



# 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]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	24.03	24.75	30	PASS
		MCH	24.03	24.75	30	PASS
		HCH	24.08	24.8	30	PASS
WCDMA1900	UMTS/TM1	LCH	24.04	23.15	33	PASS
		MCH	24.05	23.16	33	PASS
		HCH	24.03	23.14	33	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.09	19.77	38.5	PASS
		MCH	24.02	19.7	38.5	PASS
		HCH	23.96	19.64	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:

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

SET RBW=1%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
WCDMA850	UMTS/TM1	LCH	3	13	PASS
		MCH	2.97	13	PASS
		HCH	2.81	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.88	13	PASS
		MCH	2.95	13	PASS
		HCH	2.83	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.08	13	PASS
		MCH	3.18	13	PASS
		HCH	3.09	13	PASS

### 3Appendix\_C: Modulation Characteristics

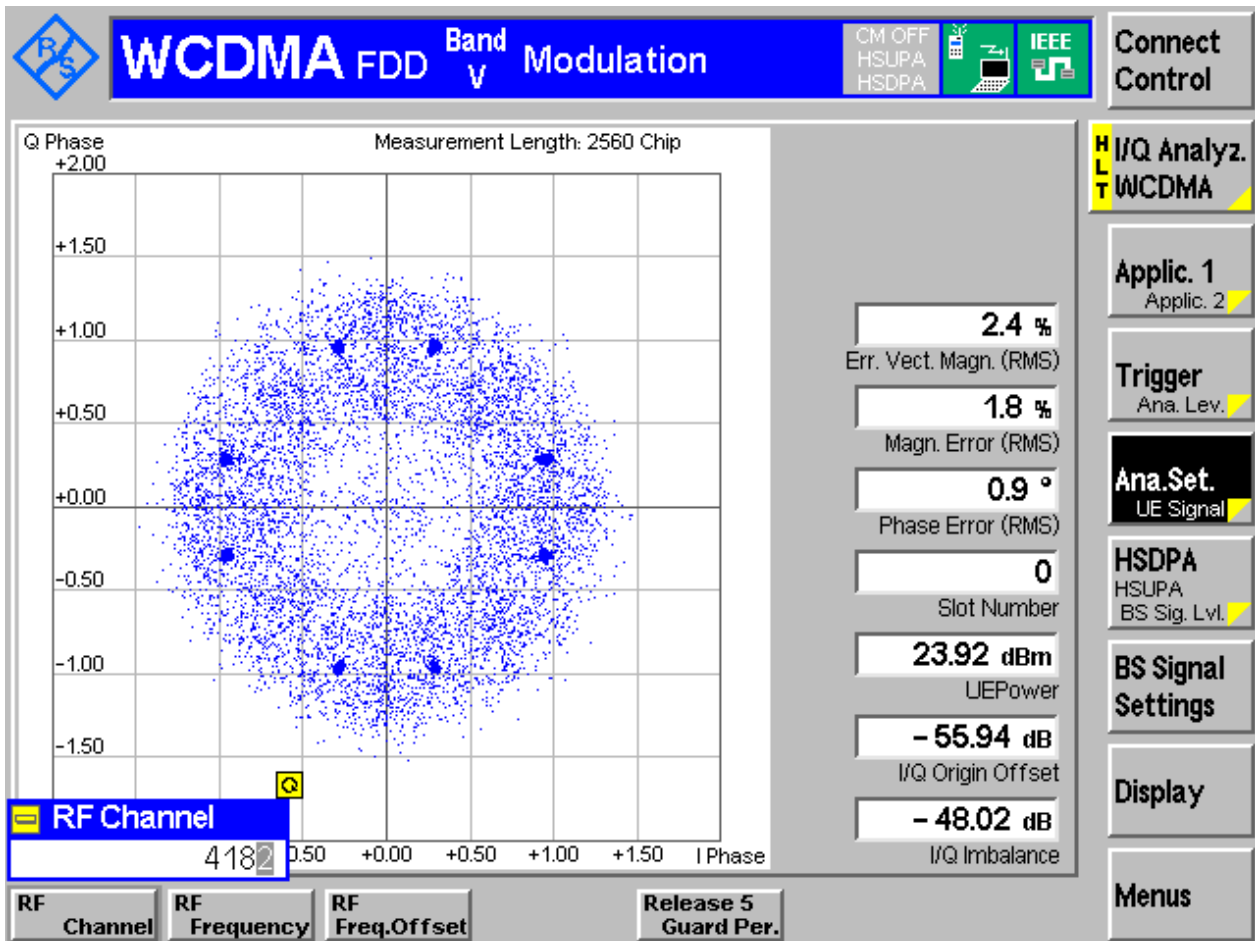
#### Part I - Test Plots

##### 3.1 For UMTS

##### 3.1.1 Test Band = WCDMA850

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

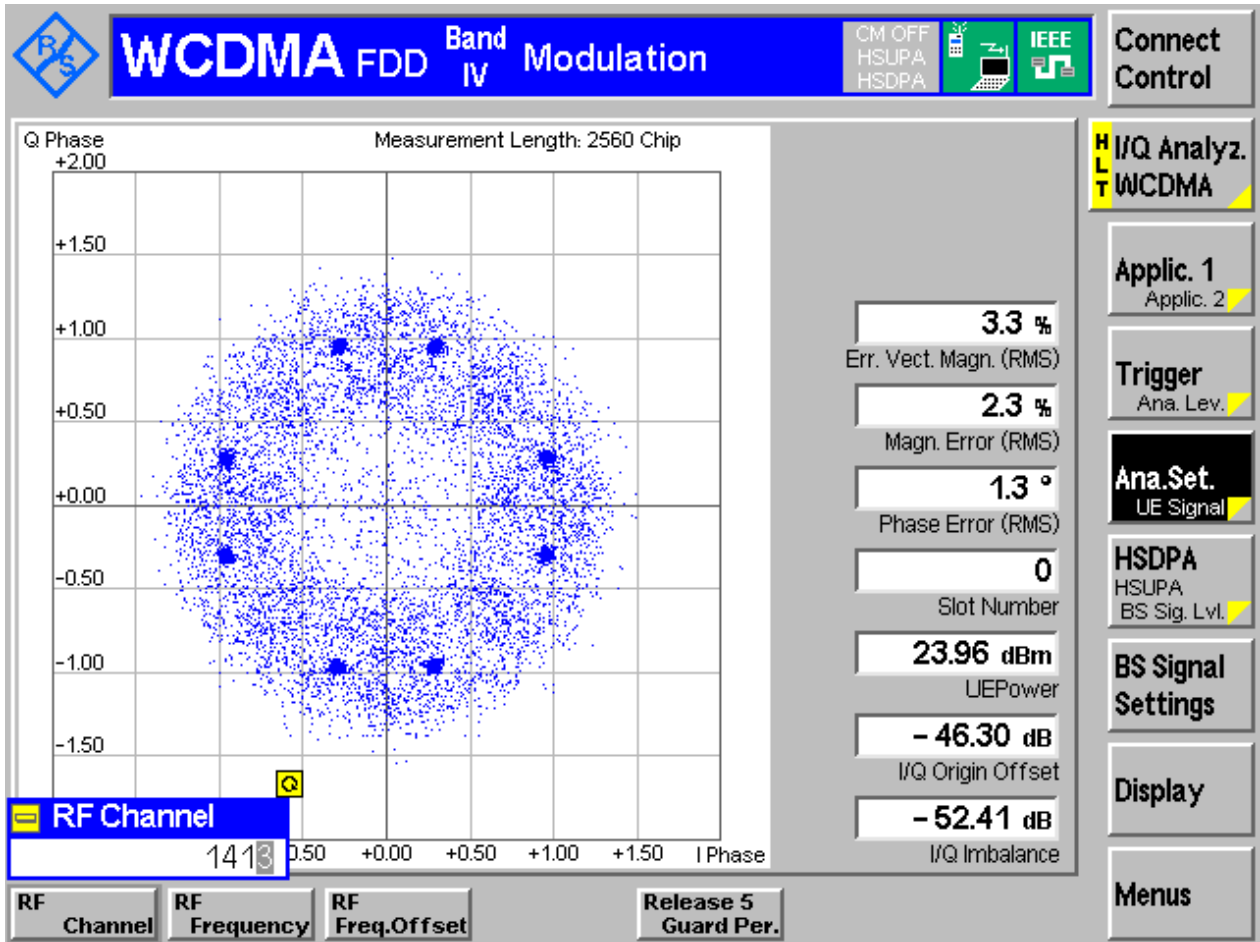
##### 3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

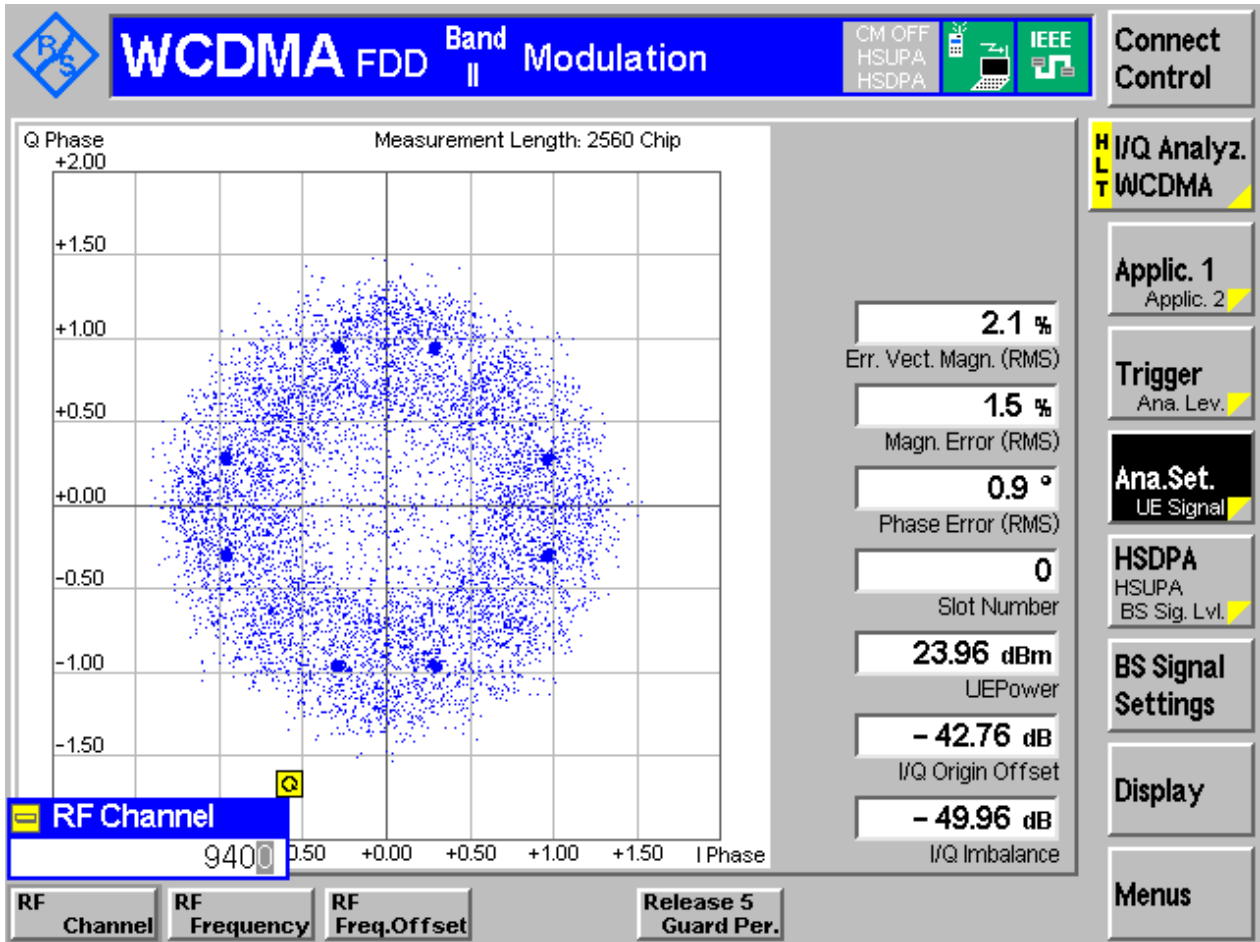
3.1.2.1.1 Test Channel = MCH



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	4.15	4.73	Pass
		MCH	4.17	4.72	Pass
		HCH	4.16	4.73	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.72	Pass
		MCH	4.18	4.73	Pass
		HCH	4.16	4.73	Pass
WCDMA1900	UMTS/TM1	LCH	4.16	4.73	Pass
		MCH	4.18	4.72	Pass
		HCH	4.17	4.73	Pass



