



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	24.12	19.07	38.5	PASS
		MCH	24.05	19	38.5	PASS
		HCH	24.01	18.96	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.92	25.52	30	PASS
		MCH	23.77	25.37	30	PASS
		HCH	23.73	25.33	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.68	25.68	33	PASS
		MCH	23.44	25.44	33	PASS
		HCH	23.43	25.43	33	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
WCDMA850	UMTS/TM1	LCH	2.97	13	PASS
		MCH	2.97	13	PASS
		HCH	2.86	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.11	13	PASS
		MCH	3.16	13	PASS
		HCH	3.14	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.06	13	PASS
		MCH	3.25	13	PASS
		HCH	2.99	13	PASS

3Appendix_C: Modulation Characteristics

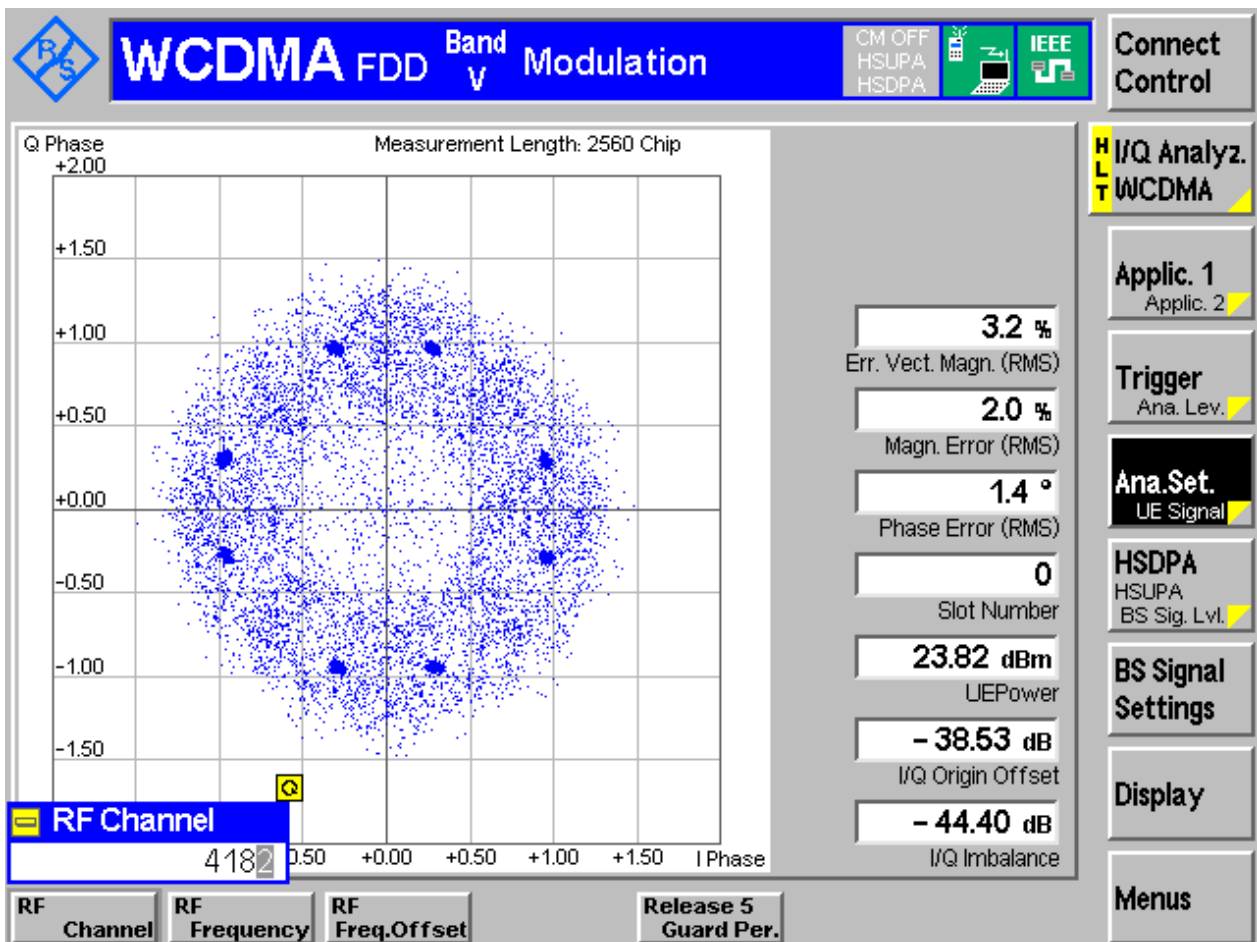
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

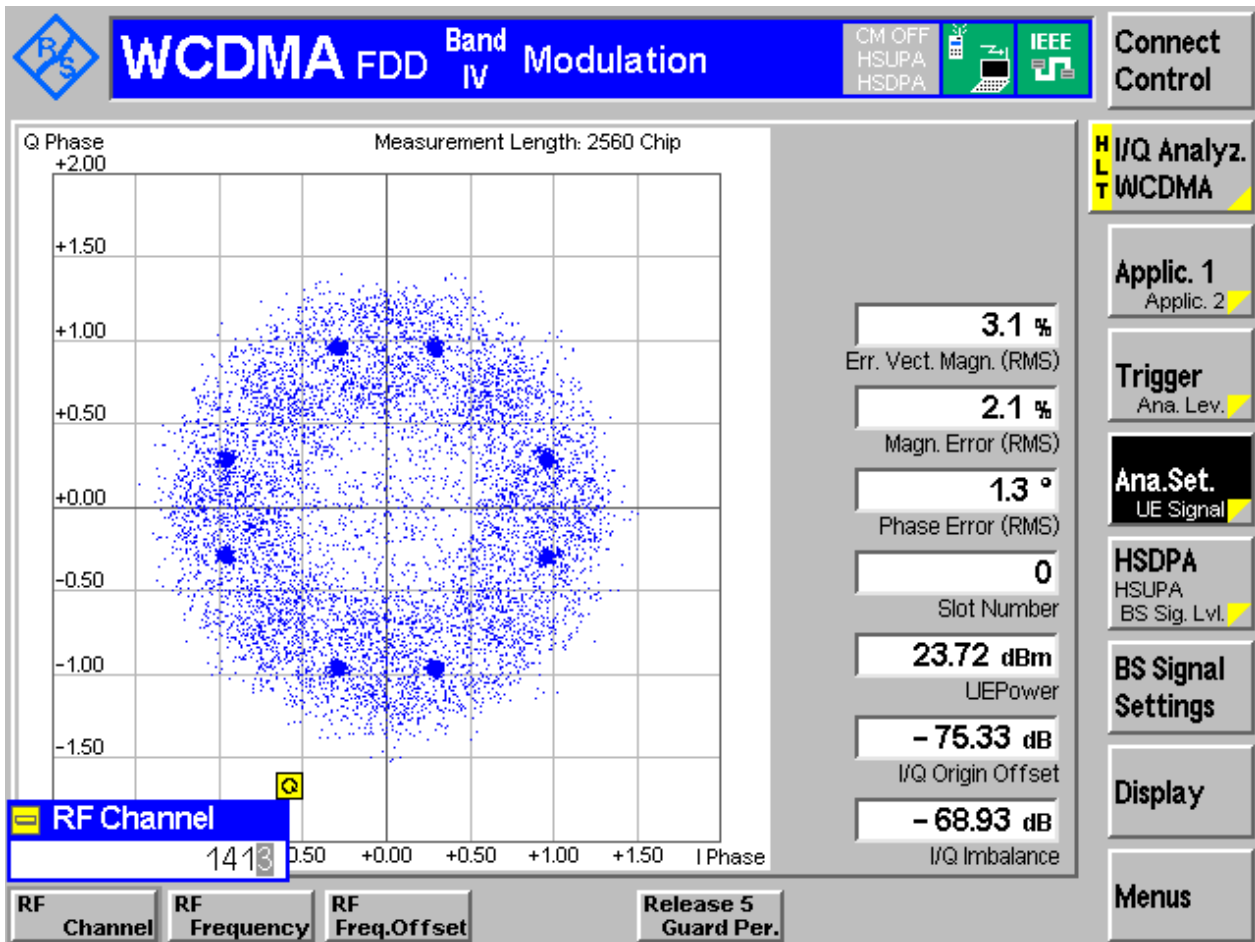
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

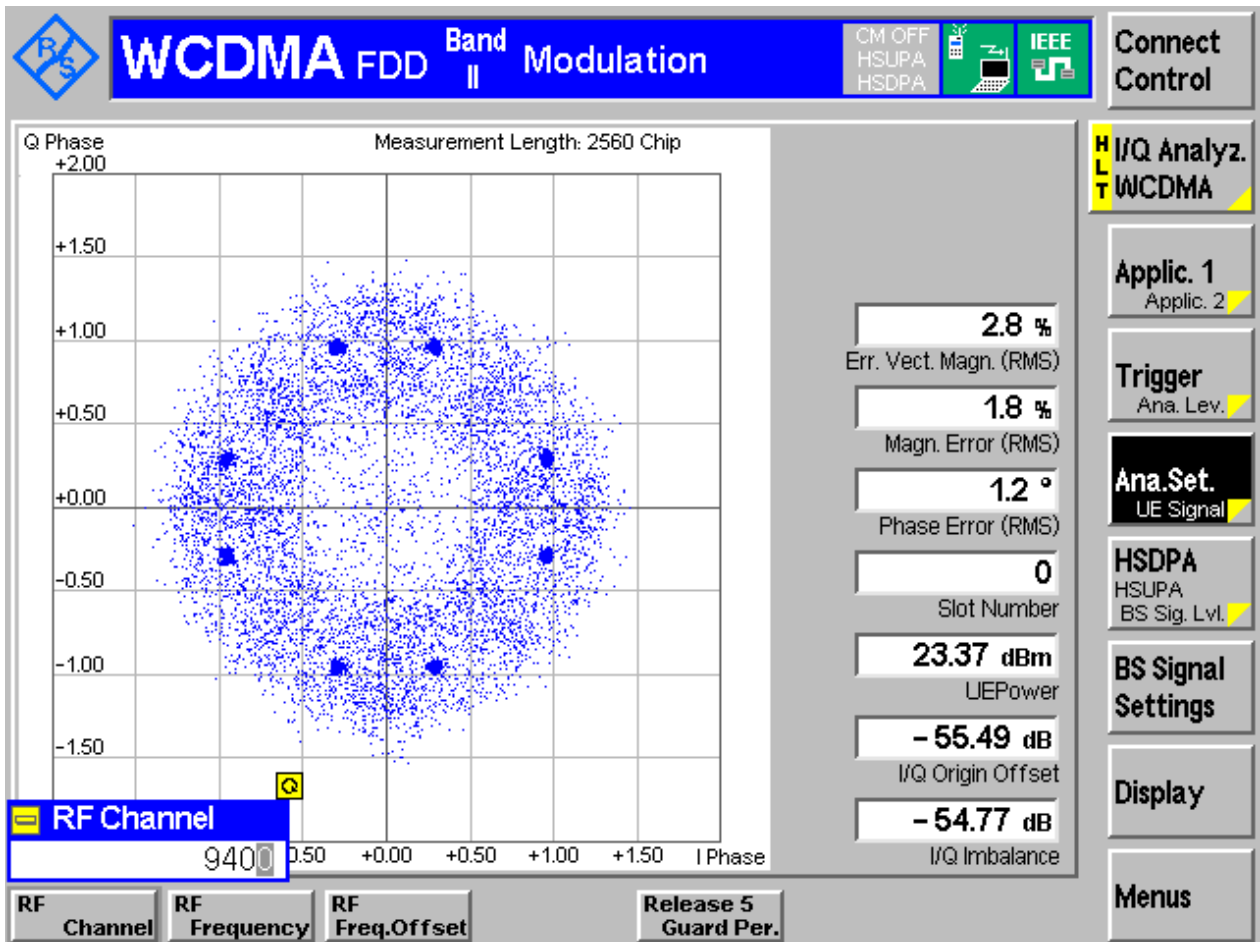
3.1.2.1.1 Test Channel = MCH



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	4.14	4.71	Pass
		MCH	4.14	4.72	Pass
		HCH	4.15	4.73	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.69	Pass
		MCH	4.14	4.71	Pass
		HCH	4.15	4.70	Pass
WCDMA1900	UMTS/TM1	LCH	4.16	4.71	Pass
		MCH	4.16	4.71	Pass
		HCH	4.14	4.71	Pass



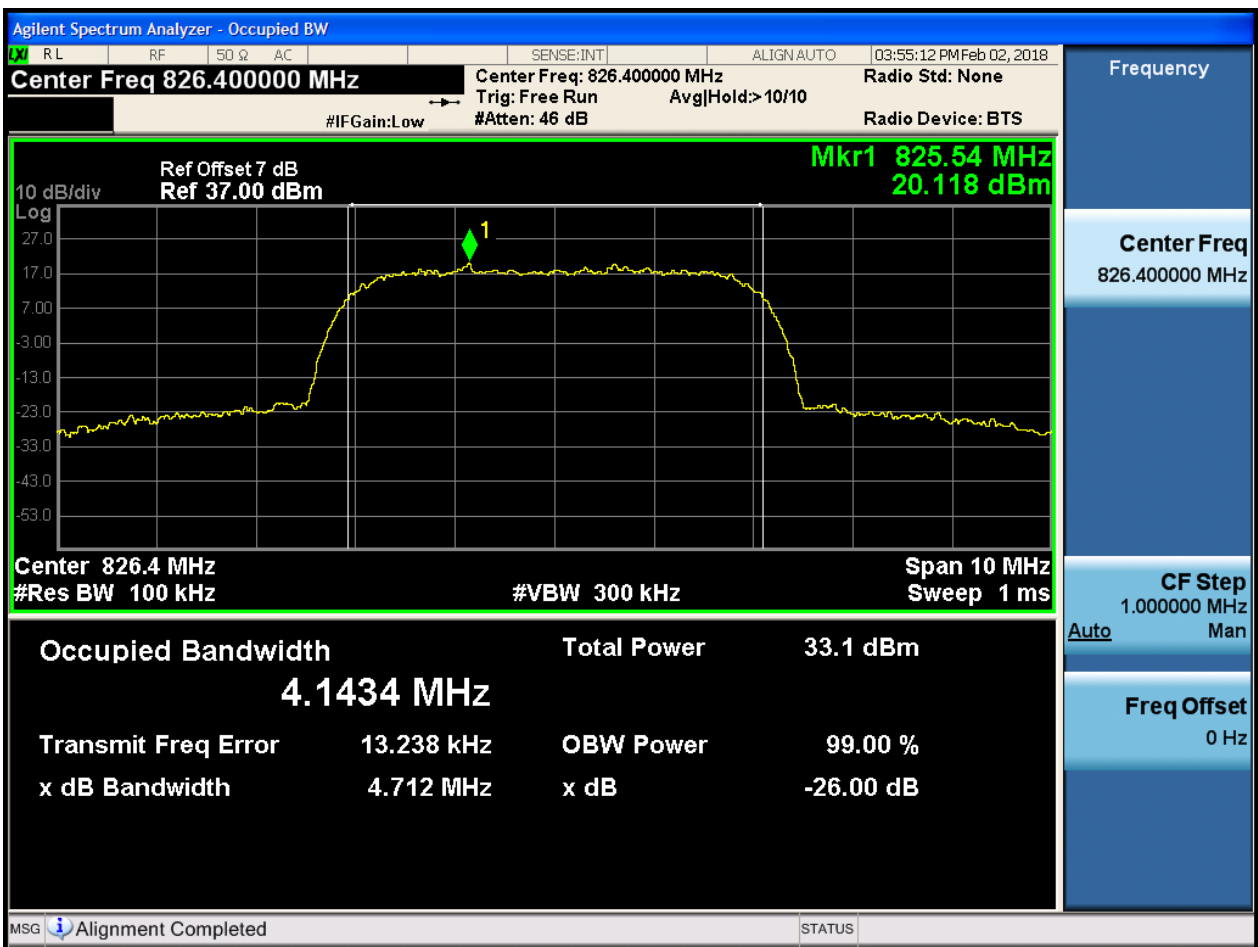
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

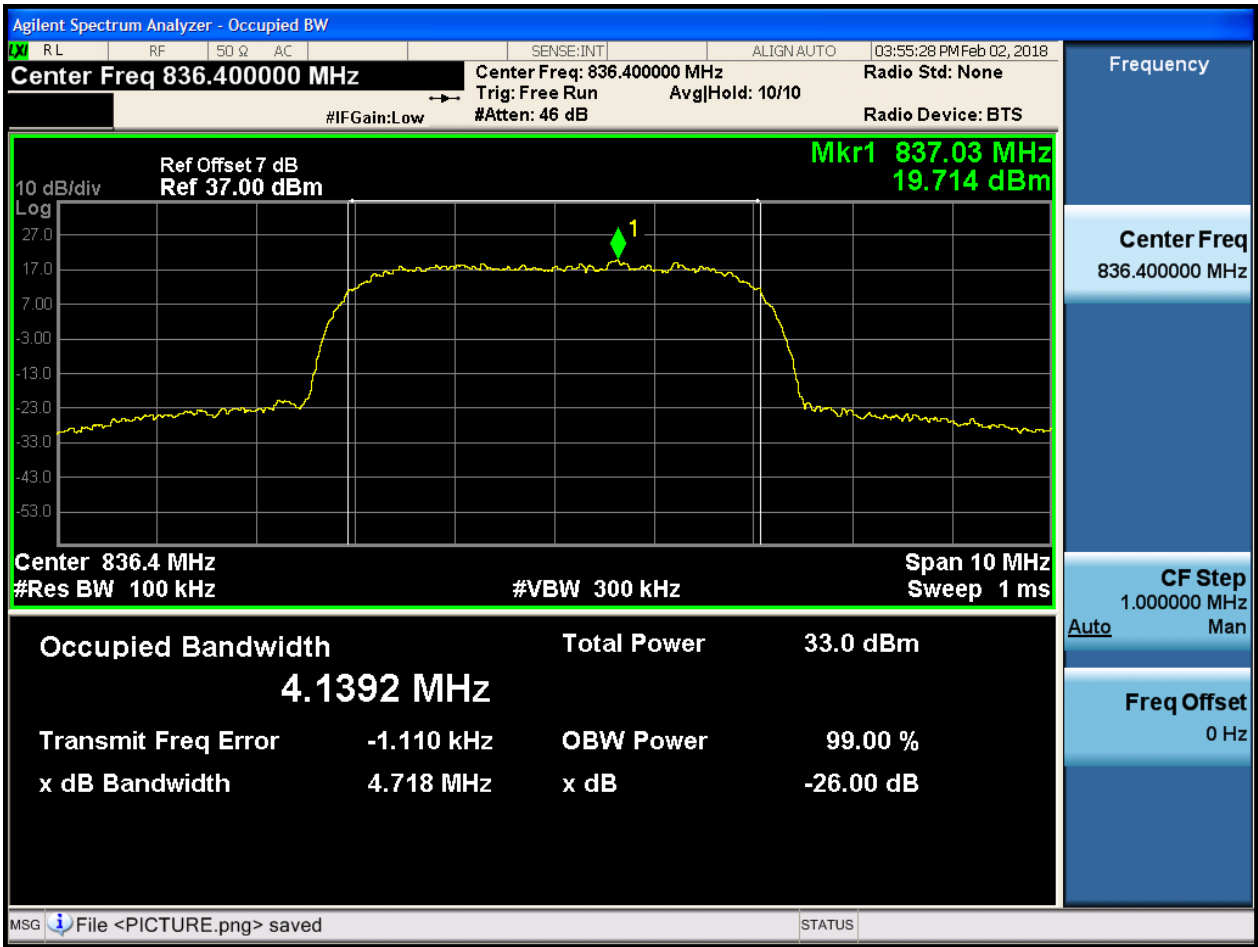
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



