



# Appendix for test report

## 1Appendix\_A: Effective (Isotropic) Radiated Power Output Data

### Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
GSM850	GSM/TM1	LCH	32.70	25.95	38.5	PASS
		MCH	32.52	25.77	38.5	PASS
		HCH	32.60	25.85	38.5	PASS
	GSM/TM2	LCH	26.36	19.61	38.5	PASS
		MCH	26.41	19.66	38.5	PASS
		HCH	26.45	19.7	38.5	PASS
Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP [dBm]	Limit [dBm]	Verdict
PCS1900	GSM/TM1	LCH	29.89	28.89	33	PASS
		MCH	29.85	28.85	33	PASS
		HCH	29.93	28.93	33	PASS
	GSM/TM2	LCH	25.70	24.7	33	PASS
		MCH	25.75	24.75	33	PASS
		HCH	25.88	24.88	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
GSM850	GSM/TM1	LCH	1.88	13	PASS
		MCH	1.81	13	PASS
		HCH	1.95	13	PASS
	GSM/TM2	LCH	4.54	13	PASS
		MCH	4.52	13	PASS
		HCH	4.39	13	PASS
PCS1900	GSM/TM1	LCH	1.98	13	PASS
		MCH	1.92	13	PASS
		HCH	1.94	13	PASS
	GSM/TM2	LCH	5.13	13	PASS
		MCH	4.53	13	PASS
		HCH	4.72	13	PASS

### 3Appendix\_C: Modulation Characteristics

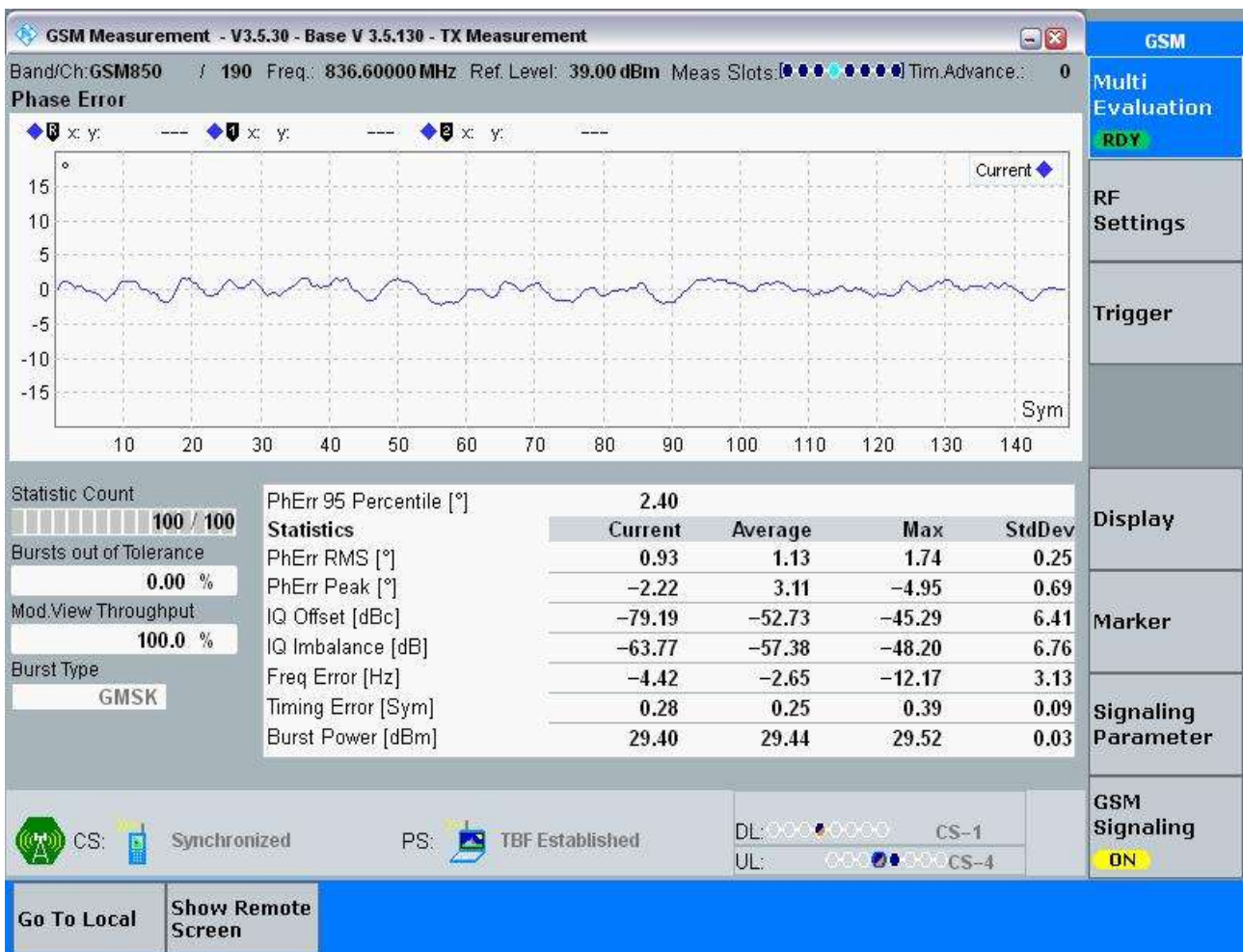
#### Part I - Test Plots

#### 3.1 For GSM

#### 3.1.1 Test Band = GSM850

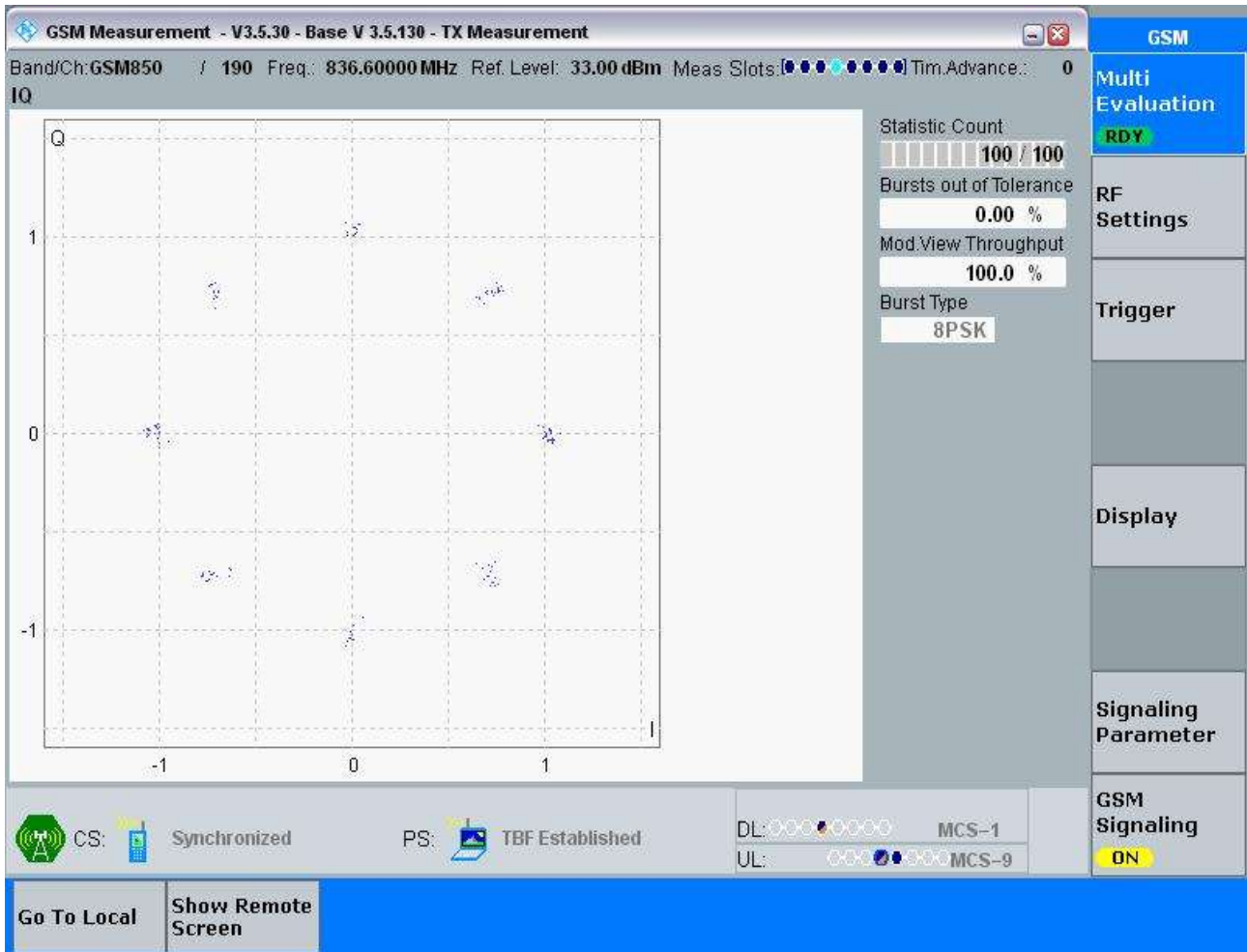
#### 3.1.1.1 Test Mode = GSM/TM1

#### 3.1.1.1.1 Test Channel = MCH



## 3.1.1.2 Test Mode = GSM/TM2

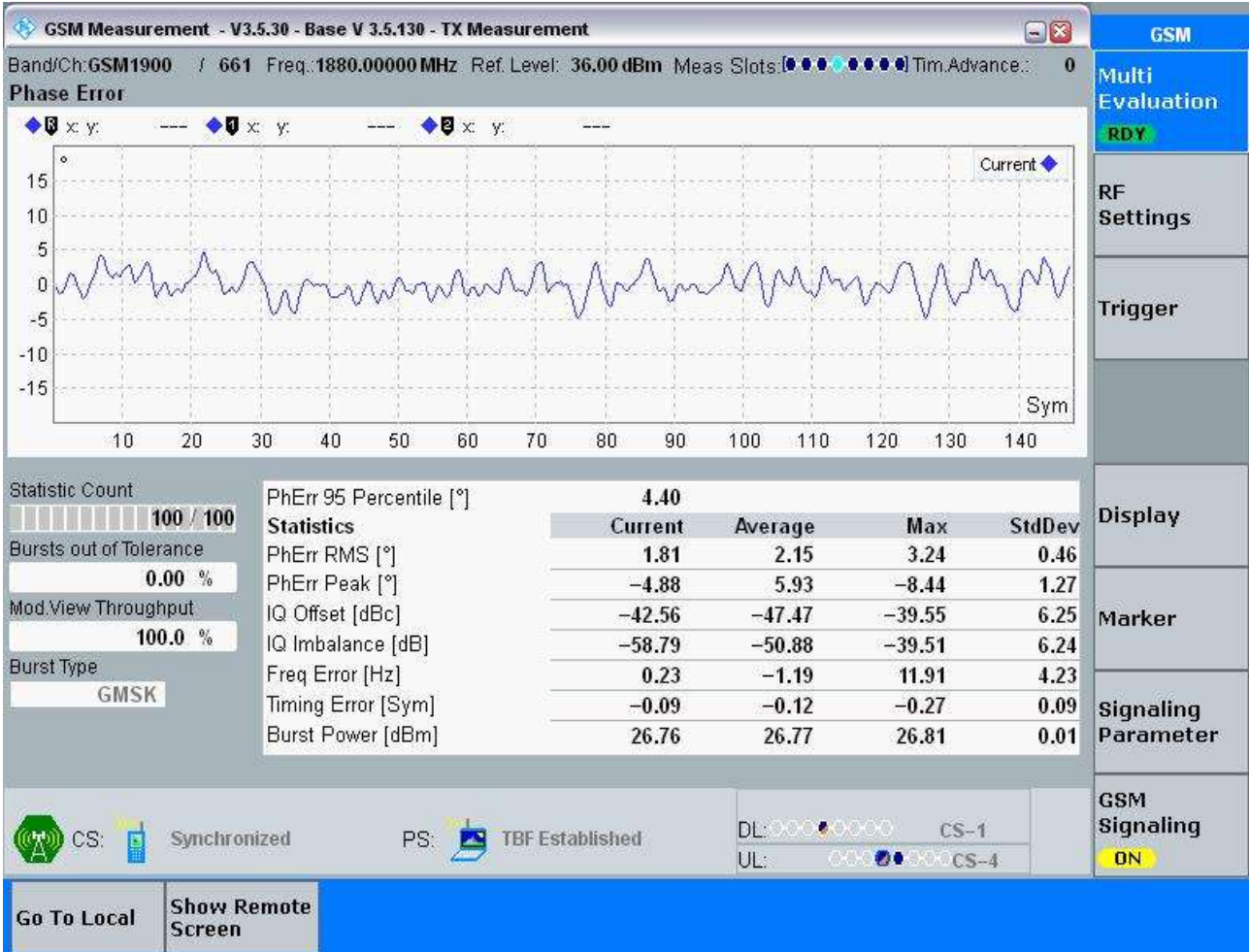
## 3.1.1.2.1 Test Channel = MCH



### 3.1.2 Test Band = PCS1900

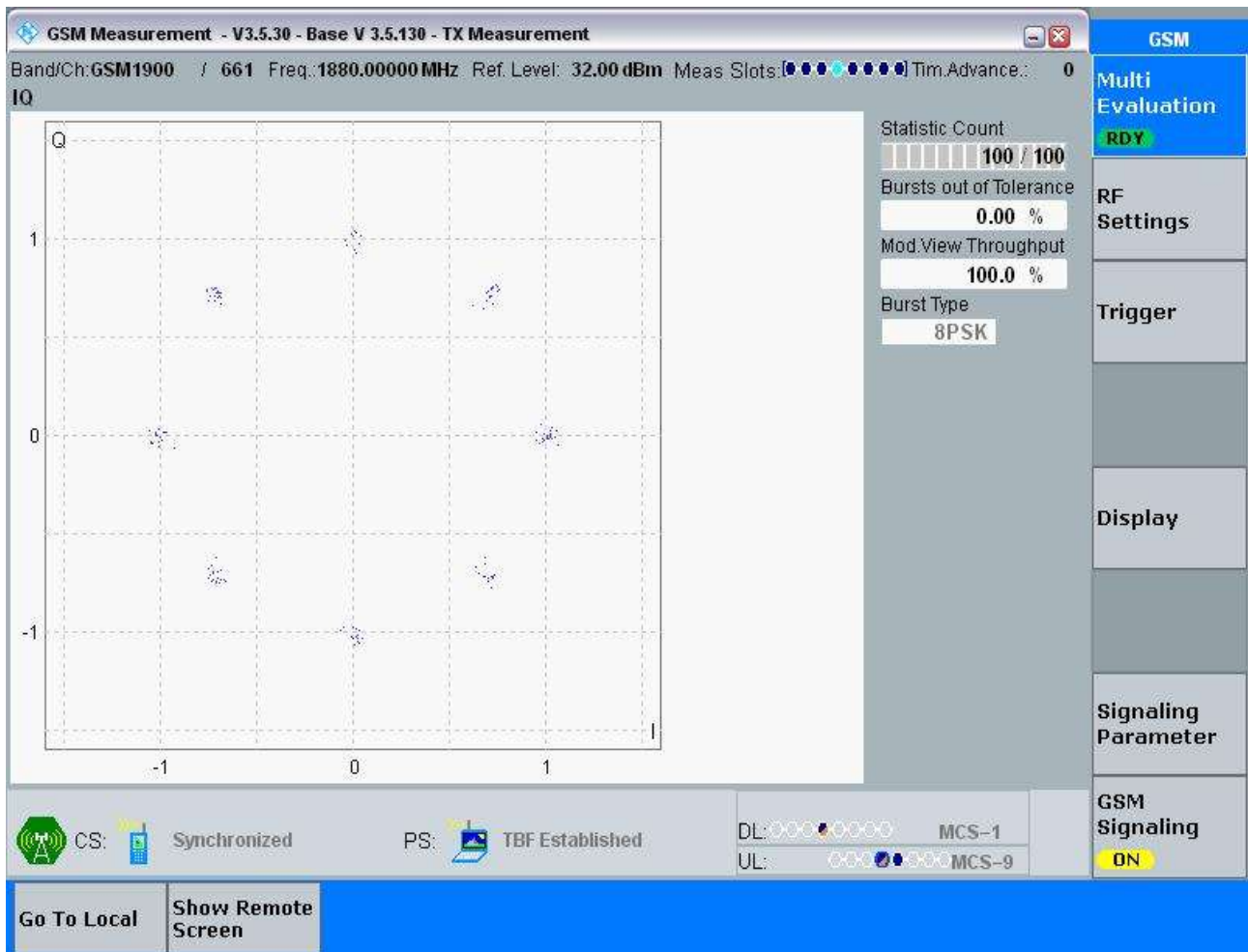
#### 3.1.2.1 Test Mode = GSM/TM1

##### 3.1.2.1.1 Test Channel = MCH



### 3.1.2.2 Test Mode = GSM/TM2

#### 3.1.2.2.1 Test Channel = MCH





## 4Appendix\_D: Bandwidth

### Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [kHz]	Emission Bandwidth [kHz]	Verdict
GSM850	GSM/TM1	LCH	241.66	319.5	Pass
		MCH	242.54	313.8	Pass
		HCH	245.08	308.2	Pass
	GSM/TM2	LCH	256.40	334.7	Pass
		MCH	251.94	324.7	Pass
		HCH	256.99	316.7	Pass
PCS1900	GSM/TM1	LCH	246.80	315.6	Pass
		MCH	248.12	311.8	Pass
		HCH	246.51	319.0	Pass
	GSM/TM2	LCH	250.01	318.9	Pass
		MCH	247.33	315.3	Pass
		HCH	253.35	317.4	Pass

