



# 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	23.79	18.04	38.5	PASS
		MCH	23.65	17.90	38.5	PASS
		HCH	23.66	17.91	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	22.74	21.74	30	PASS
		MCH	22.48	21.48	30	PASS
		HCH	22.76	21.76	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.46	21.66	33	PASS
		MCH	23.96	22.16	33	PASS
		HCH	23.98	22.18	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	2.540	13	PASS
		MCH	3.050	13	PASS
		HCH	2.670	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.210	13	PASS
		MCH	3.160	13	PASS
		HCH	3.080	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.770	13	PASS
		MCH	2.600	13	PASS
		HCH	2.490	13	PASS

### 3Appendix\_C: Modulation Characteristics

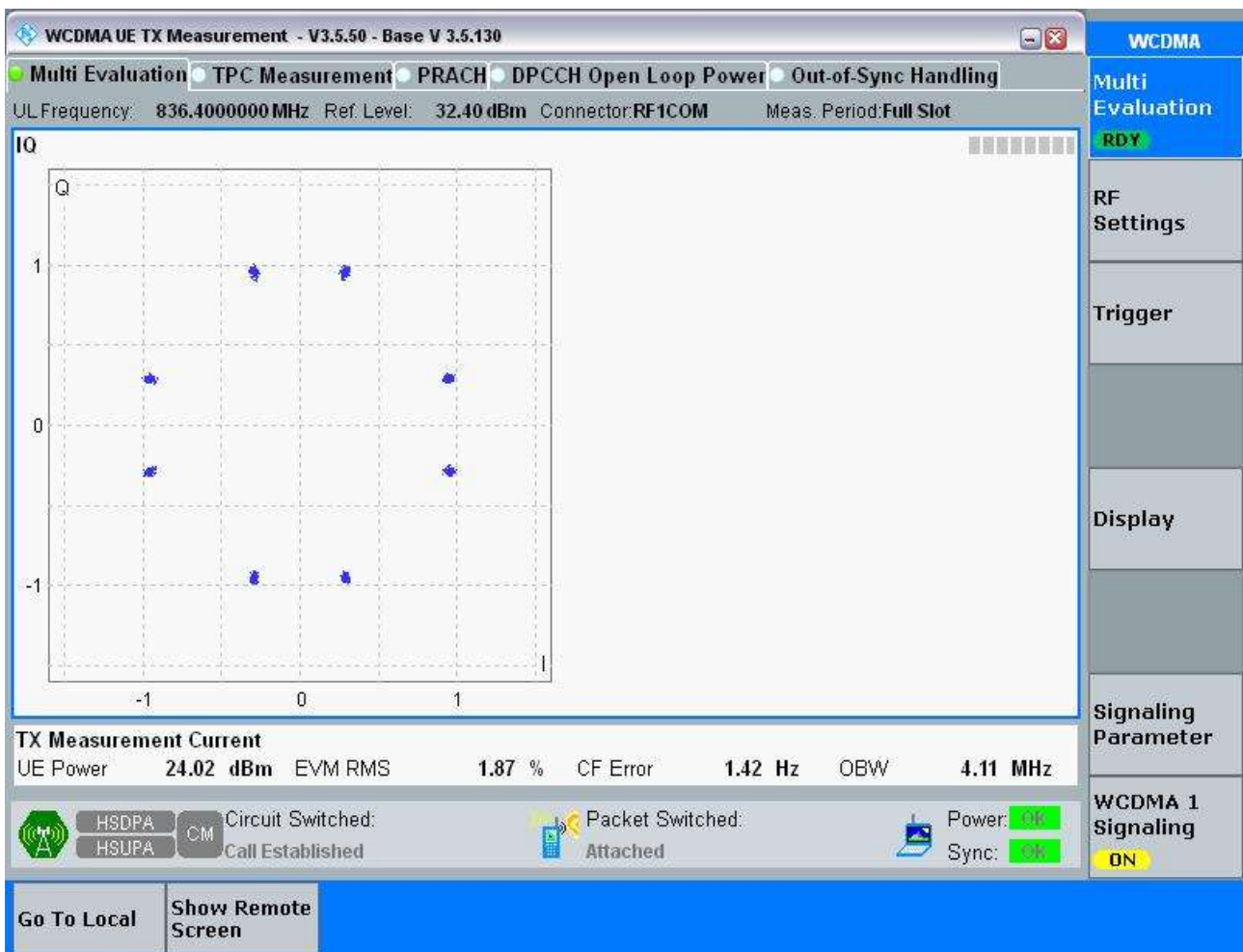
#### Part I - Test Plots

#### 3.1 For UMTS

#### 3.1.1 Test Band = WCDMA850

#### 3.1.1.1 Test Mode = UMTS/TM1

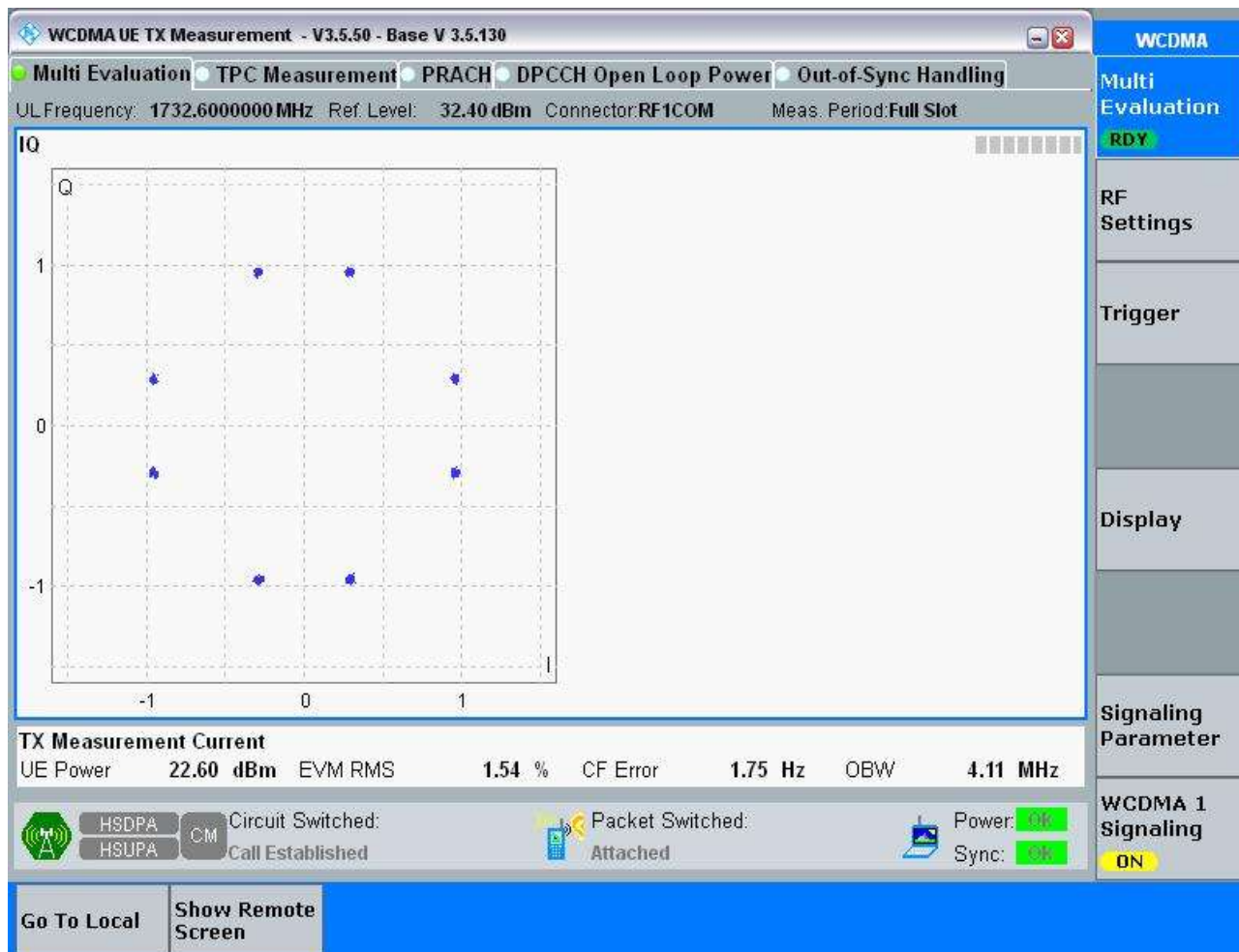
#### 3.1.1.1.1 Test Channel = MCH



### 3.1.2 Test Band = WCDMA1700

#### 3.1.2.1 Test Mode = UMTS/TM1

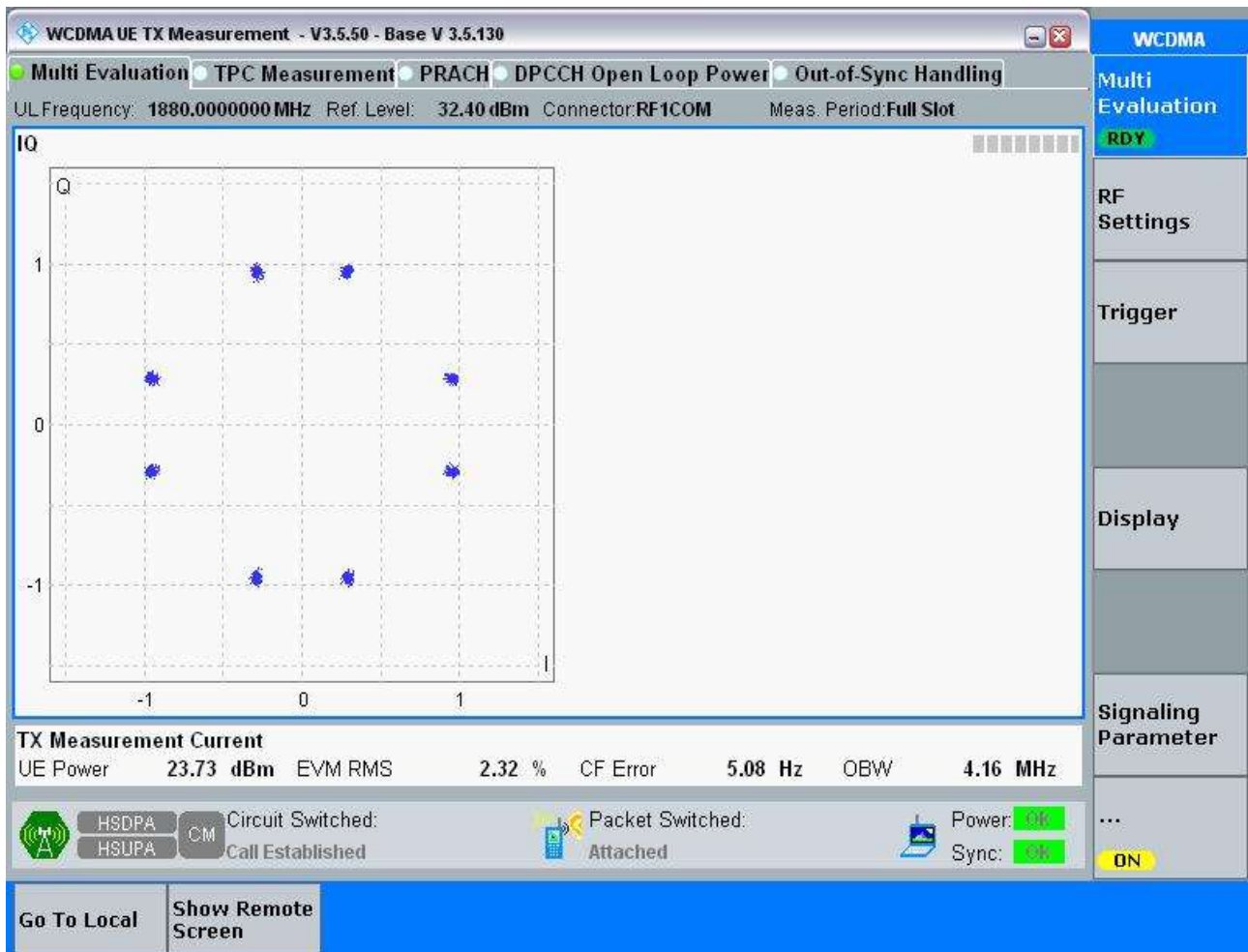
##### 3.1.2.1.1 Test Channel = MCH



### 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	4.18	4.69	Pass
		HCH	4.18	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.68	Pass
		MCH	4.17	4.69	Pass
		HCH	4.16	4.73	Pass
WCDMA1900	UMTS/TM1	LCH	4.18	4.69	Pass
		MCH	4.17	4.70	Pass
		HCH	4.17	4.71	Pass

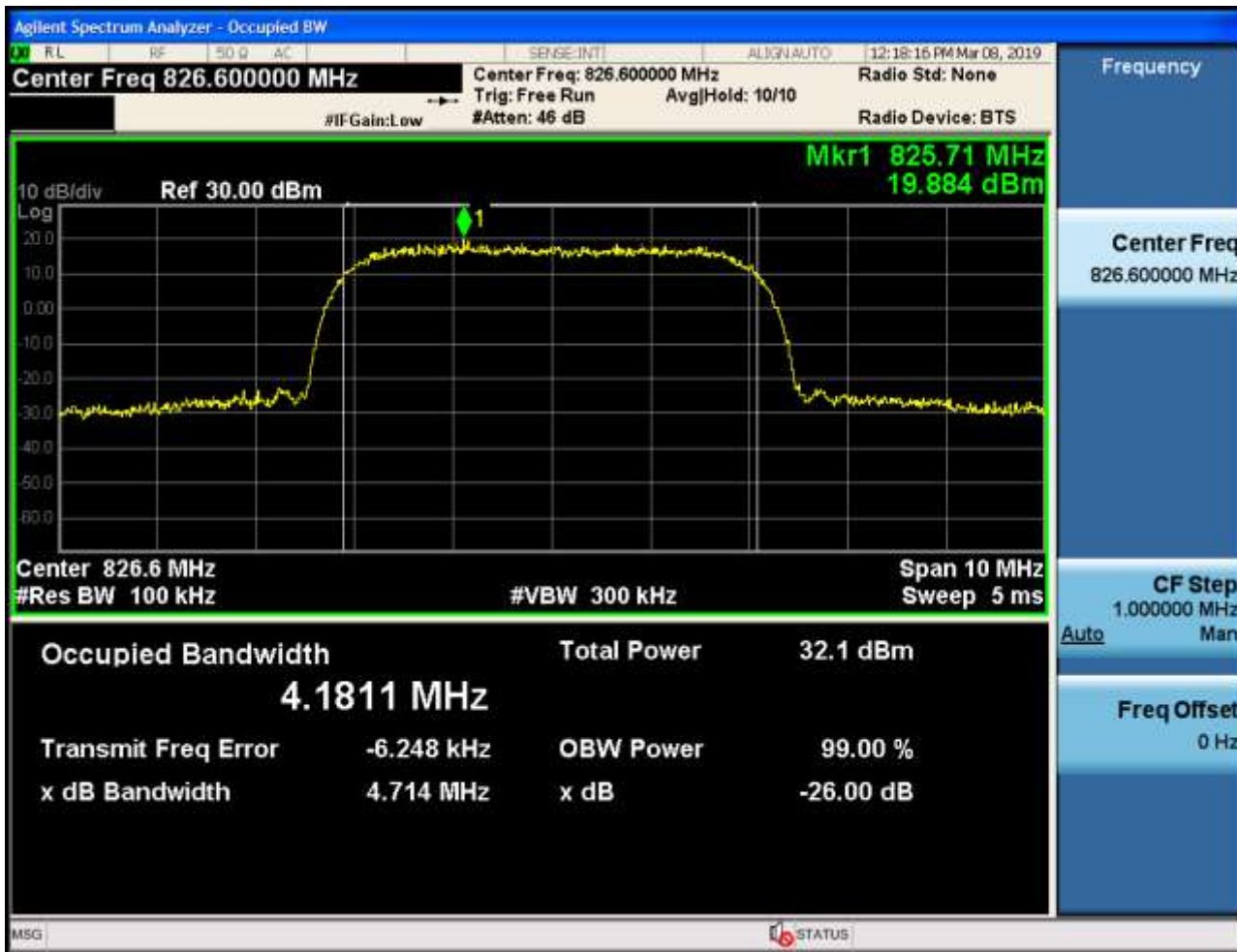
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

