



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	23.09	25.41	33	PASS
		MCH	23.11	25.76	33	PASS
		HCH	23.03	25.59	33	PASS
Test Band	Test Mode	Test Channel	Measured[dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	23.58	24.10	38.5	PASS
		MCH	23.41	23.71	38.5	PASS
		HCH	23.52	23.74	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	2.96	13	PASS
		MCH	2.95	13	PASS
		HCH	3.04	13	PASS
WCDMA850	UMTS/TM1	LCH	3.09	13	PASS
		MCH	2.64	13	PASS
		HCH	2.71	13	PASS

3Appendix_C: Modulation Characteristics

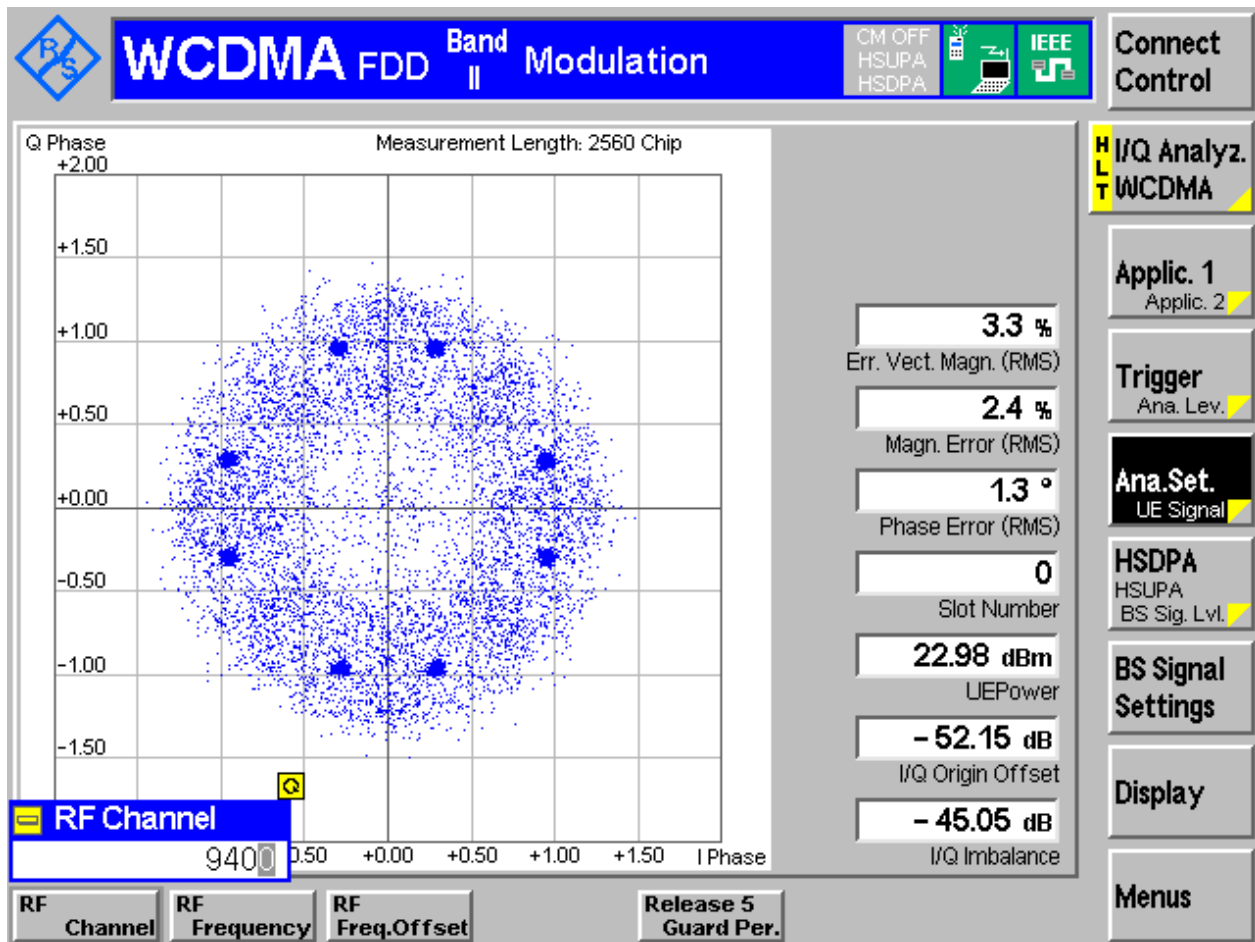
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

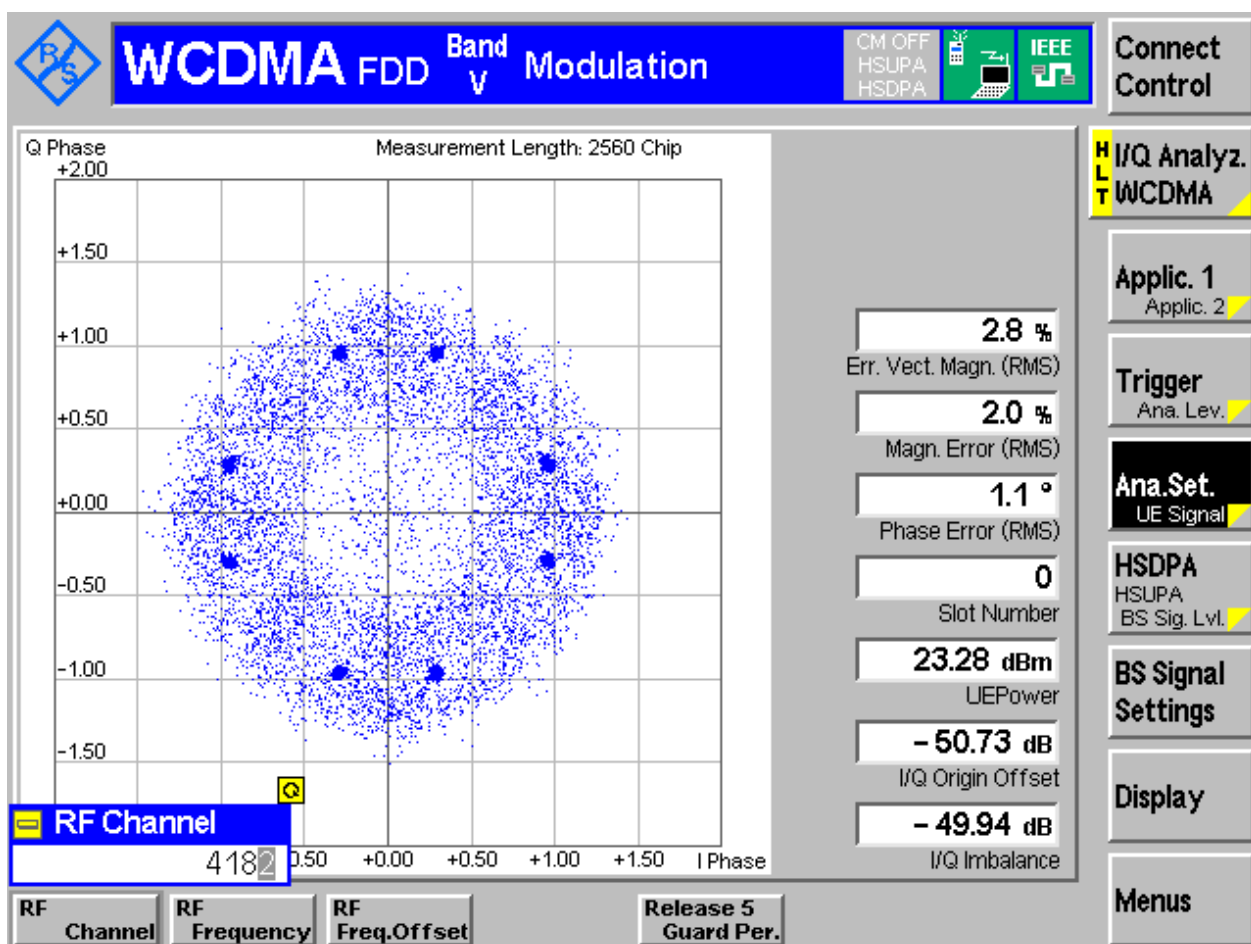
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA850

3.1.2.1 Test Mode = UMTS/TM1

3.1.2.1.1 Test Channel = MCH





4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1900	UMTS/TM1	LCH	4.16	4.71	Pass
		MCH	4.16	4.72	Pass
		HCH	4.15	4.70	Pass
WCDMA850	UMTS/TM1	LCH	4.16	4.73	Pass
		MCH	4.16	4.72	Pass
		HCH	4.16	4.71	Pass

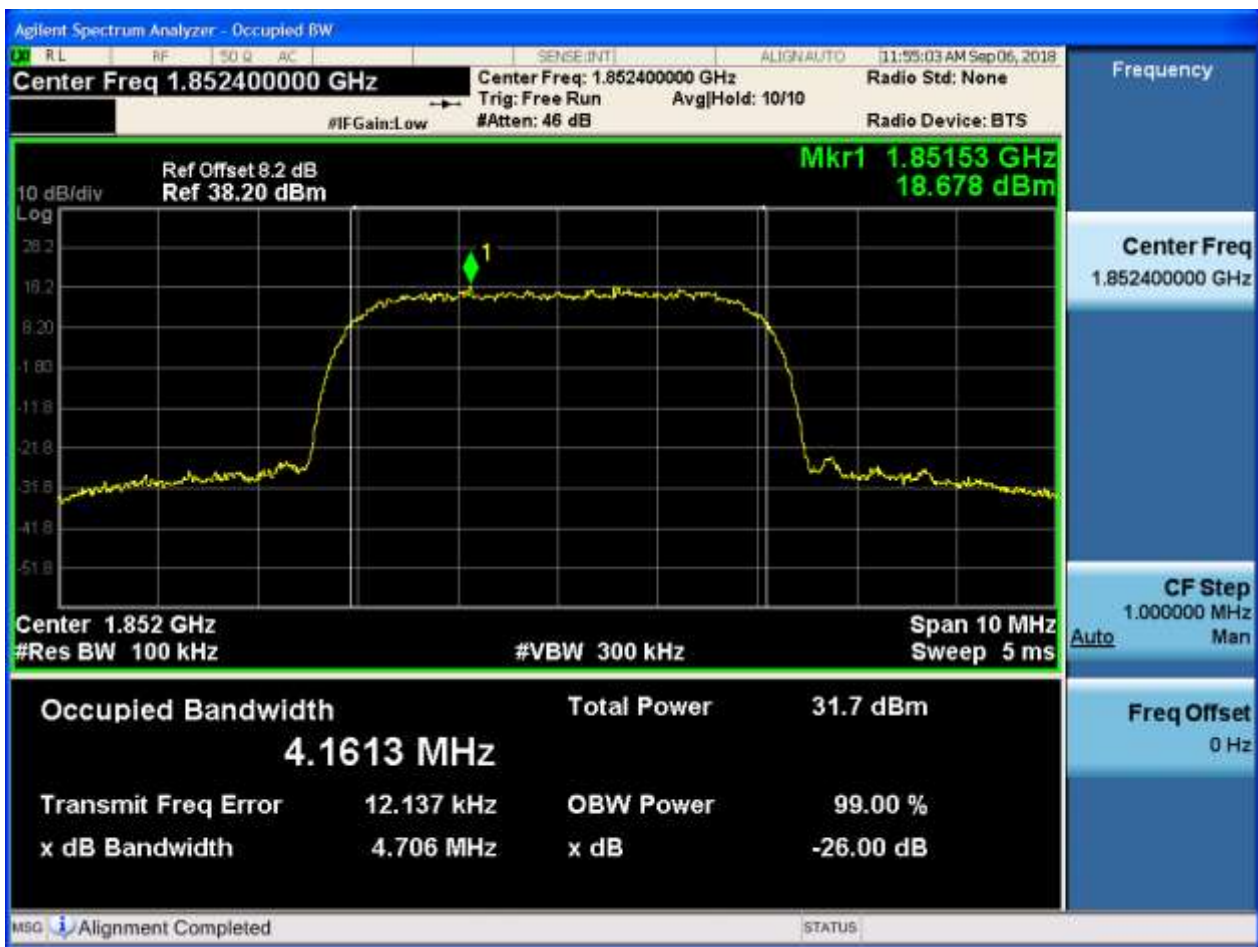
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