Part II - Test Plots

4.1 For GSM

4.1.1 Test Band = GSM850

4.1.1.1 Test Mode = GSM/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

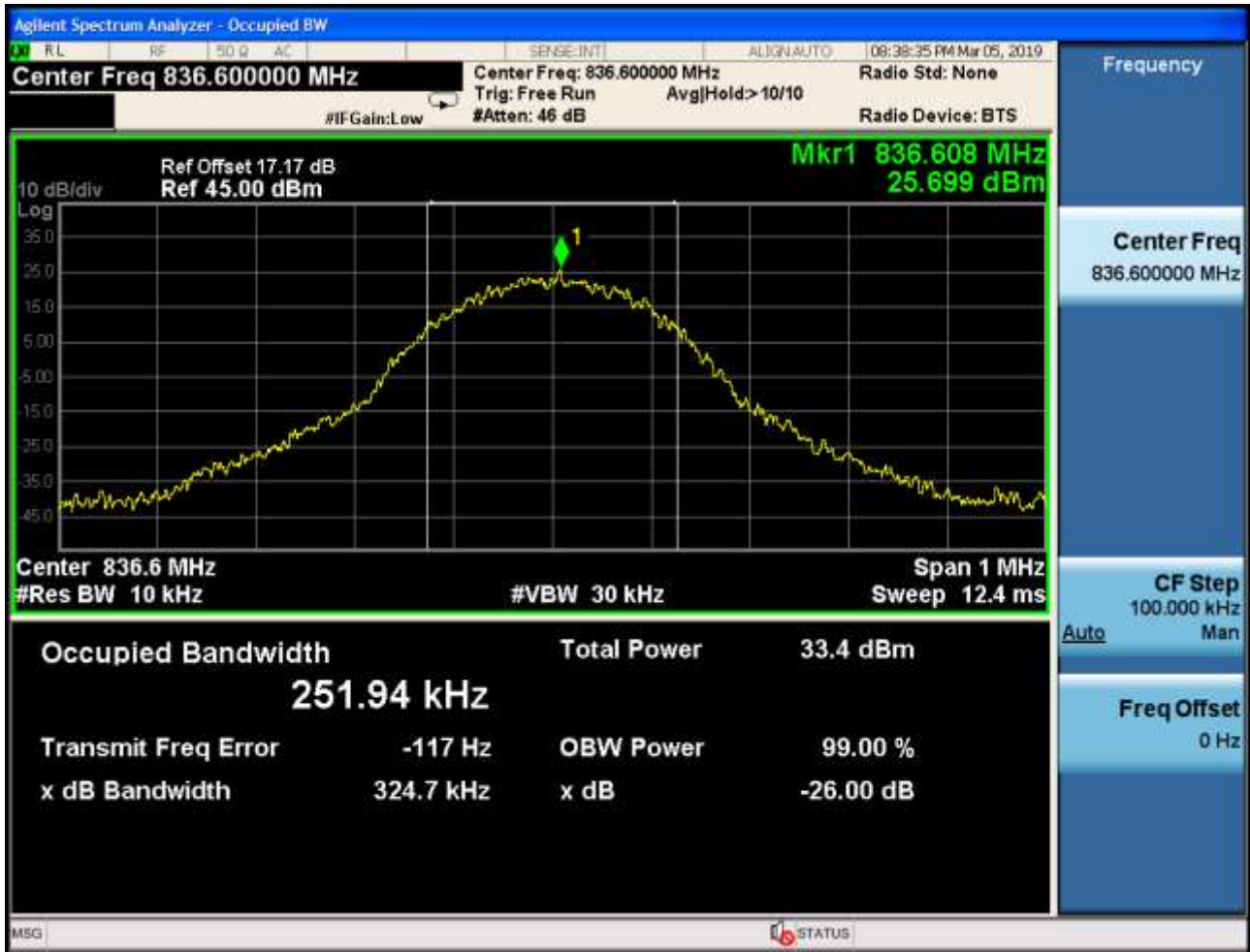


4.1.1.2 Test Mode = GSM/TM2

4.1.1.2.1 Test Channel = LCH



4.1.1.2.2 Test Channel = MCH





4.1.1.2.3 Test Channel = HCH



4.1.2 Test Band = PCS1900

4.1.2.1 Test Mode = GSM/TM1

4.1.2.1.1 Test Channel = LCH

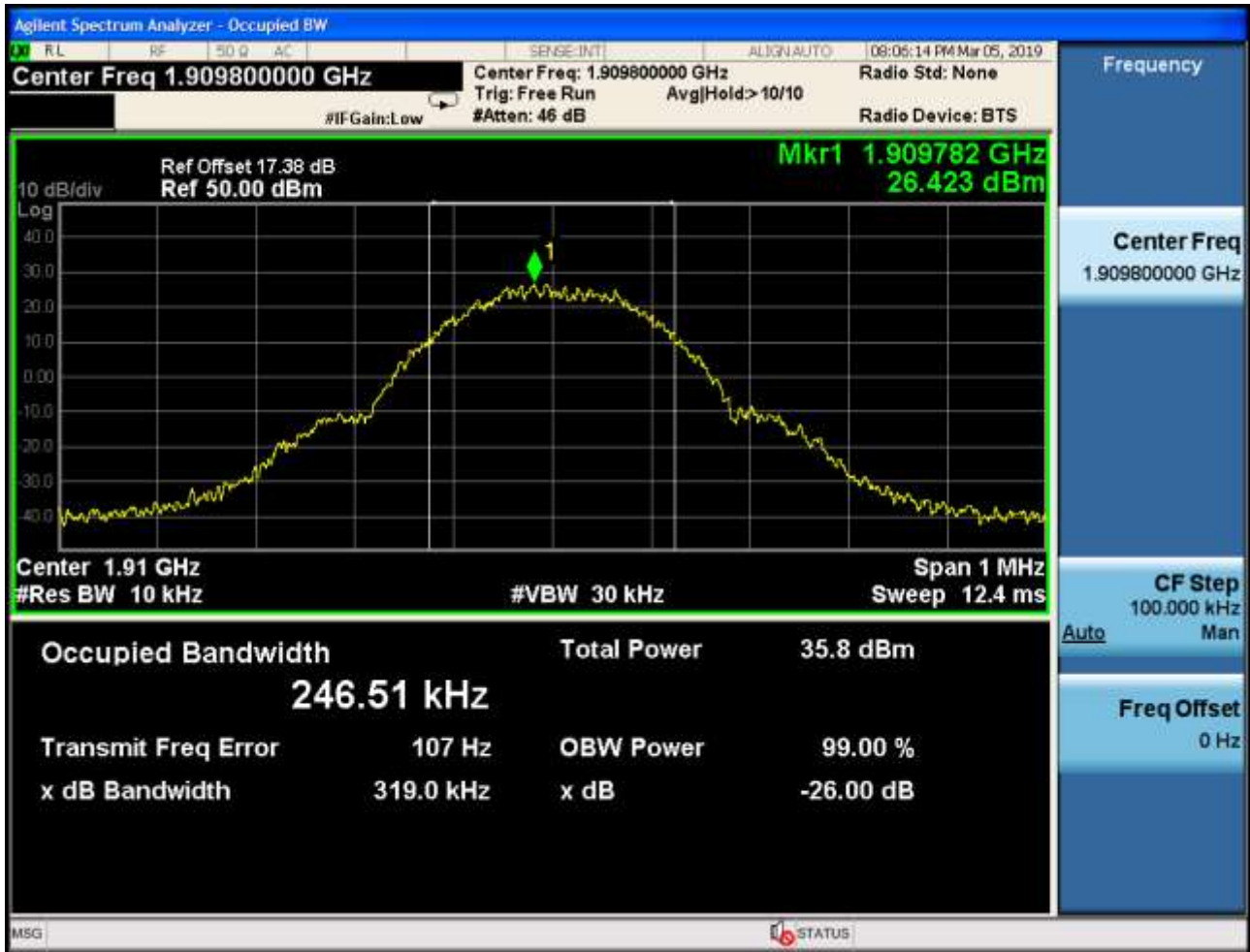




4.1.2.1.2 Test Channel = MCH



4.1.2.1.3 Test Channel = HCH



4.1.2.2 Test Mode = GSM/TM2

4.1.2.2.1 Test Channel = LCH



4.1.2.2.2 Test Channel = MCH



4.1.2.2.3 Test Channel = HCH



## 5Appendix\_E: Band Edges Compliance

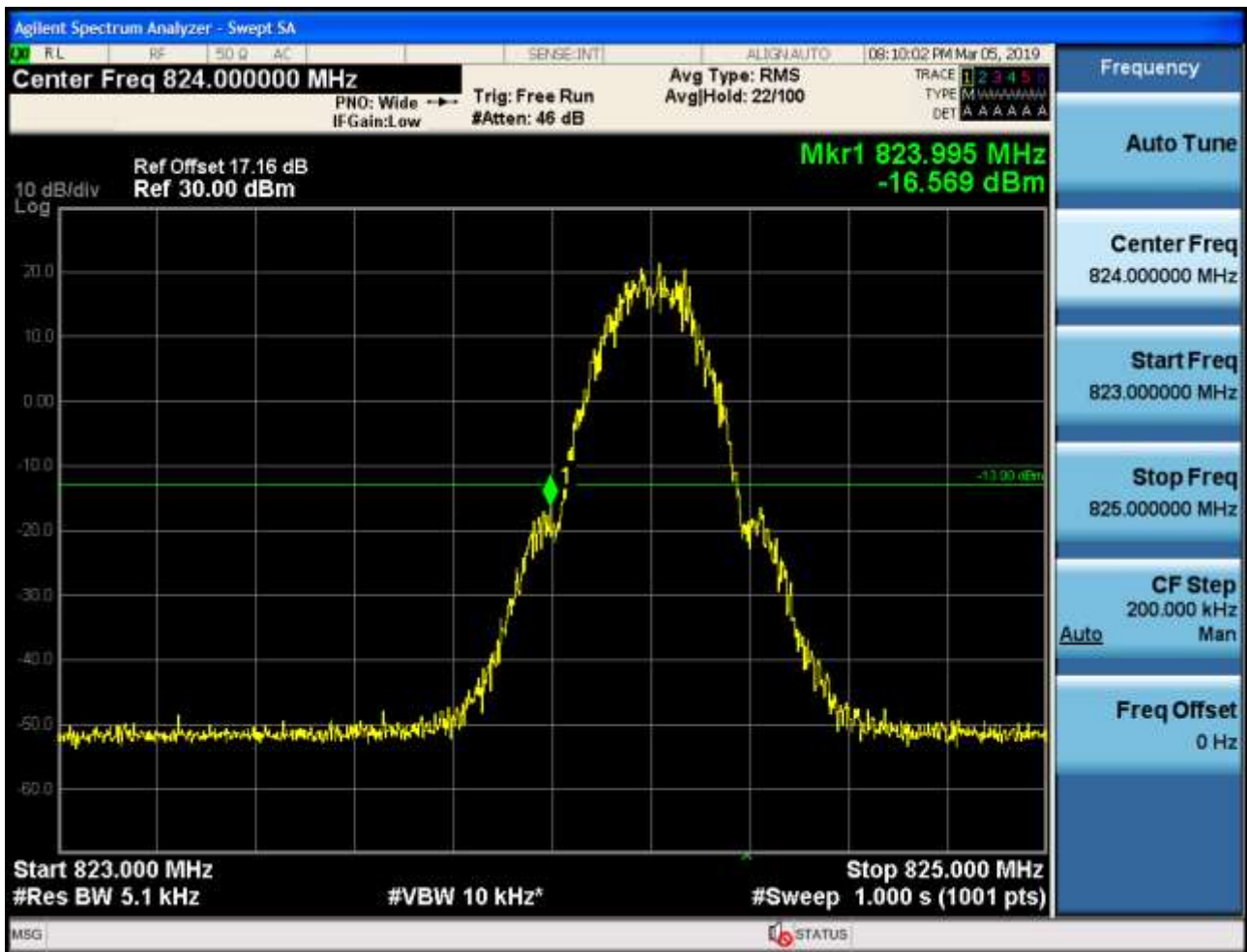
### Part I - Test Plots

#### 5.1 For GSM

##### 5.1.1 Test Band = GSM850

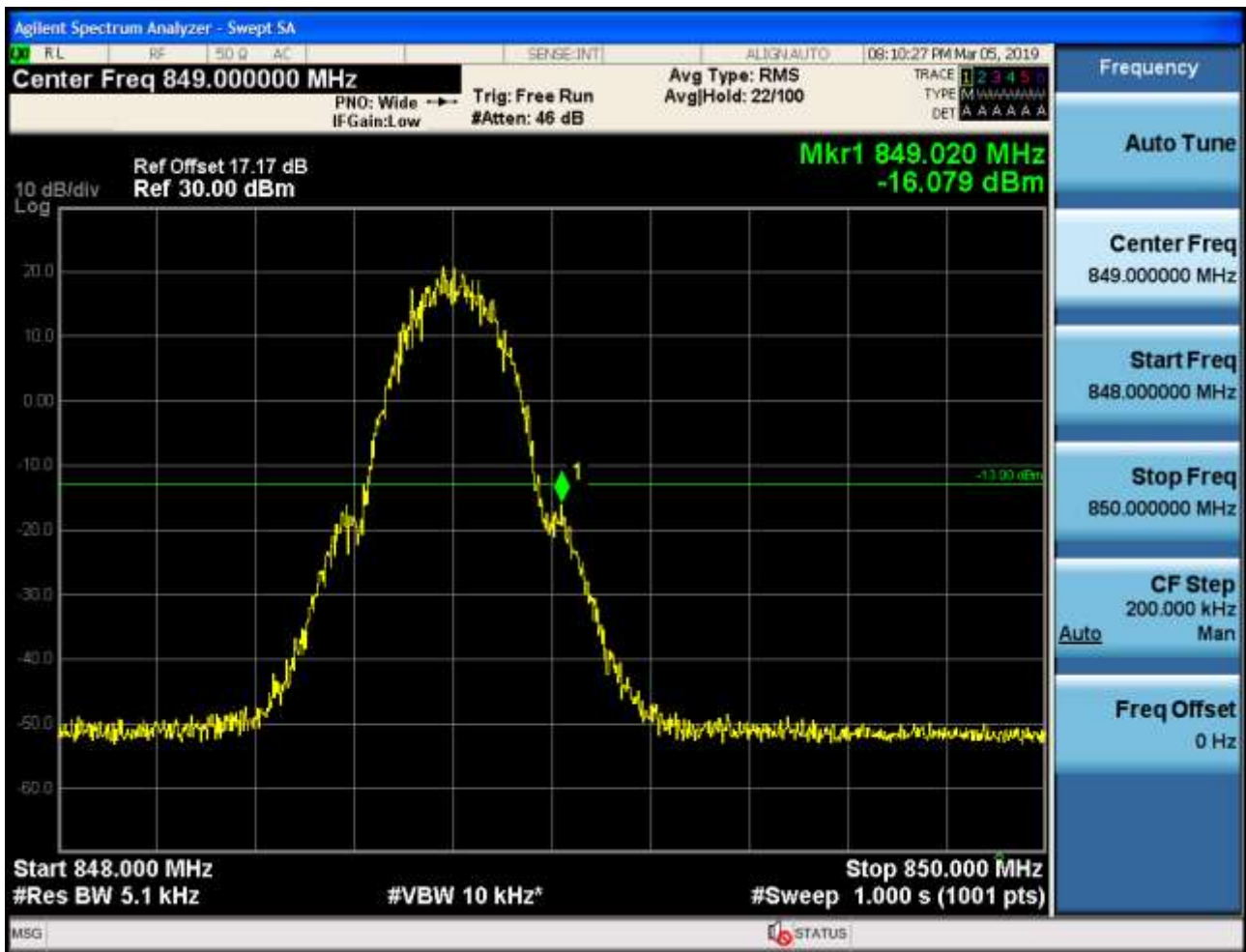
##### 5.1.1.1 Test Mode = GSM/TM1

##### 5.1.1.1.1 Test Channel = LCH



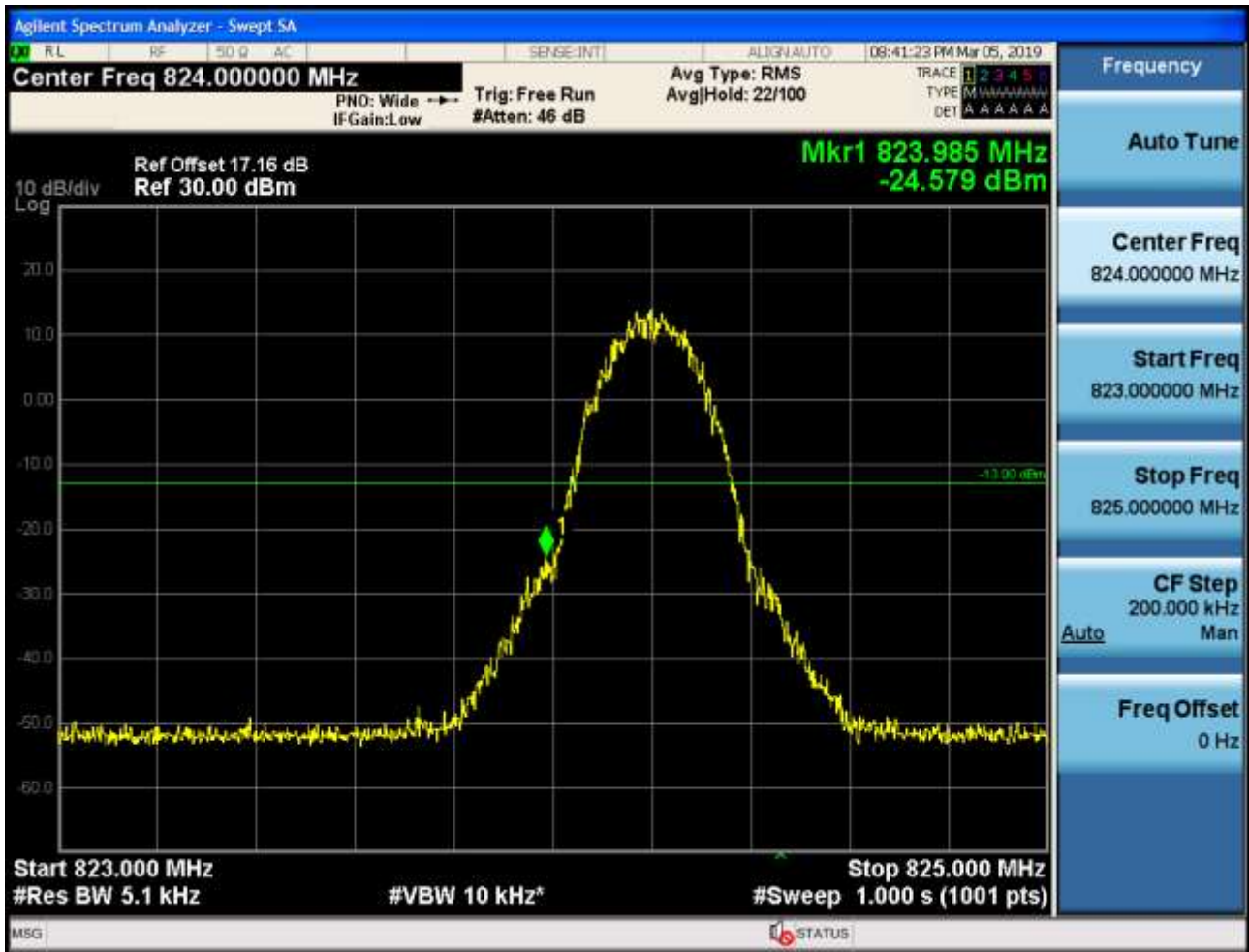


## 5.1.1.1.2 Test Channel = HCH



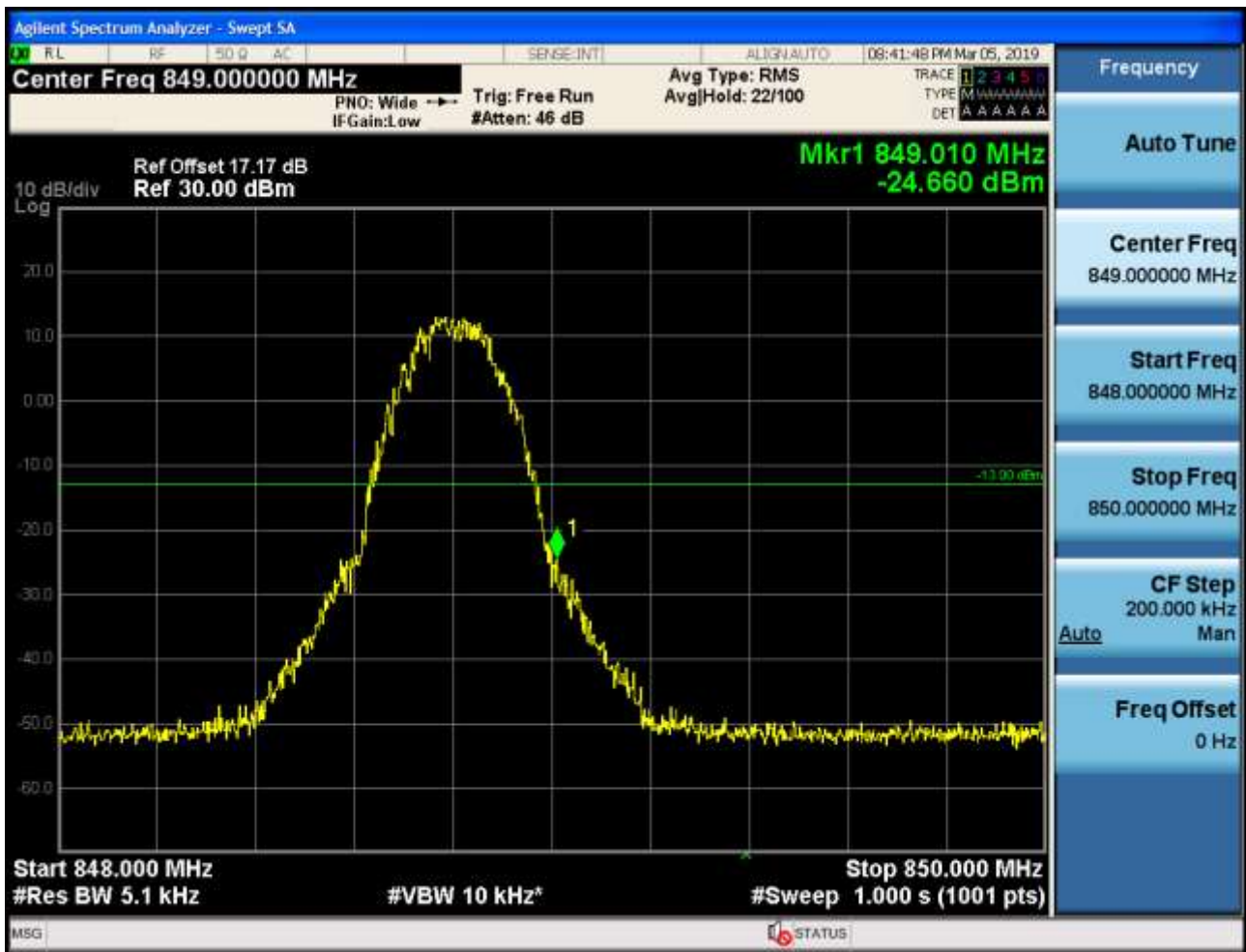
### 5.1.1.2 Test Mode = GSM/TM2

#### 5.1.1.2.1 Test Channel = LCH





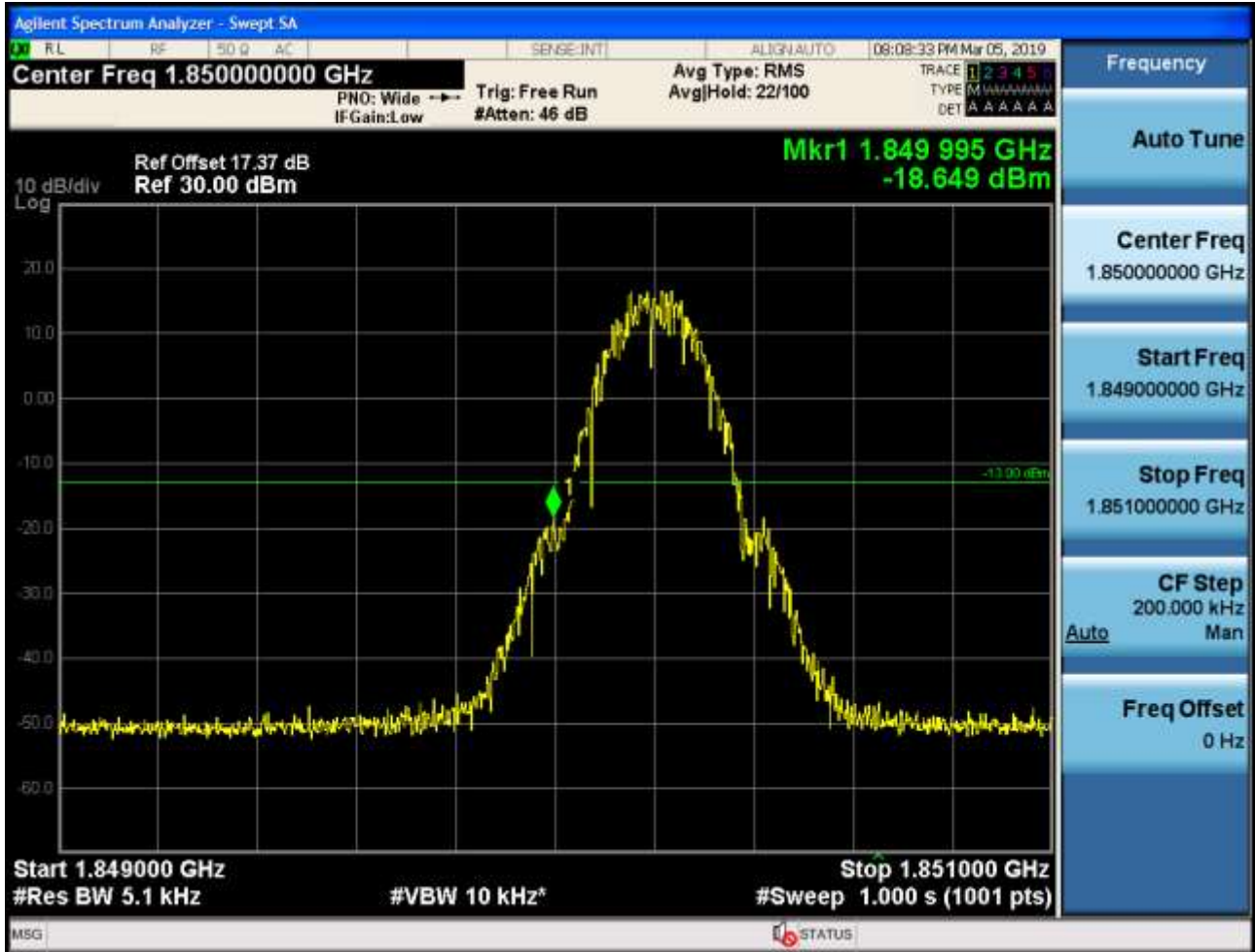
## 5.1.1.2.2 Test Channel = HCH



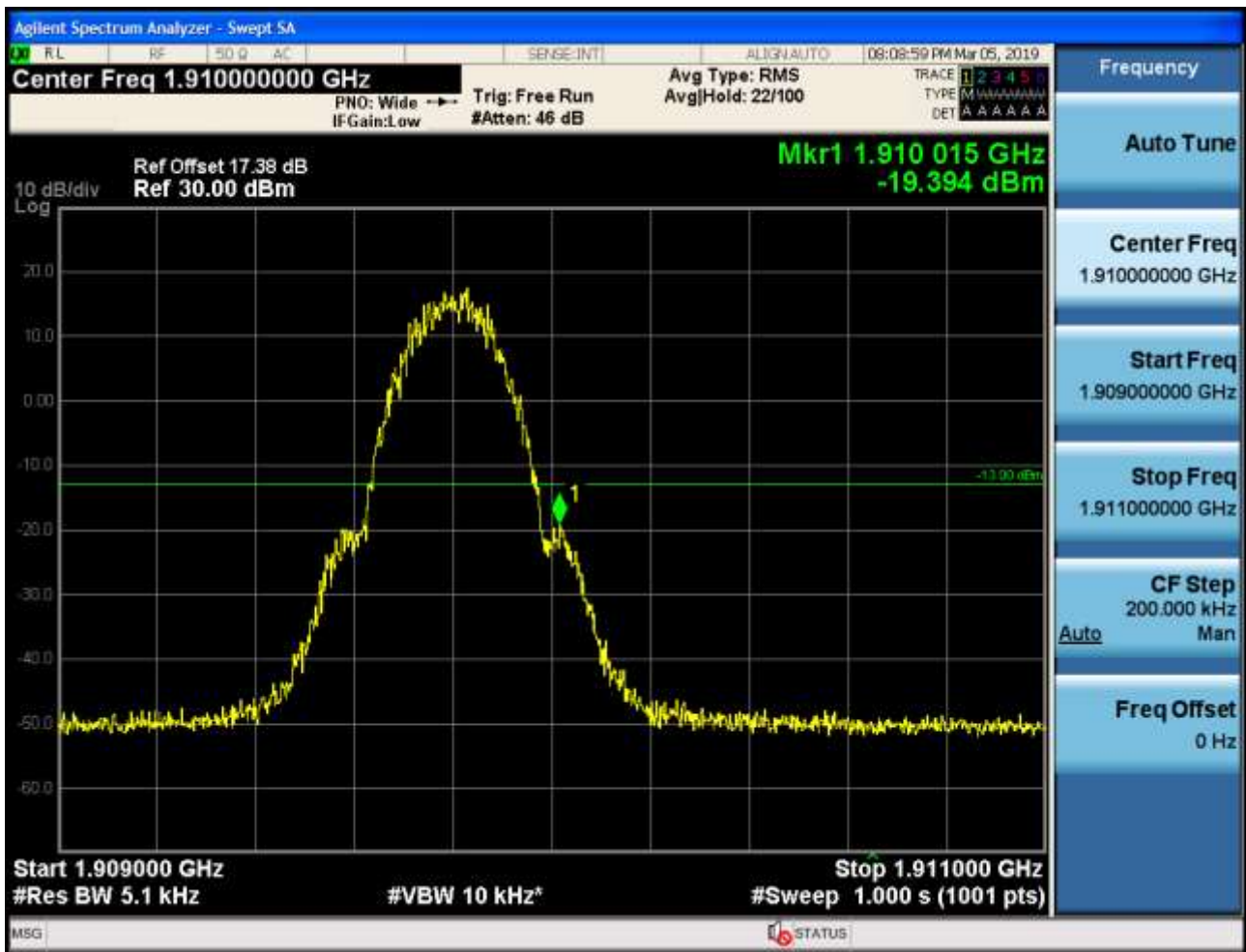
