

Appendix for test report

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
WCDMA850	UMTS/TM1	LCH	23.50	20.35	38.5	PASS
		MCH	24.10	20.95	38.5	PASS
		HCH	24.41	21.26	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	22.90	21.90	30	PASS
		MCH	22.92	21.92	30	PASS
		HCH	23.10	22.10	30	PASS
WCDMA1900	UMTS/TM1	LCH	22.98	19.88	33	PASS
		MCH	23.42	20.32	33	PASS
		HCH	23.04	19.94	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:

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

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

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

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
WCDMA850	UMTS/TM1	LCH	2.890	13	PASS
		MCH	2.880	13	PASS
		HCH	2.690	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.820	13	PASS
		MCH	3.020	13	PASS
		HCH	2.860	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.780	13	PASS
		MCH	2.830	13	PASS
		HCH	2.900	13	PASS

3Appendix_C: Modulation Characteristics

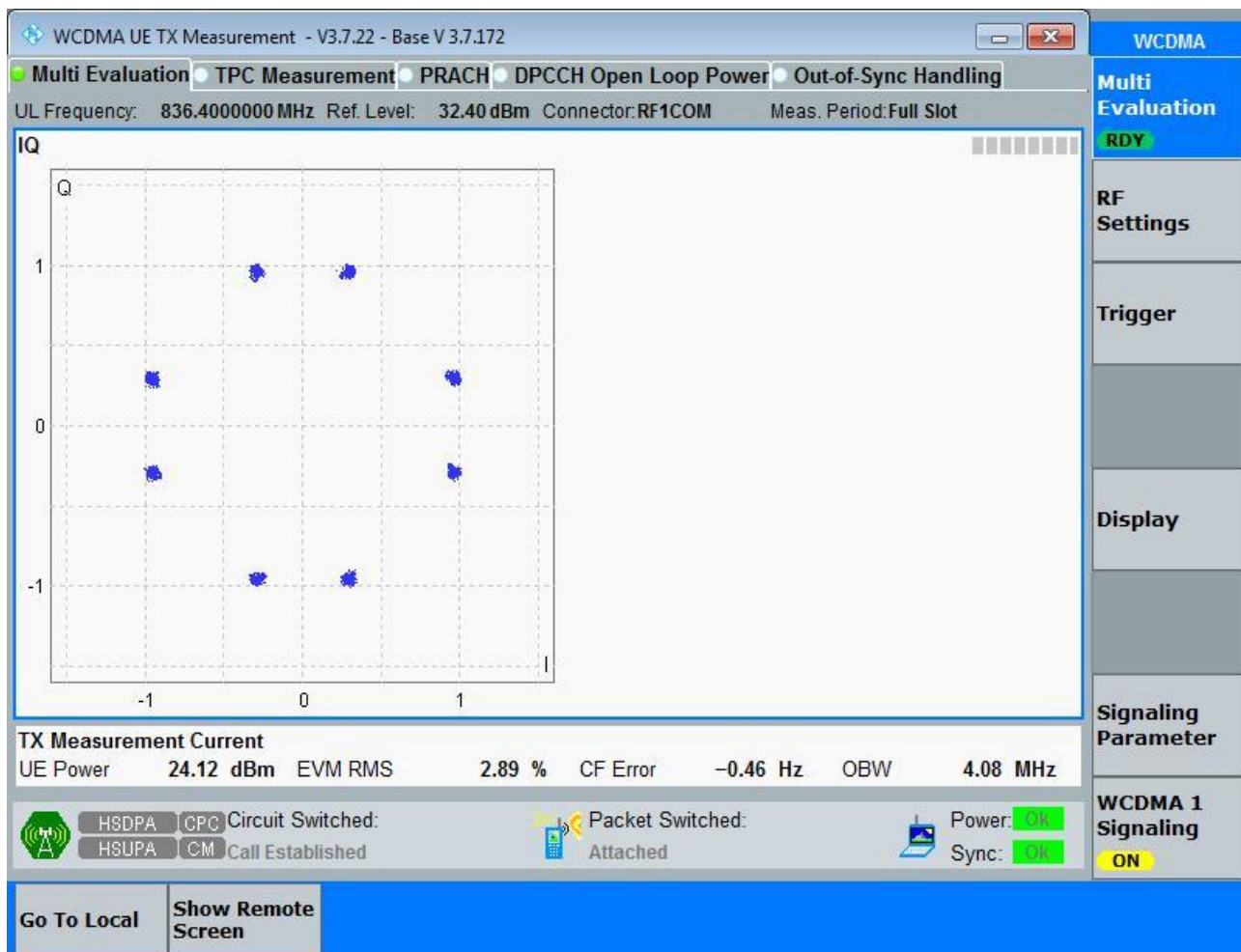
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

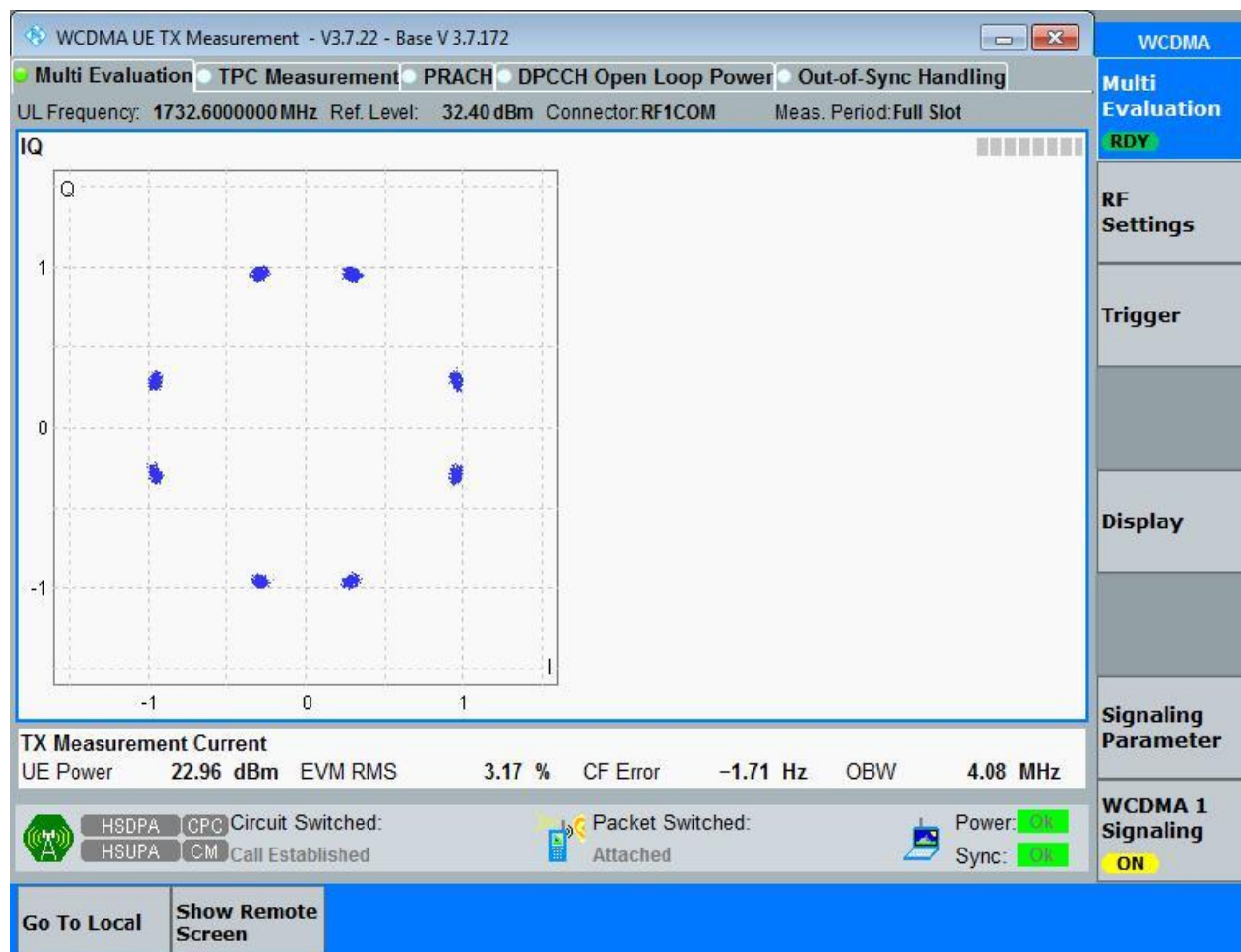
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

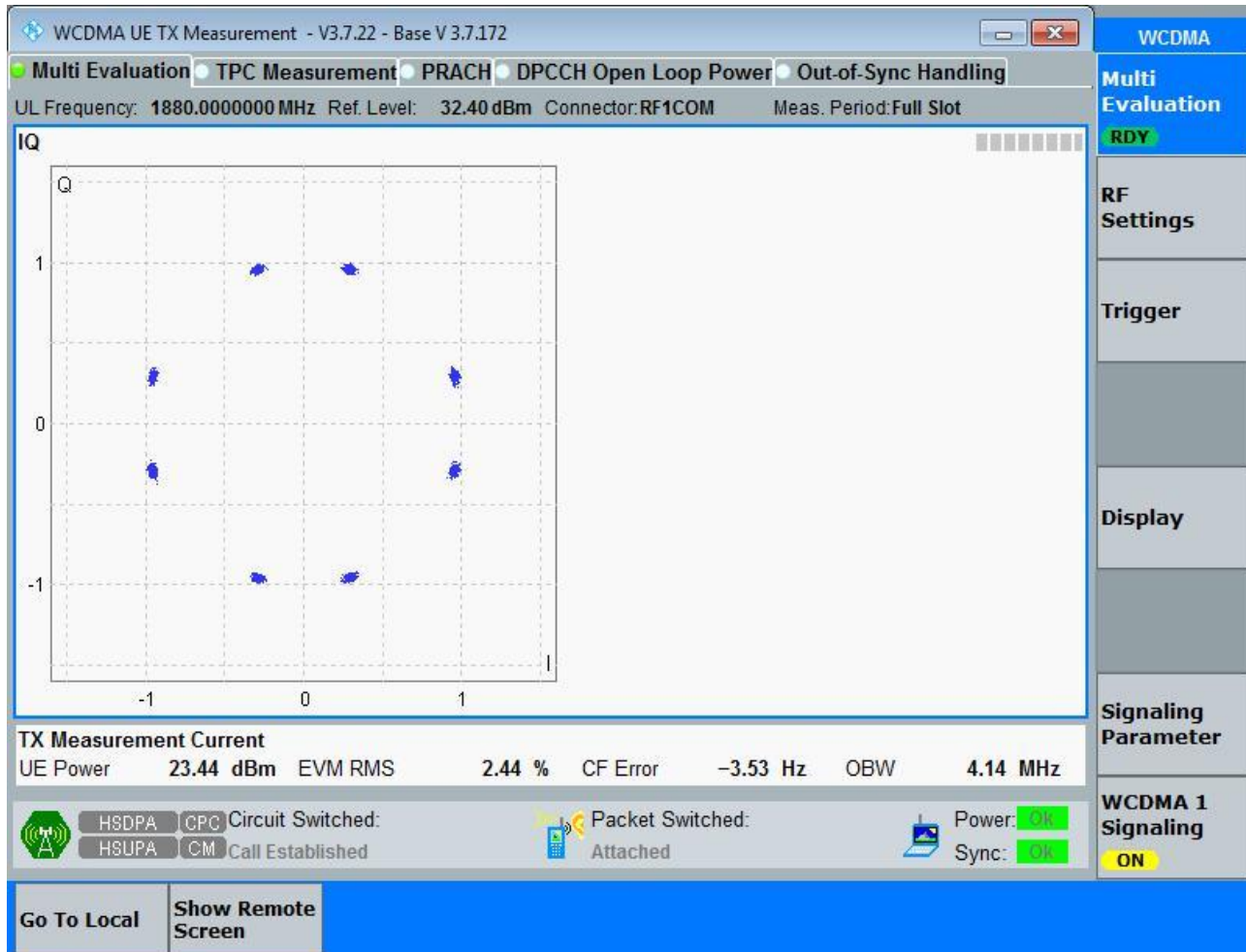
3.1.2.1.1 Test Channel = MCH



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	4.13	4.72	Pass
		MCH	4.13	4.71	Pass
		HCH	4.13	4.72	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.72	Pass
		MCH	4.13	4.71	Pass
		HCH	4.15	4.72	Pass
WCDMA1900	UMTS/TM1	LCH	4.15	4.71	Pass
		MCH	4.15	4.71	Pass
		HCH	4.15	4.74	Pass

