



Appendix for test report



1 Appendix_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
WCDMA850	UMTS/TM1	LCH	23.52	23.17	38.5	PASS
		MCH	23.56	23.21	38.5	PASS
		HCH	23.67	23.32	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	22.68	22.98	30	PASS
		MCH	23.00	23.30	30	PASS
		HCH	22.85	23.15	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.07	24.17	33	PASS
		MCH	22.97	24.07	33	PASS
		HCH	23.21	24.31	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,

$$ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]$$

$$EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]$$

b, SGP = Signal Generator Level

Note2:

$$SET Span = 1.5 * OBW$$

$$SET RBW = 1\% \text{ of the } OBW, \text{ not to exceed } 1MHz$$

$$SET VBW \geq 3 * RBW$$

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
WCDMA850	UMTS/TM1	LCH	2.650	13	PASS
		MCH	2.670	13	PASS
		HCH	2.650	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.690	13	PASS
		MCH	2.670	13	PASS
		HCH	2.590	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.630	13	PASS
		MCH	2.680	13	PASS
		HCH	2.570	13	PASS



3Appendix_C: Modulation Characteristics

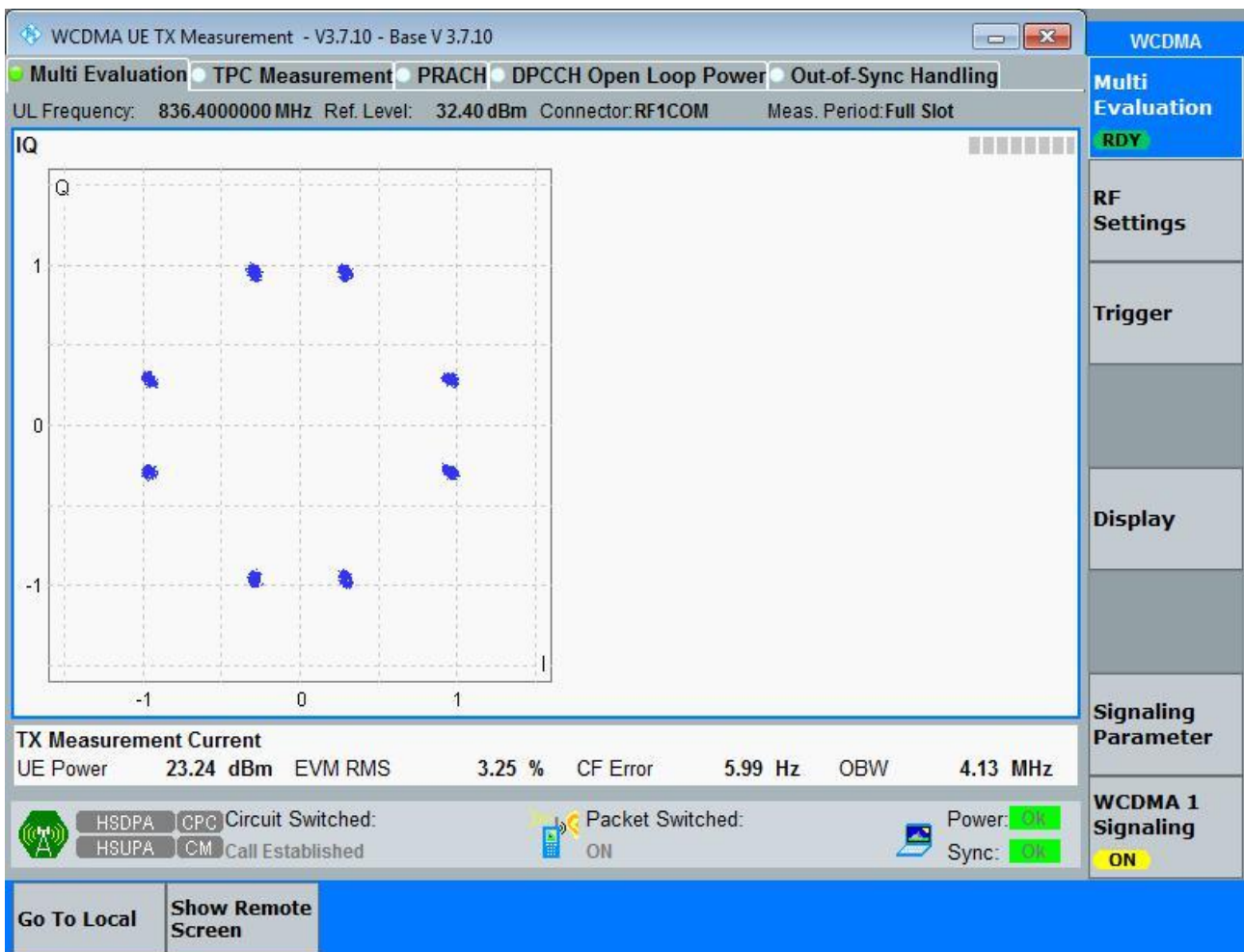
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

3.1.1.1.1 Test Channel = MCH

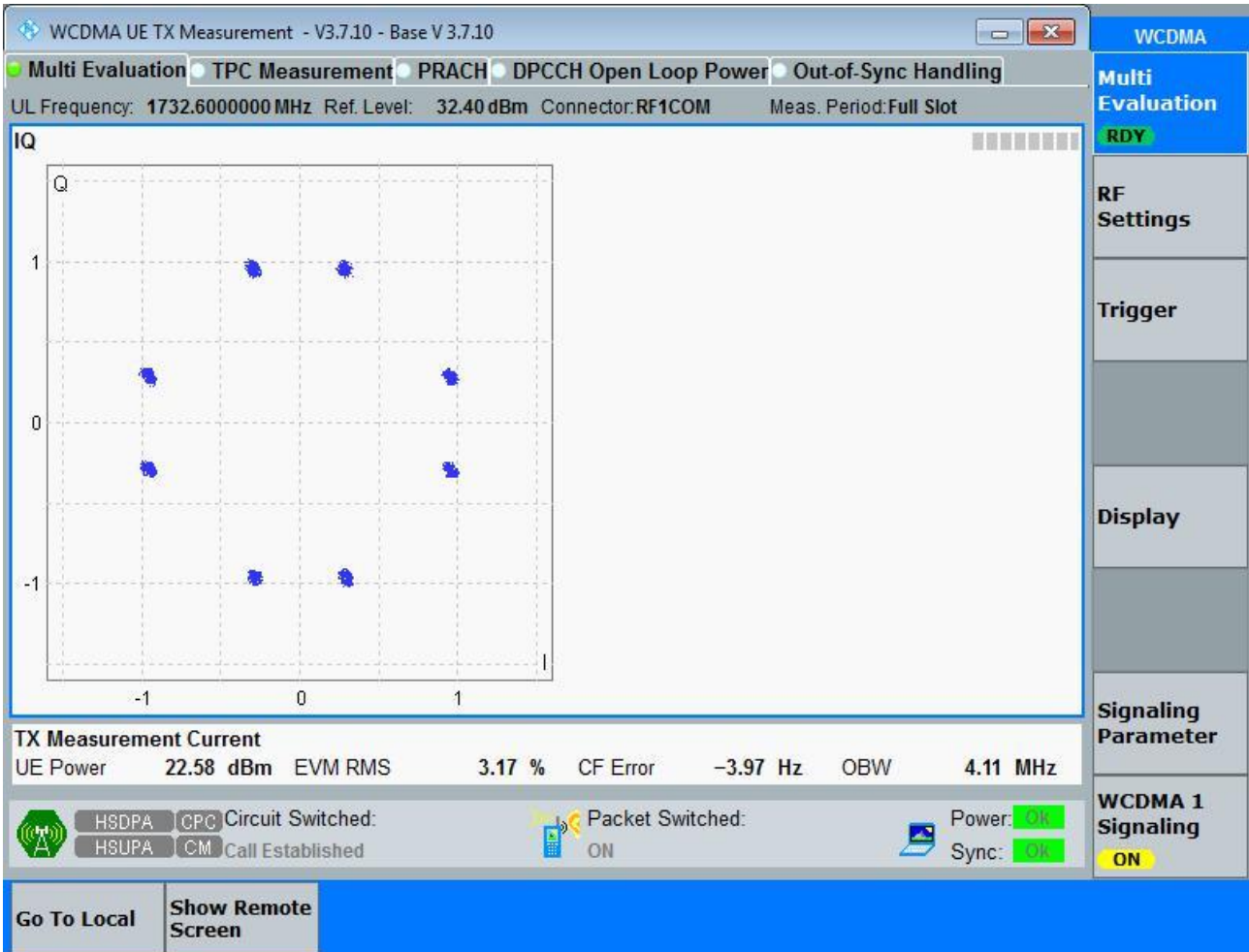




3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

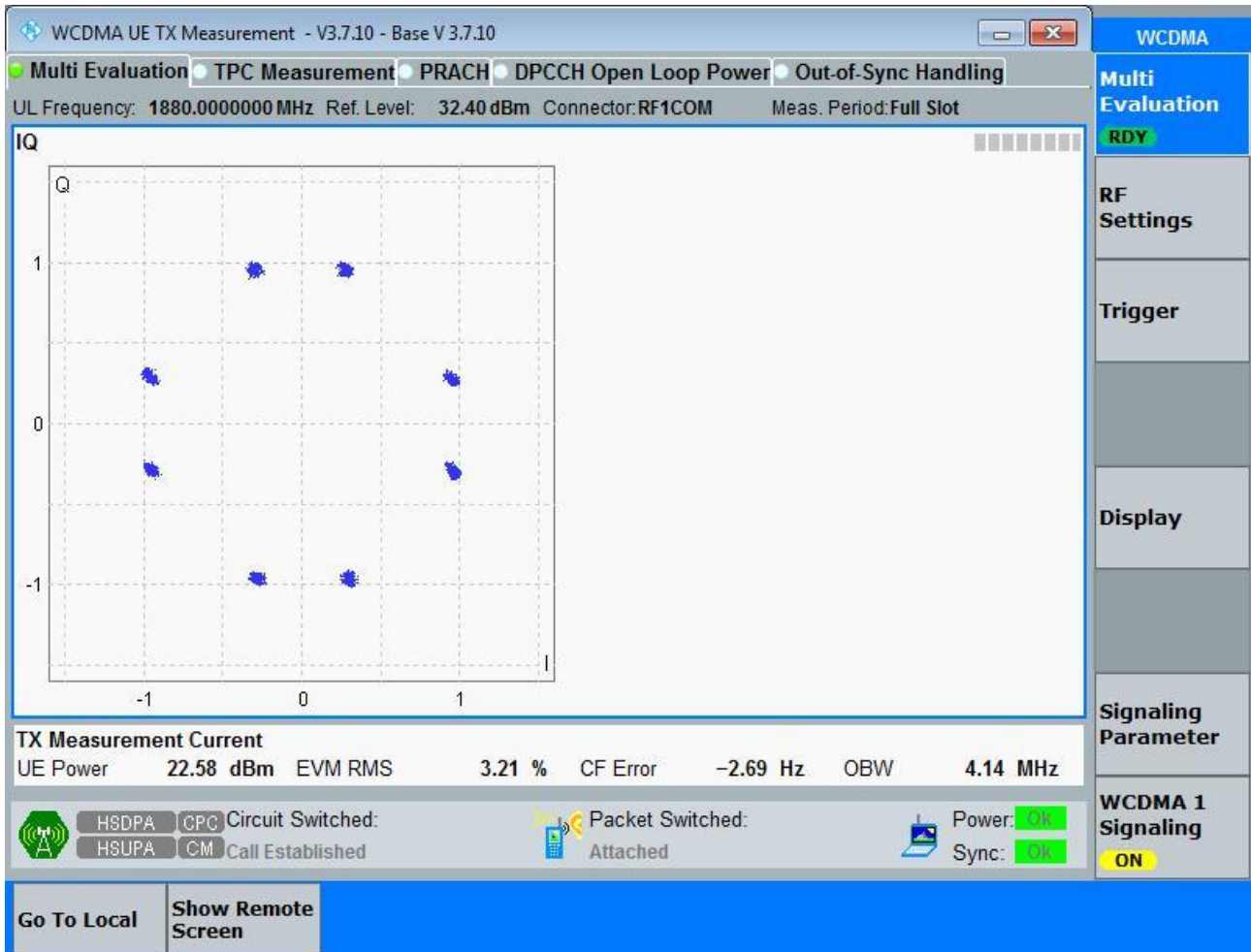
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA1900

3.1.3.1 Test Mode = UMTS/TM1

3.1.3.1.1 Test Channel = MCH





4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.15	4.70	Pass
		MCH	4.17	4.71	Pass
		HCH	4.17	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.15	4.68	Pass
		MCH	4.16	4.70	Pass
		HCH	4.16	4.70	Pass
WCDMA1900	UMTS/TM1	LCH	4.15	4.68	Pass
		MCH	4.16	4.70	Pass
		HCH	4.14	4.69	Pass



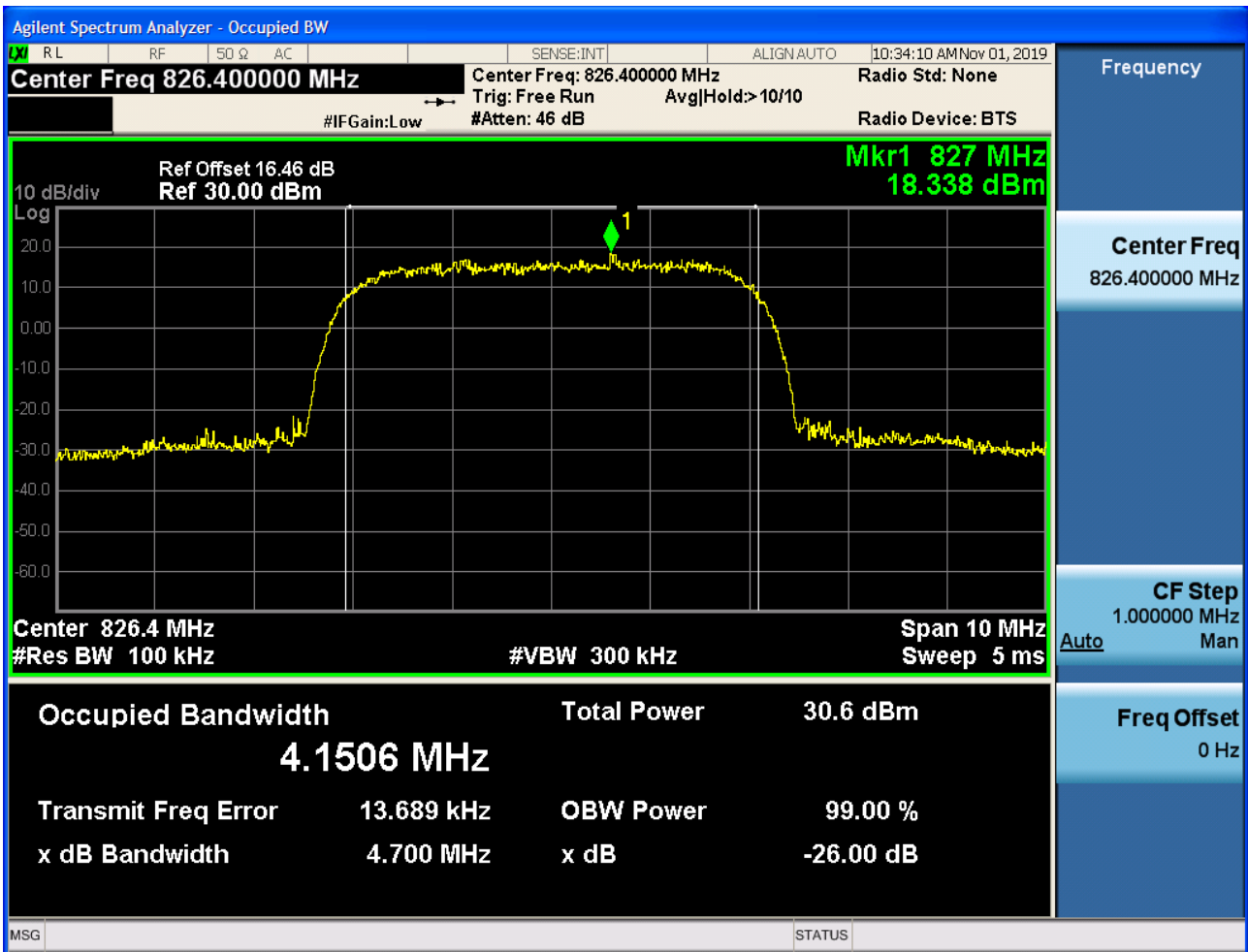
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

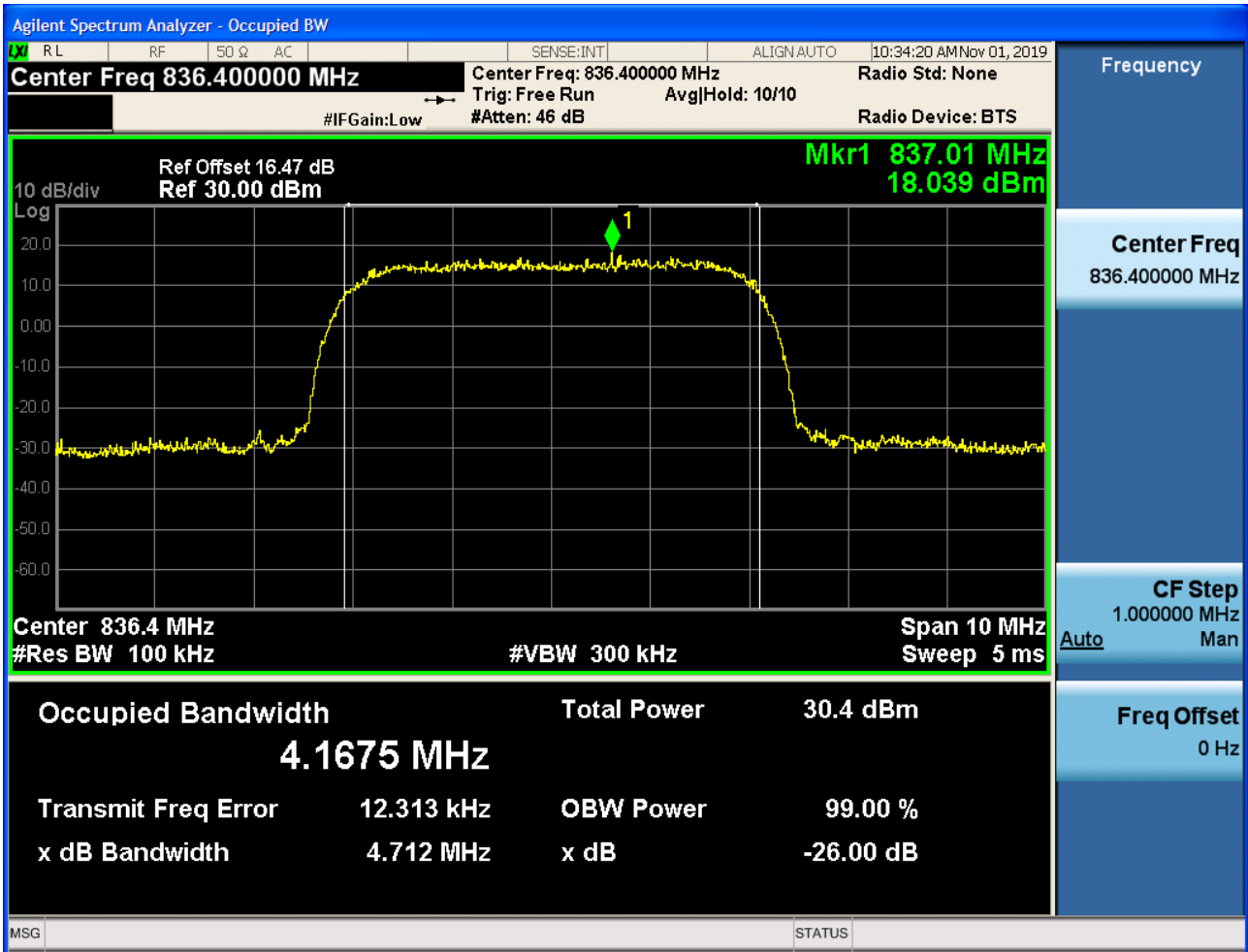
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



