



# 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	22.96	17.99	38.5	PASS
		MCH	22.91	18.06	38.5	PASS
		HCH	23.02	17.97	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.13	22.55	33	PASS
		MCH	22.81	22.27	33	PASS
		HCH	23.07	22.53	33	PASS
WCDMA1700	UMTS/TM1	LCH	22.65	22.53	30	PASS
		MCH	22.79	22.71	30	PASS
		HCH	22.73	22.61	30	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:

SET Span=1.5\*OBW

SET RBW=1%of the OBW,not to exceed 1MHz

SET VBW>= 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	3.17	13	PASS
		MCH	3.12	13	PASS
		HCH	3.22	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.5	13	PASS
		MCH	2.79	13	PASS
		HCH	2.78	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.65	13	PASS
		MCH	3.19	13	PASS
		HCH	2.82	13	PASS

### 3Appendix\_C: Modulation Characteristics

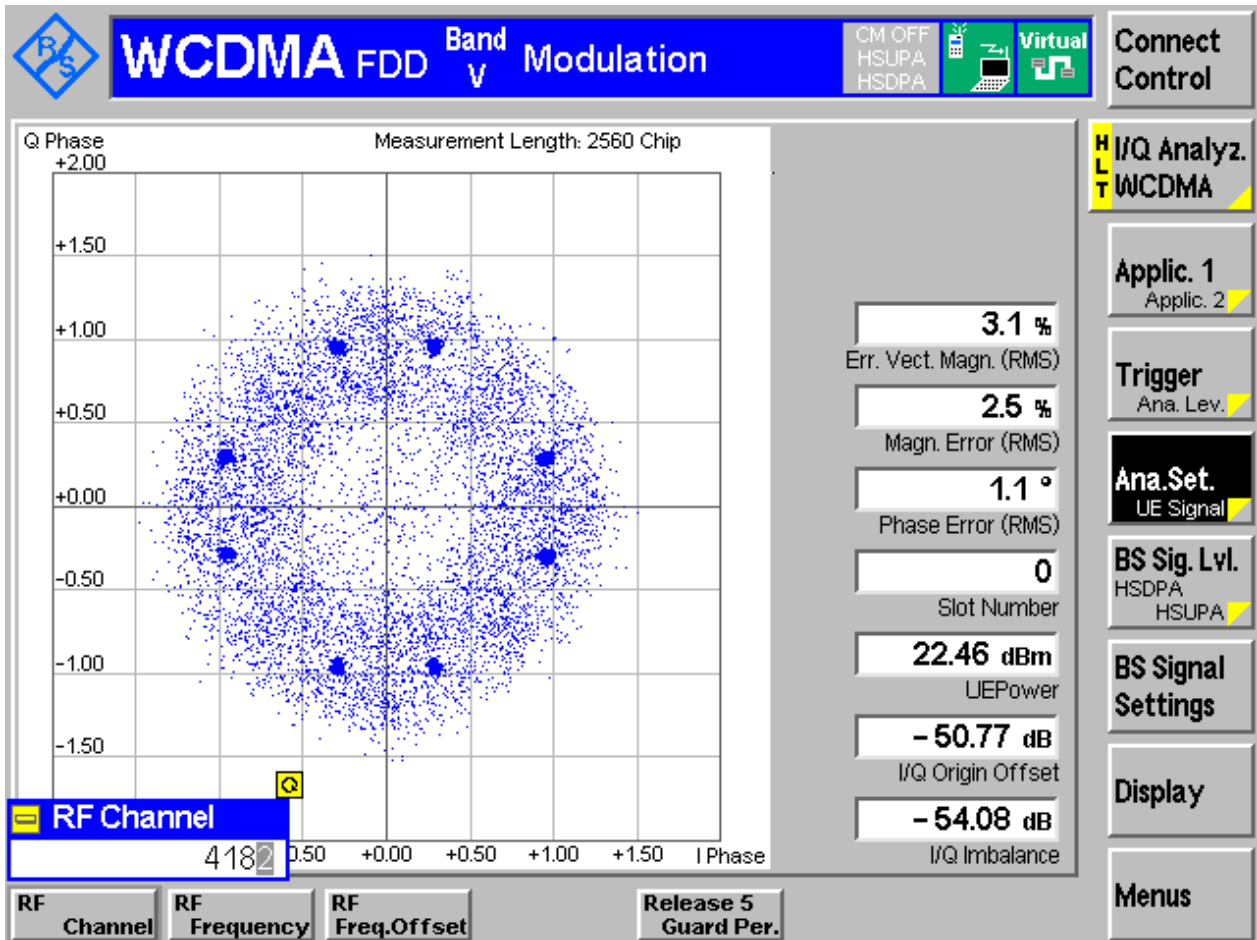
#### Part I - Test Plots

#### 3.1 For UMTS

#### 3.1.1 Test Band = WCDMA850

#### 3.1.1.1 Test Mode = UMTS/TM1

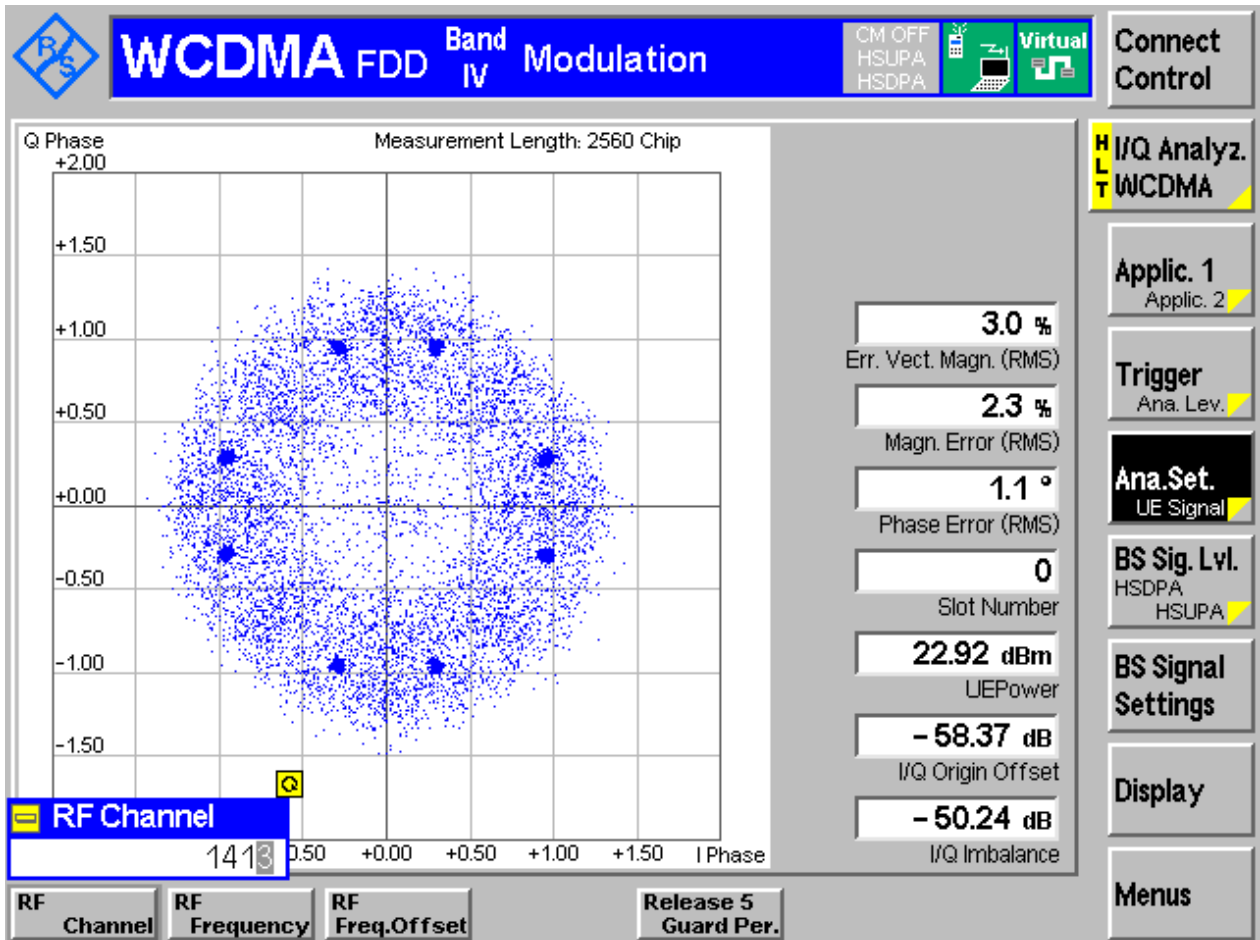
#### 3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

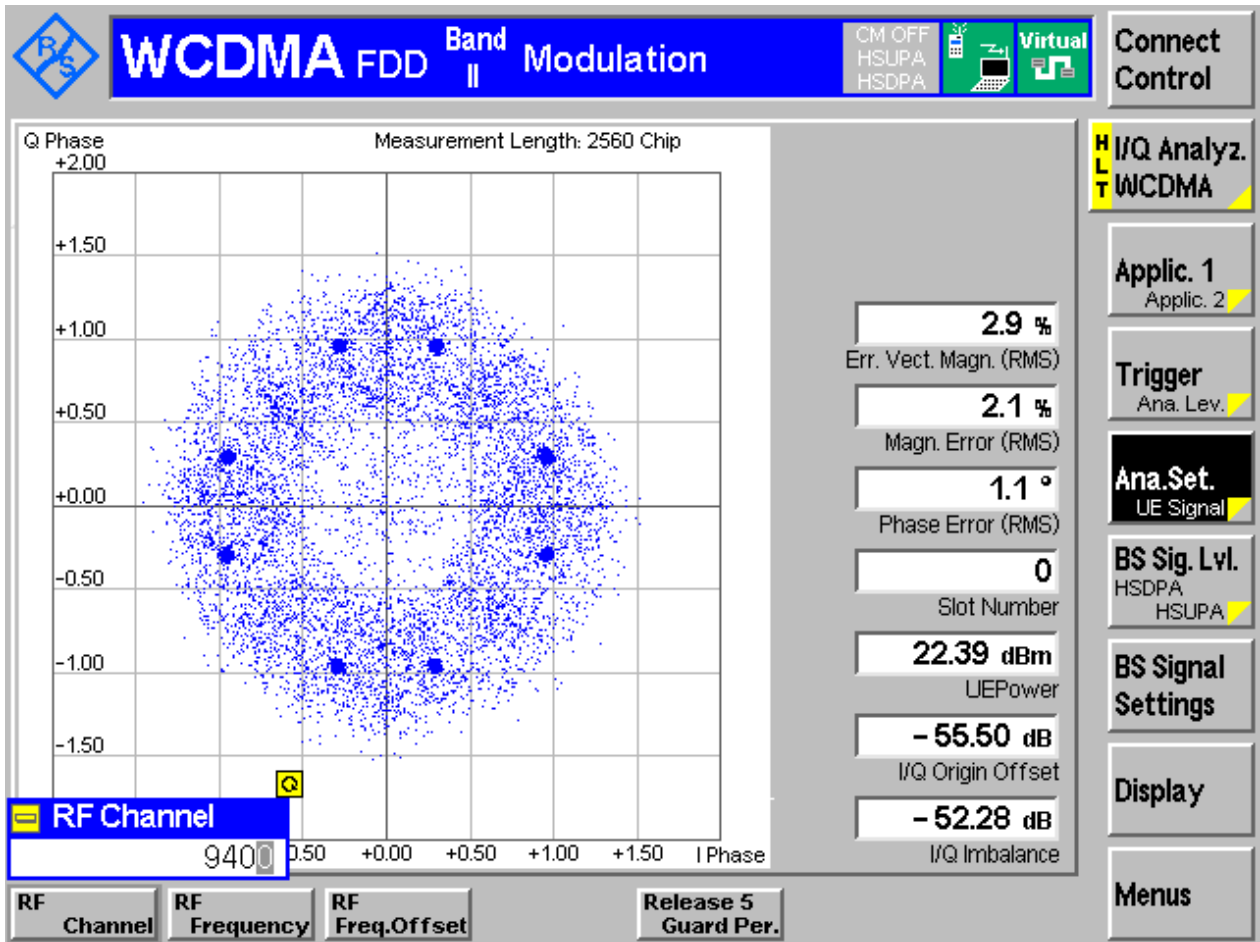
3.1.2.1.1 Test Channel = MCH



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	4.21	4.86	Pass
		MCH	4.20	4.86	Pass
		HCH	4.19	4.85	Pass
WCDMA1700	UMTS/TM1	LCH	4.21	4.89	Pass
		MCH	4.22	4.90	Pass
		HCH	4.21	4.86	Pass
WCDMA1900	UMTS/TM1	LCH	4.21	4.89	Pass
		MCH	4.21	4.87	Pass
		HCH	4.20	4.87	Pass



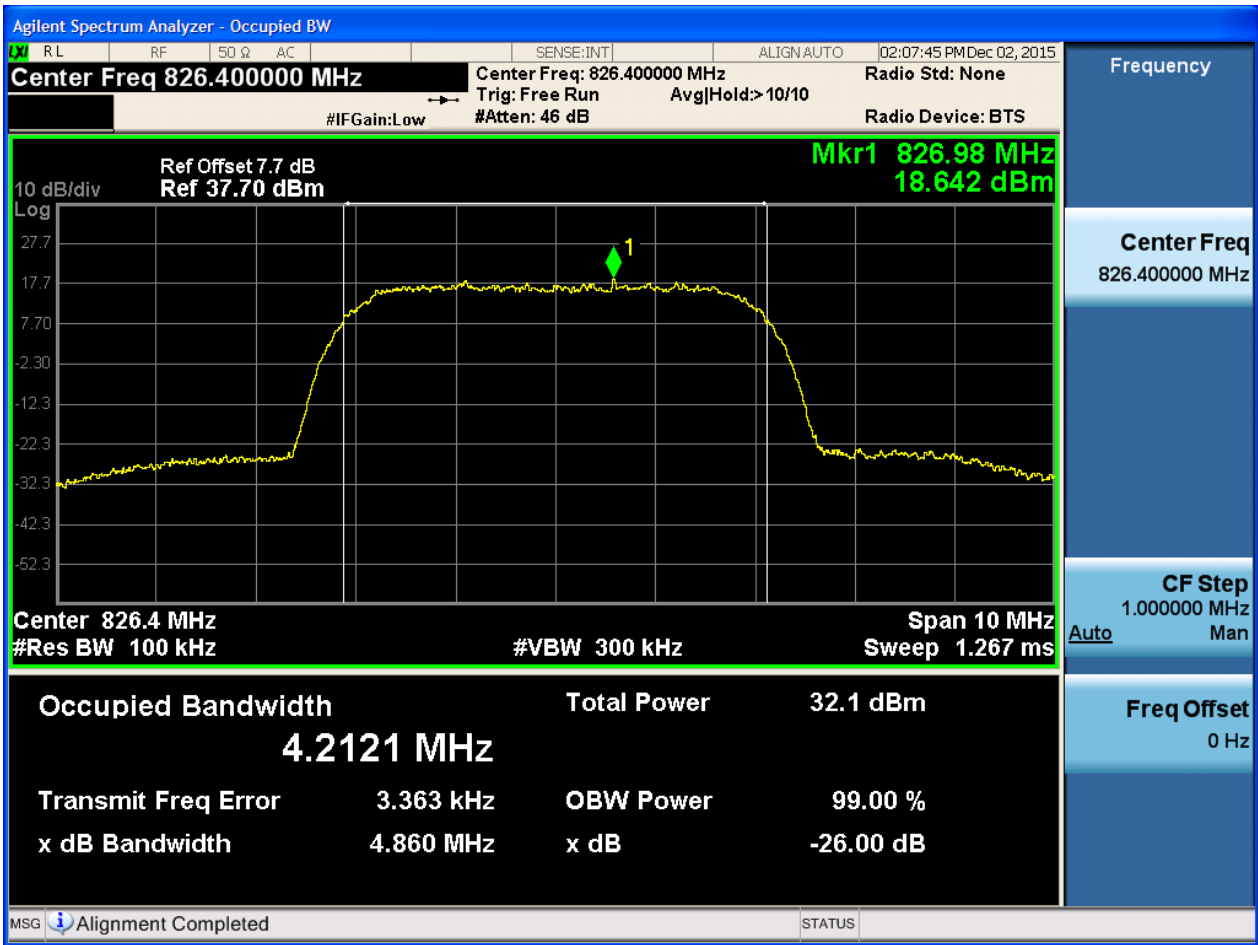
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

