



# 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	23.76	20.21	38.5	PASS
		MCH	23.76	20.21	38.5	PASS
		HCH	23.76	20.21	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.43	24.43	30	PASS
		MCH	23.43	24.43	30	PASS
		HCH	23.40	24.40	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.74	23.44	33	PASS
		MCH	23.75	23.45	33	PASS
		HCH	23.74	23.44	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:

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

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

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

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	2.800	13	PASS
		MCH	2.770	13	PASS
		HCH	2.700	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.660	13	PASS
		MCH	2.700	13	PASS
		HCH	2.790	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.640	13	PASS
		MCH	2.610	13	PASS
		HCH	2.400	13	PASS

### 3Appendix\_C: Modulation Characteristics

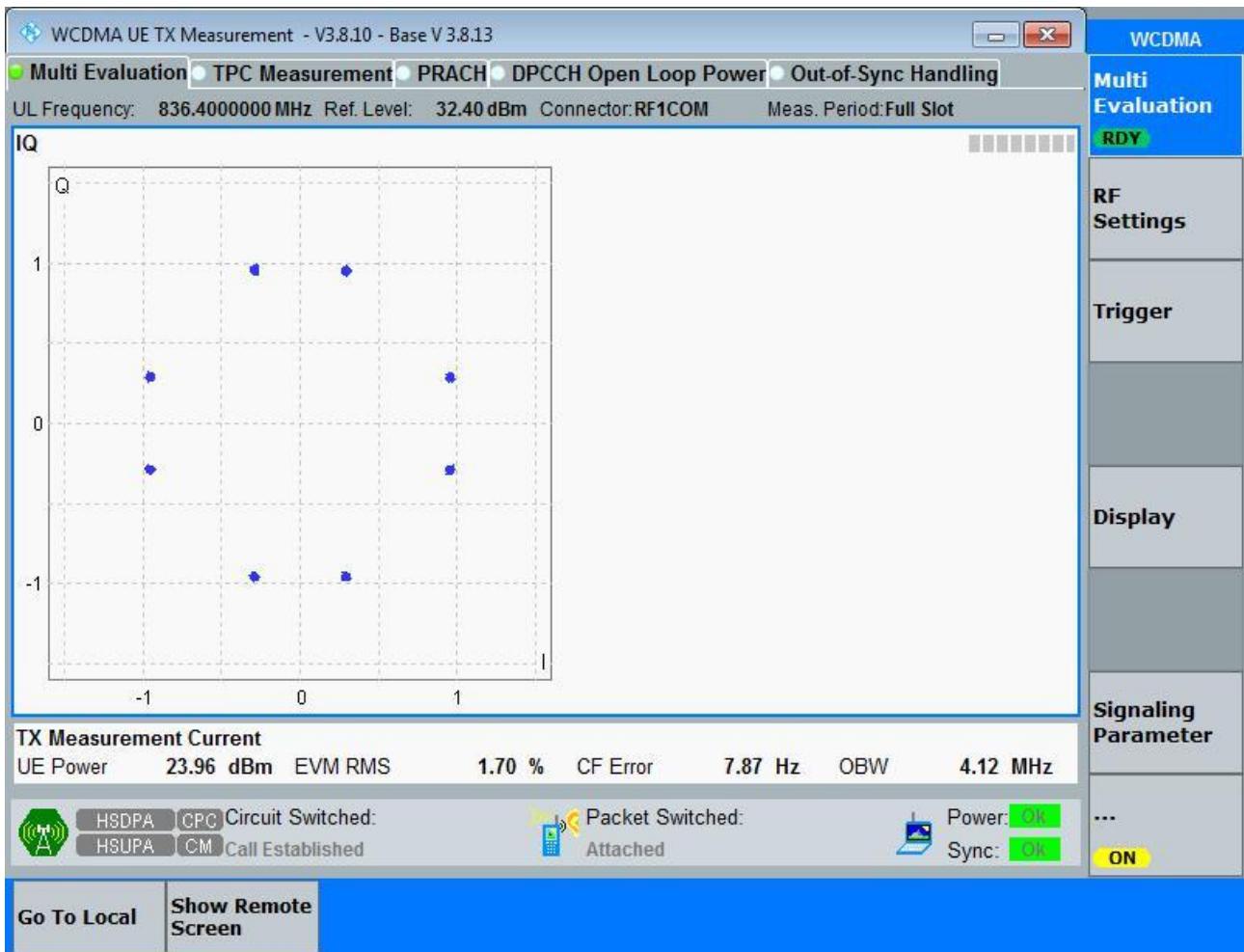
