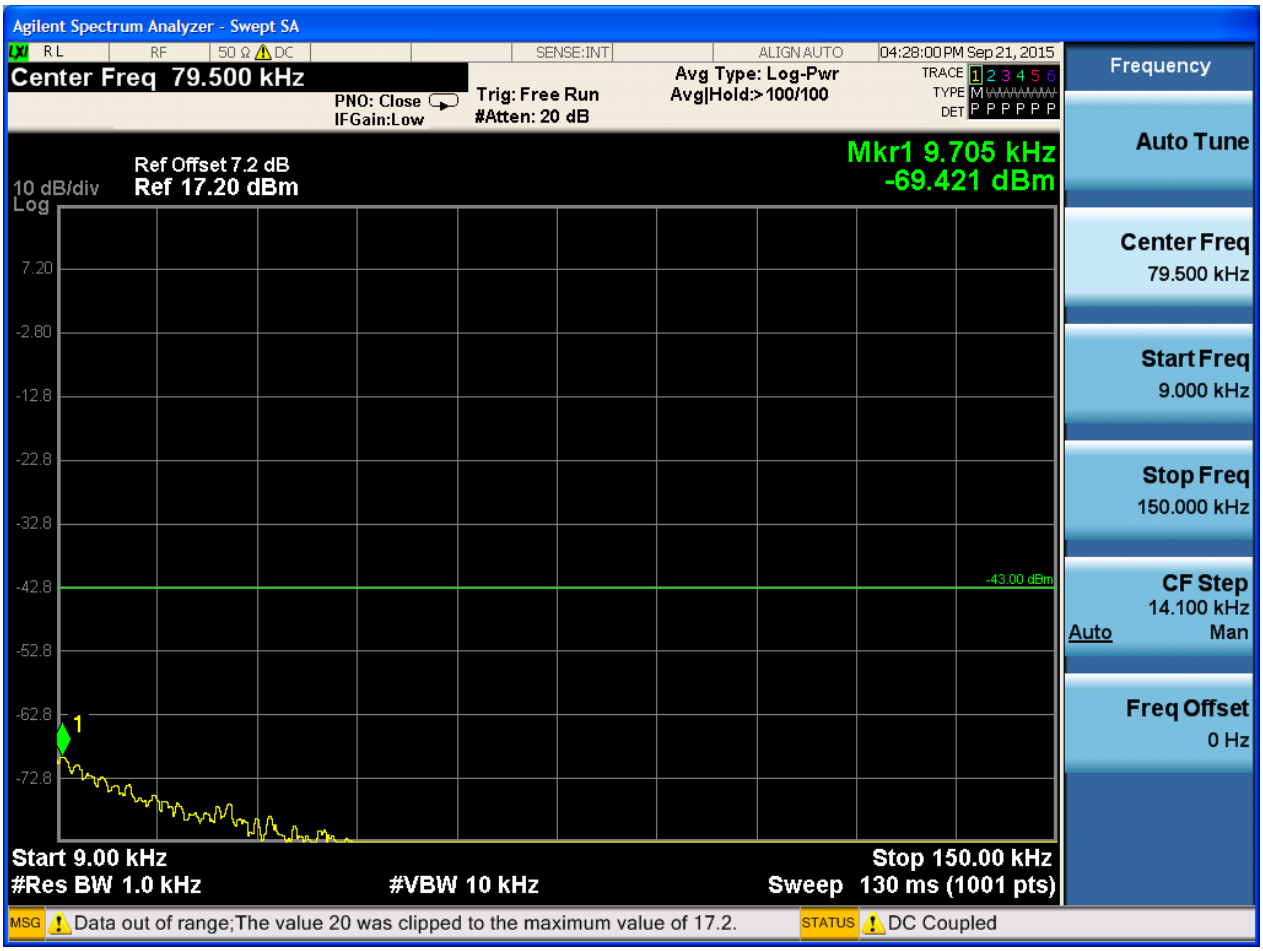

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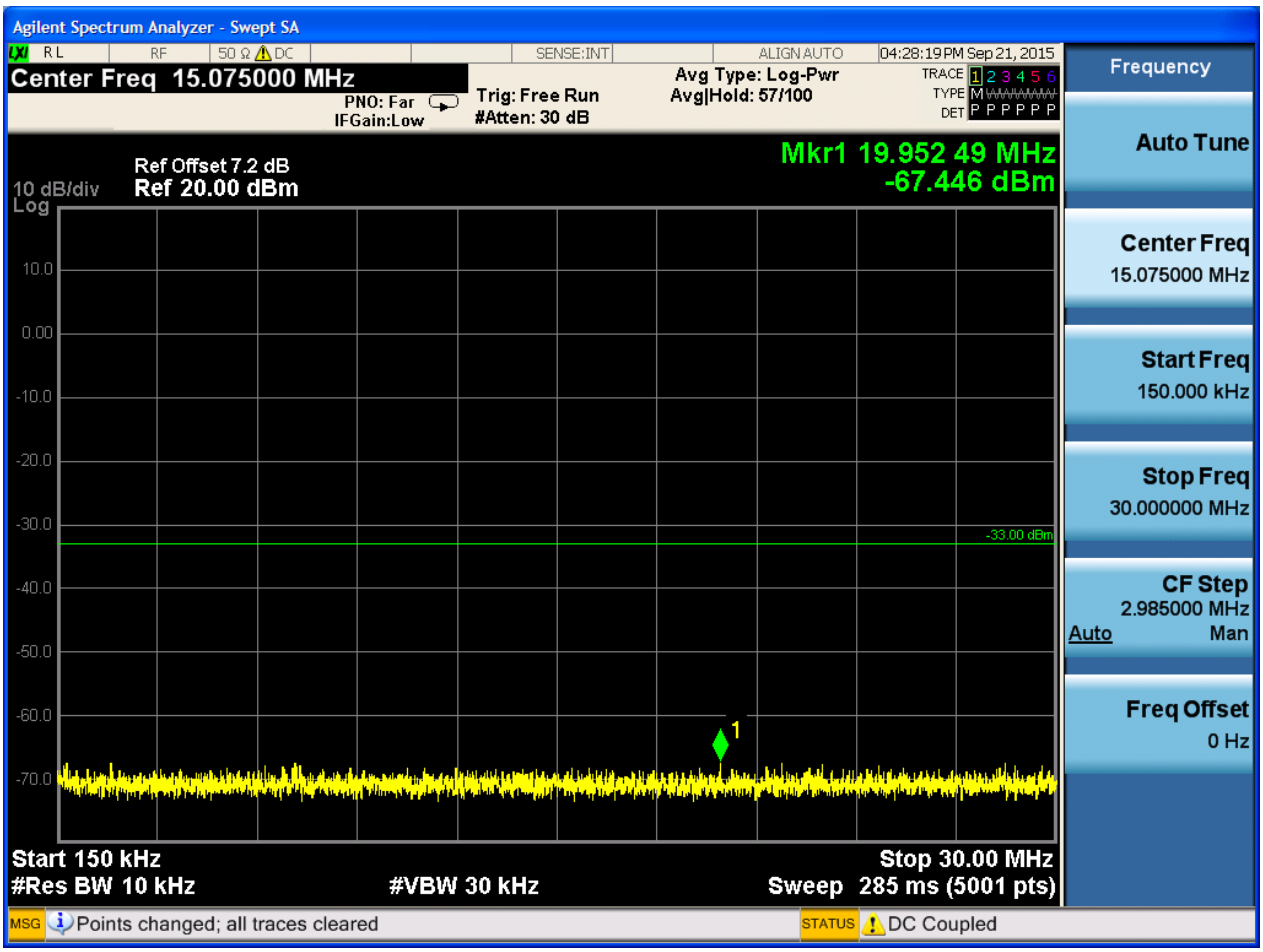

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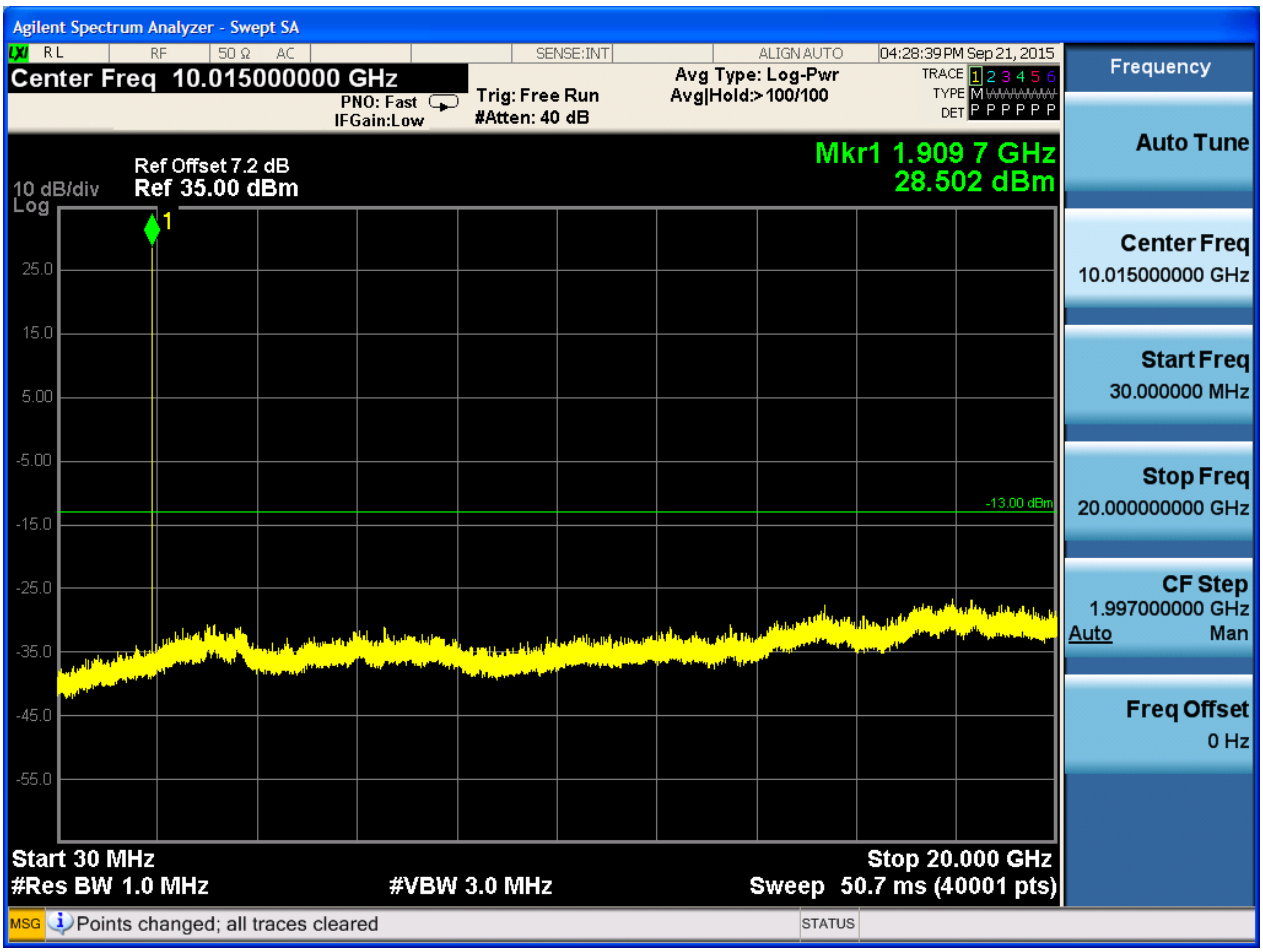

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6.1.1.1.2 Test Channel = MCH

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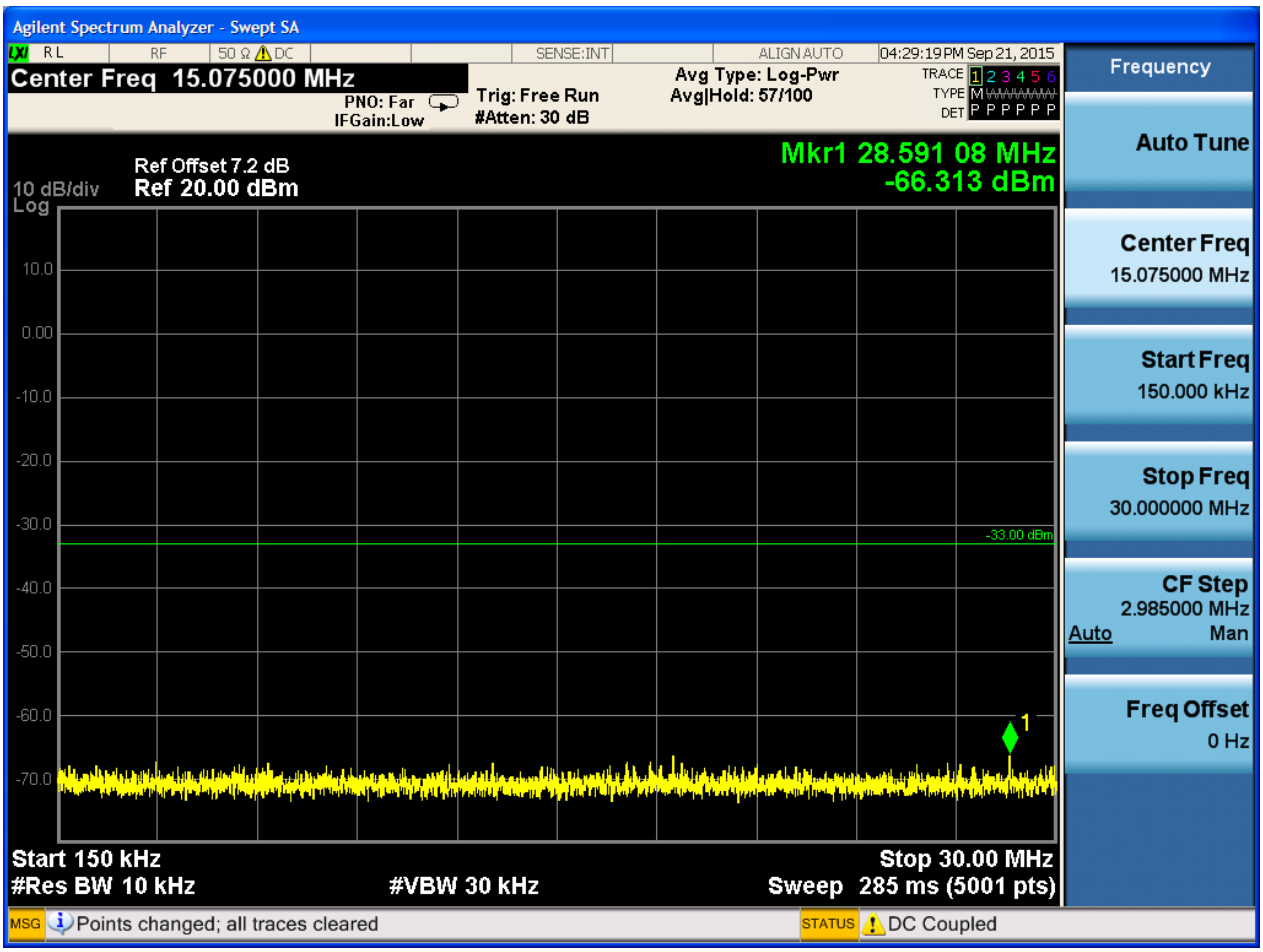

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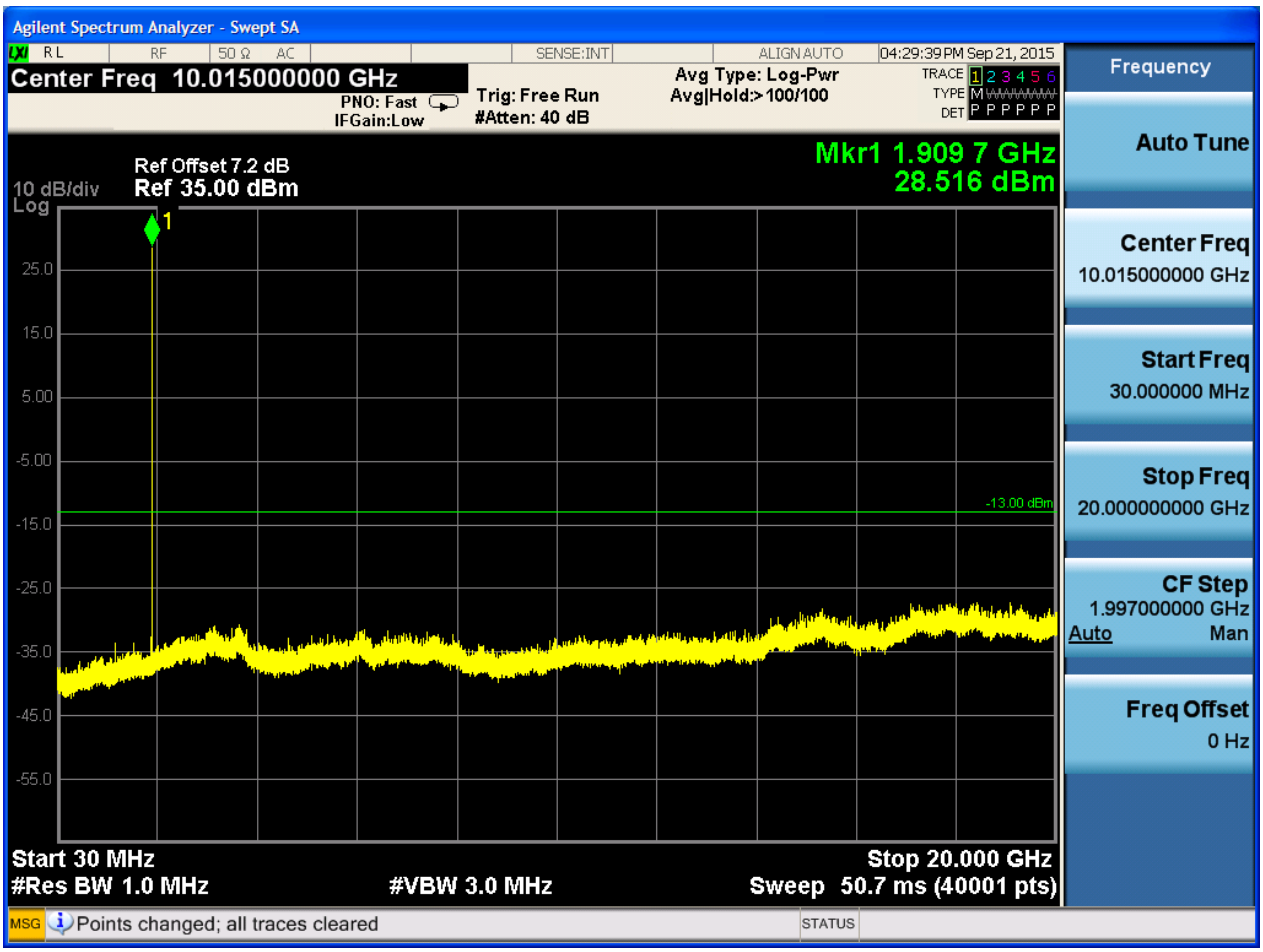

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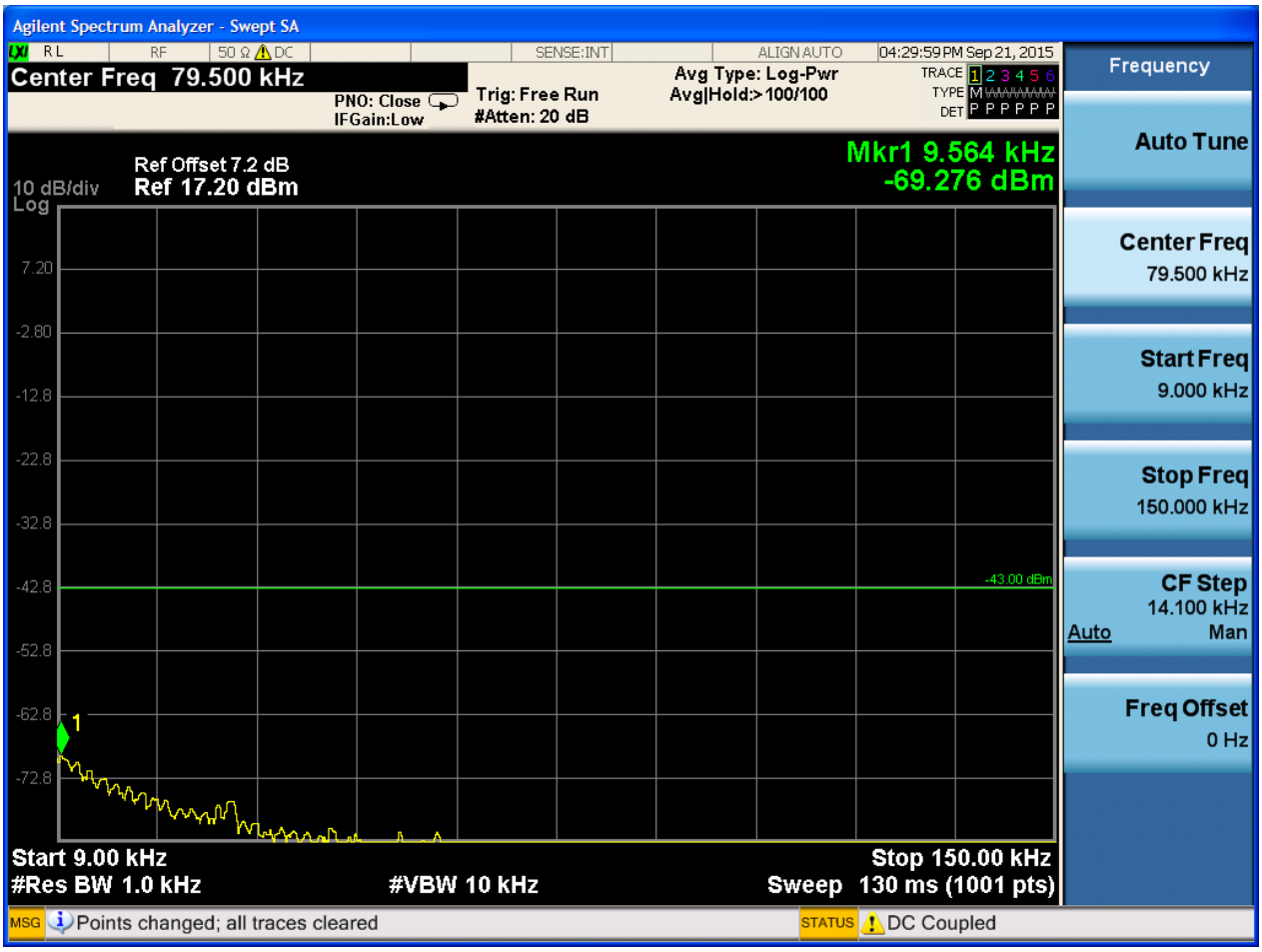
6.1.1.1.3 Test Channel = HCH