4.1.1.1 Test Mode = UMTS/TM1

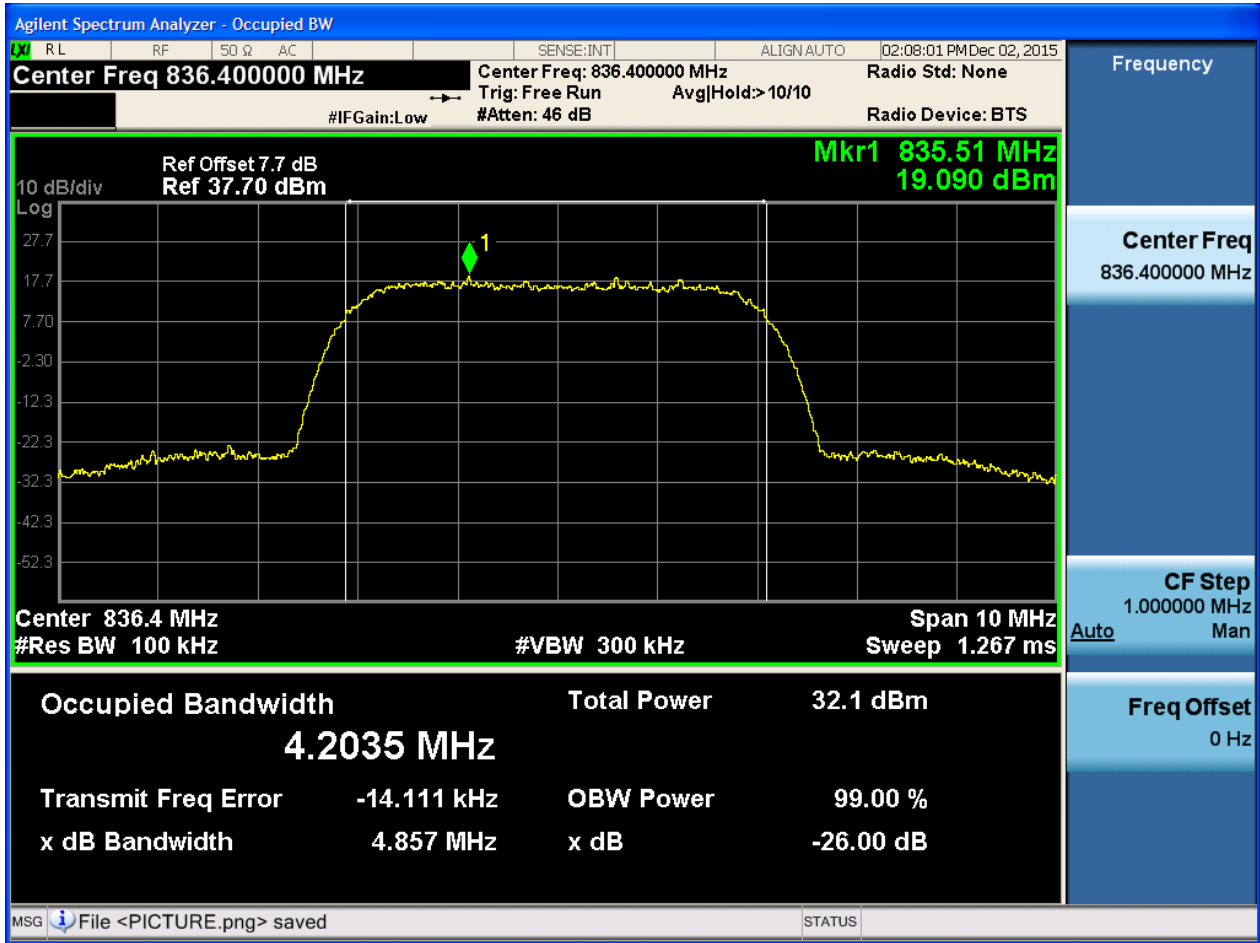
4.1.1.1.1 Test Channel = LCH





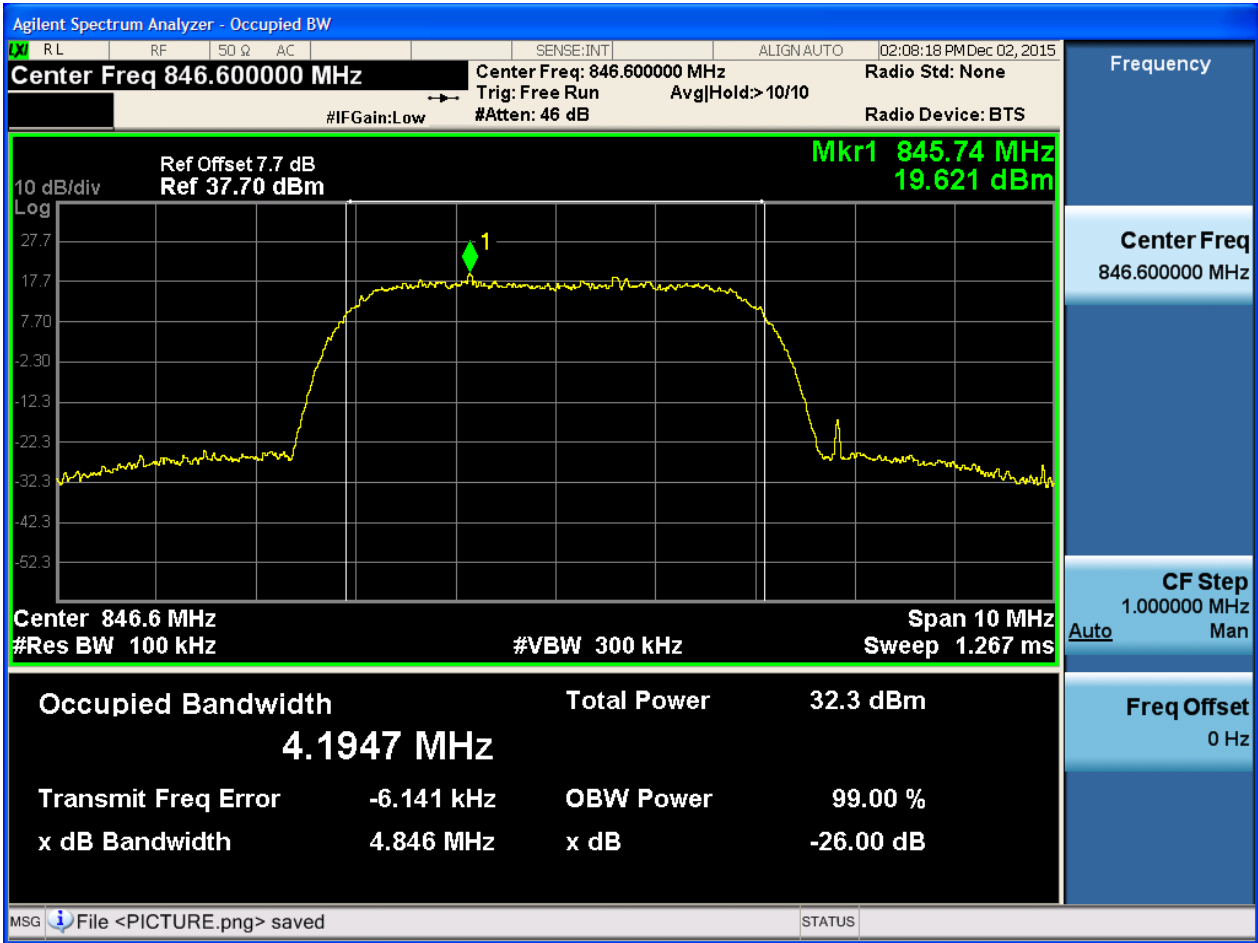


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

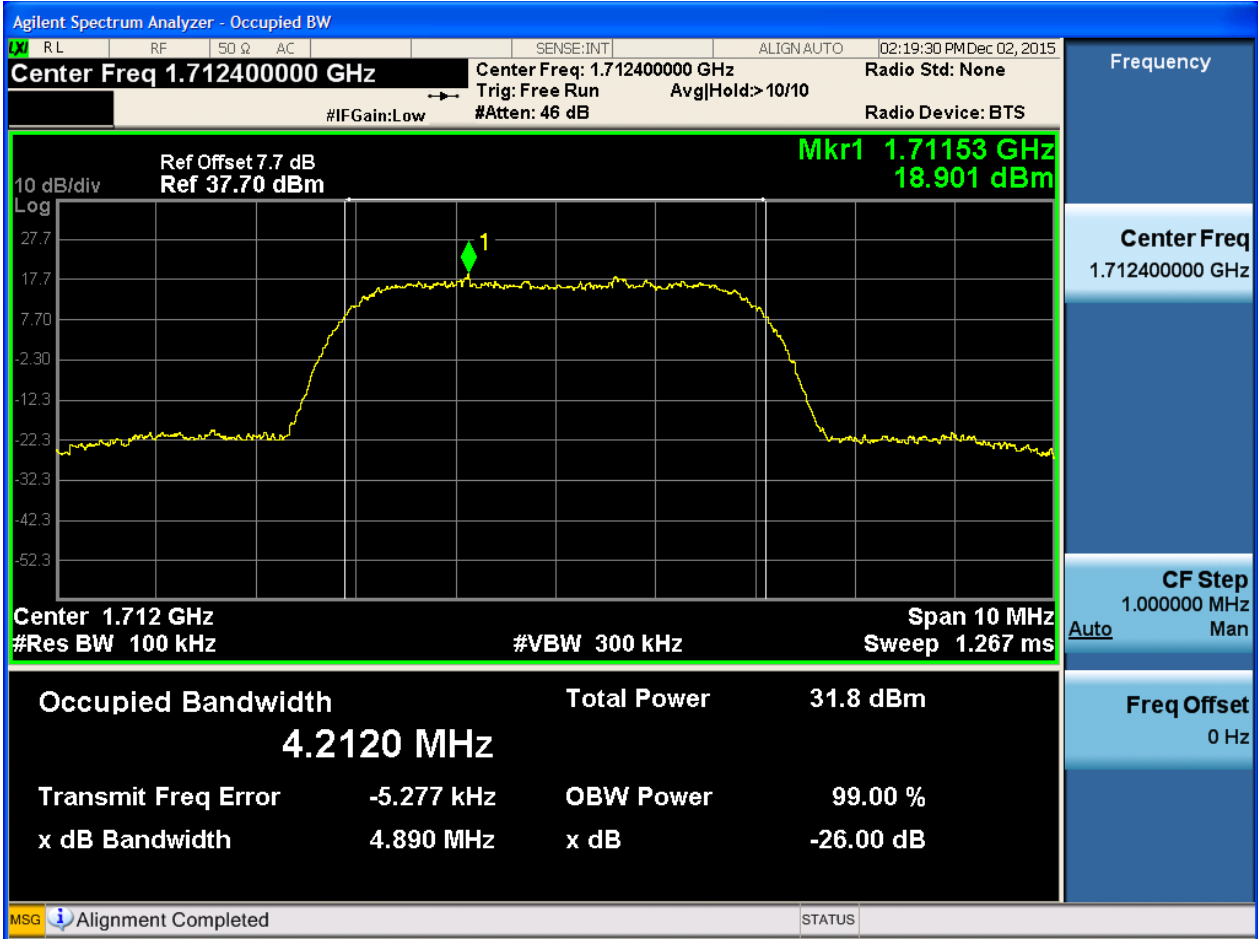




4.1.2 Test Band = WCDMA1700

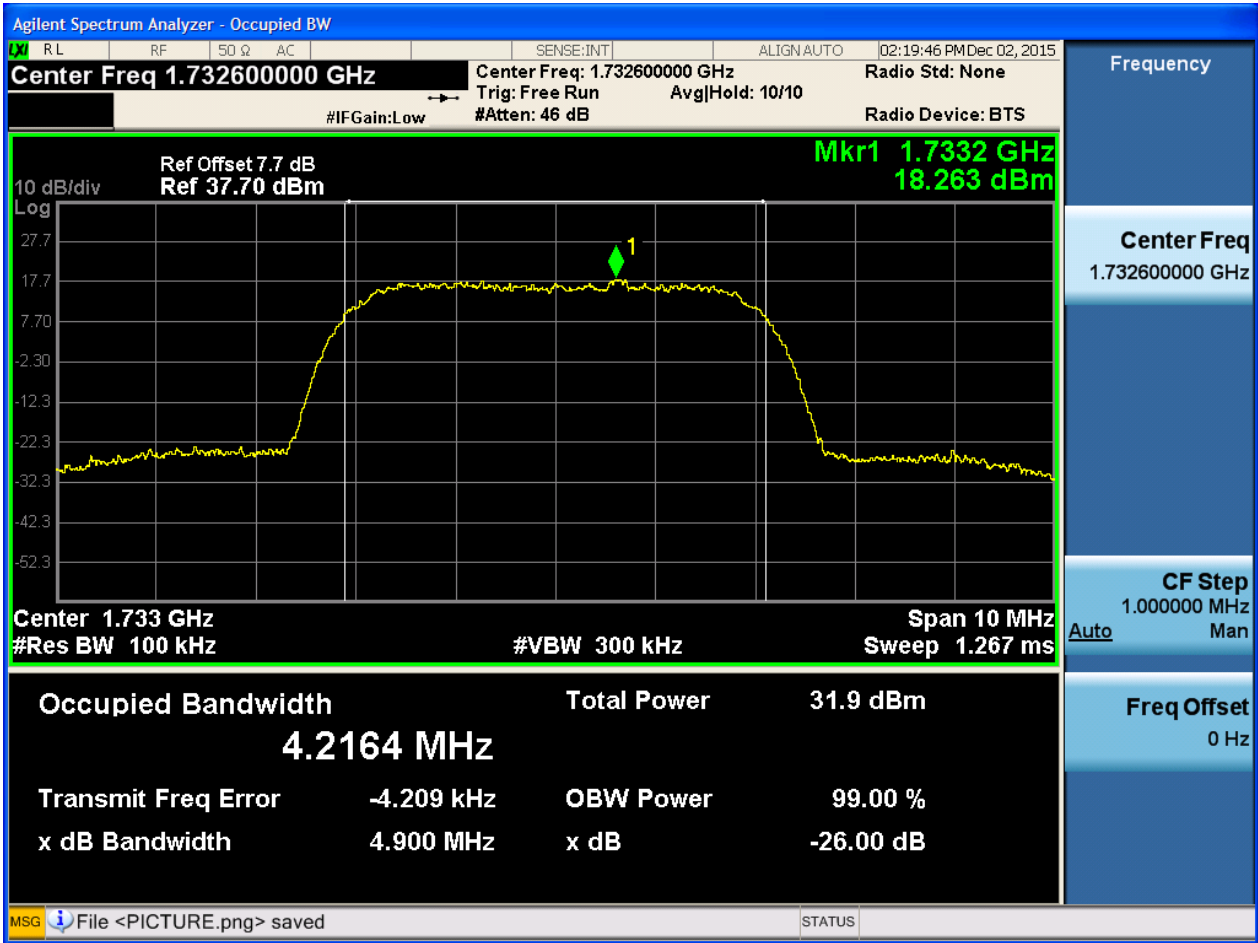
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



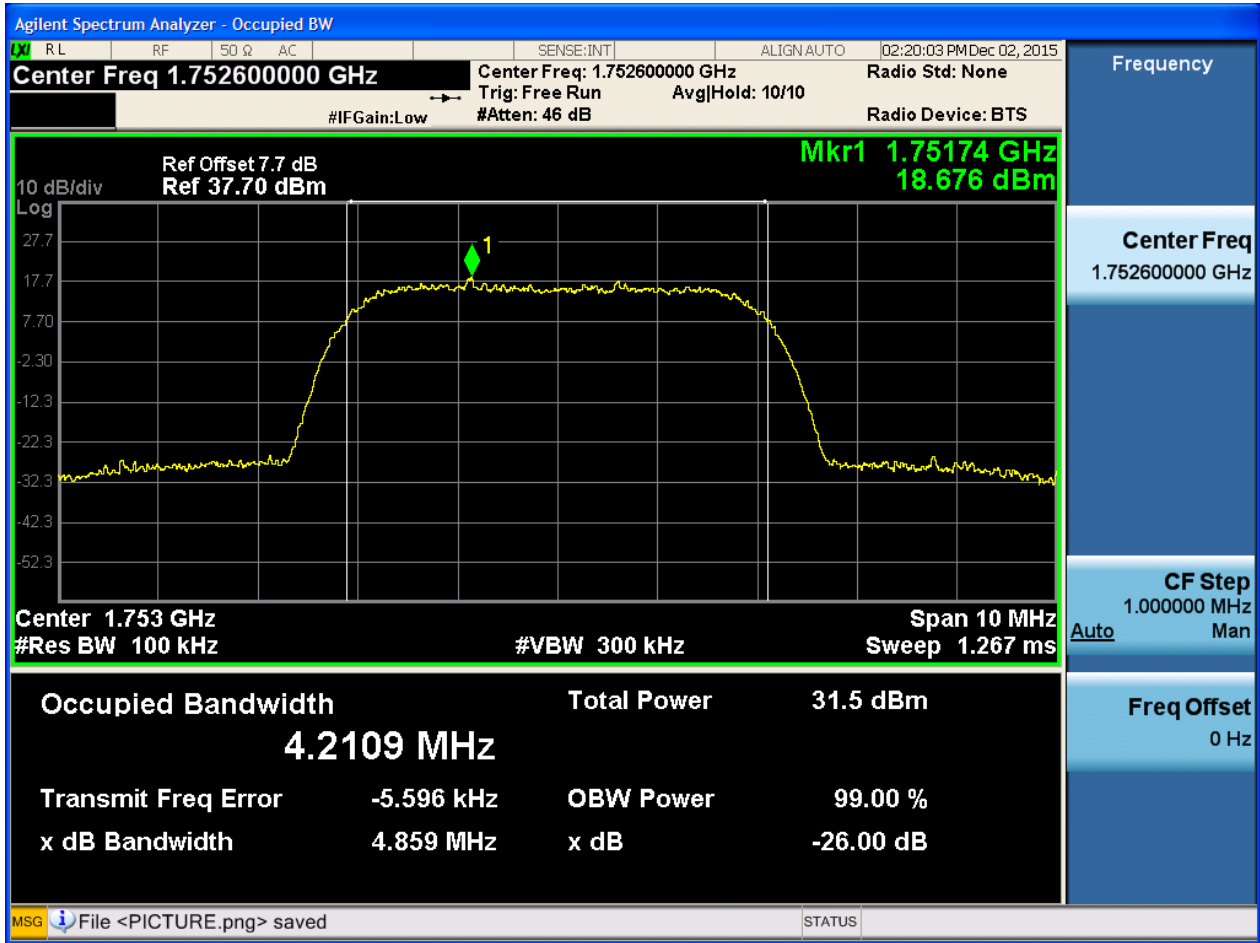


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

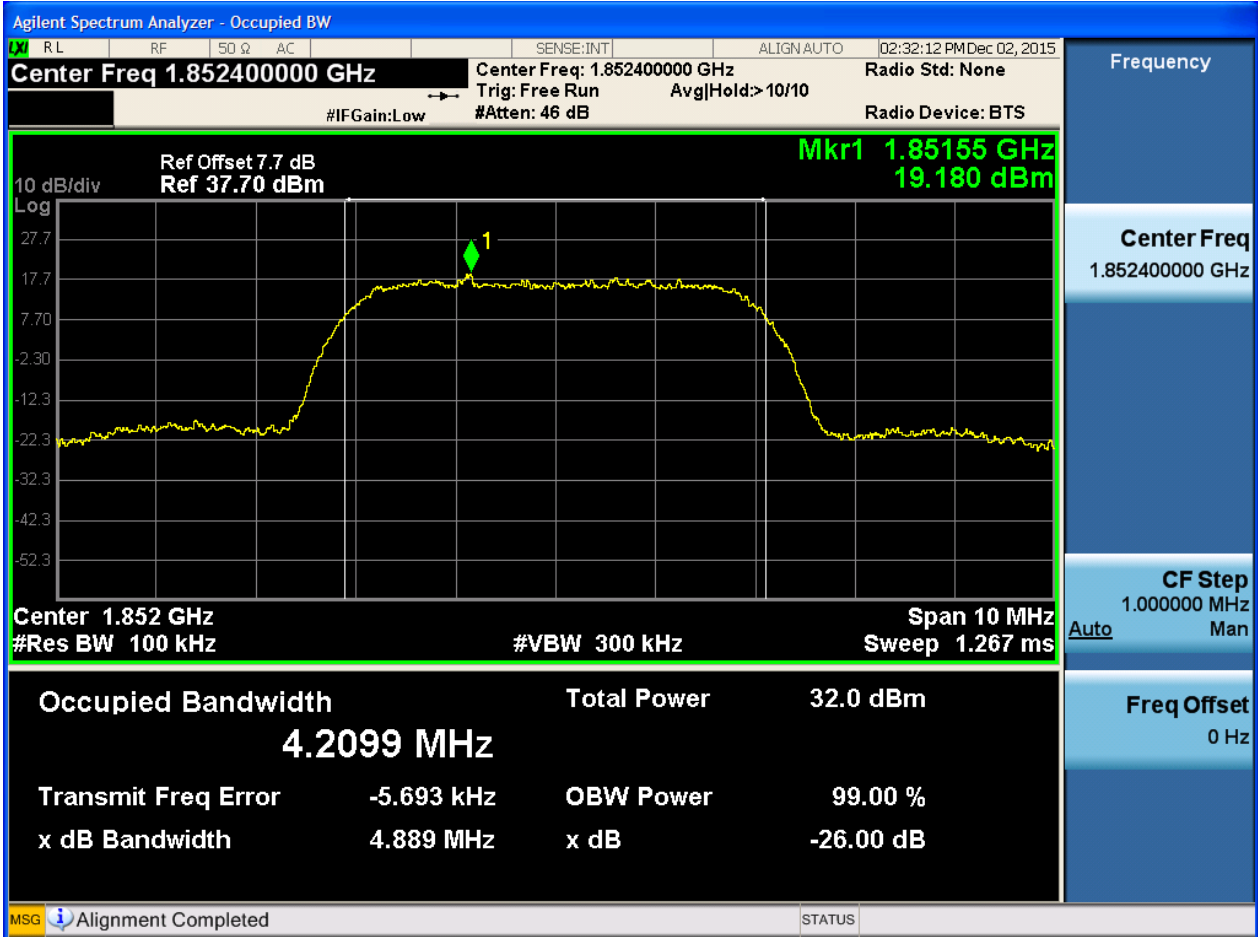




4.1.3 Test Band = WCDMA1900

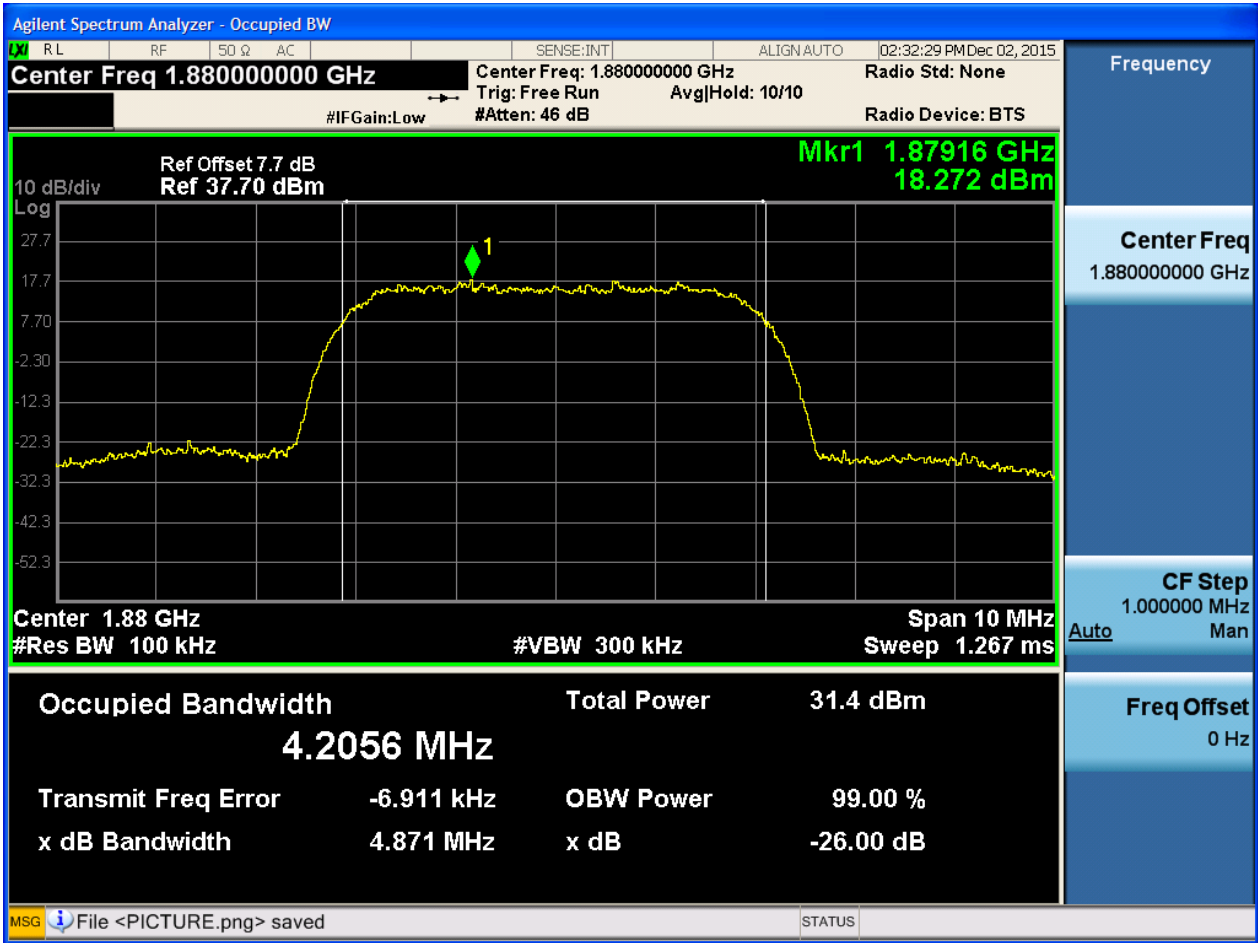
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



