



Appendix for test report

1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.68	24.17	38.5	PASS
		MCH	32.74	24.23	38.5	PASS
		HCH	32.65	24.14	38.5	PASS
	GSM/TM2	LCH	26.8	18.29	38.5	PASS
		MCH	26.8	18.29	38.5	PASS
		HCH	26.77	18.26	38.5	PASS
Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP [dBm]	Limit [dBm]	Verdict
PCS1900	GSM/TM1	LCH	29.13	26.27	33	PASS
		MCH	29.33	26.47	33	PASS
		HCH	29.22	26.36	33	PASS
	GSM/TM2	LCH	24.21	21.35	33	PASS
		MCH	24.61	21.75	33	PASS
		HCH	24.36	21.5	33	PASS

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,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP = Signal Generator Level

Note2:

$$\text{SET Span} = 1.5 * \text{OBW}$$

SET RBW = 1% of the OBW, not to exceed 1MHz

$$\text{SET VBW} \geq 3 * \text{RBW}$$

SET Sweep time = auto - couple.

Detector: RMS

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	2.02	13	PASS
		MCH	1.83	13	PASS
		HCH	2.00	13	PASS
	GSM/TM2	LCH	2.74	13	PASS
		MCH	2.91	13	PASS
		HCH	2.8	13	PASS
PCS1900	GSM/TM1	LCH	1.86	13	PASS
		MCH	1.80	13	PASS
		HCH	2.14	13	PASS
	GSM/TM2	LCH	5.00	13	PASS
		MCH	5.13	13	PASS
		HCH	5.02	13	PASS

3Appendix_C: Modulation Characteristics

Part I - Test Plots

3.1 For GSM

3.1.1 Test Band = GSM850

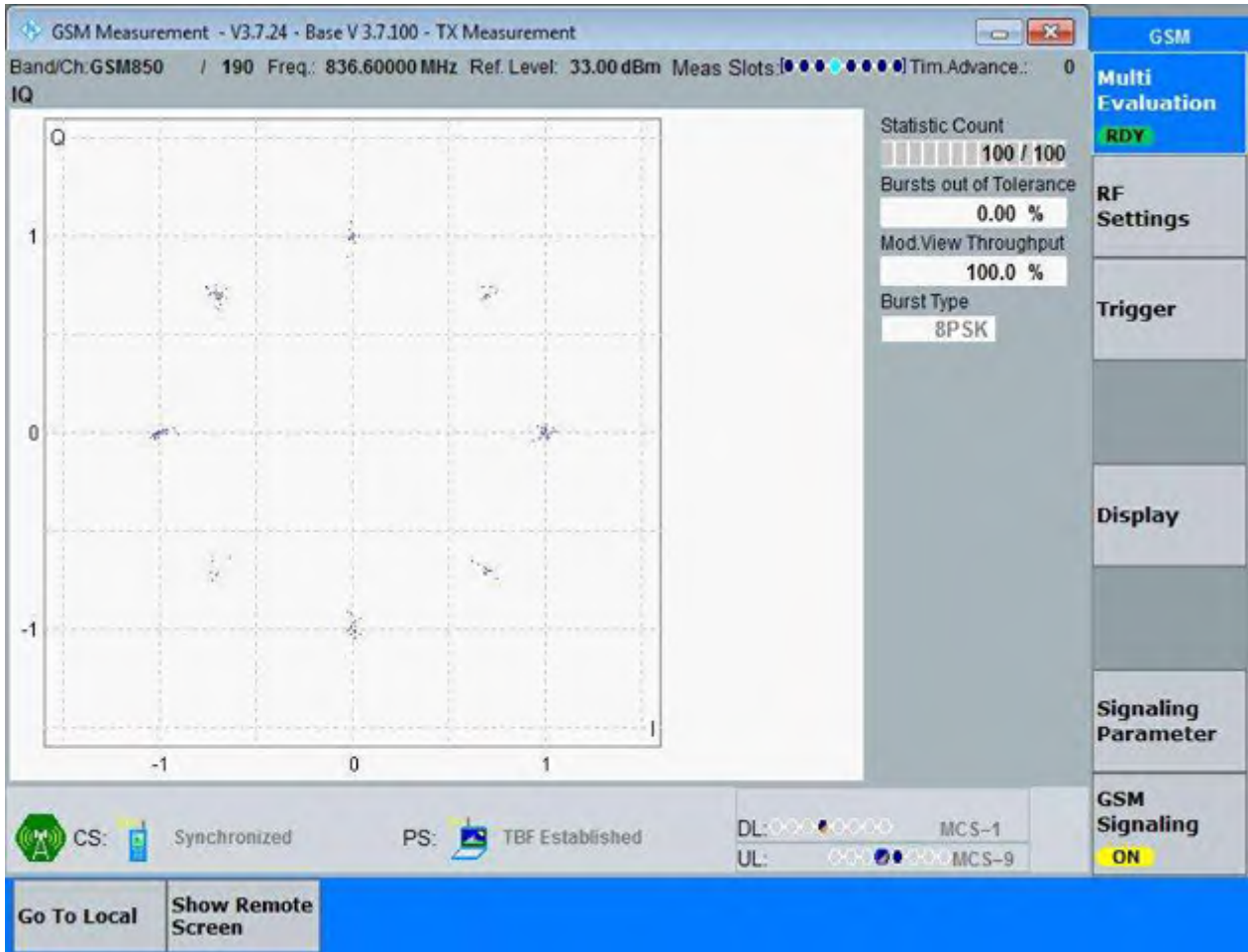
3.1.1.1 Test Mode = GSM/TM1

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = GSM/TM2

3.1.1.2.1 Test Channel = MCH



3.1.2 Test Band = PCS1900

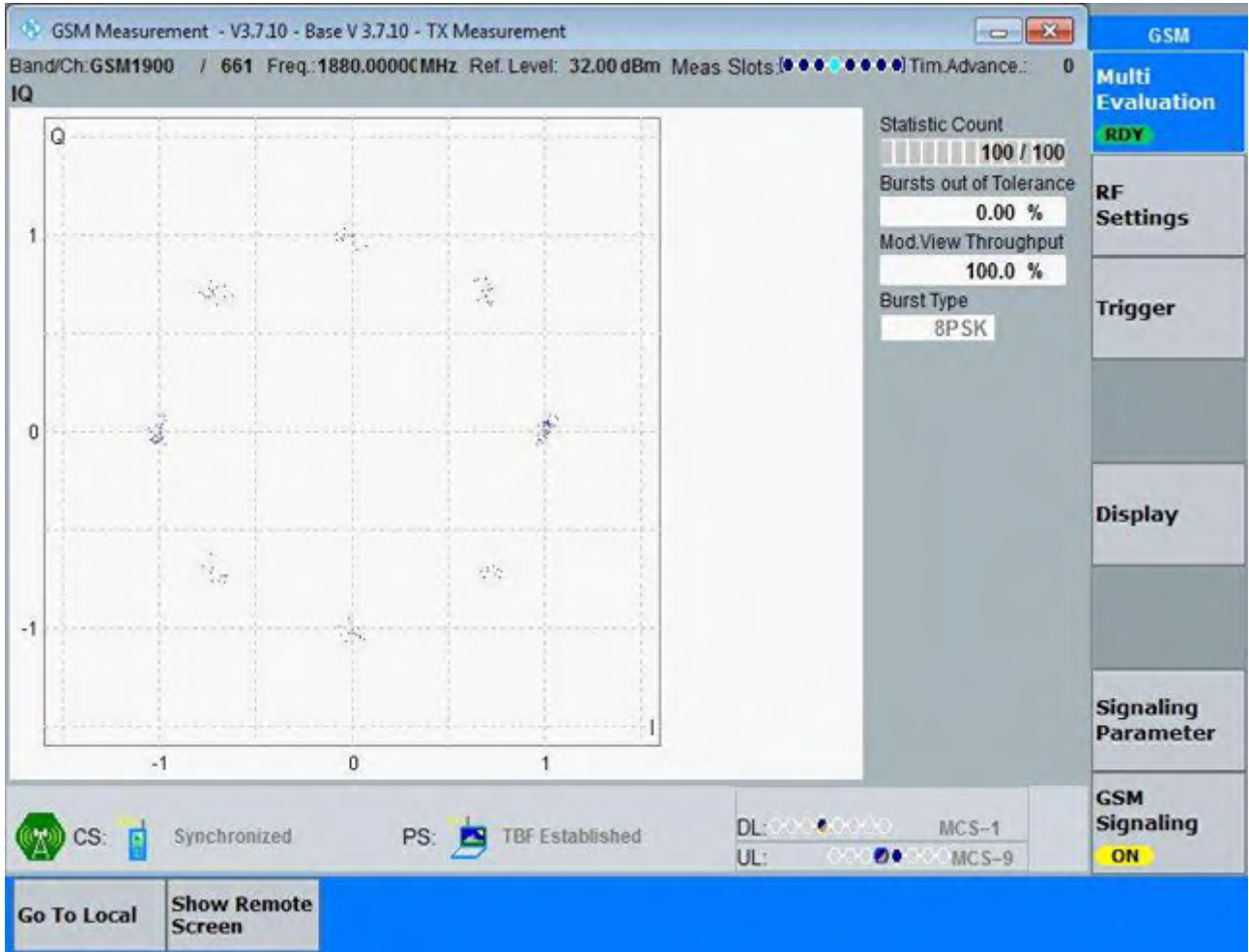
3.1.2.1 Test Mode = GSM/TM1

3.1.2.1.1 Test Channel = MCH



3.1.2.2 Test Mode = GSM/TM2

3.1.2.2.1 Test Channel = MCH



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	248.08	319.4	Pass
		MCH	249.90	323.1	Pass
		HCH	245.73	314.5	Pass
	GSM/TM2	LCH	241.81	303.15	Pass
		MCH	231.86	296.41	Pass
		HCH	254.4	324.53	Pass
PCS1900	GSM/TM1	LCH	241.19	316.6	Pass
		MCH	239.19	311.2	Pass
		HCH	240.63	316.3	Pass
	GSM/TM2	LCH	249.62	314.8	Pass
		MCH	248.39	306.2	Pass
		HCH	247.92	311.7	Pass

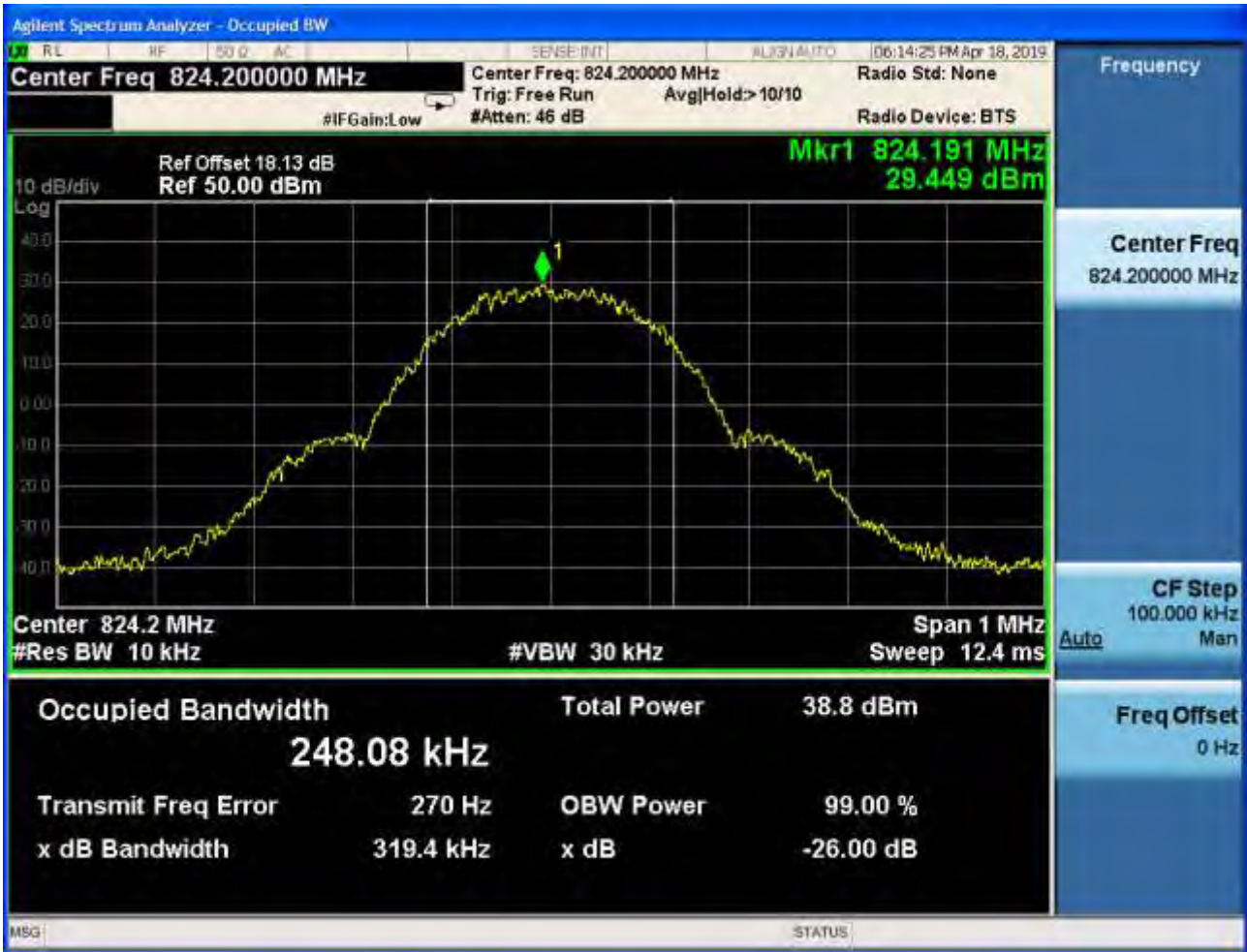
Part II - Test Plots

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



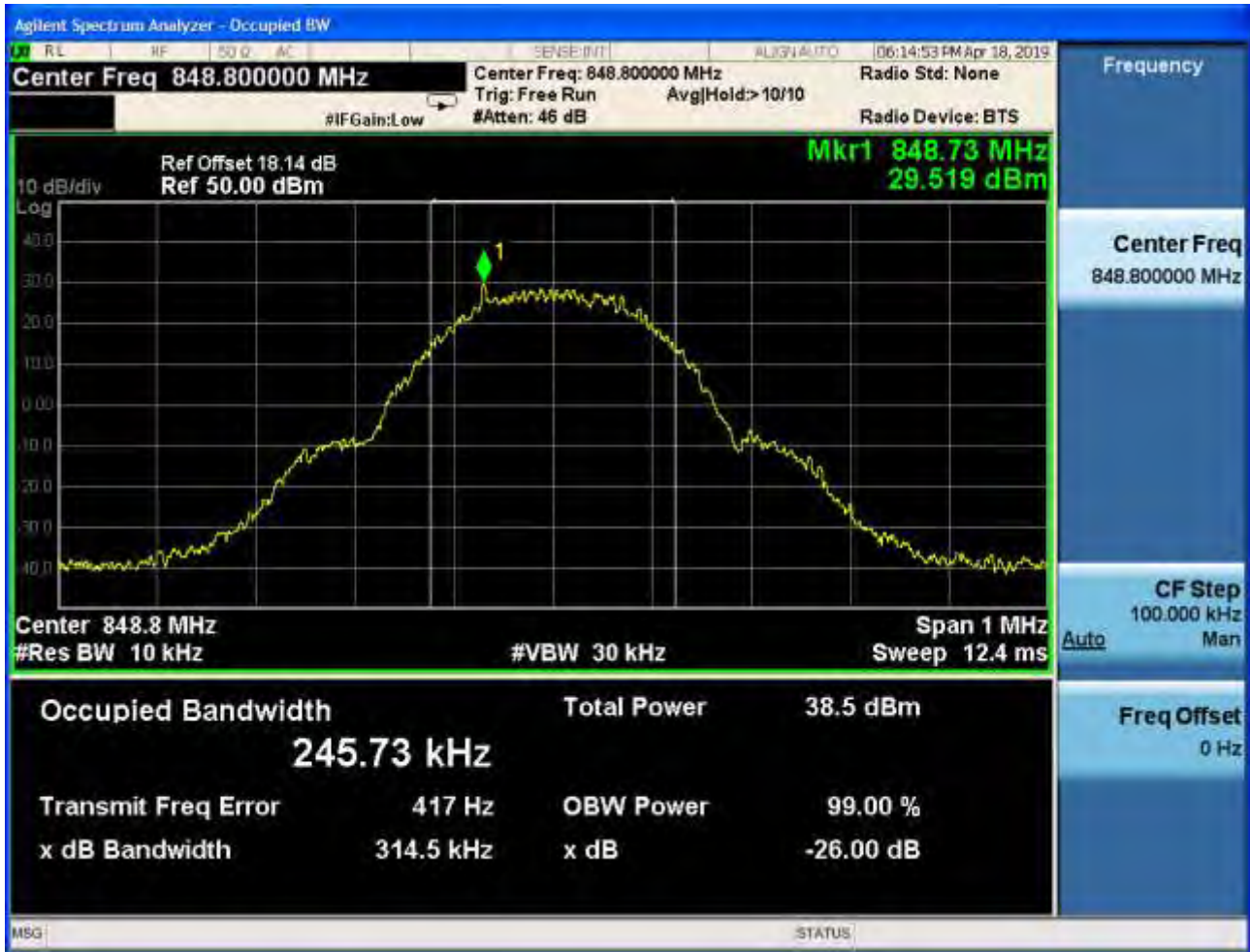


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH





4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH





4.1.1.2.2 Test Channel = MCH





4.1.1.2.3 Test Channel = HCH



4.1.2 Test Band = PCS1900

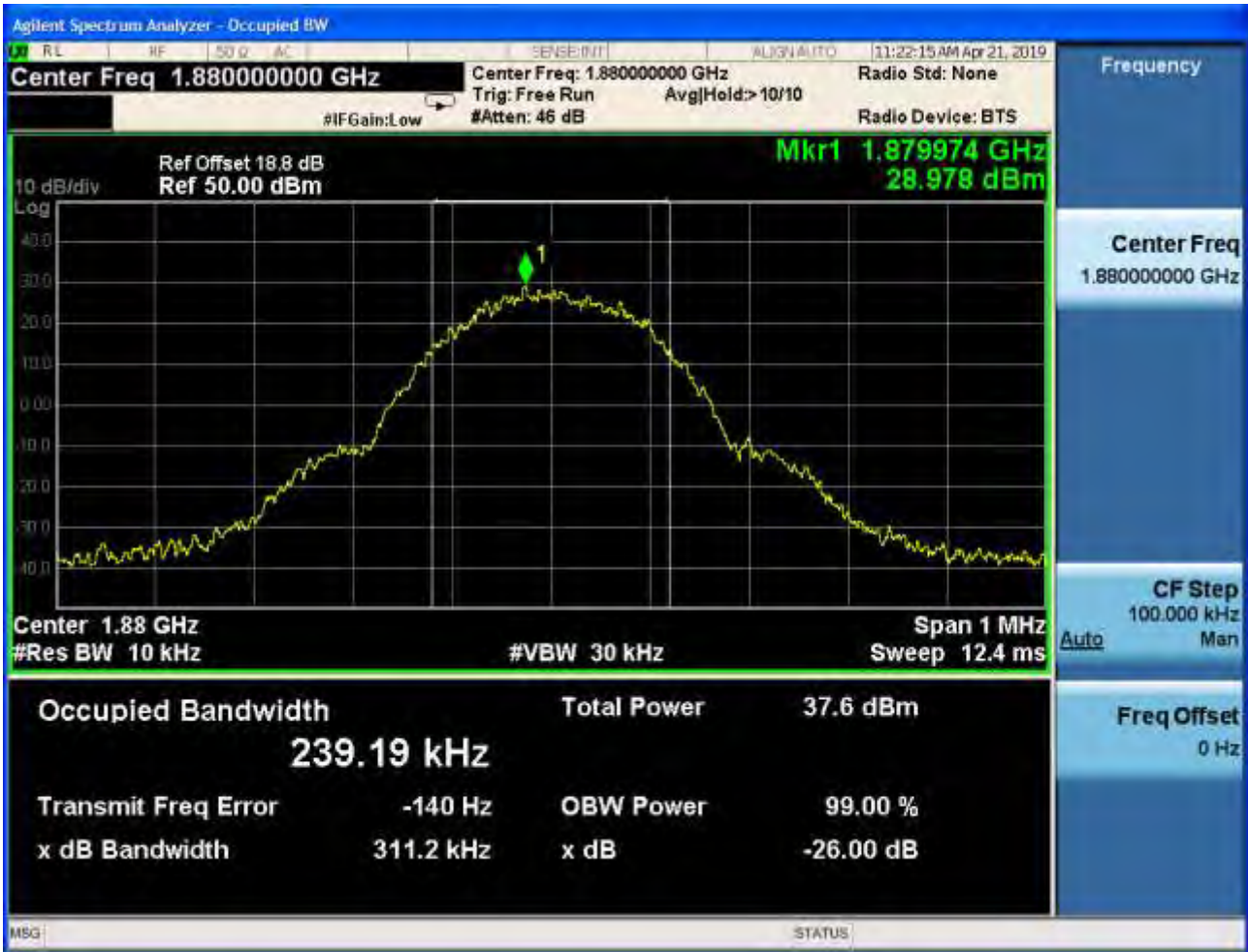
4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH





4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH





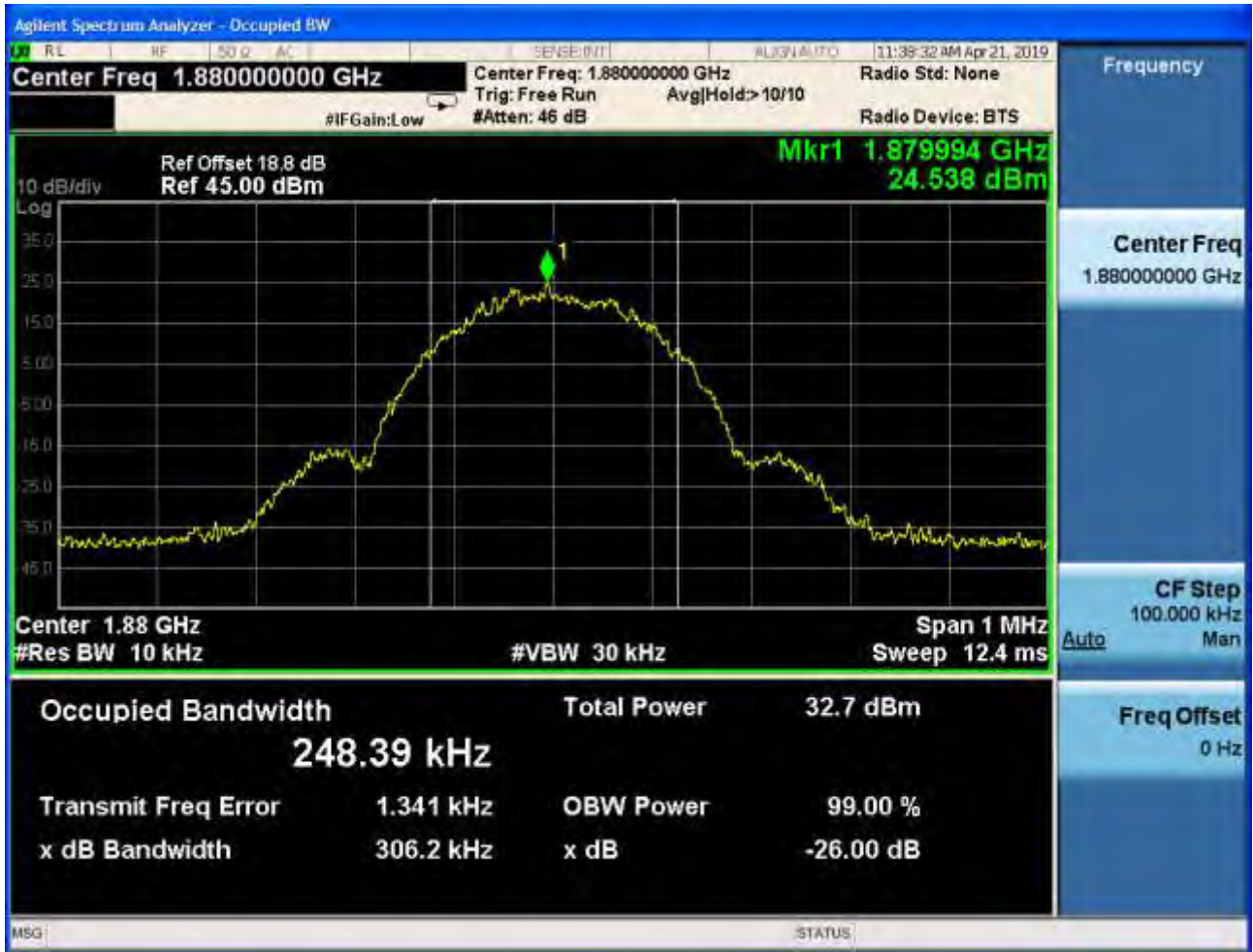
4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



