



# Appendix for test report



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

### Part I - Test Results

Test Band	Test Mode	Test Channel	Conducte d Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	24.01	21.61	33	PASS
		MCH	23.82	21.42	33	PASS
		HCH	24.11	21.71	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.89	22.39	30	PASS
		MCH	23.96	22.46	30	PASS
		HCH	24.15	22.65	30	PASS
Test Band	Test Mode	Test Channel	Conducte d Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.13	21.93	38.5	PASS
		MCH	24.16	21.96	38.5	PASS
		HCH	24.17	21.97	38.5	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:

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

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

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

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
WCDMA1900	UMTS/TM1	LCH	3.25	13	PASS
		MCH	3.45	13	PASS
		HCH	3.03	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.48	13	PASS
		MCH	3.16	13	PASS
		HCH	3.38	13	PASS
WCDMA850	UMTS/TM1	LCH	3.76	13	PASS
		MCH	3.55	13	PASS
		HCH	3.23	13	PASS

### 3Appendix\_C: Modulation Characteristics

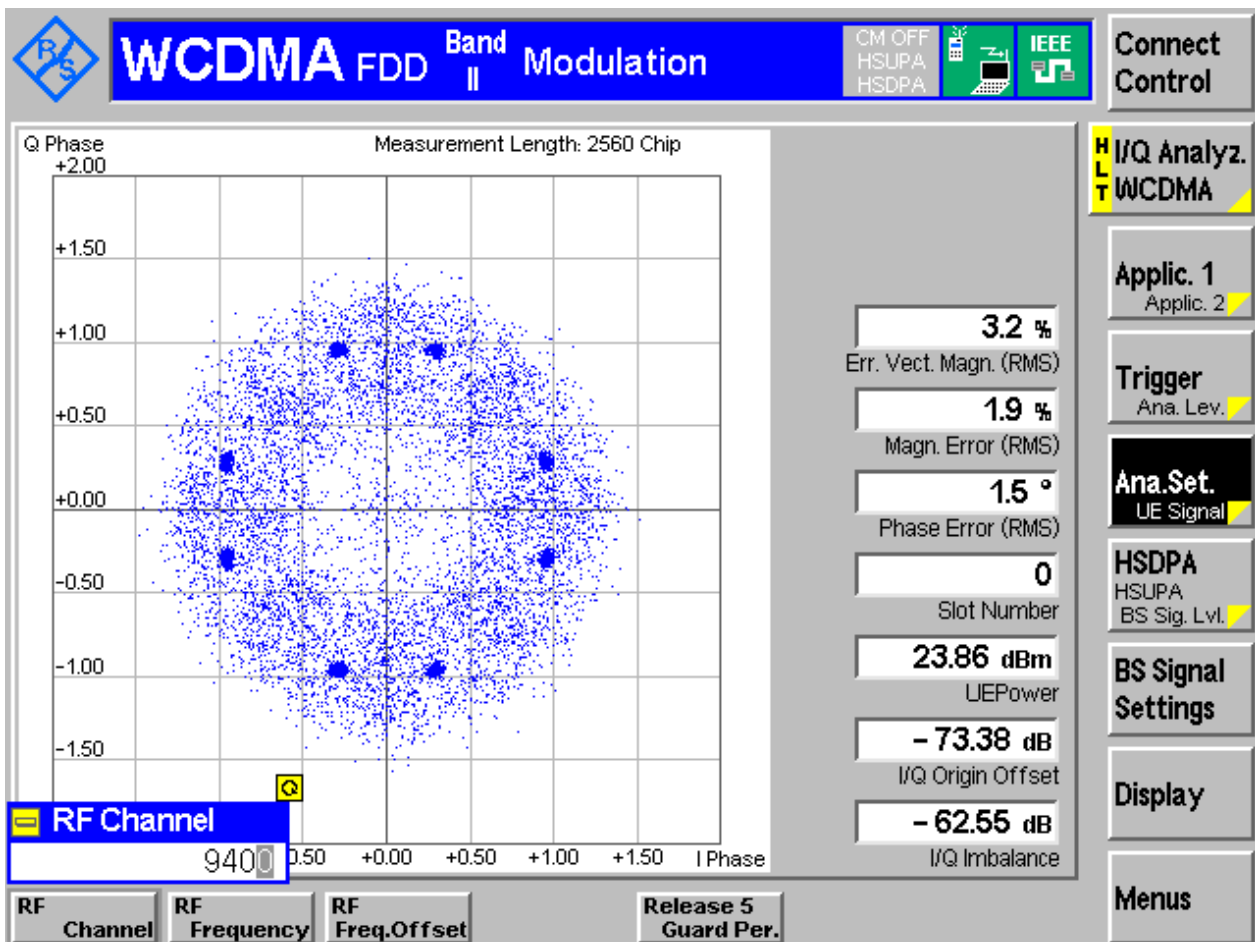
#### Part I - Test Plots

##### 3.1 For UMTS

###### 3.1.1 Test Band = WCDMA1900

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

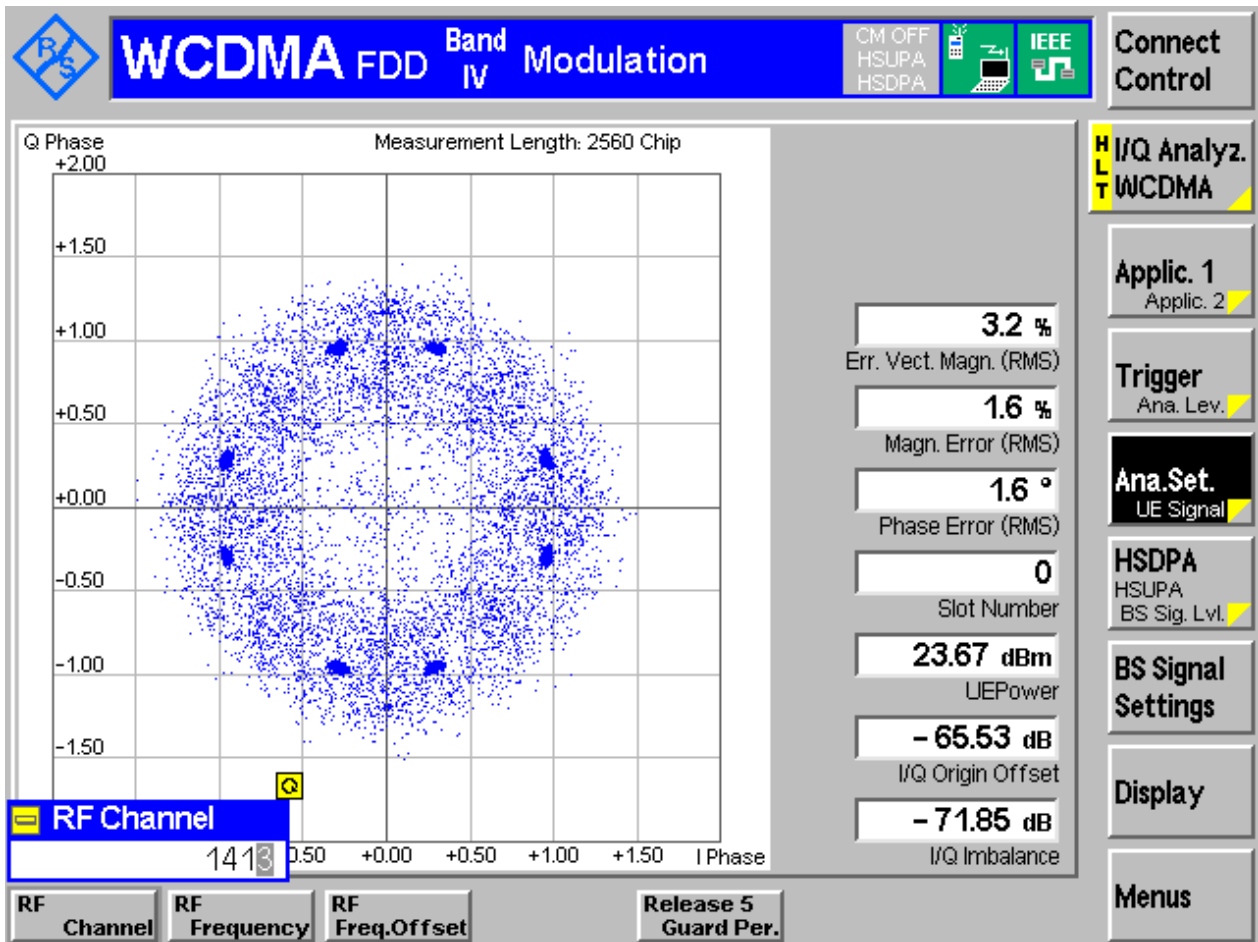
###### 3.1.1.1.1 Test Channel = MCH



### 3.1.2 Test Band = WCDMA1700

#### 3.1.2.1 Test Mode = UMTS/TM1

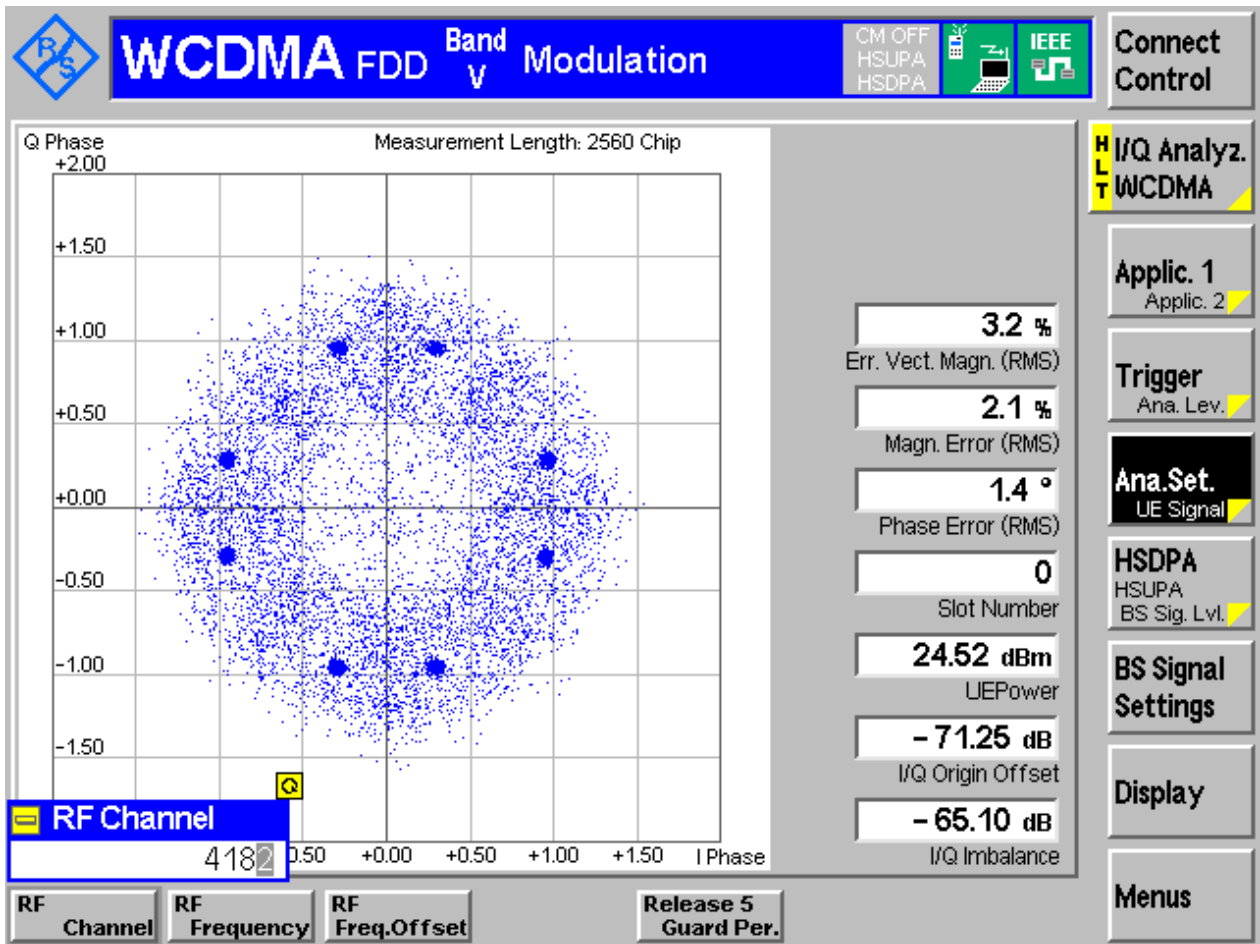
##### 3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA850

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
WCDMA1900	UMTS/TM1	LCH	4.13	4.71	Pass
		MCH	4.13	4.72	Pass
		HCH	4.15	4.73	Pass
WCDMA1700	UMTS/TM1	LCH	4.13	4.71	Pass
		MCH	4.15	4.74	Pass
		HCH	4.15	4.71	Pass
WCDMA850	UMTS/TM1	LCH	4.13	4.71	Pass
		MCH	4.14	4.71	Pass
		HCH	4.12	4.72	Pass



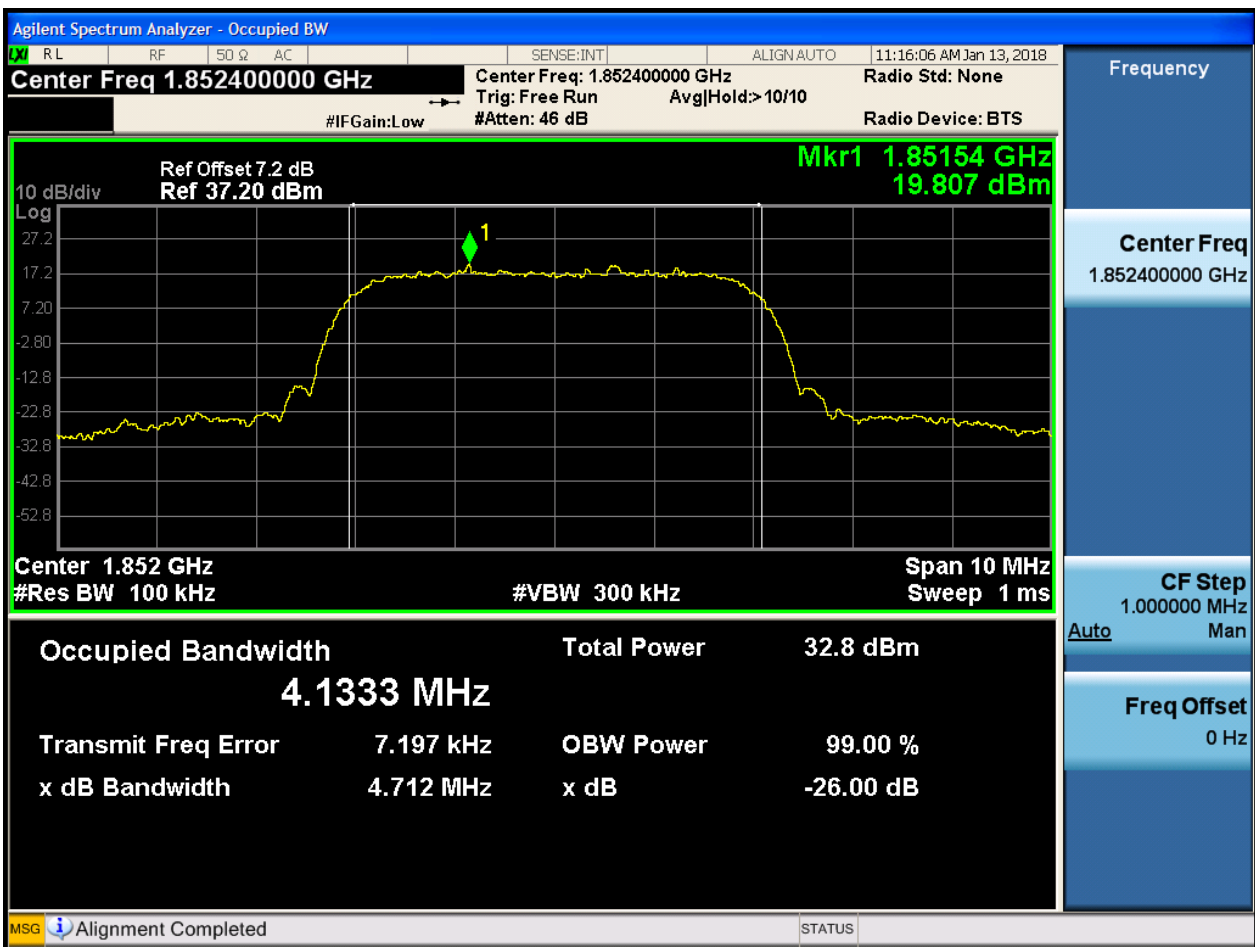
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