### 5.1.2 Test Band = PCS1900

#### 5.1.2.1 Test Mode = GSM/TM1

##### 5.1.2.1.1 Test Channel = LCH

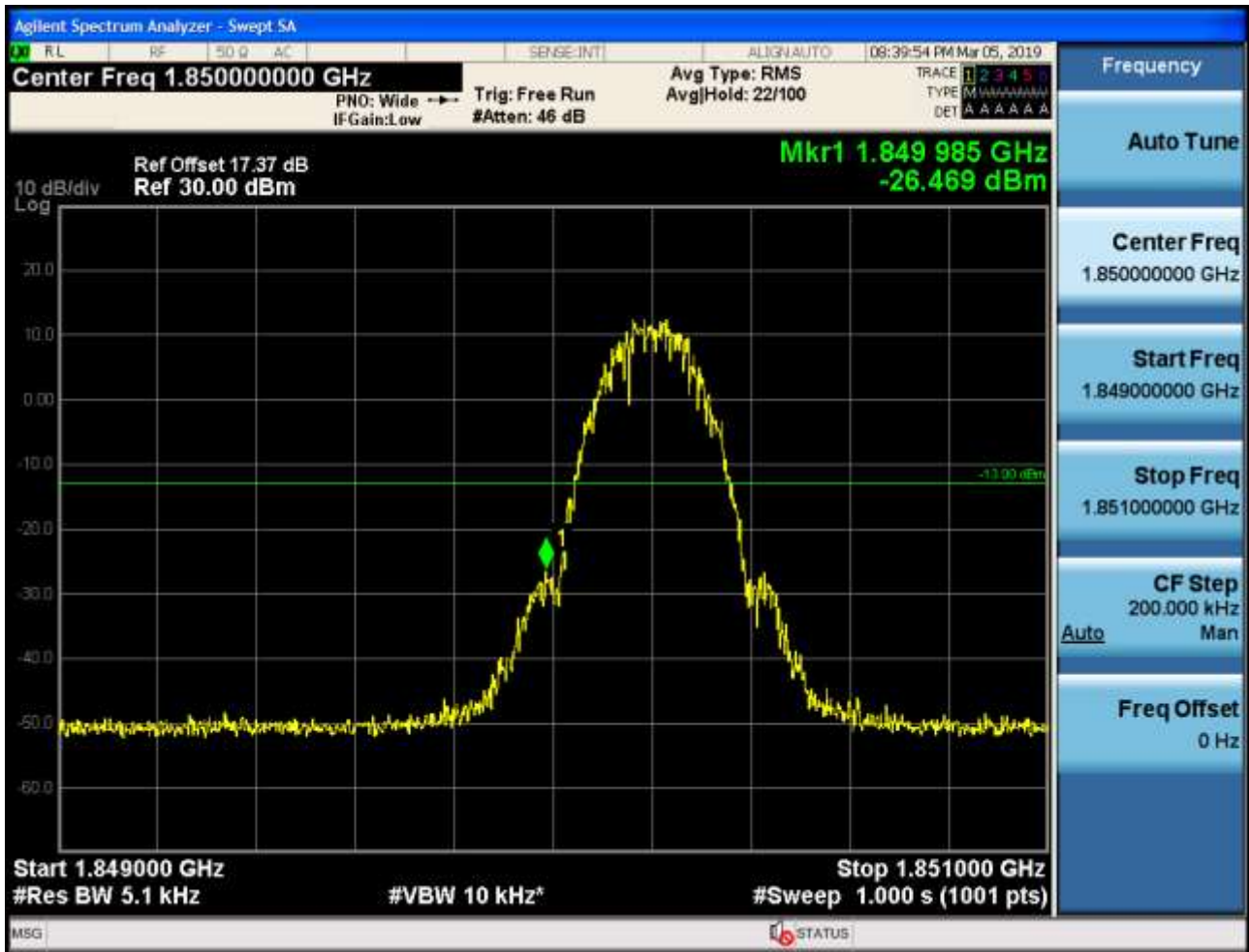


5.1.2.1.2 Test Channel = HCH

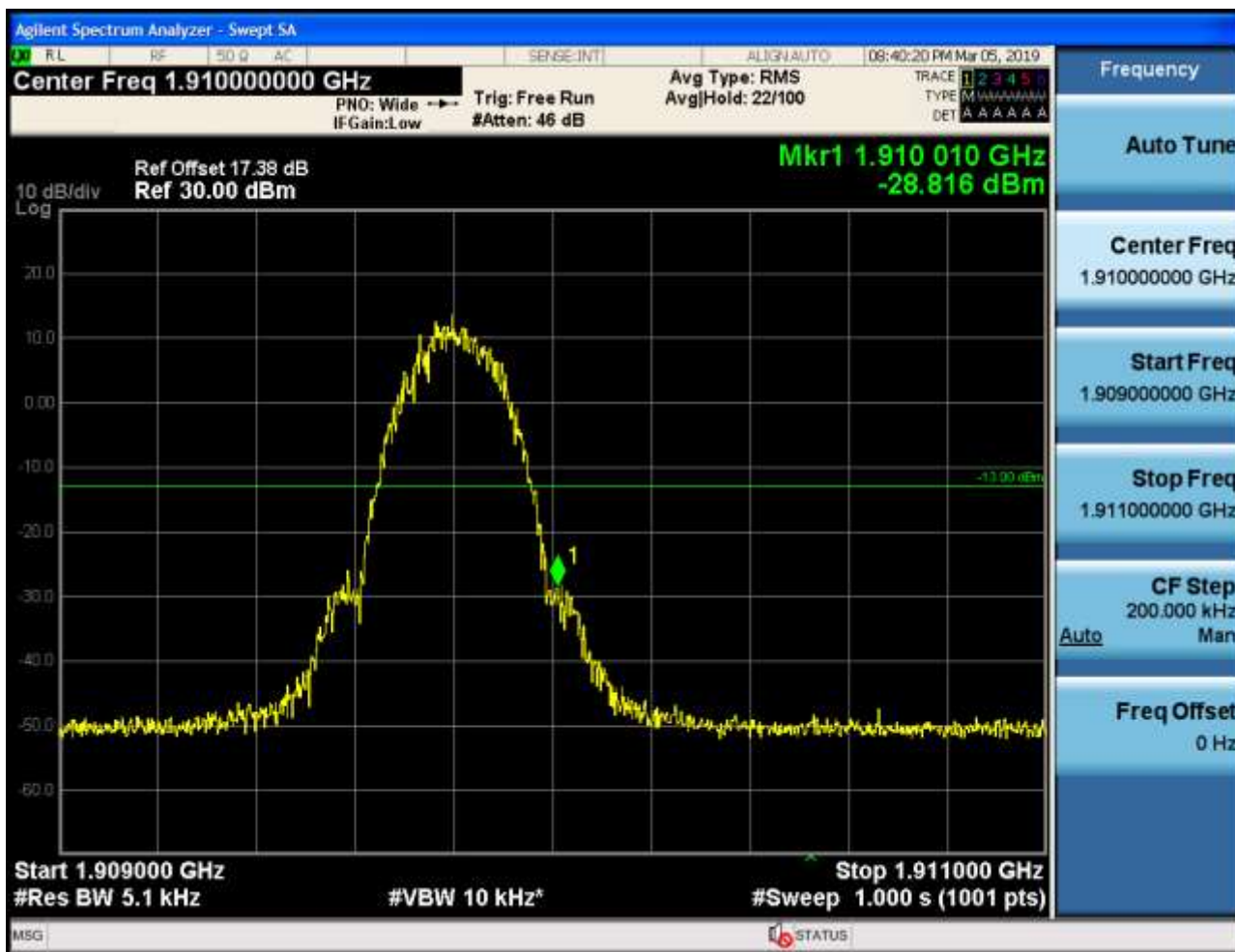


### 5.1.2.2 Test Mode = GSM/TM2

#### 5.1.2.2.1 Test Channel = LCH



### 5.1.2.2.2 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.

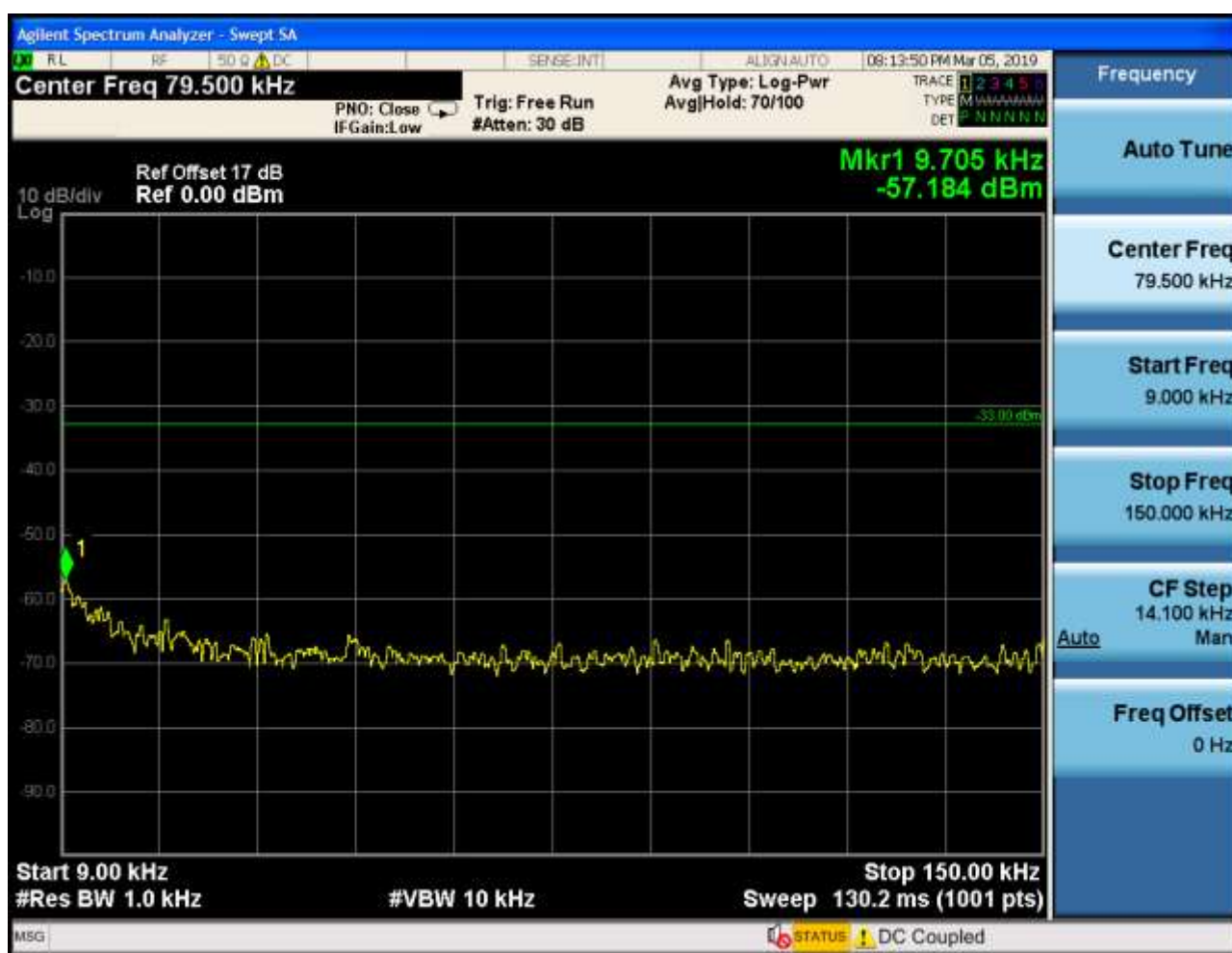
### Part I - Test Plots

#### 6.1 For GSM

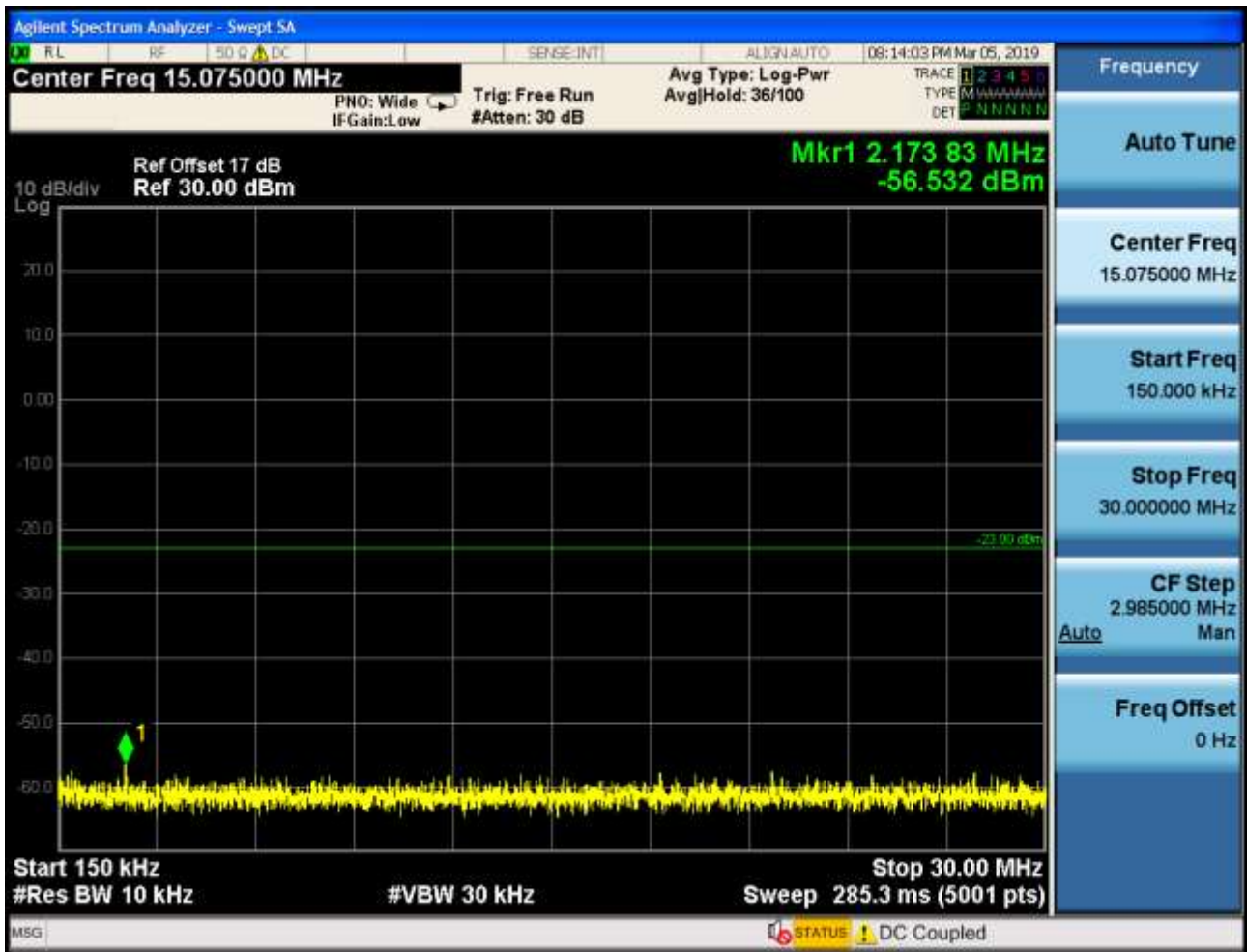
##### 6.1.1 Test Band = GSM850

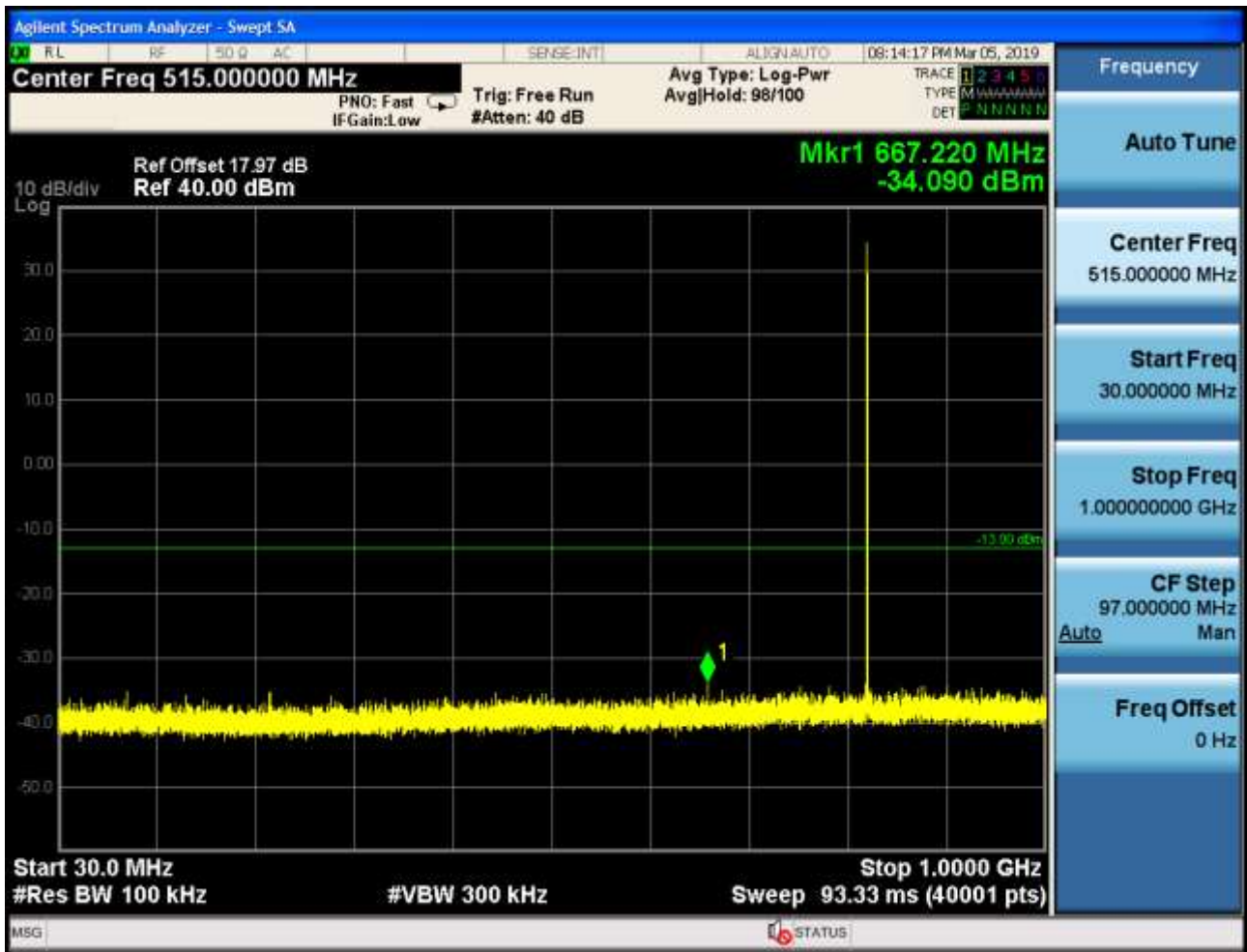
##### 6.1.1.1 Test Mode = GSM/TM1

##### 6.1.1.1.1 Test Channel = LCH







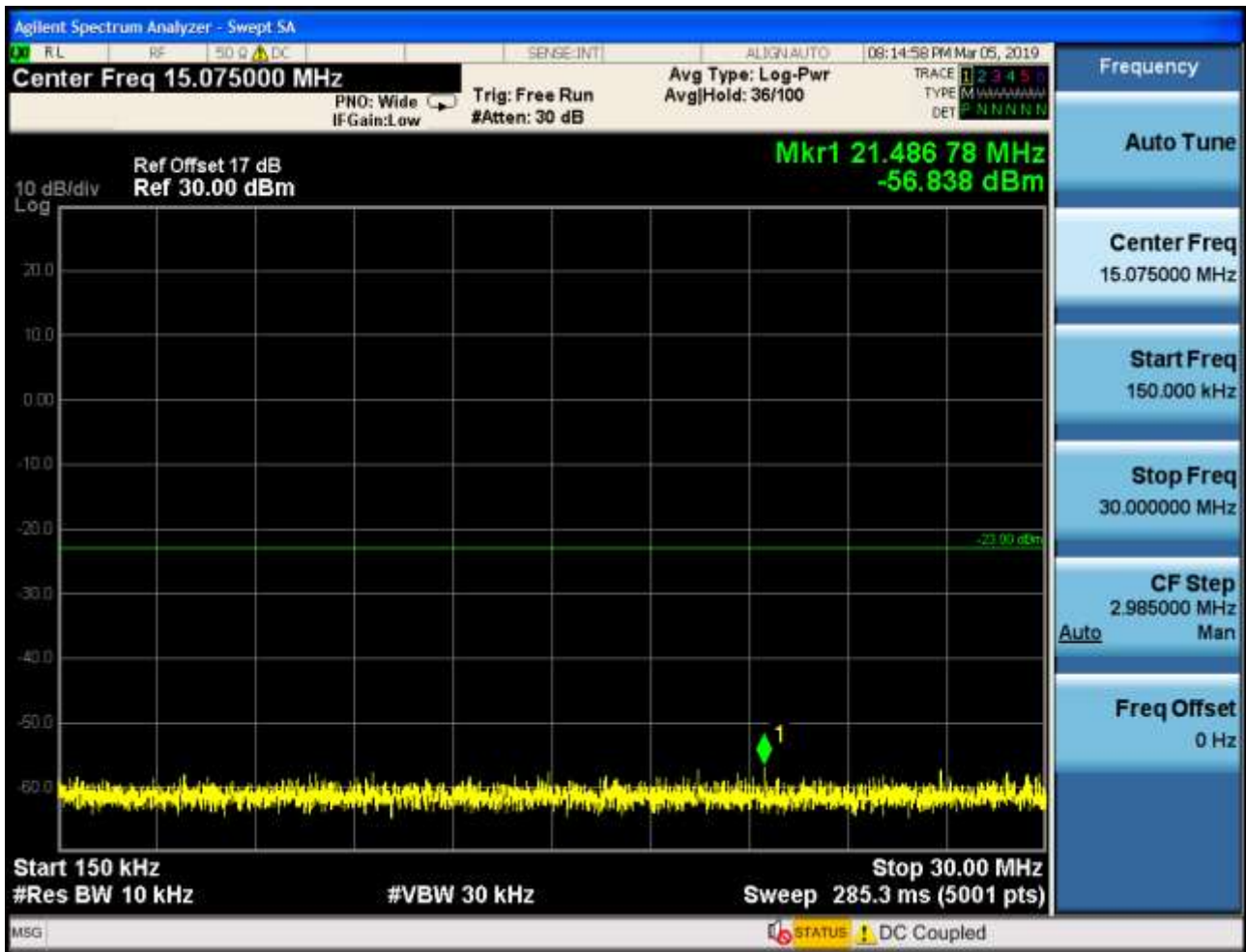






## 6.1.1.1.2 Test Channel = MCH

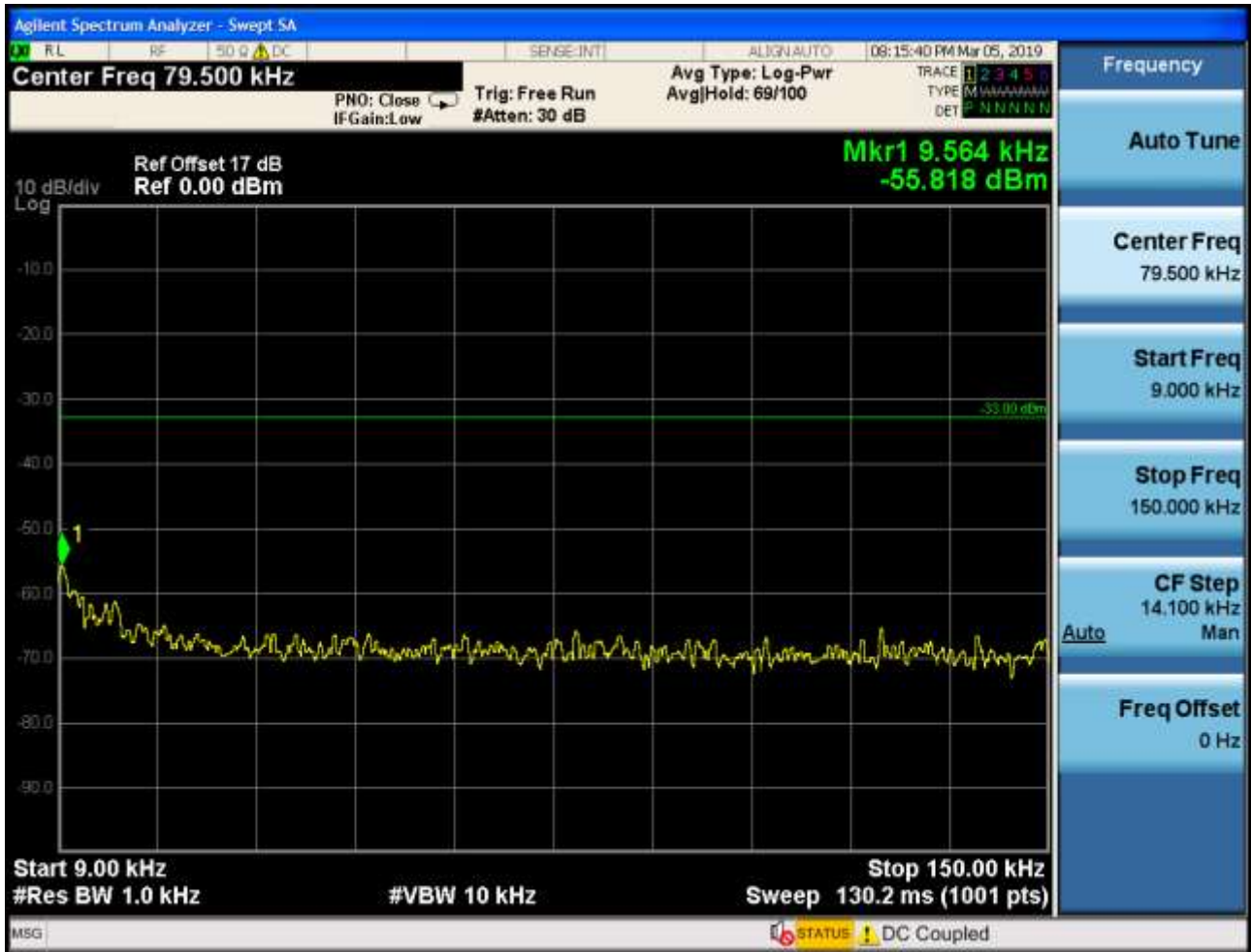




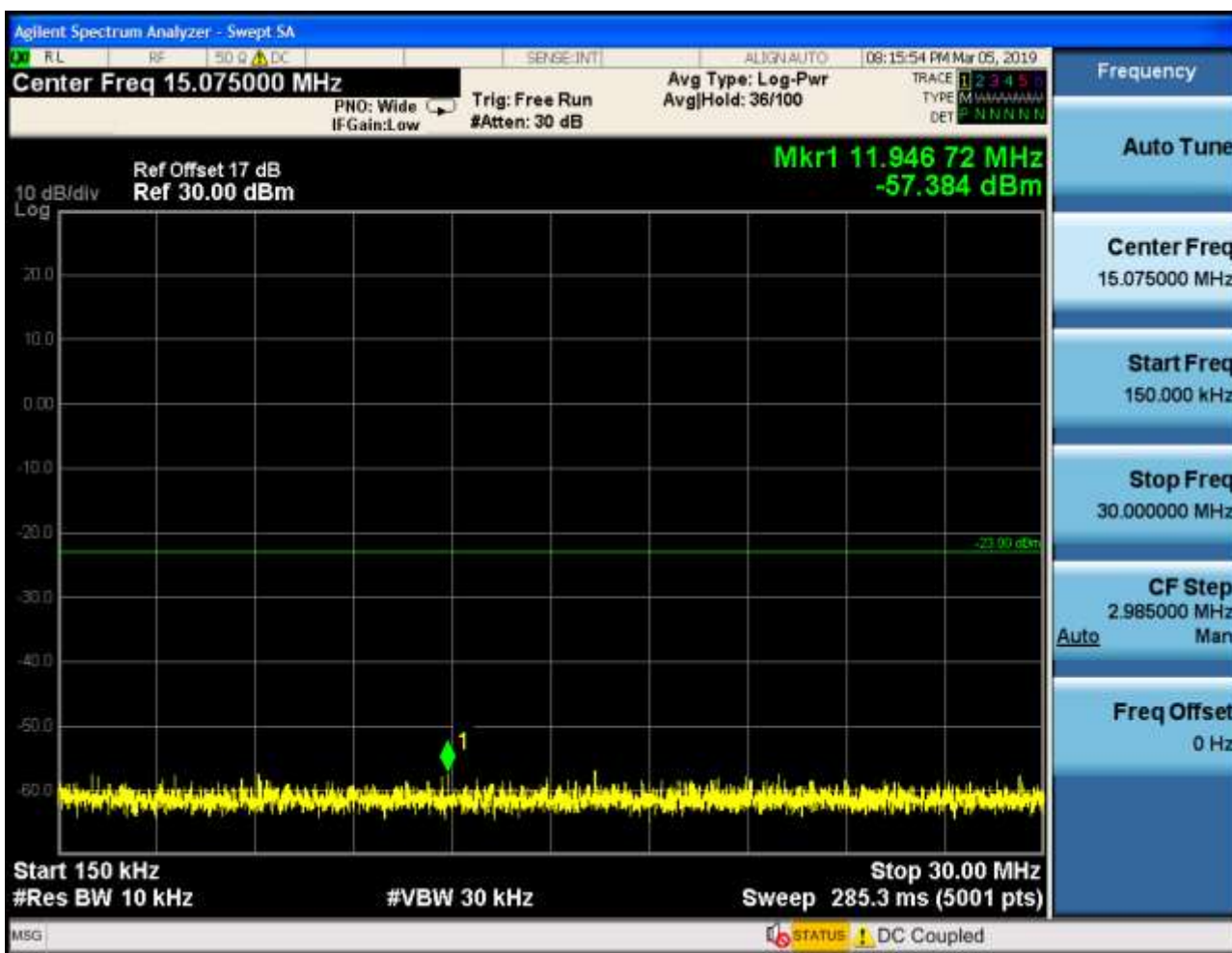


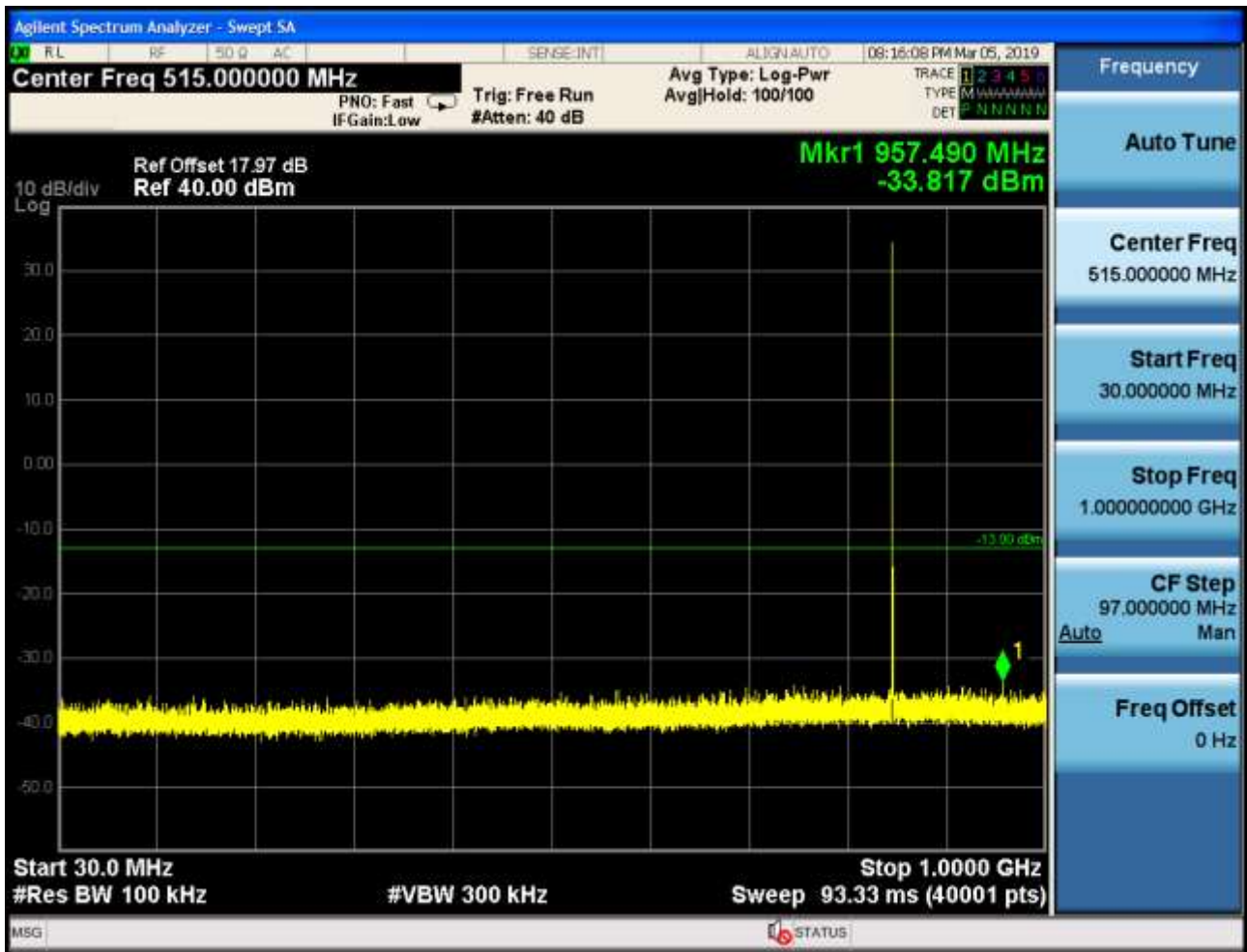


## 6.1.1.1.3 Test Channel = HCH

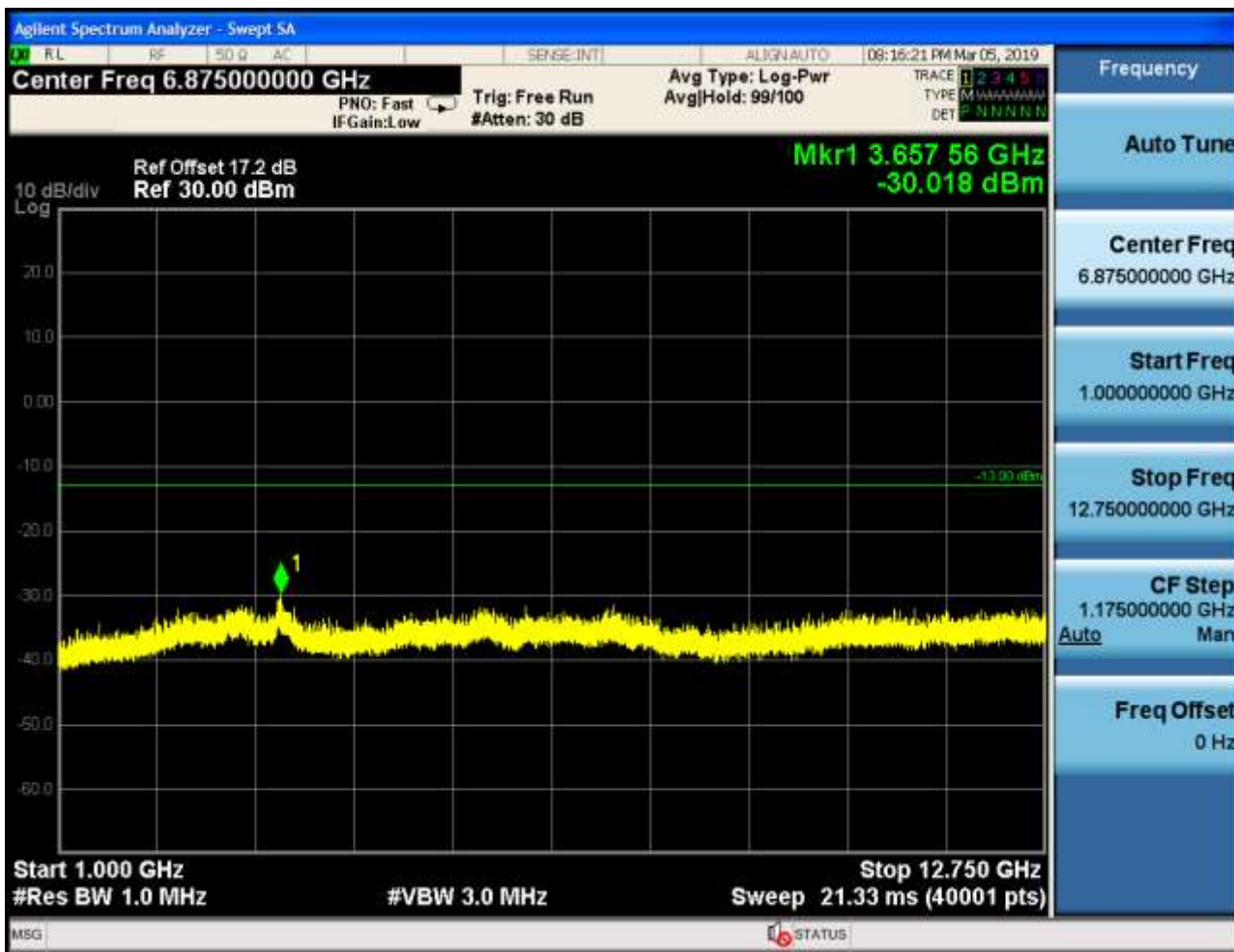






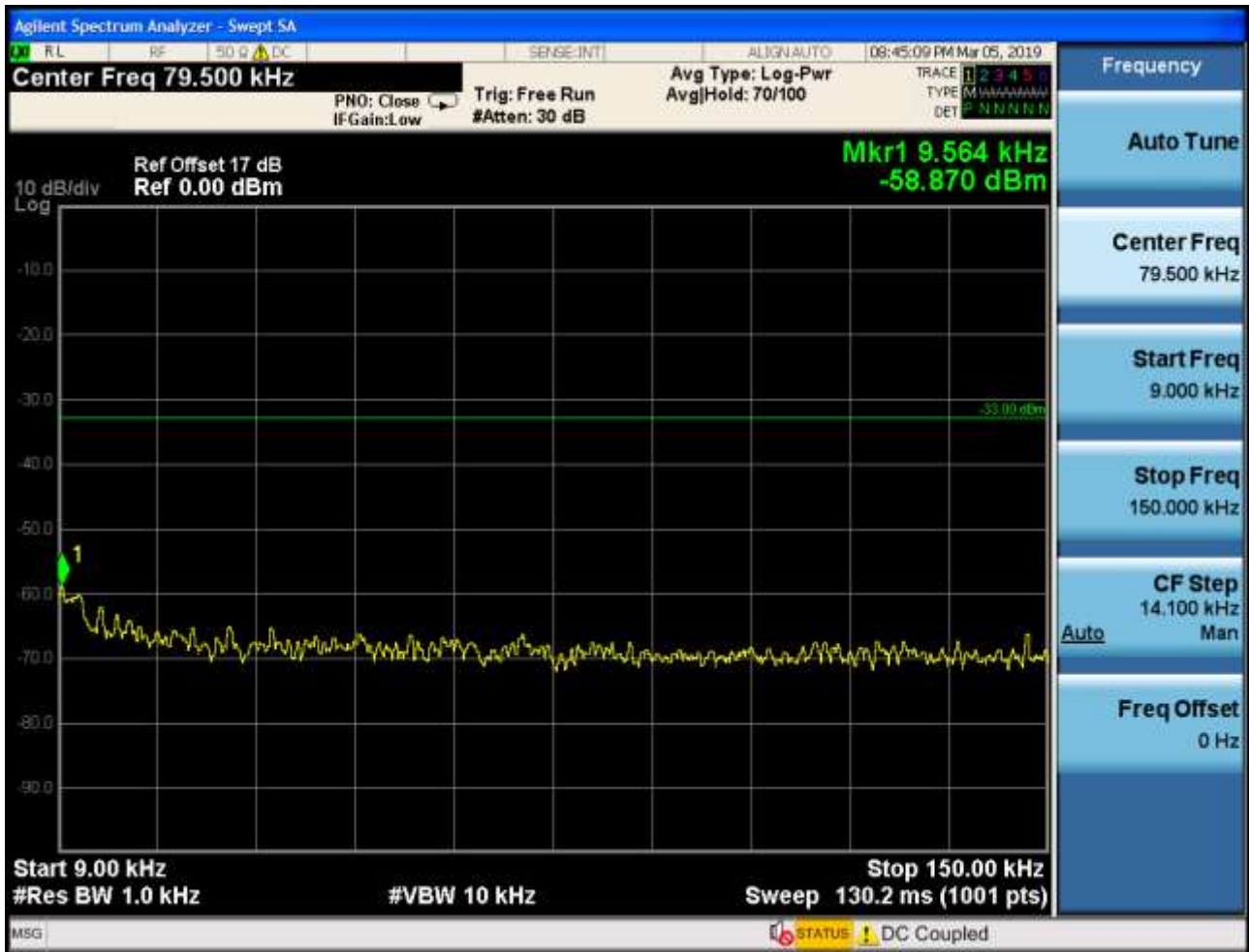




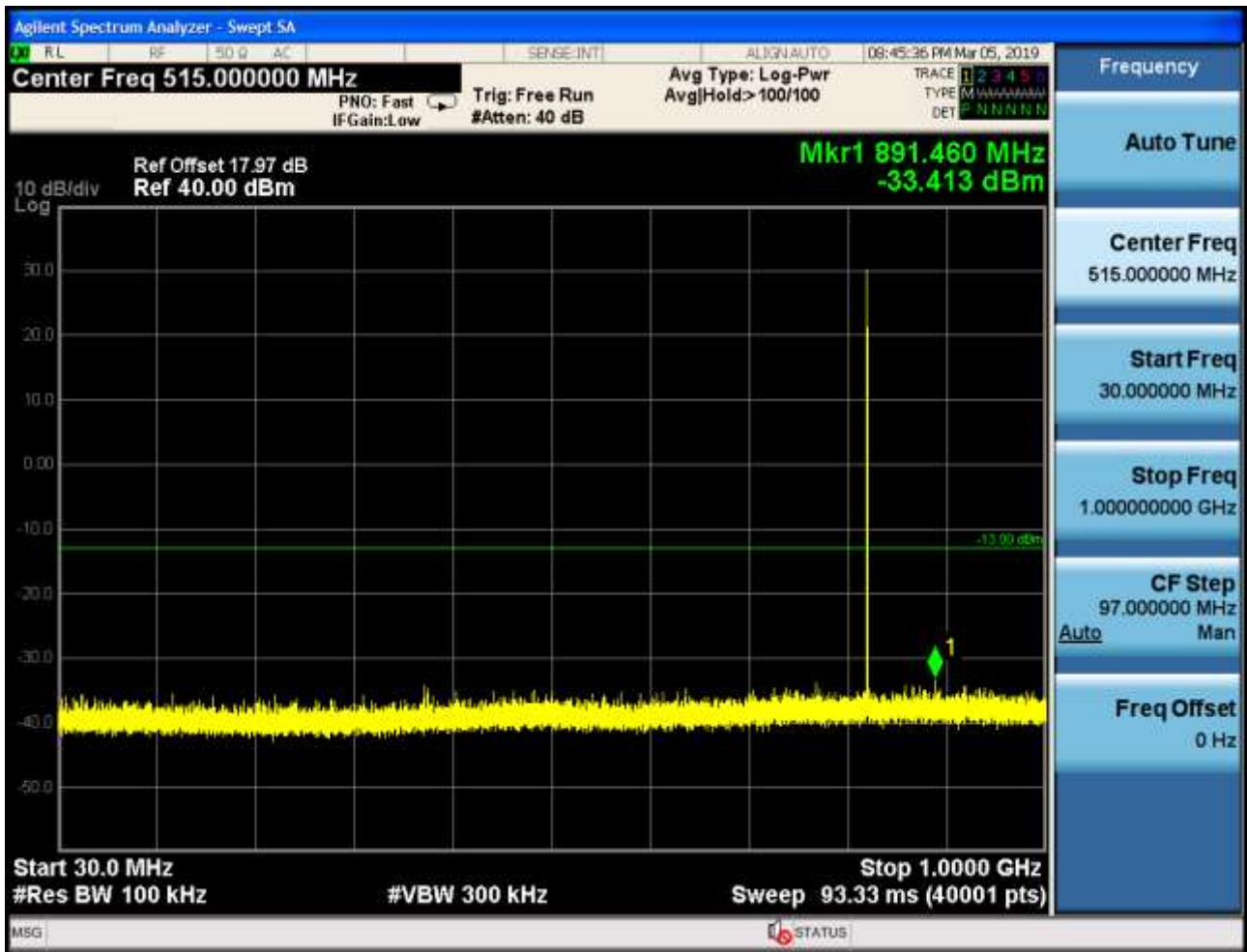


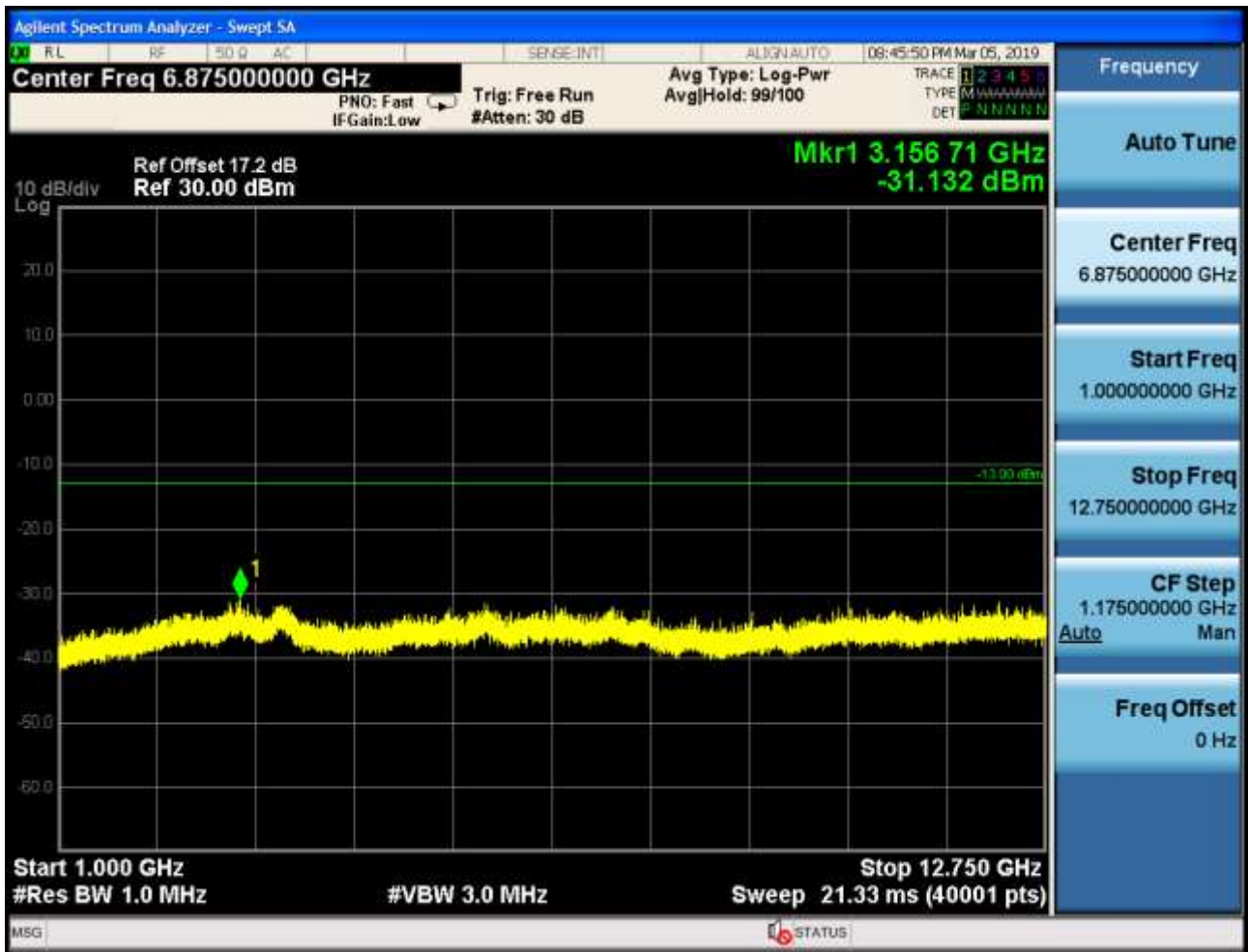
### 6.1.1.2 Test Mode = GSM/TM2

#### 6.1.1.2.1 Test Channel = LCH

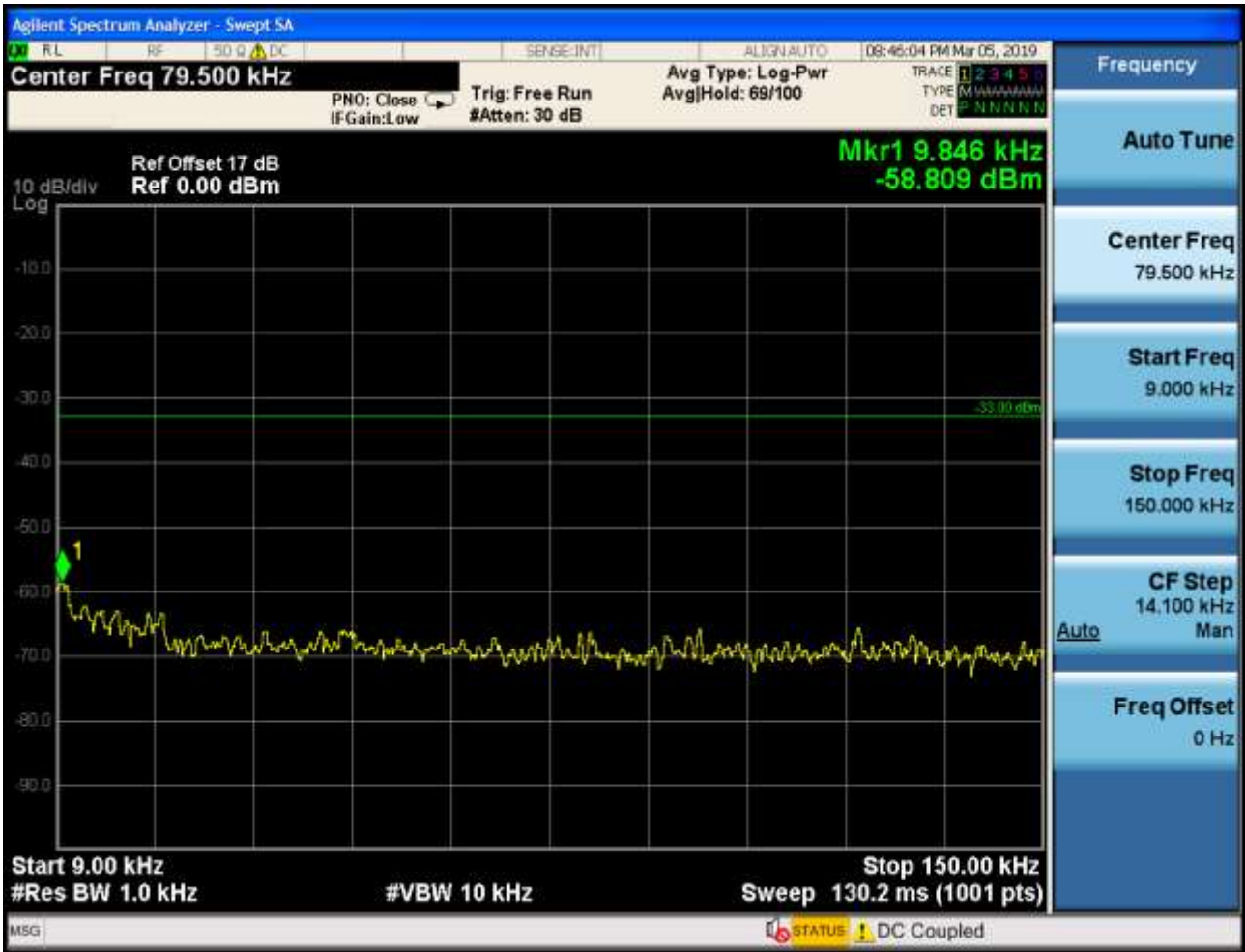




