



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
WCDMA850	UMTS/TM1	LCH	24.35	20.2	38..5	PASS
		MCH	24.29	20.14	38.5	PASS
		HCH	24.35	20.49	38.5	PASS
WCDMA1900	UMTS/TM1	LCH	23.91	23.71	33	PASS
		MCH	23.74	23.81	33	PASS
		HCH	23.97	23.77	33	PASS
WCDMA 1700	UMTS/TM1	LCH	24.16	24.83	30	PASS
		MCH	24.08	24.74	30	PASS
		HCH	24.22	24.9	30	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: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS



2Appendix_B: Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA1700	UMTS/TM1	LCH	3.7	13	PASS
		MCH	3.54	13	PASS
		HCH	3.82	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.11	13	PASS
		MCH	3.75	13	PASS
		HCH	3.4	13	PASS

3Appendix_C: Modulation Characteristics

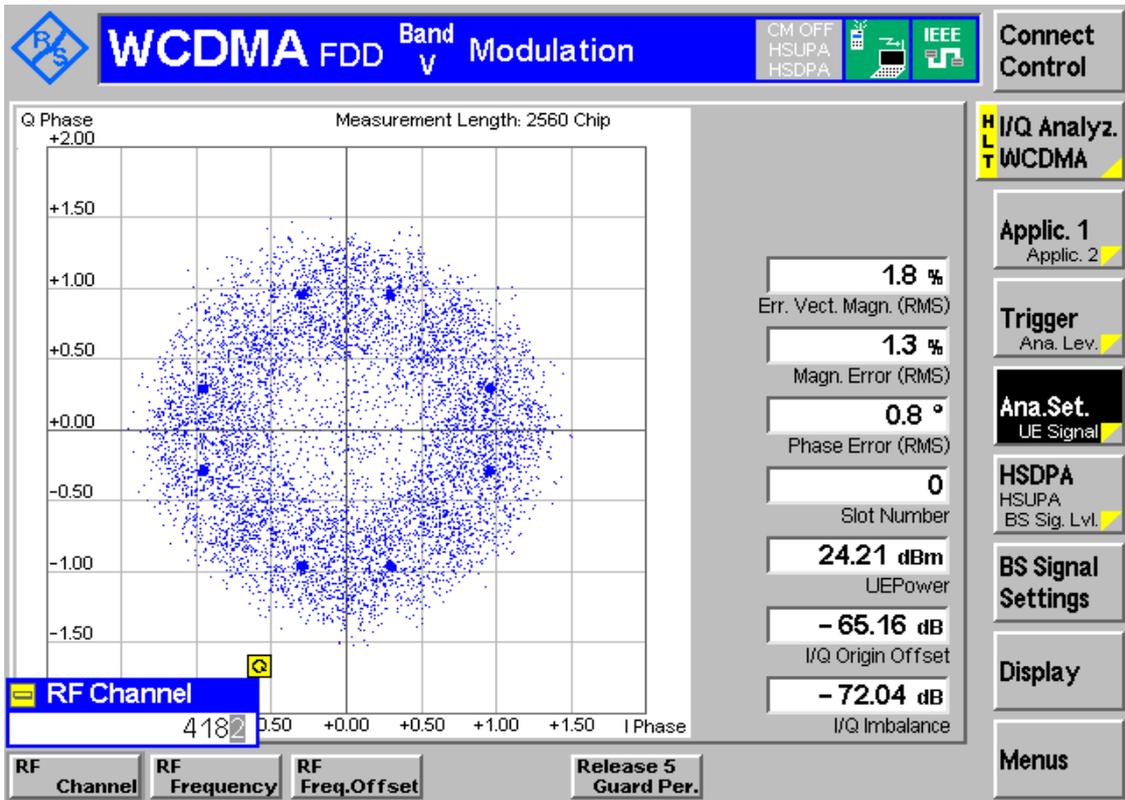
Part I - Test Plots

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

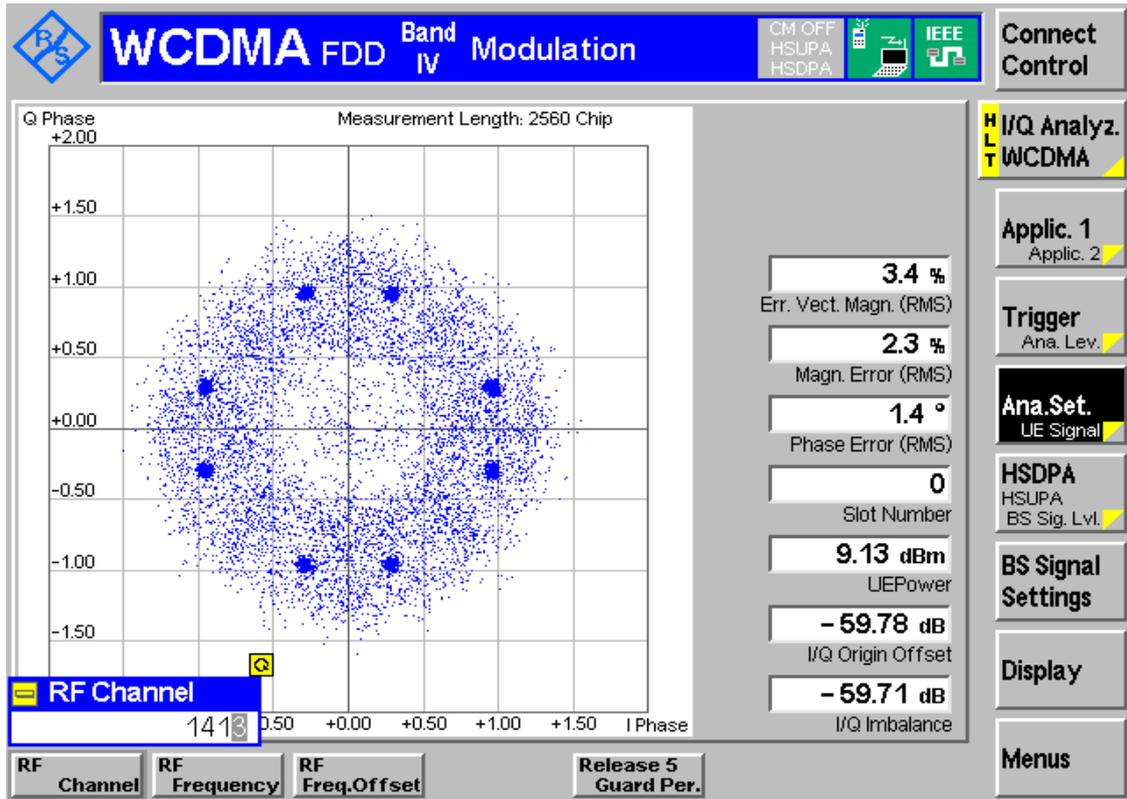


3.2 For UMTS

3.2.1 Test Band = WCDMA1700

3.2.1.1 Test Mode = UMTS/TM1

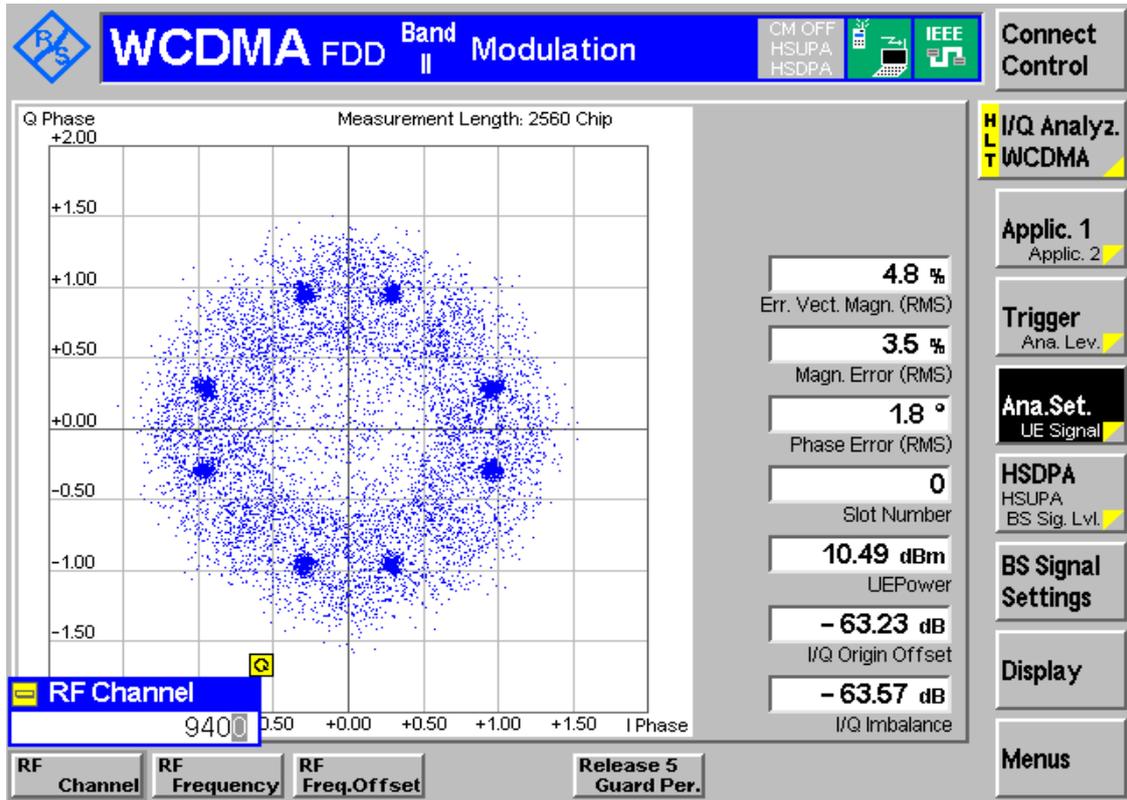
3.2.1.1.1 Test Channel = MCH



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	4.17	4.67	Pass
		MCH	4.17	4.67	Pass
		HCH	4.16	4.66	Pass
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1700	UMTS/TM1	LCH	4.16	4.66	Pass
		MCH	4.17	4.66	Pass
		HCH	4.17	4.66	Pass
WCDMA1900	UMTS/TM1	LCH	4.22	4.76	Pass
		MCH	4.17	4.66	Pass
		HCH	4.14	4.66	Pass

