



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	24.12	20.17	38.5	PASS
		MCH	24.06	20.11	38.5	PASS
		HCH	24.09	20.14	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.37	23.07	30	PASS
		MCH	23.36	23.06	30	PASS
		HCH	23.32	23.02	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.69	24.09	33	PASS
		MCH	23.69	24.09	33	PASS
		HCH	23.65	24.05	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	2.670	13	PASS
		MCH	3.240	13	PASS
		HCH	2.830	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.870	13	PASS
		MCH	2.770	13	PASS
		HCH	2.740	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.760	13	PASS
		MCH	2.800	13	PASS
		HCH	2.700	13	PASS

3Appendix_C: Modulation Characteristics

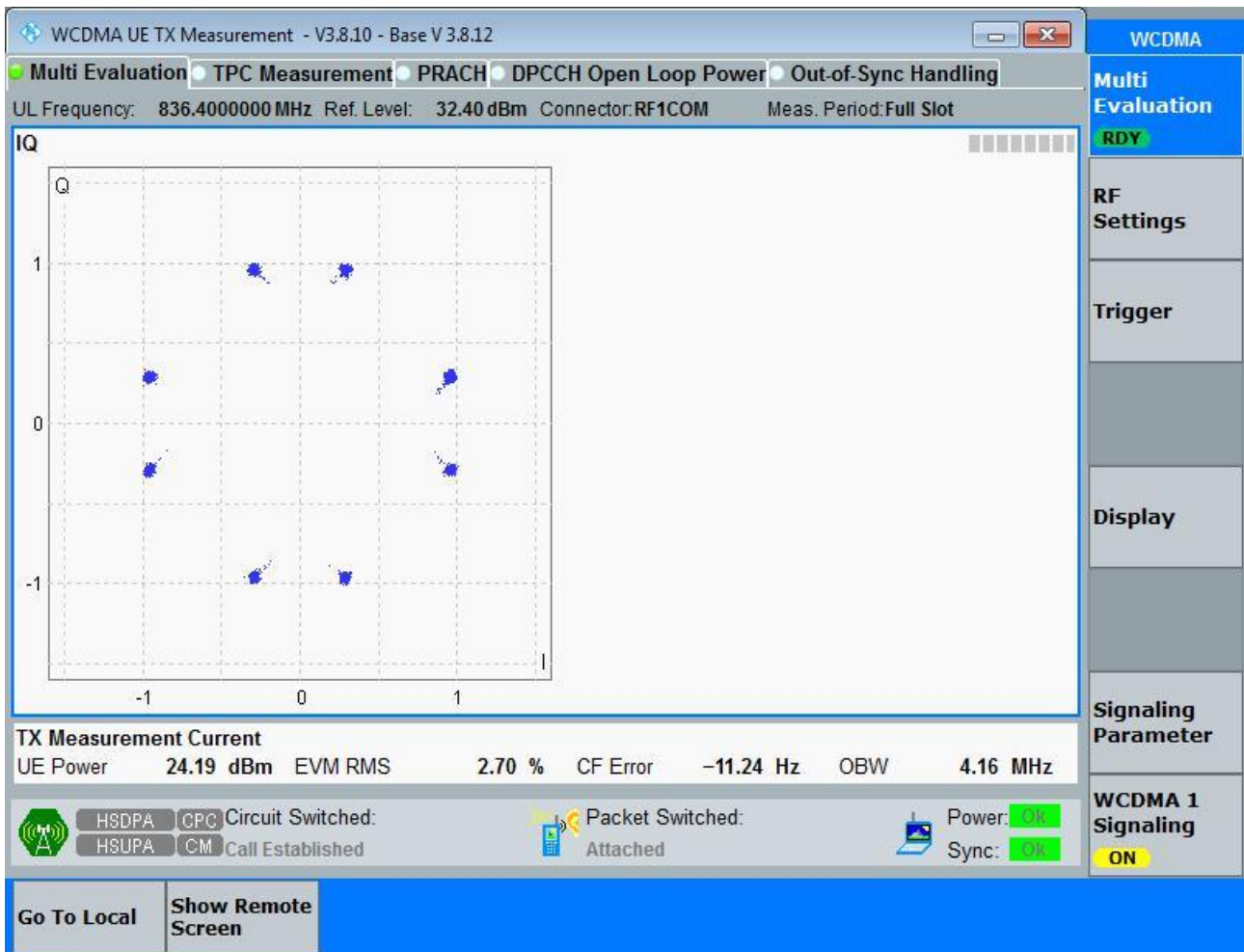
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

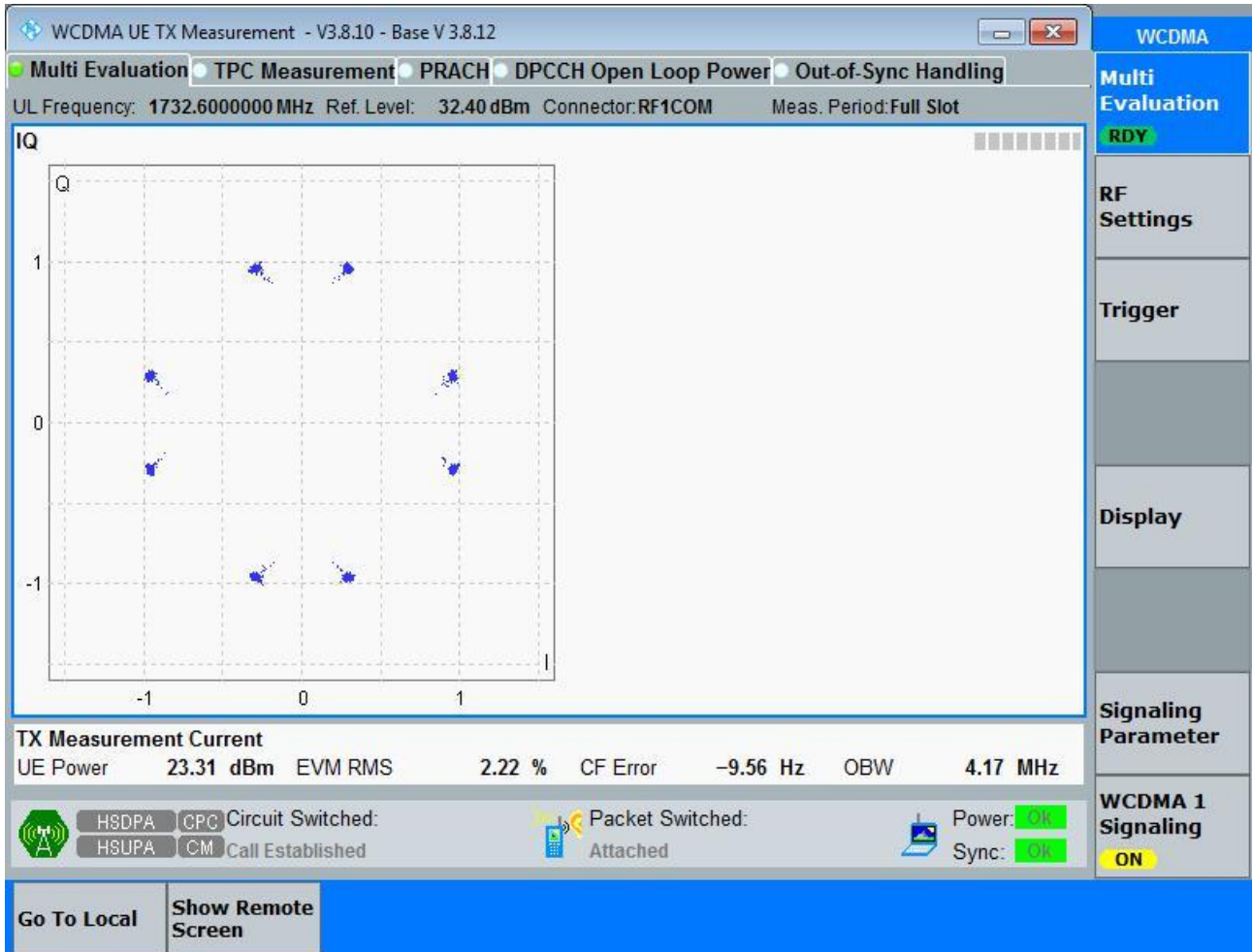
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

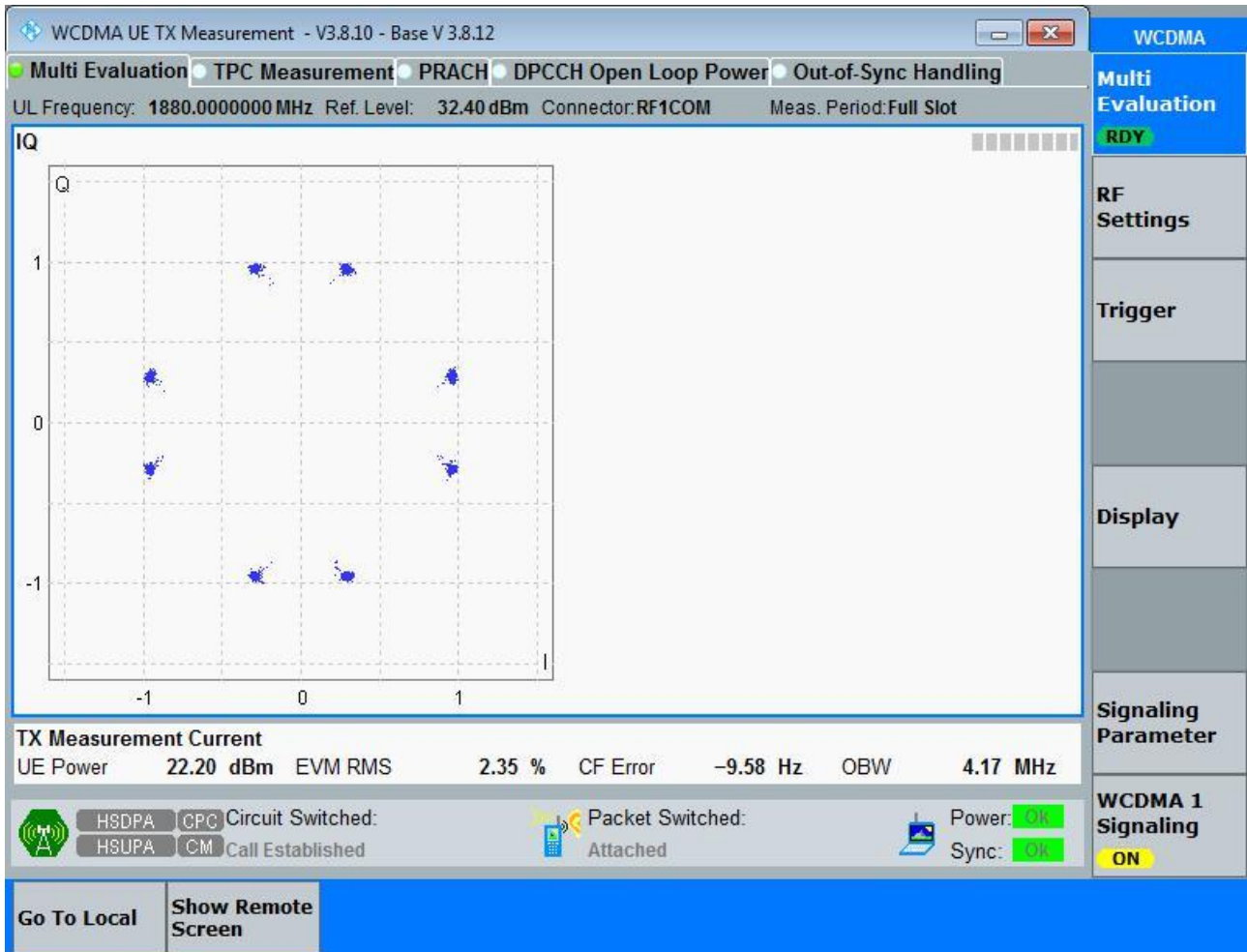
3.1.2.1.1 Test Channel = MCH



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	4.18	4.72	Pass
		MCH	4.17	4.73	Pass
		HCH	4.17	4.73	Pass
WCDMA1700	UMTS/TM1	LCH	4.16	4.70	Pass
		MCH	4.18	4.72	Pass
		HCH	4.17	4.75	Pass
WCDMA1900	UMTS/TM1	LCH	4.17	4.73	Pass
		MCH	4.17	4.71	Pass
		HCH	4.18	4.71	Pass