4.1.1.1 Test Mode = UMTS/TM1

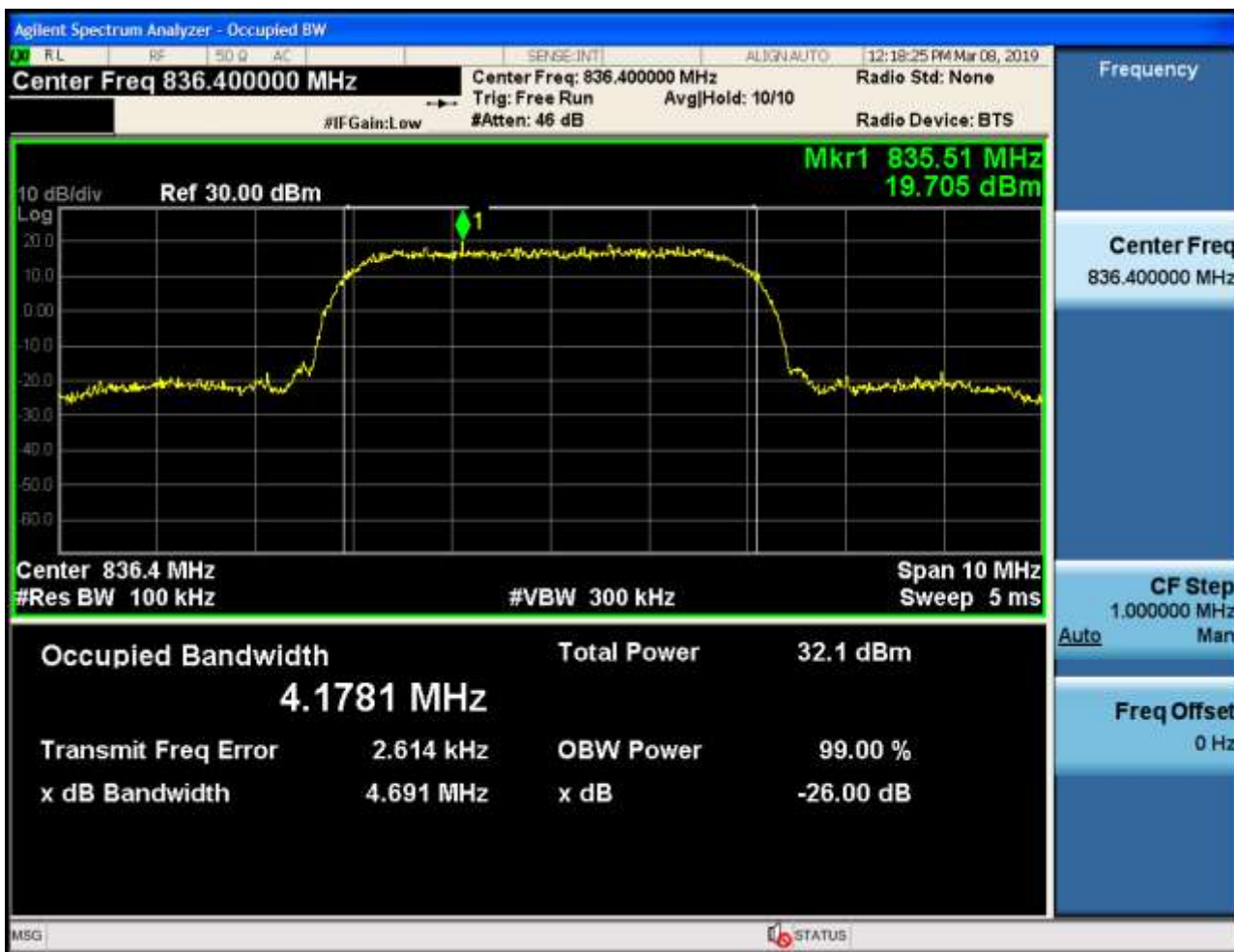
4.1.1.1.1 Test Channel = LCH







4.1.1.1.2 Test Channel = MCH



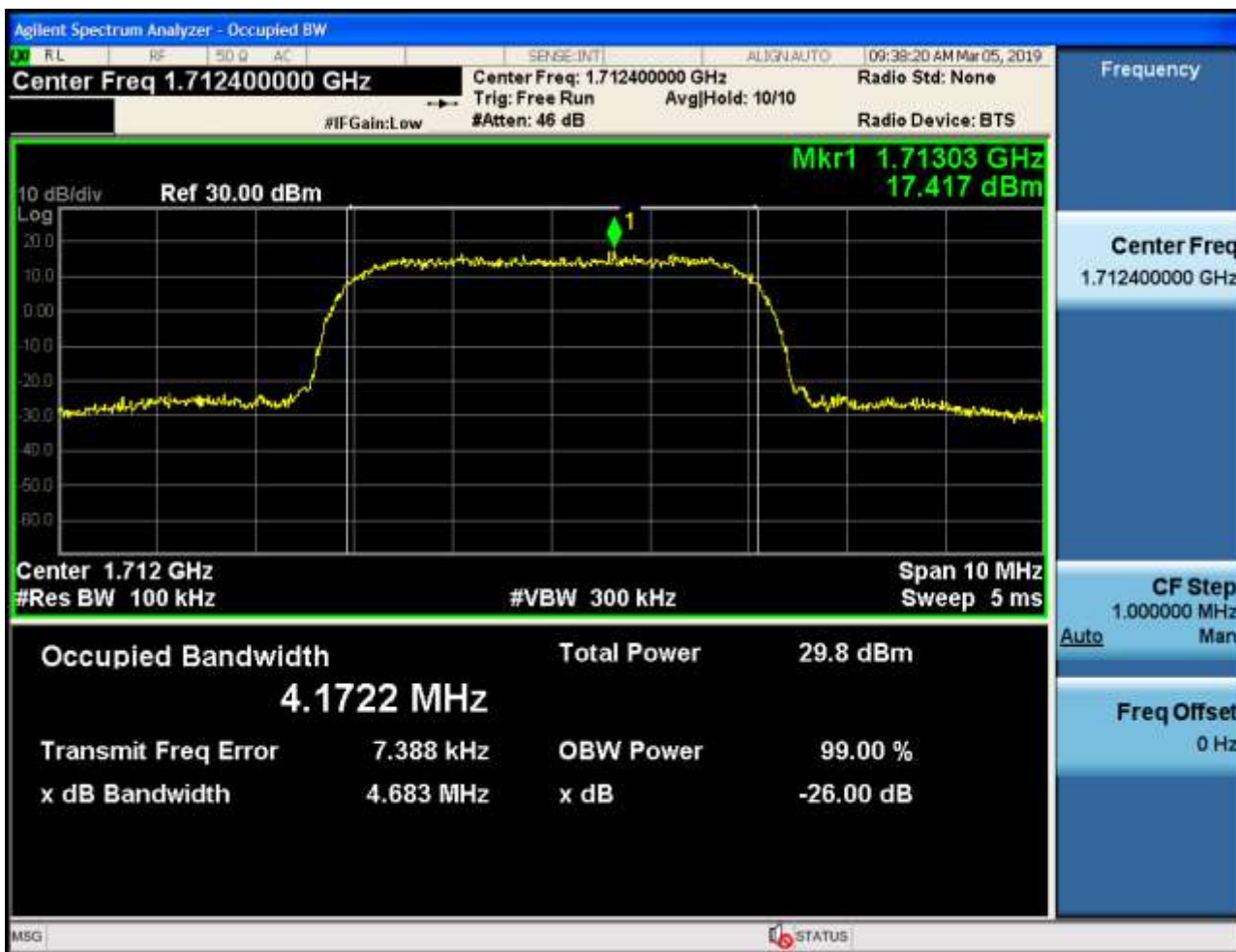
4.1.1.1.3 Test Channel = HCH



4.1.2 Test Band = WCDMA1700

4.1.2.1 Test Mode = UMTS/TM1

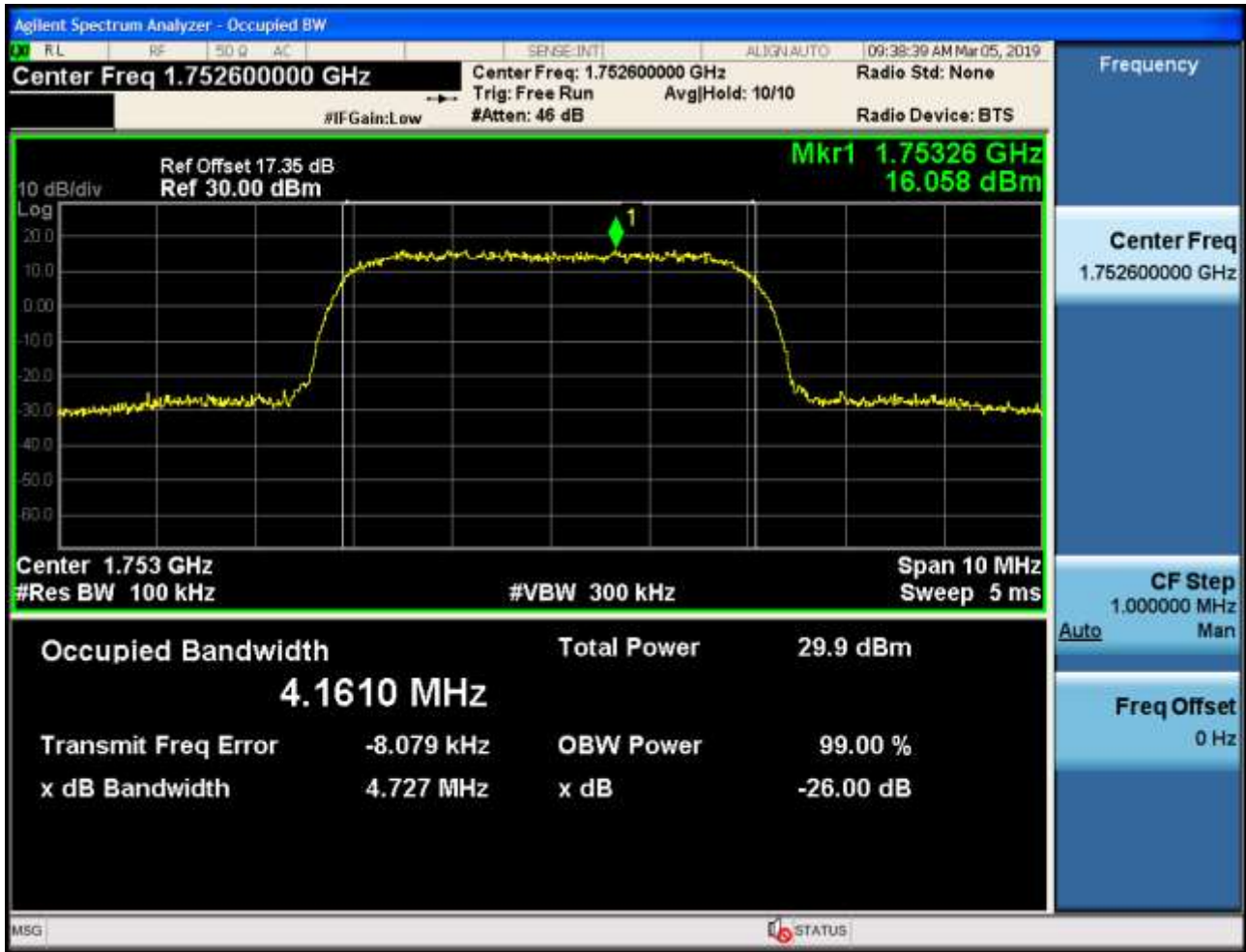
4.1.2.1.1 Test Channel = LCH



4.1.2.1.2 Test Channel = MCH



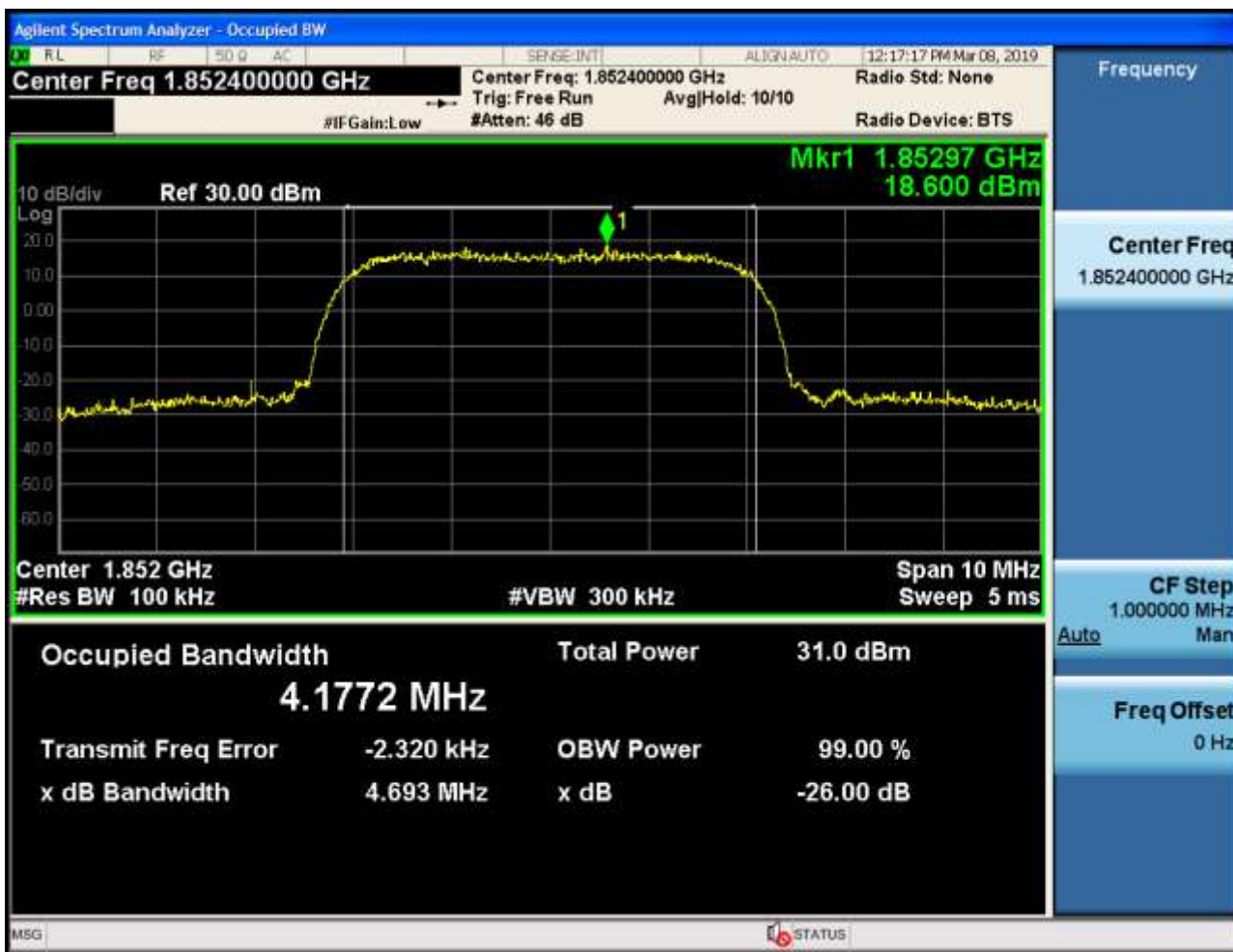
4.1.2.1.3 Test Channel = HCH



4.1.3 Test Band = WCDMA1900

4.1.3.1 Test Mode = UMTS/TM1

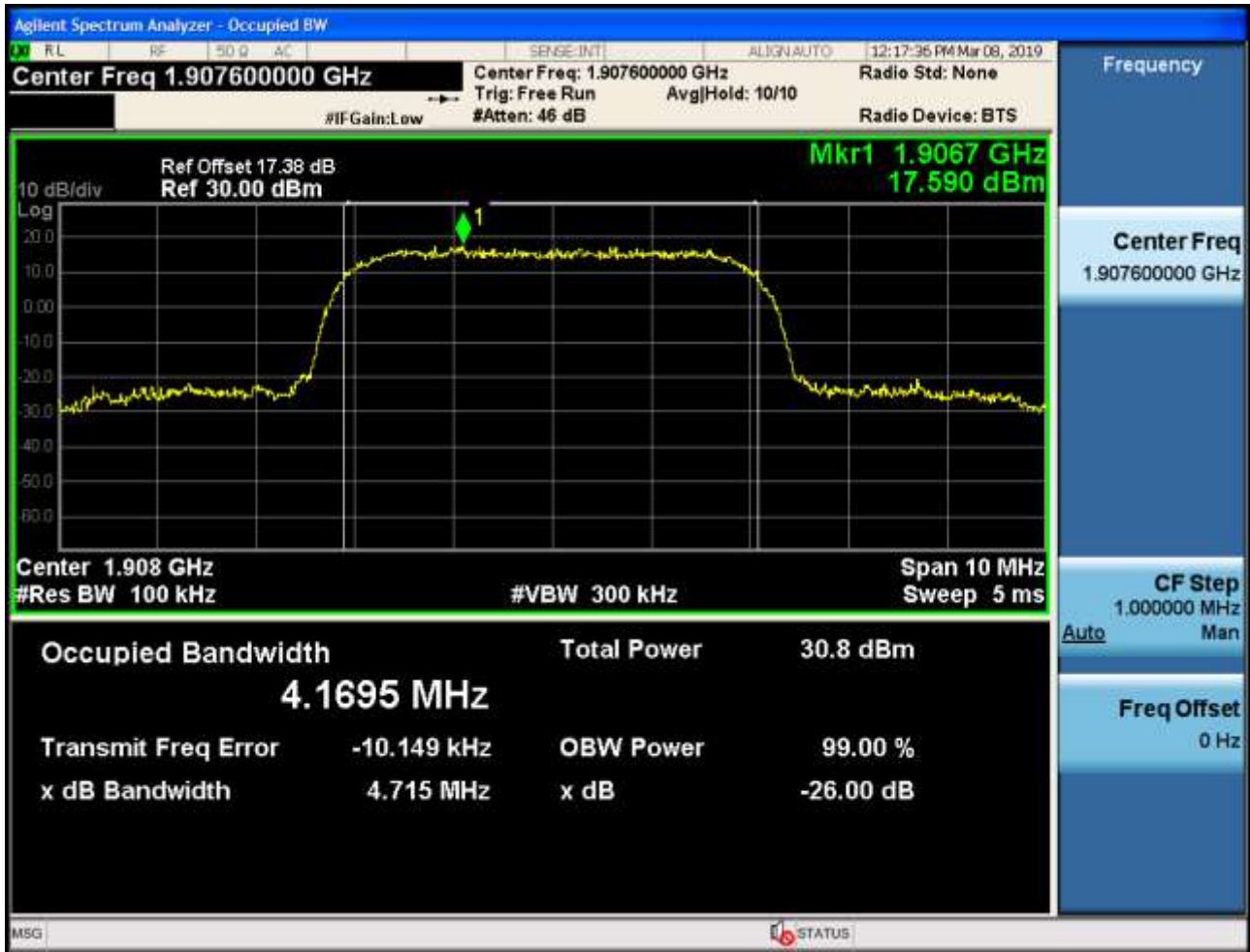
4.1.3.1.1 Test Channel = LCH



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.