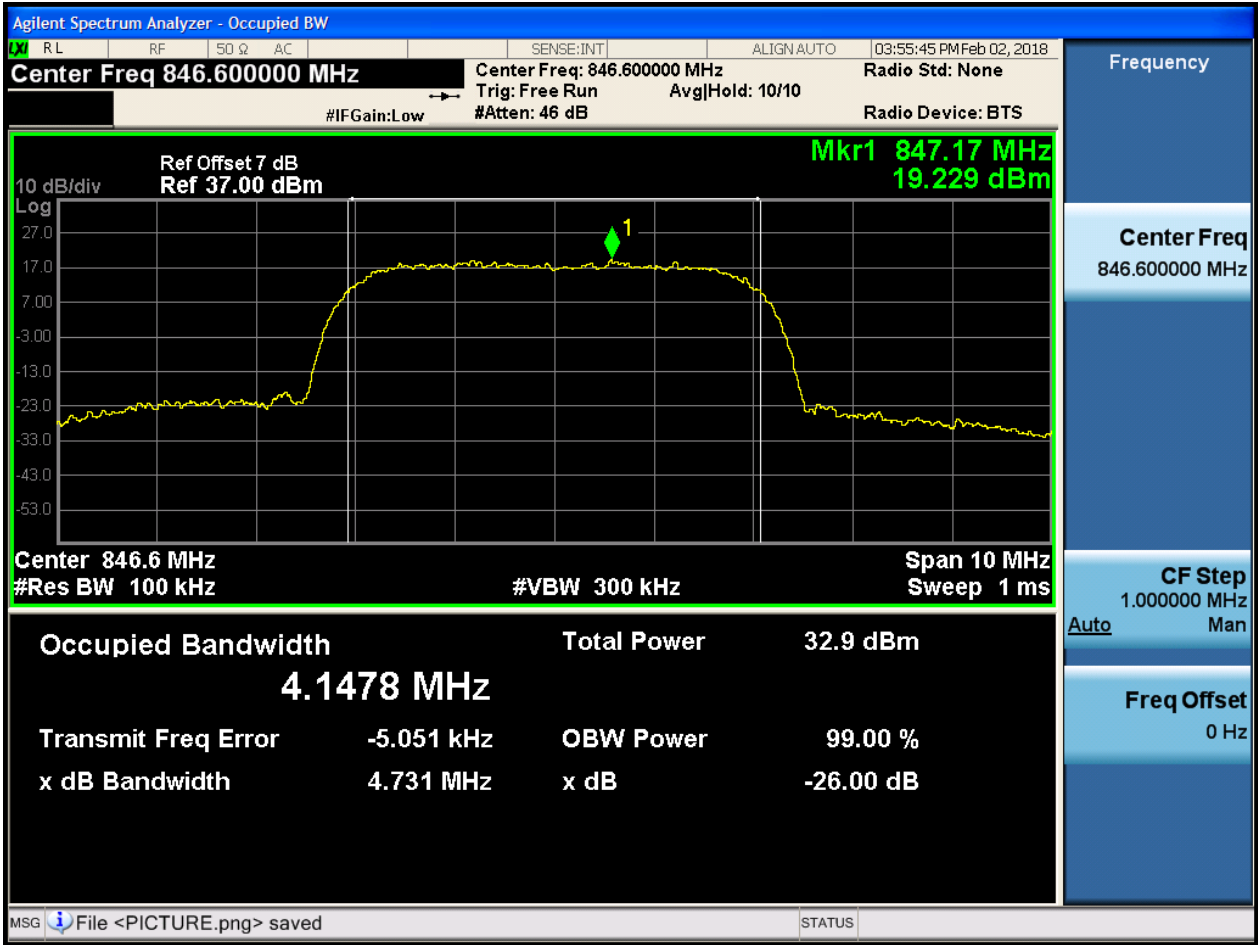


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

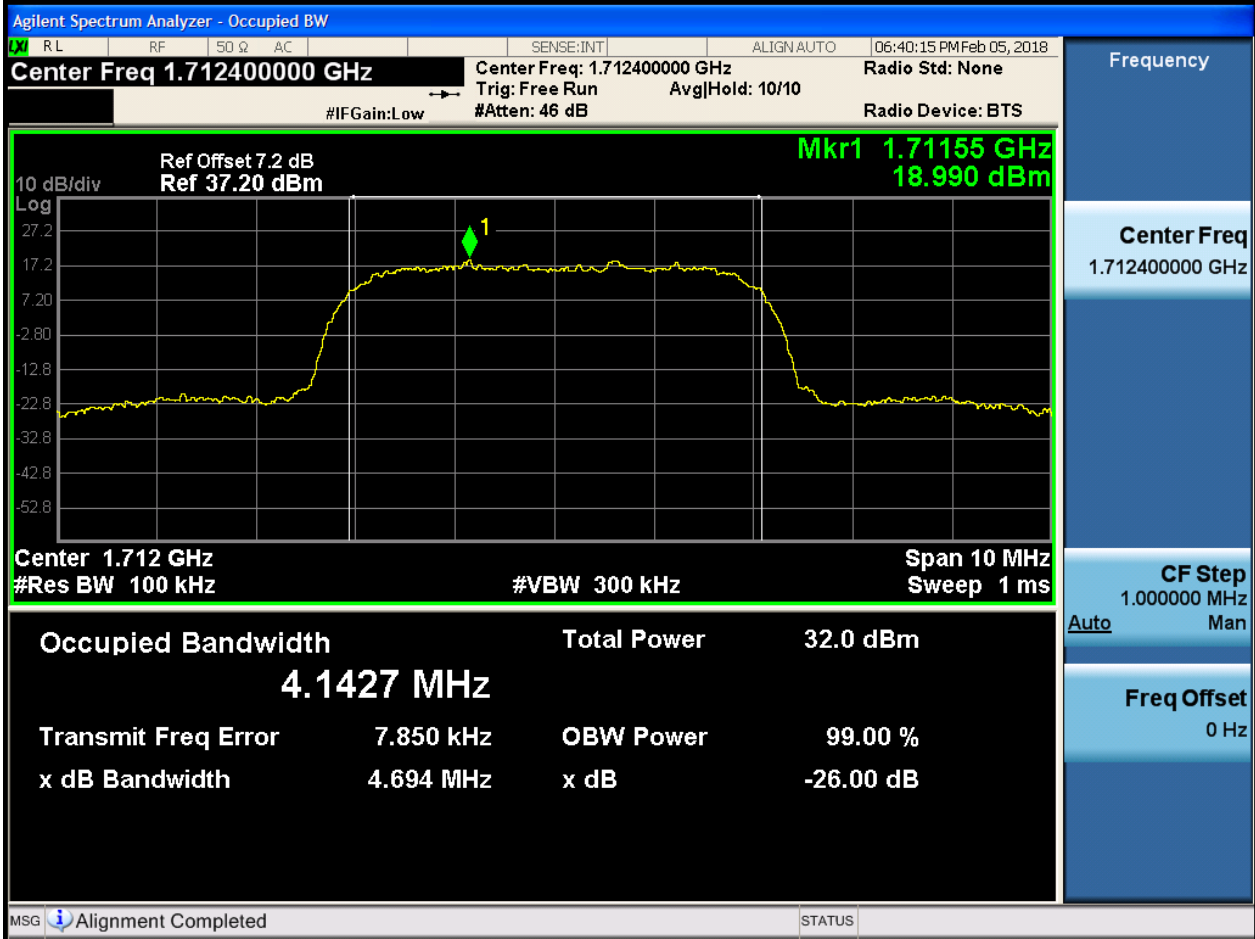




4.1.2 Test Band = WCDMA1700

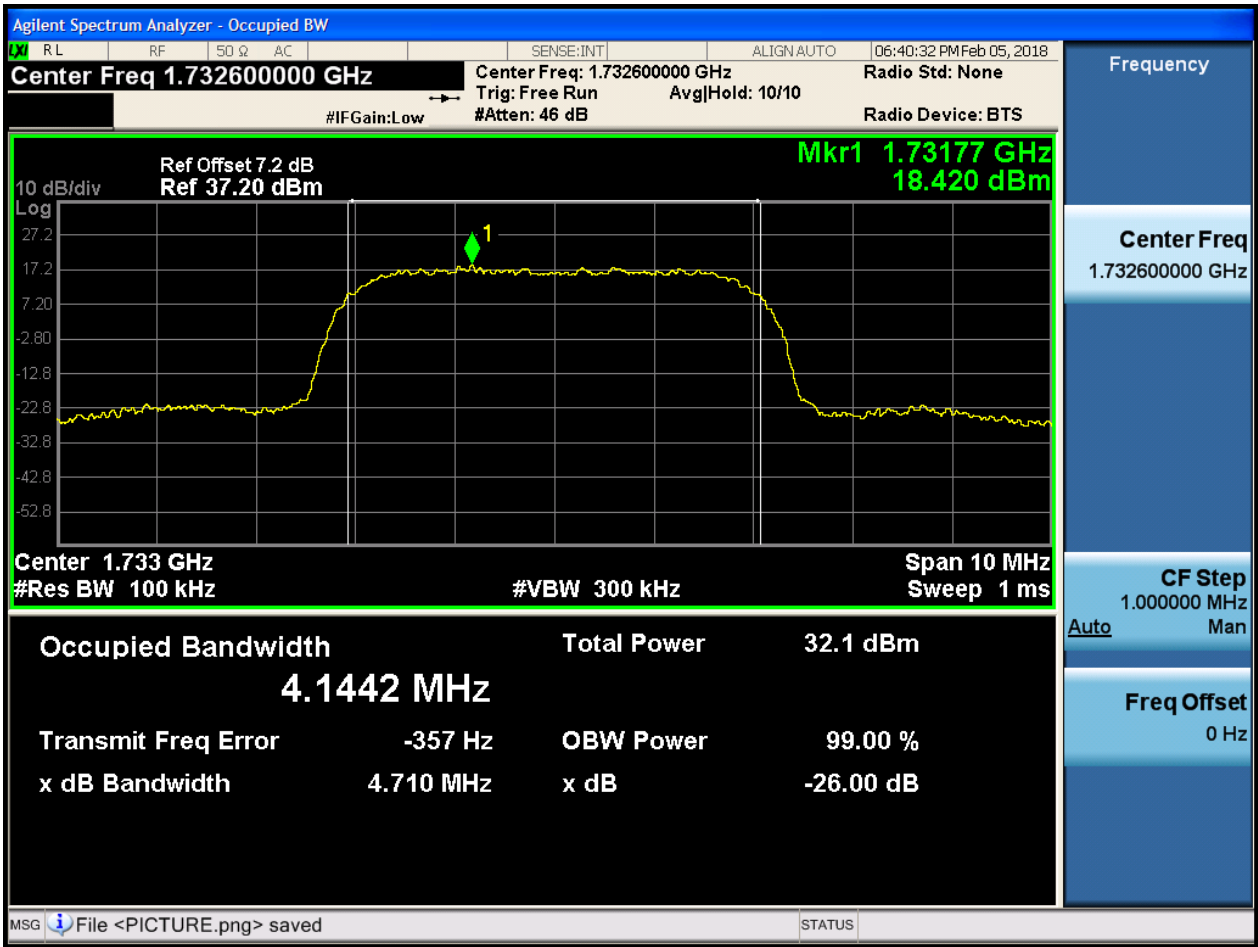
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



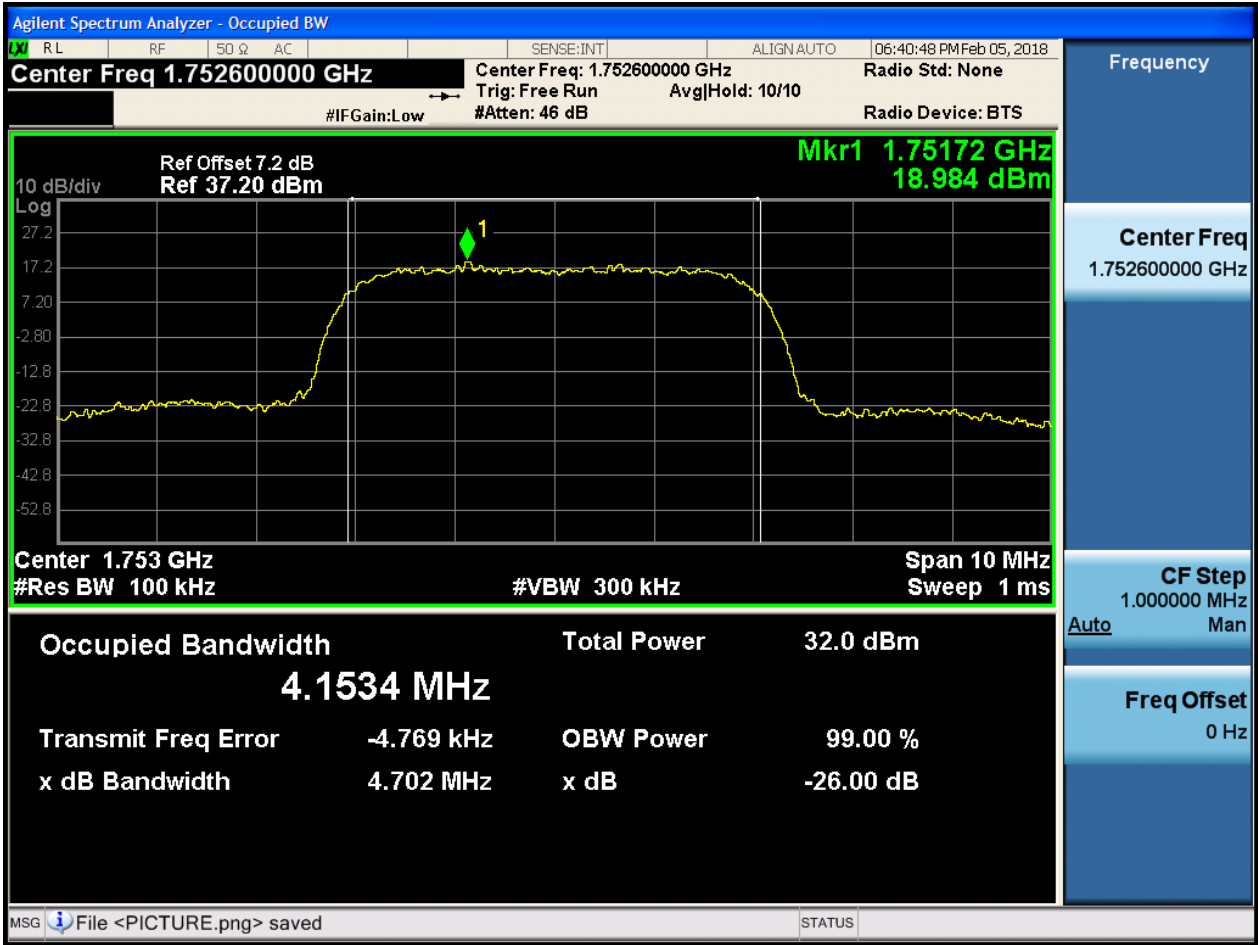


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

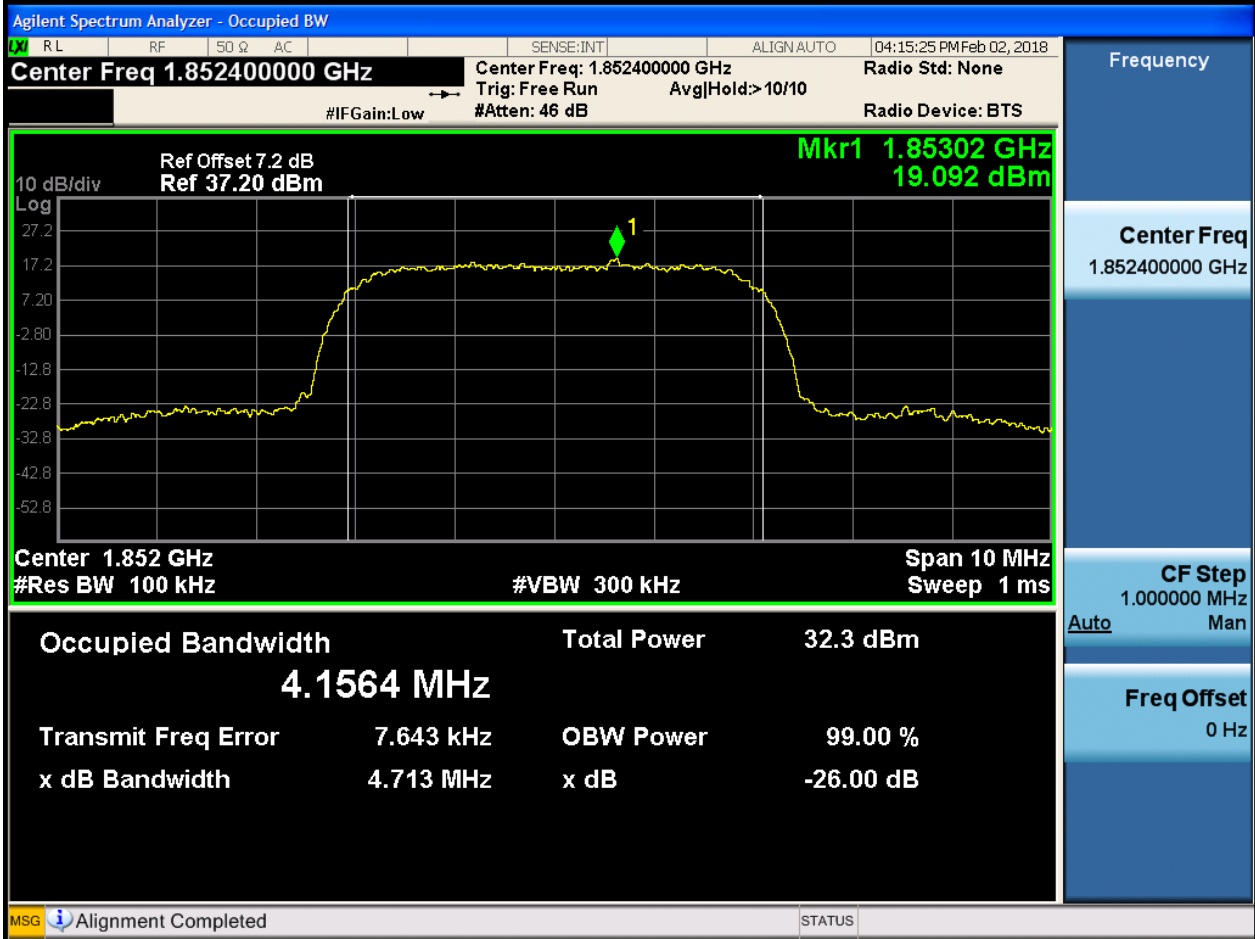




4.1.3 Test Band = WCDMA1900

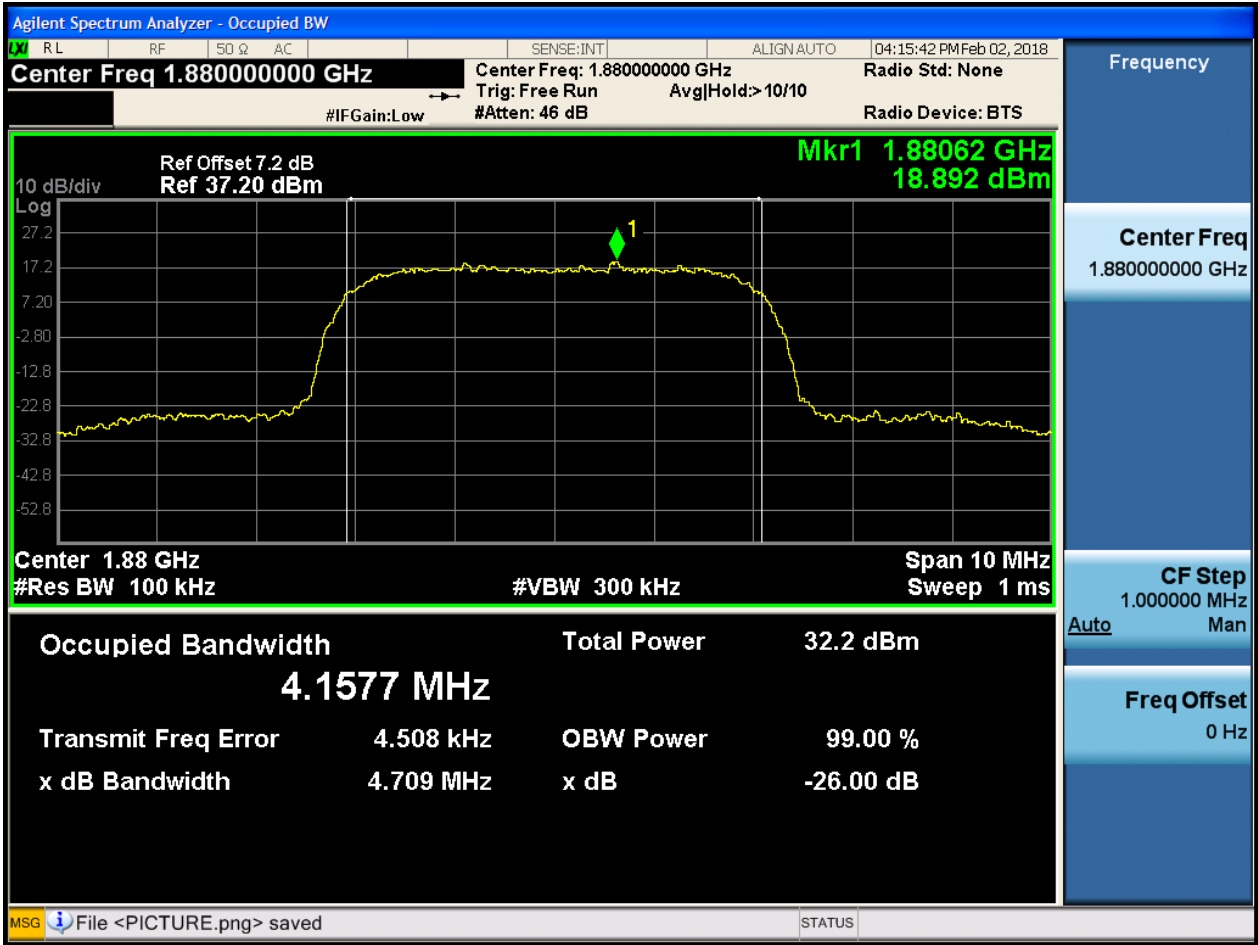
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



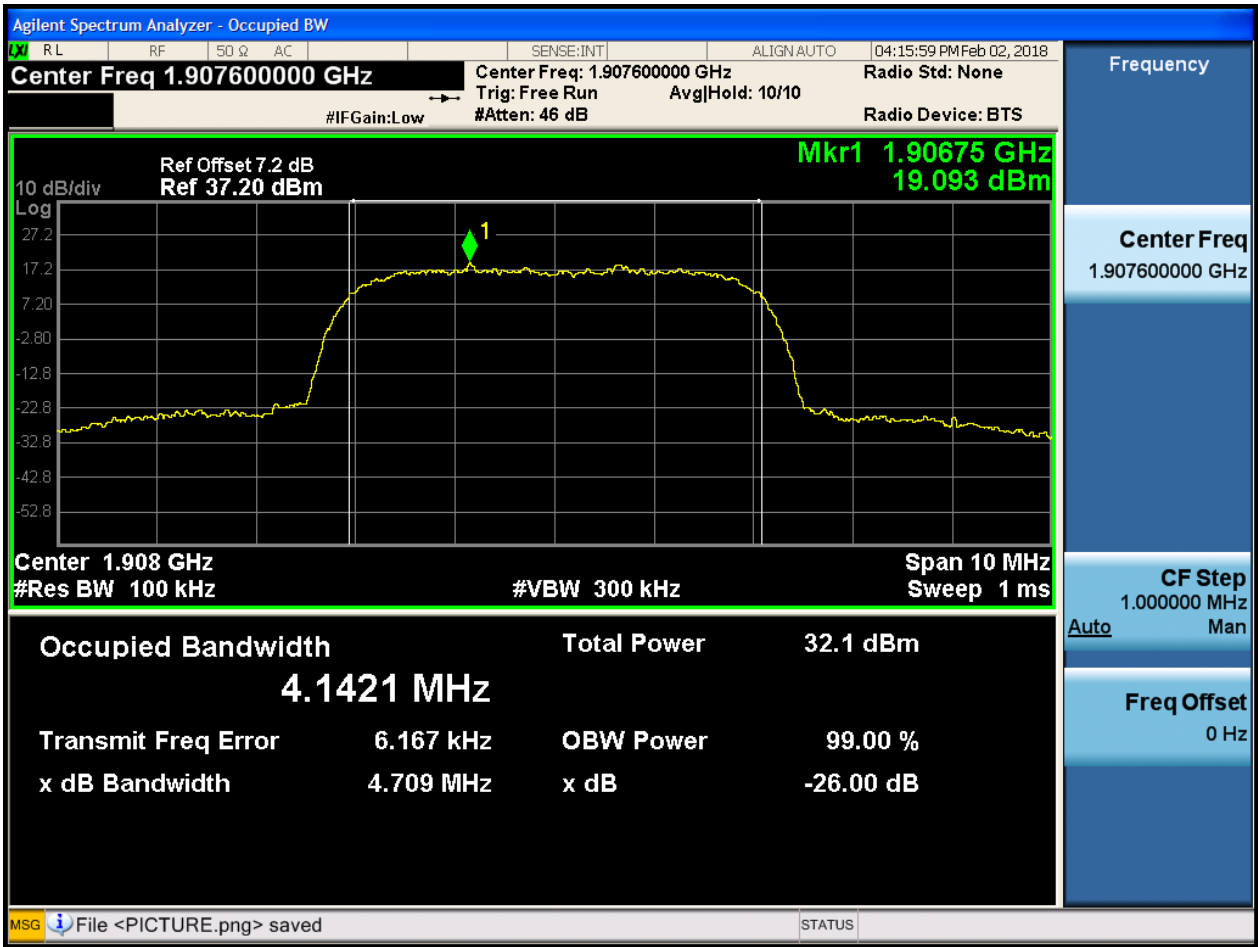


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

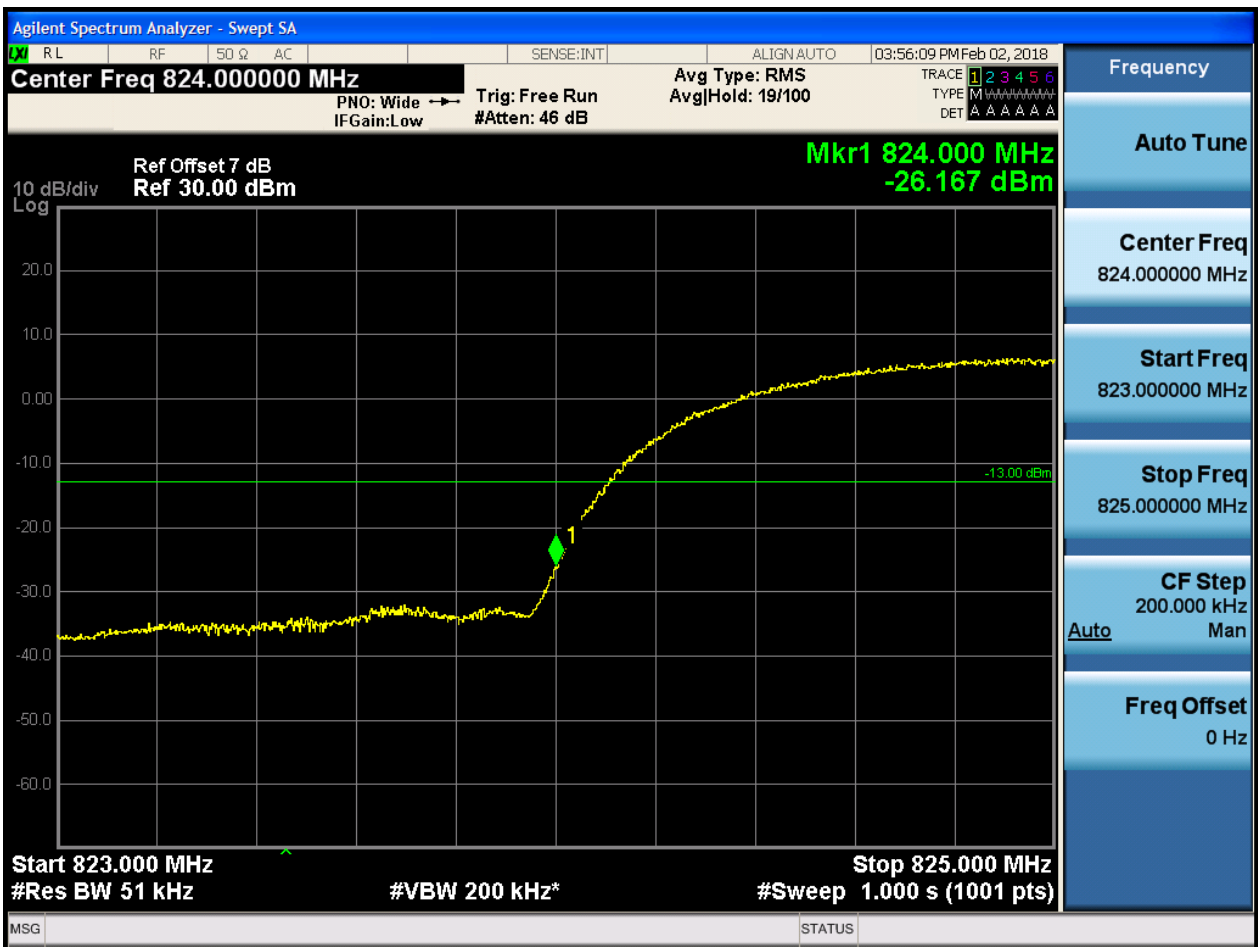
Part I - Test Plots

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

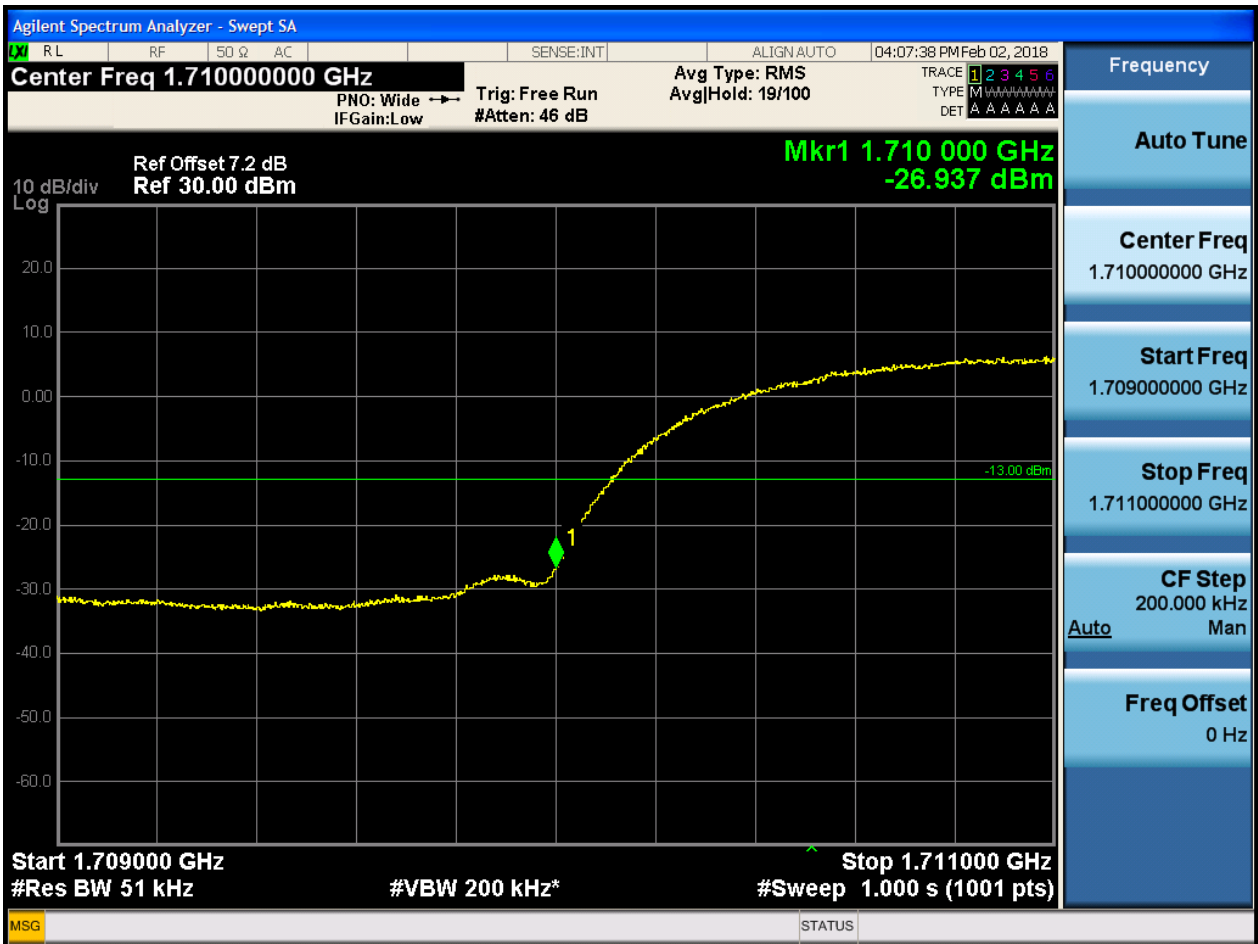




5.1.2 Test Band = WCDMA1700

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.