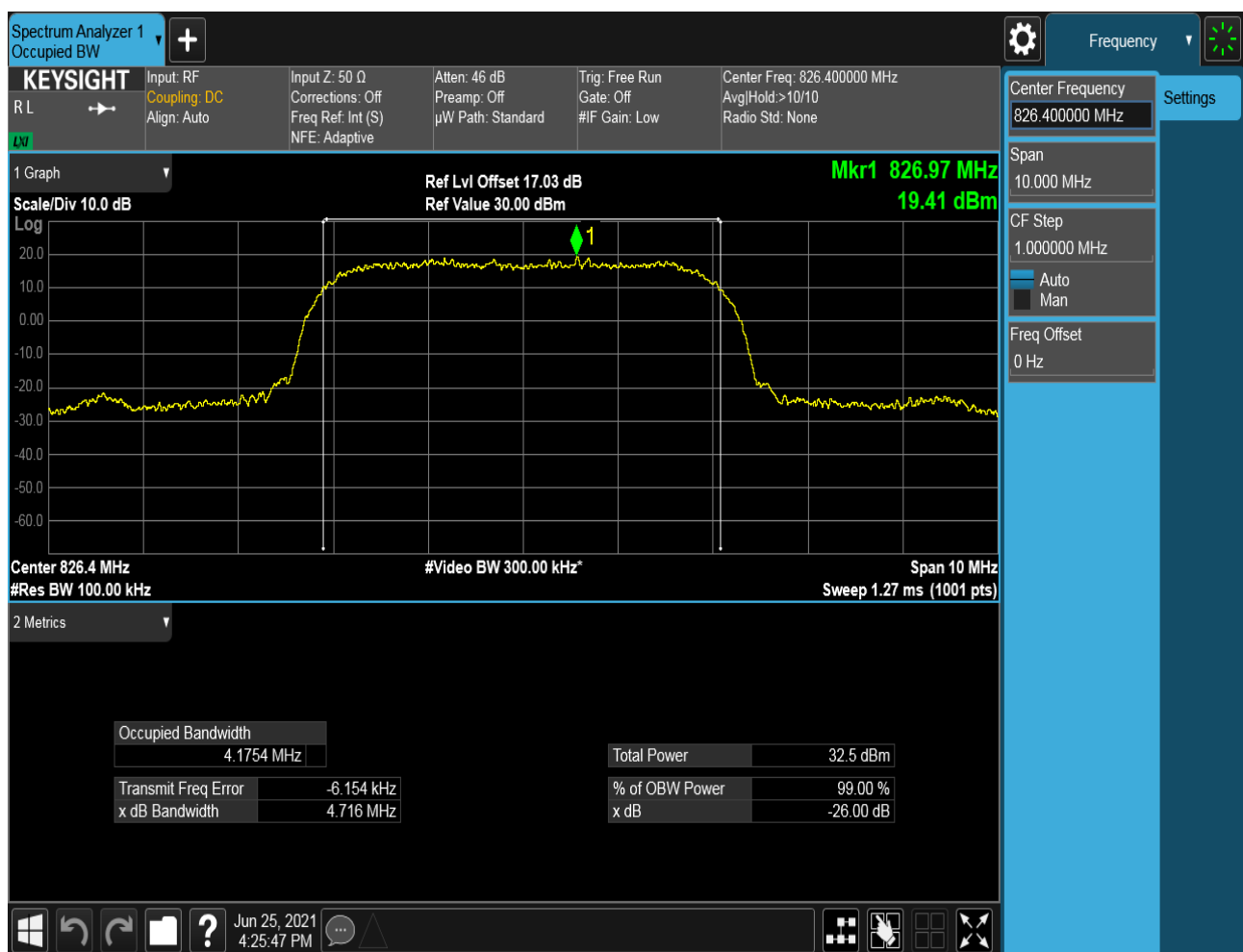
Part II - Test Plots

4.1 For UMTS

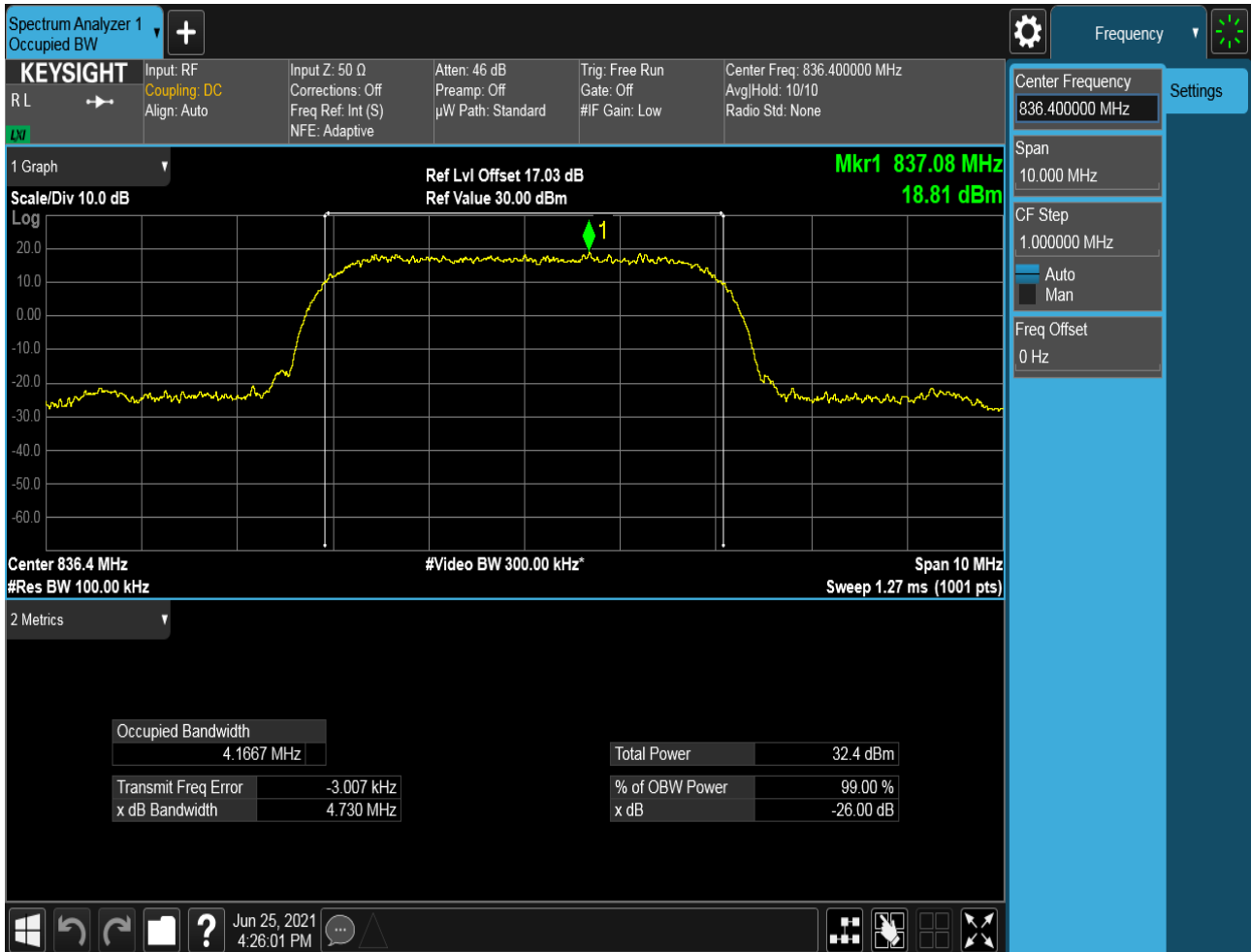
4.1.1 Test Band = WCDMA850

4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH

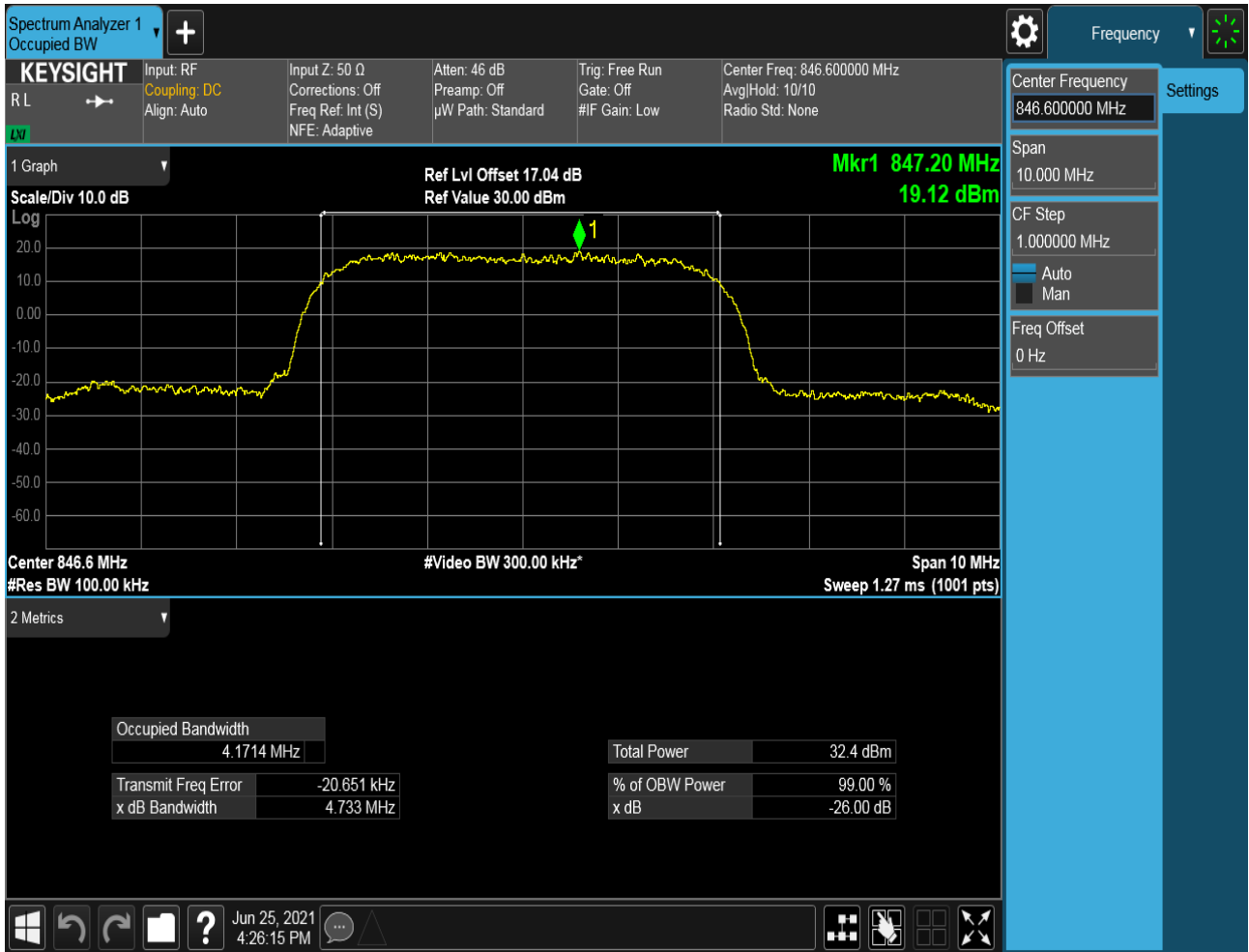


4.1.1.1.2 Test Channel = MCH





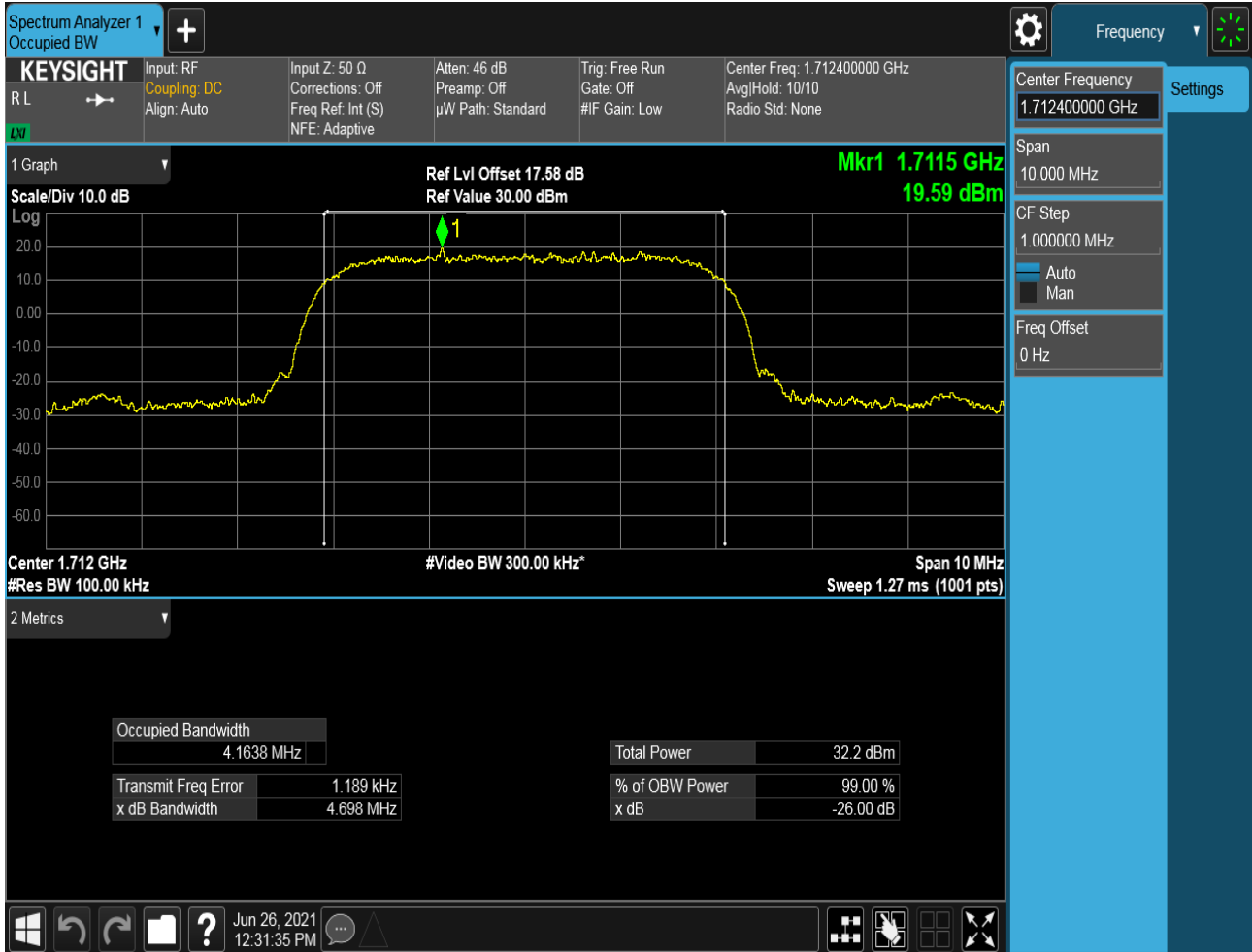
4.1.1.1.3 Test Channel = HCH



4.1.2 Test Band = WCDMA1700

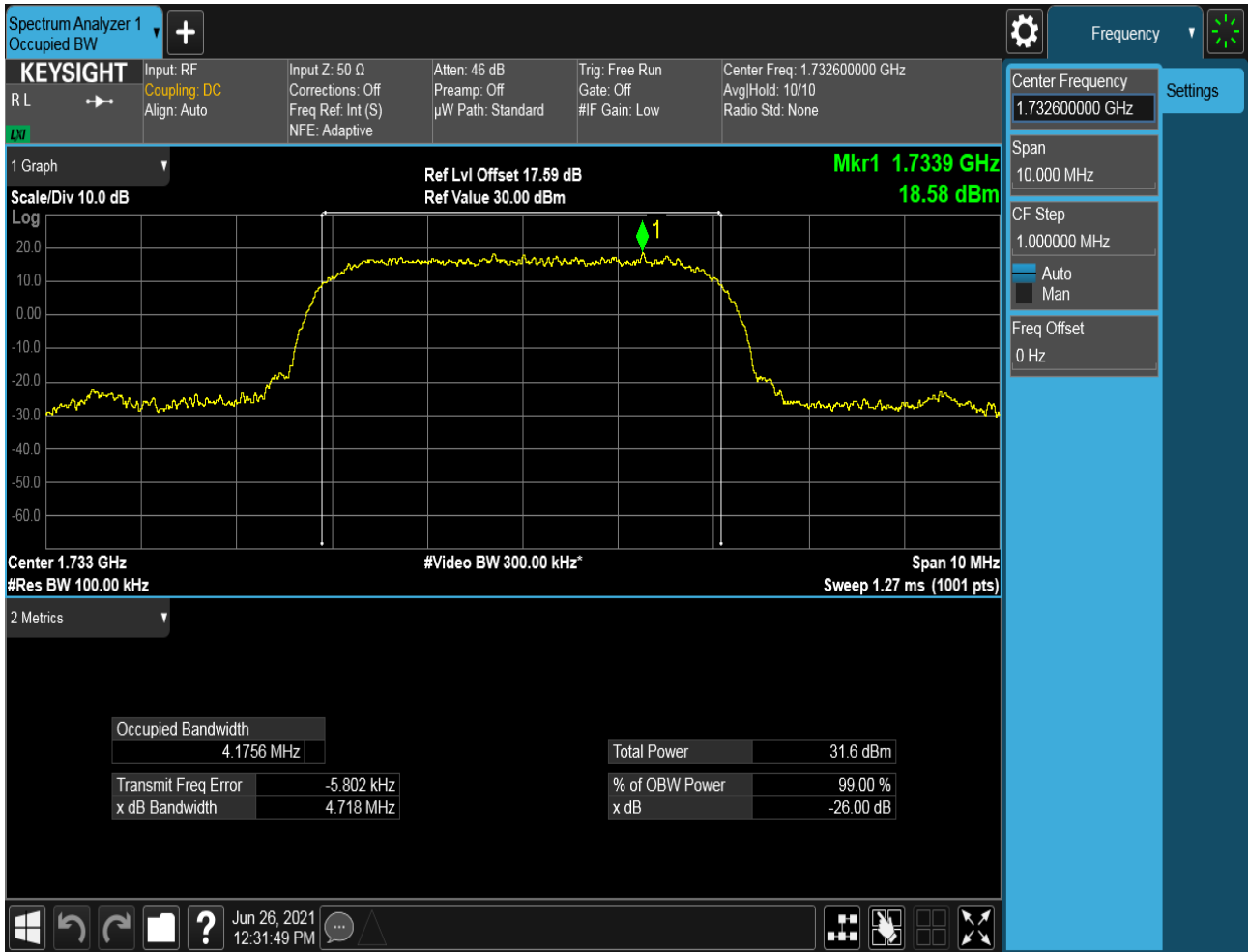
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



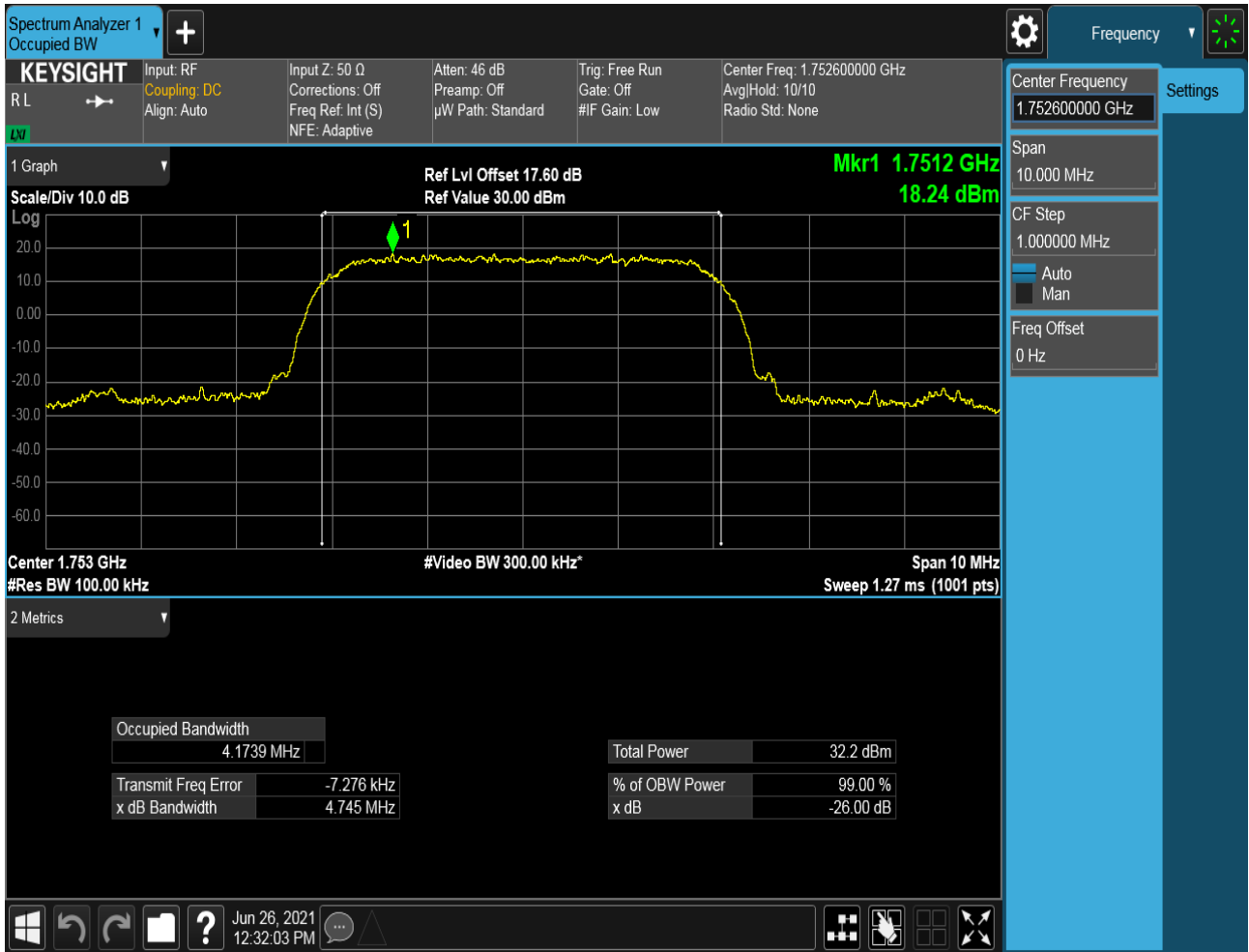


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH



4.1.3 Test Band = WCDMA1900

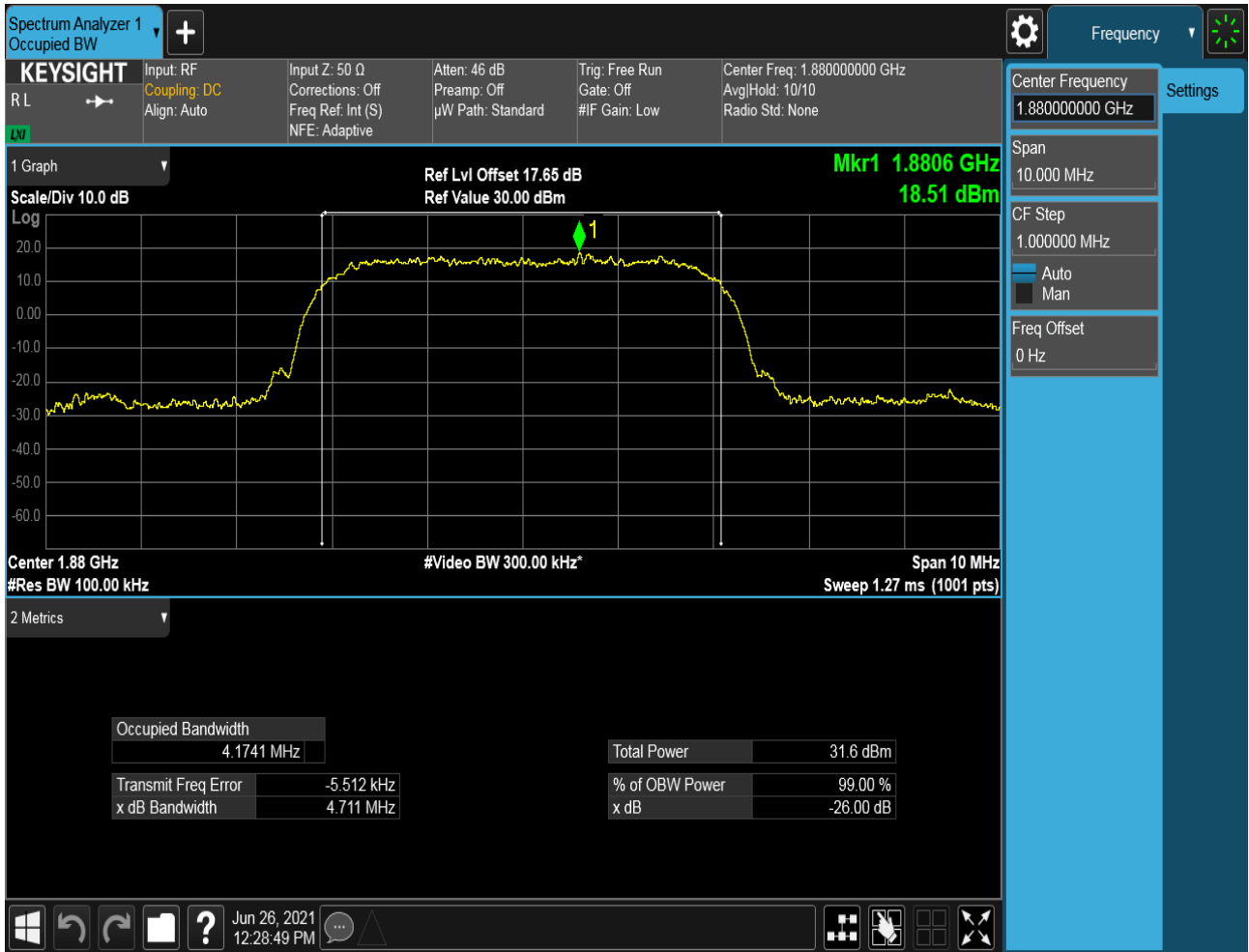
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



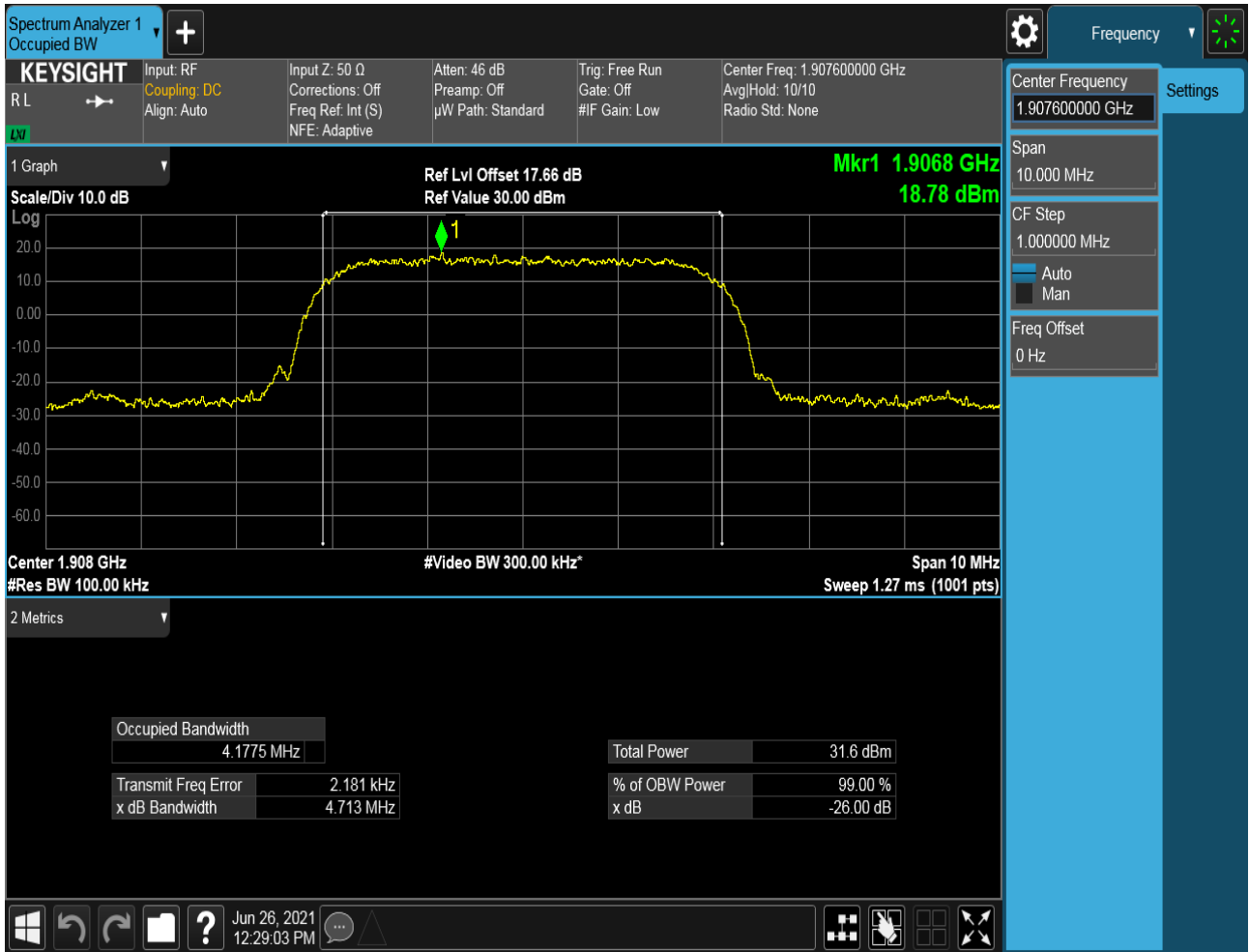


4.1.3.1.2 Test Channel = MCH





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

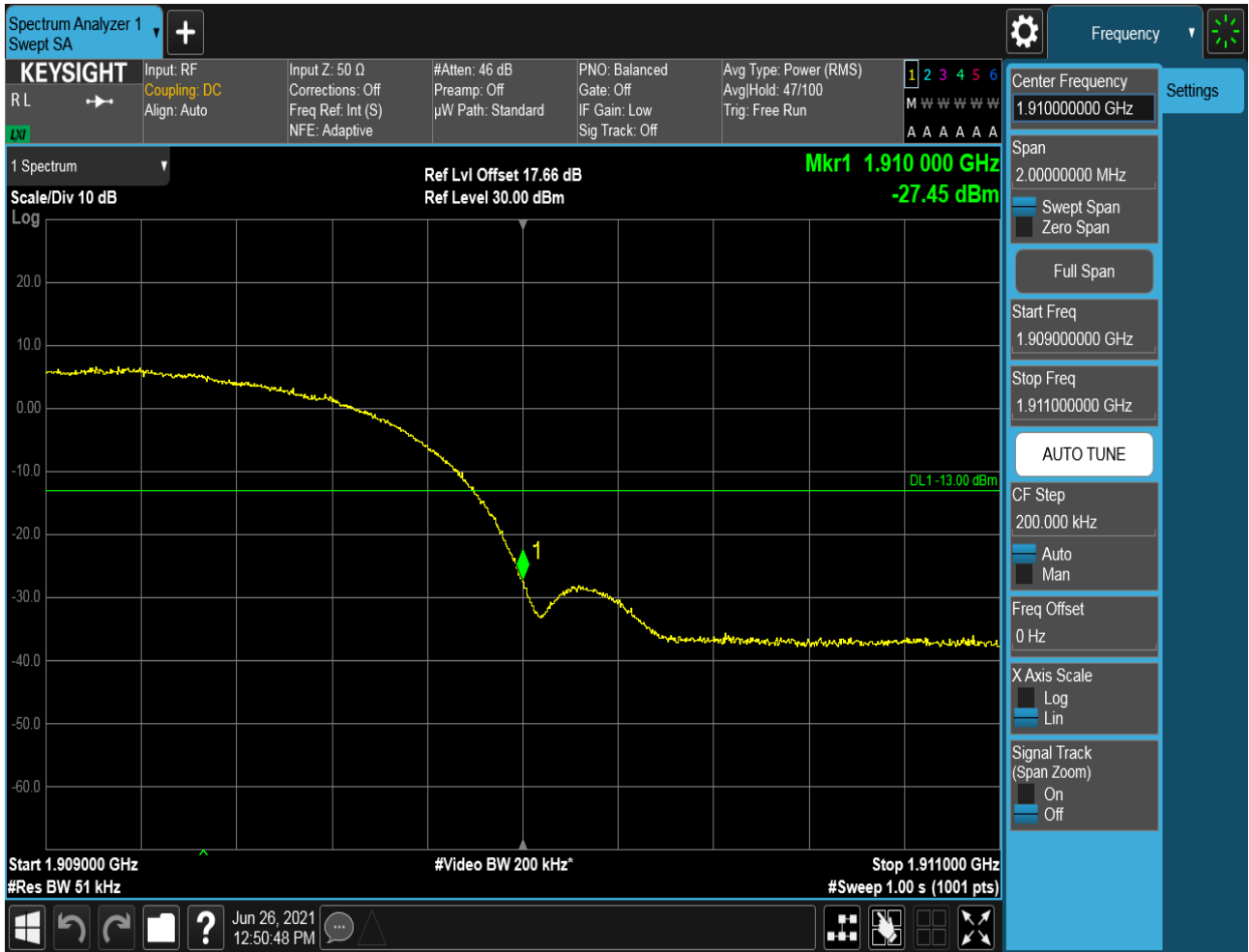
5.1.3.1 Test Mode = UMTS/TM1

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.

