



Appendix for test report



1 Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Conducte d Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.82	25.02	30	PASS
		MCH	24.04	25.24	30	PASS
		HCH	23.98	25.18	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.87	24.37	33	PASS
		MCH	23.85	24.35	33	PASS
		HCH	23.73	24.23	33	PASS

Test Band	Test Mode	Test Channel	Conducte d Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.11	23.76	38.5	PASS
		MCH	24.04	23.69	38.5	PASS
		HCH	23.85	23.5	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
WCDMA850	UMTS/TM1	LCH	2.88	13	PASS
		MCH	2.89	13	PASS
		HCH	3.05	13	PASS
Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA1700	UMTS/TM1	LCH	3.02	13	PASS
		MCH	3.06	13	PASS
		HCH	3	13	PASS
WCDMA1900	UMTS/TM1	LCH	9.67	13	PASS
		MCH	9.98	13	PASS
		HCH	2.94	13	PASS

3Appendix_C: Modulation Characteristics

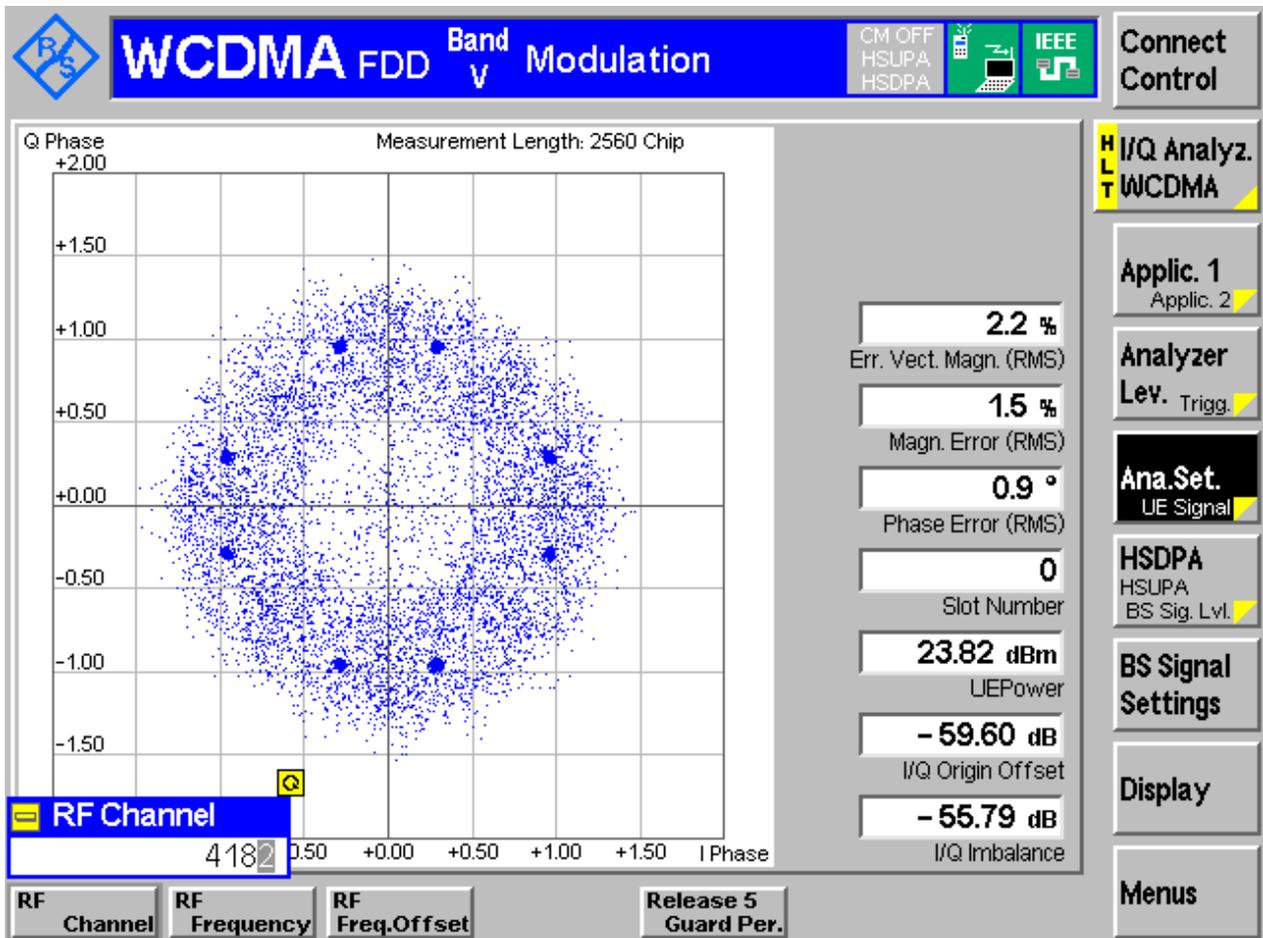
Part I - Test Plots

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

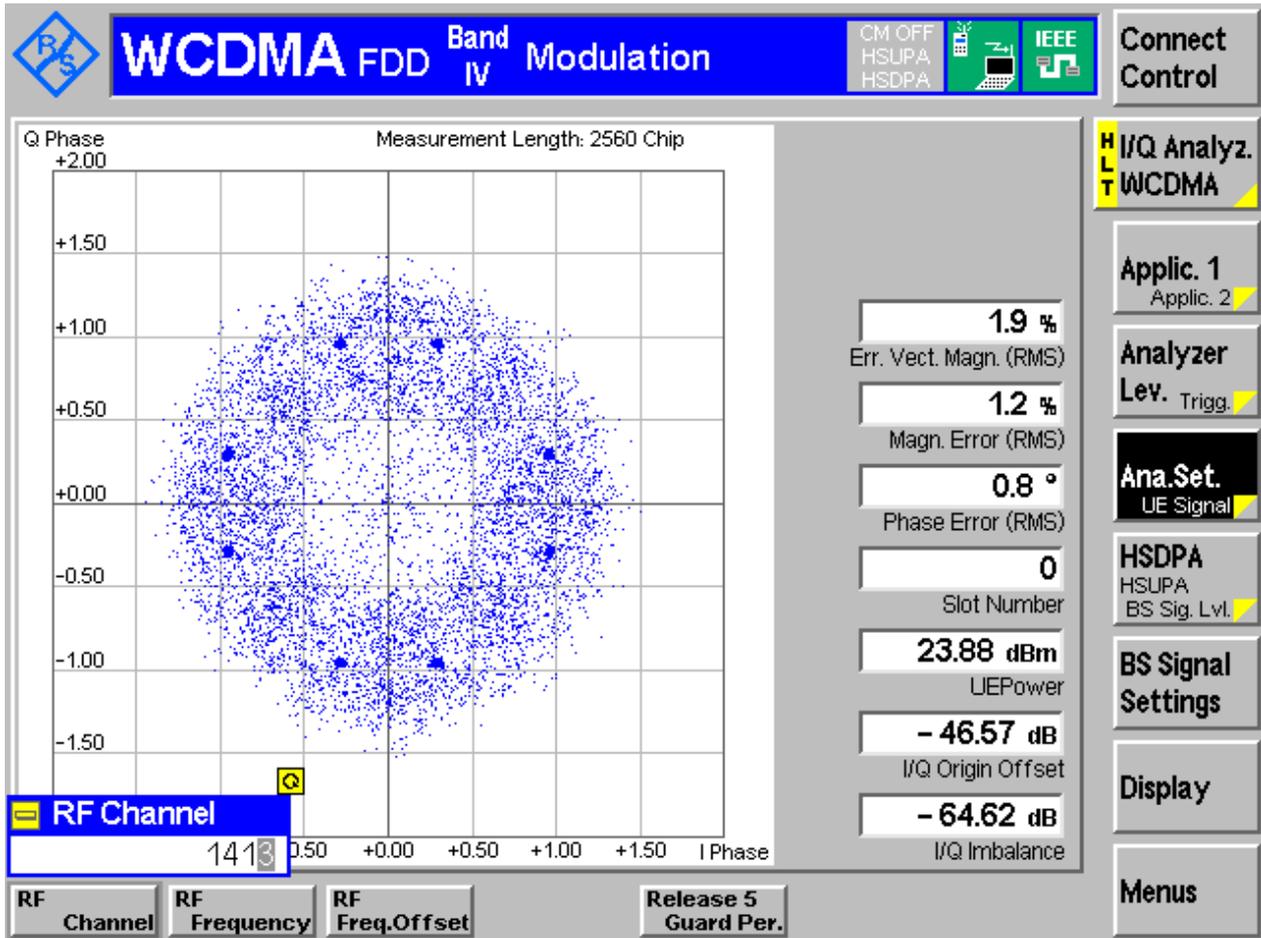


3.2 For UMTS

3.2.1 Test Band = WCDMA1700

3.2.1.1 Test Mode = UMTS/TM1

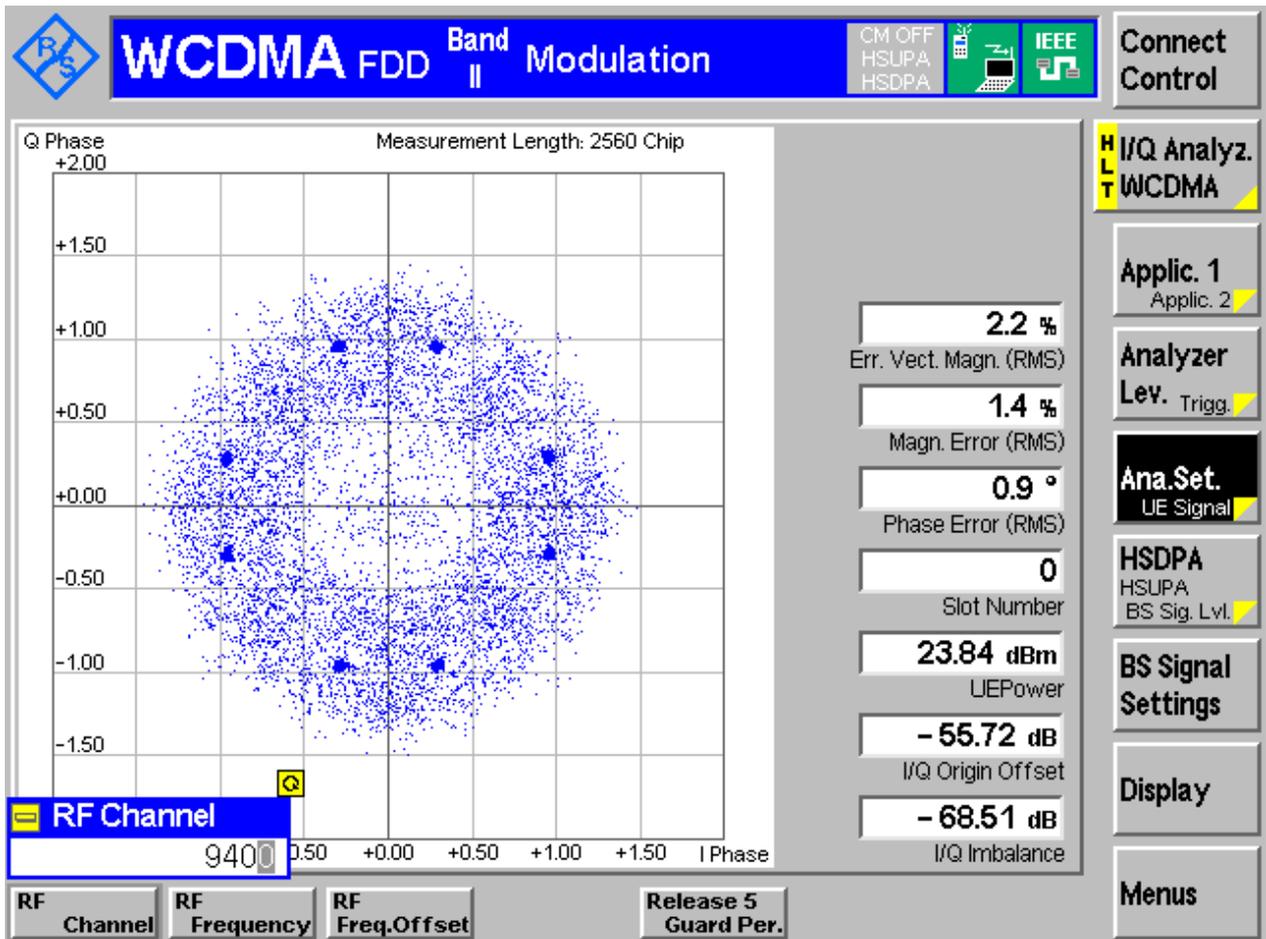
3.2.1.1.1 Test Channel = MCH



3.2.2 Test Band = WCDMA1900

3.2.2.1 Test Mode = UMTS/TM1

3.2.2.1.1 Test Channel = MCH



4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.13	4.71	Pass
		MCH	4.16	4.73	Pass
		HCH	4.13	4.70	Pass
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1700	UMTS/TM1	LCH	4.14	4.70	Pass
		MCH	4.15	4.71	Pass
		HCH	4.16	4.71	Pass
WCDMA1900	UMTS/TM1	LCH	4.14	4.69	Pass
		MCH	4.15	4.69	Pass
		HCH	4.15	4.70	Pass



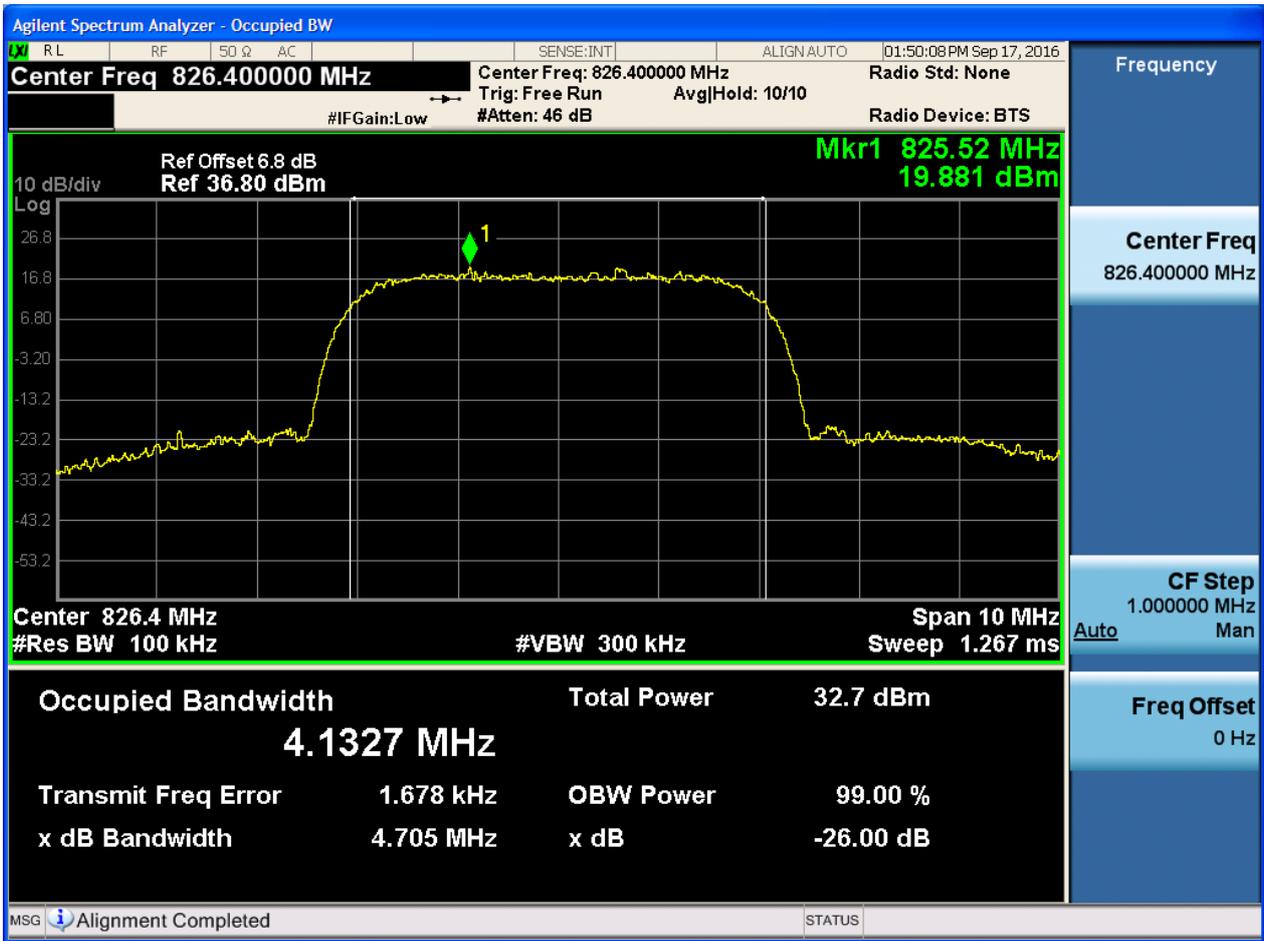
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

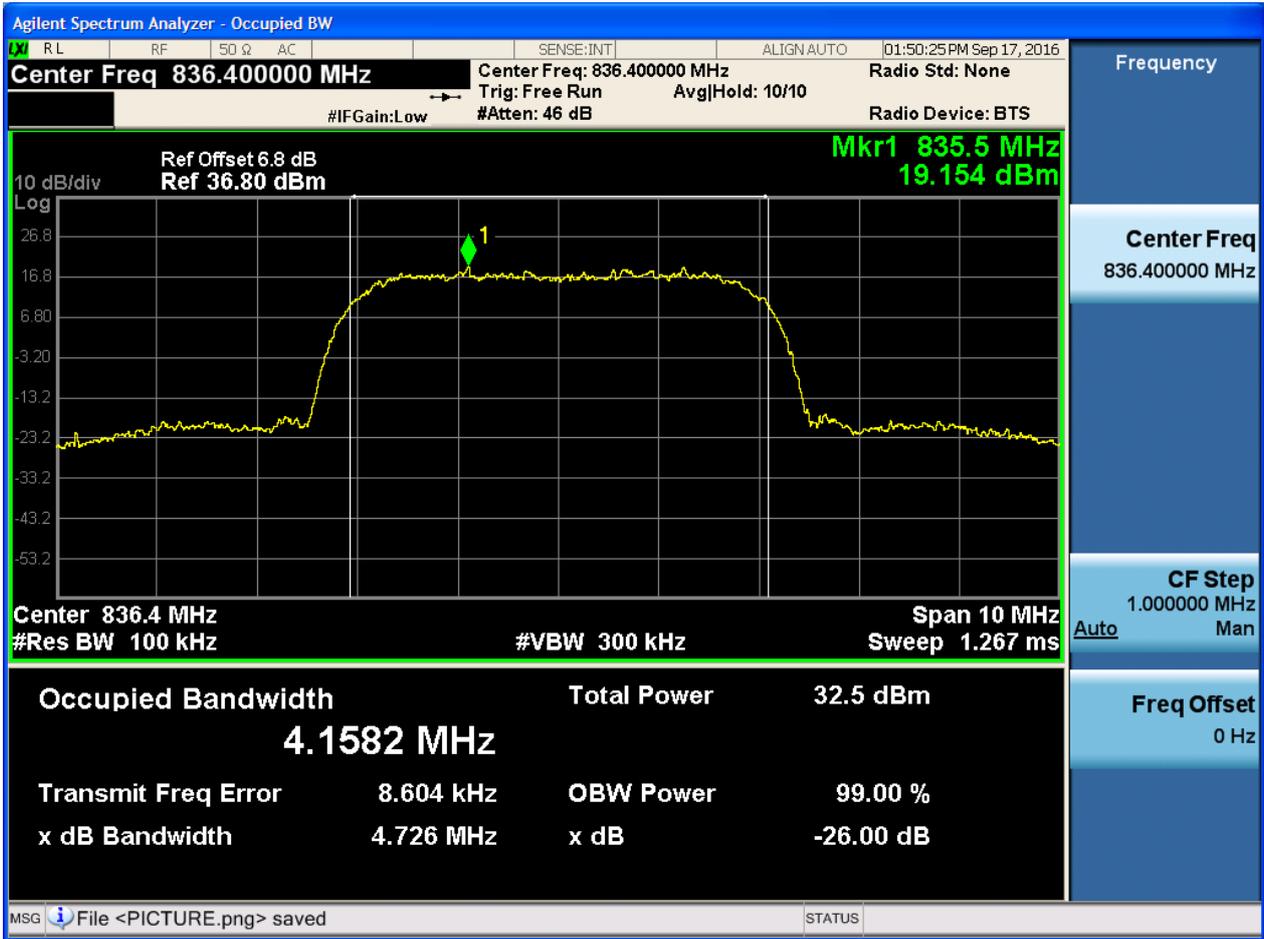
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



