



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
WCDMA1900	UMTS/TM1	LCH	23.87	20.99	33	PASS
		MCH	23.81	20.96	33	PASS
		HCH	23.86	20.84	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.43	21.71	30	PASS
		MCH	23.31	21.65	30	PASS
		HCH	23.34	21.69	30	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP[dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.03	18.86	38.5	PASS
		MCH	23.99	19.02	38.5	PASS
		HCH	24.07	19.16	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:

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

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

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

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
WCDMA1900	UMTS/TM1	LCH	2.92	13	PASS
		MCH	2.85	13	PASS
		HCH	2.66	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.64	13	PASS
		MCH	3.08	13	PASS
		HCH	2.95	13	PASS
WCDMA850	UMTS/TM1	LCH	2.91	13	PASS
		MCH	2.8	13	PASS
		HCH	2.71	13	PASS

3Appendix_C: Modulation Characteristics

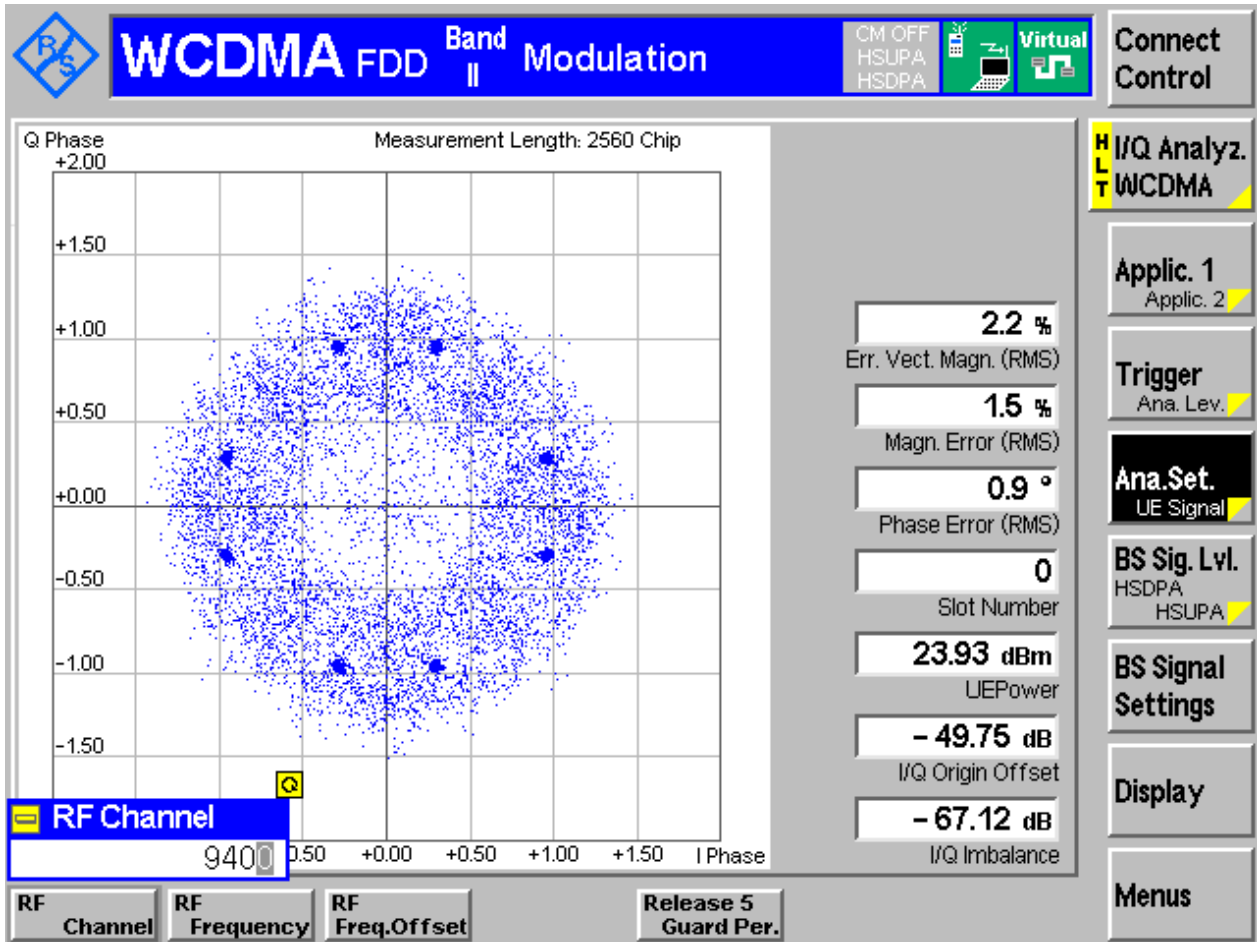
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

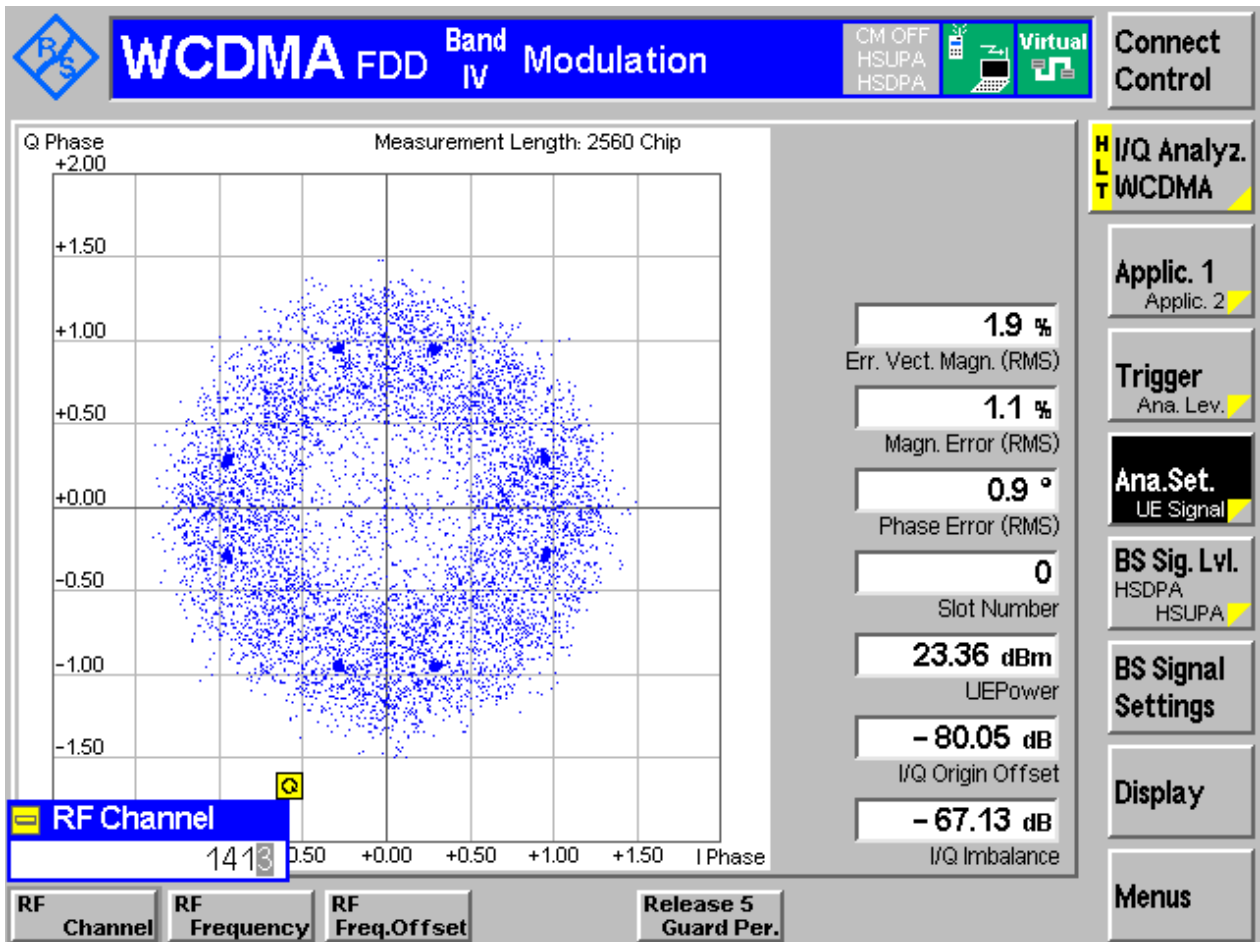
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

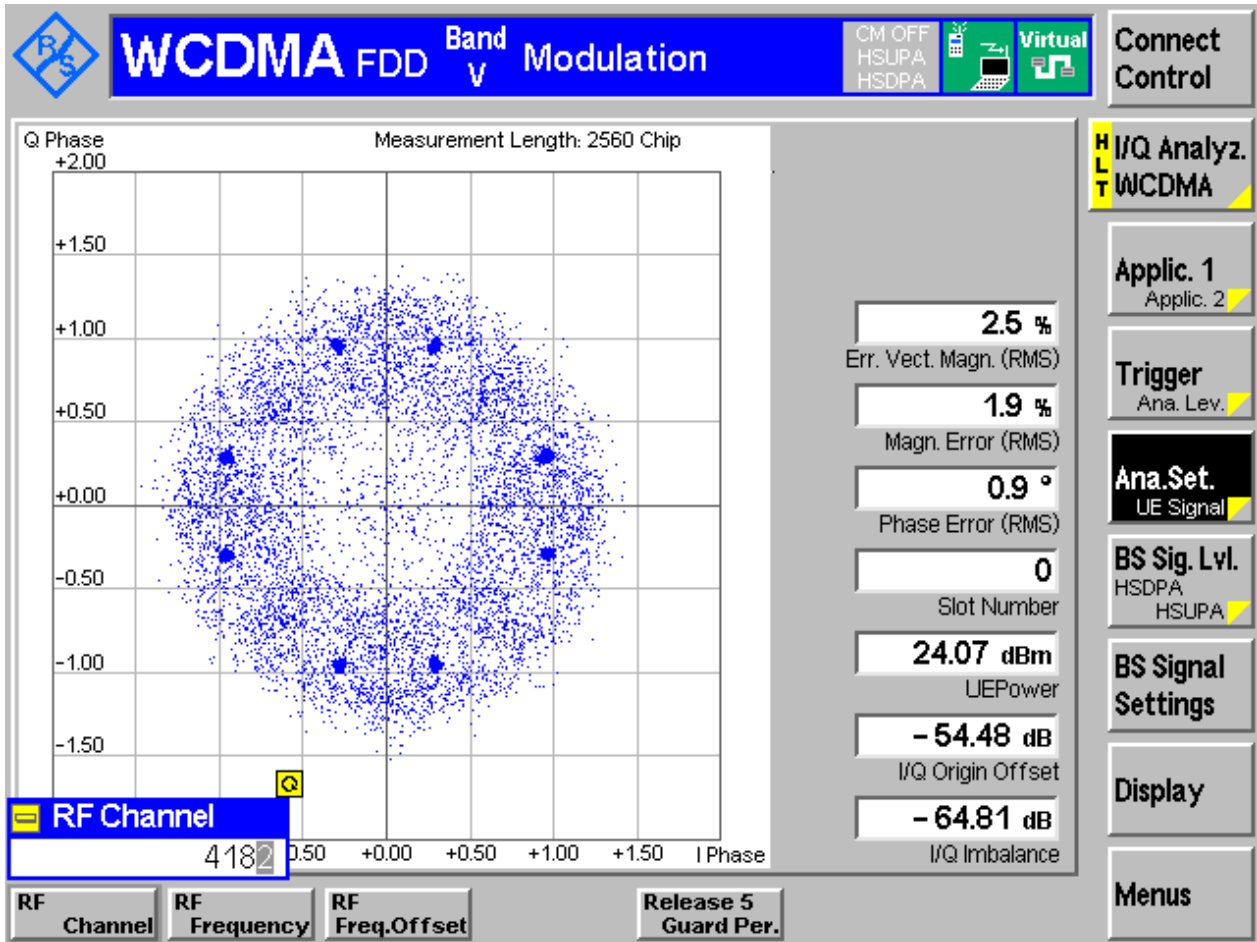
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA850

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
WCDMA1900	UMTS/TM1	LCH	4.16	4.73	Pass
		MCH	4.17	4.72	Pass
		HCH	4.17	4.74	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.73	Pass
		MCH	4.16	4.70	Pass
		HCH	4.17	4.71	Pass
WCDMA850	UMTS/TM1	LCH	4.17	4.72	Pass
		MCH	4.16	4.73	Pass
		HCH	4.17	4.72	Pass

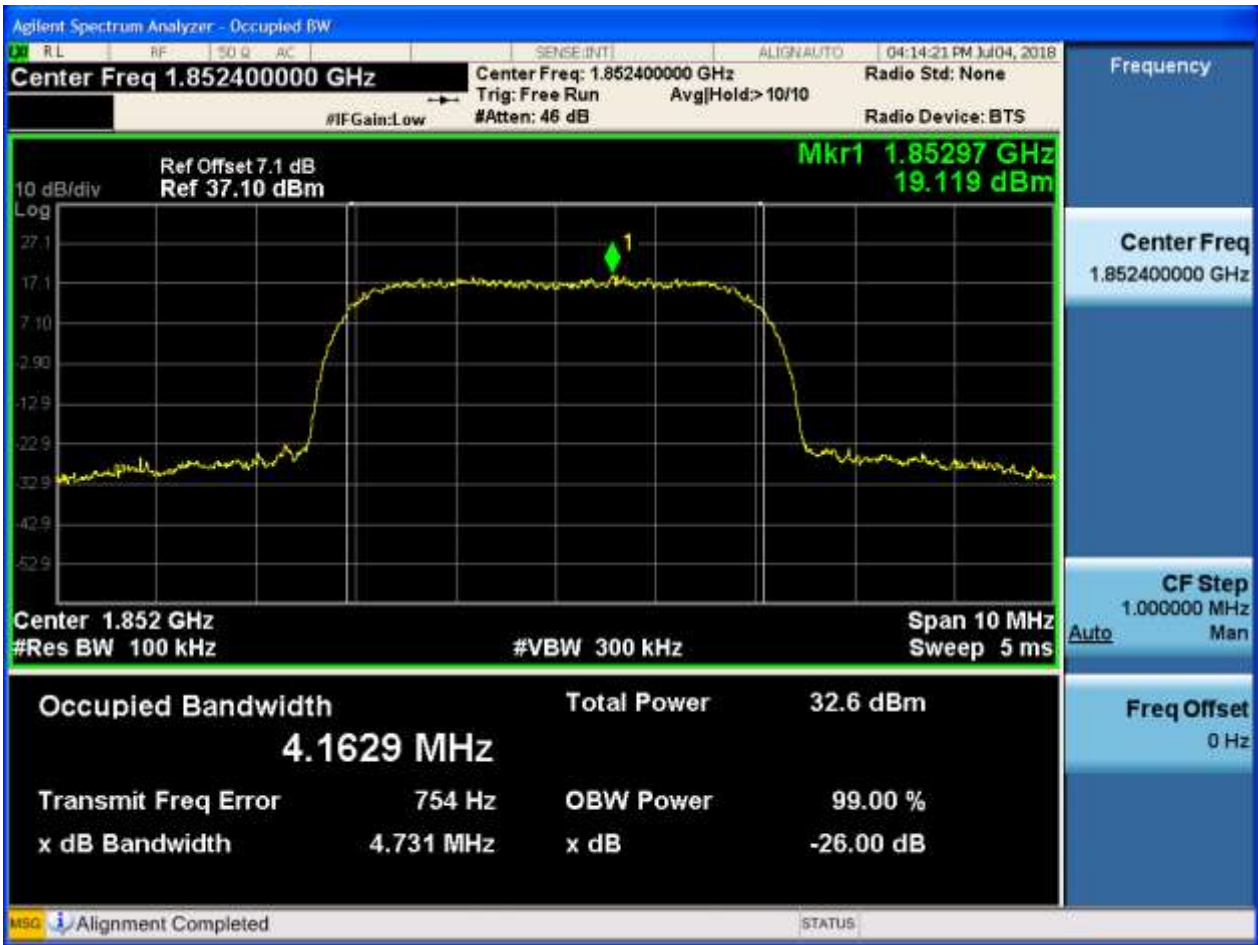
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

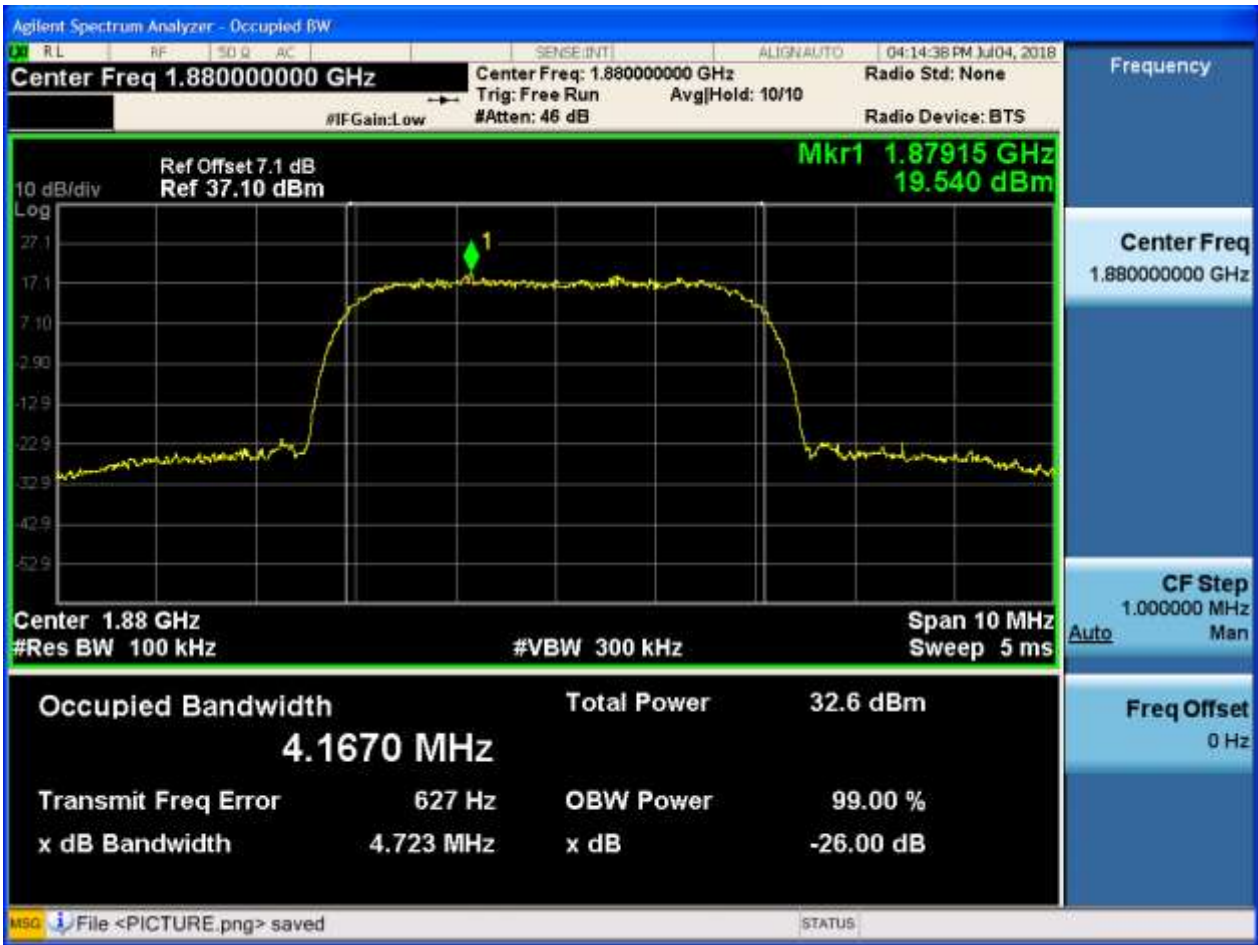
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