4.1.1.1 Test Mode = UMTS/TM1

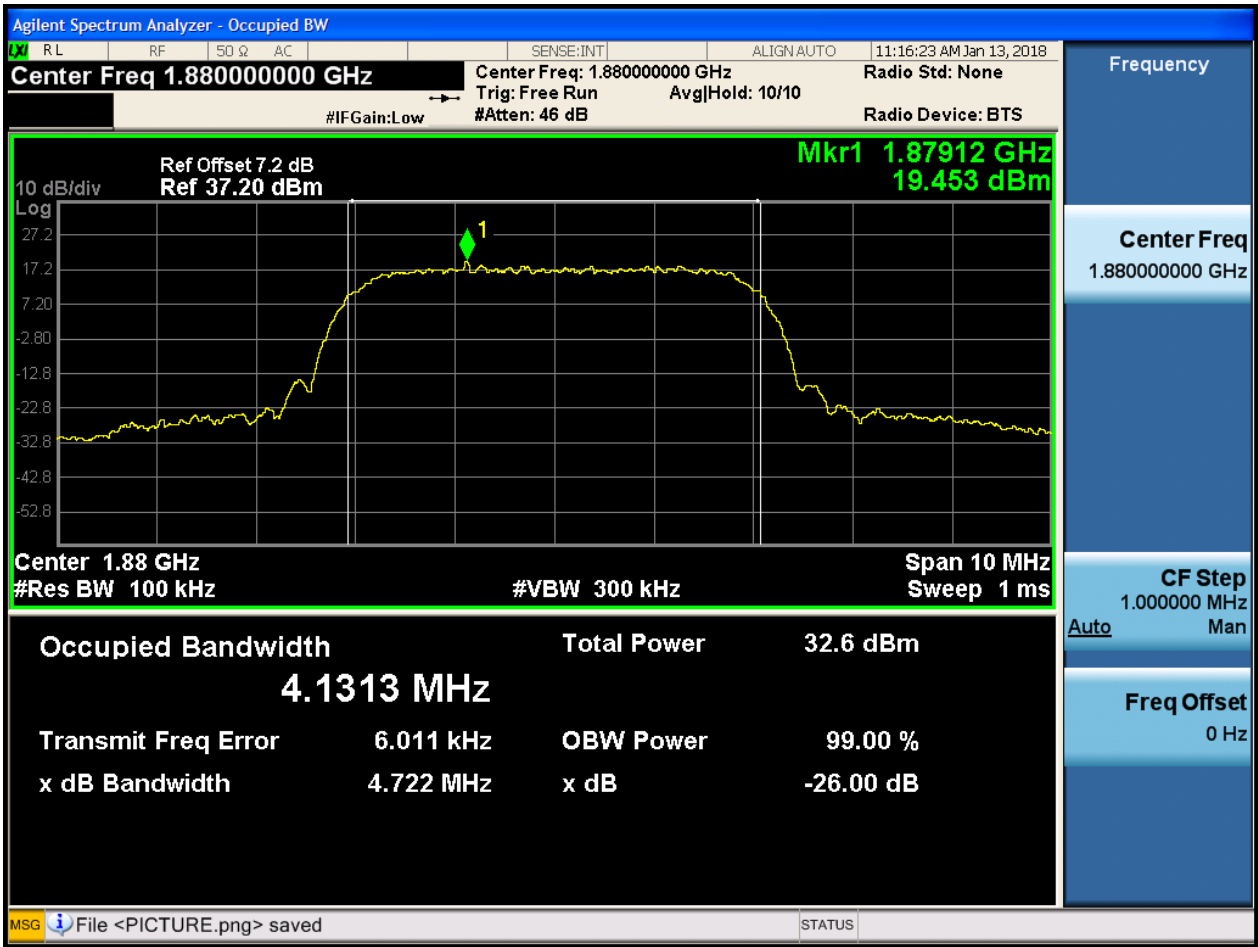
4.1.1.1.1 Test Channel = LCH





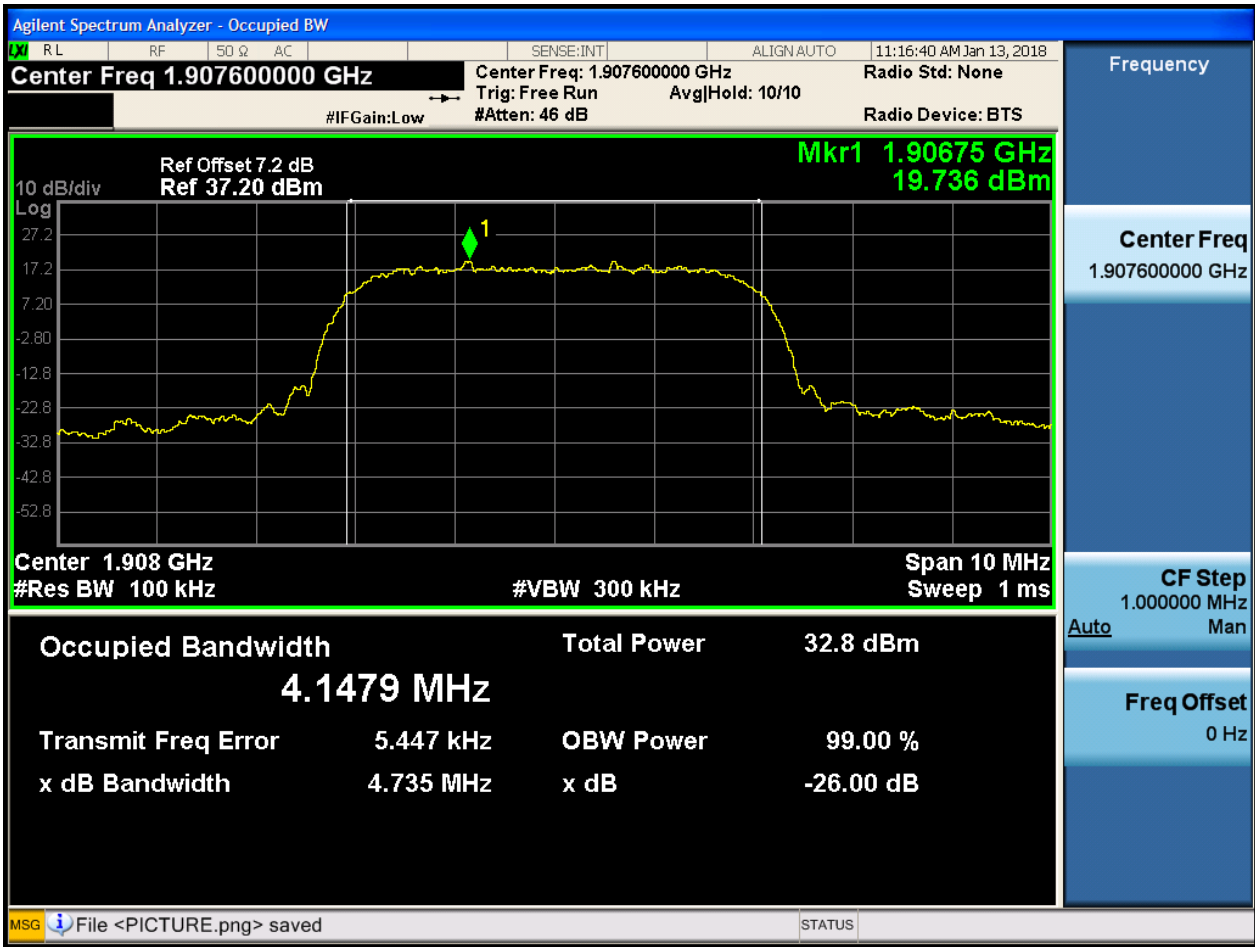


### 4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

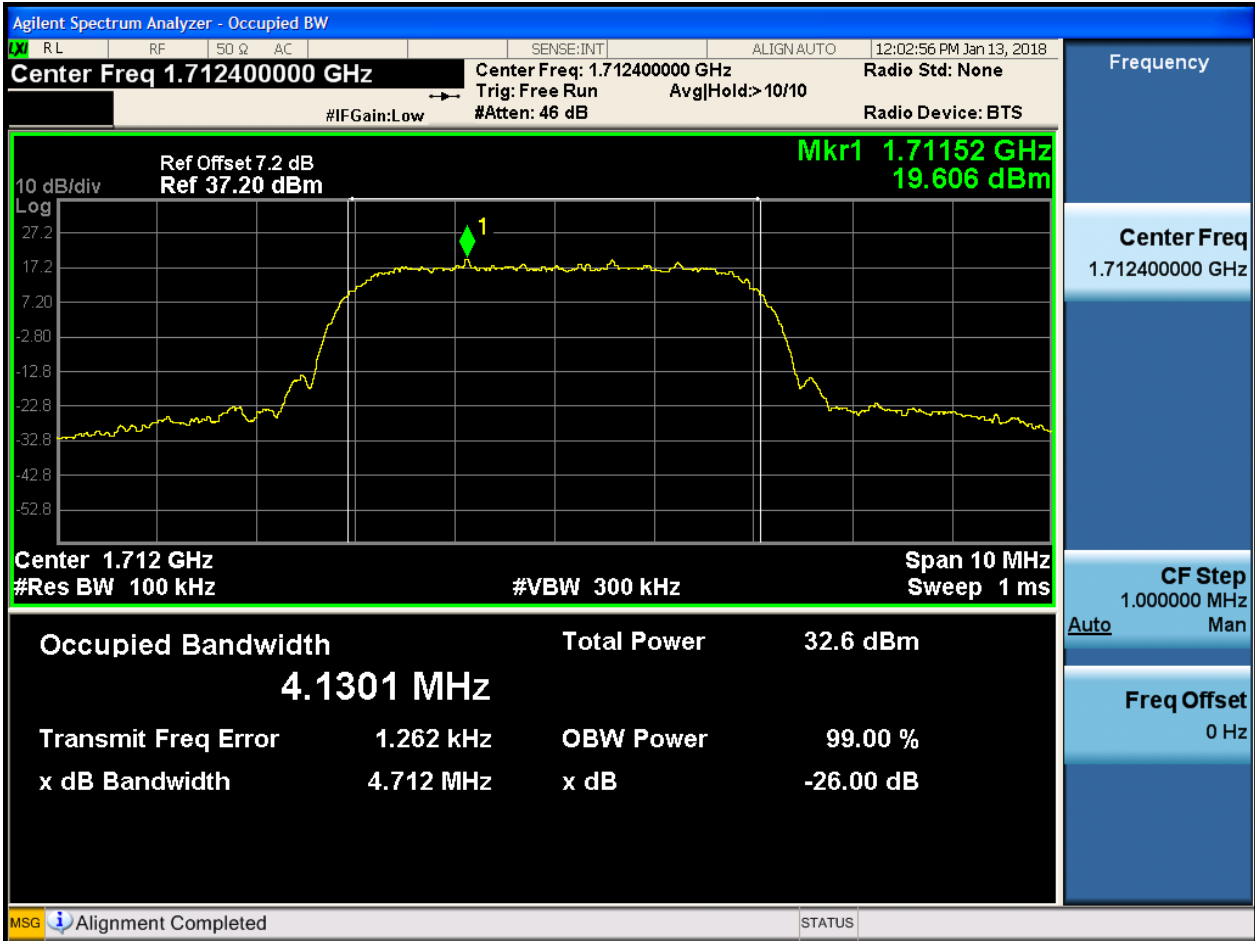




4.1.2 Test Band = WCDMA1700

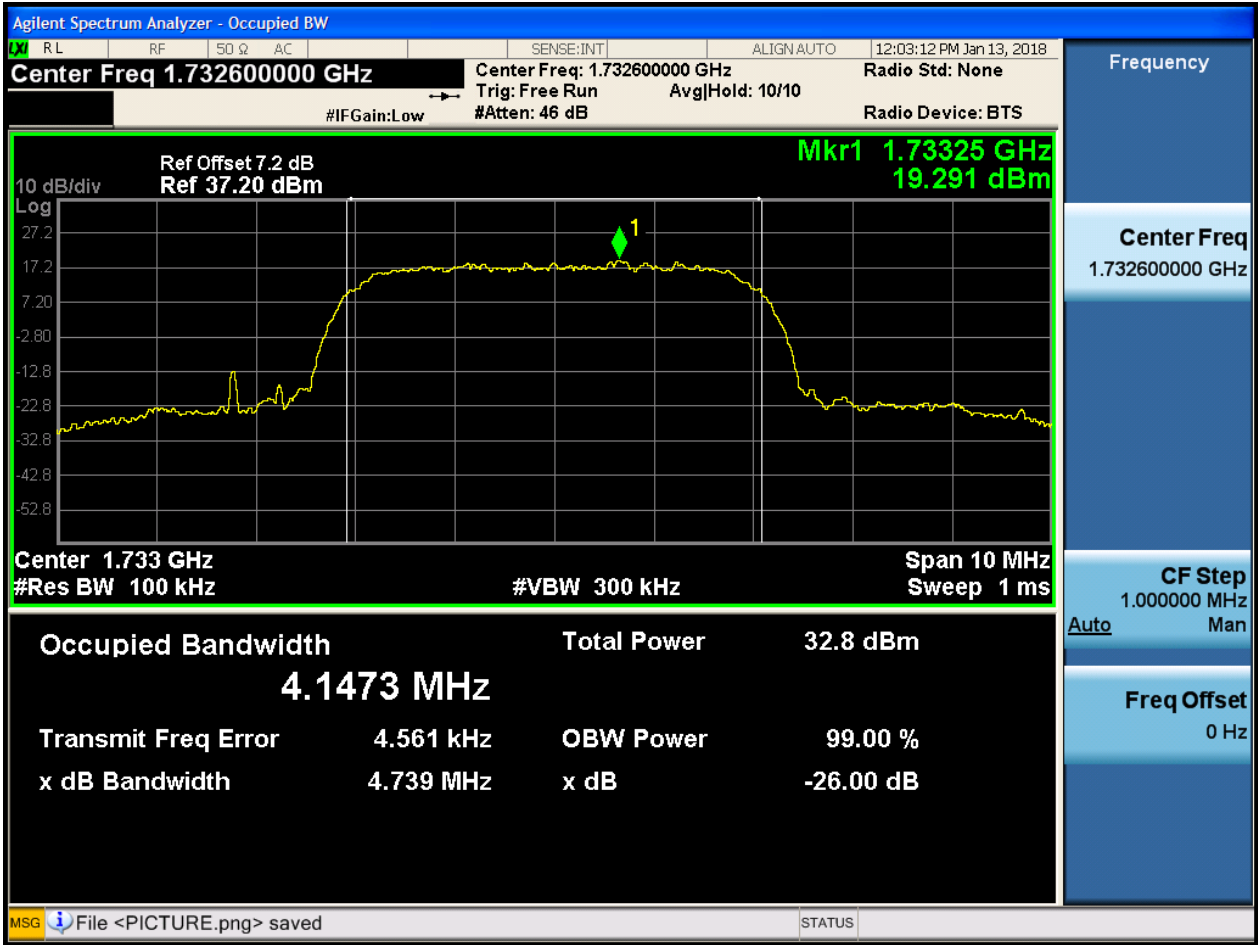
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



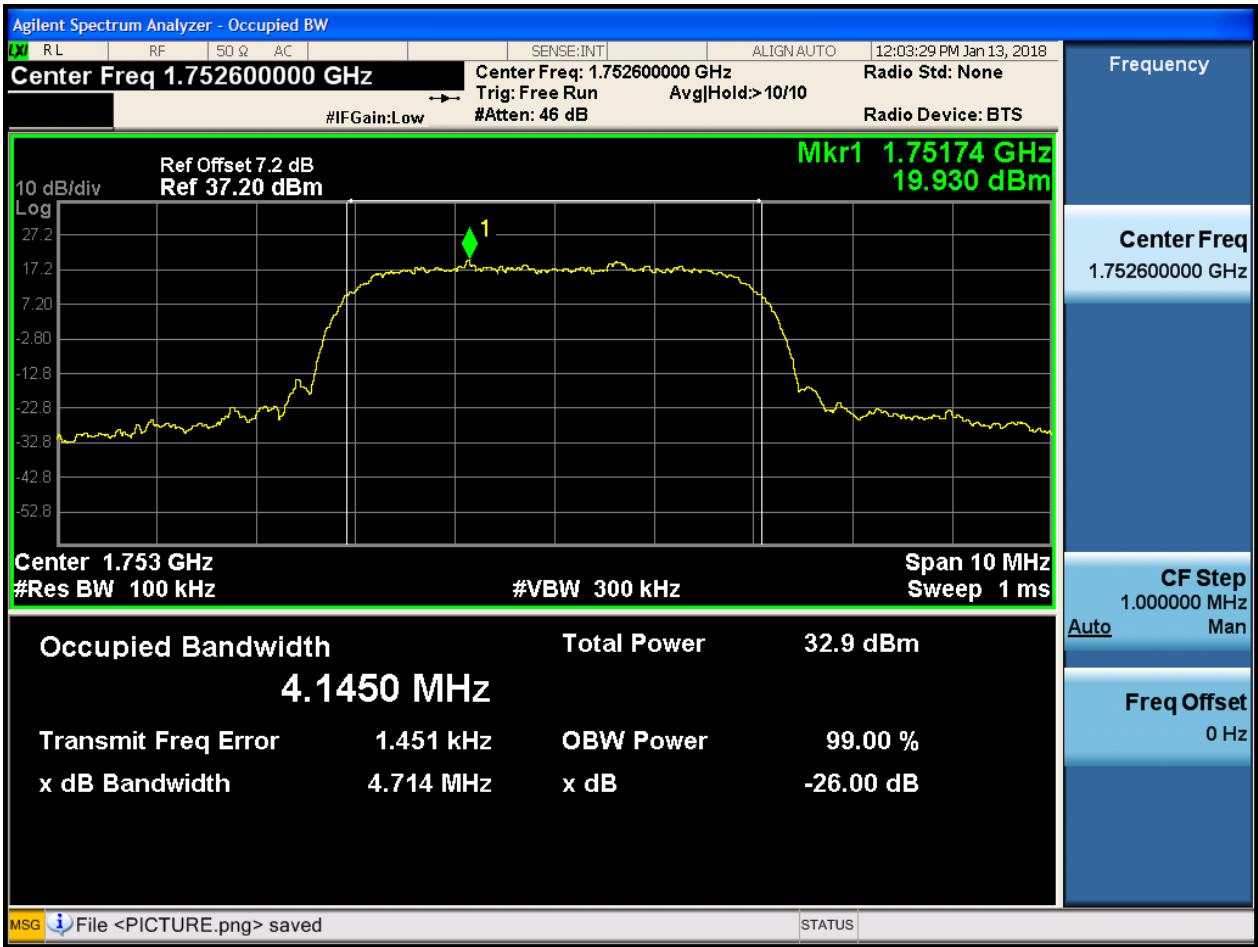


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

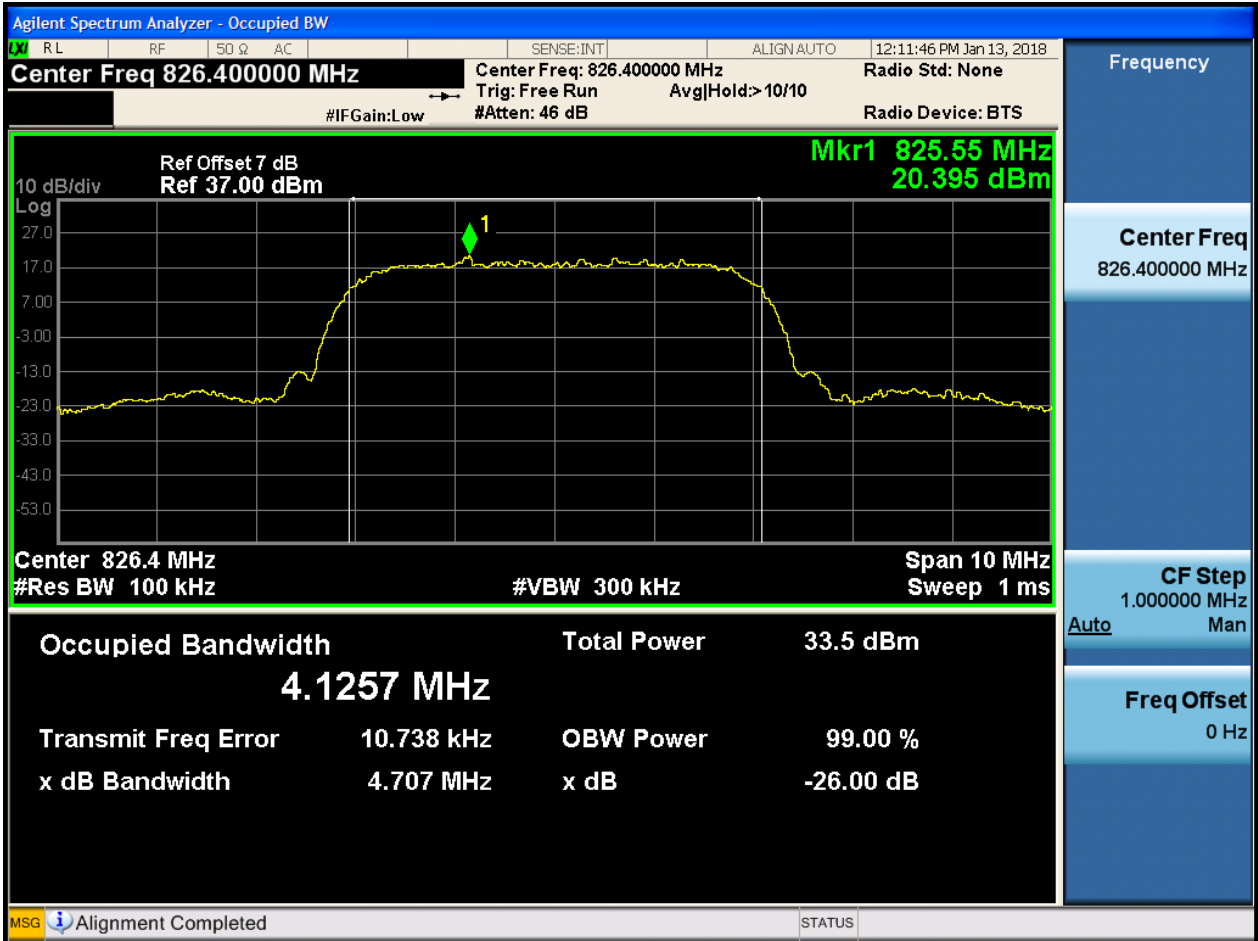




4.1.3 Test Band = WCDMA850

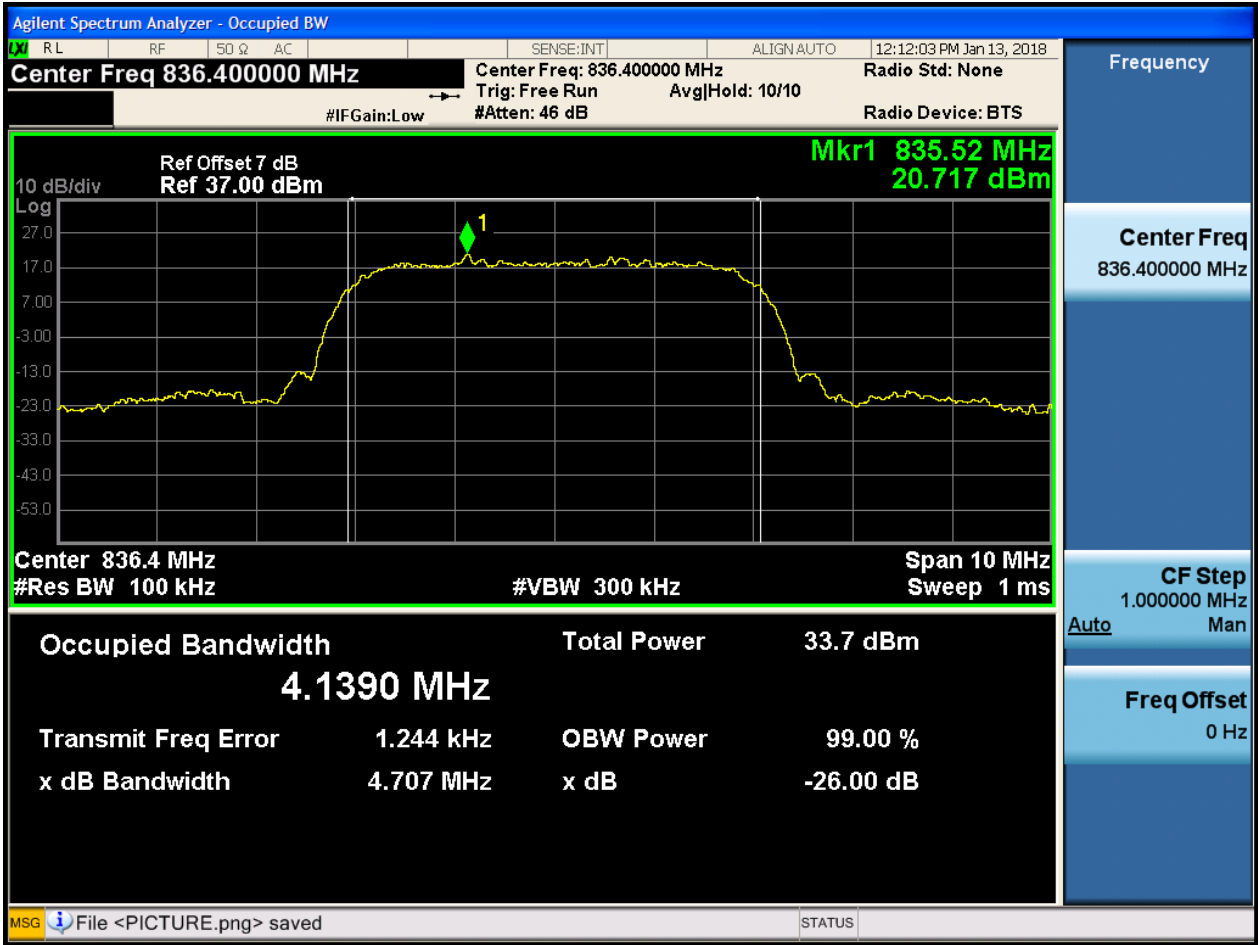
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



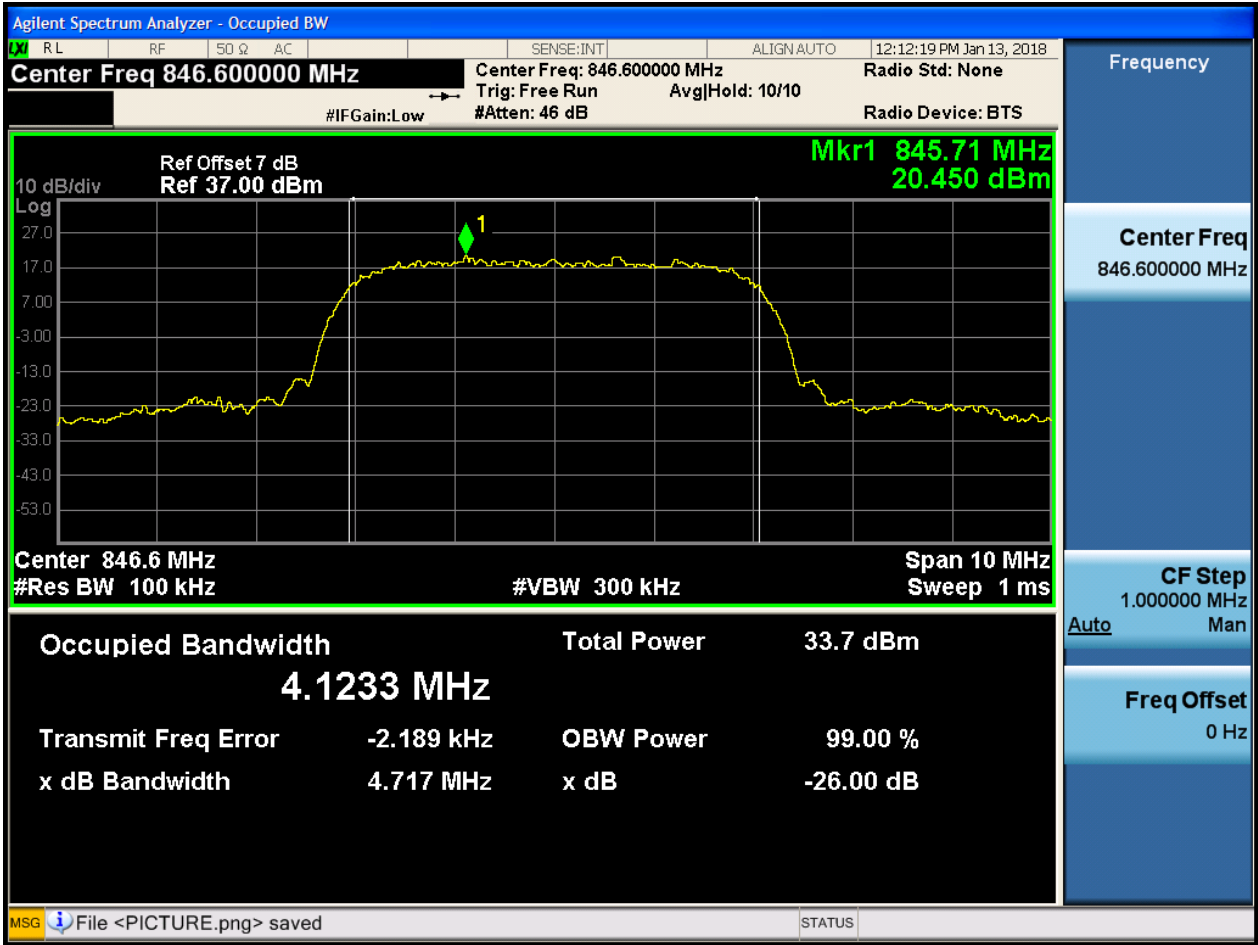


4.1.3.1.2 Test Channel = MCH





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 = WCDMA1900

##### 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

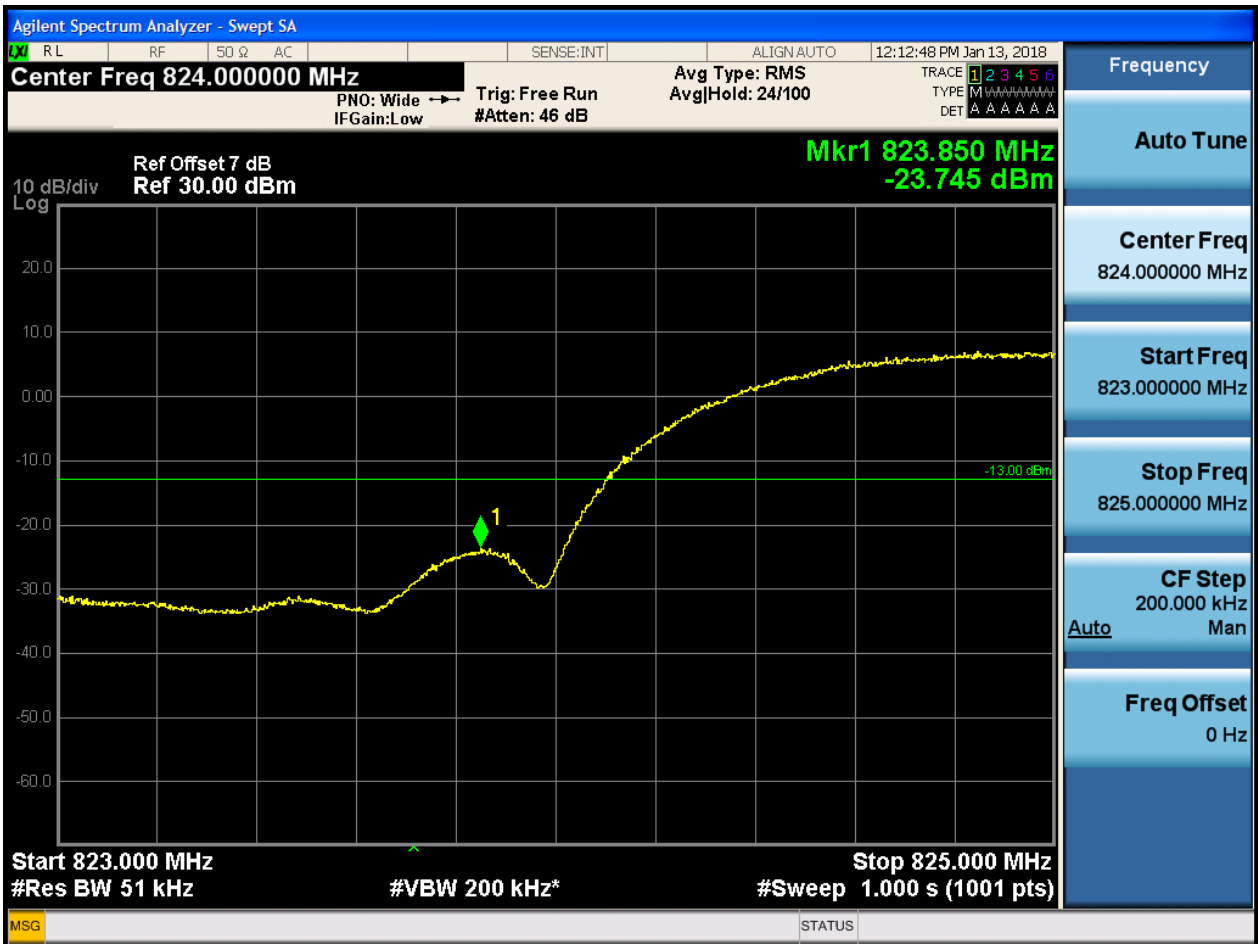




5.1.3 Test Band = WCDMA850

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.