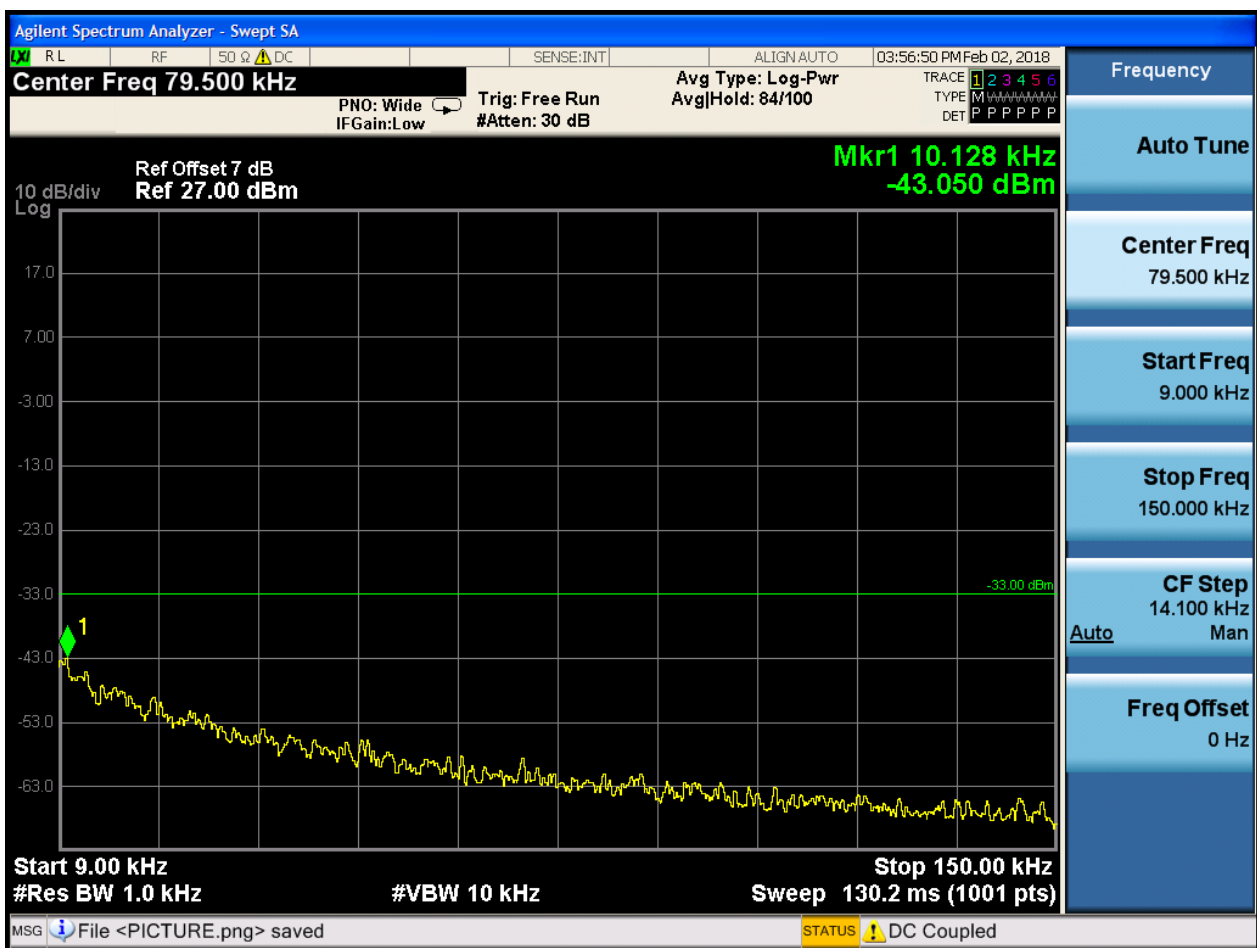
Part I - Test Plots

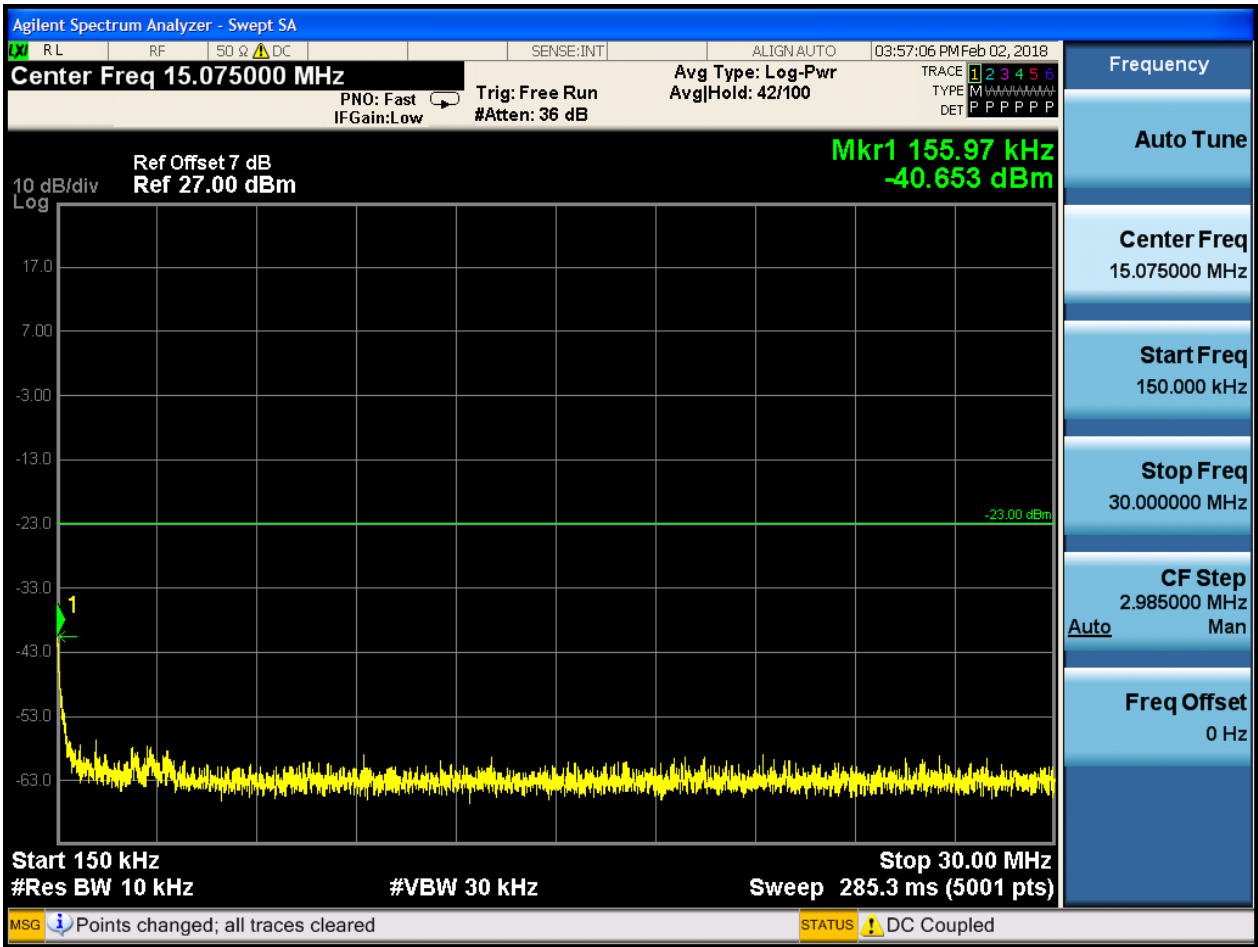
6.1 For UMTS

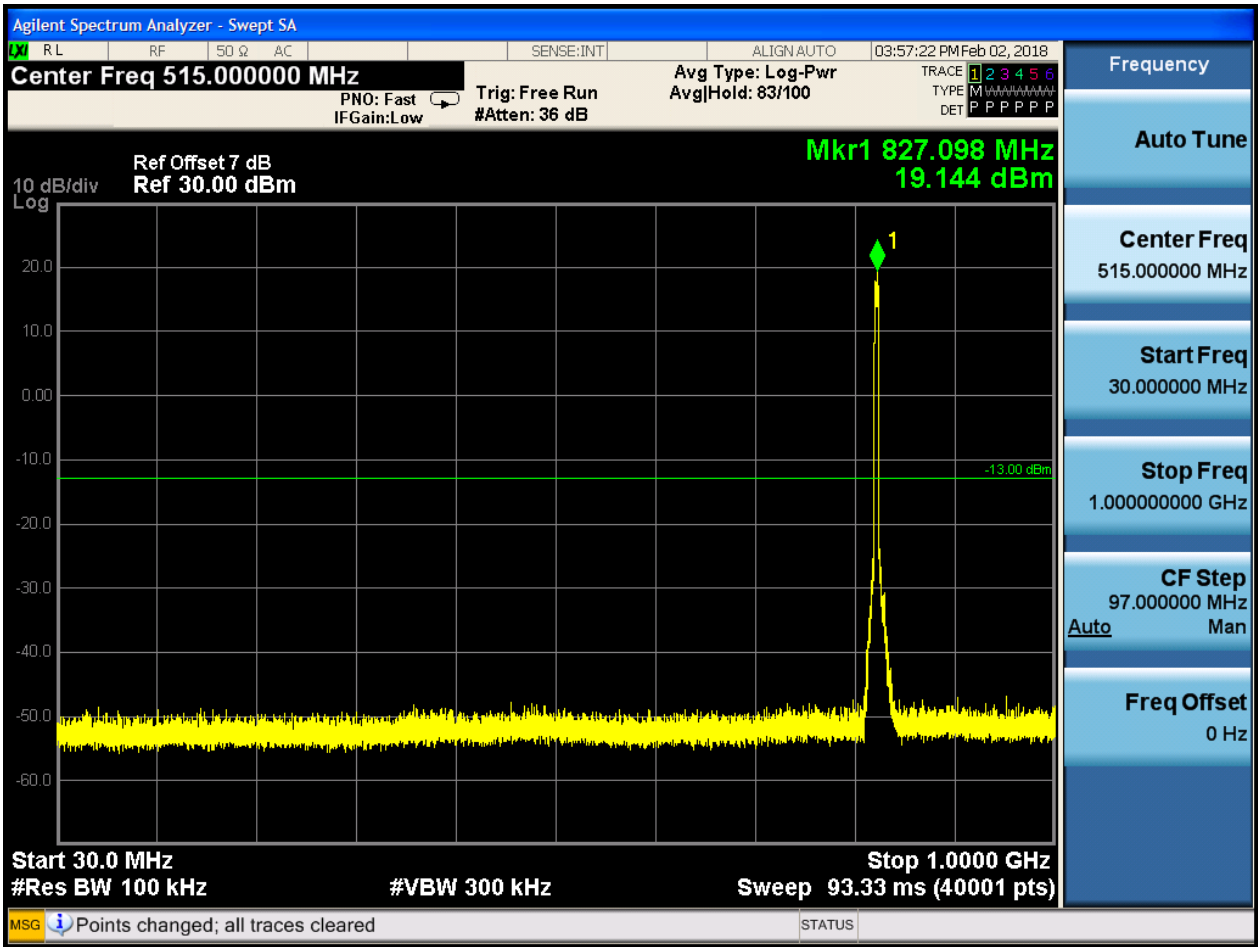
6.1.1 Test Band = WCDMA850

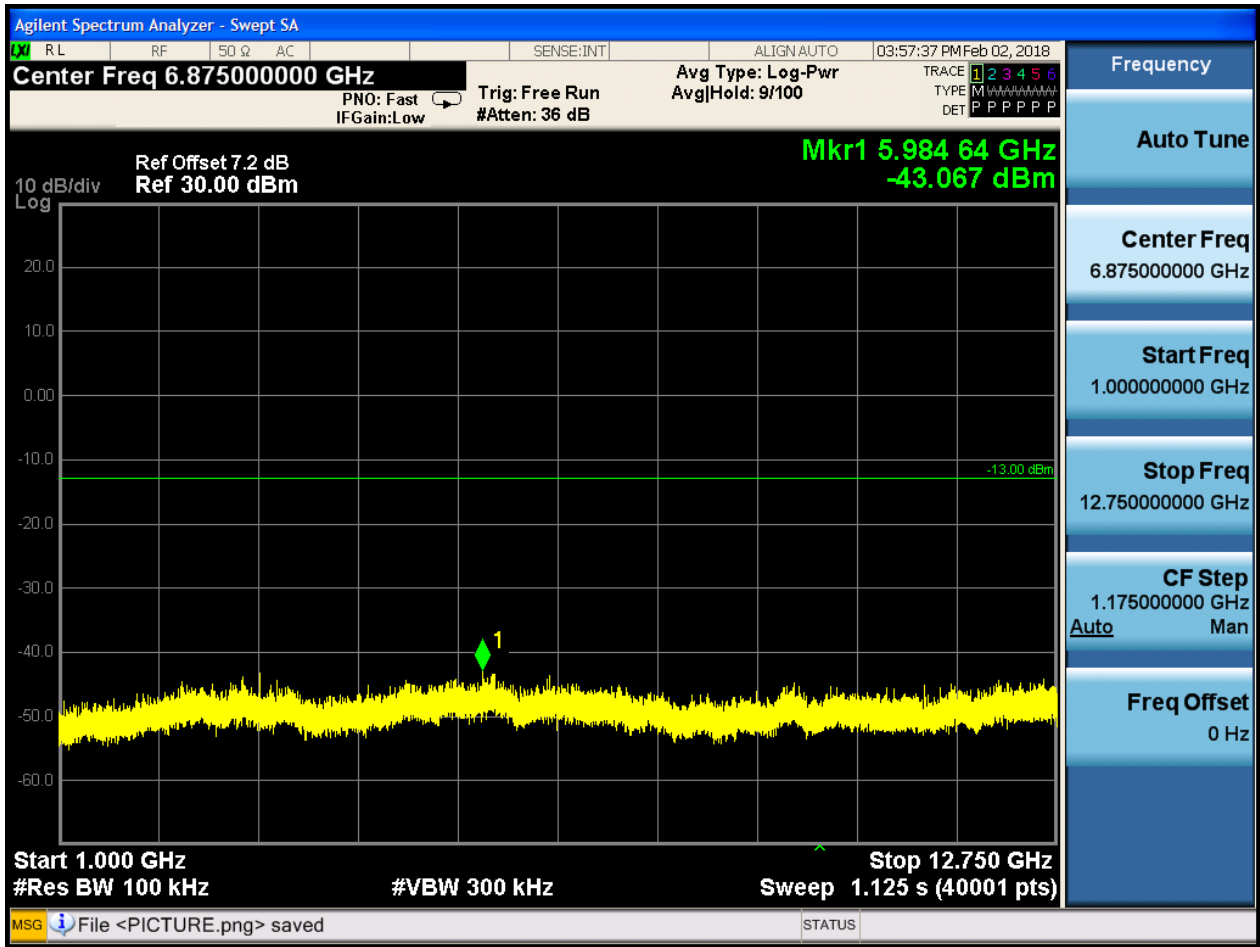
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