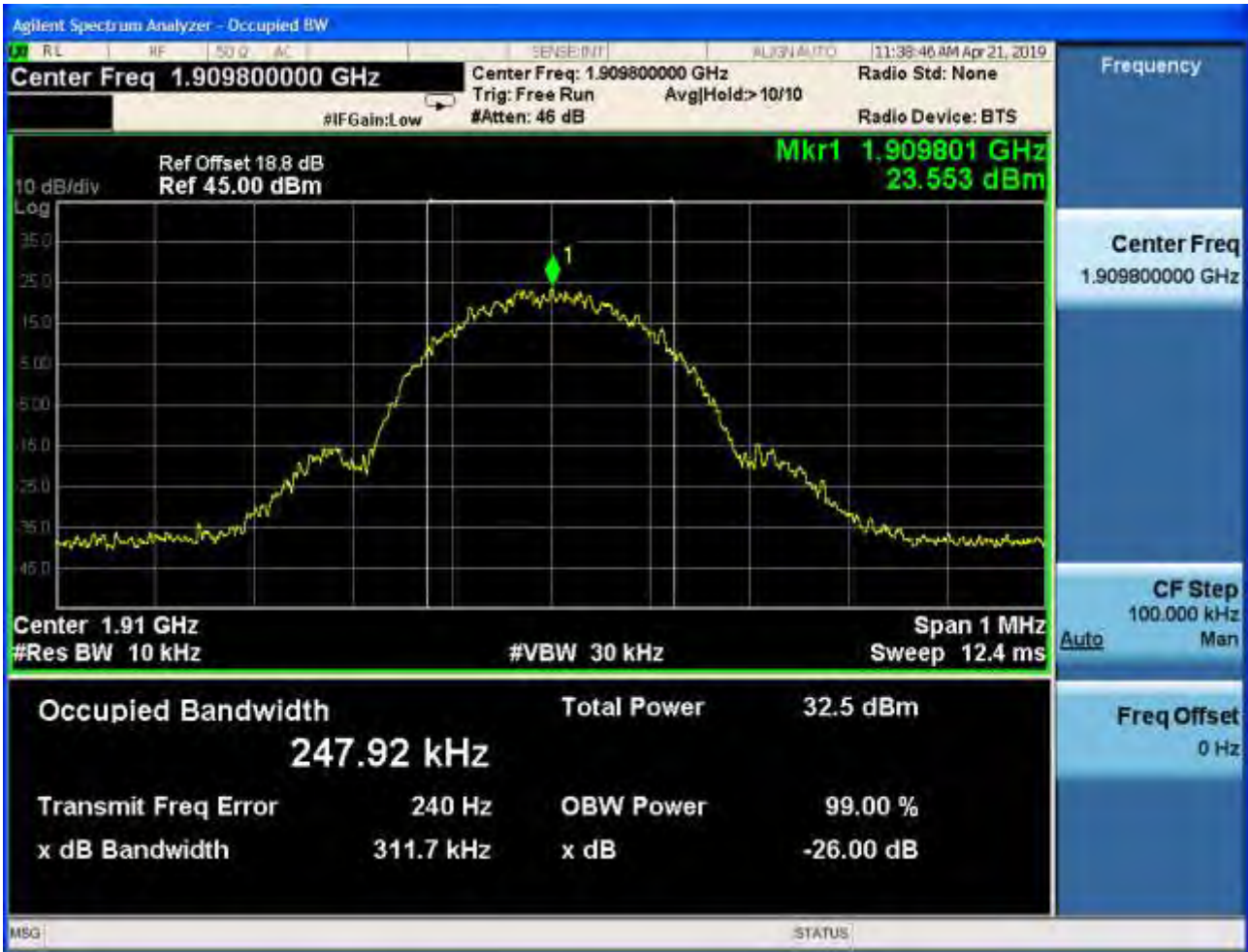


4.1.2.2.2 Test Channel = MCH





4.1.2.2.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

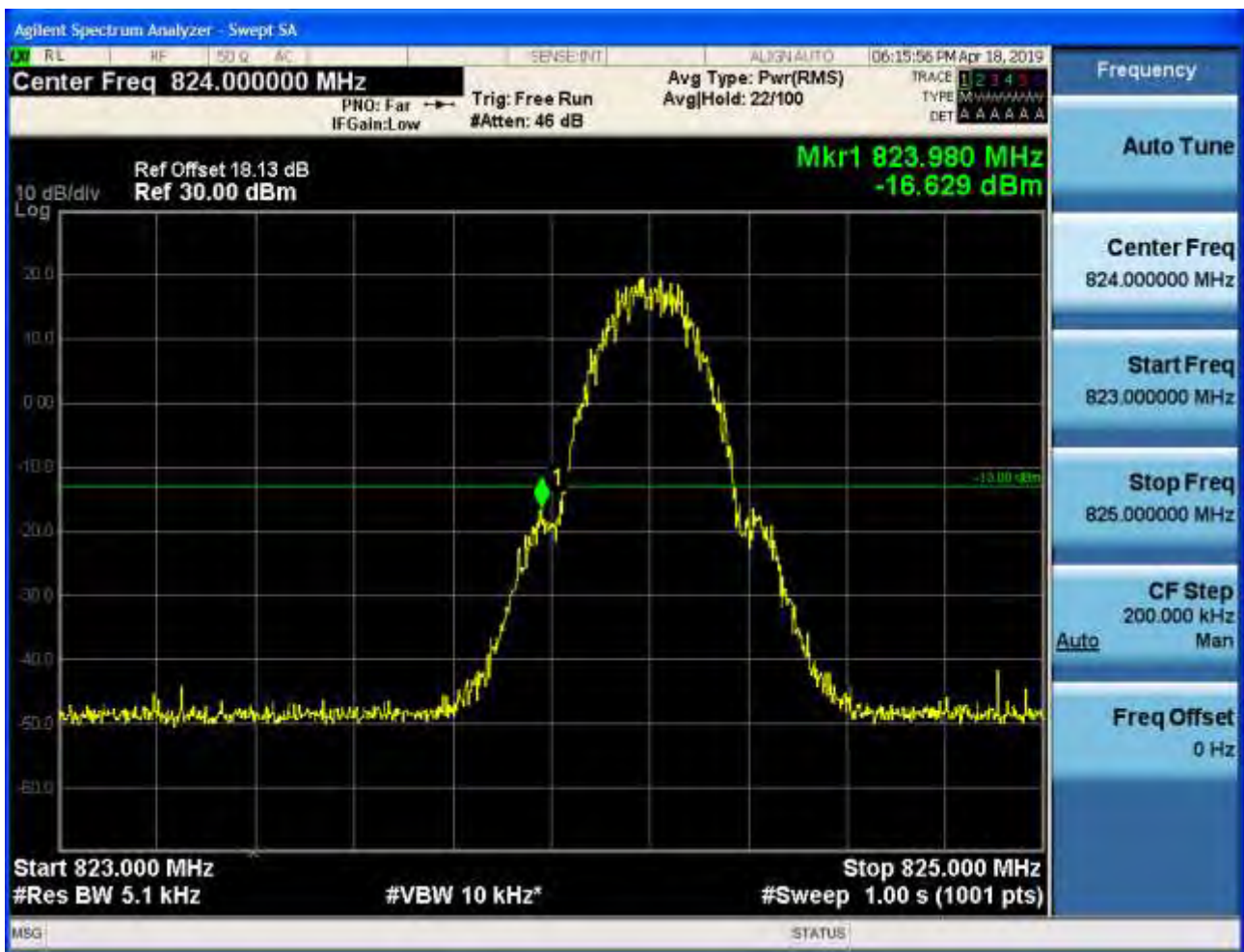
Part I - Test Plots

5.1 For GSM

5.1.1 Test Band = GSM850

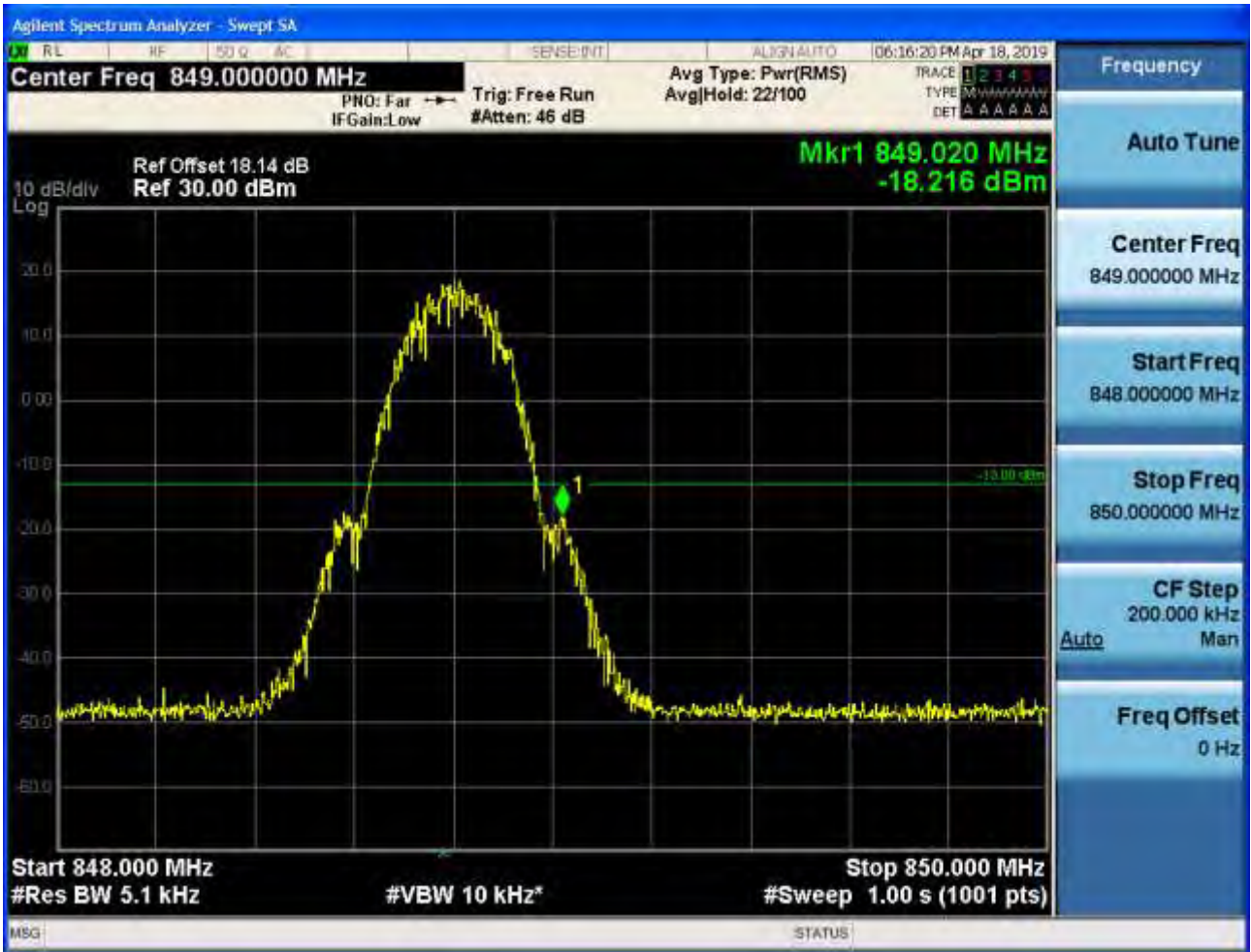
5.1.1.1 Test Mode = GSM/TM1

5.1.1.1.1 Test Channel = LCH



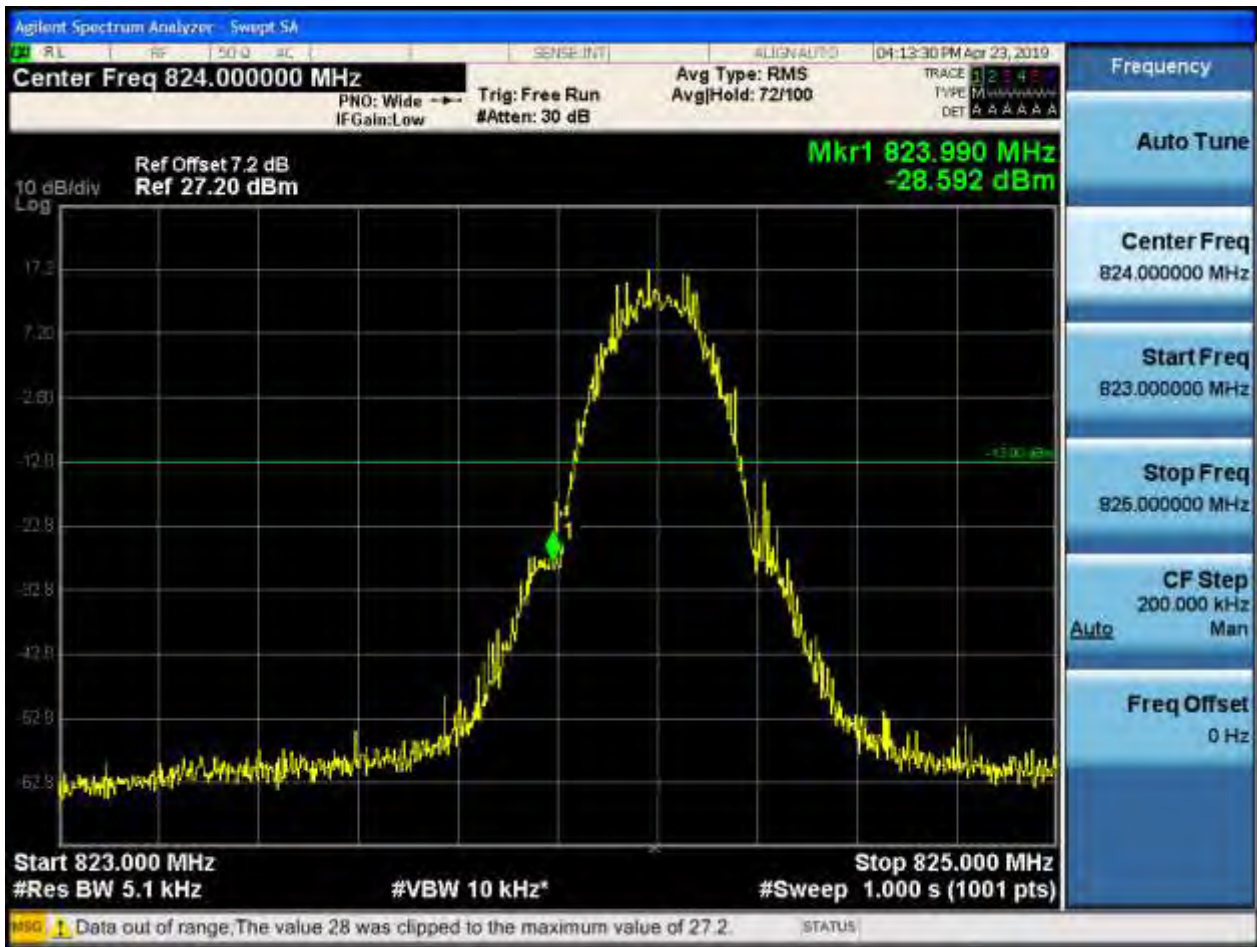


5.1.1.1.2 Test Channel = HCH



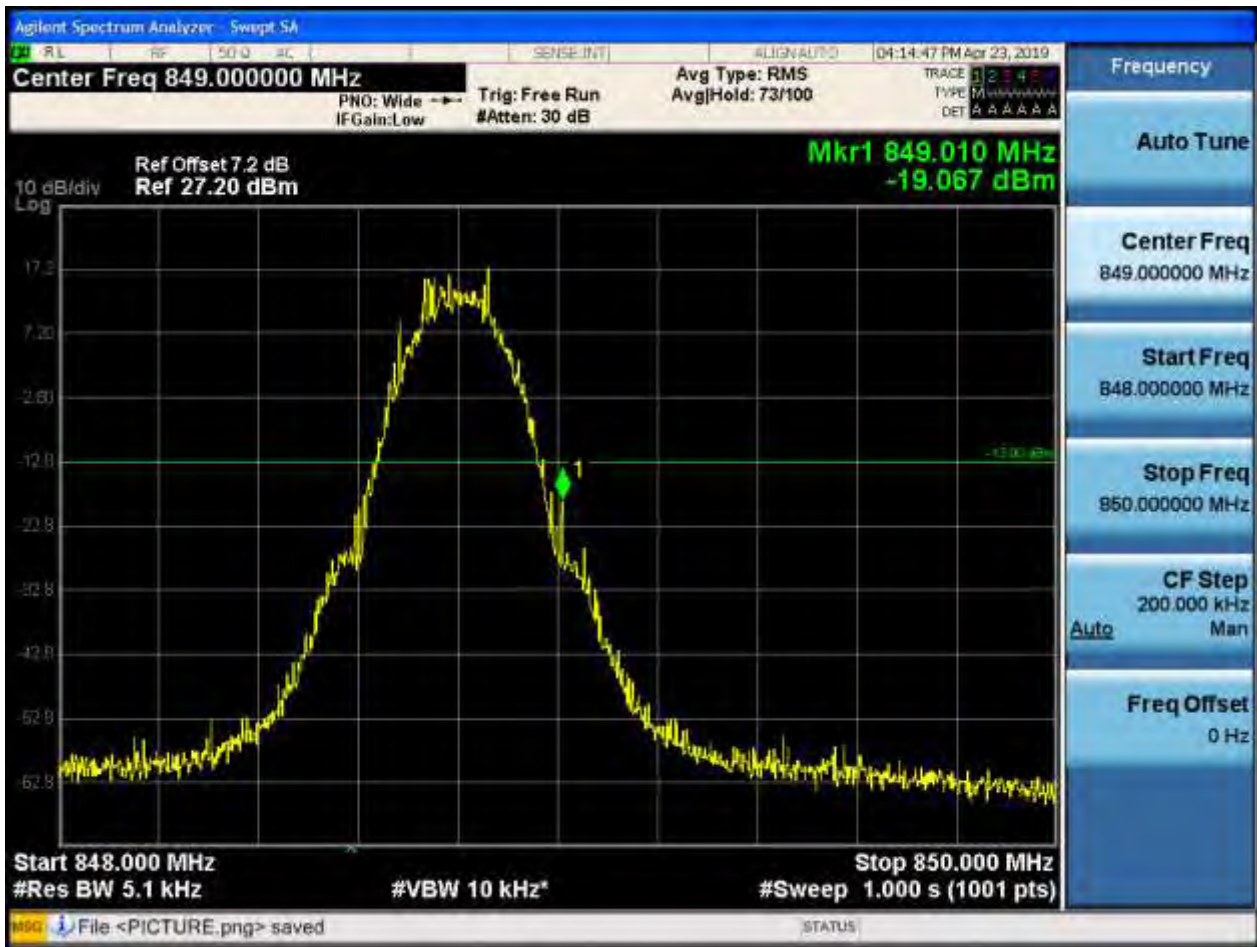
5.1.1.2 Test Mode = GSM/TM2

5.1.1.2.1 Test Channel = LCH





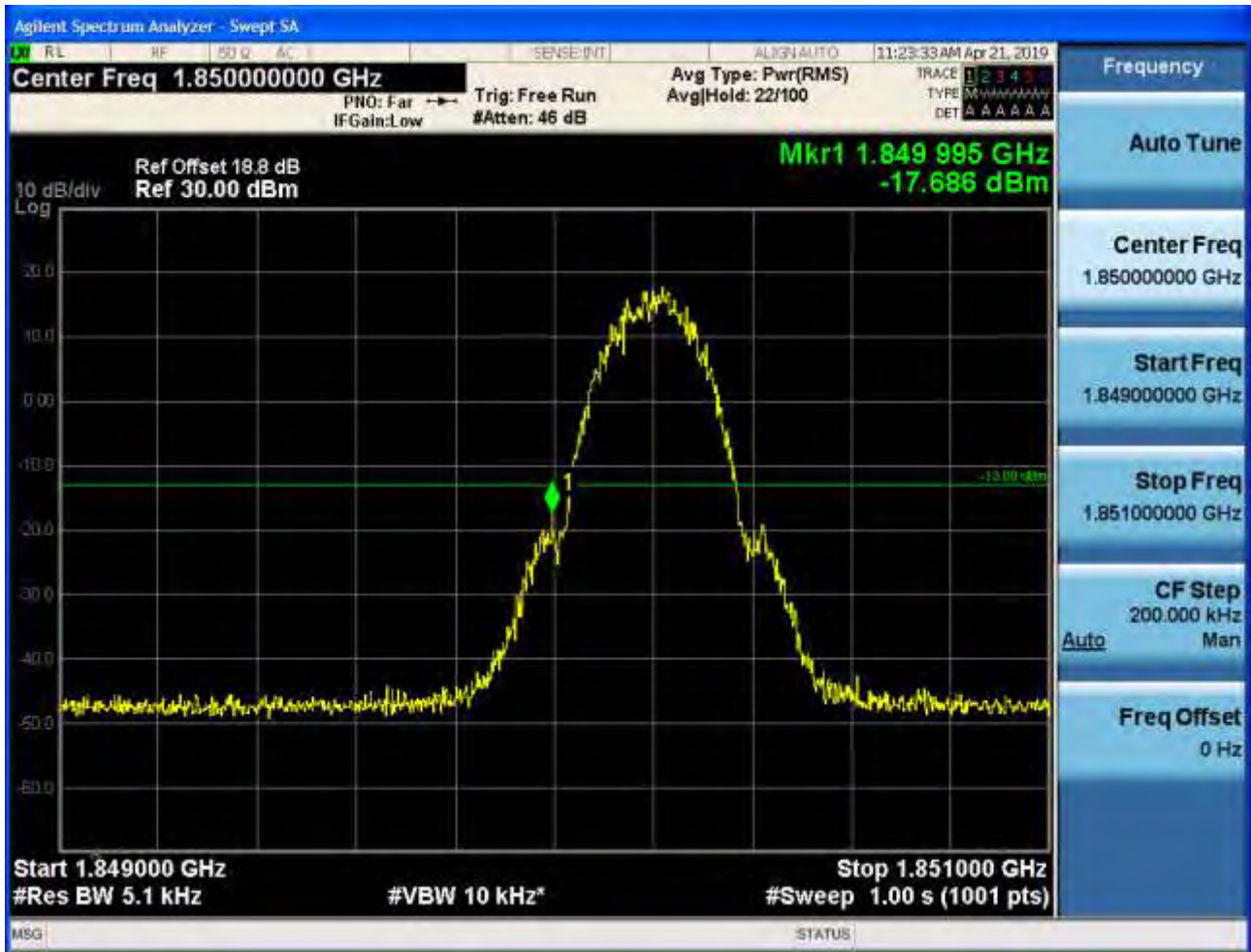
5.1.1.2.2 Test Channel = HCH



5.1.2 Test Band = PCS1900

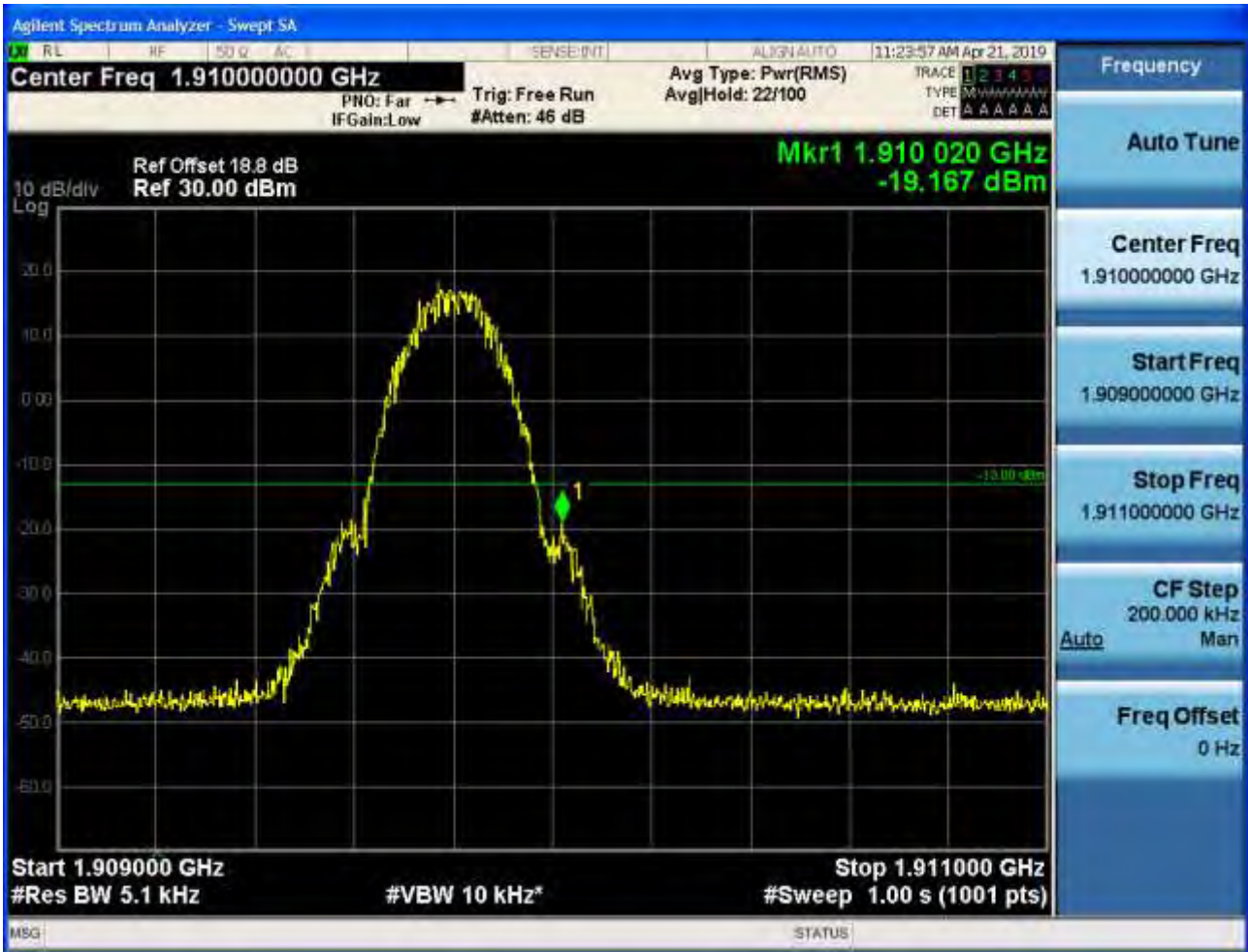
5.1.2.1 Test Mode = GSM/TM1