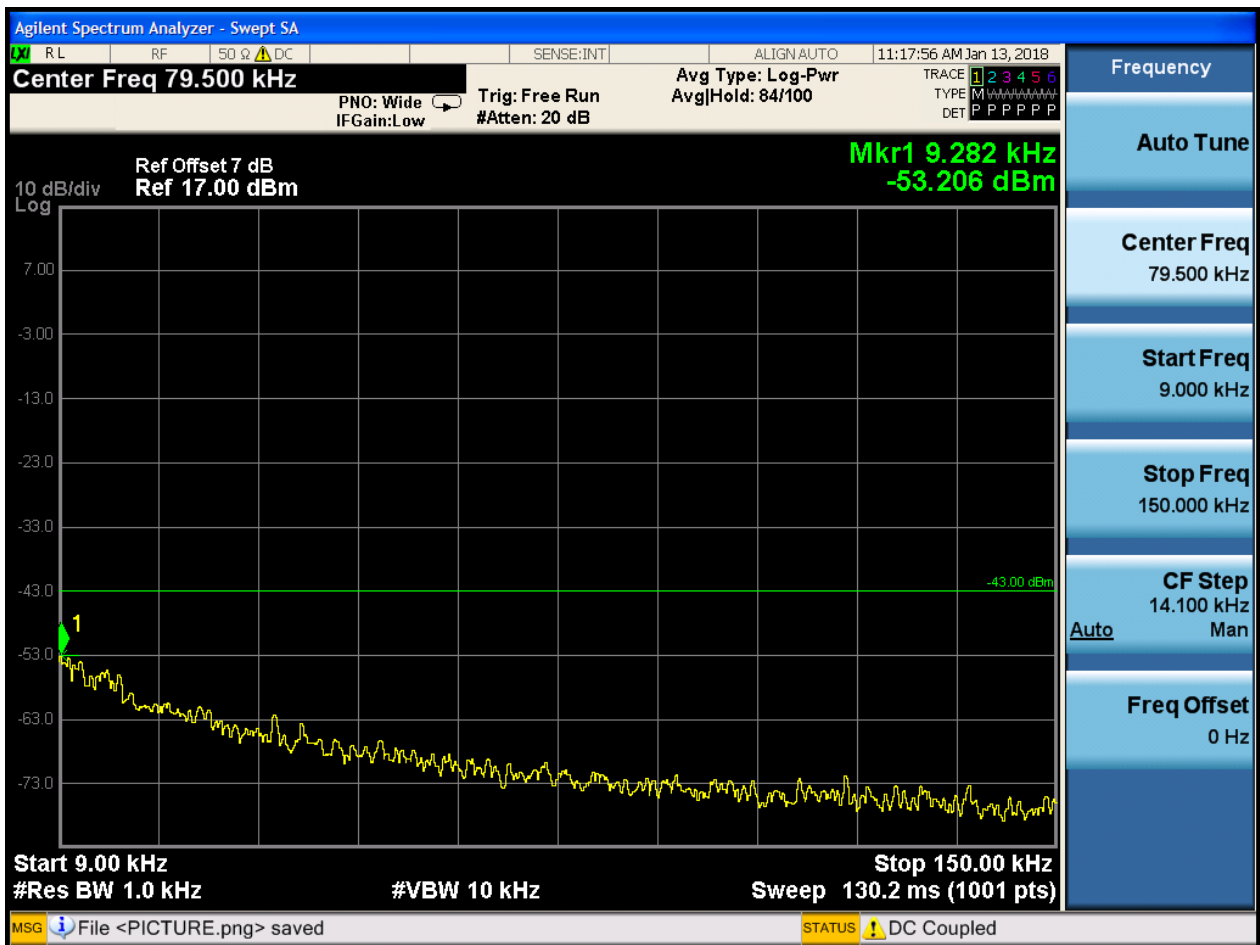
### Part I - Test Plots

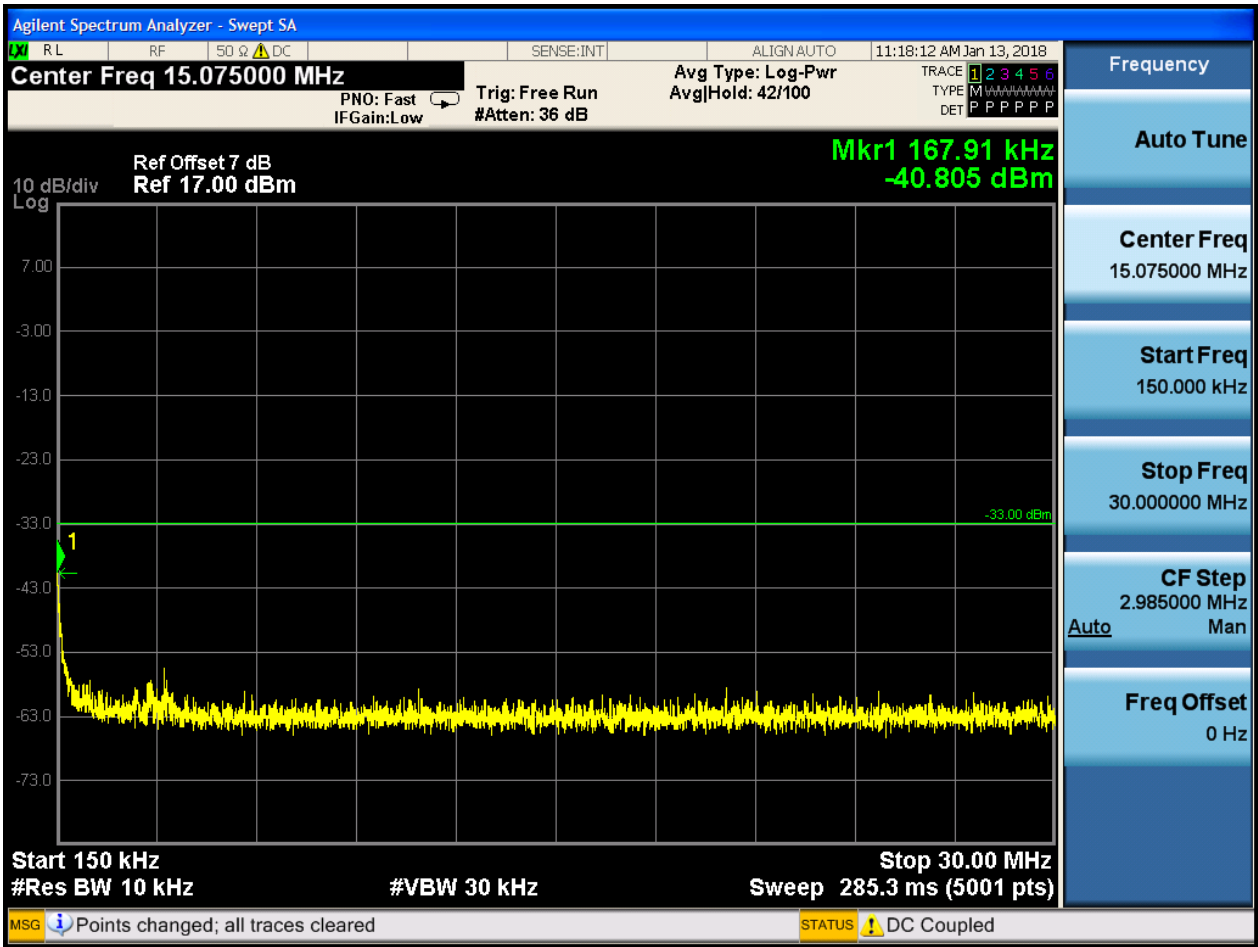
#### 6.1 For UMTS

##### 6.1.1 Test Band = WCDMA1900

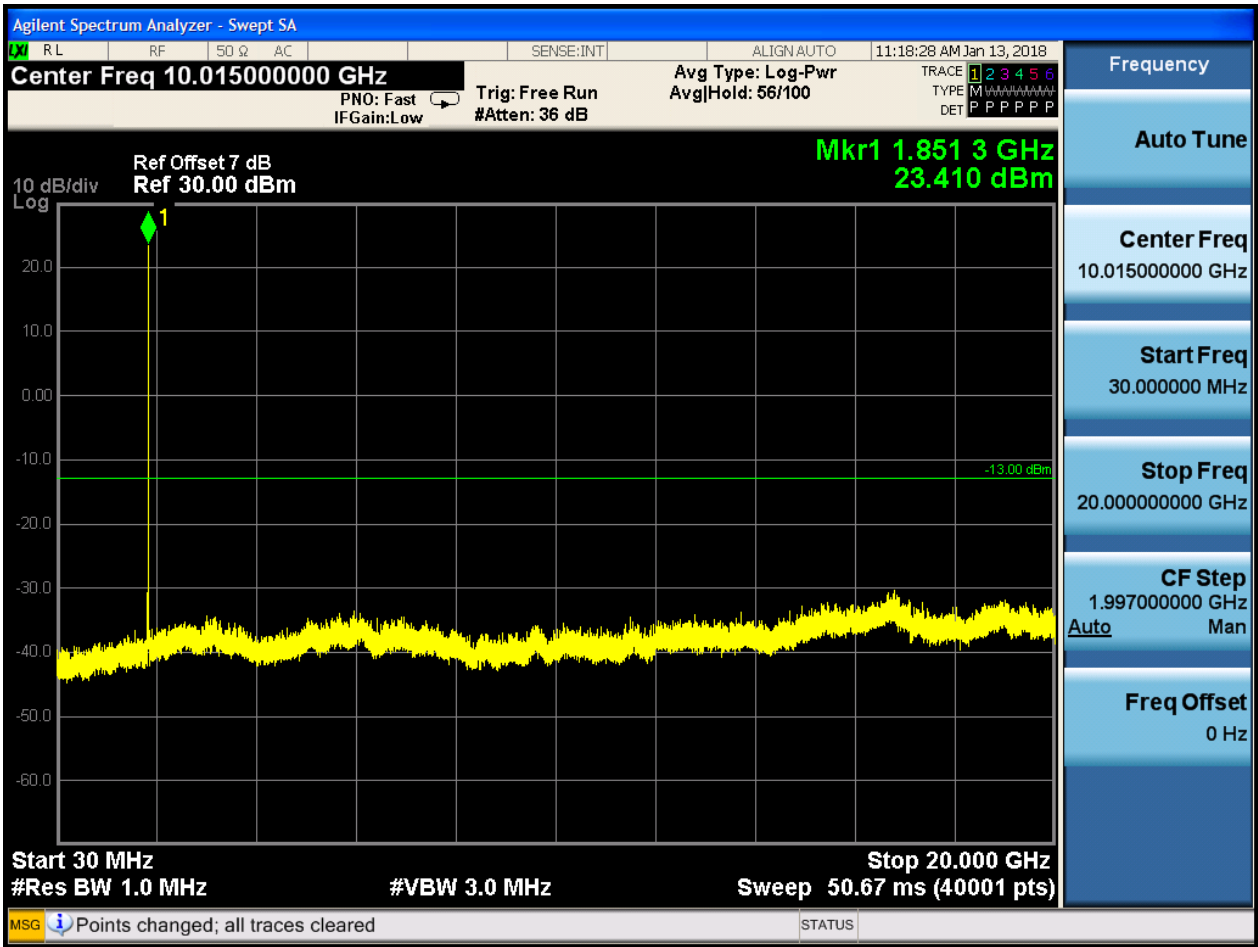
##### 6.1.1.1 Test Mode = UMTS/TM1

##### 6.1.1.1.1 Test Channel = LCH



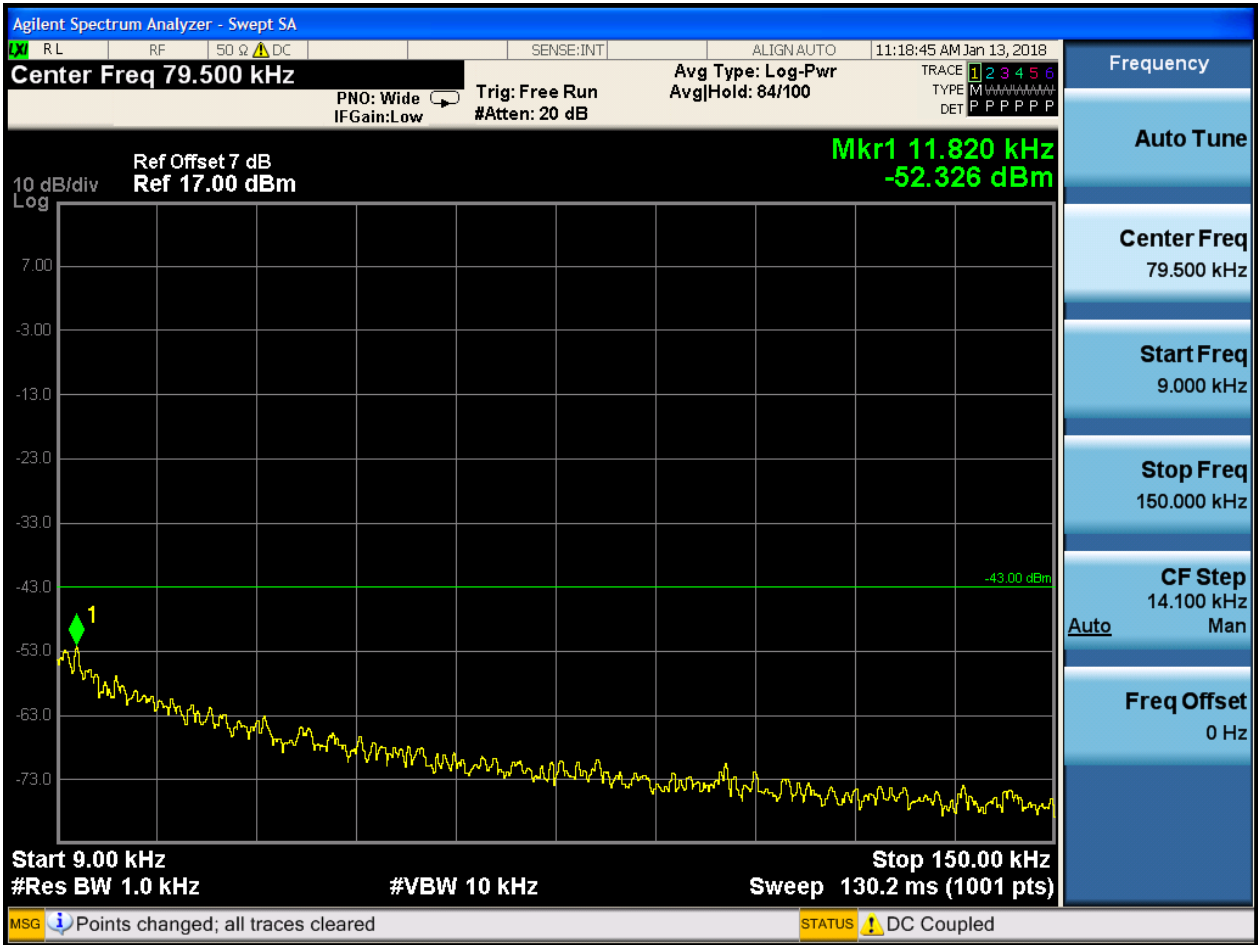


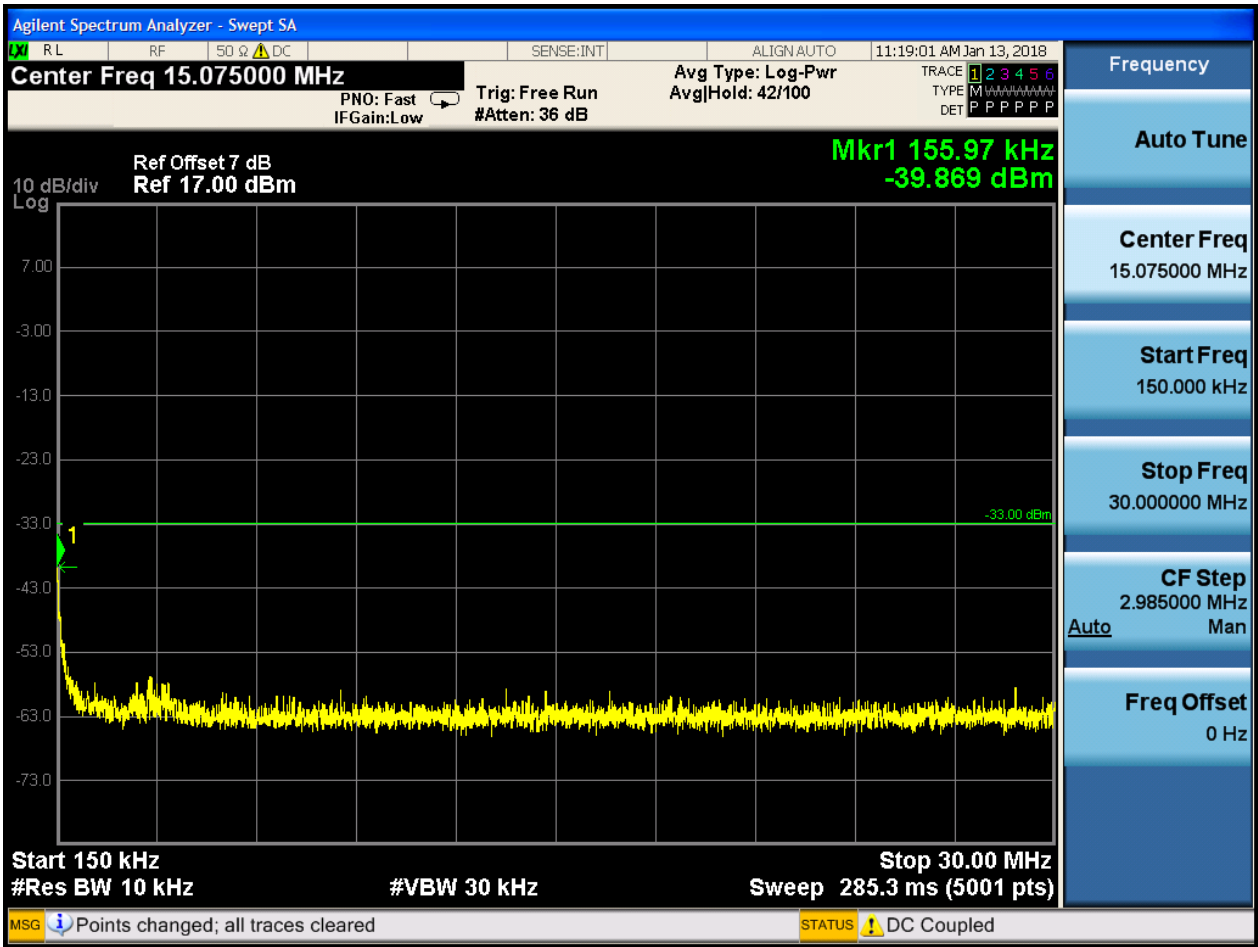


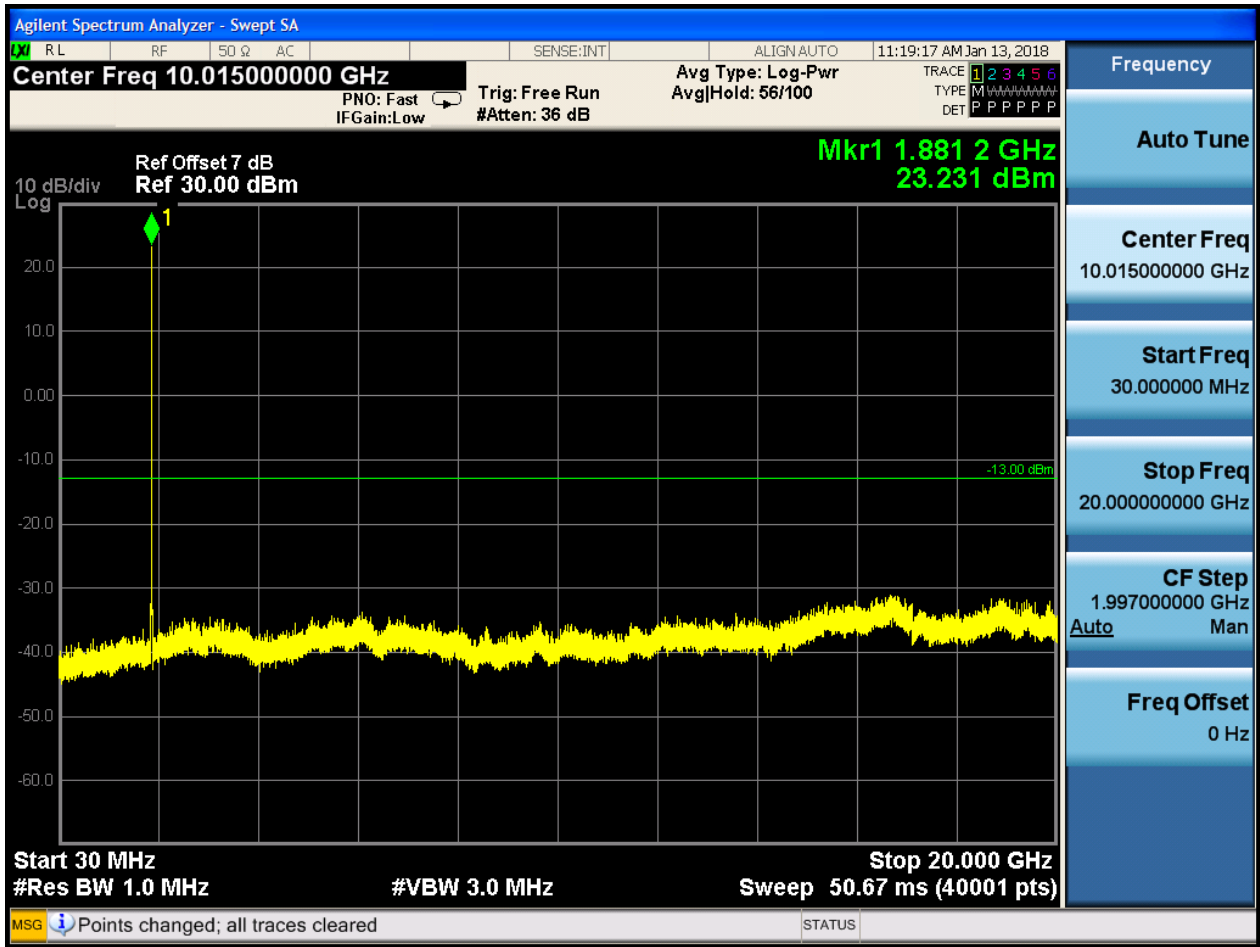