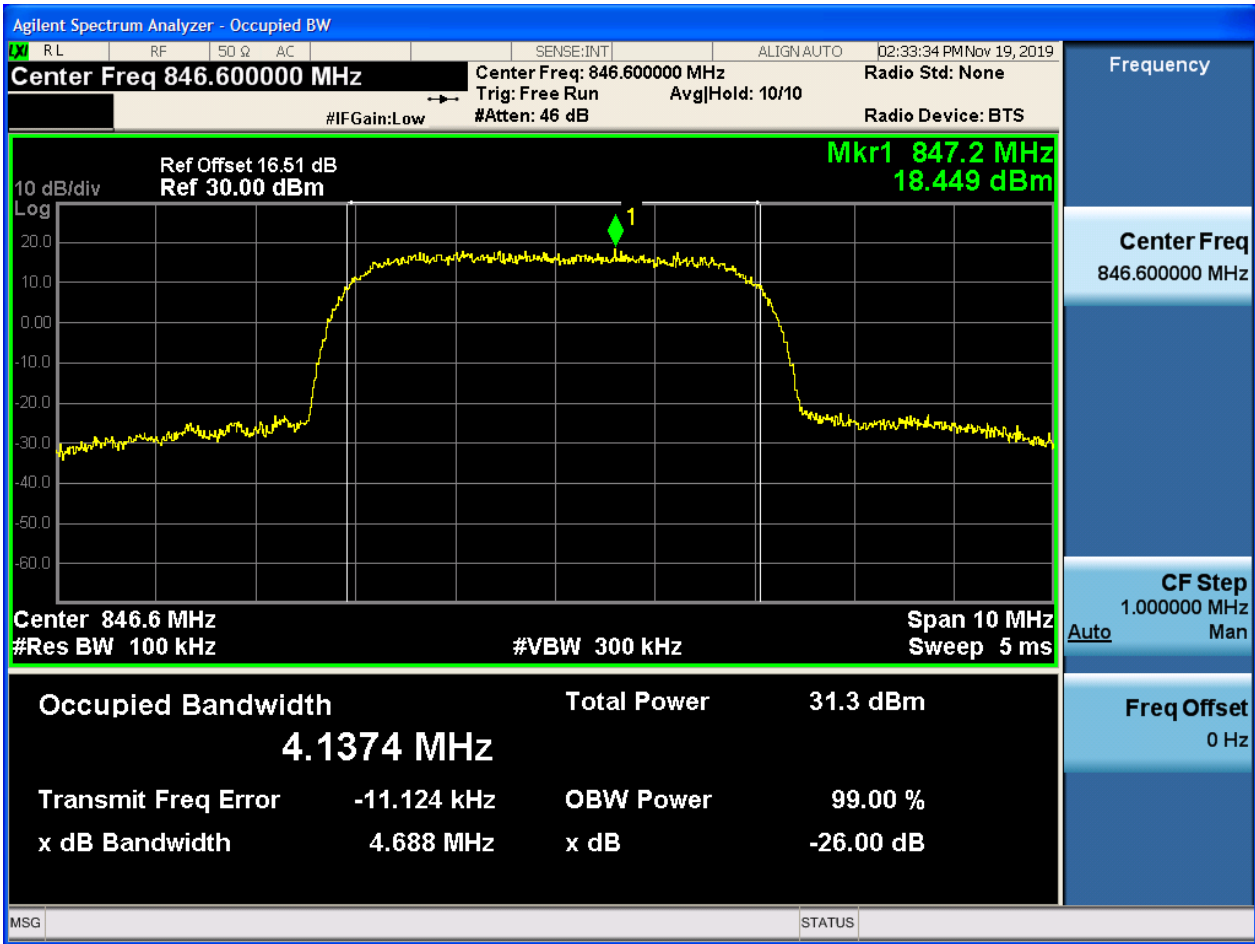


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

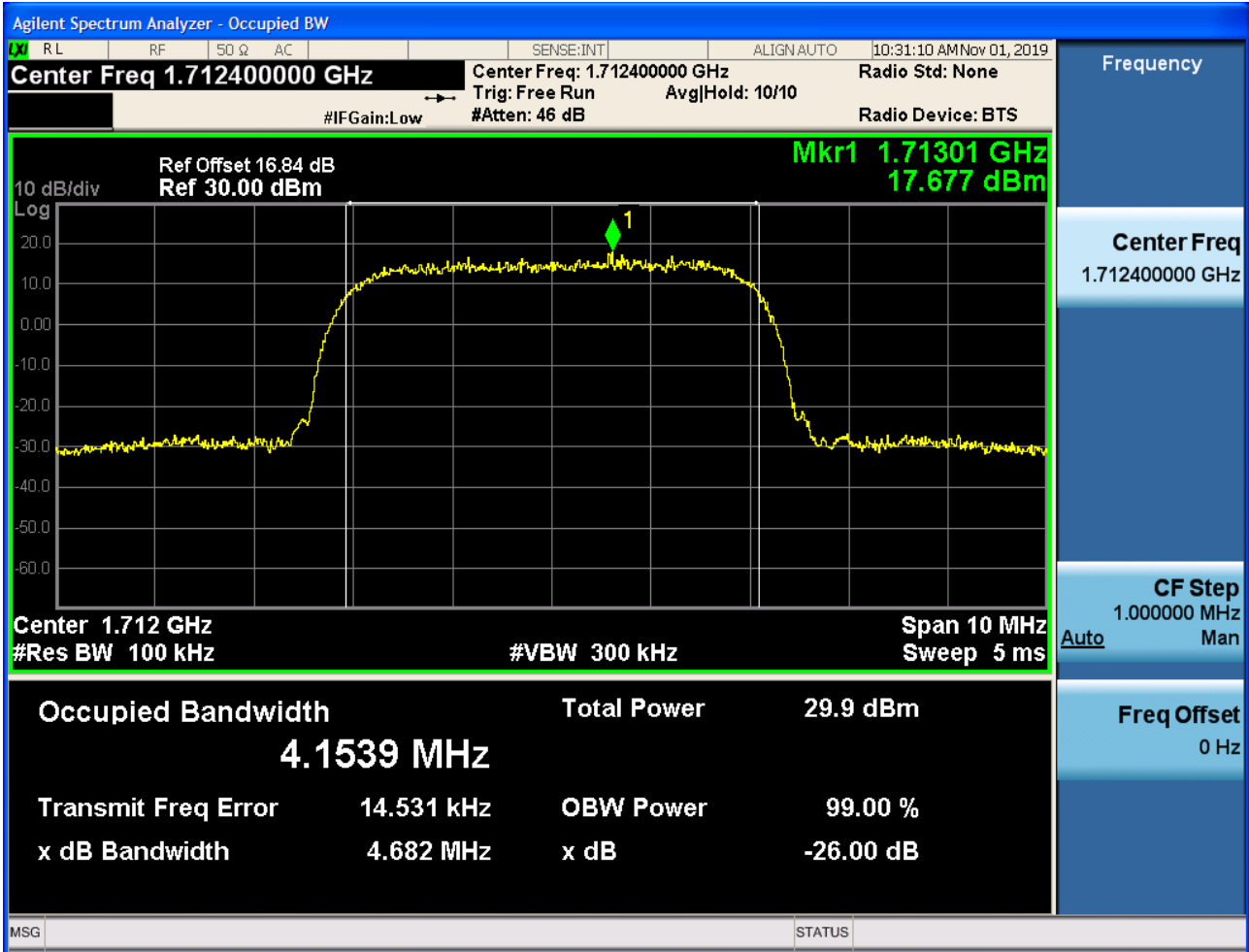




4.1.2 Test Band = WCDMA1700

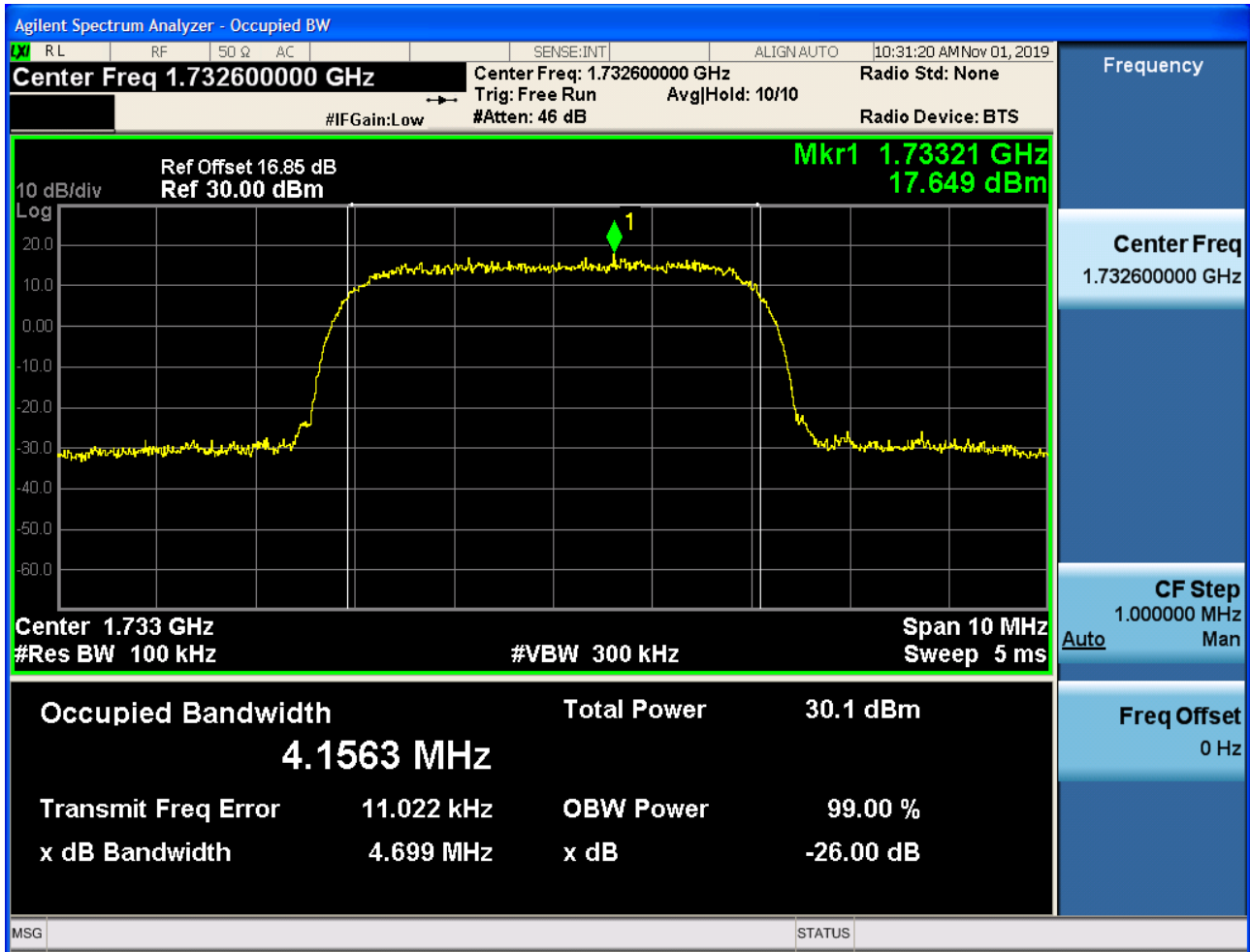
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



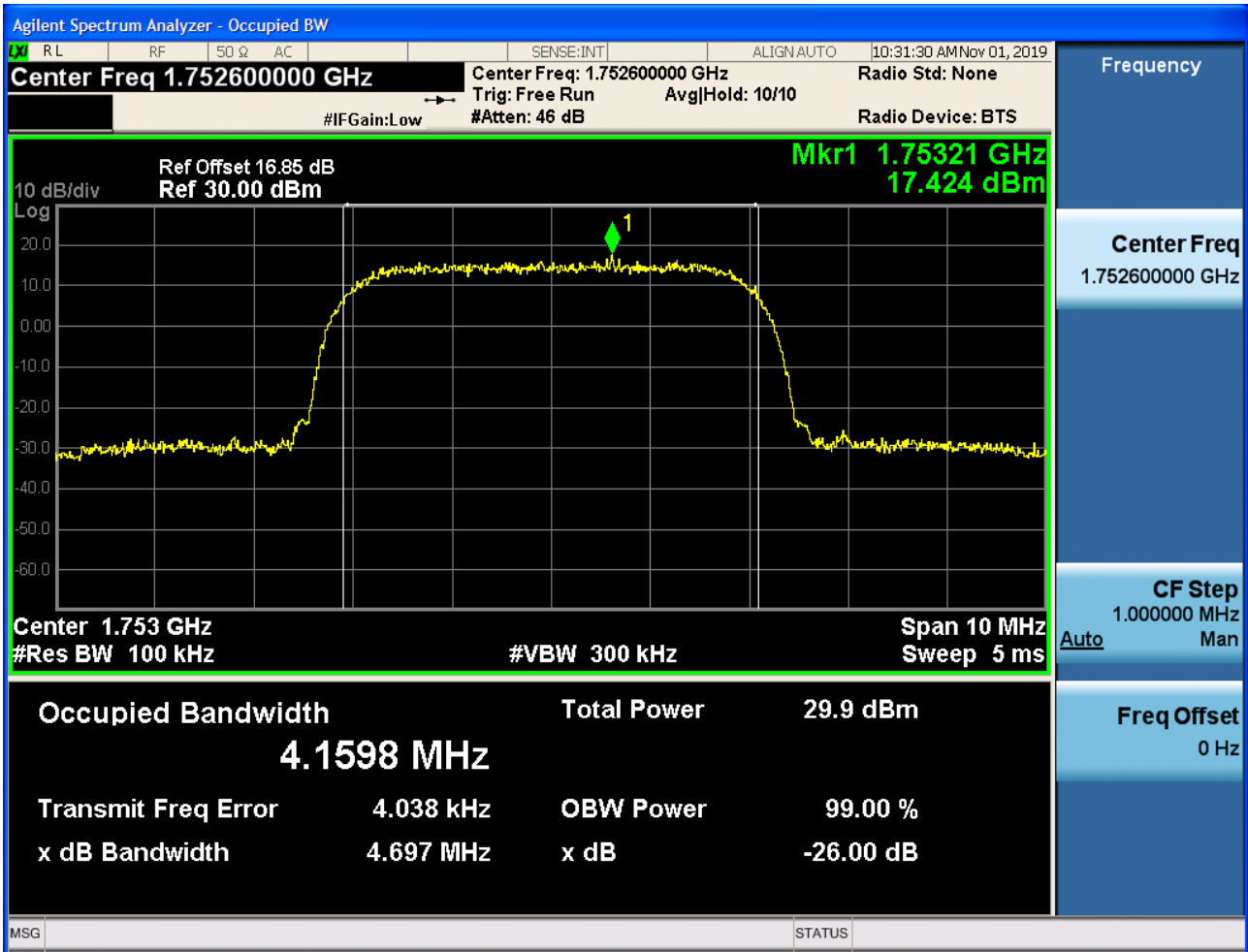


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

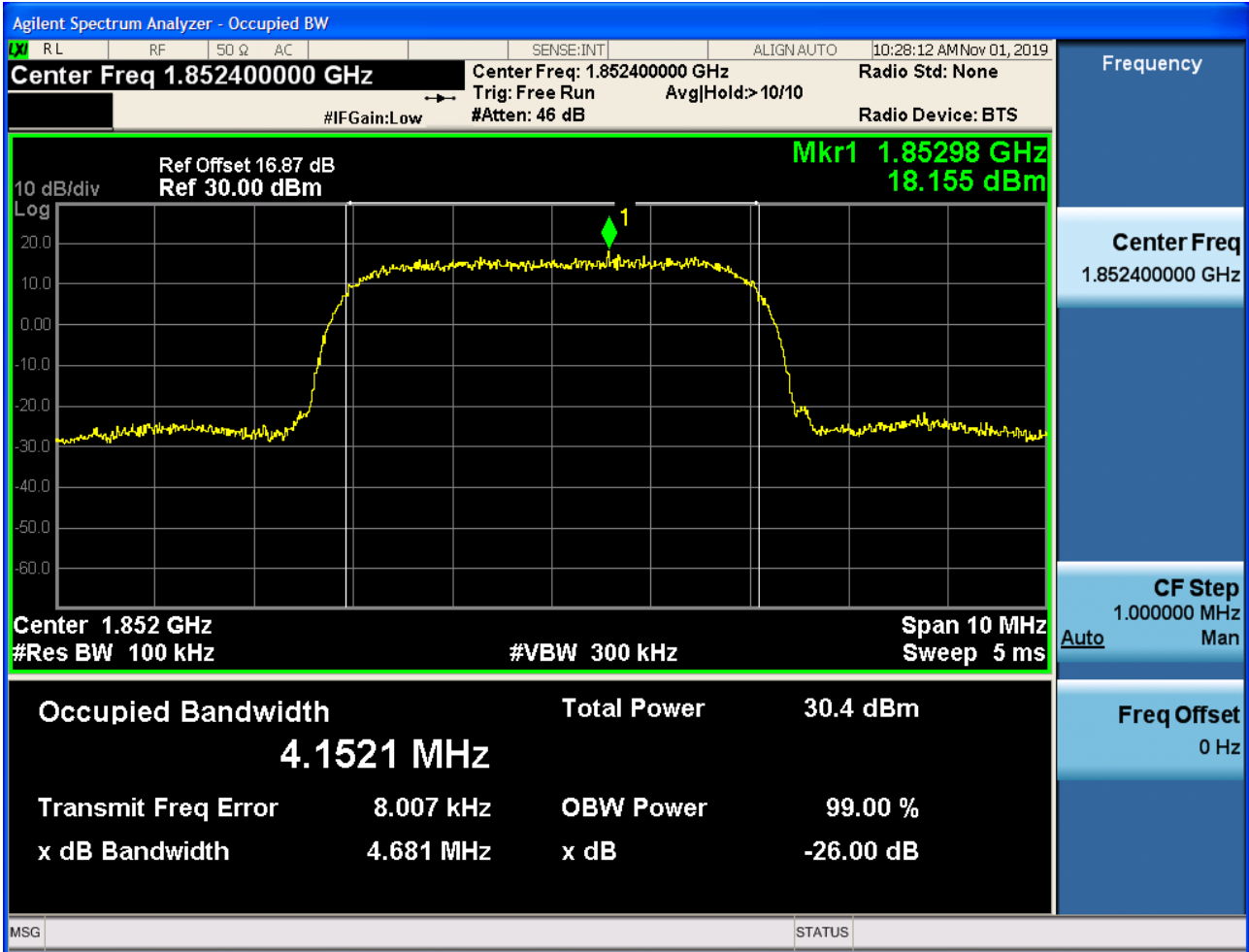




4.1.3 Test Band = WCDMA1900

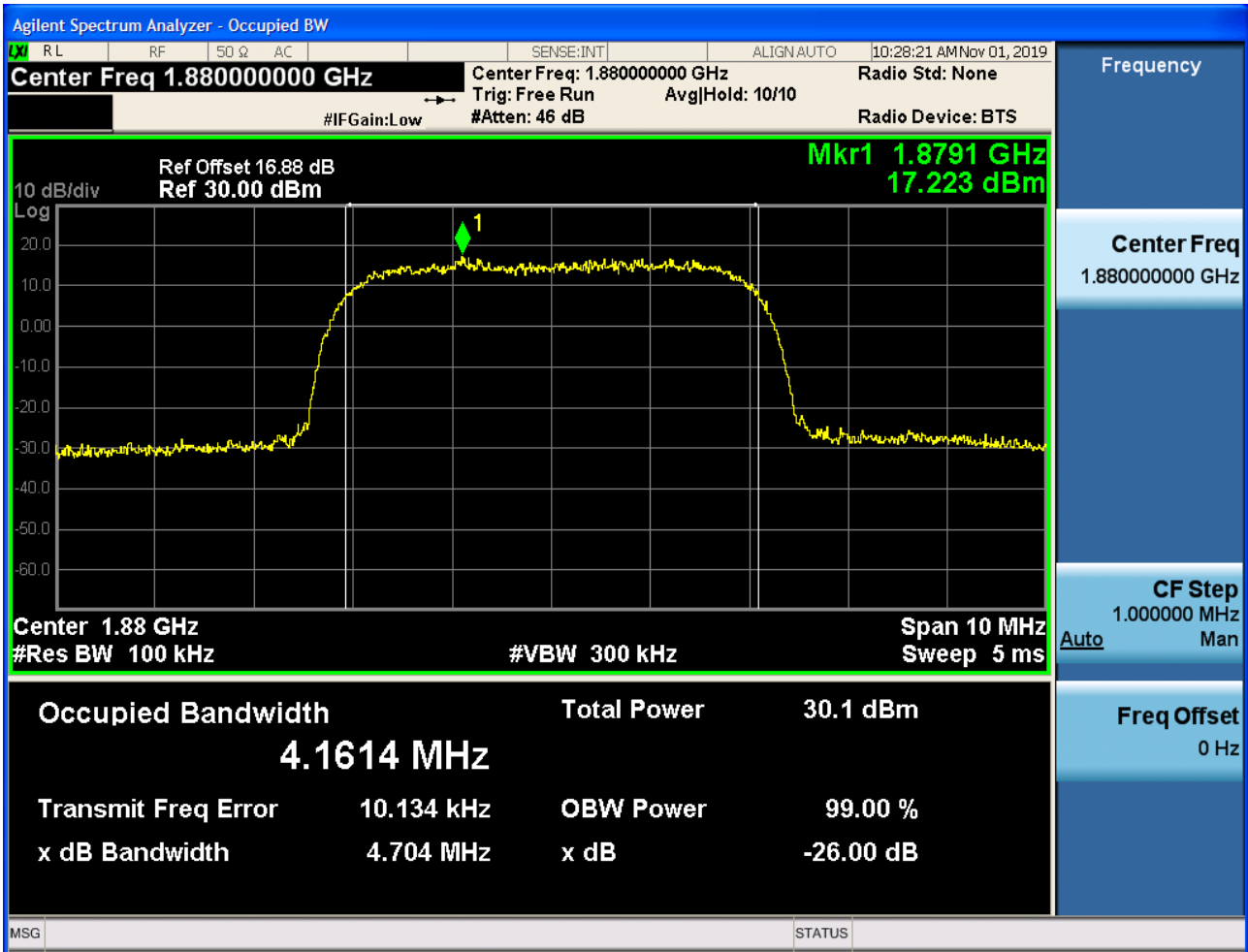
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



