



## Appendix for Test Report

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

### Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	24.41	23.85	33	PASS
		MCH	24.29	23.73	33	PASS
		HCH	24.32	23.76	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.95	23.44	30	PASS
		MCH	23.91	23.40	30	PASS
		HCH	23.88	23.37	30	PASS
Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.20	19.75	38.5	PASS
		MCH	24.18	19.73	38.5	PASS
		HCH	24.15	19.70	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	3.32	13	PASS
		MCH	3.47	13	PASS
		HCH	3.44	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.06	13	PASS
		MCH	3.25	13	PASS
		HCH	3.13	13	PASS
WCDMA850	UMTS/TM1	LCH	2.80	13	PASS
		MCH	2.72	13	PASS
		HCH	2.49	13	PASS

## 3Appendix\_C: Modulation Characteristics

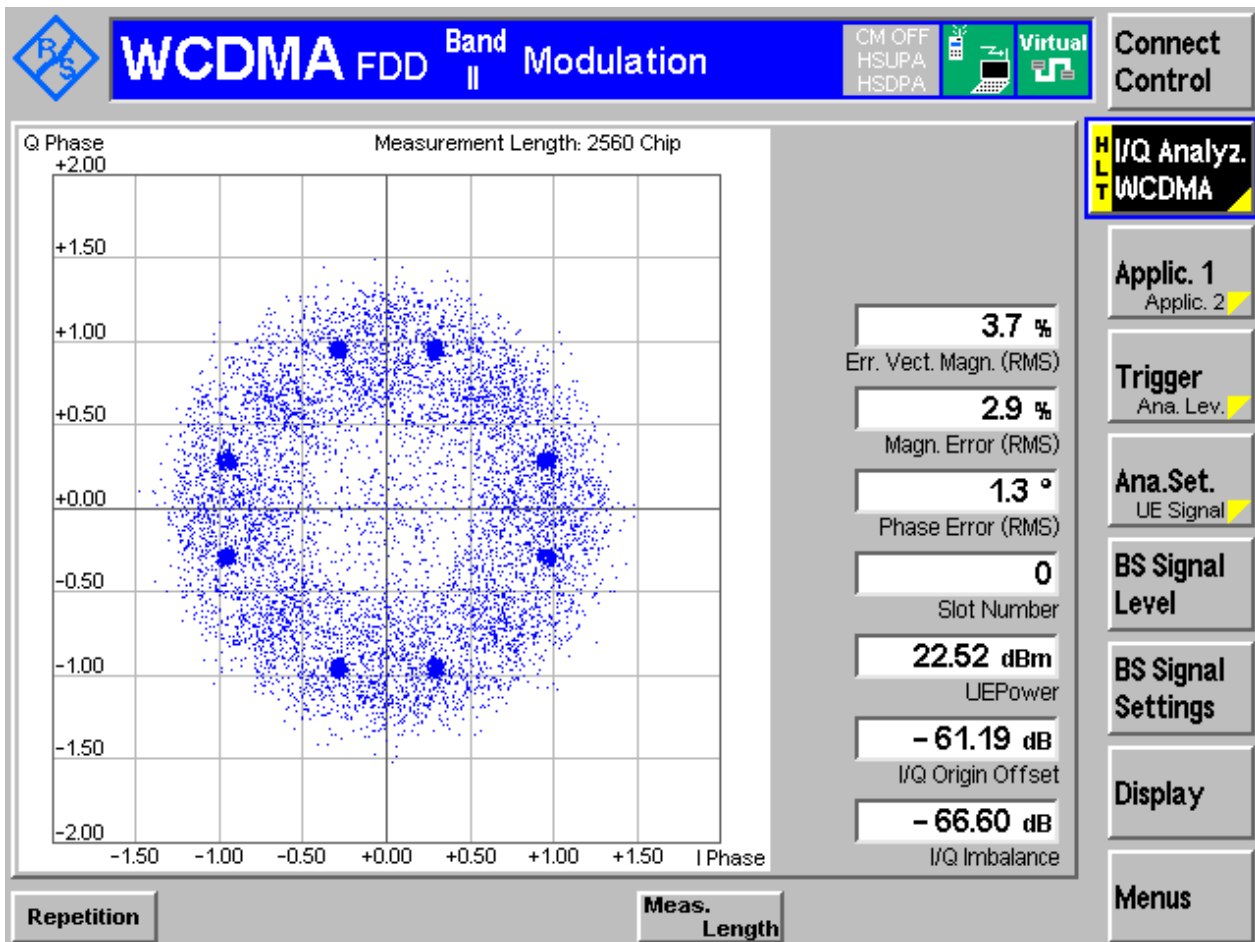
### Part I - Test Plots

#### 3.1 For UMTS

##### 3.1.1 Test Band = WCDMA1900

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

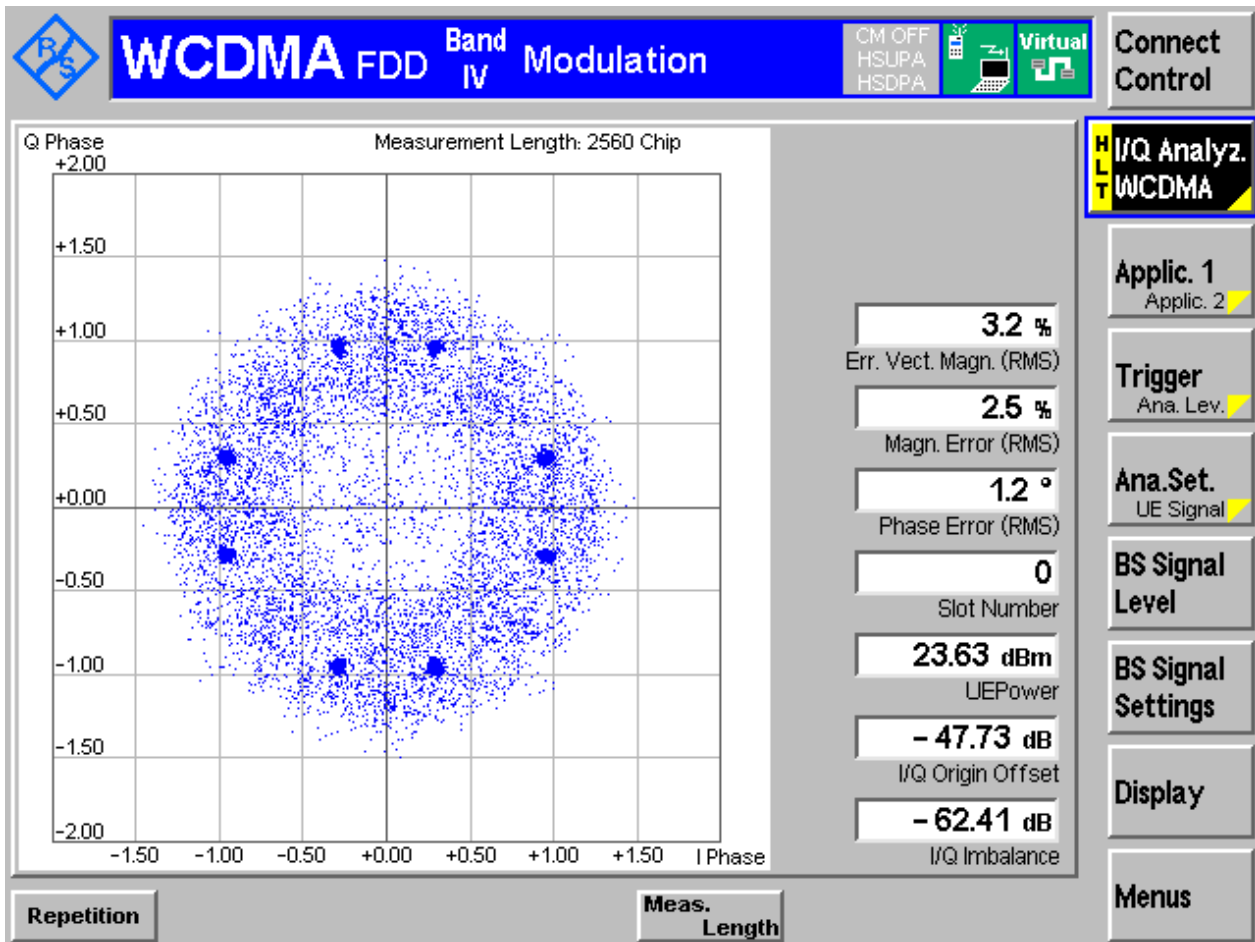
##### 3.1.1.1.1 Test Channel = MCH



### 3.1.2 Test Band = WCDMA1700

#### 3.1.2.1 Test Mode = UMTS/TM1

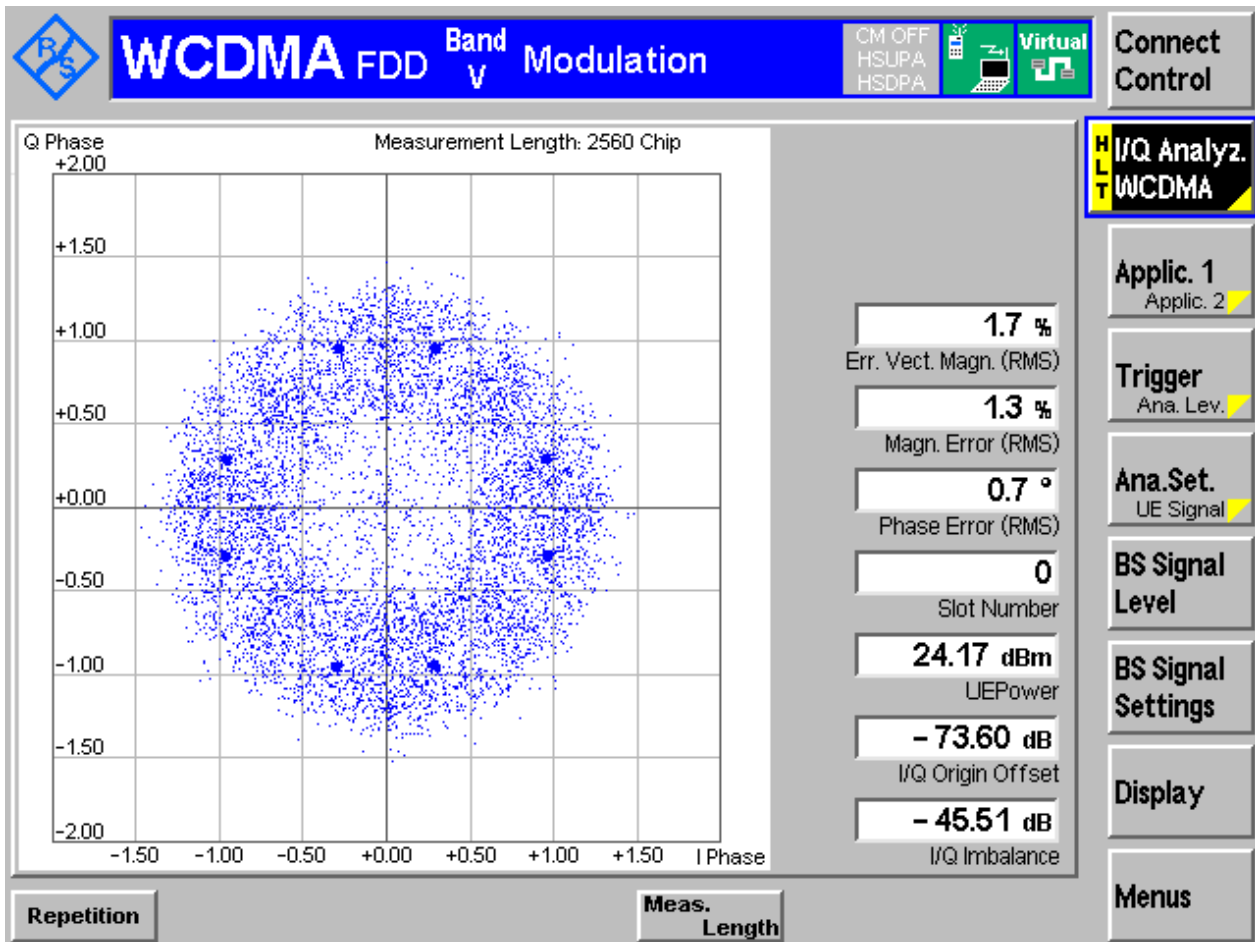
##### 3.1.2.1.1 Test Channel = MCH



### 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	4.16	4.71	Pass
		MCH	4.16	4.72	Pass
		HCH	4.15	4.70	Pass
WCDMA1700	UMTS/TM1	LCH	4.16	4.72	Pass
		MCH	4.16	4.73	Pass
		HCH	4.16	4.73	Pass
WCDMA850	UMTS/TM1	LCH	4.16	4.71	Pass
		MCH	4.16	4.71	Pass
		HCH	4.18	4.73	Pass