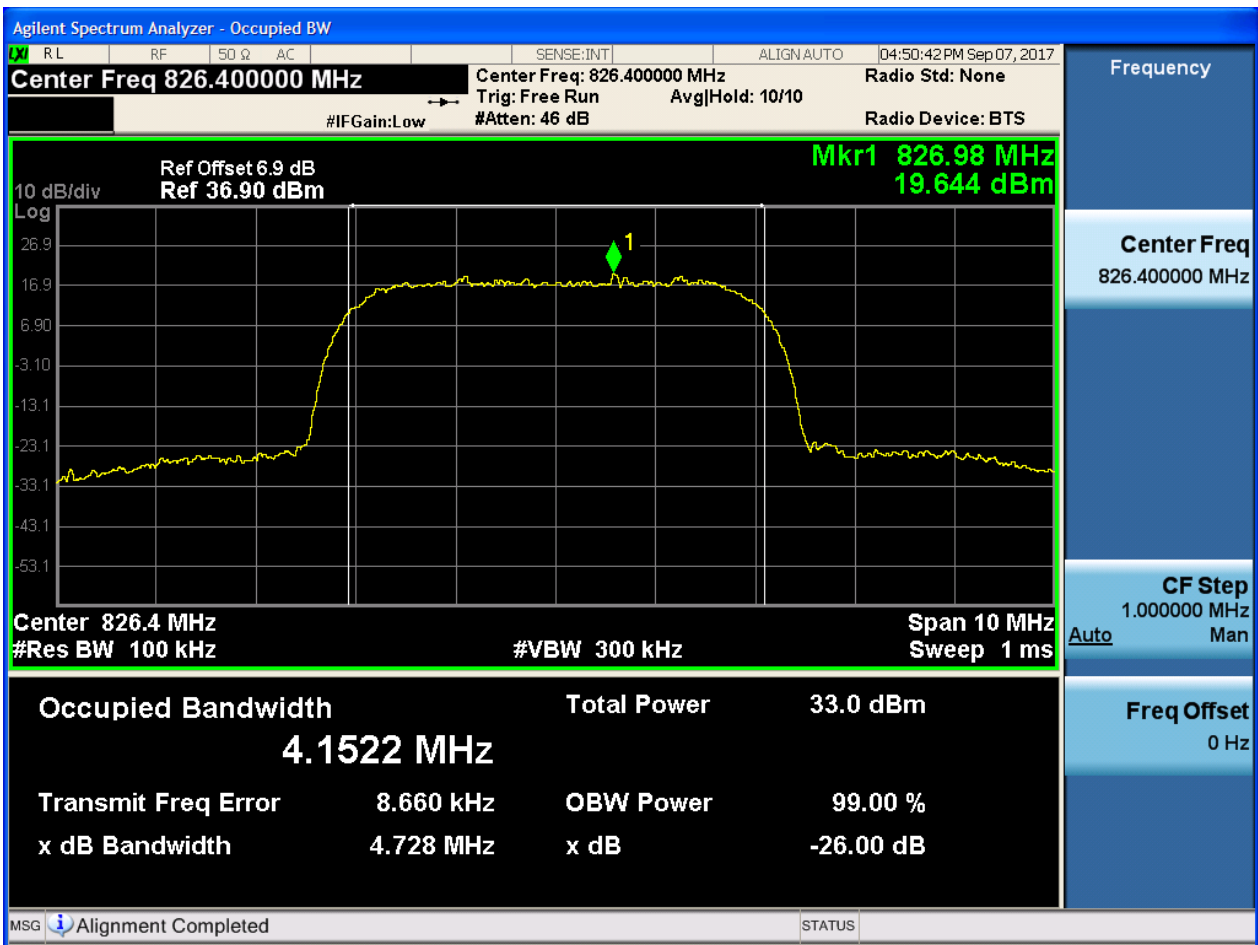
**Part II - Test Plots**

**4.1 For UMTS**

**4.1.1 Test Band = WCDMA850**

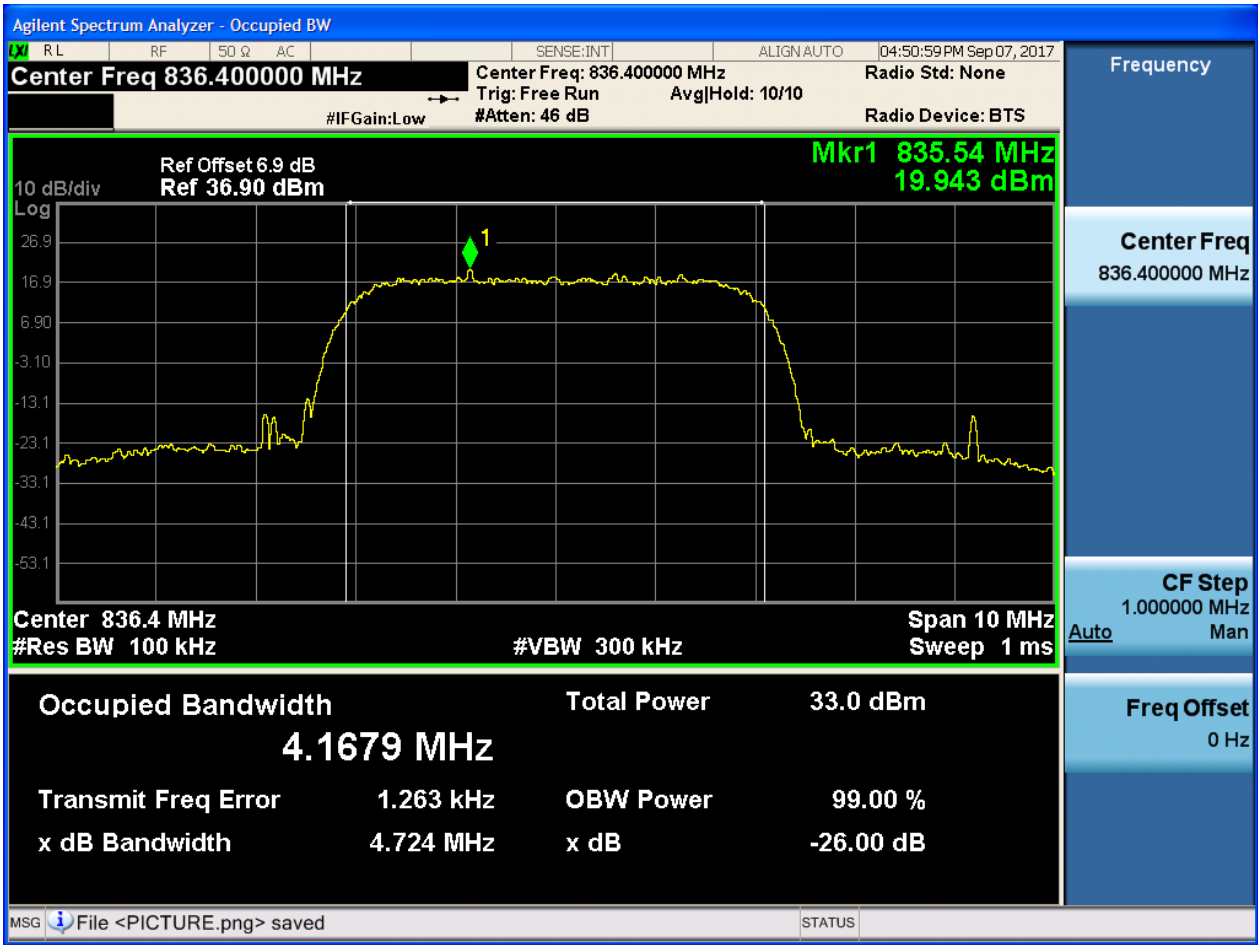
**4.1.1.1 Test Mode = UMTS/TM1**

**4.1.1.1.1 Test Channel = LCH**



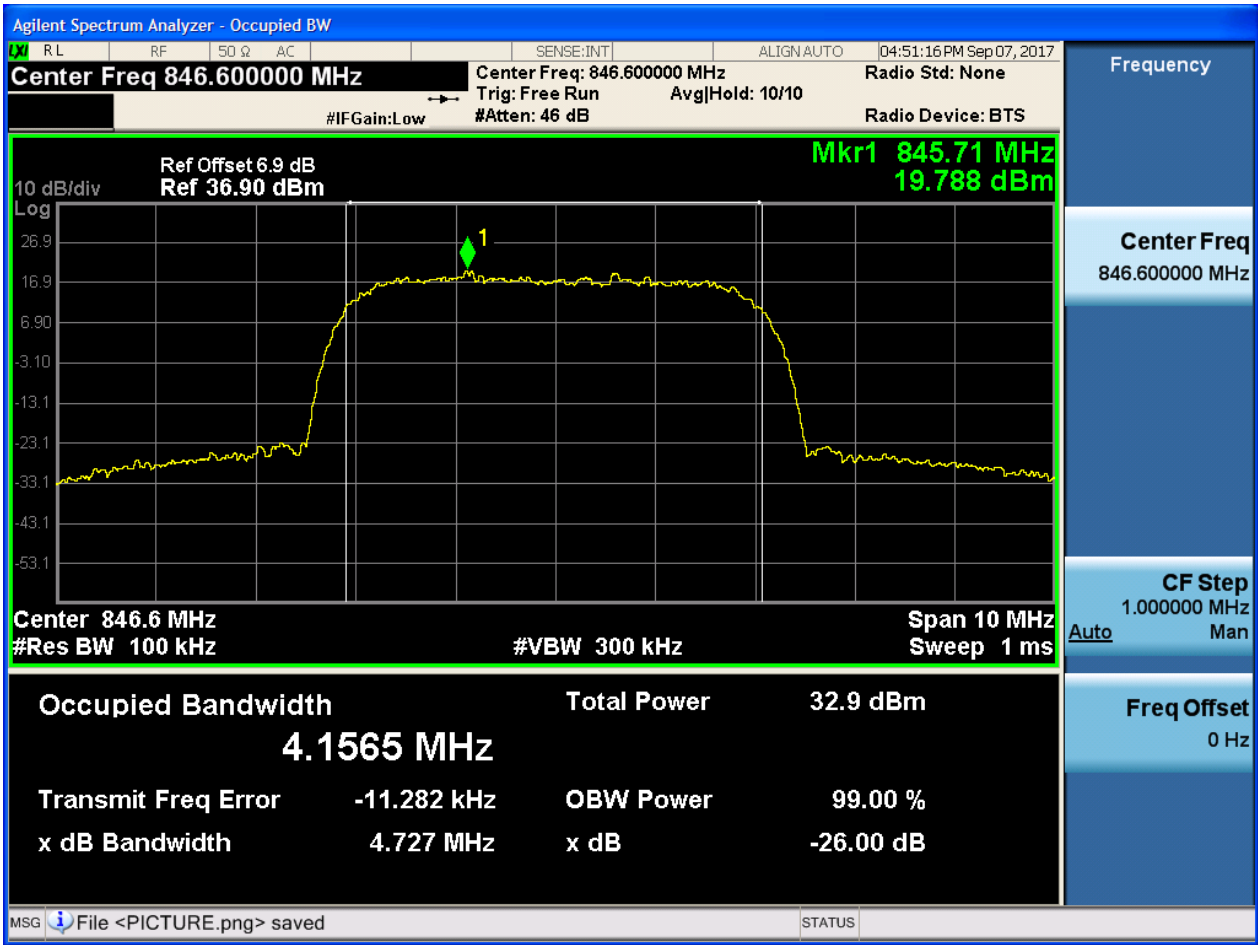


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

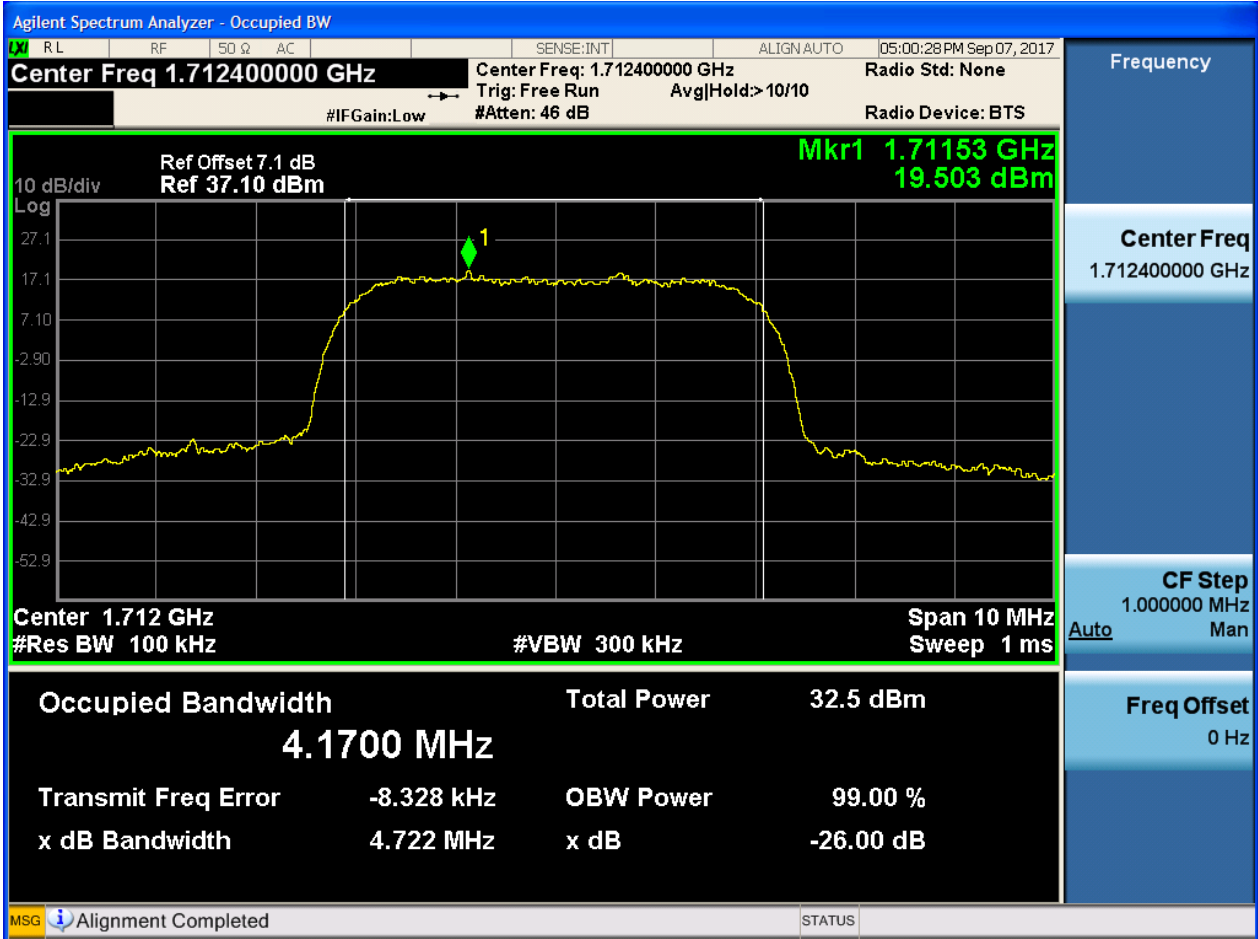




4.1.2 Test Band = WCDMA1700

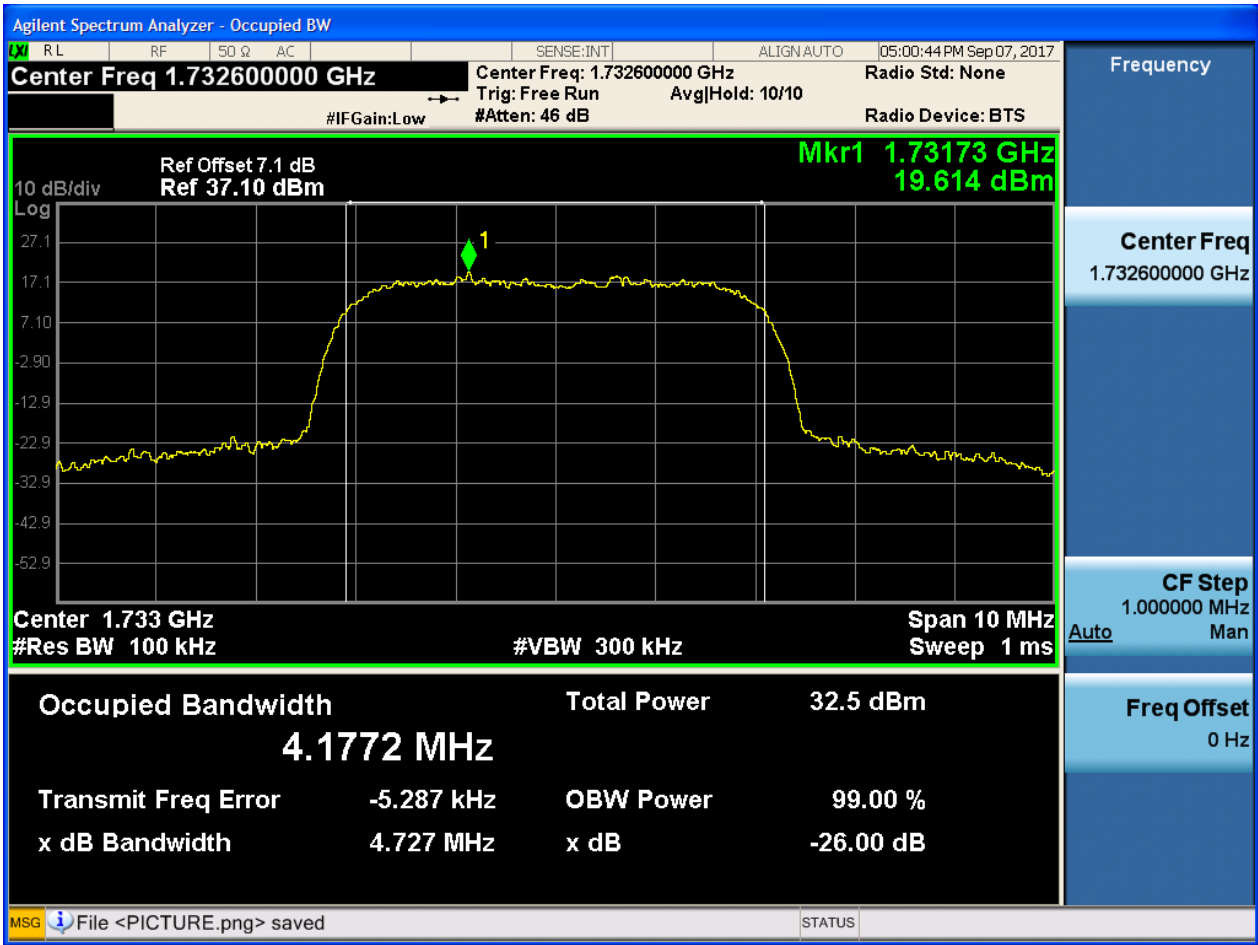
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH

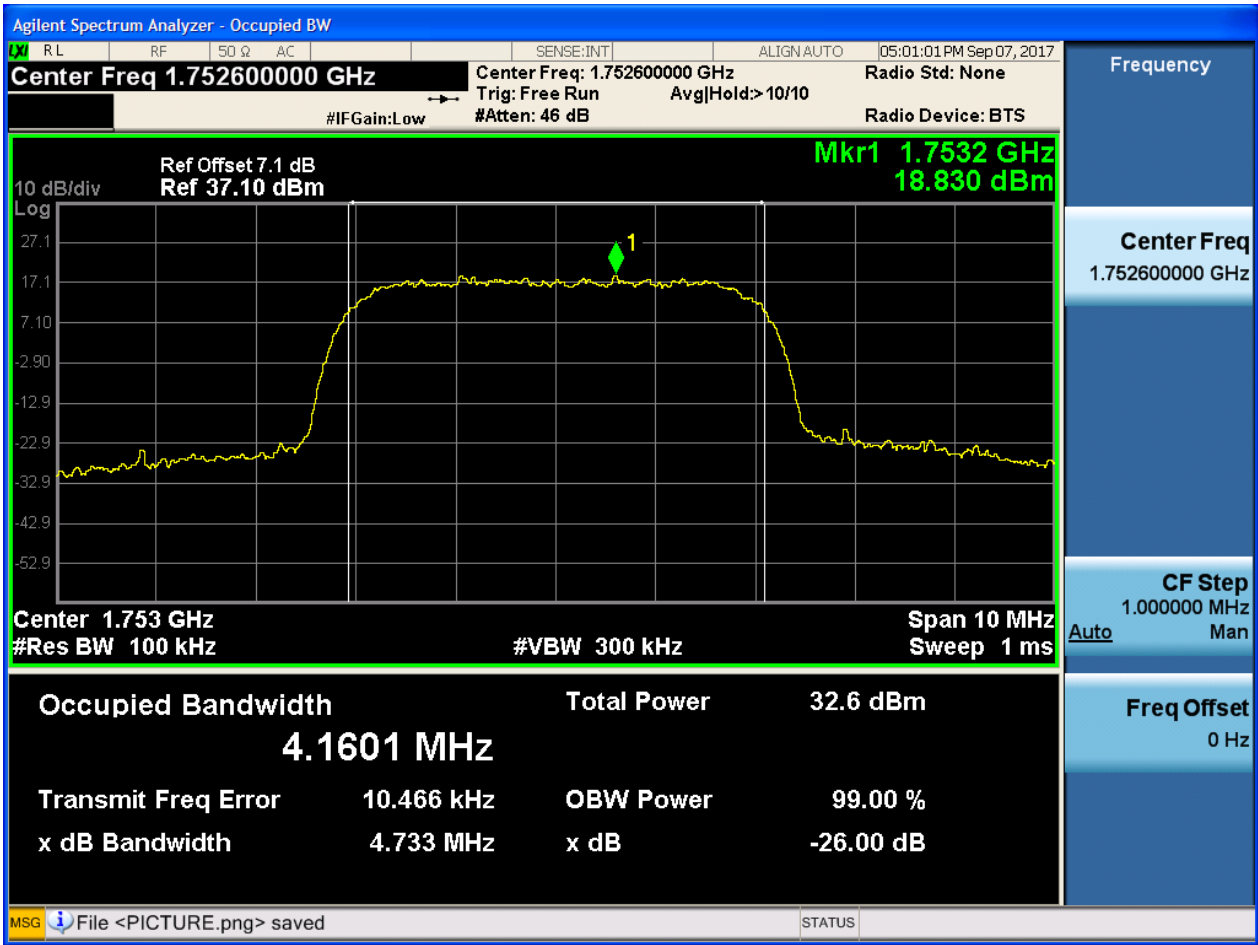




4.1.2.1.2 Test Channel = MCH



4.1.2.1.3 Test Channel = HCH

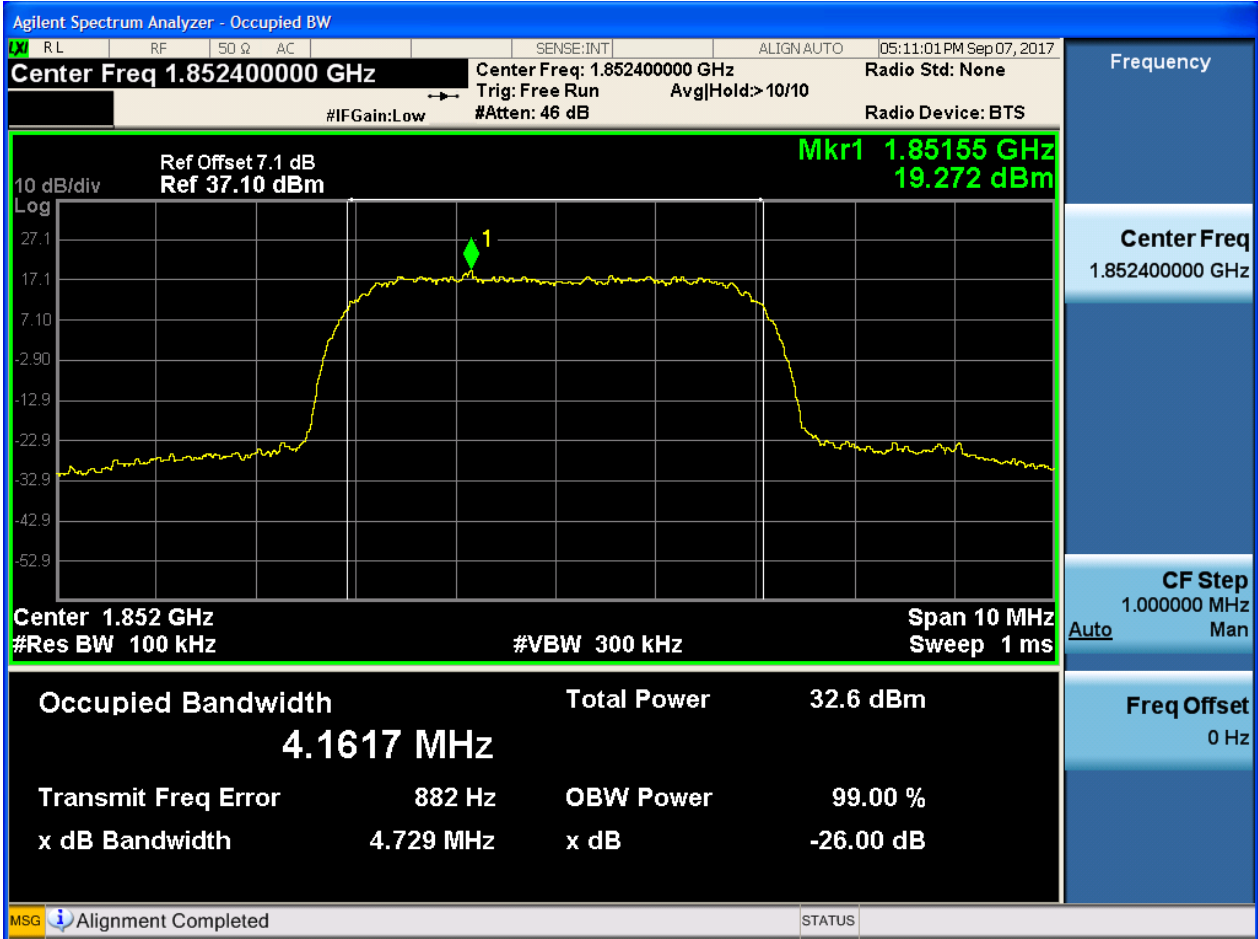




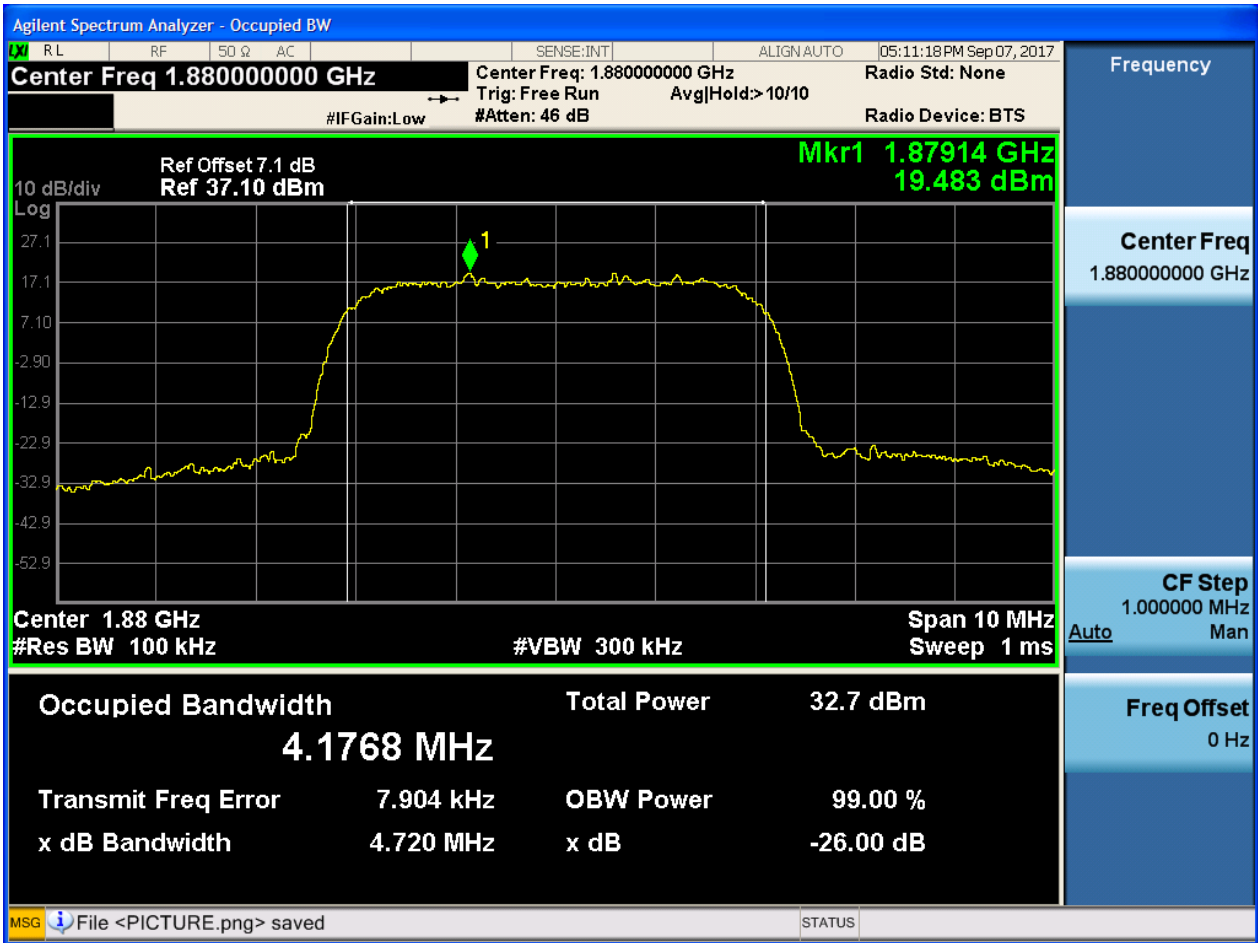
4.1.3 Test Band = WCDMA1900

4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



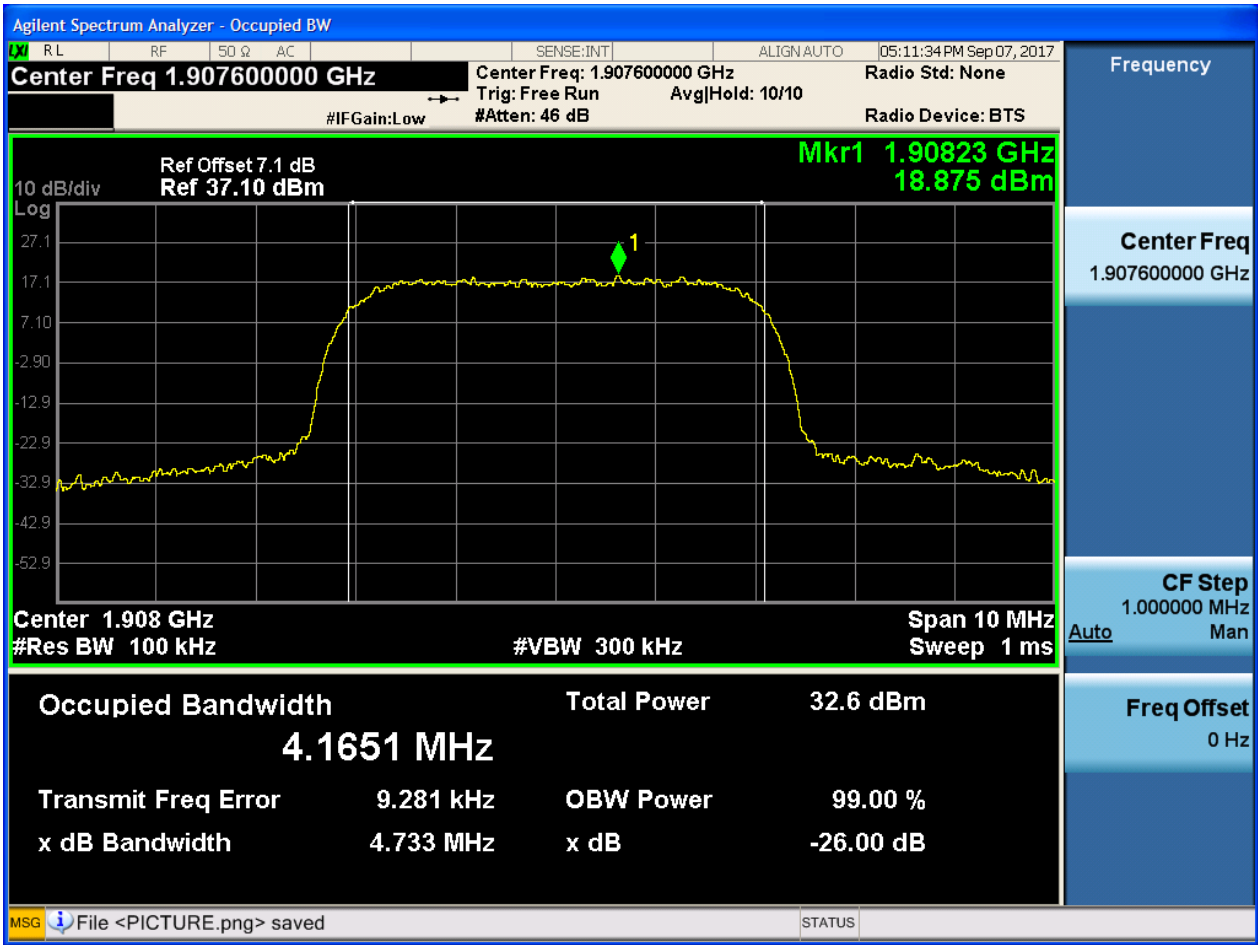
4.1.3.1.2 Test Channel = MCH







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





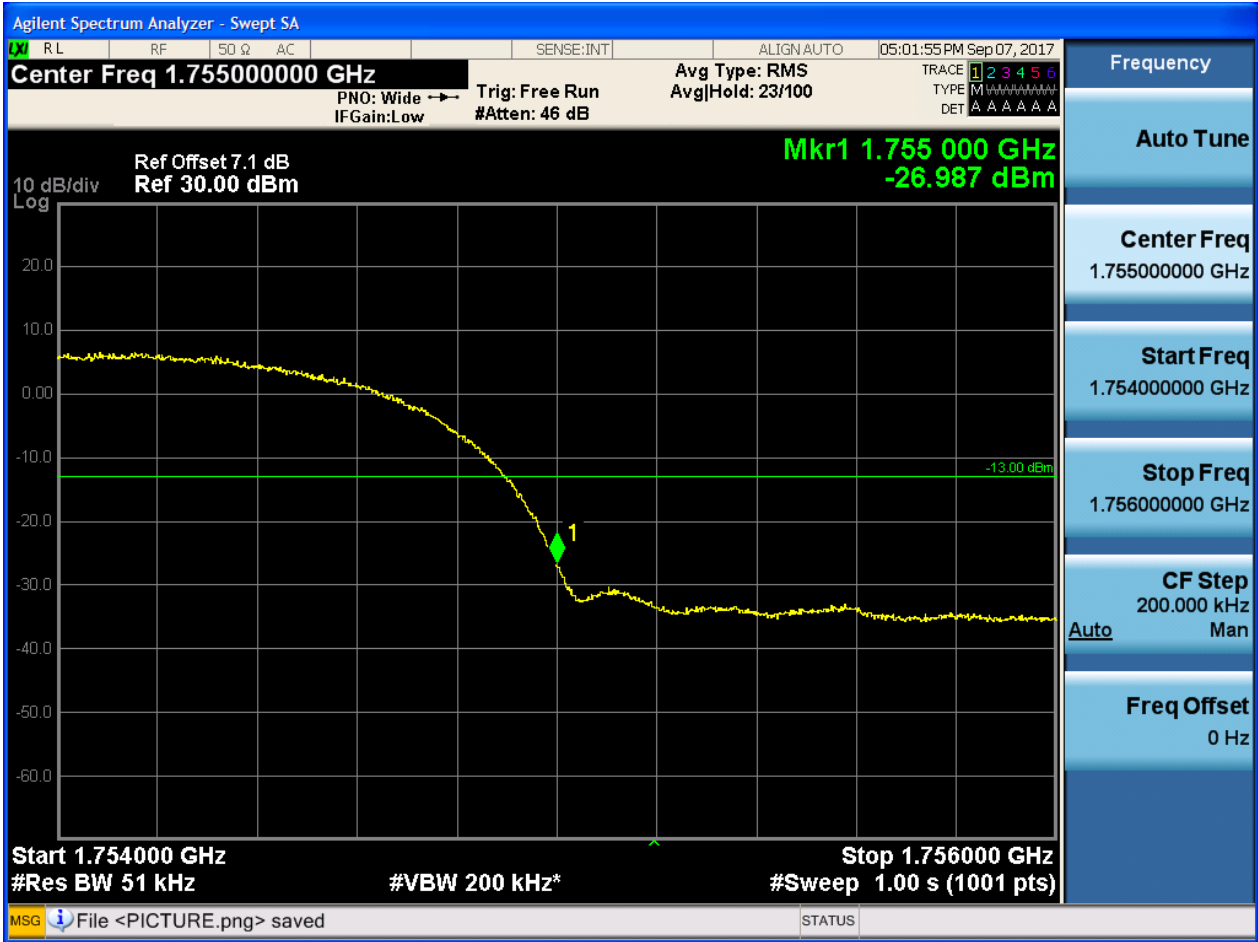
5.1.2 Test Band = WCDMA1700

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

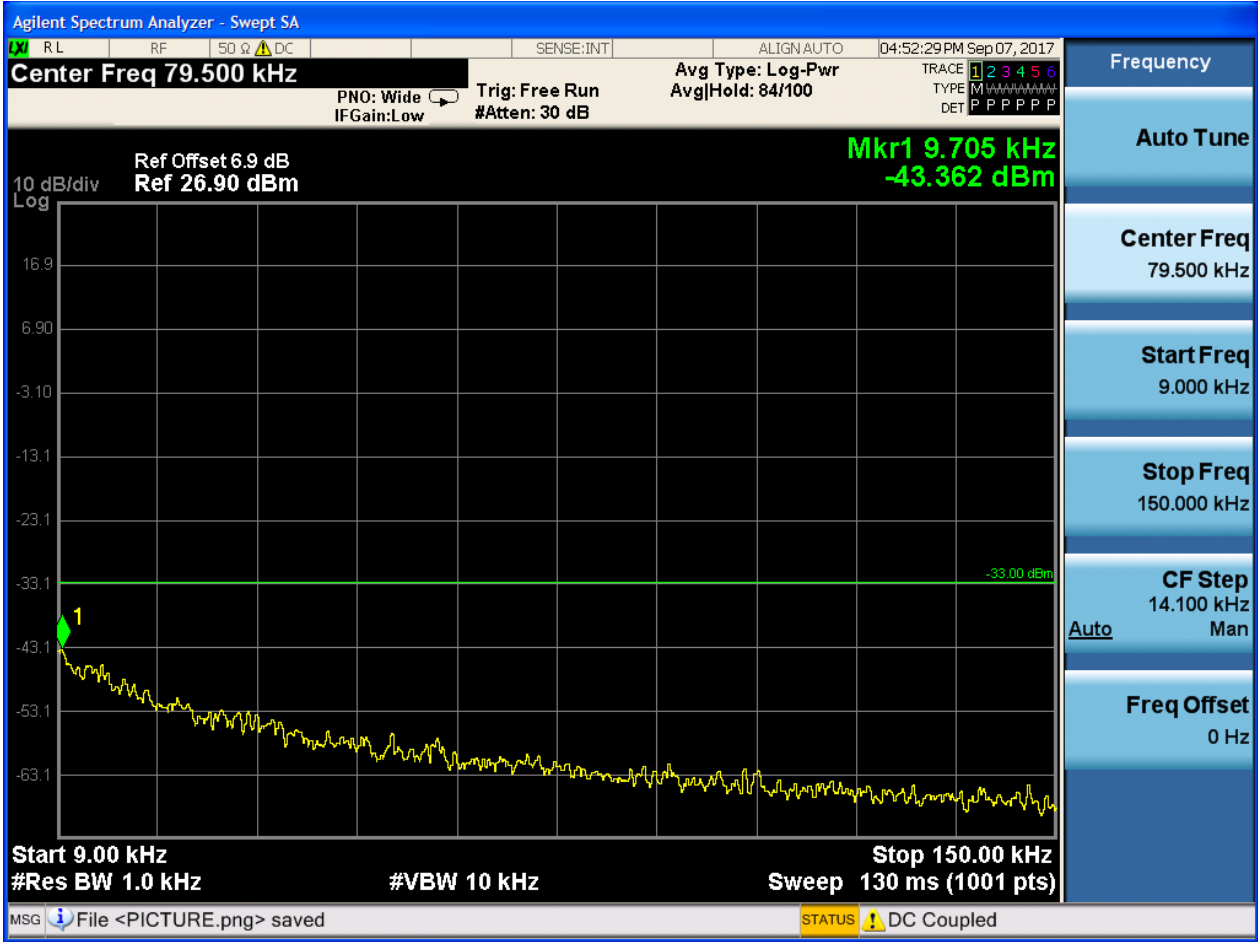
#### 6.1 For UMTS

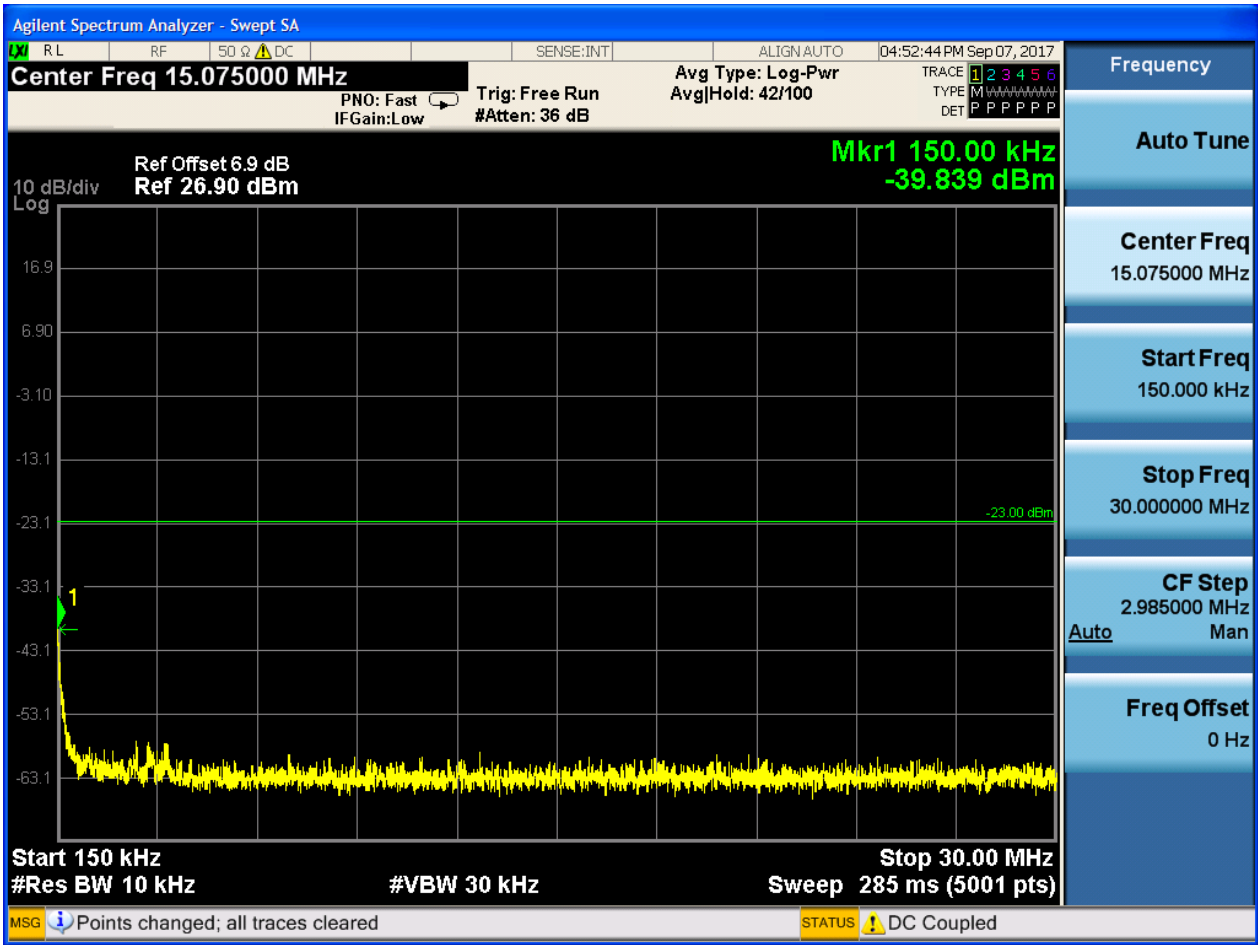
##### 6.1.1 Test Band = WCDMA850

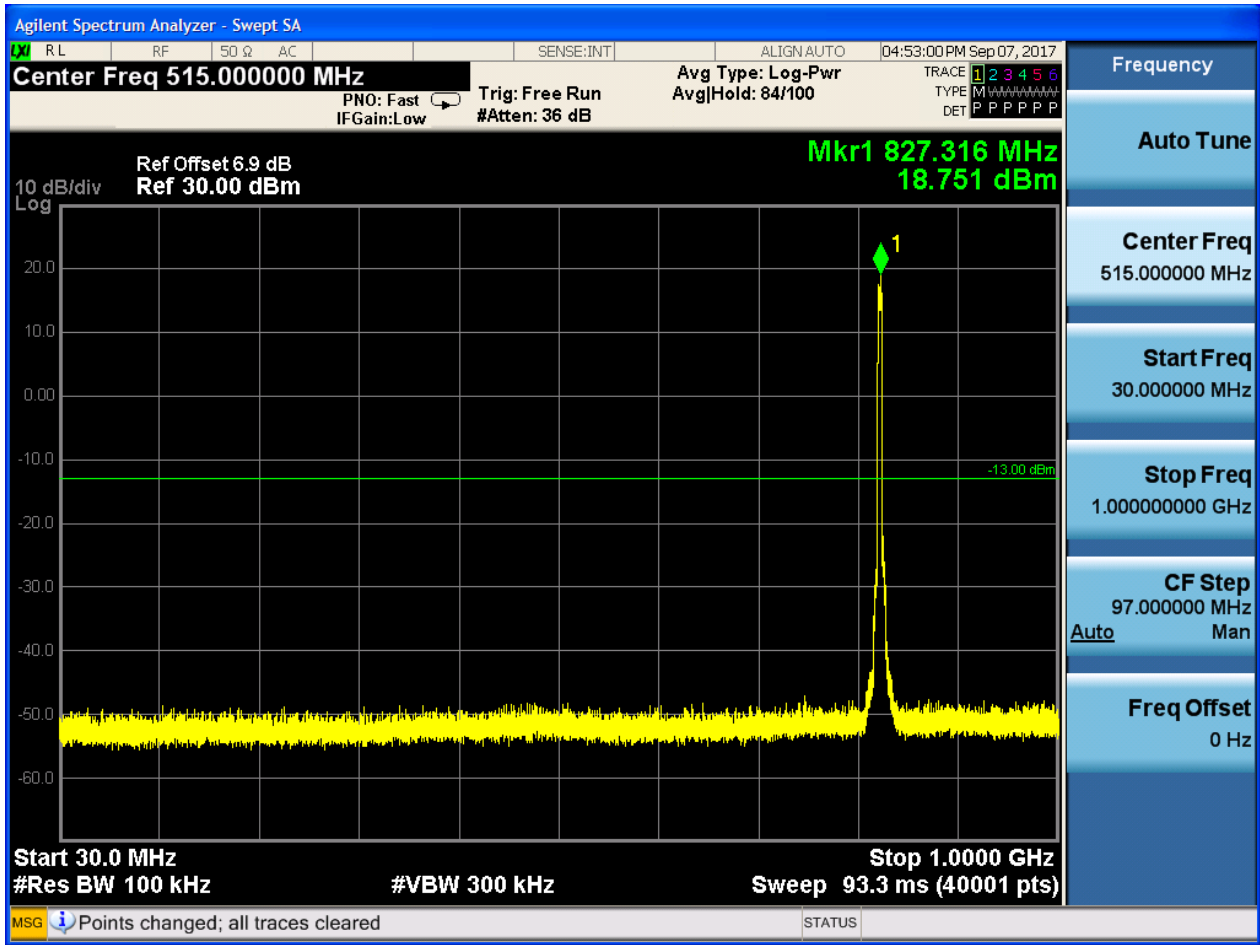