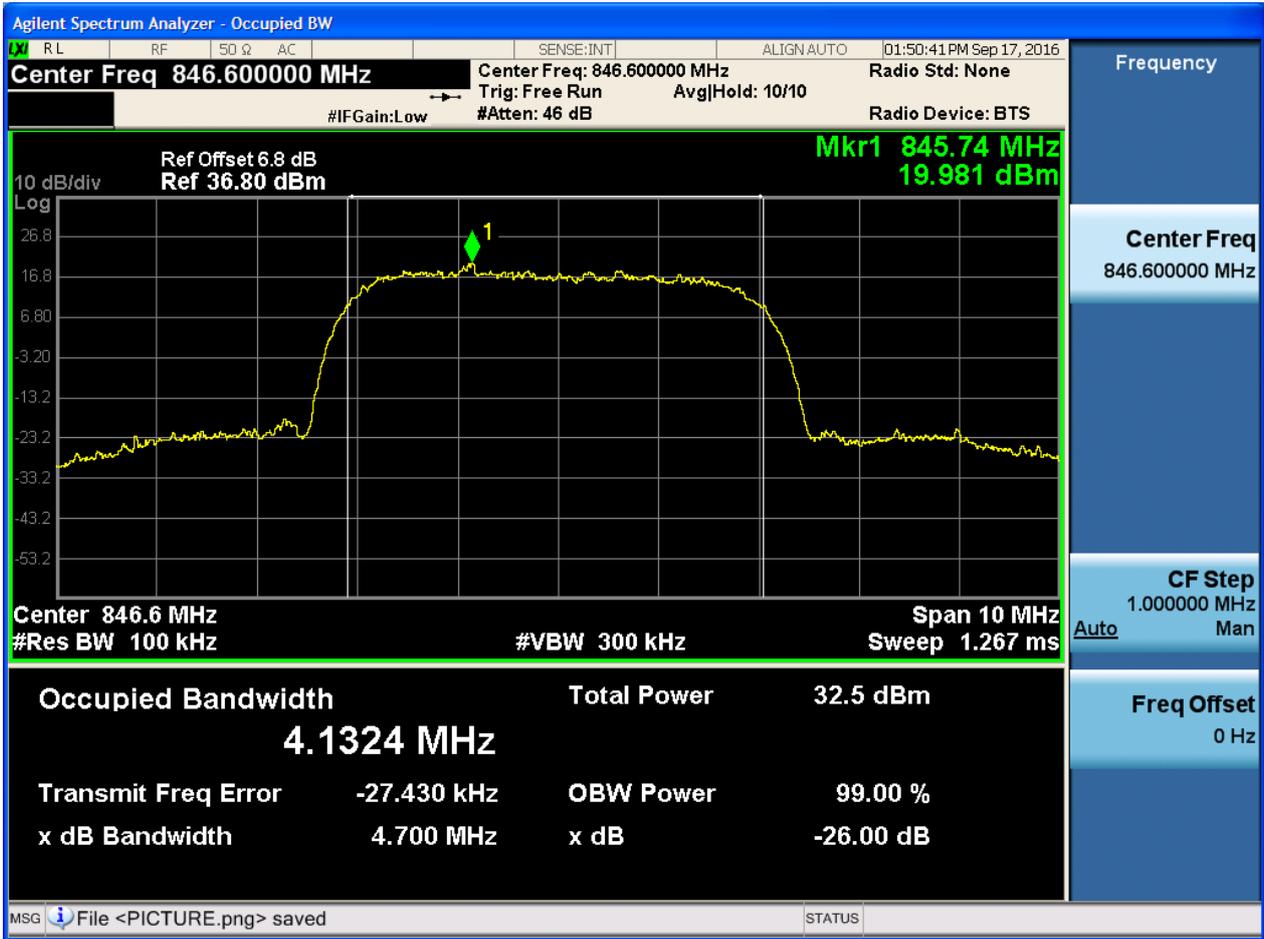


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH



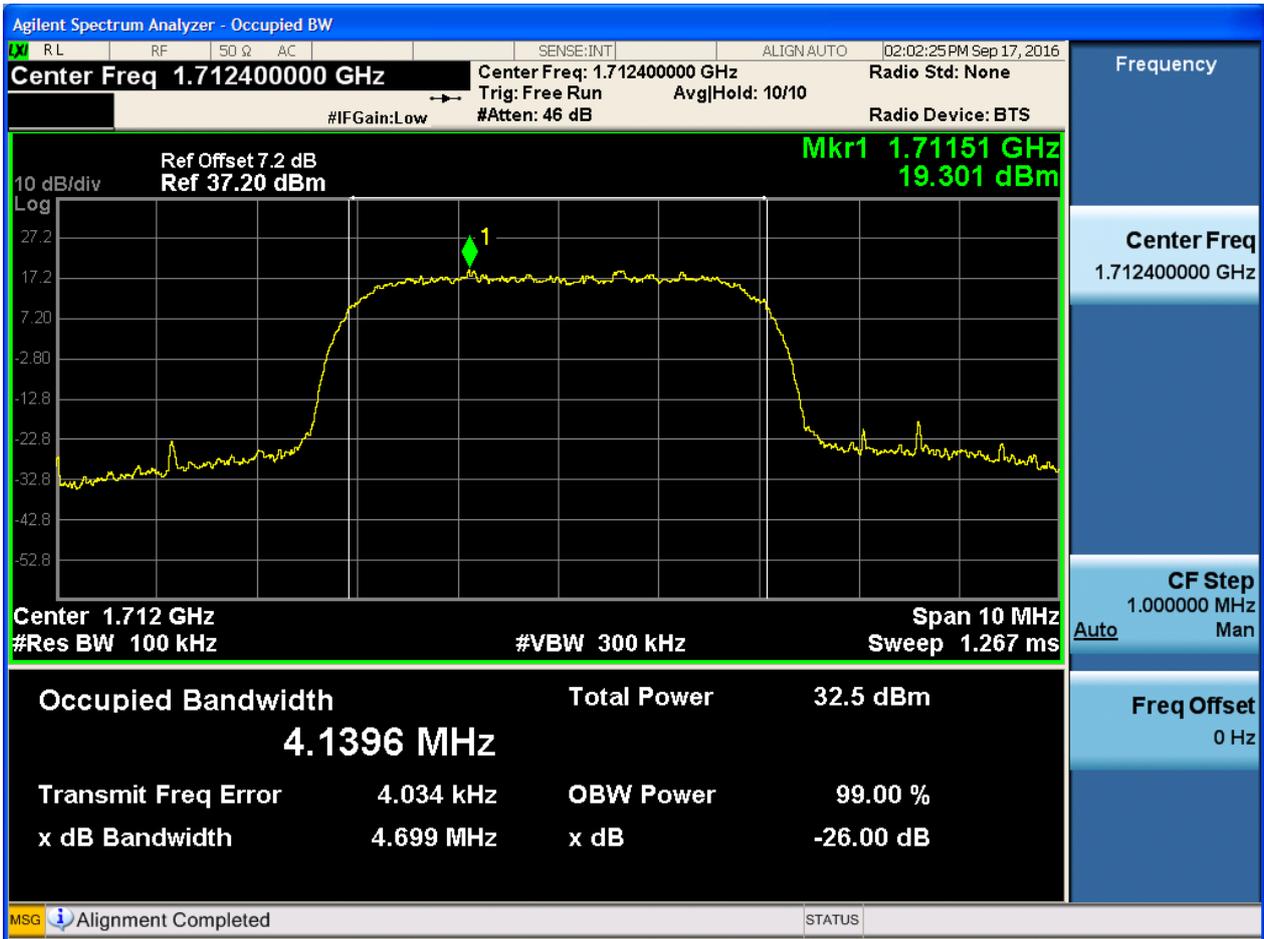


4.2 For UMTS

4.2.1 Test Band = WCDMA1700

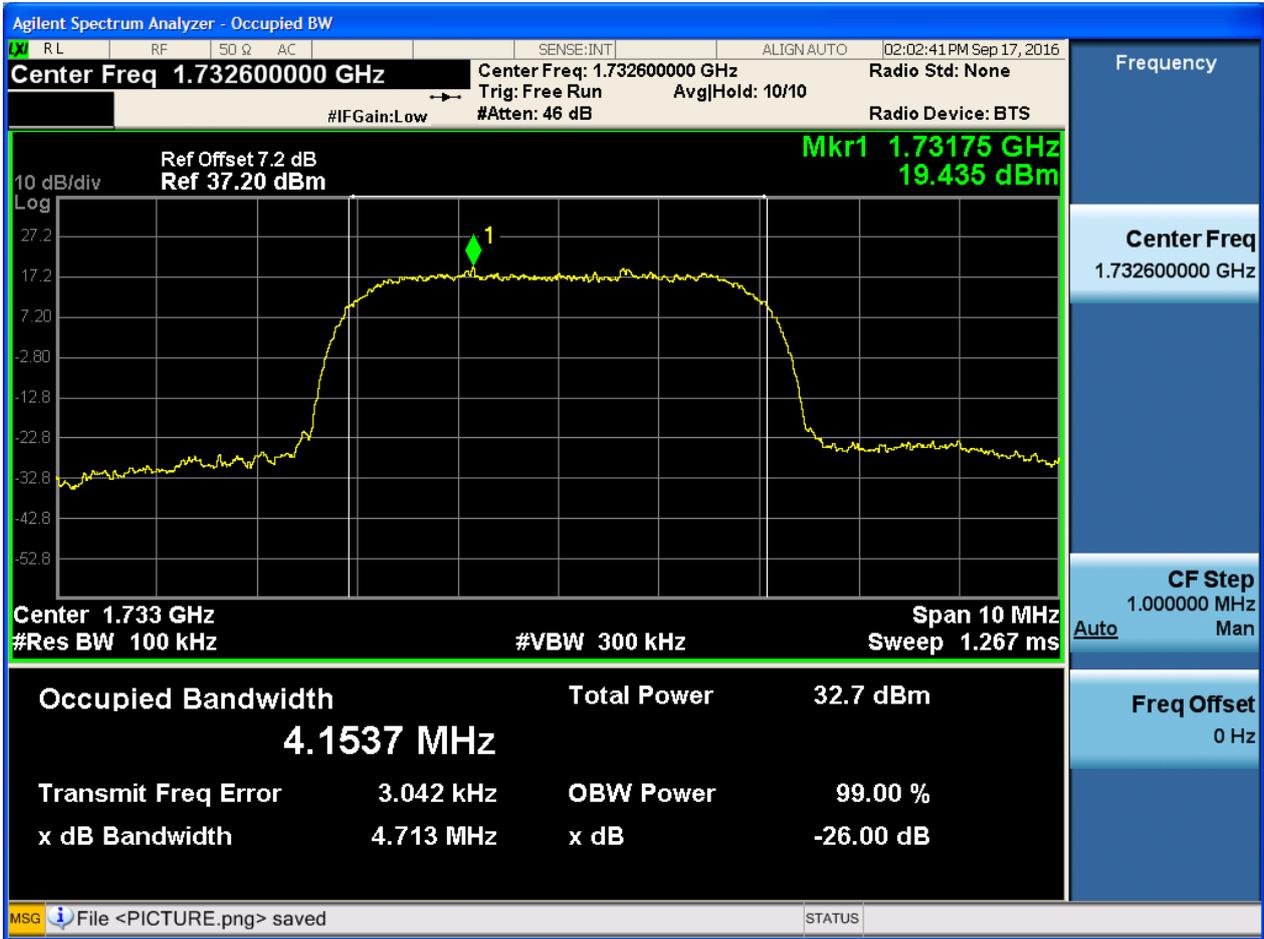
4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



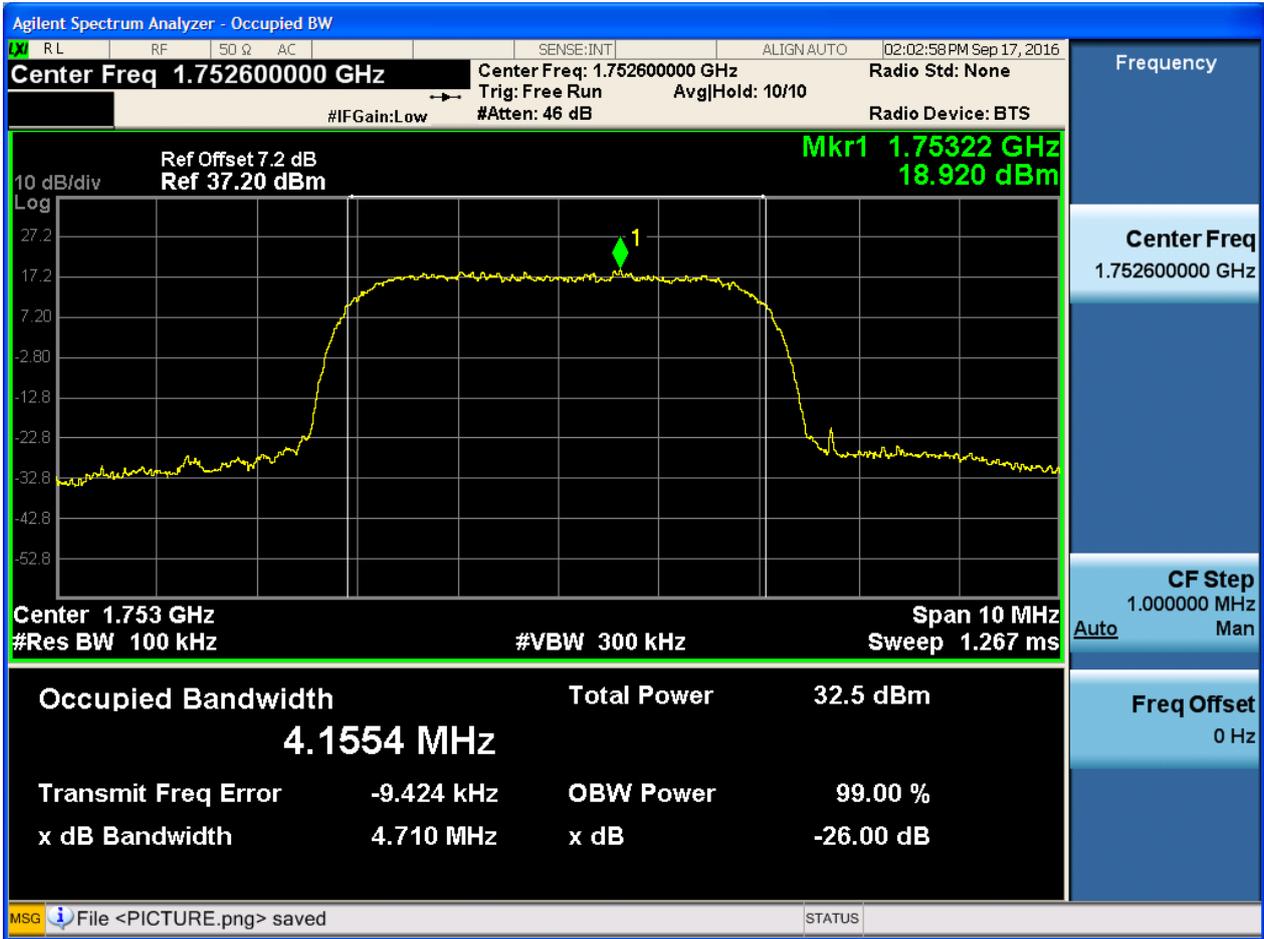


4.2.1.1.2 Test Channel = MCH





4.2.1.1.3 Test Channel = HCH

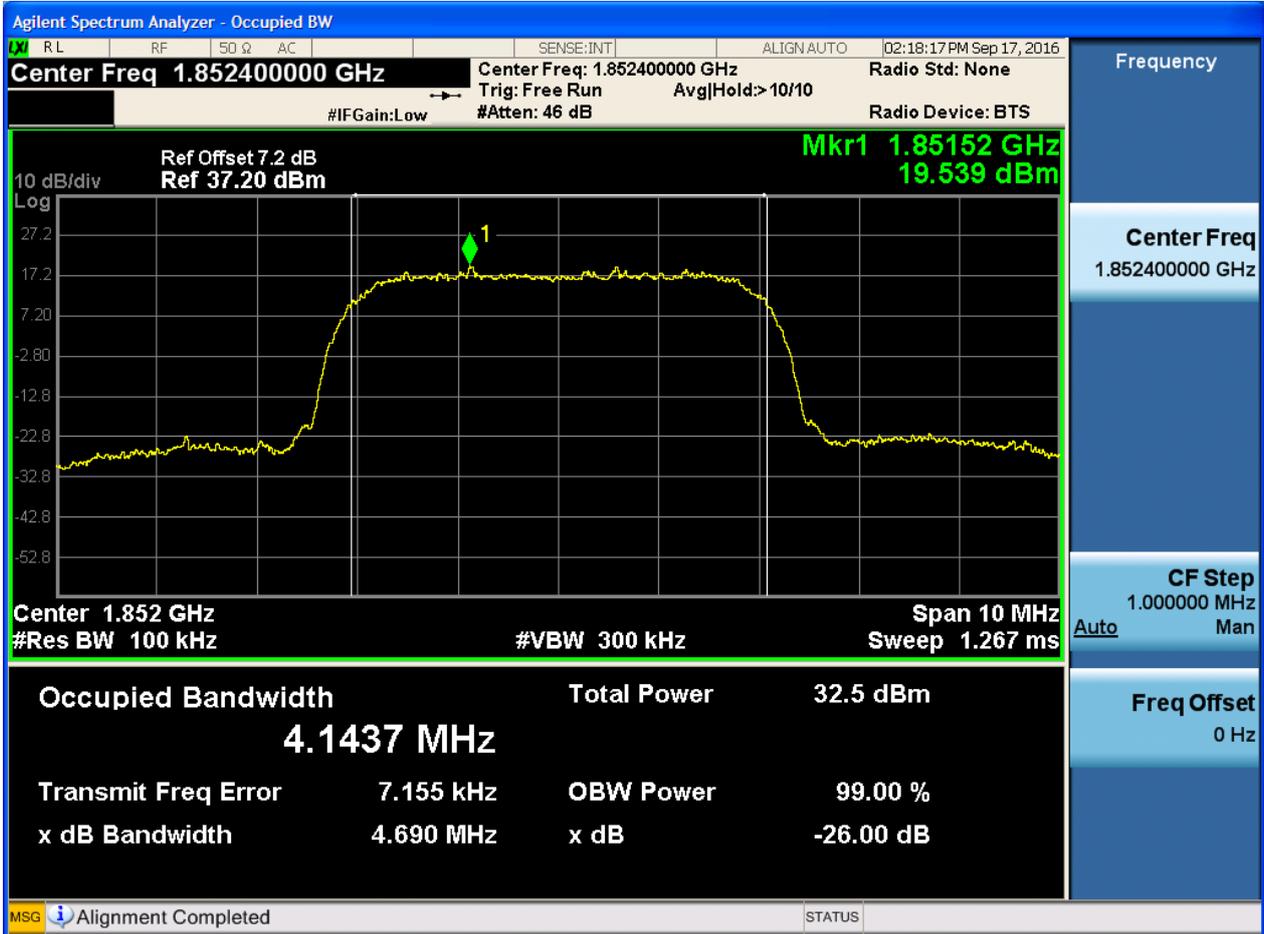




4.2.2 Test Band = WCDMA1900

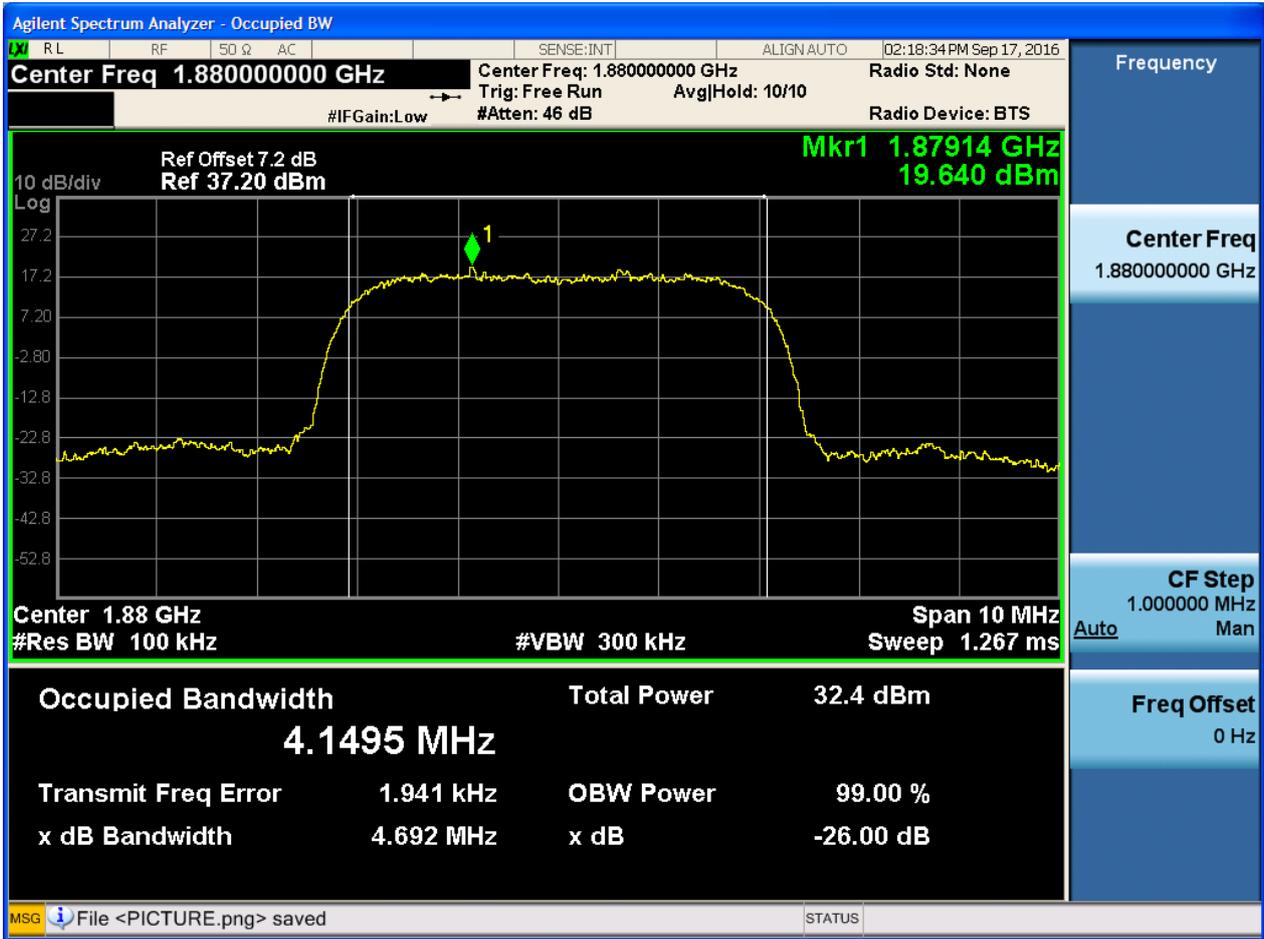
4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH



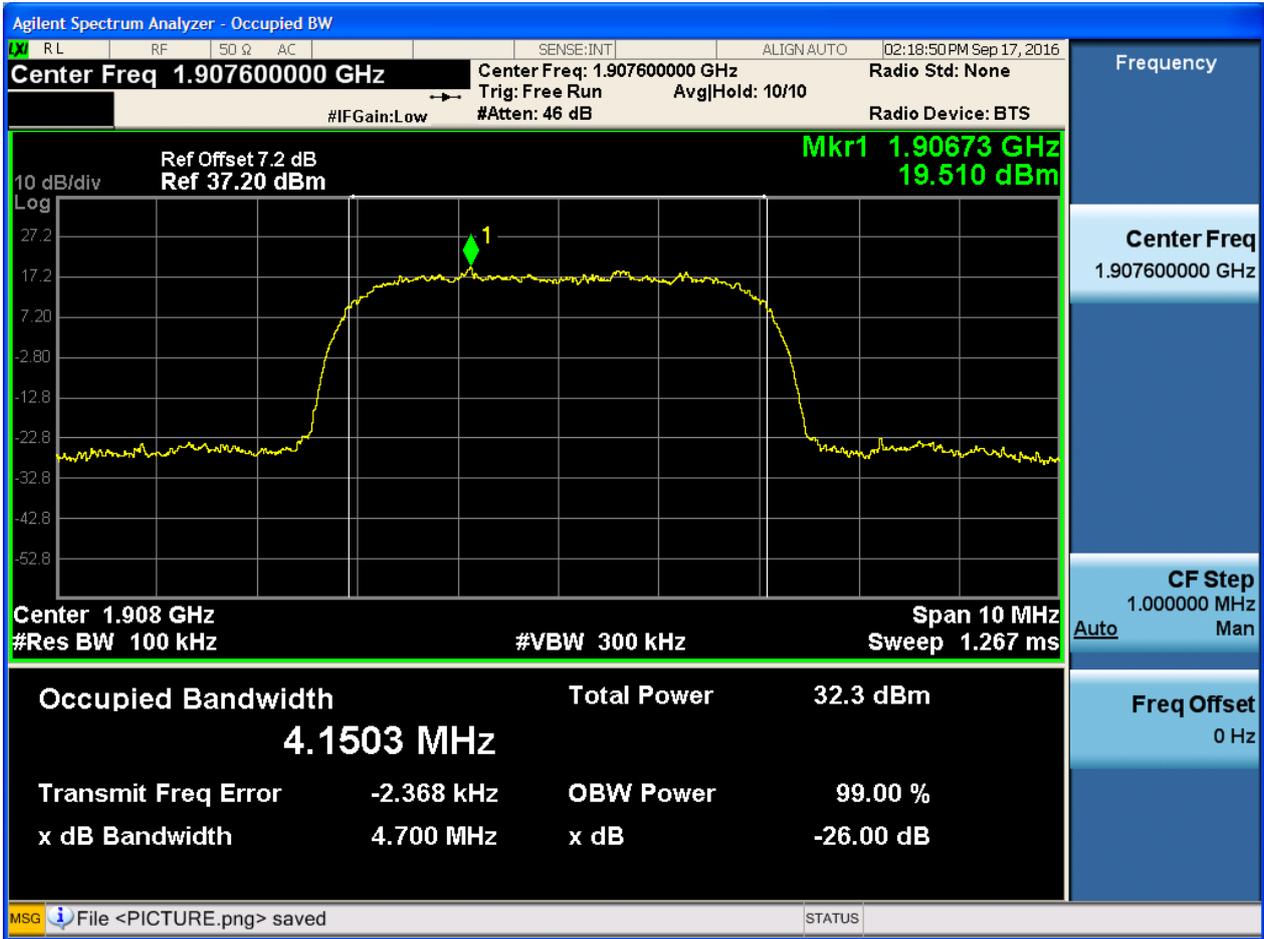


4.2.2.1.2 Test Channel = MCH





4.2.2.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

Part I - Test Plots

5.1 For UMTS

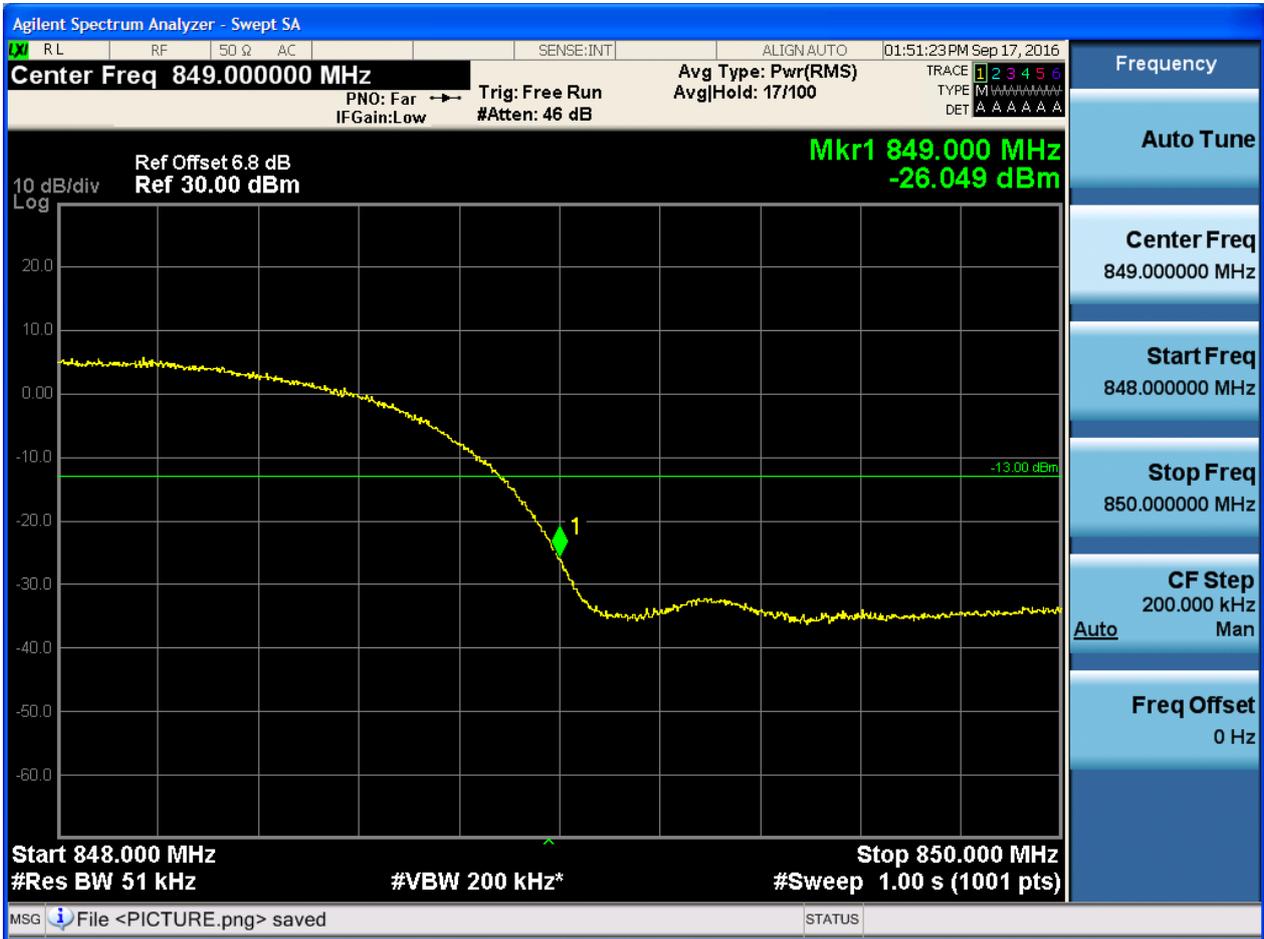
5.1.1 Test Band = WCDMA850

5.1.1.1 Test Mode = UMTS/TM1

5.1.1.1.1 Test Channel = LCH



5.1.1.1.2 Test Channel = HCH





5.2 For UMTS

5.2.1 Test Band = WCDMA1700

5.2.1.1 Test Mode = UMTS/TM1

5.2.1.1.1 Test Channel = LCH



5.2.1.1.2 Test Channel = HCH





5.2.2 Test Band = WCDMA1900

5.2.2.1 Test Mode = UMTS/TM1

5.2.2.1.1 Test Channel = LCH



5.2.2.1.2 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.