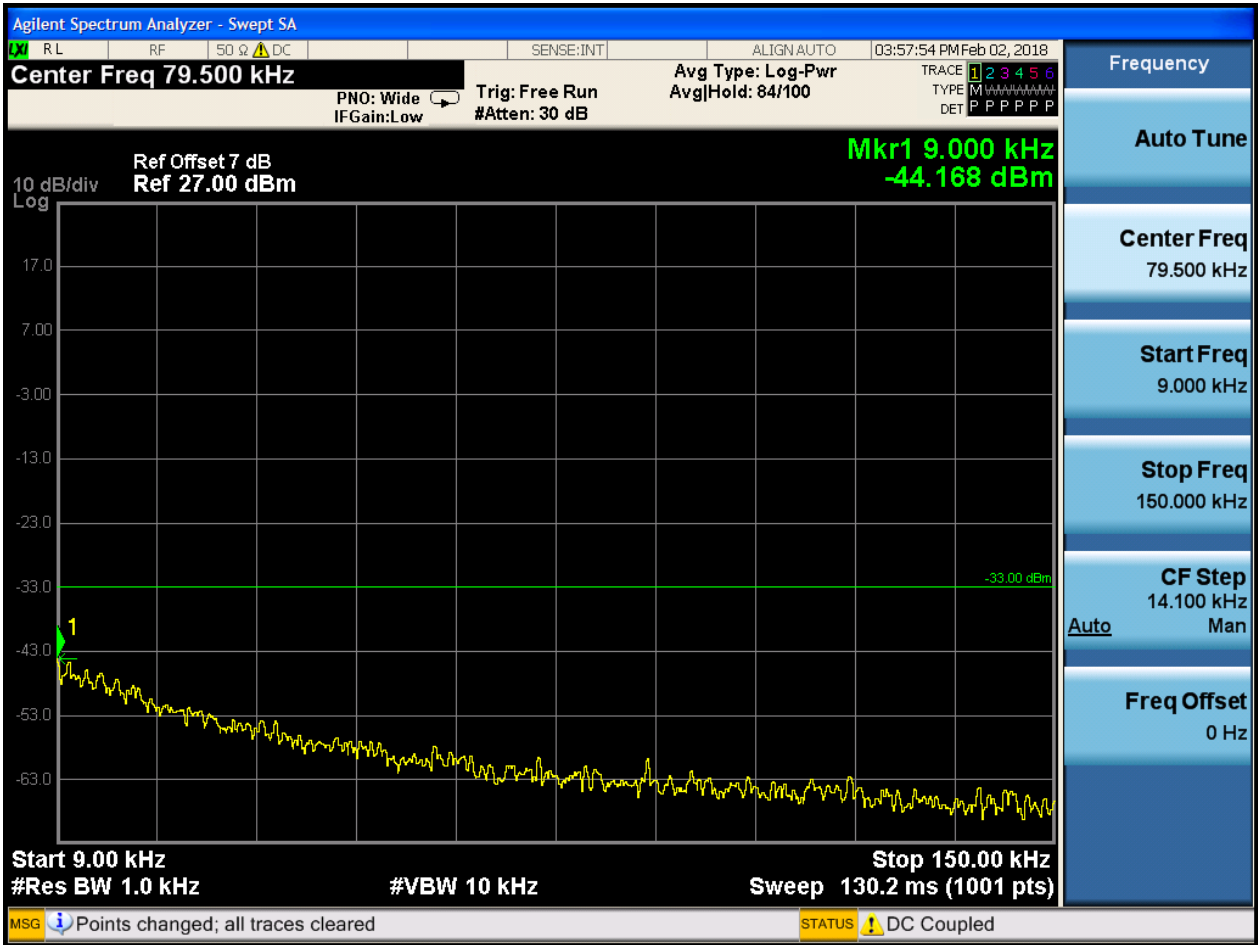


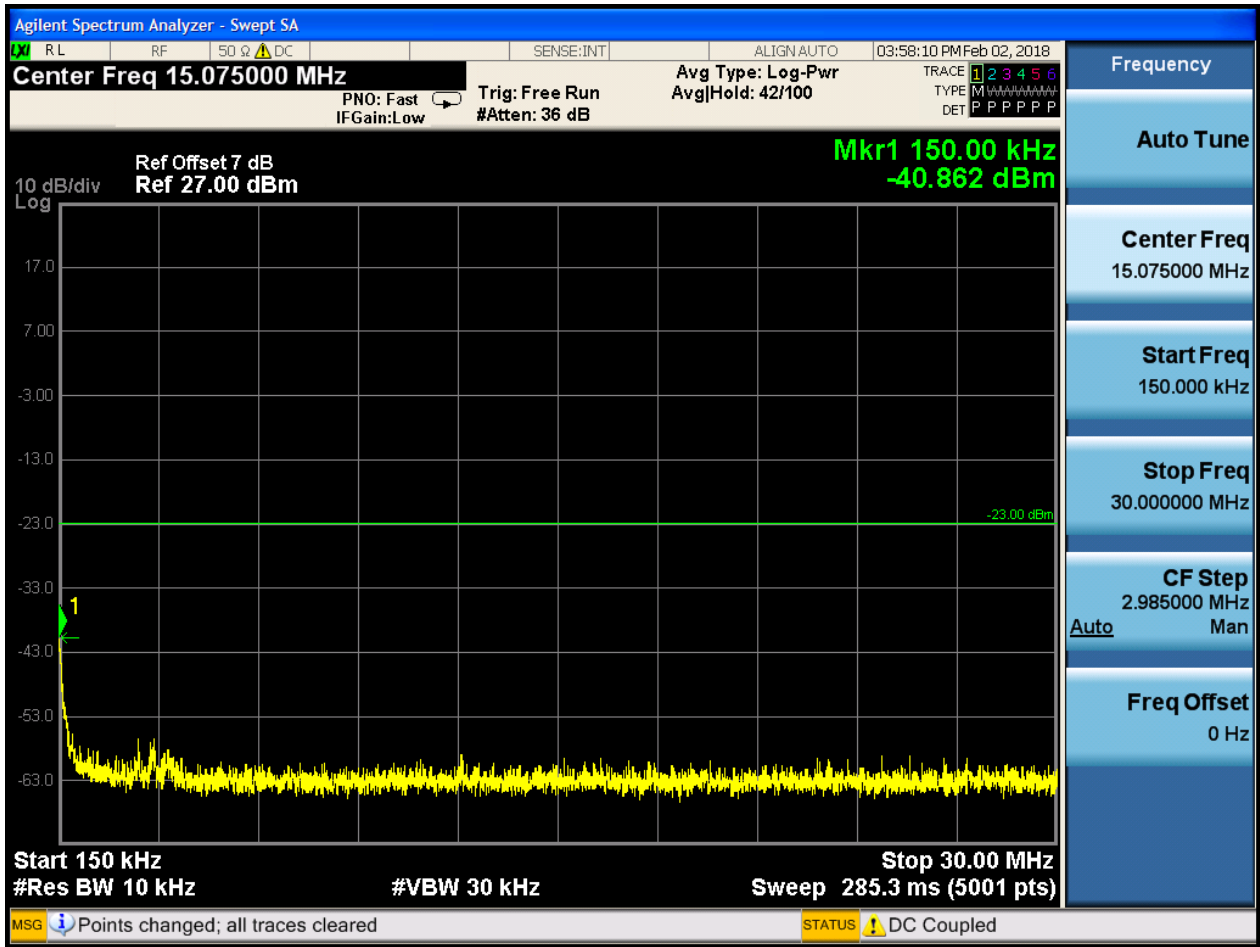


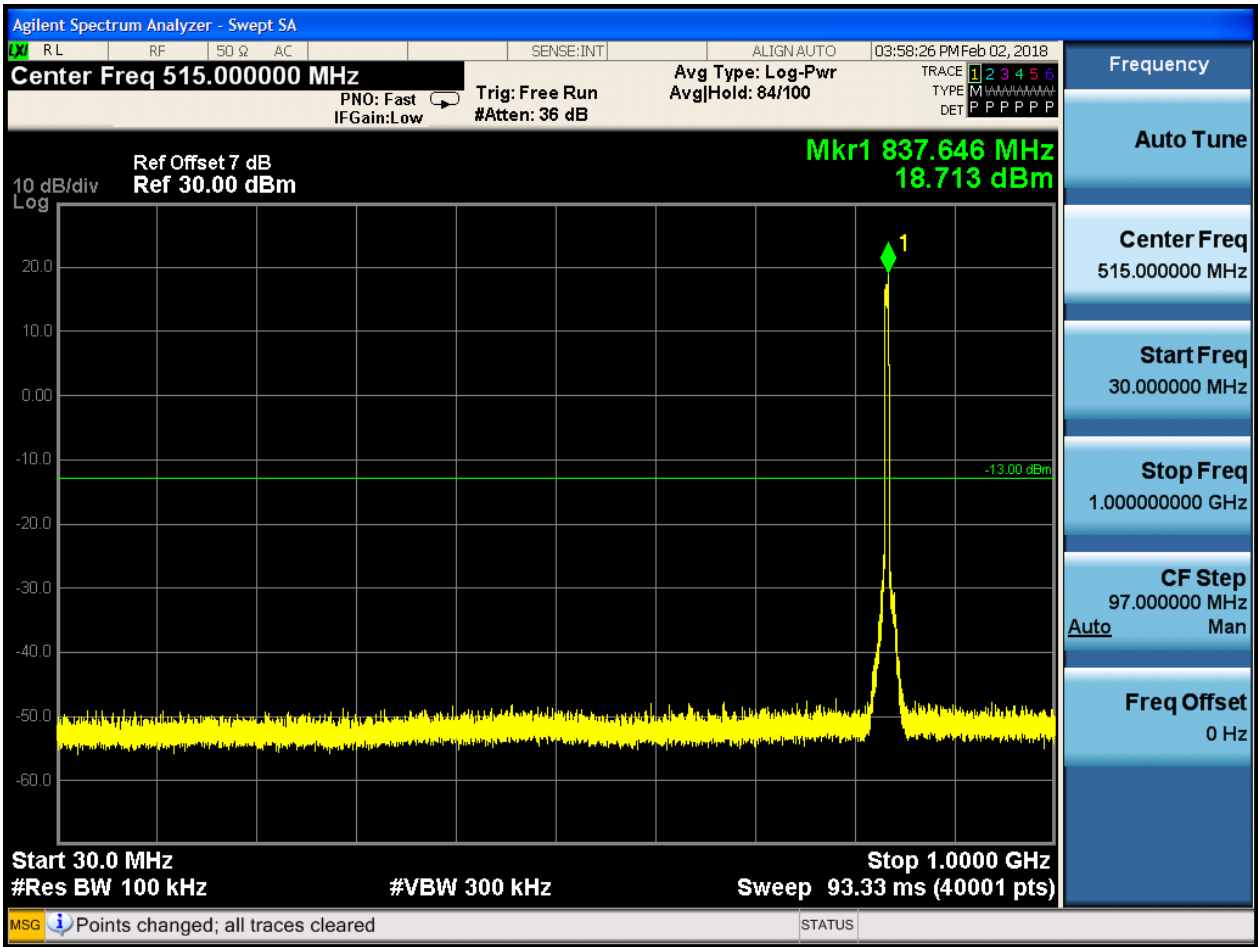


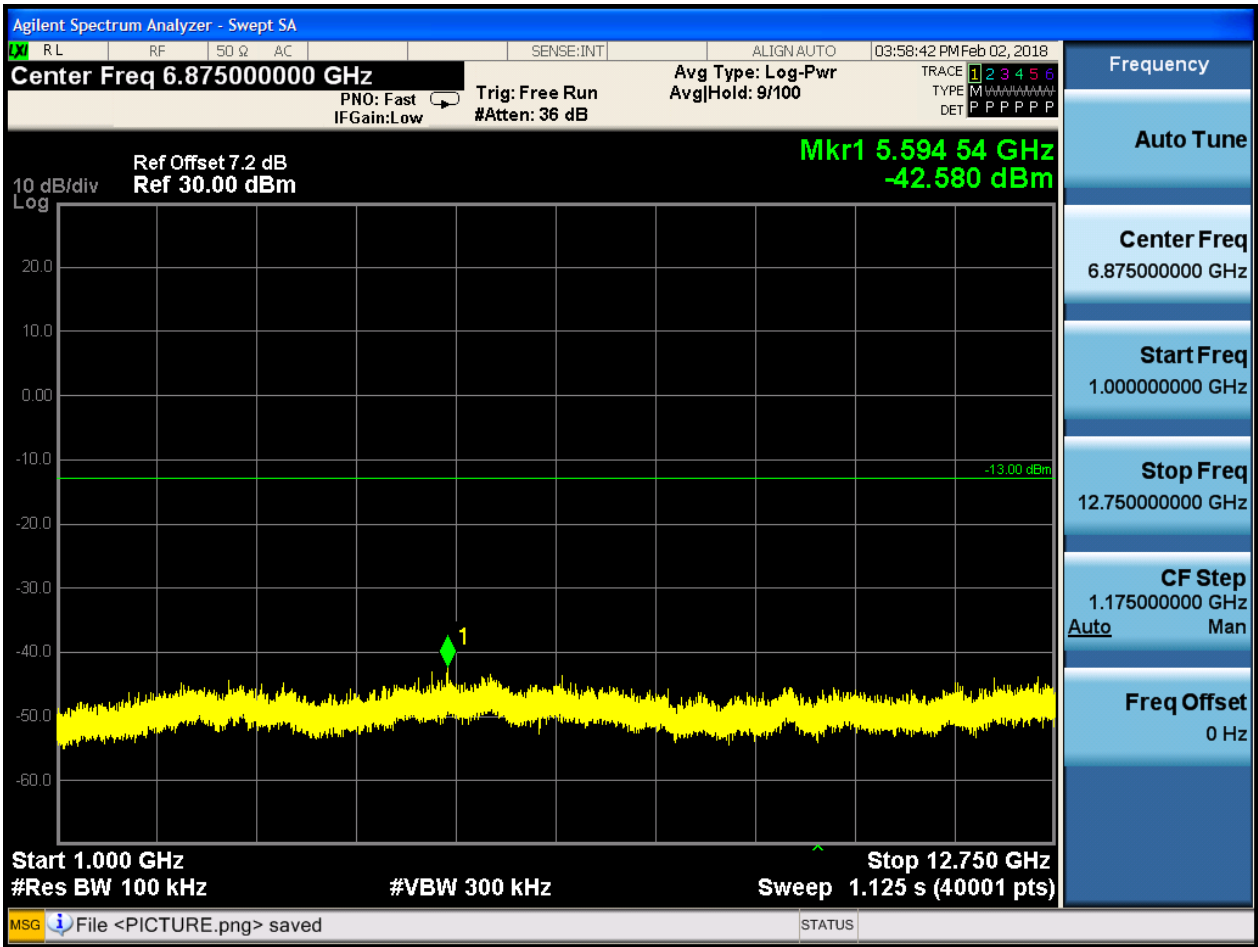


6.1.1.1.2 Test Channel = MCH



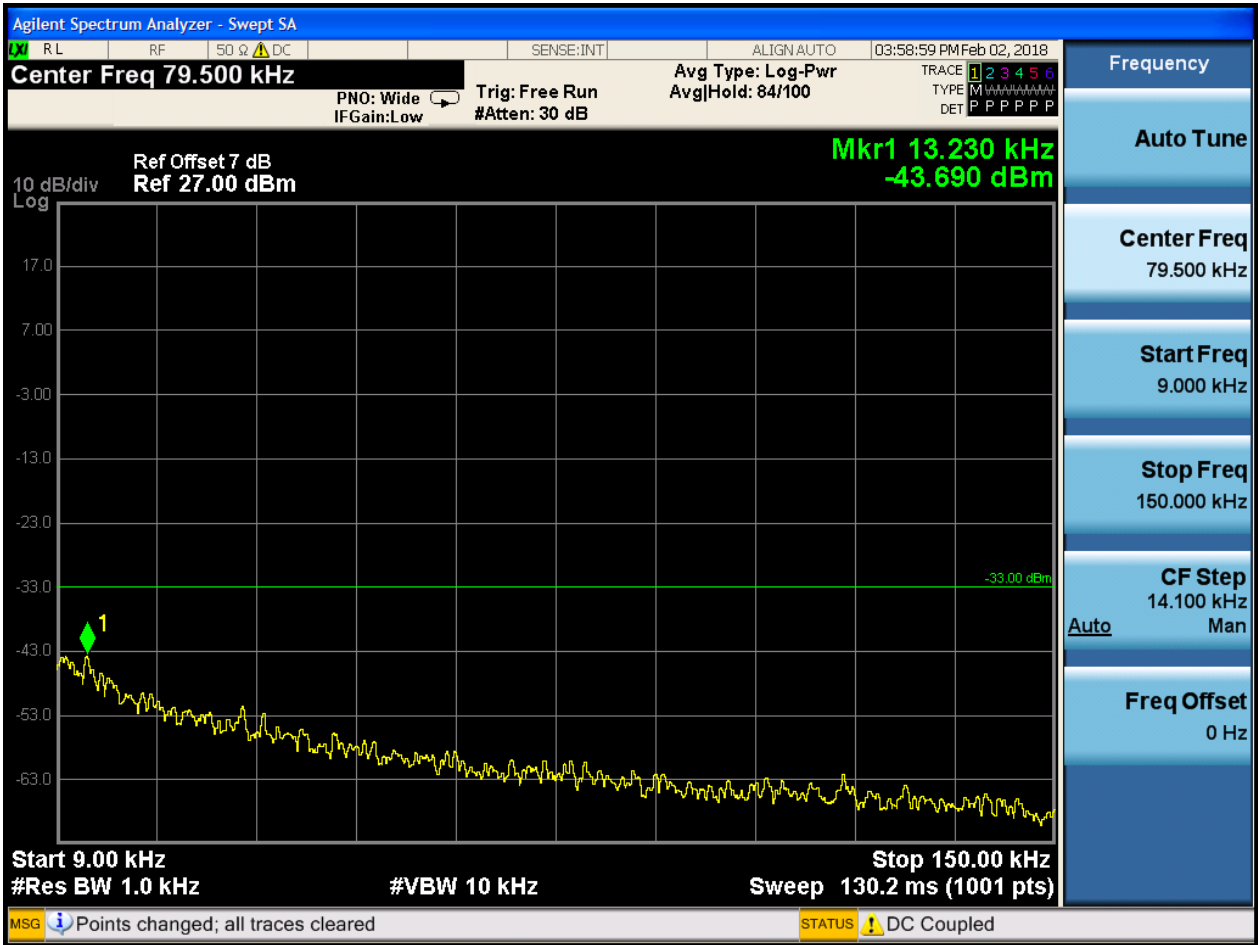


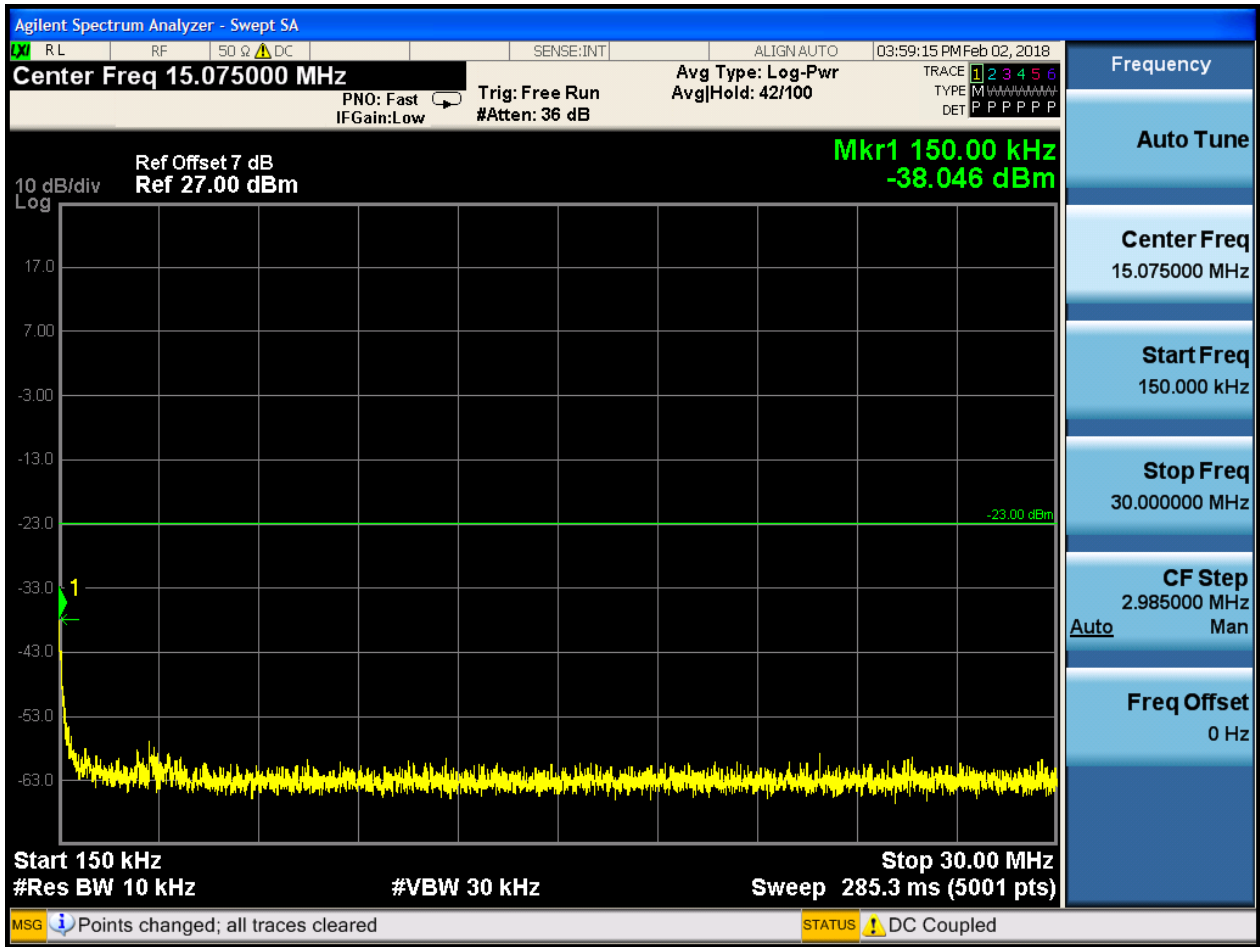


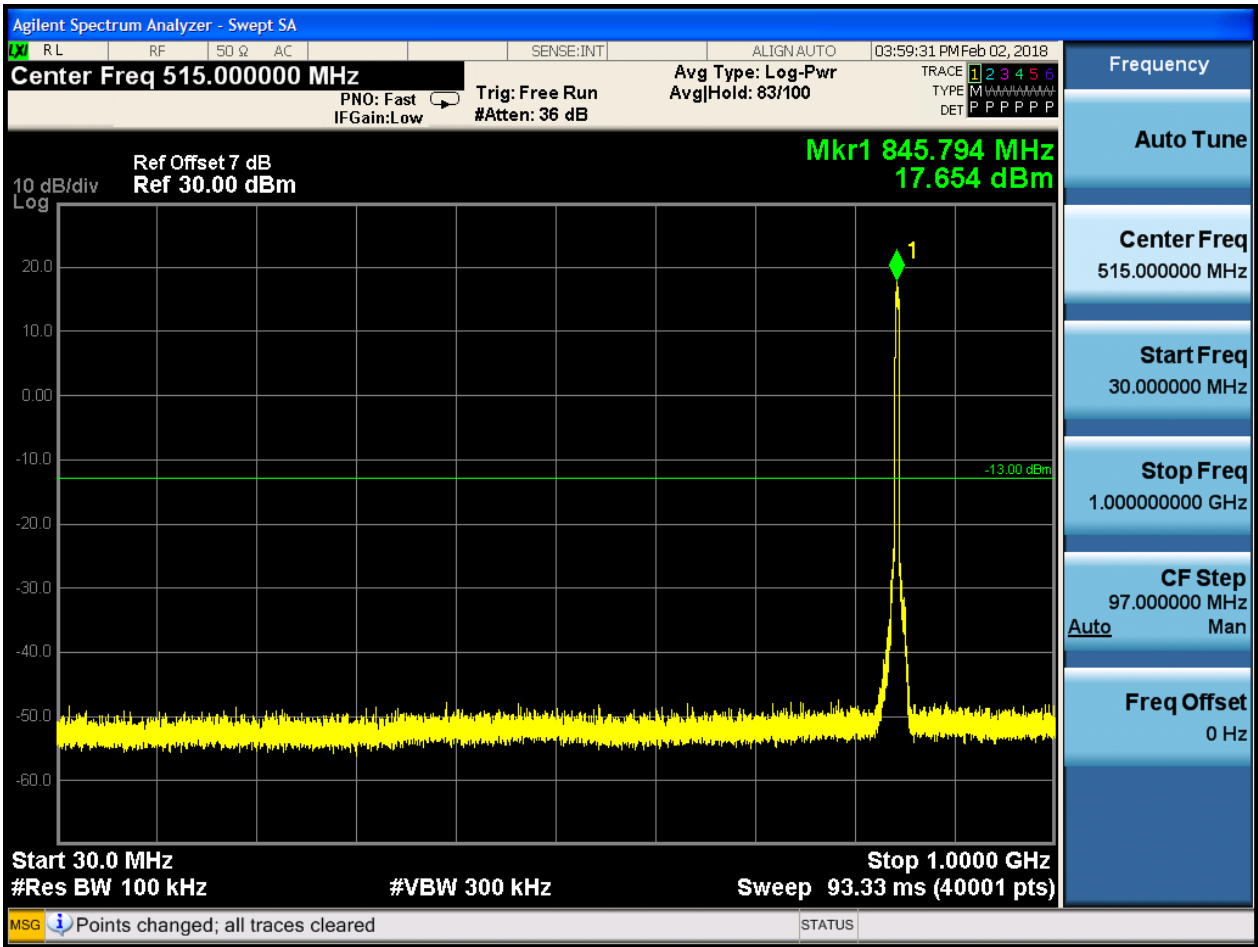


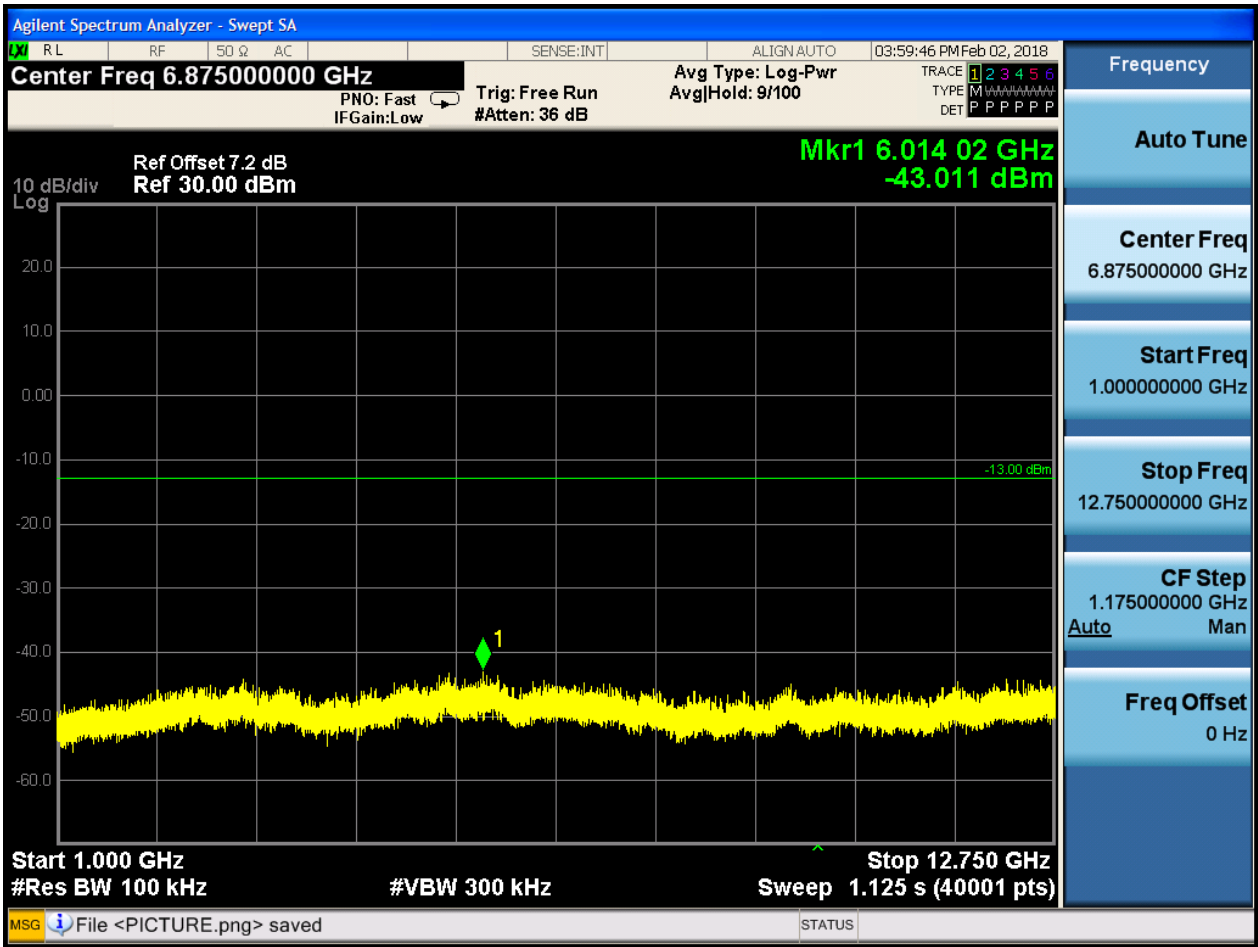


6.1.1.1.3 Test Channel = HCH







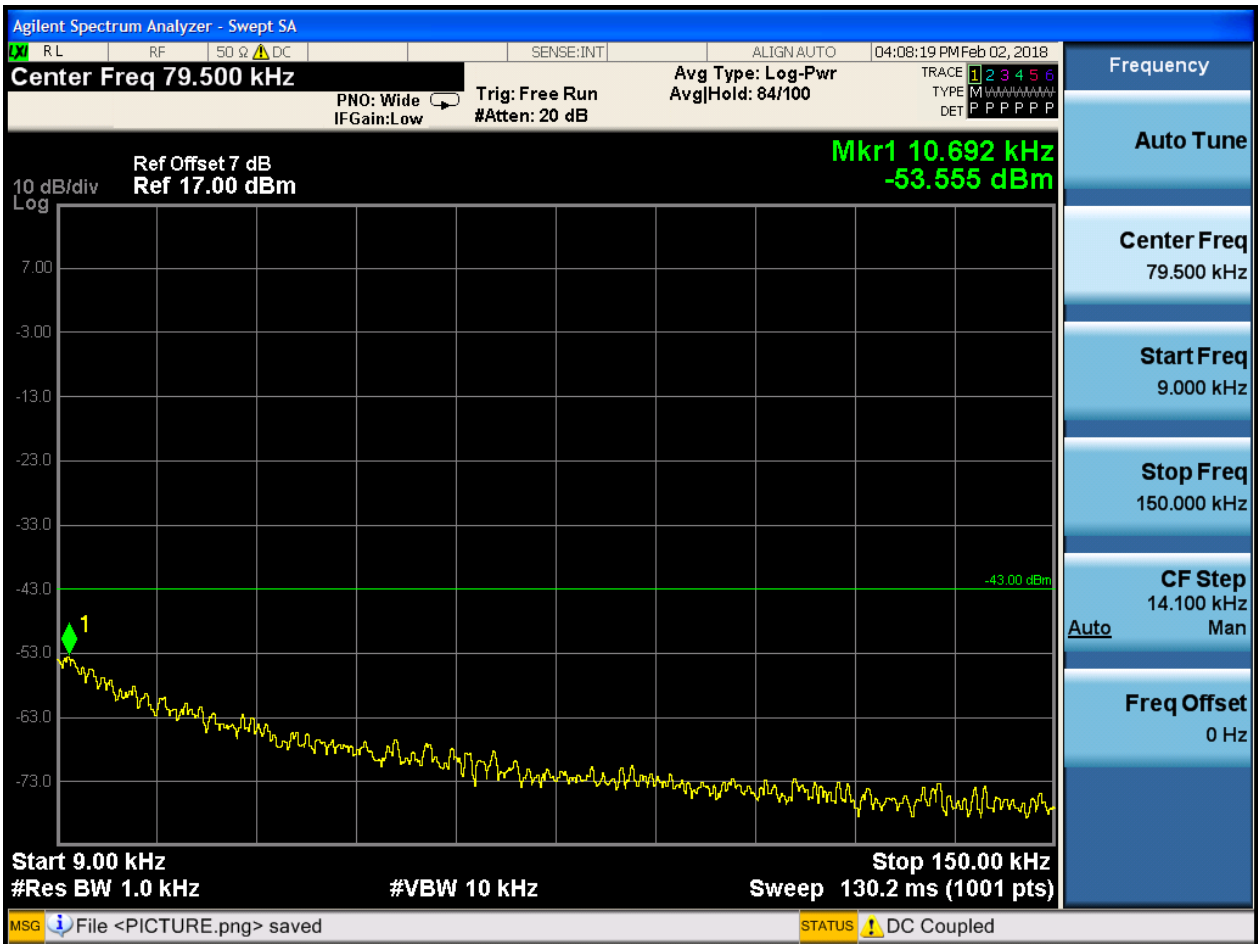


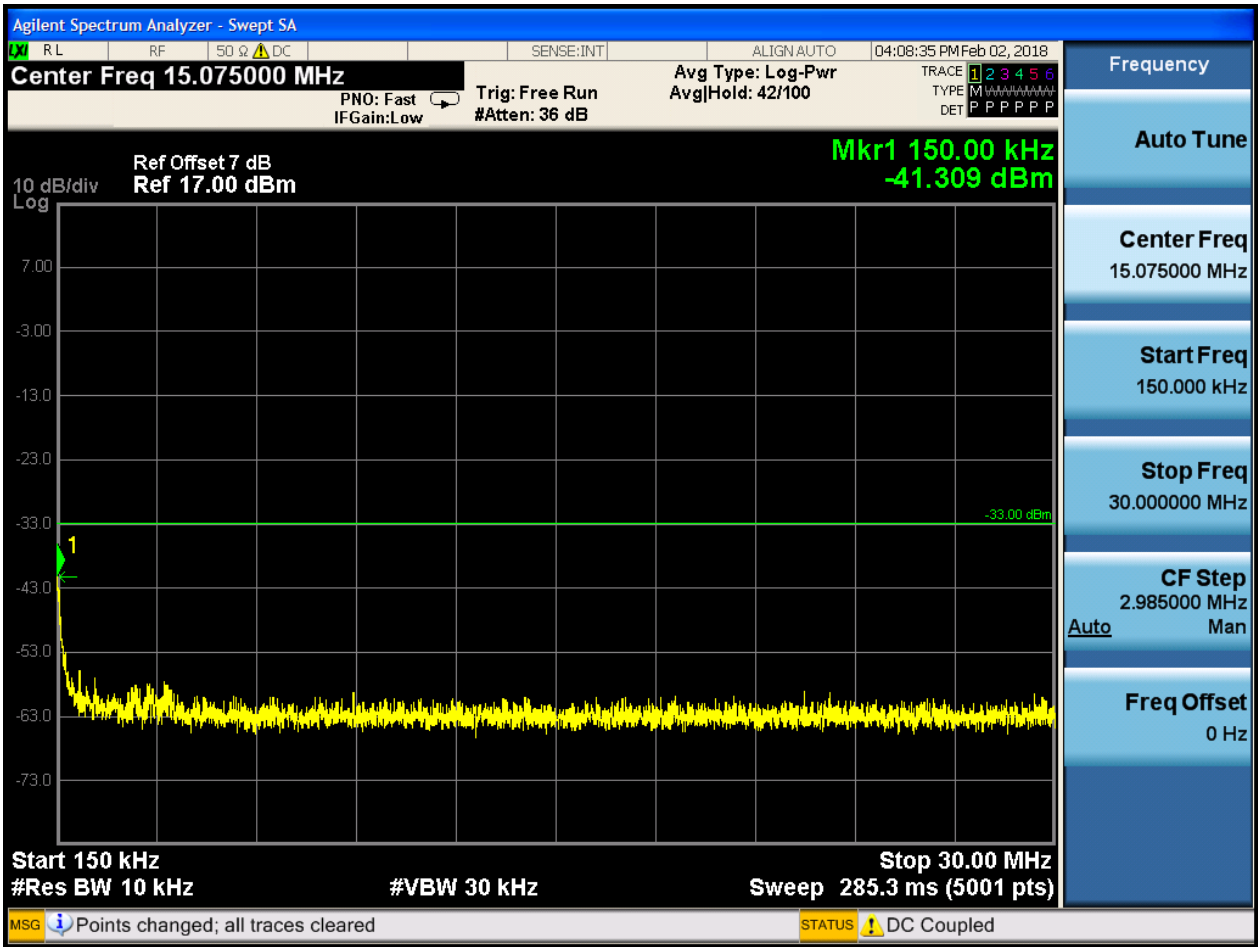


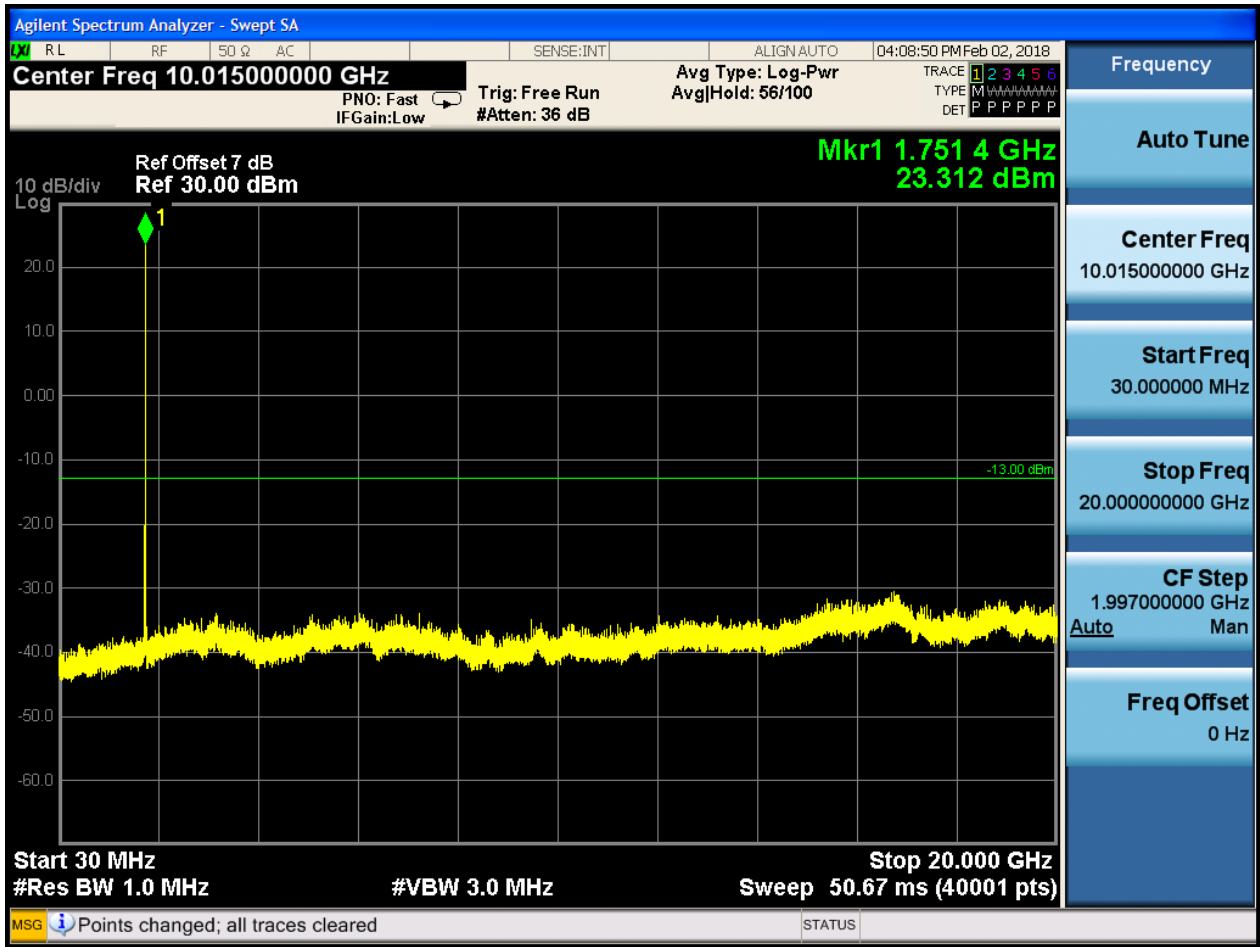
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH

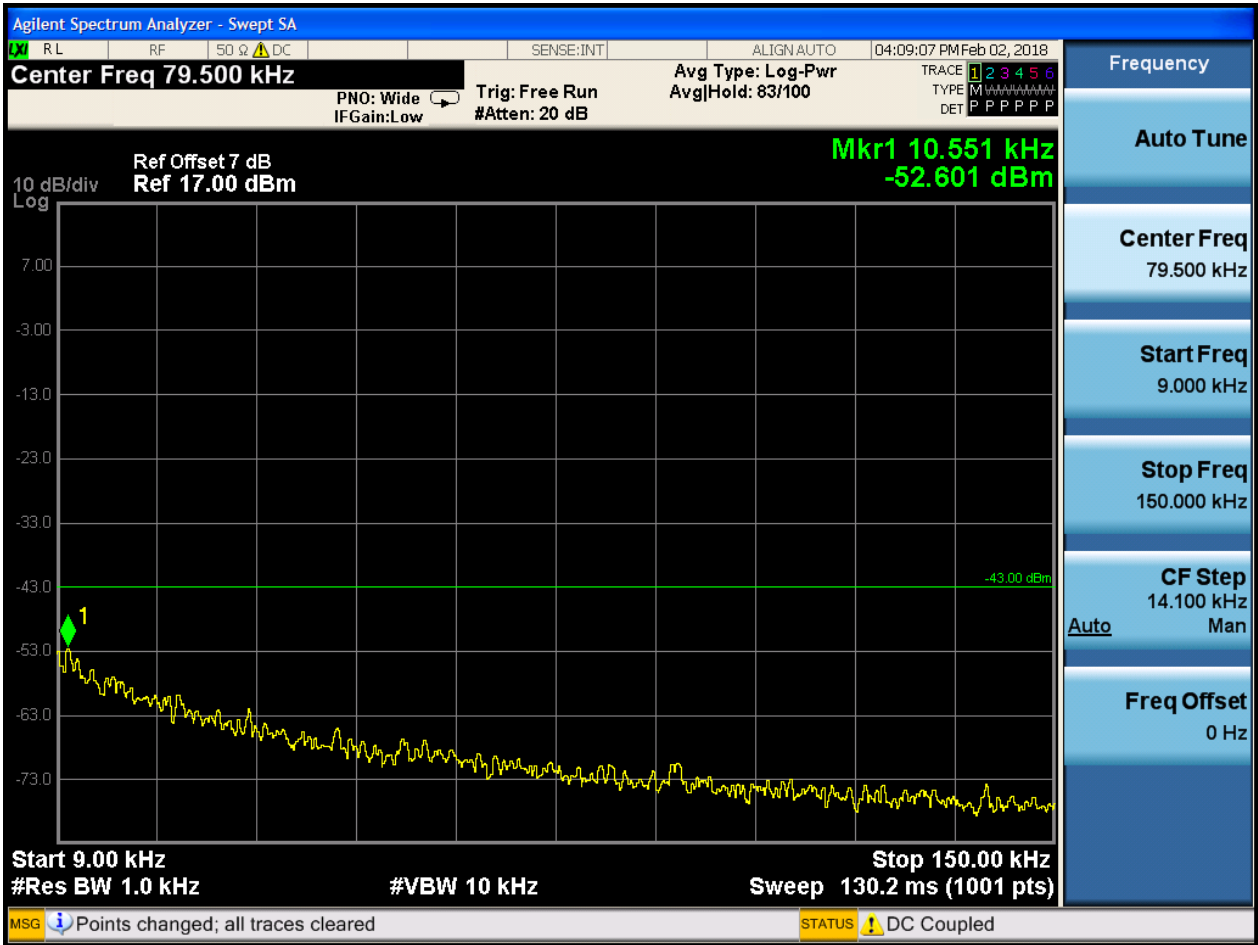


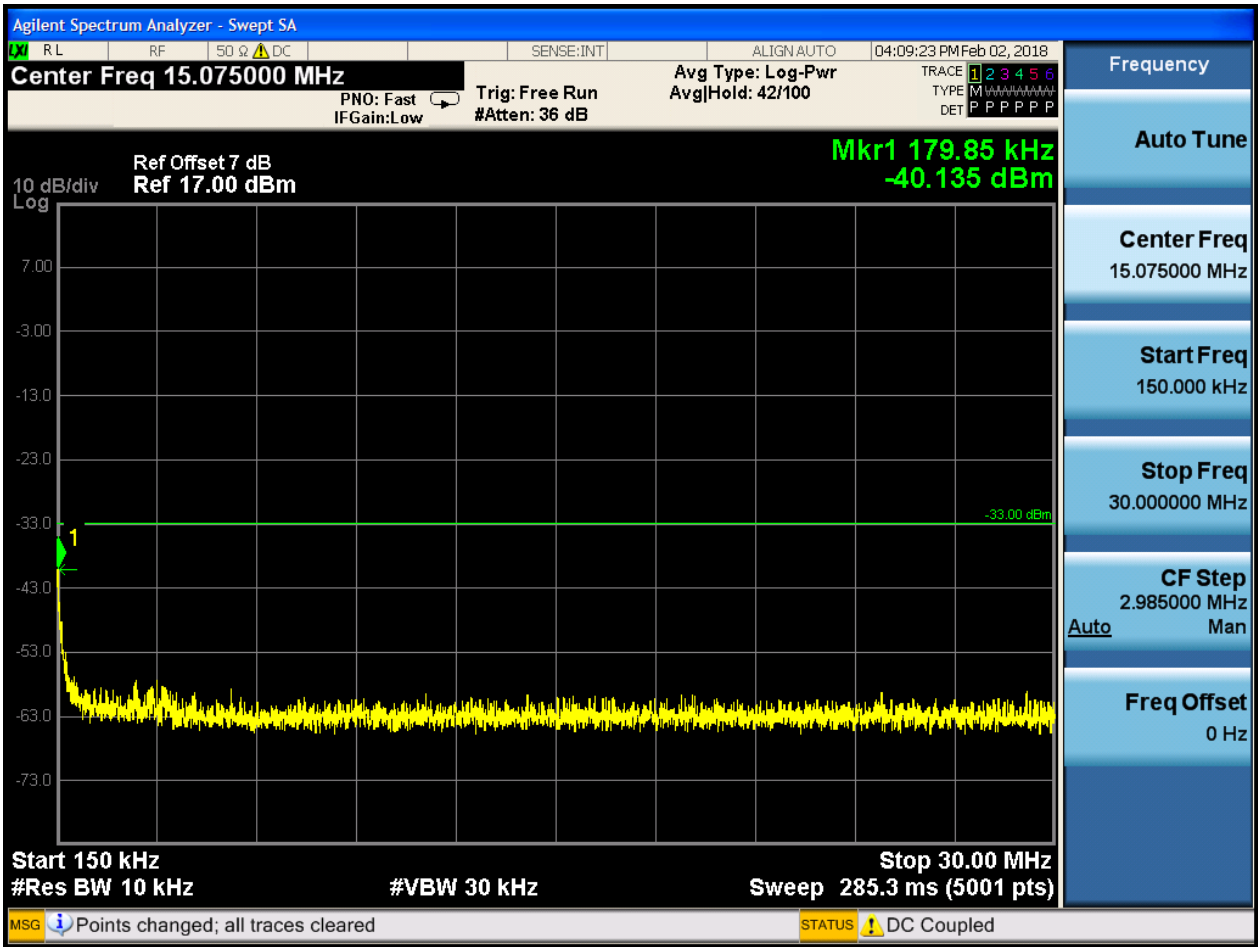


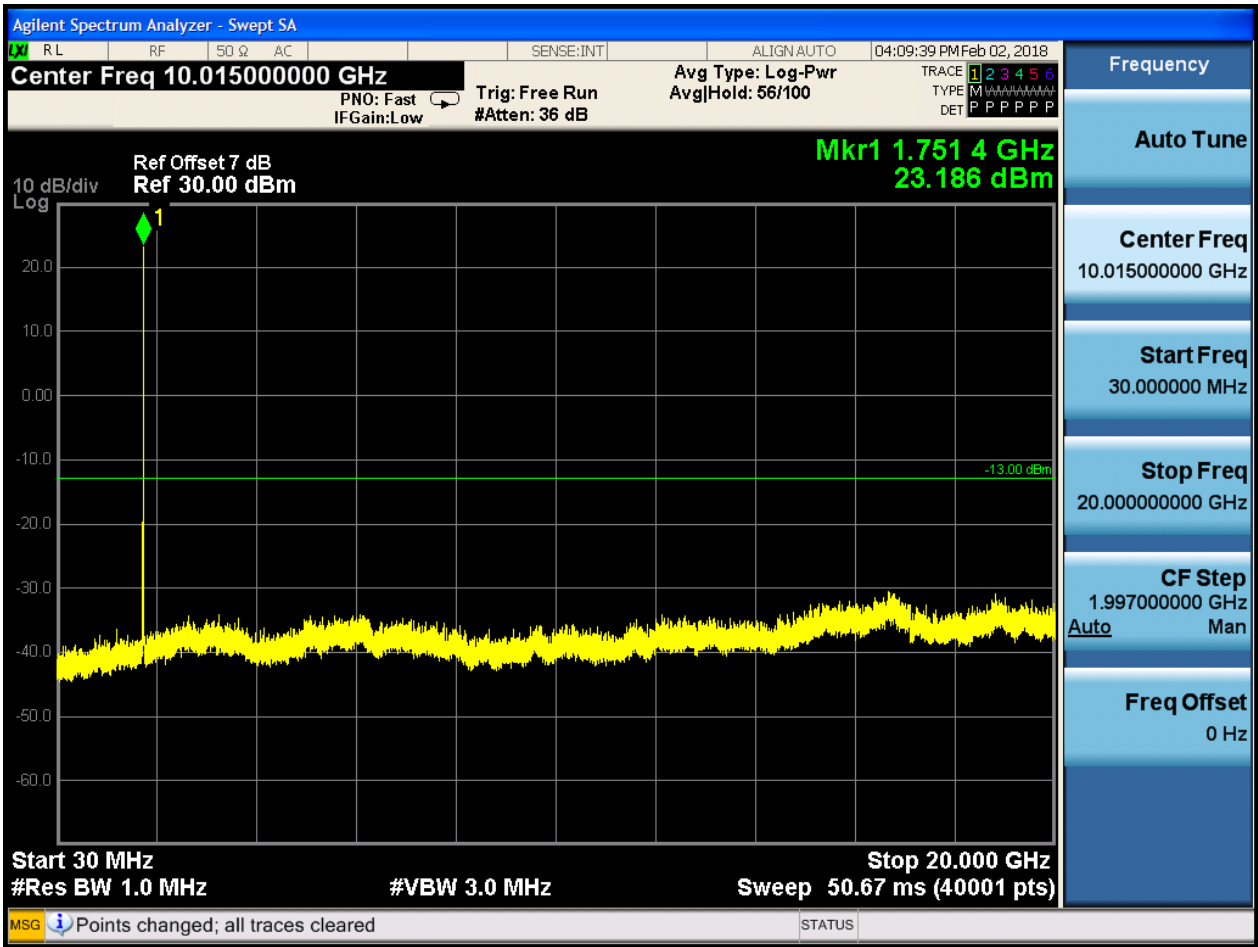




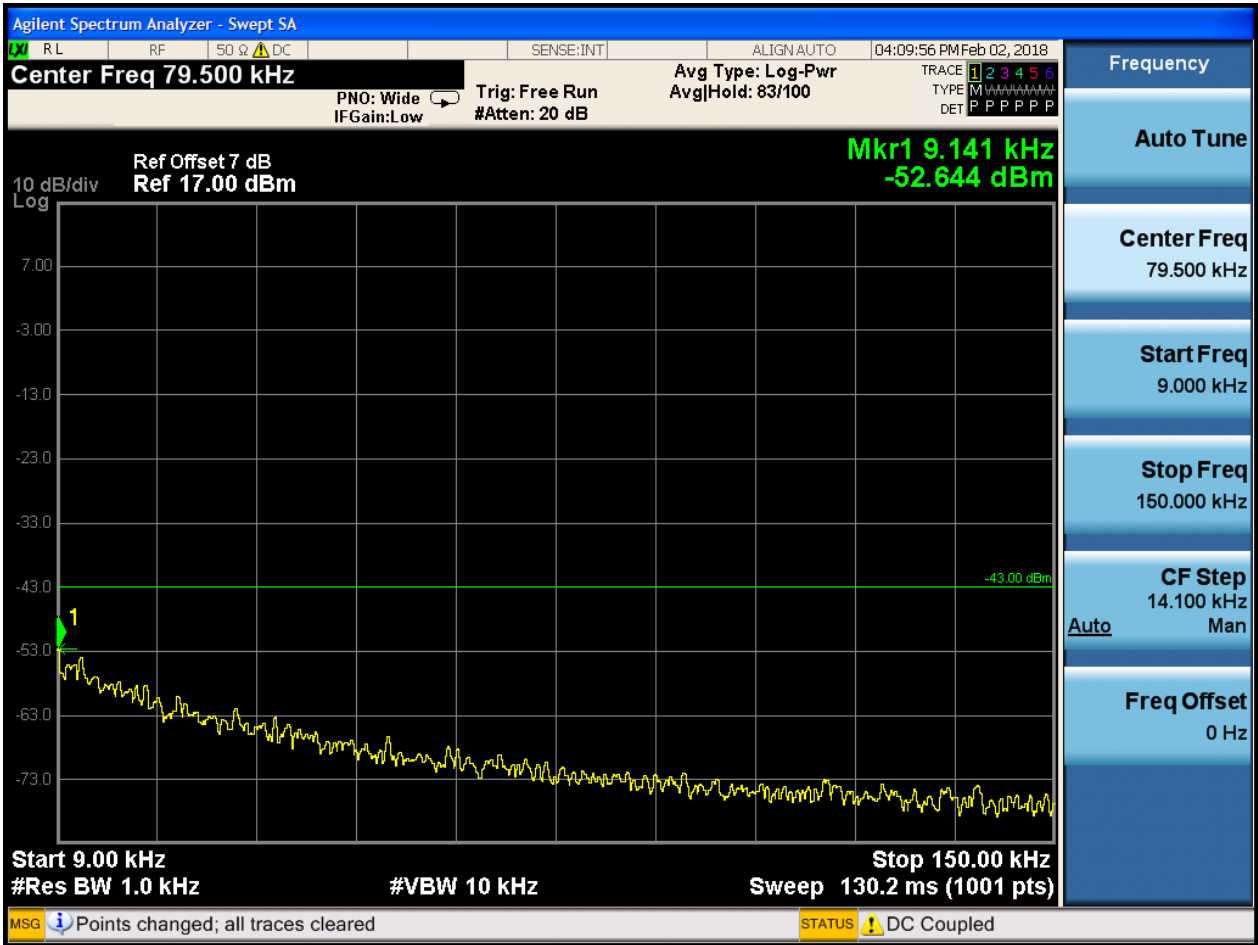
6.1.2.1.2 Test Channel = MCH

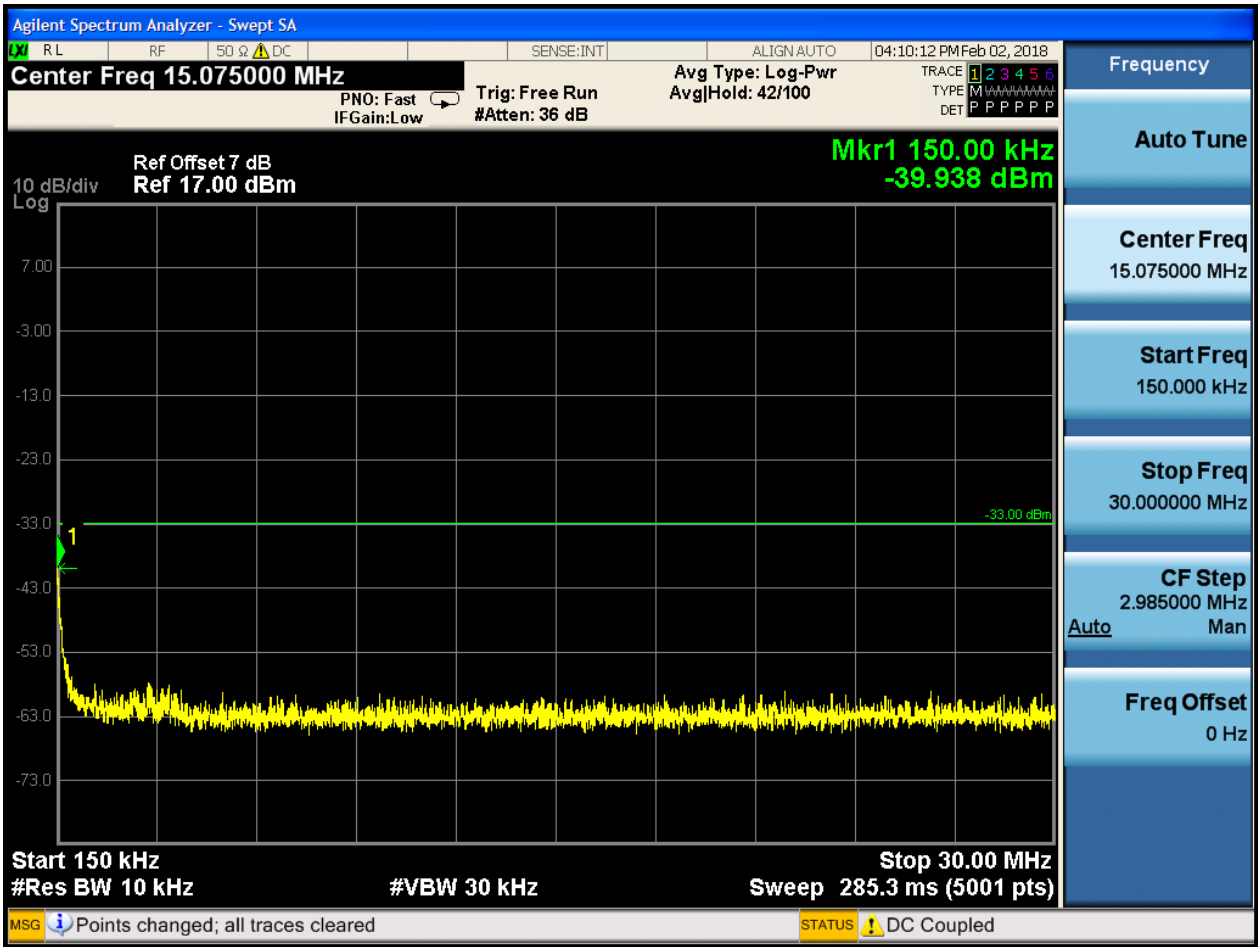


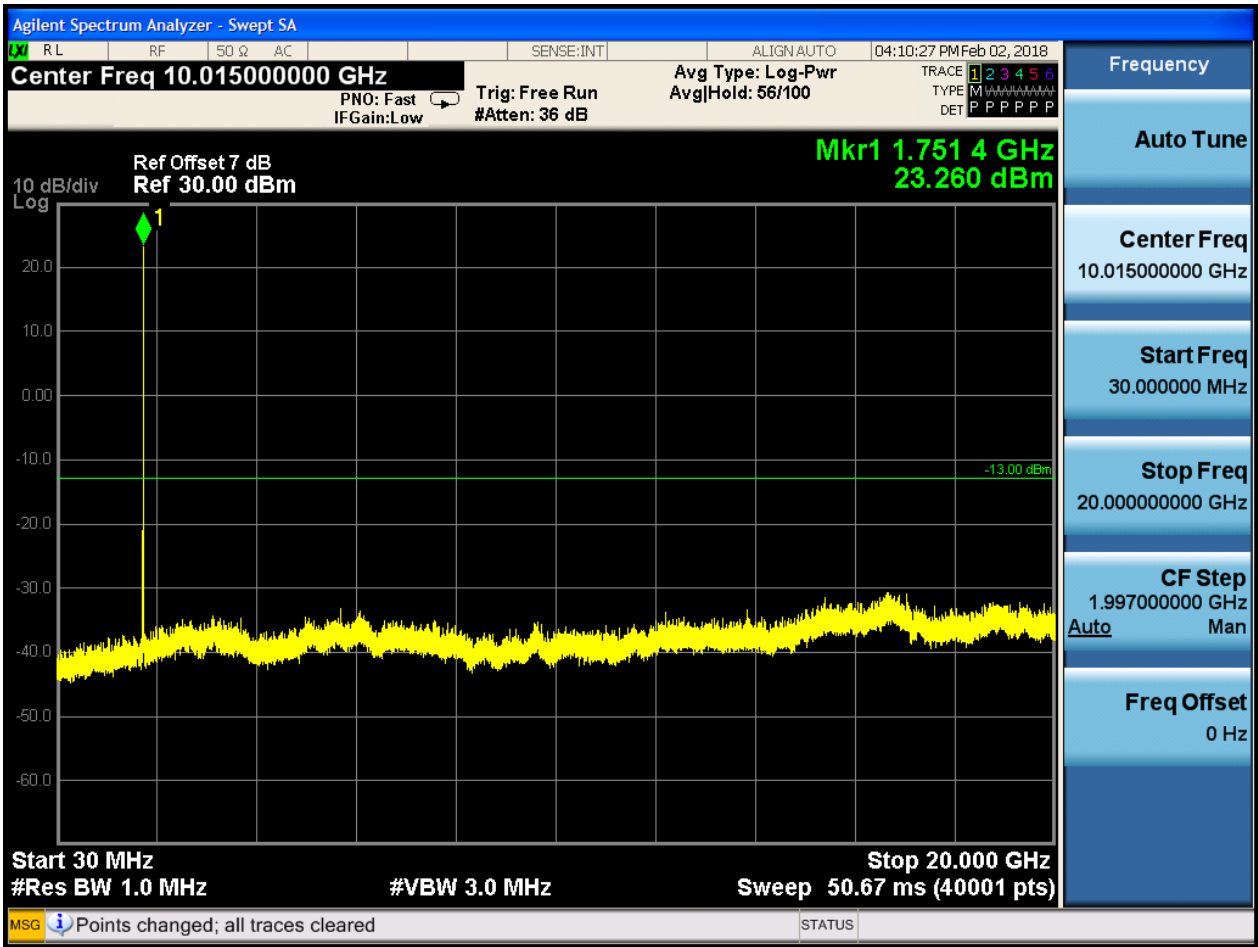




6.1.2.1.3 Test Channel = HCH





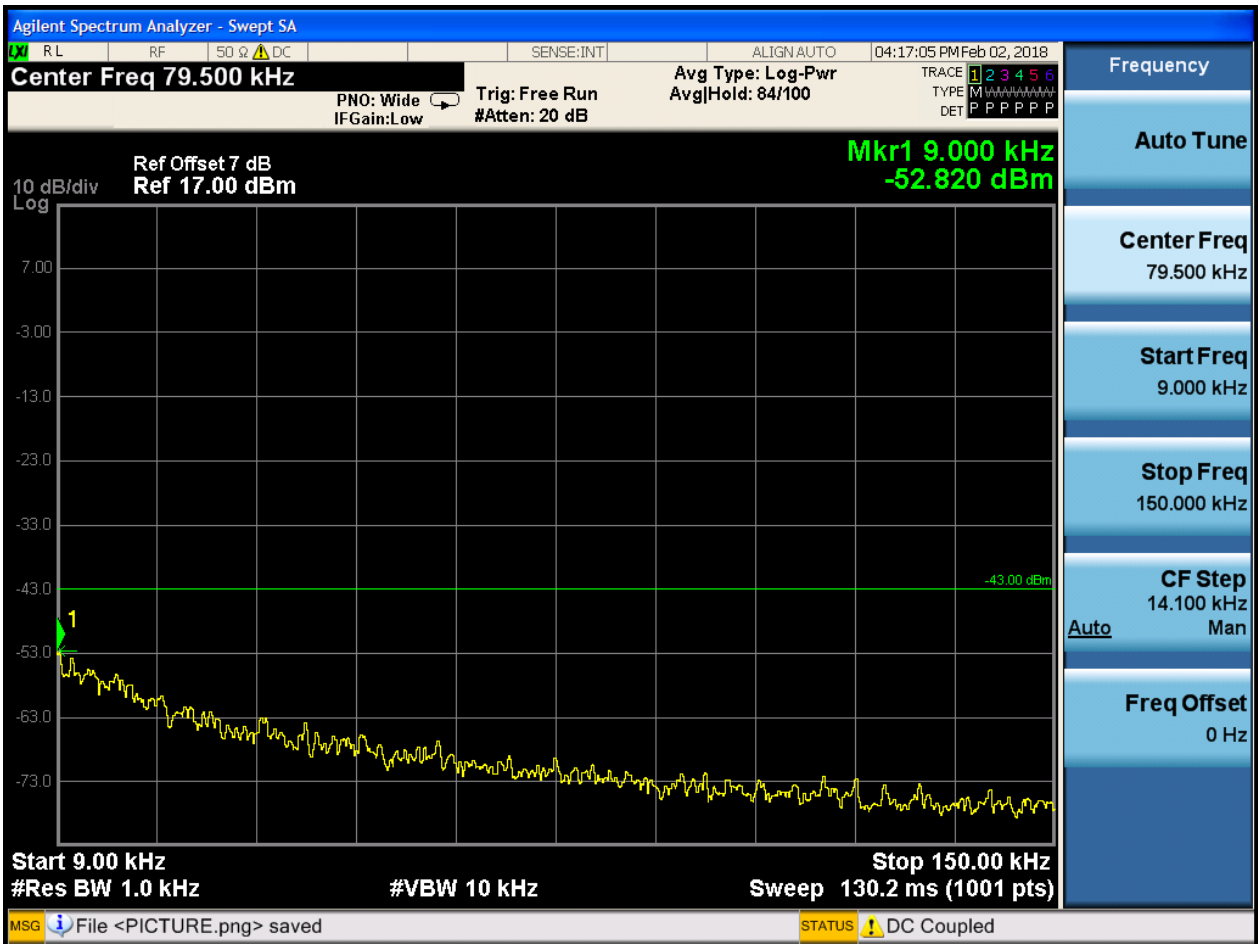


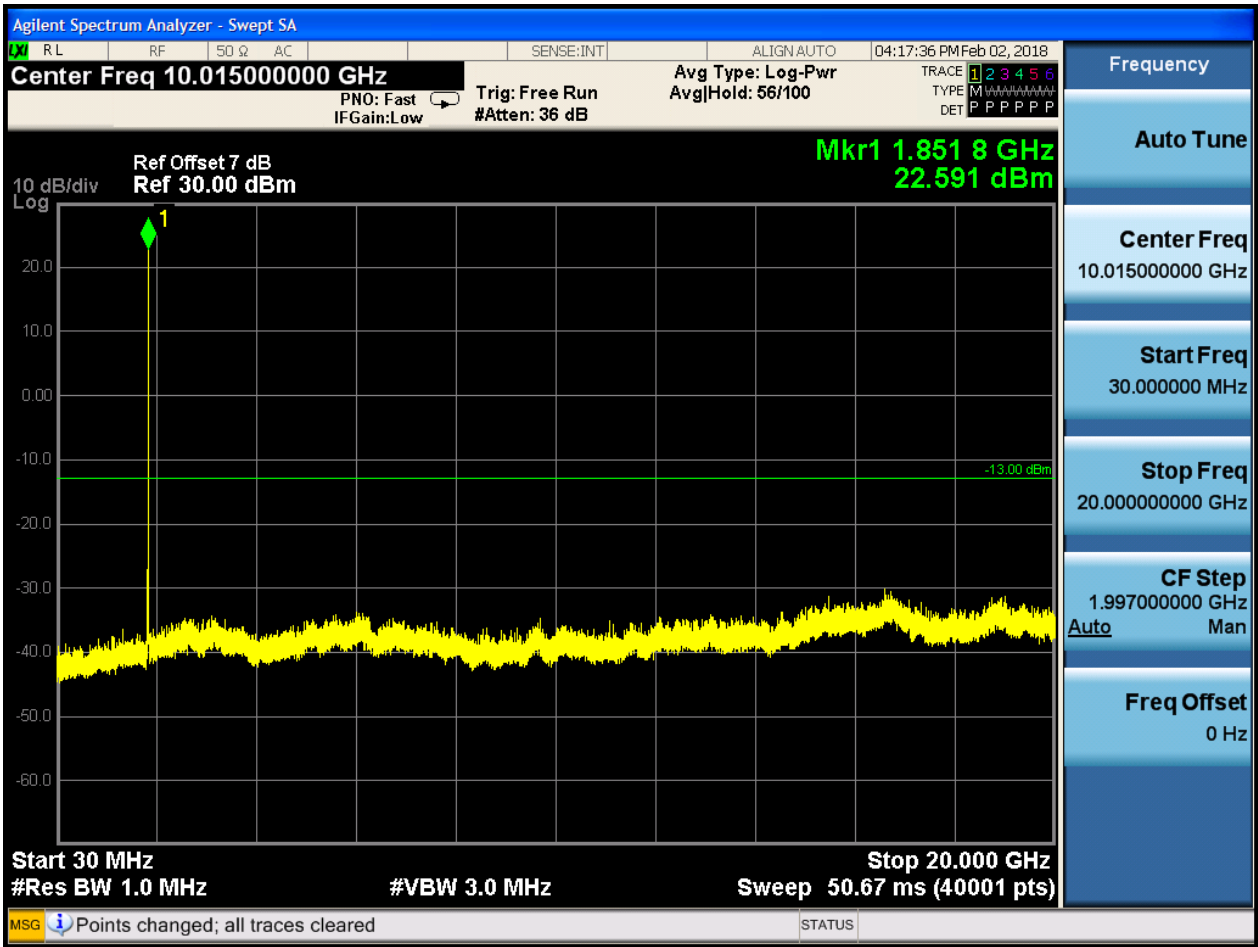


6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

