



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	23.54	24.54	33	PASS
		MCH	23.58	24.58	33	PASS
		HCH	23.49	24.49	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.55	23.75	30	PASS
		MCH	23.55	23.75	30	PASS
		HCH	23.51	23.71	30	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	23.68	18.93	38.5	PASS
		MCH	23.69	18.94	38.5	PASS
		HCH	23.72	18.97	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,

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

Note2:

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

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

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

$$\text{SET Sweep time} = \text{auto-couple.}$$

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	3.35	13	PASS
		MCH	3.37	13	PASS
		HCH	2.88	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.06	13	PASS
		MCH	3.1	13	PASS
		HCH	3.14	13	PASS
WCDMA850	UMTS/TM1	LCH	2.69	13	PASS
		MCH	2.93	13	PASS
		HCH	2.75	13	PASS

3Appendix_C: Modulation Characteristics

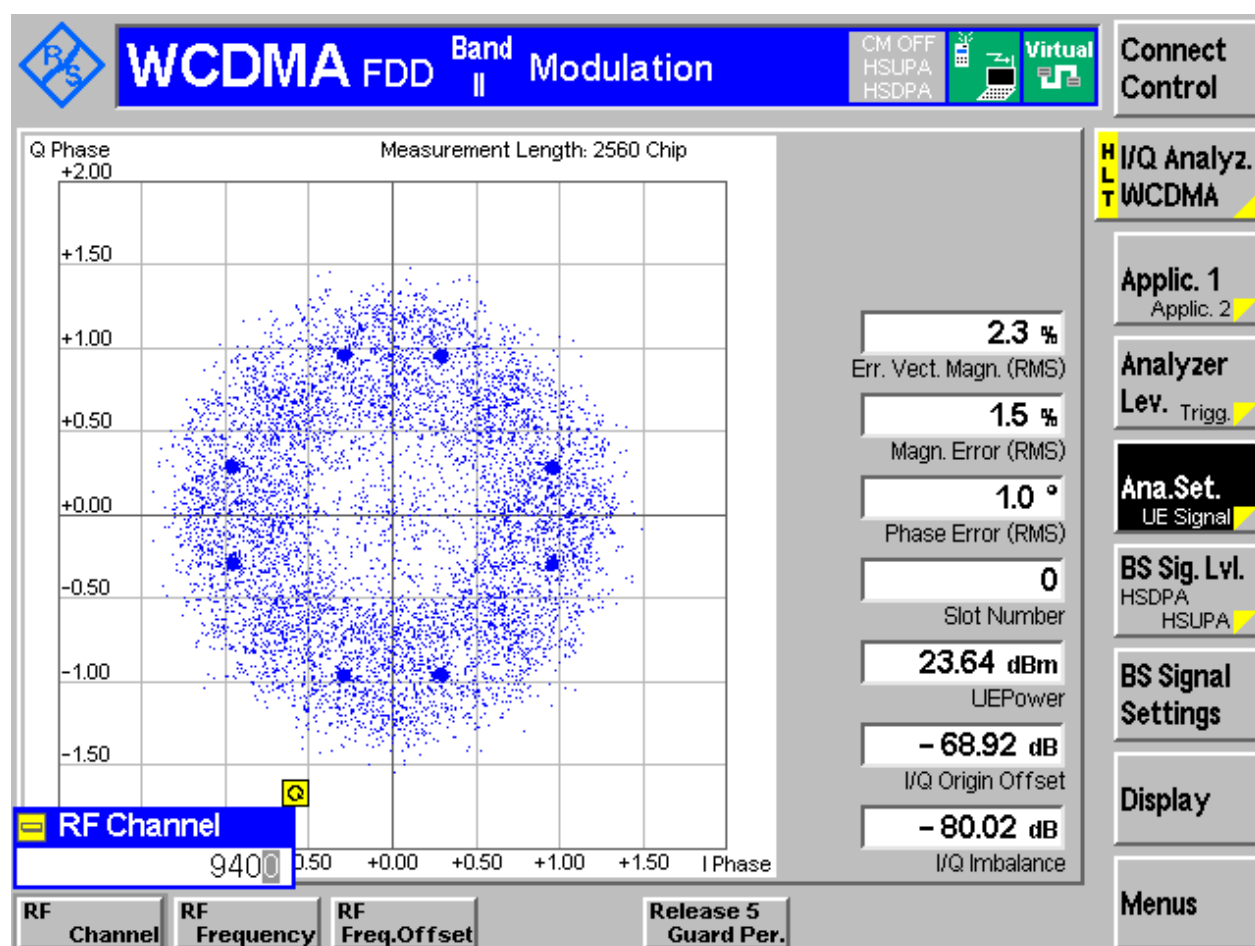
Part I - Test Plots

3.1 For UMTS

3.1.2 Test Band = WCDMA1900

3.1.2.1 Test Mode = UMTS/TM1

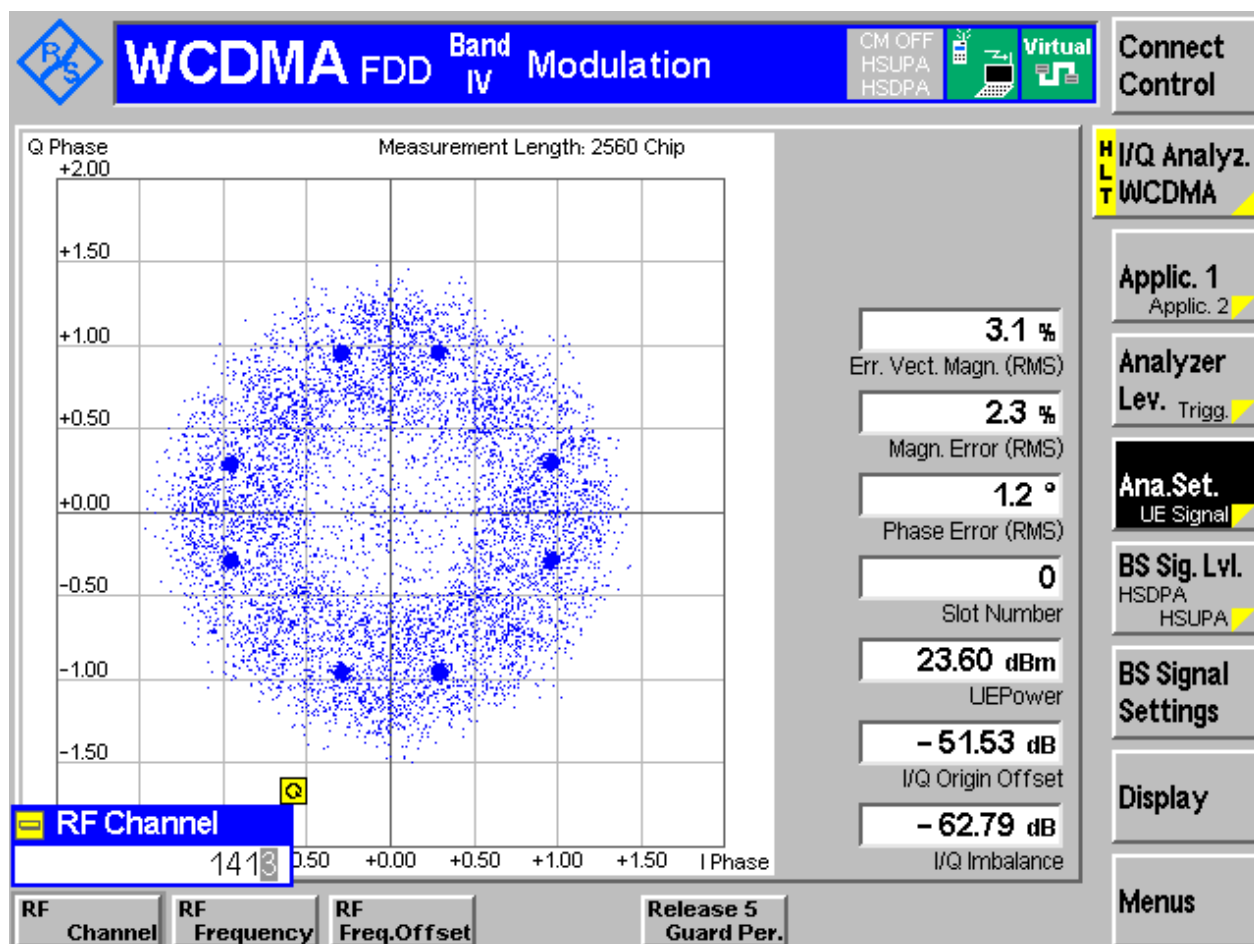
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA1700

3.1.3.1 Test Mode = UMTS/TM1

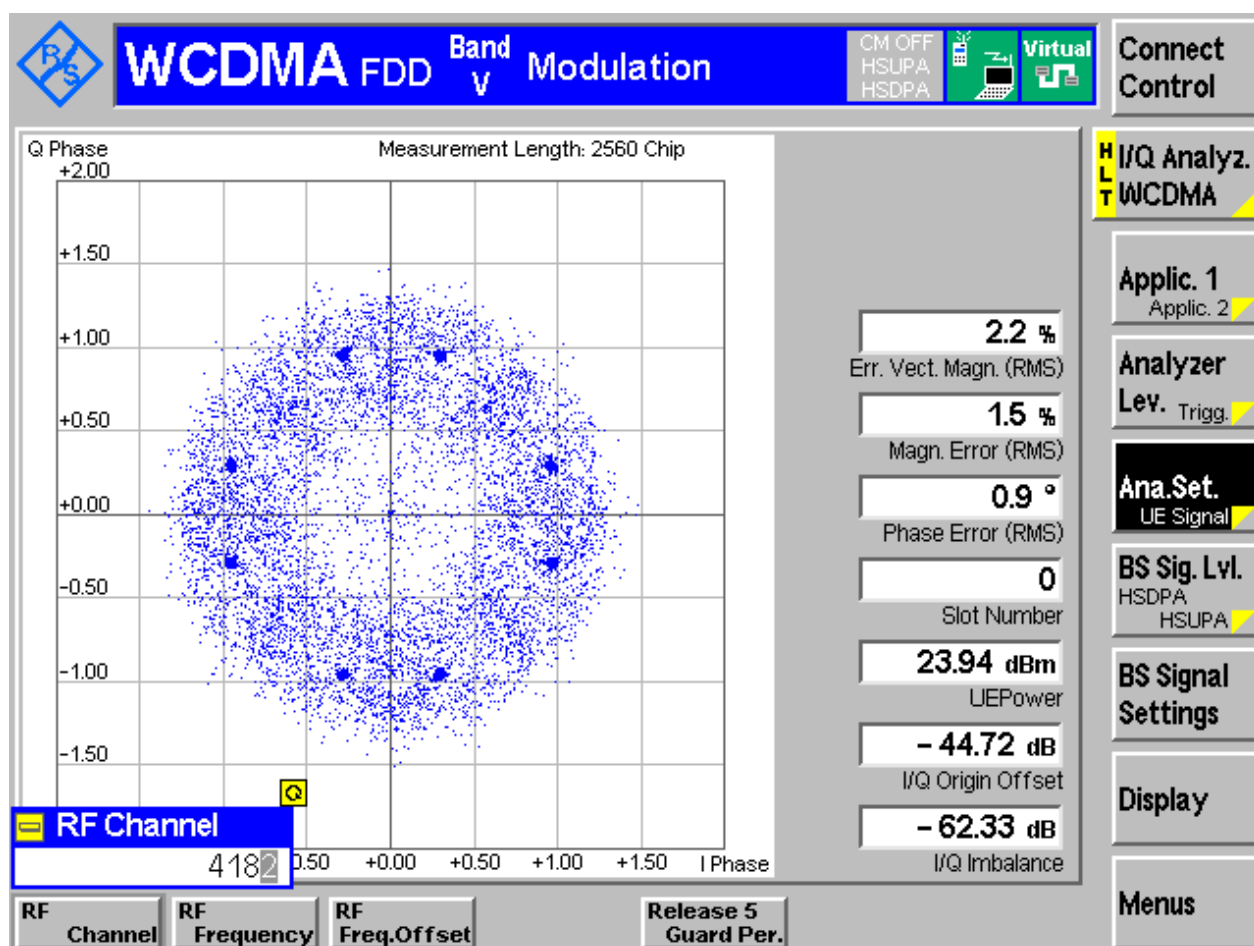
3.1.3.1.1 Test Channel = MCH



3.1.4 Test Band = WCDMA850

3.1.4.1 Test Mode = UMTS/TM1

3.1.4.1.1 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	4.14	4.70	Pass
		MCH	4.16	4.71	Pass
		HCH	4.14	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.72	Pass
		MCH	4.16	4.71	Pass
		HCH	4.14	4.72	Pass
WCDMA850	UMTS/TM1	LCH	4.13	4.73	Pass
		MCH	4.14	4.74	Pass
		HCH	4.16	4.75	Pass

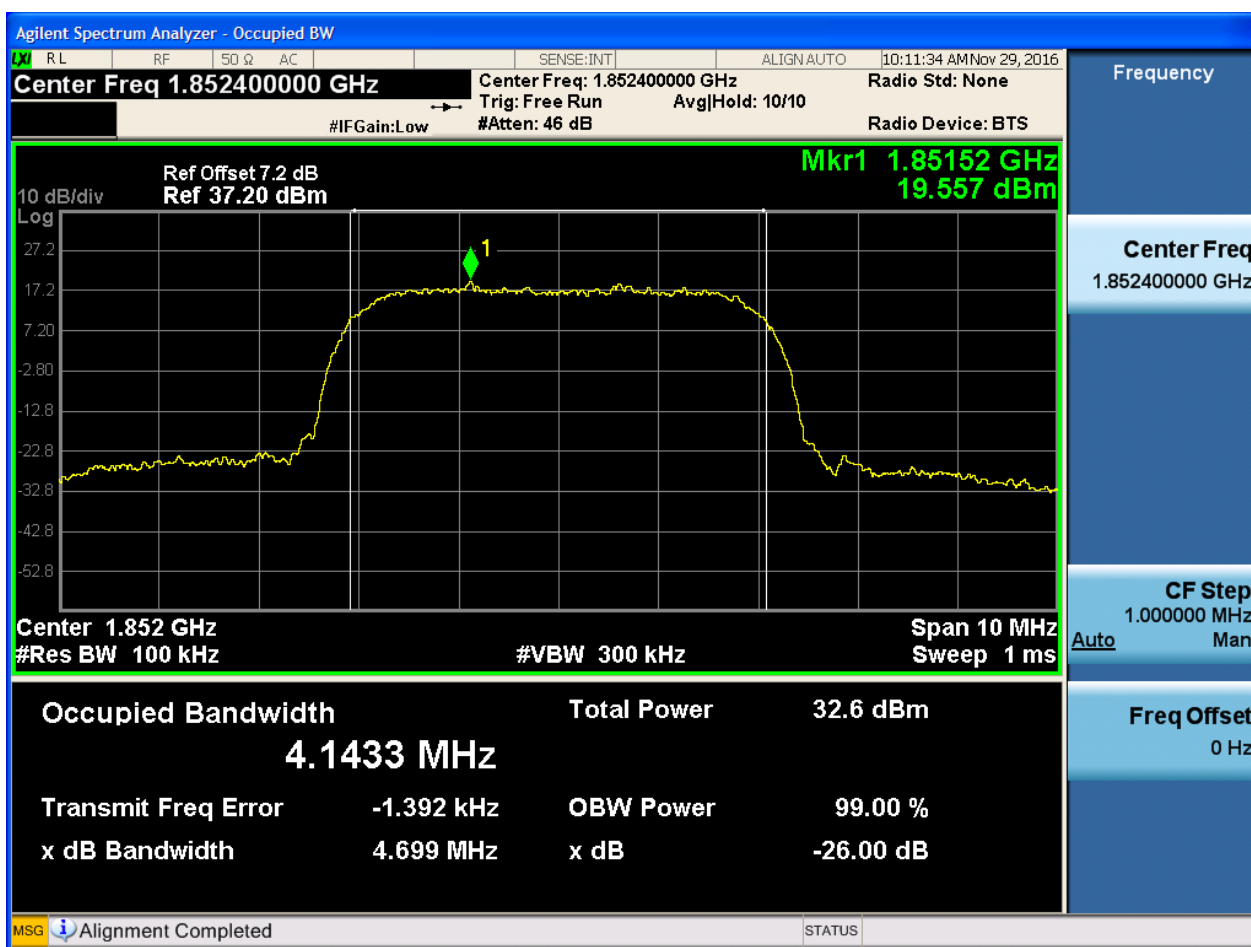
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

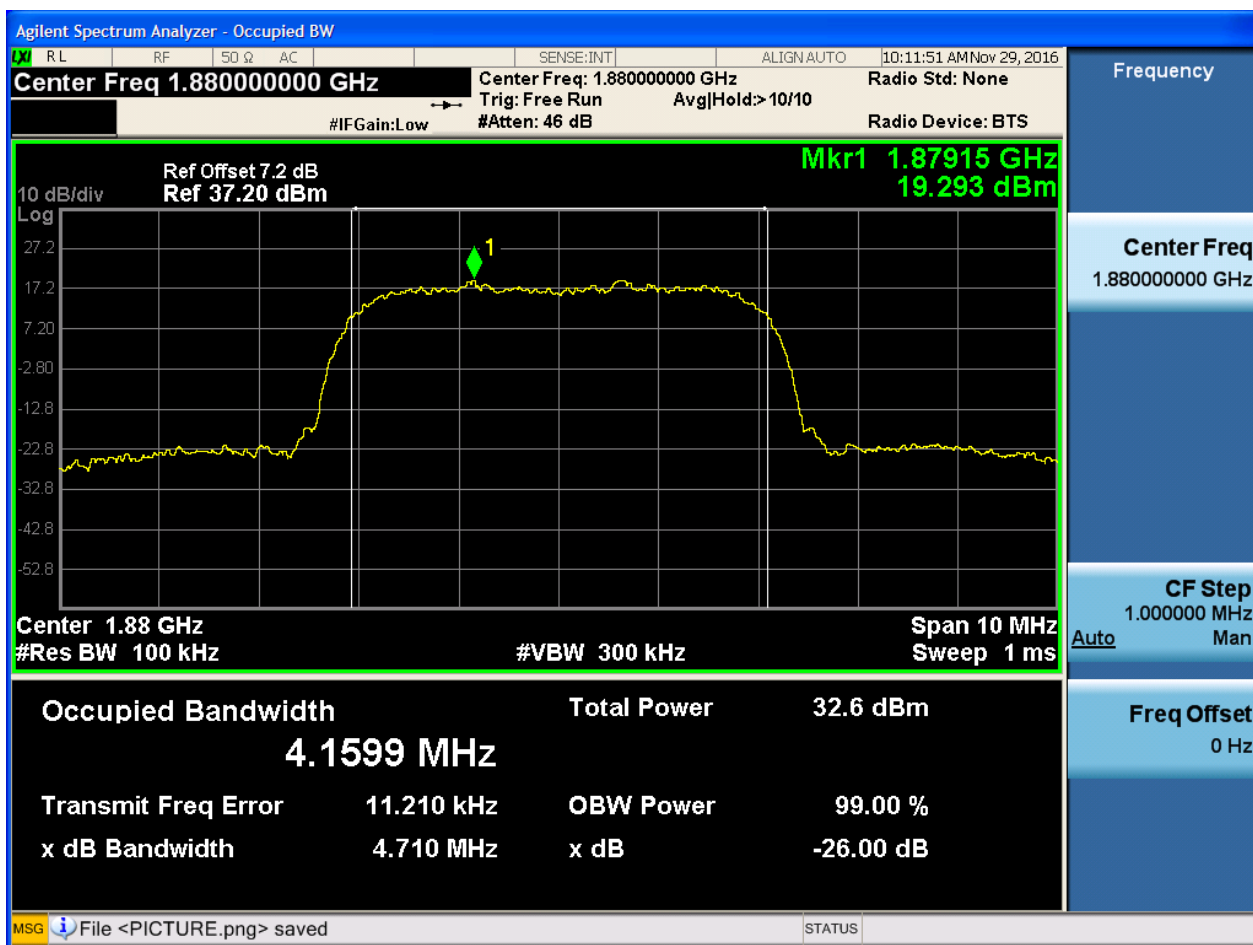
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



