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	32.36	27.21	38.5	PASS
		MCH	32.51	27.36	38.5	PASS
		HCH	32.57	27.42	38.5	PASS
	GSM/TM2	LCH	26.88	21.73	38.5	PASS
		MCH	27.89	22.74	38.5	PASS
		HCH	27.91	22.76	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
GSM1900	GSM/TM1	LCH	29.52	27.52	33	PASS
		MCH	29.34	27.34	33	PASS
		HCH	29.30	27.3	33	PASS
	GSM/TM2	LCH	25.64	23.64	33	PASS
		MCH	25.57	23.57	33	PASS
		HCH	25.59	23.59	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	0.11	13	PASS
		MCH	0.13	13	PASS
		HCH	0.13	13	PASS
	GSM/TM2	LCH	3.13	13	PASS
		MCH	3.16	13	PASS
		HCH	3.27	13	PASS
GSM1900	GSM/TM1	LCH	0.11	13	PASS
		MCH	0.12	13	PASS
		HCH	0.11	13	PASS
	GSM/TM2	LCH	3.05	13	PASS
		MCH	2.97	13	PASS
		HCH	3.01	13	PASS

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3Appendix_C: Modulation Characteristics

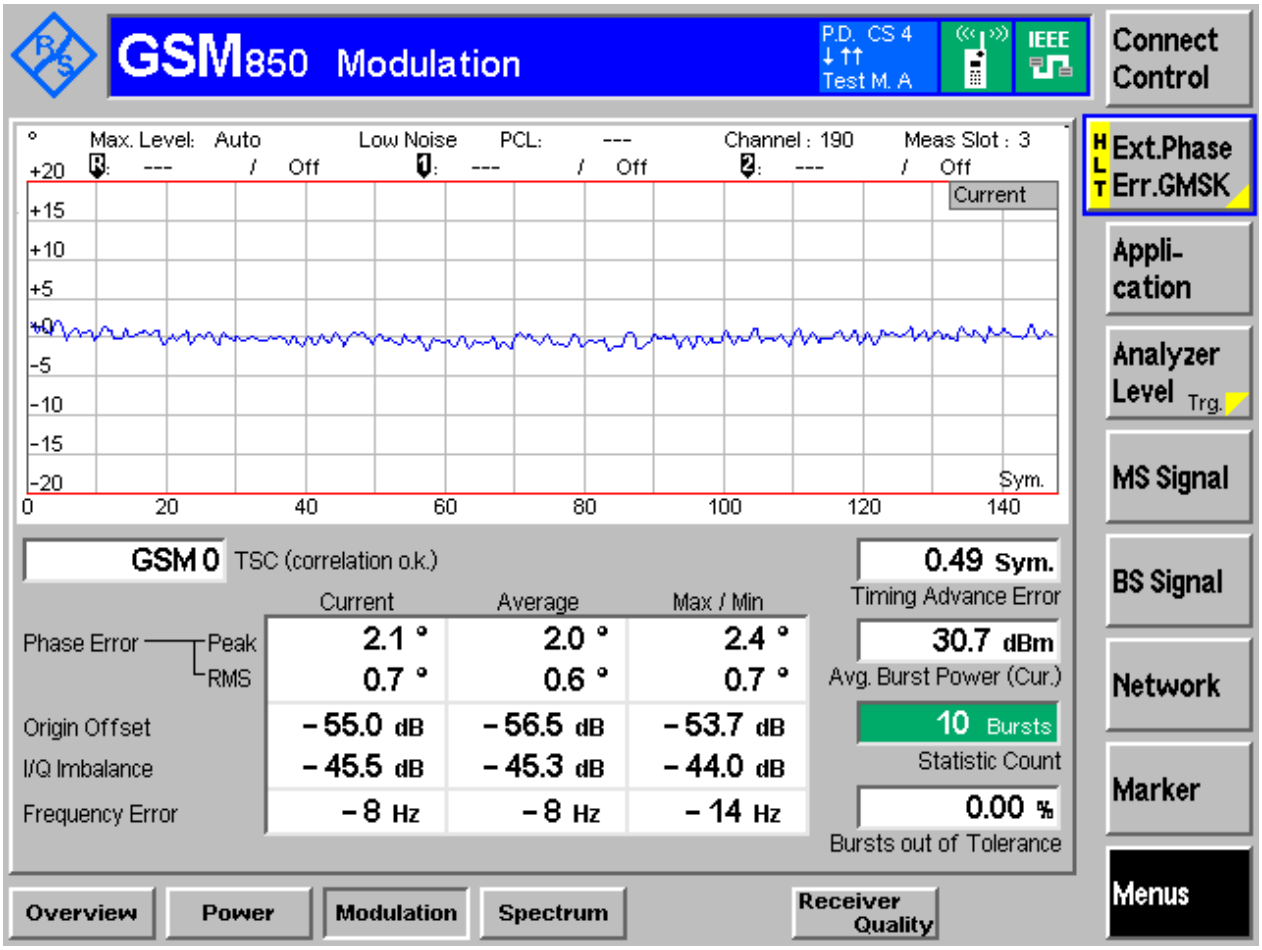
Part I - Test Plots

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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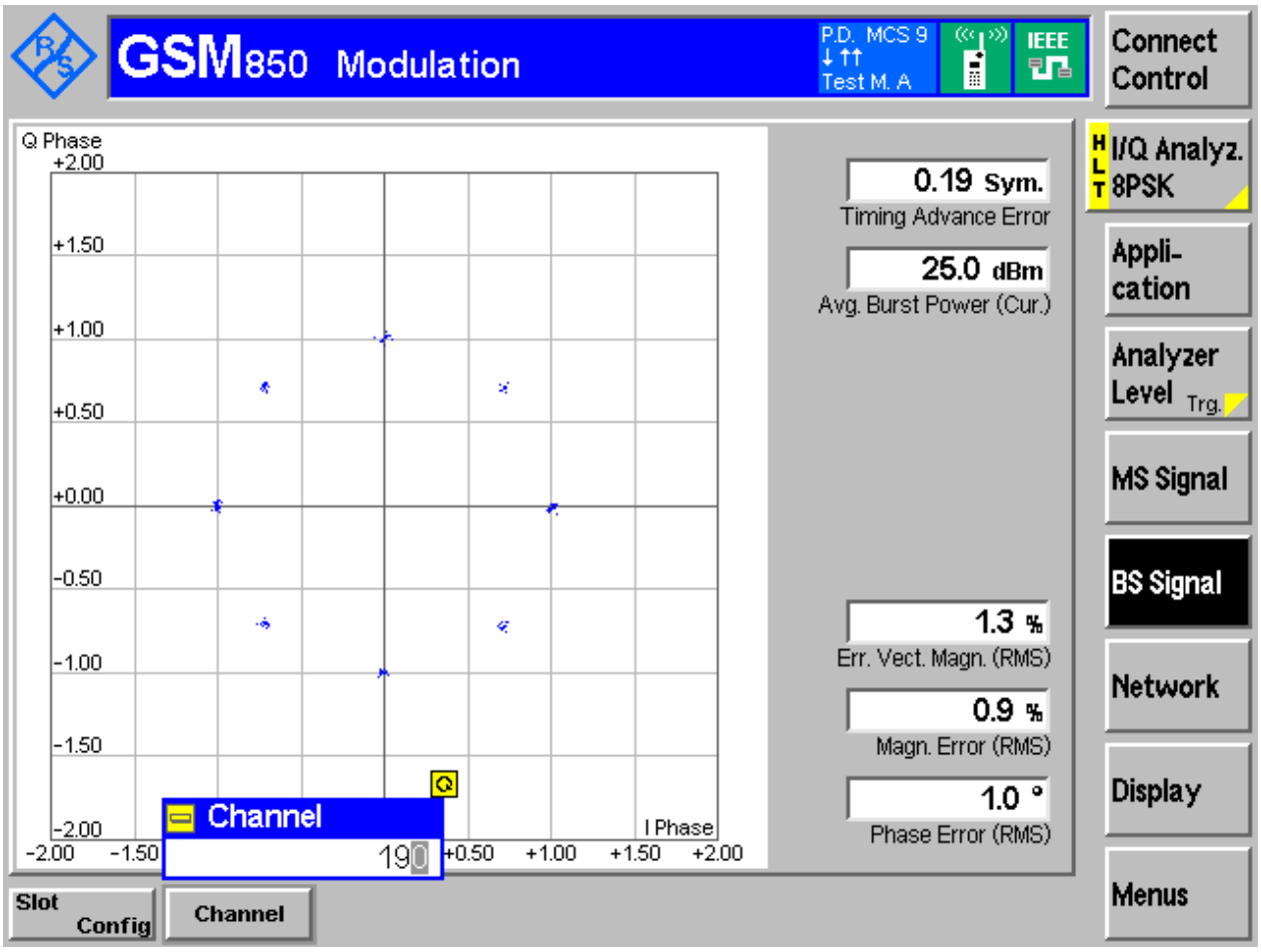
3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = MCH



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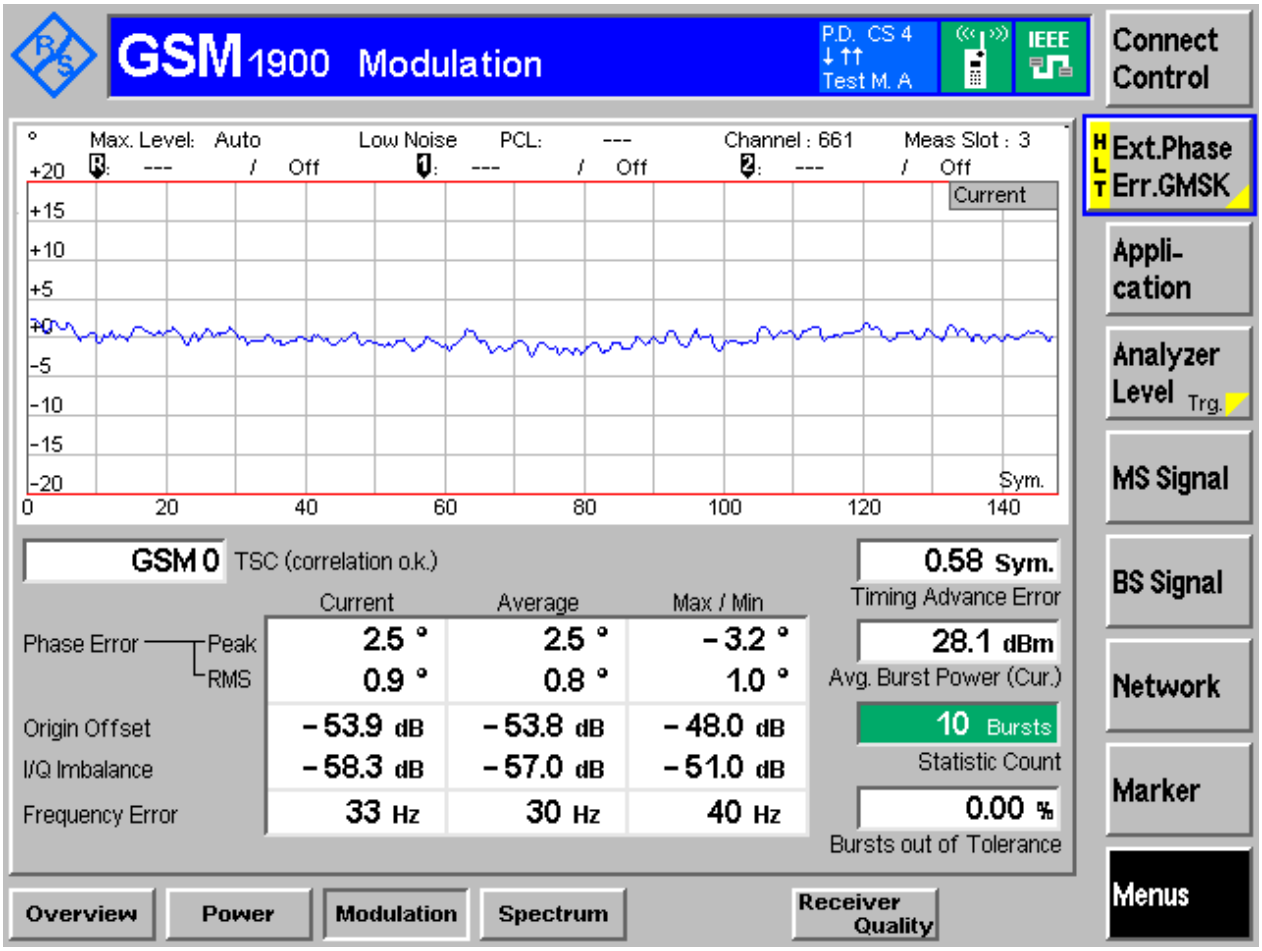
3.1.2 Test Band = GSM1900

3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



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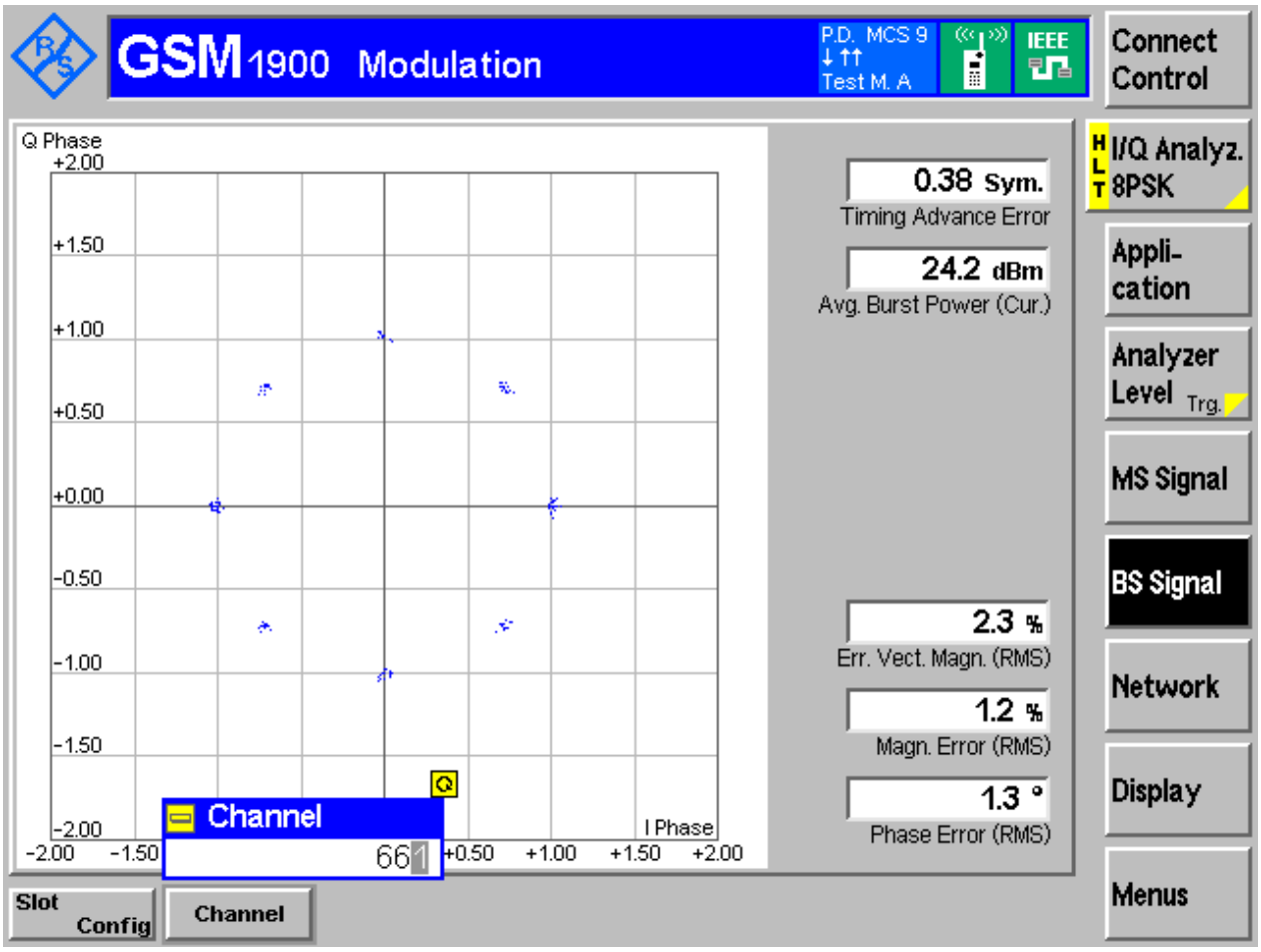
3.1.2.2 Test Mode = GSM/TM2

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	247.55	323.99	Pass
		MCH	243.90	320.71	Pass
		HCH	244.98	316.02	Pass
	GSM/TM2	LCH	248.61	322.15	Pass
		MCH	246.51	315.87	Pass
		HCH	248.05	322.42	Pass
GSM1900	GSM/TM1	LCH	244.20	319.34	Pass
		MCH	245.26	321.42	Pass
		HCH	242.66	318.81	Pass
	GSM/TM2	LCH	250.45	319.41	Pass
		MCH	253.31	322.00	Pass
		HCH	246.99	321.72	Pass

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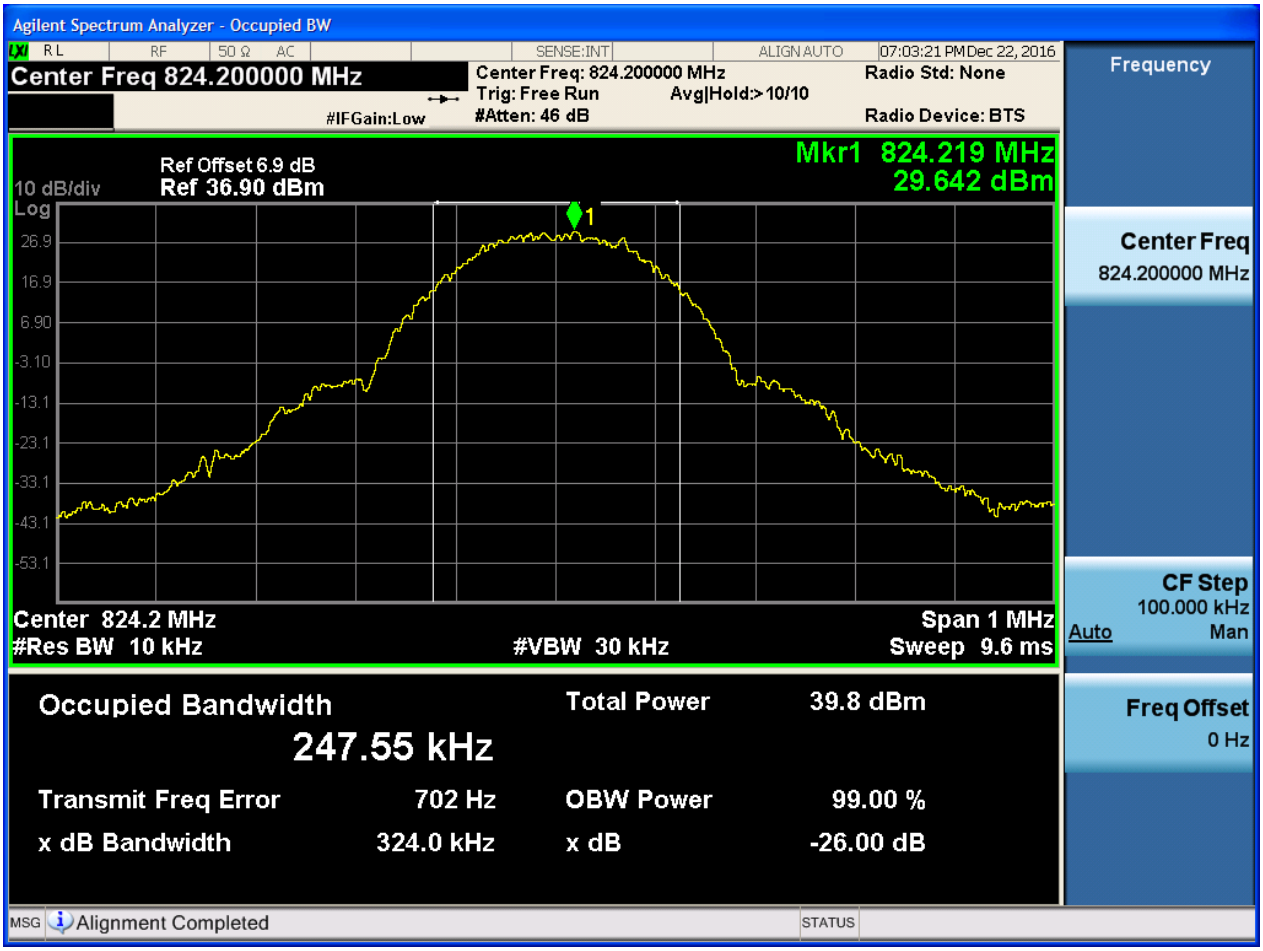
Part II - Test Plots

4.1 For GSM

4.1.3 Test Band = GSM850

4.1.3.1 Test Mode = GSM/TM1

4.1.3.1.1 Test Channel = LCH



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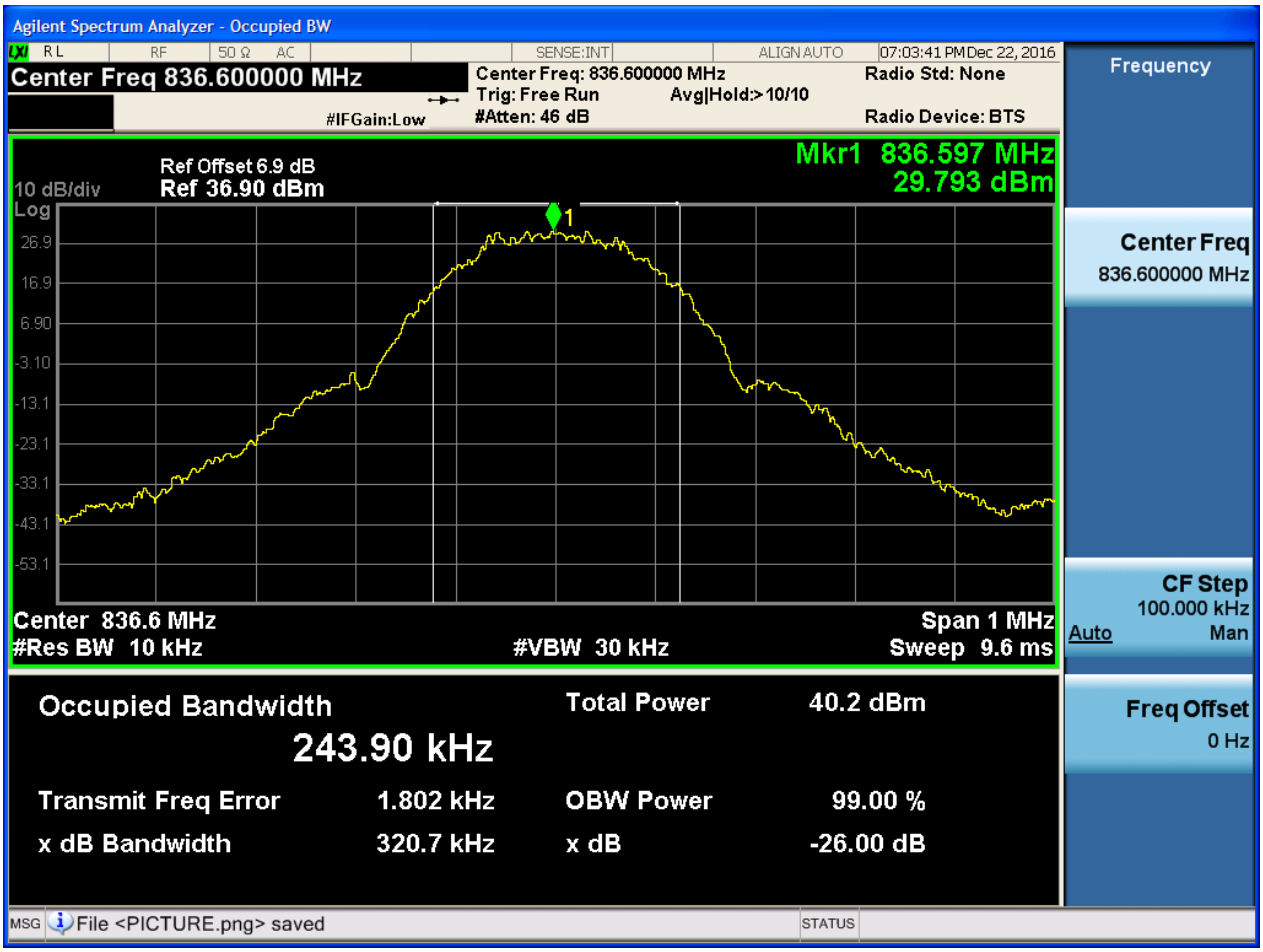
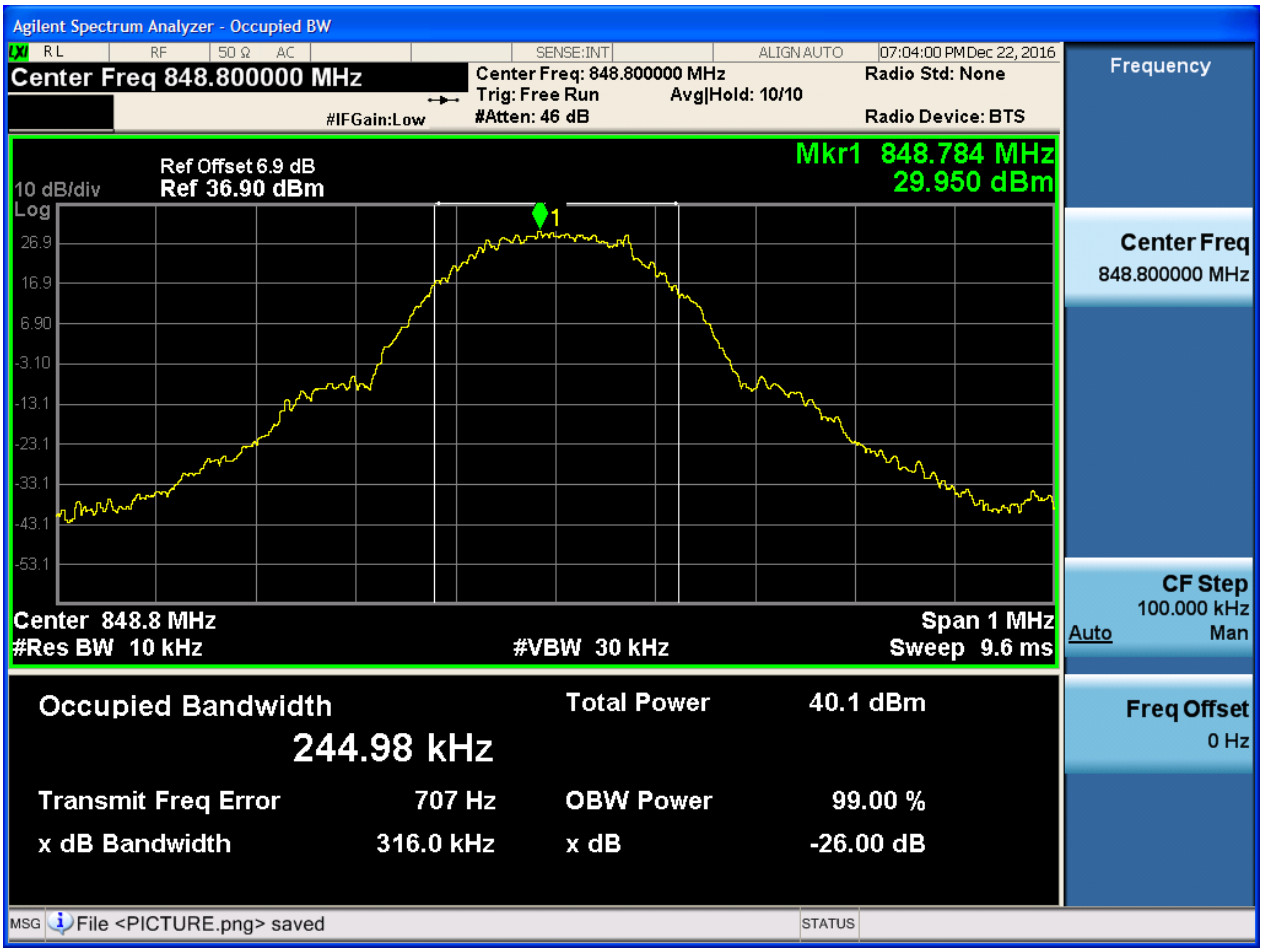
4.1.3.1.2 Test Channel = MCH

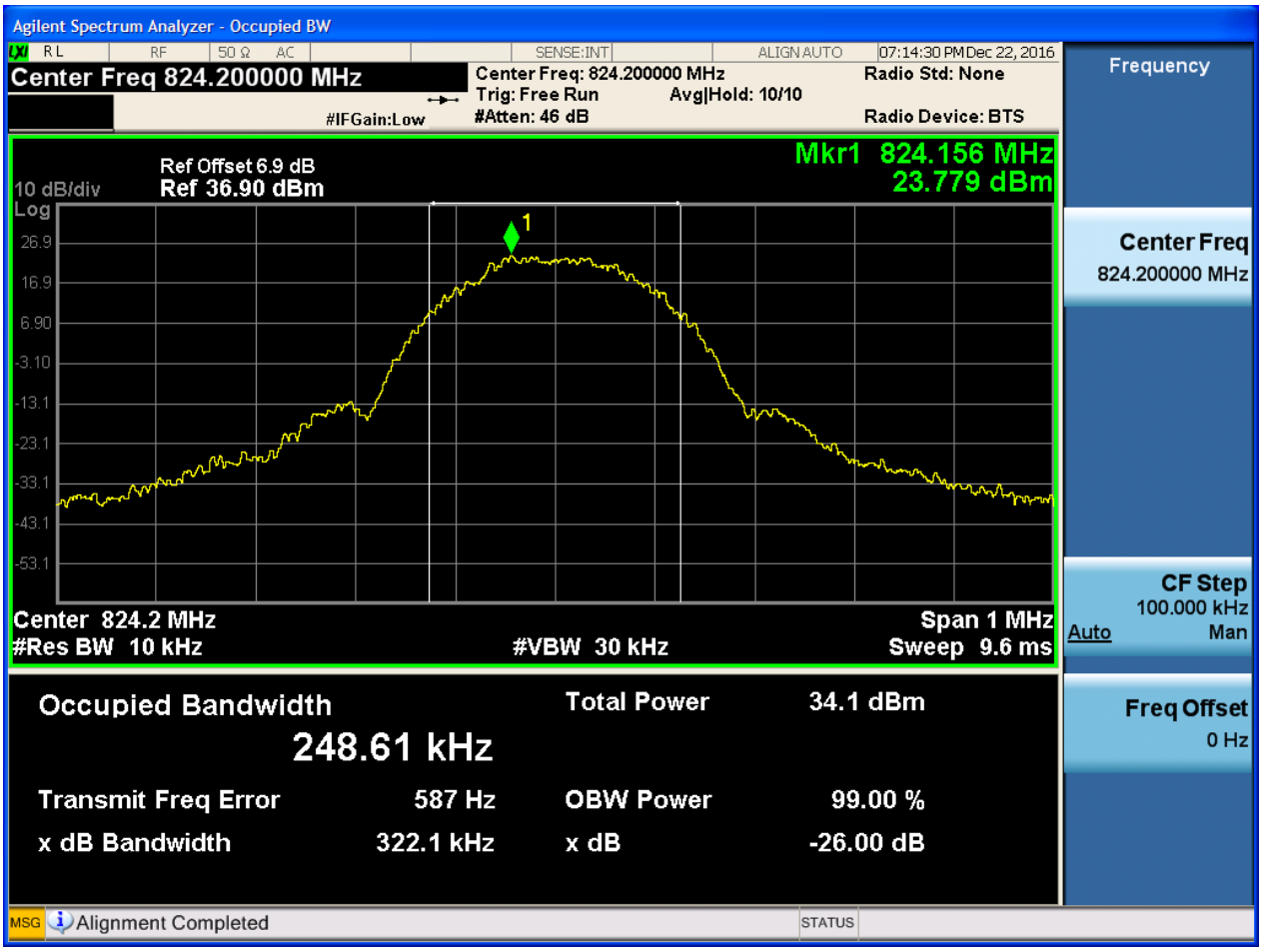


4.1.3.1.3 Test Channel = HCH



4.1.3.2 Test Mode = GSM/TM2

4.1.3.2.1 Test Channel = LCH



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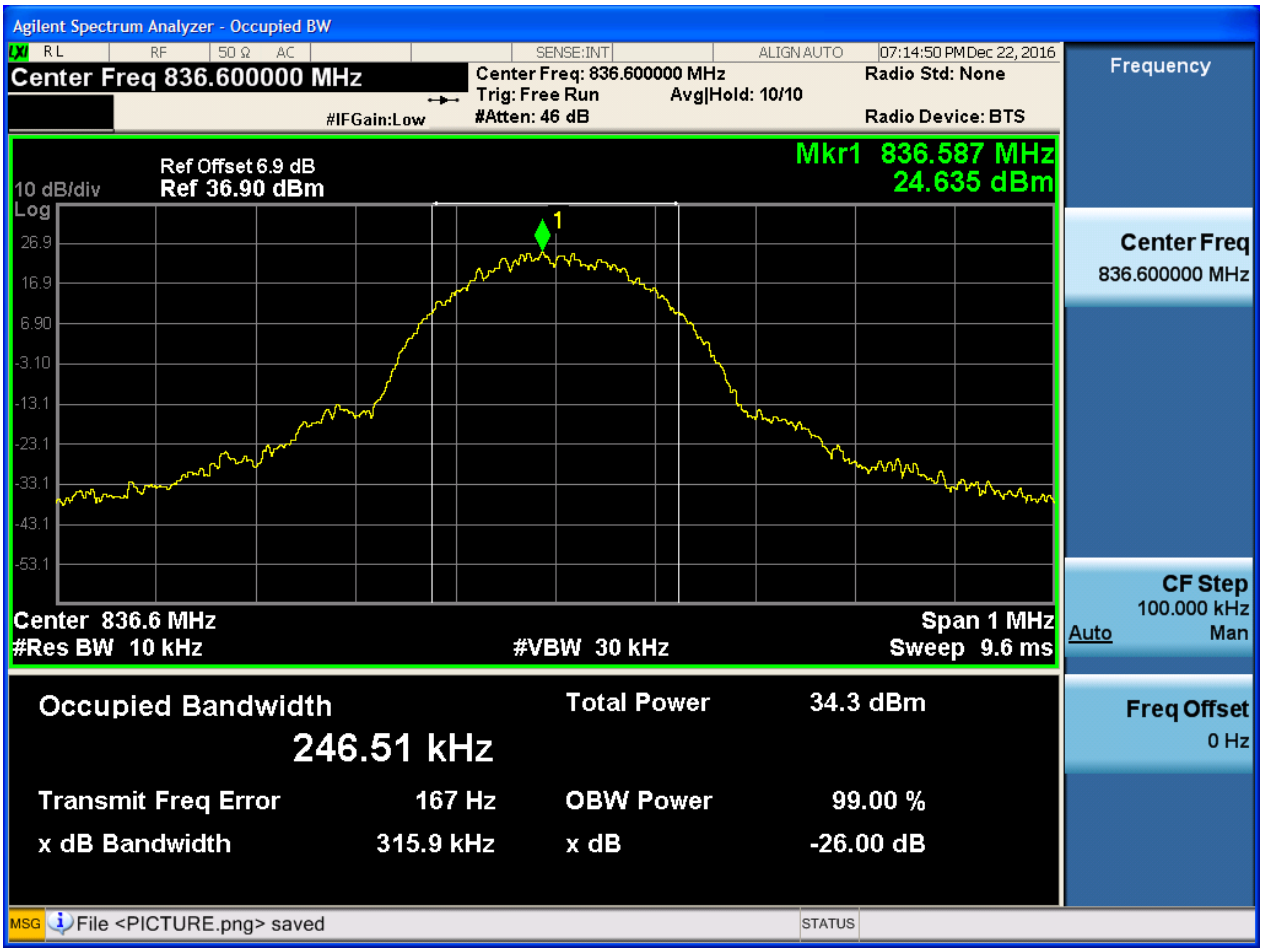
4.1.3.2.2 Test Channel = MCH