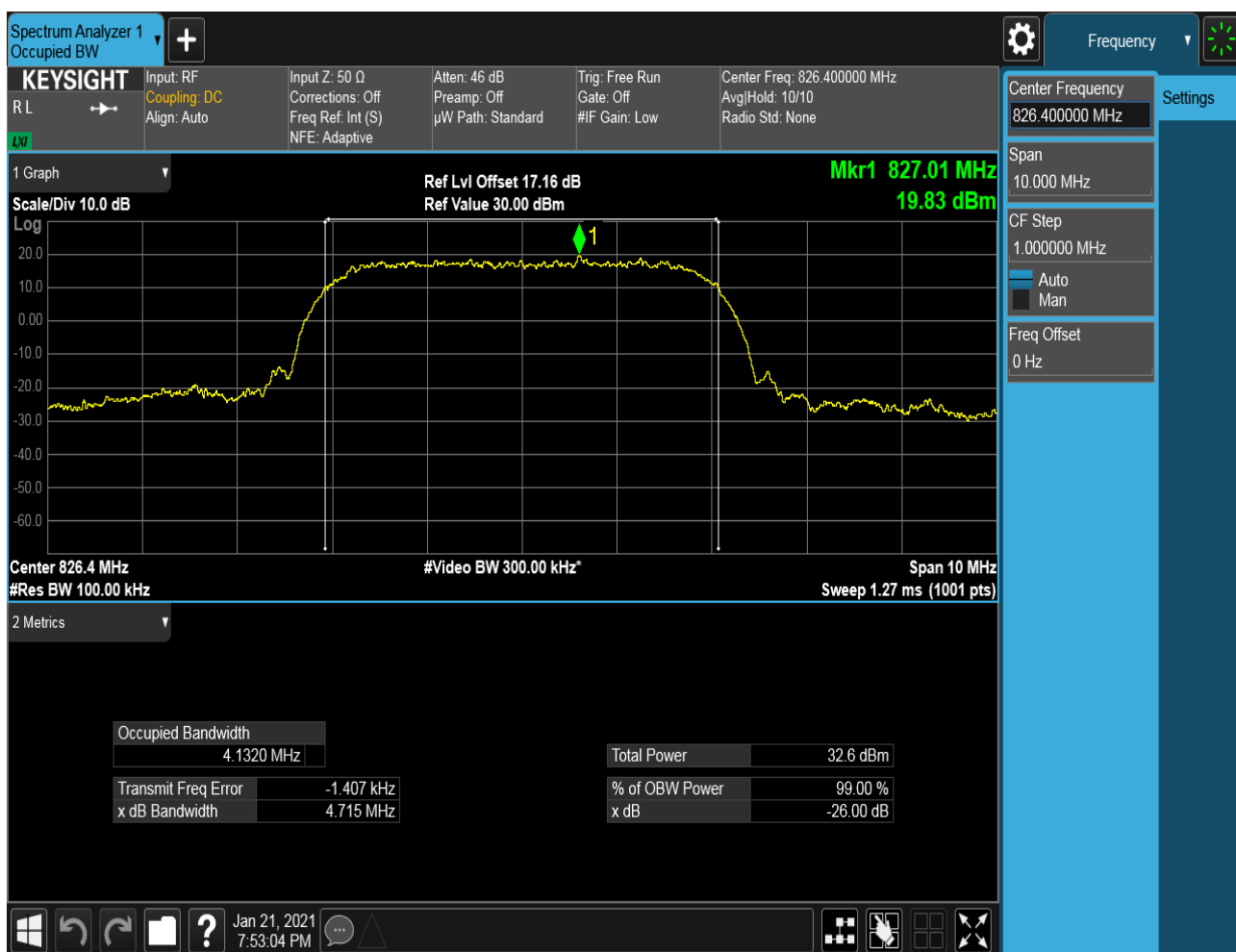
Part II - Test Plots

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



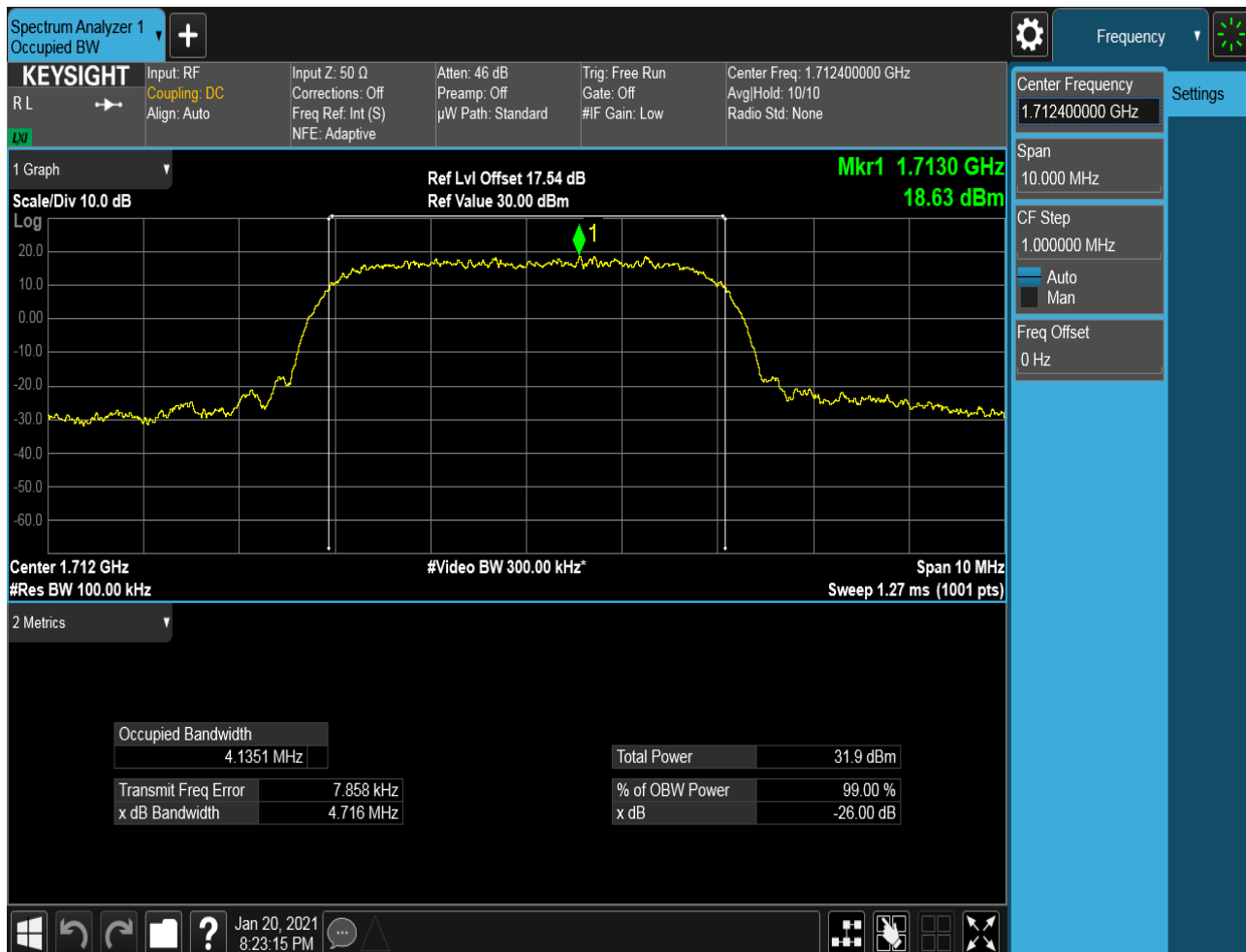
4.1.1.1.3 Test Channel = HCH



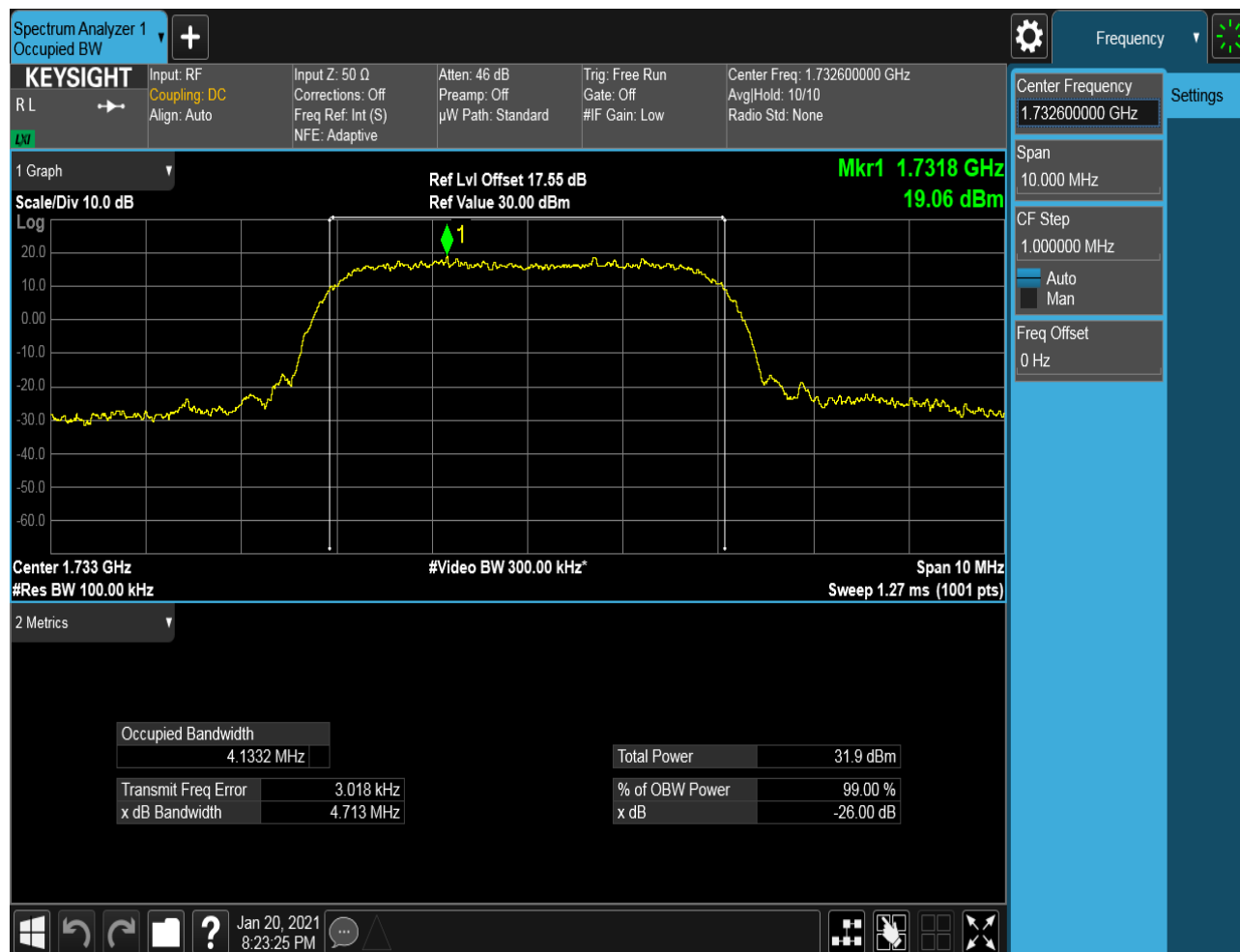
4.1.2 Test Band = WCDMA1700

4.1.2.1 Test Mode = UMTS/TM1

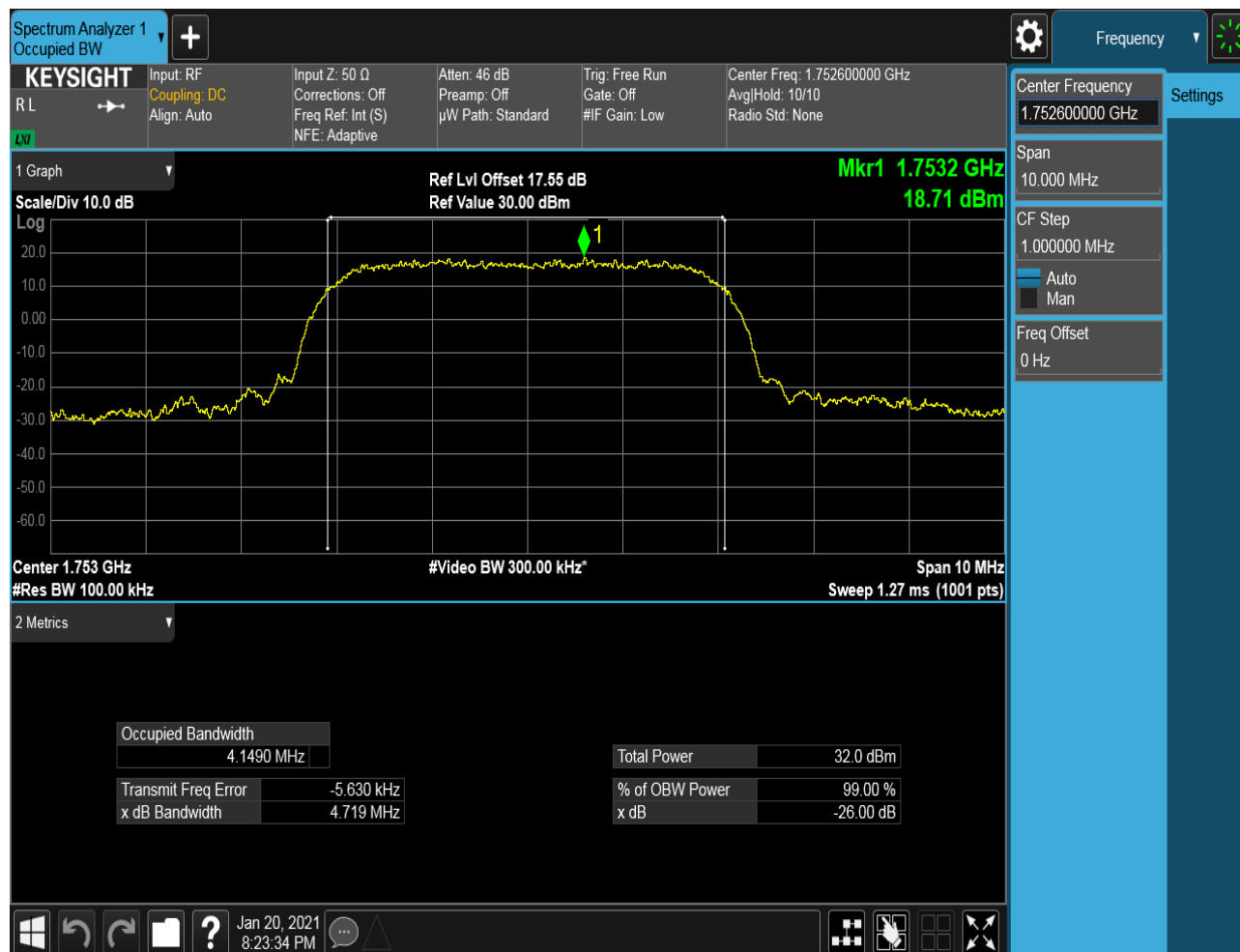
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH



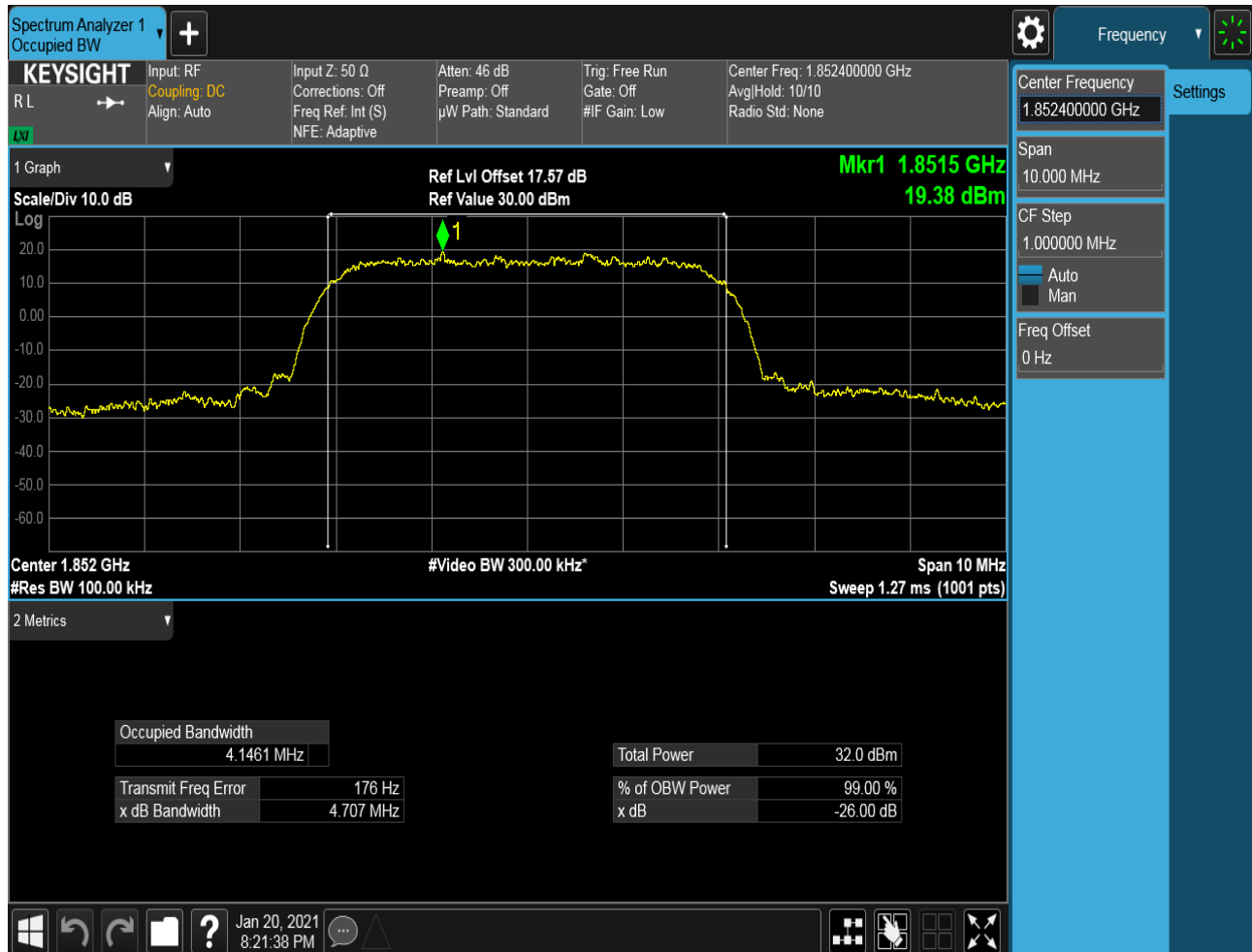
4.1.2.1.3 Test Channel = HCH



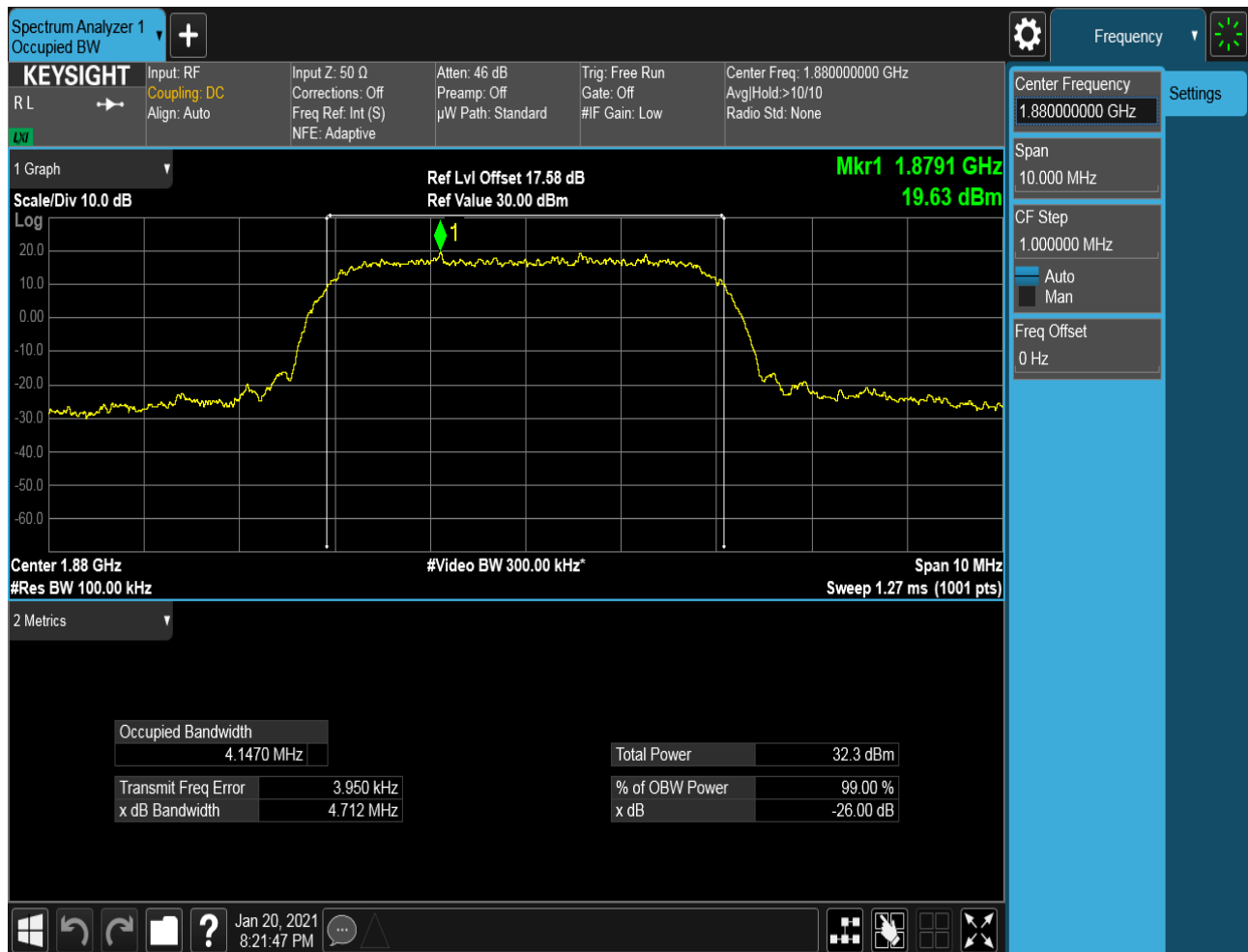
4.1.3 Test Band = WCDMA1900

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.