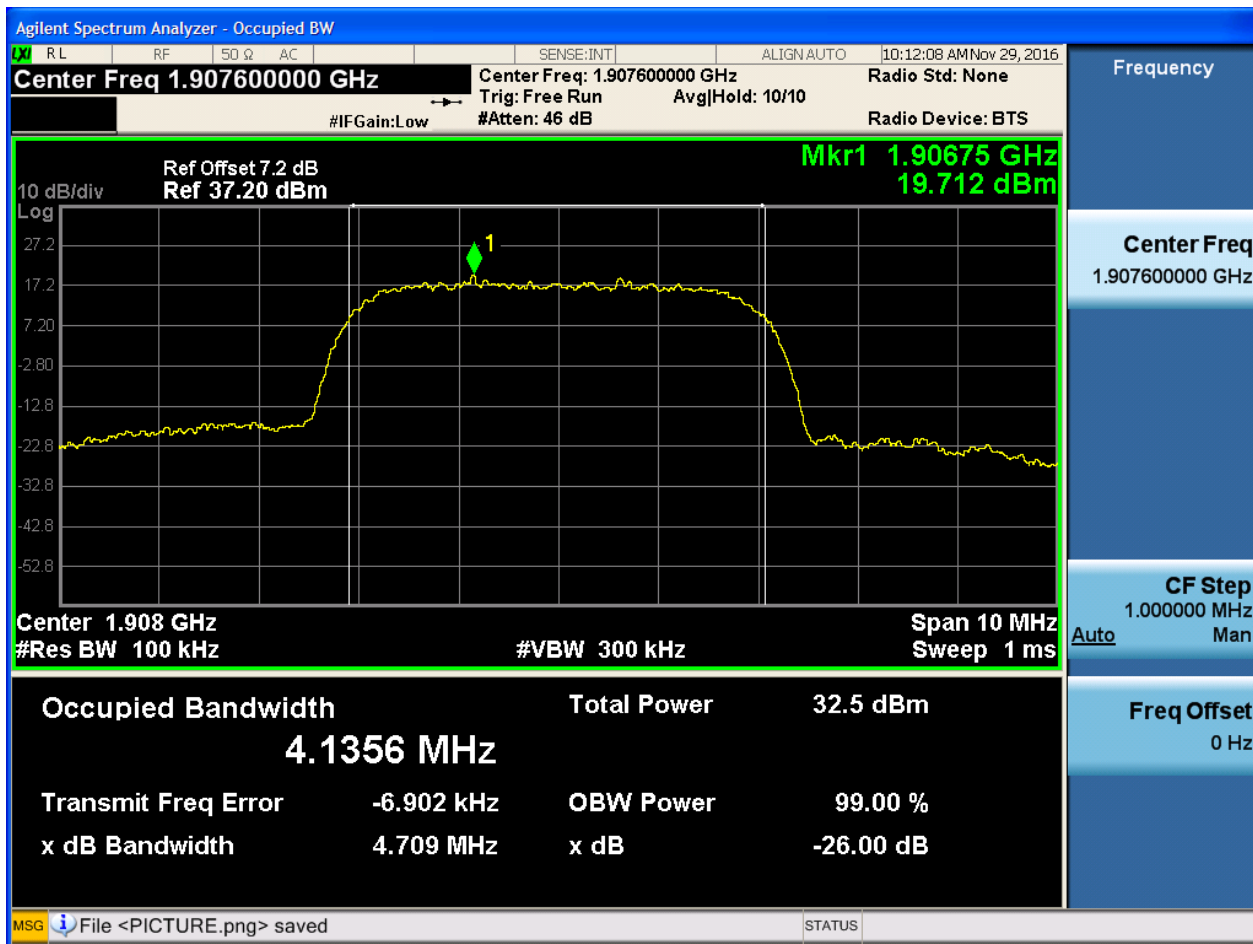


4.1.1.1.2 Test Channel = MCH





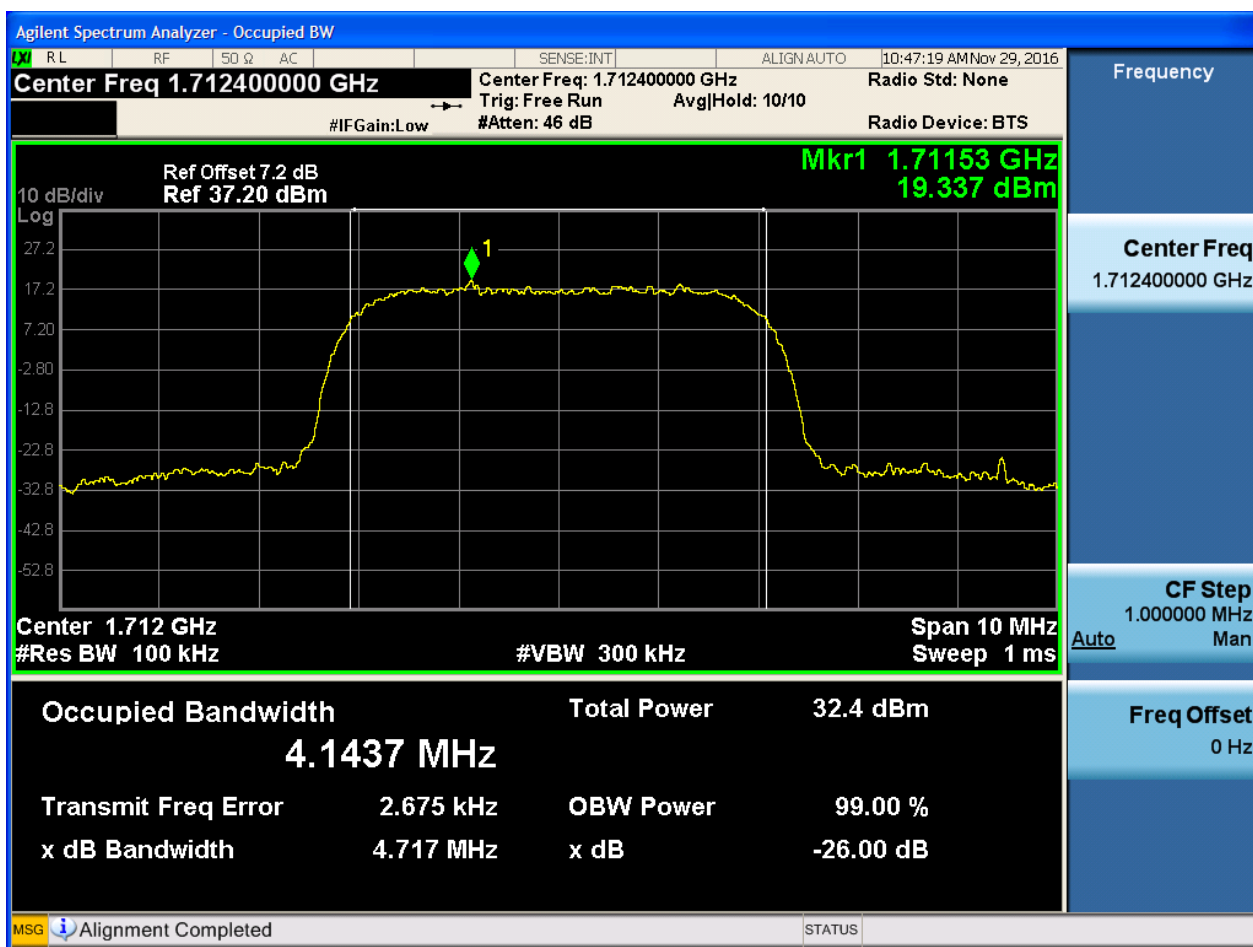
4.1.1.1.3 Test Channel = HCH



4.1.3 Test Band = WCDMA1700

4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH





Agilent Spectrum Analyzer - Occupied BW

Center Freq 1.732600000 GHz

Center Freq: 1.732600000 GHz
Trig: Free Run
#Gain: Low
#Atten: 46 dB

Radio Std: None
Avg/Hold: 10/10
Radio Device: BTS

Frequency

Center Freq
1.732600000 GHz

CF Step
1.000000 MHz
Man

Freq Offset
0 Hz

Ref Offset 7.2 dB
Ref 37.20 dBm

Mkr1 1.73175 GHz
18.884 dBm

10 dB/div
Log

Center 1.733 GHz
#Res BW 100 kHz

Span 10 MHz
Sweep 1 ms

#VBW 300 kHz

Occupied Bandwidth
4.1558 MHz

Total Power
32.4 dBm

Transmit Freq Error
441 Hz

OBW Power
99.00 %

x dB Bandwidth
4.714 MHz

x dB
-26.00 dB

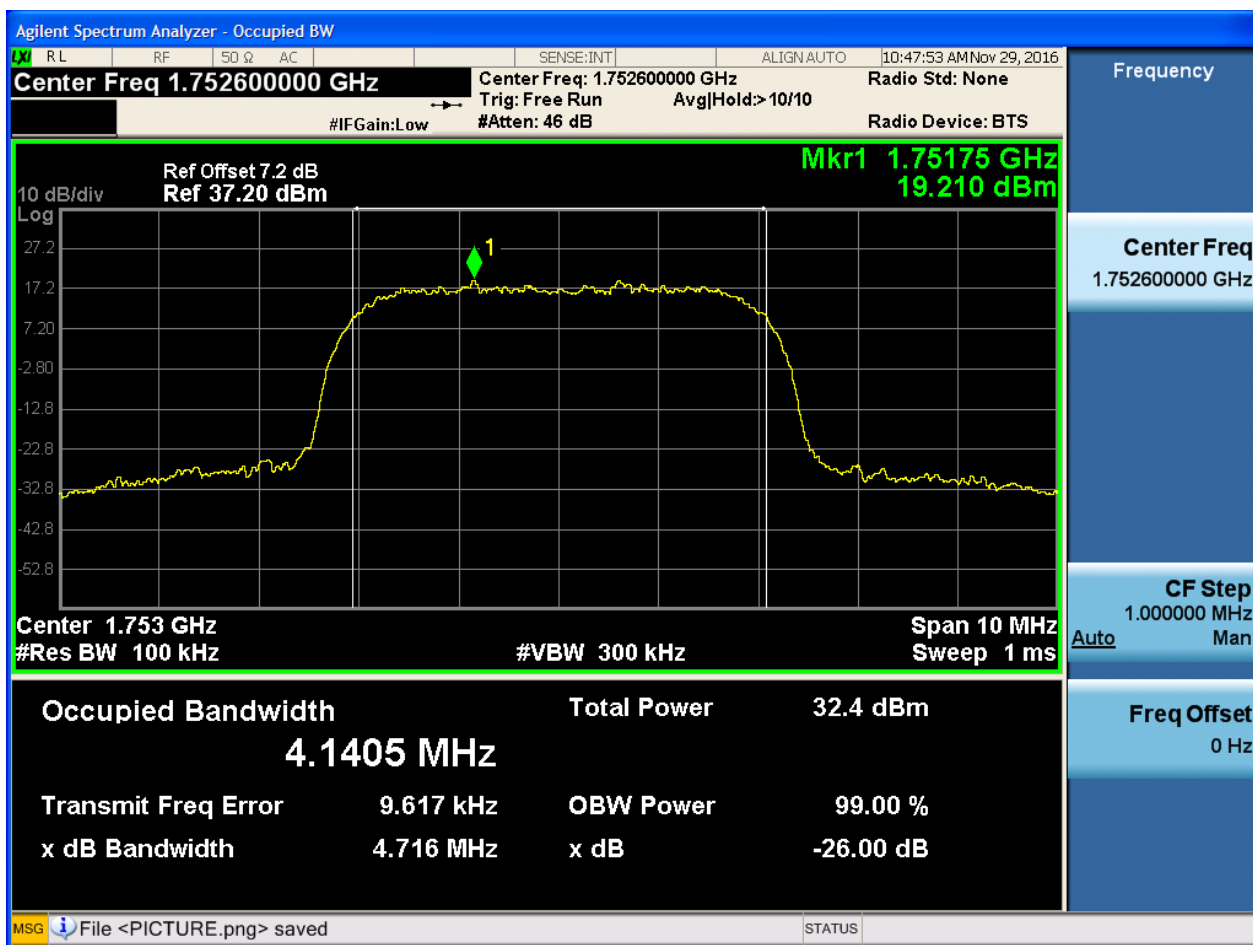
MSG File <PICTURE.png> saved

STATUS

The image shows a screenshot of an Agilent Spectrum Analyzer. The main display area shows a spectrum plot with a yellow trace. A peak is marked with a green diamond and labeled '1'. The peak frequency is 1.73175 GHz and the power is 18.884 dBm. The center frequency is 1.732600000 GHz. The span is 10 MHz. The resolution bandwidth is 100 kHz. The video bandwidth is 300 kHz. The sweep is 1 ms. The occupied bandwidth is 4.1558 MHz. The total power is 32.4 dBm. The transmit frequency error is 441 Hz. The OBW power is 99.00 %. The x dB bandwidth is 4.714 MHz. The x dB is -26.00 dB. The display also shows a message 'MSG File <PICTURE.png> saved' and a status bar.