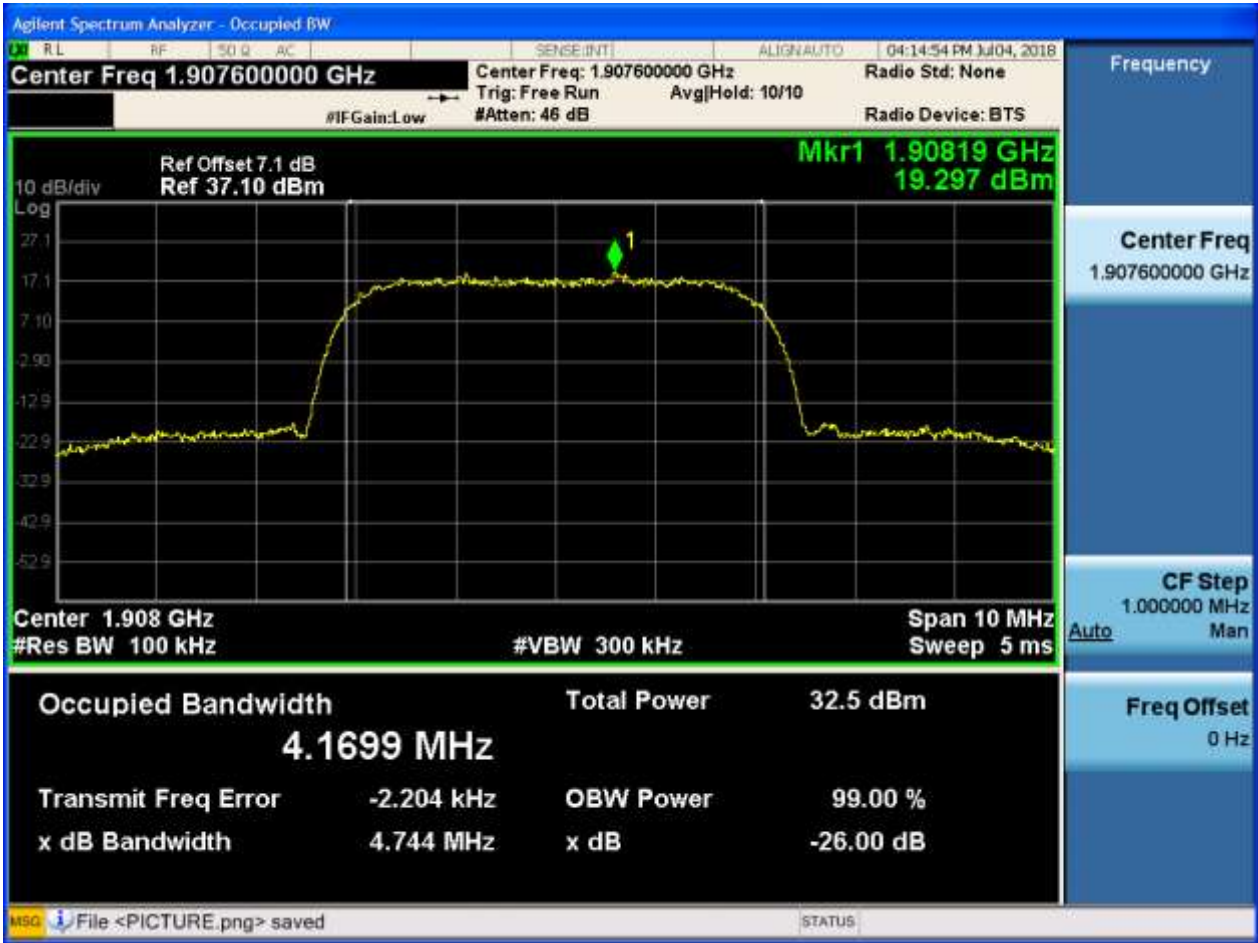


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

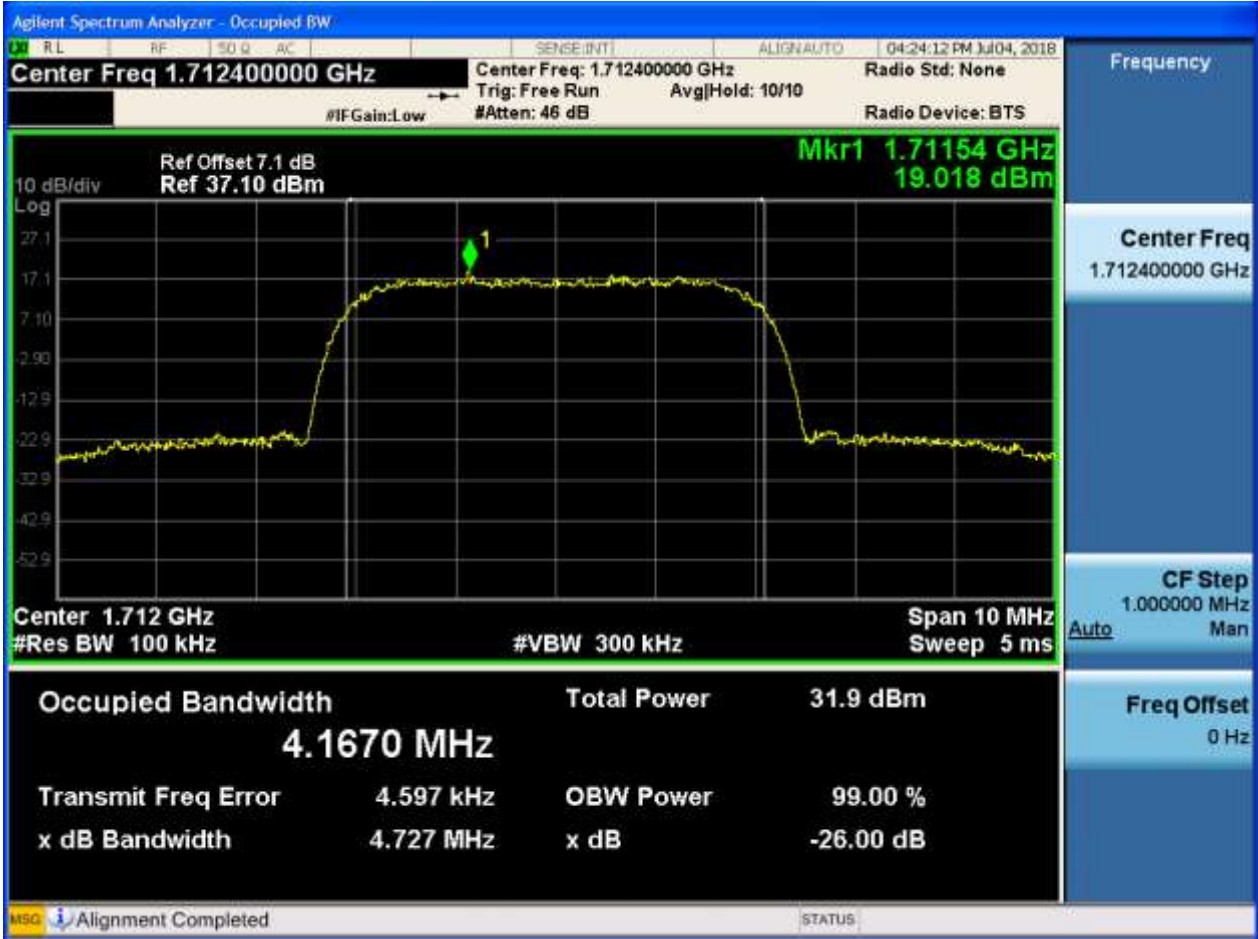




4.1.2 Test Band = WCDMA1700

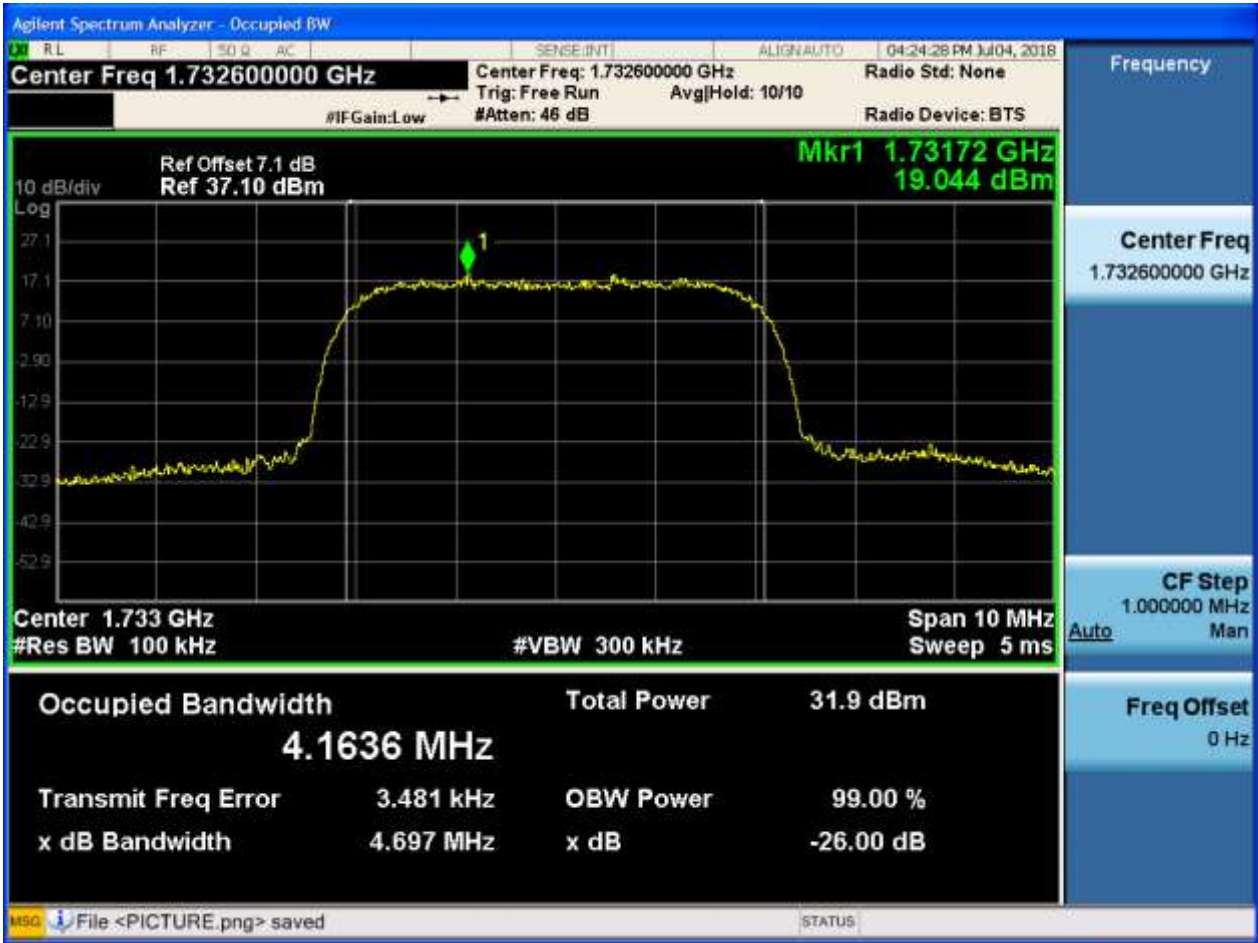
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