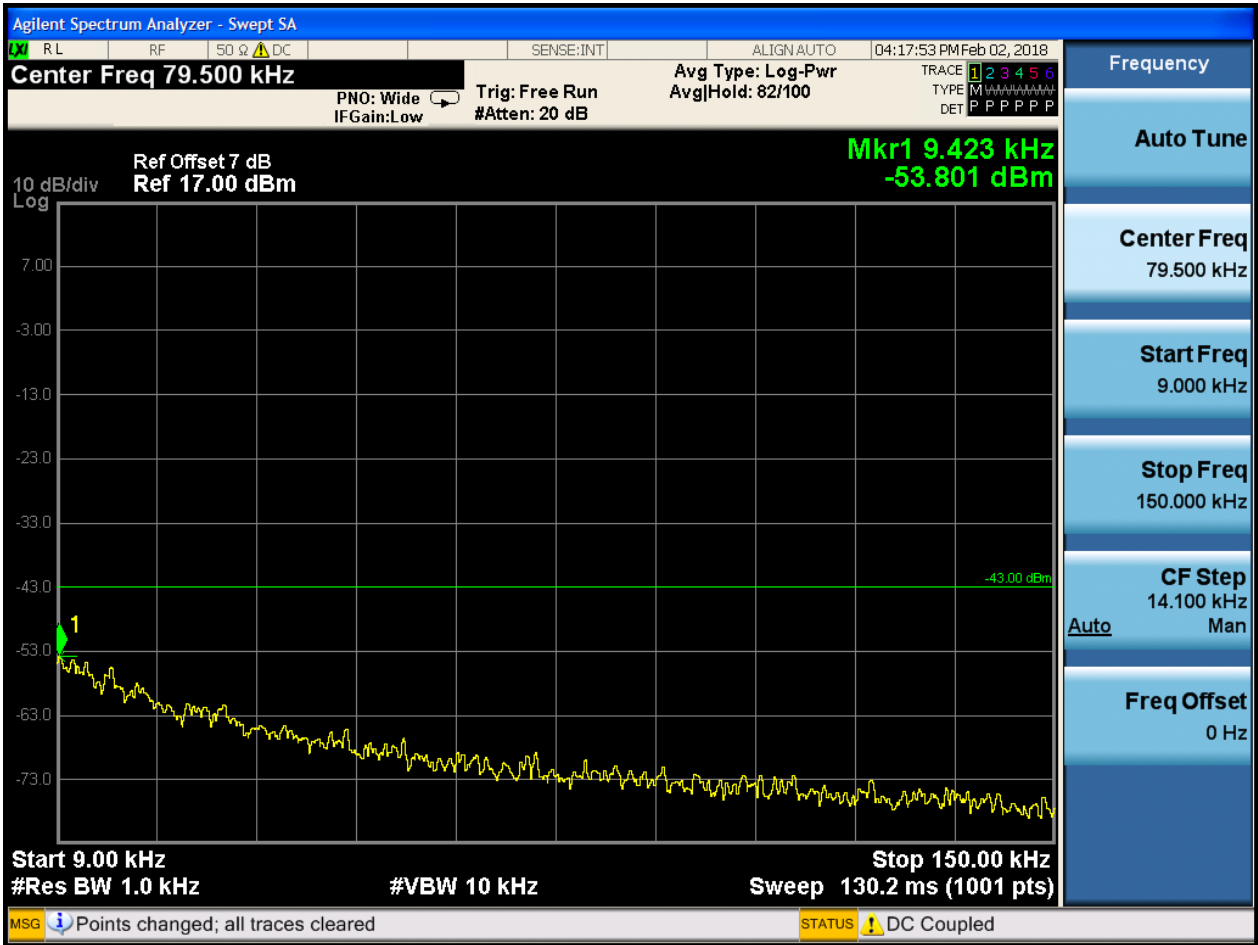
6.1.3.1.1 Test Channel = LCH

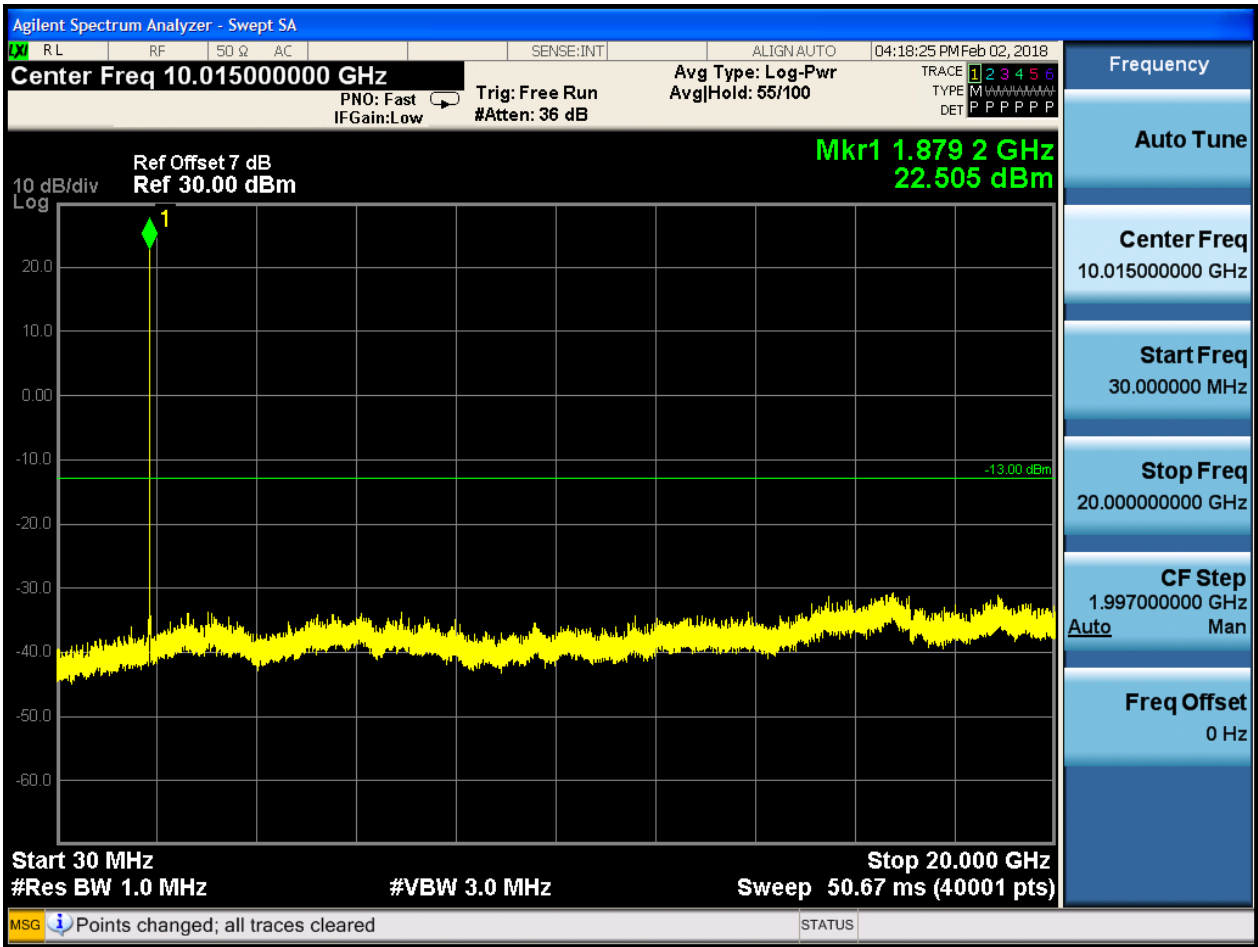






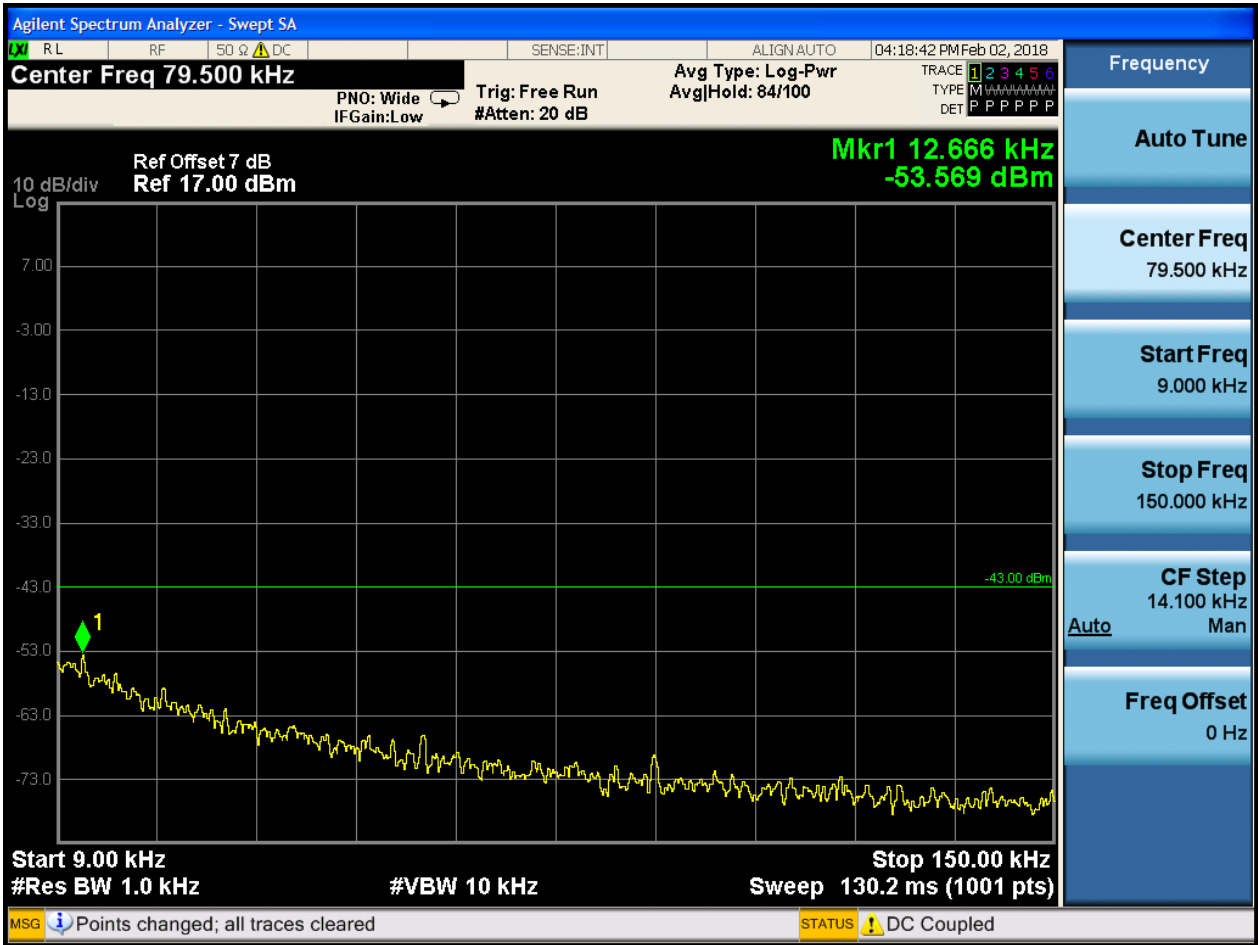
6.1.3.1.2 Test Channel = MCH

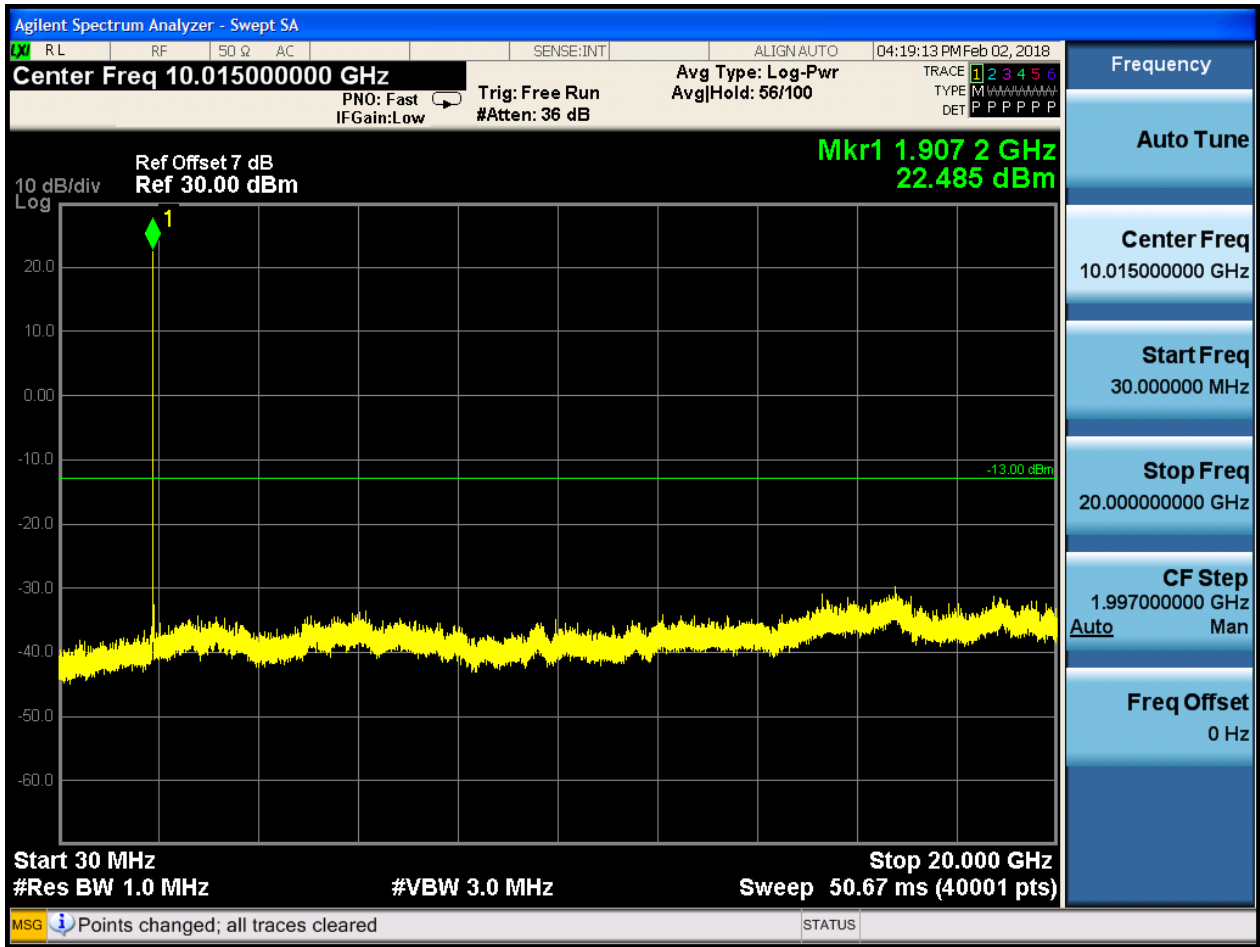






6.1.3.1.3 Test Channel = HCH







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

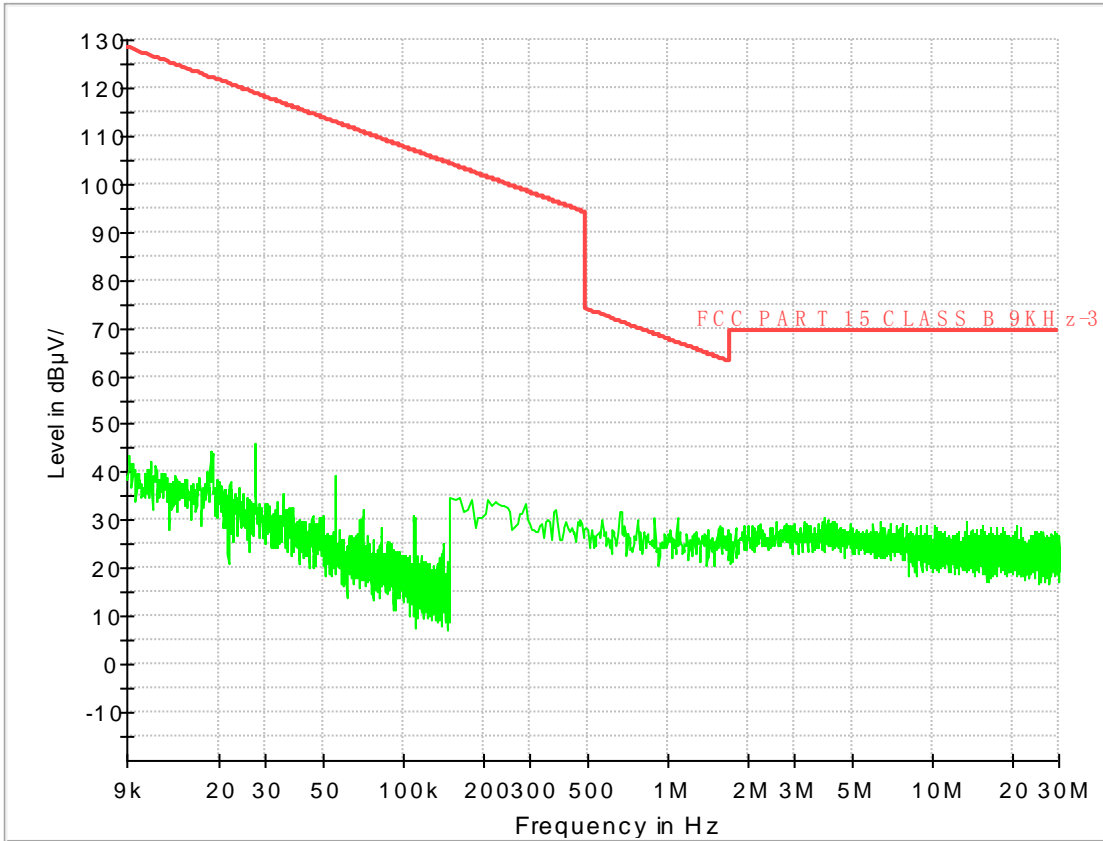
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