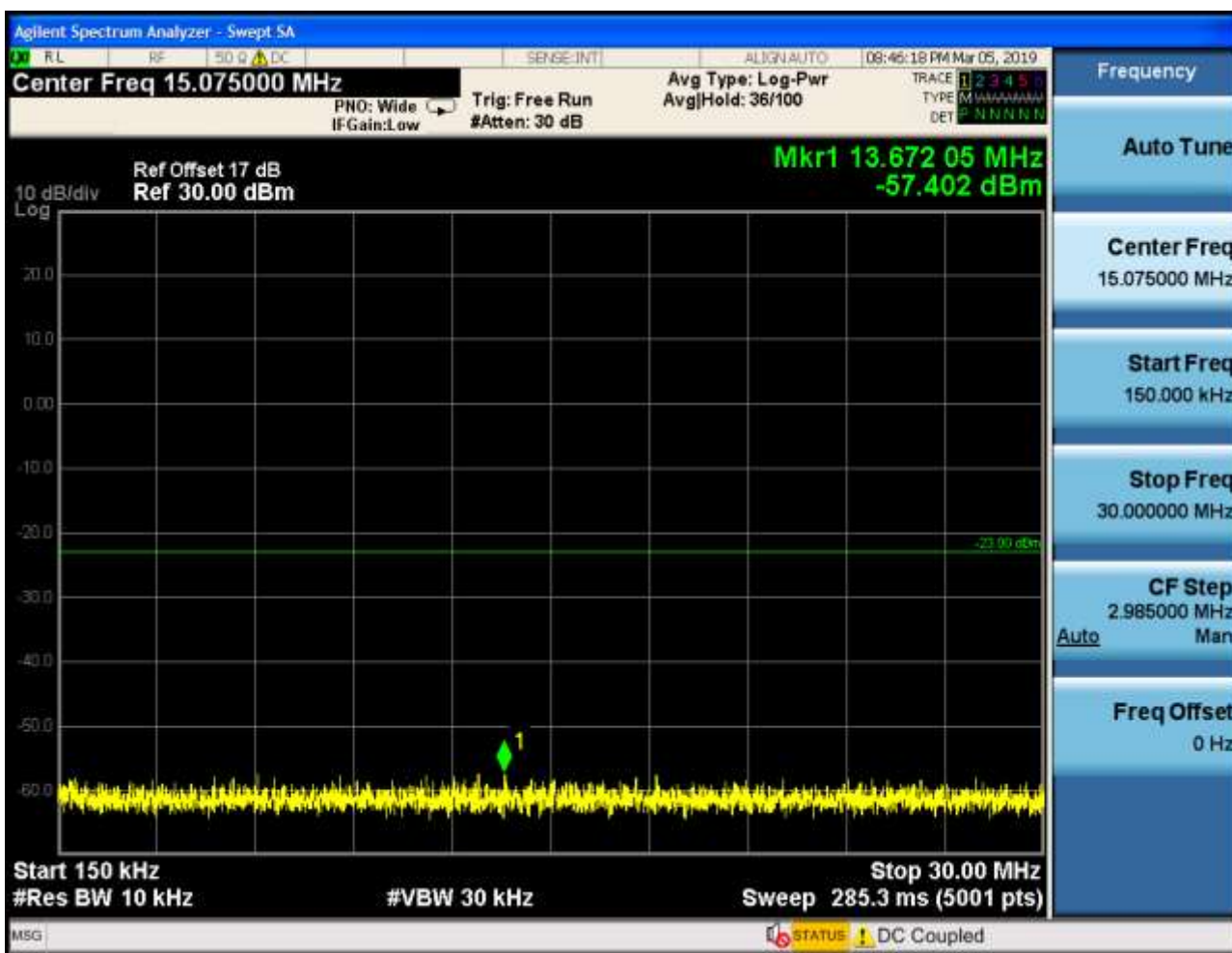


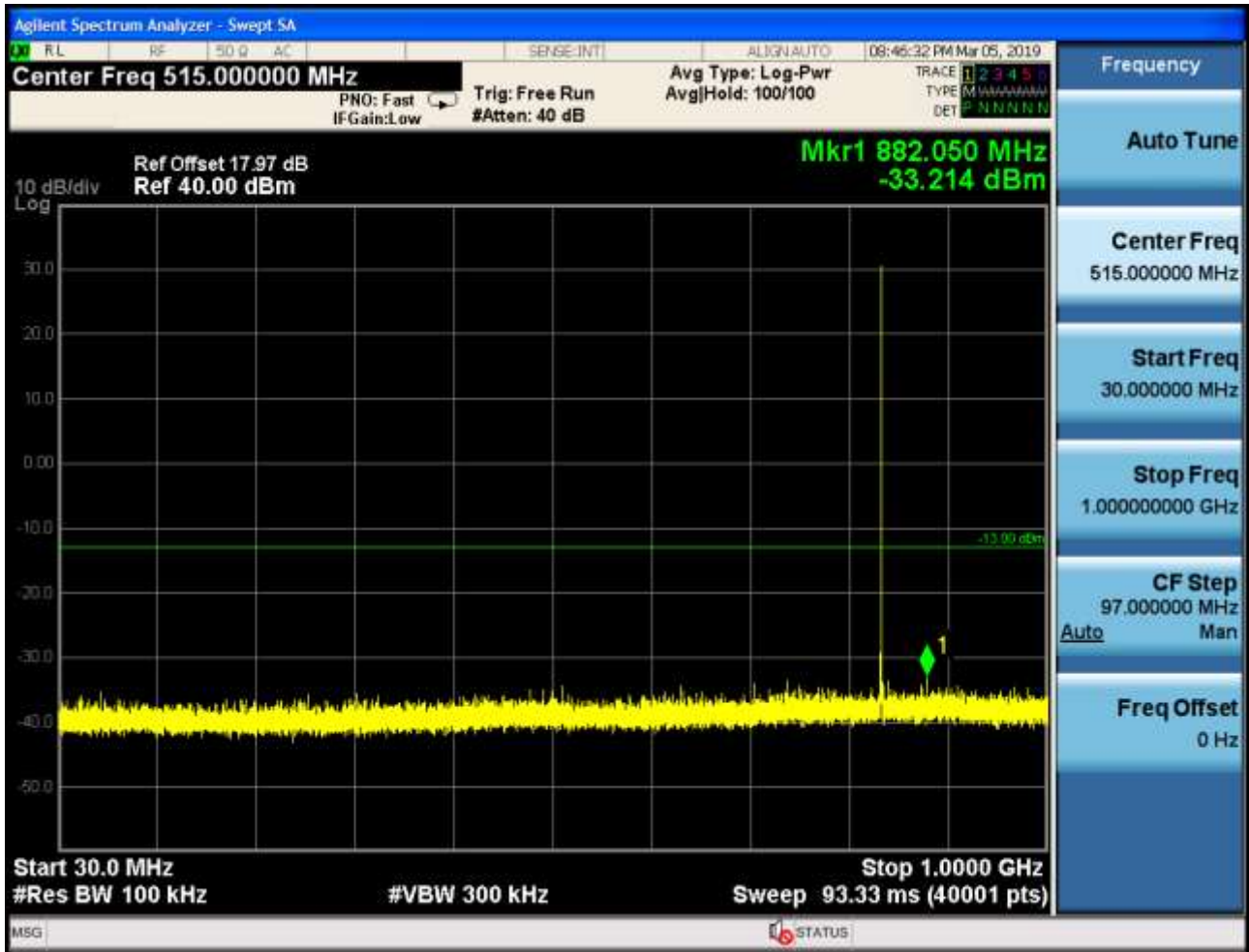


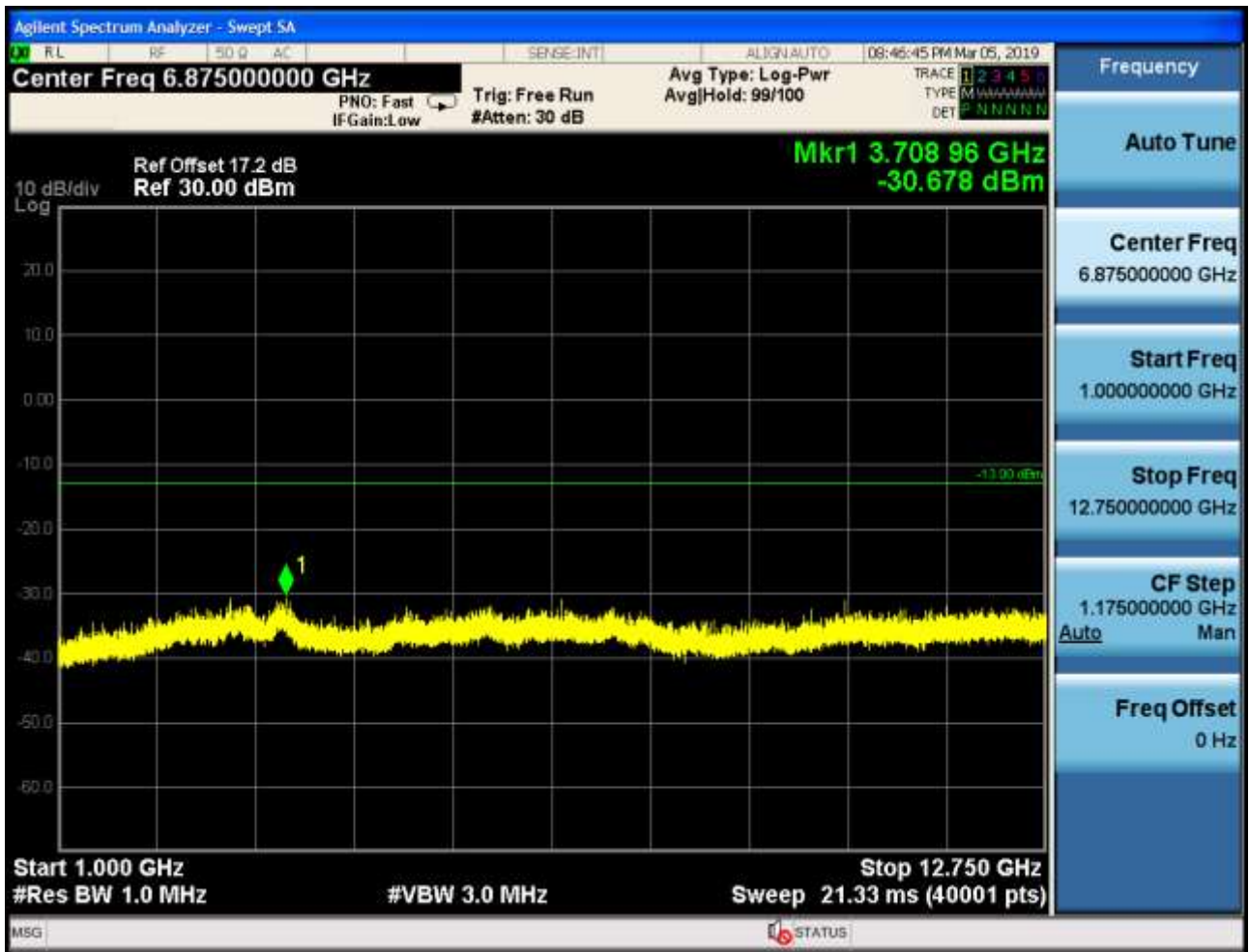
### 6.1.1.2.2 Test Channel = MCH



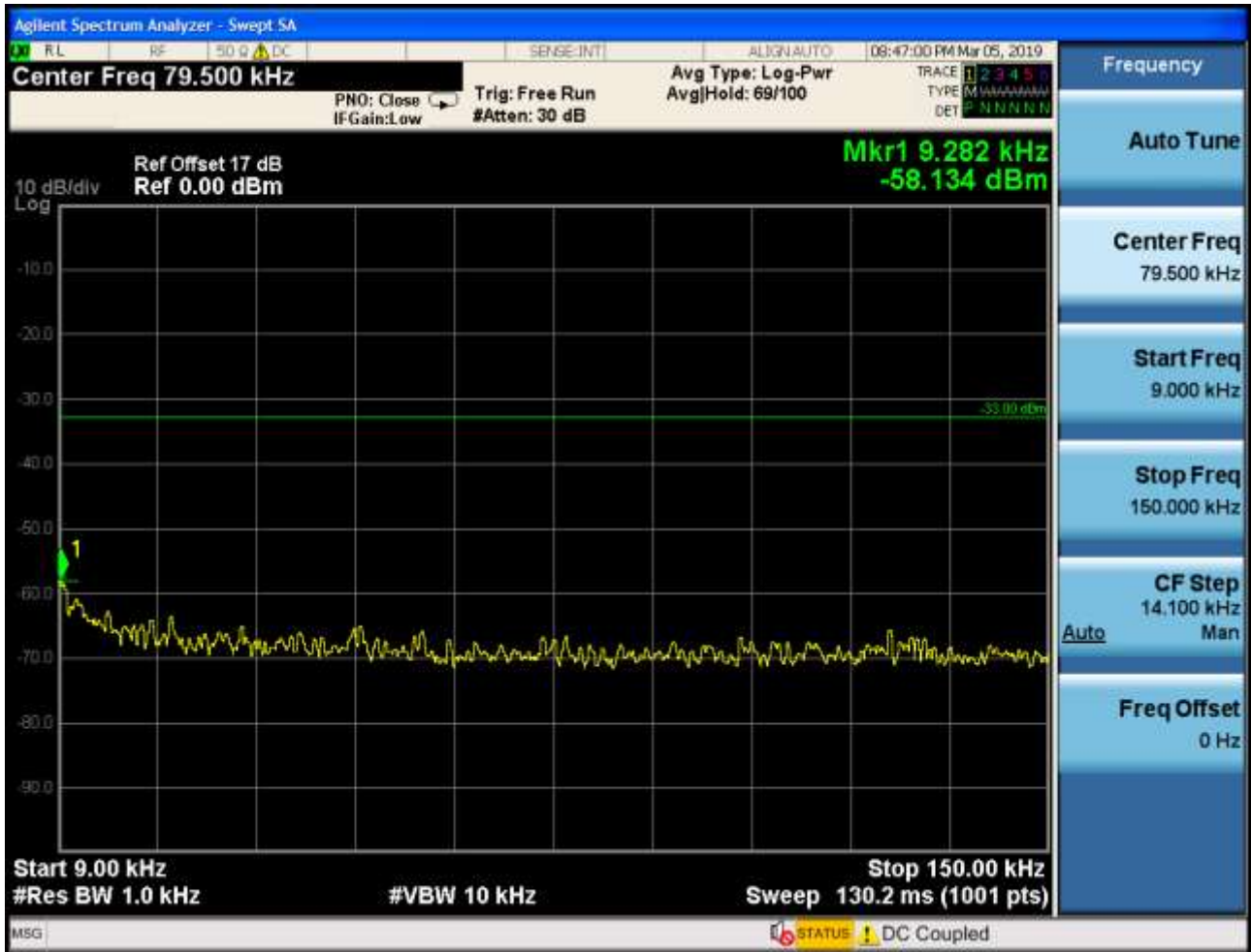




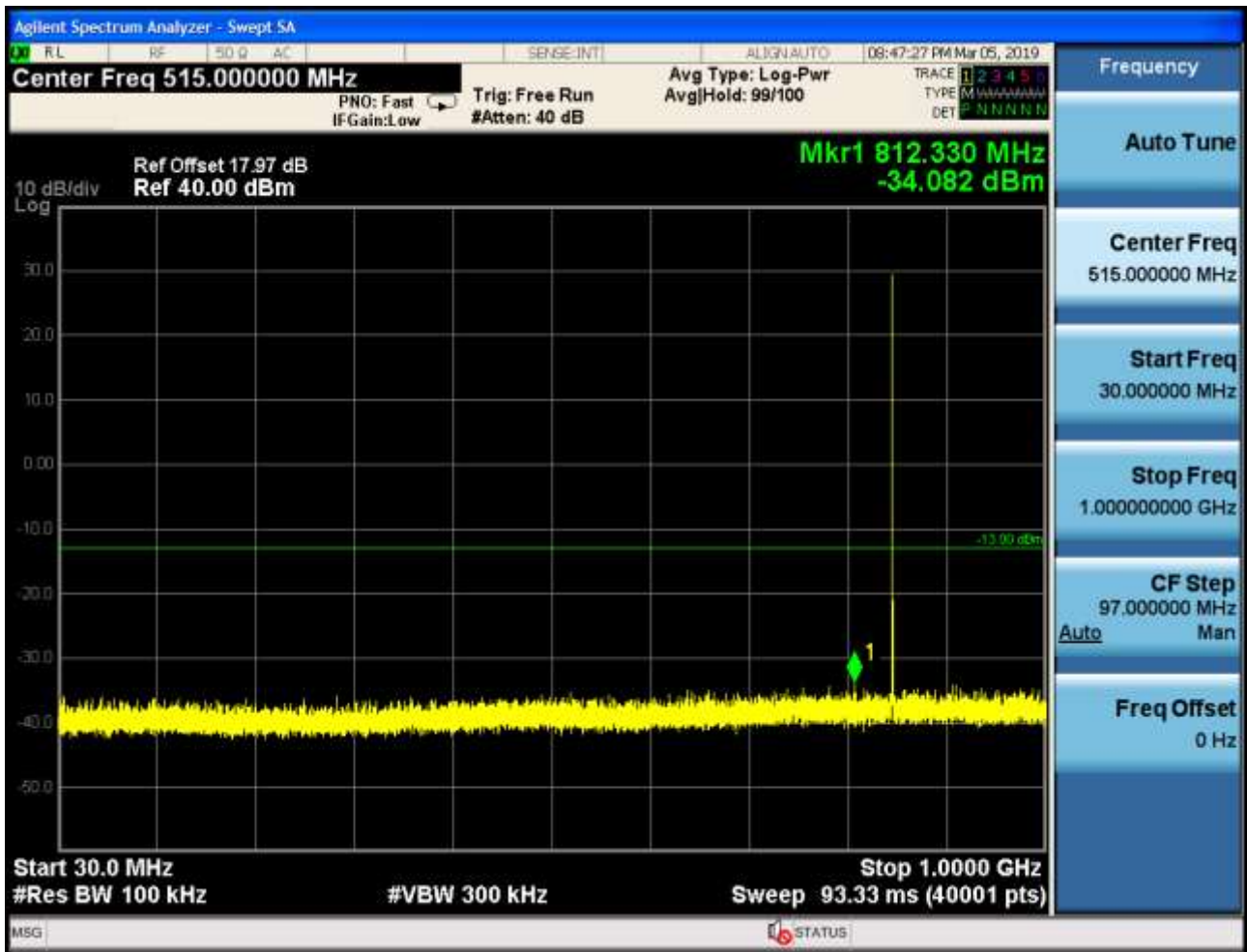




## 6.1.1.2.3 Test Channel = HCH







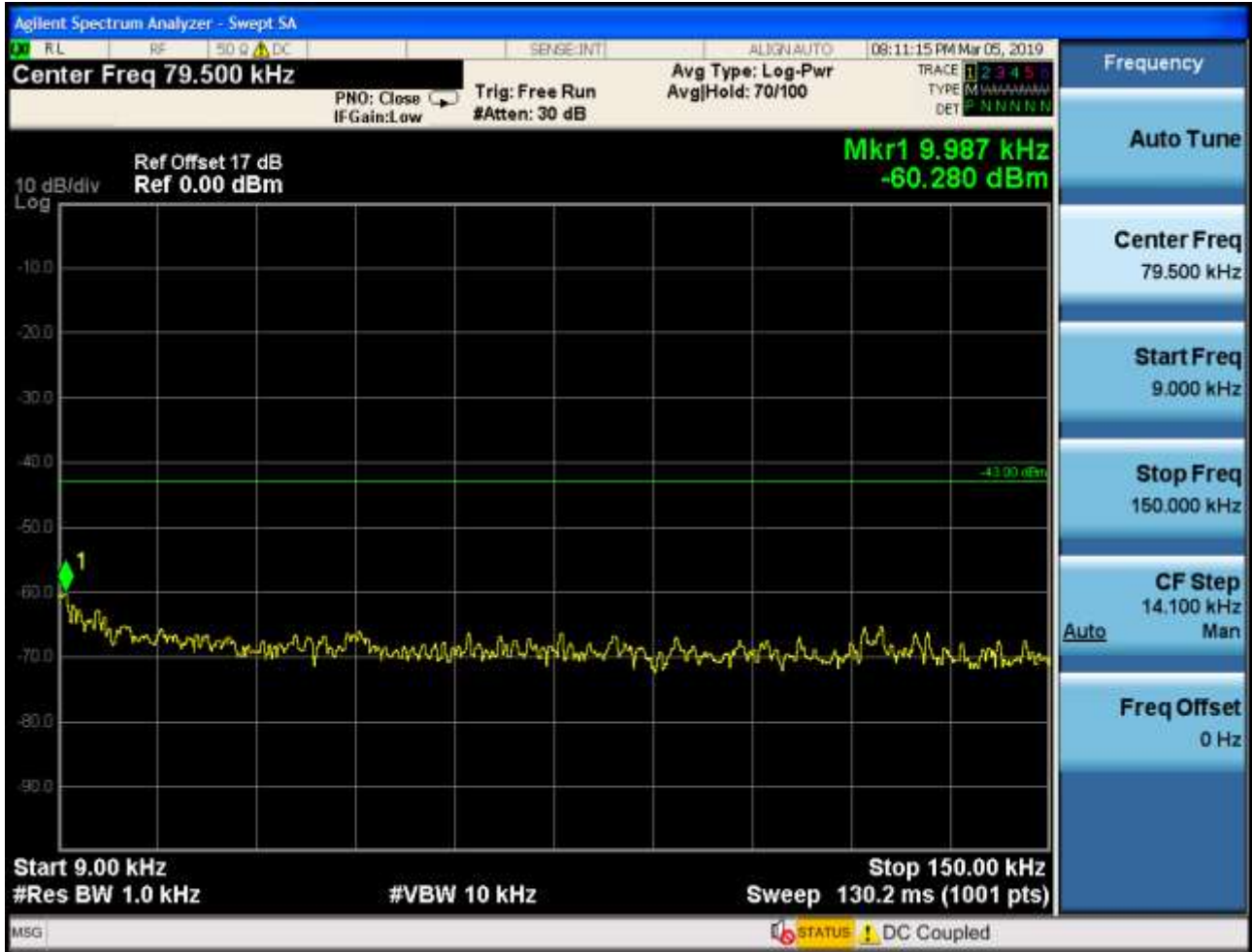




## 6.1.2 Test Band = PCS1900

### 6.1.2.1 Test Mode = GSM/TM1

#### 6.1.2.1.1 Test Channel = LCH



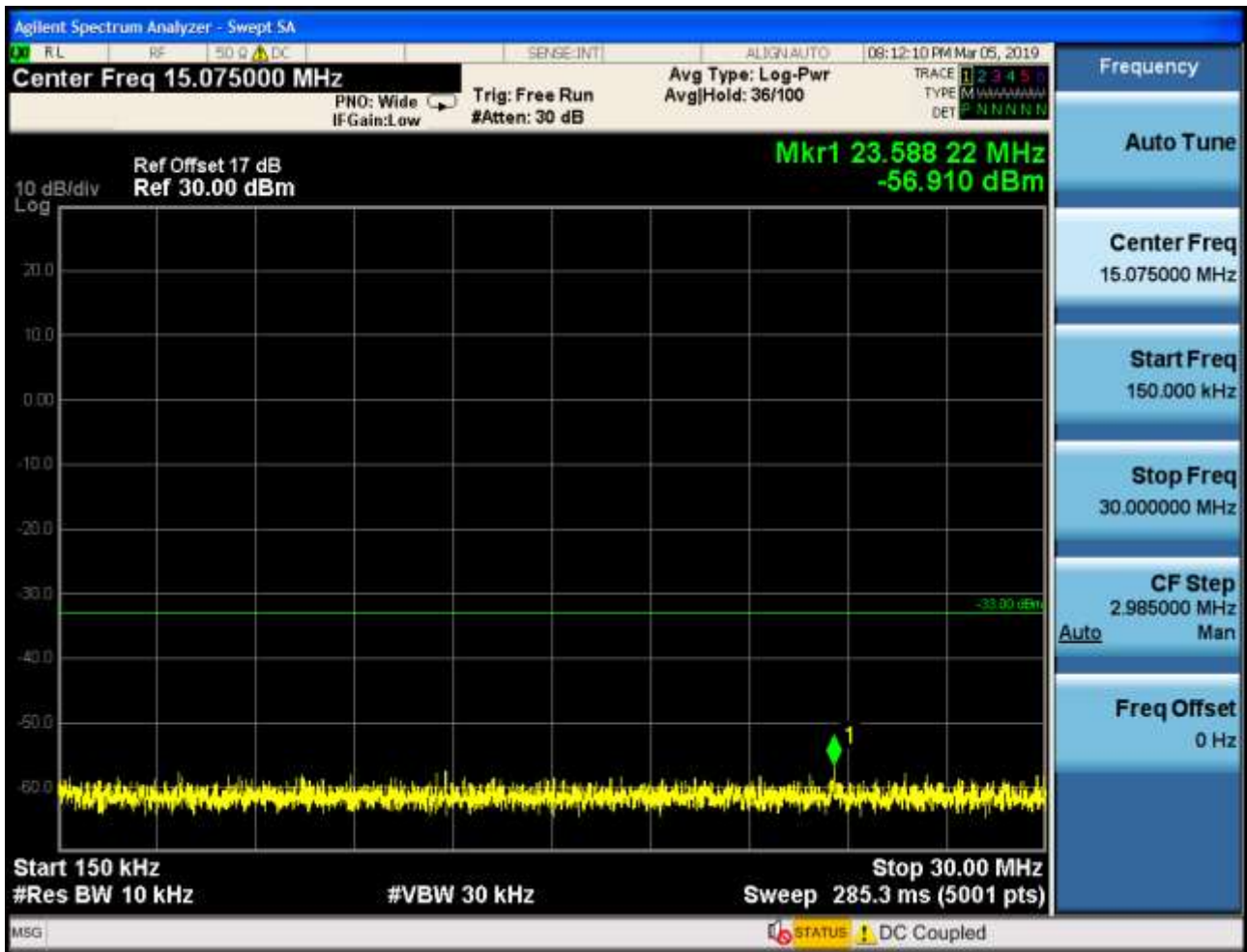






### 6.1.2.1.2 Test Channel = MCH

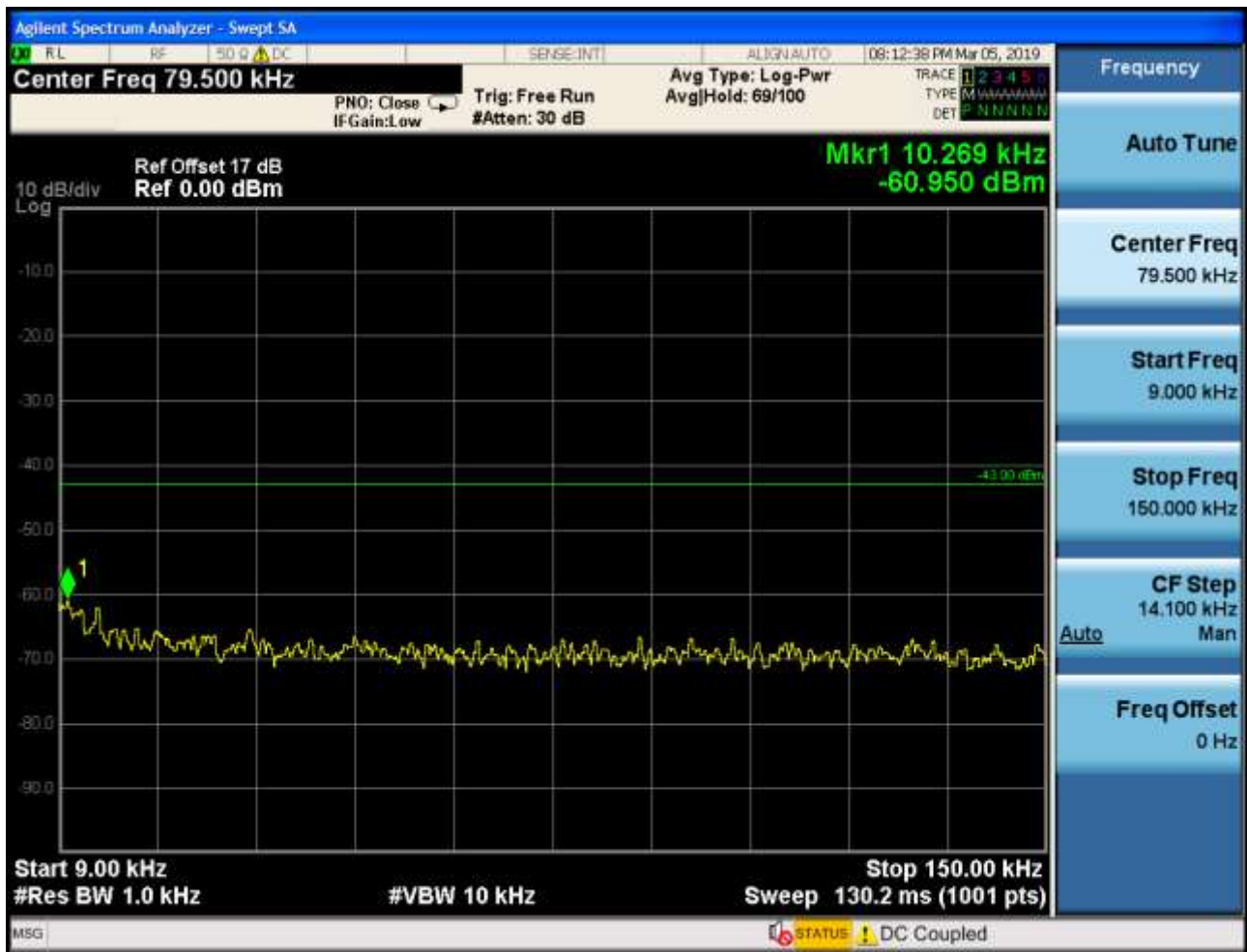


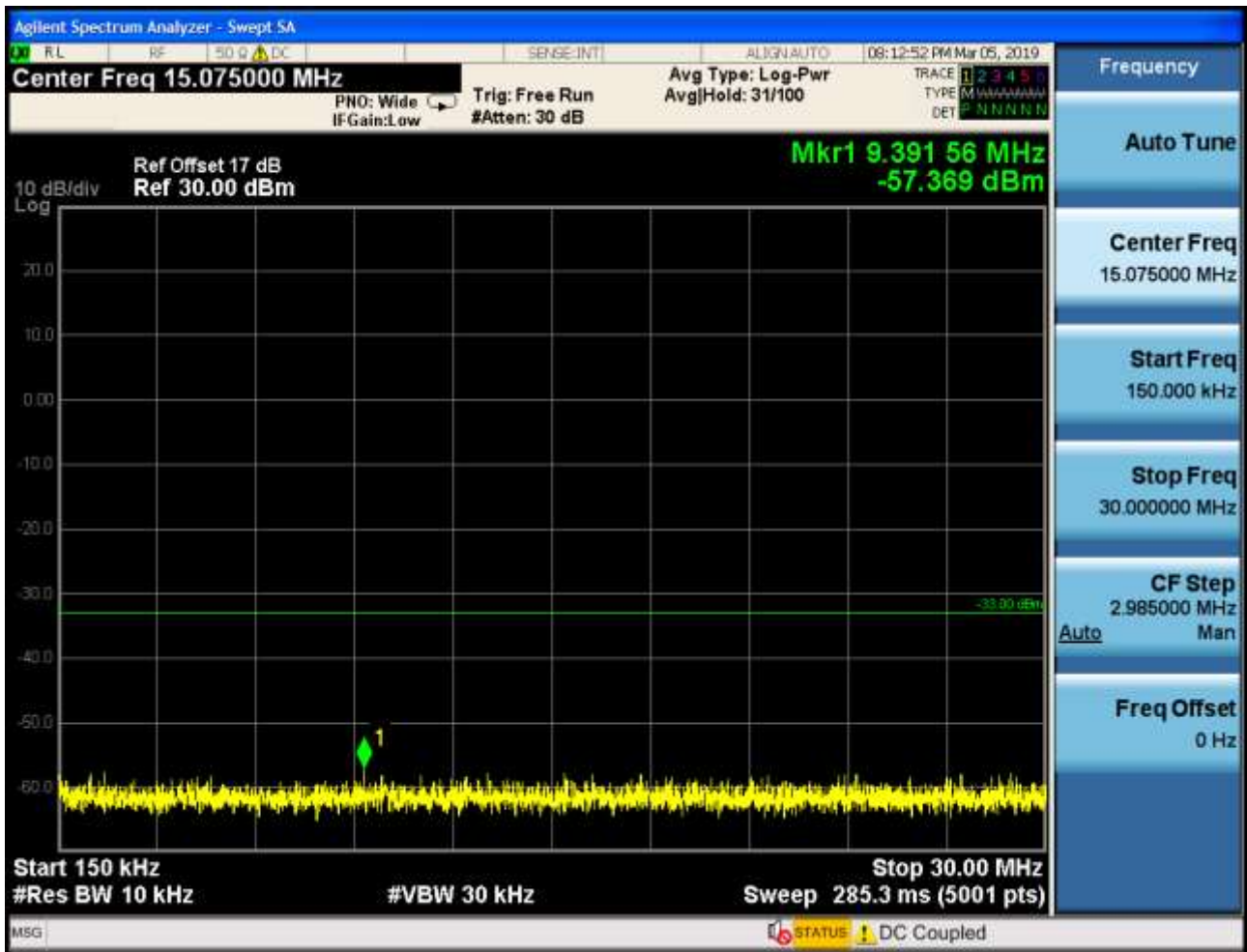






## 6.1.2.1.3 Test Channel = HCH

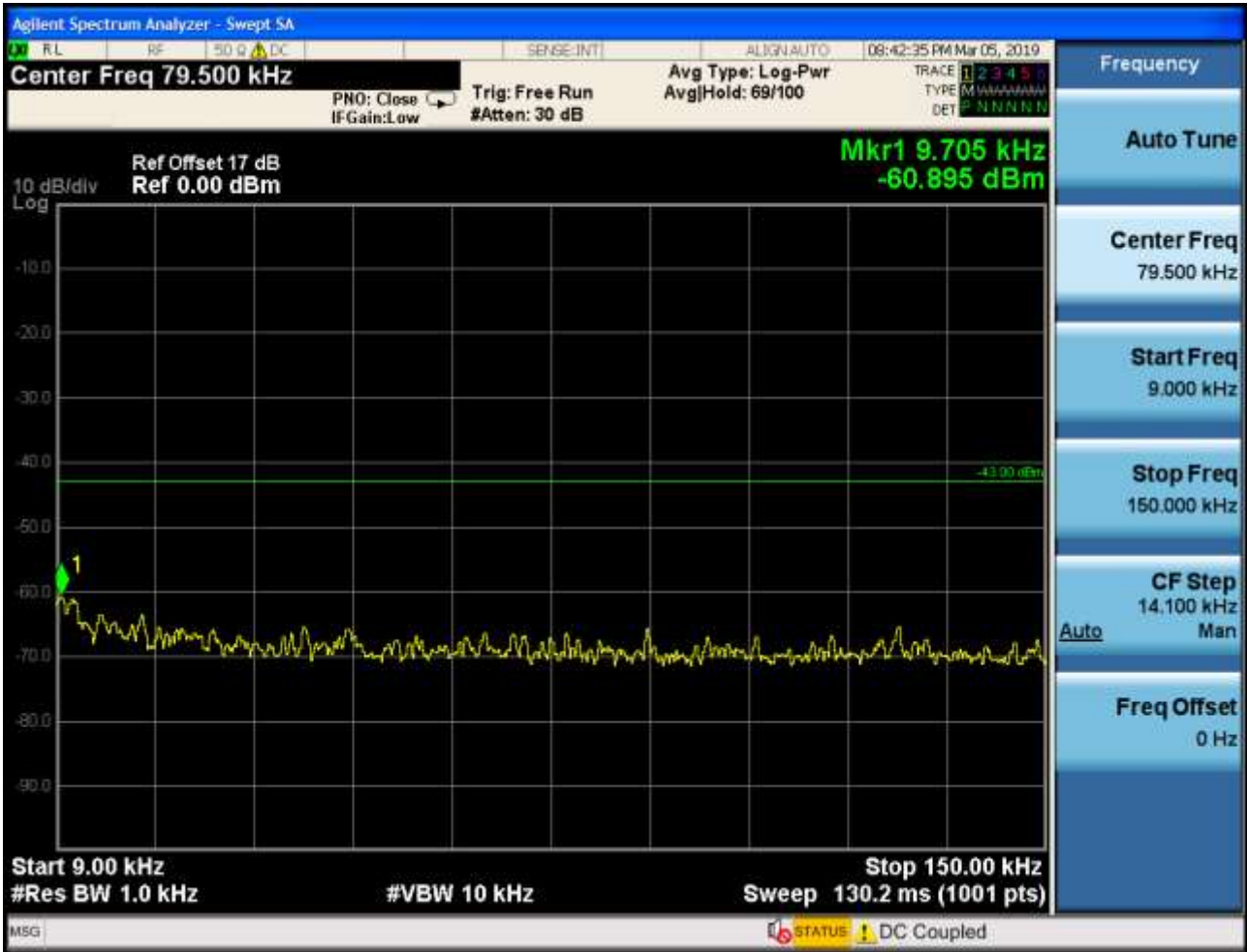


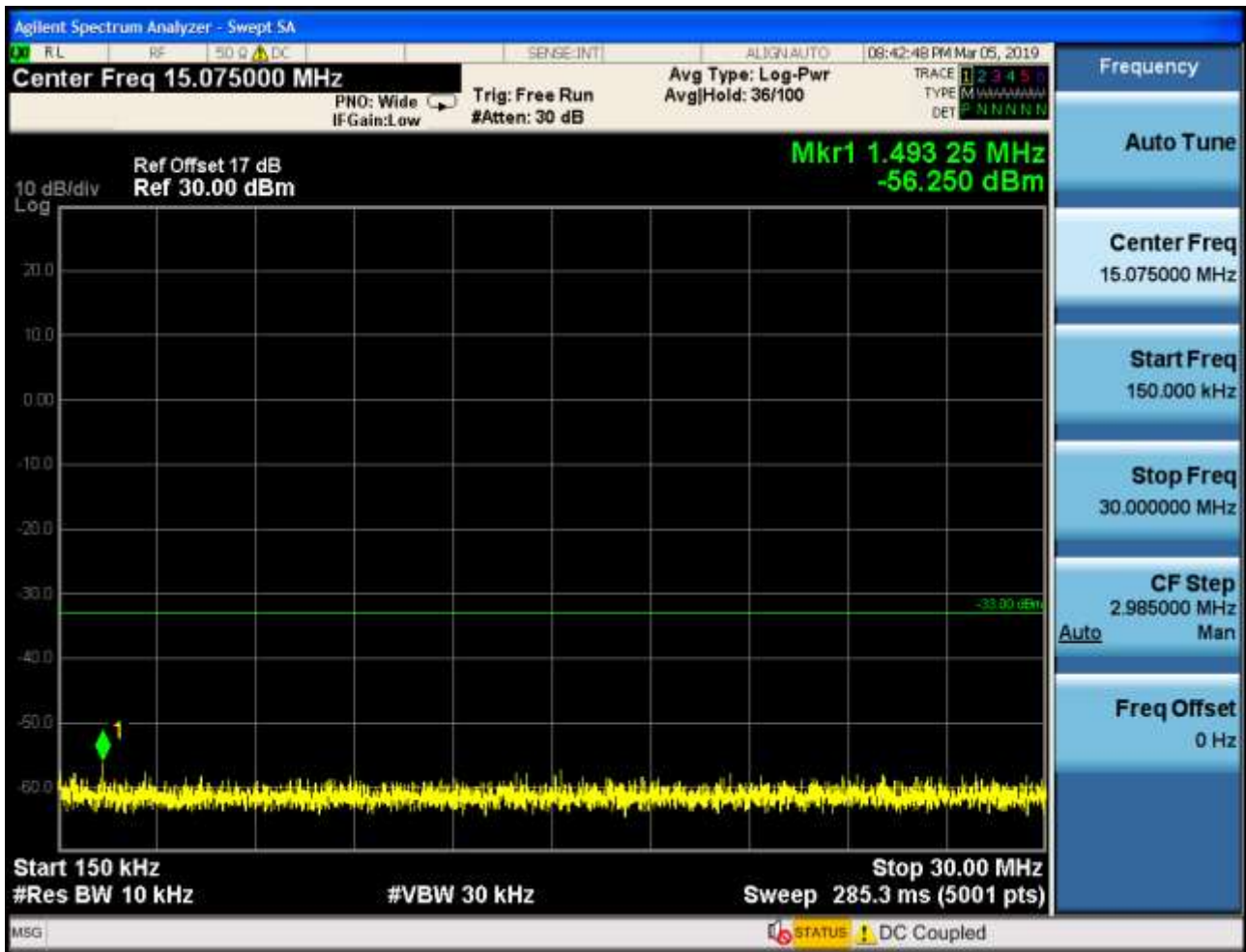




### 6.1.2.2 Test Mode = GSM/TM2

#### 6.1.2.2.1 Test Channel = LCH









## 6.1.2.2.2 Test Channel = MCH



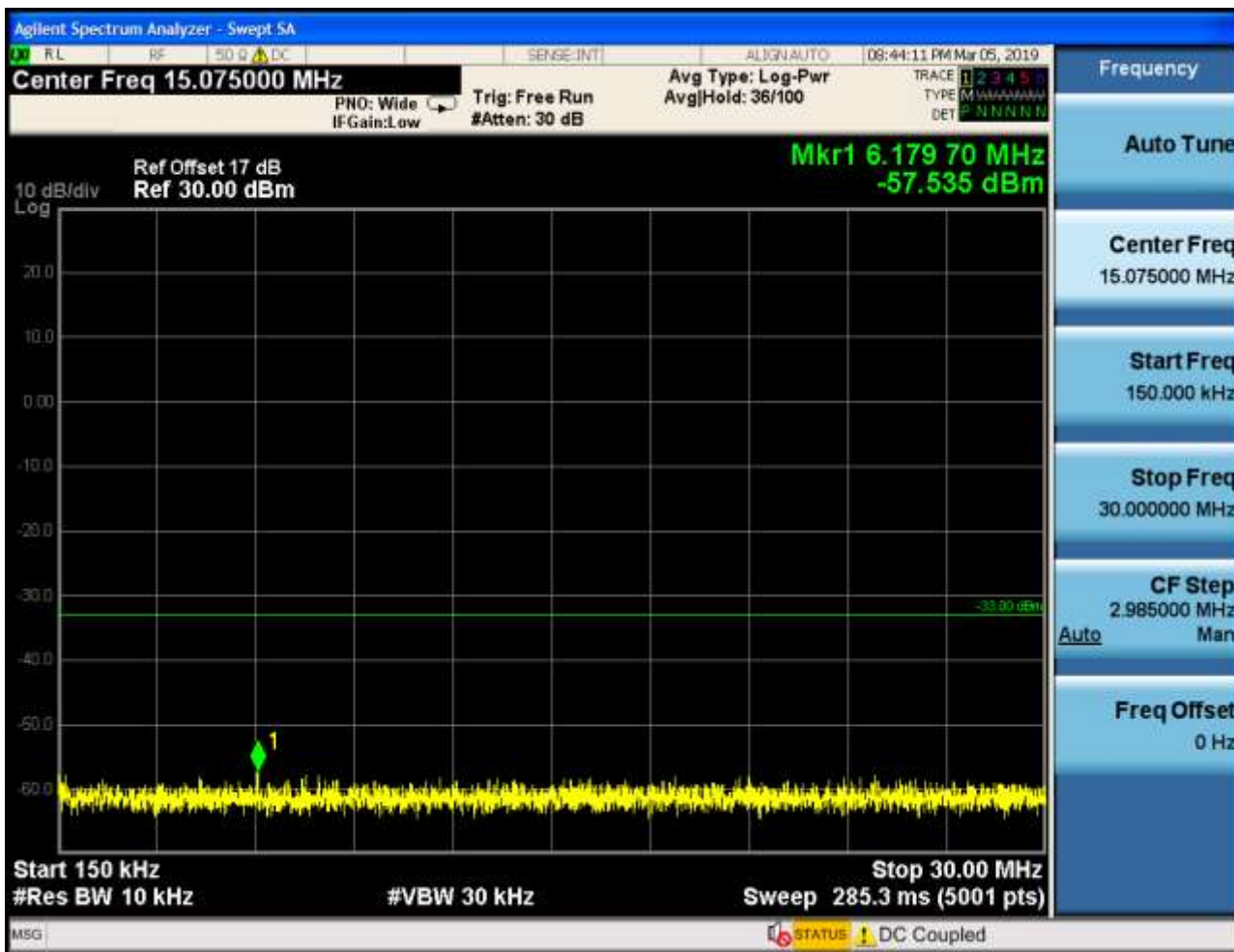






### 6.1.2.2.3 Test Channel = HCH









## 8Appendix\_G: Frequency Stability

### 8.1 For GSM

#### 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
GSM850	GSM/TM1	LCH	TN	VL	0.71029	0.00086	PASS
				VN	-1.96944	-0.00239	PASS
				VH	1.03315	0.00125	PASS
		MCH	TN	VL	-3.87430	-0.00463	PASS