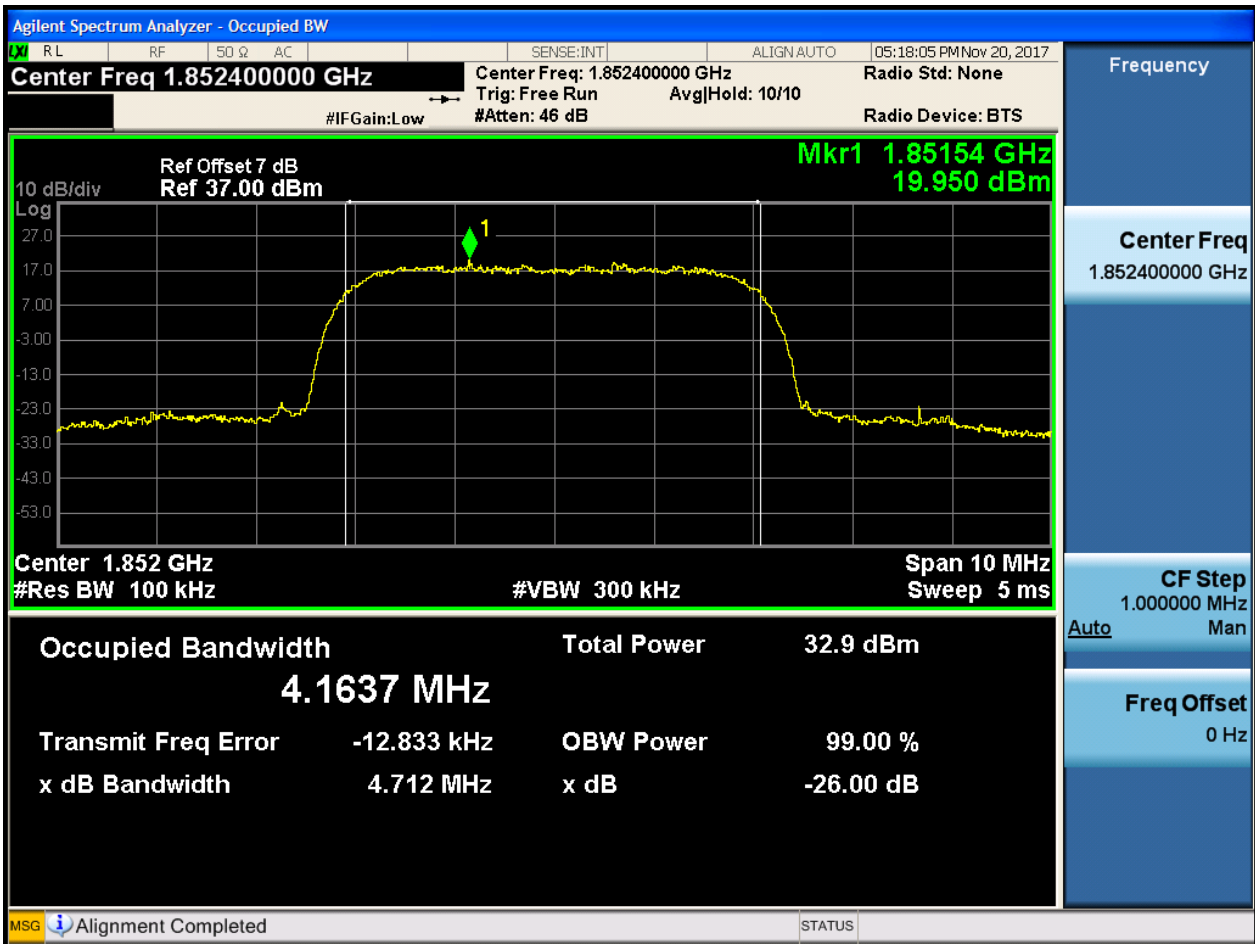




4.1.6 Test Band = WCDMA1900

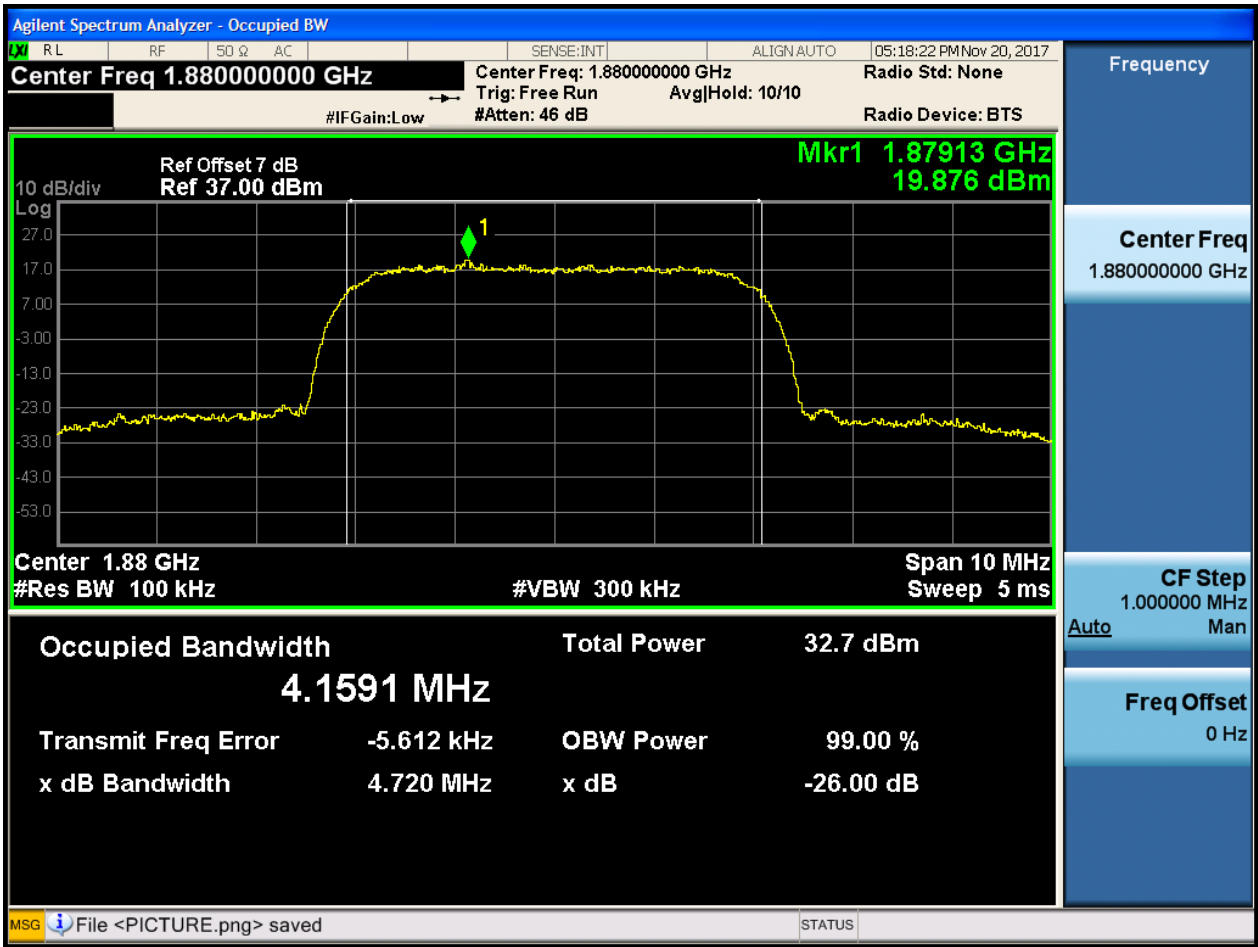
4.1.6.1 Test Mode = UMTS/TM1

4.1.6.1.1 Test Channel = LCH



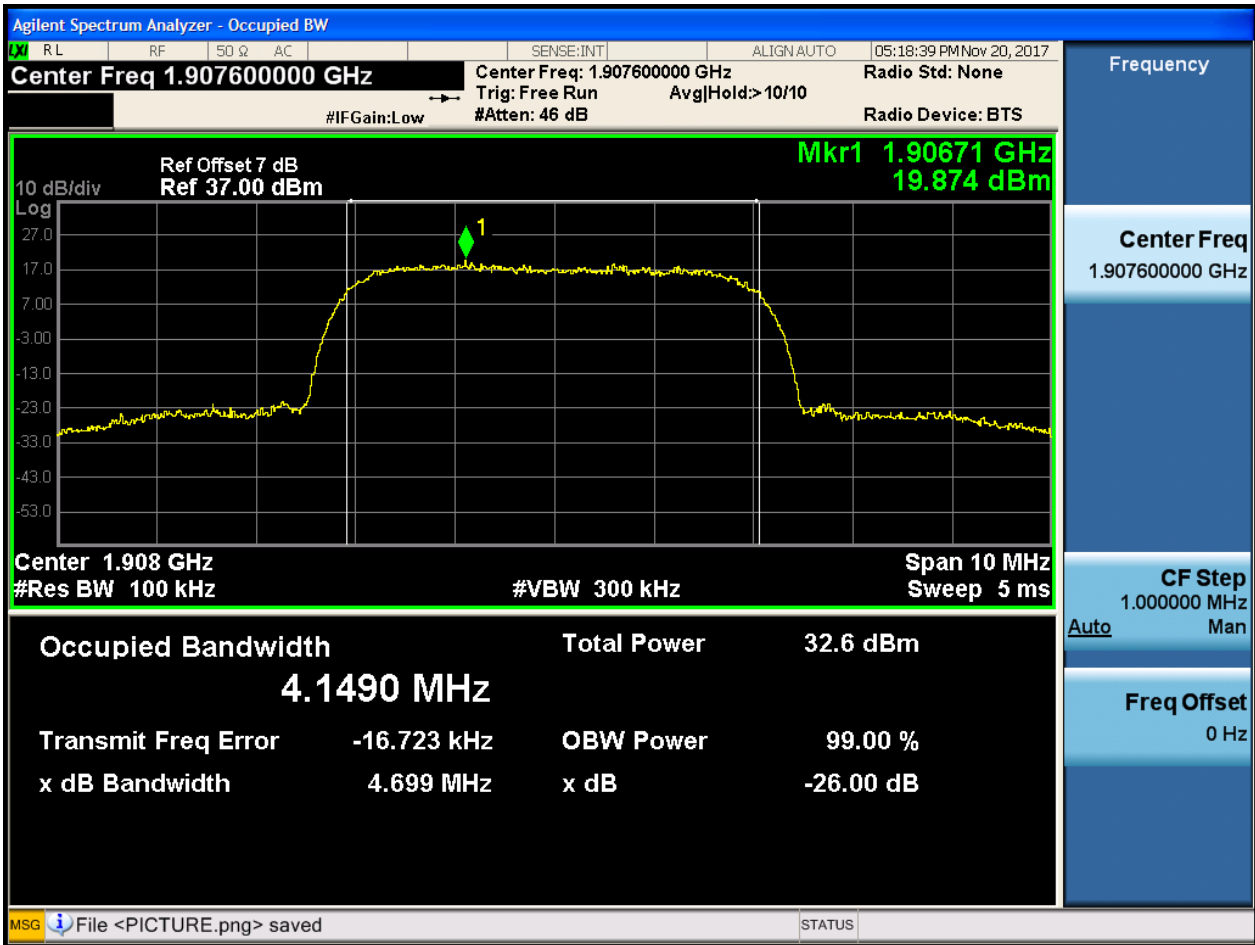


4.1.6.1.2 Test Channel = MCH





4.1.6.1.3 Test Channel = HCH

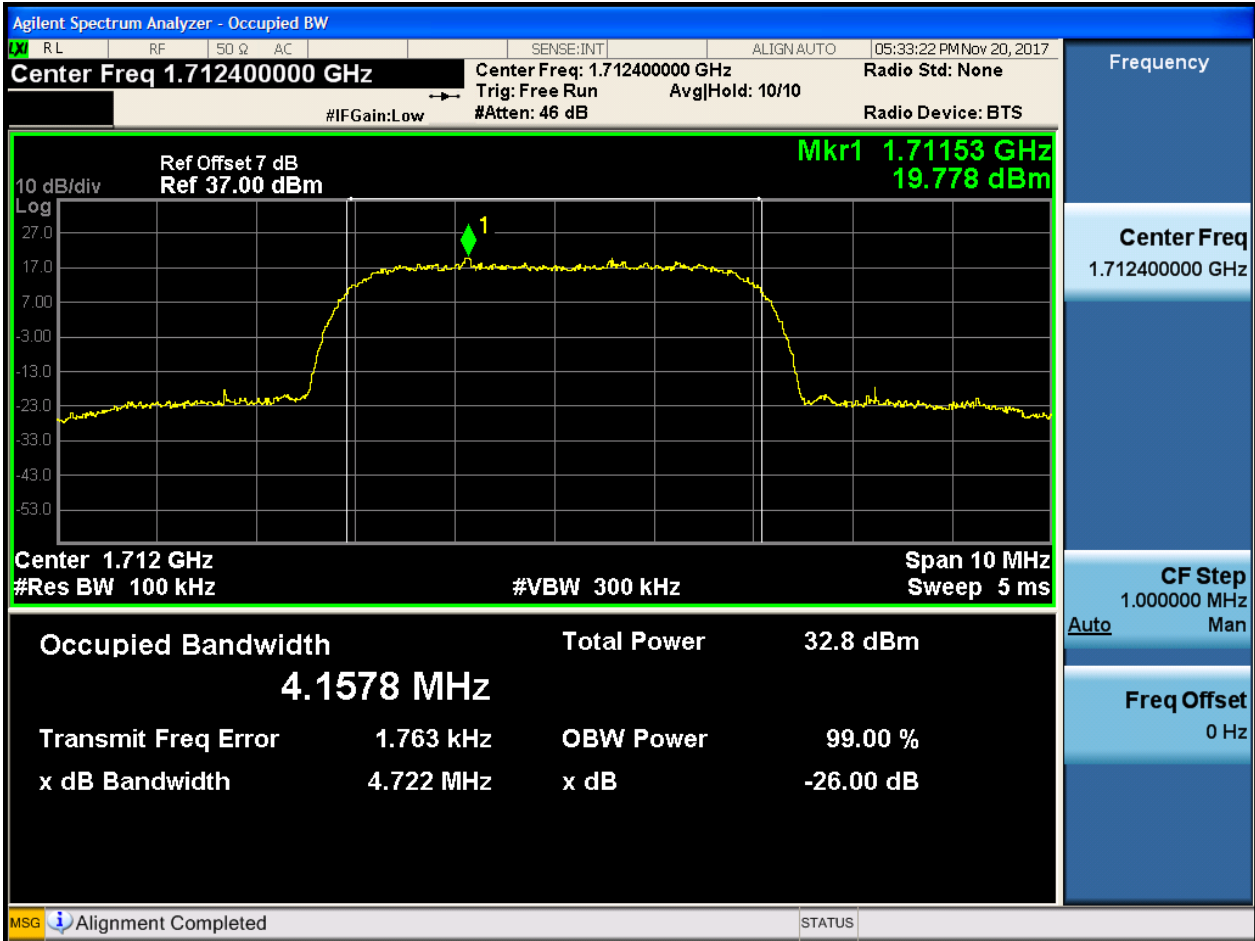




4.1.7 Test Band = WCDMA1700

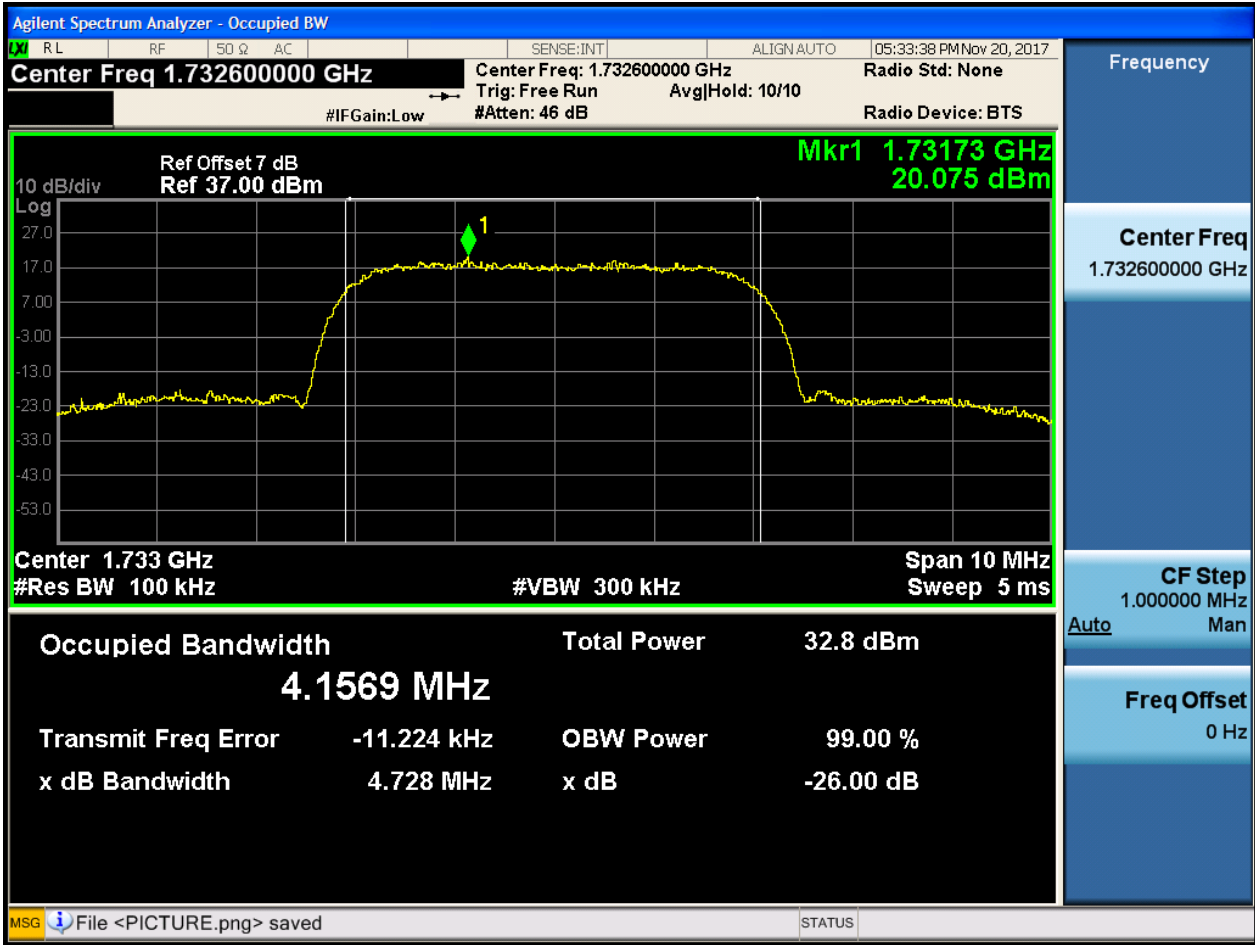
4.1.7.1 Test Mode = UMTS/TM1

4.1.7.1.1 Test Channel = LCH



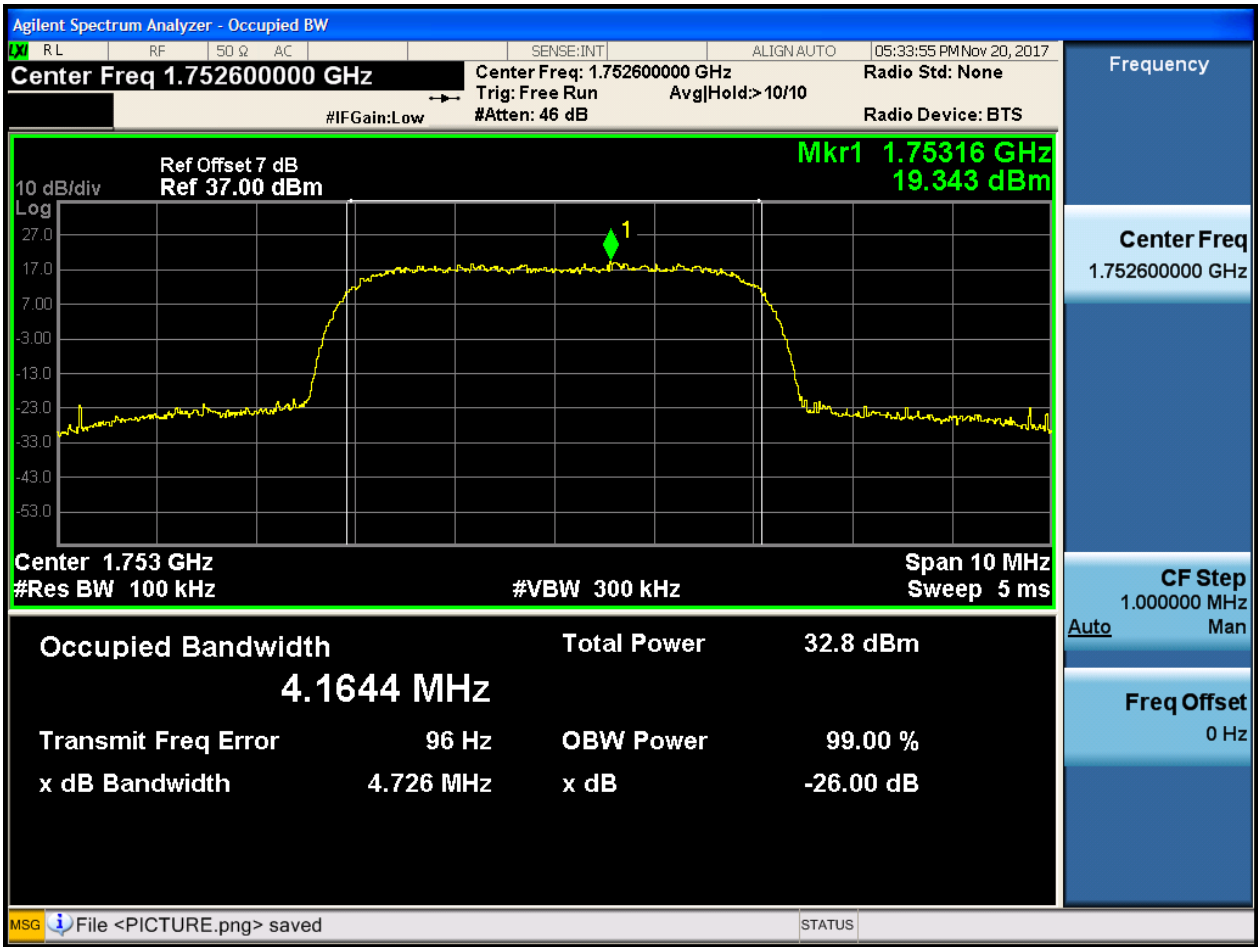


4.1.7.1.2 Test Channel = MCH





4.1.7.1.3 Test Channel = HCH

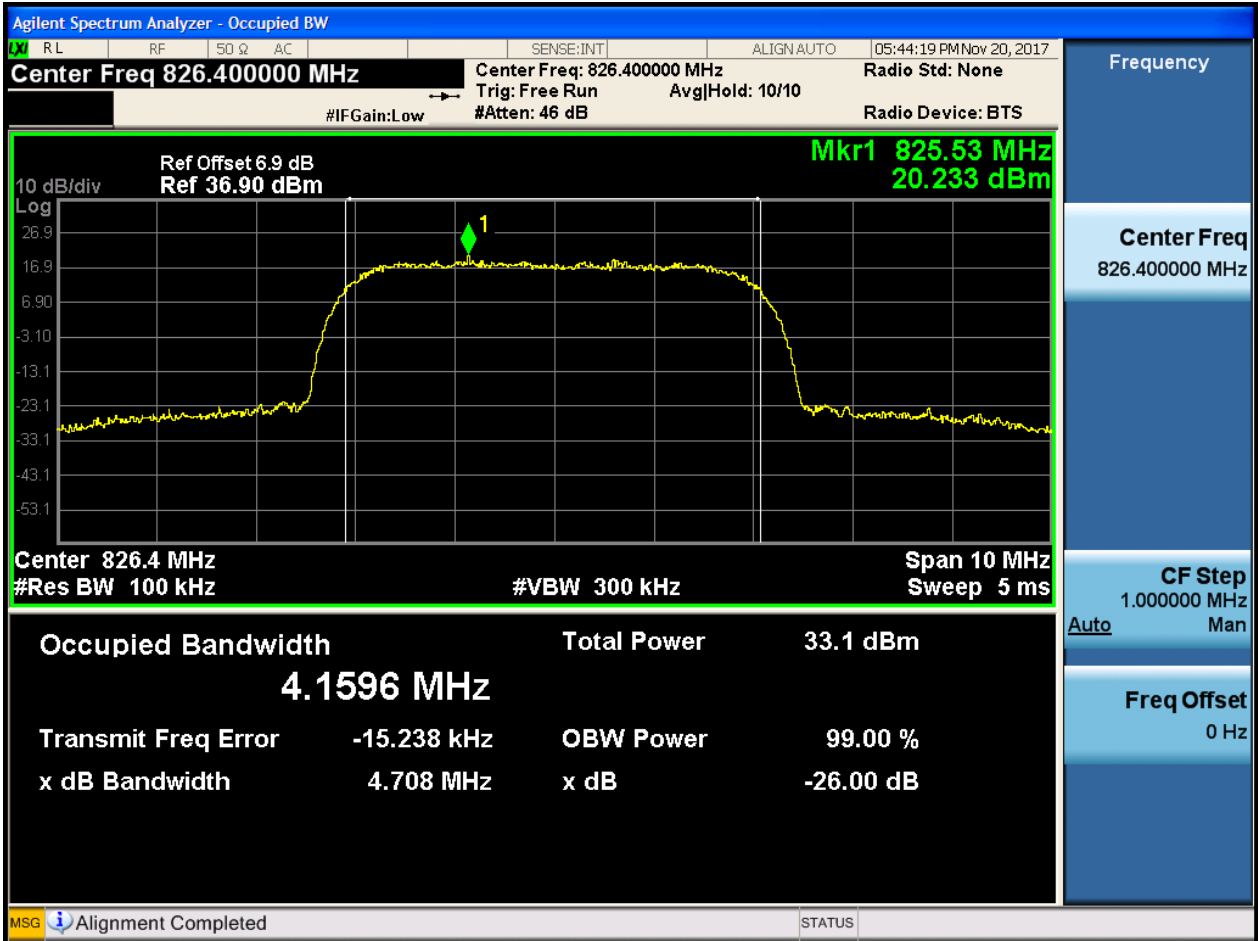




4.1.8 Test Band = WCDMA850

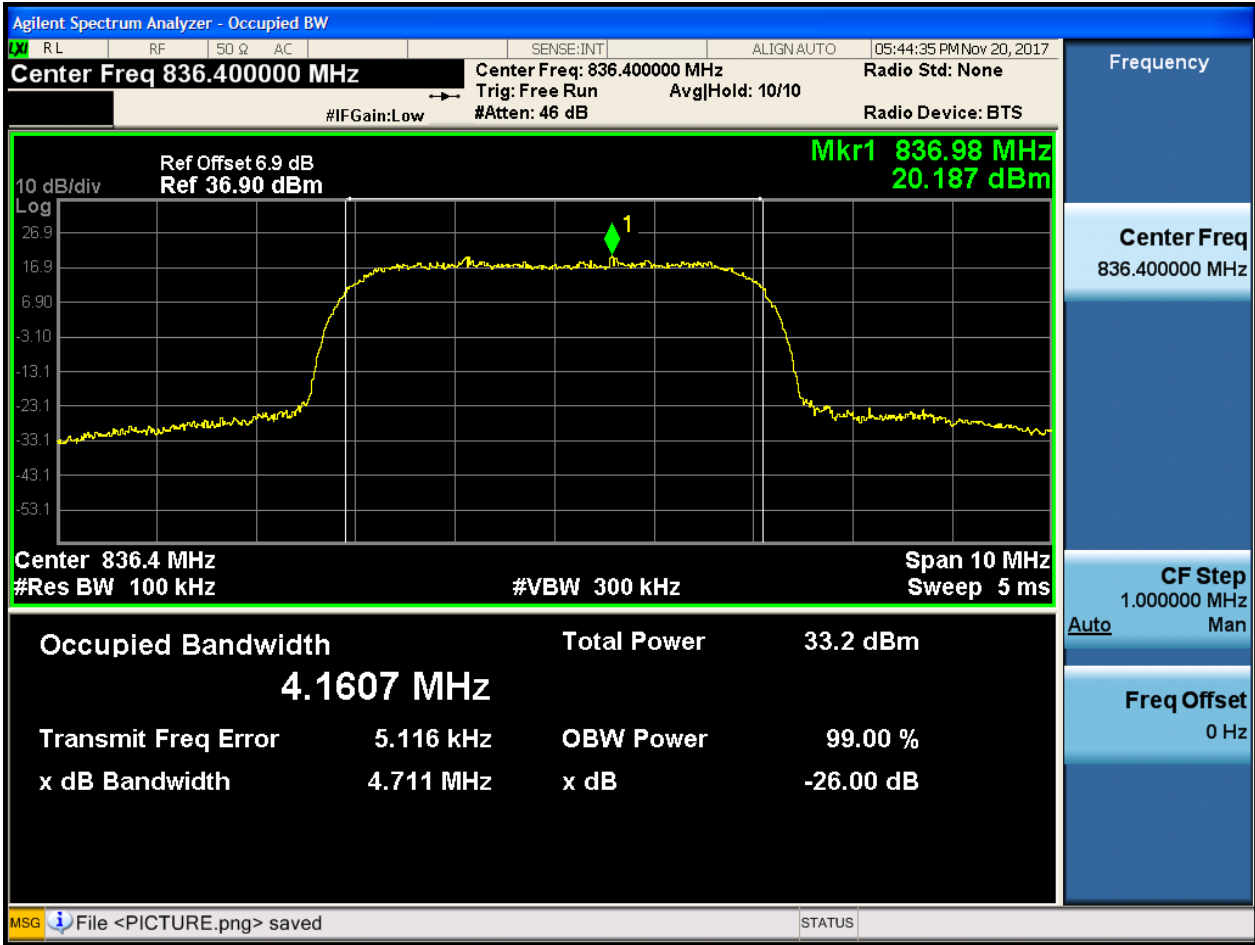