#### Part I - Test Plots

##### 3.1 For UMTS

##### 3.1.1 Test Band = WCDMA850

##### 3.1.1.1 Test Mode = UMTS/TM1

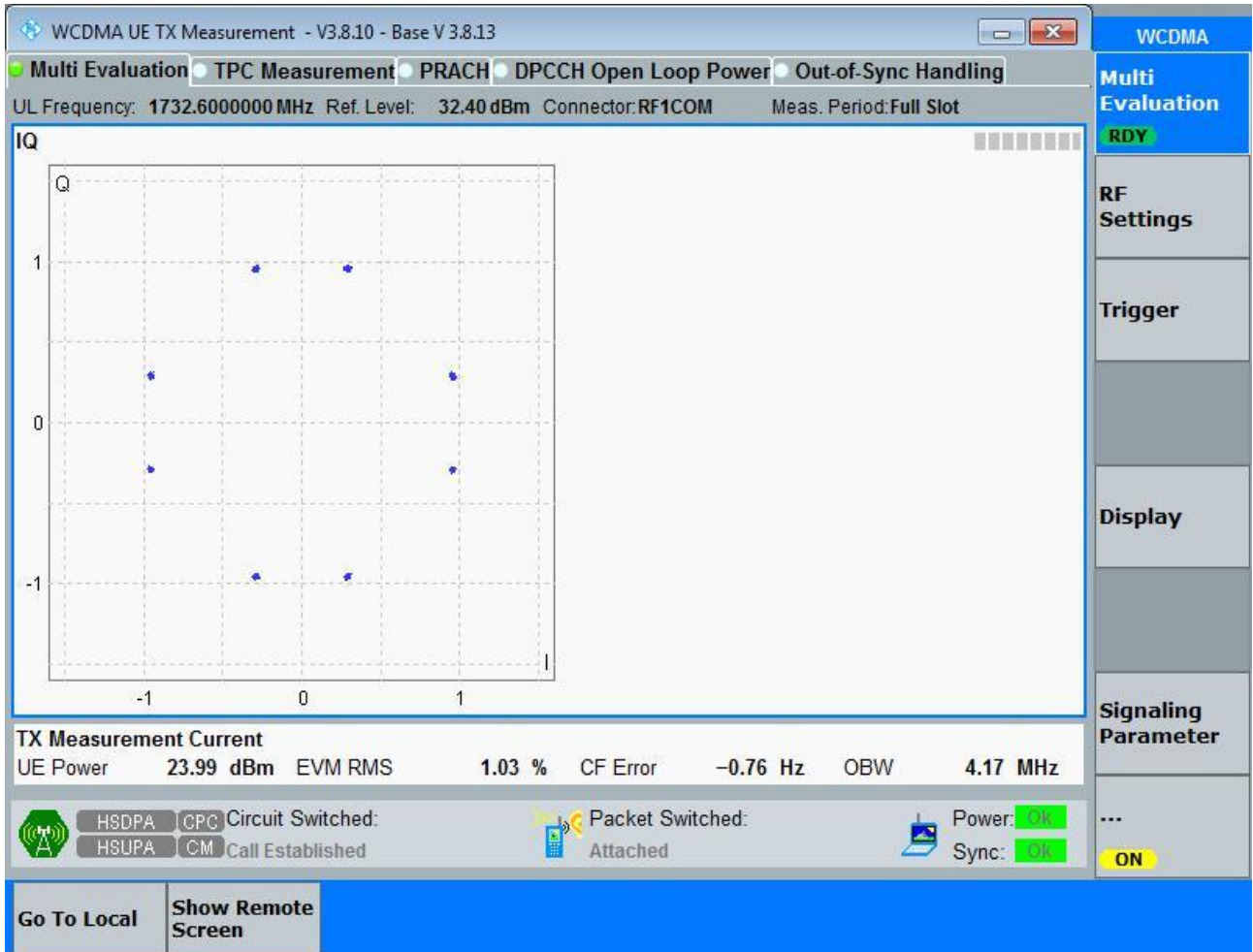
##### 3.1.1.1.1 Test Channel = MCH



### 3.1.2 Test Band = WCDMA1700

#### 3.1.2.1 Test Mode = UMTS/TM1

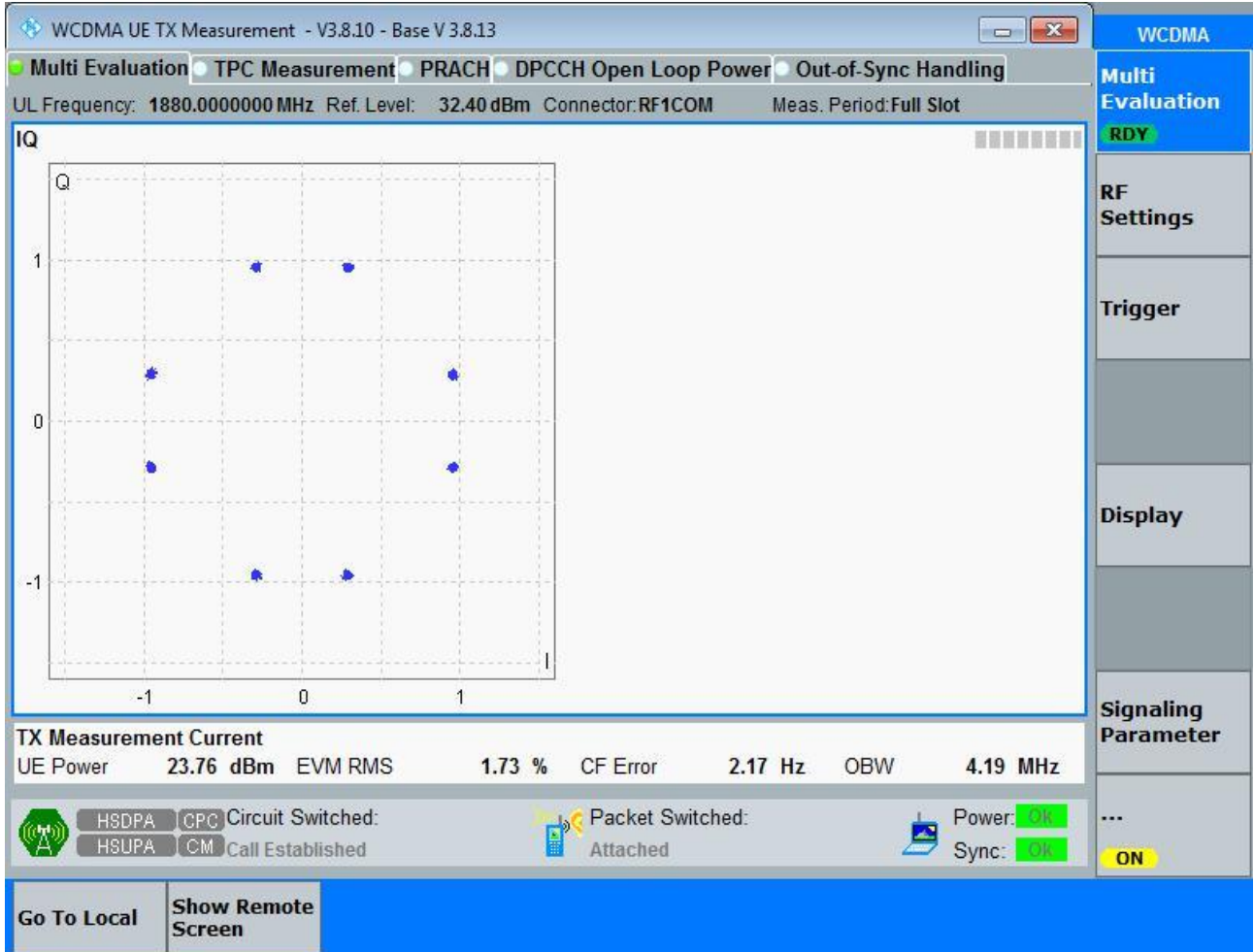
##### 3.1.2.1.1 Test Channel = MCH



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

## Part II - Test Plots

### 4.1 For UMTS

#### 4.1.1 Test Band = WCDMA850

##### 4.1.1.1 Test Mode = UMTS/TM1

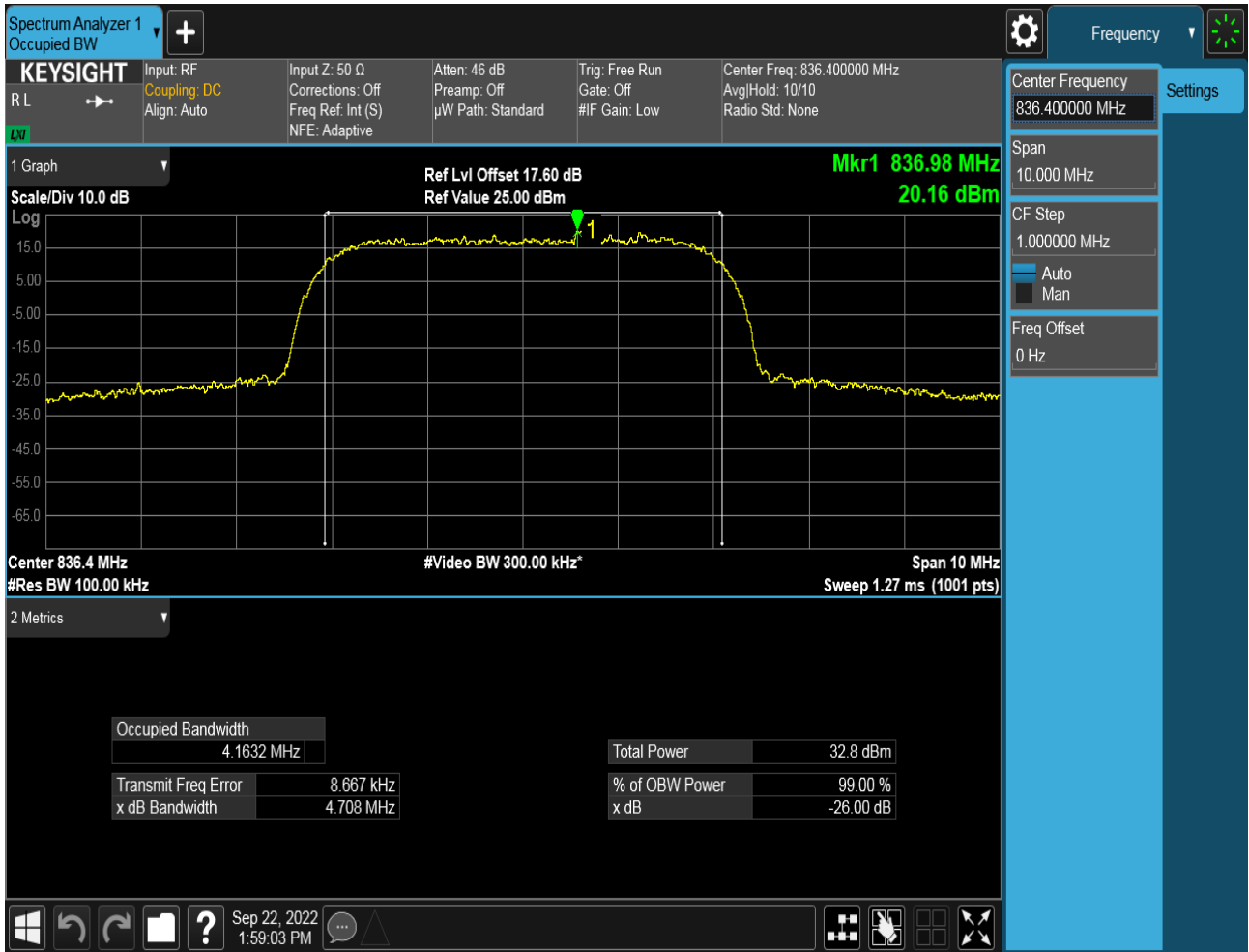
##### 4.1.1.1.1 Test Channel = LCH





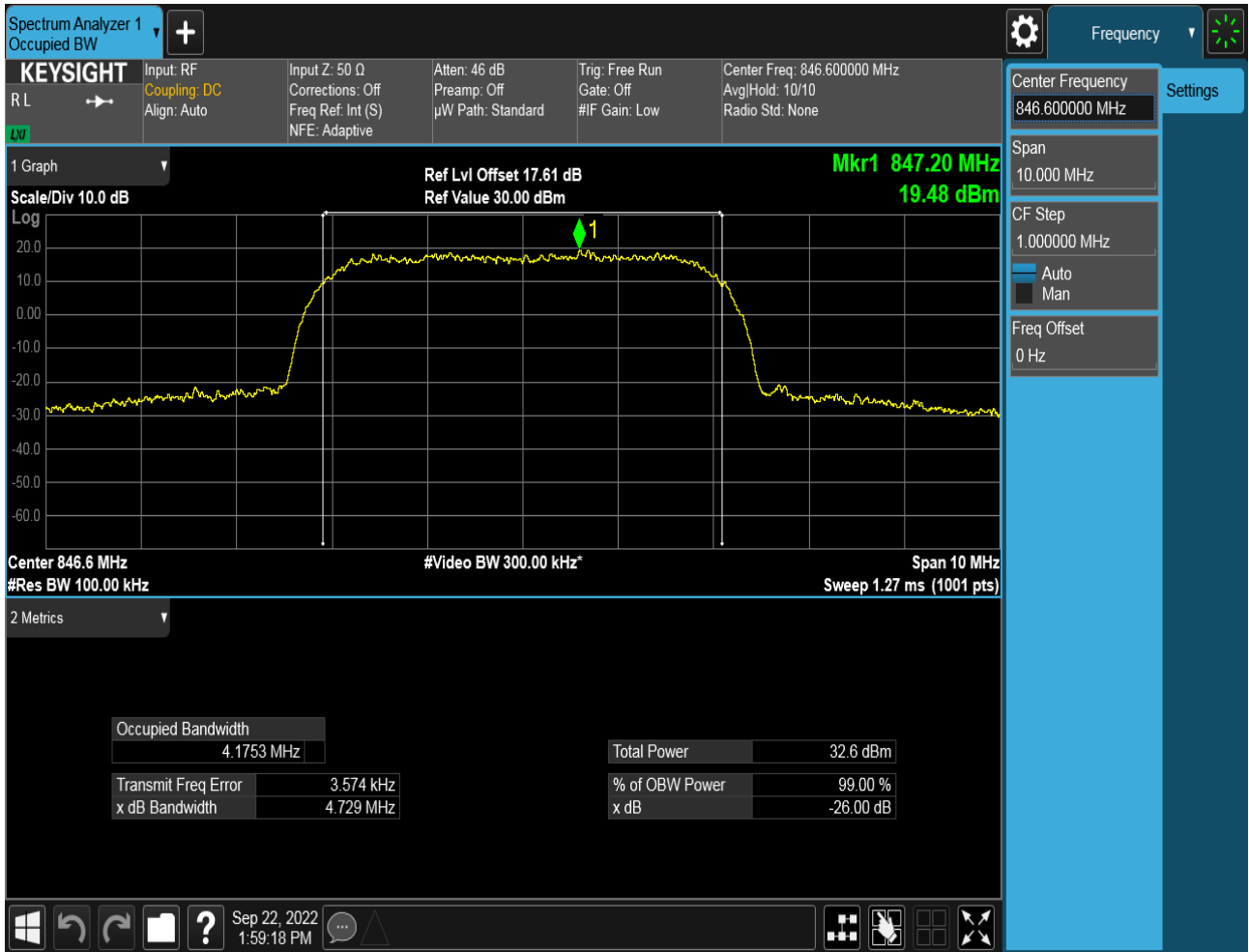


### 4.1.1.1.2 Test Channel = MCH





### 4.1.1.1.3 Test Channel = HCH

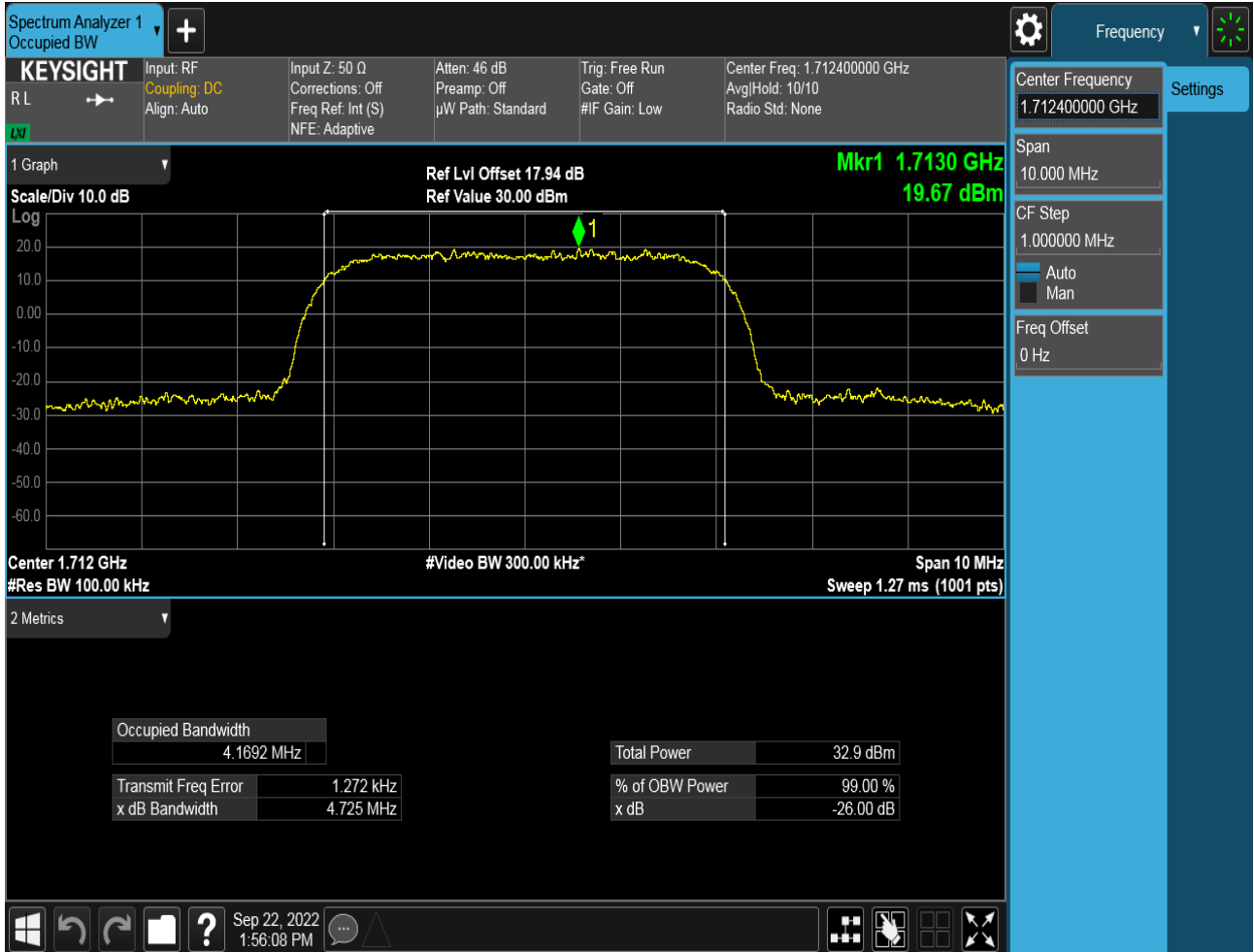




### 4.1.2 Test Band = WCDMA1700

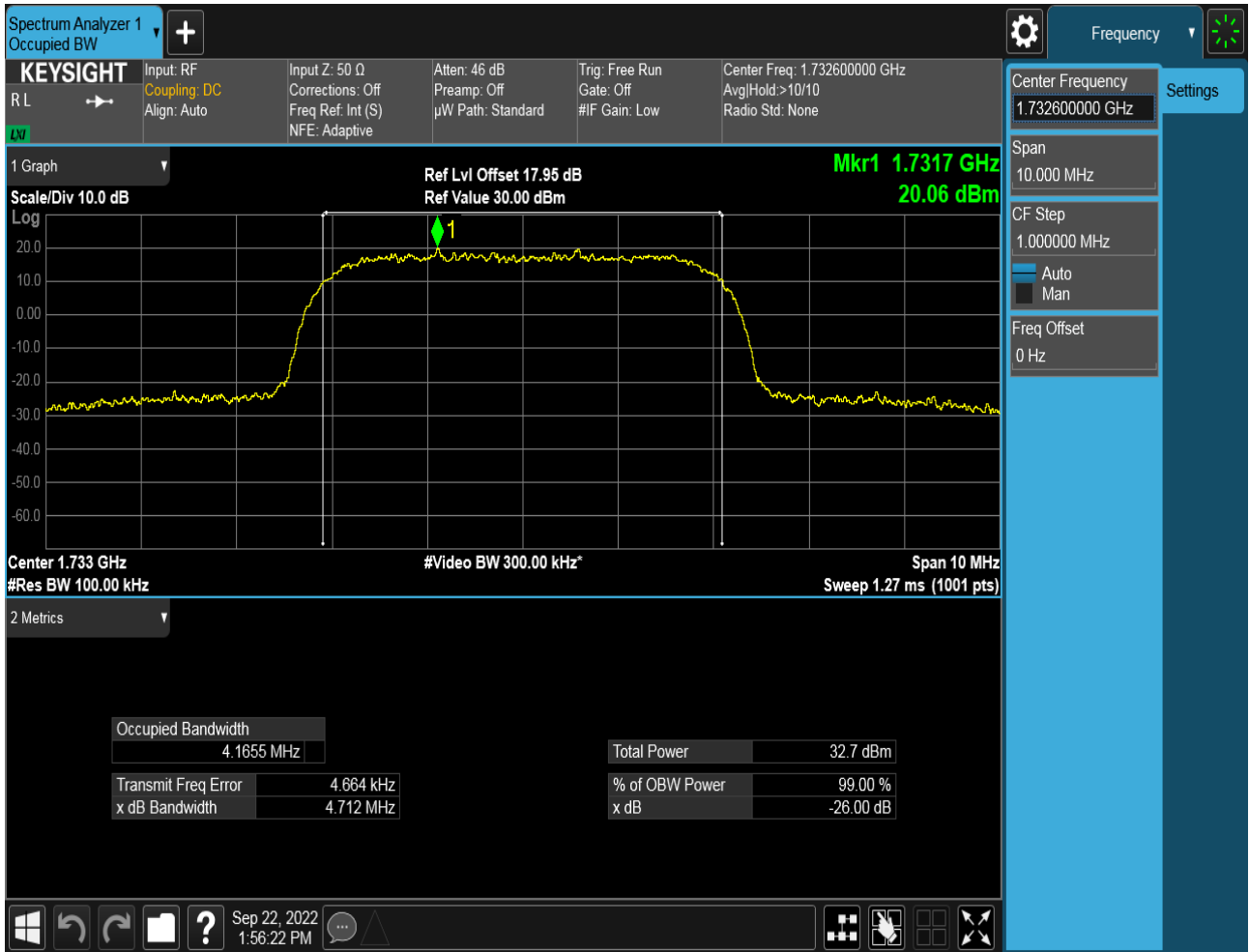
#### 4.1.2.1 Test Mode = UMTS/TM1

##### 4.1.2.1.1 Test Channel = LCH



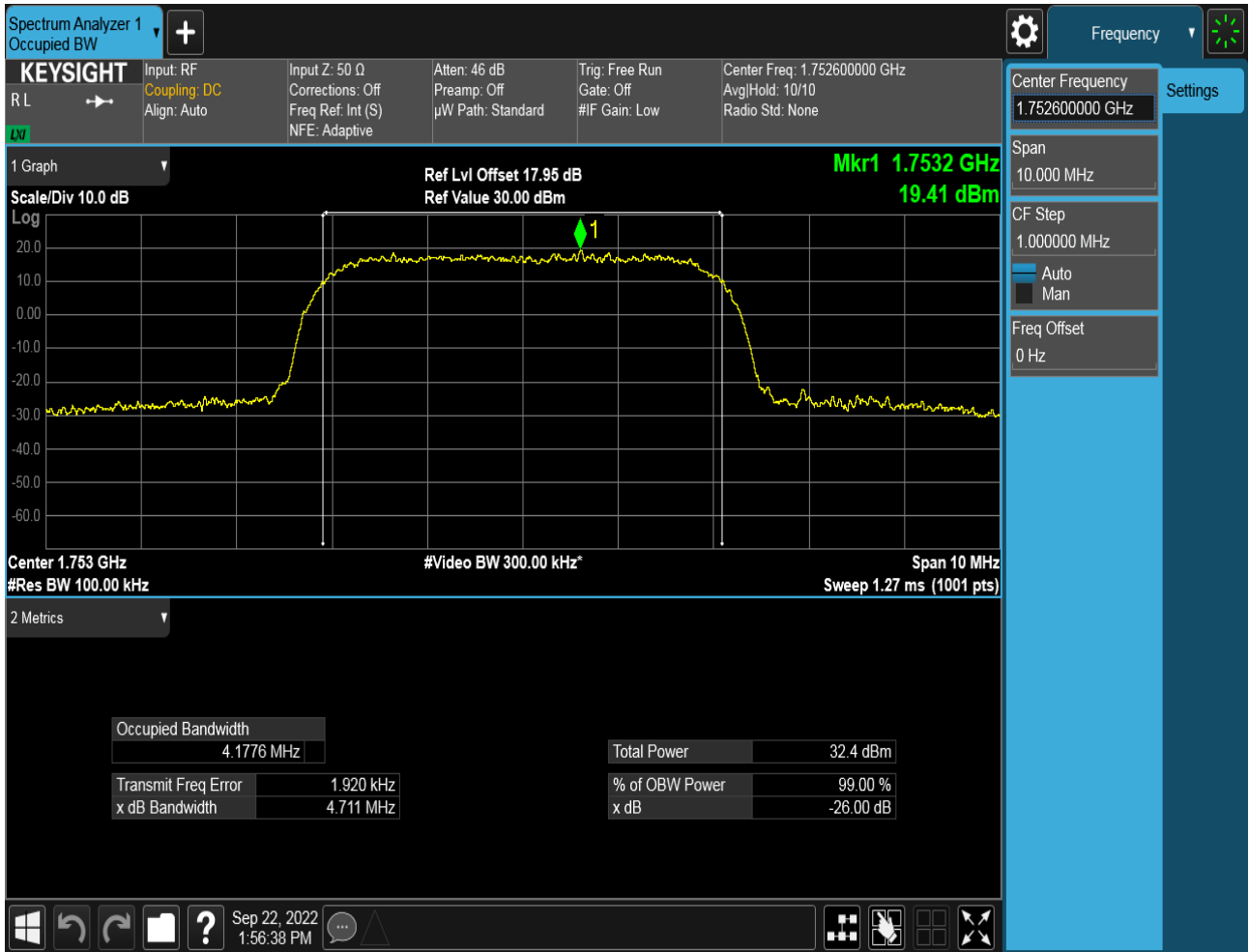


### 4.1.2.1.2 Test Channel = MCH





### 4.1.2.1.3 Test Channel = HCH

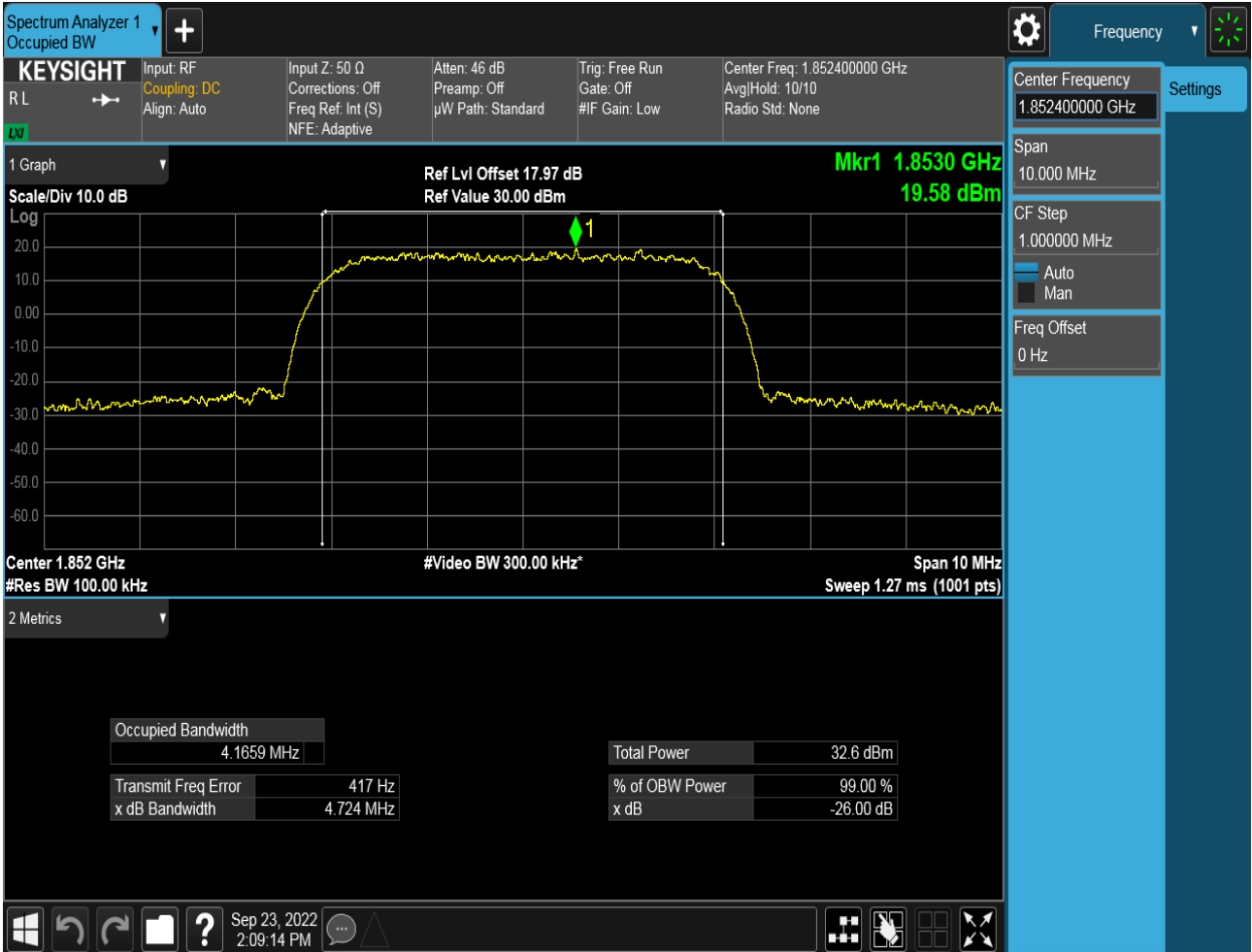