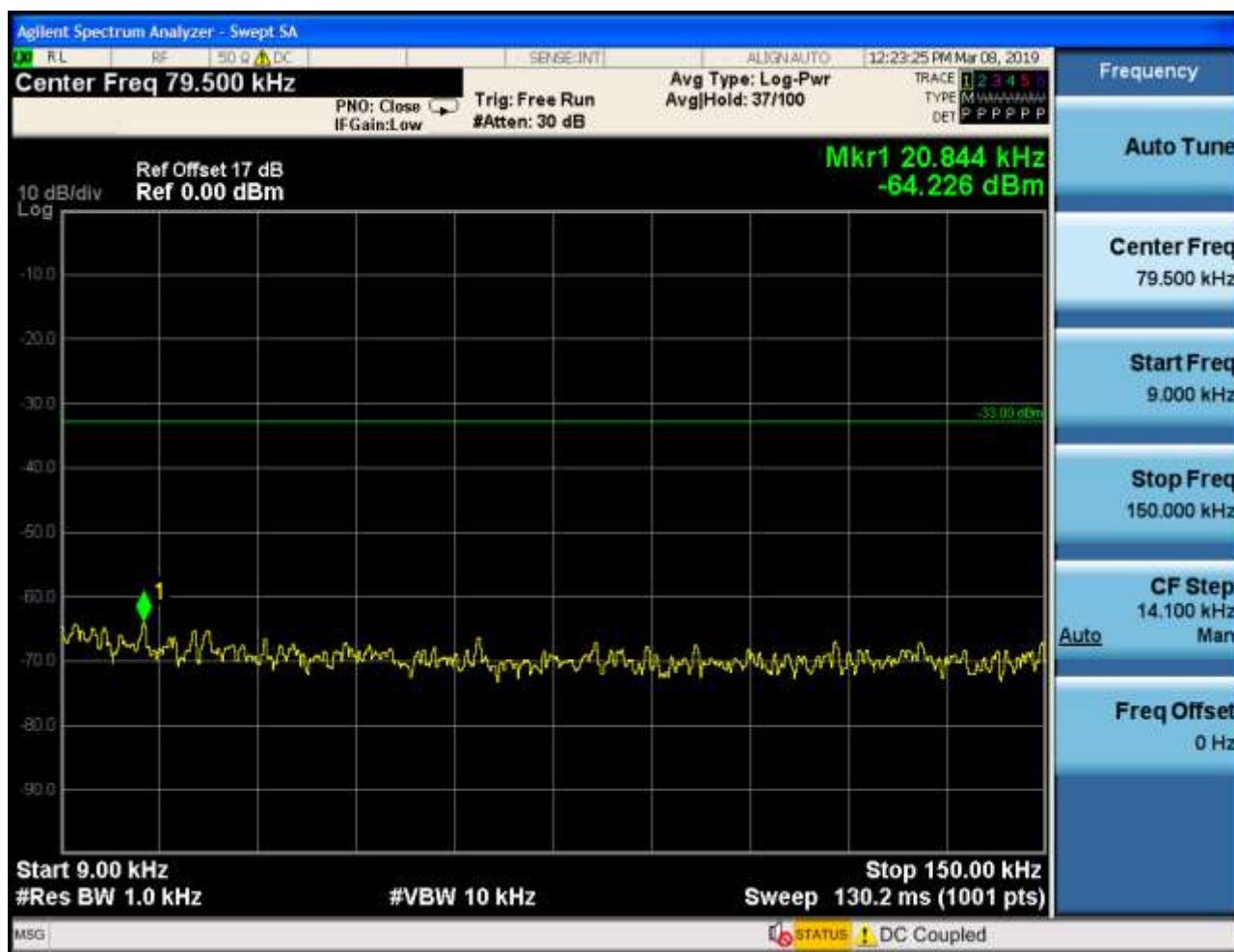
### Part I - Test Plots

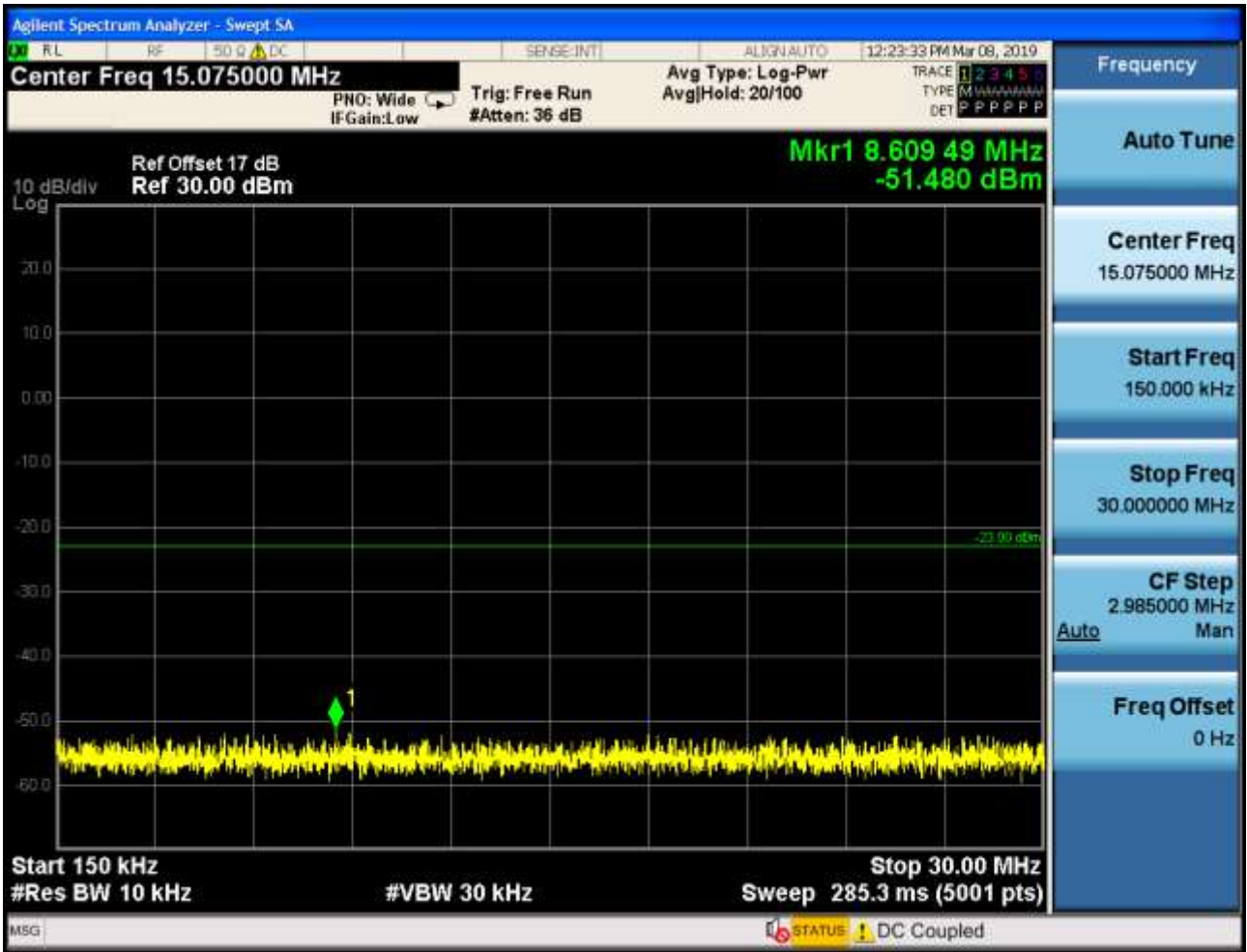
#### 6.1 For UMTS

##### 6.1.1 Test Band = WCDMA850

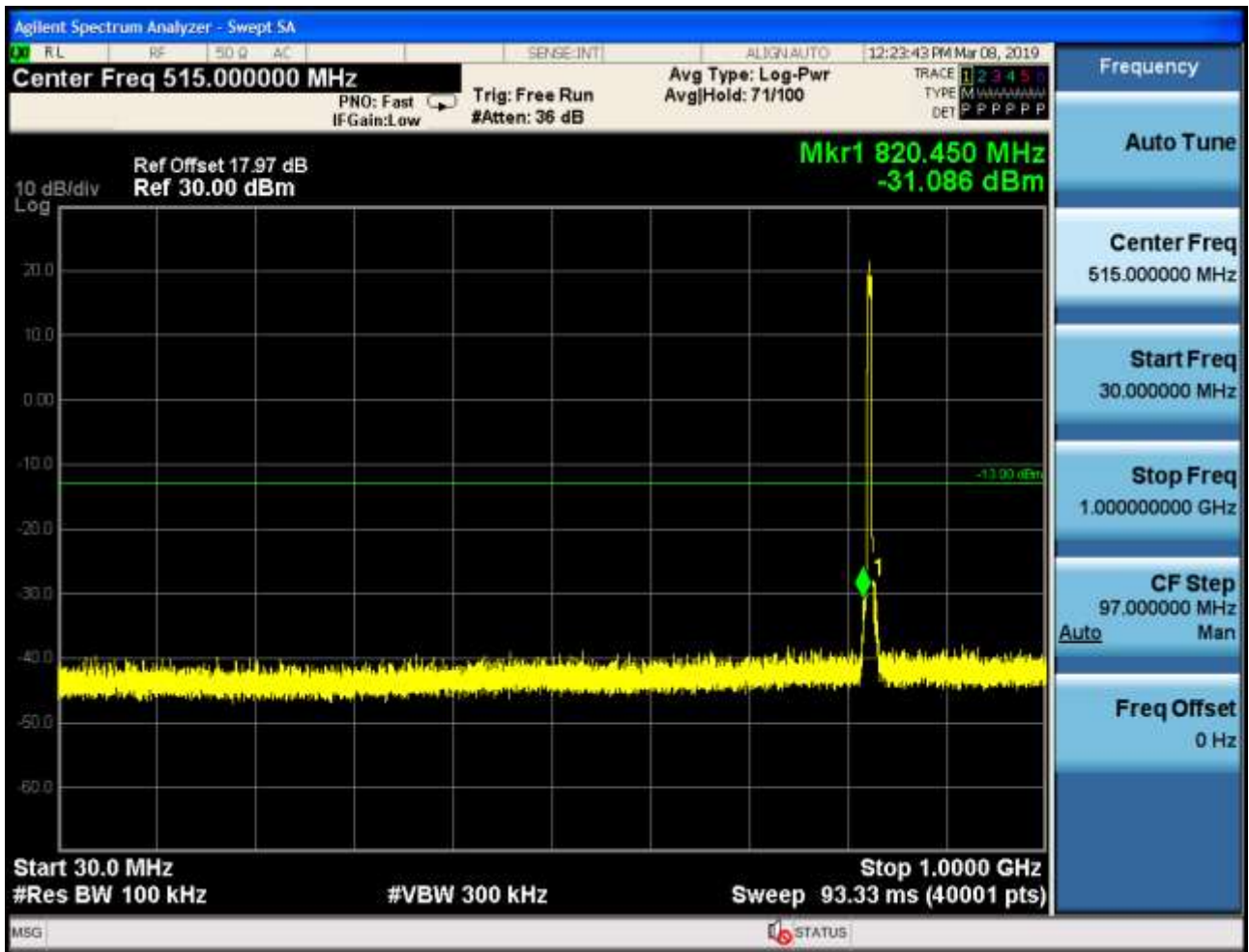
##### 6.1.1.1 Test Mode = UMTS/TM1

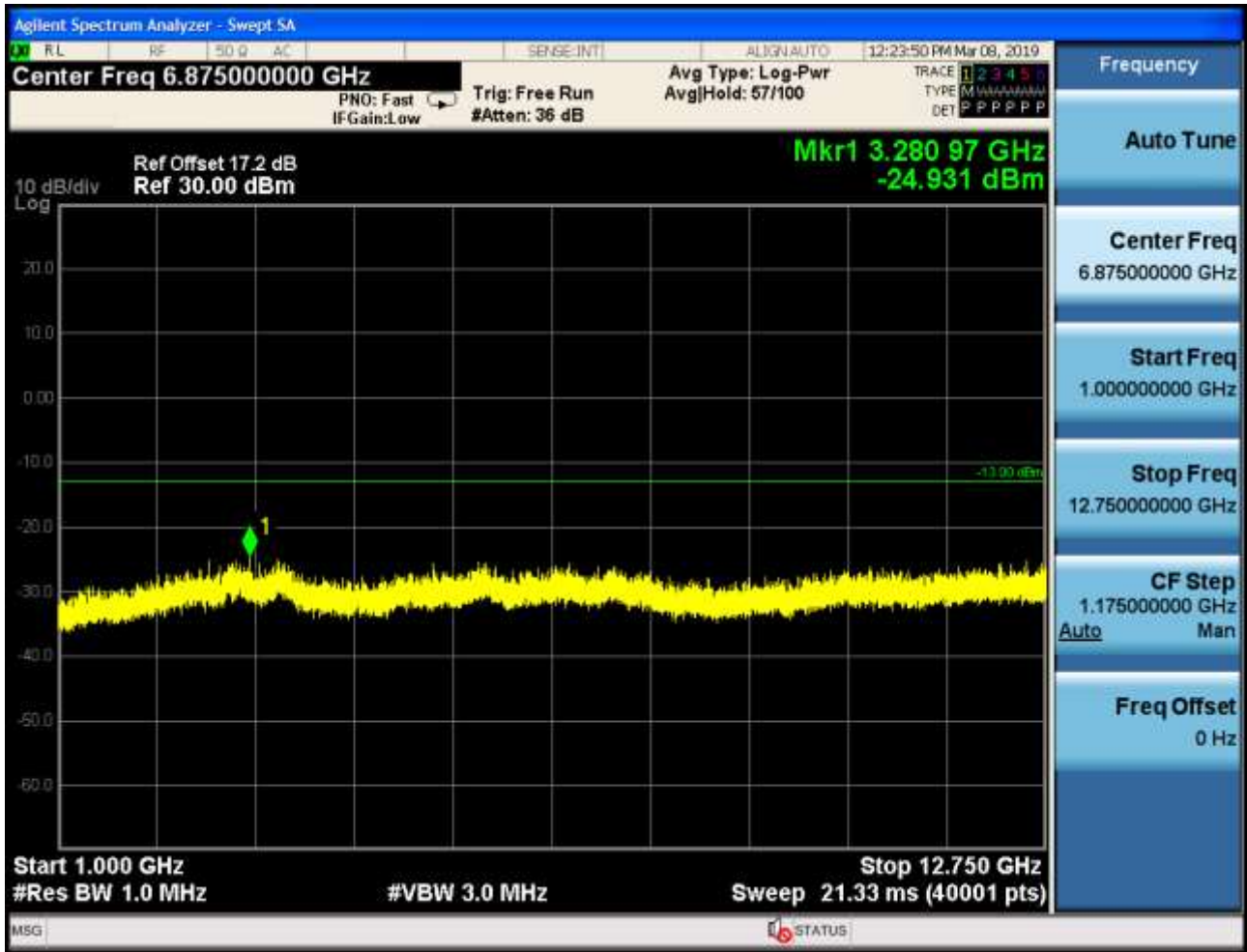
##### 6.1.1.1.1 Test Channel = LCH



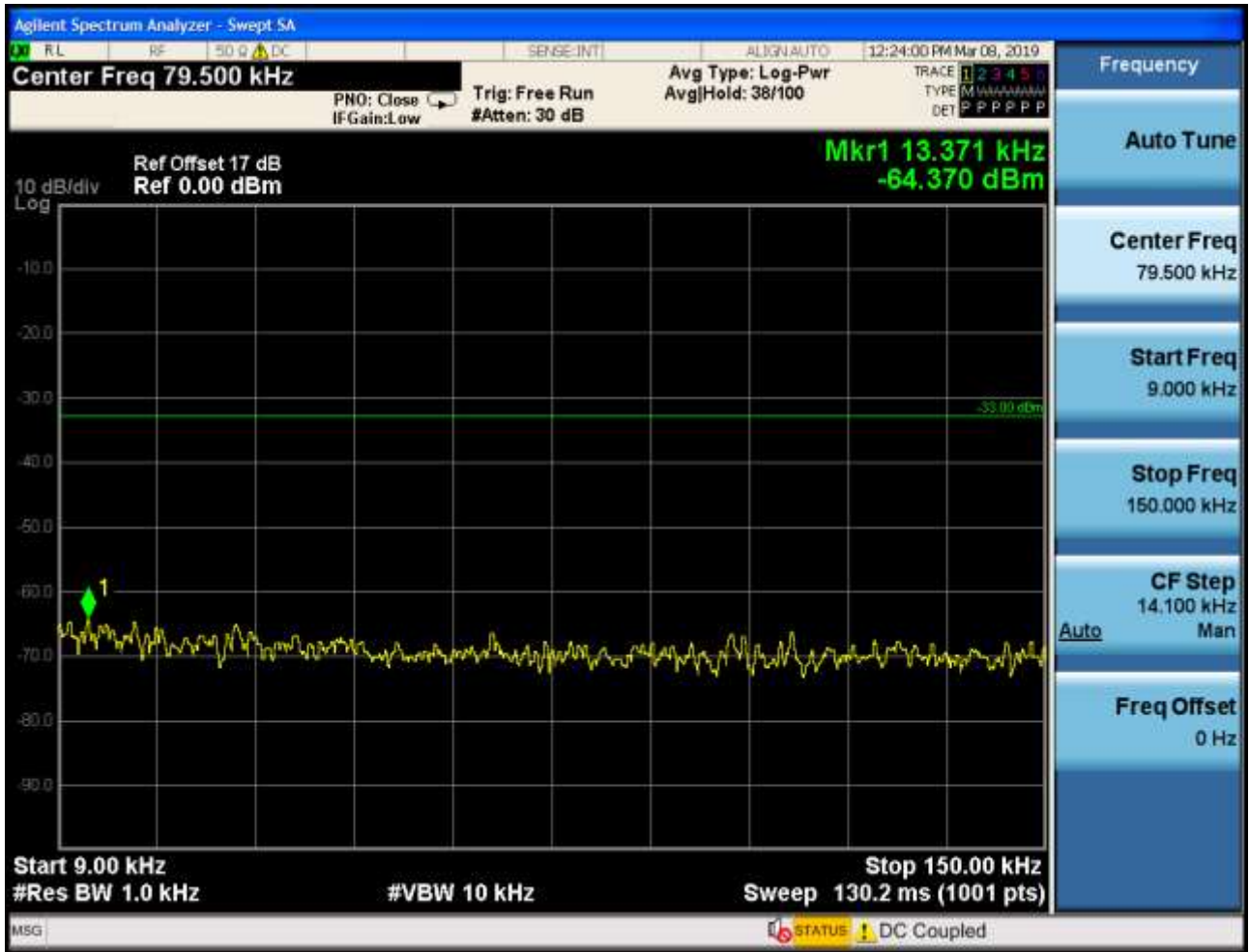


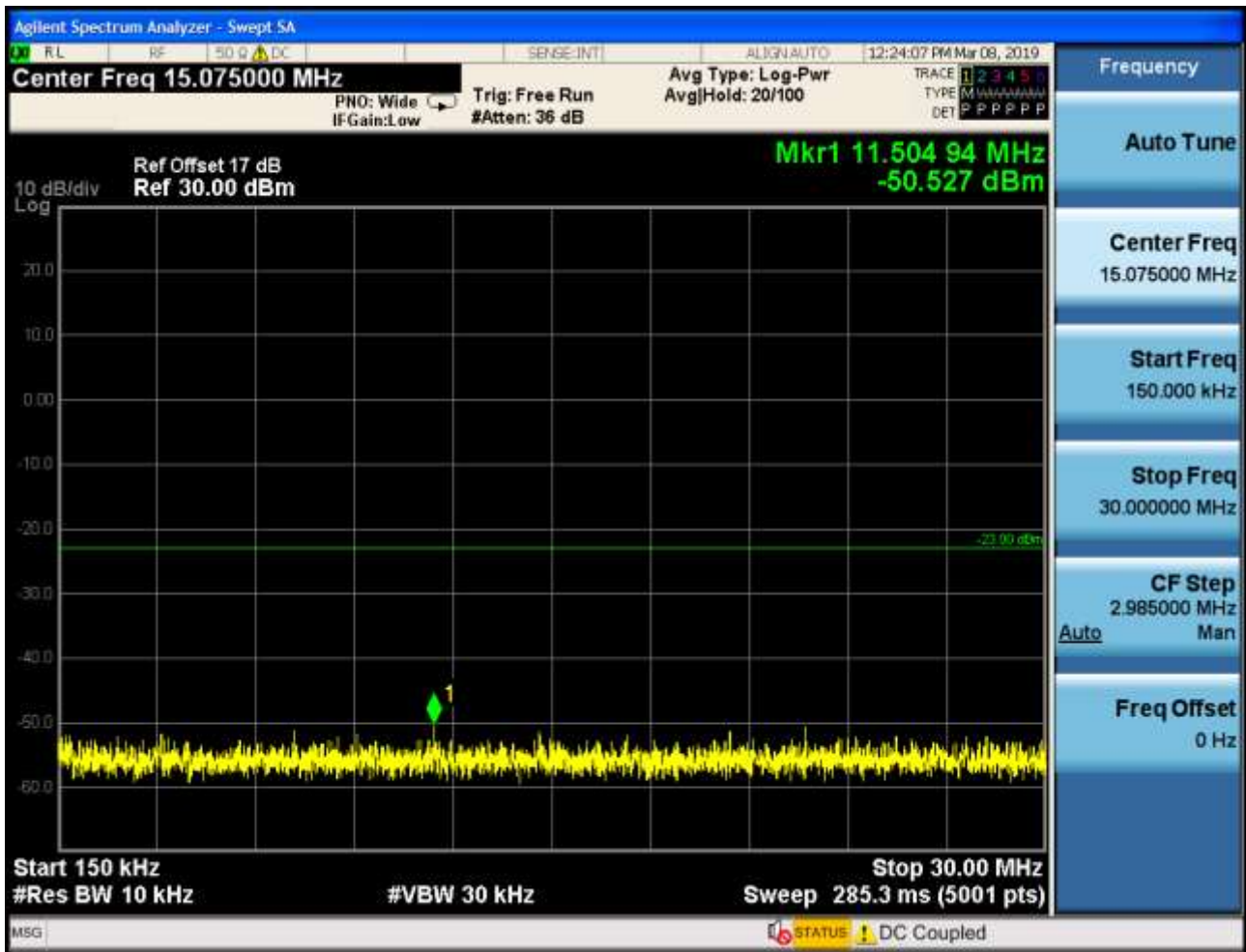


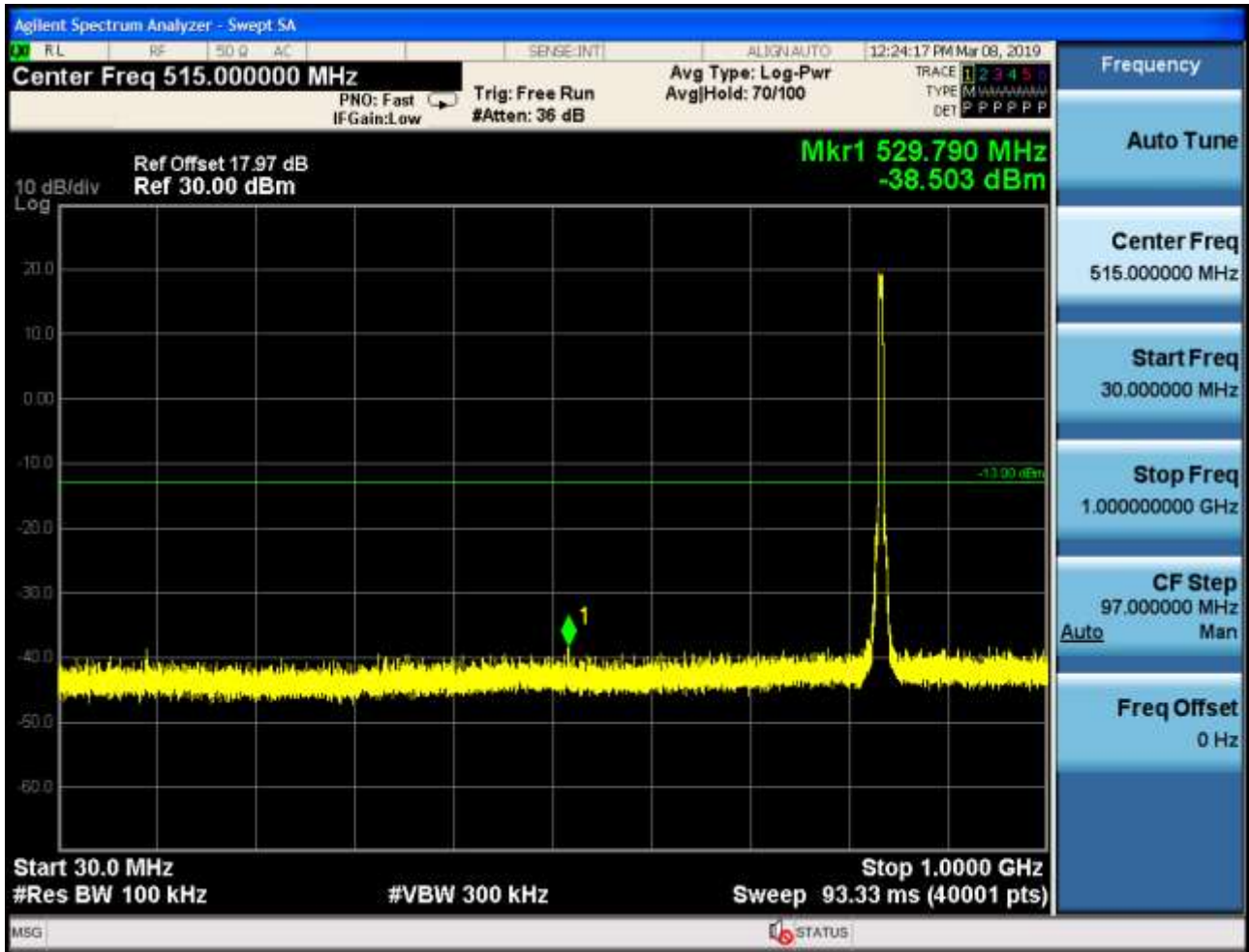


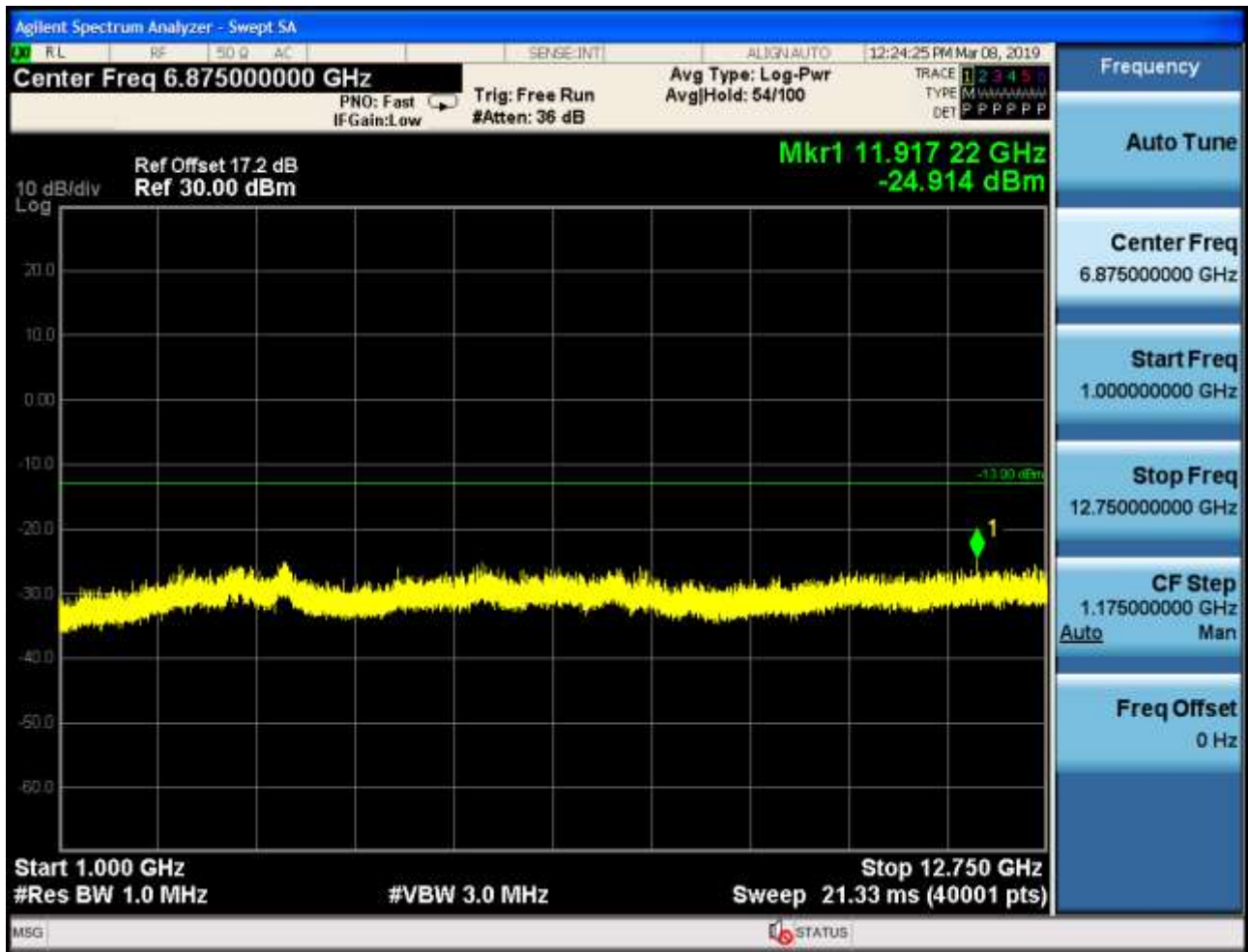


### 6.1.1.1.2 Test Channel = MCH



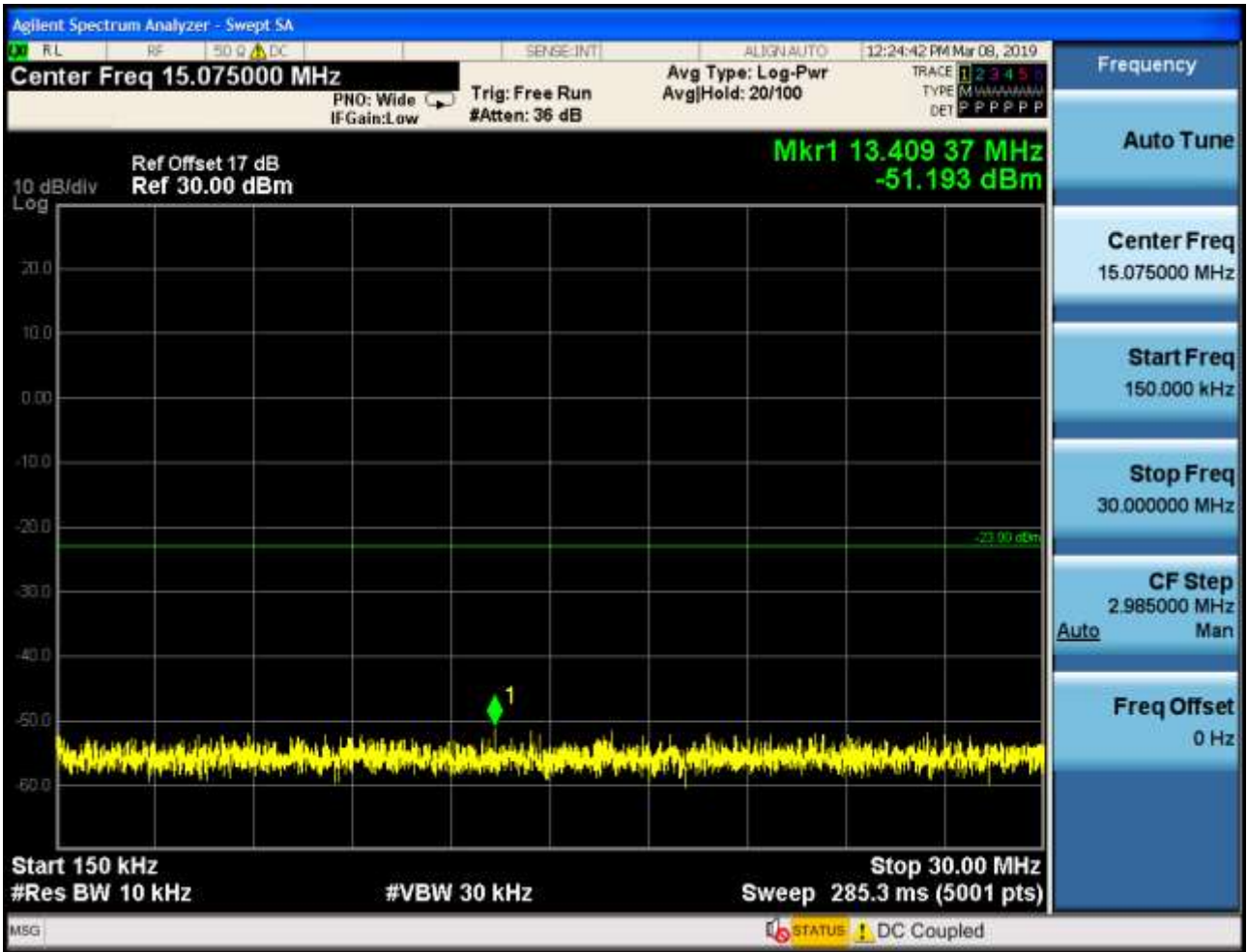




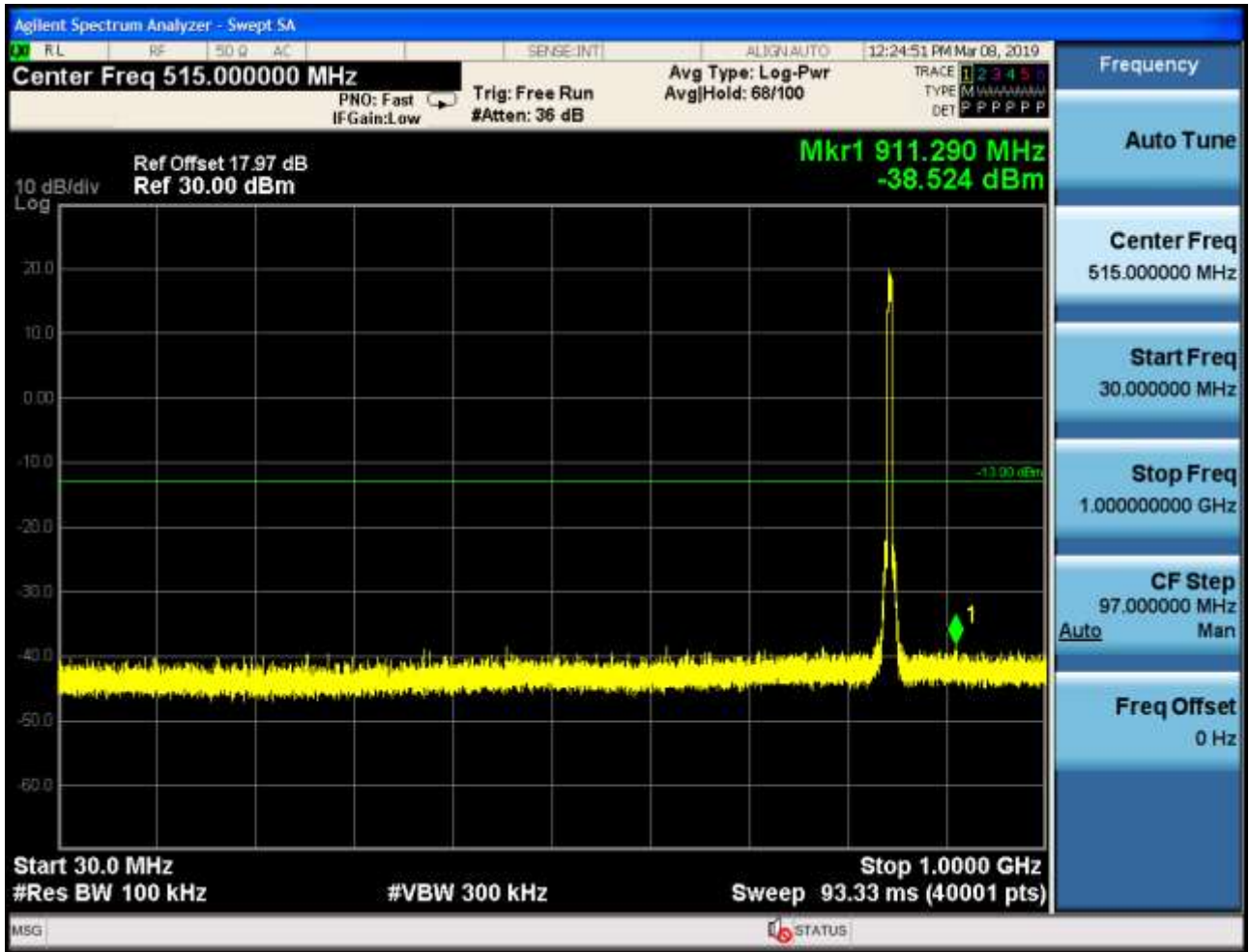


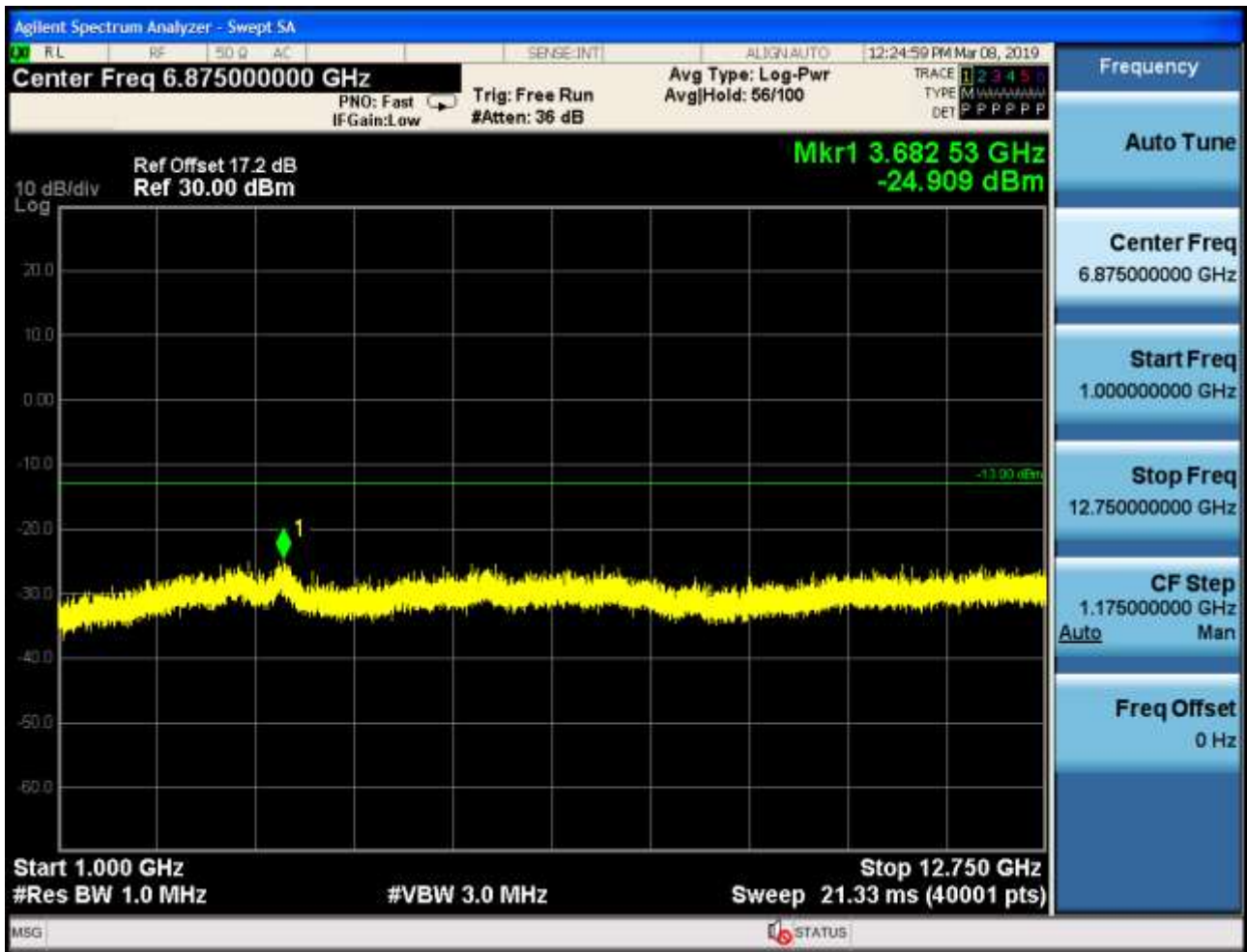
6.1.1.1.3 Test Channel = HCH







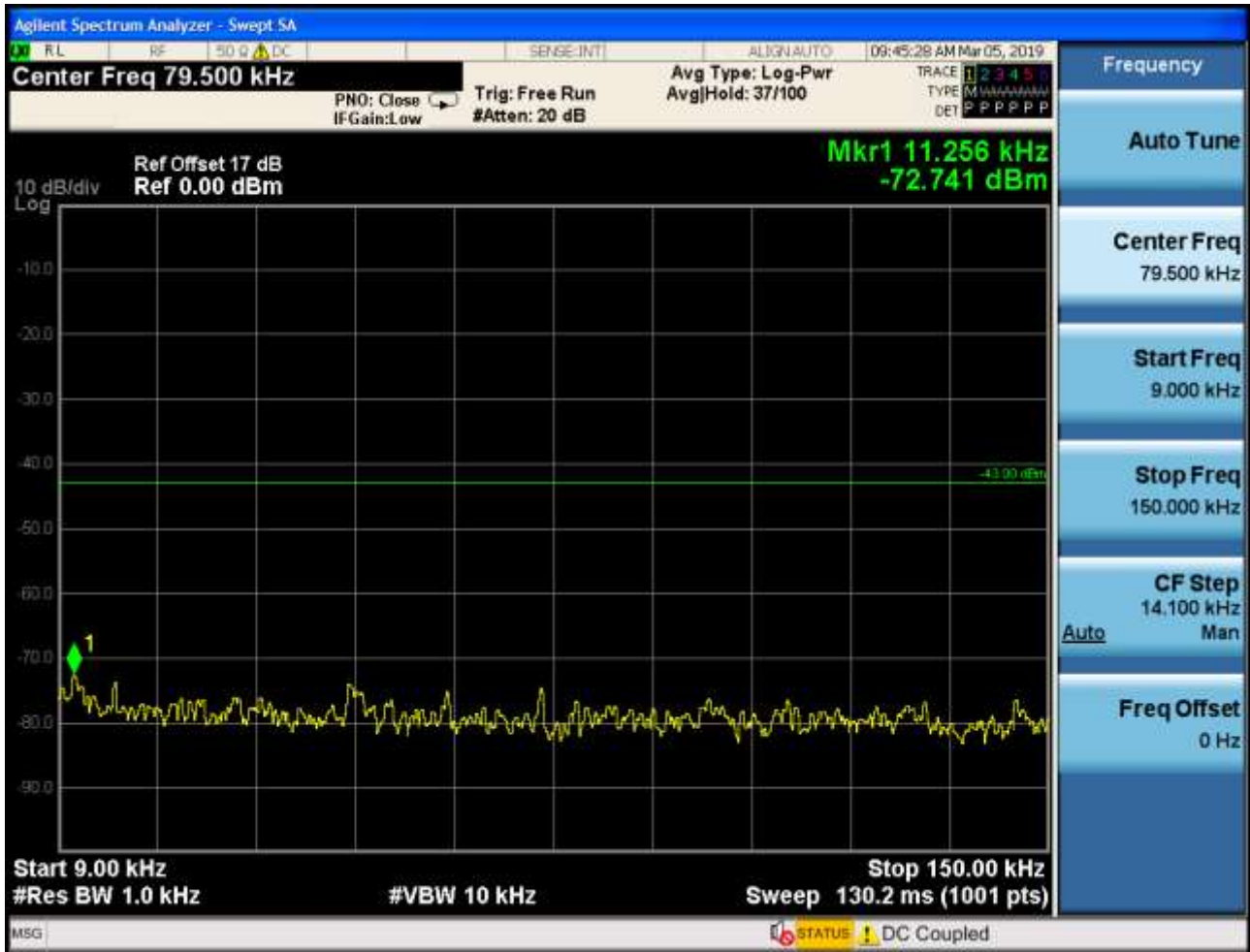


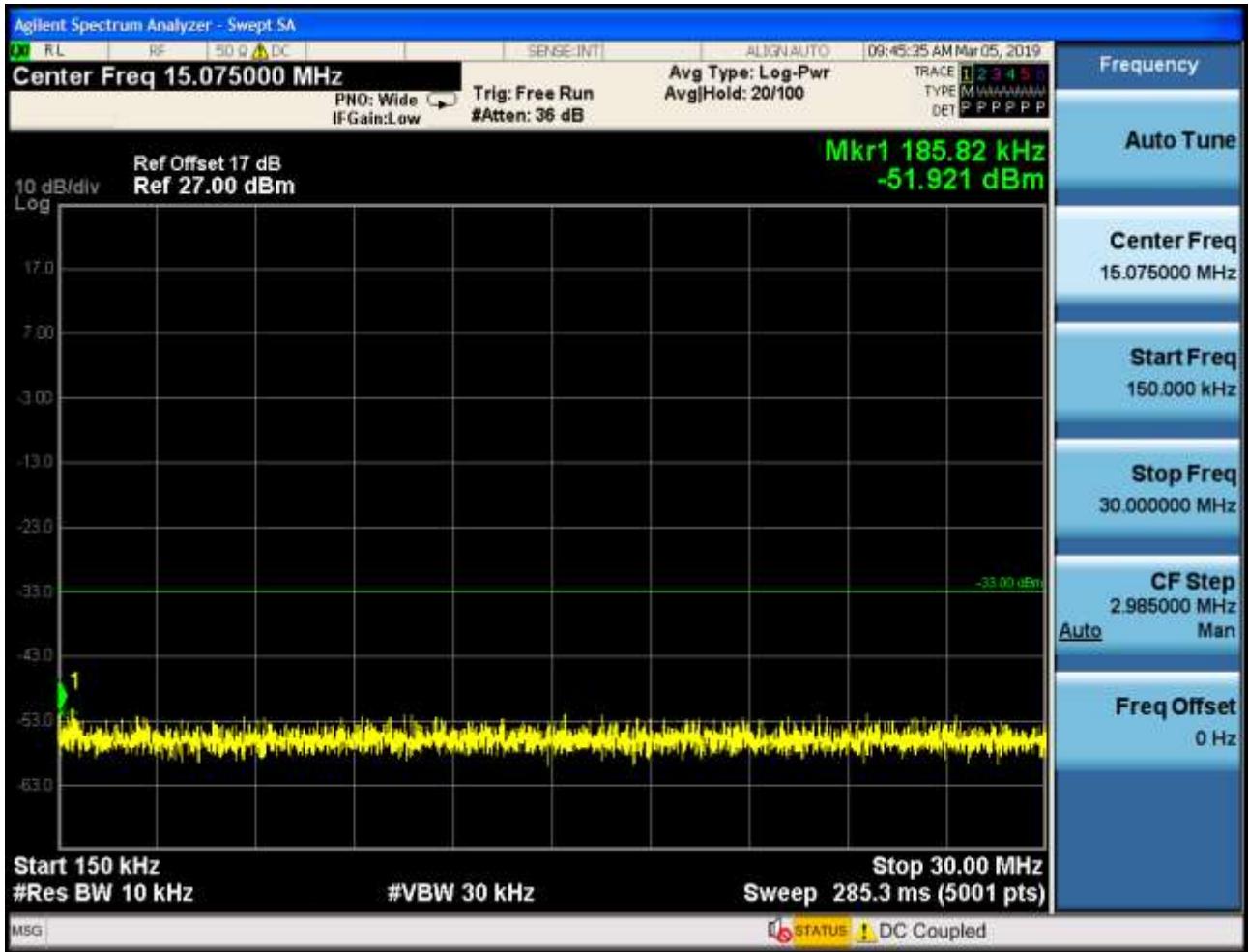


## 6.1.2 Test Band = WCDMA1700

### 6.1.2.1 Test Mode = UMTS/TM1

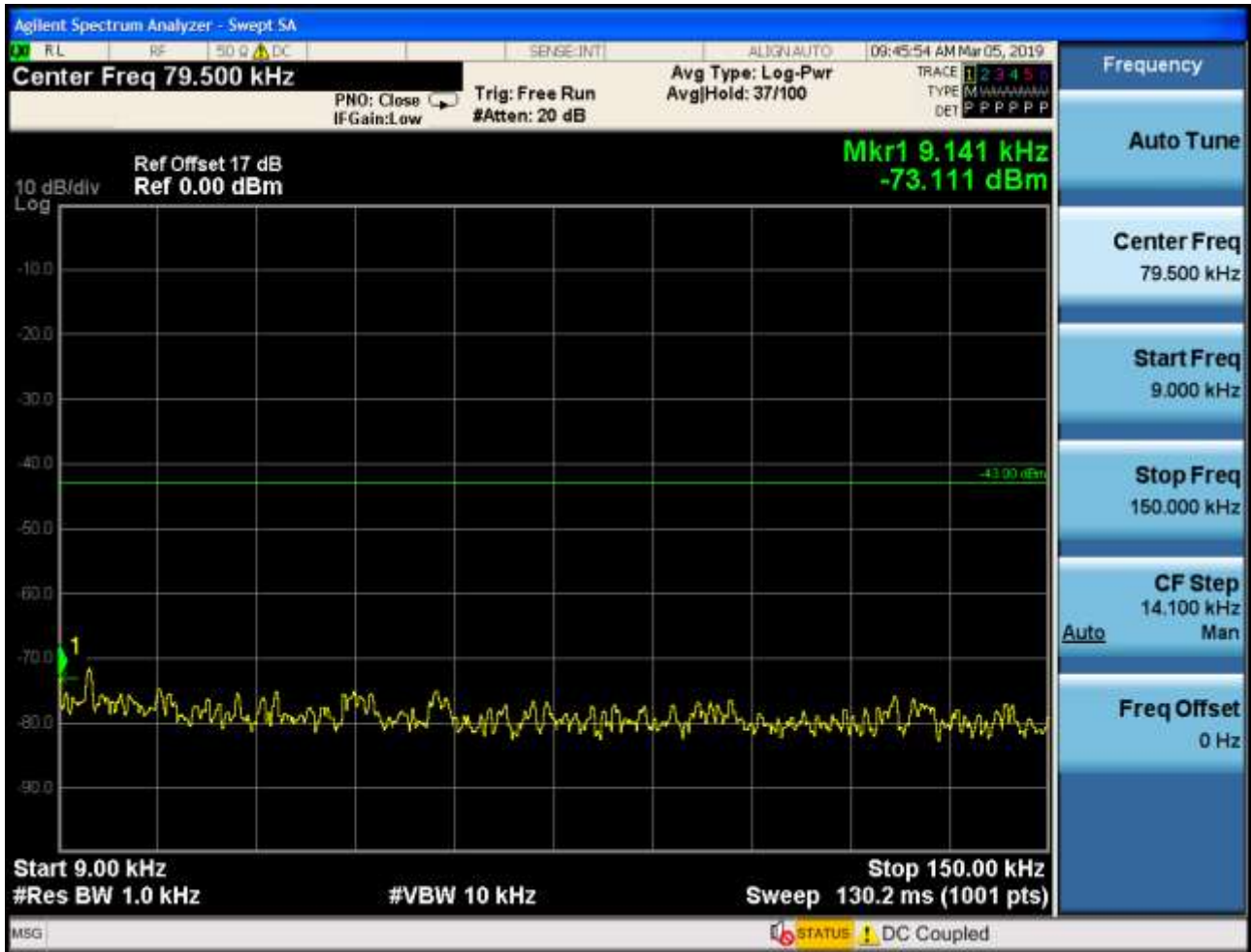