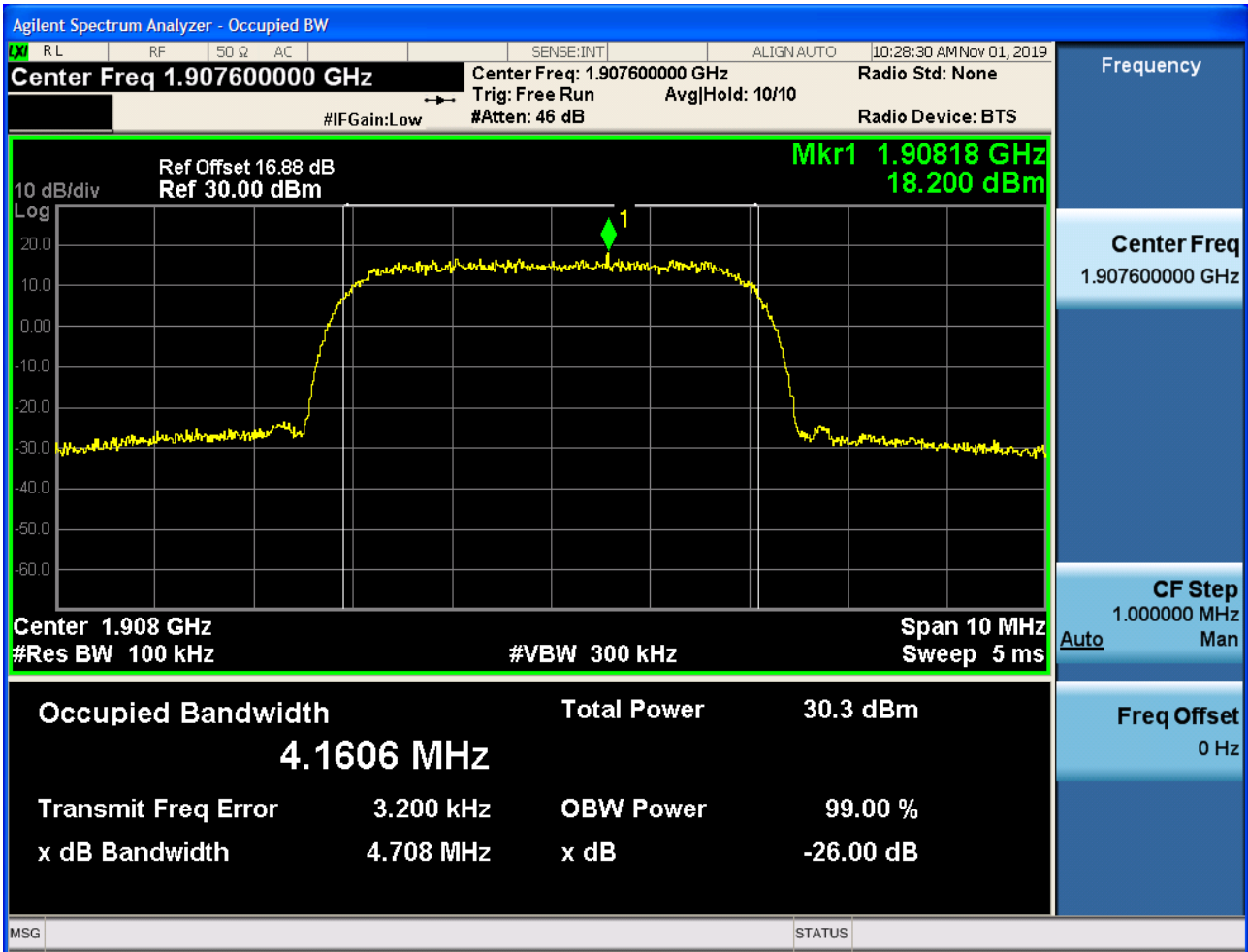


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

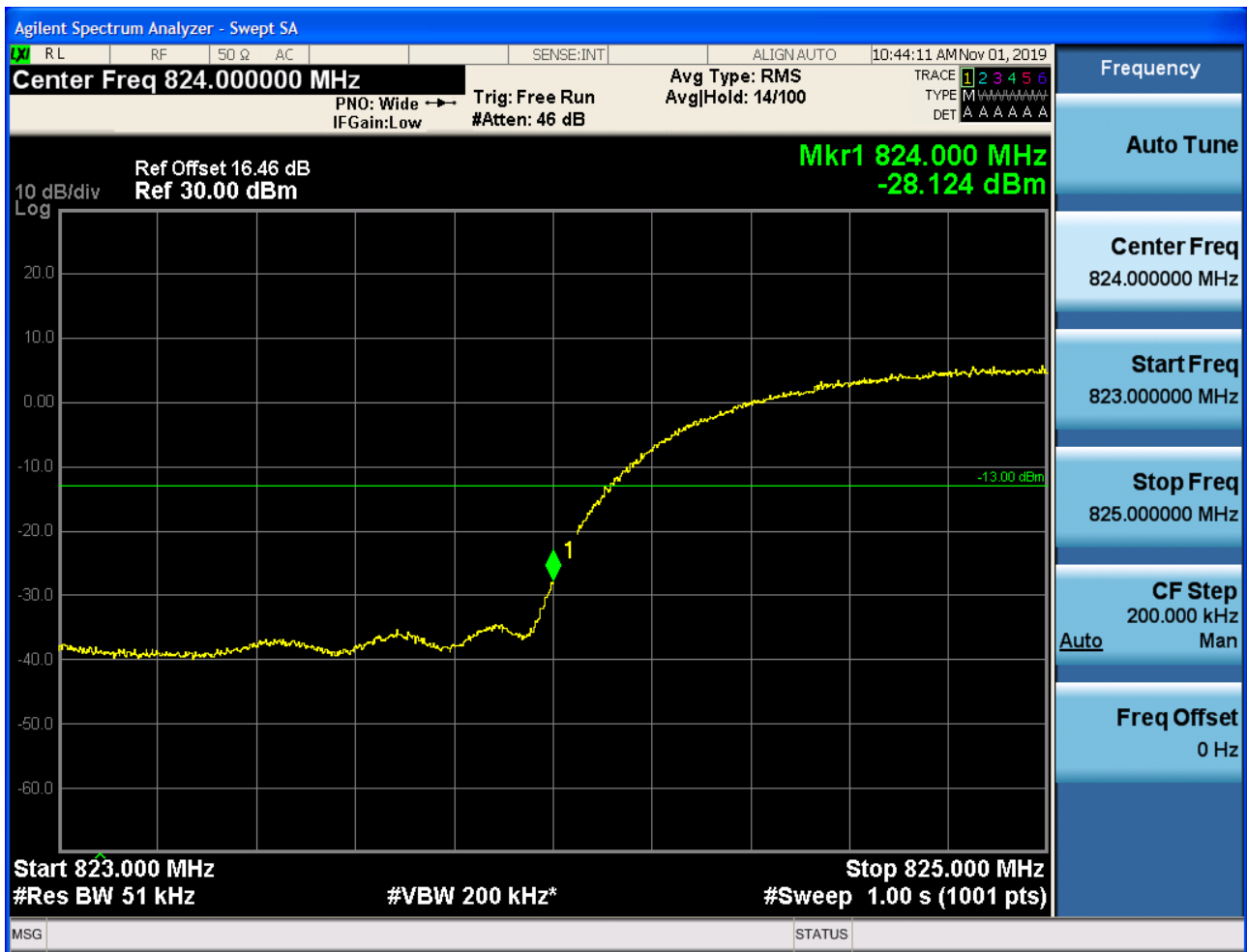
Part I - Test Plots

5.1 For UMTS

5.1.1 Test Band = WCDMA850

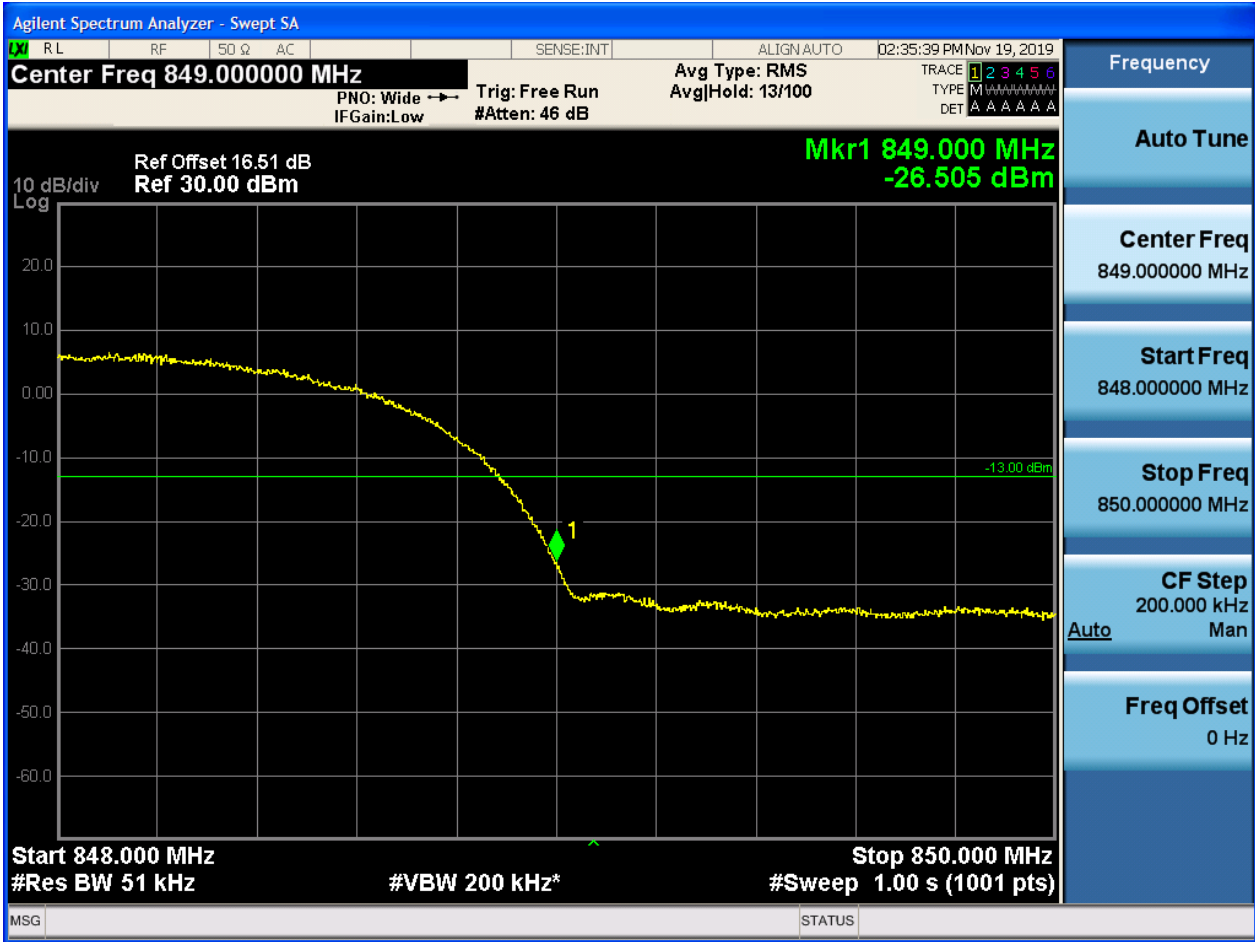
5.1.1.1 Test Mode = UMTS/TM1

5.1.1.1.1 Test Channel = LCH





5.1.1.1.2 Test Channel = HCH

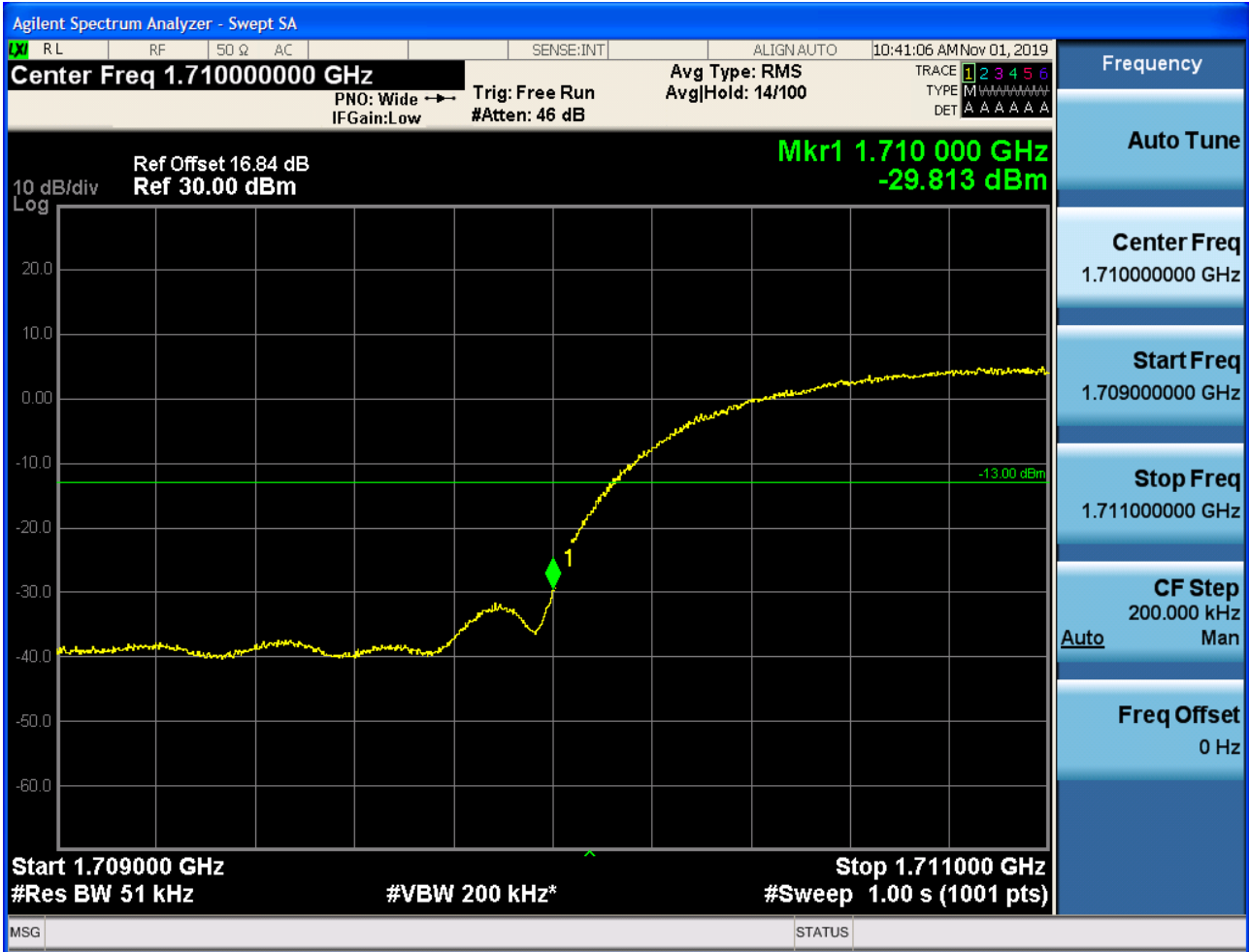




5.1.2 Test Band = WCDMA1700

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH





5.1.2.1.2 Test Channel = HCH

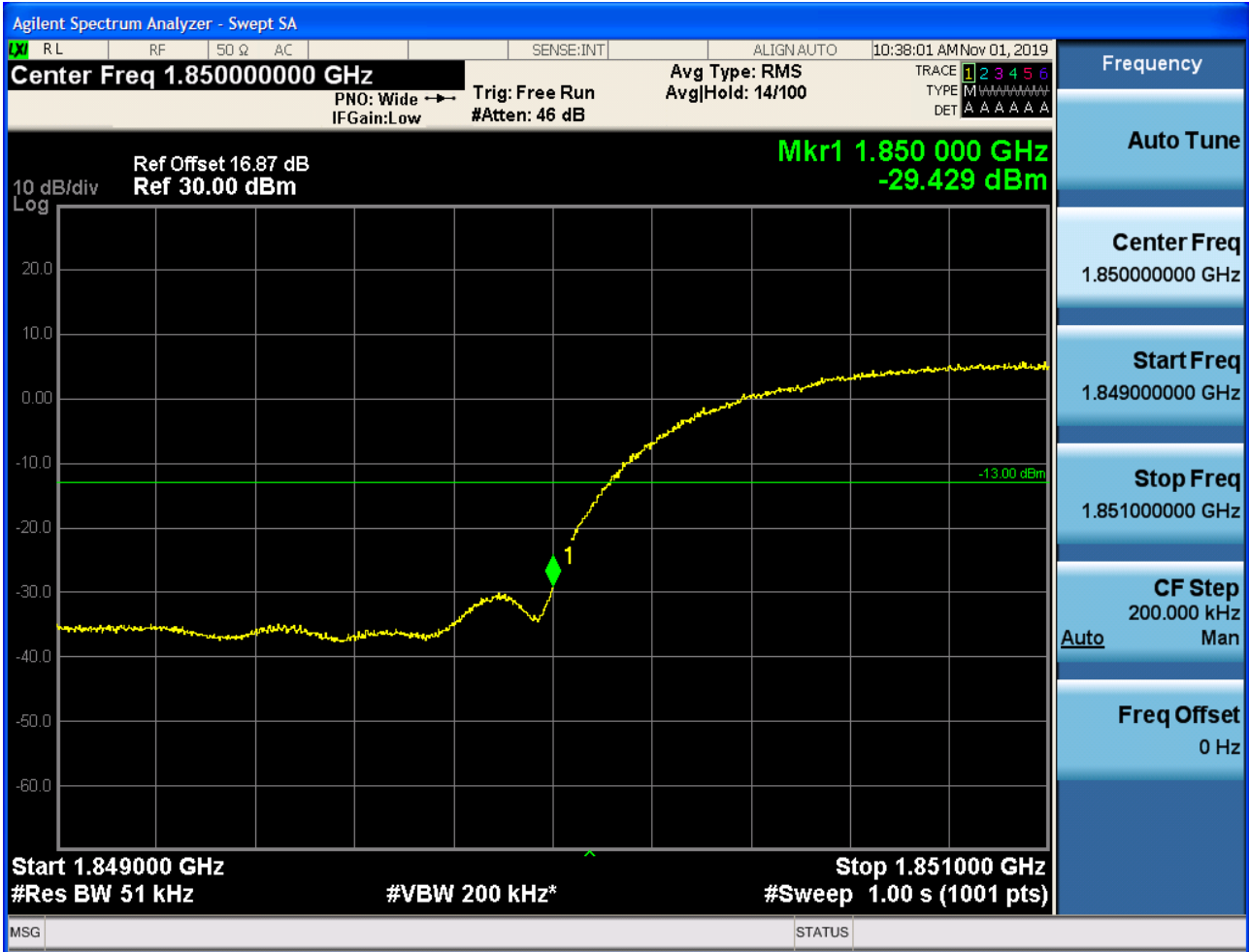




5.1.3 Test Band = WCDMA1900

5.1.3.1 Test Mode = UMTS/TM1

5.1.3.1.1 Test Channel = LCH





5.1.3.1.2 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.

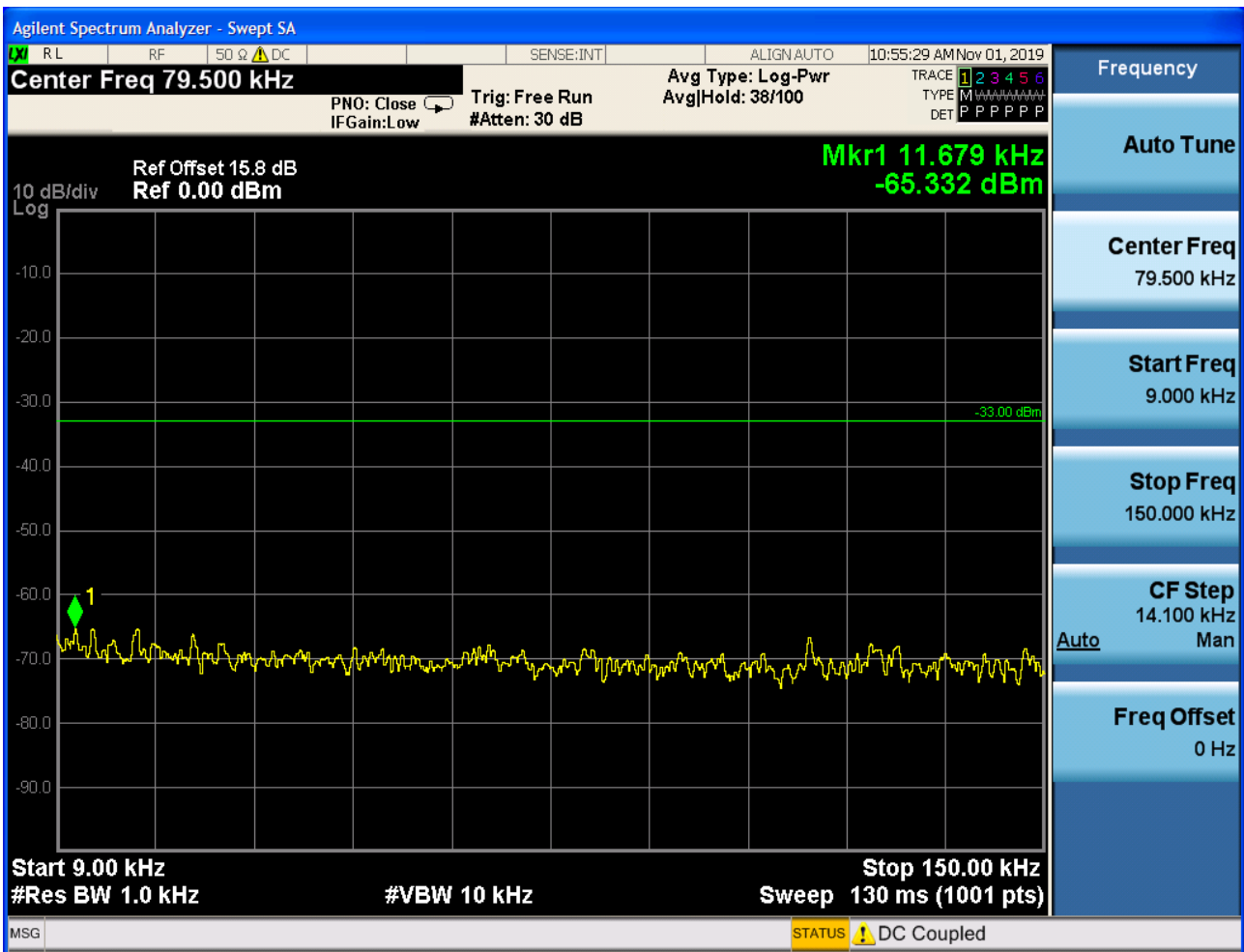
Part I - Test Plots

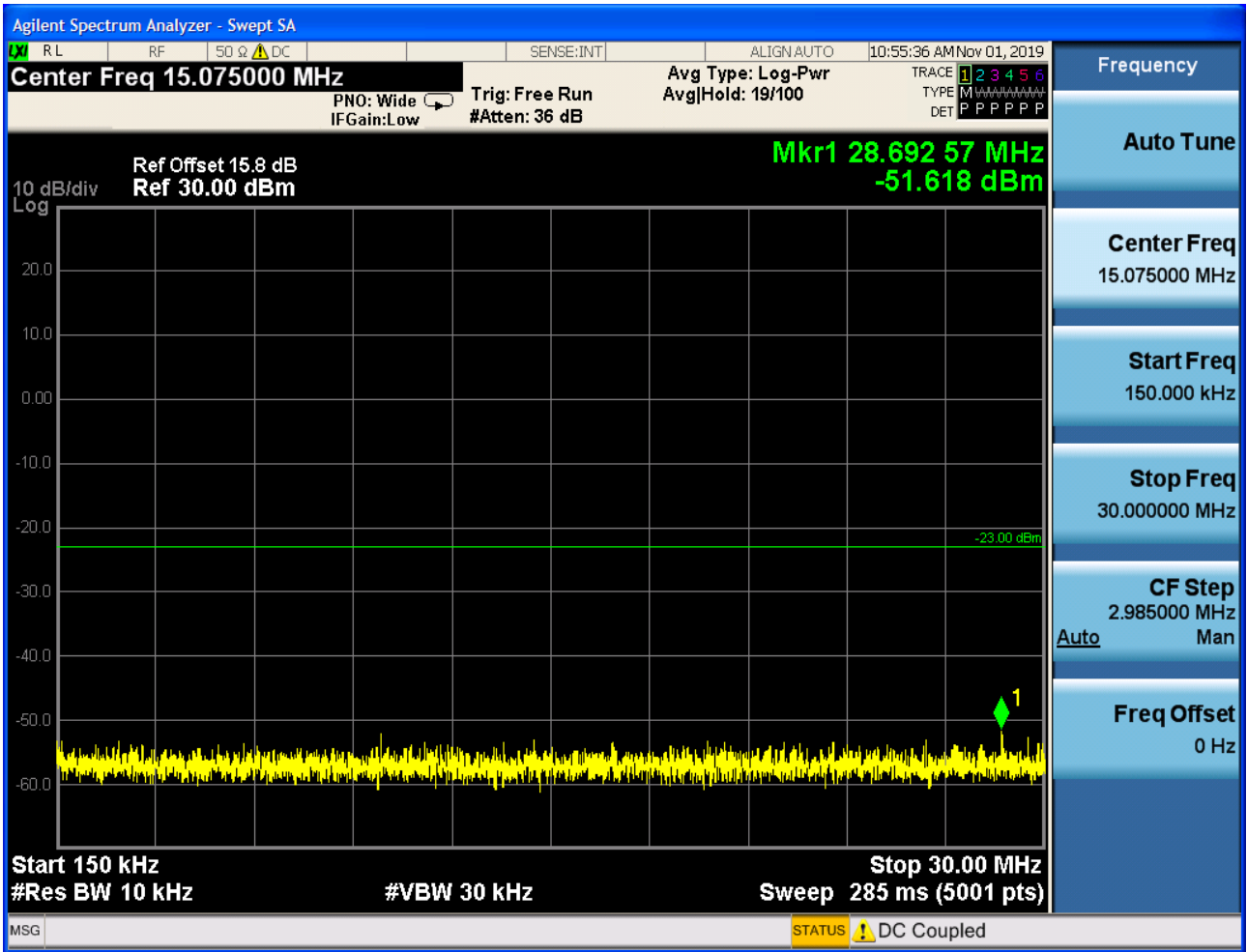
6.1 For UMTS

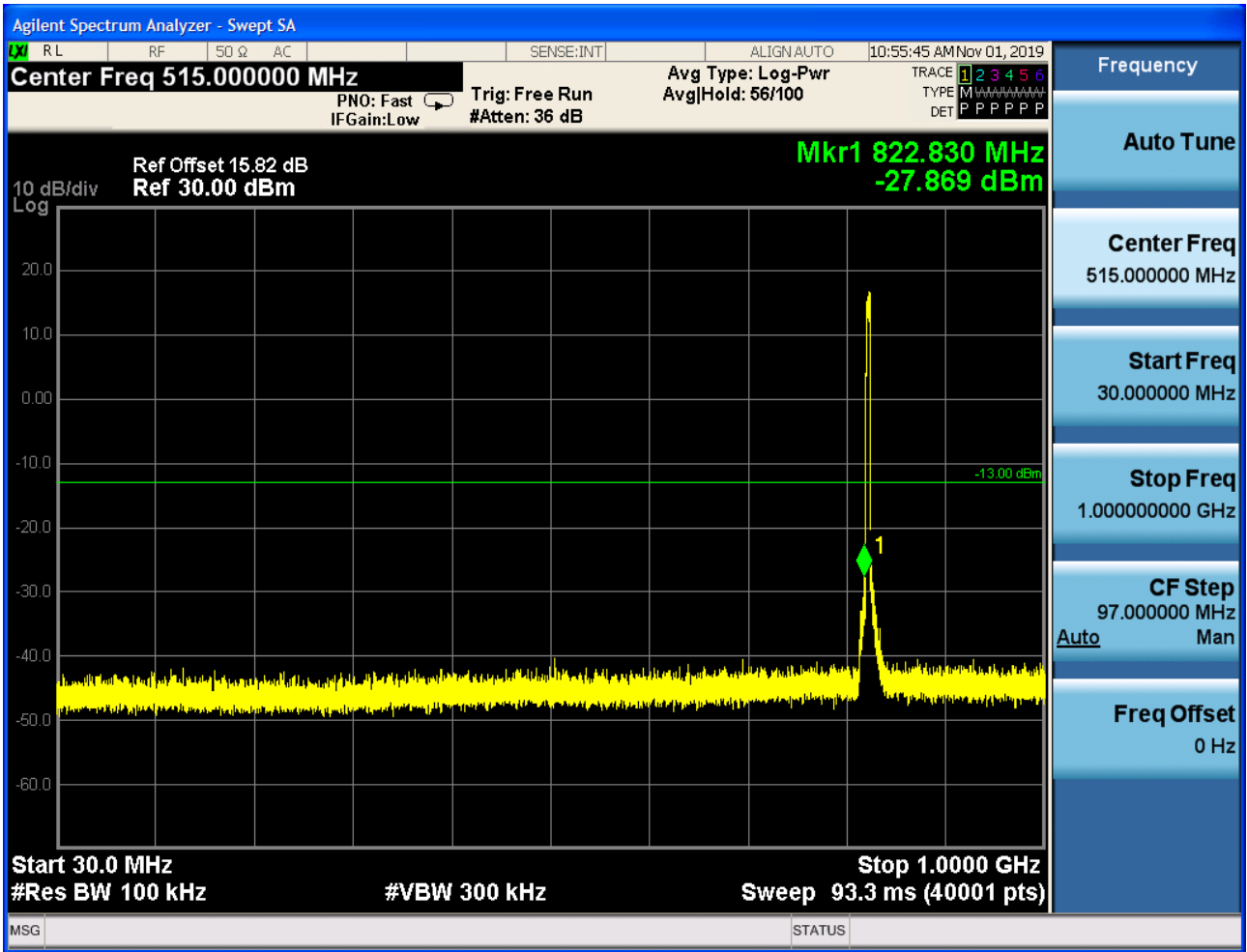
6.1.1 Test Band = WCDMA850

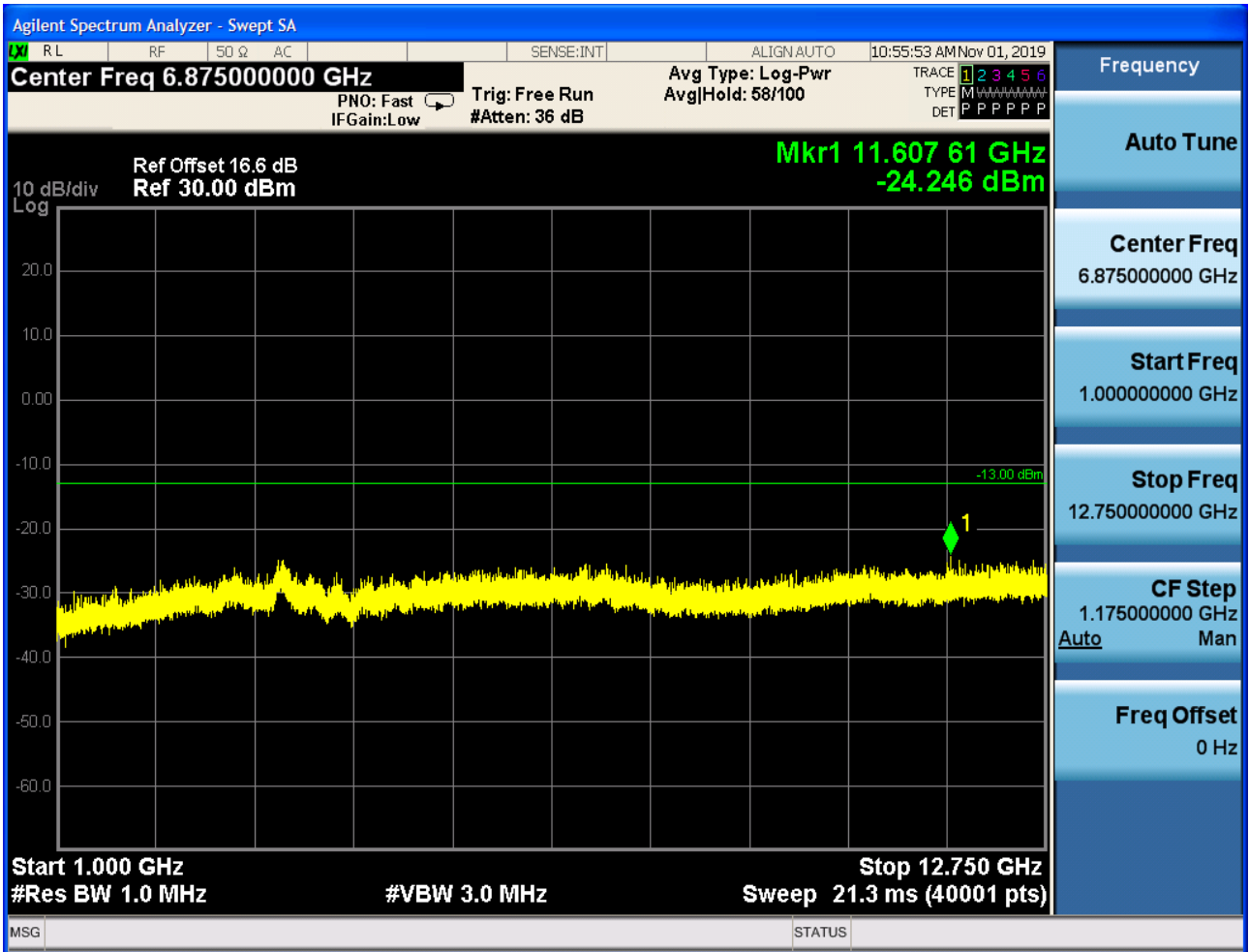
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