### 4.1.3 Test Band = WCDMA1900

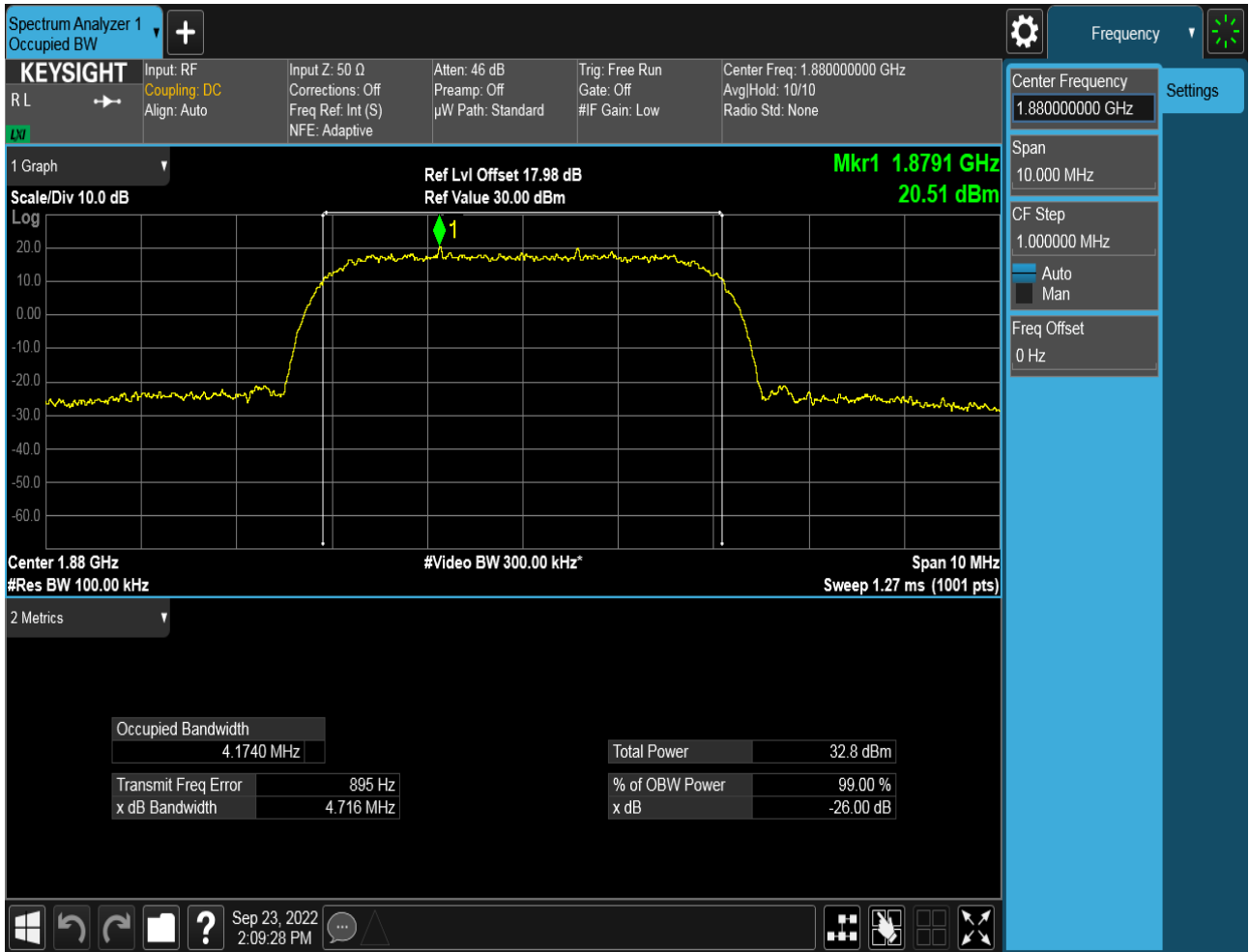
#### 4.1.3.1 Test Mode = UMTS/TM1

##### 4.1.3.1.1 Test Channel = LCH



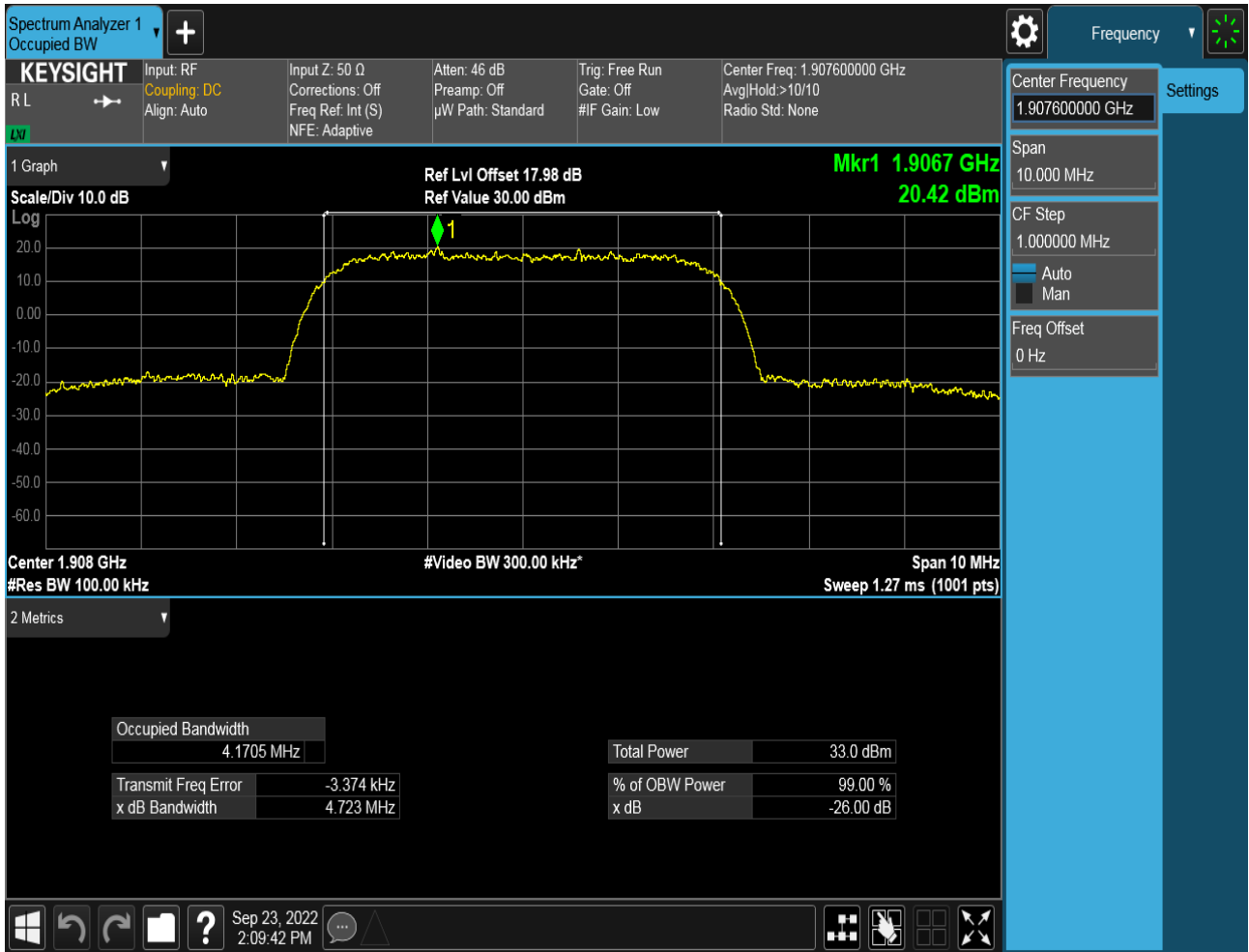


### 4.1.3.1.2 Test Channel = MCH





### 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.

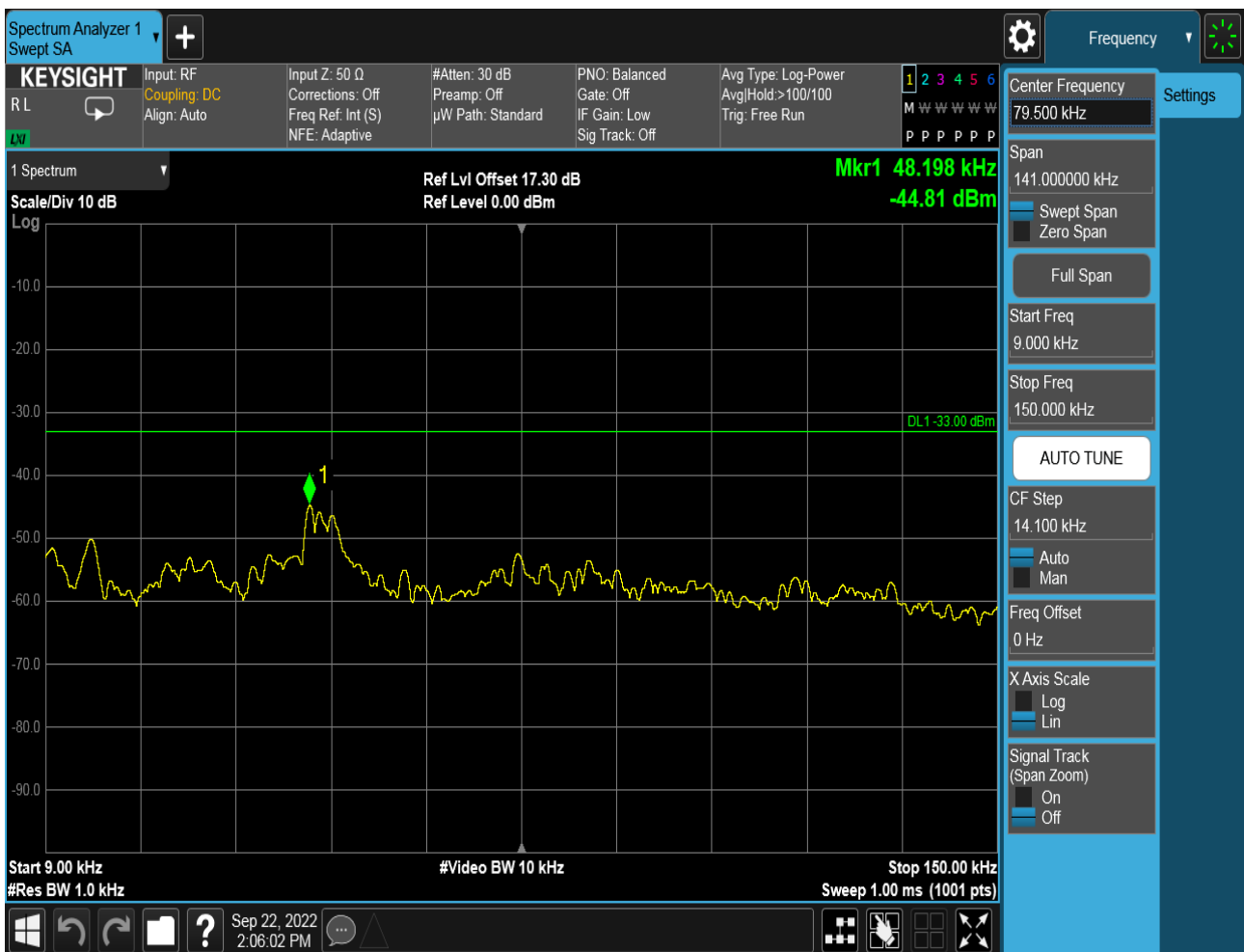
### Part I - Test Plots

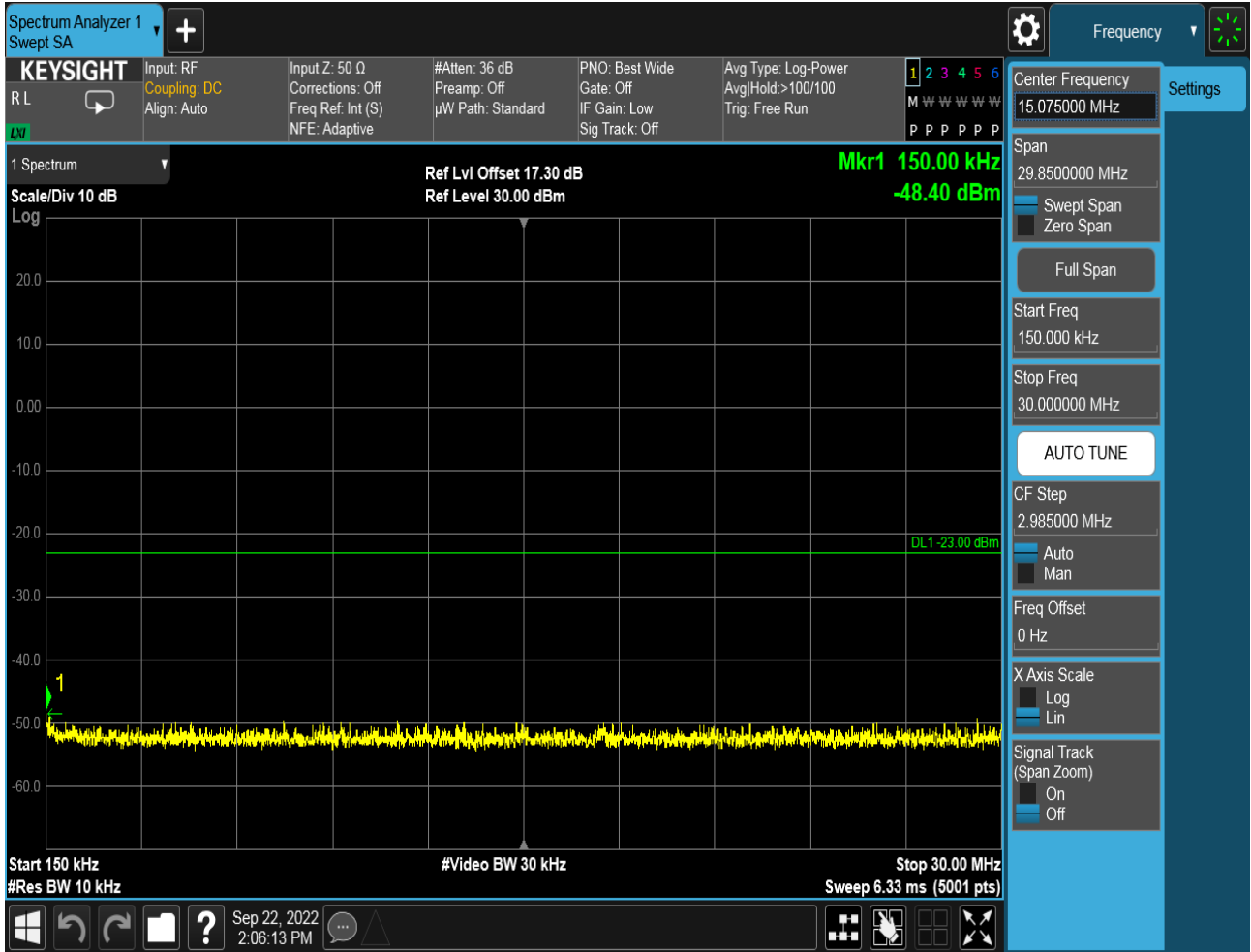
#### 6.1 For UMTS

##### 6.1.1 Test Band = WCDMA850

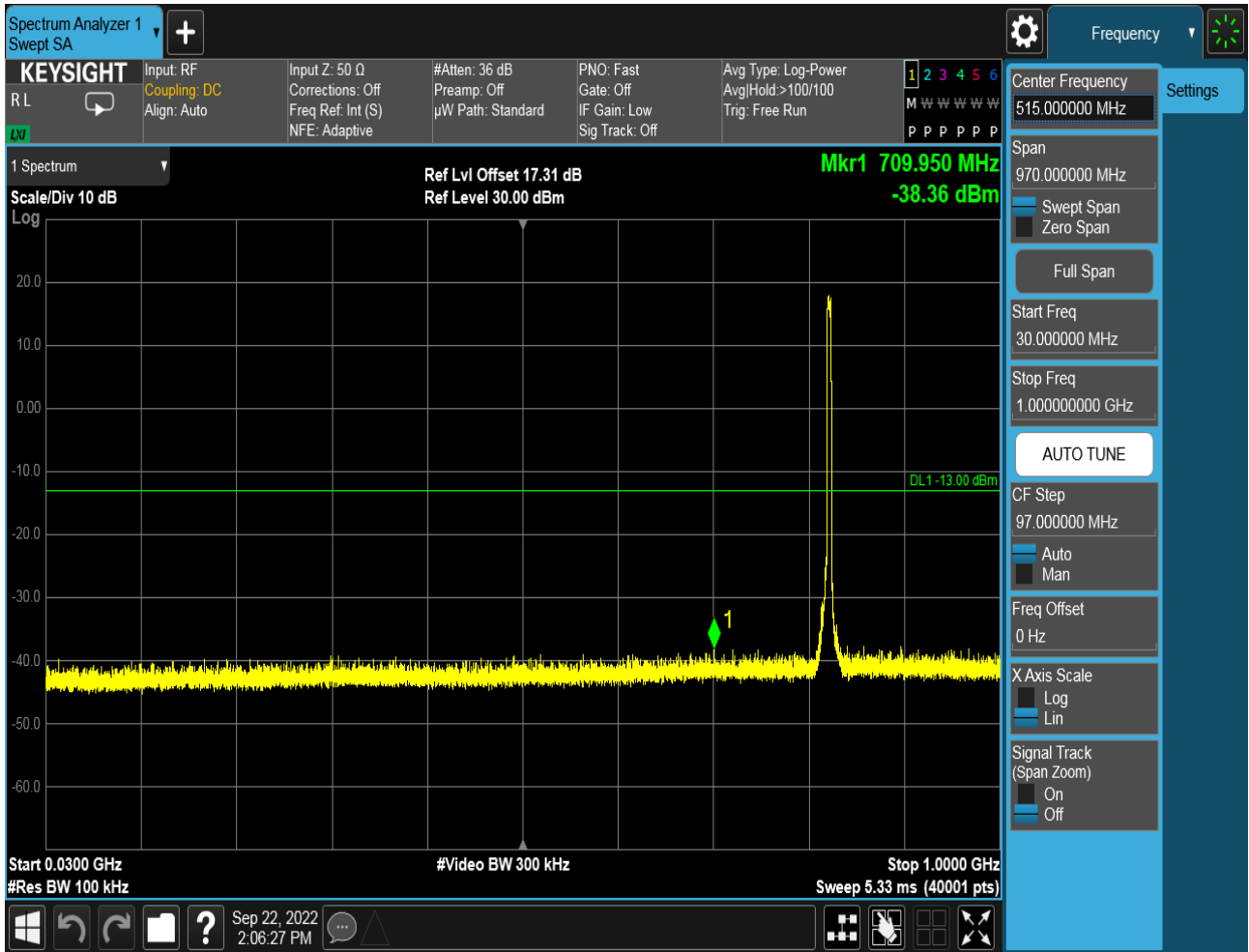
##### 6.1.1.1 Test Mode = UMTS/TM1

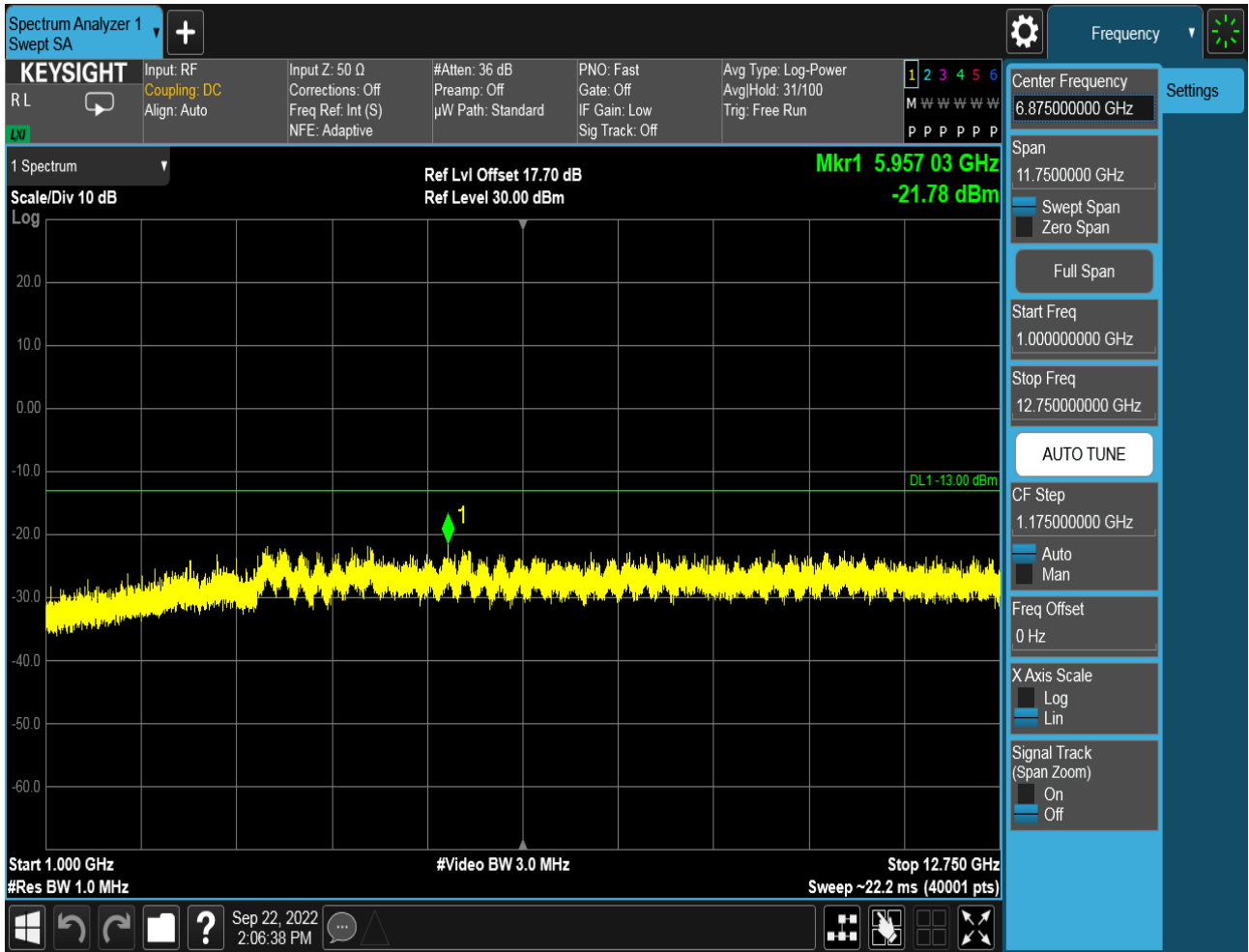
##### 6.1.1.1.1 Test Channel = LCH







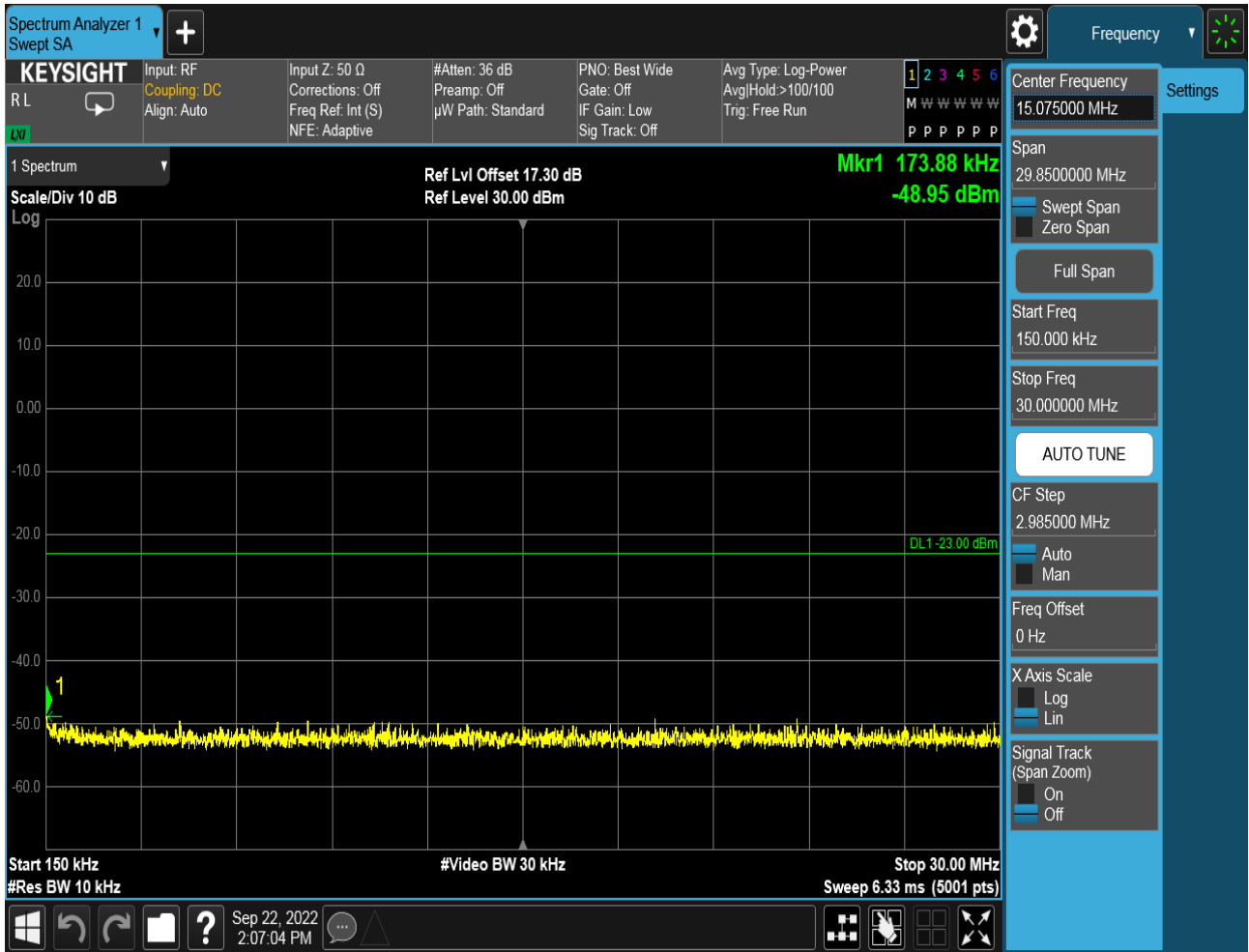


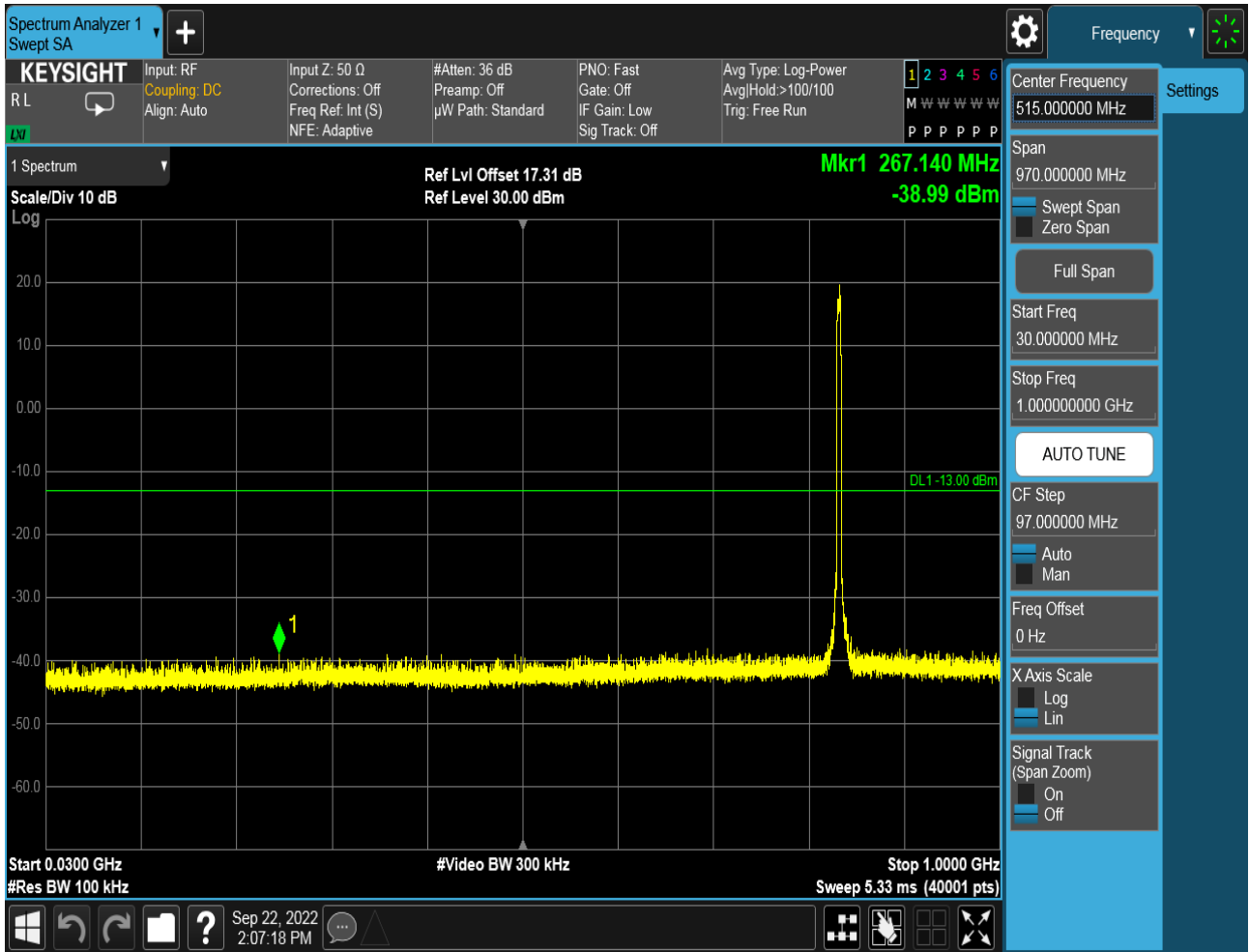


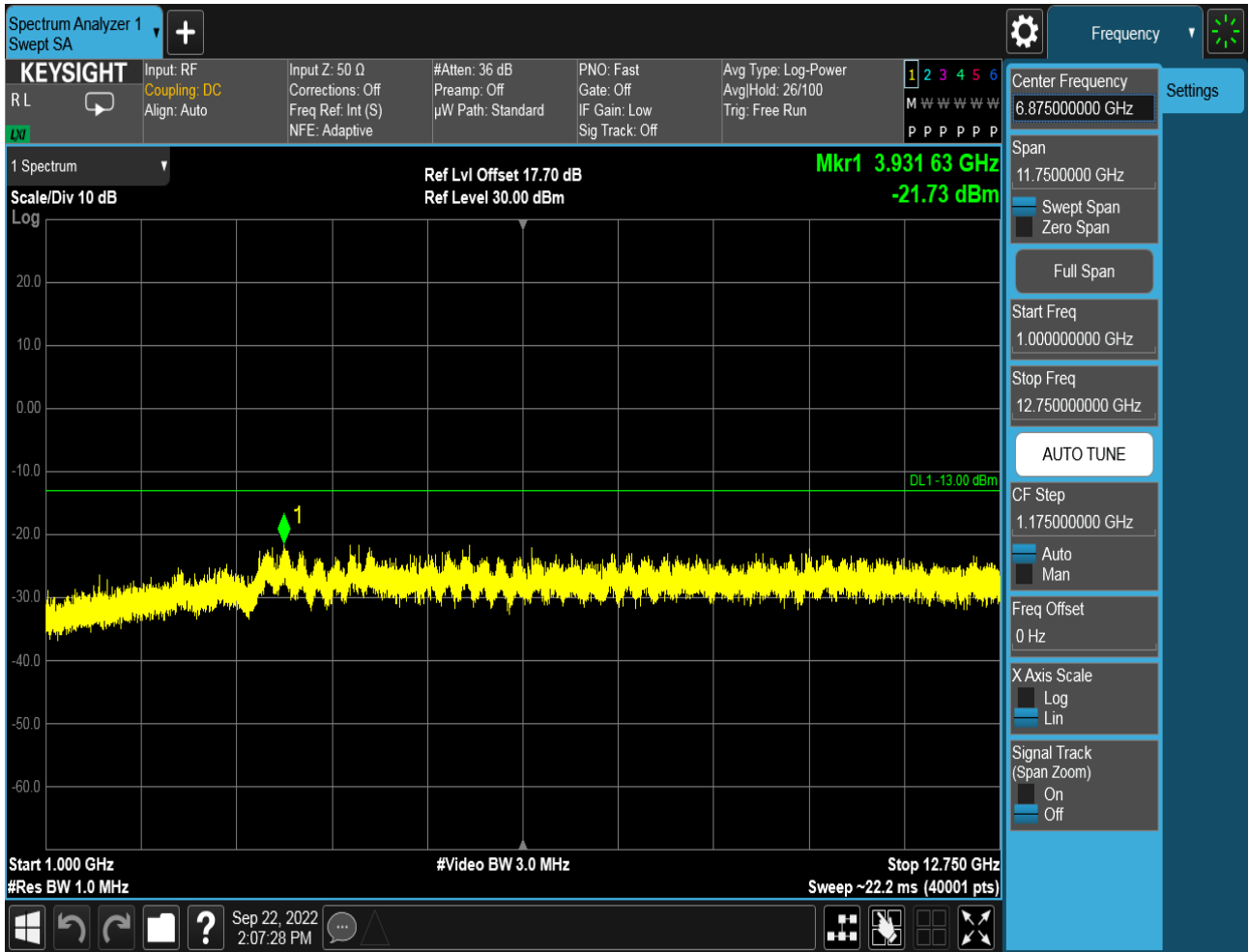


### 6.1.1.1.2 Test Channel = MCH



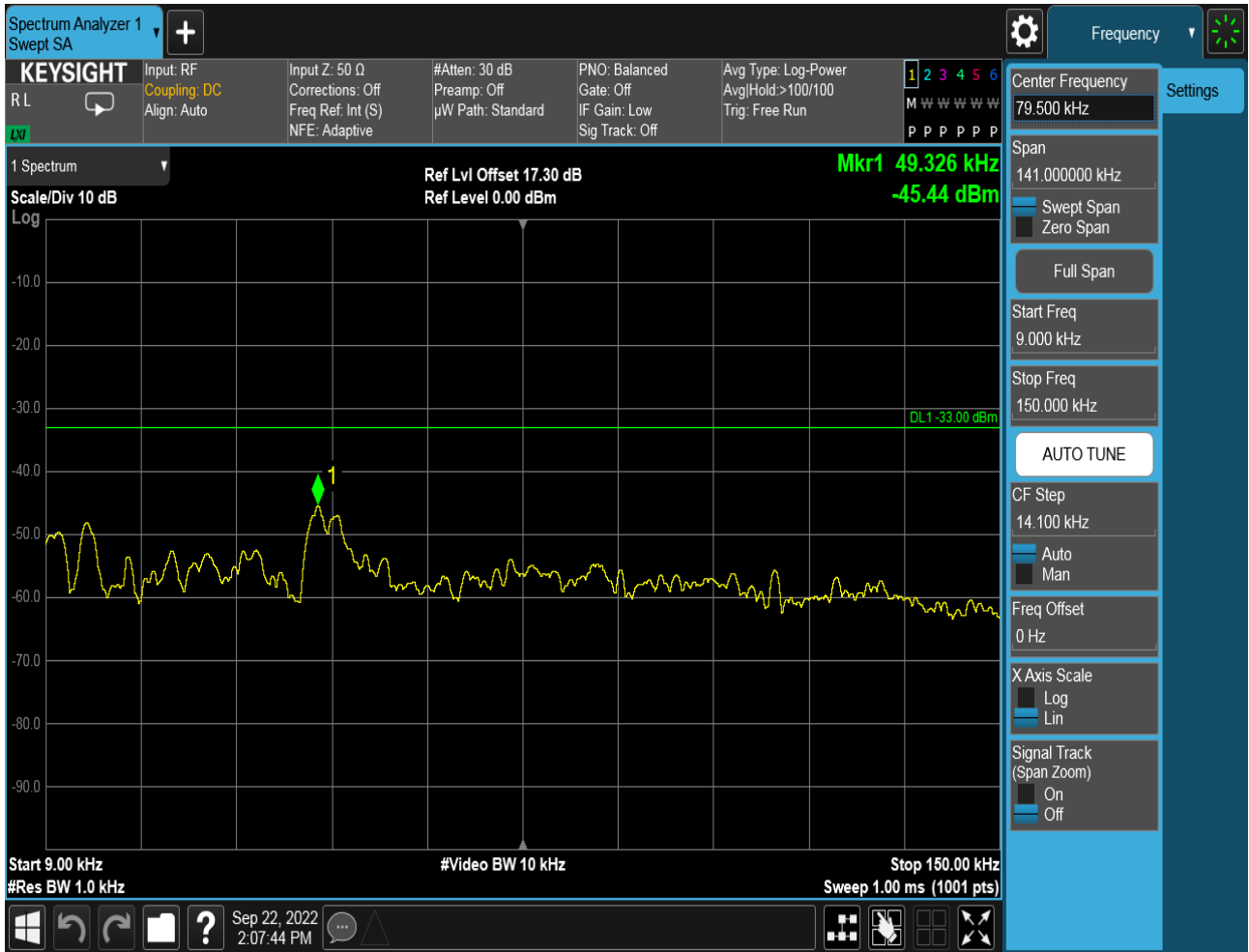


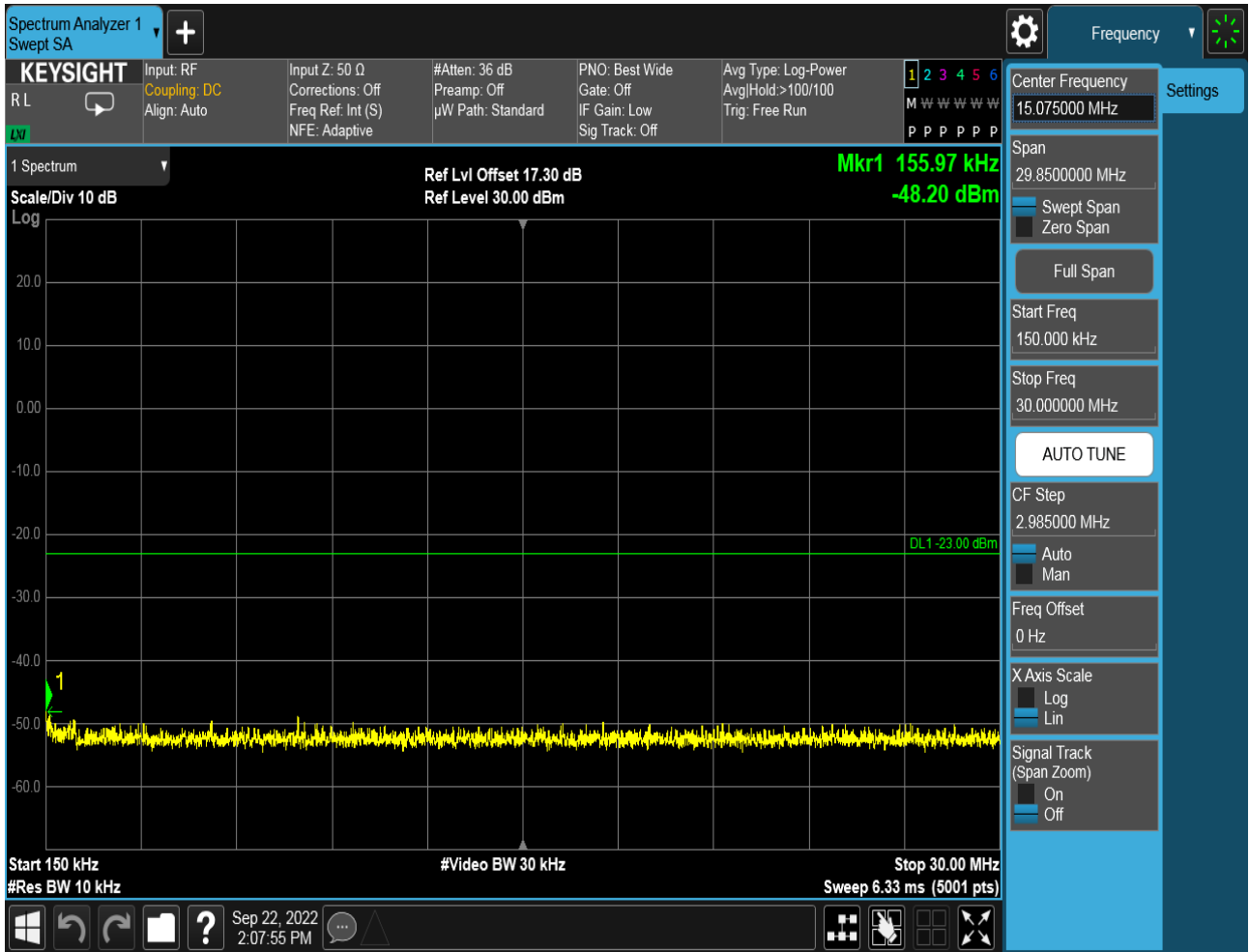




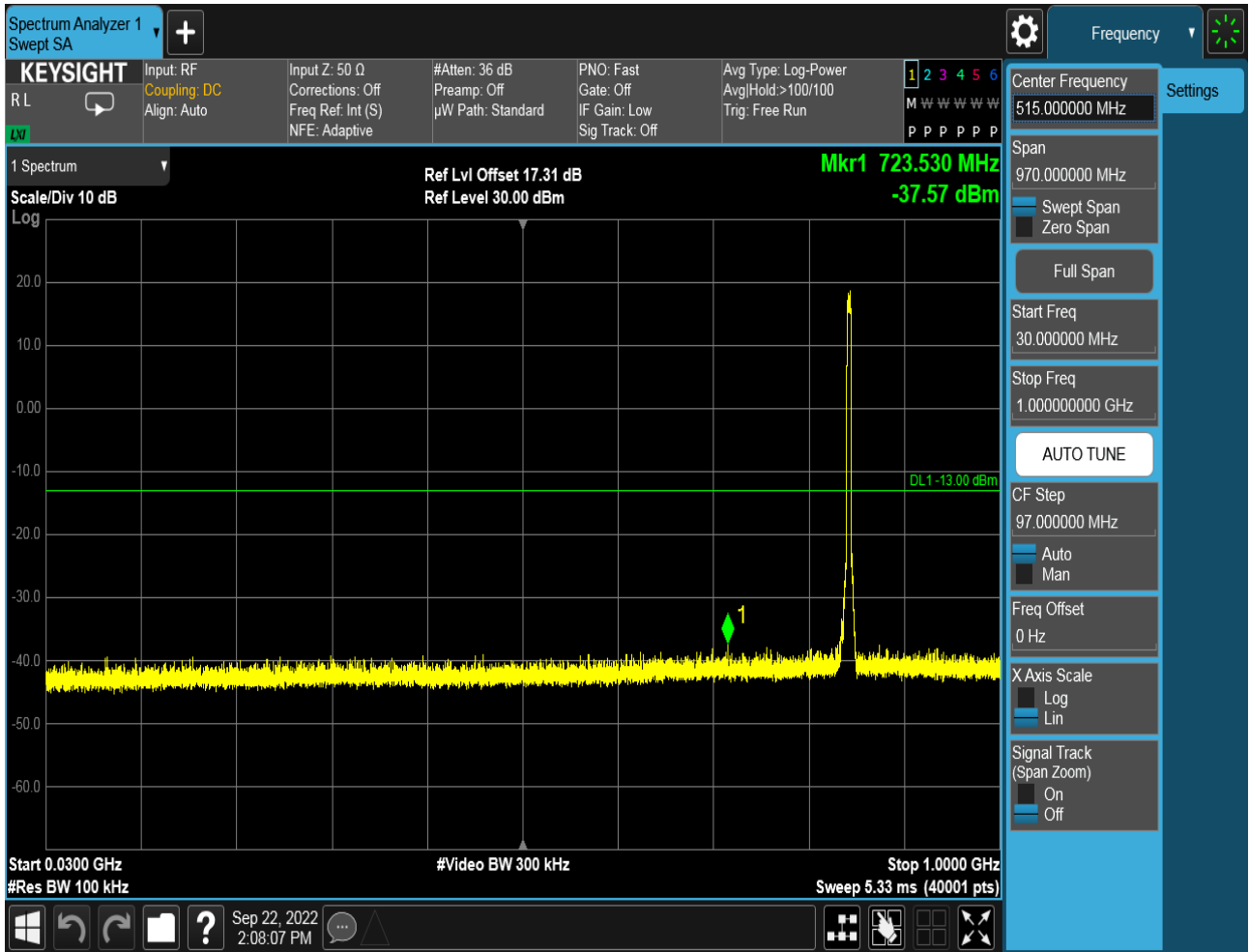


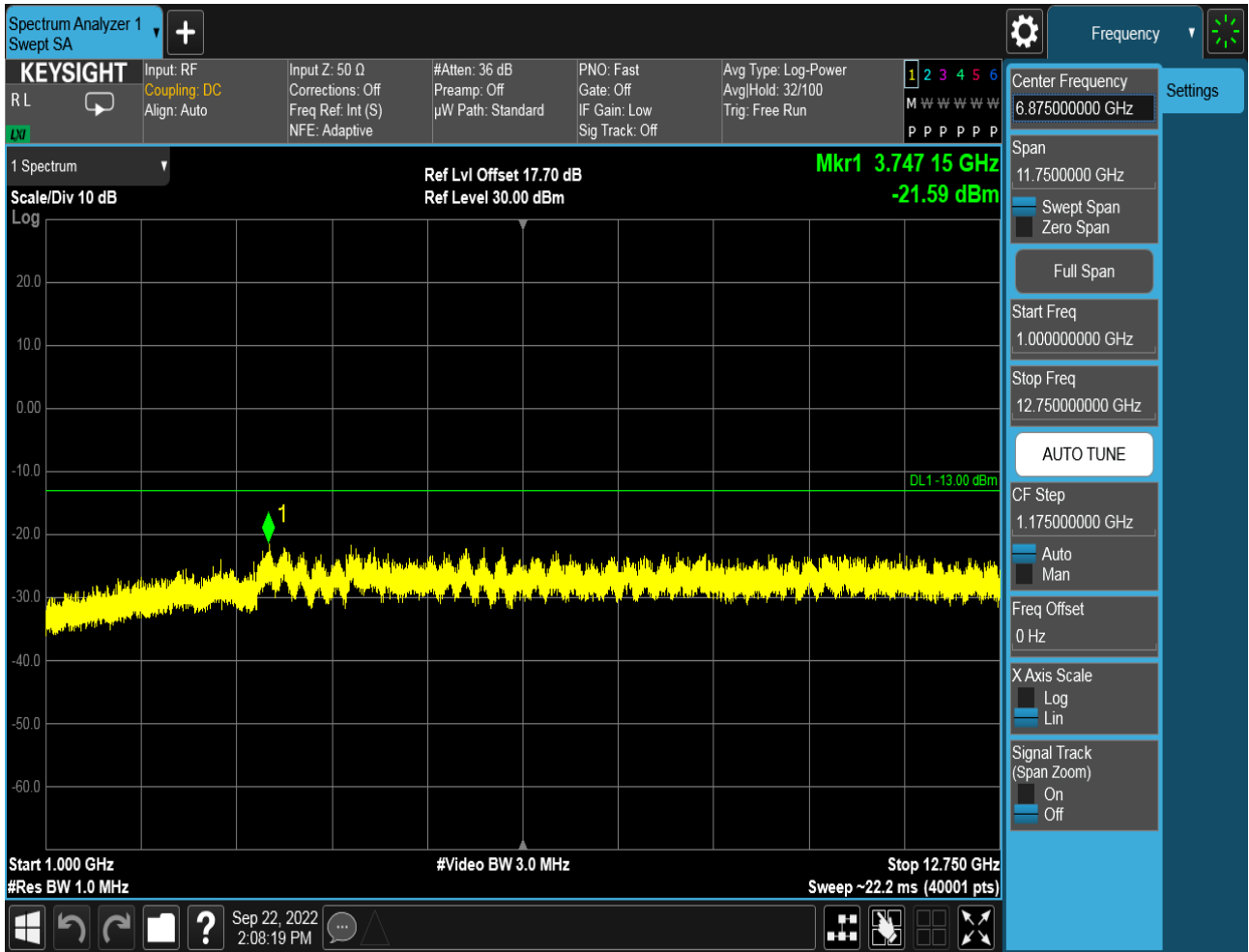
### 6.1.1.1.3 Test Channel = HCH









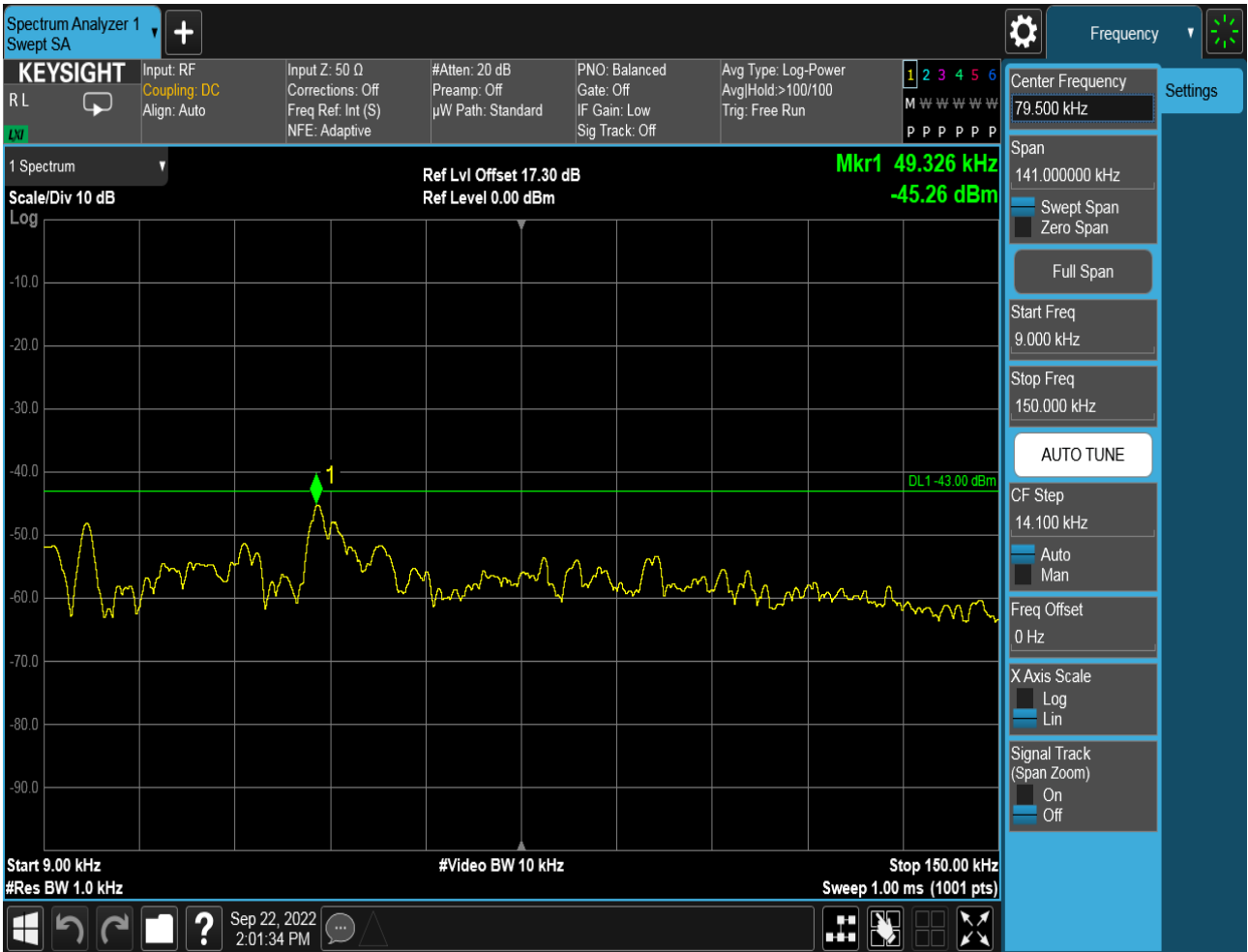