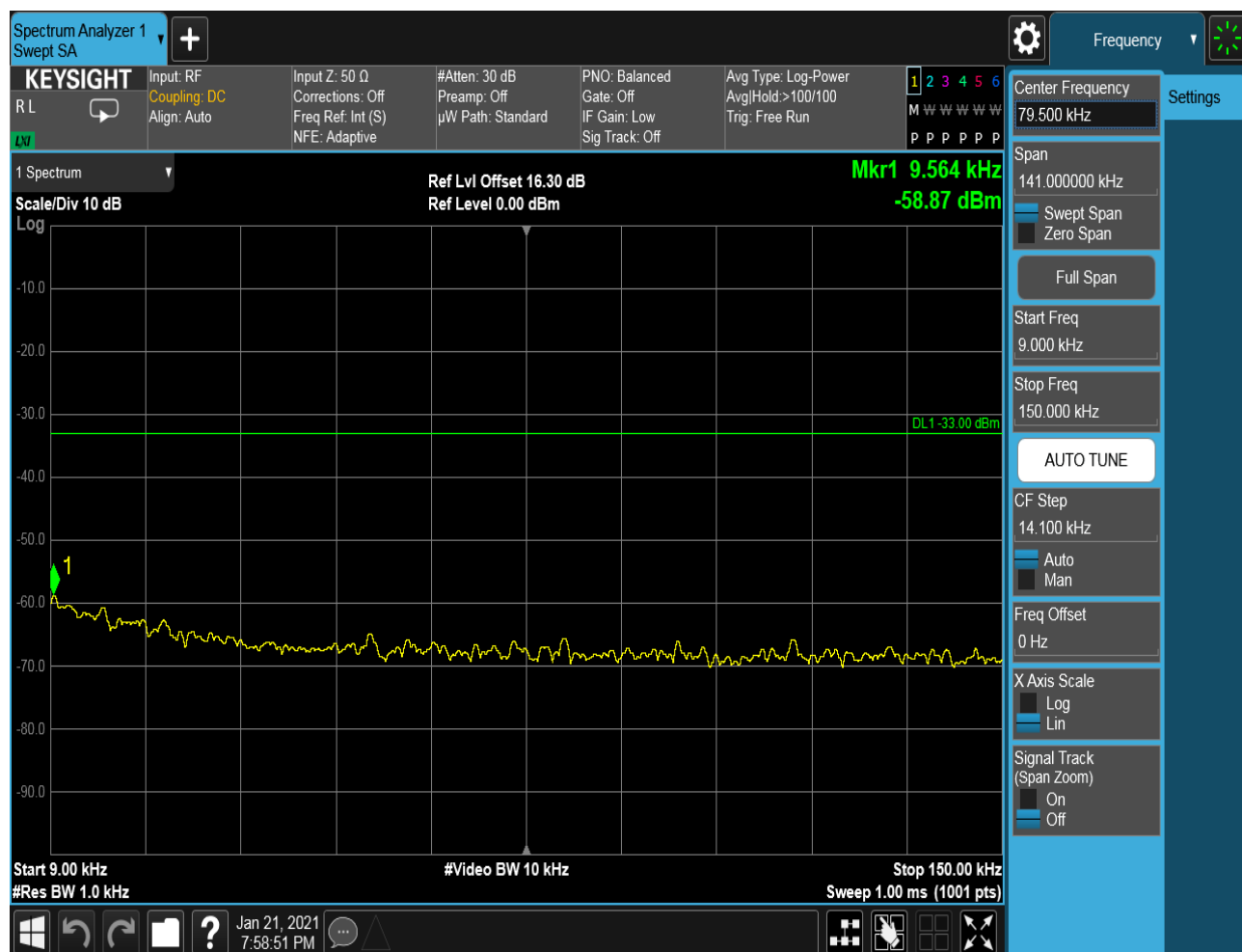
Part I - Test Plots

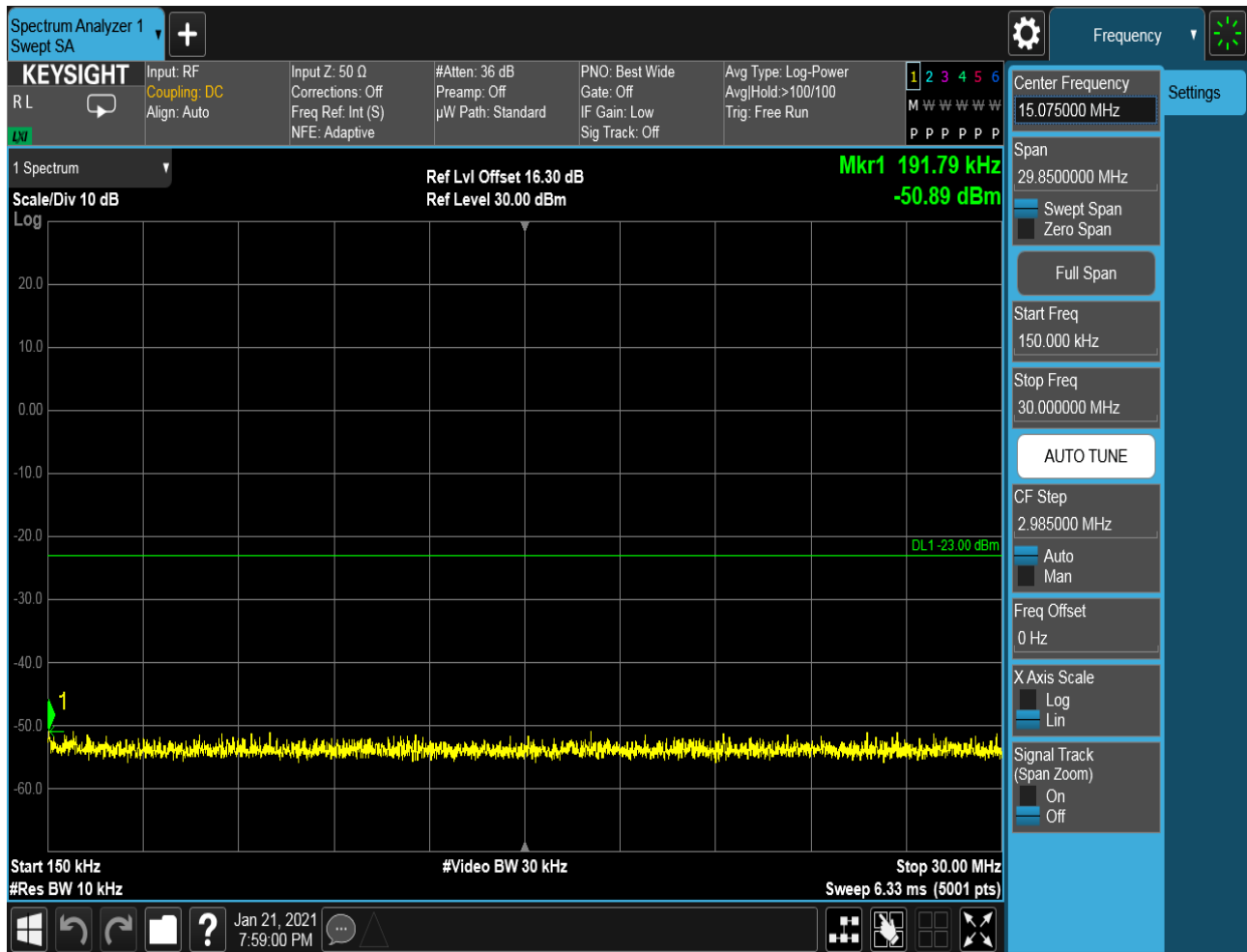
6.1 For UMTS

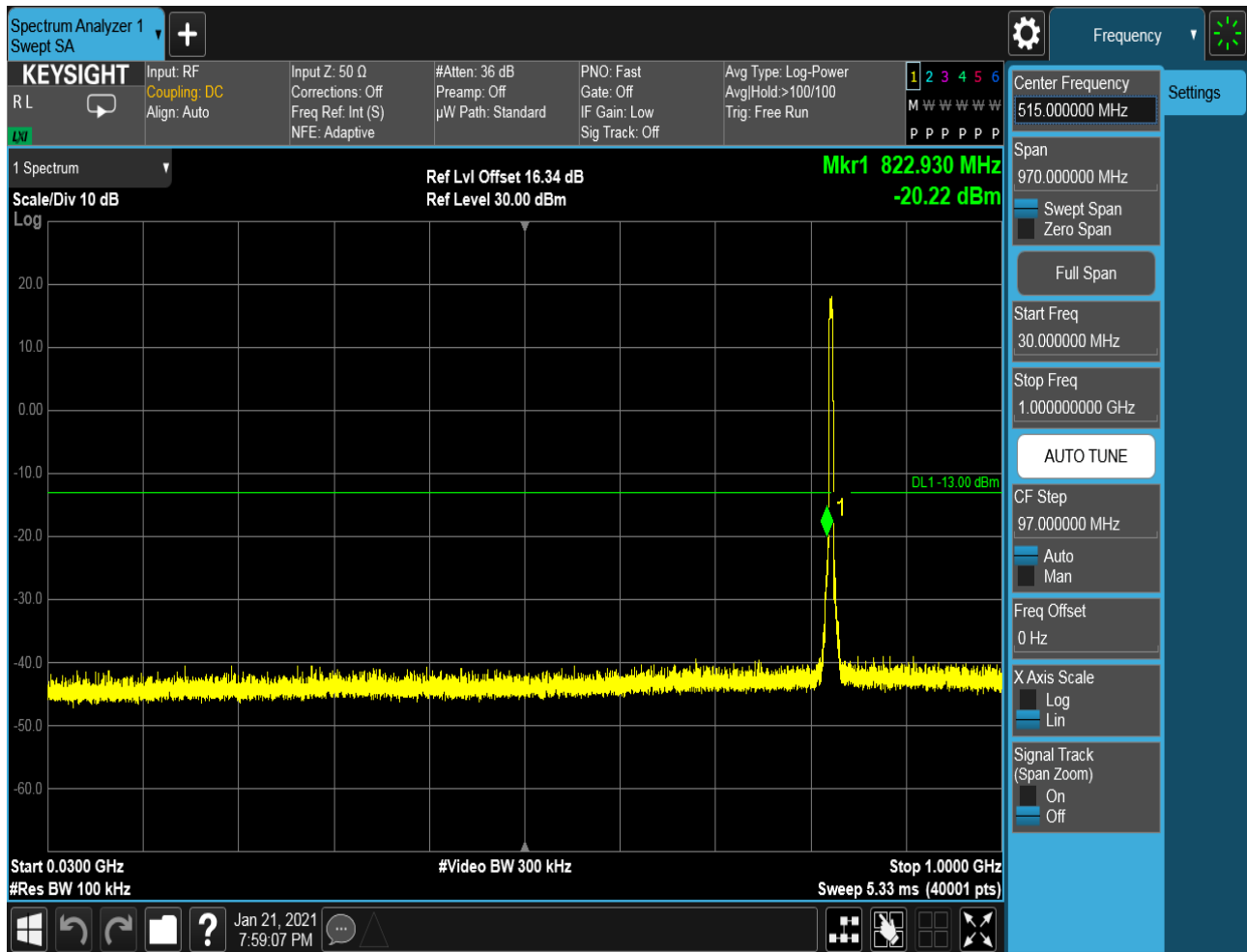
6.1.1 Test Band = WCDMA850

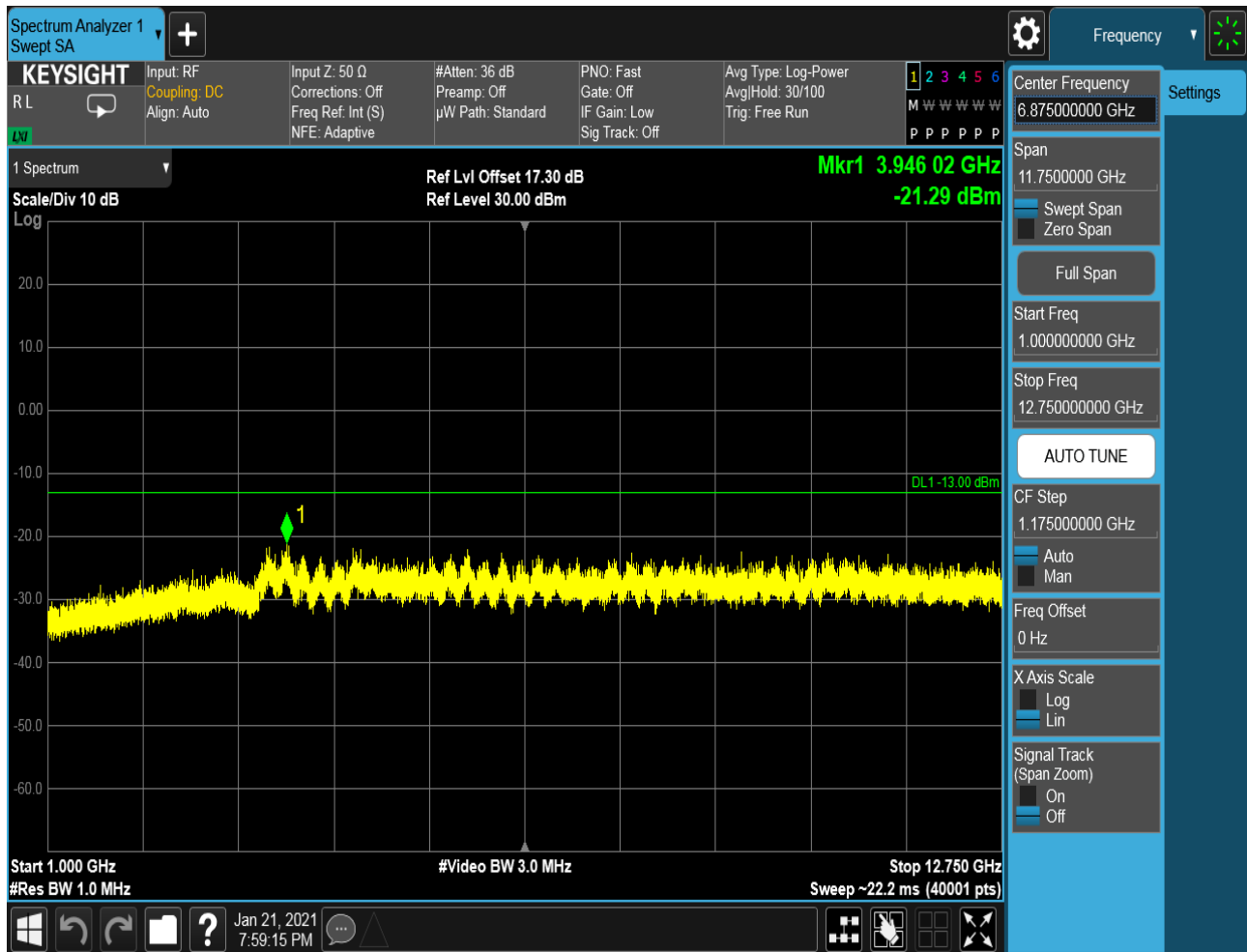
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH

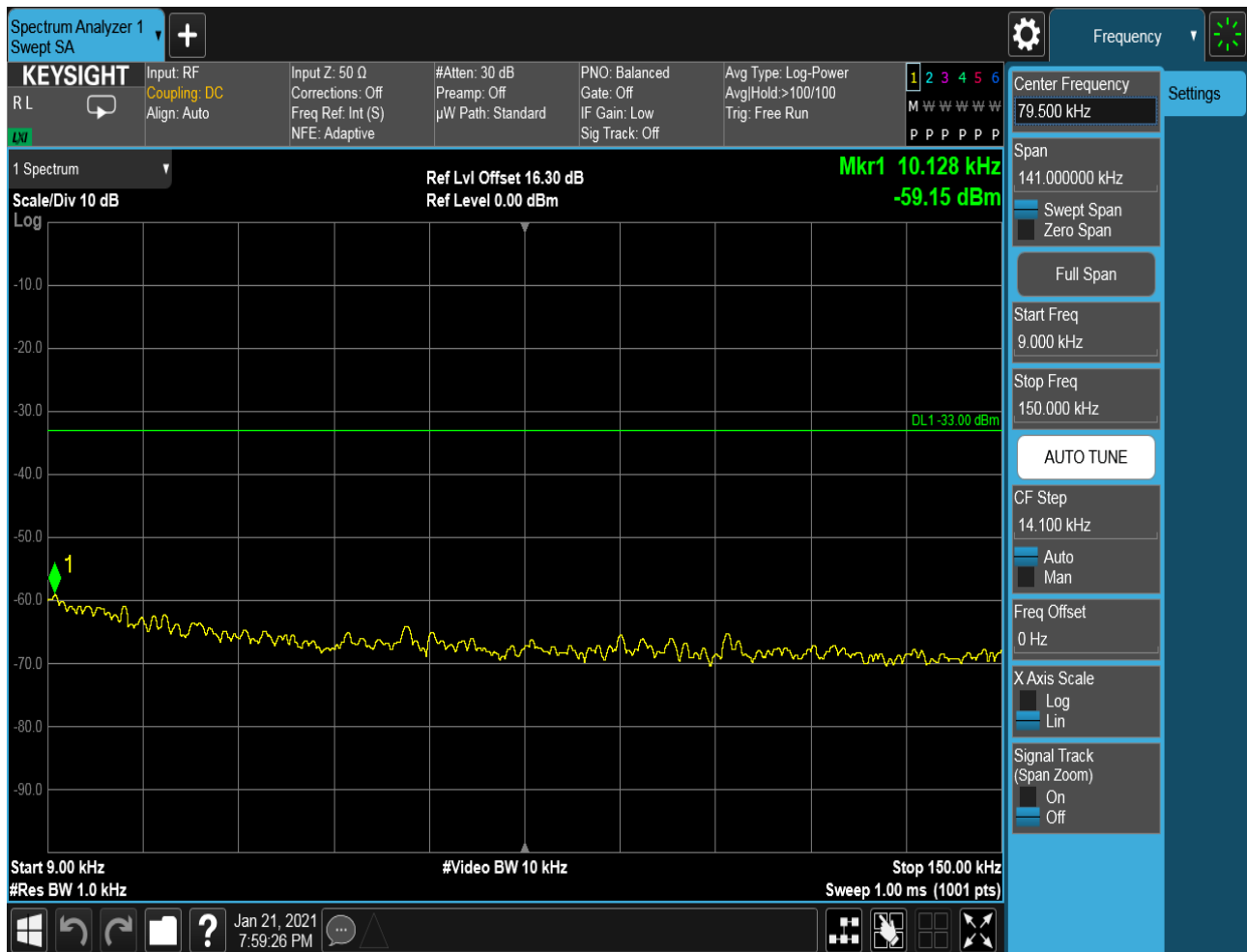


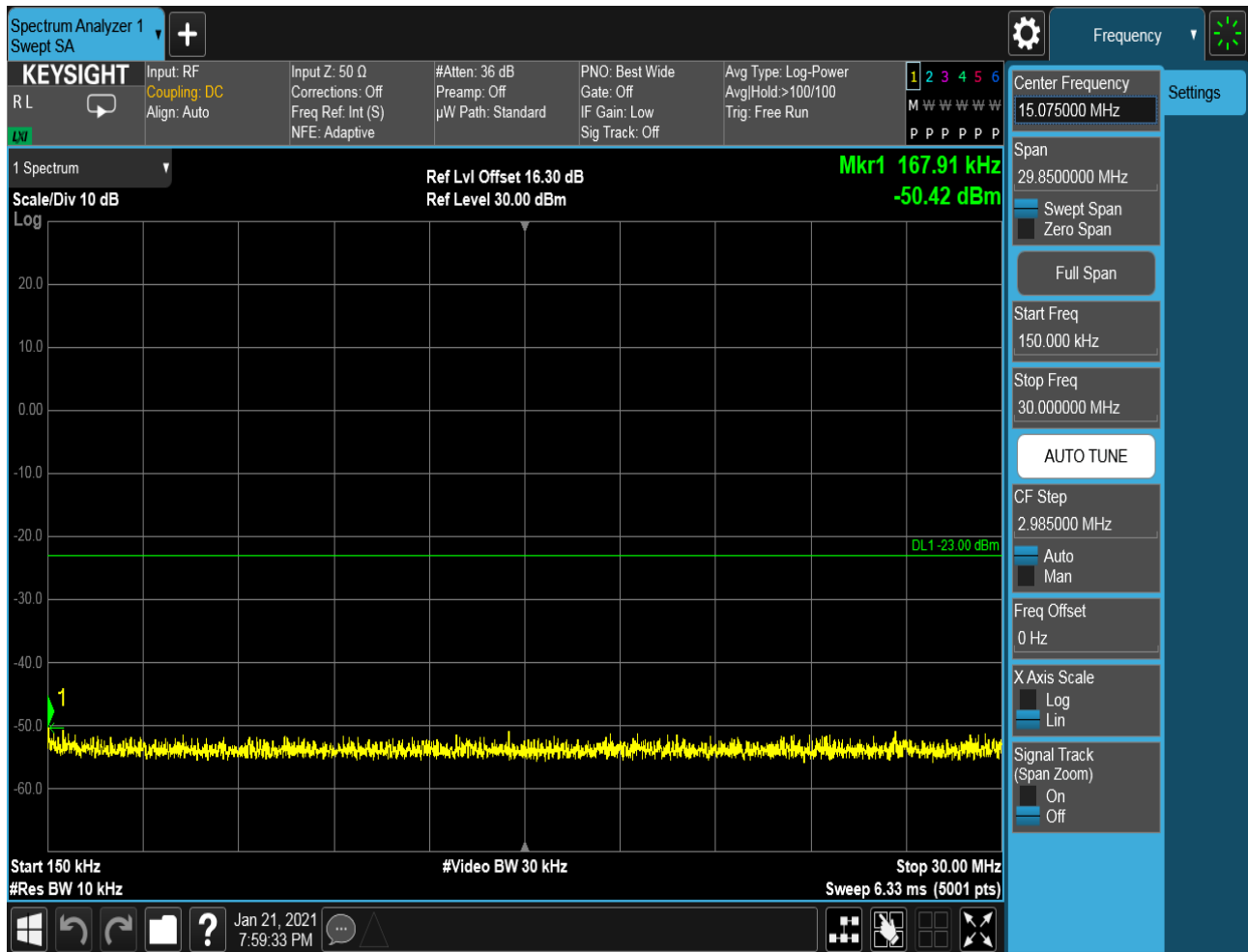


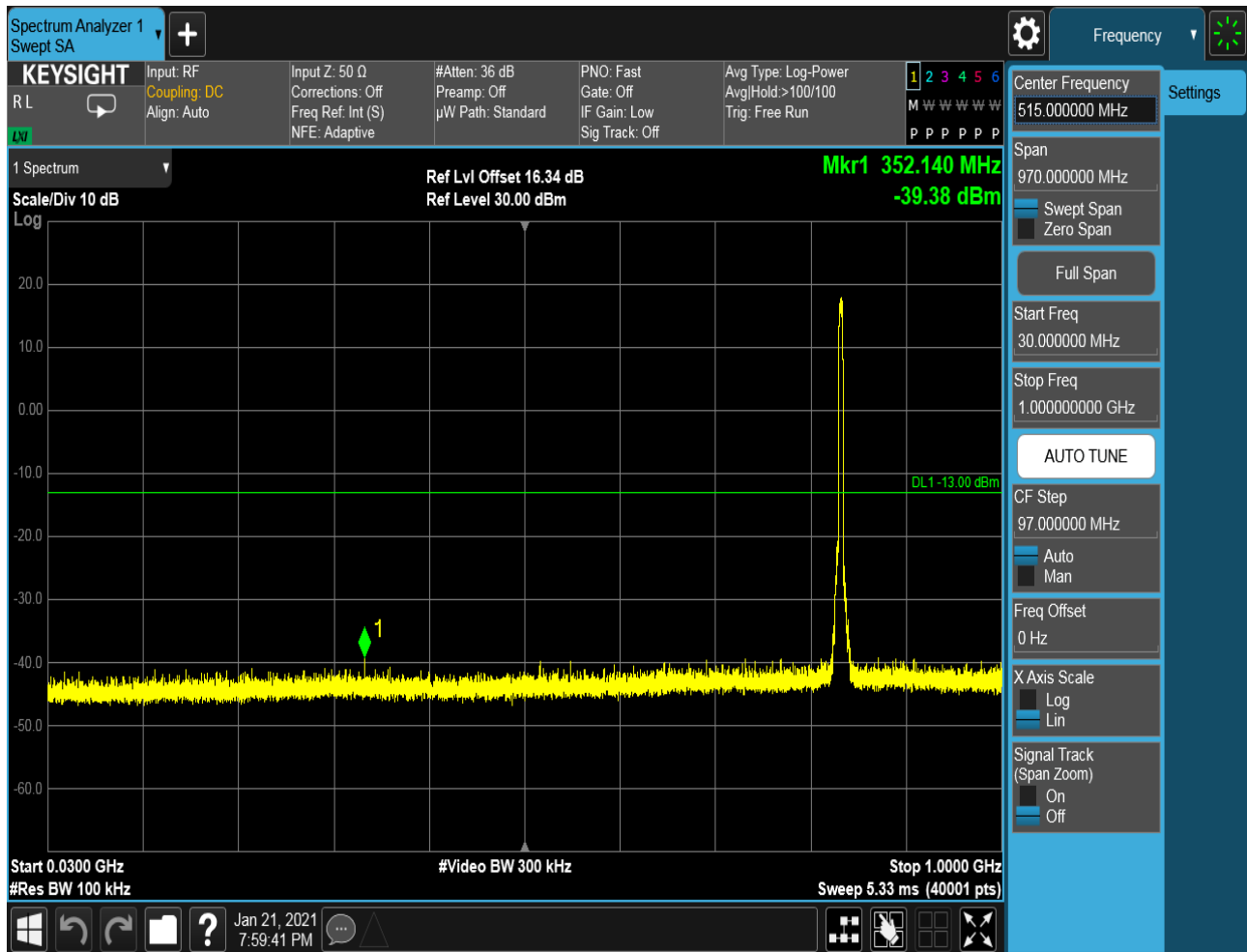


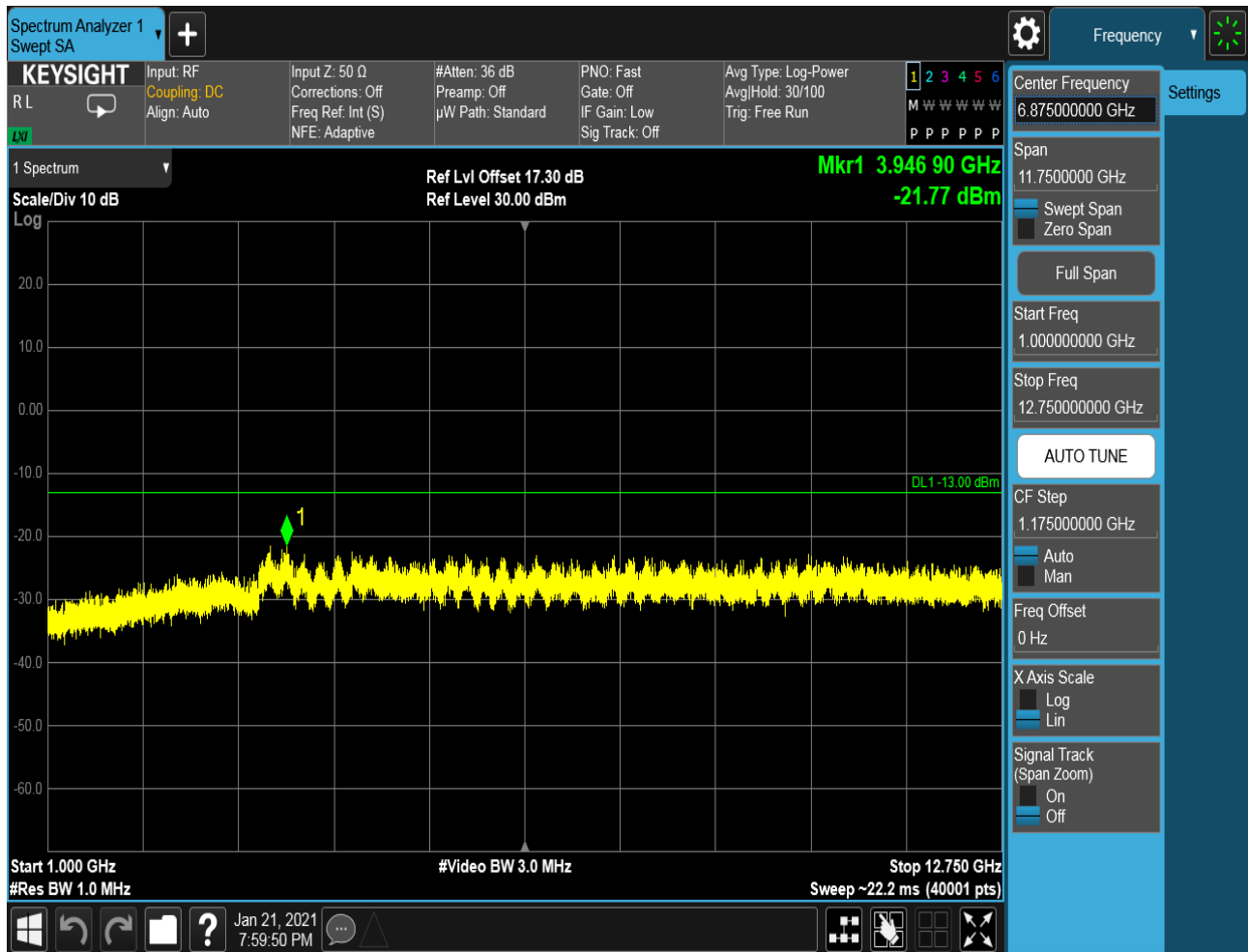


6.1.1.1.2 Test Channel = MCH

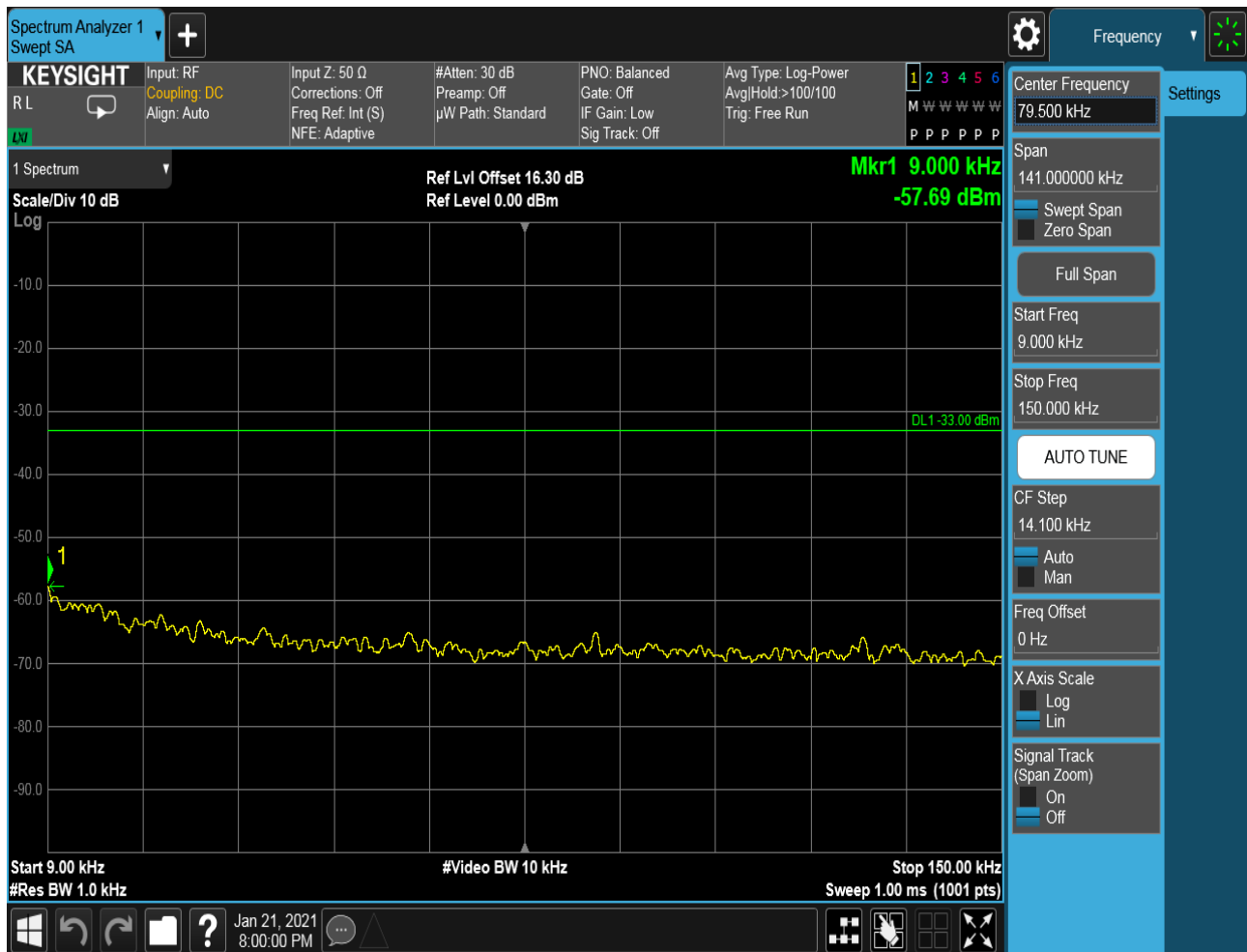


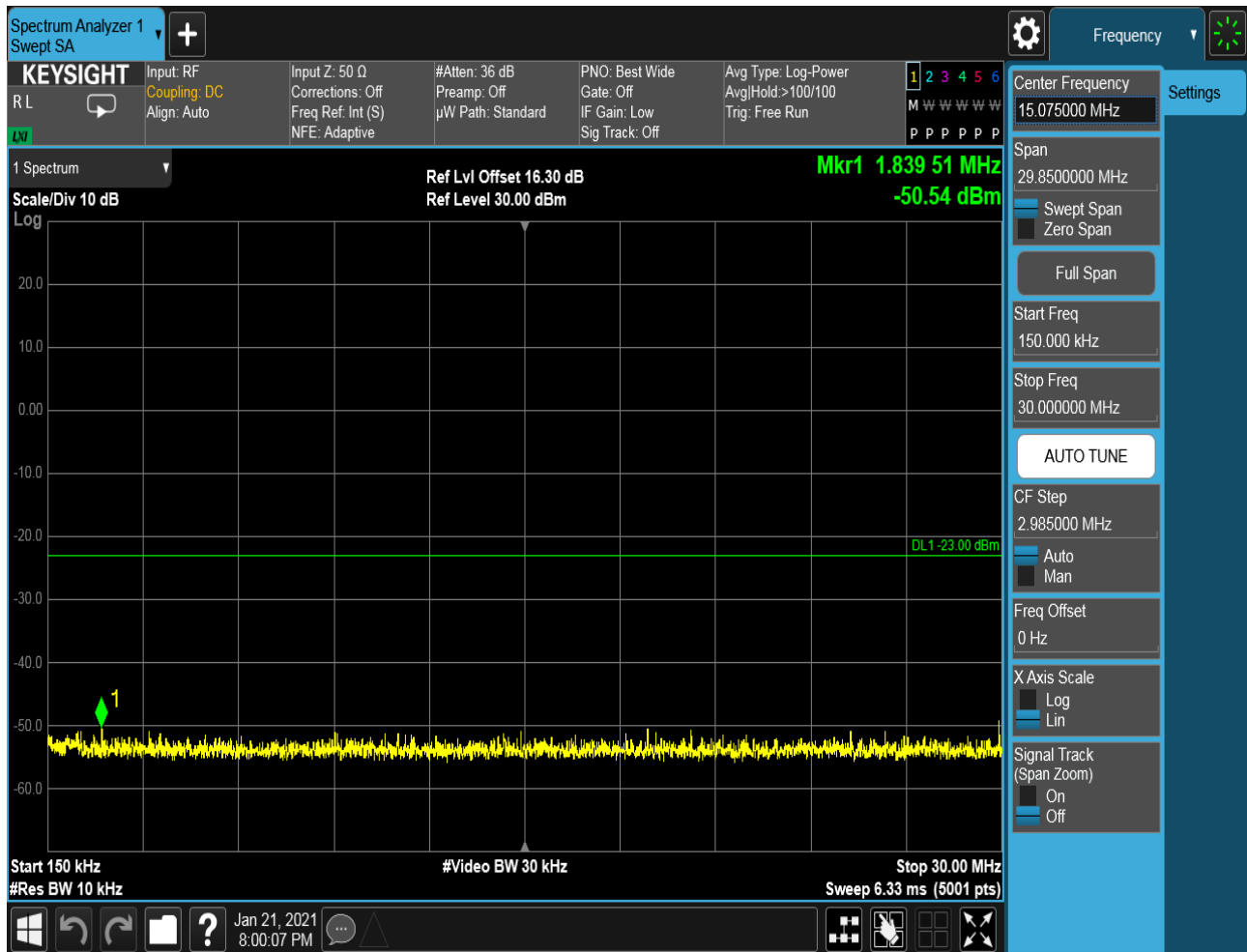