4.1.8.1 Test Mode = UMTS/TM1

4.1.8.1.1 Test Channel = LCH





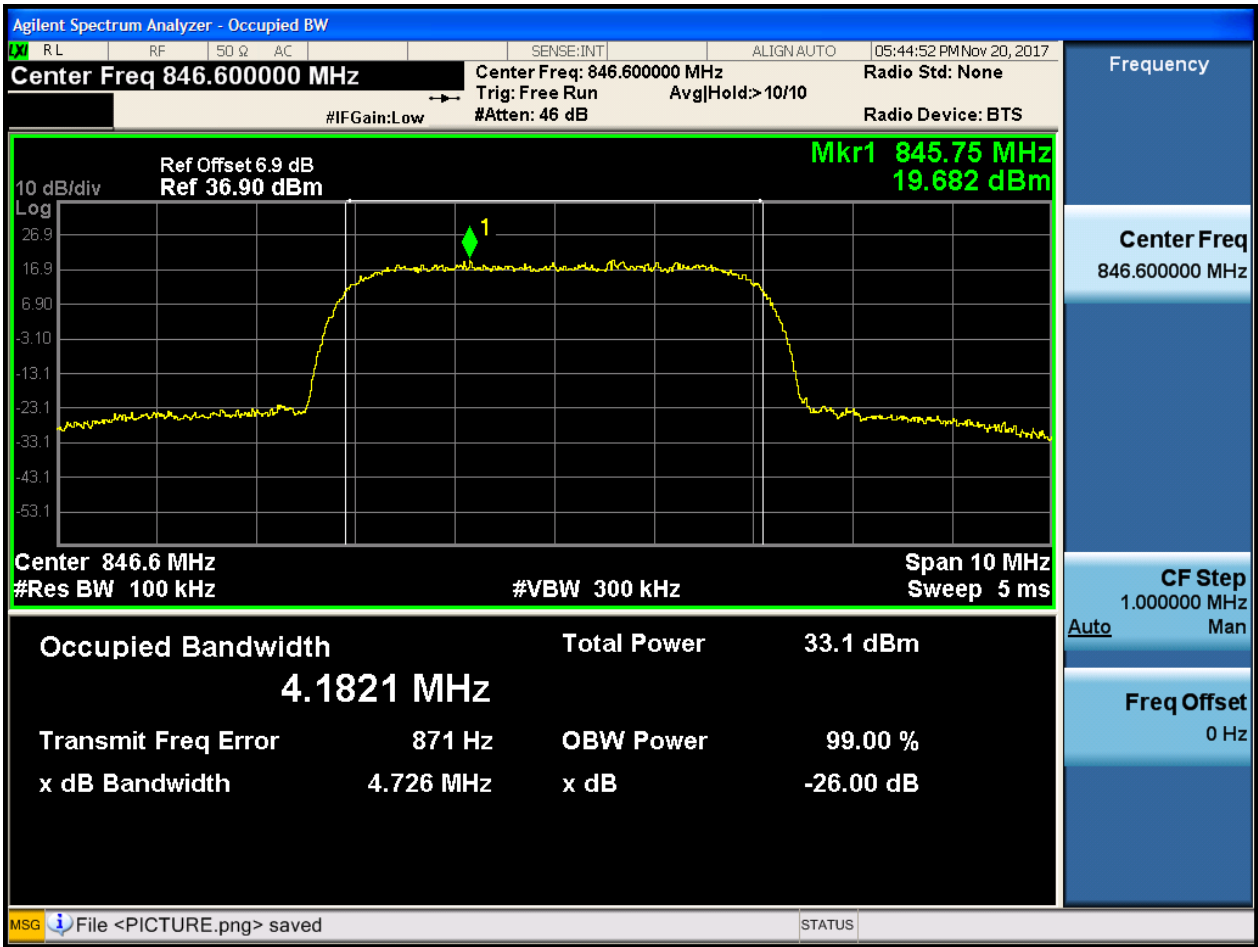
4.1.8.1.2 Test Channel = MCH







4.1.8.1.3 Test Channel = HCH





## 5Appendix\_E: Band Edges Compliance

### Part I - Test Plots

#### 5.1 For UMTS

##### 5.1.5 Test Band = WCDMA1900

##### 5.1.5.1 Test Mode = UMTS/TM1

##### 5.1.5.1.1 Test Channel = LCH



## 5.1.5.1.2 Test Channel = HCH

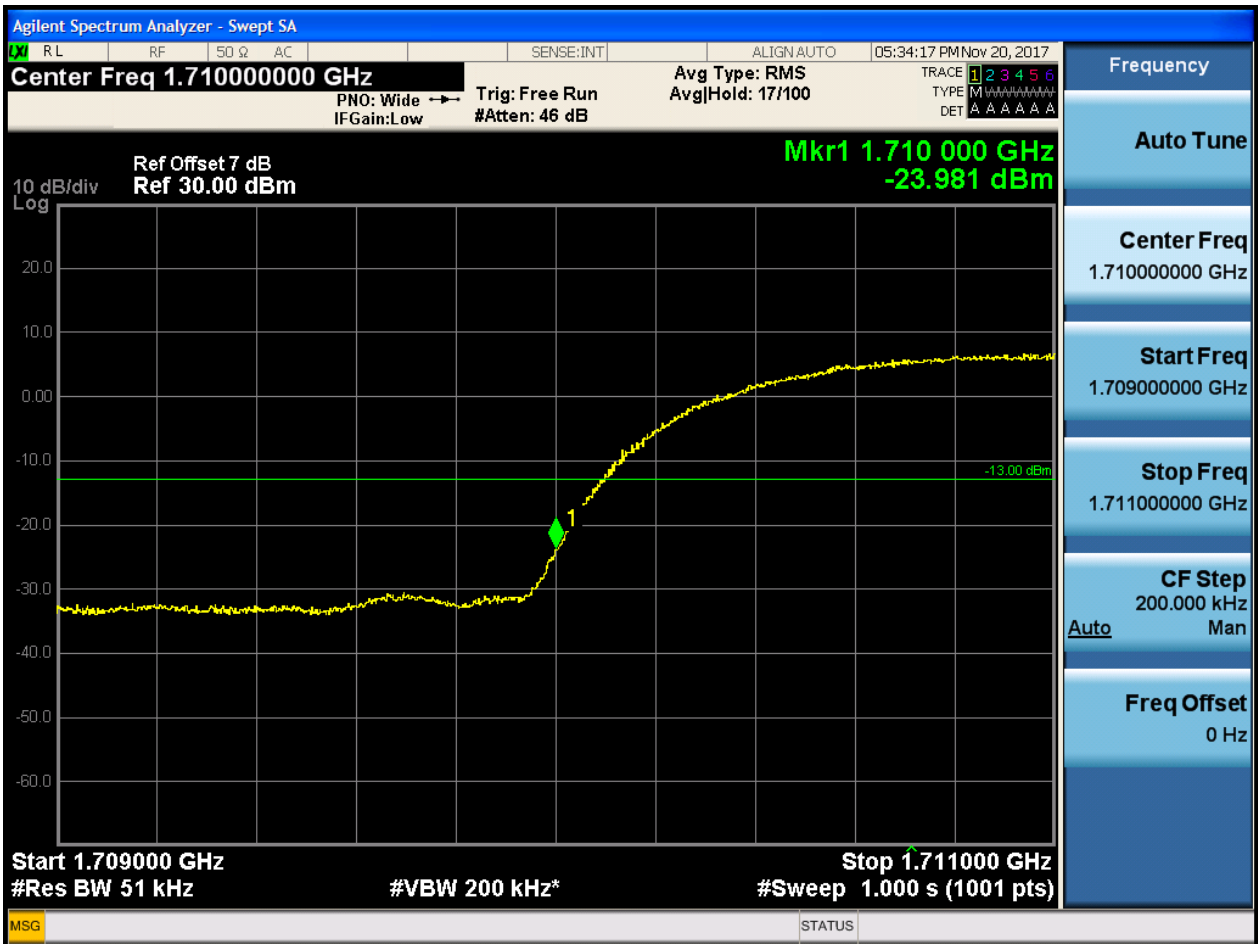




5.1.6 Test Band = WCDMA1700

5.1.6.1 Test Mode = UMTS/TM1

5.1.6.1.1 Test Channel = LCH



5.1.6.1.2 Test Channel = HCH

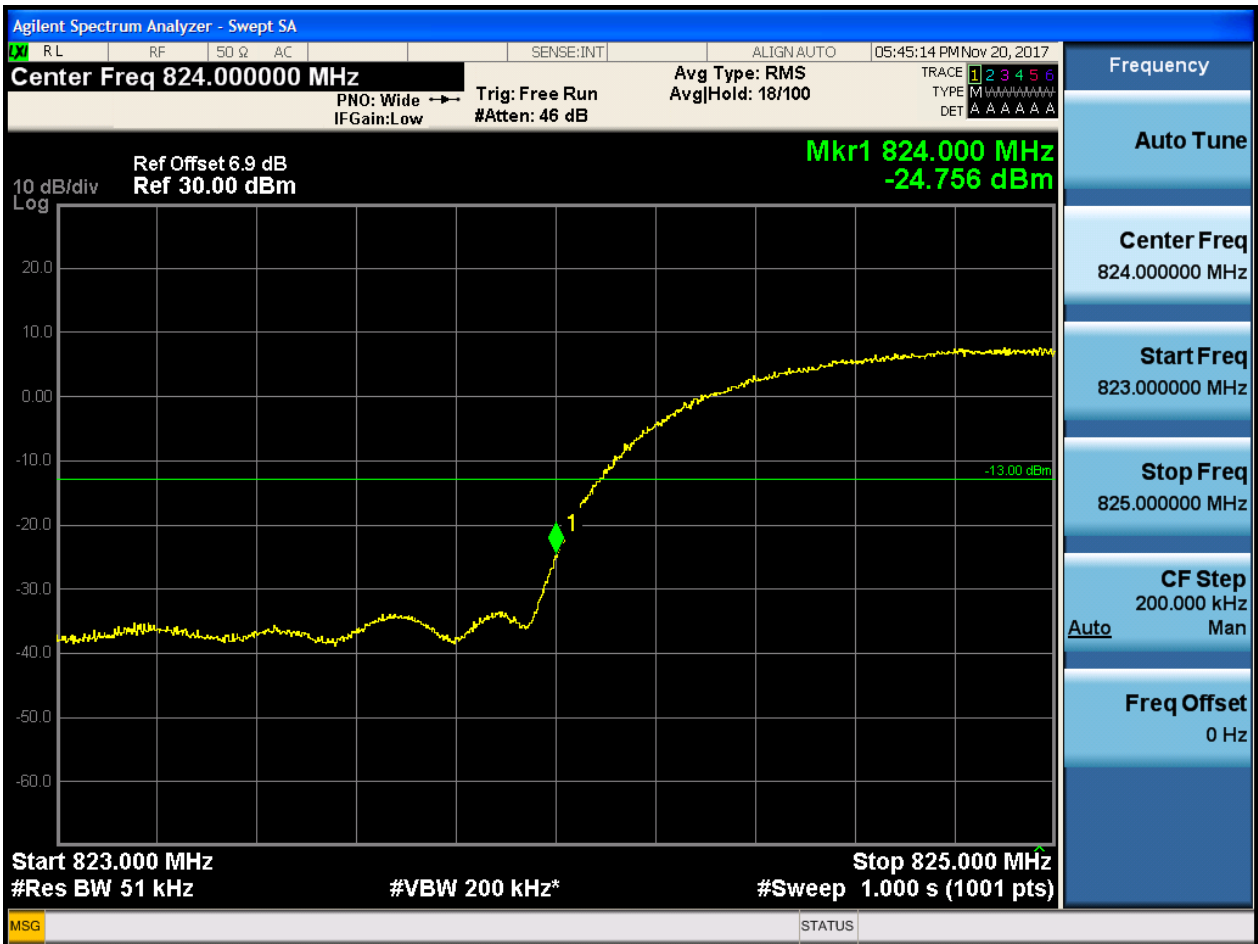




5.1.7 Test Band = WCDMA850

5.1.7.1 Test Mode = UMTS/TM1