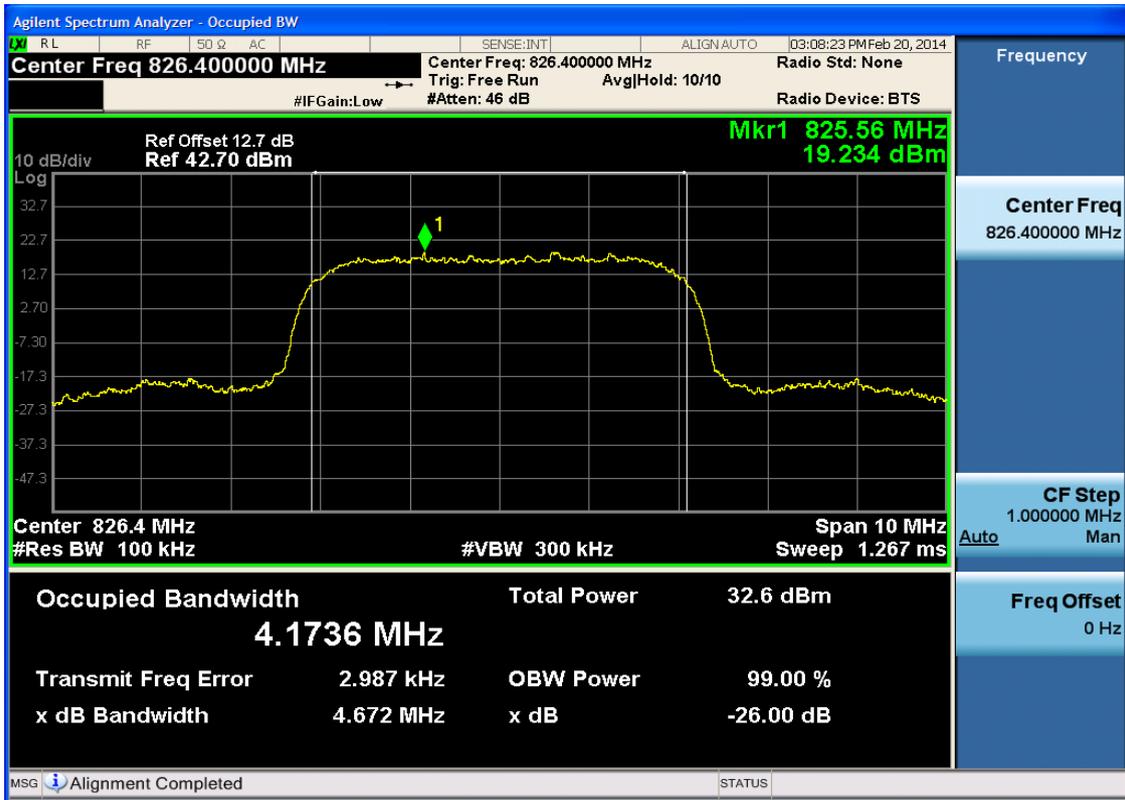
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

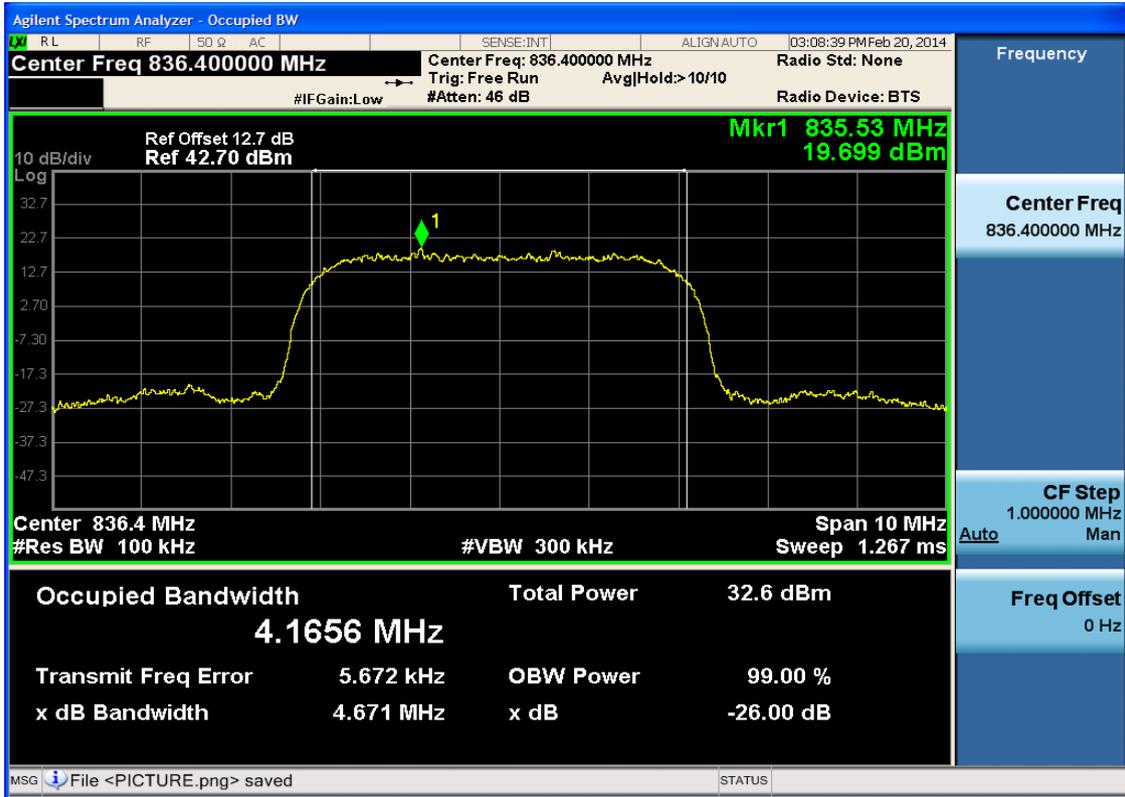
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH

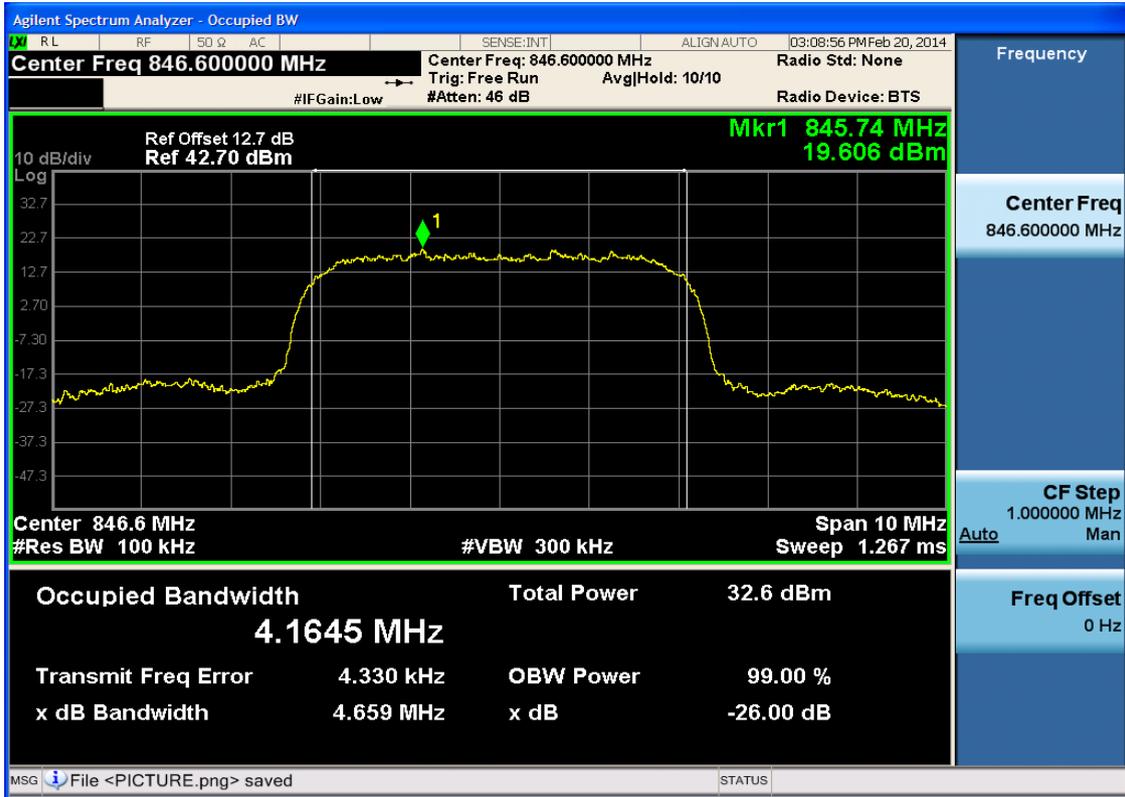




4.1.1.1.2 Test Channel = MCH



4.1.1.1.3 Test Channel = HCH



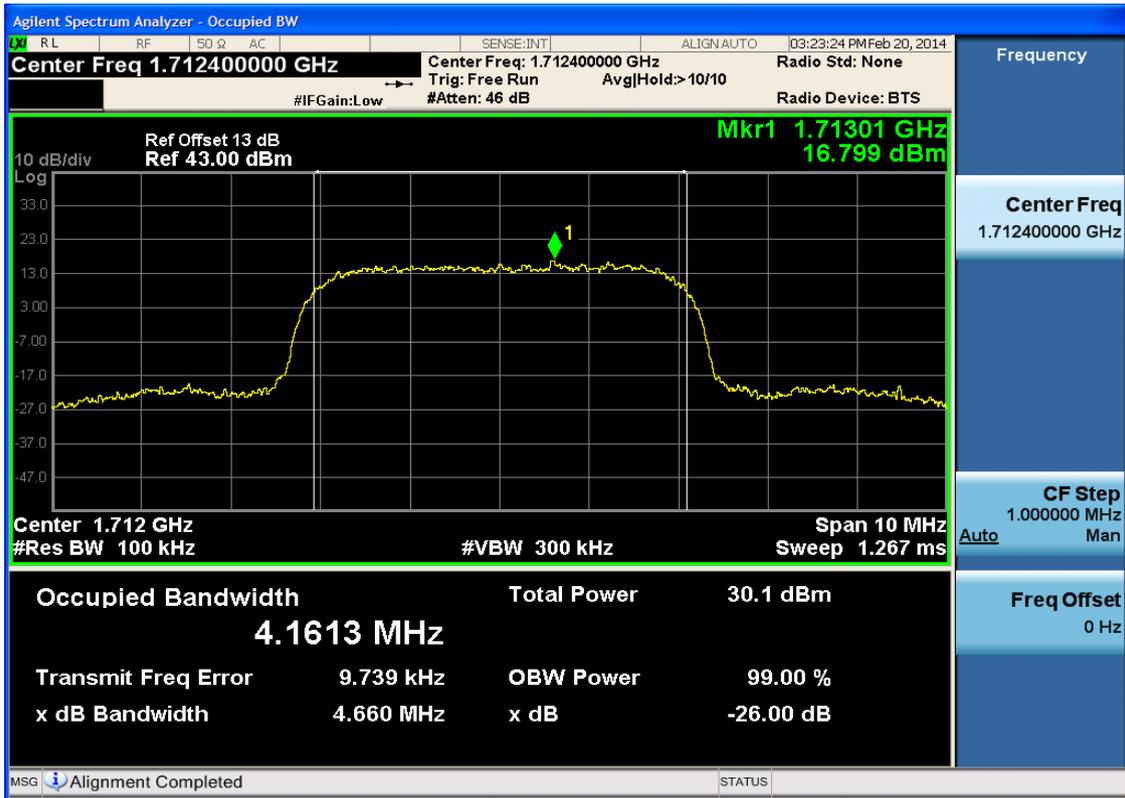


4.2 For UMTS

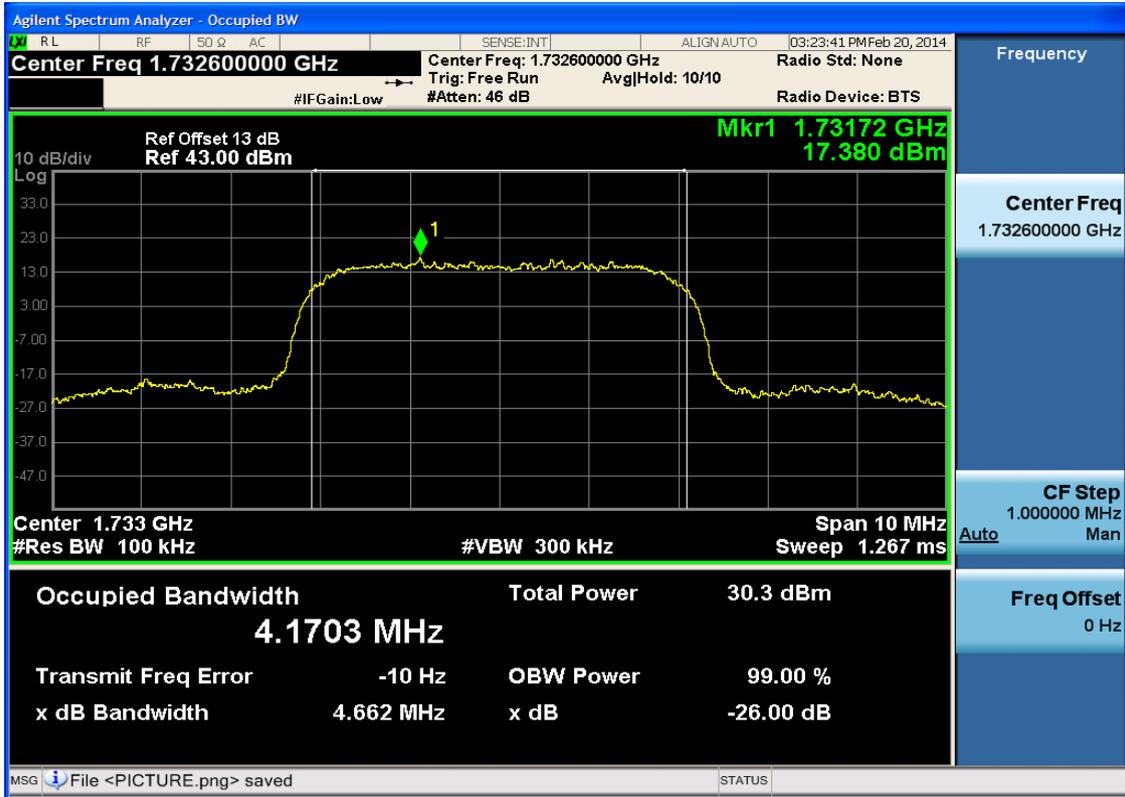
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4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH

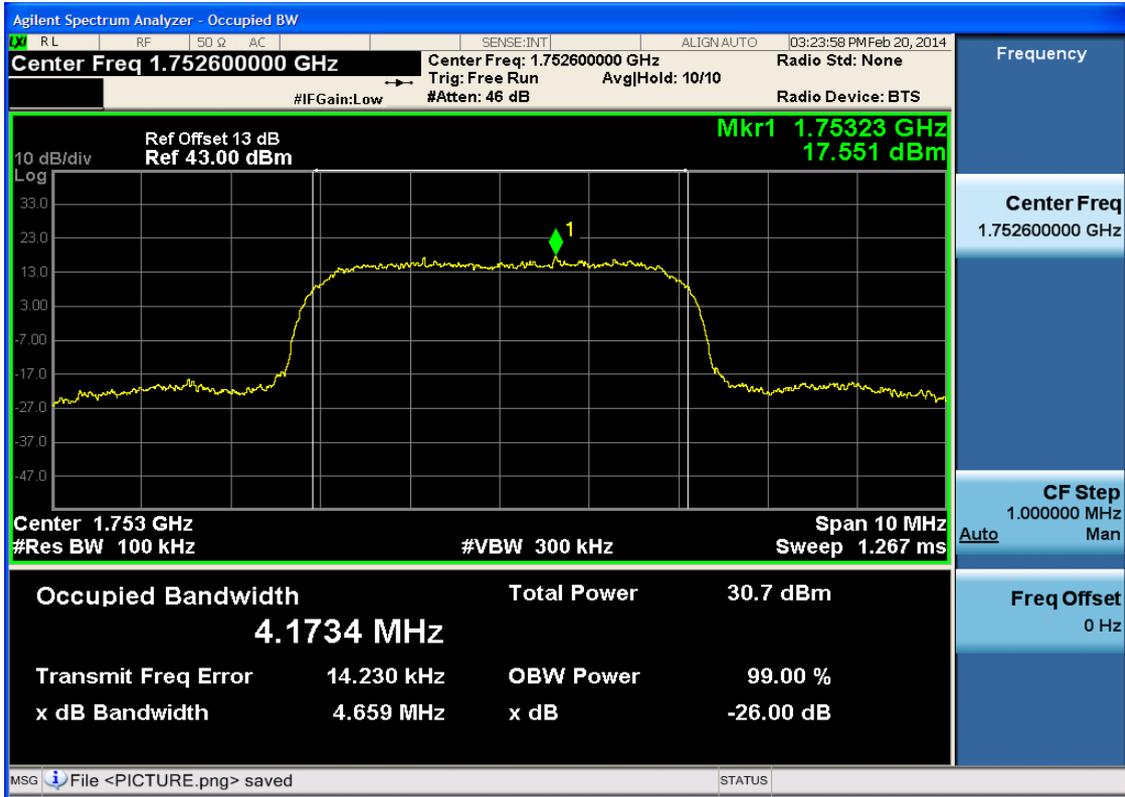


4.2.1.1.2 Test Channel = MCH





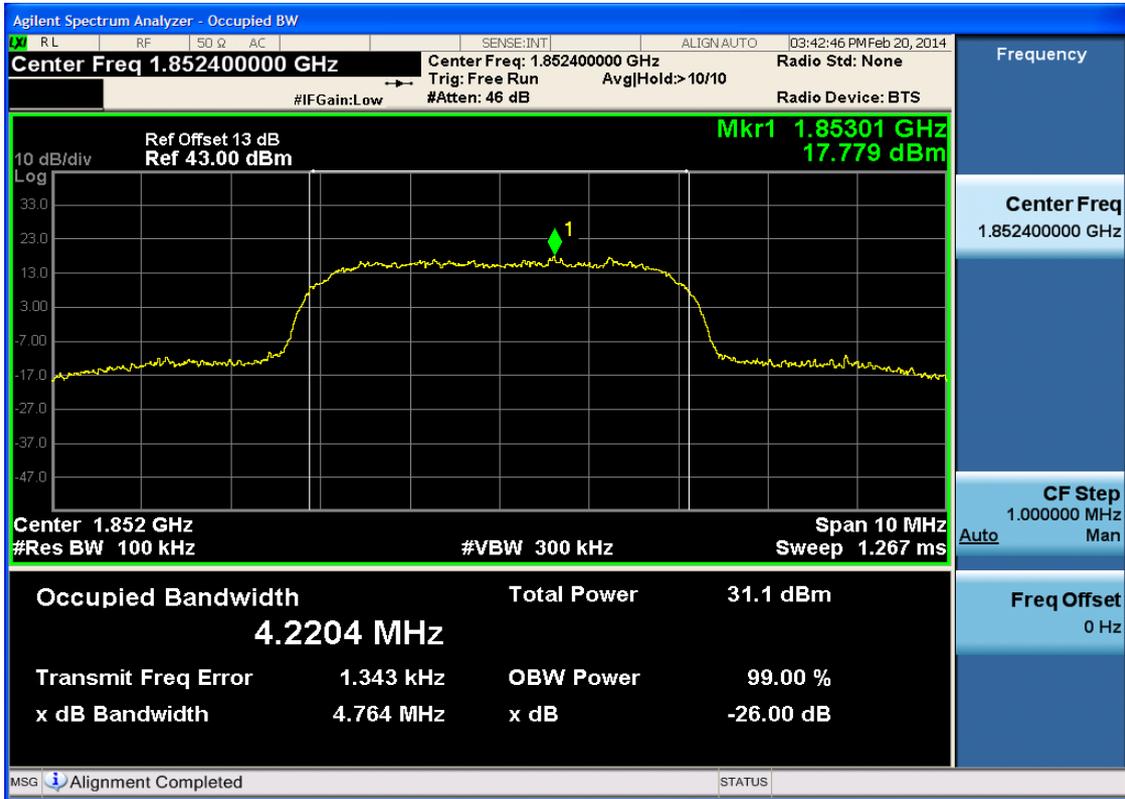
4.2.1.1.3 Test Channel = HCH



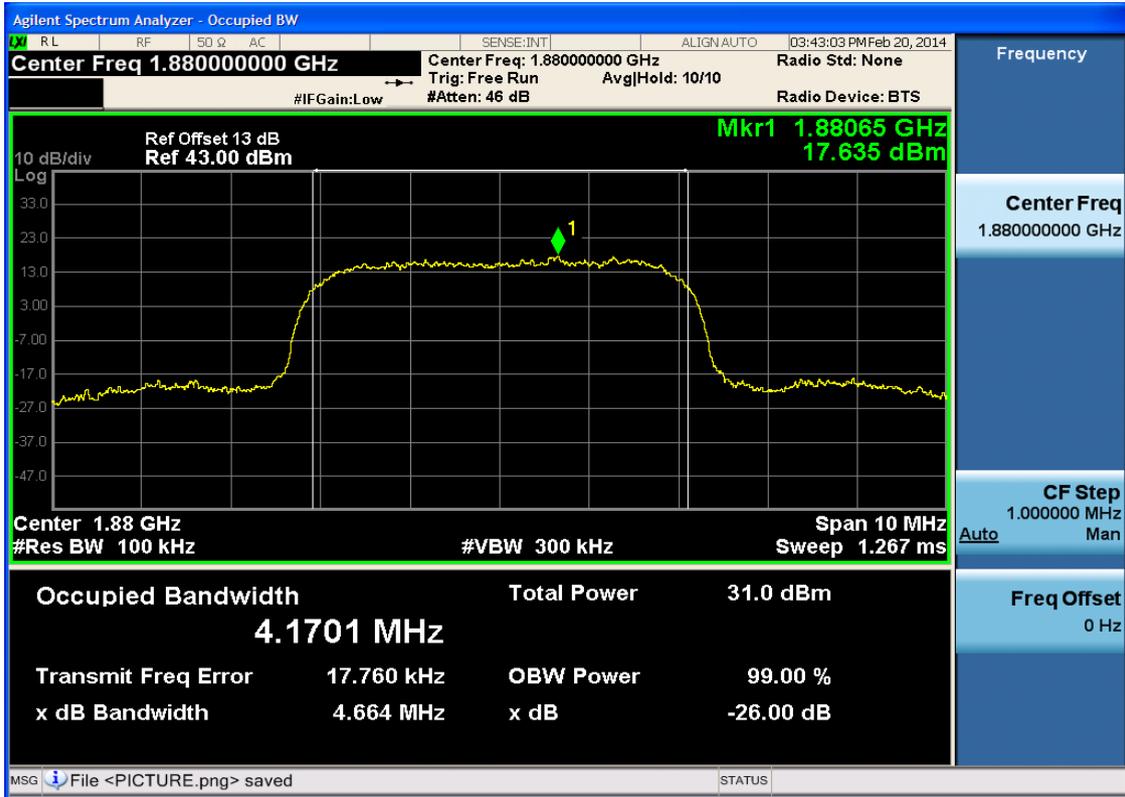
4.2.2 Test Band = WCDMA1900

4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH

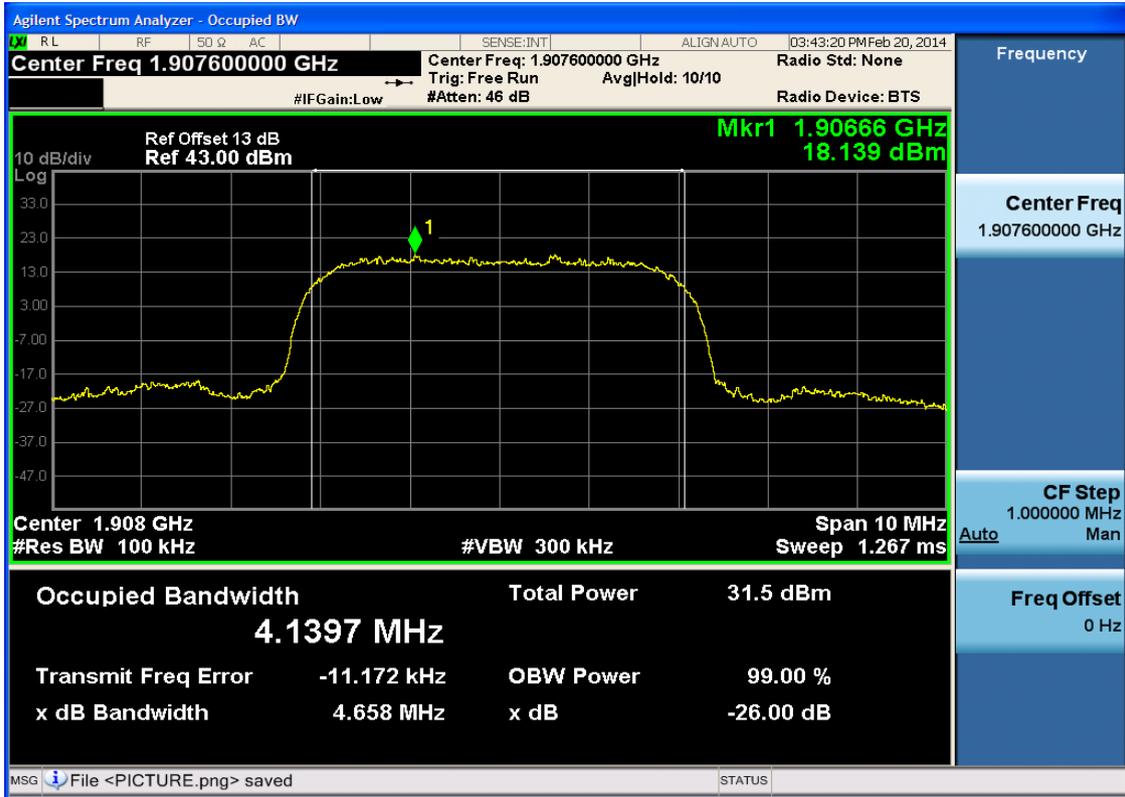


4.2.2.1.2 Test Channel = MCH





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

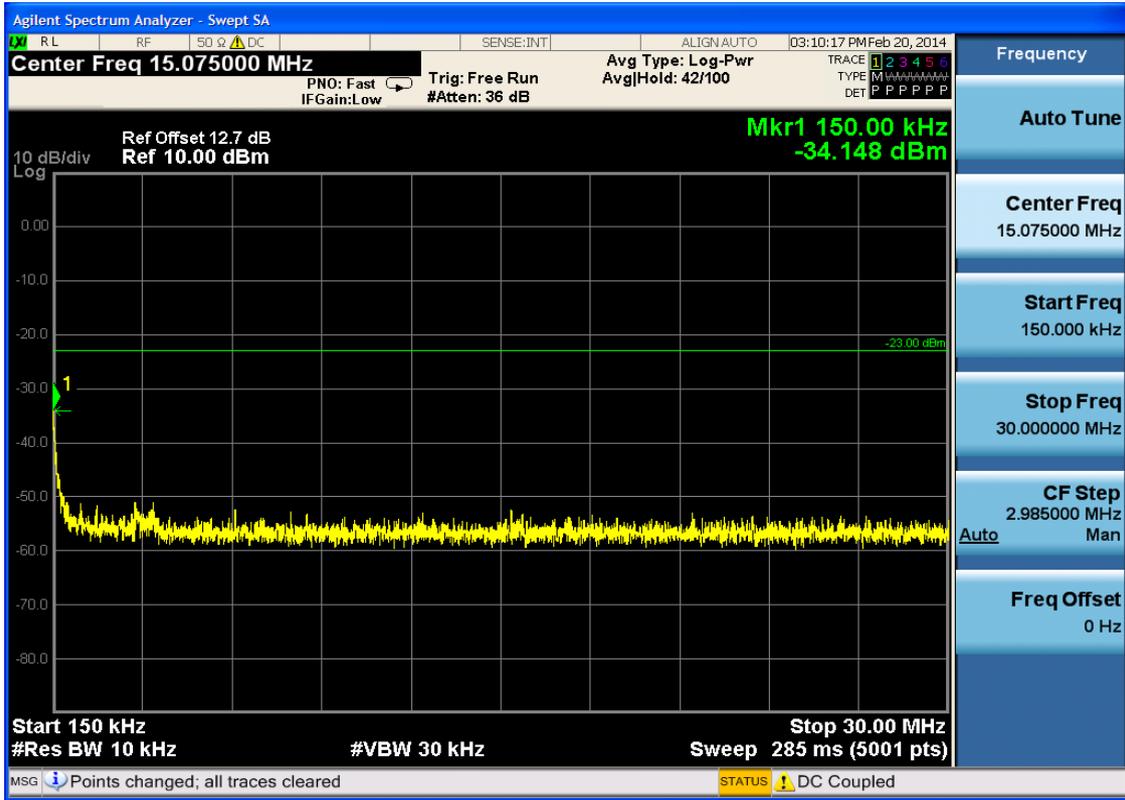
6.1 For UMTS

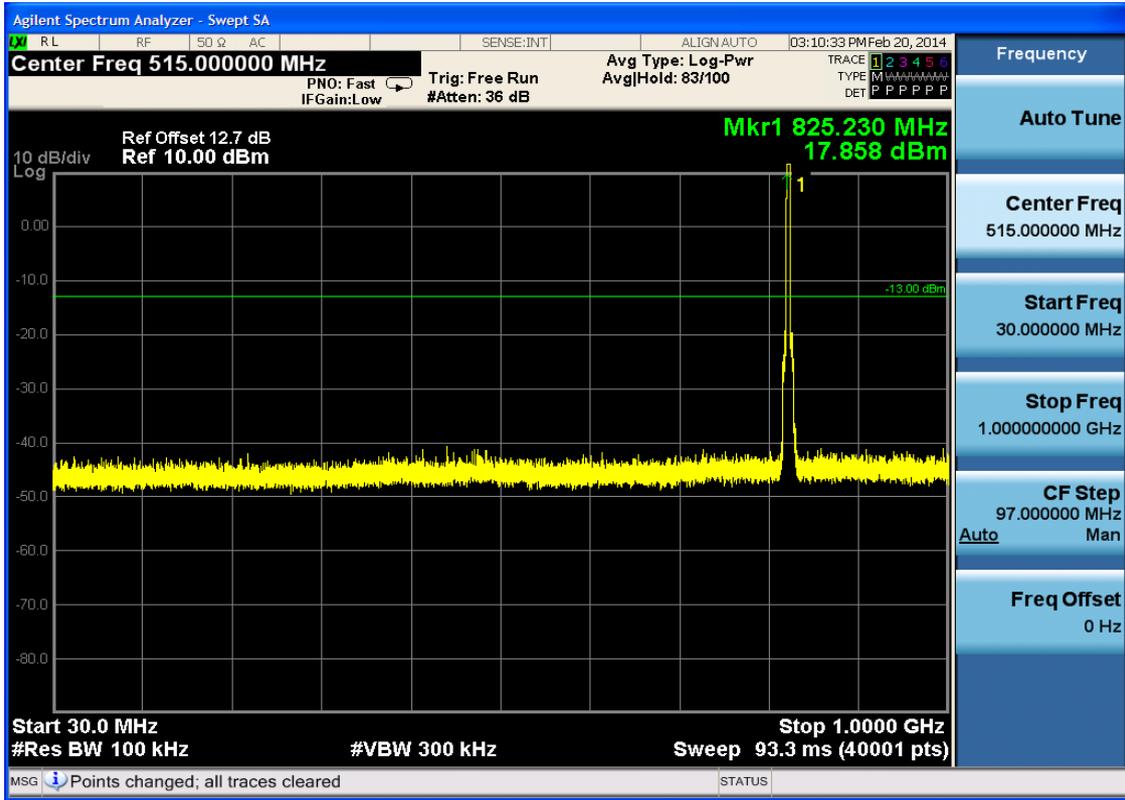
6.1.1 Test Band = WCDMA850

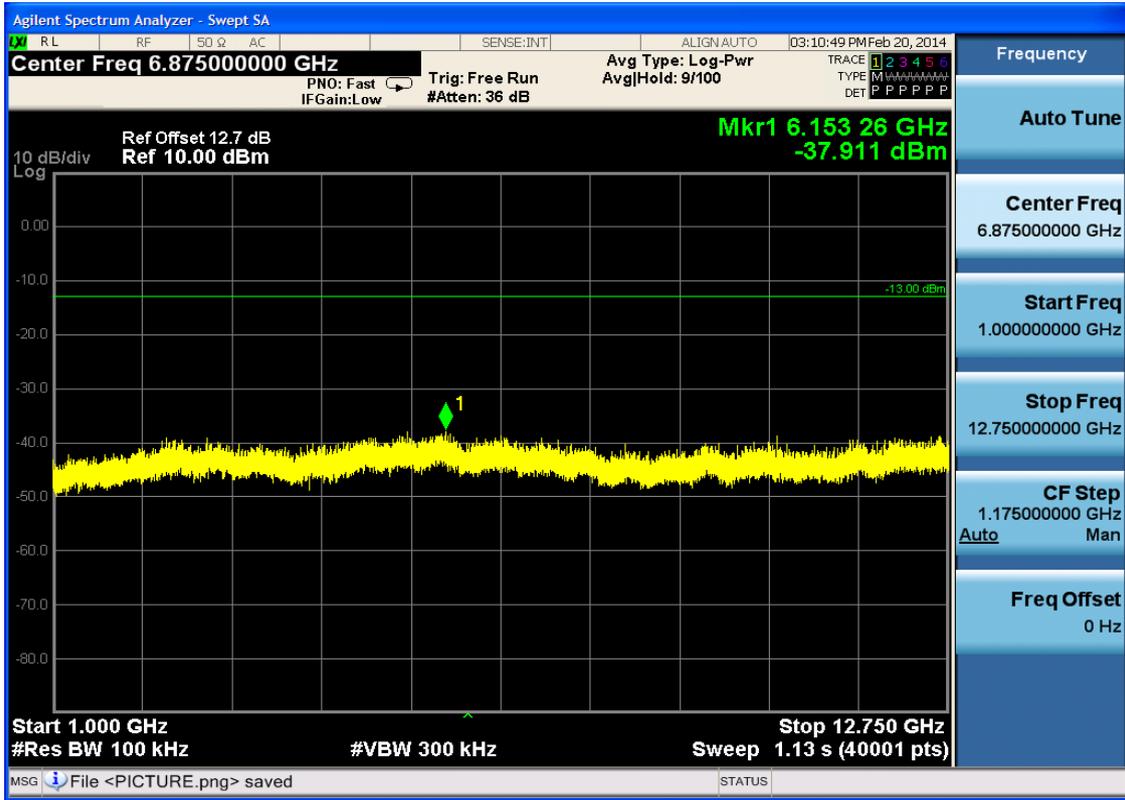
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH





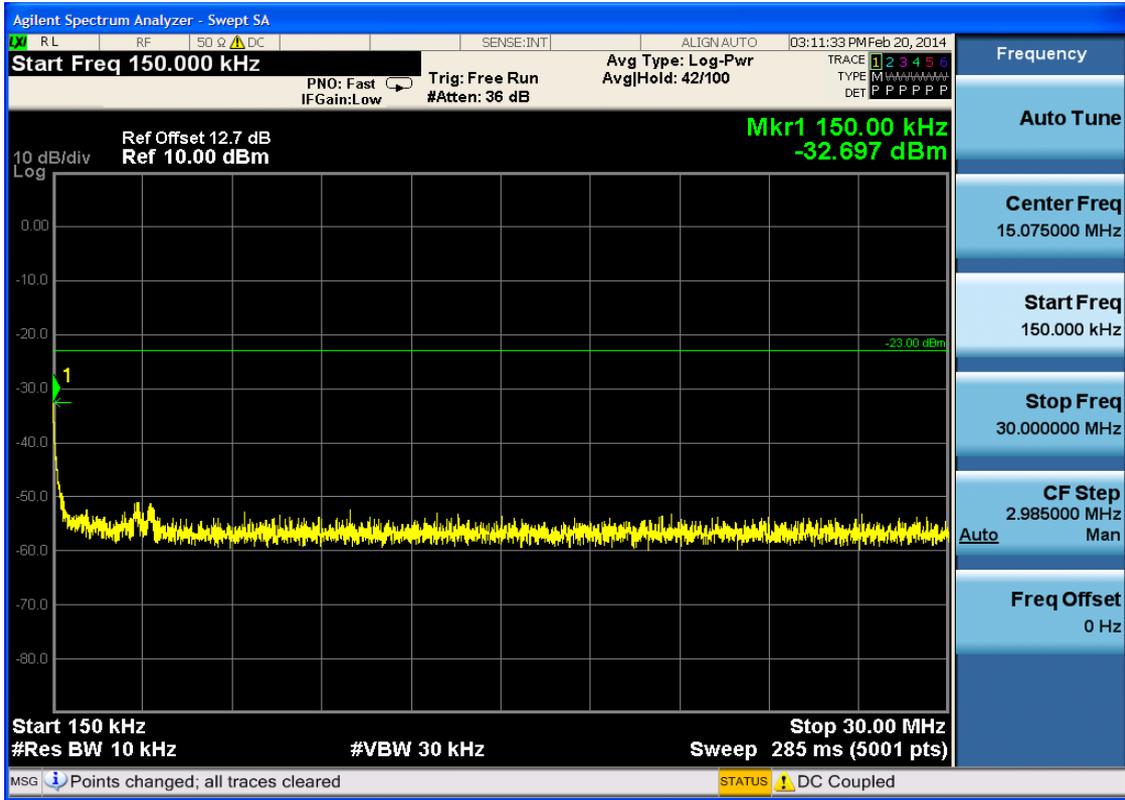


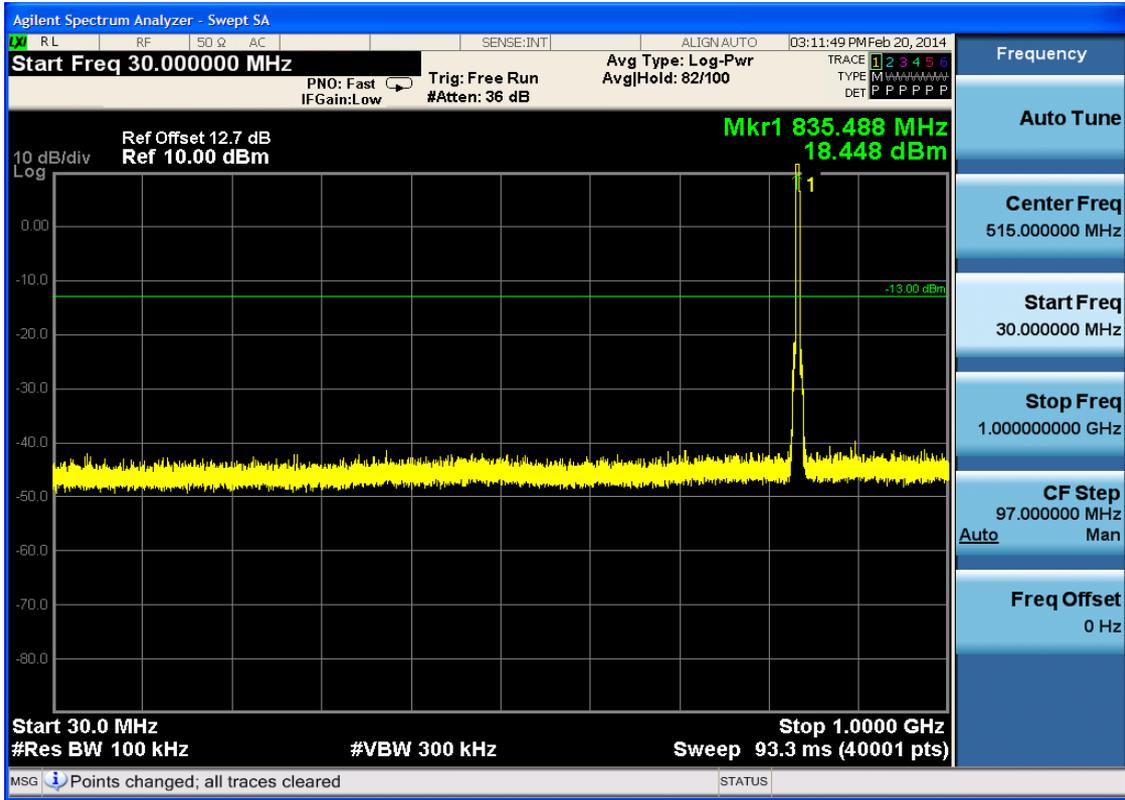


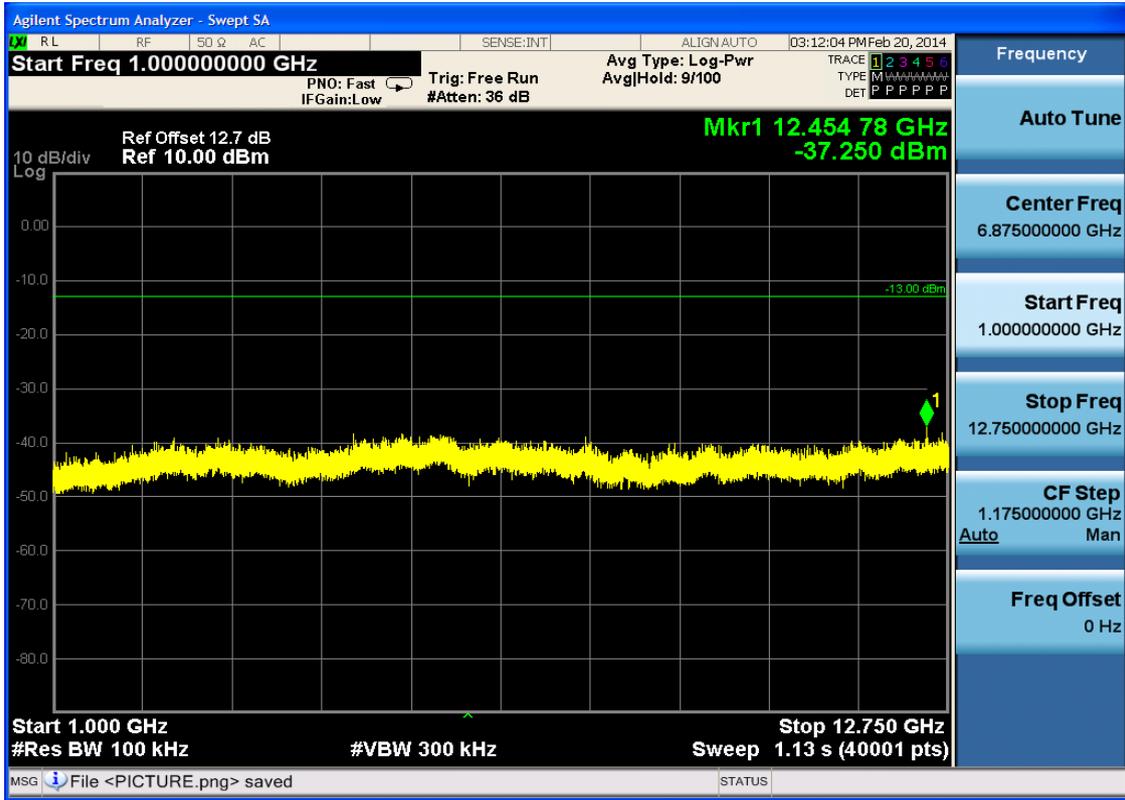


6.1.1.1.2 Test Channel = MCH



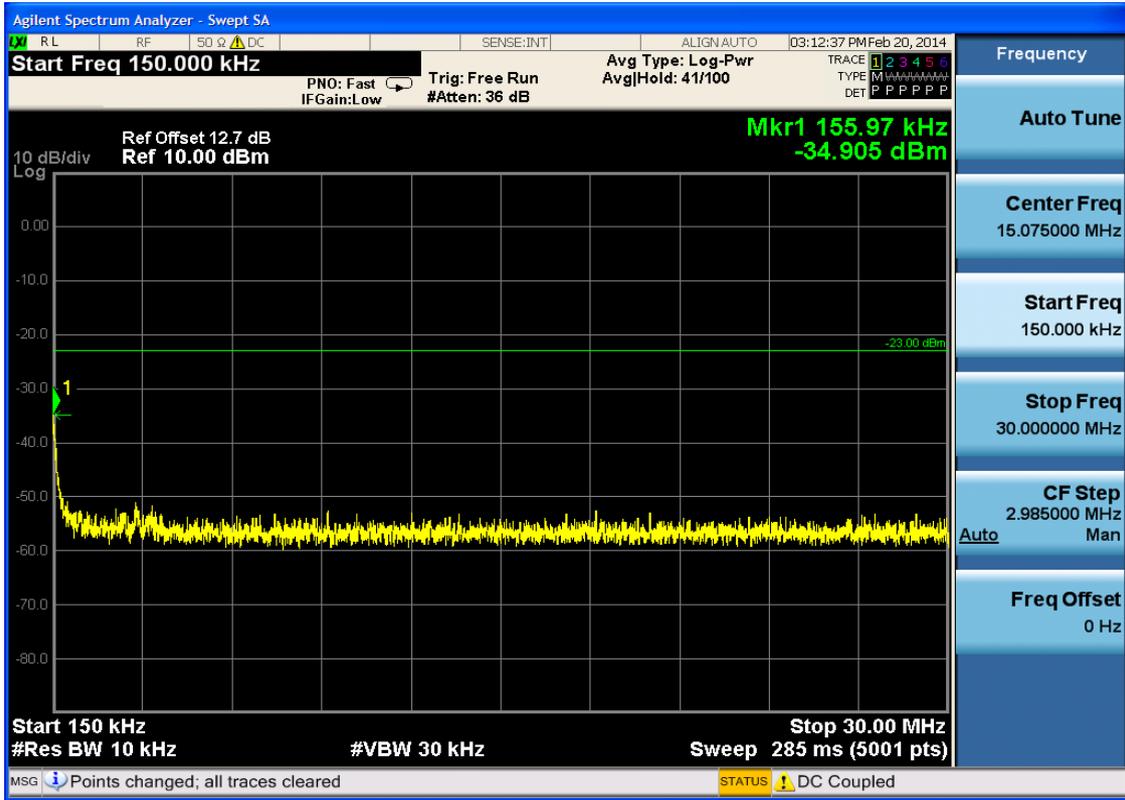


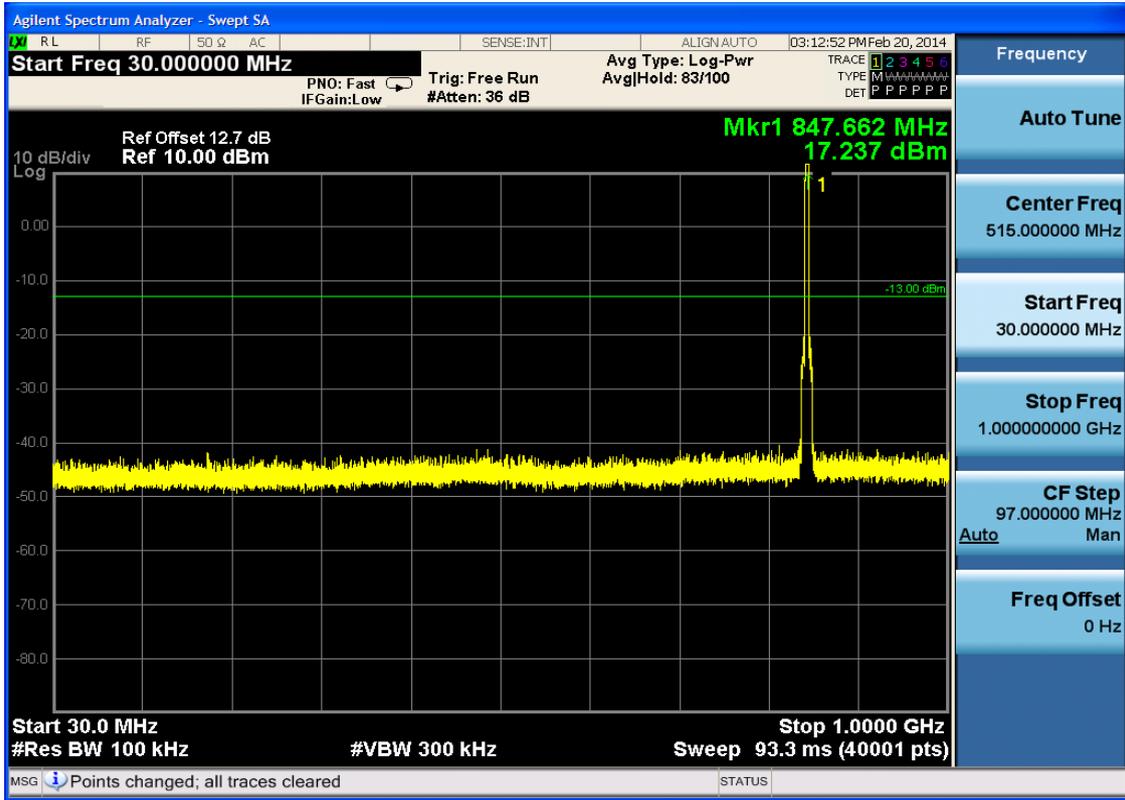


