



Appendix for Test Report

1Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	23.36	21.34	33	PASS
		MCH	23.35	21.06	33	PASS
		HCH	23.55	21.40	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.54	22.17	30	PASS
		MCH	23.41	22.21	30	PASS
		HCH	23.38	22.18	30	PASS
Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.26	19.08	38.5	PASS
		MCH	24.17	19.18	38.5	PASS
		HCH	24.2	19.13	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	3.11	13	PASS
		MCH	3.03	13	PASS
		HCH	2.81	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.29	13	PASS
		MCH	3.3	13	PASS
		HCH	3.08	13	PASS
WCDMA850	UMTS/TM1	LCH	3.01	13	PASS
		MCH	3.08	13	PASS
		HCH	2.94	13	PASS

3Appendix_C: Modulation Characteristics

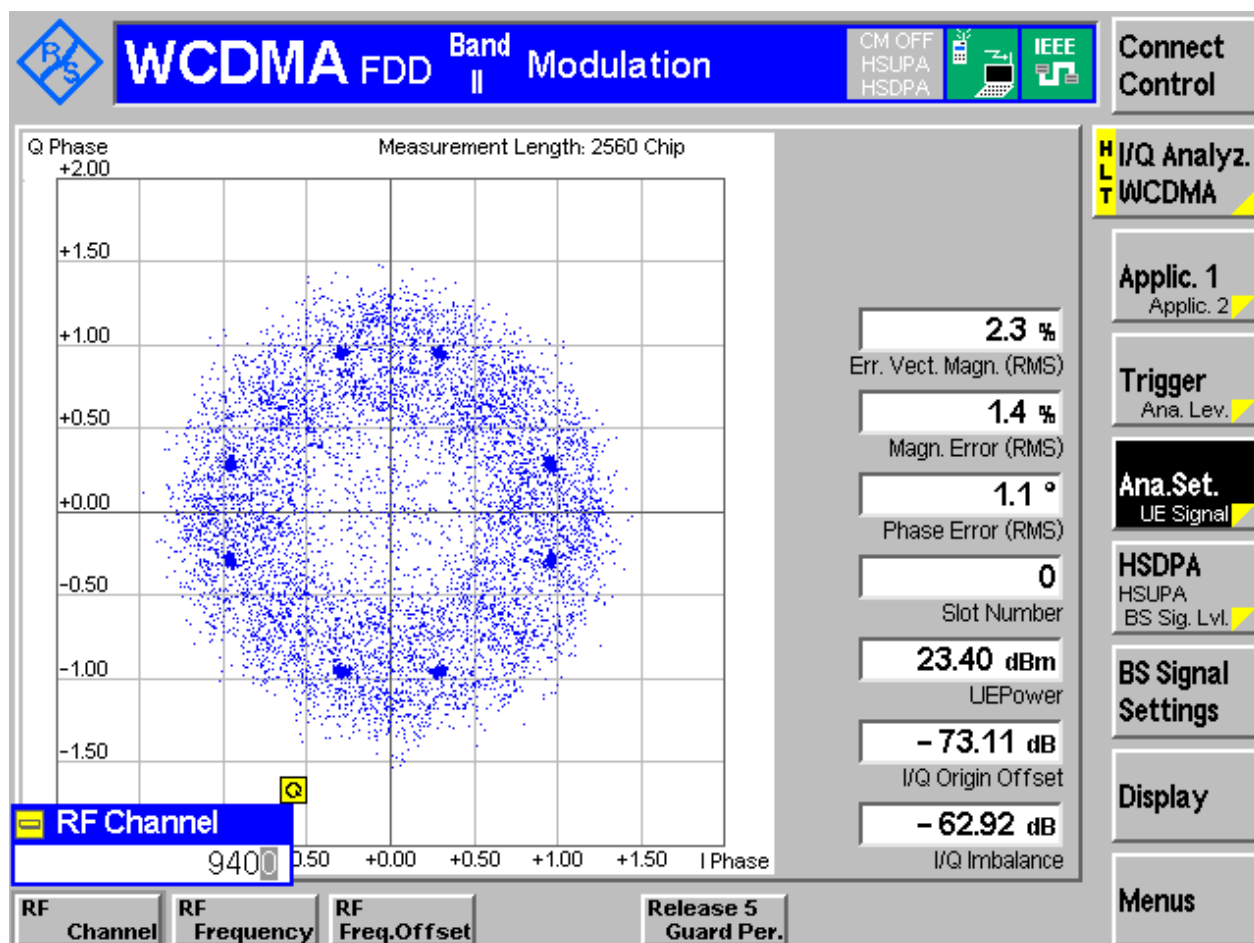
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

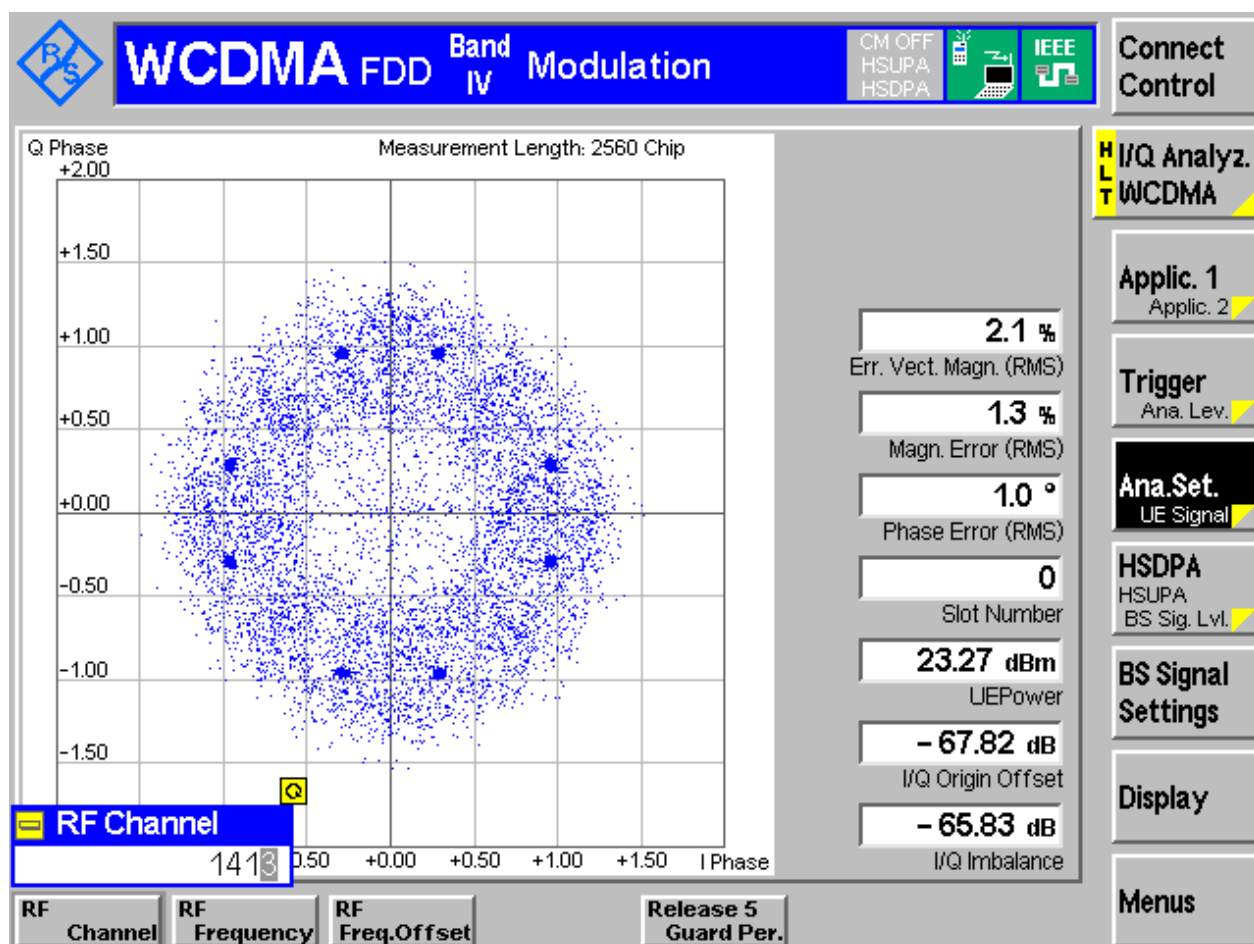
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

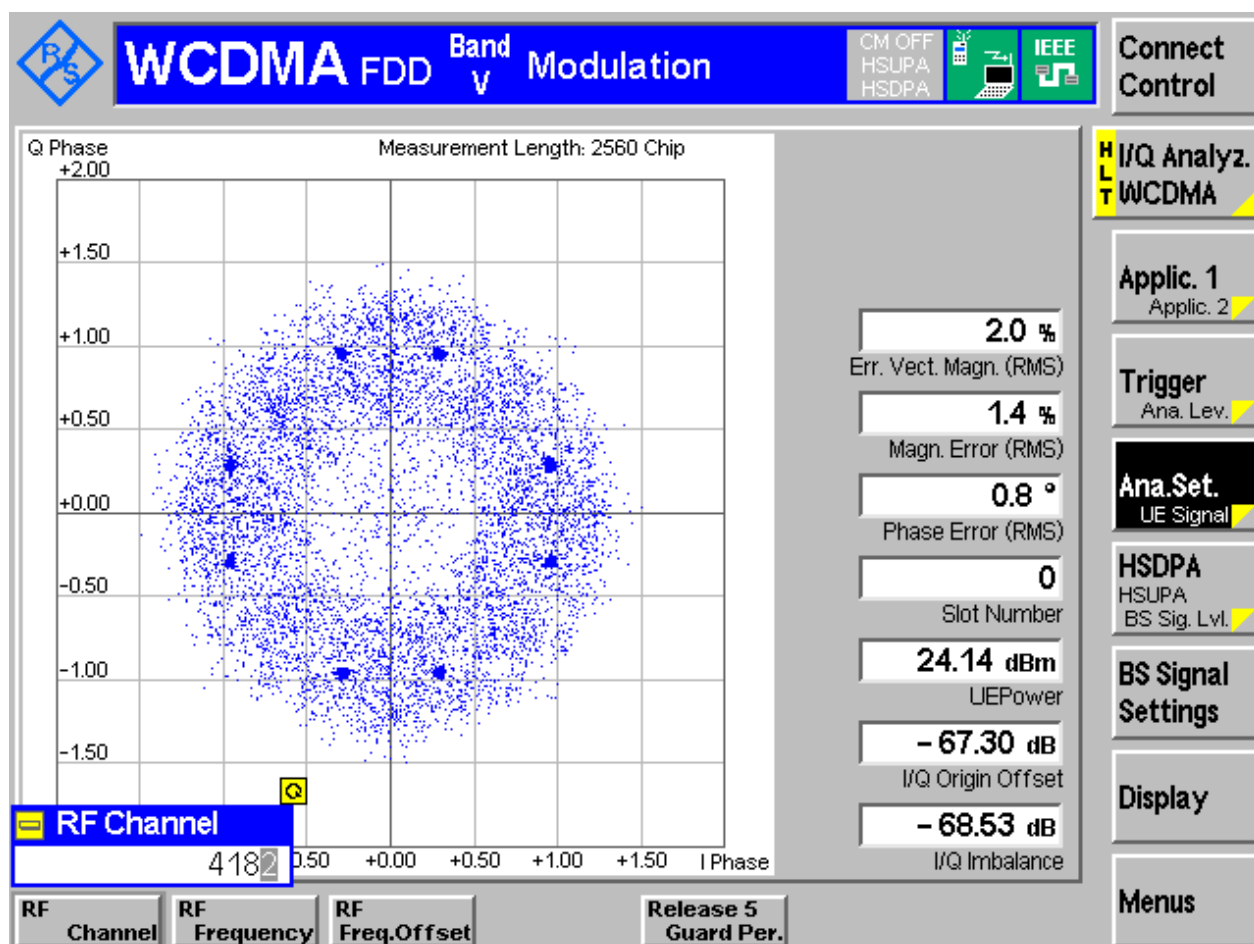
3.1.2.1.1 Test Channel = MCH



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	4.71	Pass
		MCH	4.16	4.71	Pass
		HCH	4.17	4.72	Pass
WCDMA1700	UMTS/TM1	LCH	4.15	4.70	Pass
		MCH	4.16	4.70	Pass
		HCH	4.16	4.71	Pass
WCDMA850	UMTS/TM1	LCH	4.16	4.71	Pass
		MCH	4.15	4.70	Pass
		HCH	4.16	4.71	Pass