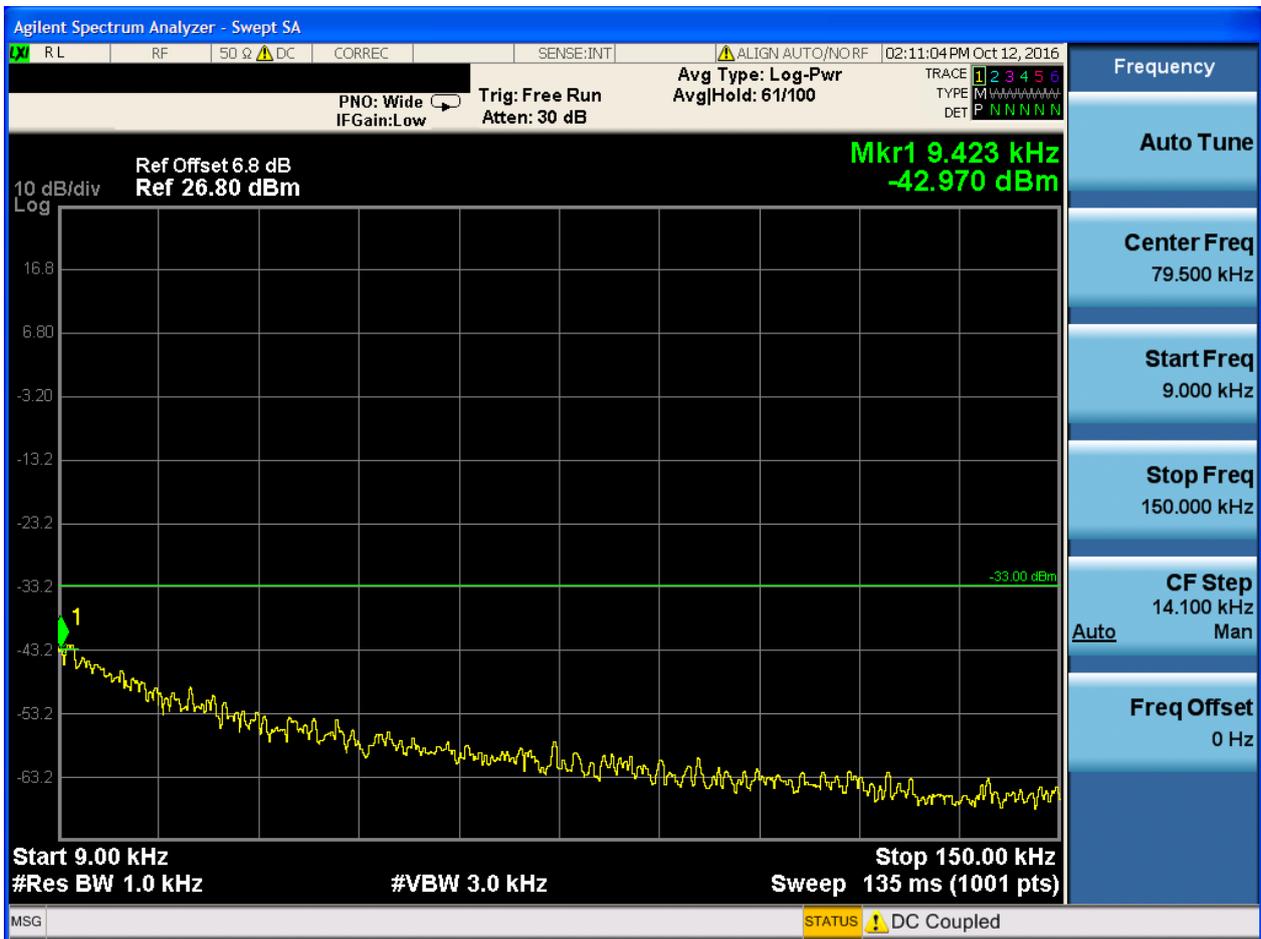
Part I - Test Plots

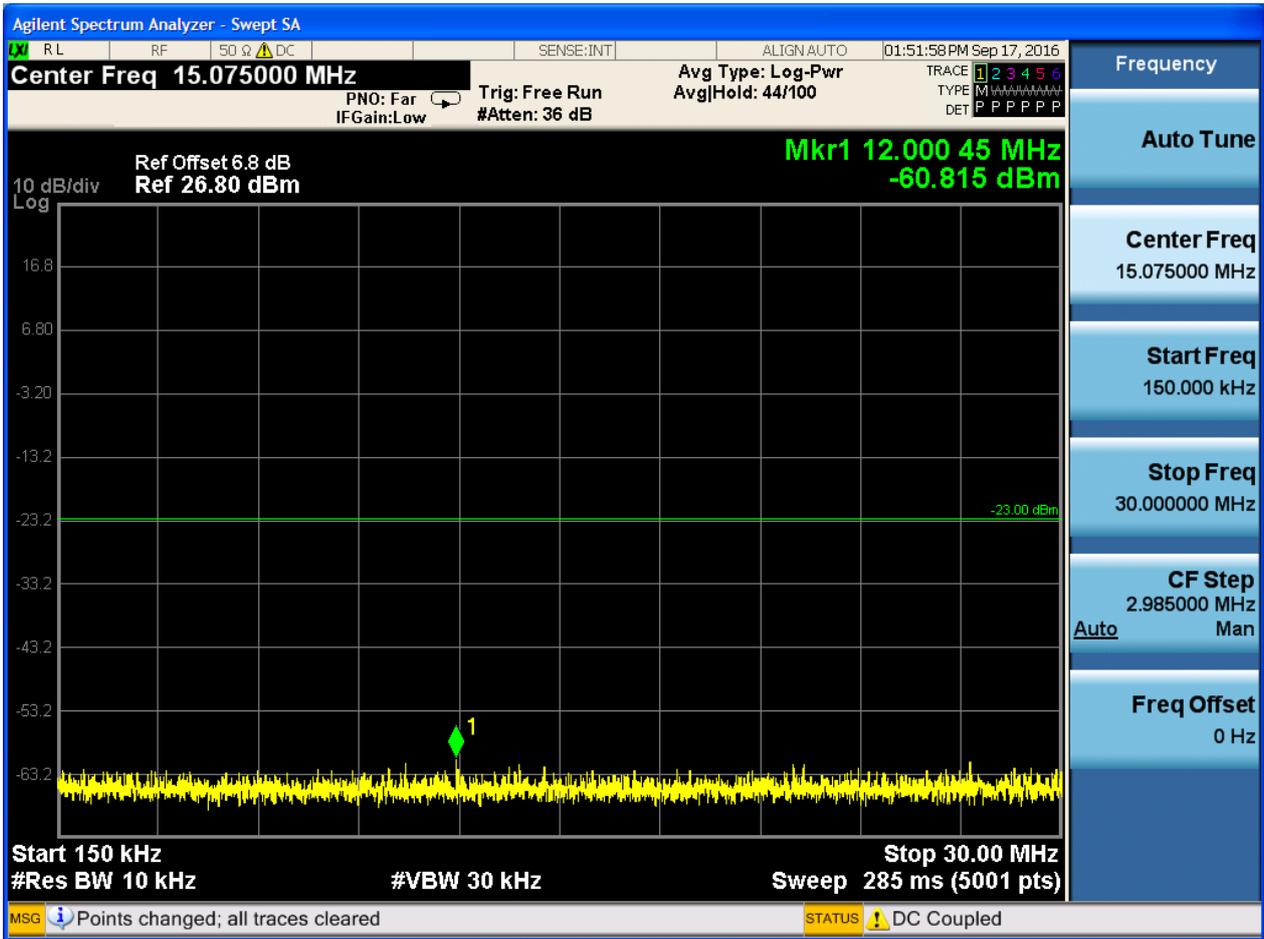
6.1 For UMTS

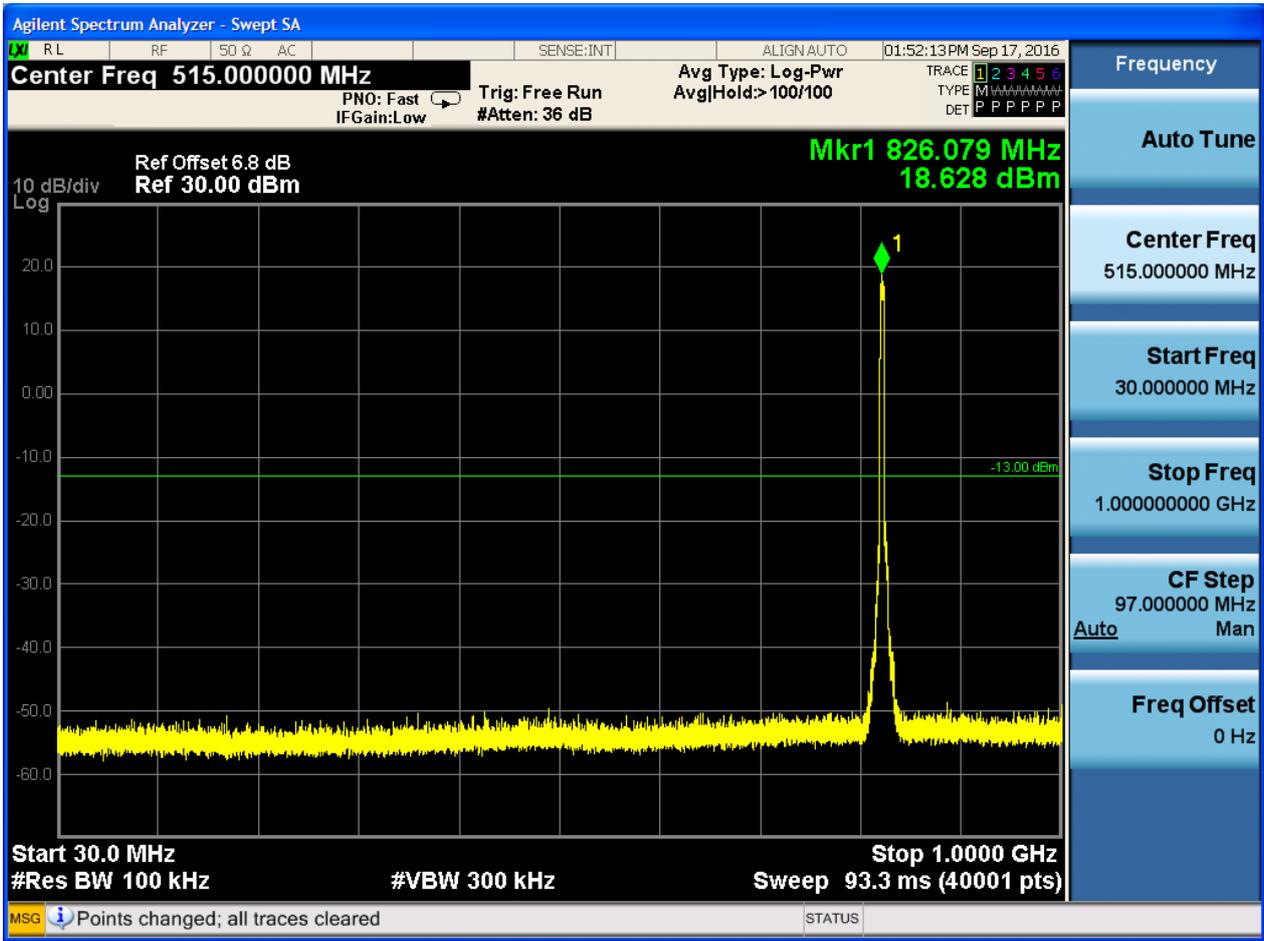
6.1.1 Test Band = WCDMA850

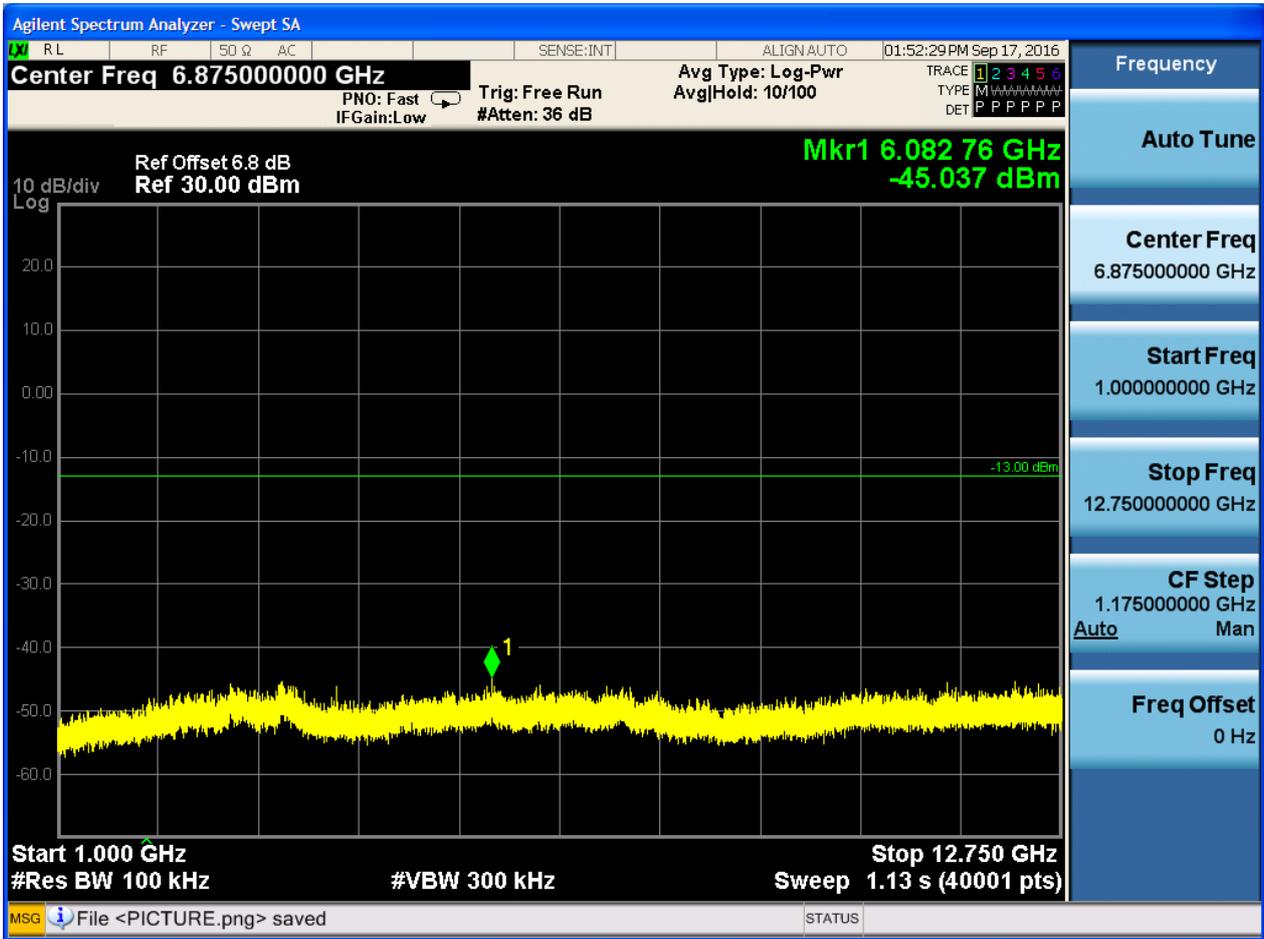
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



