



# 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]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.07	24.57	33	PASS
		MCH	23.19	24.69	33	PASS
		HCH	23.25	24.75	33	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	23.18	22.53	38.5	PASS
		MCH	23.07	22.42	38.5	PASS
		HCH	22.98	22.33	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:

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

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

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

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
WCDMA1900	UMTS/TM1	LCH	3.14	13	PASS
		MCH	3.13	13	PASS
		HCH	3.14	13	PASS
WCDMA850	UMTS/TM1	LCH	3.45	13	PASS
		MCH	3.48	13	PASS
		HCH	3.38	13	PASS

### 3Appendix\_C: Modulation Characteristics

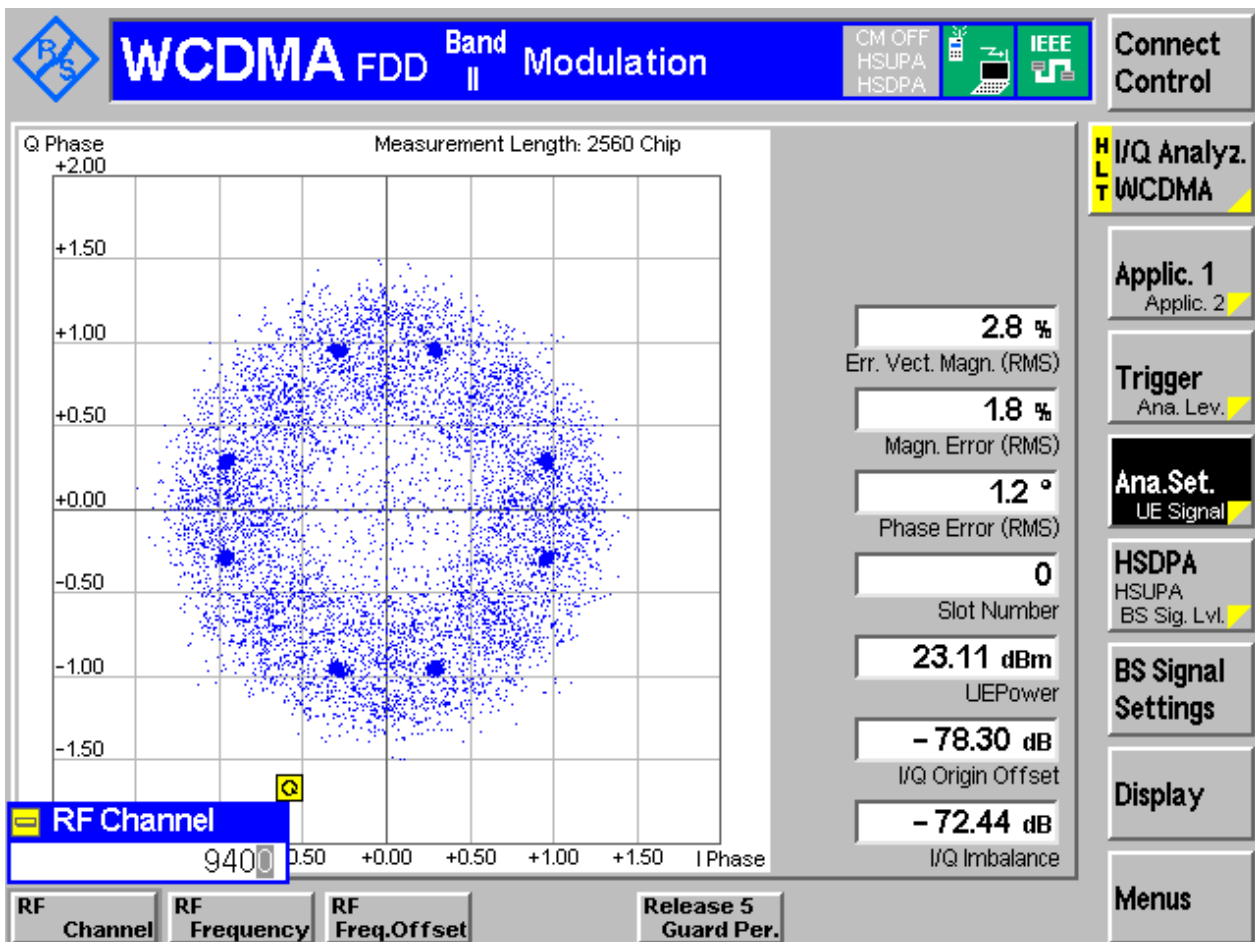
#### Part I - Test Plots

##### 3.1 For UMTS

###### 3.1.1 Test Band = WCDMA1900

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

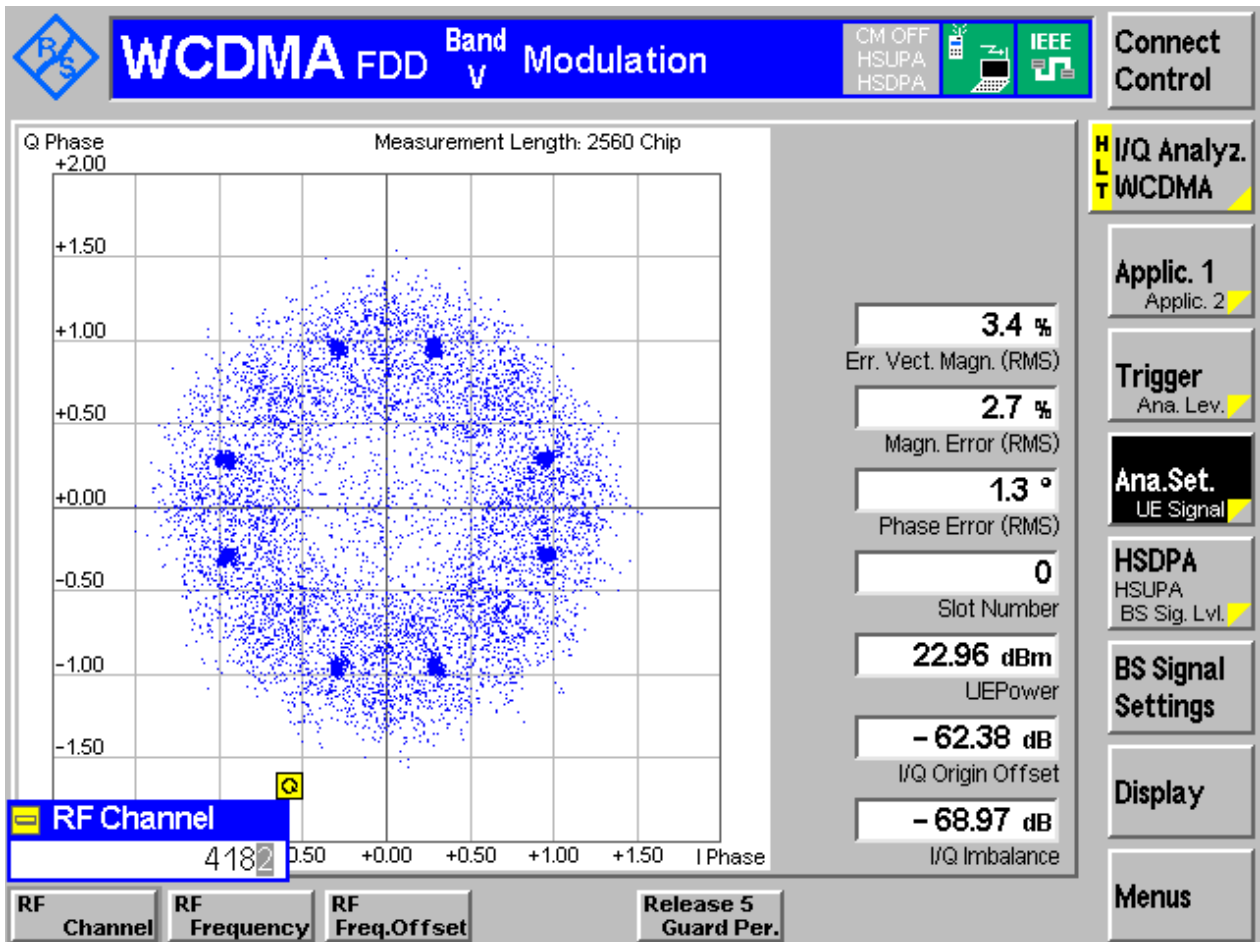
###### 3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA850

3.1.2.1 Test Mode = UMTS/TM1

3.1.2.1.1 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	4.15	4.70	Pass
		MCH	4.15	4.70	Pass
		HCH	4.15	4.71	Pass
WCDMA850	UMTS/TM1	LCH	4.15	4.68	Pass
		MCH	4.15	4.69	Pass
		HCH	4.15	4.70	Pass