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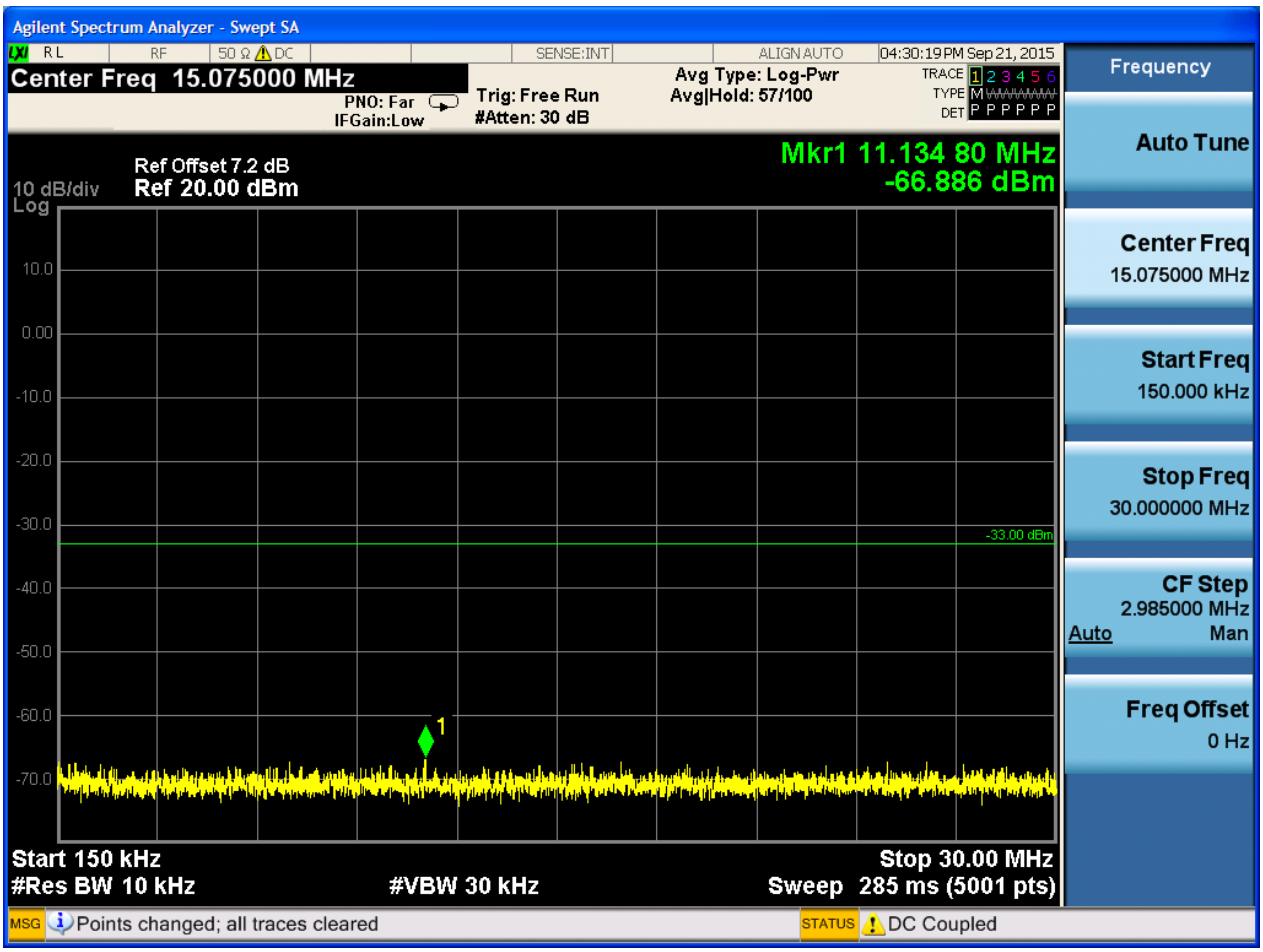

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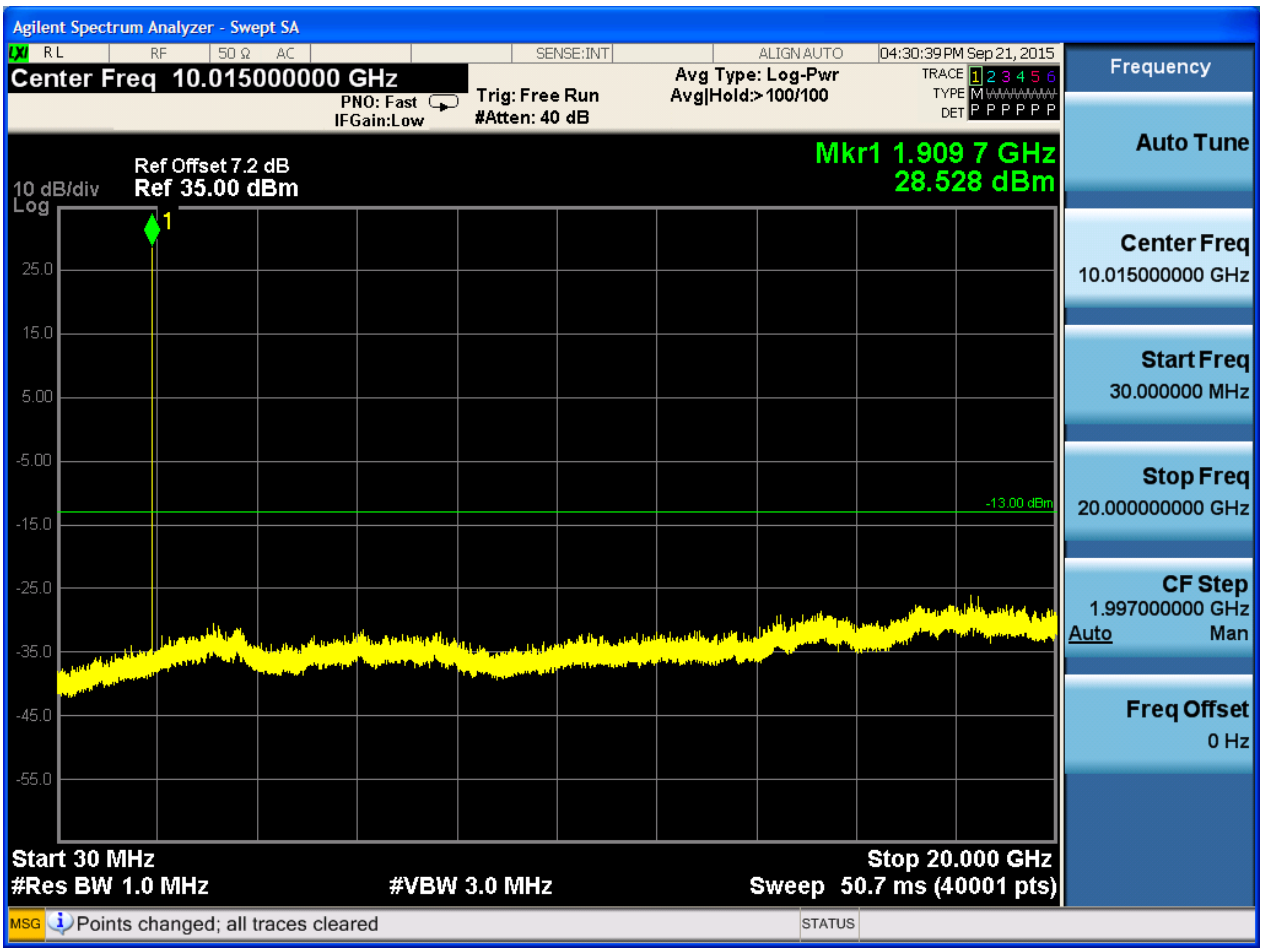

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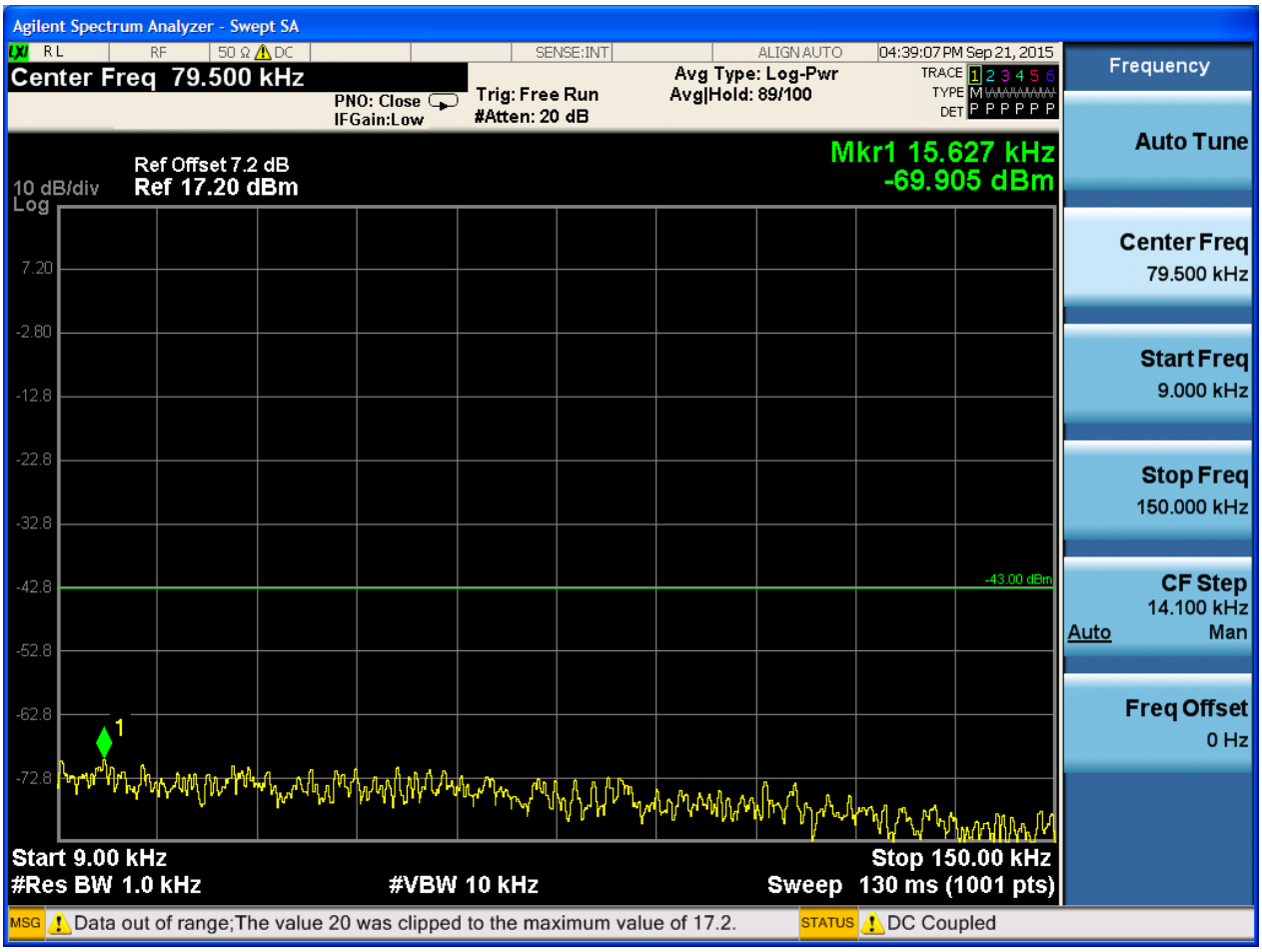
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



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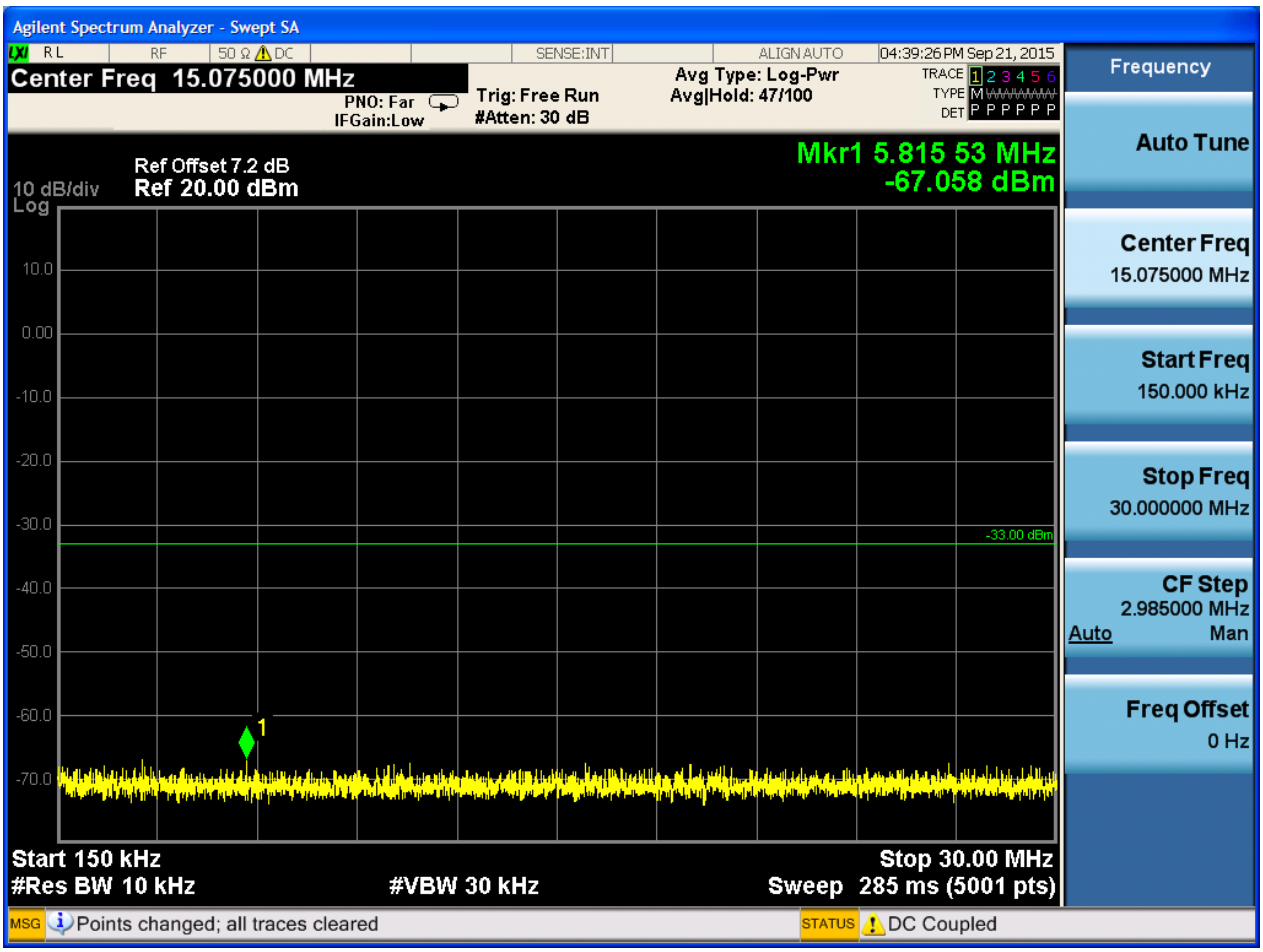

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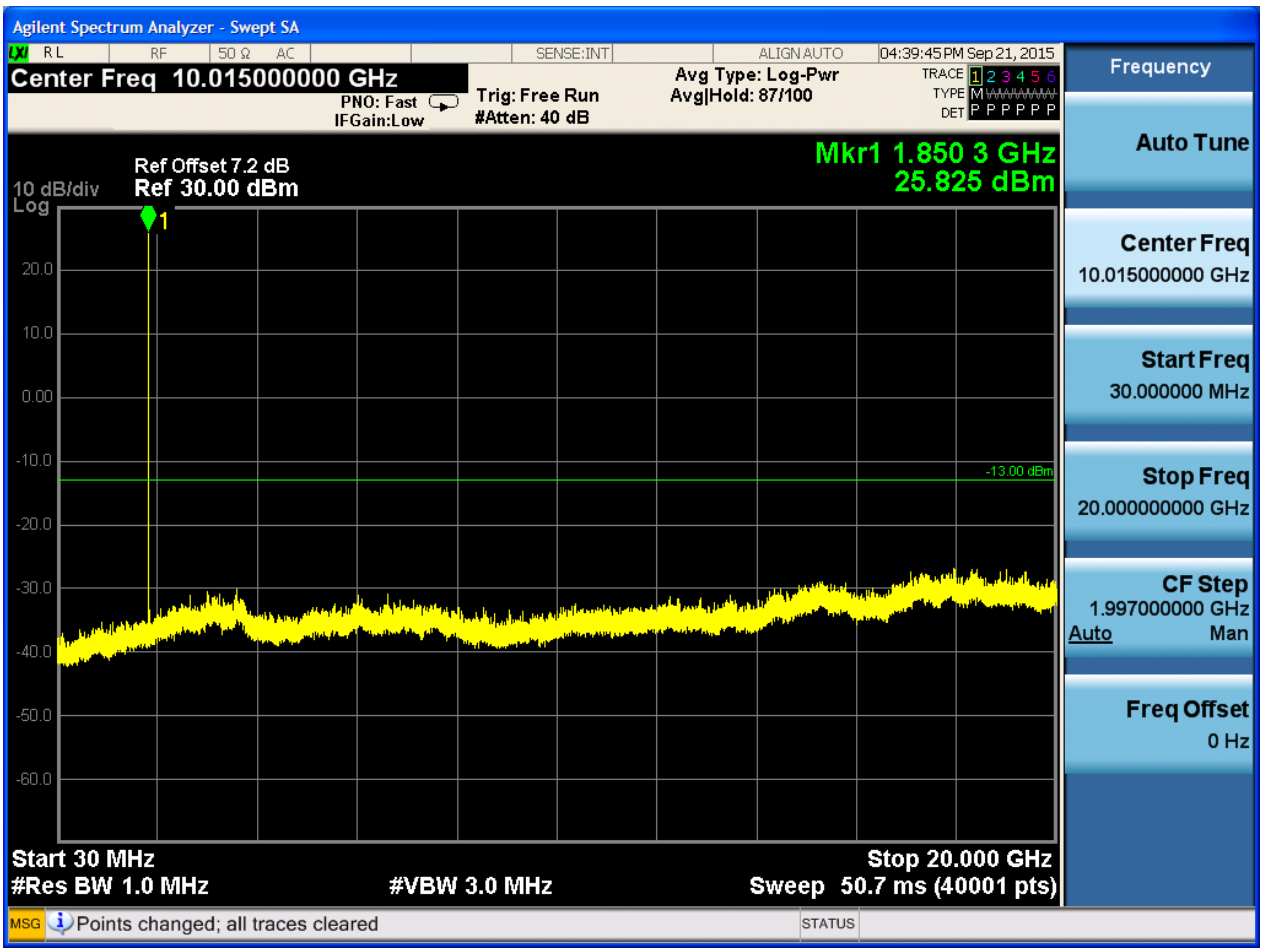

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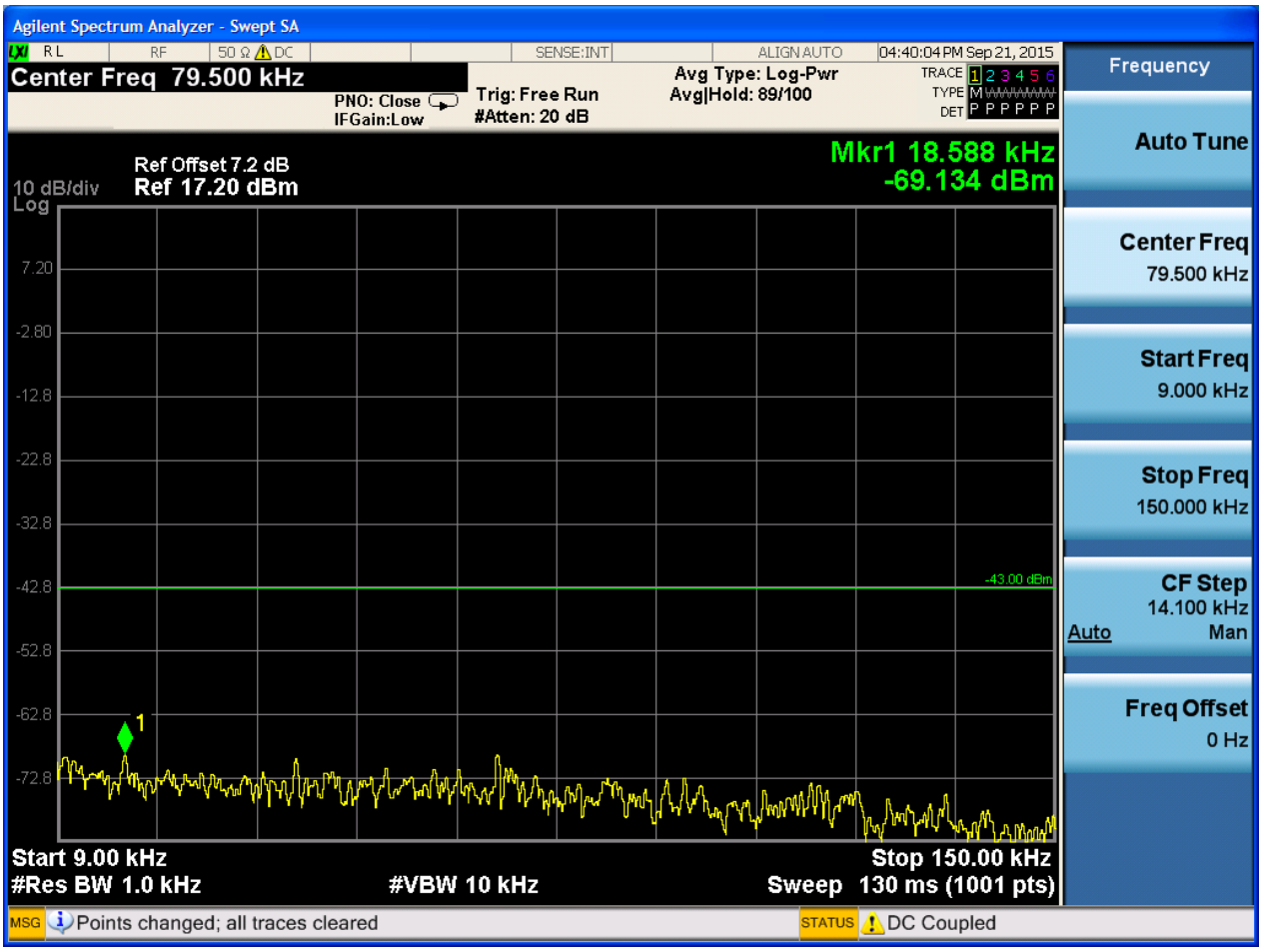
6.1.1.2.2 Test Channel = MCH