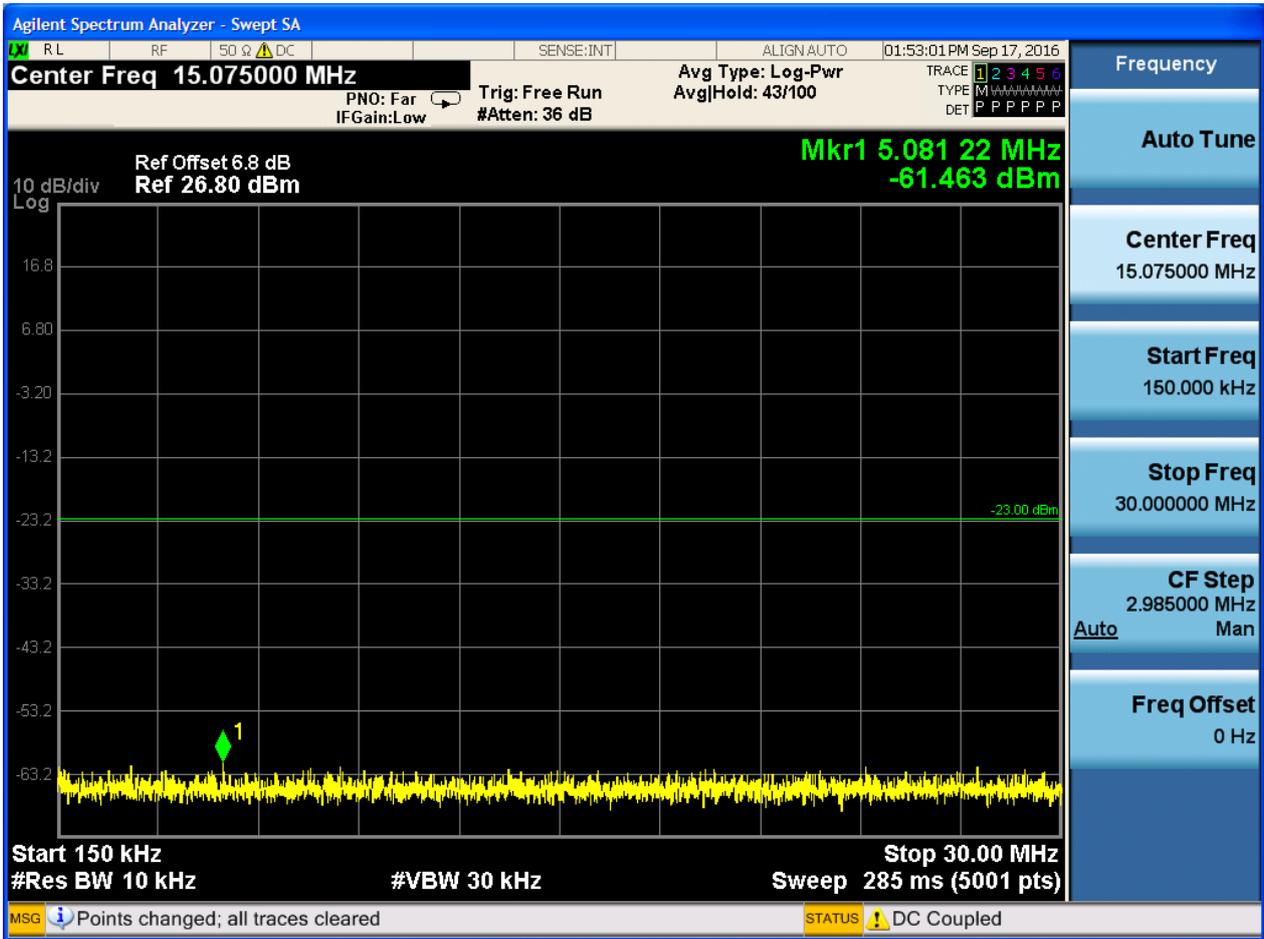


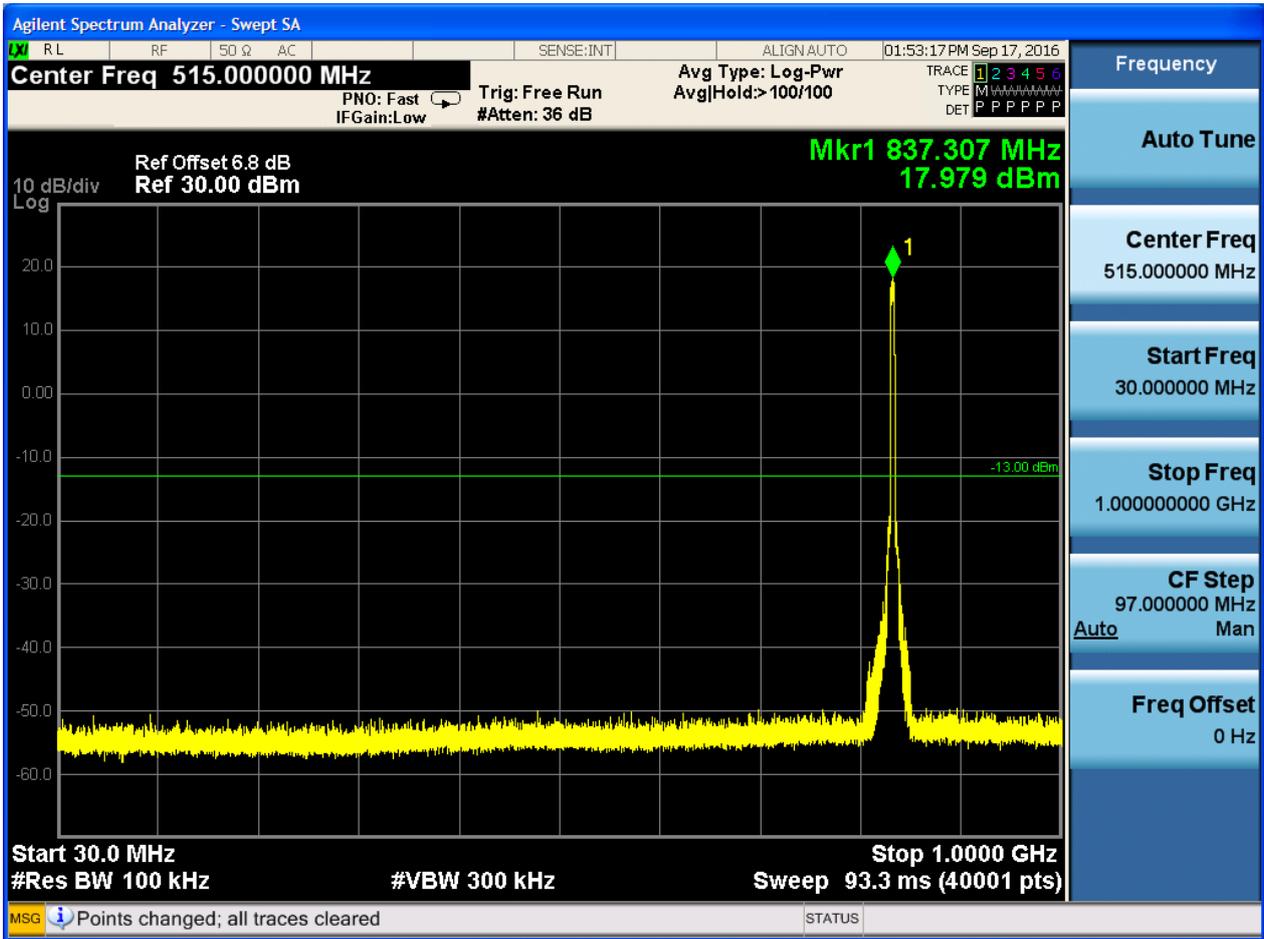


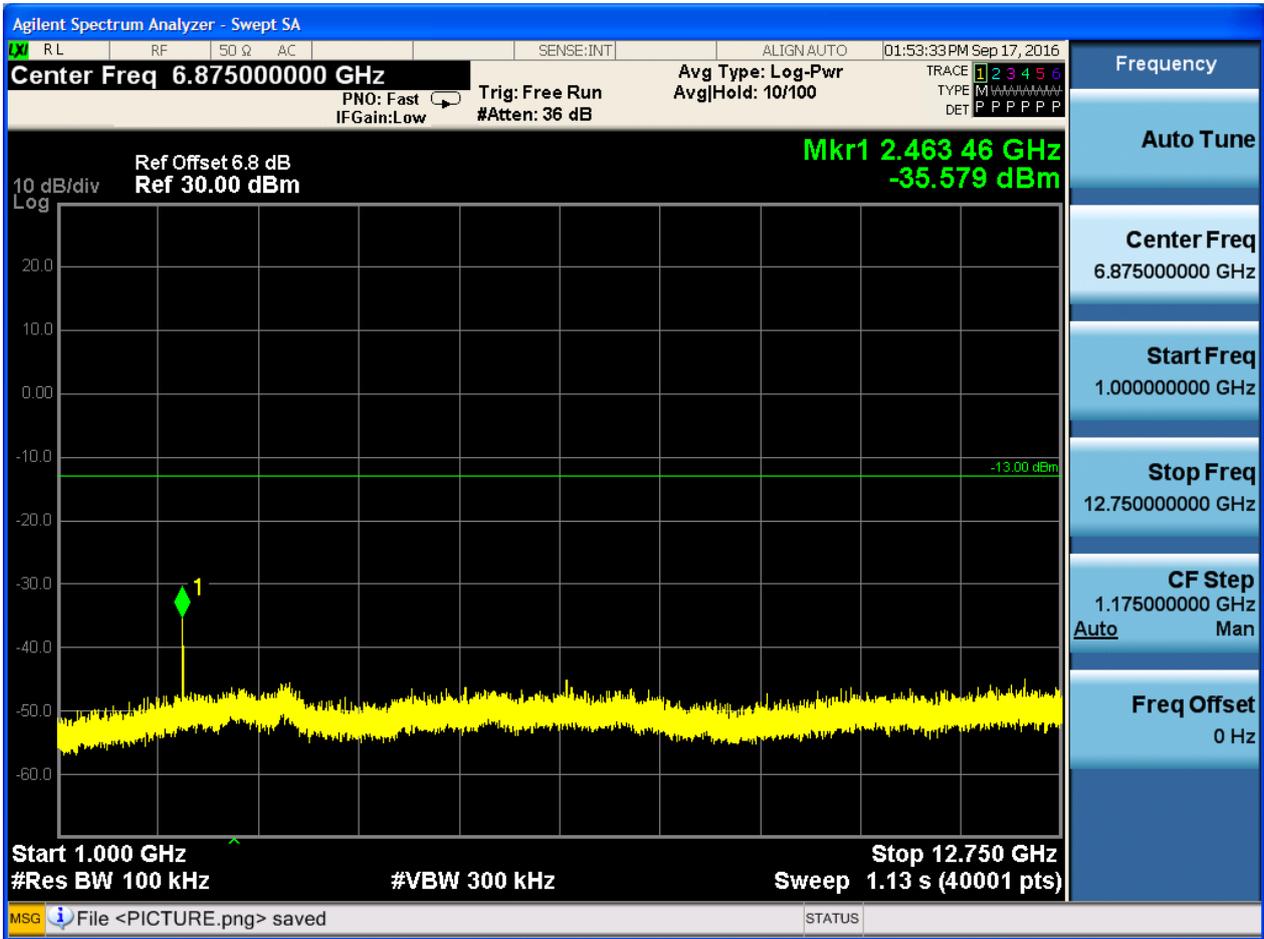


6.1.1.1.2 Test Channel = MCH





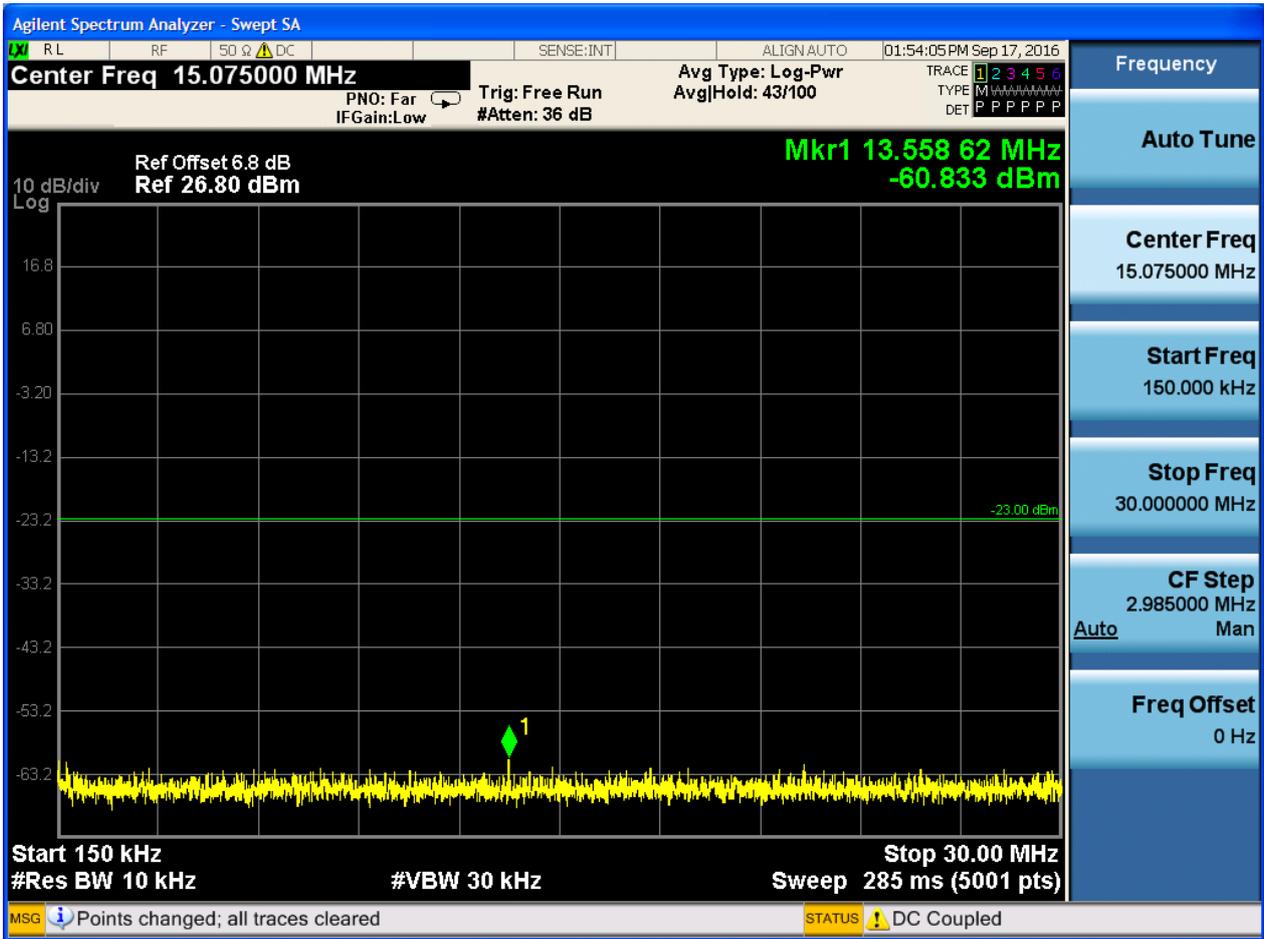


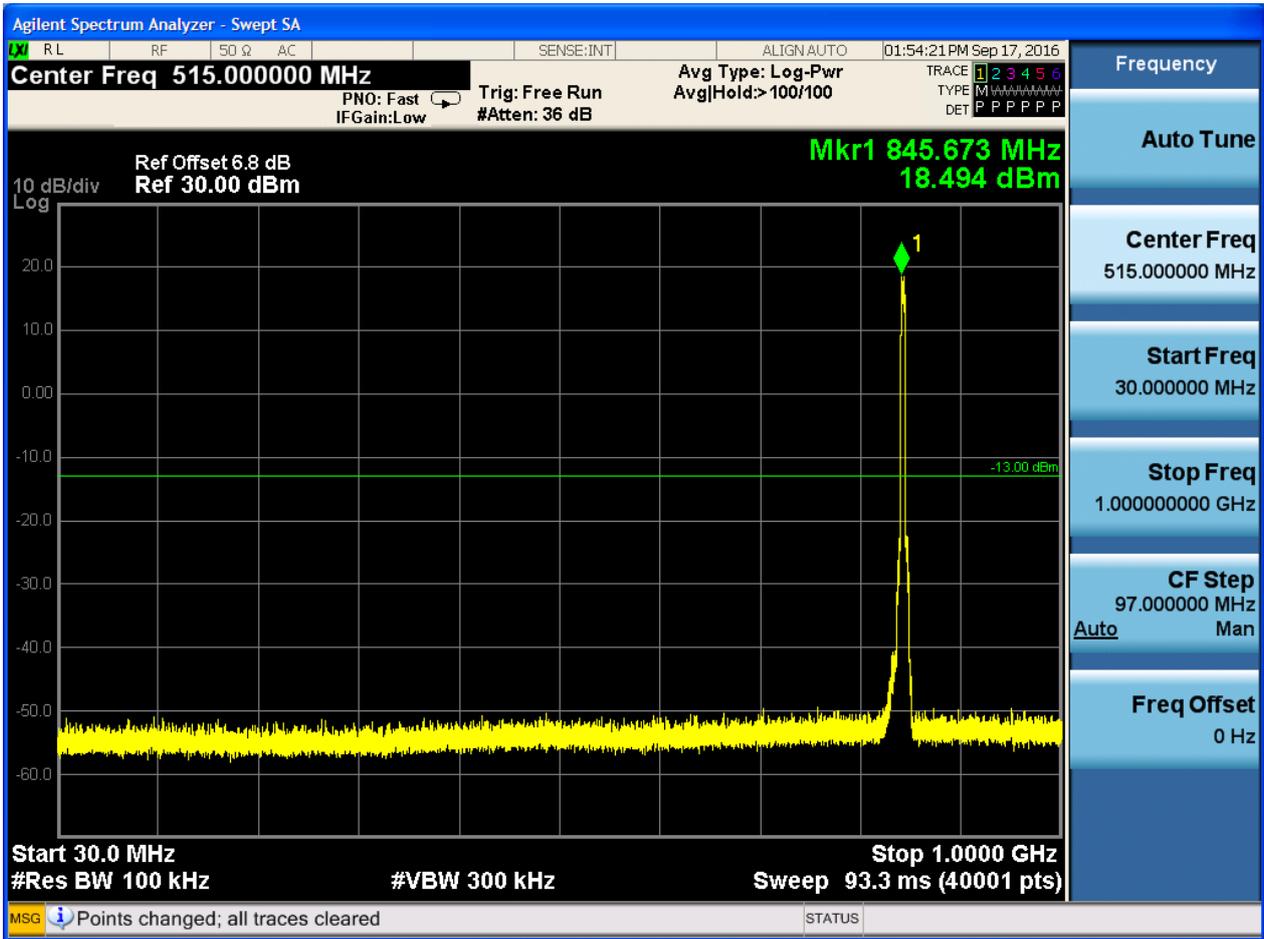


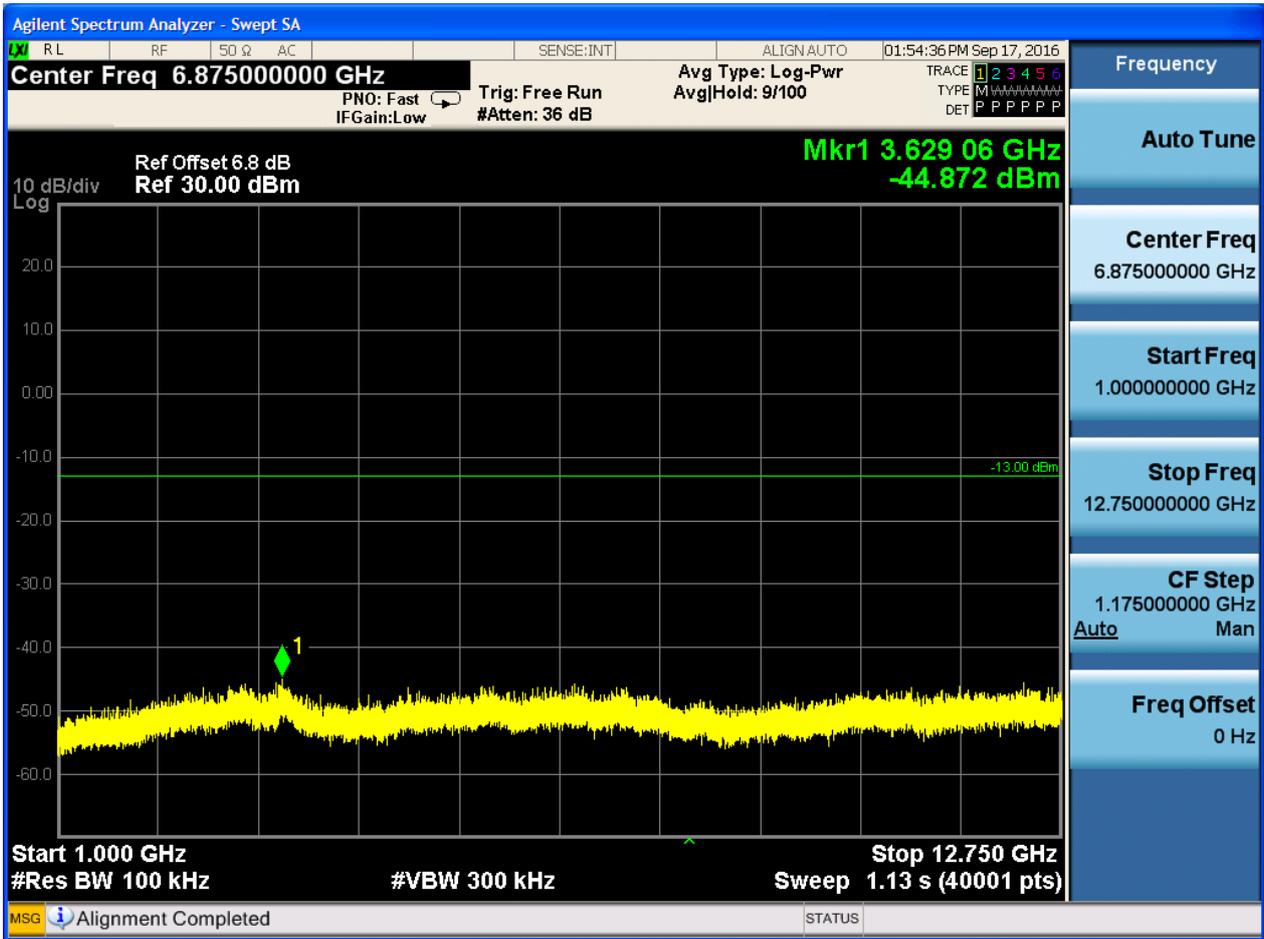


6.1.1.1.3 Test Channel = HCH











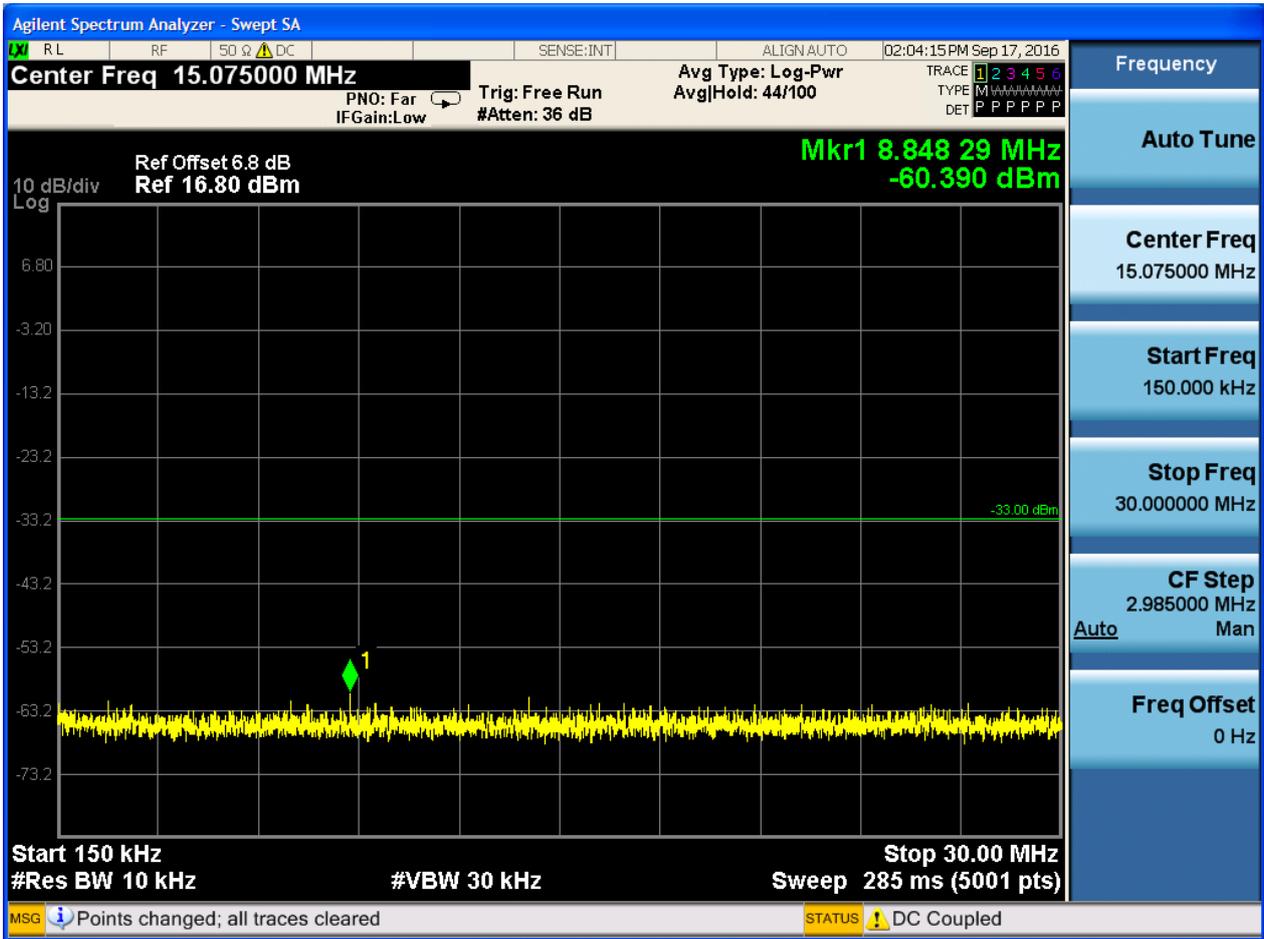
6.2 For UMTS

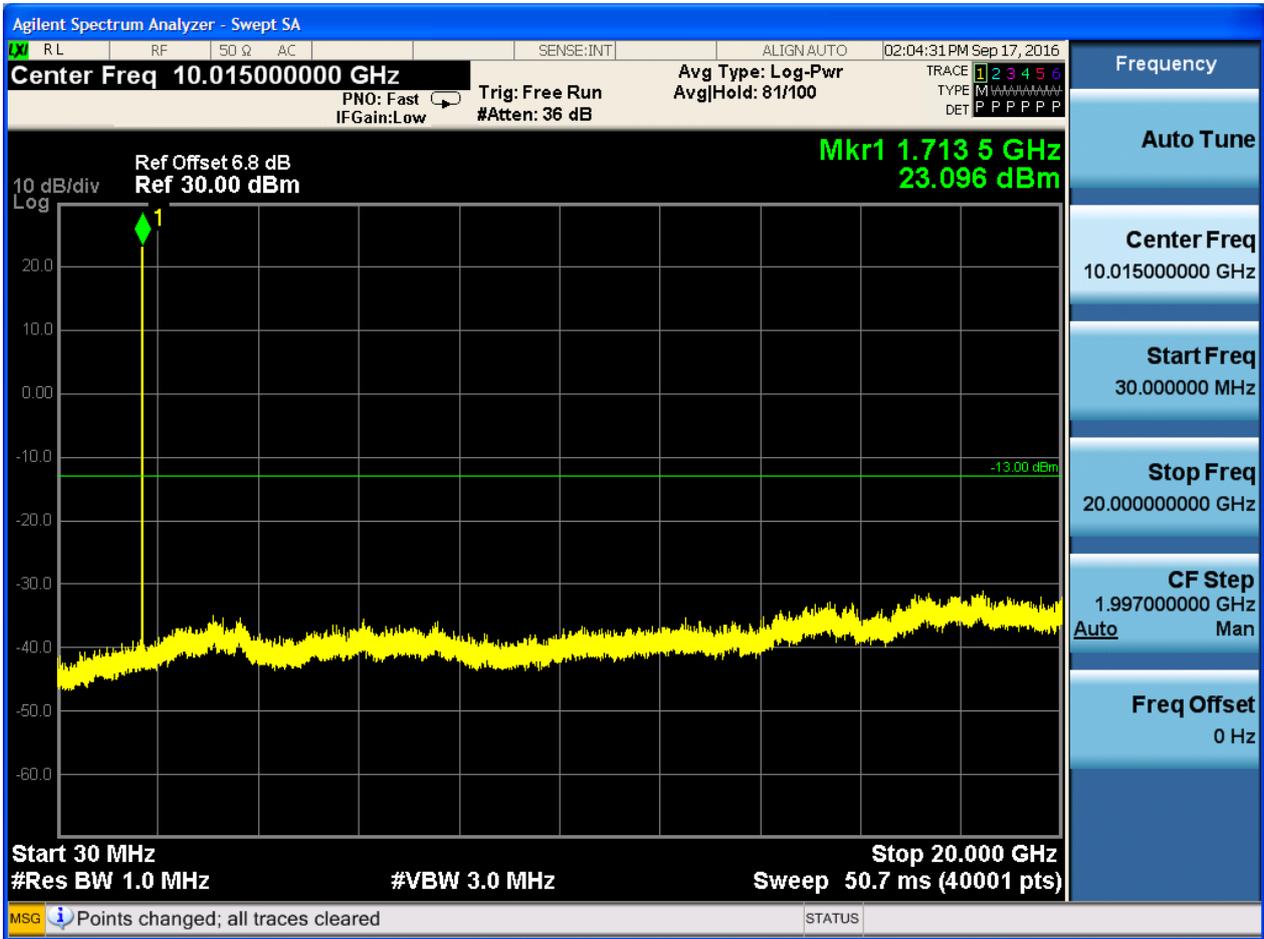
6.2.1 Test Band = WCDMA1700