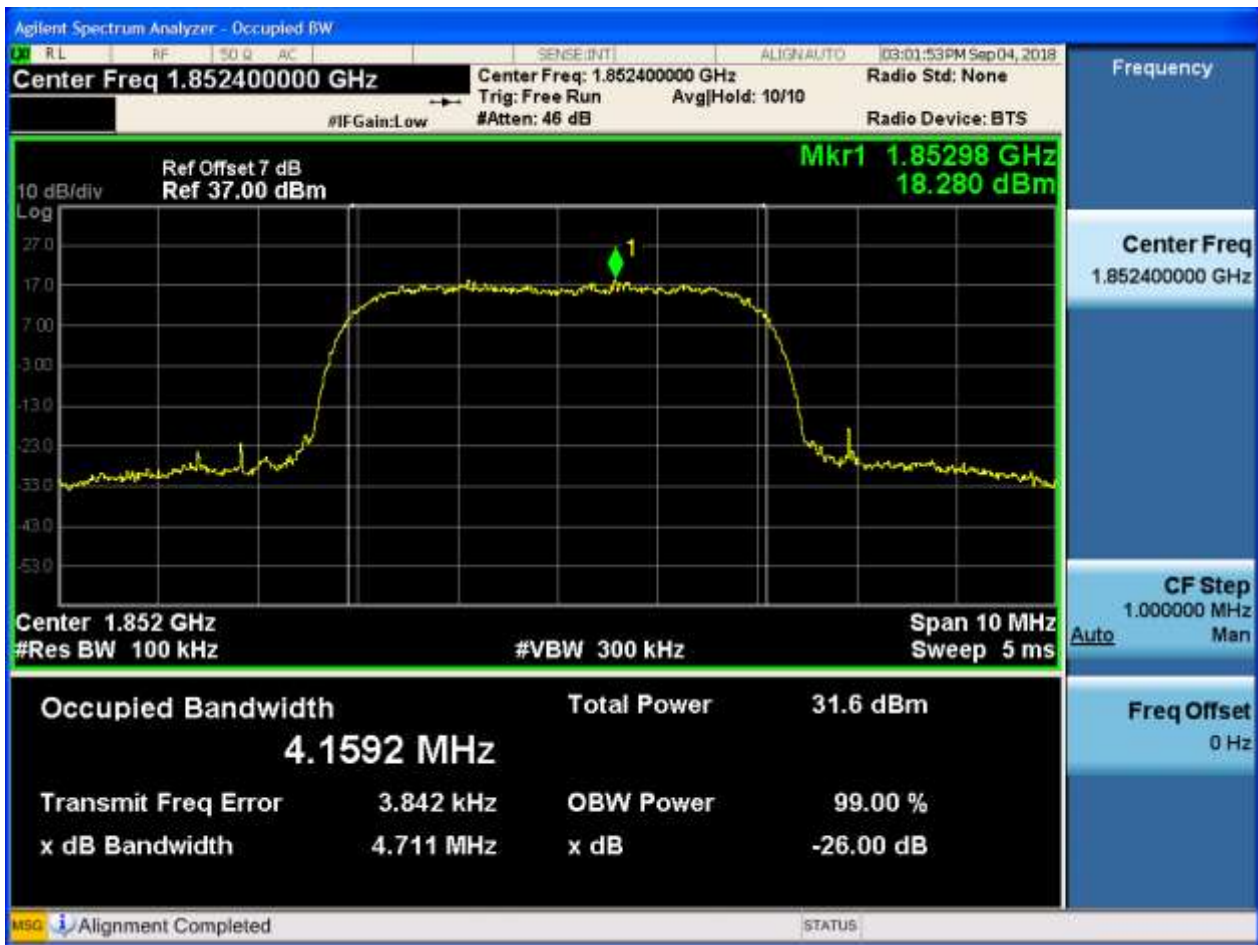
Part II - Test Plots

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



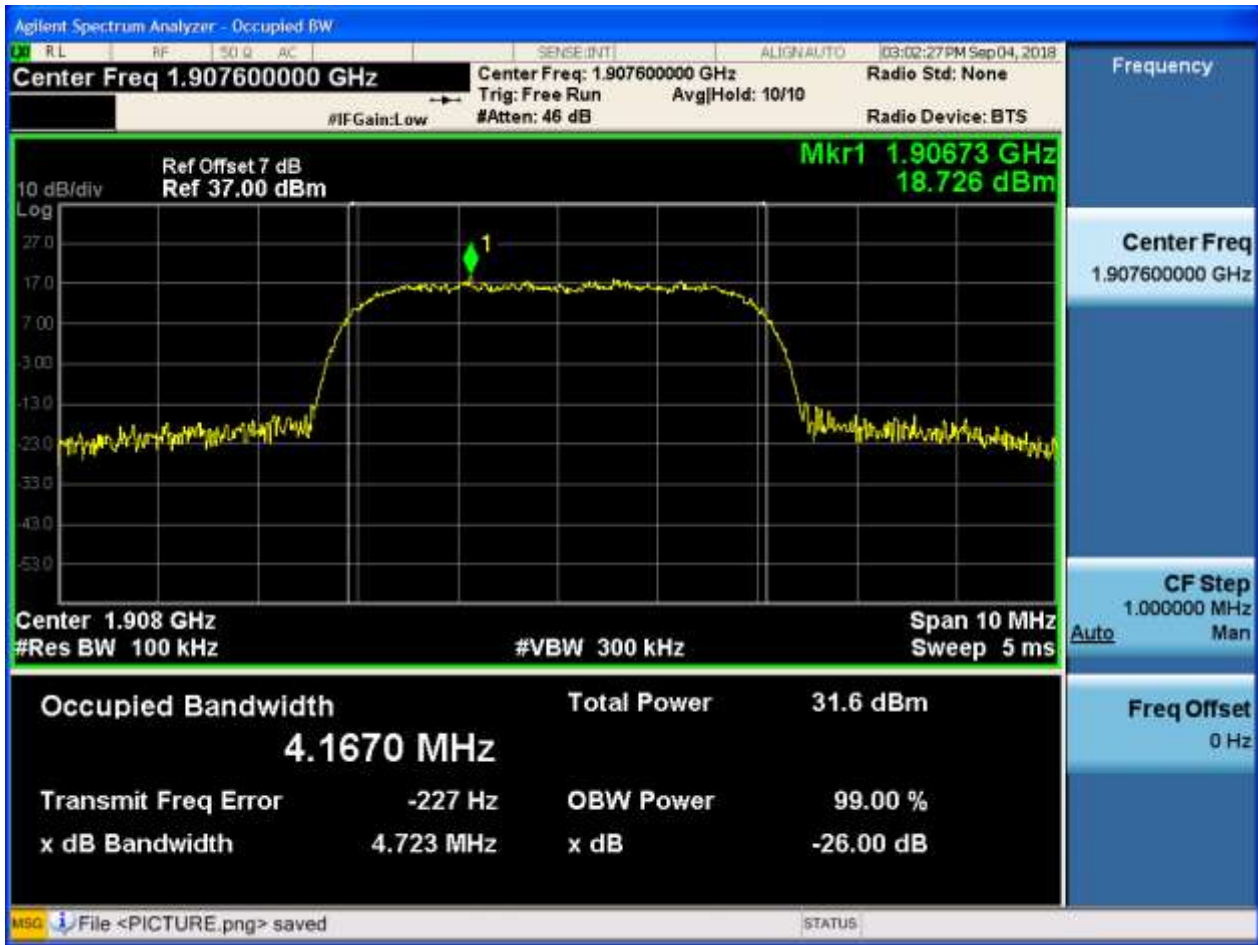


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

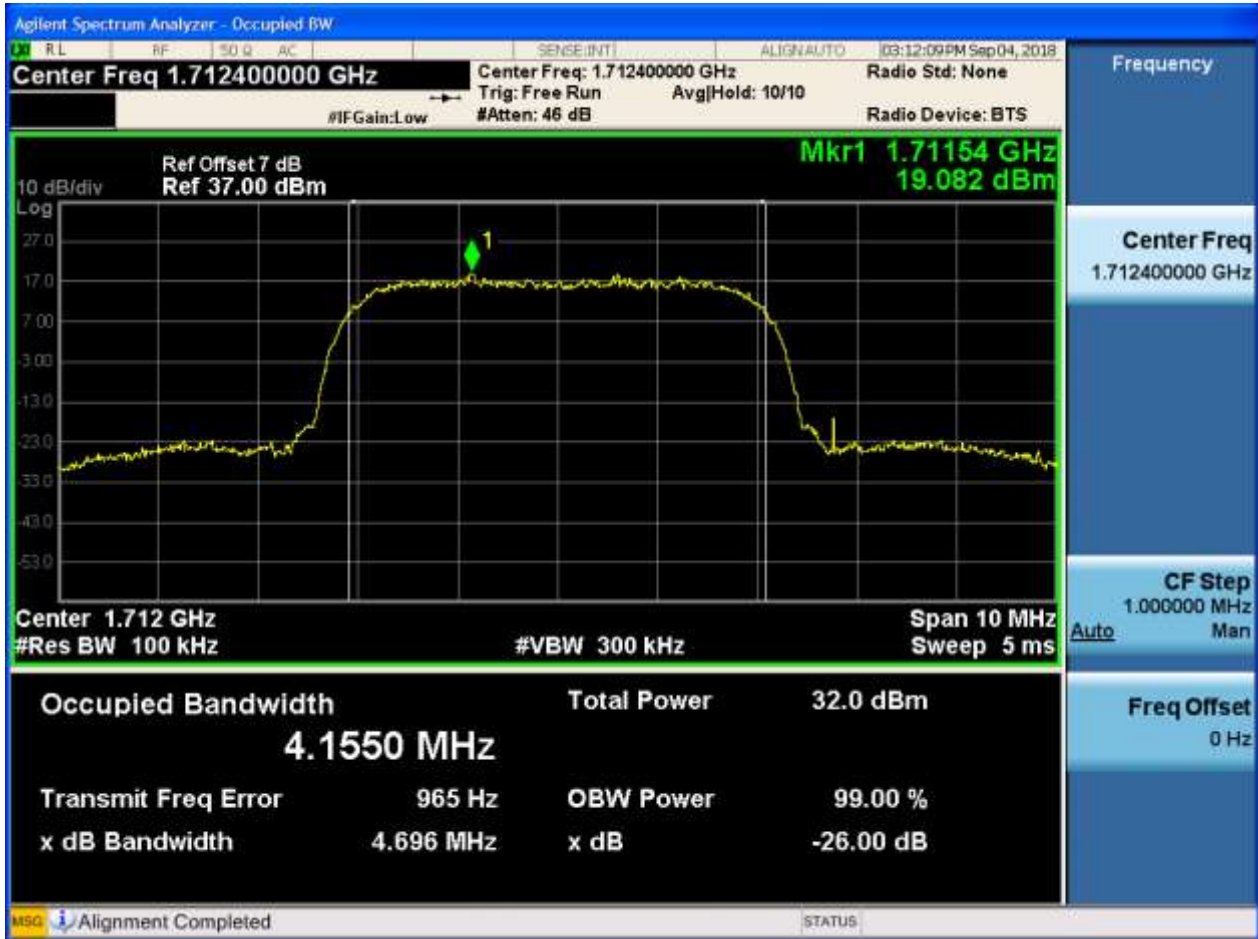




4.1.2 Test Band = WCDMA1700

4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



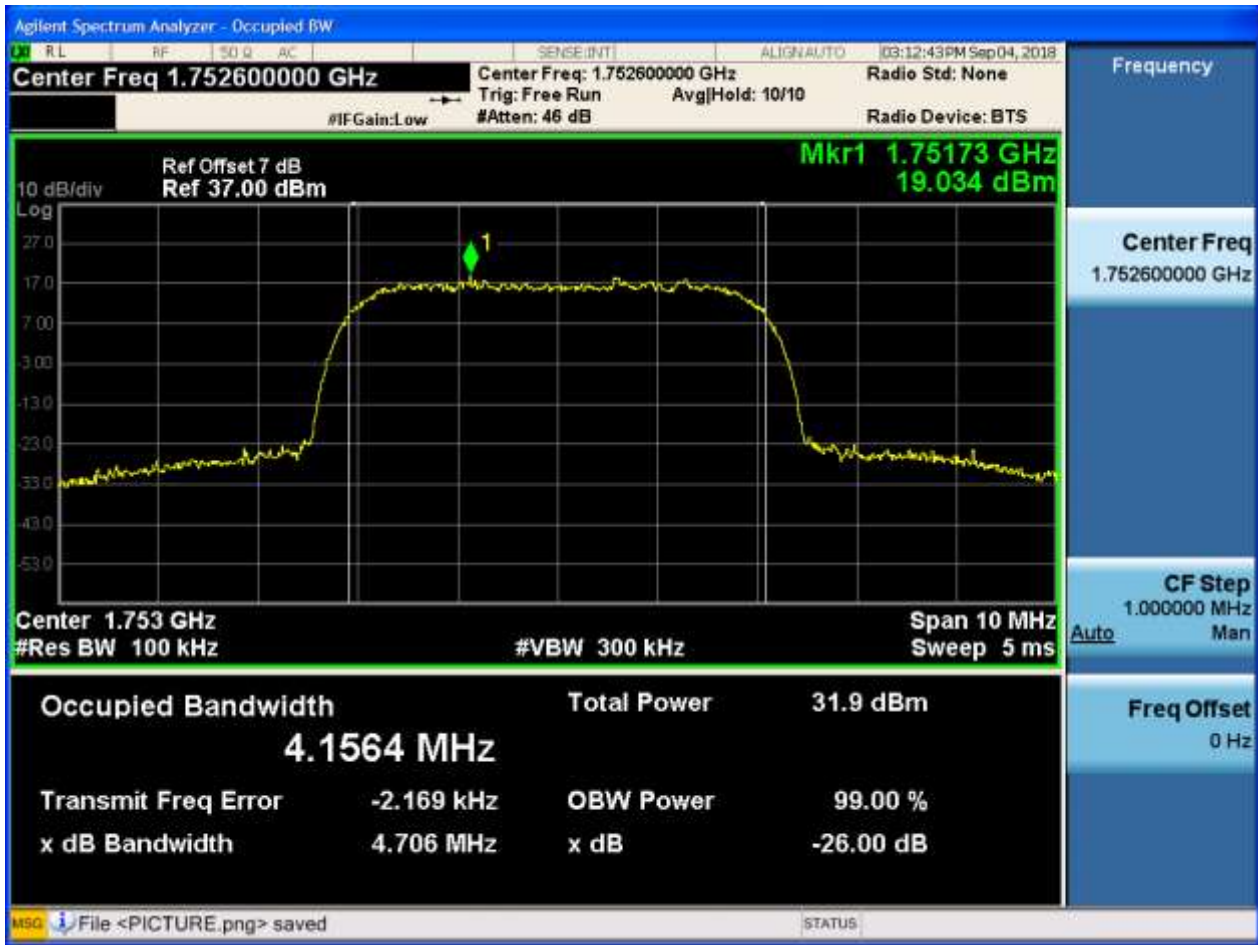


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

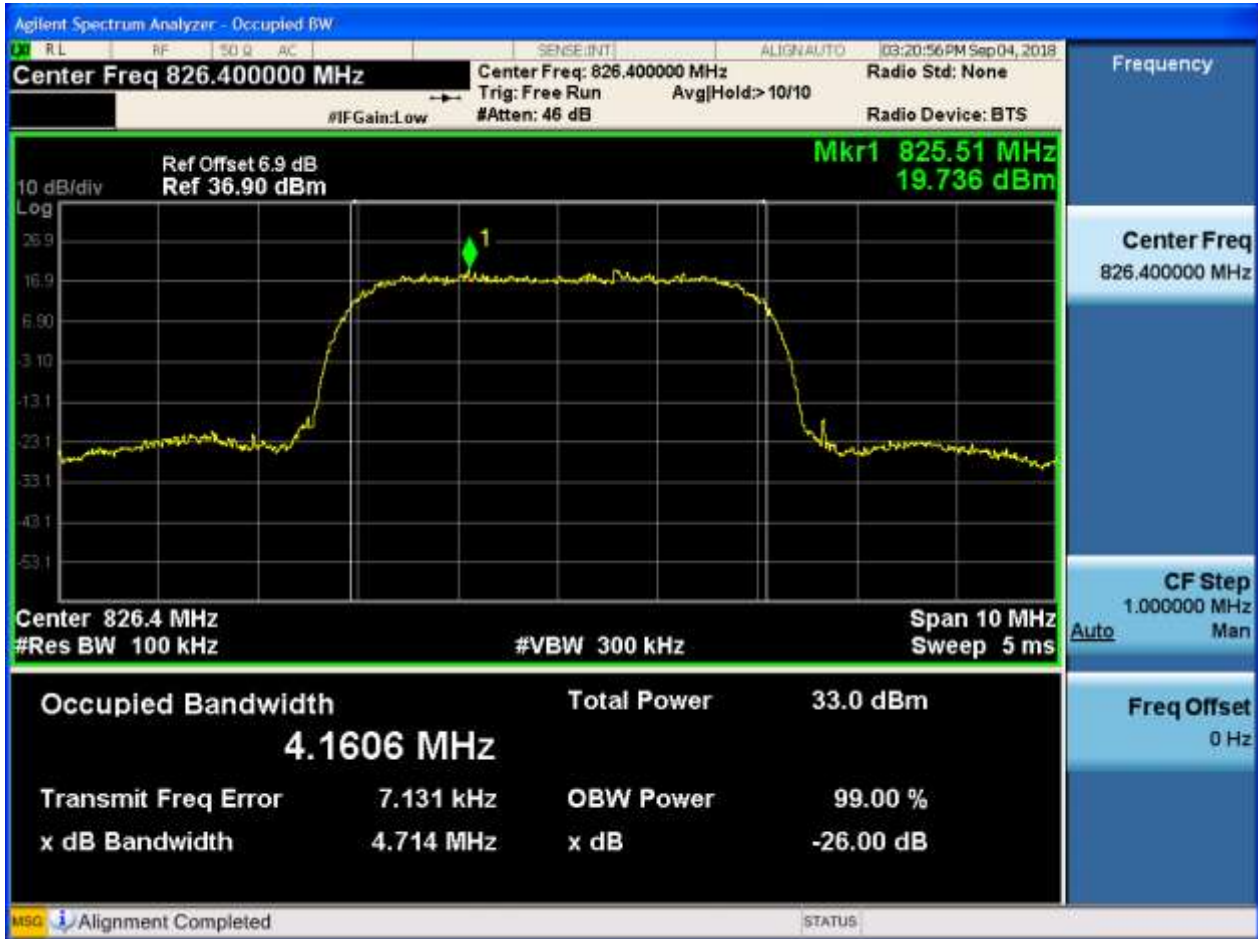




4.1.3 Test Band = WCDMA850

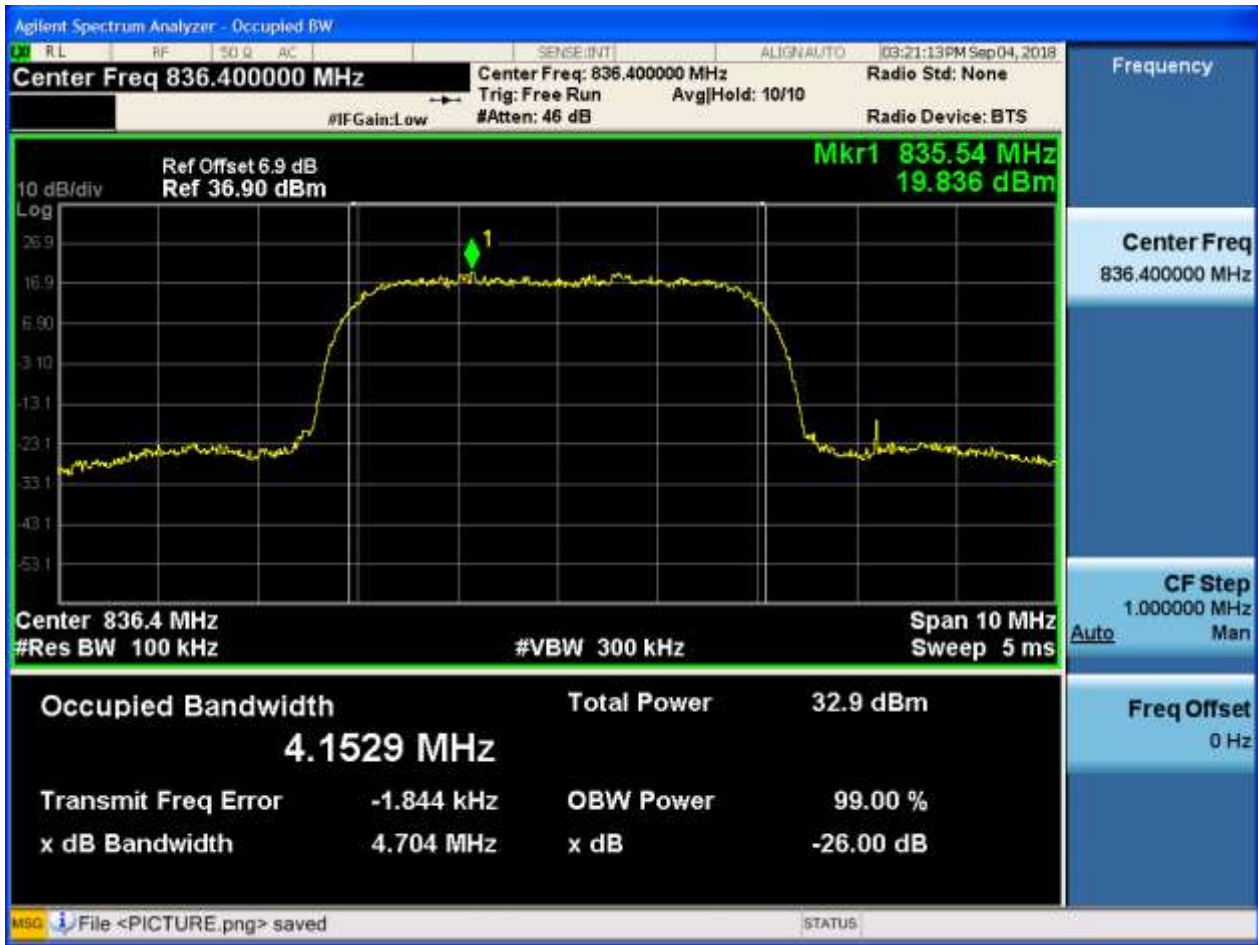
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