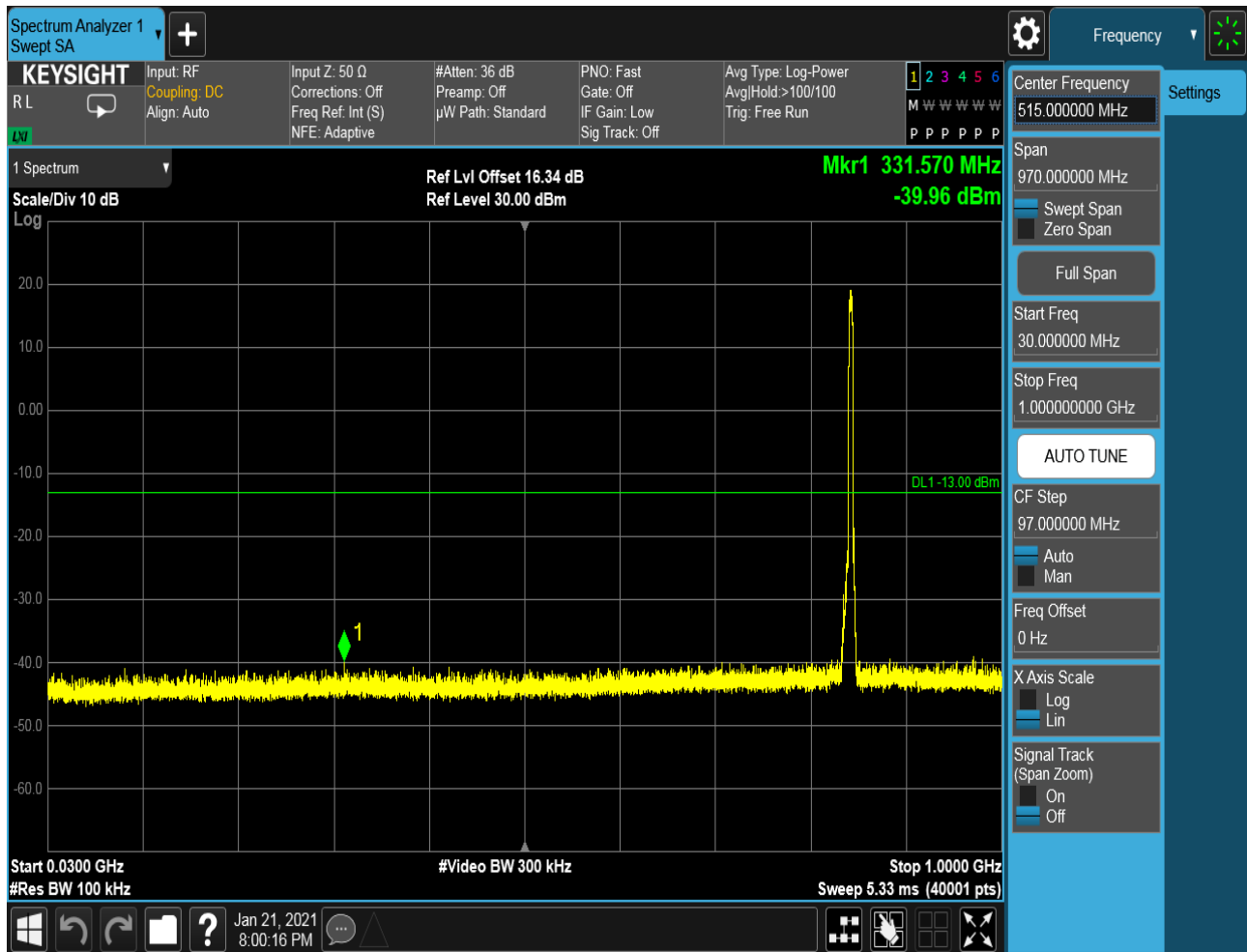


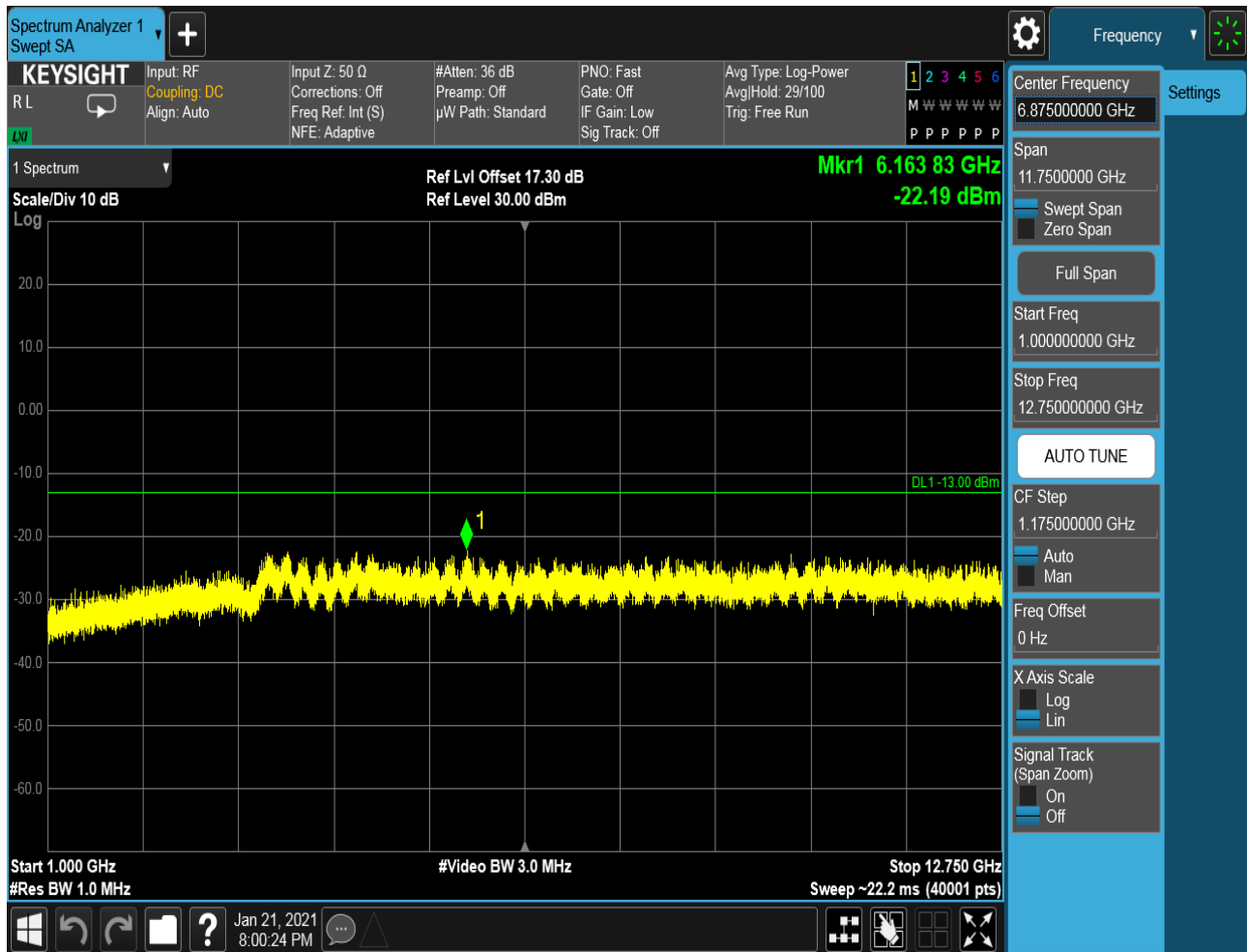


6.1.1.1.3 Test Channel = HCH





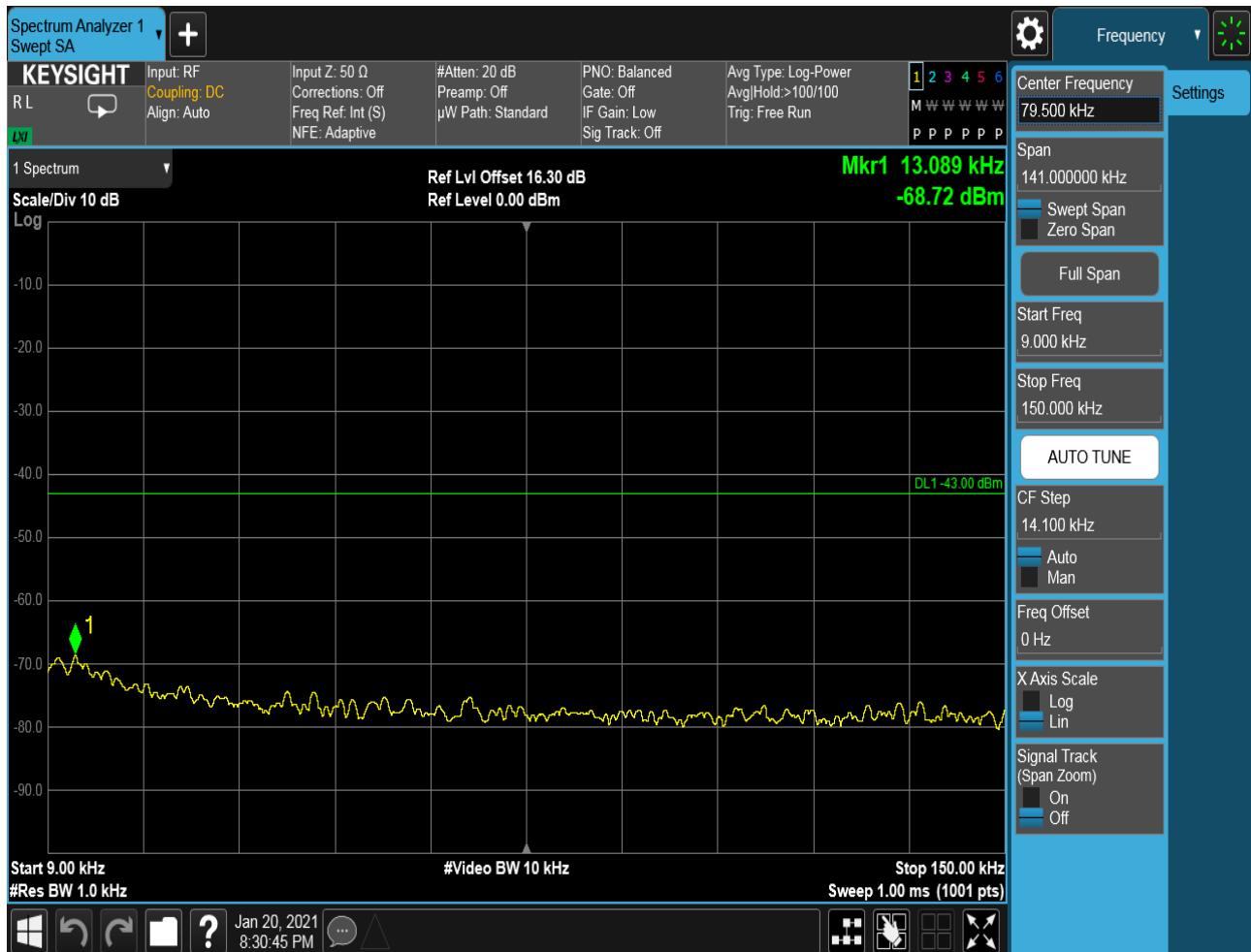


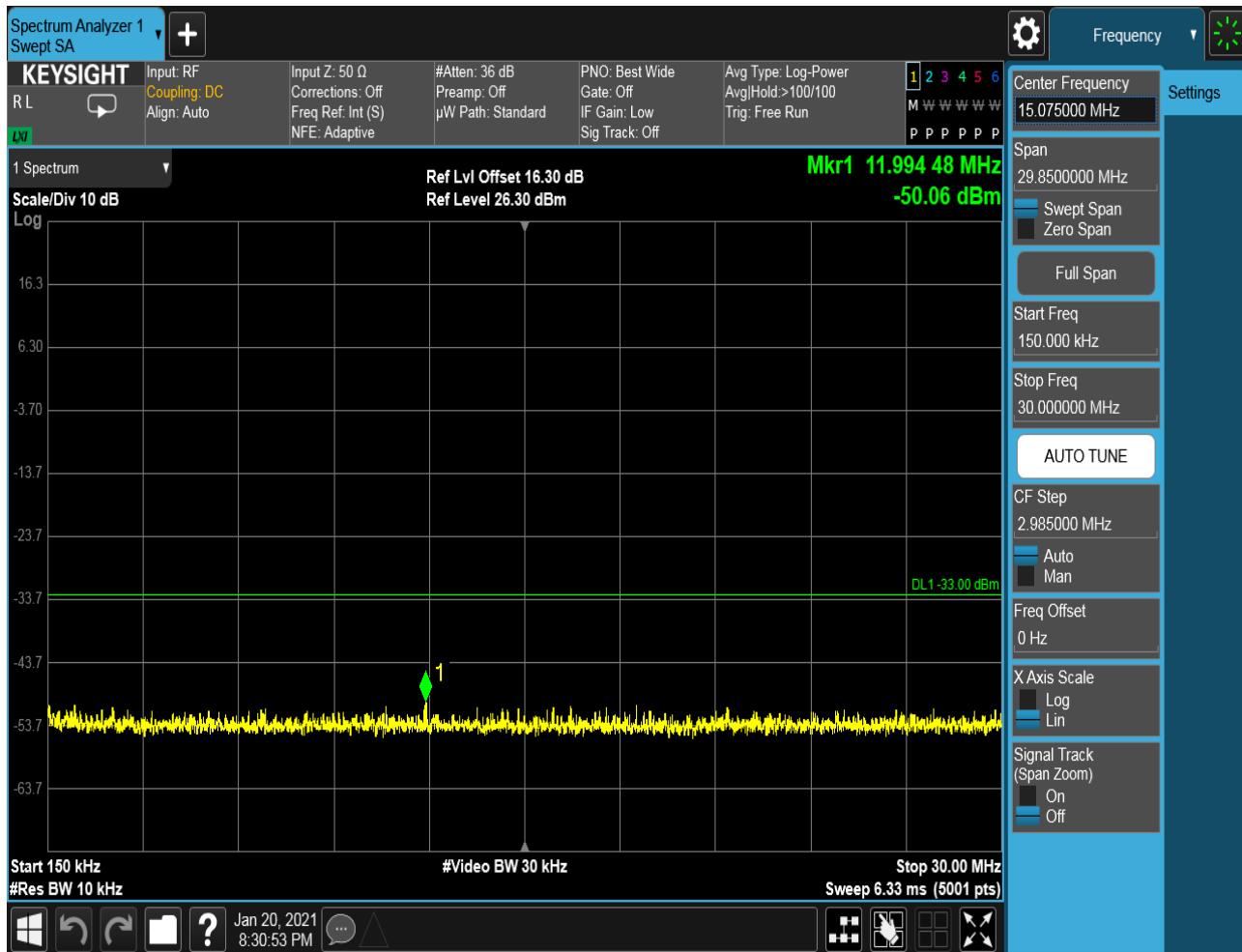


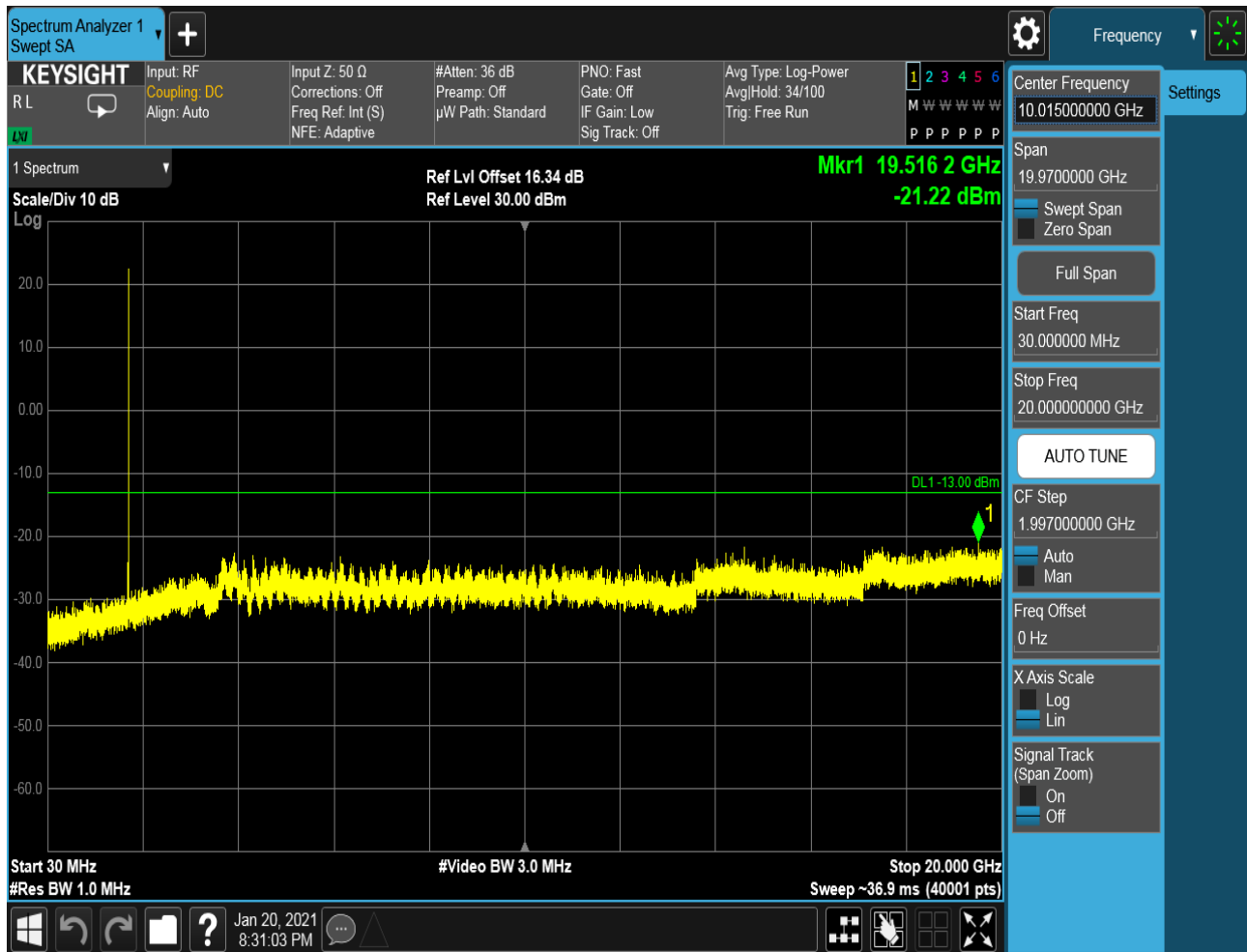
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