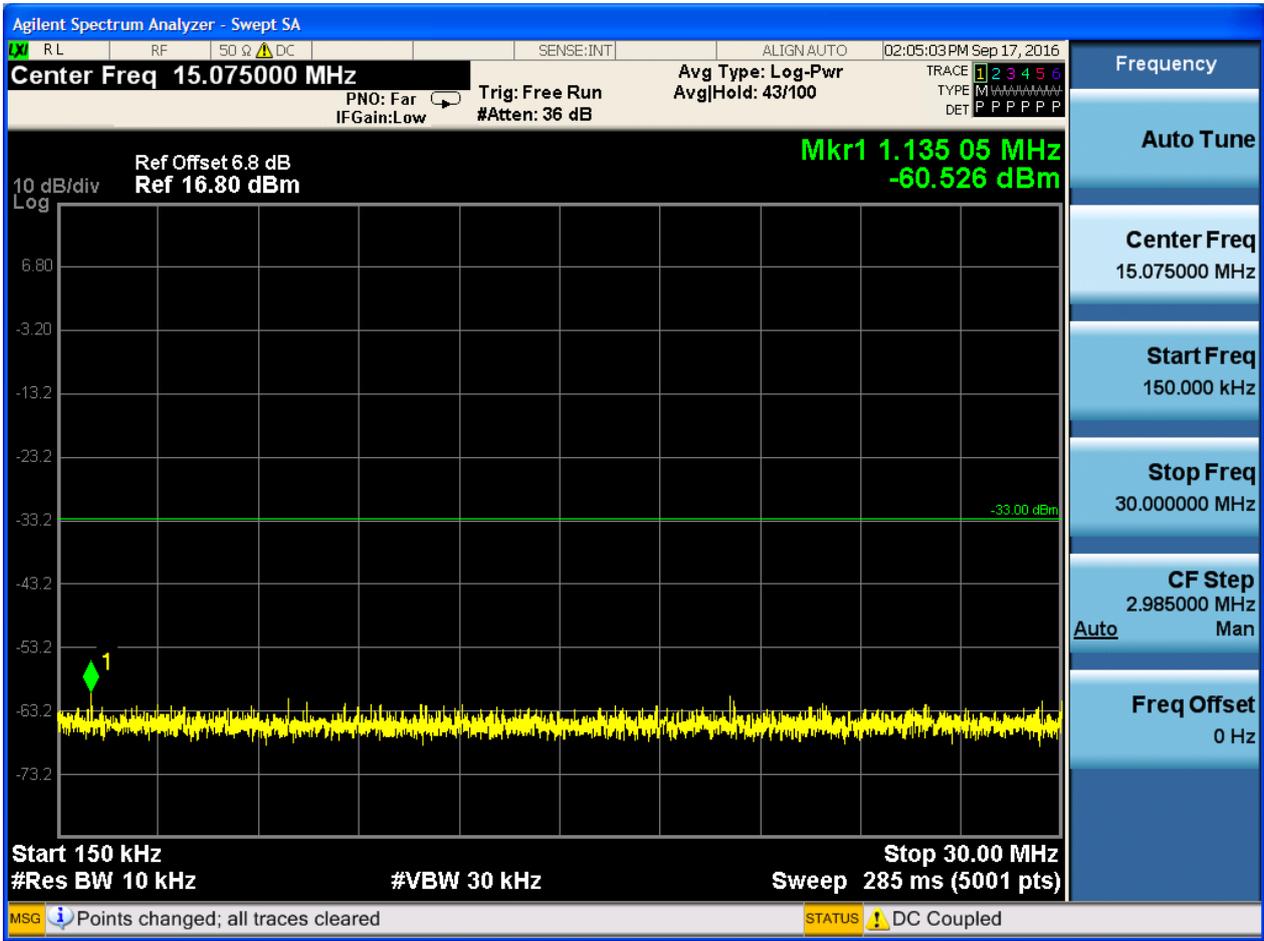
6.2.1.1 Test Mode = UMTS/TM1

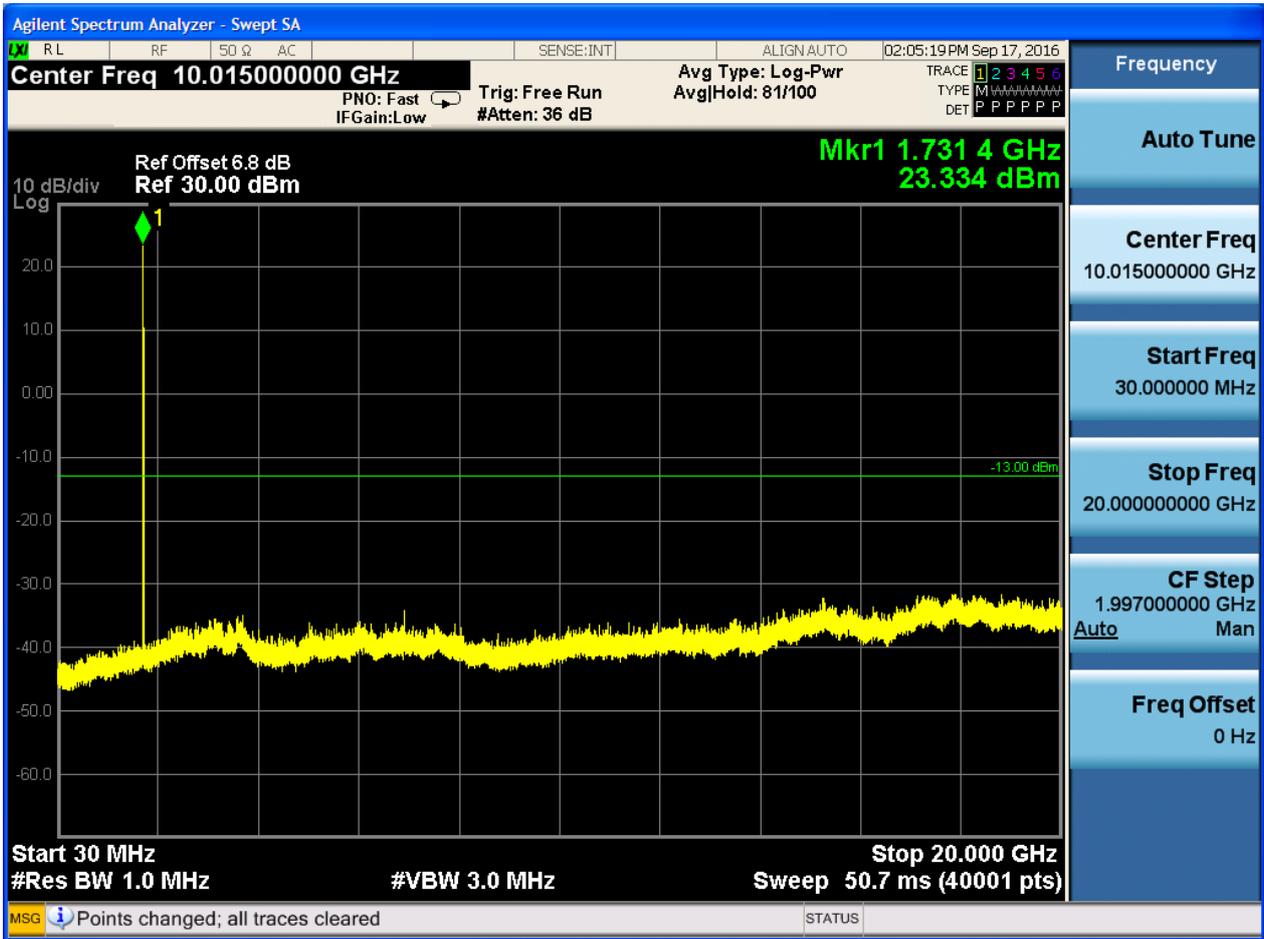
6.2.1.1.1 Test Channel = LCH





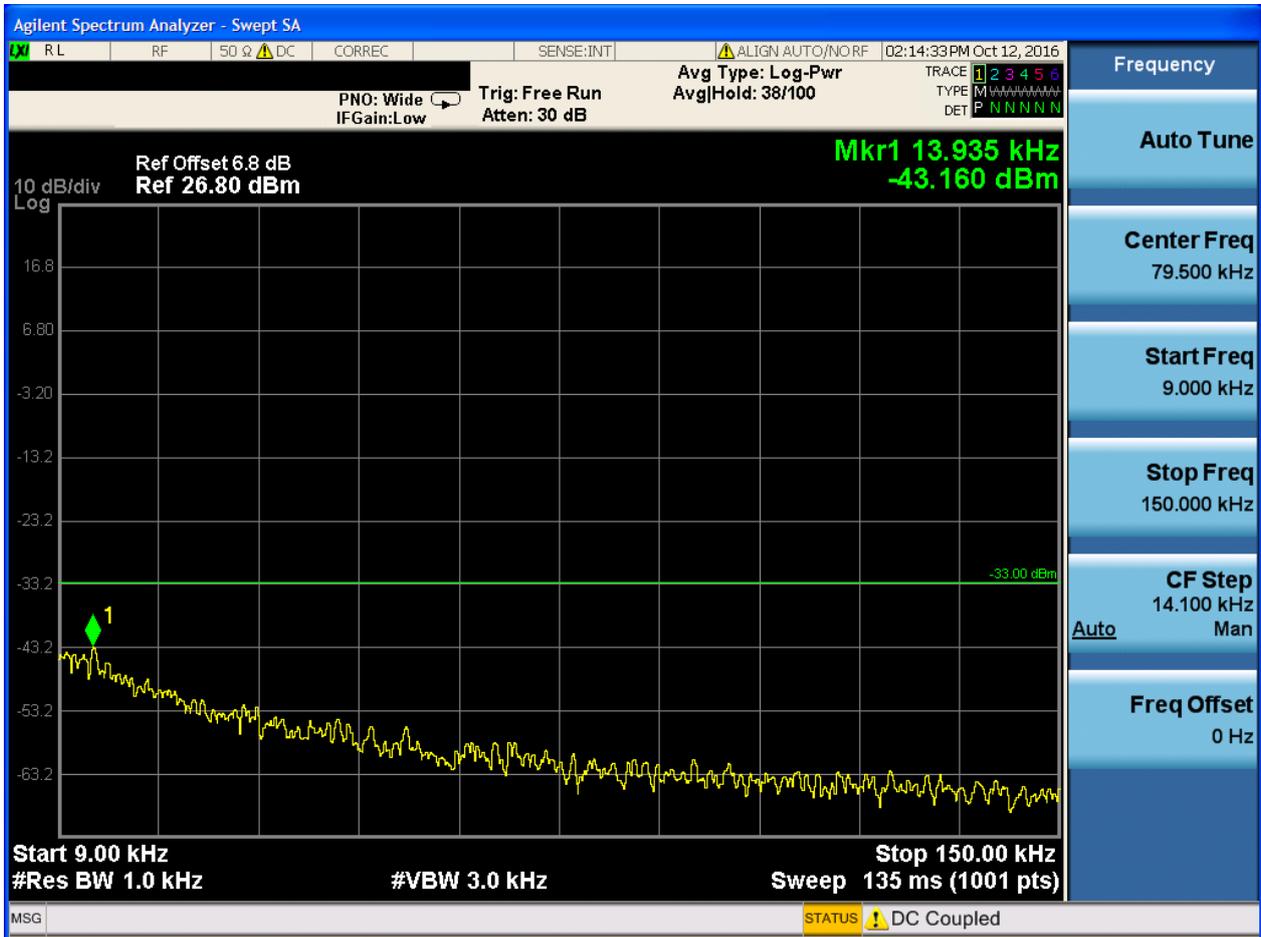


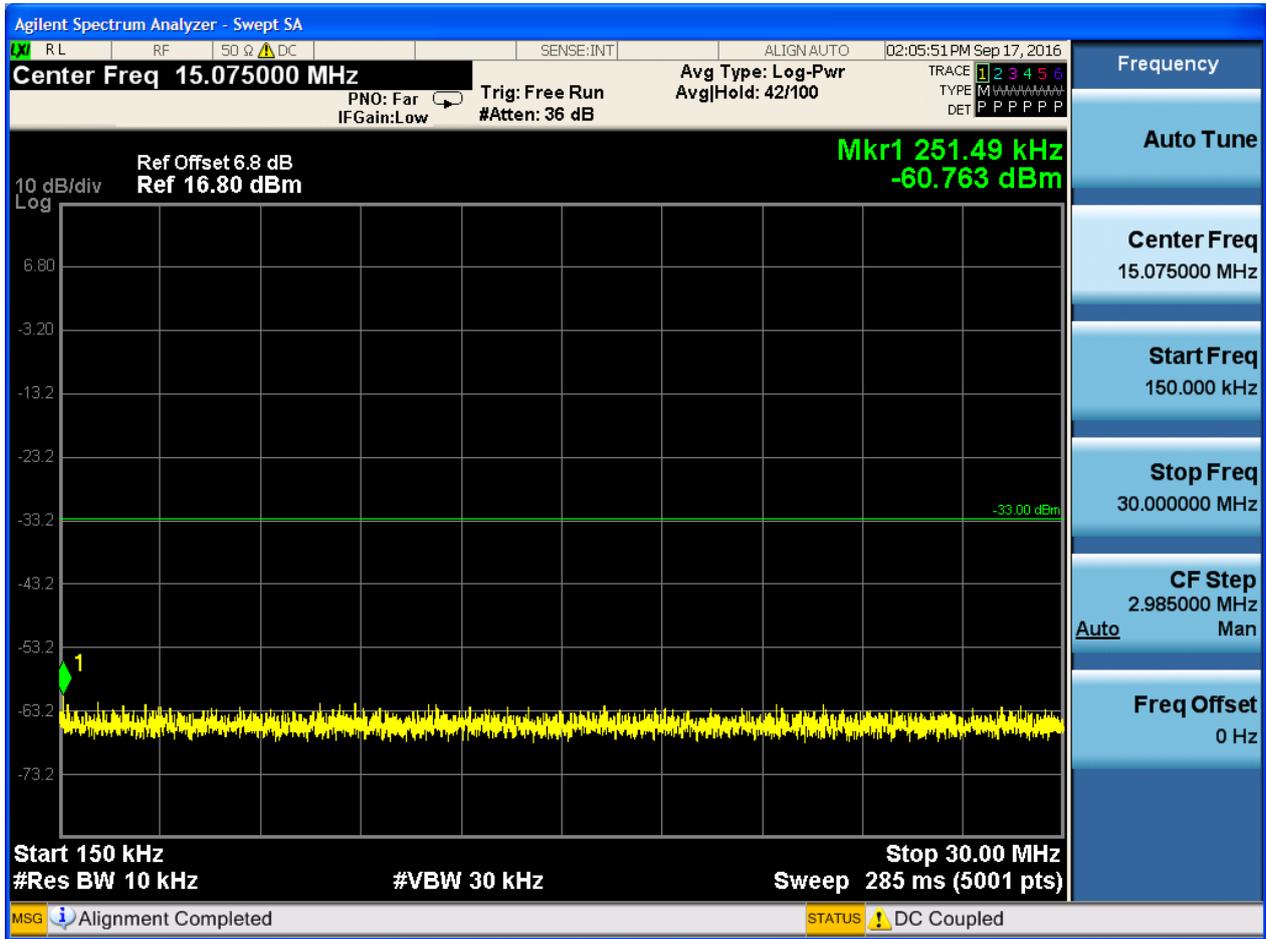


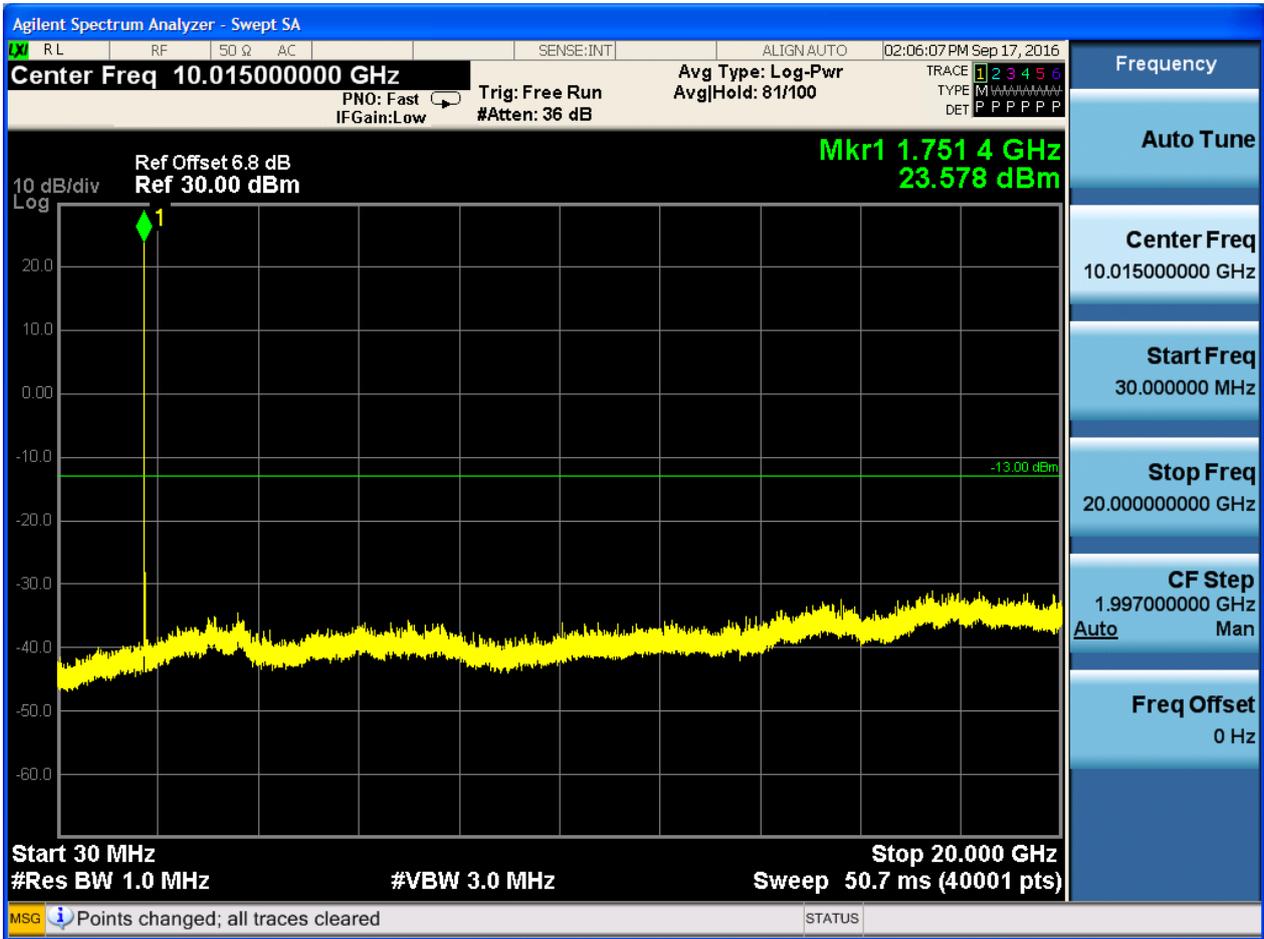




6.2.1.1.3 Test Channel = HCH





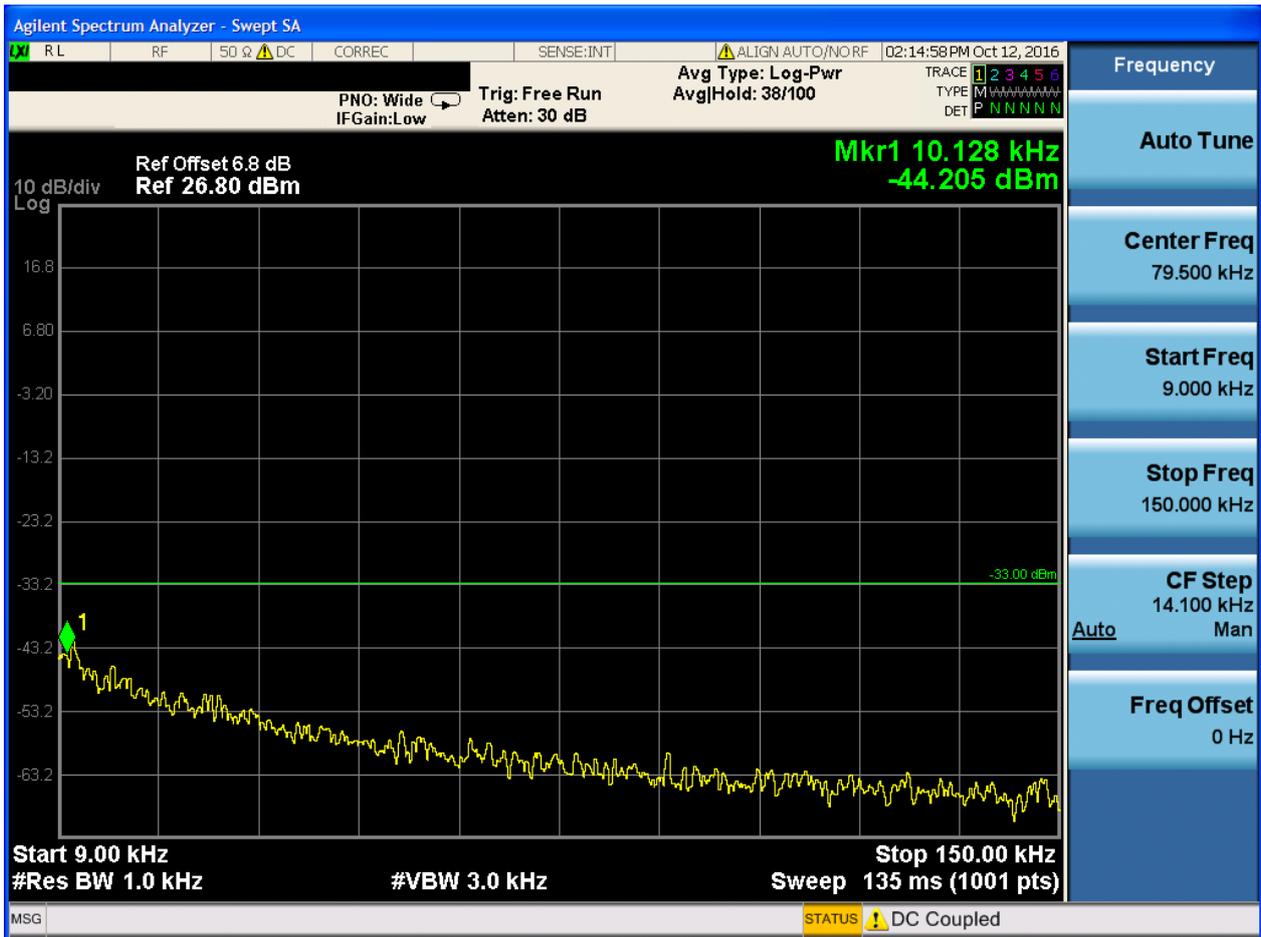


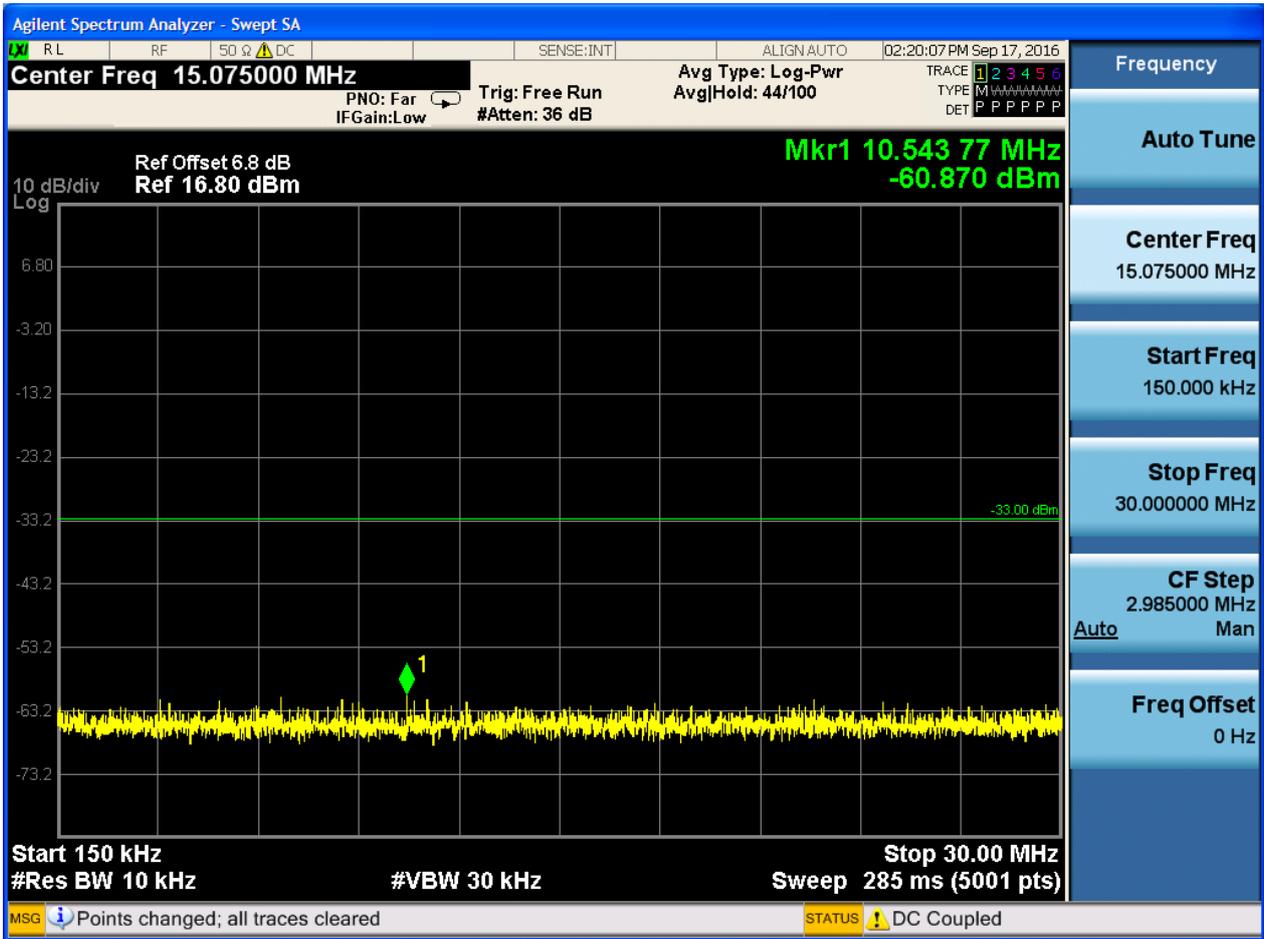


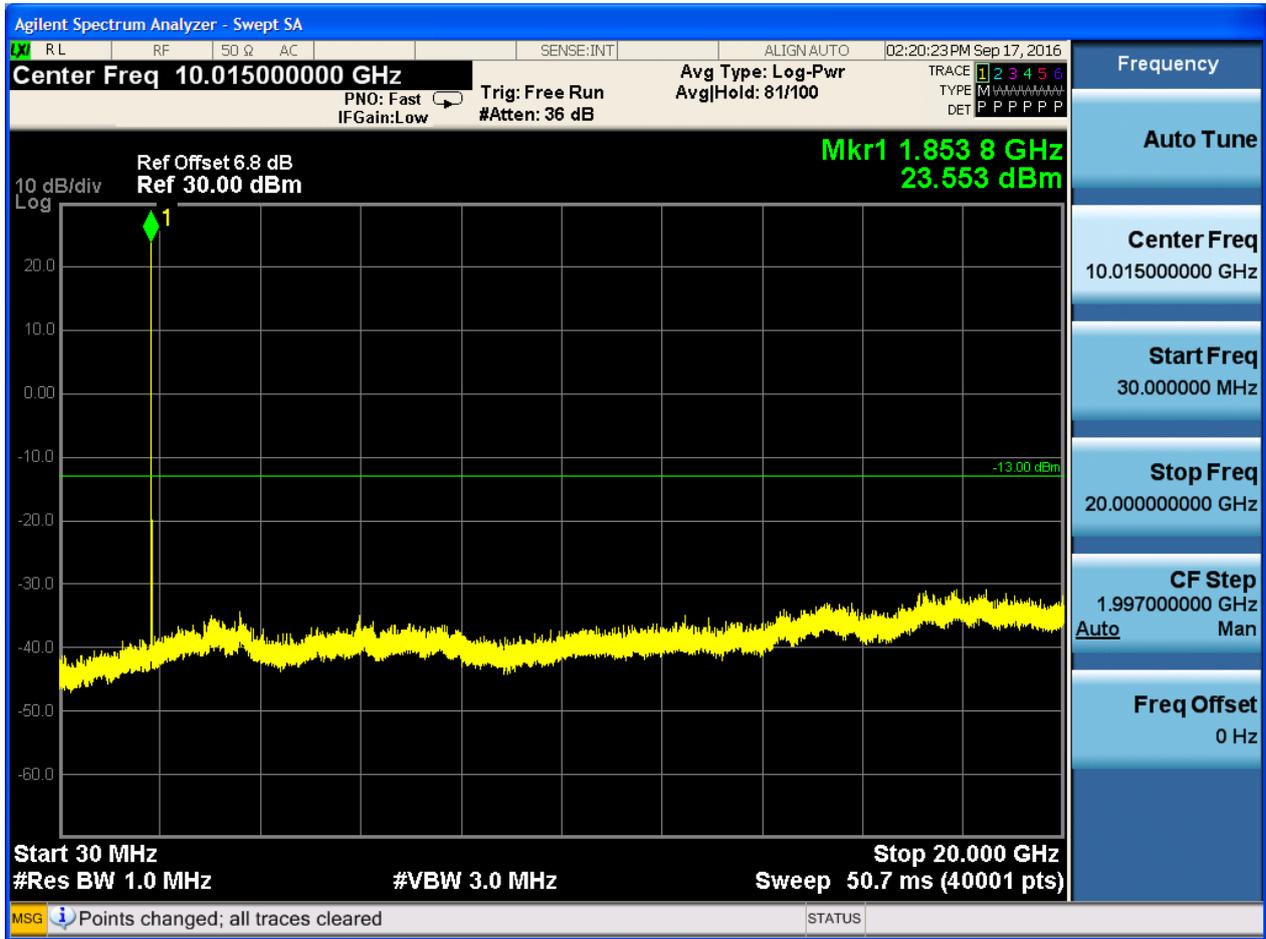
6.2.2 Test Band = WCDMA1900