4.1.3.1.3 Test Channel = HCH

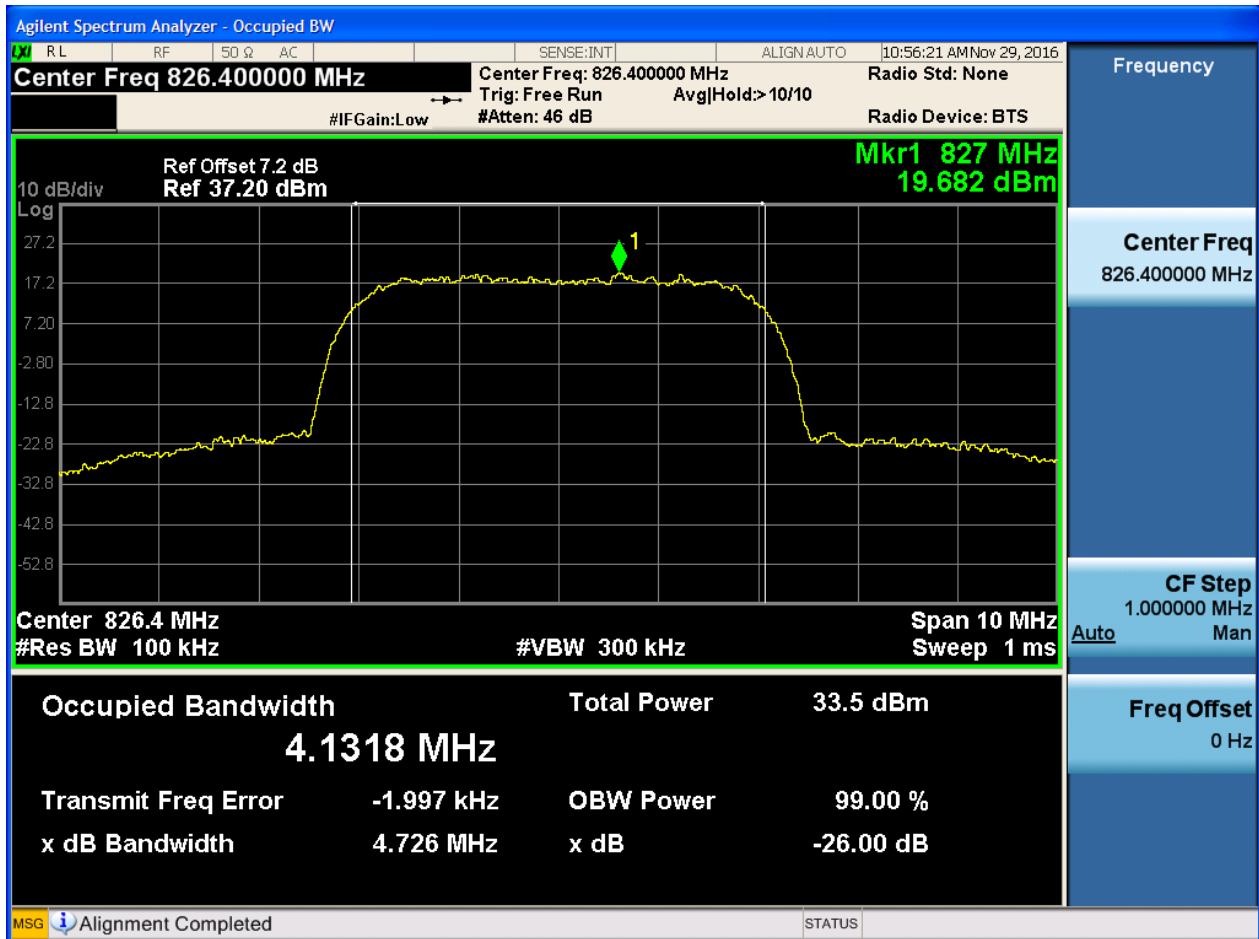




4.1.4 Test Band = WCDMA850

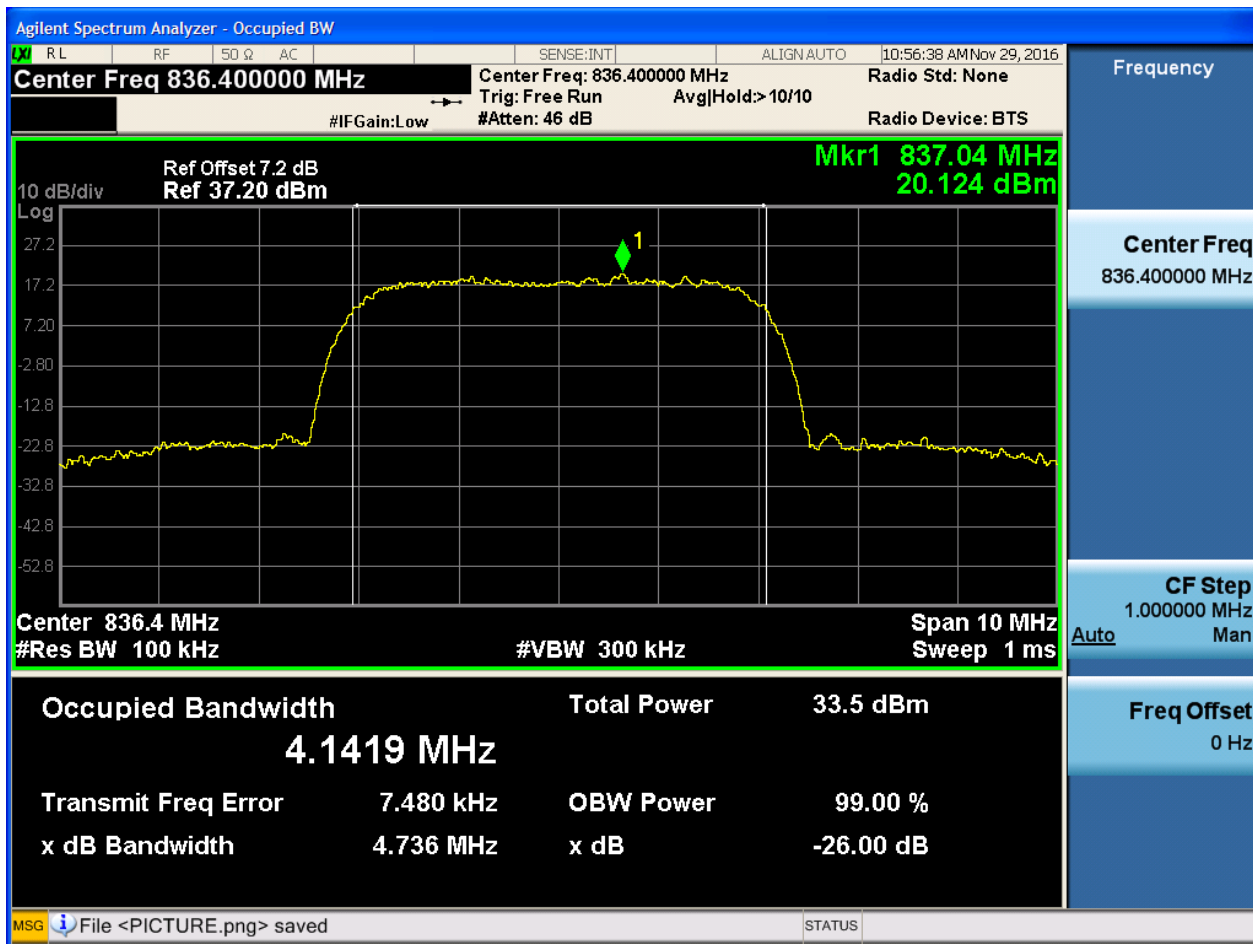
4.1.4.1 Test Mode = UMTS/TM1

4.1.4.1.1 Test Channel = LCH



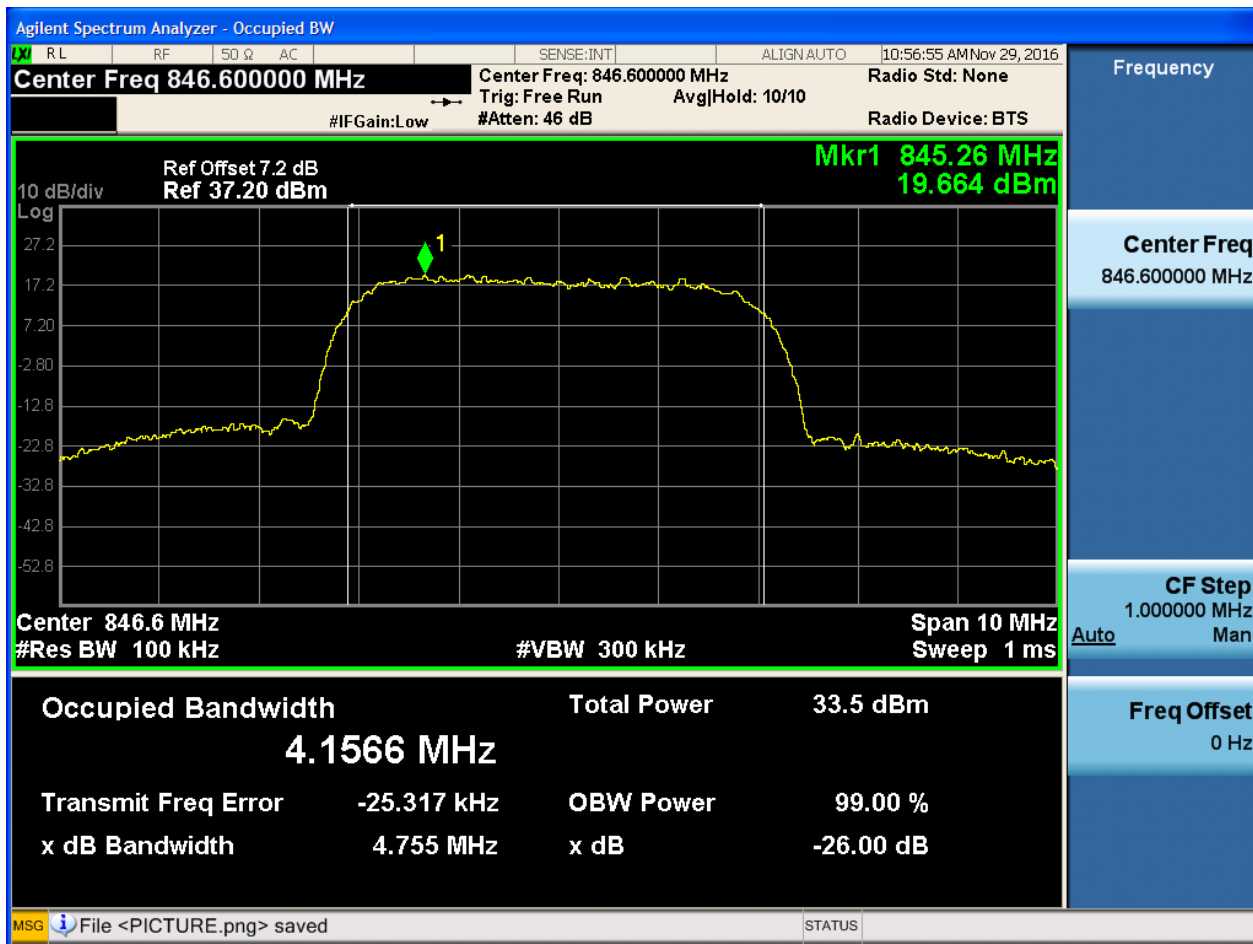


4.1.4.1.2 Test Channel = MCH





4.1.4.1.3 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



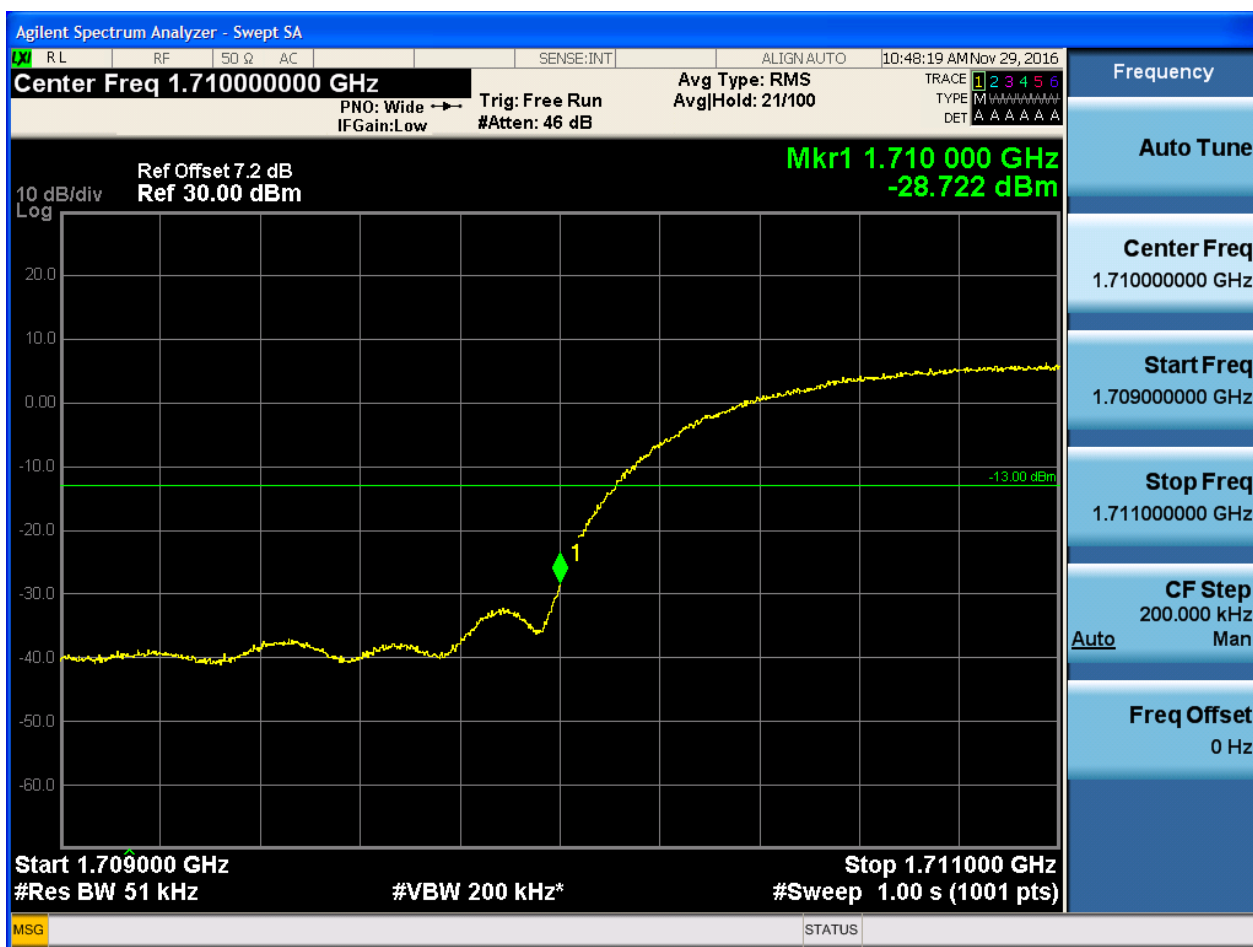
5.1.1.1.2 Test Channel = HCH



5.1.3 Test Band = WCDMA1700

5.1.3.1 Test Mode = UMTS/TM1

5.1.3.1.1 Test Channel = LCH



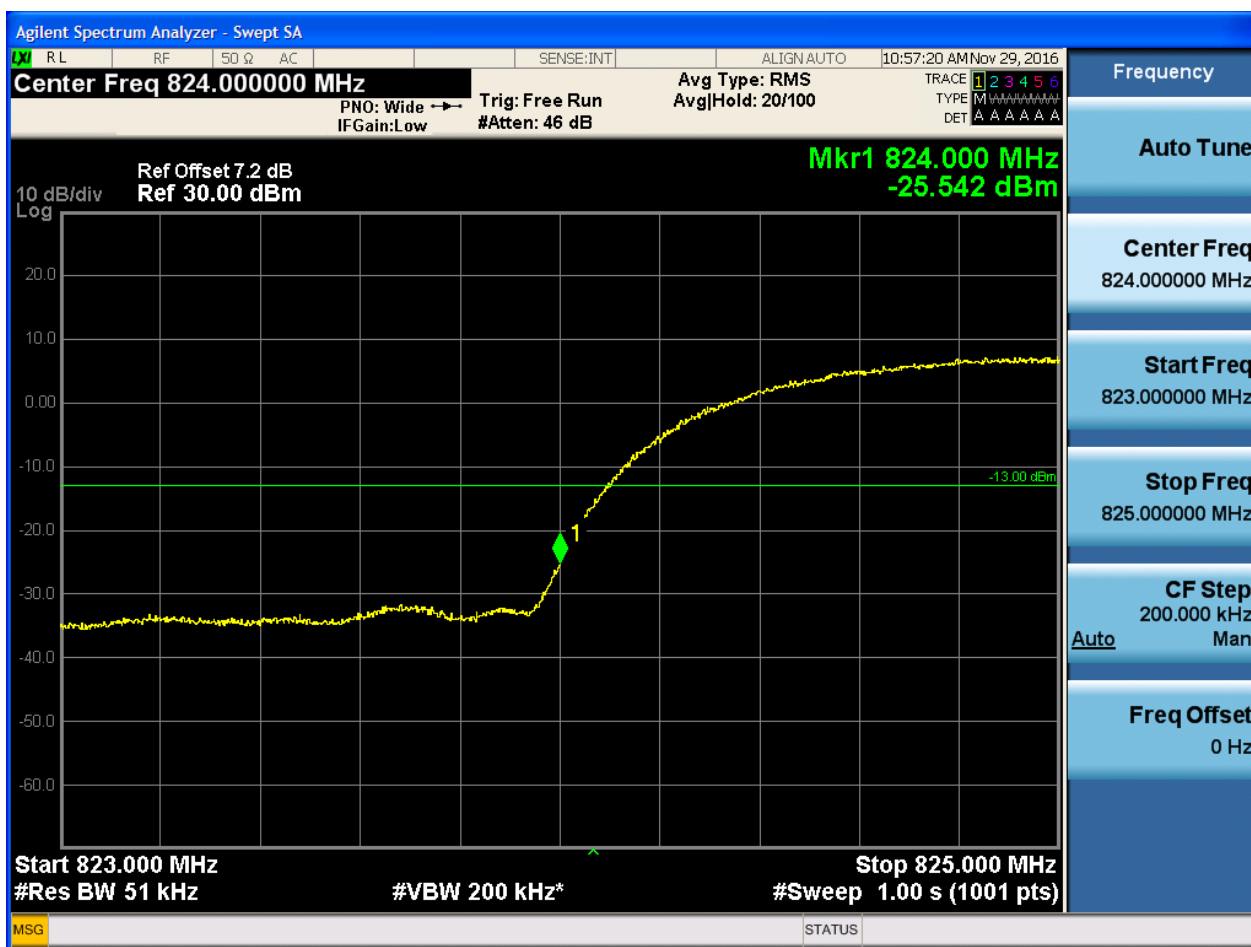
5.1.3.1.2 Test Channel = HCH



5.1.4 Test Band = WCDMA850

5.1.4.1 Test Mode = UMTS/TM1

5.1.4.1.1 Test Channel = LCH



5.1.4.1.2 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

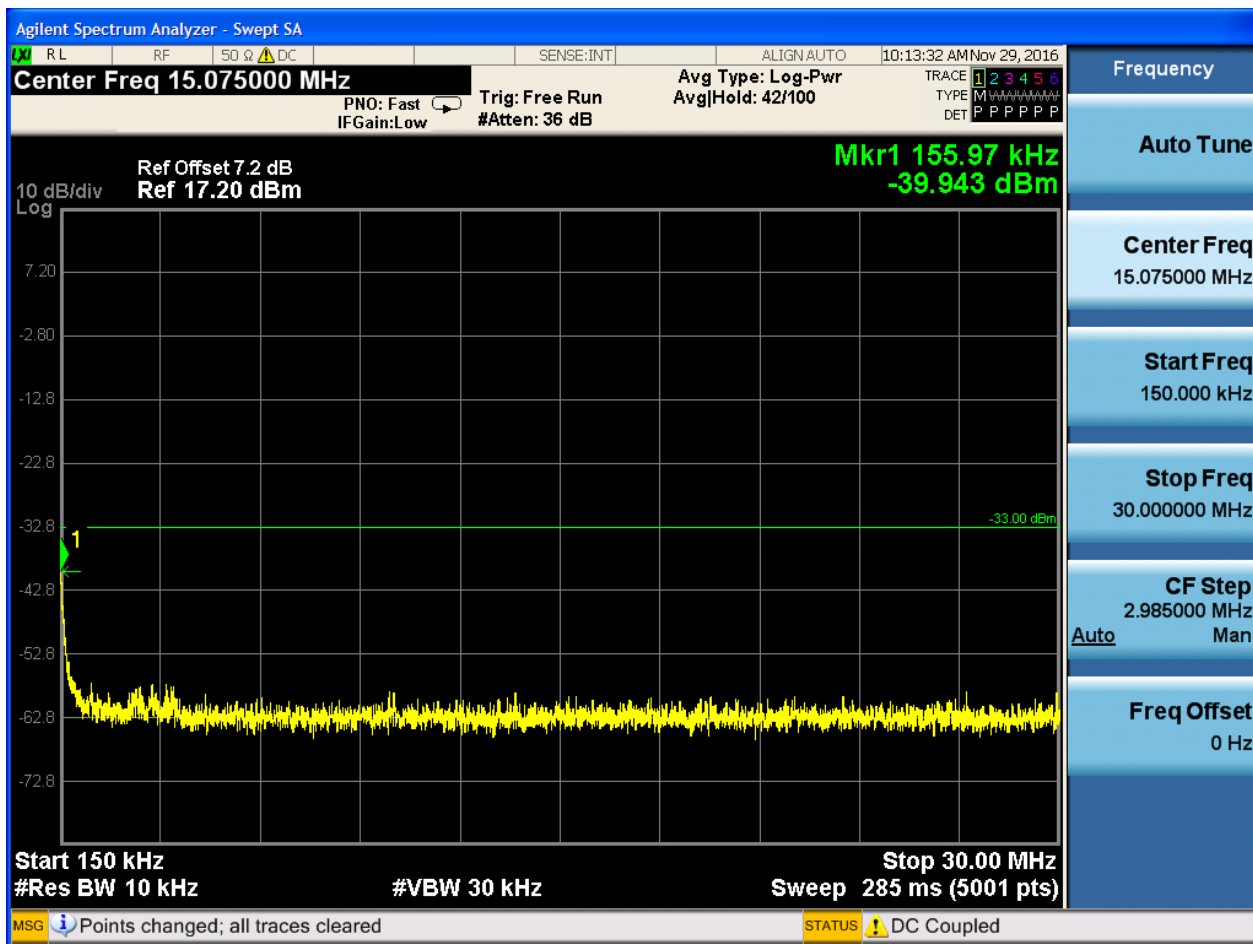
6.1 For UMTS

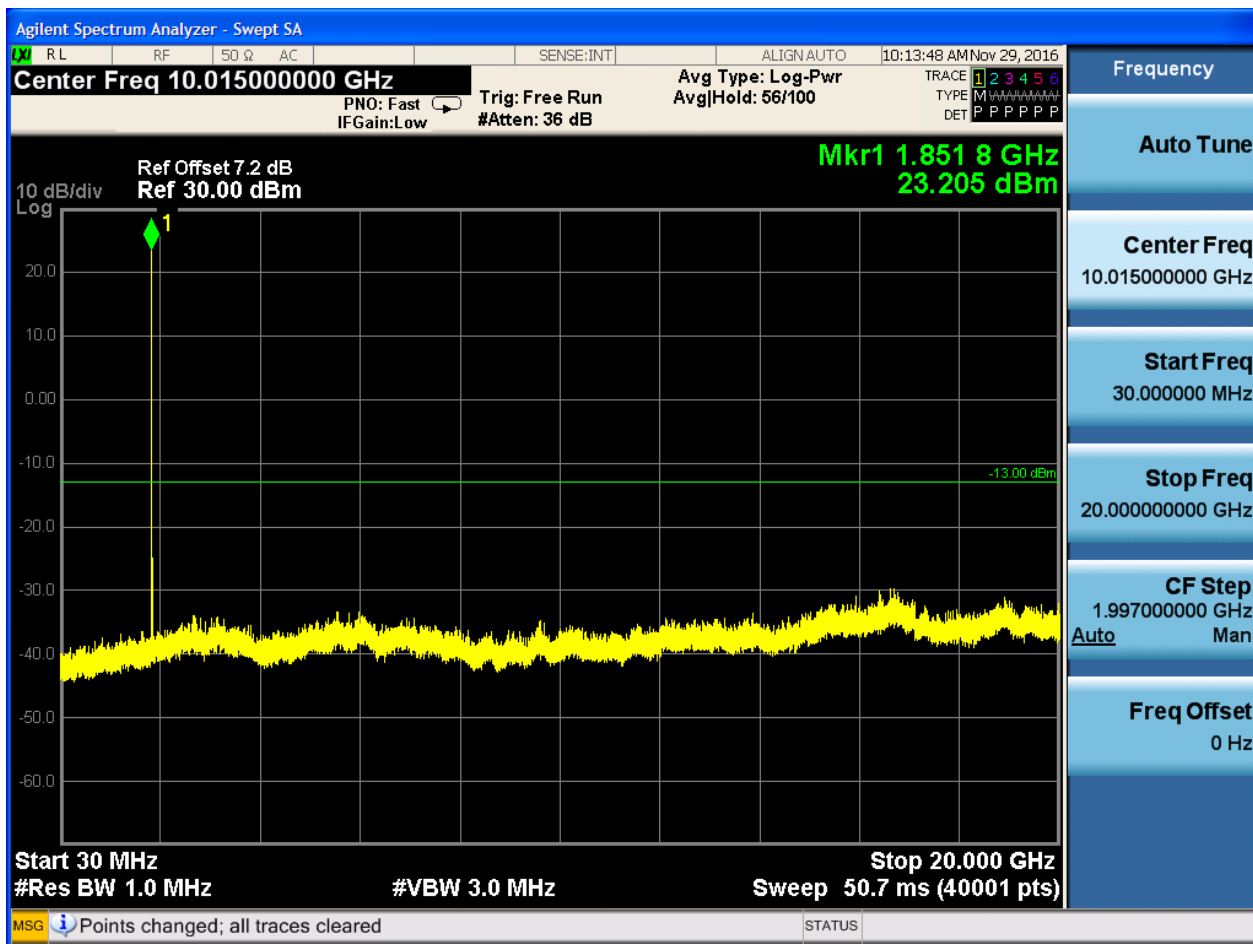
6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