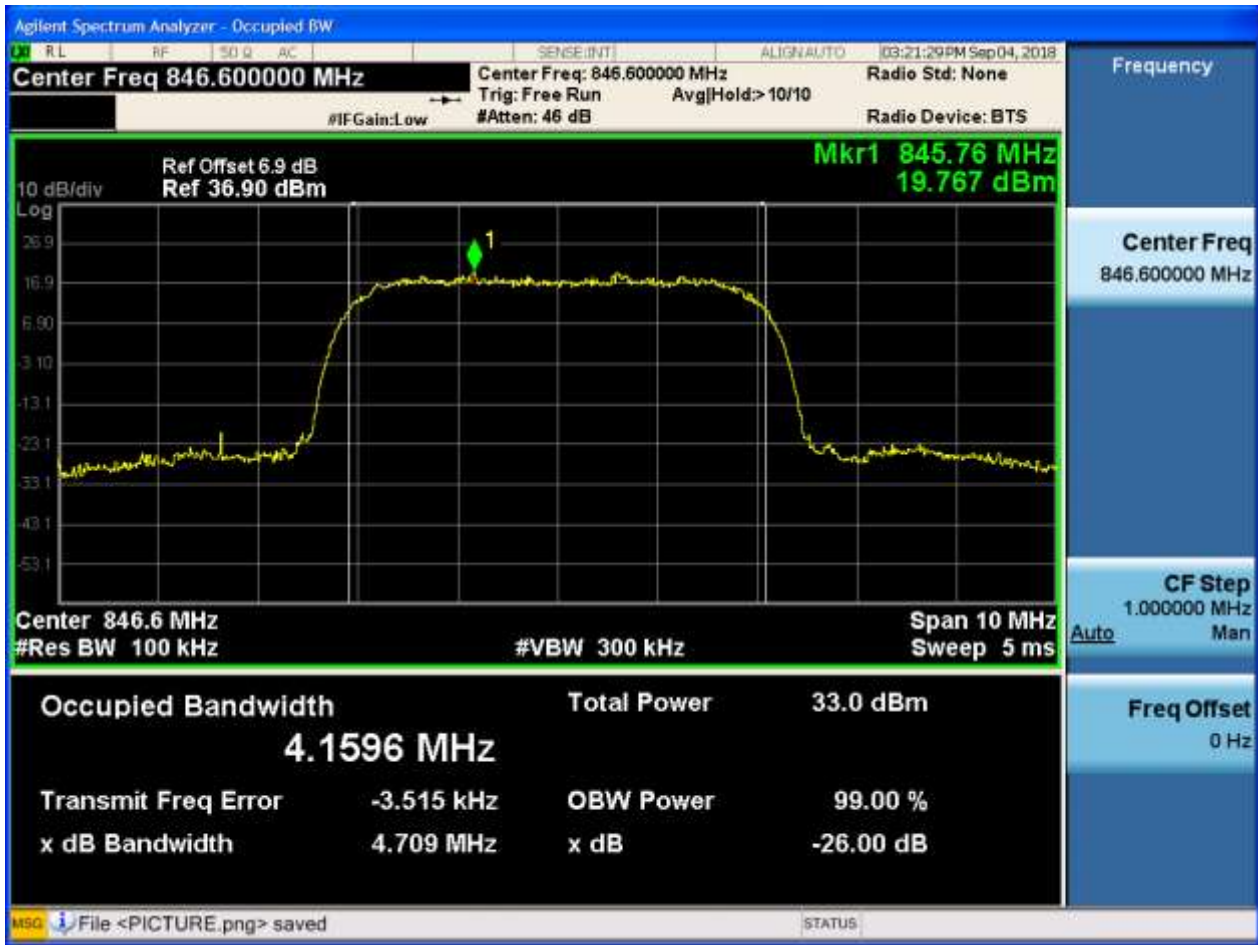


4.1.3.1.2 Test Channel = MCH





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.