				VN	-1.48515	-0.00178	PASS
				VH	-1.16229	-0.00139	PASS
		HCH	TN	VL	-3.35773	-0.00396	PASS
				VN	-4.16488	-0.00491	PASS
				VH	-1.90487	-0.00224	PASS
	GSM/TM2	LCH	TN	VL	1.03315	0.00125	PASS
				VN	0.25829	0.00031	PASS
				VH	1.61429	0.00196	PASS
		MCH	TN	VL	-1.22686	-0.00147	PASS
				VN	2.00172	0.00239	PASS
				VH	-0.29057	-0.00035	PASS
		HCH	TN	VL	-1.19458	-0.00141	PASS
				VN	-1.25915	-0.00148	PASS
				VH	-2.64744	-0.00312	PASS
PCS1900	GSM/TM1	LCH	TN	VL	-0.77486	-0.00042	PASS
				VN	-0.48429	-0.00026	PASS
				VH	0.67800	0.00037	PASS
		MCH	TN	VL	-2.42144	-0.00129	PASS
				VN	1.80801	0.00096	PASS
				VH	0.41972	0.00022	PASS
		HCH	TN	VL	-2.77658	-0.00042	PASS
				VN	-3.55144	-0.00026	PASS
				VH	-4.77831	0.00037	PASS
	GSM/TM2	LCH	TN	VL	1.00086	0.00054	PASS
				VN	-3.00258	-0.00162	PASS
				VH	0.25829	0.00014	PASS
		MCH	TN	VL	-1.32372	-0.00070	PASS
				VN	-4.48773	-0.00239	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				VH	-1.03315	-0.00055	PASS
		HCH	TN	VL	-7.16746	0.00054	PASS
				VN	-7.36117	-0.00162	PASS
				VH	-5.97288	0.00014	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
GSM850	GSM/TM1	LCH	VN	-30	-0.25829	-0.00031	PASS
				-20	-2.84116	-0.00345	PASS