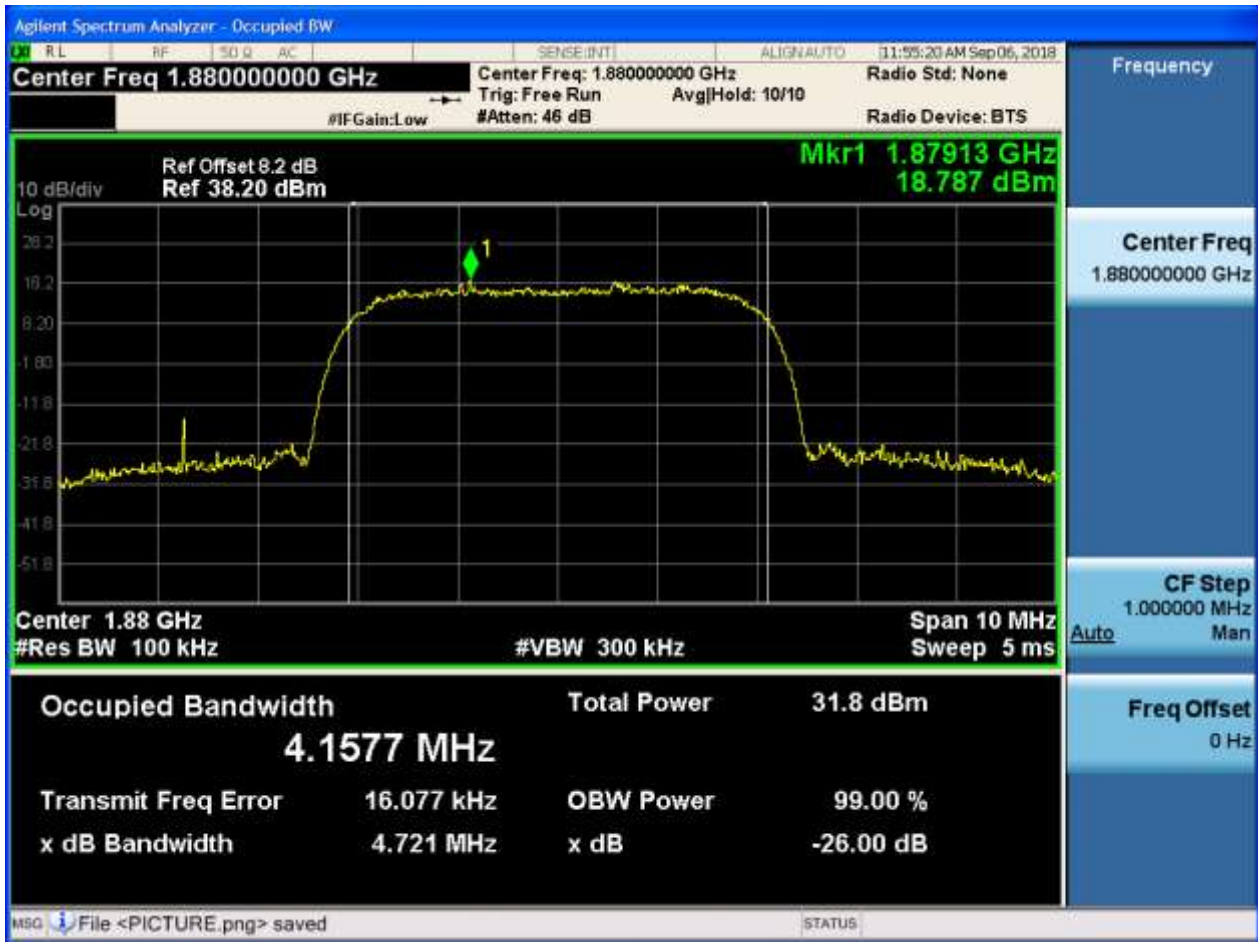
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