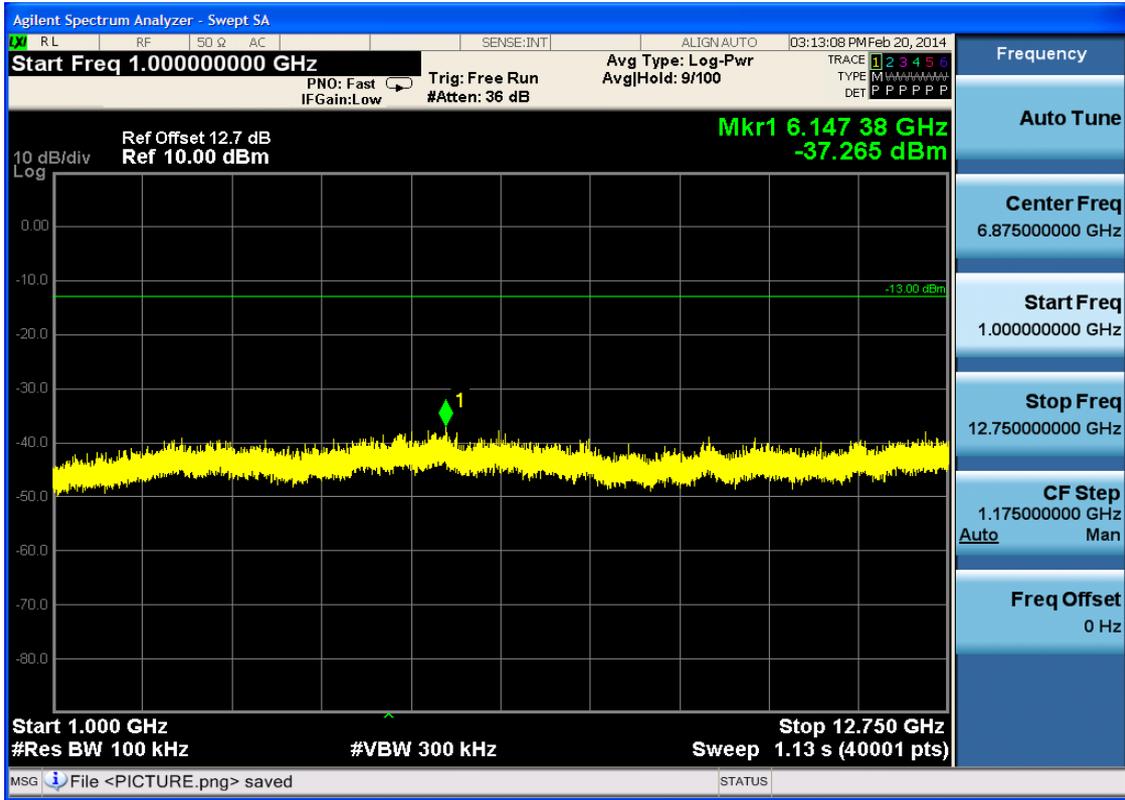


6.1.1.1.3 Test Channel = HCH









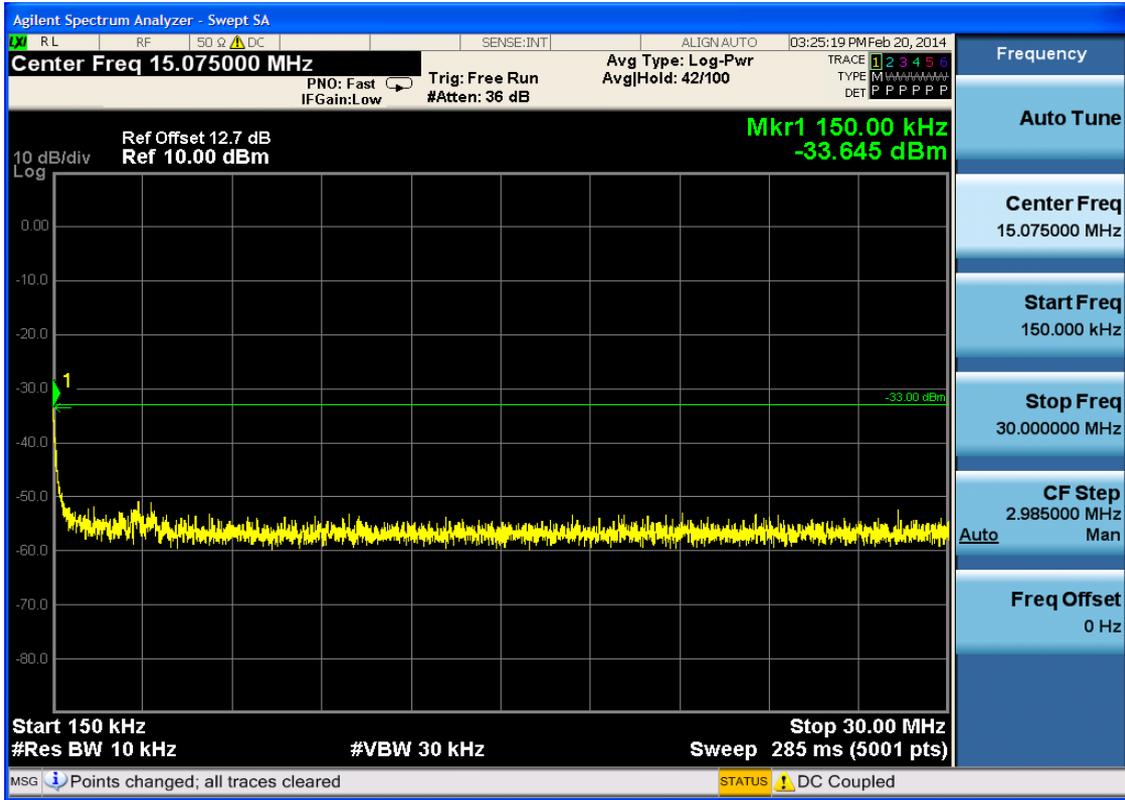
6.2 For UMTS

6.2.1 Test Band = WCDMA1700

6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH

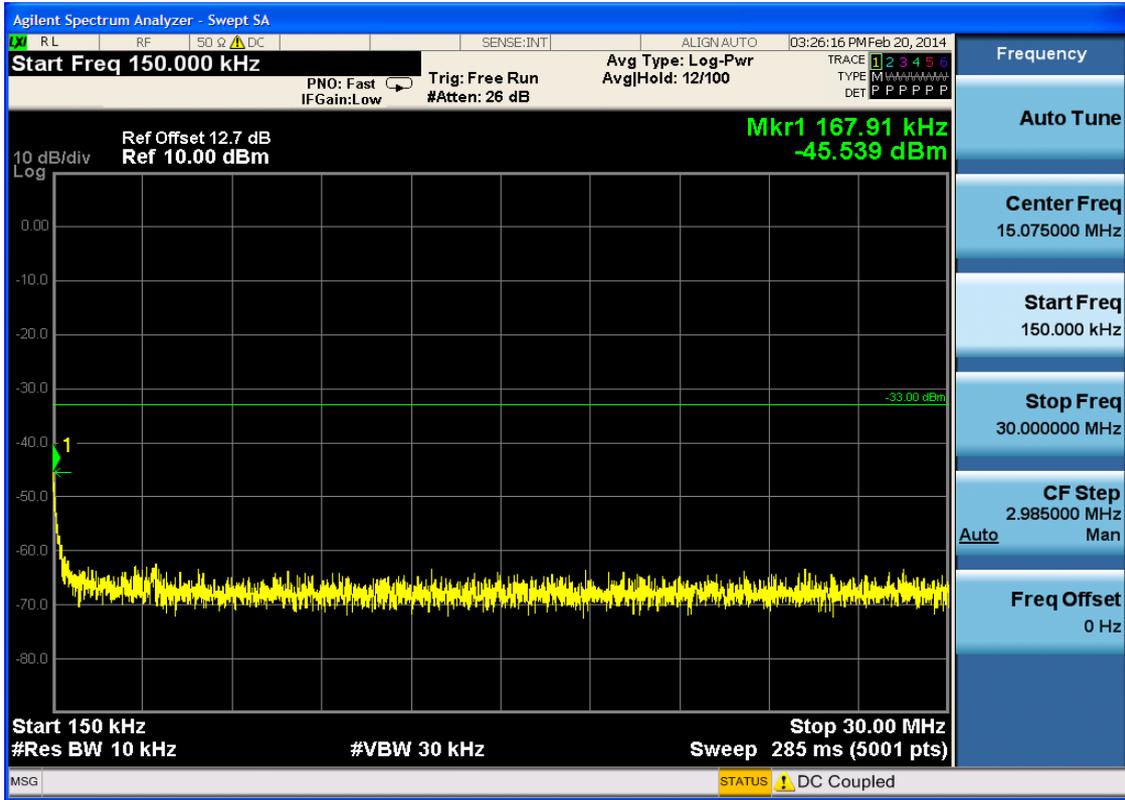


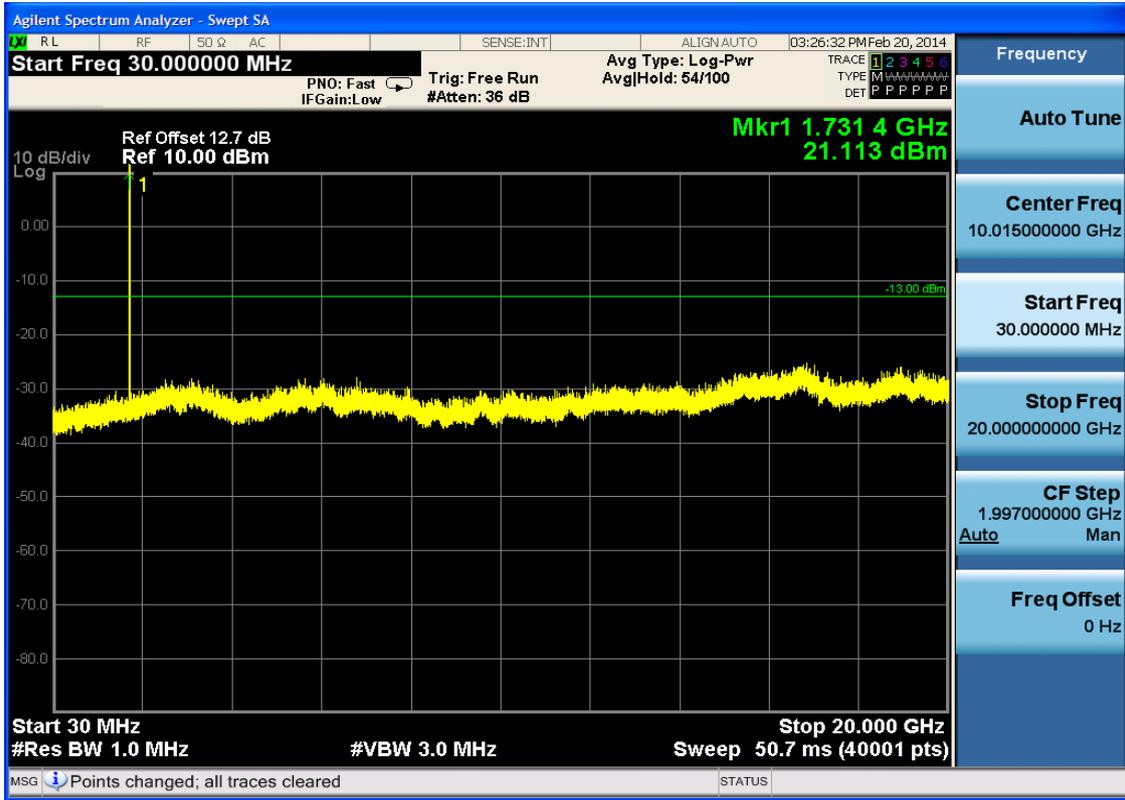


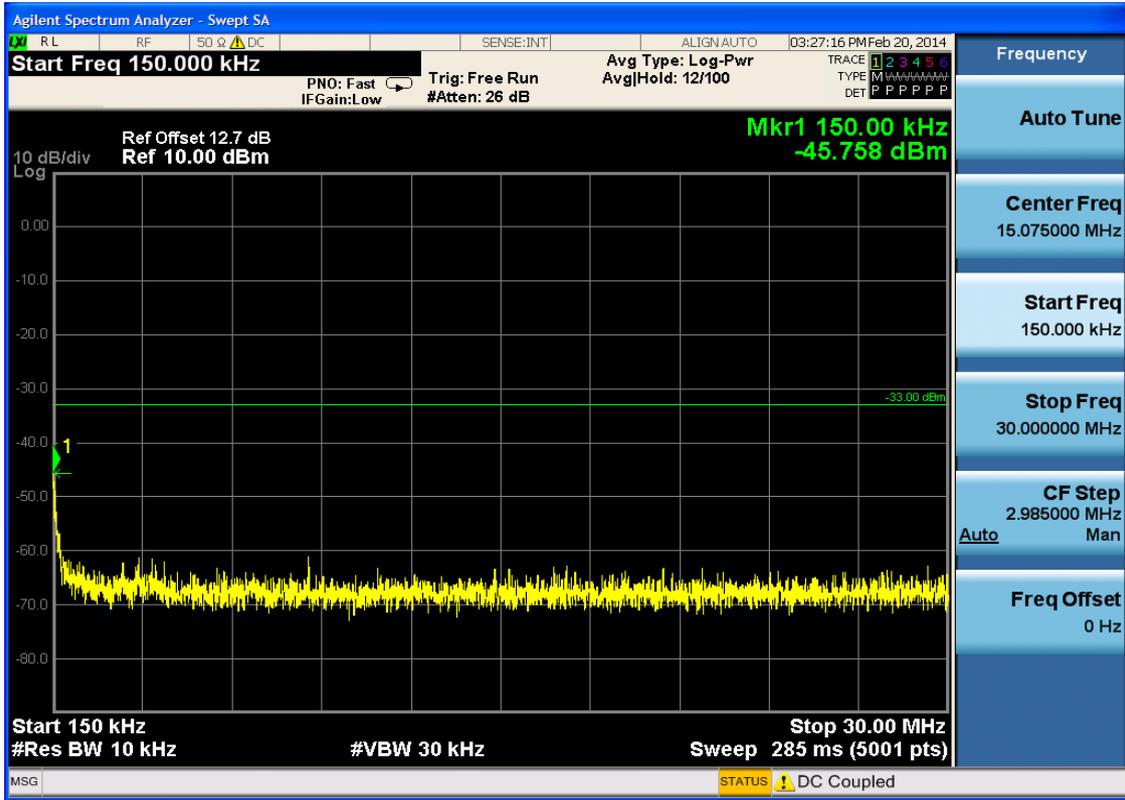


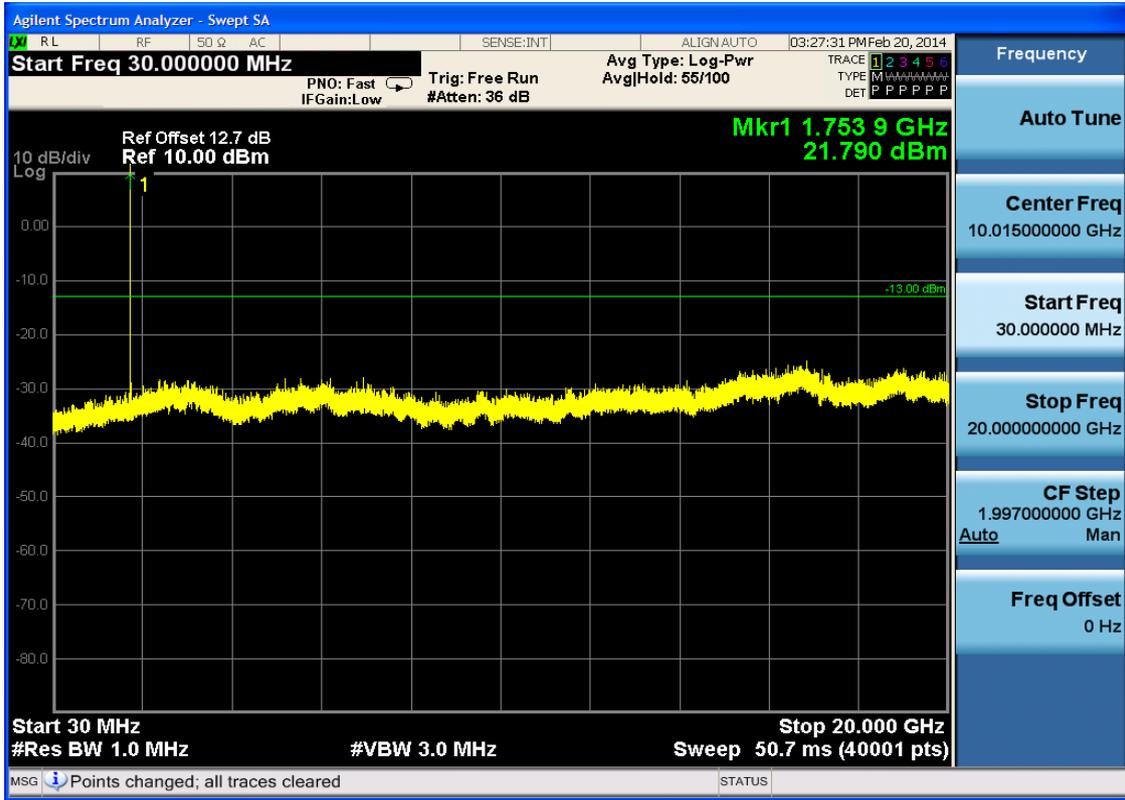
6.2.1.1.2 Test Channel = MCH







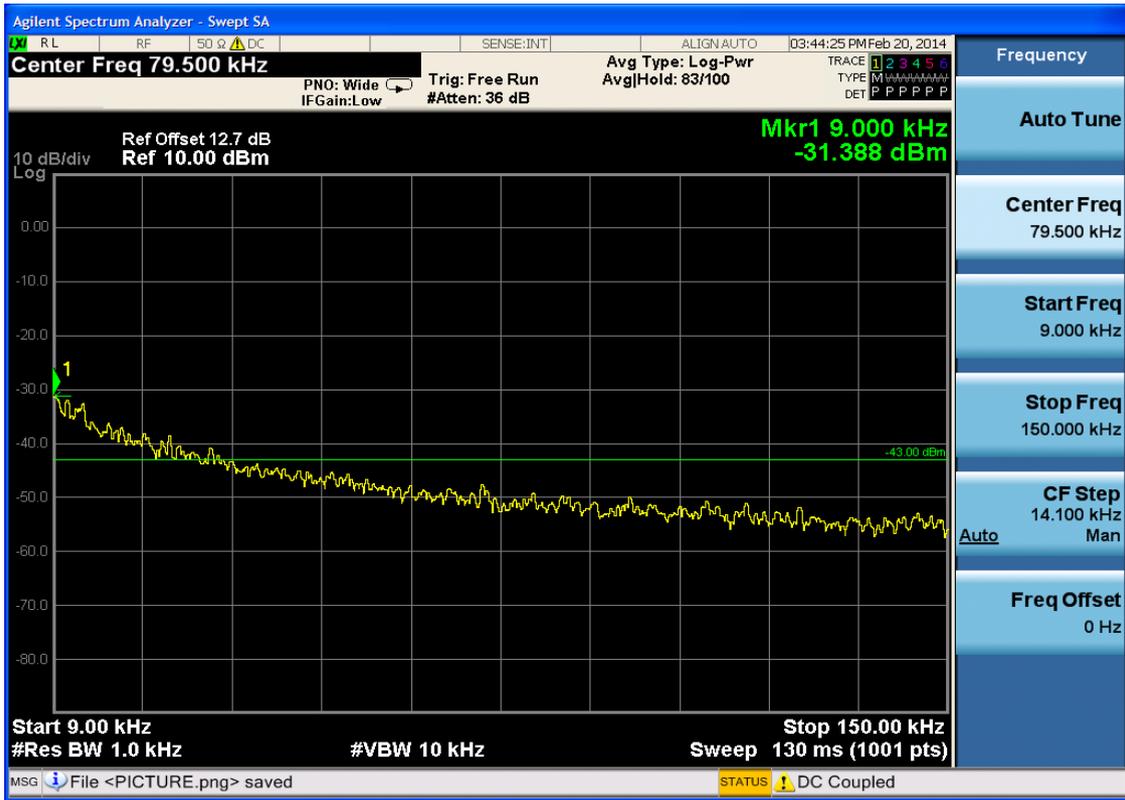