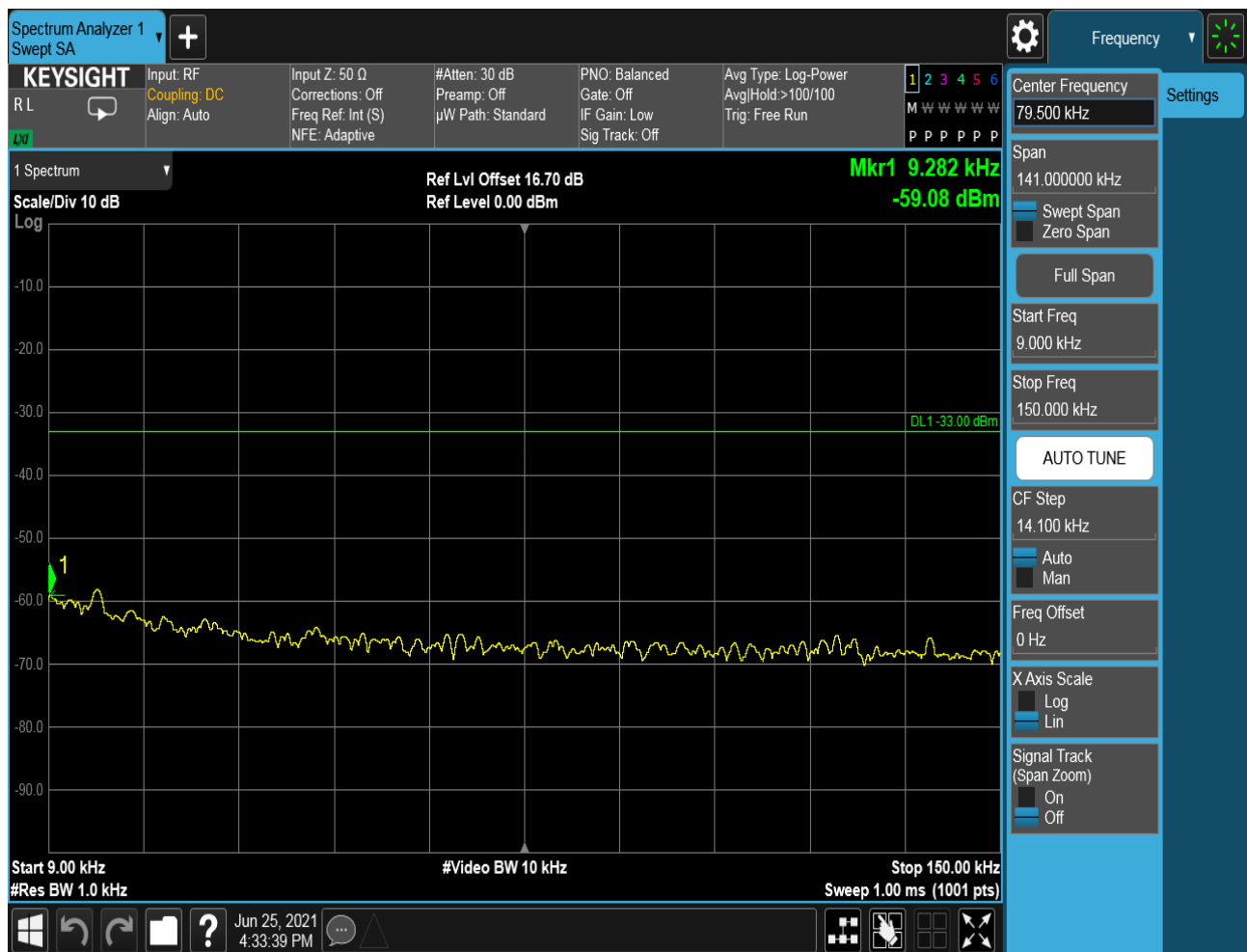
Part I - Test Plots

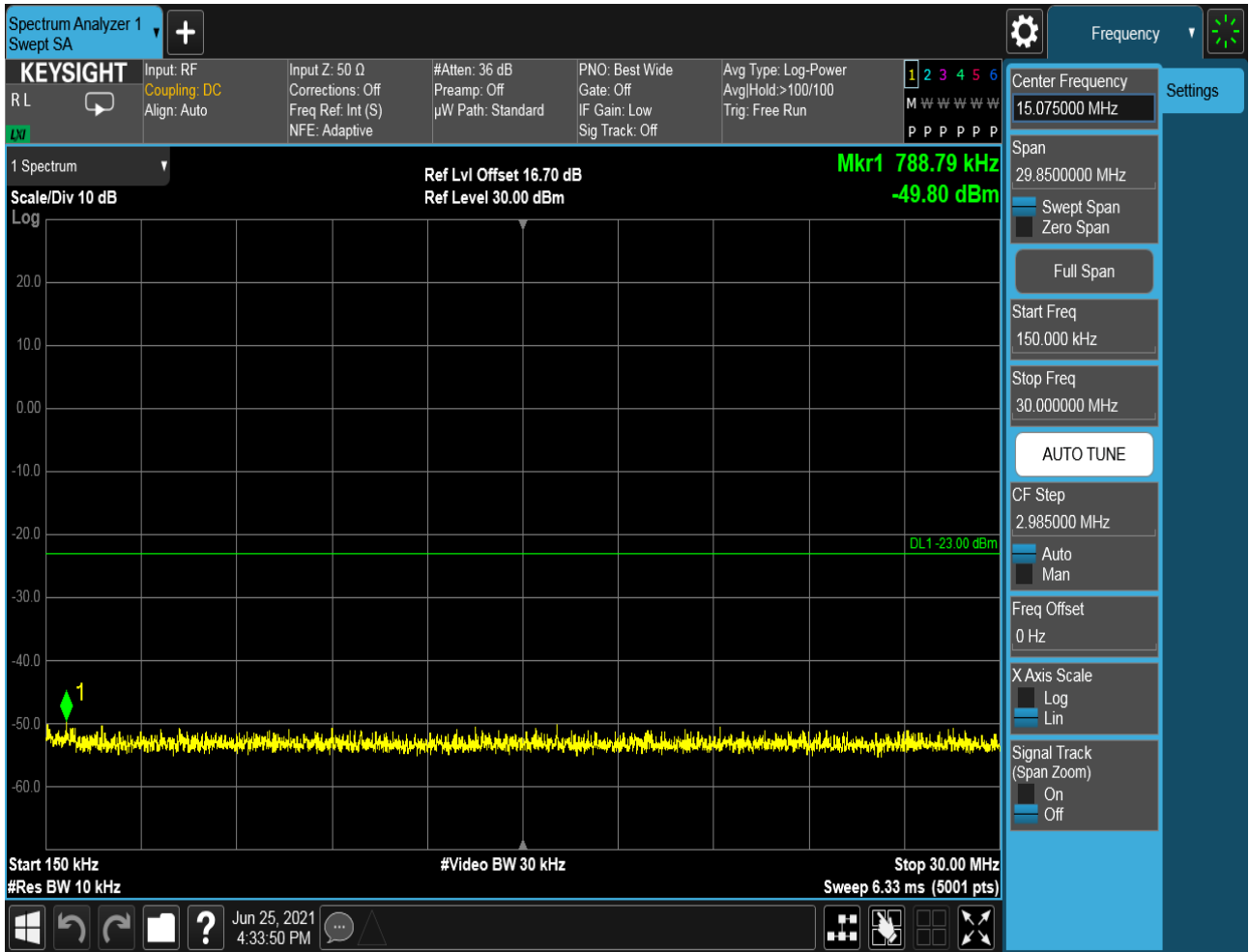
6.1 For UMTS

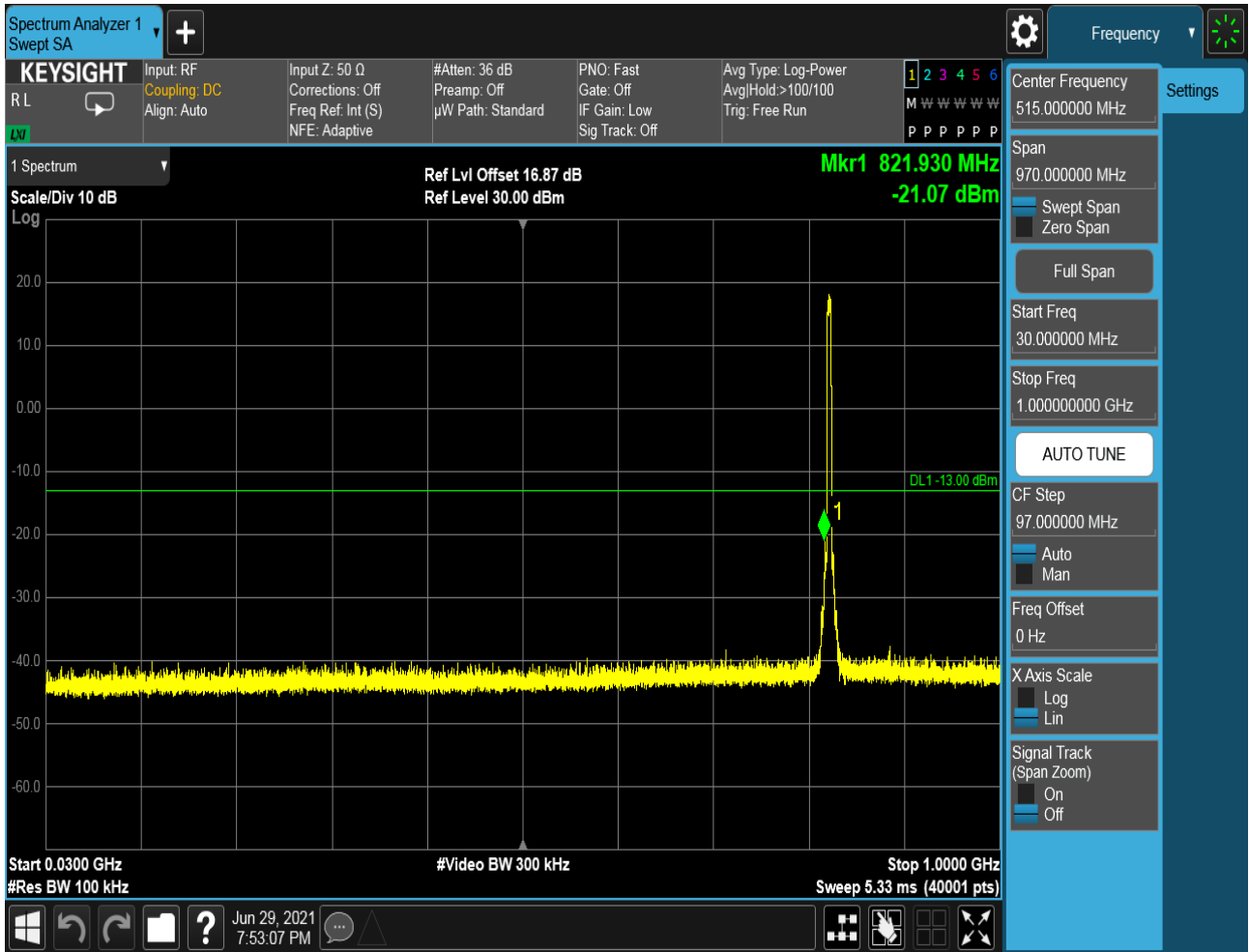
6.1.1 Test Band = WCDMA850

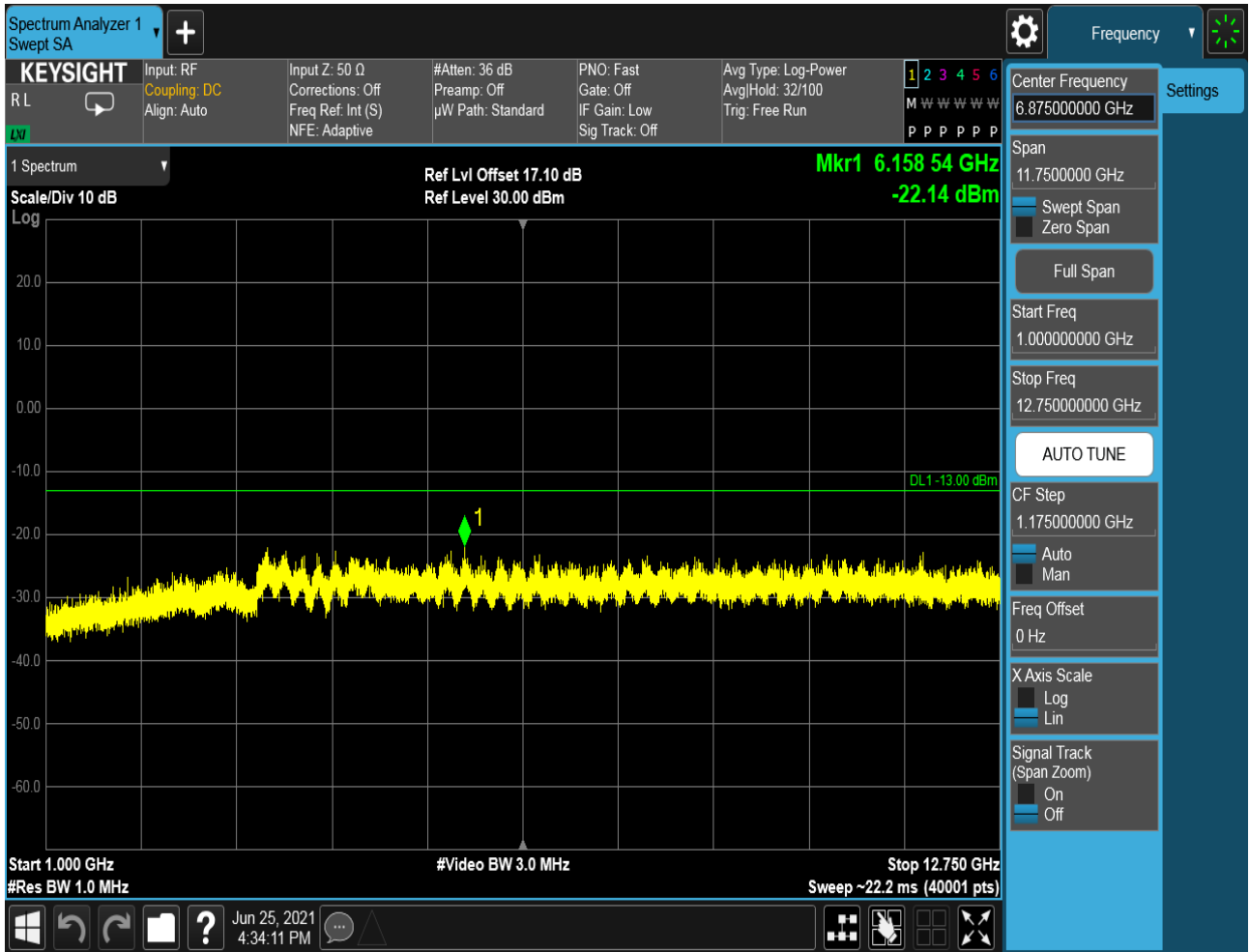
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