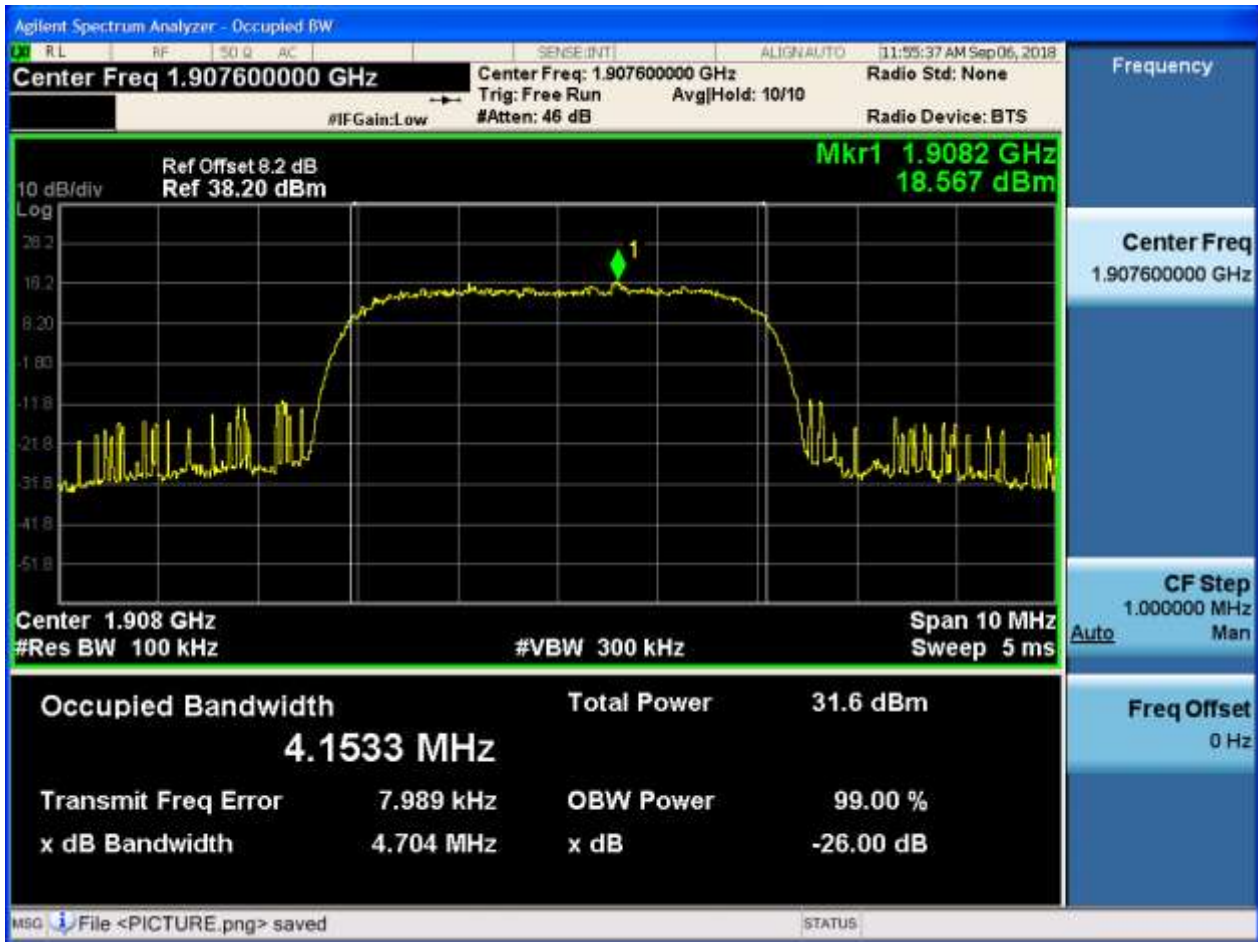


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

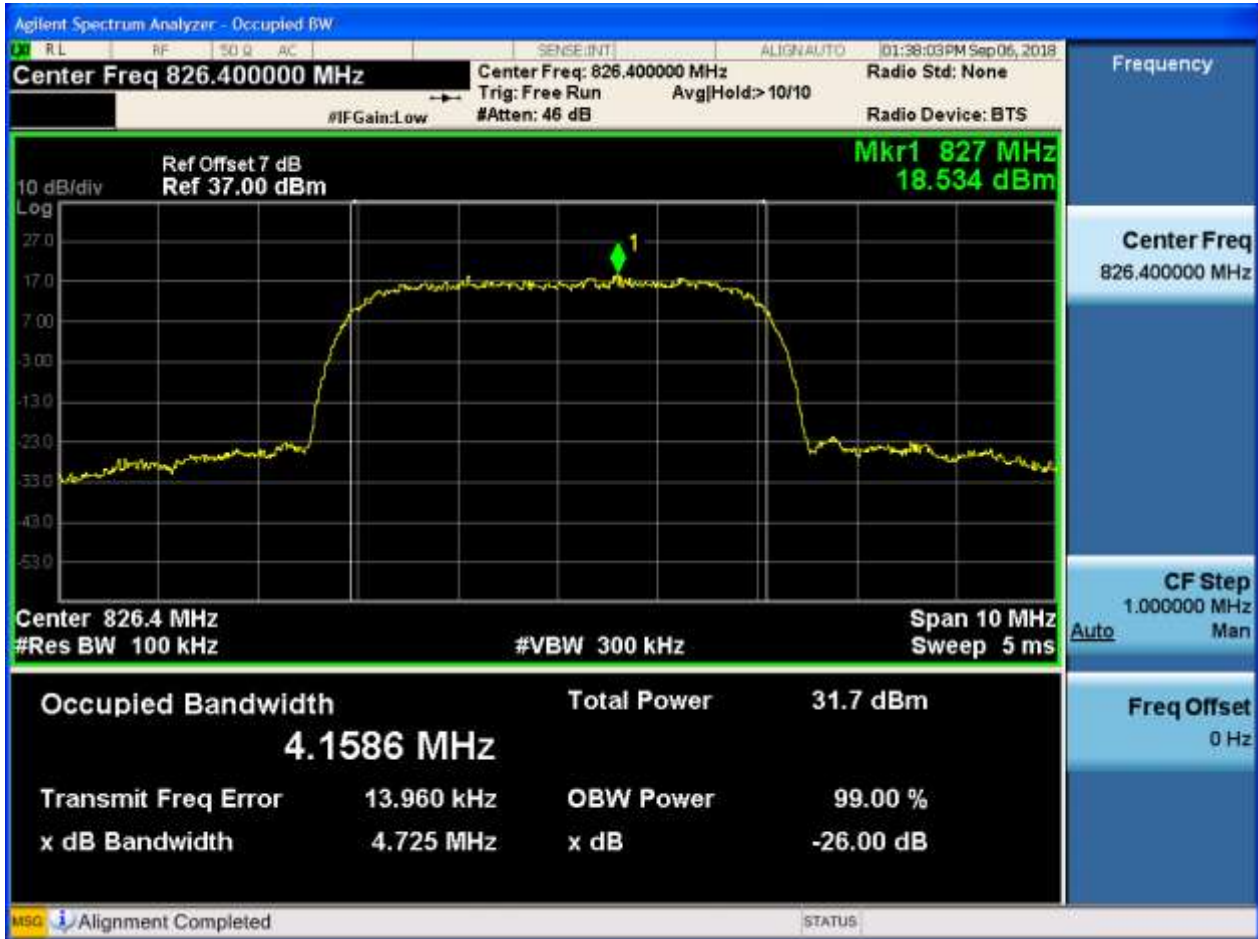




4.1.2 Test Band = WCDMA850

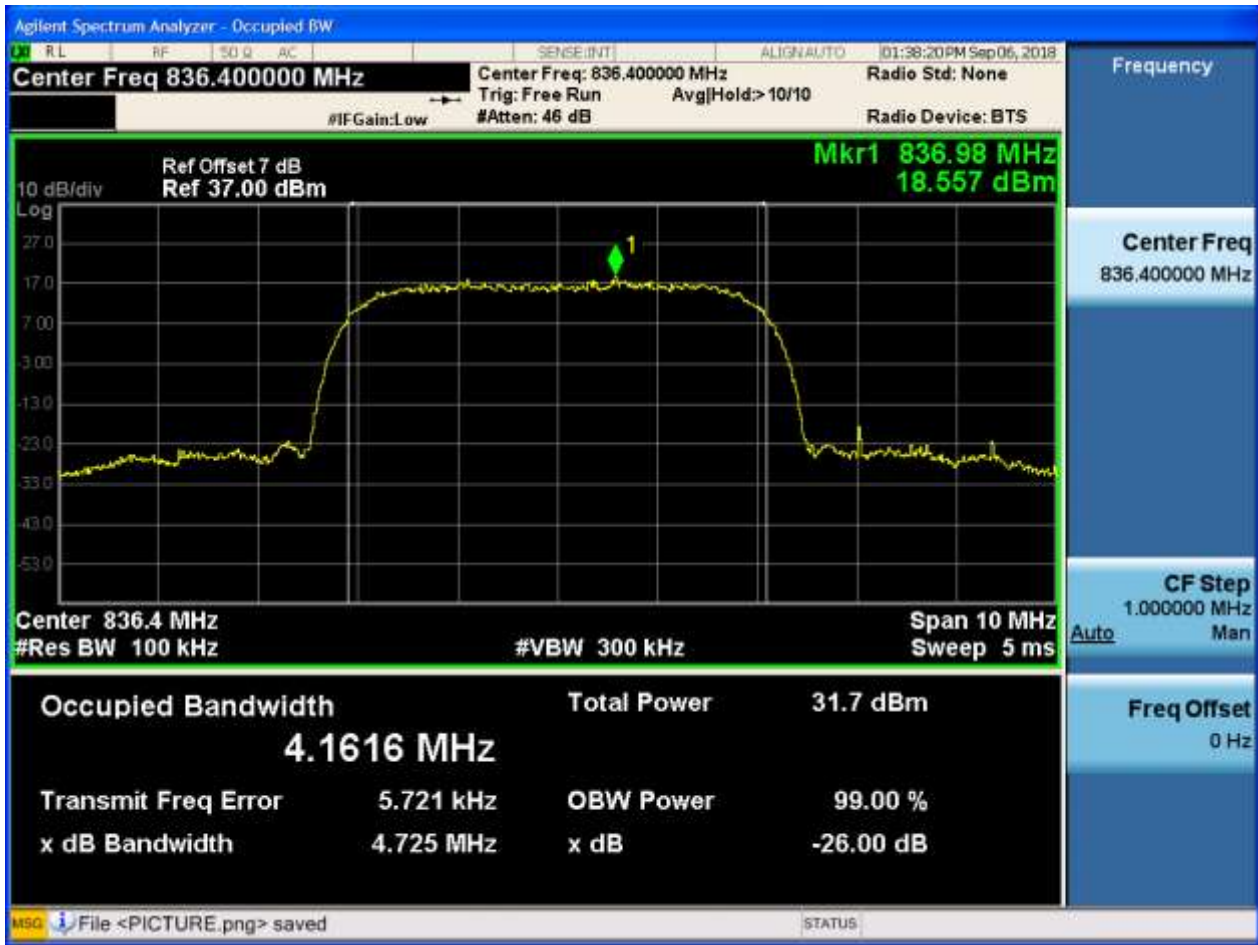
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



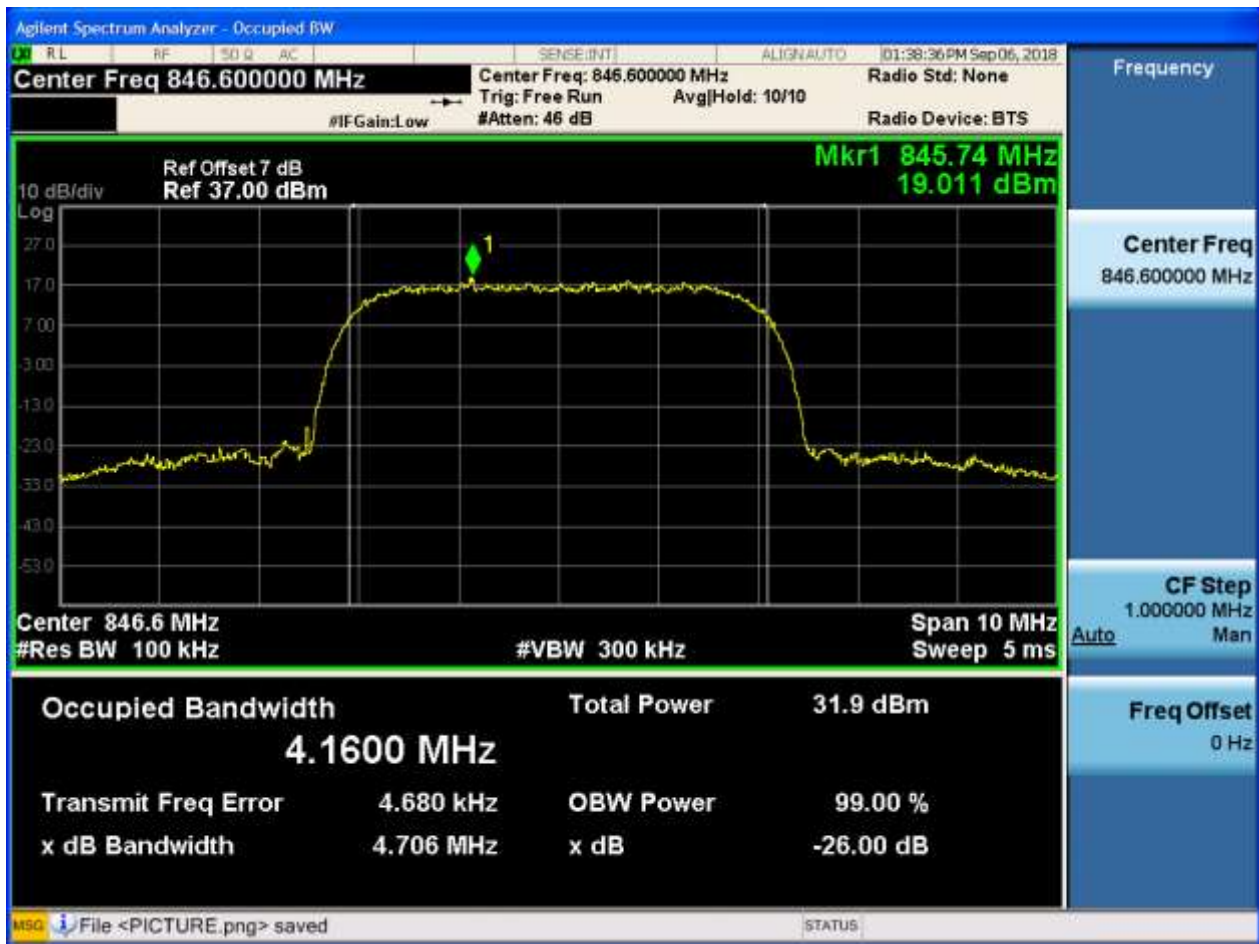


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH





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 = WCDMA850

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 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.