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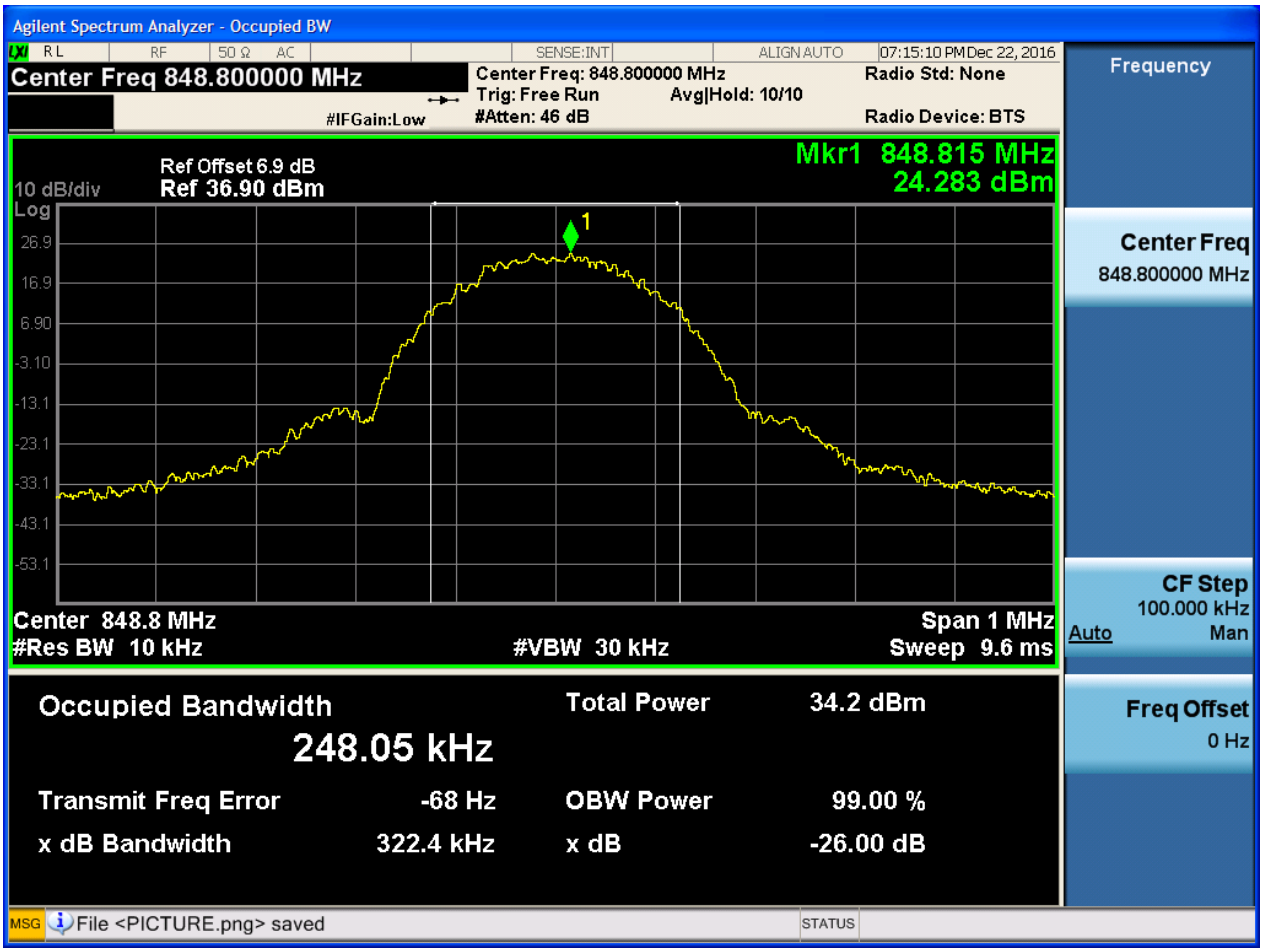
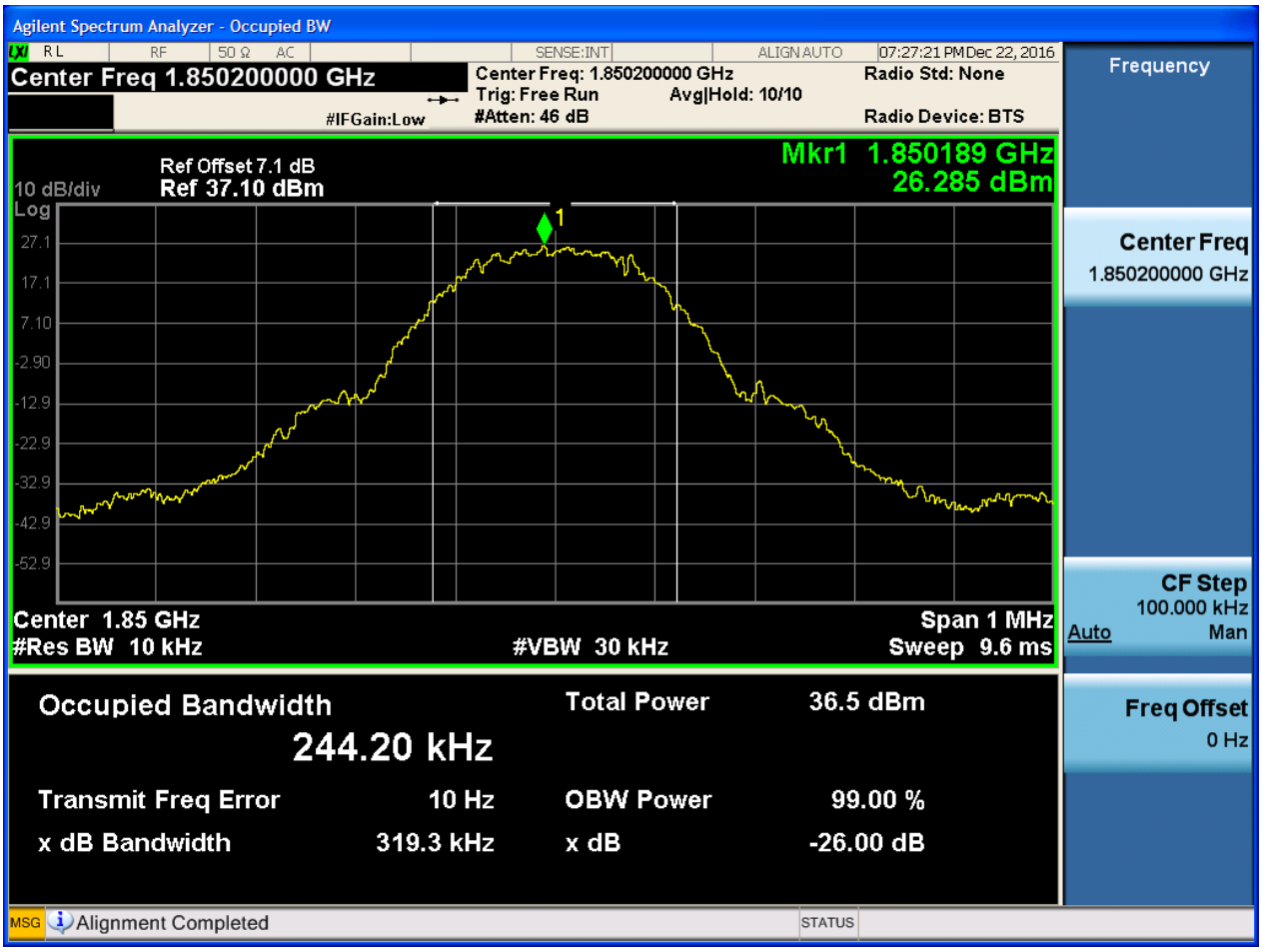
4.1.3.2.3 Test Channel = HCH



4.1.4 Test Band = GSM1900

4.1.4.1 Test Mode = GSM/TM1

4.1.4.1.1 Test Channel = LCH



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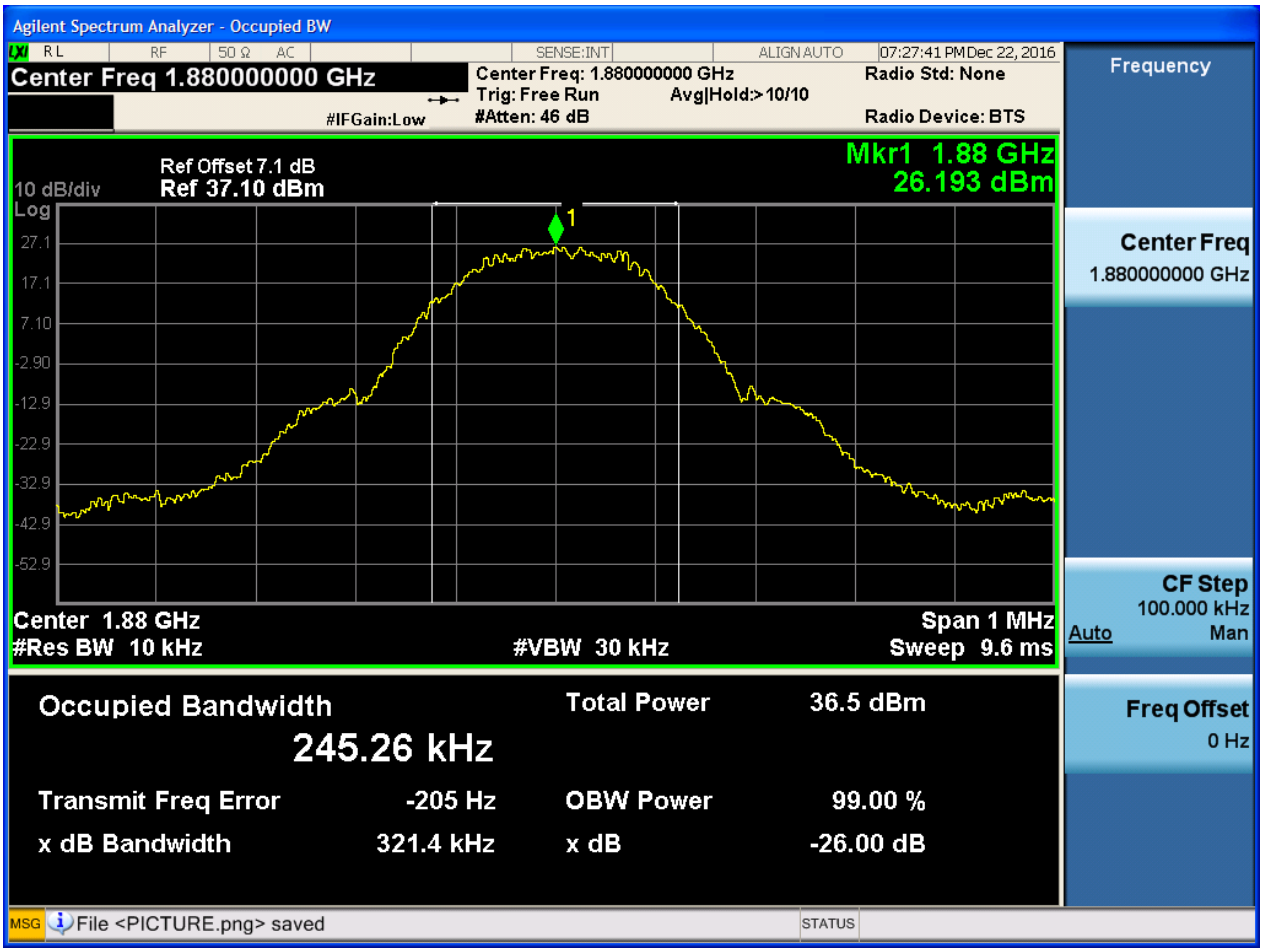
4.1.4.1.2 Test Channel = MCH



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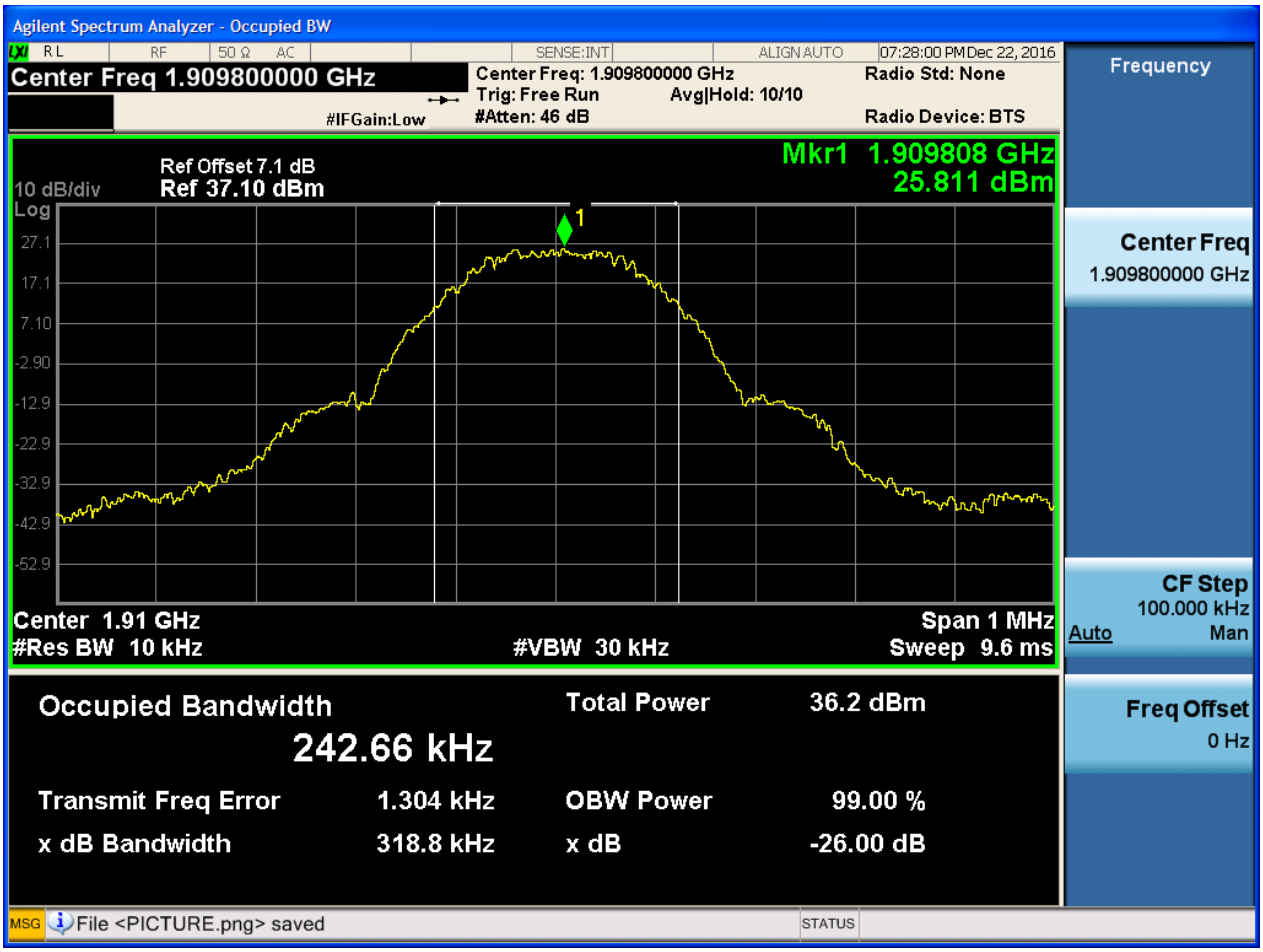
4.1.4.1.3 Test Channel = HCH



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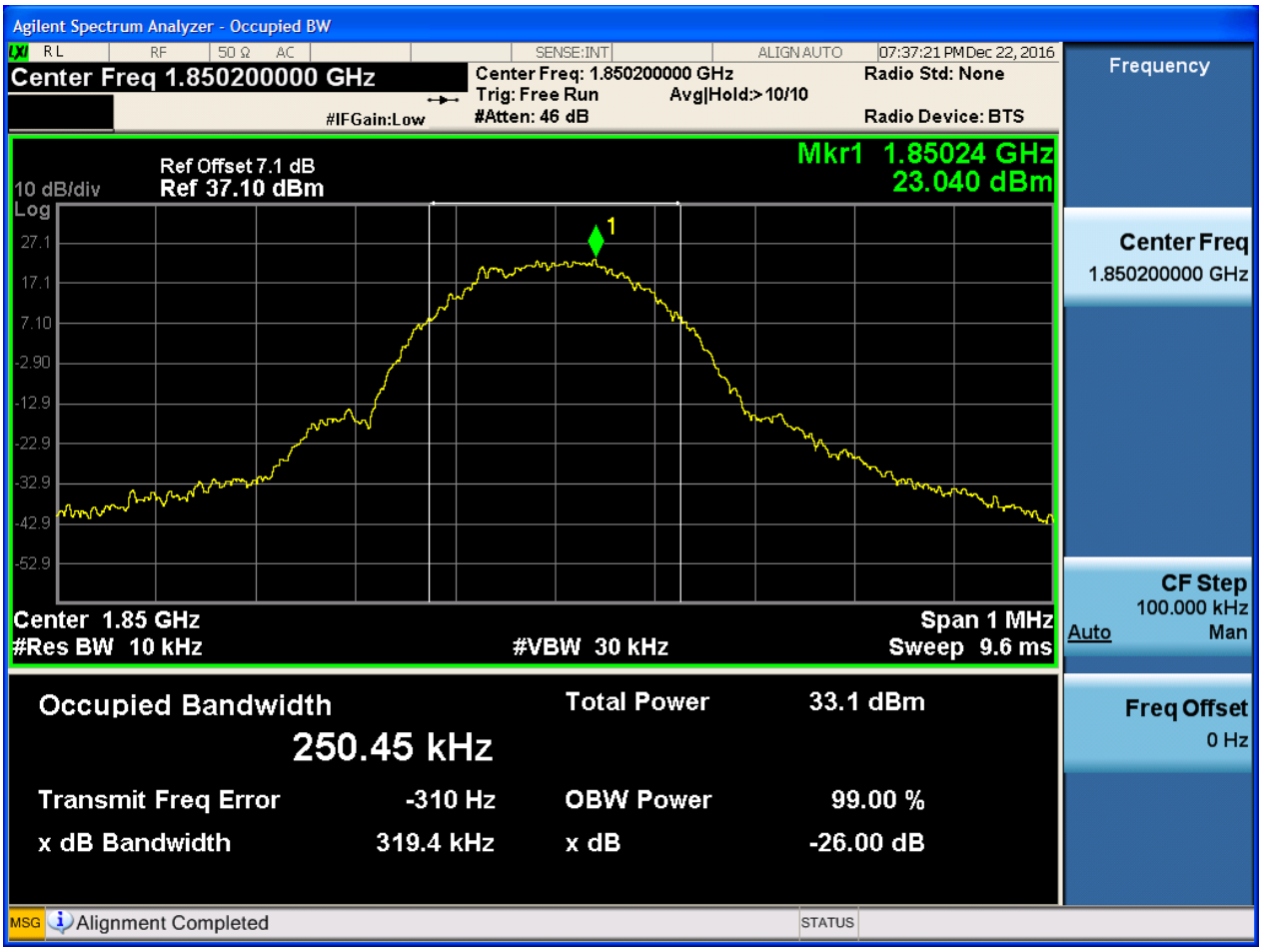
4.1.4.2 Test Mode = GSM/TM2

4.1.4.2.1 Test Channel = LCH



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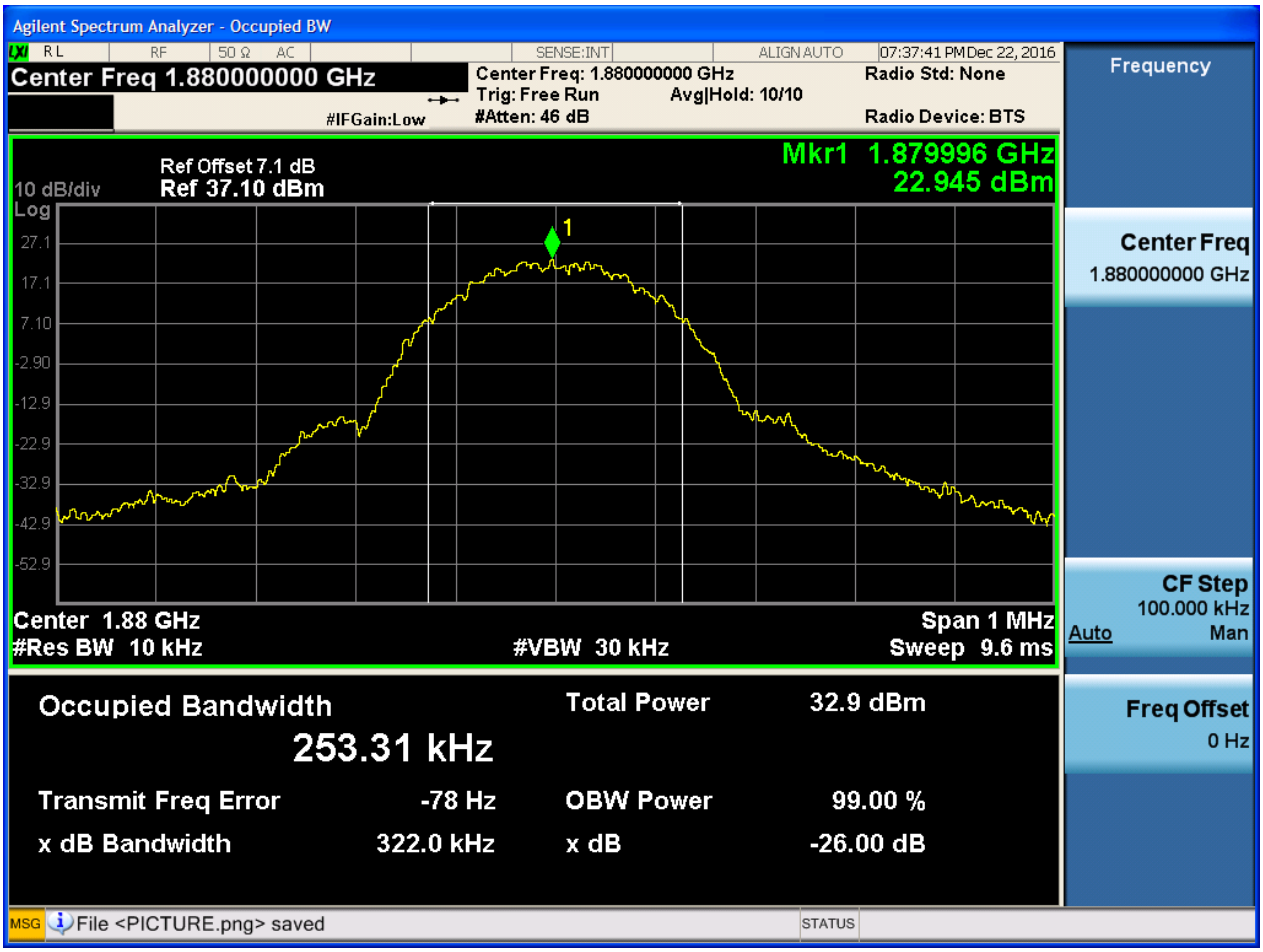
4.1.4.2.2 Test Channel = MCH



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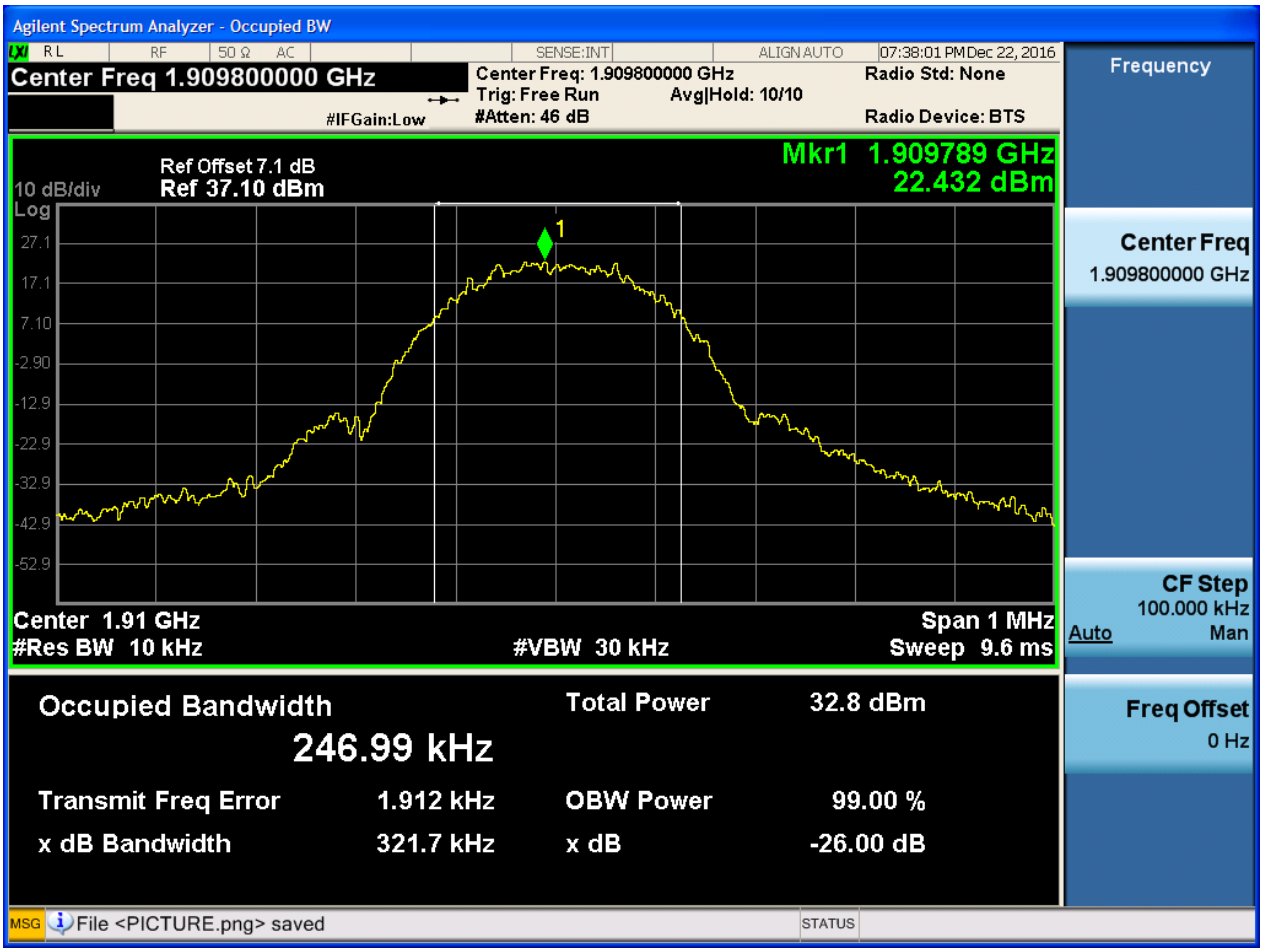
4.1.4.2.3 Test Channel = HCH



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5Appendix_E: Band Edges Compliance

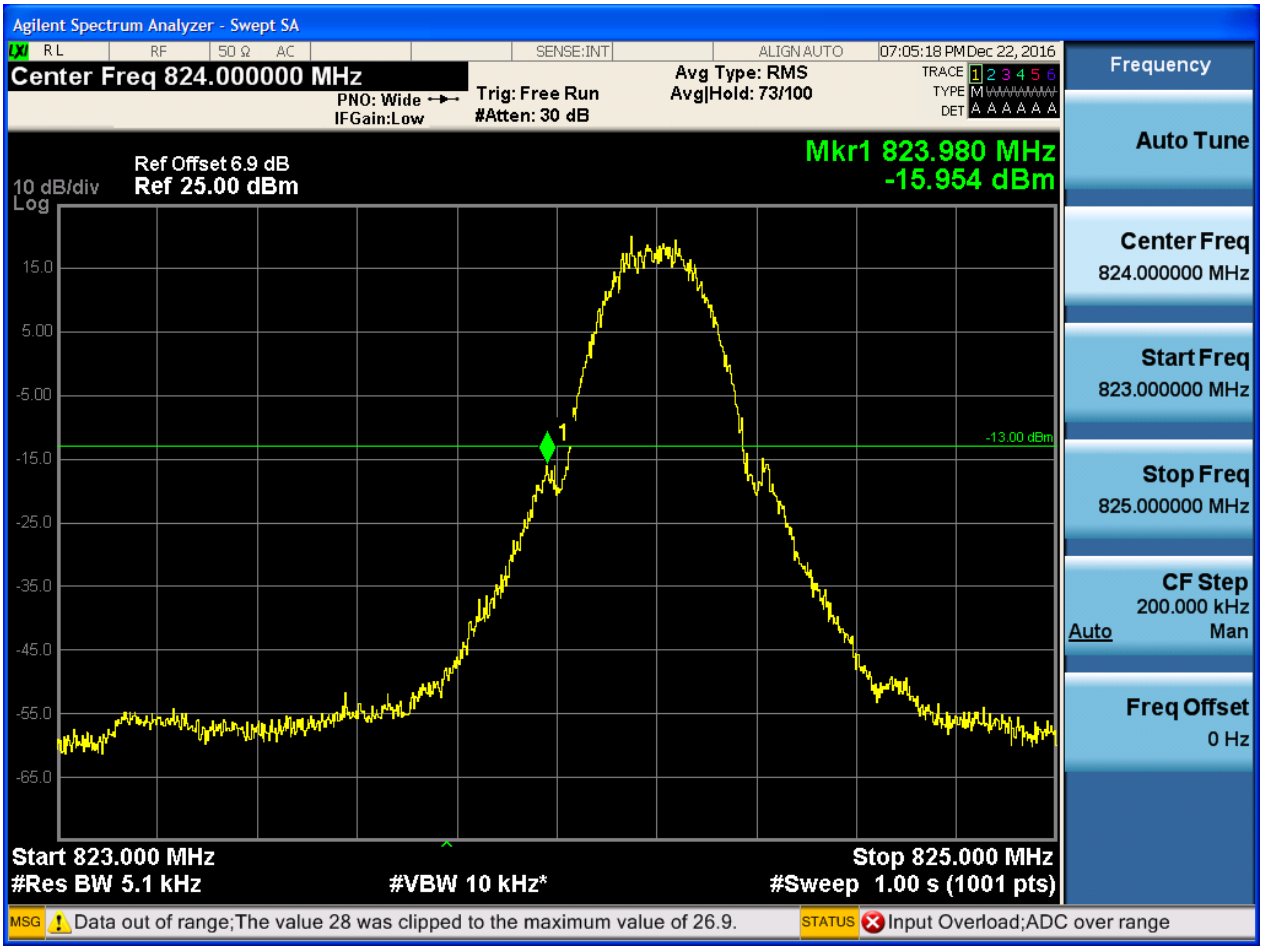
Part I - Test Plots

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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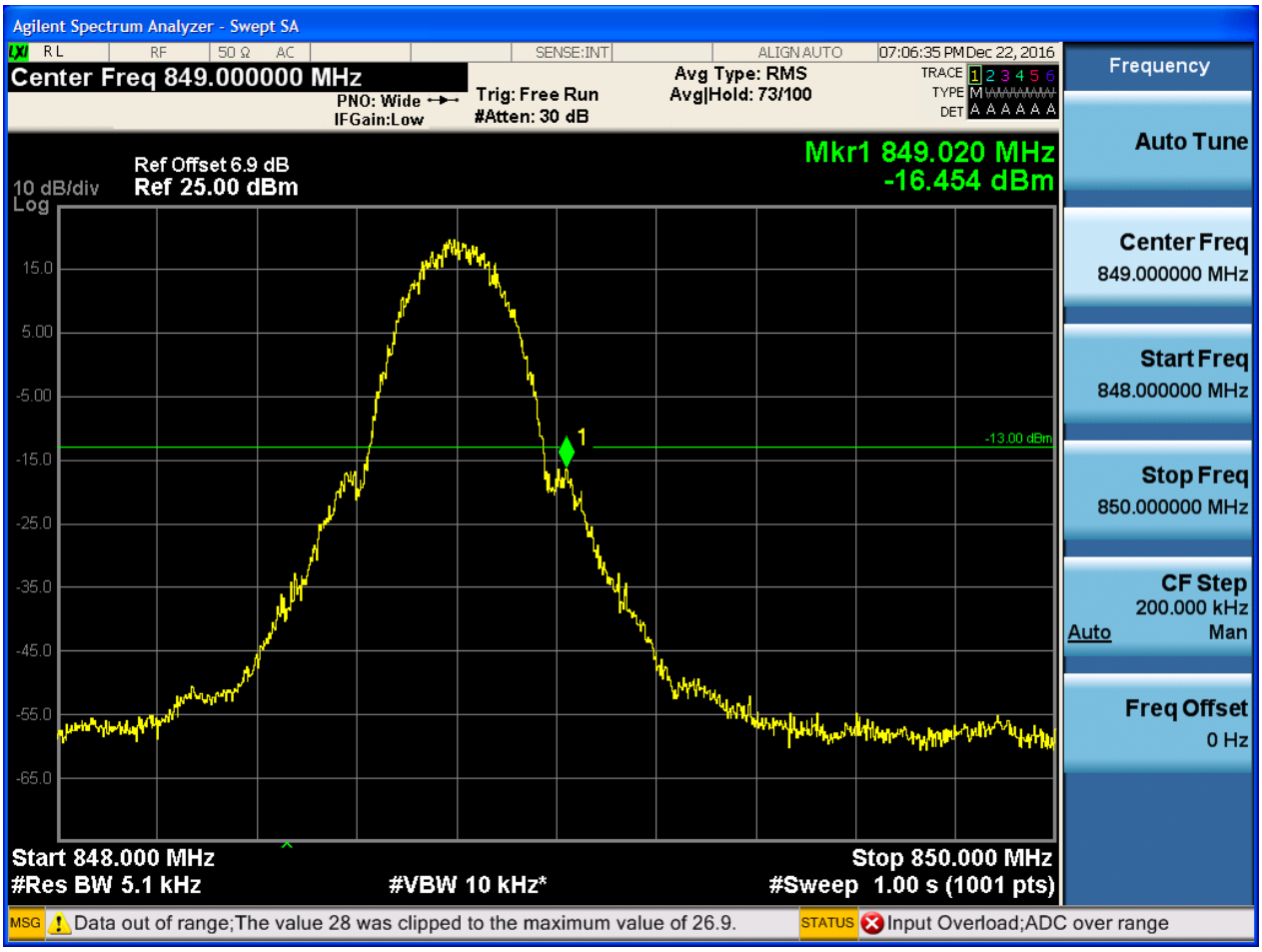
5.1.1.1.2 Test Channel = HCH