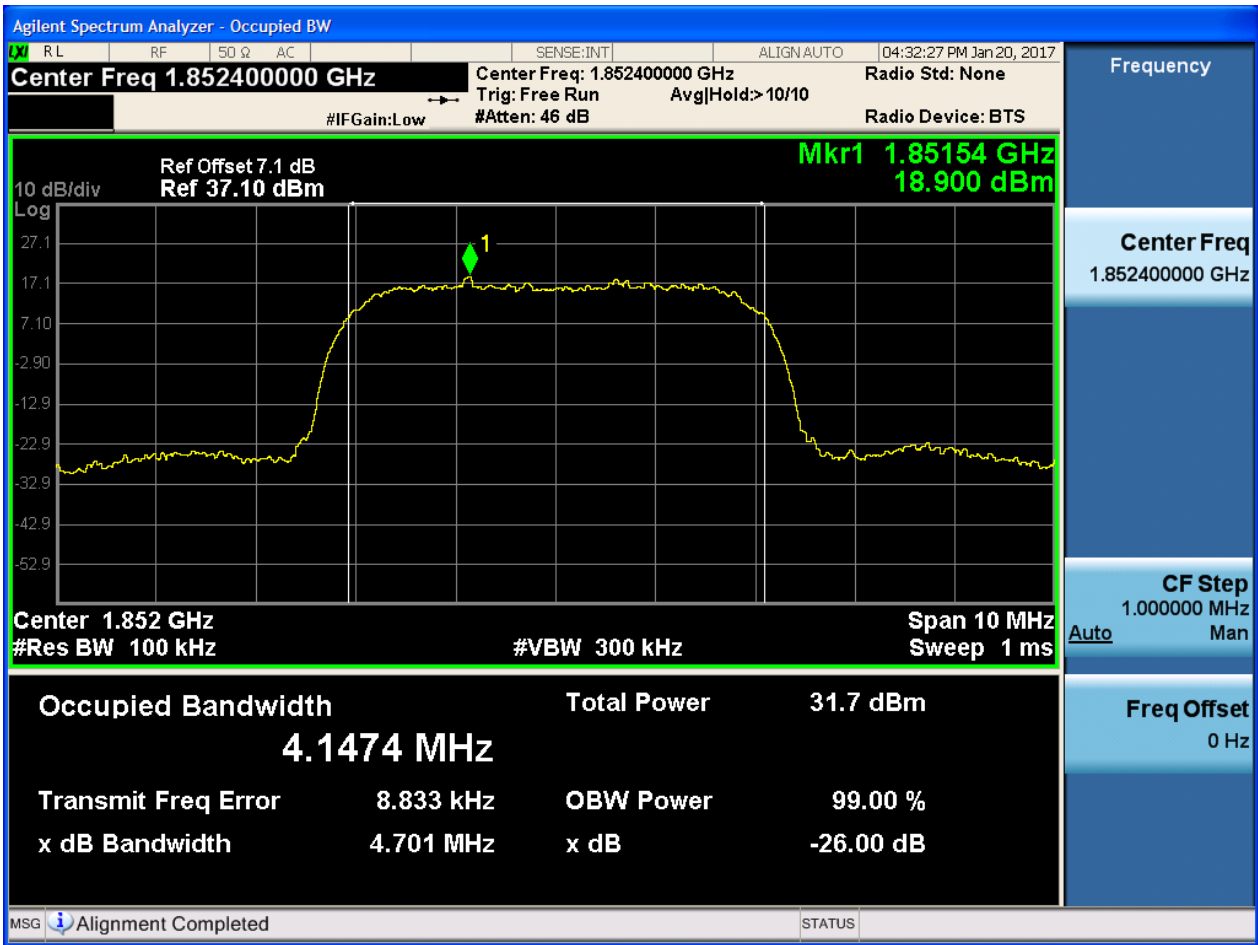
Part II - Test Plots

4.1 For UMTS

4.1.2 Test Band = WCDMA1900

4.1.2.1 Test Mode = UMTS/TM1

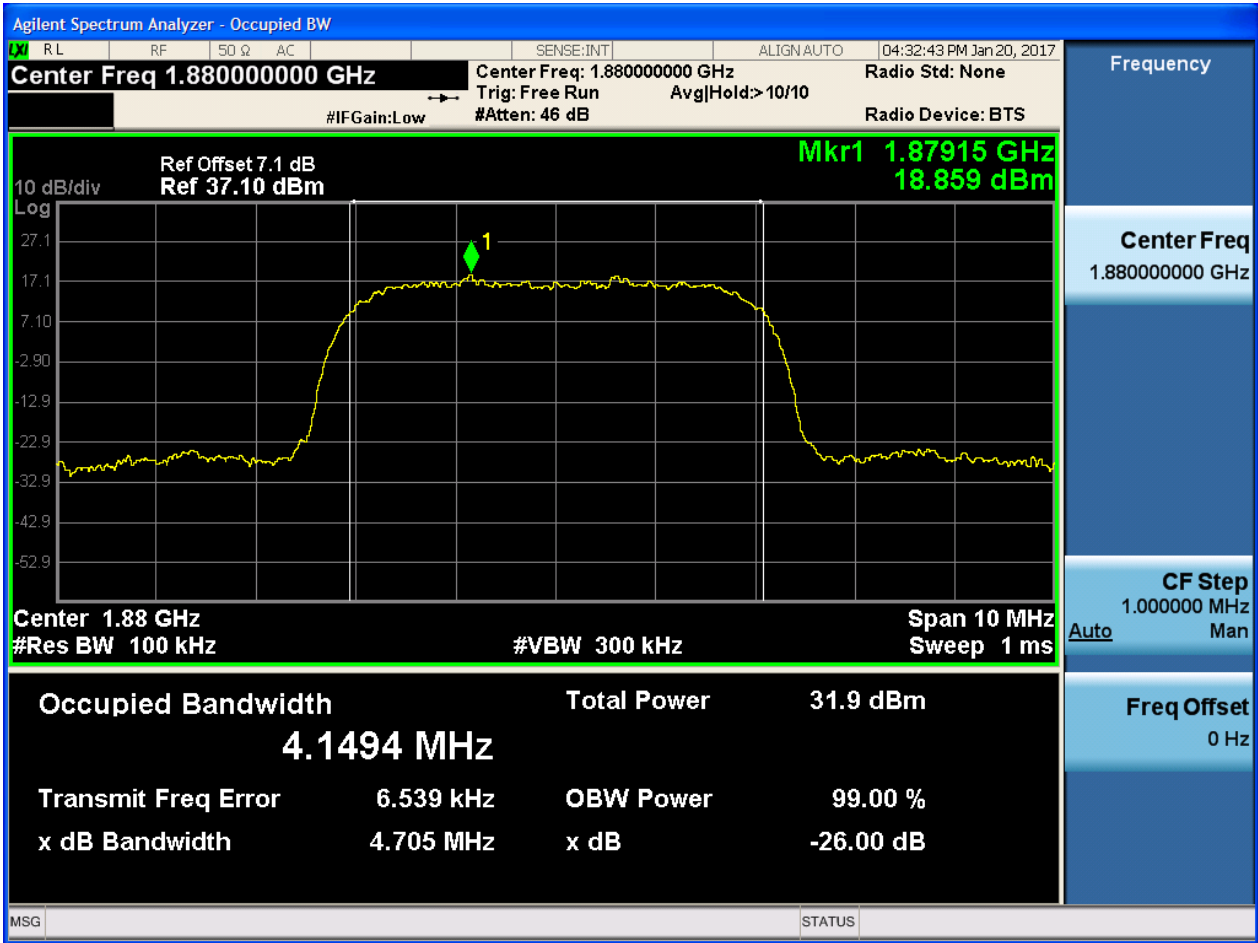
4.1.2.1.1 Test Channel = LCH





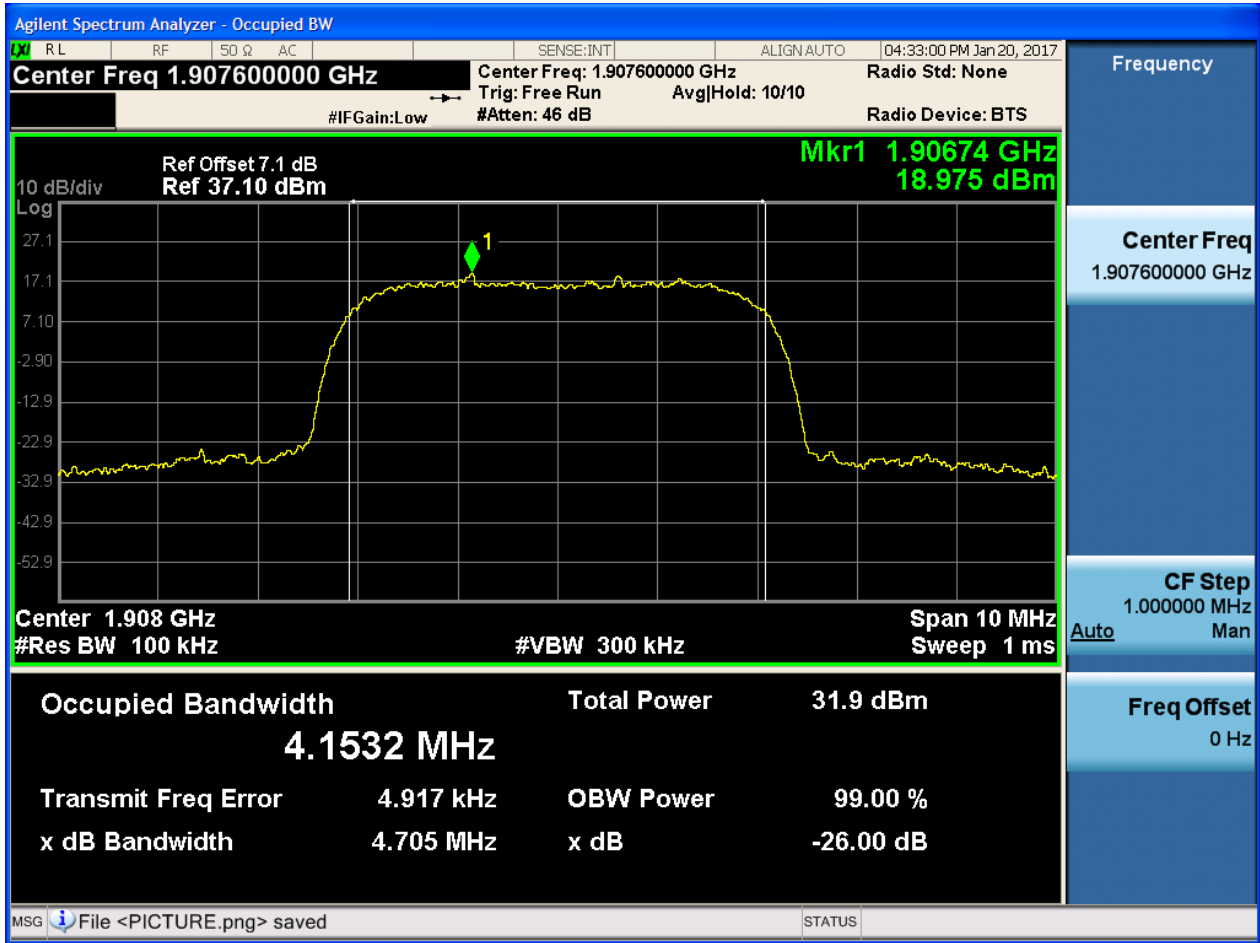


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

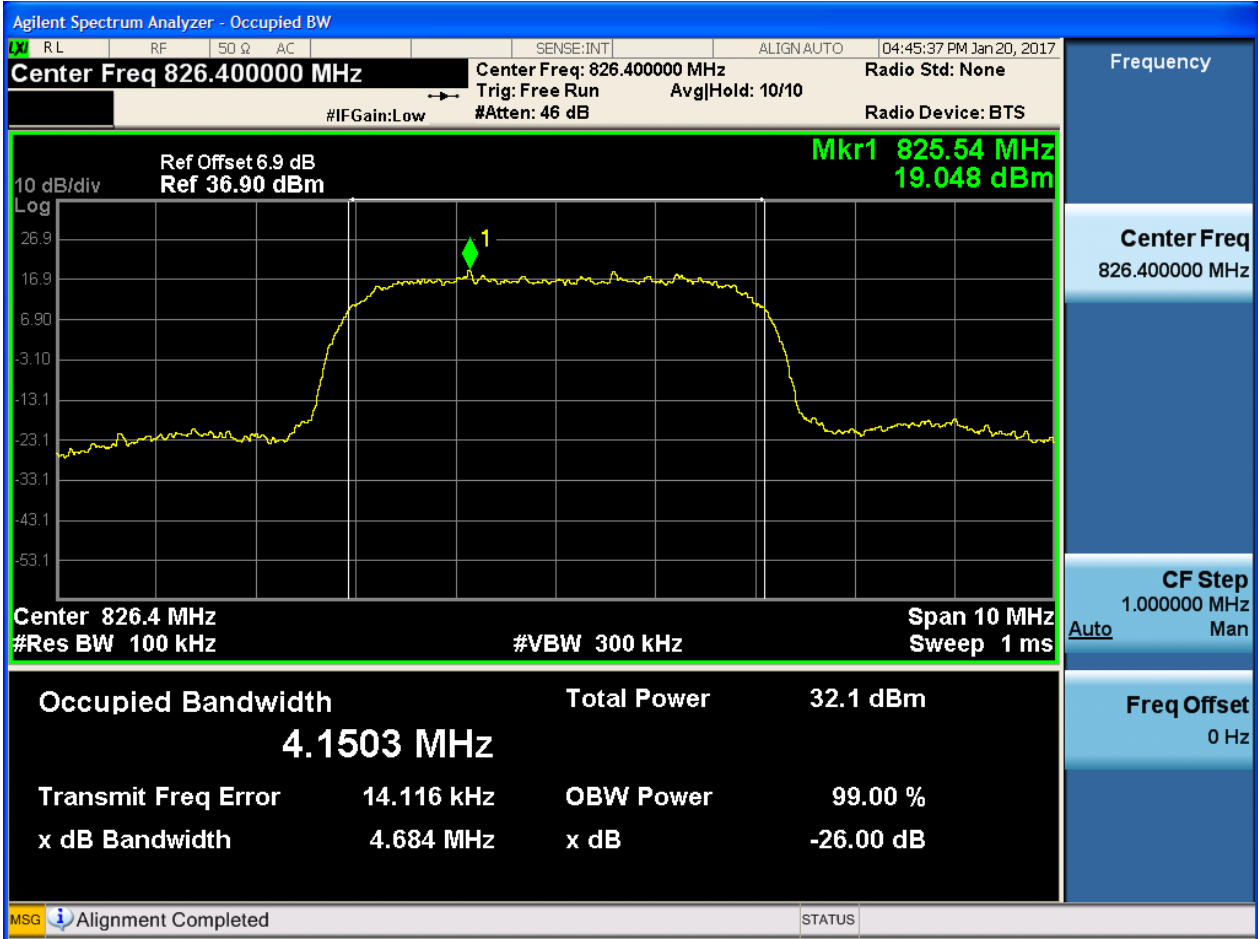




4.1.3 Test Band = WCDMA850

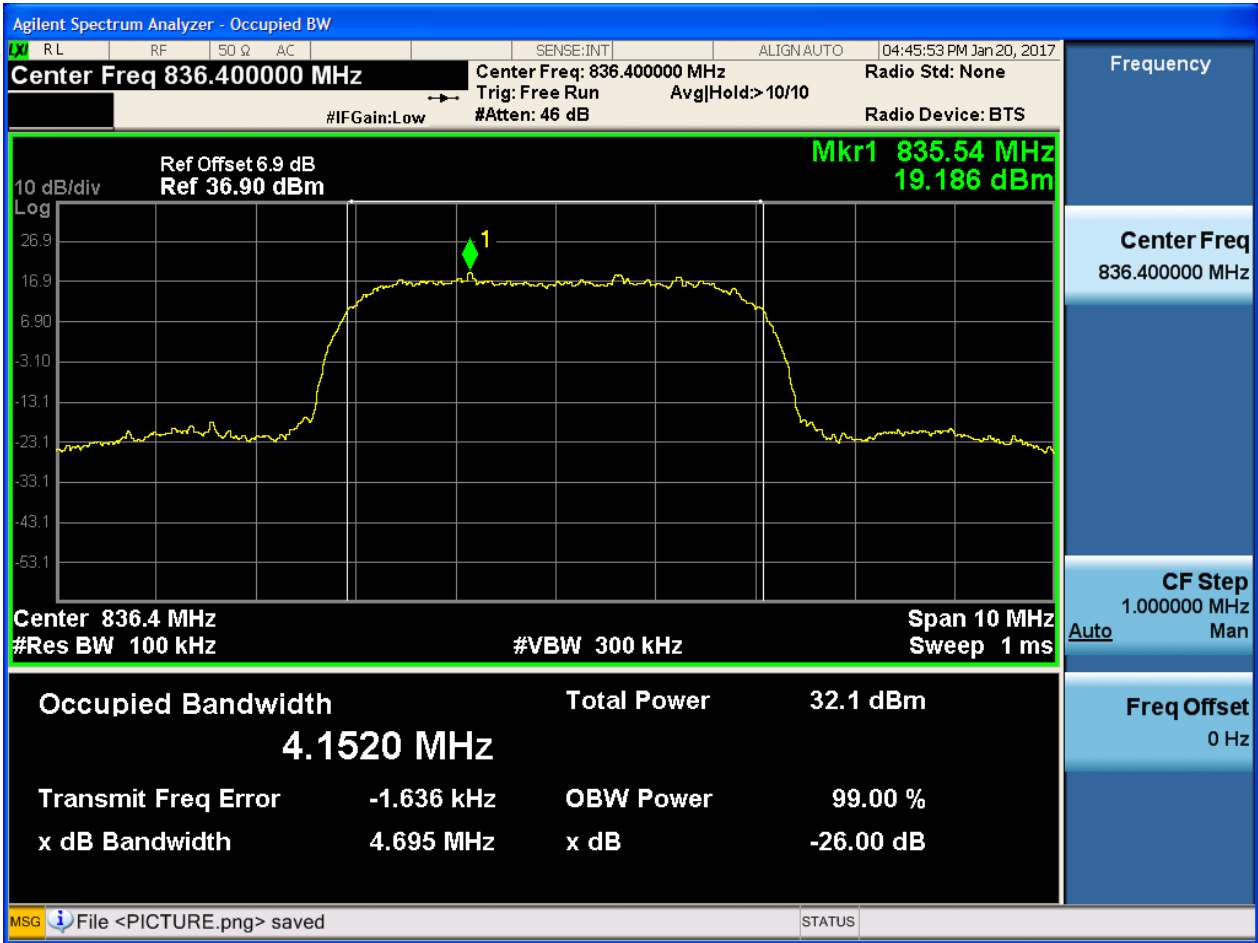
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