6.1.1.1.2 Test Channel = MCH

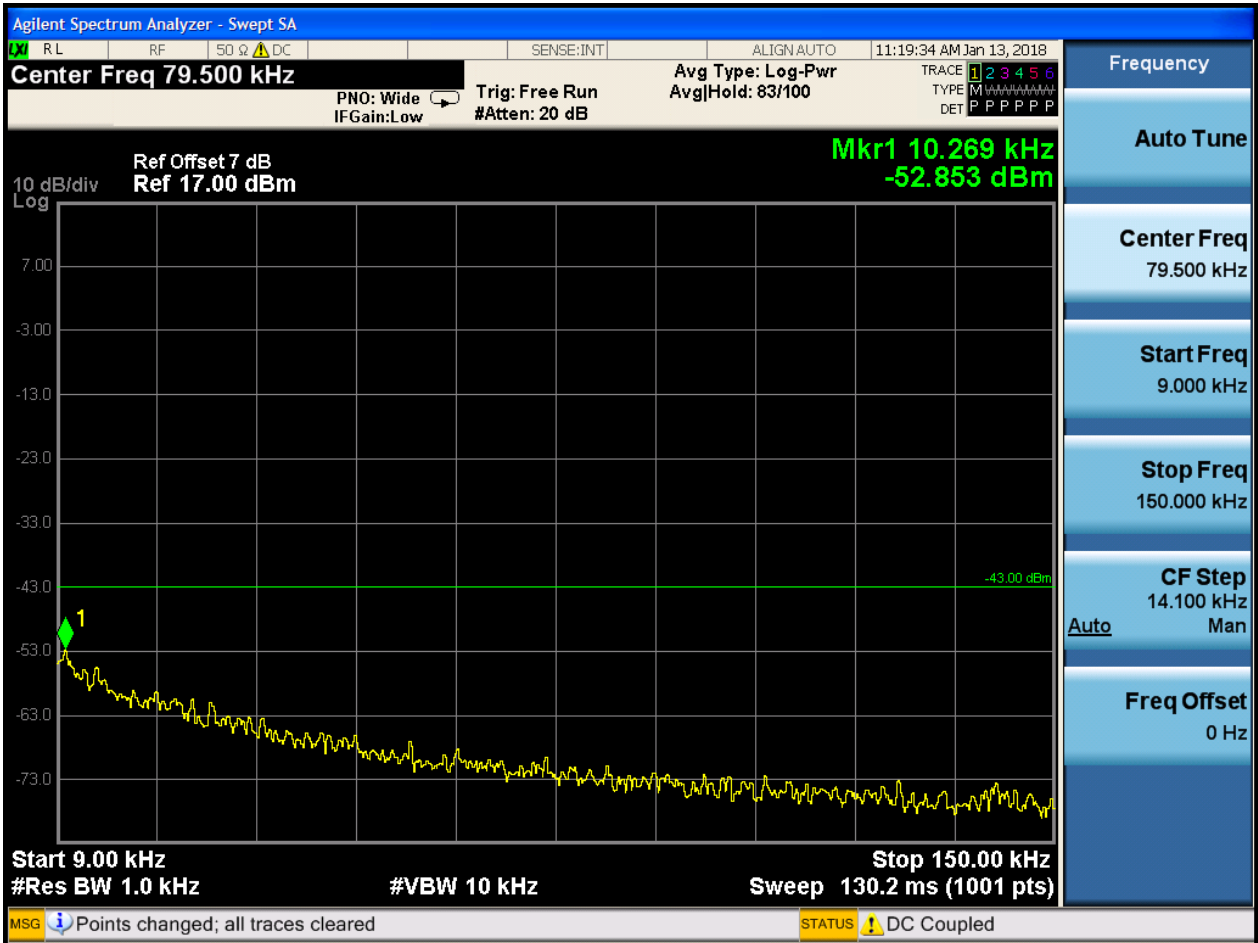


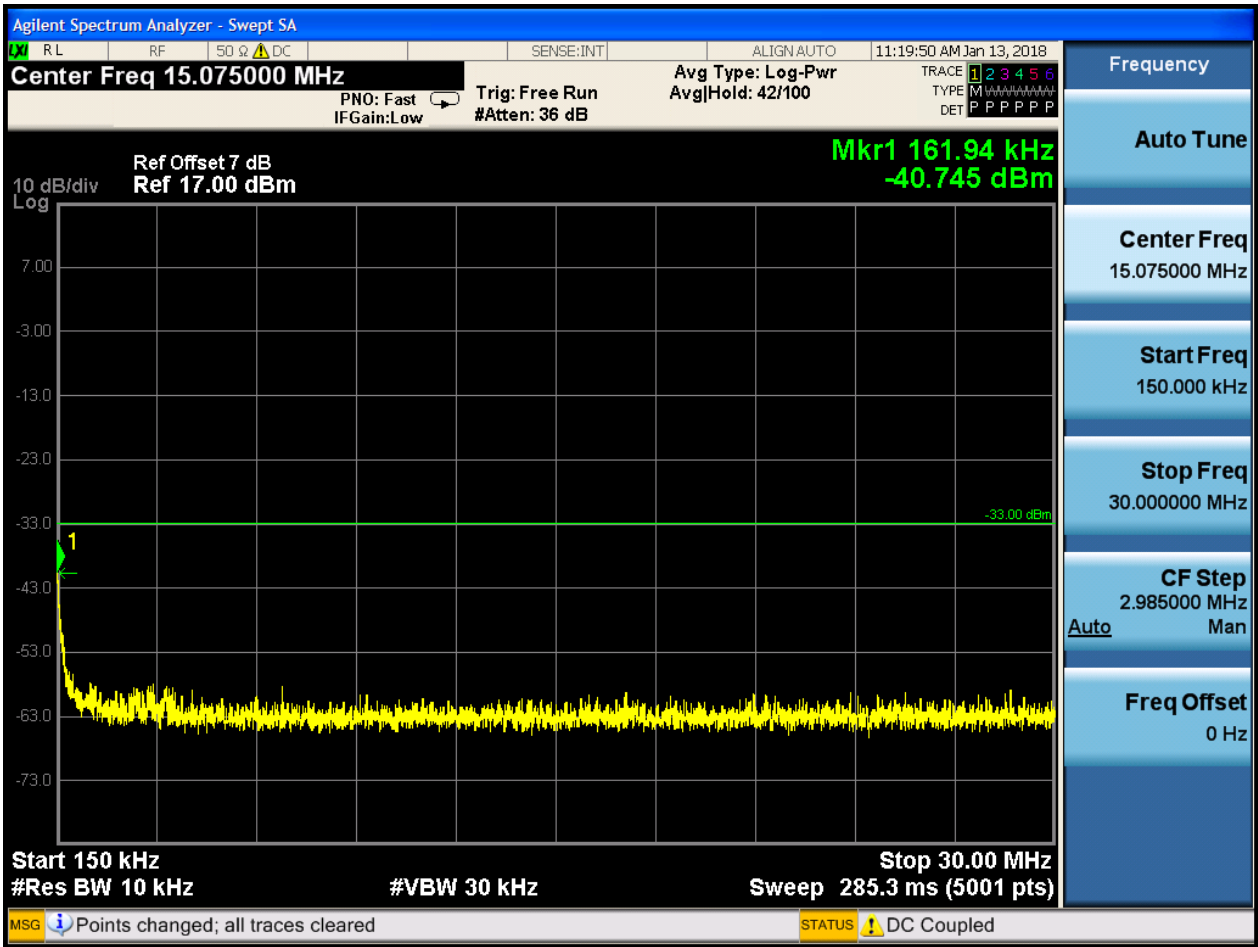


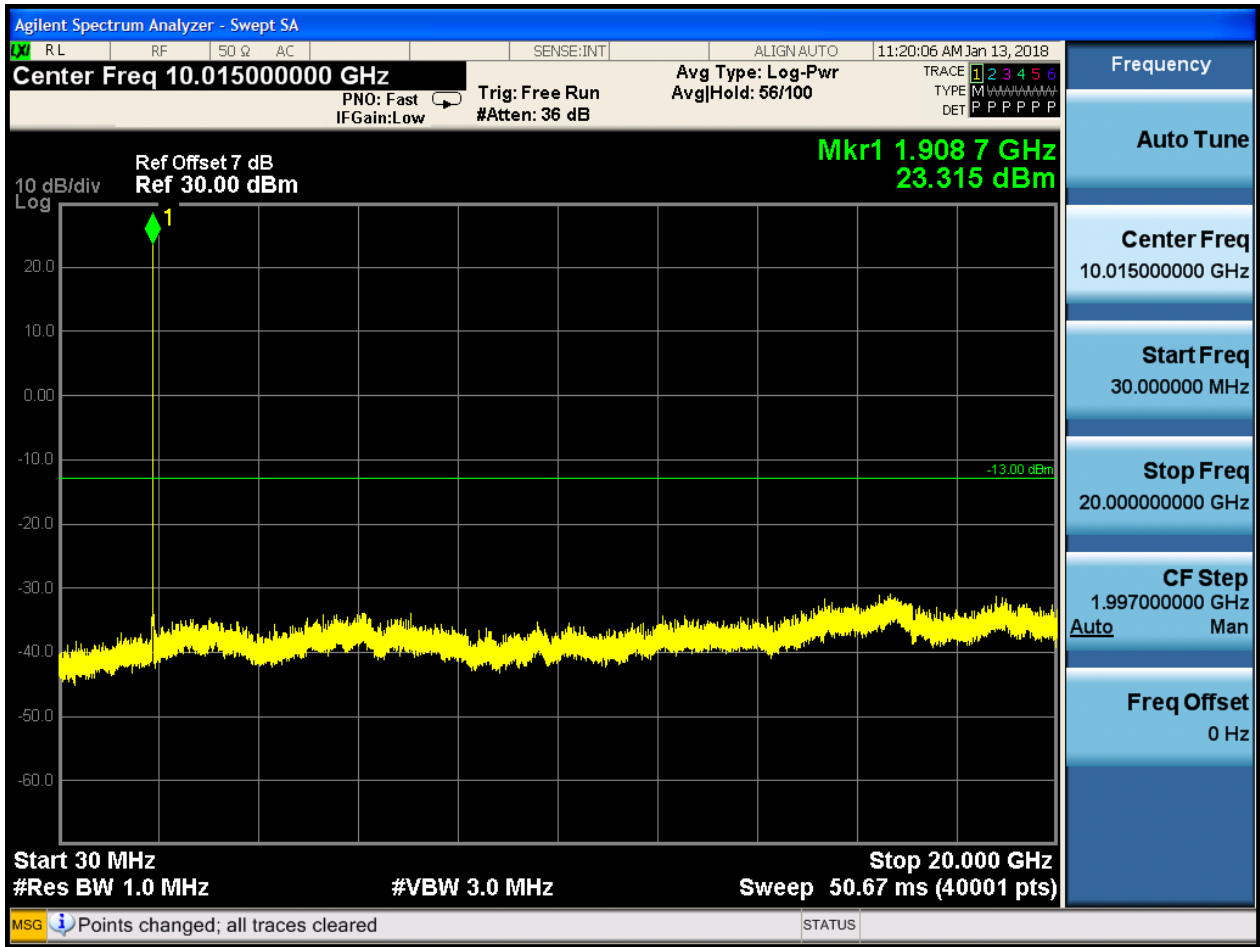




### 6.1.1.1.3 Test Channel = HCH





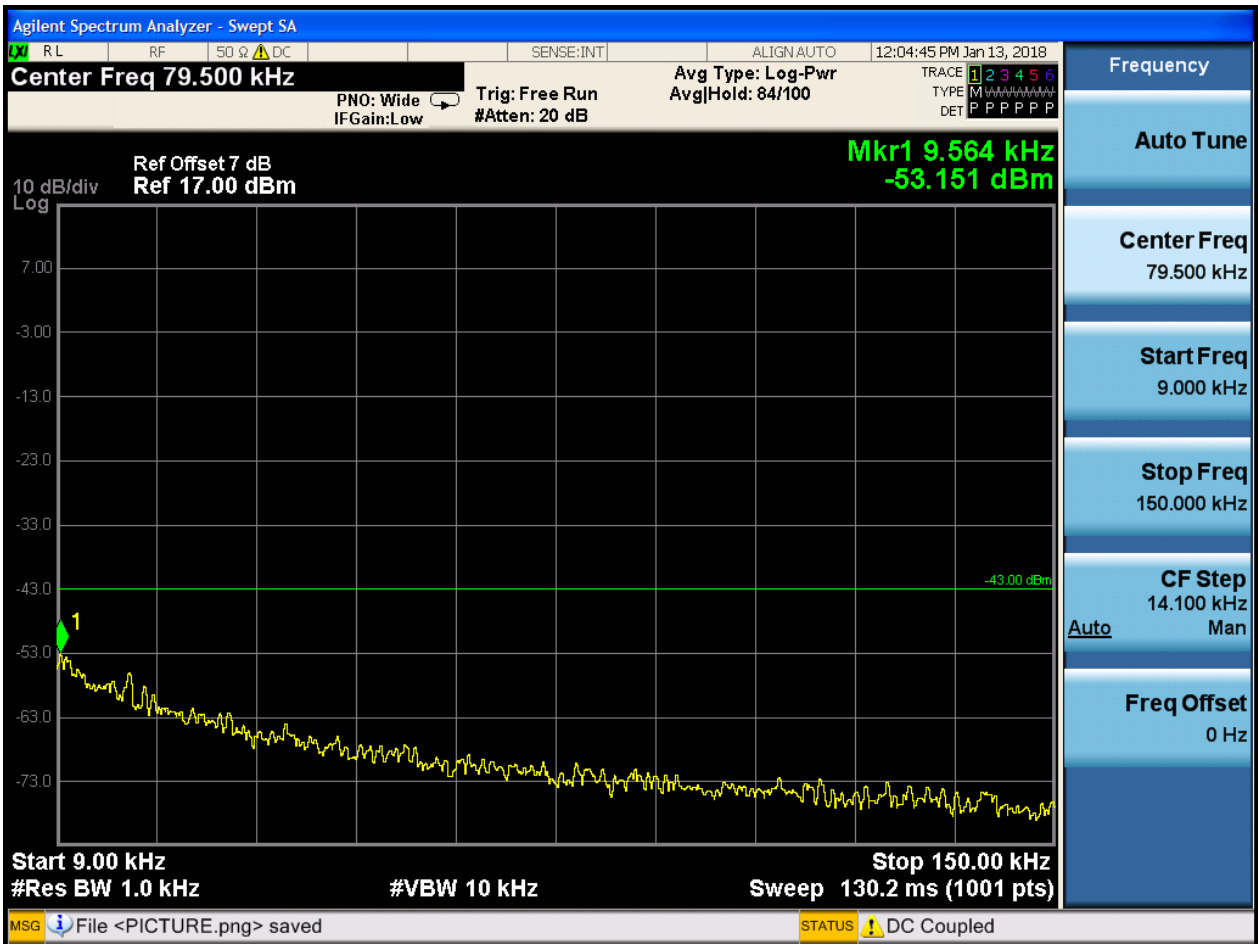




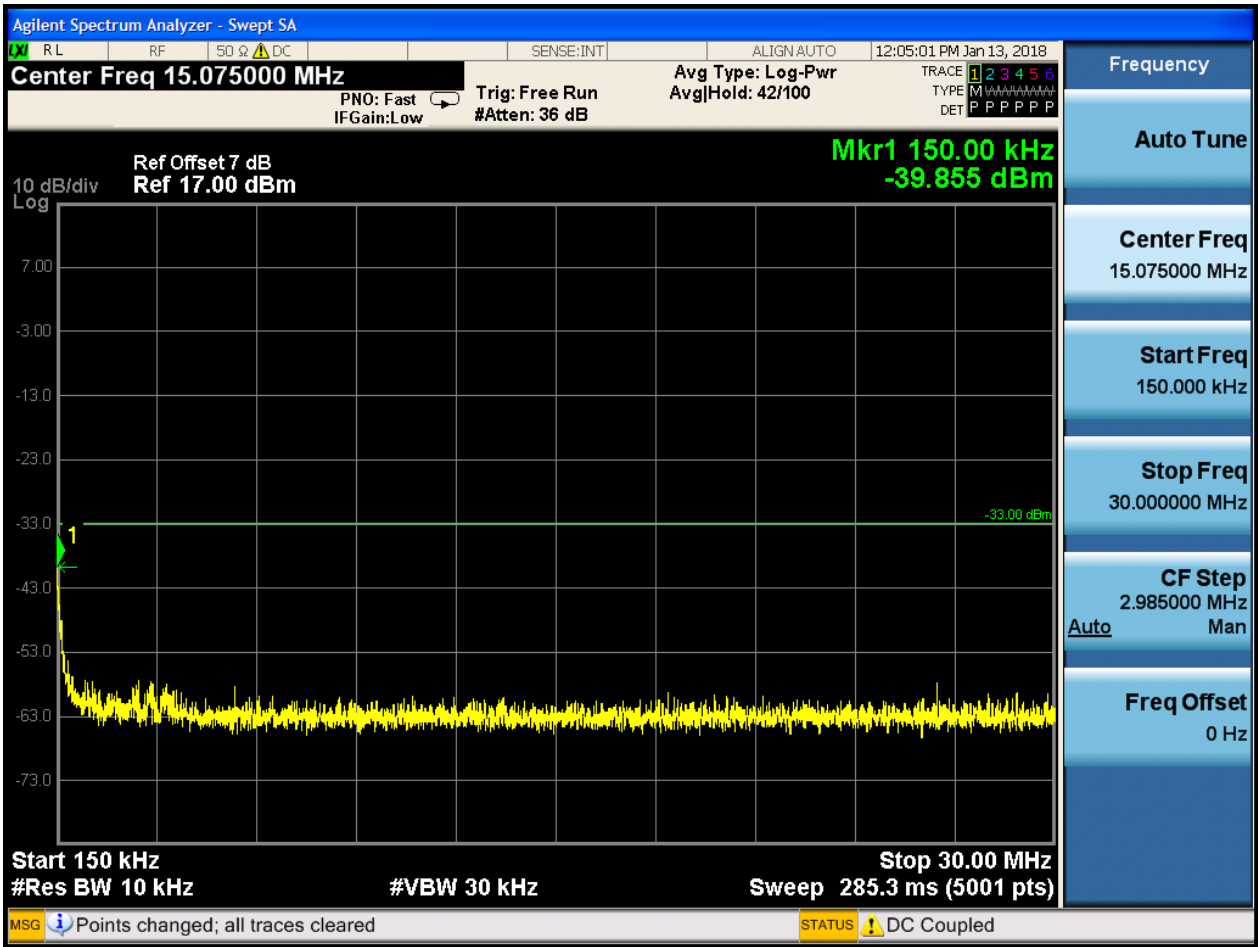
6.1.2 Test Band = WCDMA1700

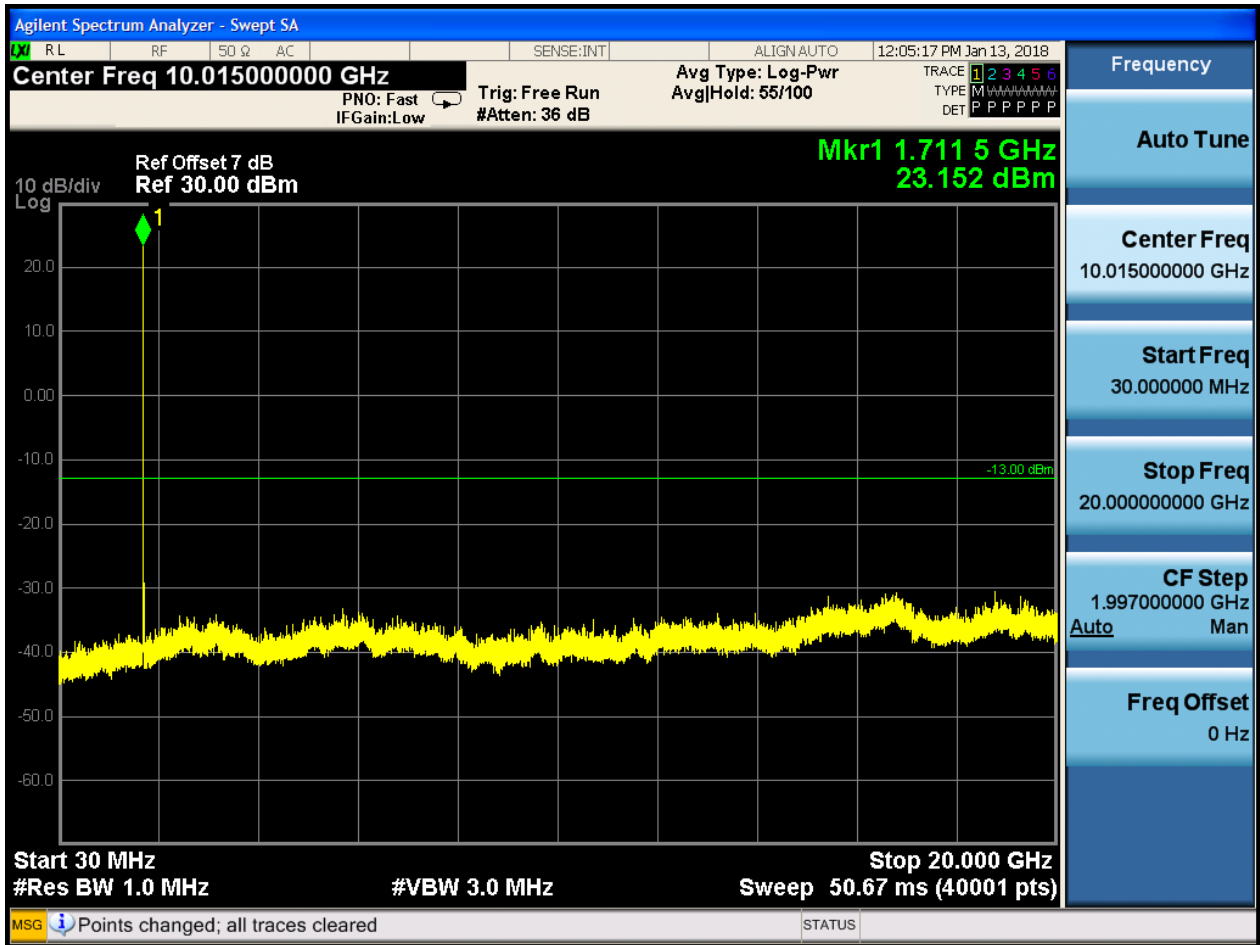
6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH



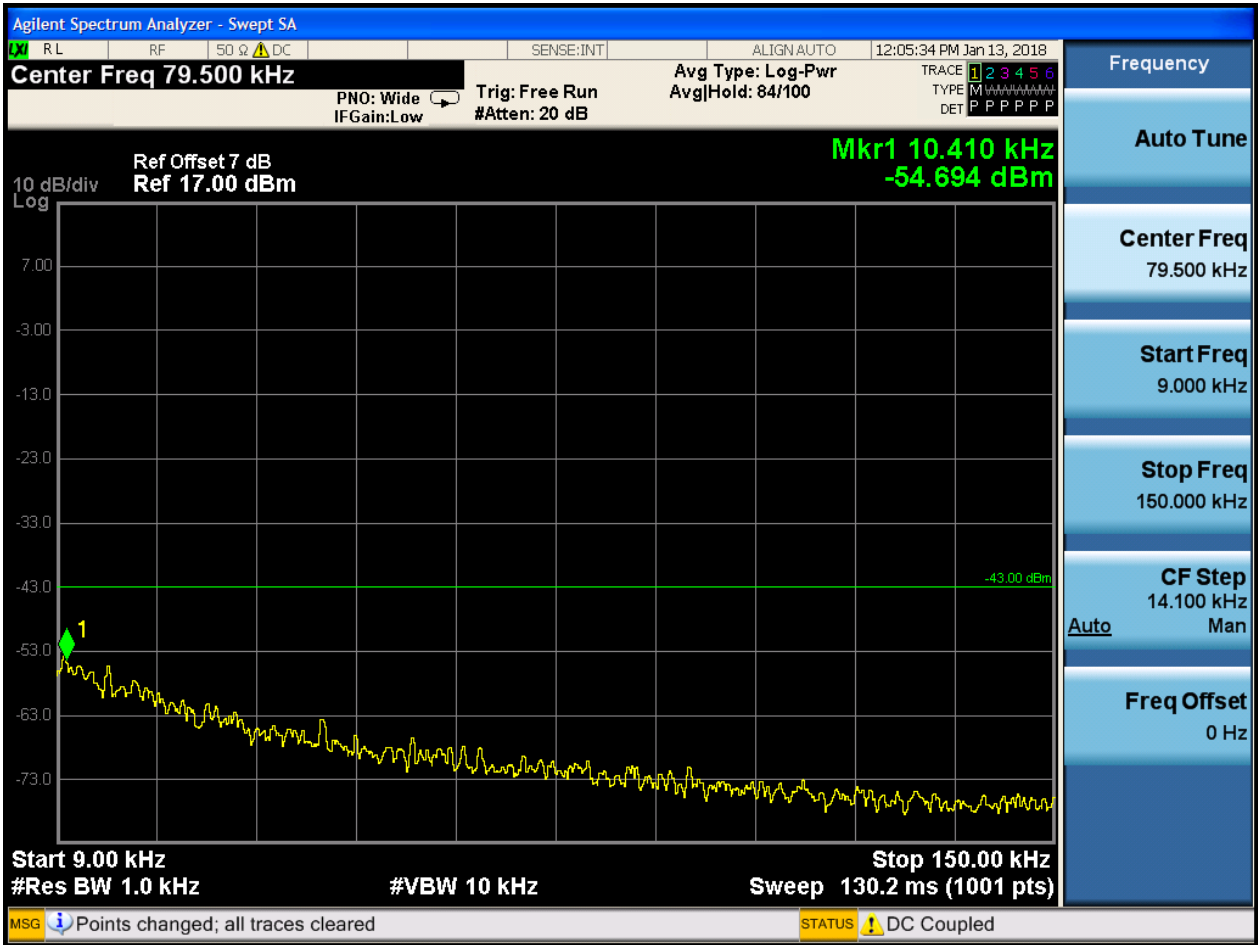


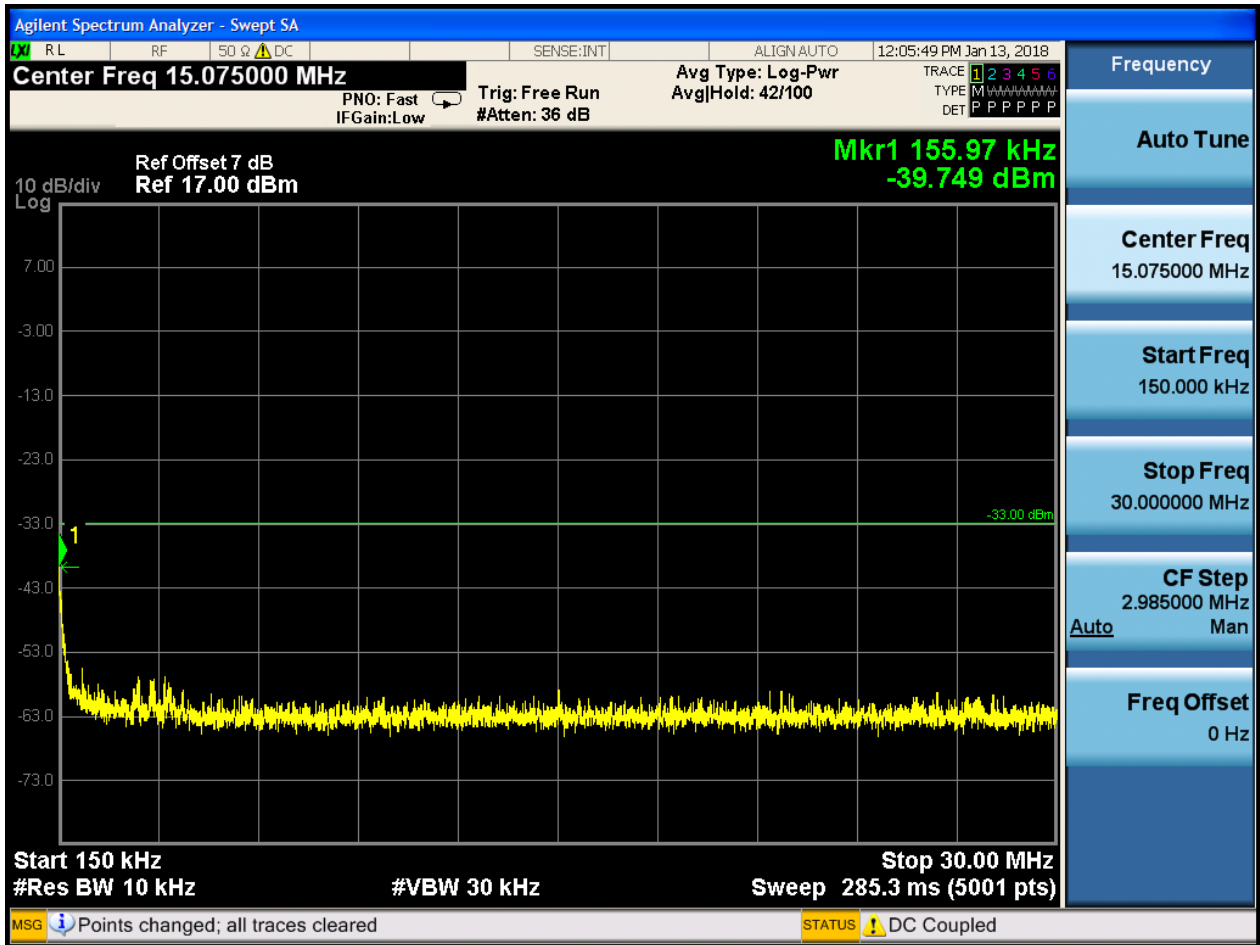


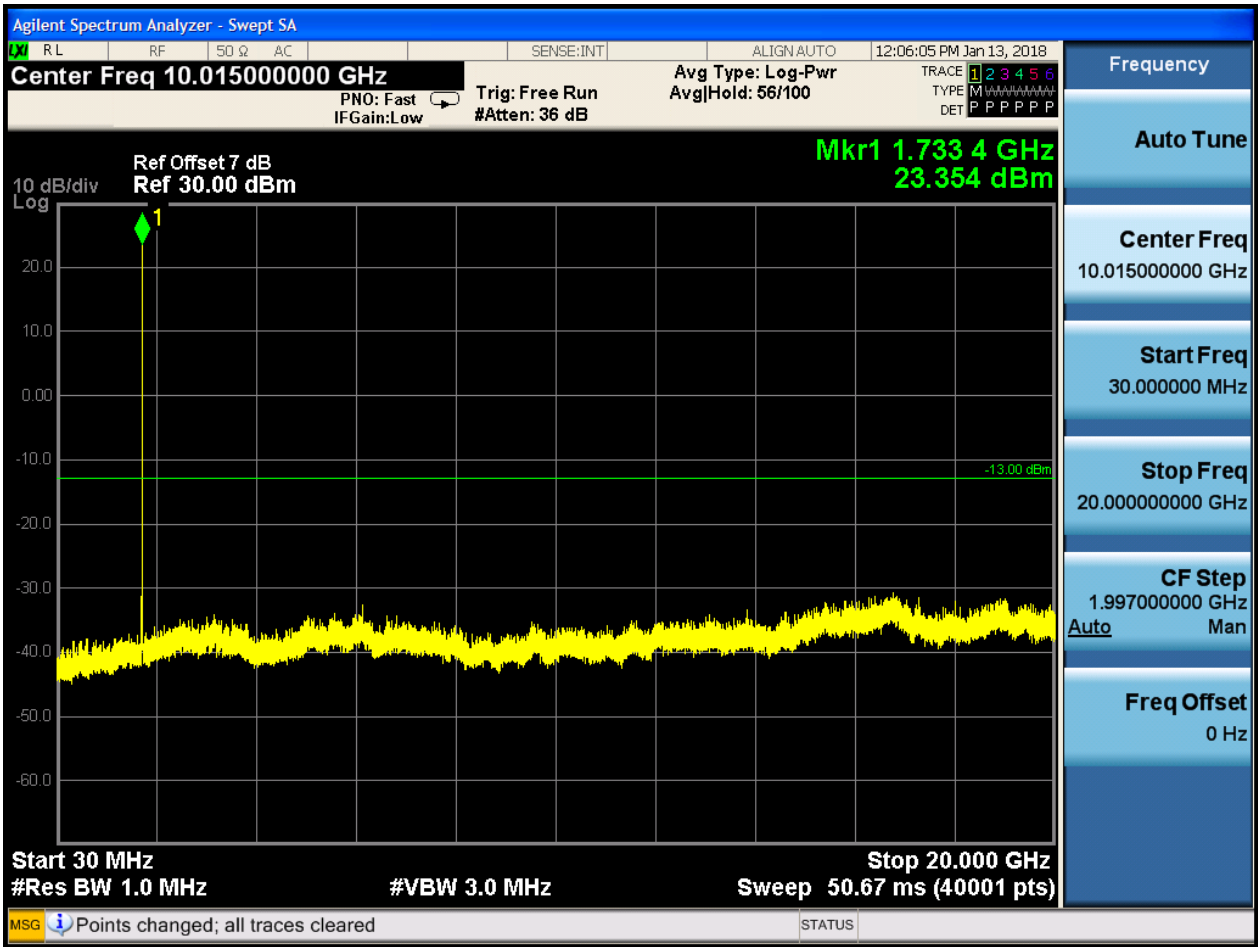




### 6.1.2.1.2 Test Channel = MCH

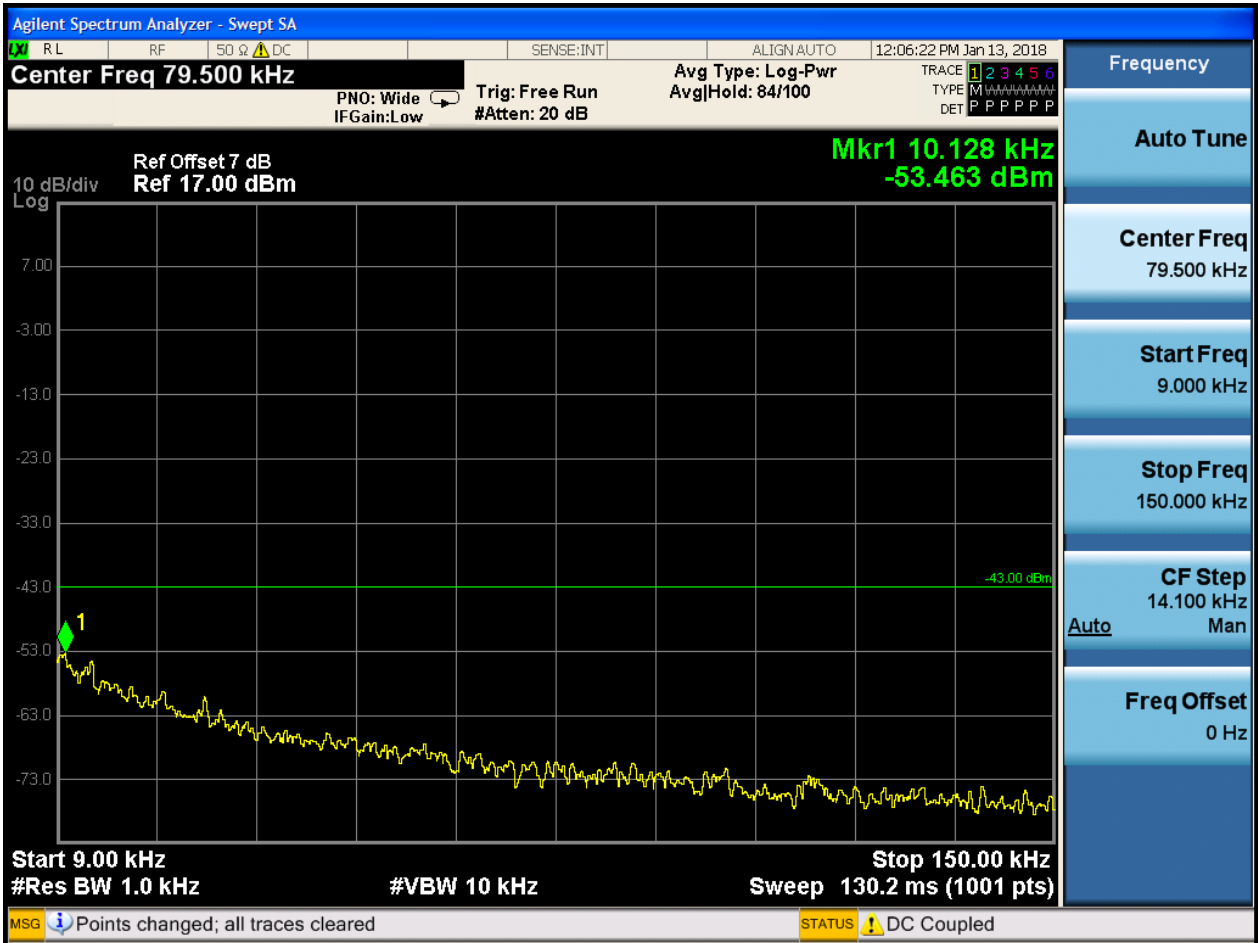


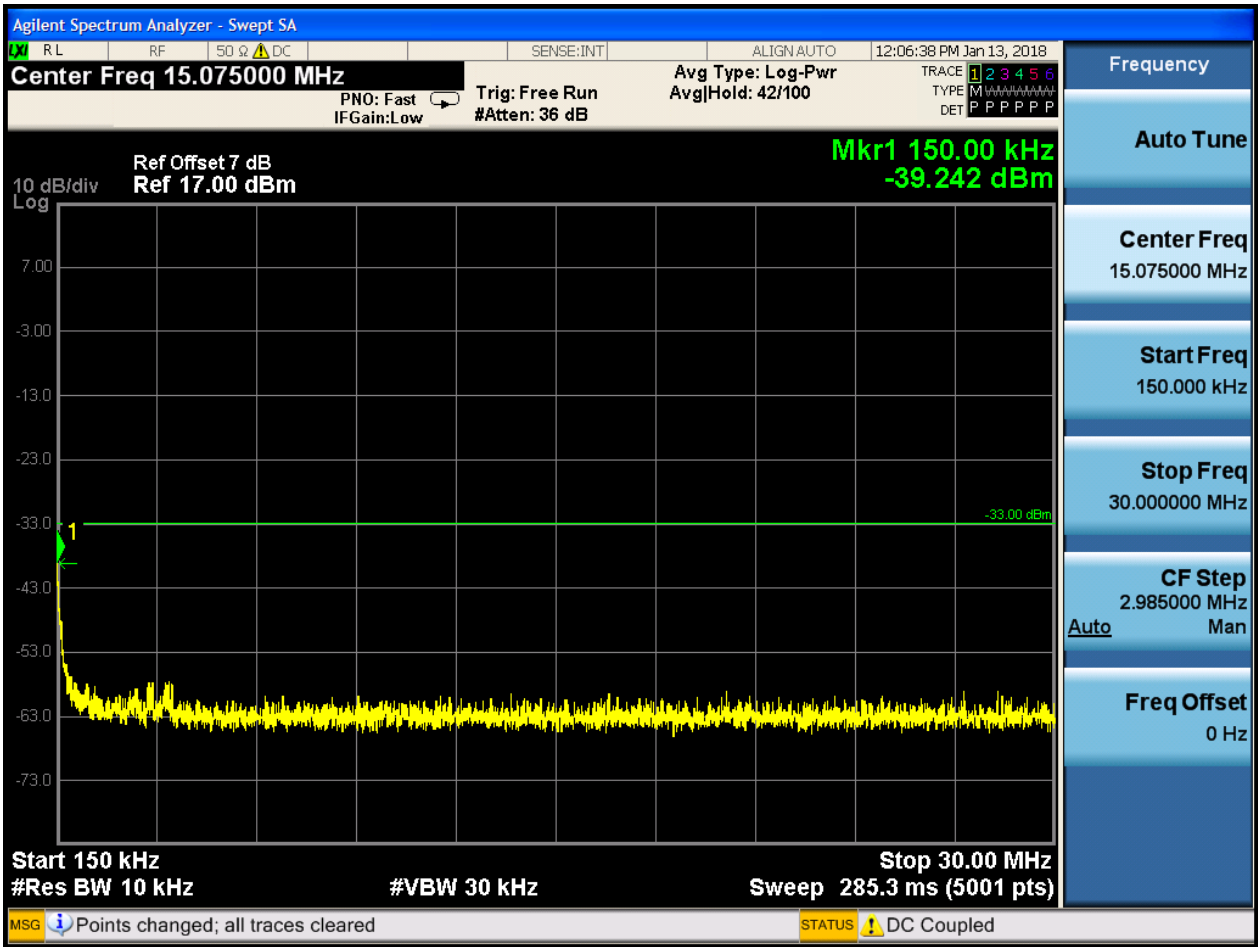


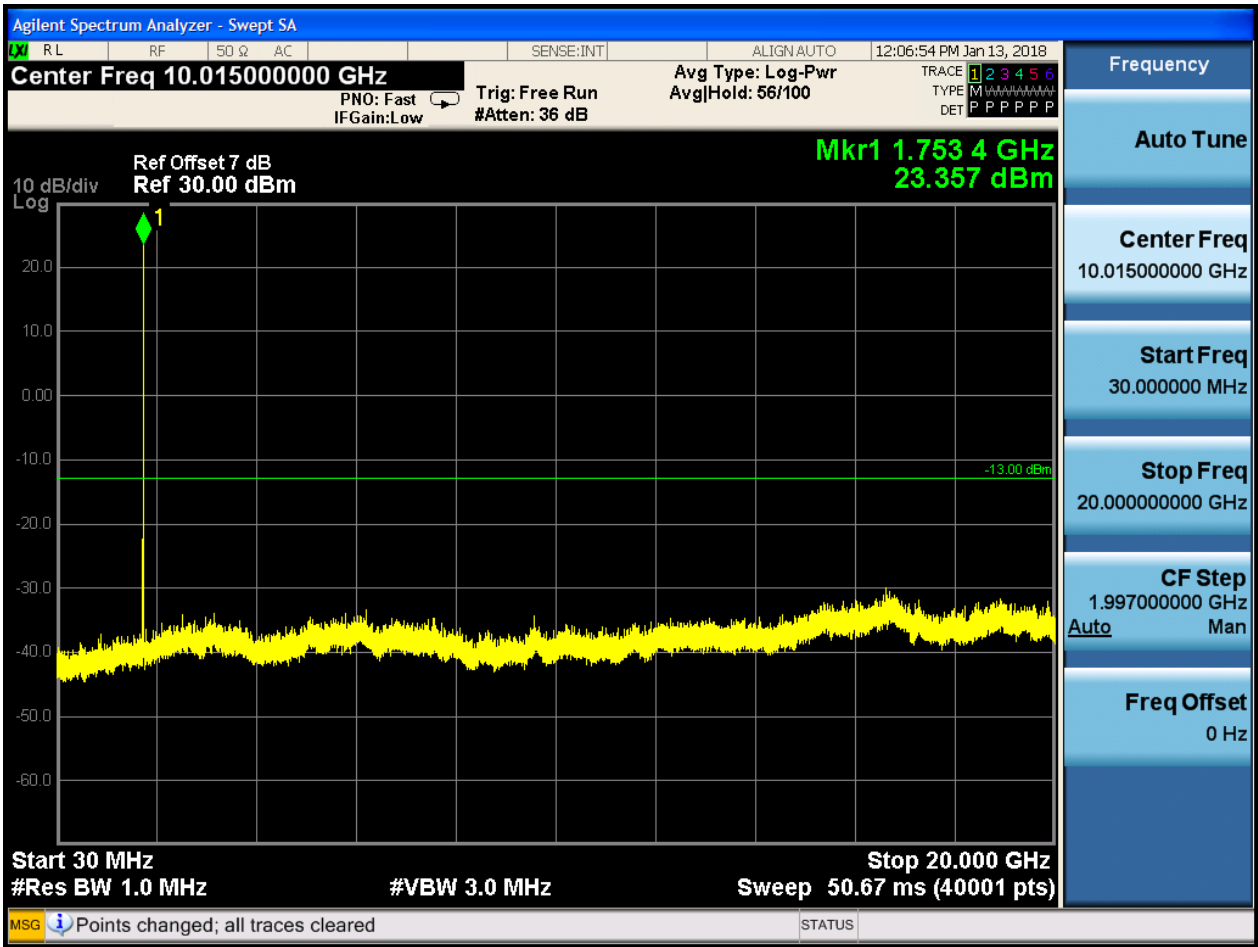