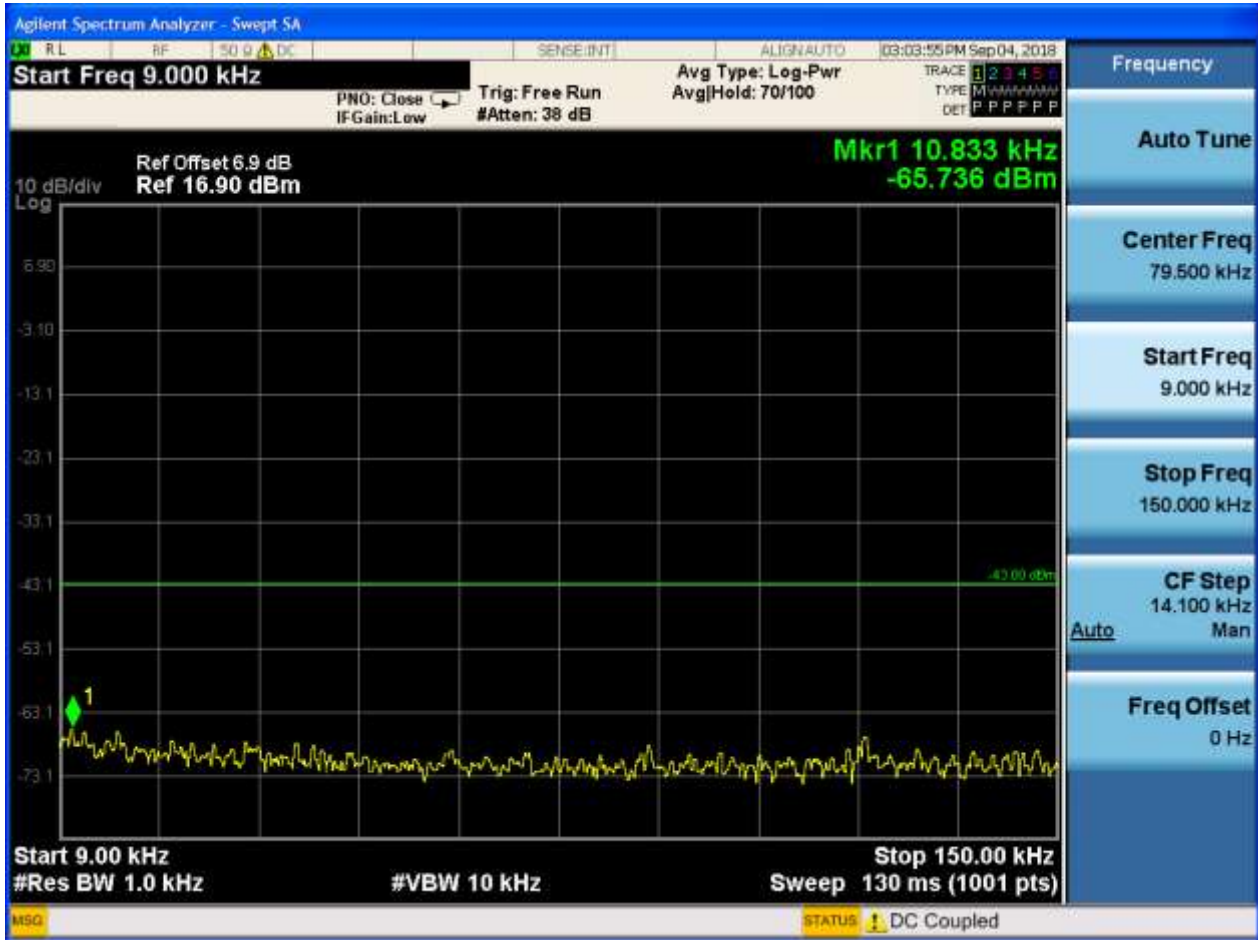
Part I - Test Plots

6.1 For UMTS

6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

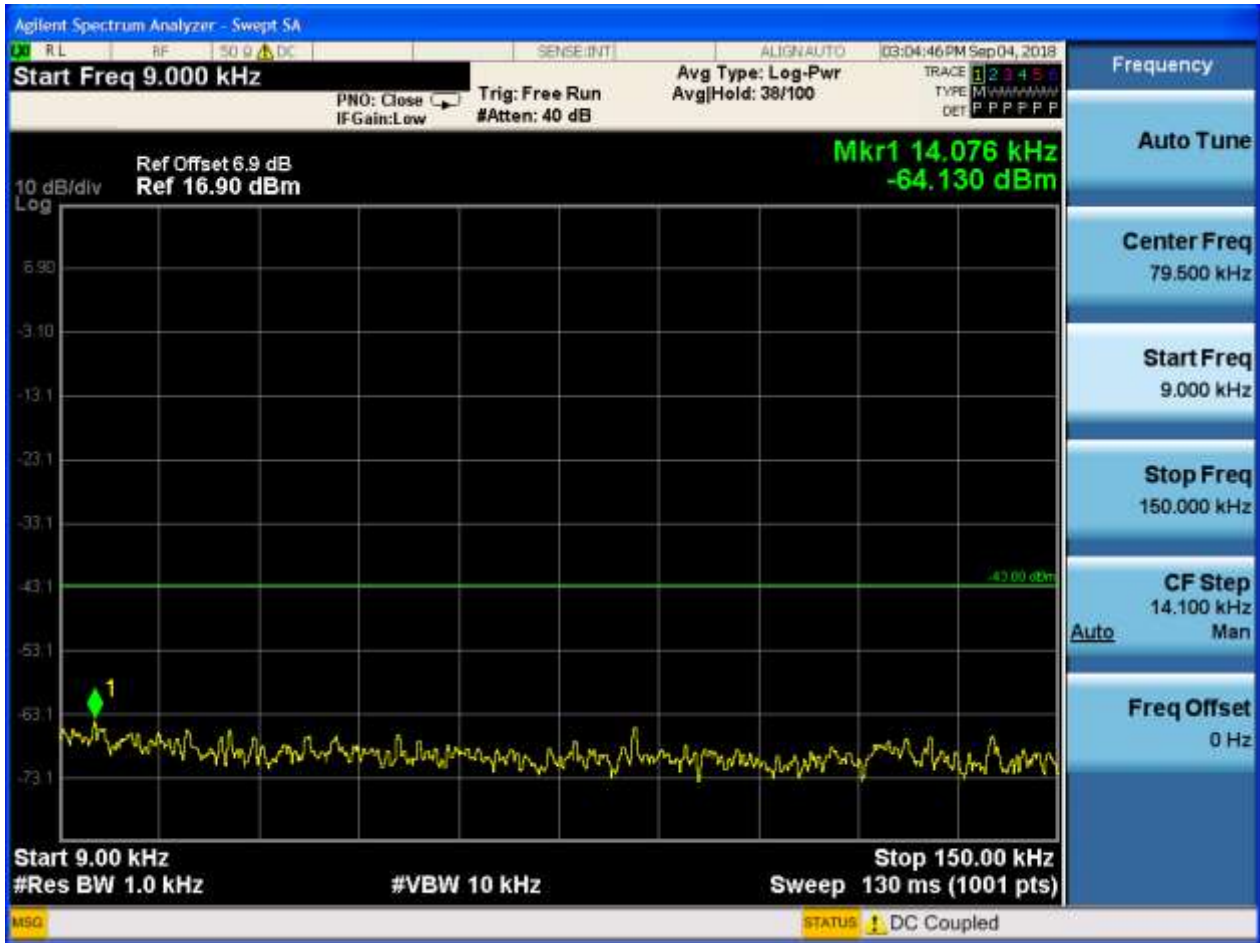
6.1.1.1.1 Test Channel = LCH





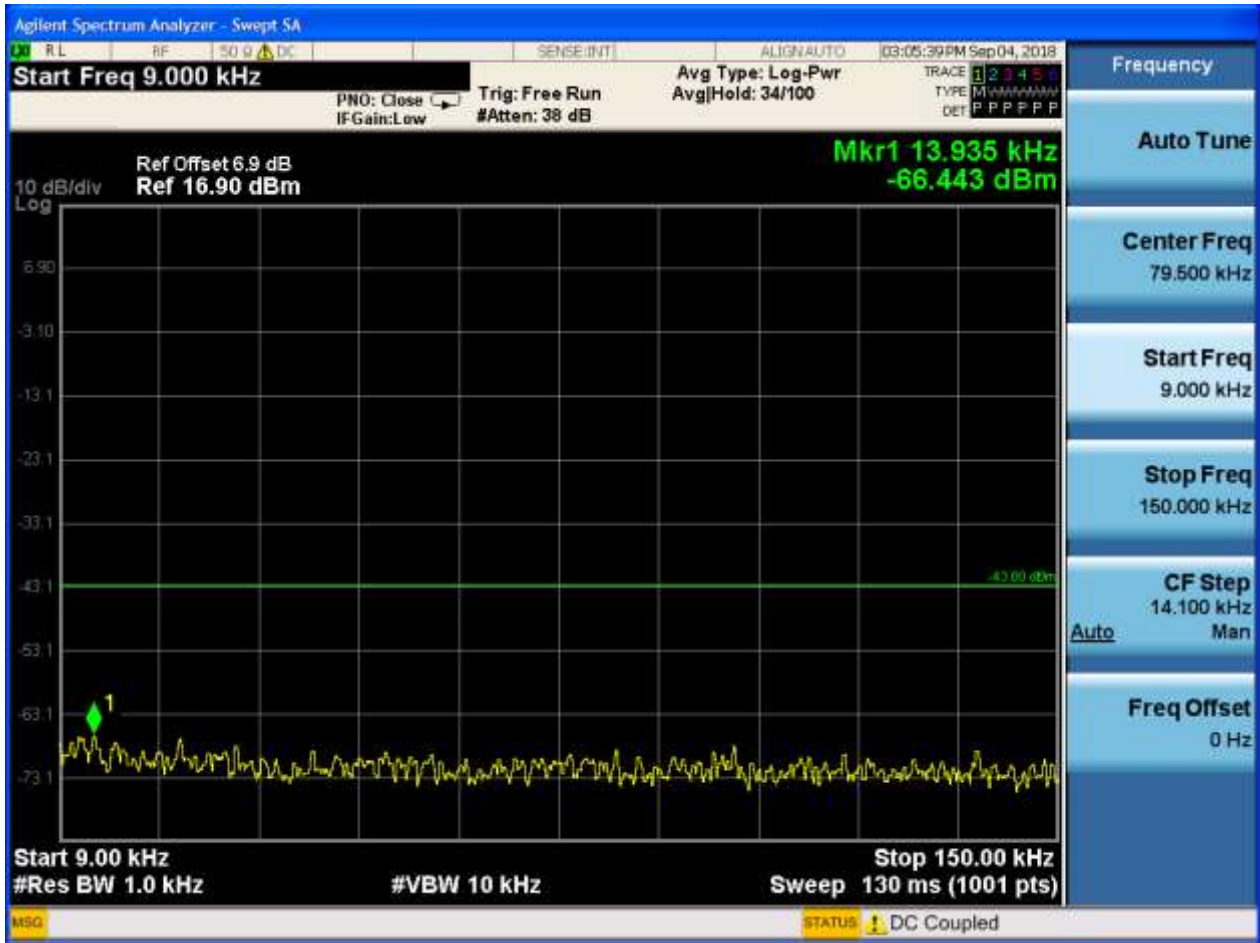


6.1.1.1.2 Test Channel = MCH





6.1.1.1.3 Test Channel = HCH

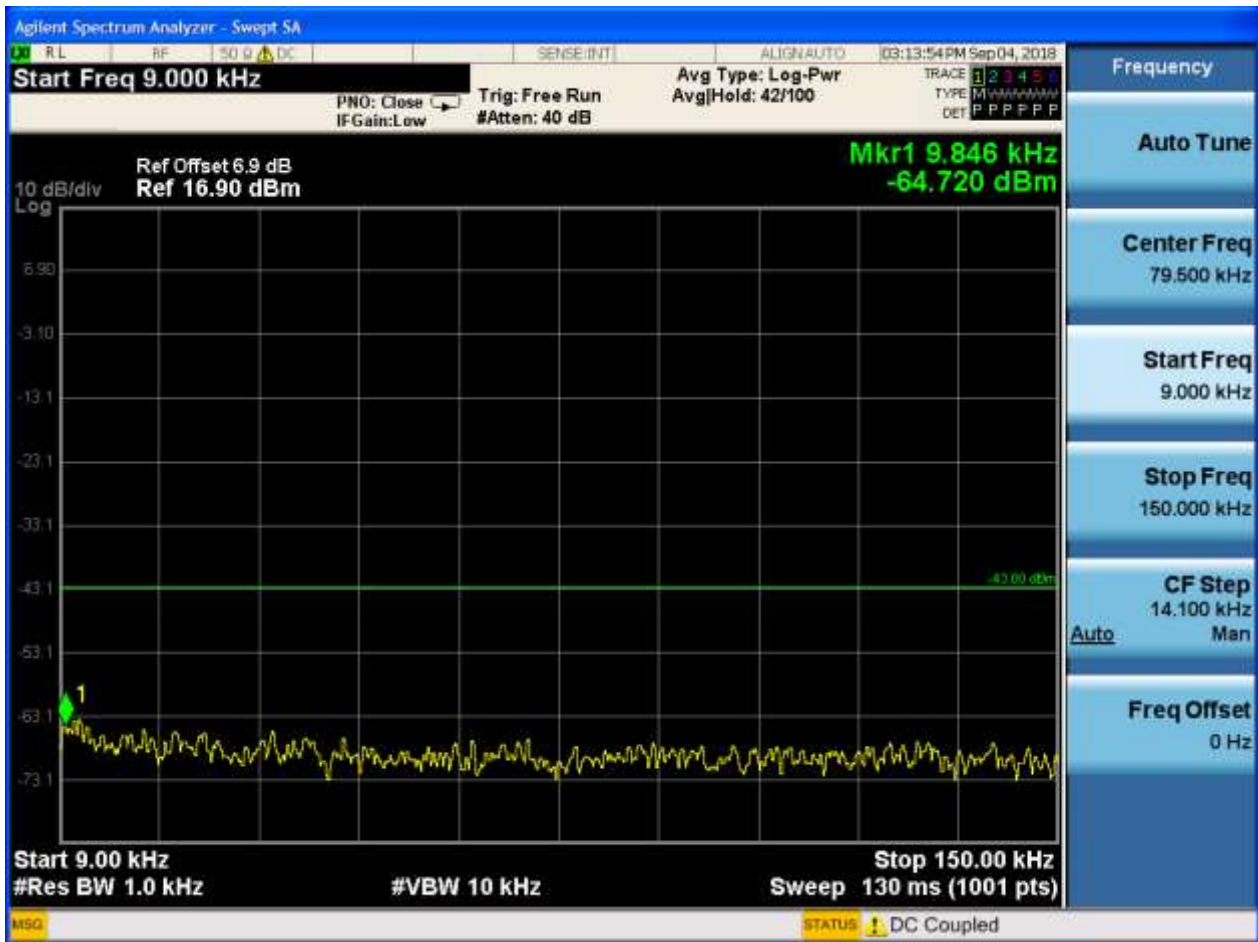




6.1.2 Test Band = WCDMA1700

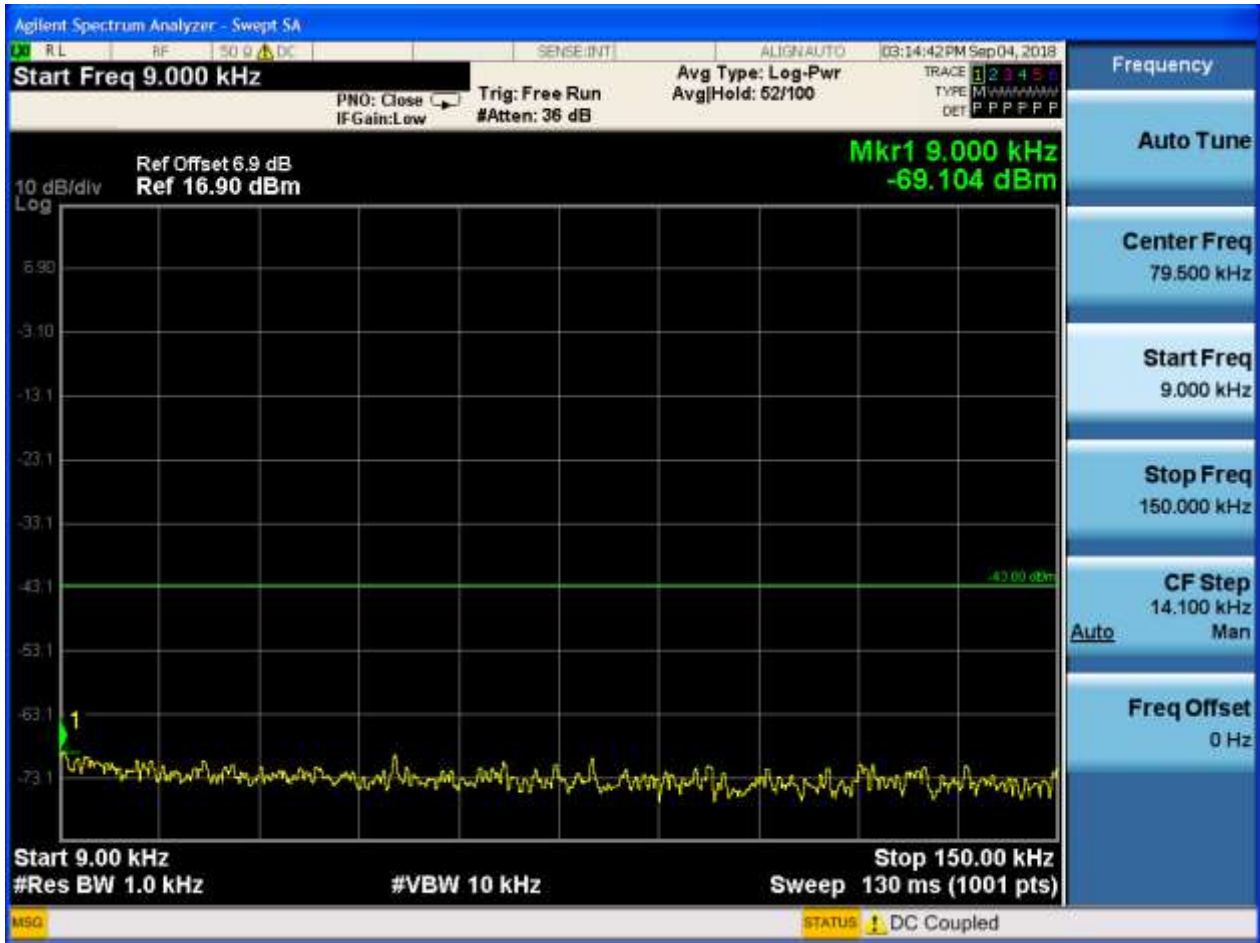
6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH



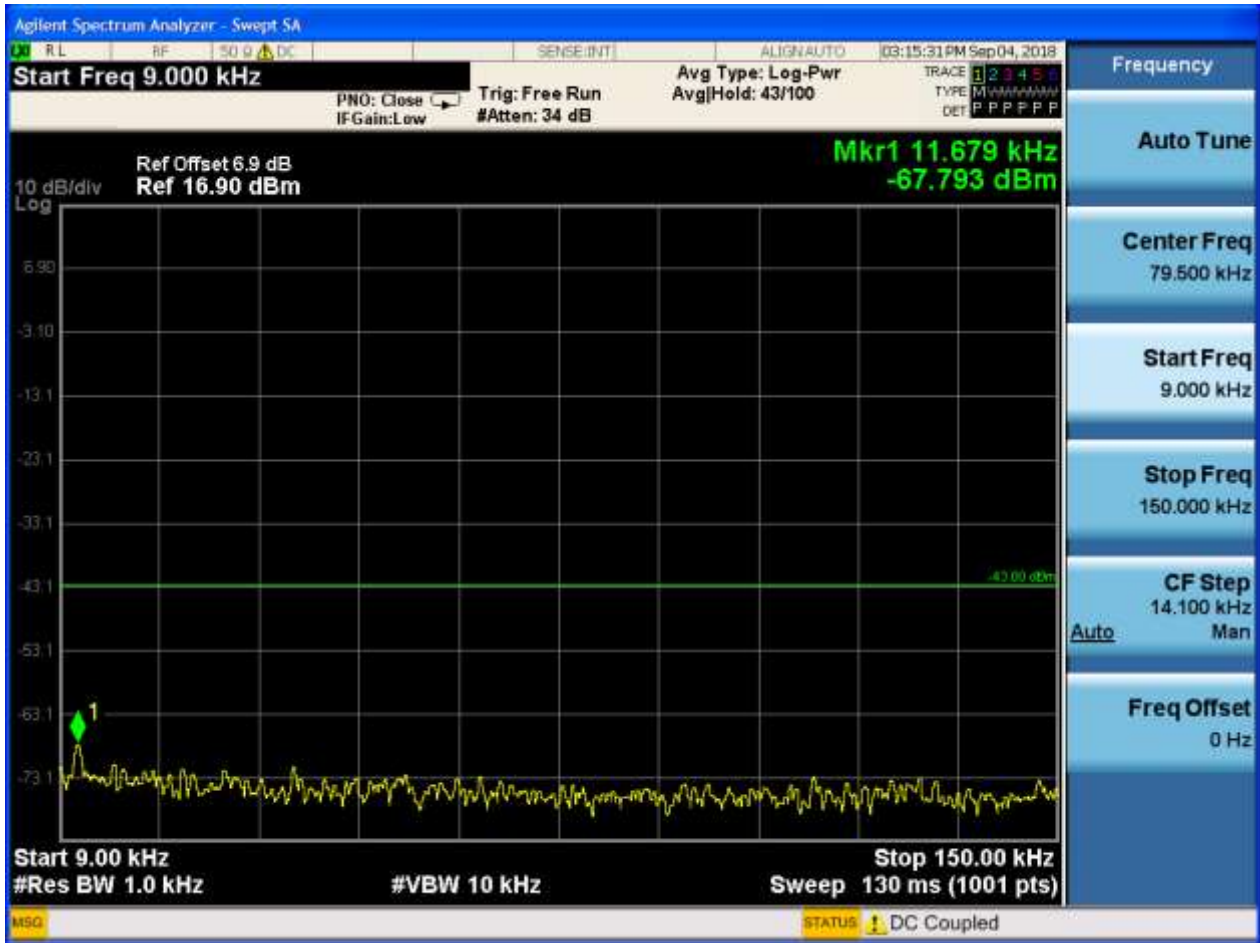


6.1.2.1.2 Test Channel = MCH





6.1.2.1.3 Test Channel = HCH



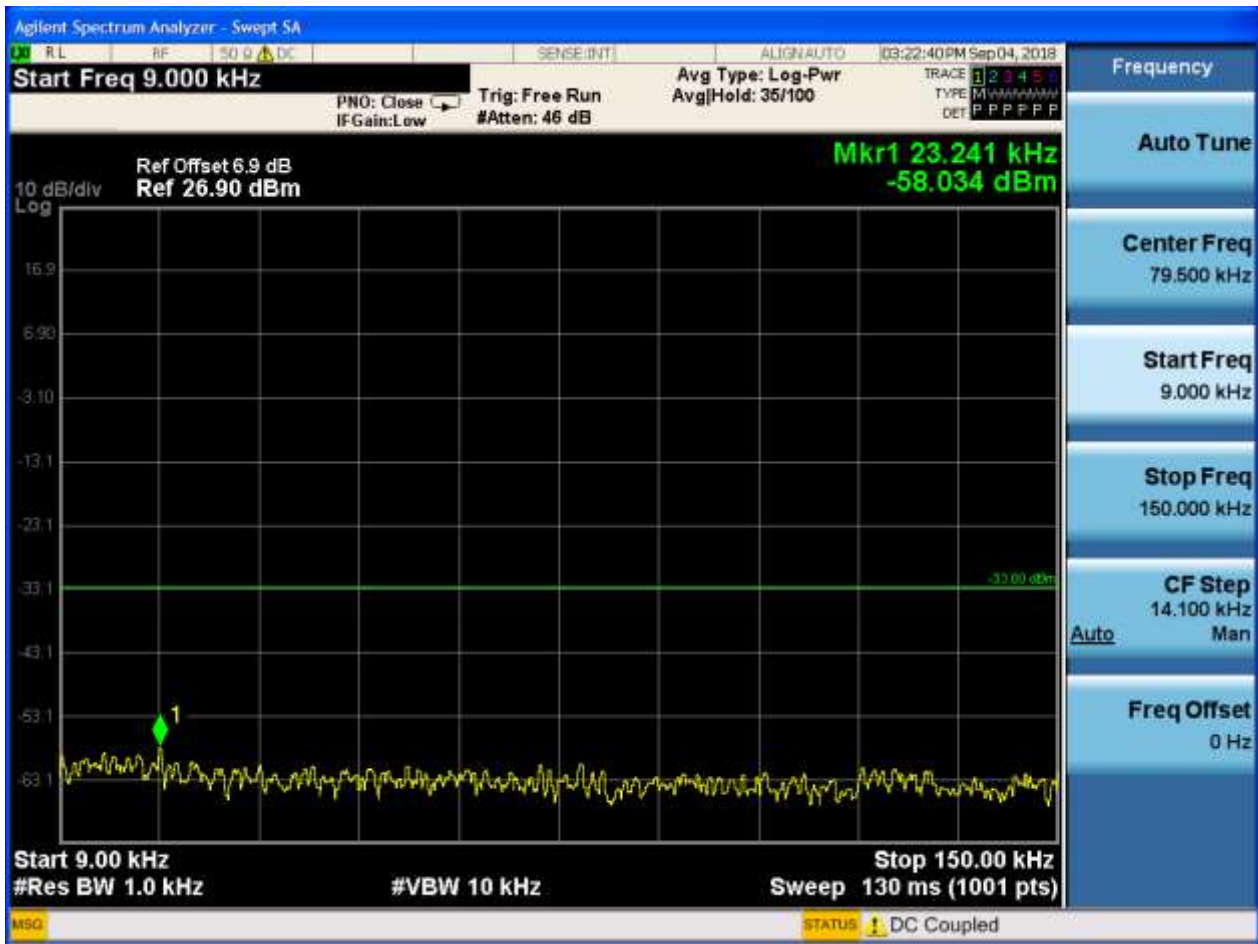


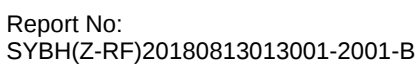
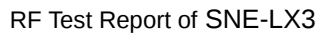


6.1.3 Test Band = WCDMA850

6.1.3.1 Test Mode = UMTS/TM1

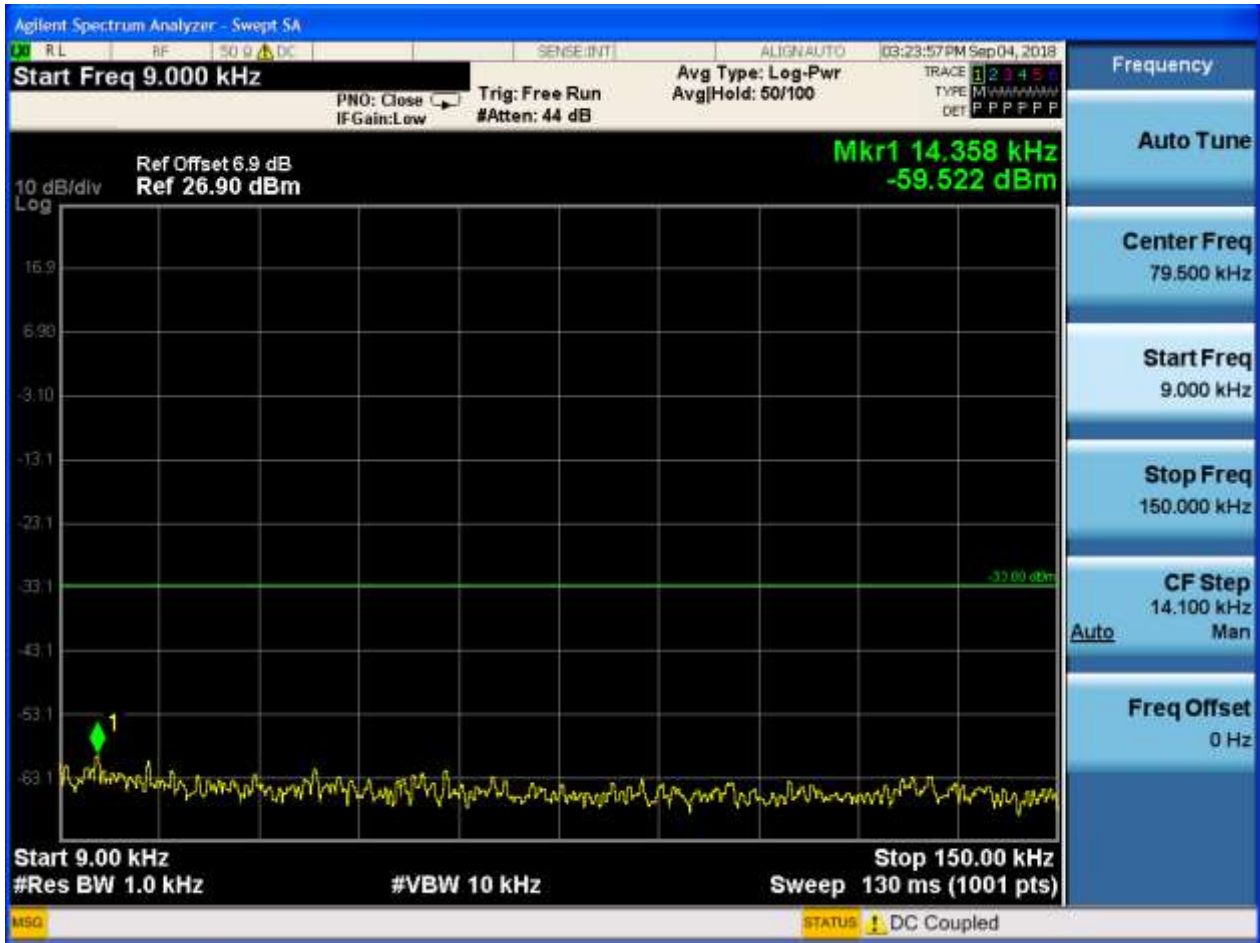
6.1.3.1.1 Test Channel = LCH

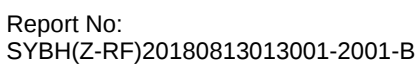
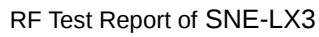