5.1.7.1.1 Test Channel = LCH



### 5.1.7.1.2 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.

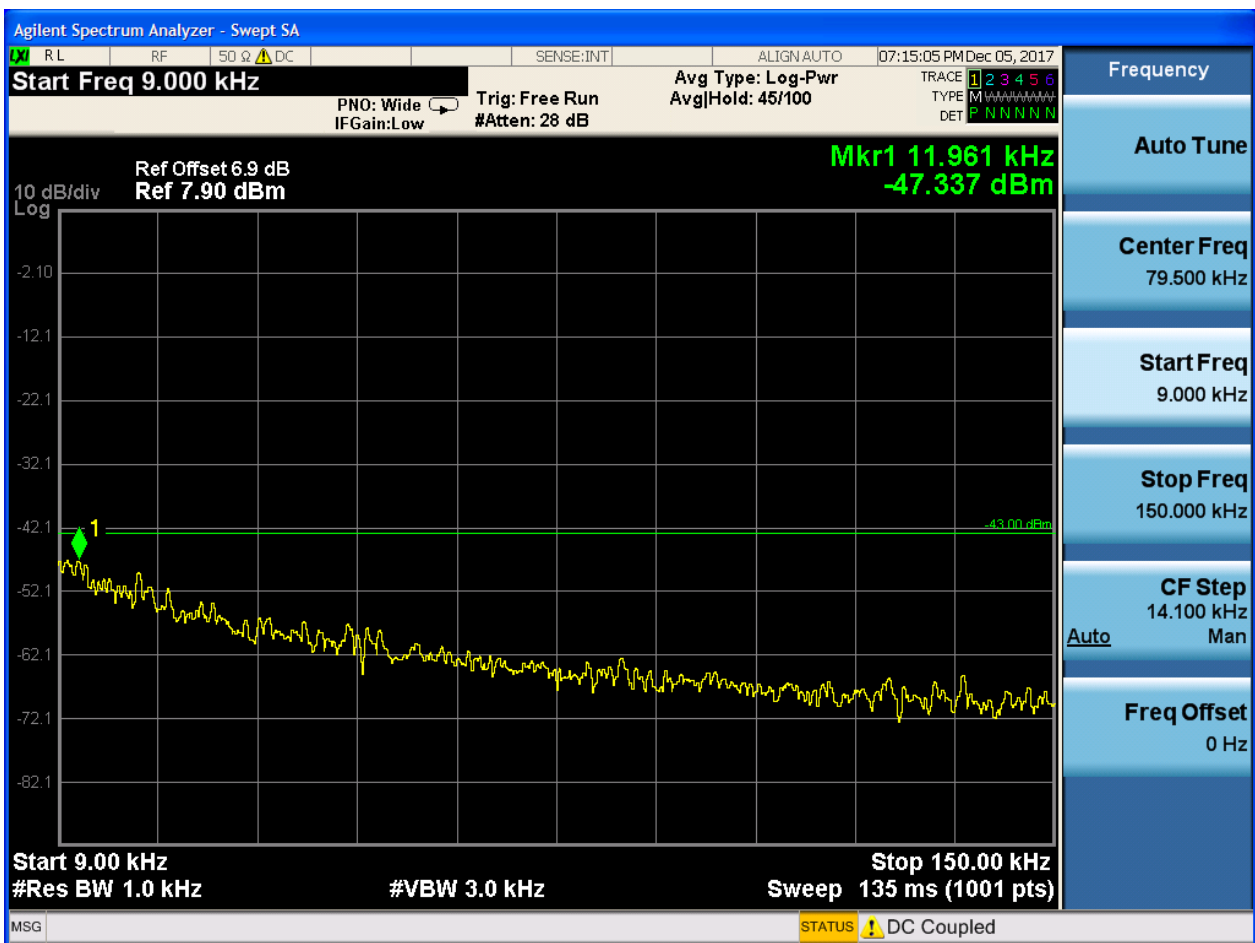
### Part I - Test Plots

#### 6.1 For UMTS

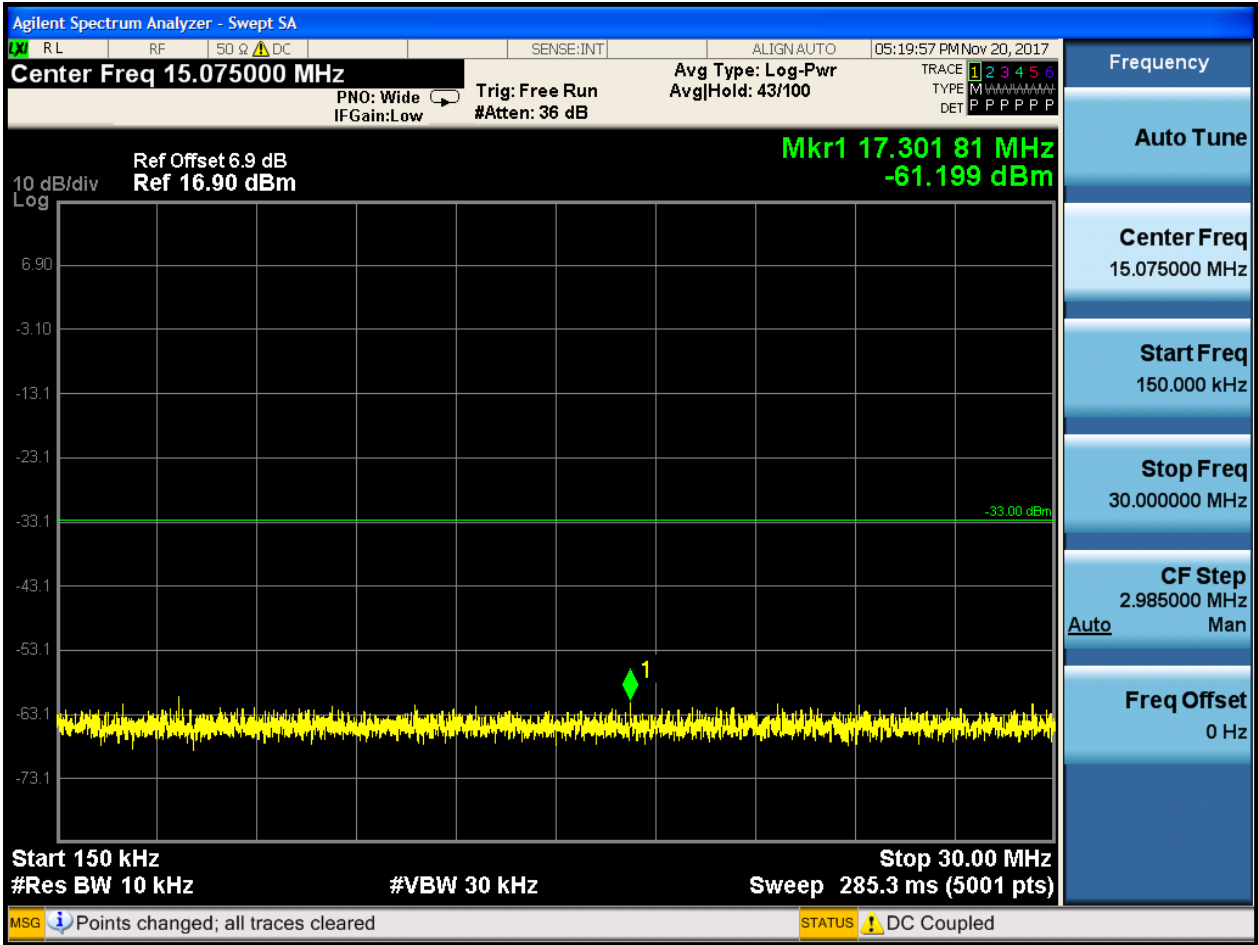
##### 6.1.4 Test Band = WCDMA1900

##### 6.1.4.1 Test Mode = UMTS/TM1

##### 6.1.4.1.1 Test Channel = LCH

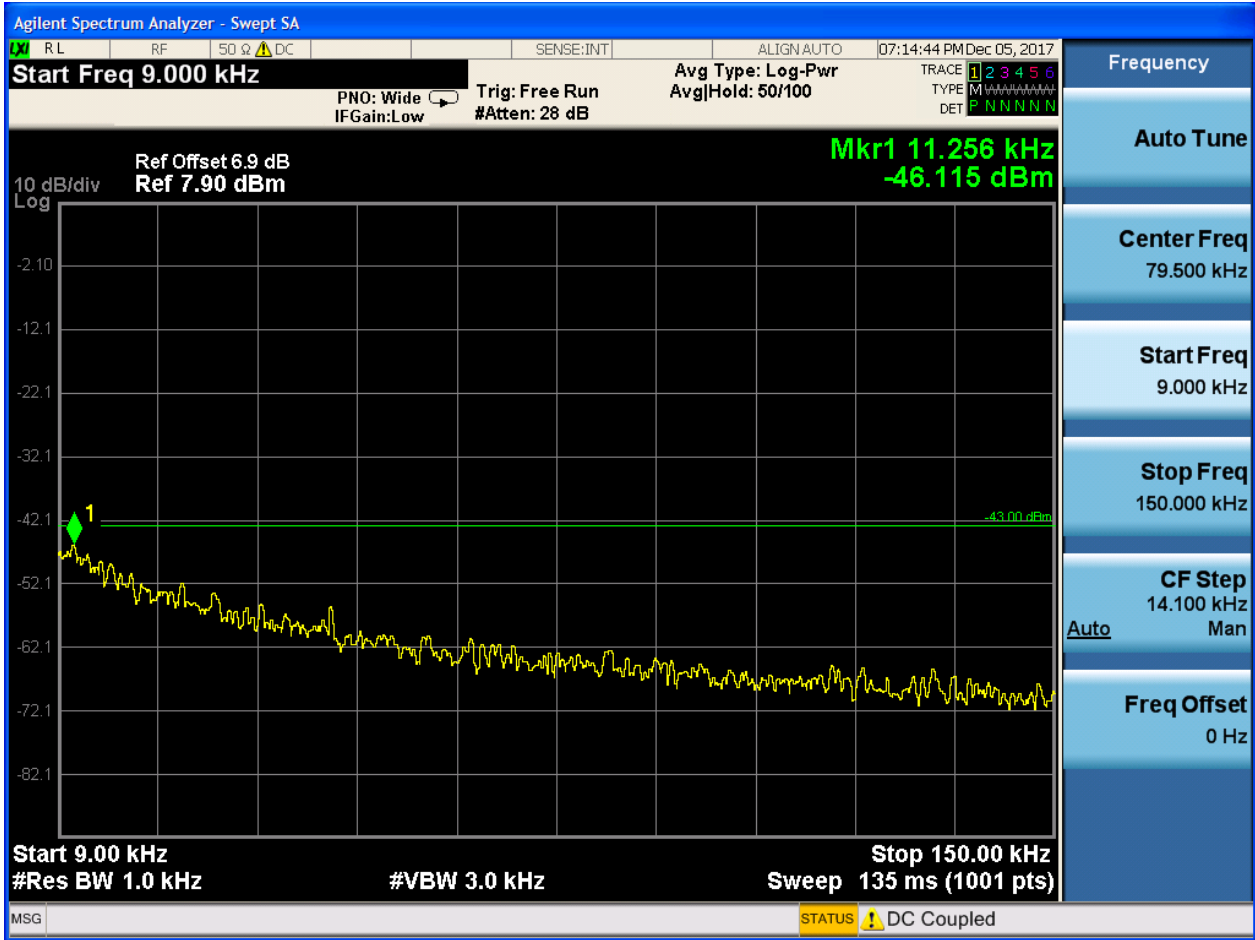


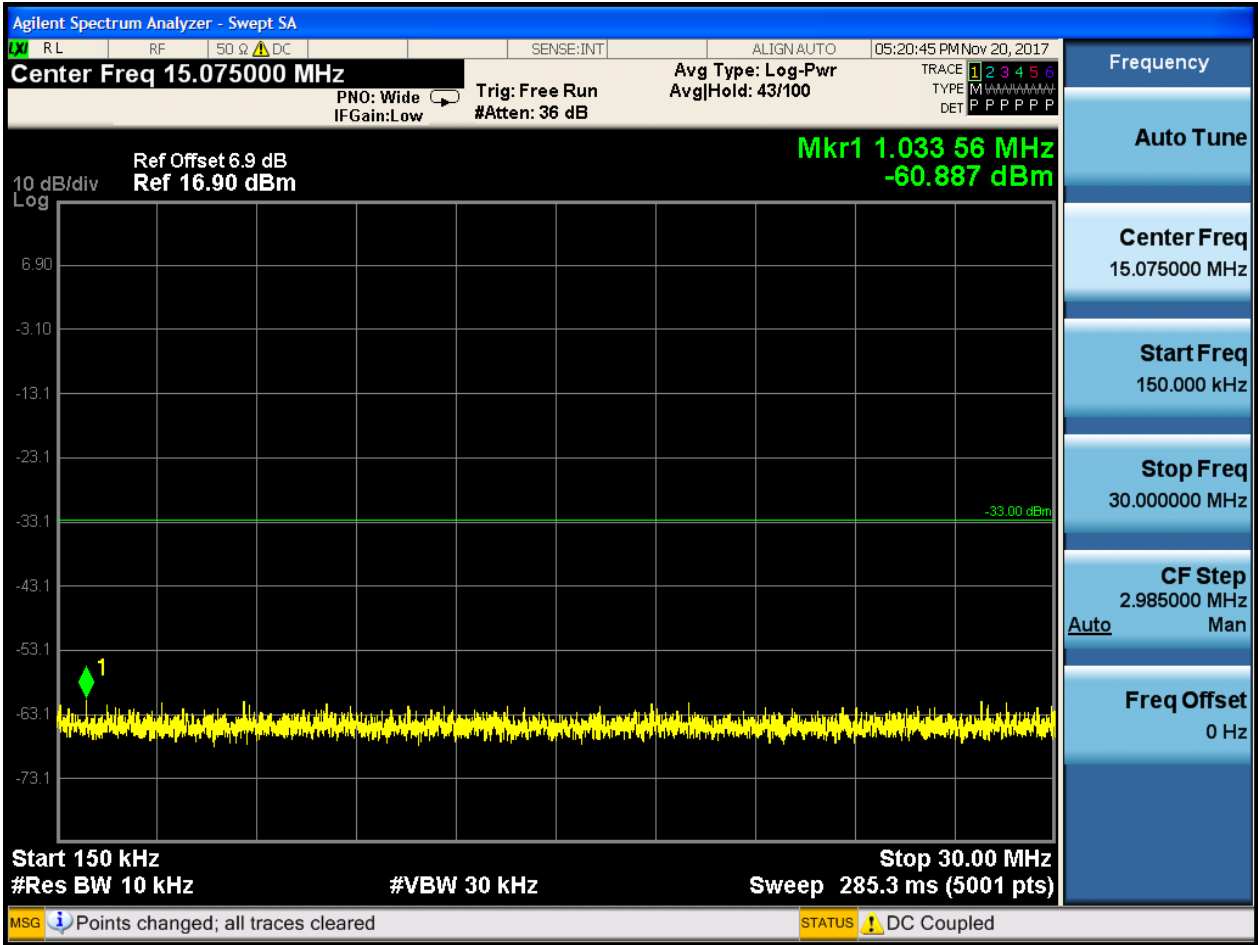


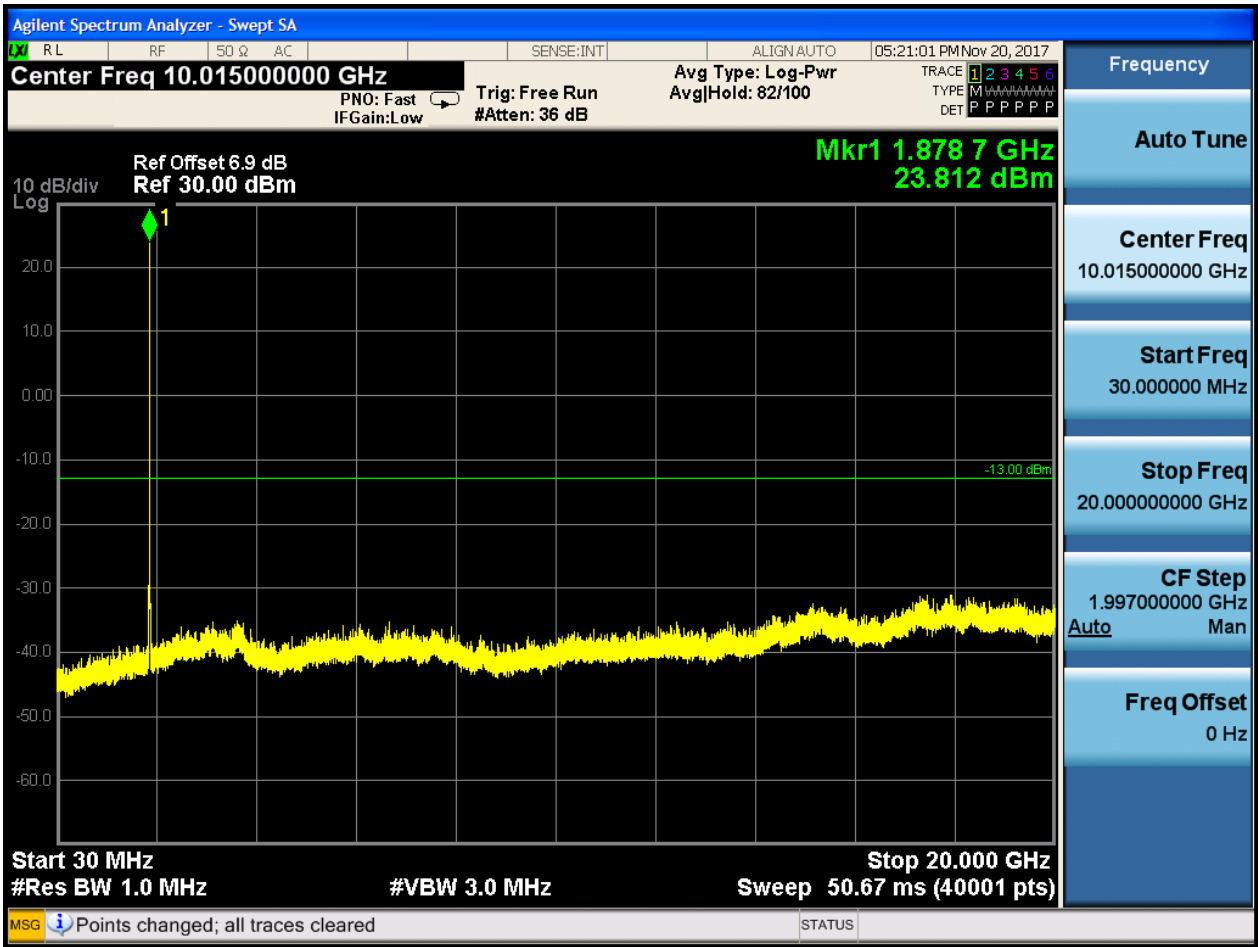




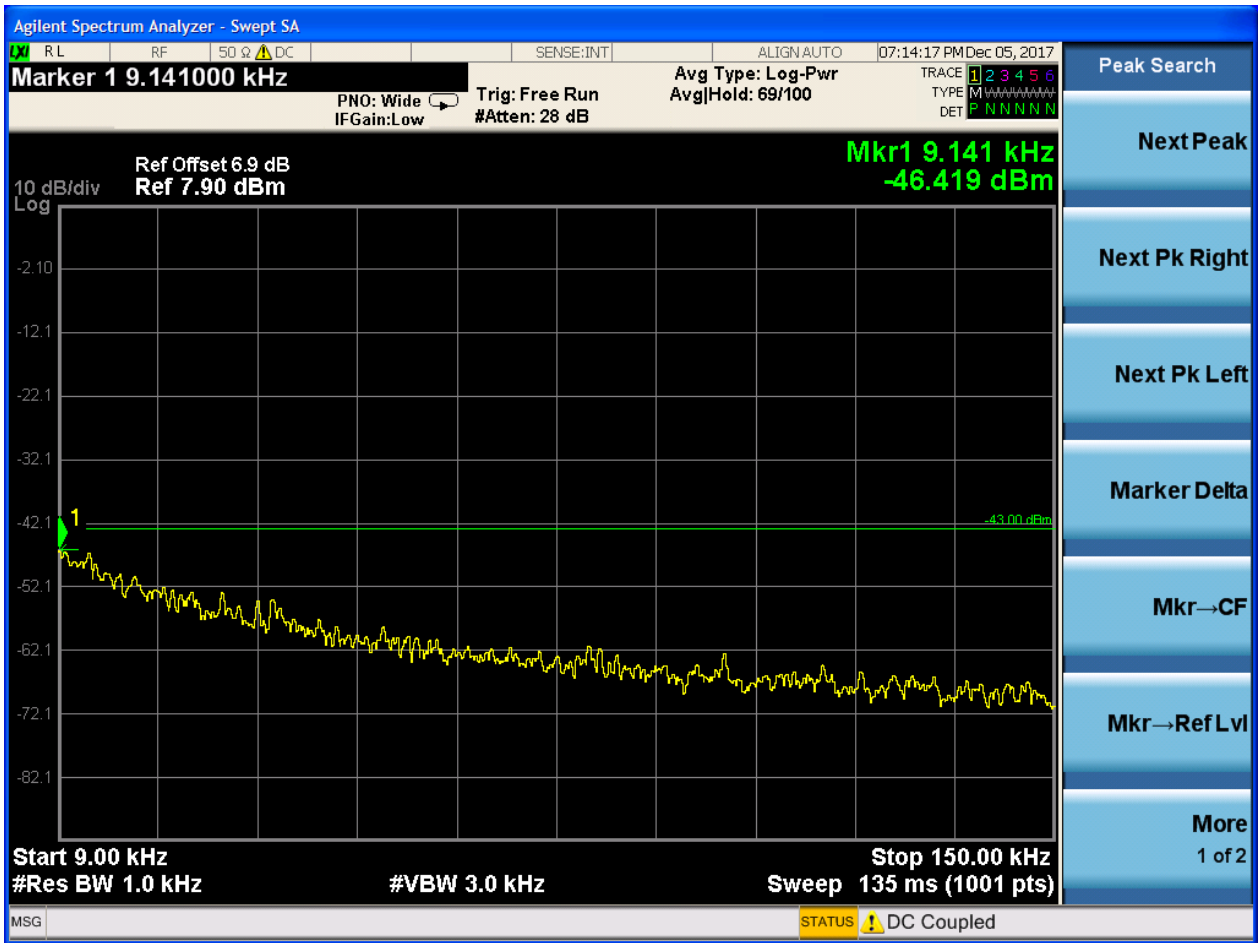
### 6.1.4.1.2 Test Channel = MCH

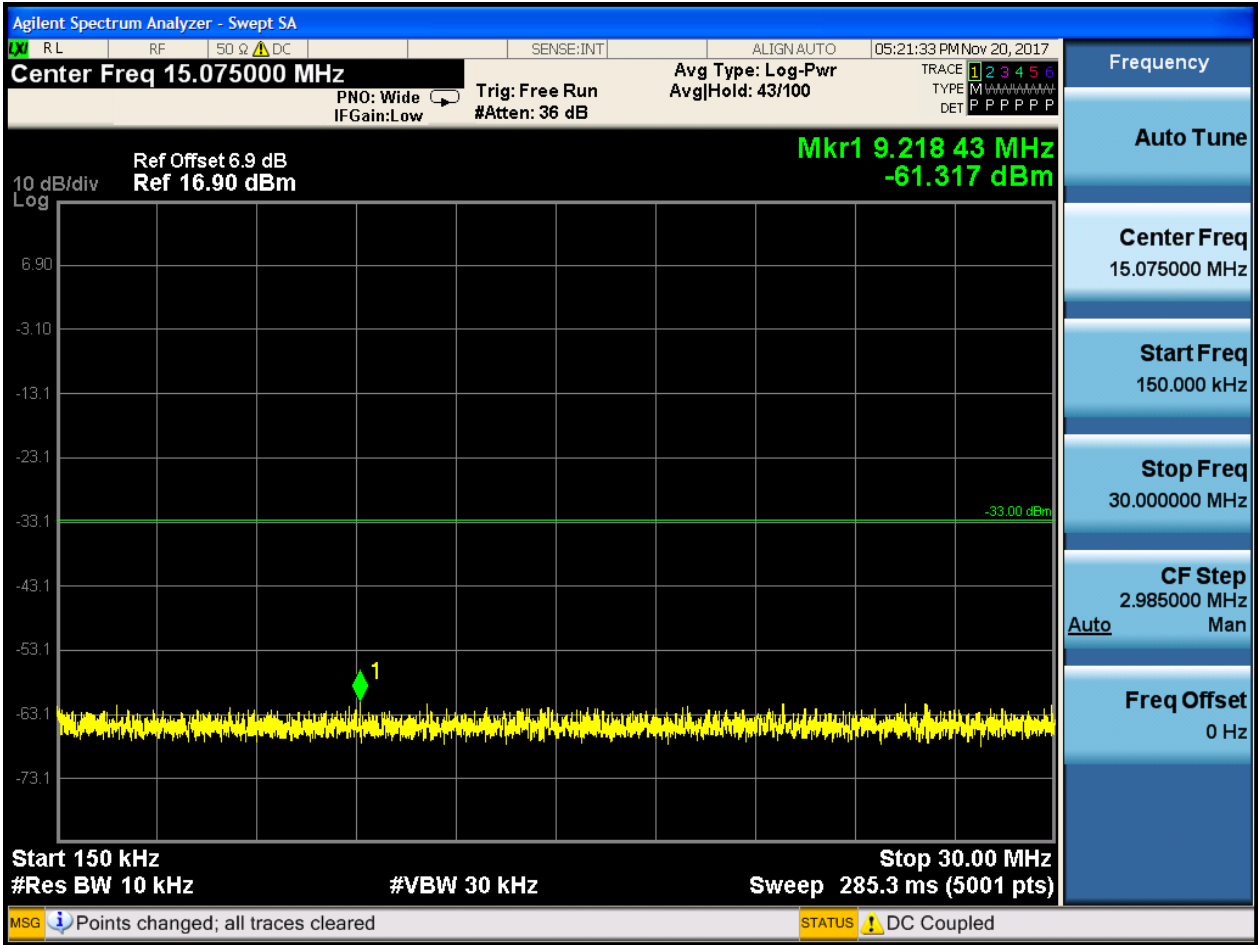


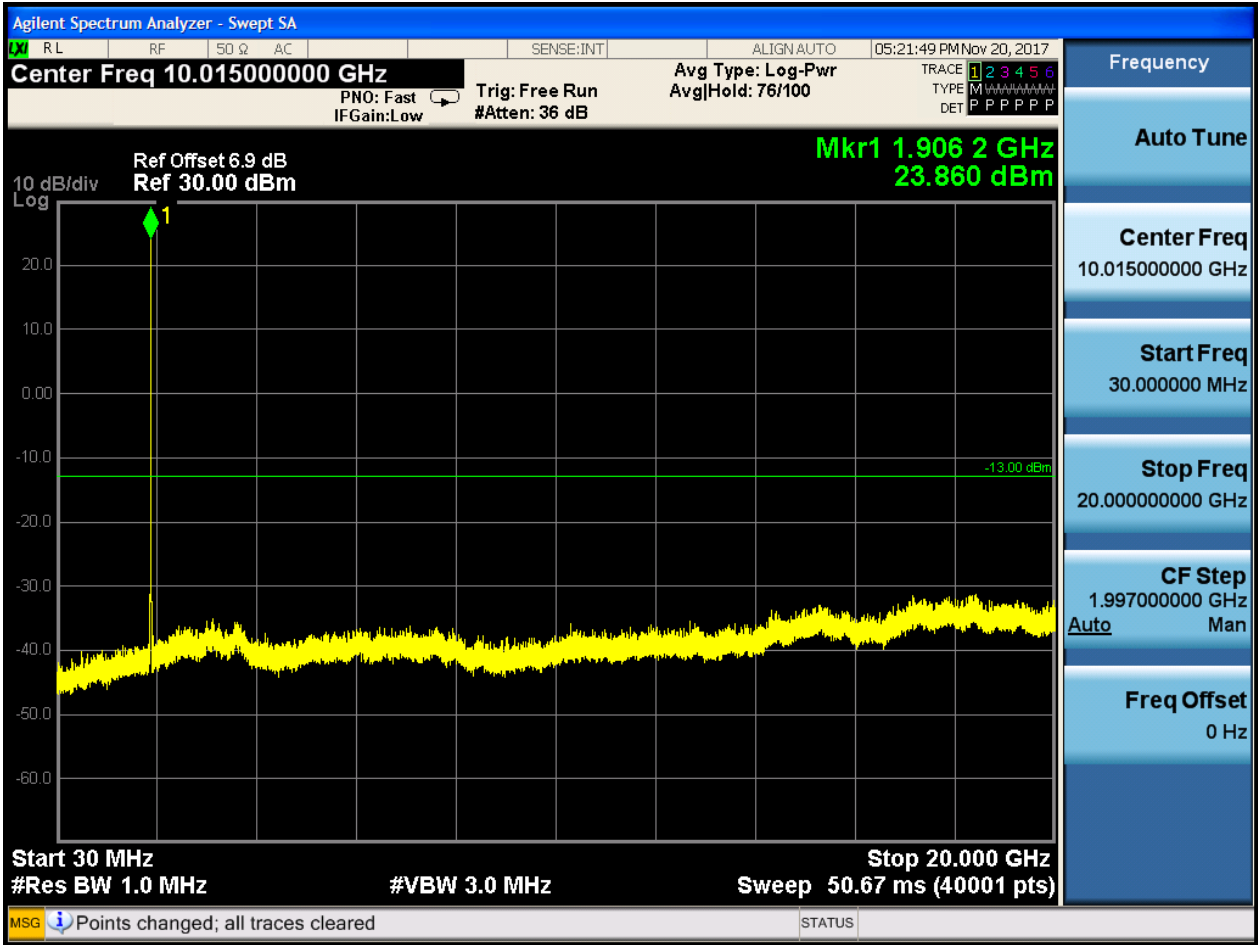




6.1.4.1.3 Test Channel = HCH