### 6.1.2.1.3 Test Channel = HCH







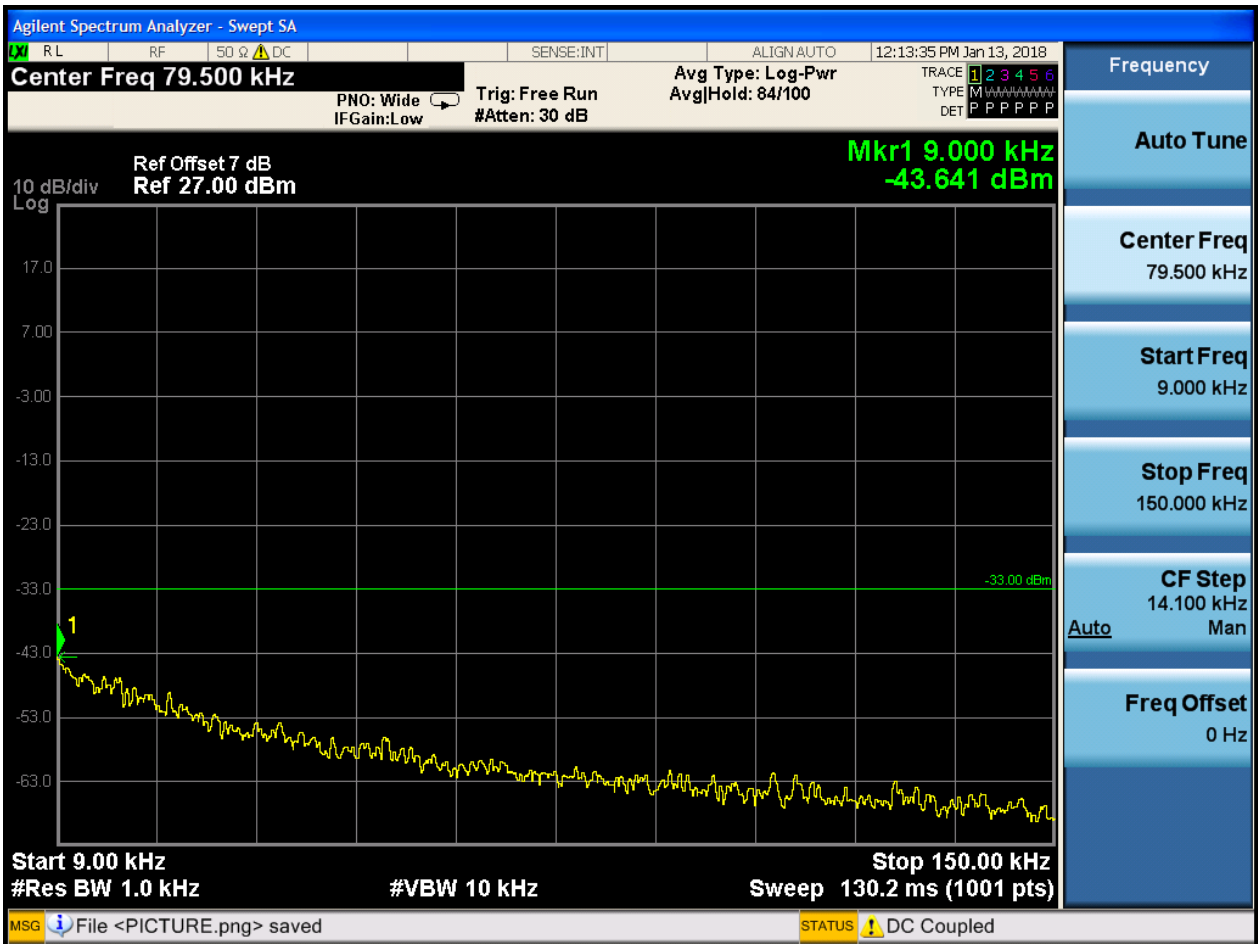


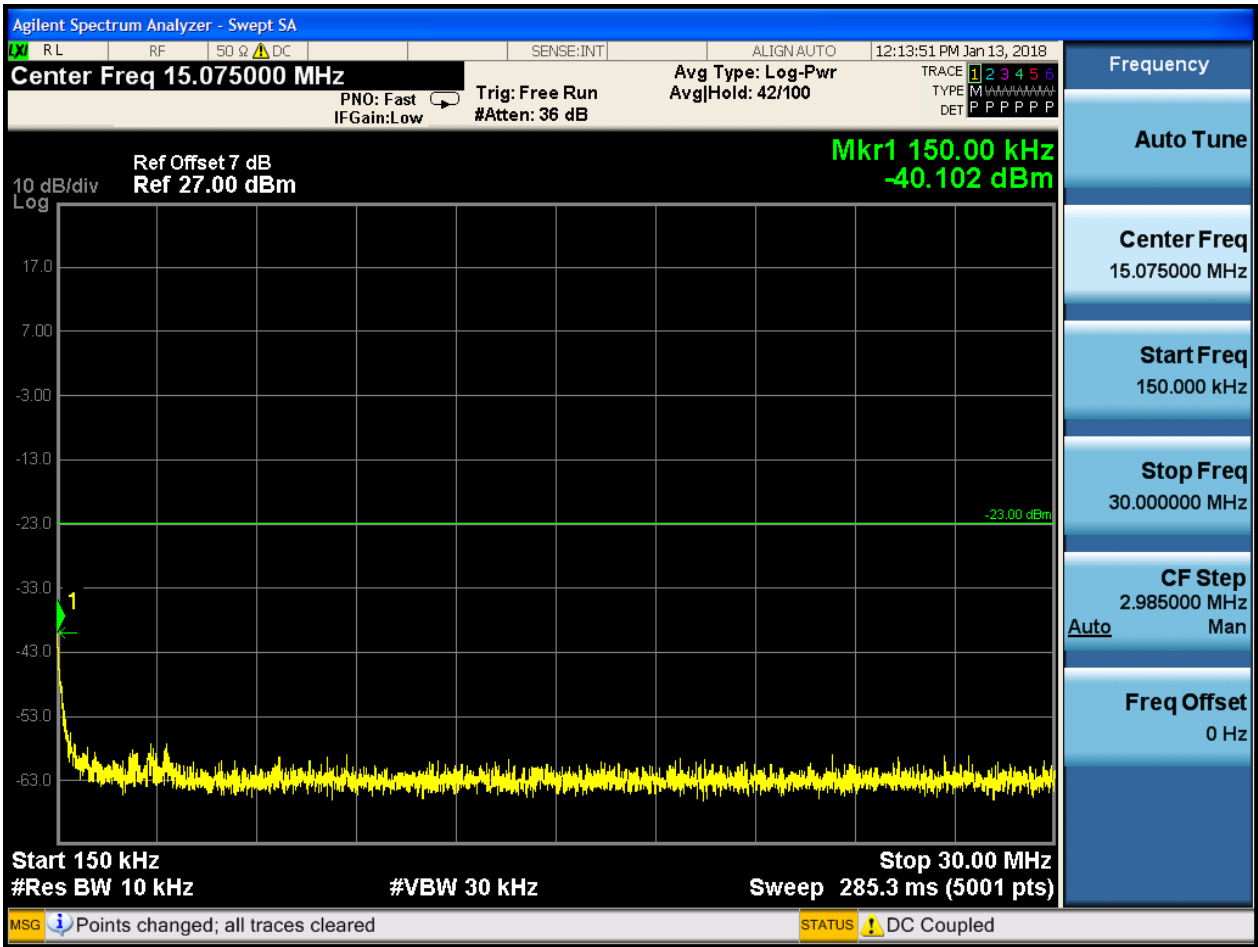


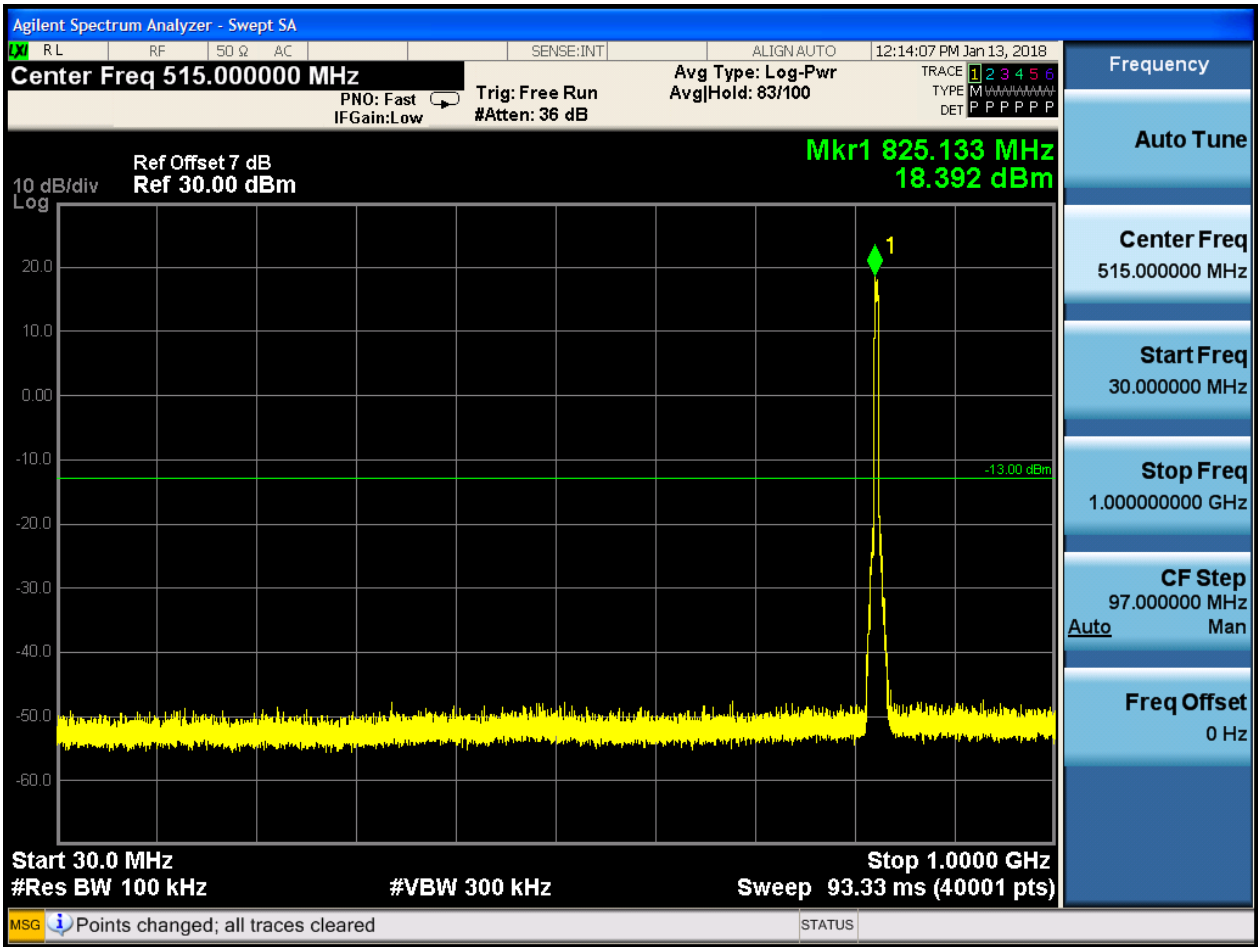
6.1.3 Test Band = WCDMA850

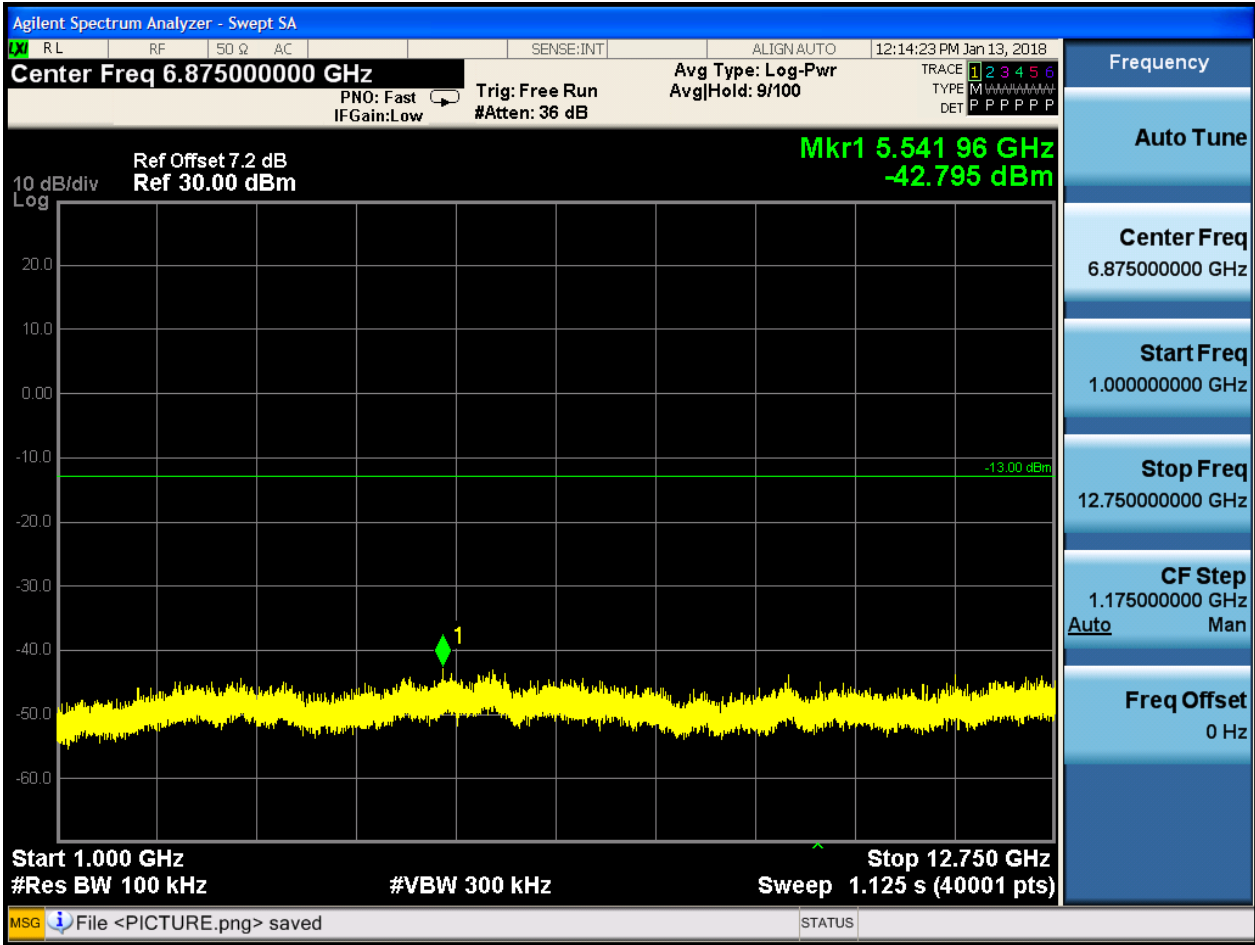
6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH



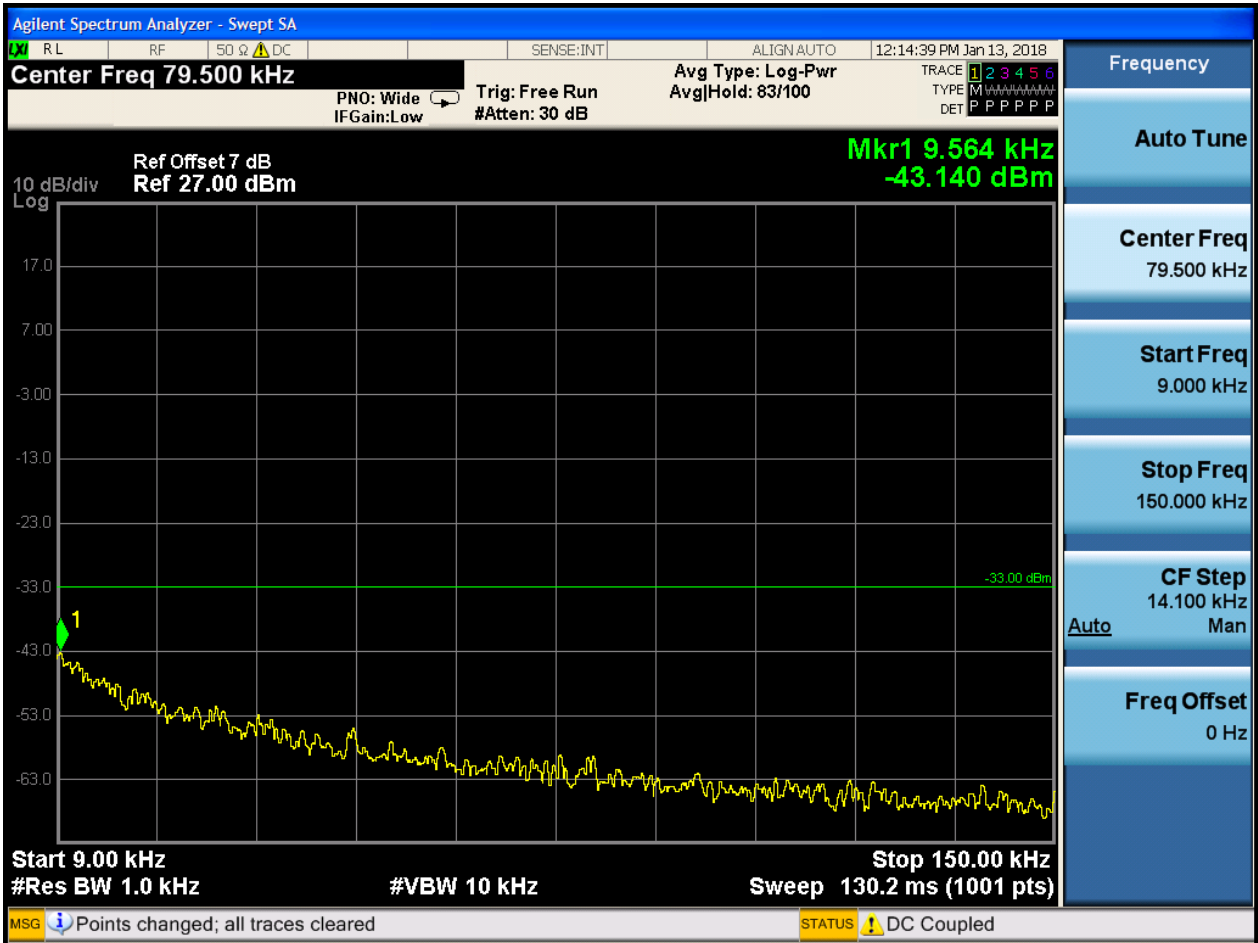


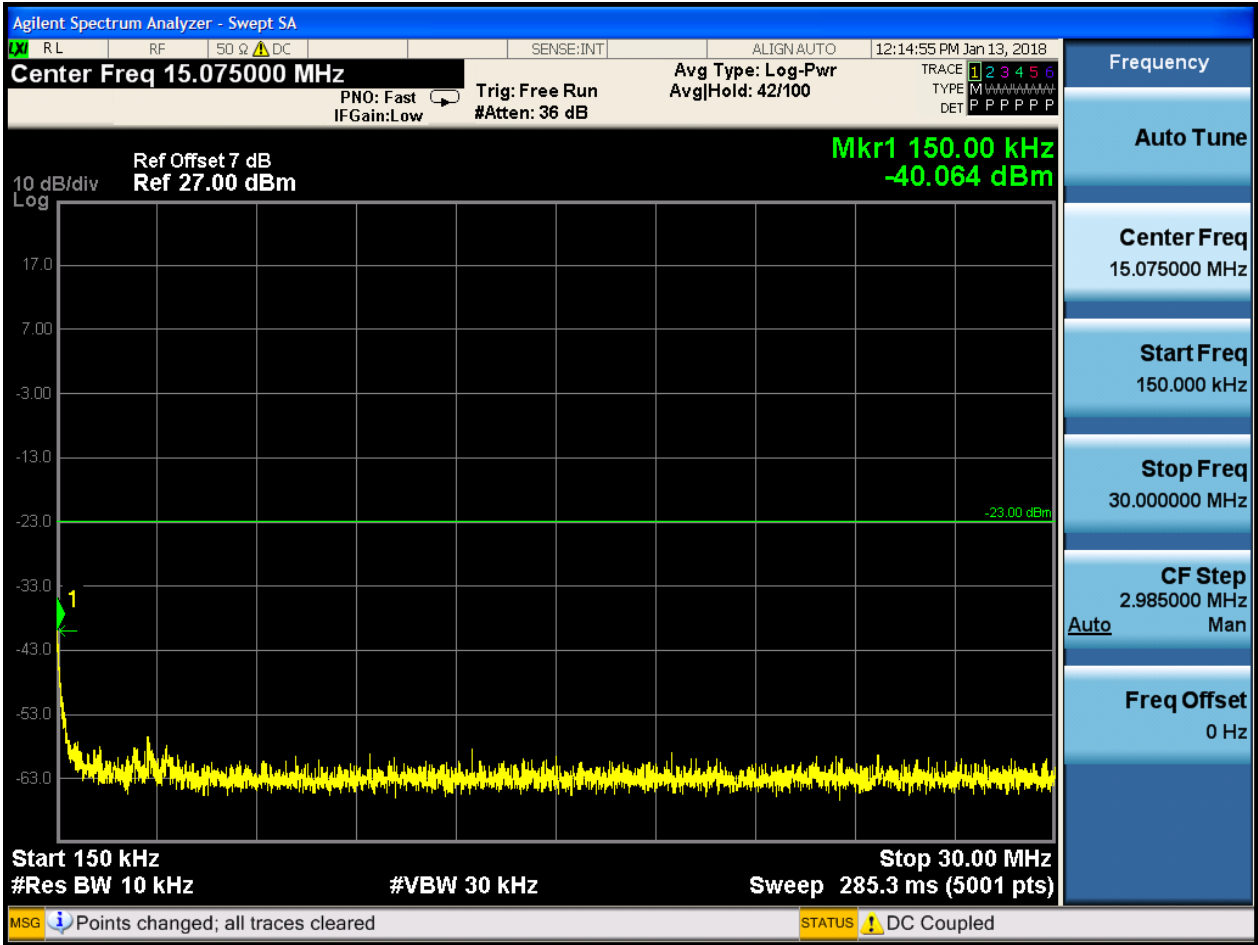


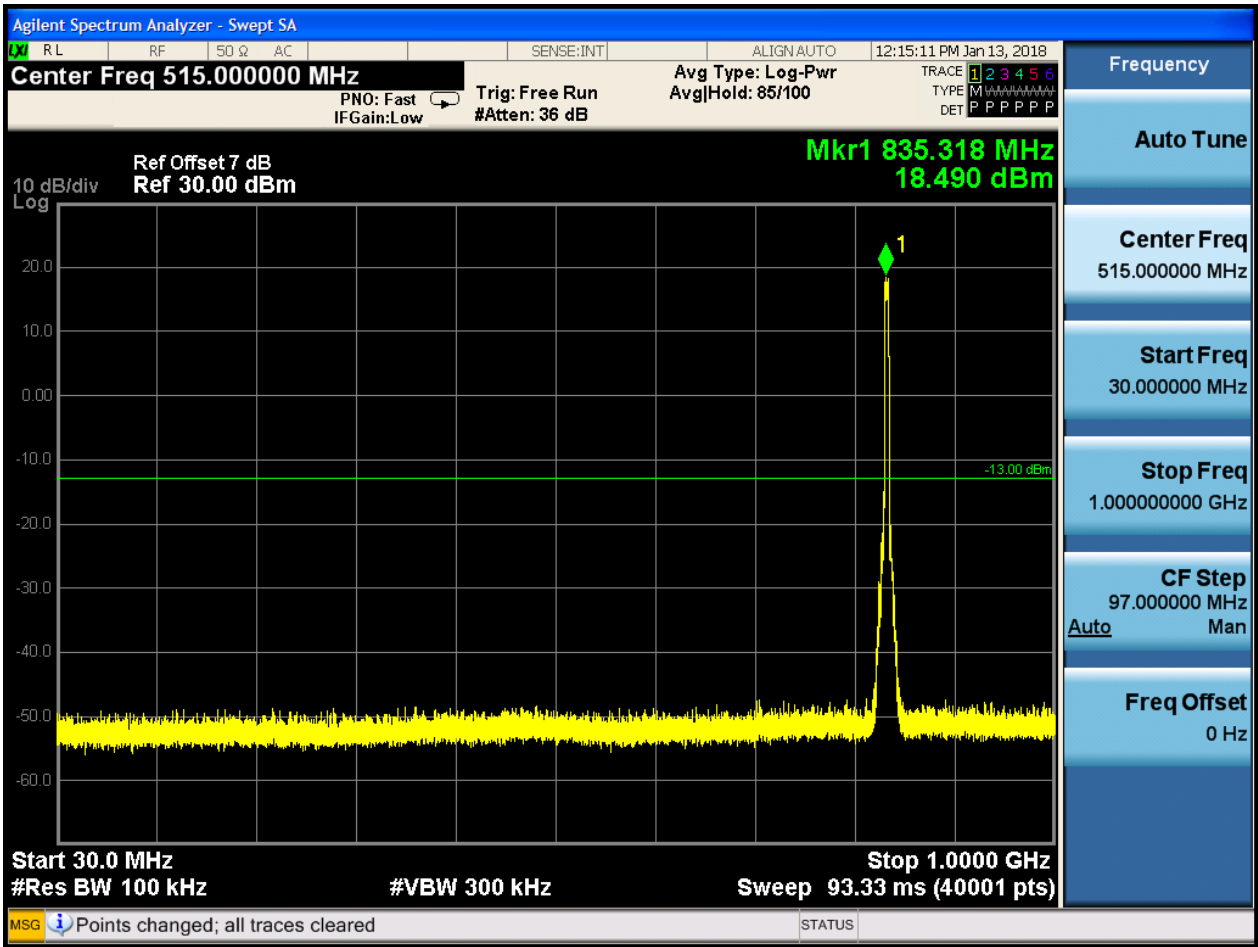


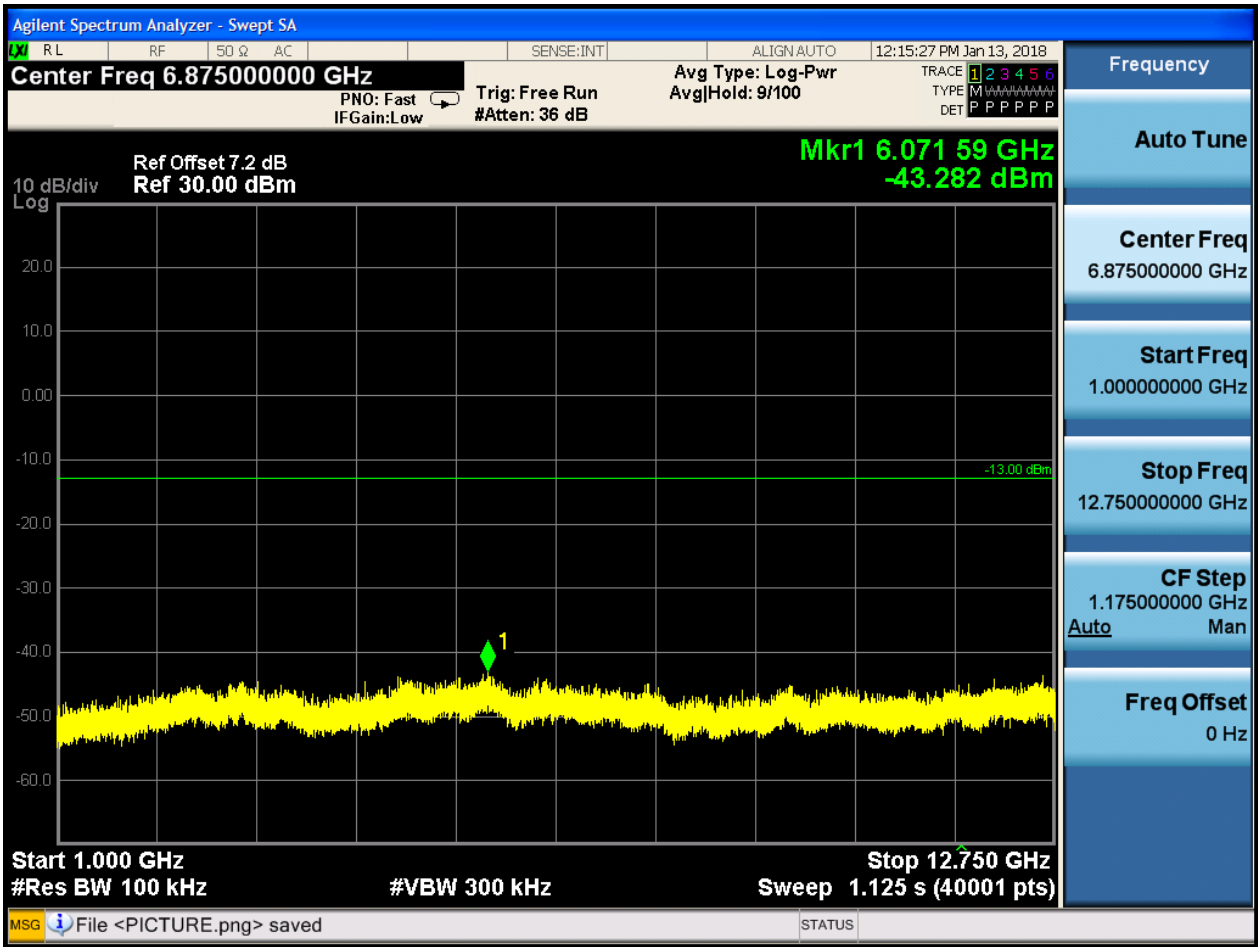


6.1.3.1.2 Test Channel = MCH





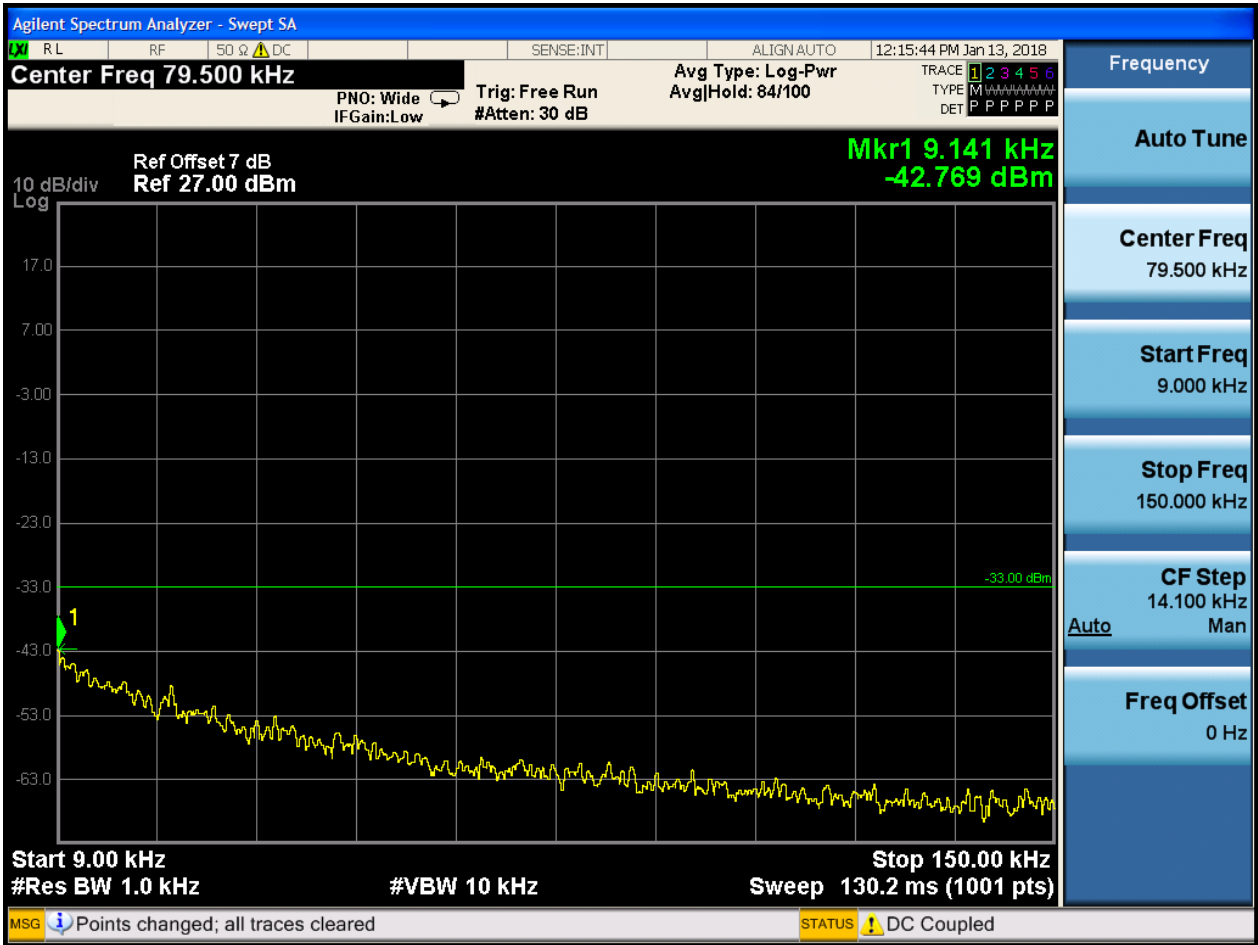


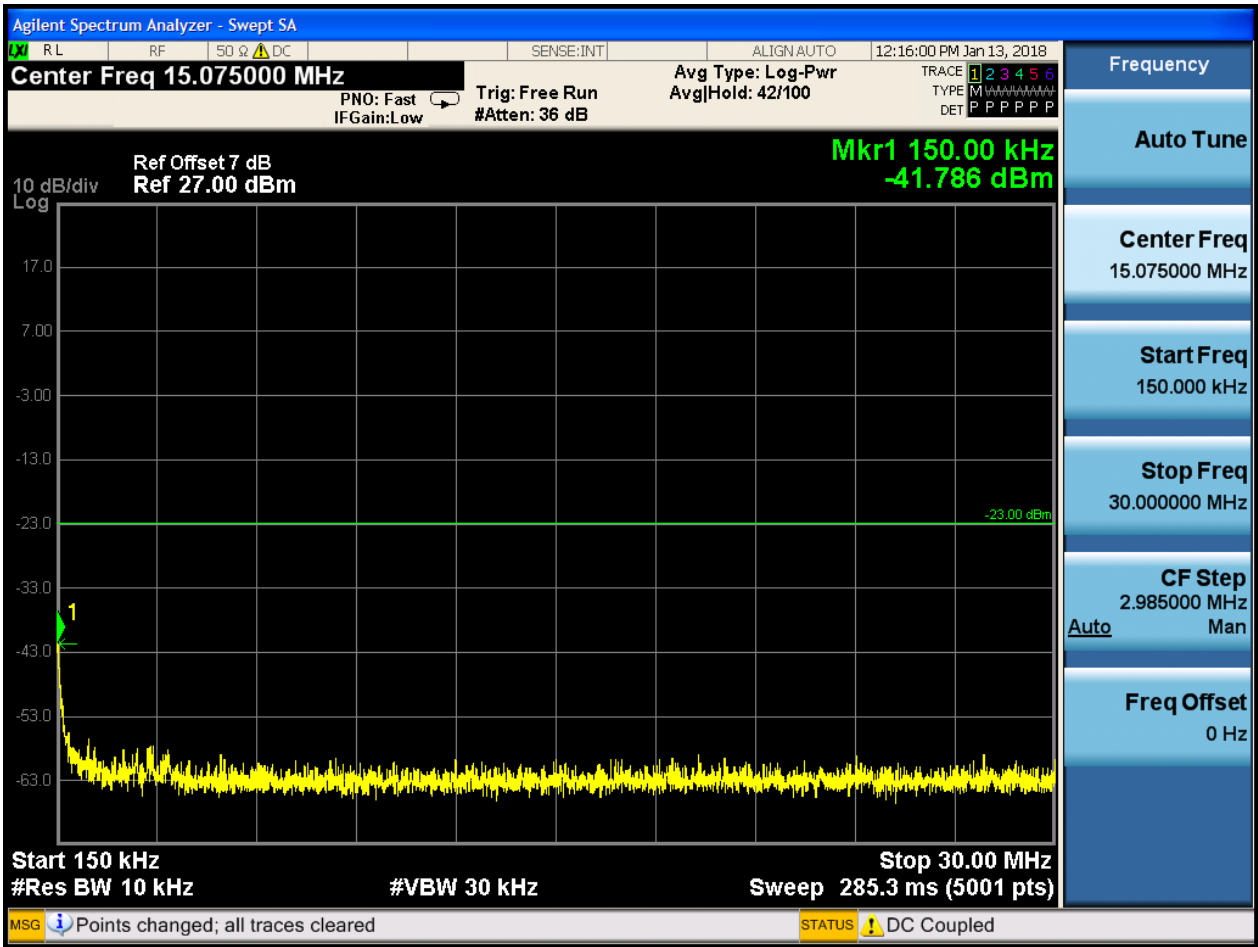


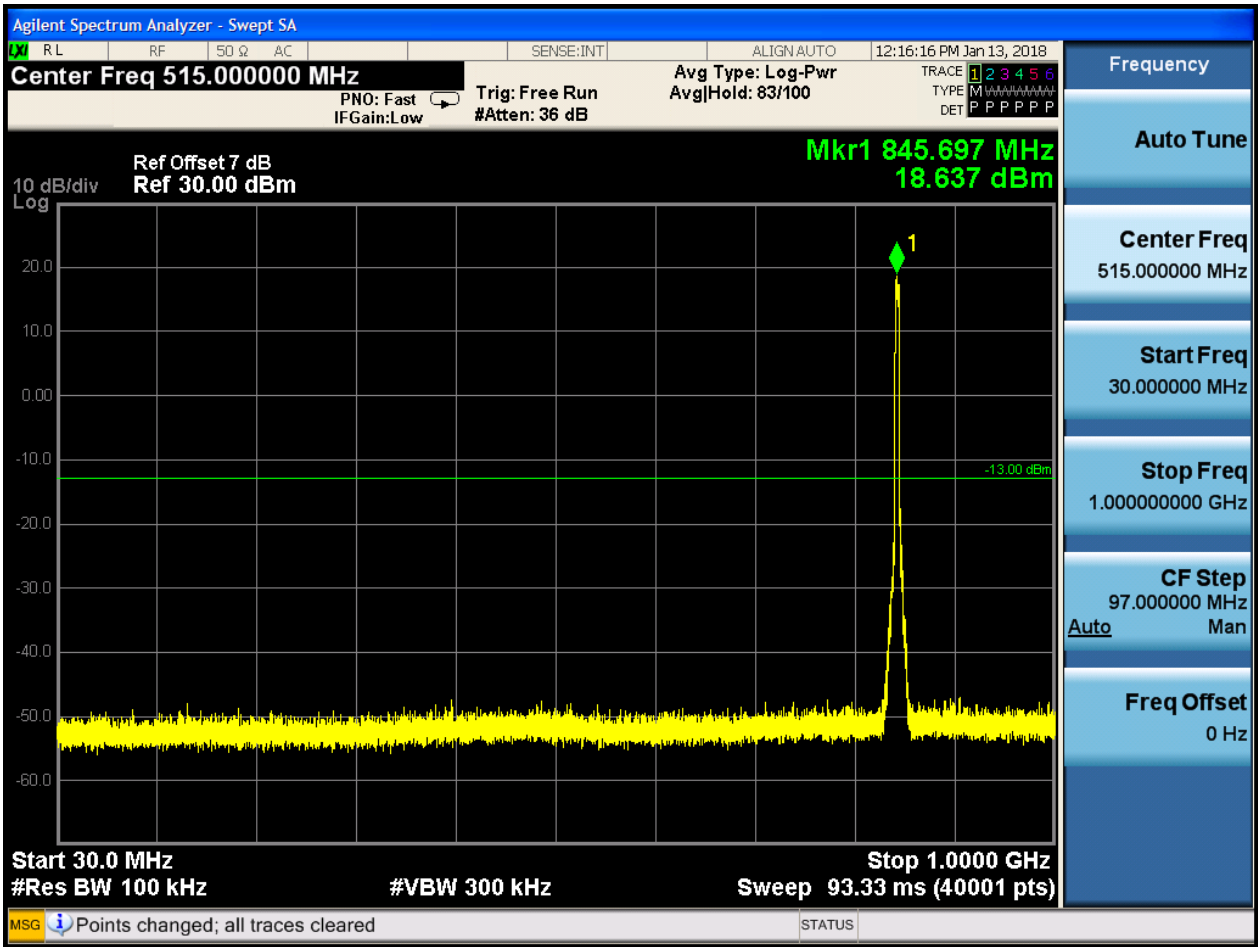


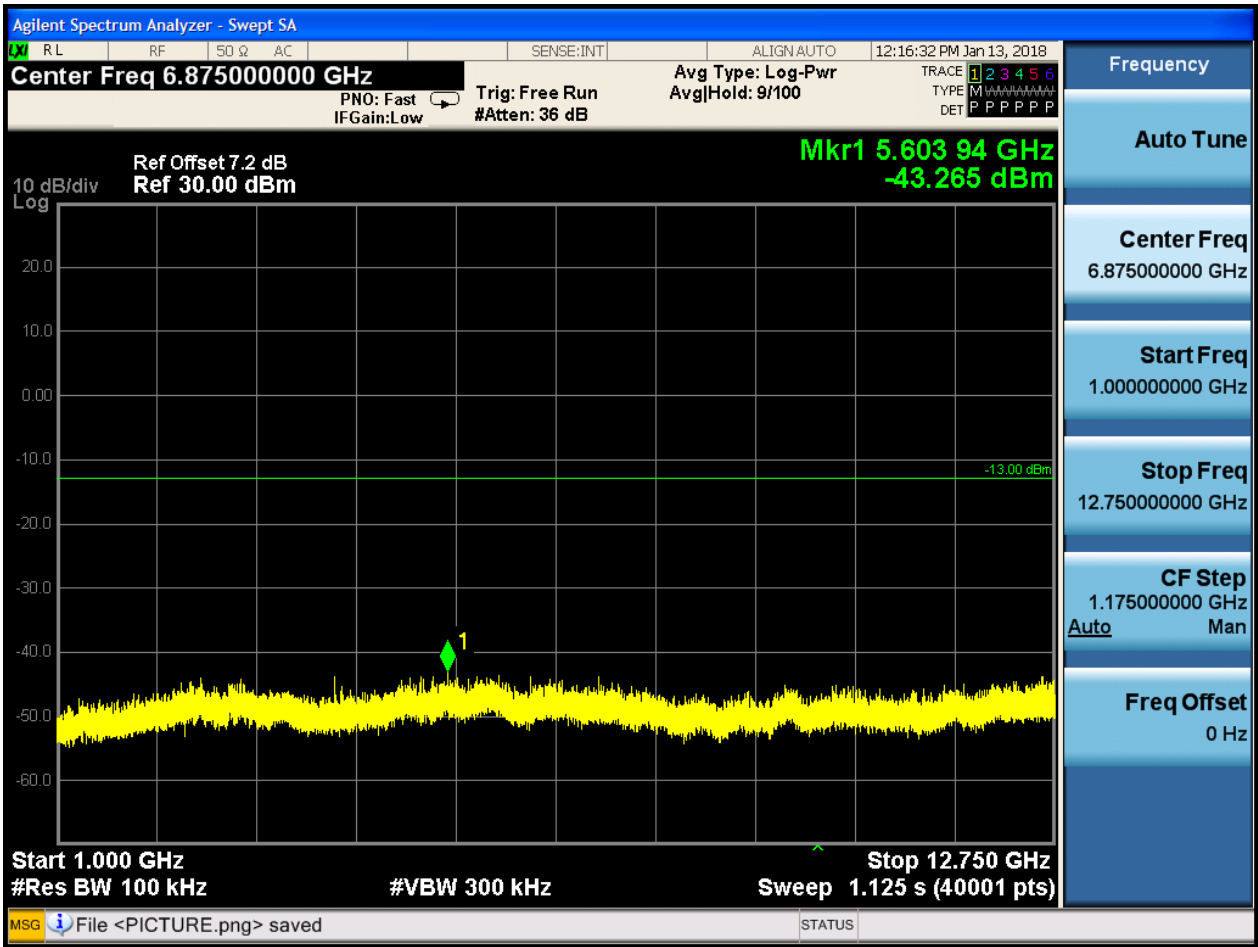


### 6.1.3.1.3 Test Channel = HCH









## 7Appendix\_G: Field Strength of Spurious Radiation

Note: We tested all modes, but 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

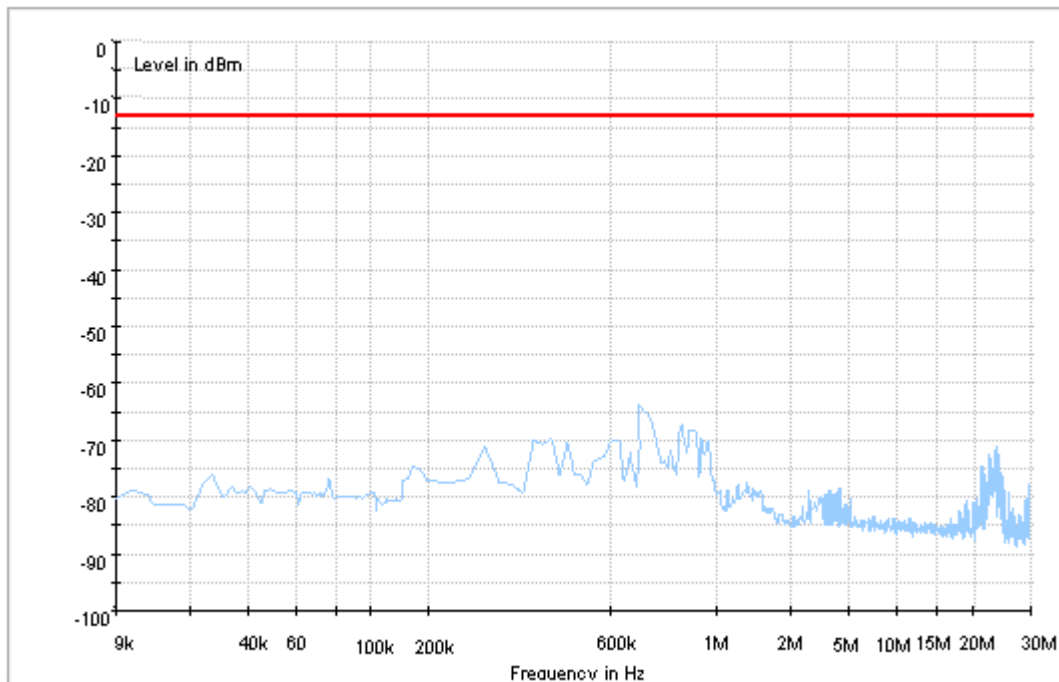
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