5.1.2.1.1 Test Channel = LCH





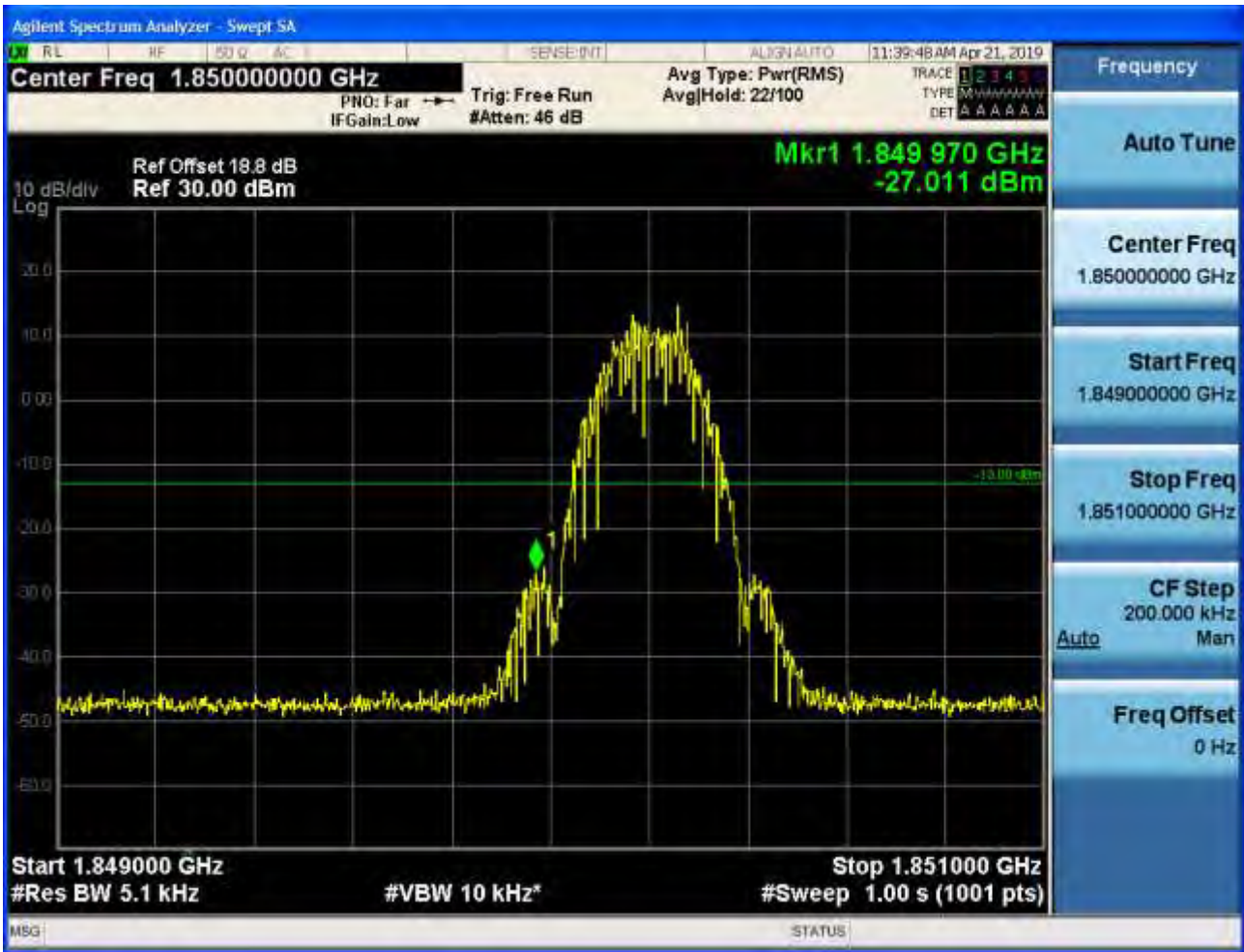
5.1.2.1.2 Test Channel = HCH





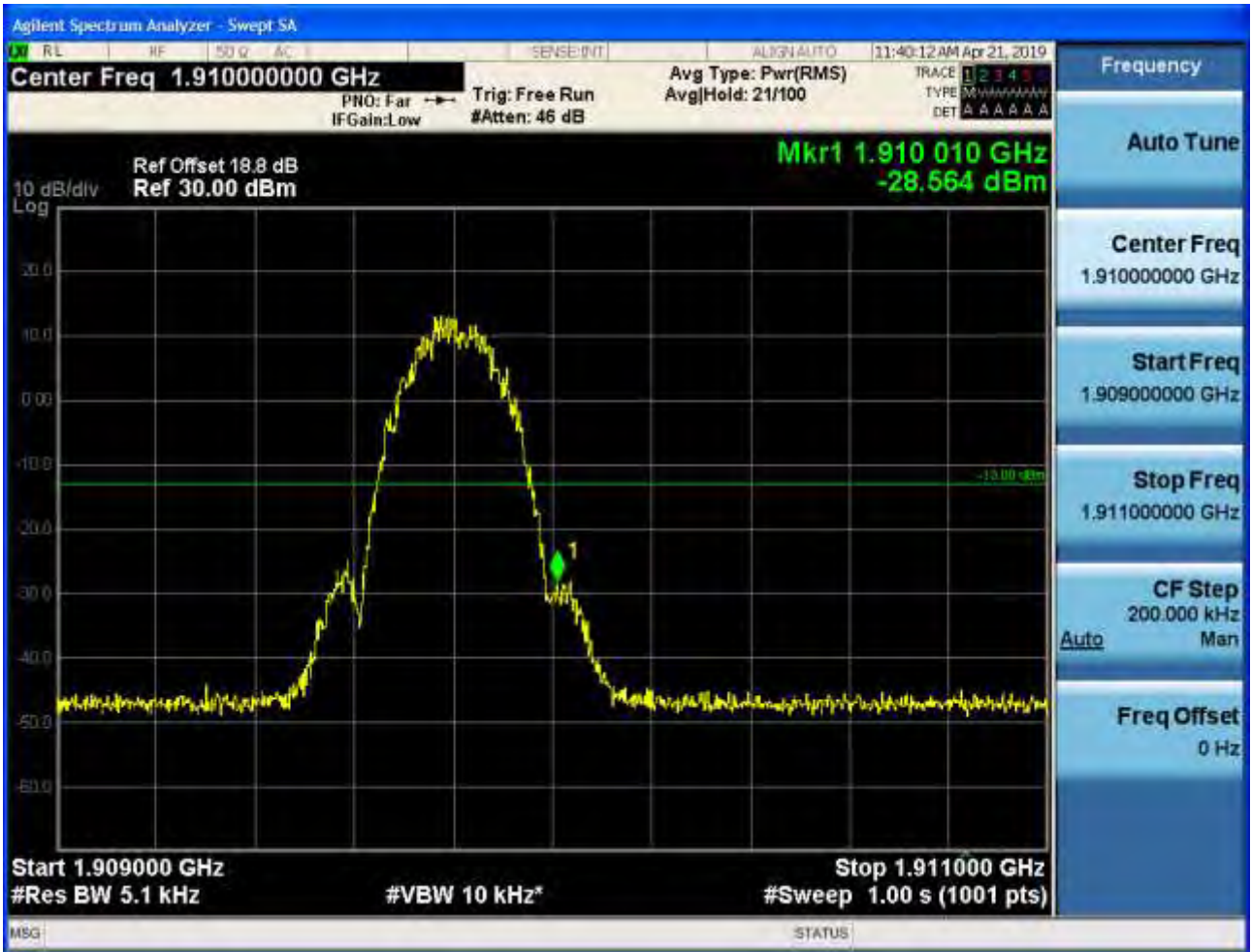
5.1.2.2 Test Mode = GSM/TM2

5.1.2.2.1 Test Channel = LCH





5.1.2.2.2 Test Channel = HCH



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

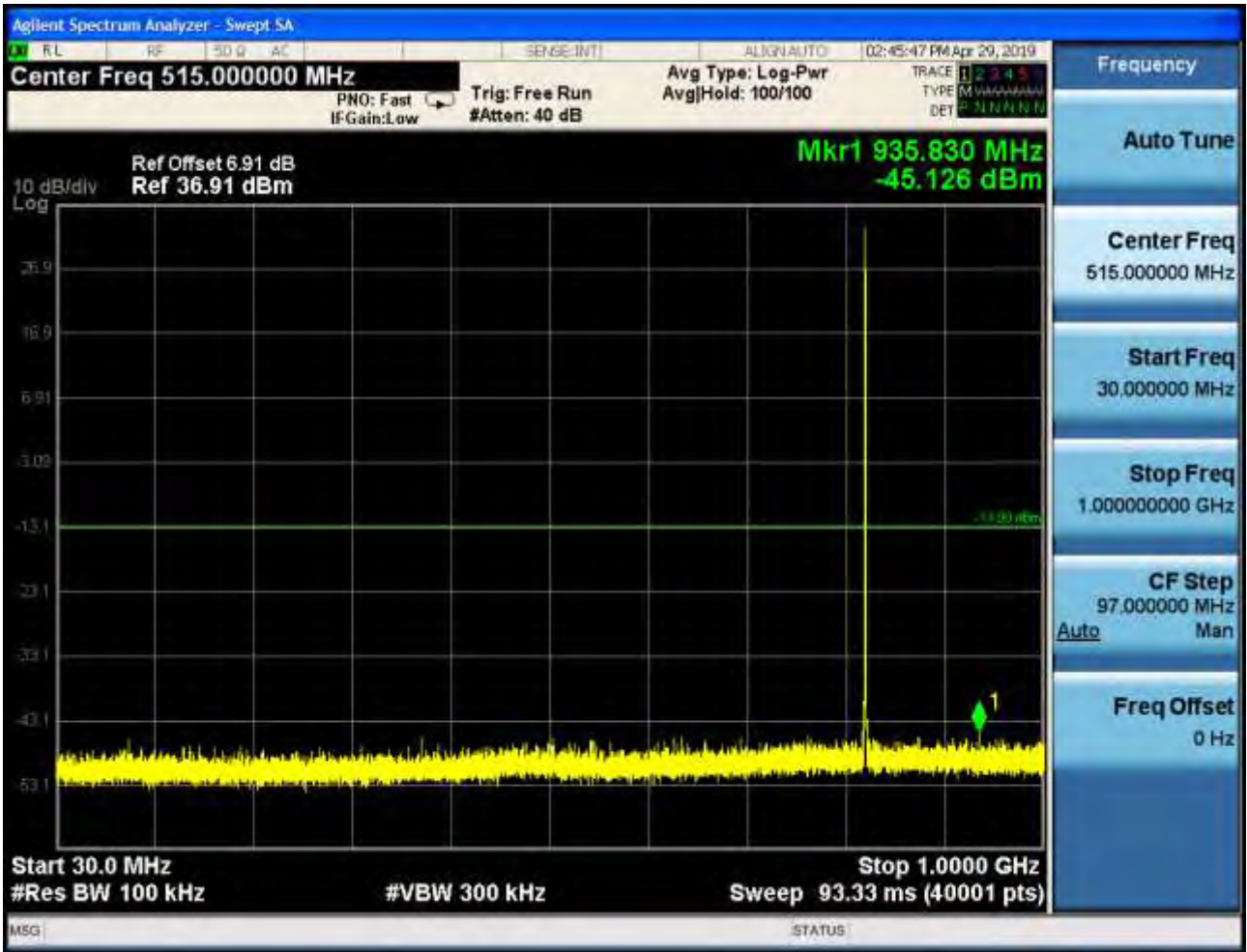
6.1.1 Test Band = GSM850

6.1.1.1 Test Mode = GSM/TM1

6.1.1.1.1 Test Channel = LCH







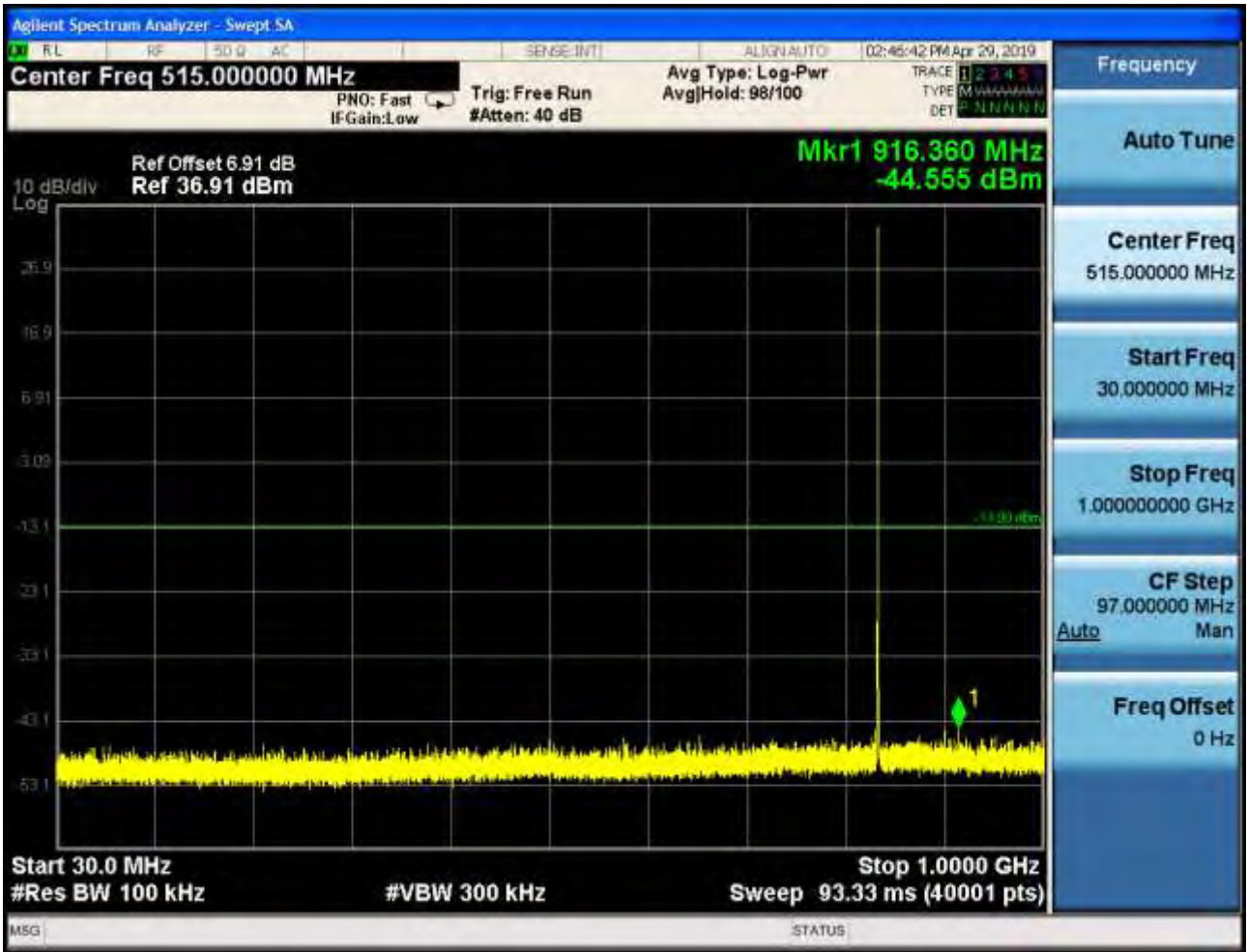




6.1.1.1.2 Test Channel = MCH







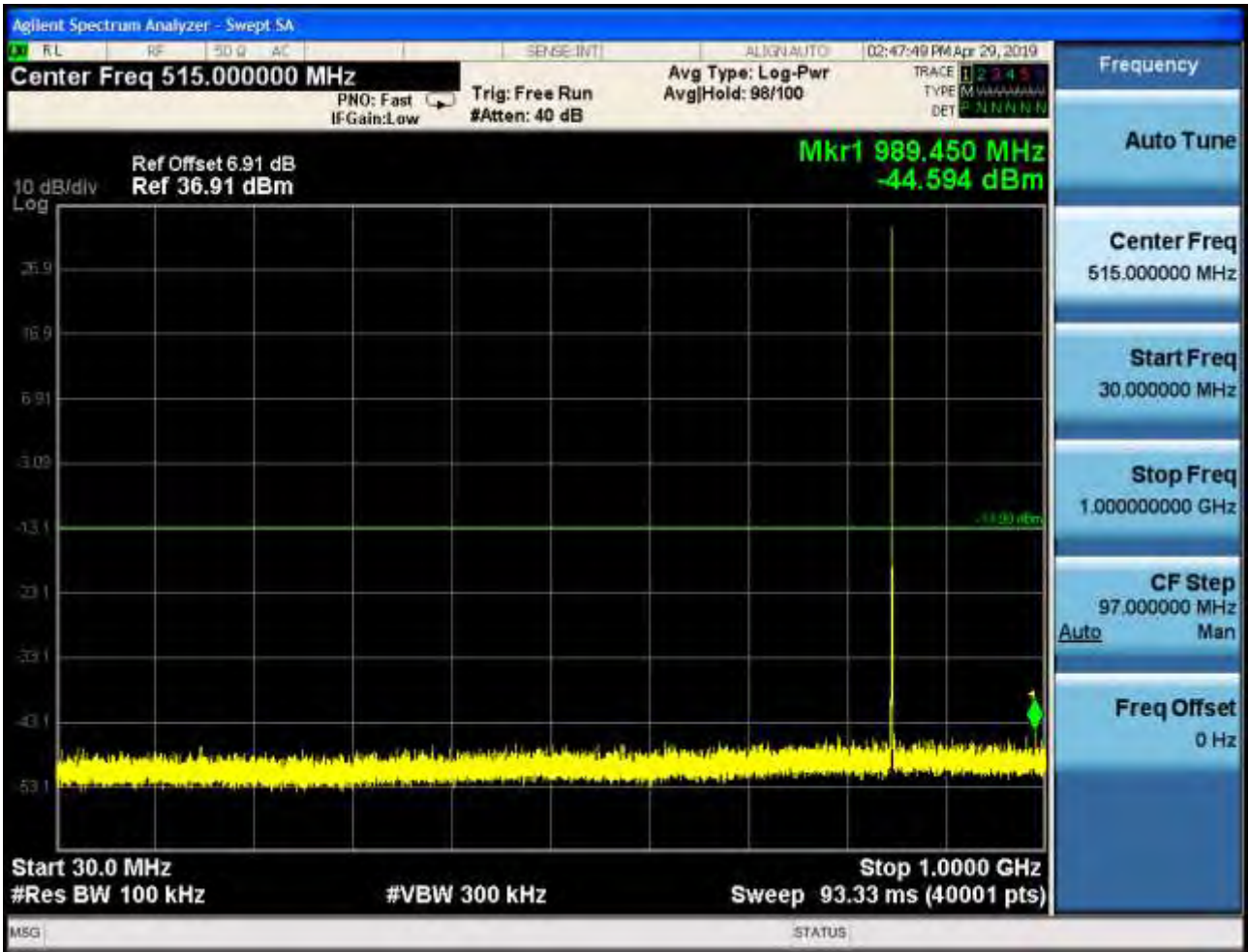




6.1.1.1.3 Test Channel = HCH



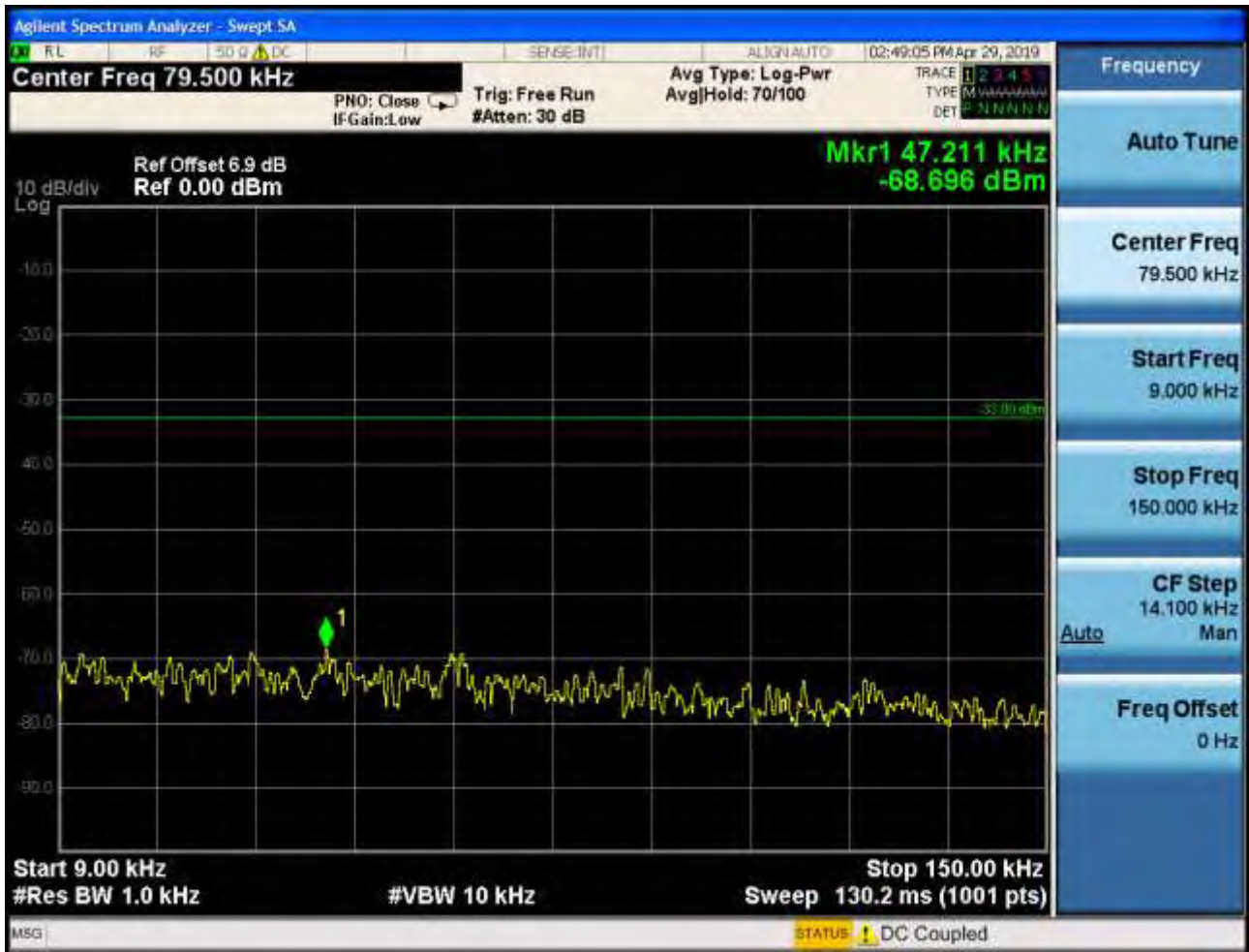




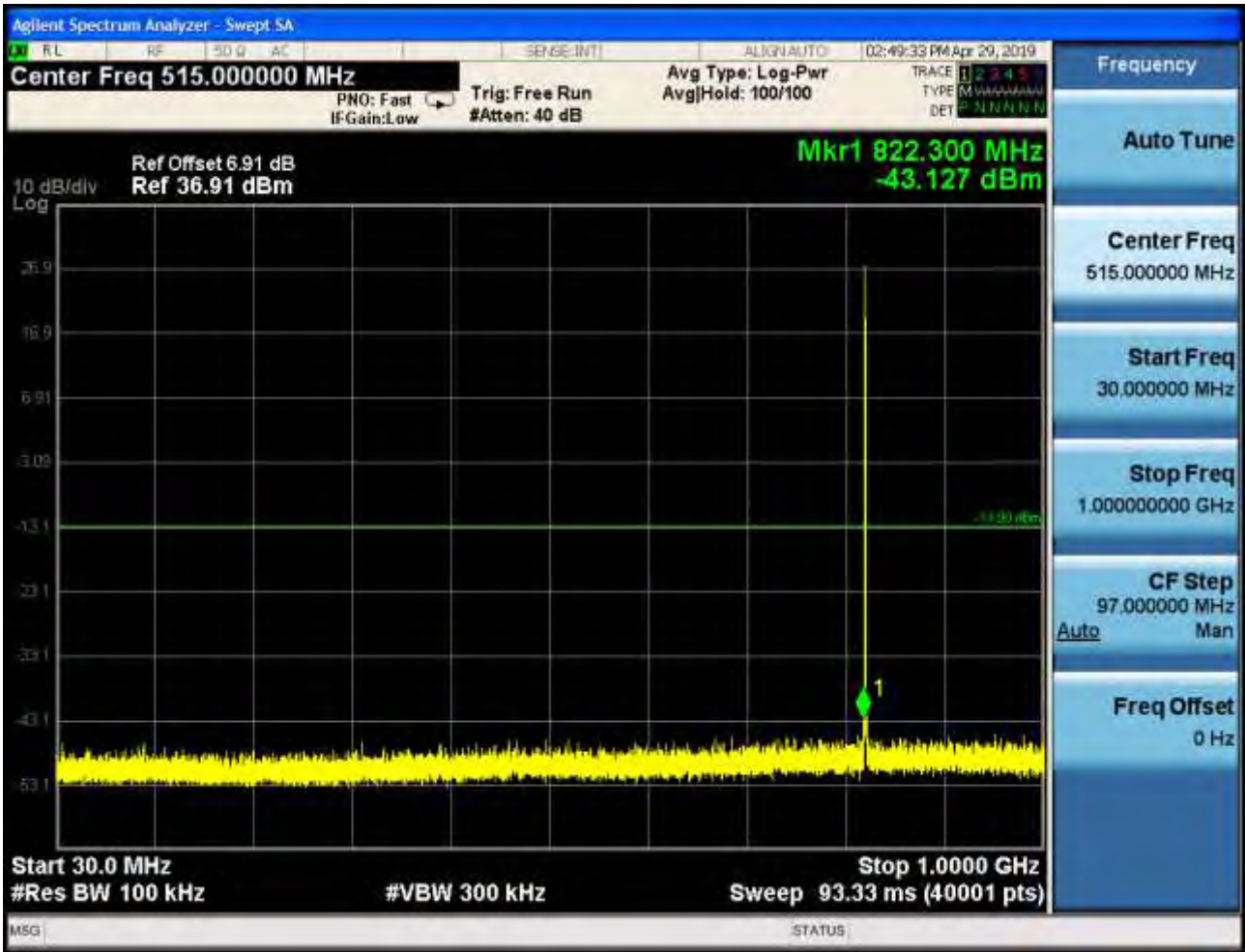