#### 6.1.2.1.1 Test Channel = LCH

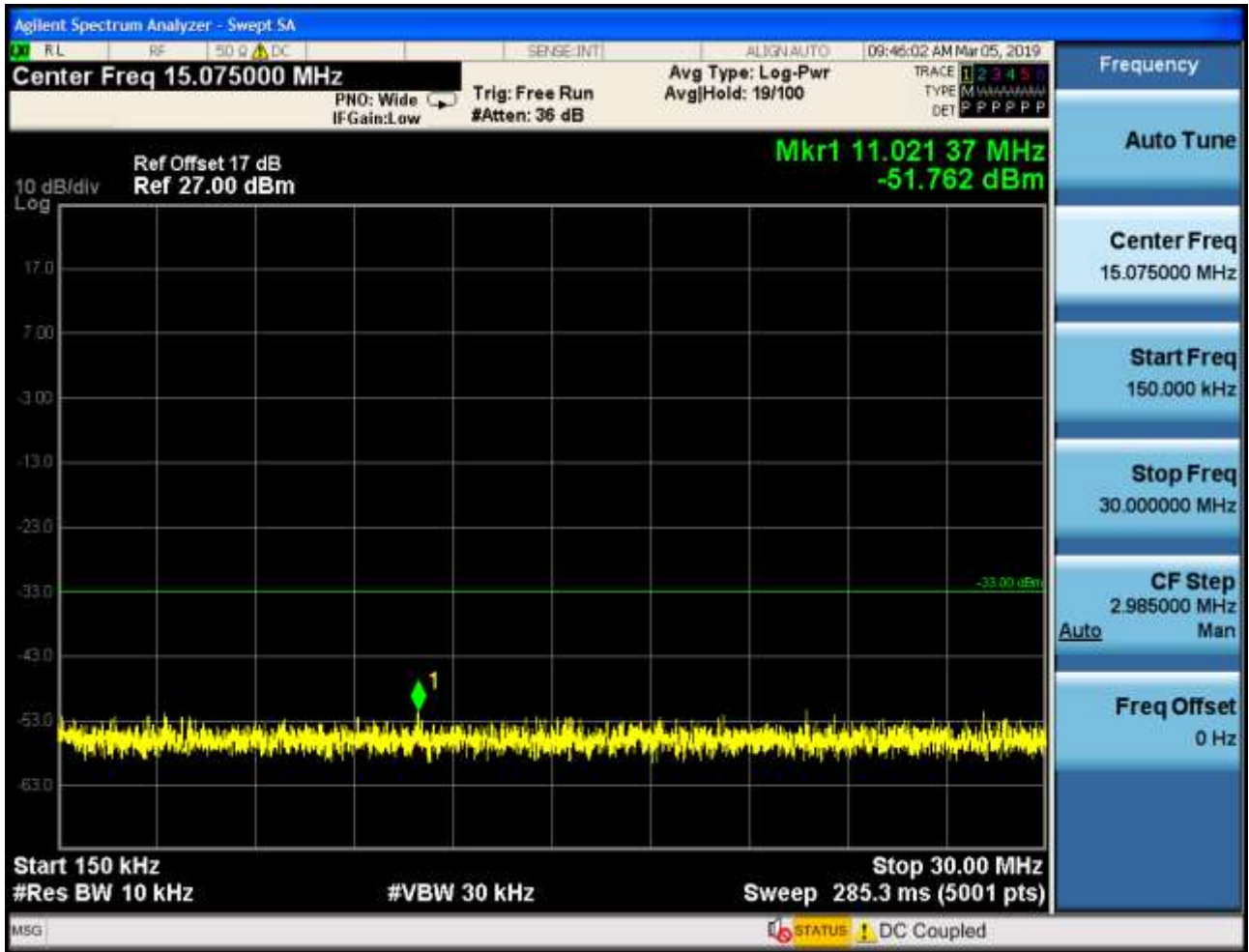






## 6.1.2.1.2 Test Channel = MCH

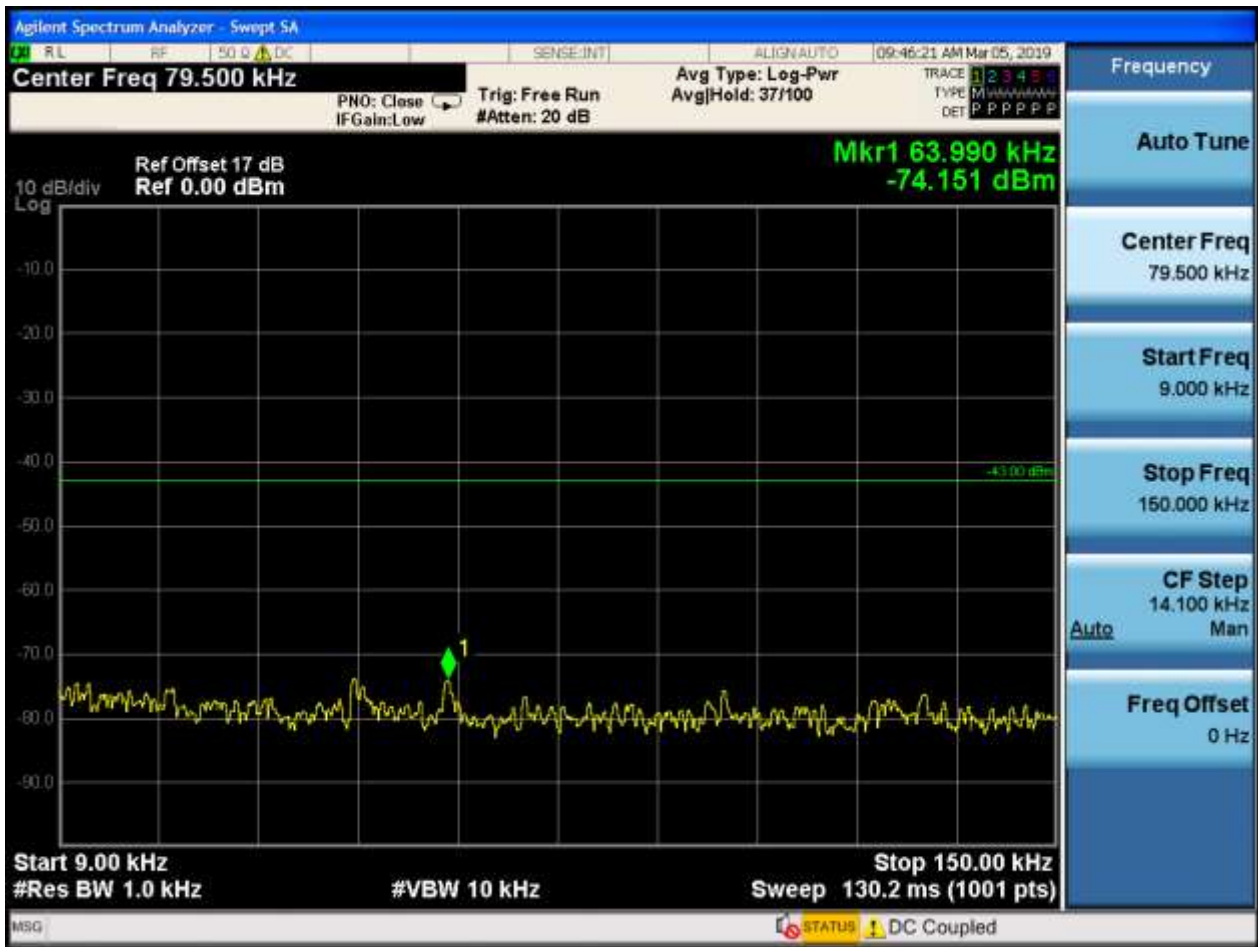


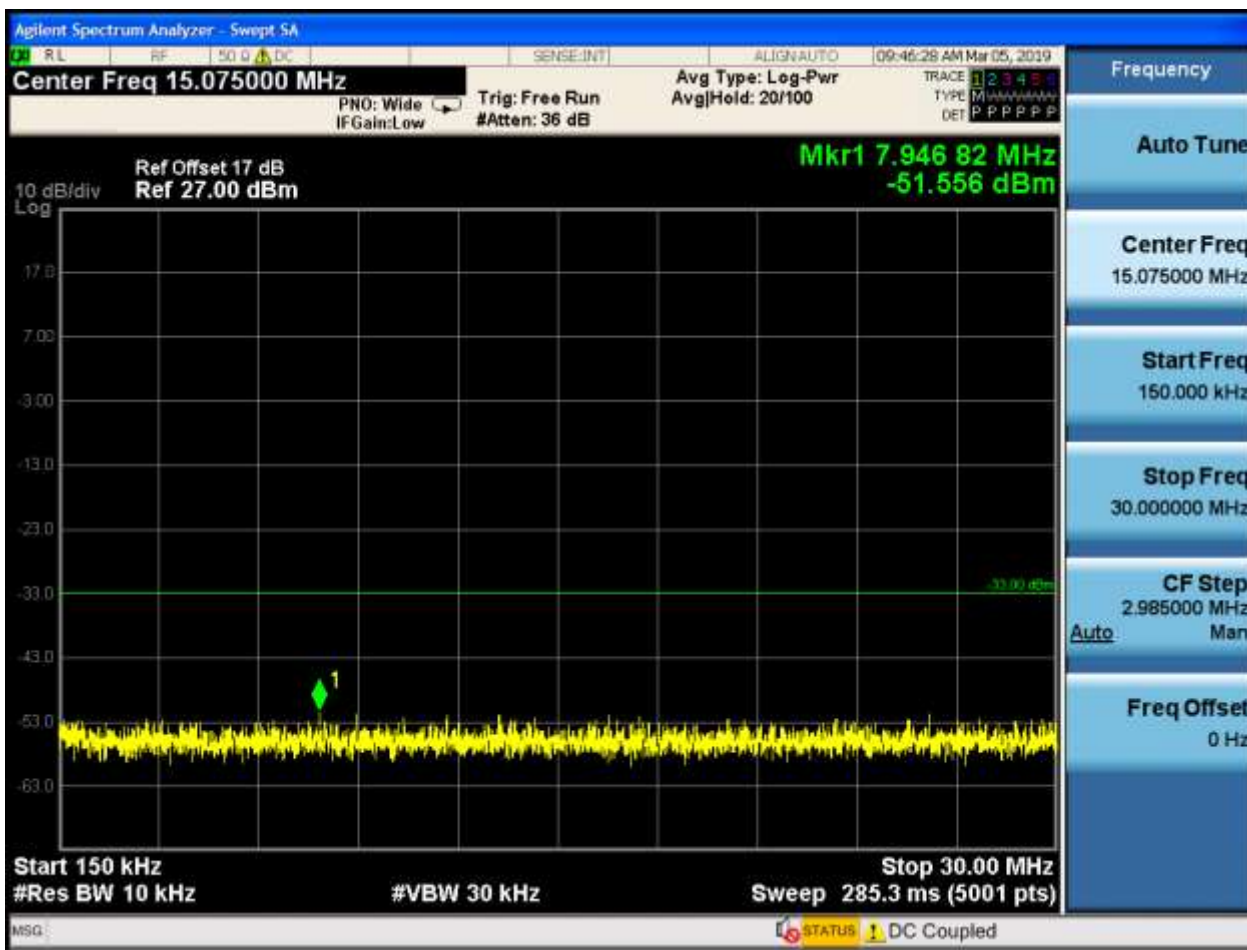






## 6.1.2.1.3 Test Channel = HCH



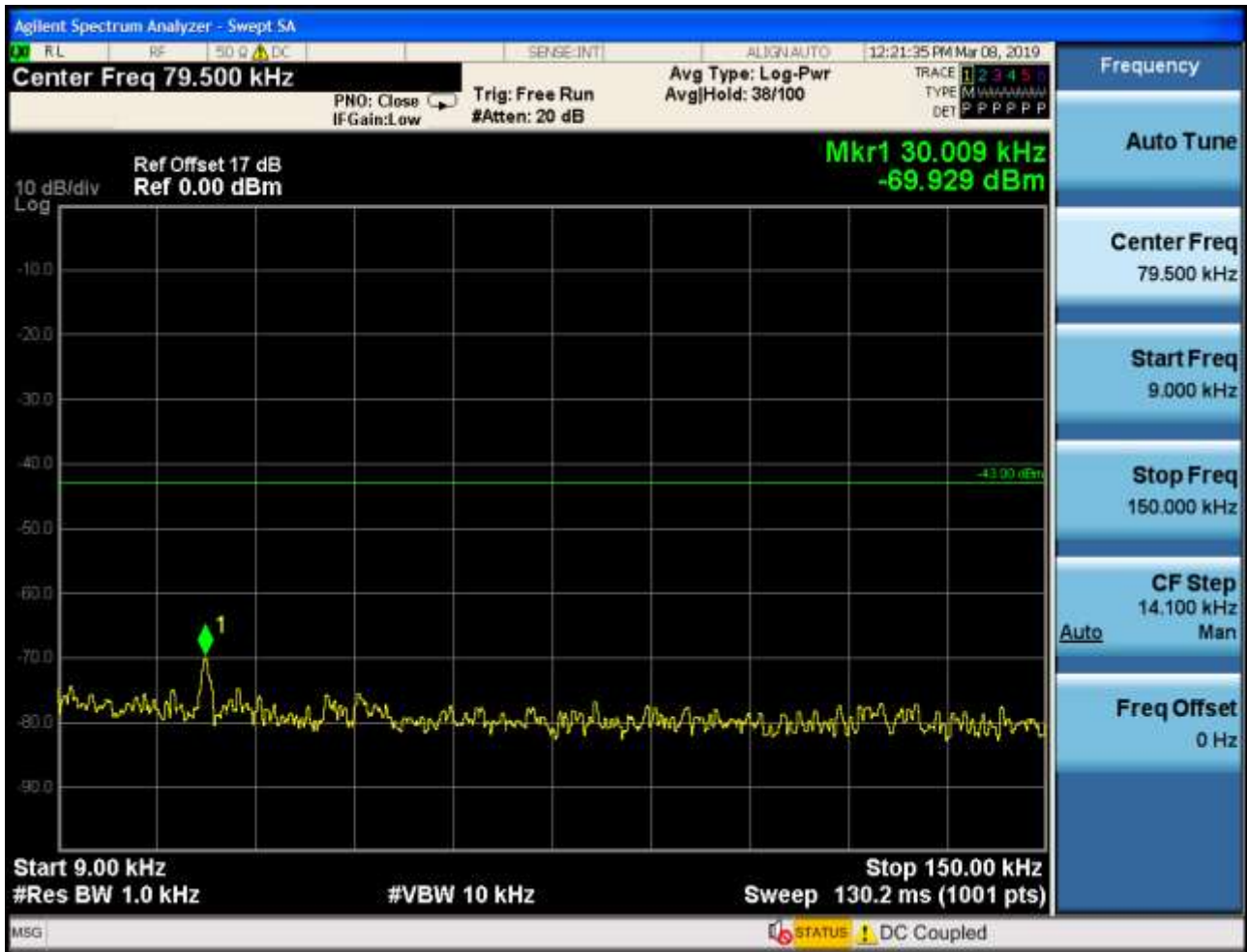


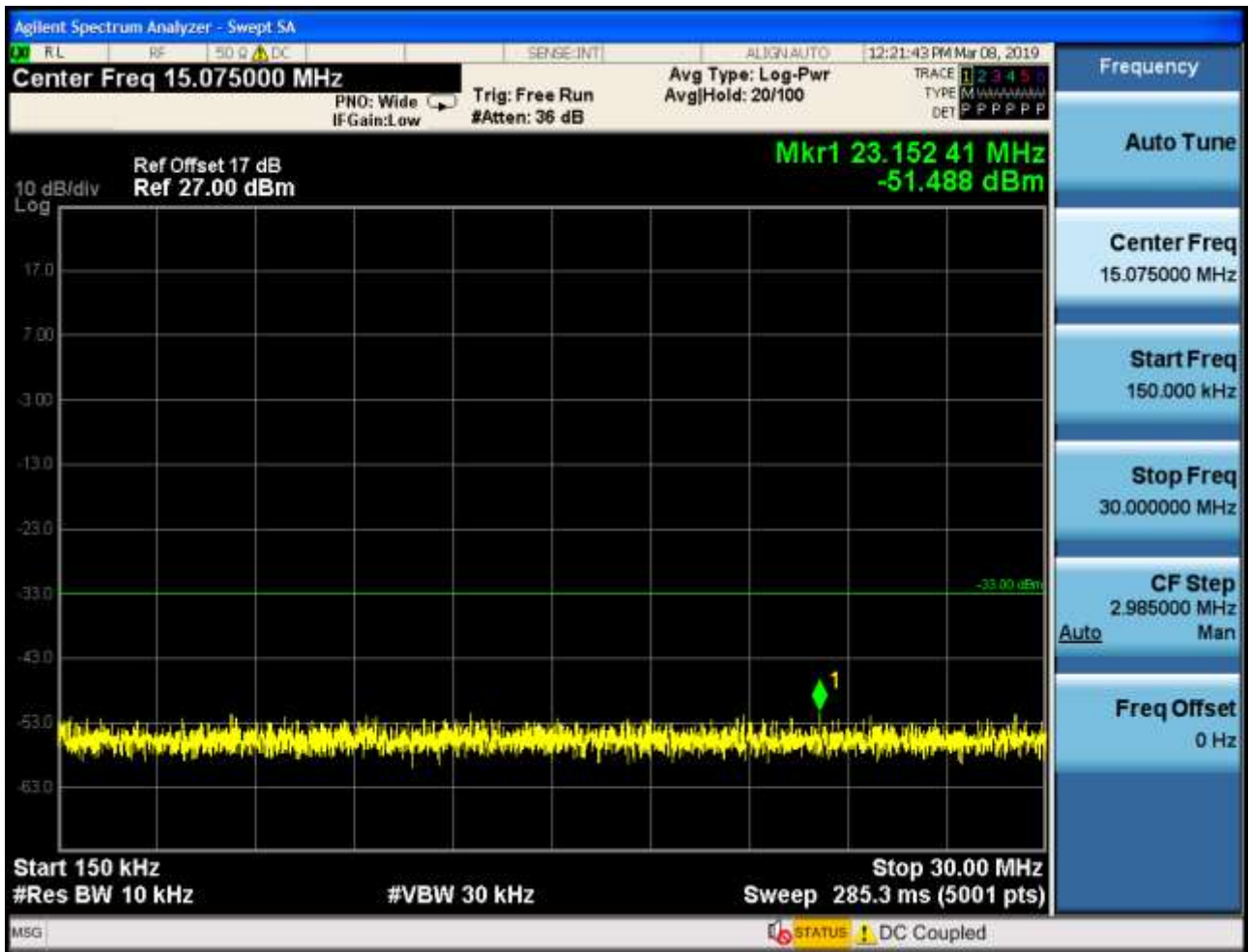


6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

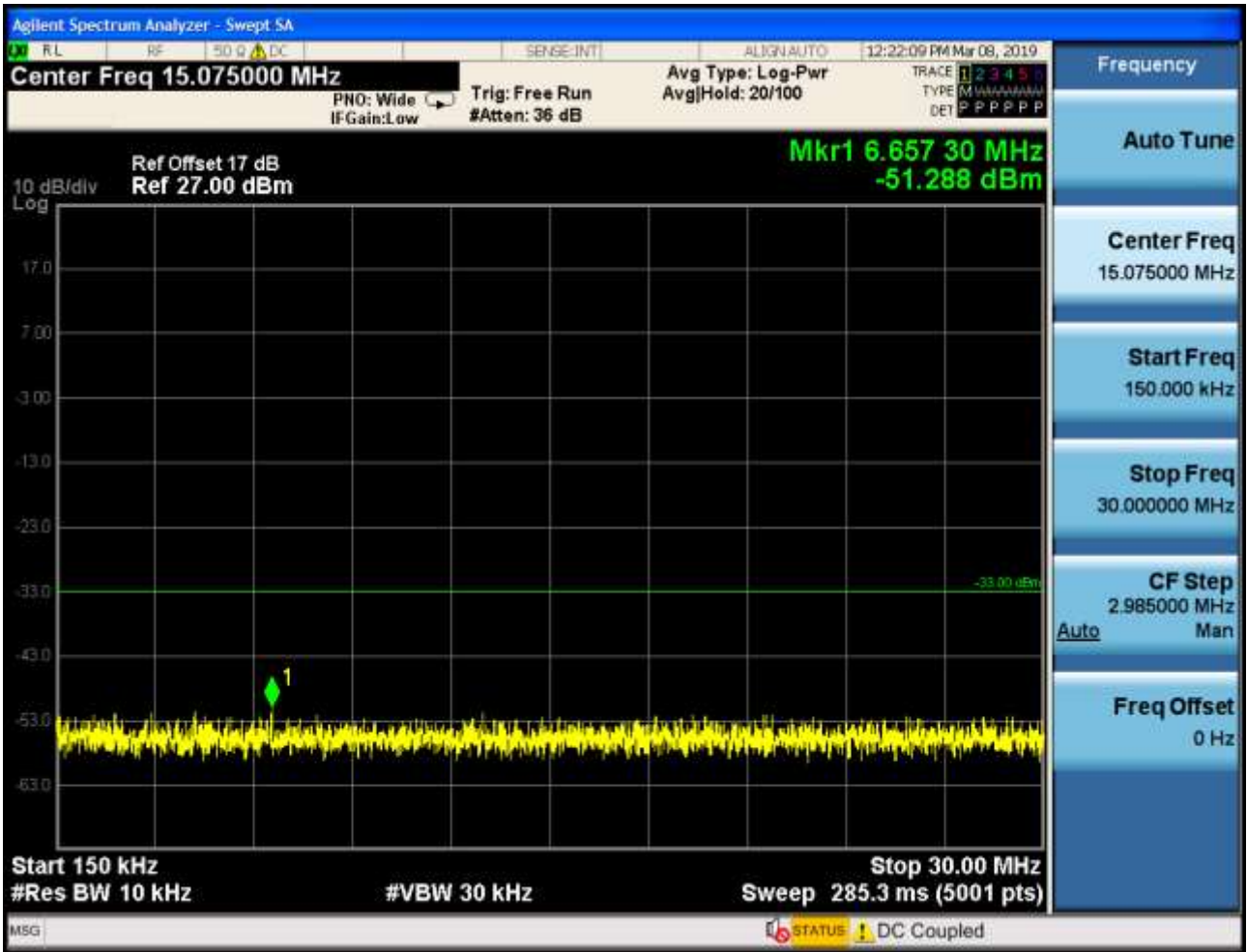






## 6.1.3.1.2 Test Channel = MCH

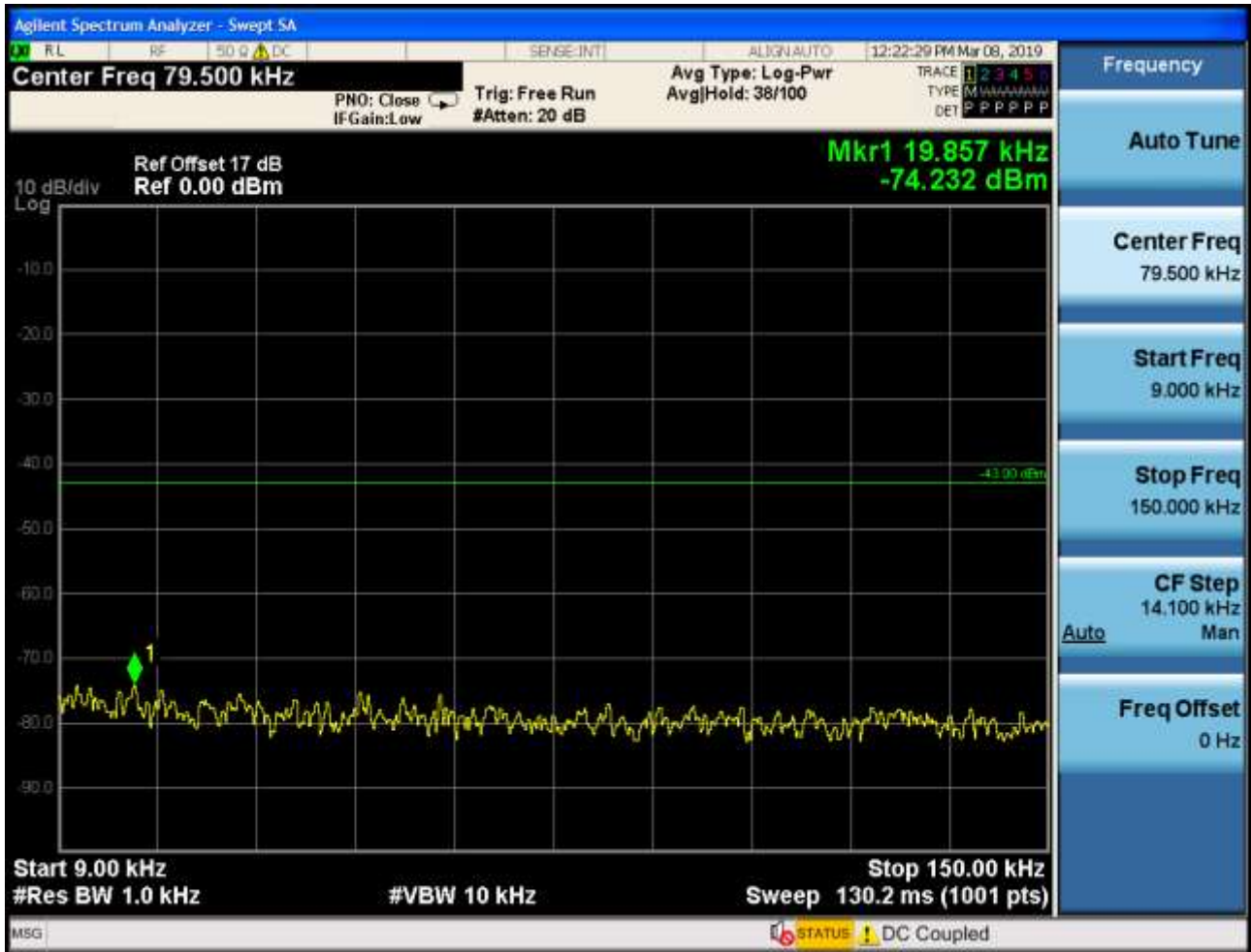


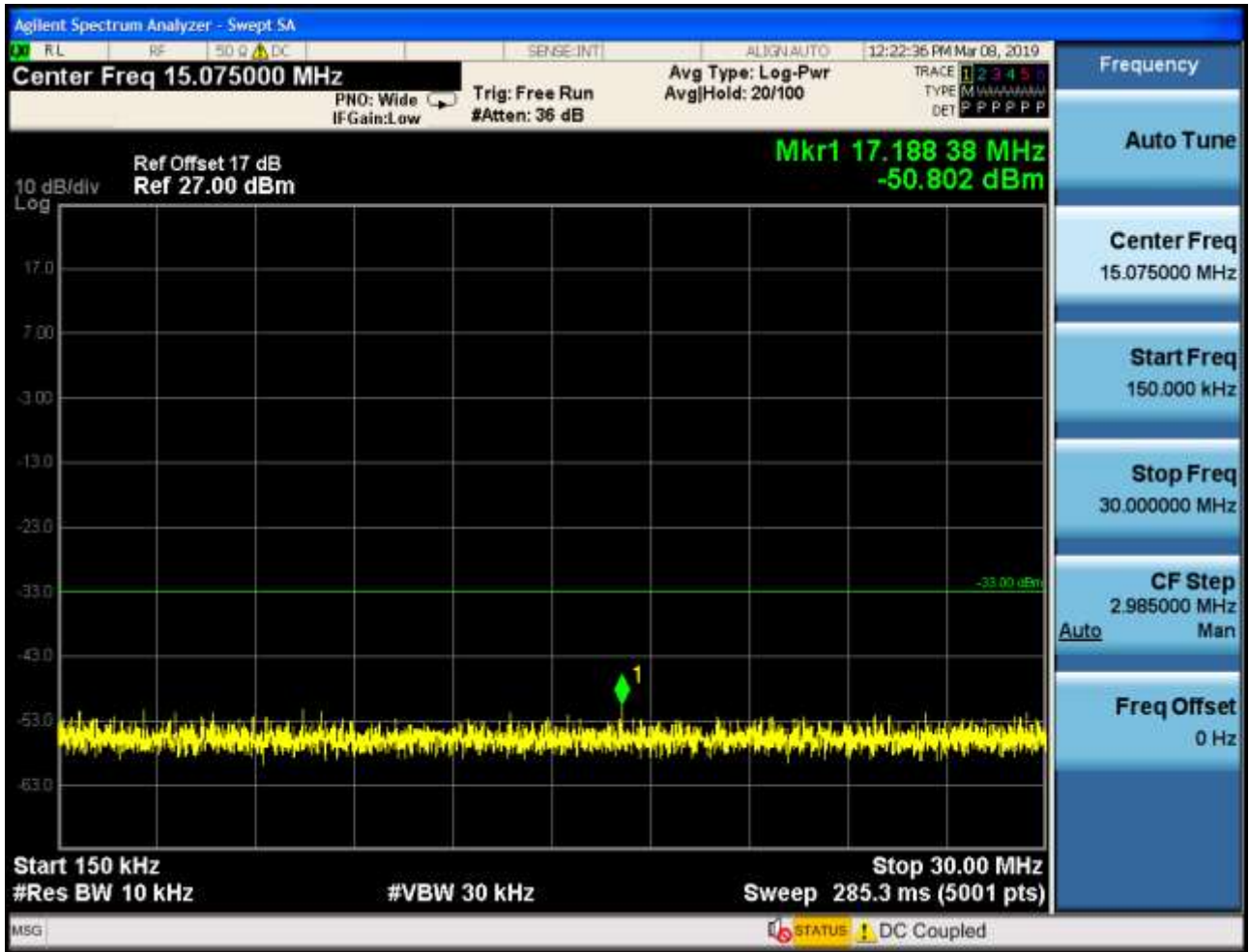






## 6.1.3.1.3 Test Channel = HCH







## 7Appendix\_G: Frequency Stability

### 7.1 For UMTS

#### 7.1.1 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	5.14984	0.00623	PASS
				VN	-1.68085	-0.00203	PASS
				VH	0.80824	0.00098	PASS
		MCH	TN	VL	2.17438	0.00260	PASS
				VN	3.77655	0.00452	PASS
				VH	1.83821	0.00220	PASS
		HCH	TN	VL	-2.51770	-0.00297	PASS