##### 6.1.1.1 Test Mode = UMTS/TM1

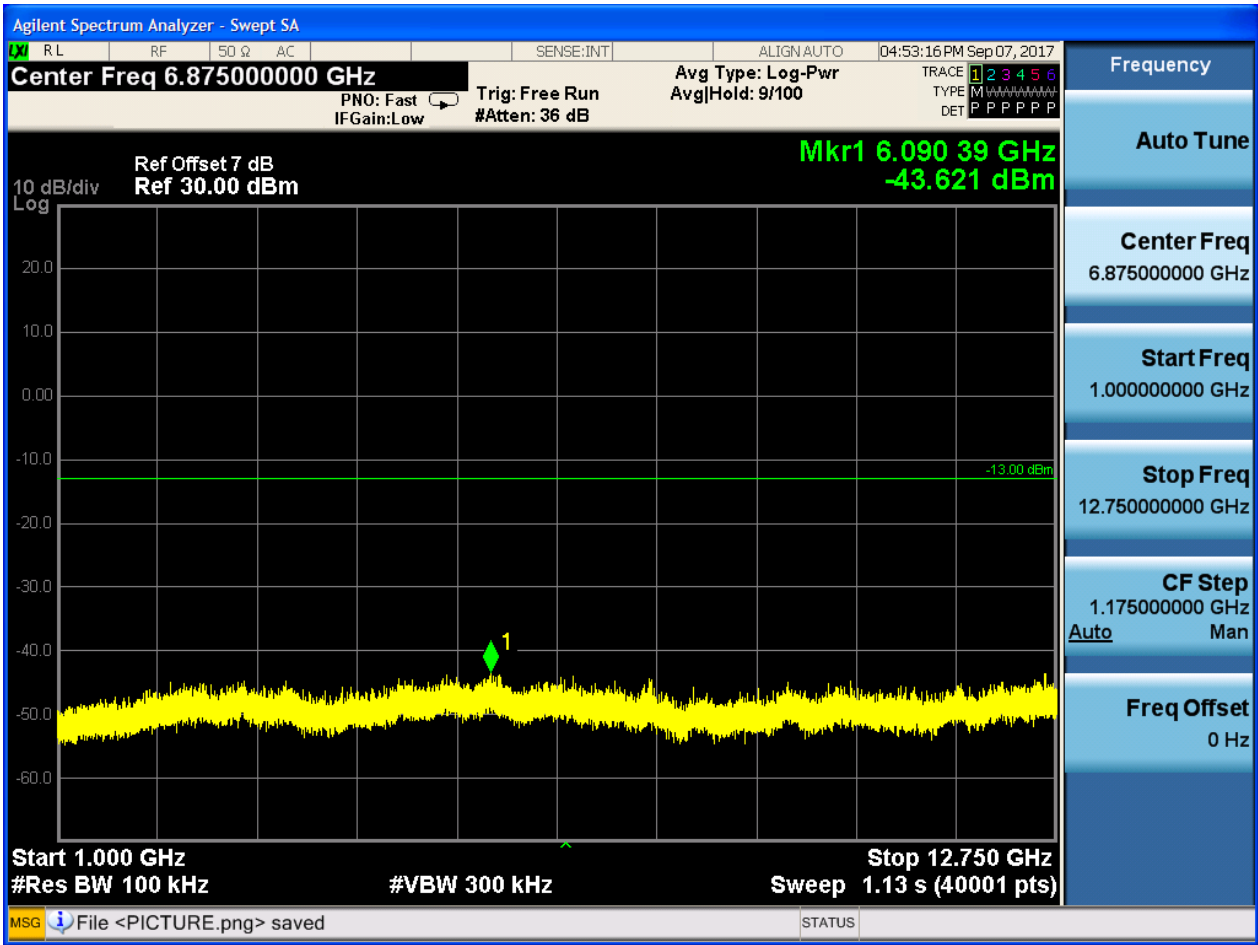
##### 6.1.1.1.1 Test Channel = LCH





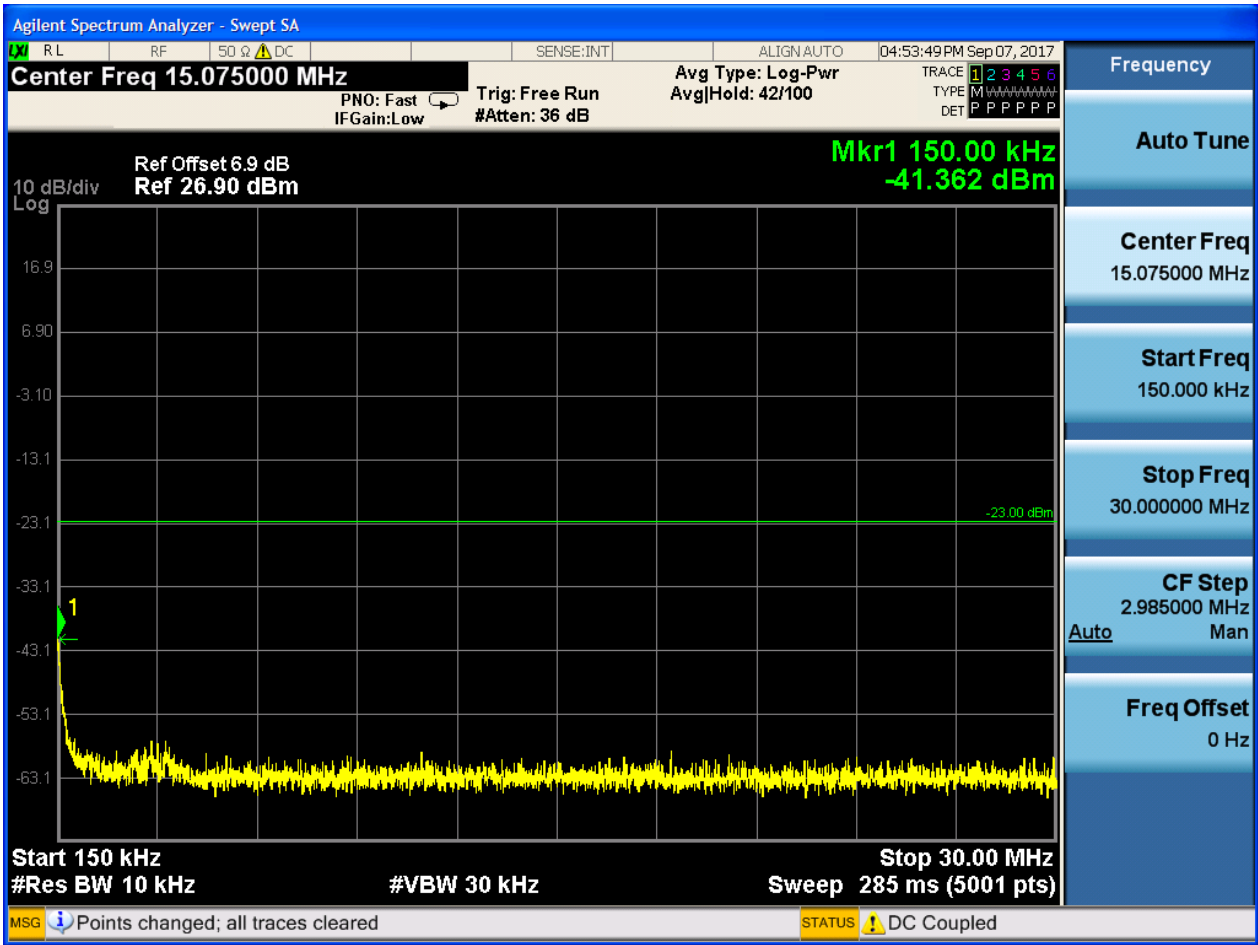


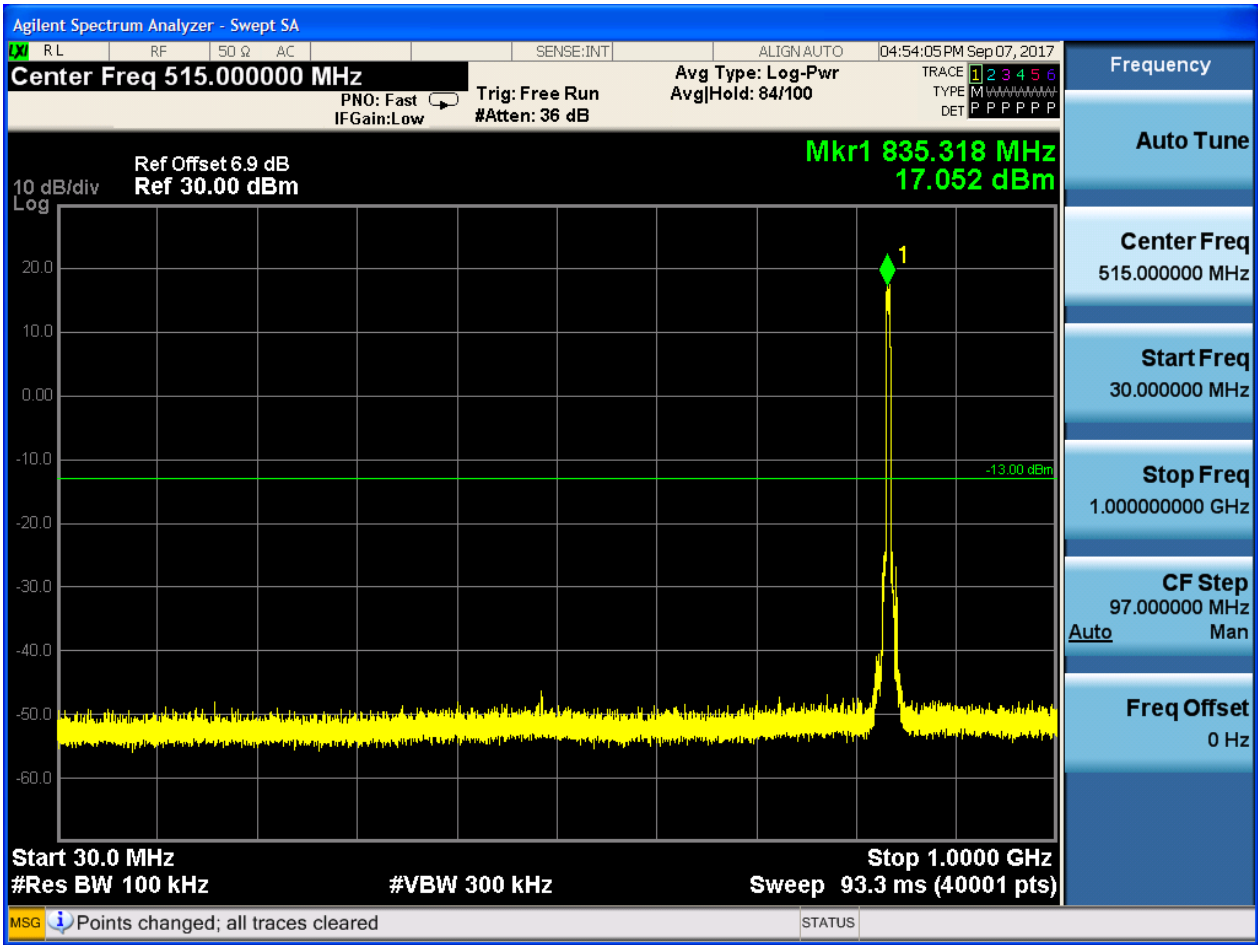


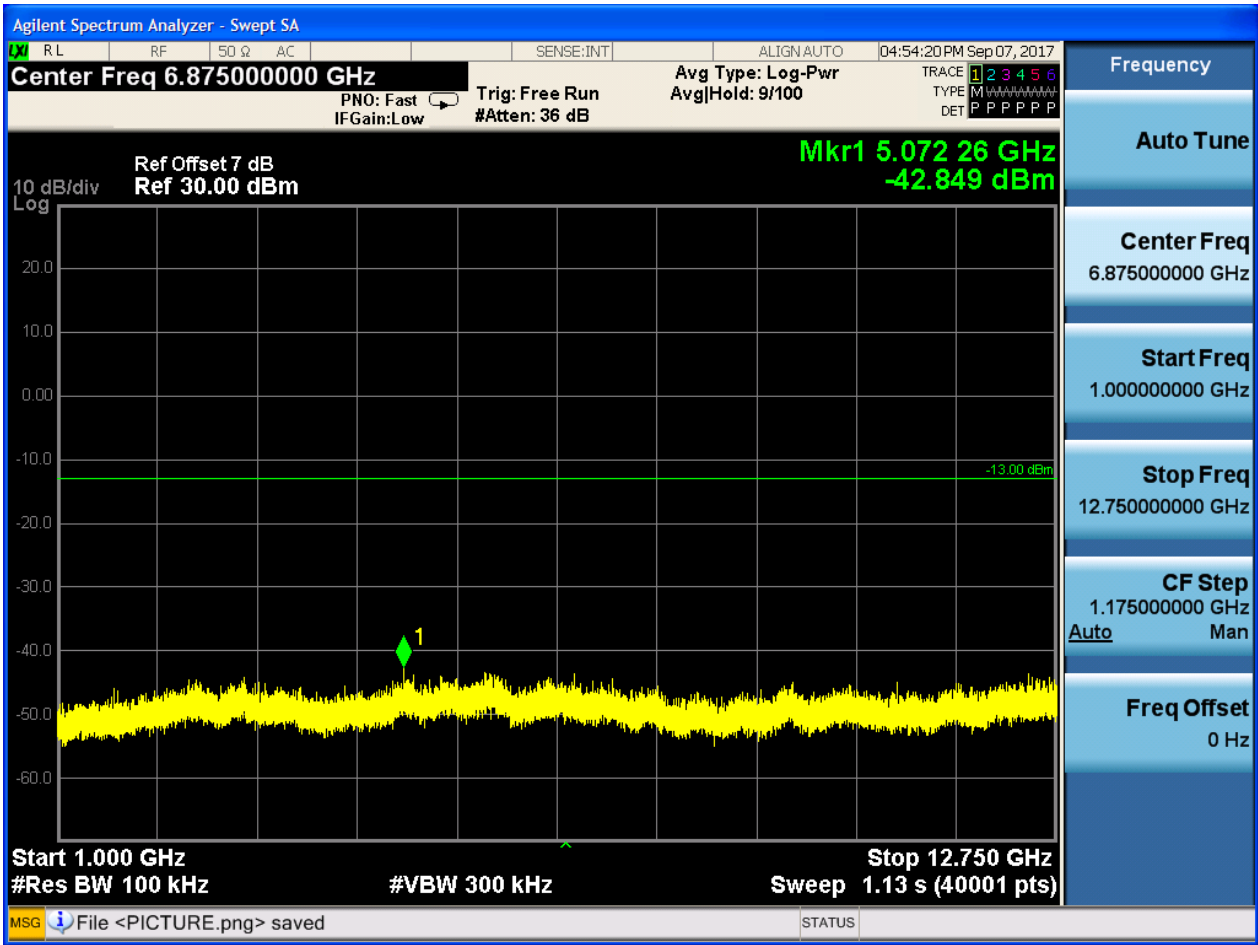


6.1.1.1.2 Test Channel = MCH



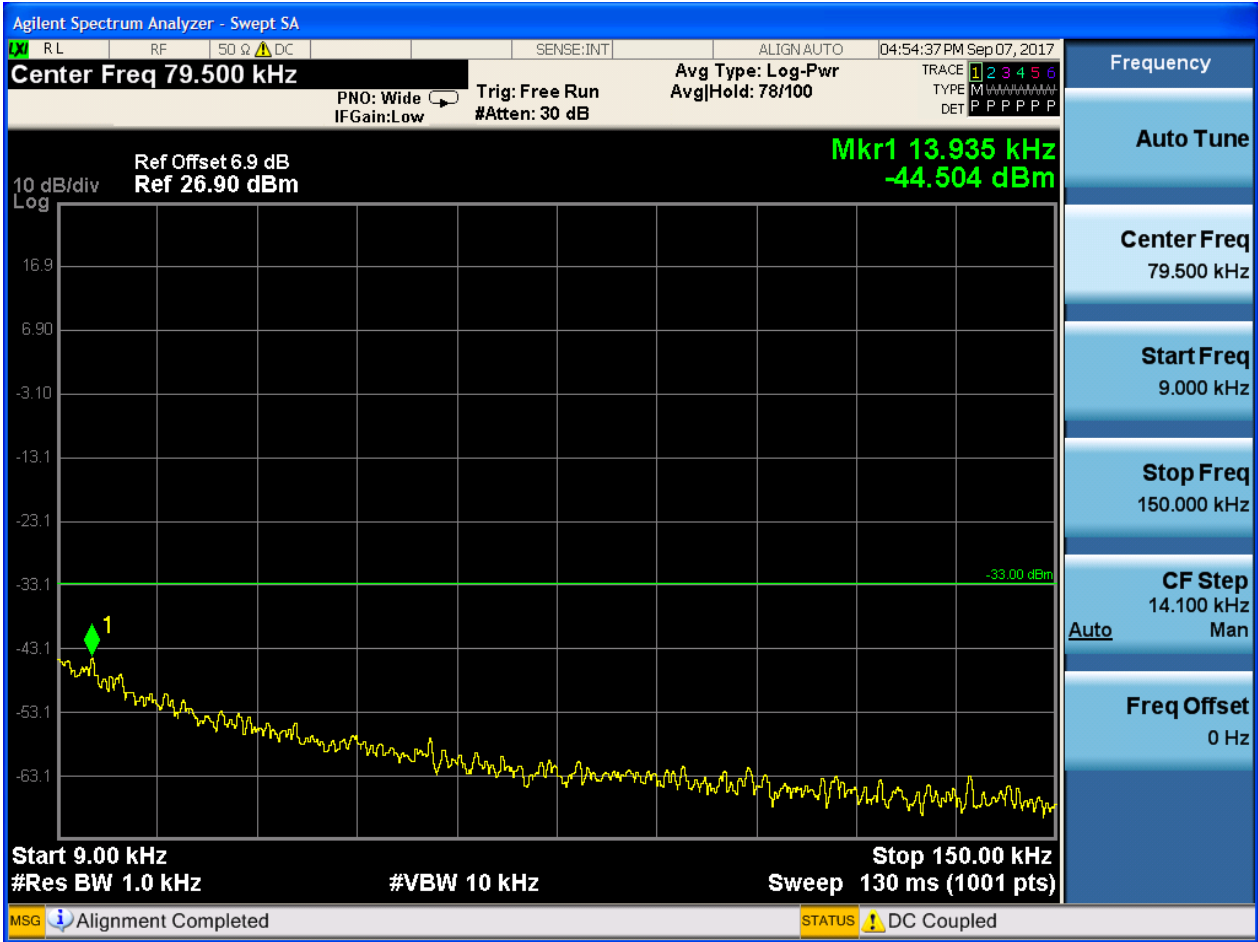


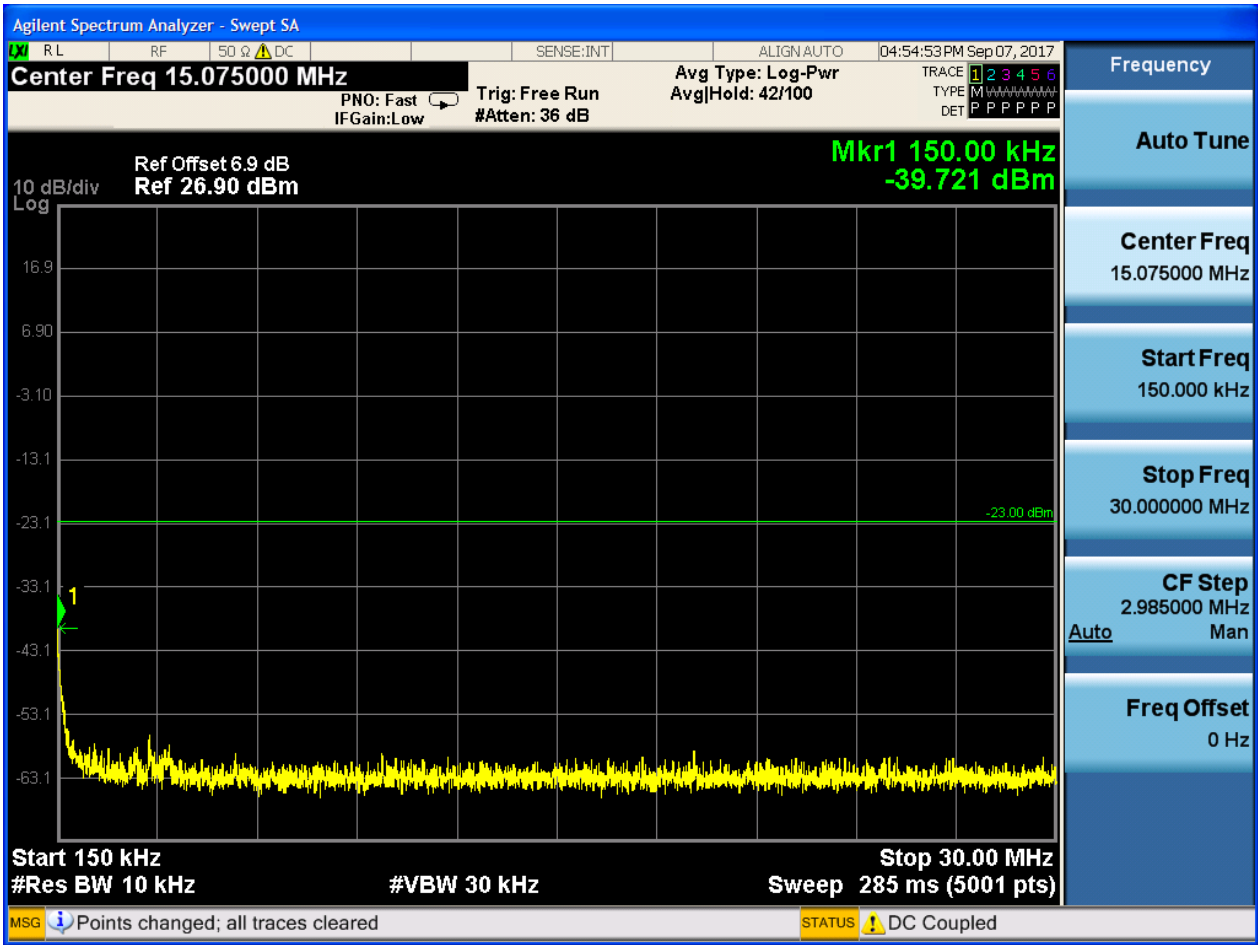


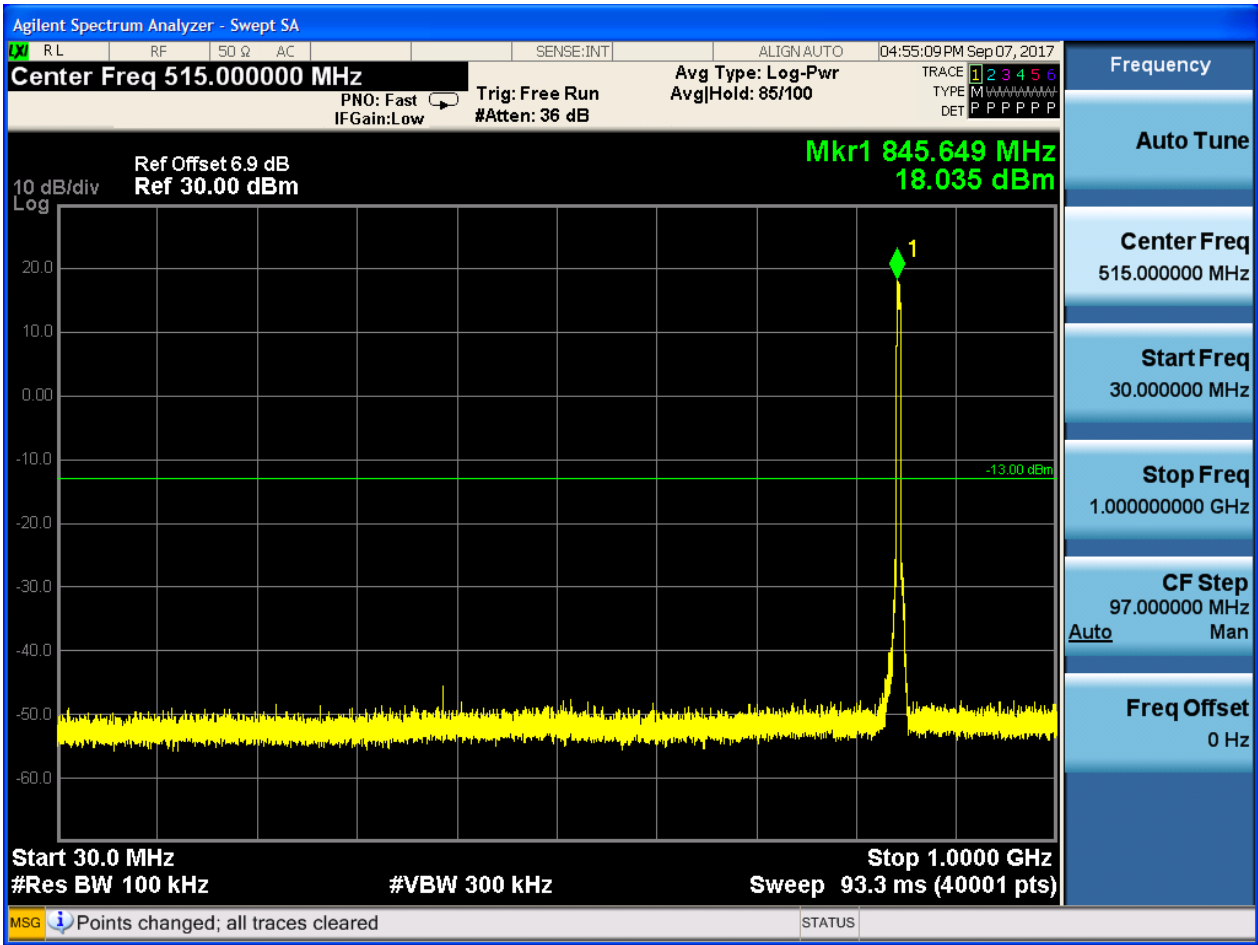


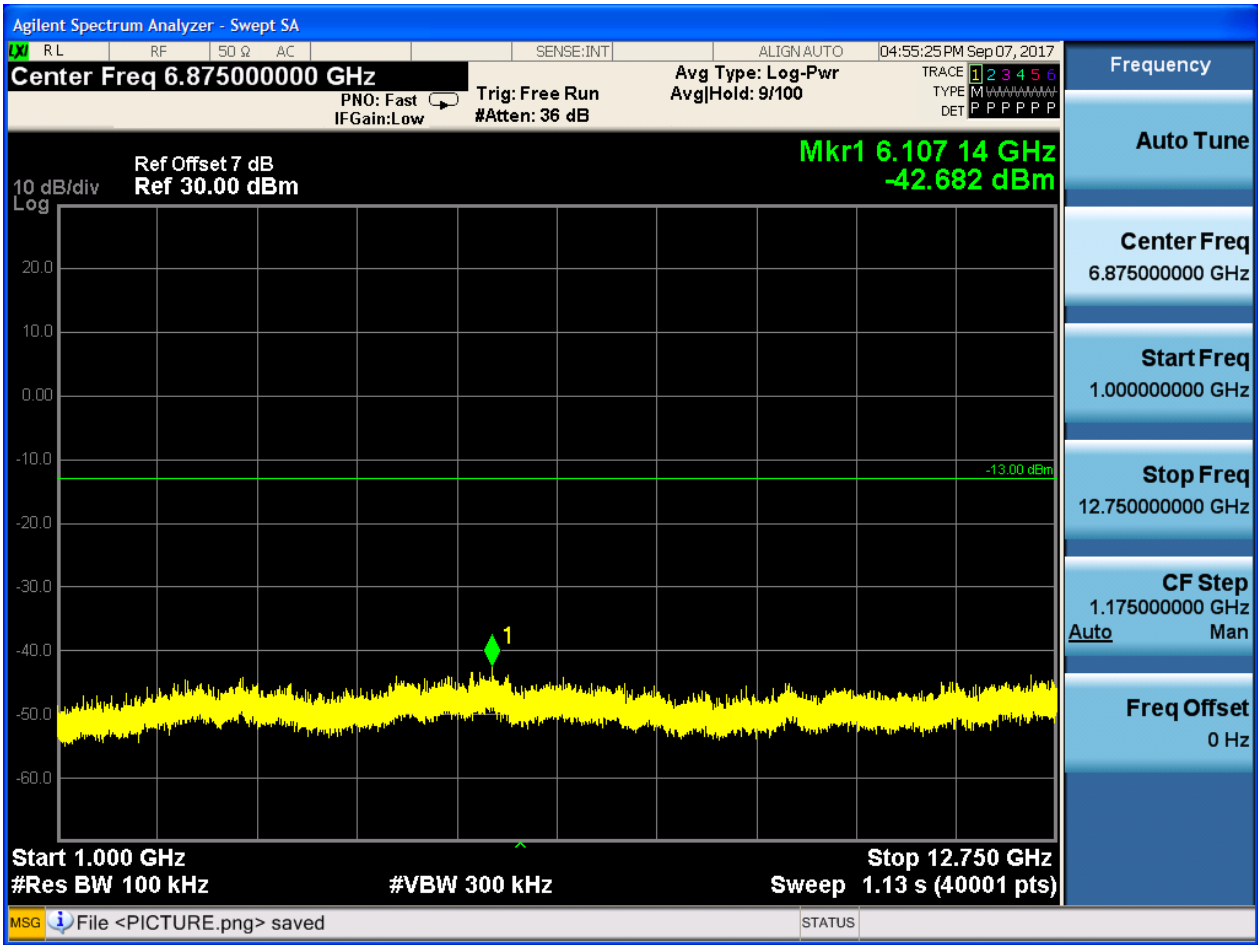


6.1.1.1.3 Test Channel = HCH







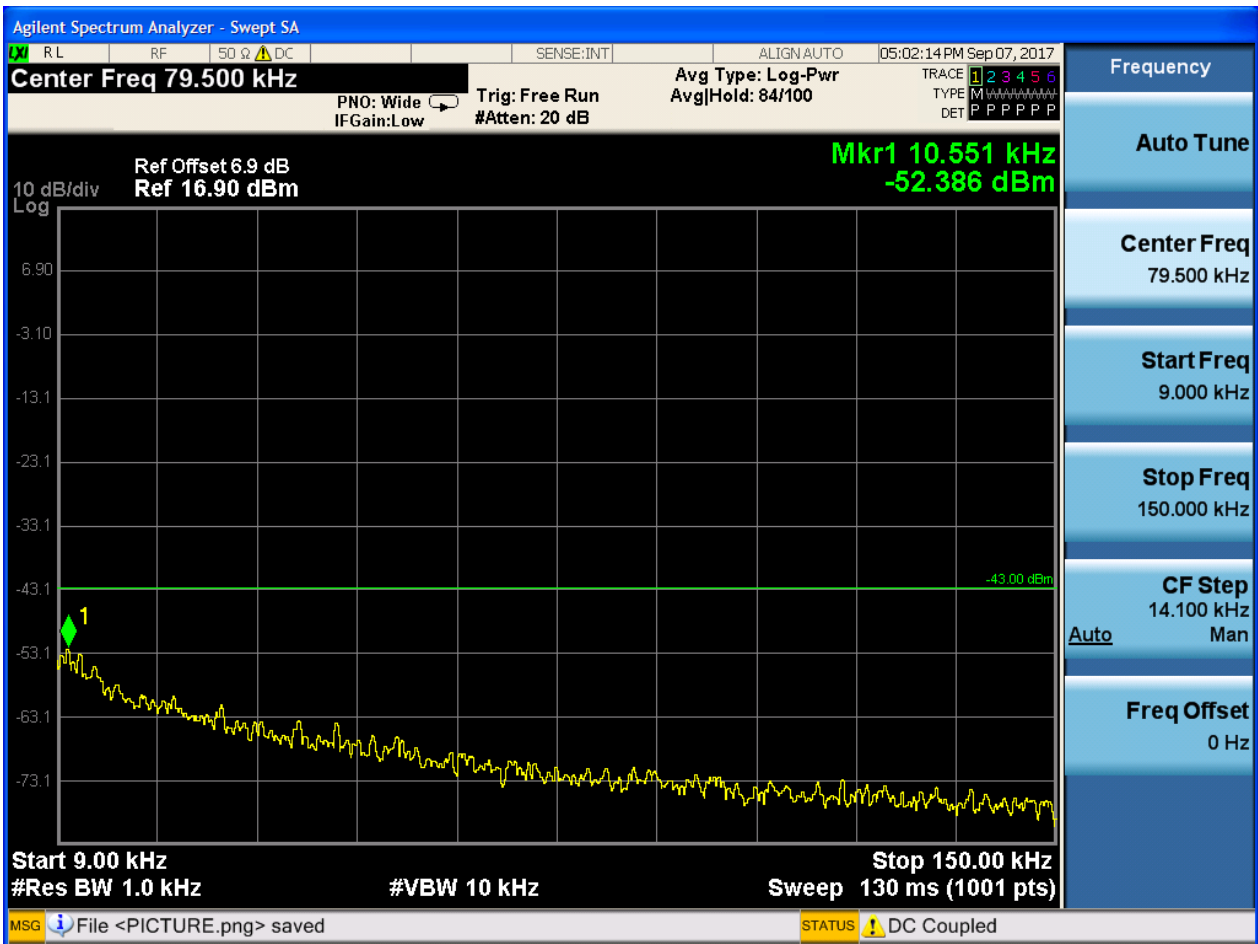


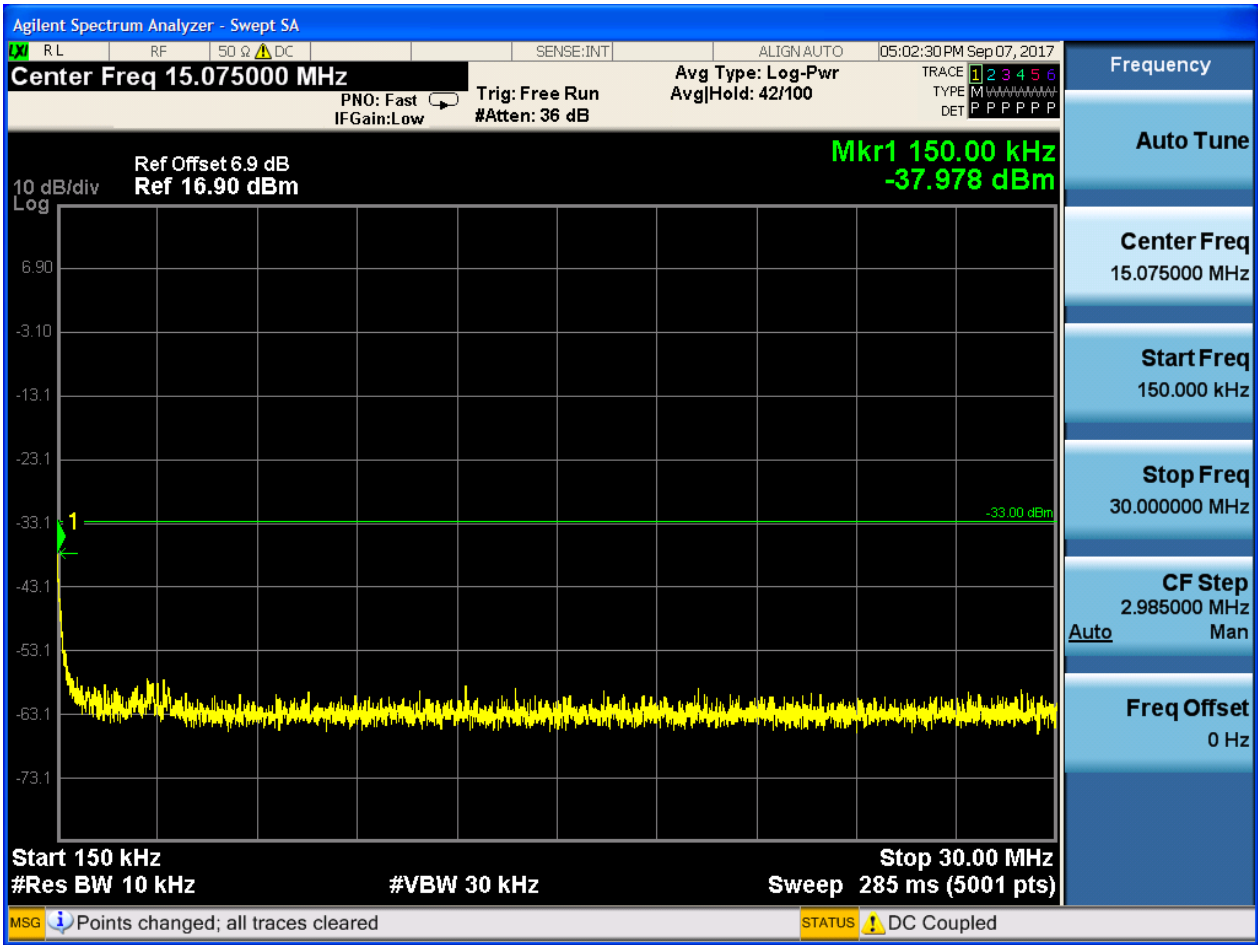


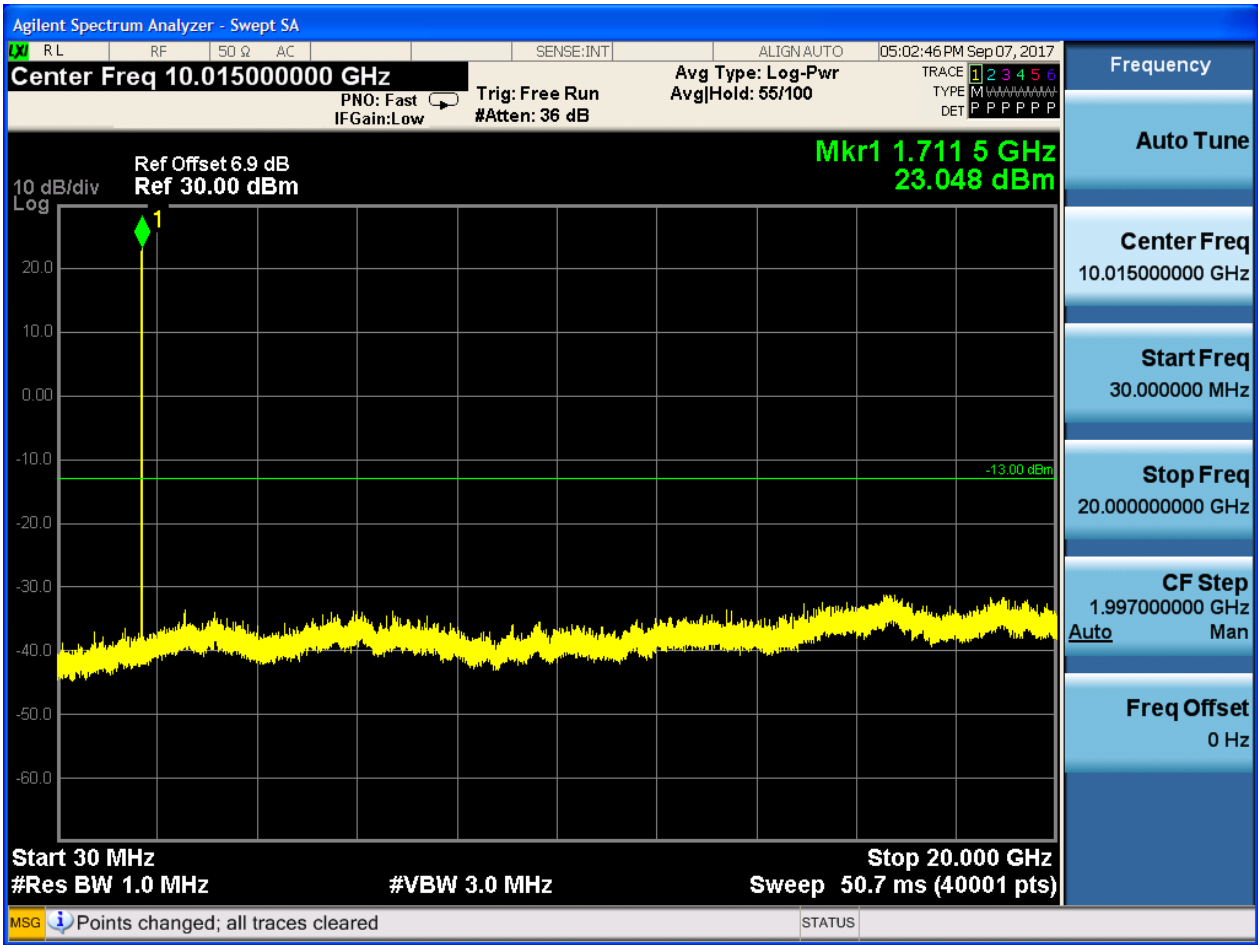
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