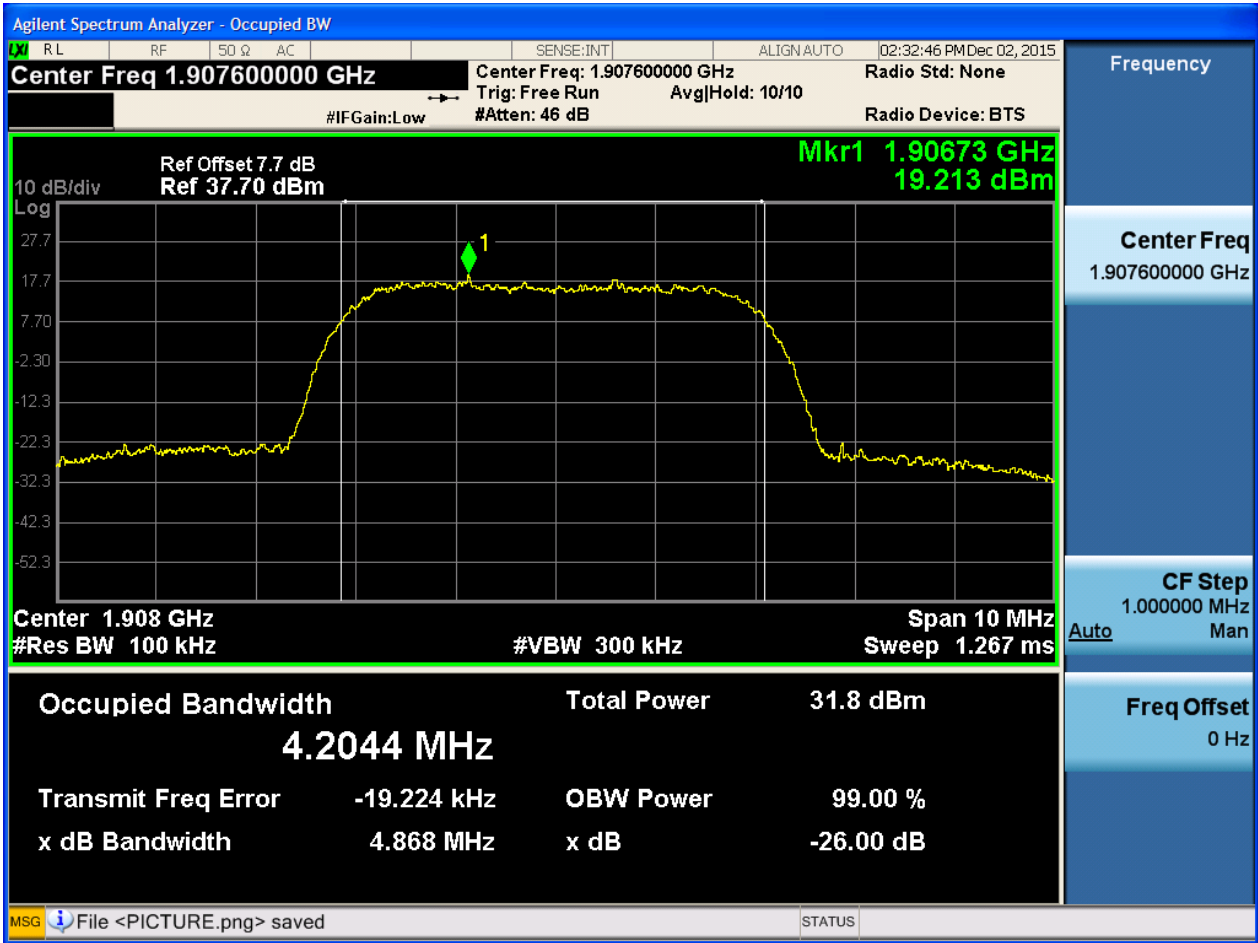


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH







## 5Appendix\_E: Band Edges Compliance

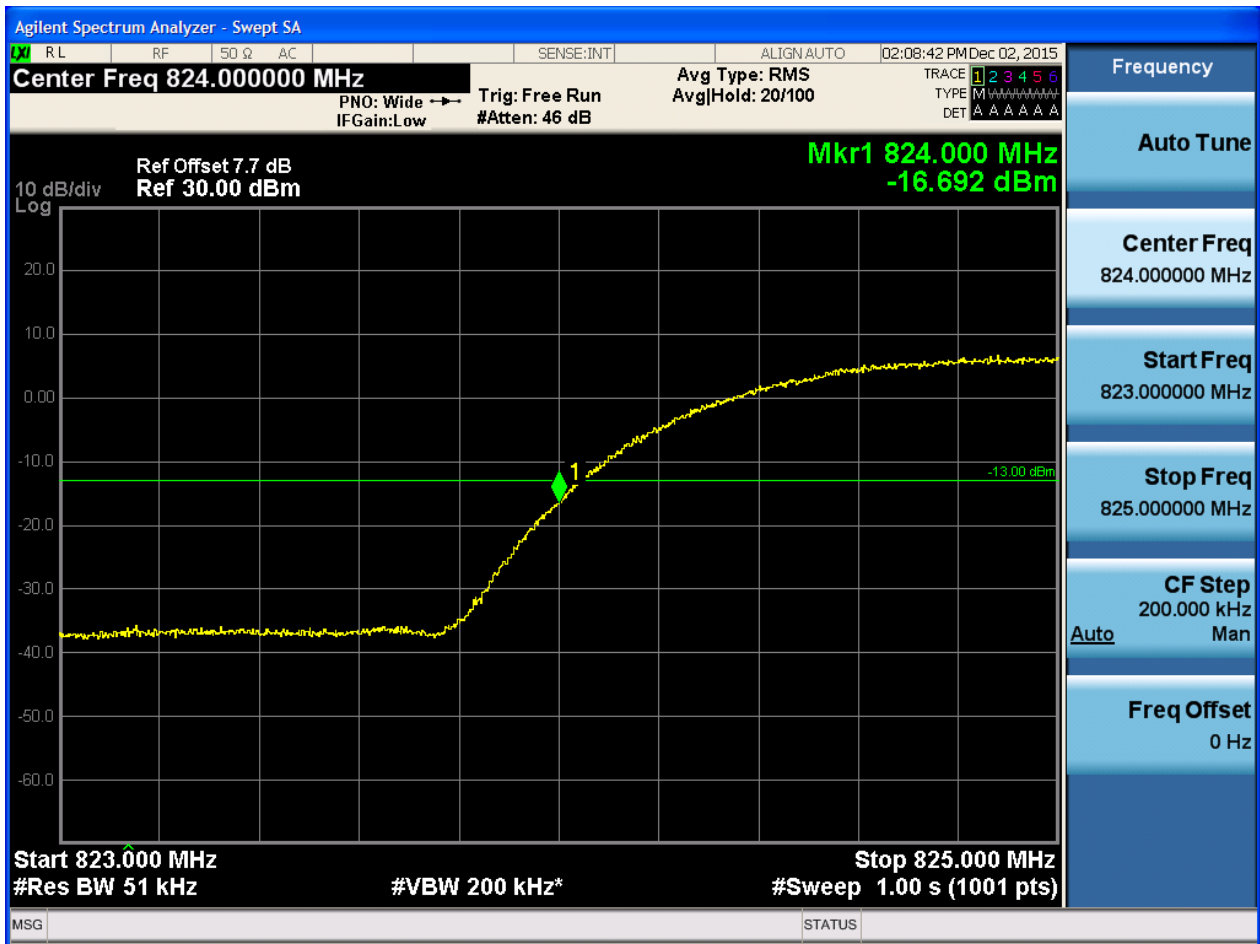
### Part I - Test Plots

#### 5.1 For UMTS

##### 5.1.1 Test Band = WCDMA850

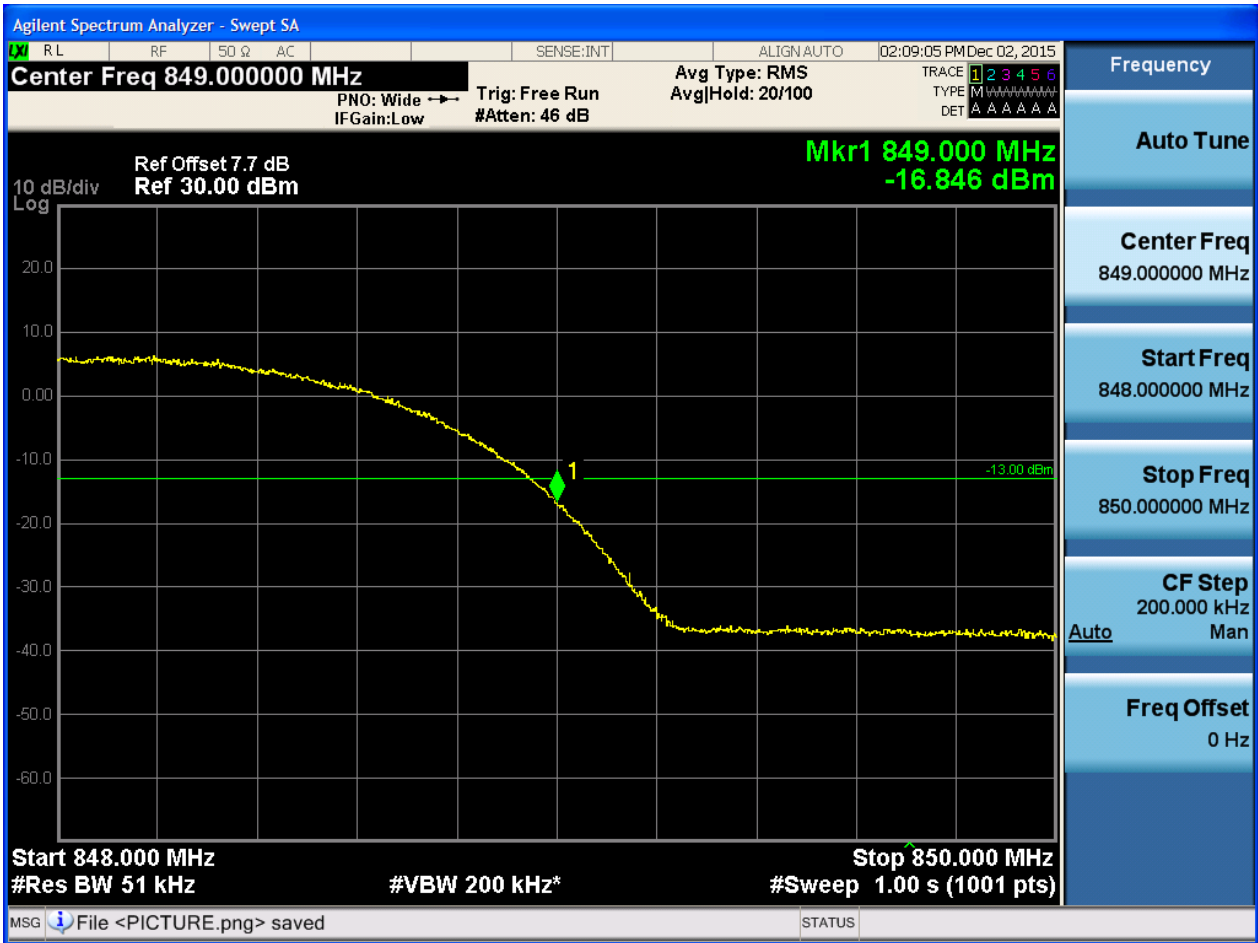
##### 5.1.1.1 Test Mode = UMTS/TM1

##### 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.

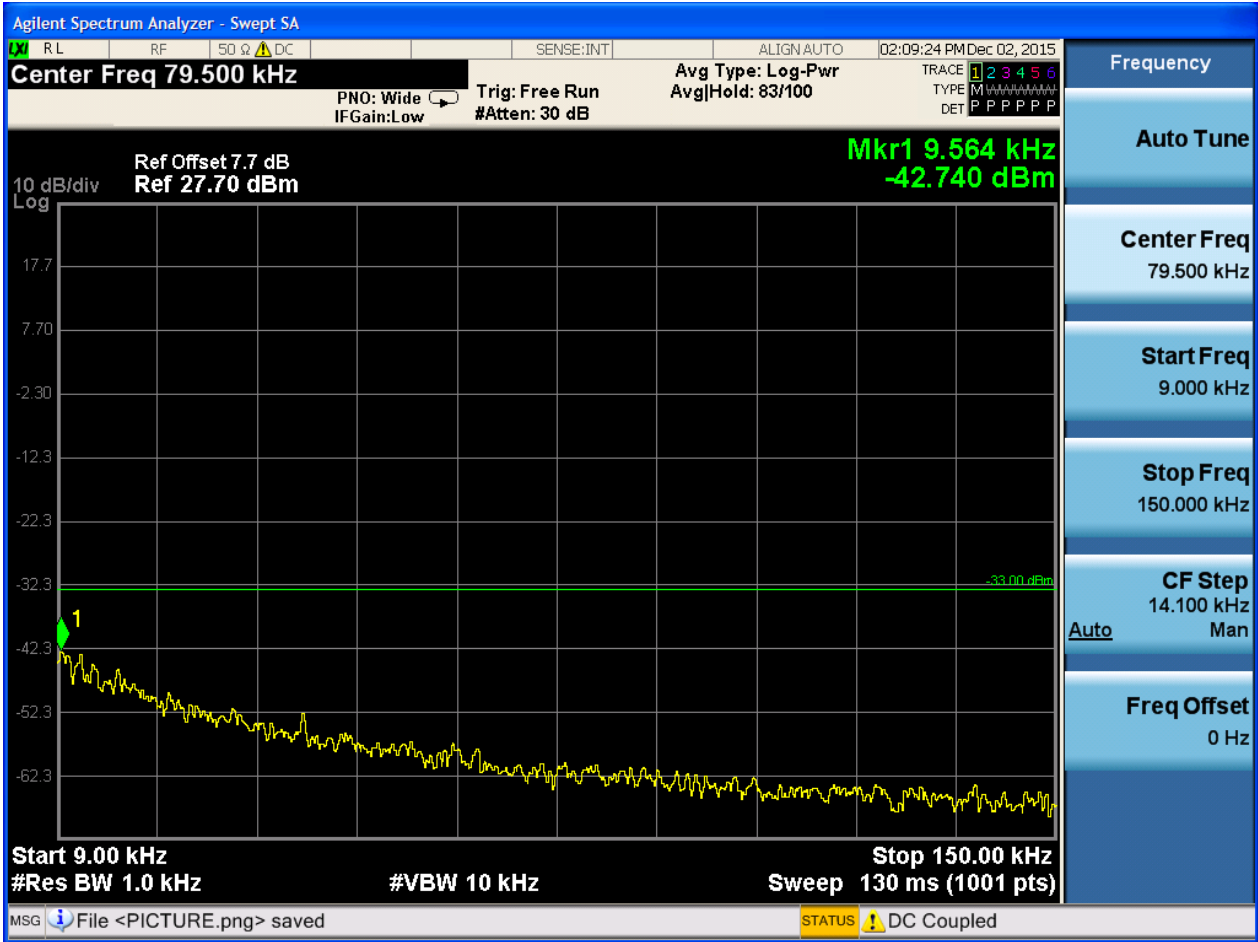