6.1.1.2 Test Mode = GSM/TM2

6.1.1.2.1 Test Channel = LCH



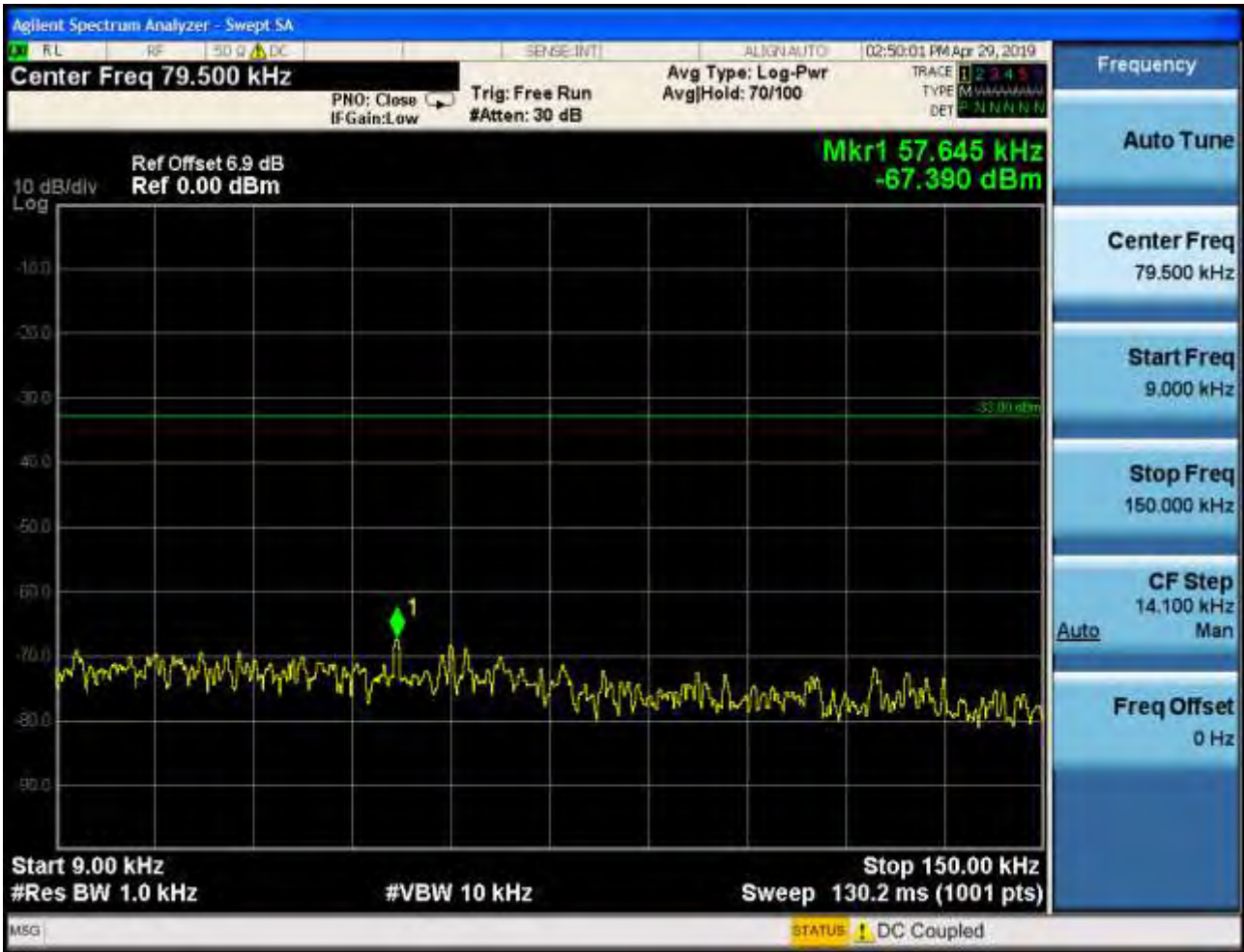




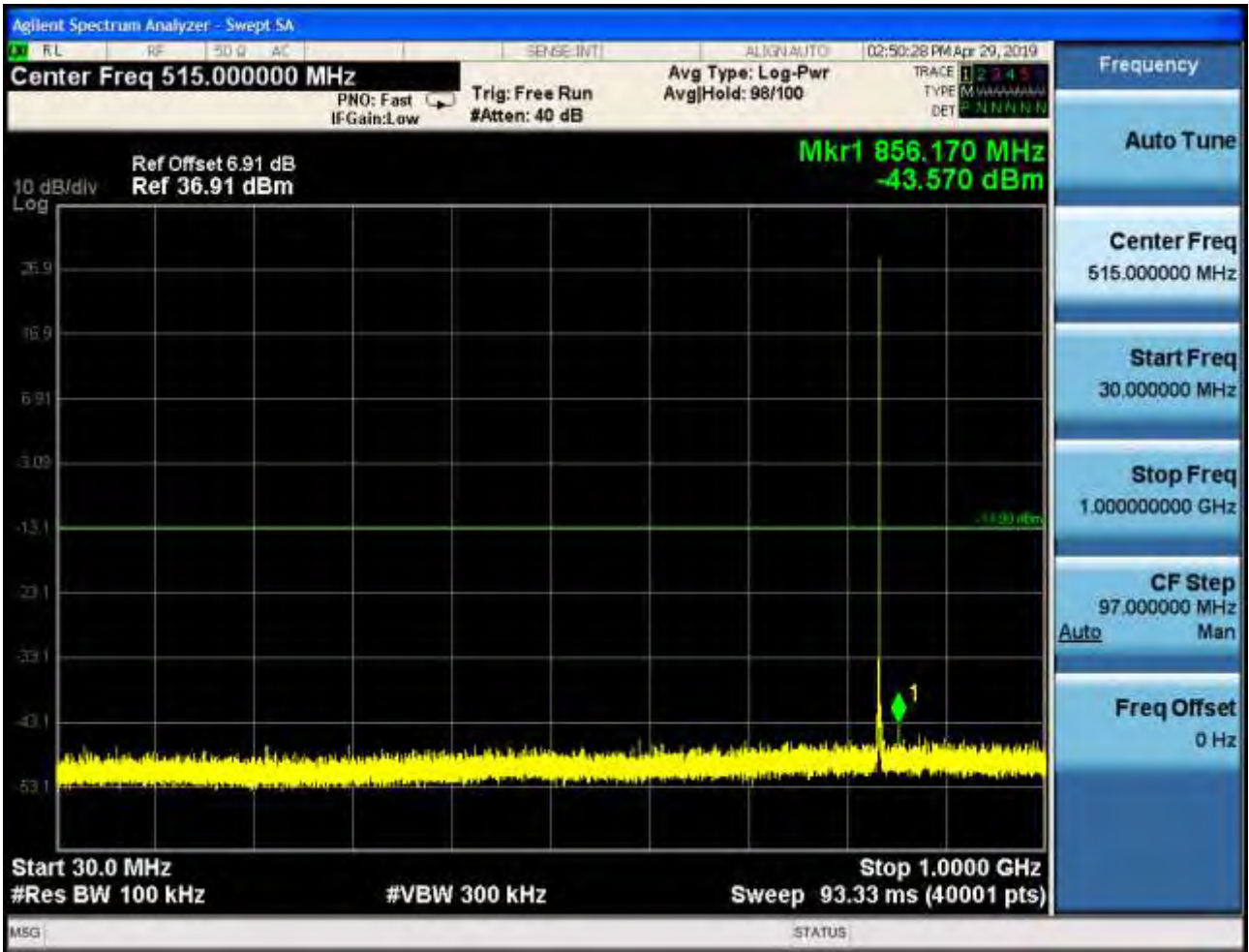




6.1.1.2.2 Test Channel = MCH







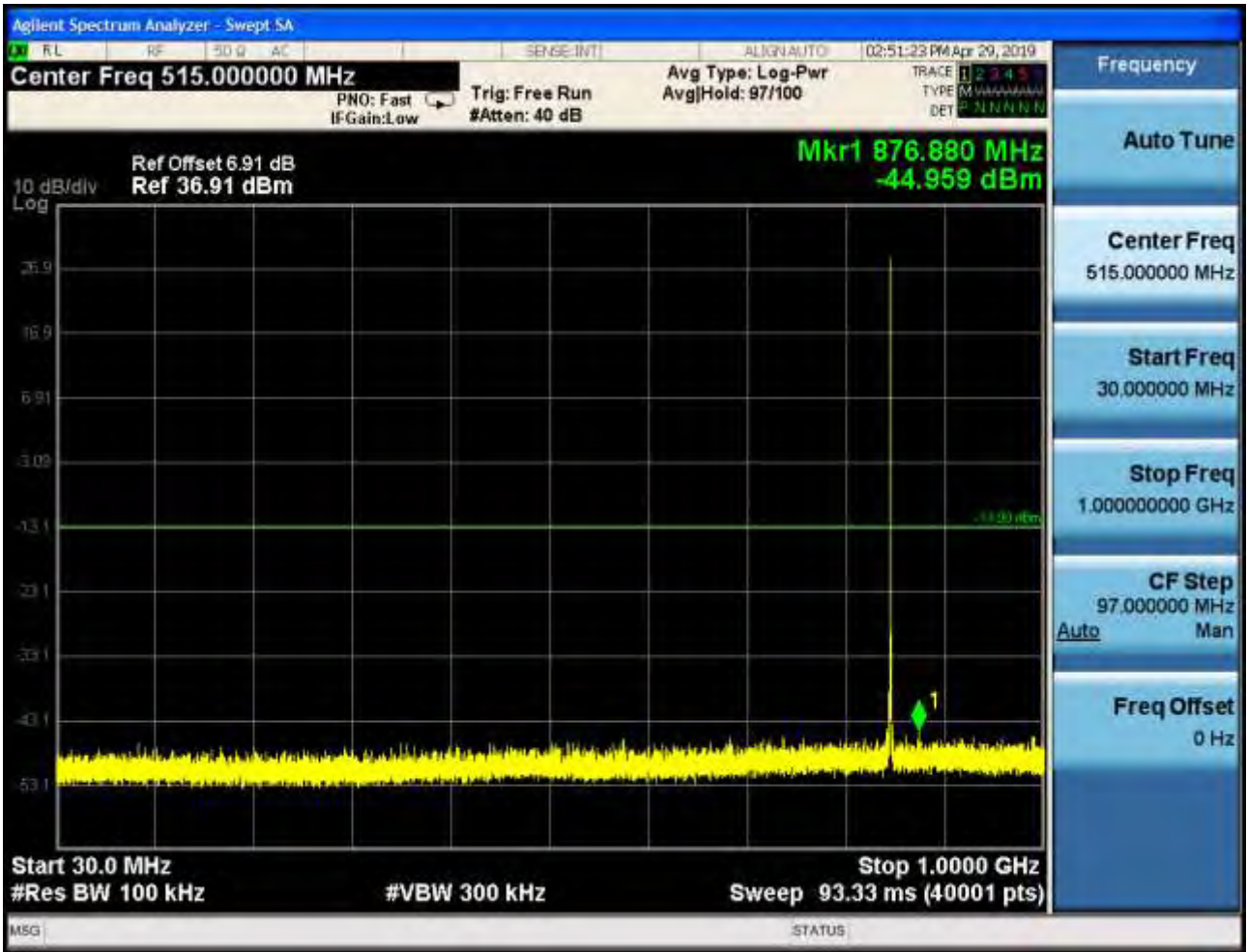




6.1.1.2.3 Test Channel = HCH









6.1.2 Test Band = PCS1900

6.1.2.1 Test Mode = GSM/TM1

6.1.2.1.1 Test Channel = LCH

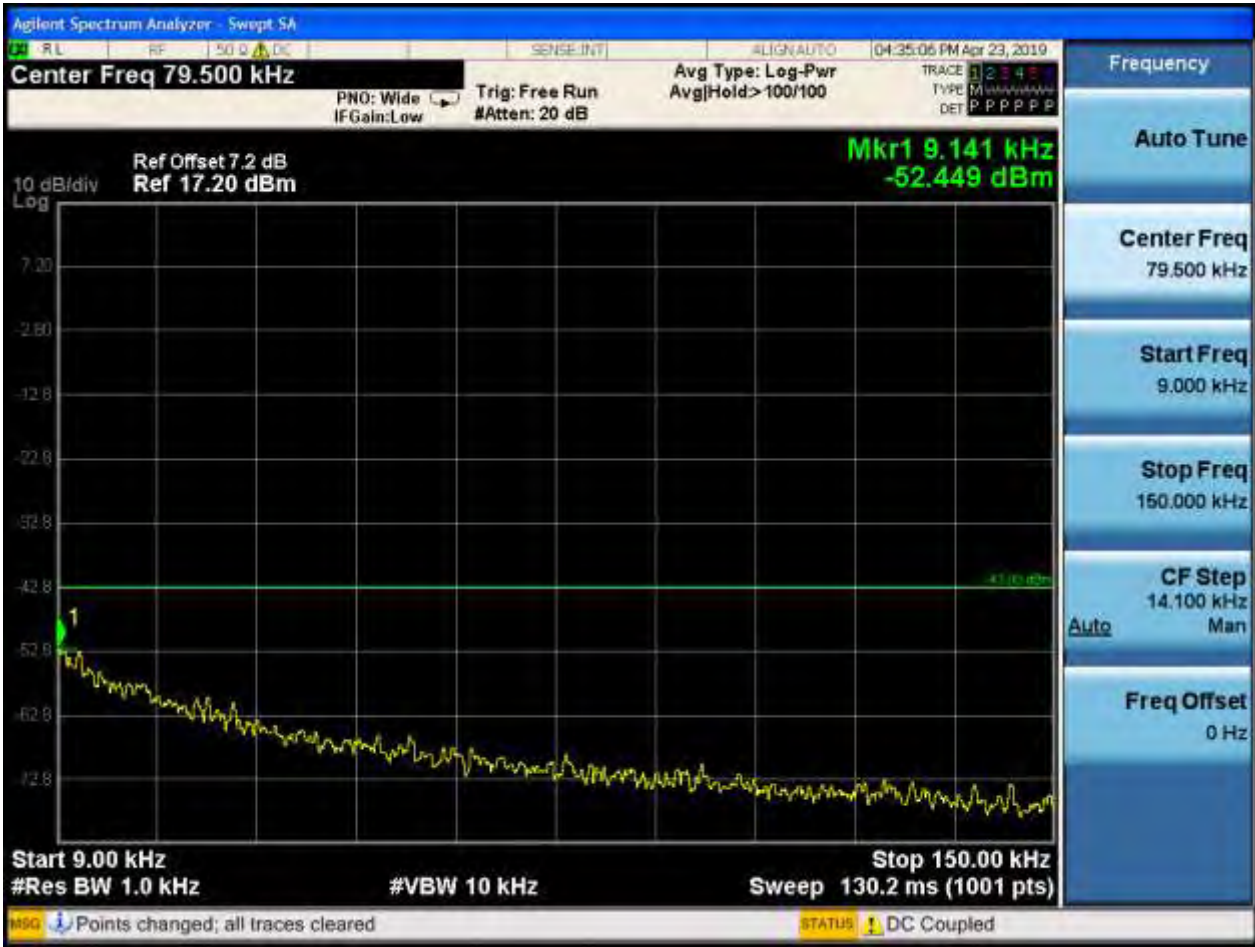


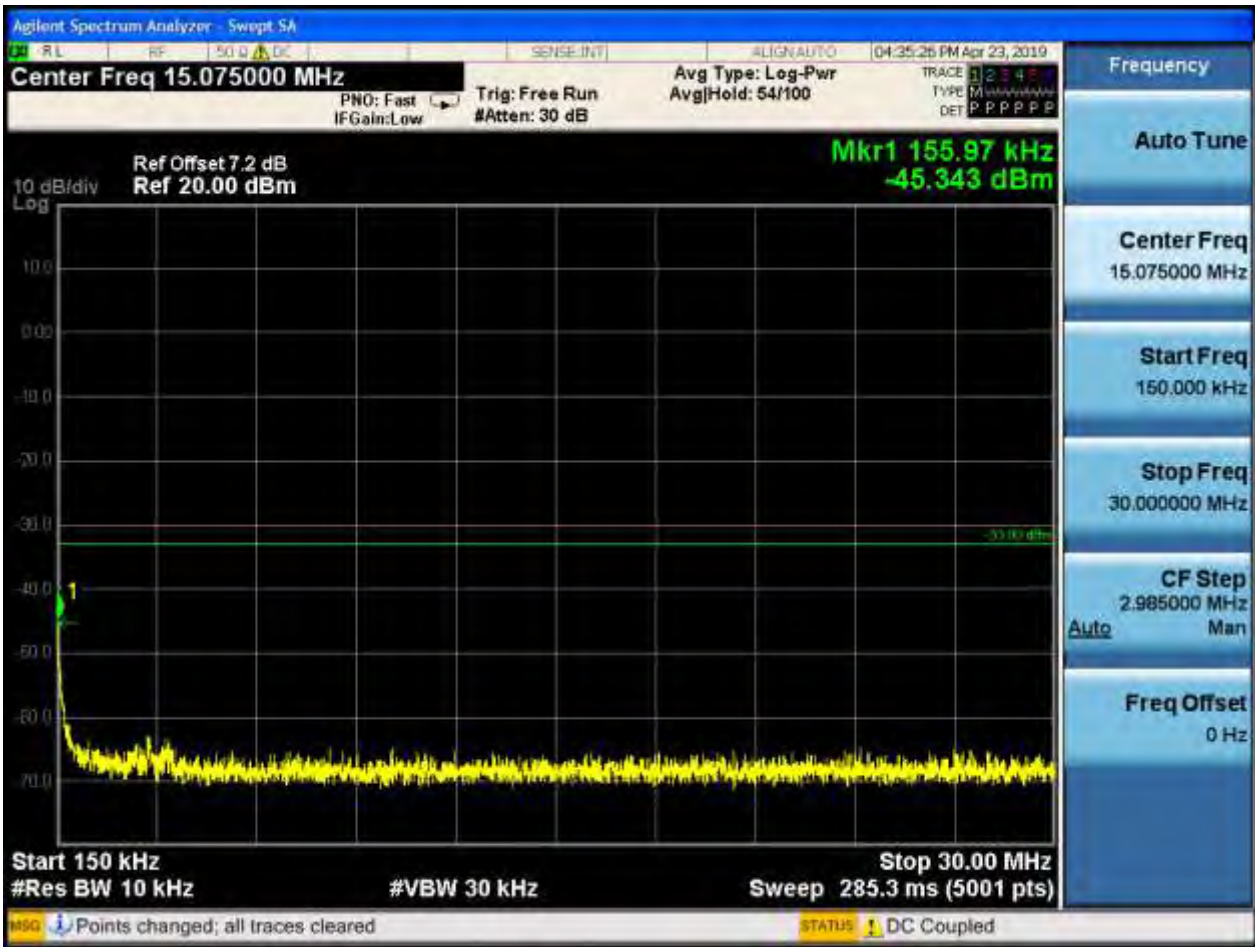






6.1.3.1.2 Test Channel = MCH



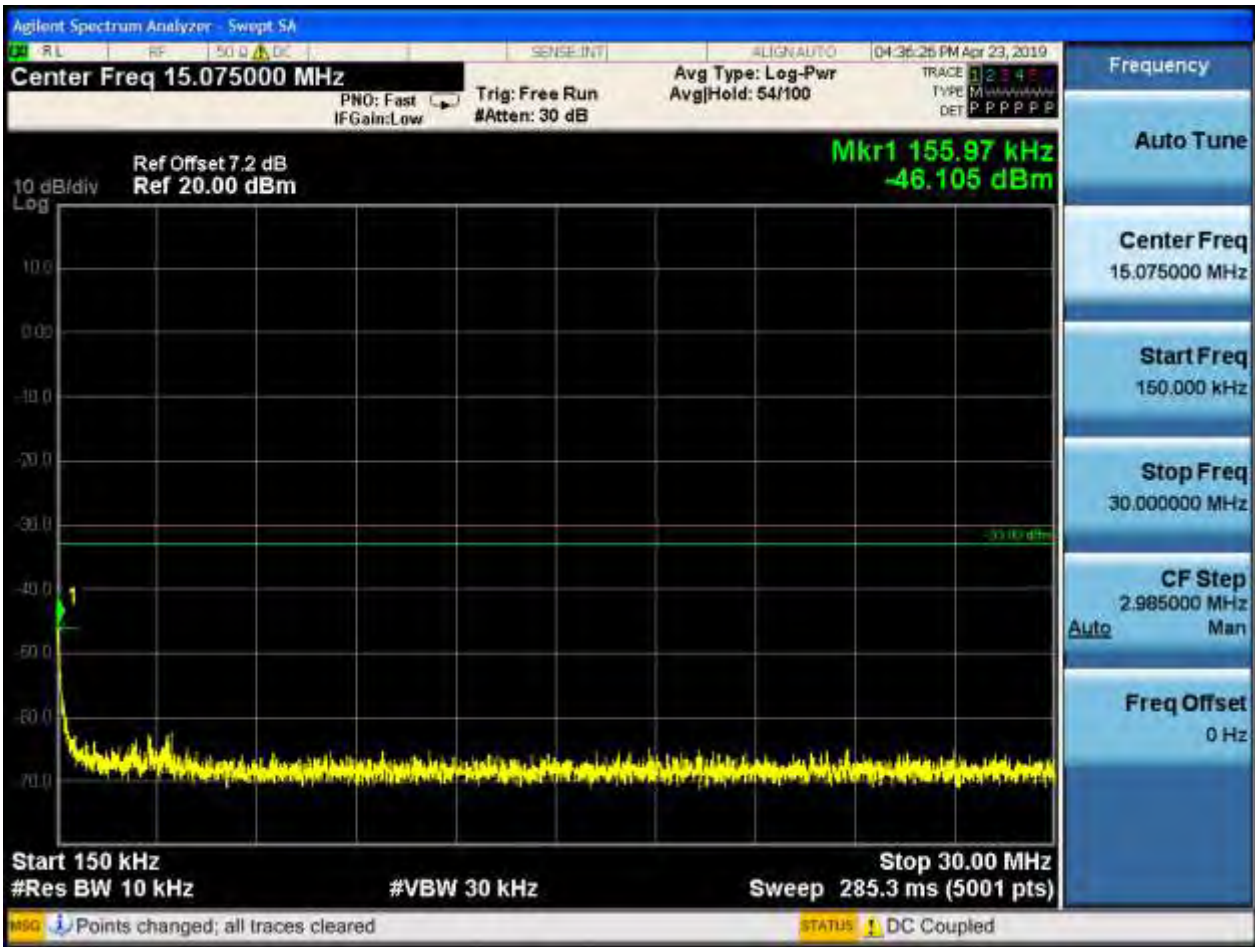






6.1.3.1.3 Test Channel = HCH









6.1.3.2 Test Mode = GSM/TM2

6.1.3.2.1 Test Channel = LCH



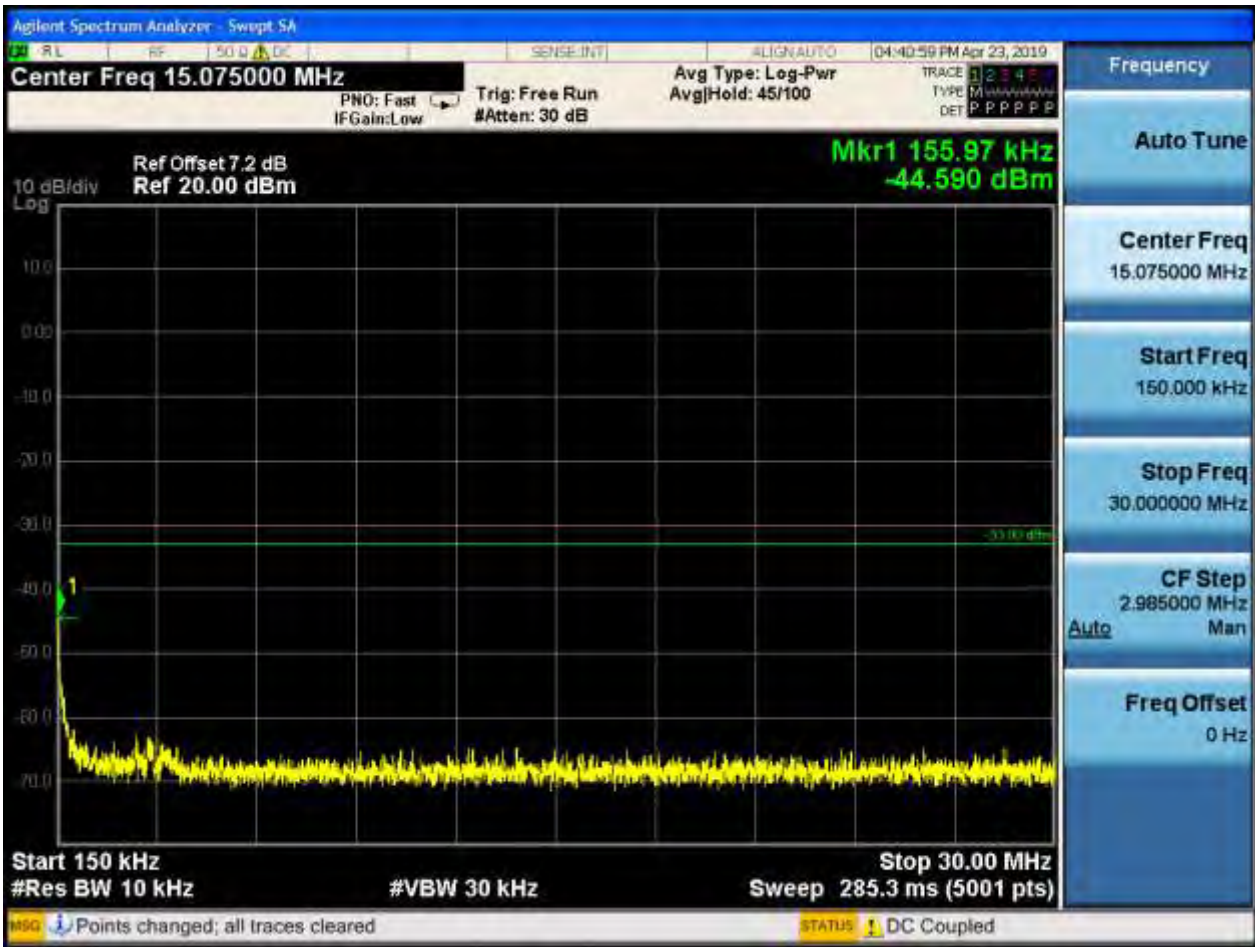






6.1.3.2.2 Test Channel = MCH