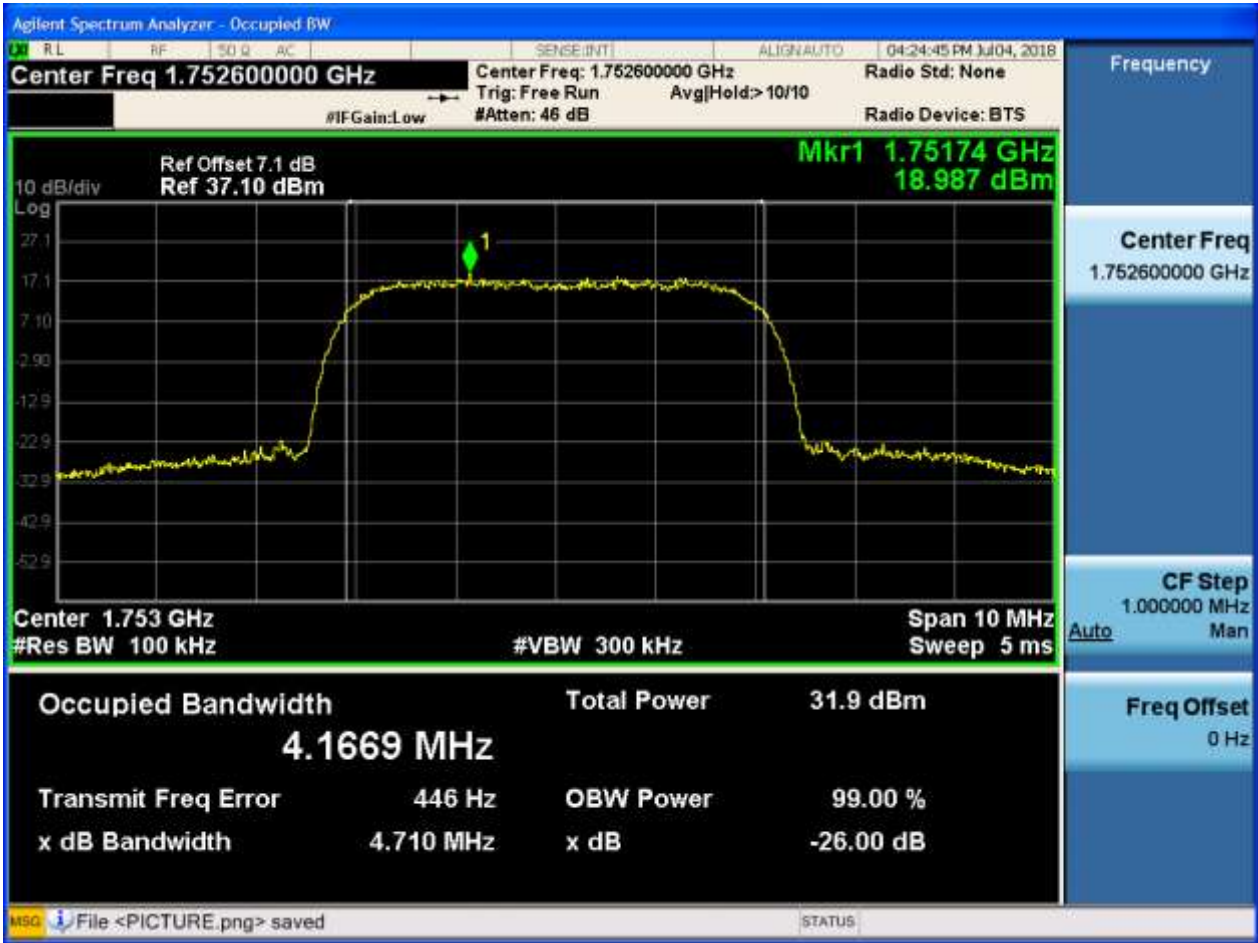


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

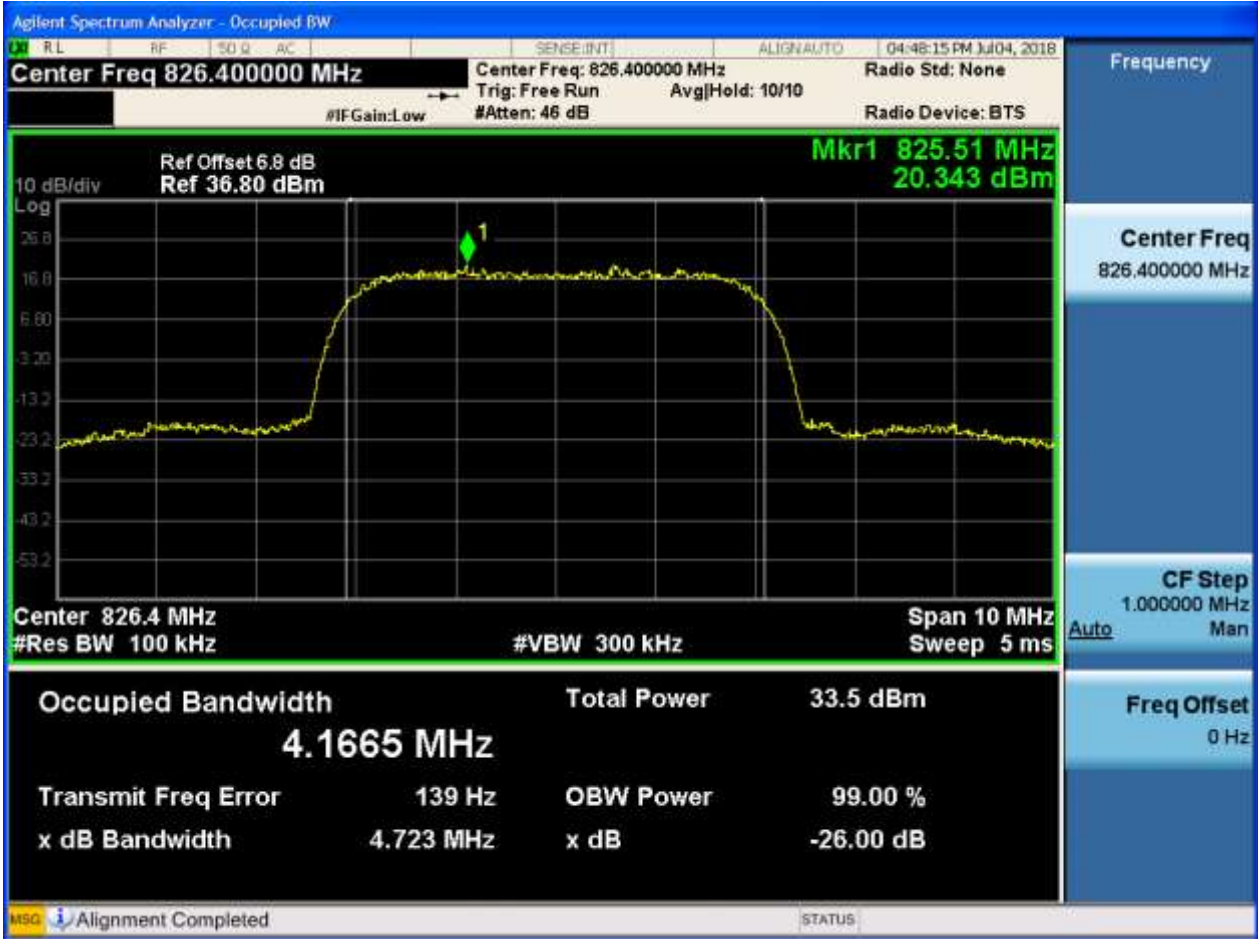




4.1.3 Test Band = WCDMA850

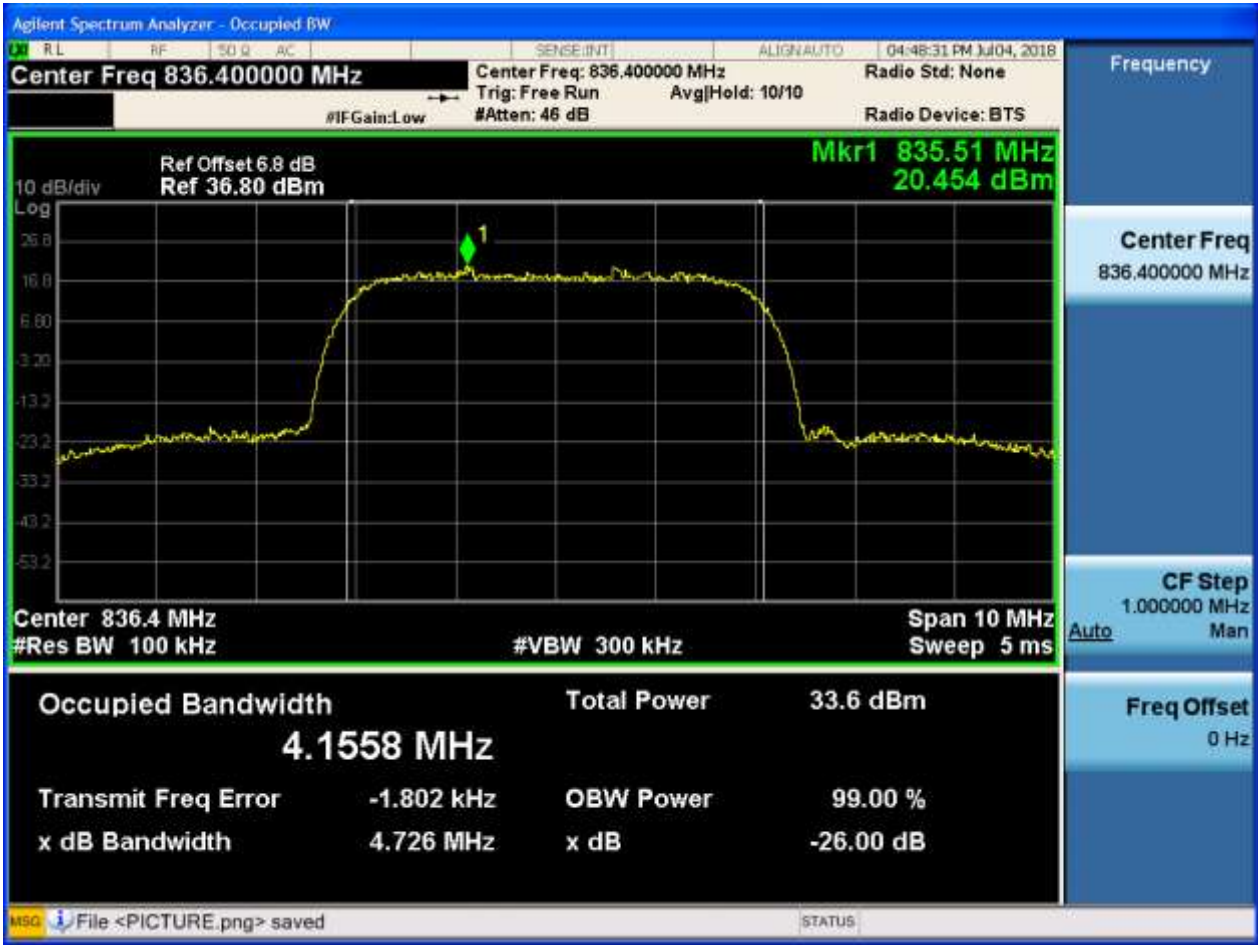
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



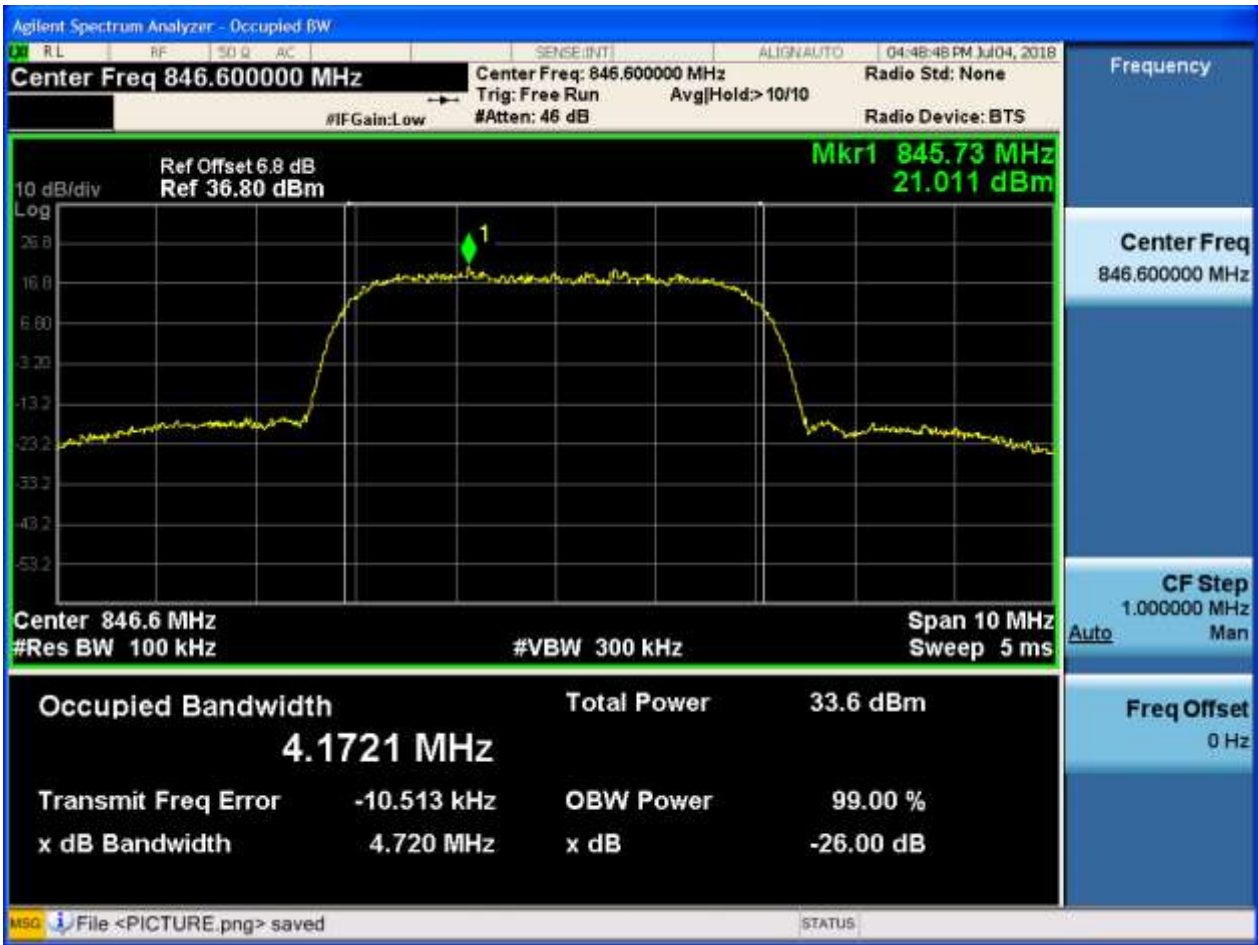


4.1.3.1.2 Test Channel = MCH





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 = 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