				-10	-1.45286	-0.00176	PASS
				0	-1.80801	-0.00219	PASS
				10	-0.48429	-0.00059	PASS
				20	-1.96944	-0.00239	PASS
				30	-2.93801	-0.00356	PASS
				40	-2.03401	-0.00247	PASS
				50	-2.13087	-0.00259	PASS
		MCH	VN	-30	0.12914	0.00015	PASS
				-20	-2.42144	-0.00289	PASS
				-10	0.71029	0.00085	PASS
				0	0.03229	0.00004	PASS
				10	-0.96858	-0.00116	PASS
				20	-1.48515	-0.00178	PASS
				30	-2.32458	-0.00278	PASS
				40	-0.51657	-0.00062	PASS
				50	-2.51830	-0.00301	PASS
		HCH	VN	-30	-1.77572	-0.00209	PASS
				-20	-5.32716	-0.00628	PASS
				-10	-3.16401	-0.00373	PASS
				0	-1.32372	-0.00156	PASS
				10	-3.06716	-0.00361	PASS
				20	-4.16488	-0.00491	PASS
	30			-1.87258	-0.00221	PASS	
	40			-3.68059	-0.00434	PASS	
	50			-2.51830	-0.00297	PASS	
	GSM/TM2	LCH	VN	-30	-2.61515	-0.00317	PASS
				-20	-0.80715	-0.00098	PASS
				-10	-1.38829	-0.00168	PASS
				0	-3.19630	-0.00388	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict						
				10	0.45200	0.00055	PASS						
				20	0.25829	0.00031	PASS						
				30	-0.29057	-0.00035	PASS						
				40	-0.29057	-0.00035	PASS						
				50	-4.06802	-0.00494	PASS						
		MCH	VN			-30	0.00000	0.00000	PASS				
						-20	2.55058	0.00305	PASS				