6.2.2.1 Test Mode = UMTS/TM1

6.2.2.1.1 Test Channel = LCH

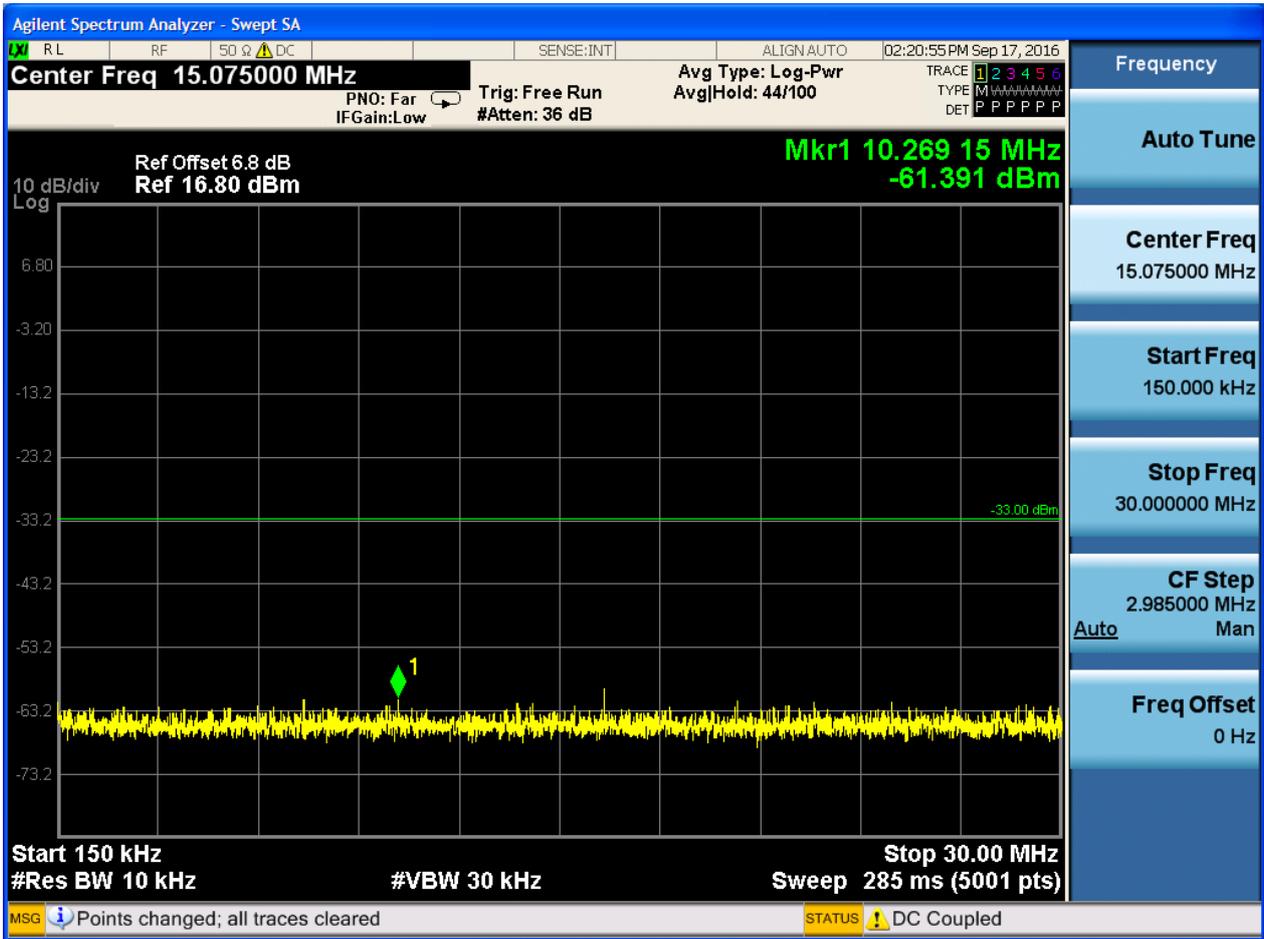






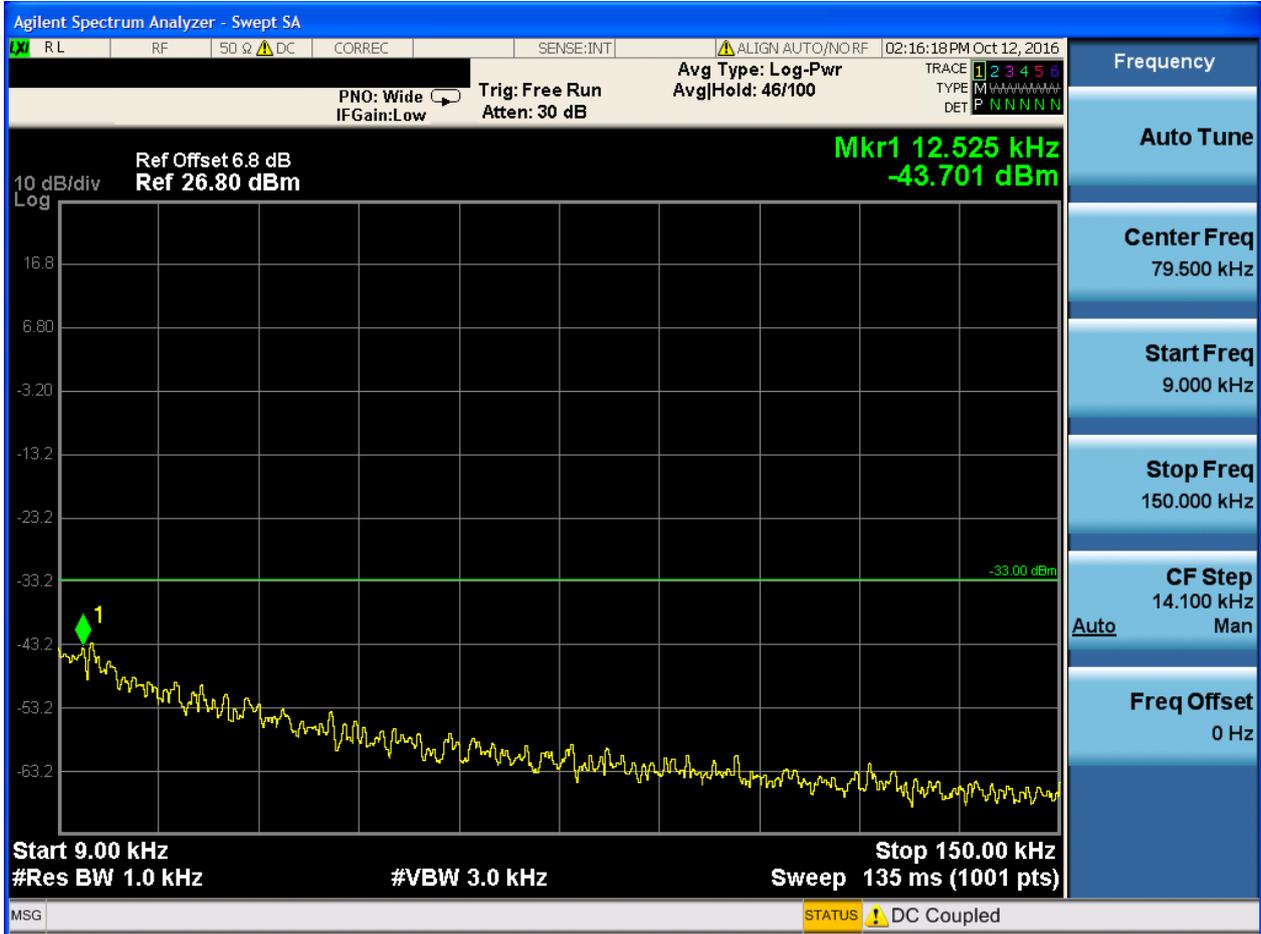
6.2.2.1.2 Test Channel = MCH

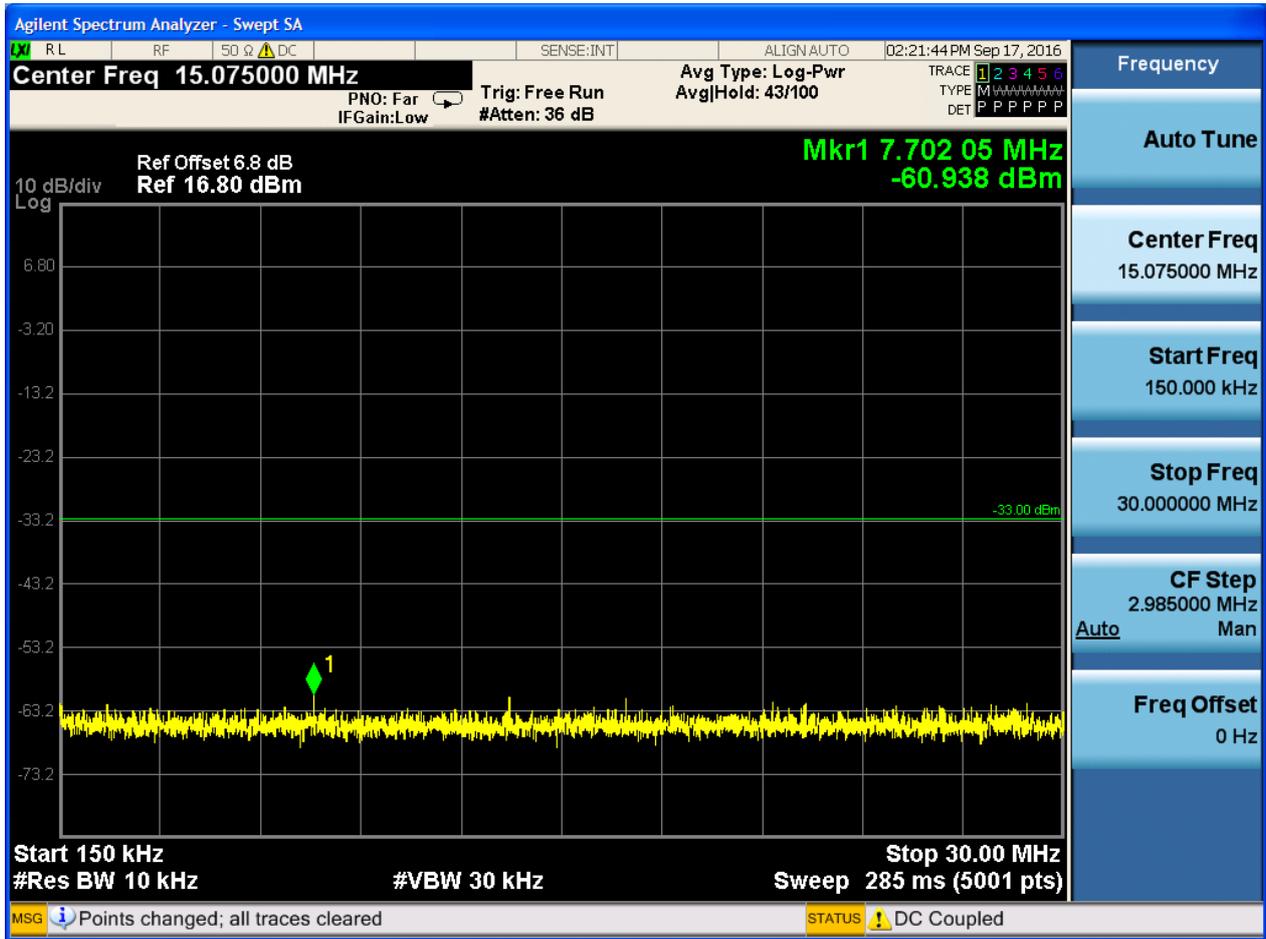


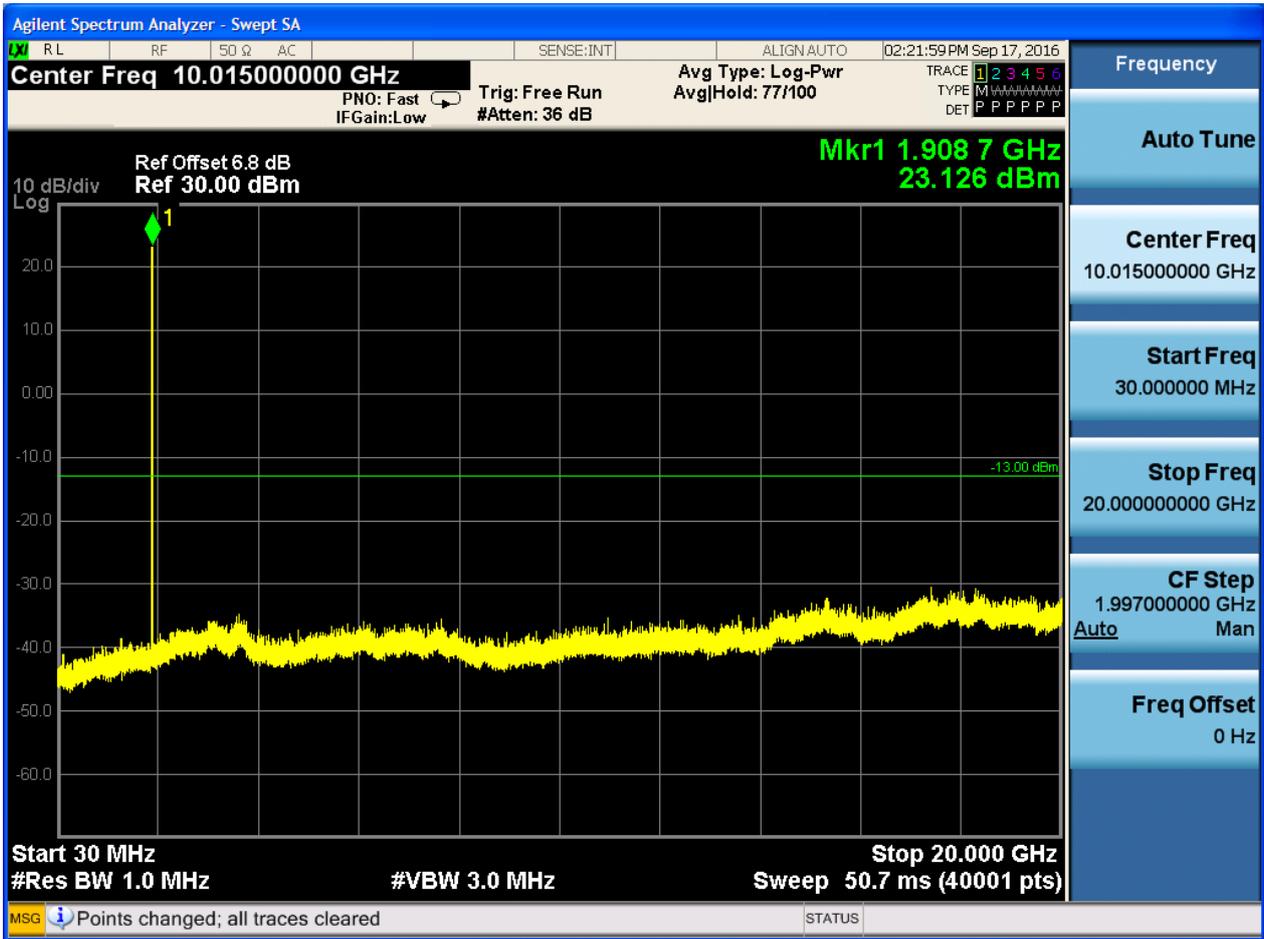




6.2.2.1.3 Test Channel = HCH







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

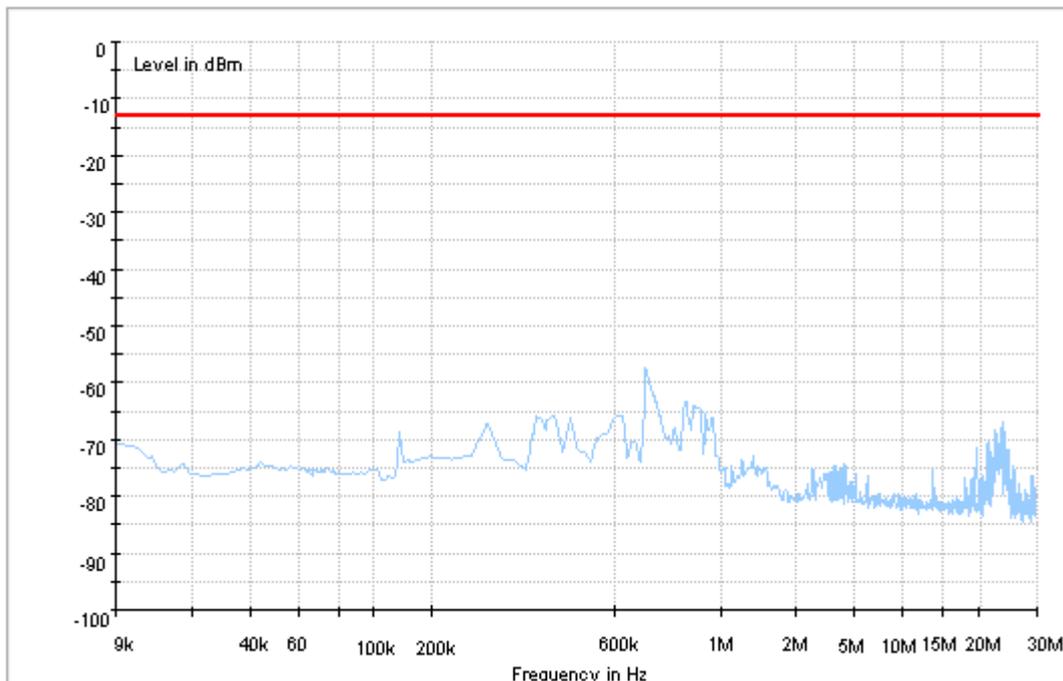
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