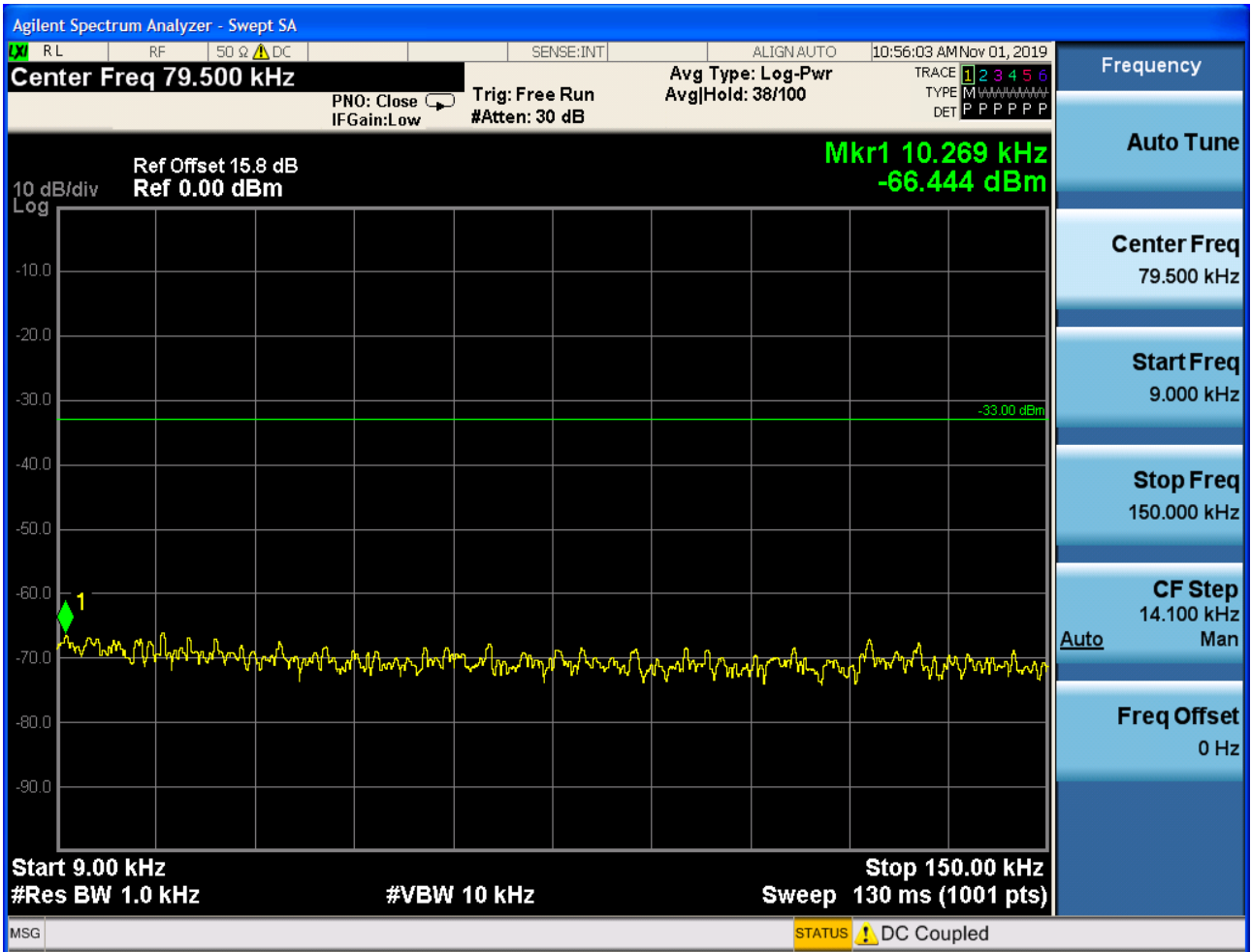


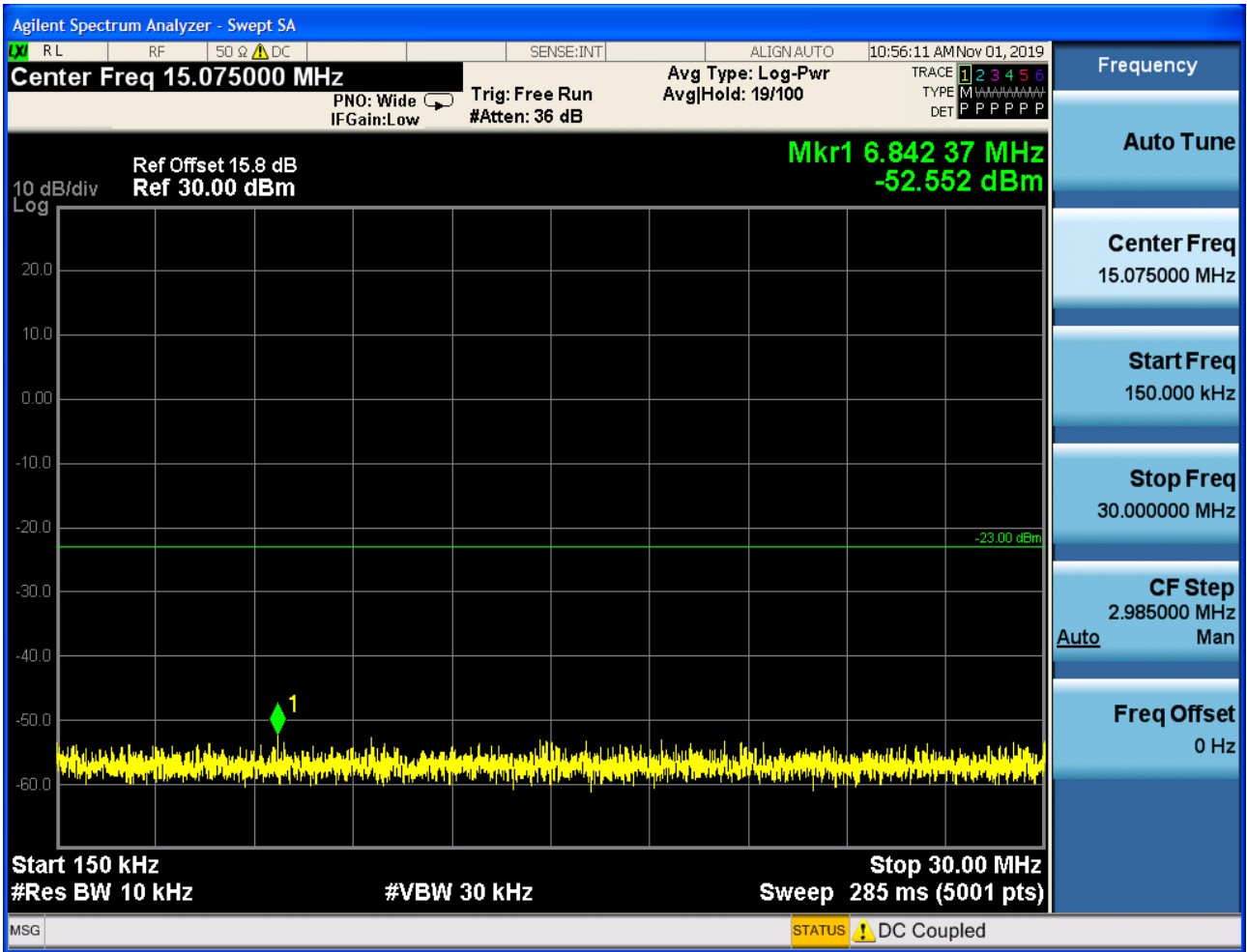


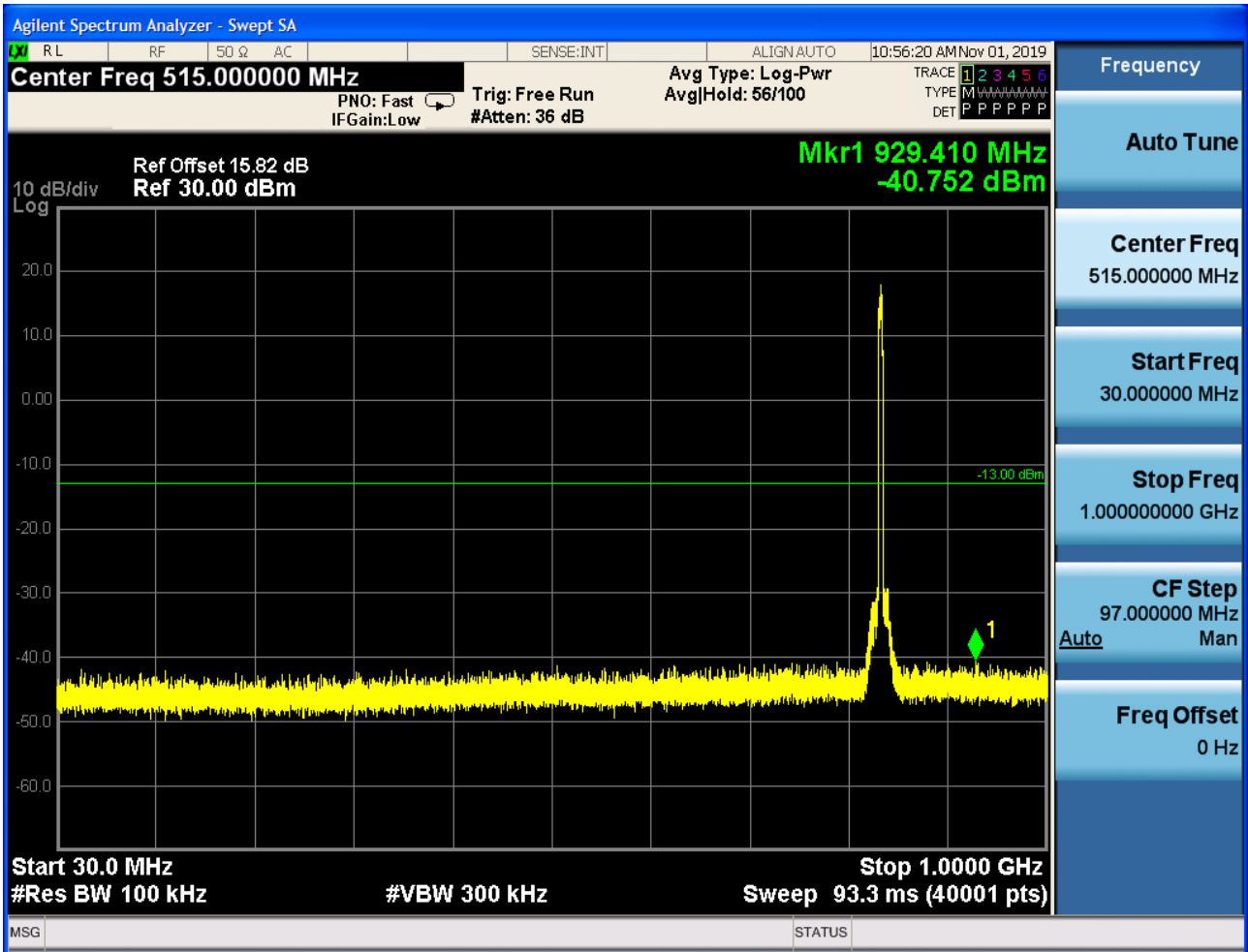


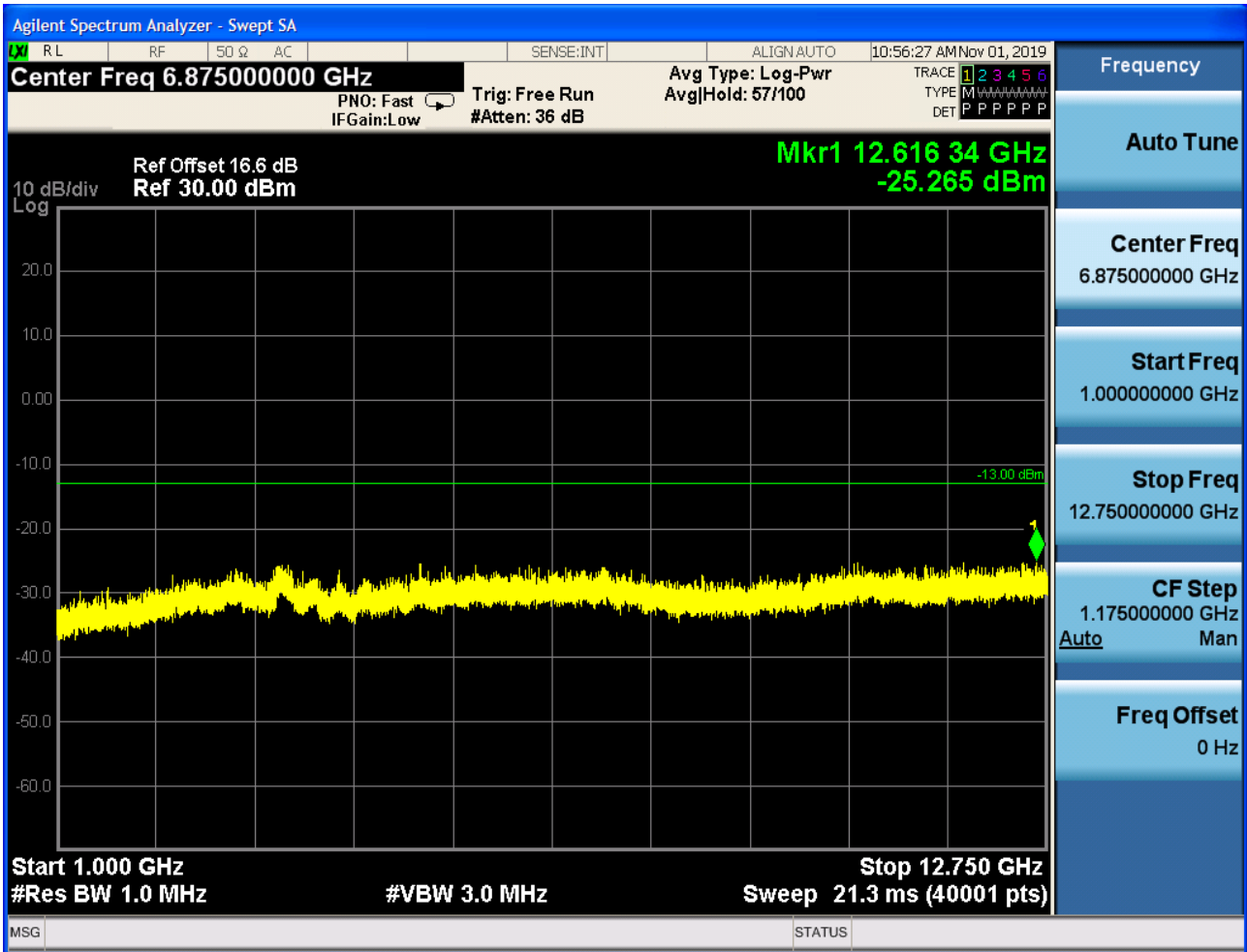


6.1.1.1.2 Test Channel = MCH



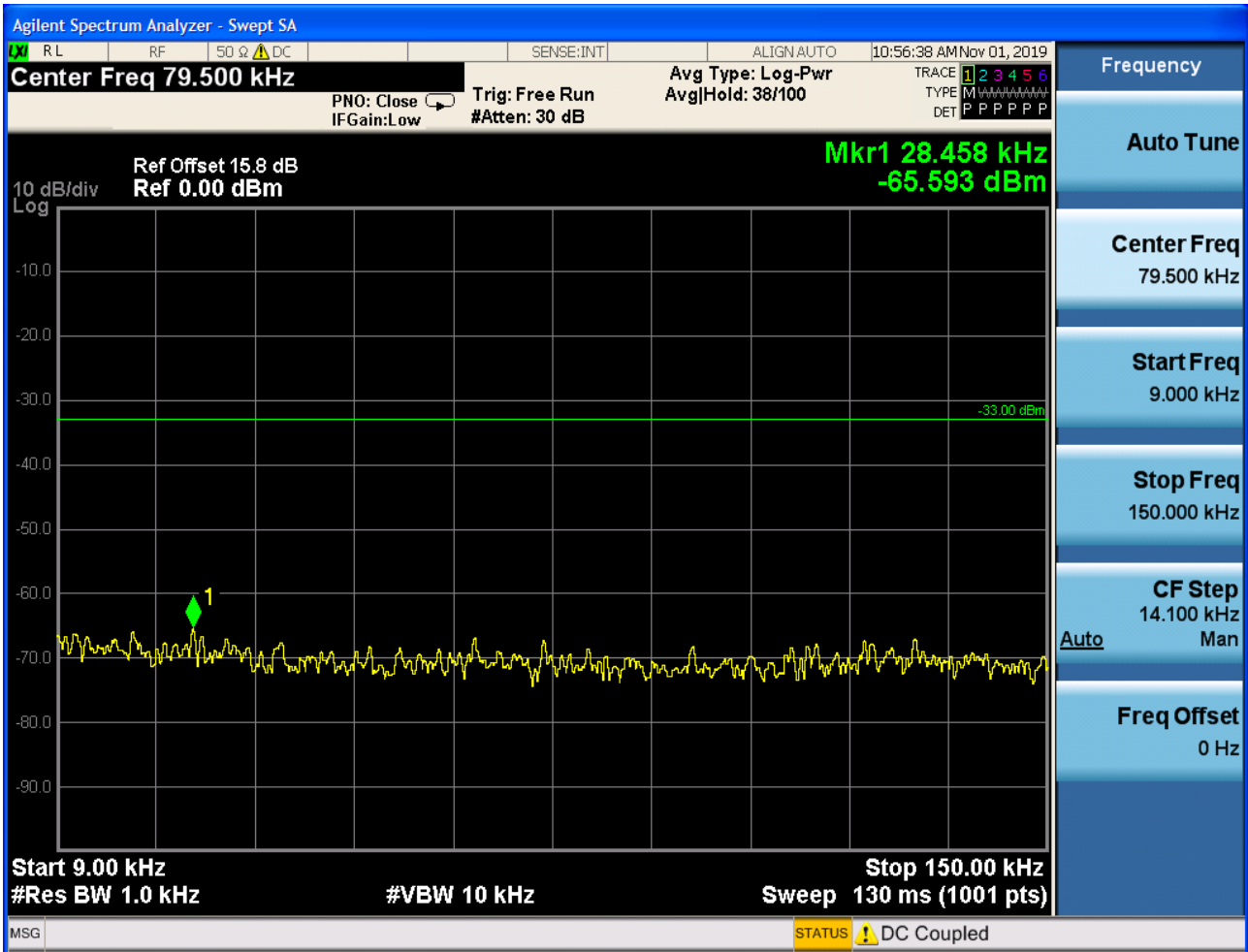


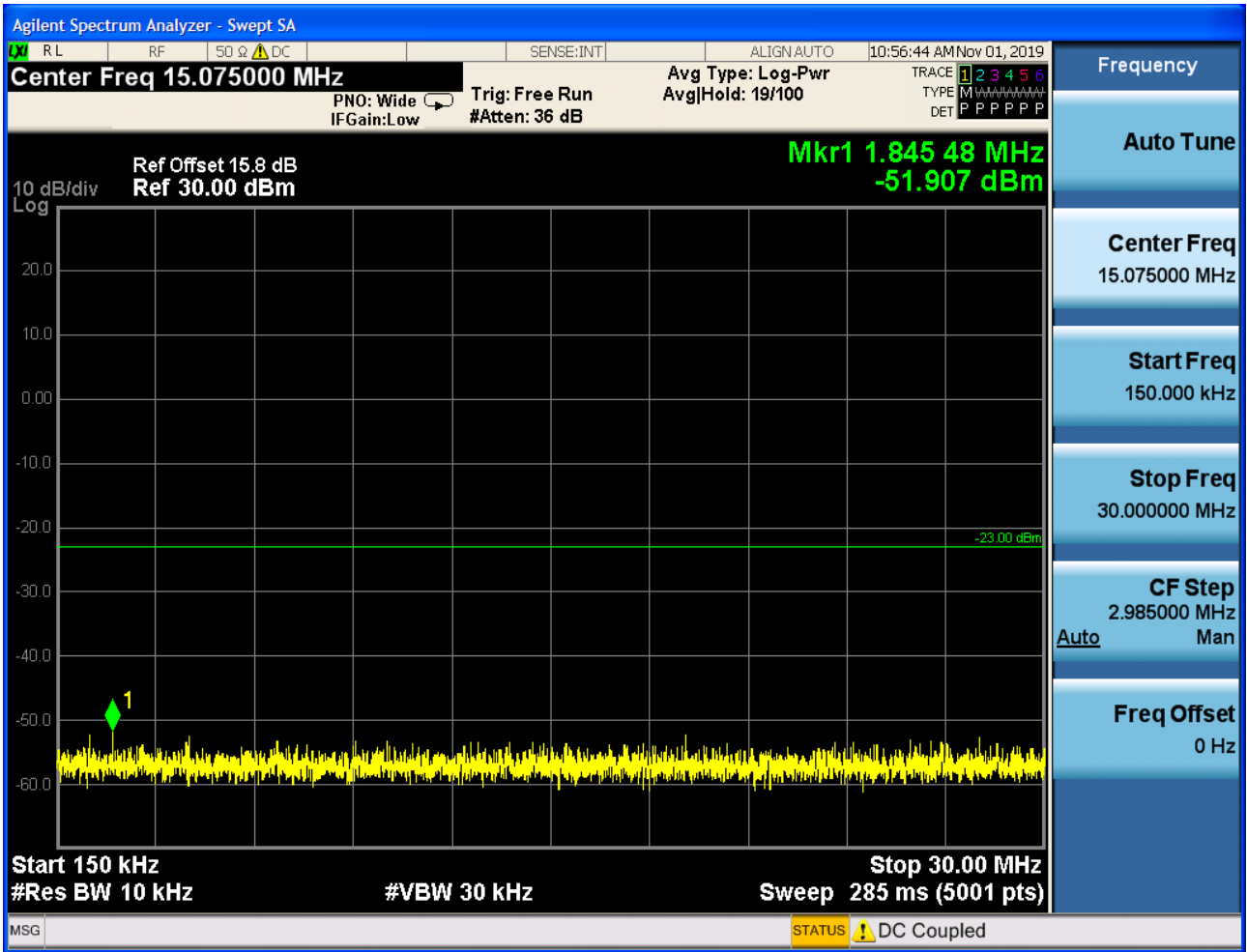