						-10	0.06457	0.00008	PASS				
						0	0.90400	0.00108	PASS				
						10	0.19372	0.00023	PASS				
						20	2.00172	0.00239	PASS				
						30	0.03229	0.00004	PASS				
						40	-1.45286	-0.00174	PASS				
						50	-2.64744	-0.00316	PASS				
		HCH	VN			-30	-4.48773	-0.00529	PASS				
						-20	-0.54886	-0.00065	PASS				
						-10	-1.74344	-0.00205	PASS				
						0	-3.26087	-0.00384	PASS				
						10	-2.51830	-0.00297	PASS				
						20	-1.25915	-0.00148	PASS				
30	-1.87258					-0.00221	PASS						
40	-1.48515					-0.00175	PASS						
50	-4.58459	-0.00540	PASS										
PCS1900	GSM/TM1	LCH	VN					-30	0.77486	0.00042	PASS		
								-20	-5.06888	-0.00274	PASS		
								-10	-1.16229	-0.00063	PASS		
								0	-2.64744	-0.00143	PASS		
								10	-3.32544	-0.00180	PASS		
								20	-0.48429	-0.00026	PASS		
								30	-1.13000	-0.00061	PASS		
								40	-1.16229	-0.00063	PASS		
								50	-0.09686	-0.00005	PASS		
		MCH	VN							-30	-2.32458	-0.00124	PASS
										-20	-1.00086	-0.00053	PASS
										-10	-0.90400	-0.00048	PASS
										0	0.77486	0.00041	PASS
										10	-1.61429	-0.00086	PASS
										20	1.80801	0.00096	PASS
										30	-3.90659	-0.00208	PASS