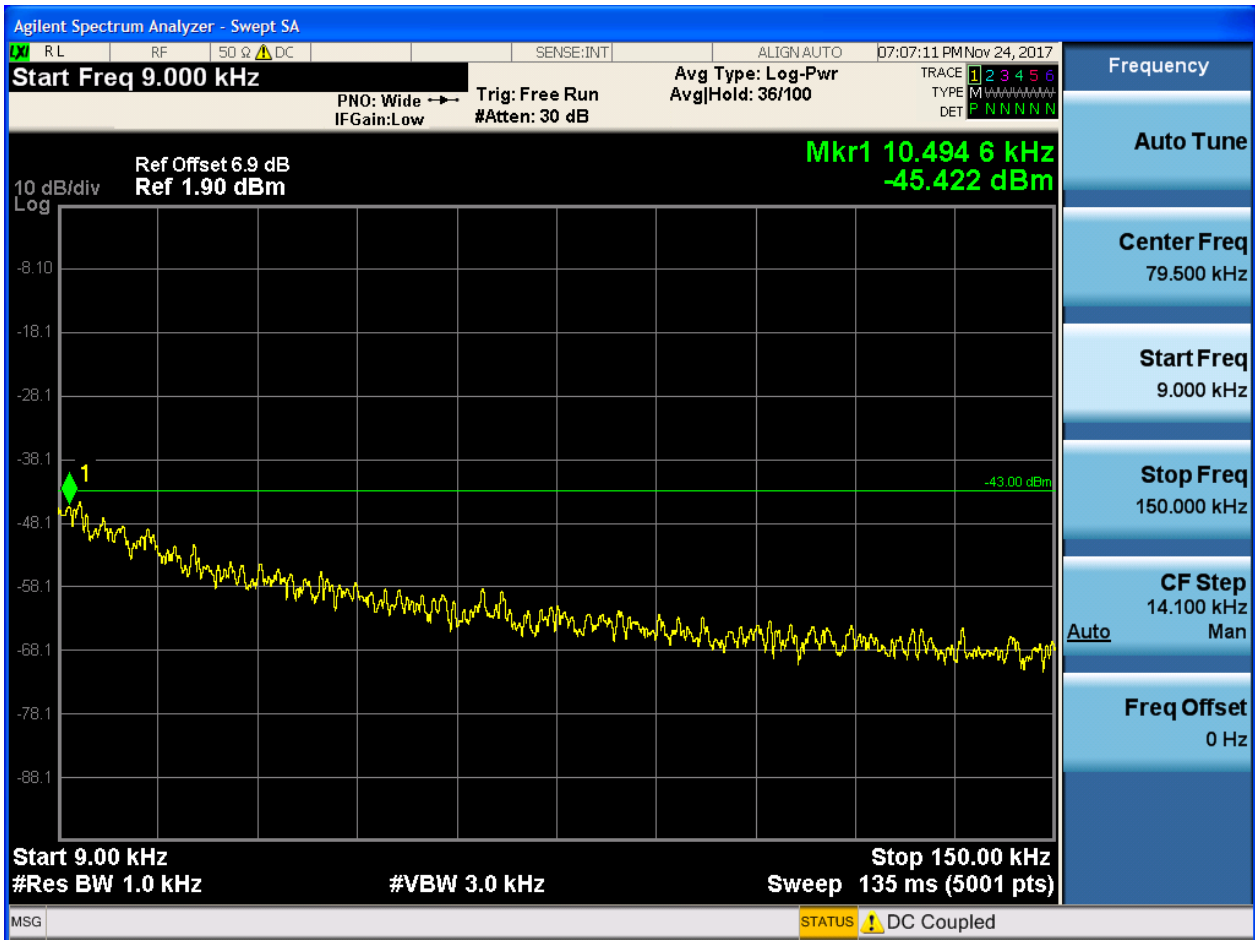


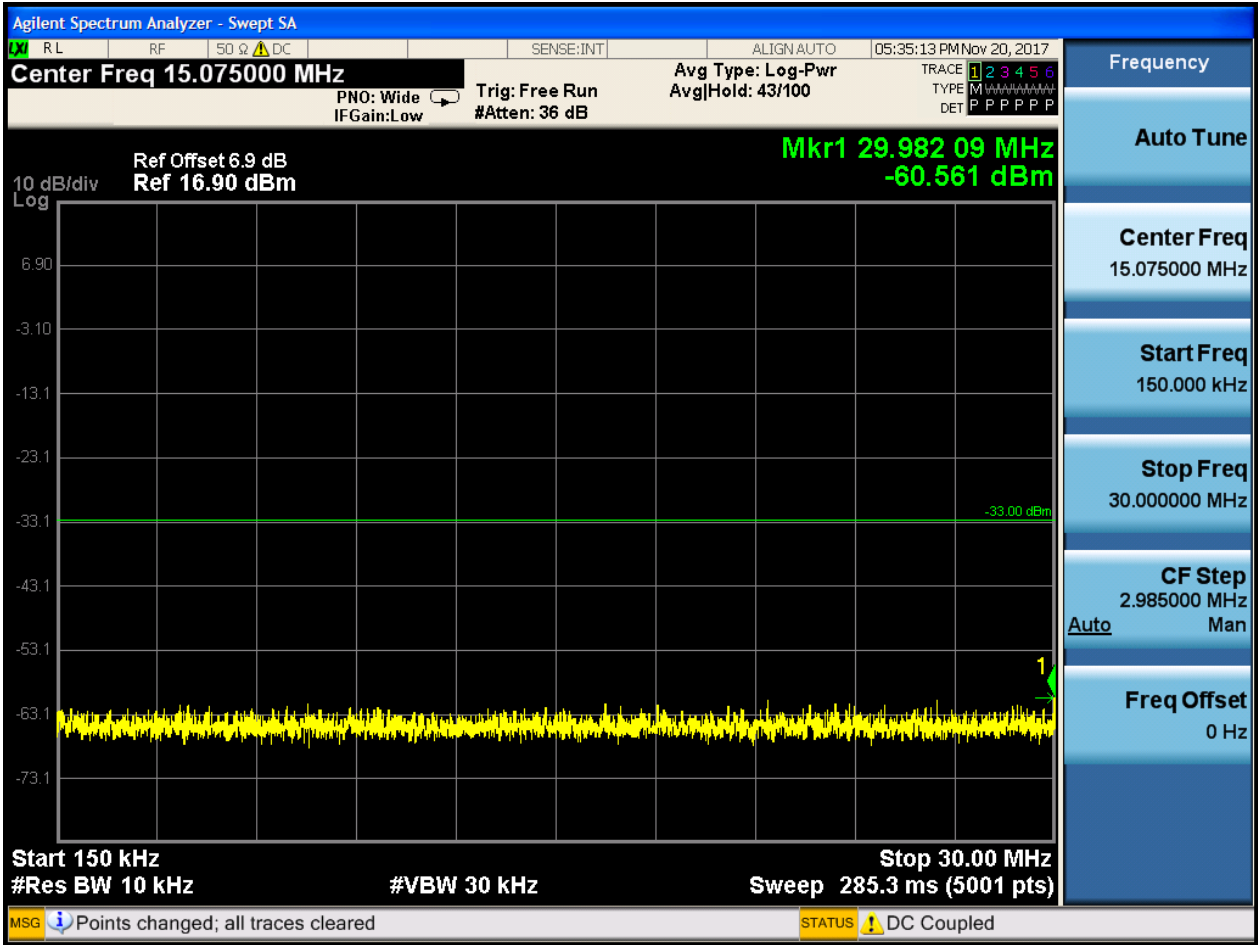


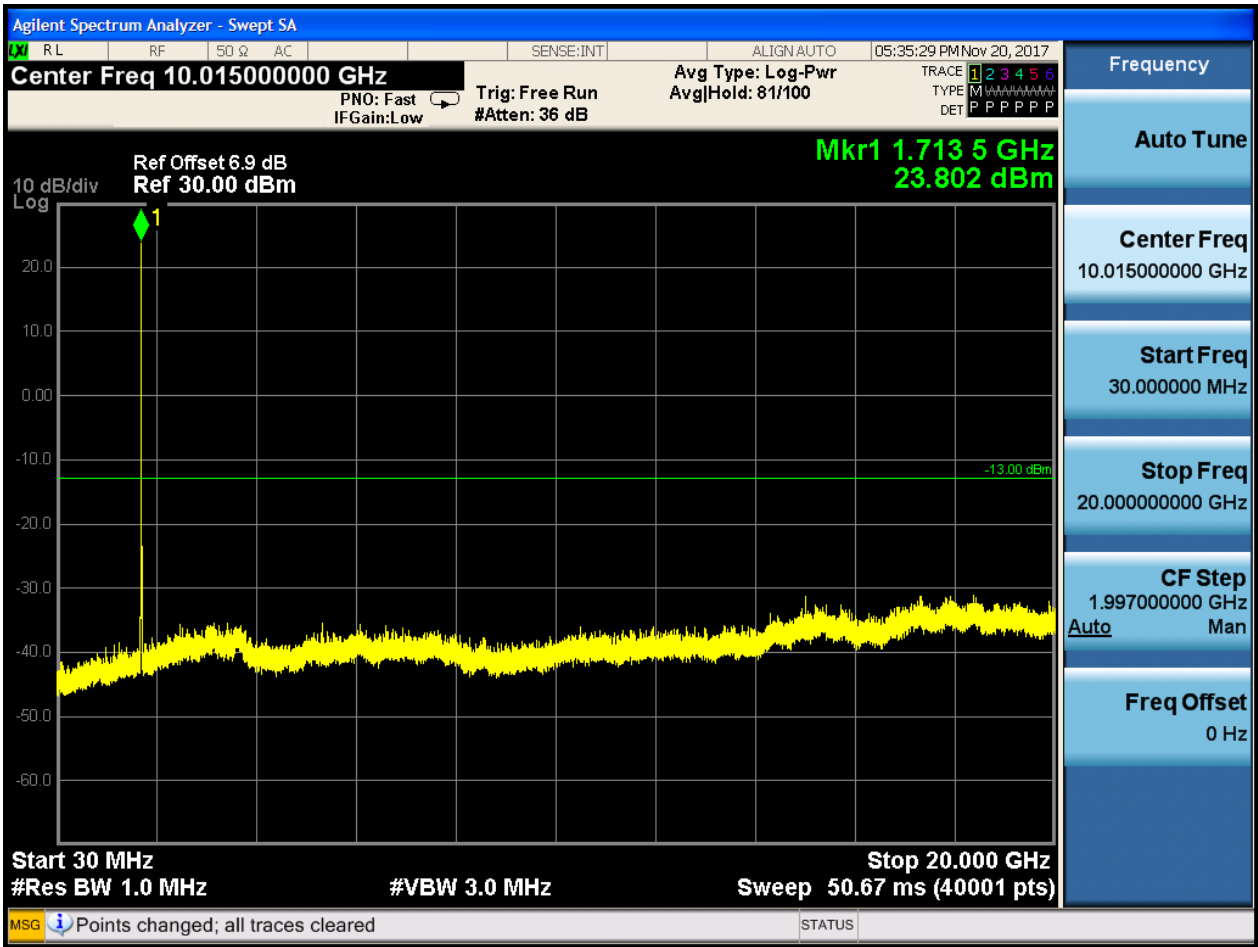
6.1.5 Test Band = WCDMA1700

6.1.5.1 Test Mode = UMTS/TM1

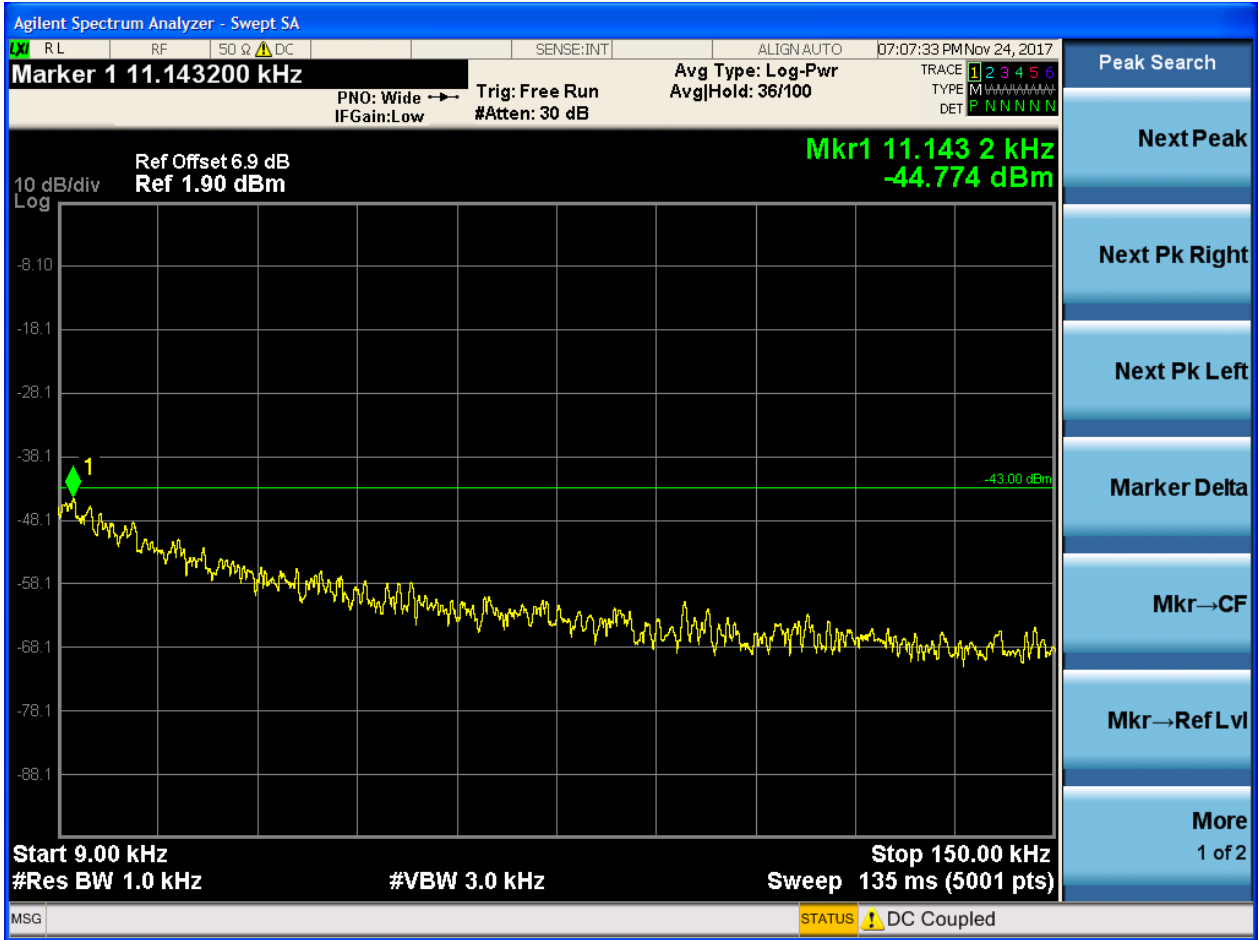
6.1.5.1.1 Test Channel = LCH

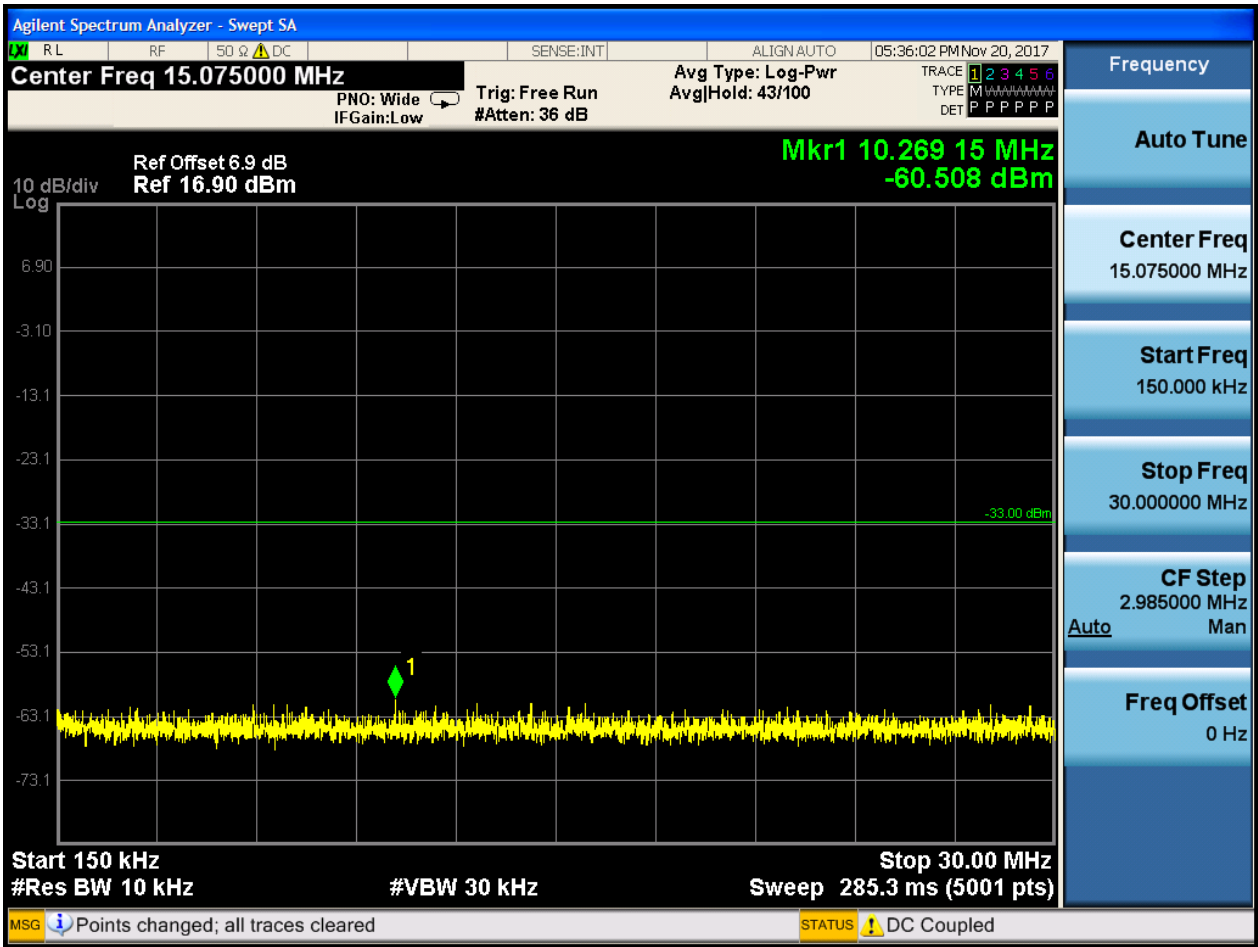


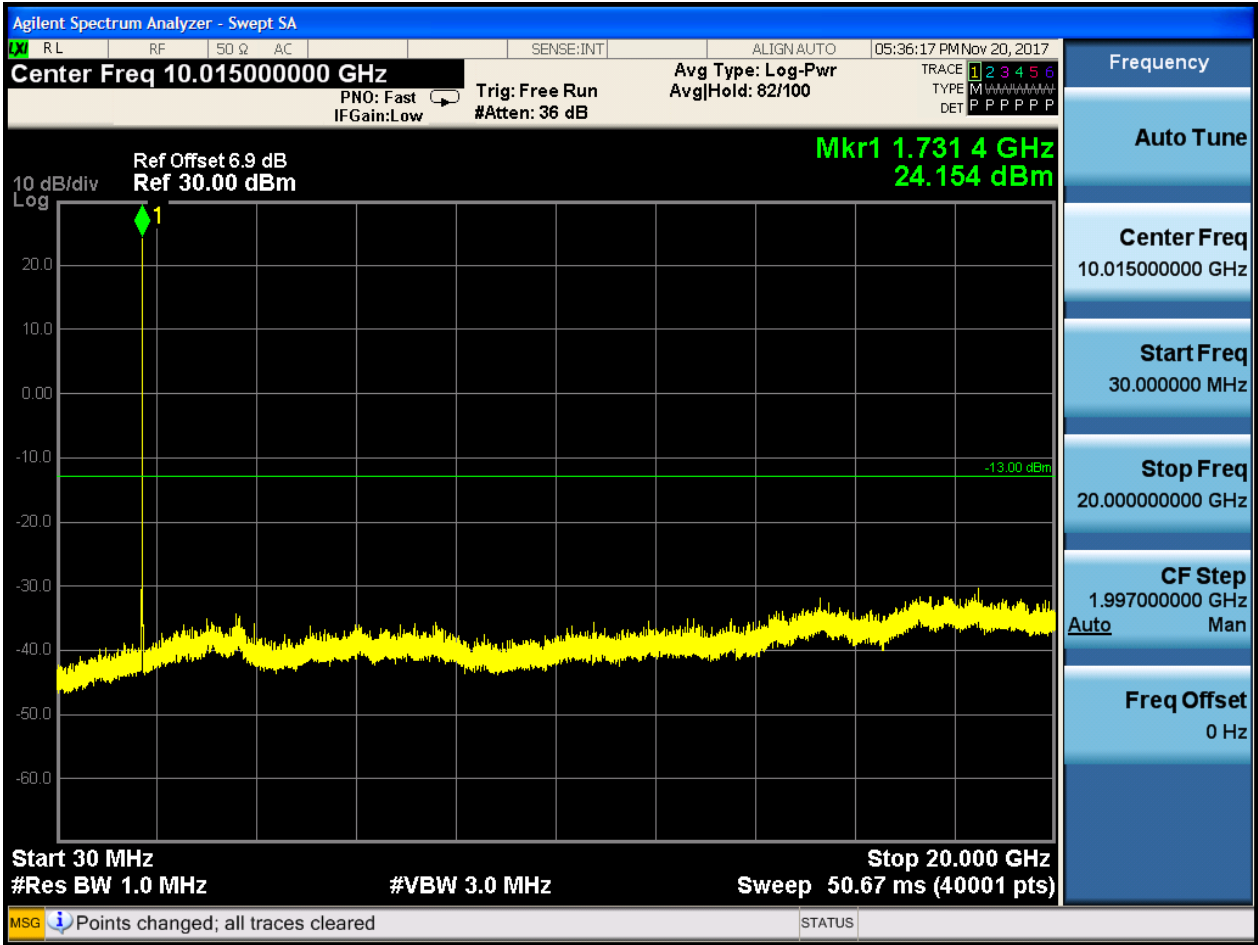




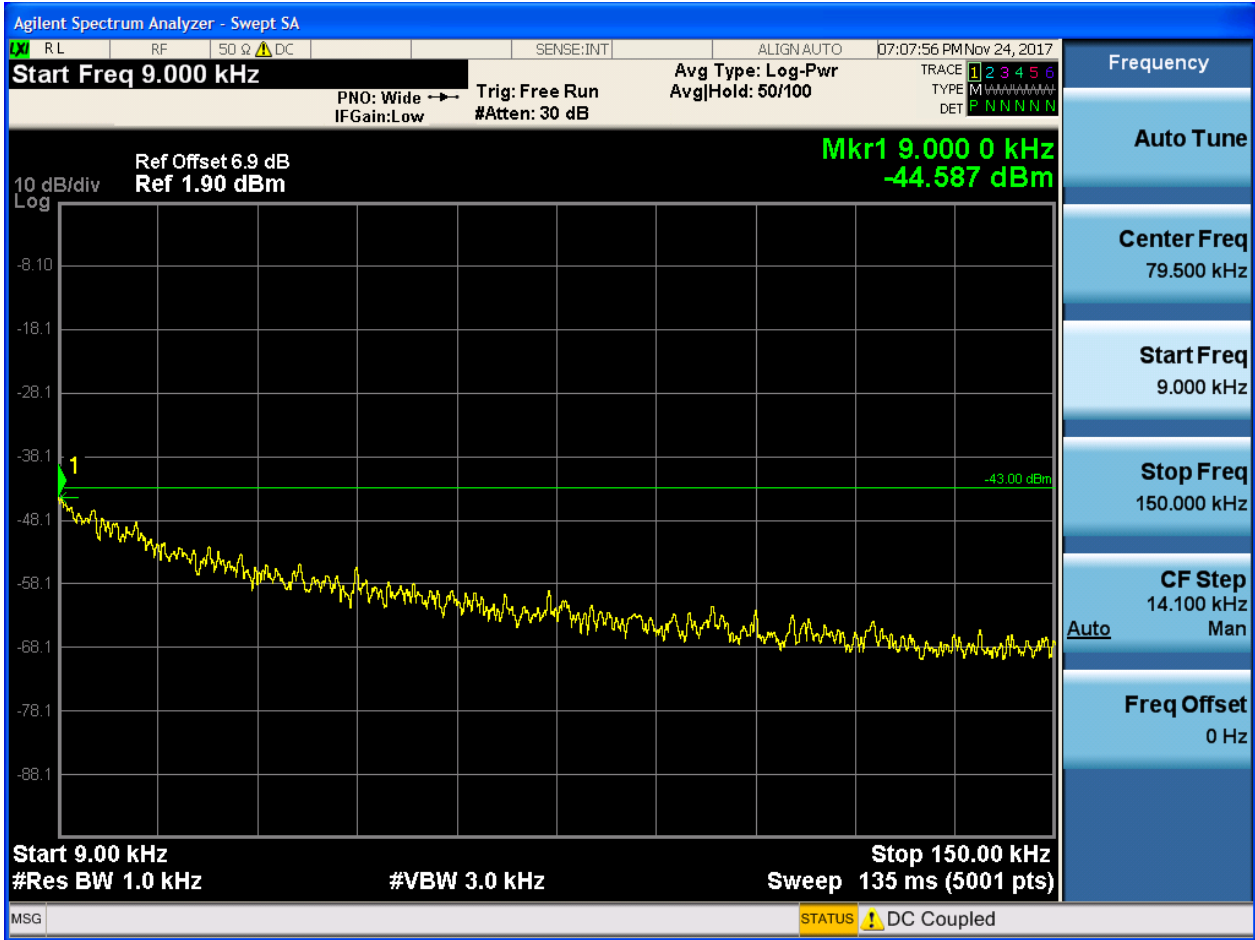
6.1.5.1.2 Test Channel = MCH

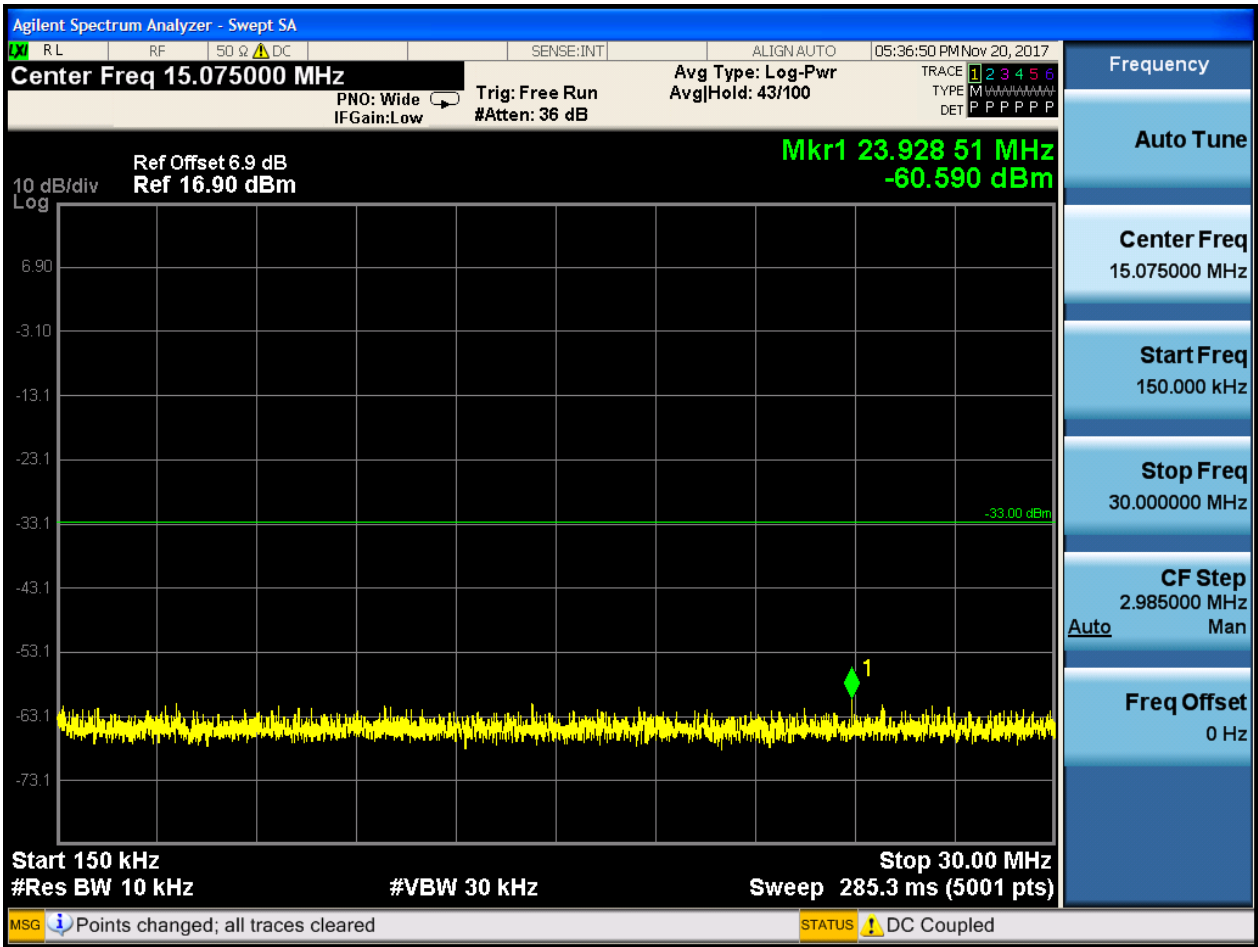




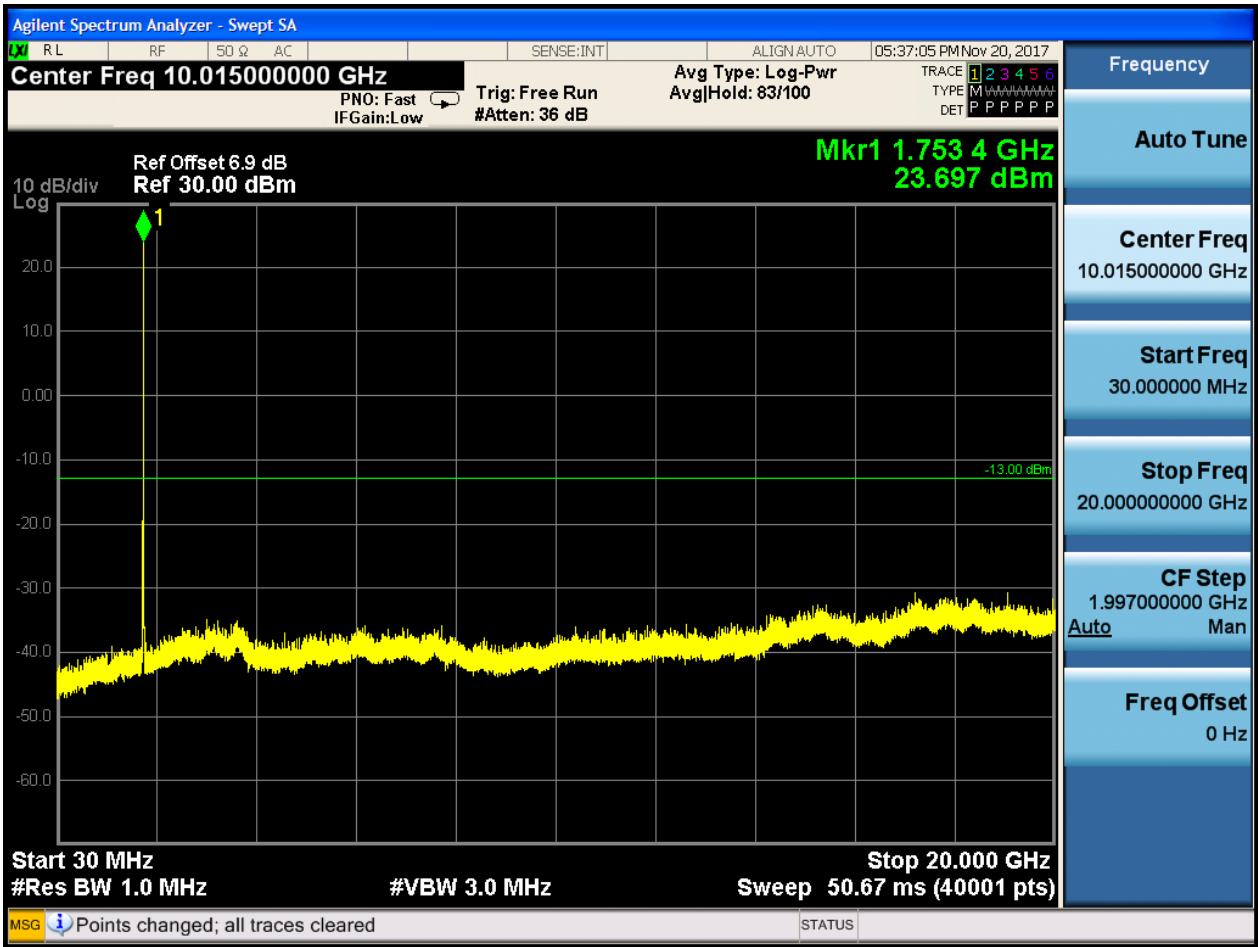


6.1.5.1.3 Test Channel = HCH







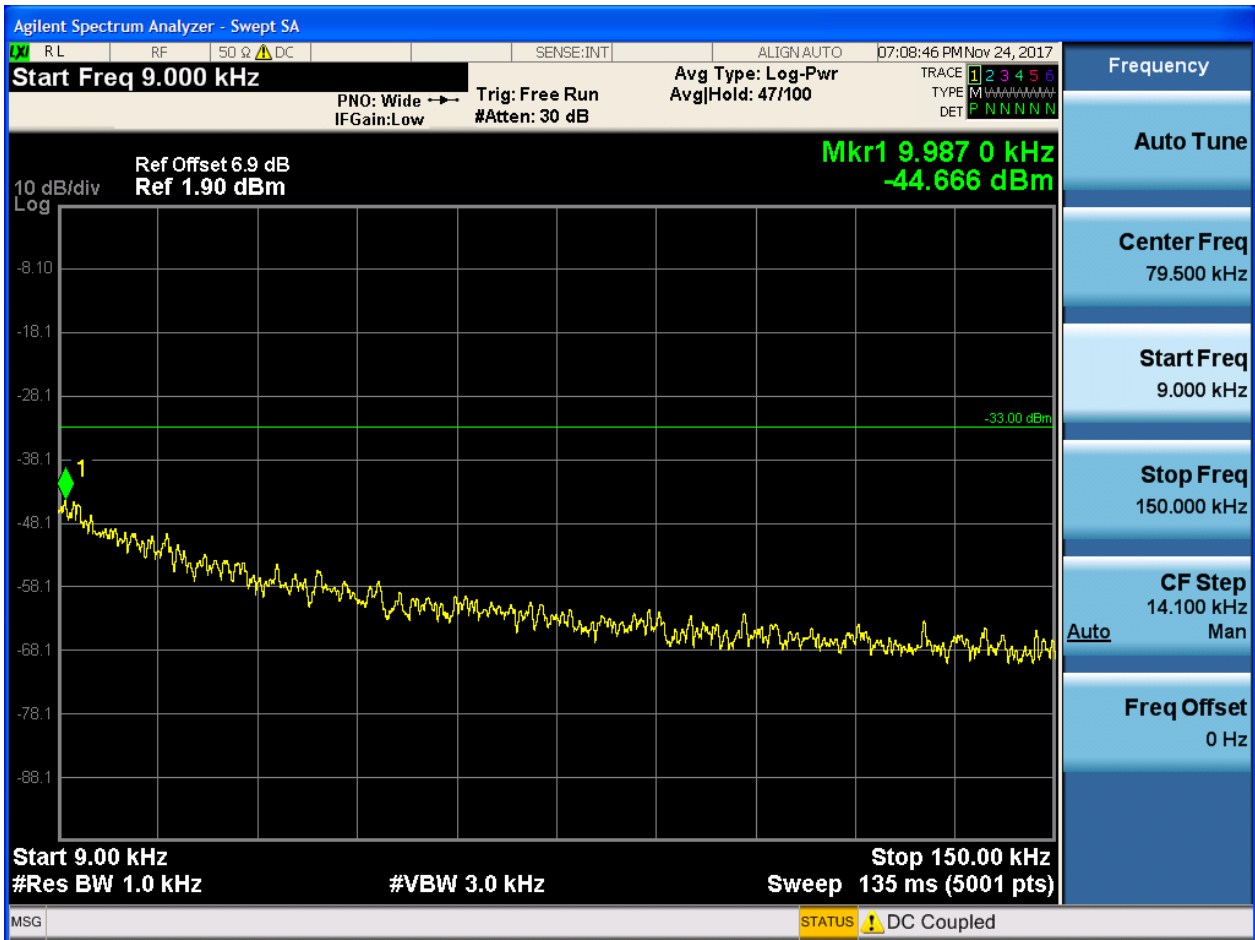


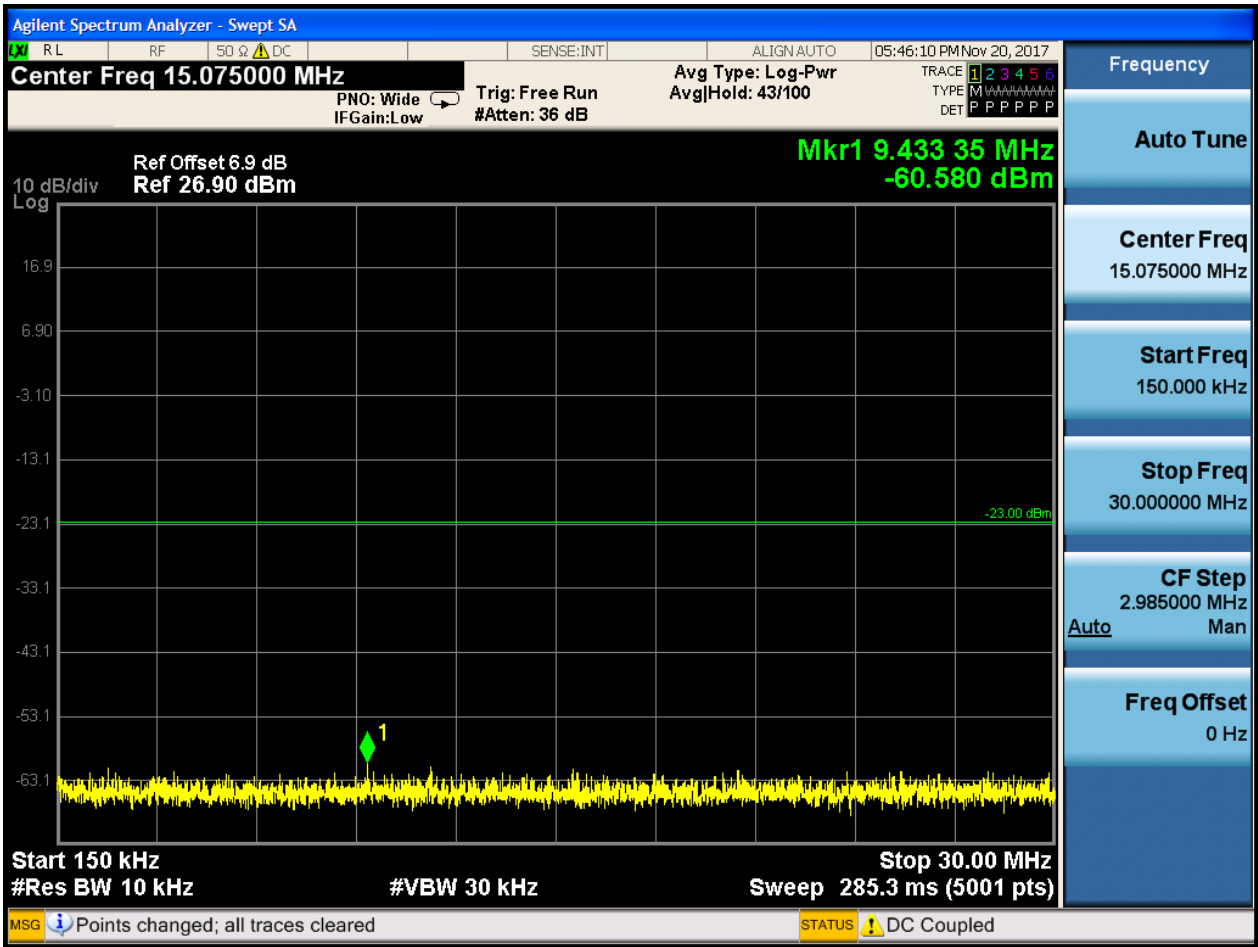


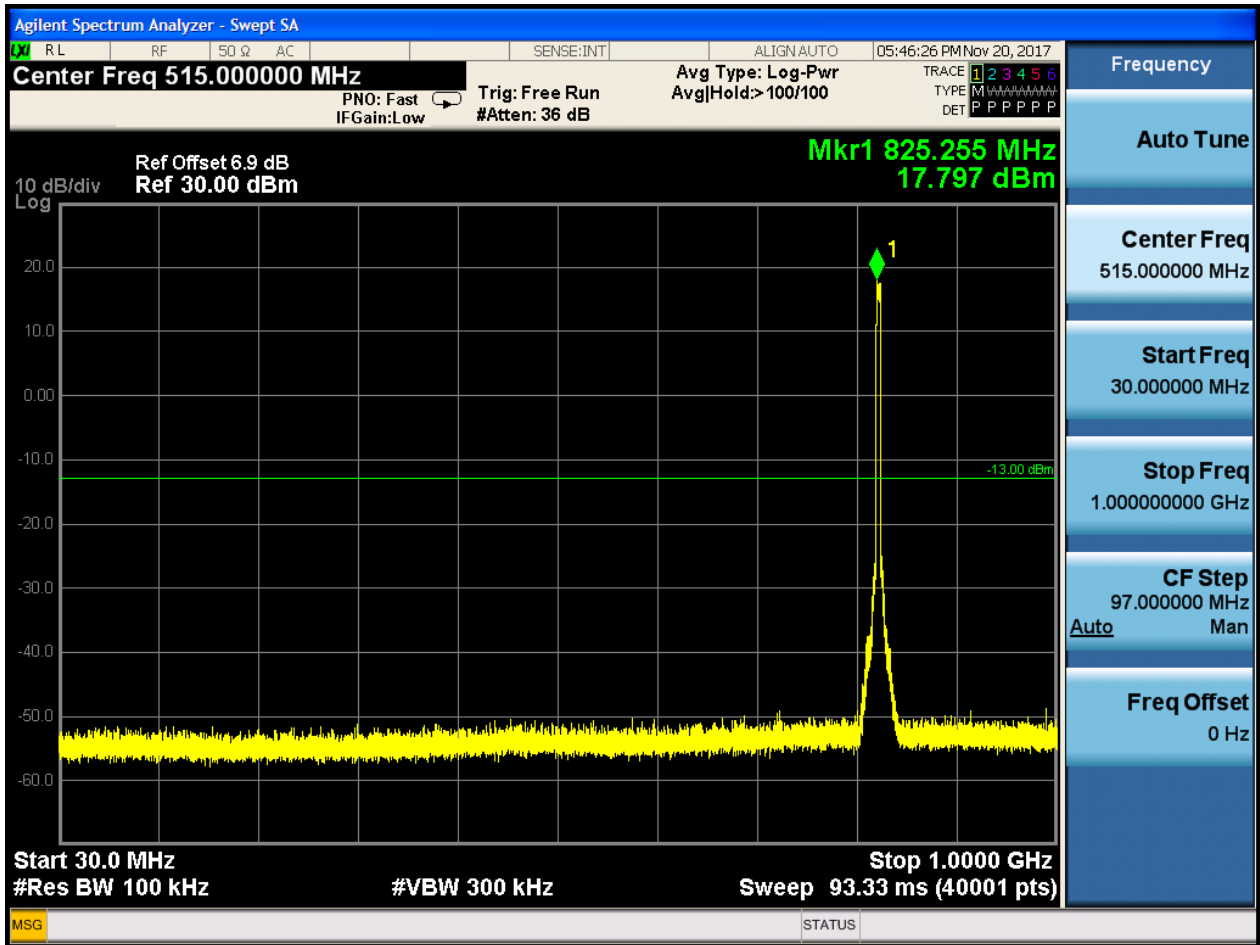