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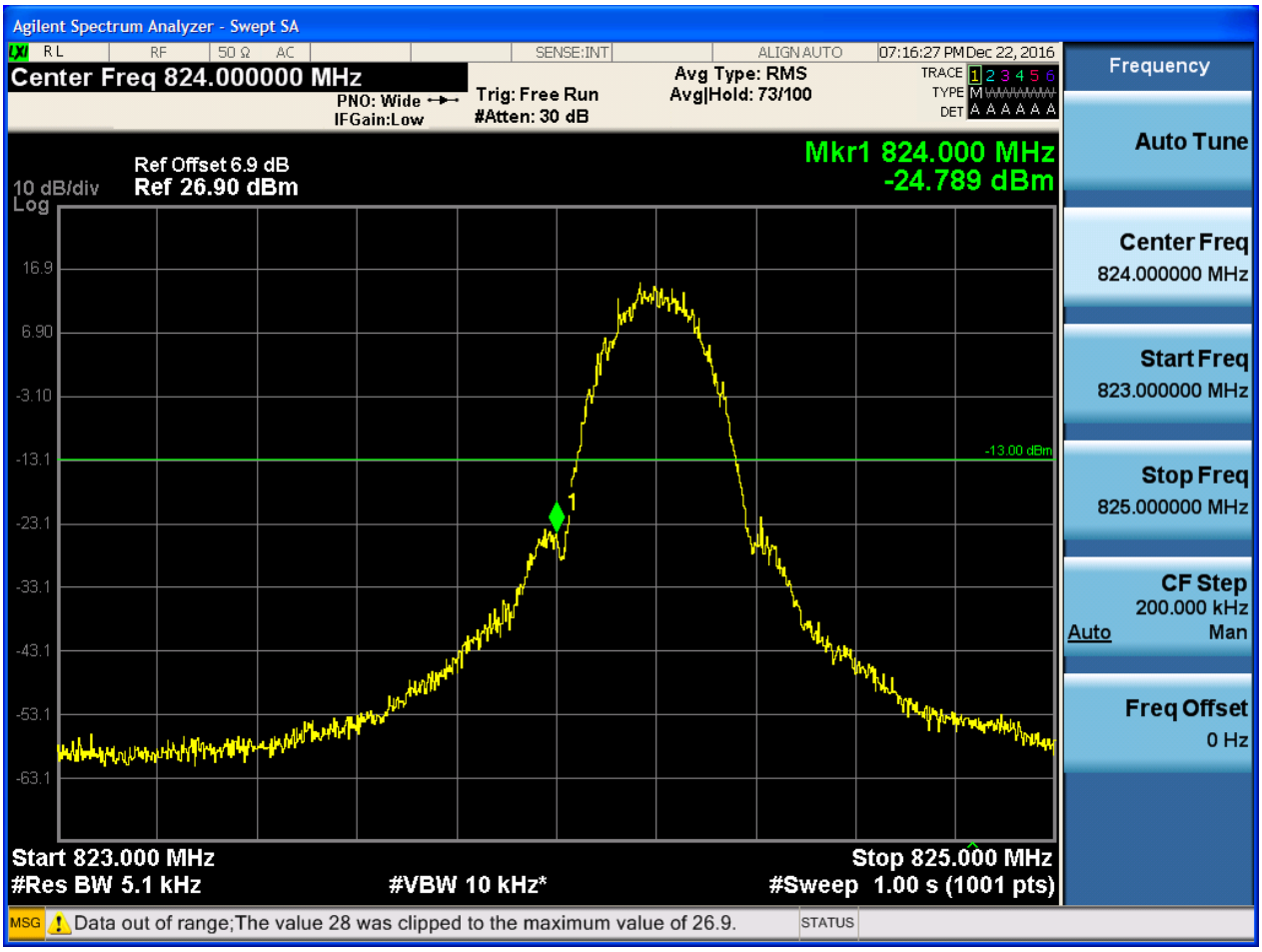
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH



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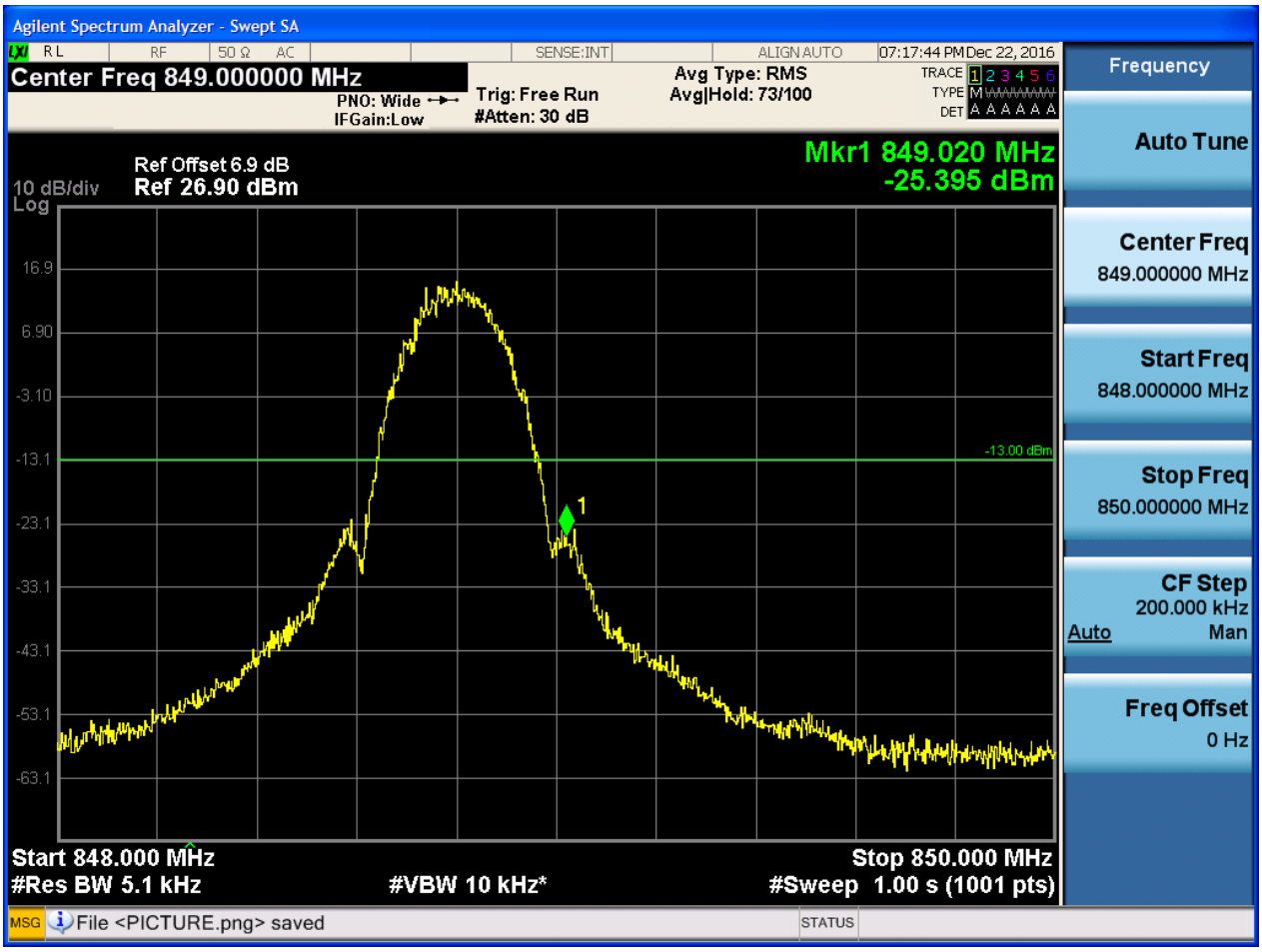
5.1.1.2.2 Test Channel = HCH



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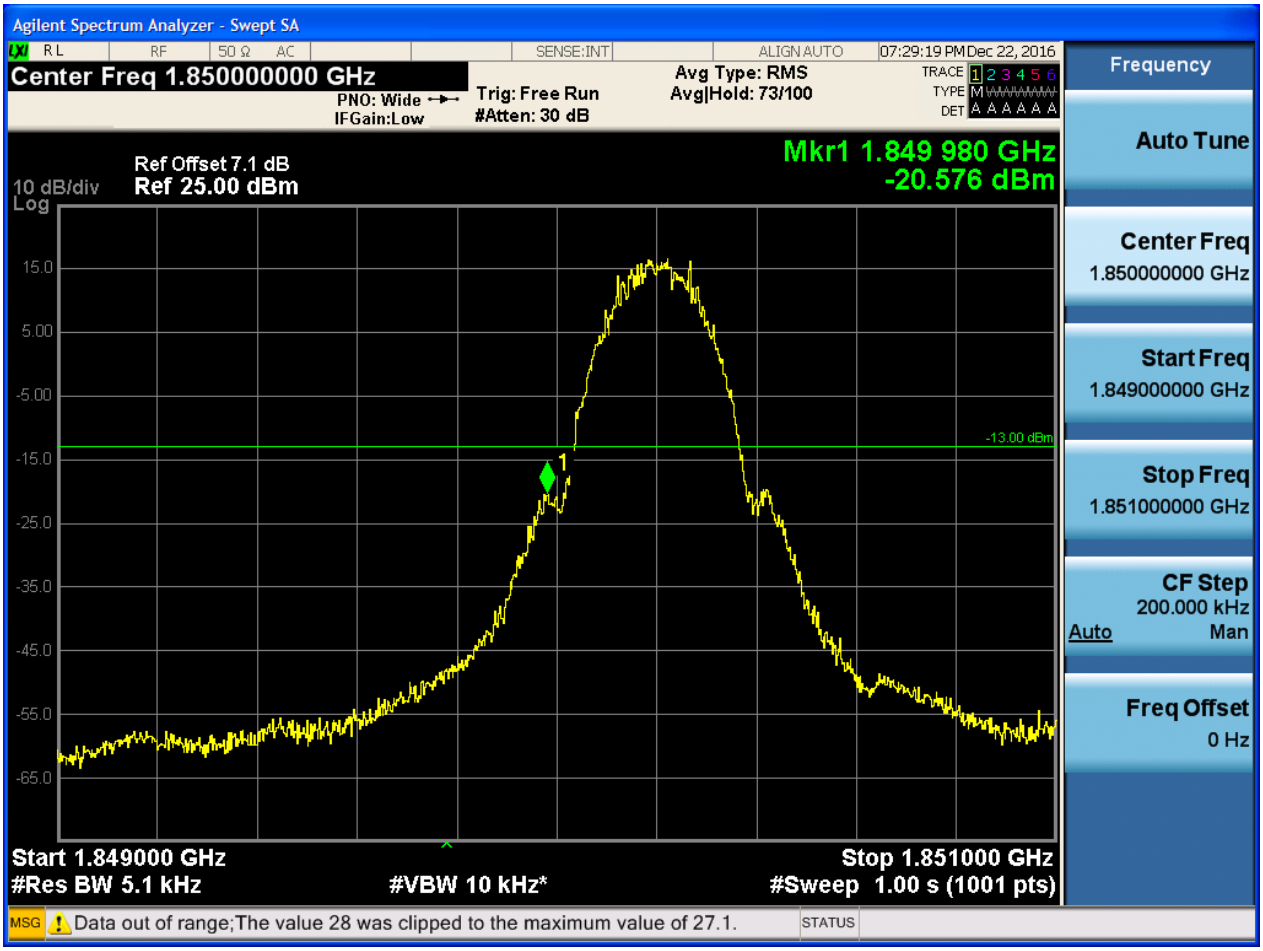
5.1.2 Test Band = GSM1900

5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH



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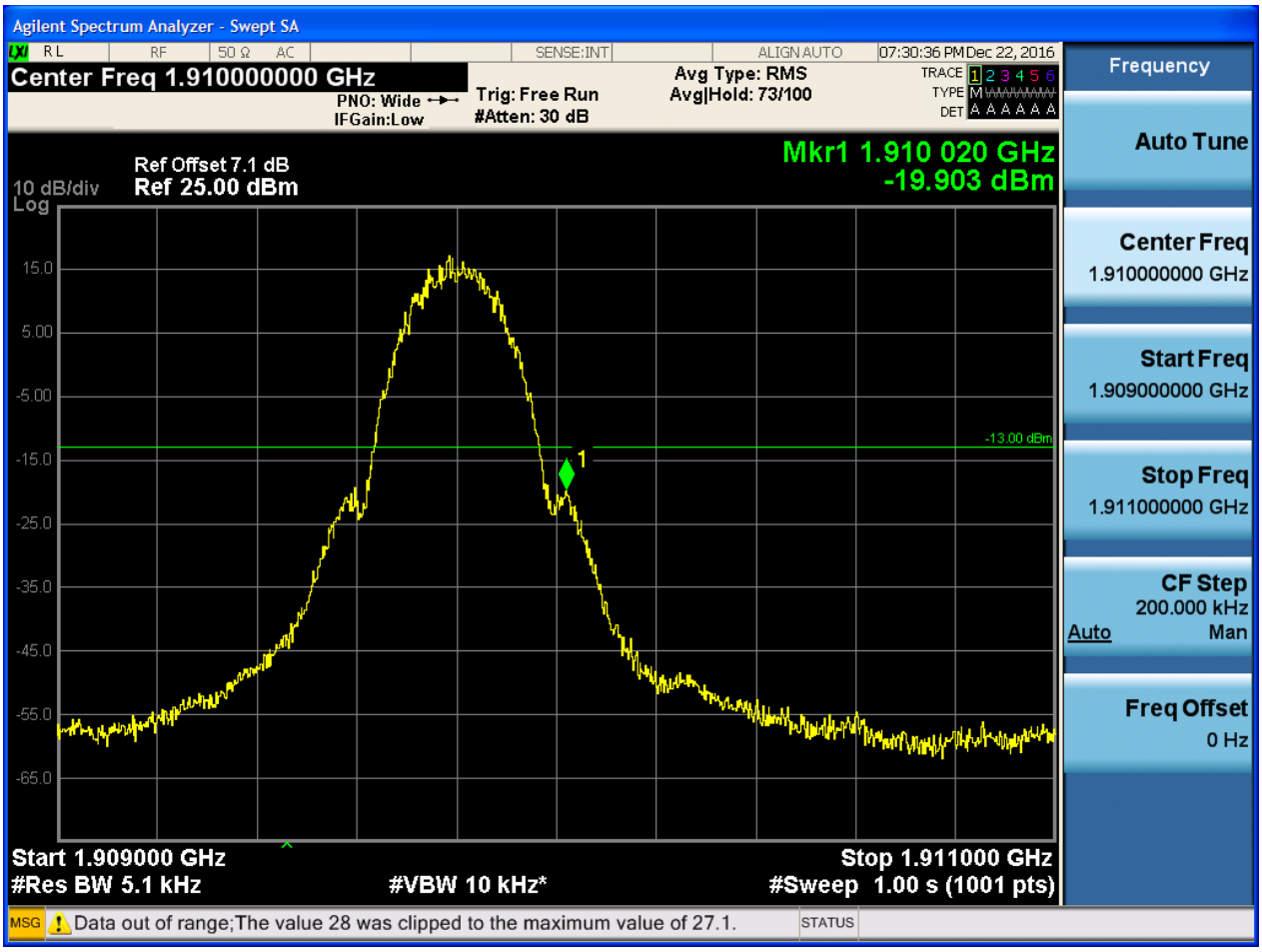
5.1.2.1.2 Test Channel = HCH



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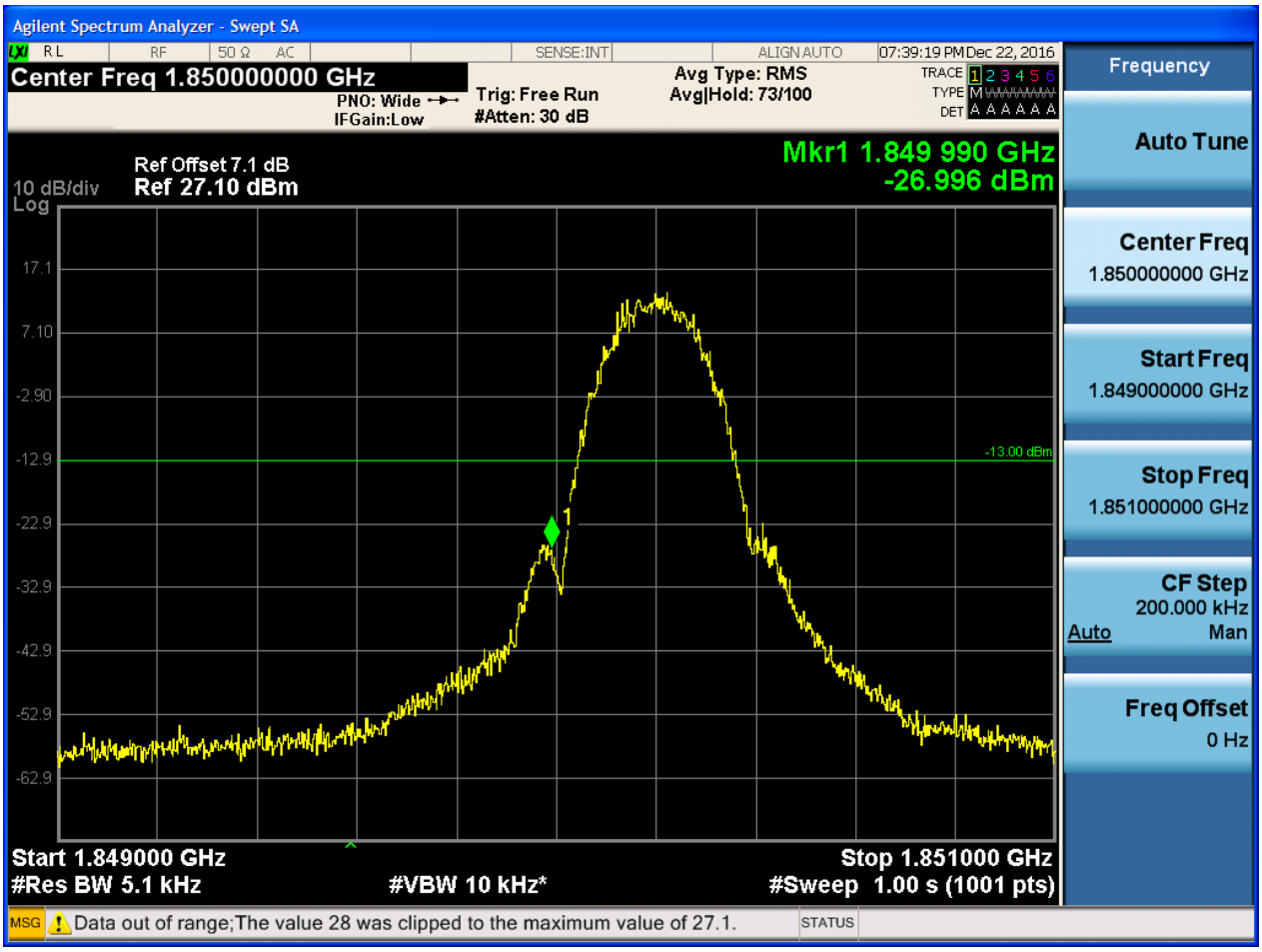
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH



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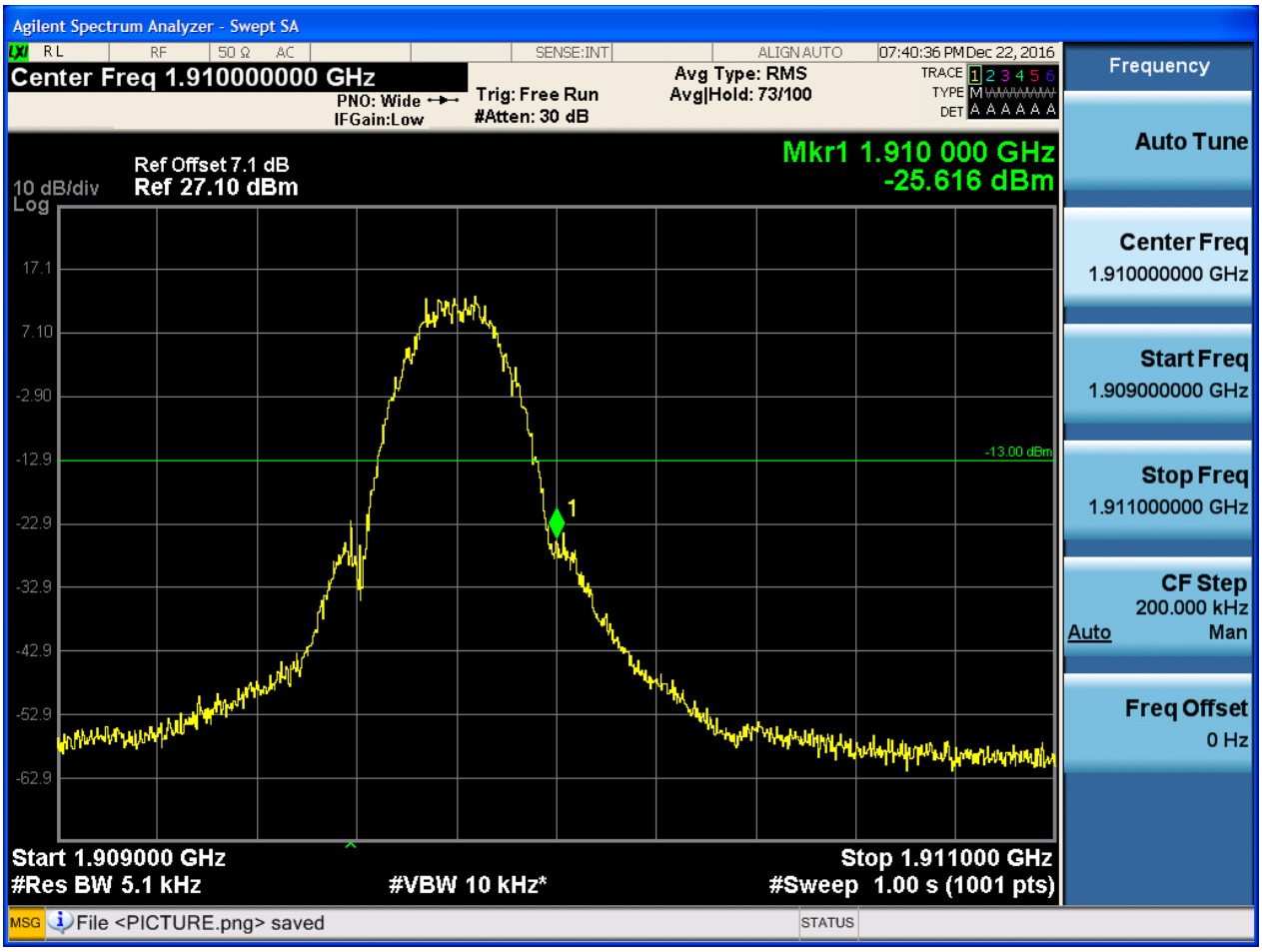
5.1.2.2.2 Test Channel = HCH



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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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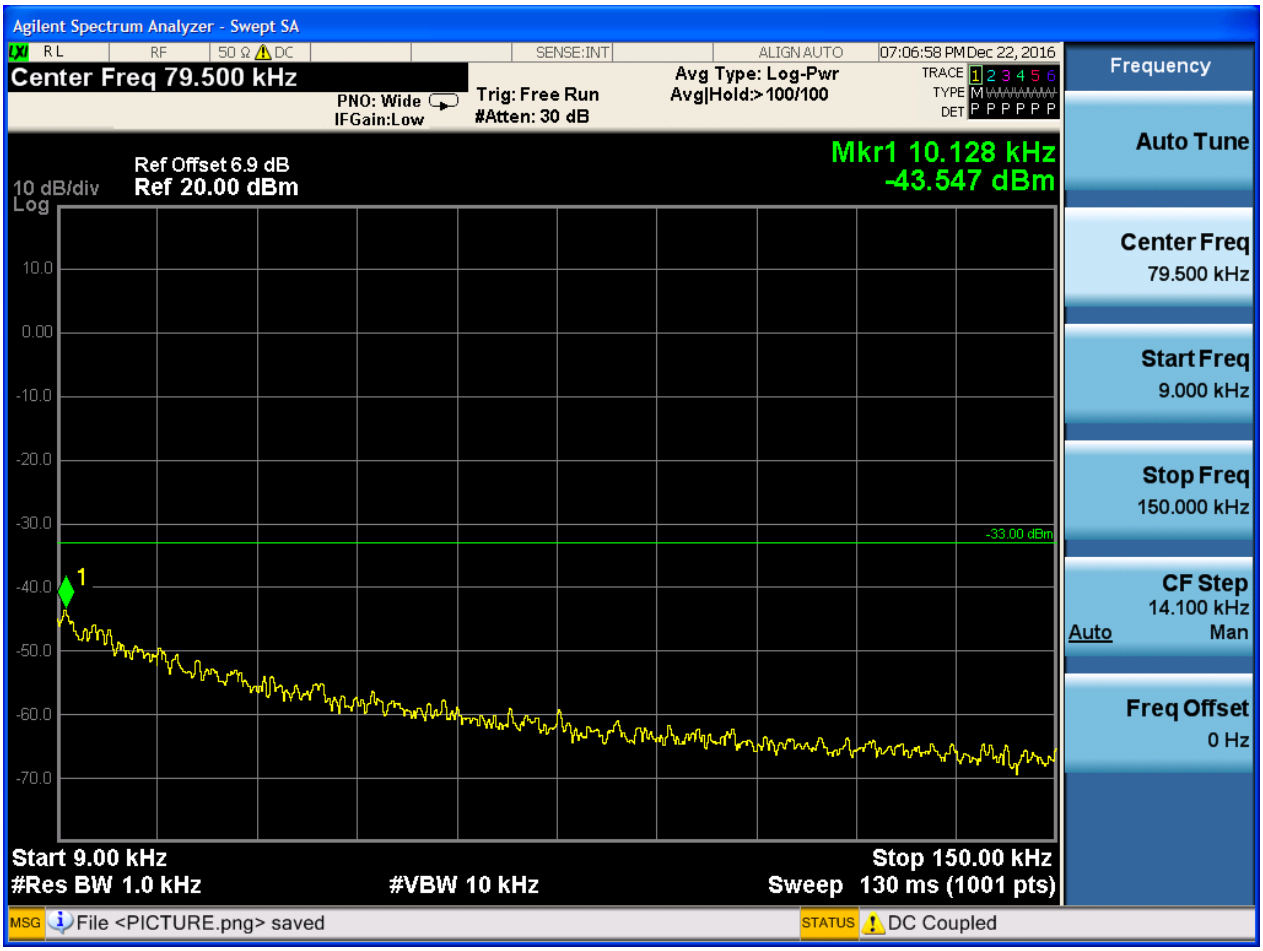

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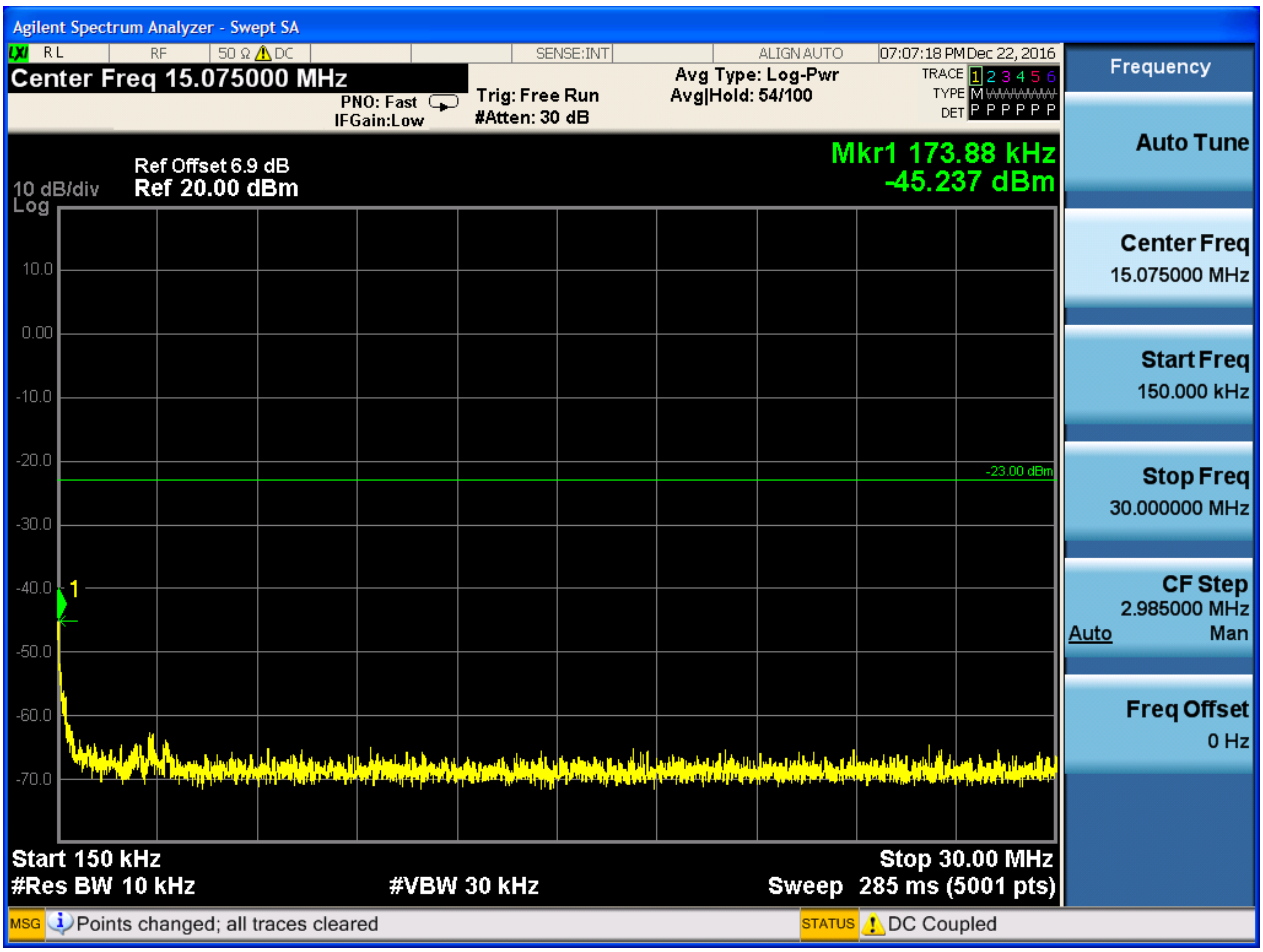

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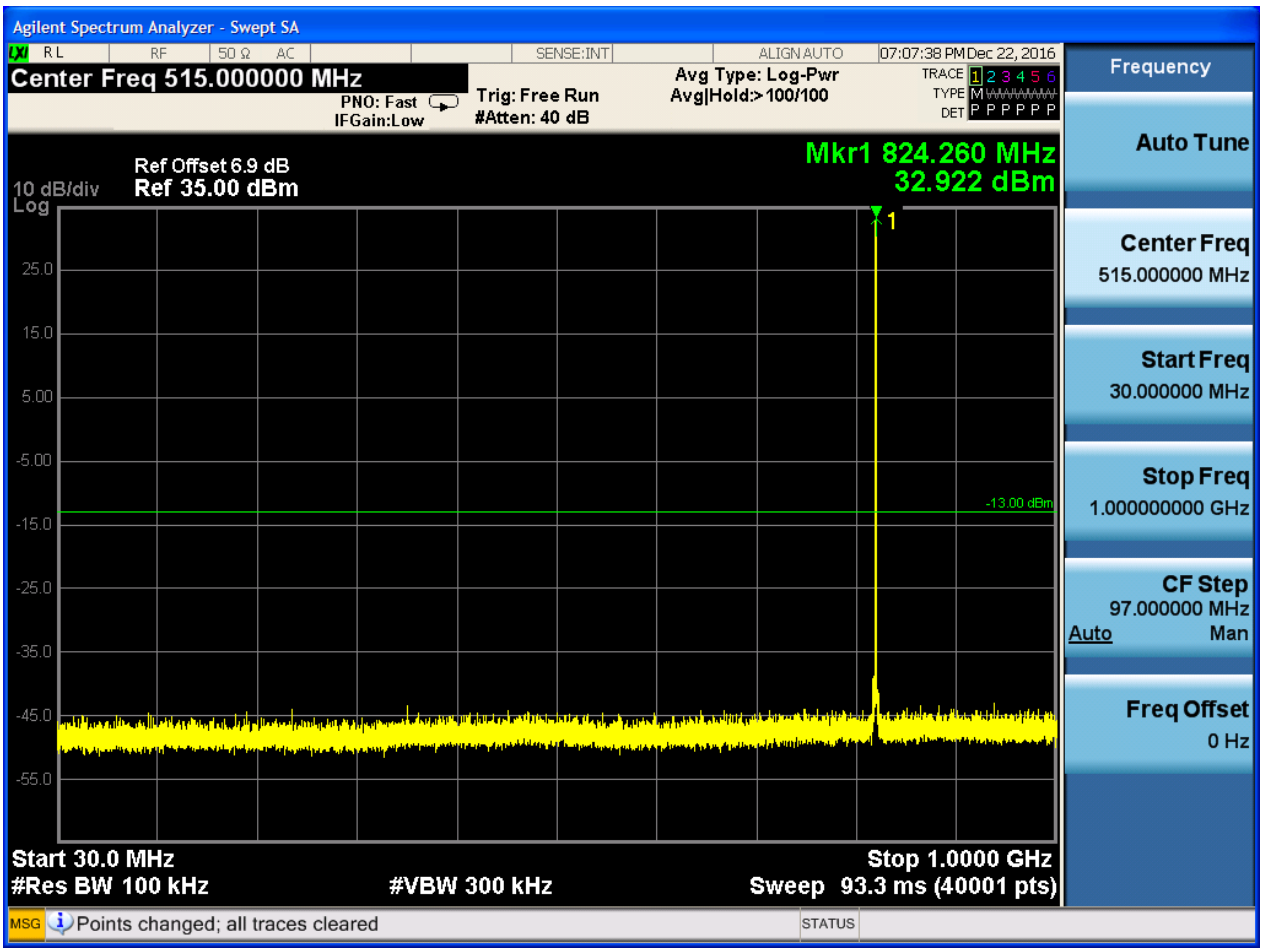

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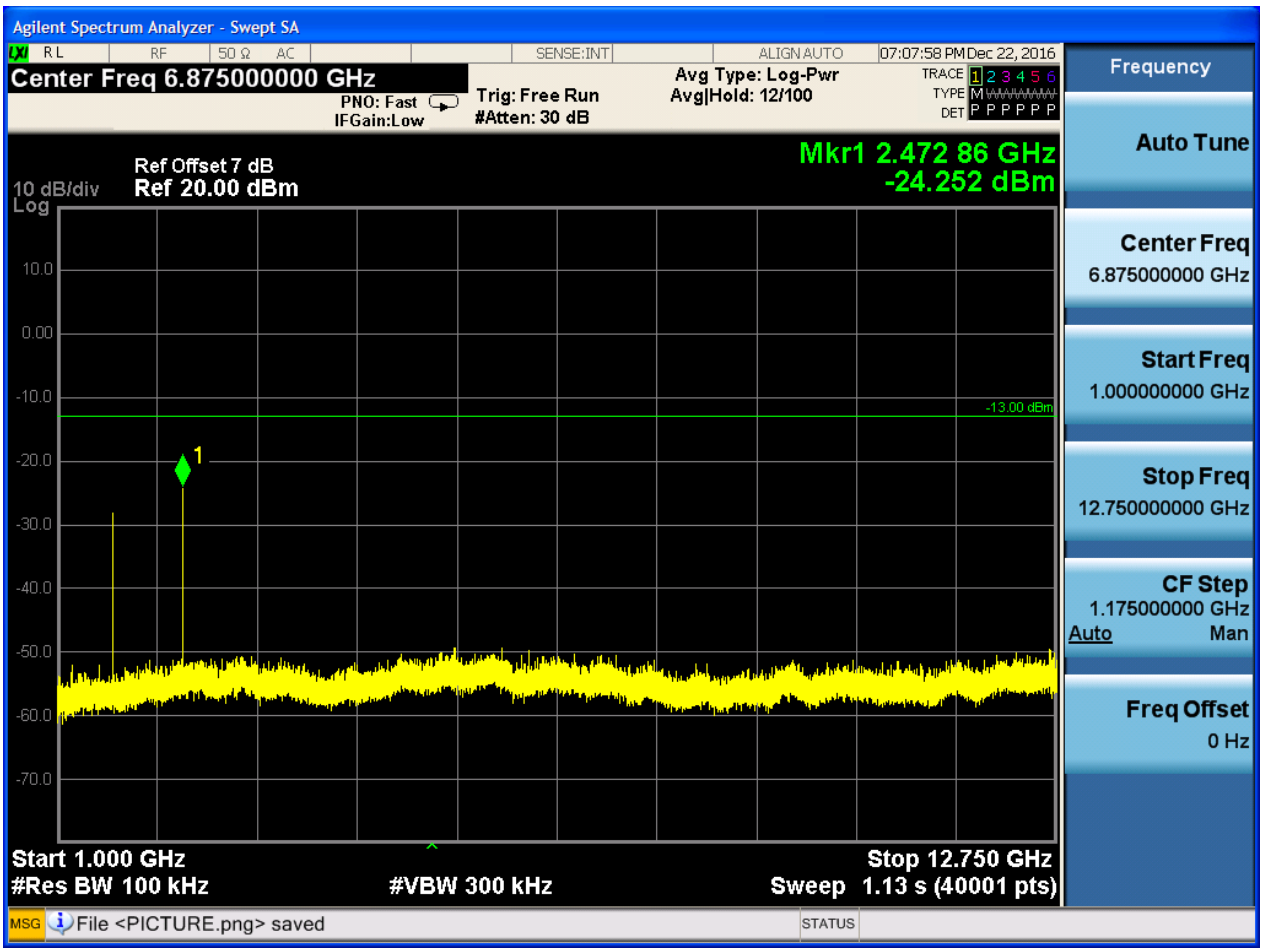