### Part I - Test Plots

#### 6.1 For UMTS

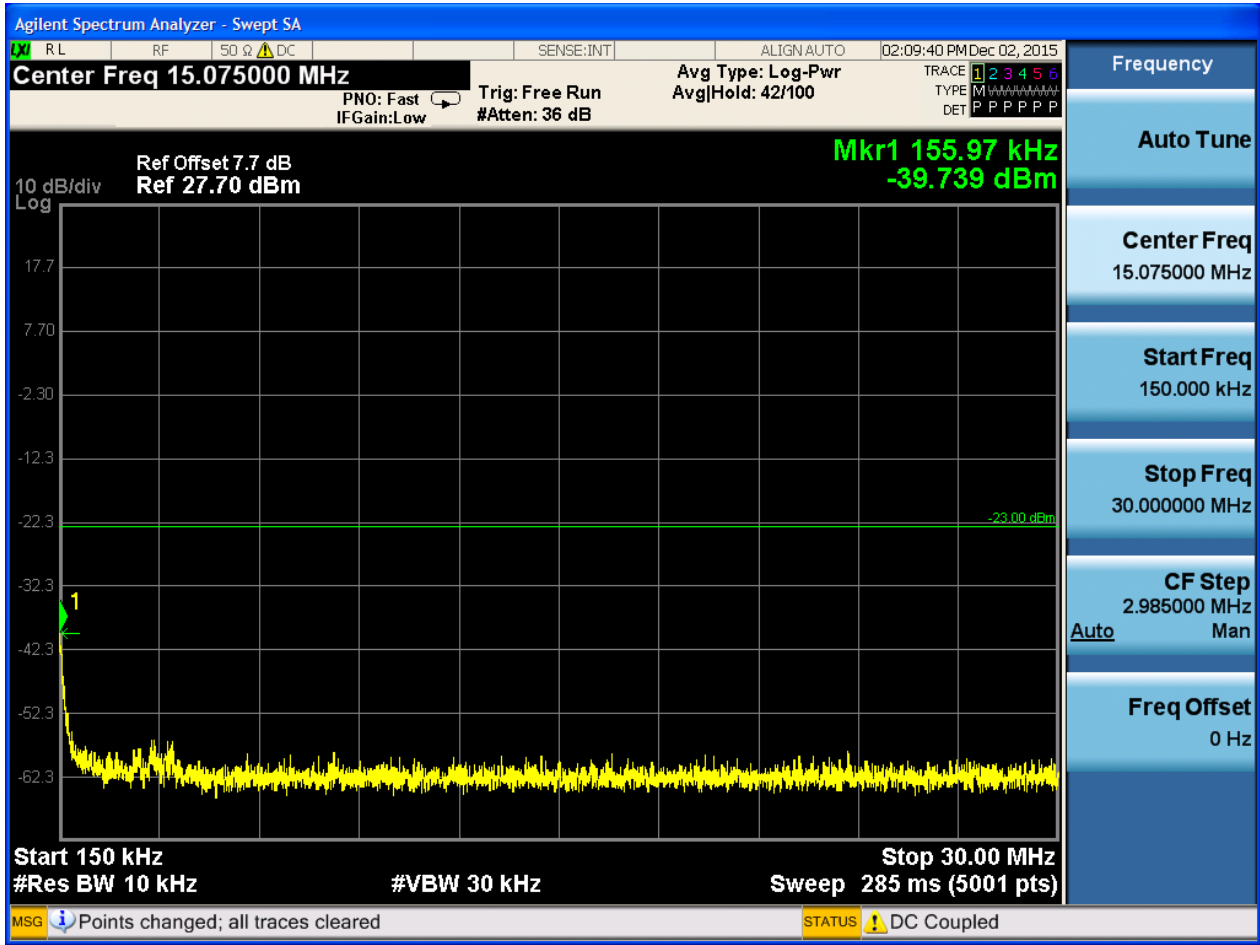
##### 6.1.1 Test Band = WCDMA850

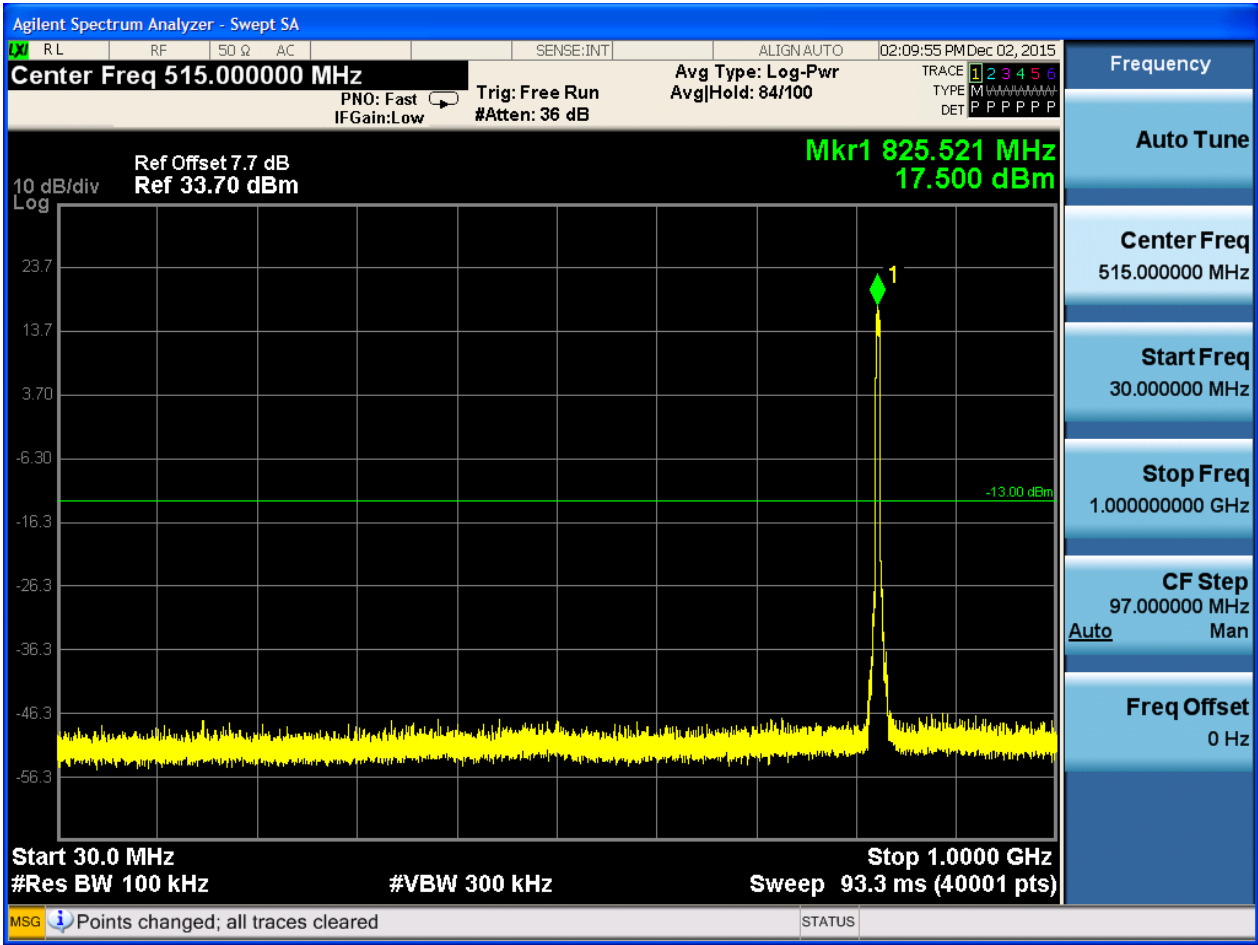
##### 6.1.1.1 Test Mode = UMTS/TM1

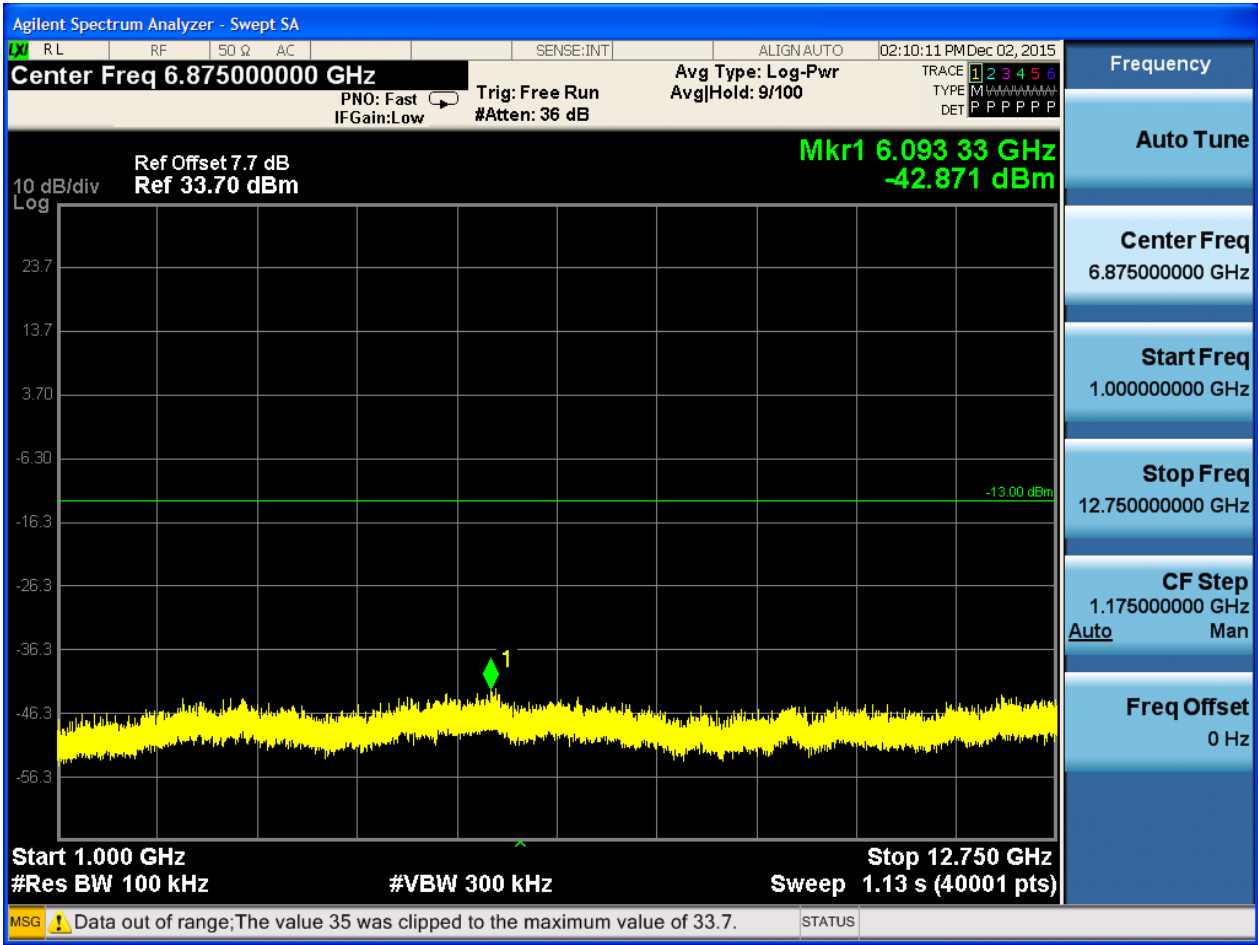
##### 6.1.1.1.1 Test Channel = LCH





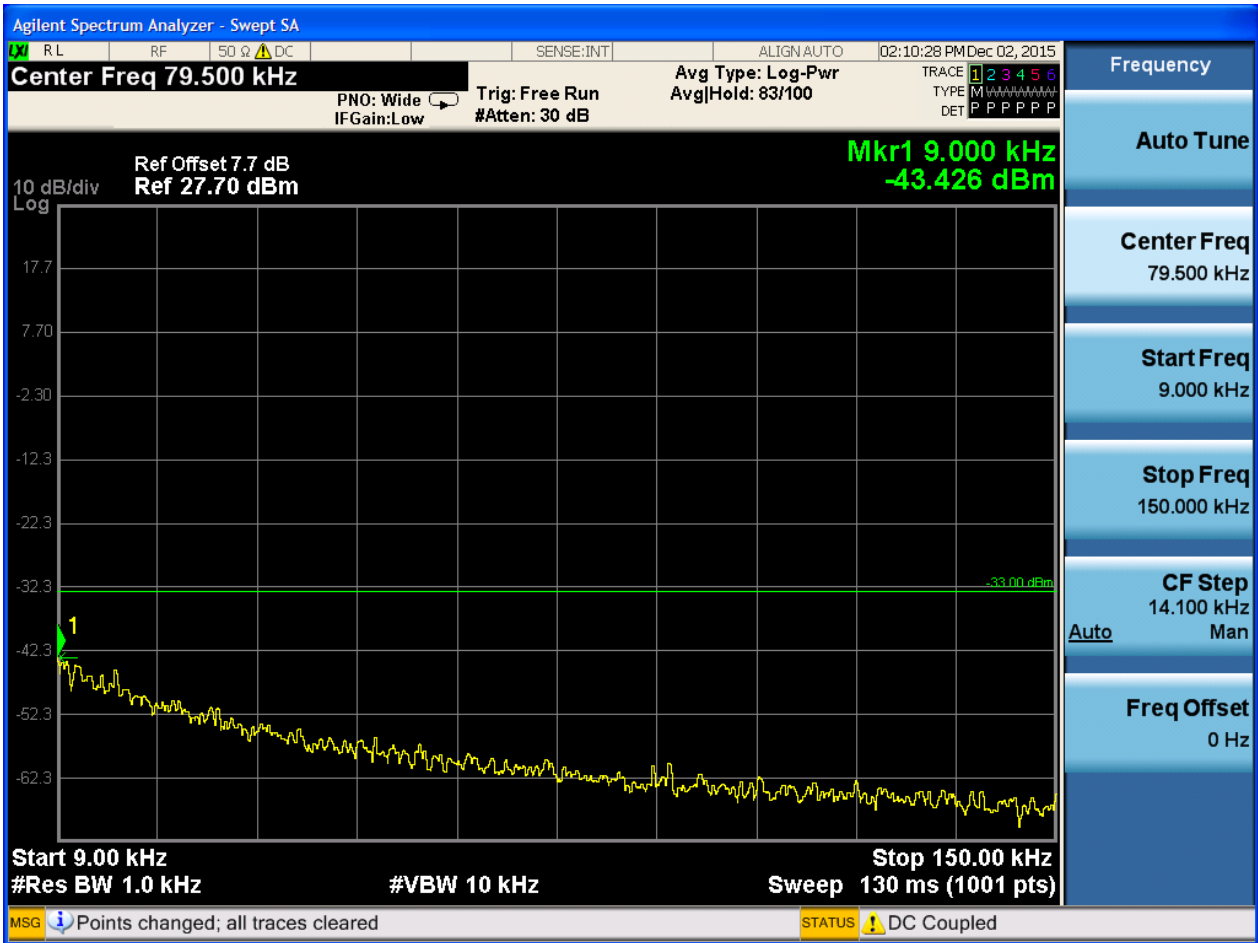


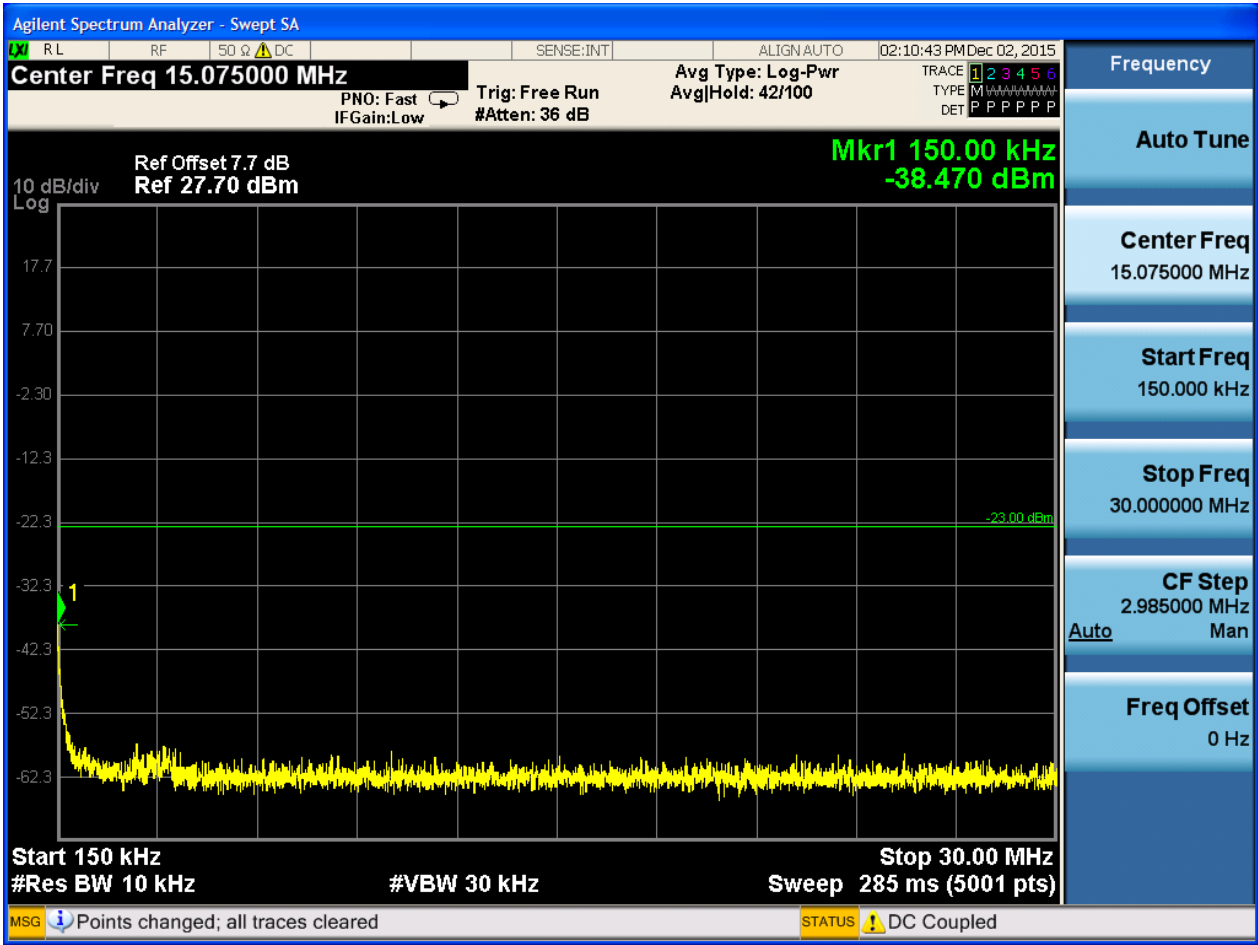


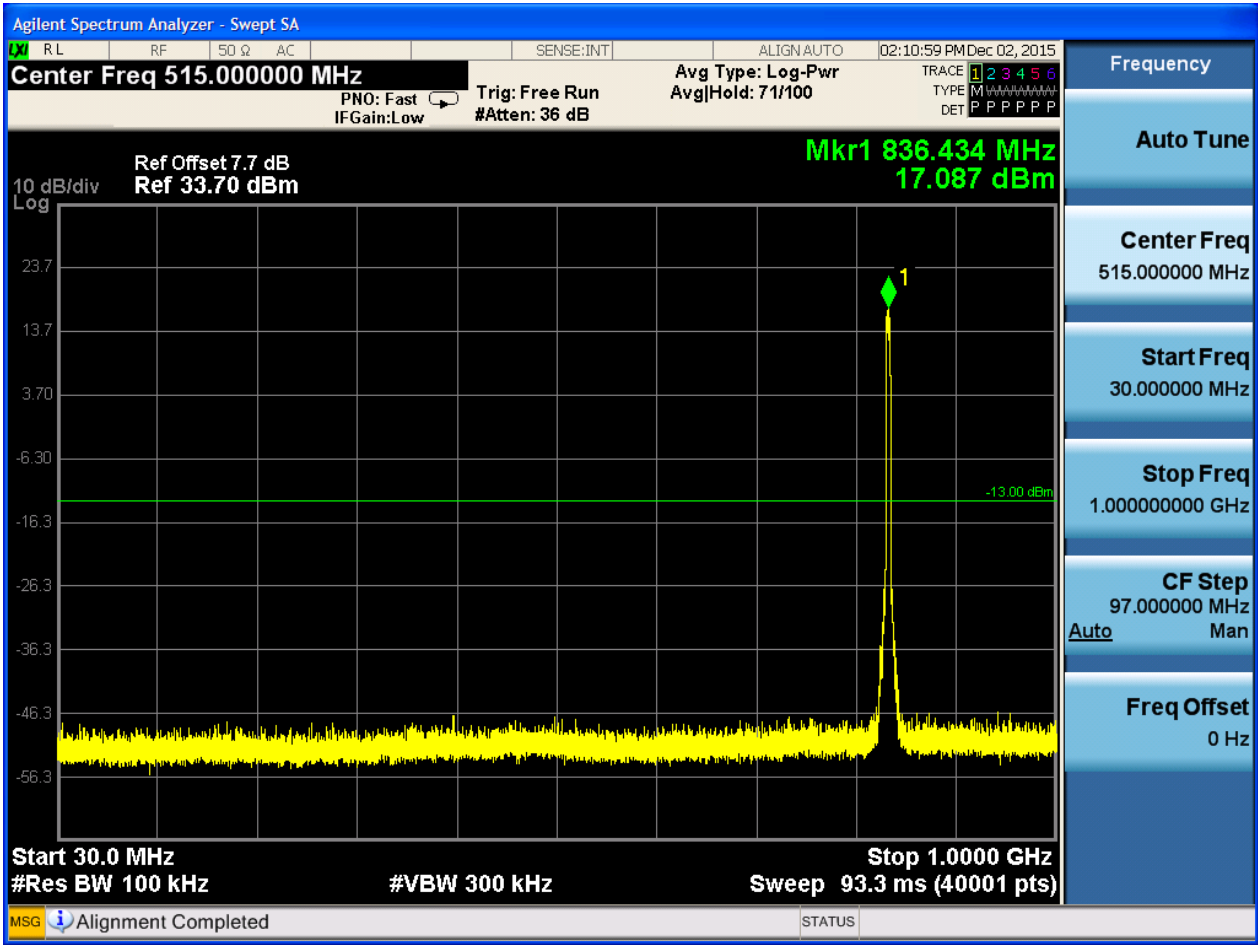


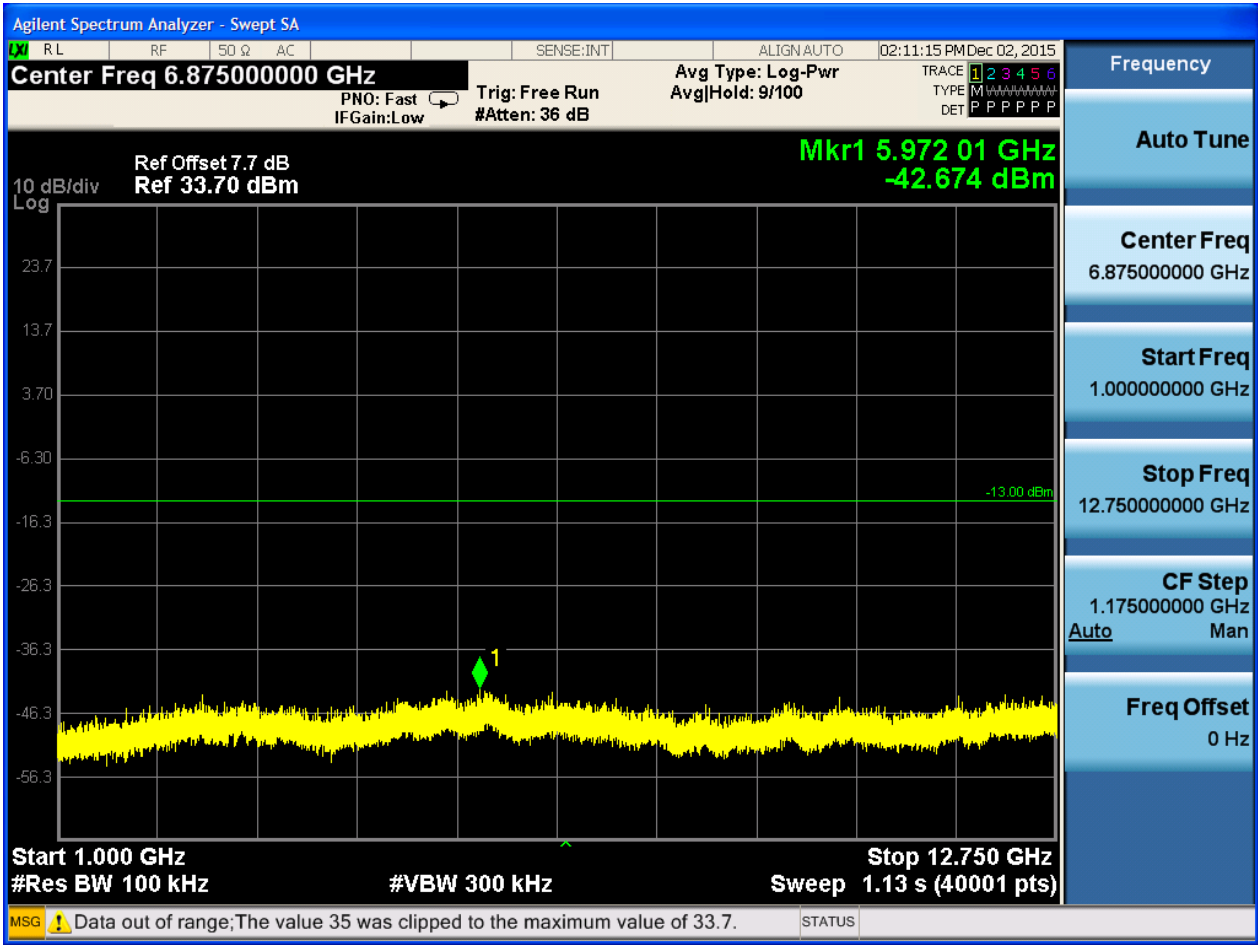