5.1.2 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 = WCDMA850

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

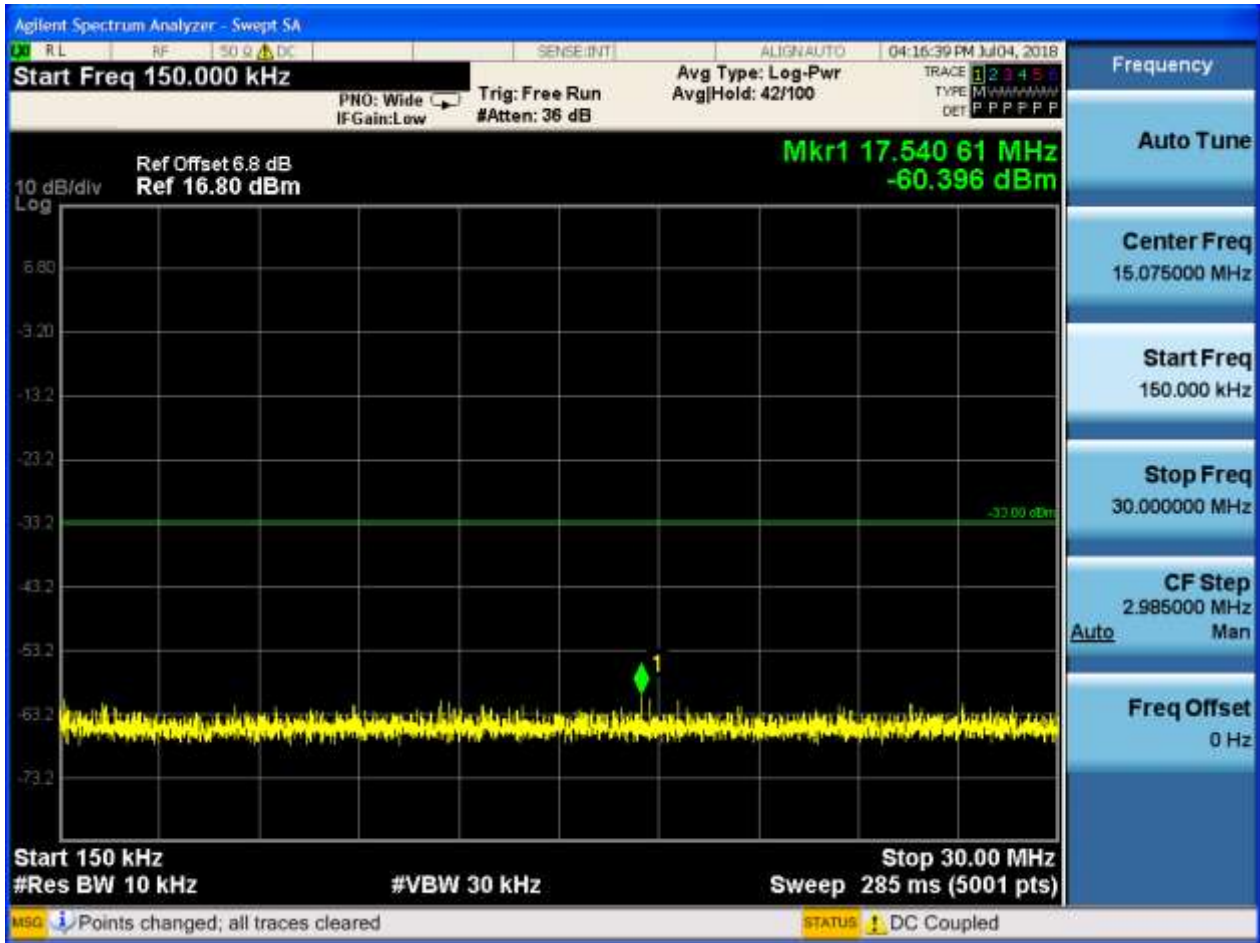
6.1 For UMTS

6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

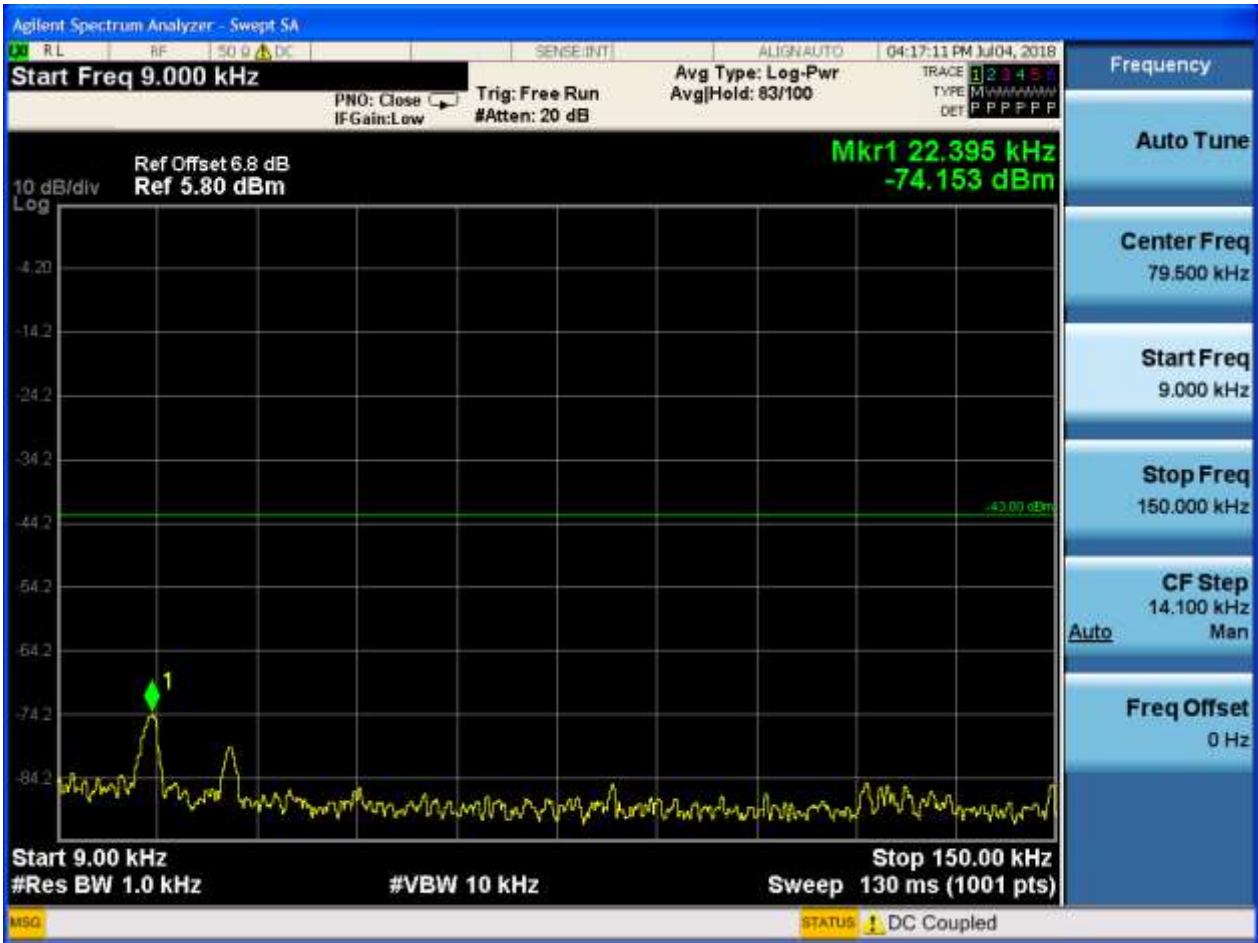
6.1.1.1.1 Test Channel = LCH

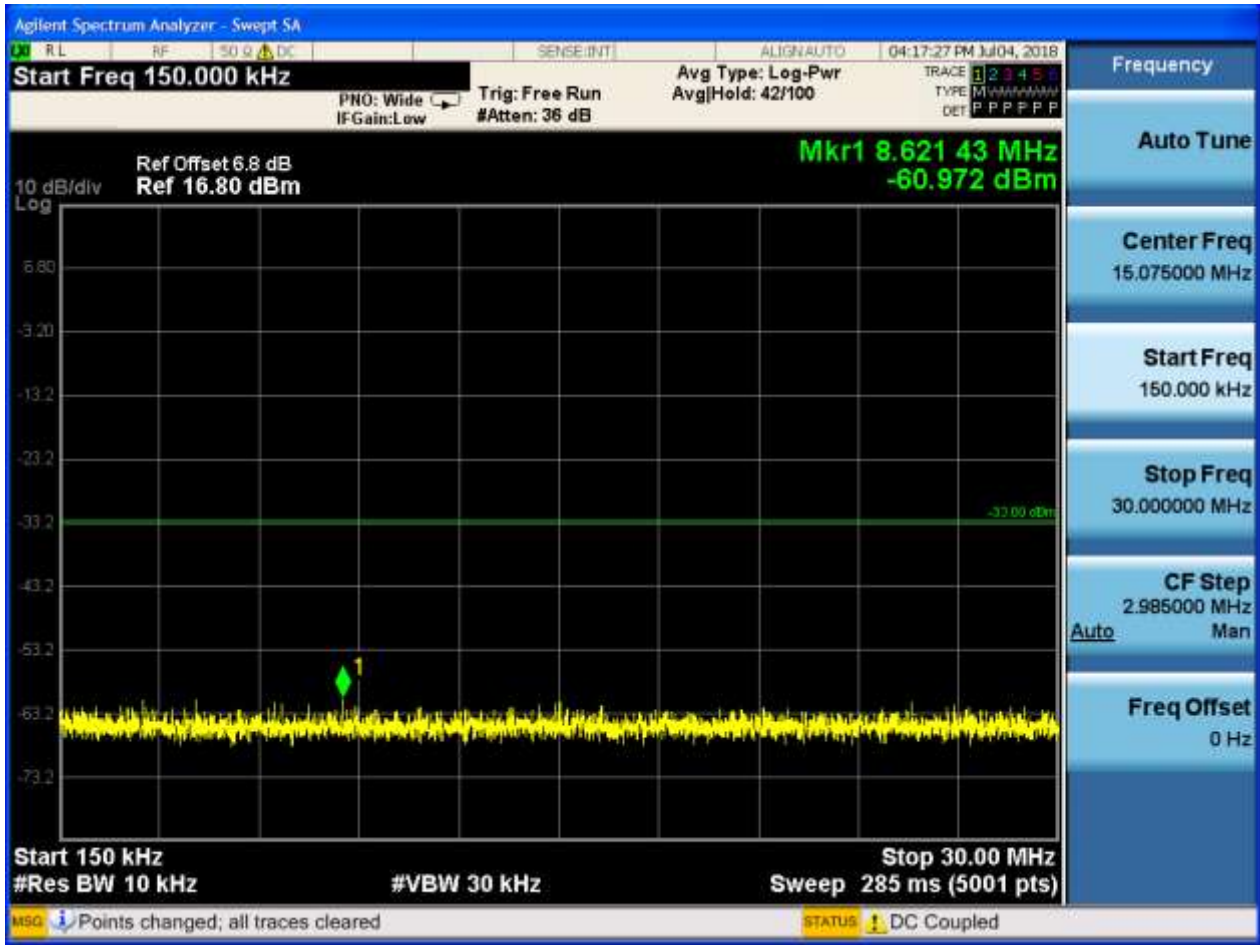






6.1.1.1.2 Test Channel = MCH

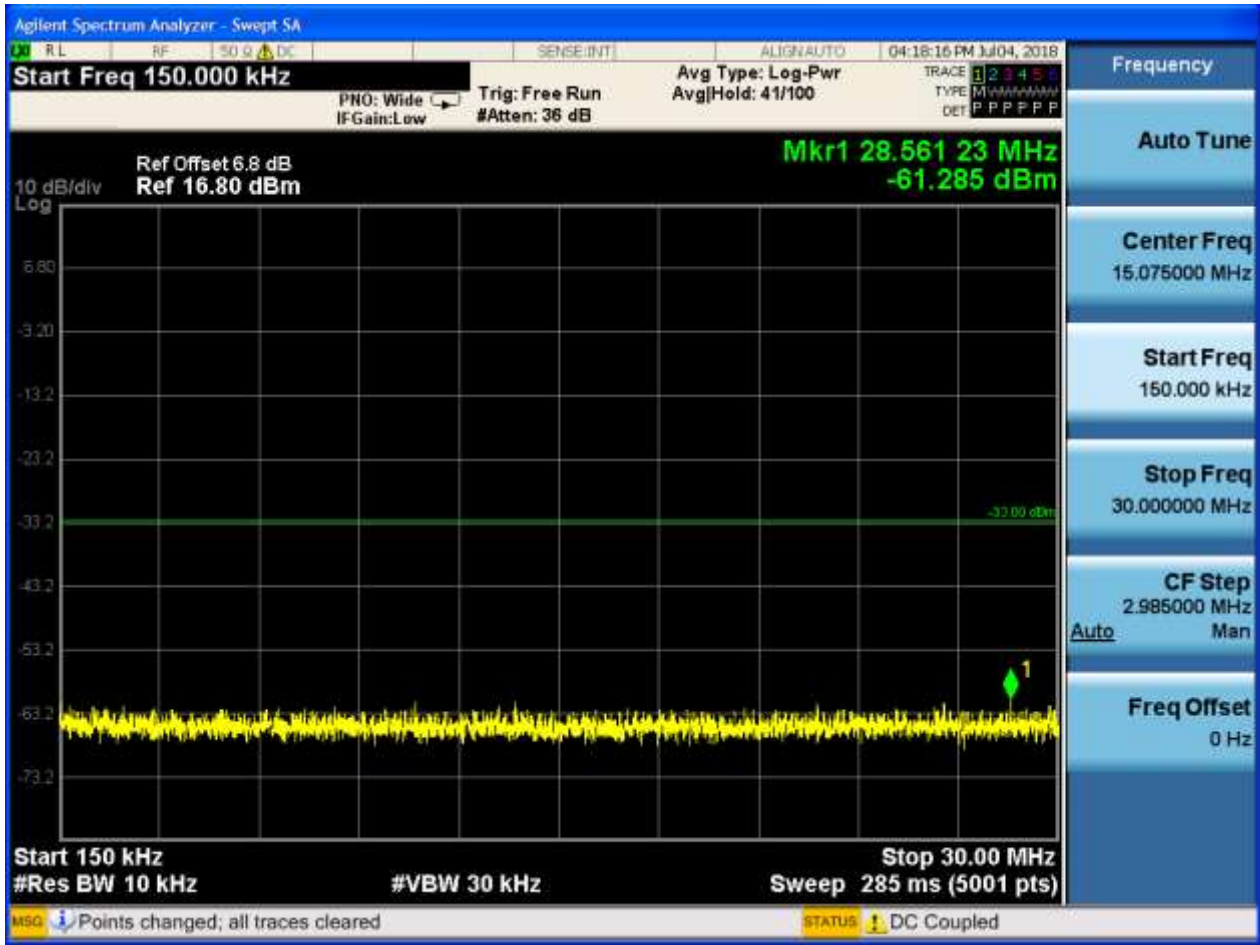






6.1.1.1.3 Test Channel = HCH







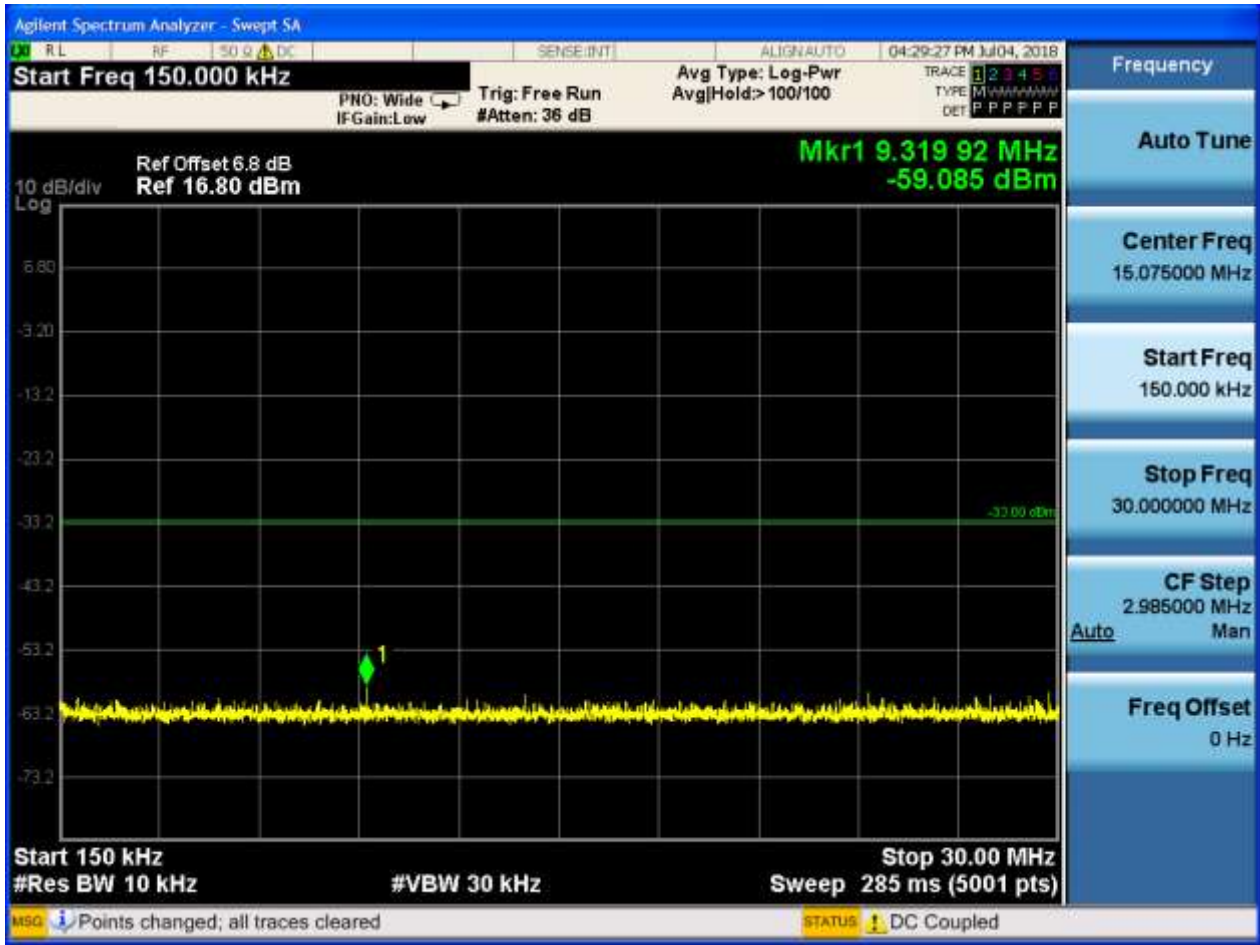


6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

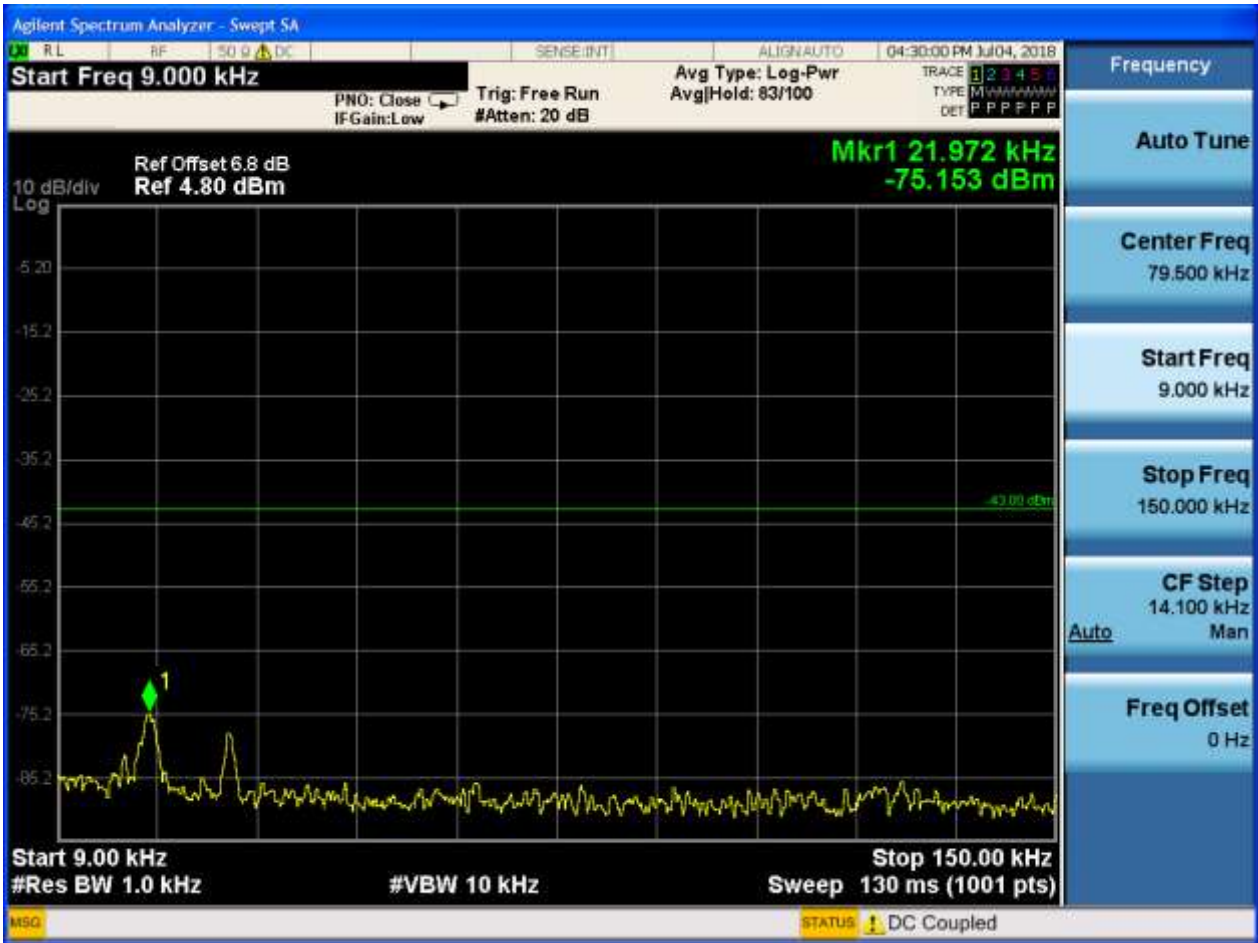
6.1.2.1.1 Test Channel = LCH

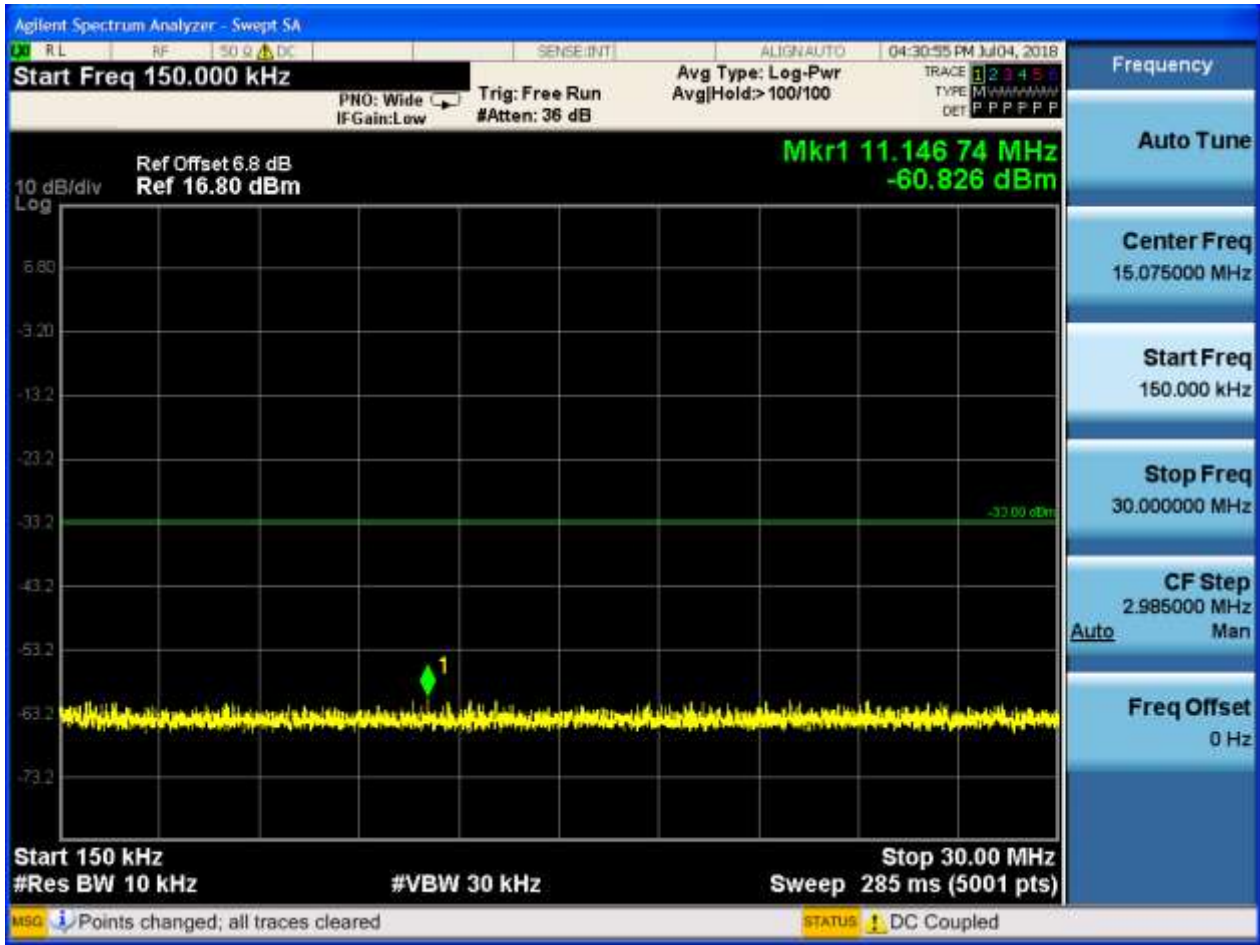






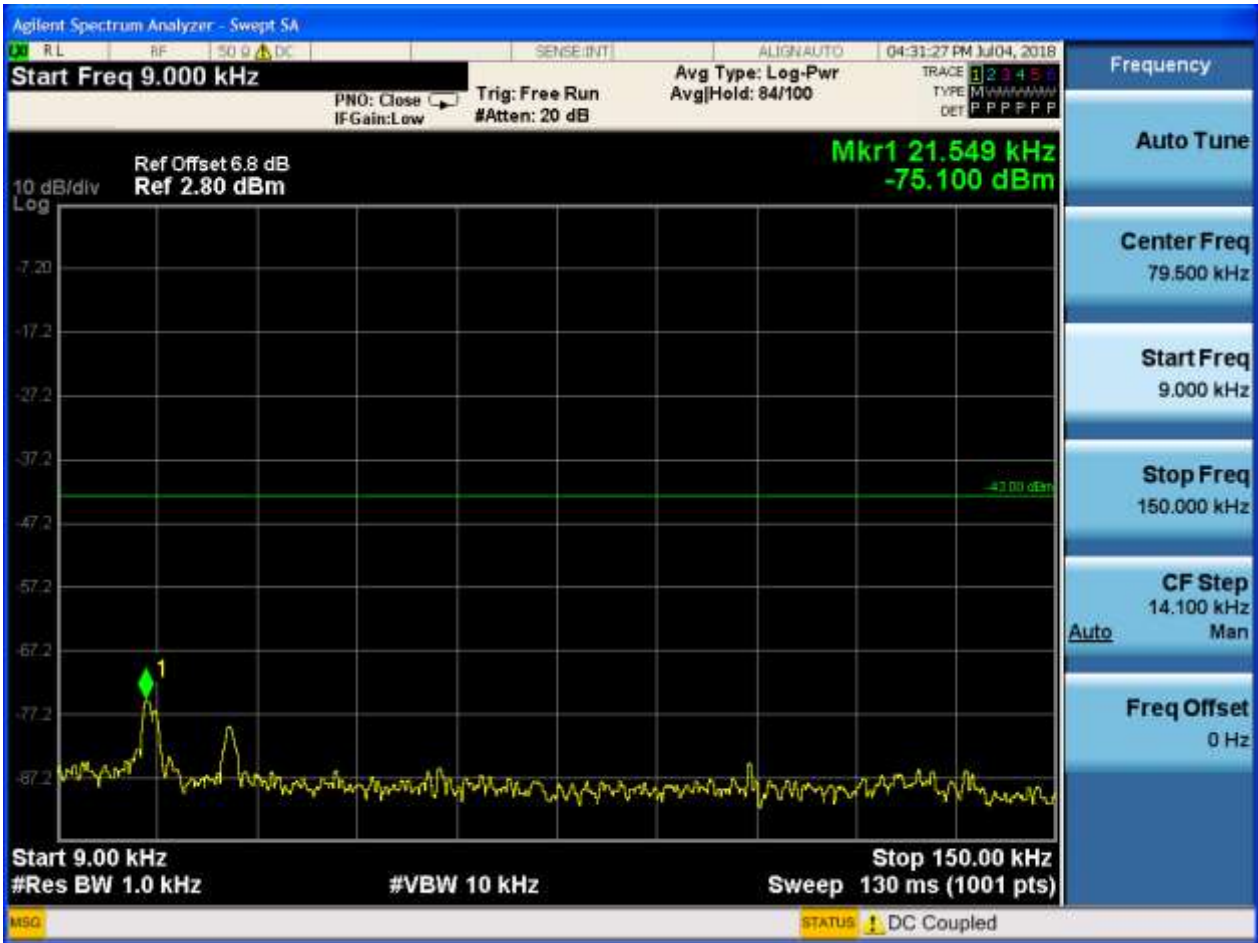
6.1.2.1.2 Test Channel = MCH

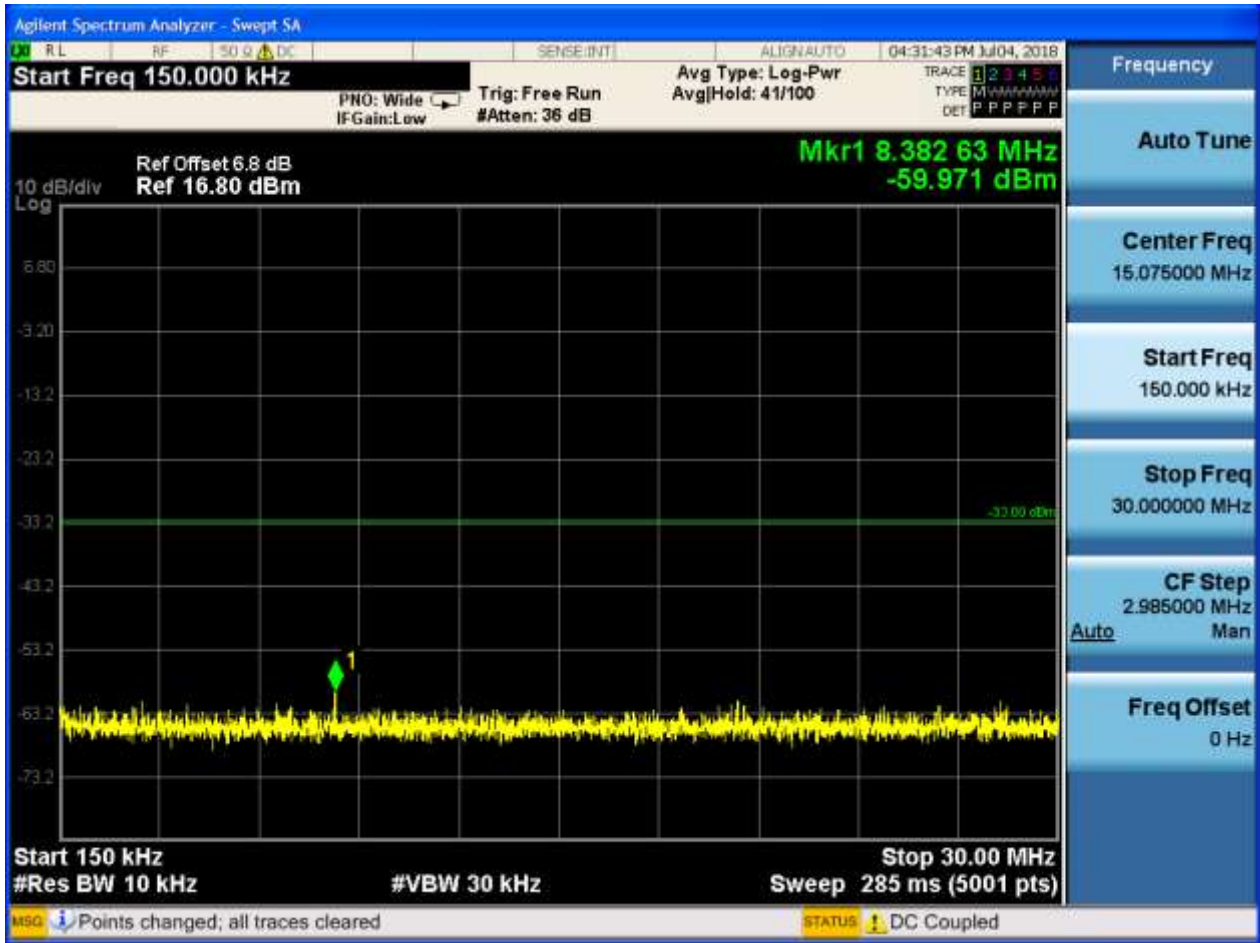






6.1.2.1.3 Test Channel = HCH







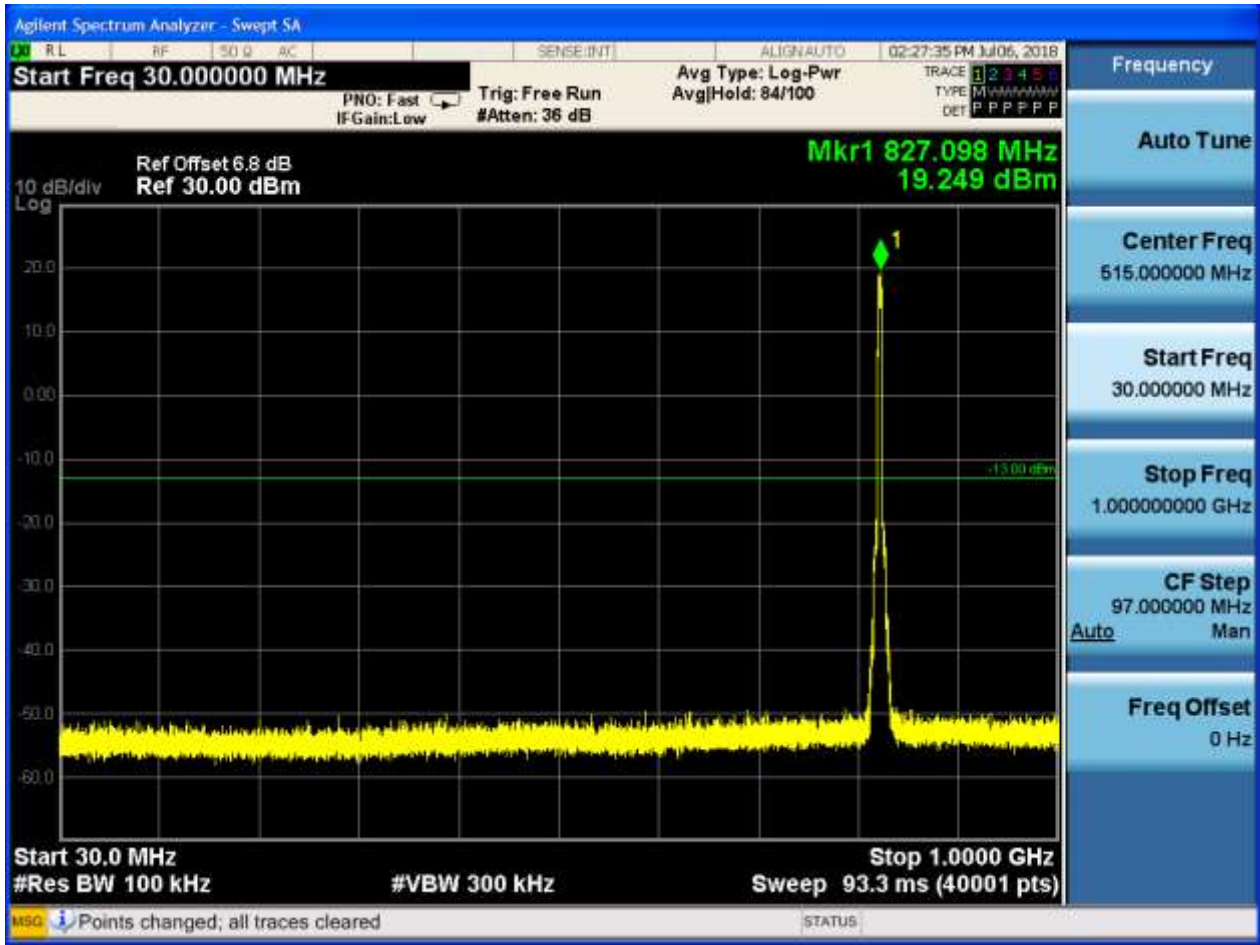


6.1.3 Test Band = WCDMA850

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH





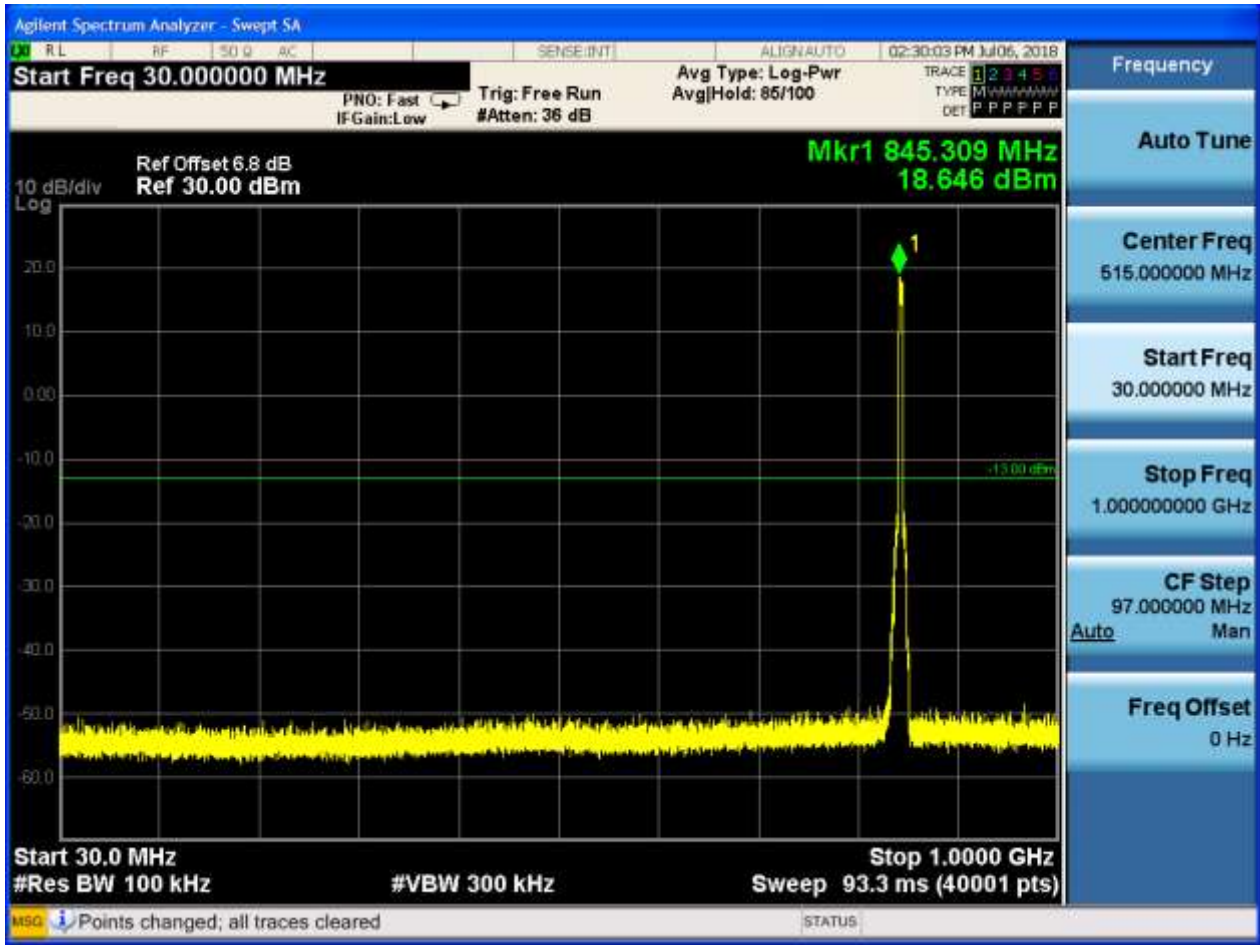
6.1.3.1.2 Test Channel = MCH





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

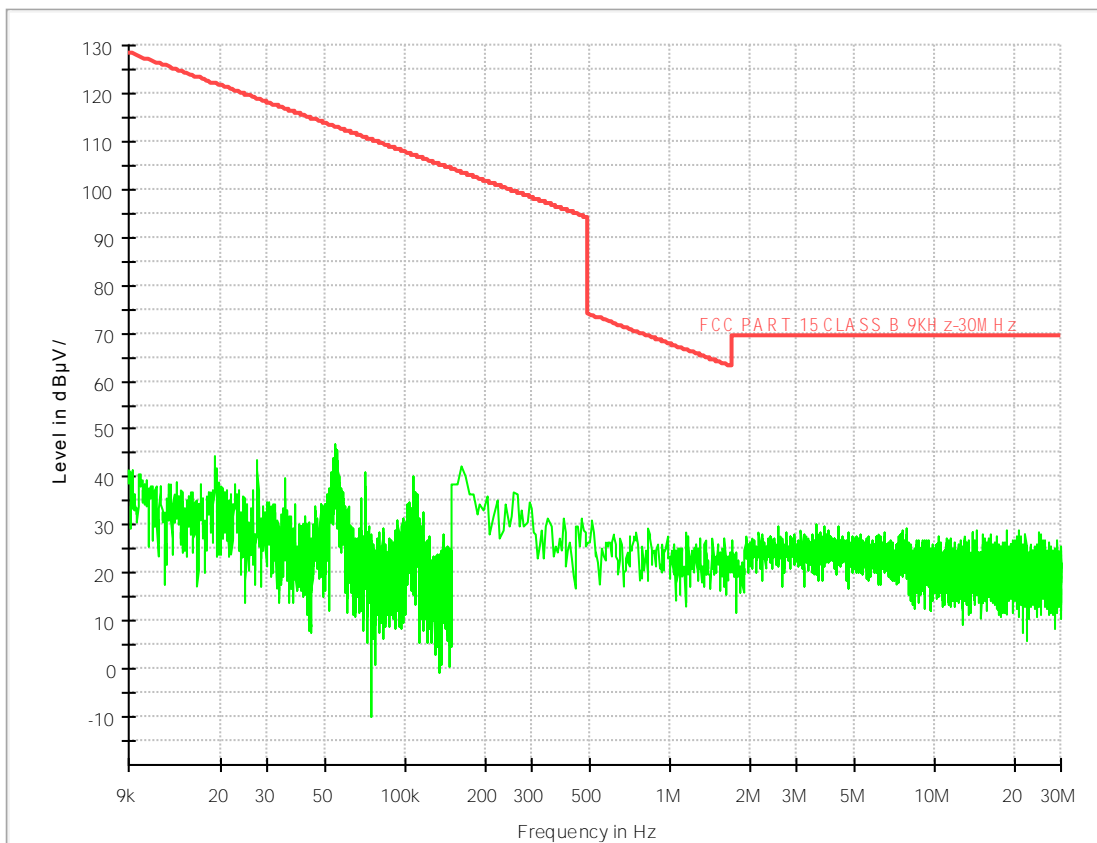


Part I - Test Plots