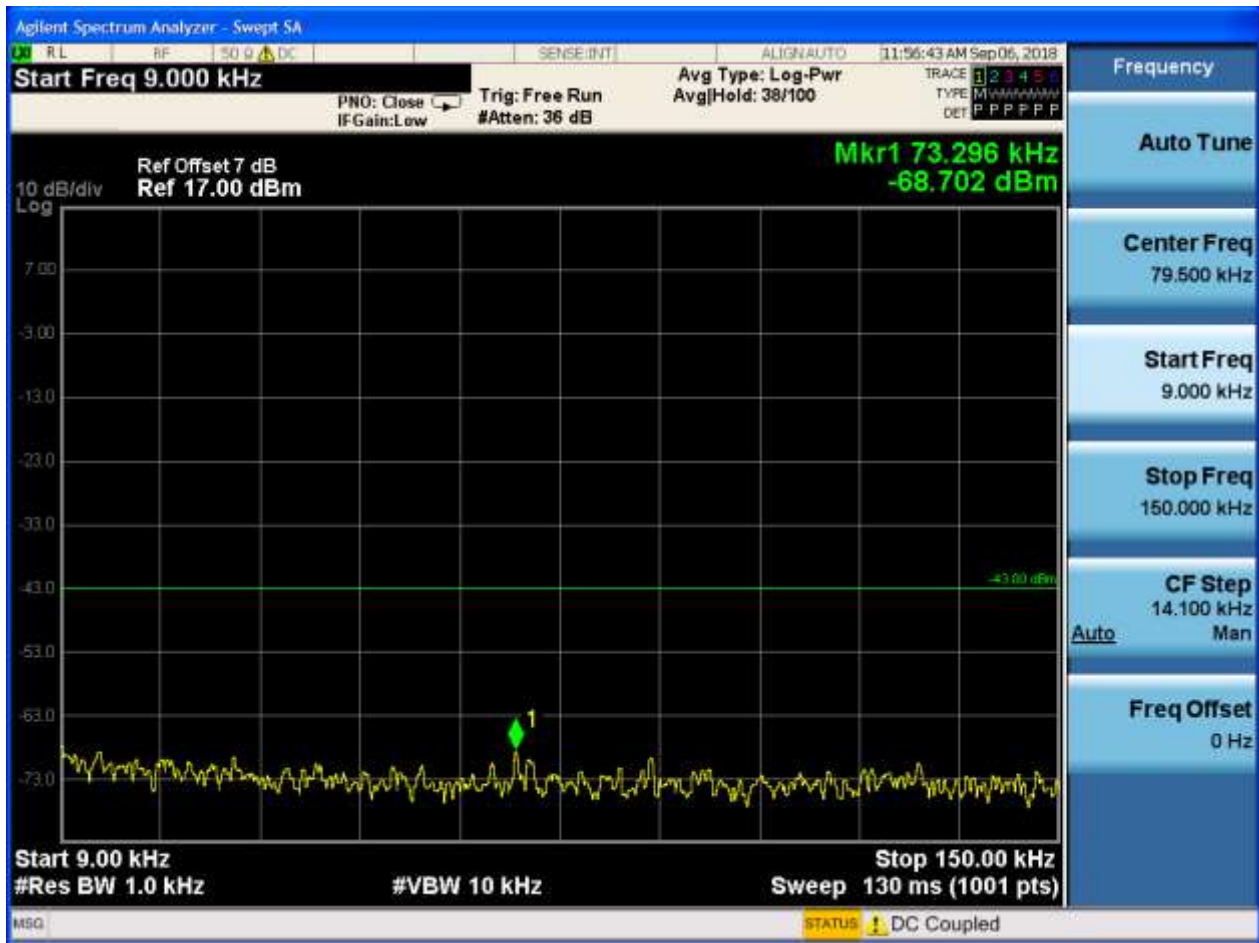
Part I - Test Plots

6.1 For UMTS

6.1.1 Test Band = WCDMA1900

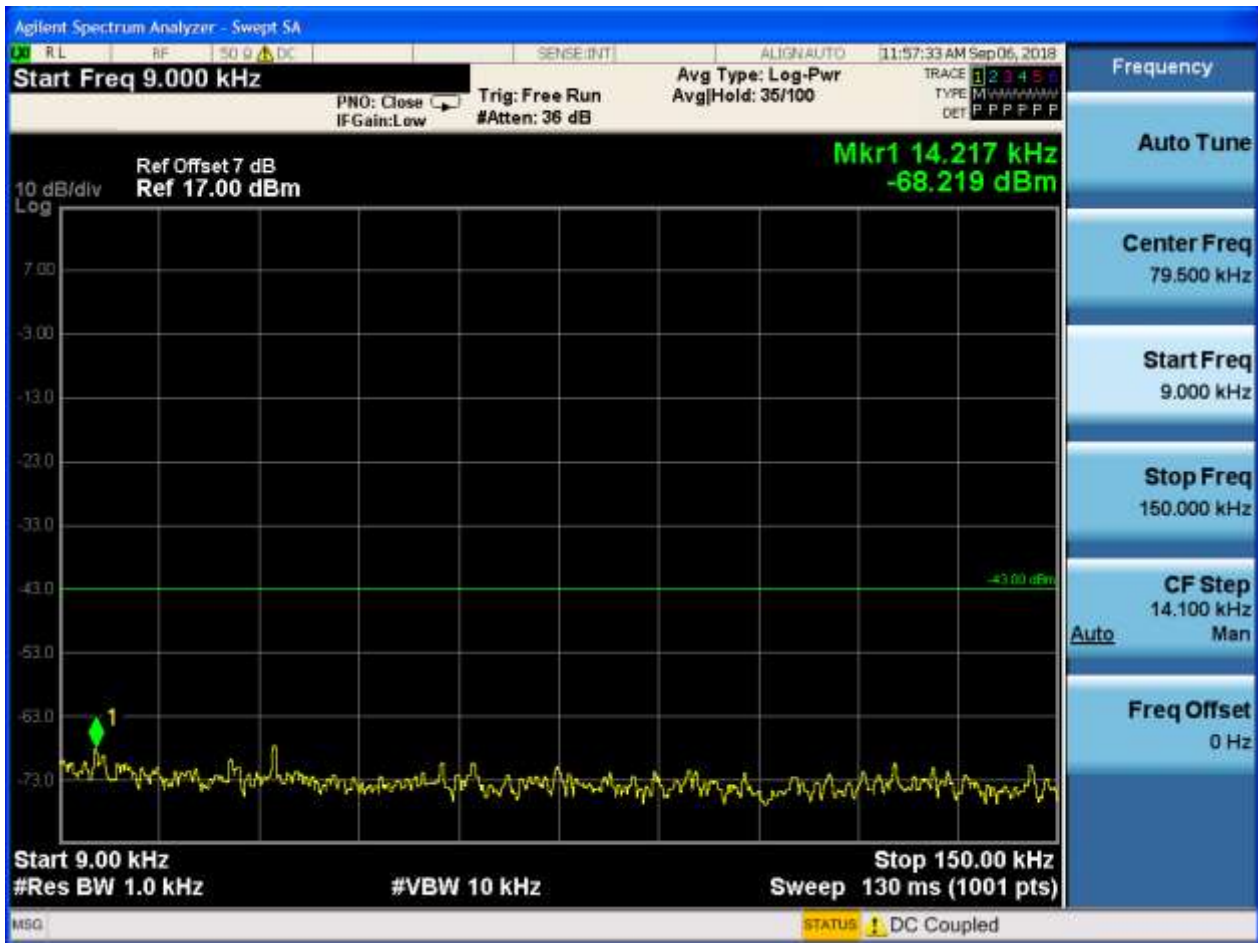
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