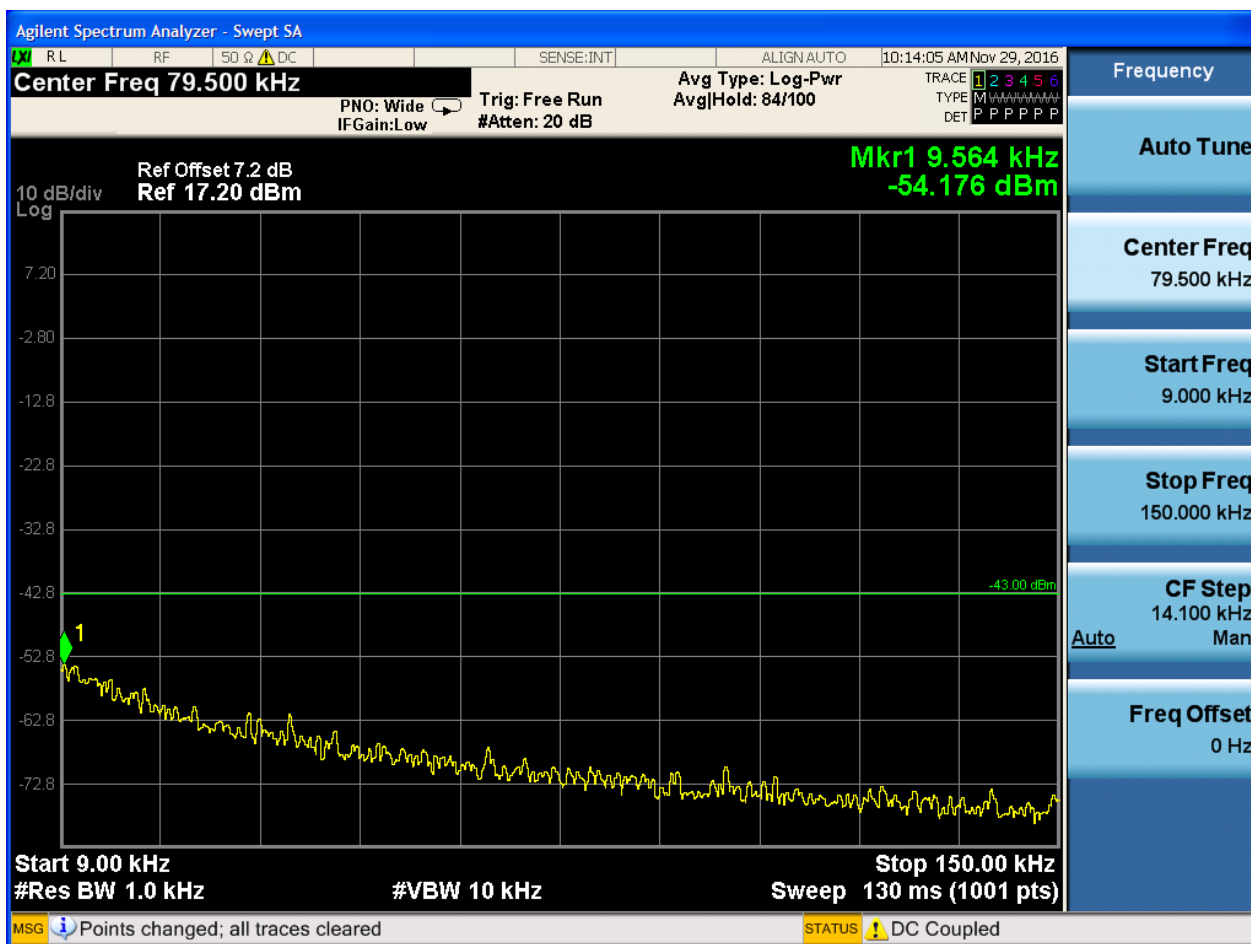
6.1.1.1.1 Test Channel = LCH

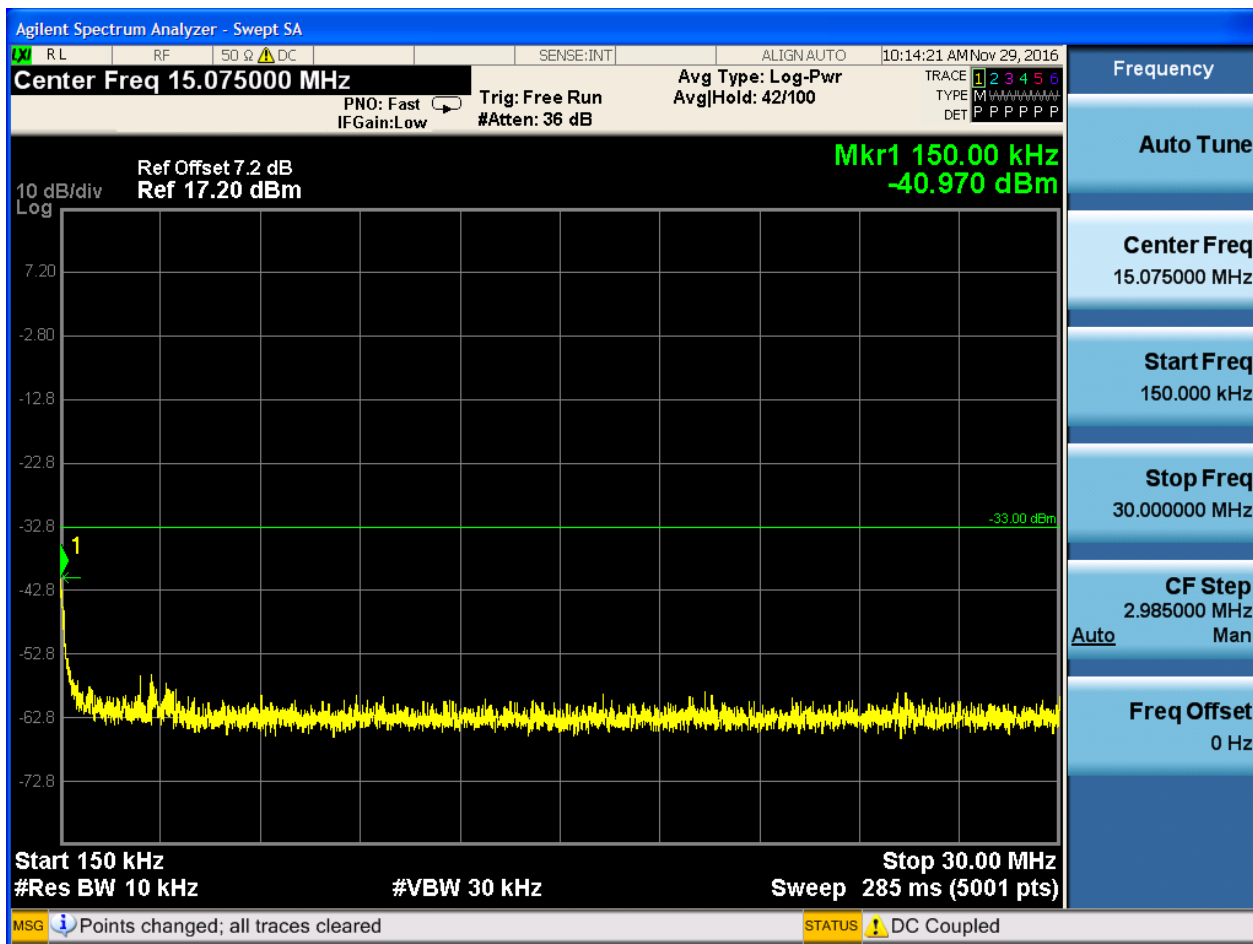


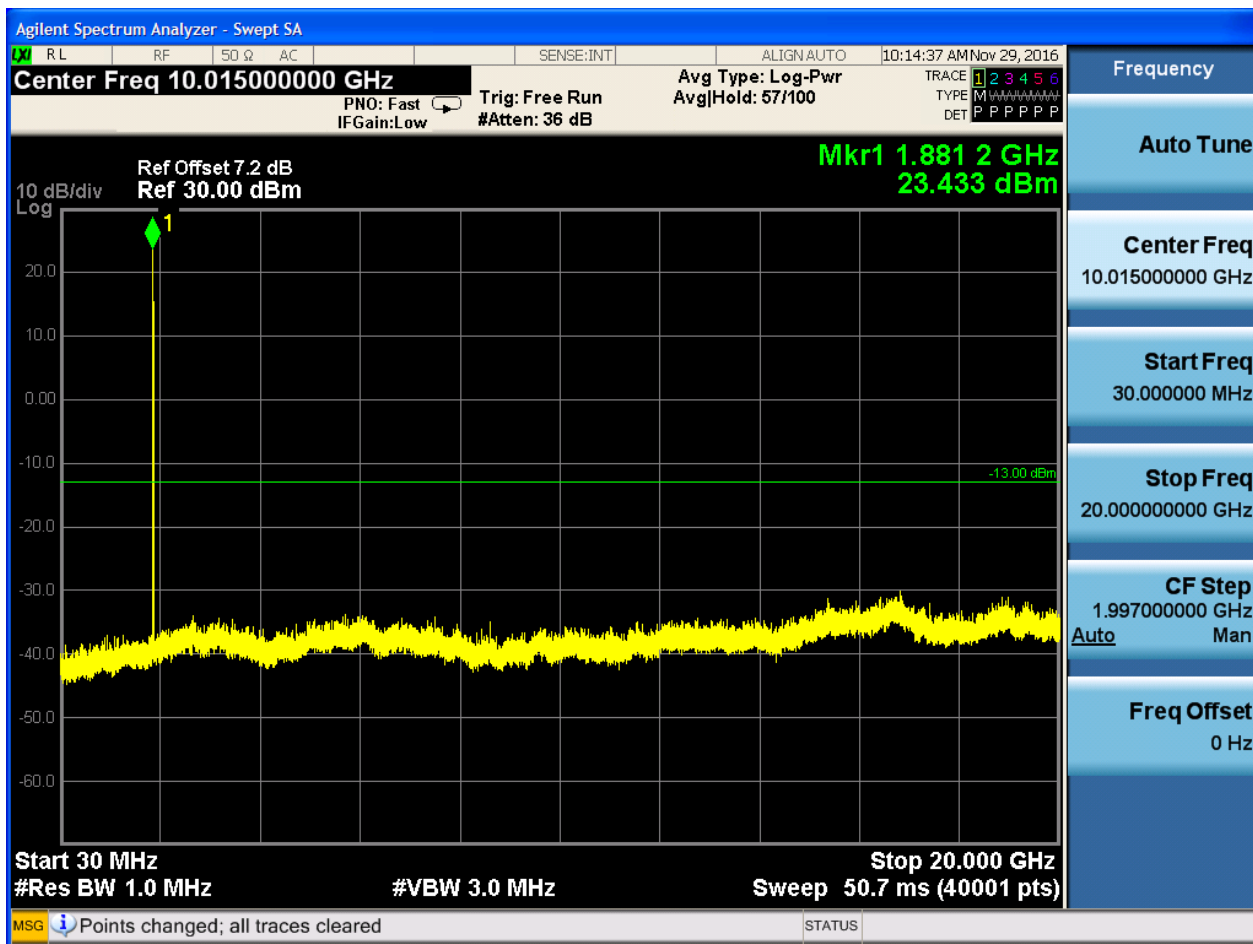




6.1.1.1.2 Test Channel = MCH

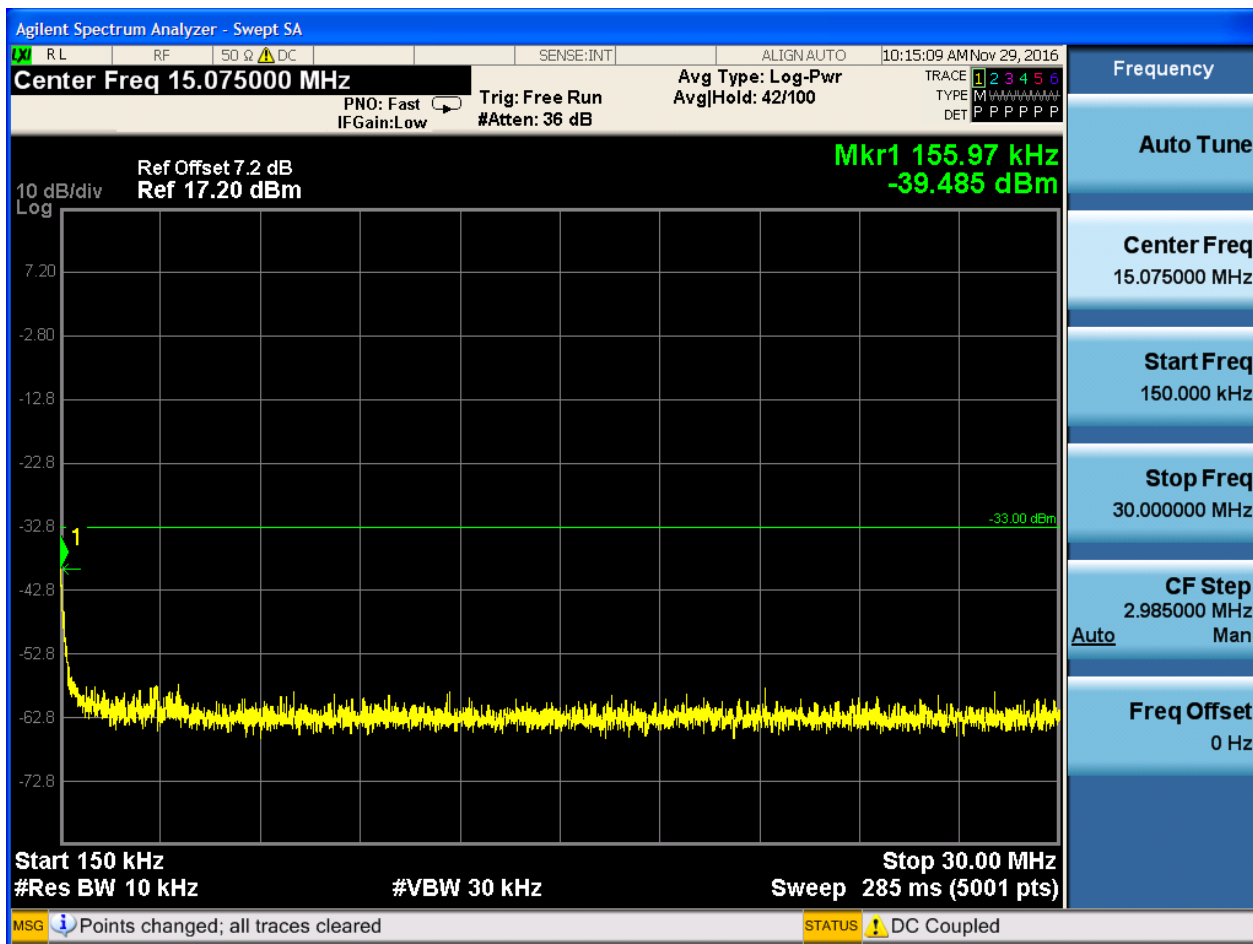


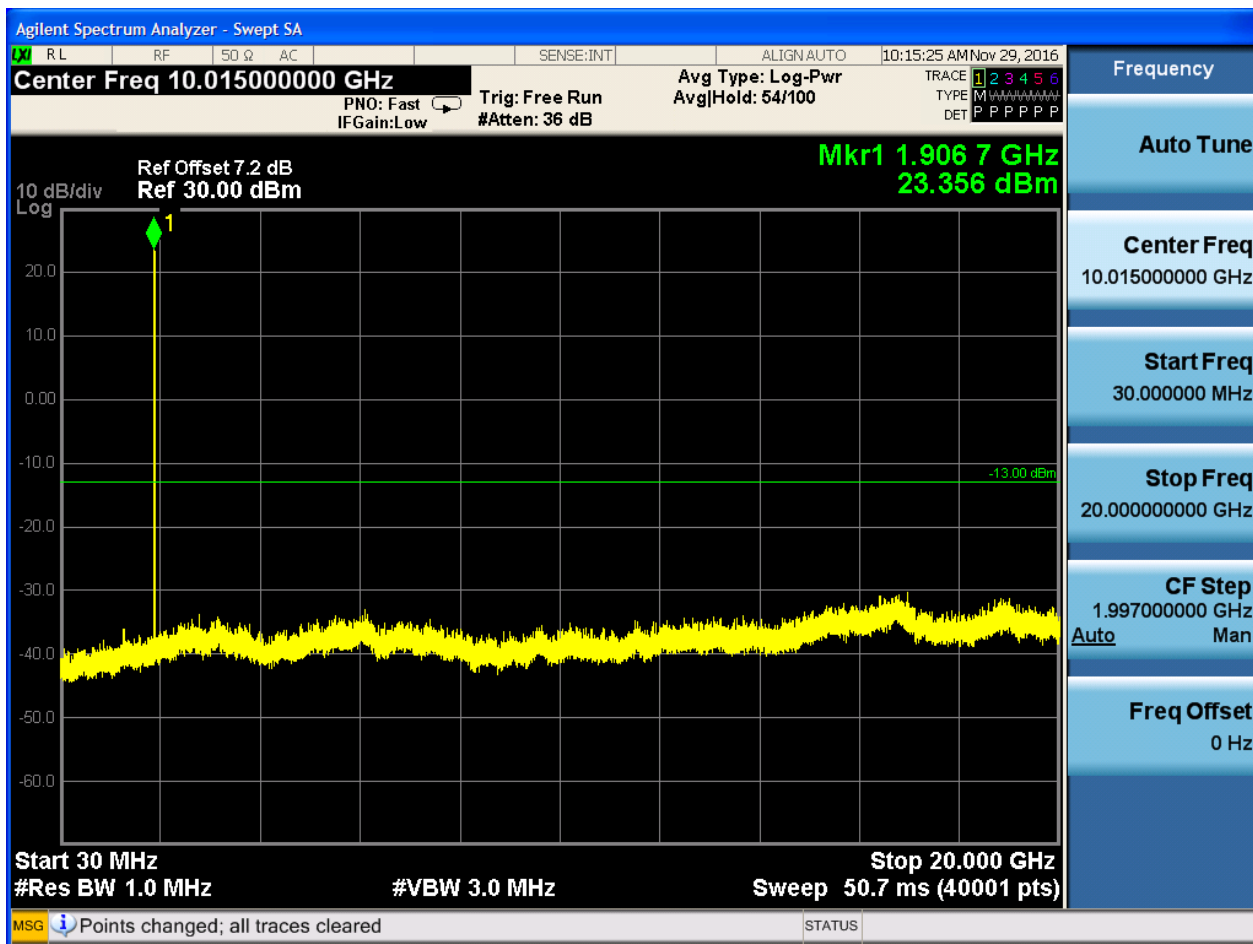




6.1.1.1.3 Test Channel = HCH



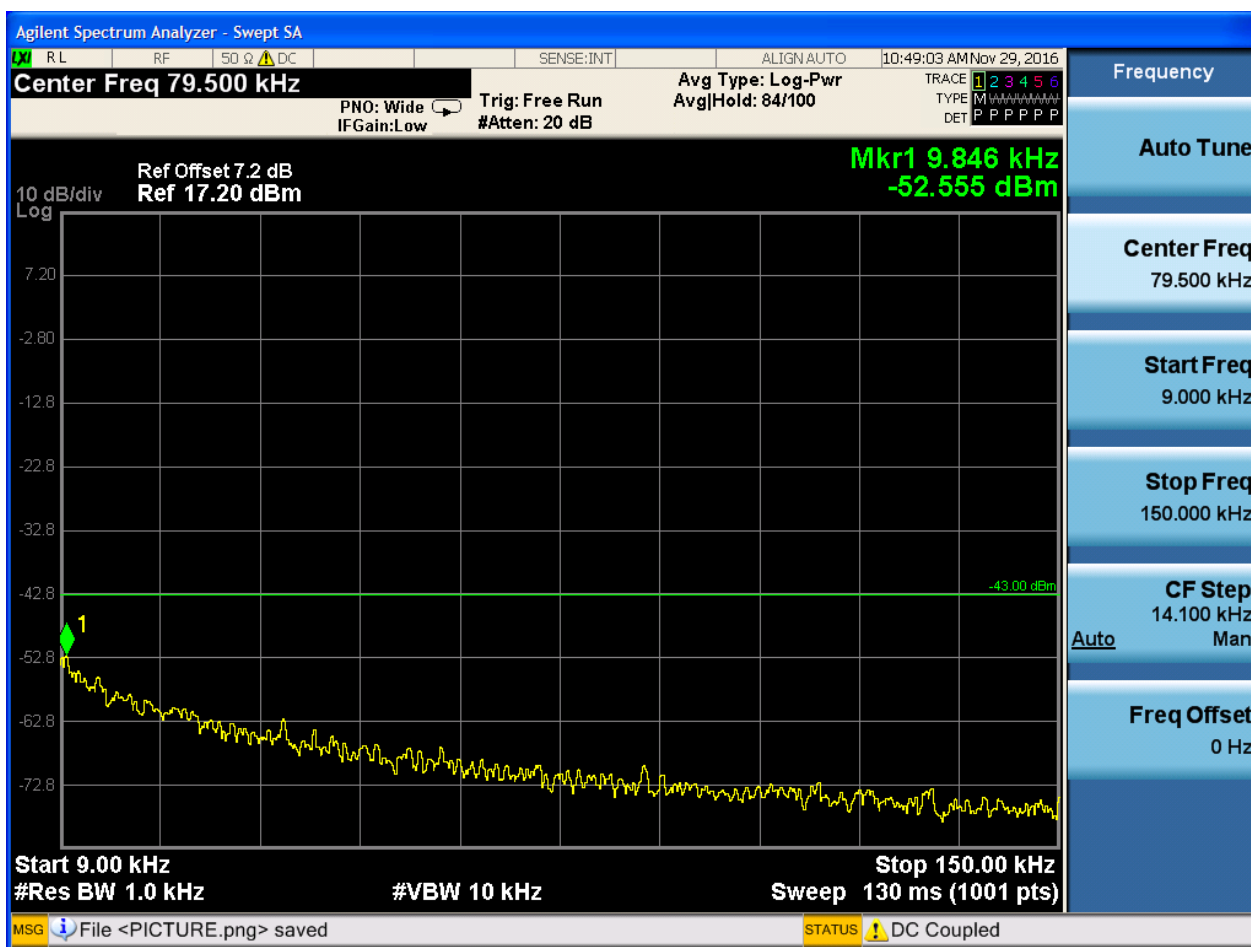


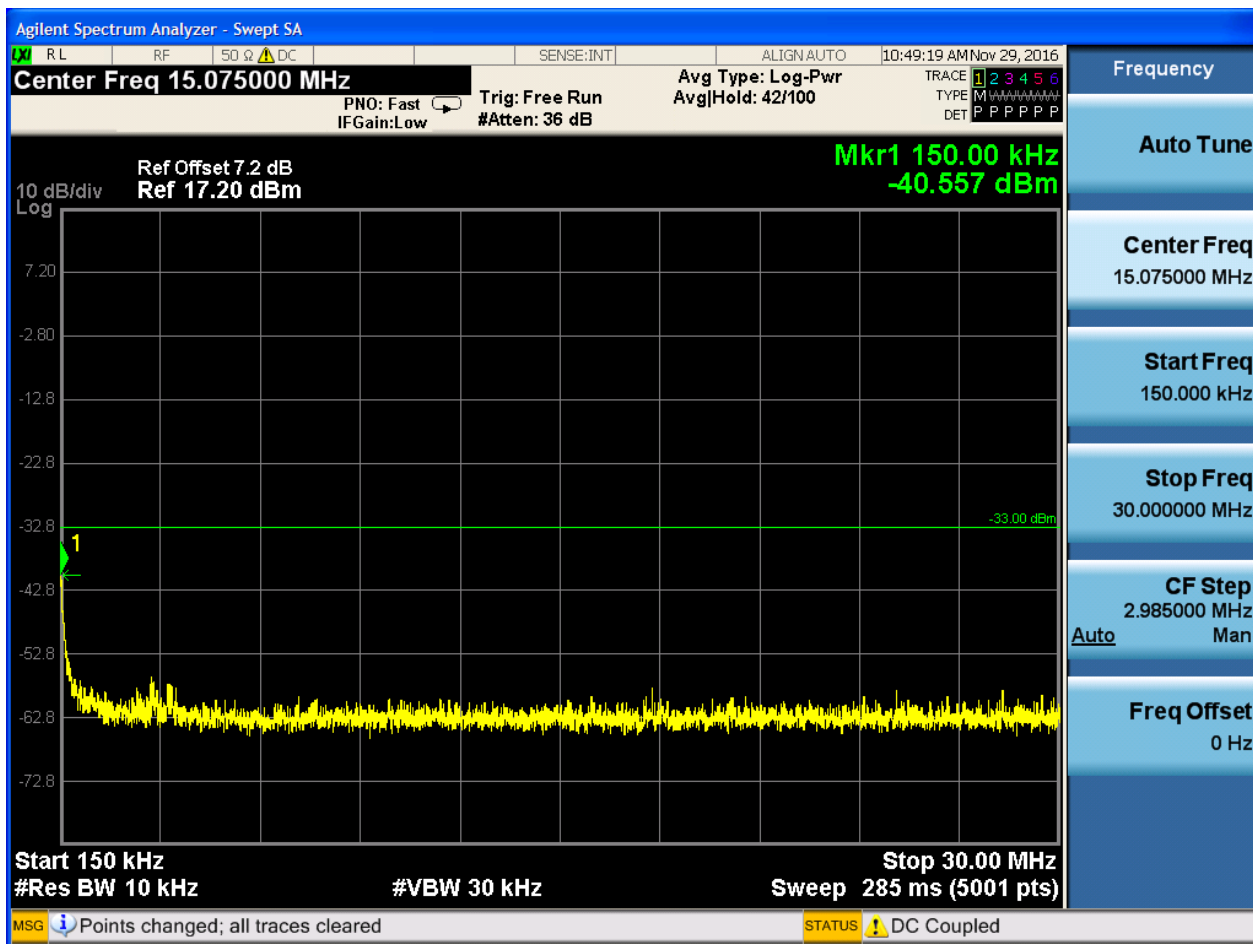


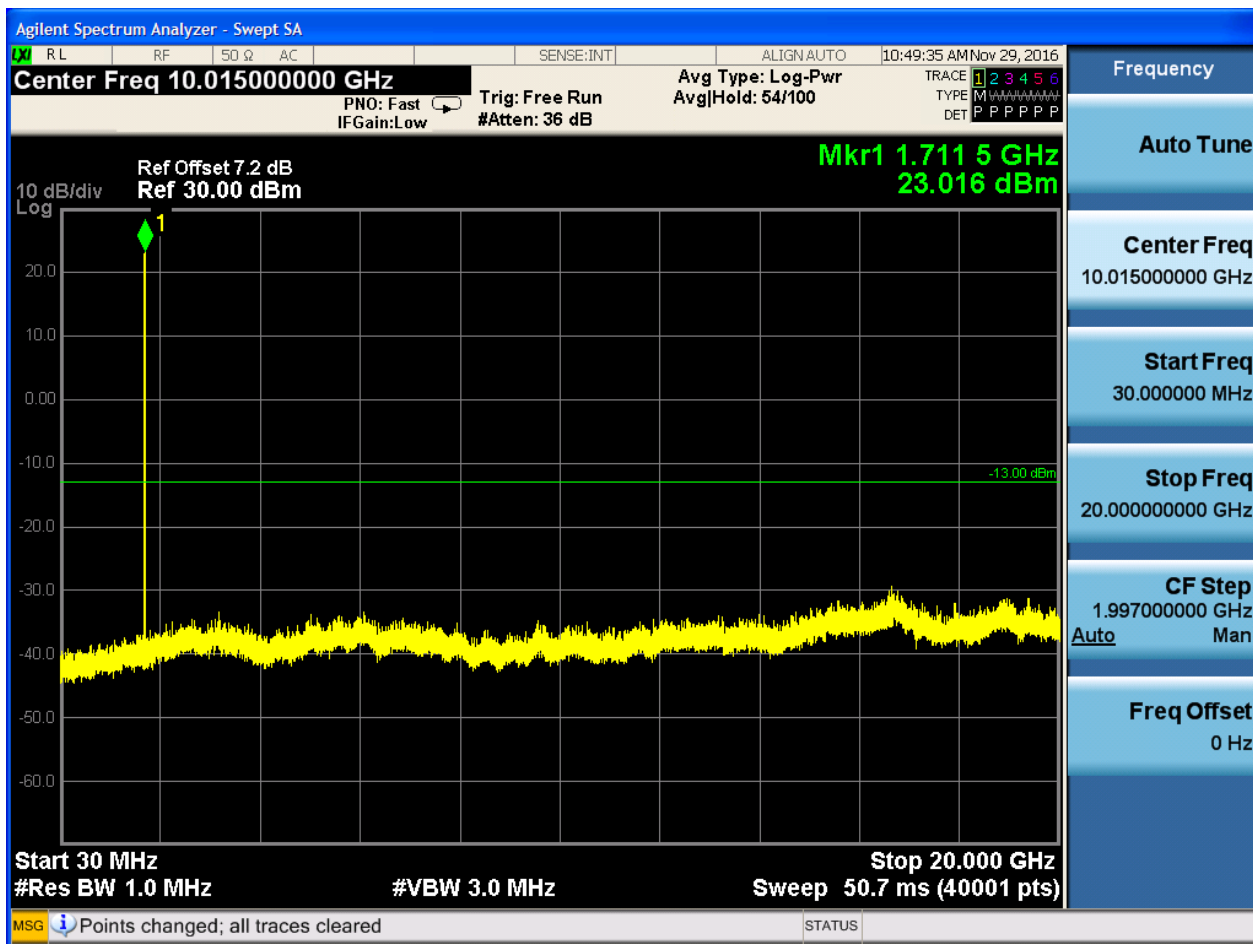
6.1.3 Test Band = WCDMA1700

6.1.3.1 Test Mode = UMTS/TM1

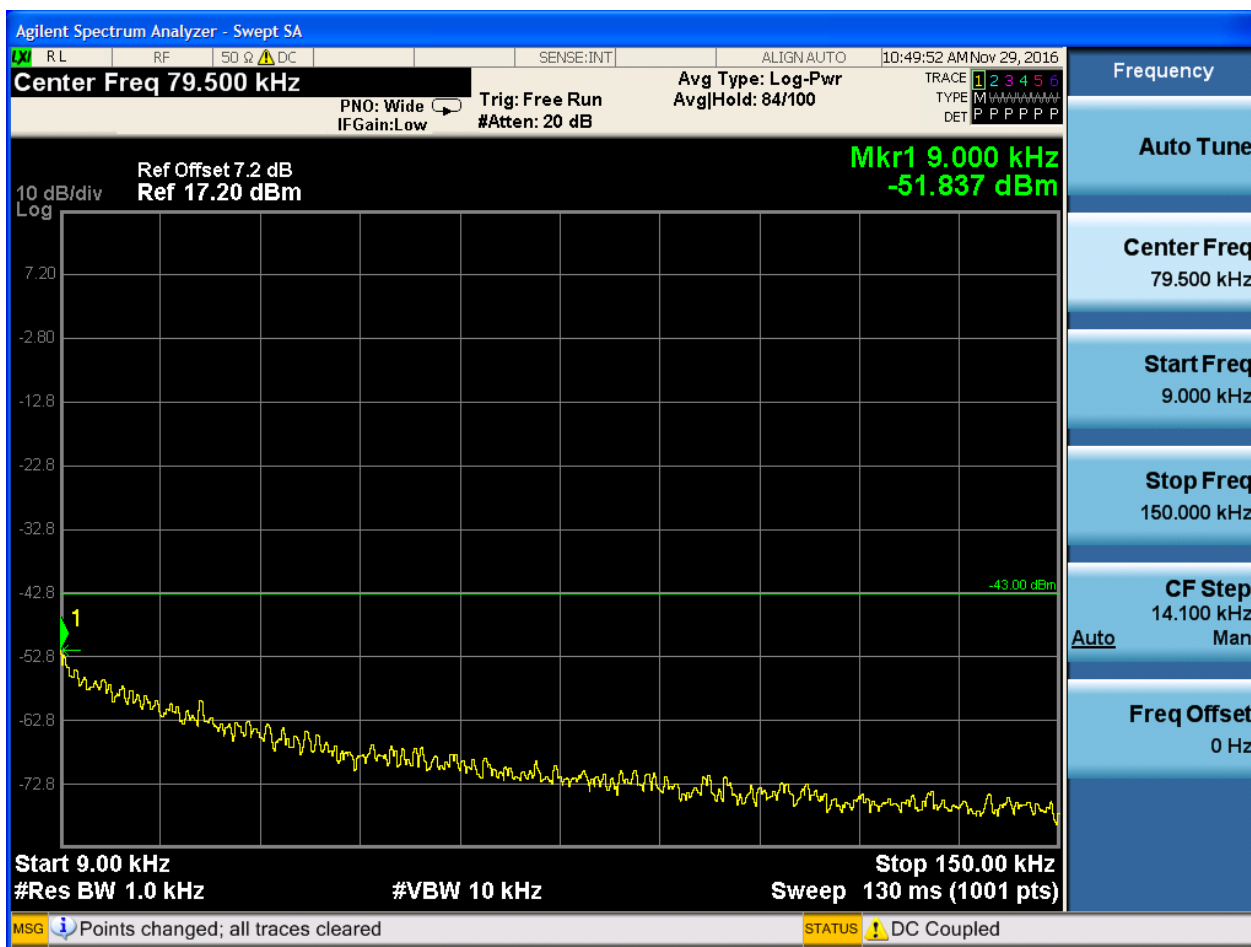
6.1.3.1.1 Test Channel = LCH