6.1.1.1.2 Test Channel = MCH

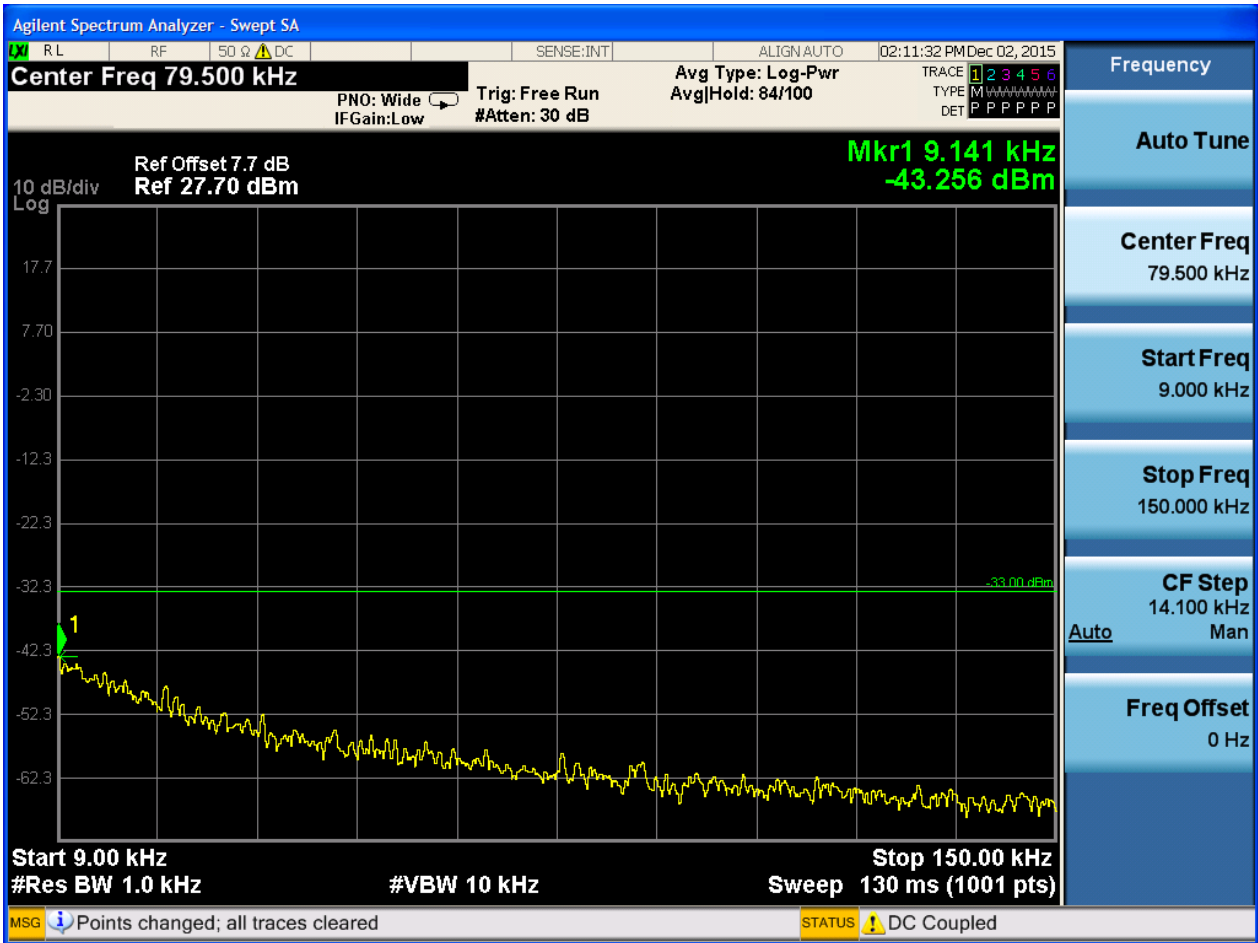




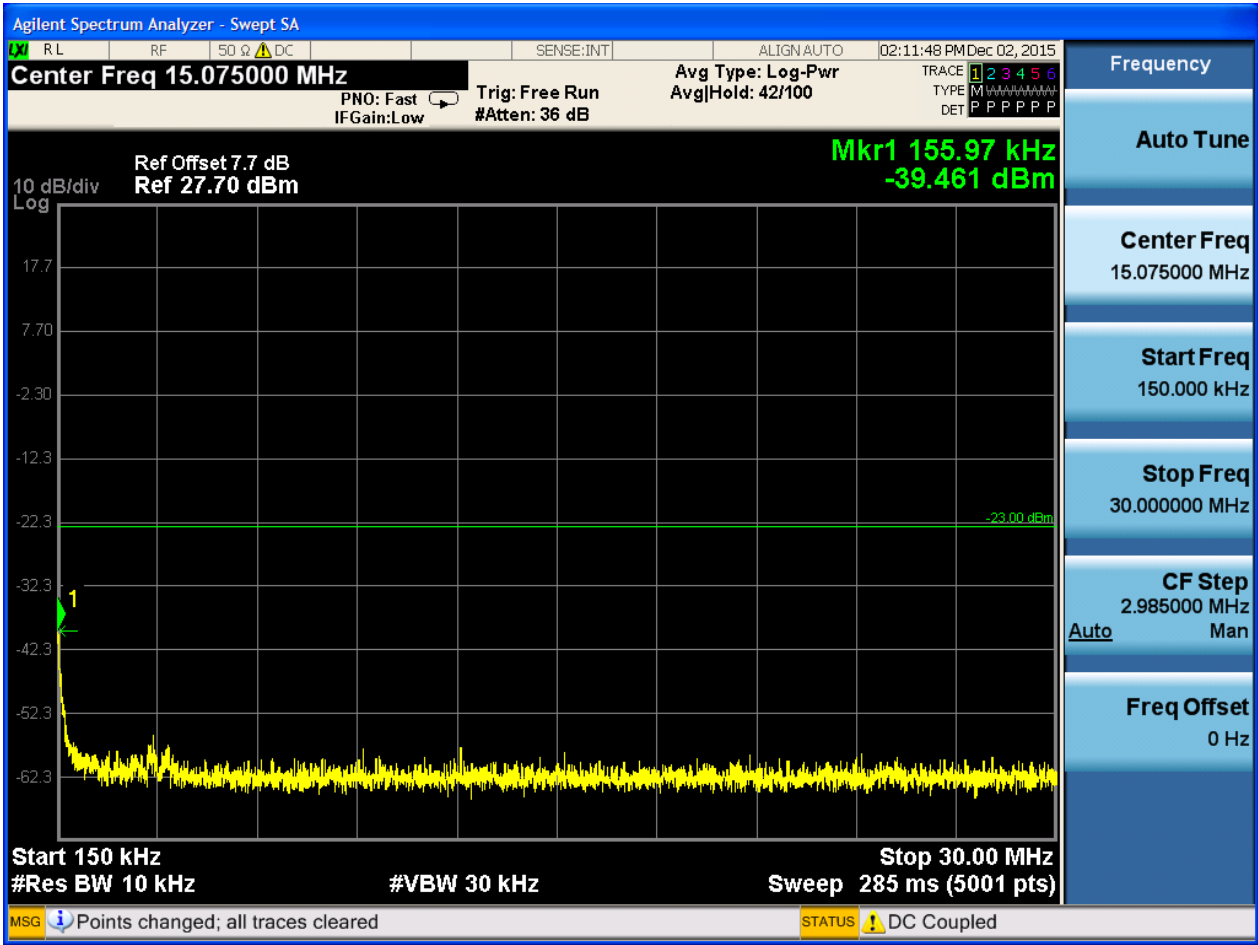


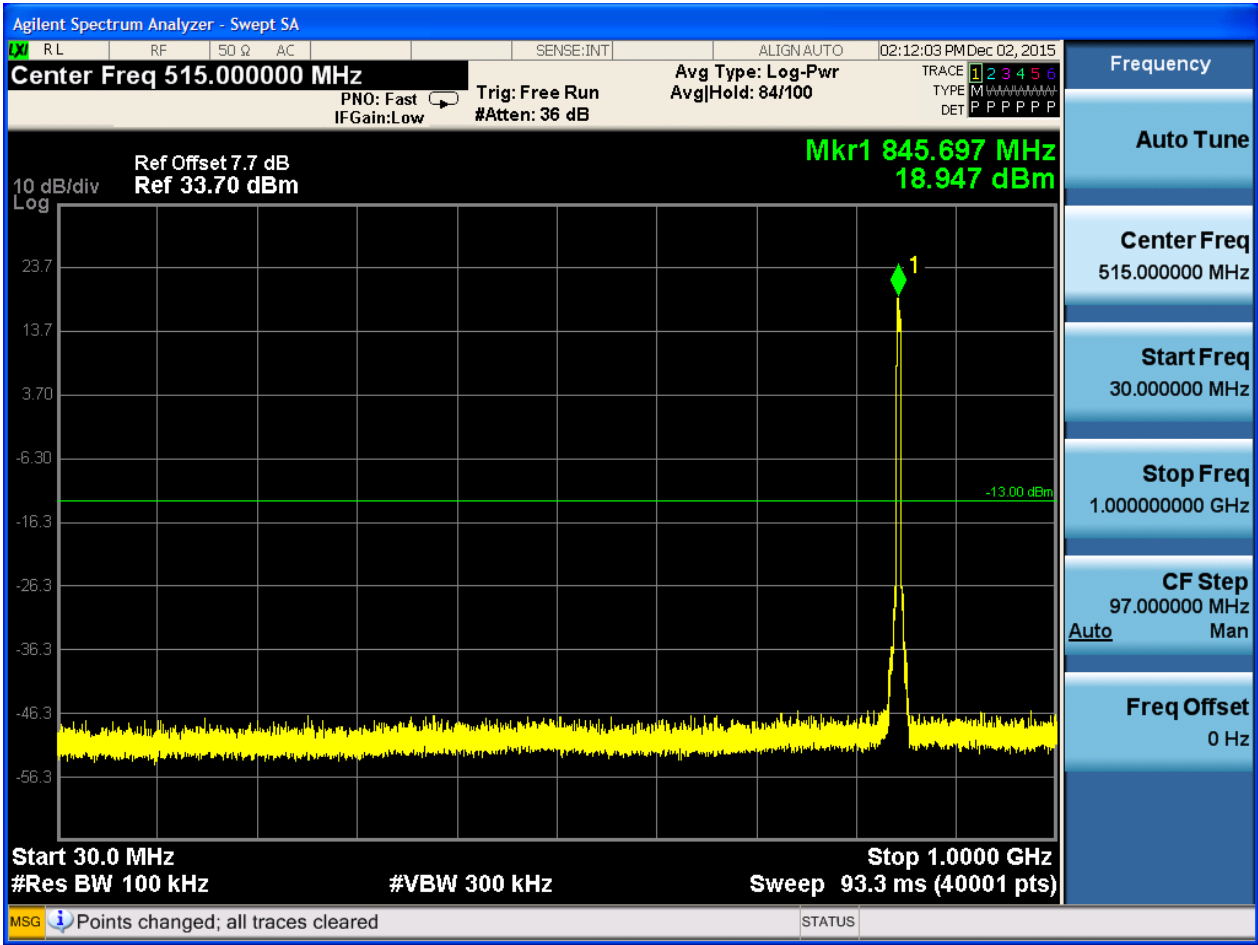


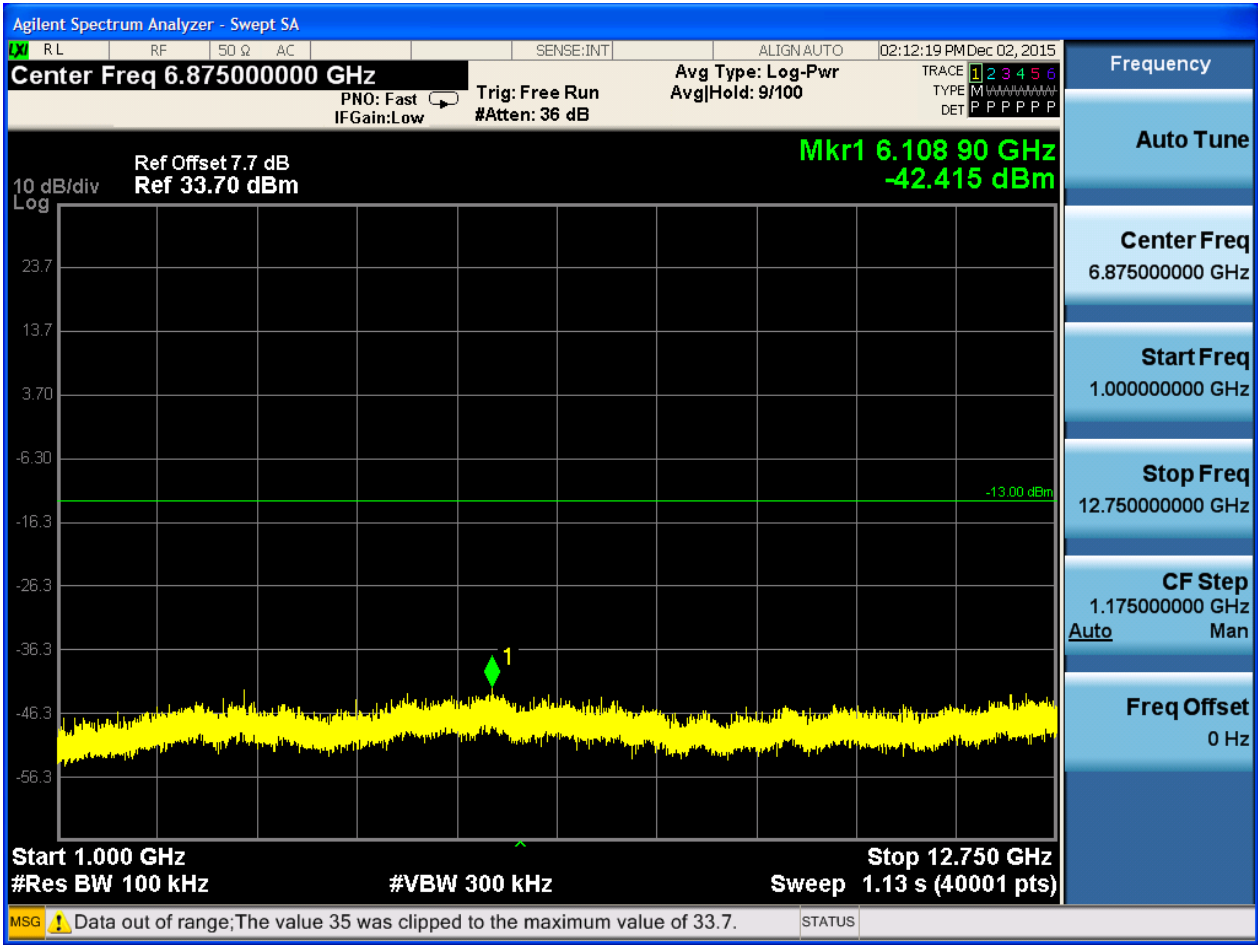
6.1.1.1.3 Test Channel = HCH









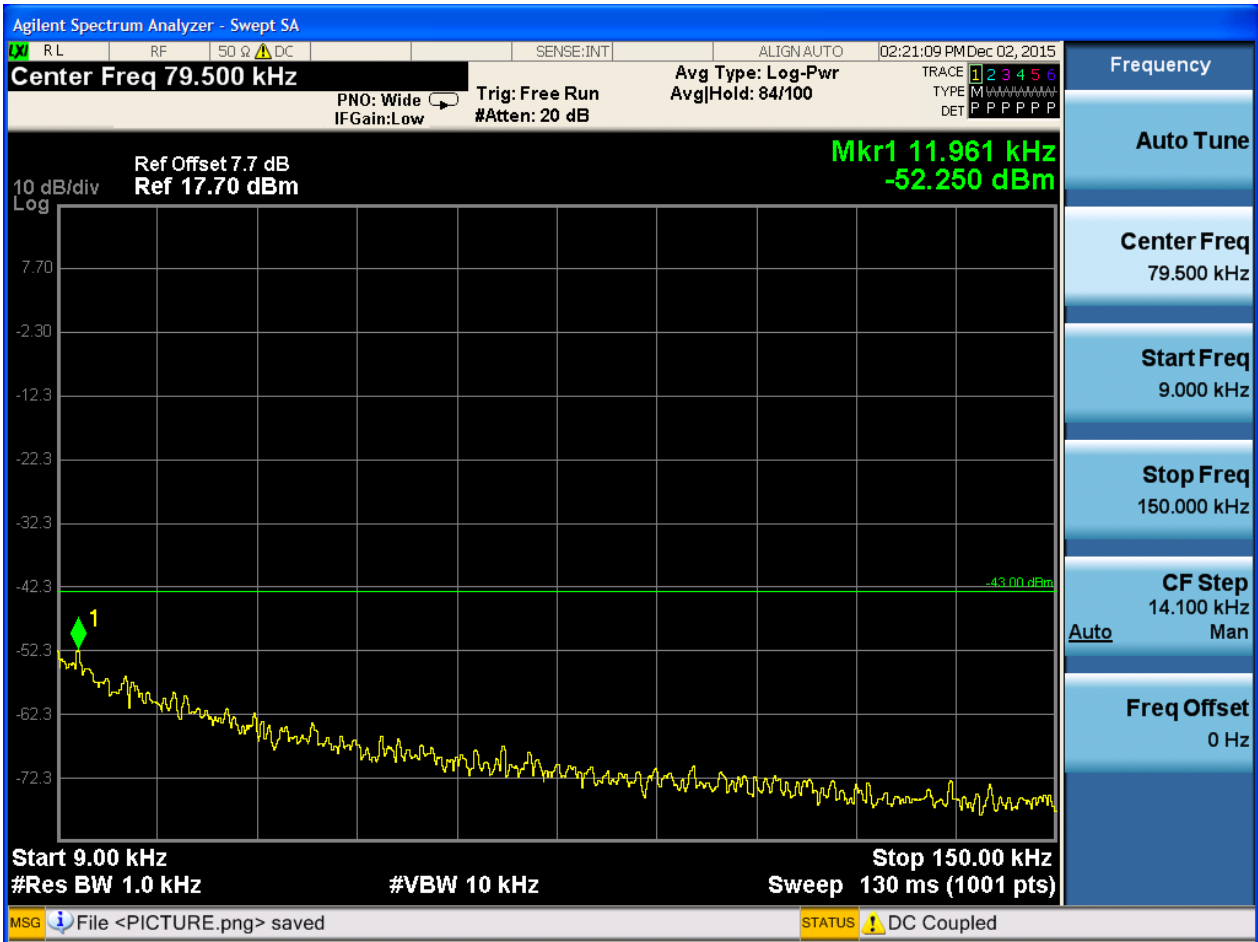


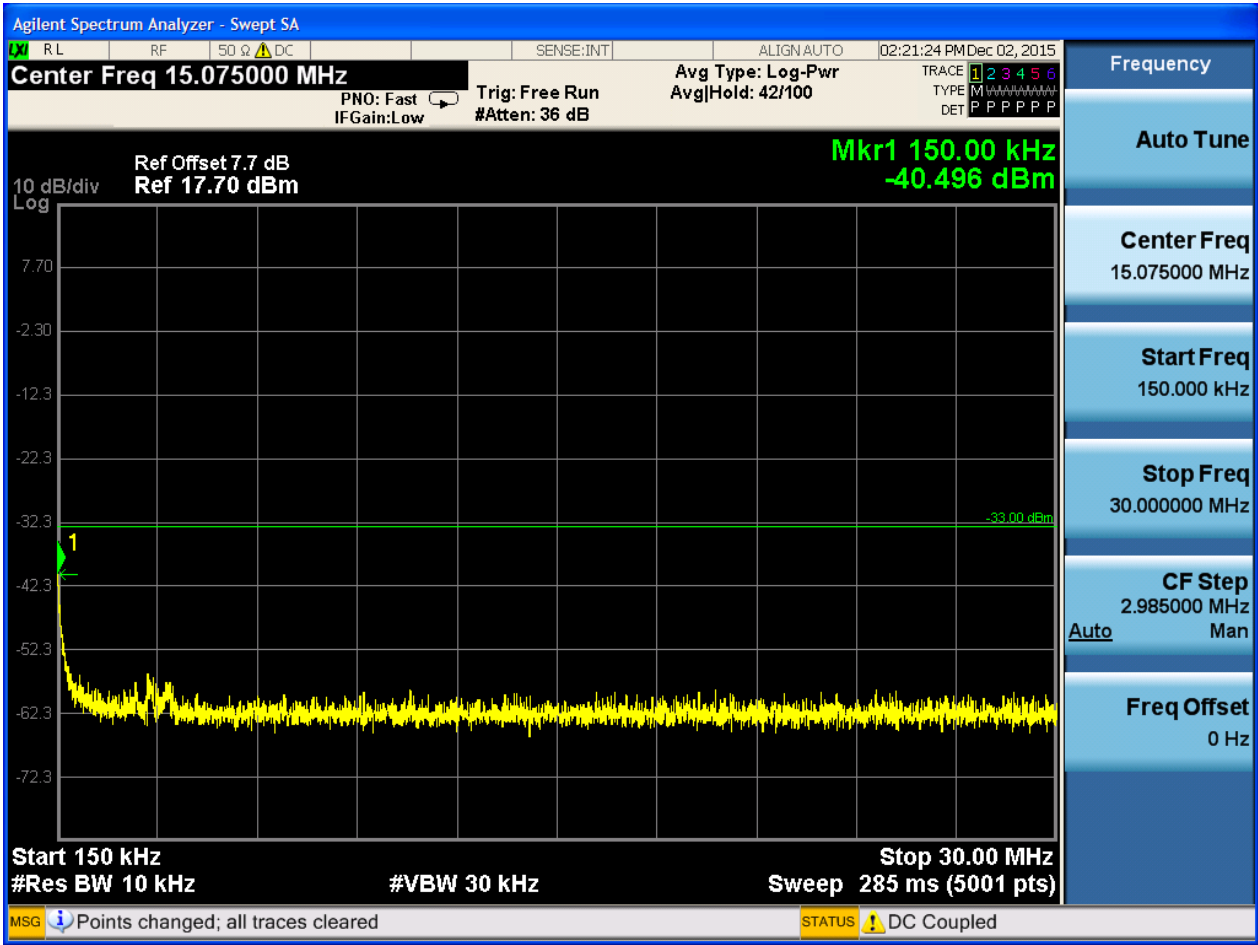


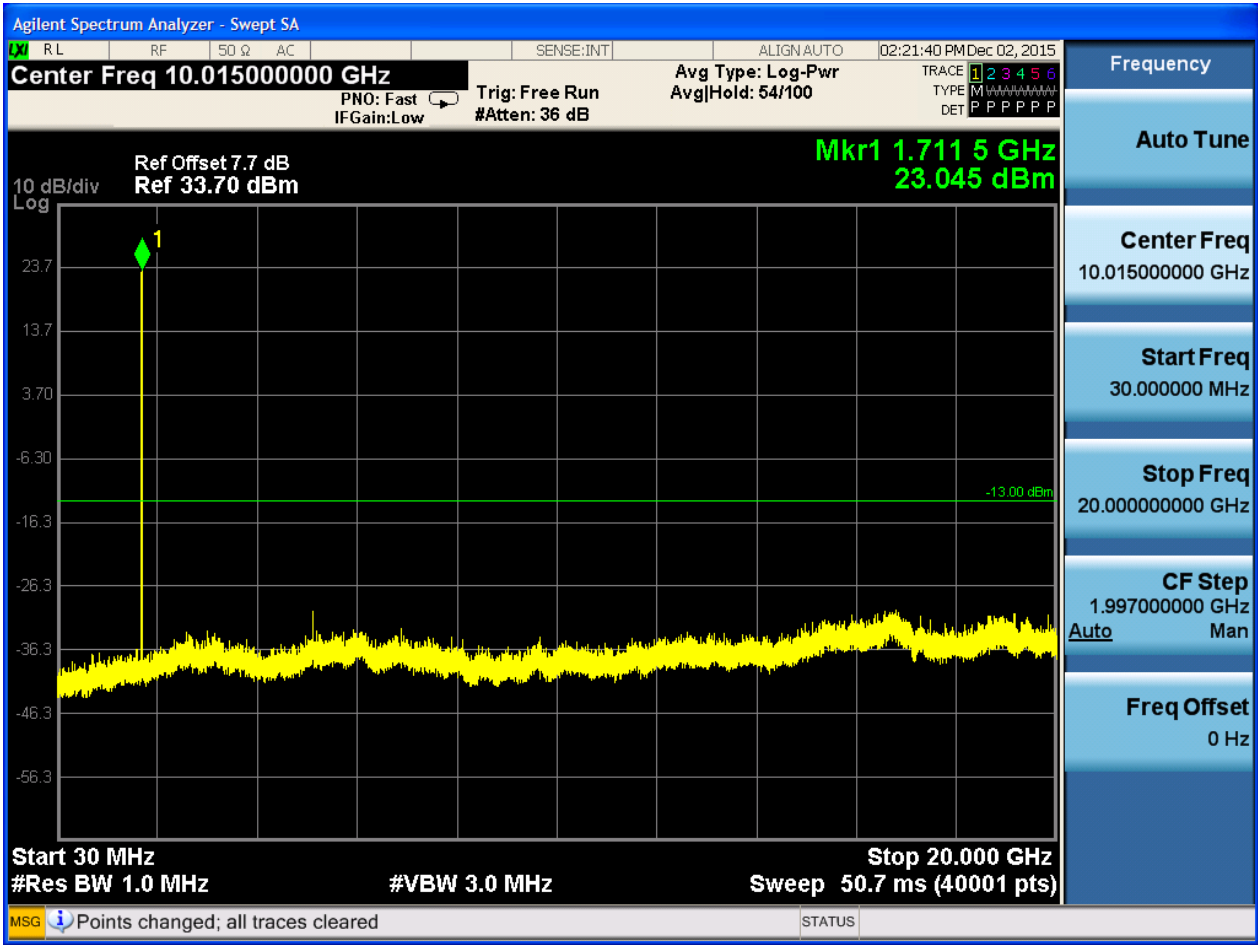
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