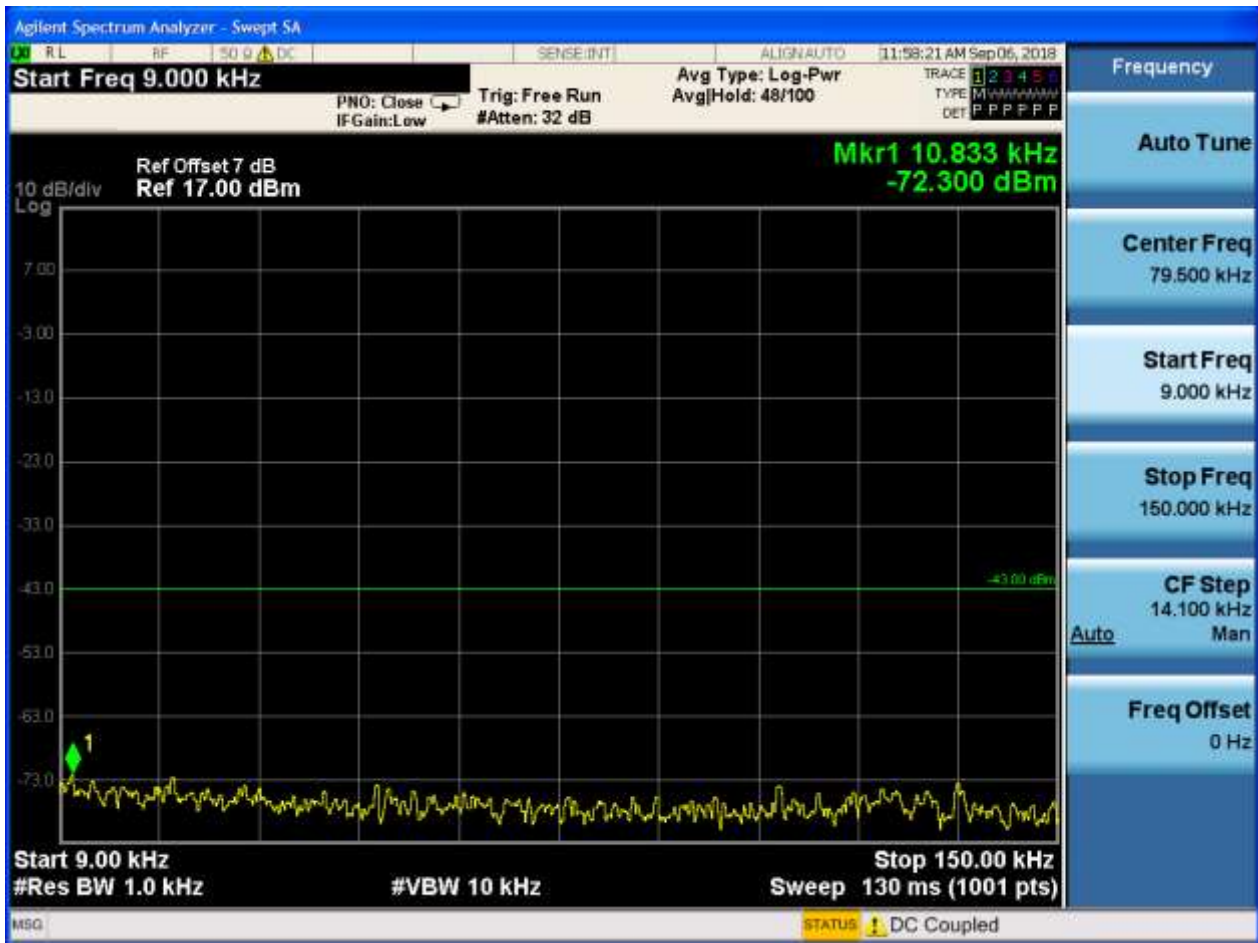


6.1.1.1.2 Test Channel = MCH





6.1.1.1.3 Test Channel = HCH





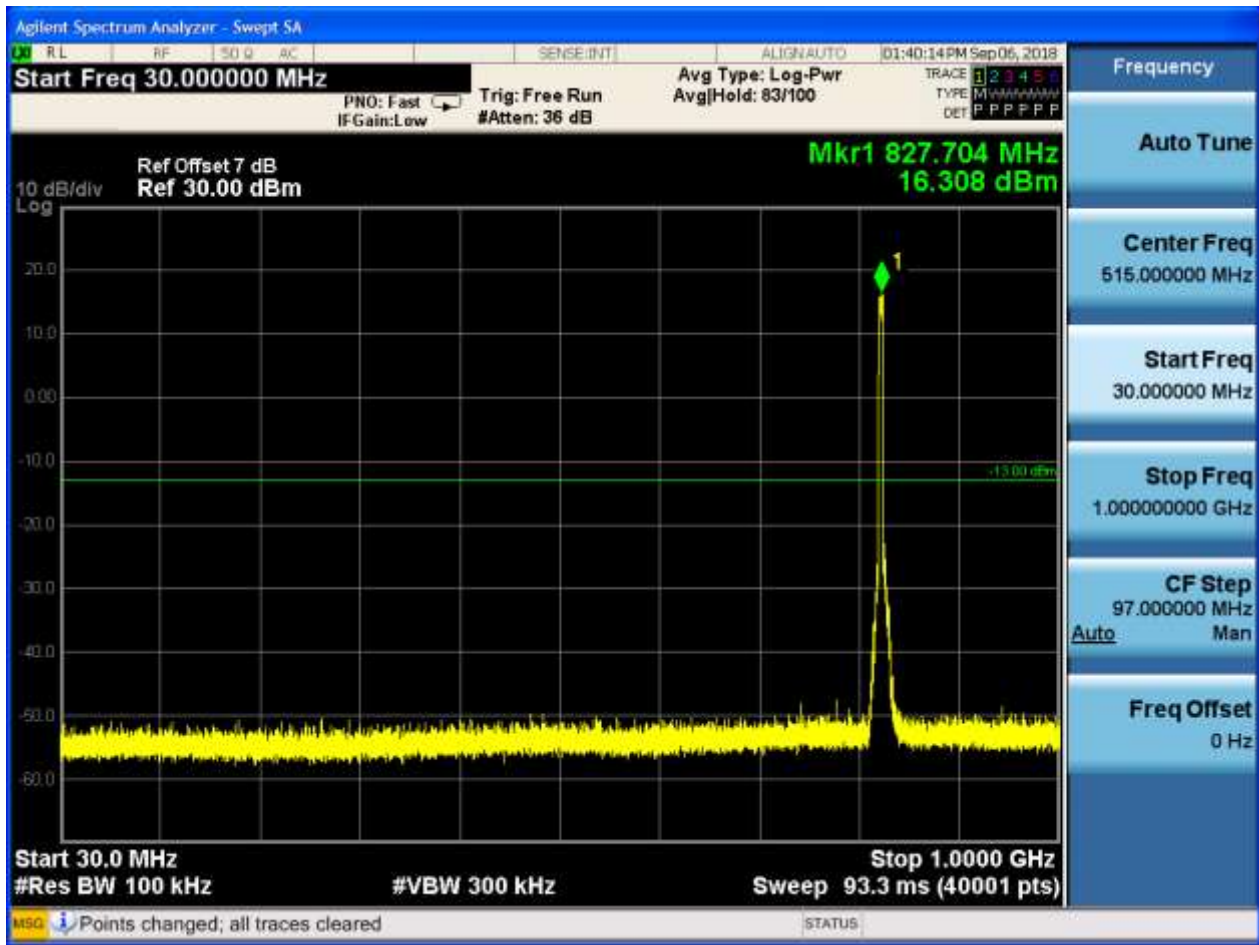


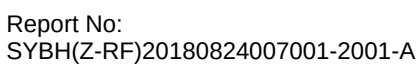
6.1.2 Test Band = WCDMA850

6.1.2.1 Test Mode = UMTS/TM1

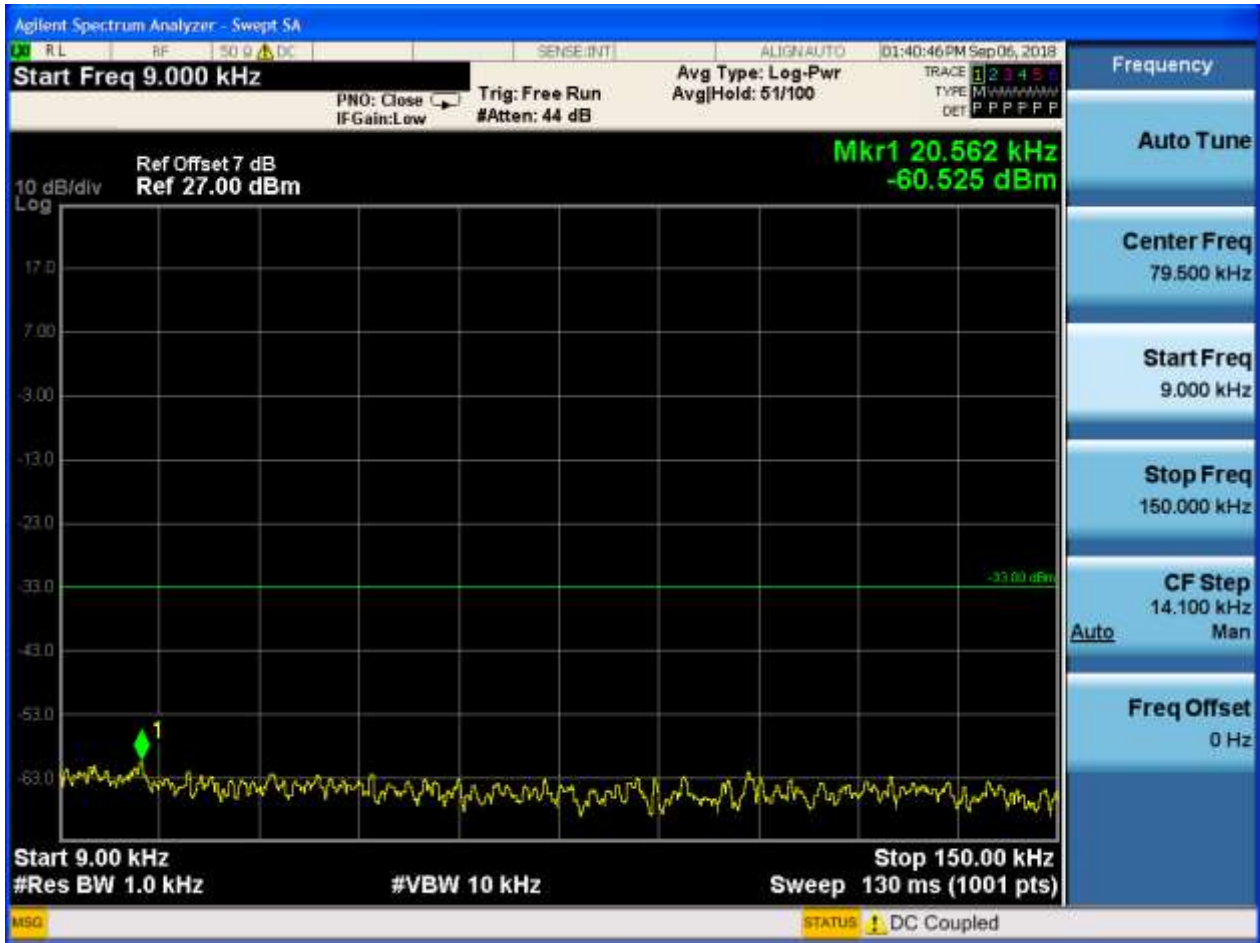