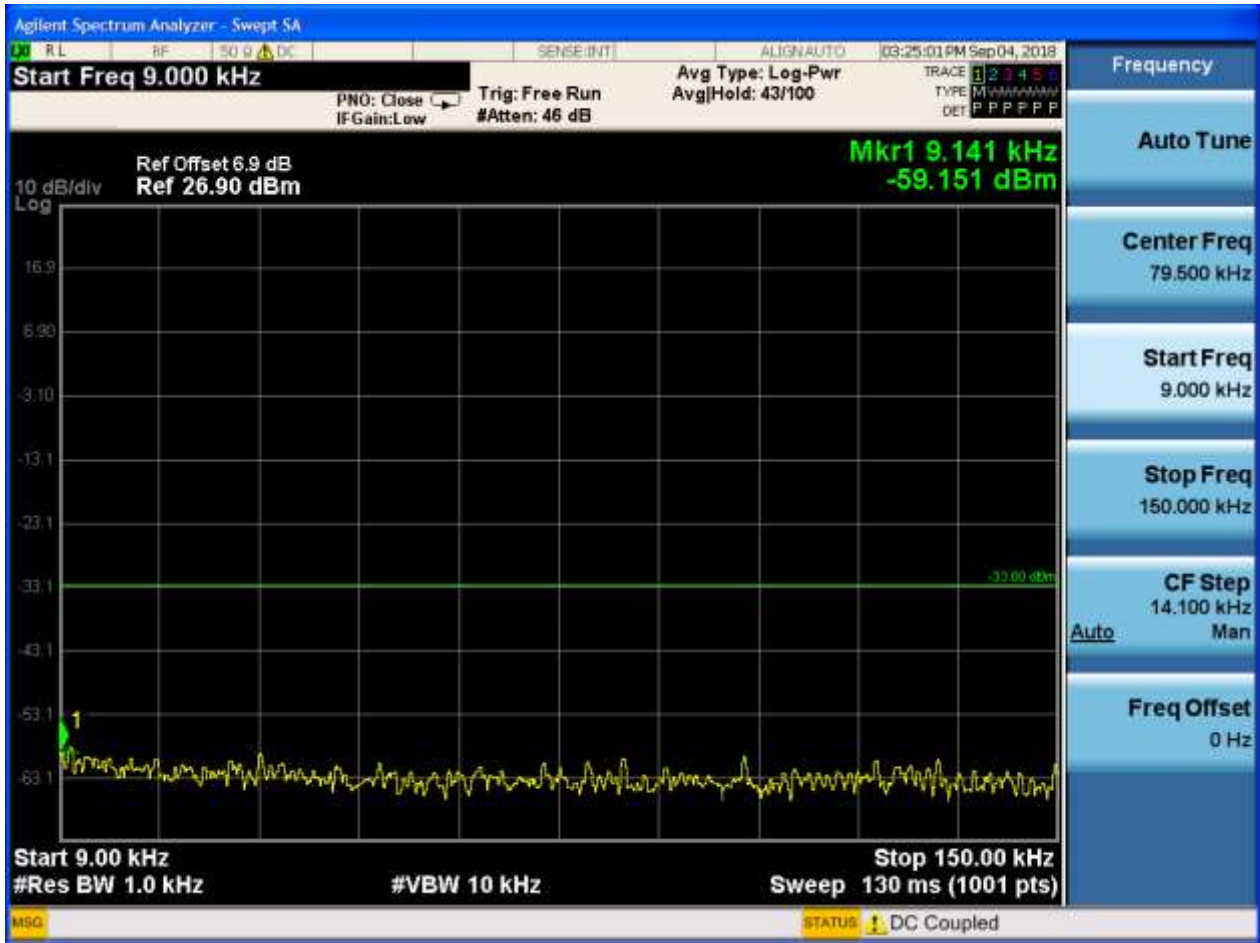


6.1.3.1.2 Test Channel = MCH

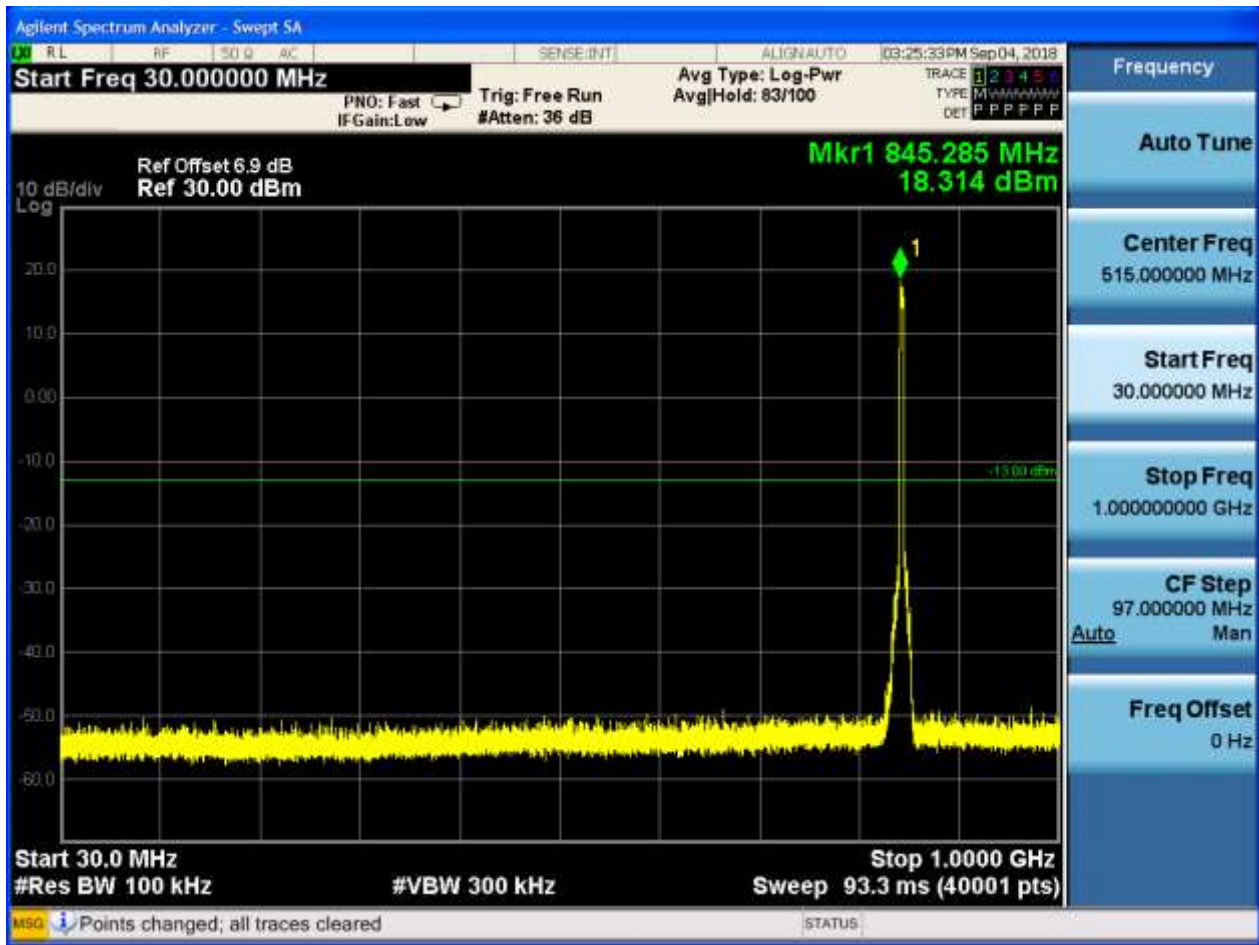


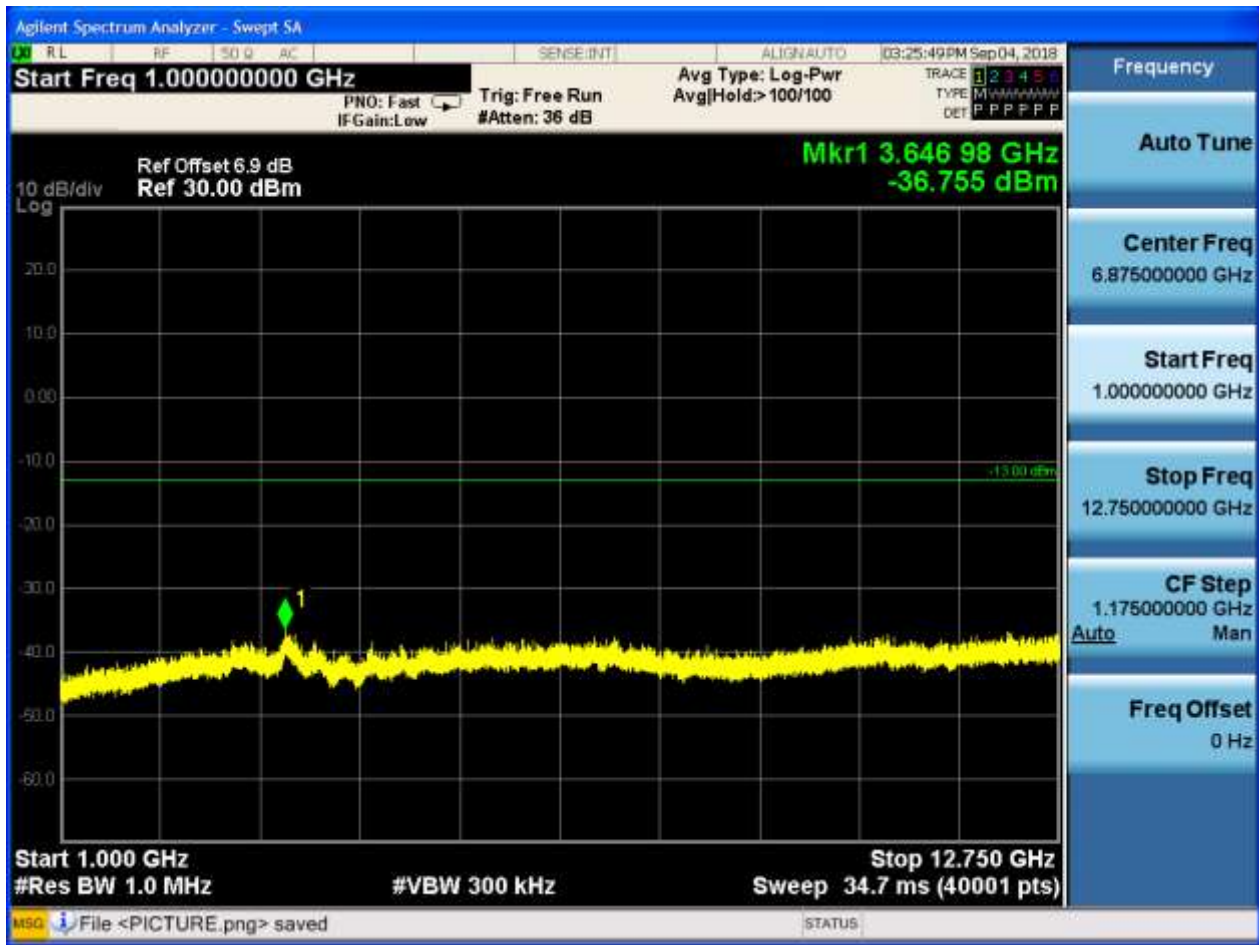


6.1.3.1.3 Test Channel = HCH











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

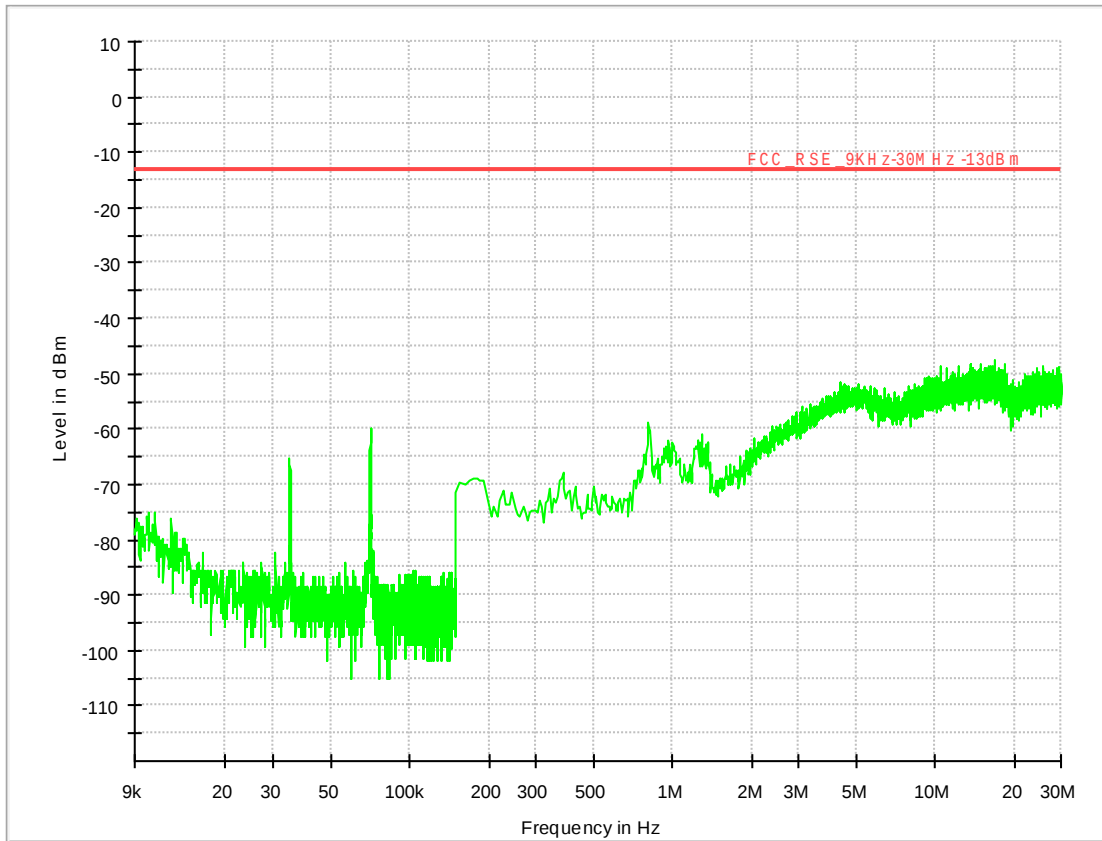
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