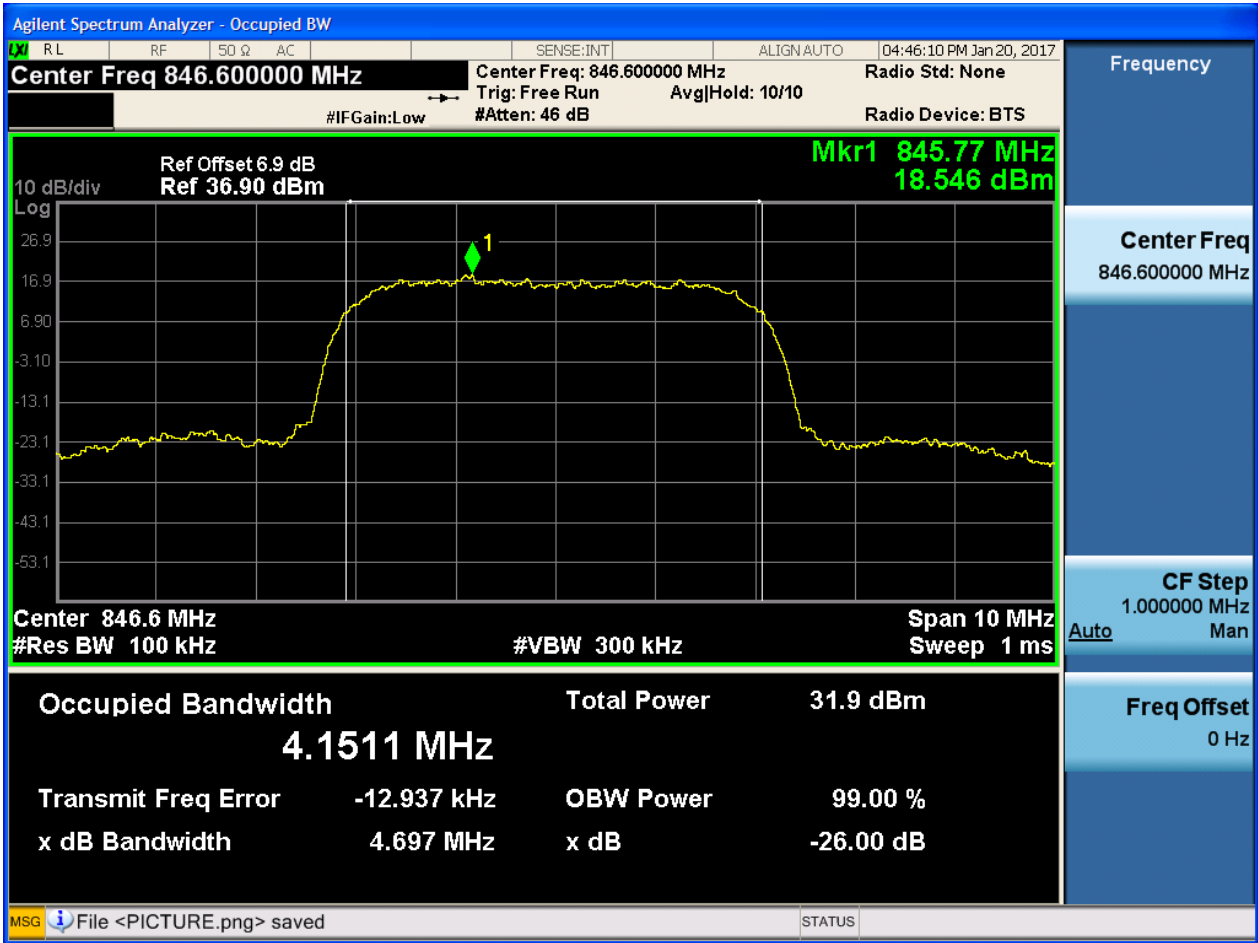


4.1.3.1.2 Test Channel = MCH





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

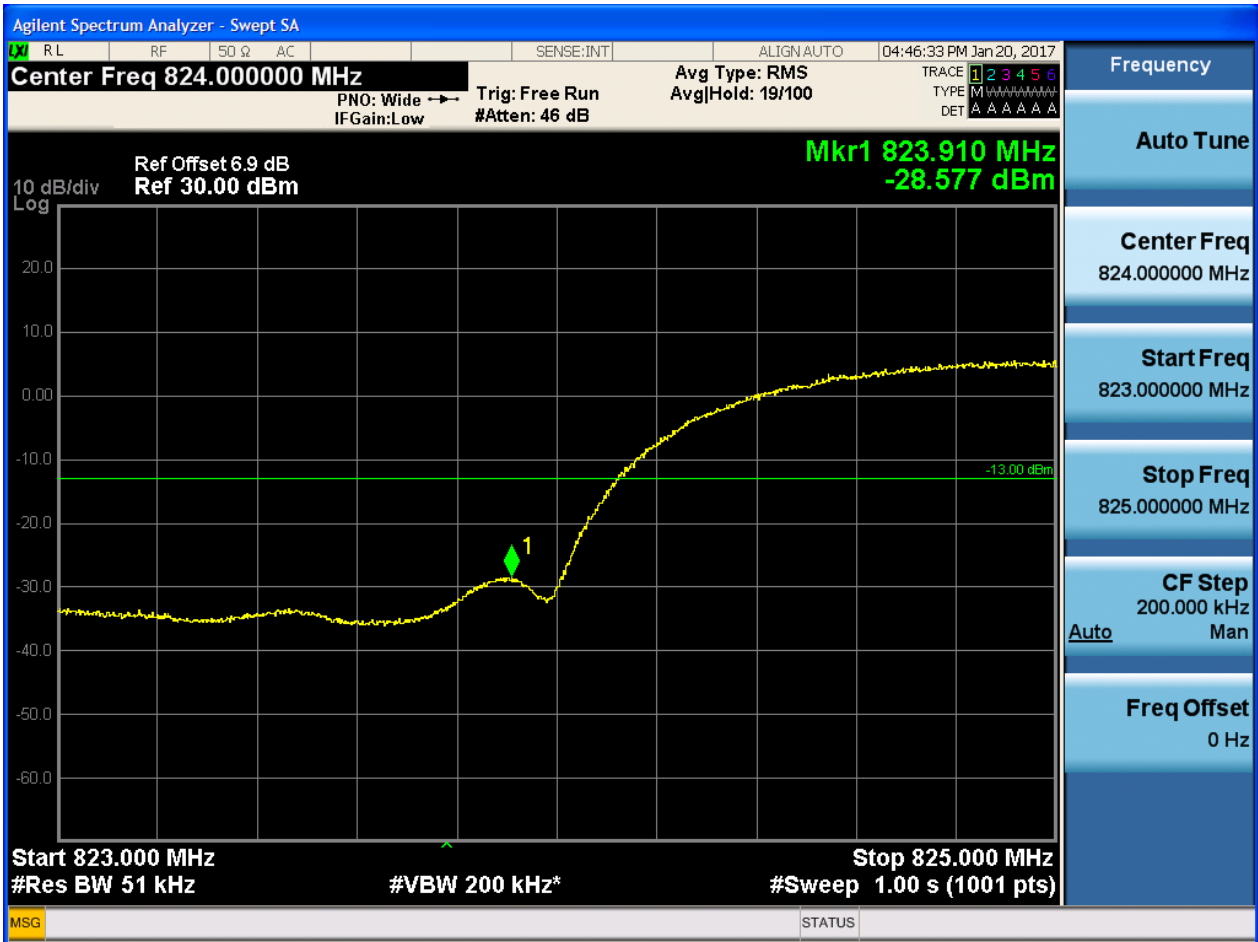




5.1.2 Test Band = WCDMA850

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH







5.1.2.1.2 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.