6.1.2.1.1 Test Channel = LCH



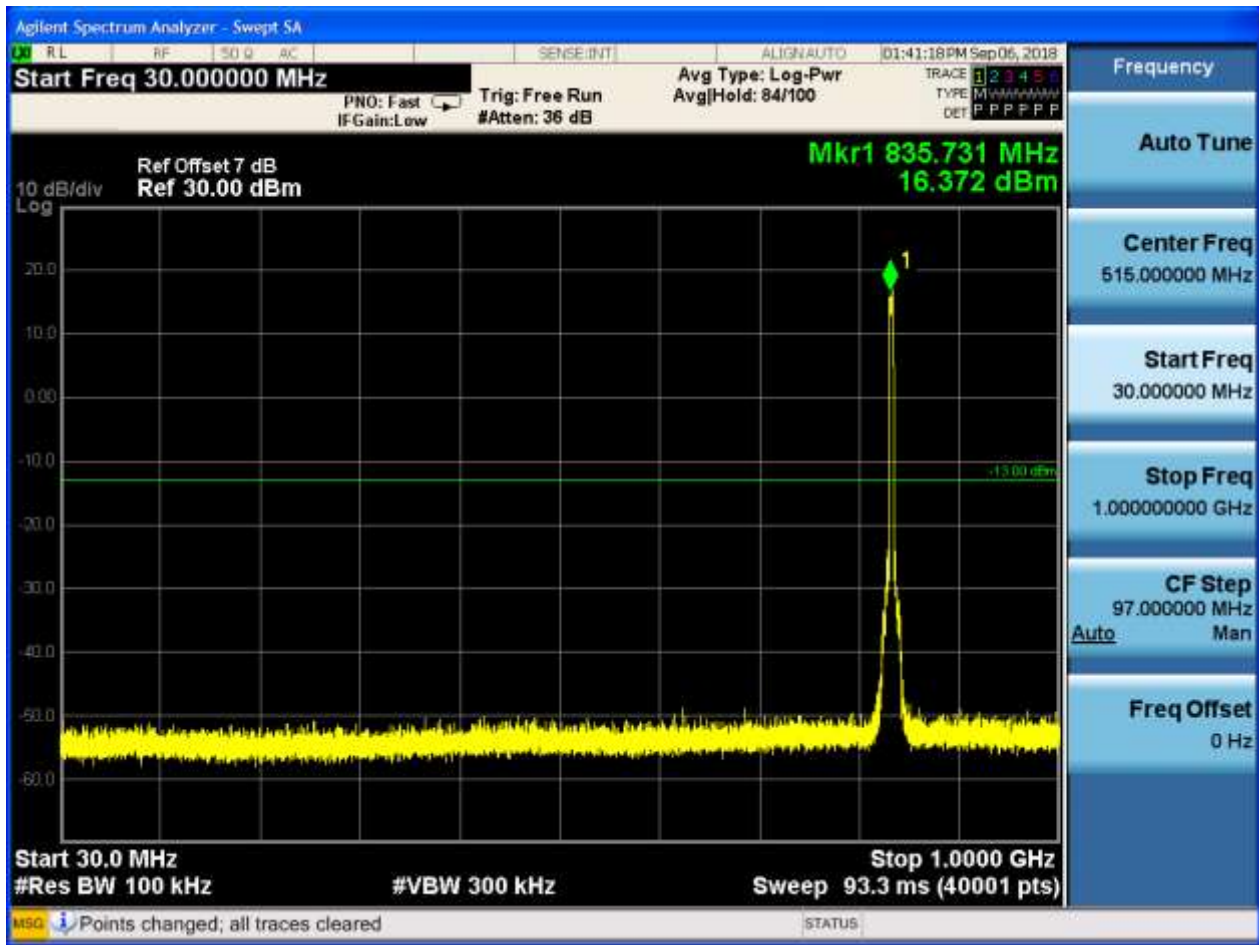


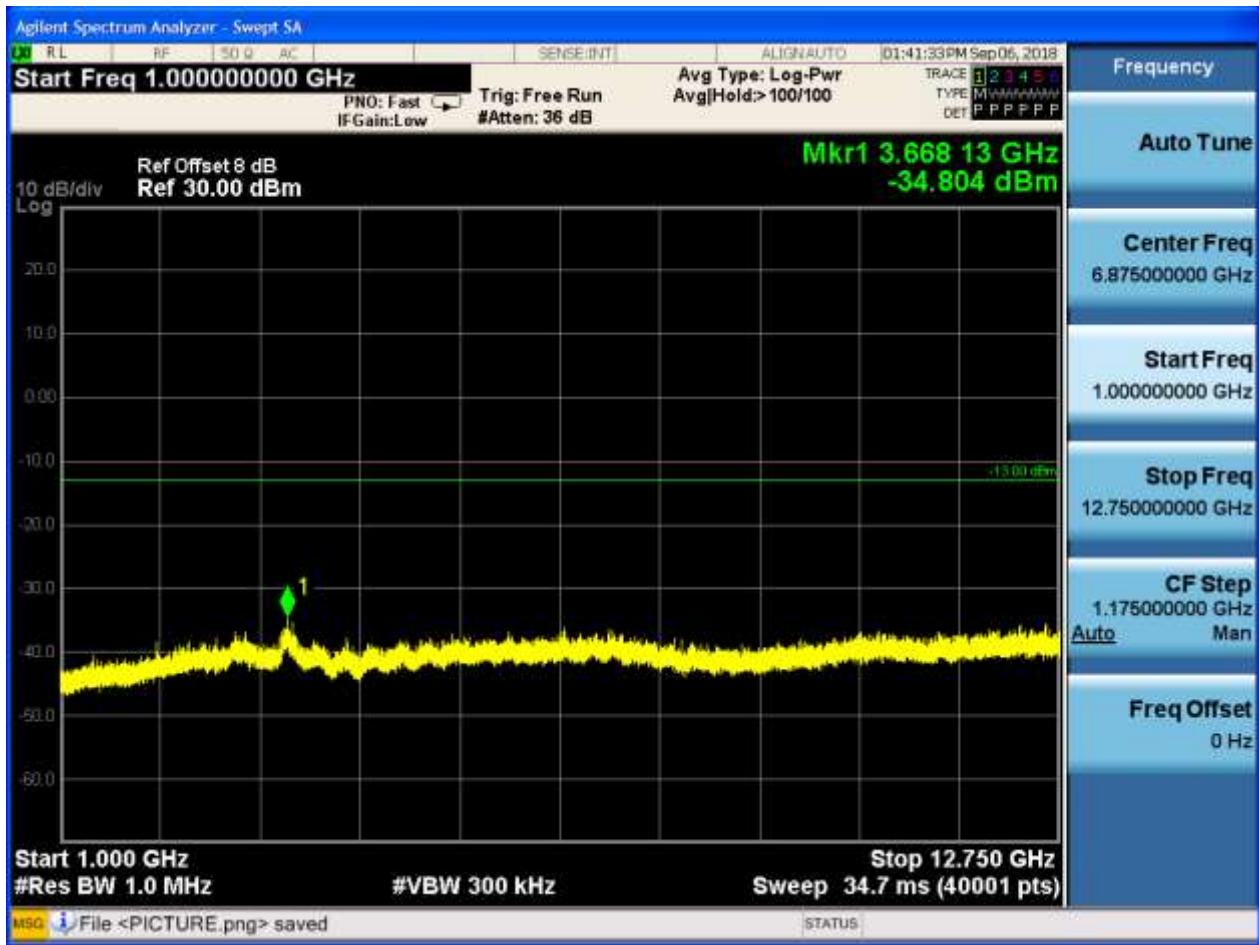


6.1.2.1.2 Test Channel = MCH

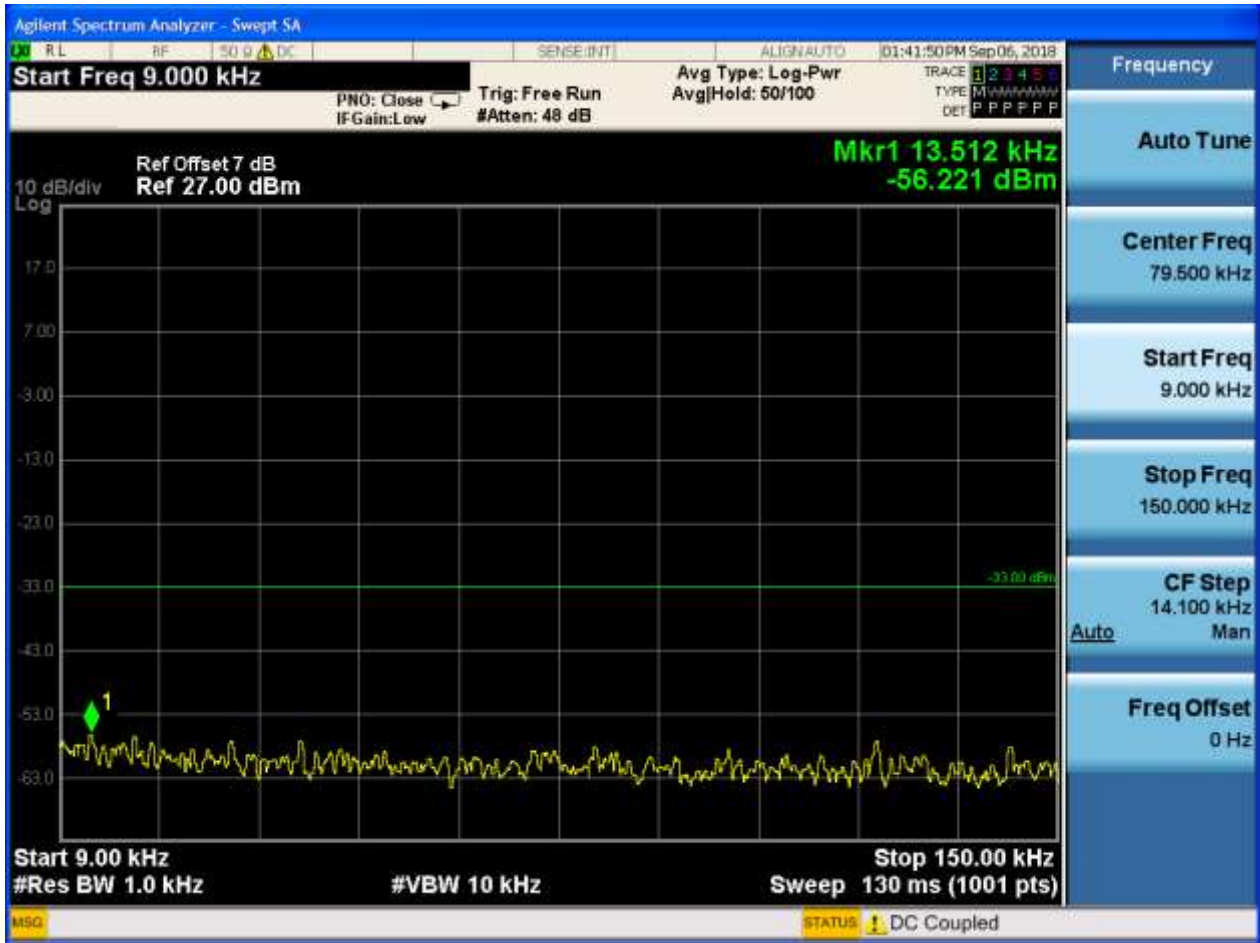


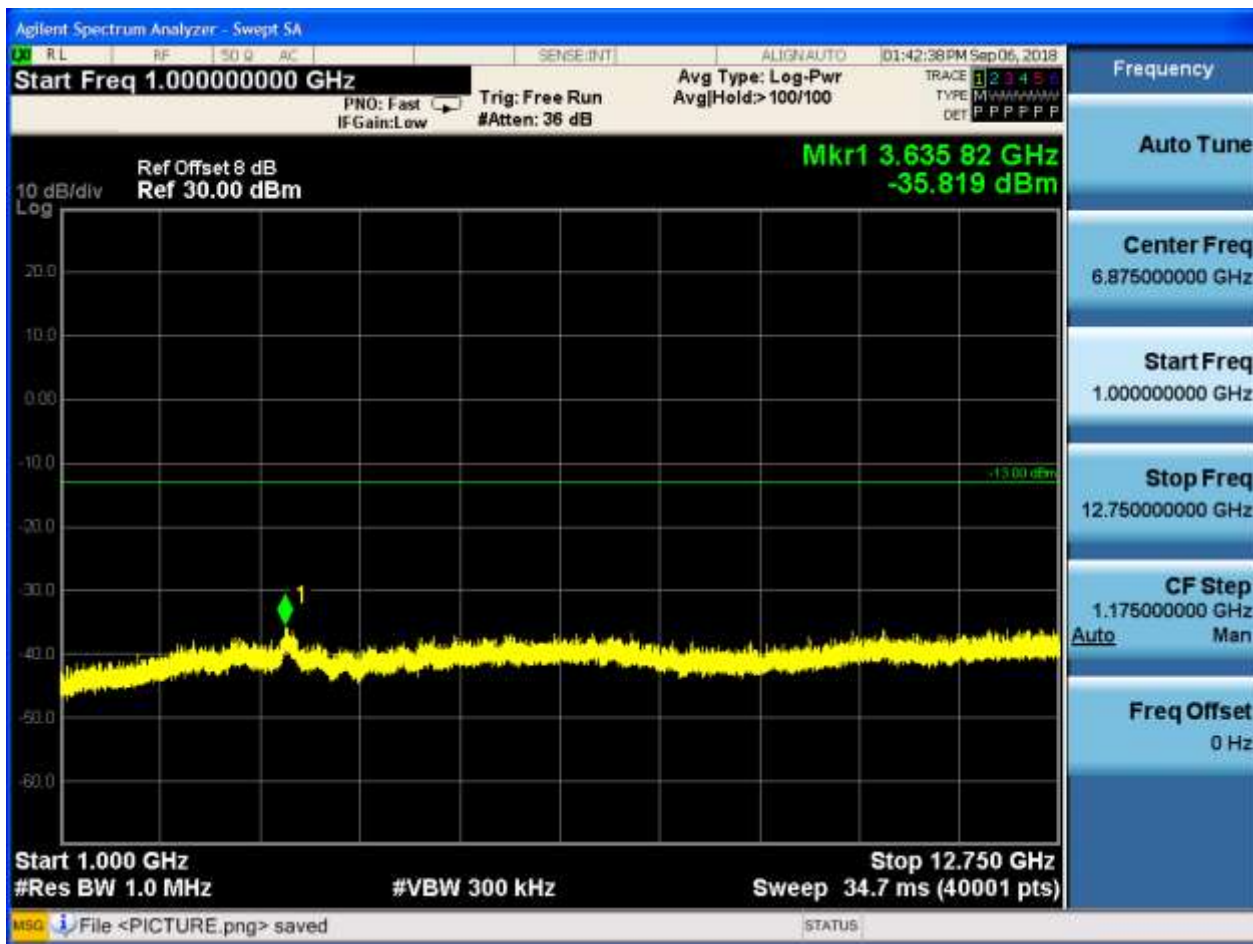






6.1.2.1.3 Test Channel = HCH







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