										40	-0.16143	-0.00009	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		HCH	VN	50	-1.45286	-0.00077	PASS
				-30	-1.77572	-0.00093	PASS
				-20	-7.39346	-0.00387	PASS
				-10	-7.91003	-0.00414	PASS
				0	-6.26346	-0.00328	PASS
				10	-6.65088	-0.00348	PASS
				20	-3.55144	-0.00186	PASS
				30	-7.39346	-0.00387	PASS
				40	-5.90831	-0.00309	PASS
				50	-4.64916	-0.00243	PASS
	GSM/TM2	LCH	VN	-30	-1.87258	-0.00101	PASS
				-20	0.12914	0.00007	PASS
				-10	-1.25915	-0.00068	PASS
				0	-0.93629	-0.00051	PASS
				10	-3.16401	-0.00171	PASS
				20	-3.00258	-0.00162	PASS
				30	-1.84029	-0.00099	PASS
				40	-0.12914	-0.00007	PASS
				50	0.90400	0.00049	PASS
				MCH	VN	-30	-0.87172
		-20	-1.71115			-0.00091	PASS
		-10	-2.03401			-0.00108	PASS
		0	-1.29143			-0.00069	PASS
		10	-1.80801			-0.00096	PASS
		20	-4.48773			-0.00239	PASS
		30	-1.58201			-0.00084	PASS
		40	1.48515			0.00079	PASS
		50	0.45200			0.00024	PASS
		HCH	VN			-30	-3.51916
				-20	-5.35945	-0.00281	PASS
				-10	-7.00603	-0.00367	PASS
				0	-5.77917	-0.00303	PASS
				10	-6.48946	-0.00340	PASS
				20	-7.36117	-0.00385	PASS
				30	-6.42488	-0.00336	PASS
				40	-6.23117	-0.00326	PASS
				50	-5.81145	-0.00304	PASS

END