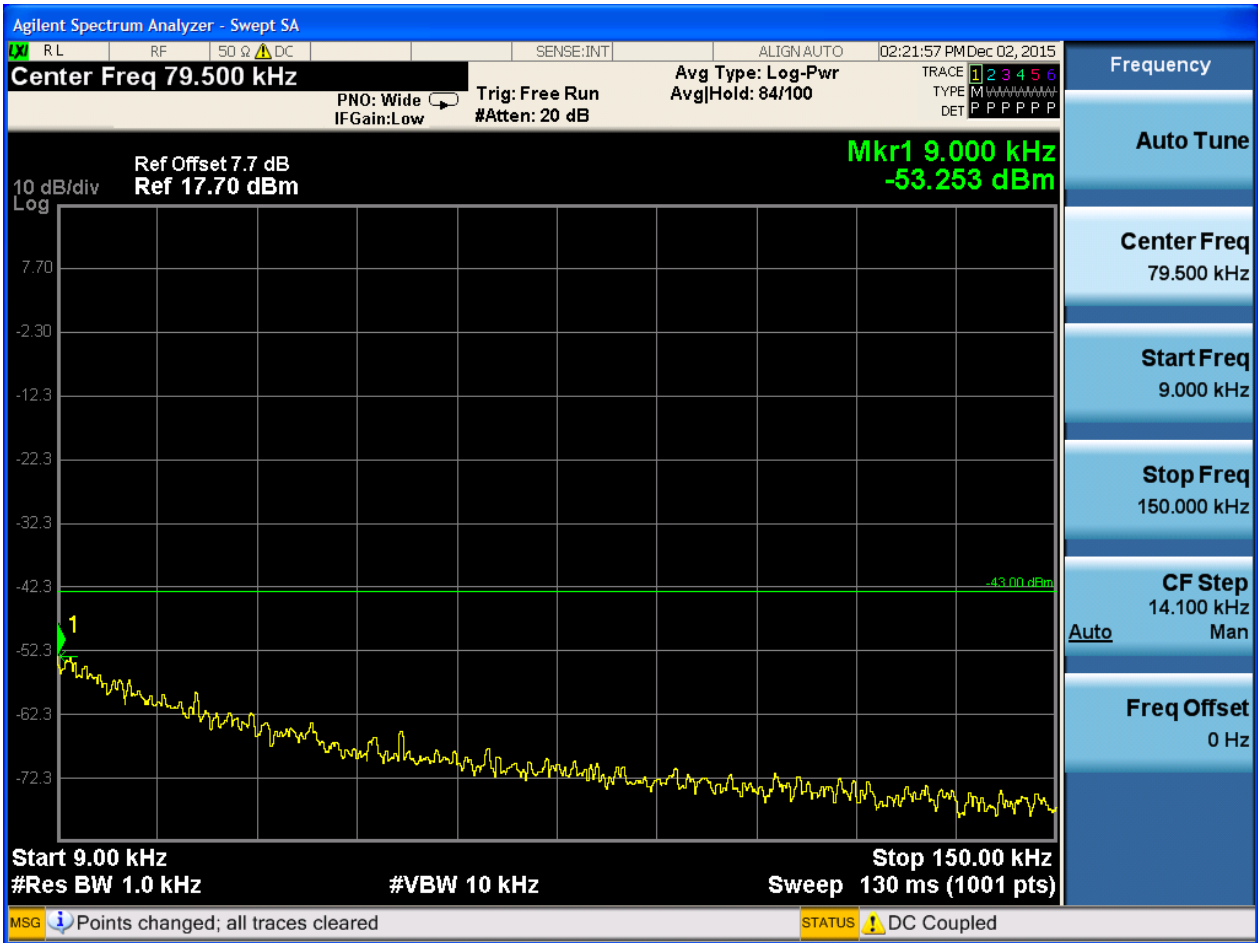
6.1.2.1.1 Test Channel = LCH

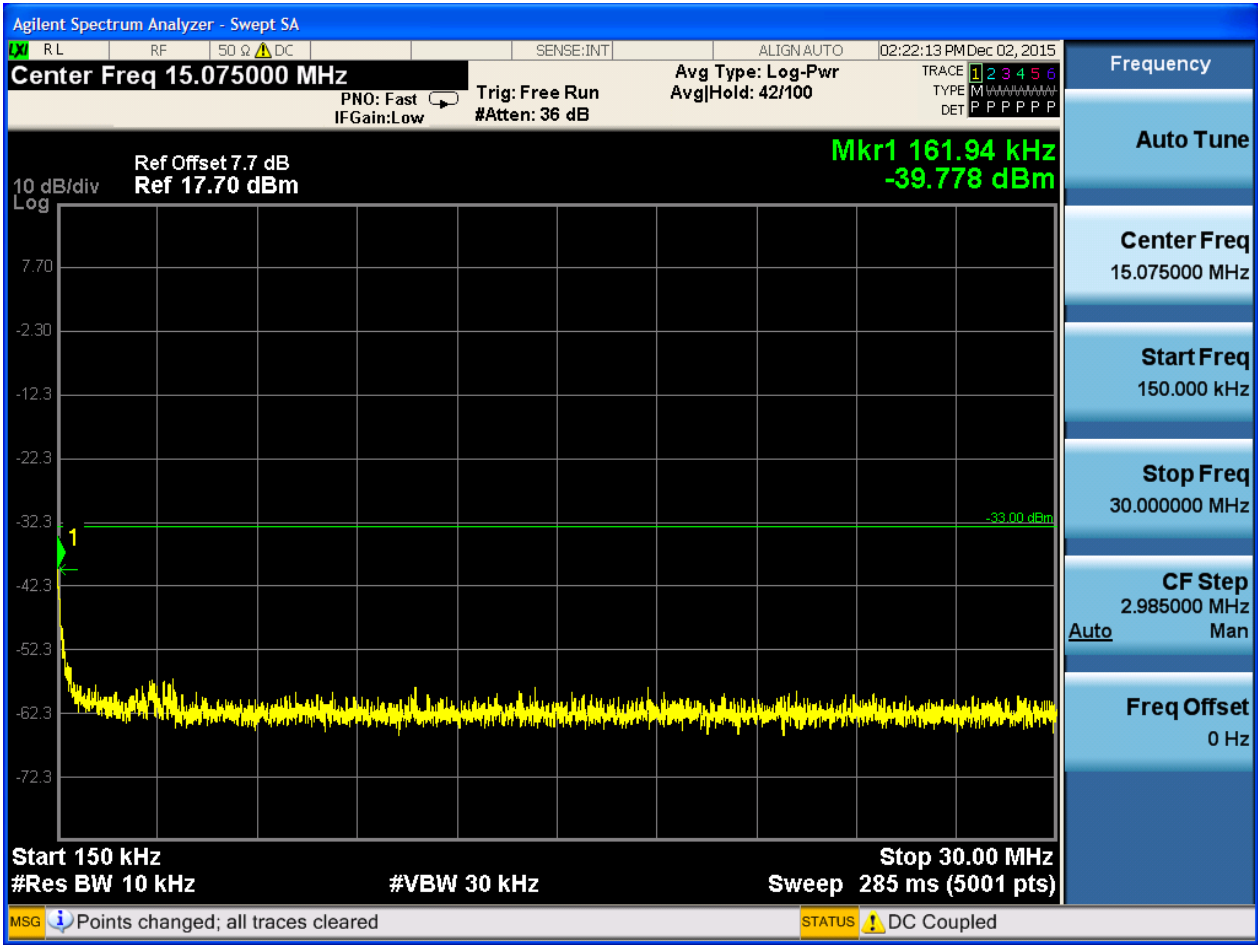




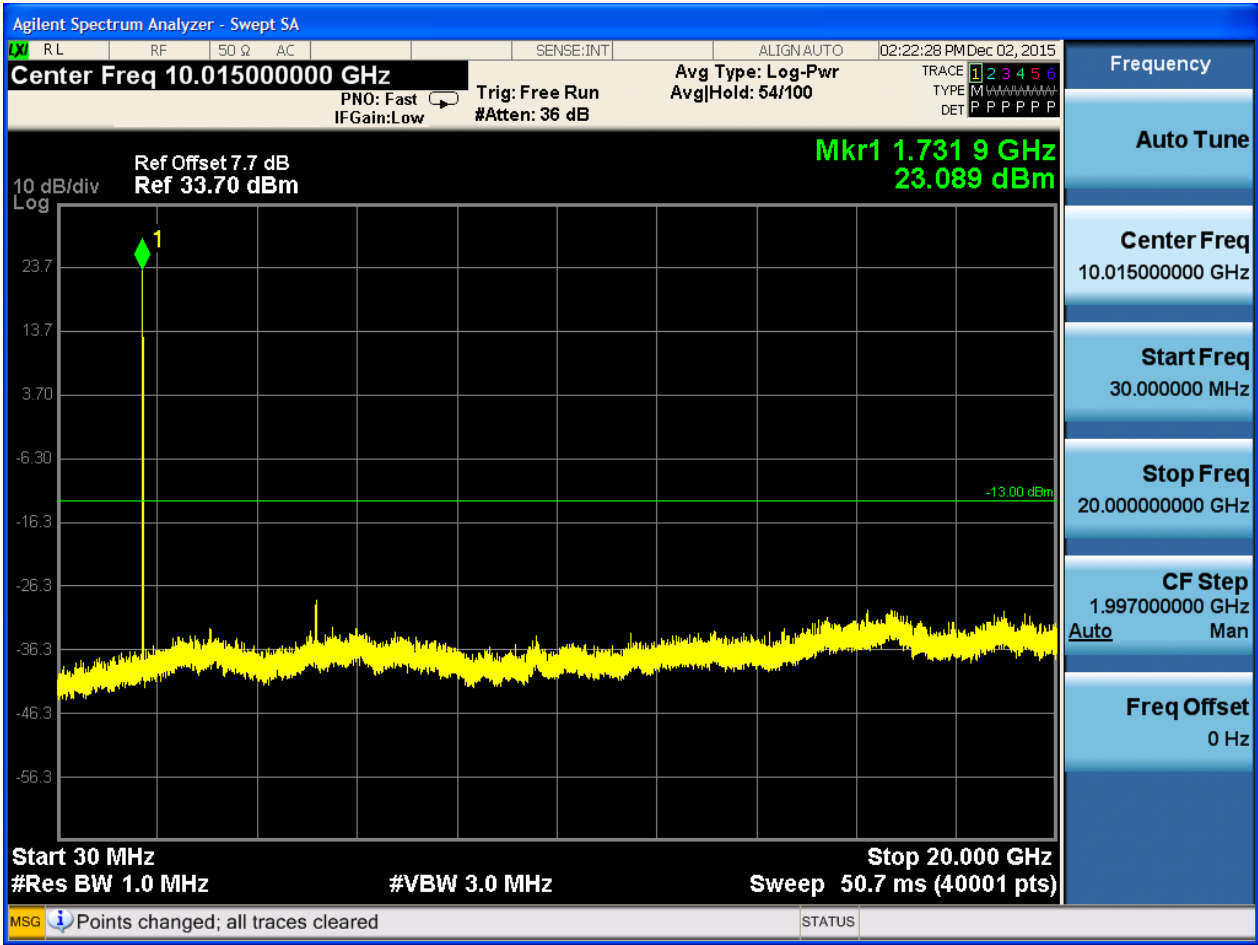


6.1.2.1.2 Test Channel = MCH

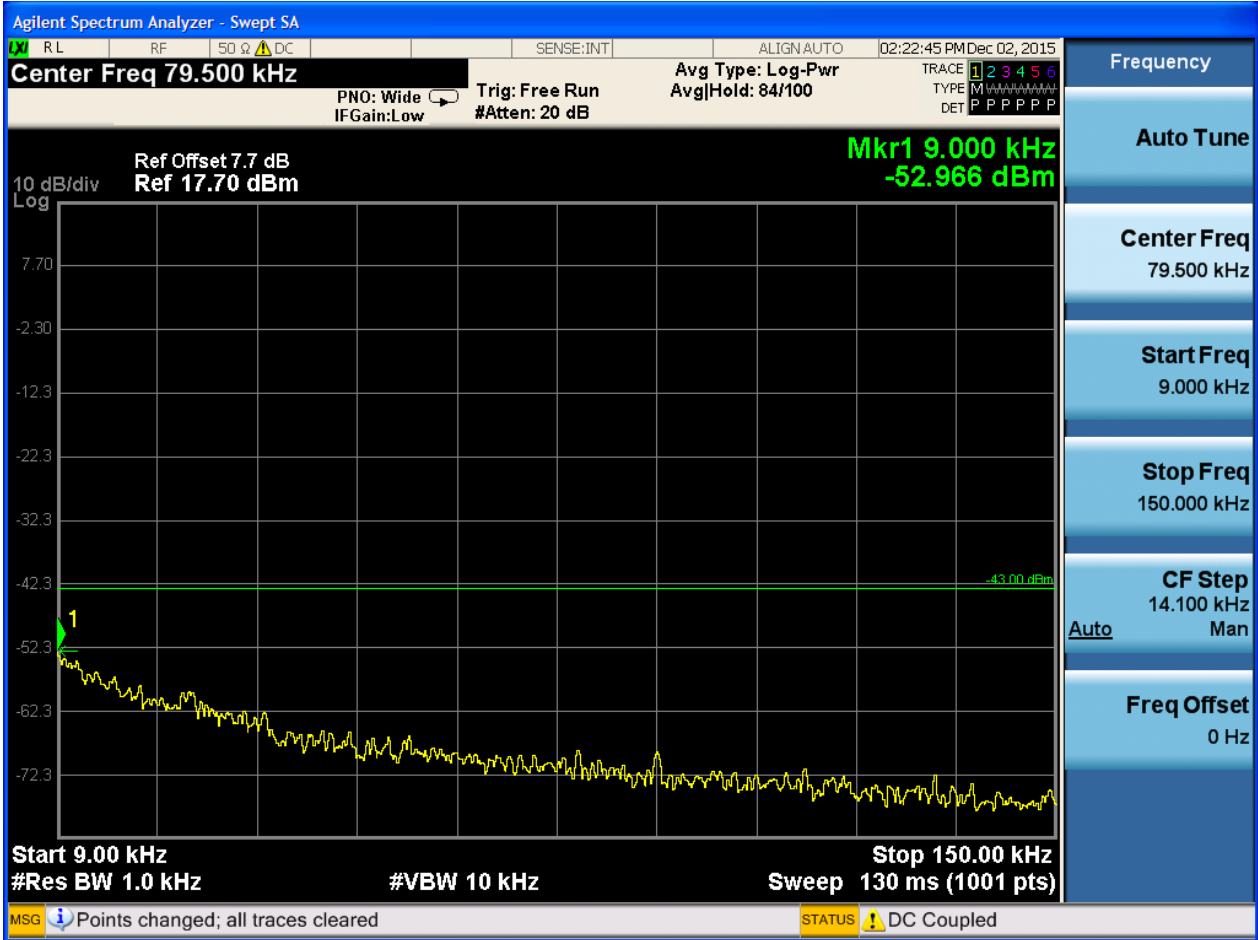


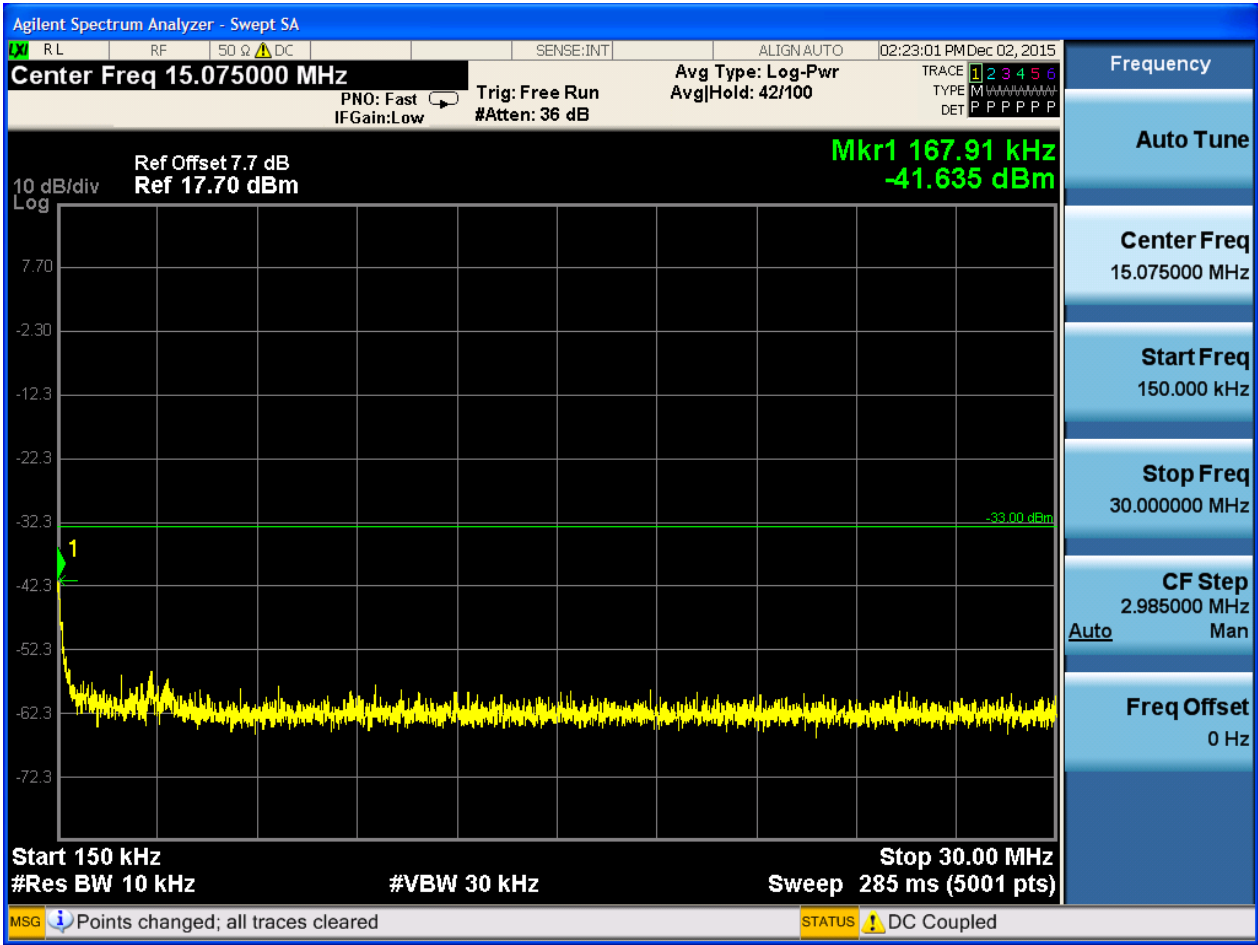


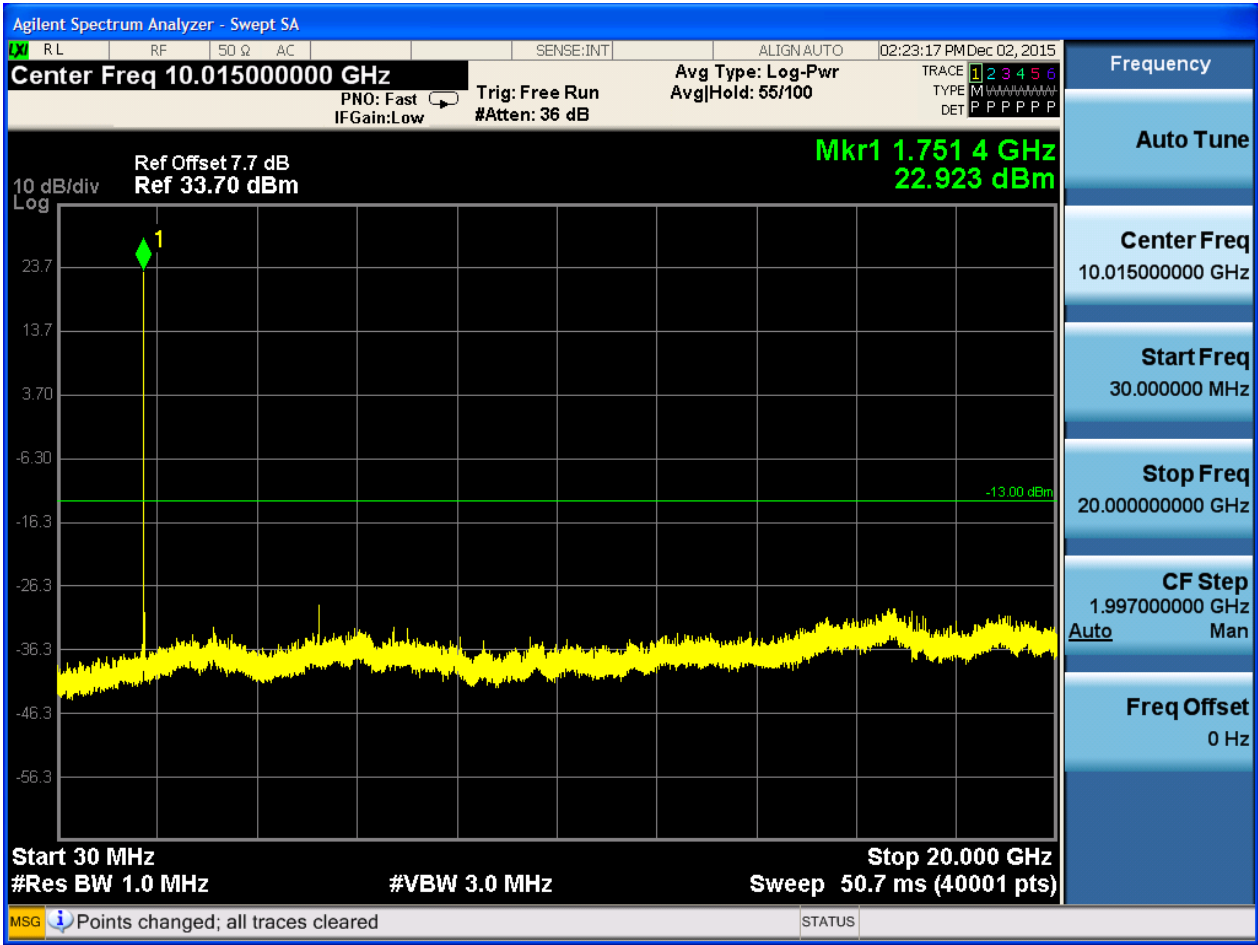




6.1.2.1.3 Test Channel = HCH





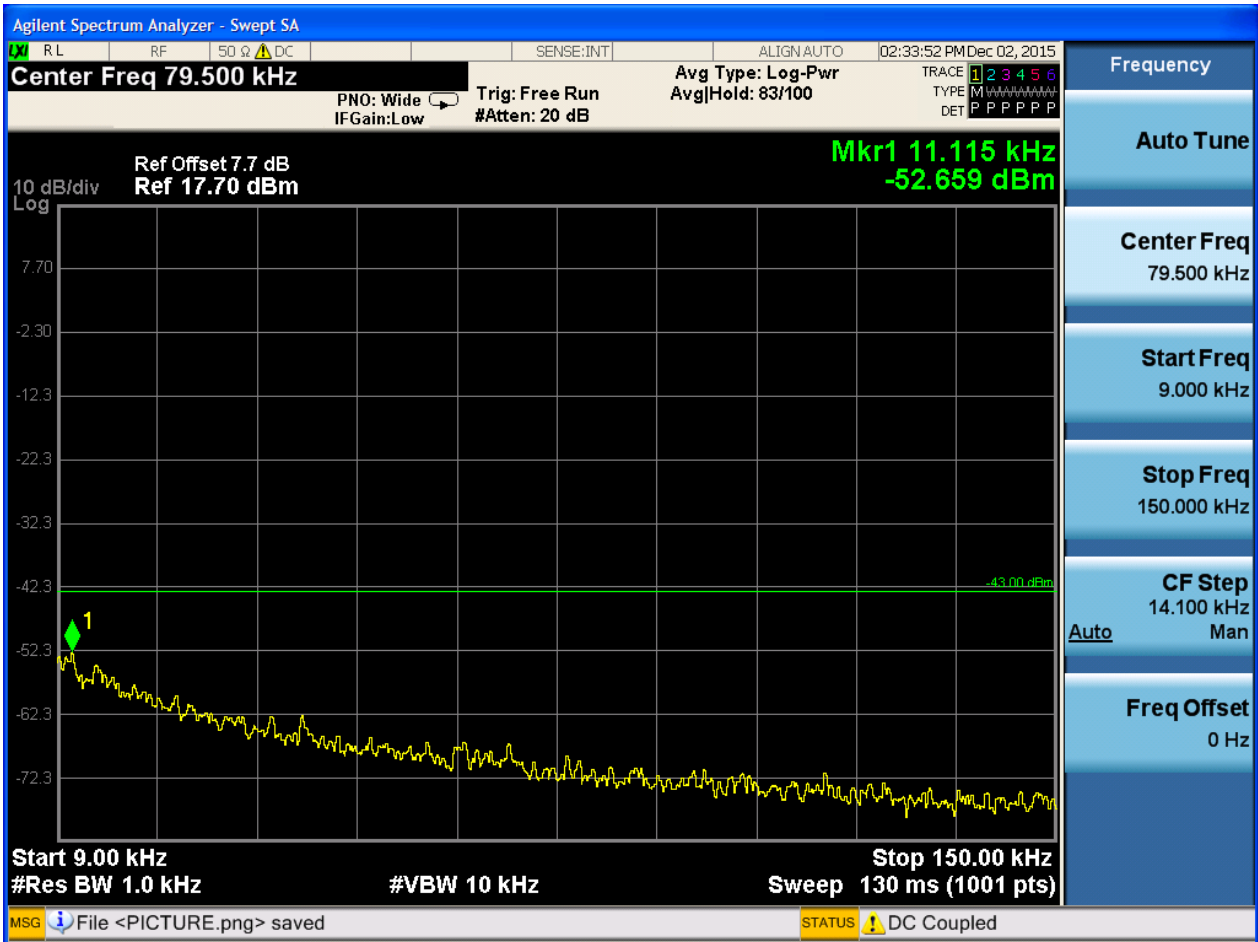


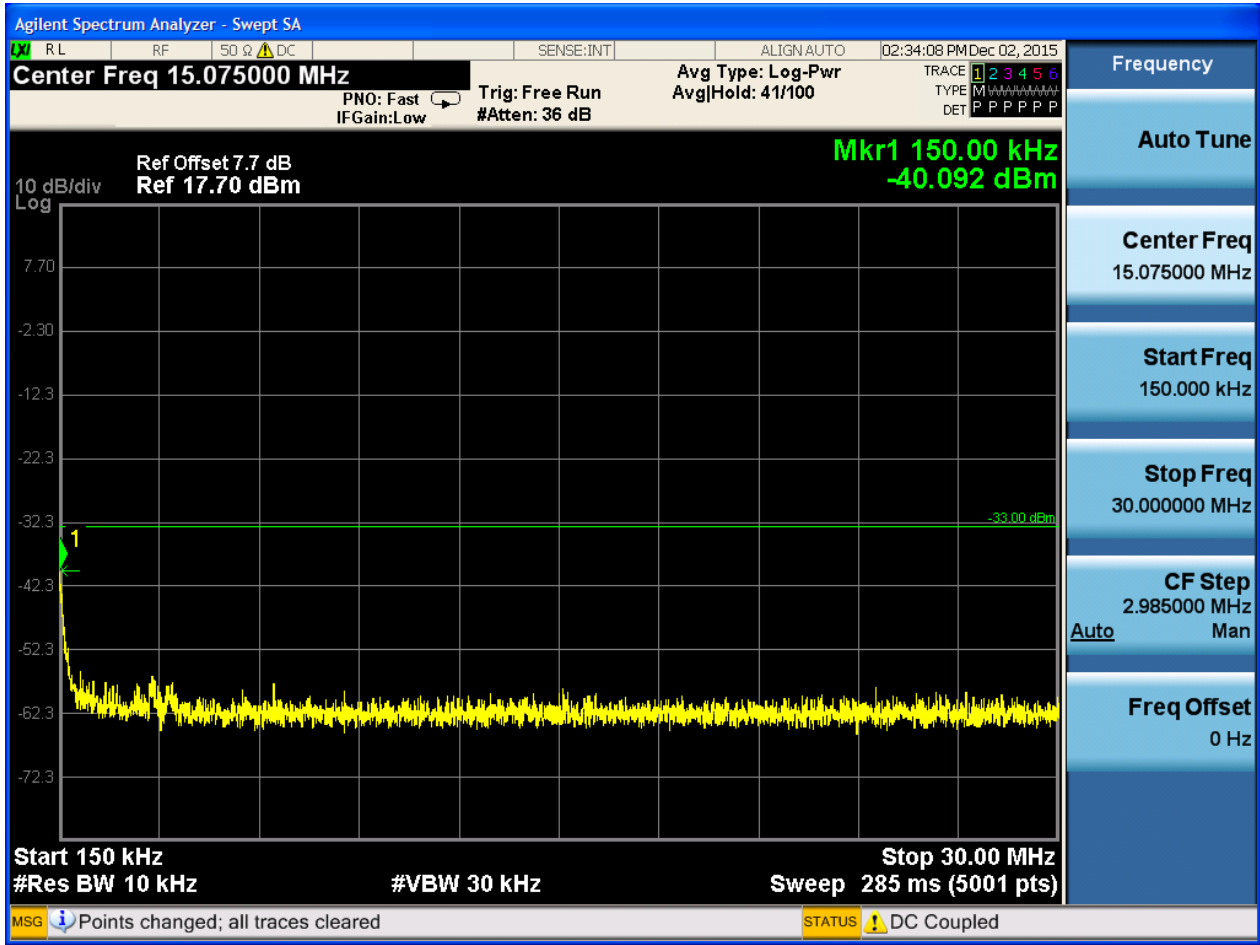


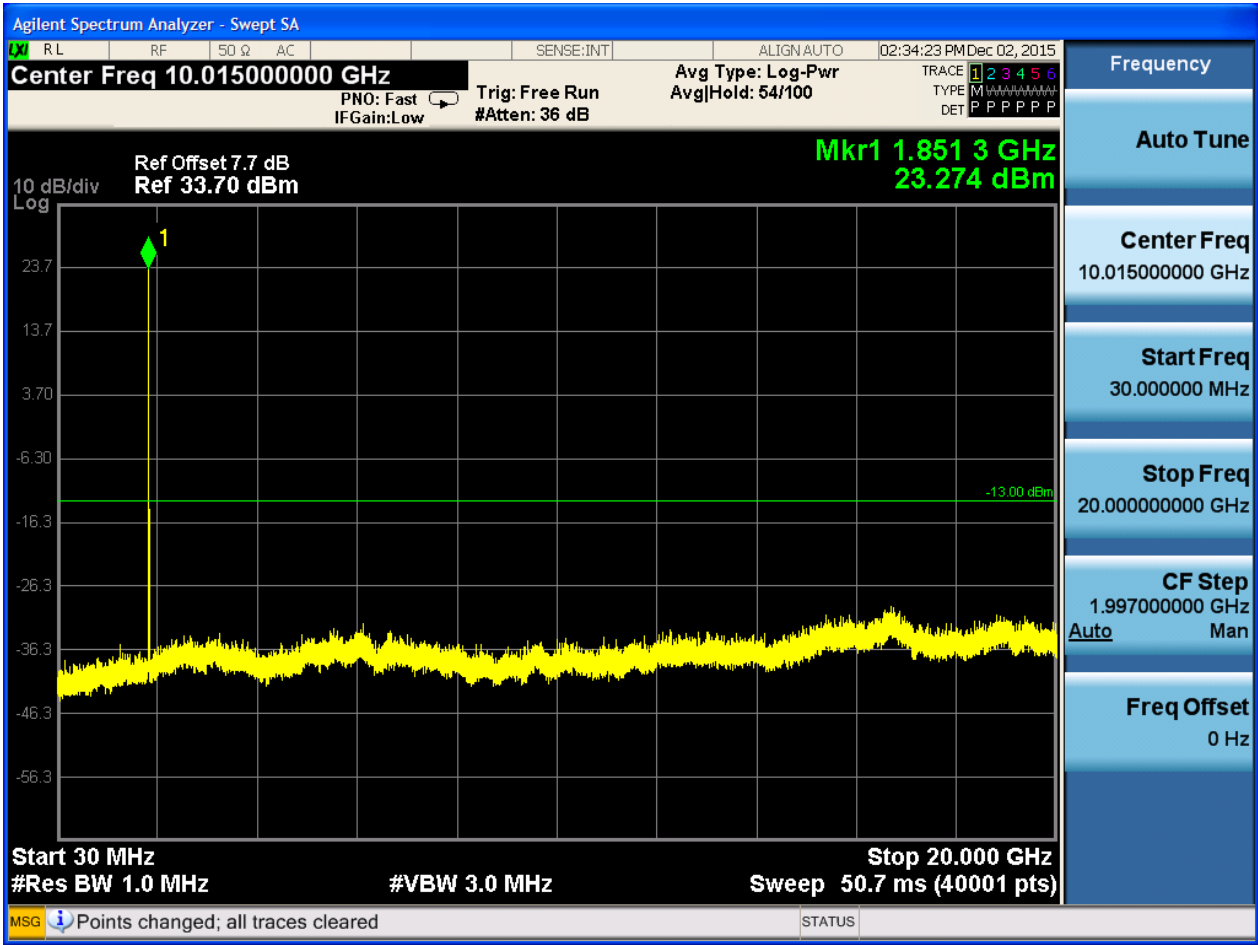
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