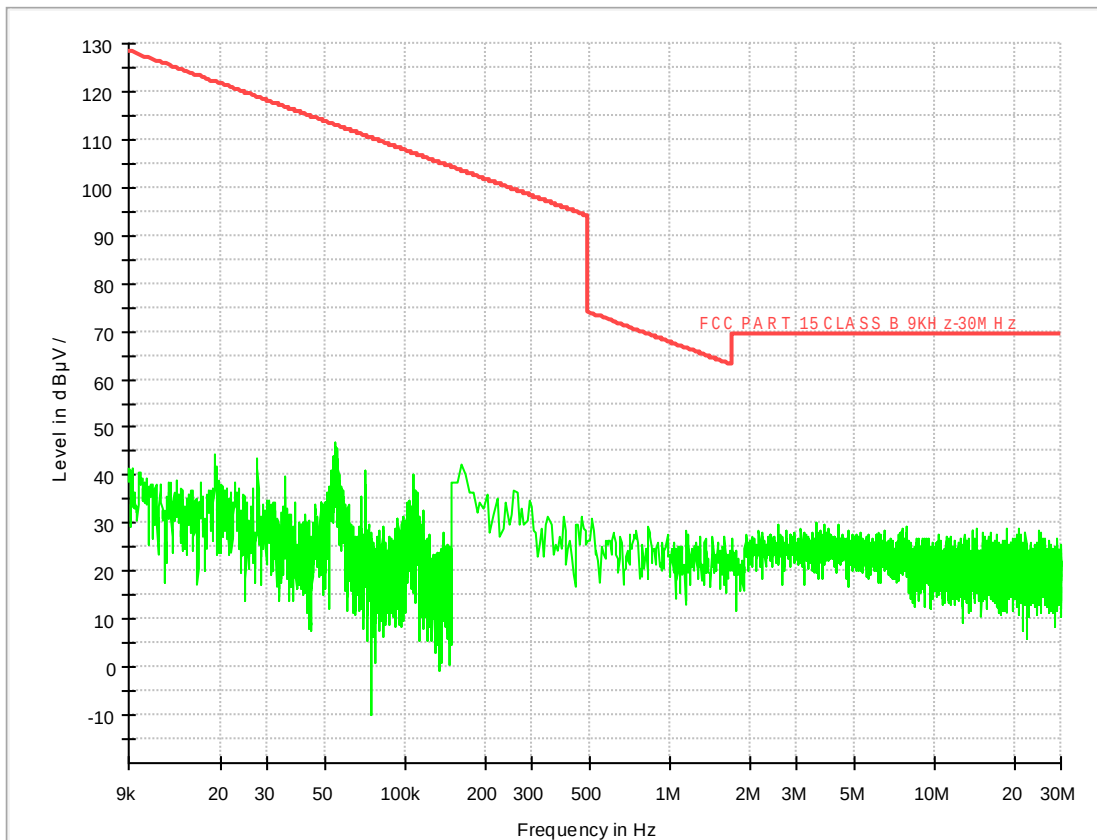
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

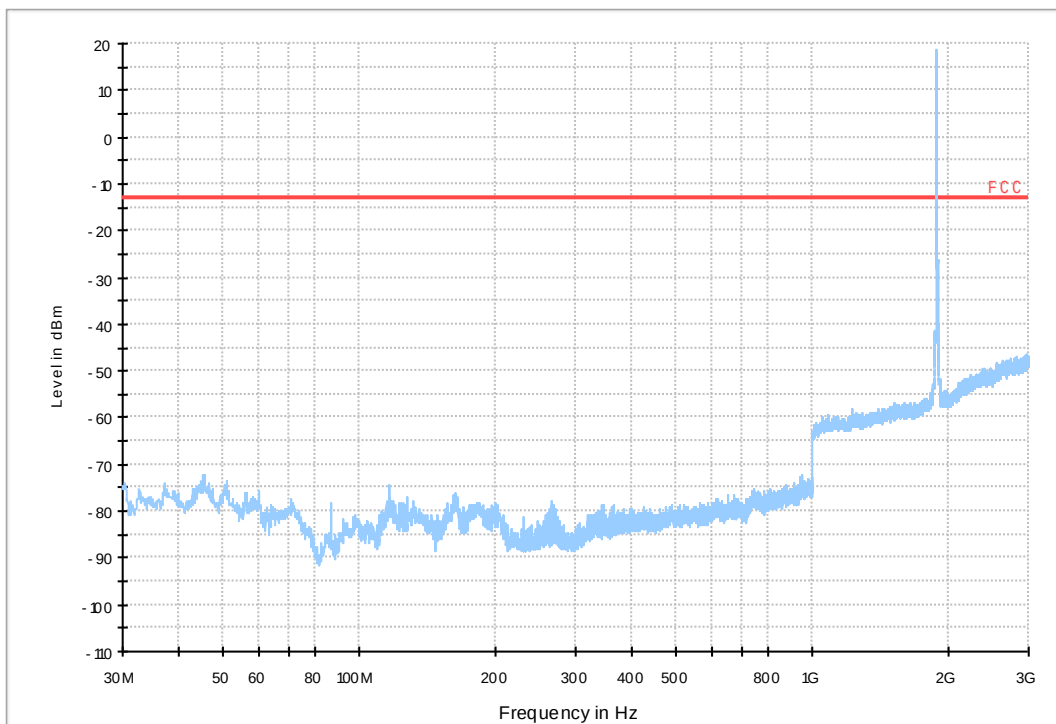
7.1 For UMTS

7.1.1 Test Band = WCDMA1900

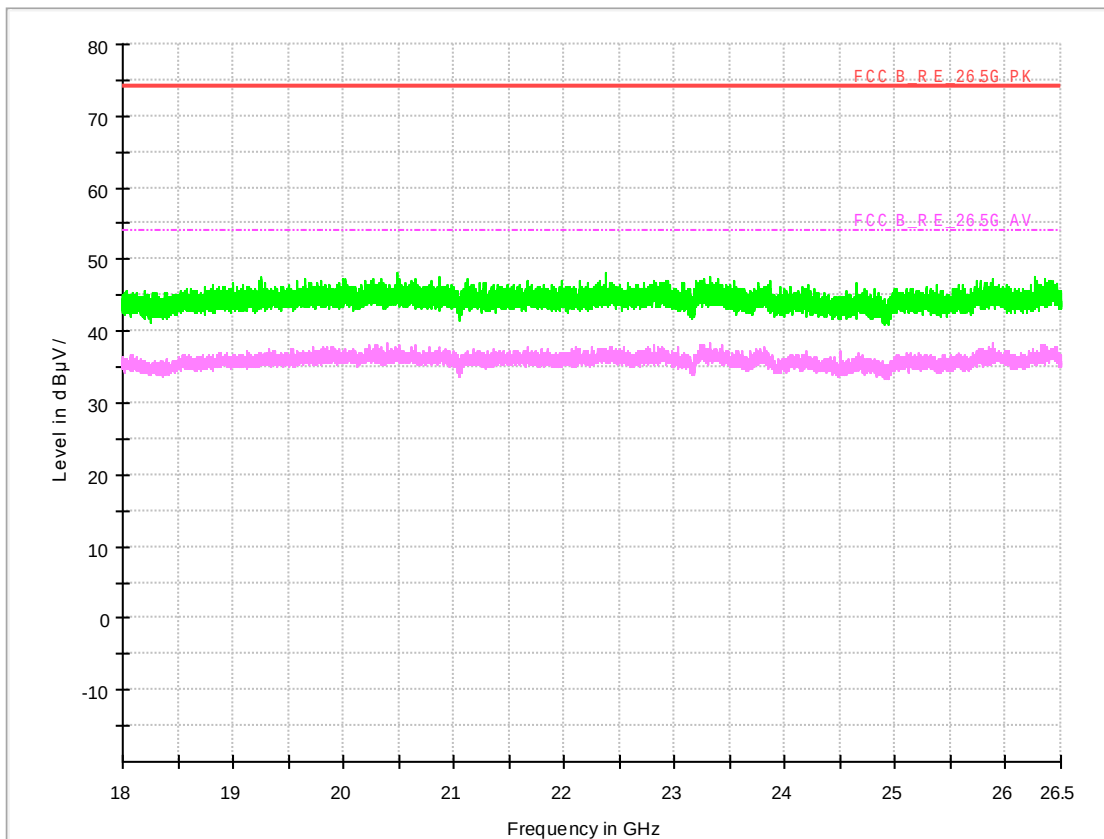
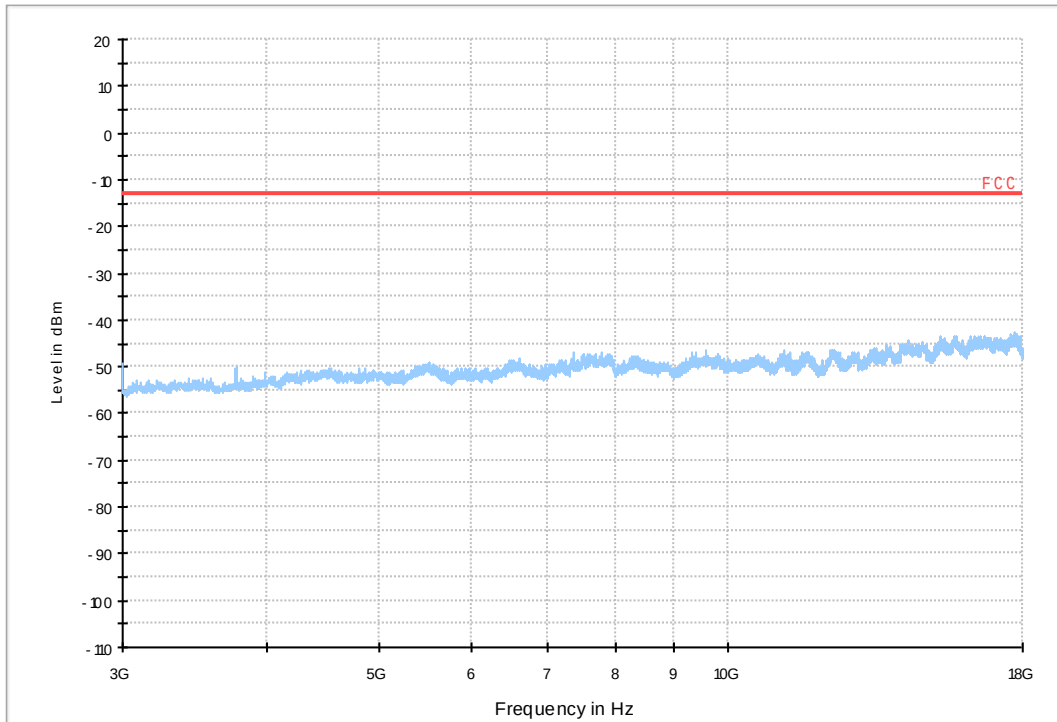
7.1.1.1 Test Mode = UMTS/TM1