				VN	1.28031	0.00151	PASS
				VH	-5.65052	-0.00668	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-0.35763	-0.00021	PASS
				VN	-0.62943	-0.00037	PASS
				VH	2.36750	0.00138	PASS
		MCH	TN	VL	2.42472	0.00140	PASS
				VN	-4.42028	-0.00255	PASS
				VH	2.07424	0.00120	PASS
		HCH	TN	VL	3.53336	0.00202	PASS
				VN	4.20570	0.00240	PASS
				VH	2.42472	0.00138	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	1.16587	0.00063	PASS
				VN	0.44346	0.00024	PASS
				VH	0.64373	0.00035	PASS
		MCH	TN	VL	-0.14305	-0.00008	PASS
				VN	2.72512	0.00145	PASS
				VH	0.10729	0.00006	PASS
		HCH	TN	VL	3.81947	0.00063	PASS
				VN	-4.39167	0.00024	PASS
				VH	-1.70946	0.00035	PASS

7.1.2 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	2.57492	0.00312	PASS
				-20	0.77248	0.00093	PASS
				-10	2.41041	0.00292	PASS
				0	-0.85115	-0.00103	PASS
				10	-0.12159	-0.00015	PASS
				20	-1.68085	-0.00203	PASS
				30	1.83821	0.00222	PASS
				40	1.91688	0.00232	PASS
				50	0.51498	0.00062	PASS
		MCH	VN	-30	-3.41177	-0.00408	PASS
				-20	4.47750	0.00535	PASS
				-10	0.77248	0.00092	PASS
				0	-1.19448	-0.00143	PASS
				10	-0.79393	-0.00095	PASS
				20	3.77655	0.00452	PASS
				30	1.22309	0.00146	PASS
				40	0.79393	0.00095	PASS
				50	-1.67370	-0.00200	PASS
		HCH	VN	-30	-1.27316	-0.00150	PASS
				-20	0.89407	0.00106	PASS
				-10	3.34024	0.00395	PASS
				0	3.61919	0.00428	PASS
				10	2.81811	0.00333	PASS
				20	1.28031	0.00151	PASS
				30	2.03848	0.00241	PASS
				40	1.90258	0.00225	PASS
				50	-3.19719	-0.00378	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	2.22444	0.00130	PASS
				-20	0.43631	0.00025	PASS
				-10	0.92983	0.00054	PASS
				0	-0.47207	-0.00028	PASS
				10	1.72377	0.00101	PASS
				20	-0.62943	-0.00037	PASS
				30	-0.17881	-0.00010	PASS
				40	0.10014	0.00006	PASS
				50	2.48194	0.00145	PASS