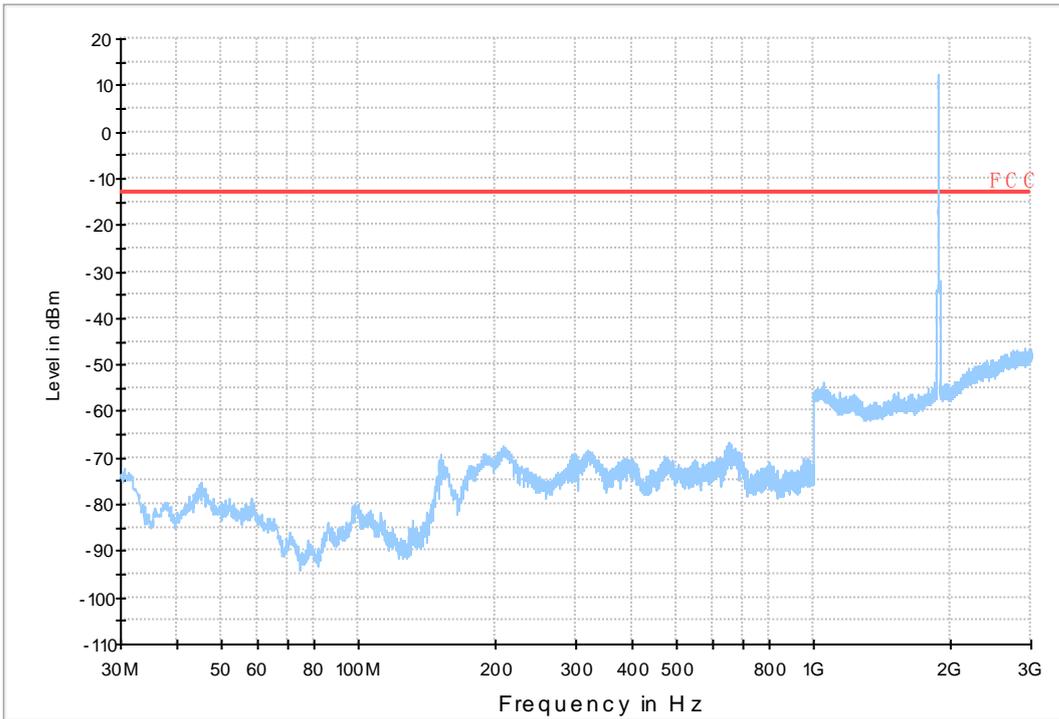
7.1 For UMTS

7.1.1 Test Band = WCDMA1900_Ant1

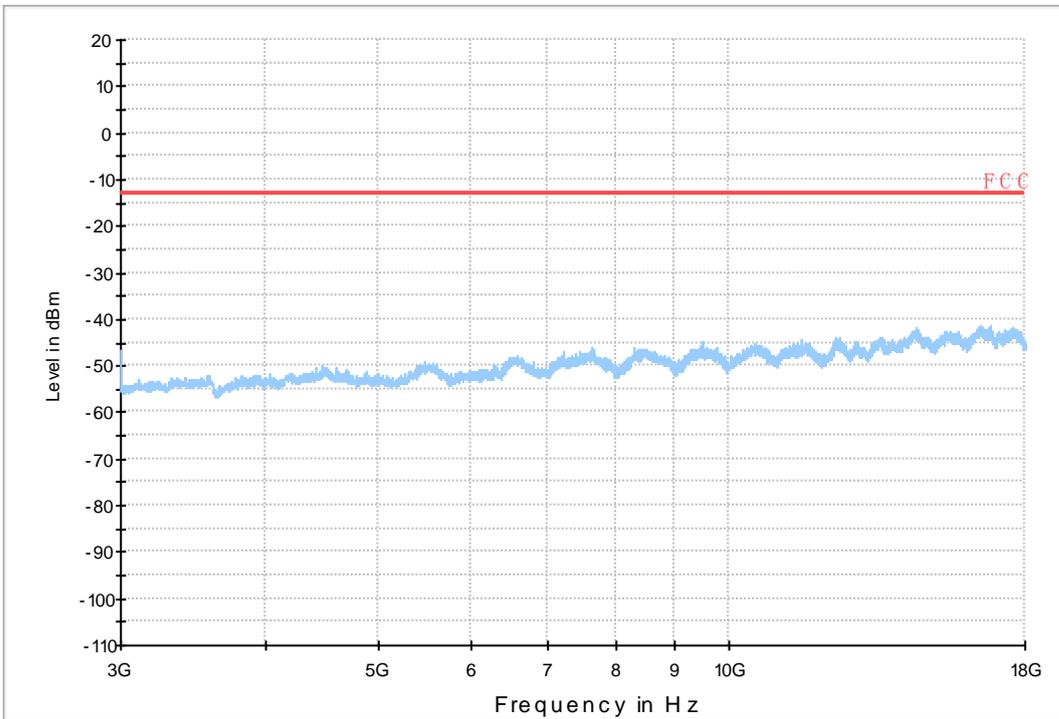
7.1.1.1 Test Mode = UMTS/TM1

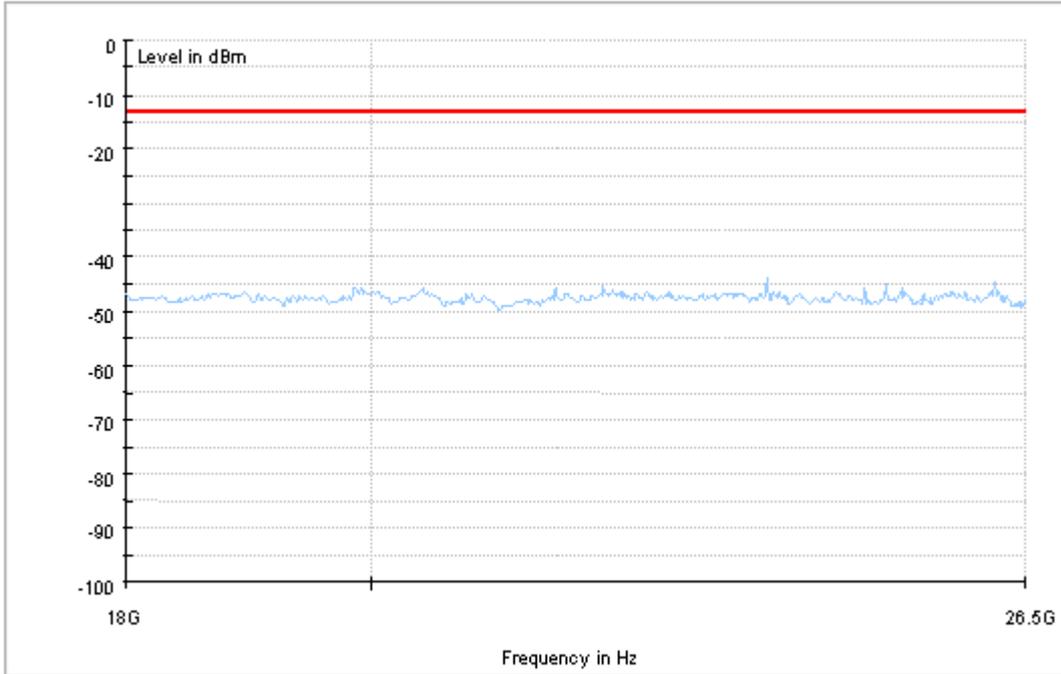


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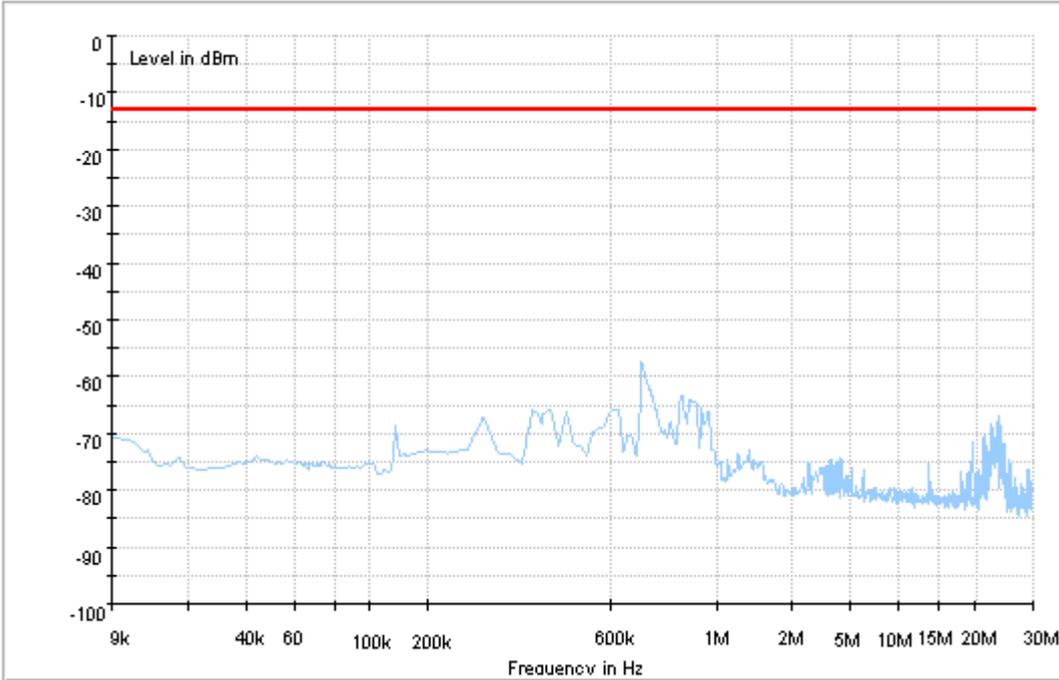
Copy of FCC PART24 W CDMA1900_H



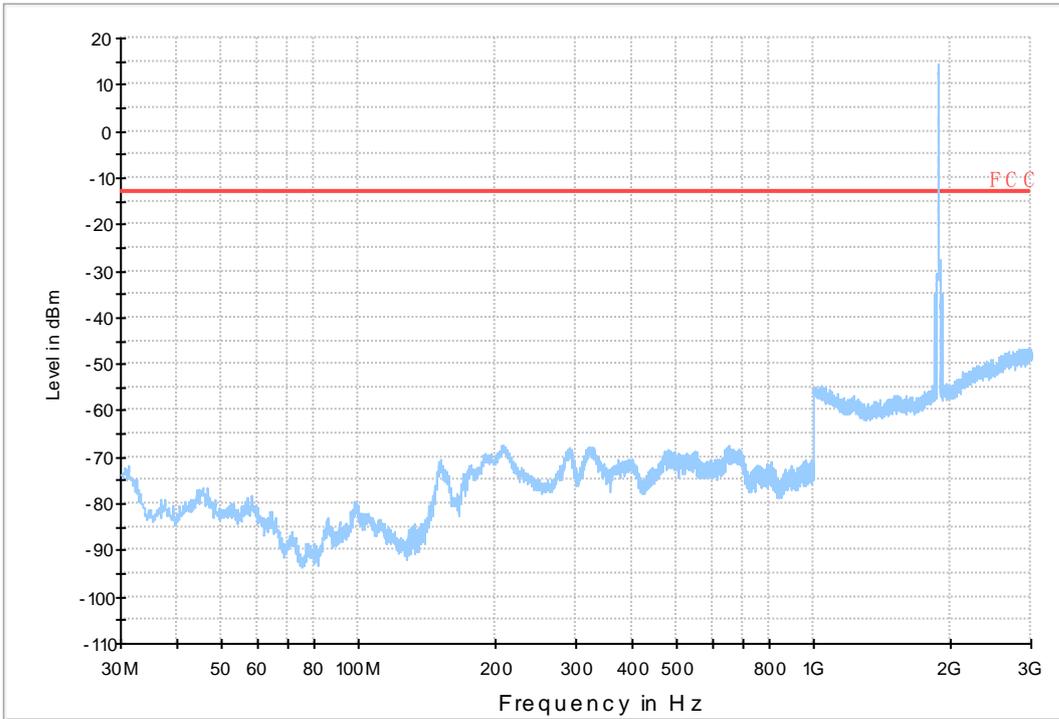


7.1.2 Test Band = WCDMA1900_Ant2

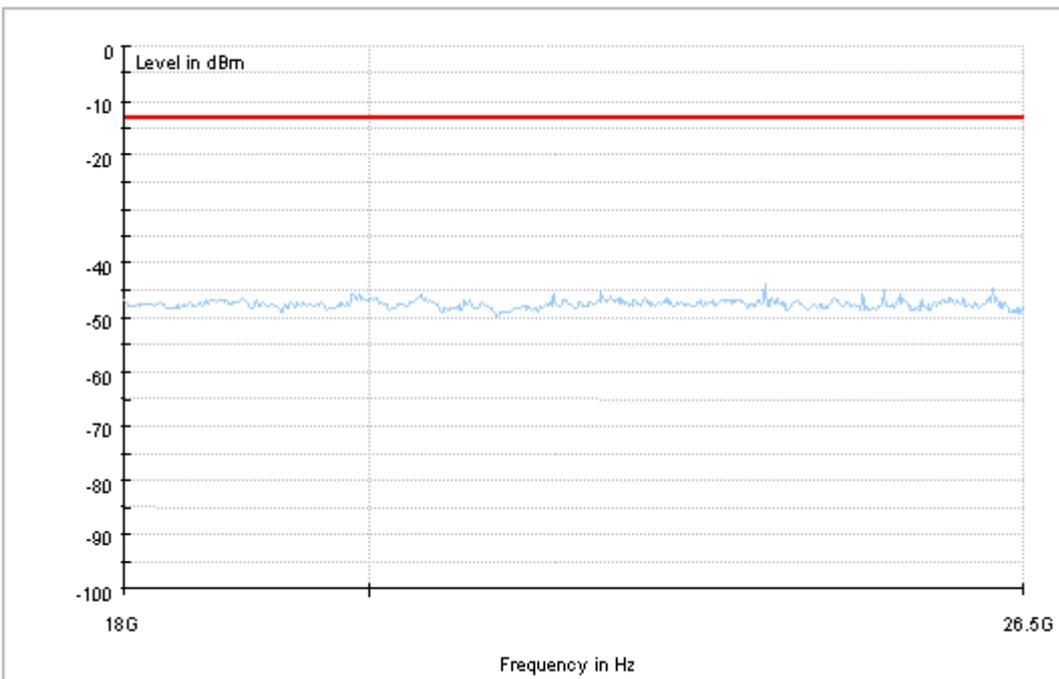
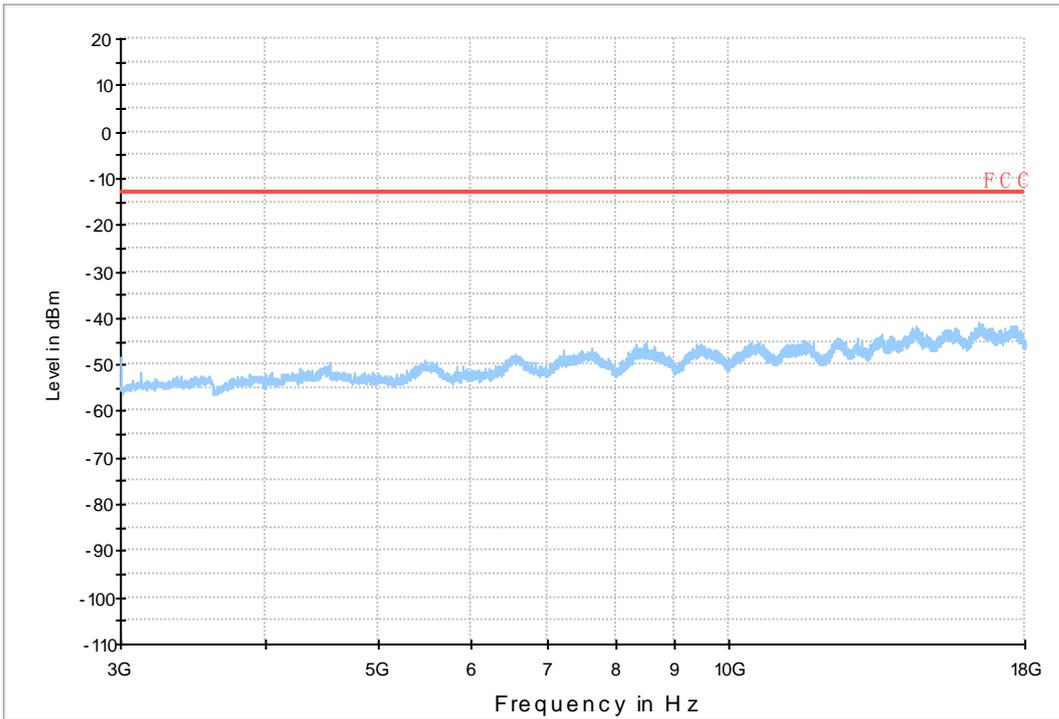
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART 24 W CDMA1900_L



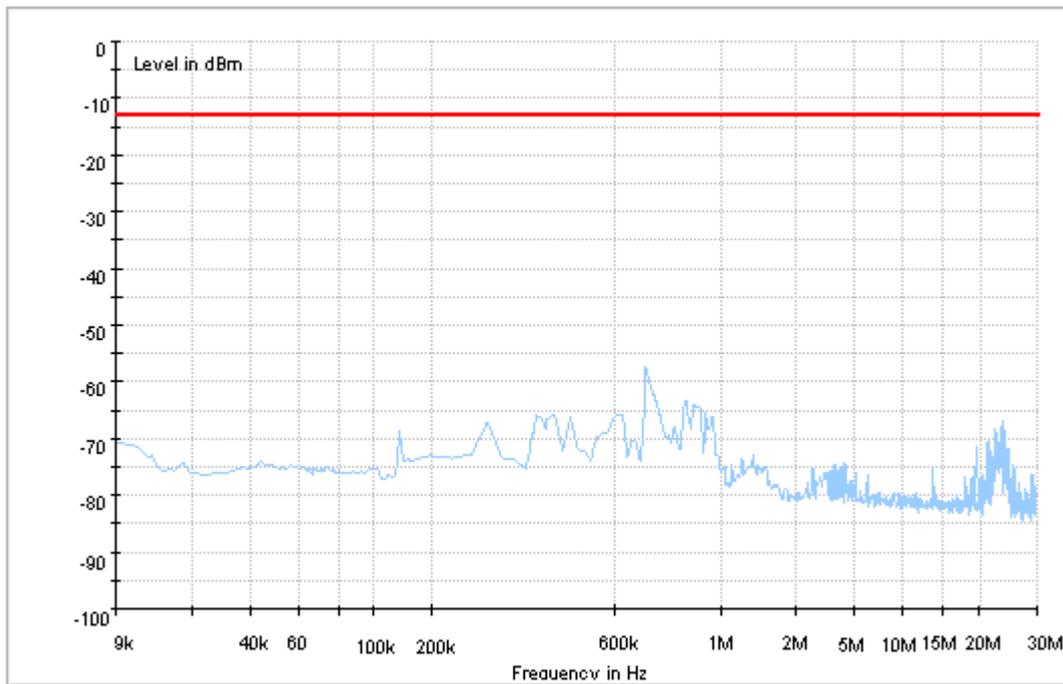
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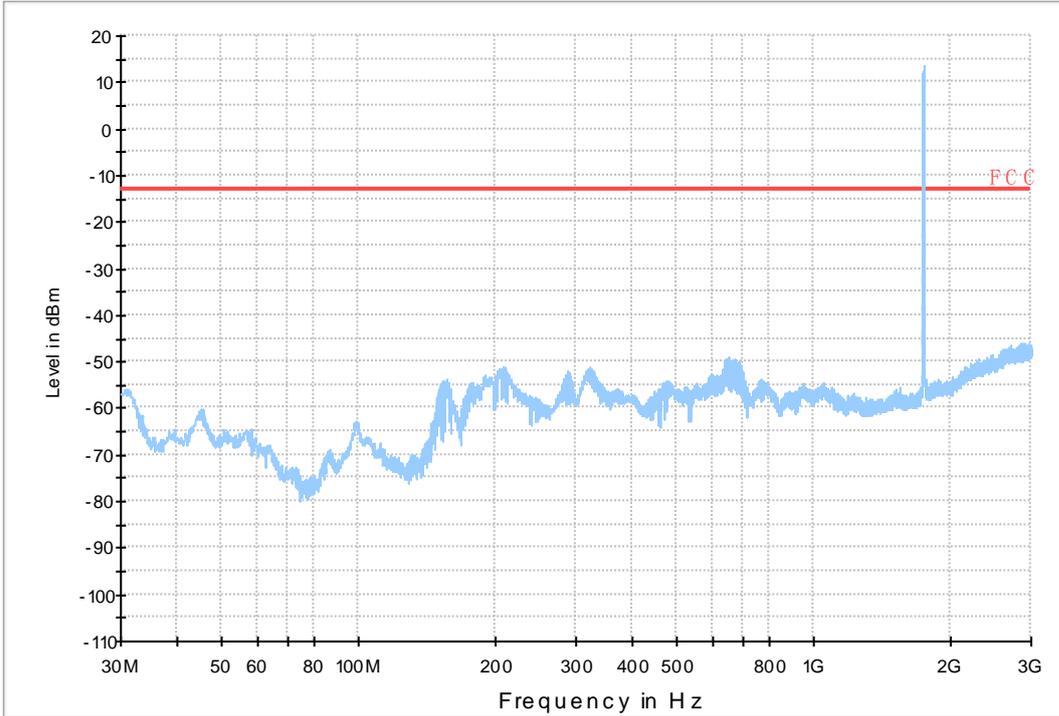
7.2 For UMTS

7.2.1 Test Band = WCDMA1700_Ant1

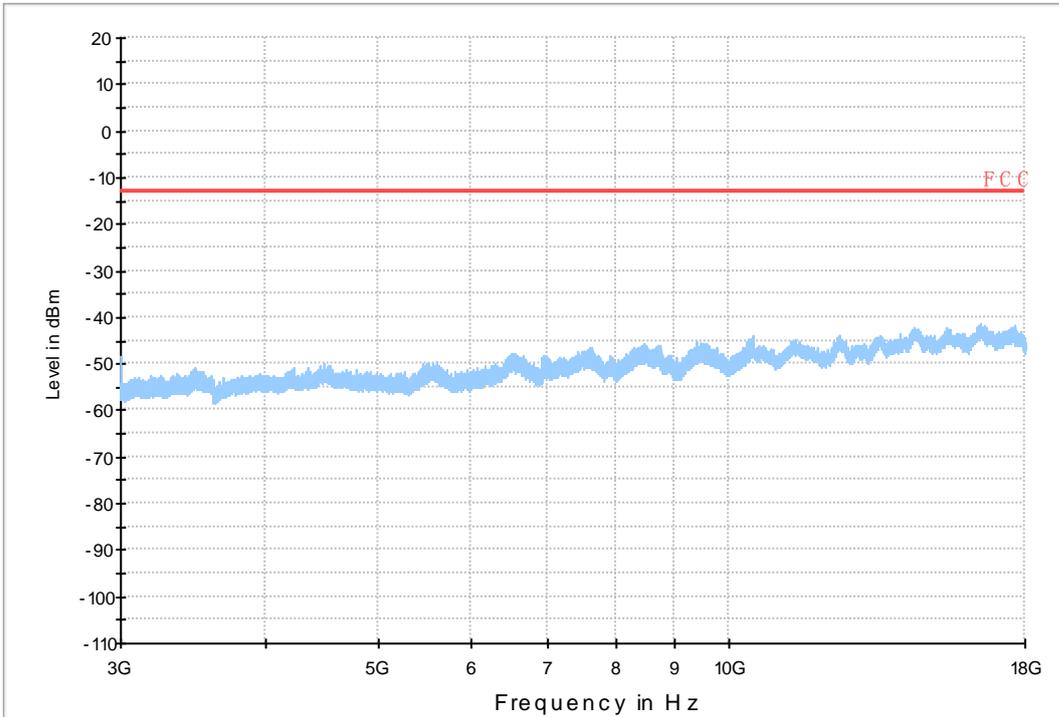
7.2.1.1 Test Mode = UMTS/TM1



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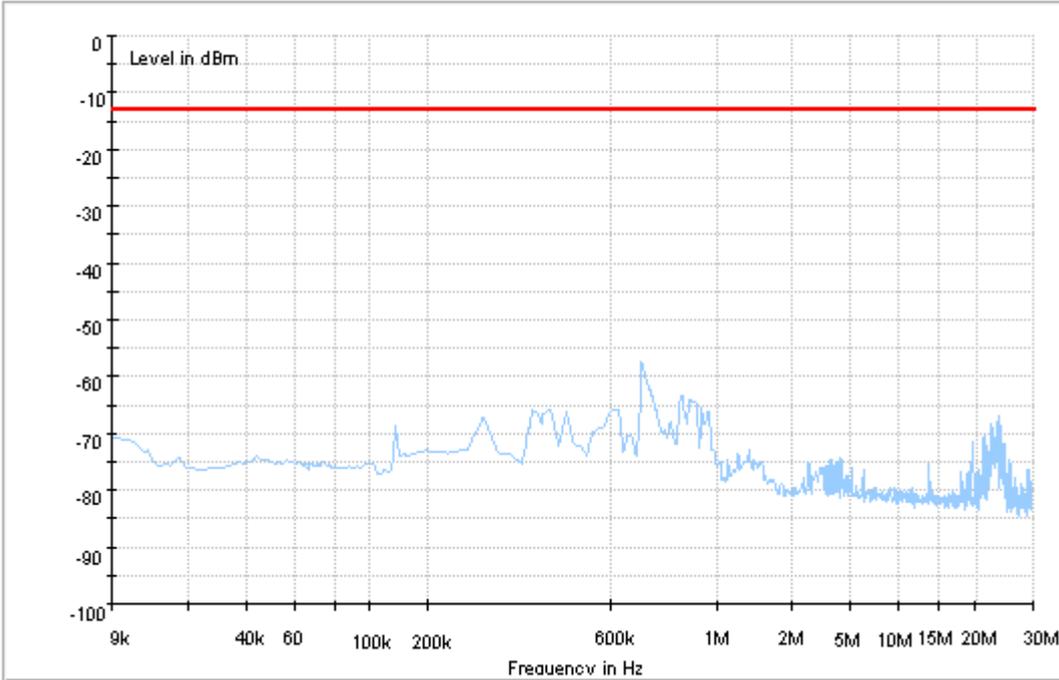