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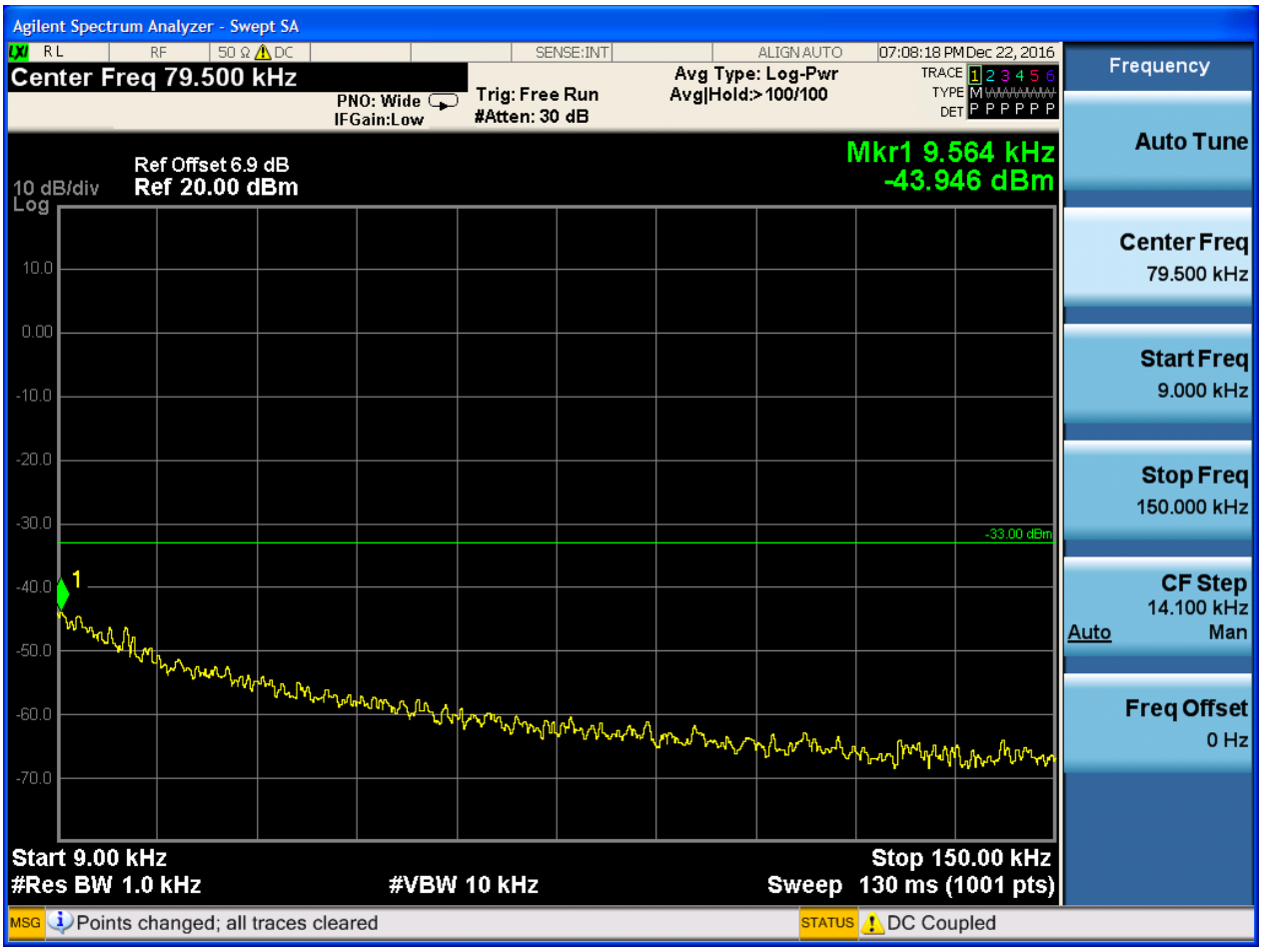
6.1.1.1.2 Test Channel = MCH



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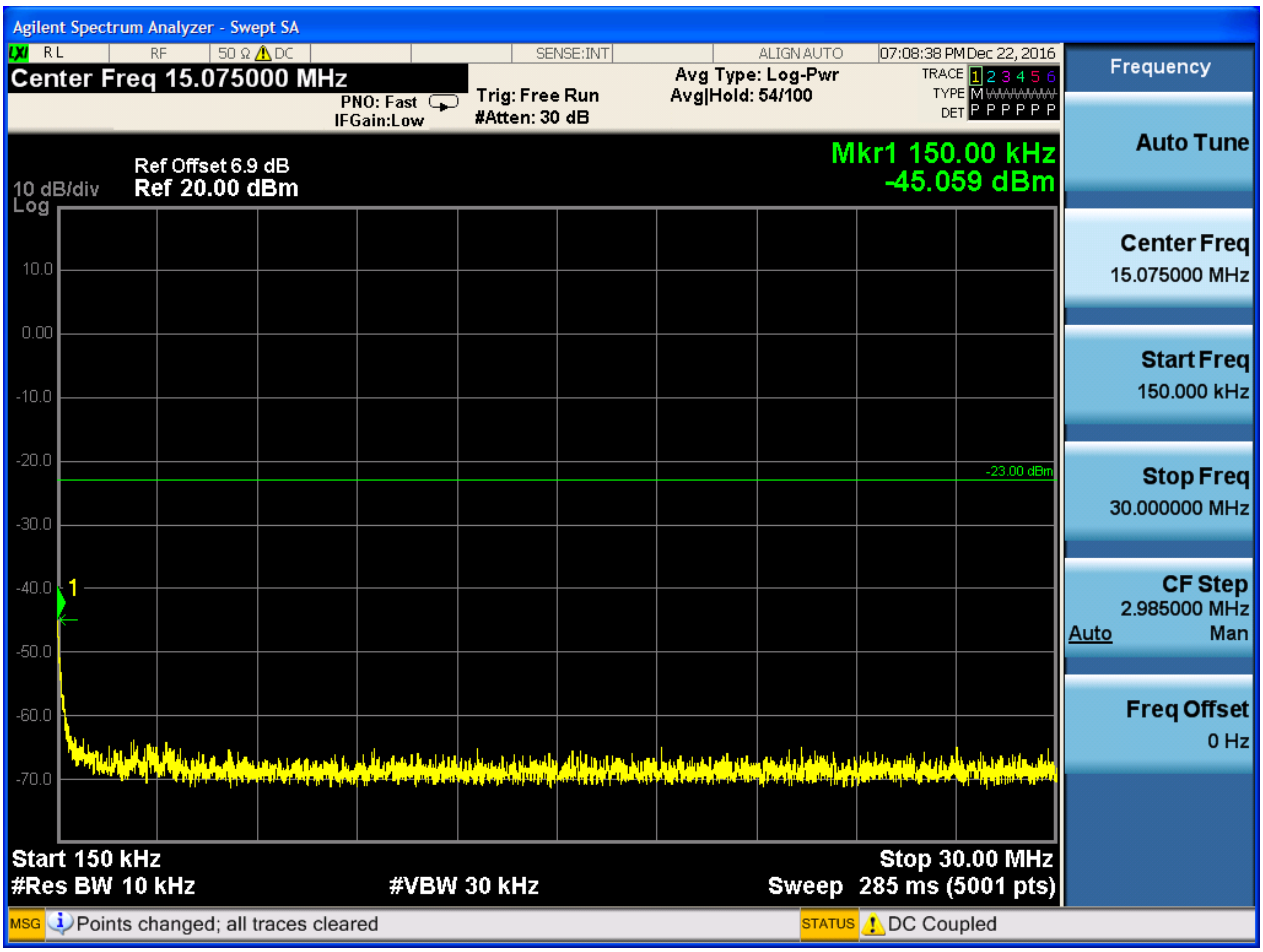

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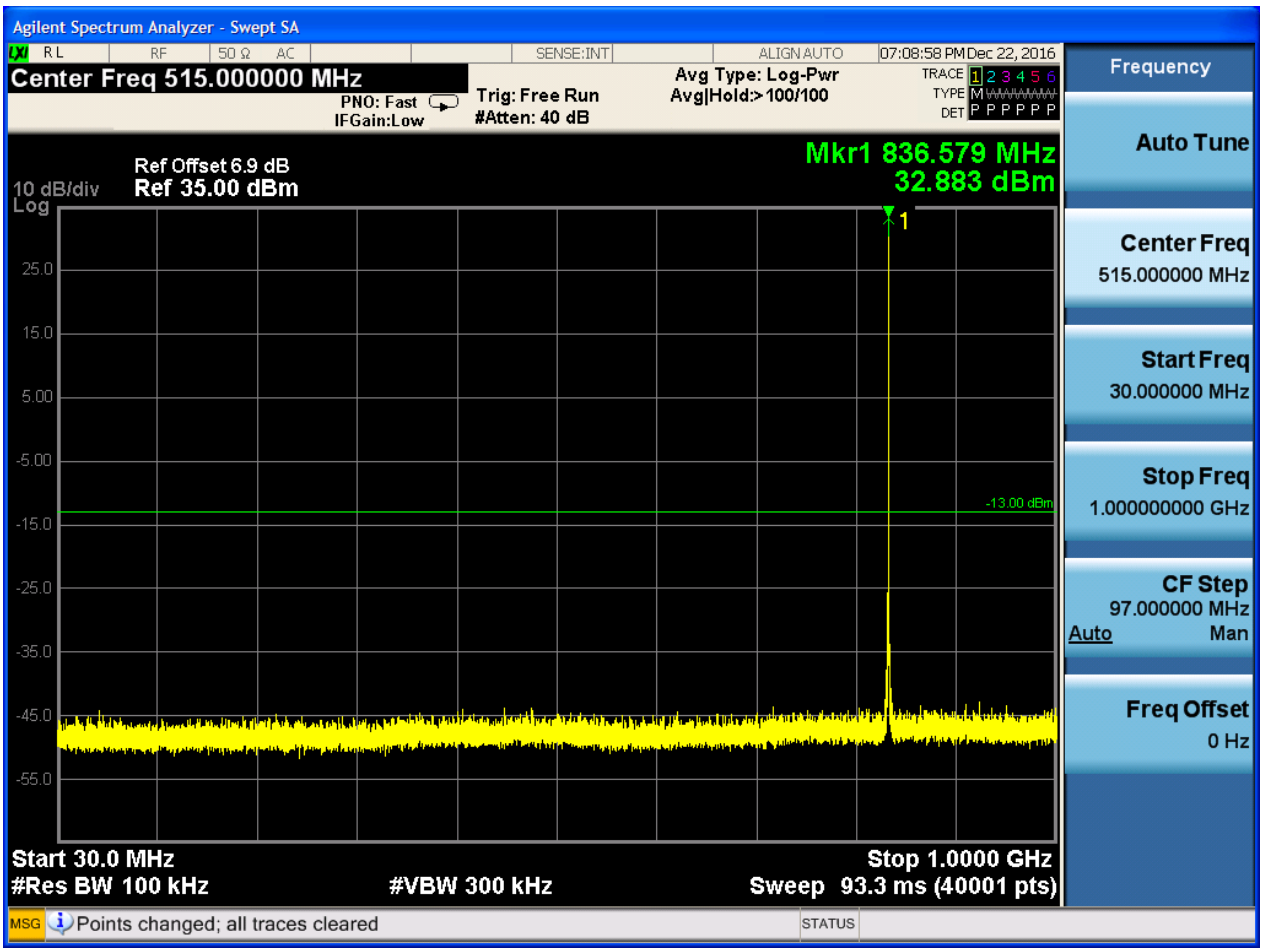

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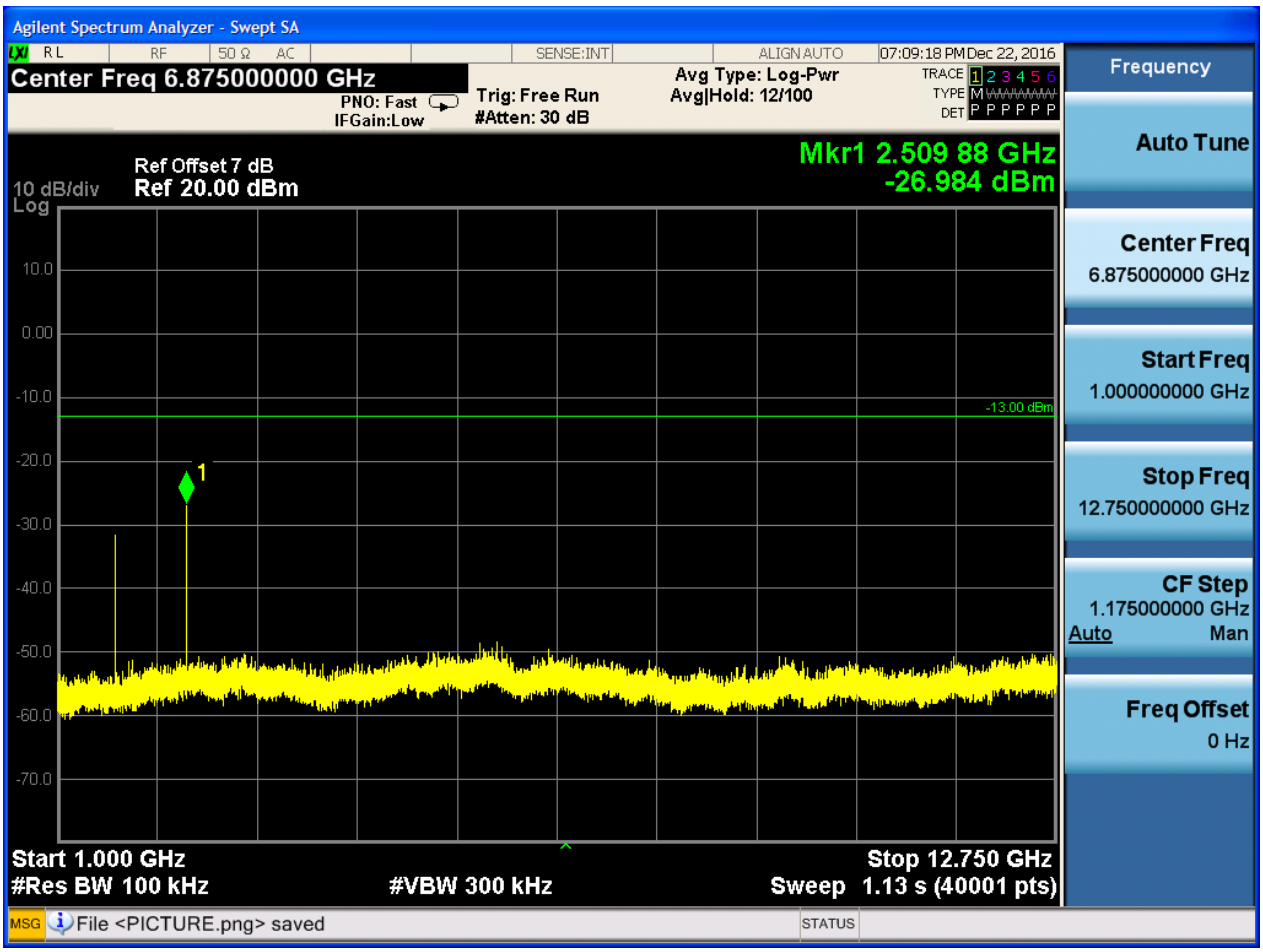

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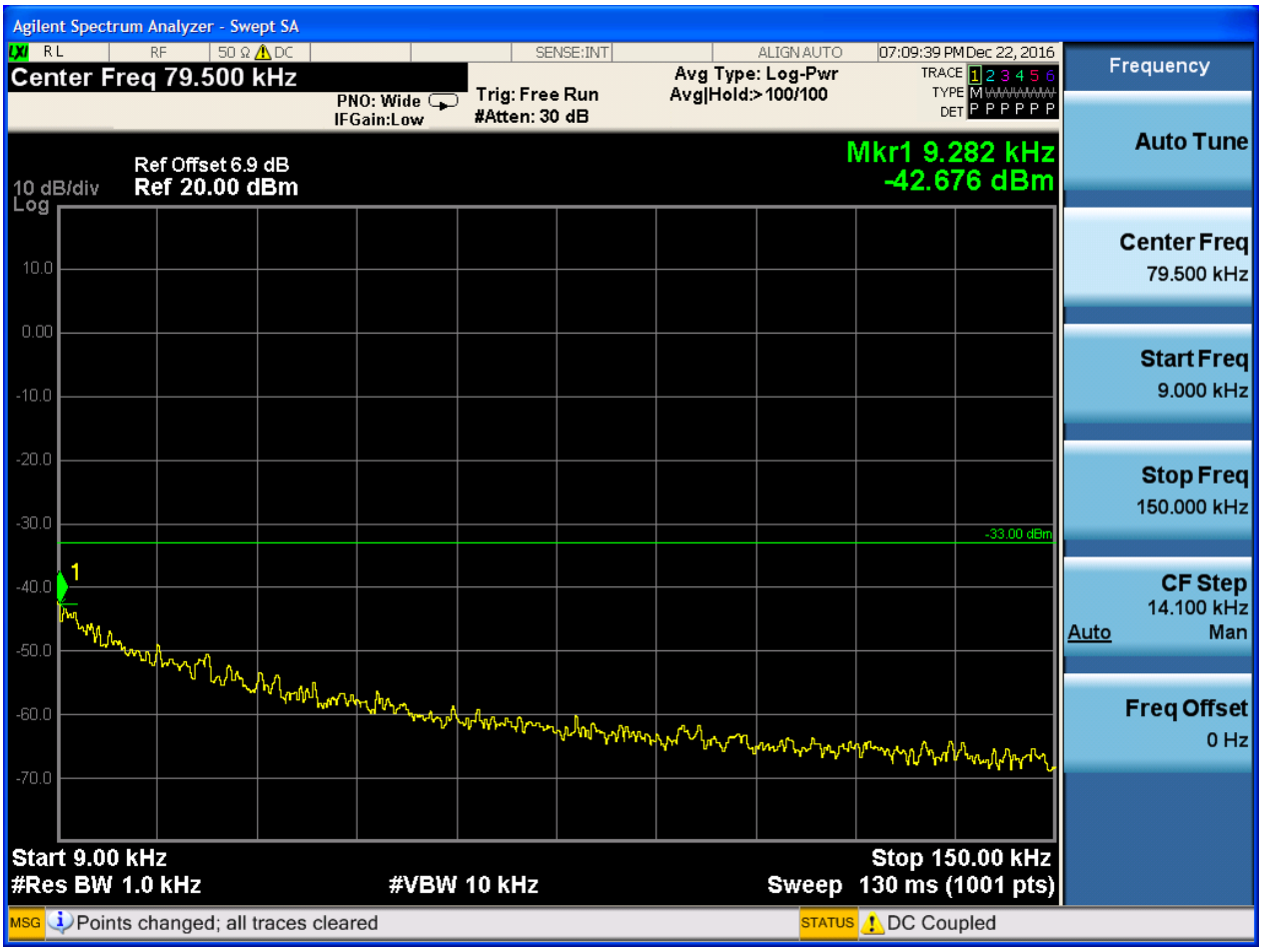
6.1.1.1.3 Test Channel = HCH



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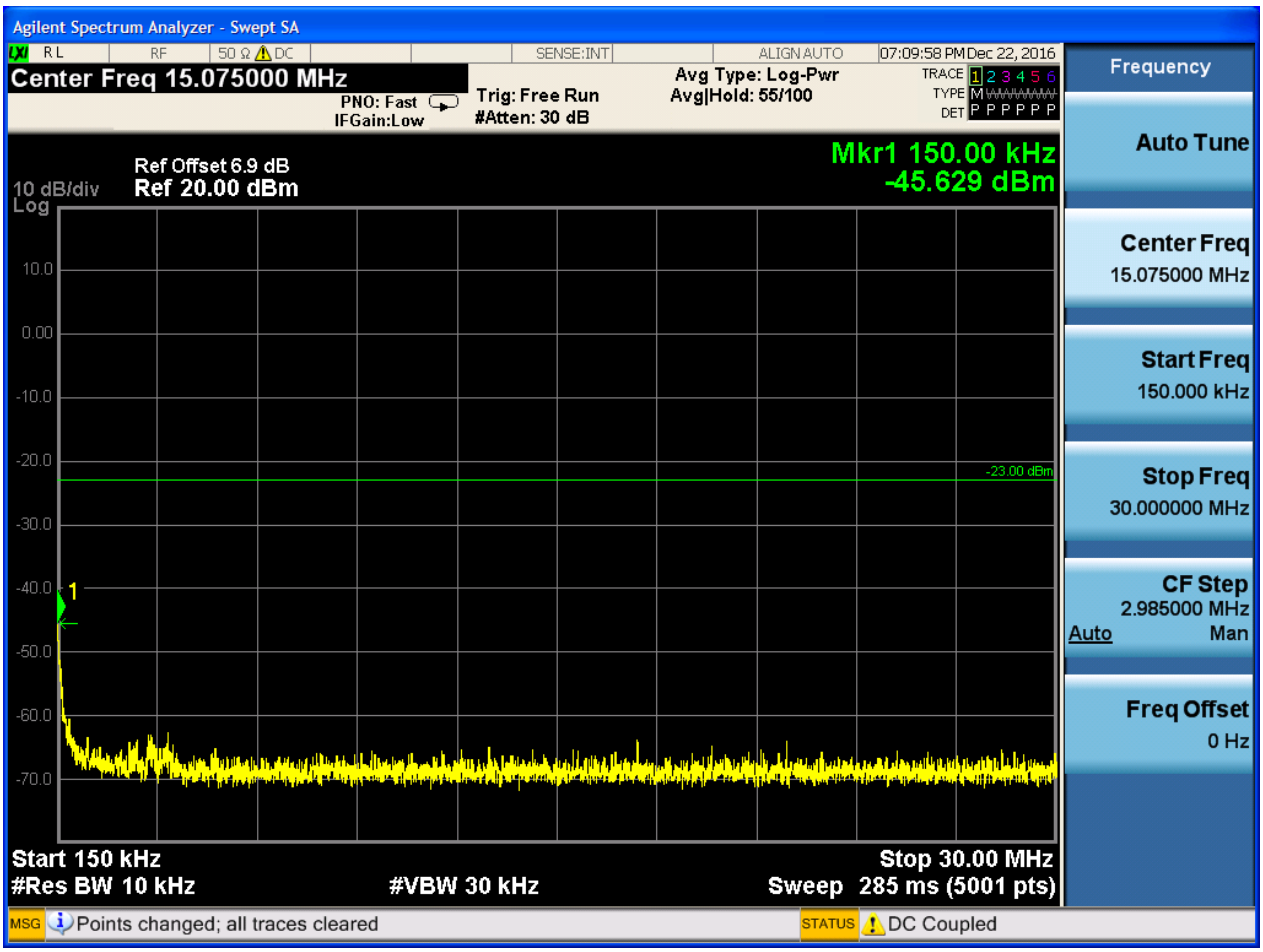

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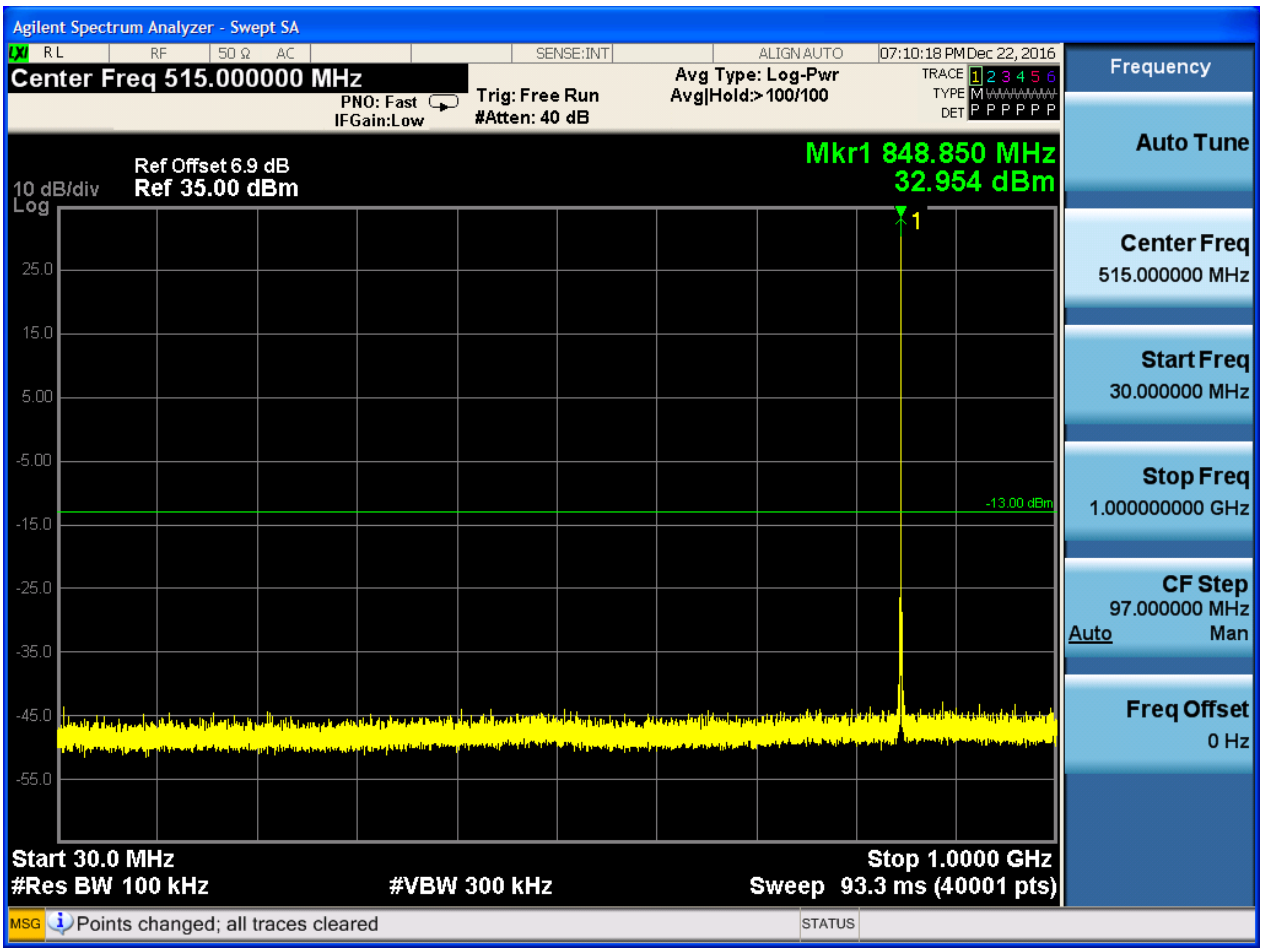

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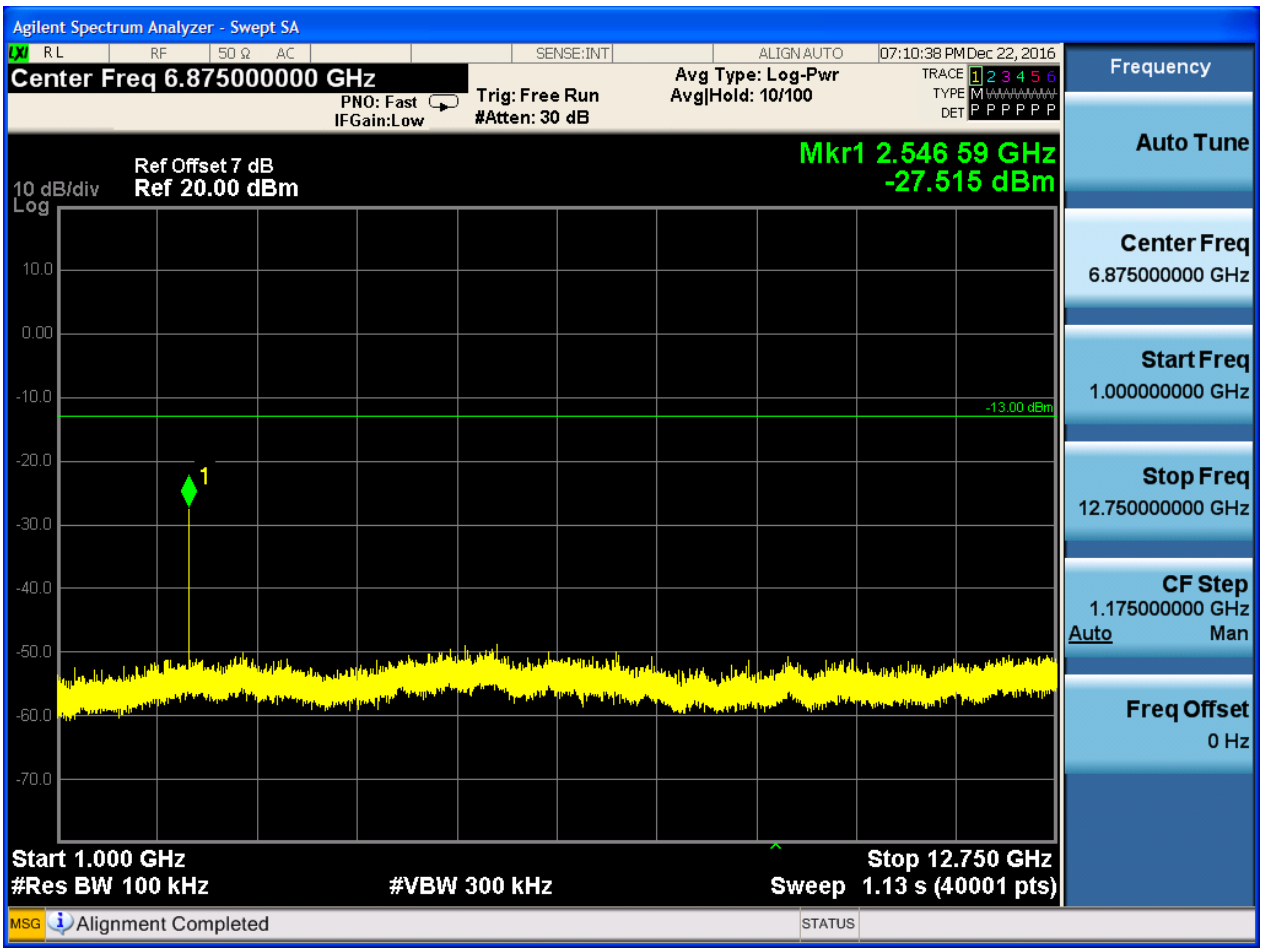

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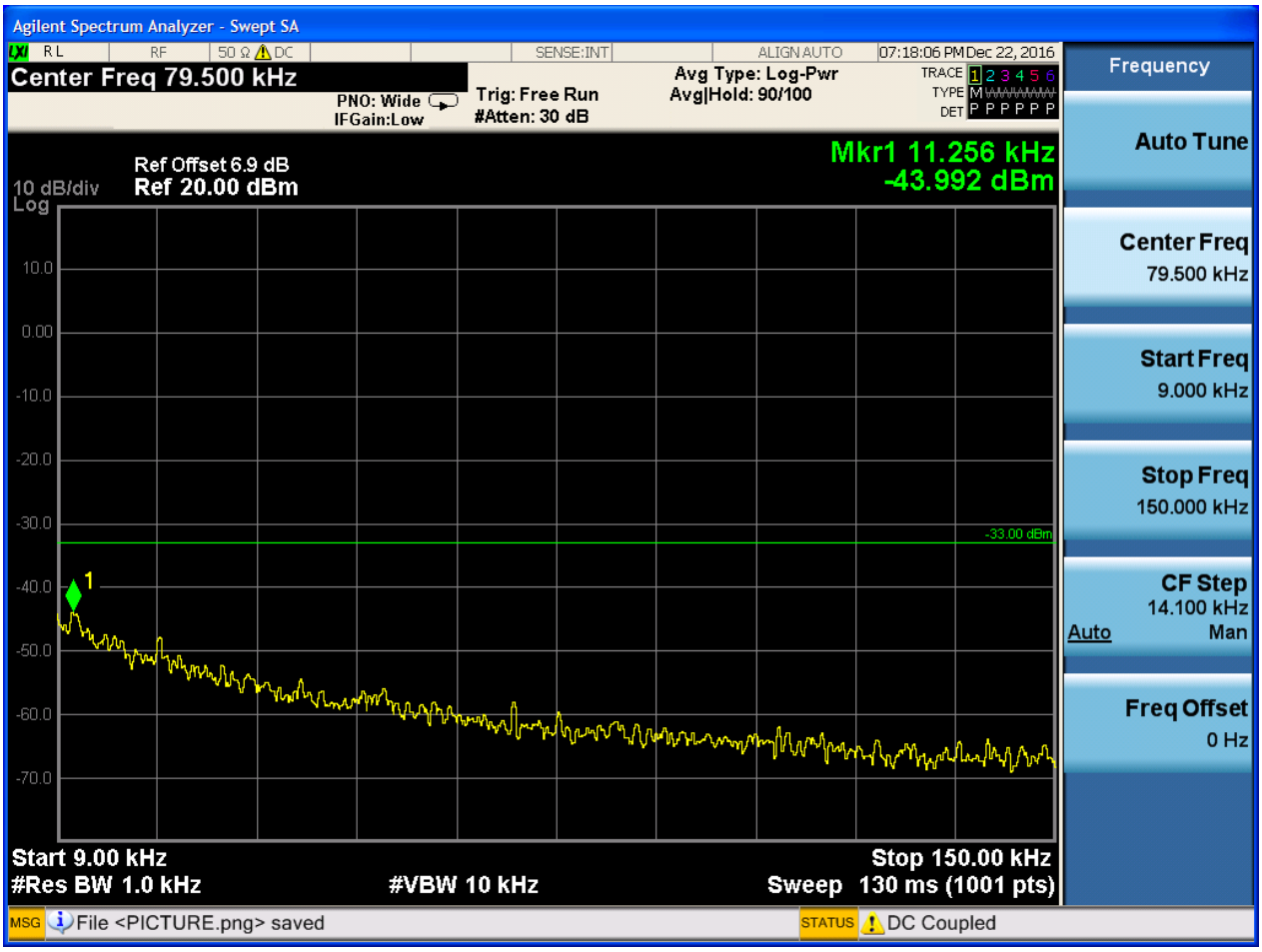
6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



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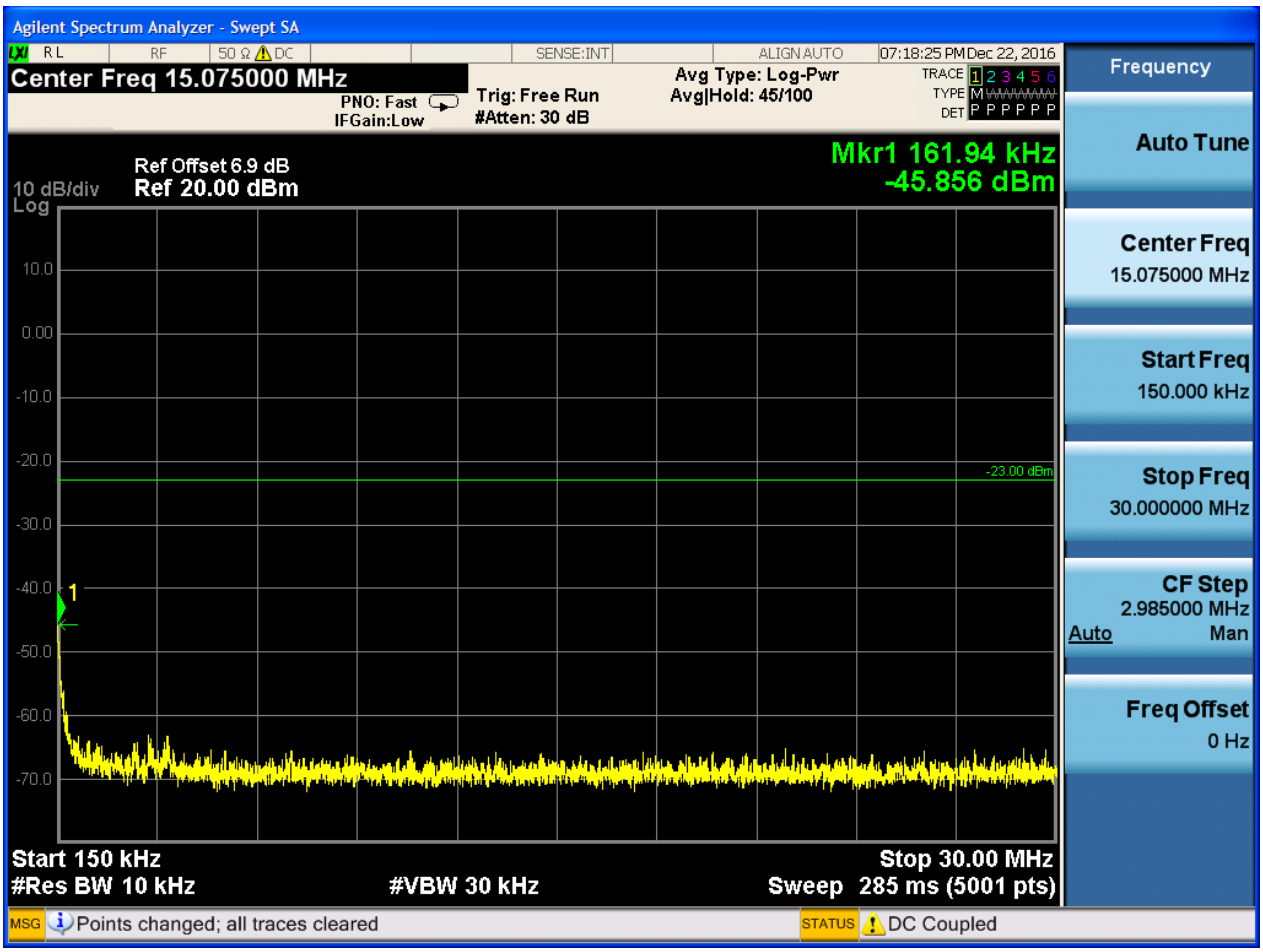