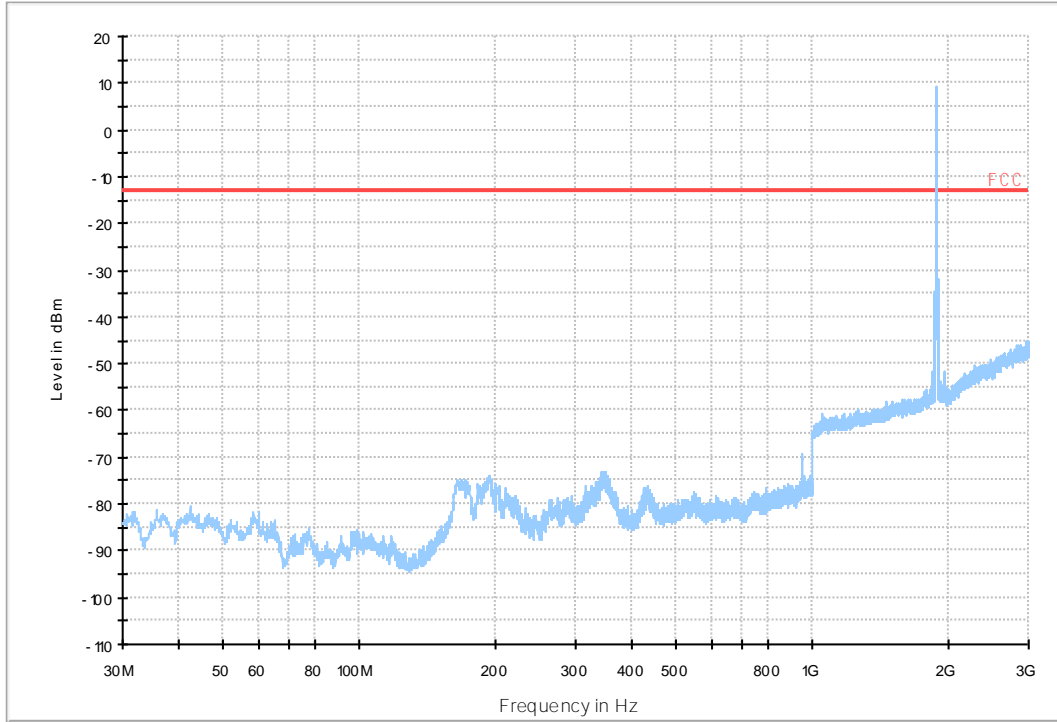
7.1 For UMTS

7.1.1 Test Band = WCDMA1900-Ant1

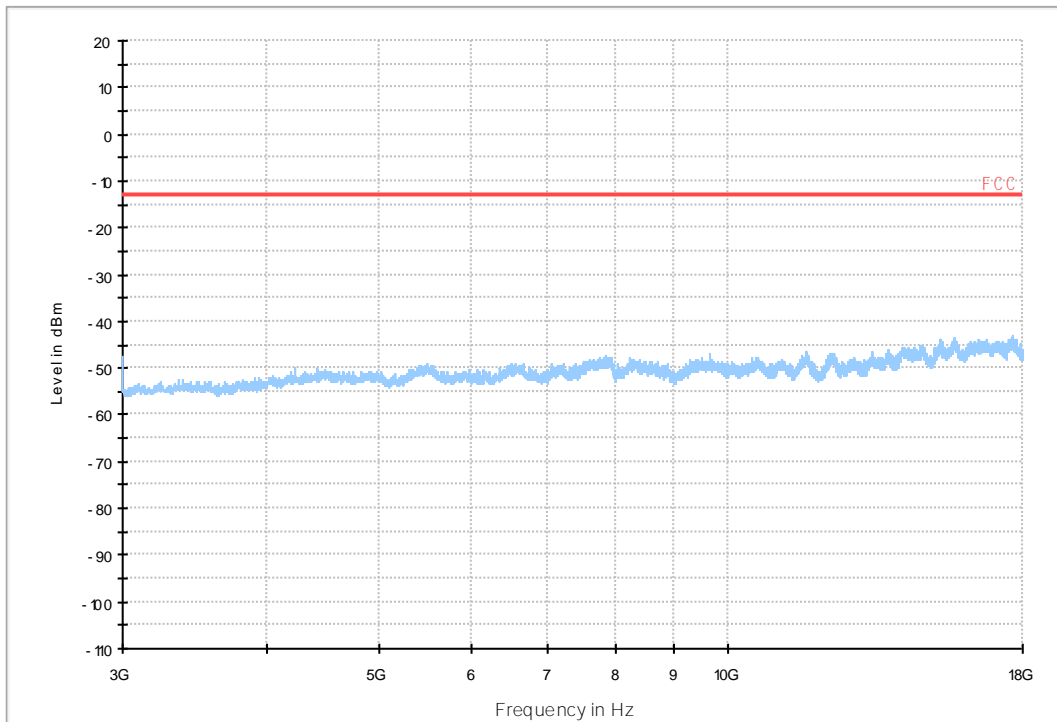
7.1.1.1 Test Mode = UMTS/TM1



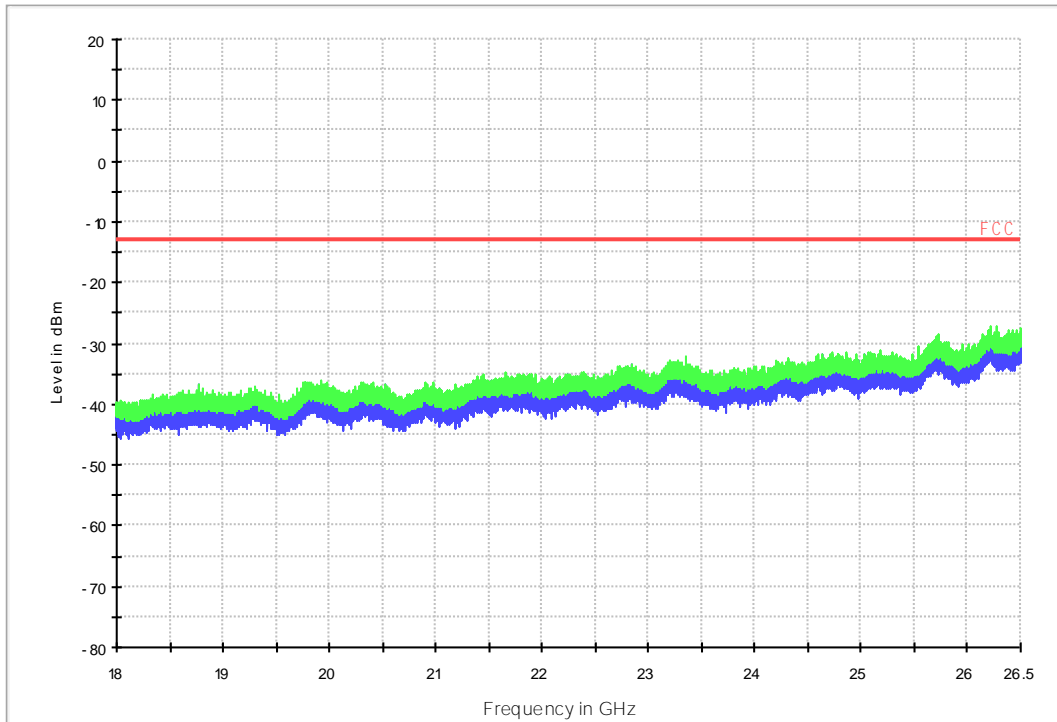
12 FCC PART 24 WCDMA1900_L



11 FCC PART 24 WCDMA1900_H

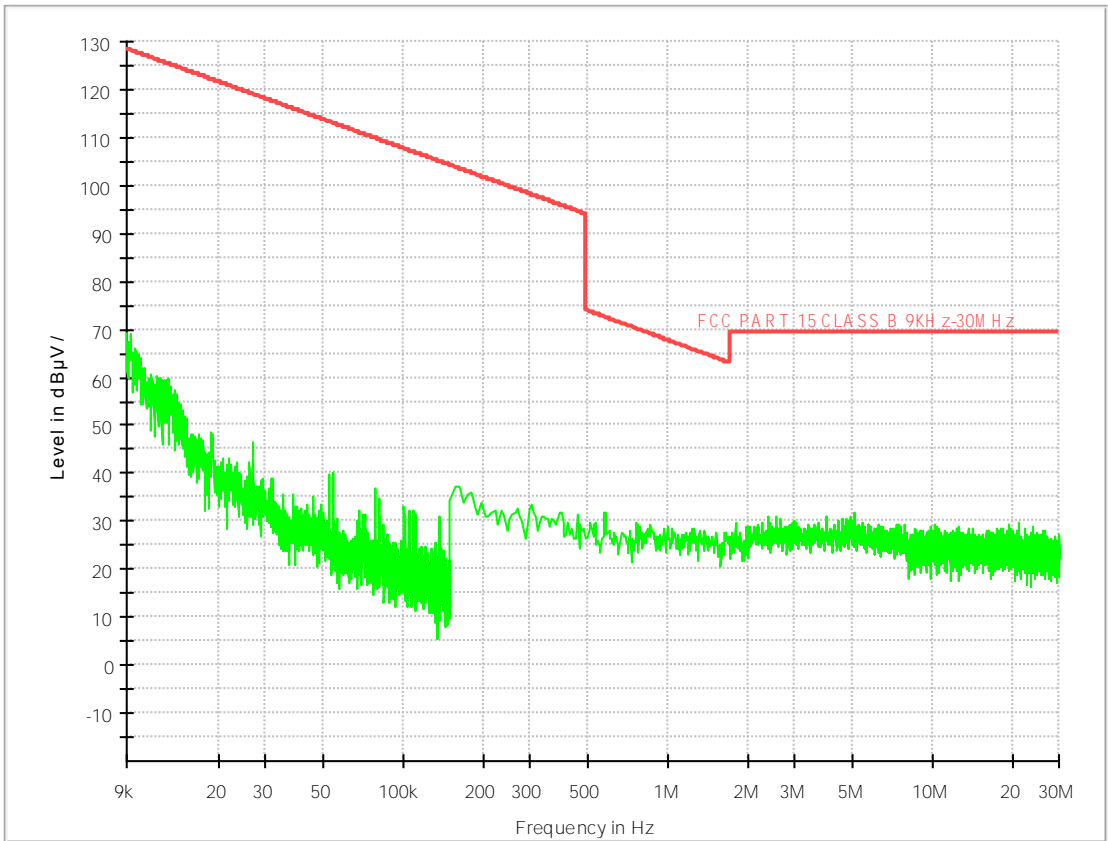


18G-26.5G R SE-TX-DIRECT OR ABOVE 1.5G PK

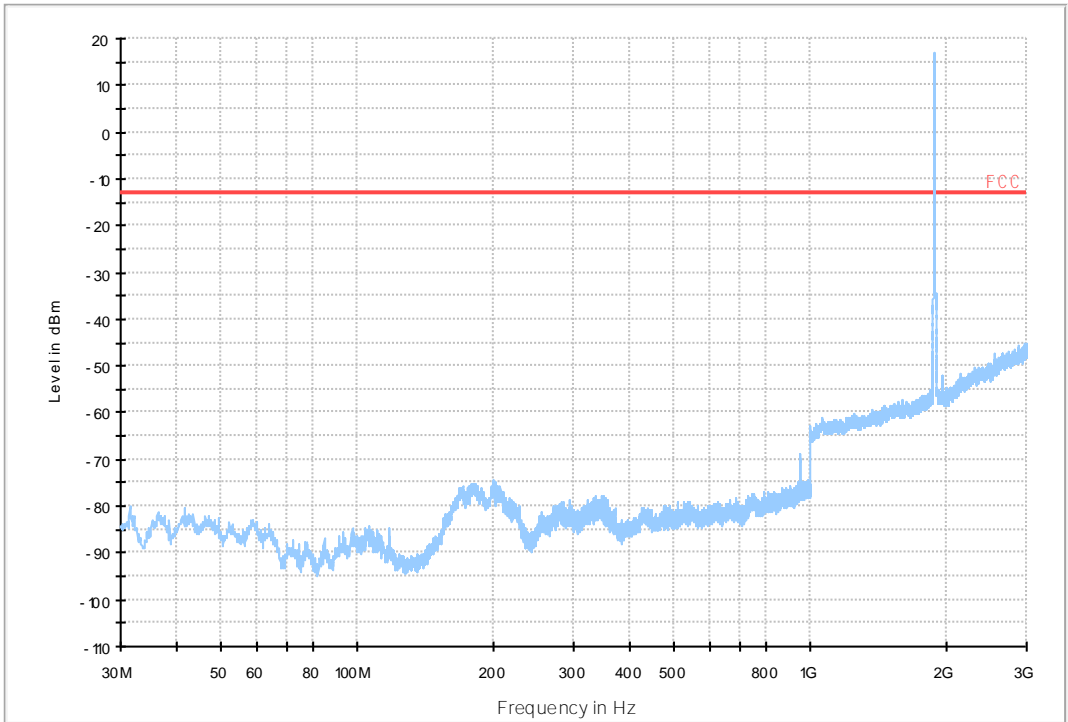


7.1.2 Test Band = WCDMA1900-Ant2

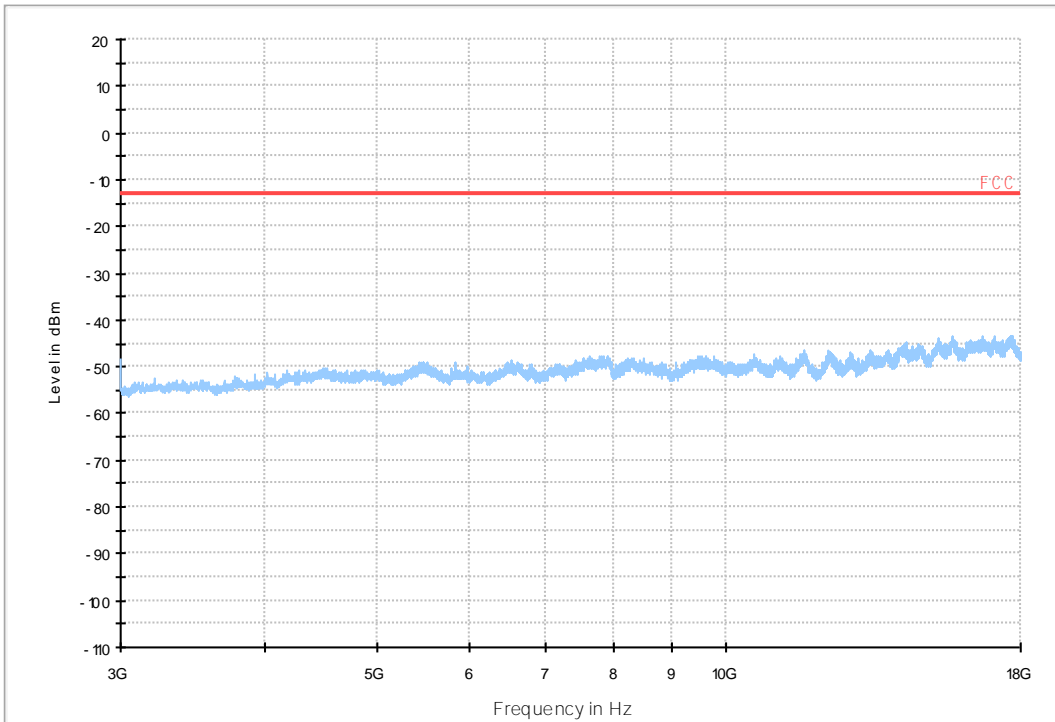
7.1.2.1 Test Mode = UMTS/TM1



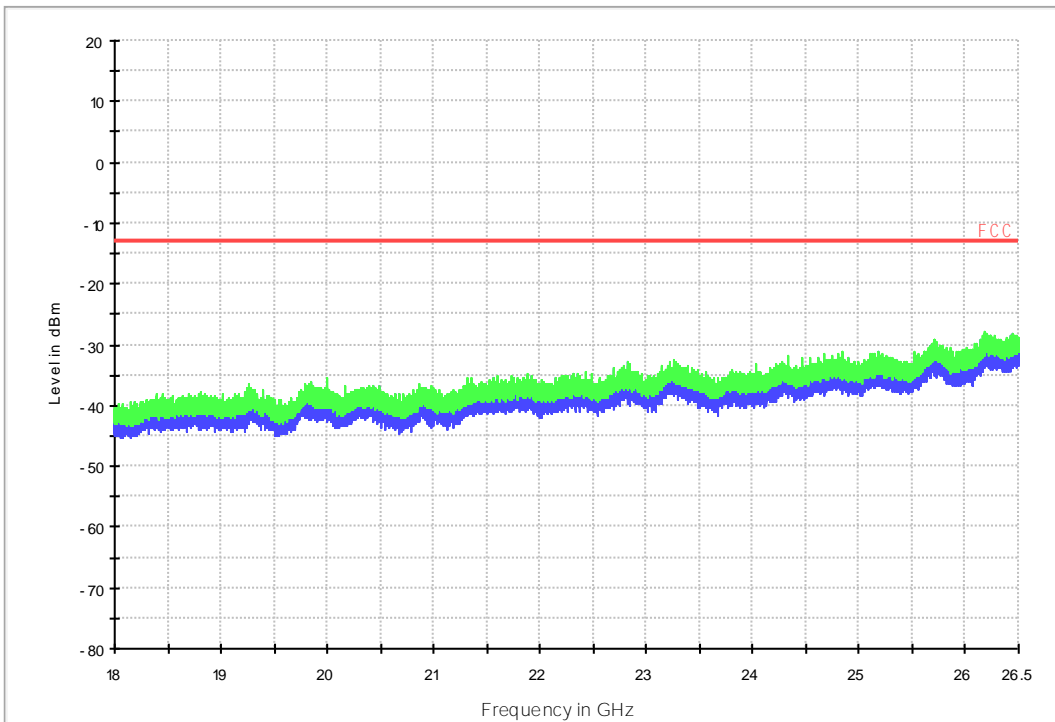
12 FCC PART 24 WCDMA1900_L



11 FCC PART 24 WCDMA1900_H



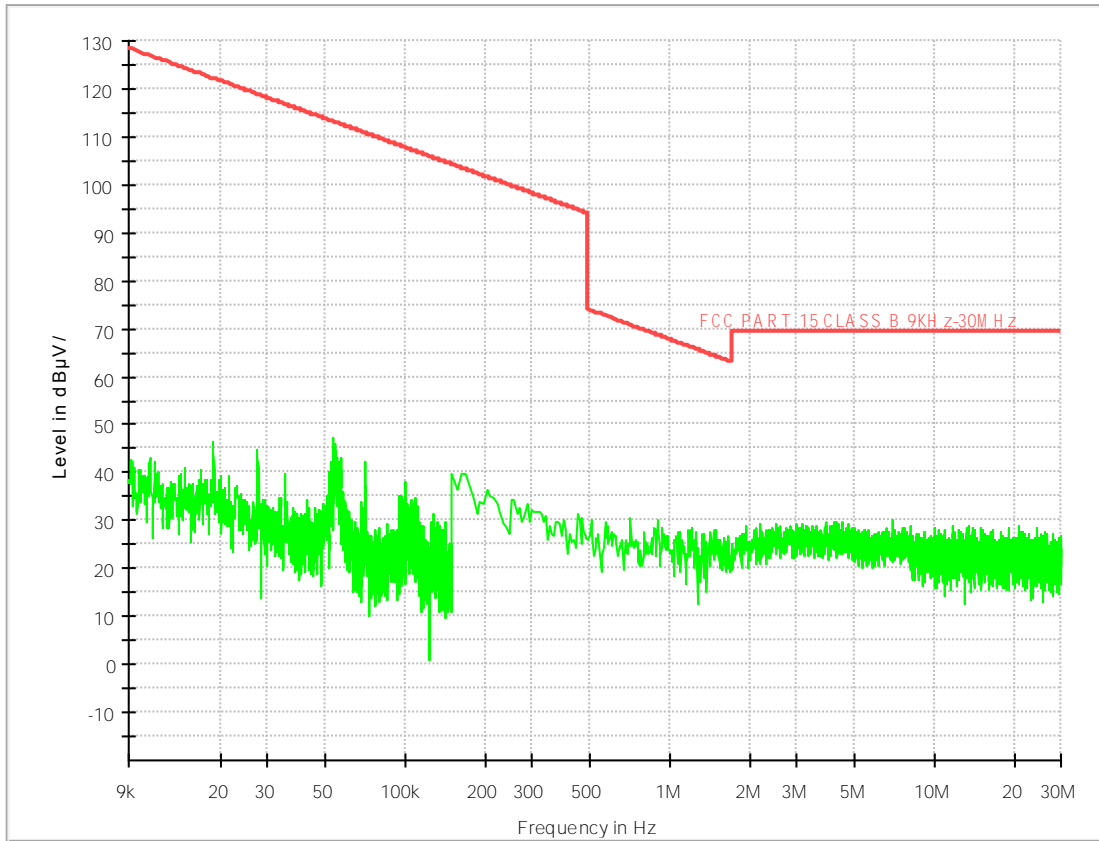
18G~26.5G RSE-TX-DIRECTOR ABOVE 1.5G PK



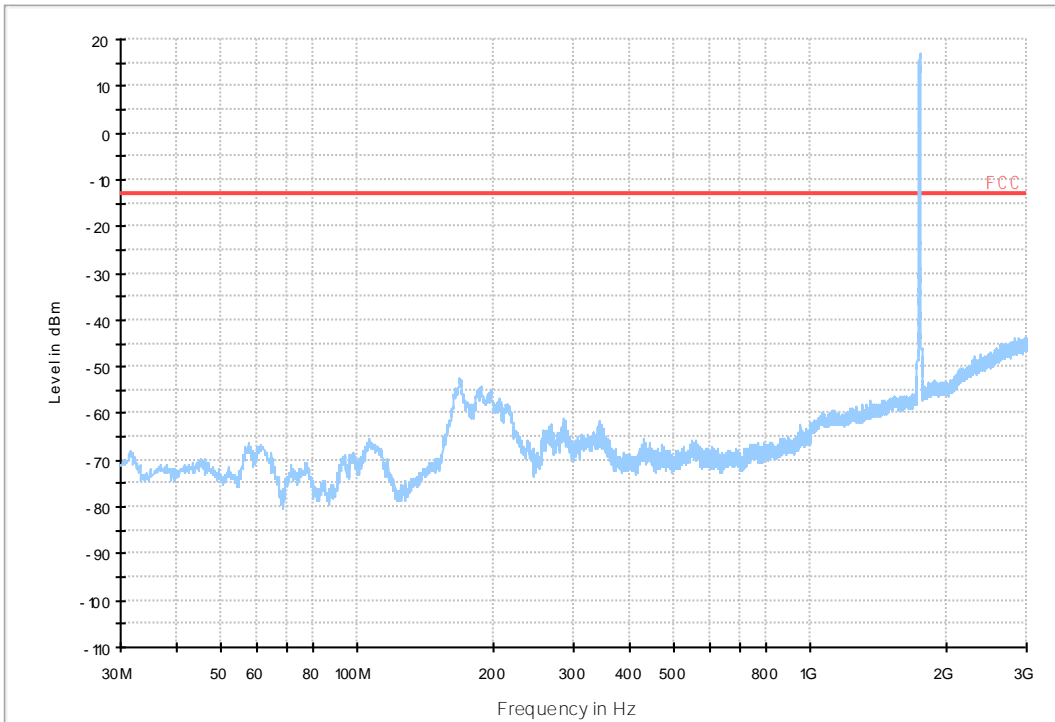


7.1.3 Test Band = WCDMA1700-Ant1

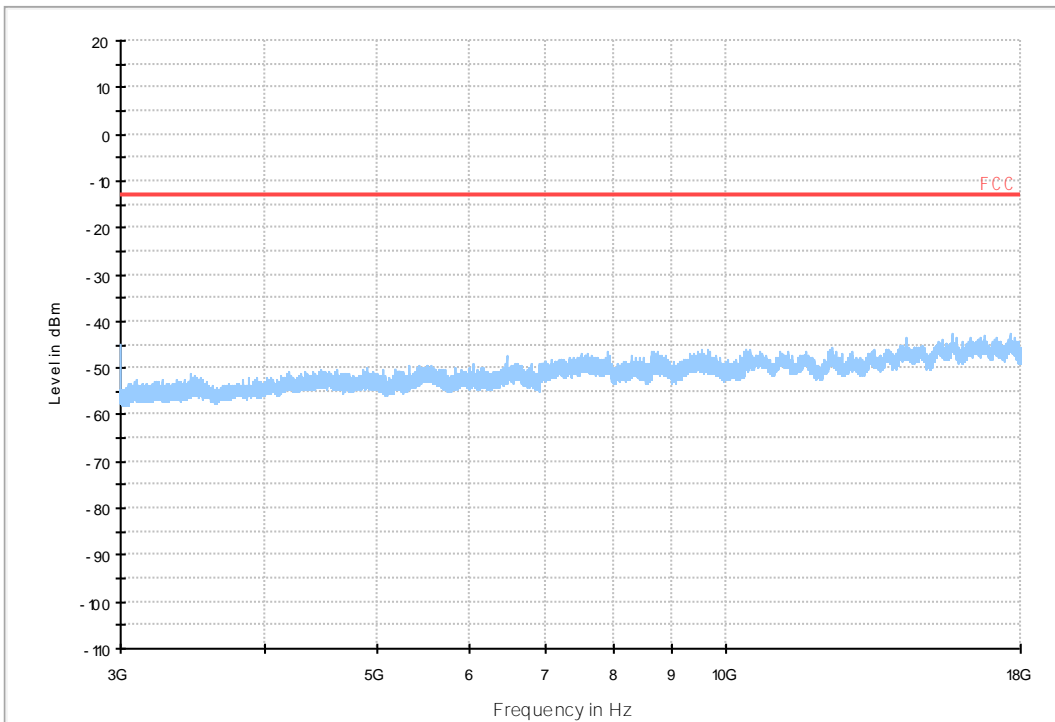
7.1.3.1 Test Mode = UMTS/TM1



18 FCC PART 27 WCDMA1700_L

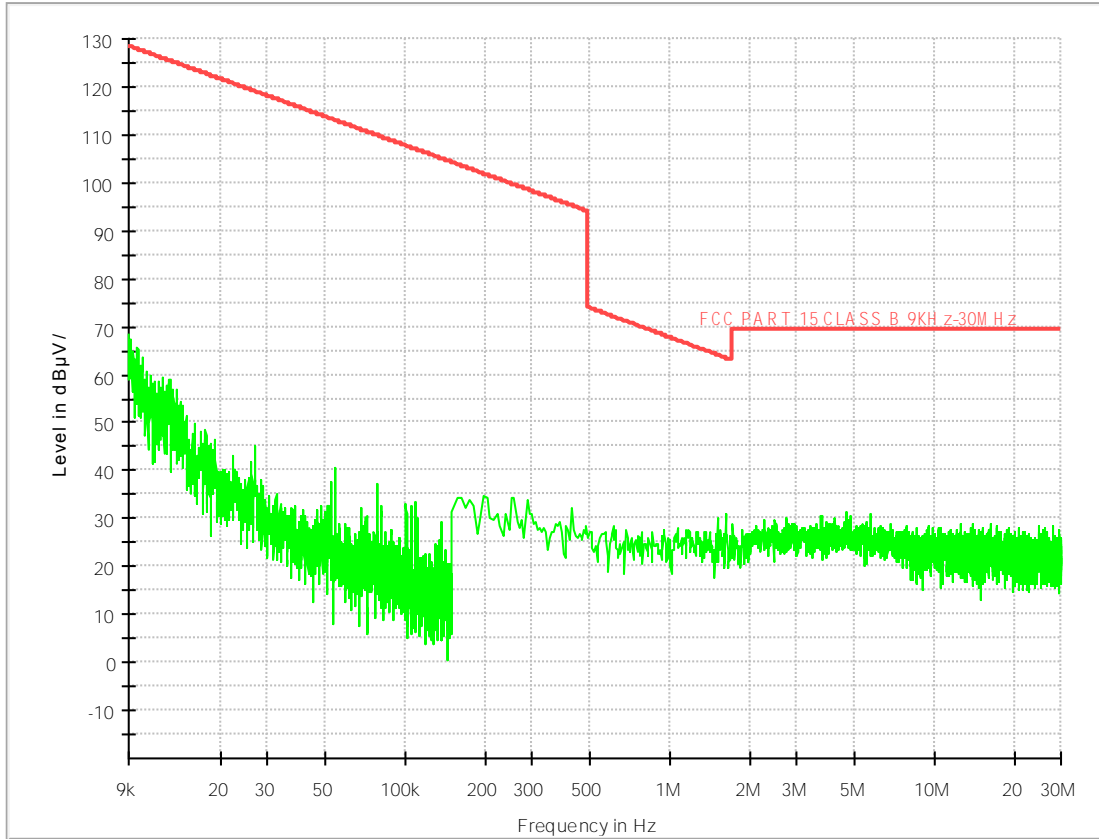


17 FCC PART 27 WCDMA1700_H

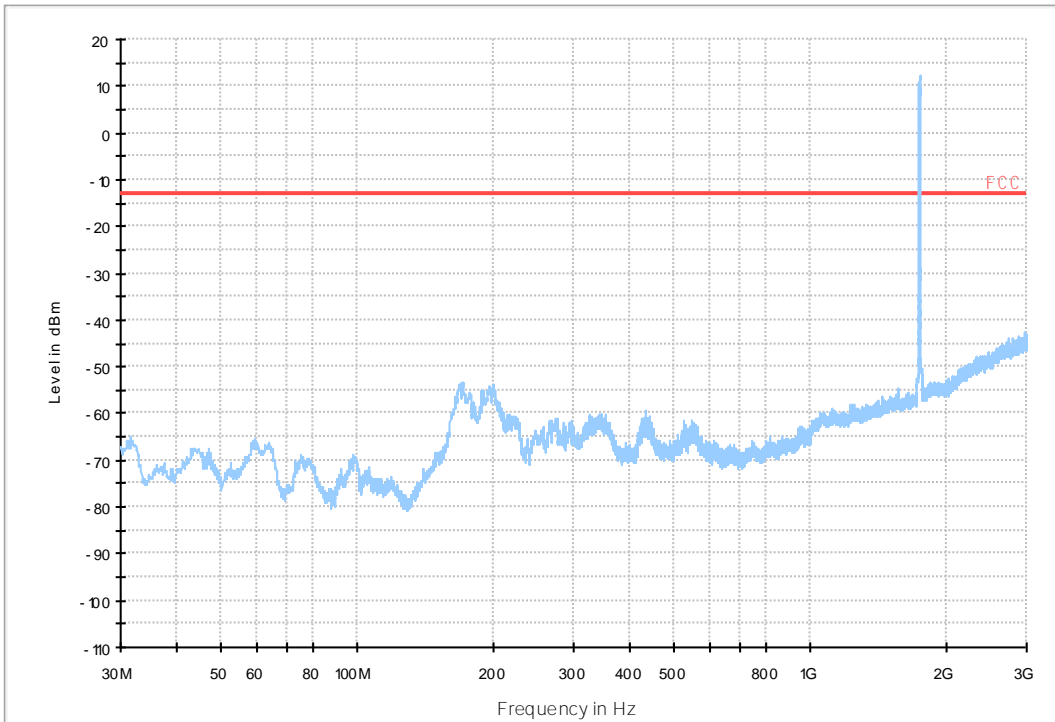


7.1.4 Test Band = WCDMA1700-Ant2

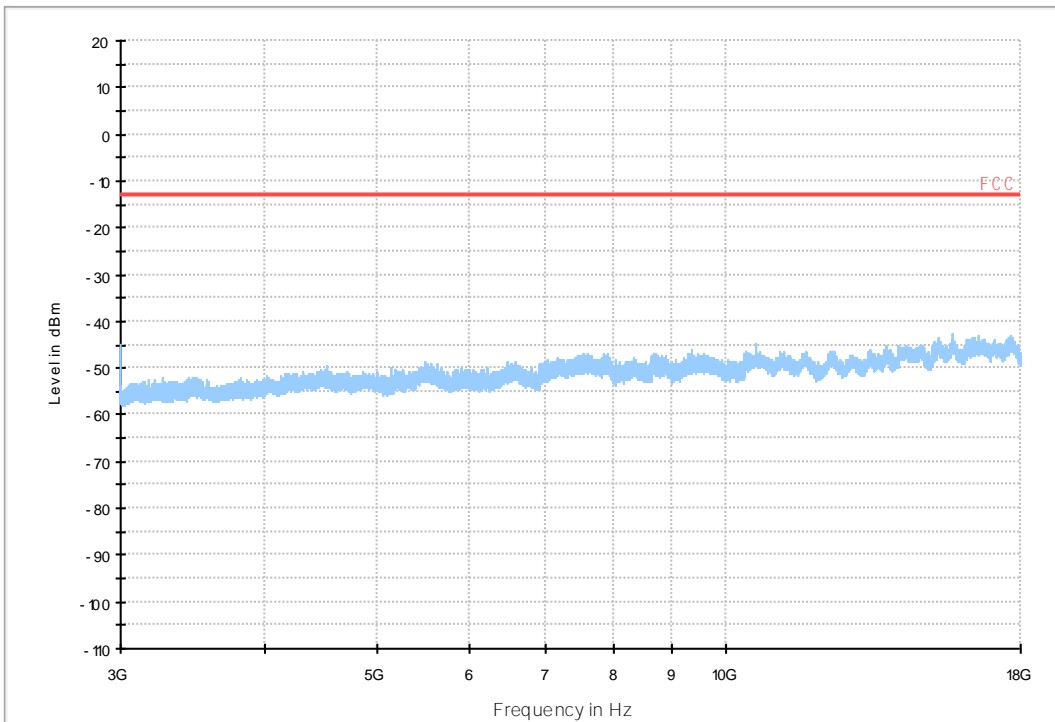
7.1.4.1 Test Mode = UMTS/TM1



18 FCC PART 27 WCDMA1700_L

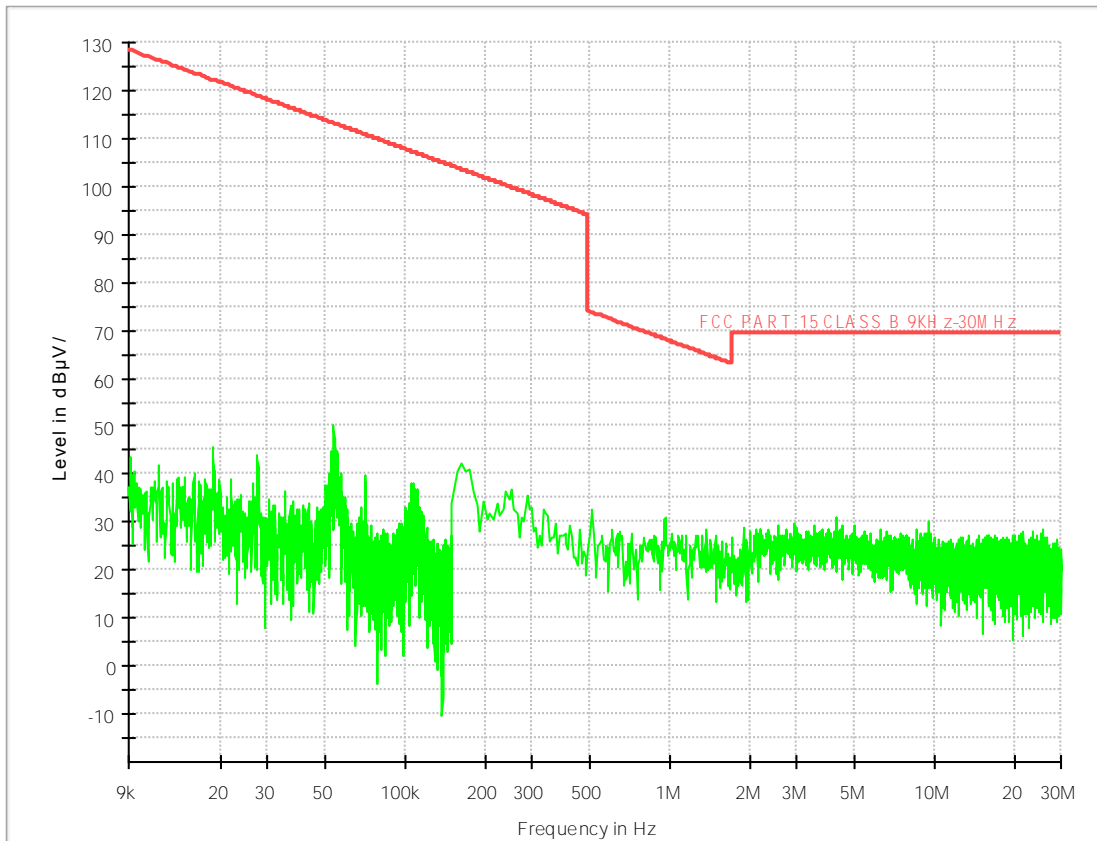


17 FCC PART 27 WCDMA1700_H

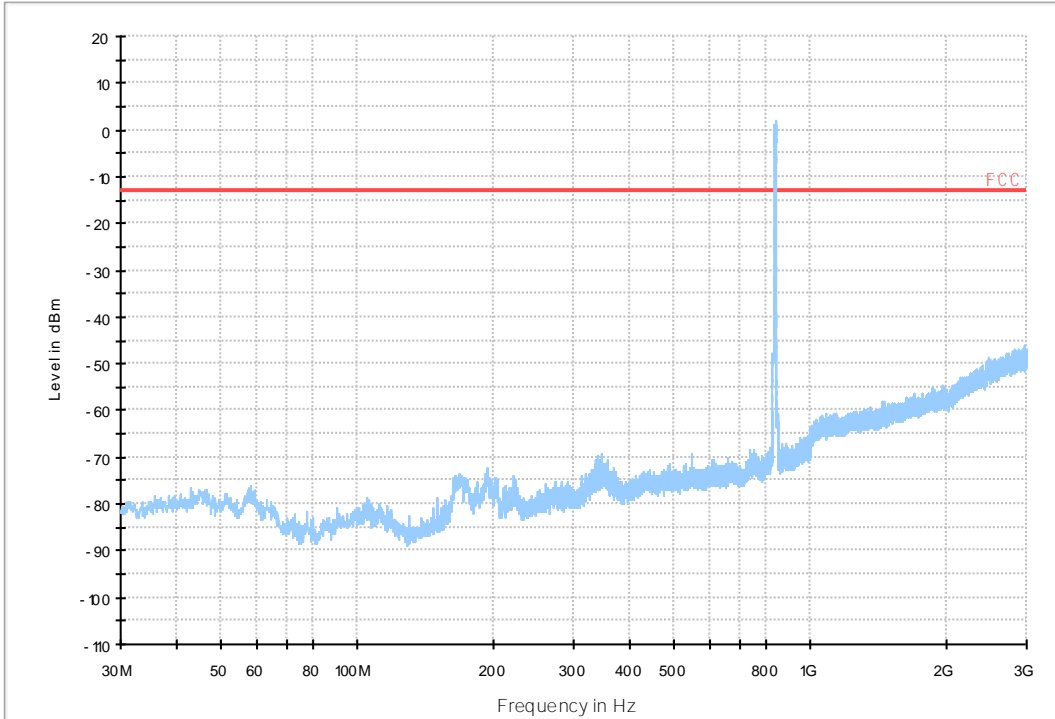