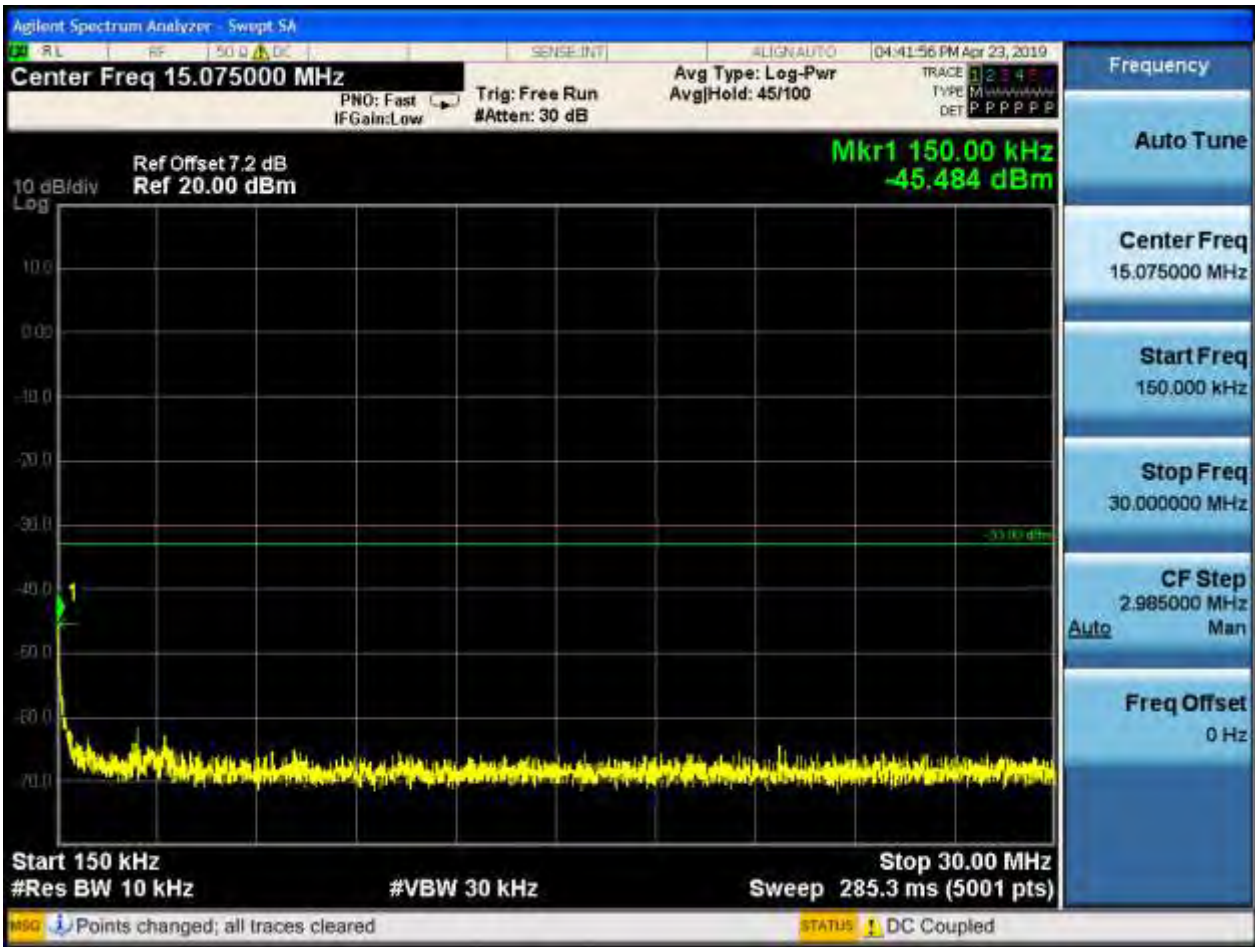






6.1.3.2.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note:

1. We tested all modes, but the data presented below is the worst case.
2. For adding Wireless charging protective case we only tested the RSE of the worst case,

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

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

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

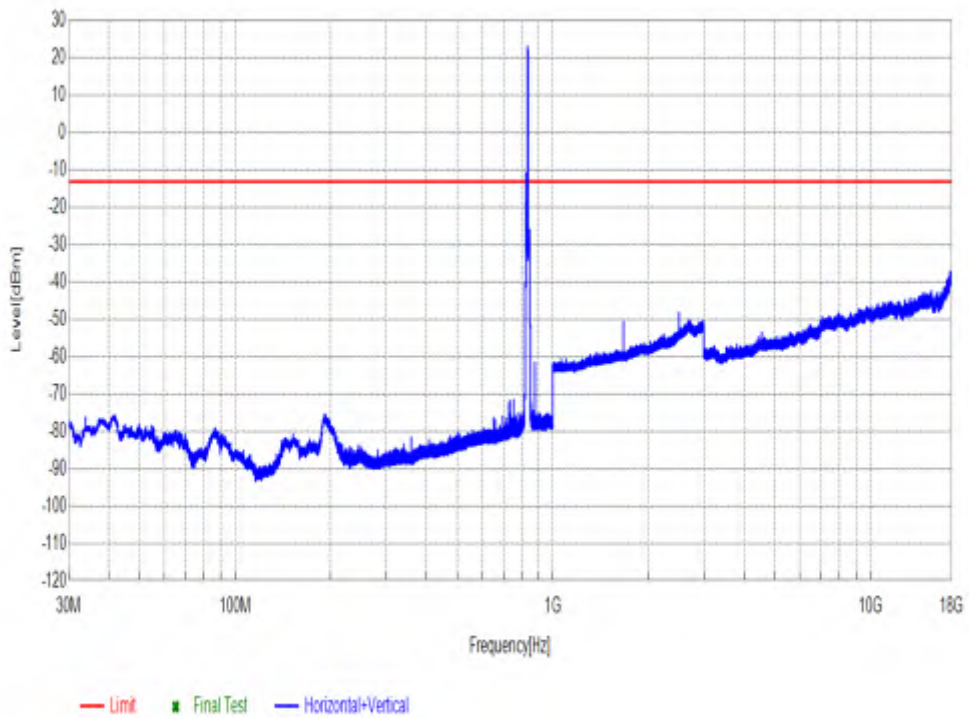
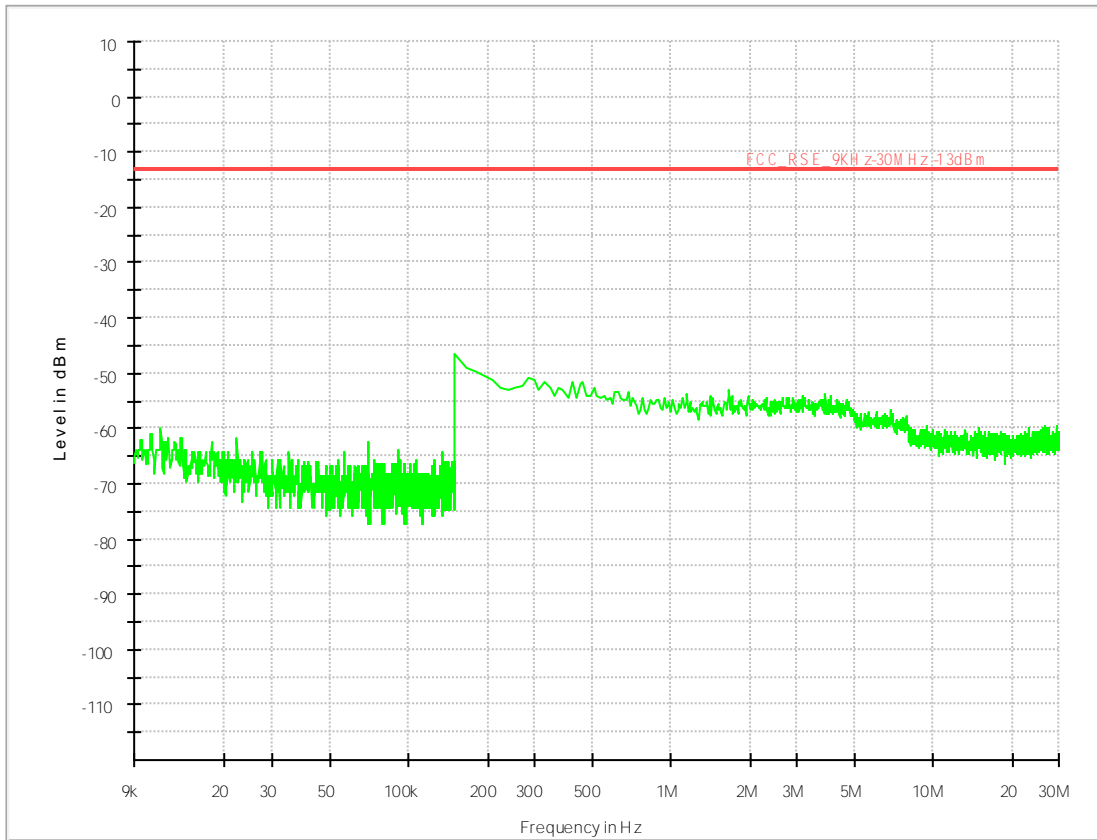
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

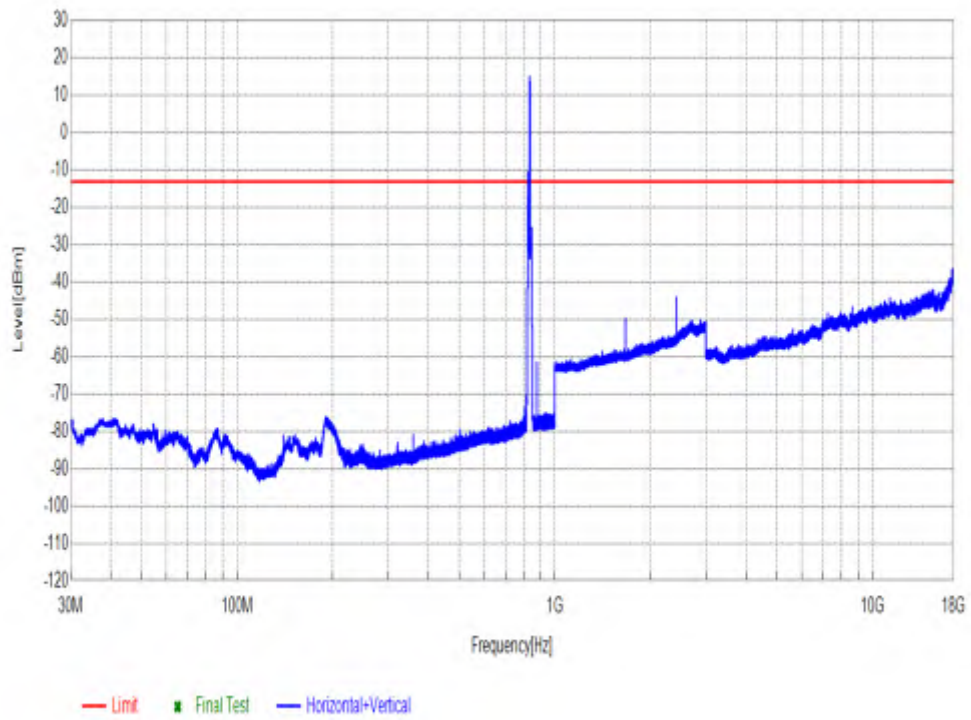
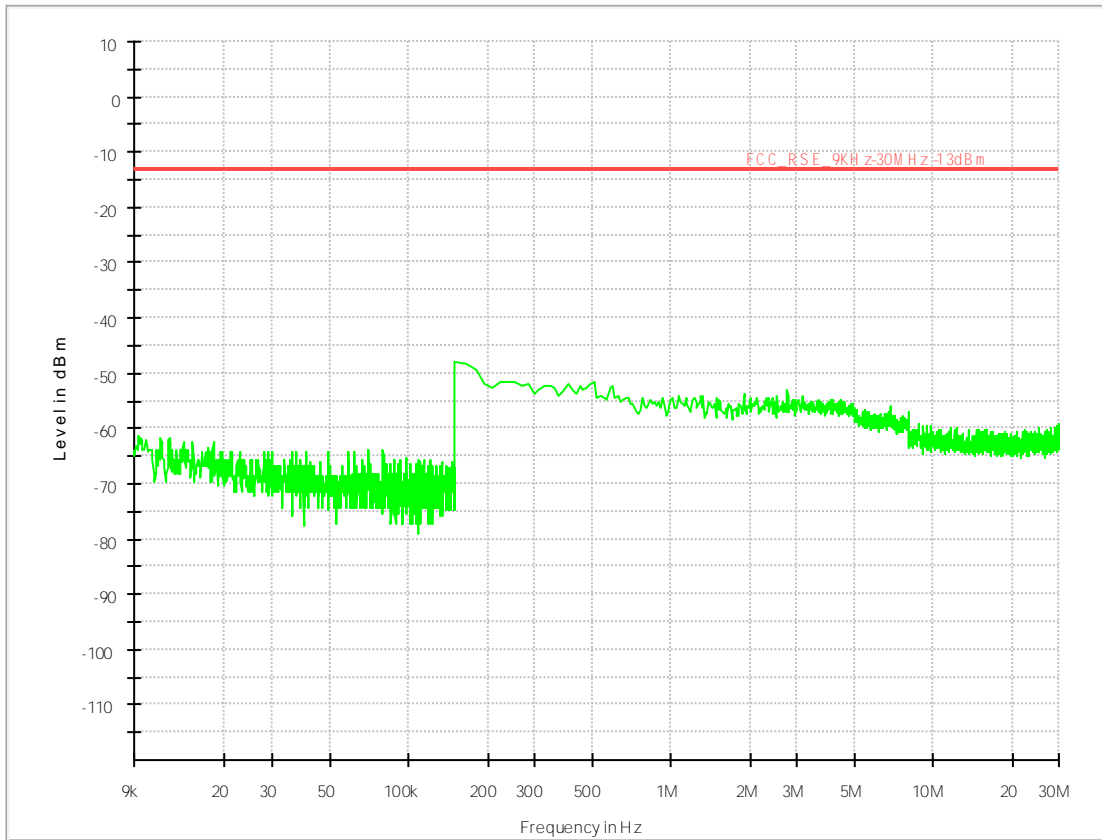
7.1 For GSM