6.1.6 Test Band = WCDMA850

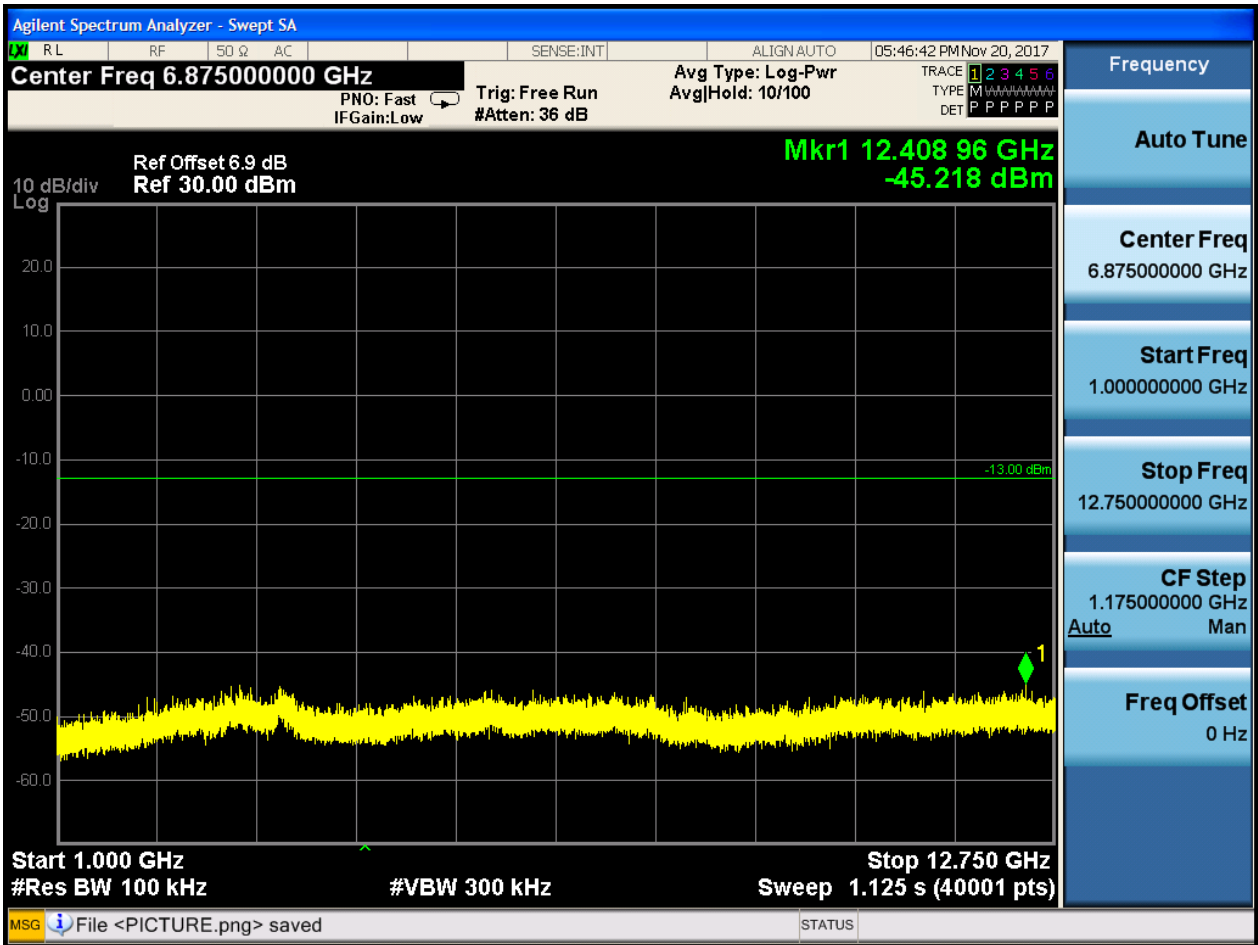
6.1.6.1 Test Mode = UMTS/TM1

6.1.6.1.1 Test Channel = LCH

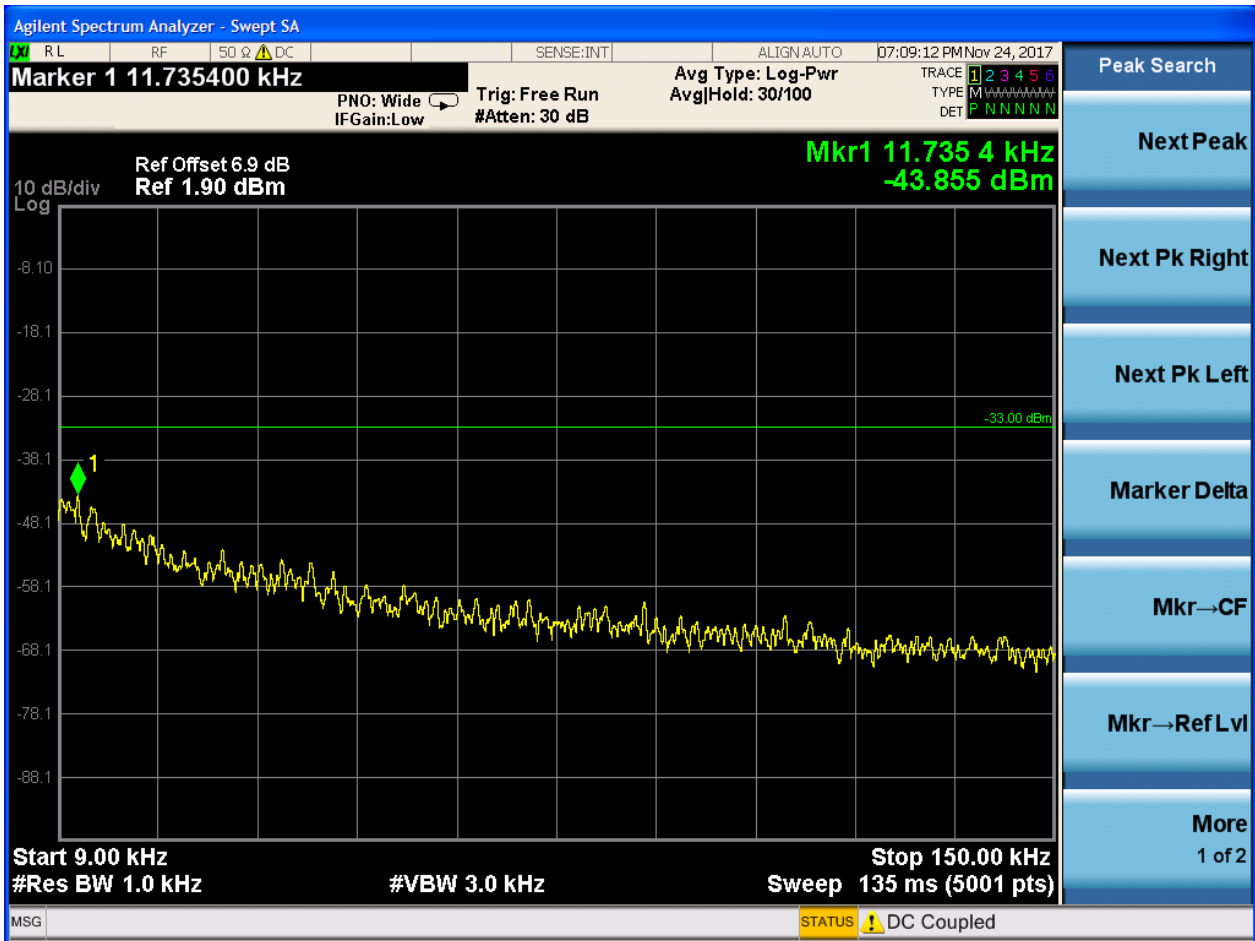


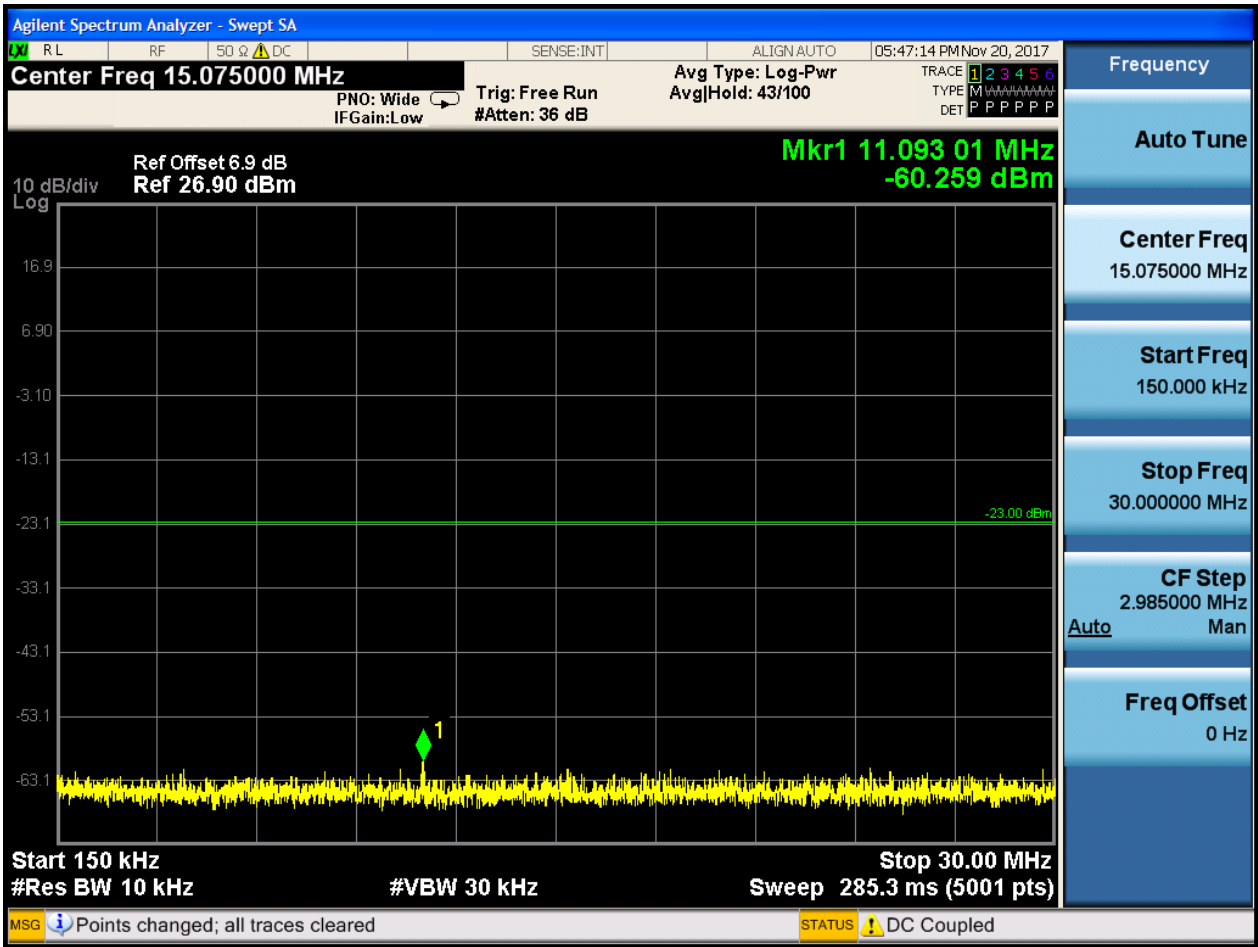


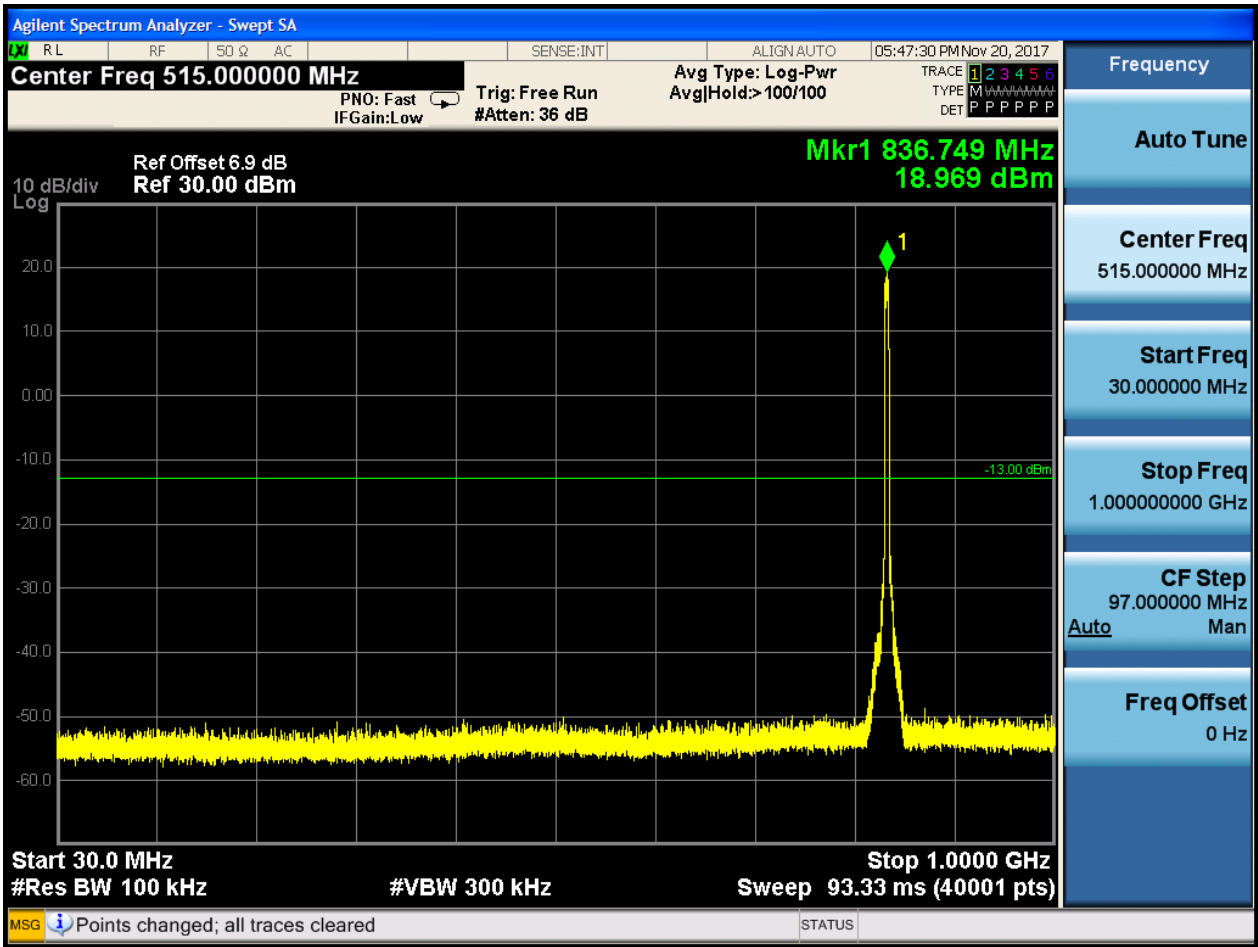




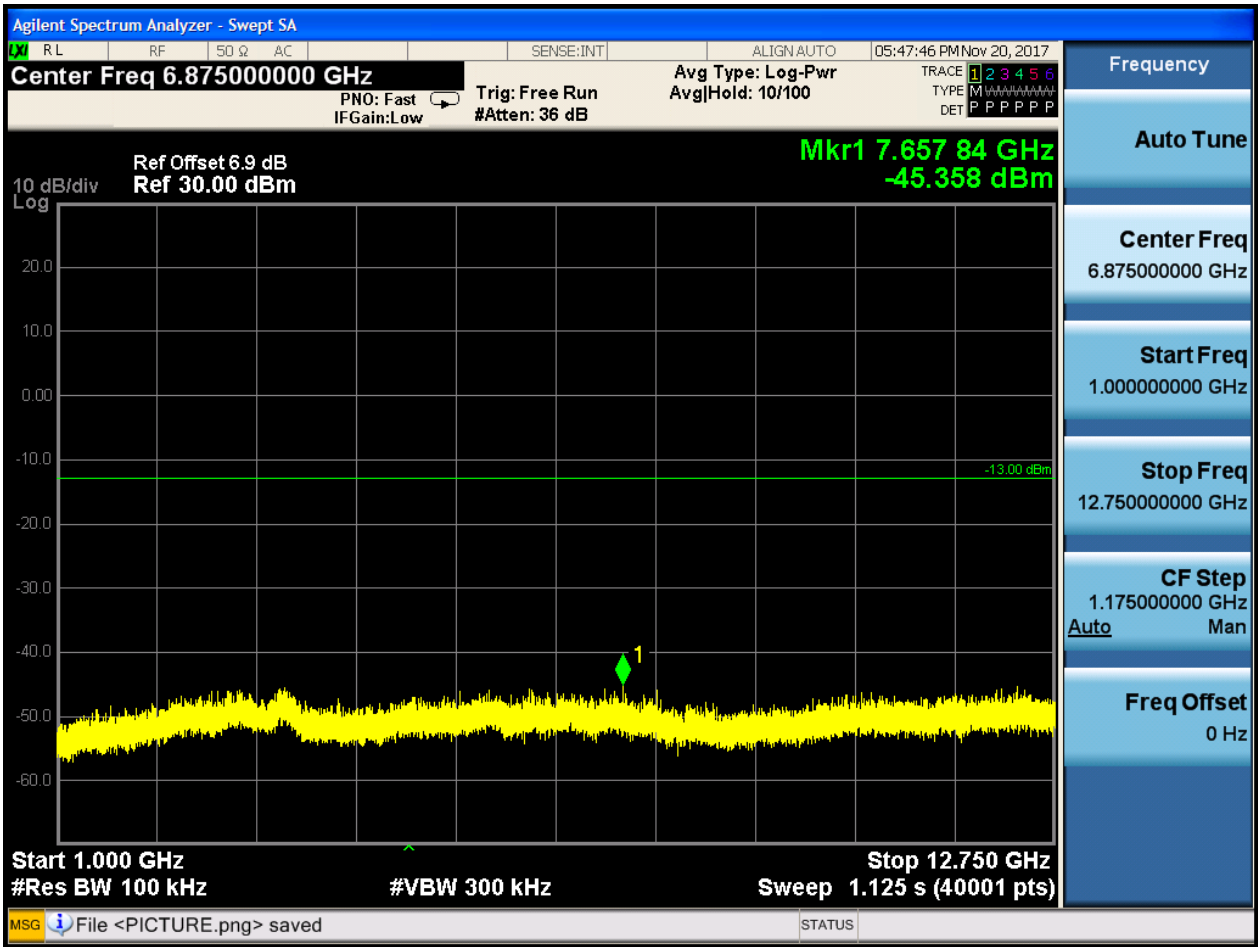
6.1.6.1.2 Test Channel = MCH



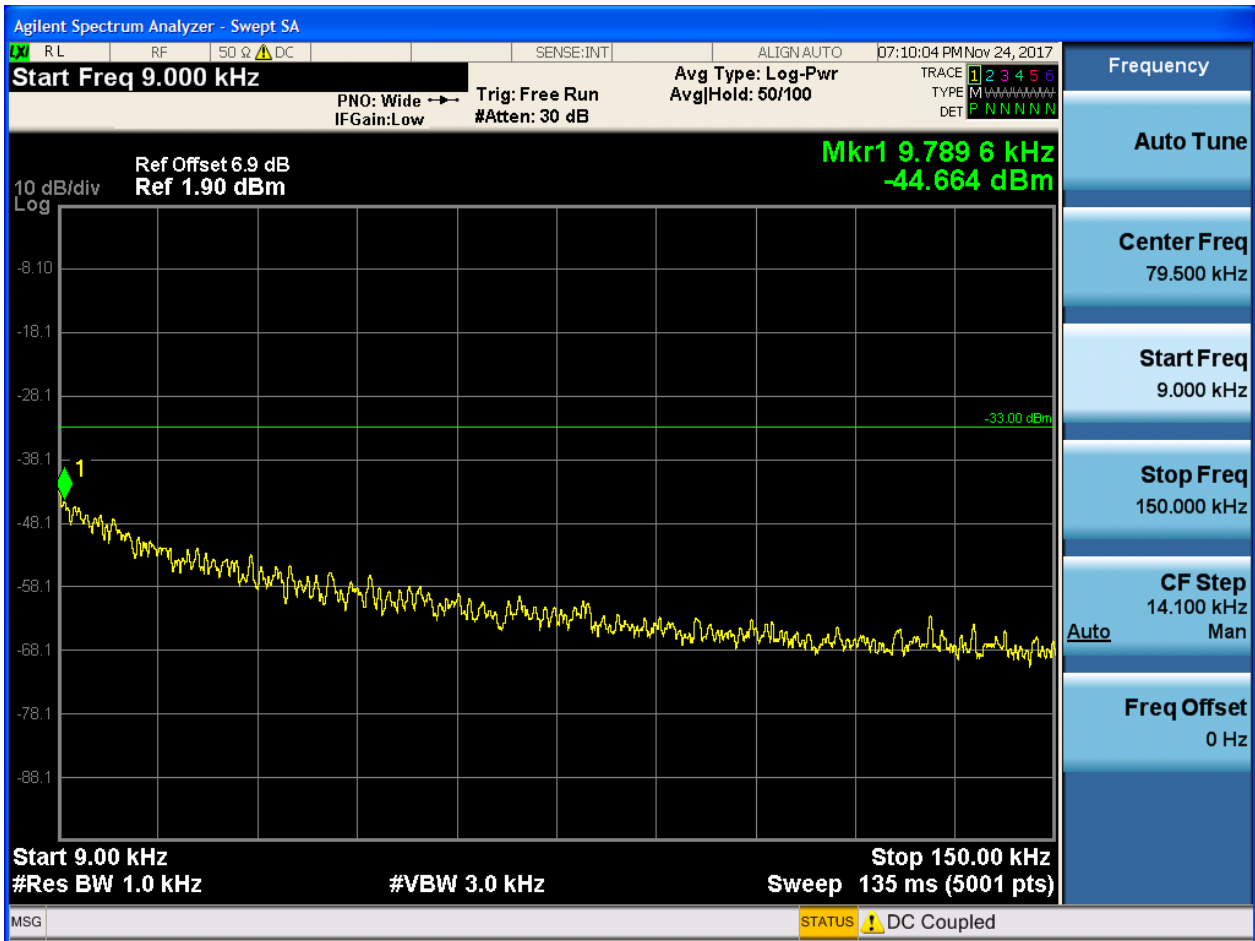


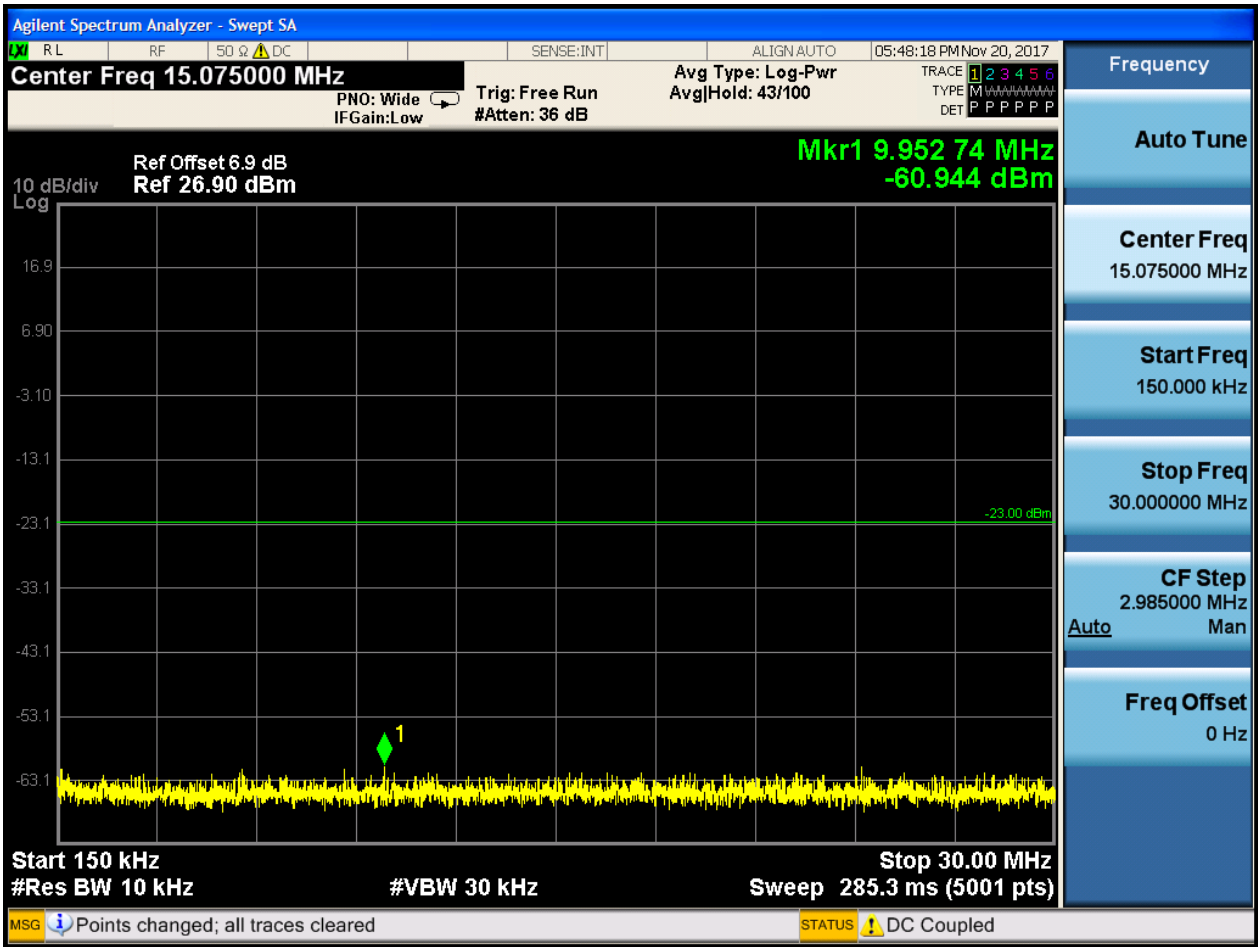


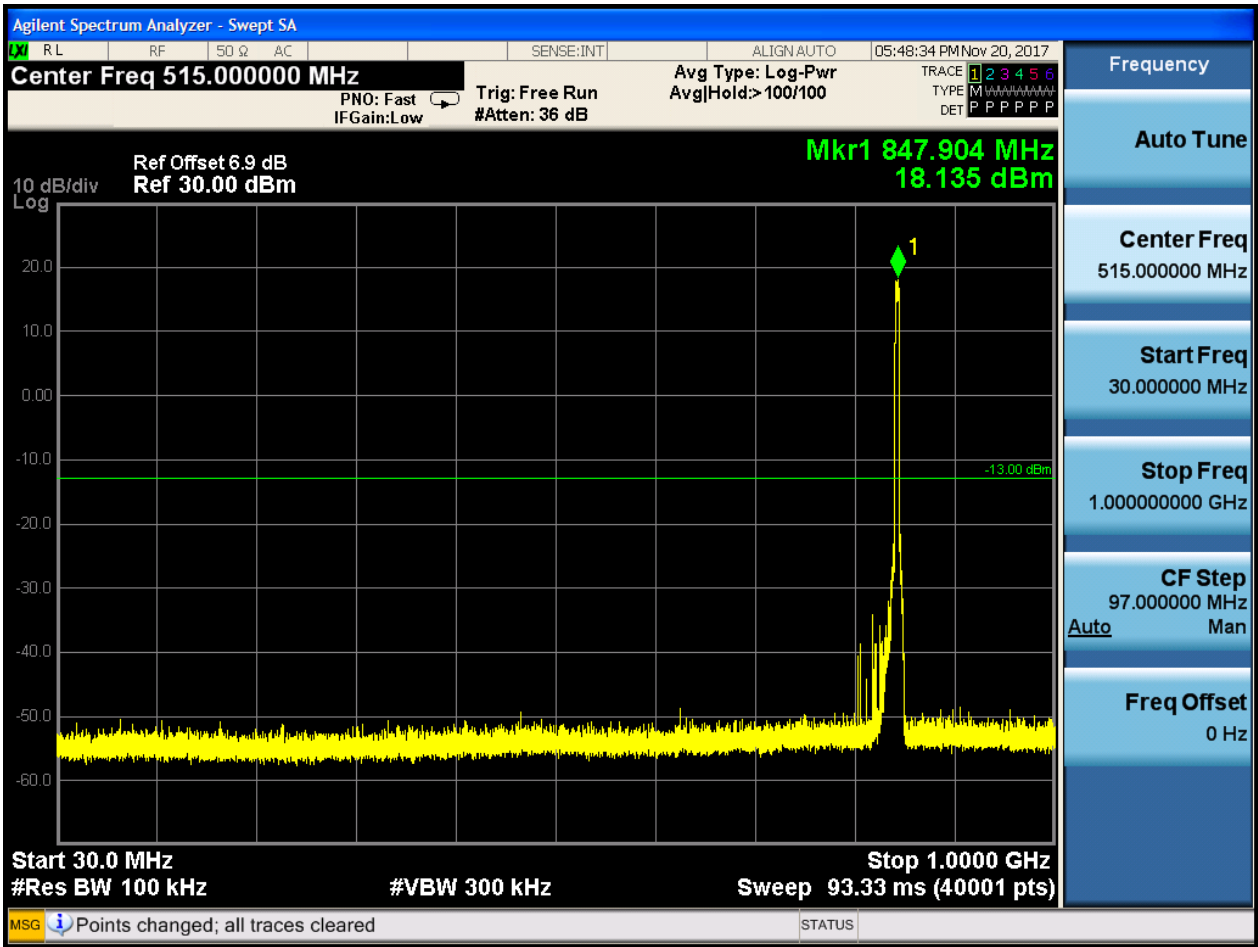


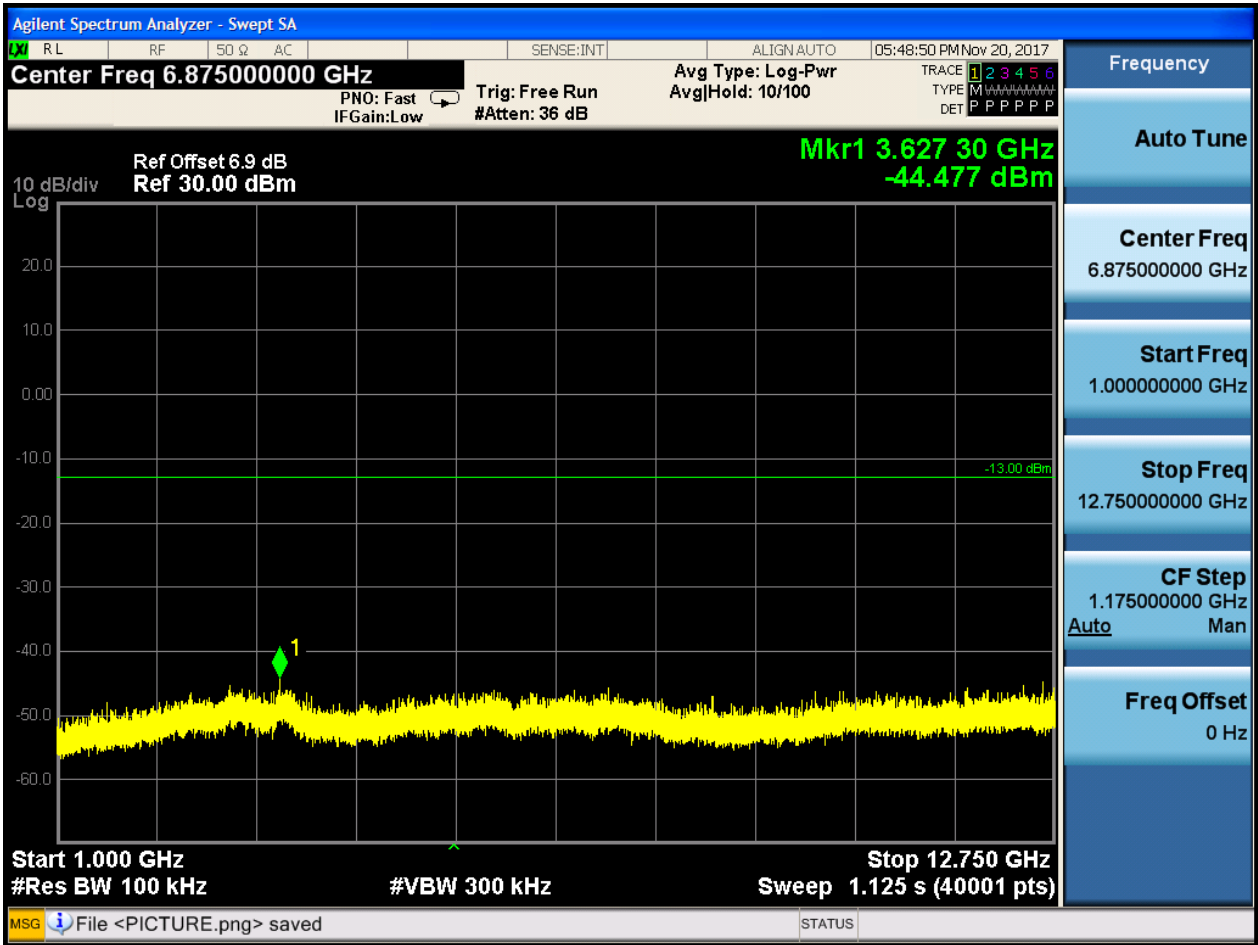


6.1.6.1.3 Test Channel = HCH









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

Note: We tested all modes, but the data presented below is the worst case.