7.1.5 Test Band = WCDMA850-Ant1

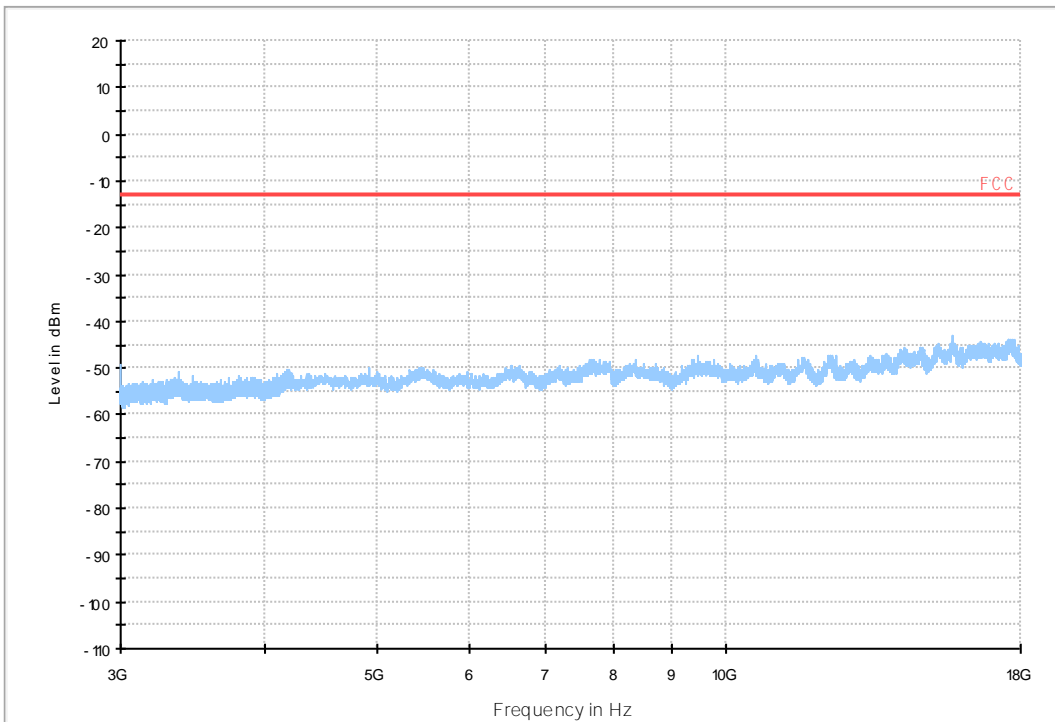
7.1.5.1 Test Mode = UMTS/TM1



06 FCC PART 22 WCDMA850_L



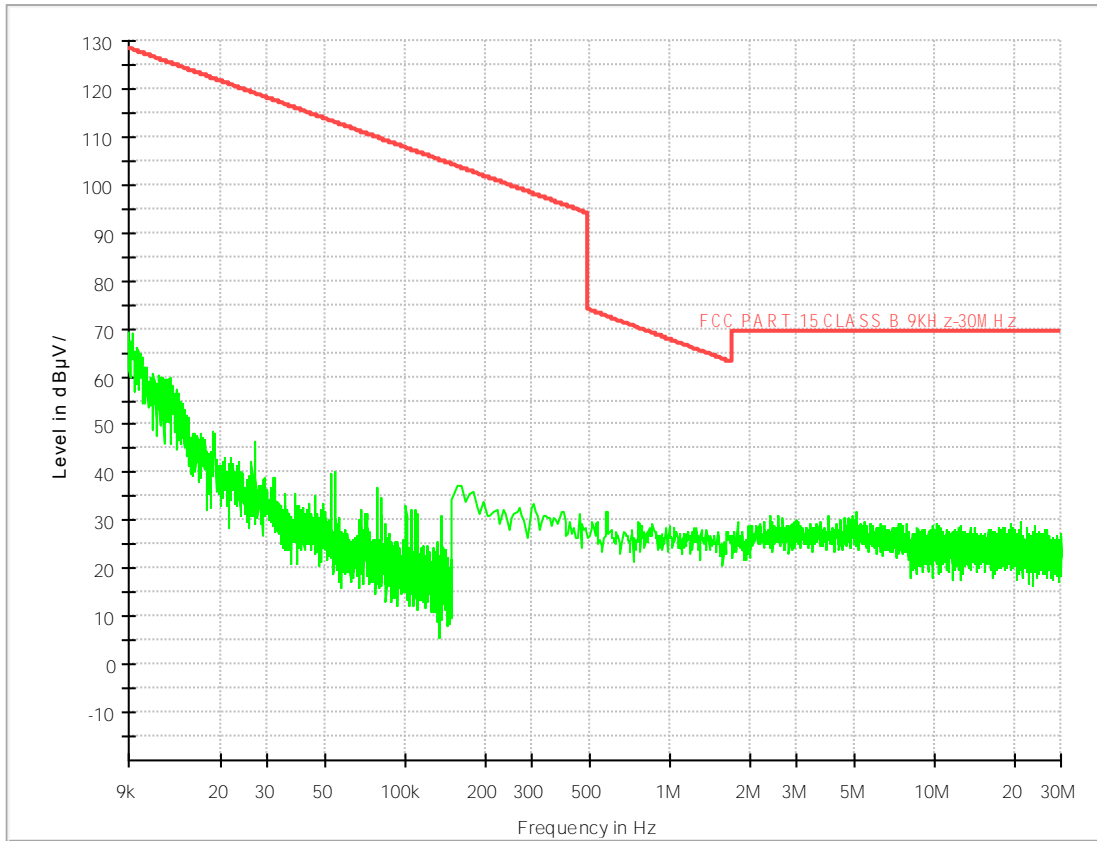
05 FCC PART 22 WCDMA850_H



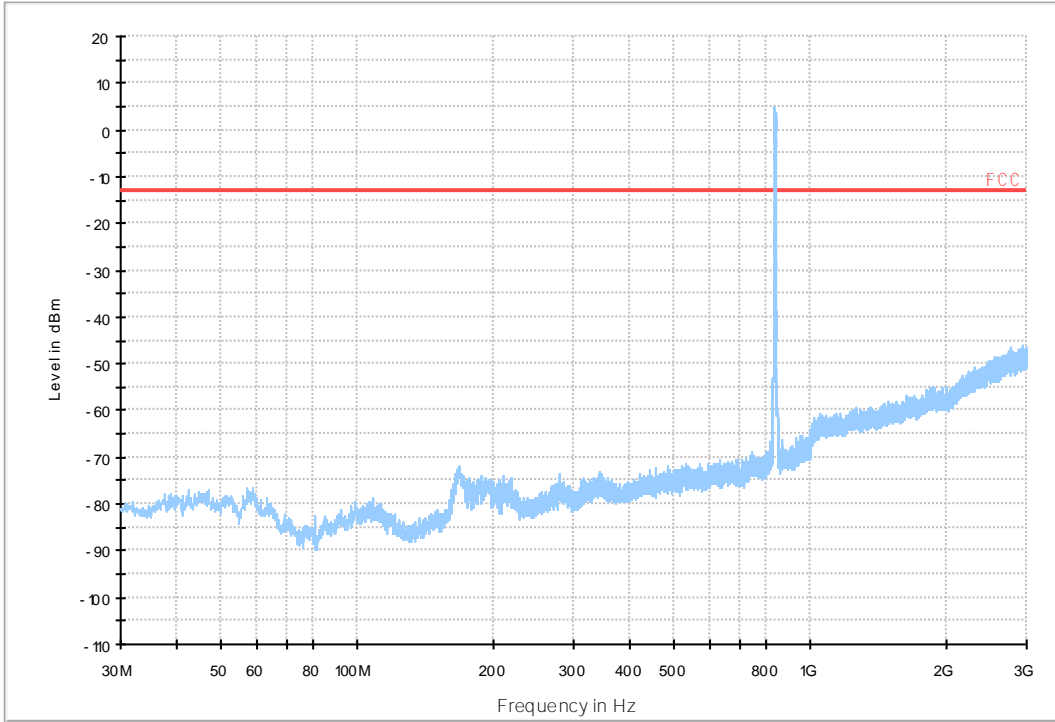


7.1.6 Test Band = WCDMA850-Ant2

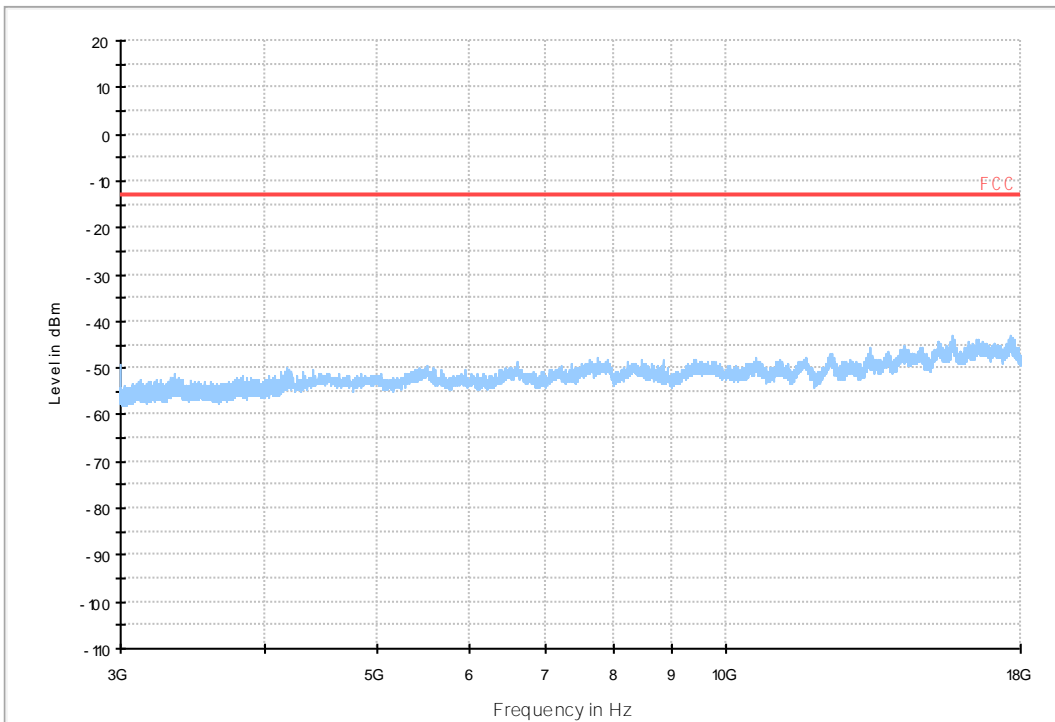
7.1.6.1 Test Mode = UMTS/TM1



06 FCC PART 22 WCDMA850_L



05 FCC PART 22 WCDMA850_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
WCDMA1900	UMTS/TM1	LCH	TN	VL	9.84	0.00531	PASS
				VN	8.32	0.00449	PASS
				VH	11.11	0.006	PASS
		MCH	TN	VL	16.78	0.00893	PASS
				VN	3.72	0.00198	PASS
				VH	8.79	0.00468	PASS
		HCH	TN	VL	5.78	0.00303	PASS
				VN	7.10	0.00372	PASS
				VH	11.41	0.00598	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	3.78	0.00221	PASS
				VN	7.20	0.0042	PASS
				VH	11.58	0.00676	PASS
		MCH	TN	VL	14.59	0.00842	PASS
				VN	2.29	0.00132	PASS
				VH	6.27	0.00362	PASS
		HCH	TN	VL	4.96	0.00283	PASS
				VN	7.06	0.00403	PASS
				VH	10.51	0.006	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	1.89	0.00229	PASS
				VN	1.80	0.00218	PASS
				VH	11.67	0.01412	PASS
		MCH	TN	VL	3.42	0.00409	PASS
				VN	3.25	0.00389	PASS