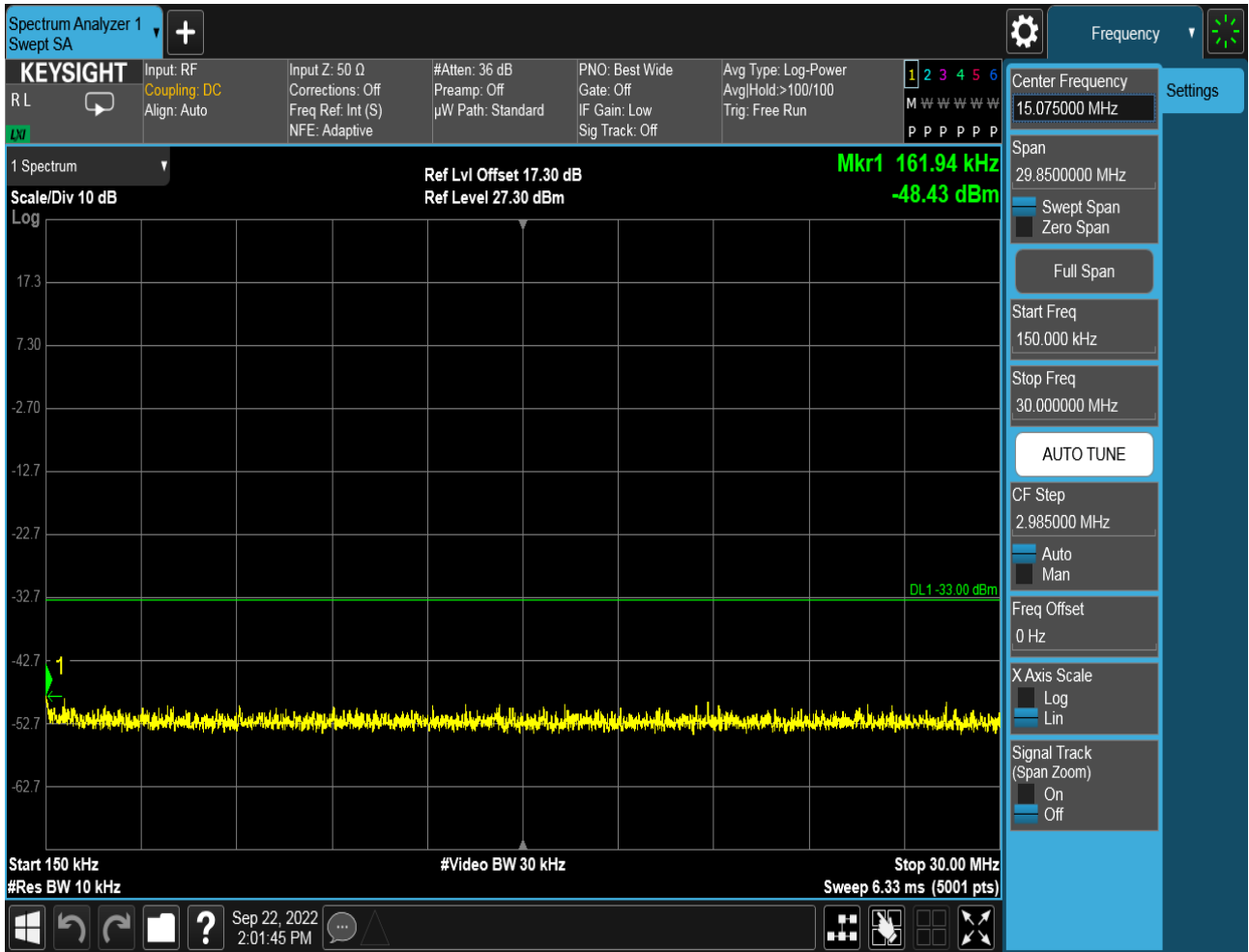


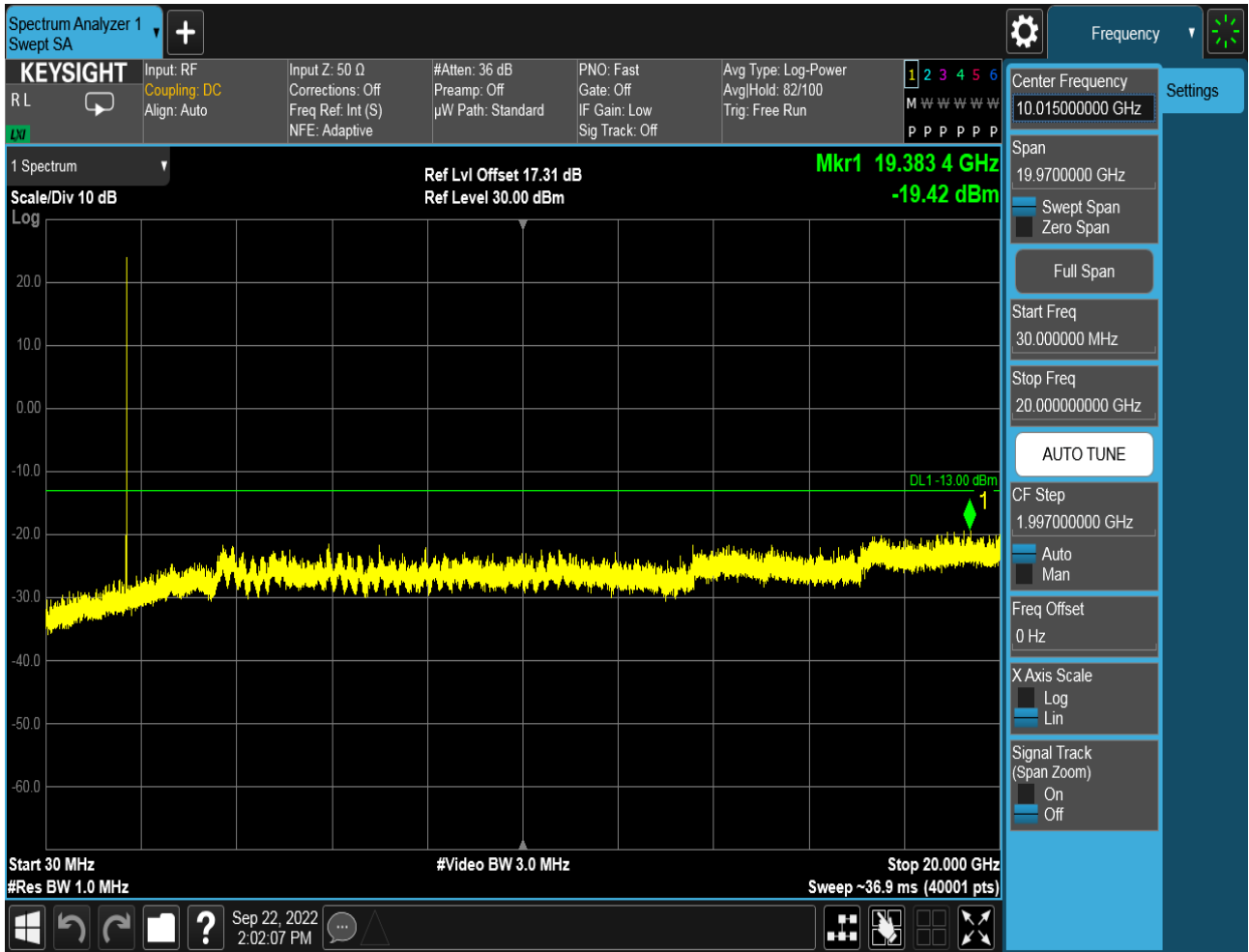
### 6.1.2 Test Band = WCDMA1700

#### 6.1.2.1 Test Mode = UMTS/TM1

##### 6.1.2.1.1 Test Channel = LCH

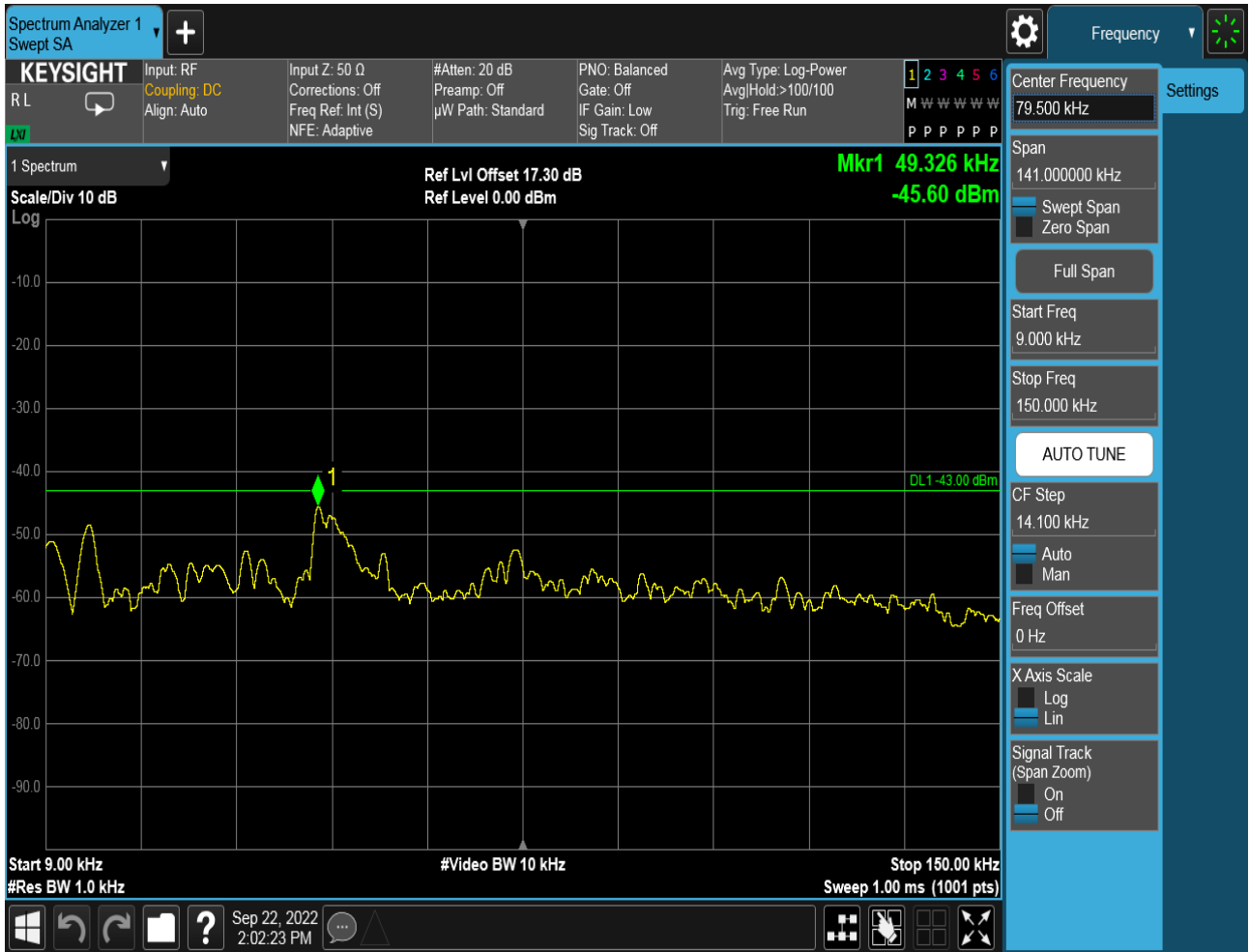


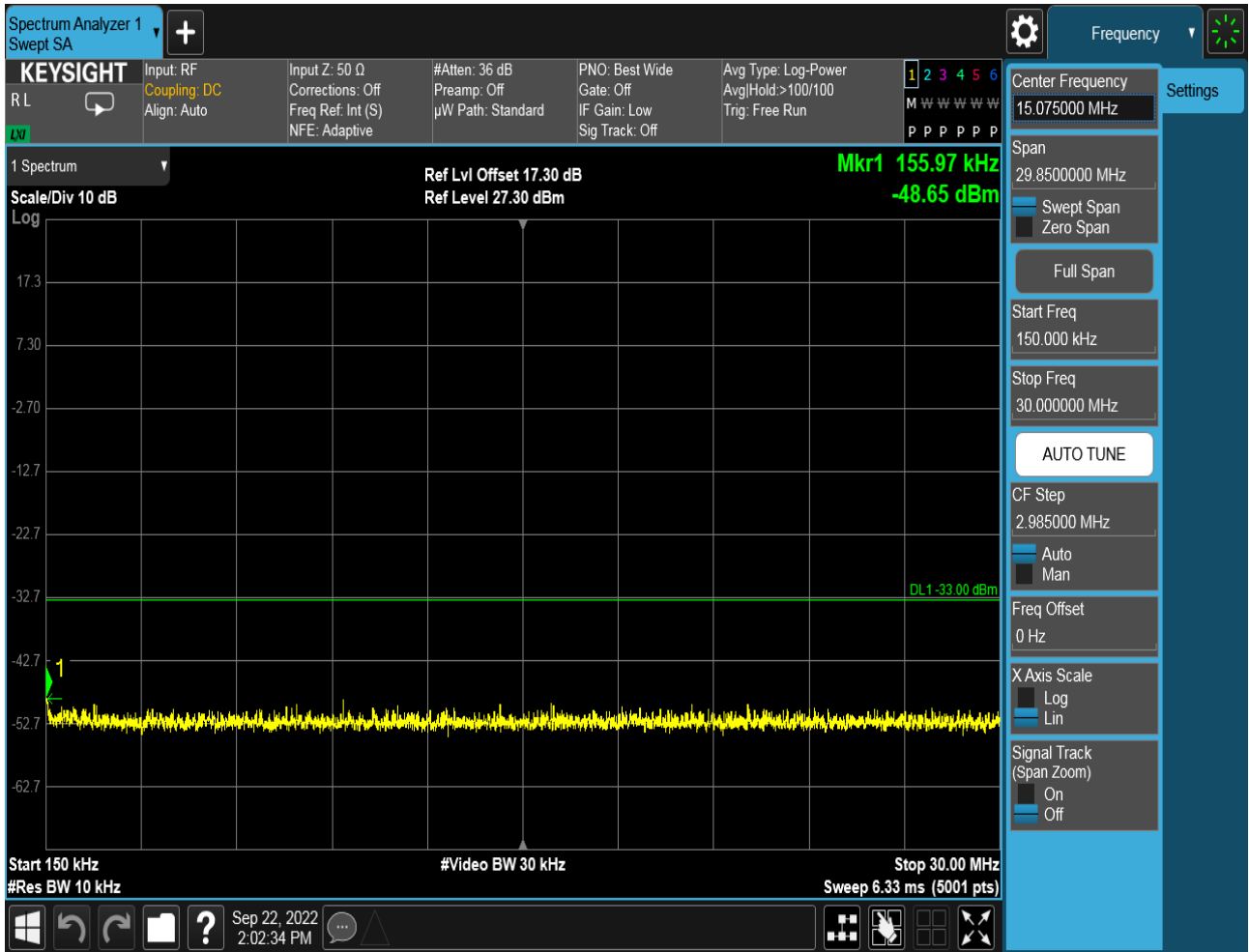


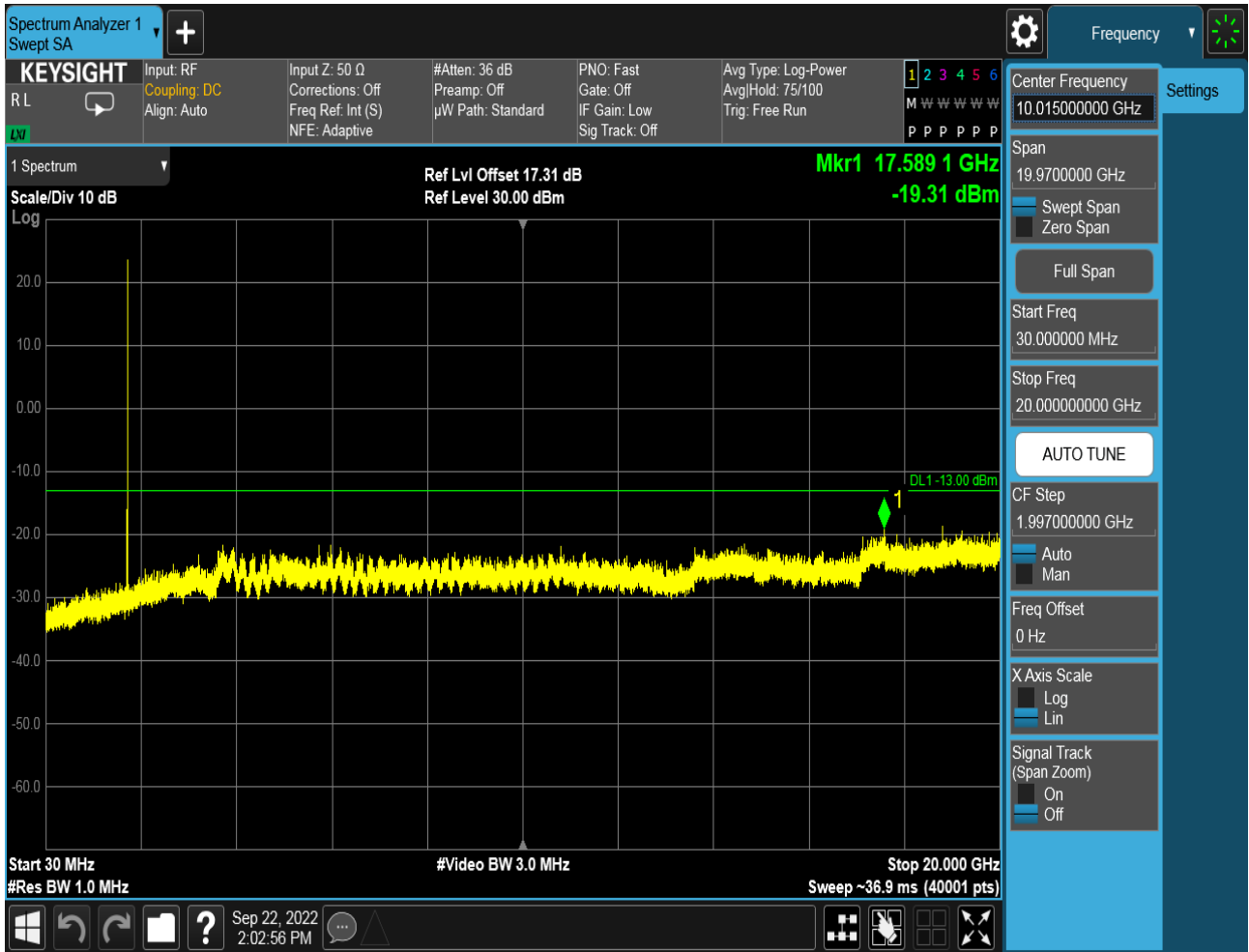




### 6.1.2.1.2 Test Channel = MCH



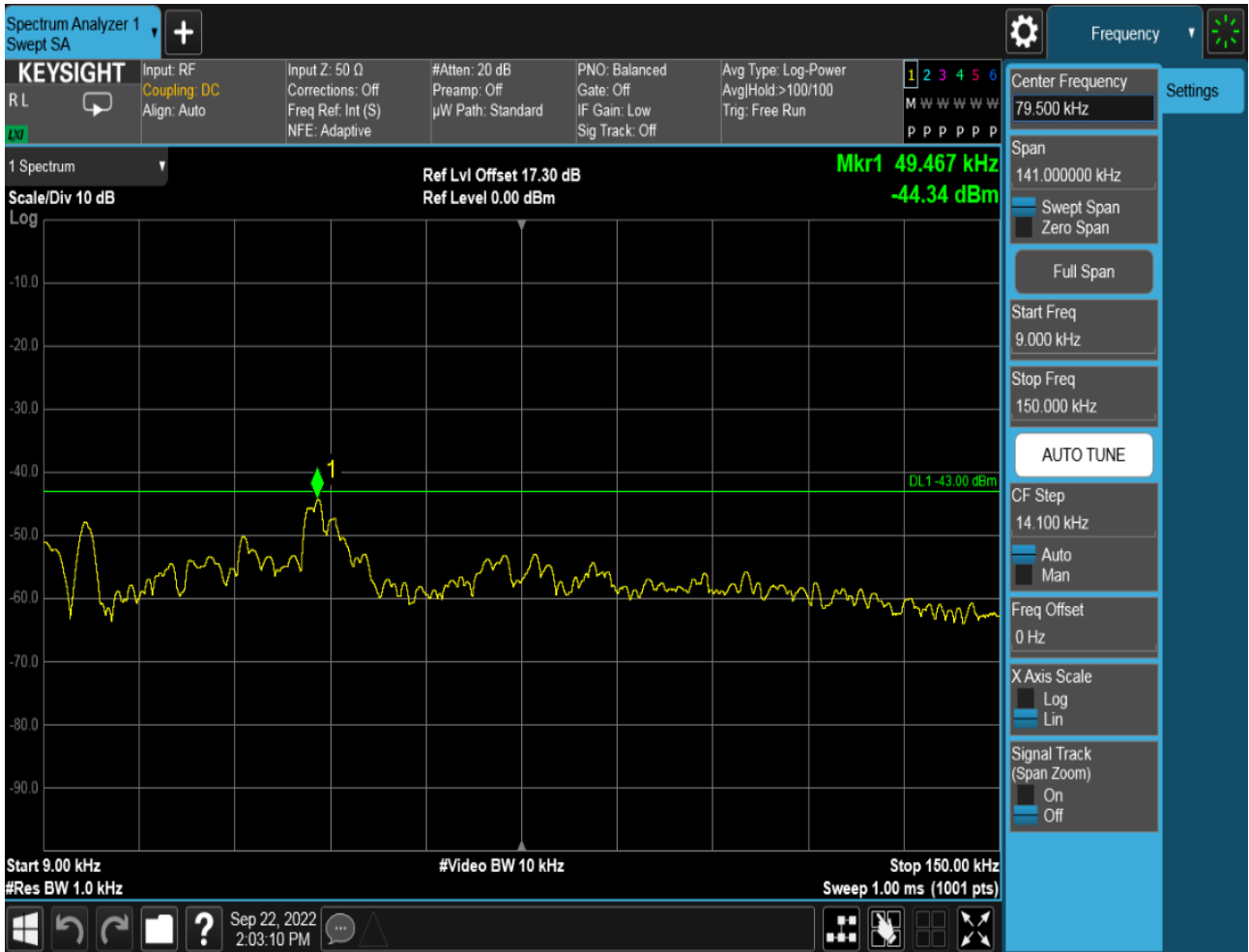


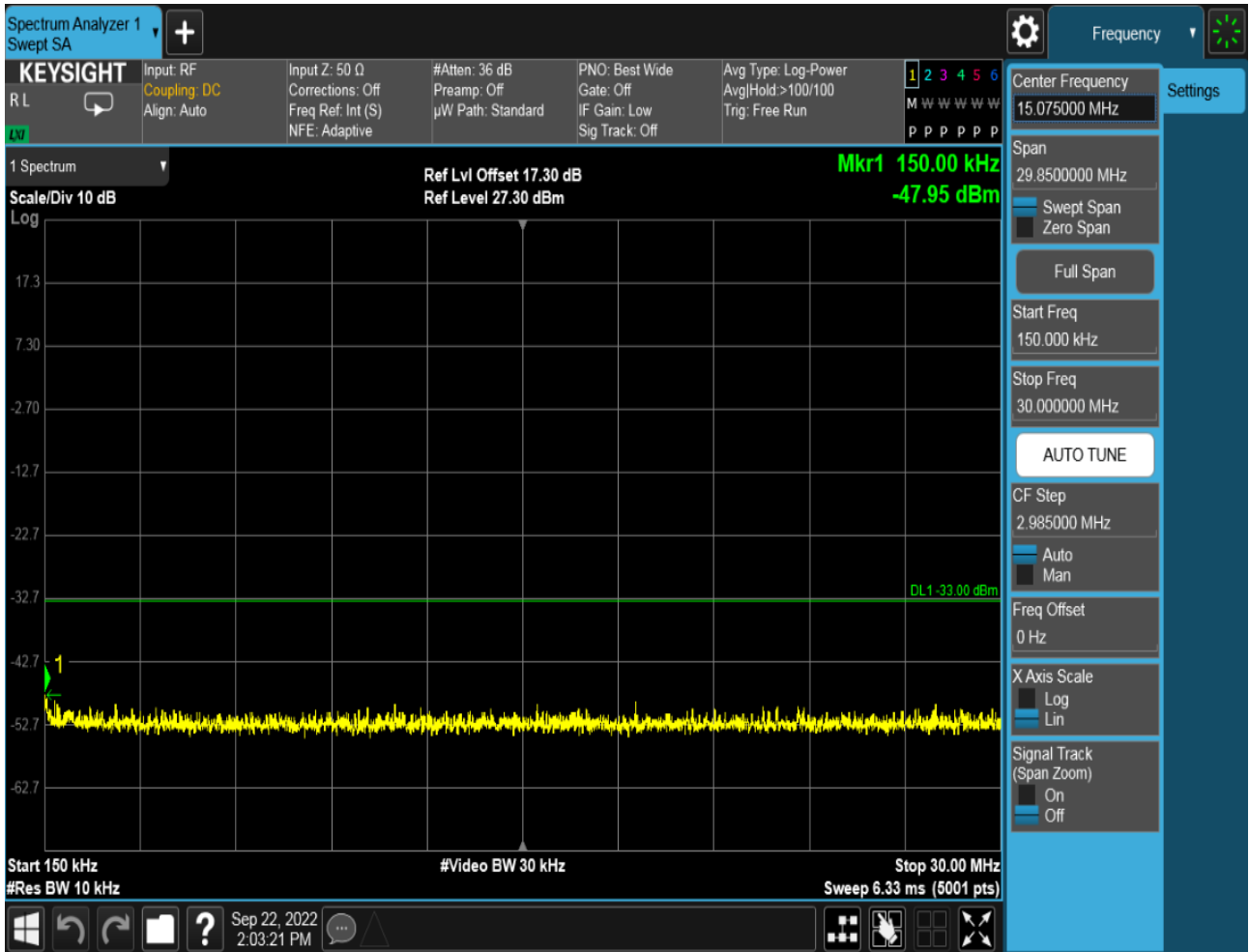


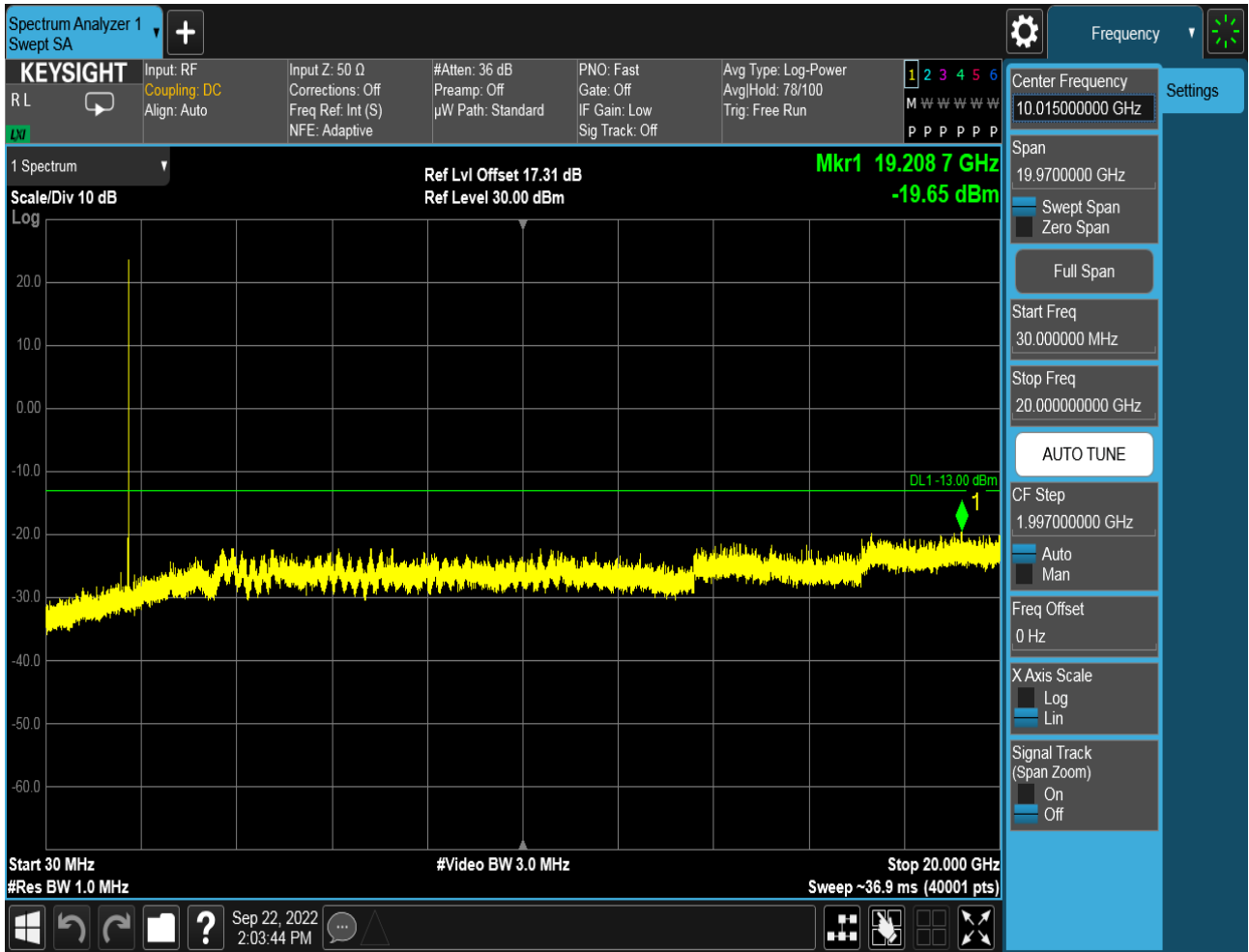




### 6.1.2.1.3 Test Channel = HCH





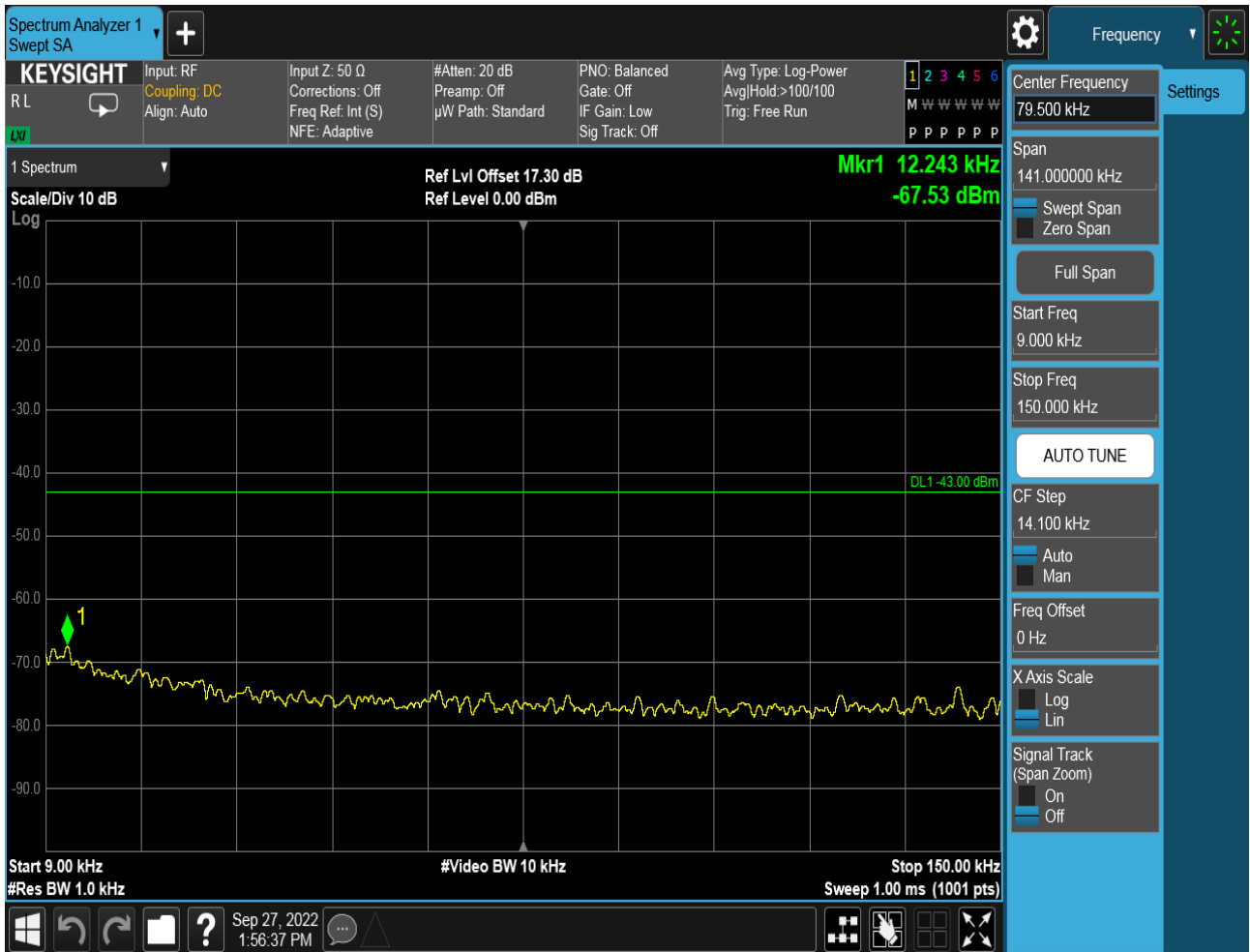


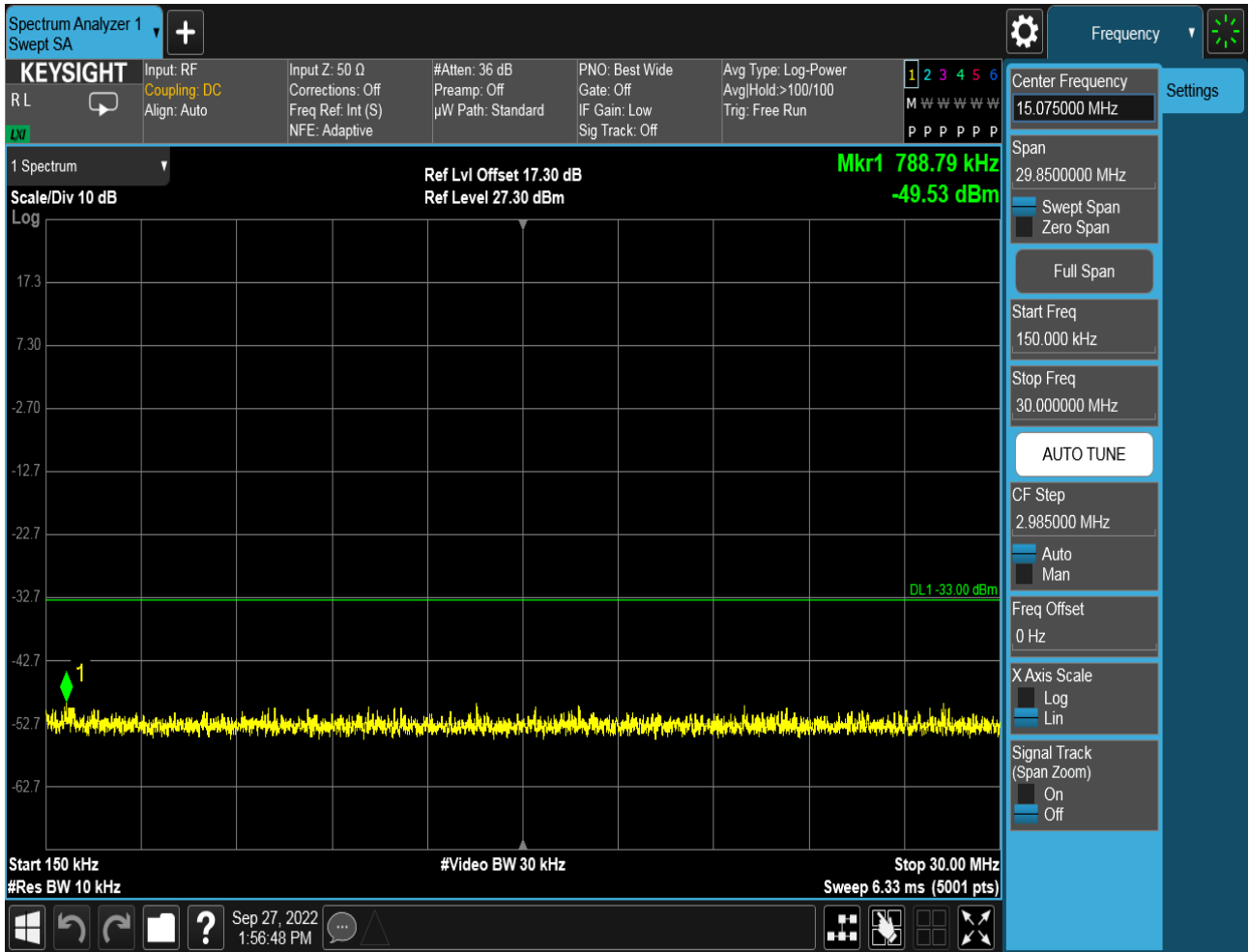


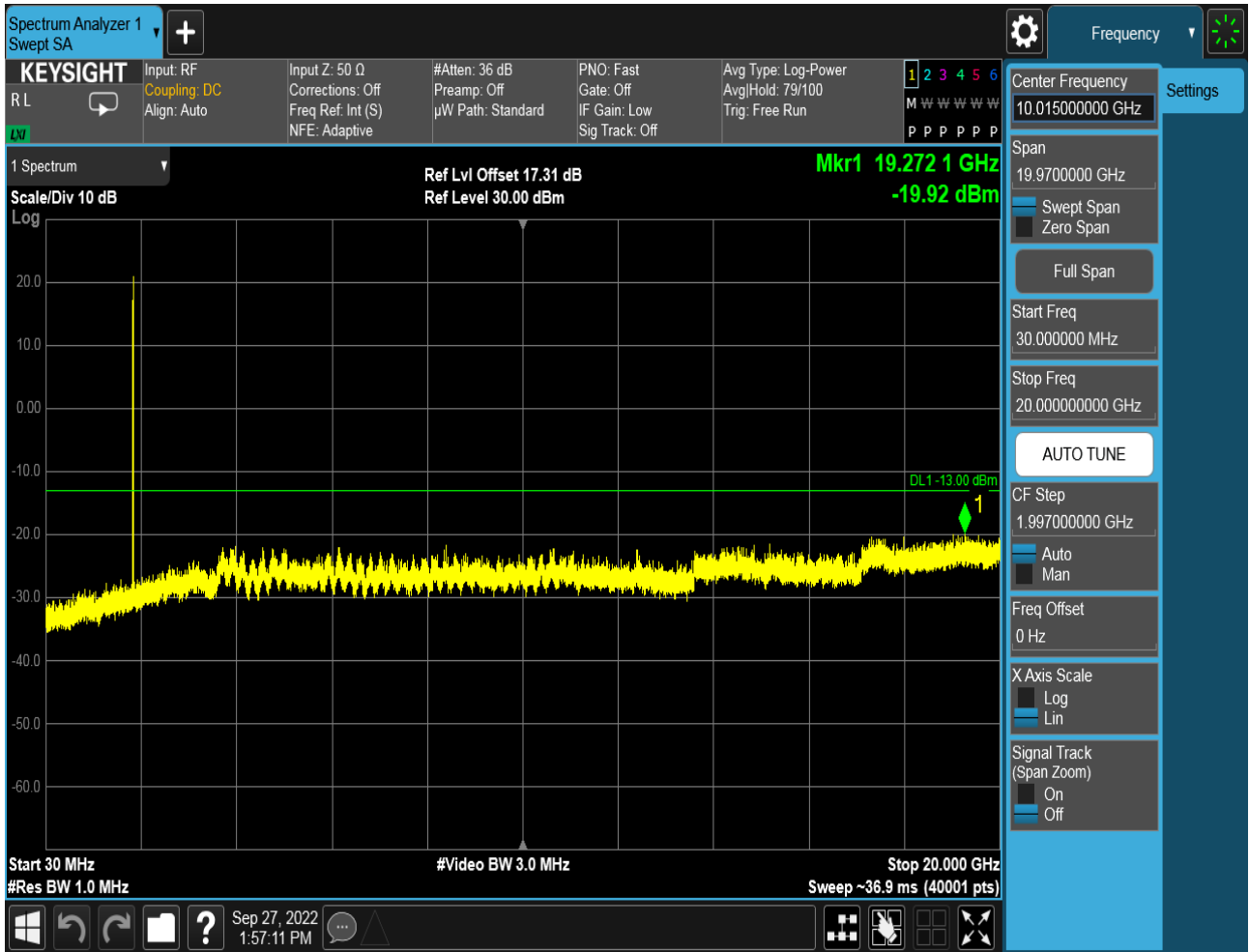
### 6.1.3 Test Band = WCDMA1900

#### 6.1.3.1 Test Mode = UMTS/TM1

##### 6.1.3.1.1 Test Channel = LCH

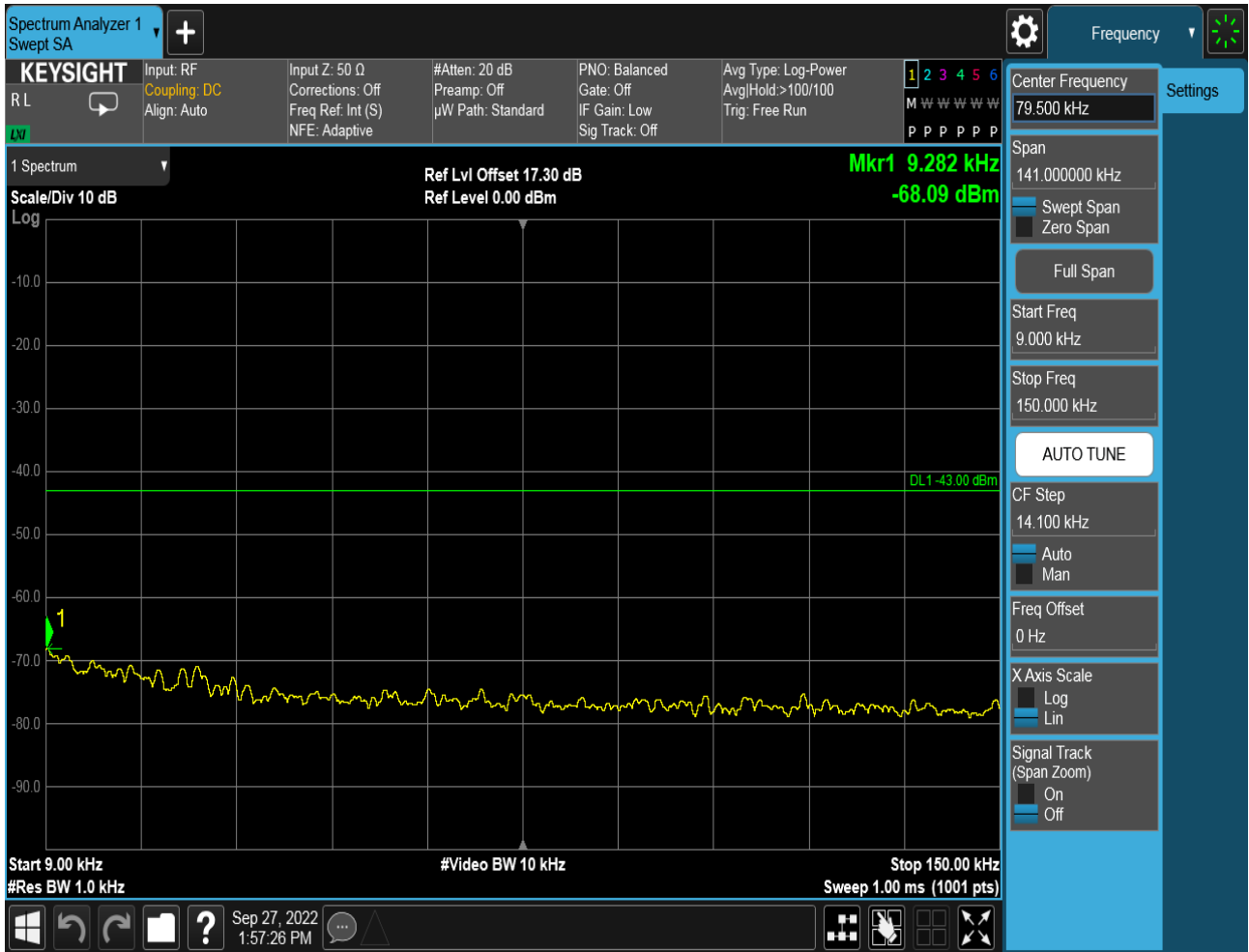


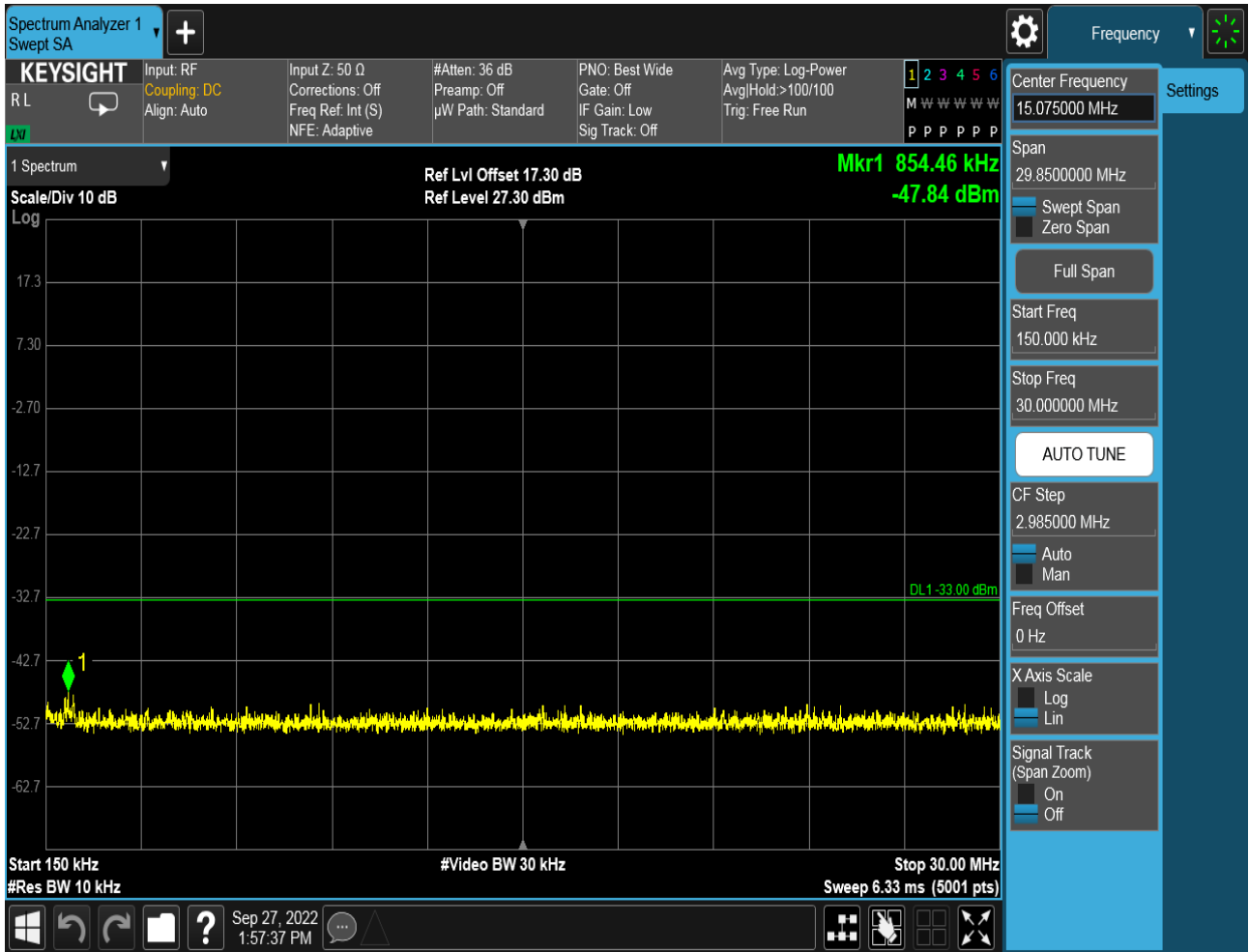




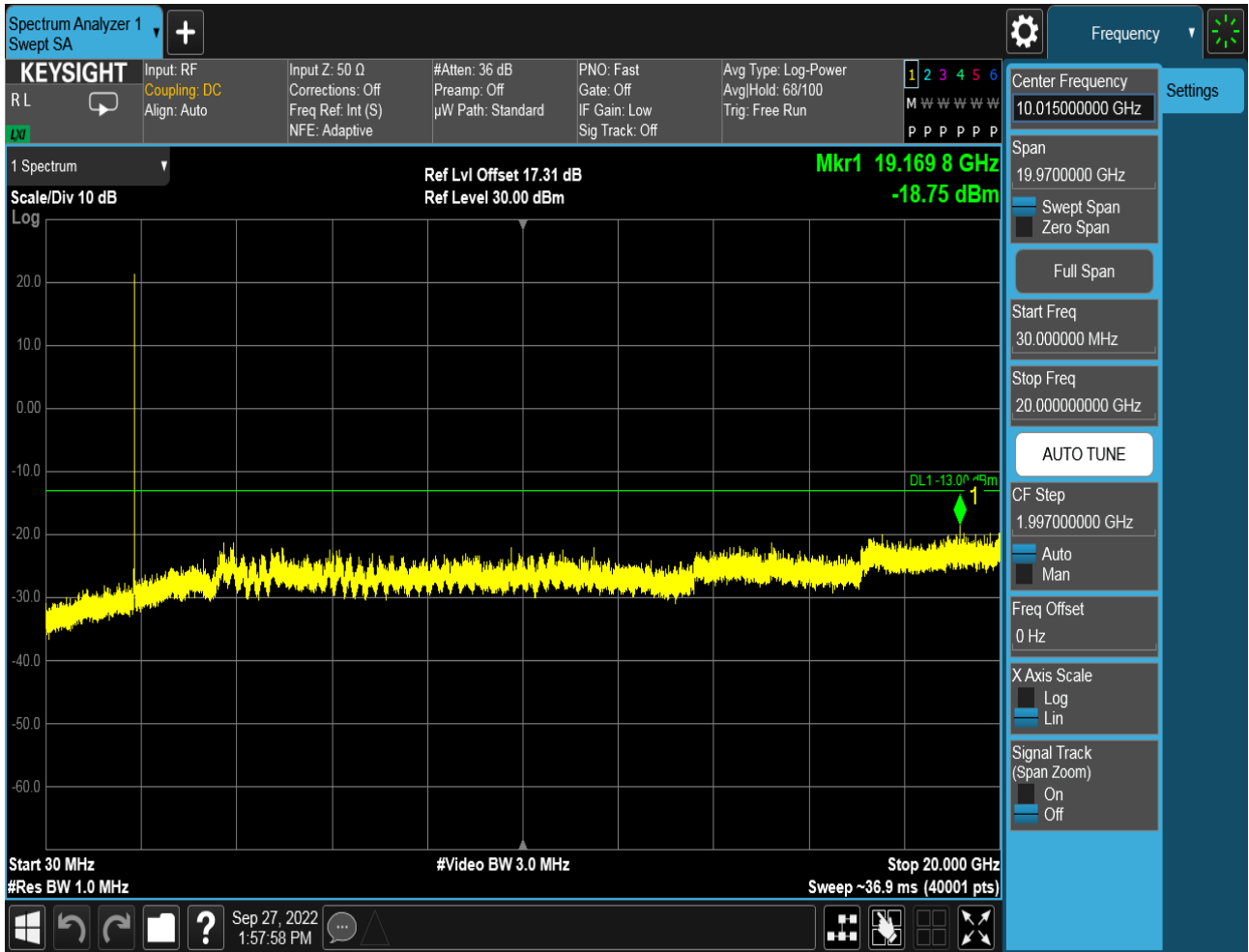


### 6.1.3.1.2 Test Channel = MCH



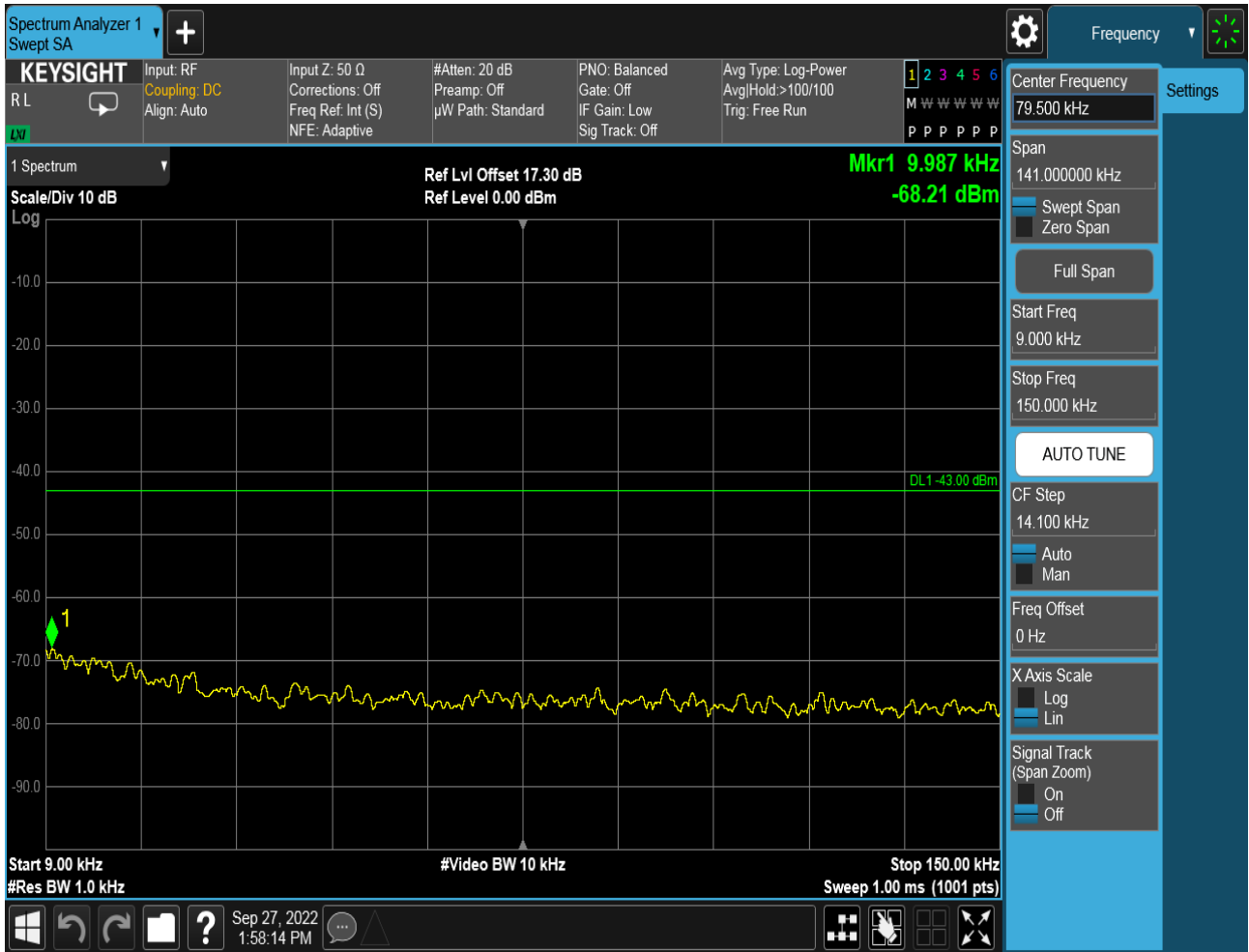


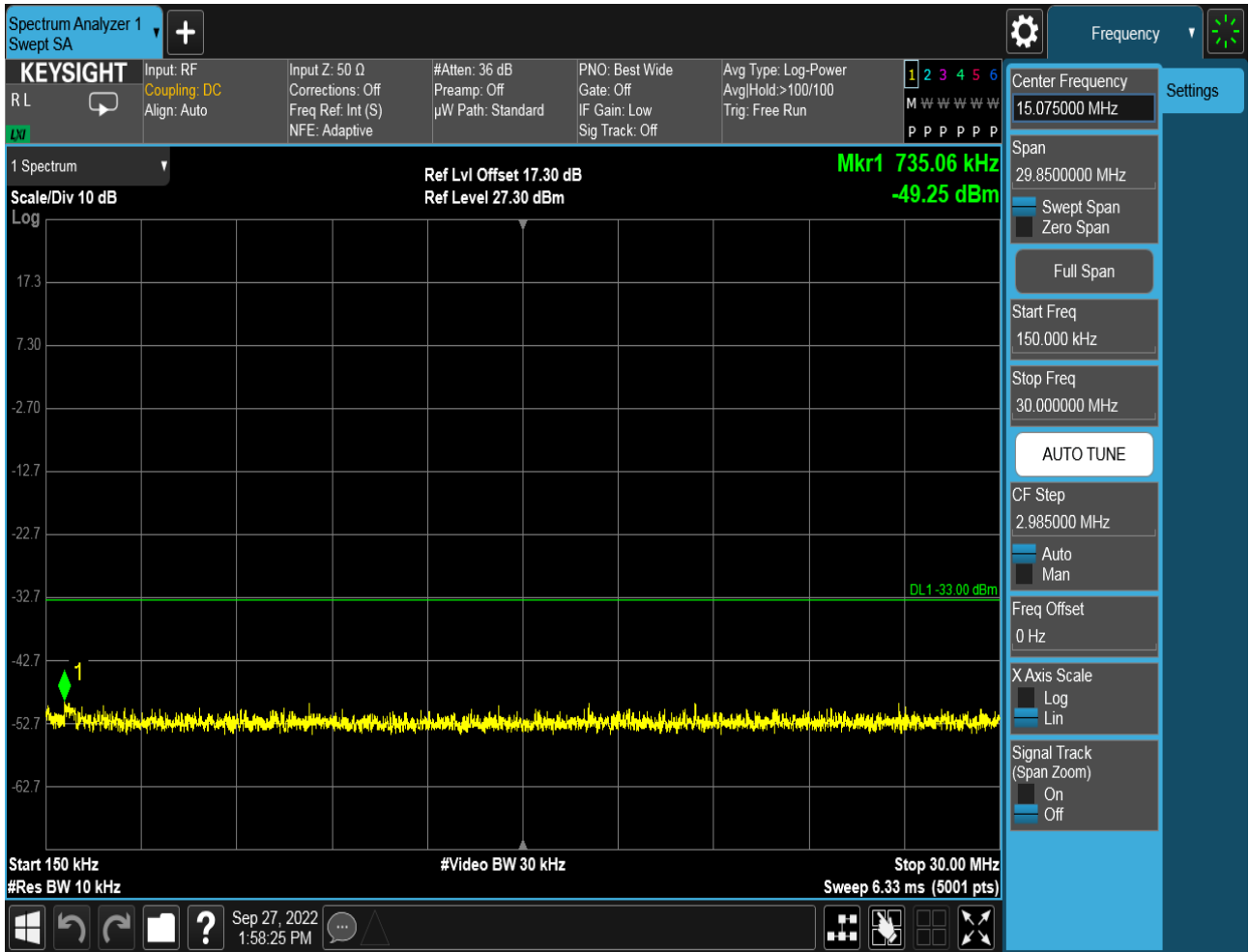


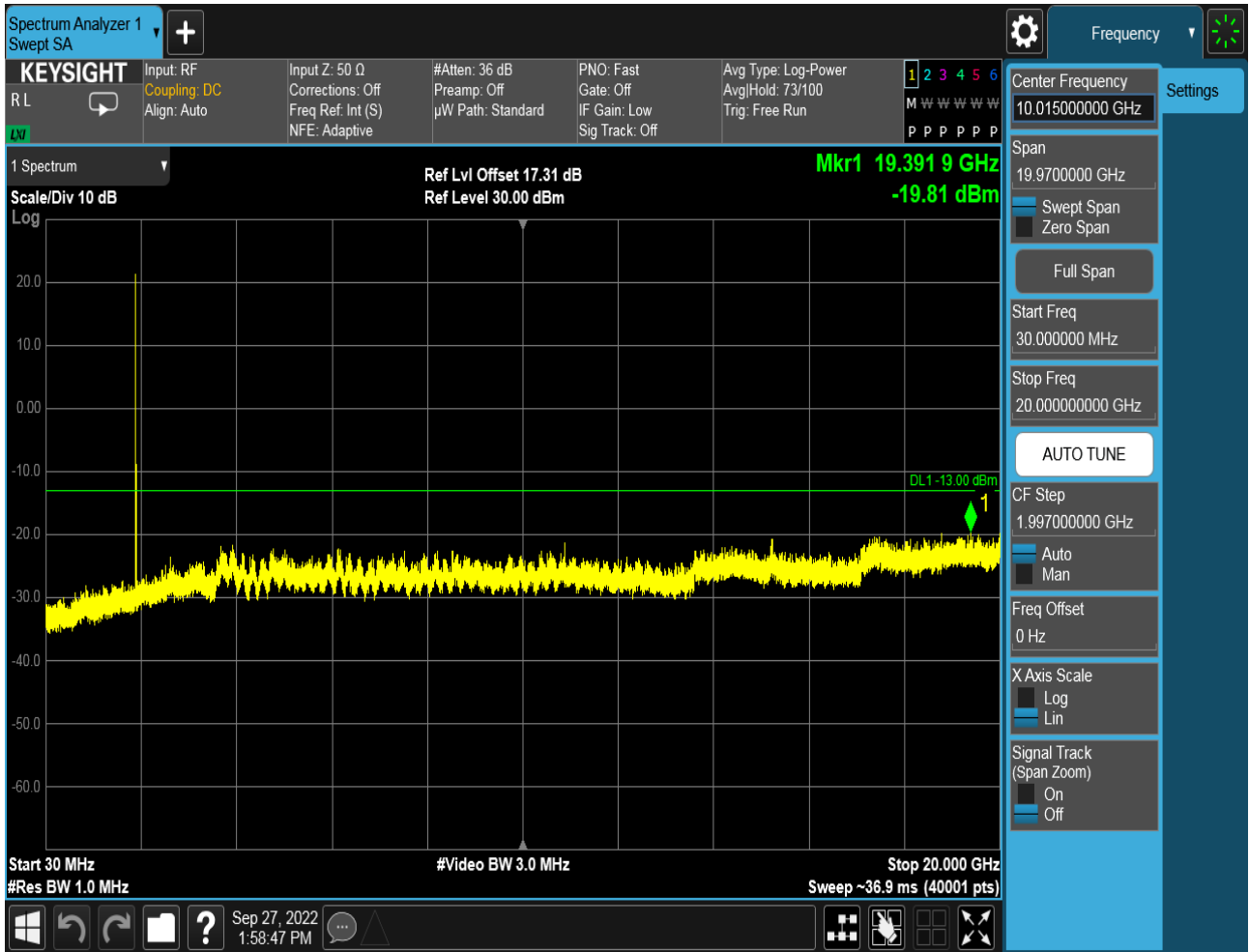