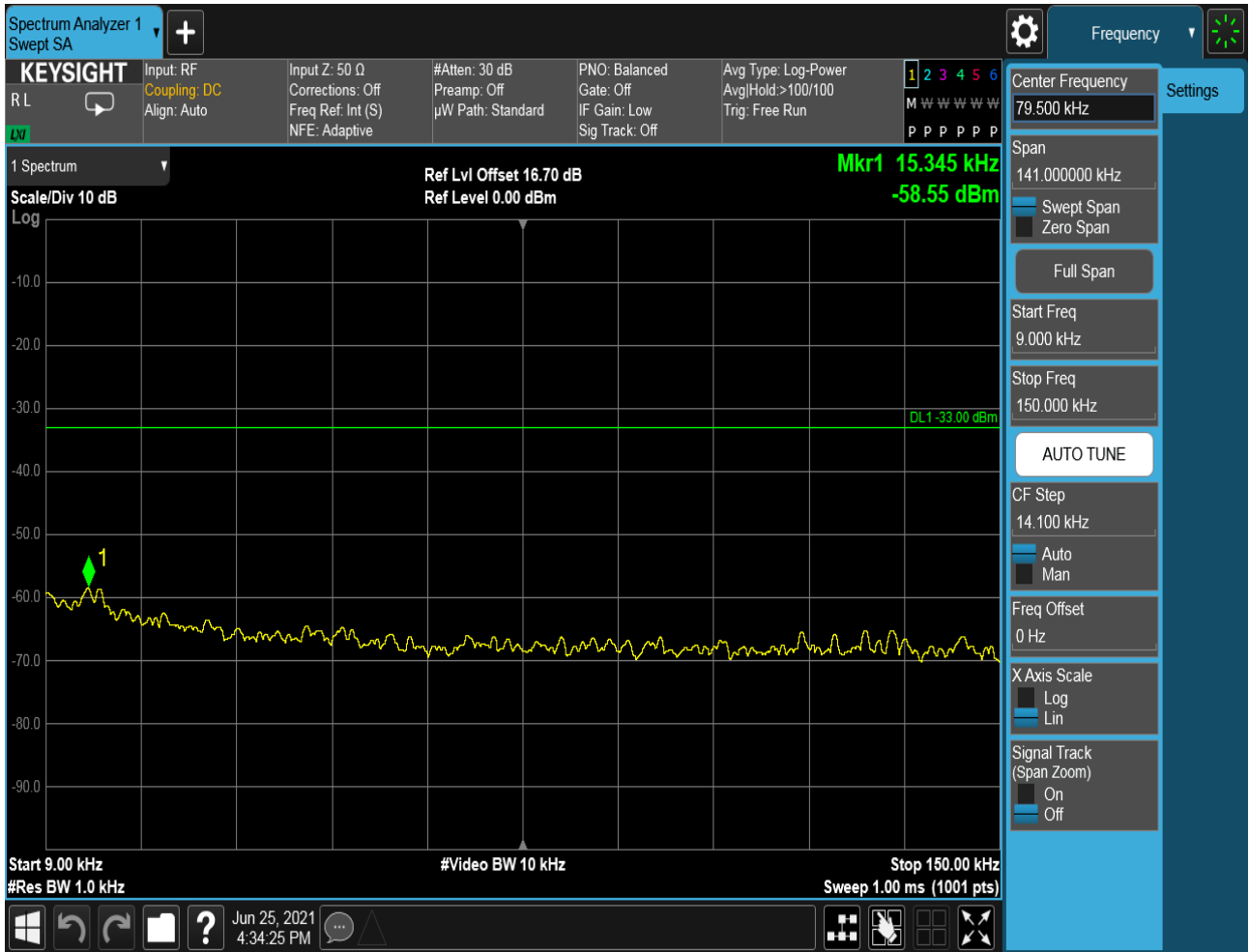


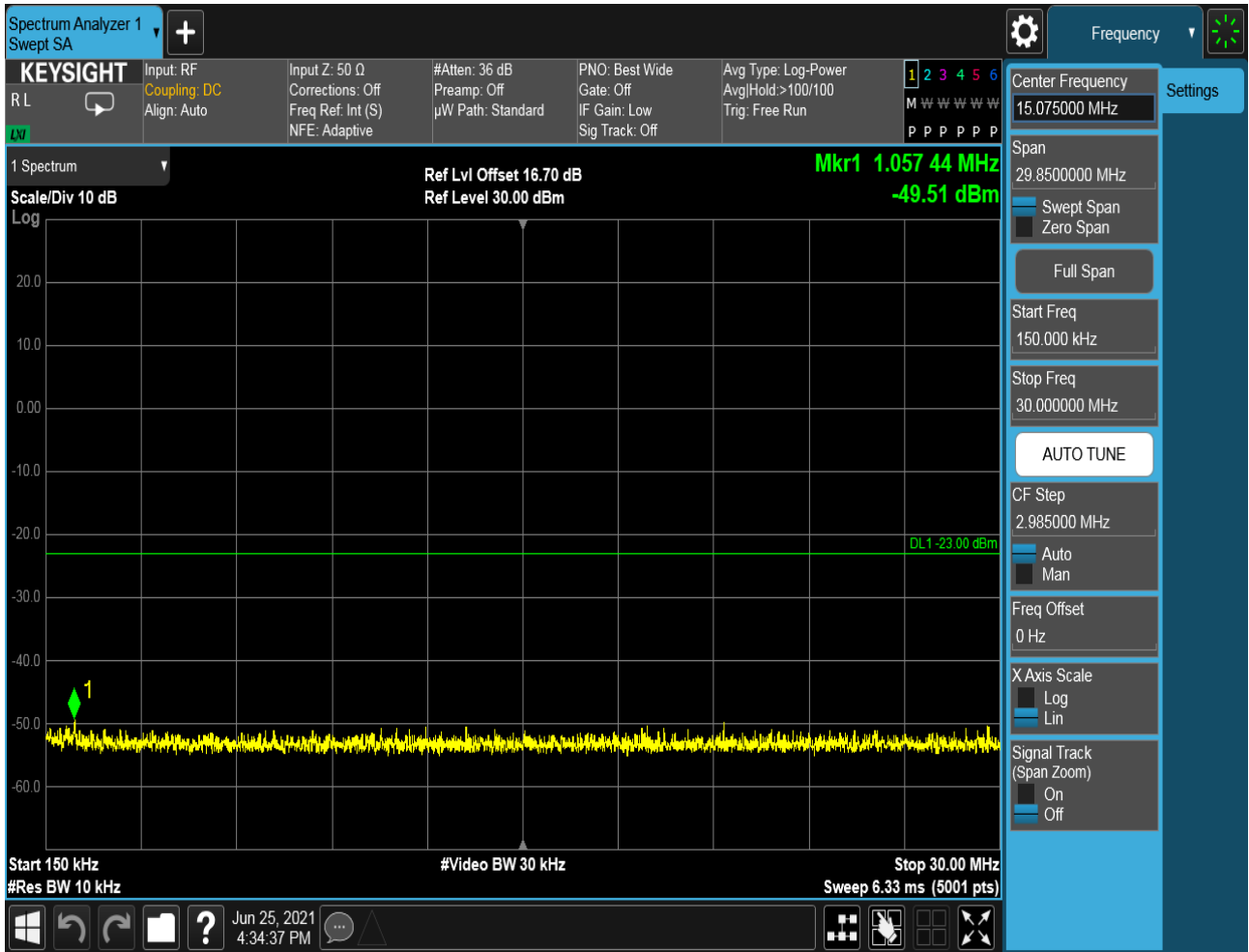


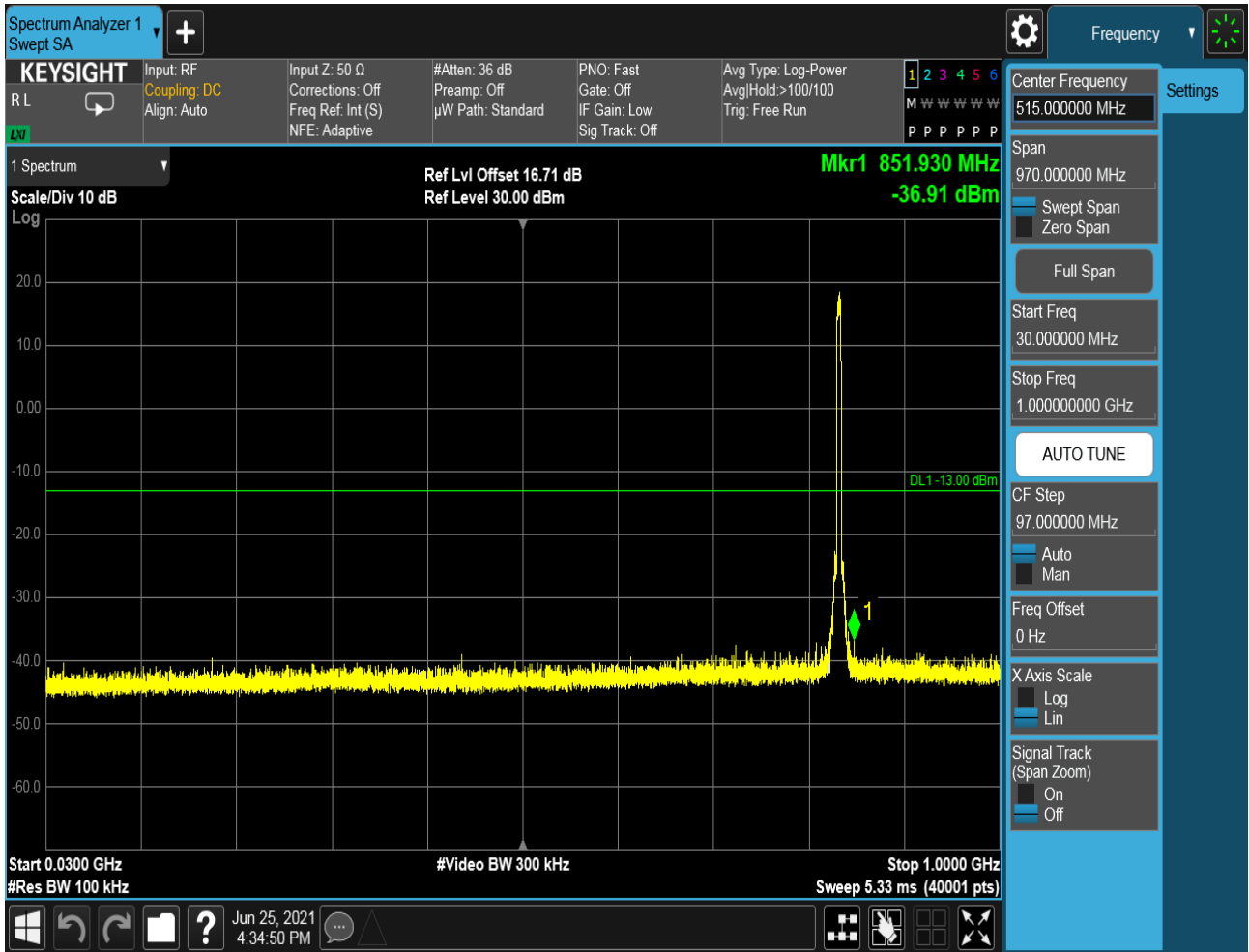


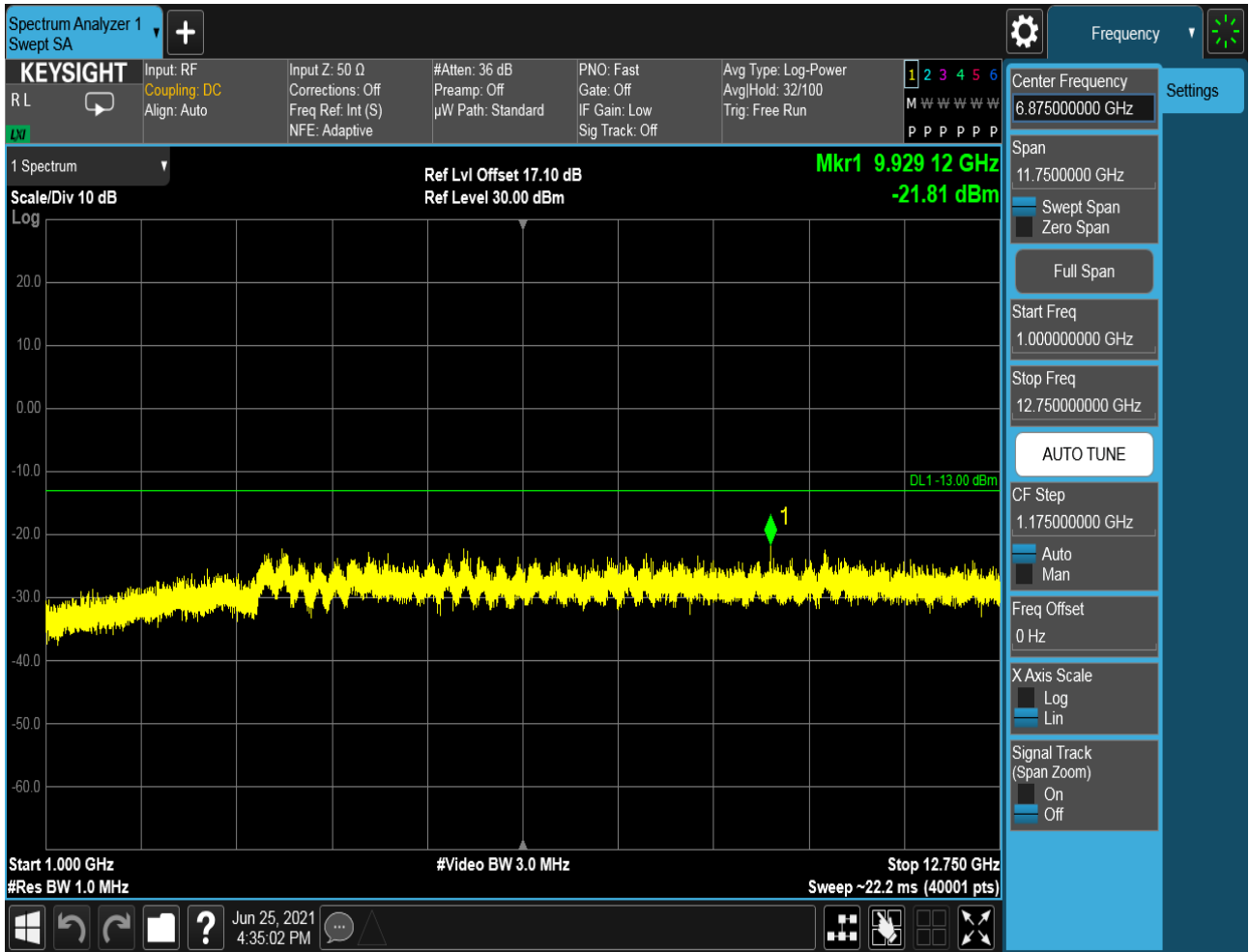


6.1.1.1.2 Test Channel = MCH



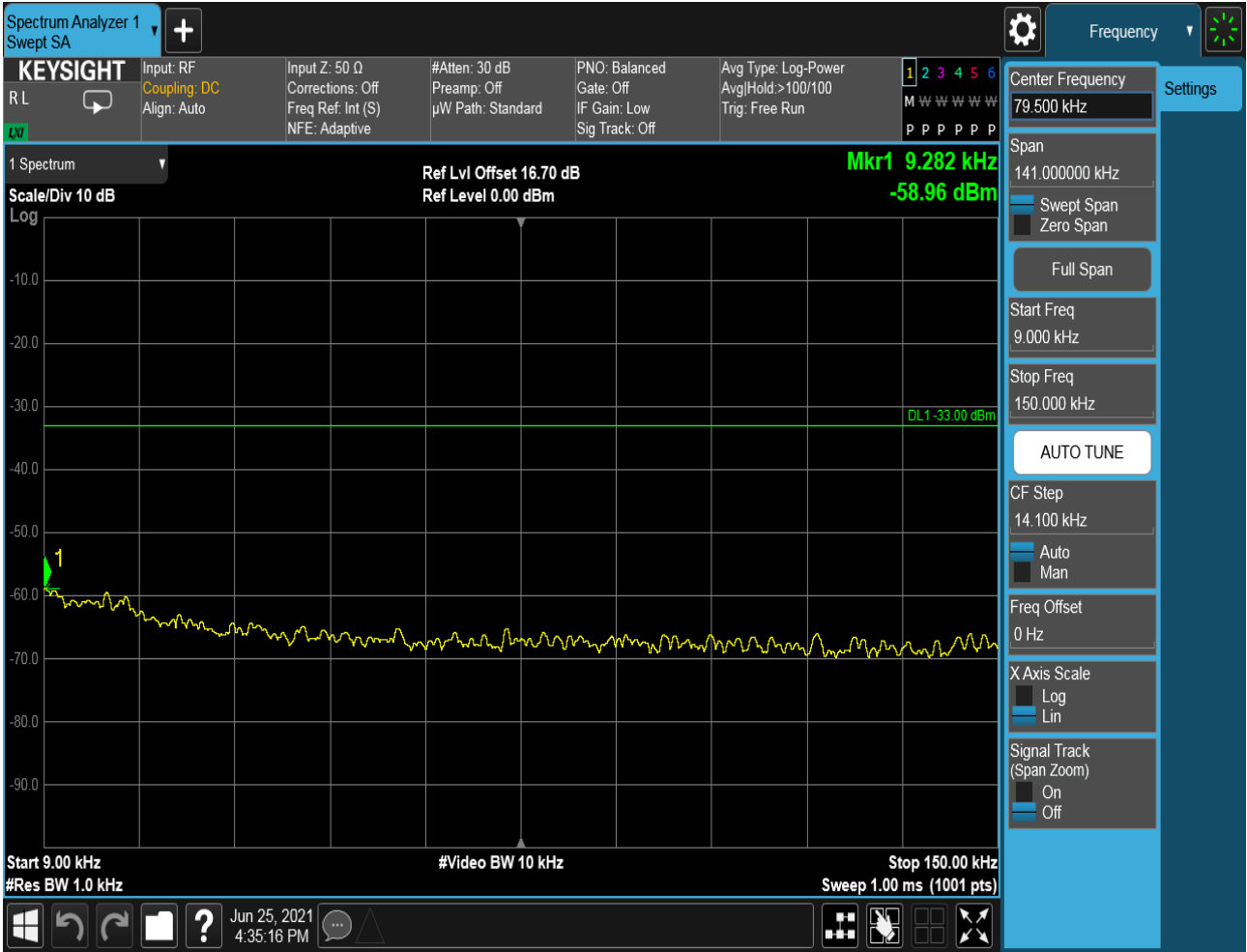


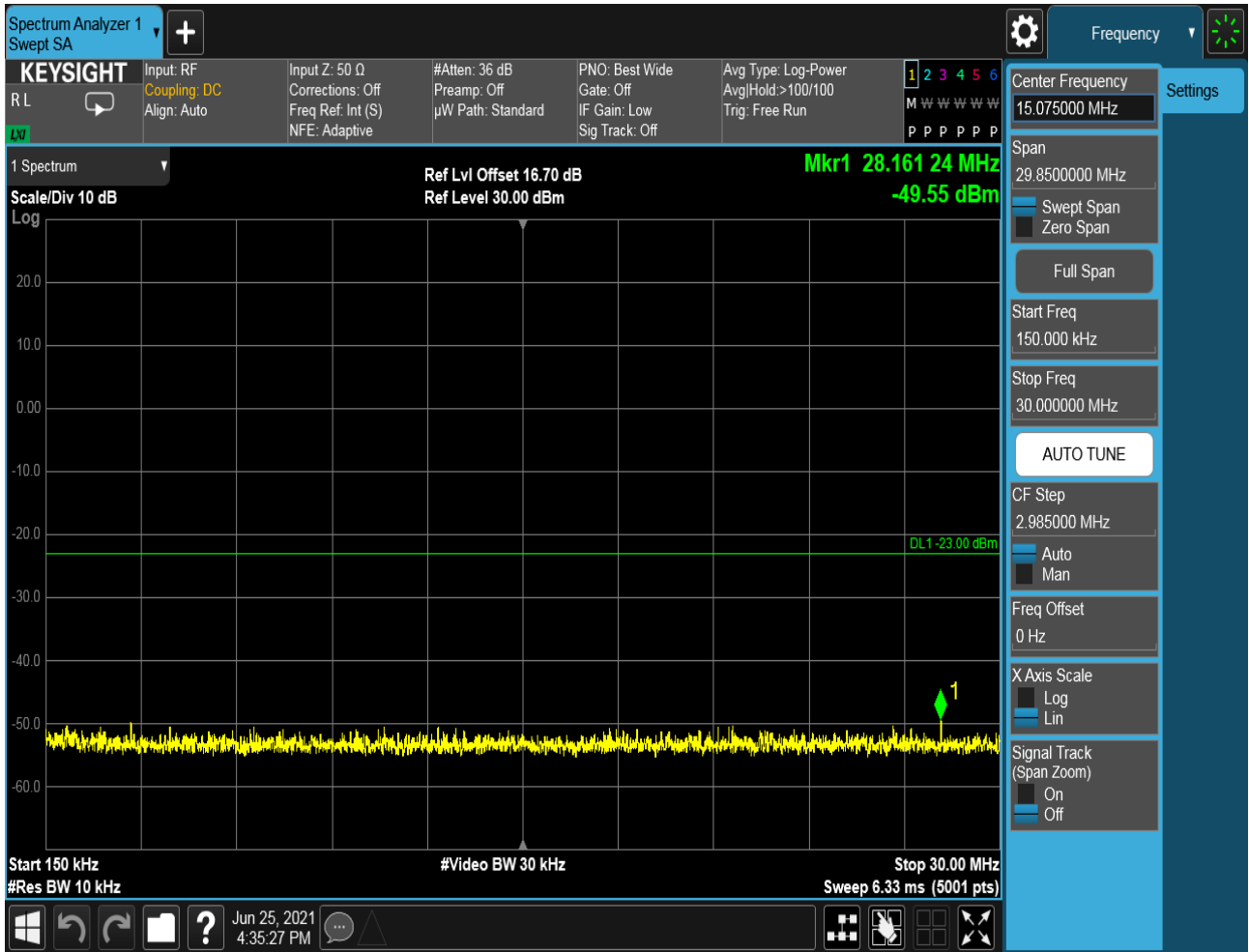