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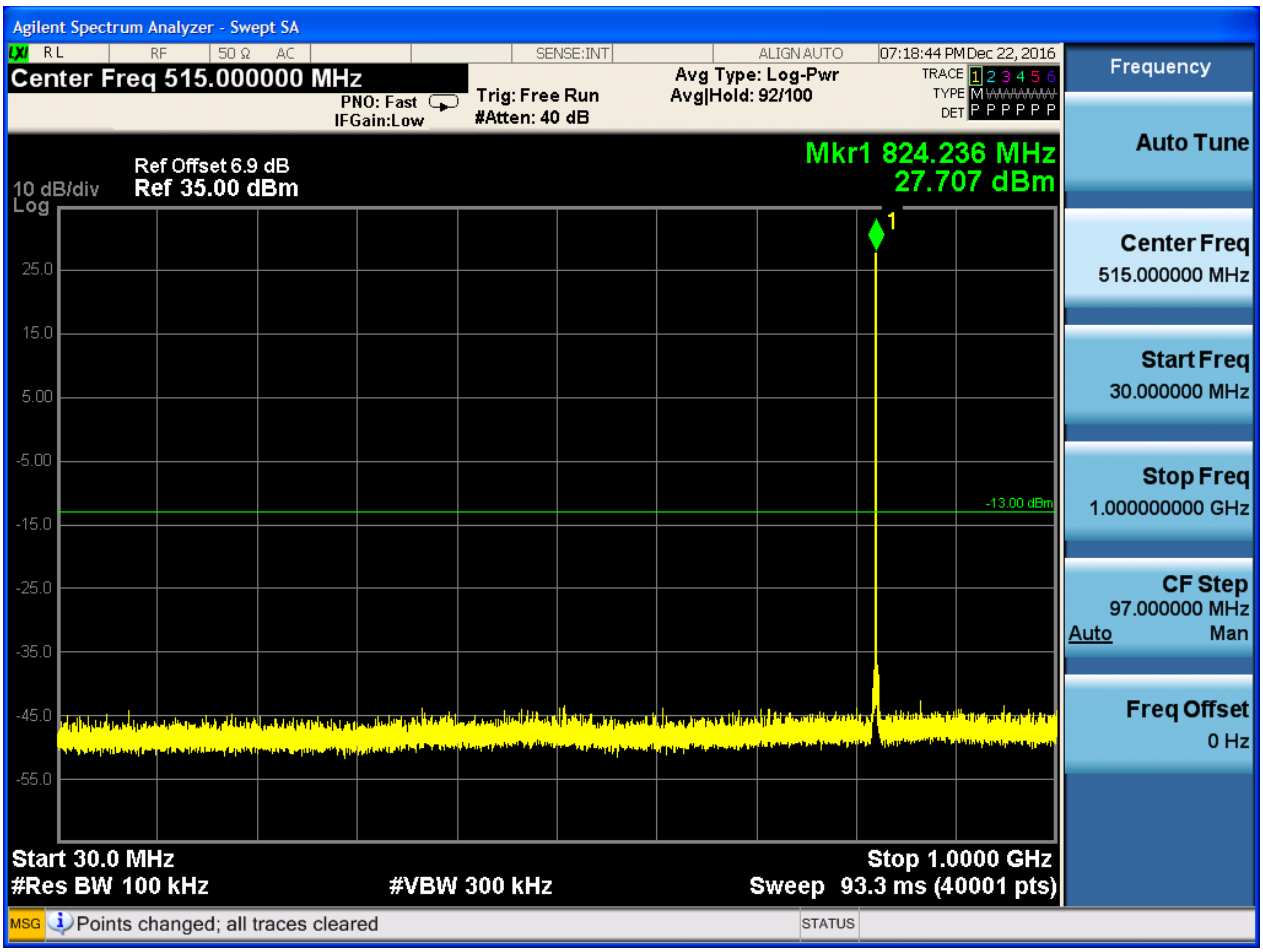

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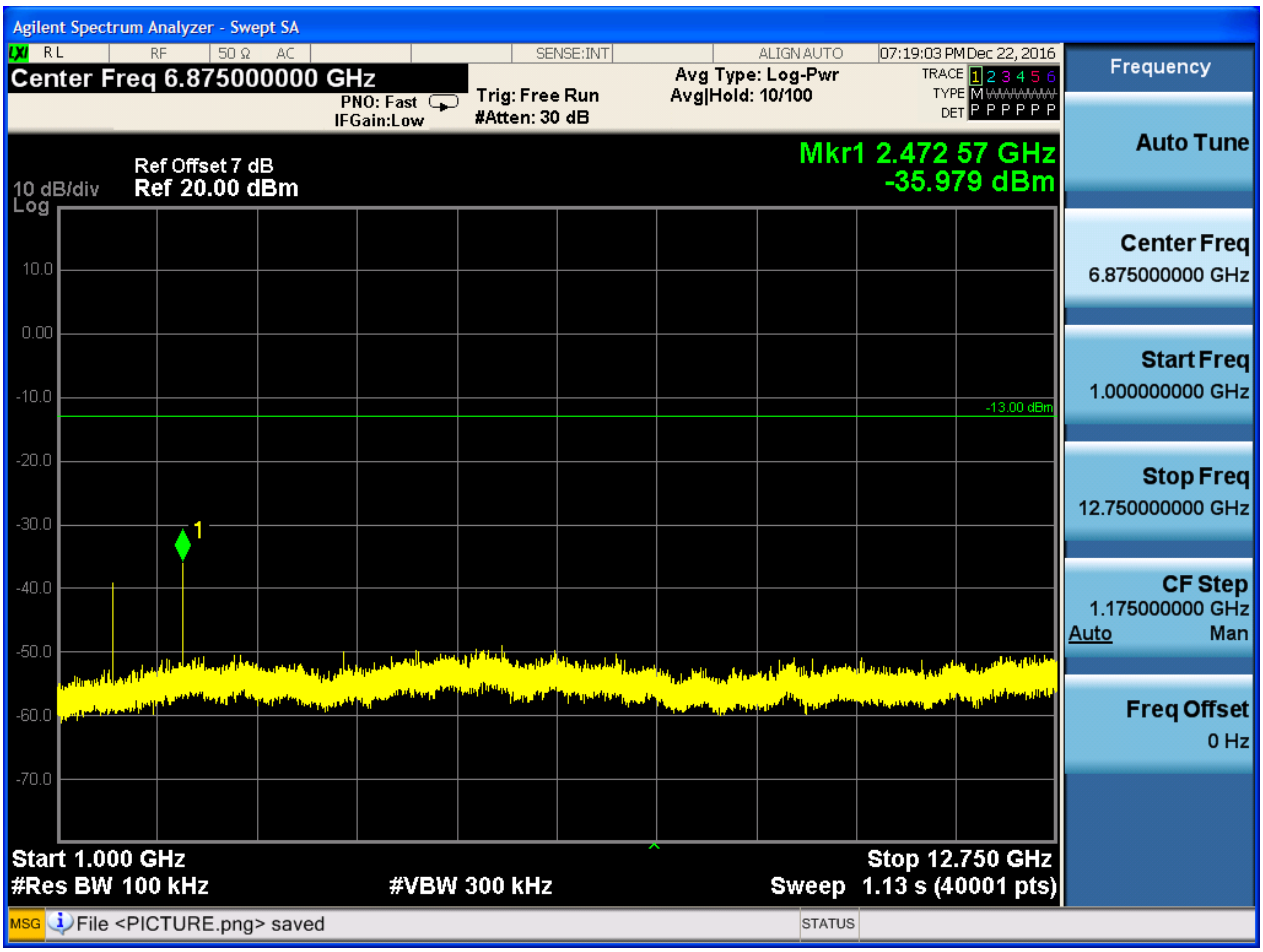

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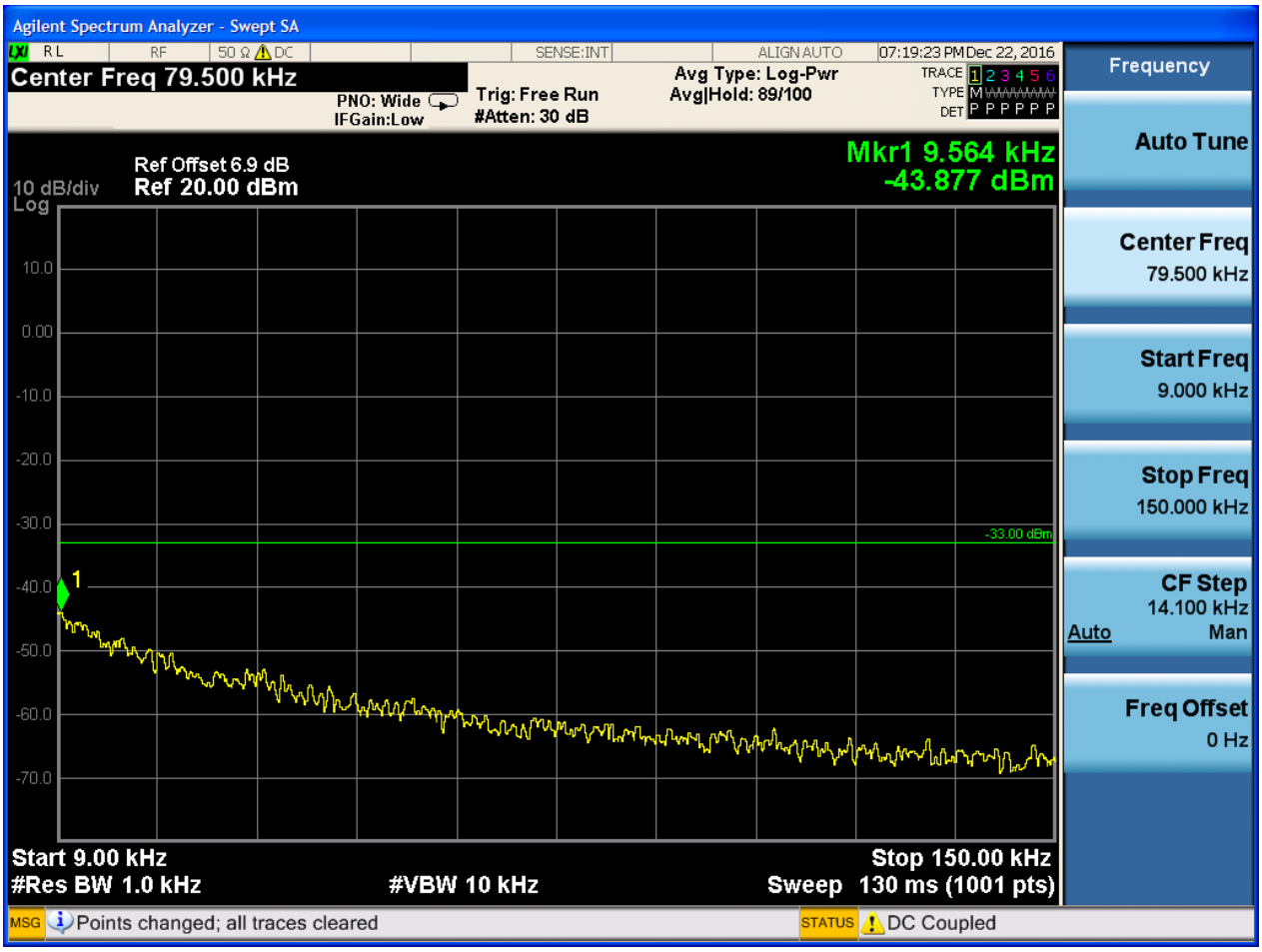
6.1.1.2.2 Test Channel = MCH



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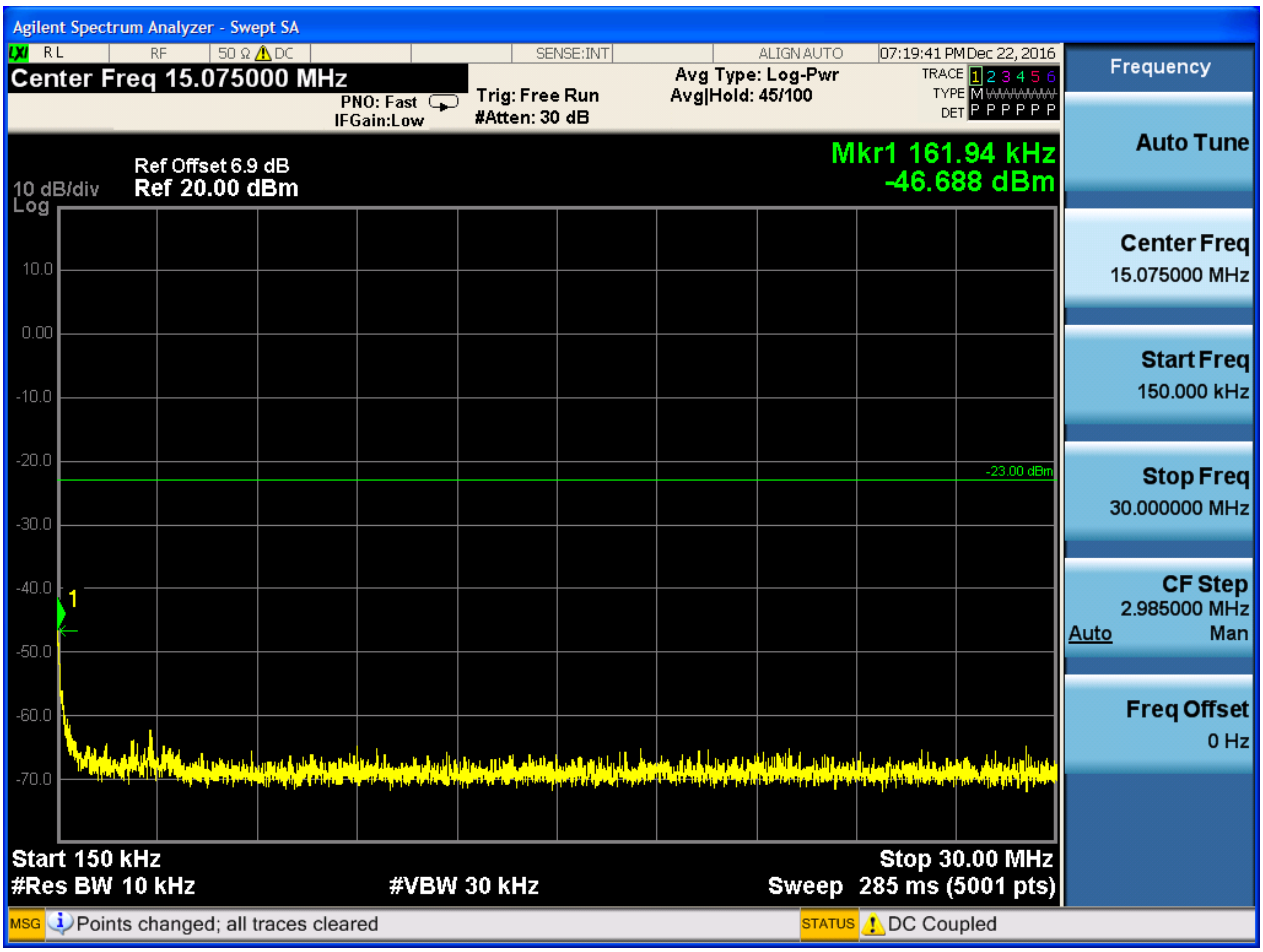

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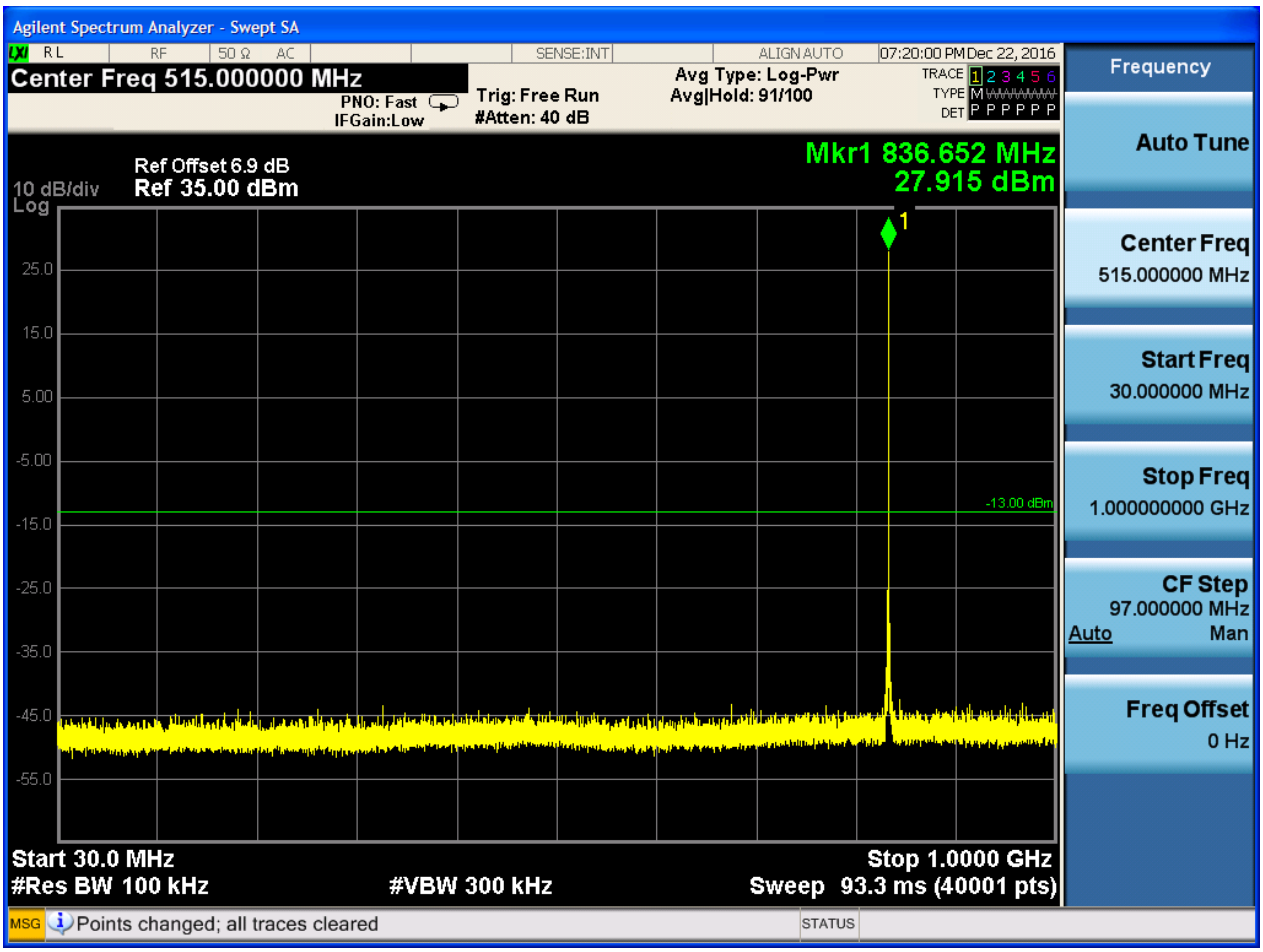

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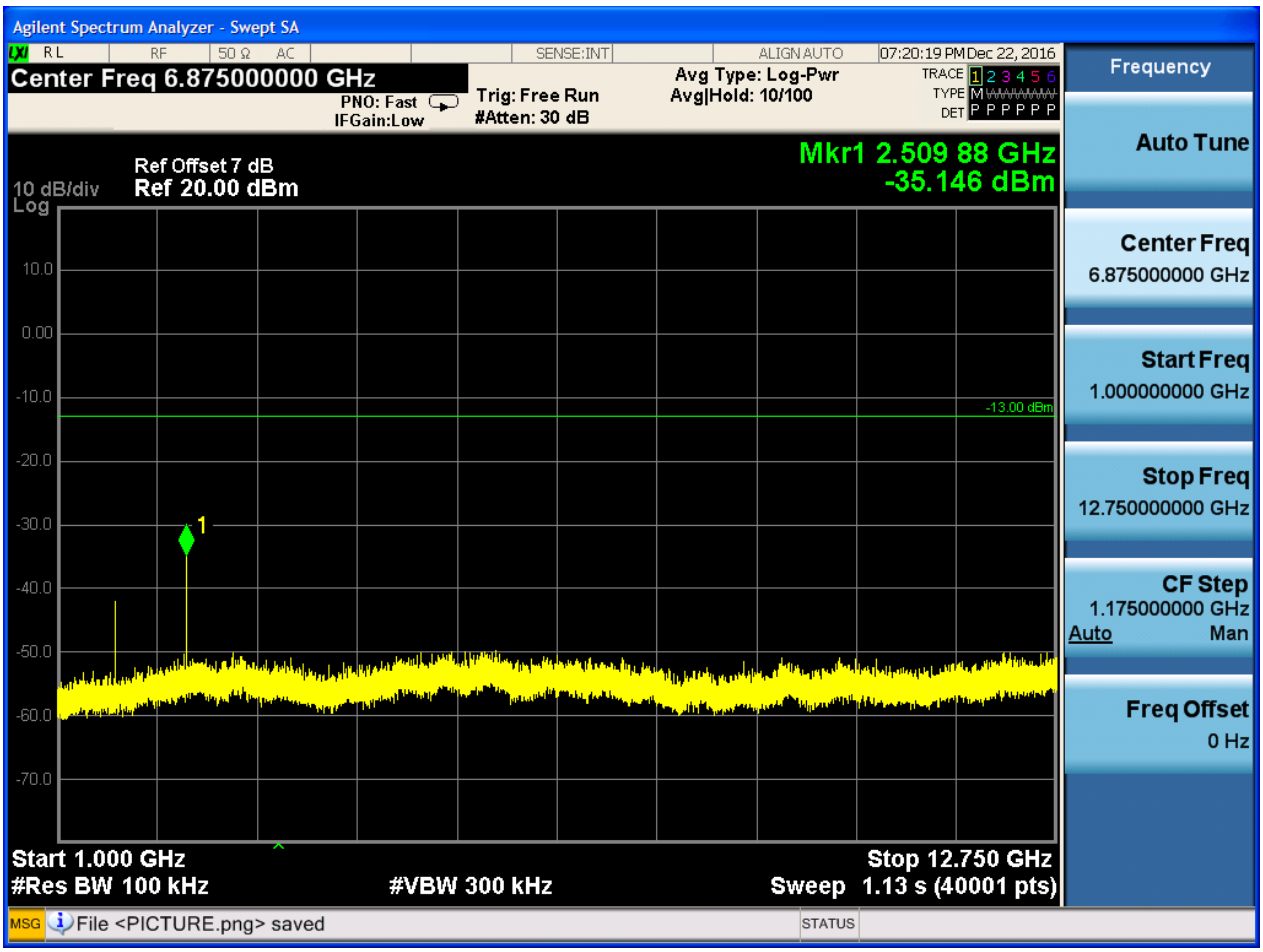

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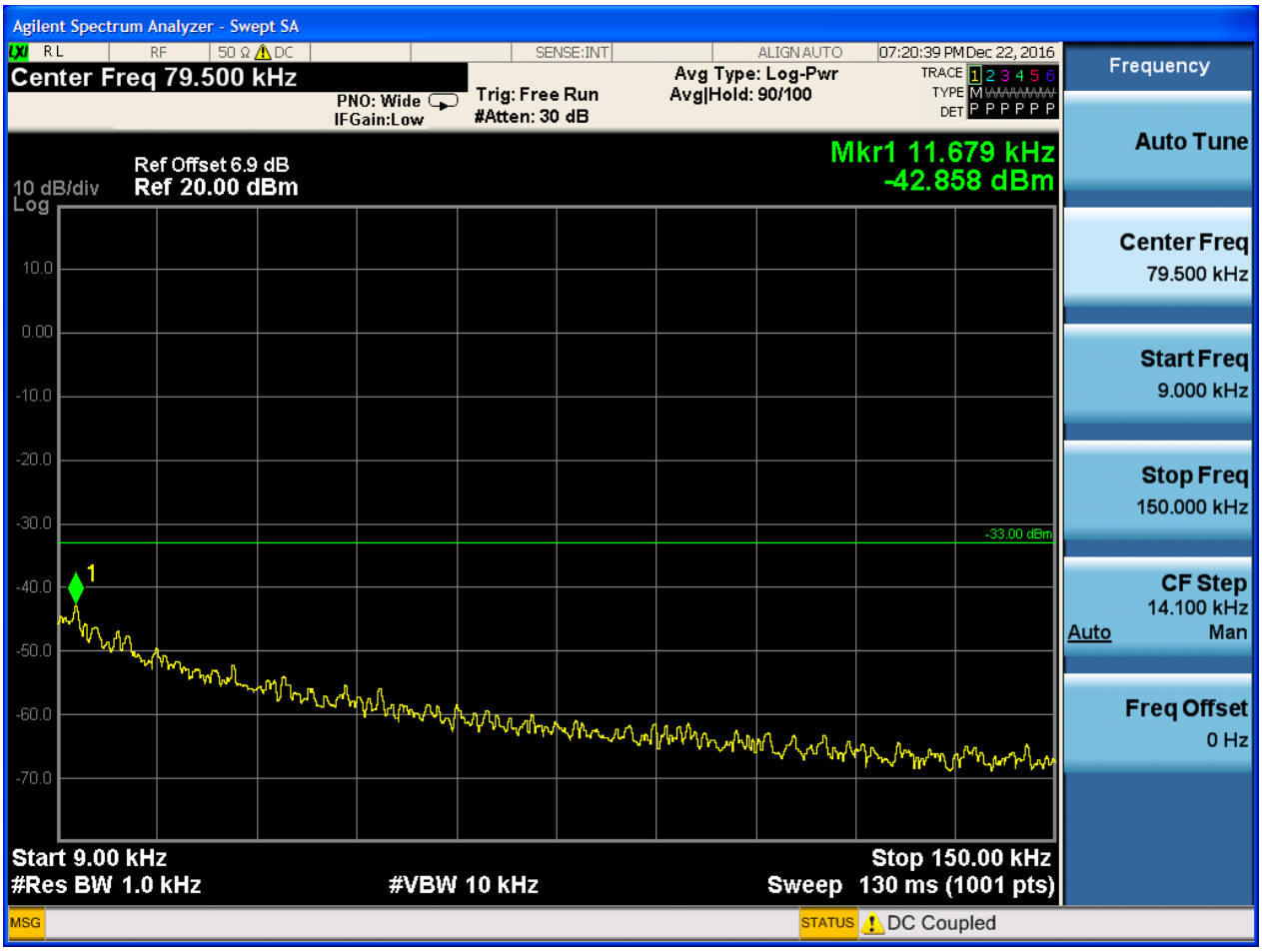

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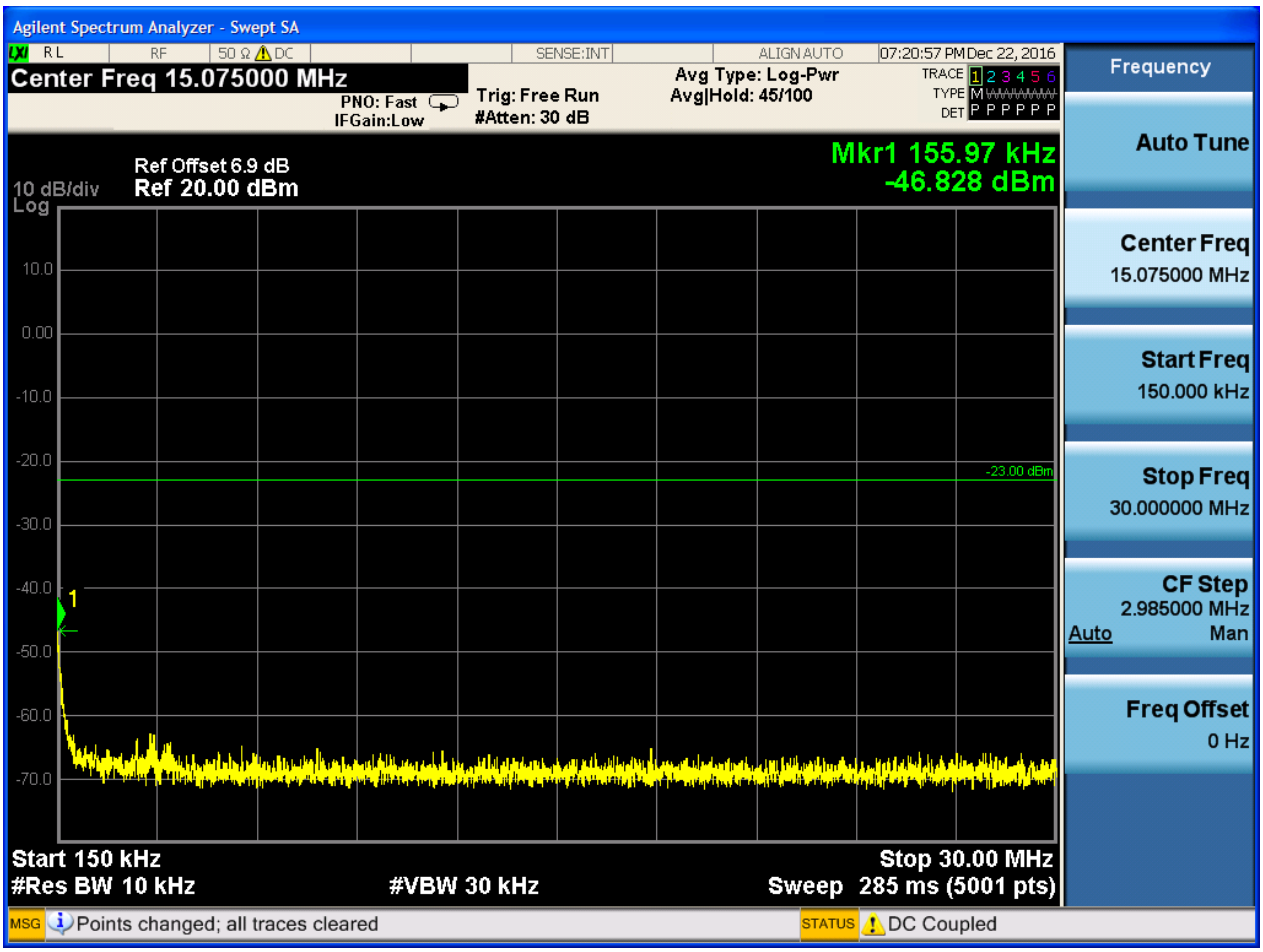

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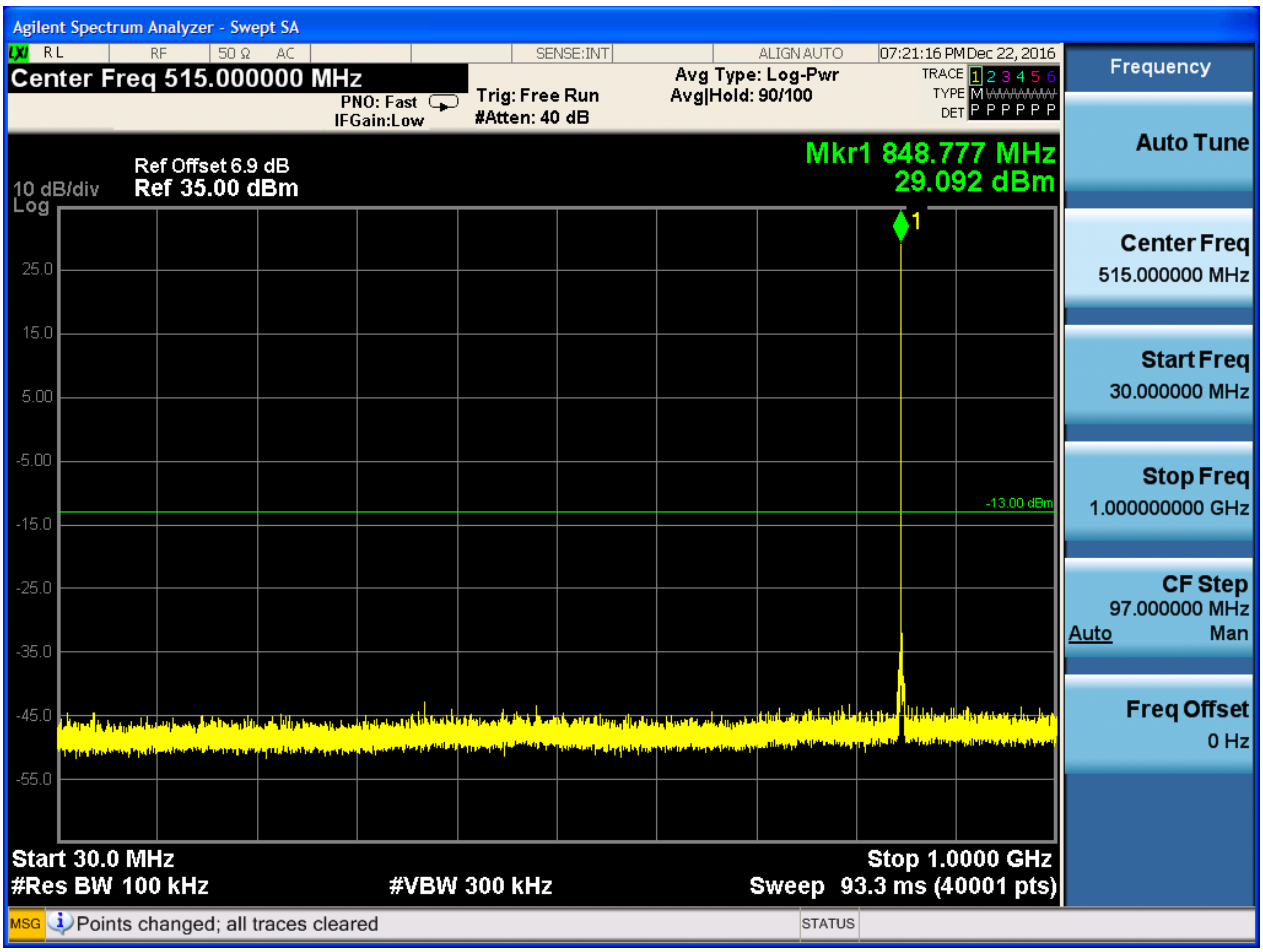