### 6.1.3.1.3 Test Channel = HCH







## 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

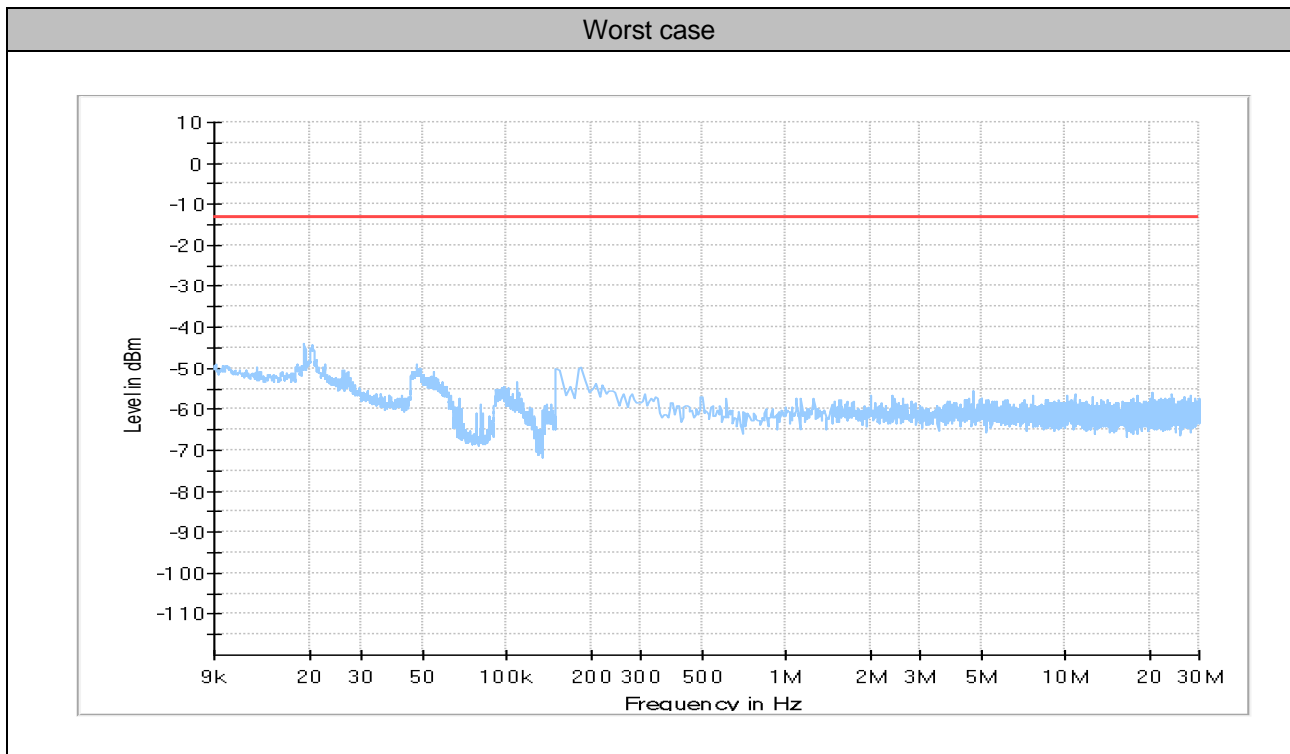
30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

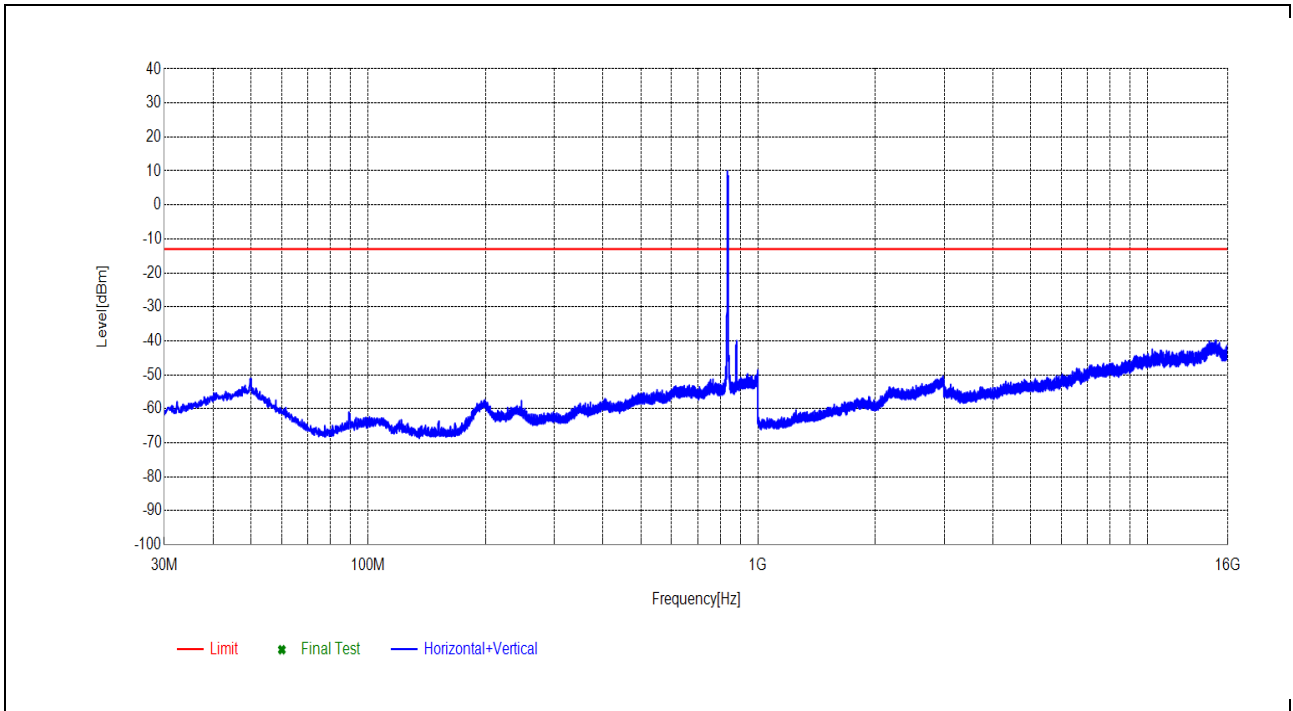
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

### Part I - Test Plots

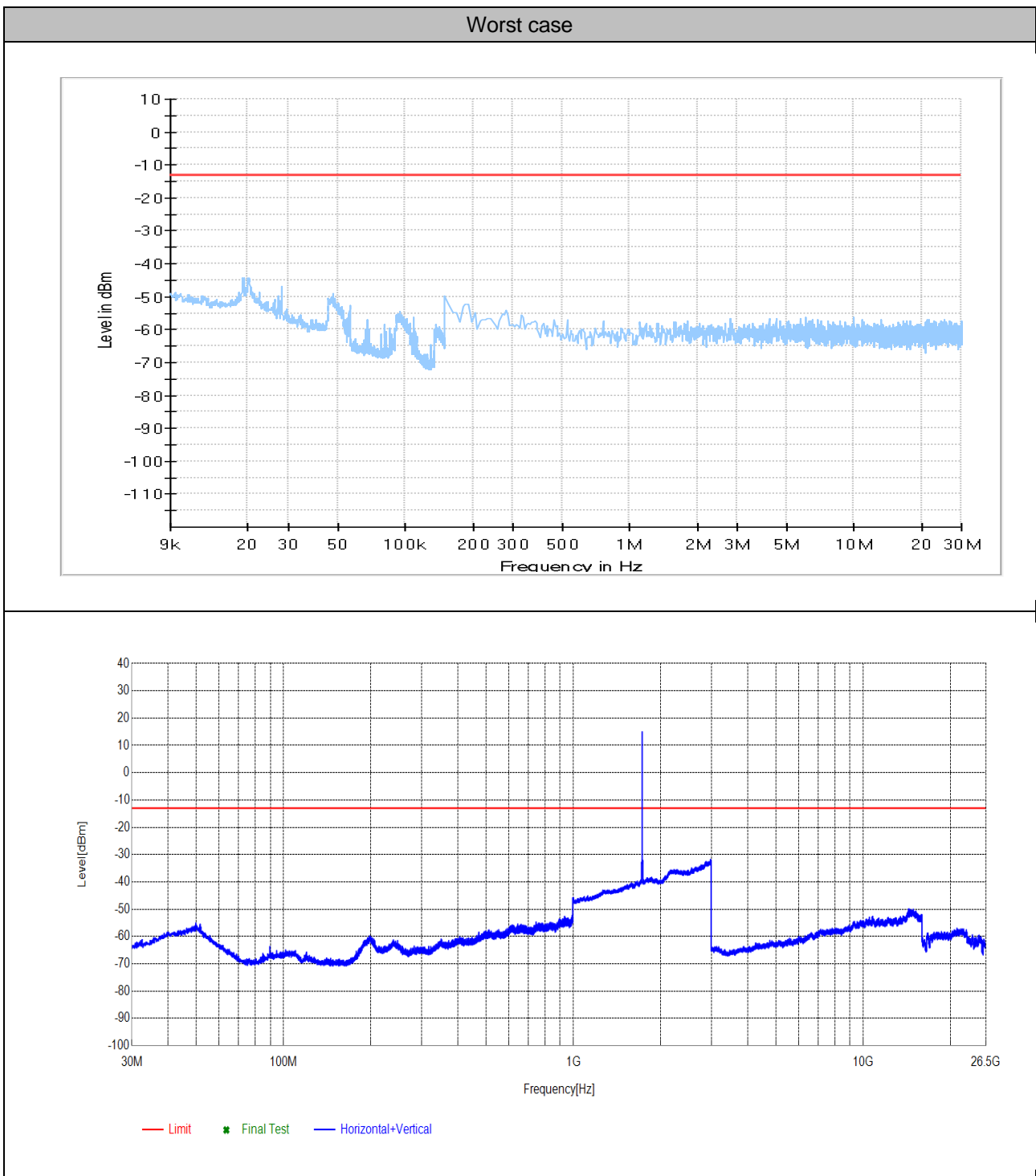
#### 7.1 For UMTS

##### 7.1.1 Test Band = WCDMA850

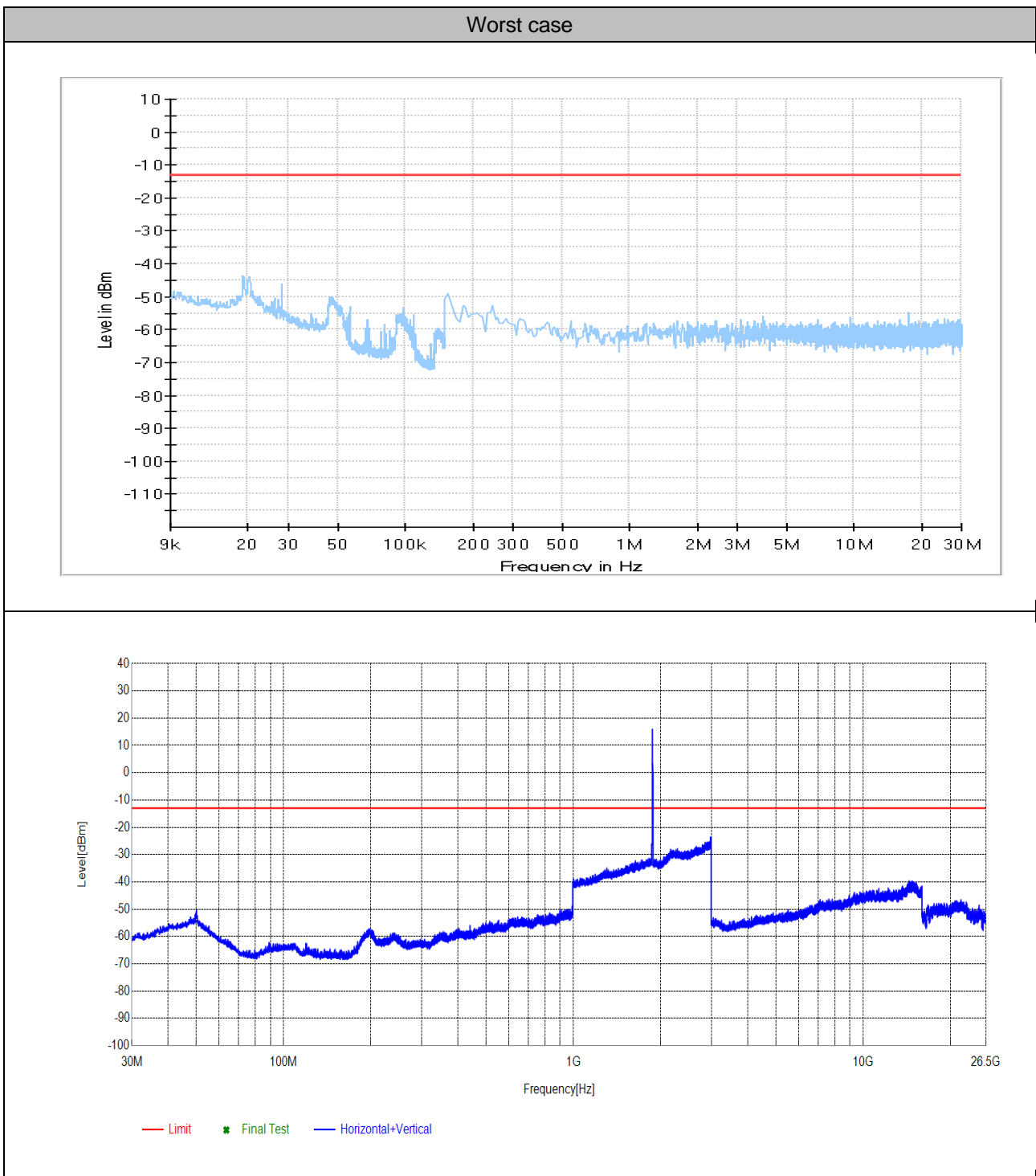




### 7.1.2 Test Band = WCDMA1700



### 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	-1.04427	-0.00126	PASS
				VN	-0.09298	-0.00011	PASS
				VH	-0.97990	-0.00119	PASS
		MCH	TN	VL	3.13997	0.00375	PASS
				VN	6.14405	0.00735	PASS
				VH	8.22544	0.00983	PASS
		HCH	TN	VL	1.38760	0.00164	PASS
				VN	0.55790	0.00066	PASS
				VH	2.49624	0.00295	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-4.02458	-0.00235	PASS
				VN	4.52078	0.00264	PASS
				VH	-1.53423	-0.00090	PASS
		MCH	TN	VL	2.82317	0.00163	PASS
				VN	0.15341	0.00009	PASS
				VH	4.70104	0.00271	PASS