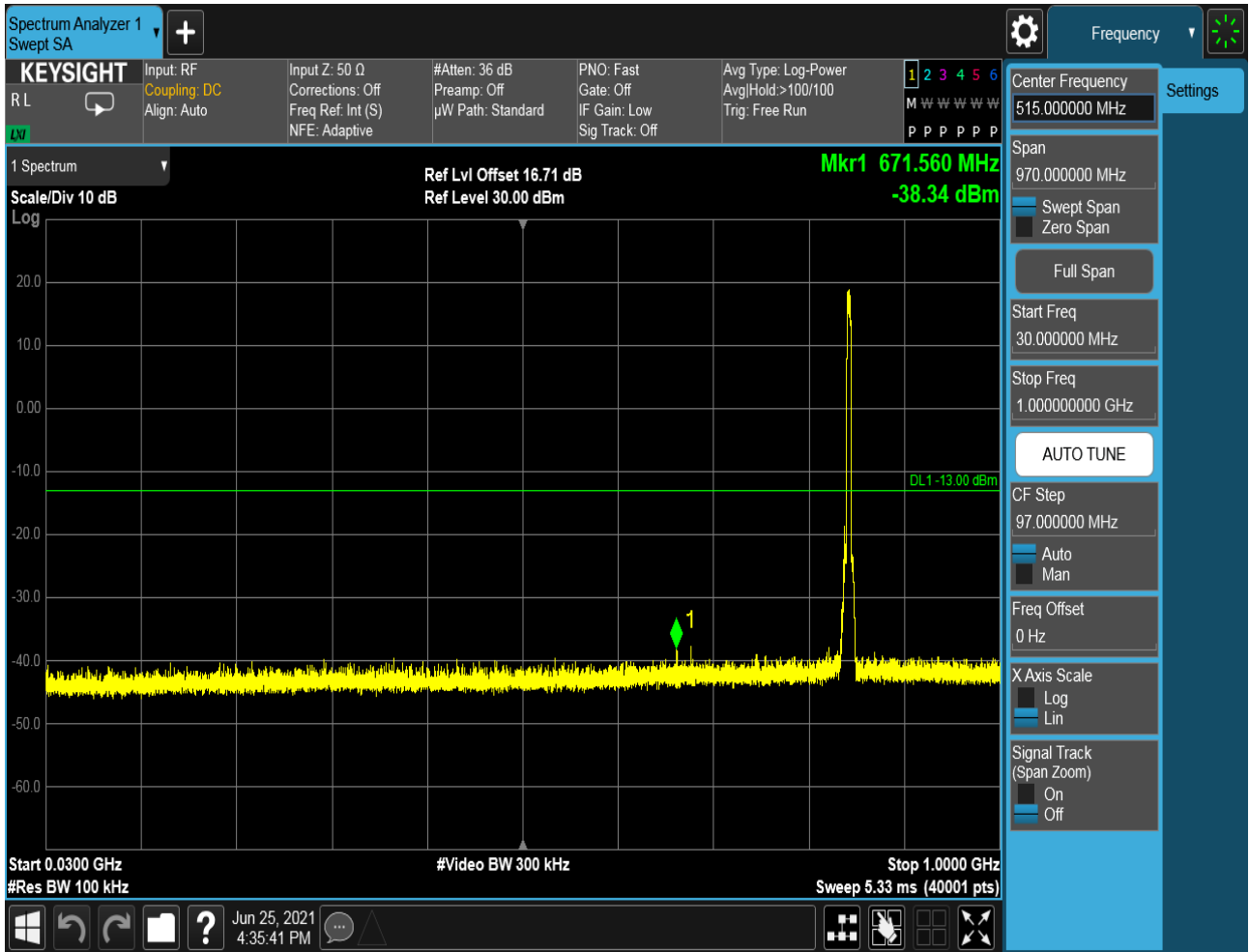


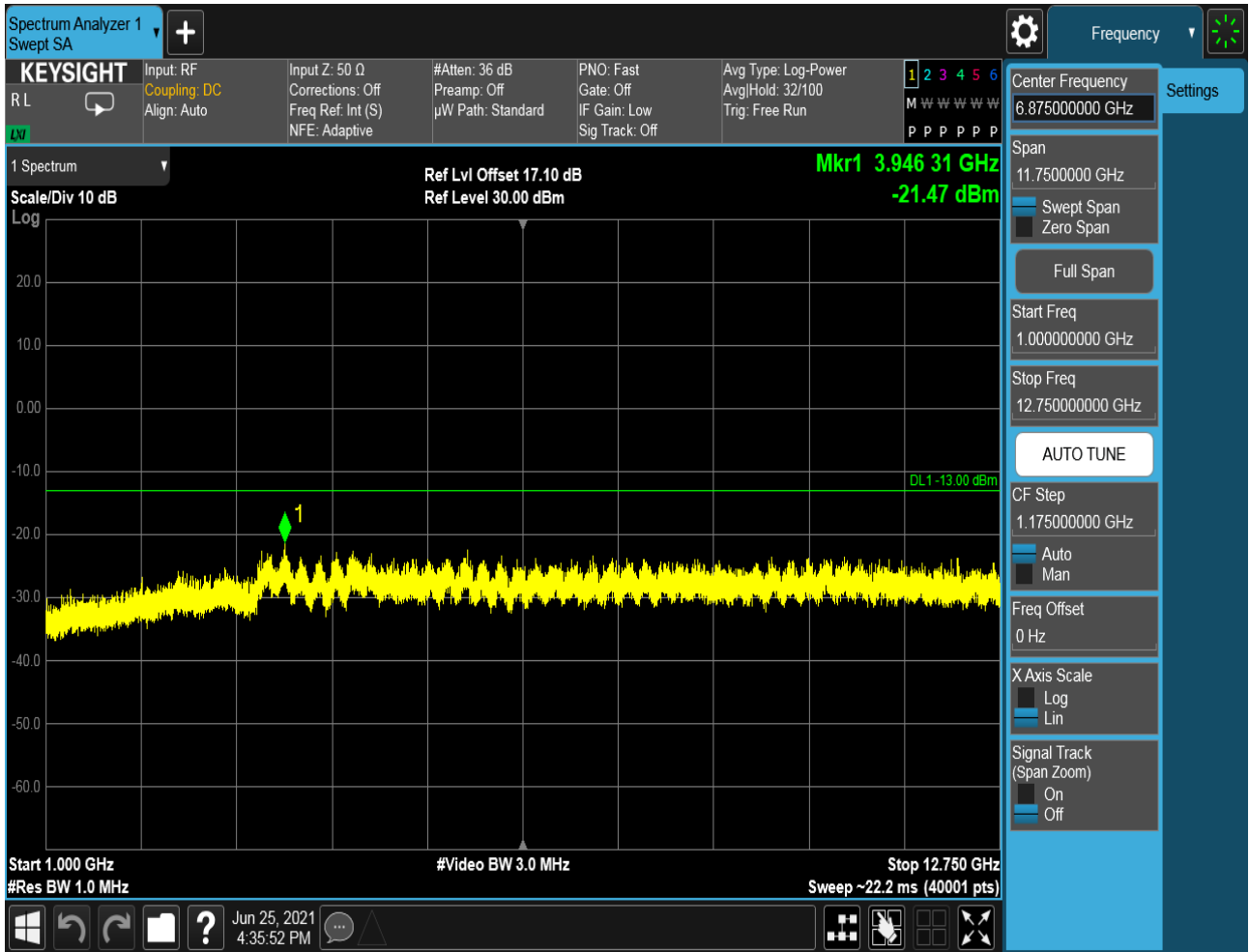


6.1.1.1.3 Test Channel = HCH







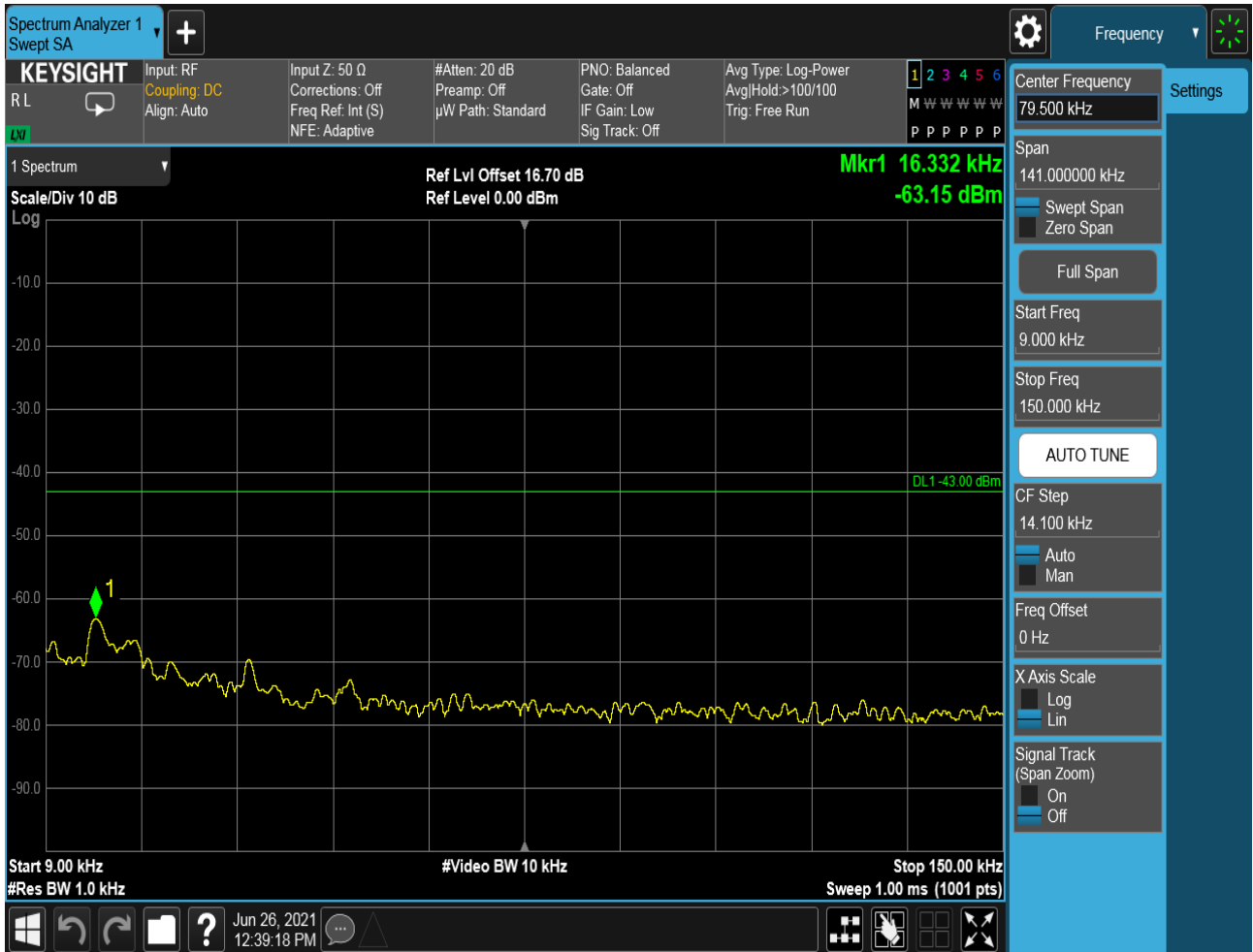


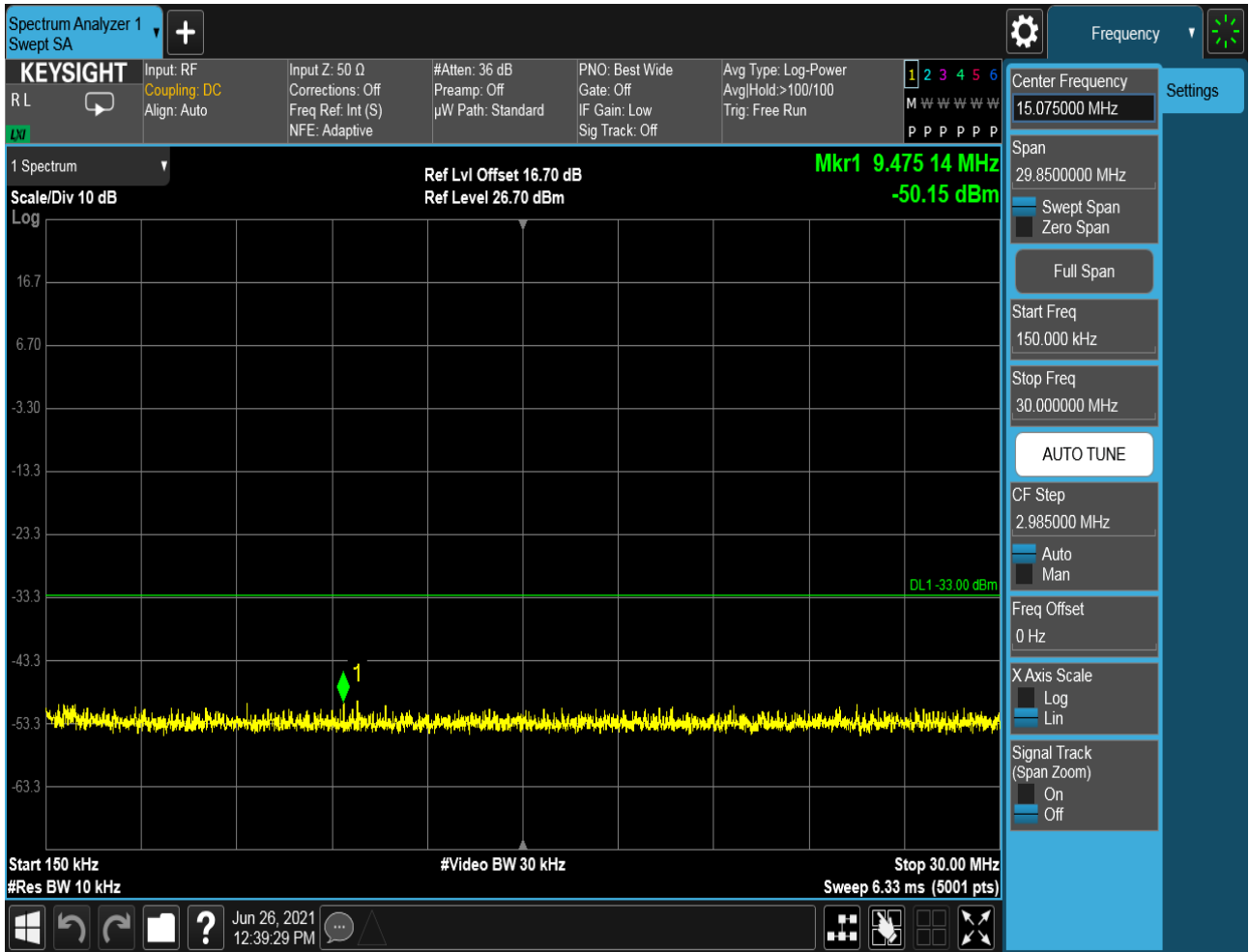


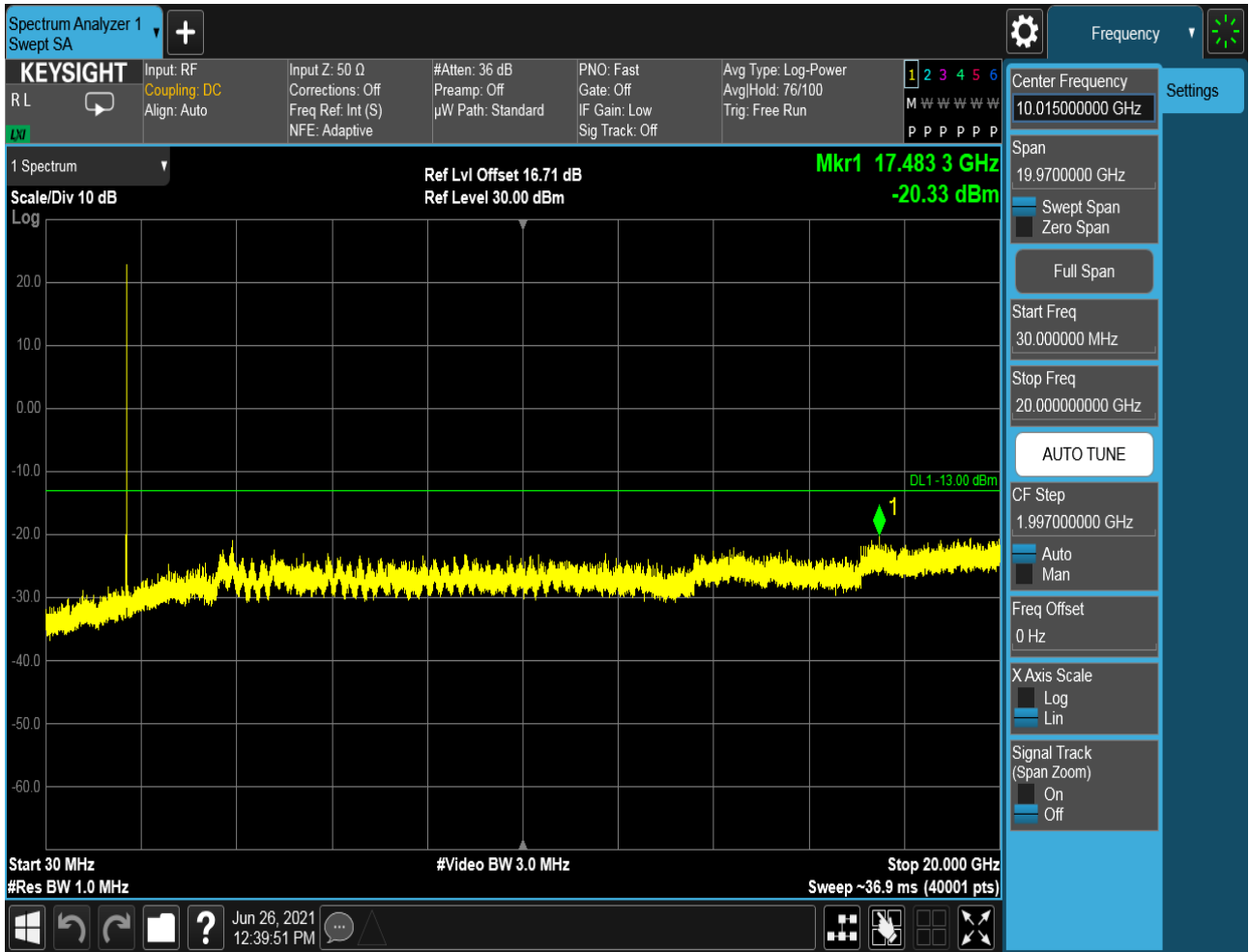
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH

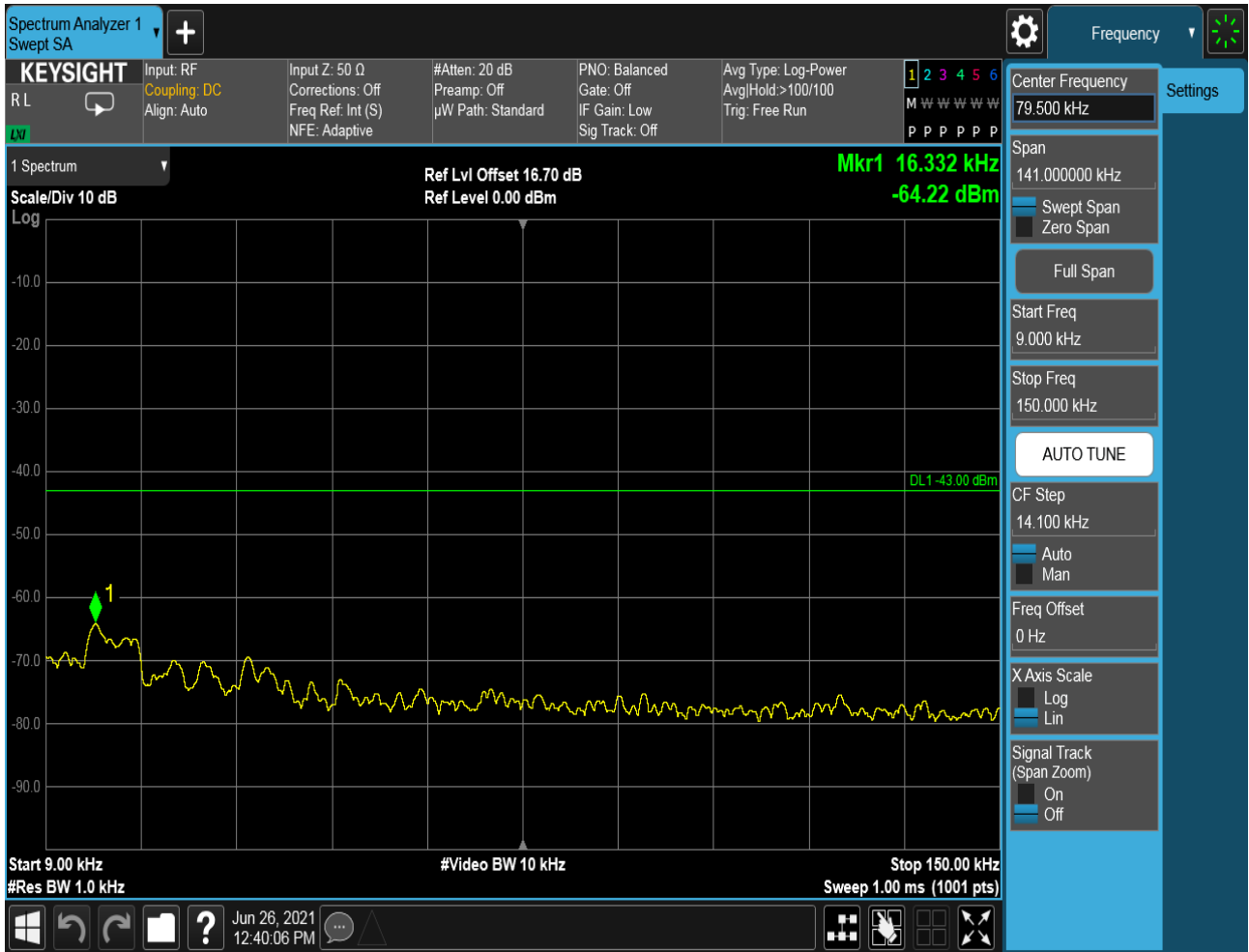


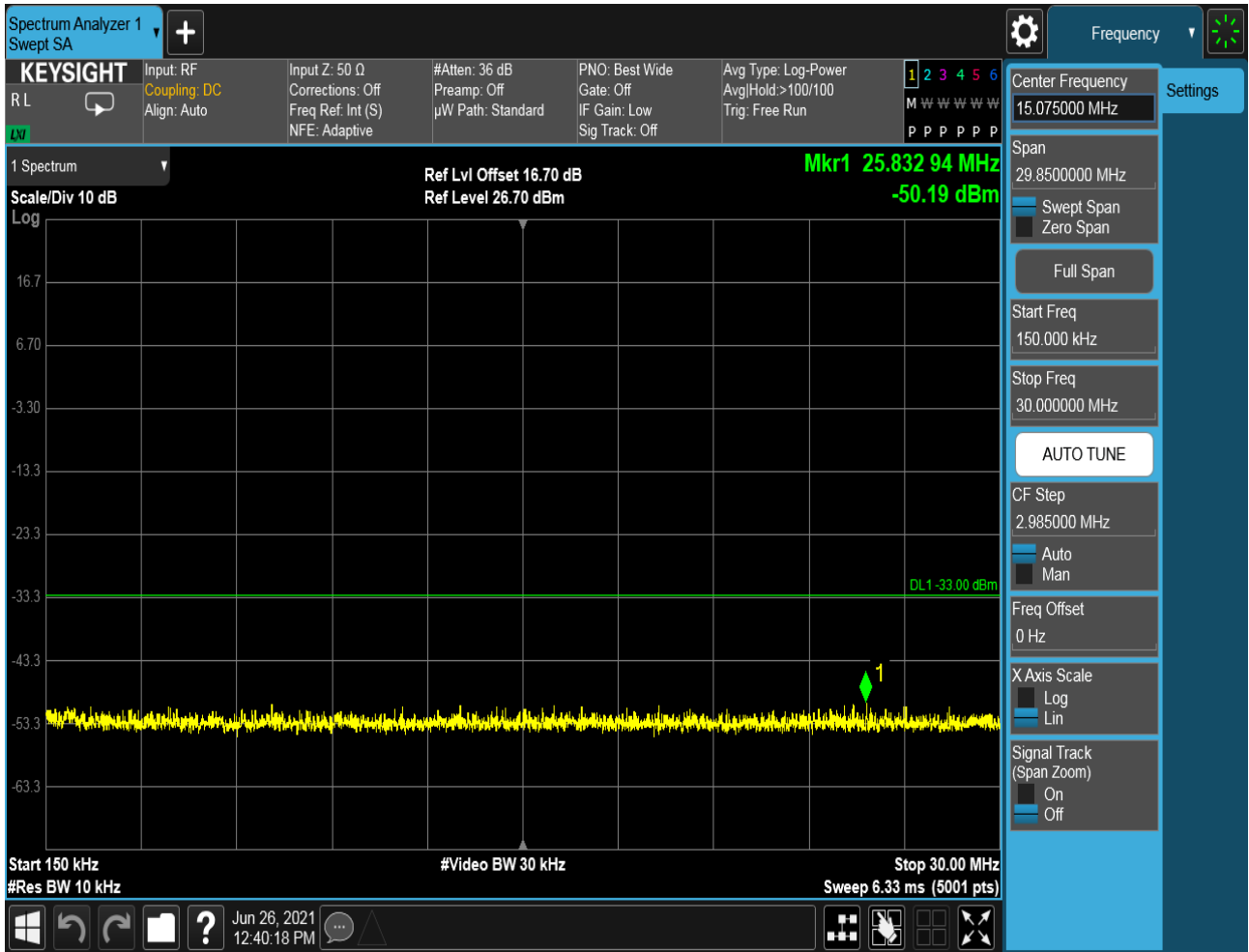


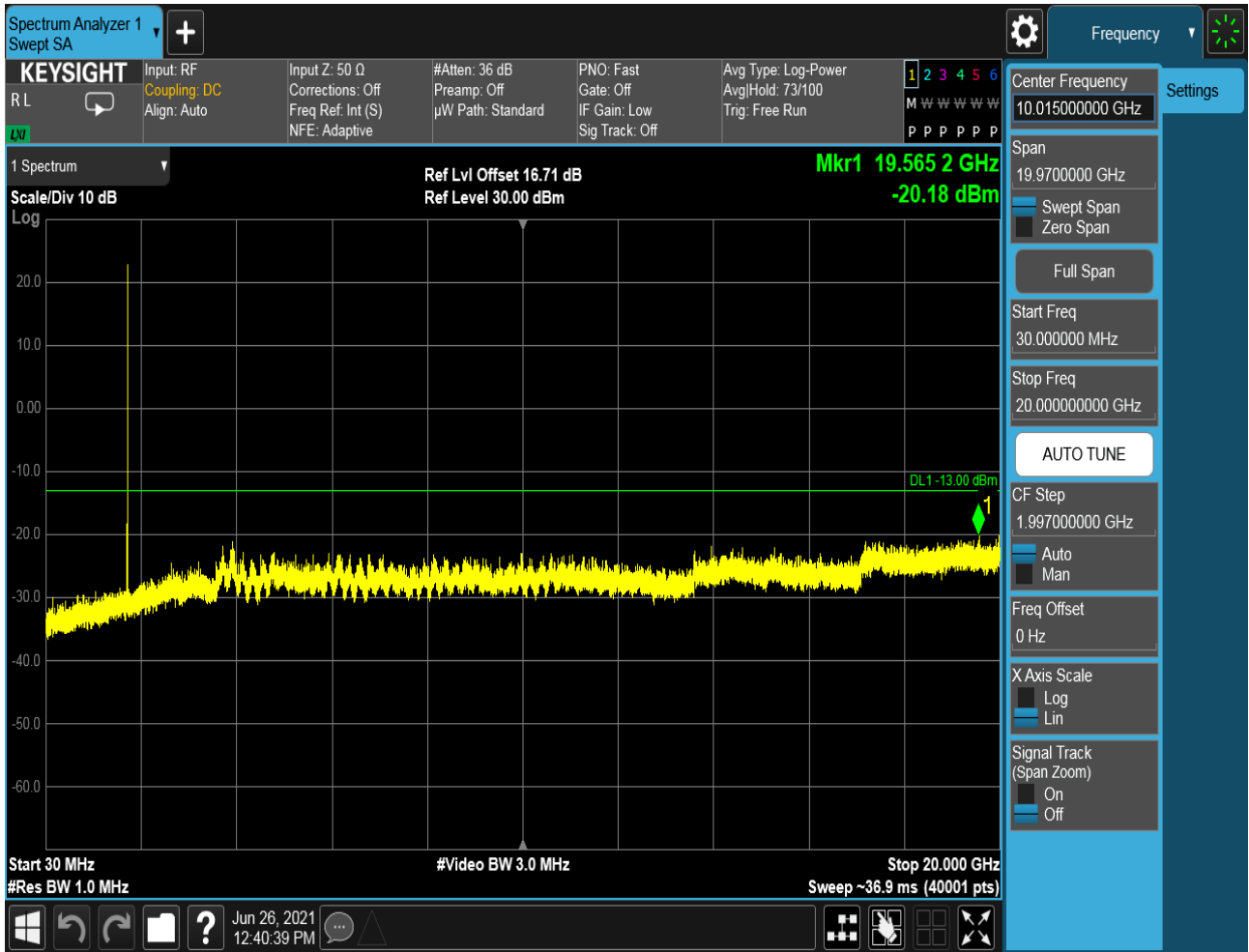




6.1.2.1.2 Test Channel = MCH

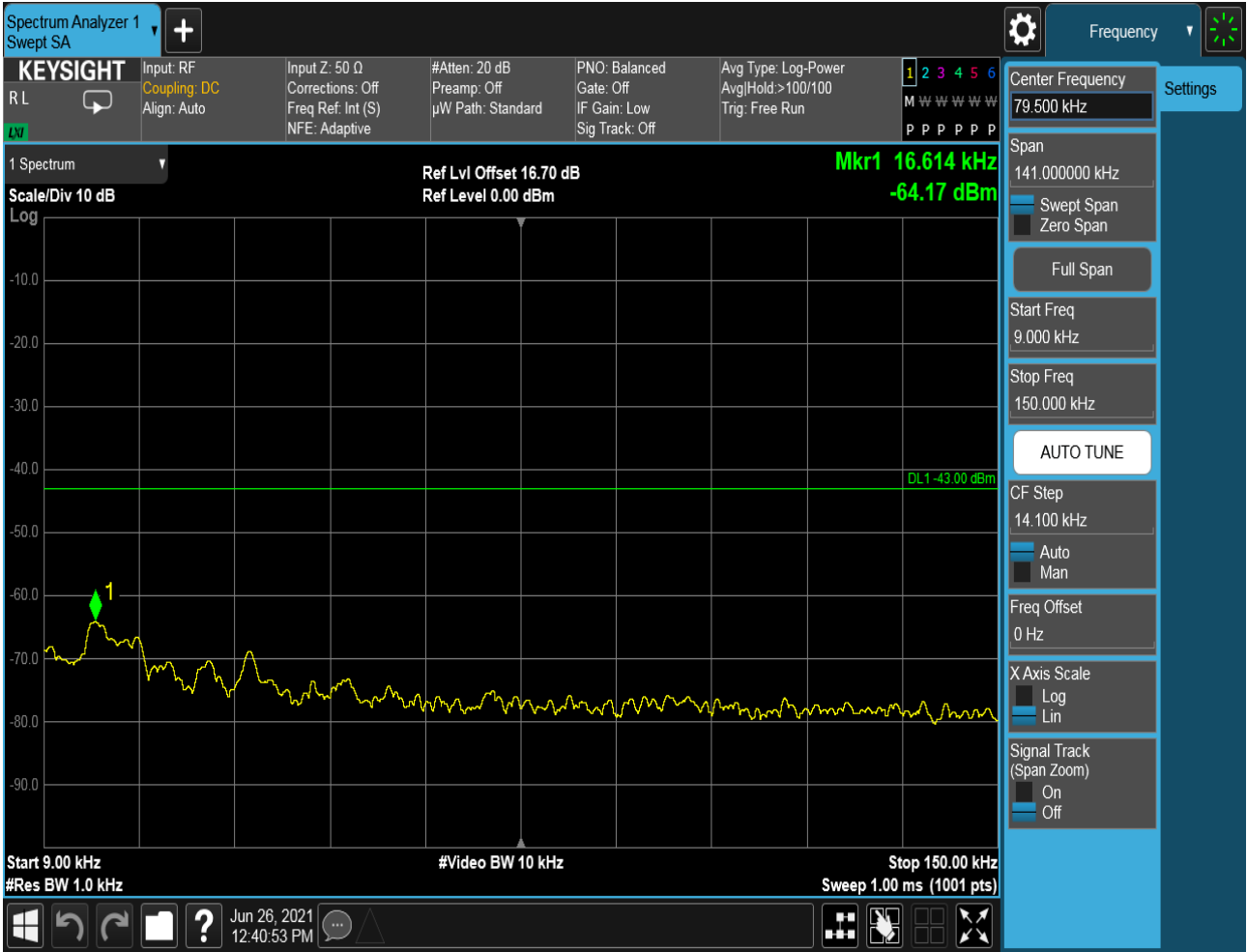


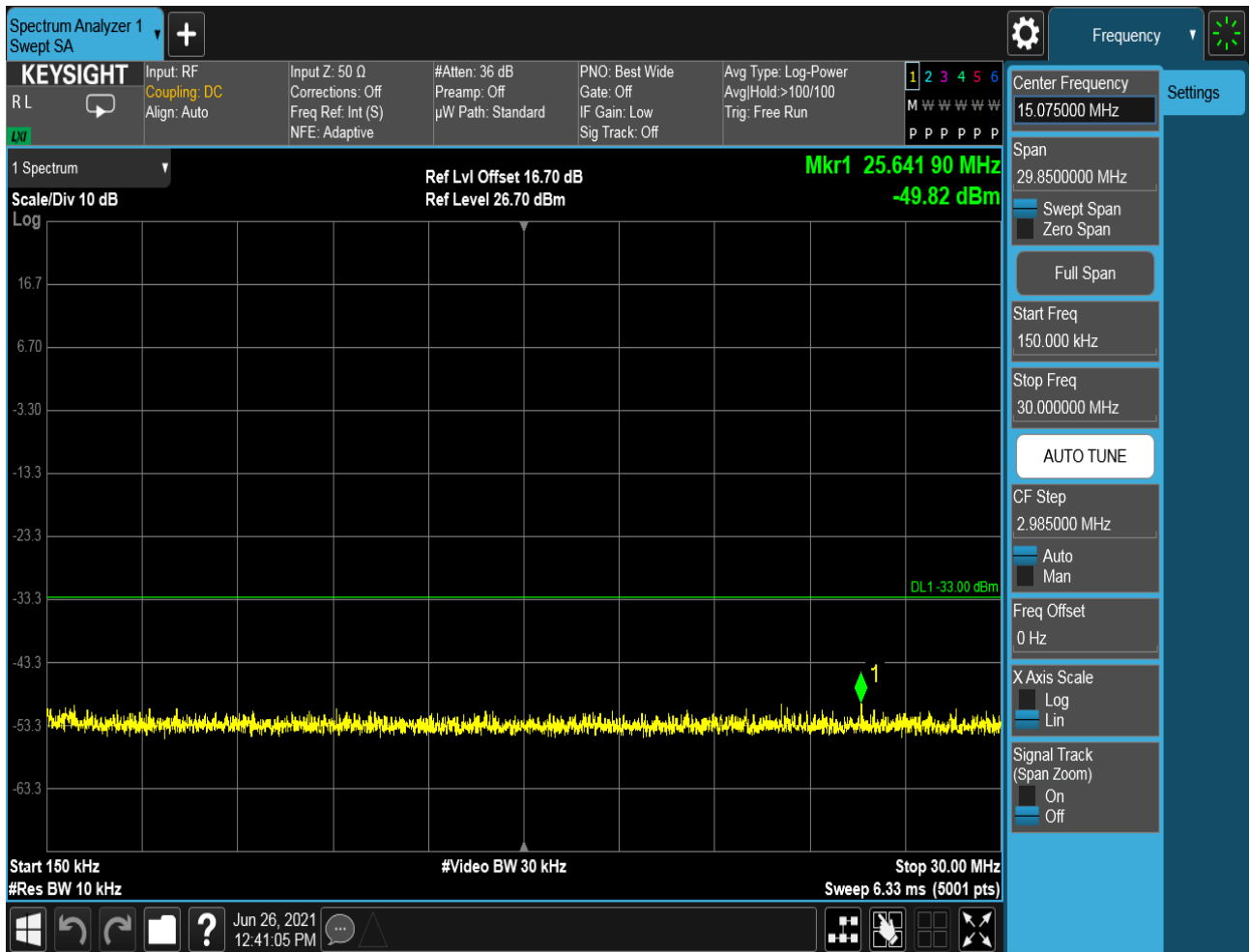


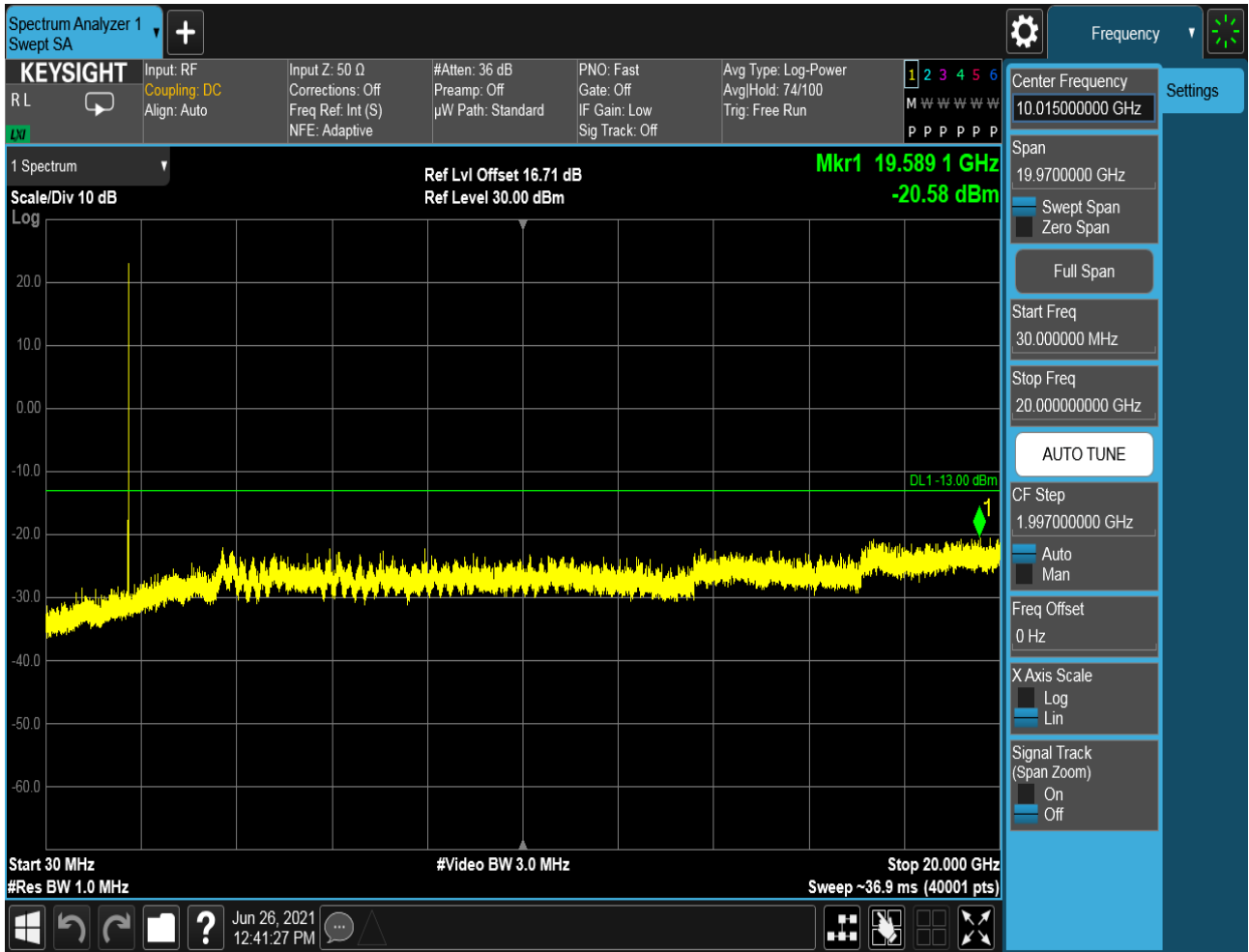




6.1.2.1.3 Test Channel = HCH





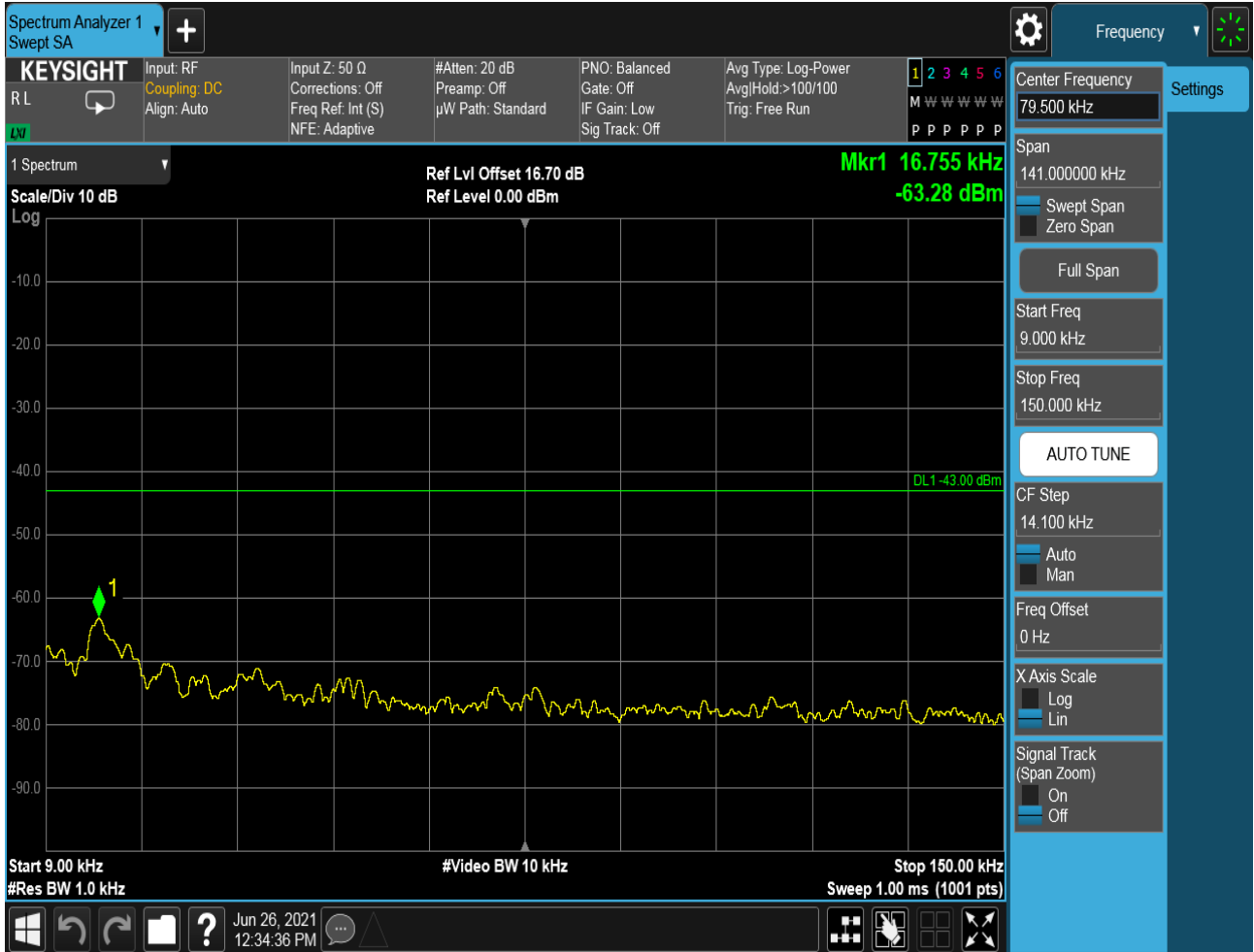


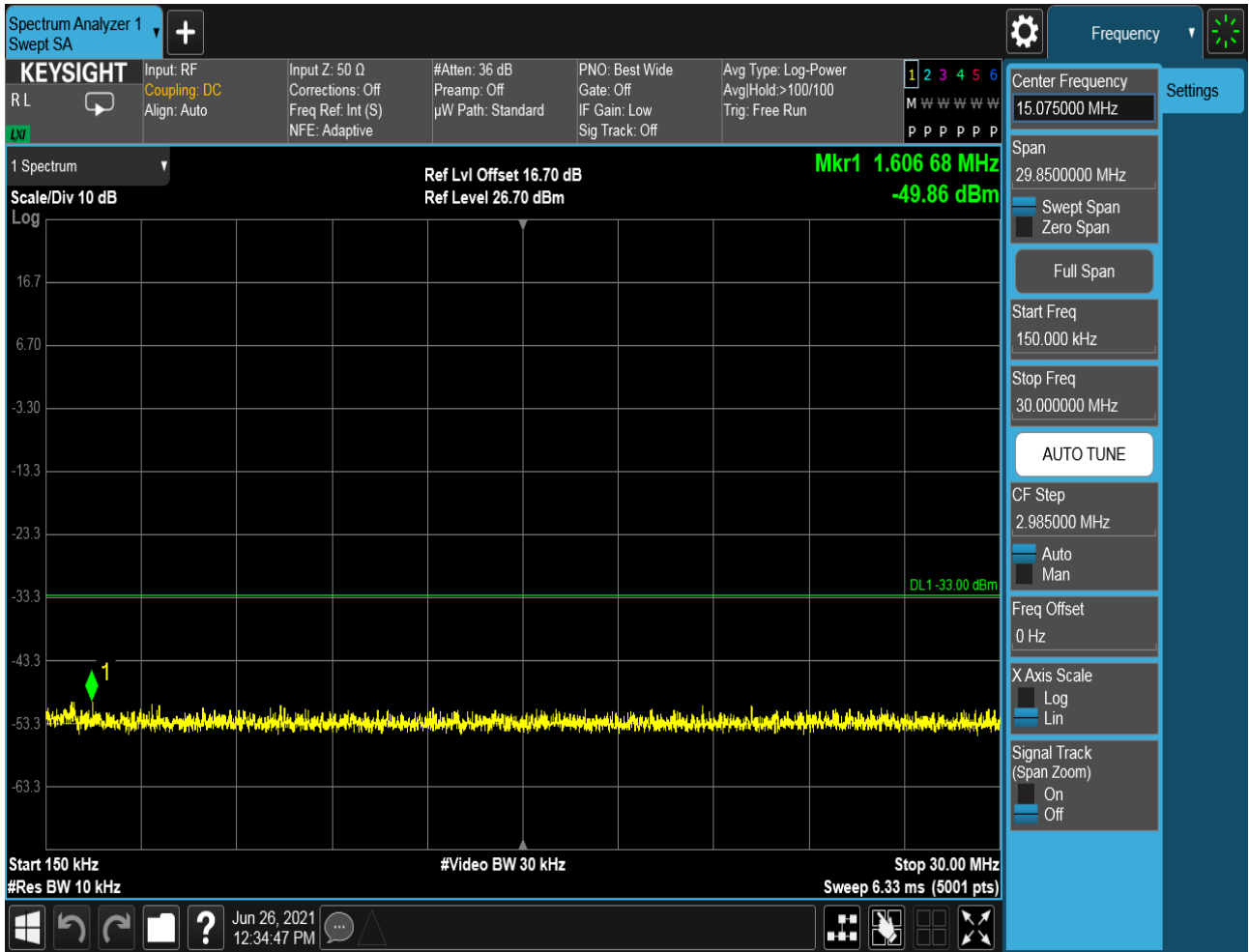


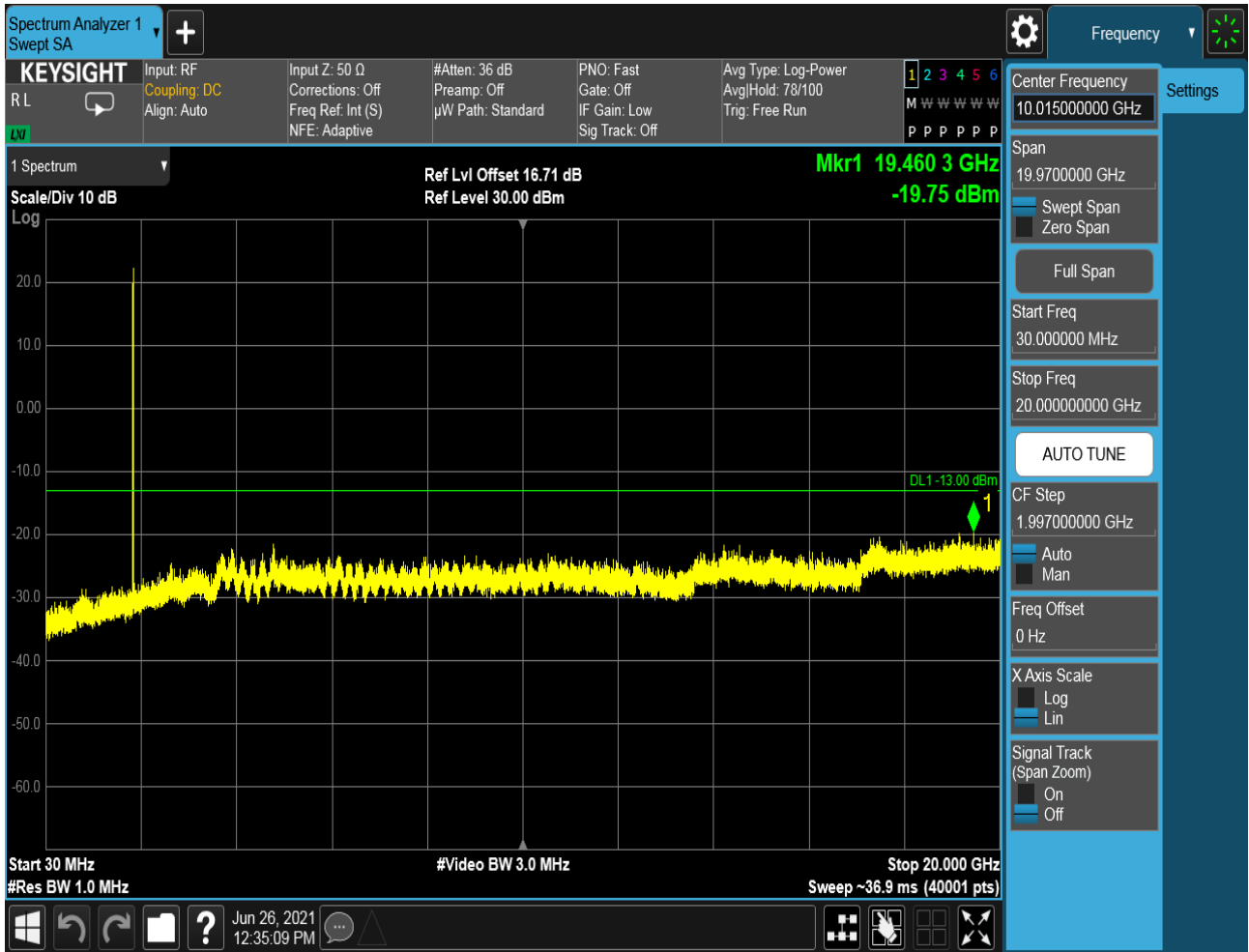
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