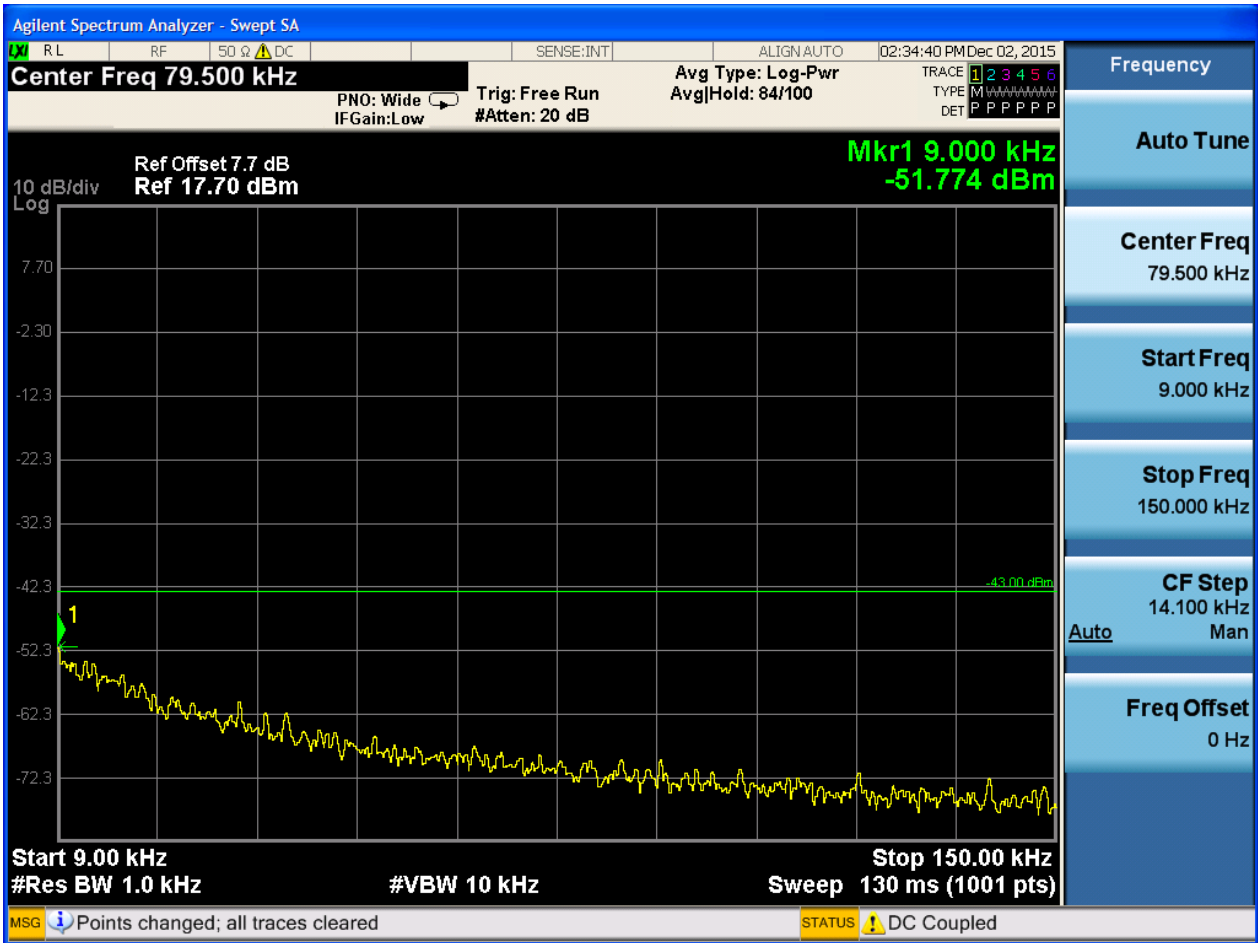




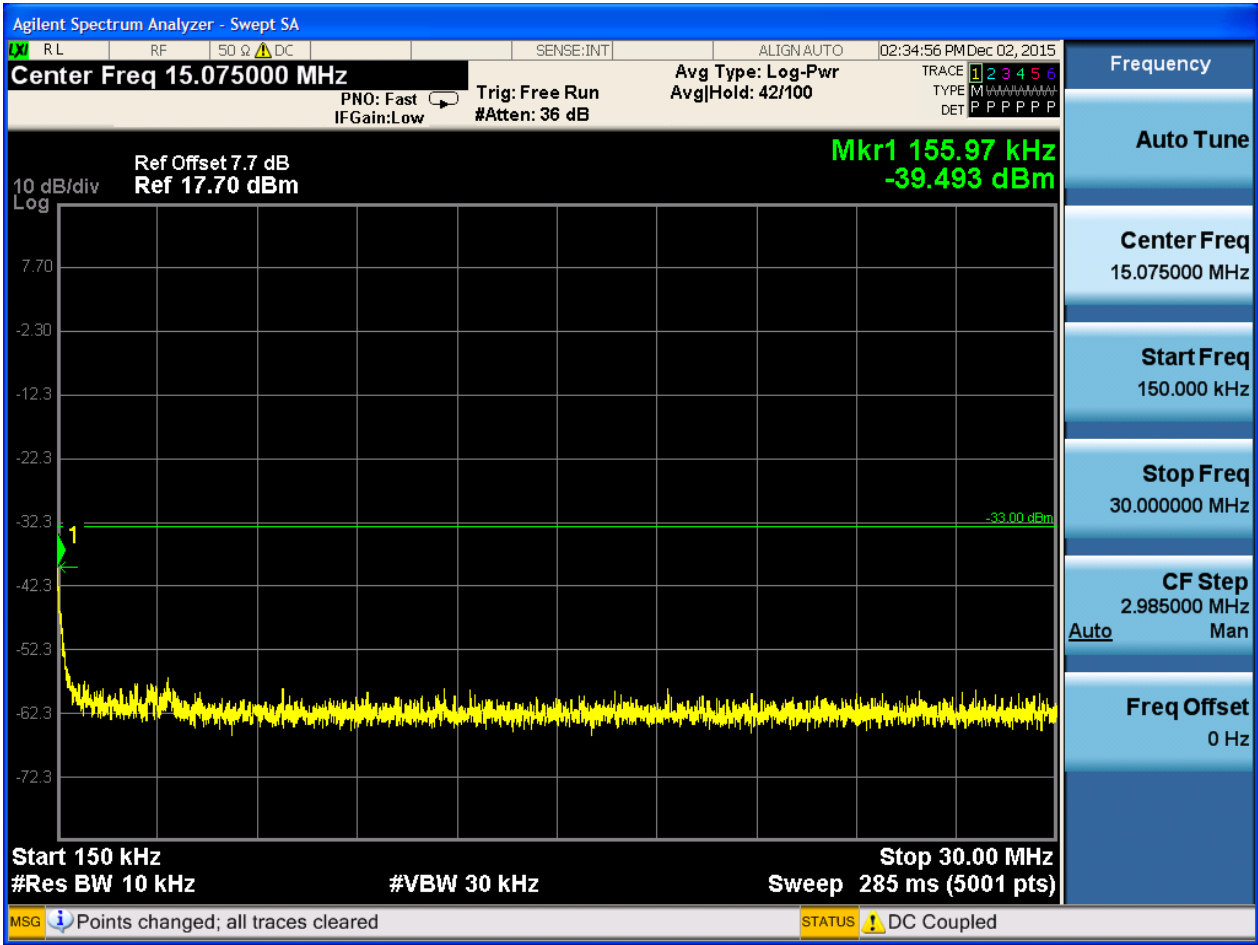


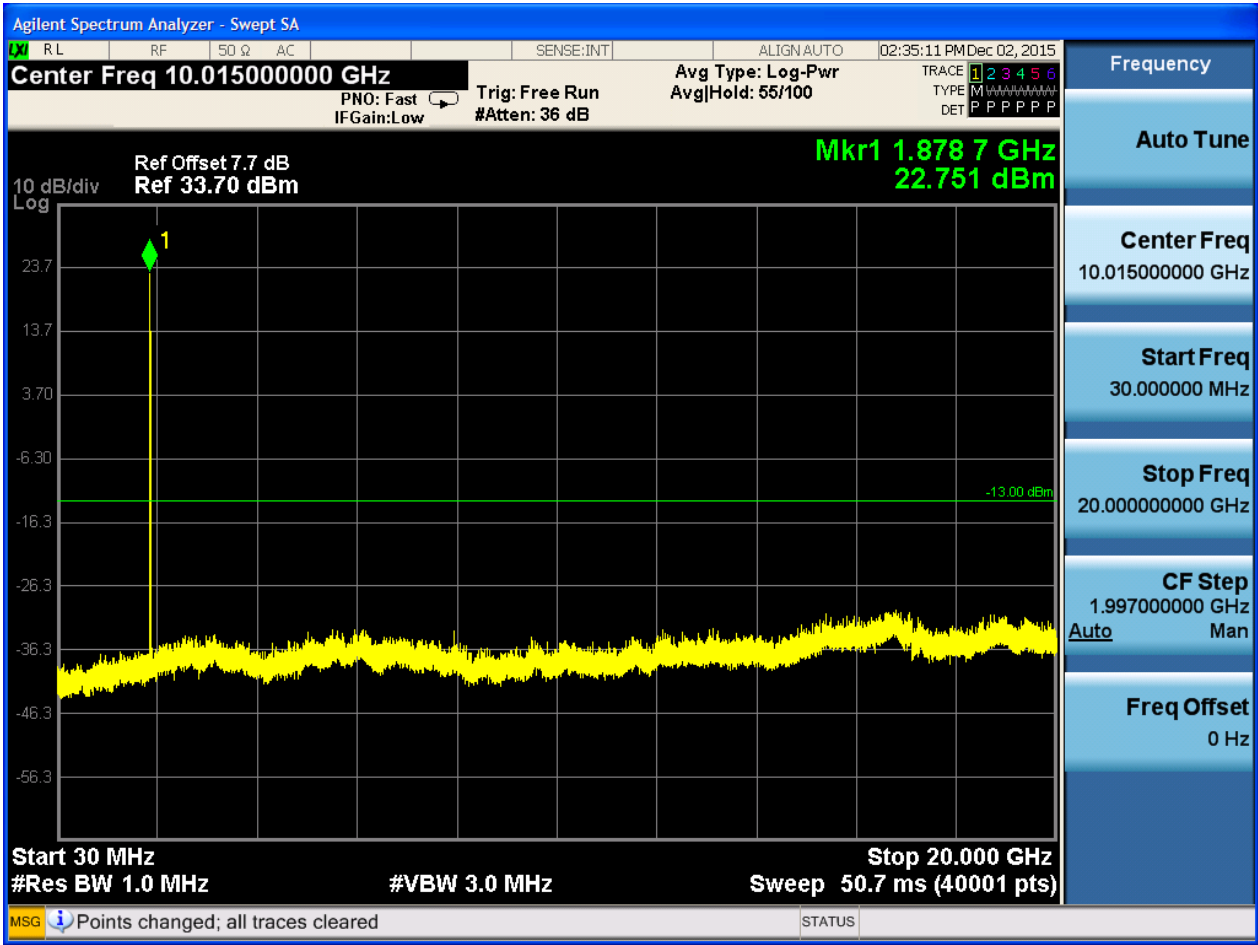


6.1.3.1.2 Test Channel = MCH

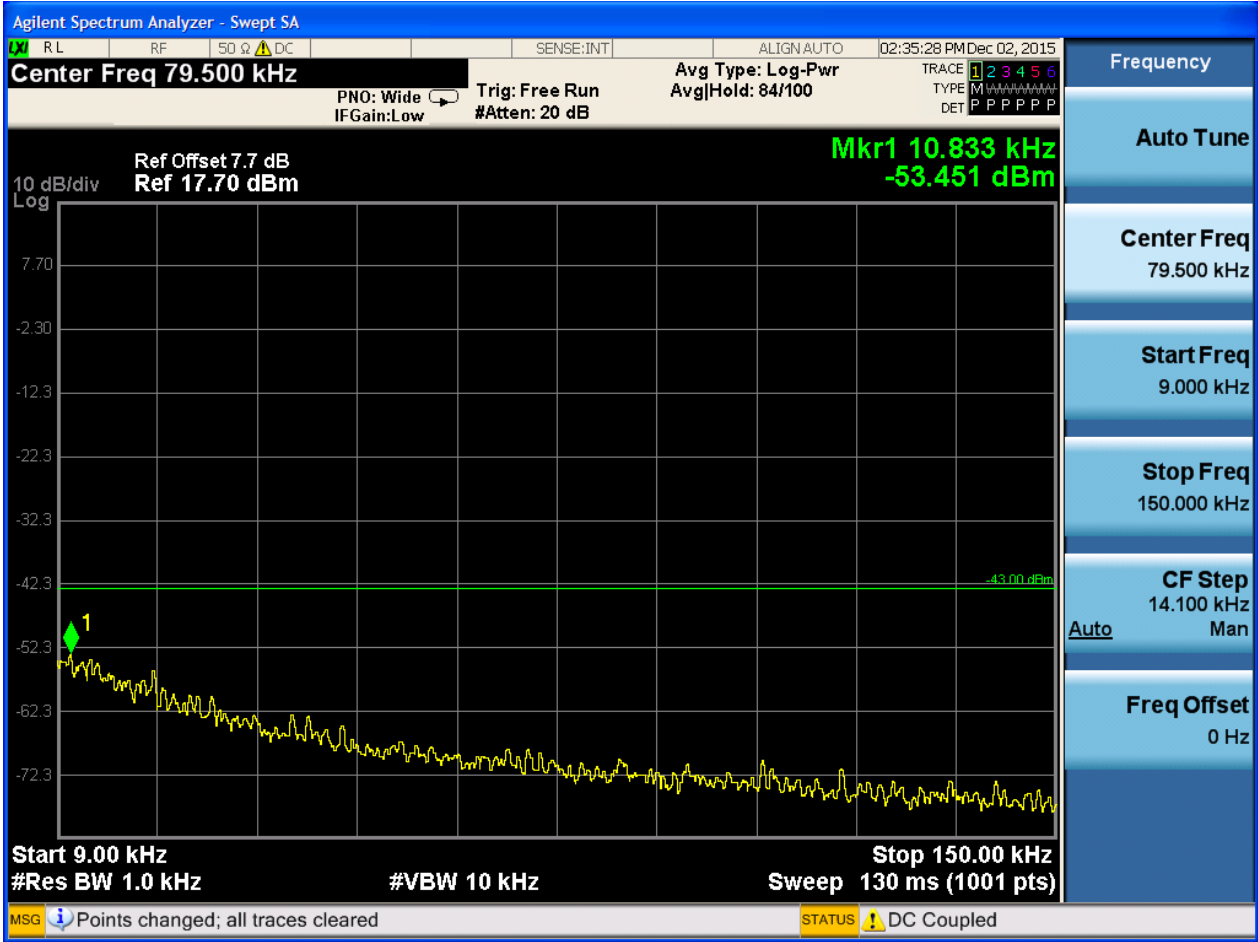


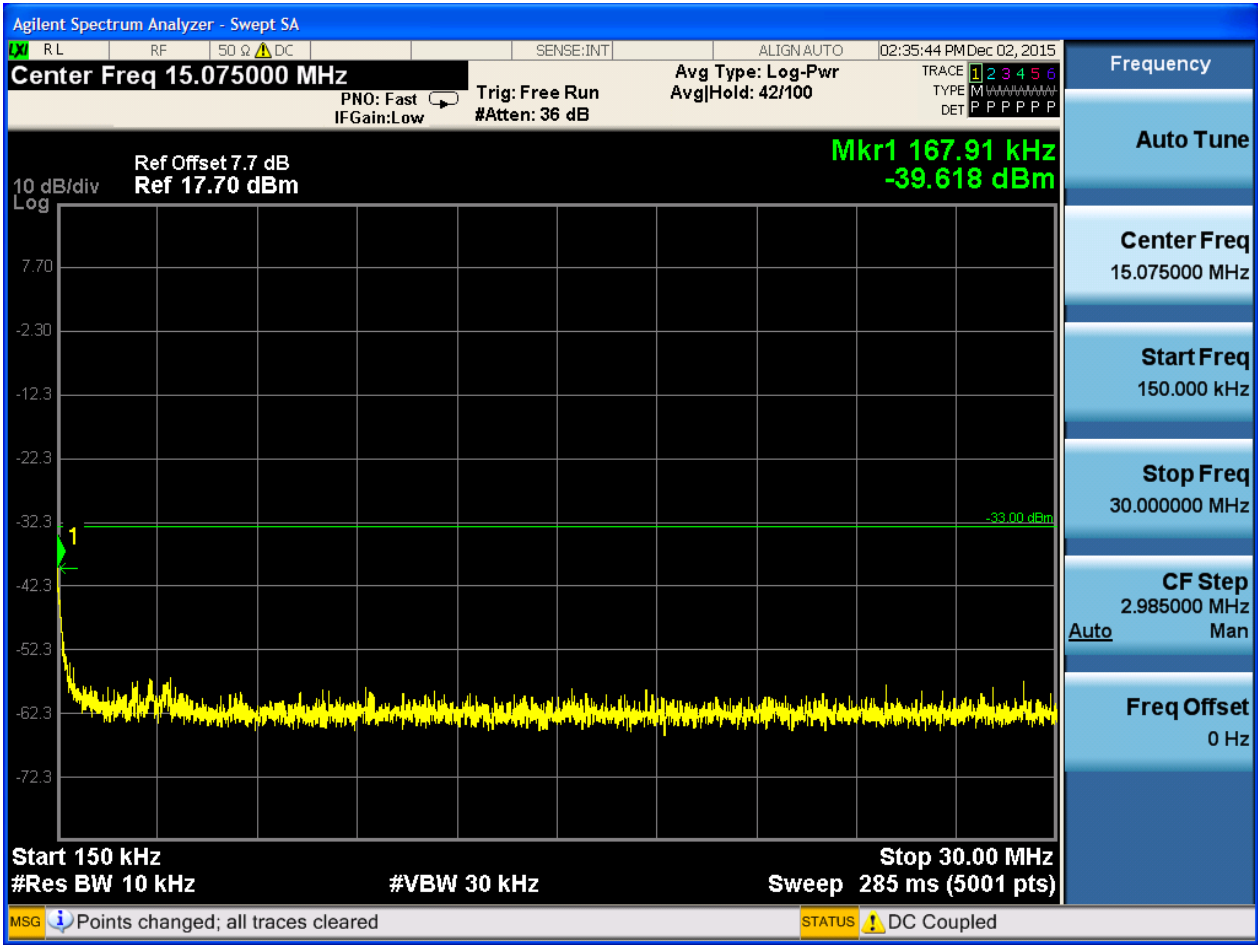


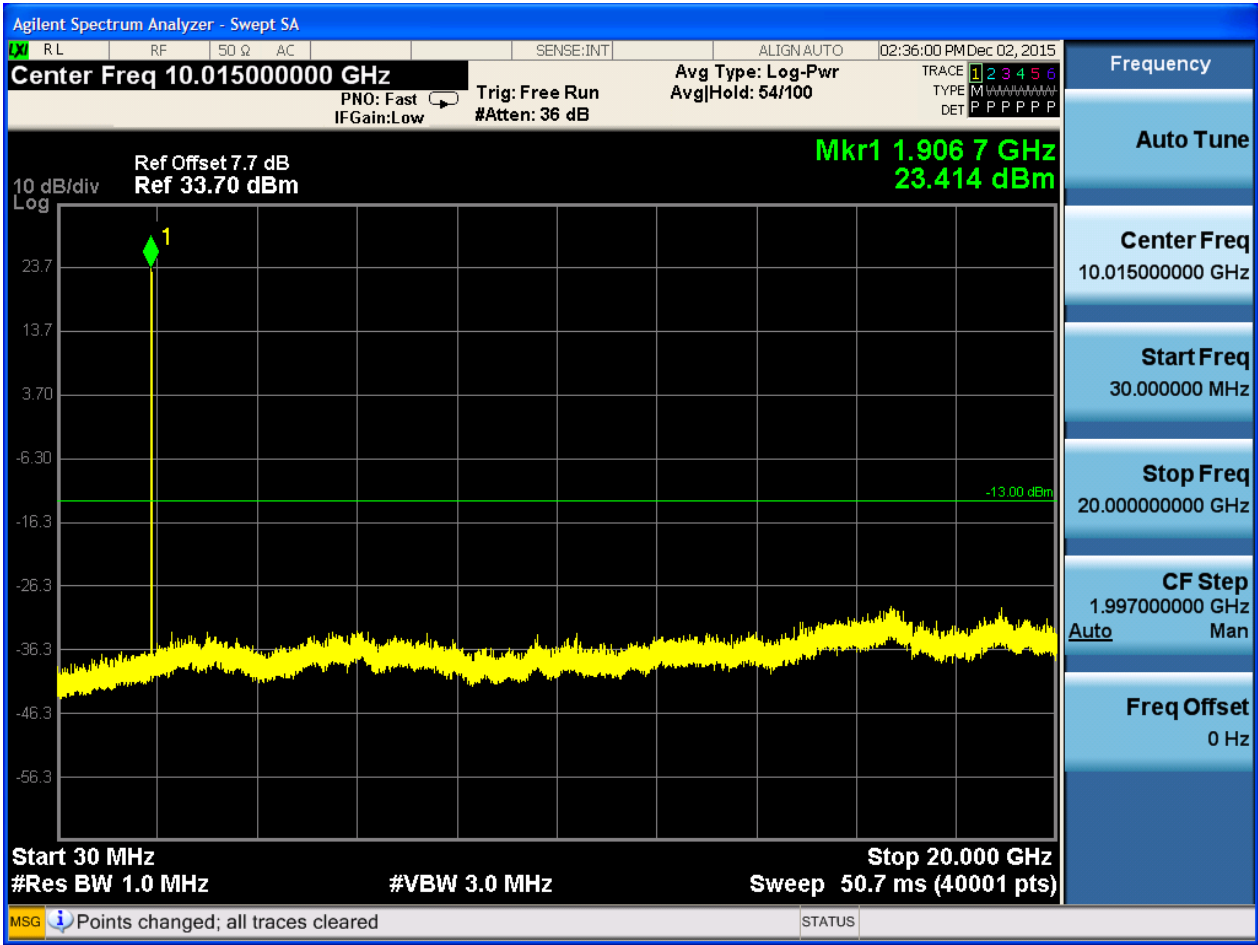




6.1.3.1.3 Test Channel = HCH







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

Note:

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

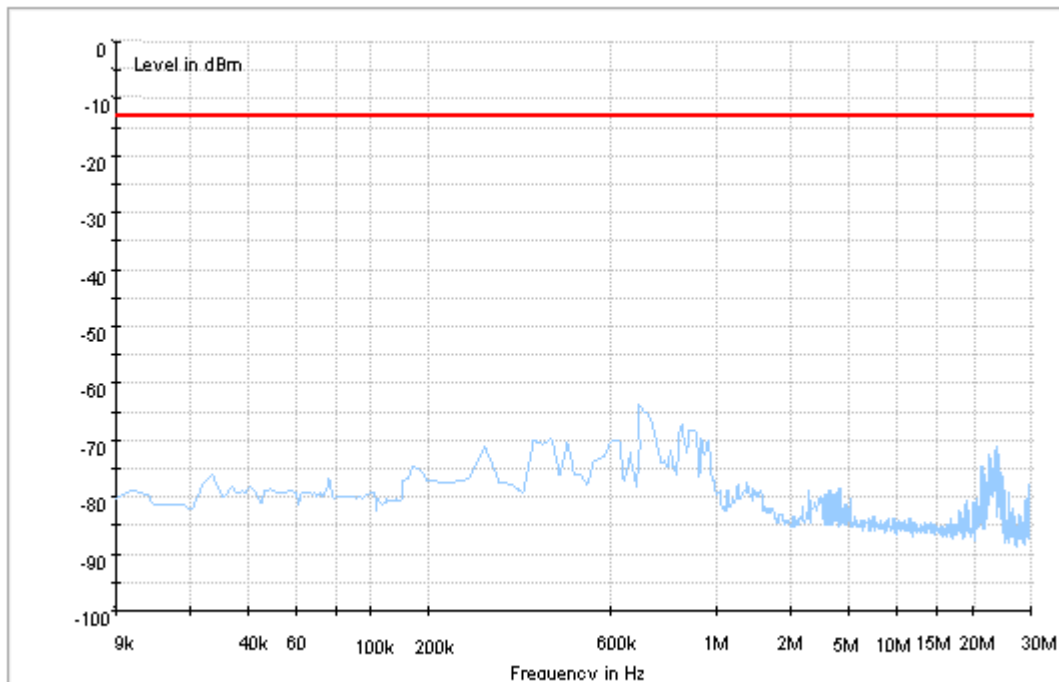
We tested all modes, but the data presented below is the worst case.

### Part I - Test Plots

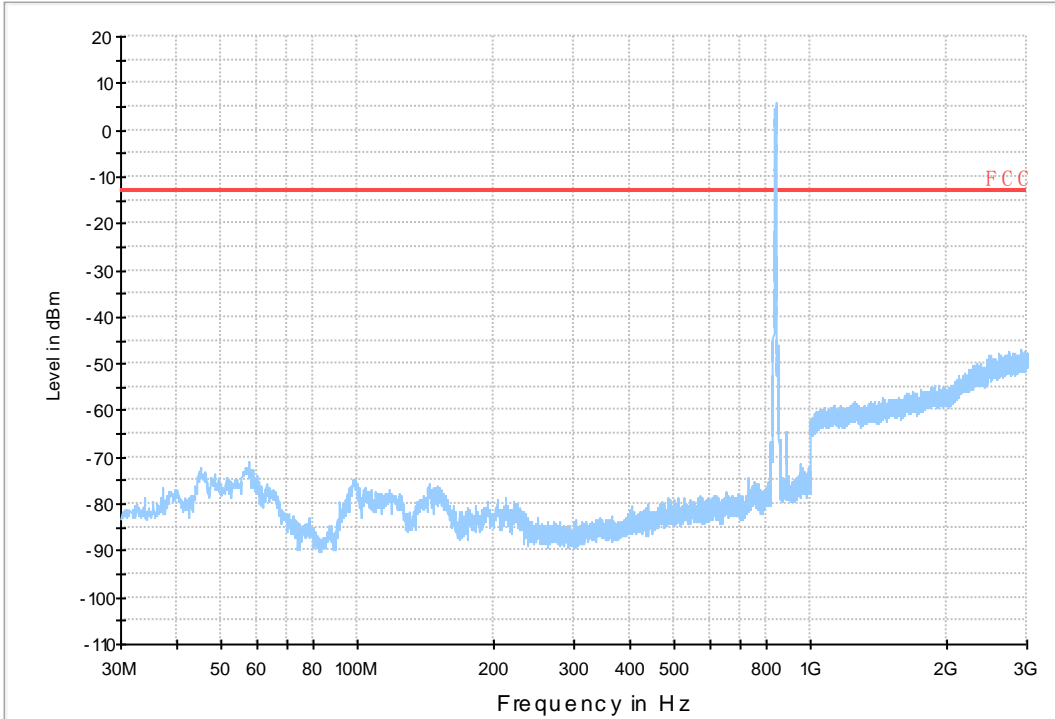
#### 7.1 For UMTS

##### 7.1.1 Test Band = WCDMA850

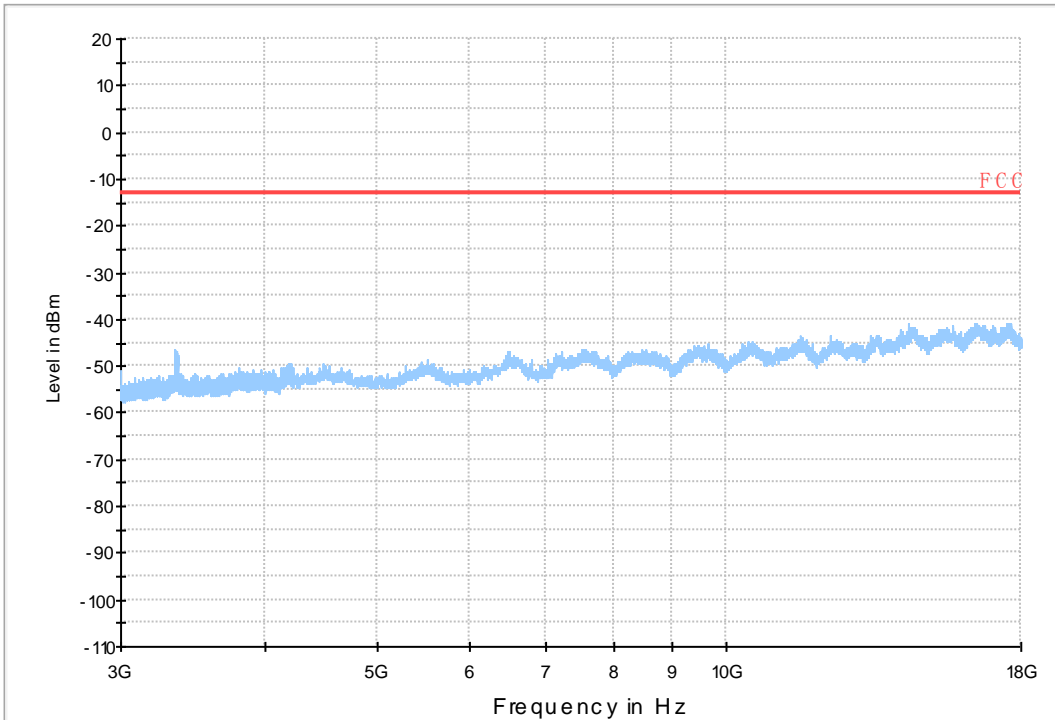
##### 7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850\_L