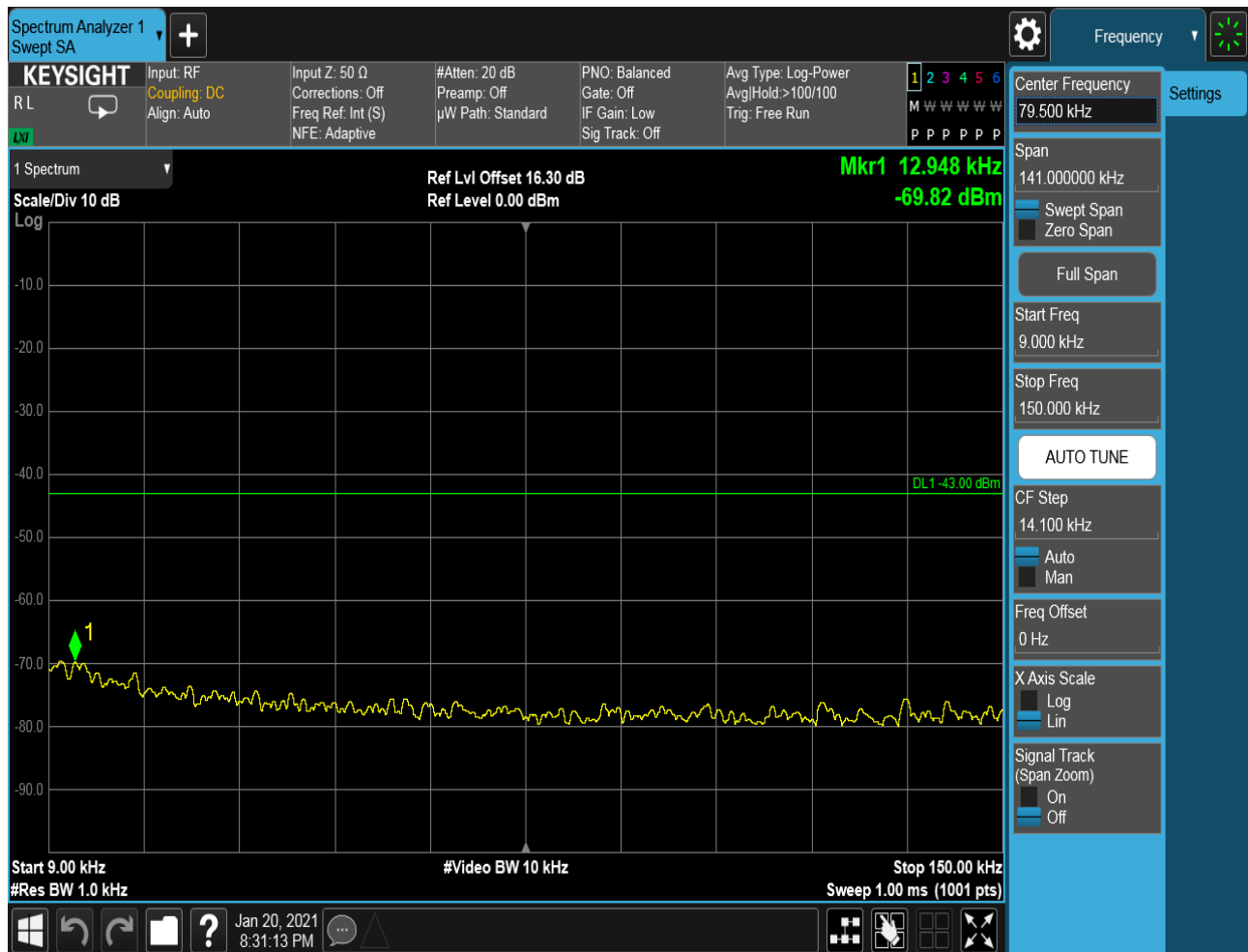
6.1.2.1.1 Test Channel = LCH

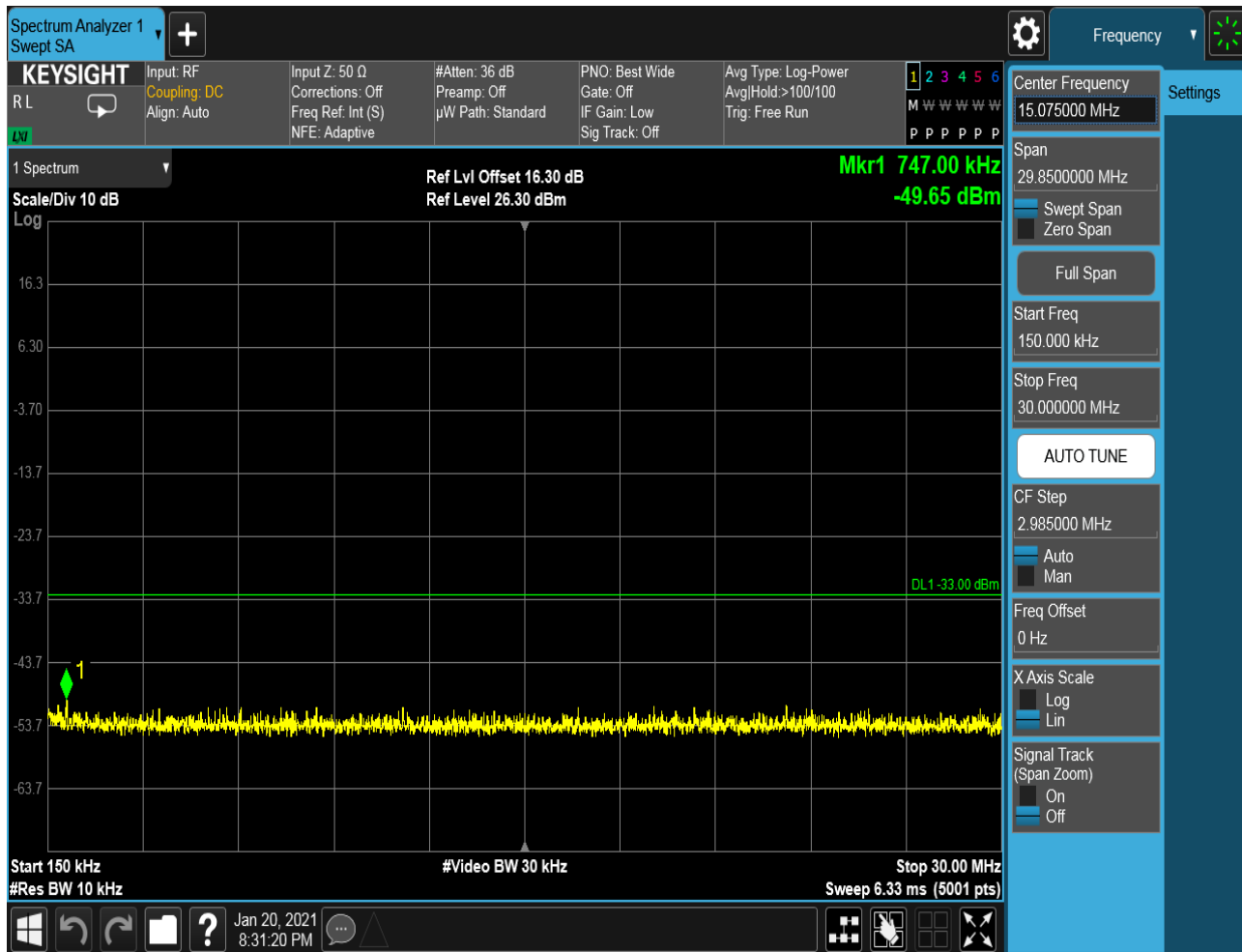


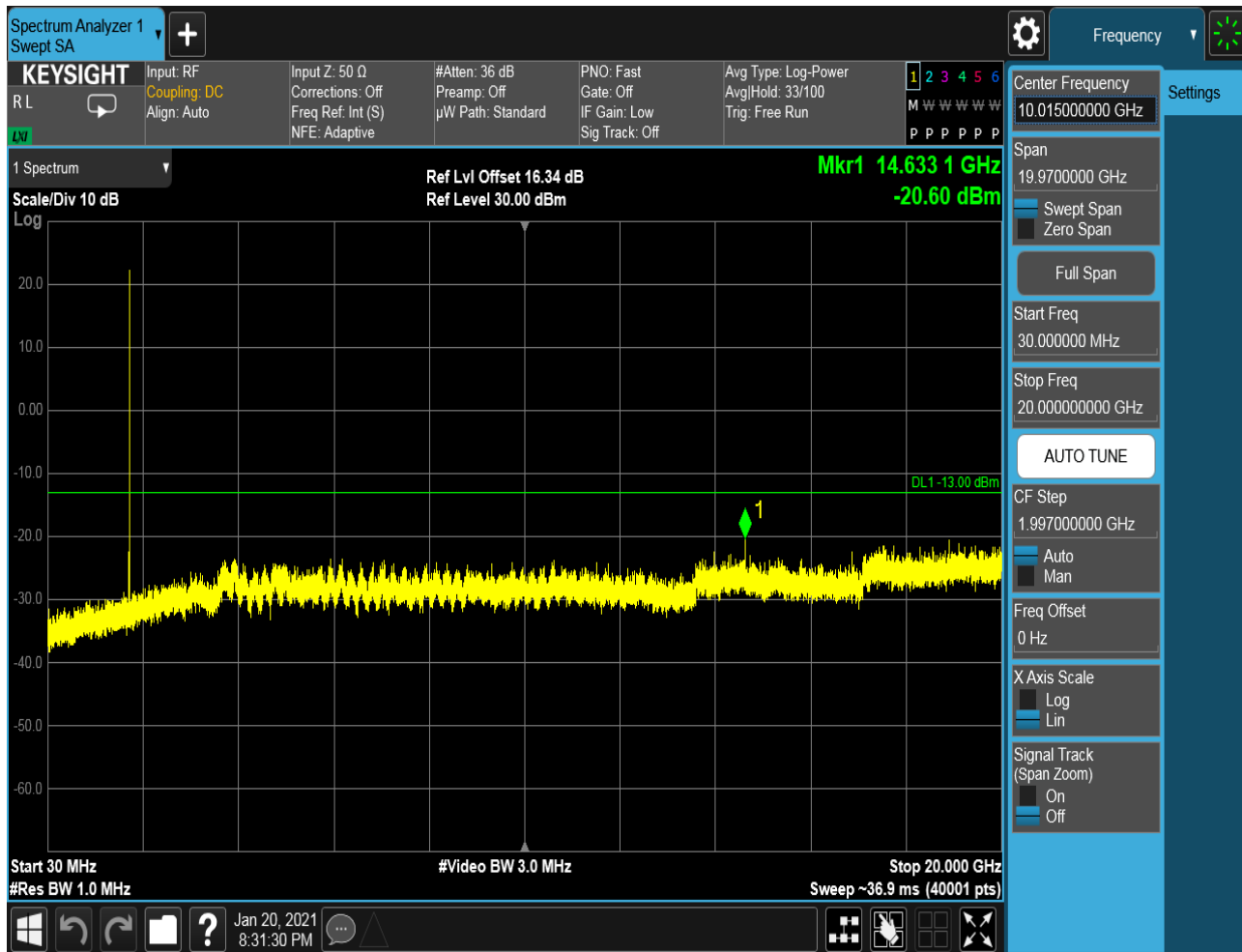




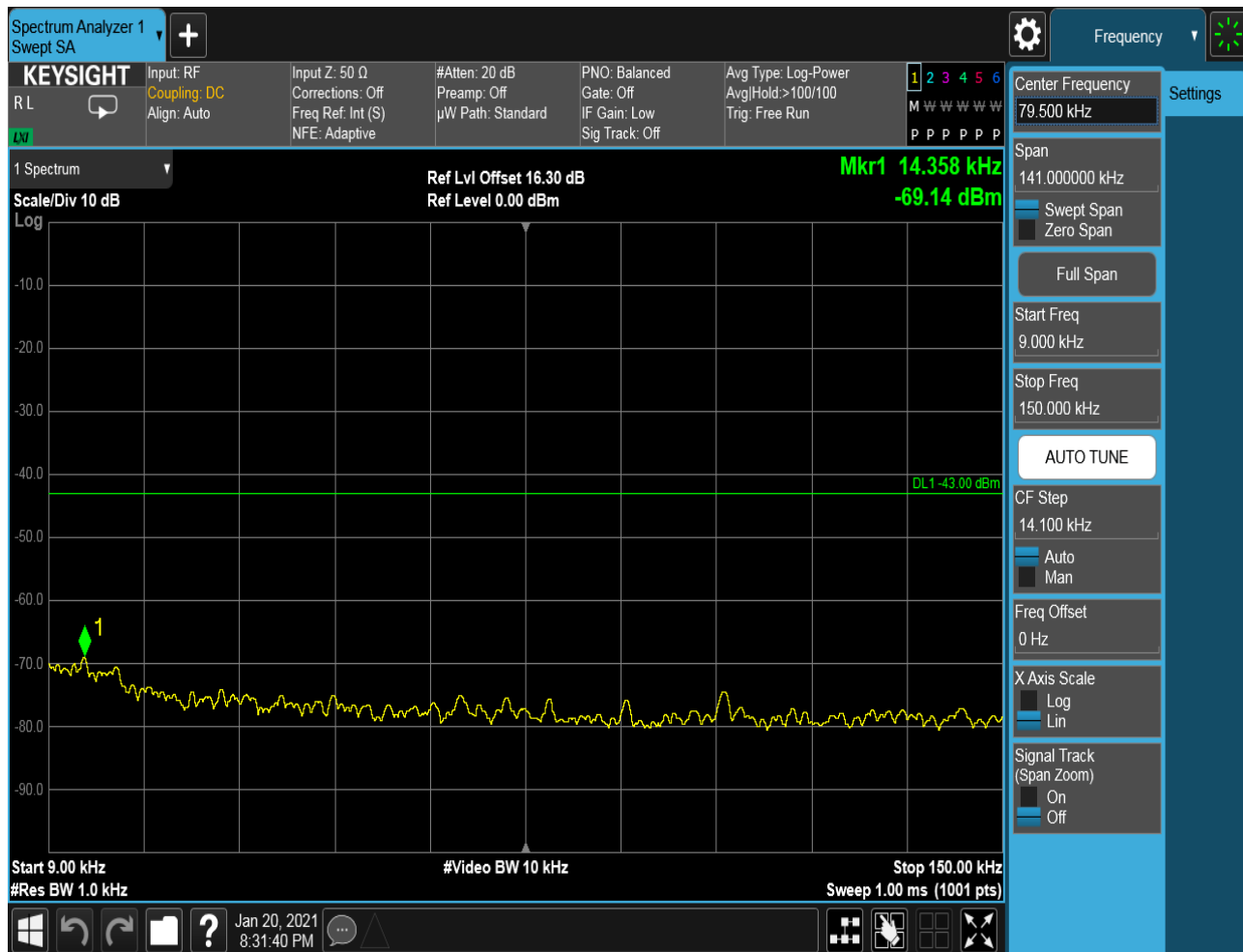
6.1.2.1.2 Test Channel = MCH

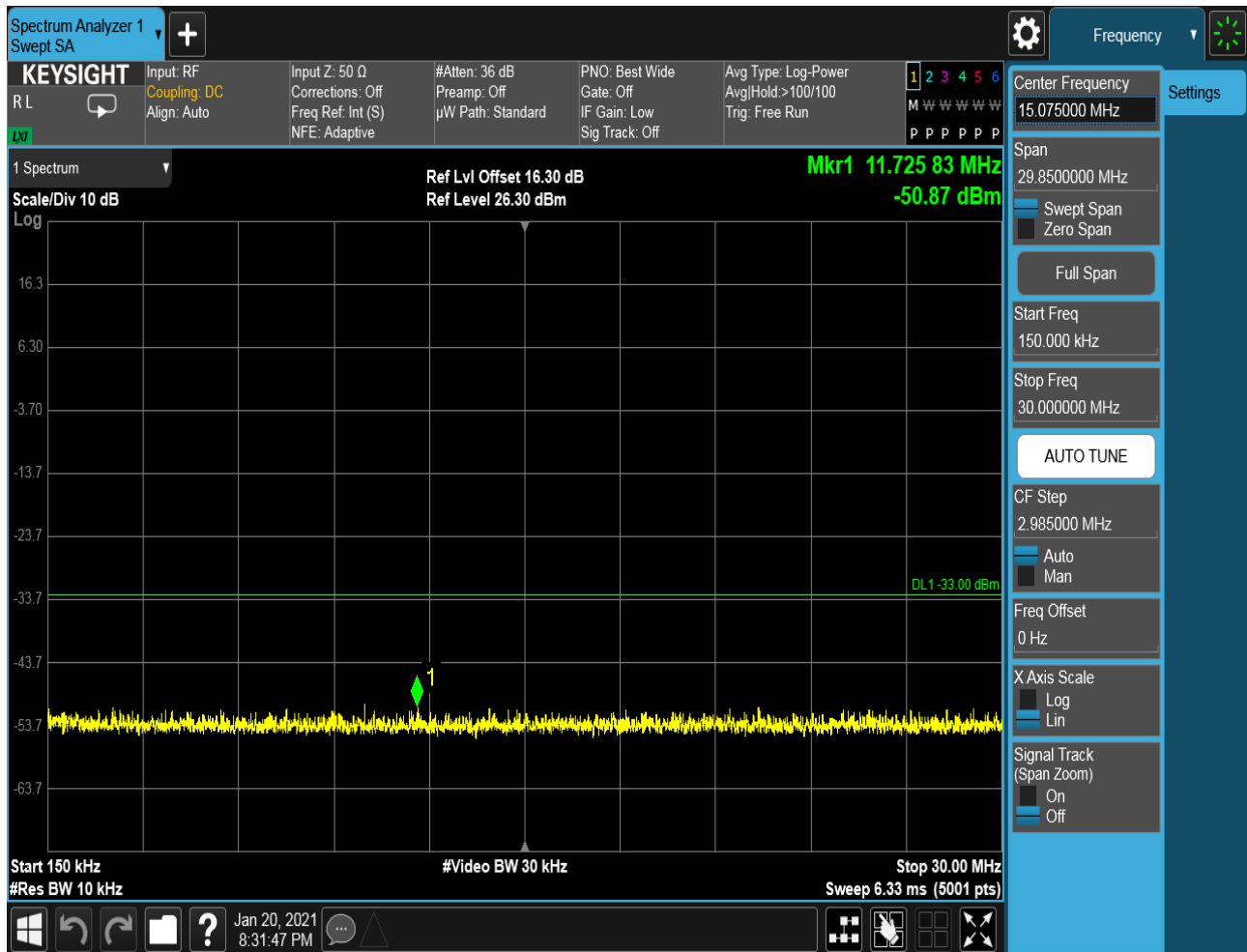


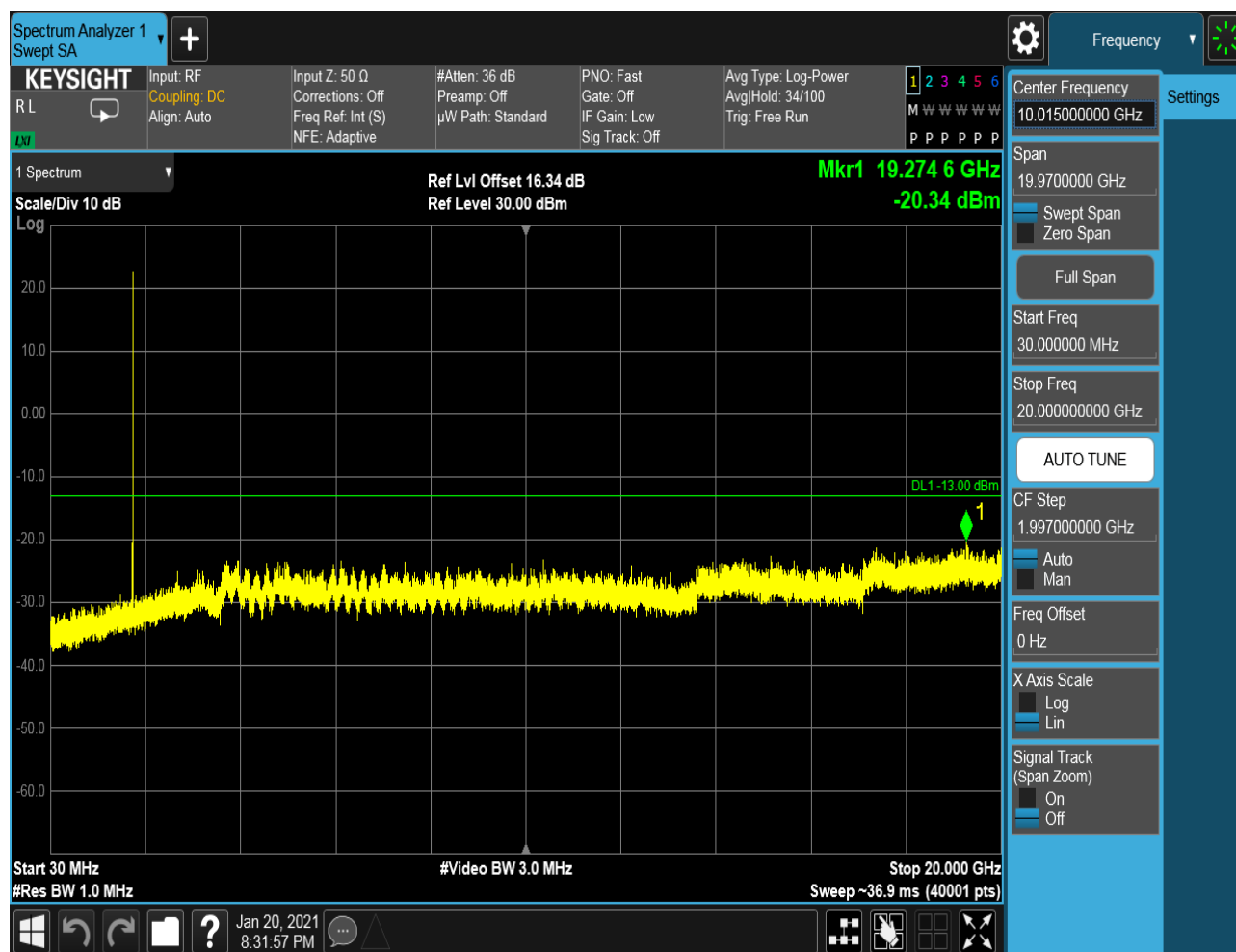




6.1.2.1.3 Test Channel = HCH



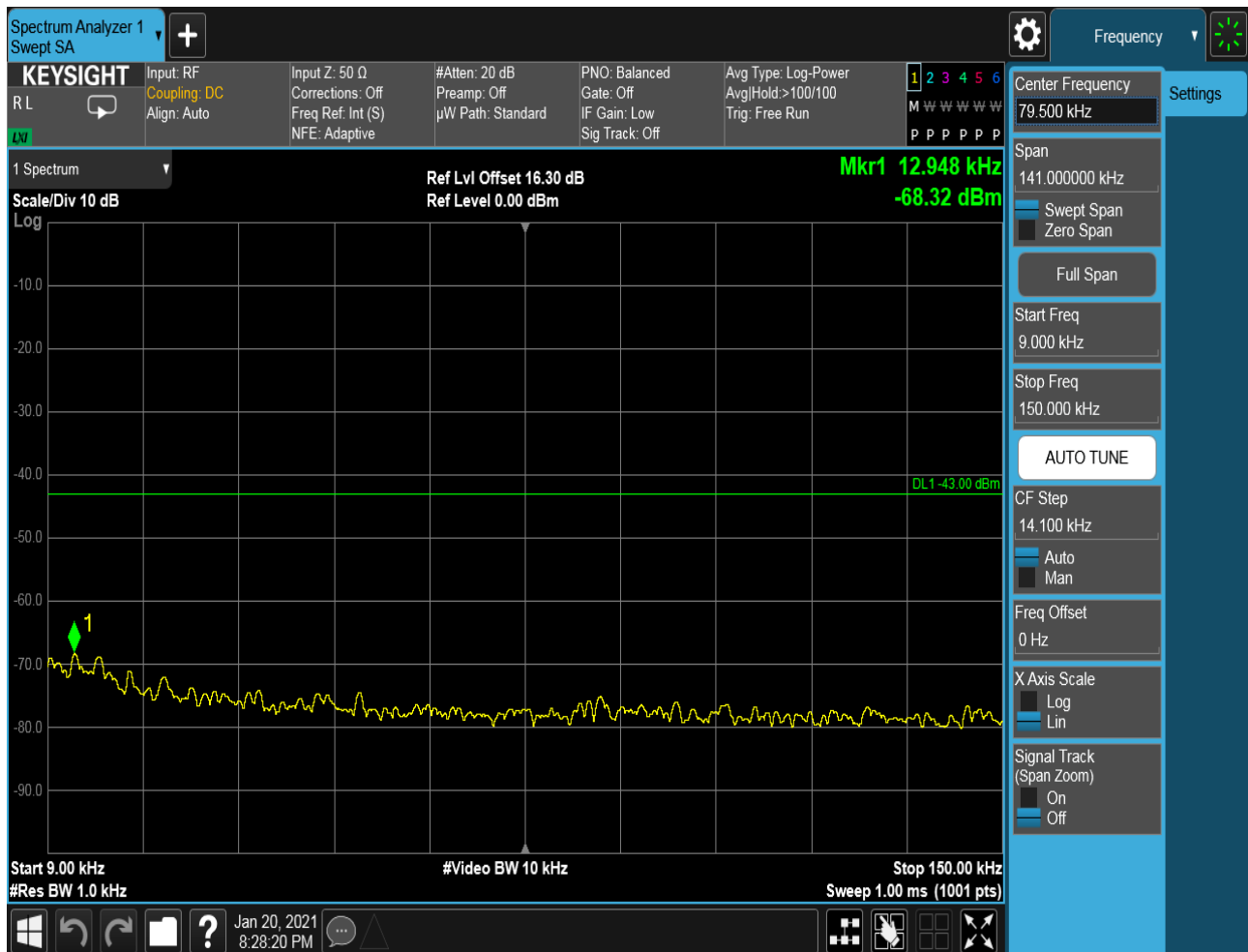


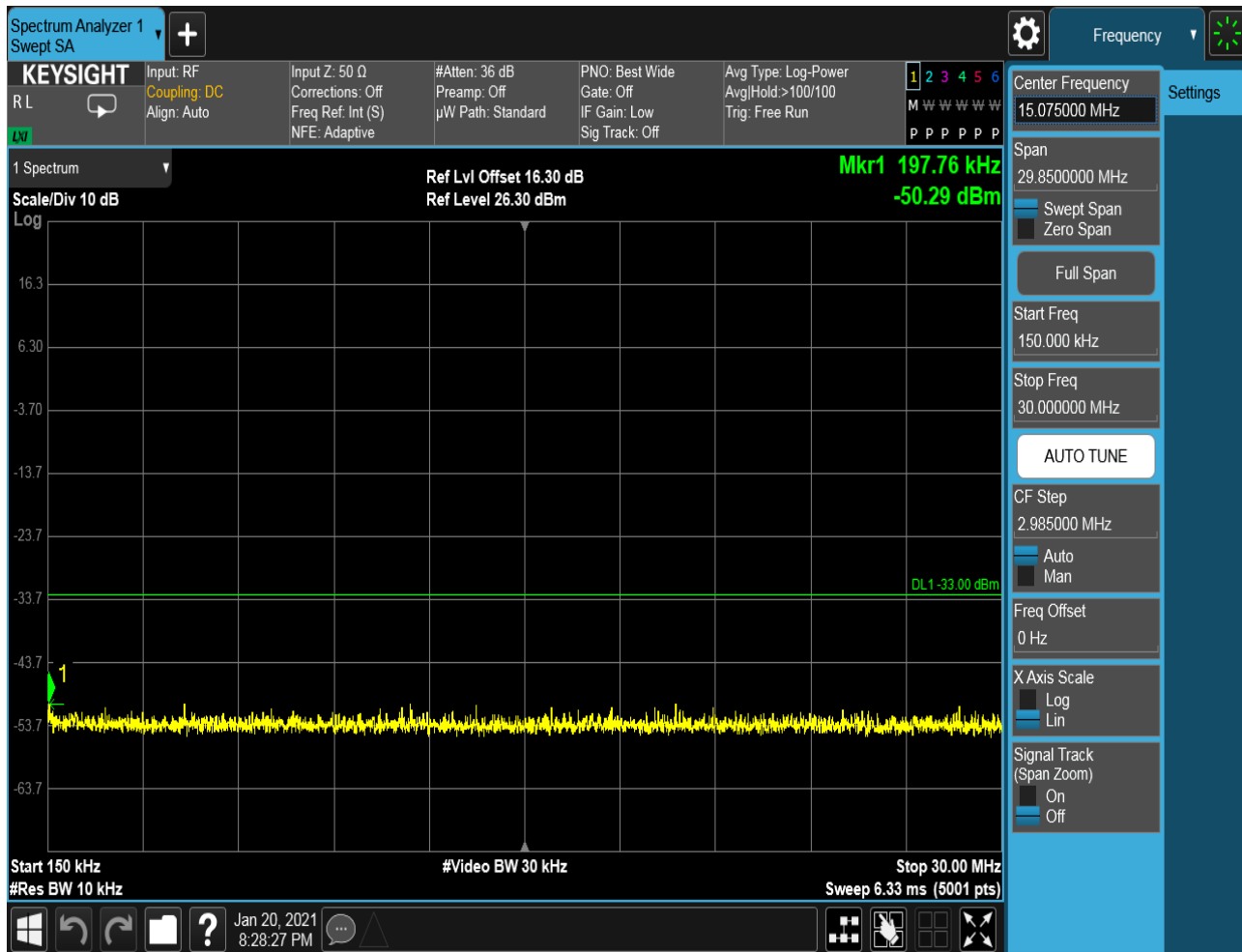


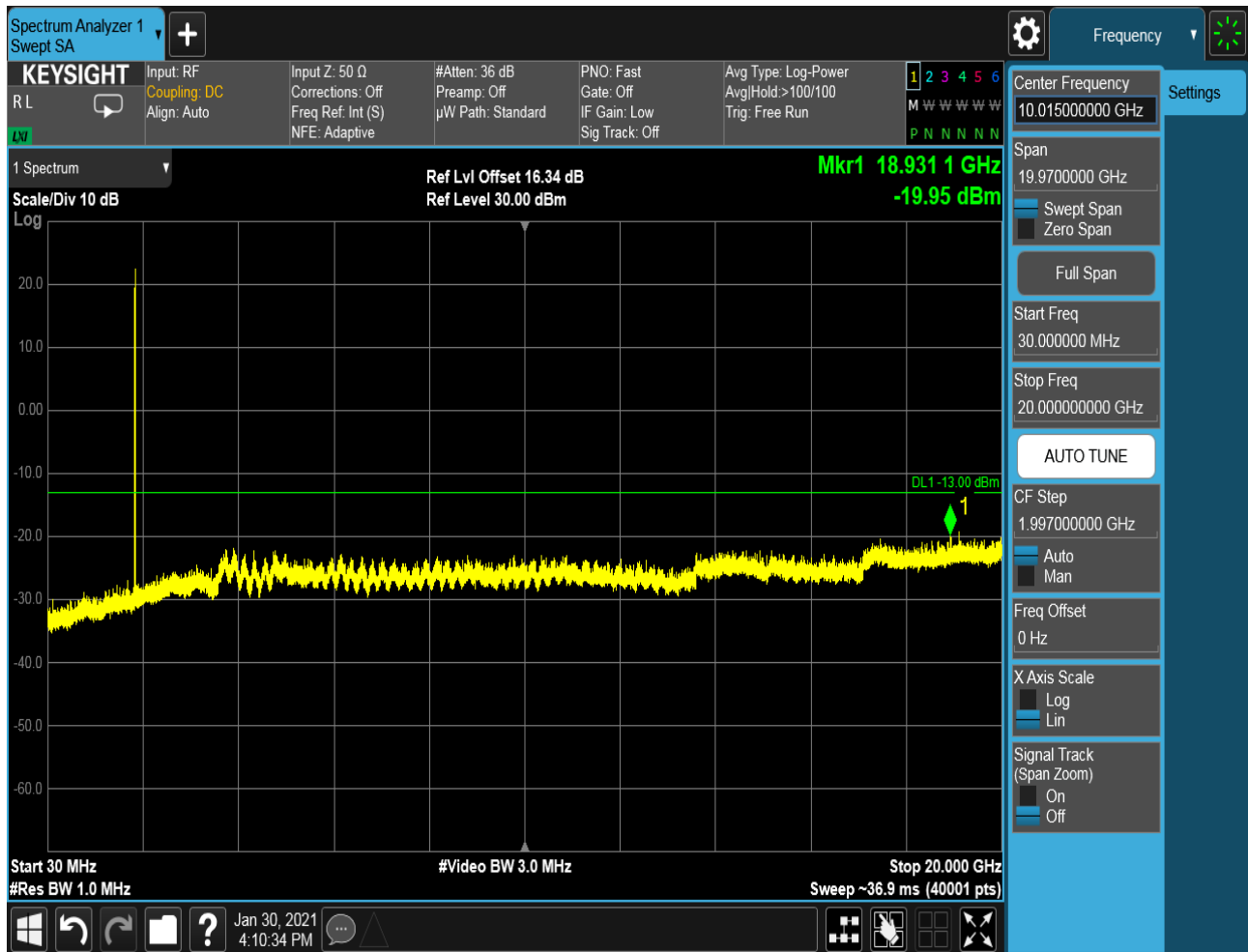
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