12 FCC PART 24 WCDMA1900_L

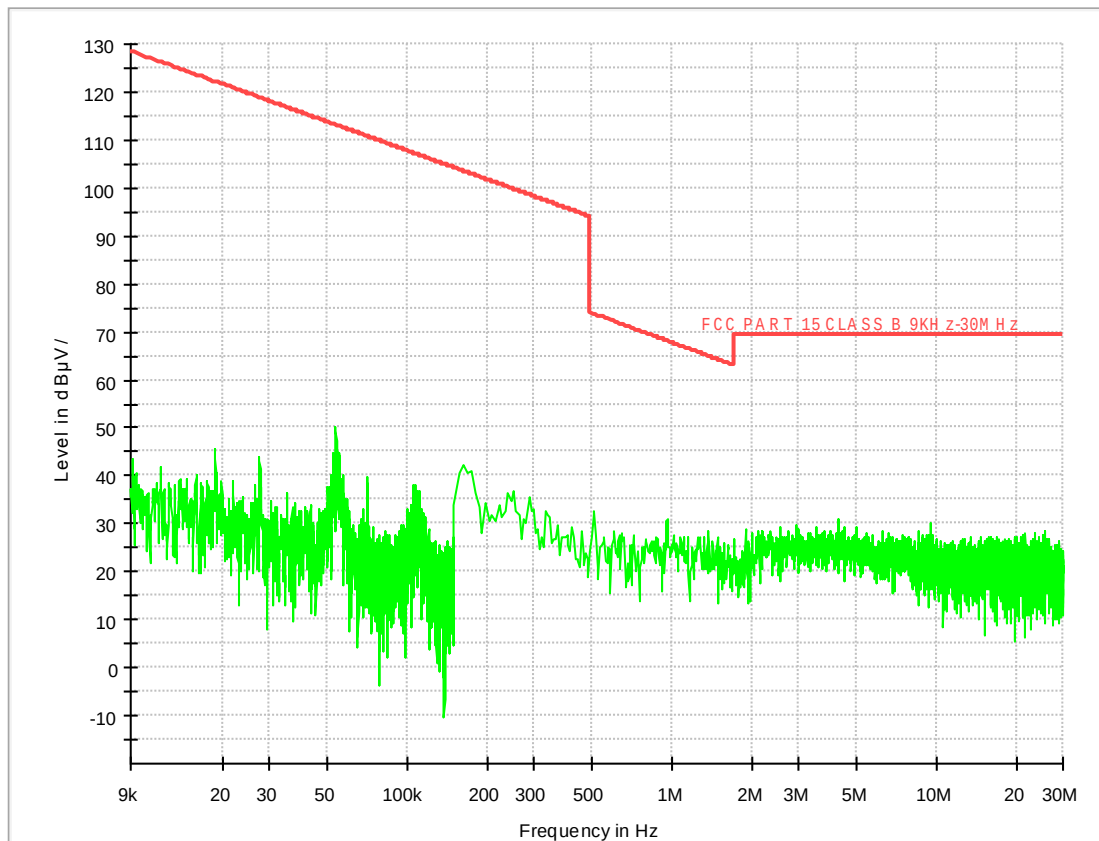


11 FCC PART 24 WCDMA1900_H

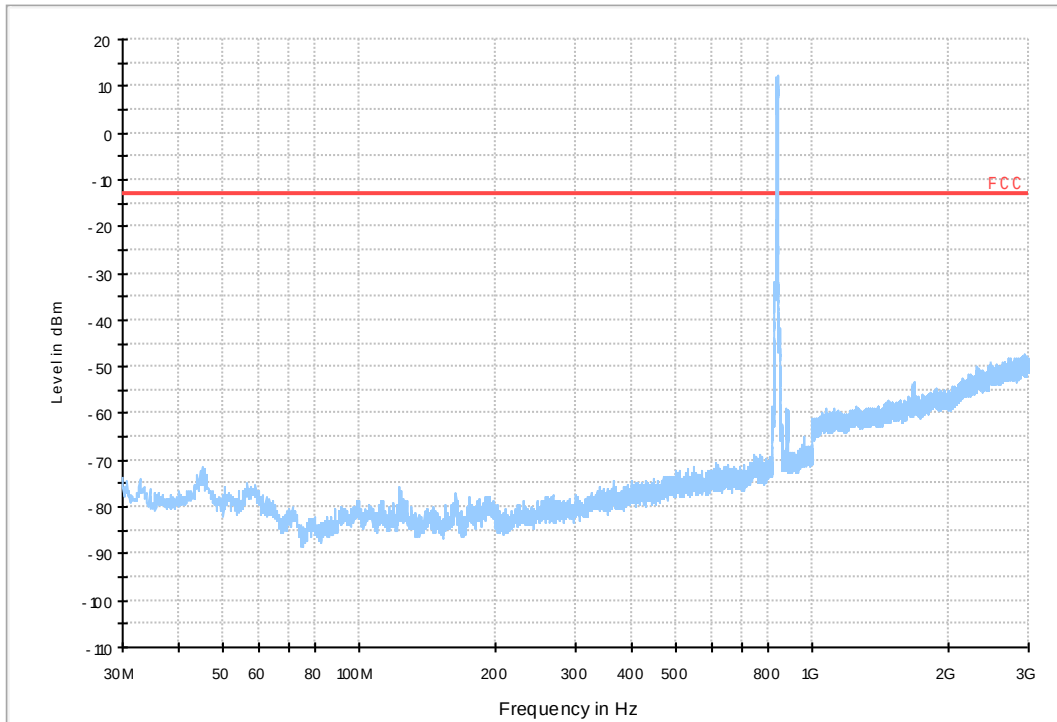


7.1.2 Test Band = WCDMA850

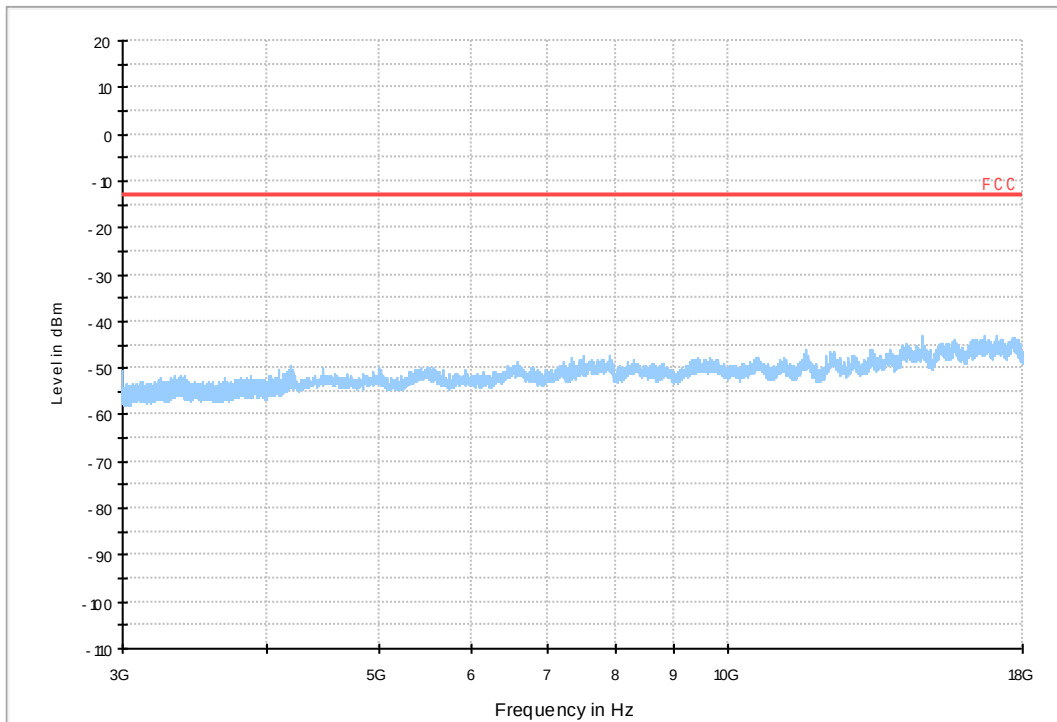
7.1.2.1 Test Mode = UMTS/TM1



06 FCC PART 22 WCDMA850_L



05 FCC PART 22 WCDMA850_H



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1Frequency 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	-5.97	-0.00322	PASS
				VN	0.53	0.00029	PASS
				VH	-2.08	-0.00112	PASS
		MCH	TN	VL	-1.56	-0.00083	PASS
				VN	-1.30	-0.00069	PASS
				VH	1.91	0.00102	PASS
		HCH	TN	VL	6.79	0.00356	PASS
				VN	5.34	0.0028	PASS
				VH	-3.57	-0.00187	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	-10.07	-0.01219	PASS
				VN	3.54	0.00428	PASS
				VH	2.49	0.00301	PASS
		MCH	TN	VL	-8.61	-0.01029	PASS
				VN	2.70	0.00323	PASS
				VH	-1.16	-0.00139	PASS
		HCH	TN	VL	-9.46	-0.01117	PASS
				VN	-5.49	-0.00648	PASS
				VH	-6.27	-0.00741	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	-2.43	-0.00131	PASS
				-20	1.63	0.00088	PASS
				-10	0.17	0.00009	PASS
				0	-1.13	-0.00061	PASS
				10	4.76	0.00257	PASS
				20	-0.12	-0.00006	PASS
				30	-0.11	-0.00006	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	3.02	0.00163	PASS
				50	-1.97	-0.00106	PASS
		MCH	VN	-30	-2.29	-0.00122	PASS
				-20	8.22	0.00437	PASS
				-10	-2.04	-0.00109	PASS
				0	-1.63	-0.00087	PASS
				10	1.19	0.00063	PASS
				20	2.64	0.0014	PASS
				30	1.14	0.00061	PASS
				40	4.67	0.00248	PASS
				50	-2.24	-0.00119	PASS
		HCH	VN	-30	7.54	0.00395	PASS
				-20	1.62	0.00085	PASS
				-10	4.30	0.00225	PASS
				0	-2.87	-0.0015	PASS
				10	2.53	0.00133	PASS
				20	3.07	0.00161	PASS
				30	6.42	0.00337	PASS
				40	5.20	0.00273	PASS
				50	7.05	0.0037	PASS
WCDMA850	UMTS/TM1	LCH	VN	-30	-10.93	-0.01323	PASS
				-20	-3.48	-0.00421	PASS
				-10	2.33	0.00282	PASS
				0	-0.56	-0.00068	PASS
				10	0.21	0.00025	PASS
				20	1.05	0.00127	PASS
				30	2.46	0.00298	PASS
				40	-0.11	-0.00013	PASS
				50	0.34	0.00041	PASS
		MCH	VN	-30	-6.91	-0.00826	PASS
				-20	-2.79	-0.00334	PASS
				-10	-4.06	-0.00485	PASS
				0	-3.71	-0.00444	PASS
				10	-5.17	-0.00618	PASS
				20	5.25	0.00628	PASS
				30	5.22	0.00624	PASS
				40	4.61	0.00551	PASS
				50	-0.31	-0.00037	PASS
		HCH	VN	-30	-14.69	-0.01735	PASS
				-20	-2.08	-0.00246	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-10	-1.34	-0.00158	PASS
				0	3.34	0.00395	PASS
				10	2.66	0.00314	PASS
				20	0.44	0.00052	PASS
				30	-3.10	-0.00366	PASS
				40	7.35	0.00868	PASS
				50	1.65	0.00195	PASS

END