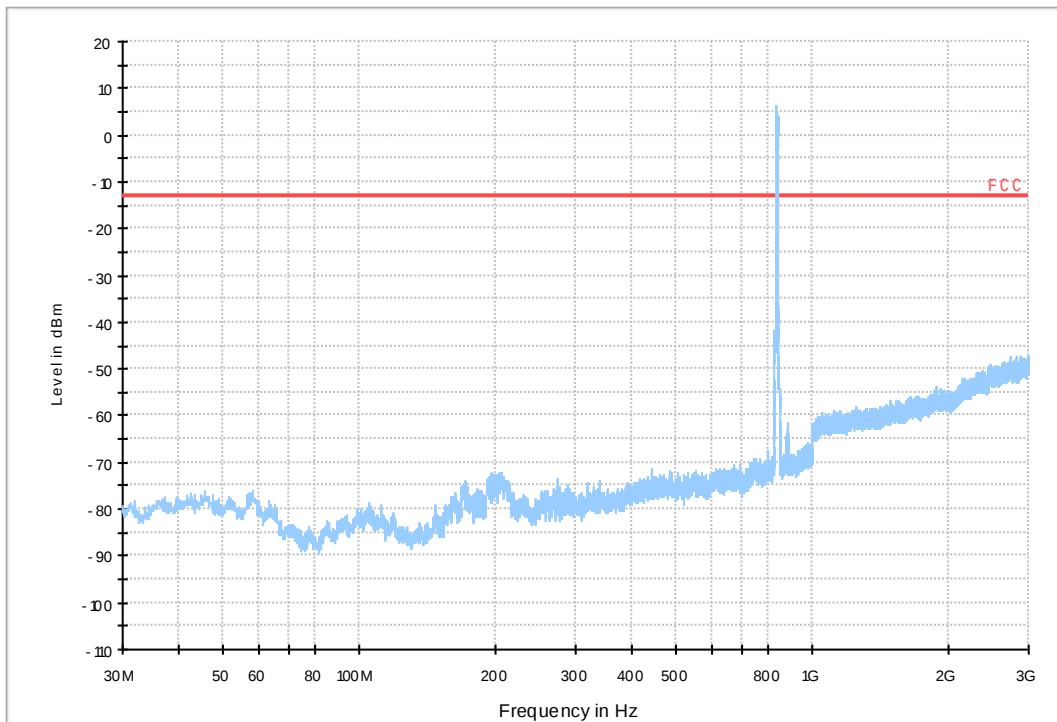
7.1 For UMTS

7.1.1 Test Band = WCDMA850_ANT1

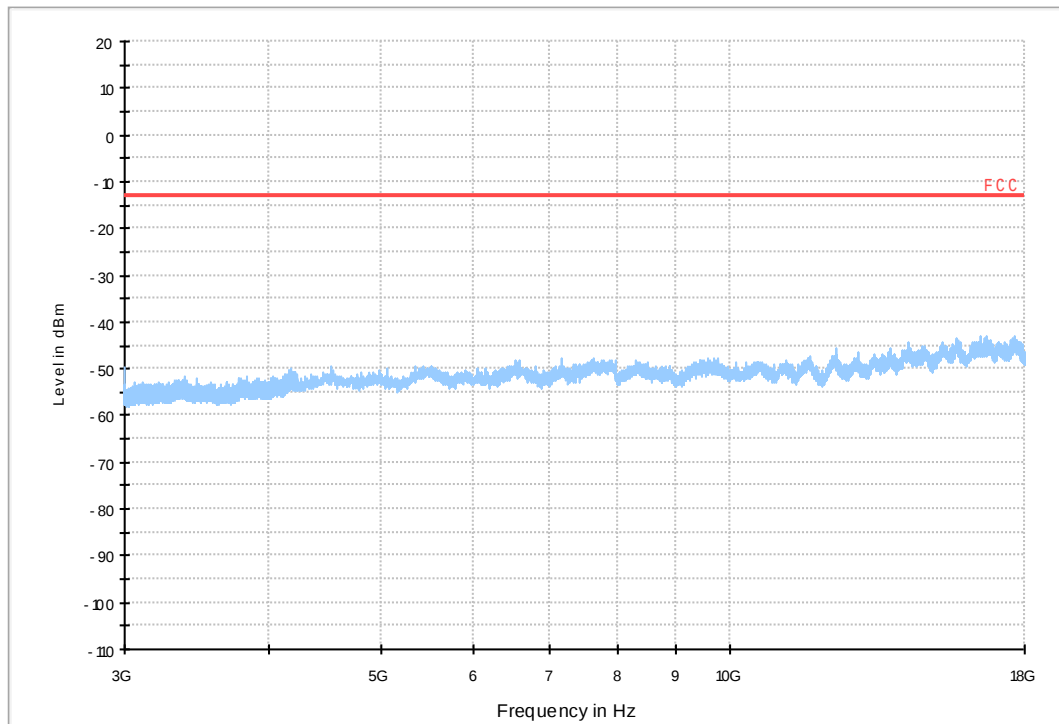
7.1.1.1 Test Mode = UMTS/TM1



06 FCC PART 22 WCDMA850_L

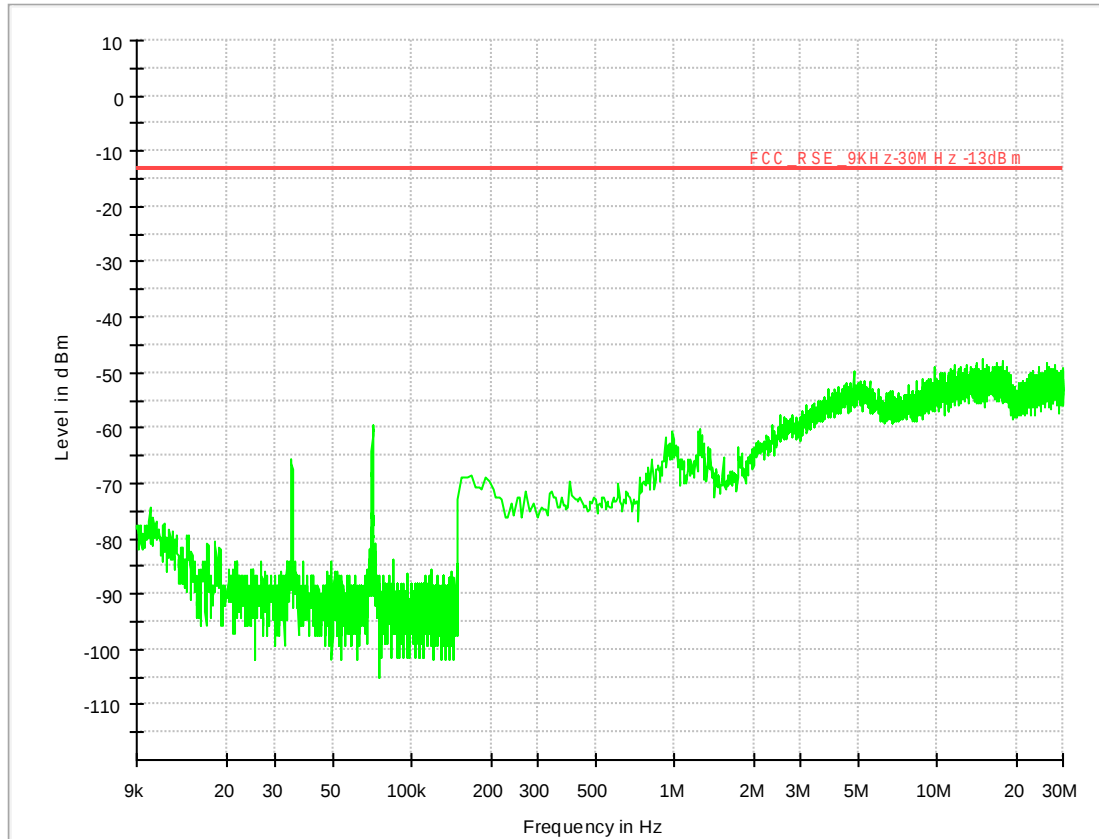


05 FCC PART 22 WCDMA850_H

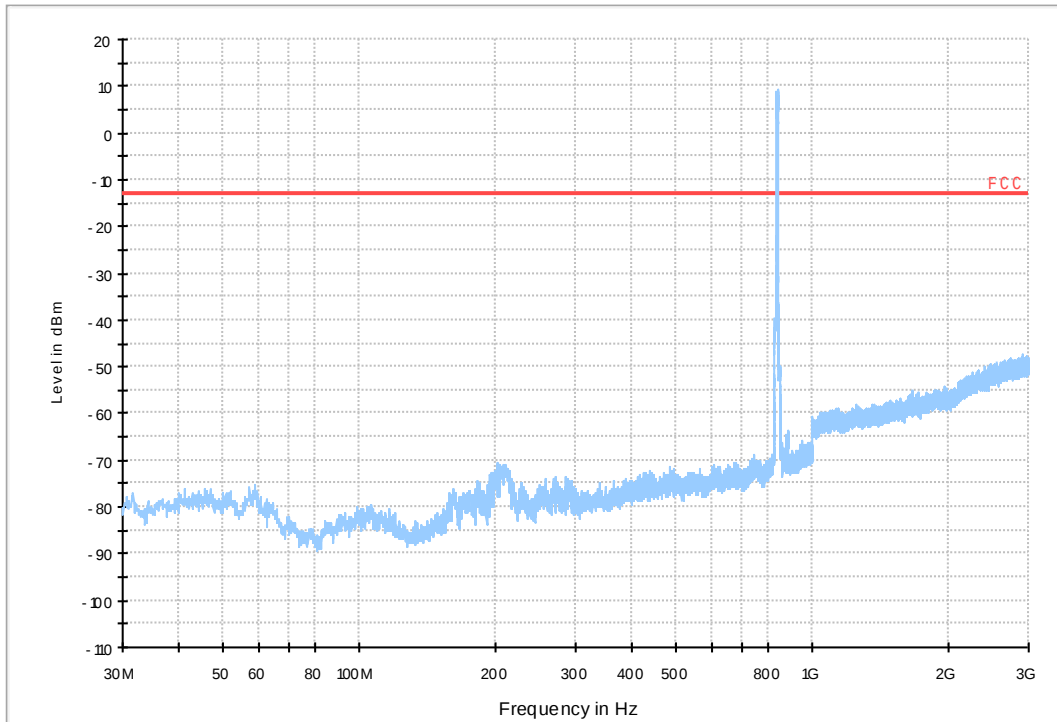


7.1.2 Test Band = WCDMA850_ANT2

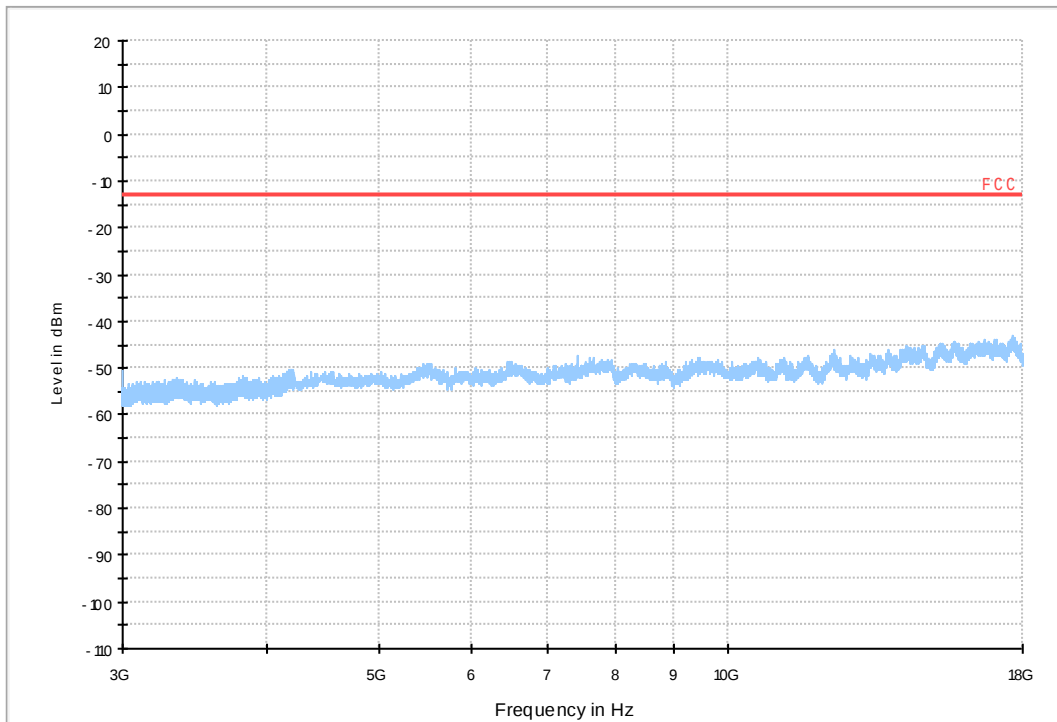
7.1.2.1 Test Mode = UMTS/TM1



06 FCC PART 22 WCDMA850_L

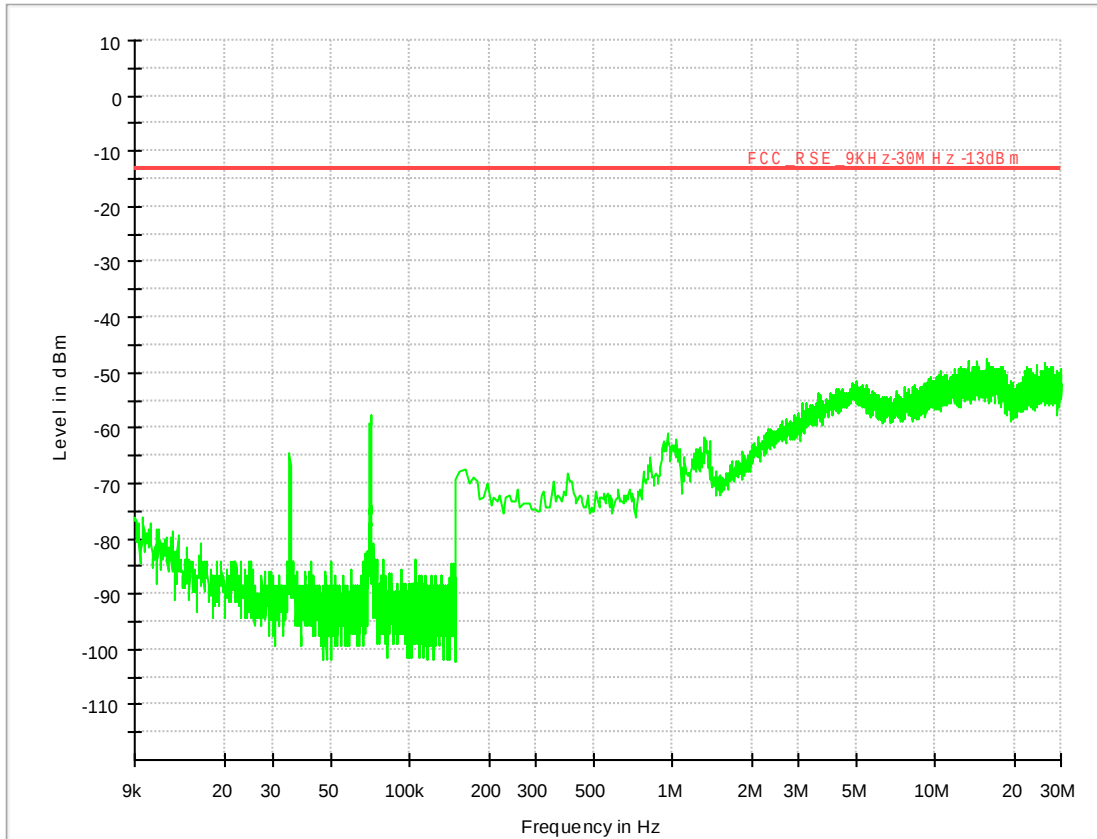


05 FCC PART 22 WCDMA850_H

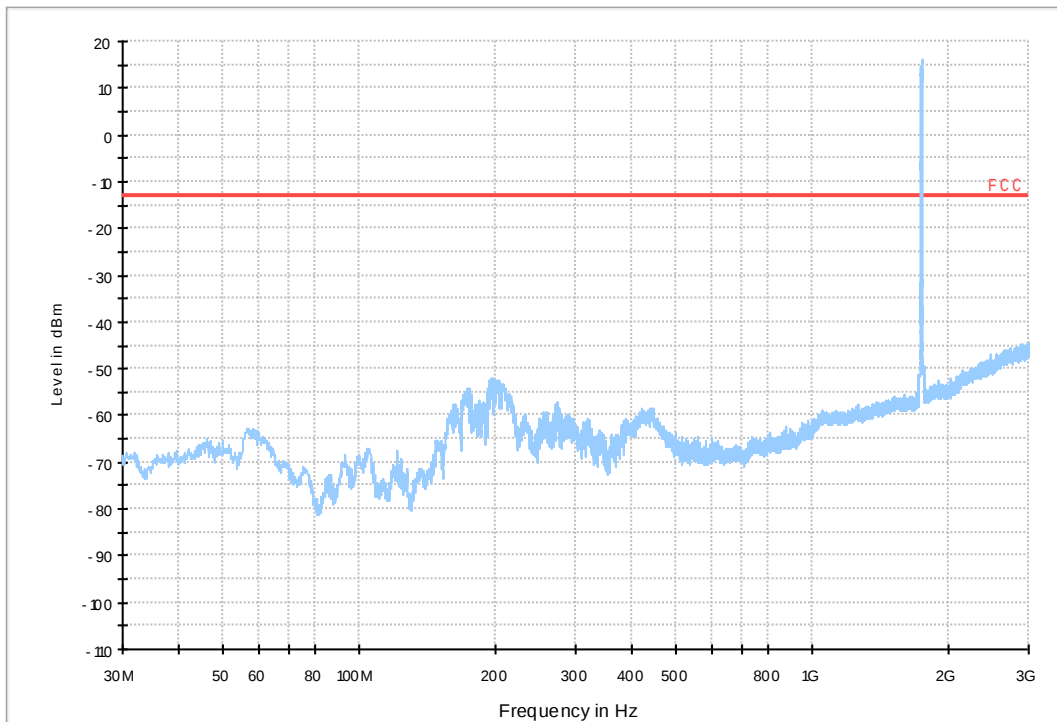


7.1.3 Test Band = WCDMA1700_ANT1

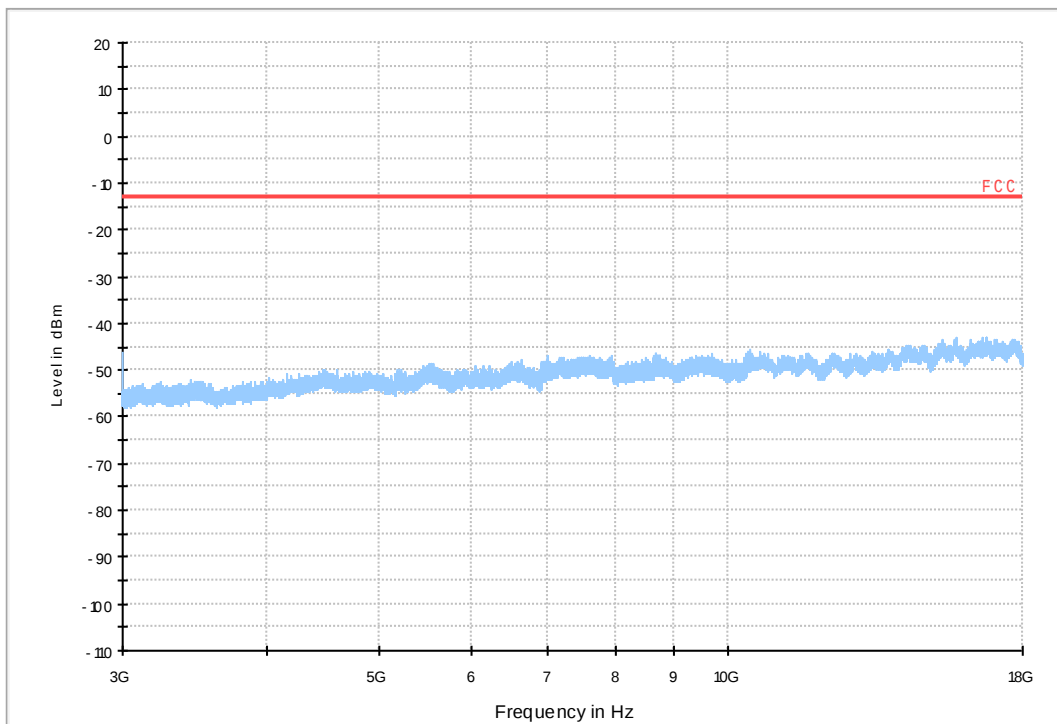
7.1.3.1 Test Mode = UMTS/TM1



18 FCC PART 27 WCDMA1700_L

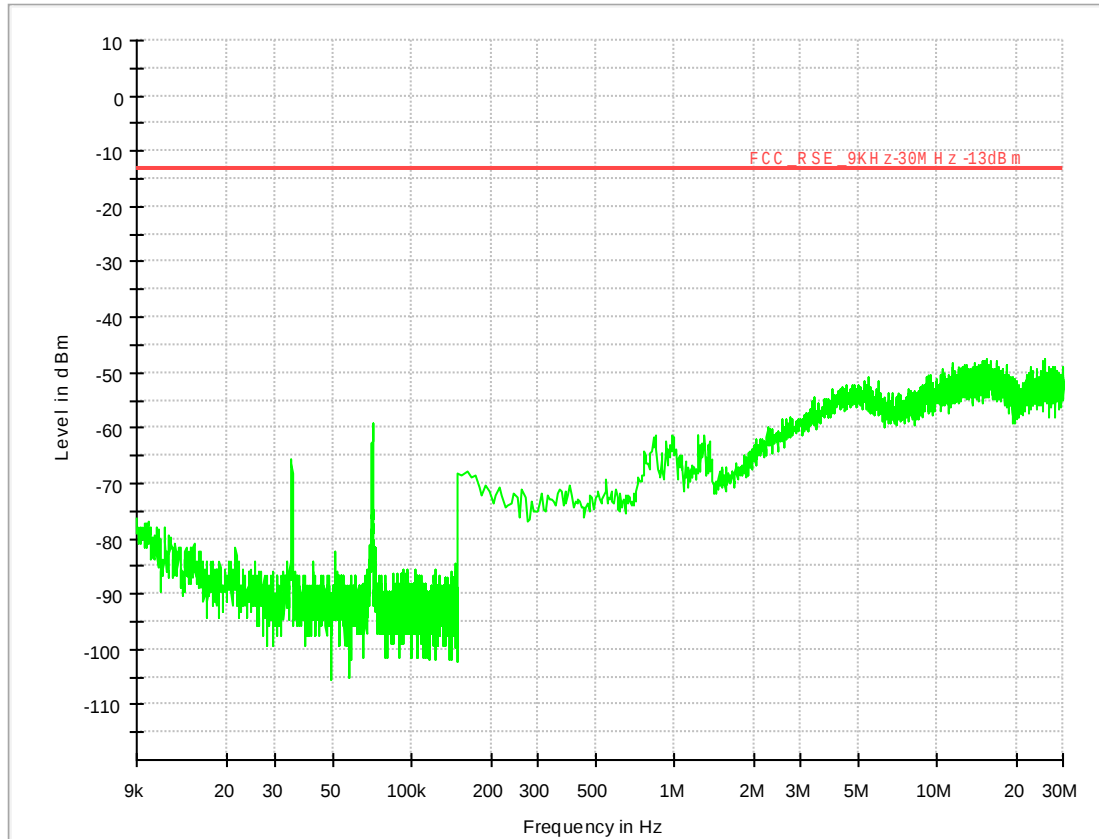


17 FCC PART 27 WCDMA1700_H

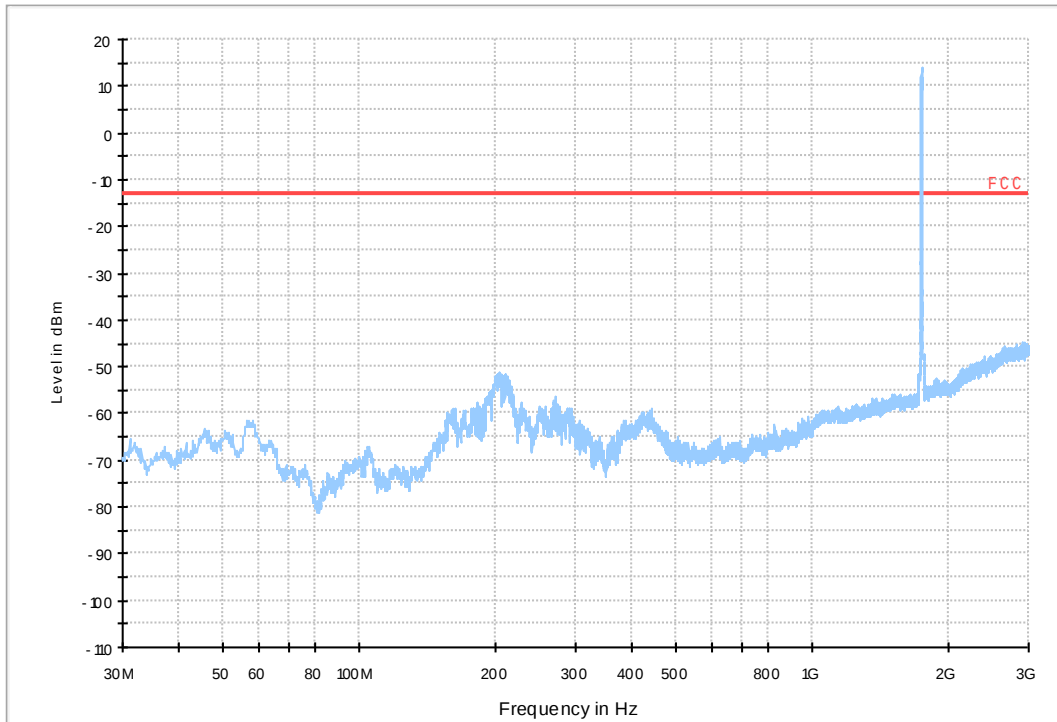


7.1.4 Test Band = WCDMA1700_ANT2

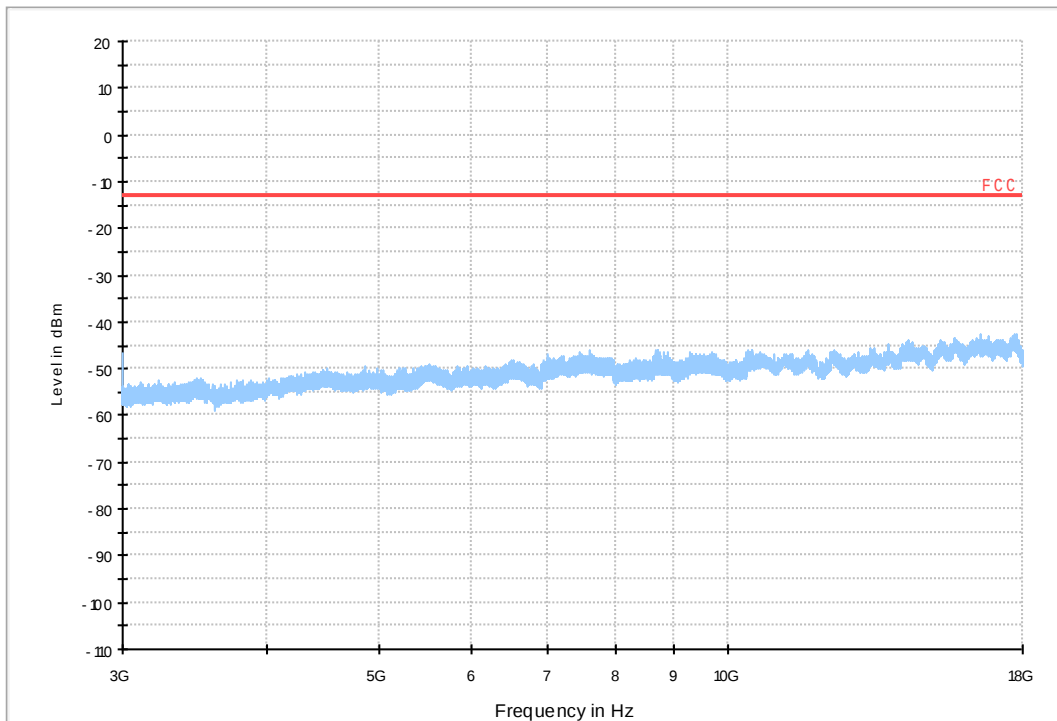
7.1.4.1 Test Mode = UMTS/TM1



18 FCC PART 27 WCDMA1700_L

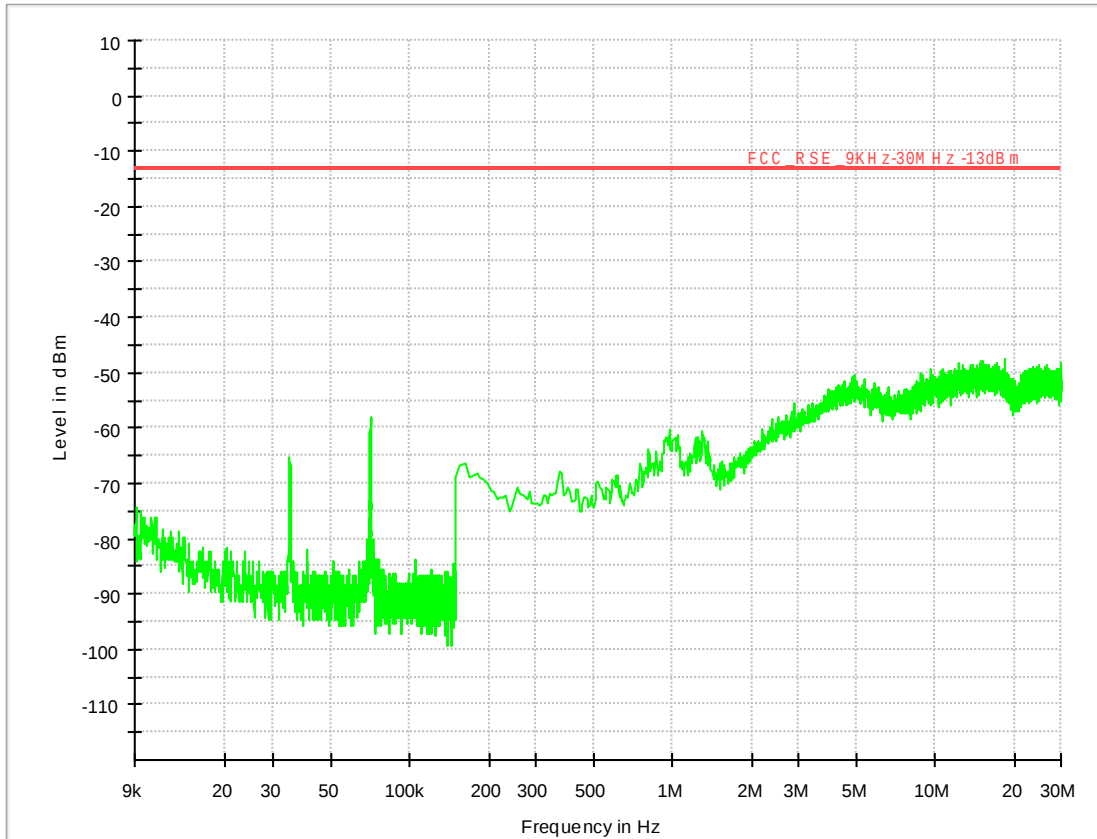


17 FCC PART 27 WCDMA1700_H

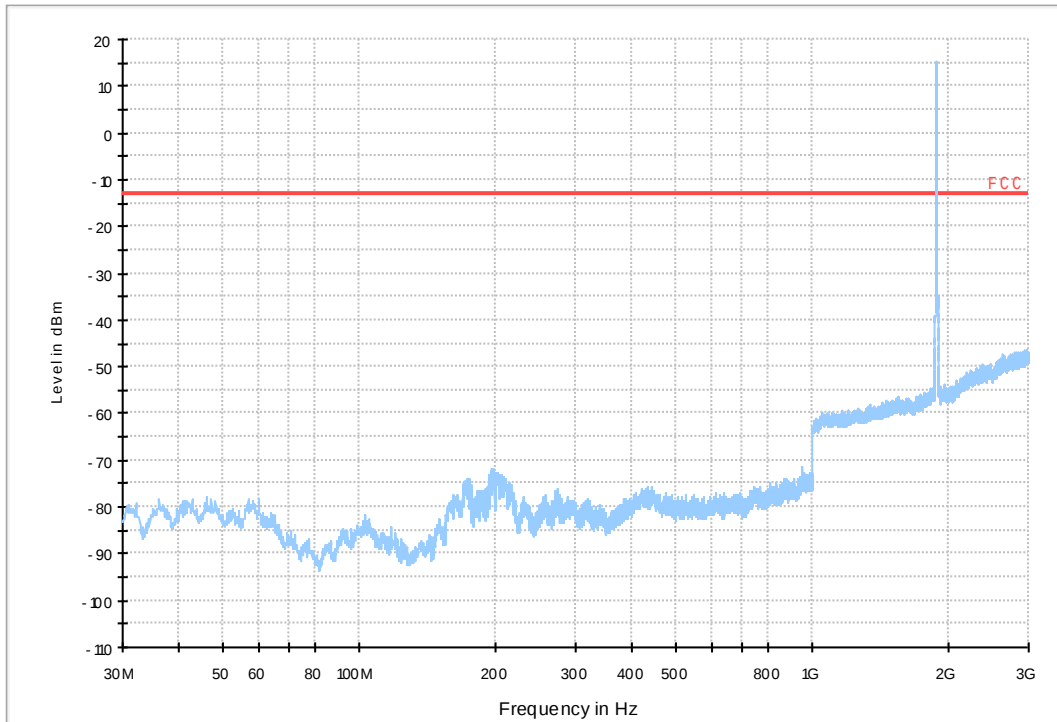


7.1.5 Test Band = WCDMA1900_ANT1

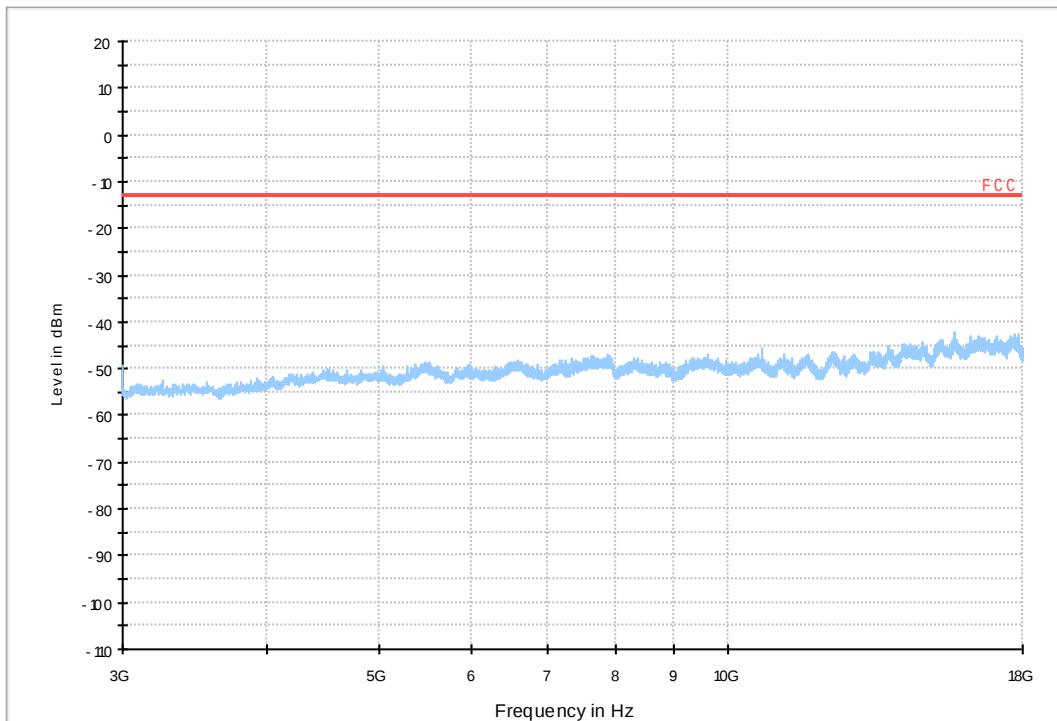
7.1.5.1 Test Mode = UMTS/TM1



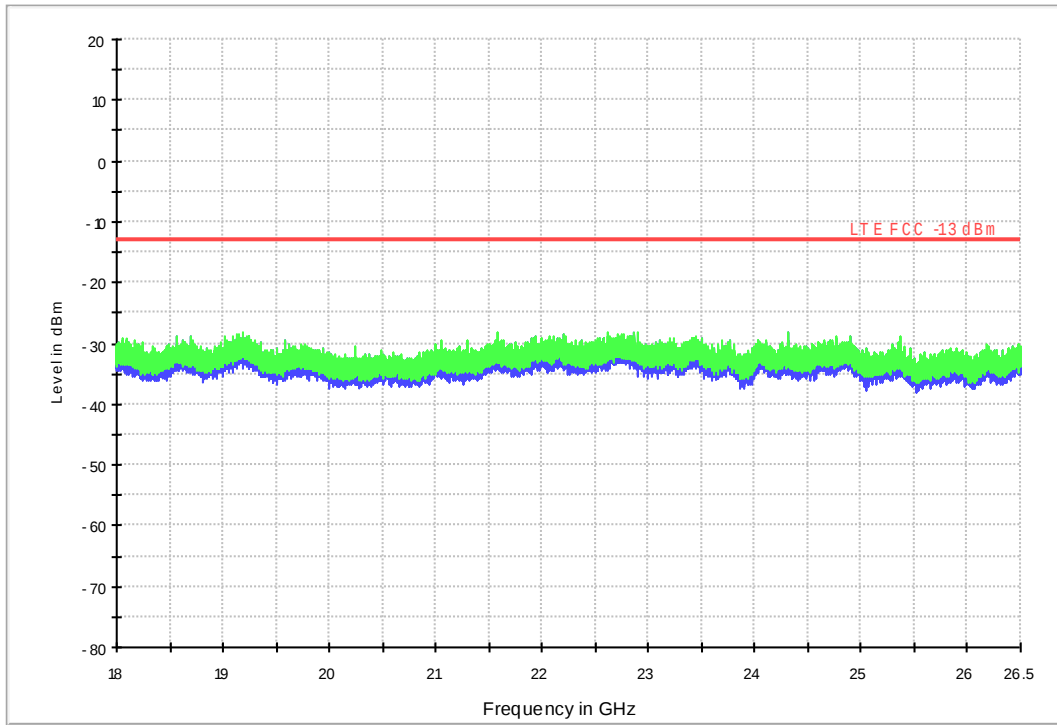
12 FCC PART 24 WCDMA1900_L



11 FCC PART 24 WCDMA1900_H

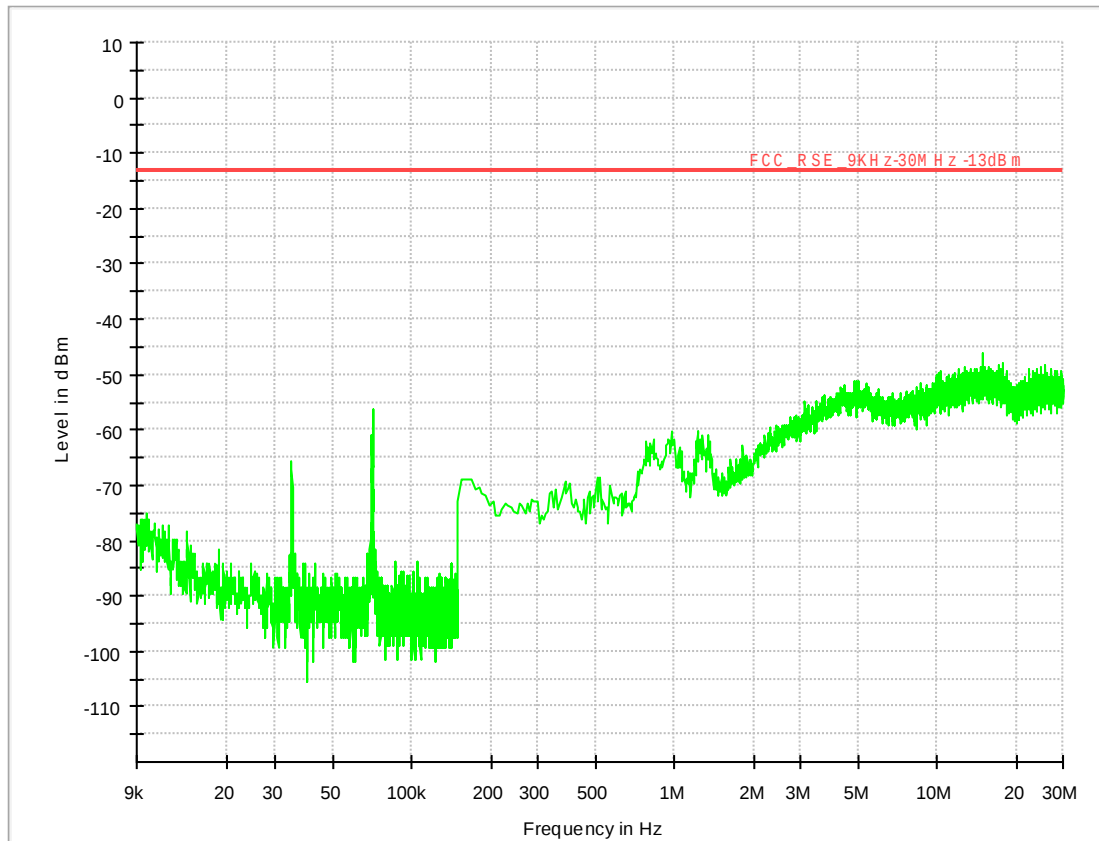


18G~26.5G RSE-TX-DIRECTOR ABOVE 1.5G PK

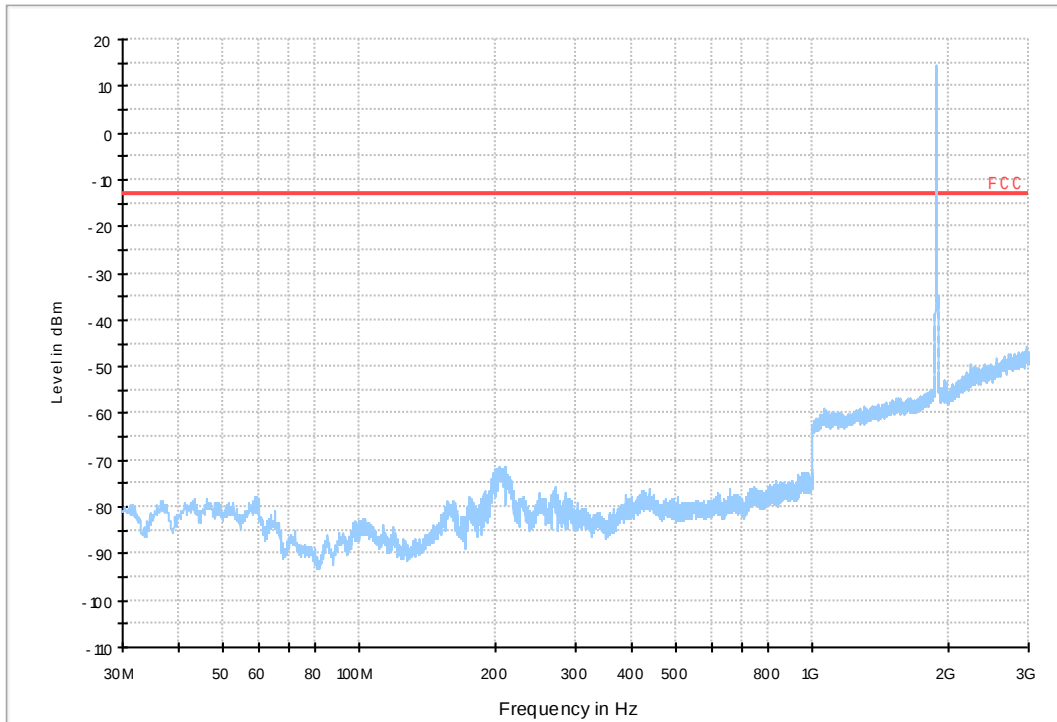


7.1.6 Test Band = WCDMA1900_ANT2

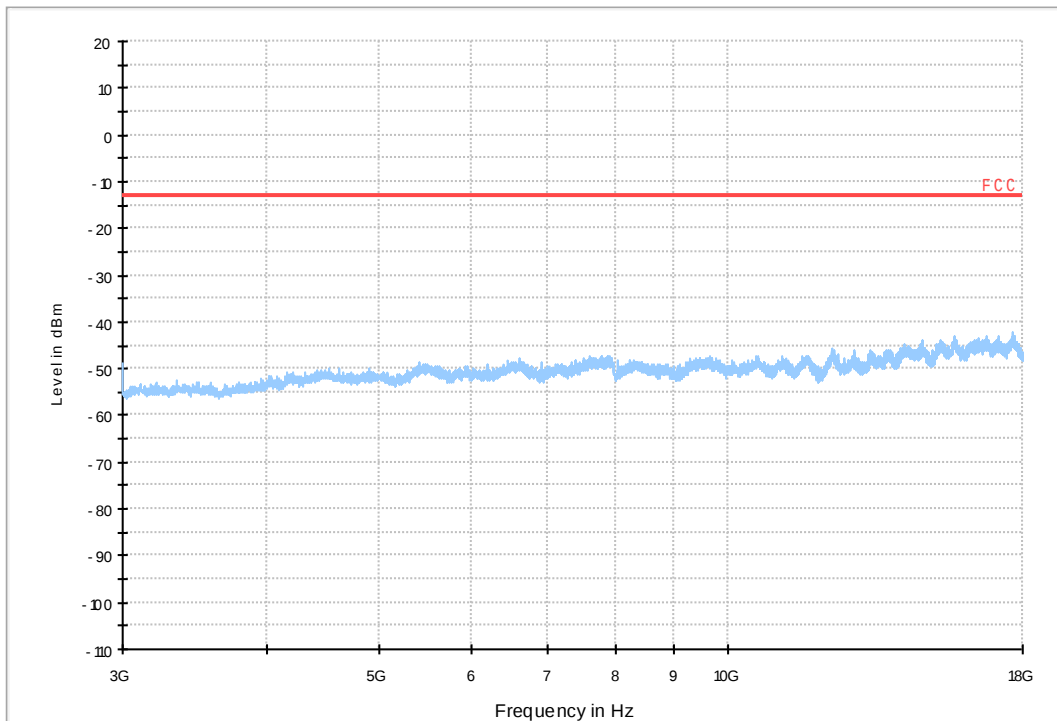
7.1.6.1 Test Mode = UMTS/TM1



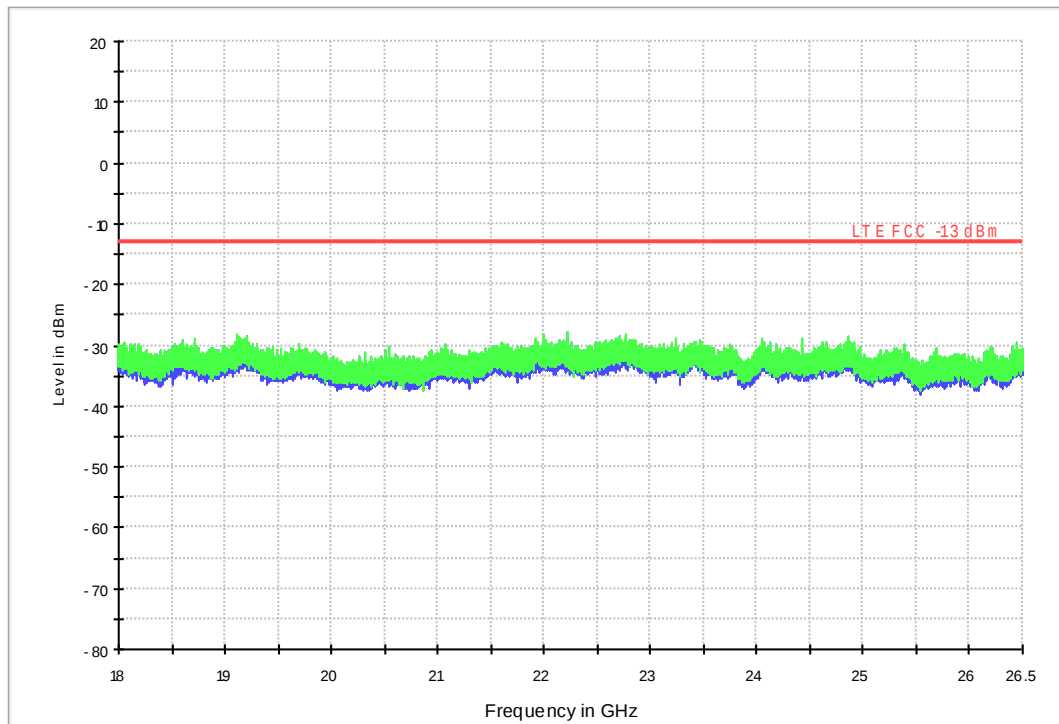
12 FCC PART 24 WCDMA1900_L



11 FCC PART 24 WCDMA1900_H