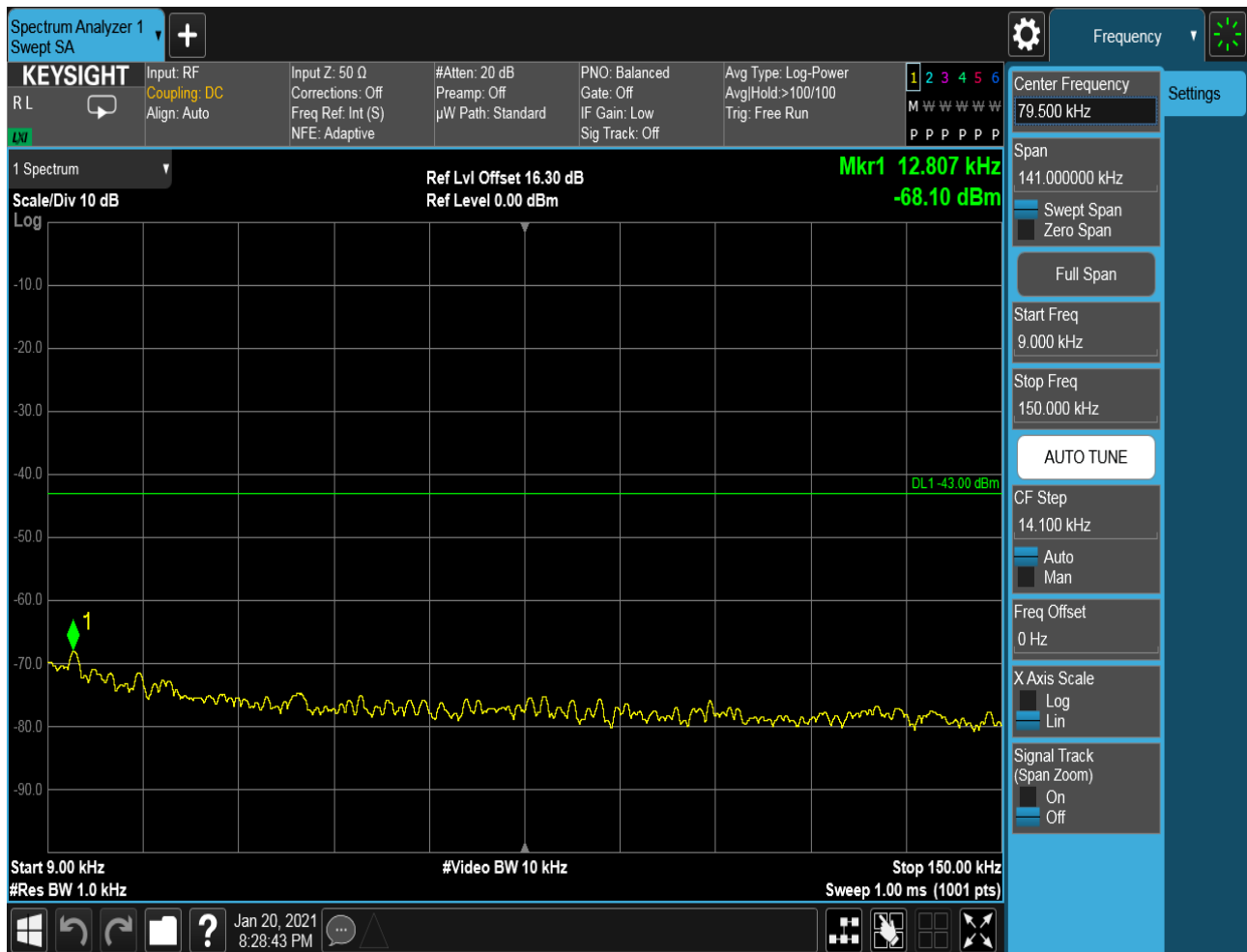
6.1.3.1.1 Test Channel = LCH

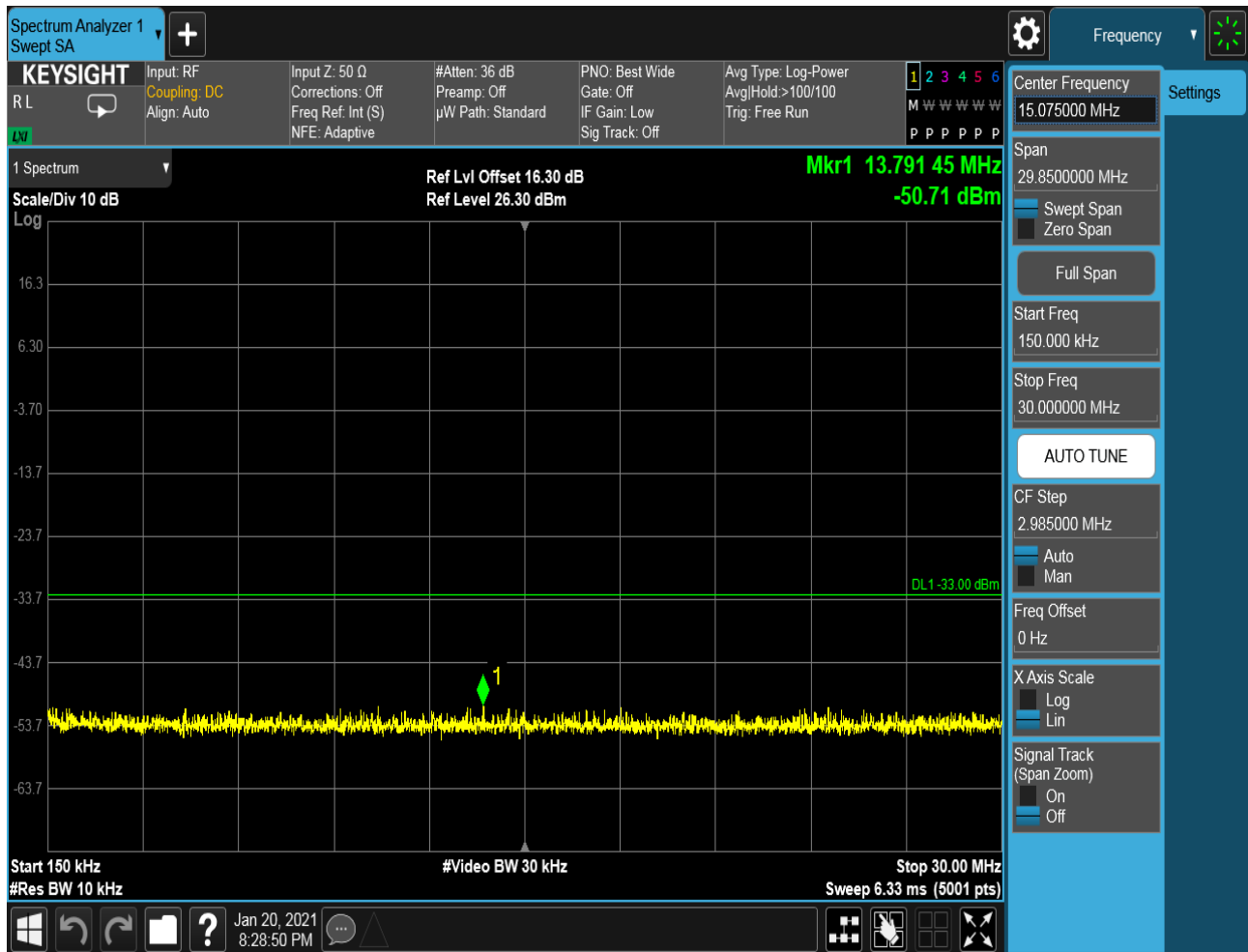


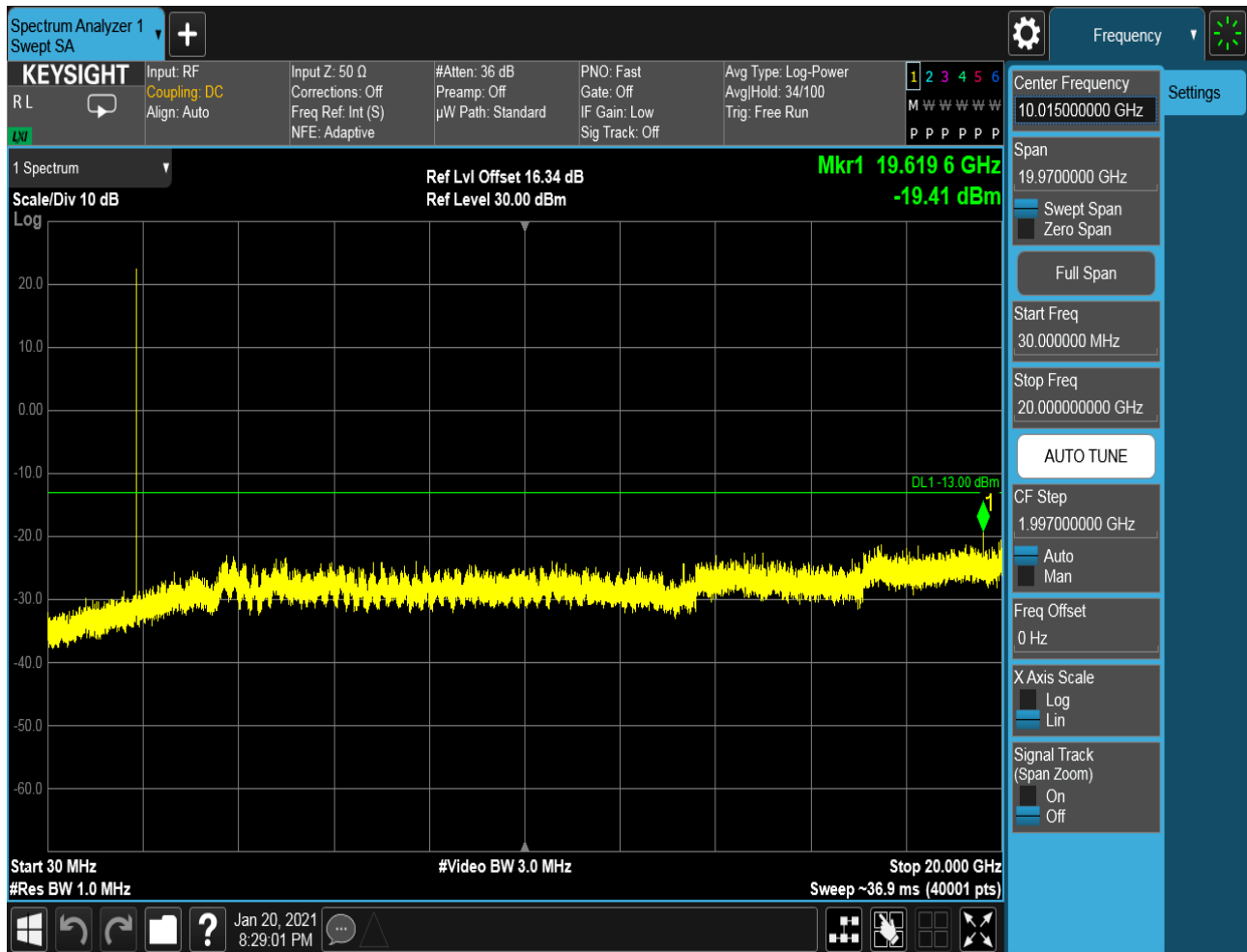




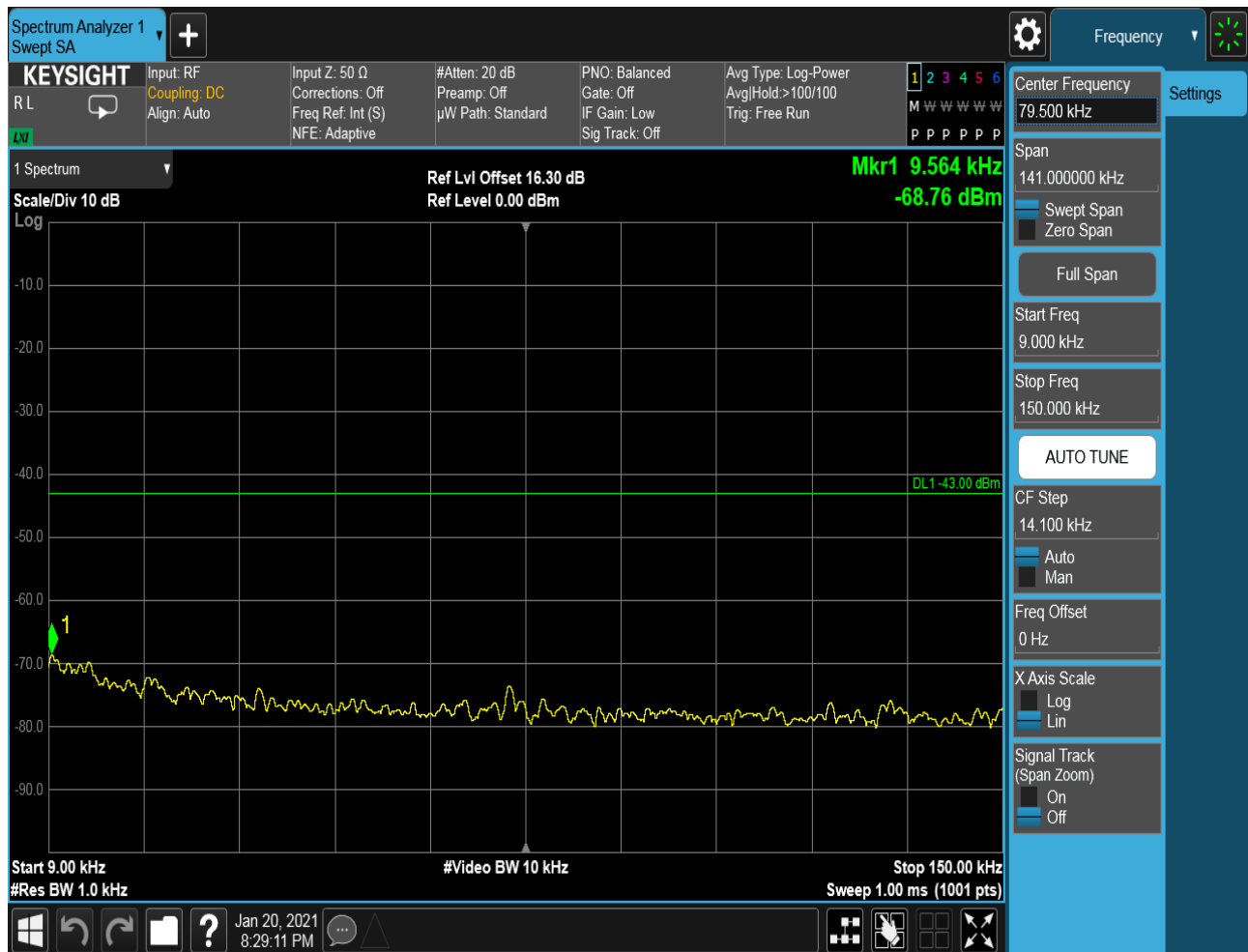
6.1.3.1.2 Test Channel = MCH

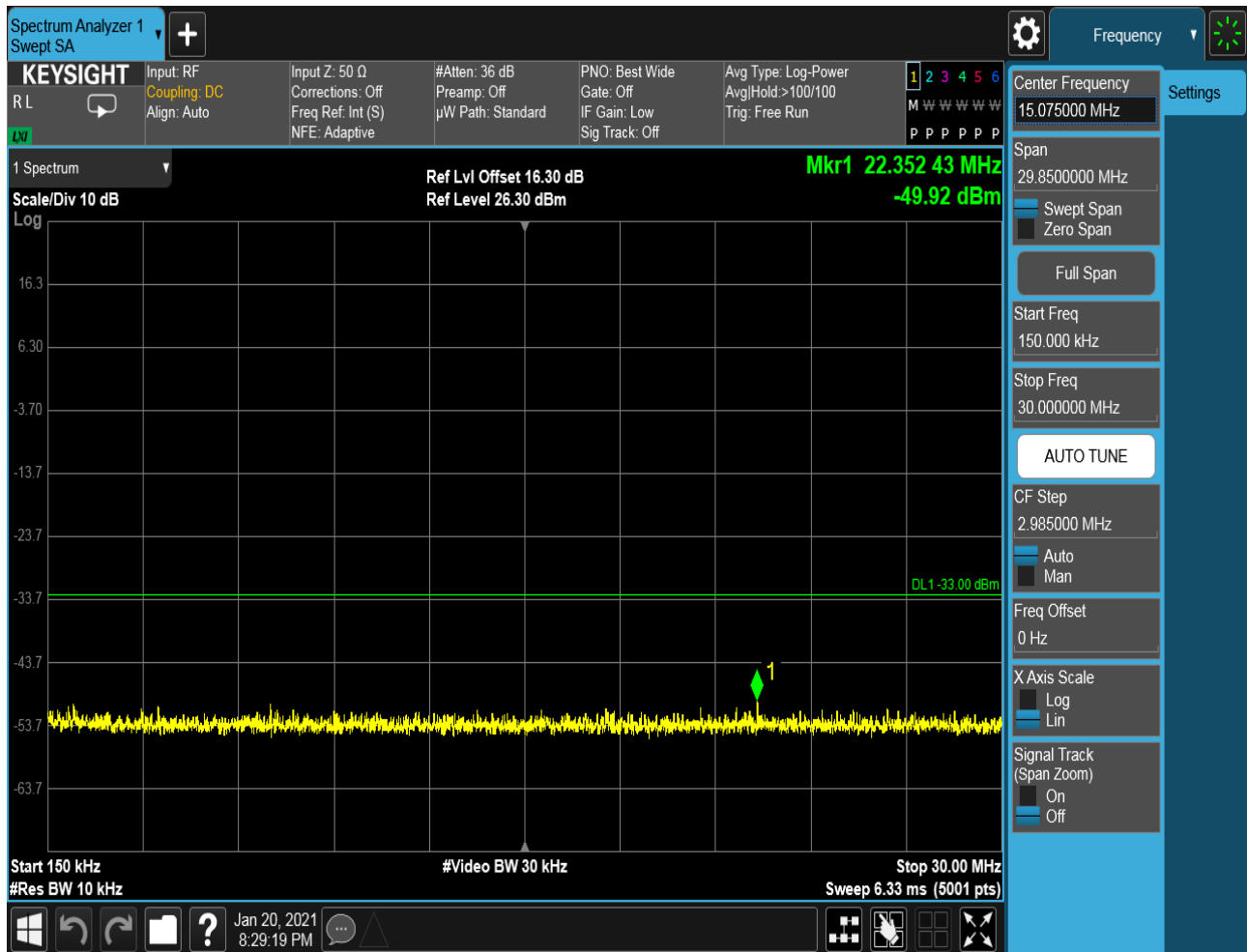


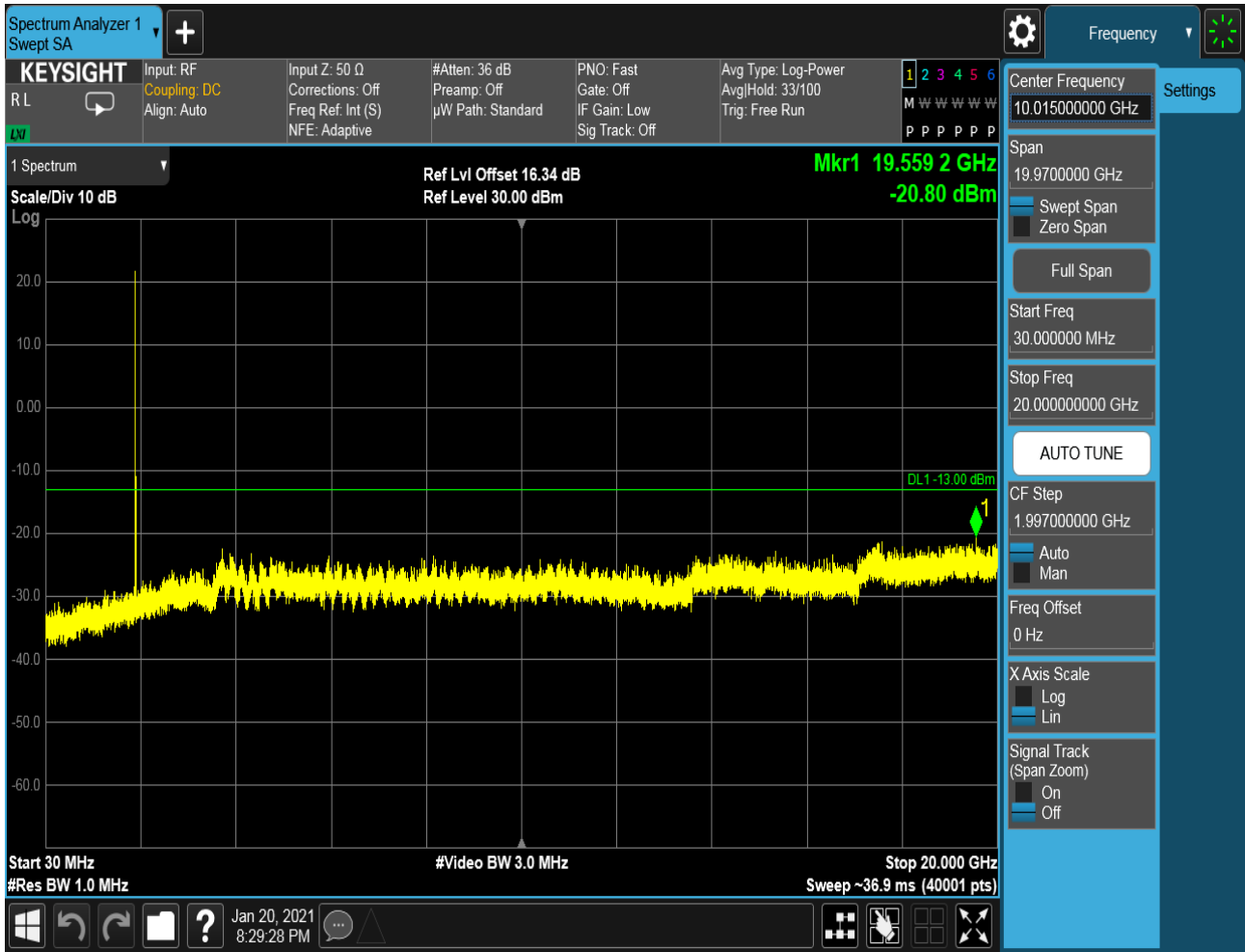




6.1.3.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes & antennas, 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