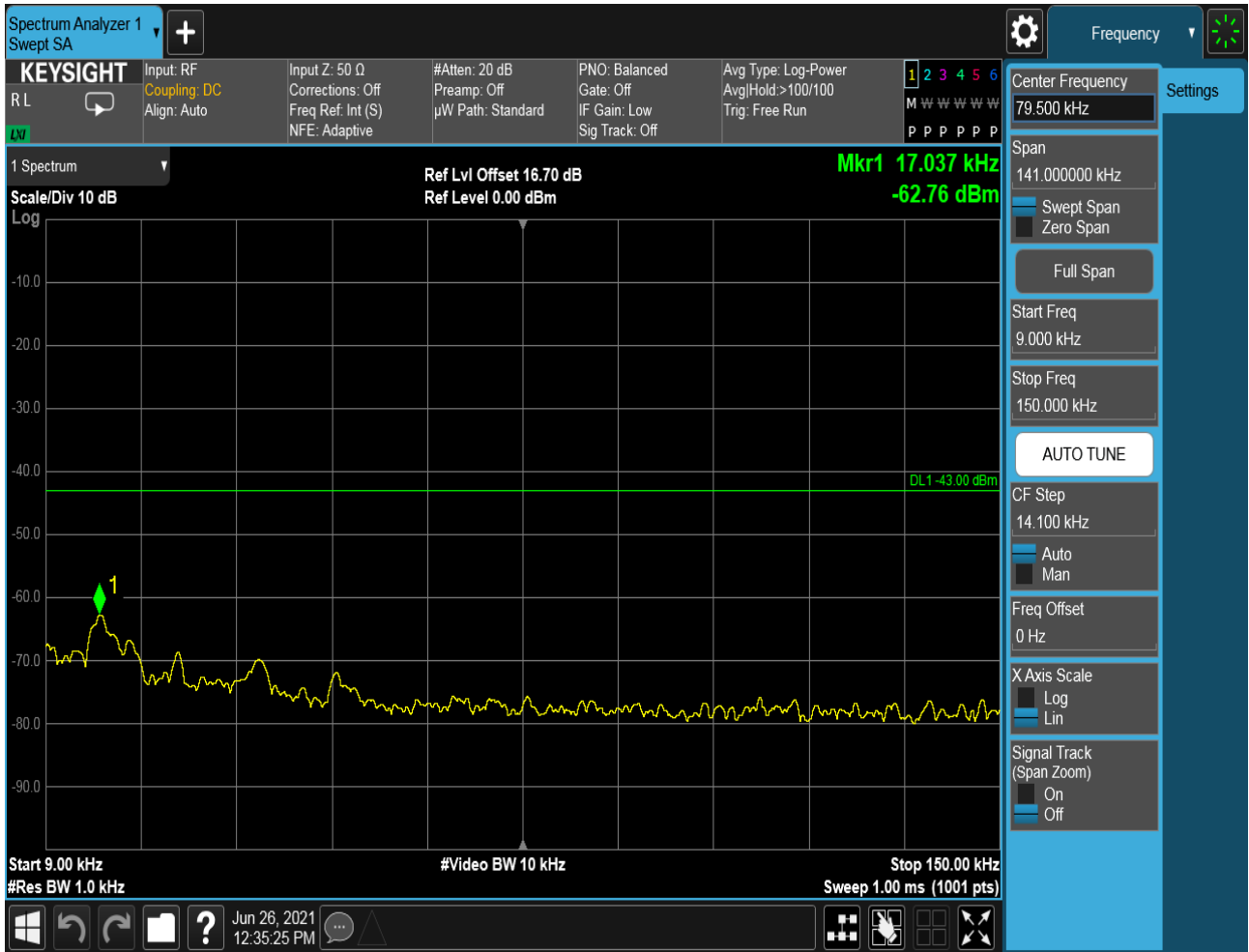


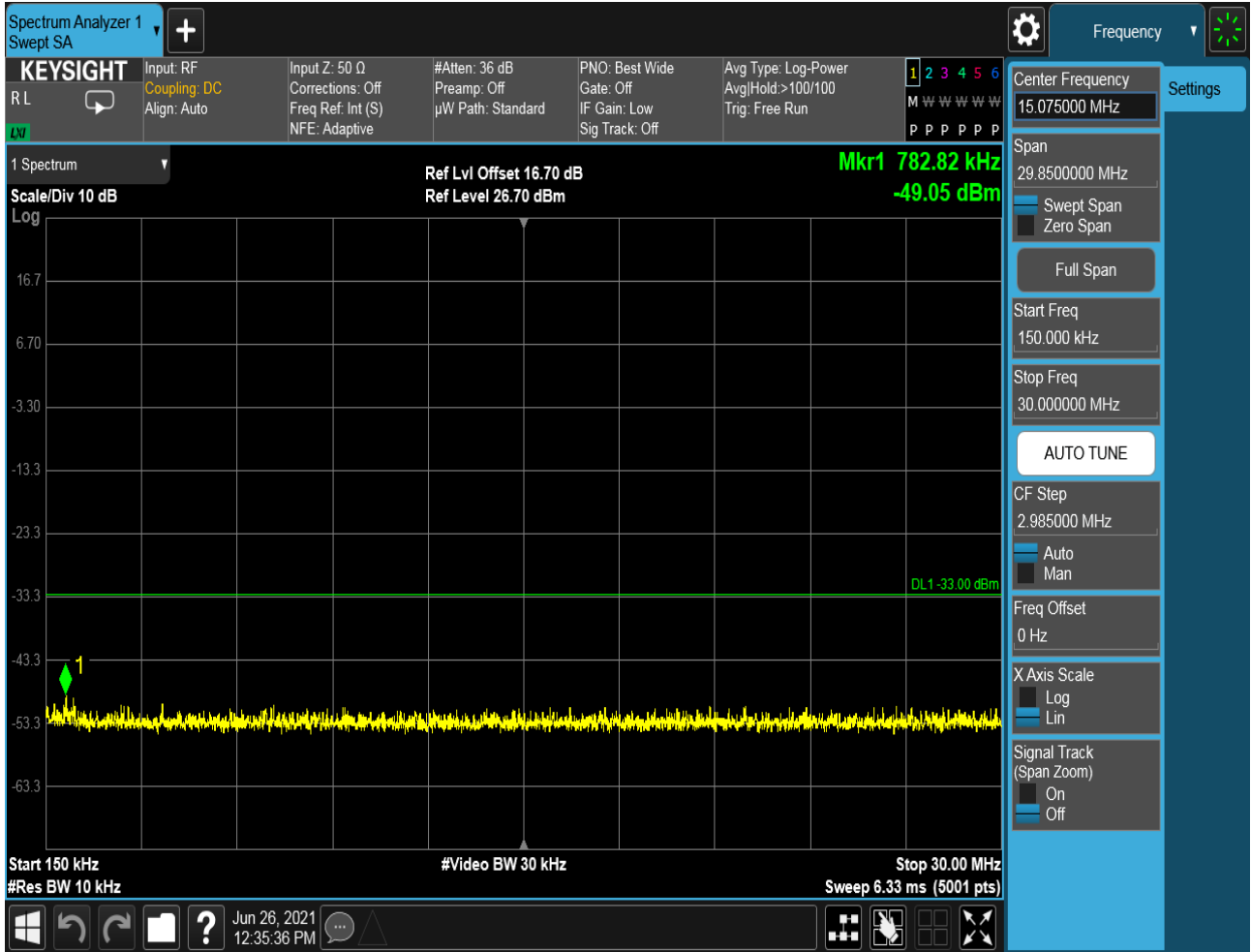


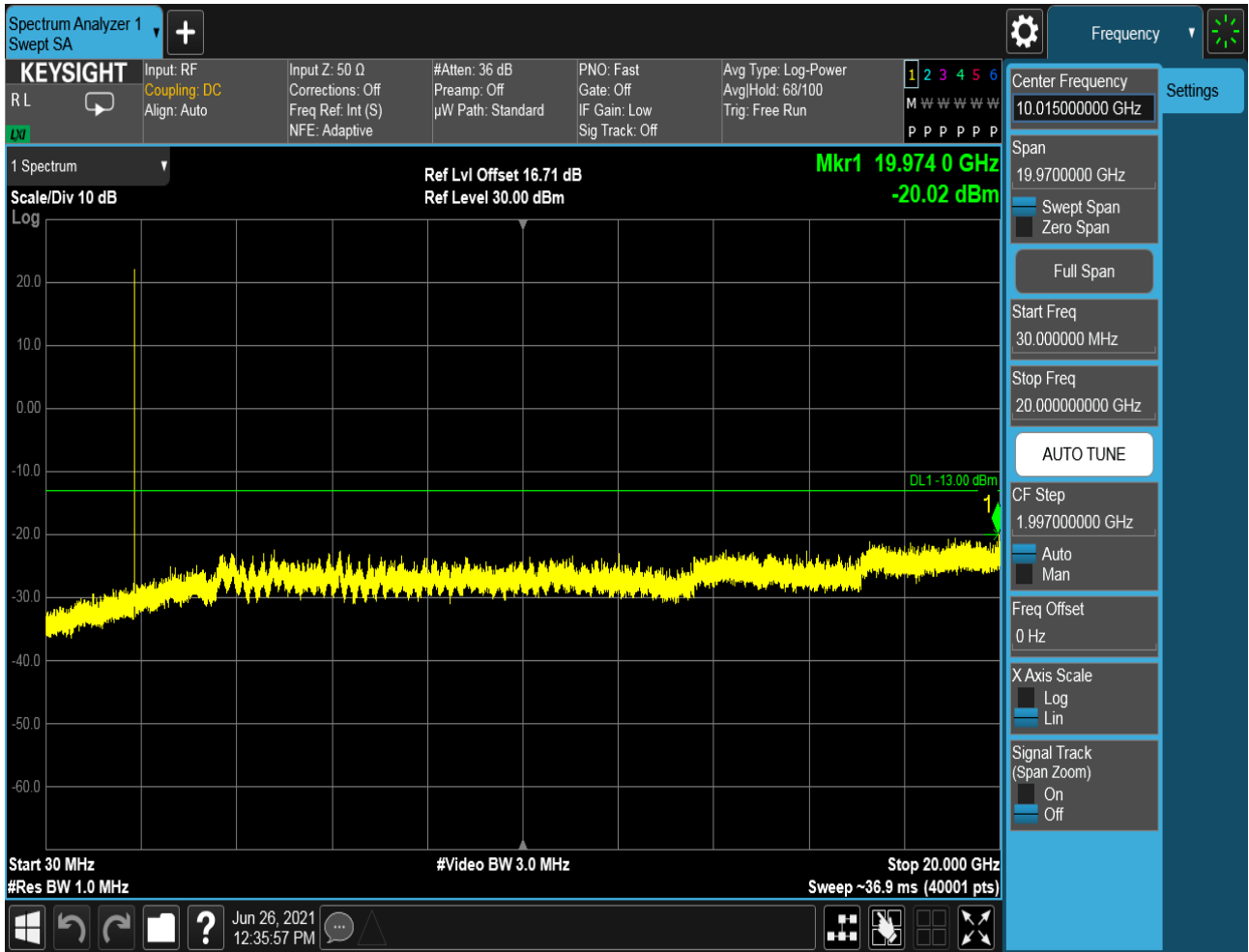




6.1.3.1.2 Test Channel = MCH

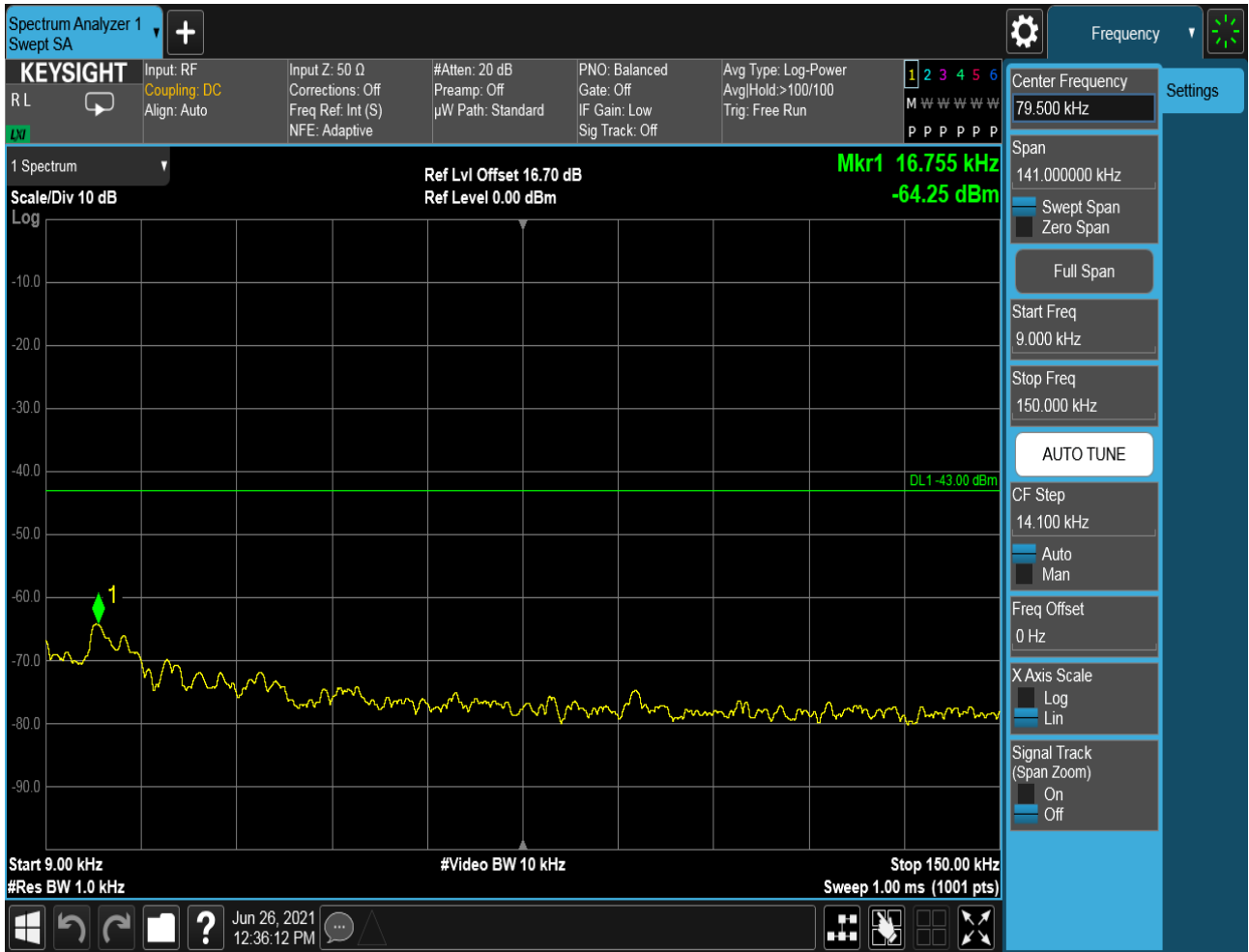


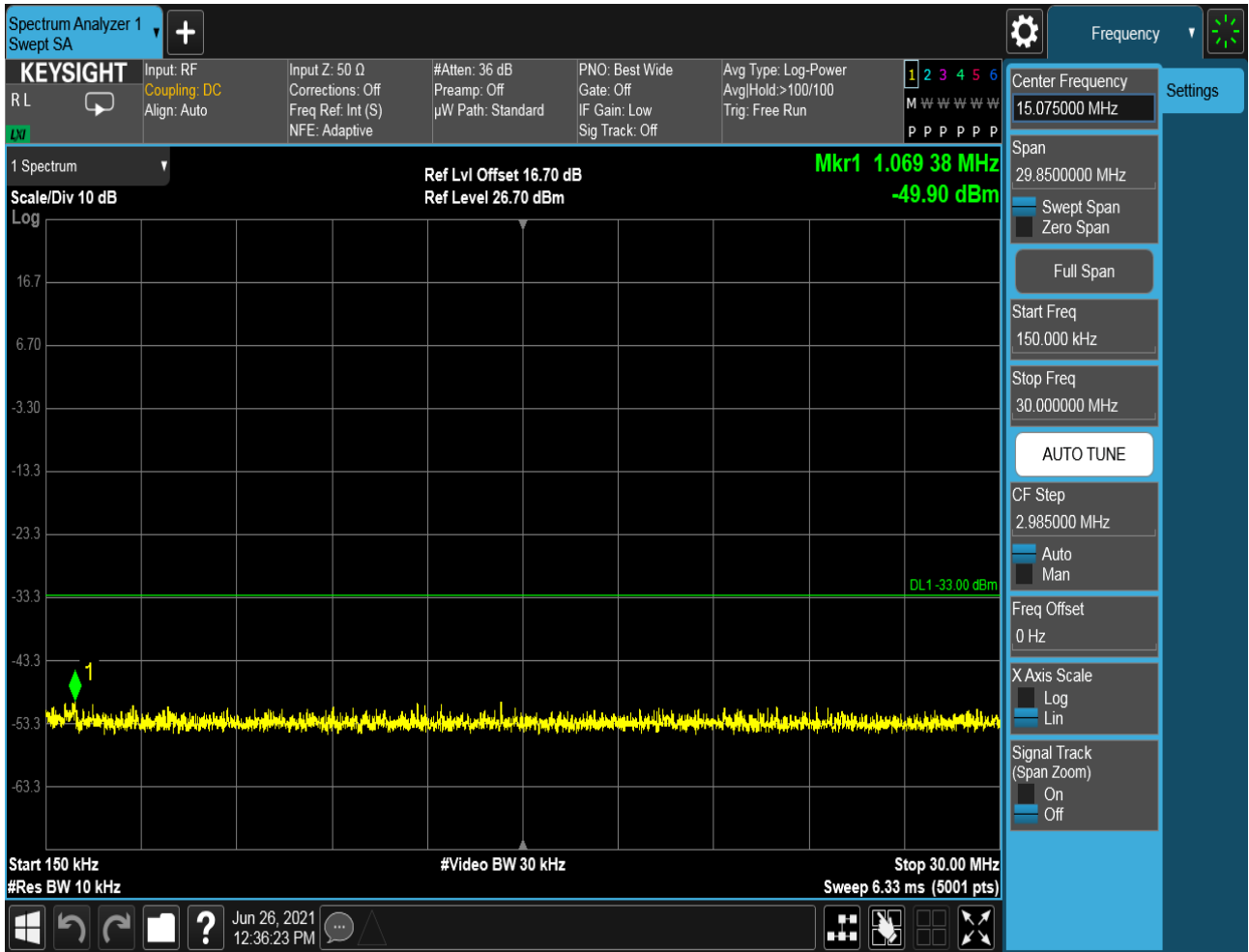


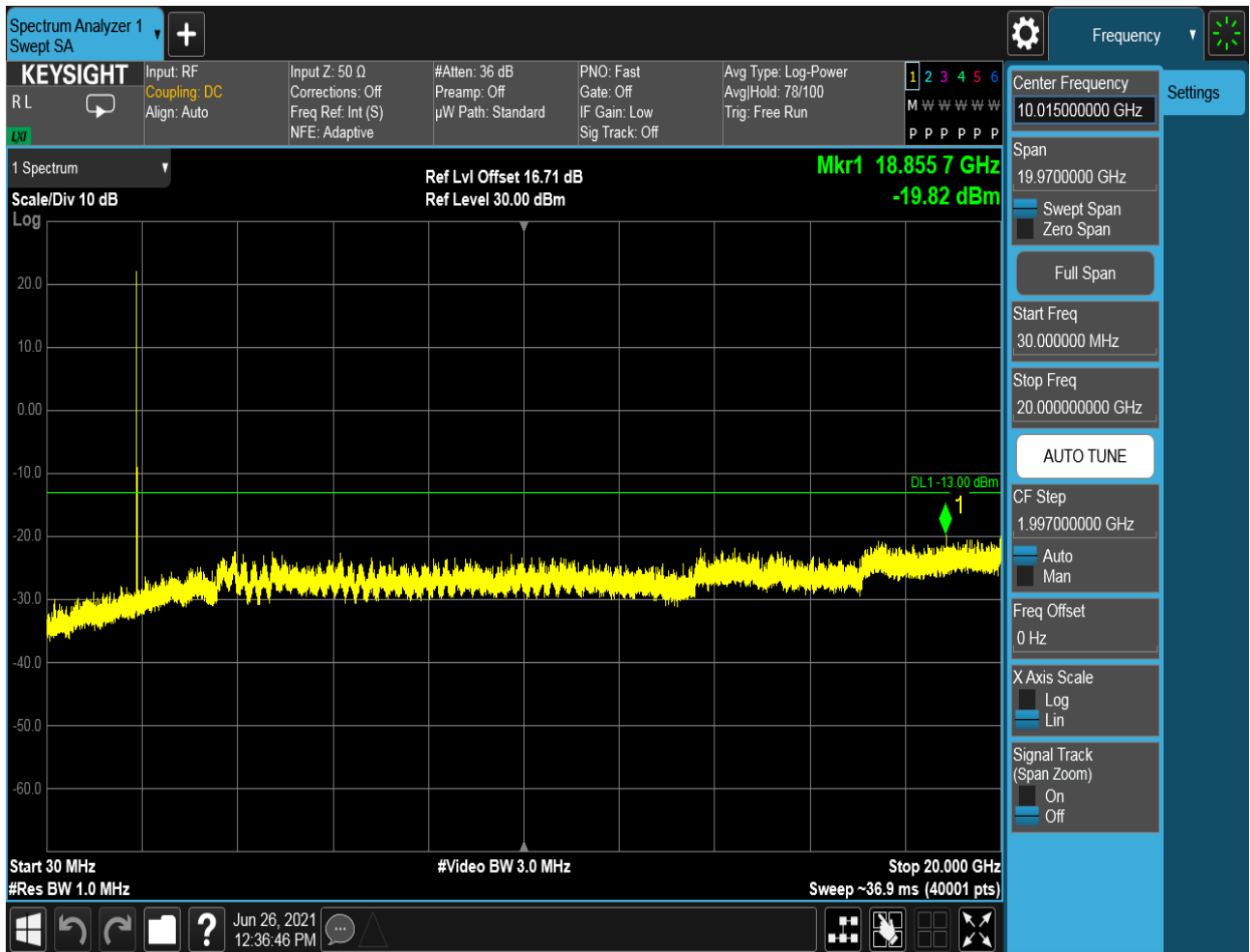




6.1.3.1.3 Test Channel = HCH







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

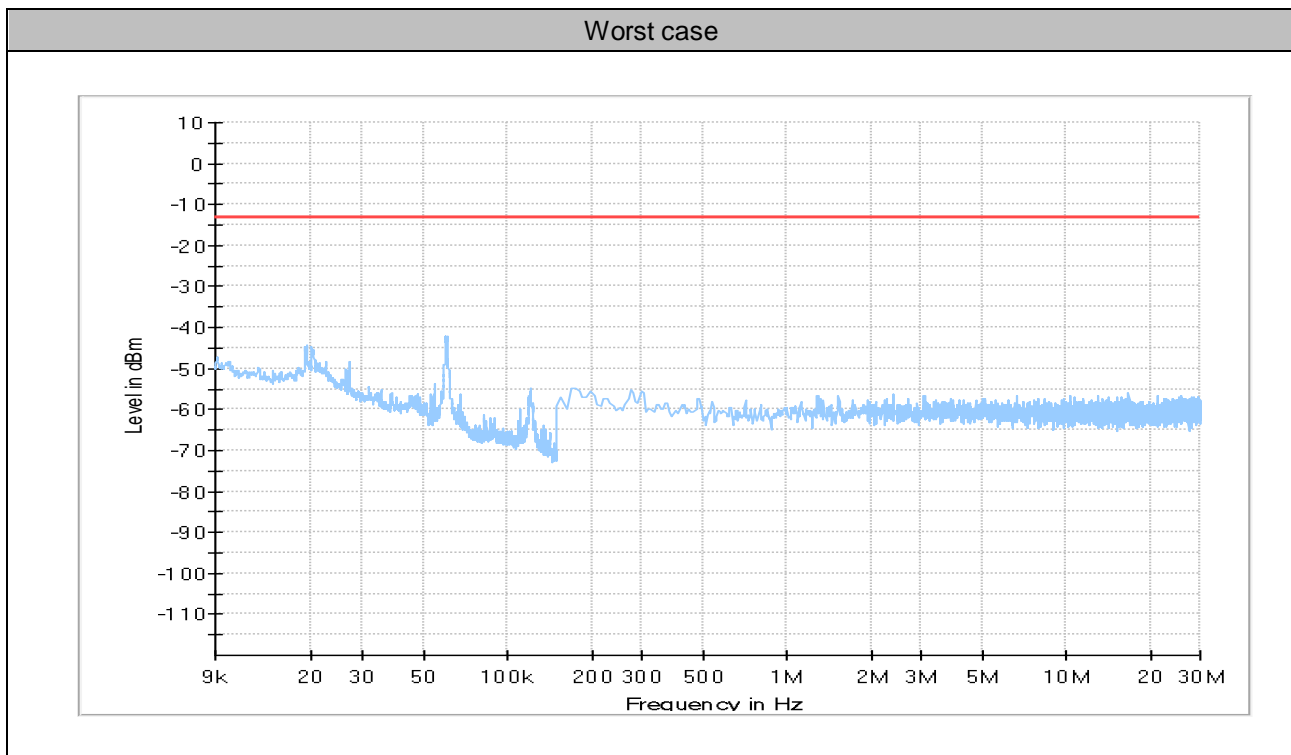
30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

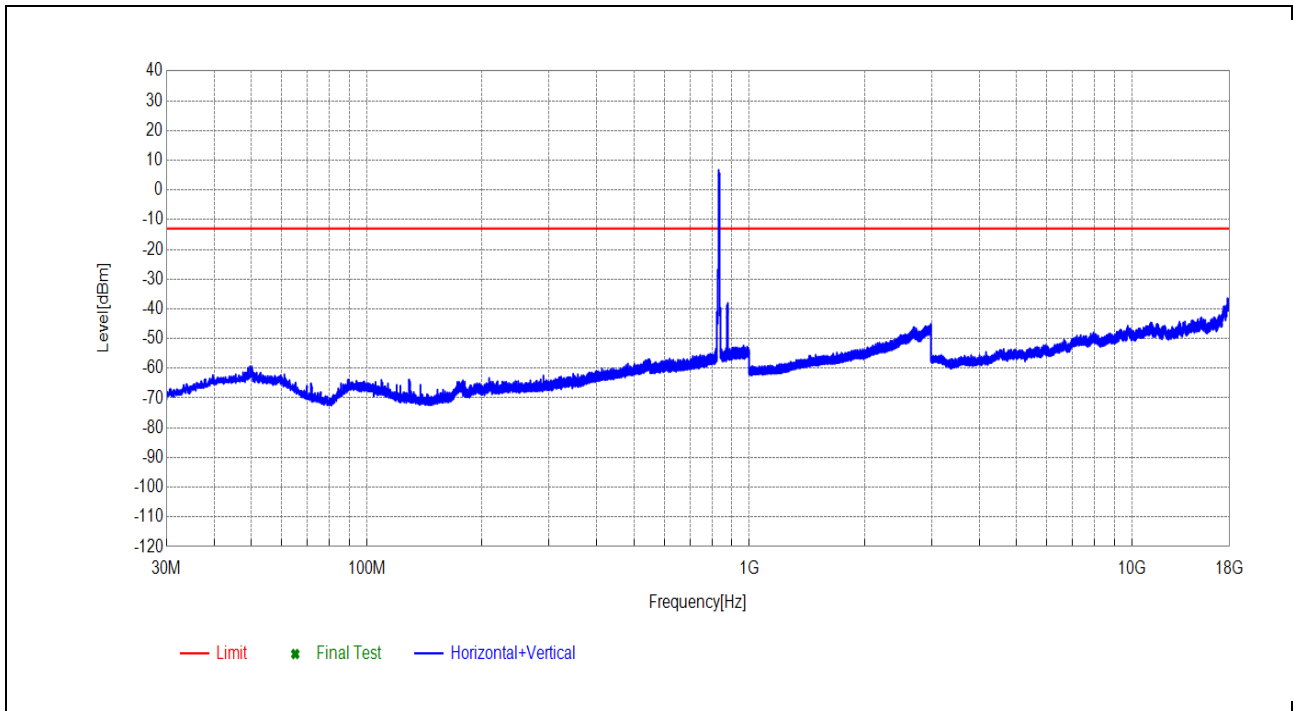
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

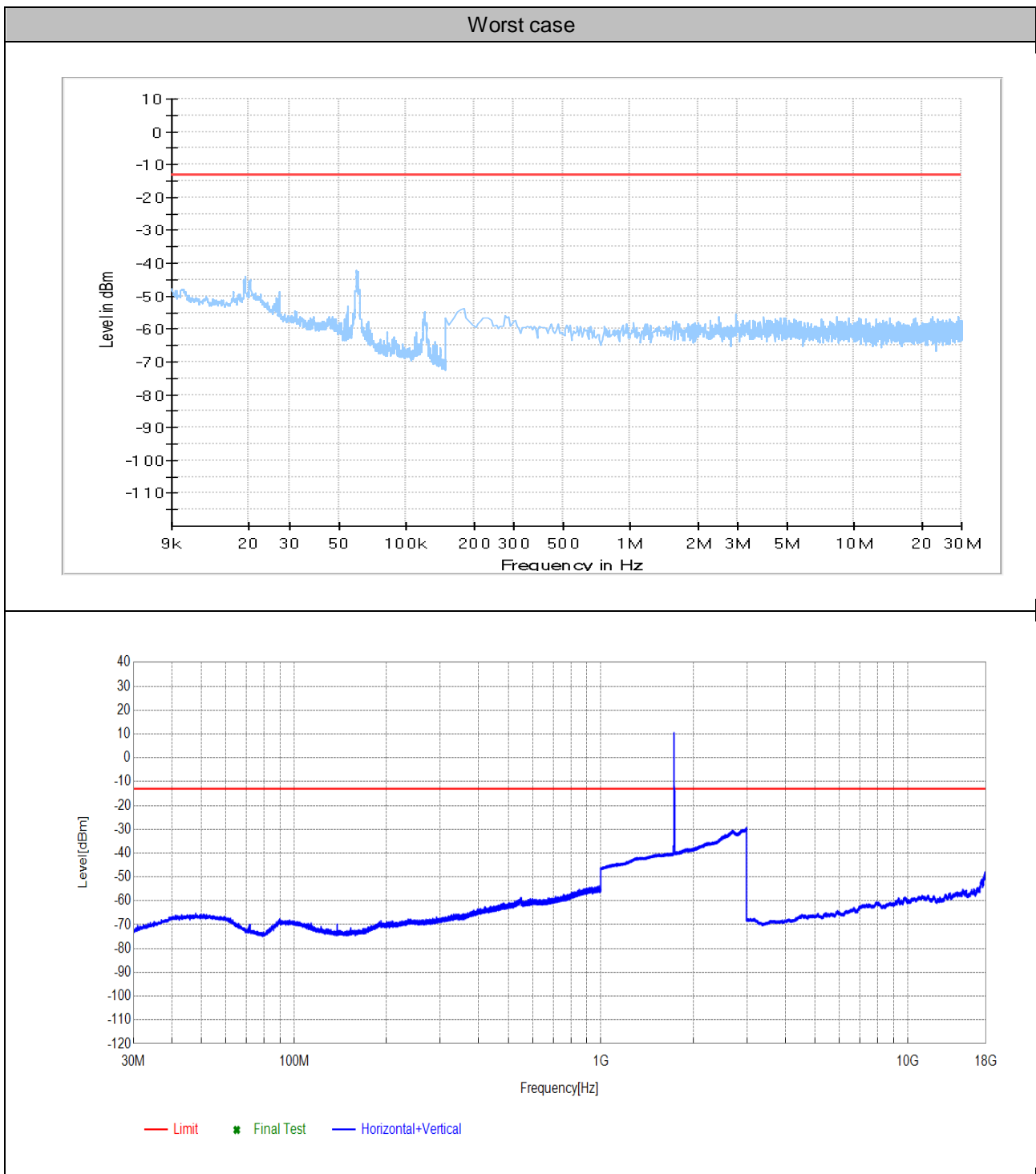
7.1 For UMTS

7.1.1 Test Band = WCDMA850

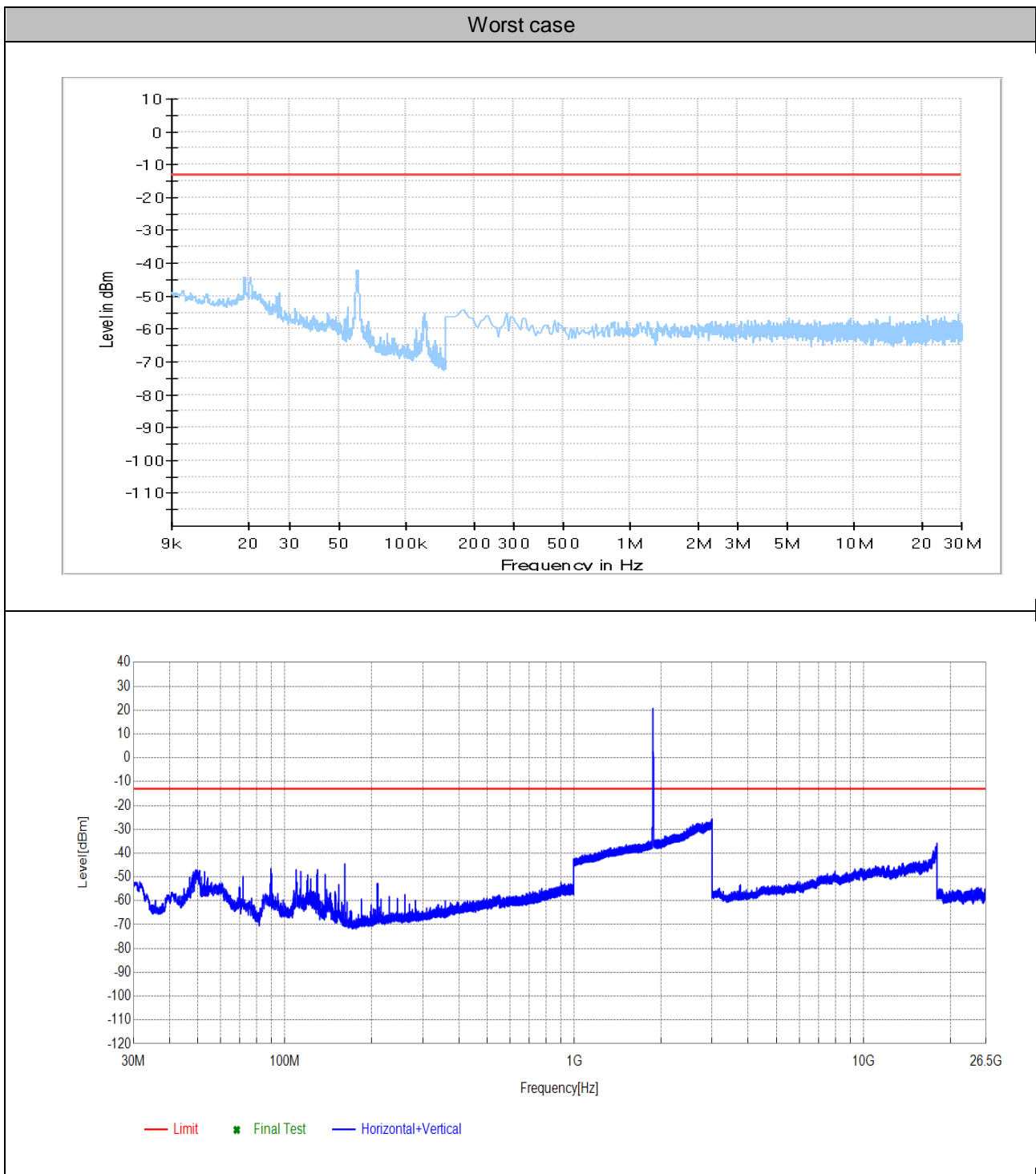




7.1.2 Test Band = WCDMA1700



7.1.3 Test Band = WCDMA1900



8Appendix_H: Frequency Stability

8.1 For UMTS

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
WCDMA850	UMTS/TM1	LCH	TN	VL	-14.43394	-0.01747	PASS
				VN	-13.32970	-0.01613	PASS
				VH	-7.93701	-0.00960	PASS
		MCH	TN	VL	-12.89788	-0.01542	PASS
				VN	-15.74580	-0.01883	PASS
				VH	-16.22660	-0.01940	PASS
		HCH	TN	VL	-9.59101	-0.01133	PASS
				VN	-13.82021	-0.01632	PASS
				VH	-16.72391	-0.01975	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-22.14671	-0.01293	PASS
				VN	-15.16218	-0.00885	PASS
				VH	-11.86303	-0.00693	PASS
		MCH	TN	VL	-15.68500	-0.00905	PASS
				VN	-19.12250	-0.01104	PASS
				VH	-15.94957	-0.00921	PASS
		HCH	TN	VL	-14.97893	-0.00855	PASS
				VN	-11.79535	-0.00673	PASS
				VH	-12.26927	-0.00700	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-17.29989	-0.00934	PASS
				VN	-12.31249	-0.00665	PASS
				VH	-11.58086	-0.00625	PASS
		MCH	TN	VL	-16.56156	-0.00881	PASS
				VN	-17.57675	-0.00935	PASS
				VH	-18.74693	-0.00997	PASS
		HCH	TN	VL	-17.40440	-0.00934	PASS
				VN	-20.05025	-0.00665	PASS
				VH	-14.15926	-0.00625	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	-10.28756	-0.01245	PASS
				-20	-9.91509	-0.01200	PASS
				-10	-10.74260	-0.01300	PASS
				0	-12.34218	-0.01493	PASS
				10	-14.09038	-0.01705	PASS
				20	-13.32970	-0.01613	PASS
				30	-8.44629	-0.01022	PASS
				40	-8.61087	-0.01042	PASS
				50	-8.82416	-0.01068	PASS
		MCH	VN	-30	-15.33220	-0.01833	PASS
				-20	-16.45547	-0.01967	PASS
				-10	-17.47631	-0.02089	PASS
				0	-14.23738	-0.01702	PASS
				10	-14.94204	-0.01786	PASS
				20	-15.74580	-0.01883	PASS
				30	-15.71061	-0.01878	PASS
				40	-14.07098	-0.01682	PASS