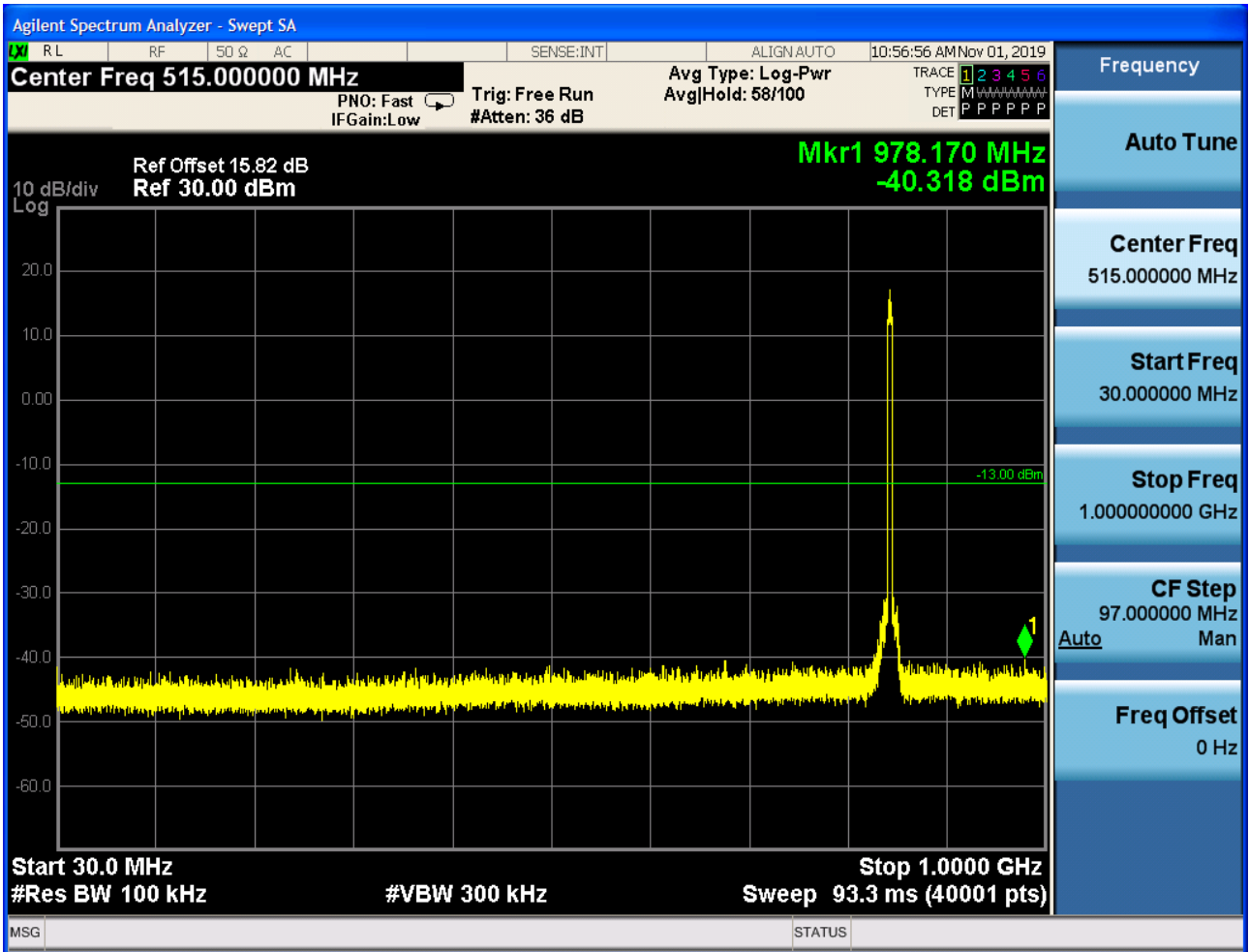


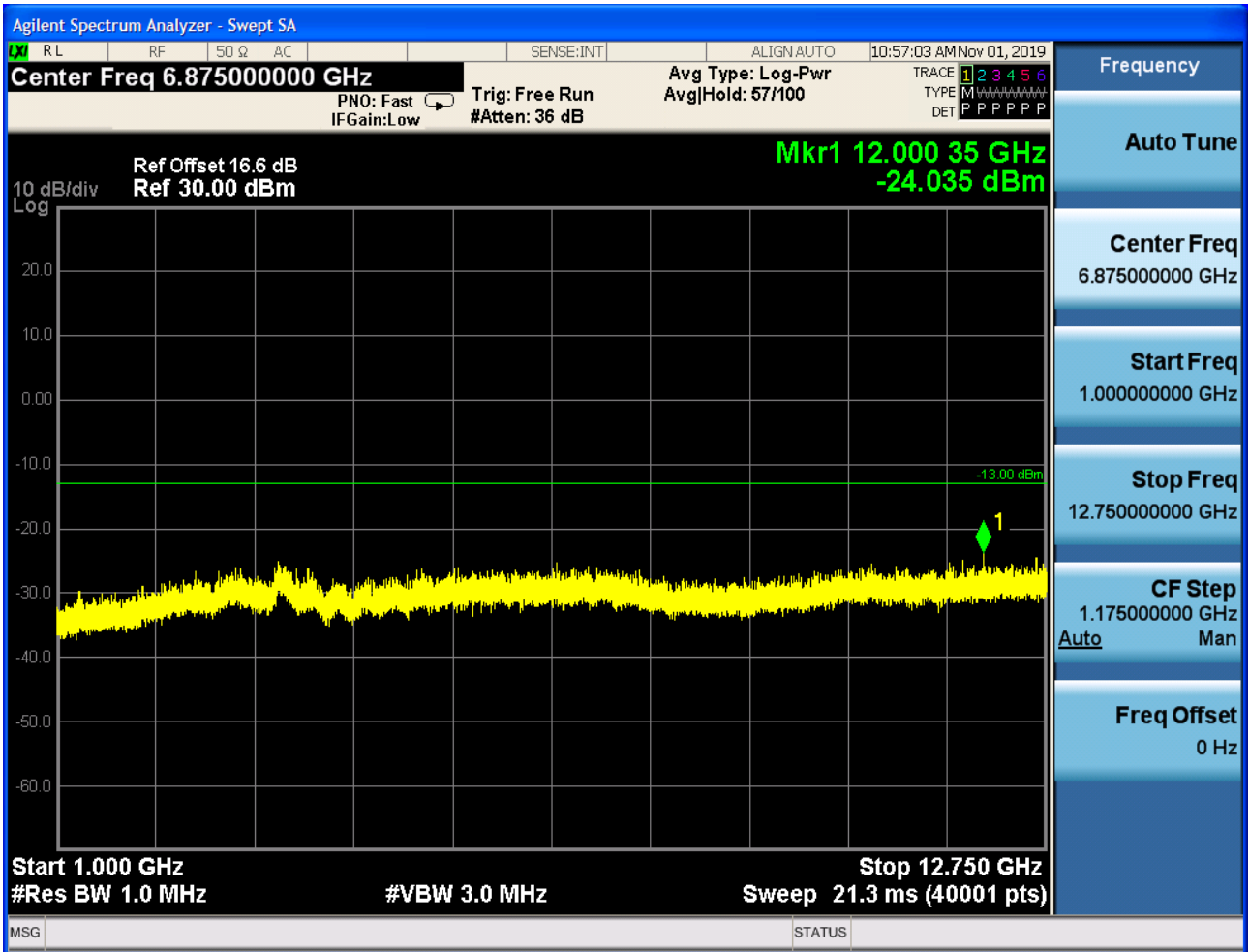


6.1.1.1.3 Test Channel = HCH







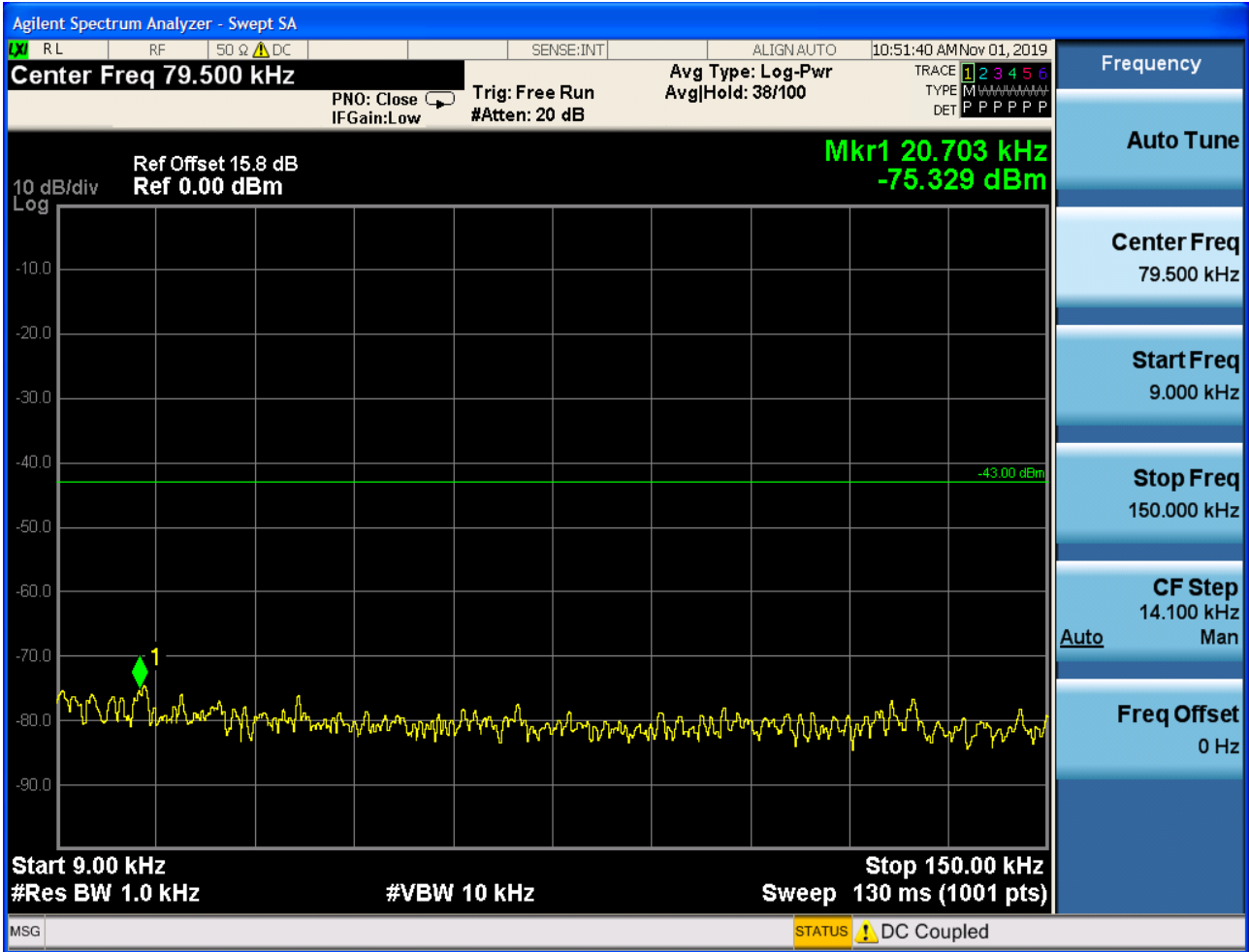


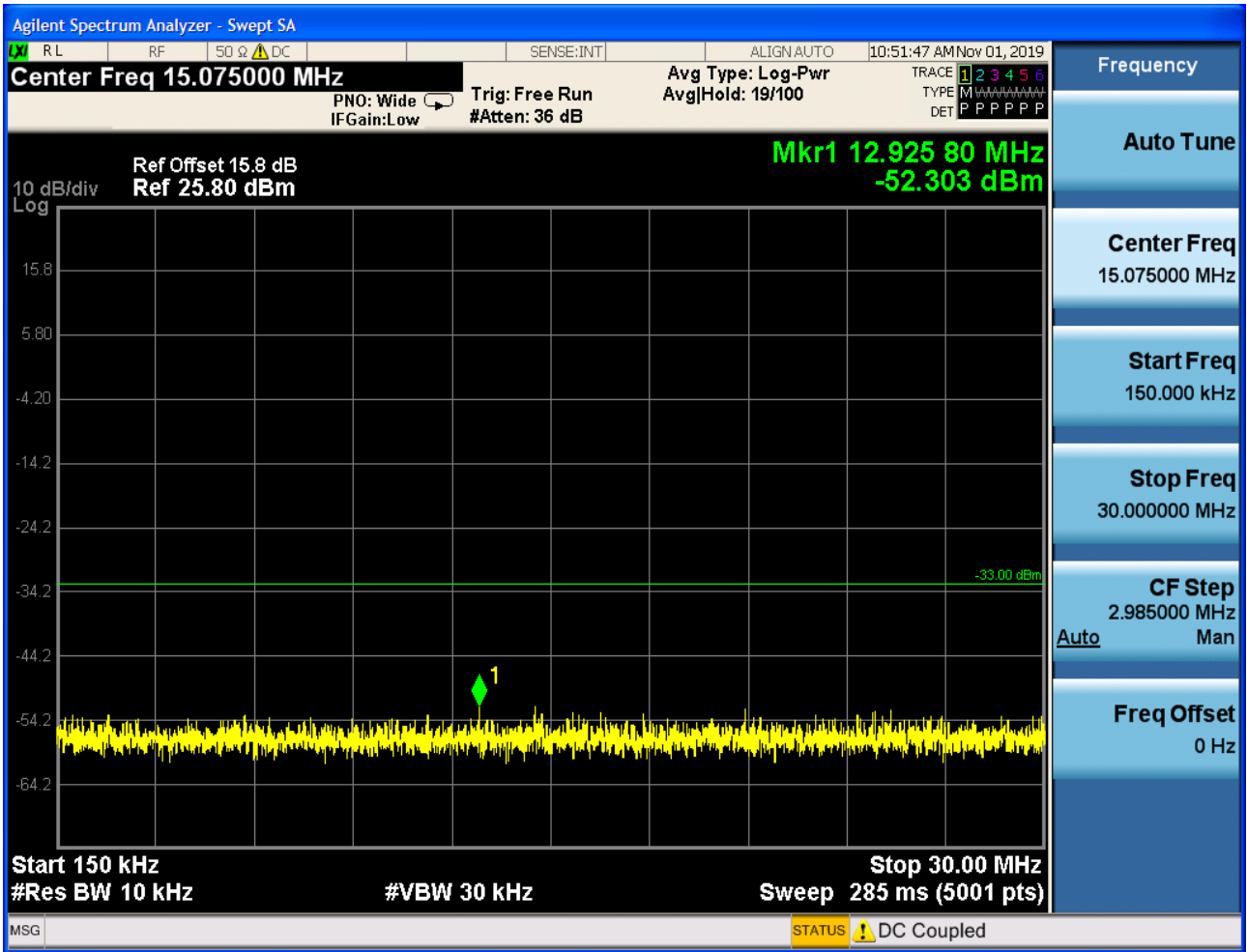


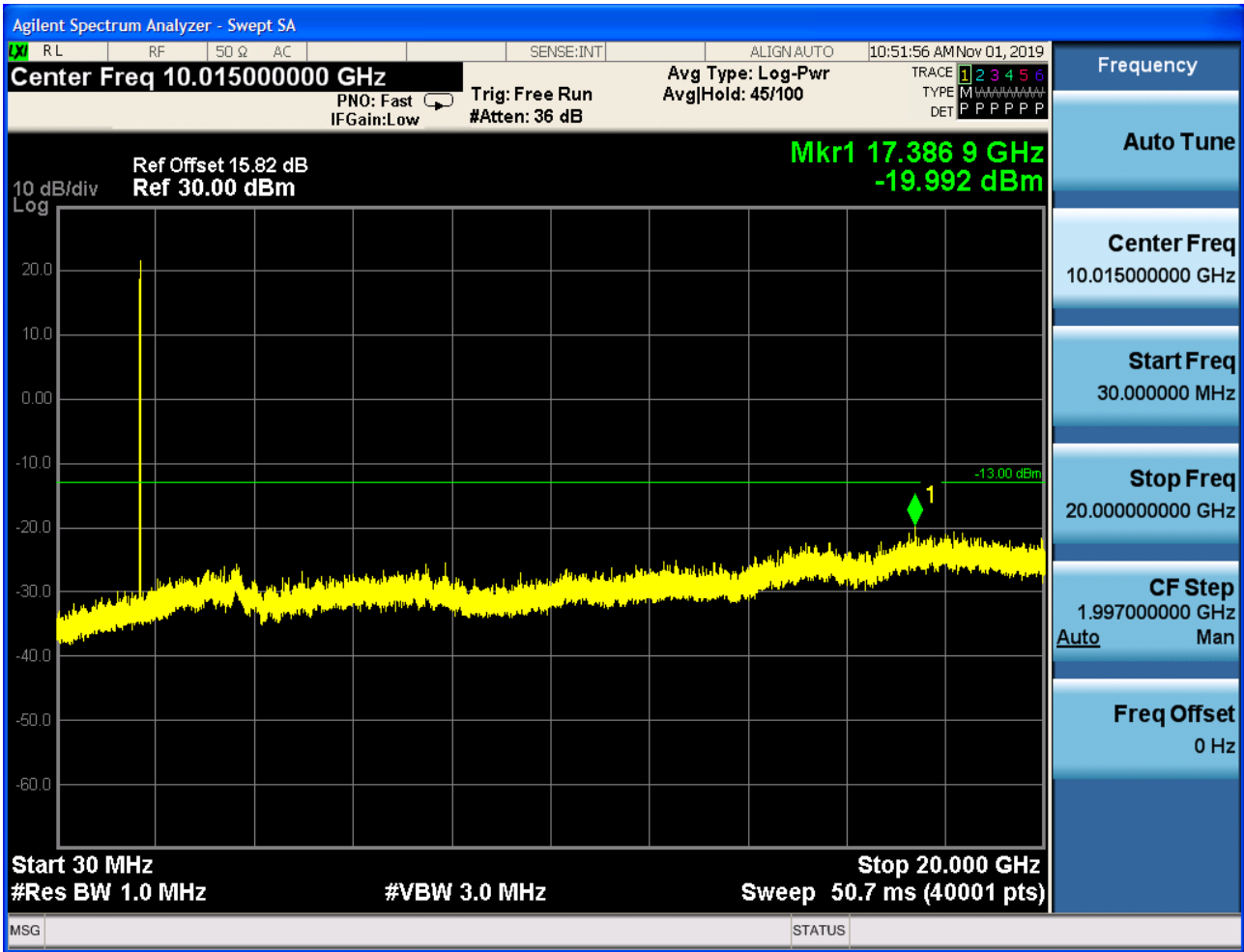
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH

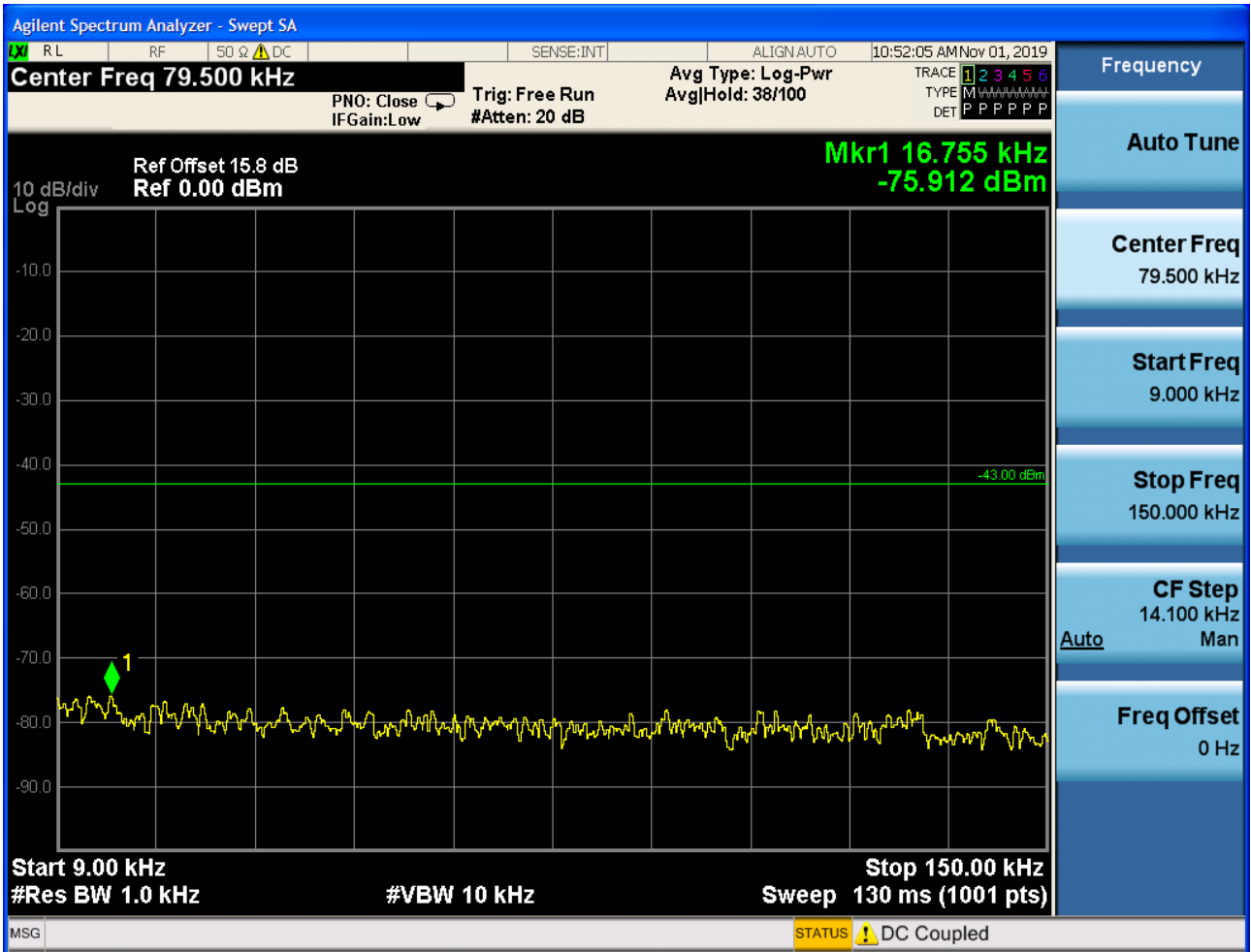


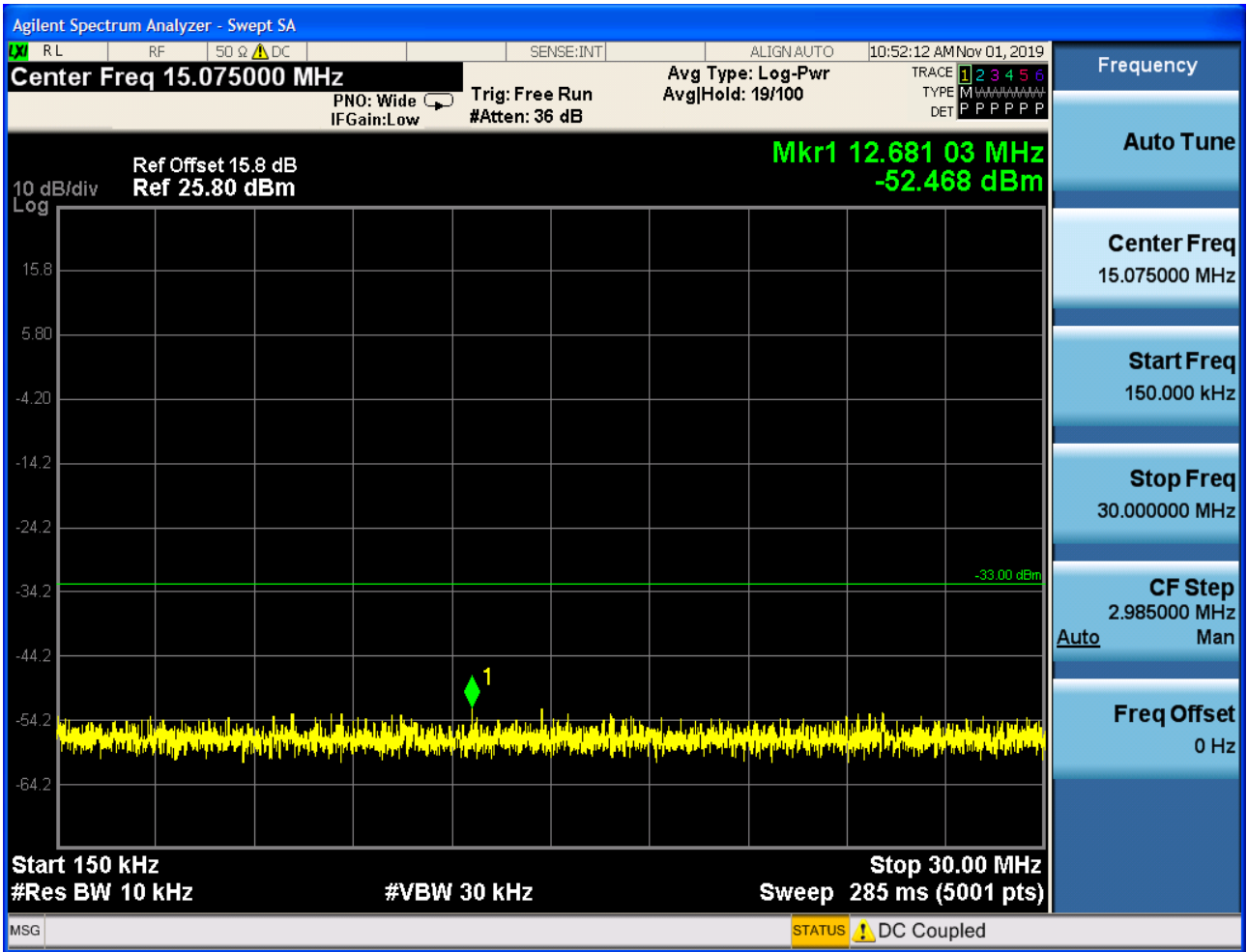


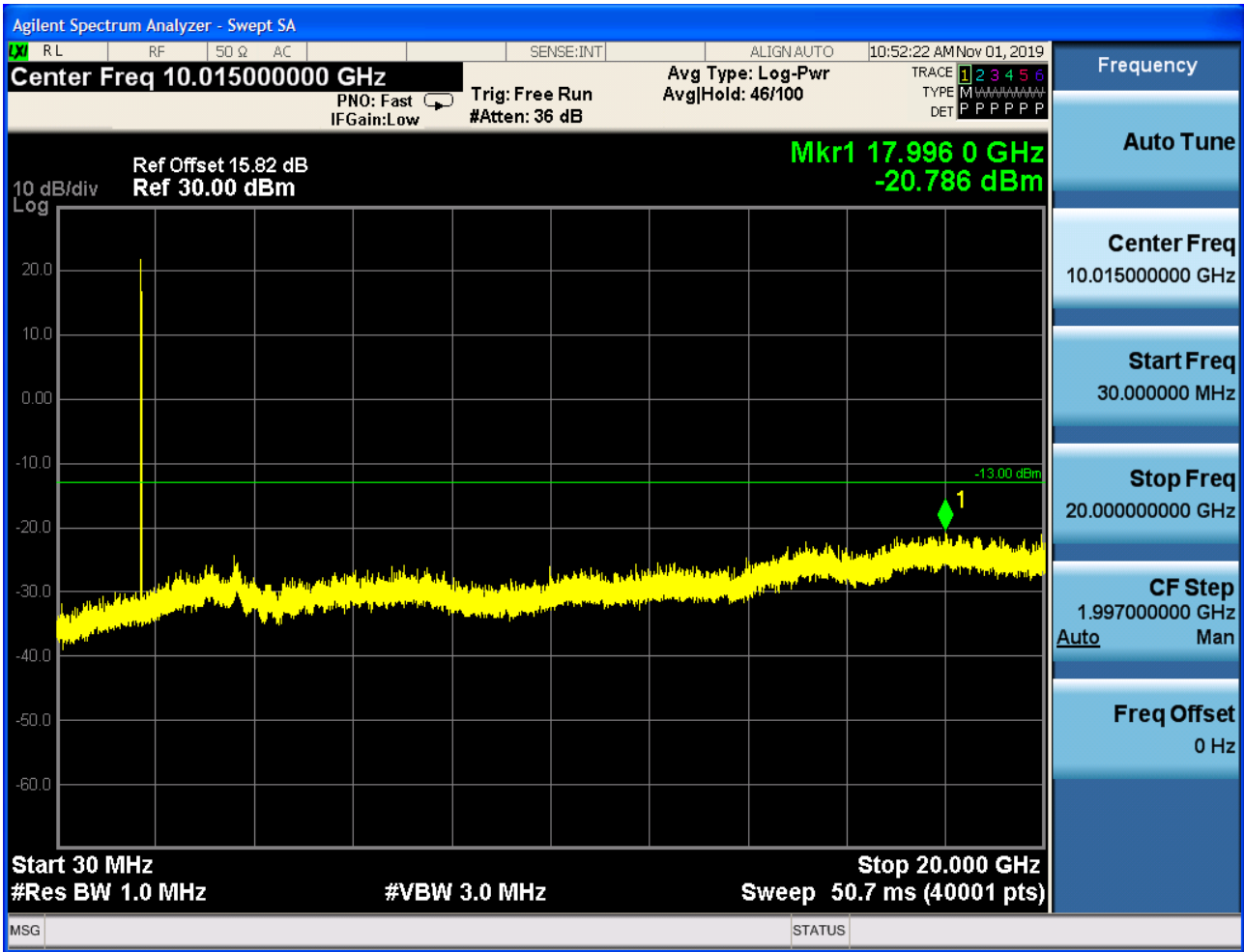




6.1.2.1.2 Test Channel = MCH

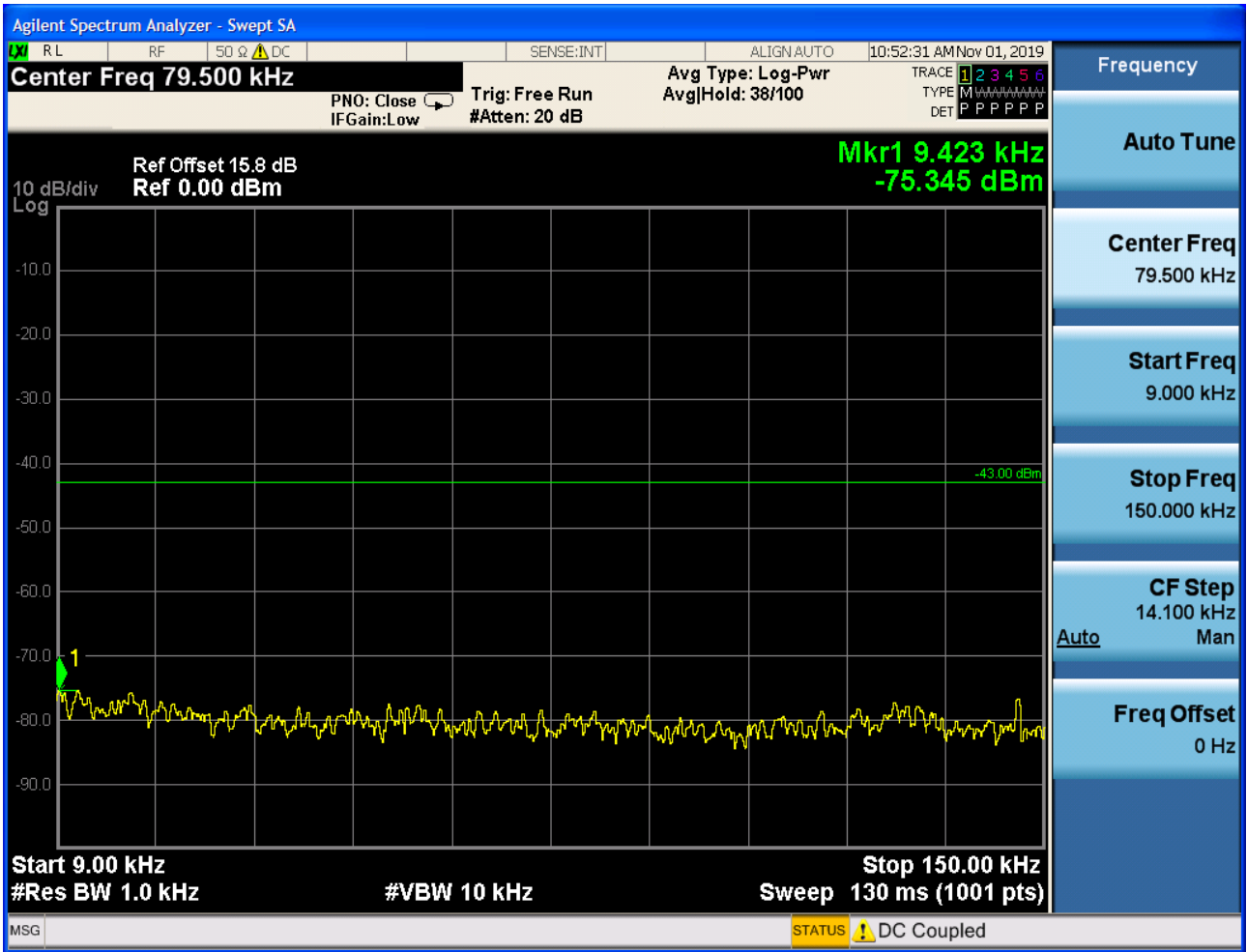


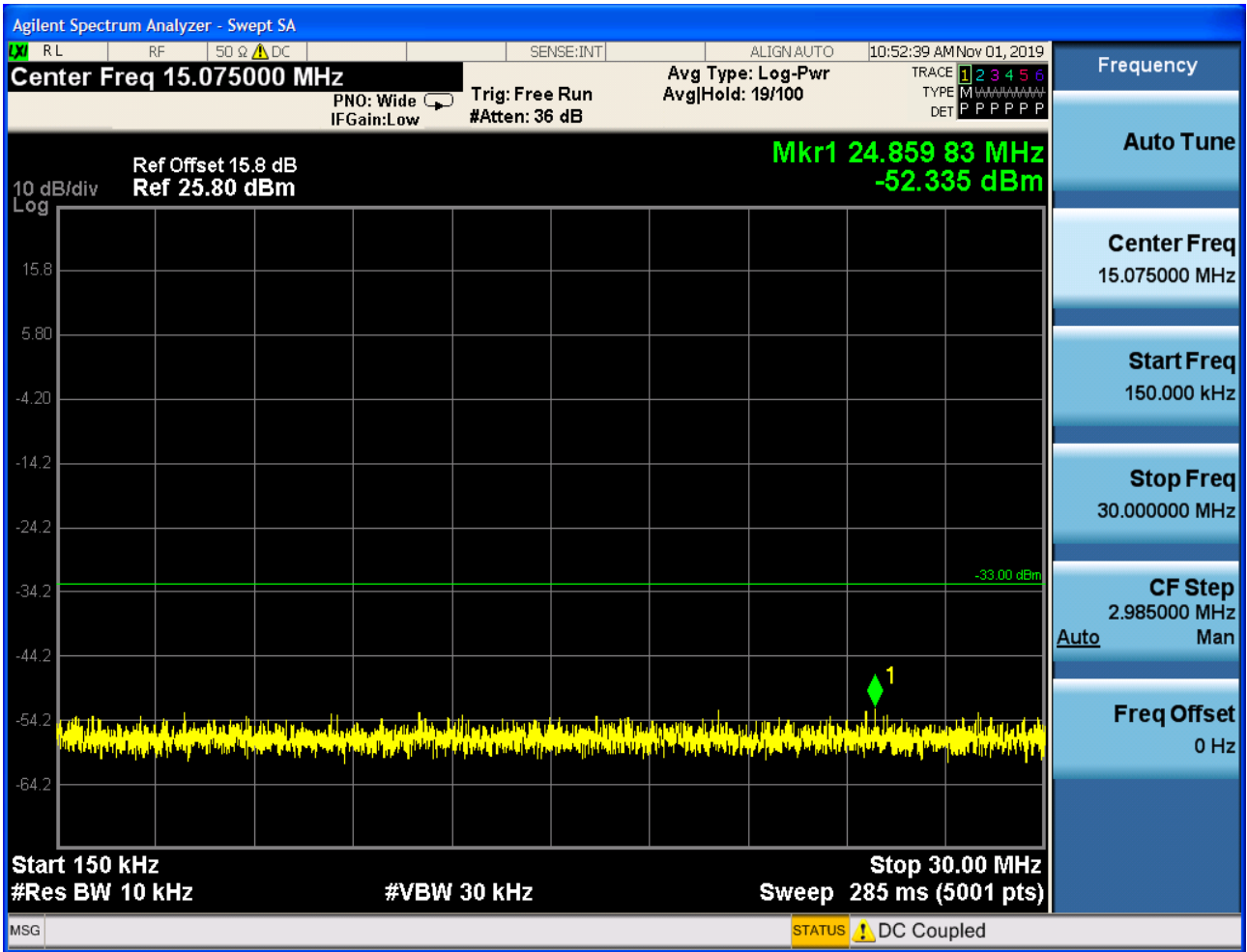


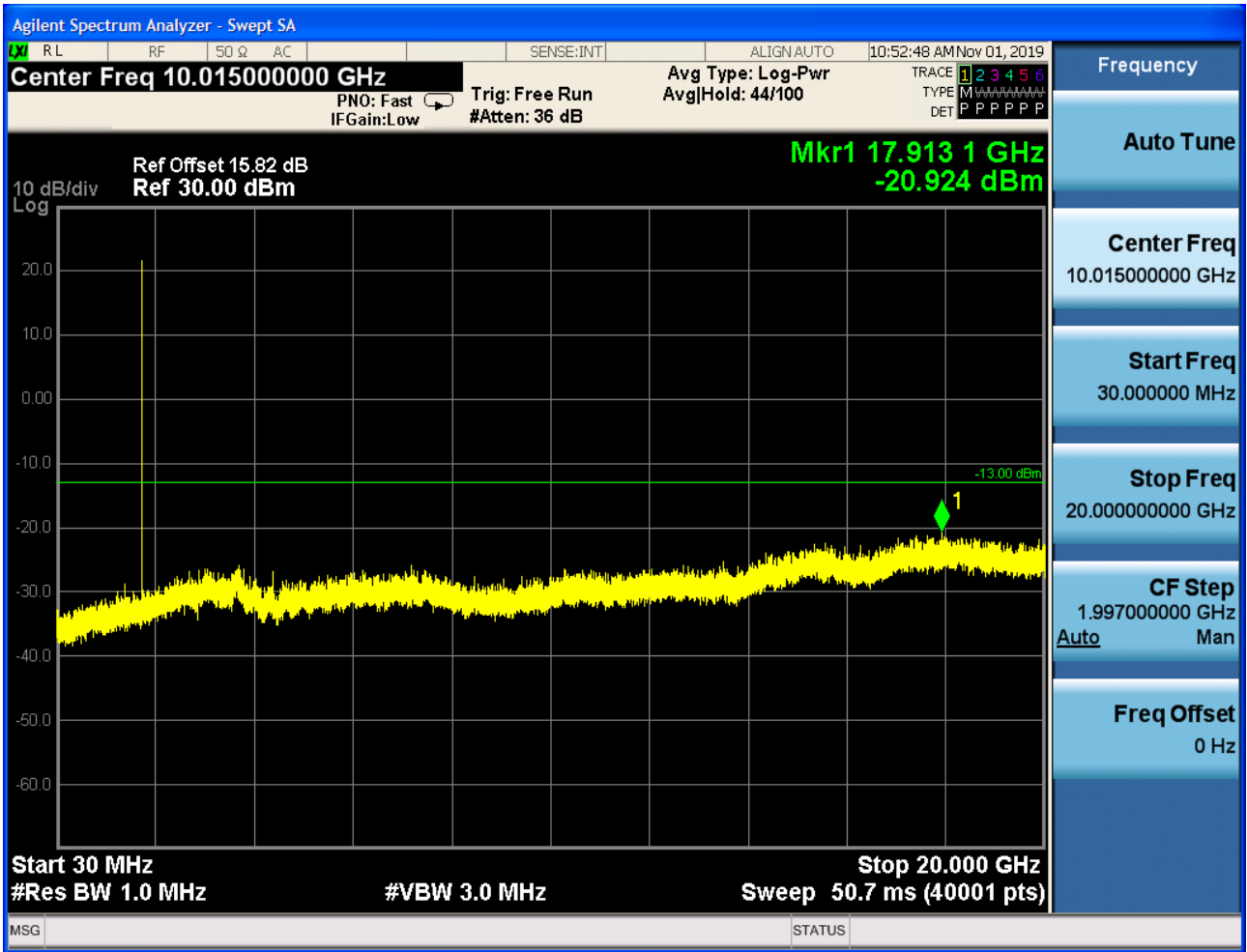




6.1.2.1.3 Test Channel = HCH





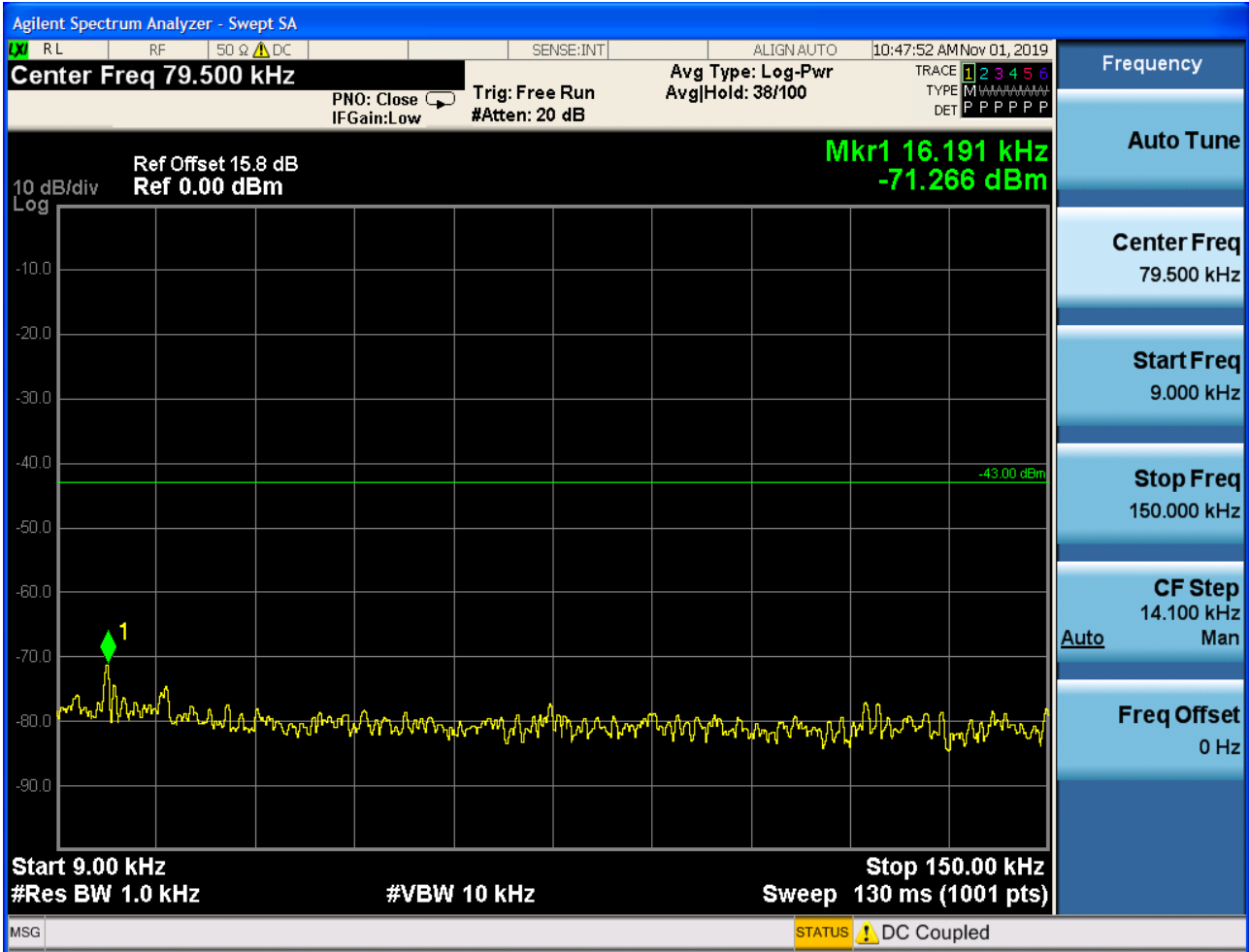


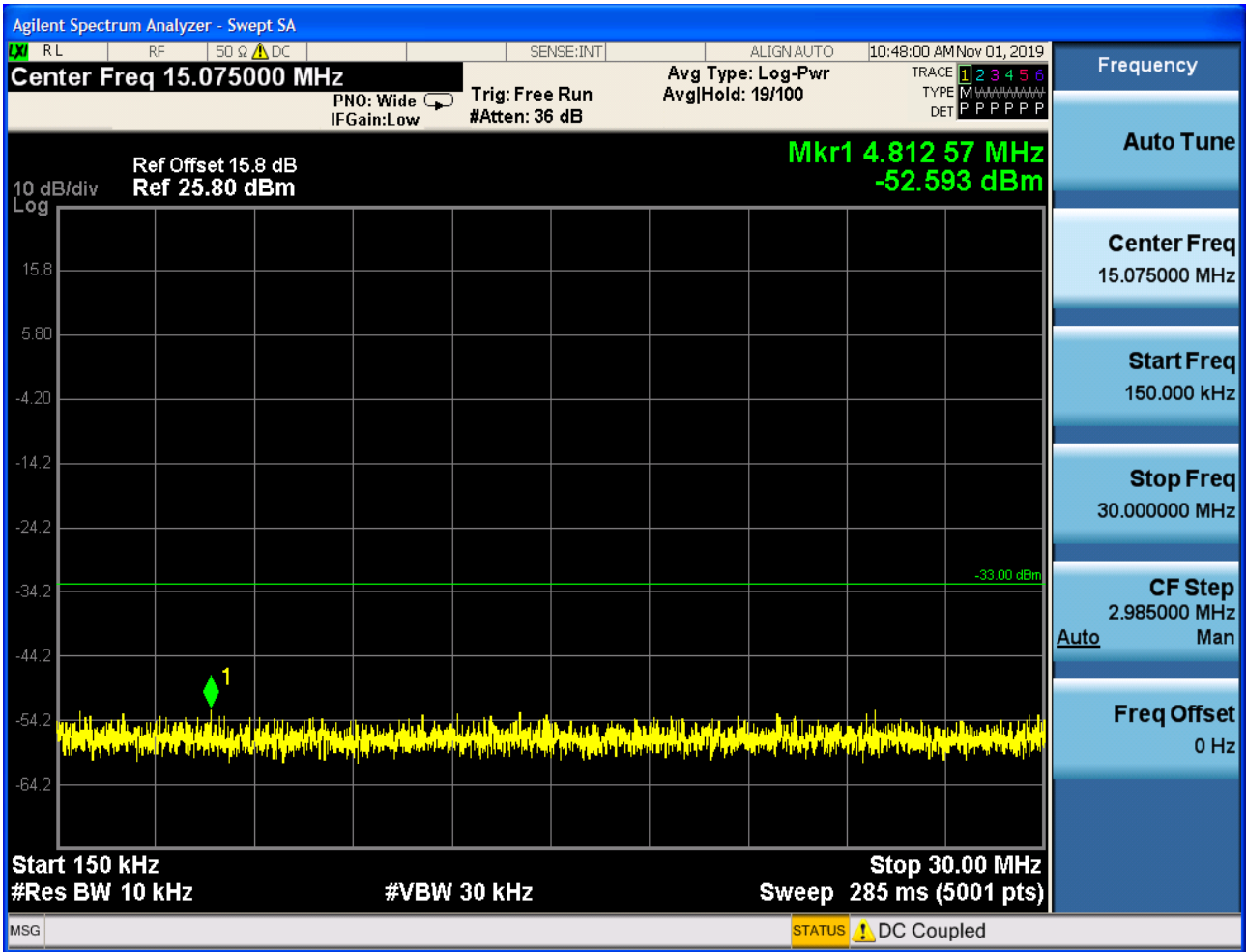


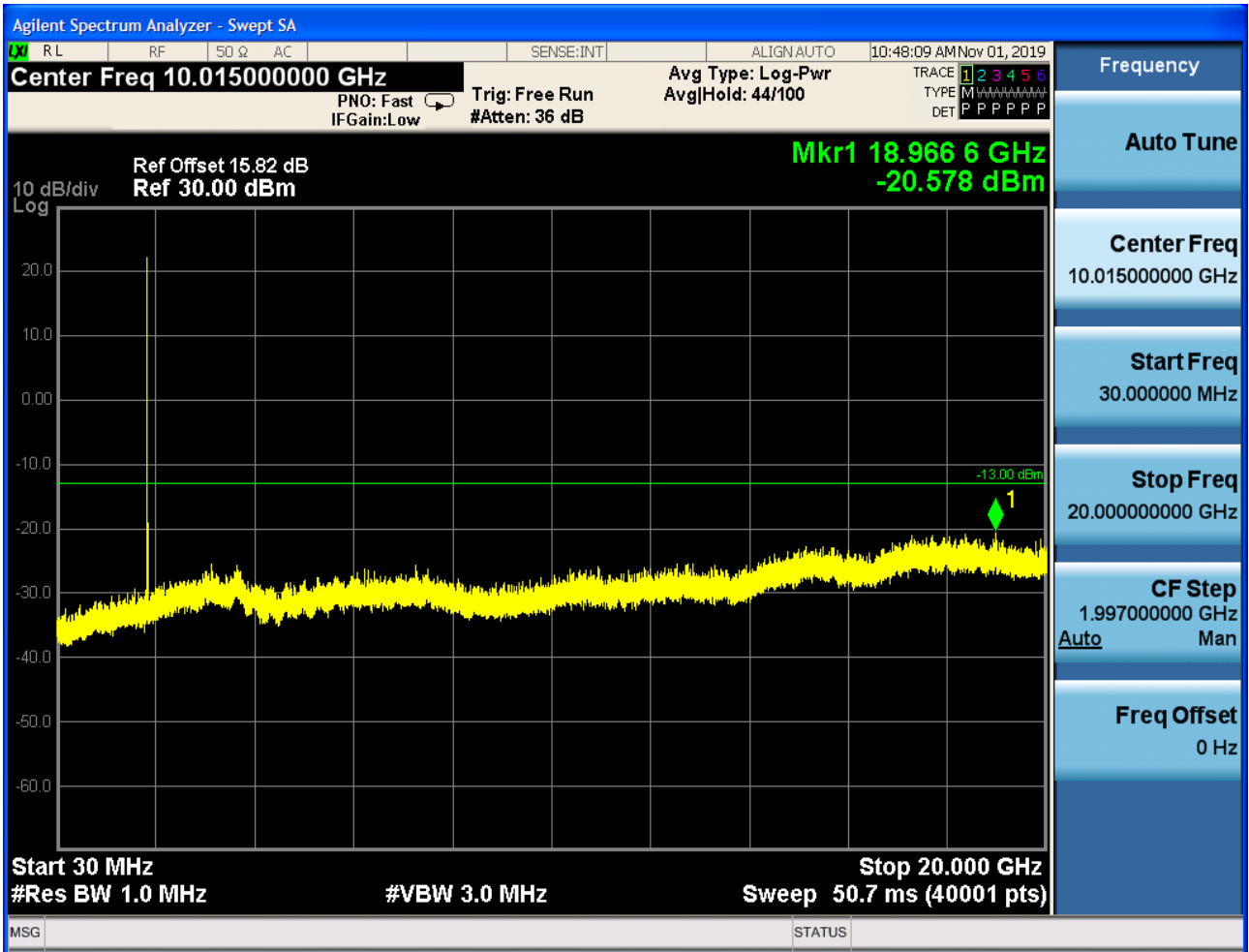
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