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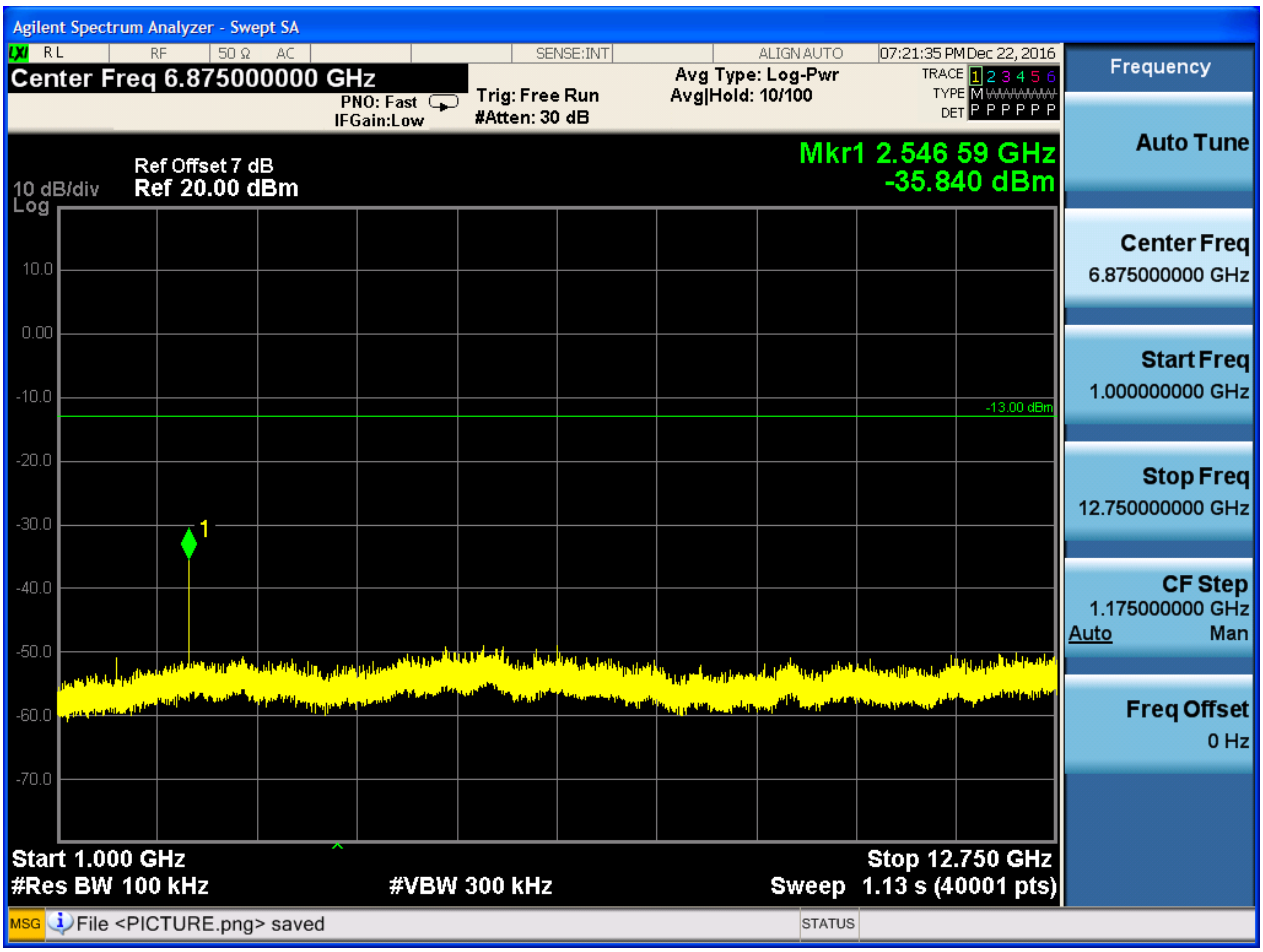

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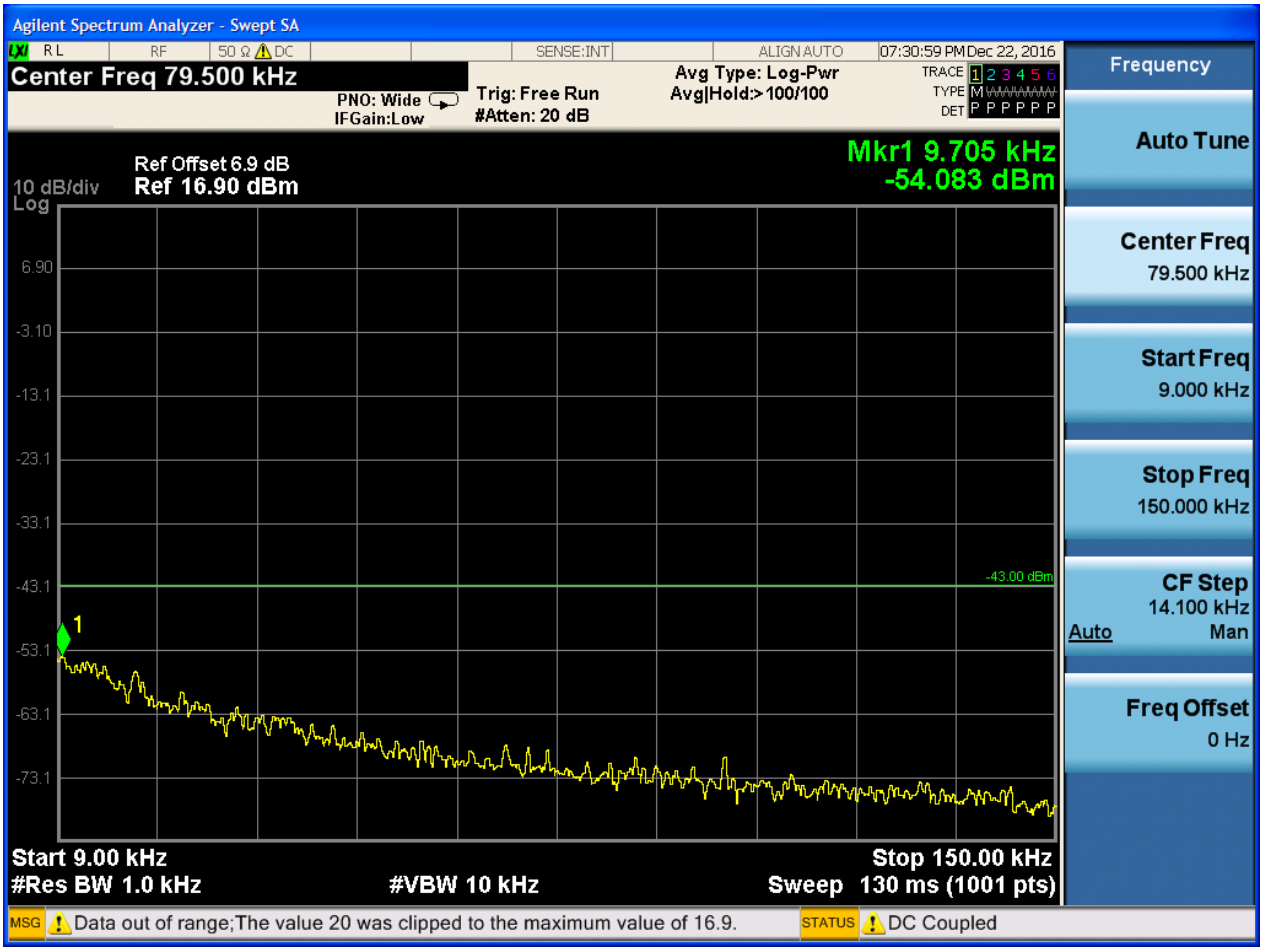
6.1.2 Test Band = GSM1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH



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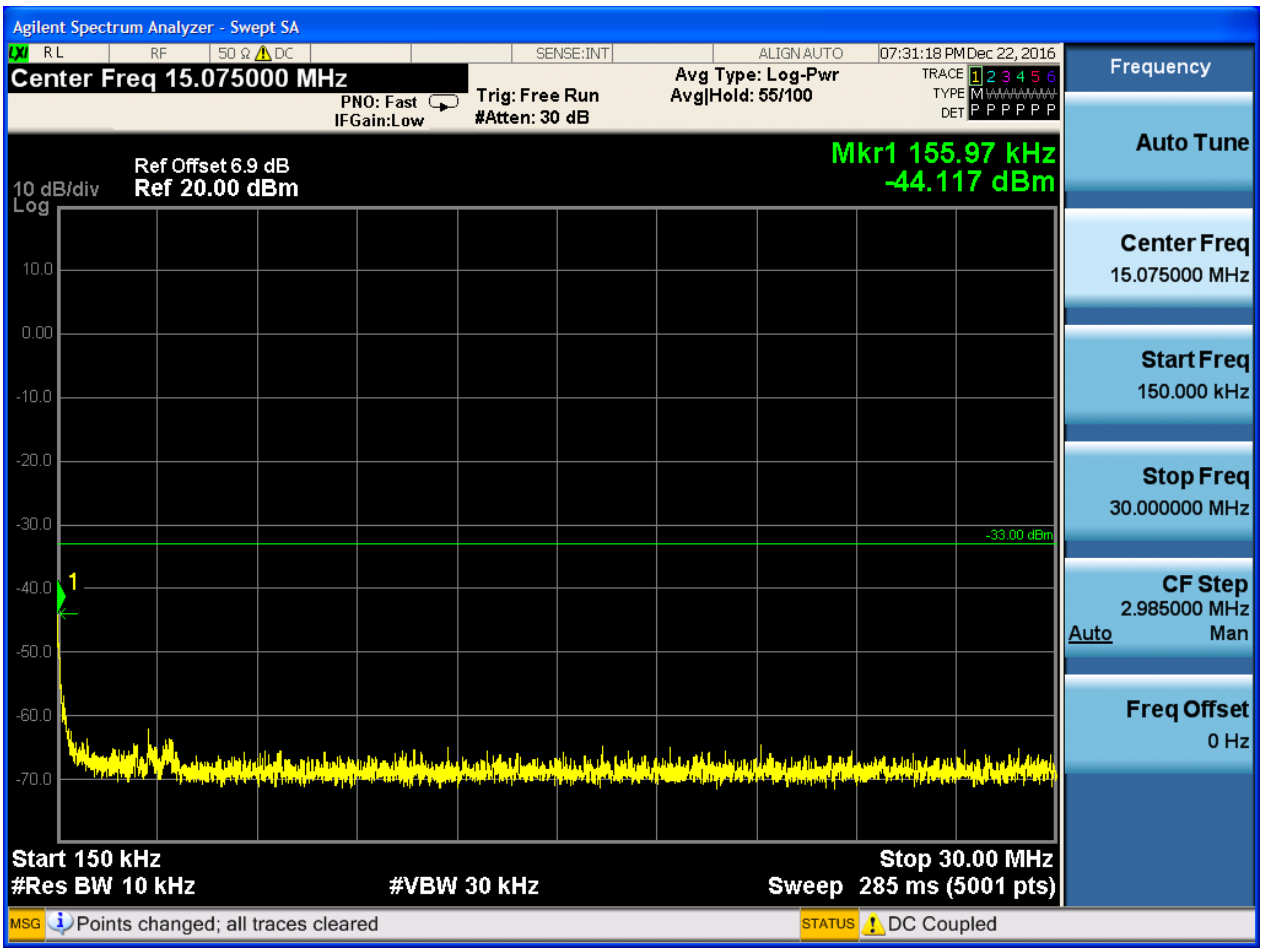

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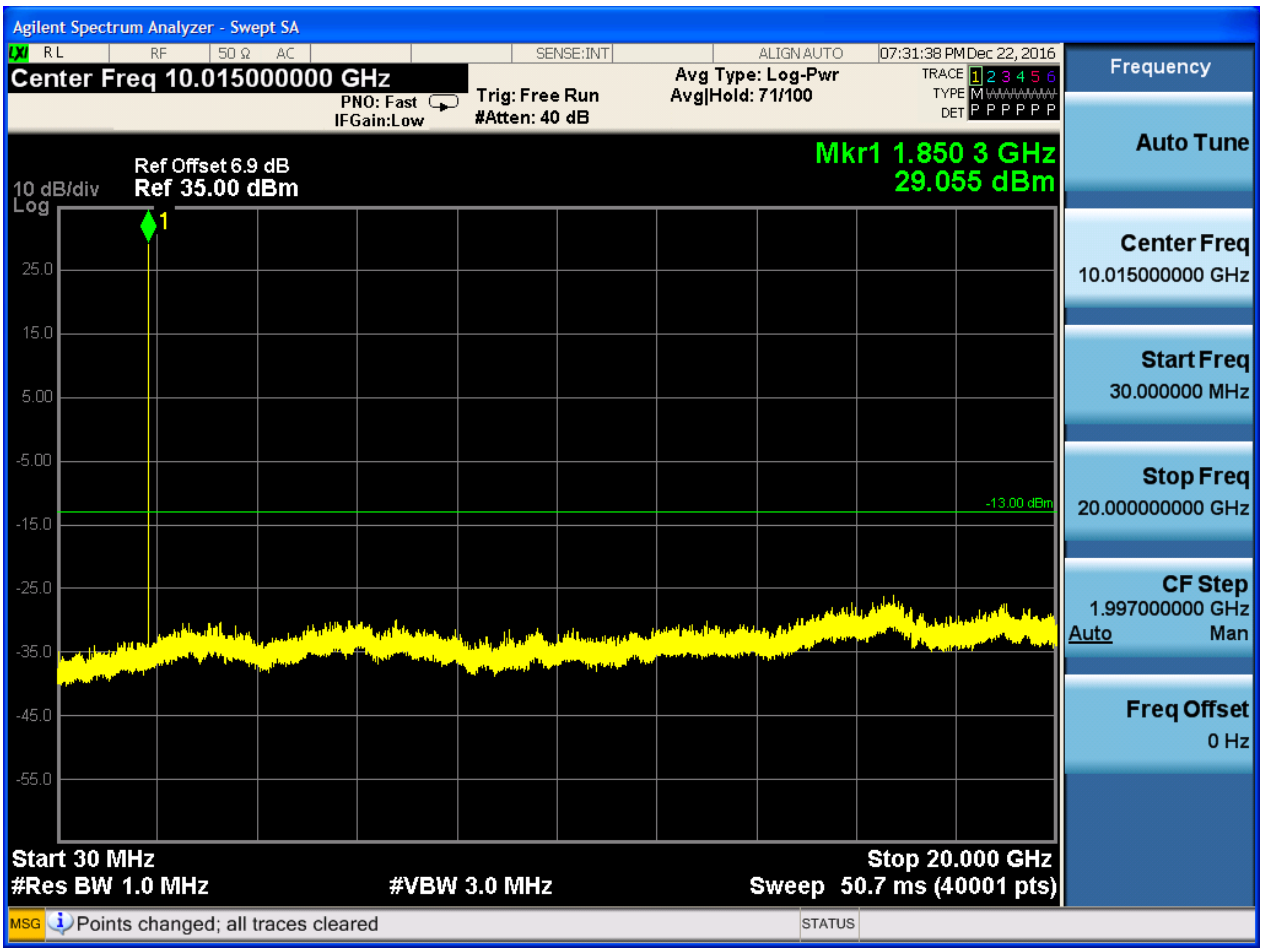

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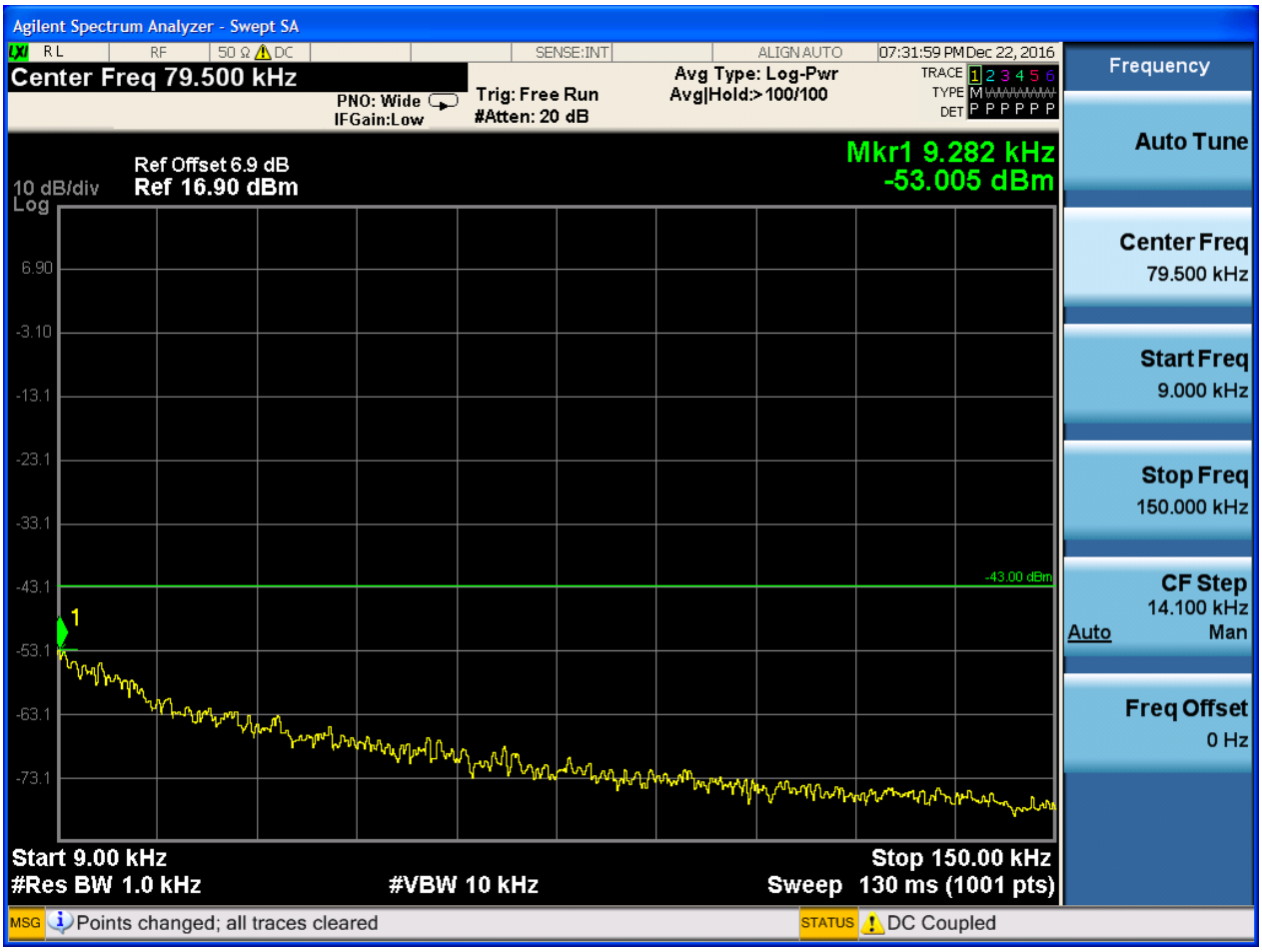
6.1.2.1.2 Test Channel = MCH



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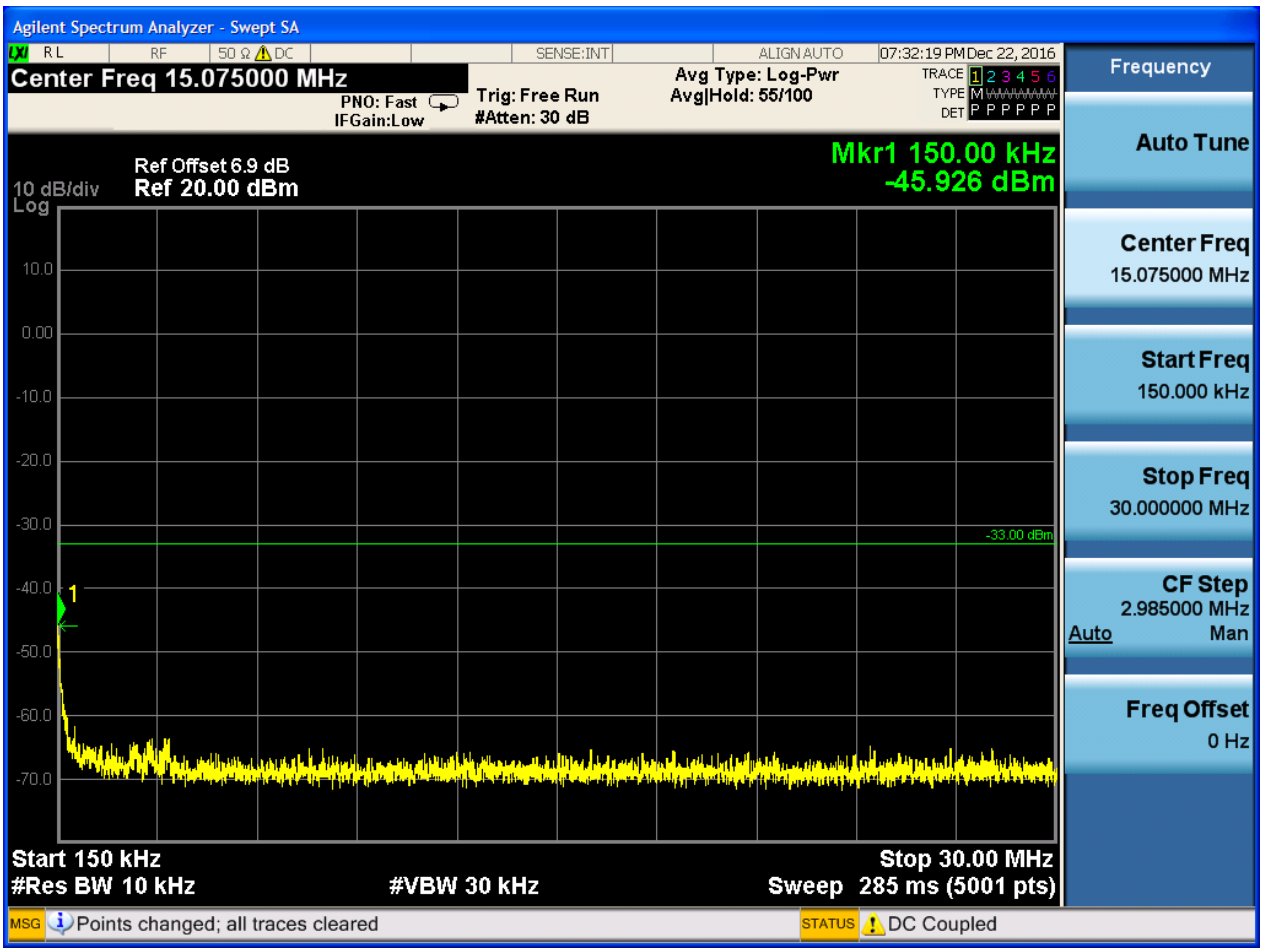

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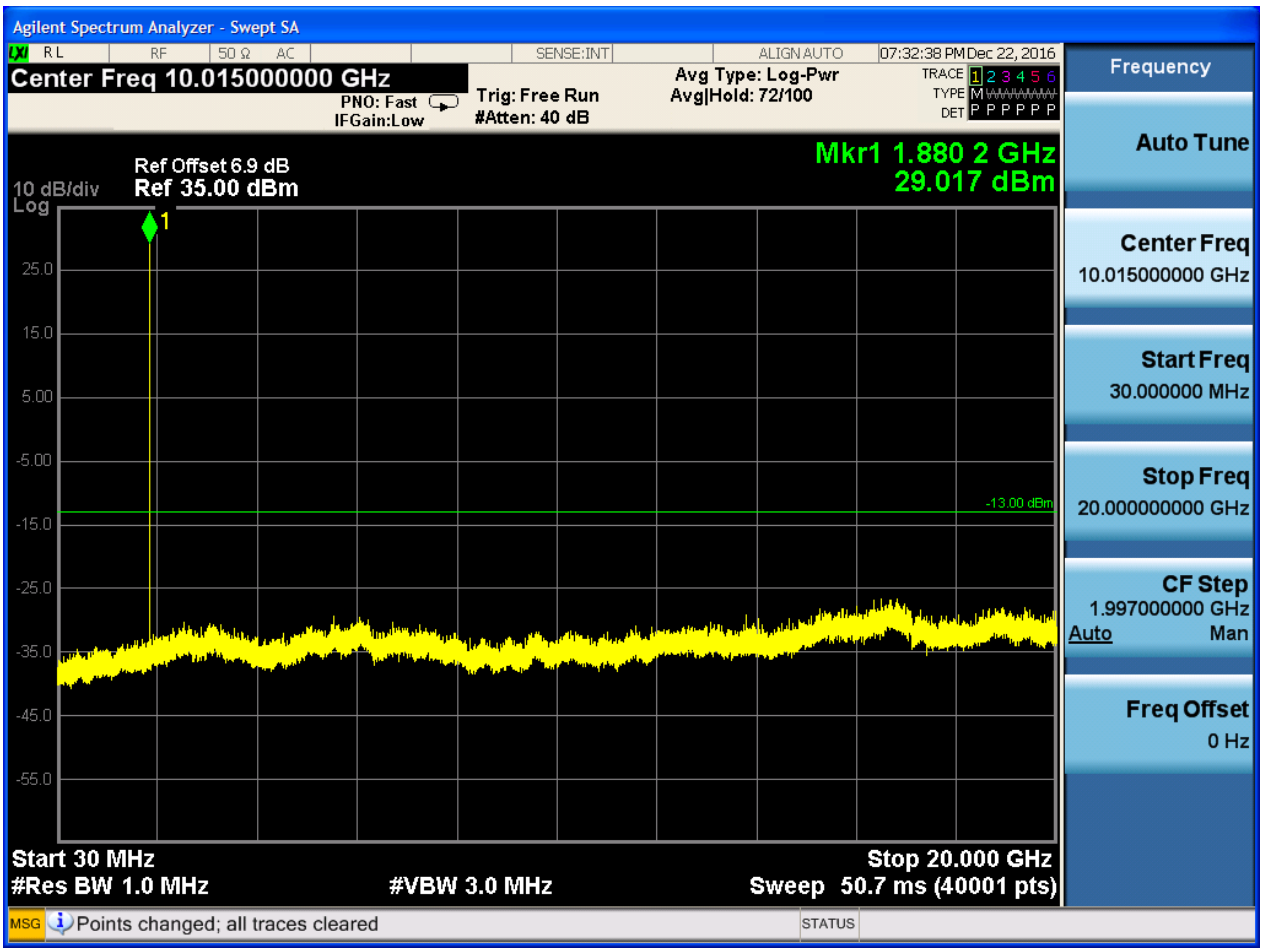

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6.1.2.1.3 Test Channel = HCH

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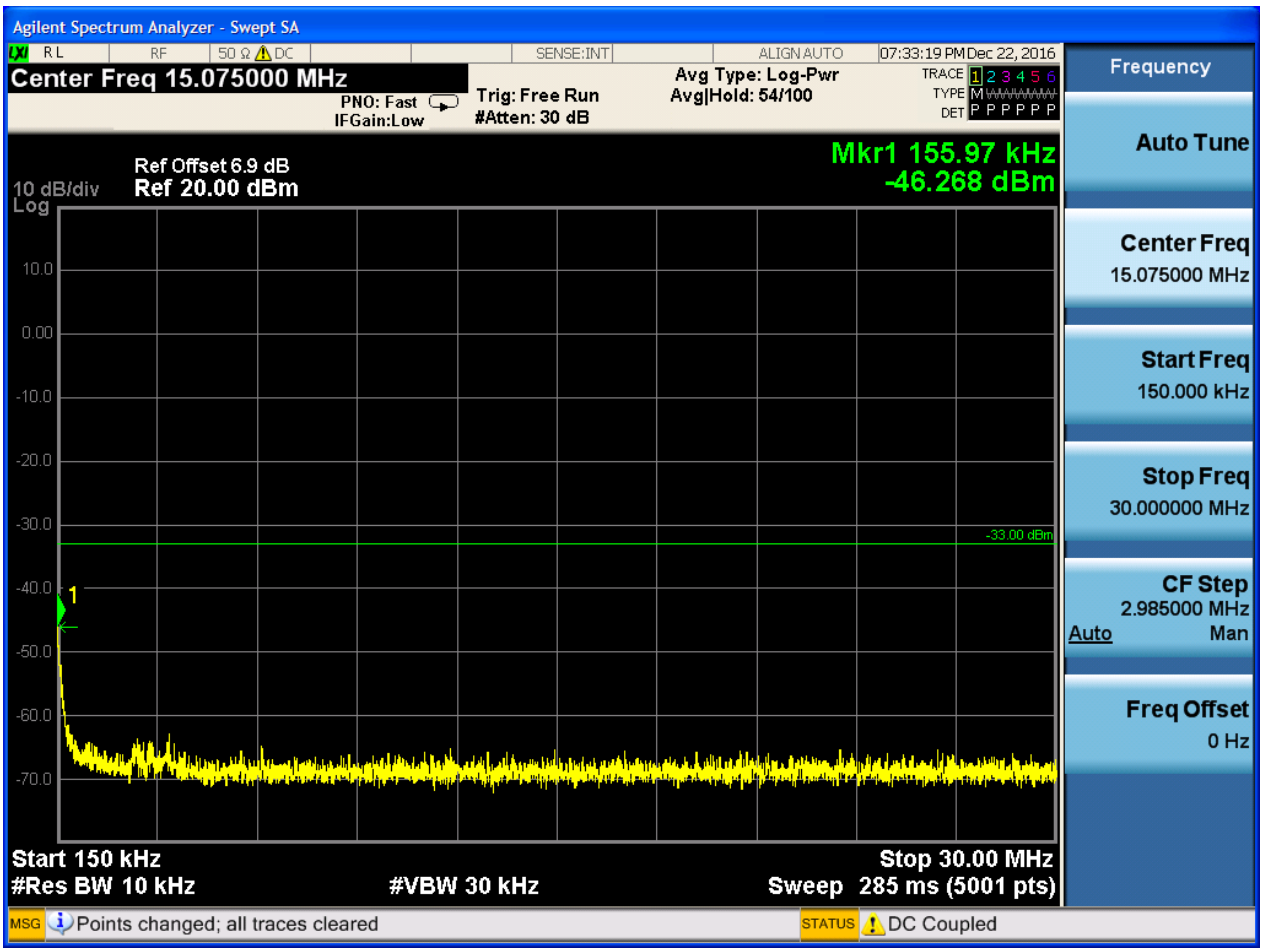

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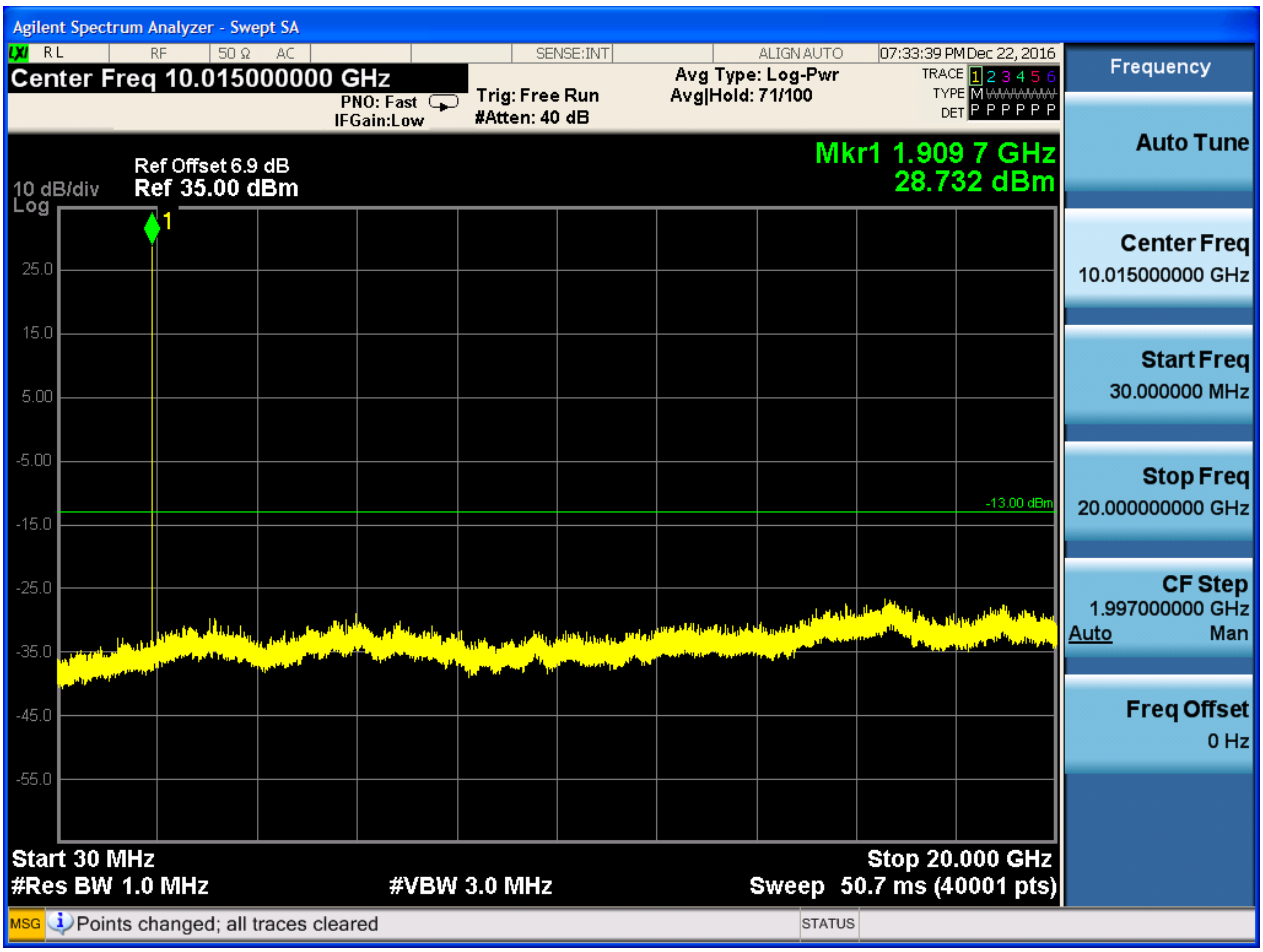

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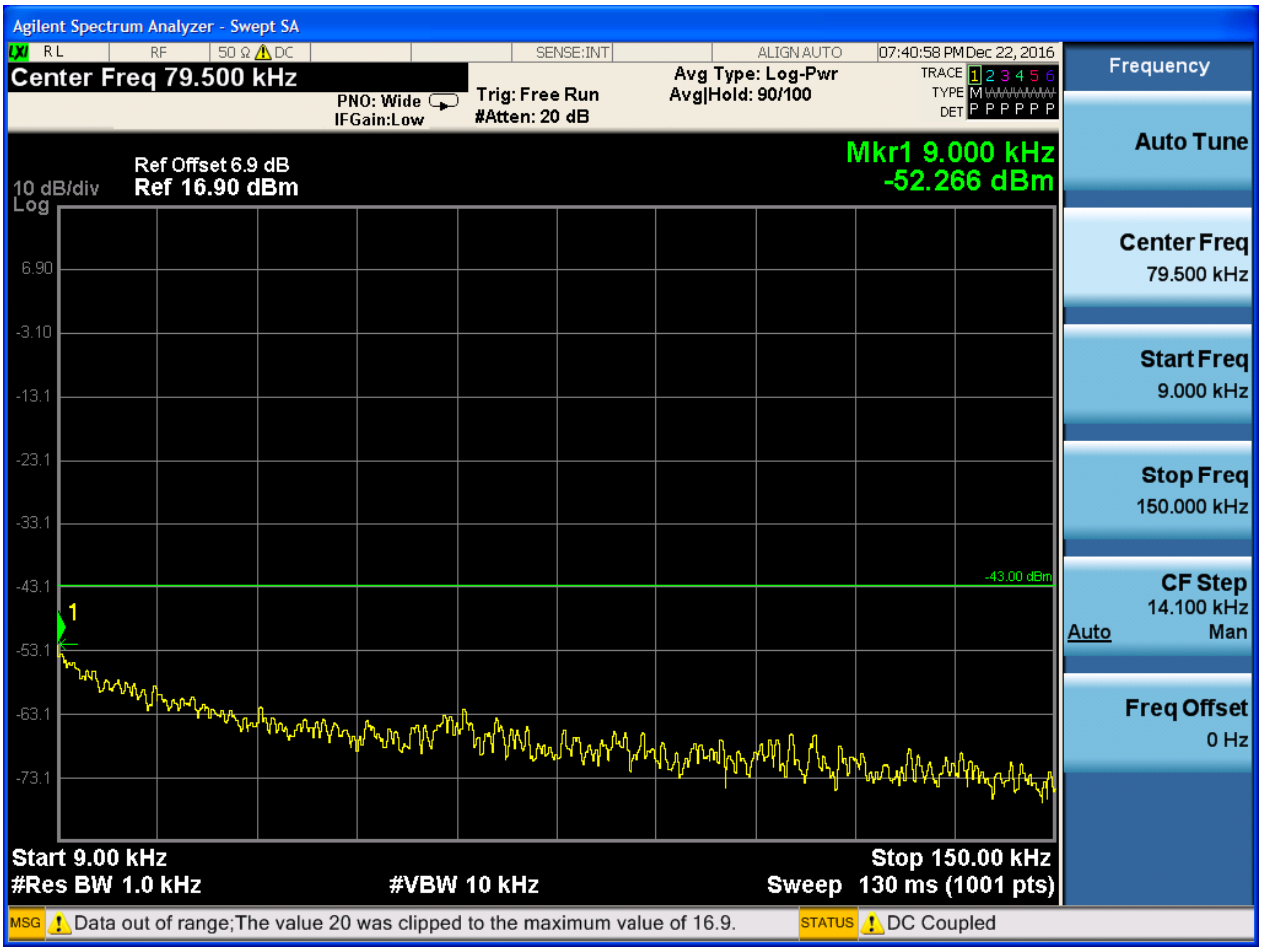
6.1.2.2 Test Mode = GSM/TM2