### Part I - Test Plots

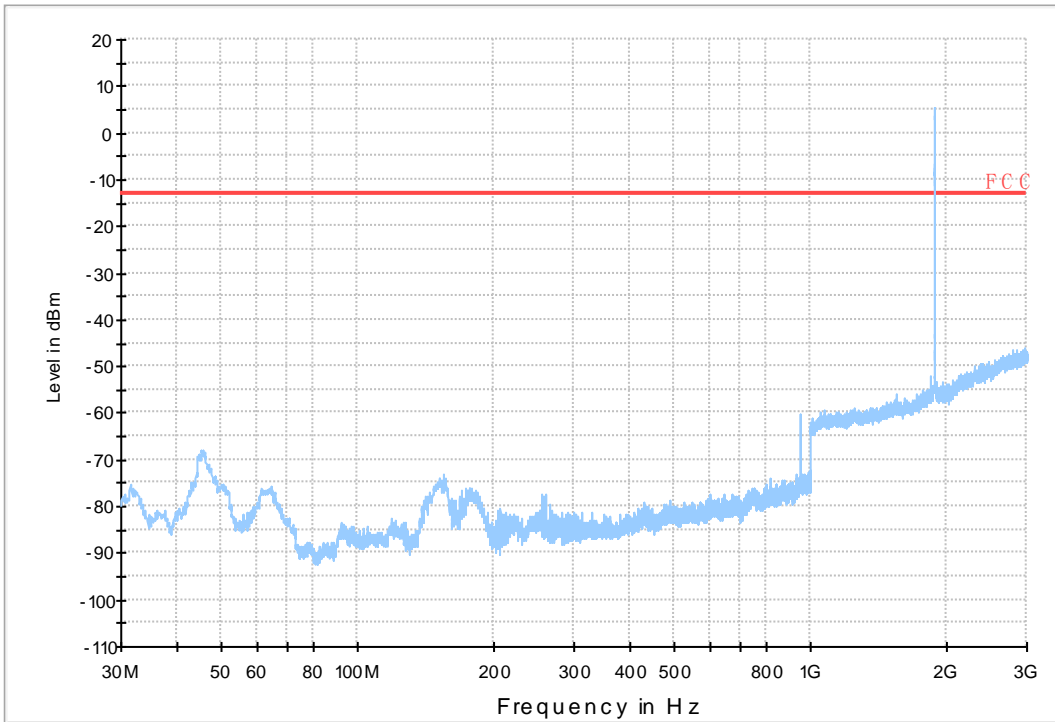
#### 7.1 For UMTS

##### 7.1.1 Test Band = WCDMA1900

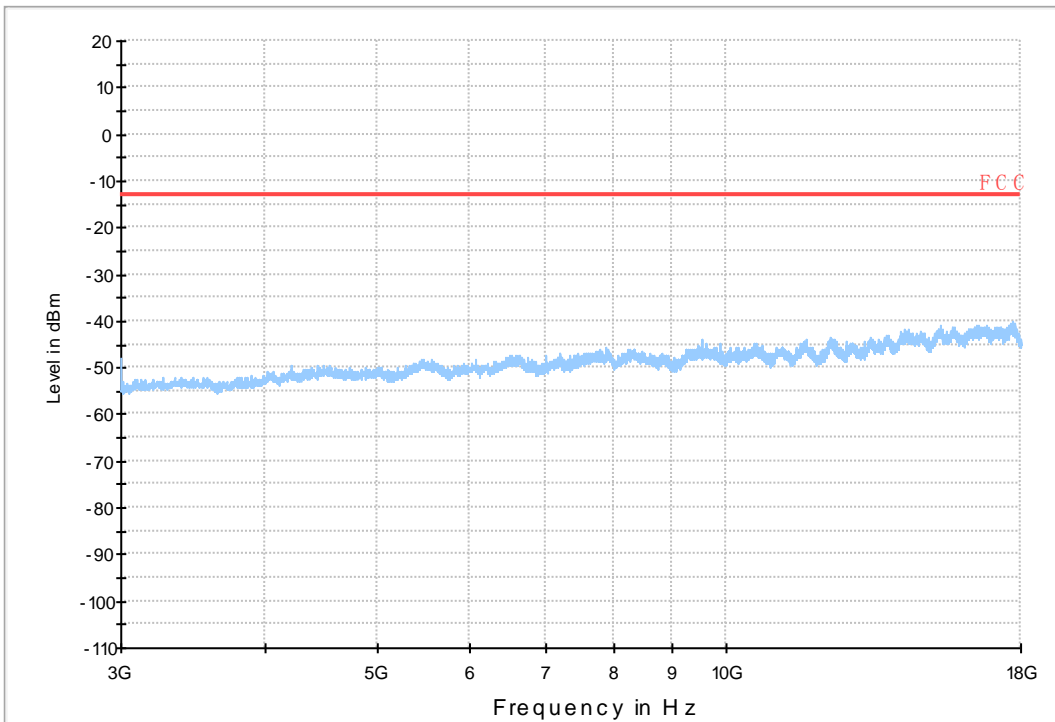
##### 7.1.1.1 Test Mode = UMTS/TM1

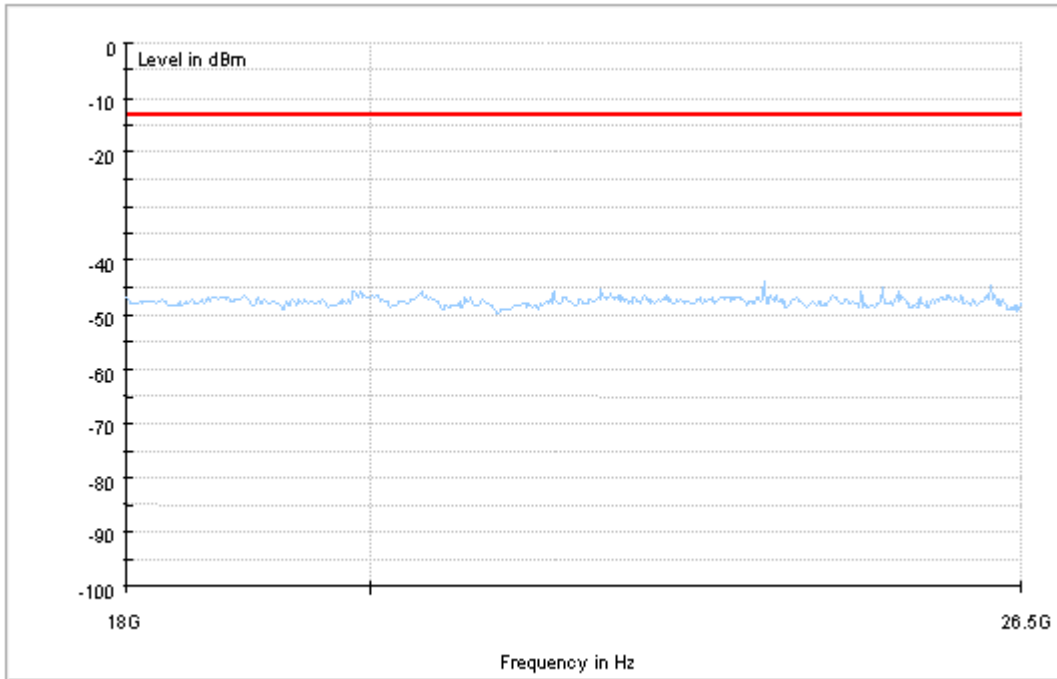


Copy of FCC PART24 W CDMA1900\_L



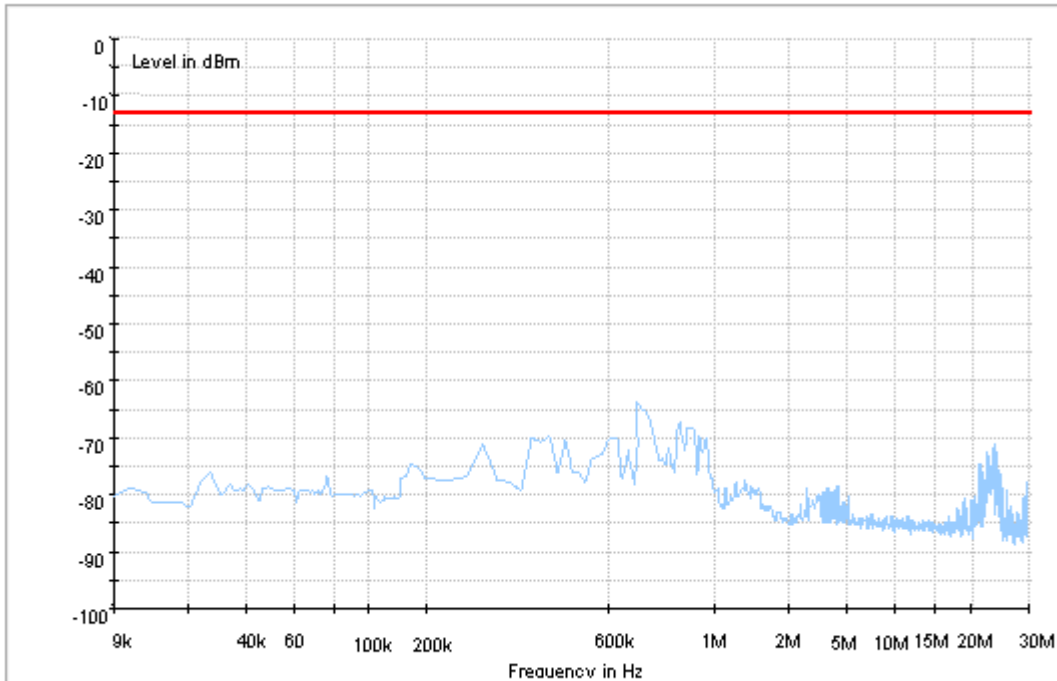
Copy of FCC PART24 W CDMA1900\_H



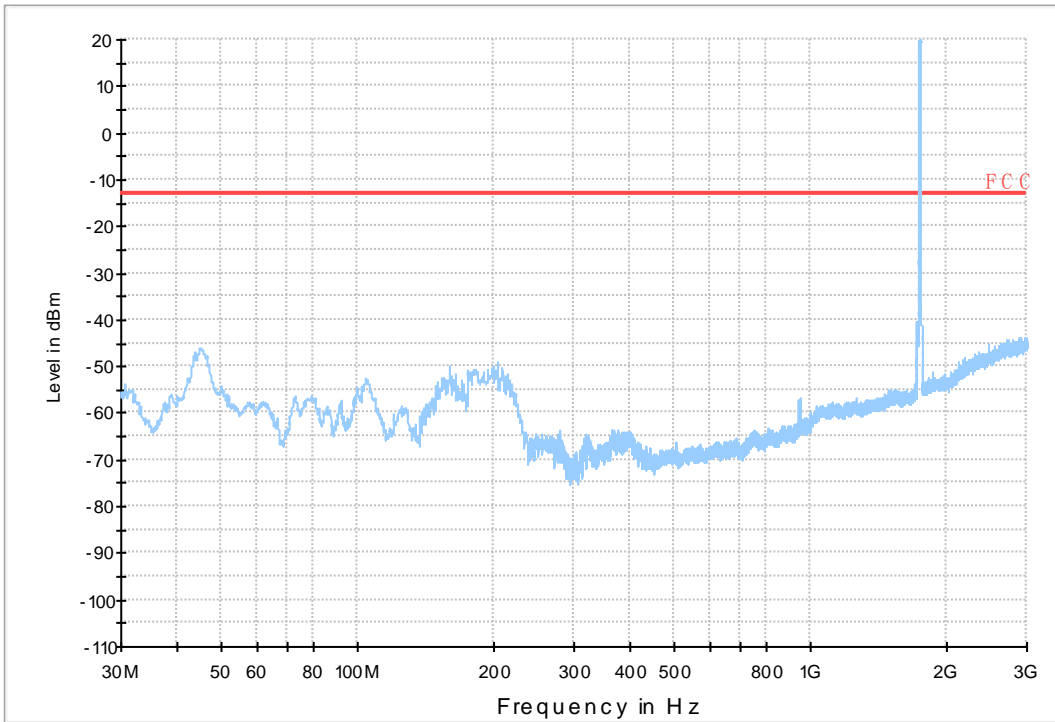


**7.1.2 Test Band = WCDMA1700**

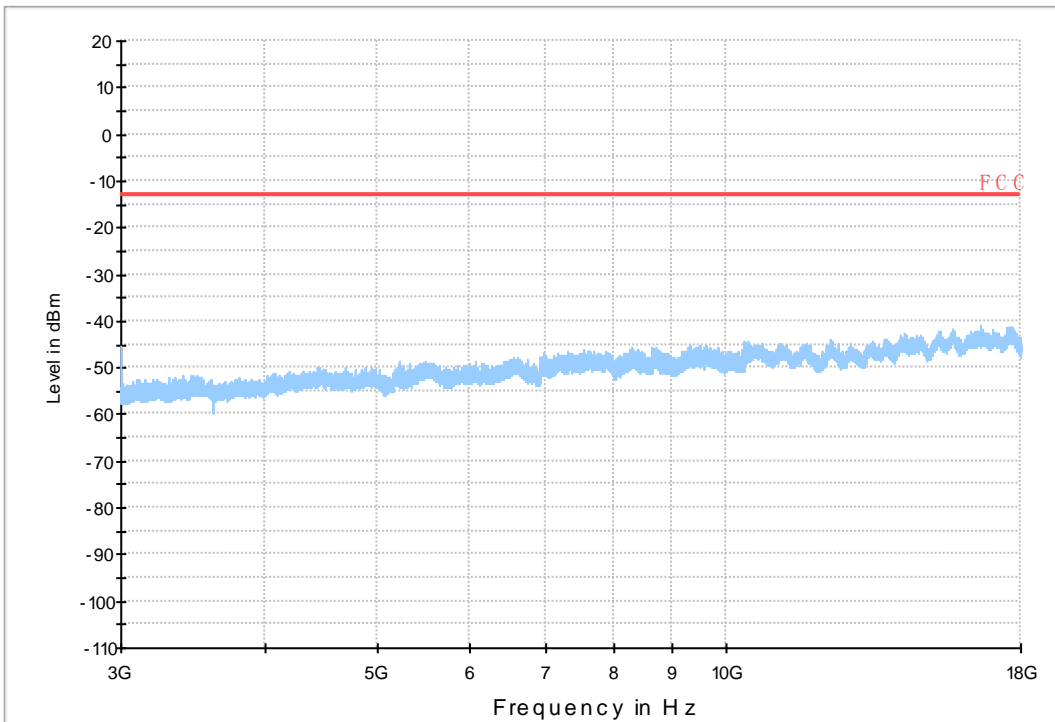
**7.1.2.1 Test Mode = UMTS/TM1**



Copy of FCC PART27 W CDMA1700\_L



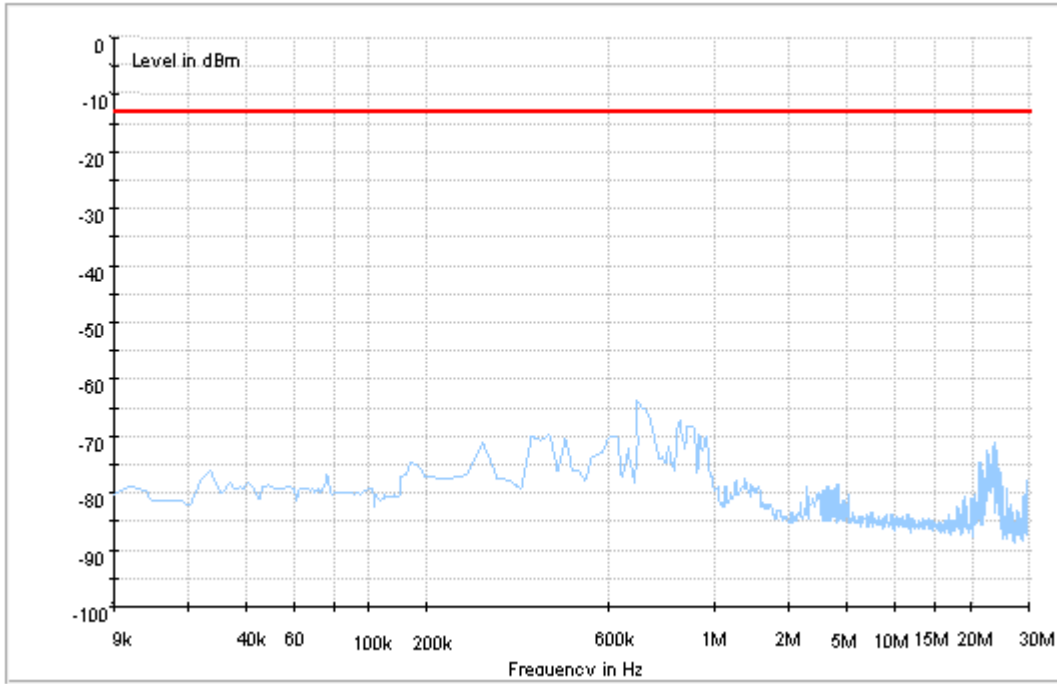
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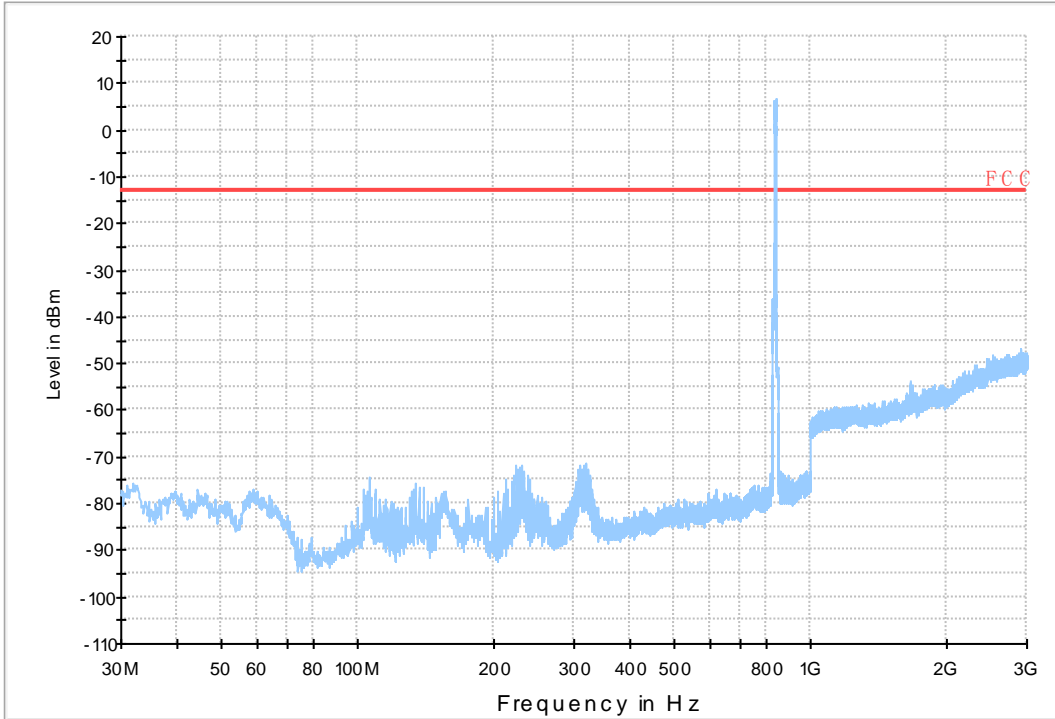


### 7.1.3 Test Band = WCDMA850

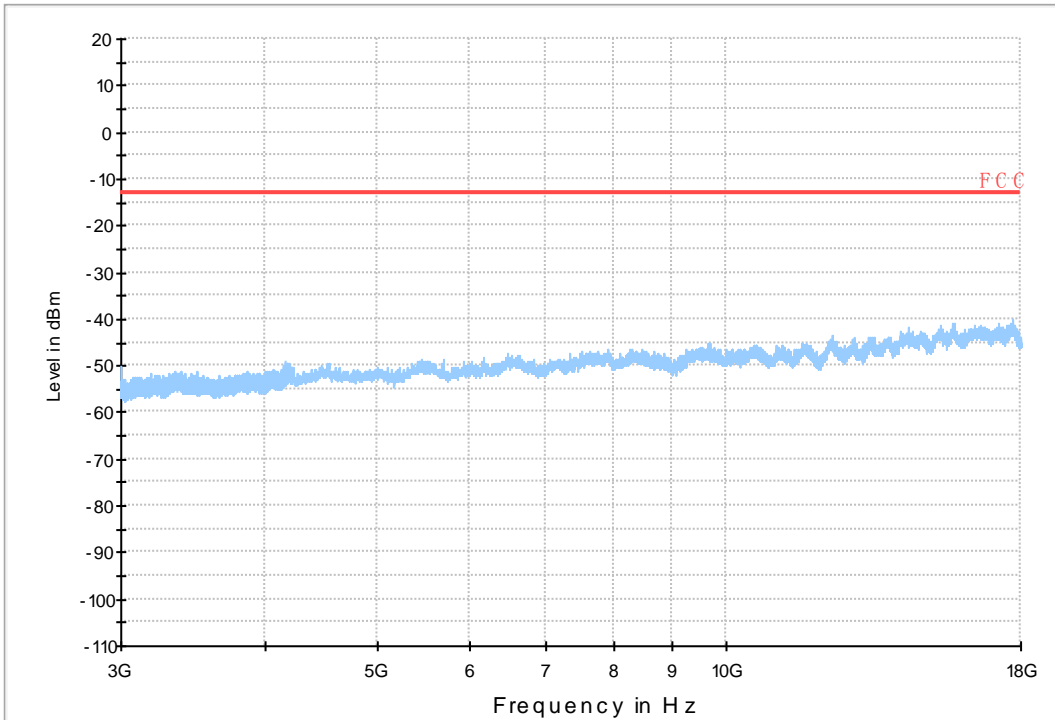
#### 7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850\_L



Copy of FCC PART22 W CDMA850\_H



## 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
WCDMA1900	UMTS/TM1	LCH	TN	VL	-1.21	-0.00065	PASS
				VN	0.20	0.00011	PASS
				VH	-0.75	-0.0004	PASS
		MCH	TN	VL	-0.17	-0.00009	PASS
				VN	-3.22	-0.00171	PASS
				VH	-2.53	-0.00135	PASS
		HCH	TN	VL	-3.16	-0.00166	PASS
				VN	-2.18	-0.00114	PASS
				VH	-3.40	-0.00178	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	7.40	0.00432	PASS
				VN	7.74	0.00452	PASS
				VH	8.36	0.00488	PASS
		MCH	TN	VL	0.72	0.00042	PASS
				VN	-0.96	-0.00055	PASS
				VH	-2.15	-0.00124	PASS
		HCH	TN	VL	-7.60	-0.00434	PASS
				VN	-6.26	-0.00357	PASS
				VH	-8.13	-0.00464	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	1.14	0.00138	PASS
				VN	0.31	0.00038	PASS
				VH	-1.86	-0.00225	PASS
		MCH	TN	VL	0.79	0.00094	PASS
				VN	-2.62	-0.00313	PASS
				VH	-1.57	-0.00188	PASS
		HCH	TN	VL	0.64	0.00076	PASS
				VN	-0.79	-0.00093	PASS
				VH	-1.16	-0.00137	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
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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1900	UMTS/TM1	LCH	VN	-30	2.00	0.00108	PASS
				-20	-0.35	-0.00019	PASS
				-10	-0.50	-0.00027	PASS
				0	-1.19	-0.00064	PASS
				10	-1.08	-0.00058	PASS
				20	-2.23	-0.0012	PASS
				30	-2.29	-0.00124	PASS
				40	0.41	0.00022	PASS
				50	0.55	0.0003	PASS
		MCH	VN	-30	-2.03	-0.00108	PASS
				-20	0.49	0.00026	PASS
				-10	1.16	0.00062	PASS
				0	-0.81	-0.00043	PASS
				10	-2.21	-0.00118	PASS
				20	-2.06	-0.0011	PASS
				30	-3.43	-0.00182	PASS
				40	-2.78	-0.00148	PASS
				50	-0.27	-0.00014	PASS
		HCH	VN	-30	-1.59	-0.00083	PASS
				-20	-0.46	-0.00024	PASS
				-10	-2.11	-0.00111	PASS
				0	-2.35	-0.00123	PASS
				10	-3.43	-0.0018	PASS
				20	-3.23	-0.00169	PASS
				30	1.05	0.00055	PASS
				40	-3.57	-0.00187	PASS
				50	-2.33	-0.00122	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	8.26	0.00482	PASS
				-20	8.01	0.00468	PASS
				-10	5.37	0.00314	PASS
				0	13.00	0.00759	PASS
				10	6.82	0.00398	PASS
				20	7.22	0.00422	PASS
				30	8.00	0.00467	PASS
				40	9.75	0.00569	PASS
				50	8.61	0.00503	PASS
		MCH	VN	-30	-1.07	-0.00062	PASS
				-20	3.88	0.00224	PASS
				-10	0.79	0.00046	PASS
				0	-3.43	-0.00198	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	1.45	0.00084	PASS
				20	0.44	0.00025	PASS
				30	-0.64	-0.00037	PASS
				40	-0.08	-0.00005	PASS
				50	-1.50	-0.00087	PASS
		HCH	VN	-30	-8.90	-0.00508	PASS
				-20	-8.42	-0.0048	PASS
				-10	-6.85	-0.00391	PASS
				0	-5.98	-0.00341	PASS
				10	-9.84	-0.00561	PASS
				20	-7.14	-0.00407	PASS
				30	-10.99	-0.00627	PASS
				40	-8.18	-0.00467	PASS
				50	-8.80	-0.00502	PASS
WCDMA850	UMTS/TM1	LCH	VN	-30	0.09	0.00011	PASS
				-20	1.57	0.0019	PASS
				-10	0.55	0.00067	PASS
				0	-1.27	-0.00154	PASS
				10	-2.52	-0.00305	PASS
				20	2.03	0.00246	PASS
				30	-1.07	-0.00129	PASS
				40	-0.50	-0.00061	PASS
				50	-1.66	-0.00201	PASS
		MCH	VN	-30	-3.89	-0.00465	PASS
				-20	-2.69	-0.00322	PASS
				-10	-2.01	-0.0024	PASS
				0	-0.43	-0.00051	PASS
				10	1.37	0.00164	PASS
				20	0.23	0.00027	PASS
				30	-0.11	-0.00013	PASS
				40	-3.36	-0.00402	PASS
				50	-1.80	-0.00215	PASS
		HCH	VN	-30	-2.12	-0.0025	PASS
				-20	0.49	0.00058	PASS
				-10	-1.19	-0.00141	PASS
				0	-2.70	-0.00319	PASS
				10	-2.99	-0.00353	PASS
				20	-3.20	-0.00378	PASS
				30	0.21	0.00025	PASS
				40	-0.63	-0.00074	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	-3.16	-0.00373	PASS

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END