9kHz~150kHz, VBW = 200Hz, VBW = 600 Hz, Detector: PK

150kHz~30MHz, VBW = 9kHz, VBW = 30k Hz, Detector: PK

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

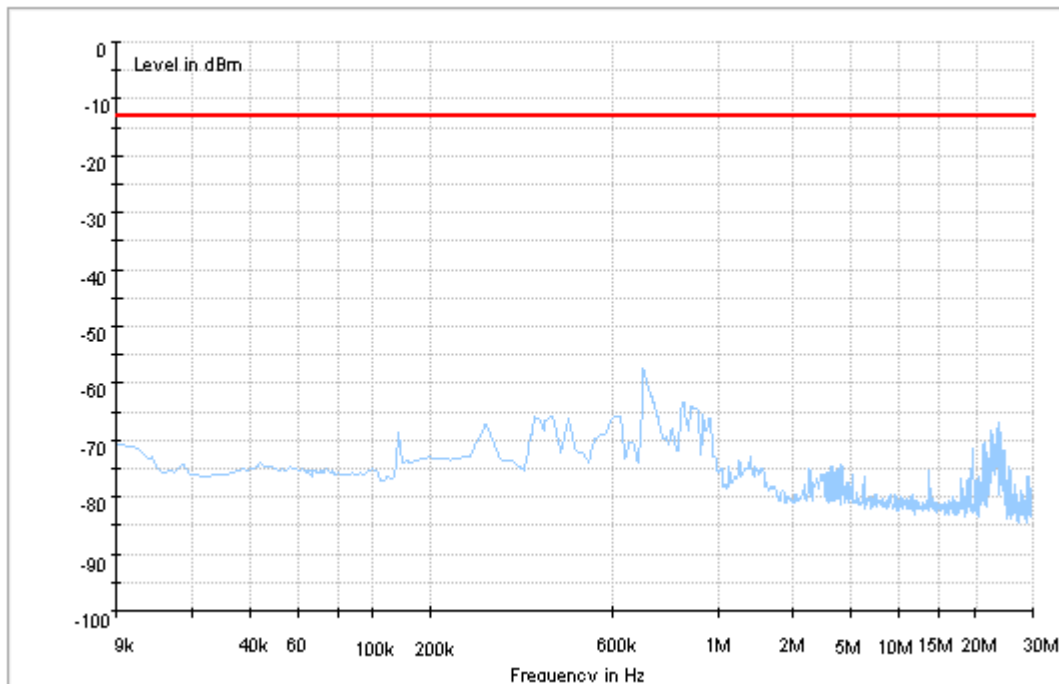
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

### Part I - Test Plots

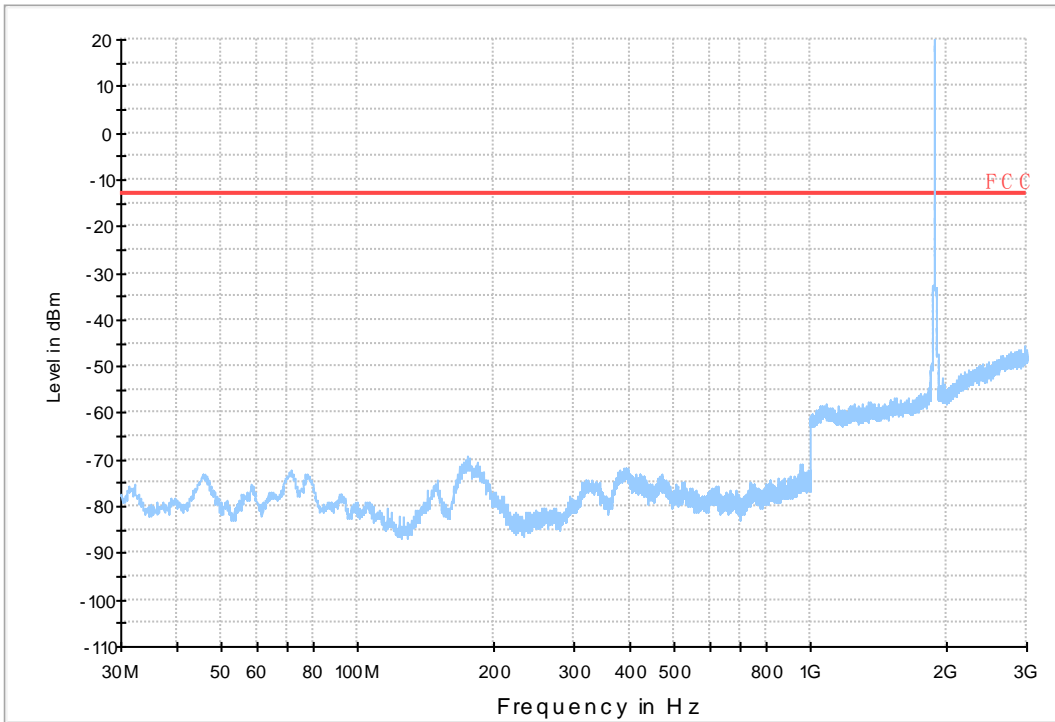
#### 7.1 For UMTS

##### 7.1.1 Test Band = WCDMA1900-Ant1

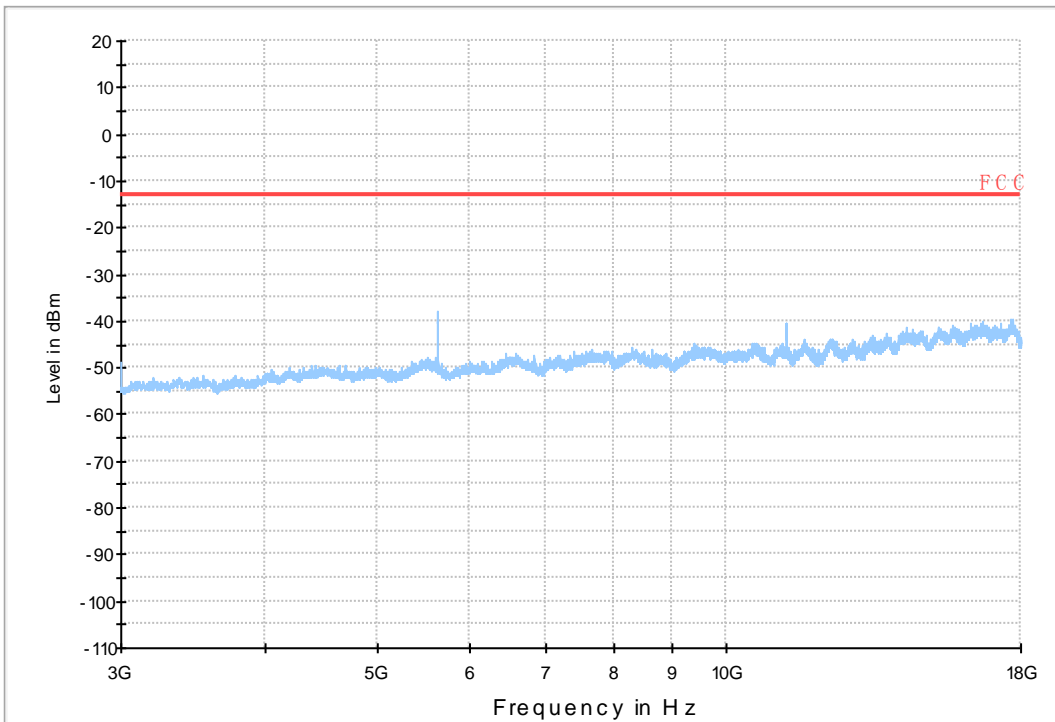
##### 7.1.1.1 Test Mode = UMTS/TM1

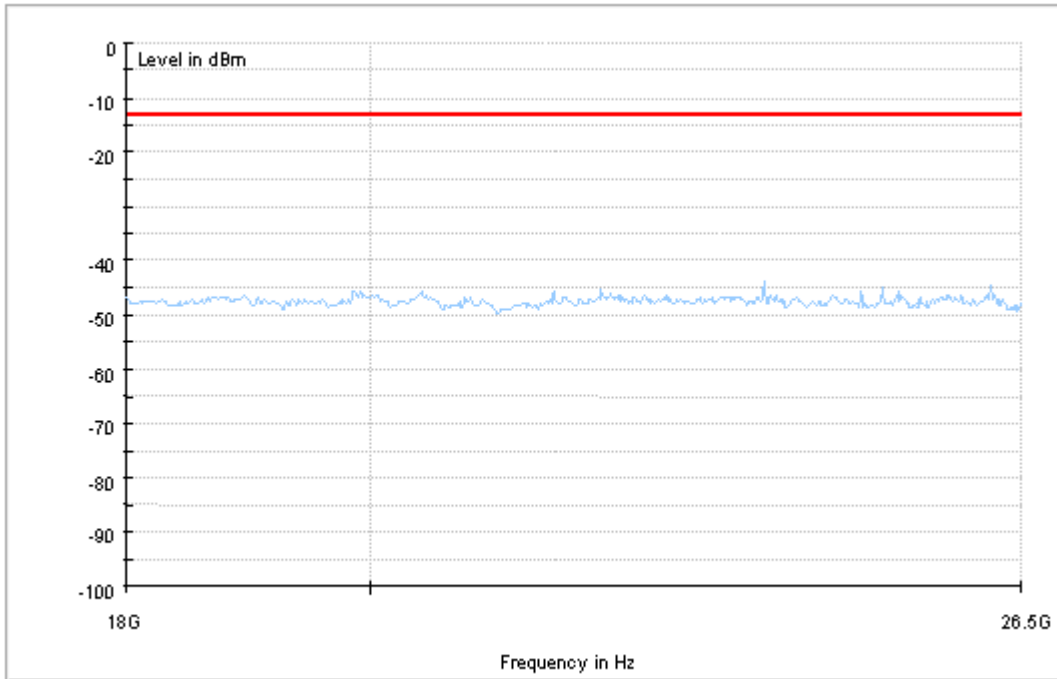


Copy of FCC PART24 W CDMA1900\_L



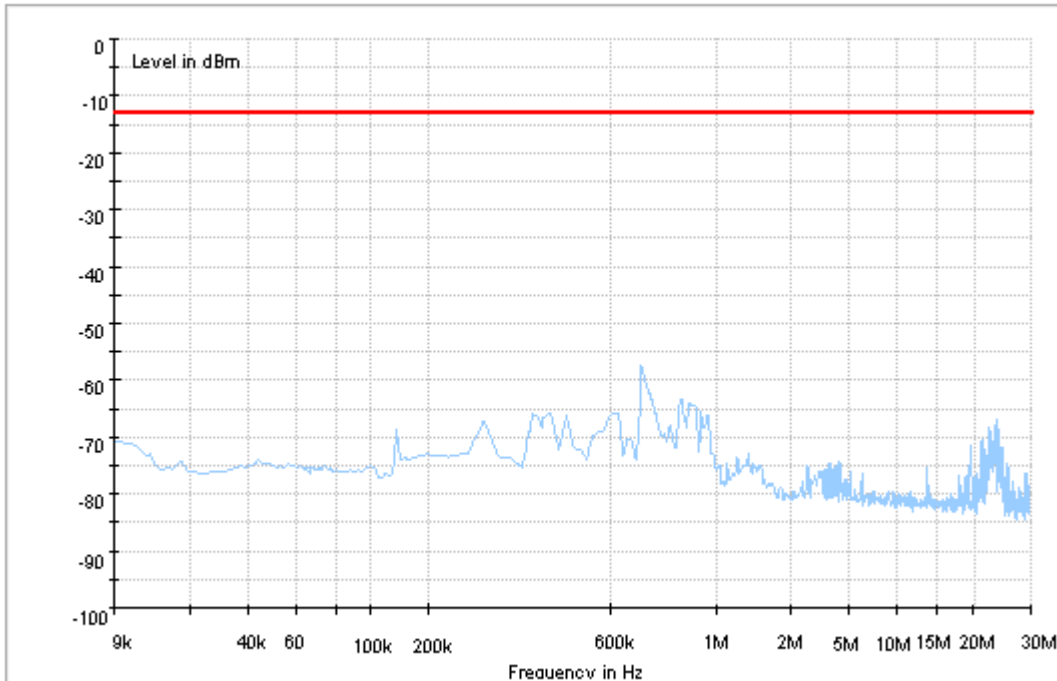
Copy of FCC PART24 W CDMA1900\_H





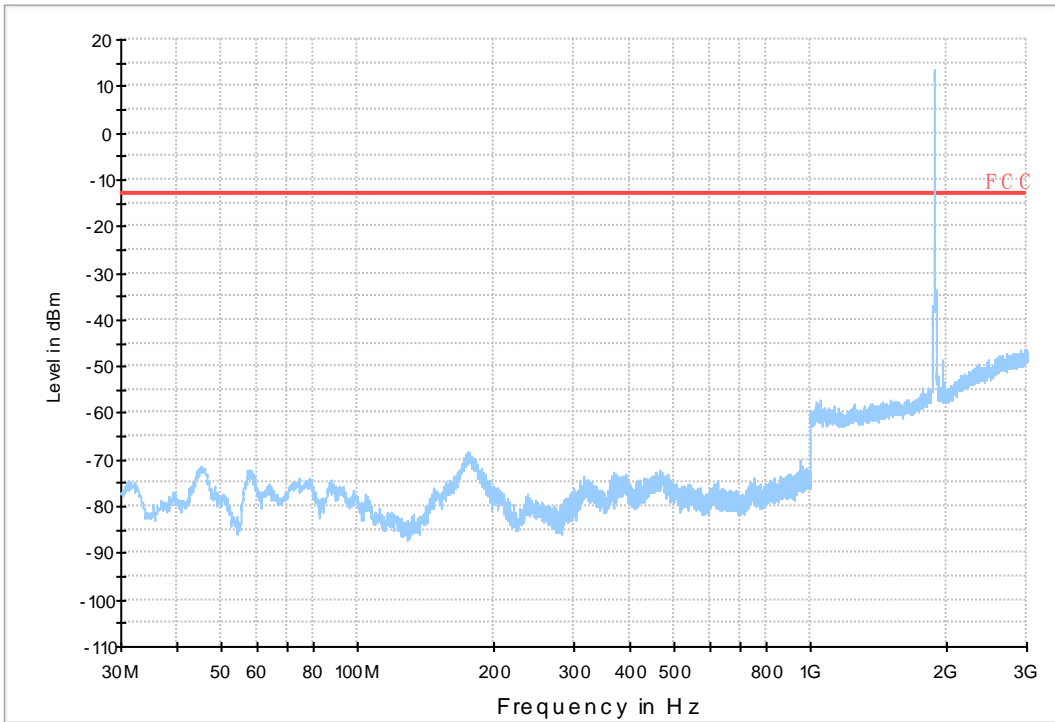
**7.1.2 Test Band = WCDMA1900-Ant2**

**7.1.2.1 Test Mode = UMTS/TM1**

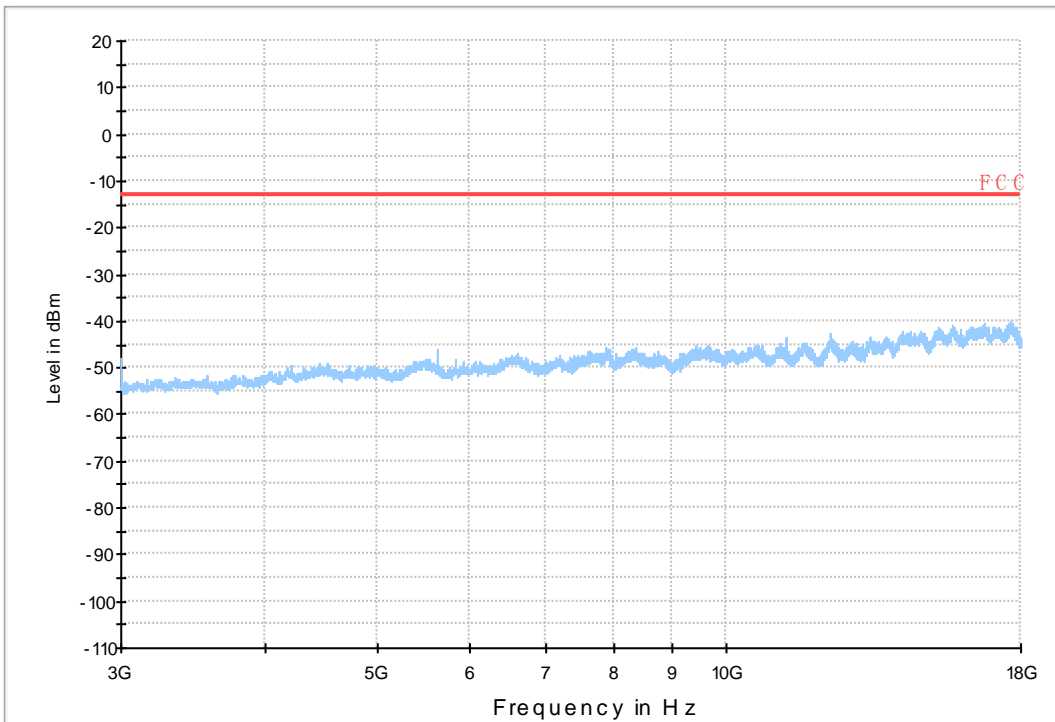


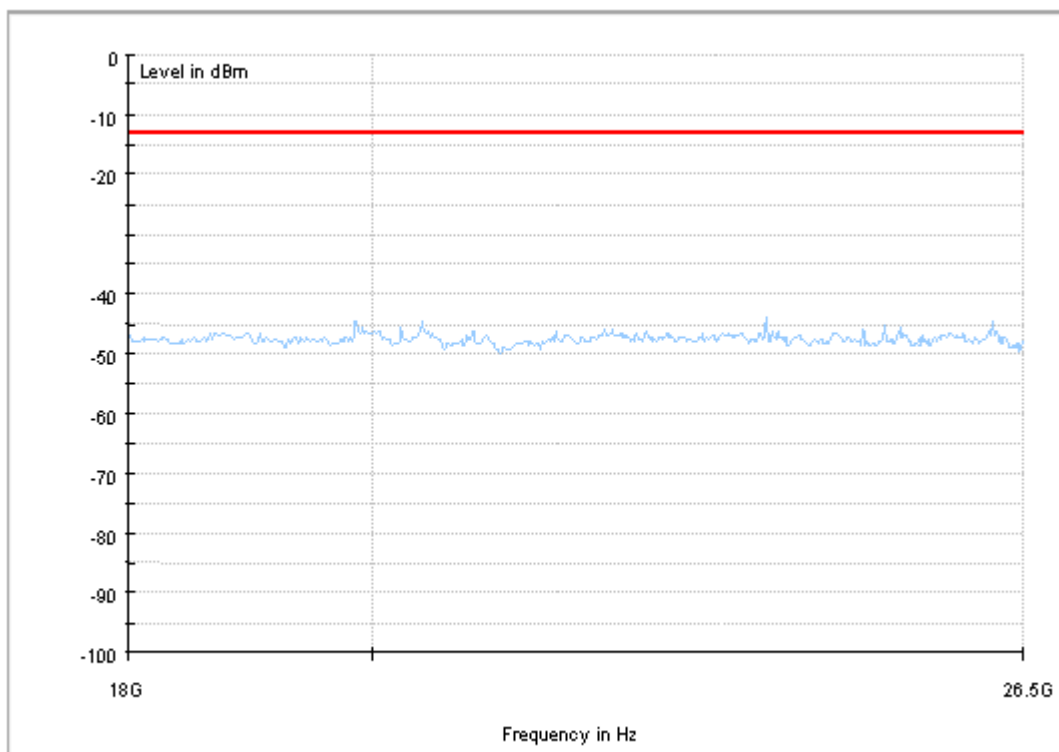


Copy of FCC PART24 W CDMA1900\_L



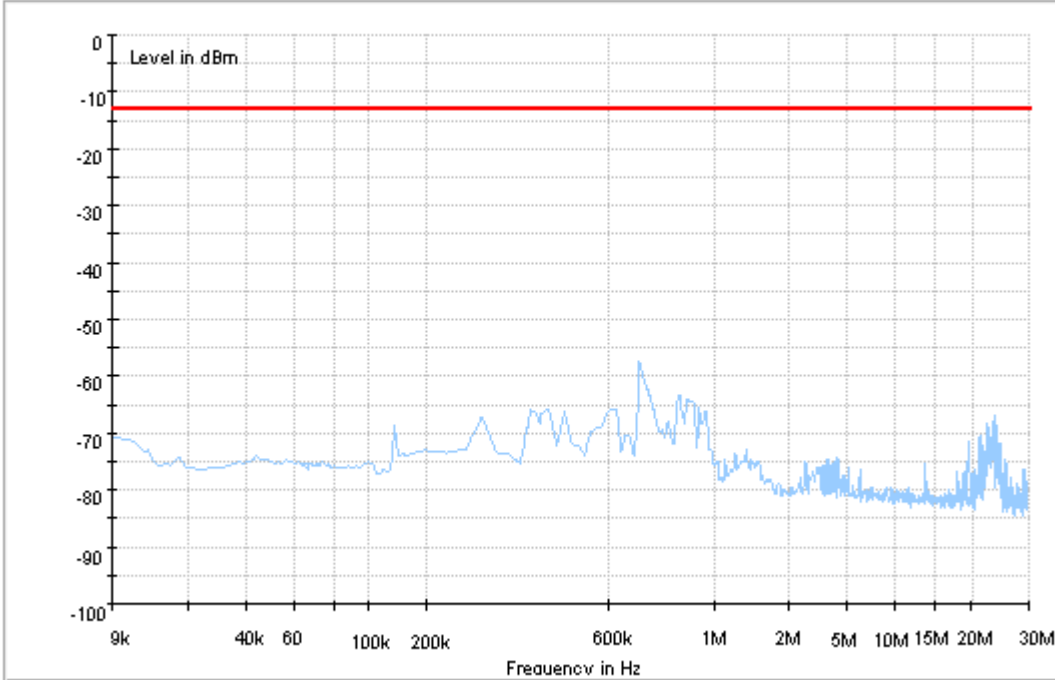
Copy of FCC PART24 W CDMA1900\_H



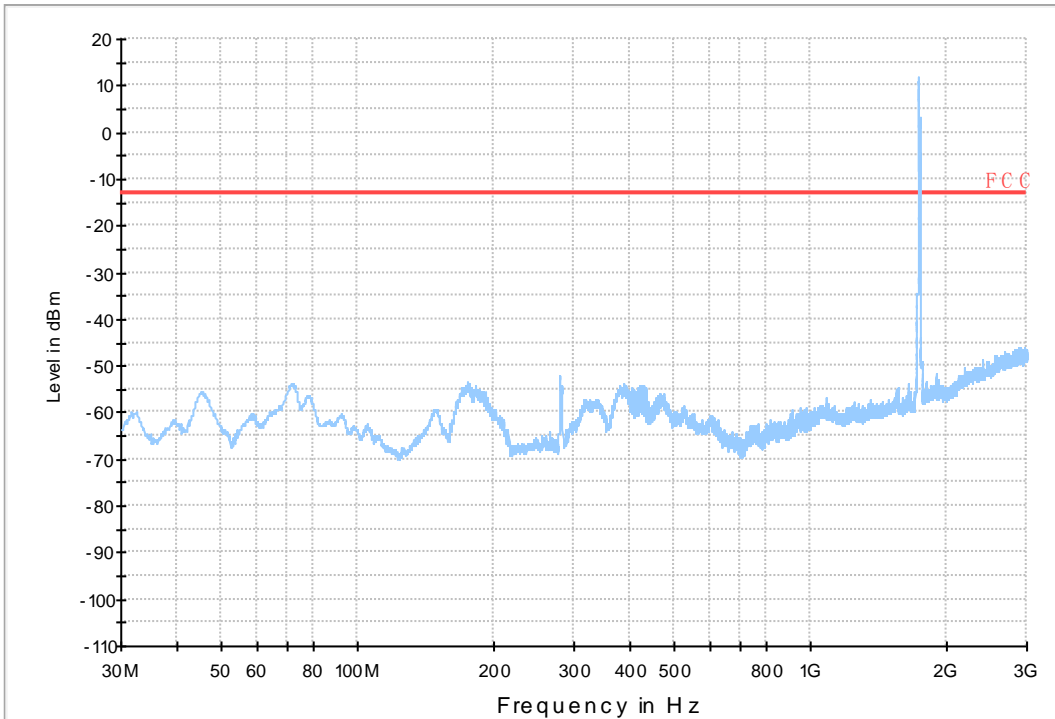


### 7.1.3 Test Band = WCDMA1700-Ant1

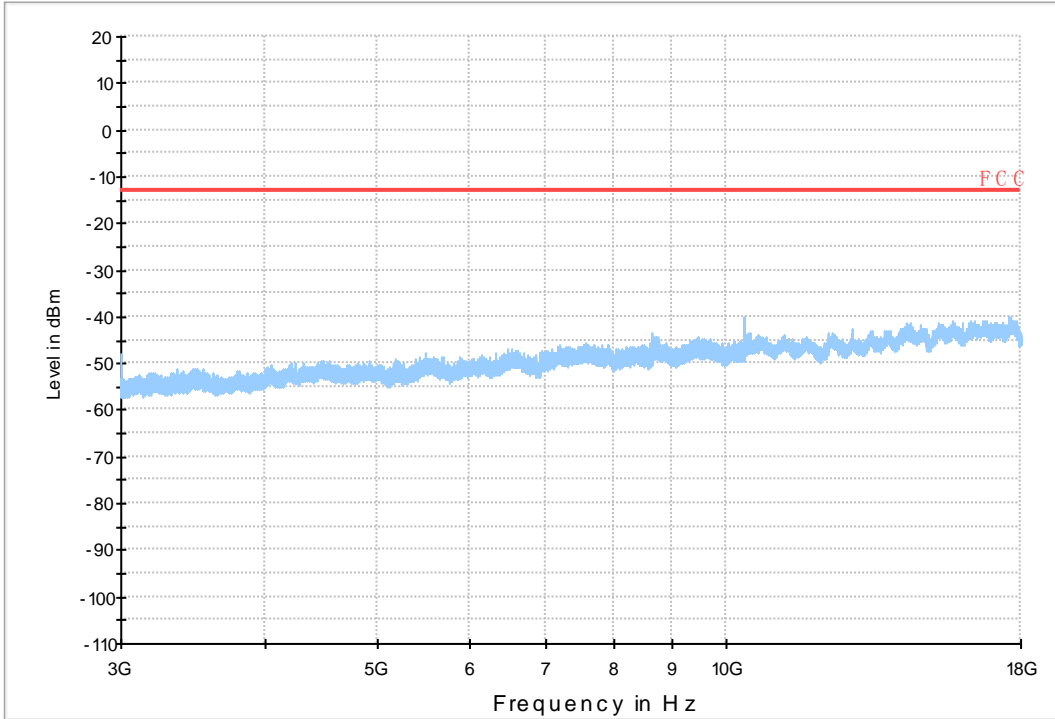
#### 7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700\_L