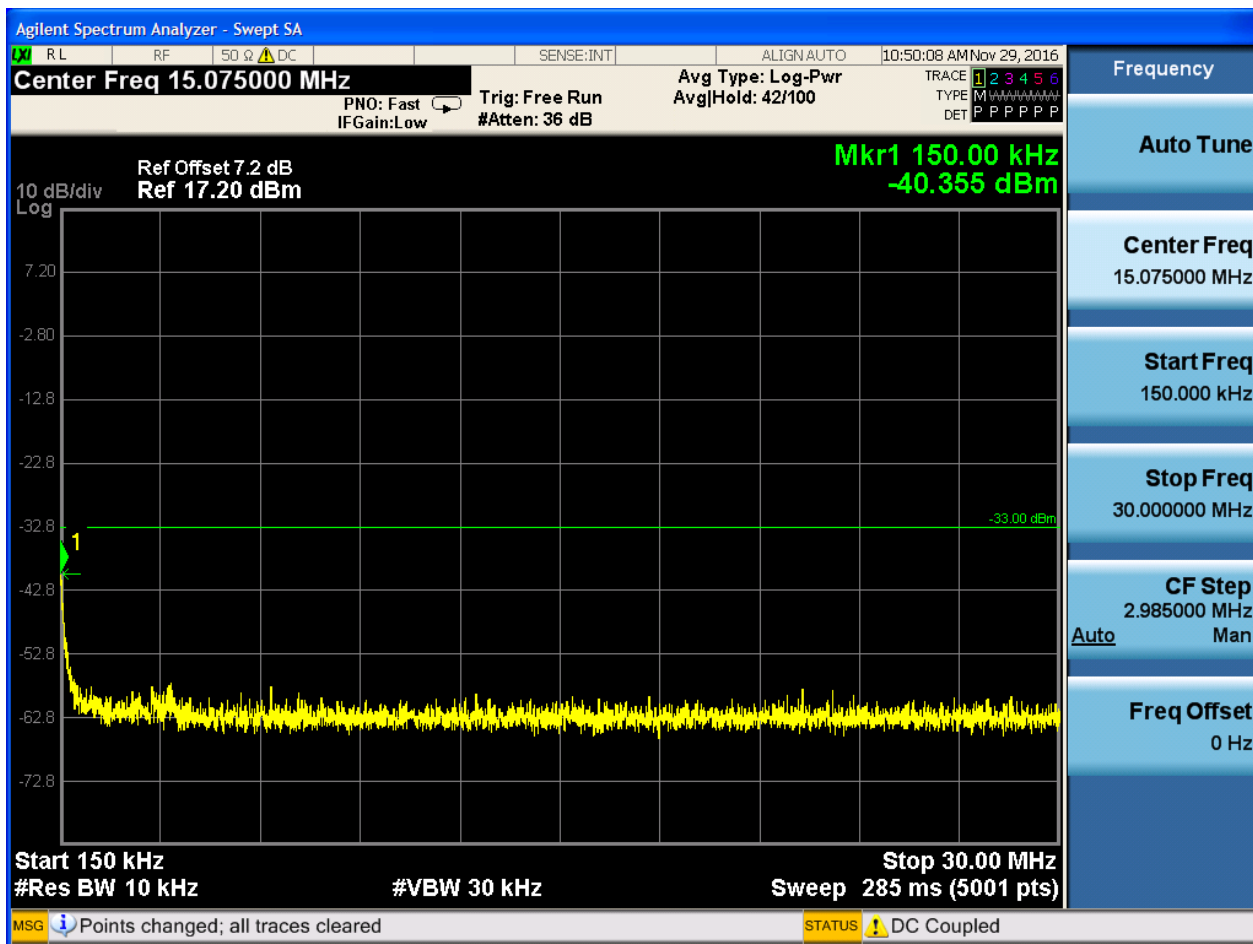


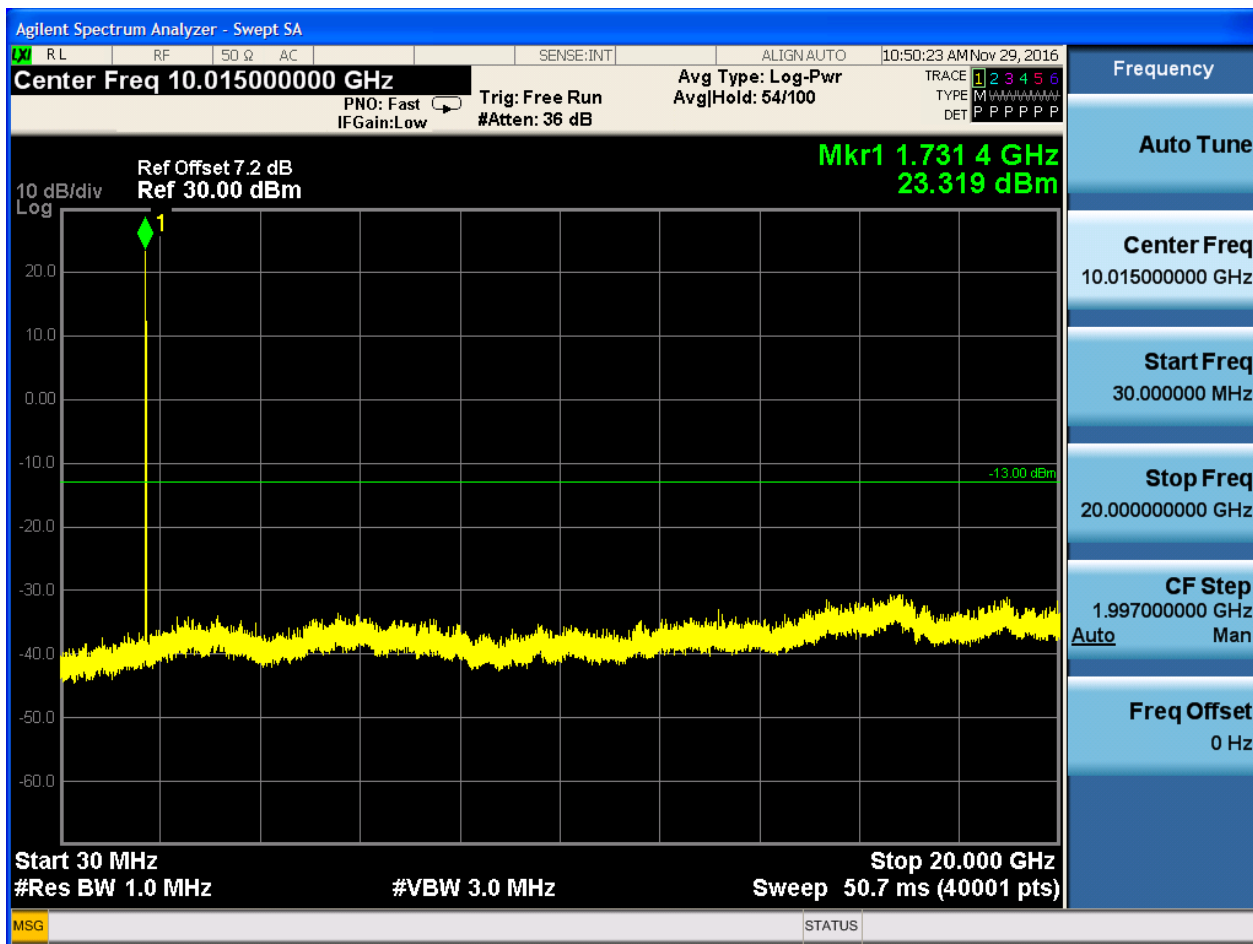




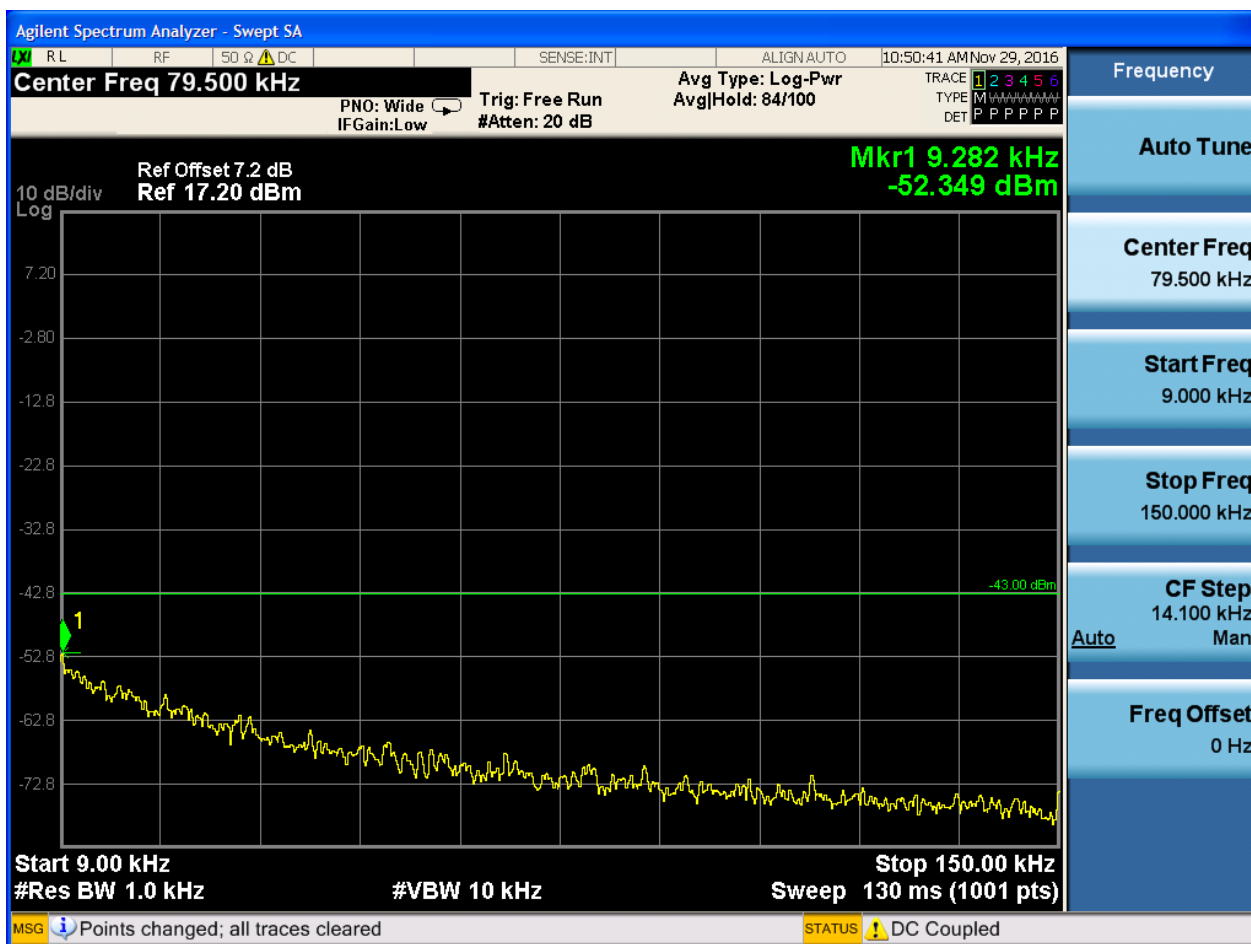
6.1.3.1.2 Test Channel = MCH

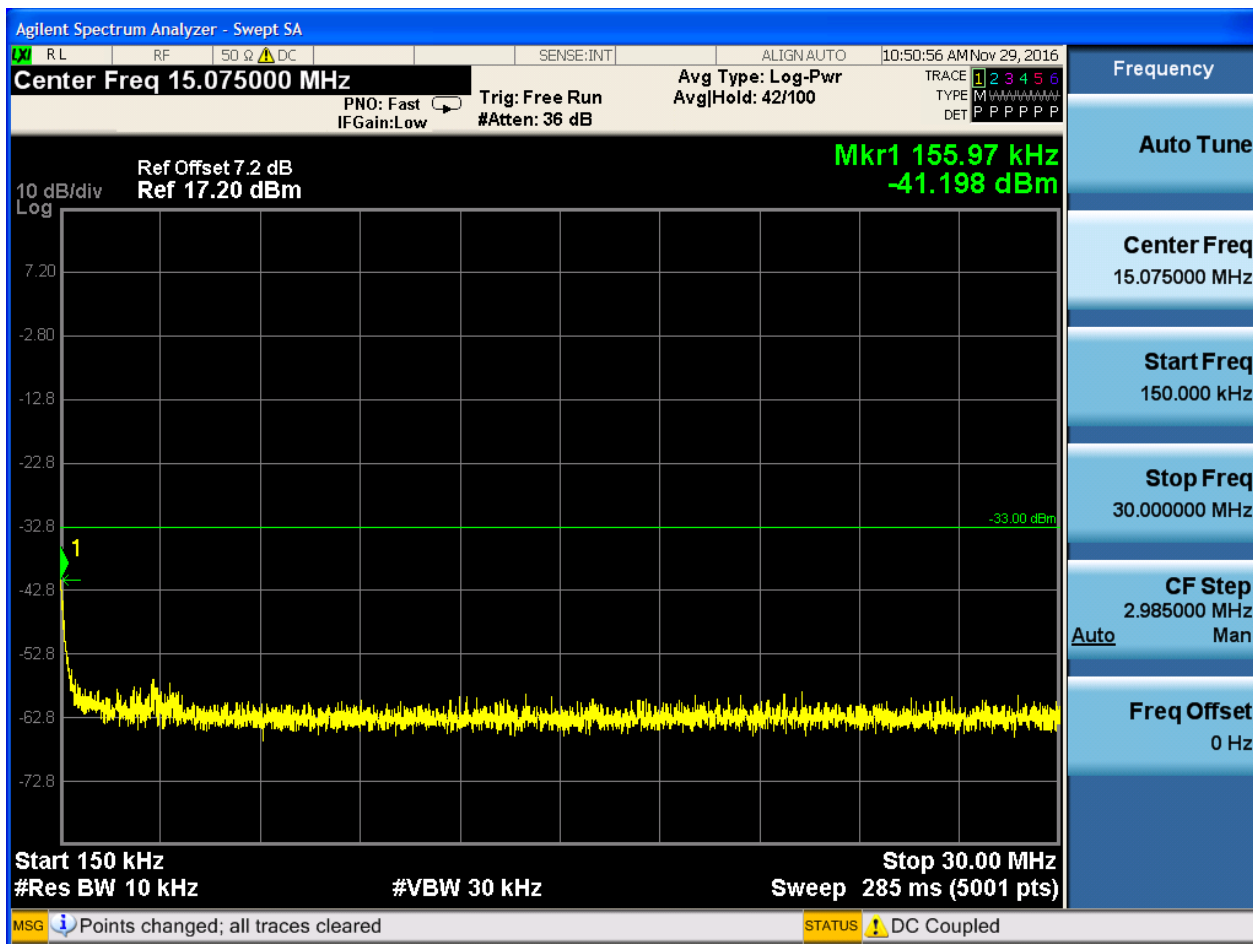


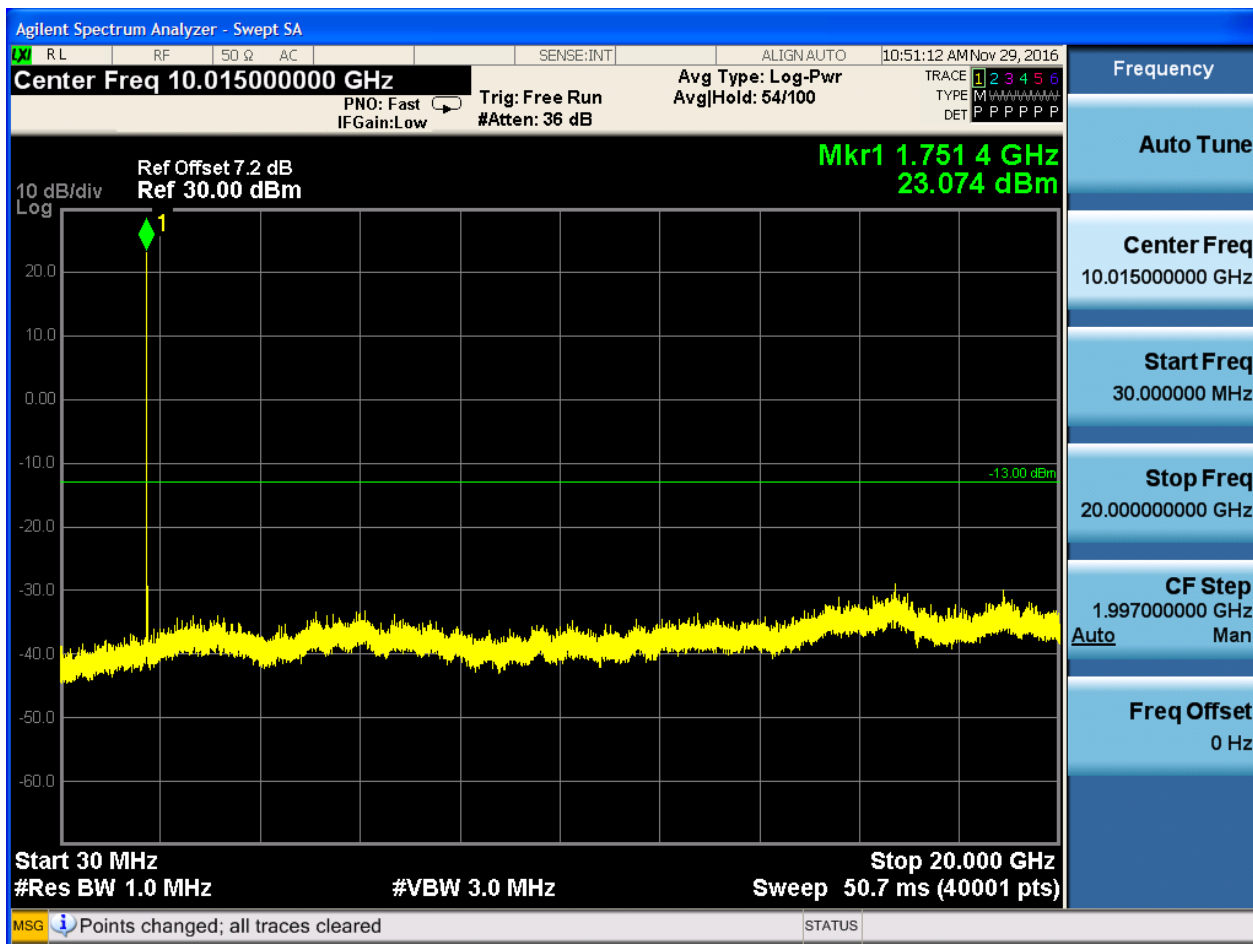




6.1.3.1.3 Test Channel = HCH





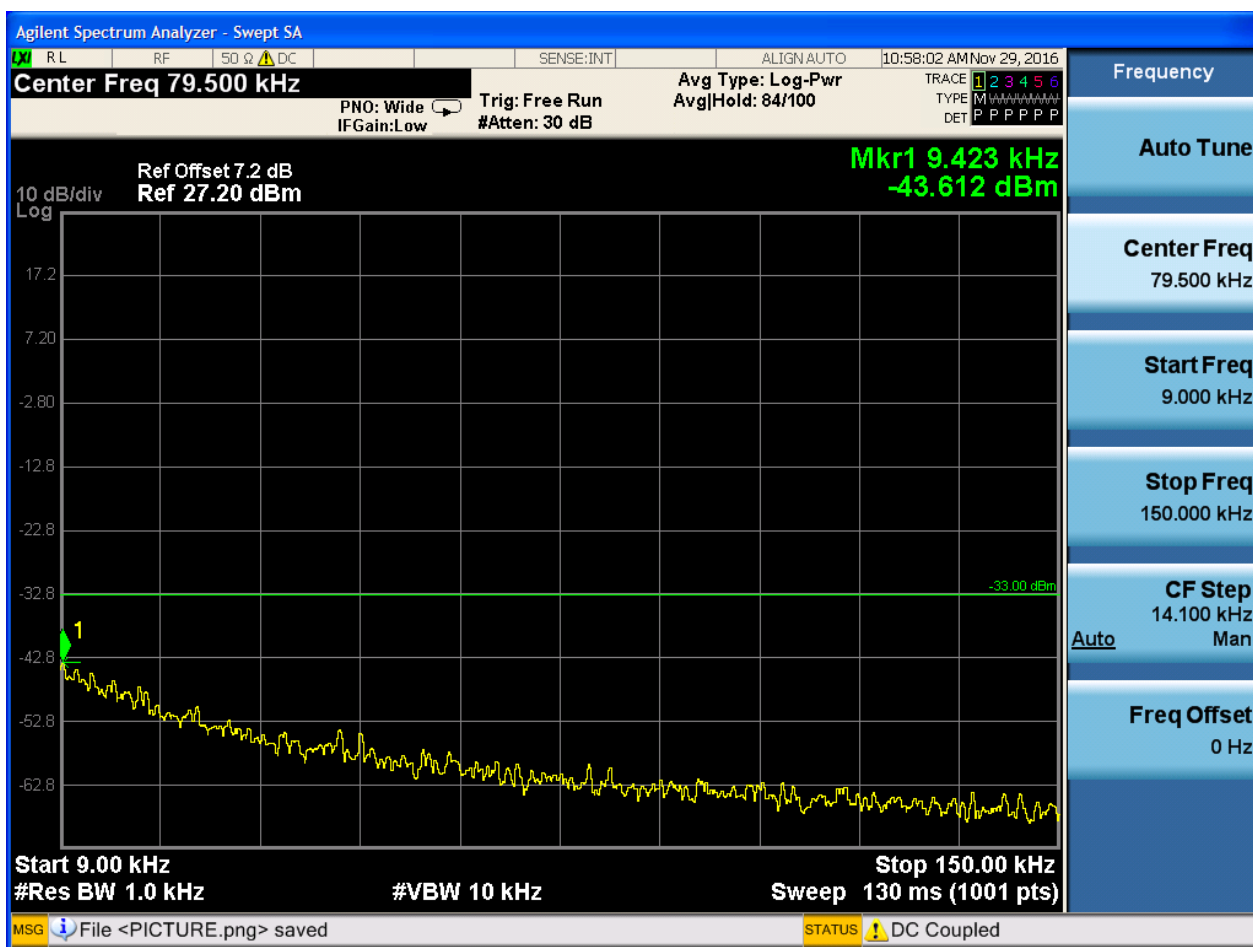


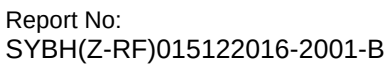


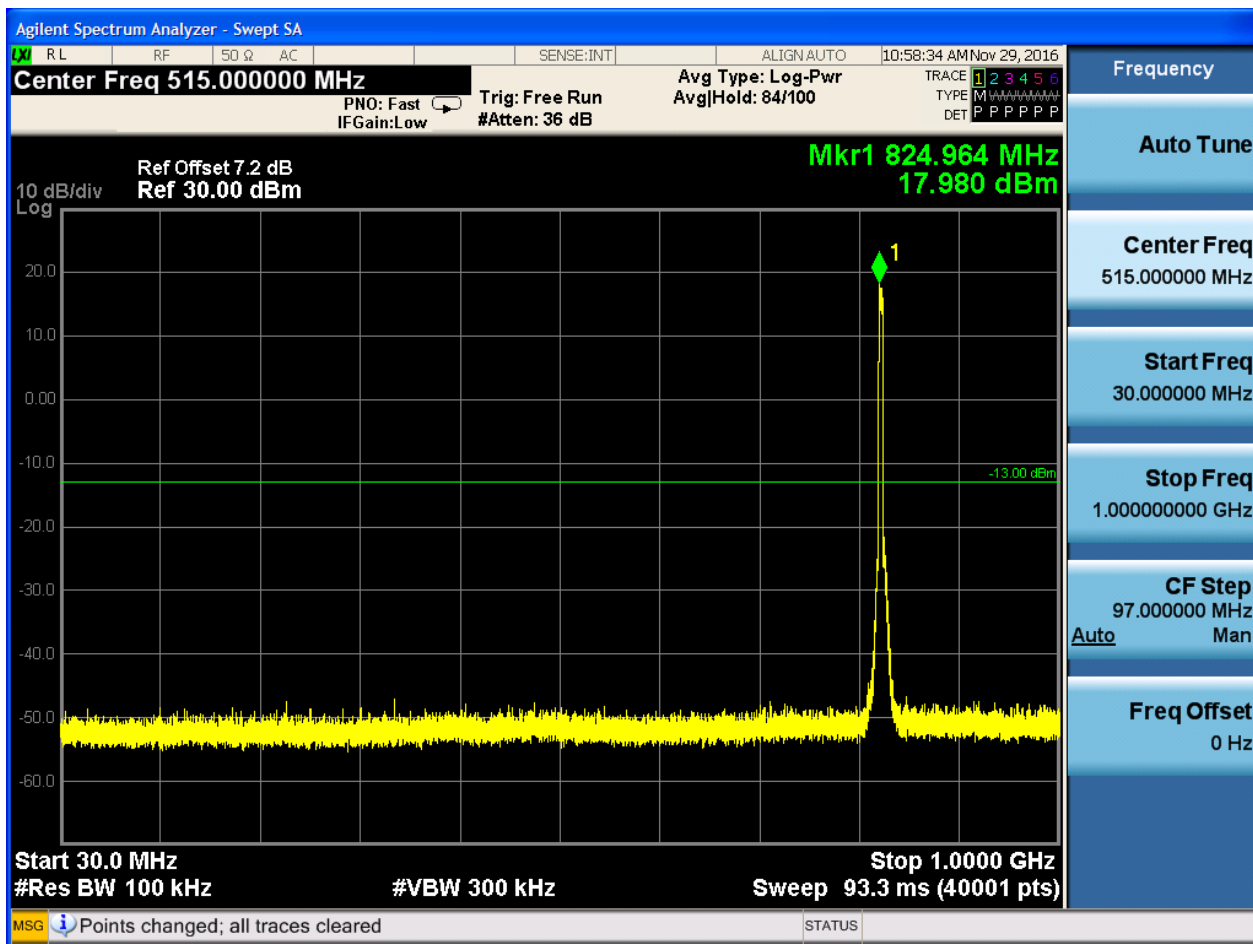
6.1.4 Test Band = WCDMA850

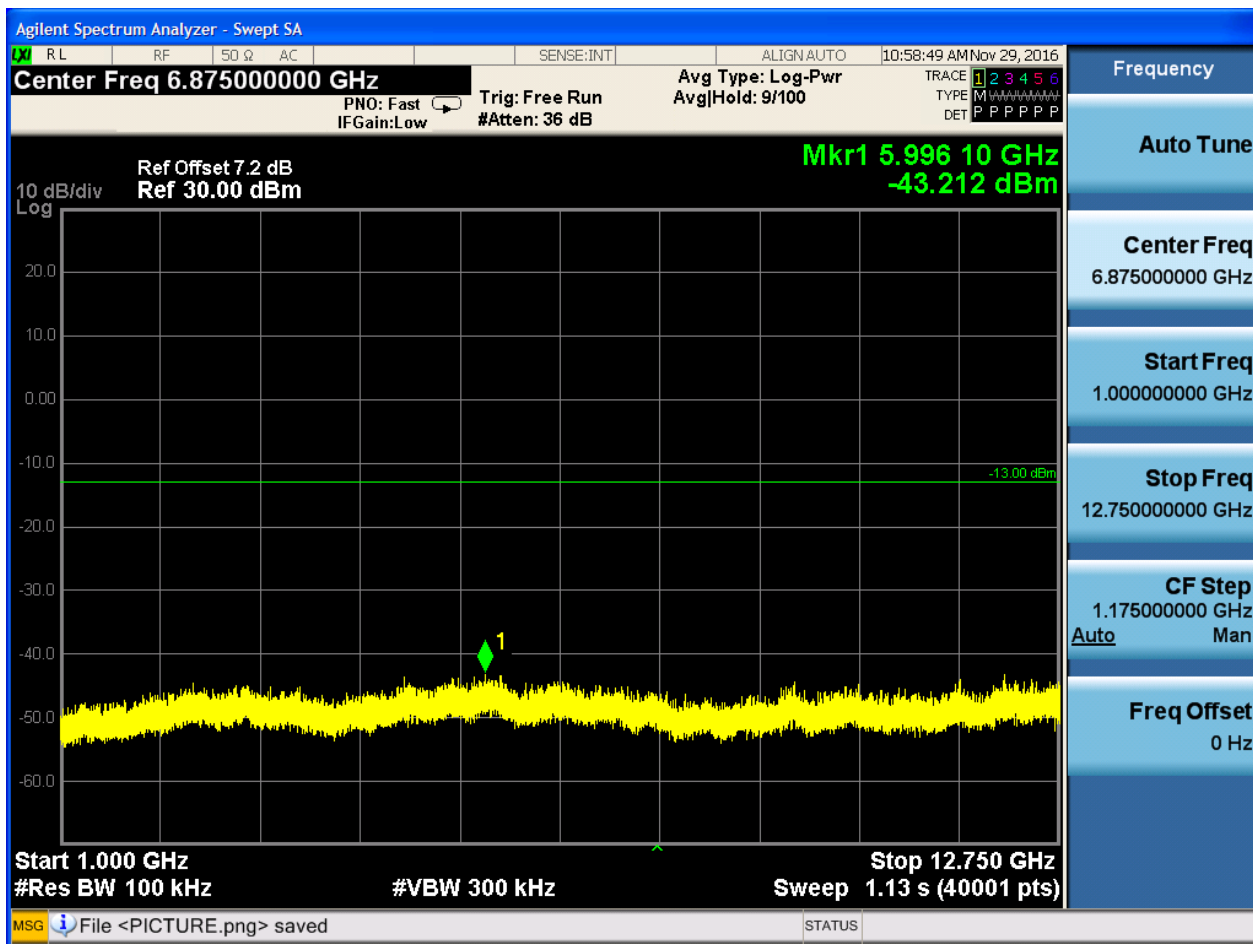
6.1.4.1 Test Mode = UMTS/TM1

6.1.4.1.1 Test Channel = LCH