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



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	5.84	.00315	PASS
				VN	5.42	0.00293	PASS
				VH	17.18	0.00927	PASS
		MCH	TN	VL	10.89	0.00579	PASS
				VN	11.76	0.00626	PASS
				VH	12.25	0.00652	PASS
		HCH	TN	VL	7.77	0.00407	PASS
				VN	14.05	0.00737	PASS
				VH	15.30	0.00802	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	15.47	0.00903	PASS
				VN	10.38	0.00606	PASS
				VH	5.28	0.00308	PASS
		MCH	TN	VL	14.65	0.00846	PASS
				VN	9.89	0.00571	PASS
				VH	16.25	0.00938	PASS
		HCH	TN	VL	17.58	0.01003	PASS
				VN	11.66	0.00665	PASS
				VH	9.29	0.0053	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	4.82	0.00583	PASS
				VN	11.38	0.01377	PASS
				VH	9.66	0.01169	PASS
		MCH	TN	VL	0.12	0.00014	PASS
				VN	6.04	0.00722	PASS
				VH	10.50	0.01255	PASS
		HCH	TN	VL	5.23	0.00618	PASS
				VN	5.48	0.00647	PASS
				VH	7.19	0.00849	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
WCDMA1900	UMTS/TM1	LCH	VN	-30	8.87	.00479	PASS
				-20	5.66	0.00306	PASS
				-10	8.62	0.00465	PASS
				0	9.92	0.00536	PASS
				10	10.36	0.00559	PASS
				20	9.40	0.00507	PASS
				30	13.44	0.00726	PASS
				40	13.41	0.00724	PASS
				50	6.36	0.00343	PASS
		MCH	VN	-30	16.54	0.0088	PASS
				-20	14.89	0.00792	PASS
				-10	2.30	0.00122	PASS
				0	8.13	0.00432	PASS
				10	14.60	0.00777	PASS
				20	9.05	0.00481	PASS
				30	8.22	0.00437	PASS
				40	8.77	0.00466	PASS
				50	11.55	0.00614	PASS
		HCH	VN	-30	9.92	0.0052	PASS
				-20	14.13	0.00741	PASS
				-10	6.56	0.00344	PASS
				0	6.06	0.00318	PASS
				10	5.75	0.00301	PASS
				20	8.48	0.00445	PASS
				30	14.25	0.00747	PASS