				50	-12.32845	-0.01474	PASS
		HCH	VN	-30	-14.93776	-0.01764	PASS
				-20	-15.73127	-0.01858	PASS
				-10	-14.32330	-0.01692	PASS
				0	-12.96495	-0.01531	PASS
				10	-13.35329	-0.01577	PASS
				20	-13.82021	-0.01632	PASS
				30	-16.62556	-0.01964	PASS
				40	-11.62111	-0.01373	PASS
				50	-16.16517	-0.01909	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	-15.59214	-0.00911	PASS
				-20	-10.79838	-0.00631	PASS
				-10	-14.84959	-0.00867	PASS
				0	-15.76373	-0.00921	PASS
				10	-17.97800	-0.01050	PASS
				20	-15.16218	-0.00885	PASS
				30	-17.42514	-0.01018	PASS
				40	-13.70000	-0.00800	PASS
				50	-11.53776	-0.00674	PASS
		MCH	VN	-30	-17.74748	-0.01024	PASS
				-20	-19.31907	-0.01115	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict						
				-10	-17.92887	-0.01035	PASS						
				0	-18.36784	-0.01060	PASS						
				10	-17.09014	-0.00986	PASS						
				20	-19.12250	-0.01104	PASS						
				30	-19.38406	-0.01119	PASS						
				40	-19.35326	-0.01117	PASS						
		HCH	VN			-30	-17.14481	-0.00978	PASS				
						-20	-15.75168	-0.00899	PASS				
						-10	-18.17730	-0.01037	PASS				
						0	-16.17103	-0.00923	PASS				
						10	-11.45458	-0.00654	PASS				
						20	-11.79535	-0.00673	PASS				
						30	-11.48854	-0.00656	PASS				
						40	-12.26796	-0.00700	PASS				
						50	-14.80368	-0.00845	PASS				
						WCDMA1900	UMTS/TM1	LCH	VN	-30	-17.34621	-0.00936	PASS
										-20	-11.11818	-0.00600	PASS
										-10	-17.80944	-0.00961	PASS
0	-8.68511	-0.00469	PASS										
10	-6.73478	-0.00364	PASS										
20	-12.31249	-0.00665	PASS										
30	-14.40281	-0.00778	PASS										
40	-18.35337	-0.00991	PASS										
50	-14.37919	-0.00776	PASS										
MCH	VN			-30	-19.49909			-0.01037	PASS				
				-20	-17.66299			-0.00940	PASS				
				-10	-18.62672			-0.00991	PASS				
				0	-17.38082			-0.00925	PASS				
				10	-18.89093			-0.01005	PASS				
				20	-17.57675			-0.00935	PASS				
				30	-19.79524			-0.01053	PASS				
				40	-22.01240			-0.01171	PASS				
				50	-19.57649			-0.01041	PASS				
HCH	VN			-30	-19.55915			-0.01025	PASS				
				-20	-19.72955			-0.01034	PASS				
				-10	-22.33053			-0.01171	PASS				
				0	-20.70294			-0.01085	PASS				
				10	-22.24336			-0.01166	PASS				
				20	-20.05025			-0.01051	PASS				



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	-21.56010	-0.01130	PASS
				40	-17.15199	-0.00899	PASS
				50	-21.70694	-0.01138	PASS

END