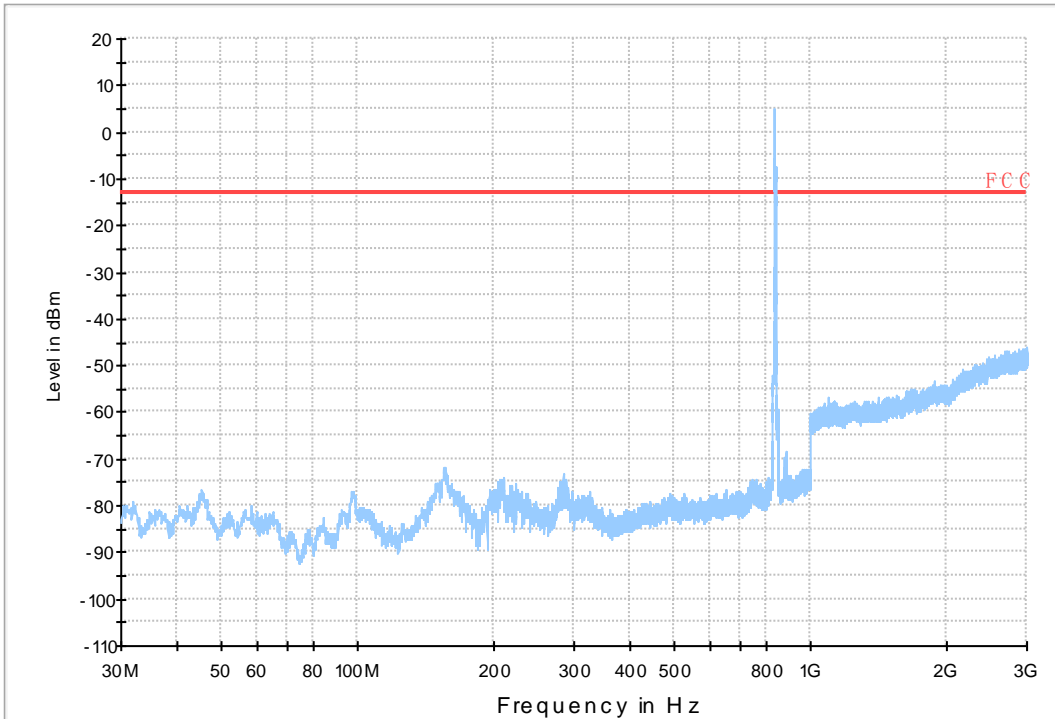
7.1 For UMTS

7.1.1 Test Band = WCDMA850_ANT1

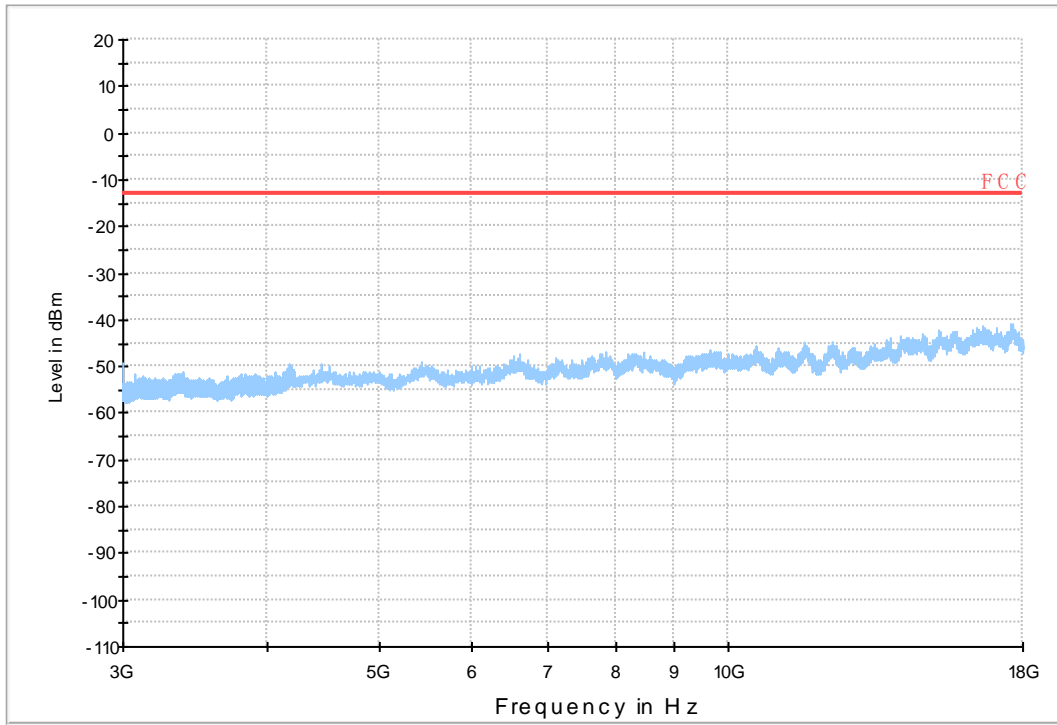
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

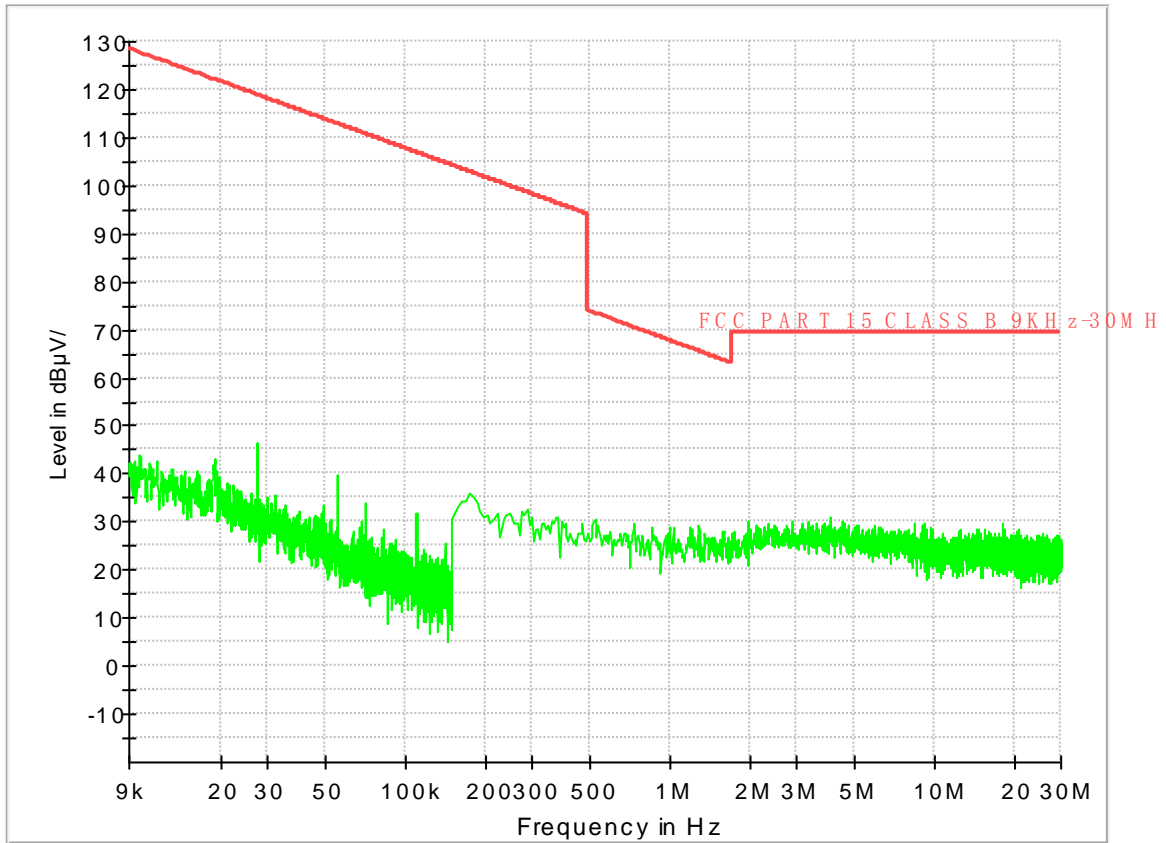


Copy of FCC PART22 W CDMA850_H

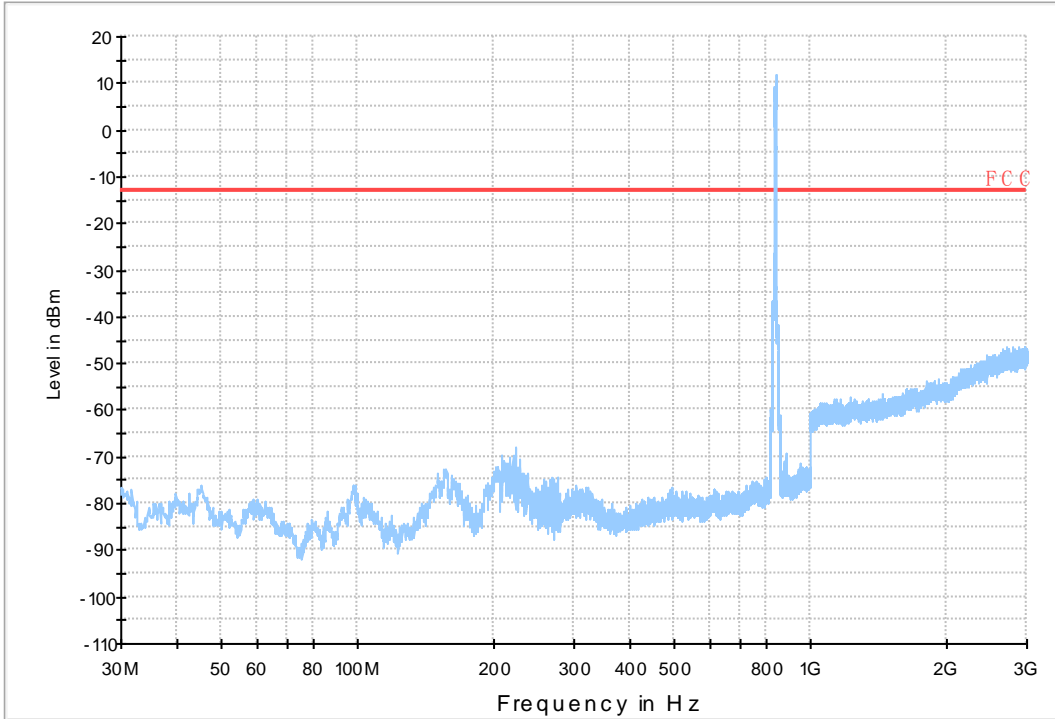


7.1.2 Test Band = WCDMA850_ANT2

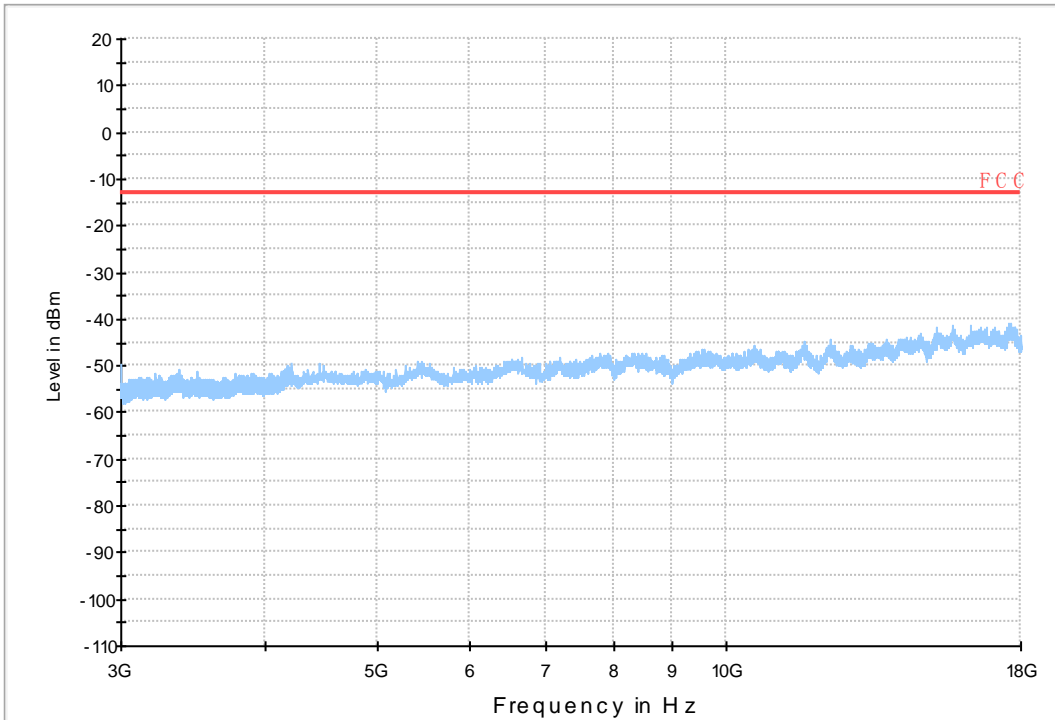
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

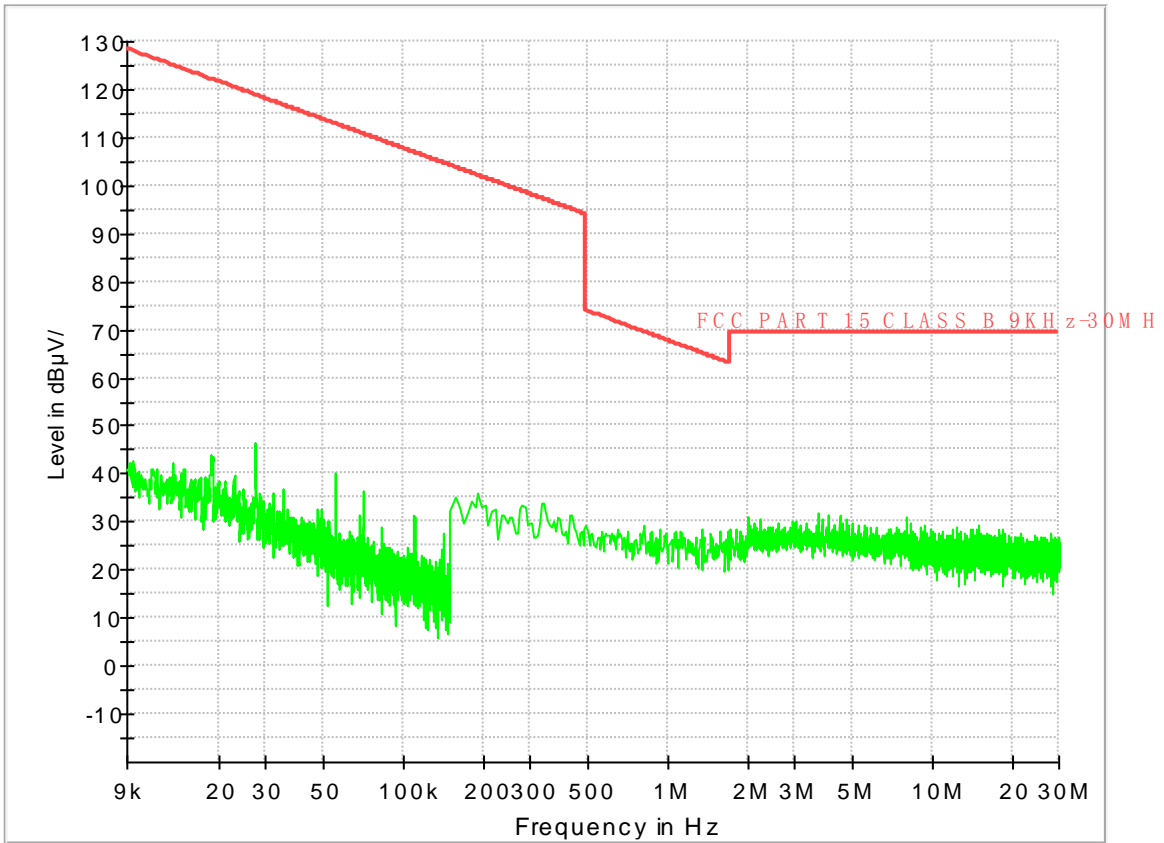


Copy of FCC PART22 W CDMA850_H

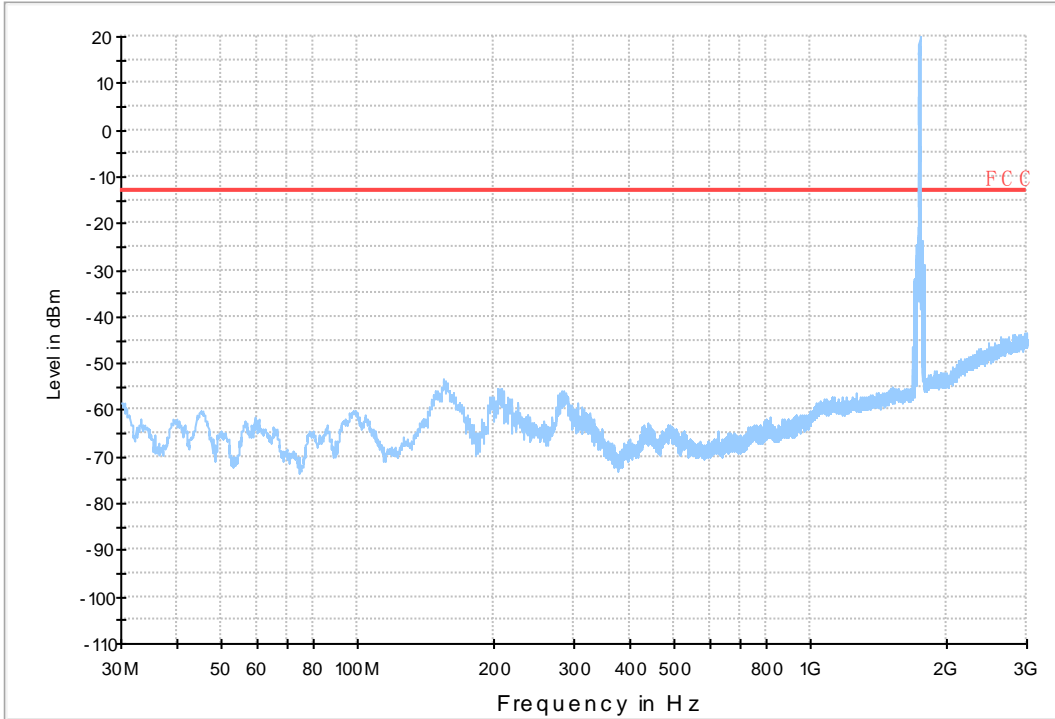


7.1.3 Test Band = WCDMA1700_ANT1

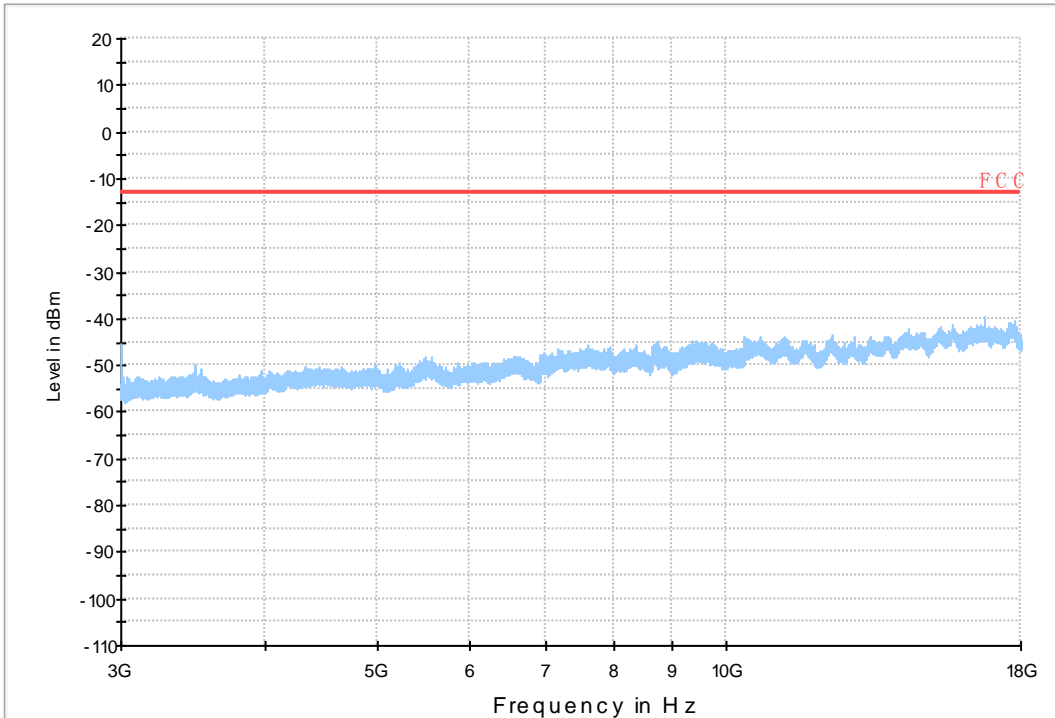
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

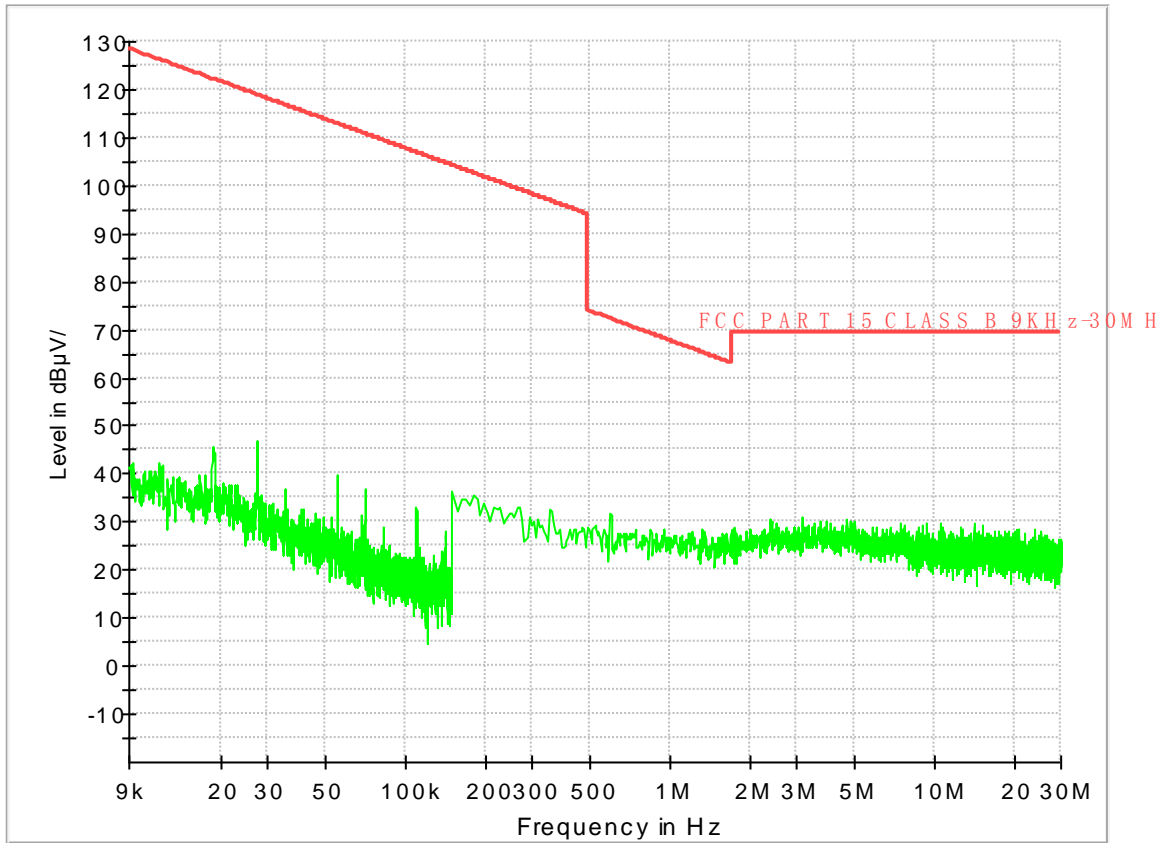


Copy of FCC PART27 W CDMA1700_H

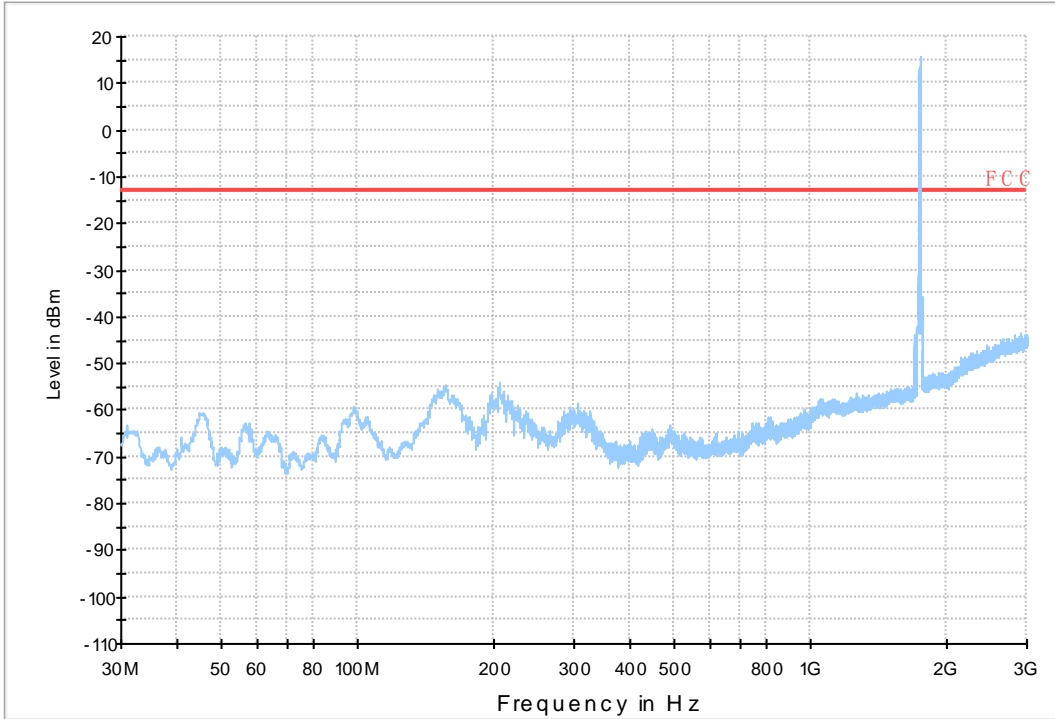


7.1.4 Test Band = WCDMA1700_ANT2

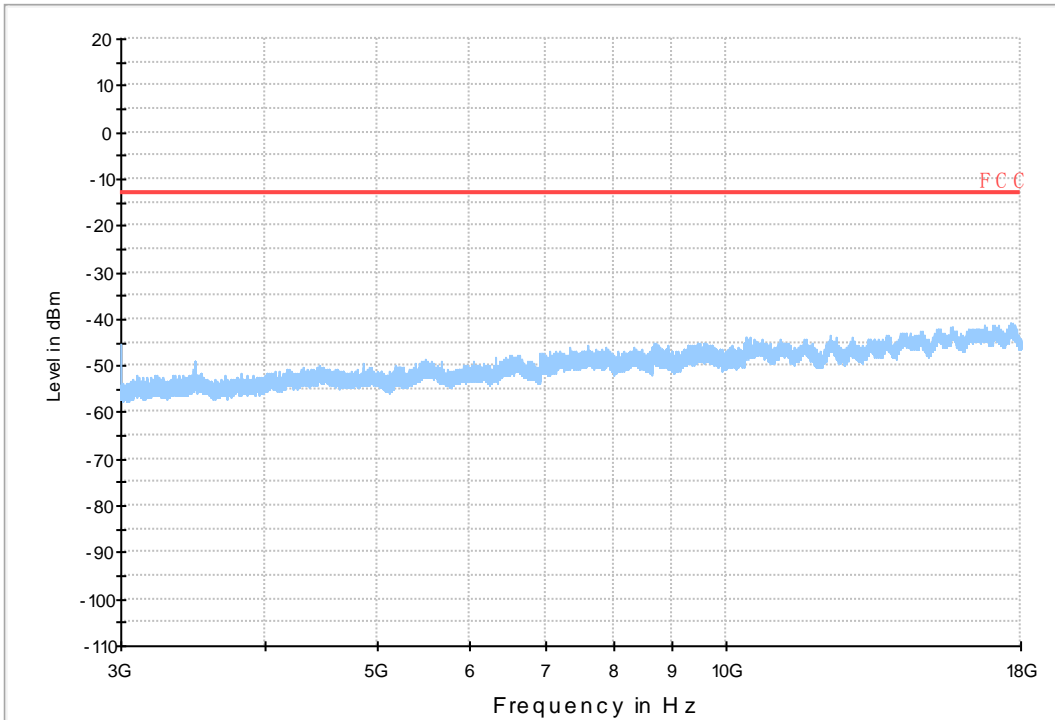
7.1.4.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