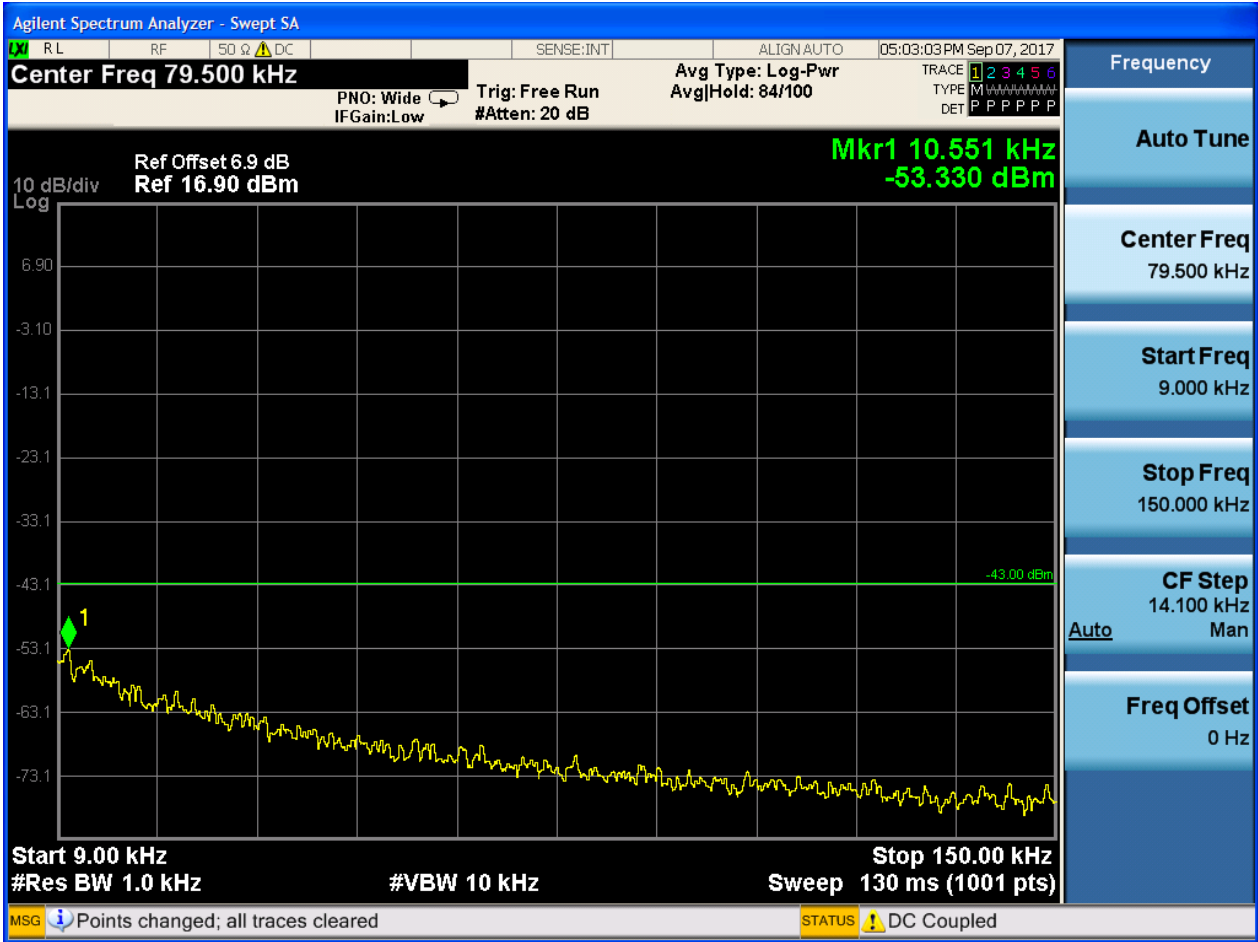
6.1.2.1.1 Test Channel = LCH



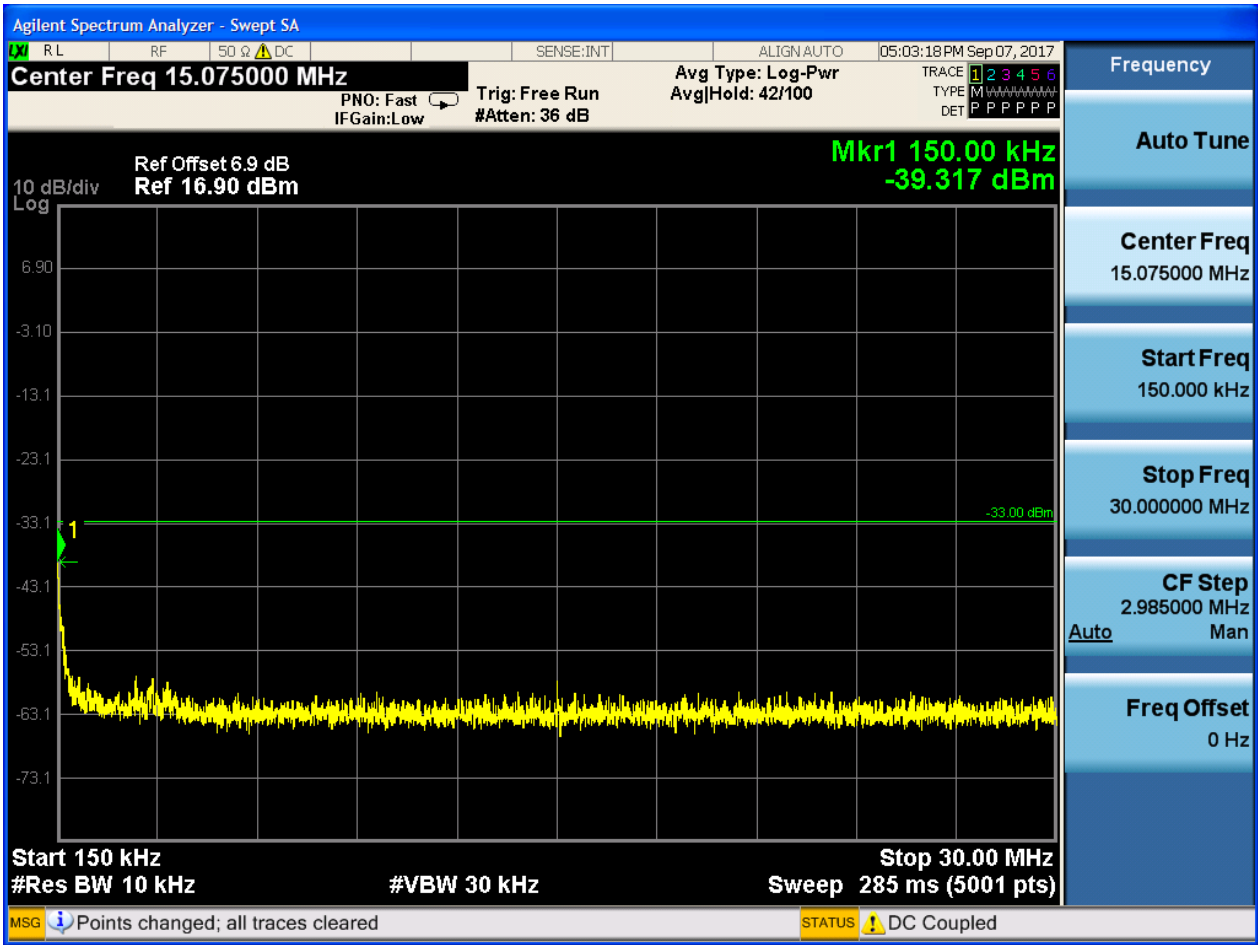


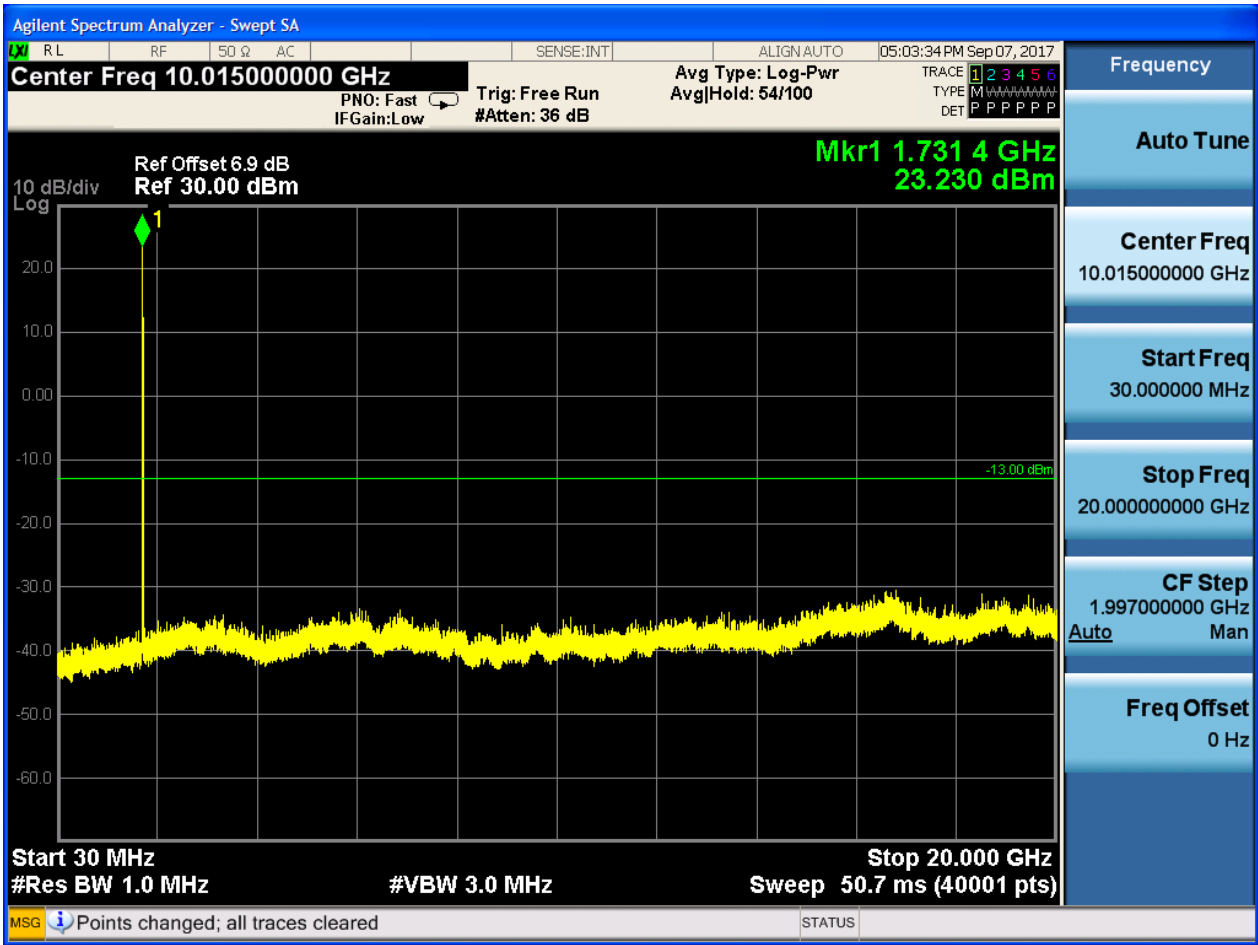


6.1.2.1.2 Test Channel = MCH

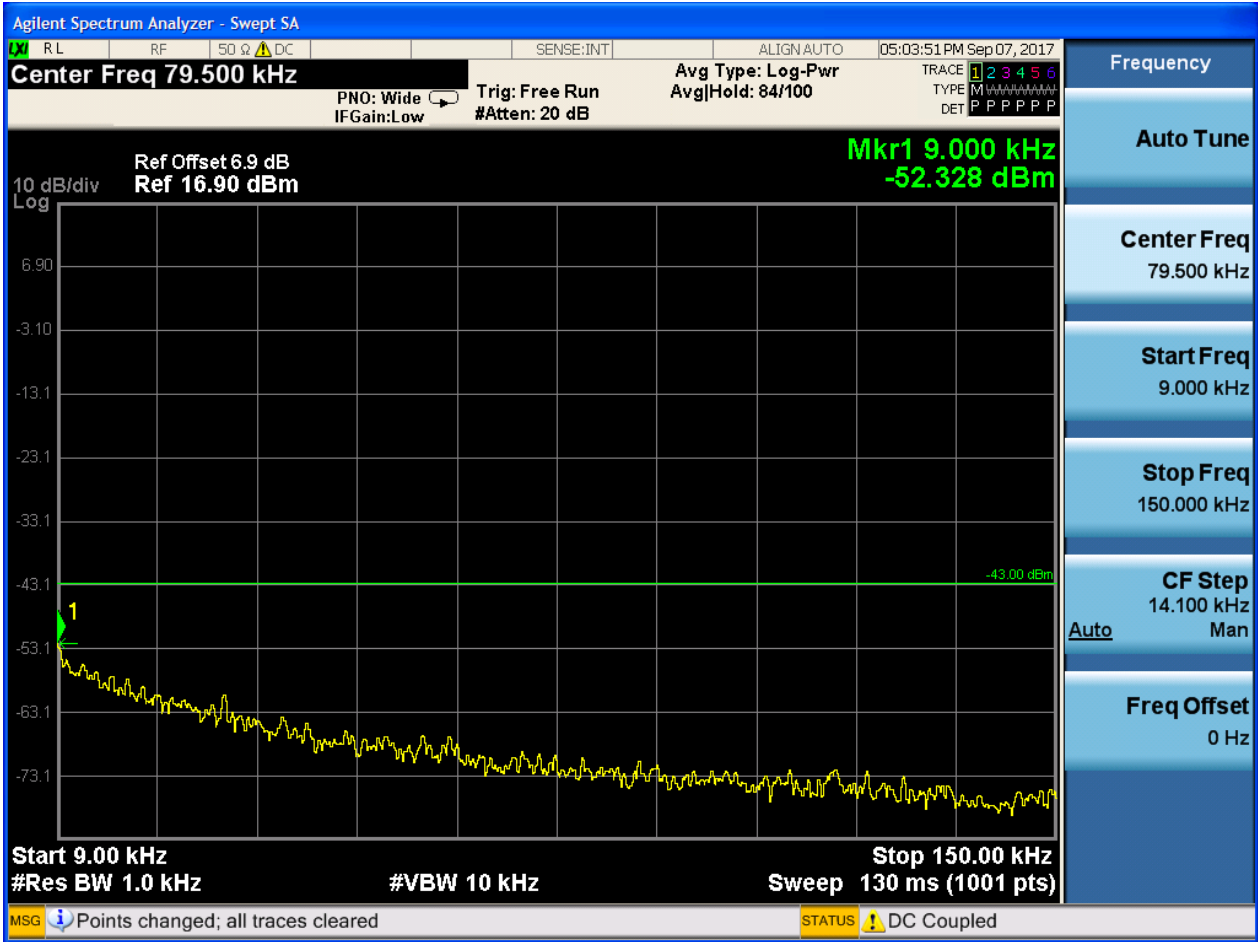


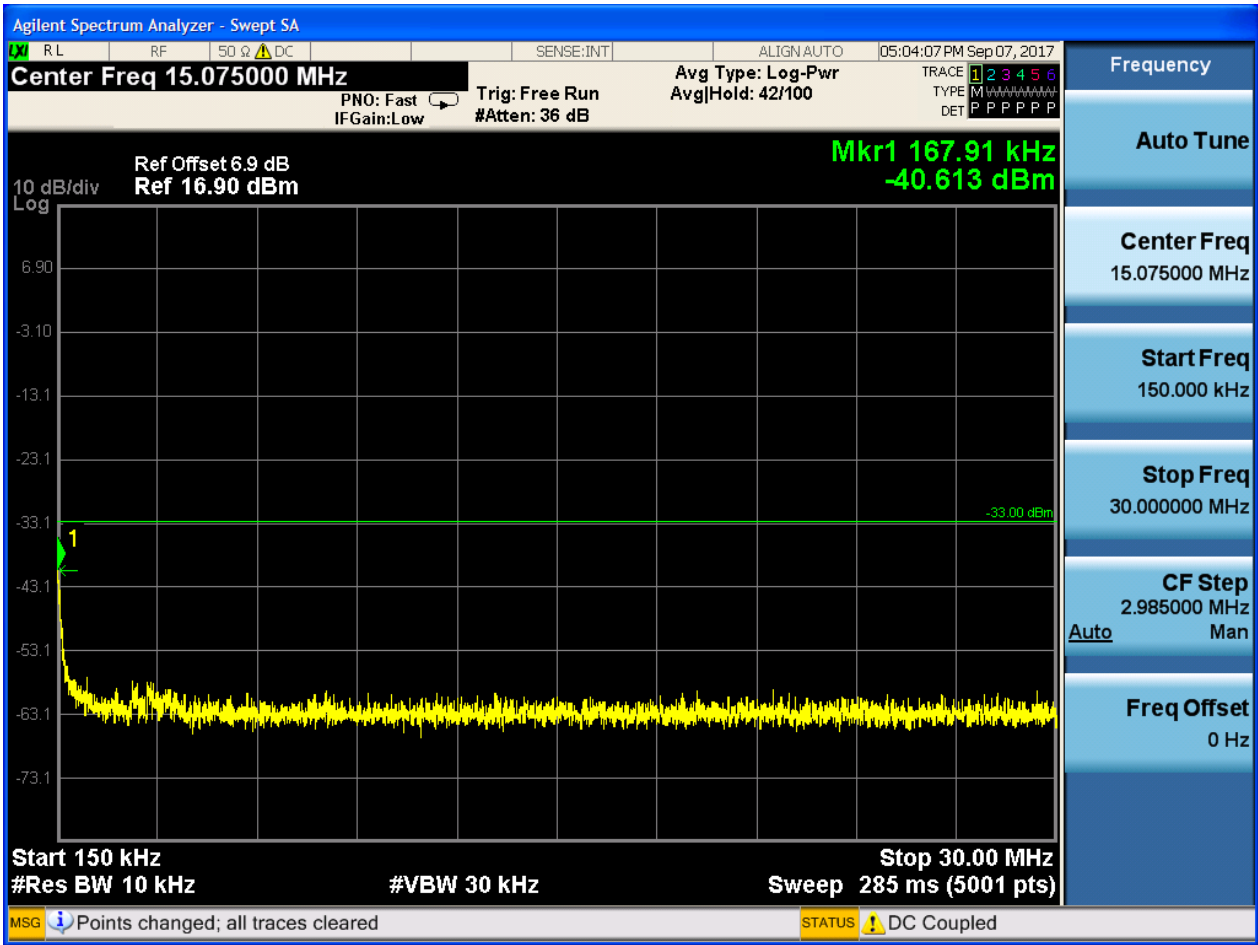


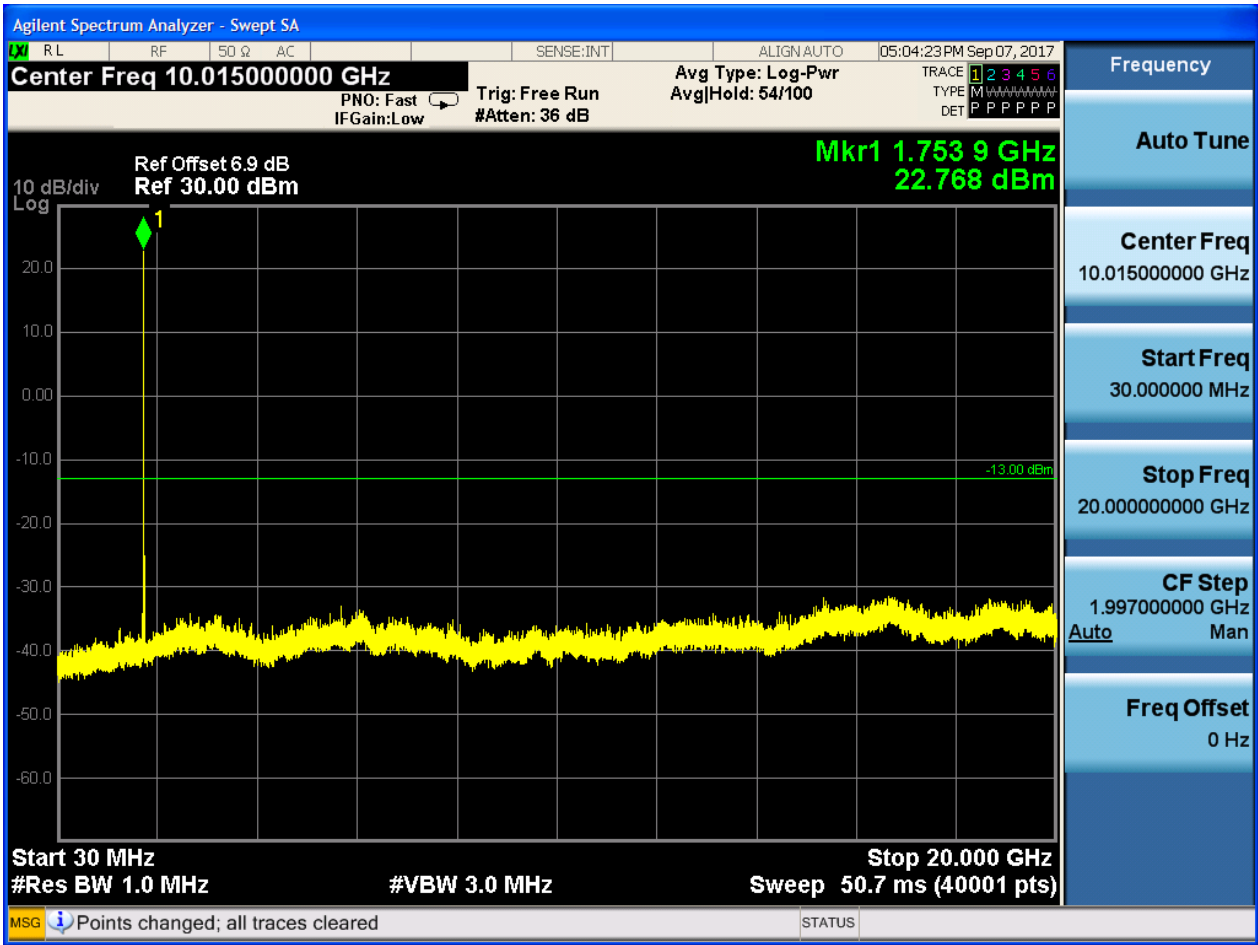




6.1.2.1.3 Test Channel = HCH





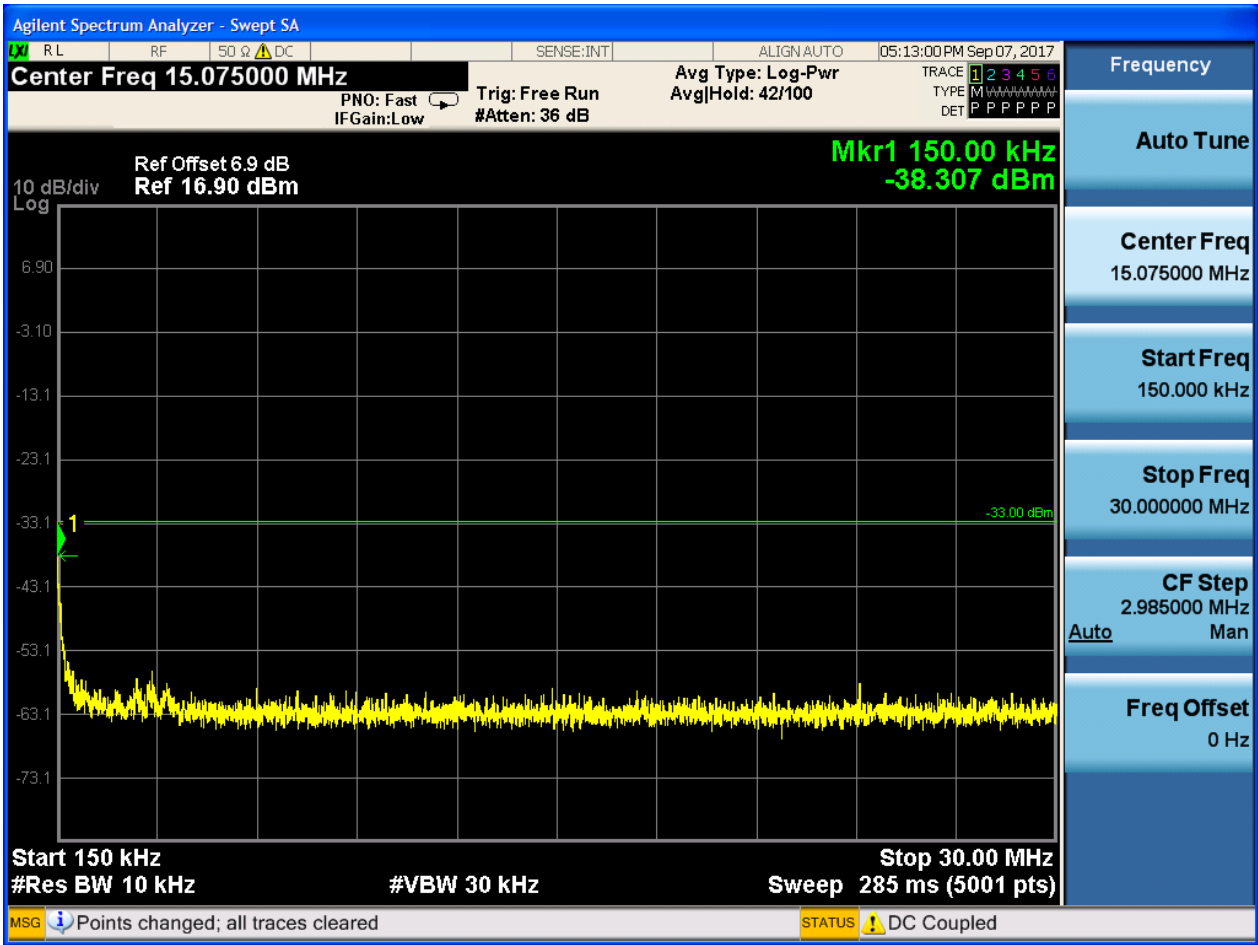


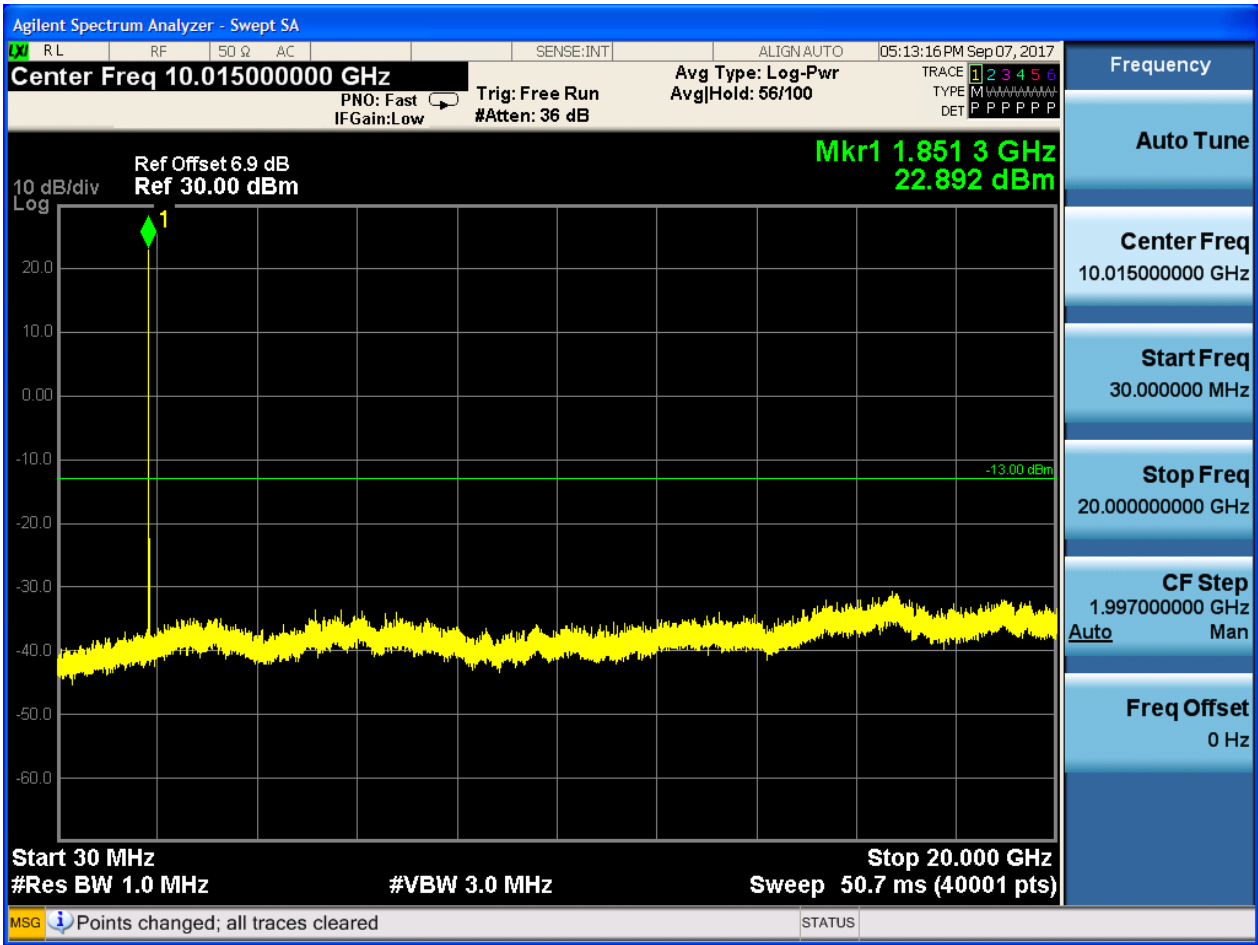
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