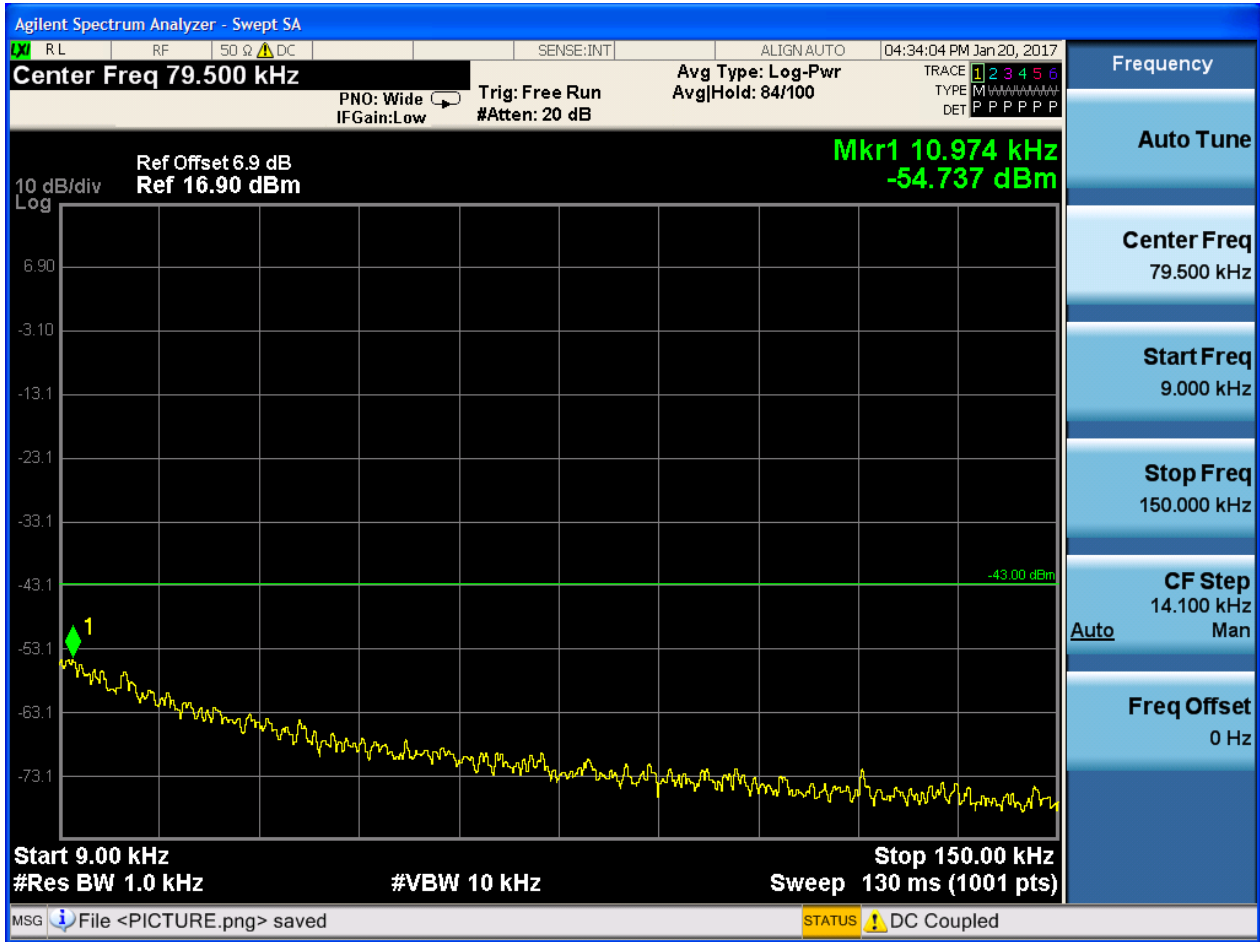
### **Part I - Test Plots**

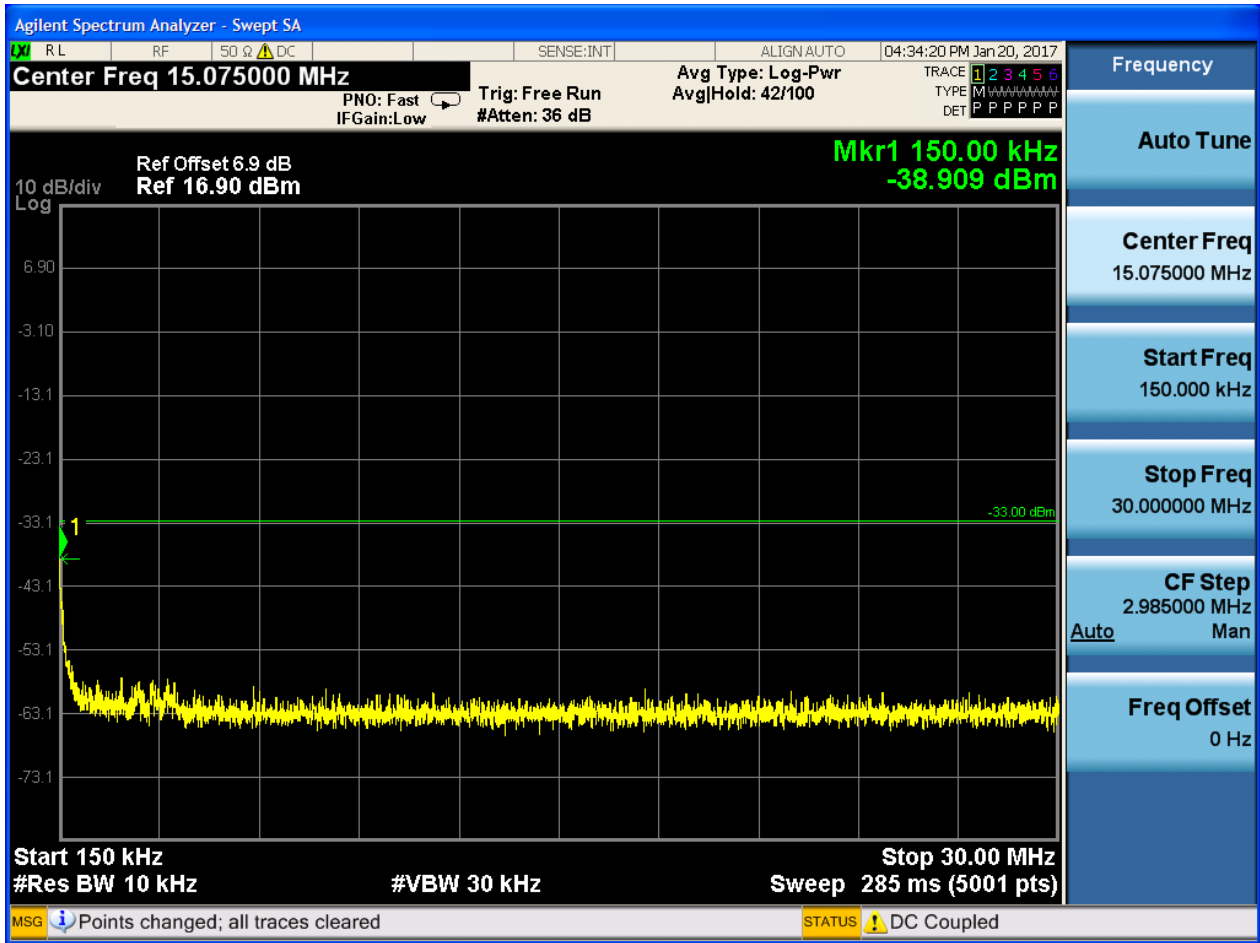
#### **6.1 For UMTS**

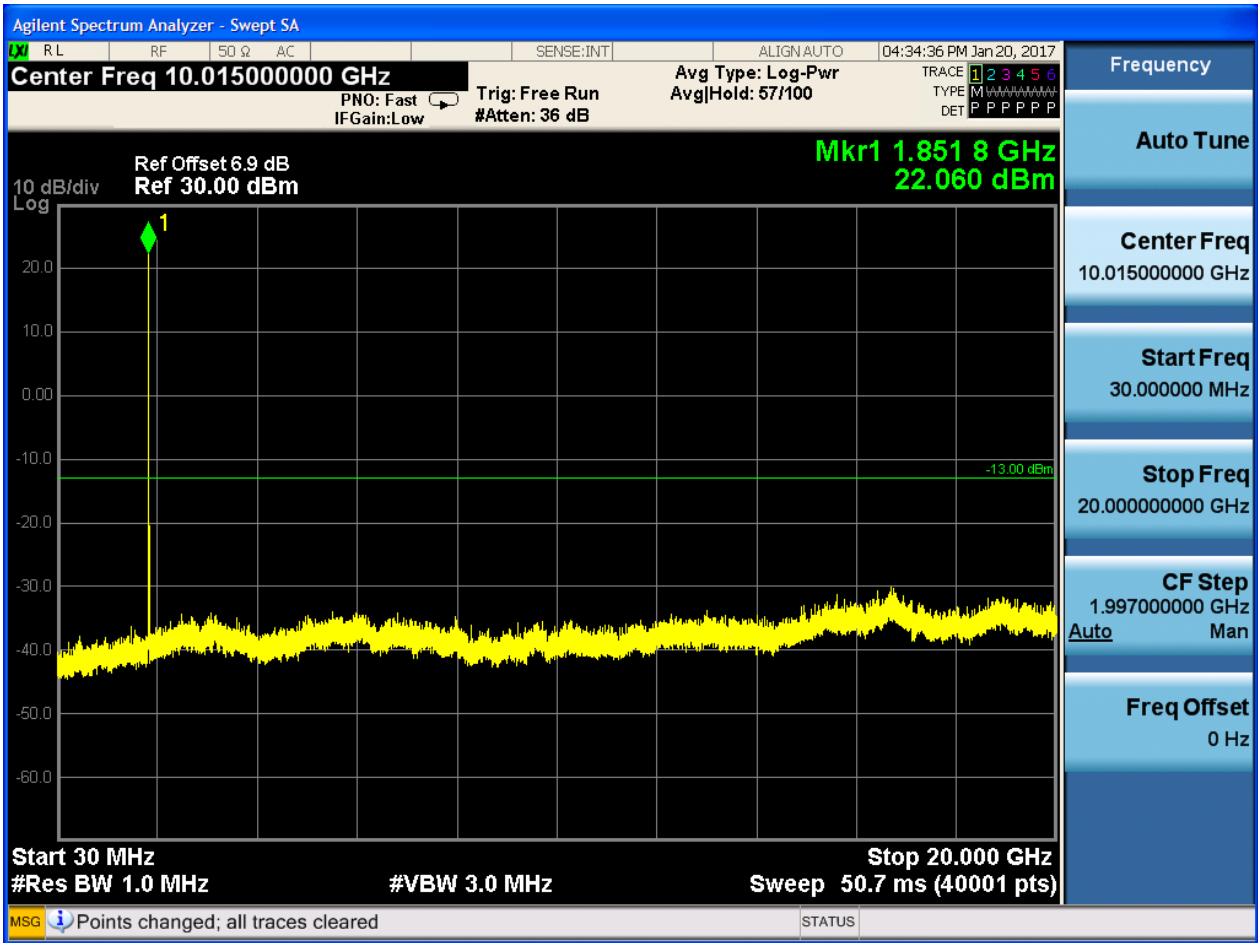
##### **6.1.1 Test Band = WCDMA1900**

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