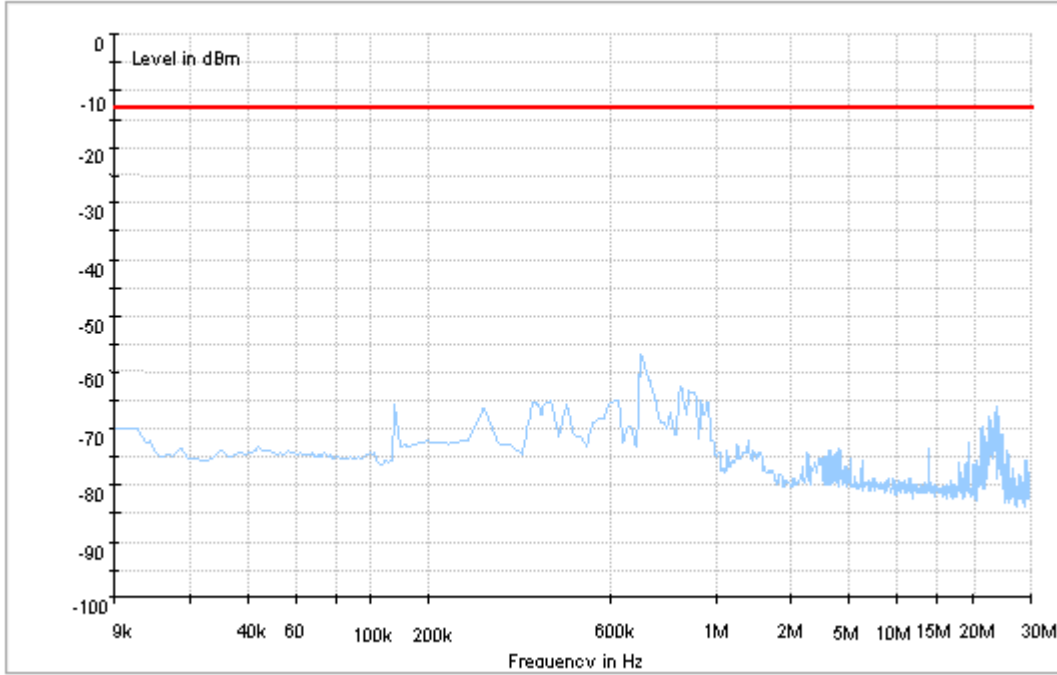


Copy of FCC PART22 W CDMA850\_H

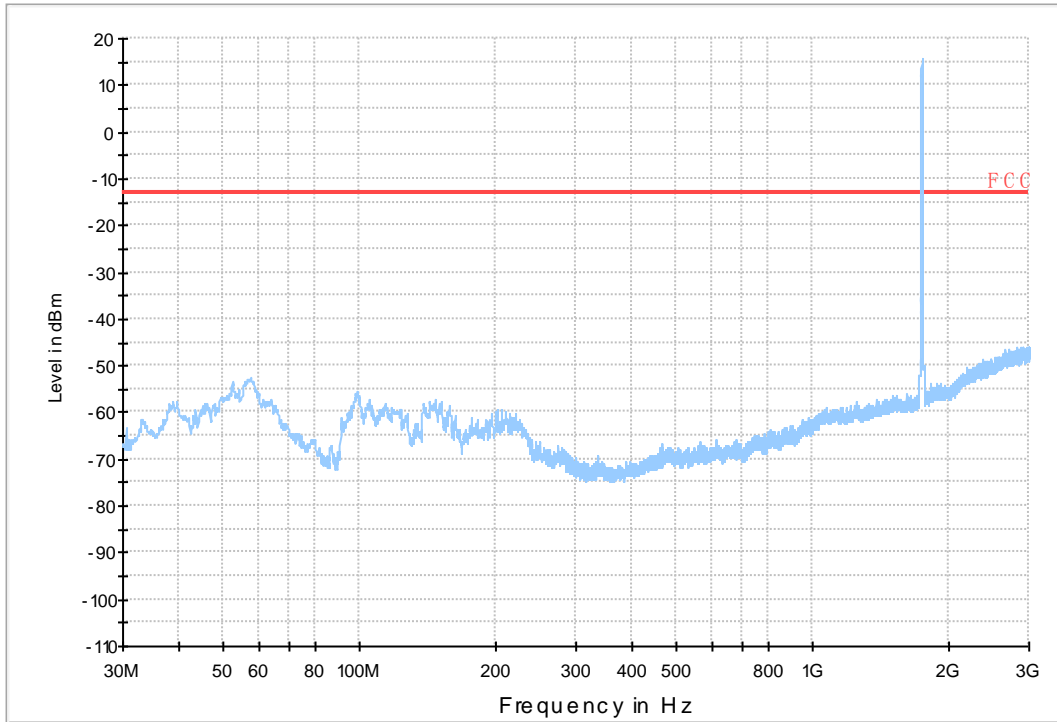


7.1.2 Test Band = WCDMA1700

7.1.2.1 Test Mode = UMTS/TM1

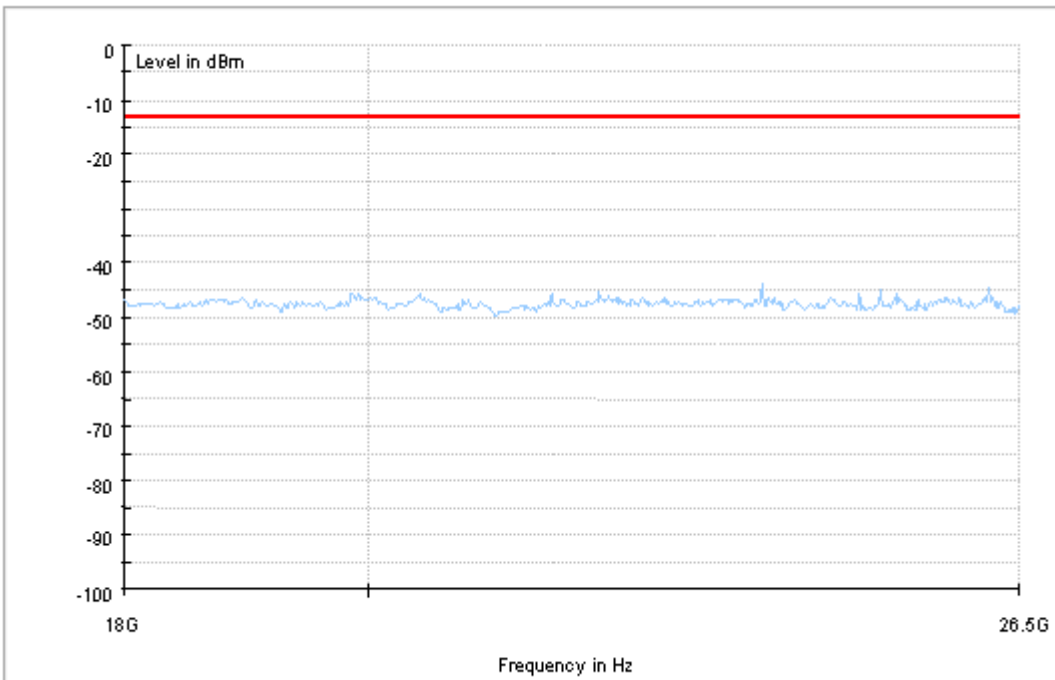
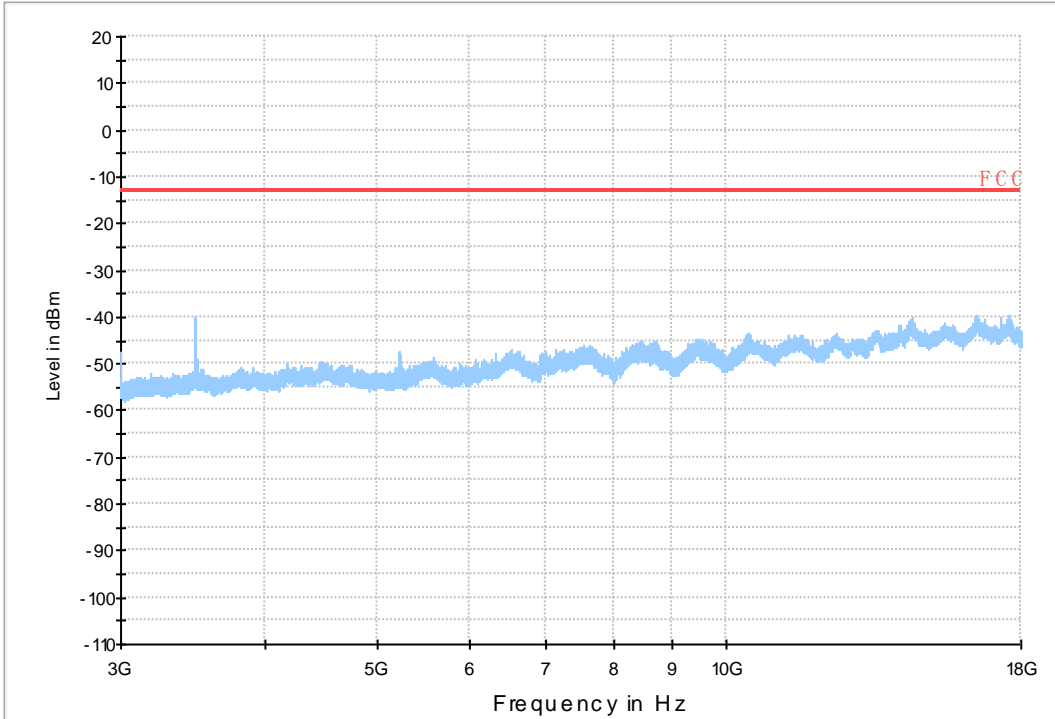


Copy of FCC PART27 W CDMA1700\_L



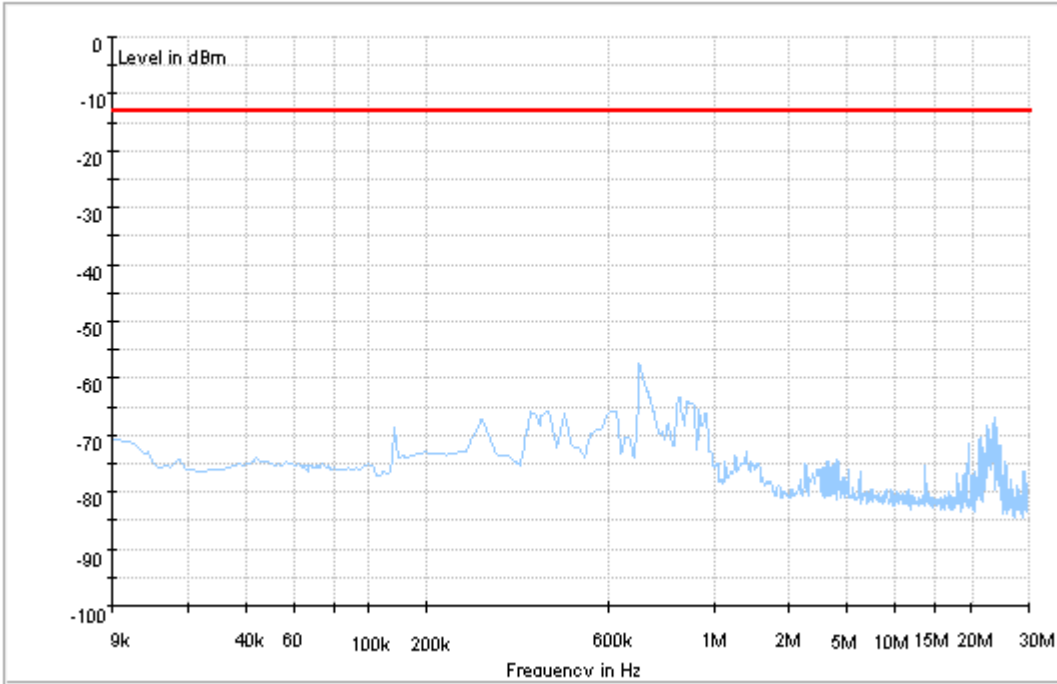


Copy of FCC PART27 W CDMA1700\_H

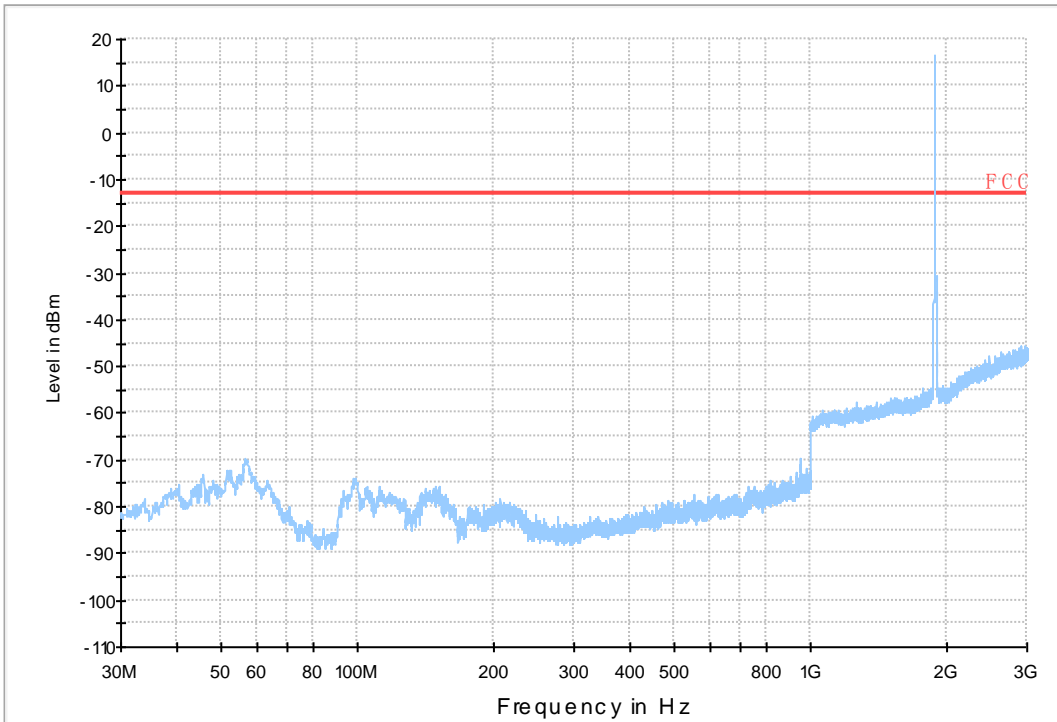


**7.1.3 Test Band = WCDMA1900**

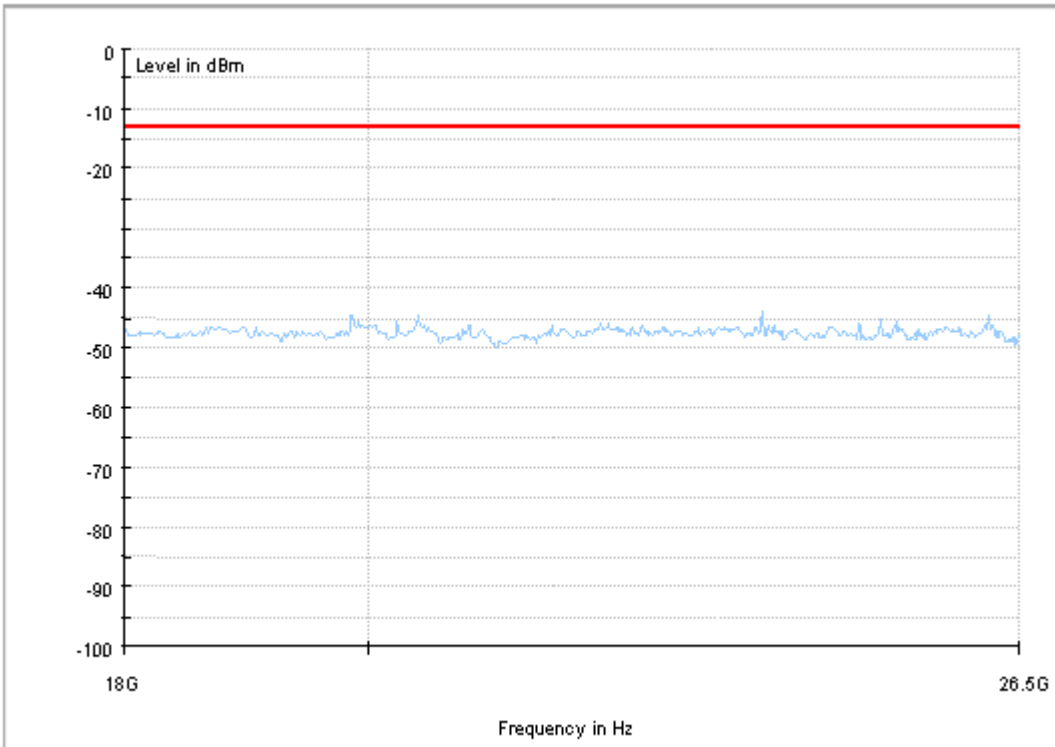
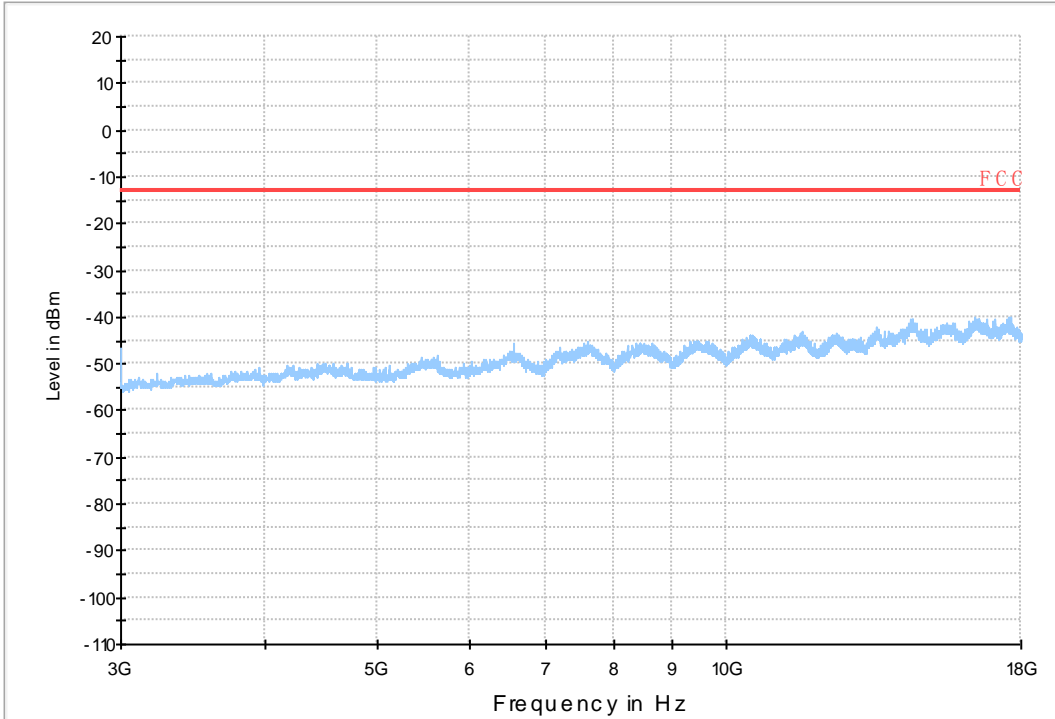
**7.1.3.1 Test Mode = UMTS/TM1**



Copy of FCC PART24 W CDMA1900\_L



Copy of FCC PART24 W CDMA1900\_H



## 8Appendix\_H: Frequency Stability

### 8.1 For UMTS

#### 8.1.1Frequency 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	-0.7	-0.00085	PASS
				VN	-2.38	-0.00288	PASS
				VH	-1.27	-0.00154	PASS
		MCH	TN	VL	0.38	0.00045	PASS
				VN	0.44	0.00053	PASS
				VH	1.74	0.00208	PASS
		HCH	TN	VL	-0.2	-0.00024	PASS
				VN	0.34	0.0004	PASS
				VH	1.48	0.00175	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-2.72	-0.00159	PASS
				VN	-0.18	-0.00011	PASS
				VH	-1.89	-0.0011	PASS
		MCH	TN	VL	-2.82	-0.00163	PASS
				VN	-1.31	-0.00076	PASS
				VH	-1.72	-0.00099	PASS
		HCH	TN	VL	-4.68	-0.00267	PASS
				VN	-0.56	-0.00032	PASS
				VH	-4.24	-0.00242	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-2.67	-0.00144	PASS
				VN	0.26	0.00014	PASS
				VH	0.73	0.00039	PASS
		MCH	TN	VL	-3.51	-0.00187	PASS
				VN	0.34	0.00018	PASS
				VH	2.12	0.00113	PASS
		HCH	TN	VL	-3.66	-0.00192	PASS
				VN	0.29	0.00015	PASS
				VH	-1.42	-0.00074	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
WCDMA850	UMTS/TM1	LCH	VN	-30	-0.38	-0.00046	PASS
				-20	-4.1	-0.00496	PASS
				-10	-3.1	-0.00375	PASS
				0	-1.21	-0.00146	PASS
				10	-1.89	-0.00229	PASS
				20	1.3	0.00157	PASS
				30	-0.69	-0.00083	PASS
				40	-0.72	-0.00087	PASS
				50	-3.02	-0.00365	PASS
		MCH	VN	-30	0.78	0.00093	PASS
				-20	-1.66	-0.00198	PASS
				-10	1.75	0.00209	PASS
				0	0.95	0.00114	PASS
				10	-0.63	-0.00075	PASS
				20	-1.33	-0.00159	PASS
				30	0.17	0.0002	PASS
				40	-1.37	-0.00164	PASS
				50	-1.24	-0.00148	PASS
		HCH	VN	-30	1.43	0.00169	PASS
				-20	0.72	0.00085	PASS
				-10	-0.46	-0.00054	PASS
				0	2.35	0.00278	PASS
				10	1.5	0.00177	PASS
				20	1.89	0.00223	PASS
				30	0.96	0.00113	PASS
				40	-0.66	-0.00078	PASS
				50	-1.07	-0.00126	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	-4.84	-0.00283	PASS
				-20	-8.18	-0.00478	PASS
				-10	0.21	0.00012	PASS
				0	3.43	0.002	PASS
				10	-3.16	-0.00185	PASS
				20	-2.15	-0.00126	PASS
				30	-5.77	-0.00337	PASS
				40	2.09	0.00122	PASS
				50	-2.91	-0.0017	PASS
		MCH	VN	-30	-5.46	-0.00315	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	-5.33	-0.00308	PASS
				-10	-2.5	-0.00144	PASS
				0	-3.1	-0.00179	PASS
				10	0.14	0.00008	PASS
				20	-3.95	-0.00228	PASS
				30	3.05	0.00176	PASS
				40	2.4	0.00139	PASS
				50	-3.42	-0.00197	PASS
		HCH	VN	-30	-5.14	-0.00293	PASS
				-20	-4.61	-0.00263	PASS
				-10	0.2	0.00011	PASS
				0	-2.53	-0.00144	PASS
				10	-2.88	-0.00164	PASS
				20	-0.66	-0.00038	PASS
				30	0.56	0.00032	PASS
				40	-4.79	-0.00273	PASS
				50	-2.41	-0.00138	PASS
				WCDMA1900	UMTS/TM1	LCH	VN
-20	0.84	0.00045	PASS				
-10	2.76	0.00149	PASS				
0	1.85	0.001	PASS				
10	2.27	0.00123	PASS				
20	4.17	0.00225	PASS				
30	1.83	0.00099	PASS				
40	-0.76	-0.00041	PASS				
50	7.8	0.00421	PASS				
MCH	VN	-30	-2.3			-0.00122	PASS
		-20	-2.33			-0.00124	PASS
		-10	-2.56			-0.00136	PASS
		0	1.6			0.00085	PASS
		10	0.43			0.00023	PASS
		20	8.96			0.00477	PASS
		30	1.66			0.00088	PASS
		40	1.85			0.00098	PASS
		50	2.17			0.00115	PASS
HCH	VN	-30	-6.71			-0.00352	PASS
		-20	-2.84			-0.00149	PASS
		-10	8.29			0.00435	PASS
		0	3.57			0.00187	PASS
		10	5.42			0.00284	PASS



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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	-2.01	-0.00105	PASS
				30	1.24	0.00065	PASS
				40	4.84	0.00254	PASS
				50	7.03	0.00369	PASS

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END