6.1.2.2.1 Test Channel = LCH



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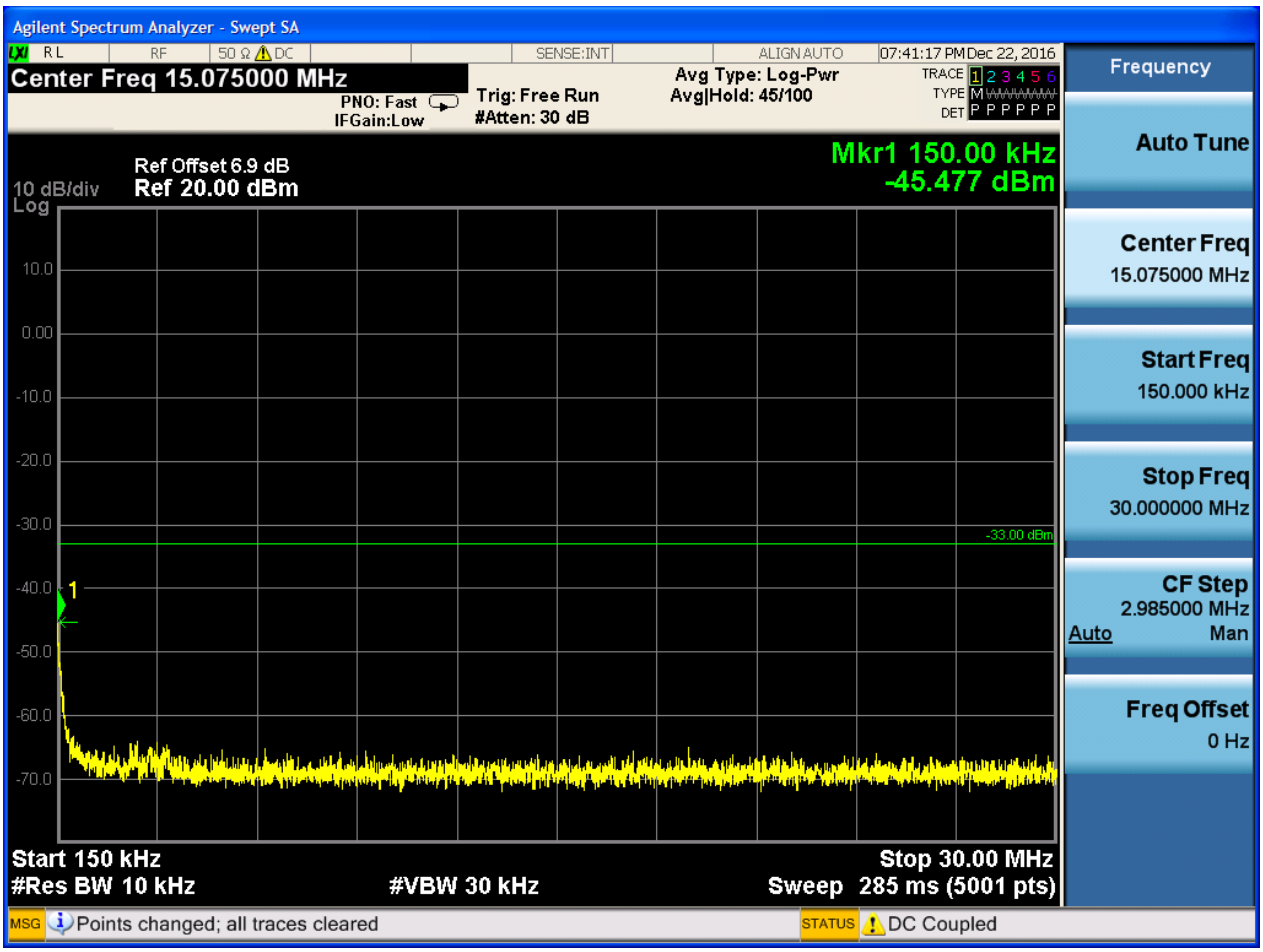

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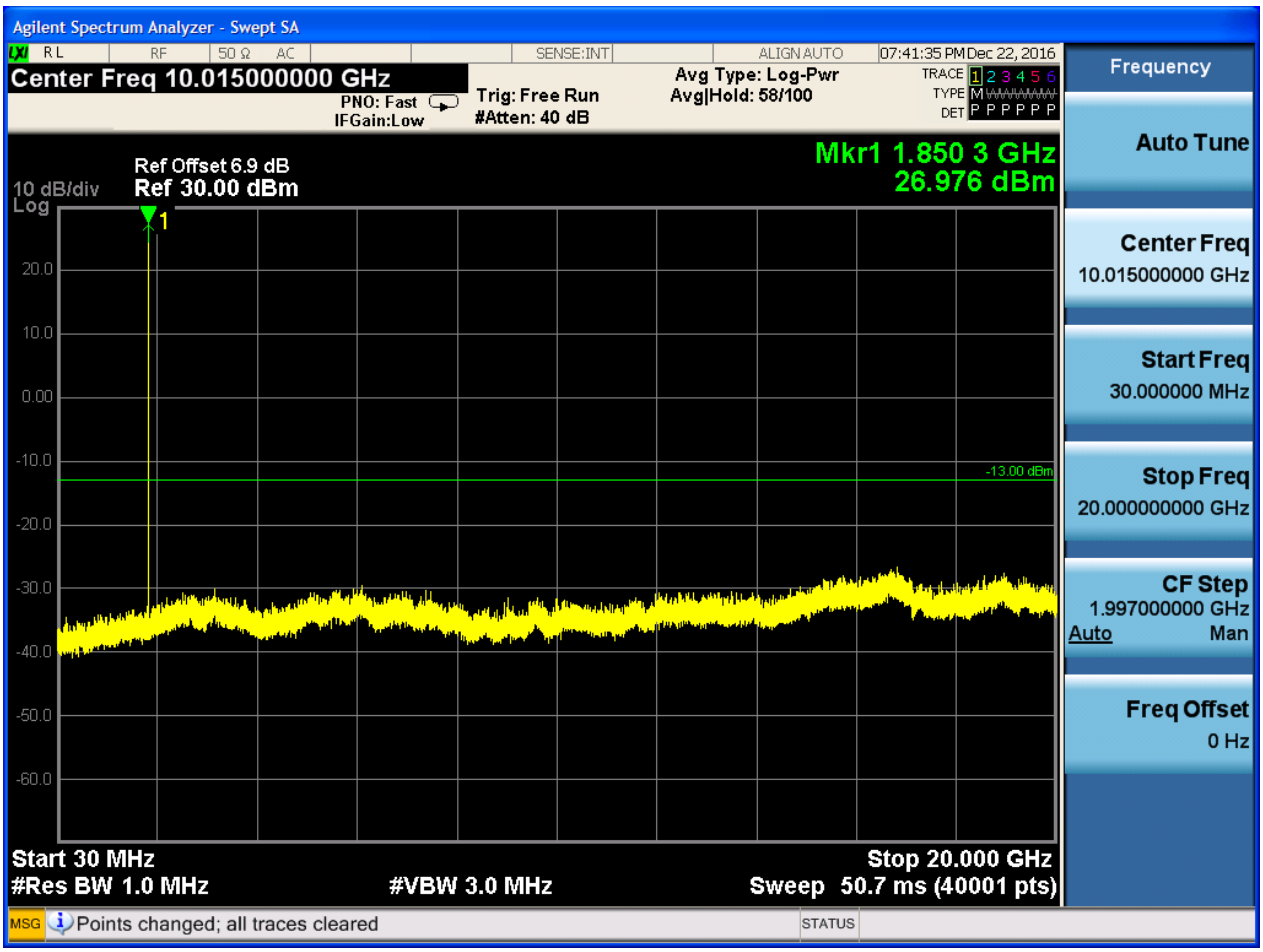

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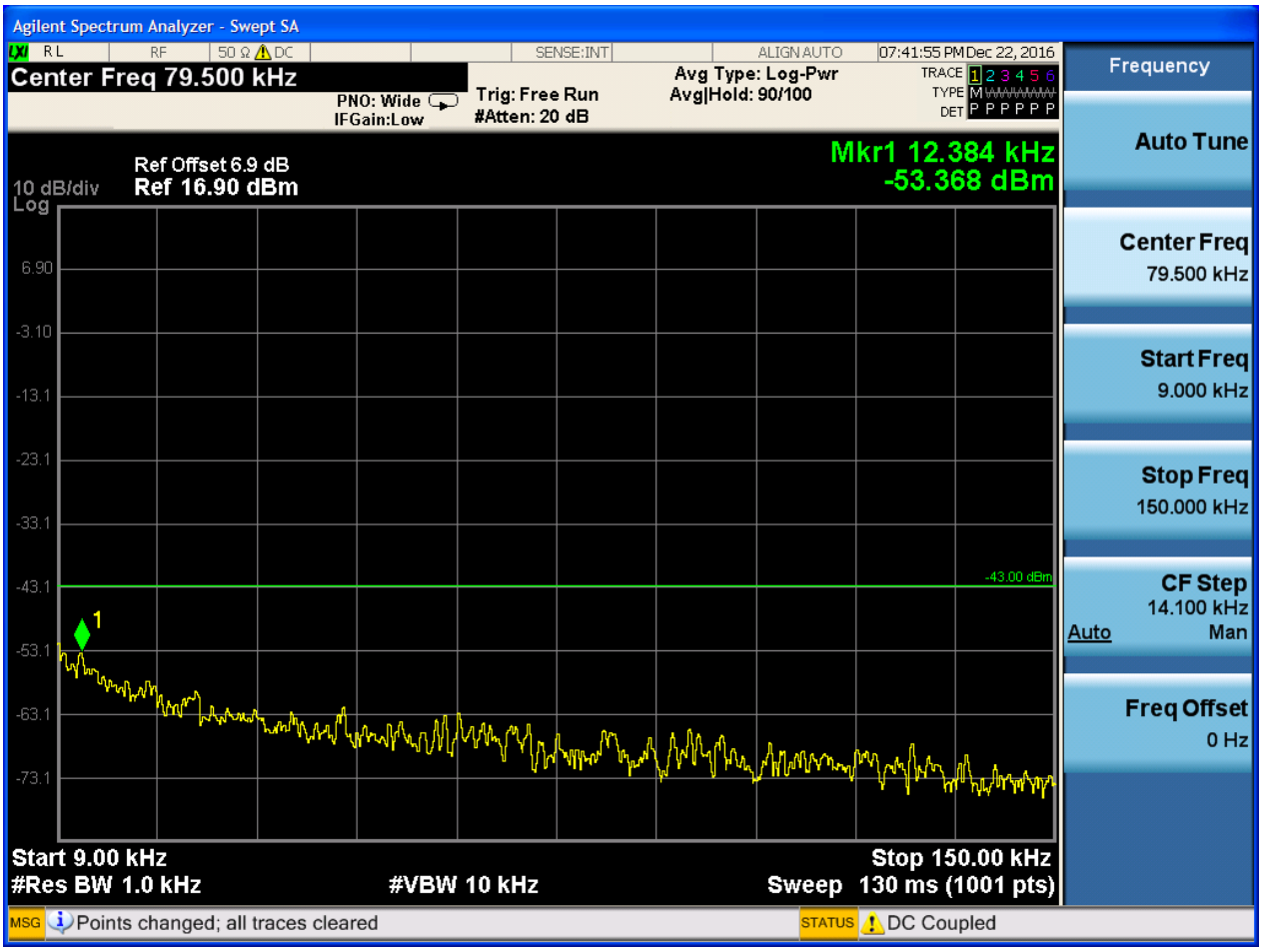
6.1.2.2.2 Test Channel = MCH



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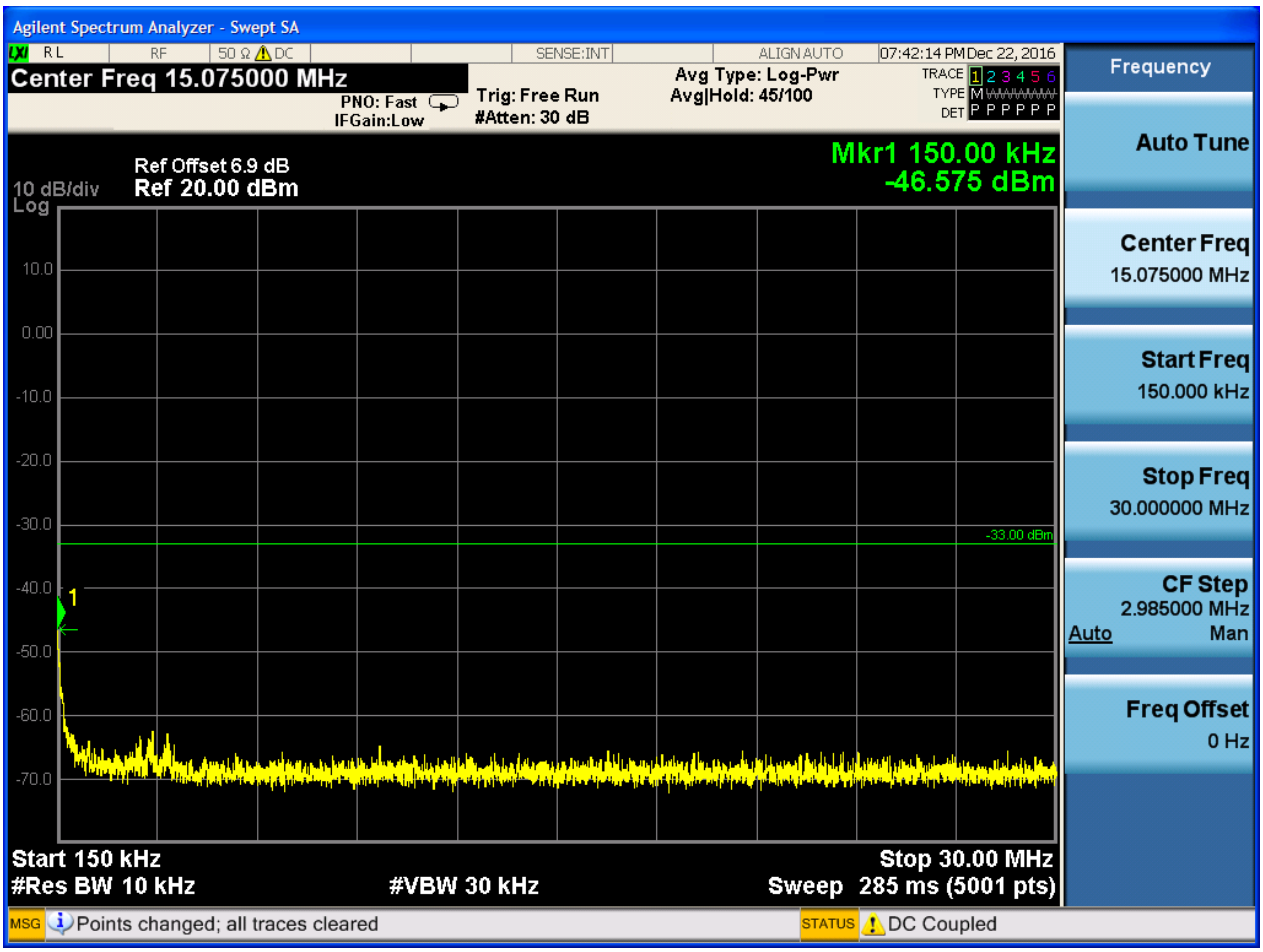

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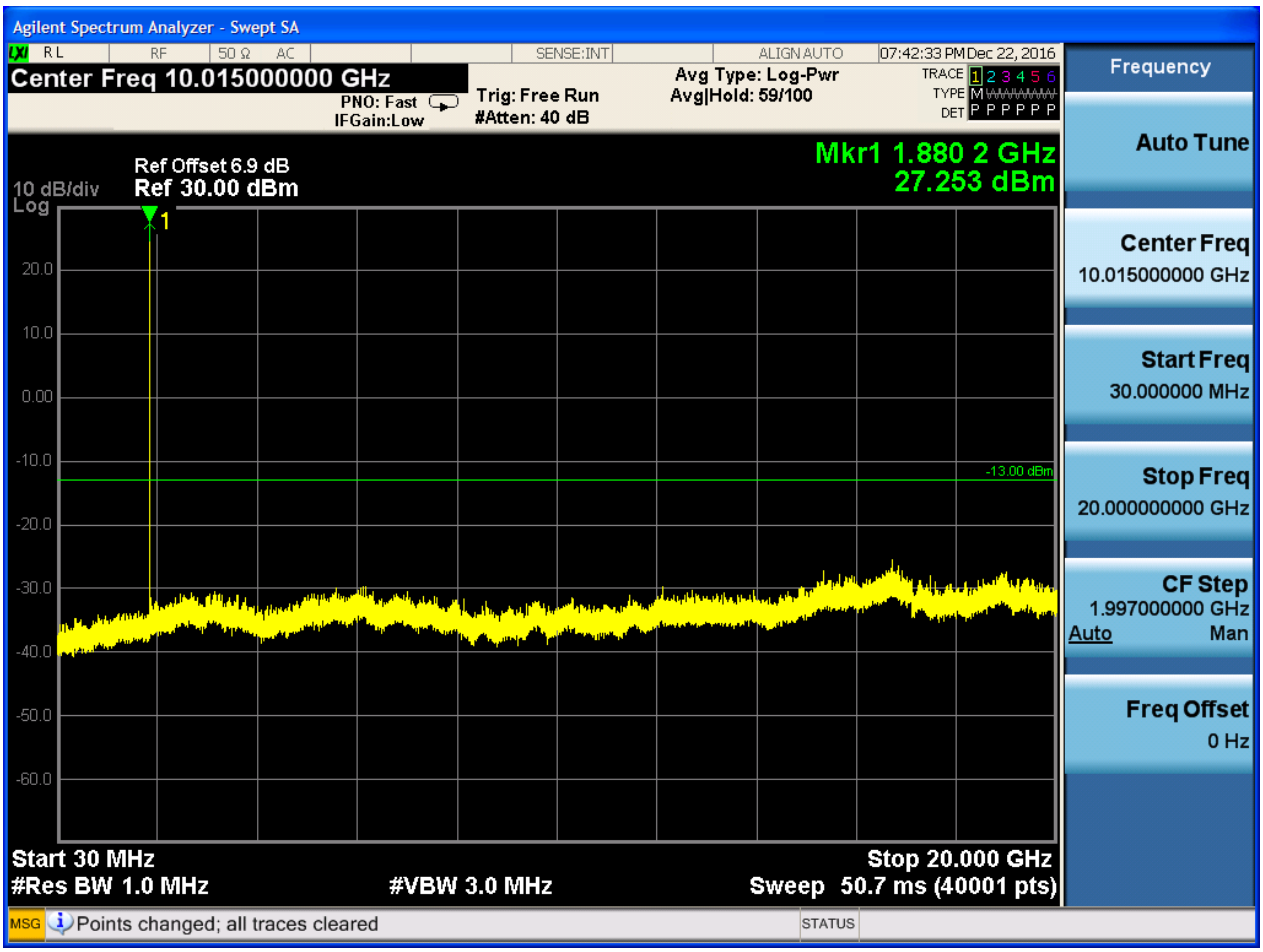

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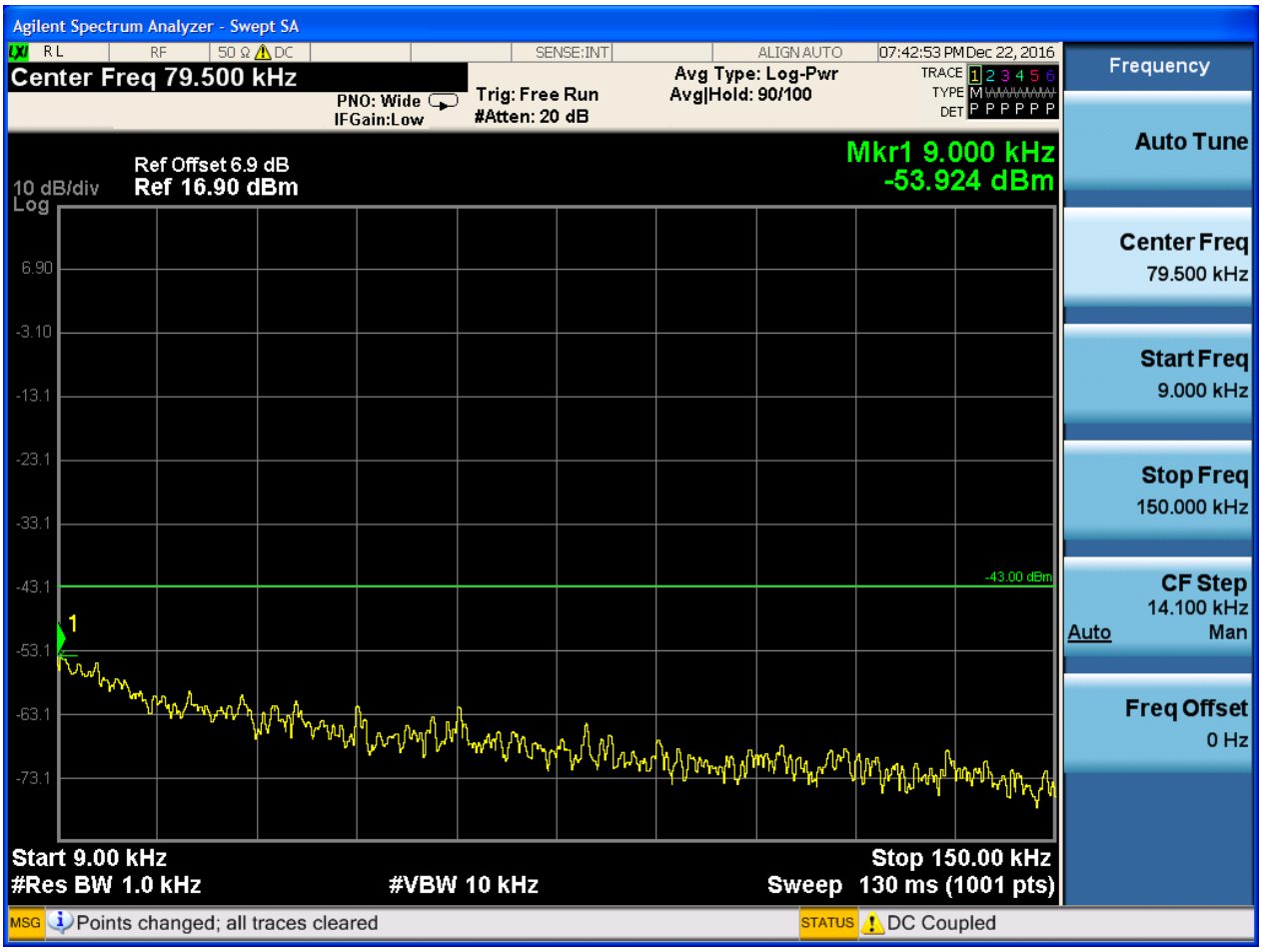
6.1.2.2.3 Test Channel = HCH



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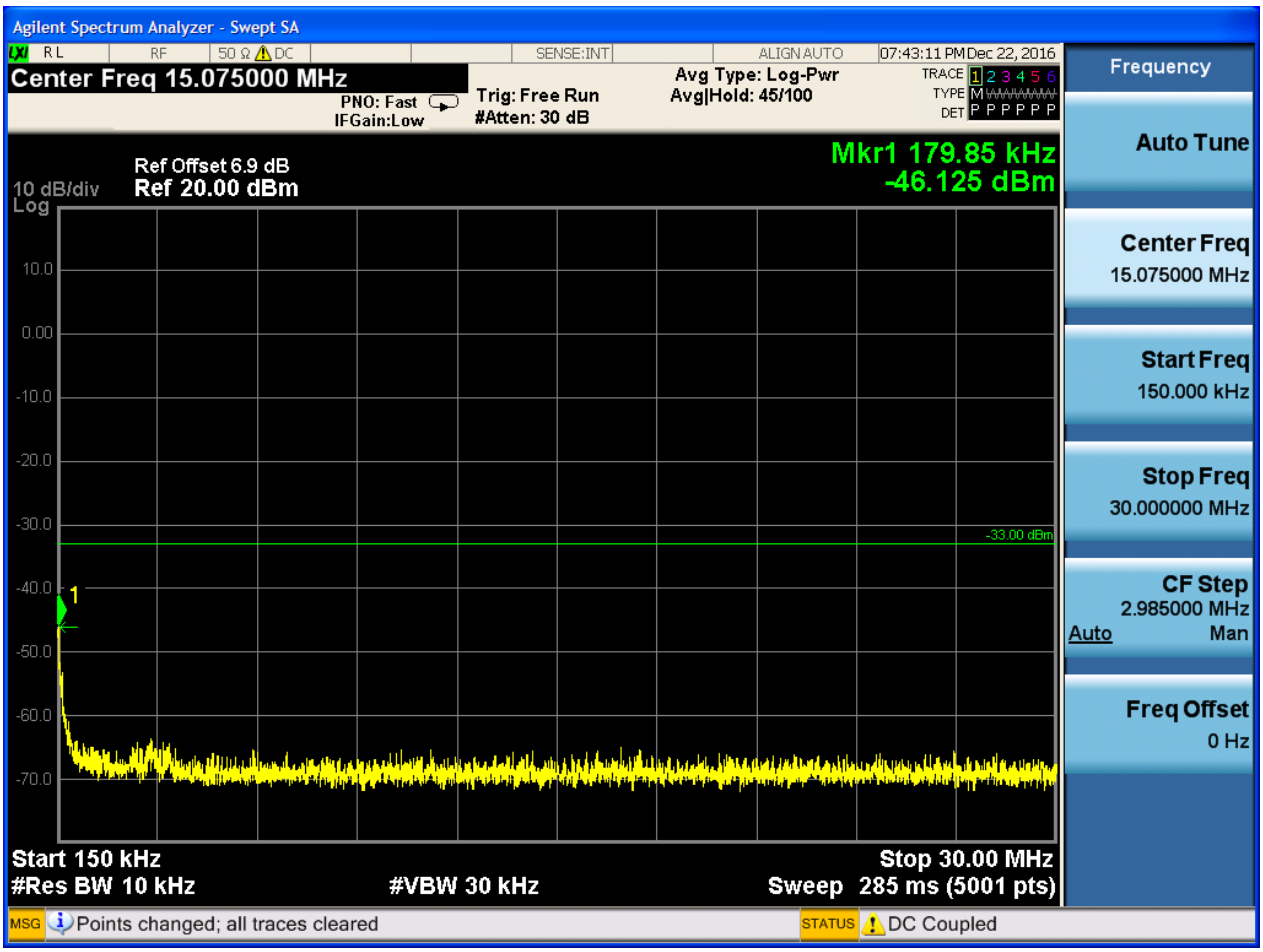

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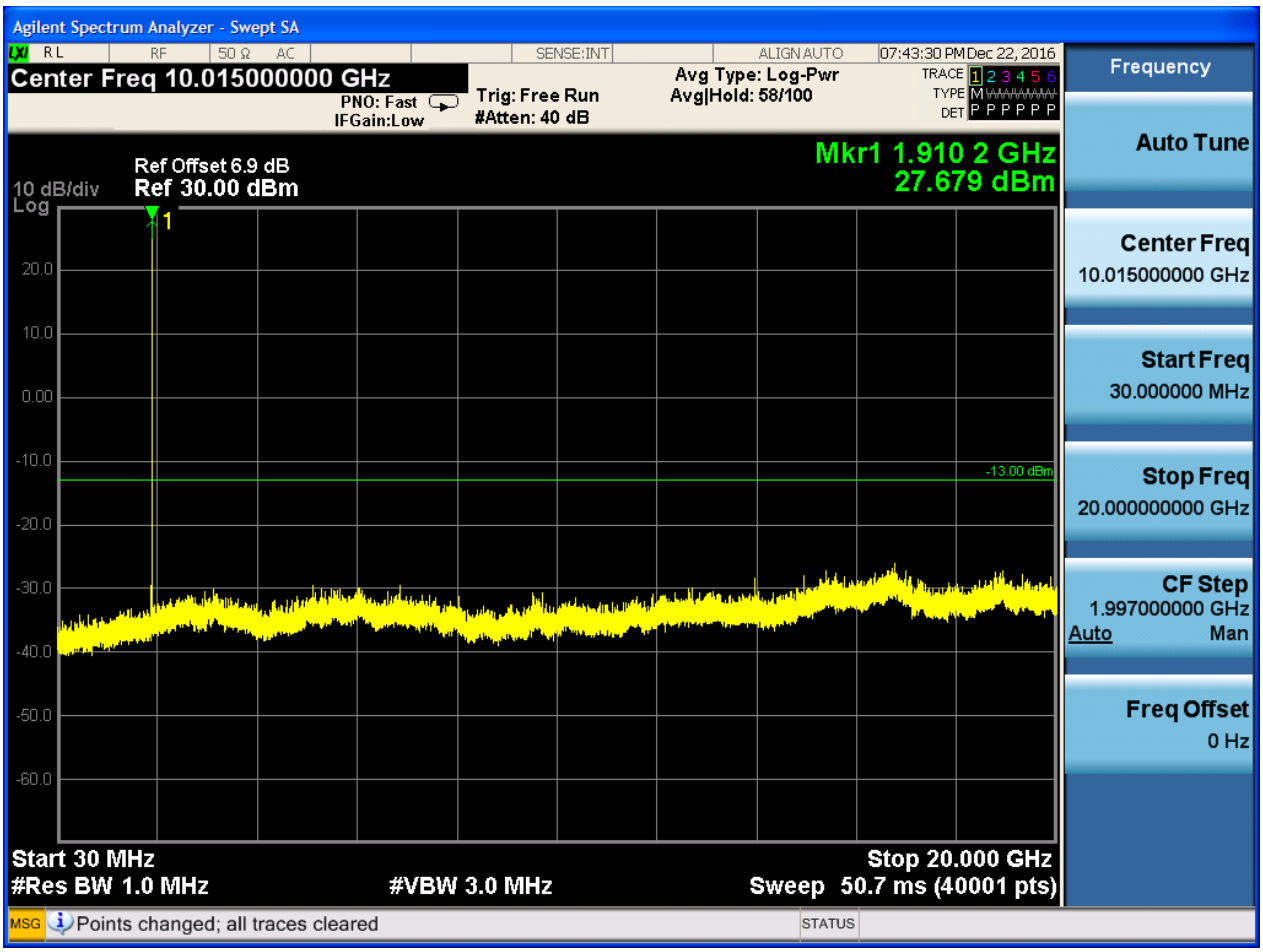

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7Appendix_G: Field Strength of Spurious Radiation

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

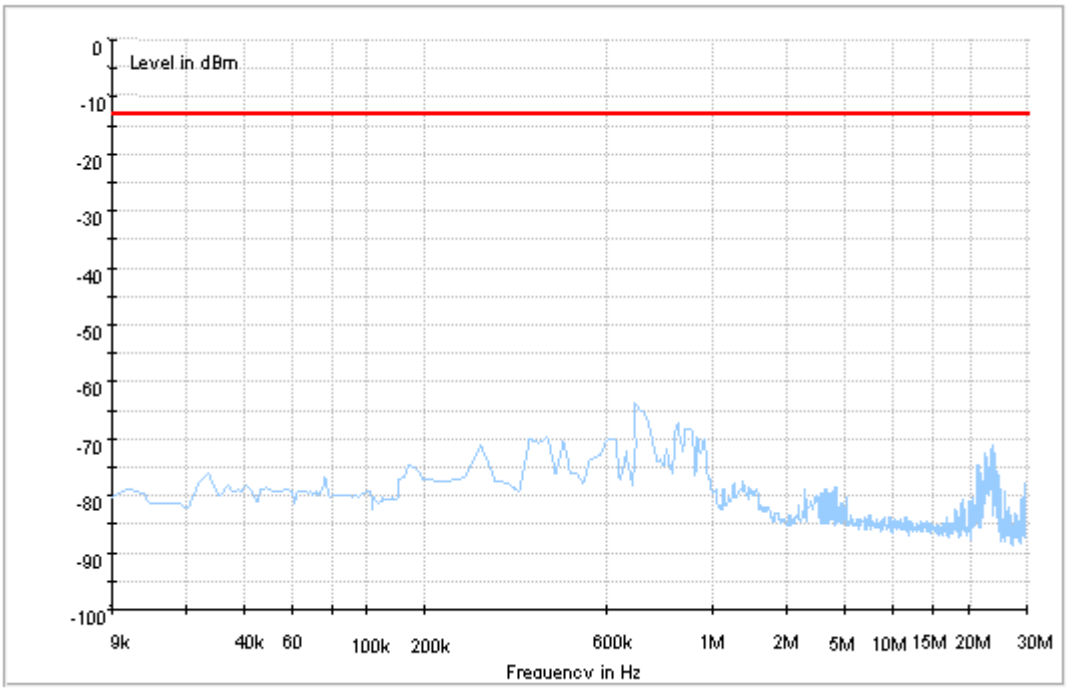
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