##### **6.1.1.1.1 Test Channel = LCH**

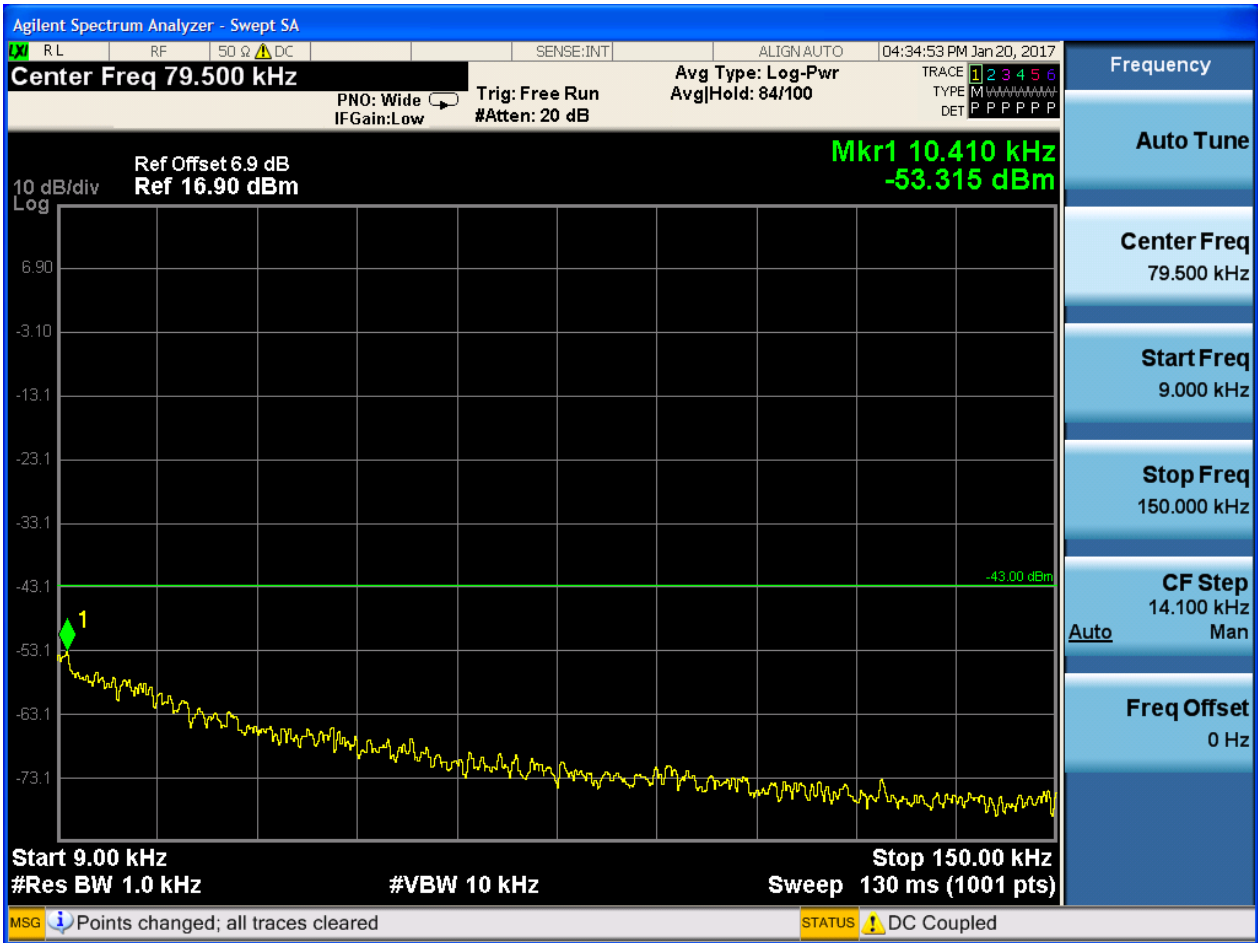


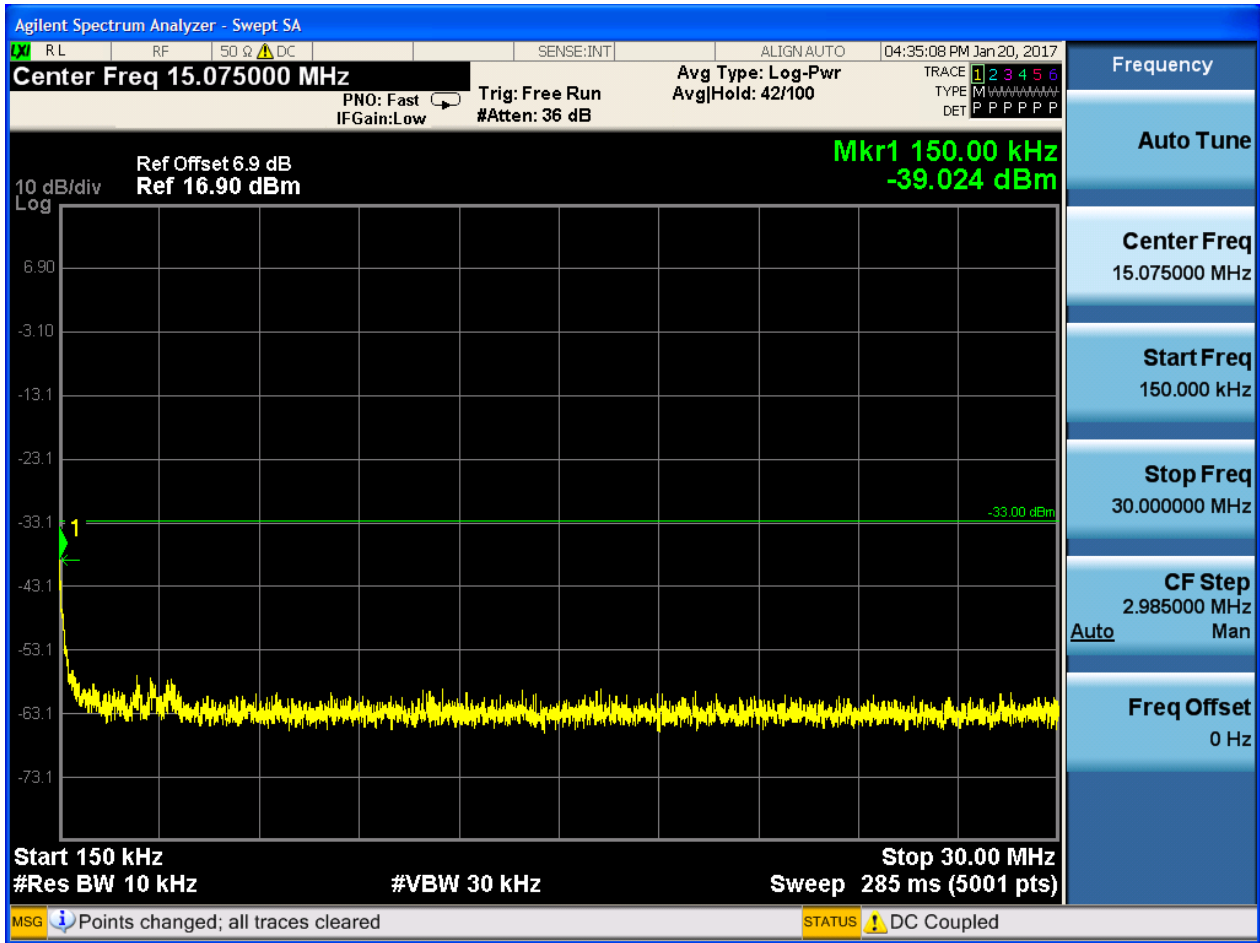


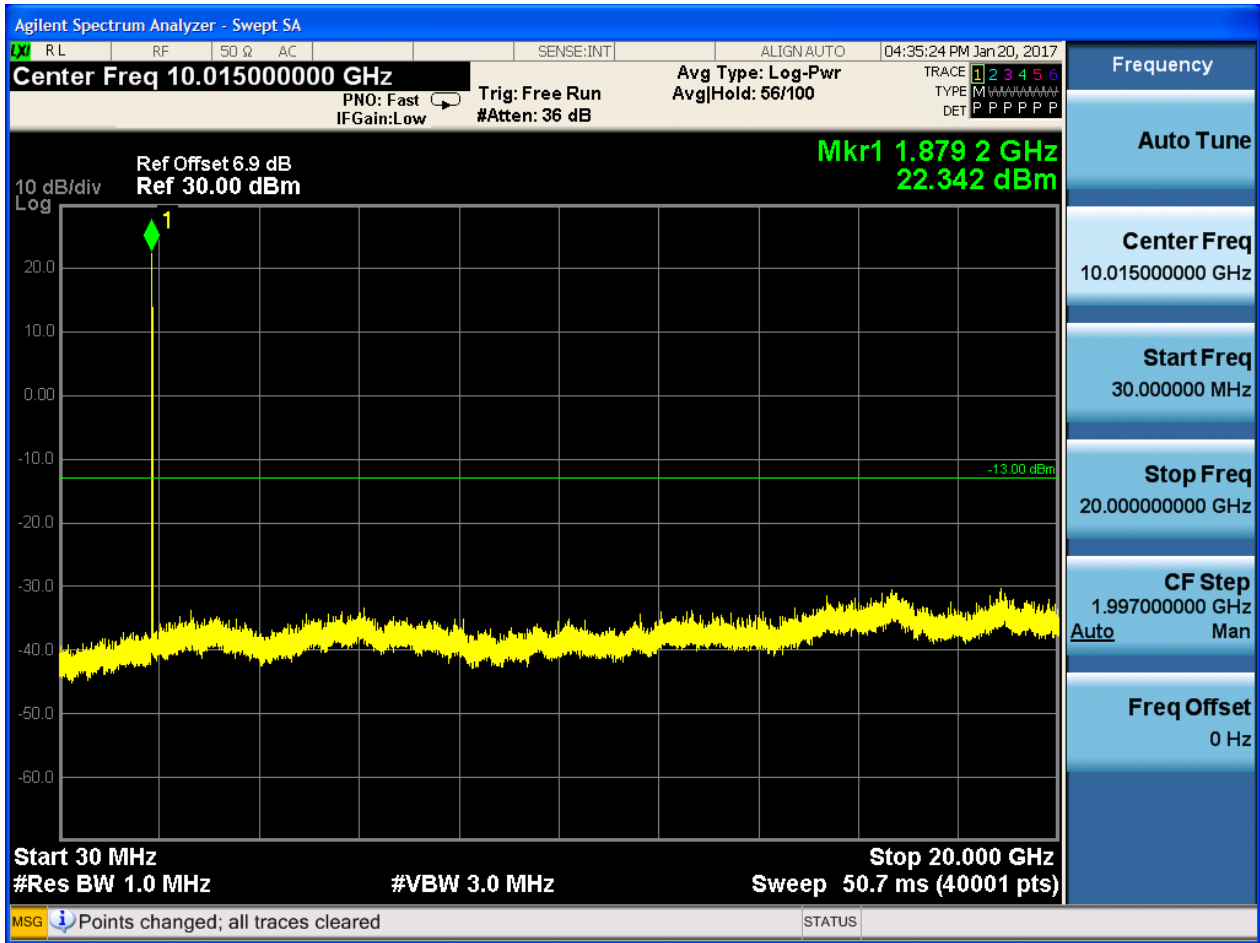




6.1.1.1.2 Test Channel = MCH



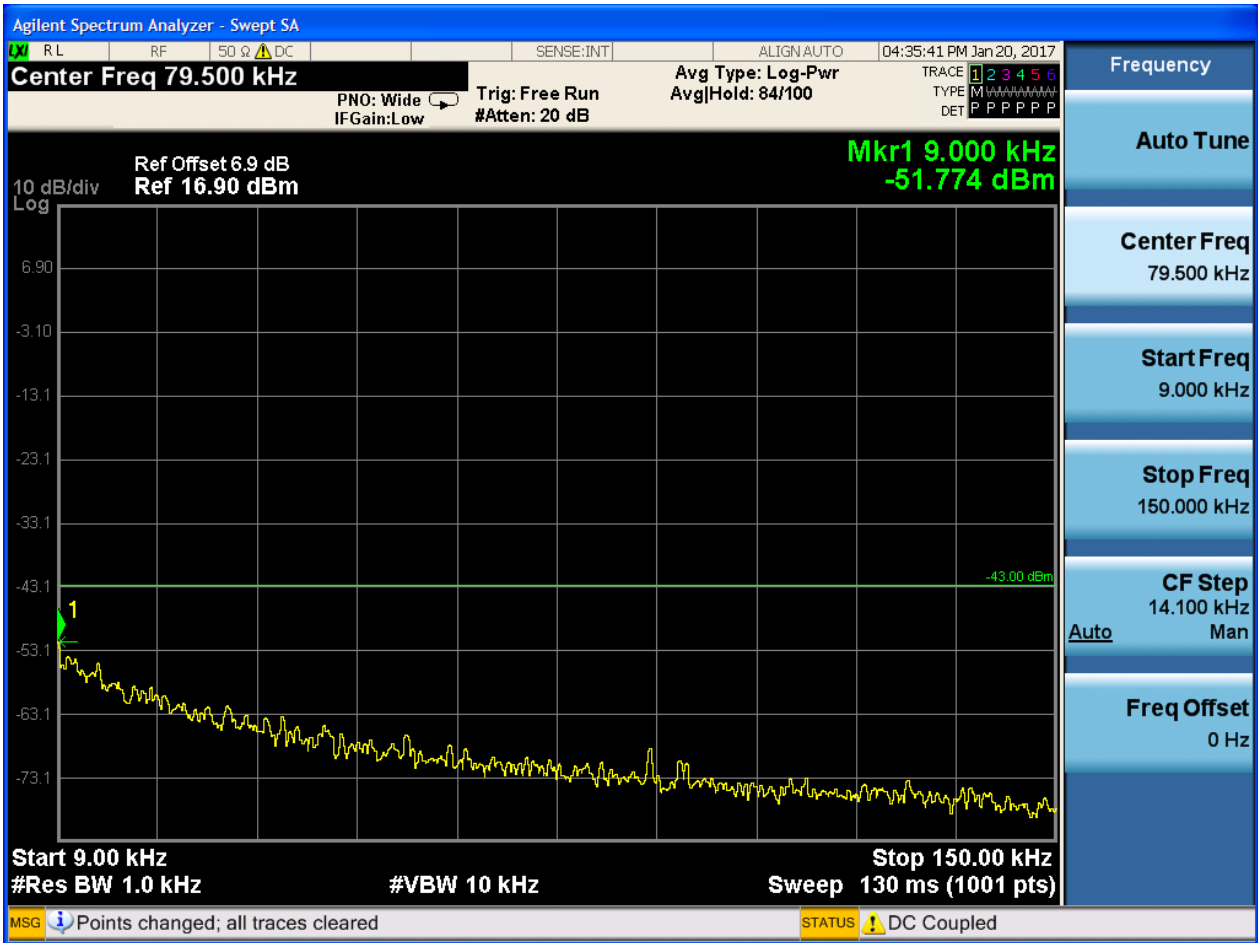


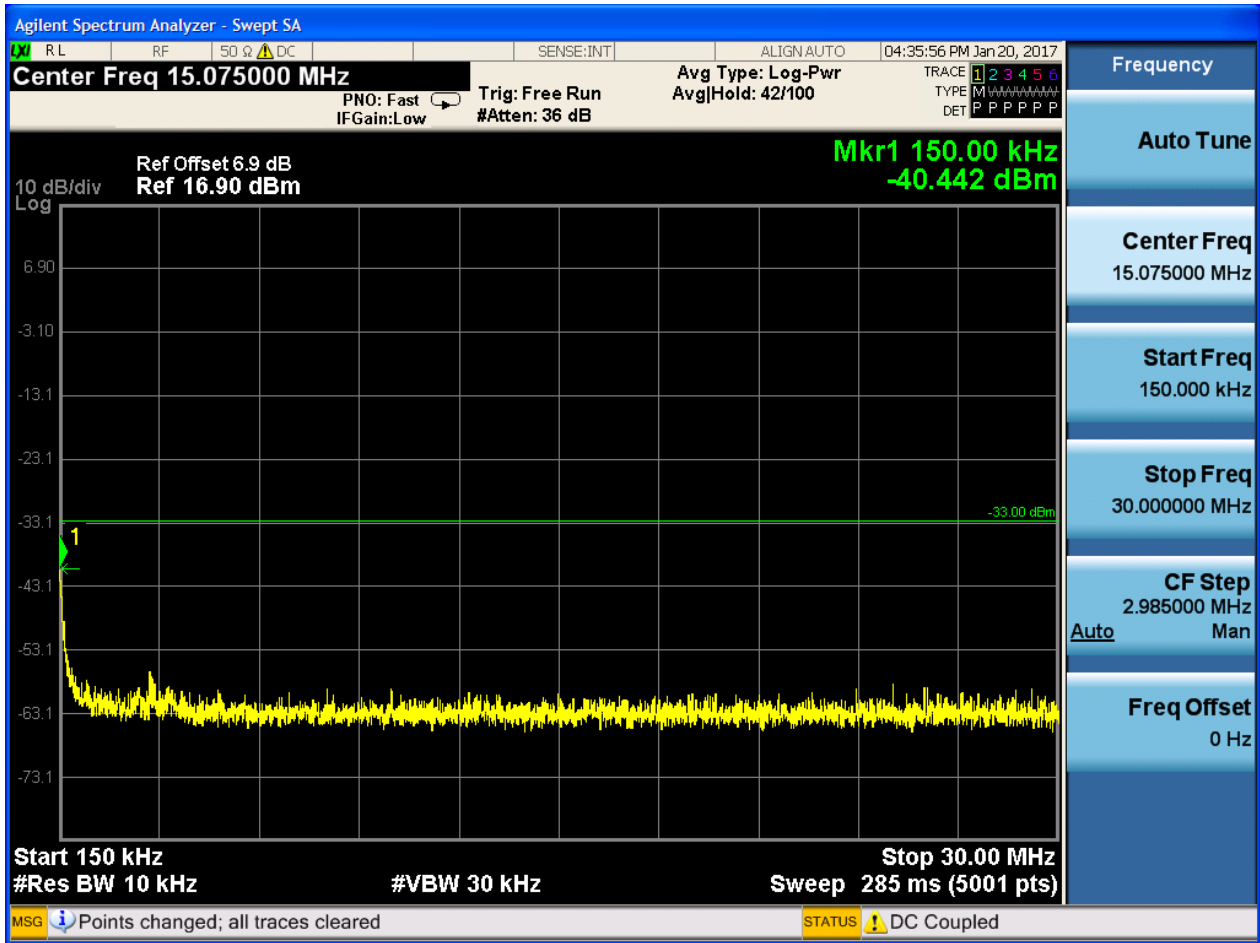


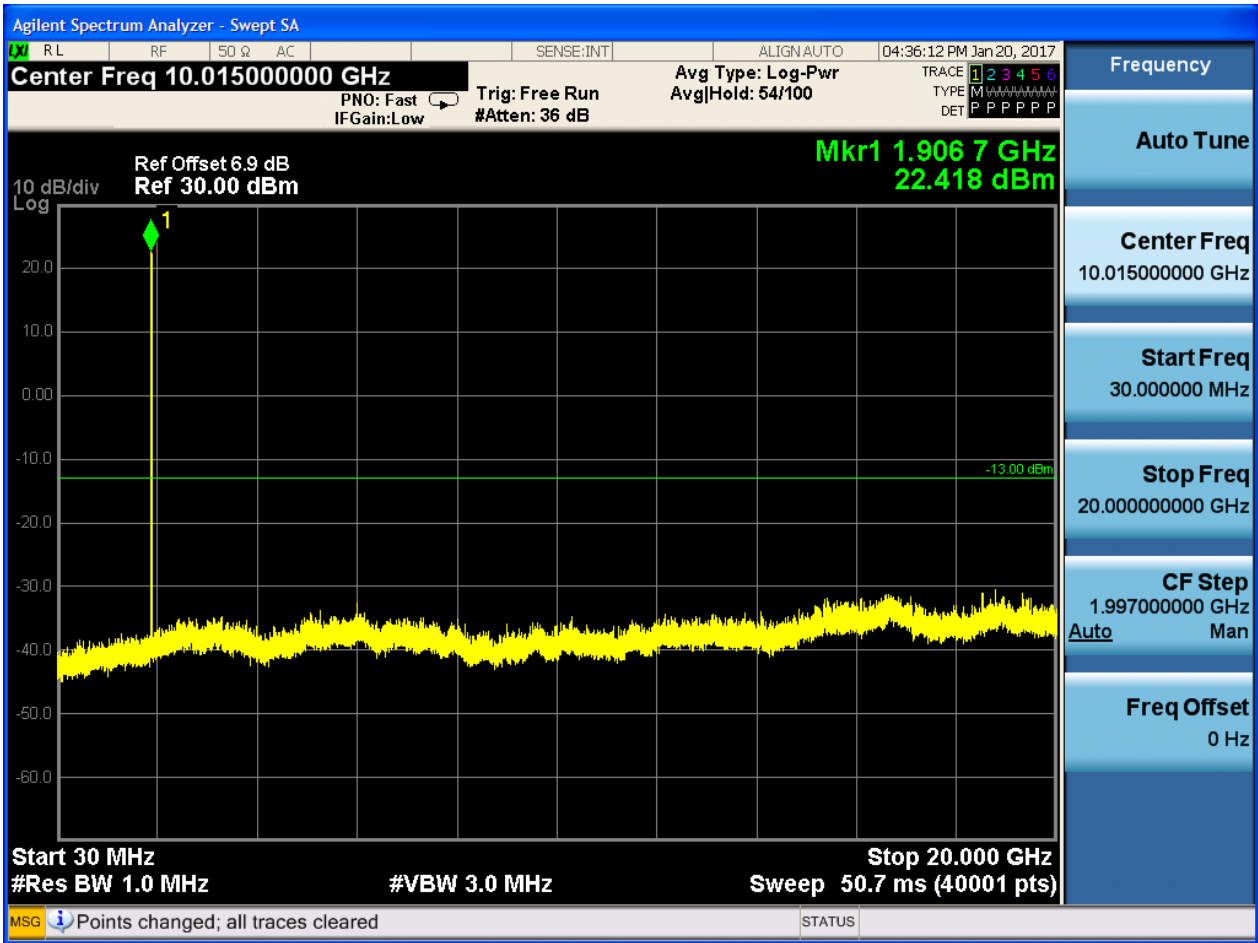