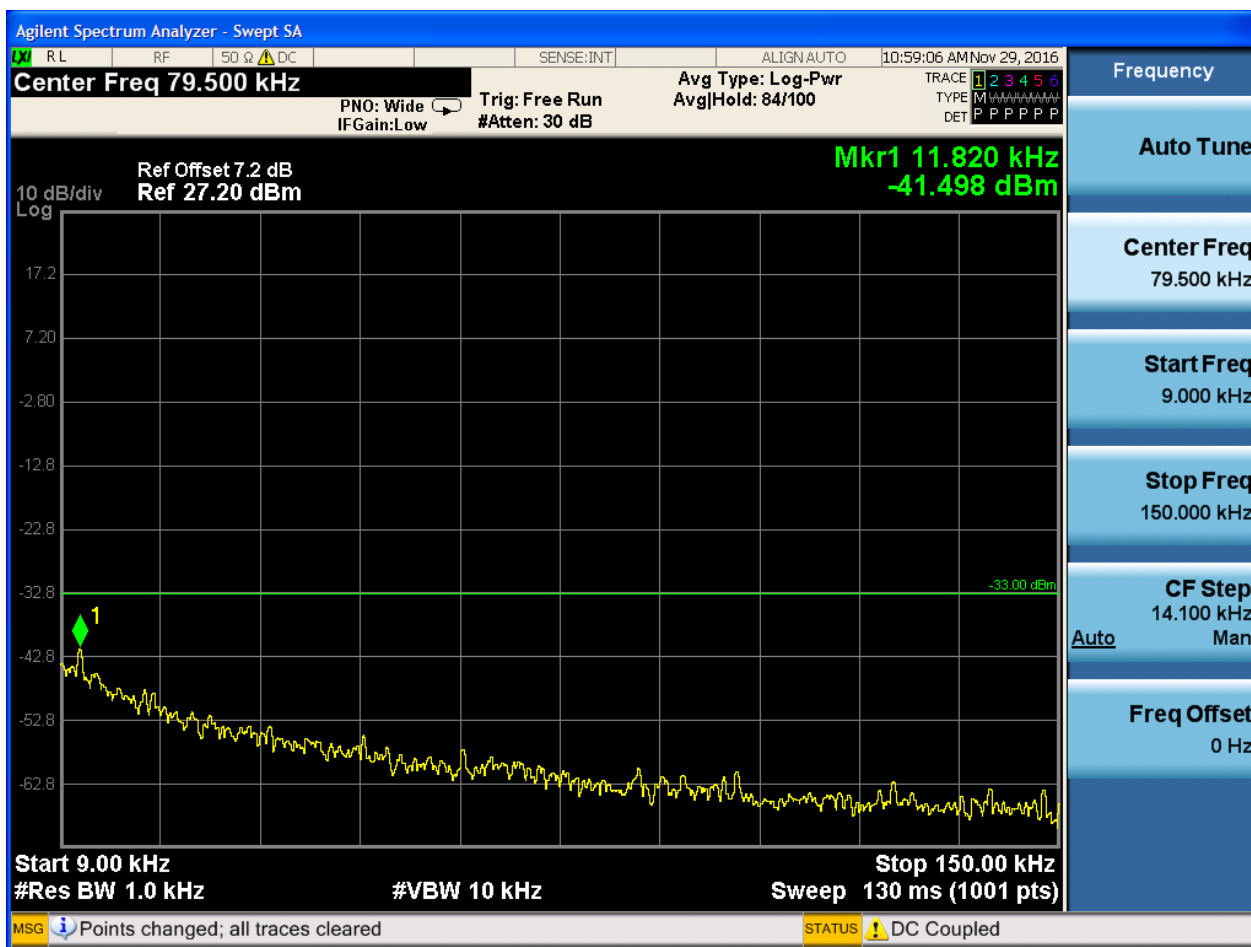


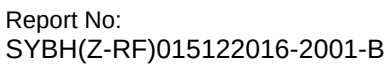


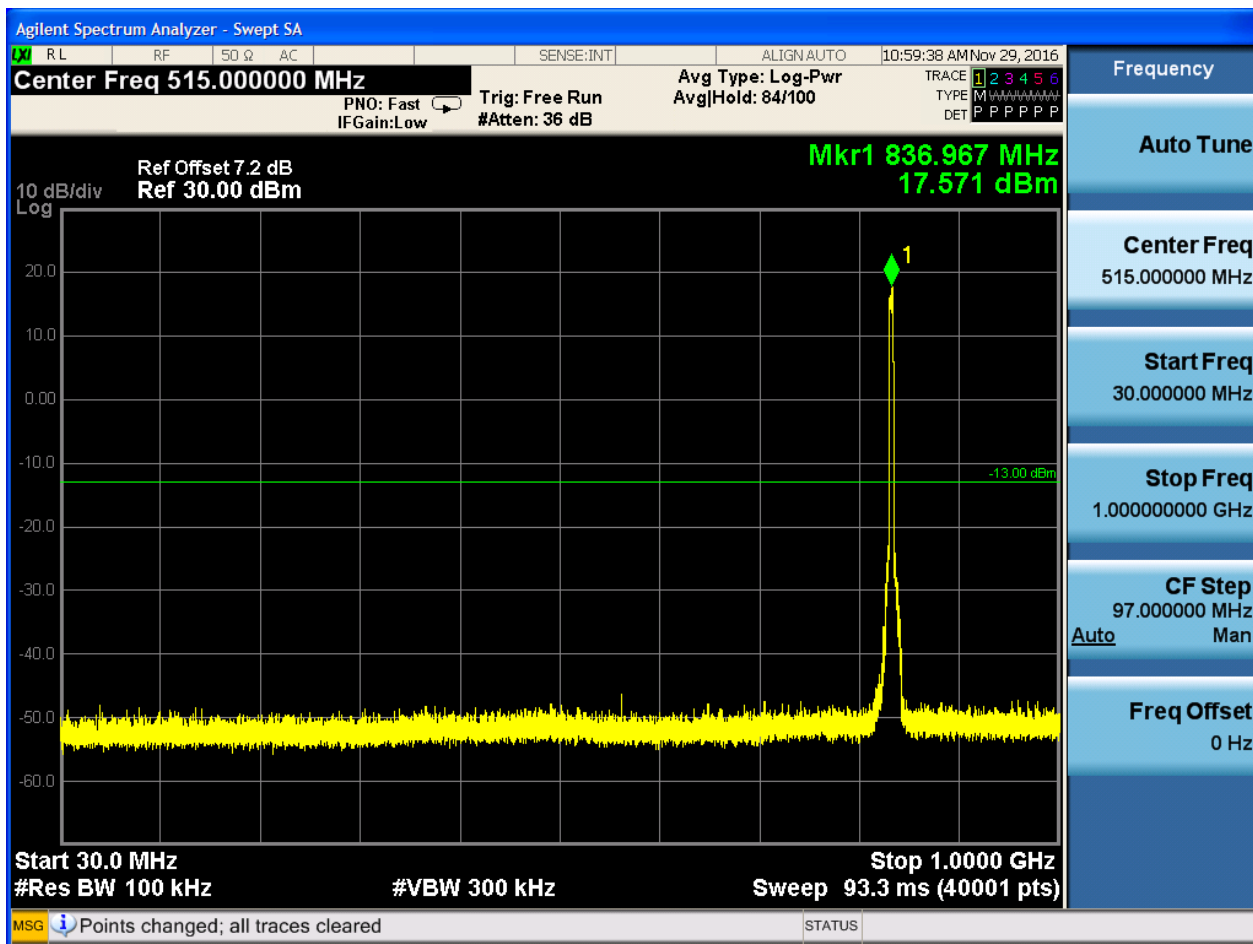


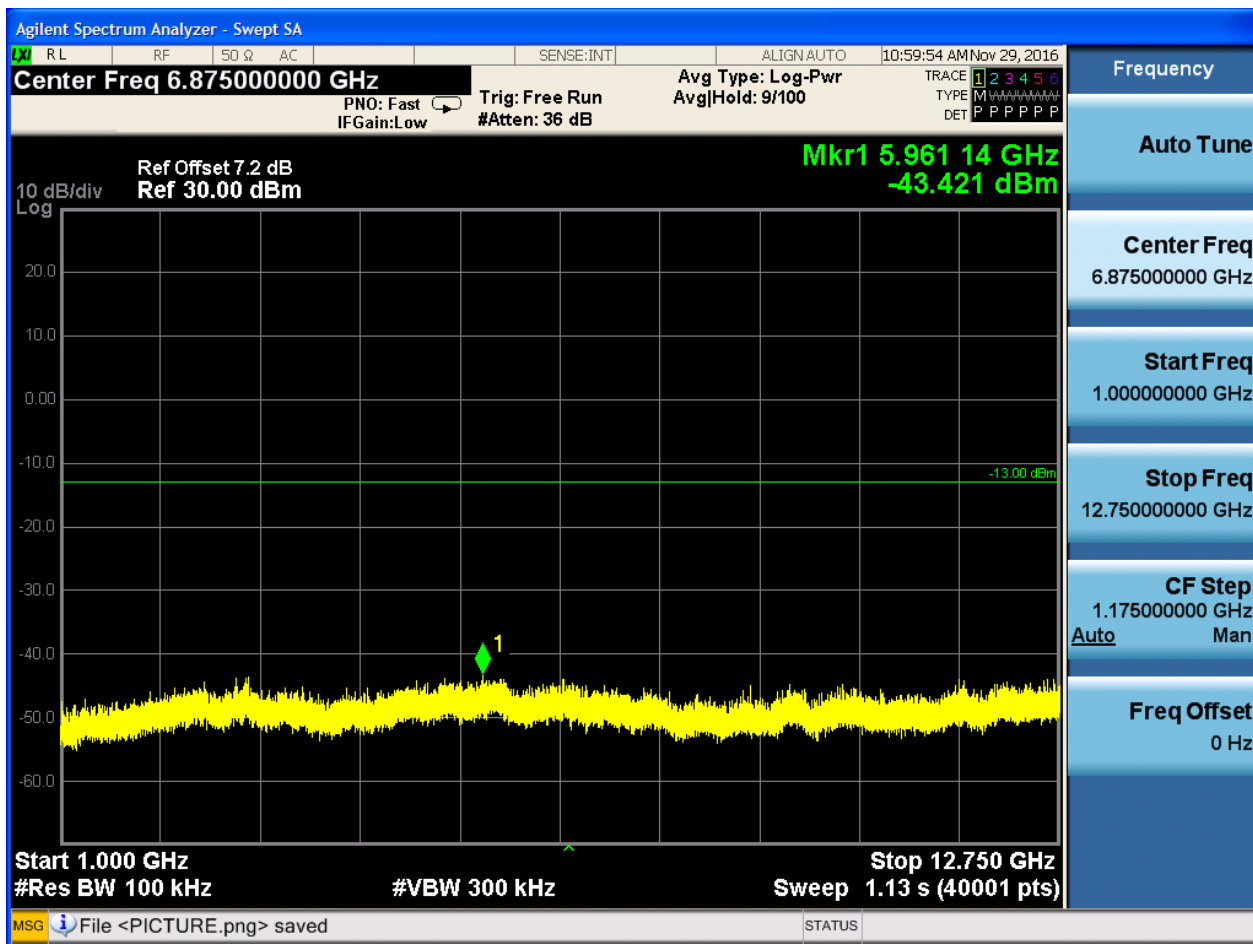


6.1.4.1.2 Test Channel = MCH

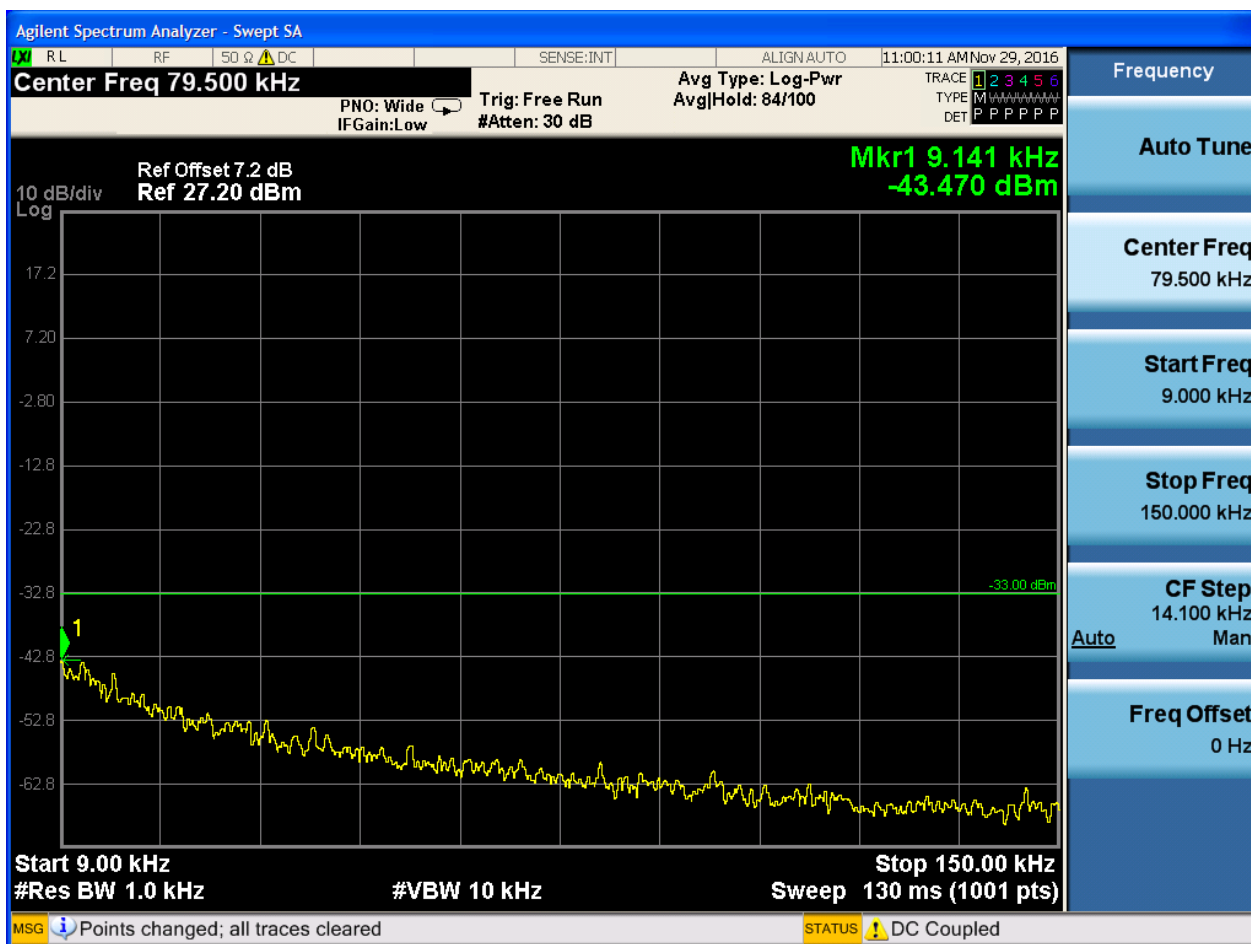


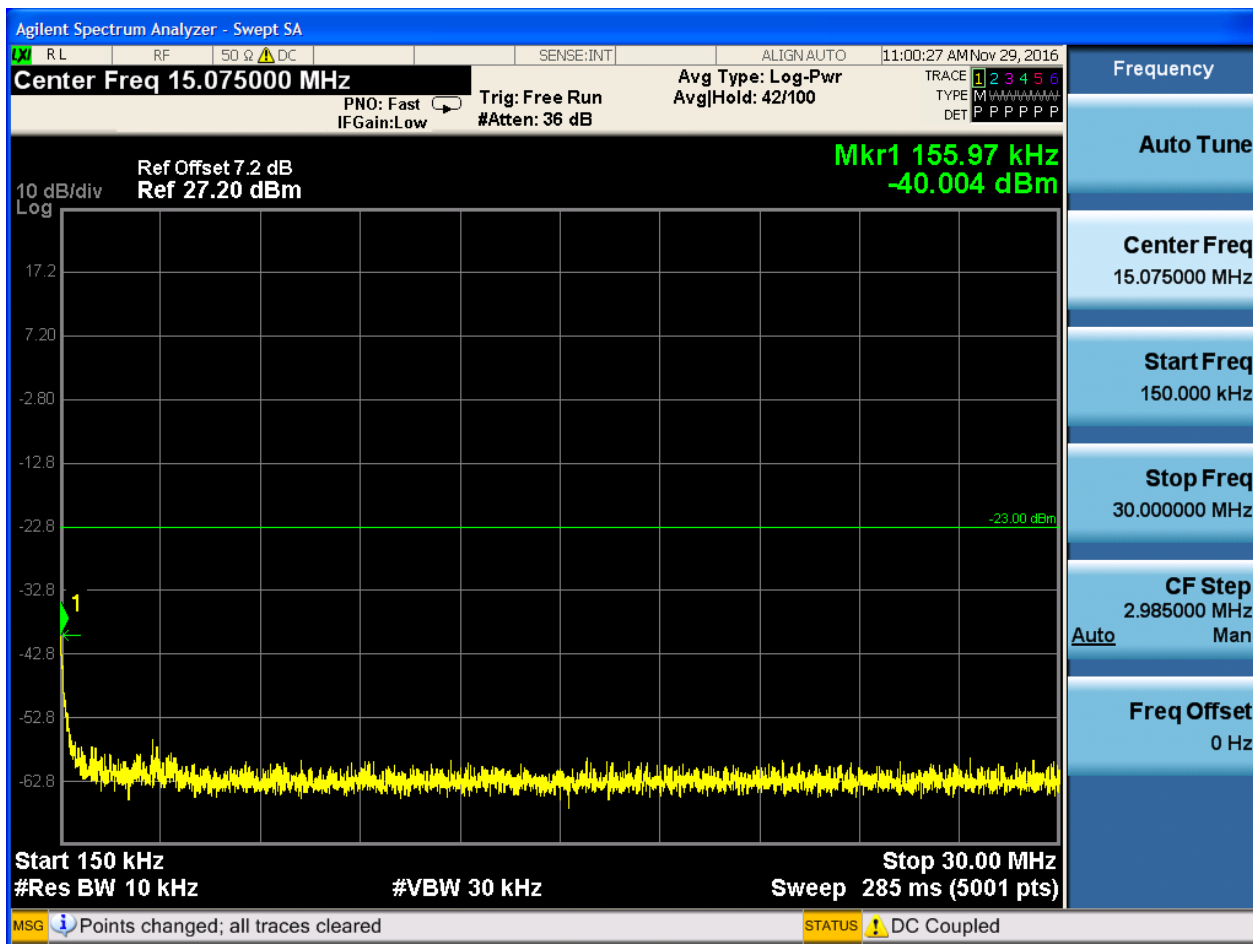


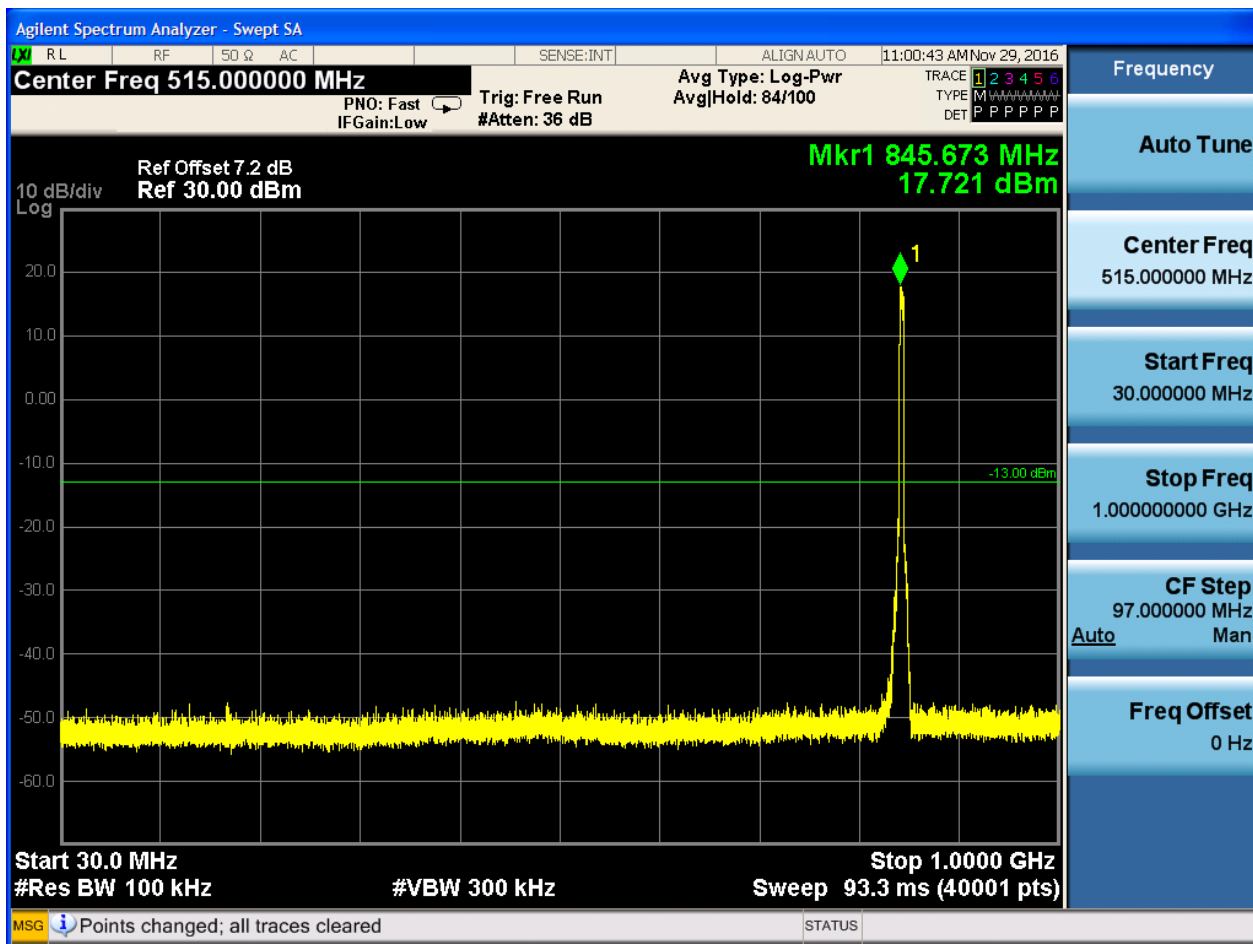


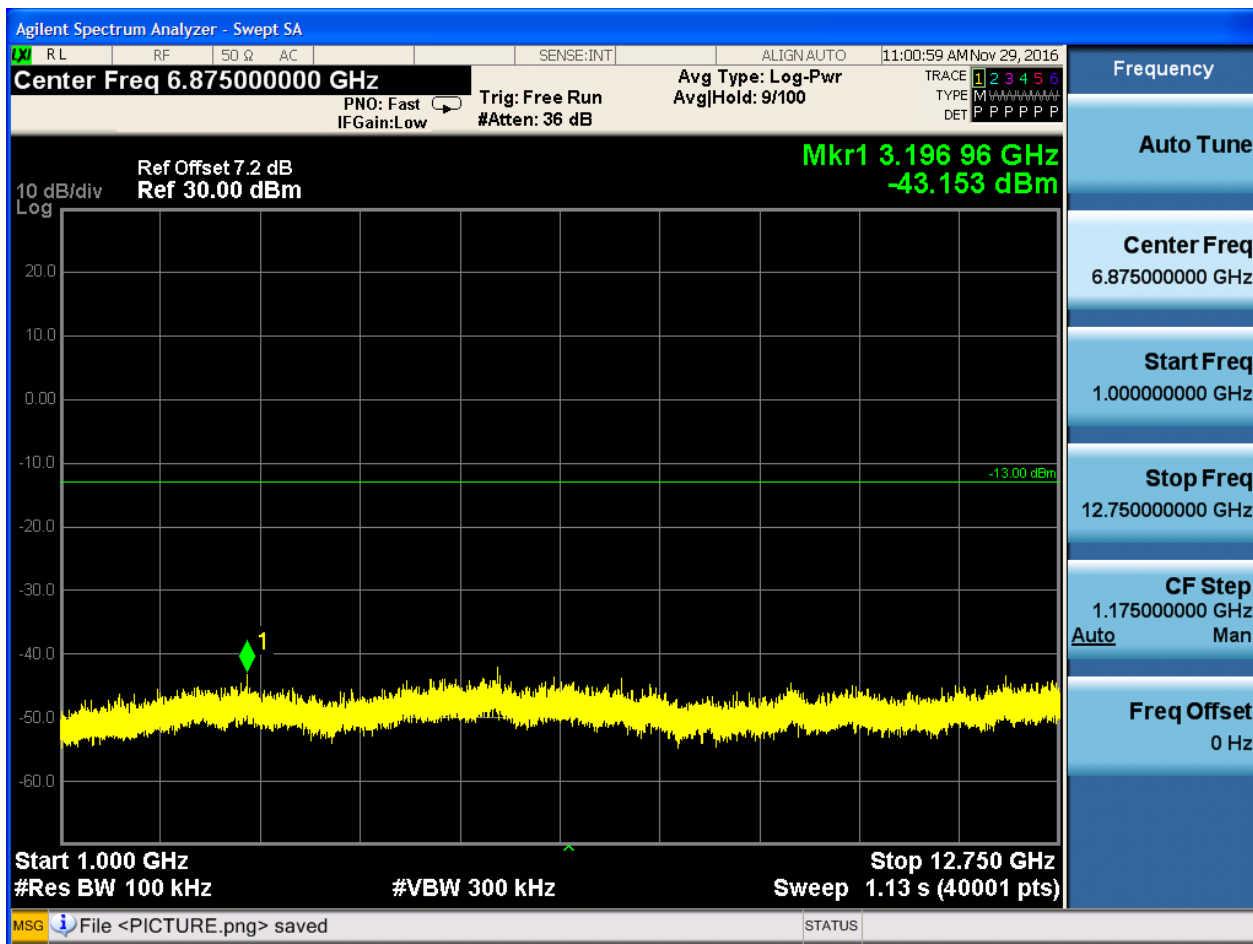


6.1.4.1.3 Test Channel = HCH









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

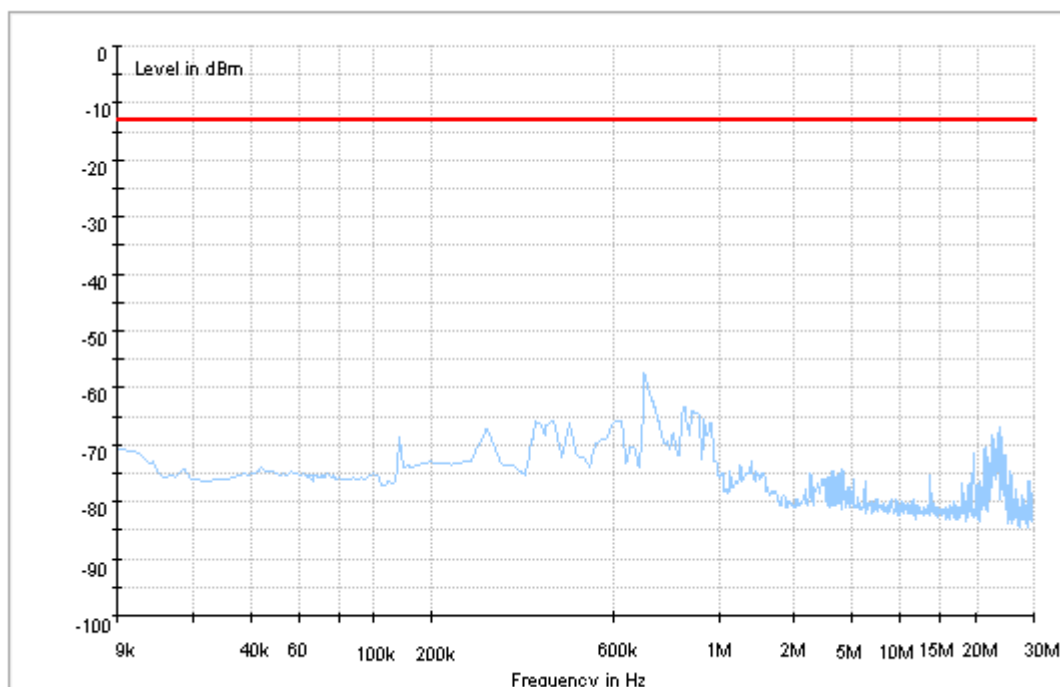
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