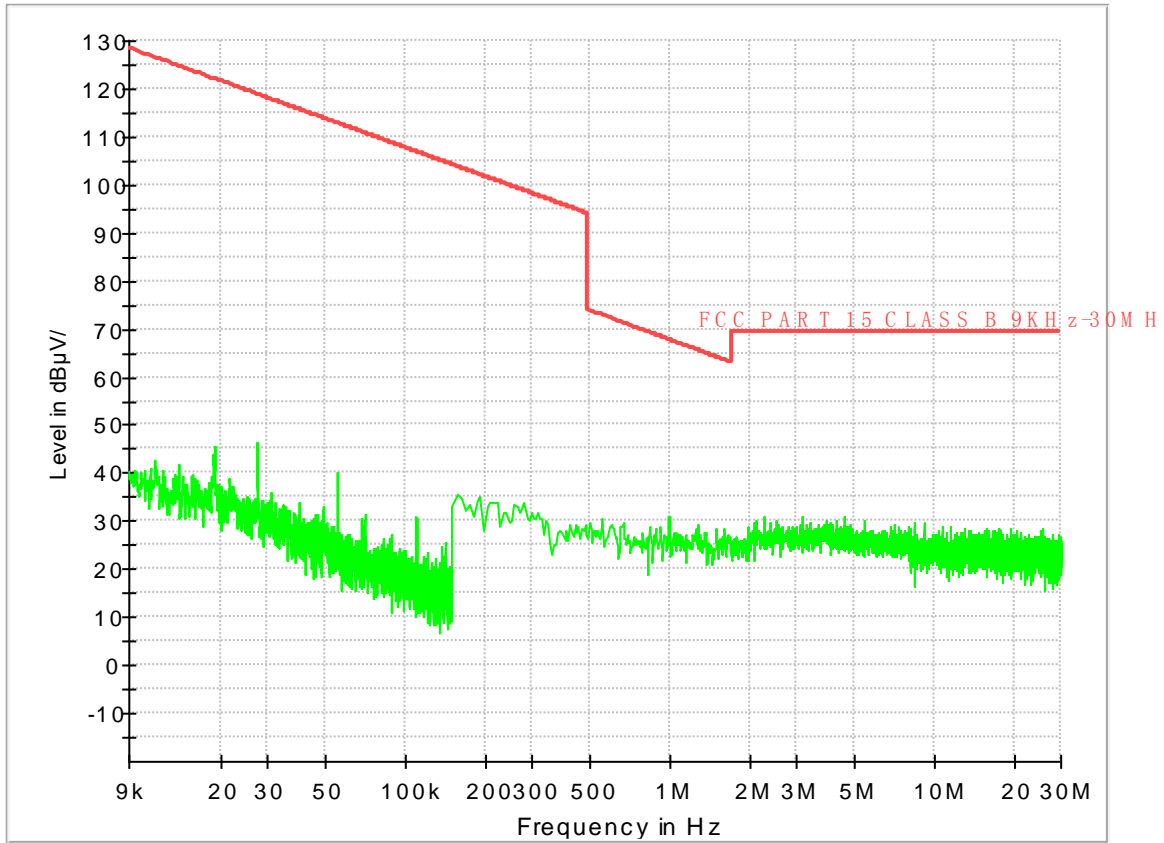


Copy of FCC PART27 W CDMA1700_H

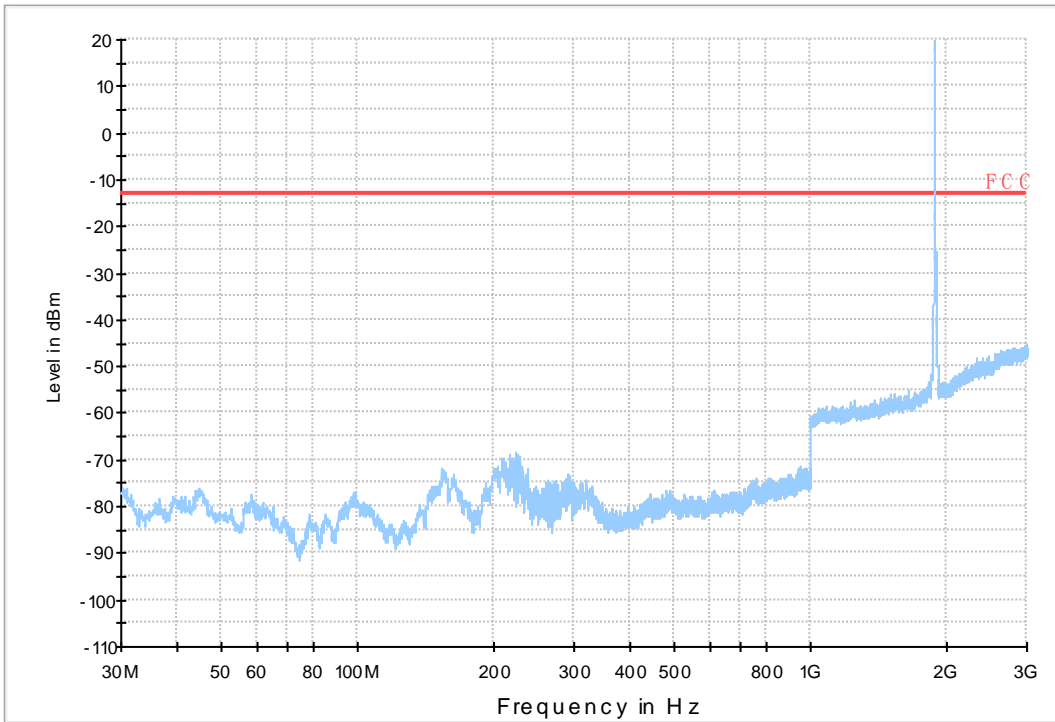


7.1.5 Test Band = WCDMA1900_ANT1

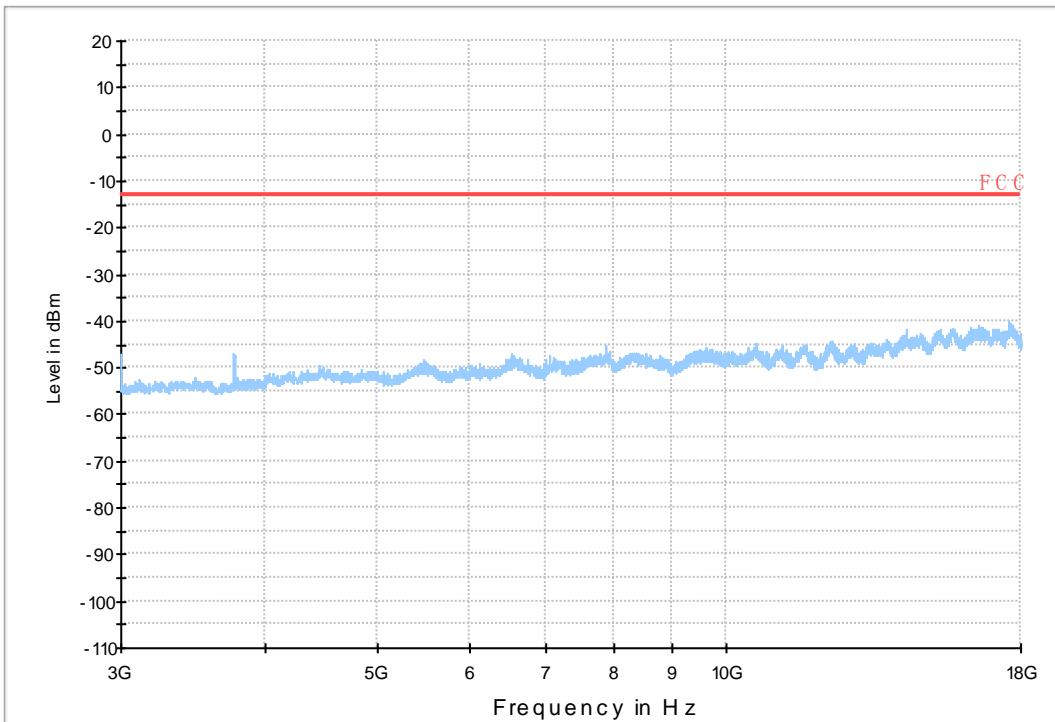
7.1.5.1 Test Mode = UMTS/TM1

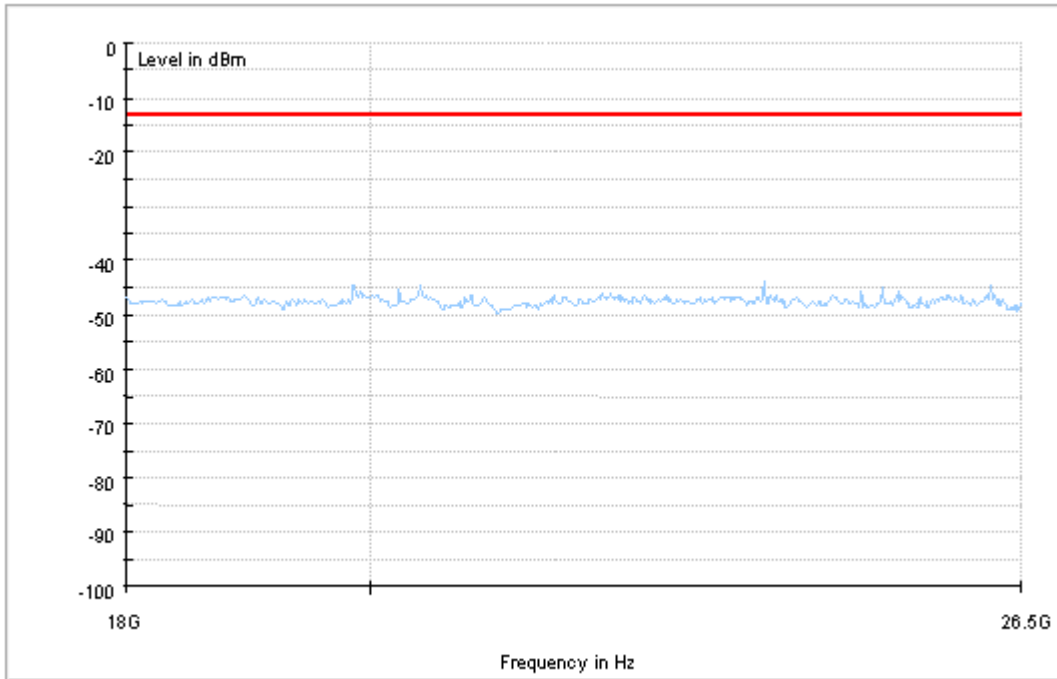


Copy of FCC PART24 W CDMA1900_L



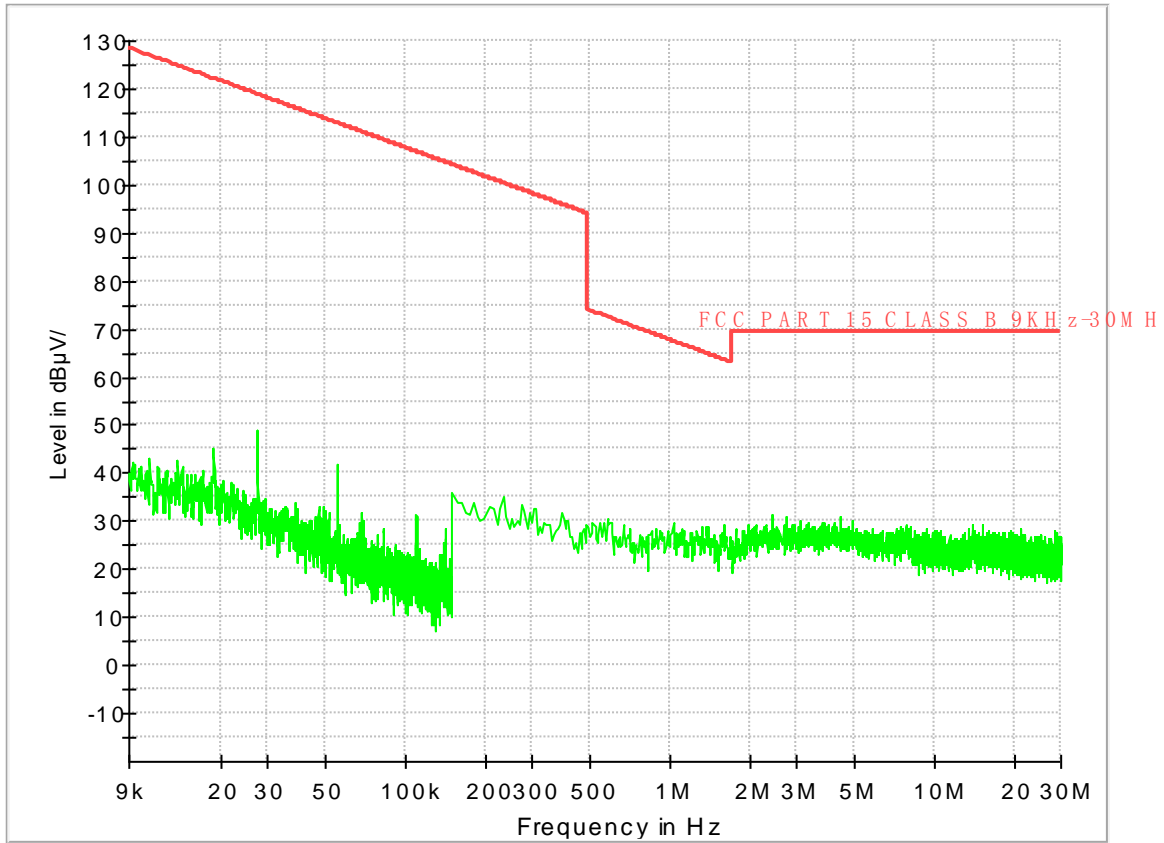
Copy of FCC PART24 W CDMA1900_H



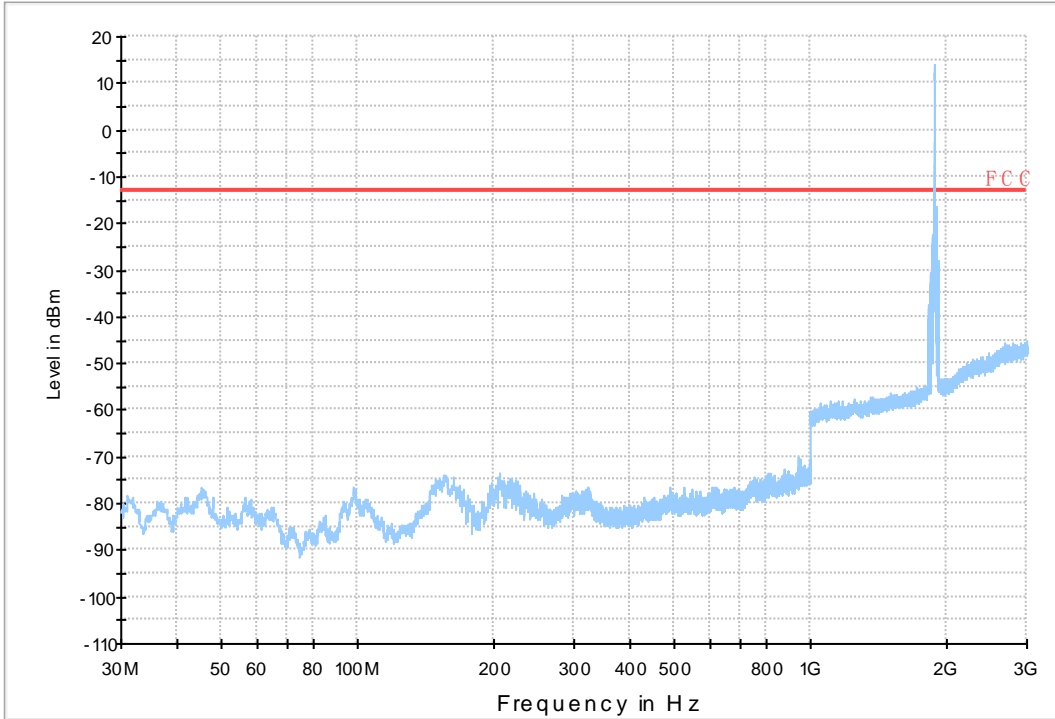


7.1.6 Test Band = WCDMA1900_ANT2

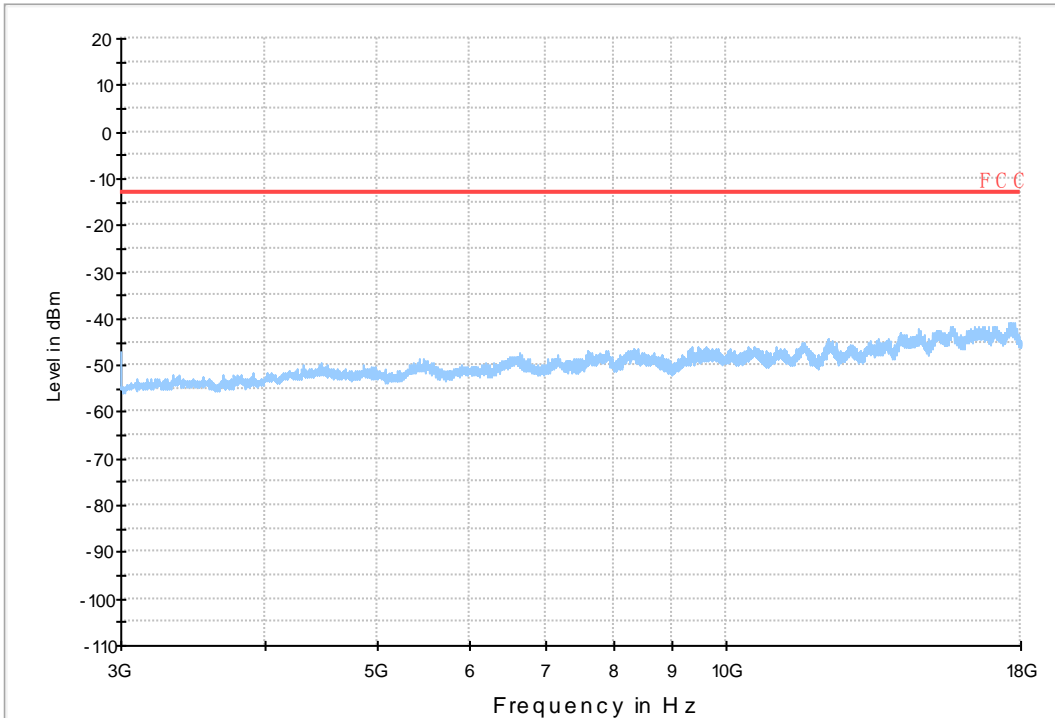
7.1.6.1 Test Mode = UMTS/TM1

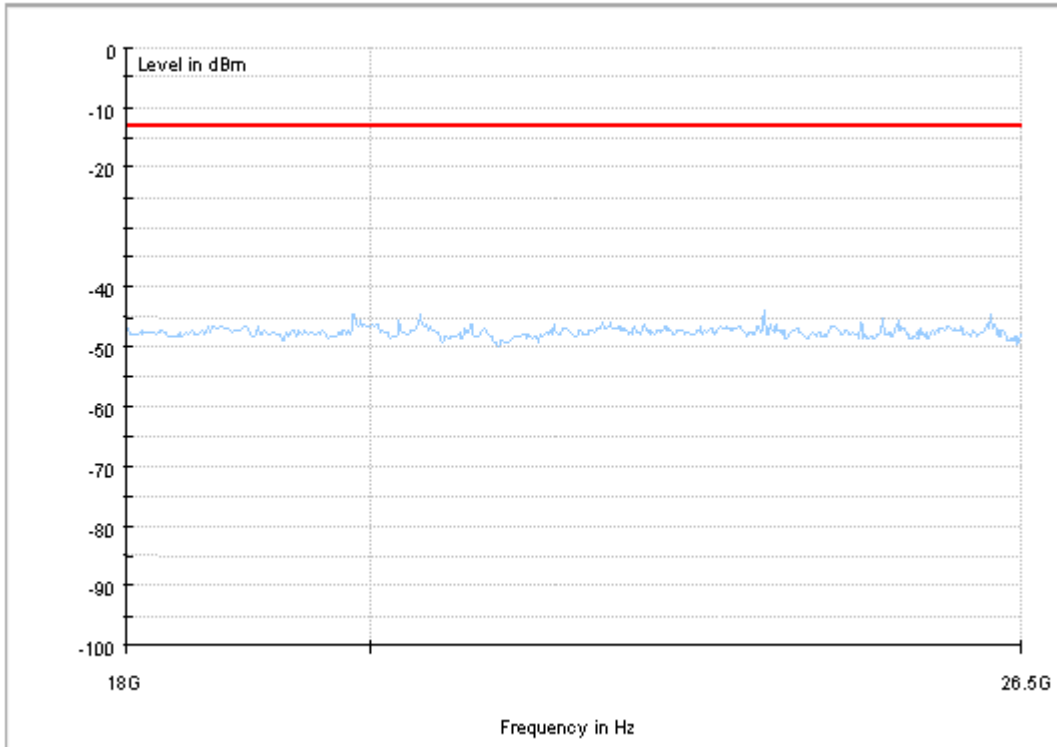


Copy of FCC PART24 W CDMA1900_L



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	4.49	0.00543	PASS
				VN	8.77	0.01061	PASS
				VH	8.27	0.01001	PASS
		MCH	TN	VL	3.01	0.0036	PASS
				VN	6.65	0.00795	PASS
				VH	4.43	0.0053	PASS
		HCH	TN	VL	-9.06	-0.0107	PASS
				VN	1.27	0.0015	PASS
				VH	-5.43	-0.00641	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	0.72	0.00032	PASS
				VN	5.36	0.00235	PASS
				VH	1.25	0.00055	PASS
		MCH	TN	VL	1.72	0.00075	PASS
				VN	-3.45	-0.00151	PASS
				VH	-6.21	-0.00272	PASS
		HCH	TN	VL	1.01	0.00044	PASS
				VN	-1.51	-0.00066	PASS
				VH	0.43	0.00019	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-1.98	-0.00107	PASS
				VN	-6.96	-0.00376	PASS
				VH	6.24	0.00337	PASS
		MCH	TN	VL	0.29	0.00015	PASS
				VN	-2.24	-0.00119	PASS
				VH	-17.43	-0.00927	PASS
		HCH	TN	VL	-0.05	-0.00003	PASS
				VN	5.33	0.00279	PASS
				VH	-3.25	-0.0017	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
WCDMA850	UMTS/TM1	LCH	VN	-30	1.19	0.00144	PASS
				-20	1.72	0.00208	PASS
				-10	1.42	0.00172	PASS
				0	-1.95	-0.00236	PASS
				10	-5.66	-0.00685	PASS
				20	4.38	0.0053	PASS
				30	5.36	0.00649	PASS
				40	1.04	0.00126	PASS
				50	2.03	0.00246	PASS
		MCH	VN	-30	6.09	0.00728	PASS
				-20	3.43	0.0041	PASS
				-10	-2.24	-0.00268	PASS
				0	2.01	0.0024	PASS
				10	3.98	0.00476	PASS
				20	4.68	0.0056	PASS
				30	0.82	0.00098	PASS
				40	-7.1	-0.00849	PASS
				50	5.69	0.0068	PASS
		HCH	VN	-30	7.03	0.0083	PASS
				-20	0.32	0.00038	PASS
				-10	6.47	0.00764	PASS
				0	4.68	0.00553	PASS
				10	10.25	0.01211	PASS
				20	6.99	0.00826	PASS
				30	-4.55	-0.00537	PASS
				40	8.76	0.01035	PASS
				50	-9.19	-0.01086	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	3.75	0.00165	PASS
				-20	-3.36	-0.00148	PASS
				-10	3.05	0.00134	PASS
				0	-3.52	-0.00155	PASS
				10	-3.13	-0.00137	PASS
				20	10.36	0.00455	PASS
				30	-0.67	-0.00029	PASS
				40	-4.03	-0.00177	PASS
				50	-1.65	-0.00072	PASS
		MCH	VN	-30	0.73	0.00032	PASS
				-20	4.76	0.00208	PASS
				-10	-6.64	-0.0029	PASS
				0	2.27	0.00099	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-7.86	-0.00344	PASS
				20	7.63	0.00334	PASS
				30	-6.53	-0.00286	PASS
				40	-3.01	-0.00132	PASS
				50	-7.14	-0.00312	PASS
		HCH	VN	-30	-3.78	-0.00165	PASS
				-20	-6.65	-0.0029	PASS
				-10	-5.78	-0.00252	PASS
				0	3.43	0.00149	PASS
				10	-3.3	-0.00144	PASS
				20	-2.94	-0.00128	PASS
				30	-0.02	-0.00001	PASS
				40	-1.66	-0.00072	PASS
				50	-7.54	-0.00328	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	12.86	0.00694	PASS
				-20	1.57	0.00085	PASS
				-10	3.22	0.00174	PASS
				0	-1.95	-0.00105	PASS
				10	-1.75	-0.00094	PASS
				20	4.35	0.00235	PASS
				30	-1.04	-0.00056	PASS
				40	-10.07	-0.00544	PASS
				50	-0.27	-0.00015	PASS
		MCH	VN	-30	-6.61	-0.00352	PASS
				-20	-7.48	-0.00398	PASS
				-10	-2.76	-0.00147	PASS
				0	-4.75	-0.00253	PASS
				10	-19.49	-0.01037	PASS
				20	-6.03	-0.00321	PASS
				30	-4.87	-0.00259	PASS
				40	-3.48	-0.00185	PASS
				50	-12.27	-0.00653	PASS
		HCH	VN	-30	-5.2	-0.00273	PASS
				-20	-7.58	-0.00397	PASS
				-10	-5.87	-0.00308	PASS
				0	4.33	0.00227	PASS
				10	-0.15	-0.00008	PASS
				20	-6.12	-0.00321	PASS
				30	9.31	0.00488	PASS
				40	0.05	0.00003	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	-11.51	-0.00603	PASS

END