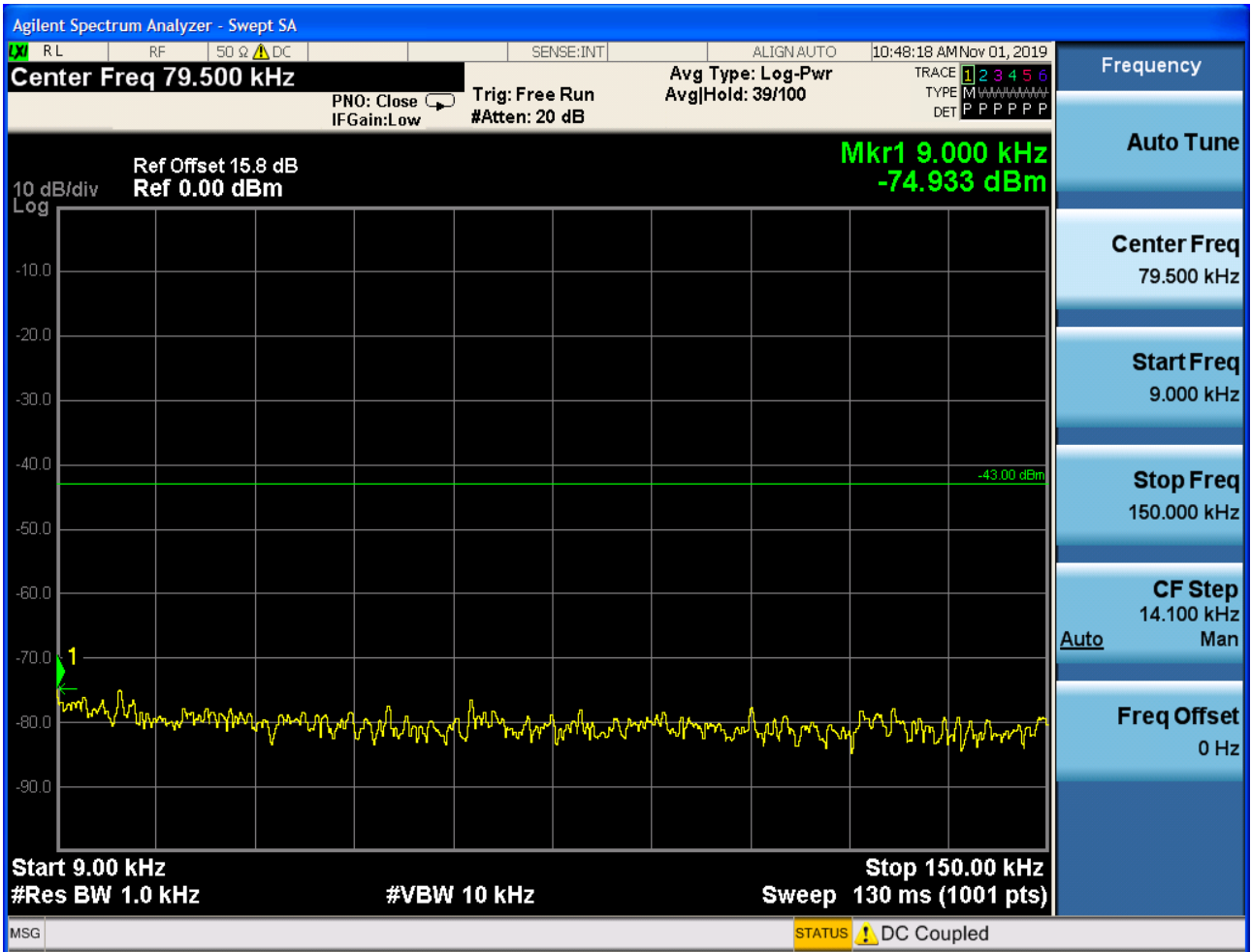


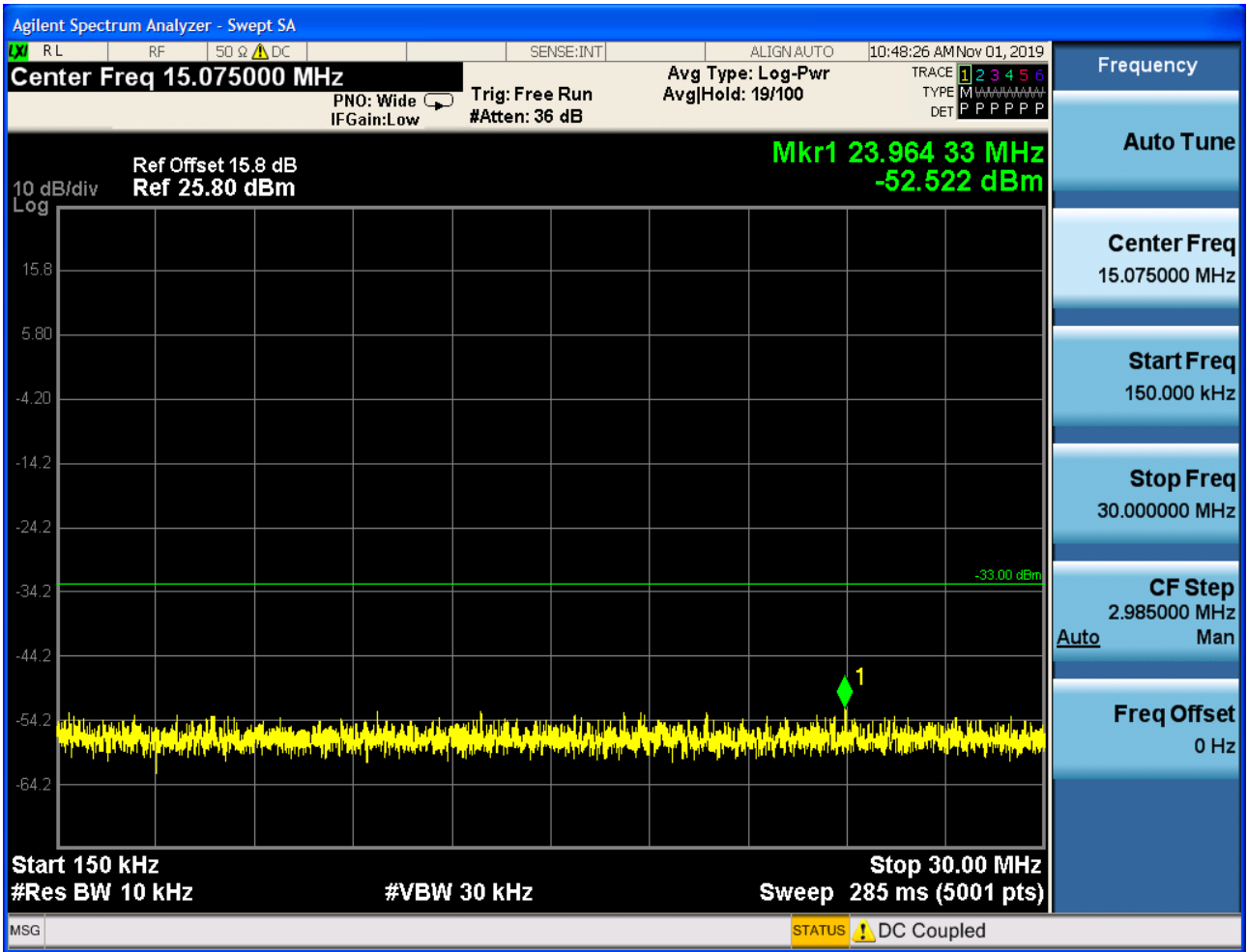


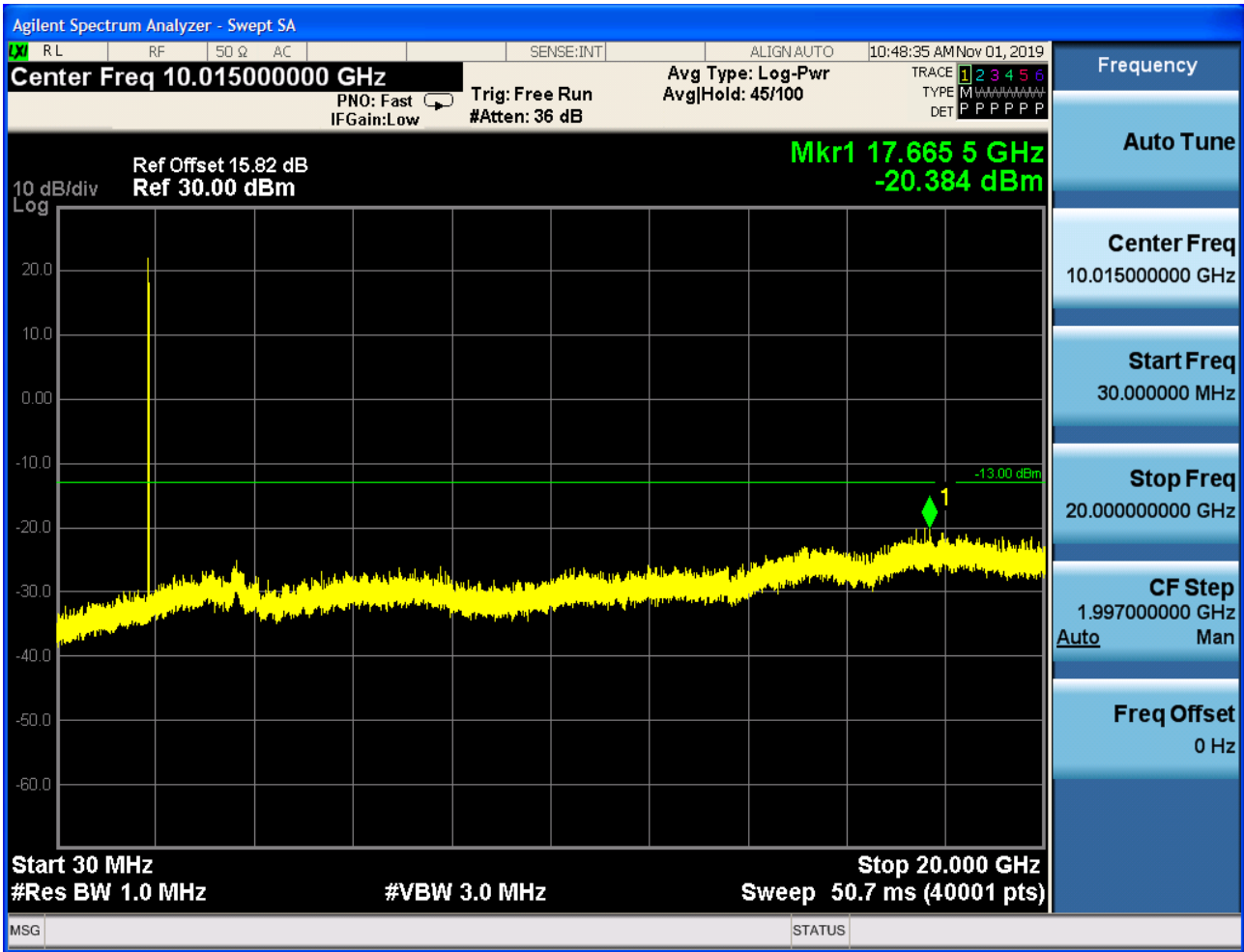




6.1.3.1.2 Test Channel = MCH

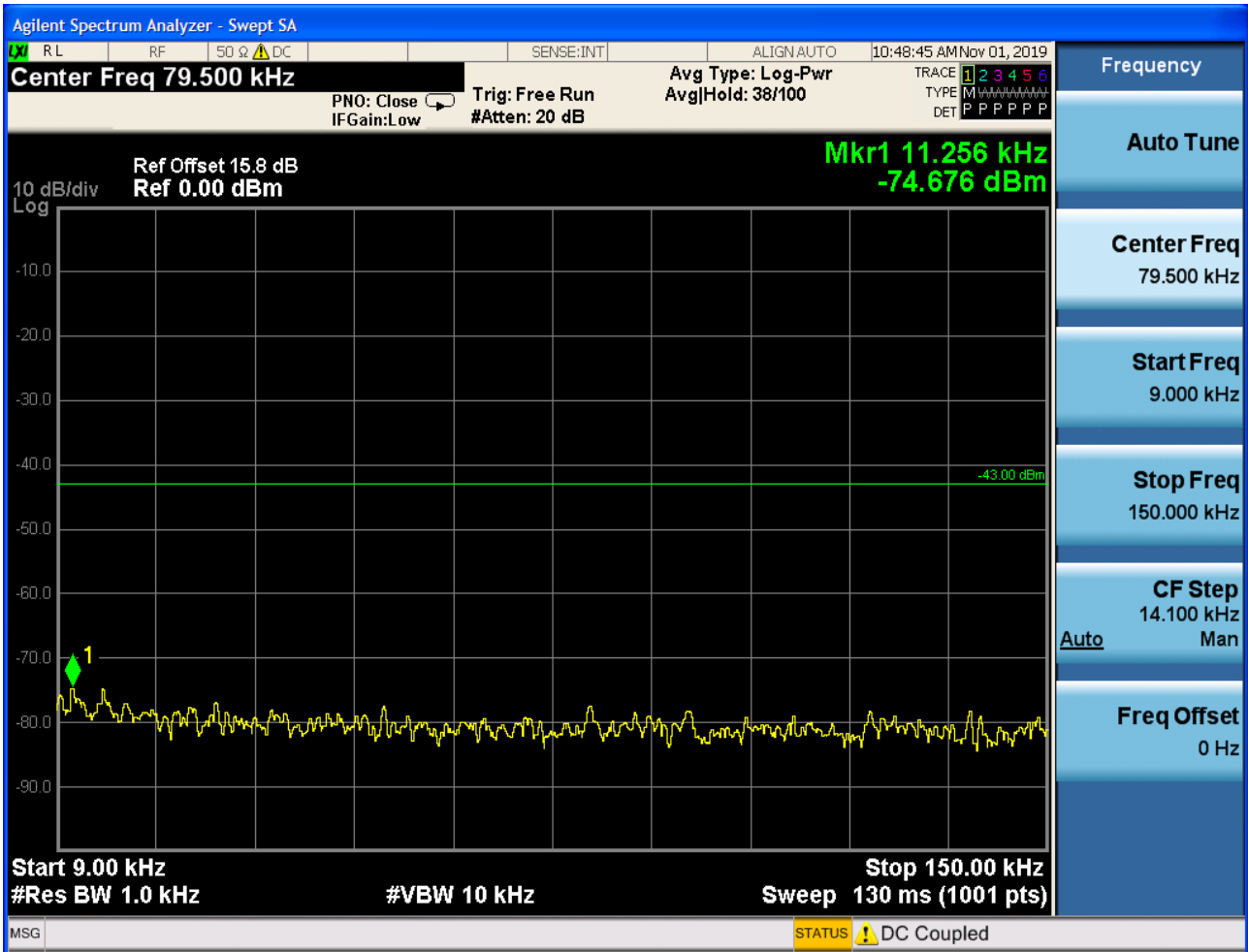


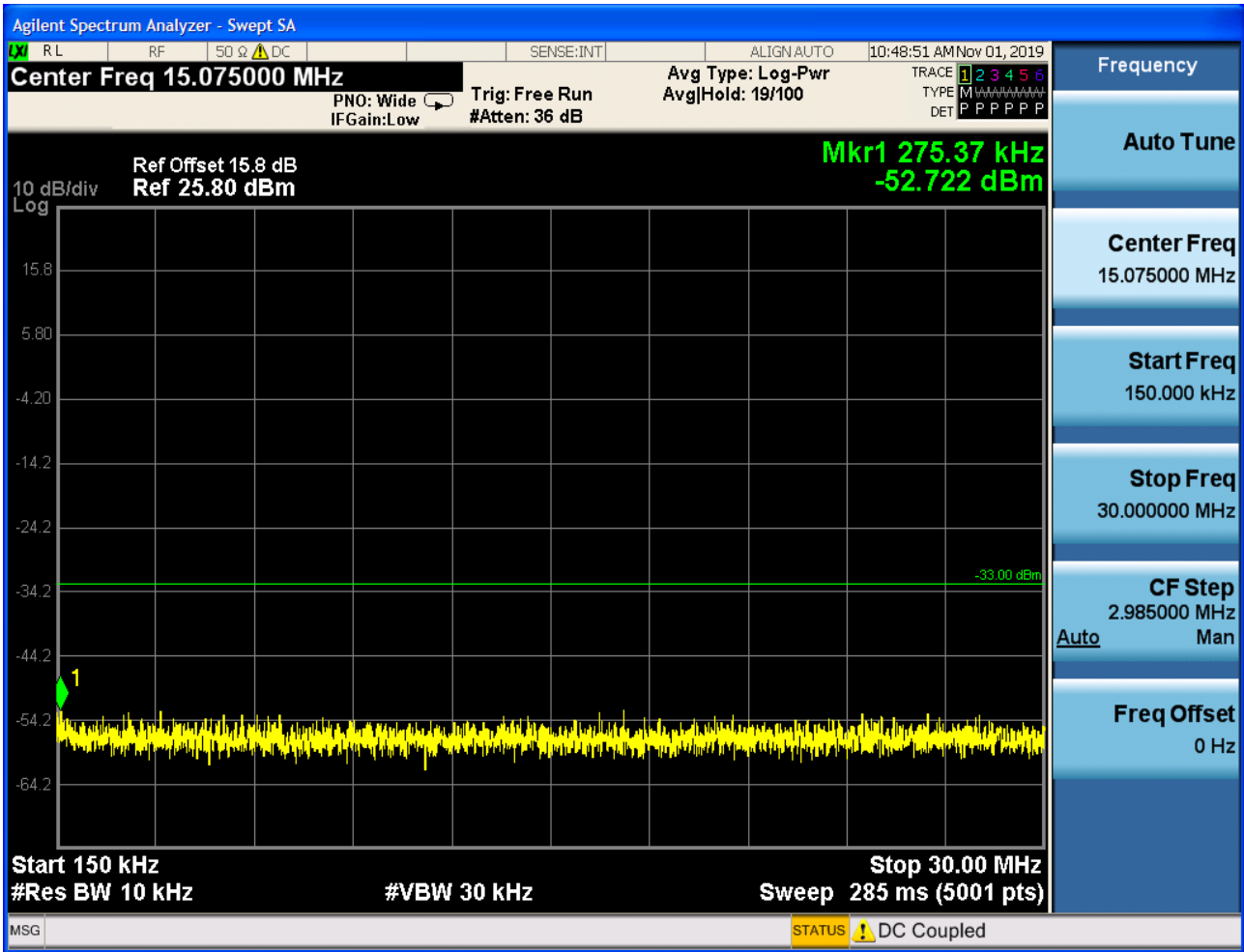


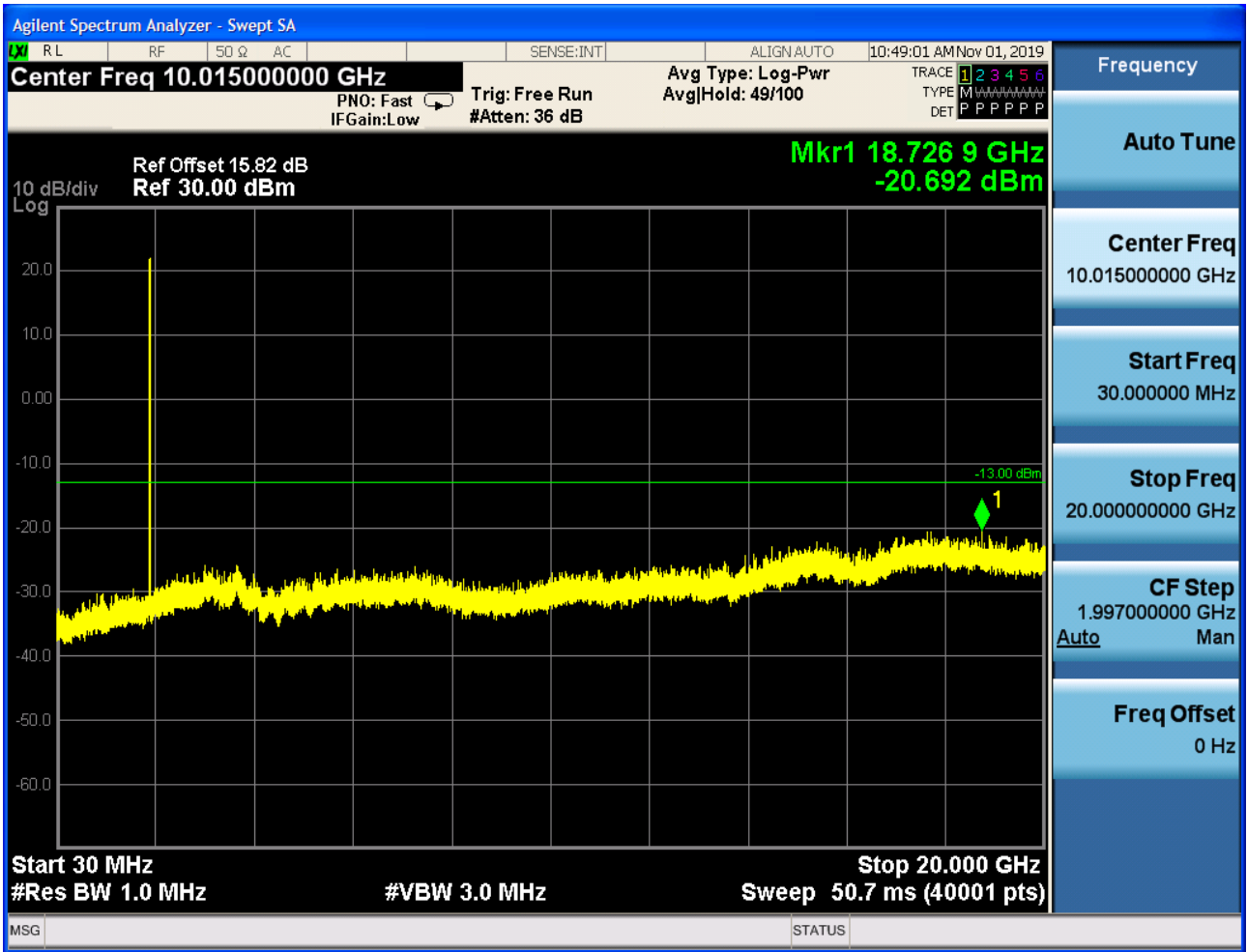




6.1.3.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes, but the data presented below is the worst case.

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

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

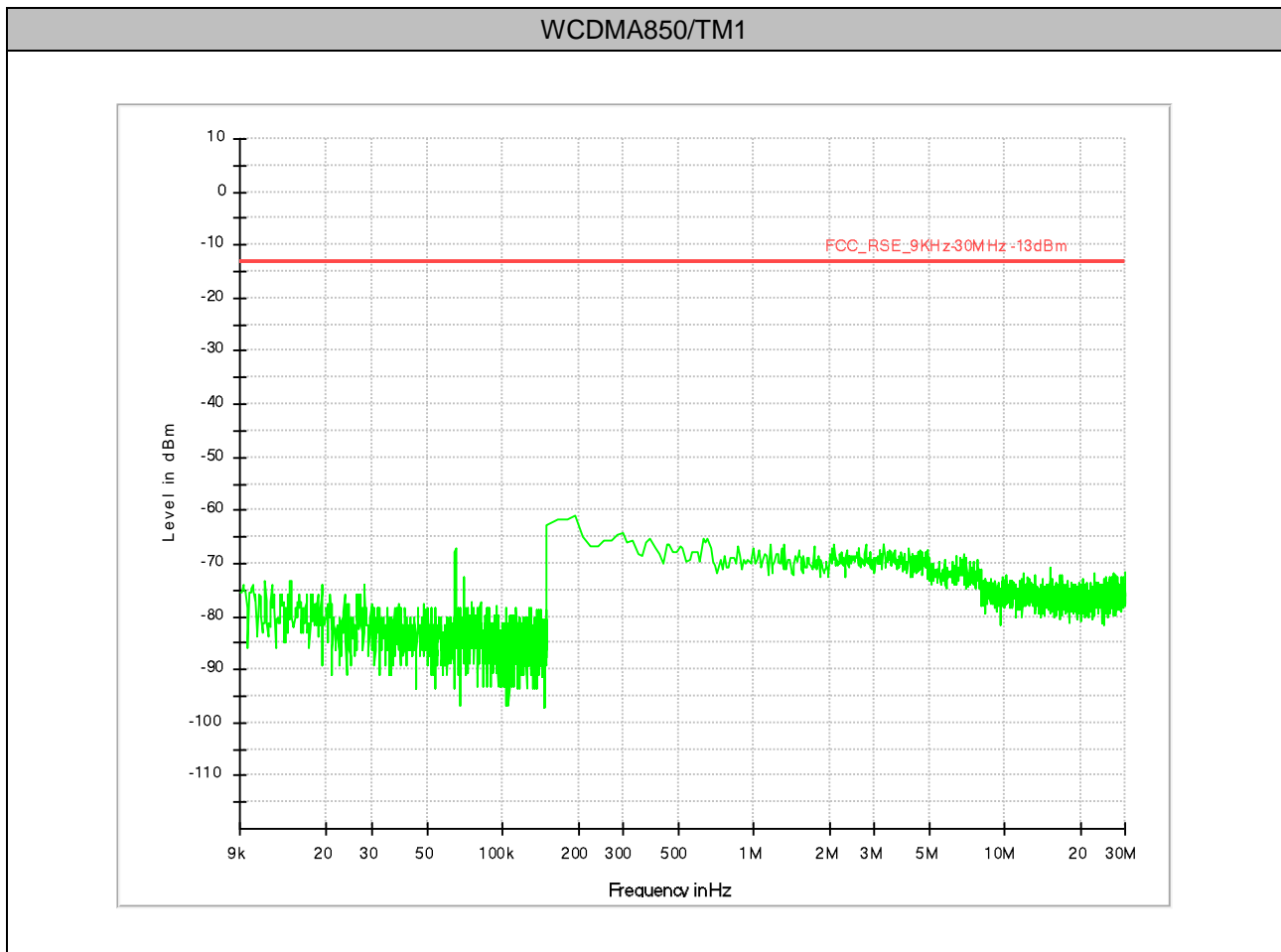
30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