				VH	9.64	0.01153	PASS
		HCH	TN	VL	4.44	0.00524	PASS
				VN	0.50	0.00059	PASS
				VH	7.78	0.00919	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	8.85	0.00478	PASS
				-20	9.99	0.00539	PASS
				-10	9.54	0.00515	PASS
				0	10.65	0.00575	PASS
				10	2.69	0.00145	PASS
				20	6.55	0.00354	PASS
				30	5.57	0.00301	PASS
				40	7.80	0.00421	PASS
				50	3.86	0.00208	PASS
		MCH	VN	-30	13.47	0.00716	PASS
				-20	16.08	0.00855	PASS
				-10	12.83	0.00682	PASS
				0	13.21	0.00703	PASS
				10	9.87	0.00525	PASS
				20	14.59	0.00776	PASS
				30	4.58	0.00244	PASS
				40	9.08	0.00483	PASS
				50	8.51	0.00453	PASS
		HCH	VN	-30	11.55	0.00605	PASS
				-20	7.05	0.0037	PASS
				-10	4.91	0.00257	PASS
				0	13.43	0.00704	PASS
				10	12.99	0.00681	PASS
				20	17.43	0.00914	PASS
30	14.82			0.00777	PASS		
40	11.55			0.00605	PASS		
50	14.97			0.00785	PASS		
WCDMA1700	UMTS/TM1	LCH	VN	-30	5.91	0.00345	PASS
				-20	9.29	0.00543	PASS
				-10	6.32	0.00369	PASS
				0	9.48	0.00554	PASS
				10	9.03	0.00527	PASS
				20	5.92	0.00346	PASS
				30	5.86	0.00342	PASS
				40	19.10	0.01115	PASS
				50	9.89	0.00578	PASS
		MCH	VN	-30	2.12	0.00122	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	3.22	0.00186	PASS