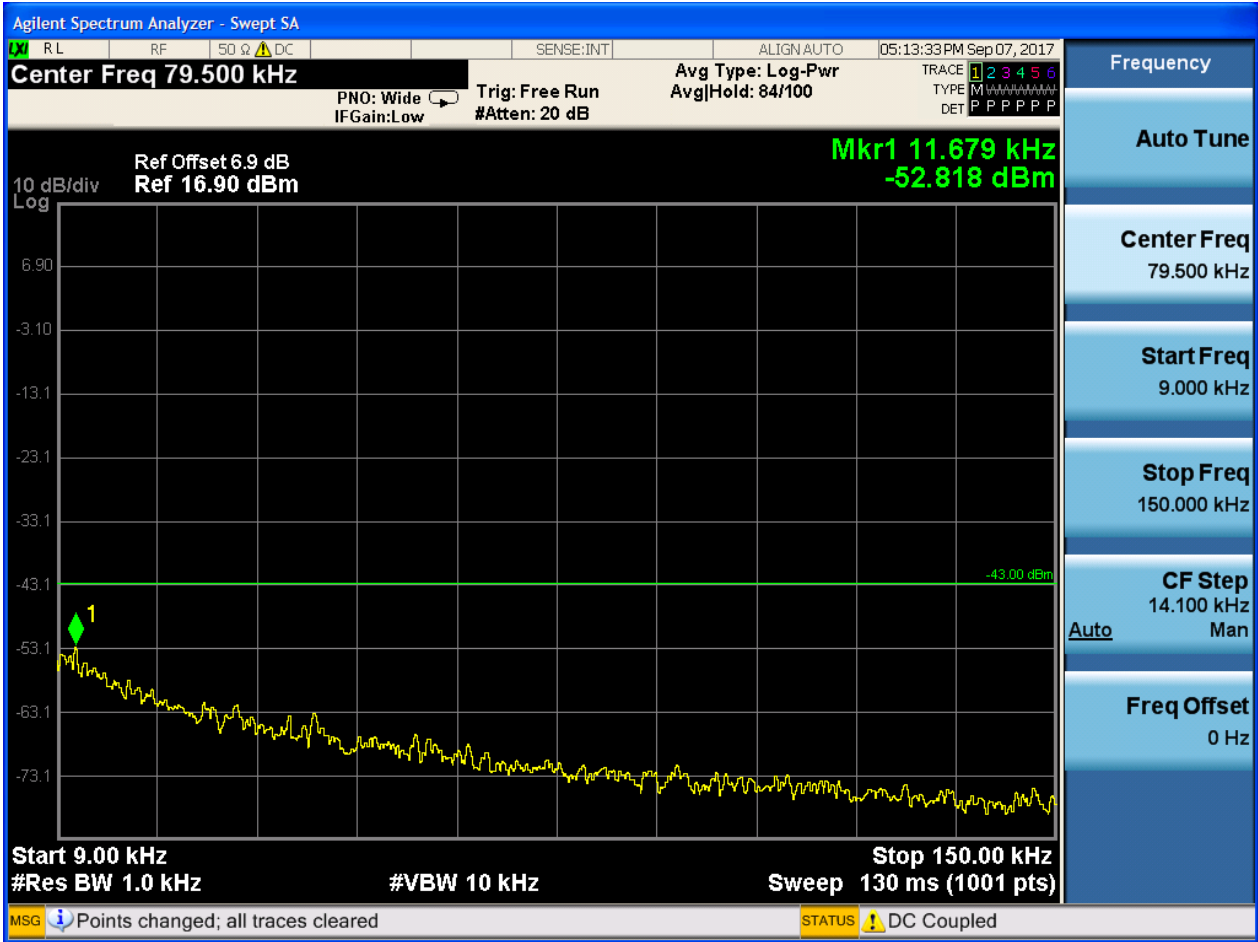


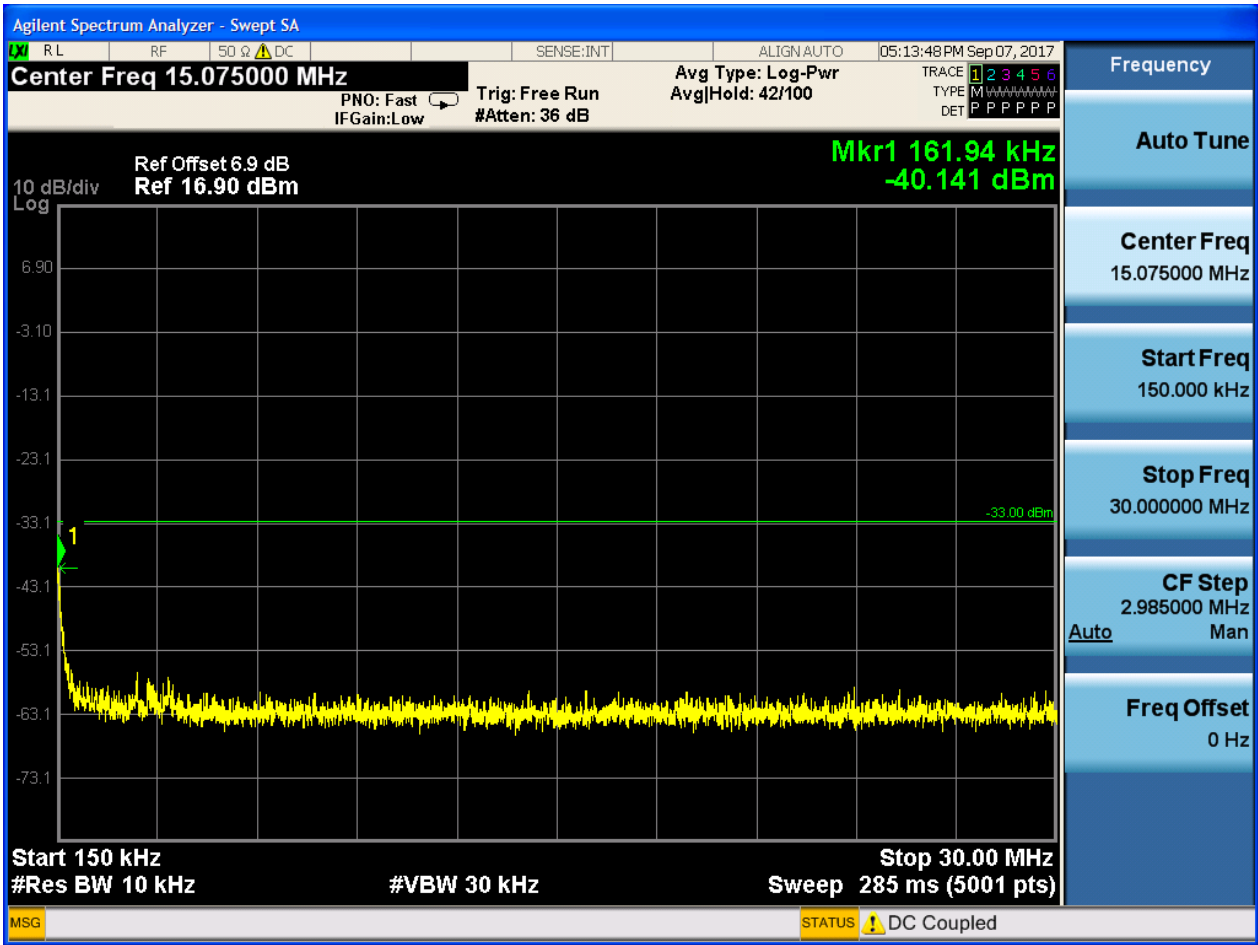


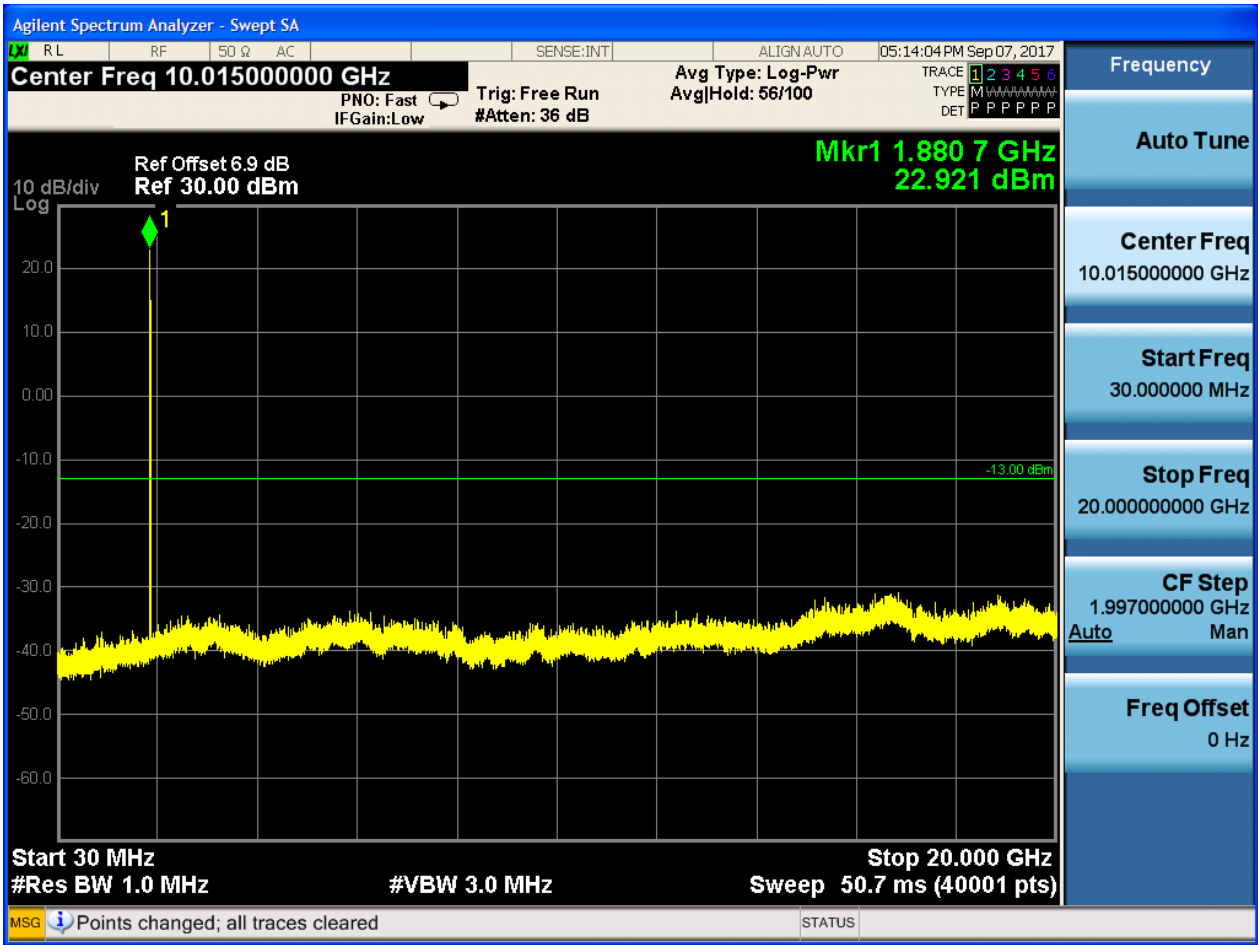




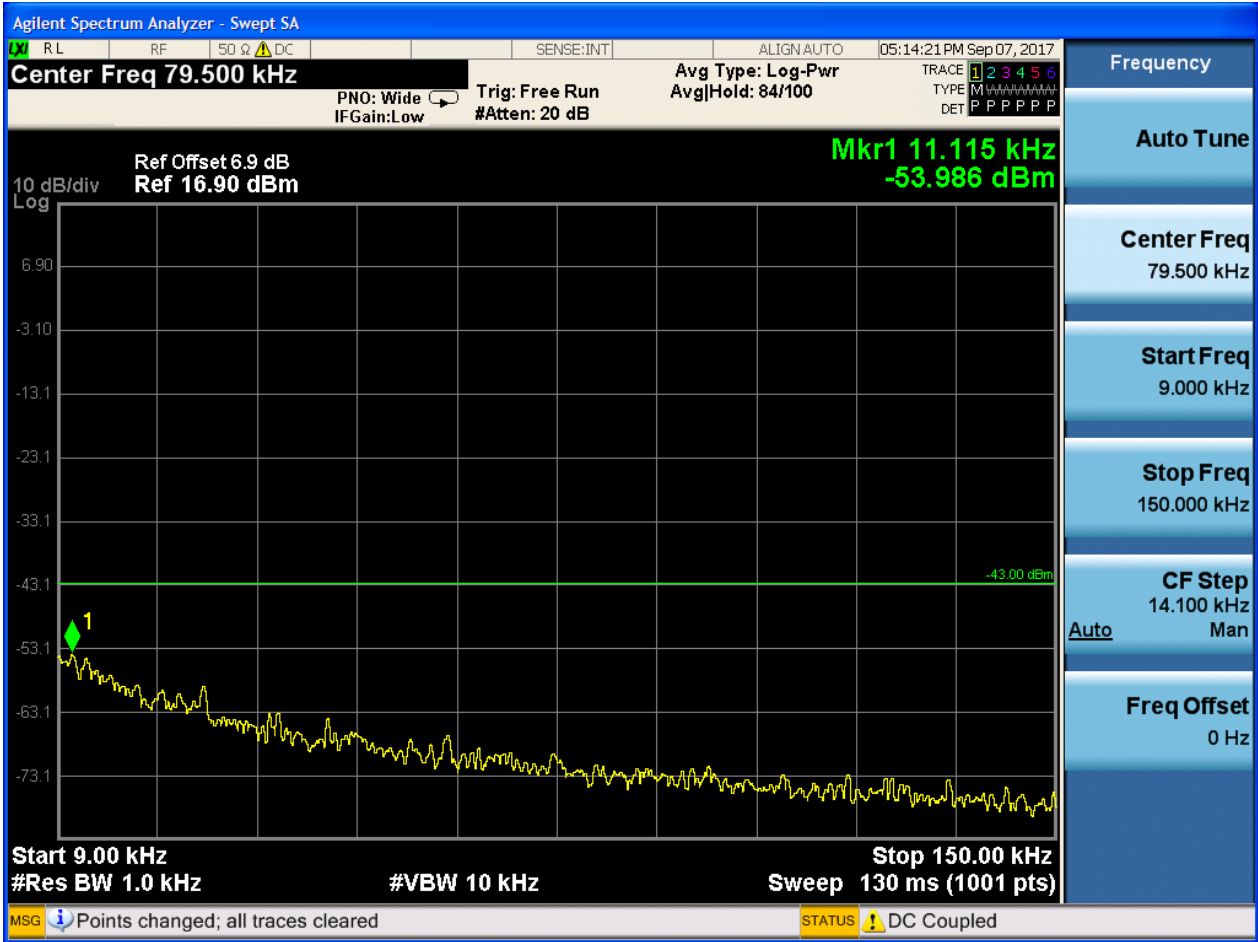
6.1.3.1.2 Test Channel = MCH

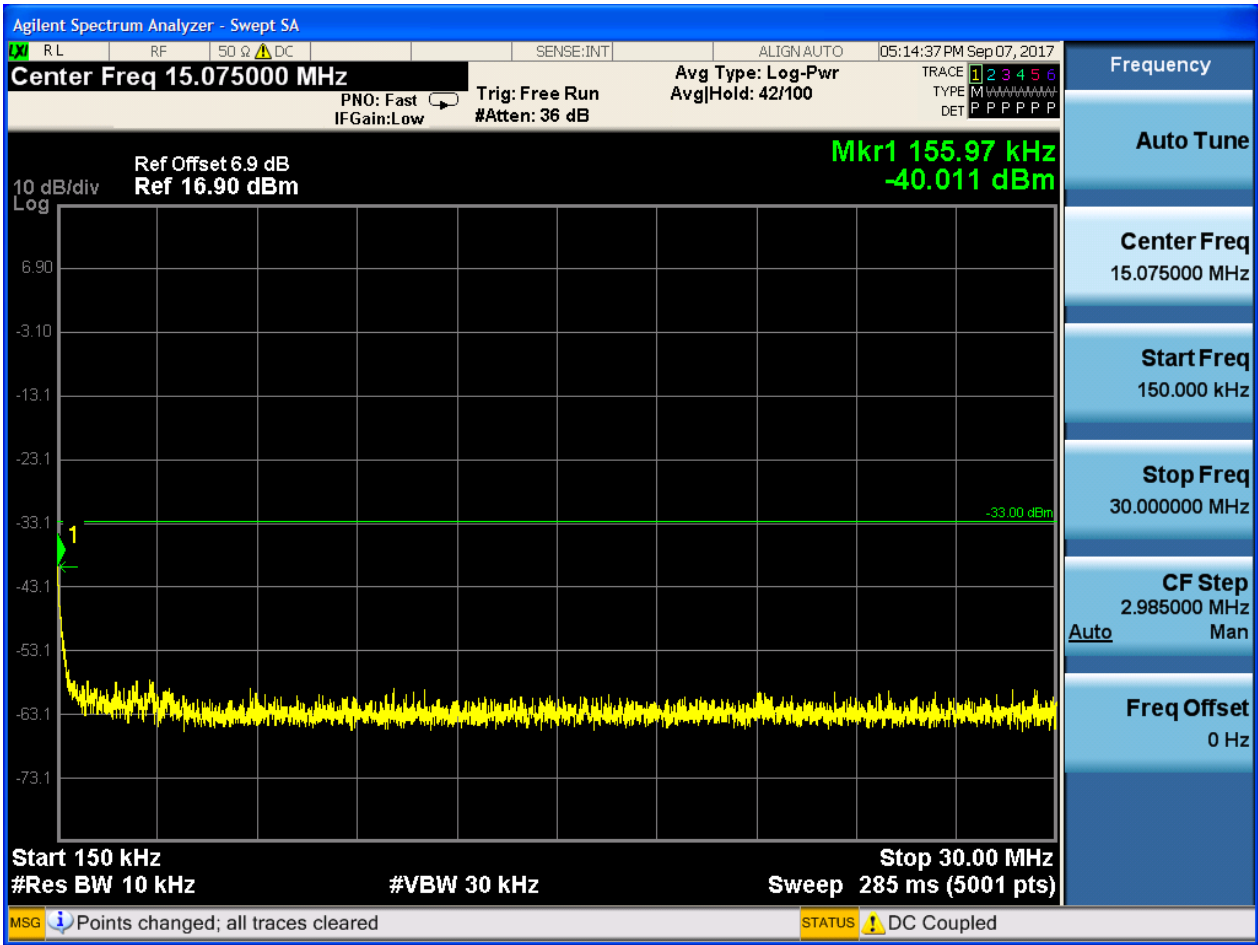


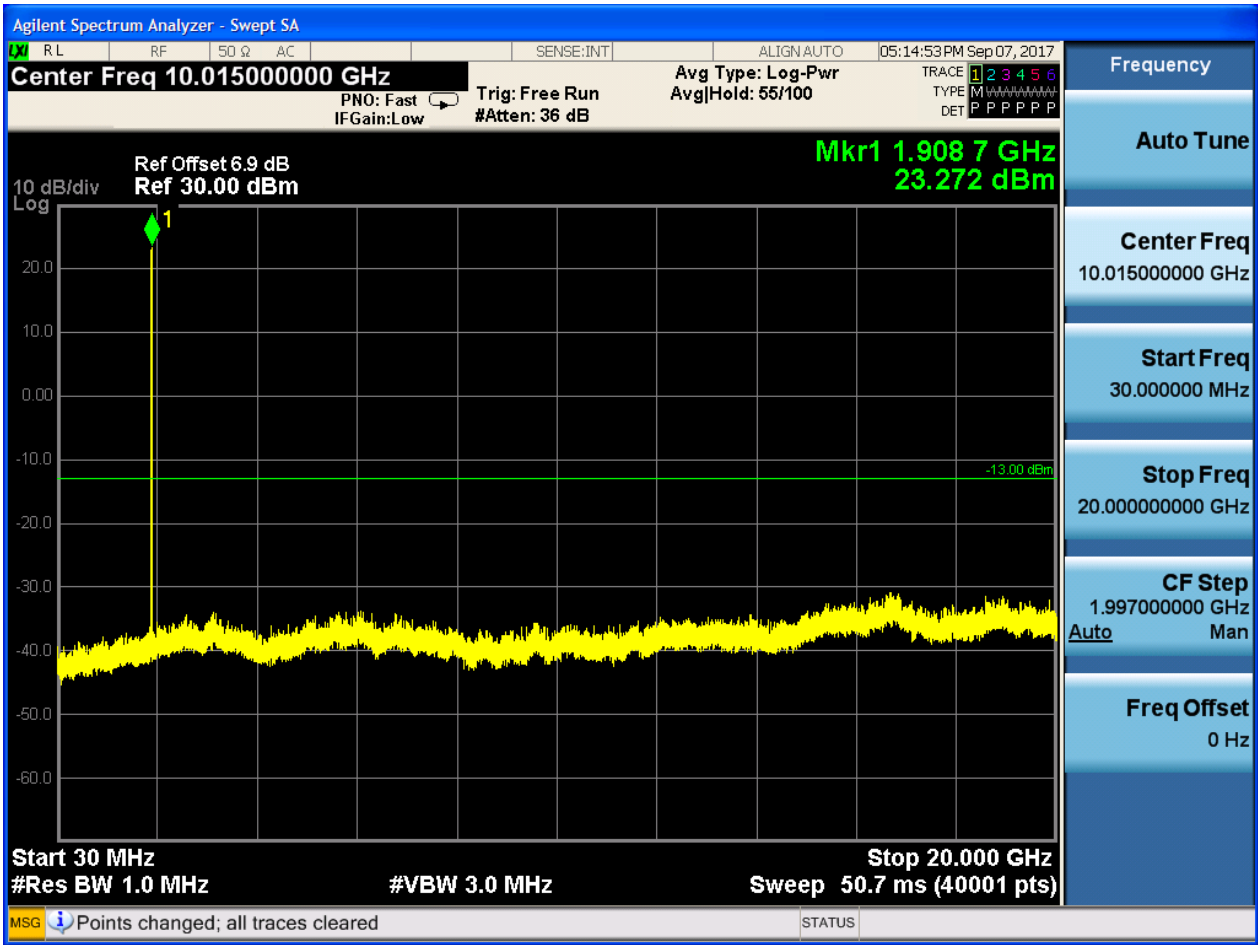




6.1.3.1.3 Test Channel = HCH







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

Note: 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

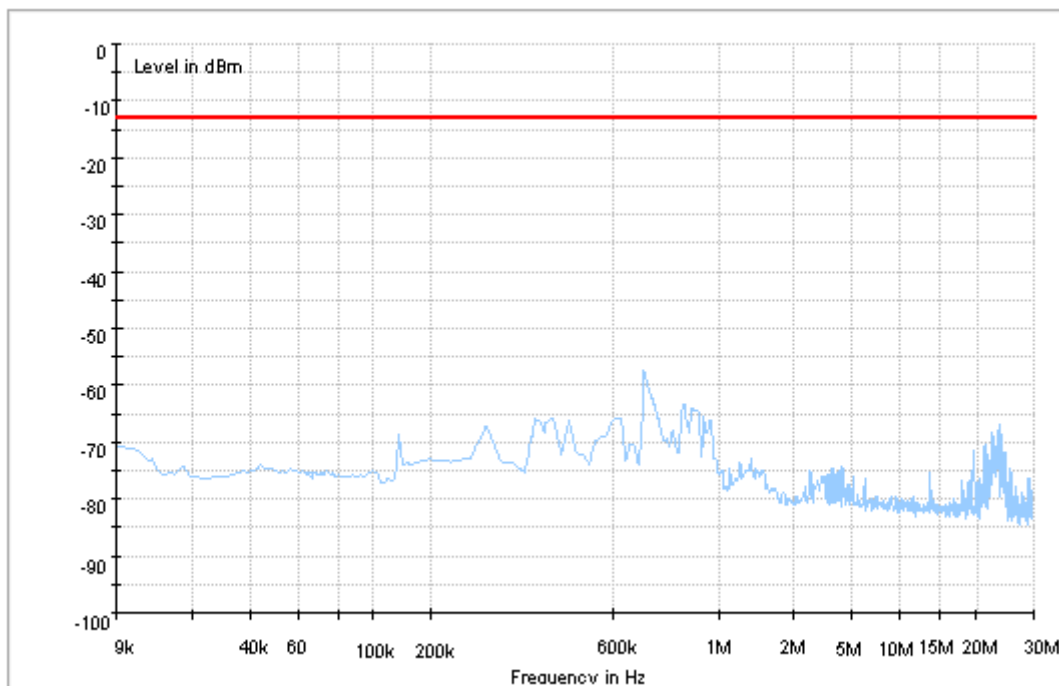
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