		MCH	VN	-30	0.50783	0.00029	PASS
				-20	-0.22173	-0.00013	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict						
				-10	-2.08855	-0.00121	PASS						
				0	-0.18597	-0.00011	PASS						
				10	0.21458	0.00012	PASS						
				20	-4.42028	-0.00255	PASS						
				30	0.36478	0.00021	PASS						
				40	-2.03133	-0.00117	PASS						
				50	-3.30448	-0.00191	PASS						
		HCH	VN			-30	-2.68936	-0.00153	PASS				
						-20	-3.44038	-0.00196	PASS				
						-10	4.19140	0.00239	PASS				
						0	-1.90973	-0.00109	PASS				
						10	3.01123	0.00172	PASS				
						20	4.20570	0.00240	PASS				
						30	1.73807	0.00099	PASS				
						40	2.92540	0.00167	PASS				
						50	-3.38316	-0.00193	PASS				
WCDMA1900	UMTS/TM1	LCH	VN										
								-30	2.90394	0.00157	PASS		
								-20	0.13590	0.00007	PASS		
								-10	-1.45197	-0.00078	PASS		
								0	6.93083	0.00374	PASS		
								10	1.65939	0.00090	PASS		
								20	0.44346	0.00024	PASS		
								30	-0.35763	-0.00019	PASS		
								40	4.31299	0.00233	PASS		
		50	2.05994	0.00111	PASS								
		MCH	VN										
										-30	3.32594	0.00177	PASS
										-20	4.63486	0.00247	PASS
										-10	3.43323	0.00183	PASS
										0	2.78950	0.00148	PASS
										10	1.25170	0.00067	PASS
										20	2.72512	0.00145	PASS
										30	-2.00272	-0.00107	PASS
										40	-2.05278	-0.00109	PASS
		50	5.75781	0.00306	PASS								
		HCH	VN										
										-30	3.29733	0.00173	PASS
										-20	2.90394	0.00152	PASS
										-10	-0.83685	-0.00044	PASS
0	-1.97411									-0.00103	PASS		
10	5.13554									0.00269	PASS		
20	-4.39167	-0.00230	PASS										



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	6.28710	0.00330	PASS
				40	3.74794	0.00196	PASS
				50	1.34468	0.00070	PASS

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END