		HCH	TN	VL	4.50691	0.00257	PASS
				VN	2.39994	0.00137	PASS
				VH	-3.34131	-0.00191	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	1.63681	0.00088	PASS
				VN	0.75013	0.00040	PASS
				VH	-2.99069	-0.00161	PASS
		MCH	TN	VL	3.74744	0.00199	PASS
				VN	4.13353	0.00220	PASS
				VH	6.53918	0.00348	PASS
		HCH	TN	VL	1.29536	0.00088	PASS
				VN	2.70590	0.00040	PASS
				VH	5.71419	-0.00161	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	0.02146	0.00003	PASS
				-20	-4.36306	-0.00528	PASS
				-10	1.64509	0.00199	PASS
				0	-0.92268	-0.00112	PASS
				10	-1.83106	-0.00222	PASS
				20	-0.09298	-0.00011	PASS
				30	0.60797	0.00074	PASS
				40	1.11580	0.00135	PASS
				50	0.75817	0.00092	PASS
		MCH	VN	-30	-2.26736	-0.00271	PASS
				-20	4.73499	0.00566	PASS
				-10	3.86238	0.00462	PASS
				0	-3.81231	-0.00456	PASS
				10	0.69380	0.00083	PASS
				20	6.14405	0.00735	PASS
				30	0.54359	0.00065	PASS
				40	2.98262	0.00357	PASS
				50	0.81539	0.00097	PASS
		HCH	VN	-30	2.14577	0.00254	PASS
				-20	-3.35455	-0.00396	PASS