### Part I - Test Plots

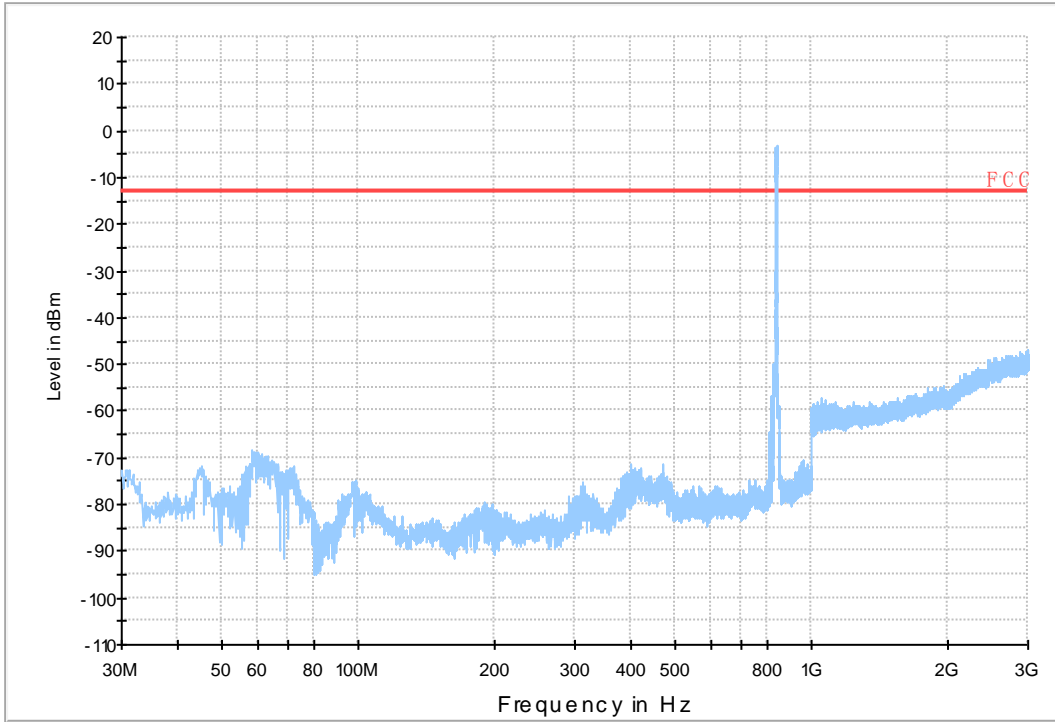
#### 7.1 For UMTS

##### 7.1.1 Test Band = WCDMA850\_ANT1

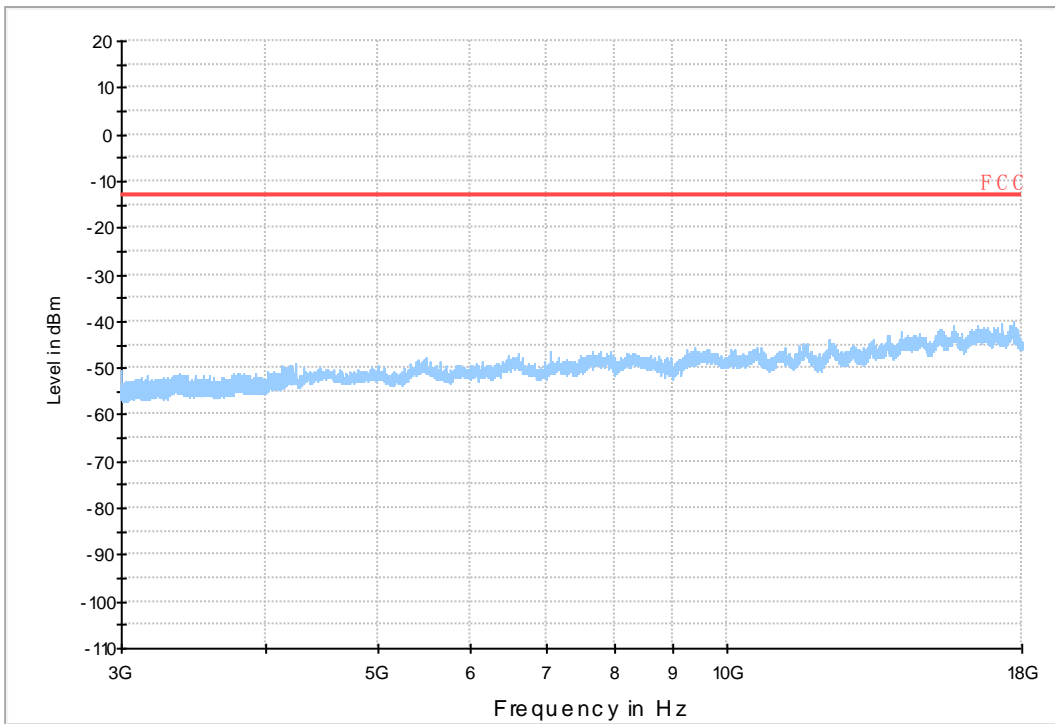
##### 7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDM A850\_L



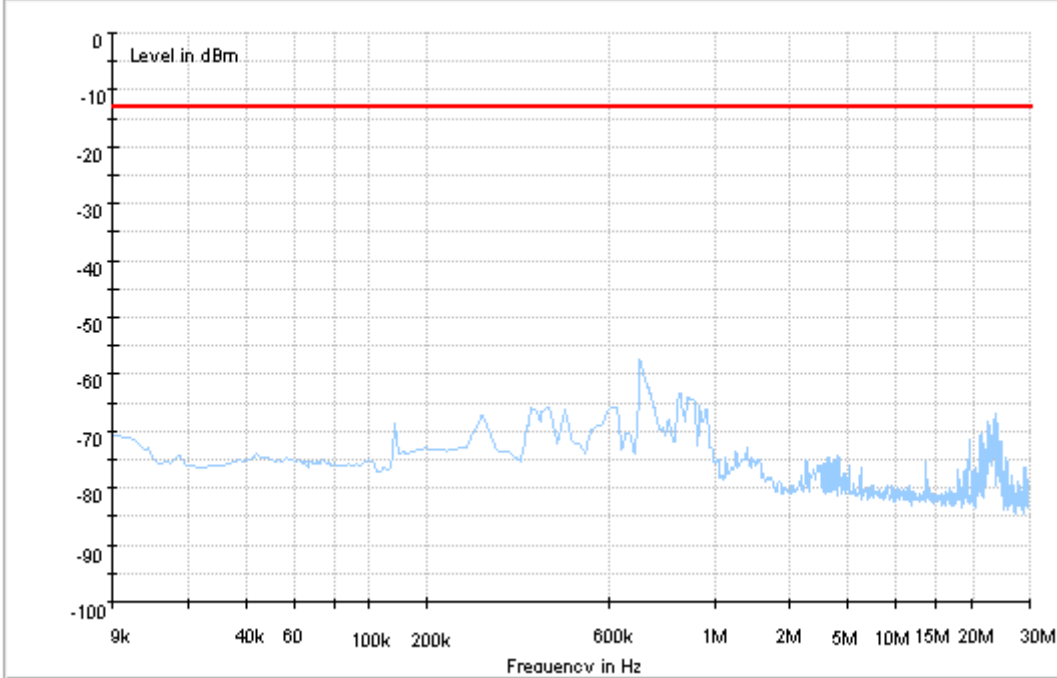
Copy of FCC PART22 W CDM A850\_H



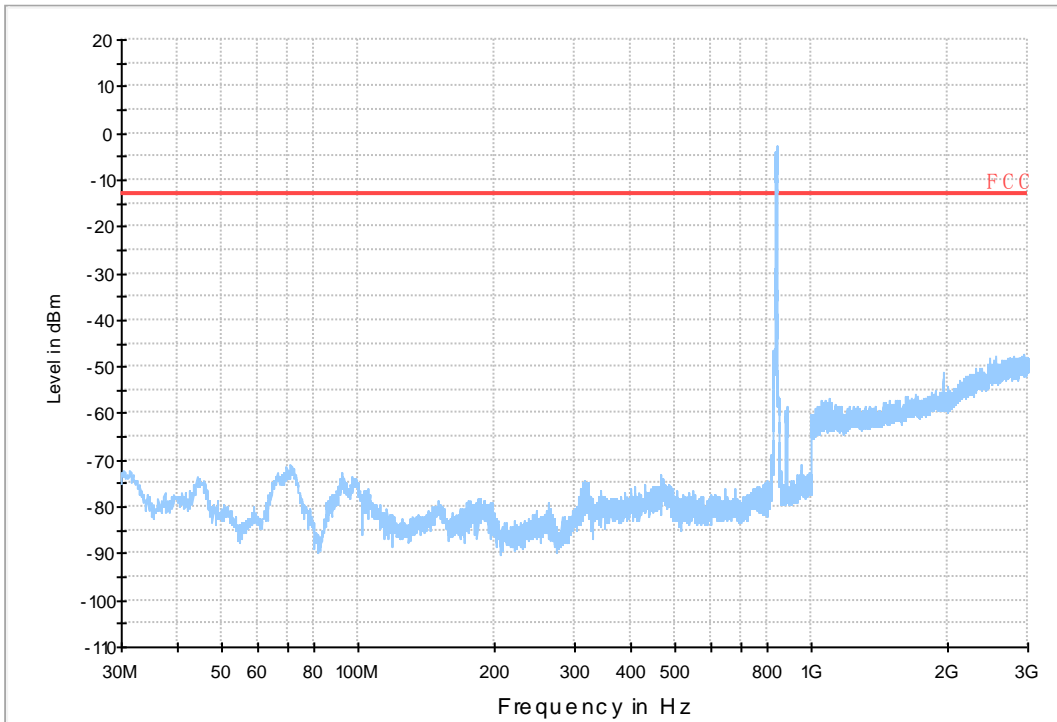


### 7.1.2 Test Band = WCDMA850\_ANT2

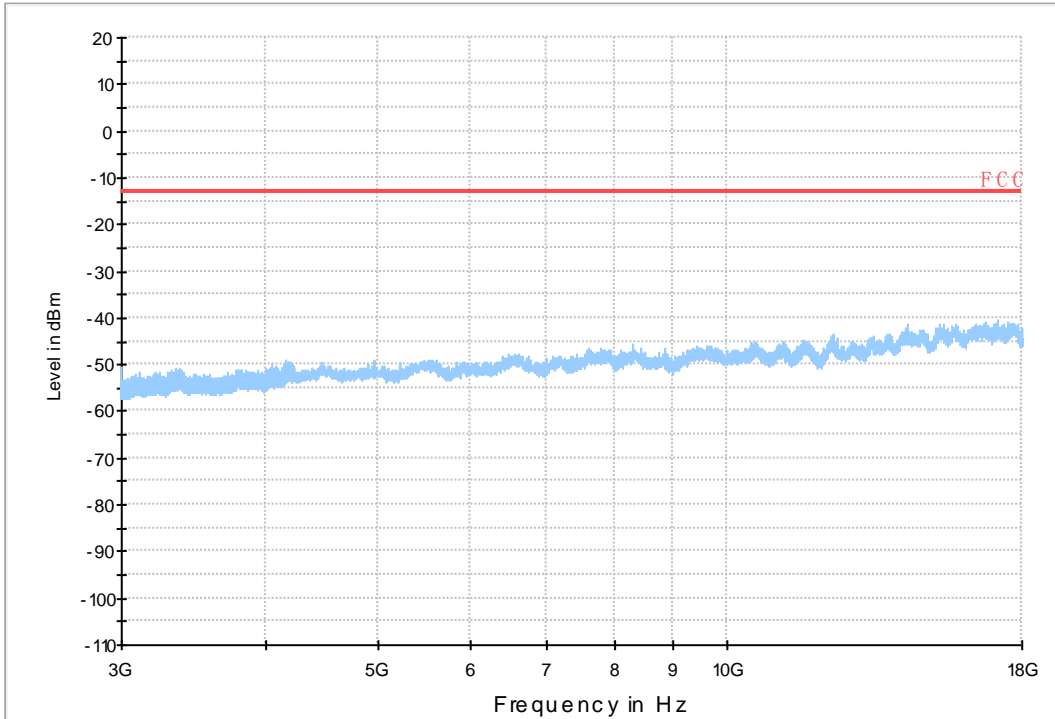
#### 7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 WCDMA850\_L

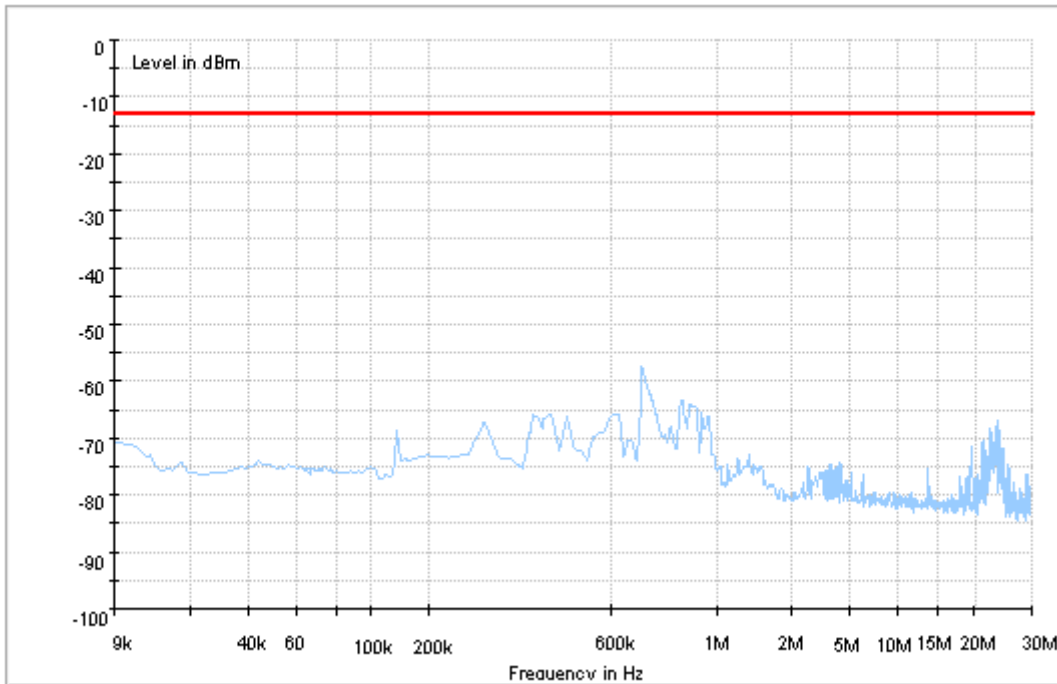


Copy of FCC PART22 WCDMA850\_H

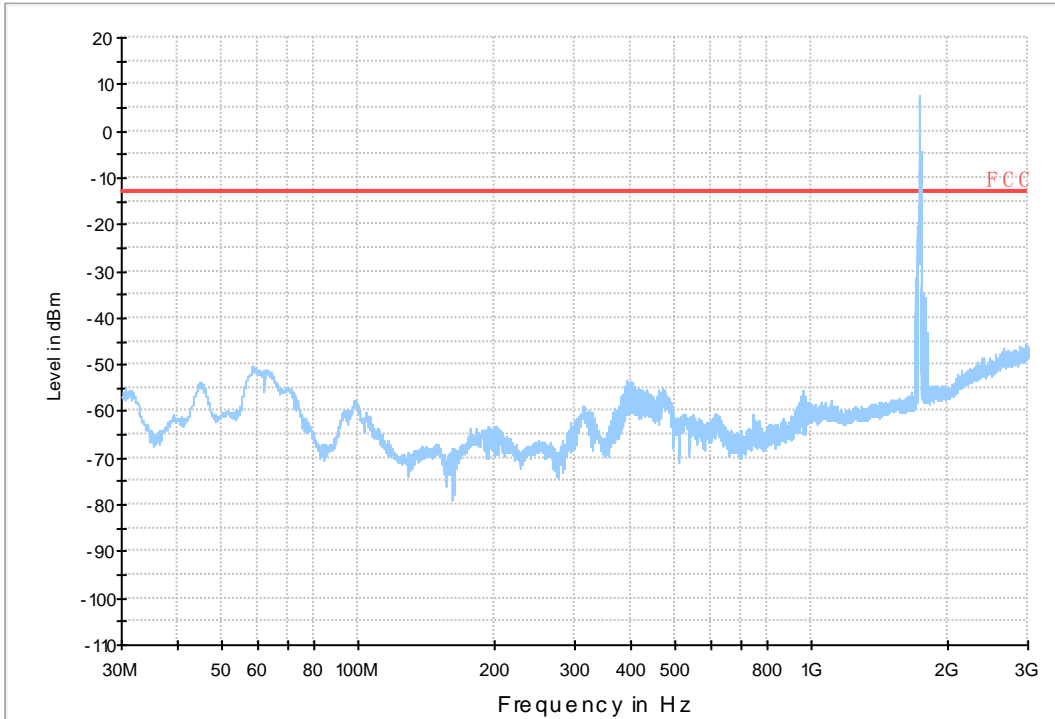


7.1.3 Test Band = WCDMA1700\_ANT1

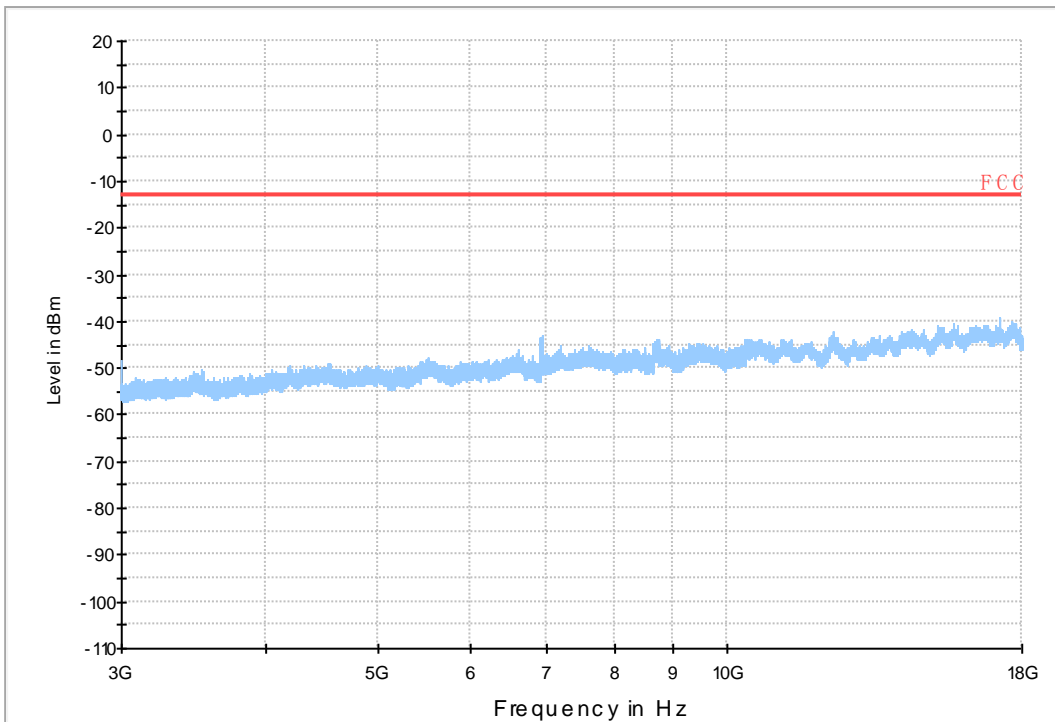
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700\_L

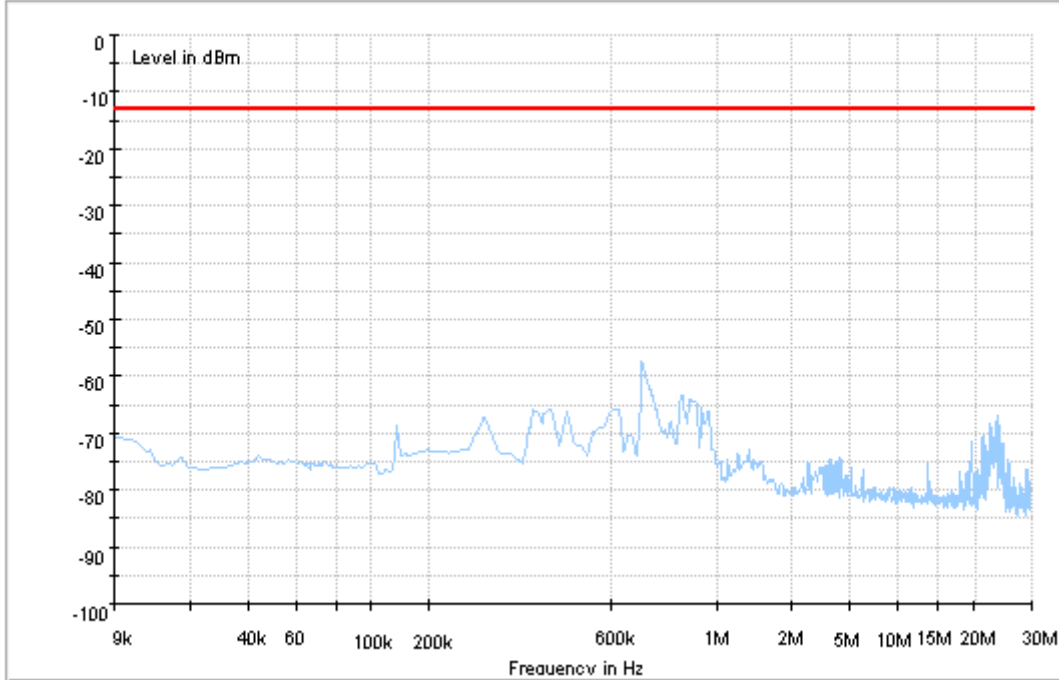


Copy of FCC PART27 W CDMA1700\_H

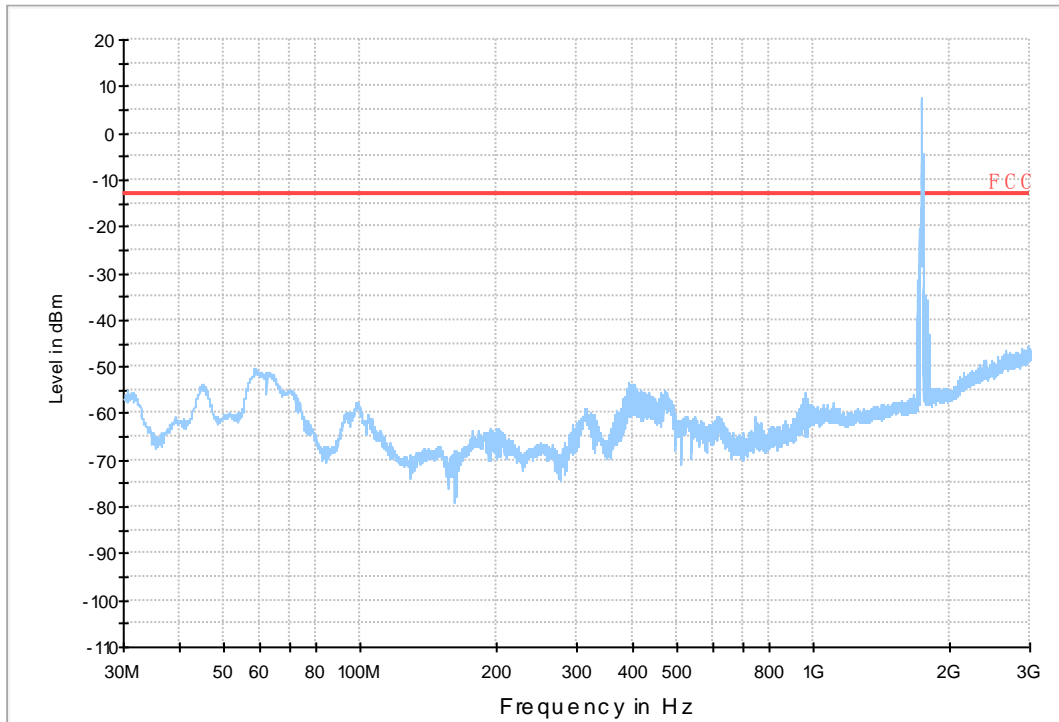


### 7.1.4 Test Band = WCDMA1700\_ANT2

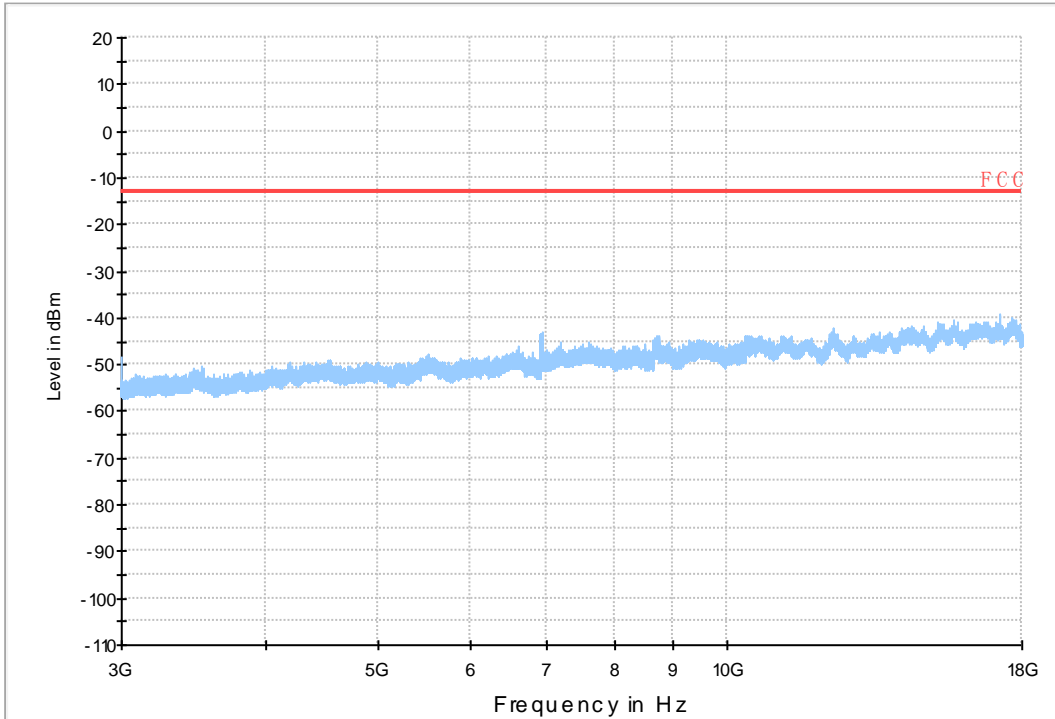
#### 7.1.4.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700\_L