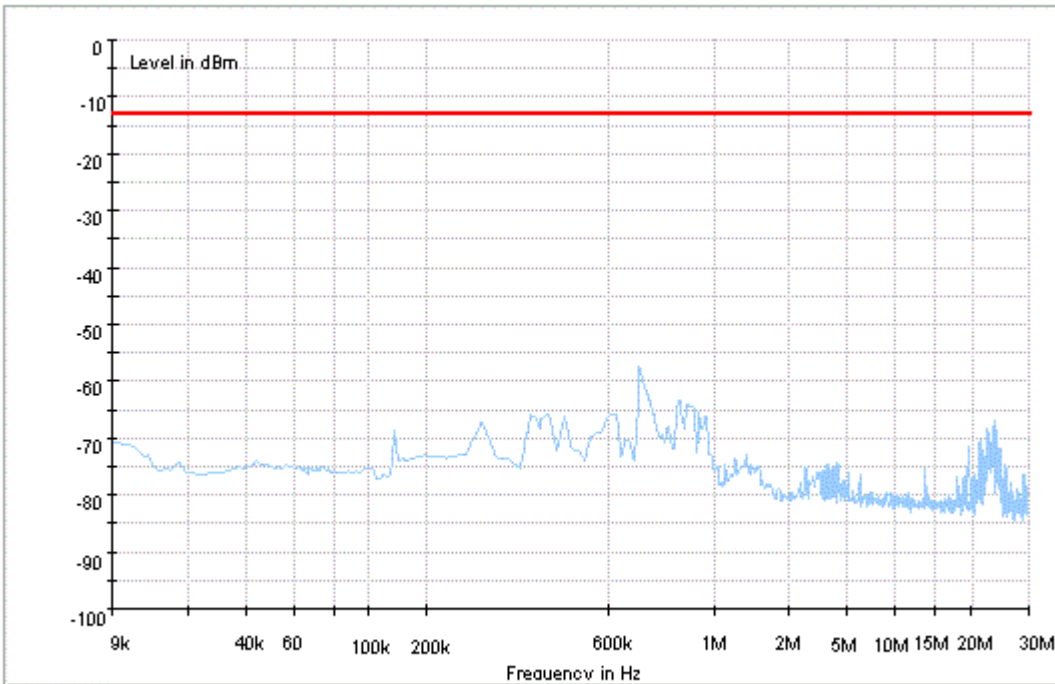


Copy of FCC PART27 W CDMA1700\_H

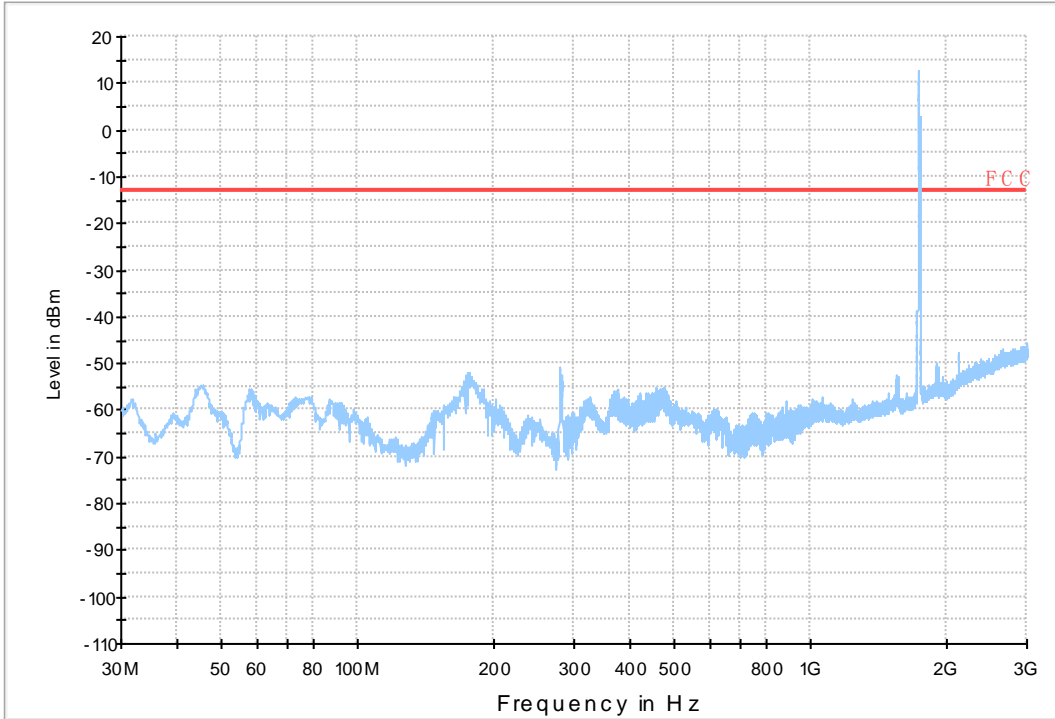


7.1.4 Test Band = WCDMA1700-Ant2

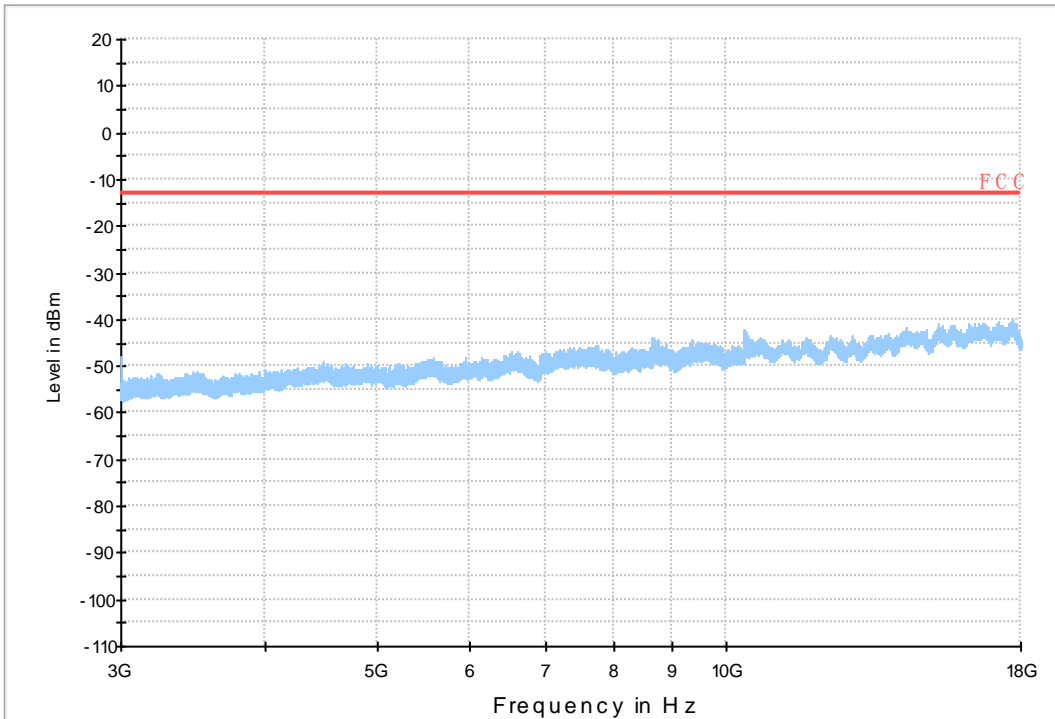
7.1.4.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700\_L

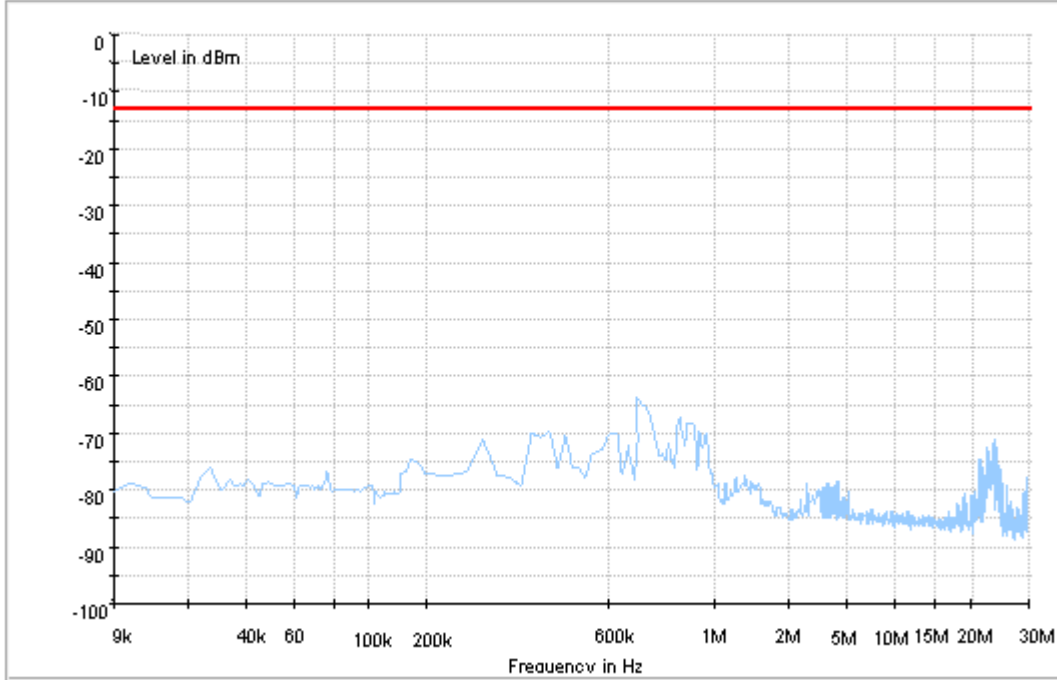


Copy of FCC PART27 W CDMA1700\_H

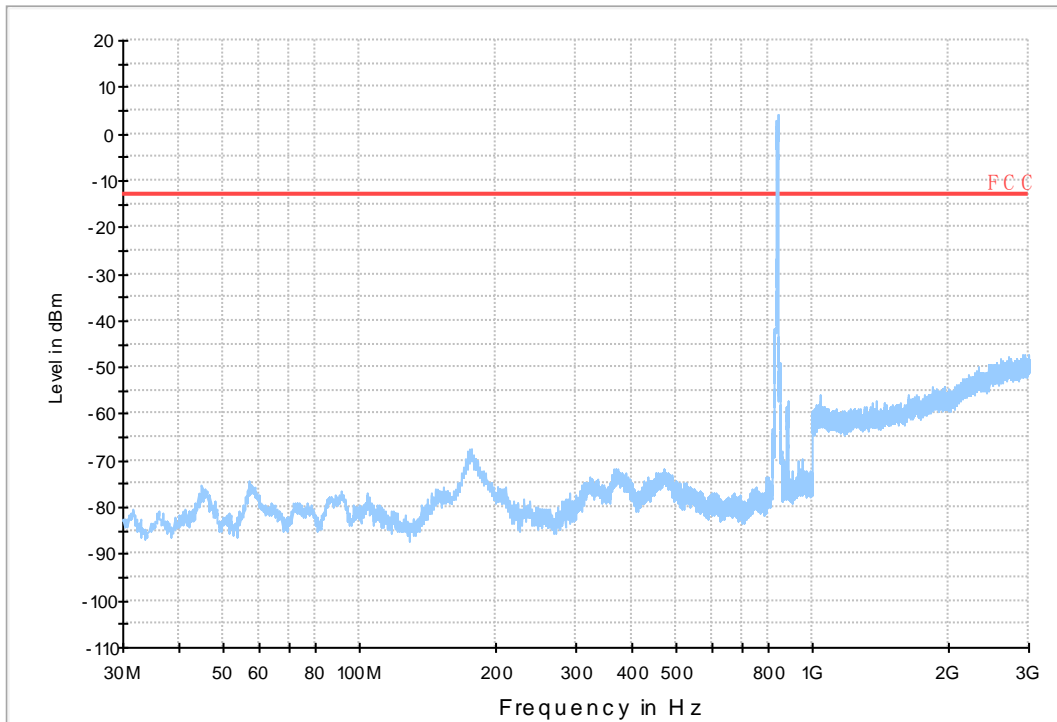


### 7.1.5 Test Band = WCDMA850-Ant1

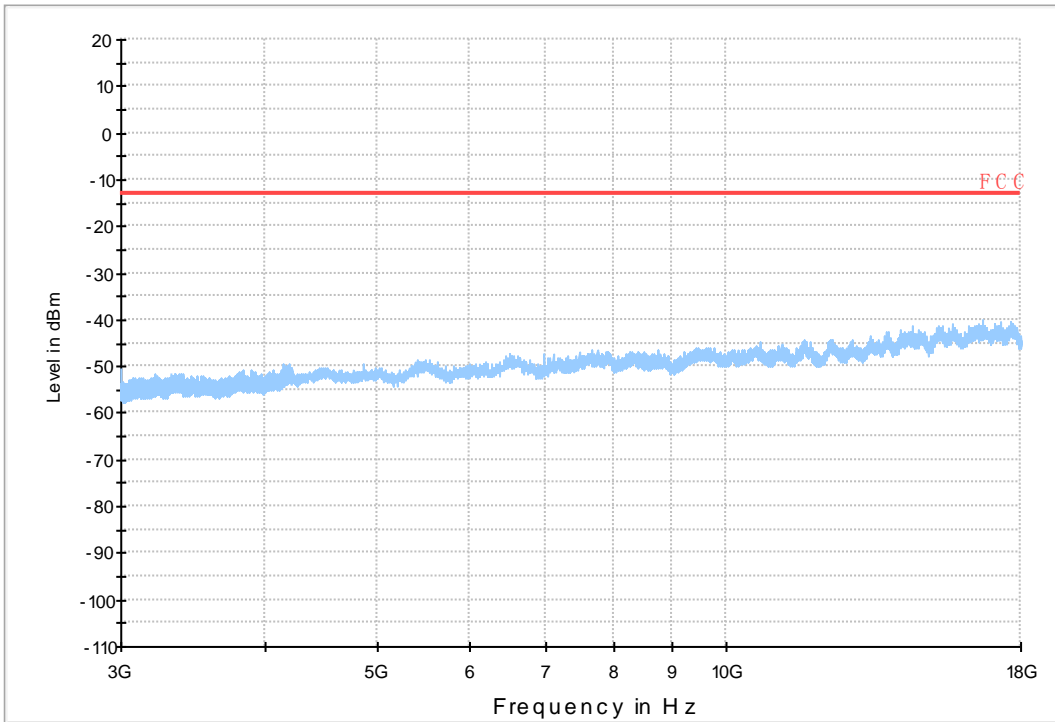
#### 7.1.5.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850\_L

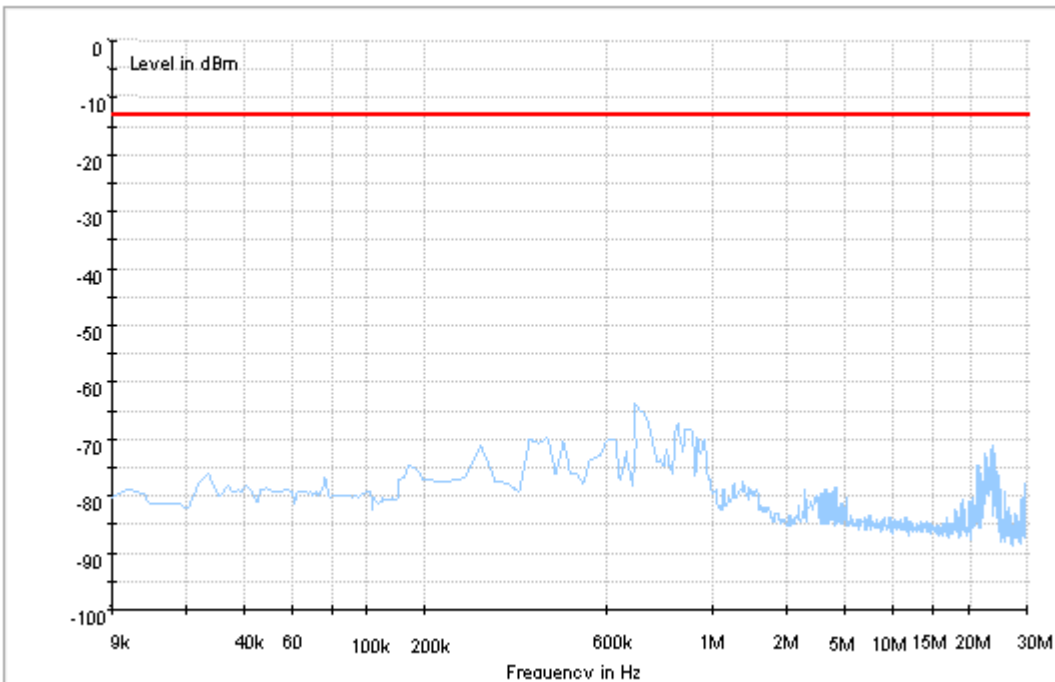


Copy of FCC PART22 W CDMA850\_H

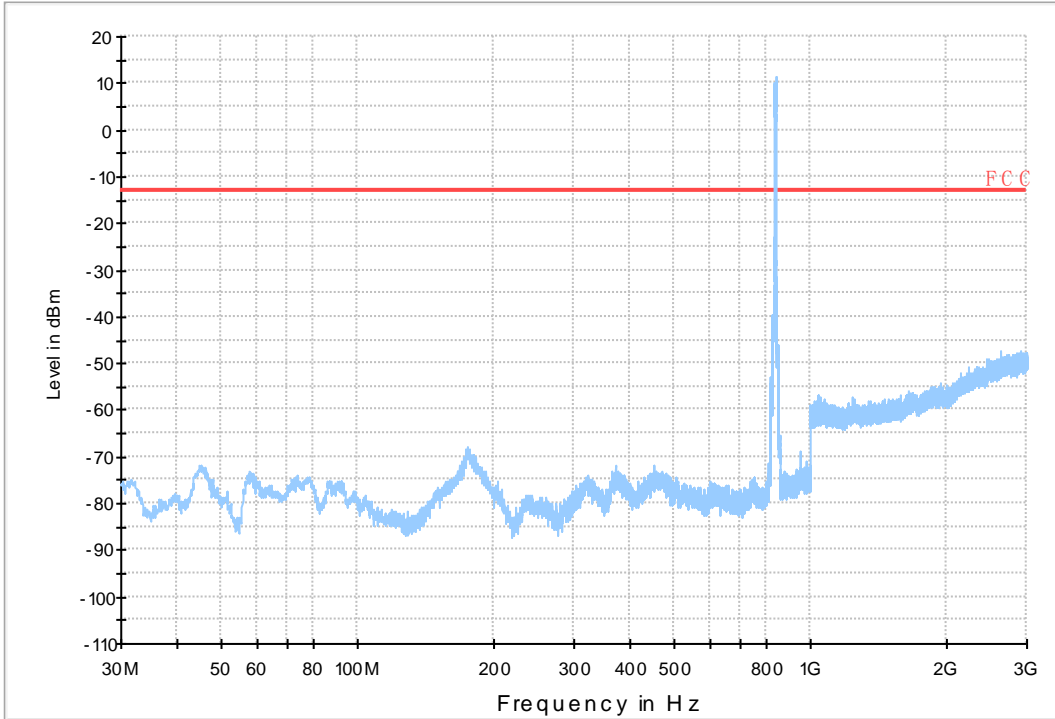


7.1.6 Test Band = WCDMA850-Ant2

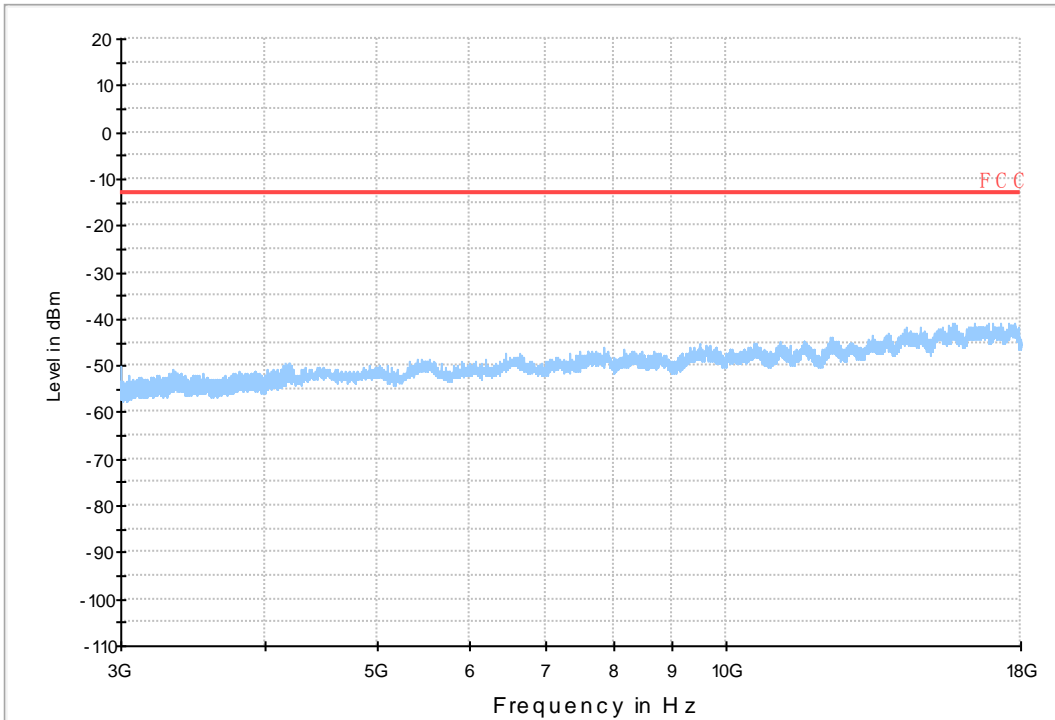
7.1.6.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850\_L



Copy of FCC PART22 W CDMA850\_H





## 8Appendix\_H: Frequency Stability

### 8.1 For WCDMA

#### 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	0.37	0.0002	PASS
				VN	-2.73	-0.00147	PASS
				VH	-4.27	-0.00231	PASS
		MCH	TN	VL	2.73	0.00145	PASS
				VN	2.01	0.00107	PASS
				VH	4.94	0.00263	PASS
		HCH	TN	VL	1.04	0.00055	PASS
				VN	-0.76	-0.0004	PASS
				VH	-2.09	-0.0011	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-6.13	-0.00358	PASS
				VN	-1.71	-0.001	PASS
				VH	7.46	0.00436	PASS
		MCH	TN	VL	-0.56	-0.00032	PASS
				VN	-2.18	-0.00126	PASS
				VH	2.99	0.00173	PASS
		HCH	TN	VL	-2.09	-0.00119	PASS
				VN	-3.27	-0.00187	PASS
				VH	-1.39	-0.00079	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	8.53	0.01032	PASS
				VN	-2.81	-0.0034	PASS
				VH	0.98	0.00119	PASS
		MCH	TN	VL	5.91	0.00707	PASS
				VN	-5.95	-0.00711	PASS
				VH	1.11	0.00133	PASS
		HCH	TN	VL	8.47	0.01	PASS
				VN	0.81	0.00096	PASS
				VH	4.94	0.00584	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
WCDMA1900	UMTS/TM1	LCH	VN	-30	-2.94	-0.00159	PASS
				-20	0.55	0.0003	PASS
				-10	-3.19	-0.00172	PASS
				0	-5.83	-0.00315	PASS
				10	-1.13	-0.00061	PASS
				20	-4.17	-0.00225	PASS
				30	-5.19	-0.0028	PASS
				40	-6.21	-0.00335	PASS
				50	-1.82	-0.00098	PASS
		MCH	VN	-30	8.35	0.00444	PASS
				-20	0.06	0.00003	PASS
				-10	-4.78	-0.00254	PASS
				0	7.10	0.00378	PASS
				10	-0.56	-0.0003	PASS
				20	-4.21	-0.00224	PASS
				30	0.61	0.00032	PASS
				40	-0.17	-0.00009	PASS
				50	1.13	0.0006	PASS
		HCH	VN	-30	-4.01	-0.0021	PASS
				-20	-3.22	-0.00169	PASS
				-10	1.57	0.00082	PASS
				0	-0.23	-0.00012	PASS
				10	-3.33	-0.00175	PASS
				20	-0.84	-0.00044	PASS
				30	-0.44	-0.00023	PASS
				40	-1.25	-0.00066	PASS
				50	-6.09	-0.00319	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	2.26	0.00132	PASS
				-20	-2.14	-0.00125	PASS
				-10	-1.19	-0.00069	PASS
				0	1.88	0.0011	PASS
				10	-4.14	-0.00242	PASS
				20	3.89	0.00227	PASS
				30	2.11	0.00123	PASS
				40	-1.69	-0.00099	PASS
				50	-0.31	-0.00018	PASS
		MCH	VN	-30	1.48	0.00085	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict		
				-20	-2.96	-0.00171	PASS		
				-10	0.14	0.00008	PASS		
				0	3.02	0.00174	PASS		
				10	-2.29	-0.00132	PASS		
				20	1.91	0.0011	PASS		
				30	-5.02	-0.0029	PASS		
				40	1.66	0.00096	PASS		
				50	2.09	0.00121	PASS		
		HCH	VN			-30	-3.07	-0.00175	PASS
						-20	-0.76	-0.00043	PASS
						-10	-5.14	-0.00293	PASS
						0	4.01	0.00229	PASS
						10	-8.32	-0.00475	PASS
						20	7.97	0.00455	PASS
						30	-2.47	-0.00141	PASS
						40	3.31	0.00189	PASS
						50	6.67	0.00381	PASS
						WCDMA850	UMTS/TM1	LCH	VN
-20	-3.65	-0.00442	PASS						
-10	6.03	0.0073	PASS						
0	5.20	0.00629	PASS						
10	-6.16	-0.00745	PASS						
20	-5.00	-0.00605	PASS						
30	-5.52	-0.00668	PASS						
40	-1.11	-0.00134	PASS						
50	6.00	0.00726	PASS						
MCH	VN			-30	5.25			0.00628	PASS
				-20	-3.25			-0.00389	PASS
				-10	3.45			0.00412	PASS
				0	5.14			0.00615	PASS
				10	0.35			0.00042	PASS
				20	-5.58			-0.00667	PASS
				30	2.56			0.00306	PASS
				40	7.13			0.00852	PASS
HCH	VN			50	-1.57			-0.00188	PASS
				-30	6.70			0.00791	PASS
				-20	-3.02			-0.00357	PASS
				-10	1.40			0.00165	PASS
				0	-3.40			-0.00402	PASS
				10	2.53			0.00299	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	5.84	0.0069	PASS
				30	4.73	0.00559	PASS
				40	6.53	0.00771	PASS
				50	3.52	0.00416	PASS

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END