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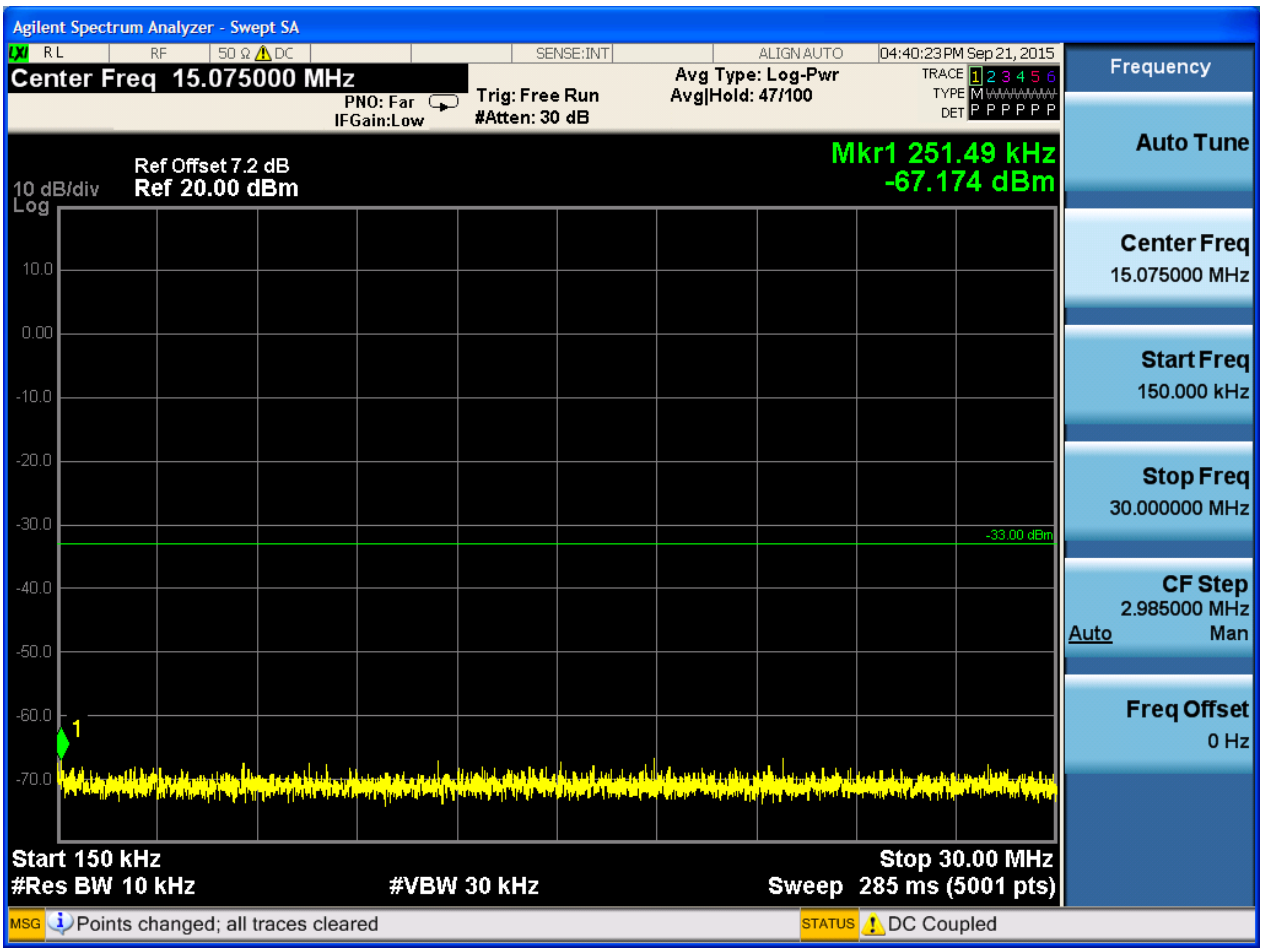

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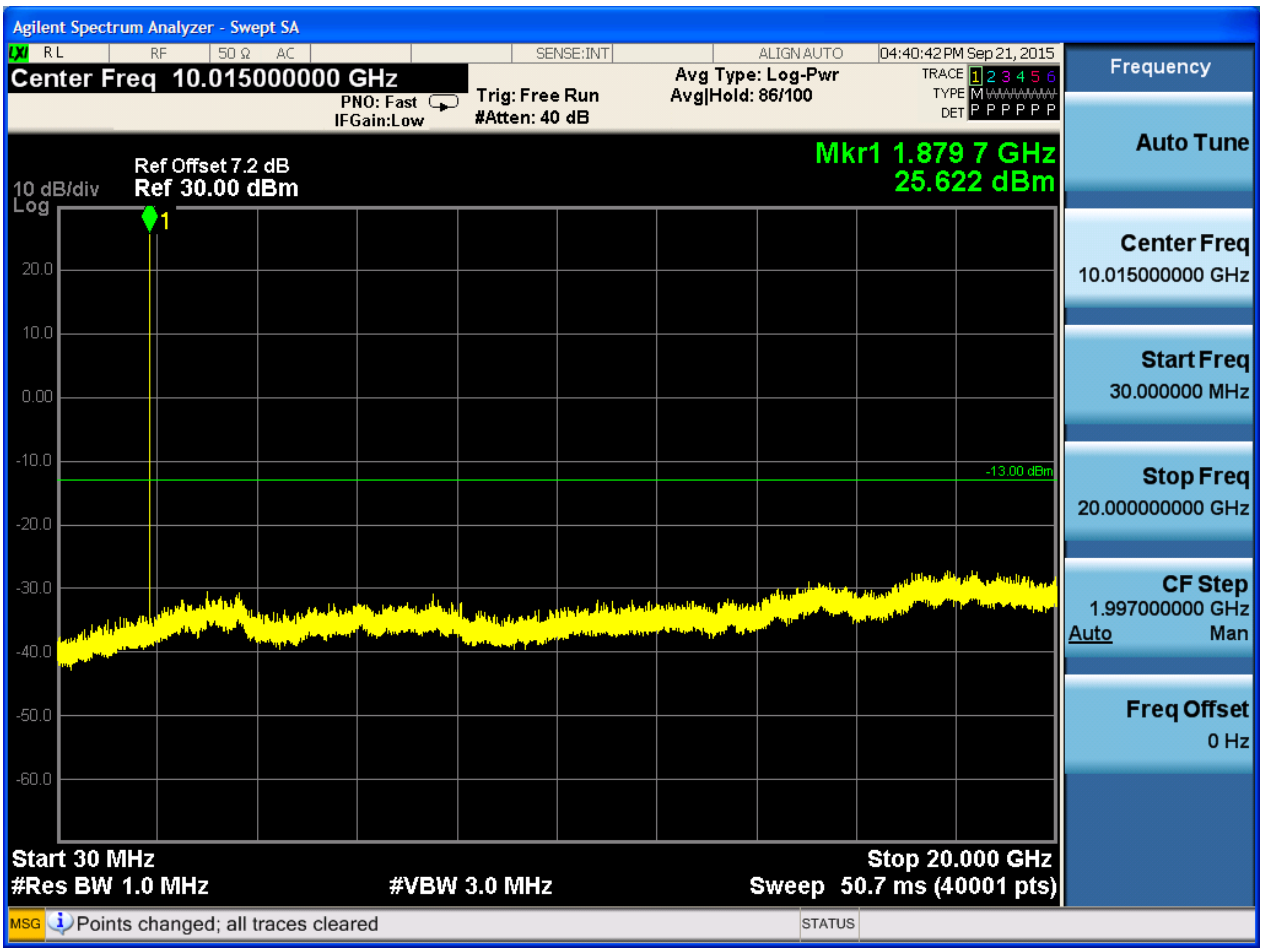

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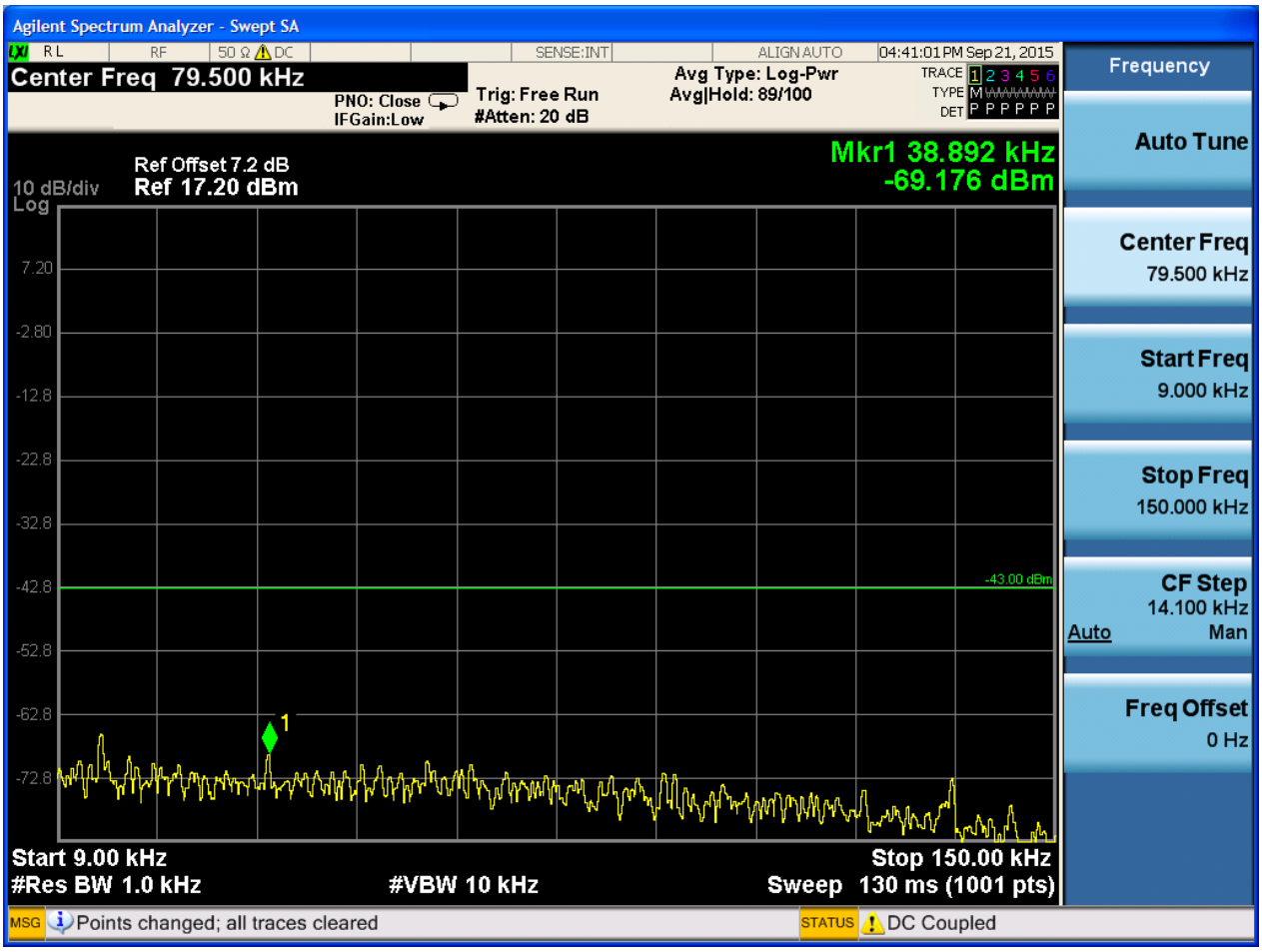
6.1.1.2.3 Test Channel = HCH



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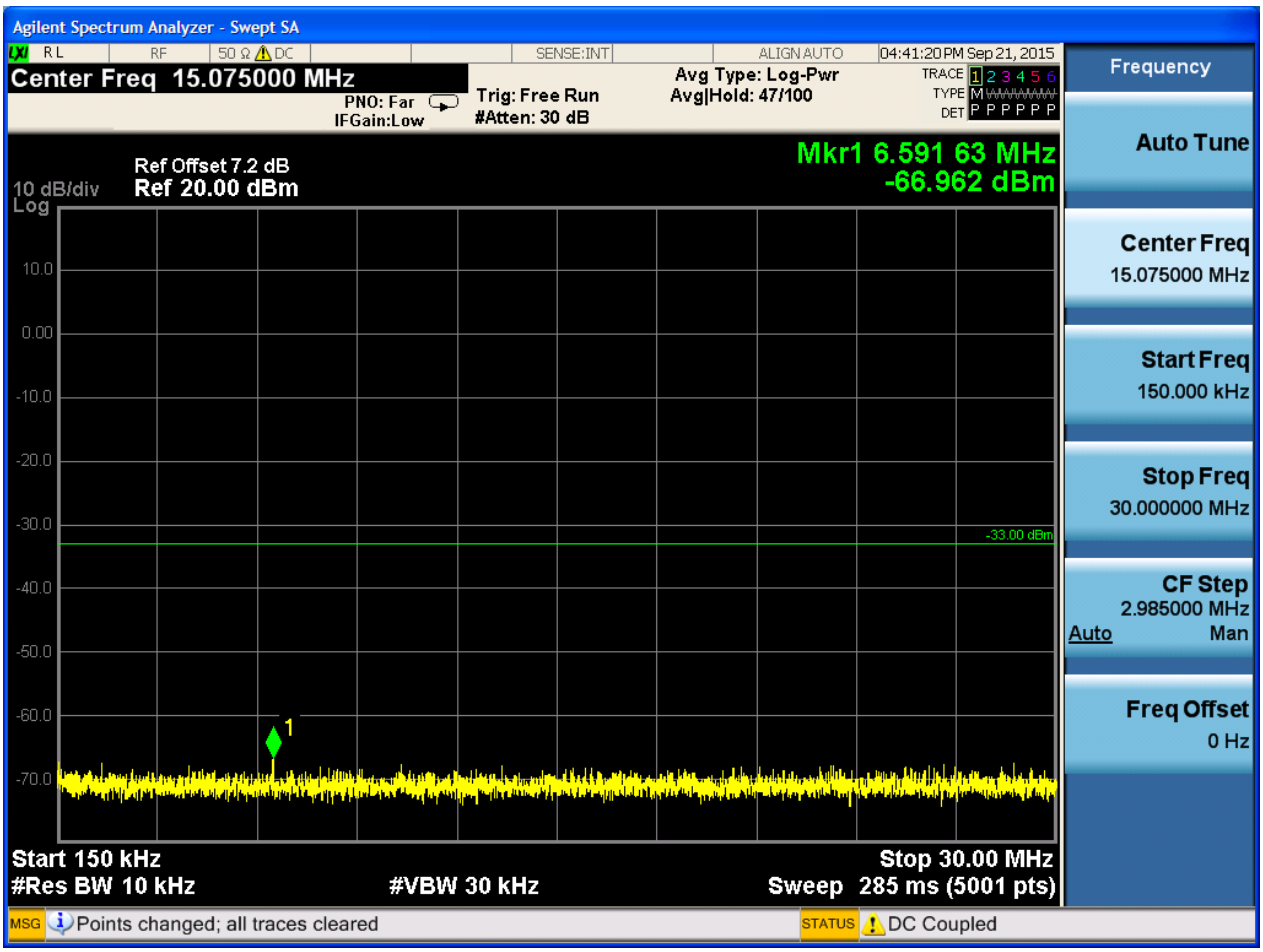

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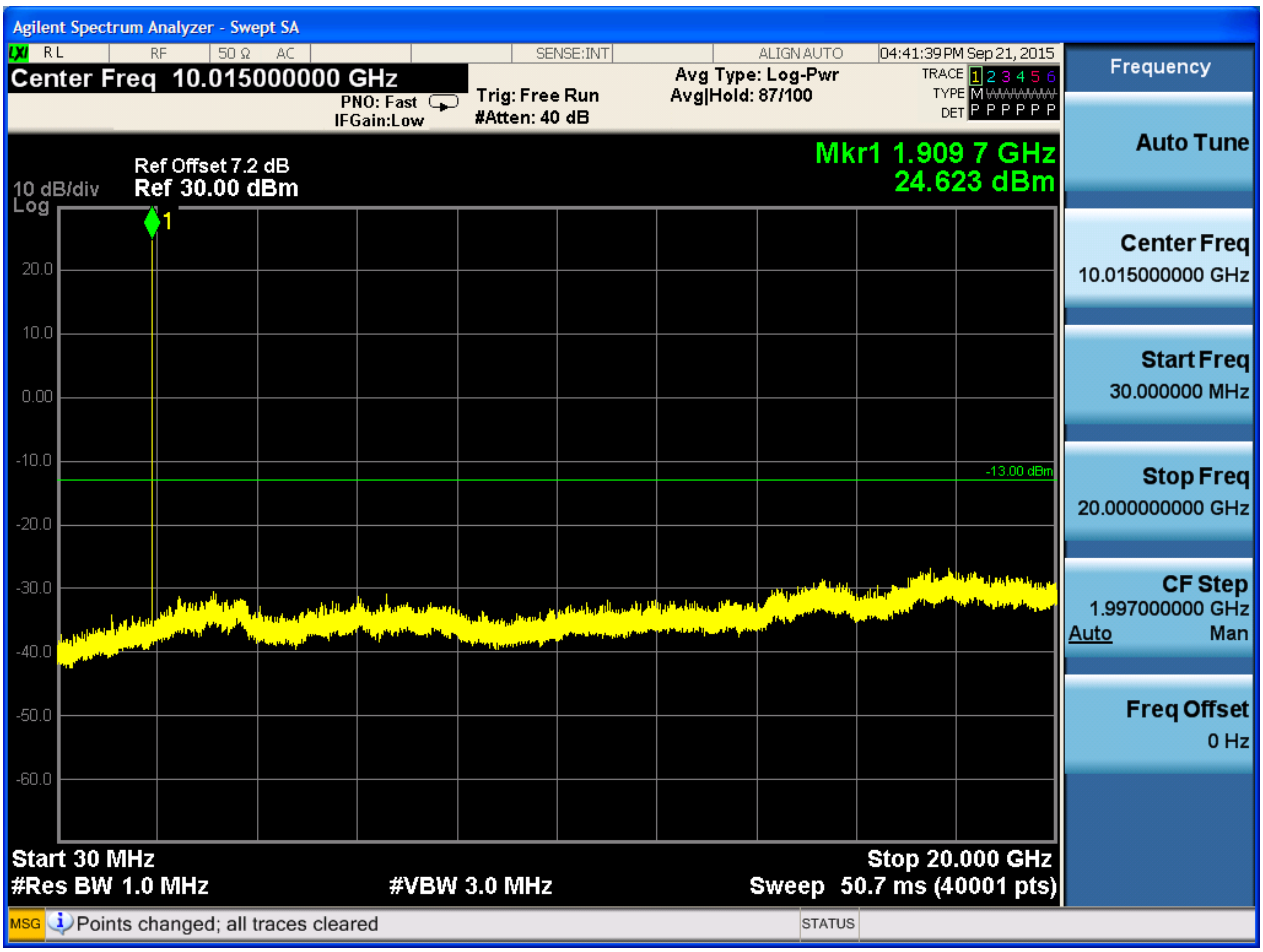

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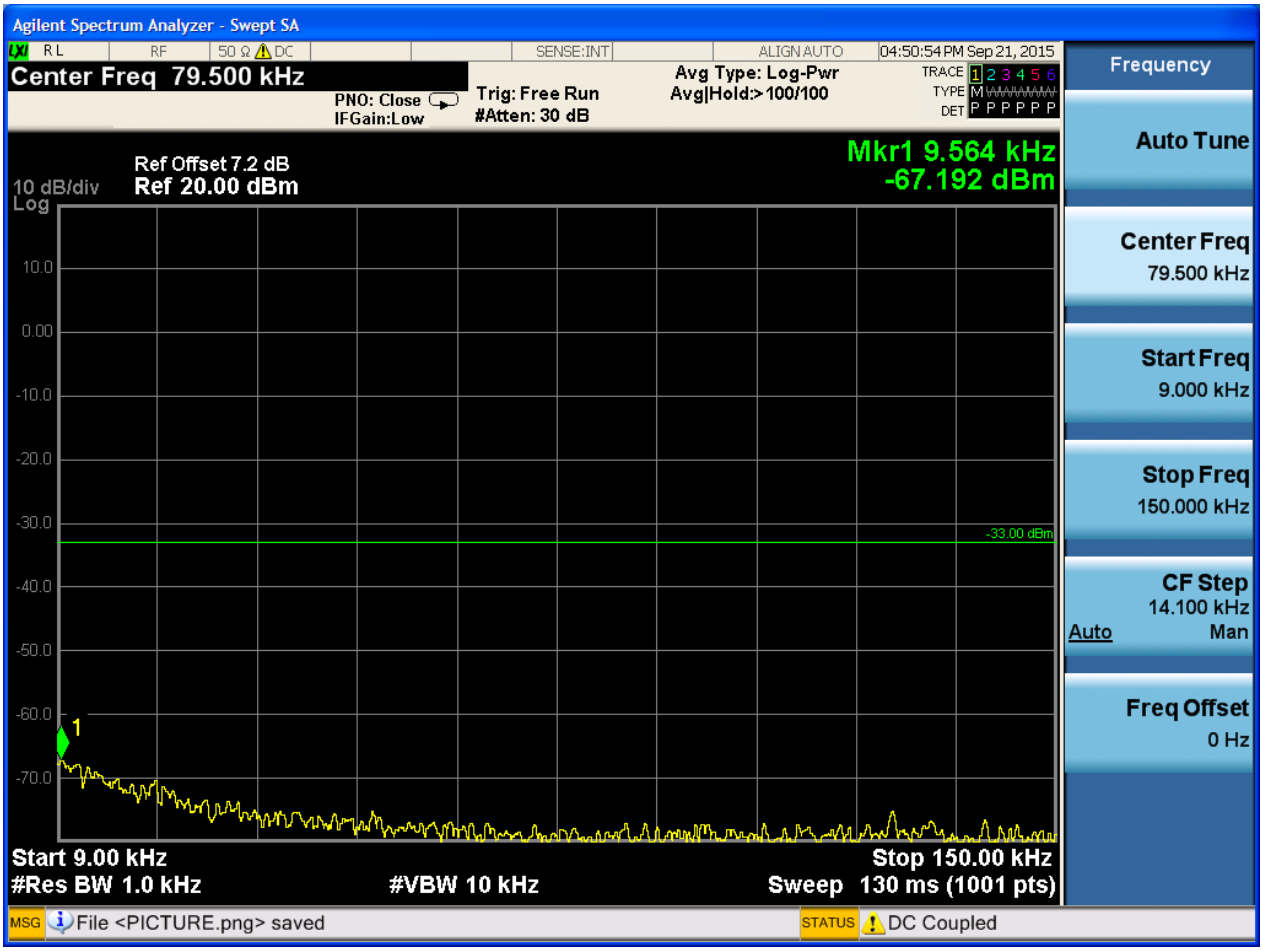
6.1.2 Test Band = GSM850