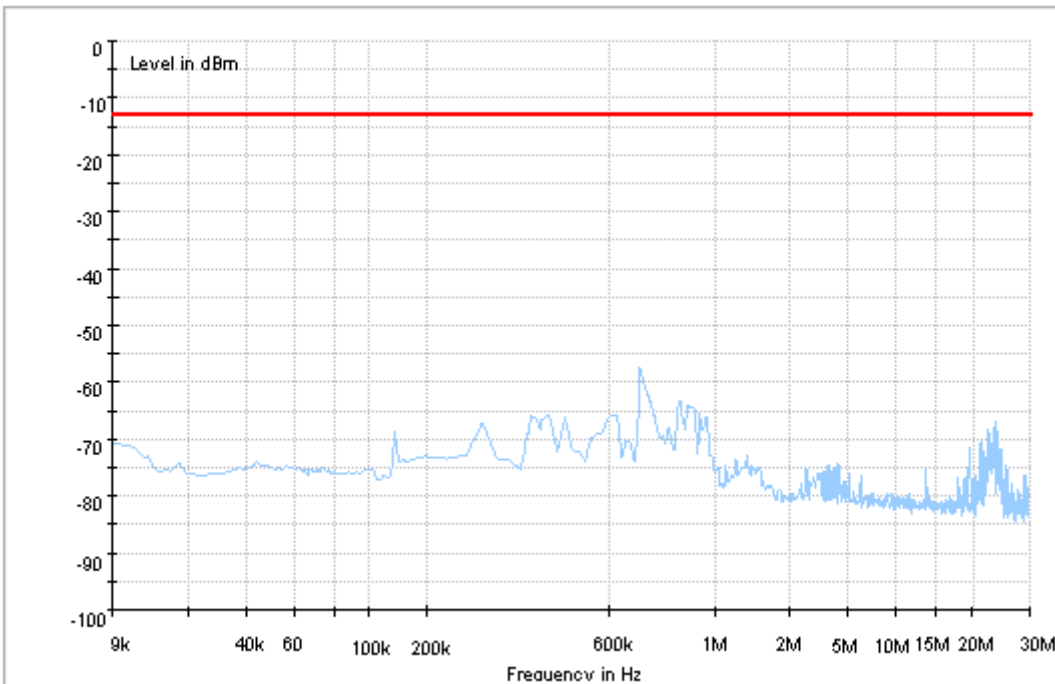


Copy of FCC PART27 W CDMA1700\_H

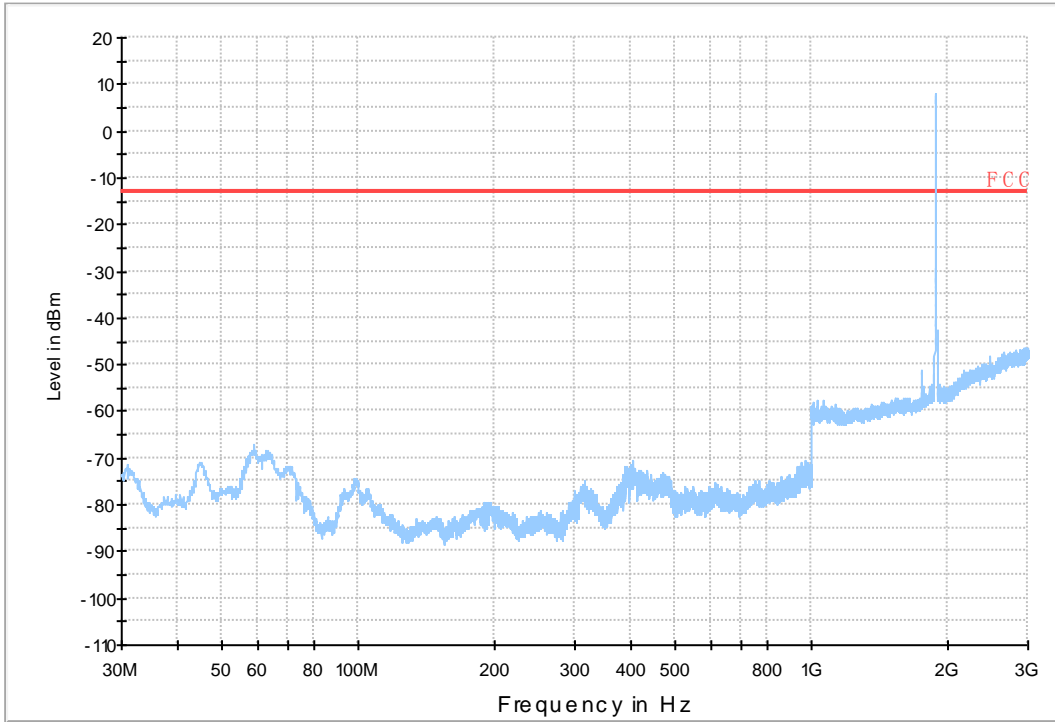


7.1.5 Test Band = WCDMA1900\_ANT1

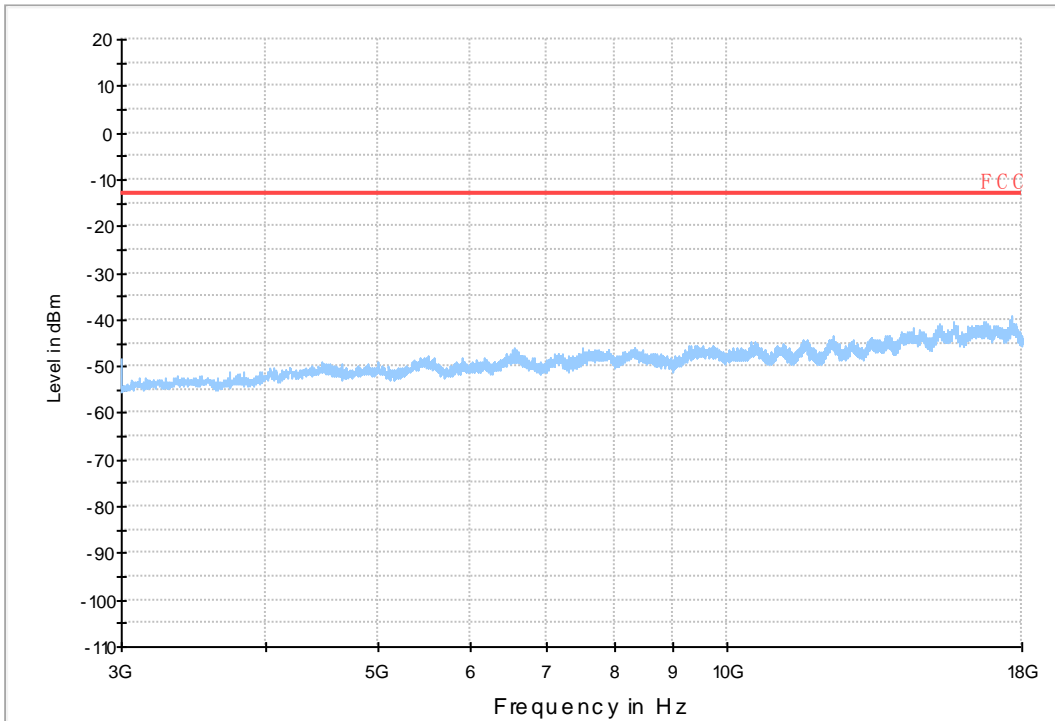
7.1.5.1 Test Mode = UMTS/TM1

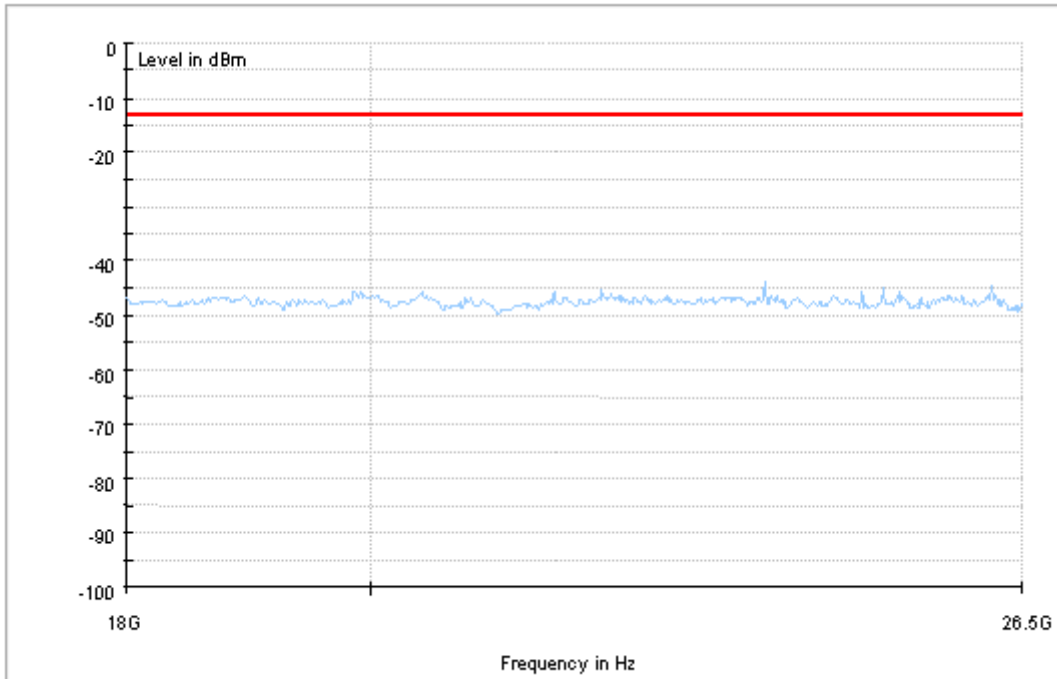


Copy of FCC PART24 W CDMA1900\_L



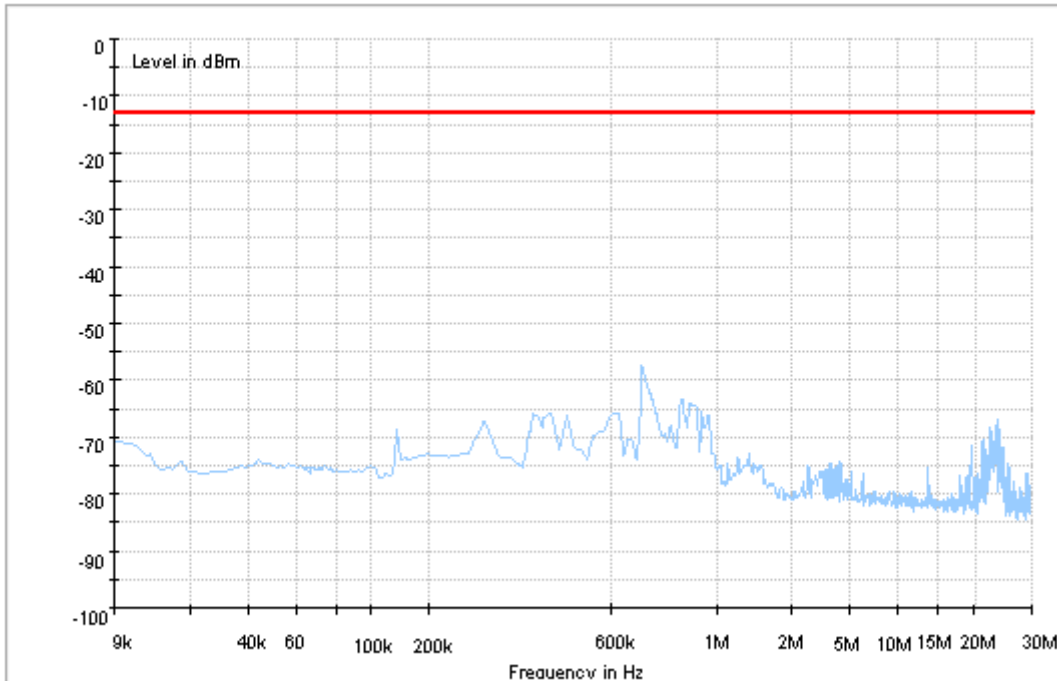
Copy of FCC PART24 W CDMA1900\_H



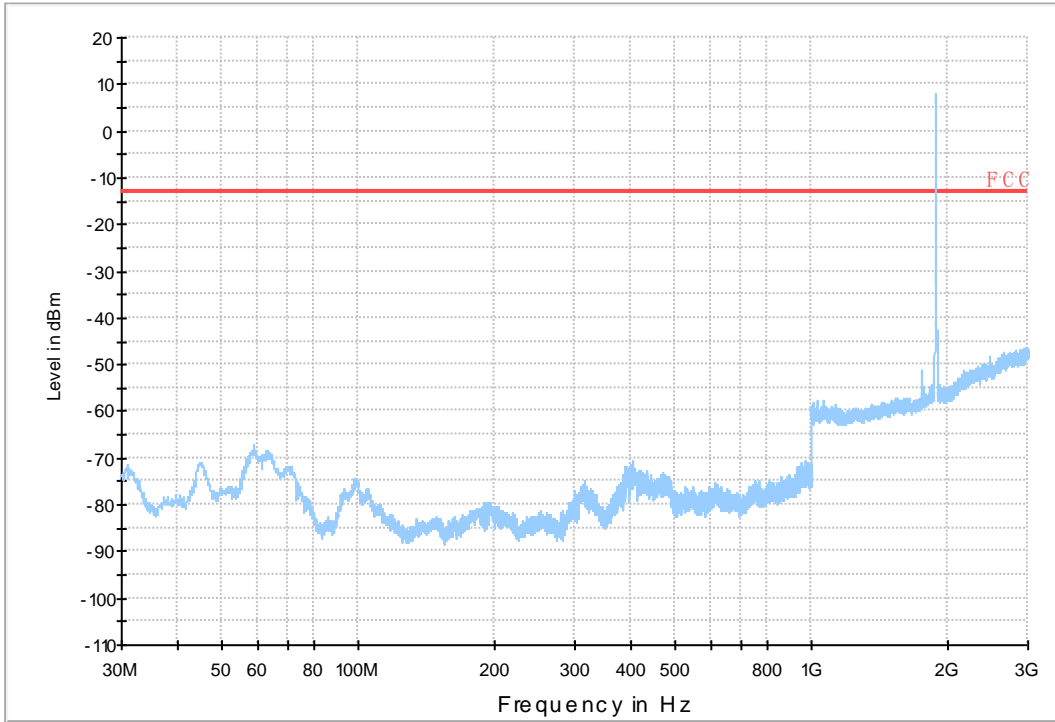


**7.1.6 Test Band = WCDMA1900\_ANT2**

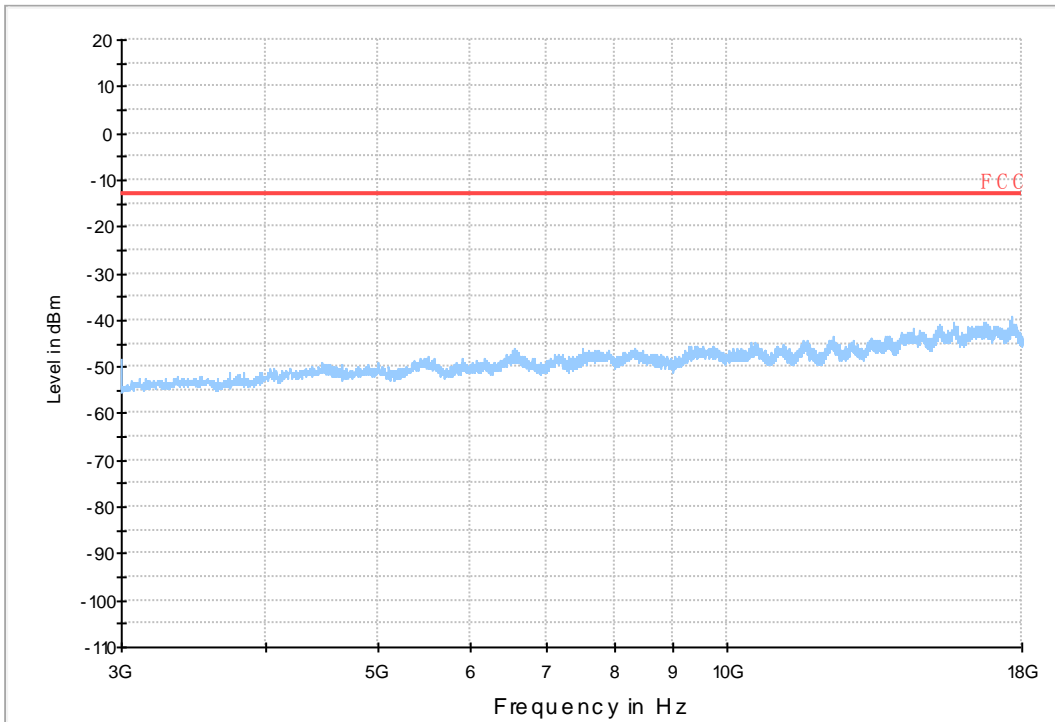
**7.1.6.1 Test Mode = UMTS/TM1**



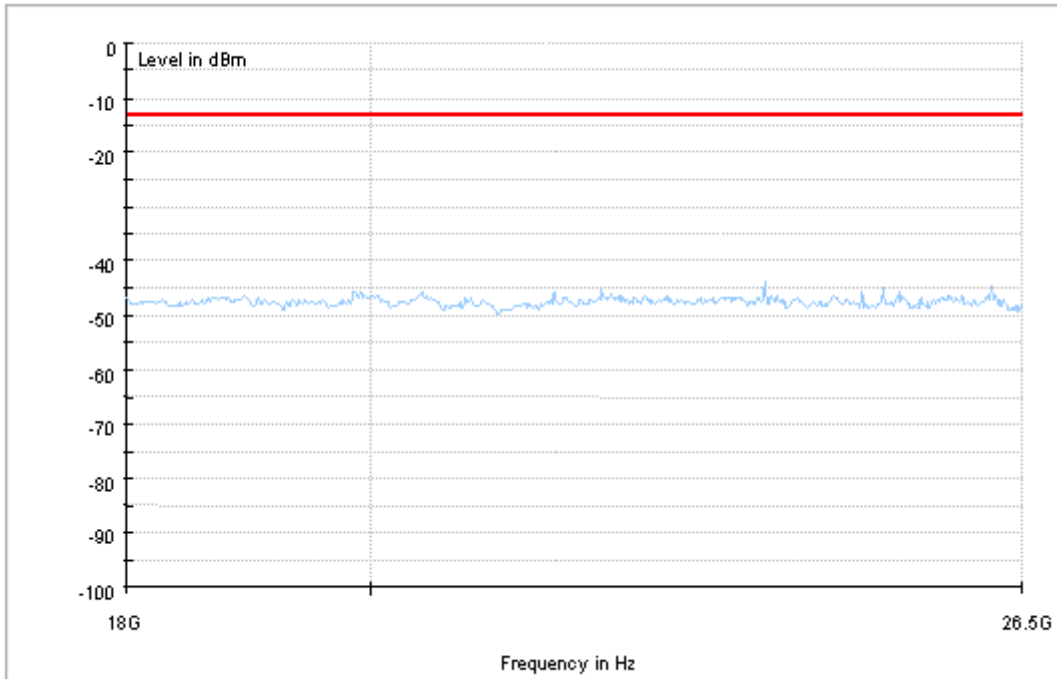
Copy of FCC PART24 W CDMA1900\_L



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	-3.8	-0.0046	PASS
				VN	-1.75	-0.00212	PASS
				VH	-0.08	-0.0001	PASS
		MCH	TN	VL	3.22	0.00385	PASS
				VN	-1.33	-0.00159	PASS
				VH	3.54	0.00423	PASS
		HCH	TN	VL	-0.27	-0.00032	PASS
				VN	0.58	0.00069	PASS
				VH	7.37	0.00871	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	1.02	0.0006	PASS
				VN	-0.67	-0.00039	PASS
				VH	2.3	0.00134	PASS
		MCH	TN	VL	1.39	0.0008	PASS
				VN	-0.4	-0.00023	PASS
				VH	5.87	0.00339	PASS
		HCH	TN	VL	-3.01	-0.00172	PASS
				VN	2.73	0.00156	PASS
				VH	-2.76	-0.00157	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	4.55	0.00246	PASS
				VN	-0.58	-0.00031	PASS
				VH	-4.32	-0.00233	PASS
		MCH	TN	VL	1.59	0.00085	PASS
				VN	6.04	0.00321	PASS
				VH	4.78	0.00254	PASS
		HCH	TN	VL	4.03	0.00211	PASS
				VN	4.01	0.0021	PASS
				VH	3.33	0.00175	PASS

#### 8.1.2Frequency Error vs. Temperature:

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

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA850	UMTS/TM1	LCH	VN	-30	-4.97	-0.00601	PASS
				-20	-9.28	-0.01123	PASS
				-10	-3.72	-0.0045	PASS
				0	-1.42	-0.00172	PASS
				10	-2.21	-0.00267	PASS
				20	5.81	0.00703	PASS
				30	-7.11	-0.0086	PASS
				40	-2.75	-0.00333	PASS
				50	2.55	0.00309	PASS
		MCH	VN	-30	1.97	0.00236	PASS
				-20	7.49	0.00896	PASS
				-10	1.72	0.00206	PASS
				0	5.28	0.00631	PASS
				10	3.77	0.00451	PASS
				20	6.2	0.00741	PASS
				30	-1.13	-0.00135	PASS
				40	3.43	0.0041	PASS
				50	2.24	0.00268	PASS
		HCH	VN	-30	0.43	0.00051	PASS
				-20	6.85	0.00809	PASS
				-10	8.1	0.00957	PASS
				0	8.1	0.00957	PASS
				10	3.51	0.00415	PASS
				20	6.96	0.00822	PASS
				30	10.25	0.01211	PASS
				40	-5.04	-0.00595	PASS
				50	-4.46	-0.00527	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	1.22	0.00071	PASS
				-20	-3.23	-0.00189	PASS
				-10	11.18	0.00653	PASS
				0	10.3	0.00601	PASS
				10	-4.29	-0.00251	PASS
				20	0.05	0.00003	PASS
				30	6.33	0.0037	PASS
				40	5.74	0.00335	PASS
				50	-1.04	-0.00061	PASS
		MCH	VN	-30	-4.41	-0.00255	PASS
				-20	2.76	0.00159	PASS
				-10	-5.19	-0.003	PASS
				0	7.28	0.0042	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	2.37	0.00137	PASS
				20	3.34	0.00193	PASS
				30	3.08	0.00178	PASS
				40	11.08	0.0064	PASS
				50	5.78	0.00334	PASS
		HCH	VN	-30	-3.63	-0.00207	PASS
				-20	1.65	0.00094	PASS
				-10	7.78	0.00444	PASS
				0	2.85	0.00163	PASS
				10	6.45	0.00368	PASS
				20	-2.41	-0.00138	PASS
				30	-7.35	-0.00419	PASS
				40	4.67	0.00266	PASS
				50	3.16	0.0018	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	-9.25	-0.00499	PASS
				-20	3.89	0.0021	PASS
				-10	5.52	0.00298	PASS
				0	2.2	0.00119	PASS
				10	-5.28	-0.00285	PASS
				20	3.97	0.00214	PASS
				30	5.51	0.00297	PASS
				40	-1.1	-0.00059	PASS
				50	1.71	0.00092	PASS
		MCH	VN	-30	0	0	PASS
				-20	2.59	0.00138	PASS
				-10	2.04	0.00109	PASS
				0	2.03	0.00108	PASS
				10	3.27	0.00174	PASS
				20	2.58	0.00137	PASS
				30	4.17	0.00222	PASS
				40	3.86	0.00205	PASS
		HCH	VN	50	3.85	0.00205	PASS
				-30	2.03	0.00106	PASS
				-20	3.88	0.00203	PASS
				-10	-0.27	-0.00014	PASS
				0	3.2	0.00168	PASS
				10	1.88	0.00099	PASS
				20	3.14	0.00165	PASS
				30	6.27	0.00329	PASS
		40	2.15	0.00113	PASS		



---

---

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	2.26	0.00118	PASS

---

END