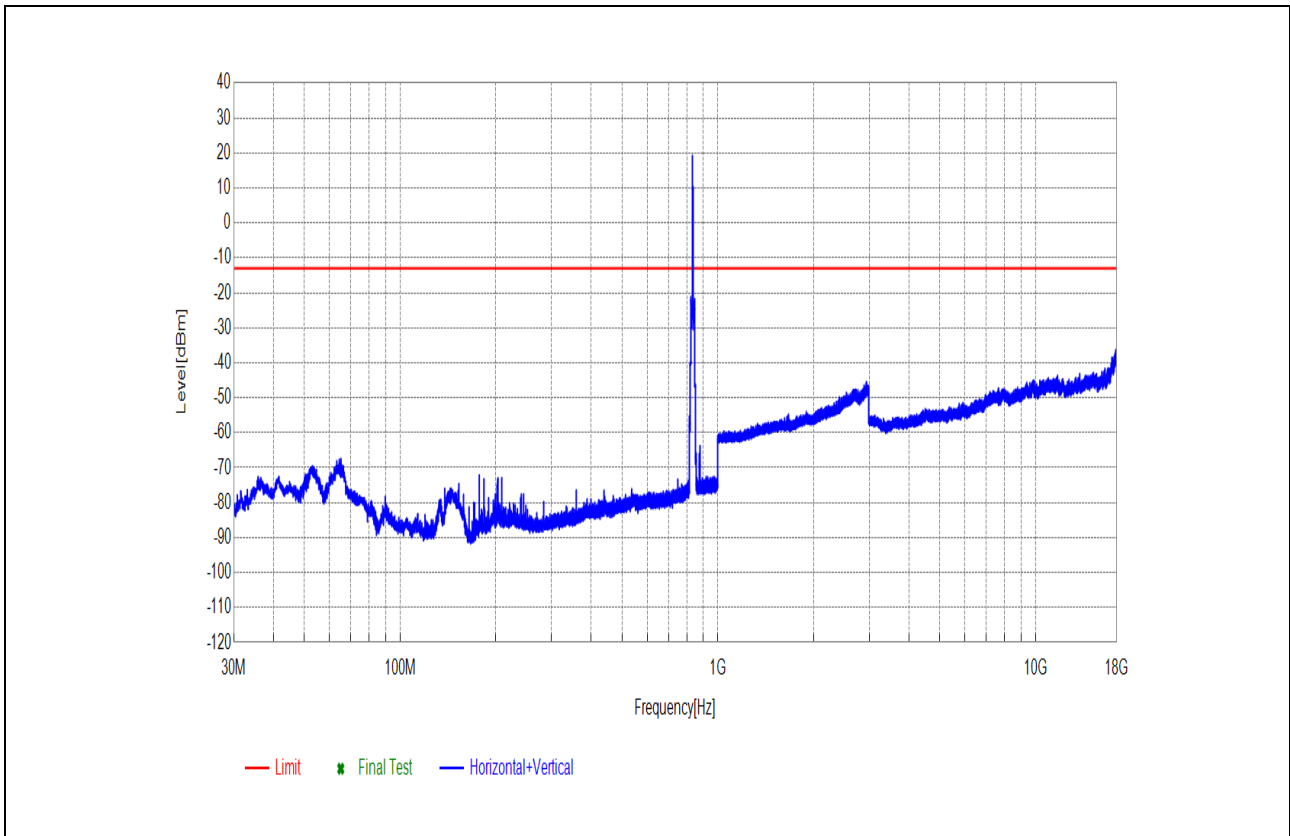
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

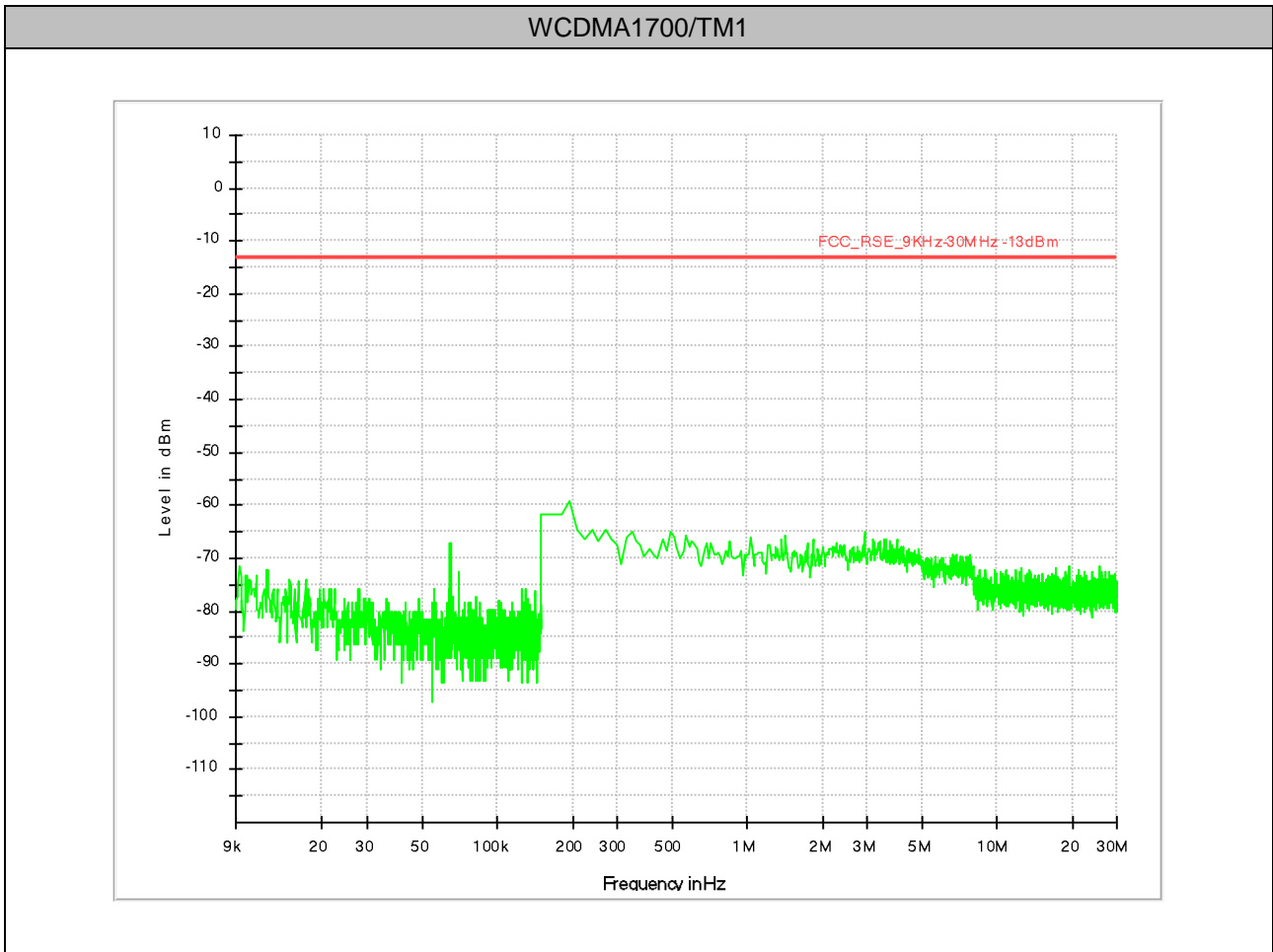
7.1 For UMTS

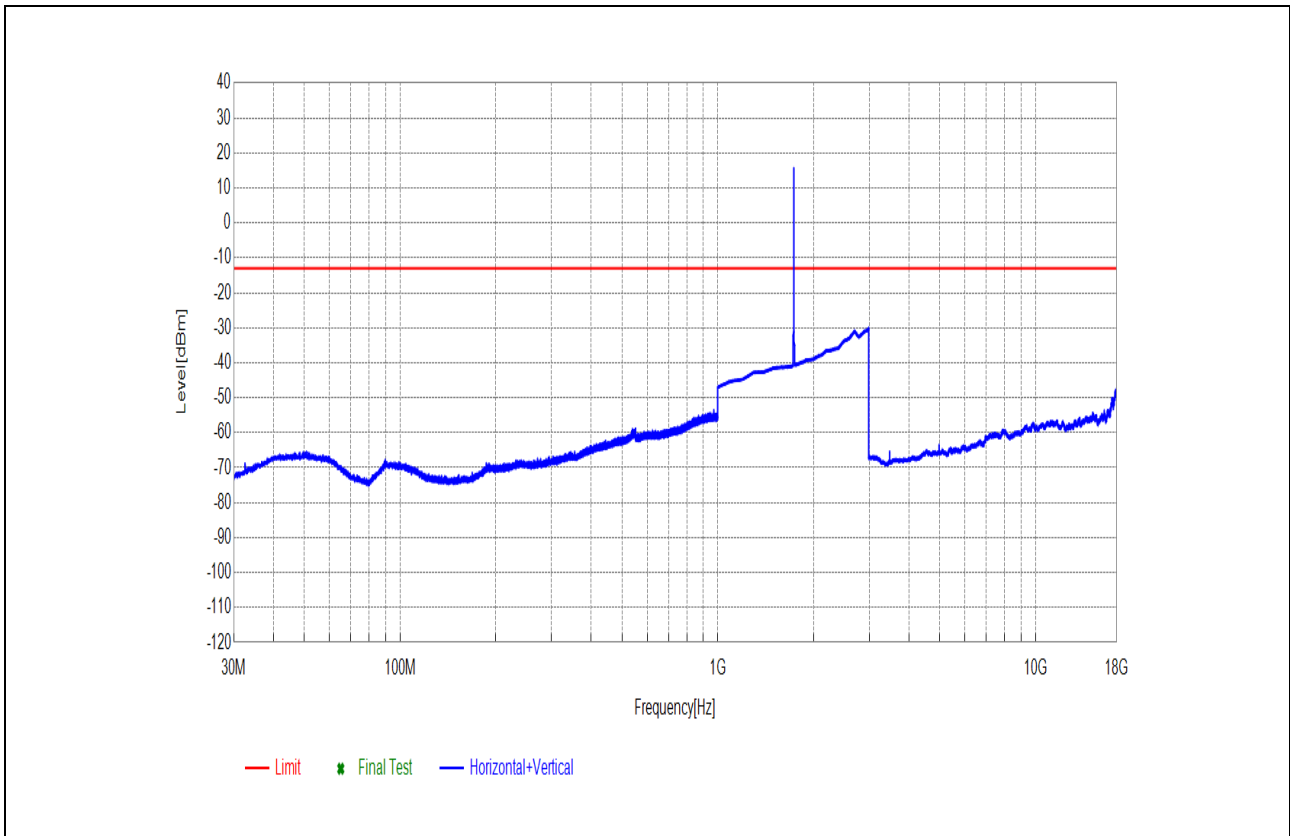
7.1.1 Test Band = WCDMA850



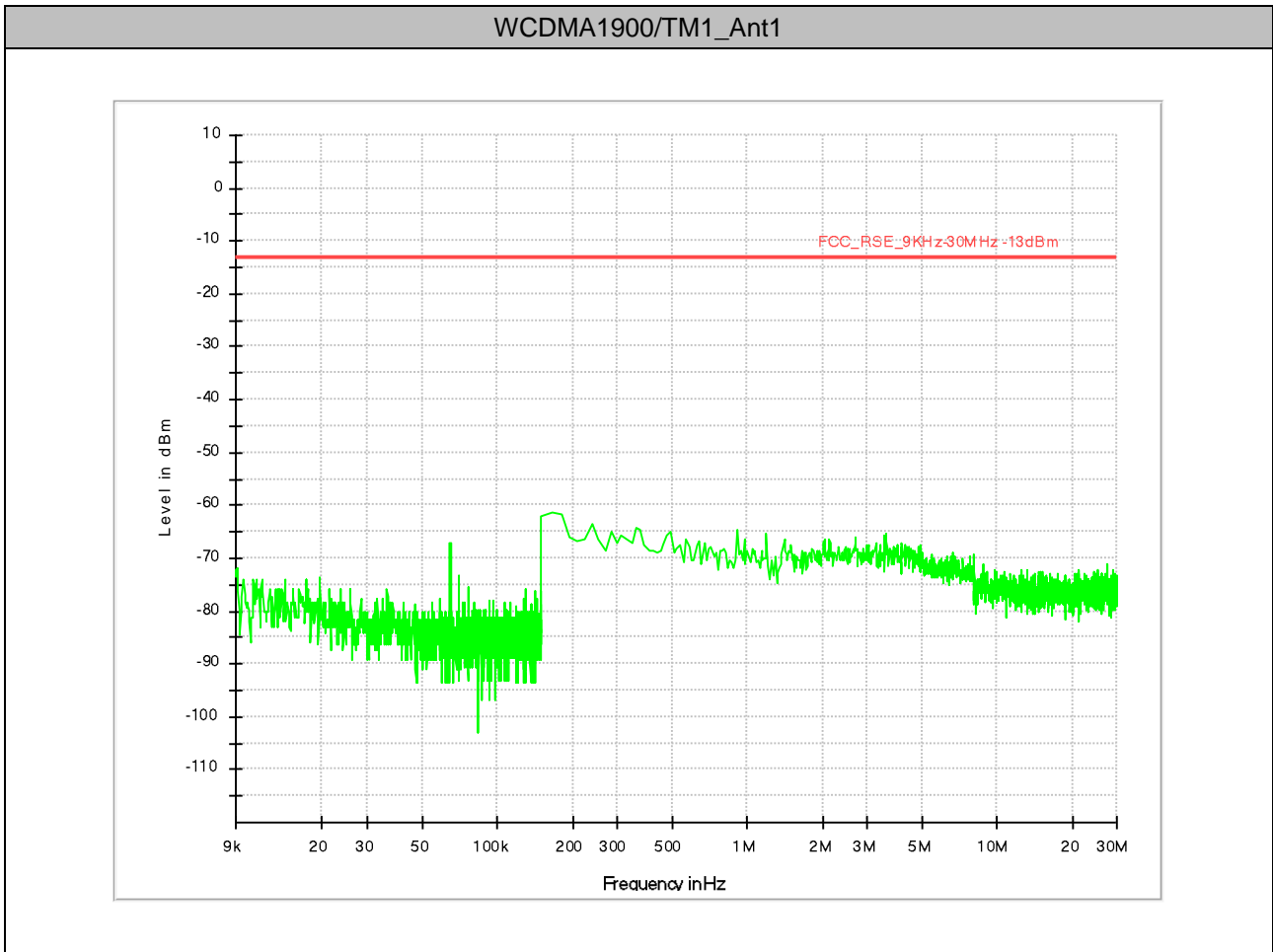


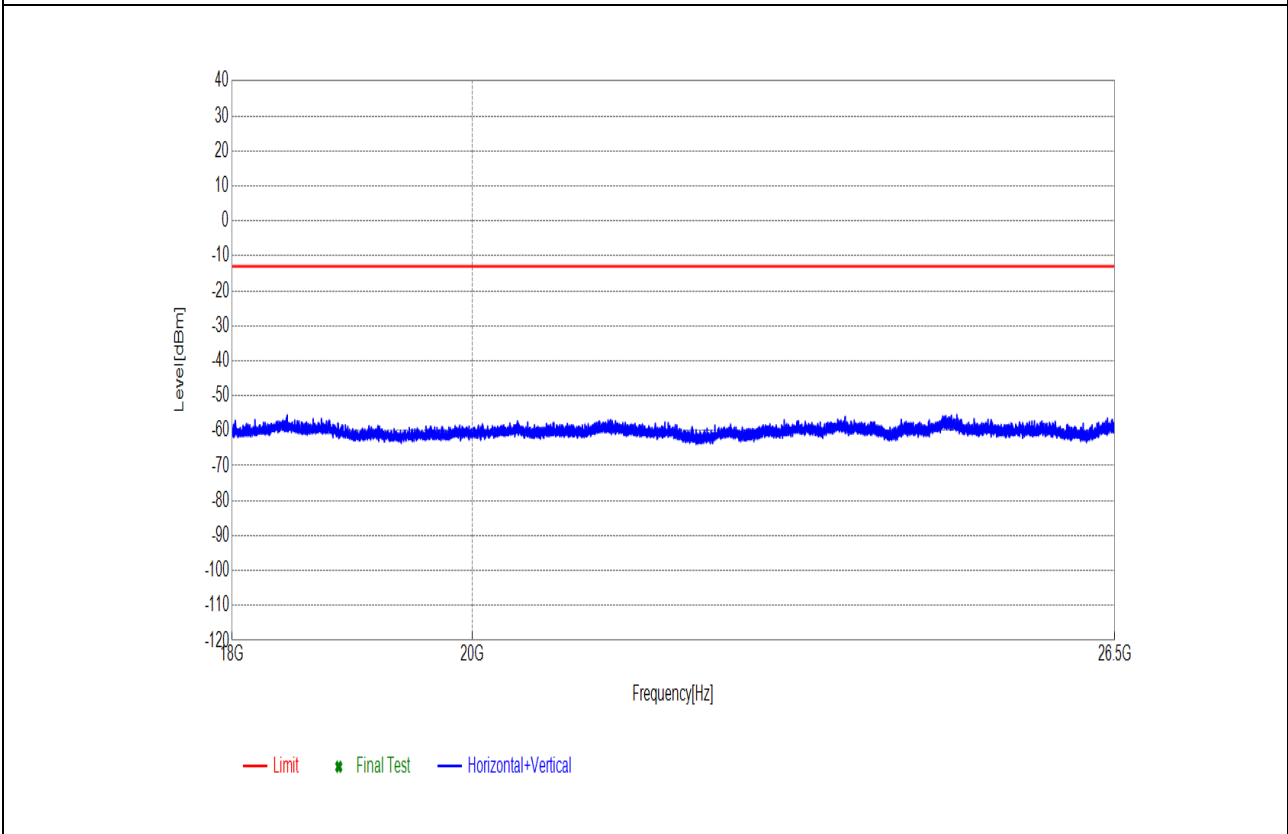
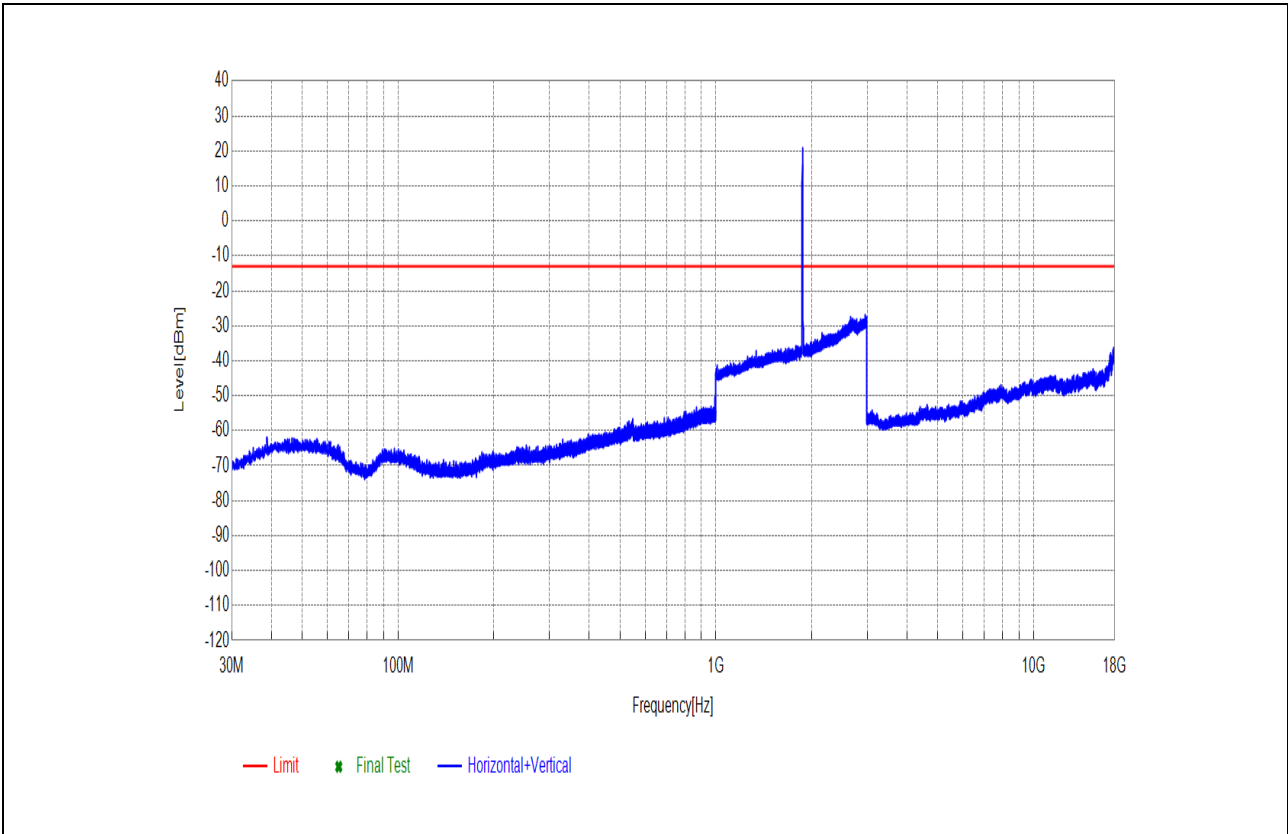
7.1.2 Test Band = WCDMA1700





7.1.3 Test Band = WCDMA1900







8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA850	UMTS/TM1	LCH	TN	VL	-5.65052	-0.00684	PASS
				VN	-1.25170	-0.00151	PASS
				VH	-6.36578	-0.00770	PASS
		MCH	TN	VL	4.22716	0.00505	PASS
				VN	3.64065	0.00435	PASS
				VH	4.31299	0.00516	PASS
		HCH	TN	VL	7.34568	0.00868	PASS
				VN	5.75781	0.00680	PASS
				VH	-0.07868	-0.00009	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-0.21458	-0.00013	PASS
				VN	-0.46492	-0.00027	PASS
				VH	-3.91960	-0.00229	PASS
		MCH	TN	VL	-0.79393	-0.00046	PASS
				VN	4.99964	0.00289	PASS
				VH	-4.86374	-0.00281	PASS
		HCH	TN	VL	3.35455	0.00191	PASS
				VN	2.91824	0.00167	PASS
				VH	0.37909	0.00022	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-3.19719	-0.00173	PASS
				VN	4.18425	0.00226	PASS
				VH	0.97275	0.00053	PASS
		MCH	TN	VL	-1.60932	-0.00086	PASS
				VN	3.71933	0.00198	PASS
				VH	-4.44889	-0.00237	PASS
		HCH	TN	VL	1.57356	-0.00173	PASS
				VN	4.24862	0.00226	PASS
				VH	-2.79665	0.00053	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
WCDMA850	UMTS/TM1	LCH	VN	-30	-3.35455	-0.00406	PASS
				-20	-0.31471	-0.00038	PASS
				-10	4.11272	0.00498	PASS
				0	-1.31607	-0.00159	PASS
				10	-4.06980	-0.00492	PASS
				20	-1.25170	-0.00151	PASS
				30	-3.64065	-0.00441	PASS
				40	0.79393	0.00096	PASS
				50	-4.77076	-0.00577	PASS
		MCH	VN	-30	-10.02789	-0.01199	PASS
				-20	3.32594	0.00398	PASS
				-10	5.57899	0.00667	PASS
				0	-3.11136	-0.00372	PASS
				10	4.32730	0.00517	PASS
				20	3.64065	0.00435	PASS
				30	7.71046	0.00922	PASS
				40	2.52485	0.00302	PASS
				50	-0.86546	-0.00103	PASS
		HCH	VN	-30	3.56913	0.00422	PASS
				-20	3.54052	0.00418	PASS
				-10	6.64473	0.00785	PASS
				0	5.84364	0.00690	PASS
				10	-1.35183	-0.00160	PASS
				20	5.75781	0.00680	PASS
				30	6.50167	0.00768	PASS
				40	-1.25885	-0.00149	PASS
				50	9.07659	0.01072	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	0.00000	0.00000	PASS
				-20	-0.04292	-0.00003	PASS
				-10	-5.67198	-0.00331	PASS
				0	1.85966	0.00109	PASS
				10	-5.02109	-0.00293	PASS
				20	-0.46492	-0.00027	PASS
				30	1.12295	0.00066	PASS
				40	-0.46492	-0.00027	PASS
				50	-1.87397	-0.00109	PASS
		MCH	VN	-30	-2.31028	-0.00133	PASS
				-20	-3.66926	-0.00212	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict				
				-10	-2.84672	-0.00164	PASS				
				0	10.61440	0.00613	PASS				
				10	0.41485	0.00024	PASS				
				20	4.99964	0.00289	PASS				
				30	5.55754	0.00321	PASS				
				40	4.99964	0.00289	PASS				
				50	-6.08683	-0.00351	PASS				
		HCH	VN	-30	1.10865	0.00063	PASS				
				-20	9.36985	0.00535	PASS				
				-10	2.62499	0.00150	PASS				
				0	-10.73599	-0.00613	PASS				
				10	1.97411	0.00113	PASS				
				20	2.91824	0.00167	PASS				
				30	6.08683	0.00347	PASS				
				40	4.83513	0.00276	PASS				
				50	-8.87632	-0.00506	PASS				
				WCDMA1900	UMTS/TM1	LCH	VN	-30	2.81811	0.00152	PASS
								-20	1.98126	0.00107	PASS
-10	-5.34296	-0.00288	PASS								
0	-5.61476	-0.00303	PASS								
10	-8.98361	-0.00485	PASS								
20	4.18425	0.00226	PASS								
30	1.34468	0.00073	PASS								
40	-3.66926	-0.00198	PASS								
50	-1.36614	-0.00074	PASS								
MCH	VN	-30	2.36034			0.00126	PASS				
		-20	-3.96967			-0.00211	PASS				
		-10	-0.33617			-0.00018	PASS				
		0	-5.55039			-0.00295	PASS				
		10	-3.83377			-0.00204	PASS				
		20	3.71933			0.00198	PASS				
		30	3.04699			0.00162	PASS				
		40	3.72648			0.00198	PASS				
		50	0.85115			0.00045	PASS				
HCH	VN	-30	6.21557			0.00326	PASS				
		-20	-1.78099			-0.00093	PASS				
		-10	-9.84907			-0.00516	PASS				
		0	13.70430			0.00718	PASS				
		10	3.19004			0.00167	PASS				
		20	4.24862			0.00223	PASS				



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	2.56062	0.00134	PASS
				40	-4.84943	-0.00254	PASS
				50	-1.88827	-0.00099	PASS

END