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



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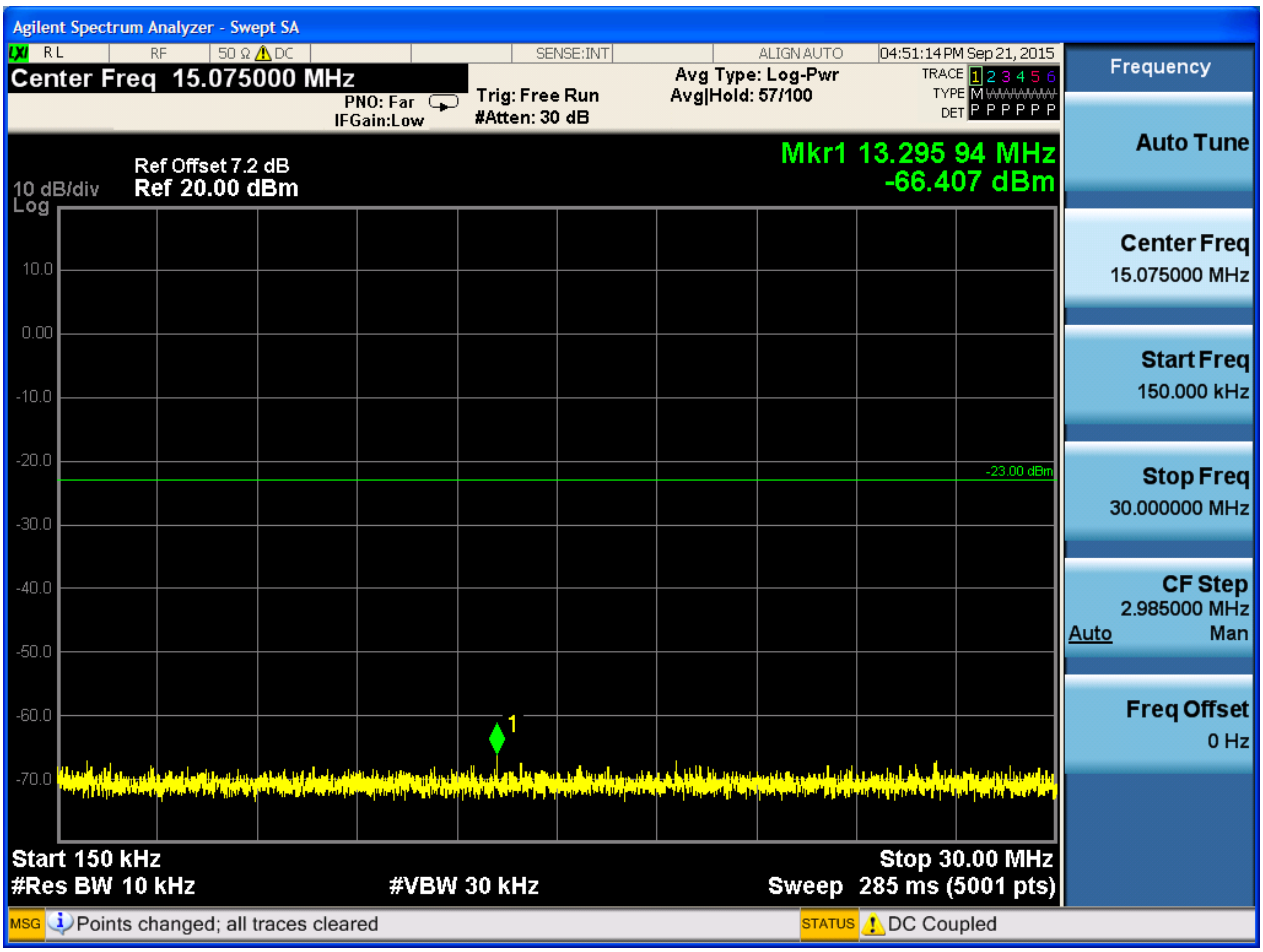

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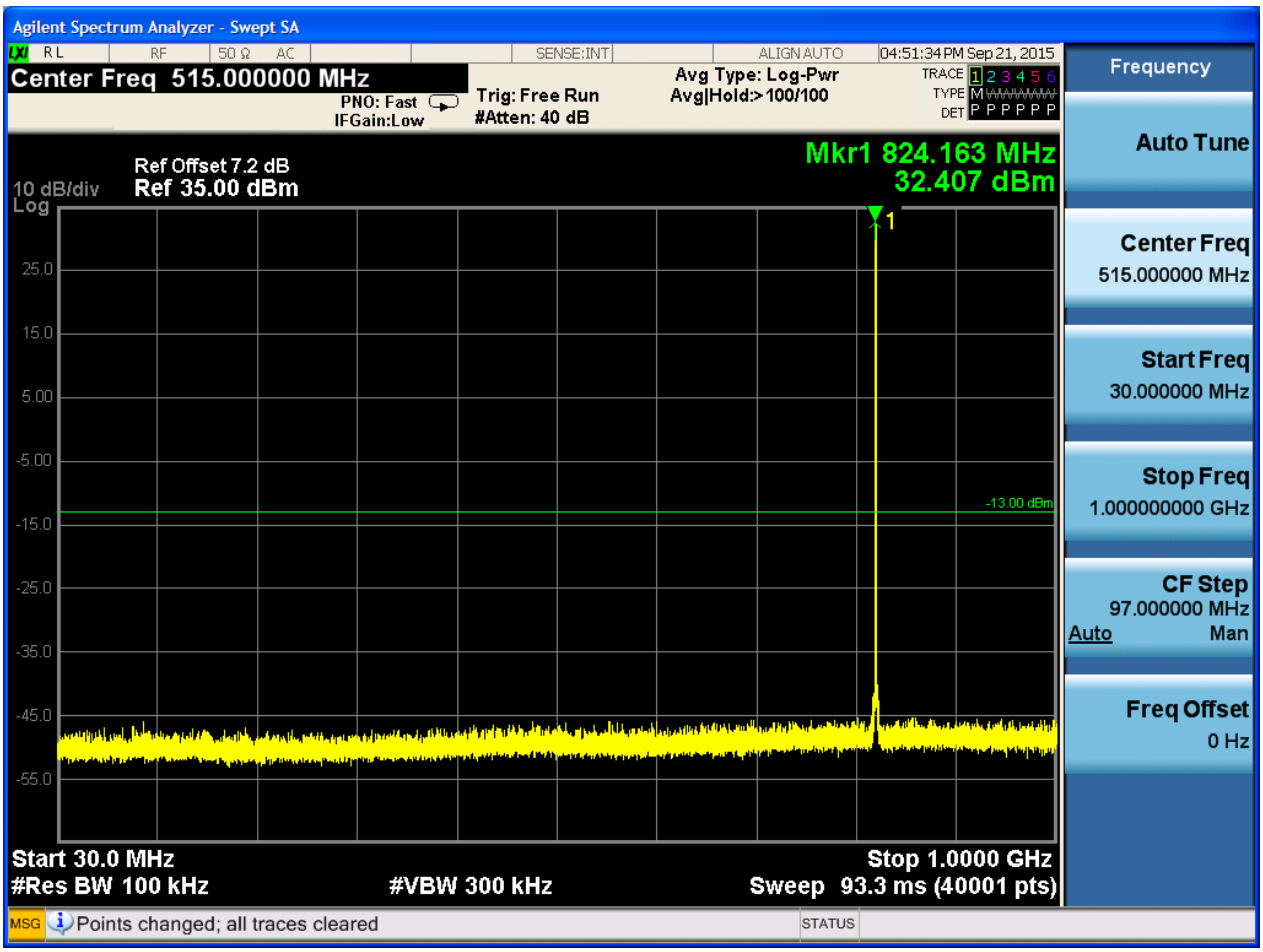

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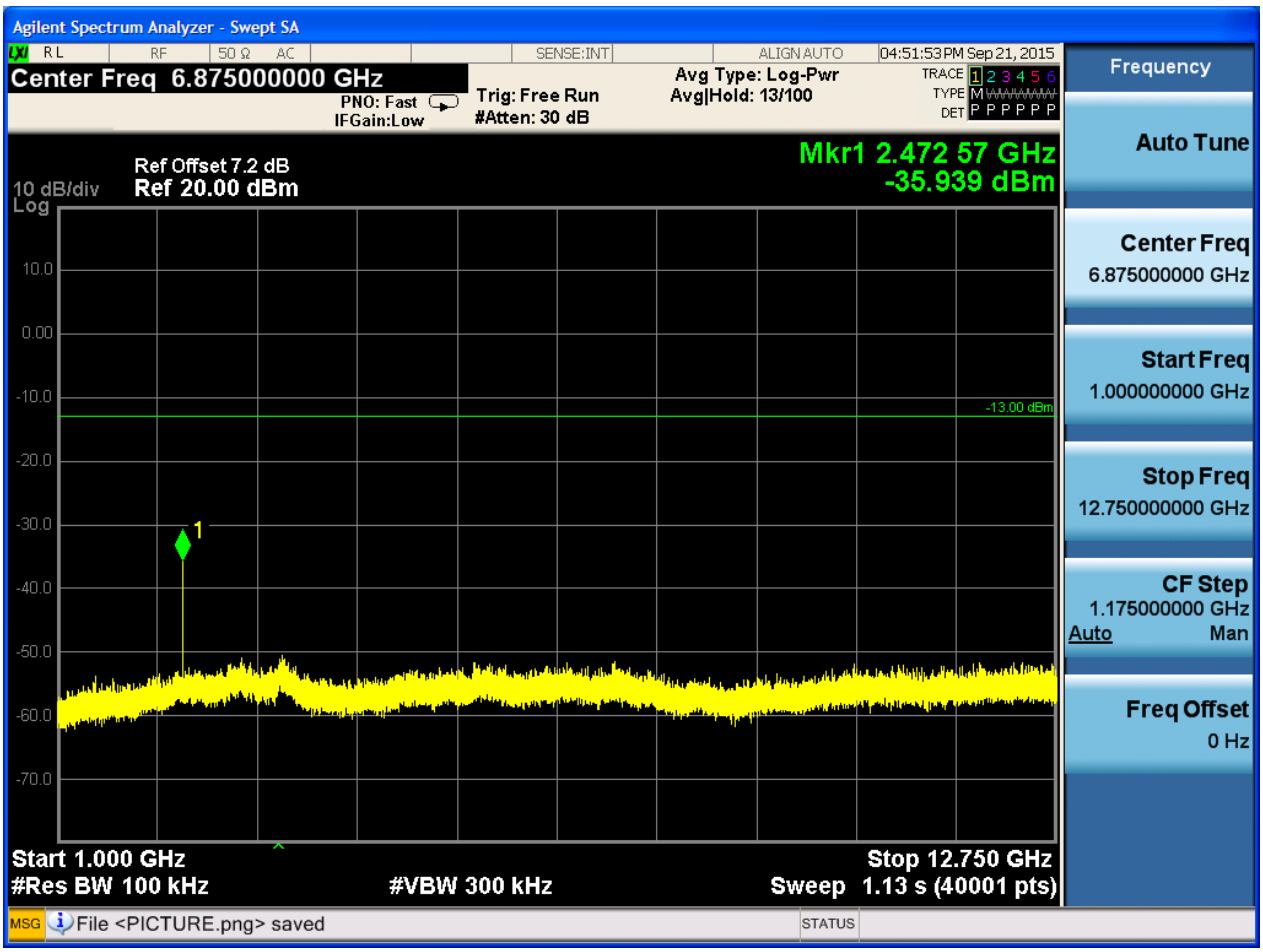

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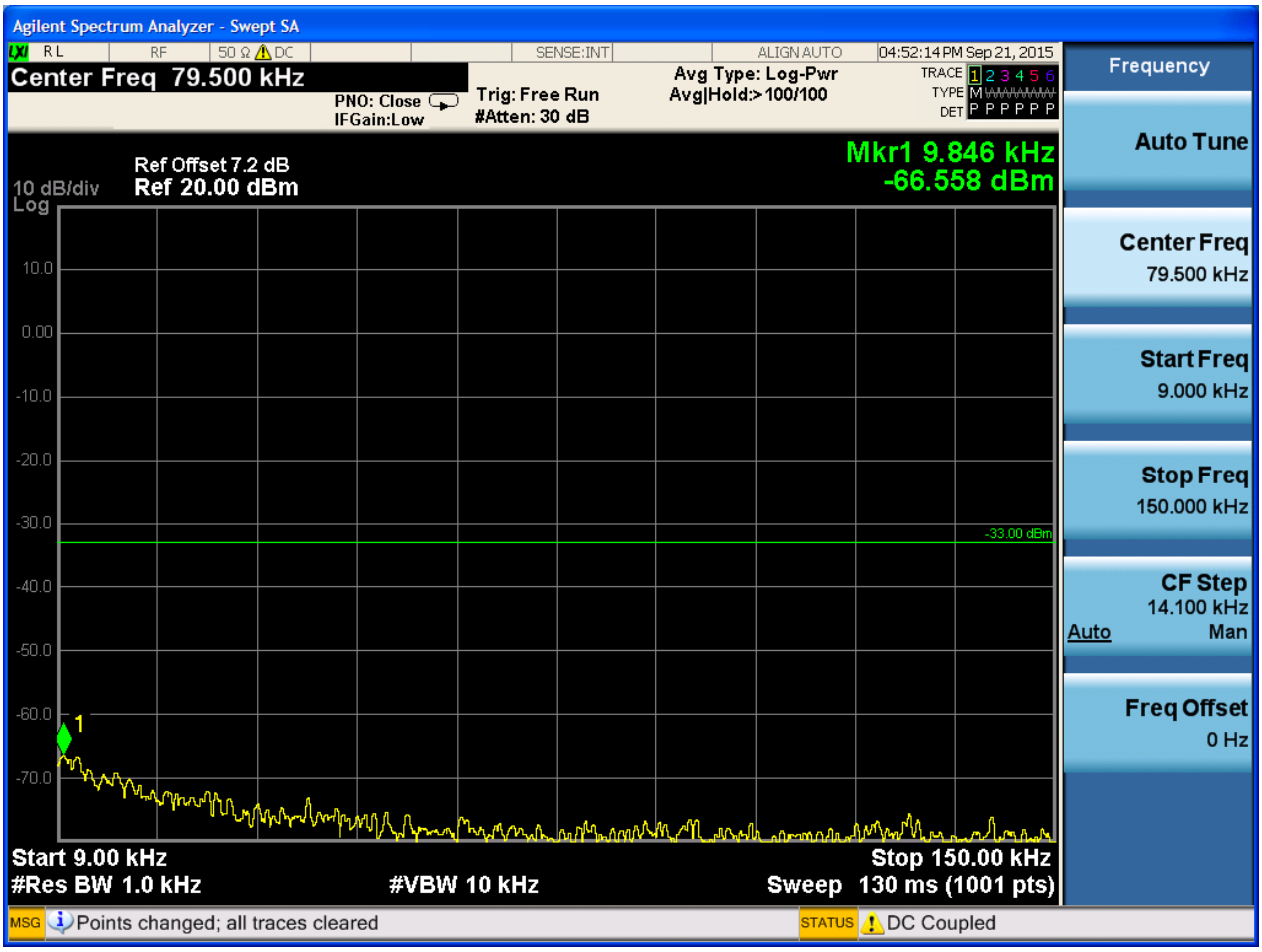
6.1.2.1.2 Test Channel = MCH



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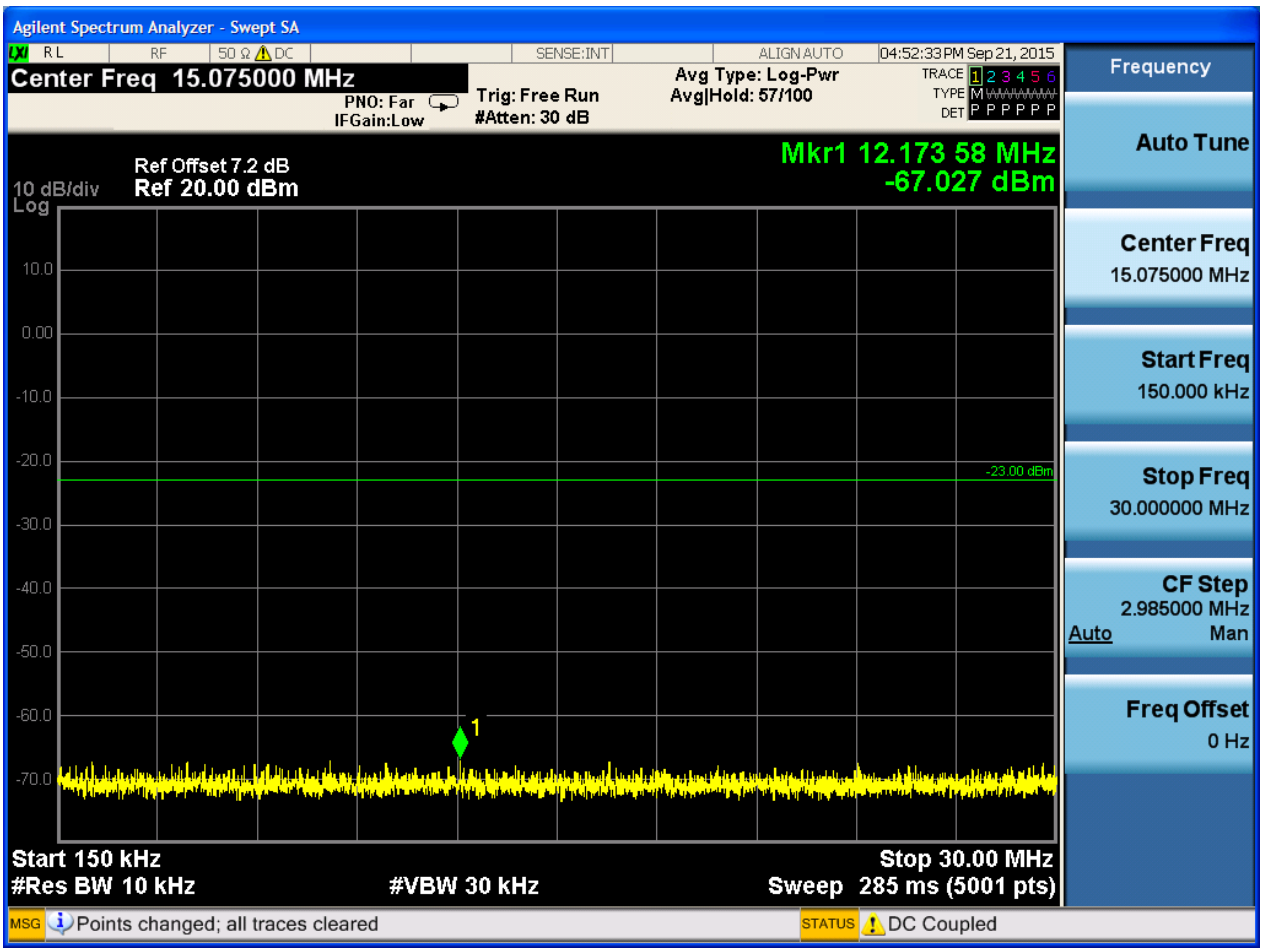

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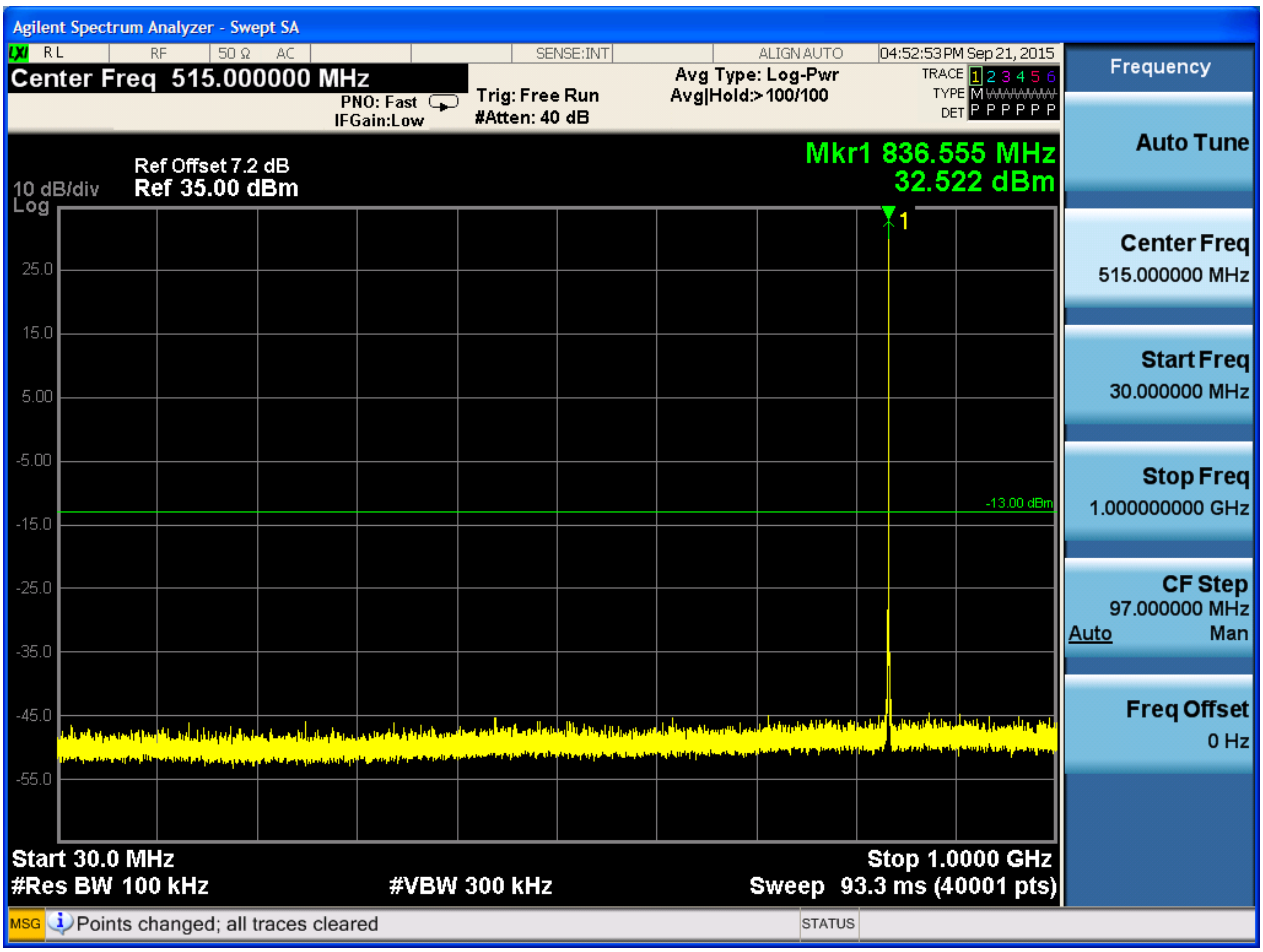