				40	3.45	0.00181	PASS
				50	6.96	0.00365	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	5.72	0.00334	PASS
				-20	8.99	0.00525	PASS
				-10	8.10	0.00473	PASS
				0	7.39	0.00432	PASS
				10	3.22	0.00188	PASS
				20	8.18	0.00478	PASS
				30	15.37	0.00898	PASS
				40	12.08	0.00705	PASS
				50	8.41	0.00491	PASS
		MCH	VN	-30	10.60	0.00612	PASS
				-20	12.12	0.007	PASS
				-10	14.36	0.00829	PASS
				0	6.16	0.00356	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	10.80	0.00623	PASS
				20	4.61	0.00266	PASS
				30	13.00	0.0075	PASS
				40	9.08	0.00524	PASS
				50	18.07	0.01043	PASS
		HCH	VN	-30	7.80	0.00445	PASS
				-20	13.85	0.0079	PASS
				-10	14.40	0.00822	PASS
				0	7.34	0.00419	PASS
				10	7.78	0.00444	PASS
				20	11.95	0.00682	PASS
				30	11.61	0.00662	PASS
				40	12.34	0.00704	PASS
				50	6.13	0.0035	PASS
WCDMA850	UMTS/TM1	LCH	VN	-30	8.00	0.00968	PASS
				-20	7.98	0.00966	PASS
				-10	12.34	0.01493	PASS
				0	7.08	0.00857	PASS
				10	11.08	0.01341	PASS
				20	4.75	0.00575	PASS
				30	8.06	0.00975	PASS
				40	1.39	0.00168	PASS
				50	2.93	0.00355	PASS
		MCH	VN	-30	11.78	0.01408	PASS
				-20	5.84	0.00698	PASS
				-10	5.86	0.00701	PASS
				0	10.25	0.01225	PASS
				10	12.18	0.01456	PASS
				20	8.90	0.01064	PASS
				30	2.46	0.00294	PASS
				40	4.59	0.00549	PASS
				50	6.35	0.00759	PASS
		HCH	VN	-30	2.55	0.00301	PASS
				-20	4.21	0.00497	PASS
				-10	6.79	0.00802	PASS
				0	8.13	0.0096	PASS
				10	9.23	0.0109	PASS
				20	6.09	0.00719	PASS
				30	2.66	0.00314	PASS
				40	8.19	0.00967	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	6.79	0.00802	PASS

END