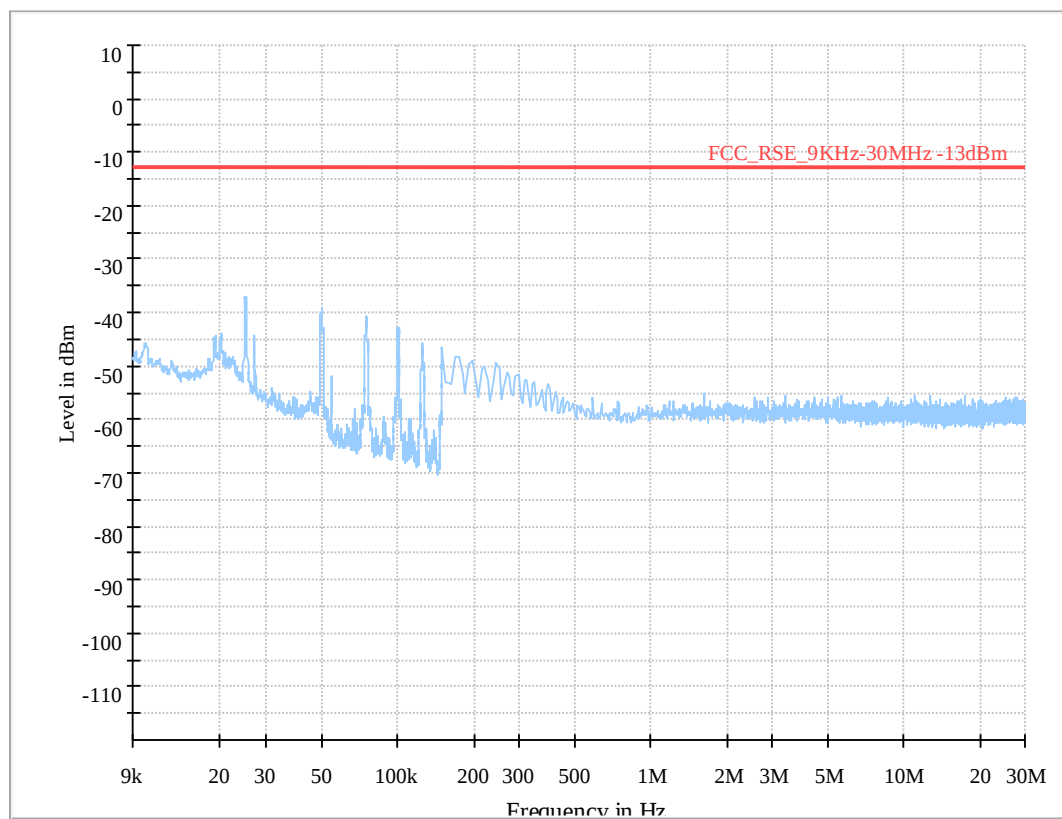
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

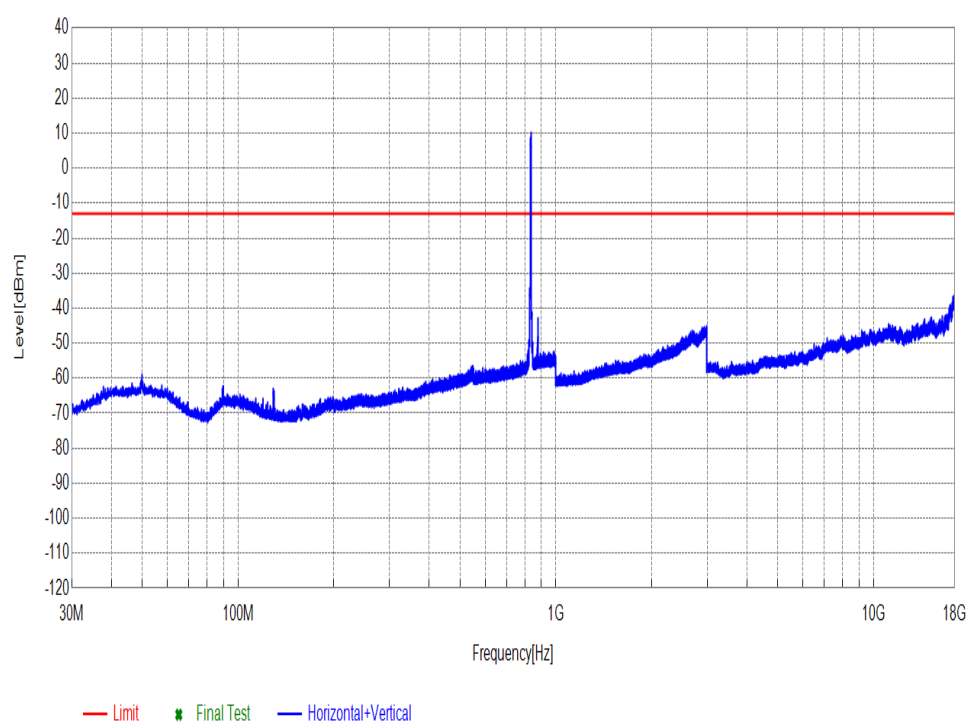
Part I - Test Plots

7.1 For UMTS

7.1.1 Test Band = WCDMA850

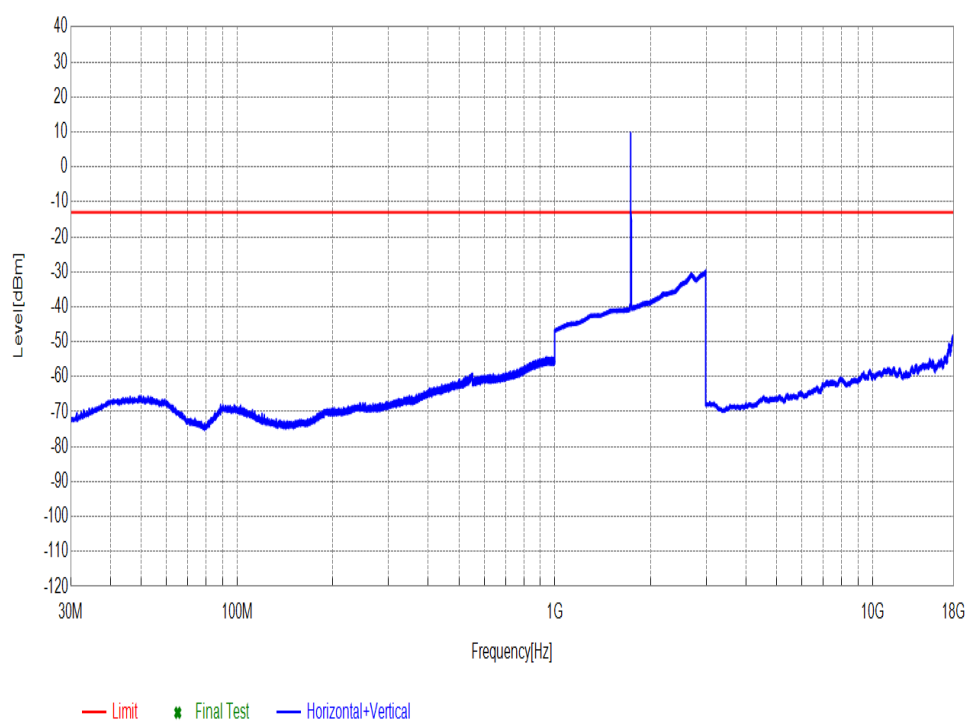
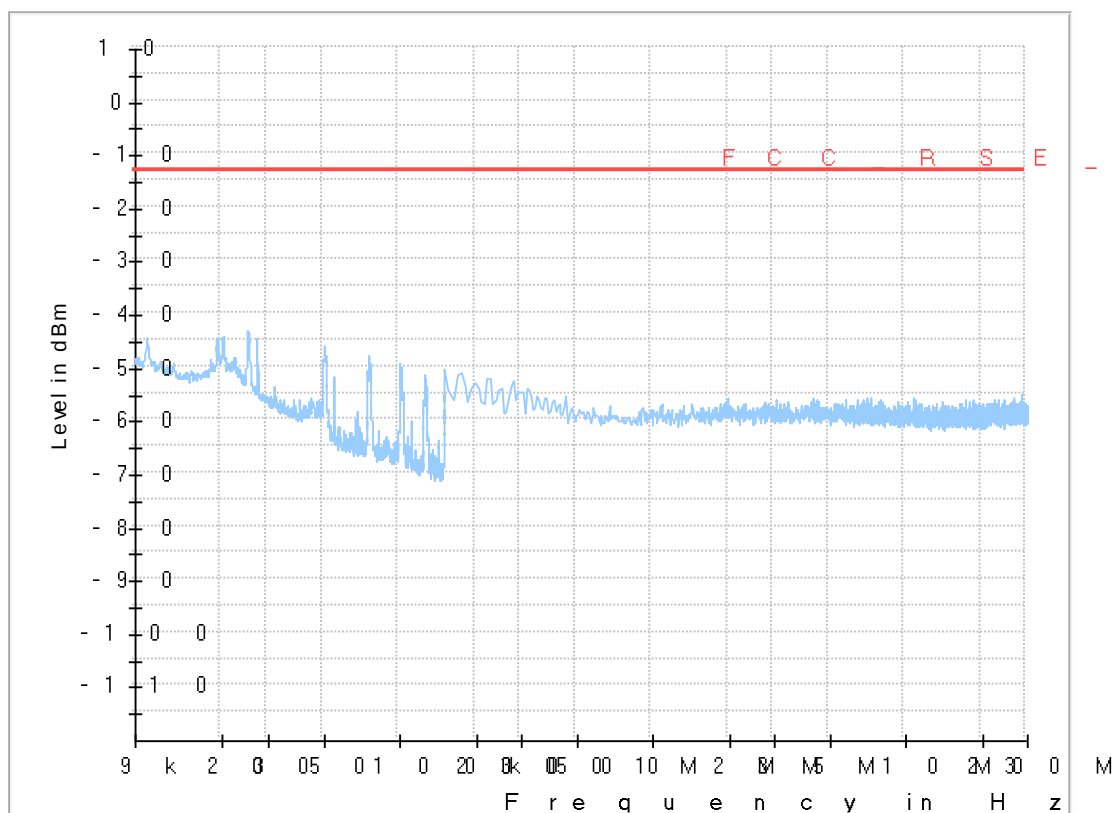
Worst case





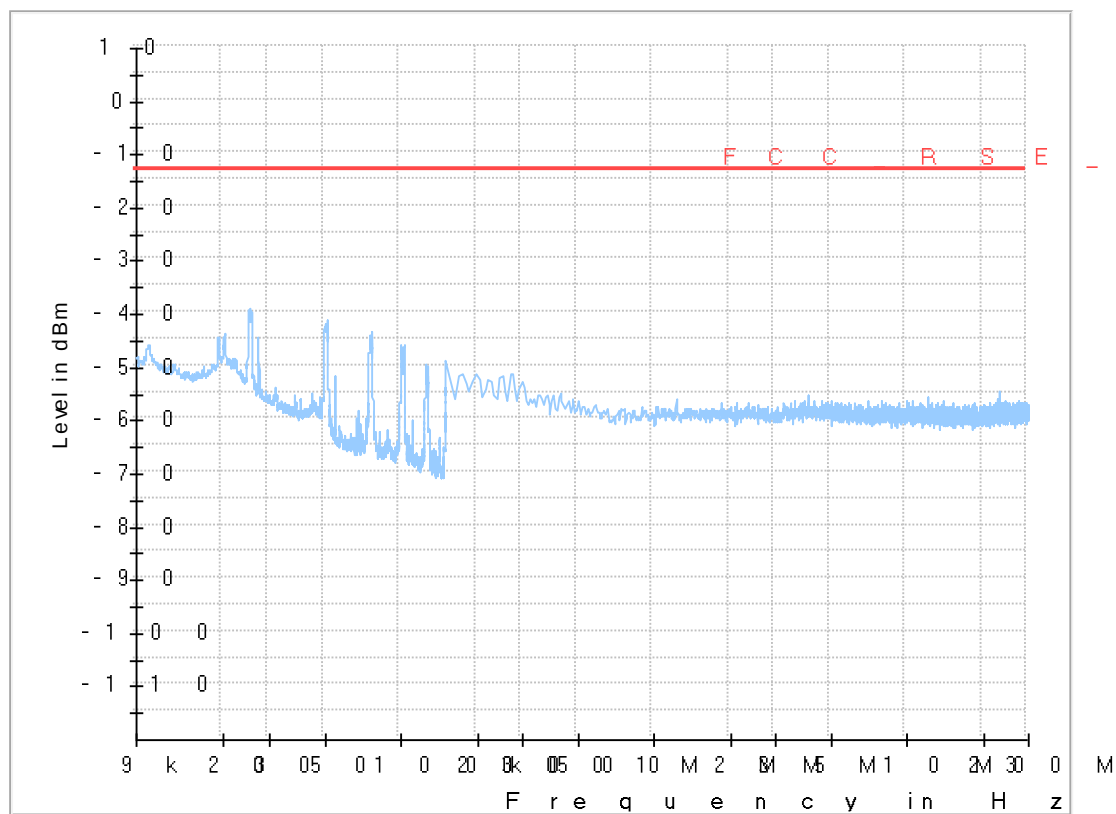
7.1.2 Test Band = WCDMA1700

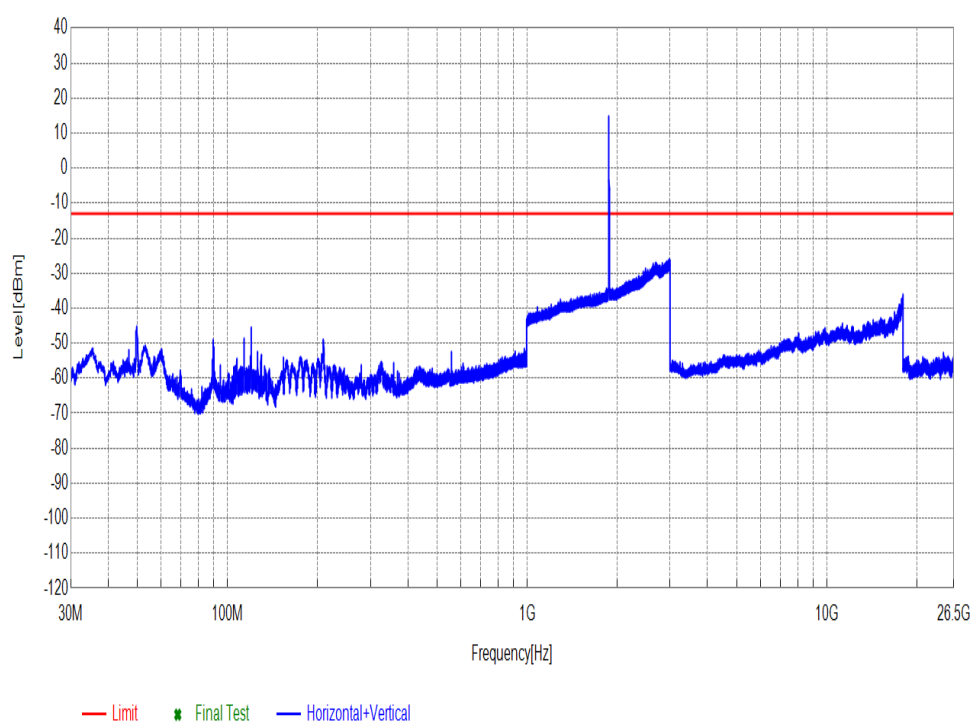
Worst case



7.1.3 Test Band = WCDMA1900

Worst case





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	-1.56641	-0.00190	PASS
				VN	-0.94414	-0.00114	PASS
				VH	-1.81675	-0.00220	PASS
		MCH	TN	VL	0.20742	0.00025	PASS
				VN	-0.47207	-0.00056	PASS
				VH	0.07153	0.00009	PASS
		HCH	TN	VL	-0.26464	-0.00031	PASS
				VN	0.30756	0.00036	PASS
				VH	0.37909	0.00045	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	0.12159	0.00007	PASS
				VN	0.39339	0.00023	PASS
				VH	-0.36478	-0.00021	PASS
		MCH	TN	VL	-1.35899	-0.00078	PASS
				VN	-2.00987	-0.00116	PASS
				VH	-1.77383	-0.00102	PASS
		HCH	TN	VL	0.53644	0.00031	PASS
				VN	0.80824	0.00046	PASS
				VH	1.10865	0.00063	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-2.73228	-0.00147	PASS
				VN	-2.84672	-0.00154	PASS
				VH	-2.56777	-0.00139	PASS
		MCH	TN	VL	-1.44482	-0.00077	PASS
				VN	-2.14577	-0.00114	PASS
				VH	-1.15871	-0.00062	PASS
		HCH	TN	VL	-1.82390	-0.00147	PASS
				VN	-2.06709	-0.00154	PASS
				VH	-1.56641	-0.00139	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	-1.34468	-0.00163	PASS
				-20	-1.78814	-0.00216	PASS
				-10	-1.38760	-0.00168	PASS
				0	-1.64509	-0.00199	PASS
				10	-1.23024	-0.00149	PASS
				20	-0.94414	-0.00114	PASS
				30	-1.66655	-0.00202	PASS
				40	-1.28031	-0.00155	PASS
				50	-1.84536	-0.00223	PASS
		MCH	VN	-30	-0.02146	-0.00003	PASS
				-20	0.20742	0.00025	PASS
				-10	-0.28610	-0.00034	PASS
				0	-0.15020	-0.00018	PASS
				10	0.80824	0.00097	PASS
				20	-0.47207	-0.00056	PASS
				30	-0.59366	-0.00071	PASS
				40	0.02146	0.00003	PASS
				50	-0.29325	-0.00035	PASS
		HCH	VN	-30	-0.32187	-0.00038	PASS
				-20	-0.14305	-0.00017	PASS
				-10	-0.15736	-0.00019	PASS
				0	-0.07153	-0.00008	PASS
				10	0.60797	0.00072	PASS
				20	0.30756	0.00036	PASS
				30	0.10014	0.00012	PASS
				40	0.24319	0.00029	PASS
				50	0.05007	0.00006	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	-0.14305	-0.00008	PASS
				-20	-0.19312	-0.00011	PASS
				-10	0.57220	0.00033	PASS
				0	0.37909	0.00022	PASS
				10	0.05722	0.00003	PASS
				20	0.39339	0.00023	PASS
				30	-0.65804	-0.00038	PASS
				40	0.10729	0.00006	PASS
				50	-0.27895	-0.00016	PASS
		MCH	VN	-30	-1.82390	-0.00105	PASS
				-20	-2.16007	-0.00125	PASS
				-10	-2.26736	-0.00131	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				0	-1.58072	-0.00091	PASS
				10	-1.41621	-0.00082	PASS
				20	-2.00987	-0.00116	PASS
				30	-2.13862	-0.00123	PASS
				40	-1.63794	-0.00095	PASS
				50	-1.67370	-0.00097	PASS
		HCH	VN	-30	0.95129	0.00054	PASS
				-20	0.68665	0.00039	PASS
				-10	1.05858	0.00060	PASS
				0	1.05143	0.00060	PASS
				10	0.80824	0.00046	PASS
				20	0.80824	0.00046	PASS
				30	0.70810	0.00040	PASS
				40	0.75102	0.00043	PASS
				50	0.70810	0.00040	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	-3.41892	-0.00185	PASS
				-20	-2.43902	-0.00132	PASS
				-10	-1.87397	-0.00101	PASS
				0	-2.42472	-0.00131	PASS
				10	-3.47614	-0.00188	PASS
				20	-2.84672	-0.00154	PASS
				30	-2.42472	-0.00131	PASS
				40	-2.55346	-0.00138	PASS
				50	-2.42472	-0.00131	PASS
		MCH	VN	-30	-1.50204	-0.00080	PASS
				-20	-1.96695	-0.00105	PASS
				-10	-1.97411	-0.00105	PASS
				0	-1.98126	-0.00105	PASS
				10	-1.47343	-0.00078	PASS
				20	-2.14577	-0.00114	PASS
				30	-1.99556	-0.00106	PASS
				40	-1.23024	-0.00065	PASS
				50	-2.01702	-0.00107	PASS
		HCH	VN	-30	-1.78099	-0.00093	PASS
				-20	-1.18732	-0.00062	PASS
				-10	-1.73807	-0.00091	PASS
				0	-1.60217	-0.00084	PASS
				10	-1.15871	-0.00061	PASS
				20	-2.06709	-0.00108	PASS
				30	-1.59502	-0.00084	PASS
				40	-1.44482	-0.00076	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	-2.05994	-0.00108	PASS

END