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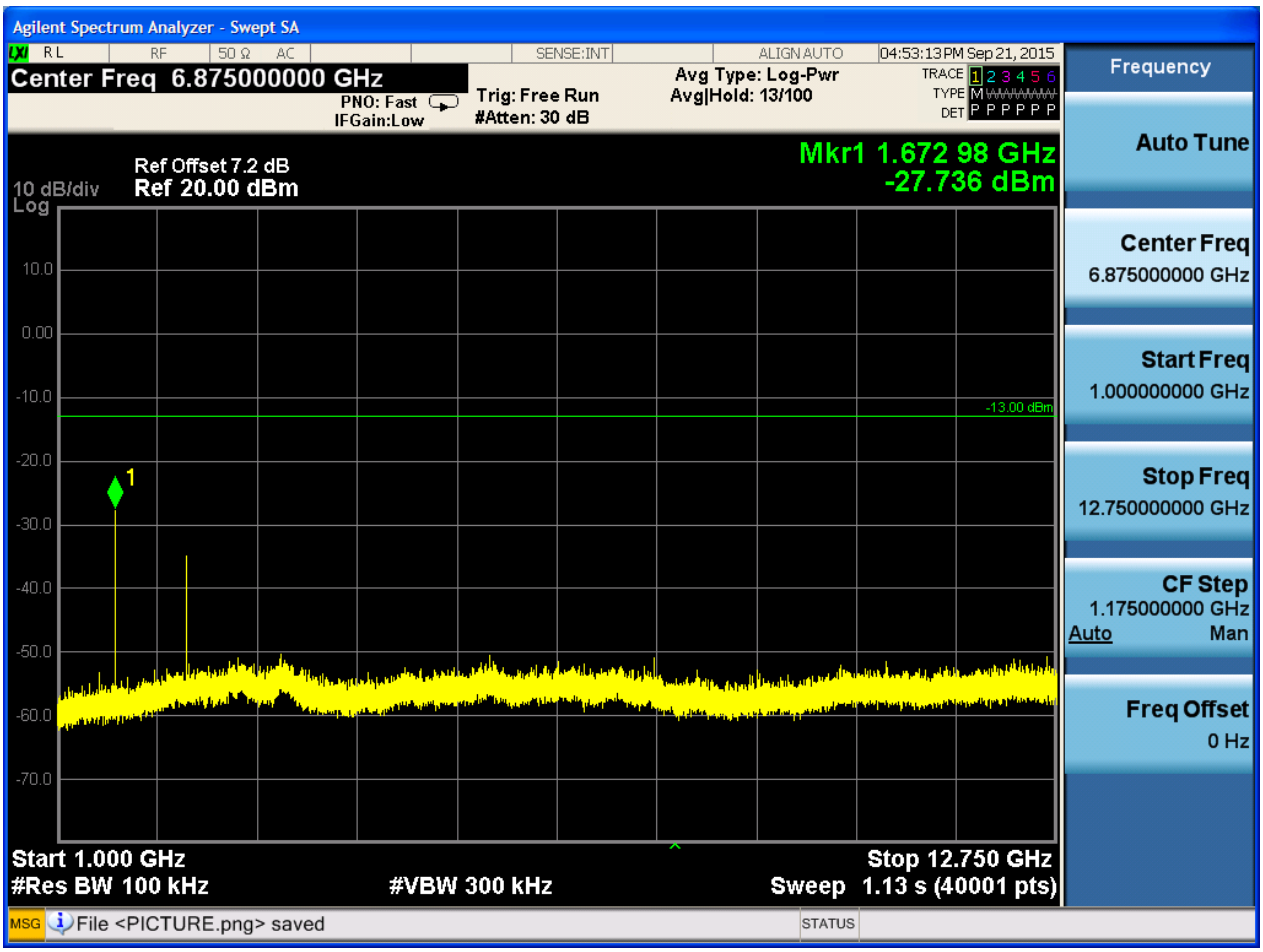

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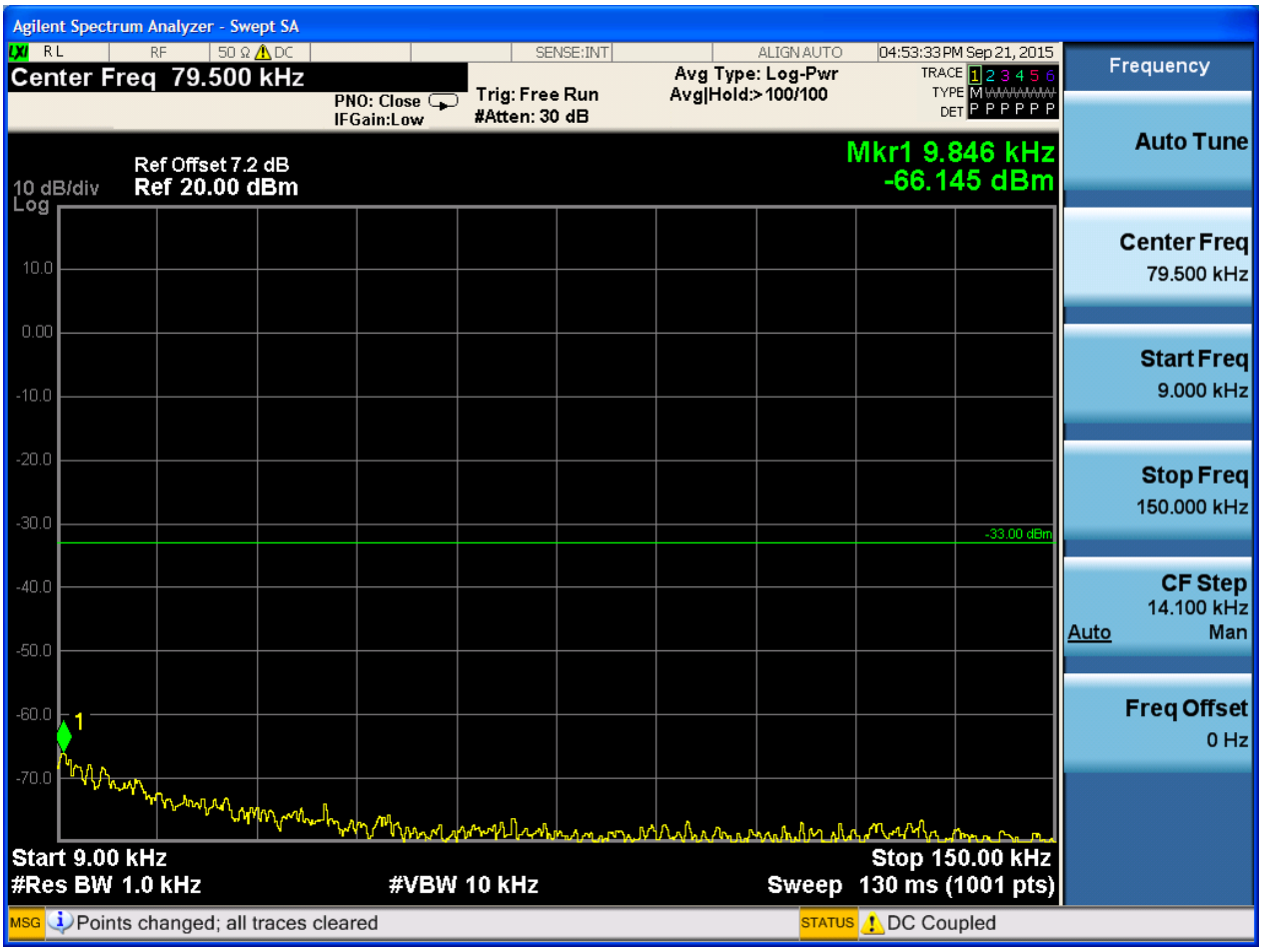
6.1.2.1.3 Test Channel = HCH



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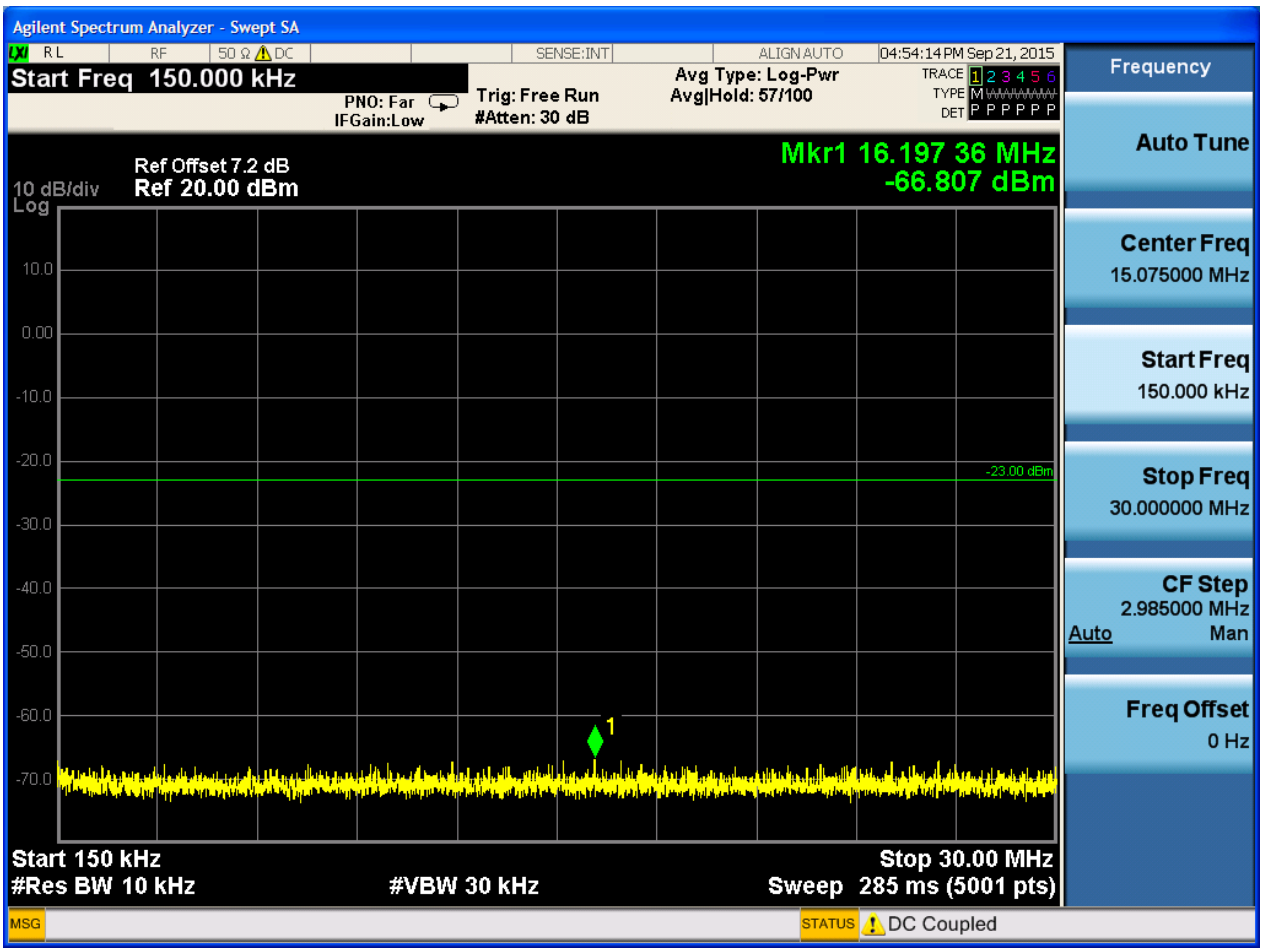

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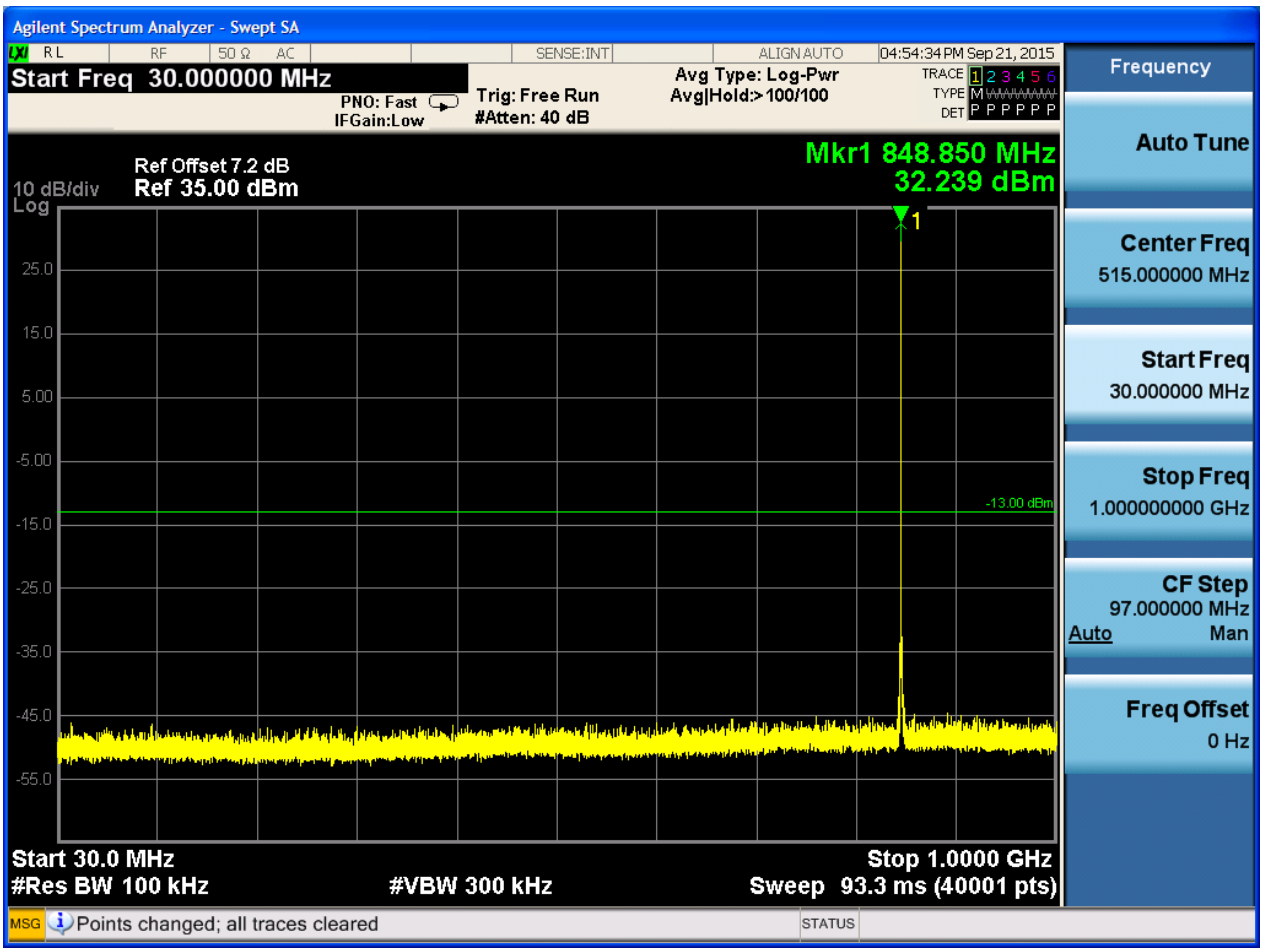

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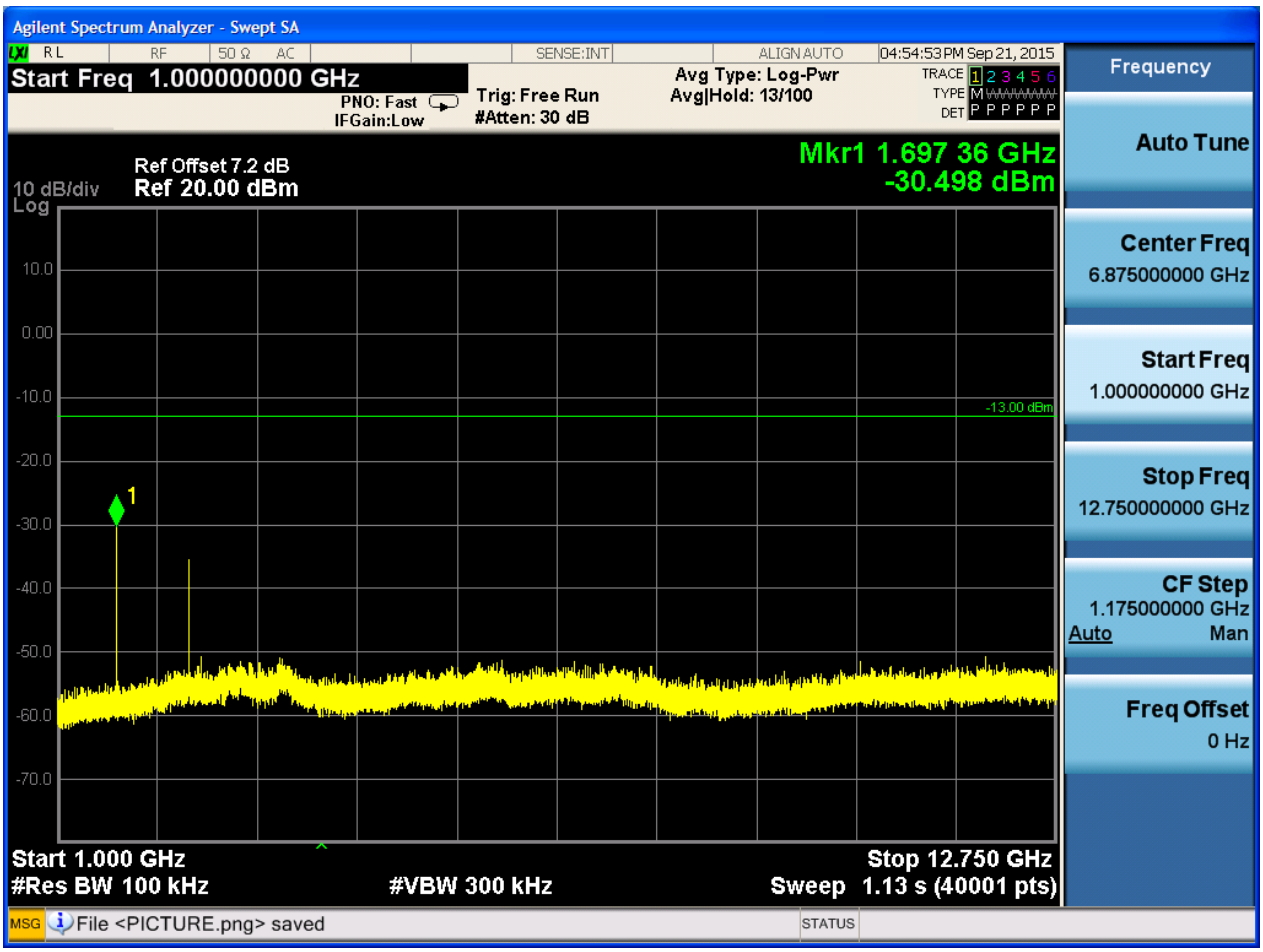

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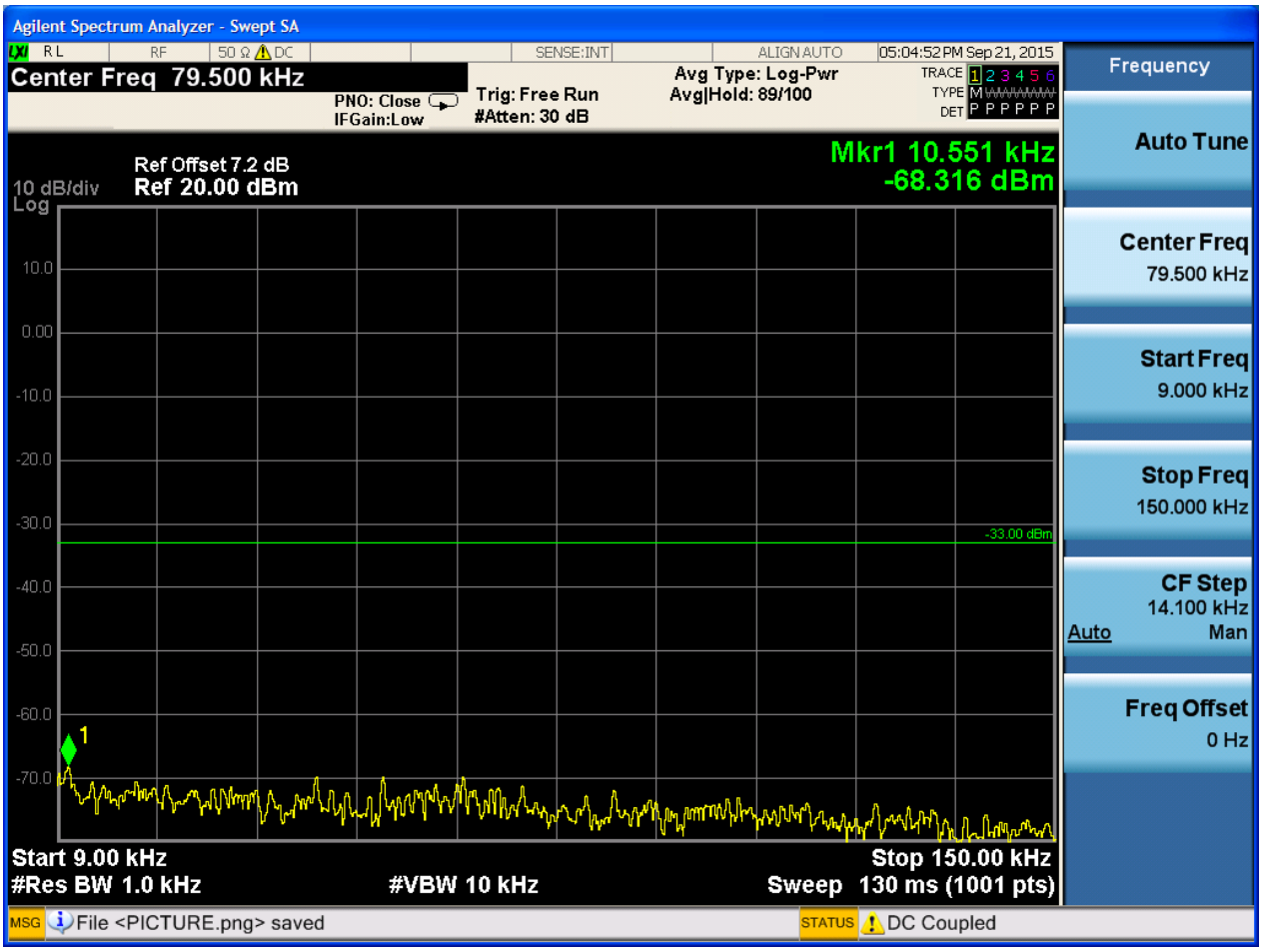
6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH



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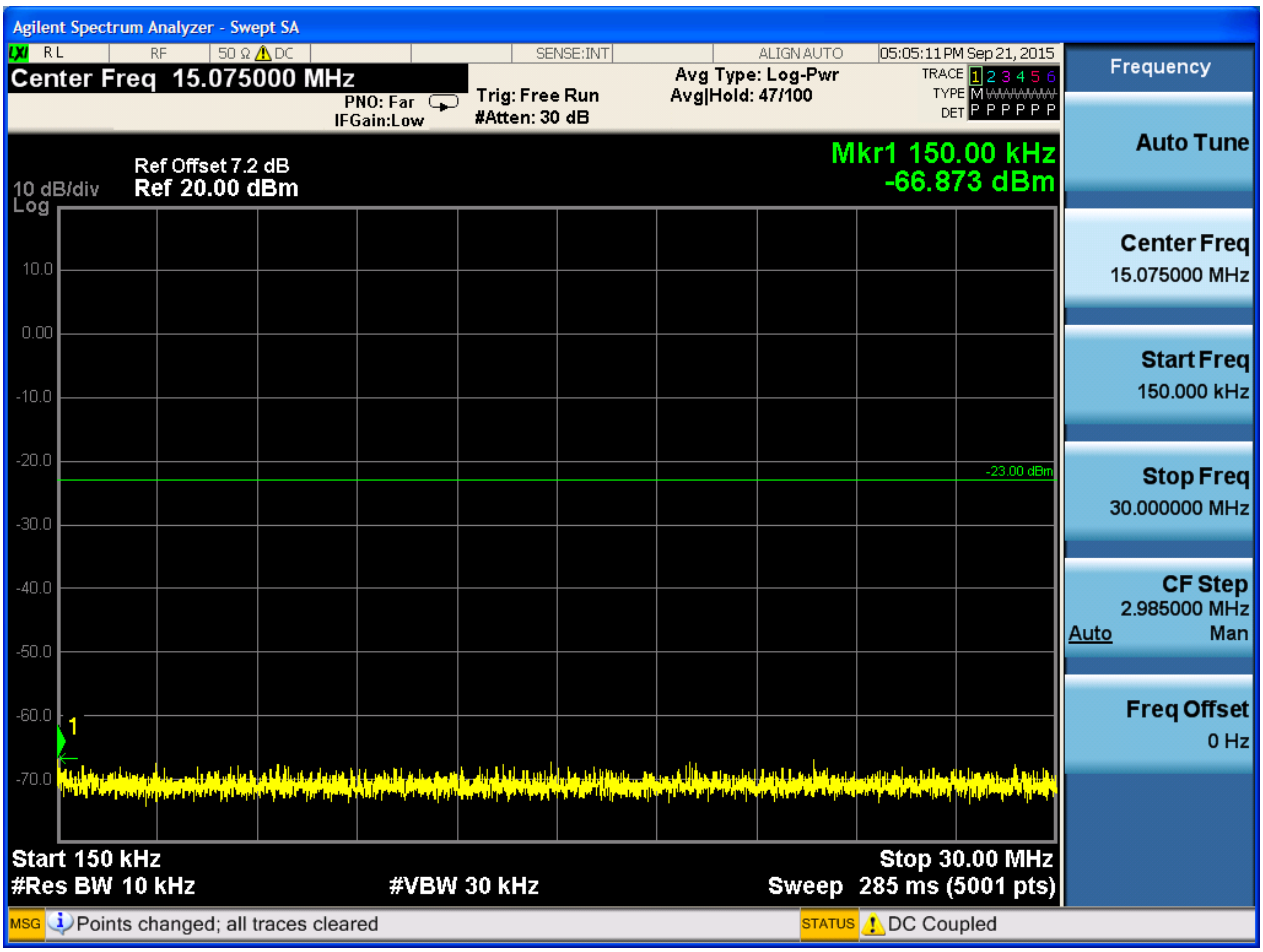

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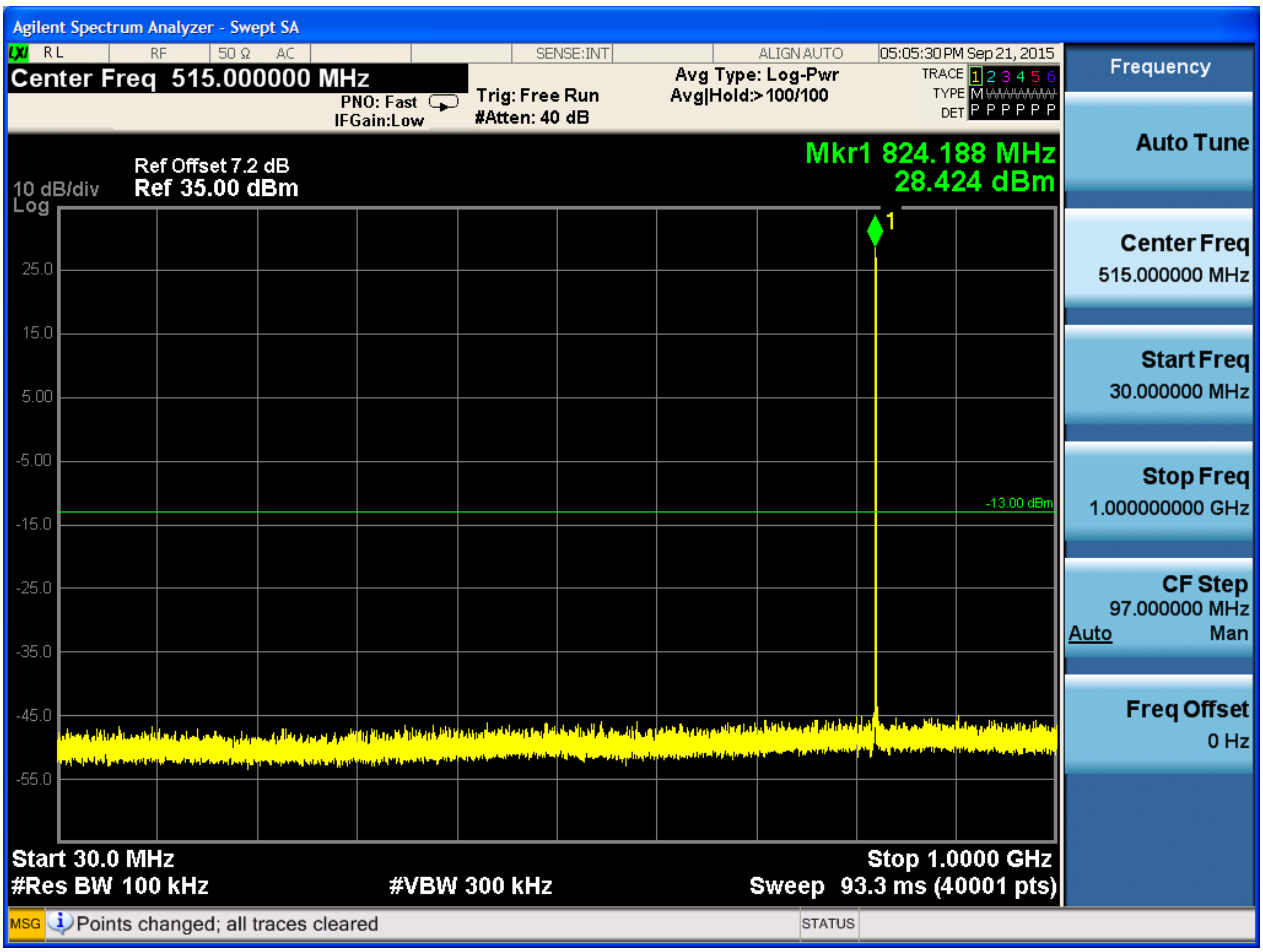

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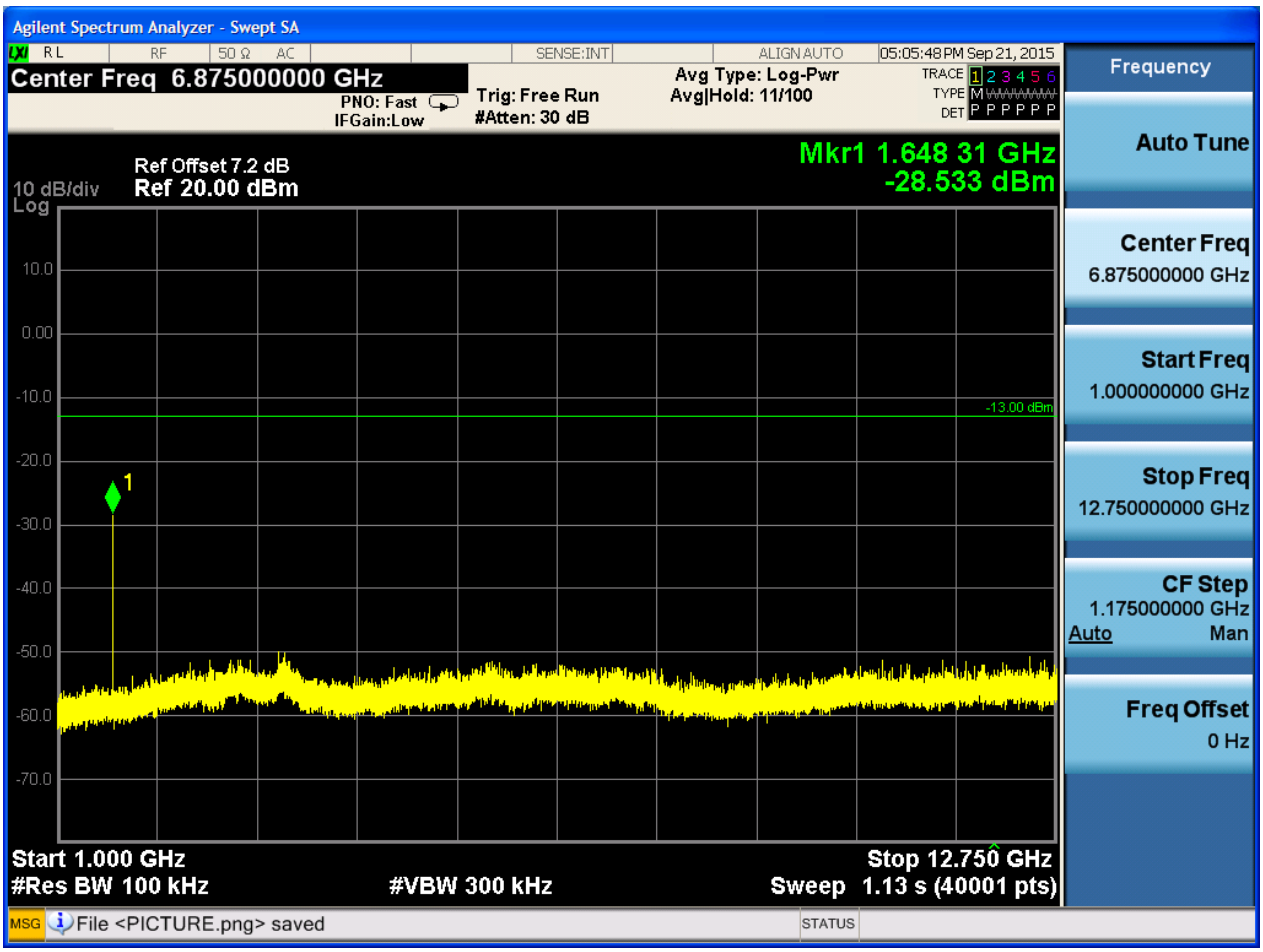

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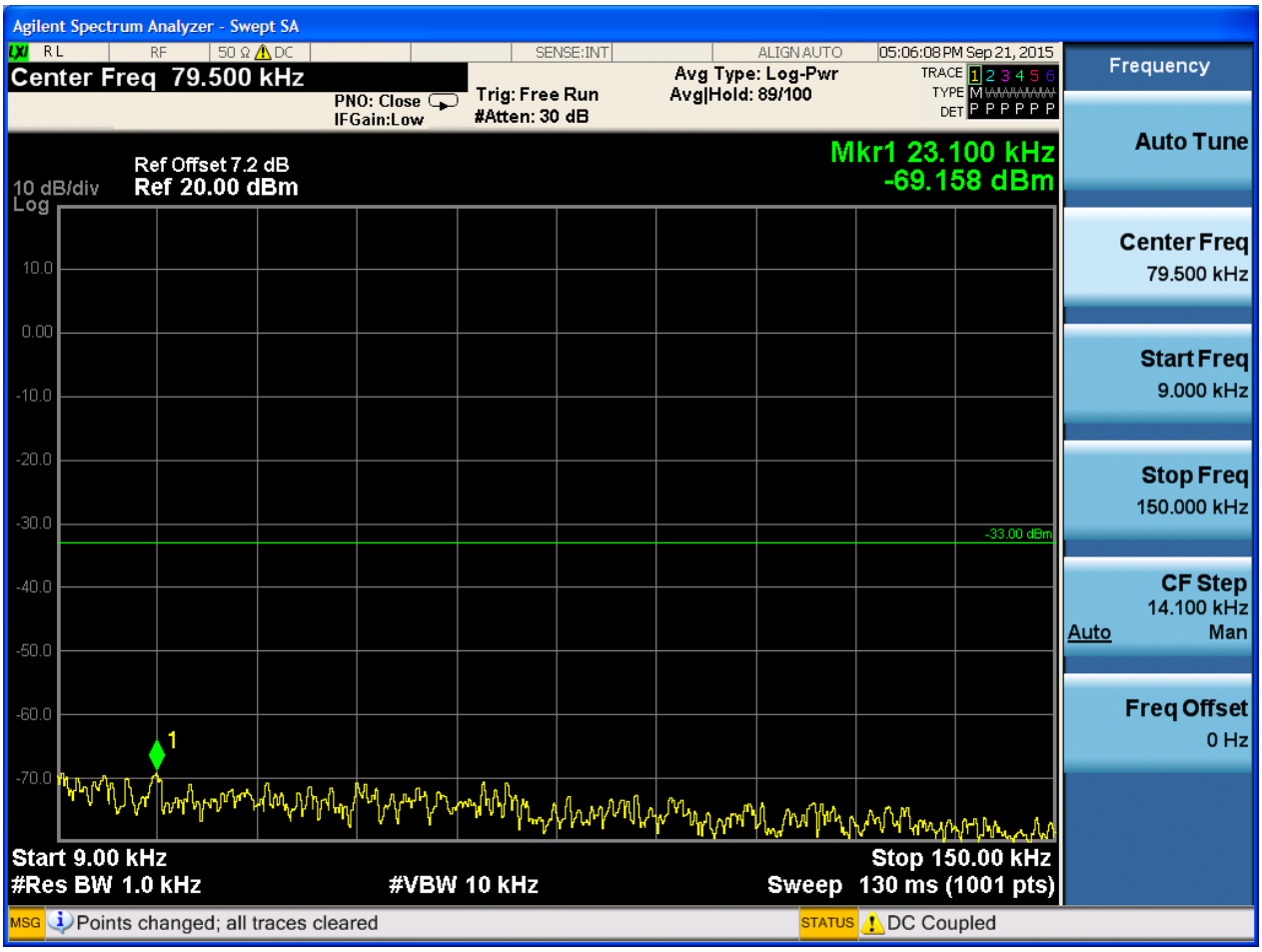
6.1.2.2.2 Test Channel = MCH



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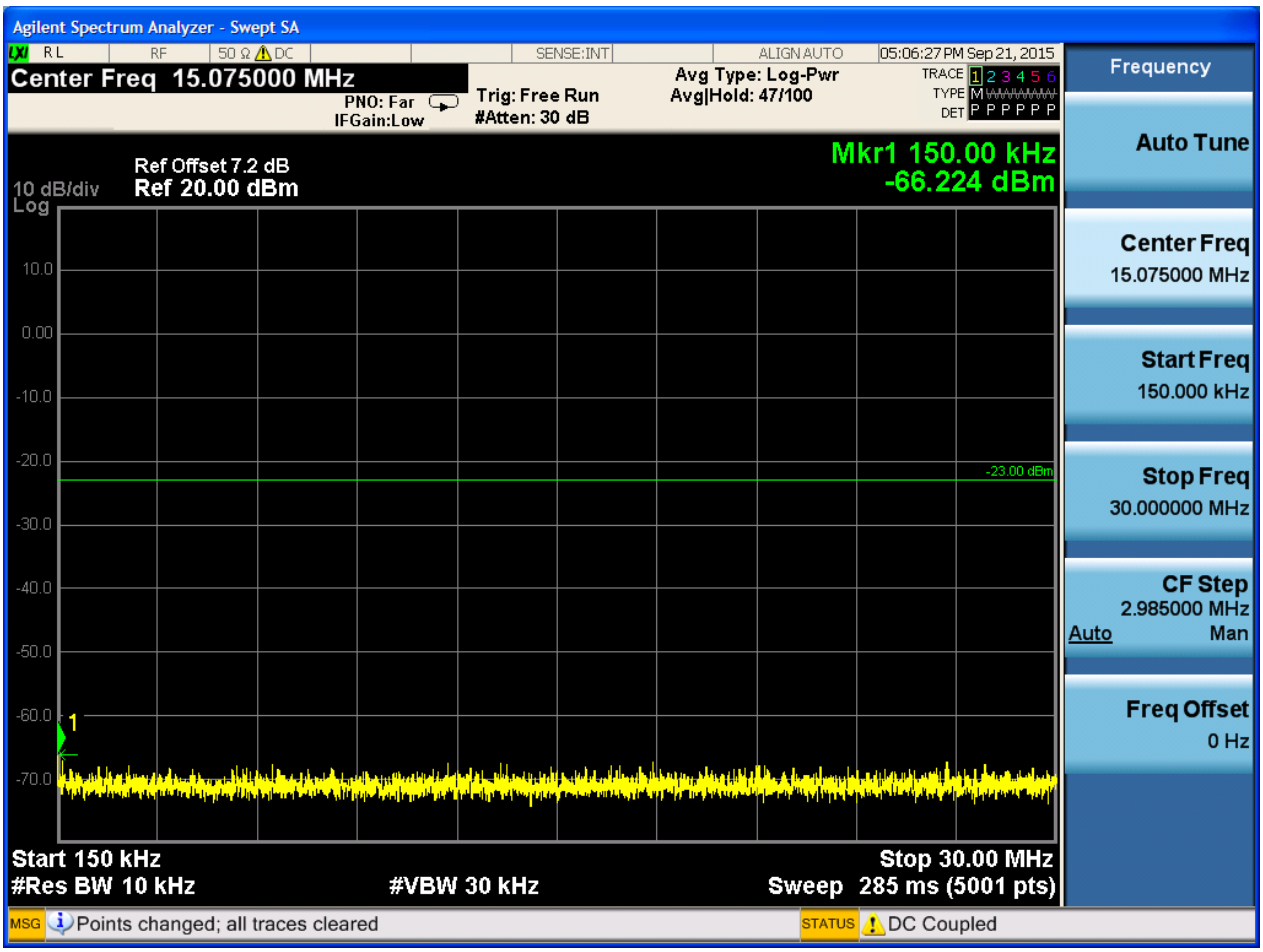

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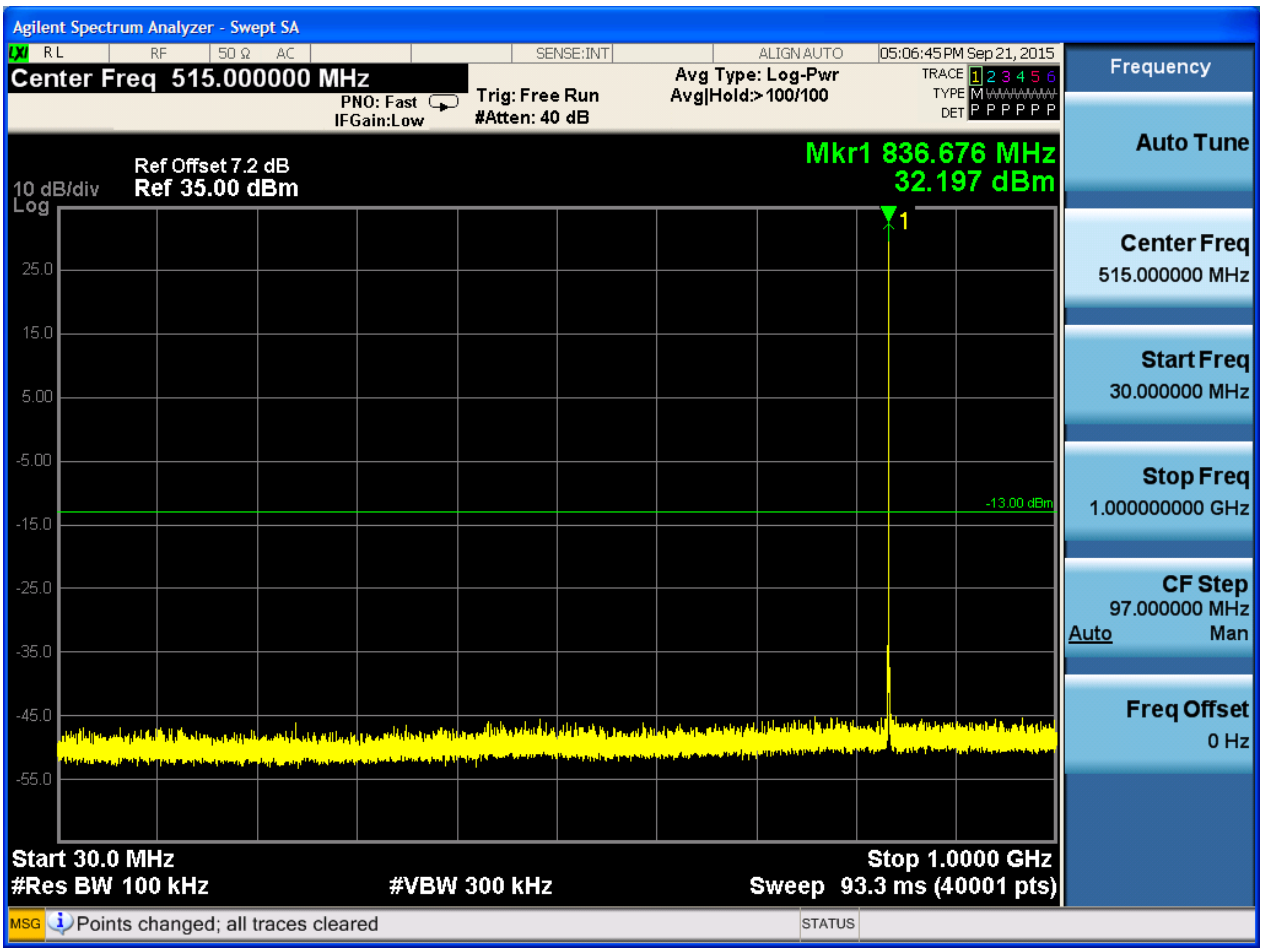