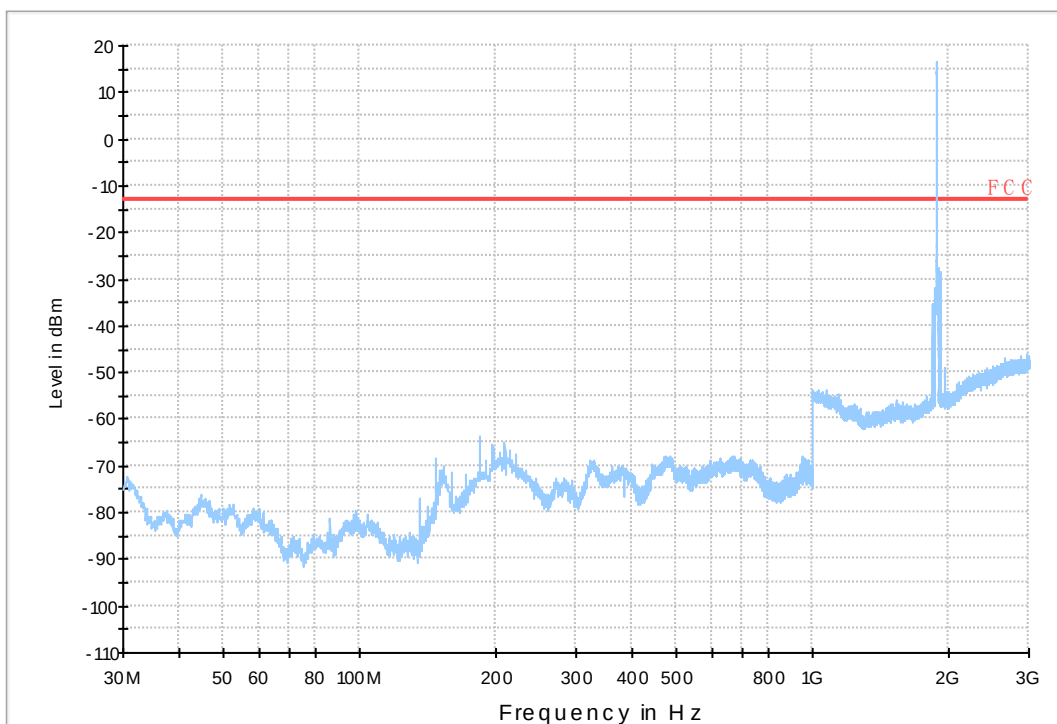
7.1 For UMTS

7.1.1 Test Band = WCDMA1900_Ant1

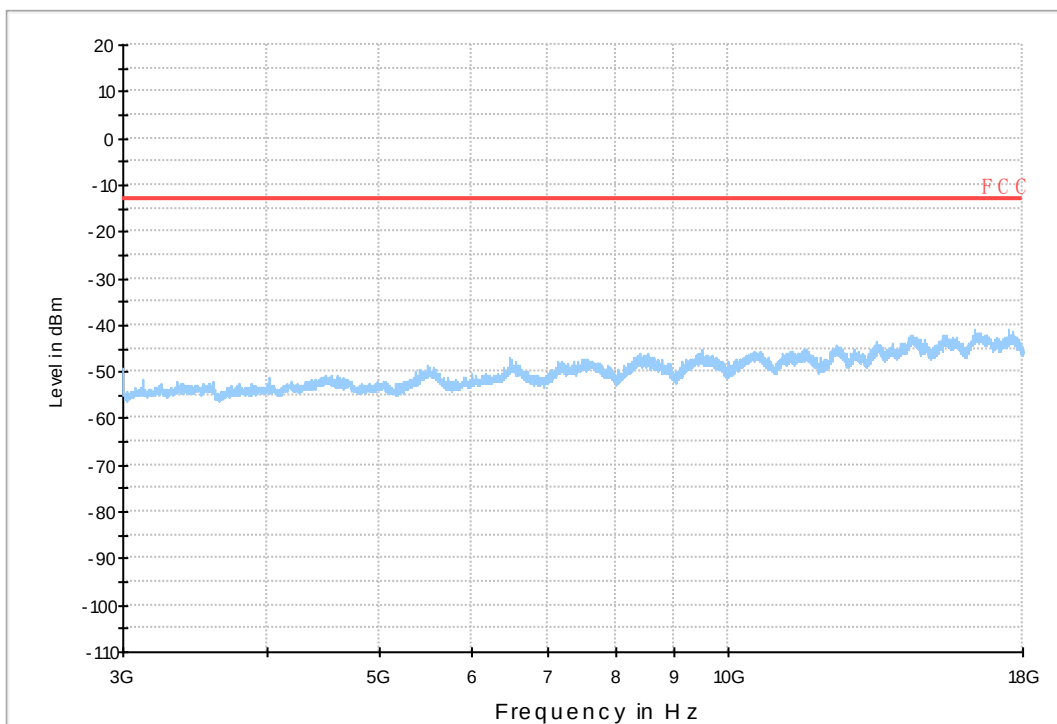
7.1.1.1 Test Mode = UMTS/TM1

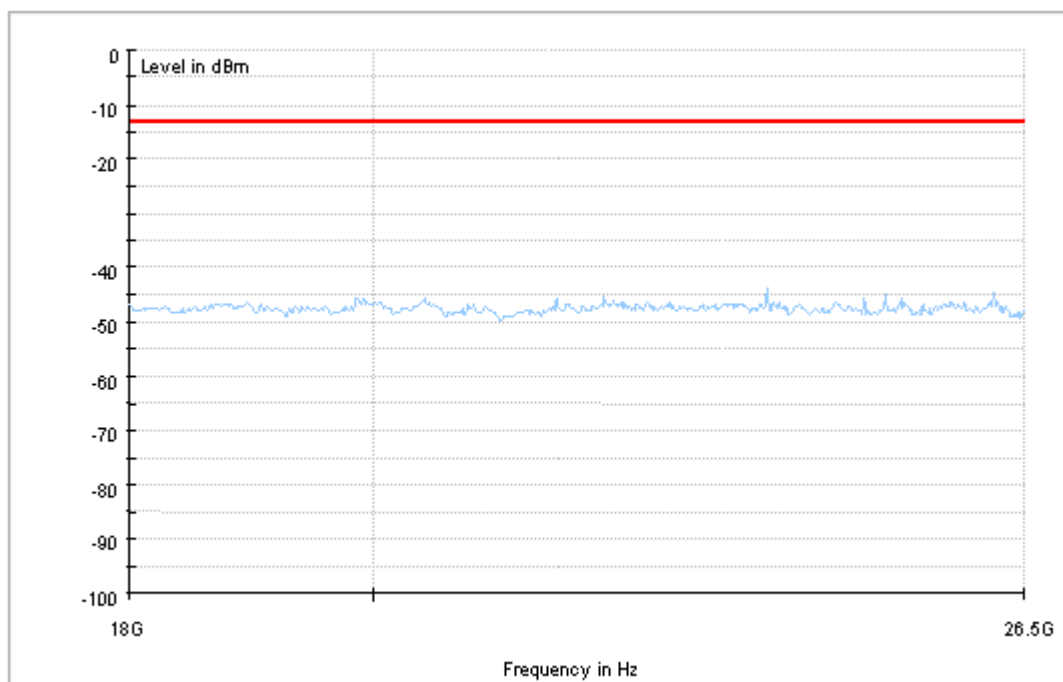


Copy of FCC PART24 W CDMA1900_L



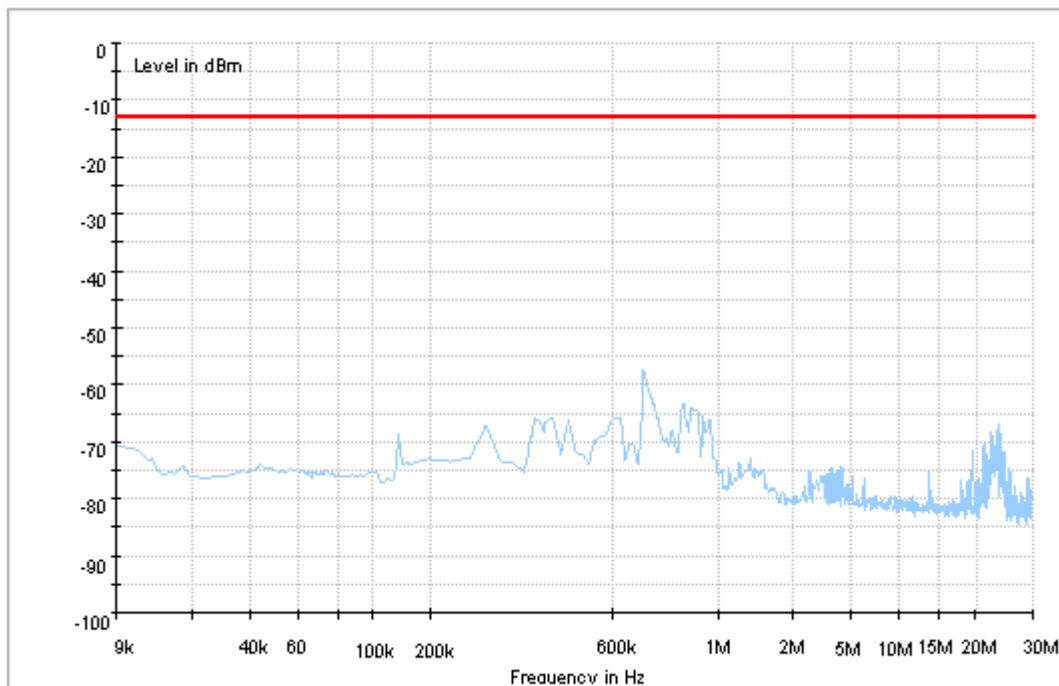
Copy of FCC PART24 W CDMA1900_H



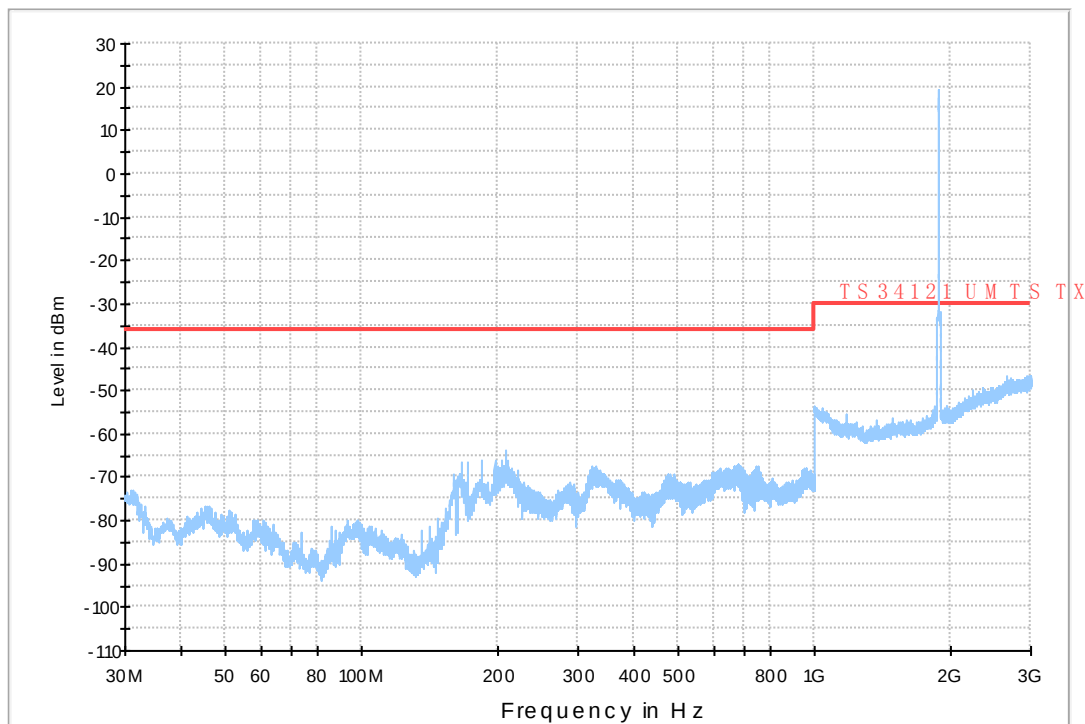


7.1.2 Test Band = WCDMA1900_Ant2

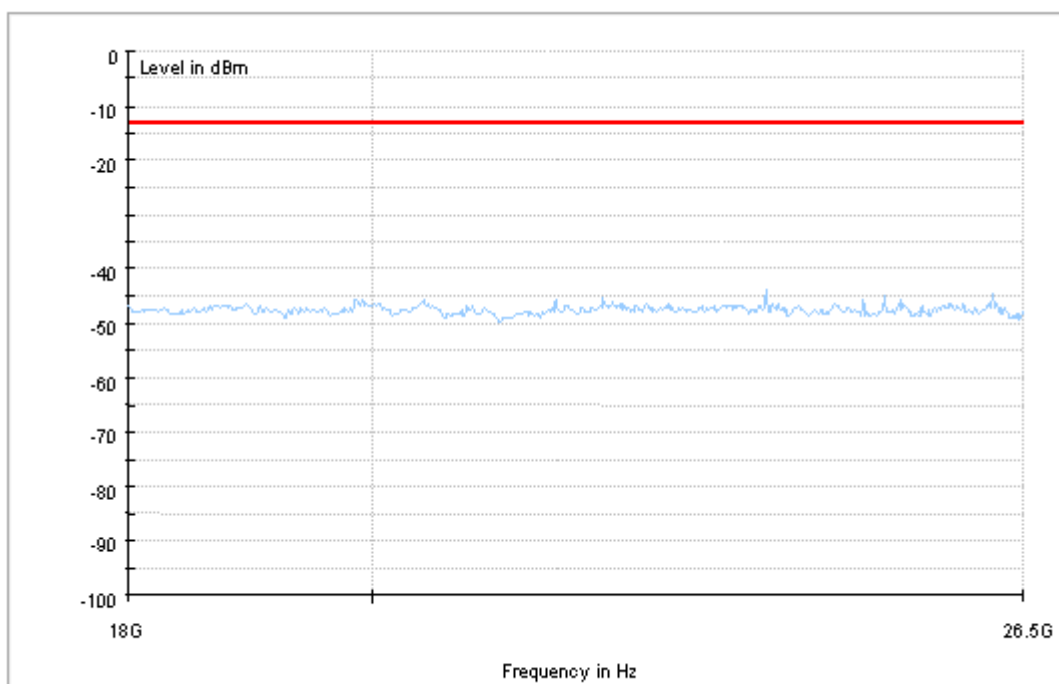
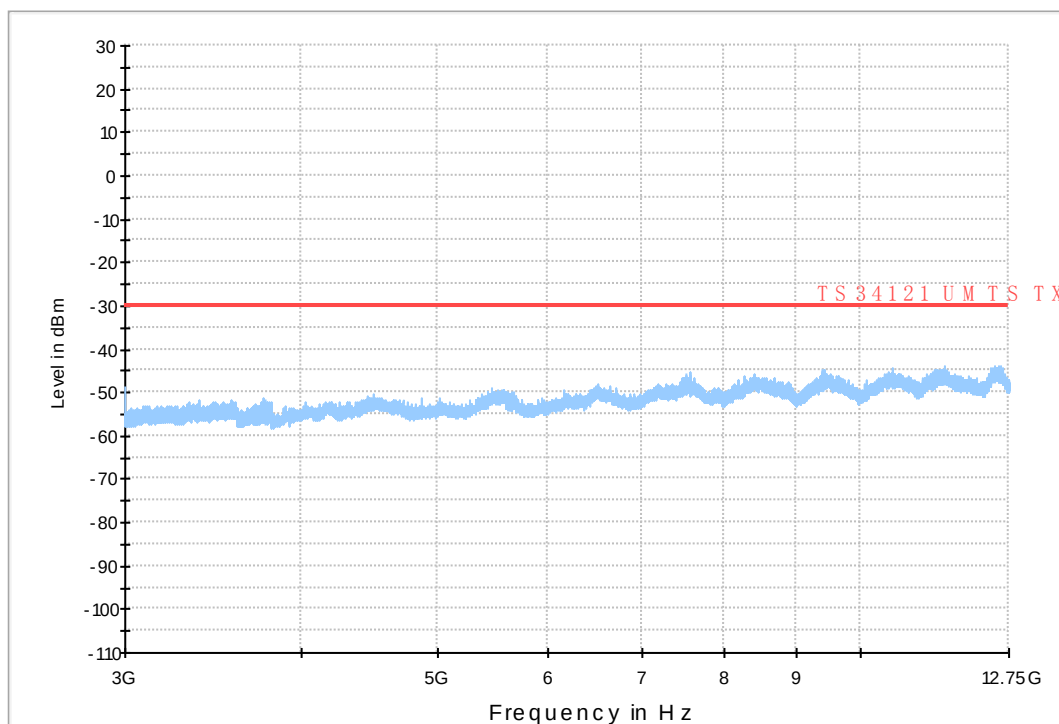
7.1.2.1 Test Mode = UMTS/TM1



Copy of RSE - TX - UMTS BAND II_L



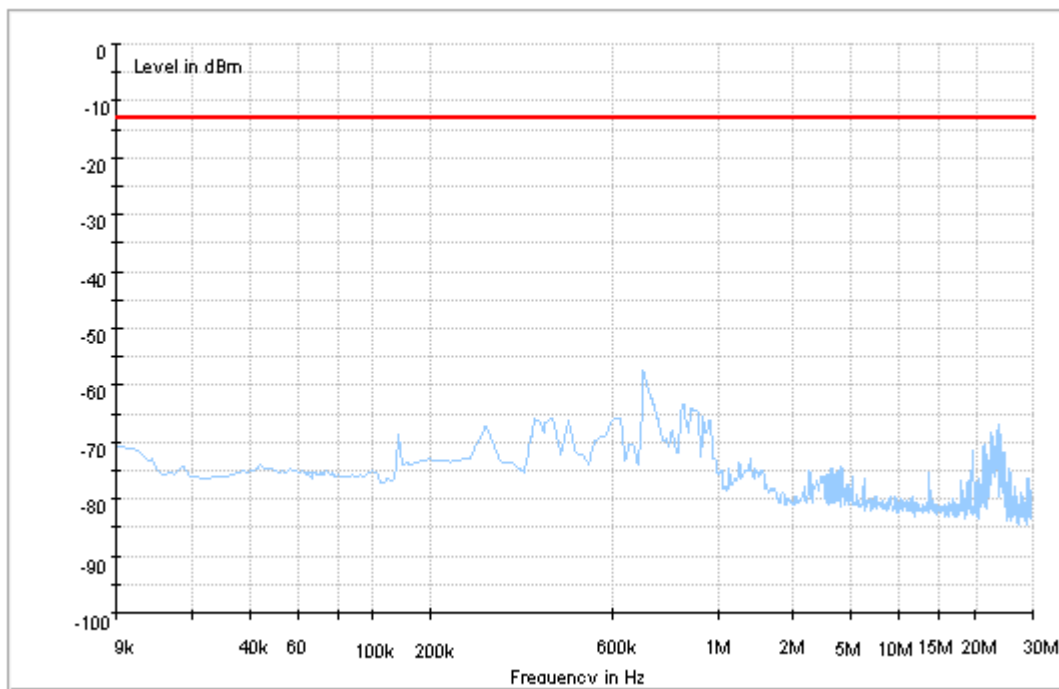
Copy of RSE - TX - UMTS BAND II_H



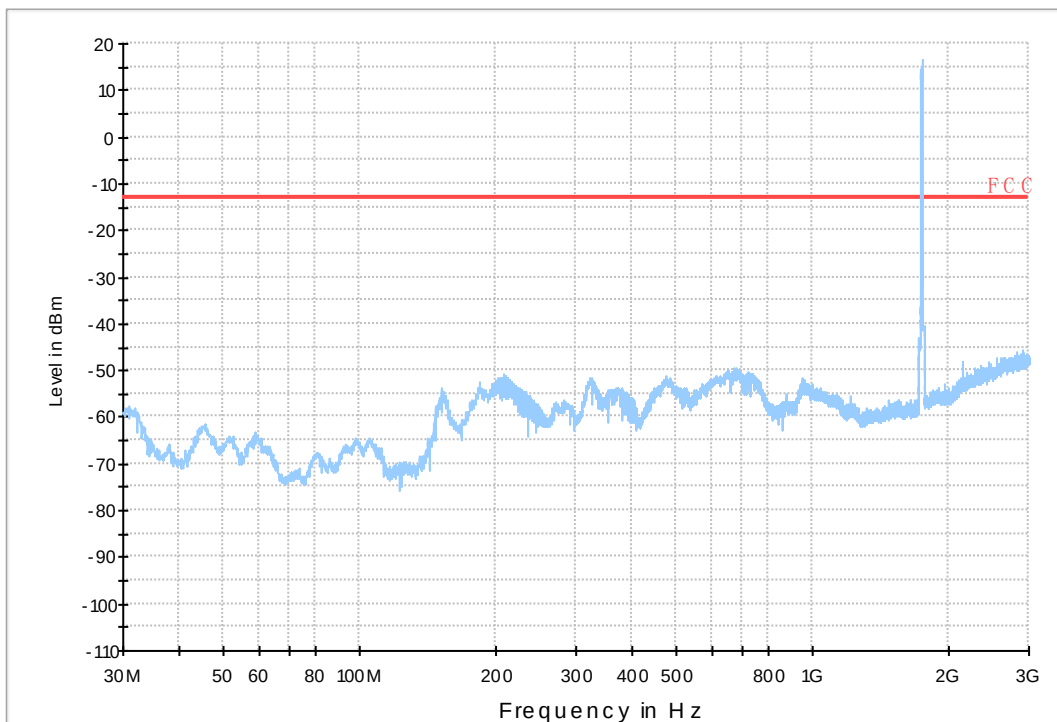
7.2 For UMTS

7.2.1 Test Band = WCDMA1700_Ant1

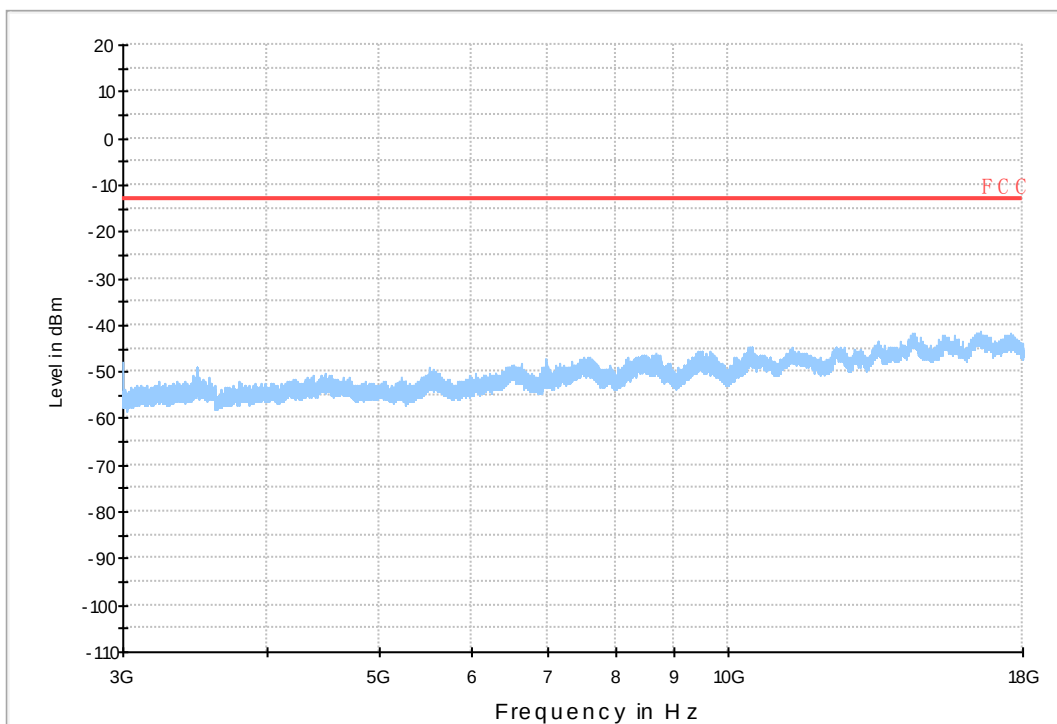
7.2.1.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