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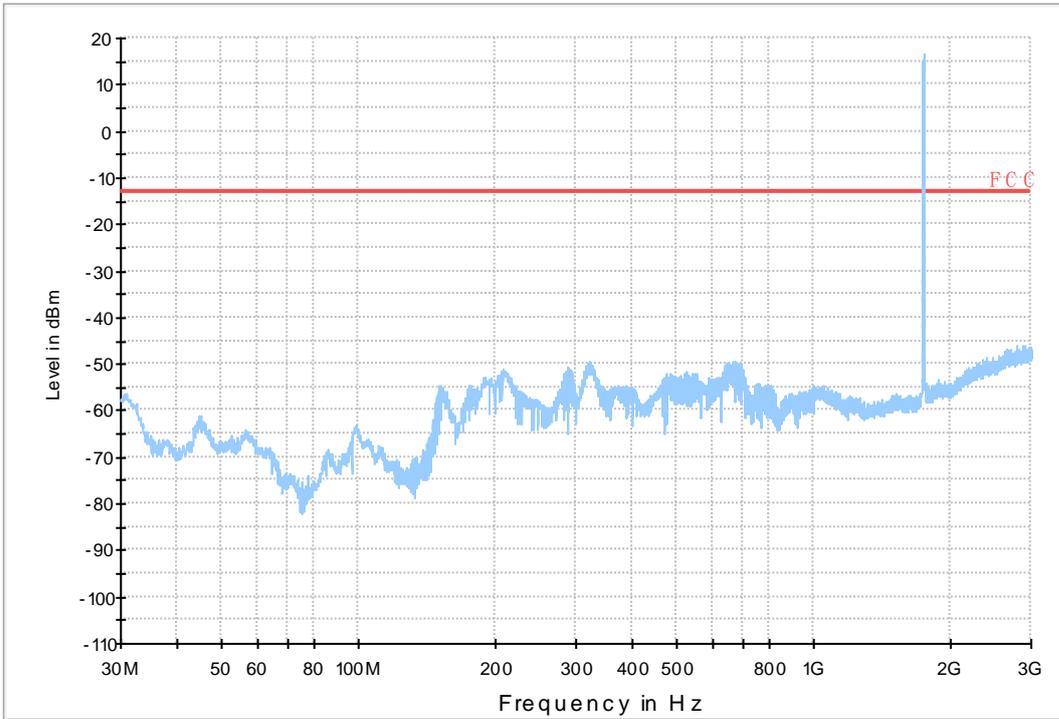


7.2.2 Test Band = WCDMA1700_Ant2

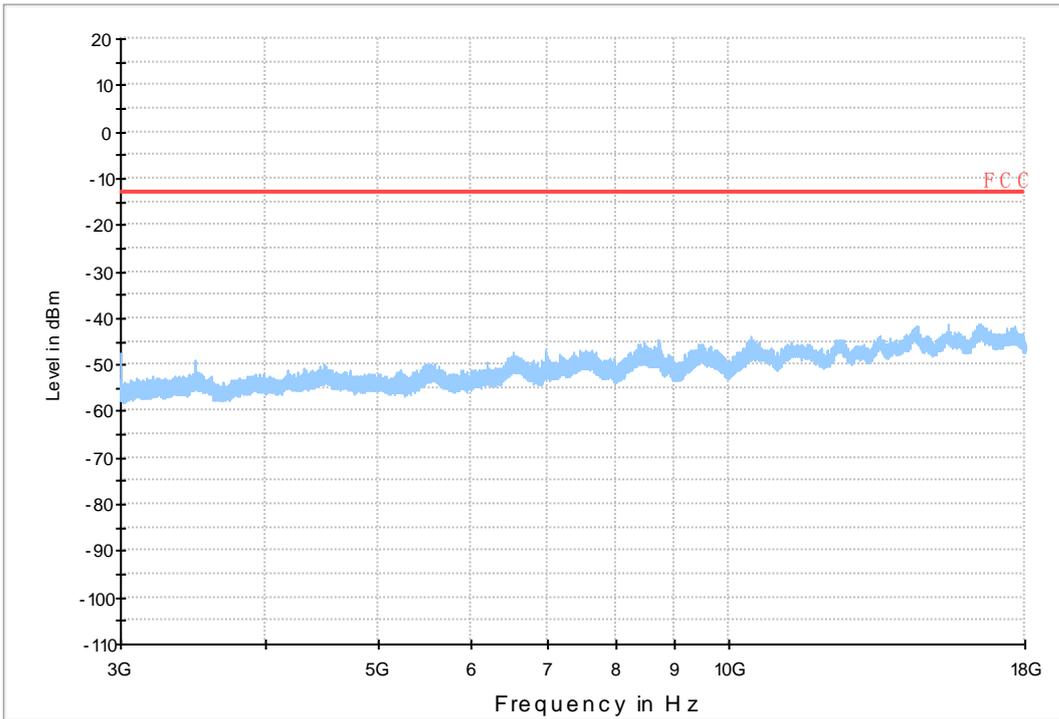
7.2.2.1 Test Mode = UMTS/TM1



Copy of FCC PART 27 W CDMA1700_L



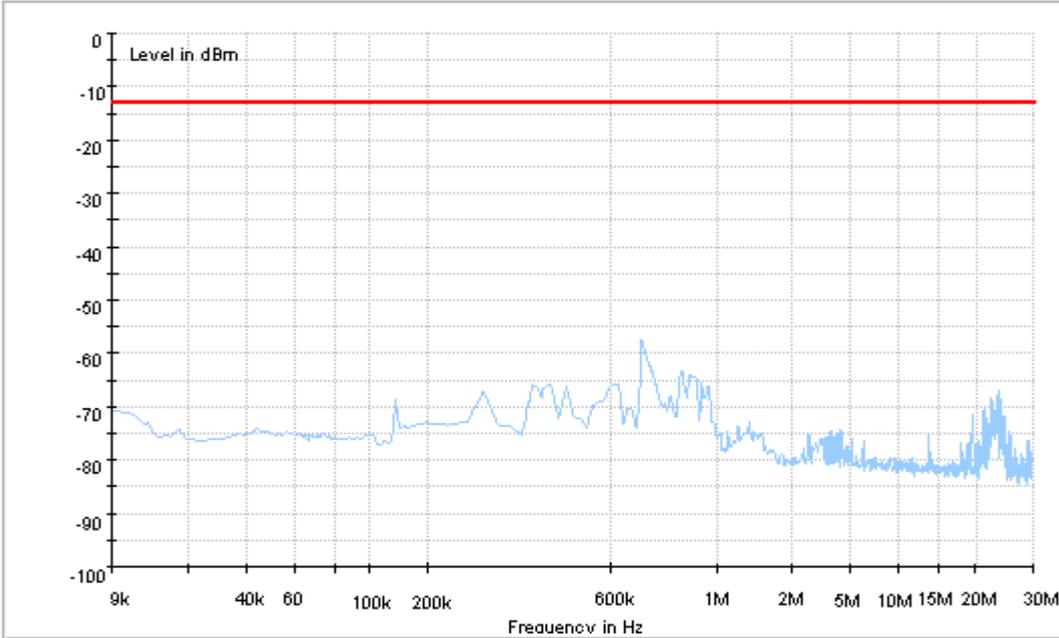
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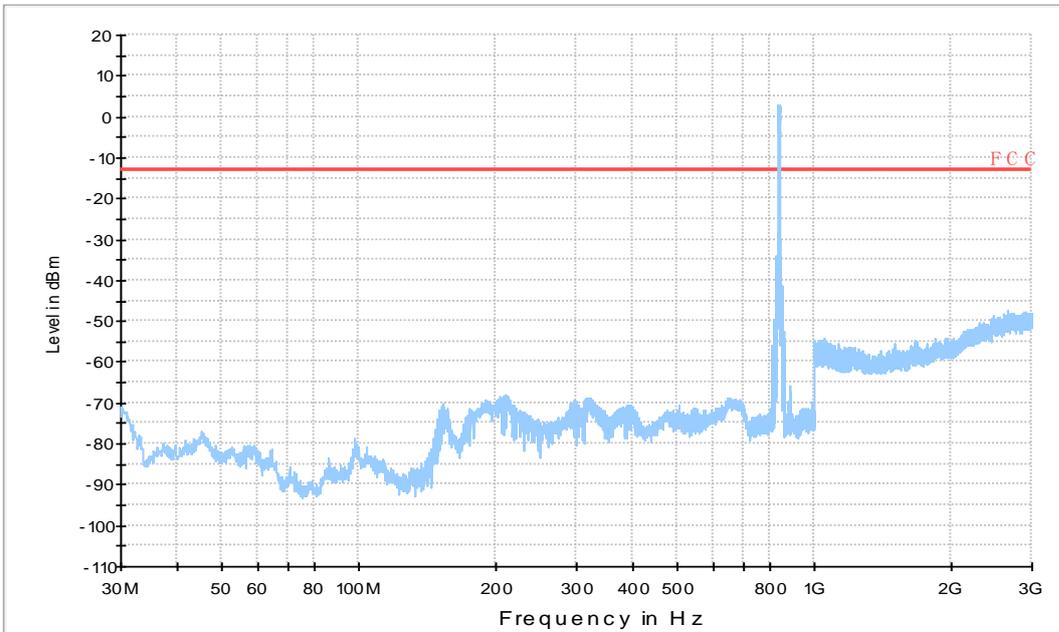
7.3 For UMTS

7.3.1 Test Band = WCDMA850_Ant1

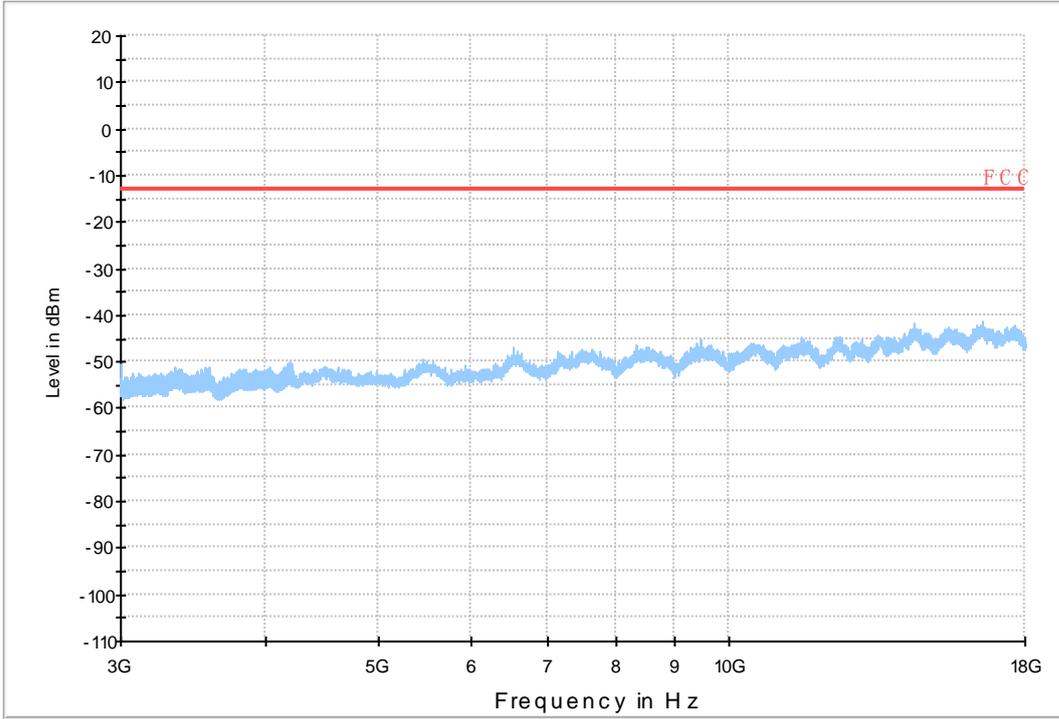
7.3.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

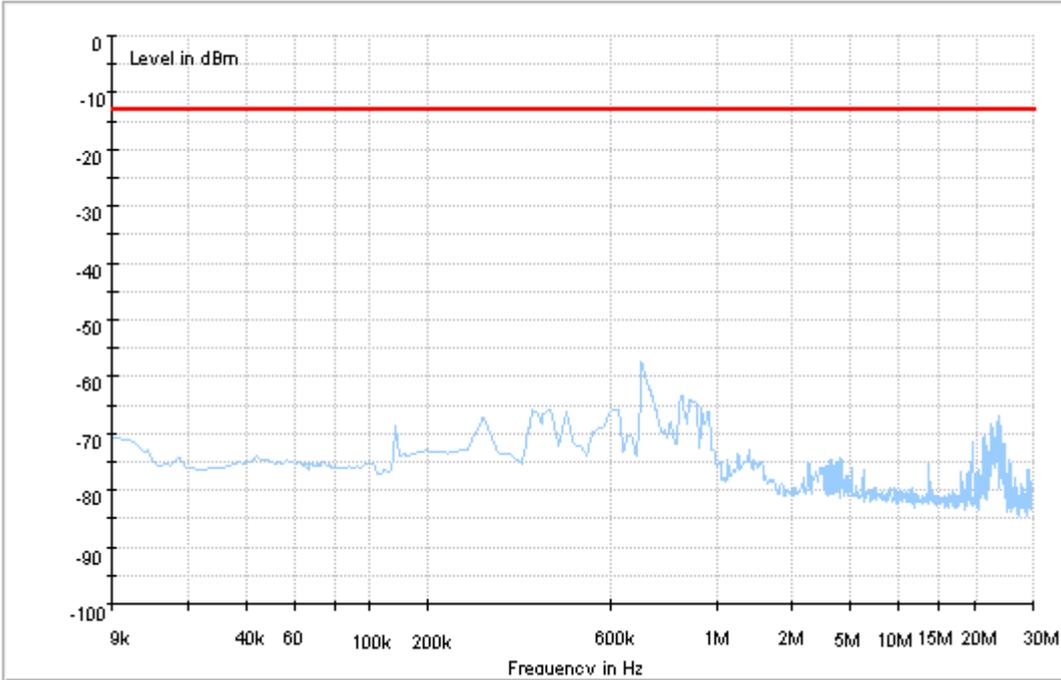


Copy of FCC PART22 W CDMA850_H

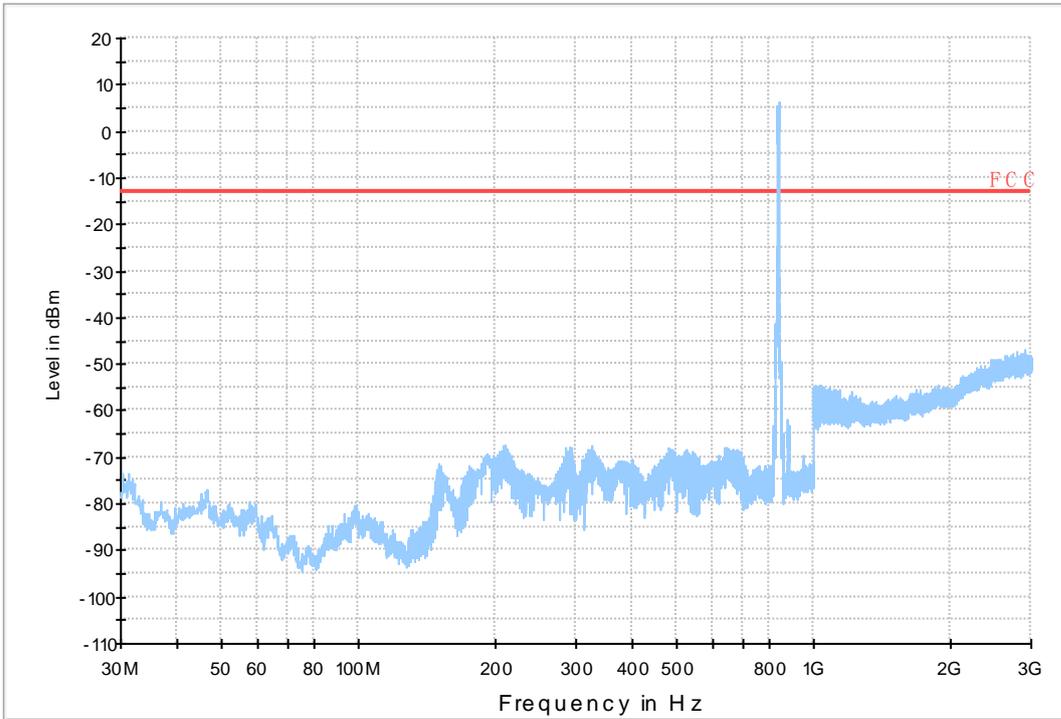


7.3.2 Test Band = WCDMA850_Ant2

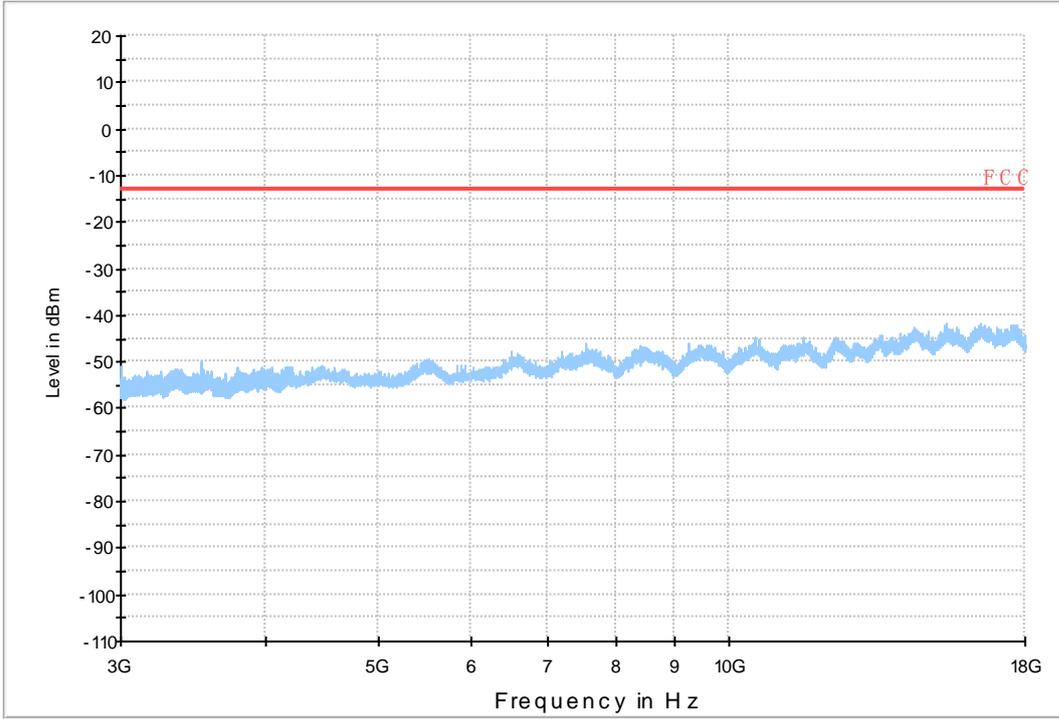
7.3.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L



Copy of FCC PART22 W CDMA850_H



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1 Frequency 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	11.09	0.01342	PASS
				VN	56.47	0.06833	PASS
				VH	6.53	0.0079	PASS
		MCH	TN	VL	-9.37	-0.0112	PASS
				VN	2.58	0.00308	PASS
				VH	2.84	0.0034	PASS
		HCH	TN	VL	1.71	0.00202	PASS
				VN	5.11	0.00604	PASS
				VH	7.45	0.0088	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	8.54	0.01033	PASS
				-20	4.39	0.00531	PASS
				-10	2.41	0.00292	PASS
				0	-4.58	-0.00554	PASS
				10	-4.32	-0.00523	PASS
				20	0.89	0.00108	PASS
				30	3.95	0.00478	PASS
				40	4.75	0.00575	PASS
				50	7.03	0.00851	PASS
		MCH	VN	-30	8.99	0.01075	PASS
				-20	-8.21	-0.00982	PASS
				-10	-0.99	-0.00118	PASS
				0	-3.25	-0.00389	PASS
				10	1.80	0.00215	PASS
				20	-3.25	-0.00389	PASS
				30	-1.14	-0.00136	PASS
				40	3.52	0.00421	PASS
				50	5.91	0.00707	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		HCH	VN	-30	-4.62	-0.00546	PASS
				-20	2.53	0.00299	PASS
				-10	6.16	0.00728	PASS
				0	-0.12	-0.00014	PASS
				10	2.53	0.00299	PASS
				20	6.45	0.00762	PASS
				30	-5.34	-0.00631	PASS
				40	-3.28	-0.00387	PASS
				50	-4.27	-0.00504	PASS

8.2 For UMTS

8.2.1 Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1700	UMTS/TM1	LCH	TN	VL	-2.08	-0.00121	PASS
				VN	7.78	0.00454	PASS
				VH	2.94	0.00172	PASS
		MCH	TN	VL	-3.31	-0.00191	PASS
				VN	0.55	0.00032	PASS
				VH	-0.02	-0.00001	PASS
		HCH	TN	VL	1.42	0.00081	PASS
				VN	1.34	0.00076	PASS
				VH	-2.70	-0.00154	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-4.93	-0.00266	PASS
				VN	-2.44	-0.00132	PASS
				VH	-0.75	-0.0004	PASS
		MCH	TN	VL	-3.62	-0.00193	PASS
				VN	1.22	0.00065	PASS
				VH	-4.82	-0.00256	PASS
		HCH	TN	VL	-2.85	-0.00149	PASS
				VN	1.98	0.00104	PASS
				VH	-5.23	-0.00274	PASS

8.2.2 Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1700	UMTS/TM1	LCH	VN	-30	4.75	0.00277	PASS
				-20	6.13	0.00358	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict		
				-10	1.51	0.00088	PASS		
				0	-1.89	-0.0011	PASS		
				10	3.85	0.00225	PASS		
				20	3.75	0.00219	PASS		
				30	7.11	0.00415	PASS		
				40	-1.89	-0.0011	PASS		
				50	8.73	0.0051	PASS		
		MCH	VN	-30	4.68	0.0027	PASS		
				-20	-3.52	-0.00203	PASS		
				-10	4.91	0.00283	PASS		
				0	2.72	0.00157	PASS		
				10	2.43	0.0014	PASS		
				20	6.35	0.00367	PASS		
				30	-4.93	-0.00285	PASS		
		HCH	VN	40	8.47	0.00489	PASS		
				50	-1.05	-0.00061	PASS		
				-30	1.75	0.001	PASS		
				-20	-1.88	-0.00107	PASS		
				-10	-3.30	-0.00188	PASS		
				0	2.03	0.00116	PASS		
				10	-5.71	-0.00326	PASS		
		WCDMA1900	UMTS/TM1	LCH	VN	20	4.84	0.00276	PASS
						30	9.40	0.00536	PASS
						40	1.71	0.00098	PASS
						50	8.29	0.00473	PASS
						-30	-0.58	-0.00031	PASS
						-20	-2.08	-0.00112	PASS
-10	-1.86					-0.001	PASS		
0	-3.56			-0.00192	PASS				
MCH	VN			10	-0.21	-0.00011	PASS		
				20	2.79	0.00151	PASS		
		30	4.29	0.00232	PASS				
				40	6.82	0.00368	PASS		
				50	5.36	0.00289	PASS		
				-30	7.57	0.00403	PASS		
				-20	6.21	0.0033	PASS		
				-10	0.08	0.00004	PASS		
				0	4.84	0.00257	PASS		
				10	2.47	0.00131	PASS		
				20	7.35	0.00391	PASS		



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				30	0.08	0.00004	PASS
				40	3.07	0.00163	PASS
				50	-4.01	-0.00213	PASS
		HCH	VN	-30	0.02	0.00001	PASS
				-20	2.75	0.00144	PASS
				-10	-0.41	-0.00021	PASS
				0	-0.23	-0.00012	PASS
				10	-1.97	-0.00103	PASS
				20	-5.91	-0.0031	PASS
				30	-10.30	-0.0054	PASS
				40	2.29	0.0012	PASS
				50	1.75	0.00092	PASS

END