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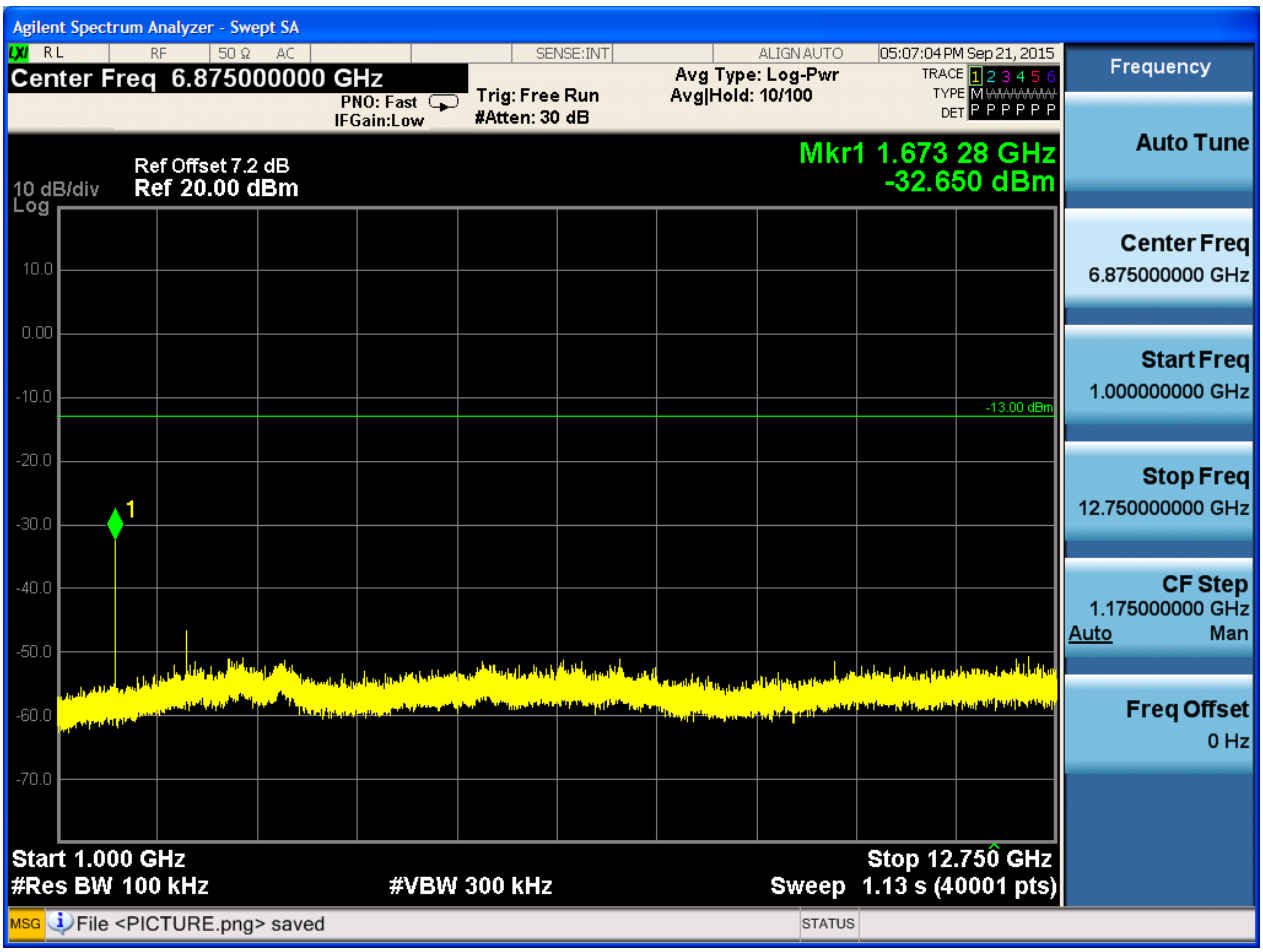

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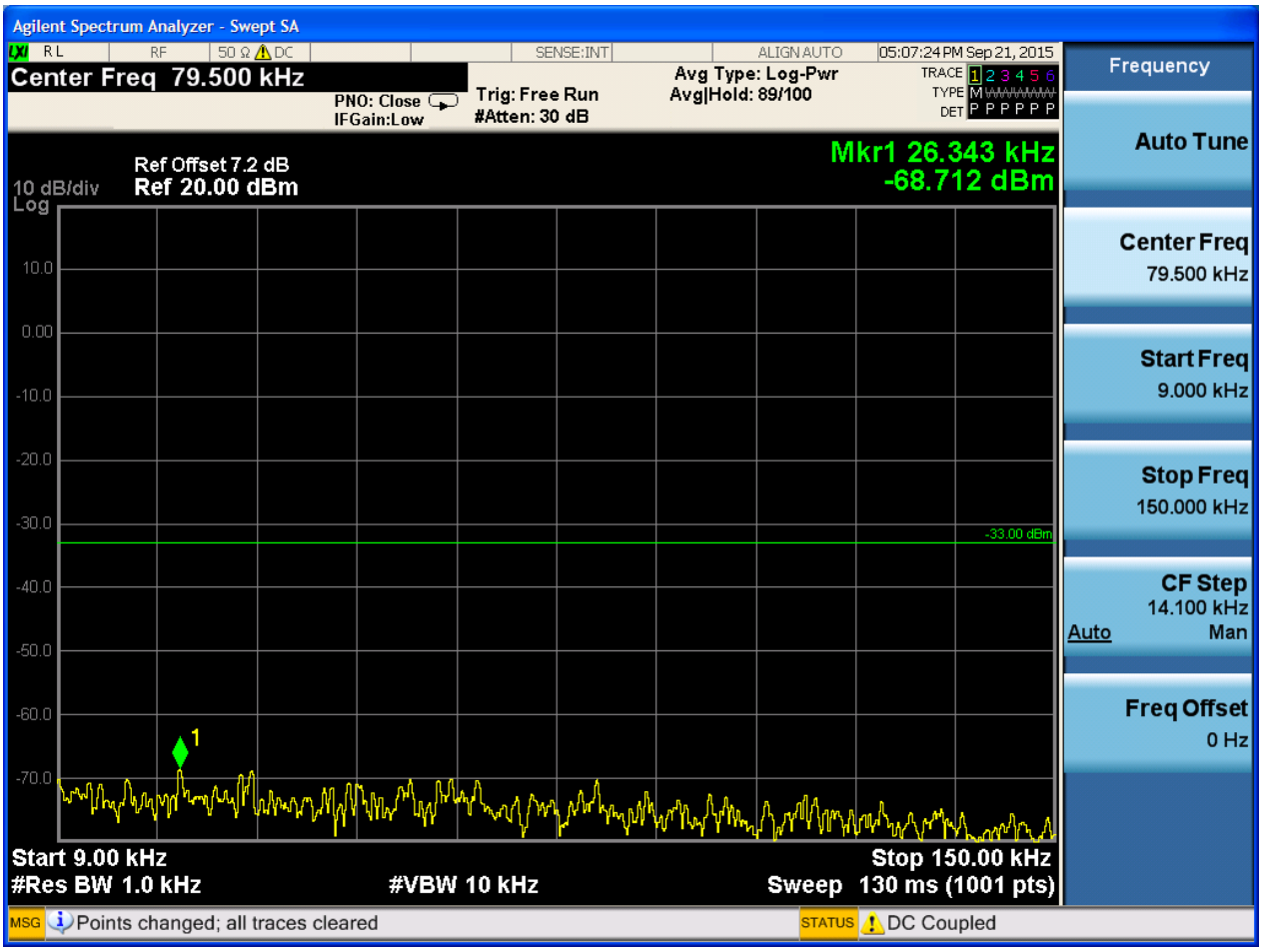
6.1.2.2.3 Test Channel = HCH



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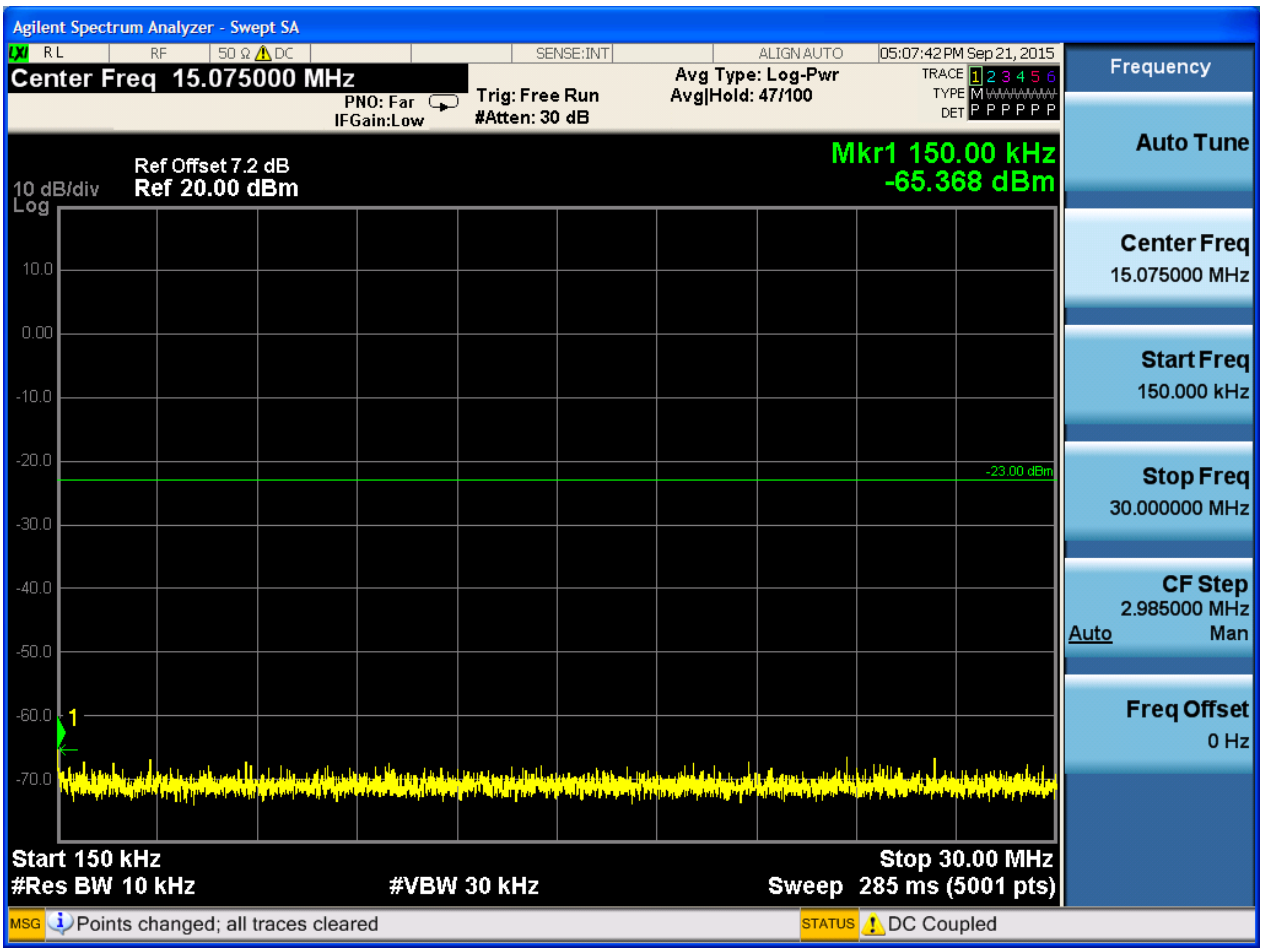

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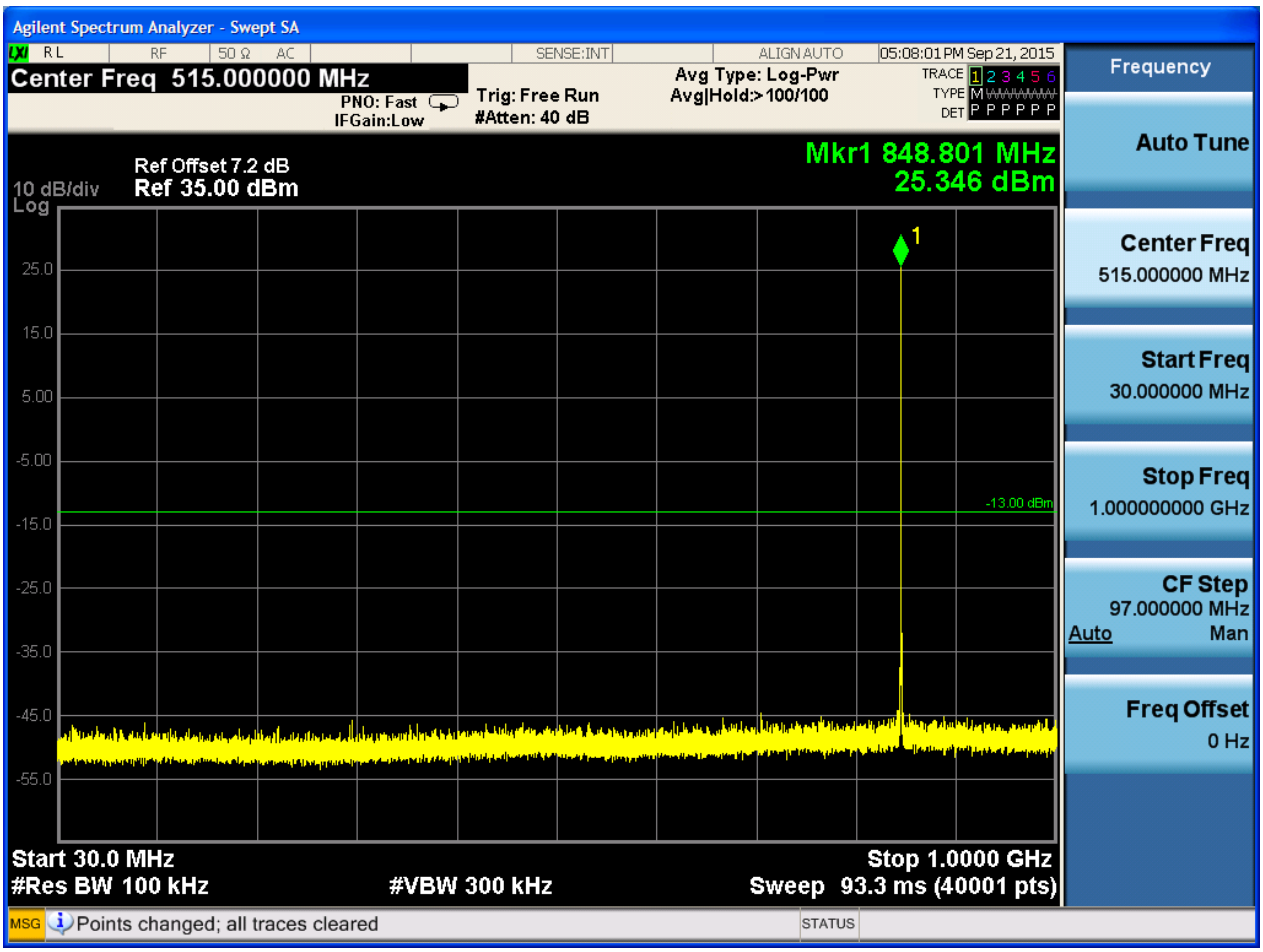

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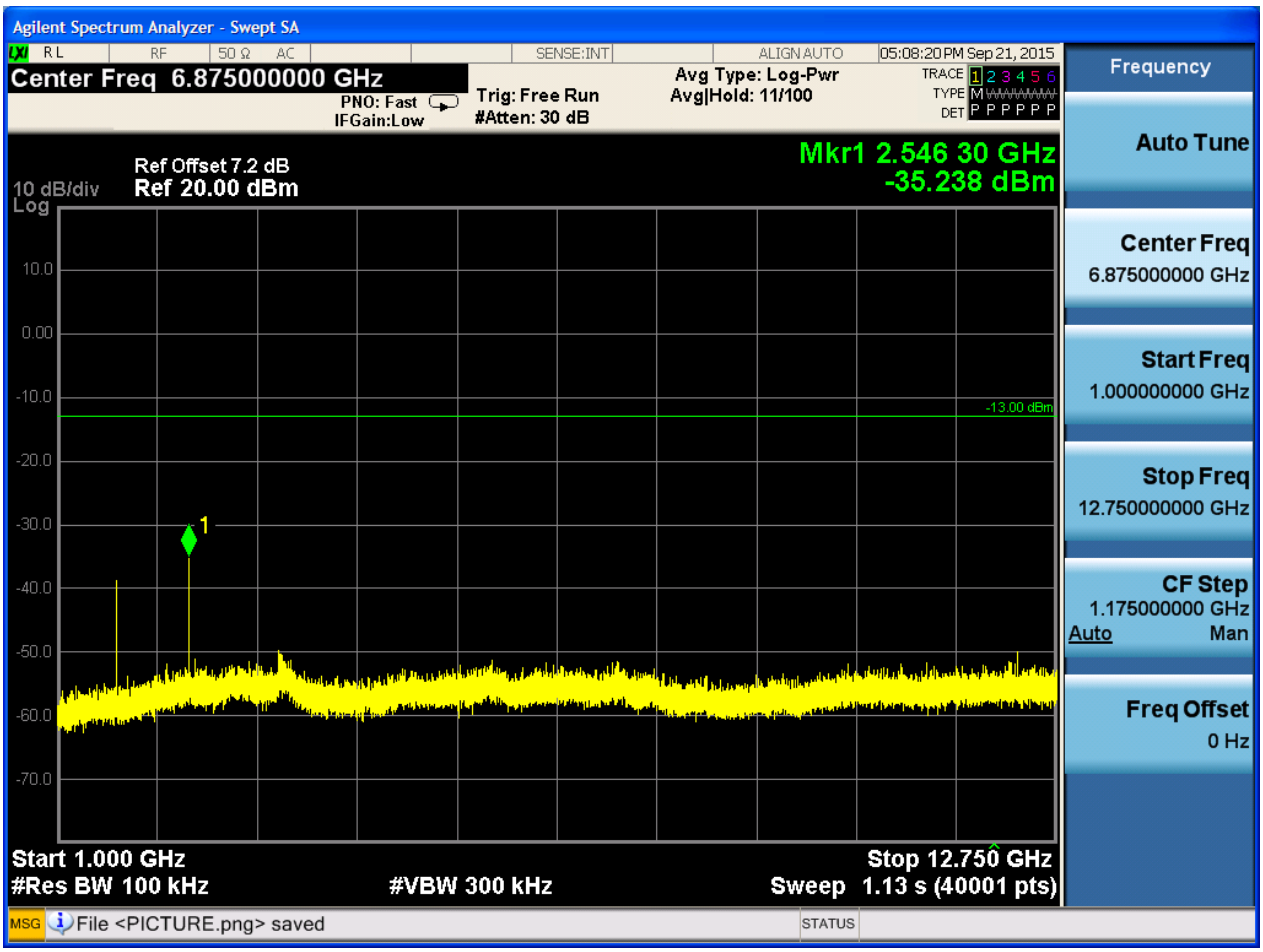

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7Appendix_G: Field Strength of Spurious Radiation

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

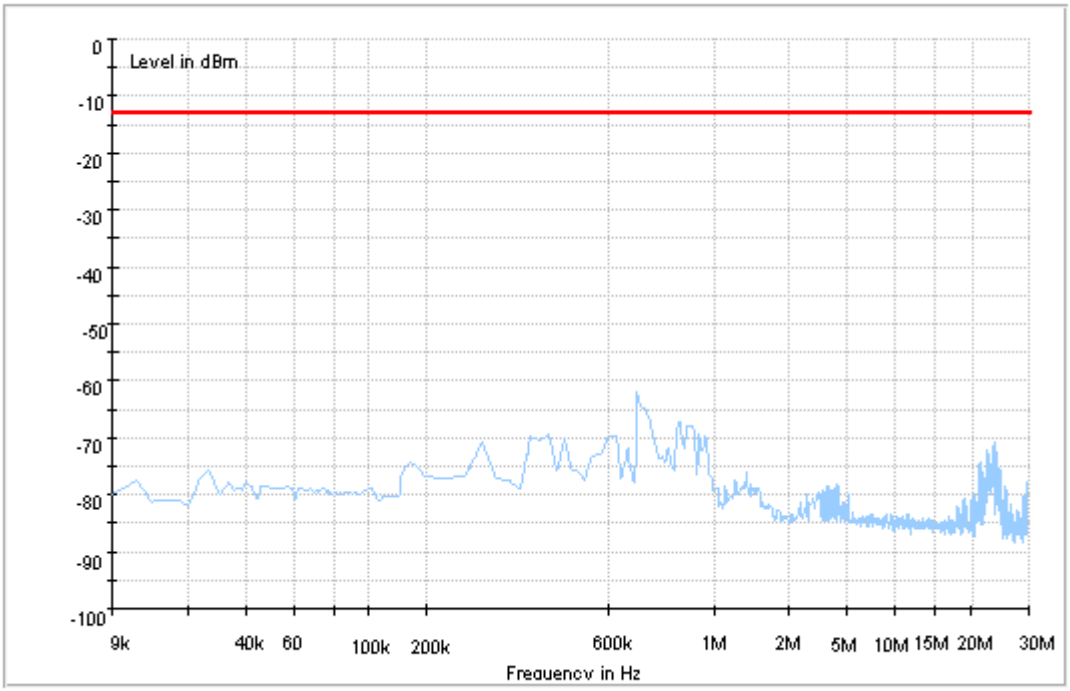
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