7.1.1 Test Band = GSM850

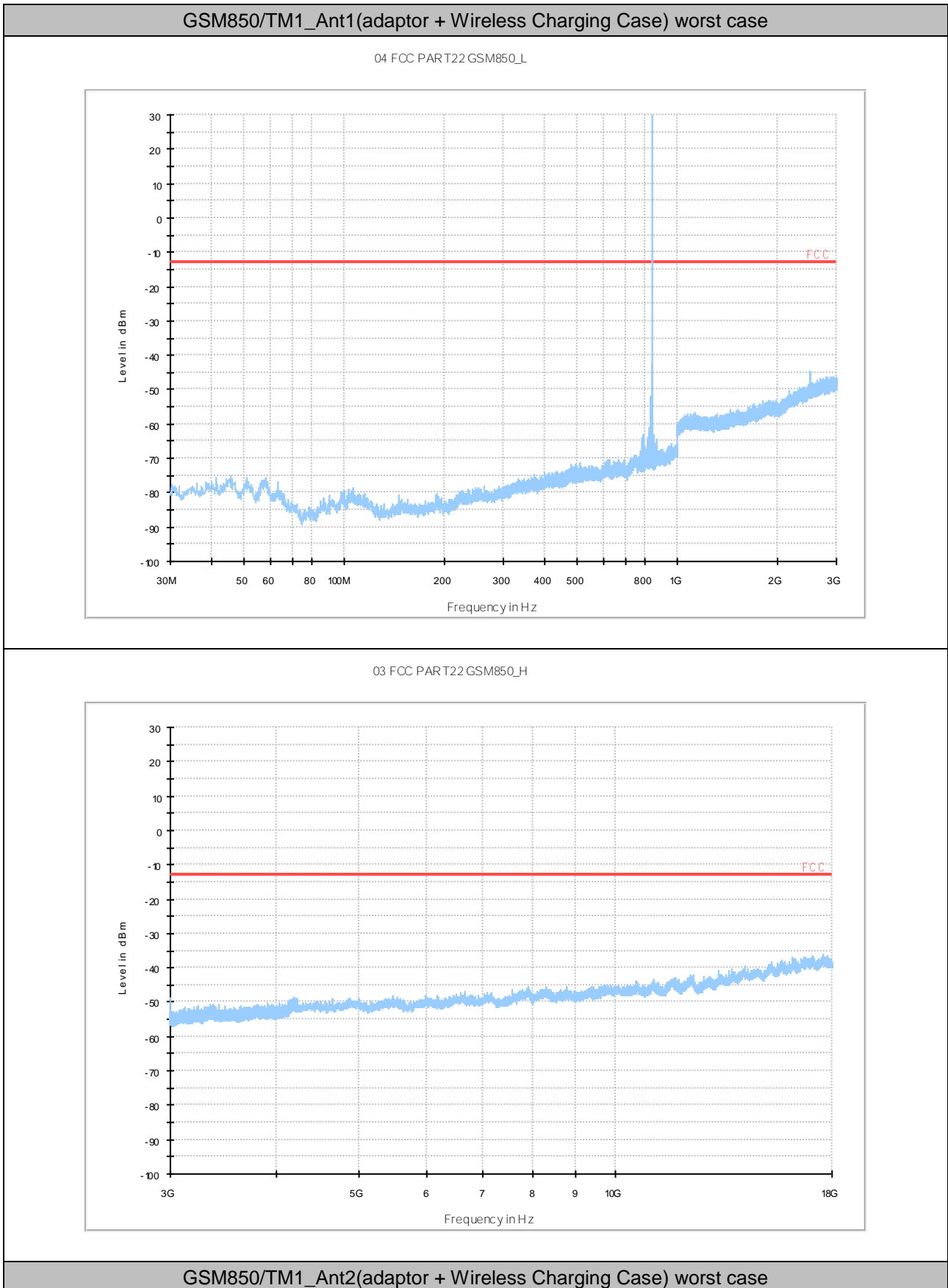
GSM850/TM1_Ant1

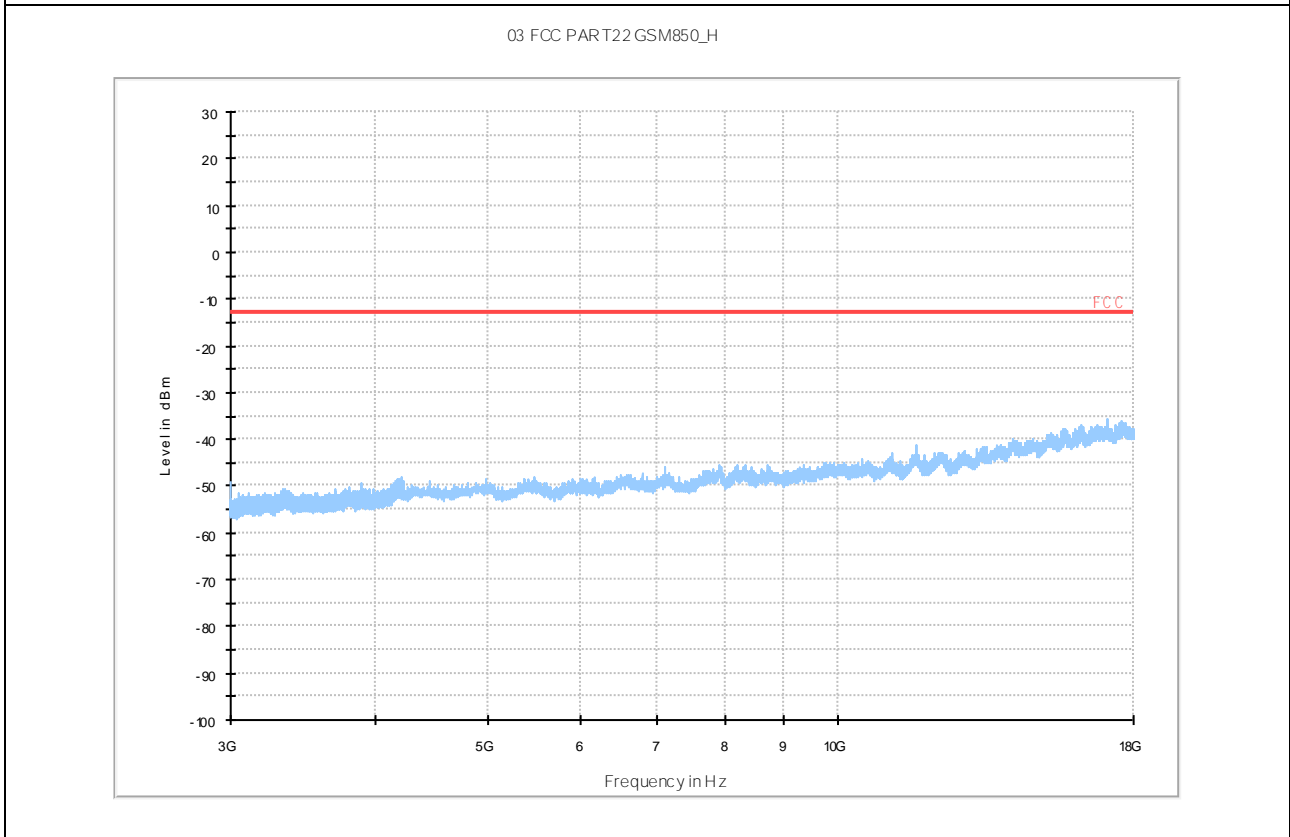
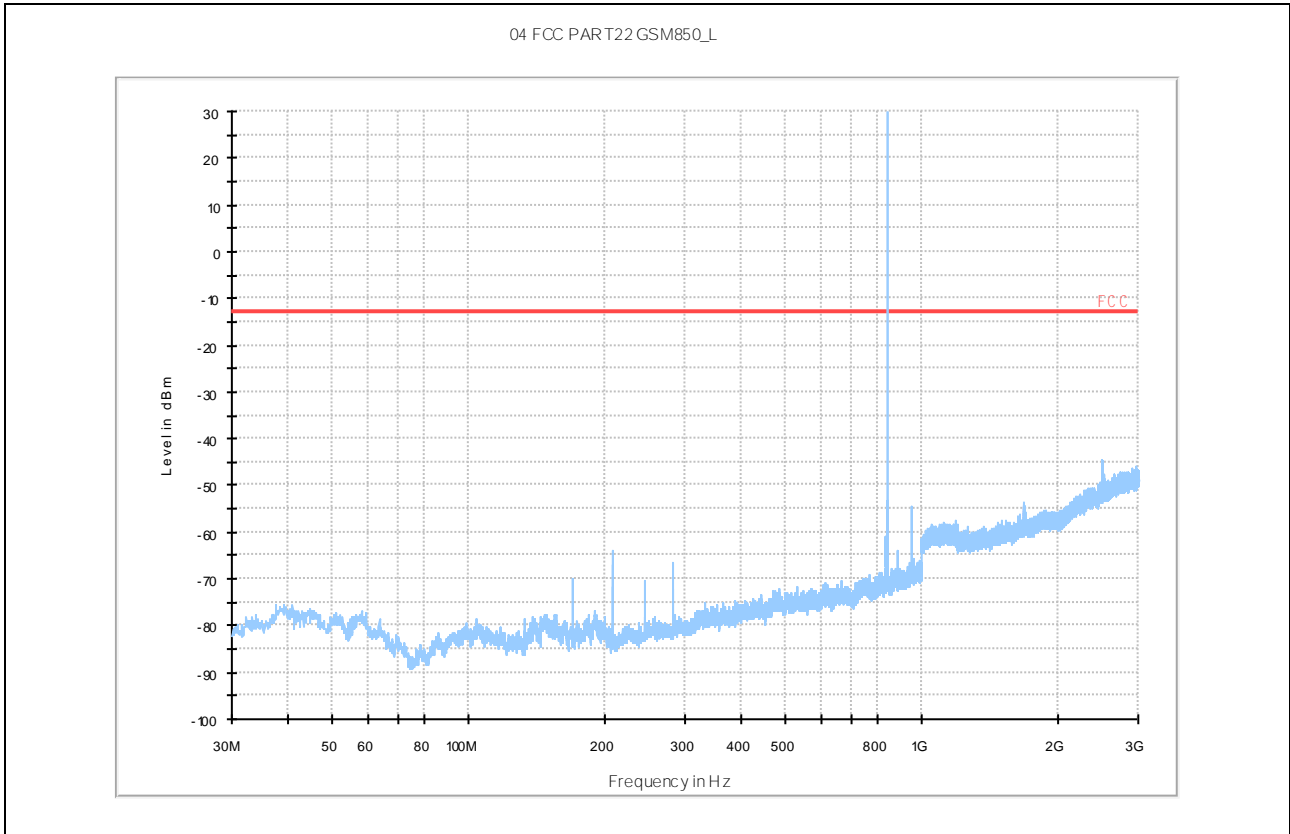


GSM850/TM1_Ant2

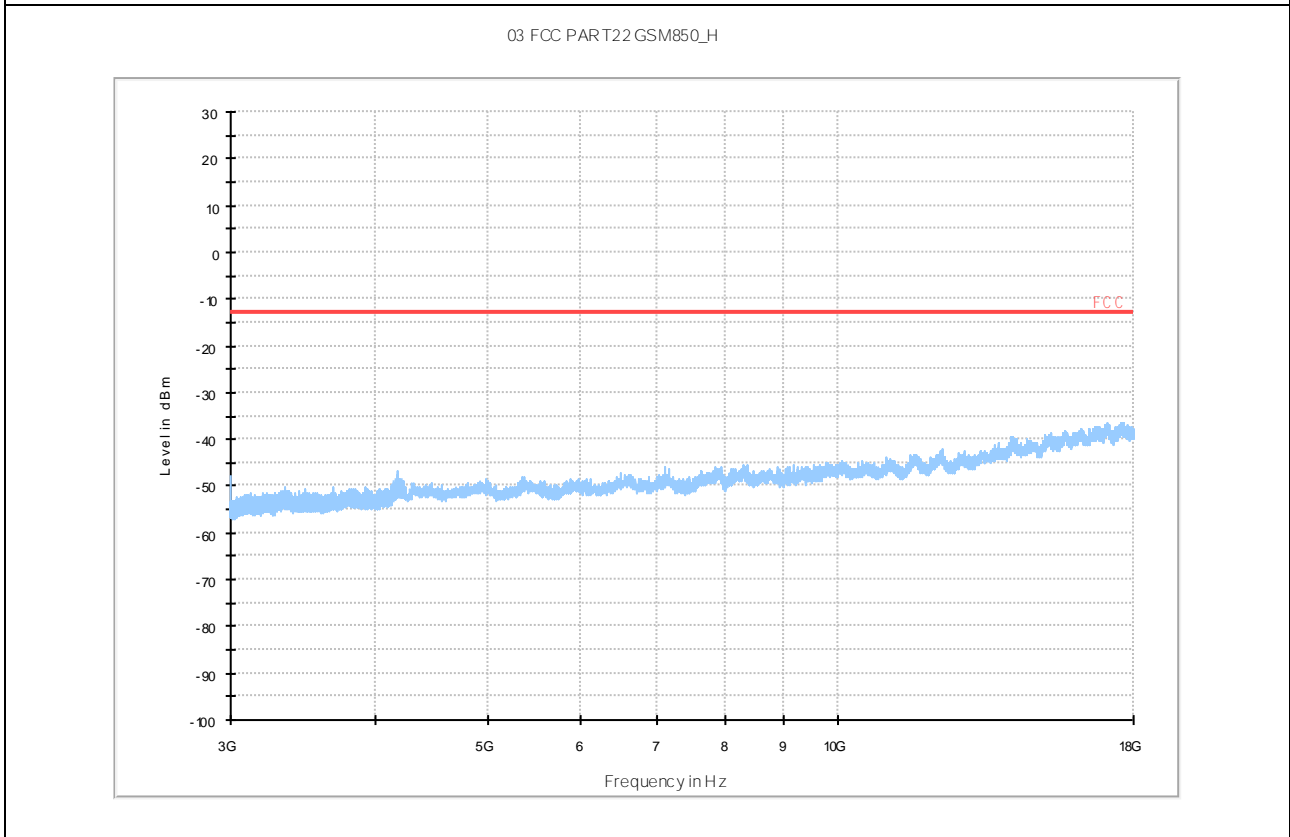
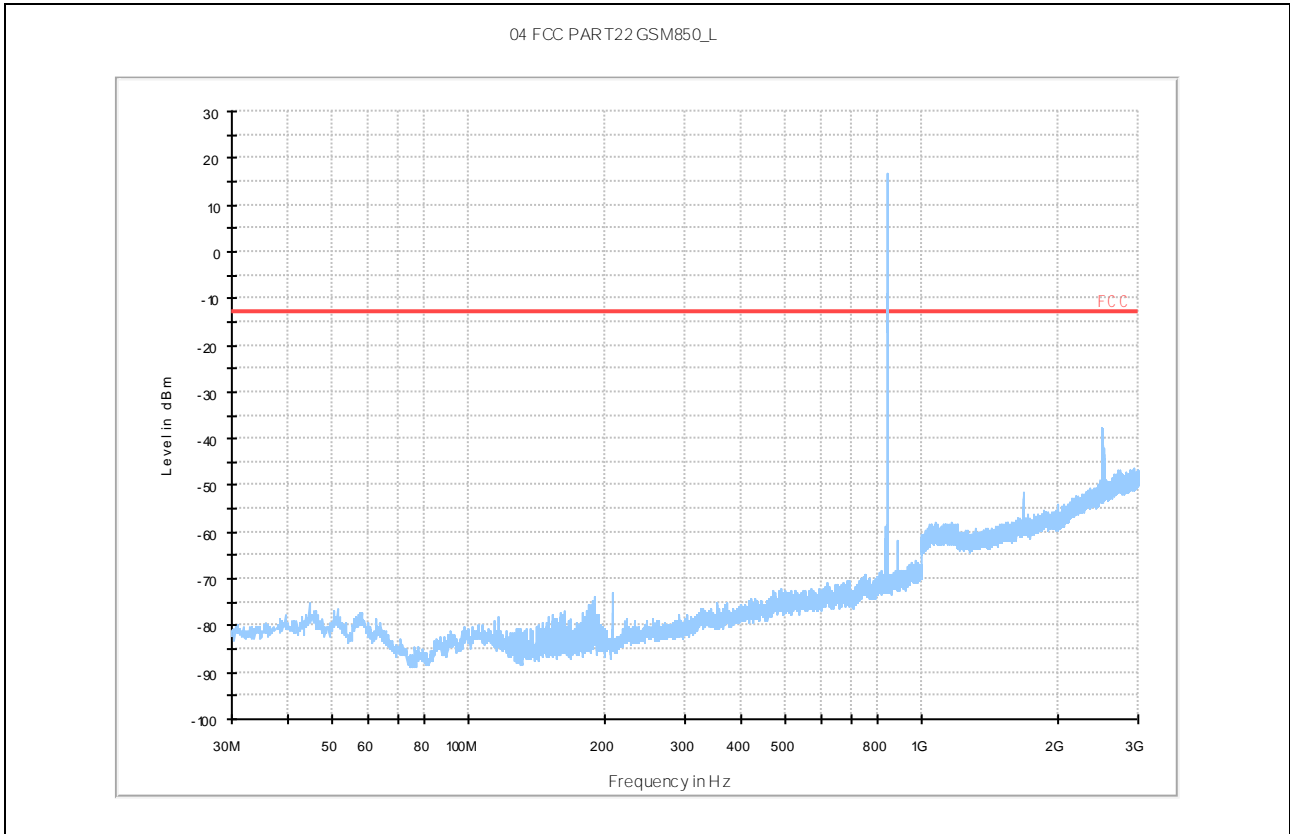


7.1.2 Test Band = GSM850(Wireless charging protective case)



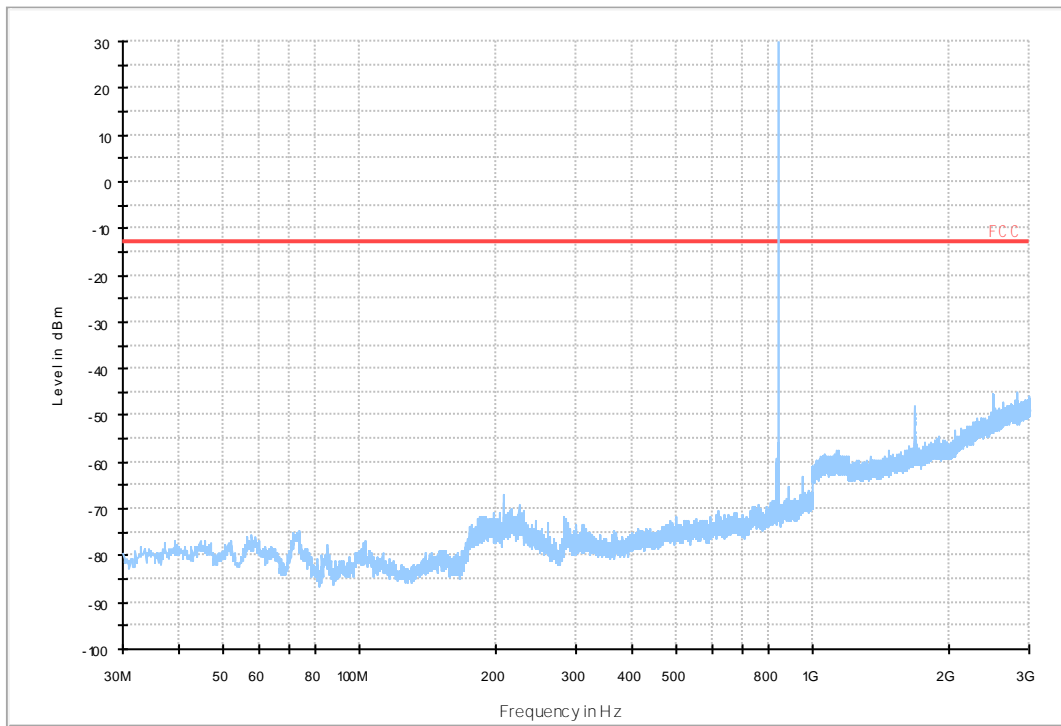


GSM850/TM1_Ant1(adaptor + Wireless charging charger+ Wireless Charging Case) worst case

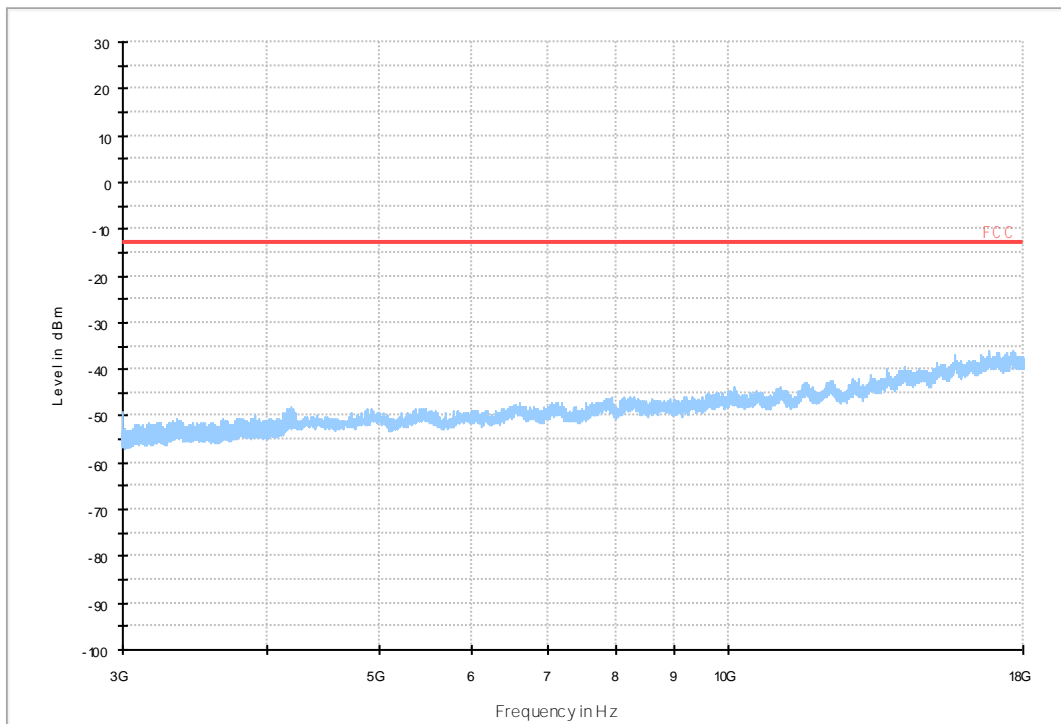


GSM850/TM1_Ant2(adaptor + Wireless charging charger+ Wireless Charging Case) worst case