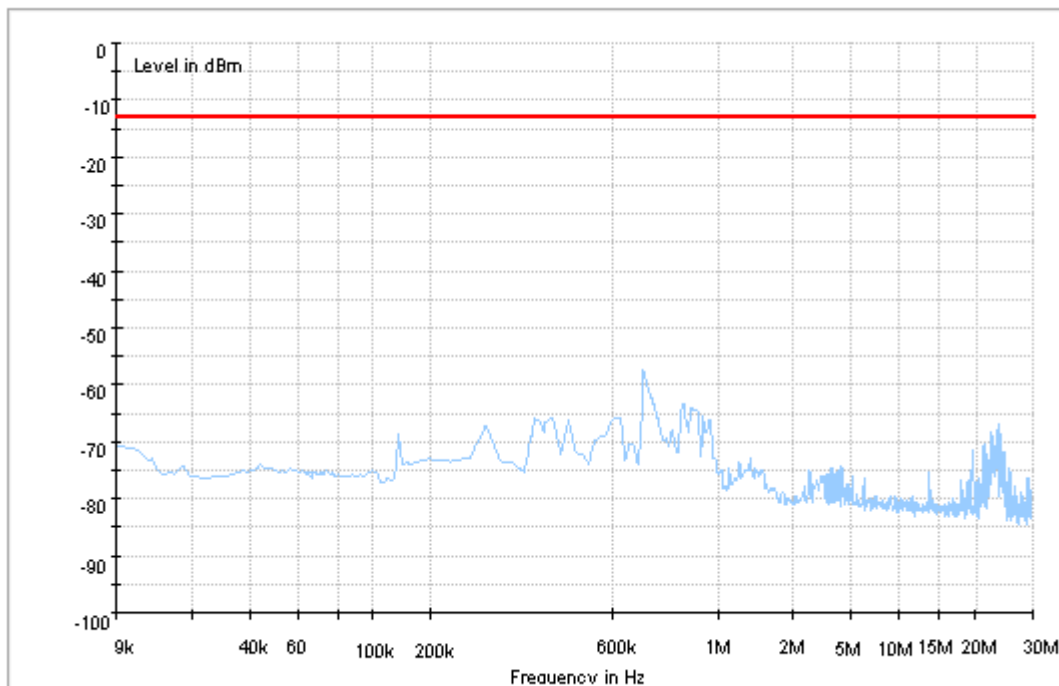


Copy of FCC PART27 W CDMA1700_H

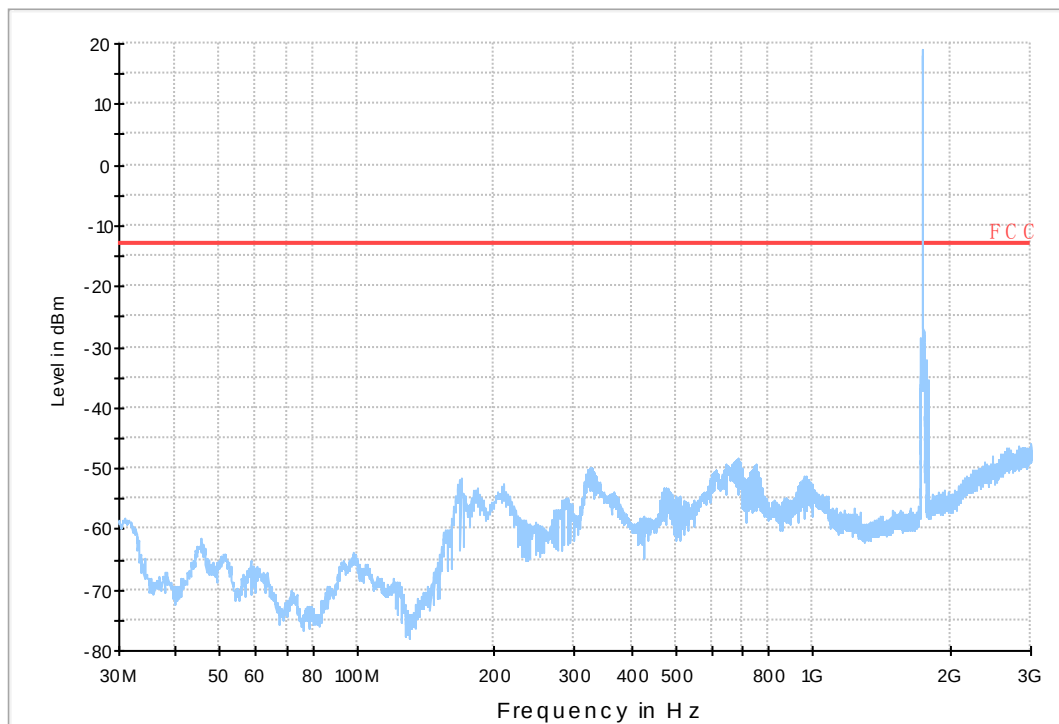


7.2.2 Test Band = WCDMA1700_Ant2

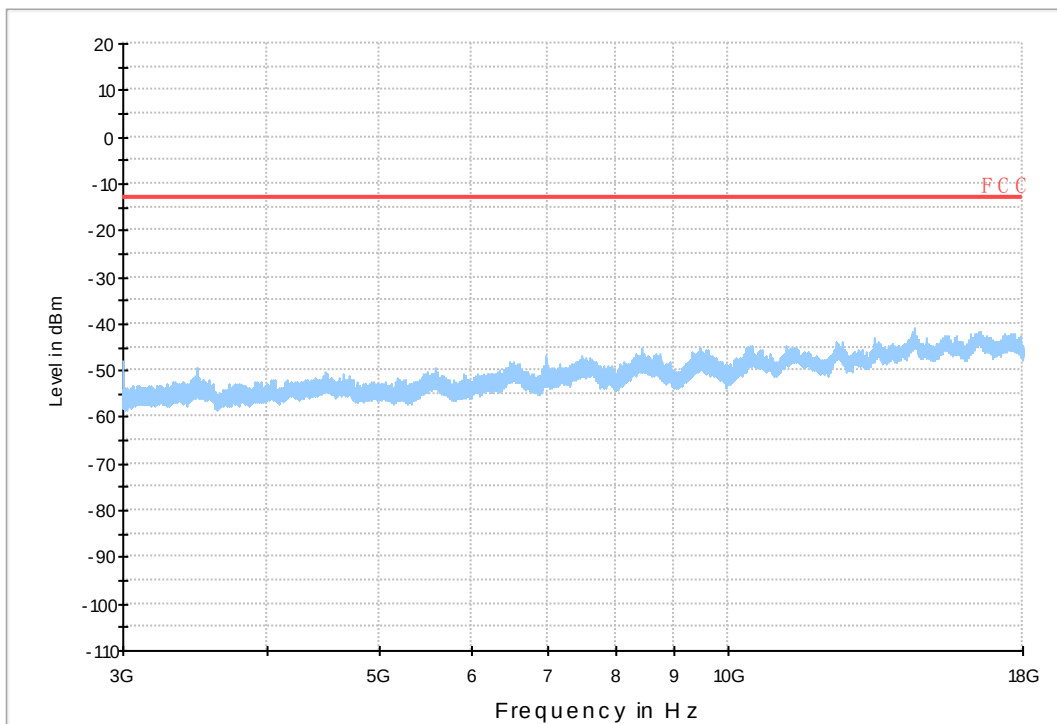
7.2.2.1 Test Mode = UMTS/TM1



Copy of FCC PART 27 W CDMA1700_L



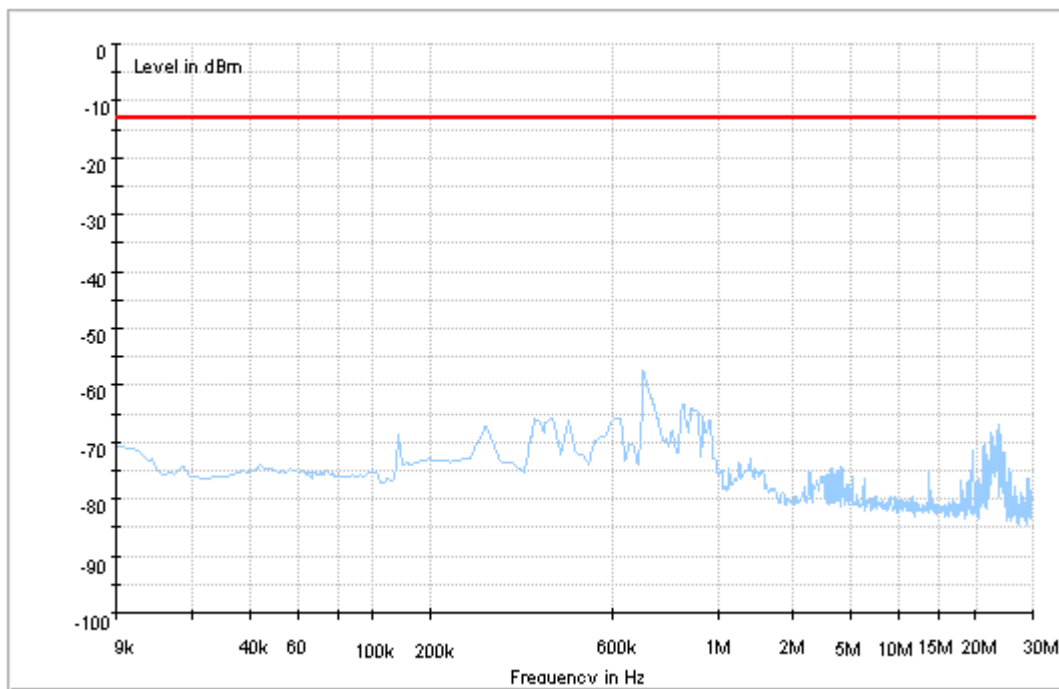
Copy of FCC PART27 W CDMA1700_H



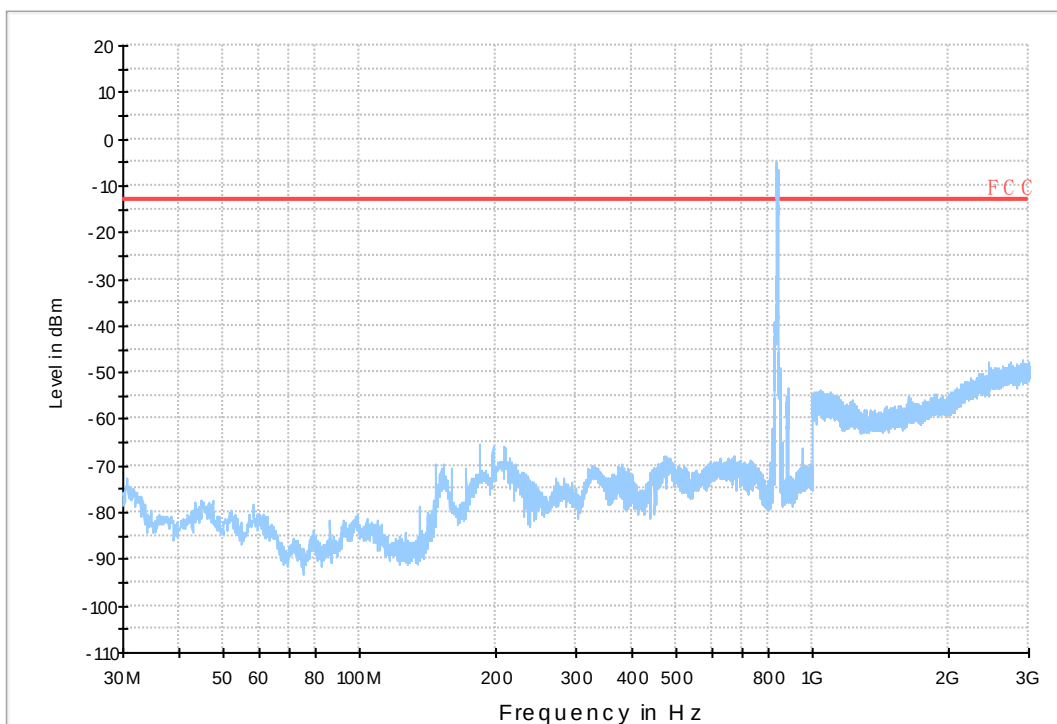
7.3 For UMTS

7.3.1 Test Band = WCDMA850_Ant1

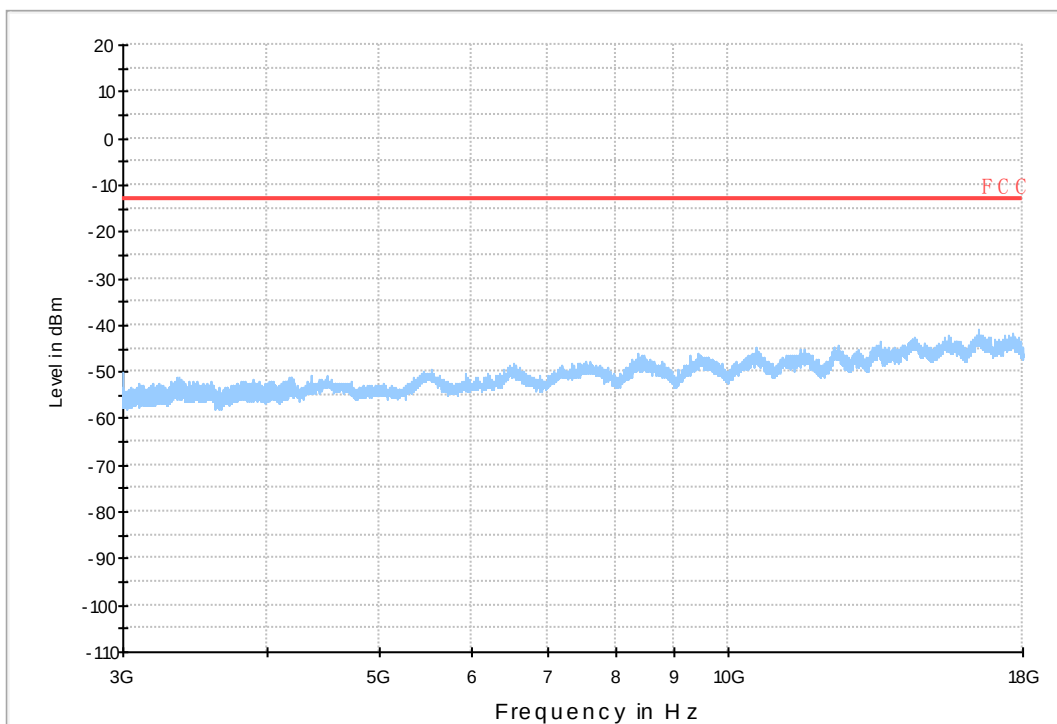
7.3.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

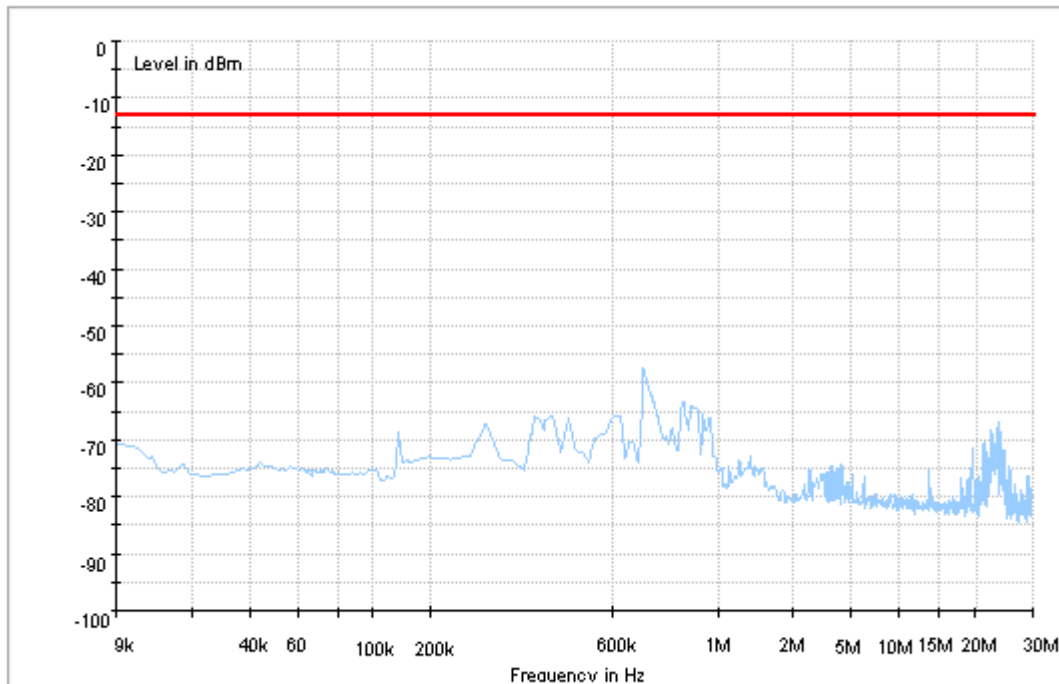


Copy of FCC PART22 W CDMA850_H

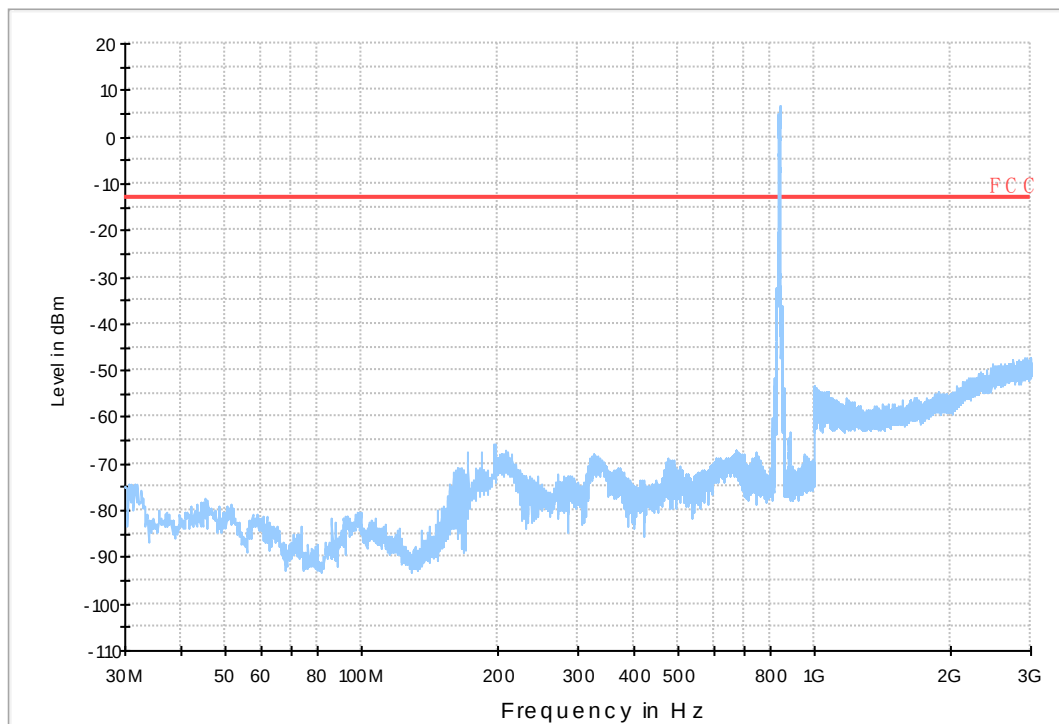


7.3.2 Test Band = WCDMA850_Ant2

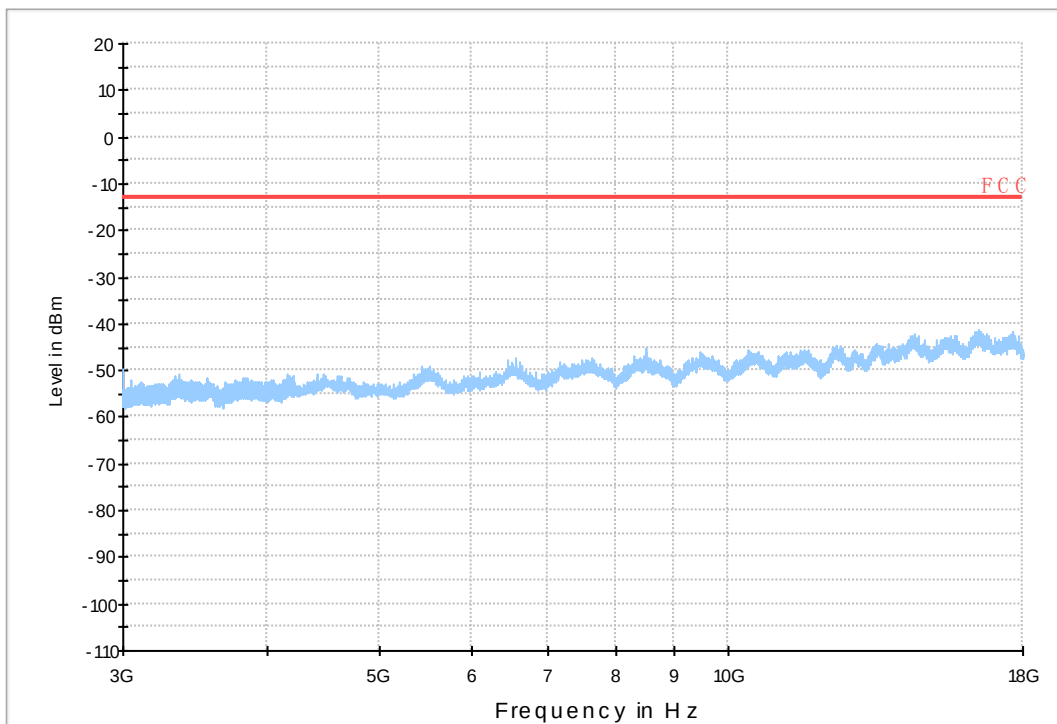
7.3.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L



Copy of FCC PART22 W CDMA850_H



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1Frequency 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	-3.39	-0.00183	PASS
				VN	-0.76	-0.00041	PASS
				VH	-4.36	-0.00235	PASS
		MCH	TN	VL	-0.18	-0.0001	PASS
				VN	-2.96	-0.00157	PASS
				VH	-3.33	-0.00177	PASS
		HCH	TN	VL	-5.51	-0.00289	PASS
				VN	-1.48	-0.00078	PASS
				VH	-6.23	-0.00327	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-1.45	-0.00085	PASS
				VN	5.77	0.00337	PASS
				VH	4.35	0.00254	PASS
		MCH	TN	VL	1.69	0.00098	PASS
				VN	2.75	0.00159	PASS
				VH	1.80	0.00104	PASS
		HCH	TN	VL	0.21	0.00012	PASS
				VN	1.48	0.00084	PASS
				VH	2.73	0.00156	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	3.36	0.00407	PASS
				VN	-0.23	-0.00028	PASS
				VH	2.62	0.00317	PASS
		MCH	TN	VL	6.06	0.00725	PASS
				VN	-2.03	-0.00243	PASS
				VH	2.04	0.00244	PASS
		HCH	TN	VL	3.20	0.00378	PASS
				VN	4.41	0.00521	PASS
				VH	3.86	0.00456	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	-2.26	-0.00122	PASS
				-20	-1.62	-0.00087	PASS
				-10	-3.65	-0.00197	PASS
				0	7.08	0.00382	PASS
				10	1.16	0.00063	PASS
				20	2.64	0.00143	PASS
				30	1.85	0.001	PASS
				40	5.37	0.0029	PASS
				50	5.11	0.00276	PASS
		MCH	VN	-30	8.47	0.00451	PASS
				-20	7.89	0.0042	PASS
				-10	0.47	0.00025	PASS
				0	-3.65	-0.00194	PASS
				10	6.07	0.00323	PASS
				20	-4.35	-0.00231	PASS
				30	-5.08	-0.0027	PASS
				40	-7.16	-0.00381	PASS
				50	4.29	0.00228	PASS
		HCH	VN	-30	-2.53	-0.00133	PASS
				-20	-2.64	-0.00138	PASS
				-10	-7.51	-0.00394	PASS
				0	-3.49	-0.00183	PASS
				10	1.72	0.0009	PASS
				20	4.70	0.00246	PASS
				30	1.22	0.00064	PASS
				40	-0.05	-0.00003	PASS
				50	-7.49	-0.00393	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	1.16	0.00068	PASS
				-20	1.97	0.00115	PASS
				-10	-4.97	-0.0029	PASS
				0	0.61	0.00036	PASS
				10	-2.88	-0.00168	PASS
				20	6.26	0.00366	PASS
				30	6.52	0.00381	PASS
				40	2.14	0.00125	PASS
				50	-2.12	-0.00124	PASS
		MCH	VN	-30	-1.65	-0.00095	PASS
				-20	2.50	0.00144	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	-3.43	-0.00198	PASS
				0	7.80	0.0045	PASS
				10	-3.57	-0.00206	PASS
				20	0.32	0.00018	PASS
				30	7.78	0.00449	PASS
				40	-0.44	-0.00025	PASS
				50	5.43	0.00313	PASS
		HCH	VN	-30	-2.49	-0.00142	PASS
				-20	-2.69	-0.00153	PASS
				-10	7.57	0.00432	PASS
				0	-4.27	-0.00244	PASS
				10	2.23	0.00127	PASS
				20	5.54	0.00316	PASS
				30	-0.67	-0.00038	PASS
				40	-2.53	-0.00144	PASS
				50	5.65	0.00322	PASS
WCDMA850	UMTS/TM1	LCH	VN	-30	1.37	0.00166	PASS
				-20	5.98	0.00724	PASS
				-10	8.96	0.01084	PASS
				0	5.71	0.00691	PASS
				10	1.63	0.00197	PASS
				20	-0.43	-0.00052	PASS
				30	-2.94	-0.00356	PASS
				40	-4.73	-0.00572	PASS
				50	-4.52	-0.00547	PASS
		MCH	VN	-30	2.29	0.00274	PASS
				-20	-4.68	-0.0056	PASS
				-10	-5.43	-0.00649	PASS
				0	3.86	0.00462	PASS
				10	0.40	0.00048	PASS
				20	2.26	0.0027	PASS
				30	-4.33	-0.00518	PASS
				40	0.64	0.00077	PASS
				50	6.26	0.00748	PASS
		HCH	VN	-30	-1.59	-0.00188	PASS
				-20	-0.55	-0.00065	PASS
				-10	5.63	0.00665	PASS
				0	1.17	0.00138	PASS
				10	0.31	0.00037	PASS
				20	6.53	0.00771	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	5.04	0.00595	PASS
				40	4.85	0.00573	PASS
				50	3.92	0.00463	PASS

END