7.1 For GSM

7.1.1 Test Band = GSM1900

7.1.1.1 Test Mode = GSM/TM1



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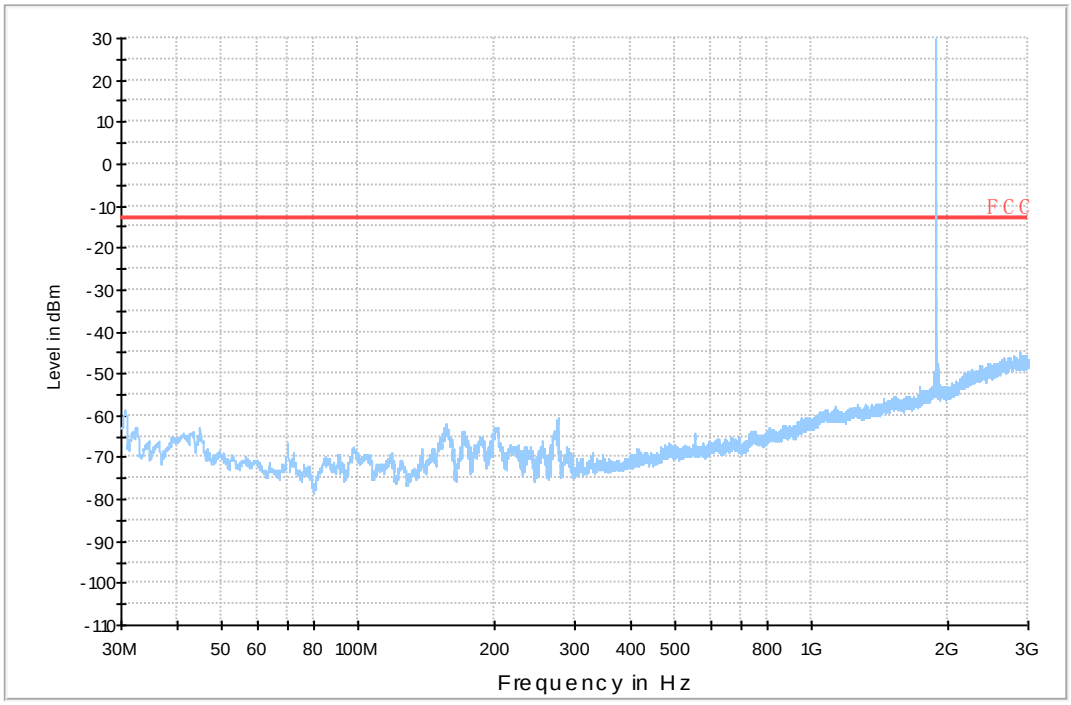
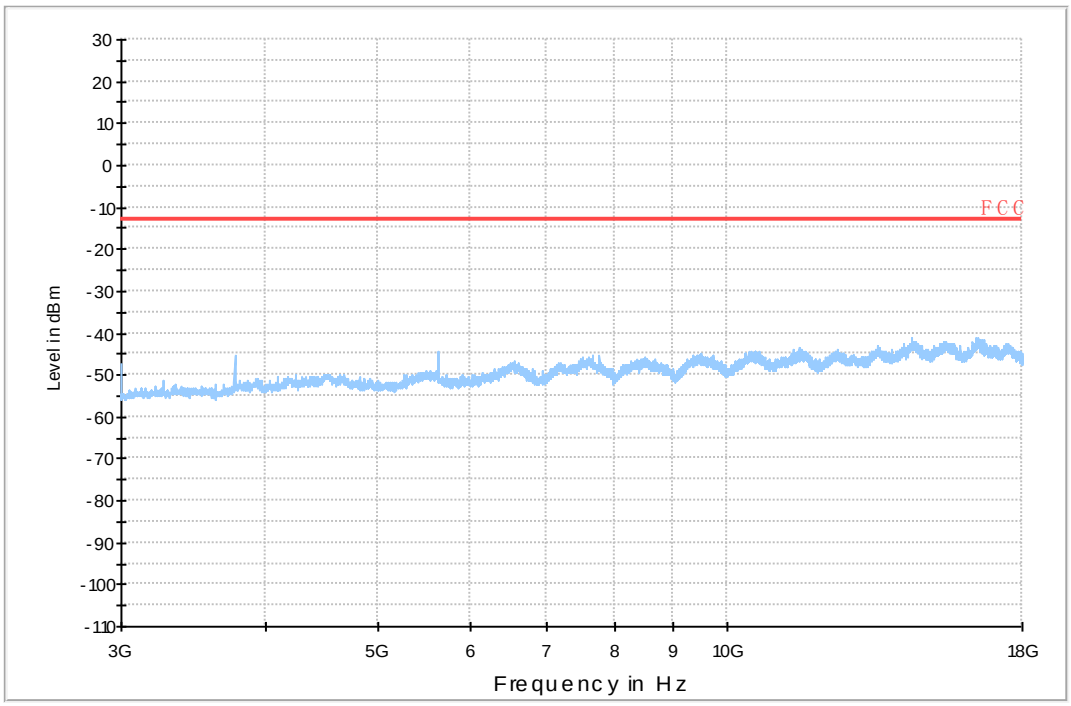
Copy of FCC PART24 GSM1900_L



Copy of FCC PART24 GSM1900_H



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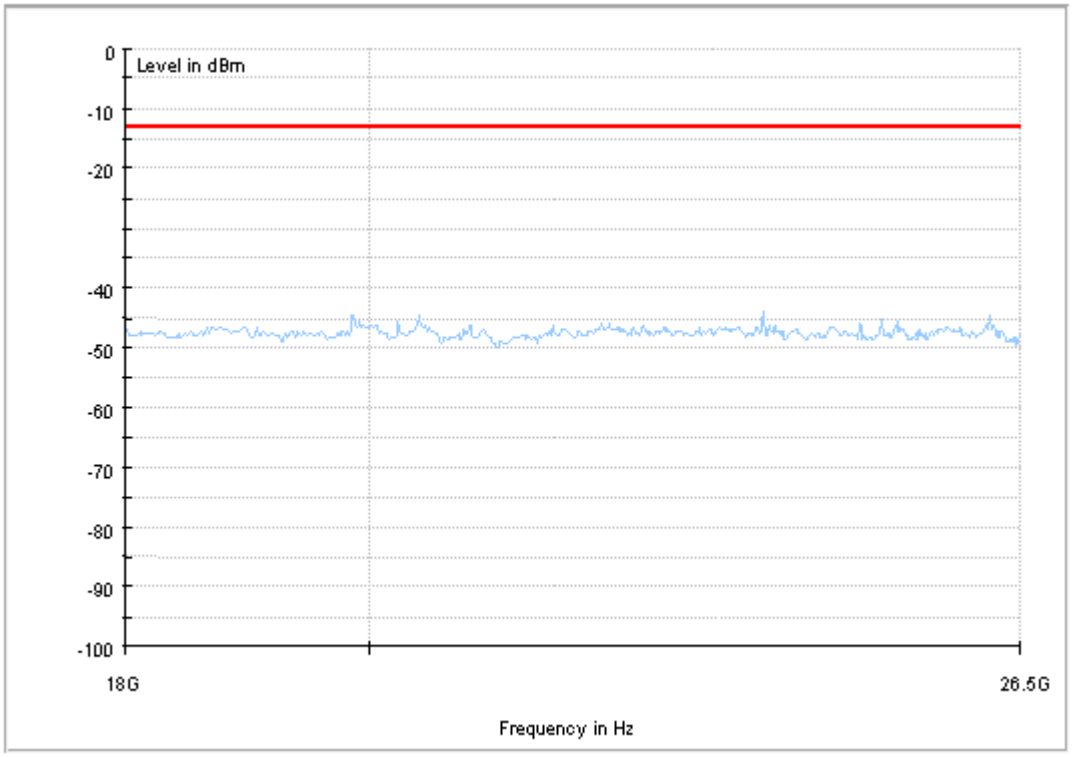

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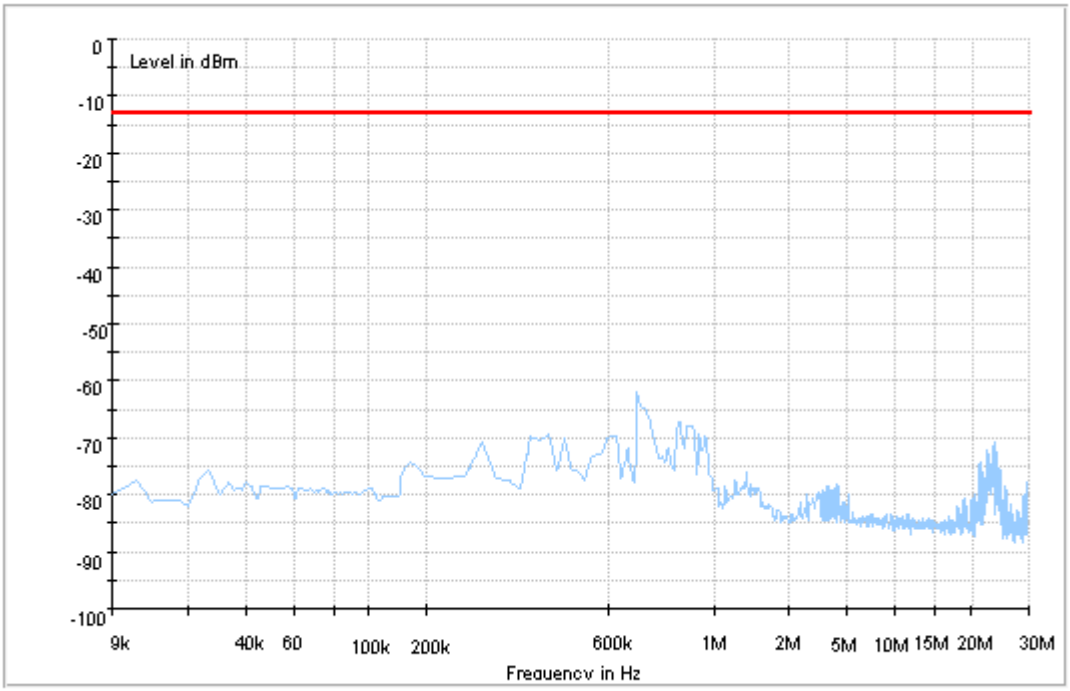
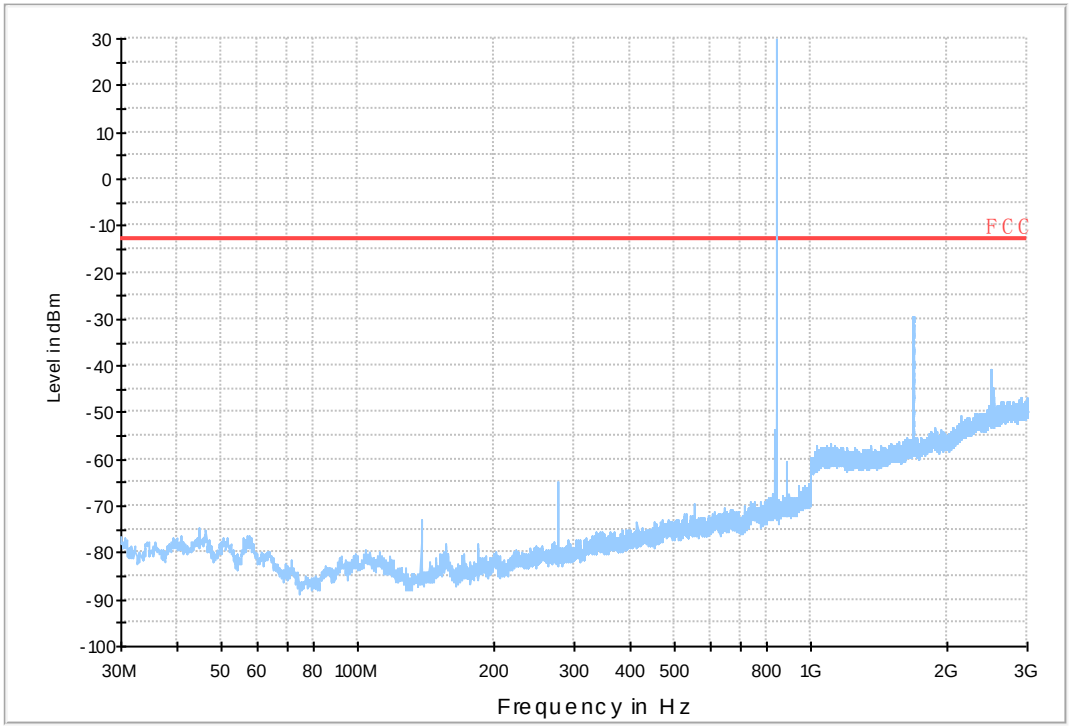
7.1.2 Test Band = GSM850

7.1.2.1 Test Mode = GSM/TM1



Copy of FCC PART22 GSM850_L



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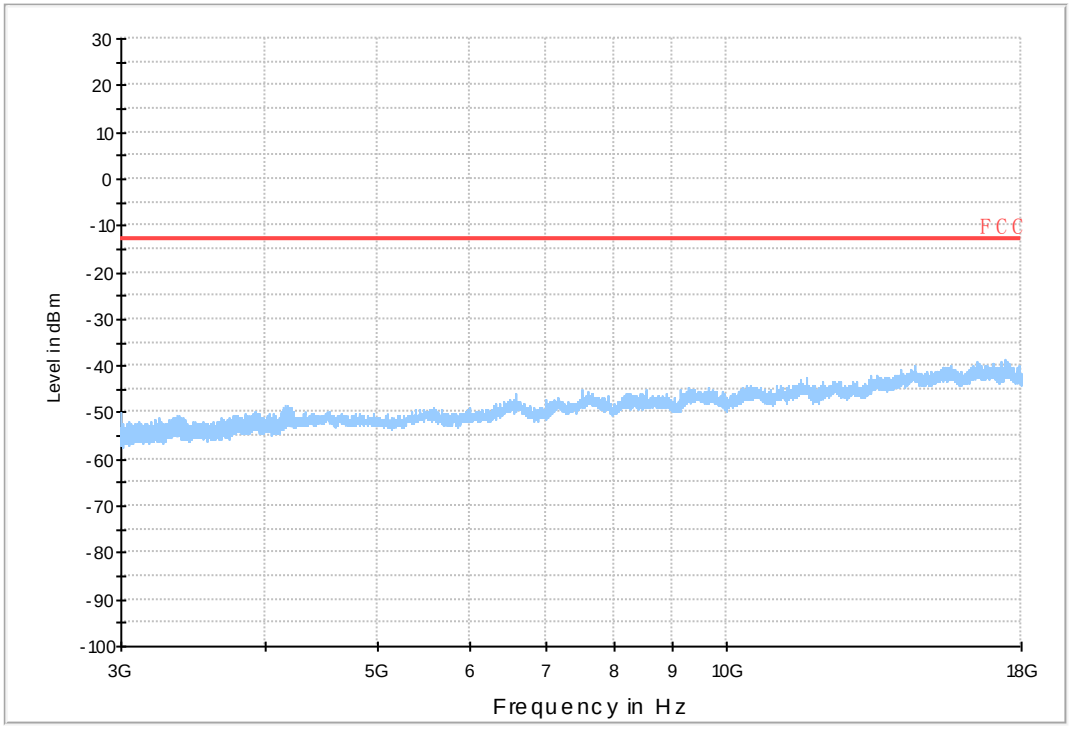

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8Appendix_H: Frequency Stability

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	2.20	0.00124	PASS
				VN	-0.52	-0.00029	PASS
				VH	-3.23	-0.00182	PASS
		MCH	TN	VL	-3.03	-0.0017	PASS
				VN	-1.61	-0.0009	PASS
				VH	1.23	0.00069	PASS
		HCH	TN	VL	-4.00	-0.00222	PASS
				VN	-2.91	-0.00162	PASS
				VH	-7.10	-0.00395	PASS
	GSM/TM2	LCH	TN	VL	4.71	0.00255	PASS
				VN	-0.68	-0.00037	PASS
				VH	6.49	0.00351	PASS
		MCH	TN	VL	1.23	0.00065	PASS
				VN	1.55	0.00082	PASS
				VH	1.78	0.00095	PASS
		HCH	TN	VL	0.36	0.00019	PASS
				VN	0.32	0.00017	PASS
				VH	-3.20	-0.00168	PASS
GSM850	GSM/TM1	LCH	TN	VL	11.62	0.0141	PASS
				VN	7.94	0.00963	PASS
				VH	8.78	0.01065	PASS
		MCH	TN	VL	5.81	0.00694	PASS
				VN	8.33	0.00996	PASS
				VH	-0.13	-0.00016	PASS
		HCH	TN	VL	10.40	0.01225	PASS
				VN	7.62	0.00898	PASS
				VH	4.52	0.00533	PASS
	GSM/TM2	LCH	TN	VL	7.65	0.00928	PASS
				VN	6.23	0.00756	PASS
				VH	7.91	0.0096	PASS
		MCH	TN	VL	9.59	0.01146	PASS
				VN	10.59	0.01266	PASS

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	9.81	0.01173	PASS
		HCH	TN	VL	11.14	0.01312	PASS
				VN	9.43	0.01111	PASS
				VH	8.56	0.01008	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
GSM1900	GSM/TM1	LCH	VN	-30	0.13	0.00007	PASS
				-20	0.19	0.00011	PASS
				-10	-0.71	-0.0004	PASS
				0	-2.32	-0.00131	PASS
				10	4.65	0.00262	PASS
				20	-5.17	-0.00292	PASS
				30	-2.78	-0.00157	PASS
				40	-0.84	-0.00047	PASS
				50	-3.10	-0.00175	PASS
		MCH	VN	-30	-3.36	-0.00188	PASS
				-20	5.36	0.003	PASS
				-10	-5.88	-0.00329	PASS
				0	-4.39	-0.00246	PASS
				10	2.39	0.00134	PASS
				20	-1.10	-0.00062	PASS
				30	-0.71	-0.0004	PASS
				40	-5.17	-0.0029	PASS
				50	-0.19	-0.00011	PASS
		HCH	VN	-30	-5.17	-0.00288	PASS
				-20	-1.94	-0.00108	PASS
				-10	-3.49	-0.00194	PASS
				0	-4.20	-0.00234	PASS
				10	1.10	0.00061	PASS
				20	-1.49	-0.00083	PASS
				30	2.78	0.00155	PASS
				40	3.94	0.00219	PASS
				50	0.84	0.00047	PASS
	GSM/TM2	LCH	VN	-30	0.26	0.00014	PASS
				-20	-0.71	-0.00038	PASS
				-10	0.90	0.00049	PASS
				0	1.23	0.00066	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	6.97	0.00377	PASS
				20	0.77	0.00042	PASS
				30	3.75	0.00203	PASS
				40	11.98	0.00647	PASS
				50	-2.16	-0.00117	PASS
		MCH	VN	-30	2.97	0.00158	PASS
				-20	4.29	0.00228	PASS
				-10	6.94	0.00369	PASS
				0	6.10	0.00324	PASS
				10	4.71	0.00251	PASS
				20	7.75	0.00412	PASS
				30	4.07	0.00216	PASS
				40	2.68	0.00143	PASS
				50	0.26	0.00014	PASS
		HCH	VN	-30	0.45	0.00024	PASS
				-20	4.10	0.00215	PASS
				-10	0.23	0.00012	PASS
				0	-0.03	-0.00002	PASS
				10	2.68	0.0014	PASS
				20	-2.10	-0.0011	PASS
				30	1.61	0.00084	PASS
				40	-0.03	-0.00002	PASS
				50	2.91	0.00152	PASS
GSM850	GSM/TM1	LCH	VN	-30	1.55	0.00188	PASS
				-20	7.43	0.00901	PASS
				-10	8.14	0.00988	PASS
				0	7.23	0.00877	PASS
				10	9.10	0.01104	PASS
				20	7.88	0.00956	PASS
				30	15.37	0.01865	PASS
				40	7.36	0.00893	PASS
				50	5.88	0.00713	PASS
		MCH	VN	-30	9.56	0.01143	PASS
				-20	5.94	0.0071	PASS
				-10	2.78	0.00332	PASS
				0	9.30	0.01112	PASS
				10	7.68	0.00918	PASS
				20	4.52	0.0054	PASS
				30	5.42	0.00648	PASS
				40	5.75	0.00687	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	5.94	0.0071	PASS
		HCH	VN	-30	7.88	0.00928	PASS
				-20	8.46	0.00997	PASS
				-10	8.78	0.01034	PASS
				0	6.33	0.00746	PASS
				10	8.78	0.01034	PASS
				20	7.17	0.00845	PASS
				30	10.53	0.01241	PASS
				40	10.27	0.0121	PASS
				50	9.75	0.01149	PASS
	GSM/TM2	LCH	VN	-30	10.43	0.01265	PASS
				-20	8.07	0.00979	PASS
				-10	7.75	0.0094	PASS
				0	9.72	0.01179	PASS
				10	5.13	0.00622	PASS
				20	7.46	0.00905	PASS
				30	7.33	0.00889	PASS
				40	7.04	0.00854	PASS
				50	6.49	0.00787	PASS
		MCH	VN	-30	7.01	0.00838	PASS
				-20	7.78	0.0093	PASS
				-10	7.39	0.00883	PASS
				0	8.07	0.00965	PASS
				10	5.13	0.00613	PASS
				20	10.43	0.01247	PASS
				30	7.39	0.00883	PASS
				40	9.59	0.01146	PASS
				50	9.04	0.01081	PASS
		HCH	VN	-30	5.13	0.00604	PASS
				-20	8.94	0.01053	PASS
				-10	14.30	0.01685	PASS
				0	8.30	0.00978	PASS
				10	10.33	0.01217	PASS
				20	8.33	0.00981	PASS
				30	7.78	0.00917	PASS
				40	9.49	0.01118	PASS
				50	10.01	0.01179	PASS

END

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