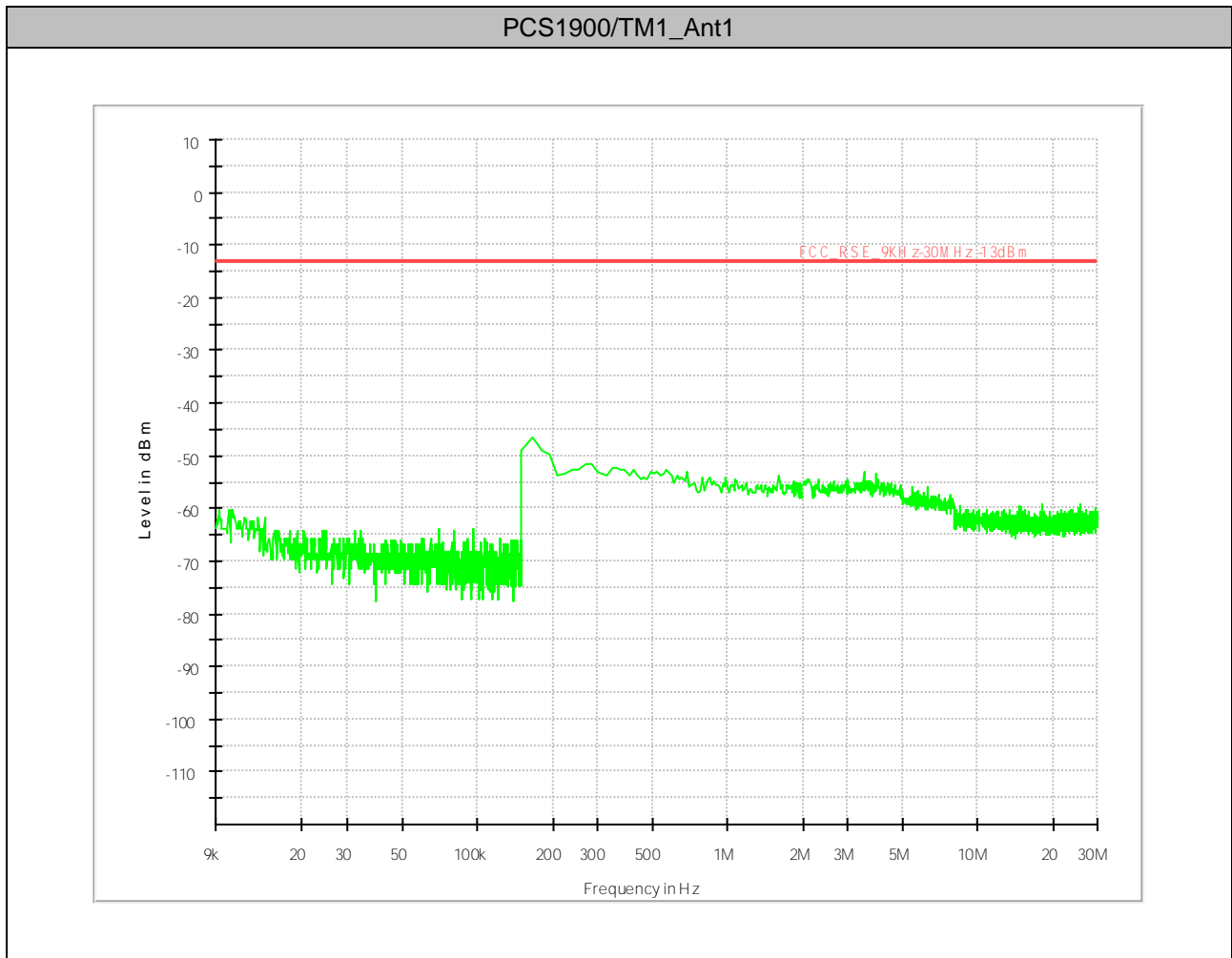
04 FCC PART22 GSM850_L

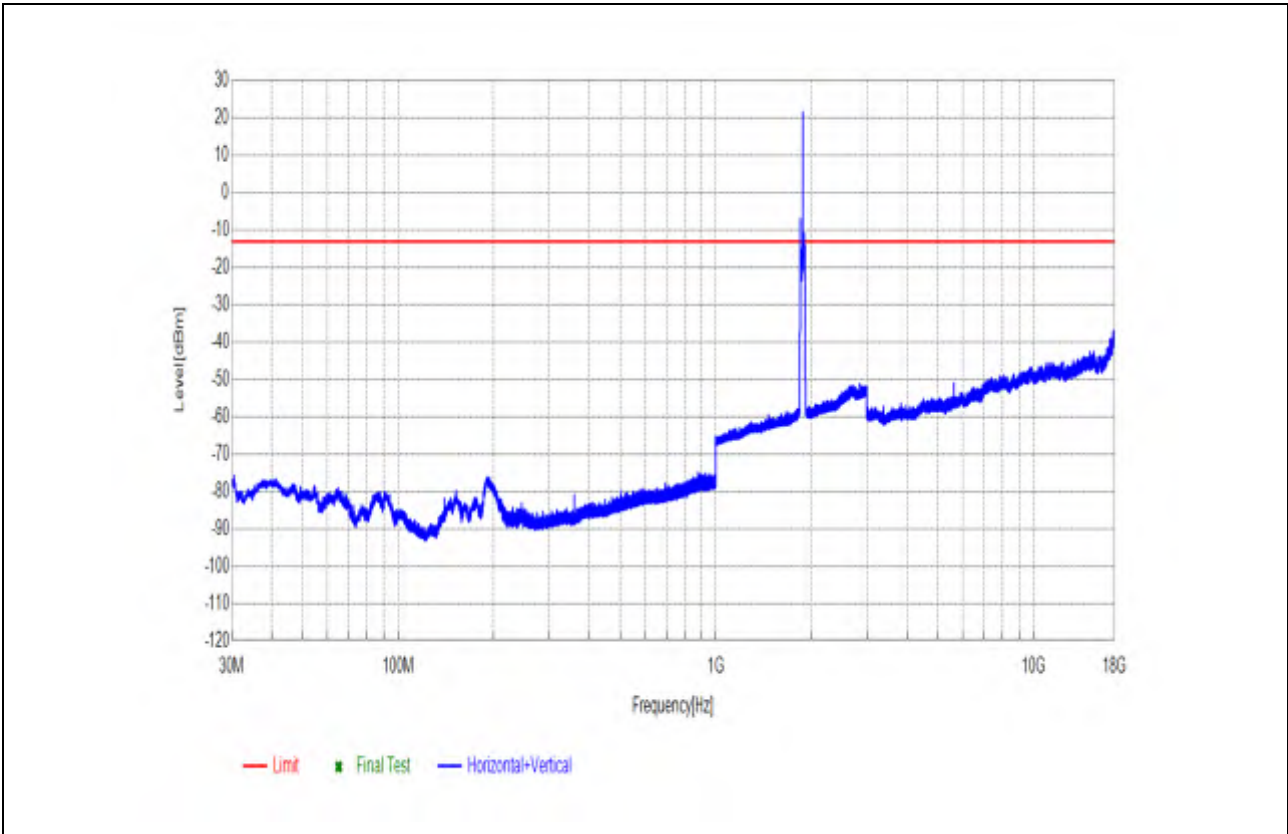


03 FCC PART22 GSM850_H

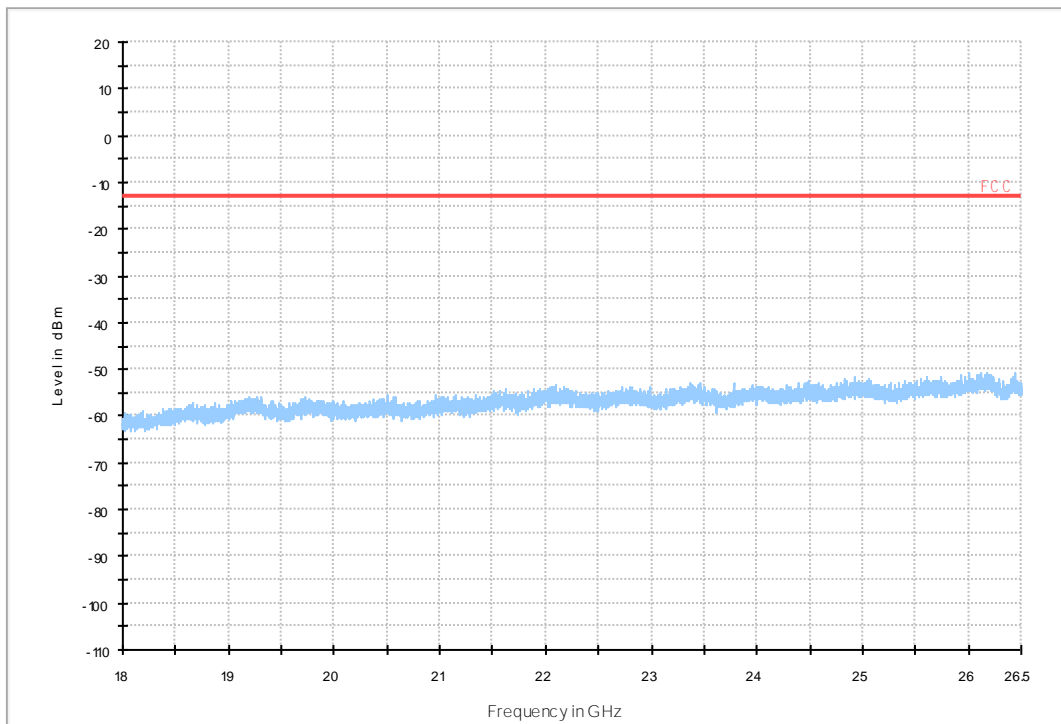


7.1.3 Test Band = PCS1900

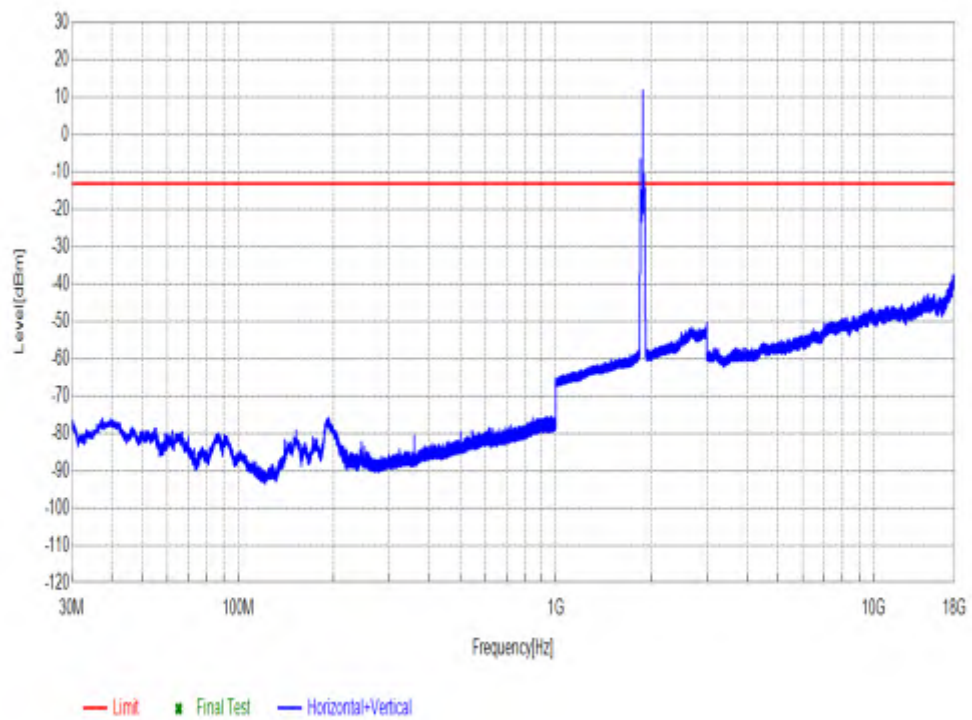
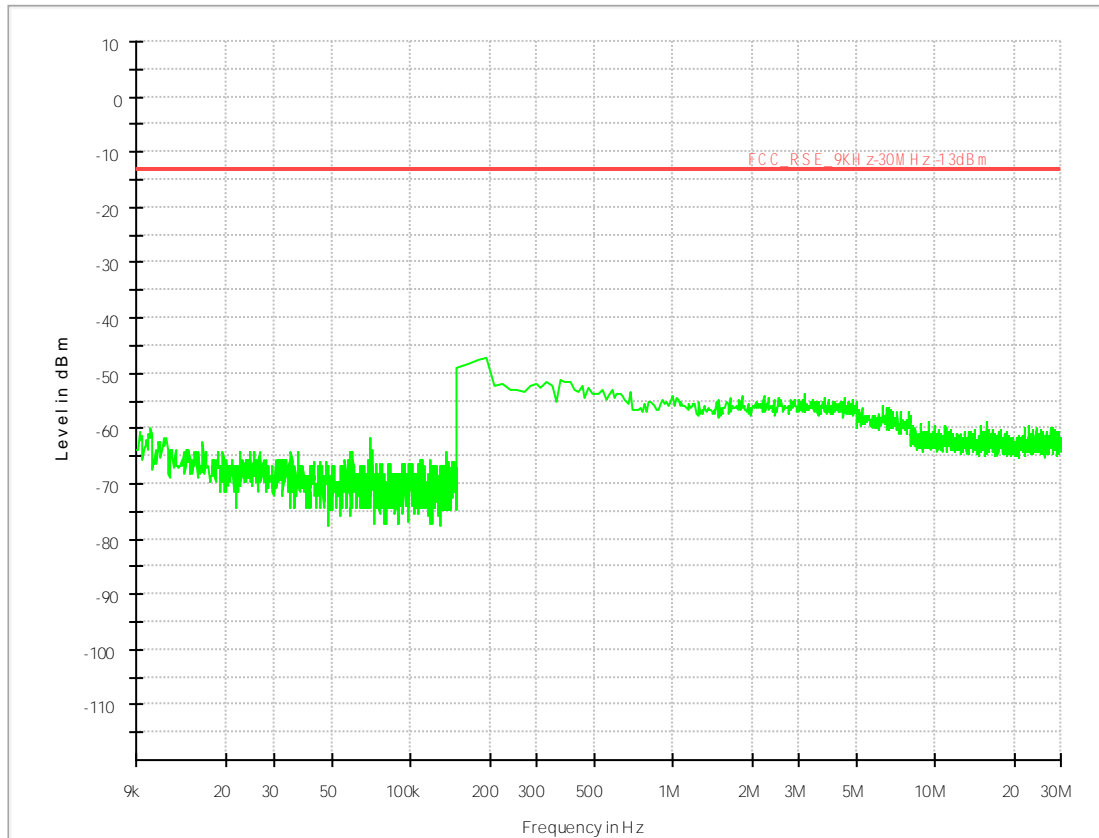


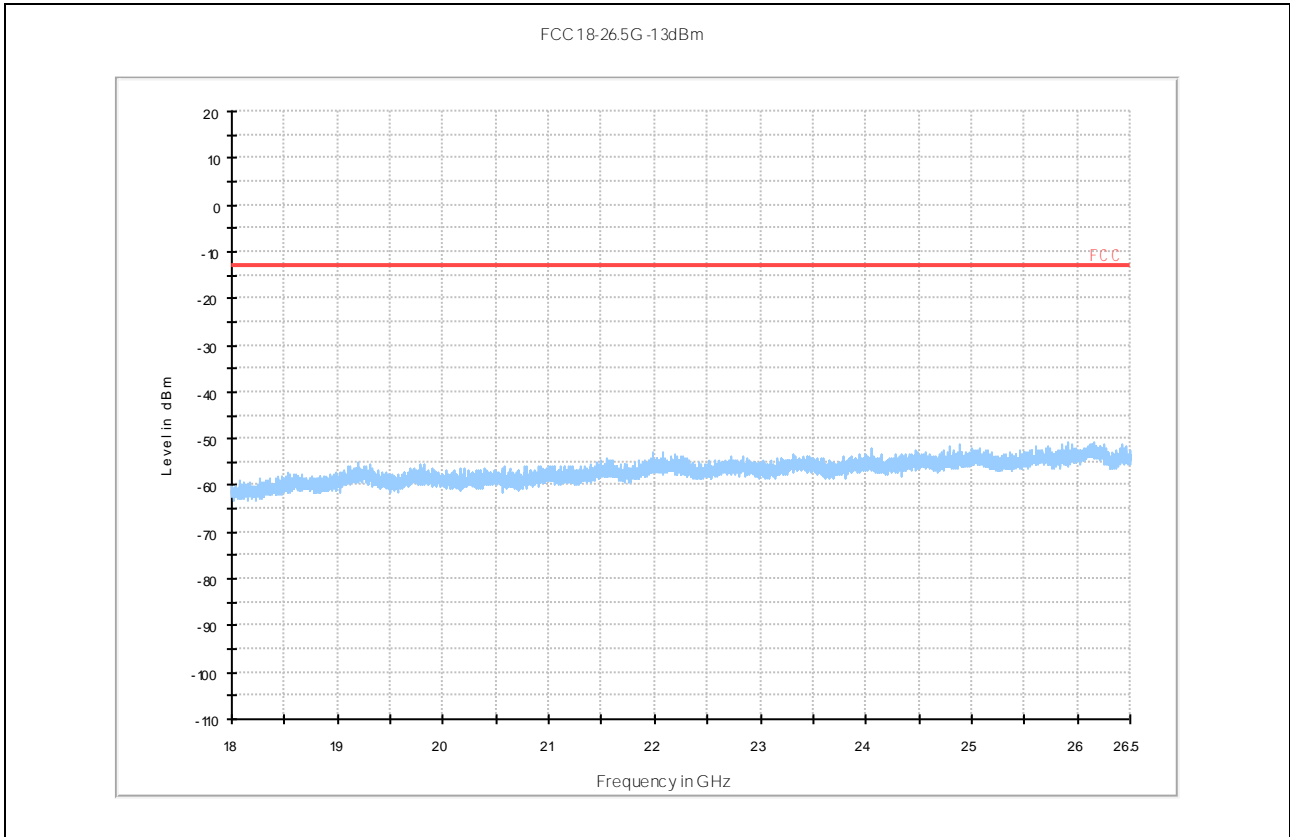


FCC 18-26.5G -13dBm



PCS1900/TM1_Ant2





8Appendix_H: Frequency Stability

8.1 For GSM

8.1.1 Frequency 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	-21.95	-0.02663	PASS
				VN	-21.44	-0.02601	PASS
				VH	-22.79	-0.02765	PASS
		MCH	TN	VL	-11.17	-0.01335	PASS
				VN	-11.88	-0.0142	PASS
				VH	-13.17	-0.01574	PASS
		HCH	TN	VL	-19.44	-0.0229	PASS
				VN	-15.95	-0.01879	PASS
				VH	-19.31	-0.02275	PASS
	GSM/TM2	LCH	TN	VL	-5.68	-0.00689	PASS
				VN	-10.2	-0.01238	PASS
				VH	-9.69	-0.01176	PASS
		MCH	TN	VL	-9.14	-0.01093	PASS
				VN	6.55	0.00783	PASS
				VH	-2.84	-0.00339	PASS
		HCH	TN	VL	-8.94	-0.01053	PASS
				VN	-18.5	-0.0218	PASS
				VH	6.55	0.00772	PASS
PCS1900	GSM/TM1	LCH	TN	VL	-3.87	-0.00209	PASS
				VN	-4.13	-0.00223	PASS
				VH	-2.07	-0.00112	PASS
		MCH	TN	VL	-4.2	-0.00223	PASS
				VN	-6.33	-0.00337	PASS
				VH	-1.1	-0.00059	PASS
		HCH	TN	VL	-5.23	-0.00274	PASS
				VN	-9.49	-0.00497	PASS
				VH	-7.88	-0.00413	PASS
	GSM/TM2	LCH	TN	VL	27.06	0.01463	PASS
				VN	30.93	0.01672	PASS
				VH	21.76	0.01176	PASS
		MCH	TN	VL	33.09	0.0176	PASS
				VN	31.22	0.01661	PASS
				VH	30.09	0.01601	PASS
		HCH	TN	VL	42.84	0.02243	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VN	34.8	0.01822	PASS
				VH	30.64	0.01604	PASS

8.1.2 Frequency 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	-3.68	-0.00446	PASS
				-20	-11.3	-0.01371	PASS
				-10	-12.37	-0.01501	PASS
				0	-9.94	-0.01206	PASS
				10	-6.94	-0.00842	PASS
				20	-12.24	-0.01485	PASS
				30	-2.87	-0.00348	PASS
				40	-8.27	-0.01003	PASS
				50	-11.88	-0.01441	PASS
		MCH	VN	-30	-5.78	-0.00691	PASS
				-20	-3.78	-0.00452	PASS
				-10	4.23	0.00506	PASS
				0	-4.88	-0.00583	PASS
				10	-2.81	-0.00336	PASS
				20	-8.59	-0.01027	PASS
				30	-3.65	-0.00436	PASS
				40	-6.55	-0.00783	PASS
				50	-2.94	-0.00351	PASS
		HCH	VN	-30	2.42	0.00285	PASS
				-20	-5.97	-0.00703	PASS
				-10	-7.1	-0.00836	PASS
				0	-11.53	-0.01358	PASS
				10	-4.1	-0.00483	PASS
				20	-4.97	-0.00586	PASS
	30			-14.3	-0.01685	PASS	
	40			-5.04	-0.00594	PASS	
	50			0.74	0.00087	PASS	
	GSM/TM2	LCH	VN	-30	-21.57	-0.02617	PASS
				-20	-21.76	-0.0264	PASS
				-10	-20.79	-0.02522	PASS
				0	-19.76	-0.02397	PASS
				10	-18.85	-0.02287	PASS
				20	-20.79	-0.02522	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict						
				30	-18.27	-0.02217	PASS						
				40	-23.18	-0.02812	PASS						
				50	-17.63	-0.02139	PASS						
		MCH	VN			-30	-12.4	-0.01482	PASS				
						-20	-11.75	-0.01404	PASS				
						-10	-14.33	-0.01713	PASS				
						0	-13.37	-0.01598	PASS				
						10	-10.2	-0.01219	PASS				
						20	-10.33	-0.01235	PASS				
						30	-11.17	-0.01335	PASS				
						40	-10.78	-0.01289	PASS				
						50	-11.69	-0.01397	PASS				
						HCH	VN			-30	-14.98	-0.01765	PASS
										-20	-17.82	-0.02099	PASS
		-10	-17.89	-0.02108	PASS								
		0	-15.95	-0.01879	PASS								
		10	-14.53	-0.01712	PASS								
		20	-17.89	-0.02108	PASS								
		30	-16.14	-0.01902	PASS								
		40	-16.14	-0.01902	PASS								
		PCS1900	GSM/TM1	LCH	VN					-30	2.78	0.0015	PASS
										-20	2.2	0.00119	PASS
										-10	1.1	0.00059	PASS
										0	-3.81	-0.00206	PASS
										10	1.03	0.00056	PASS
										20	2.71	0.00146	PASS
										30	-0.39	-0.00021	PASS
40	4.78									0.00258	PASS		
50	-7.04									-0.0038	PASS		
MCH	VN									-30	-1.87	-0.00099	PASS
										-20	5.68	0.00302	PASS
										-10	1.55	0.00082	PASS
										0	3.1	0.00165	PASS
										10	2.26	0.0012	PASS
										20	1.55	0.00082	PASS
										30	1.49	0.00079	PASS
										40	0.45	0.00024	PASS
										50	2.07	0.0011	PASS
HCH	VN			-30	-7.17	-0.00375	PASS						



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict	
				-20	-7.49	-0.00392	PASS	
				-10	-3.94	-0.00206	PASS	
				0	-3.29	-0.00172	PASS	
				10	-5.75	-0.00301	PASS	
				20	-5.42	-0.00284	PASS	
				30	-7.68	-0.00402	PASS	
				40	-0.97	-0.00051	PASS	
				50	1.1	0.00058	PASS	
		GSM/TM2	LCH	VN	-30	46.91	0.02535	PASS
					-20	38.29	0.0207	PASS
					-10	36.35	0.01965	PASS
					0	9.43	0.0051	PASS
					10	39.49	0.02134	PASS
					20	27.64	0.01494	PASS
					30	31.03	0.01677	PASS
					40	33	0.01784	PASS
			50	35.42	0.01914	PASS		
			MCH	VN	-30	47.46	0.02524	PASS
					-20	26.51	0.0141	PASS
					-10	34.51	0.01836	PASS
					0	46.27	0.02461	PASS
					10	25.02	0.01331	PASS
					20	44.46	0.02365	PASS
					30	35.48	0.01887	PASS
					40	38.61	0.02054	PASS
			50	32.74	0.01741	PASS		
			HCH	VN	-30	39.87	0.02088	PASS
					-20	34.13	0.01787	PASS
					-10	34.64	0.01814	PASS
					0	31.58	0.01654	PASS
					10	31.77	0.01664	PASS
					20	36.55	0.01914	PASS
		30			33.42	0.0175	PASS	
		40			63.22	0.0331	PASS	
		50	46.62	0.02441	PASS			

END