				-10	0.72956	0.00086	PASS
				0	-5.05686	-0.00597	PASS
				10	1.90258	0.00225	PASS
				20	0.55790	0.00066	PASS
				30	-0.91553	-0.00108	PASS
				40	-0.00715	-0.00001	PASS
				50	0.45776	0.00054	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	0.05870	0.00003	PASS
				-20	3.54393	0.00207	PASS
				-10	6.65210	0.00388	PASS
				0	3.04055	0.00178	PASS
				10	10.01166	0.00585	PASS
				20	4.52078	0.00264	PASS
				30	-3.59577	-0.00210	PASS
				40	-2.02194	-0.00118	PASS
				50	4.19580	0.00245	PASS
		MCH	VN	-30	-4.25173	-0.00245	PASS
				-20	4.49902	0.00260	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict		
				-10	4.59892	0.00265	PASS		
				0	3.73884	0.00216	PASS		
				10	6.94618	0.00401	PASS		
				20	0.15341	0.00009	PASS		
				30	2.80048	0.00162	PASS		
				40	2.93483	0.00169	PASS		
				50	3.89259	0.00225	PASS		
		HCH	VN			-30	-2.78279	-0.00159	PASS
						-20	-2.01145	-0.00115	PASS
						-10	3.13496	0.00179	PASS
						0	3.31476	0.00189	PASS
						10	5.07802	0.00290	PASS
						20	2.39994	0.00137	PASS