				-10	6.18	0.00357	PASS
				0	4.26	0.00246	PASS
				10	14.92	0.00861	PASS
				20	4.68	0.0027	PASS
				30	4.18	0.00241	PASS
				40	9.29	0.00536	PASS
				50	4.70	0.00271	PASS
		HCH	VN	-30	17.47	0.00997	PASS
				-20	13.37	0.00763	PASS
				-10	8.51	0.00486	PASS
				0	11.95	0.00682	PASS
				10	6.20	0.00354	PASS
				20	12.99	0.00741	PASS
				30	12.88	0.00735	PASS
				40	13.00	0.00742	PASS
				50	14.43	0.00823	PASS
				WCDMA850	UMTS/TM1	LCH	VN
-20	-3.16	-0.00382	PASS				
-10	2.03	0.00246	PASS				
0	0.09	0.00011	PASS				
10	14.05	0.017	PASS				
20	3.63	0.00439	PASS				
30	-5.48	-0.00663	PASS				
40	1.50	0.00182	PASS				
50	-1.82	-0.0022	PASS				
MCH	VN	-30	12.08			0.01444	PASS
		-20	1.66			0.00198	PASS
		-10	9.22			0.01102	PASS
		0	8.01			0.00958	PASS
		10	3.94			0.00471	PASS
		20	7.13			0.00852	PASS
		30	-0.11			-0.00013	PASS
		40	6.29			0.00752	PASS
		50	6.42			0.00768	PASS
HCH	VN	-30	4.84			0.00572	PASS
		-20	4.65			0.00549	PASS
		-10	4.44			0.00524	PASS
		0	10.65			0.01258	PASS
		10	11.89			0.01404	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	3.40	0.00402	PASS
				30	7.20	0.0085	PASS
				40	11.55	0.01364	PASS
				50	0.72	0.00085	PASS

END