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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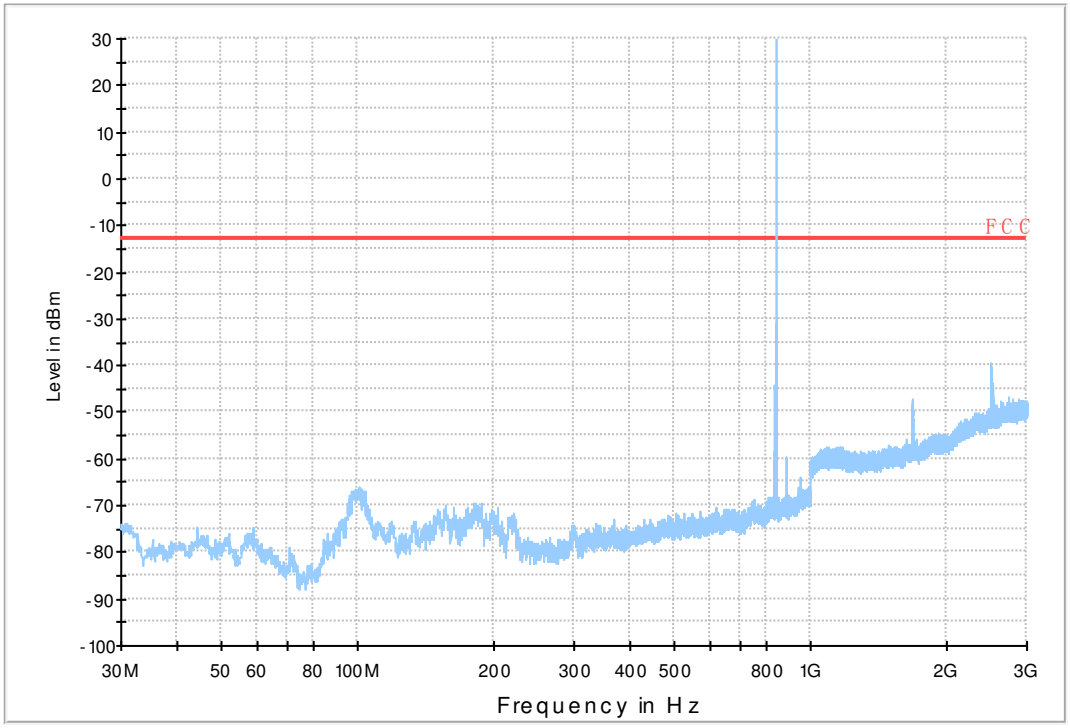
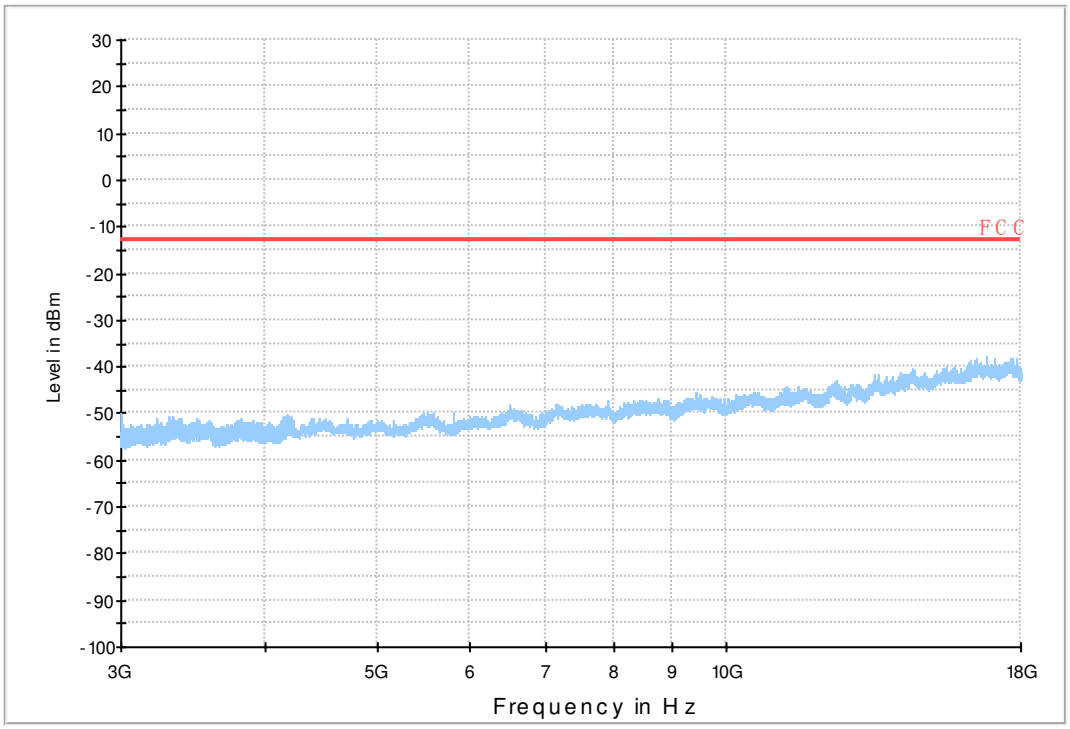
Copy of FCC PART22 GSM850_L



Copy of FCC PART22 GSM850_H



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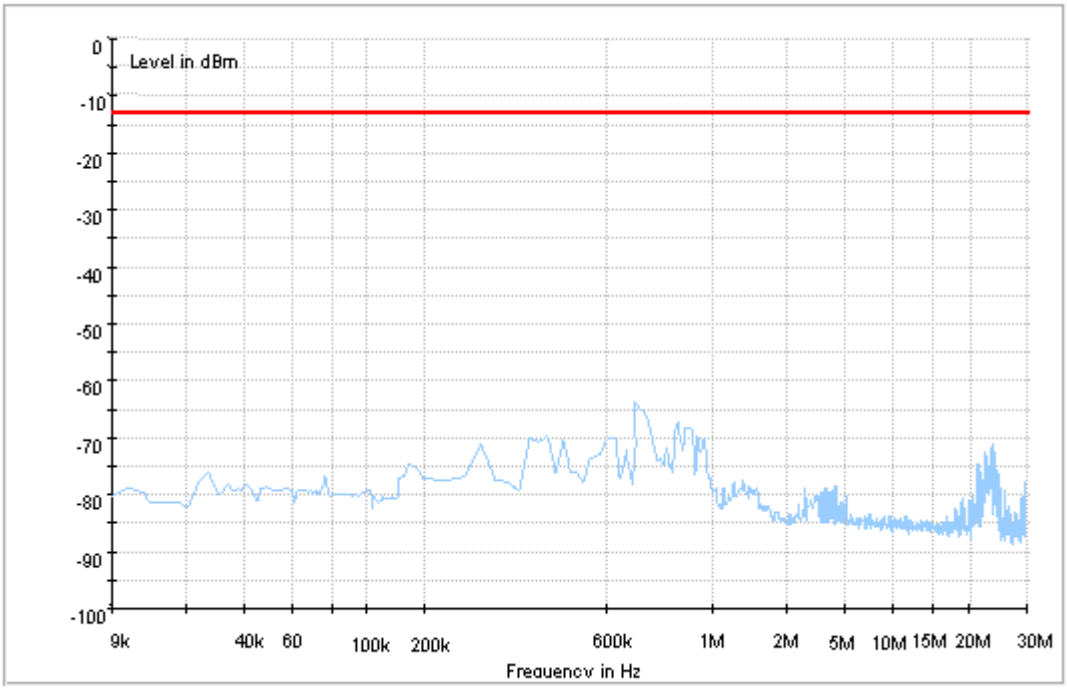
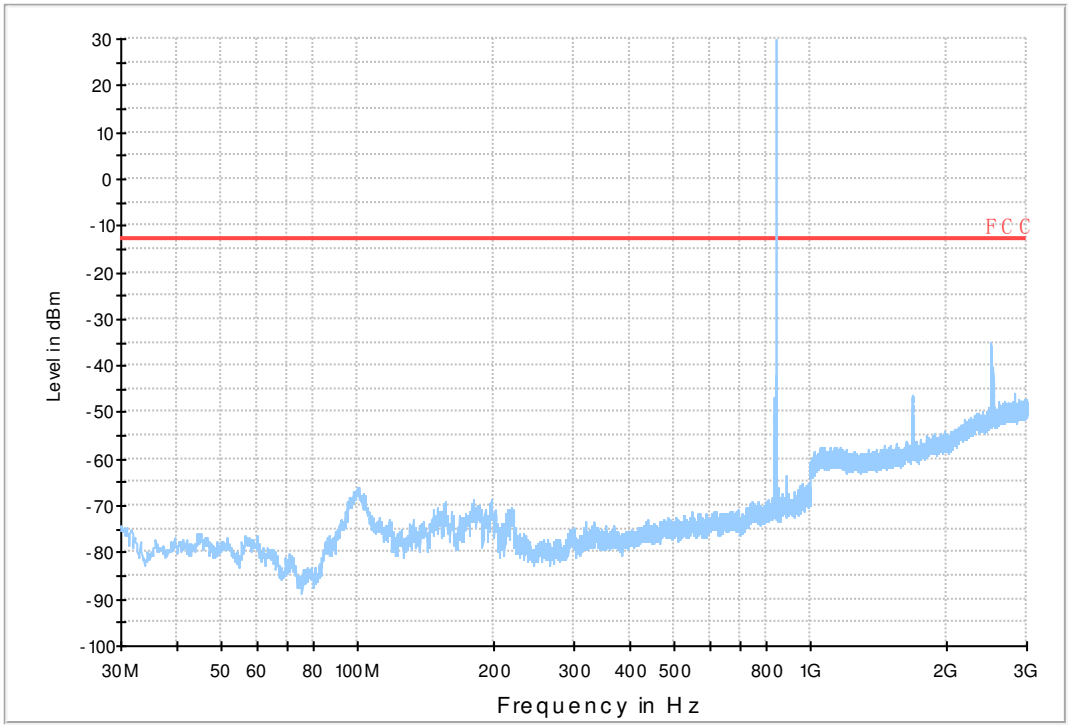
7.1.1.2 Test Mode = GSM_ANT2



Copy of FCC PART22 GSM850_L



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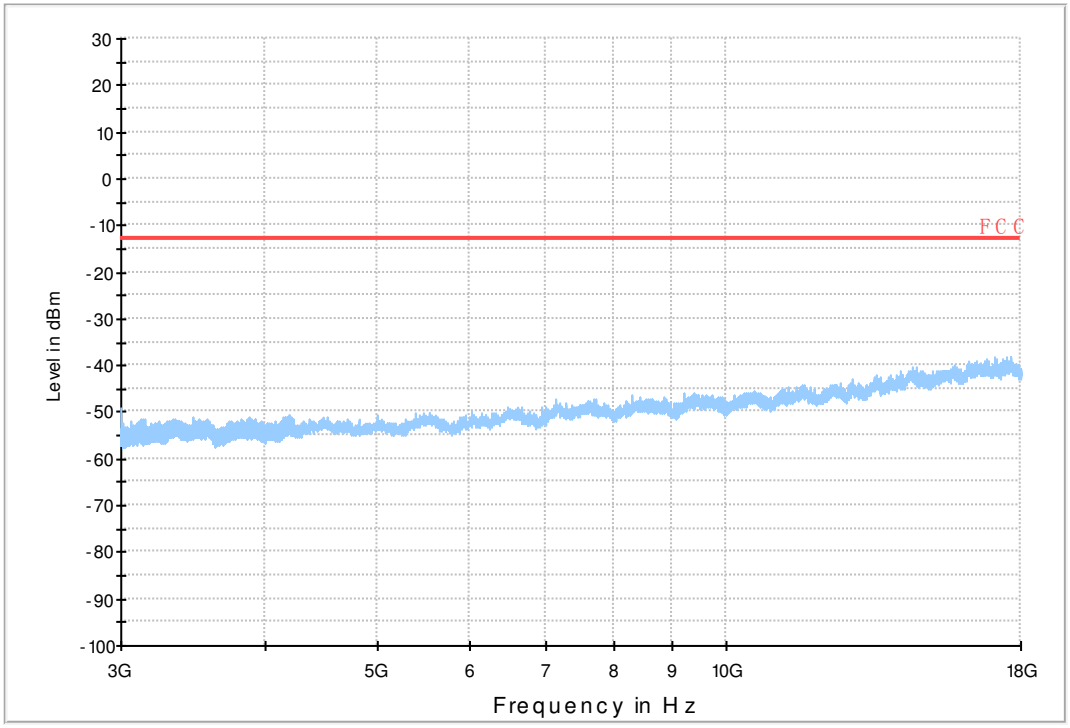

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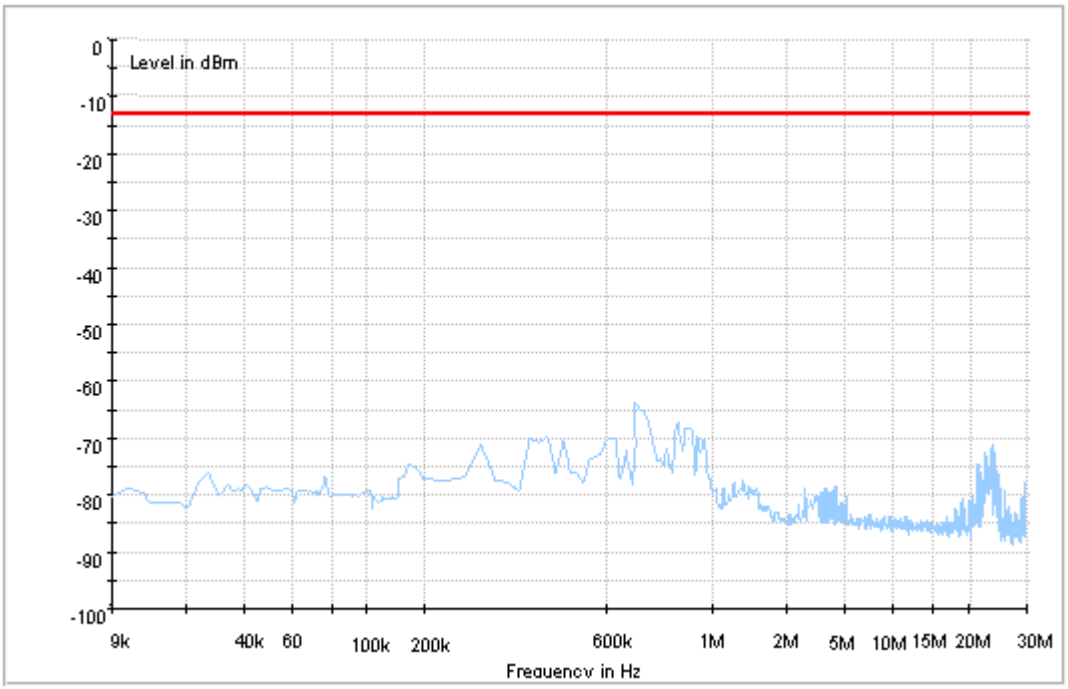
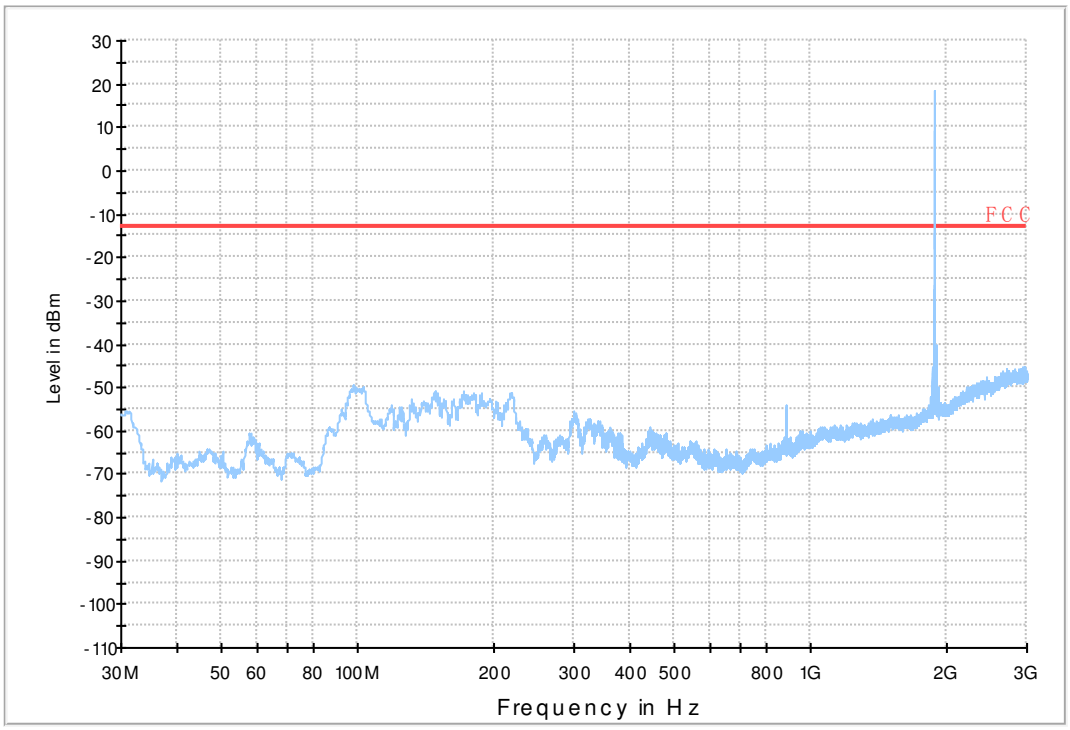
7.1.2 Test Band = GSM1900

7.1.2.1 Test Mode = GSM_ANT1



Copy of FCC PART24 GSM1900_L



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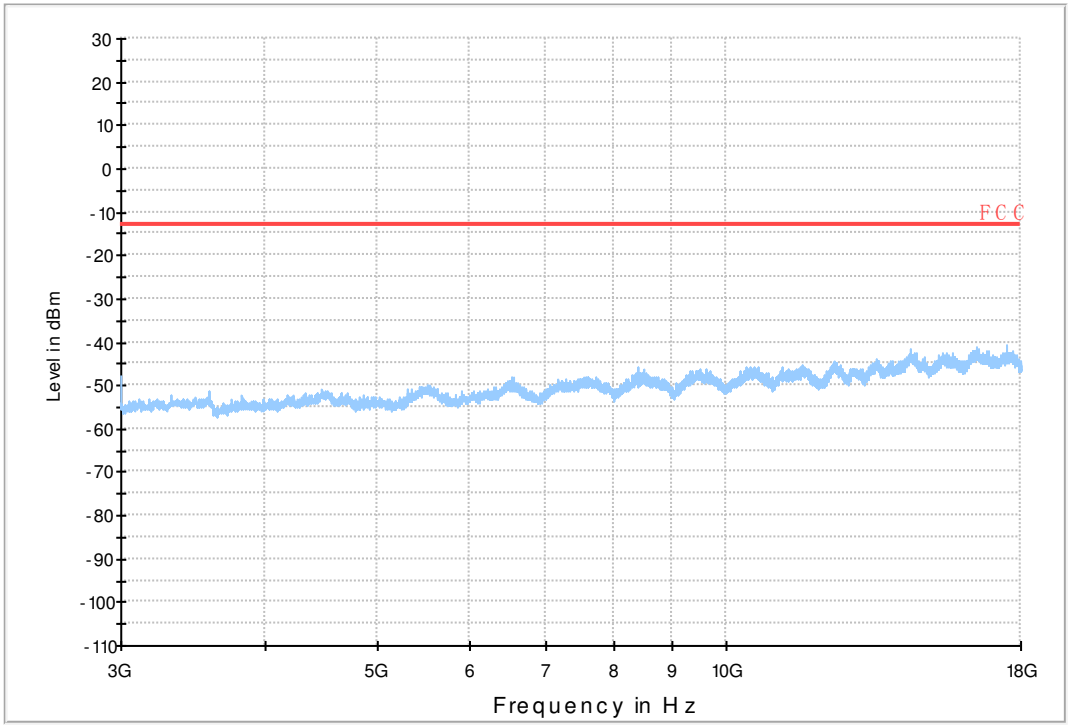
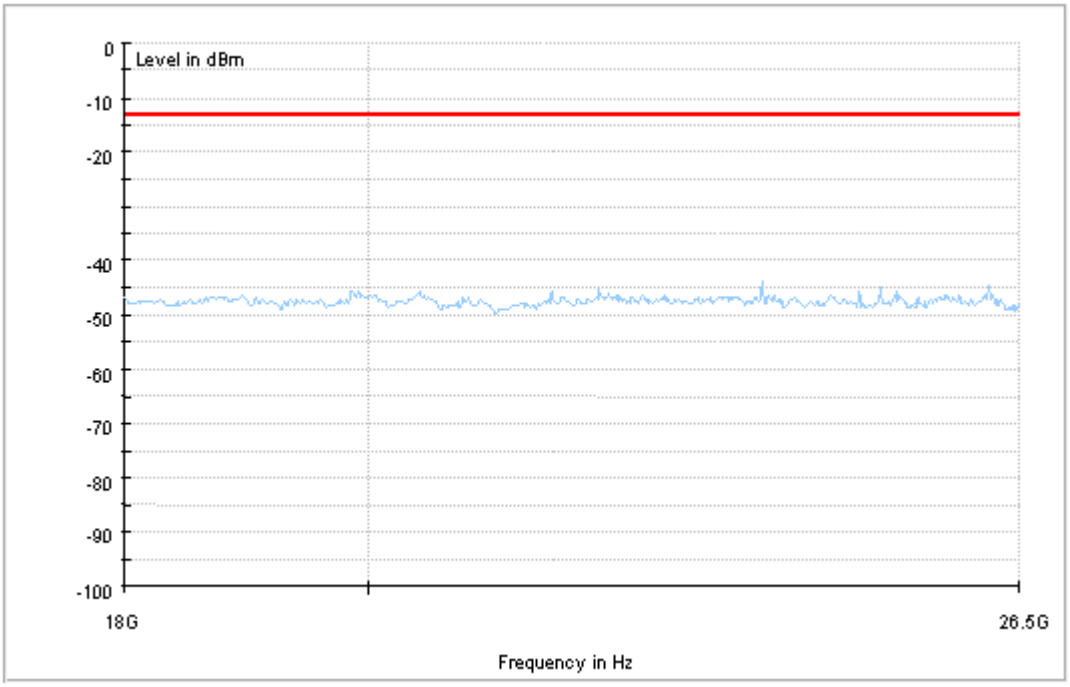
Copy of FCC PART24 GSM1900_H





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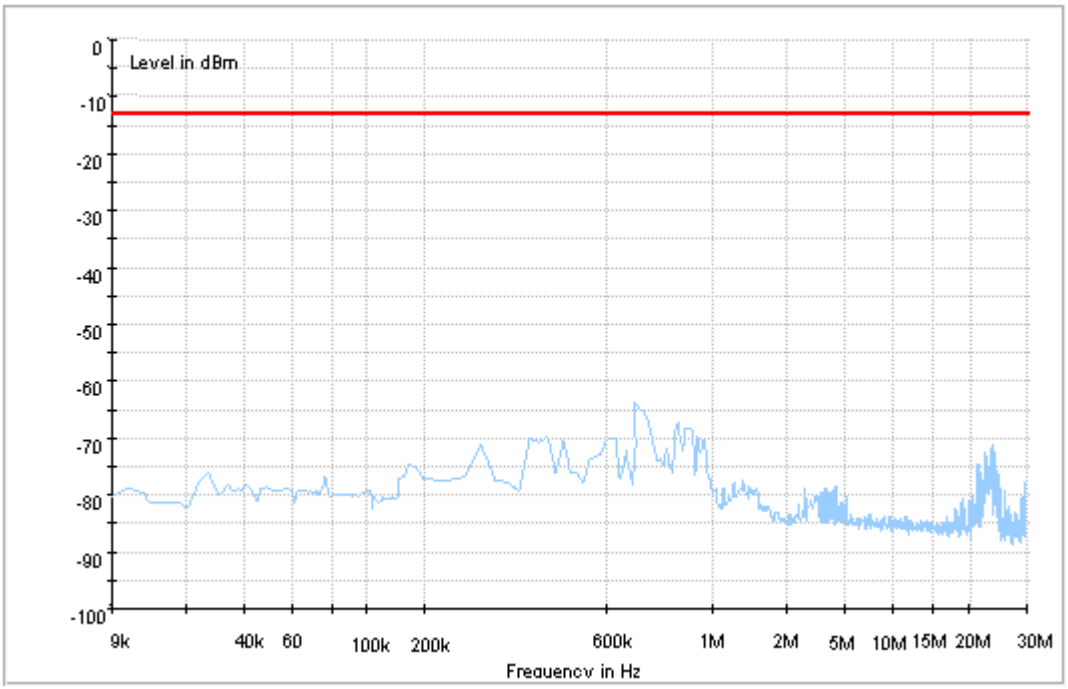
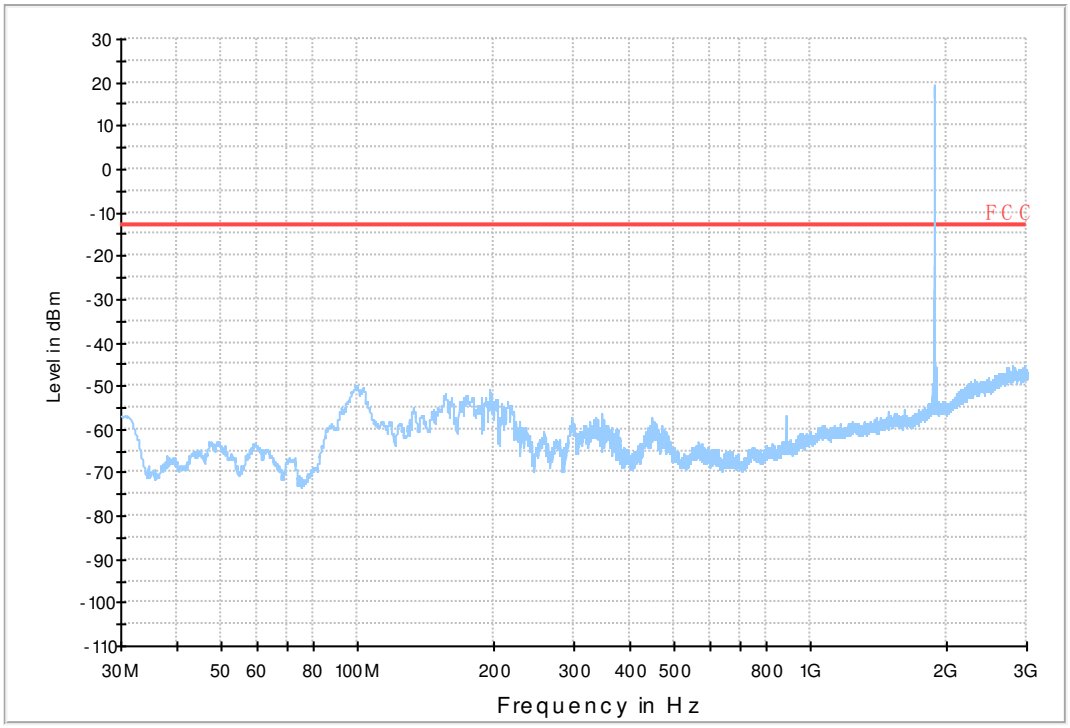
7.1.2.2 Test Mode = GSM_ANT2



Copy of FCC PART24 GSM1900_L



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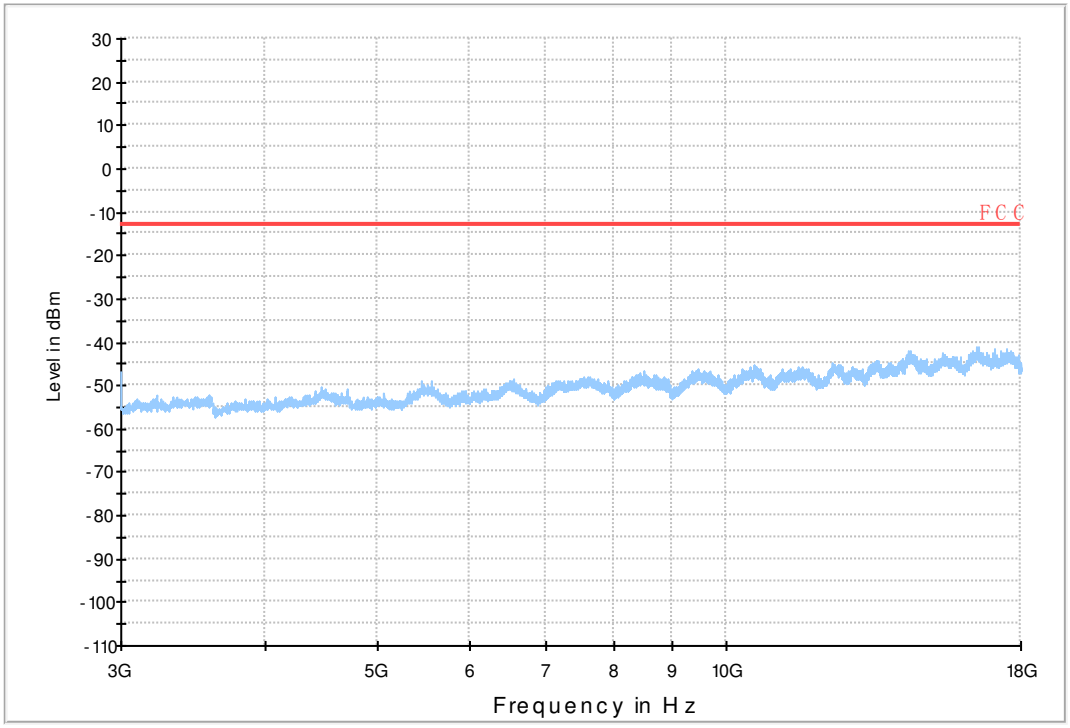
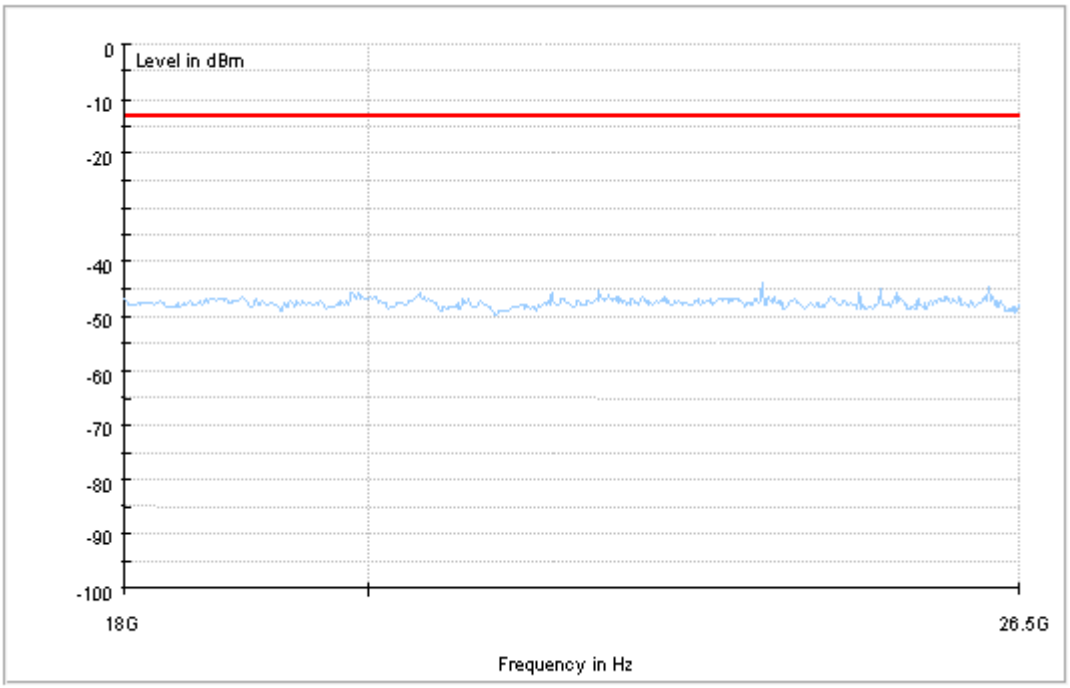
Copy of FCC PART24 GSM1900_H





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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	-8.91	-0.01081	PASS
				VN	-13.17	-0.01598	PASS
				VH	-10.27	-0.01246	PASS
		MCH	TN	VL	-7.36	-0.0088	PASS
				VN	-6.84	-0.00818	PASS
				VH	-10.40	-0.01243	PASS
		HCH	TN	VL	-9.30	-0.01096	PASS
				VN	-3.23	-0.00381	PASS
				VH	-10.14	-0.01195	PASS
	GSM/TM2	LCH	TN	VL	-13.59	-0.01649	PASS
				VN	-15.95	-0.01935	PASS
				VH	-7.94	-0.00963	PASS
		MCH	TN	VL	-8.14	-0.00973	PASS
				VN	-11.95	-0.01428	PASS
				VH	-9.04	-0.01081	PASS
		HCH	TN	VL	-12.98	-0.01529	PASS
				VN	-9.10	-0.01072	PASS
				VH	-16.30	-0.0192	PASS
GSM1900	GSM/TM1	LCH	TN	VL	12.46	0.00673	PASS
				VN	17.69	0.00956	PASS
				VH	-7.10	-0.00384	PASS
		MCH	TN	VL	18.60	0.00989	PASS
				VN	26.09	0.01388	PASS
				VH	15.05	0.00801	PASS
		HCH	TN	VL	18.79	0.00984	PASS
				VN	21.05	0.01102	PASS
				VH	27.25	0.01427	PASS
	GSM/TM2	LCH	TN	VL	-21.47	-0.0116	PASS
				VN	-16.18	-0.00875	PASS
				VH	-7.94	-0.00429	PASS
		MCH	TN	VL	-0.42	-0.00022	PASS
				VN	-5.68	-0.00302	PASS

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Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	0.45	0.00024	PASS
		HCH	TN	VL	-2.49	-0.0013	PASS
				VN	35.84	0.01877	PASS
				VH	-4.97	-0.0026	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	-10.01	-0.01215	PASS
				-20	-13.24	-0.01606	PASS
				-10	-11.43	-0.01387	PASS
				0	-9.75	-0.01183	PASS
				10	-12.01	-0.01457	PASS
				20	-10.78	-0.01308	PASS
				30	-13.11	-0.01591	PASS
				40	-7.23	-0.00877	PASS
				50	-10.53	-0.01278	PASS
		MCH	VN	-30	-10.85	-0.01297	PASS
				-20	-11.17	-0.01335	PASS
				-10	-3.29	-0.00393	PASS
				0	-6.52	-0.00779	PASS
				10	-9.56	-0.01143	PASS
				20	-0.84	-0.001	PASS
				30	-8.33	-0.00996	PASS
				40	-13.95	-0.01667	PASS
				50	-4.71	-0.00563	PASS
		HCH	VN	-30	-13.88	-0.01635	PASS
				-20	-8.33	-0.00981	PASS
				-10	-8.33	-0.00981	PASS
				0	-11.75	-0.01384	PASS
				10	-11.30	-0.01331	PASS
				20	-9.10	-0.01072	PASS
				30	-7.81	-0.0092	PASS
				40	-8.52	-0.01004	PASS
				50	-7.68	-0.00905	PASS
	GSM/TM2	LCH	VN	-30	-16.95	-0.02057	PASS
				-20	-19.02	-0.02308	PASS
				-10	-7.07	-0.00858	PASS
				0	-14.04	-0.01703	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-9.36	-0.01136	PASS
				20	-11.01	-0.01336	PASS
				30	-12.95	-0.01571	PASS
				40	-15.14	-0.01837	PASS
				50	-14.88	-0.01805	PASS
		MCH	VN	-30	-13.62	-0.01628	PASS
				-20	-12.69	-0.01517	PASS
				-10	-6.49	-0.00776	PASS
				0	-18.63	-0.02227	PASS
				10	-7.17	-0.00857	PASS
				20	-12.14	-0.01451	PASS
				30	-7.23	-0.00864	PASS
				40	-8.81	-0.01053	PASS
				50	-10.46	-0.0125	PASS
		HCH	VN	-30	-14.53	-0.01712	PASS
				-20	-13.62	-0.01605	PASS
				-10	-8.65	-0.01019	PASS
				0	-10.33	-0.01217	PASS
				10	-10.88	-0.01282	PASS
				20	-10.85	-0.01278	PASS
				30	-13.33	-0.0157	PASS
				40	-13.37	-0.01575	PASS
				50	-12.88	-0.01517	PASS
GSM1900	GSM/TM1	LCH	VN	-30	8.07	0.00436	PASS
				-20	-4.46	-0.00241	PASS
				-10	2.39	0.00129	PASS
				0	1.03	0.00056	PASS
				10	4.39	0.00237	PASS
				20	1.94	0.00105	PASS
				30	7.10	0.00384	PASS
				40	6.46	0.00349	PASS
				50	-4.46	-0.00241	PASS
		MCH	VN	-30	26.35	0.01402	PASS
				-20	-0.19	-0.0001	PASS
				-10	22.15	0.01178	PASS
				0	9.75	0.00519	PASS
				10	23.05	0.01226	PASS
				20	4.00	0.00213	PASS
				30	18.02	0.00959	PASS
				40	23.31	0.0124	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	17.76	0.00945	PASS
		HCH	VN	-30	25.05	0.01312	PASS
				-20	19.76	0.01035	PASS
				-10	29.44	0.01542	PASS
				0	17.50	0.00916	PASS
				10	23.25	0.01217	PASS
				20	19.44	0.01018	PASS
				30	13.50	0.00707	PASS
				40	9.69	0.00507	PASS
				50	14.59	0.00764	PASS
	GSM/TM2	LCH	VN	-30	-18.56	-0.01003	PASS
				-20	-26.02	-0.01406	PASS
				-10	-11.07	-0.00598	PASS
				0	-11.62	-0.00628	PASS
				10	-13.66	-0.00738	PASS
				20	-2.32	-0.00125	PASS
				30	-19.40	-0.01049	PASS
				40	2.65	0.00143	PASS
				50	-8.30	-0.00449	PASS
		MCH	VN	-30	-1.61	-0.00086	PASS
				-20	-5.20	-0.00277	PASS
				-10	-9.23	-0.00491	PASS
				0	2.32	0.00123	PASS
				10	1.00	0.00053	PASS
				20	-7.49	-0.00398	PASS
				30	-0.71	-0.00038	PASS
				40	-10.36	-0.00551	PASS
				50	-11.40	-0.00606	PASS
		HCH	VN	-30	1.52	0.0008	PASS
				-20	-3.39	-0.00178	PASS
				-10	3.62	0.0019	PASS
				0	0.13	0.00007	PASS
				10	8.04	0.00421	PASS
				20	-13.24	-0.00693	PASS
				30	-3.13	-0.00164	PASS
				40	0.26	0.00014	PASS
				50	-15.59	-0.00816	PASS

END

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