						30	1.88861	0.00108	PASS
						40	4.93557	0.00282	PASS
						50	6.40561	0.00365	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	-0.86635	-0.00047	PASS		
				-20	0.41191	0.00022	PASS		
				-10	2.36029	0.00127	PASS		
				0	5.24558	0.00283	PASS		
				10	2.70513	0.00146	PASS		
				20	0.75013	0.00040	PASS		
				30	0.98031	0.00053	PASS		
				40	5.53939	0.00299	PASS		
				50	1.65843	0.00090	PASS		
				MCH	VN			-30	6.14657
		-20	3.89216					0.00207	PASS
		-10	-3.54093					-0.00188	PASS
		0	1.28689					0.00068	PASS
		10	-6.84314					-0.00364	PASS
		20	4.13353					0.00220	PASS
		30	-0.81779					-0.00043	PASS
		40	0.98409					0.00052	PASS
		HCH	VN			50	-8.30836	-0.00442	PASS
						-30	0.79054	0.00041	PASS
						-20	-7.10066	-0.00372	PASS
						-10	-0.39479	-0.00021	PASS
						0	4.86896	0.00255	PASS
						10	3.81365	0.00200	PASS
		20	2.70590	0.00142	PASS				



---

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	3.30465	0.00173	PASS
				40	3.66477	0.00192	PASS
				50	0.24474	0.00013	PASS

---

END