### 6.1.1.1.3 Test Channel = HCH





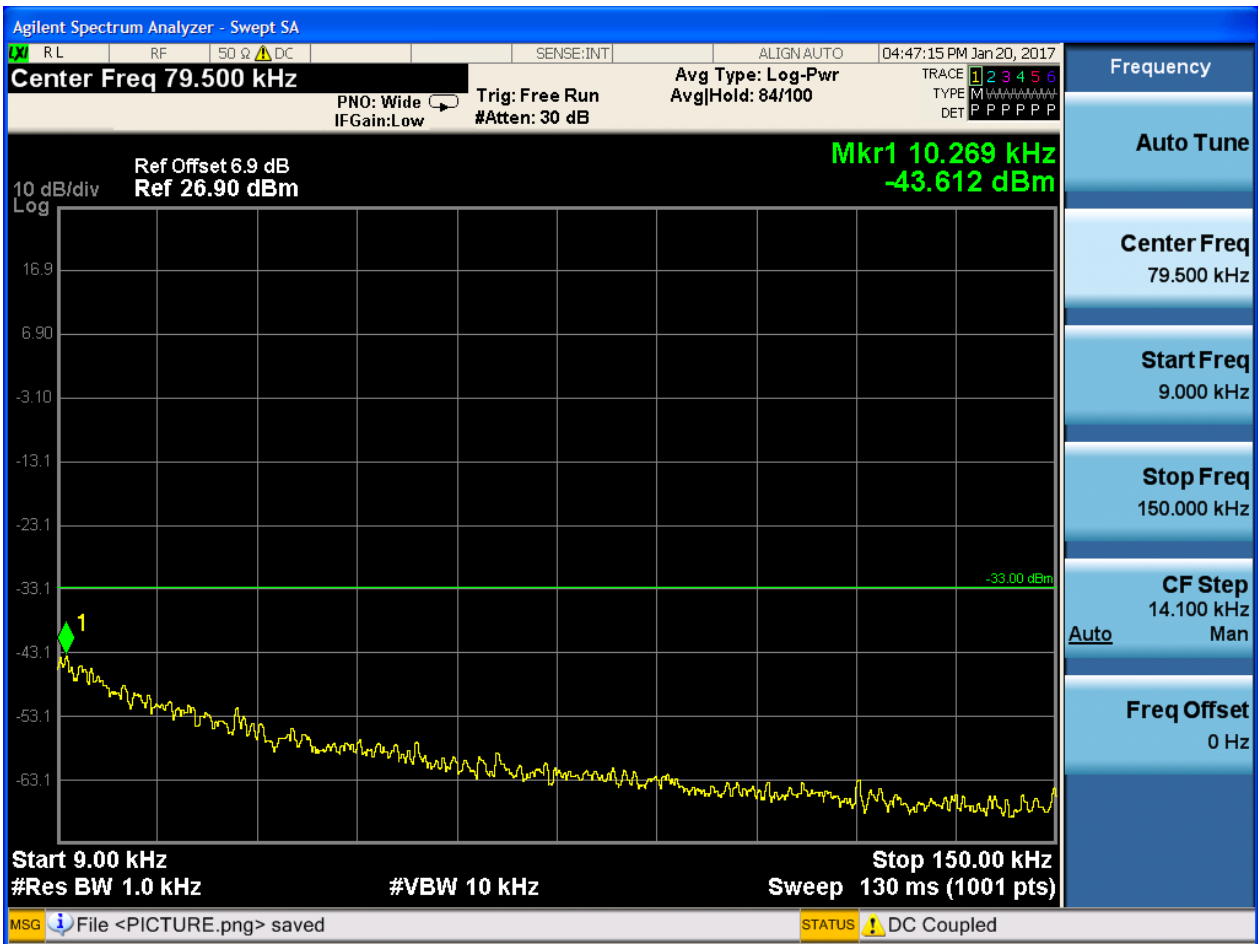


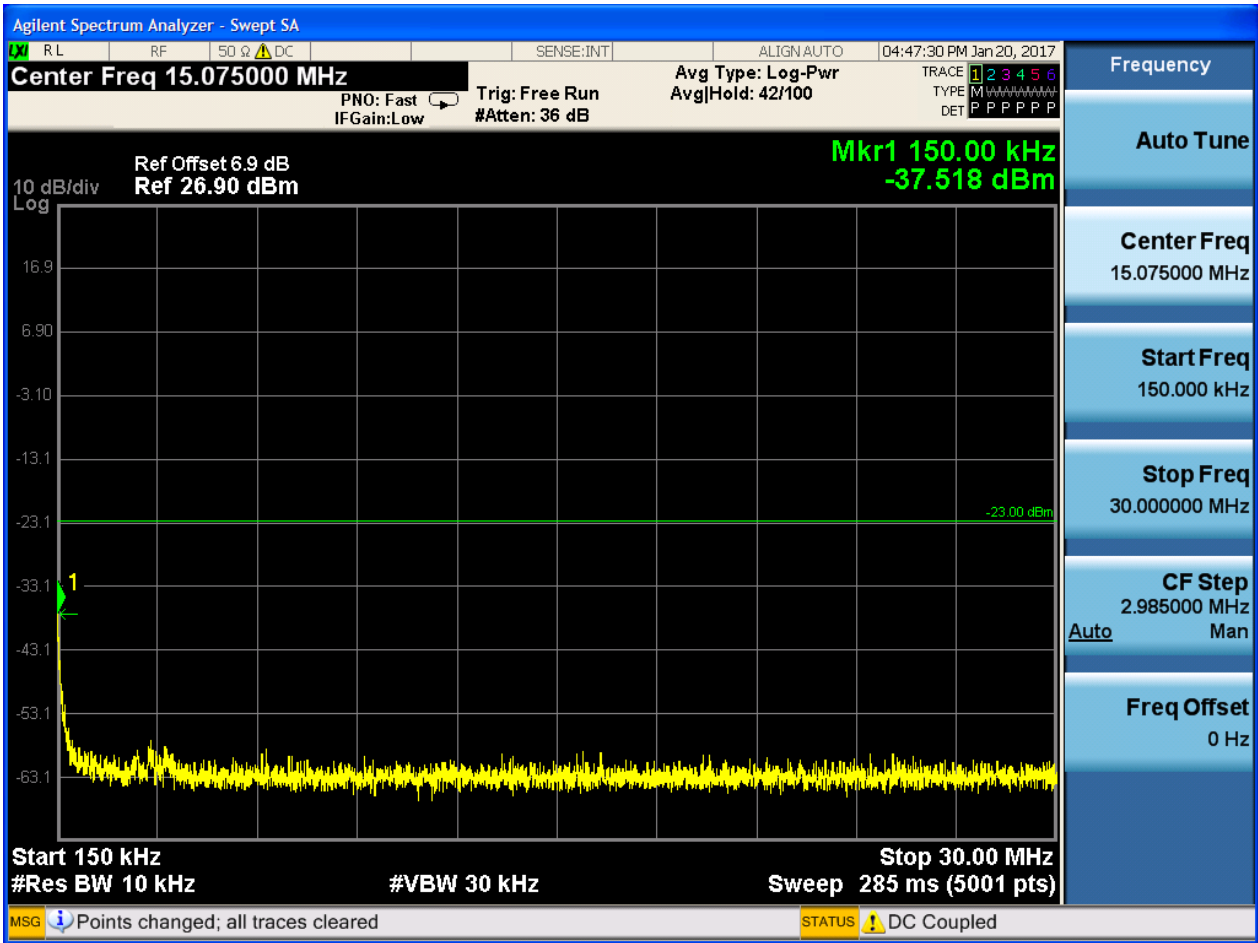


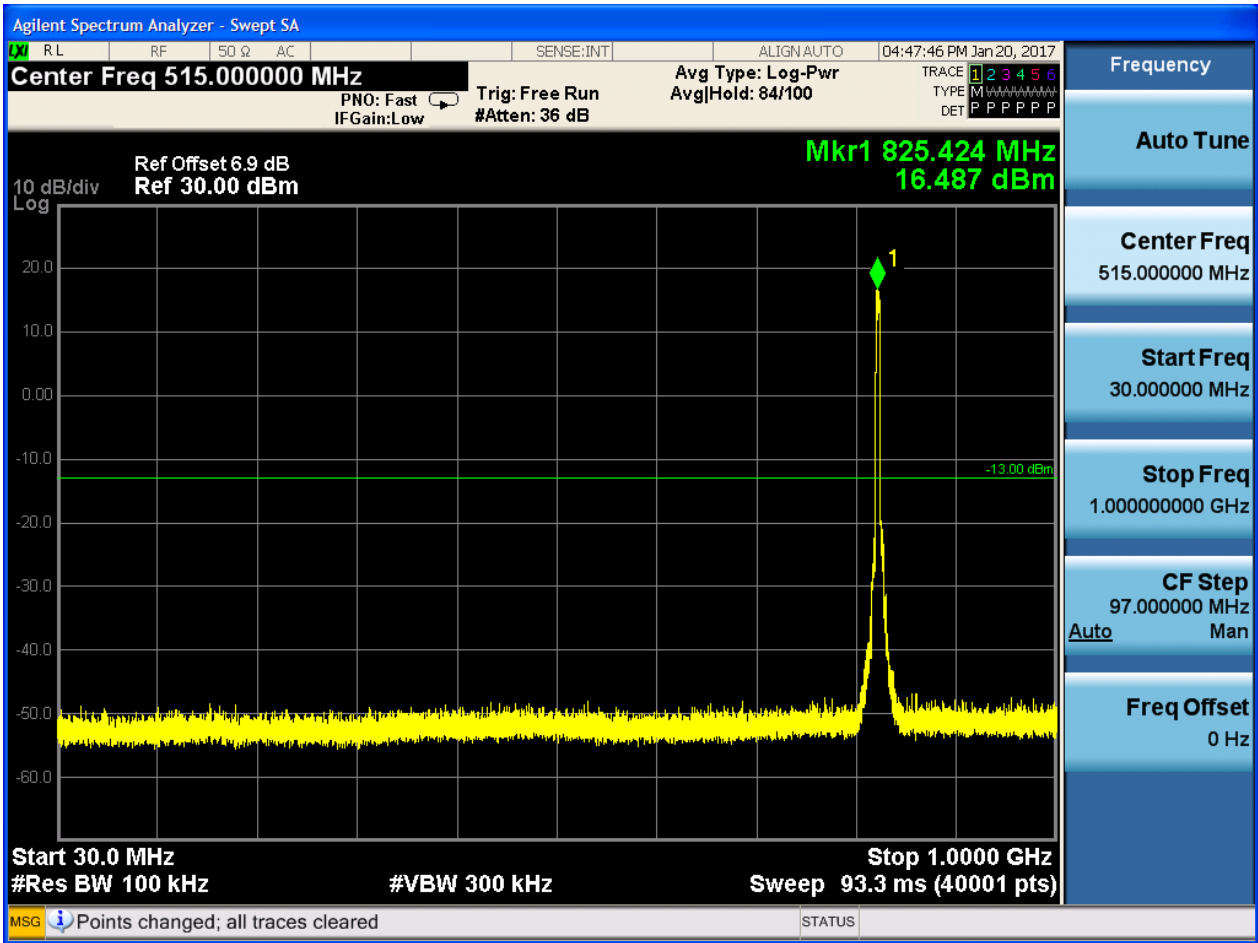
6.1.2 Test Band = WCDMA850

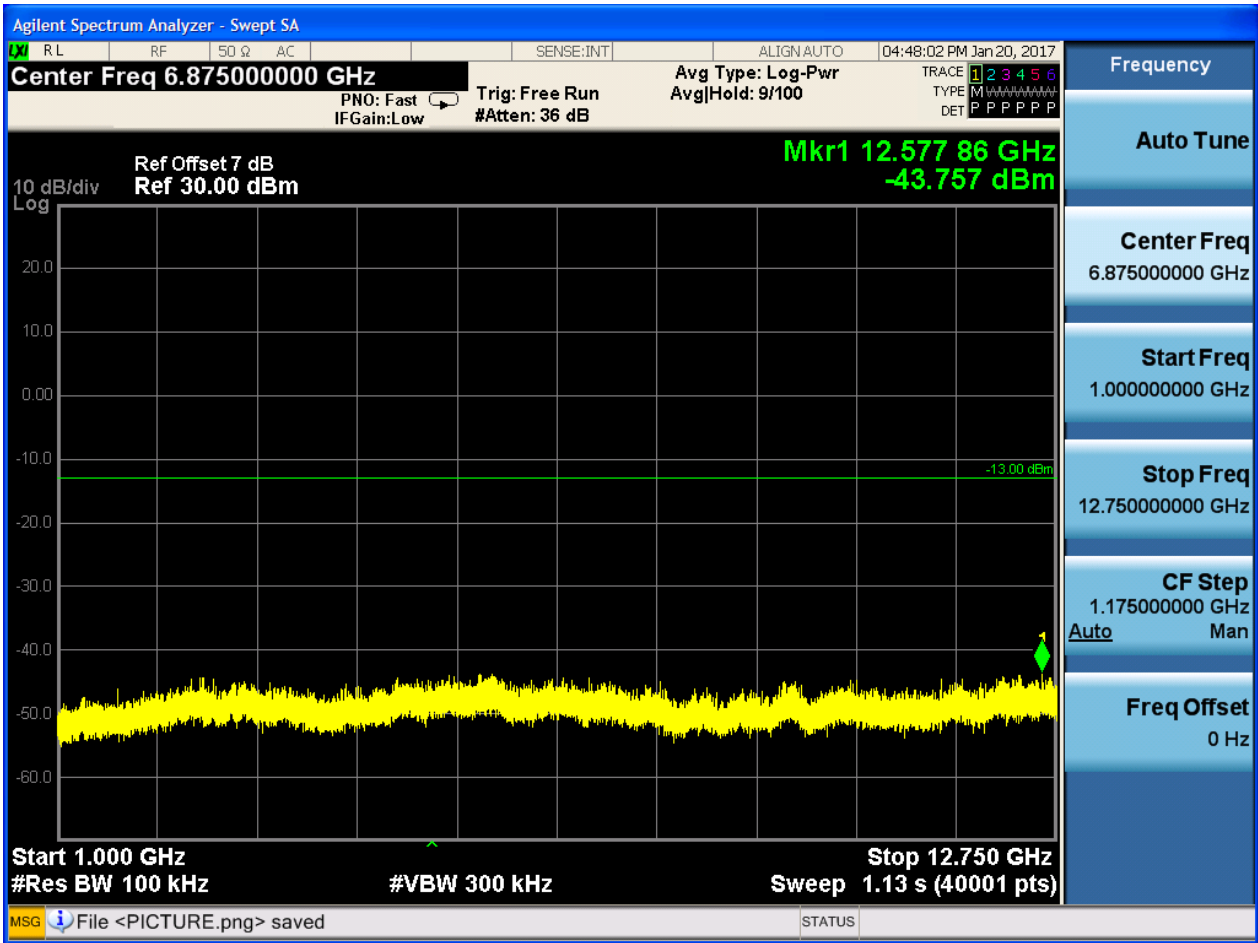
6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH



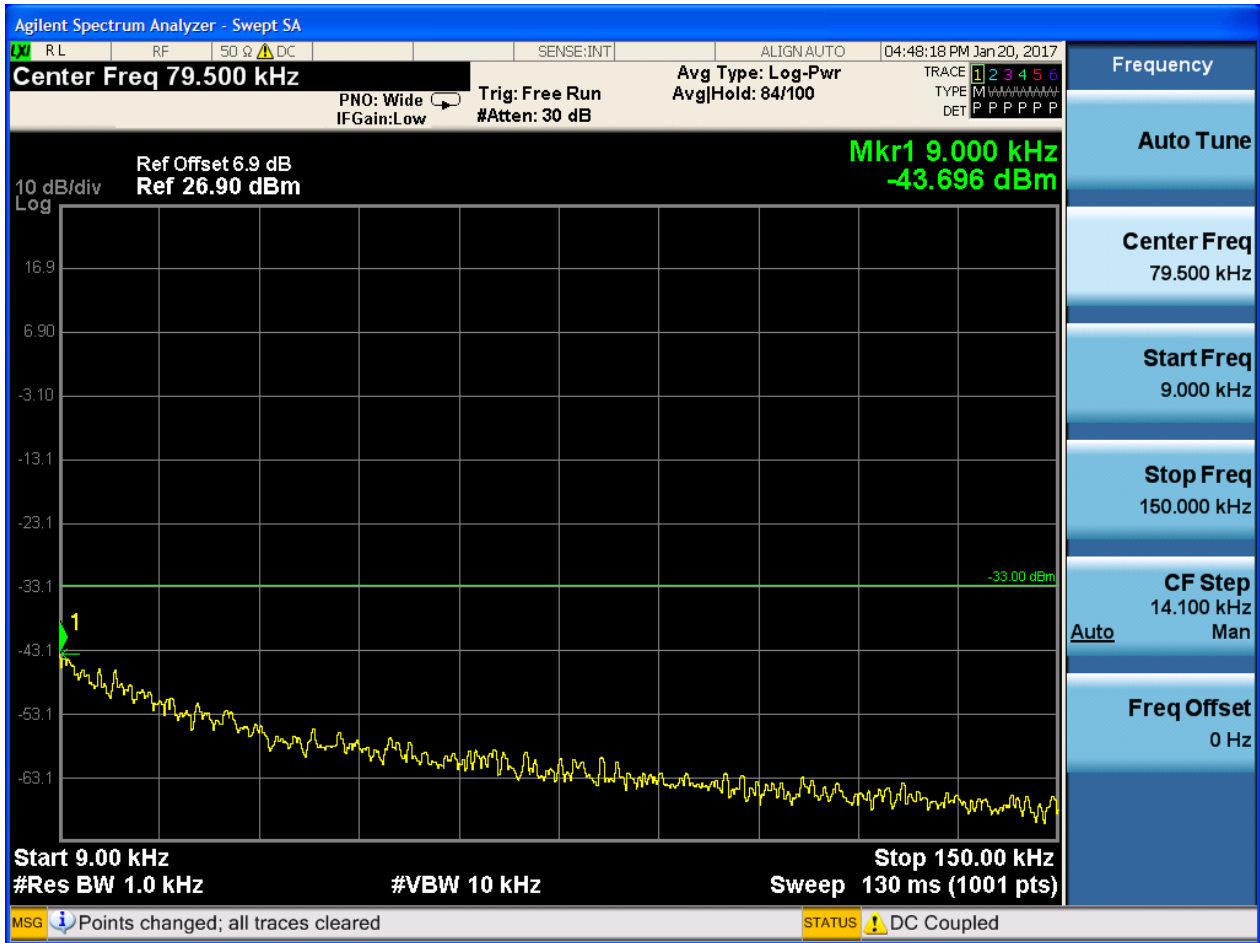




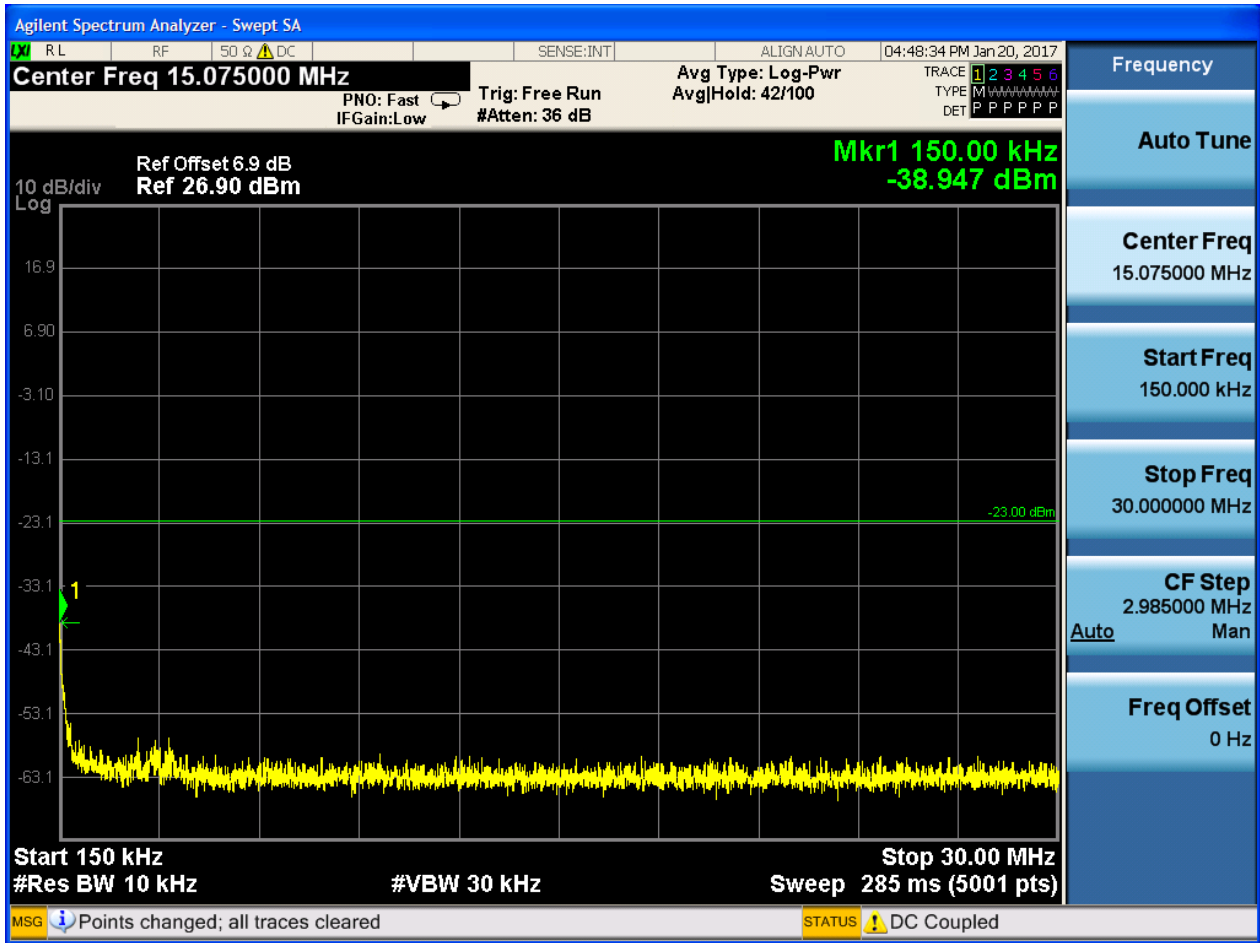


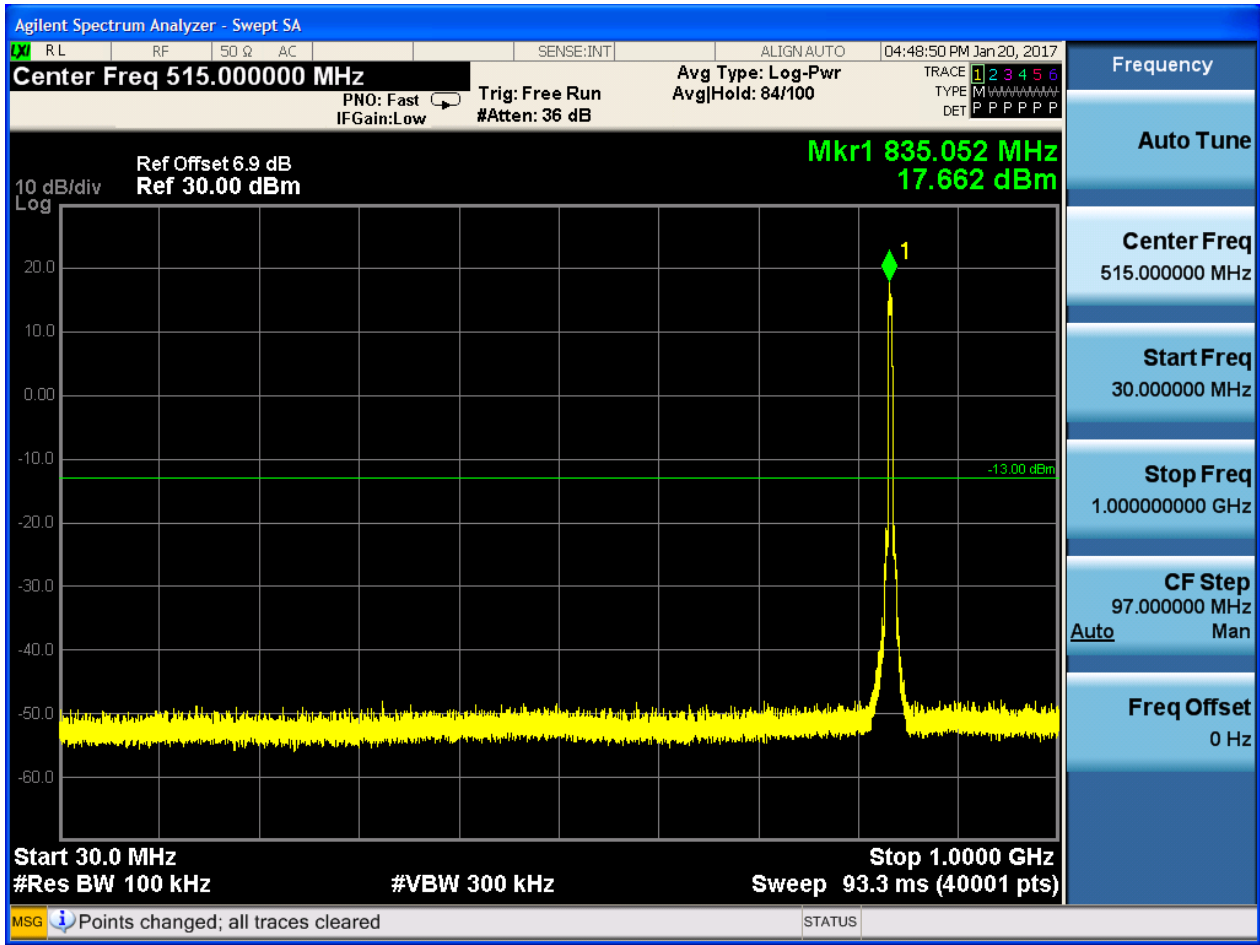


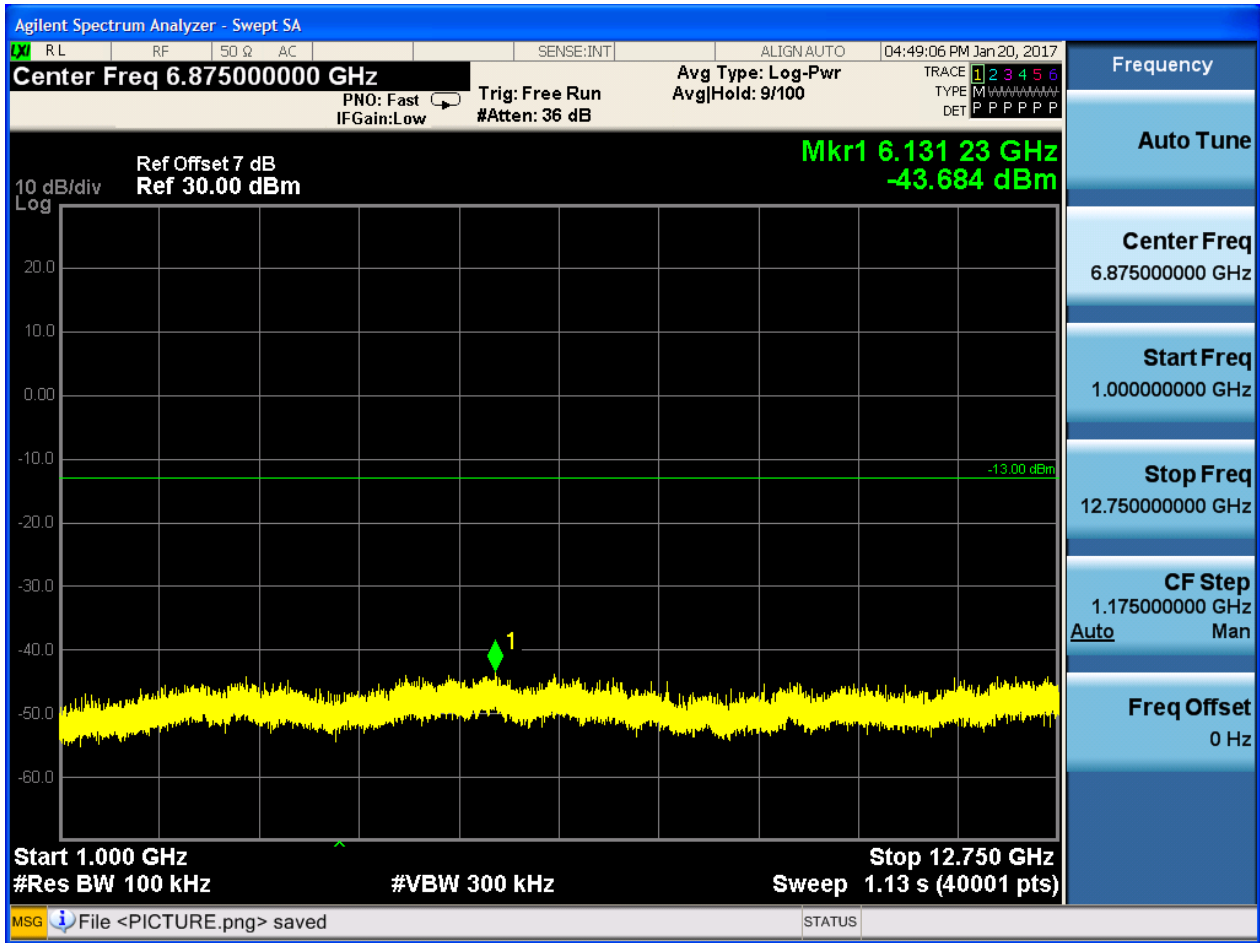
### 6.1.2.1.2 Test Channel = MCH





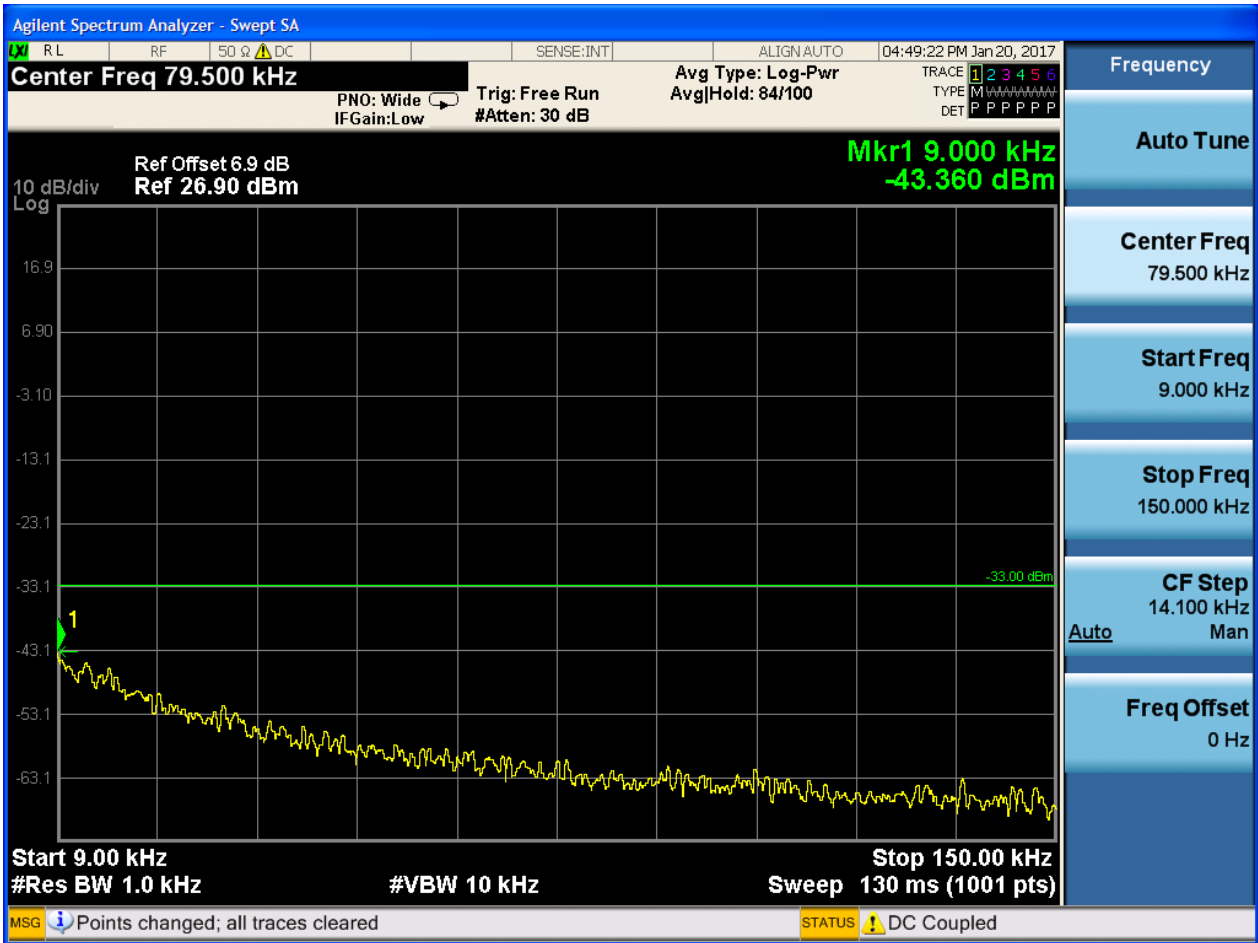


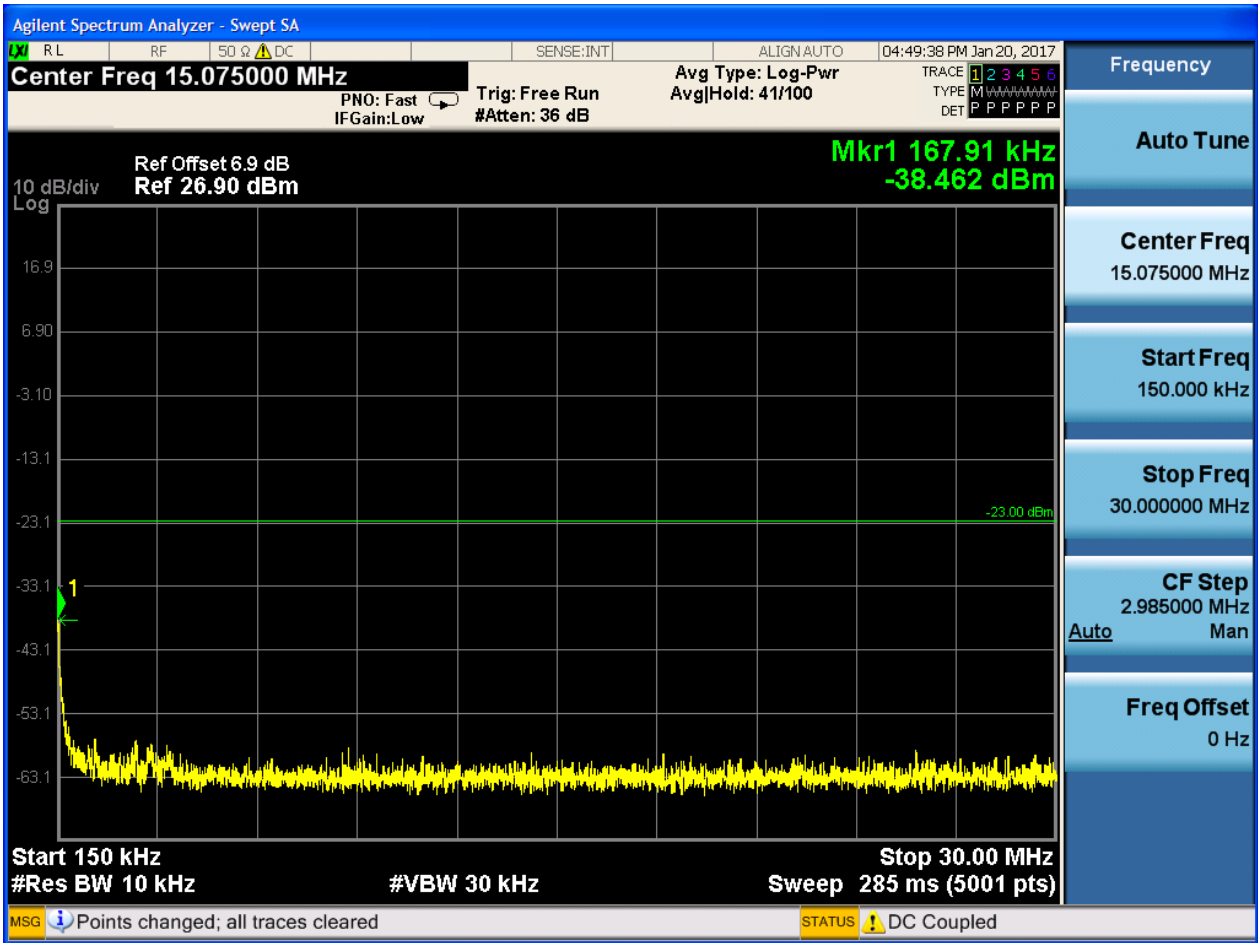


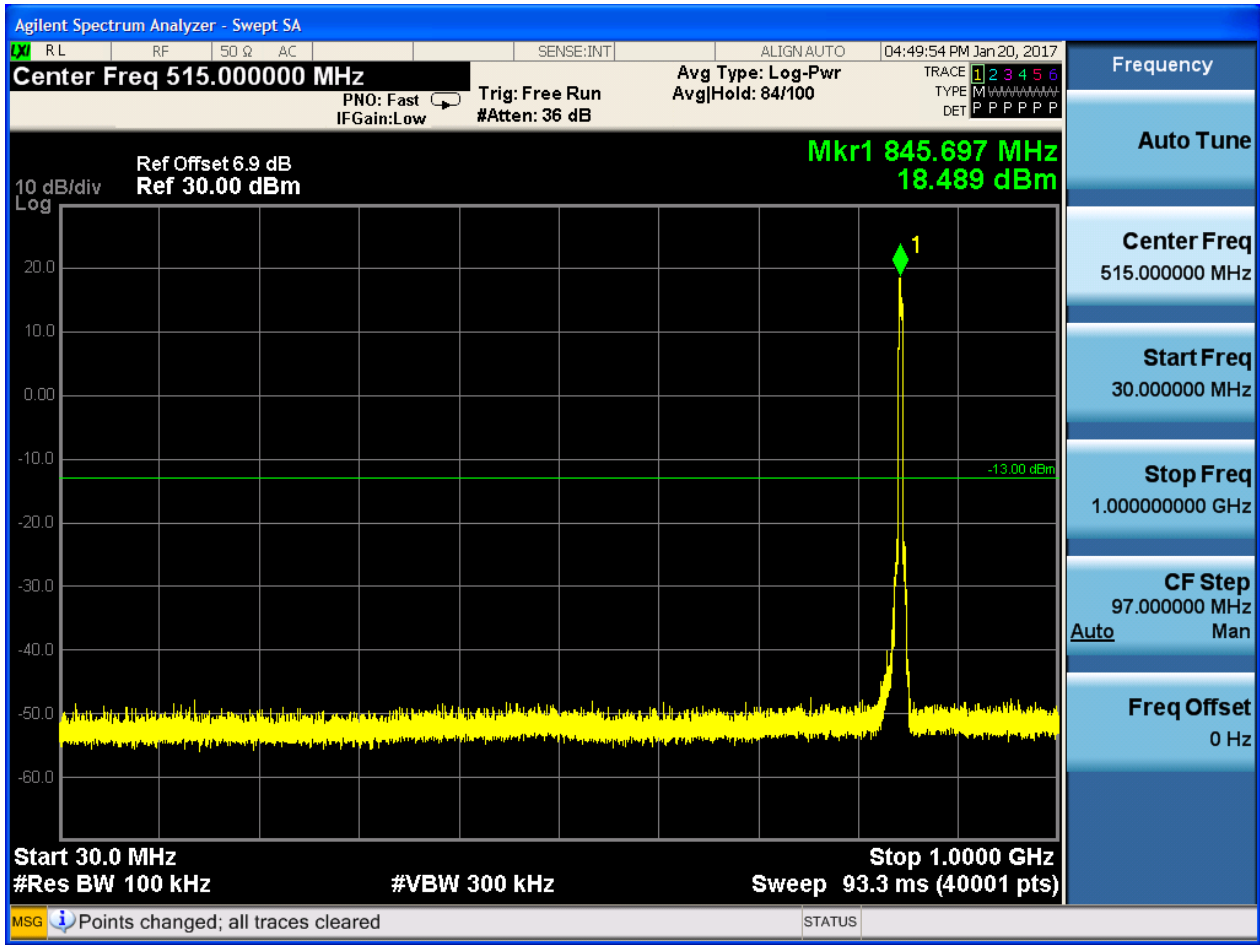


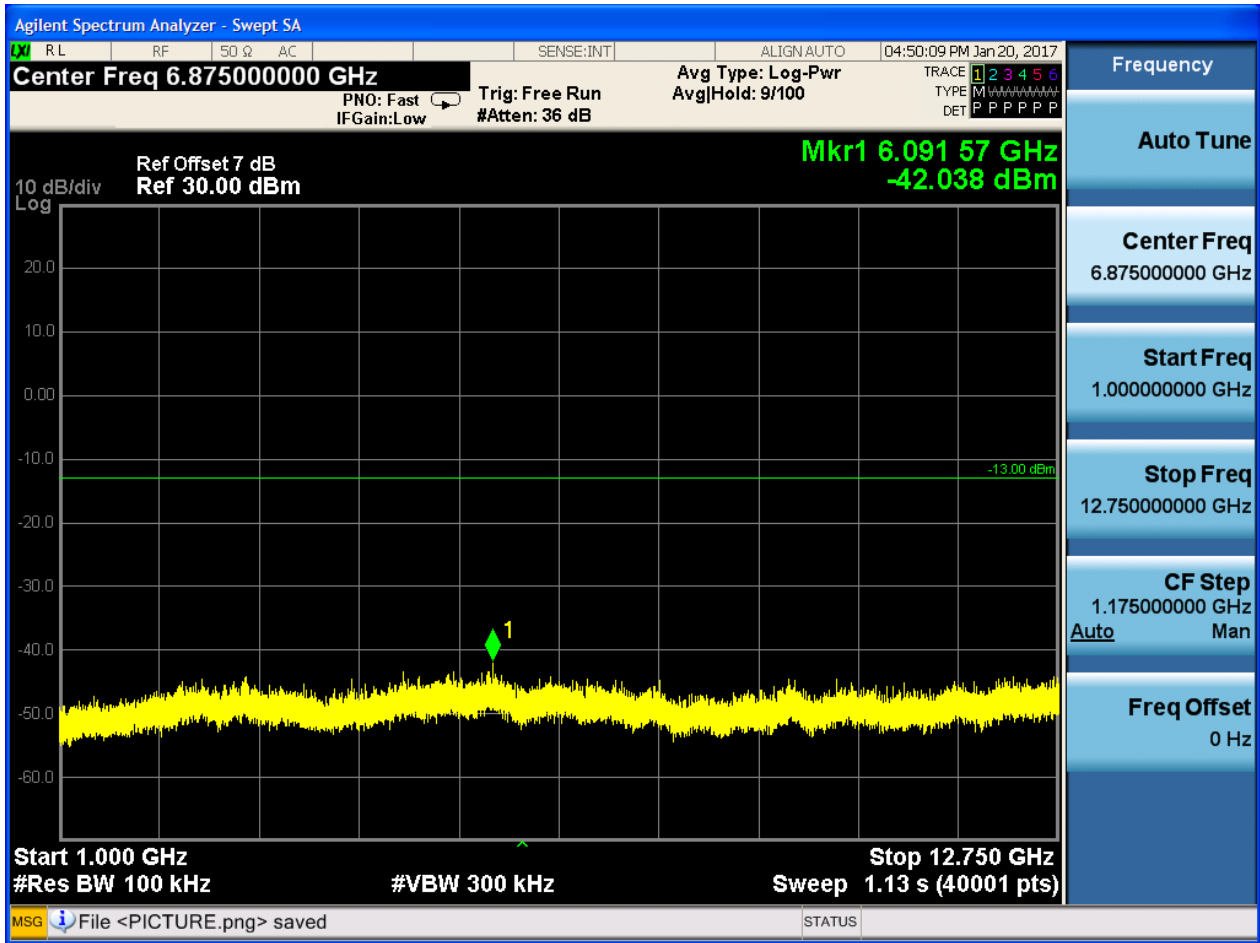


### 6.1.2.1.3 Test Channel = HCH











## 7Appendix\_G: Frequency Stability

### 7.1 For UMTS

#### 7.1.1Frequency 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	-9.99	-0.00539	PASS
				VN	-10.48	-0.00566	PASS
				VH	-8.07	-0.00436	PASS
		MCH	TN	VL	-5.34	-0.00284	PASS
				VN	-3.88	-0.00206	PASS
				VH	-19.50	-0.01037	PASS
		HCH	TN	VL	-5.46	-0.00286	PASS
				VN	7.78	0.00408	PASS
				VH	7.35	0.00385	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	5.31	0.00643	PASS
				VN	-2.99	-0.00362	PASS
				VH	3.04	0.00368	PASS
		MCH	TN	VL	1.22	0.00146	PASS
				VN	-1.89	-0.00226	PASS
				VH	-3.37	-0.00403	PASS
		HCH	TN	VL	7.83	0.00925	PASS
				VN	6.29	0.00743	PASS
				VH	7.29	0.00861	PASS

#### 7.1.2Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1900	UMTS/TM1	LCH	VN	-30	3.48	0.00188	PASS
				-20	2.75	0.00148	PASS
				-10	-5.37	-0.0029	PASS
				0	-2.67	-0.00144	PASS
				10	-7.83	-0.00423	PASS
				20	-21.94	-0.01184	PASS
				30	-1.08	-0.00058	PASS
				40	-2.41	-0.0013	PASS





Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		MCH	VN	50	2.23	0.0012	PASS
				-30	-23.83	-0.01268	PASS
				-20	-7.29	-0.00388	PASS
				-10	-5.11	-0.00272	PASS
				0	-5.60	-0.00298	PASS
				10	-16.66	-0.00886	PASS
				20	-8.29	-0.00441	PASS
				30	-14.05	-0.00747	PASS
				40	-12.18	-0.00648	PASS
				50	-9.02	-0.0048	PASS
		HCH	VN	-30	-1.75	-0.00092	PASS
				-20	-5.10	-0.00267	PASS
				-10	1.86	0.00098	PASS
				0	-23.12	-0.01212	PASS
				10	-5.05	-0.00265	PASS
				20	-13.09	-0.00686	PASS
				30	-7.81	-0.00409	PASS
				40	-4.87	-0.00255	PASS
				50	-4.56	-0.00239	PASS
				WCDMA850	UMTS/TM1	LCH	VN
-20	-8.64	-0.01045	PASS				
-10	6.47	0.00783	PASS				
0	-2.88	-0.00348	PASS				
10	1.14	0.00138	PASS				
20	0.14	0.00017	PASS				
30	5.84	0.00707	PASS				
40	-1.48	-0.00179	PASS				
50	-10.09	-0.01221	PASS				
MCH	VN	-30	-3.30			-0.00395	PASS
		-20	-5.80			-0.00693	PASS
		-10	-9.43			-0.01127	PASS
		0	-6.42			-0.00768	PASS
		10	-1.94			-0.00232	PASS
		20	-12.24			-0.01463	PASS
		30	3.51			0.0042	PASS
		40	6.10			0.00729	PASS
		50	-6.10			-0.00729	PASS
HCH	VN	-30	-3.81			-0.0045	PASS
		-20	1.56			0.00184	PASS
		-10	-1.51			-0.00178	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				0	-3.33	-0.00393	PASS
				10	-4.10	-0.00484	PASS
				20	-8.90	-0.01051	PASS
				30	-5.72	-0.00676	PASS
				40	5.07	0.00599	PASS
				50	0.37	0.00044	PASS

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END