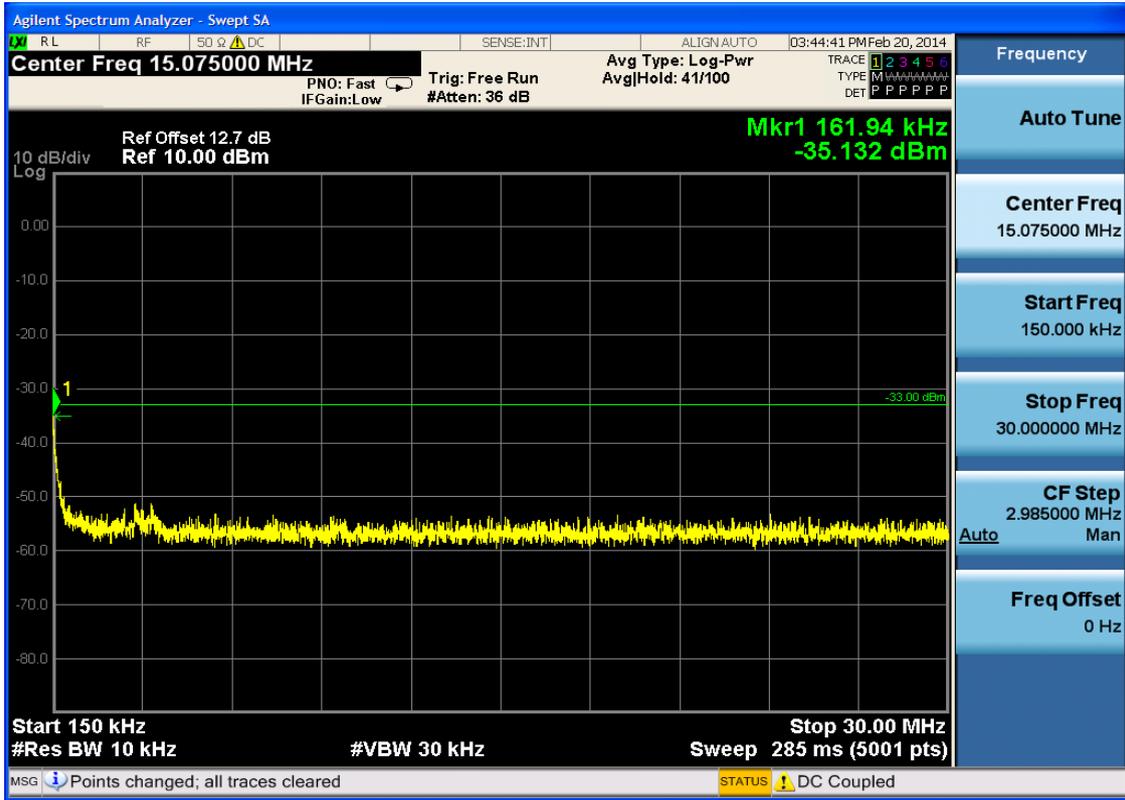


6.2.2 Test Band = WCDMA1900

6.2.2.1 Test Mode = UMTS/TM1

6.2.2.1.1 Test Channel = LCH

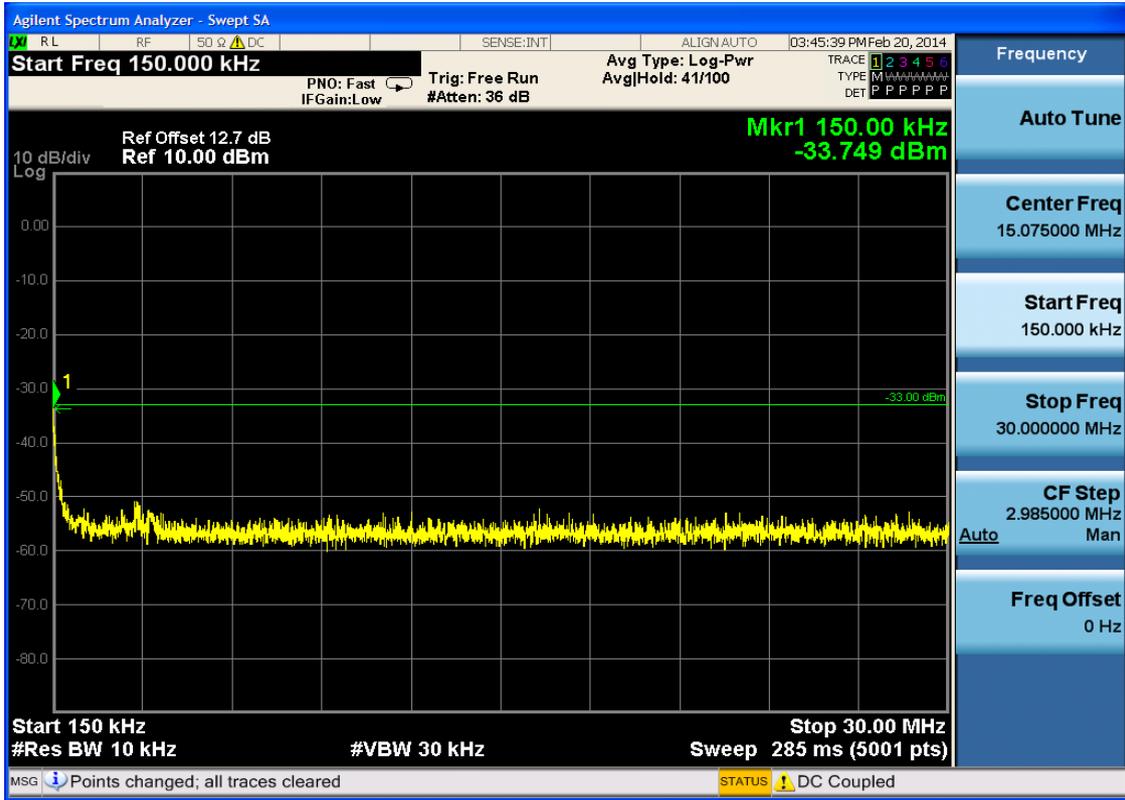


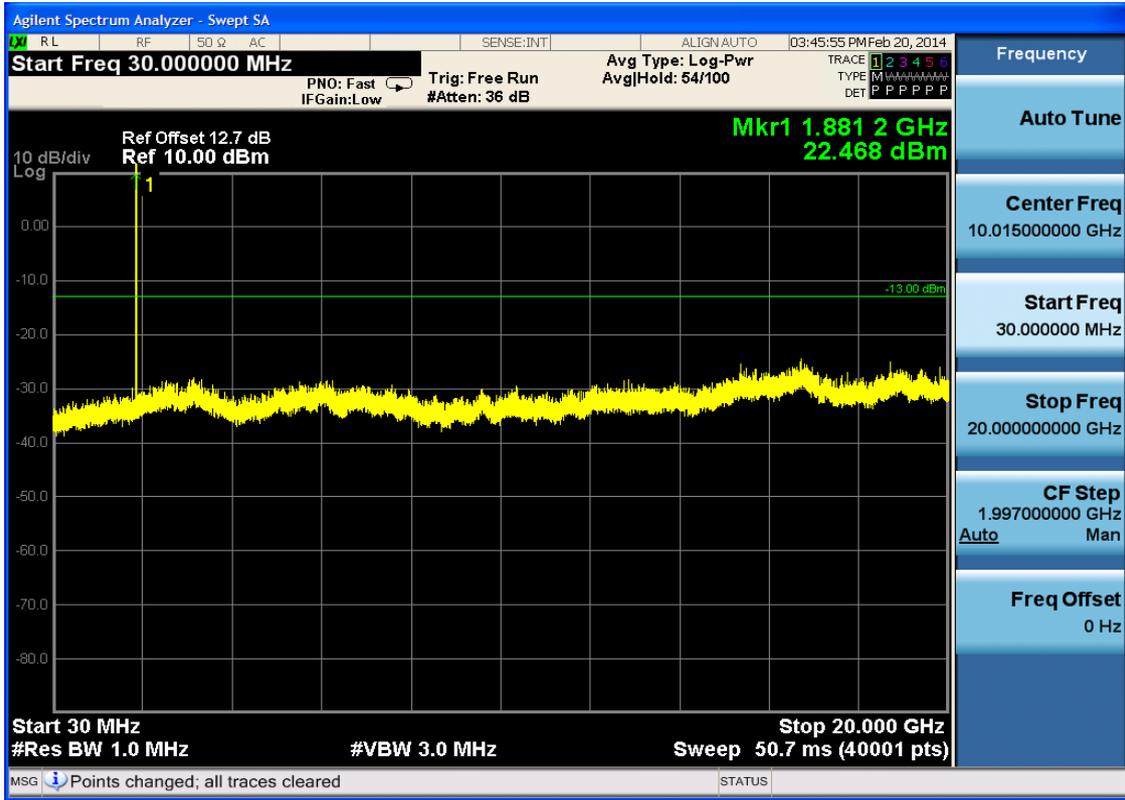




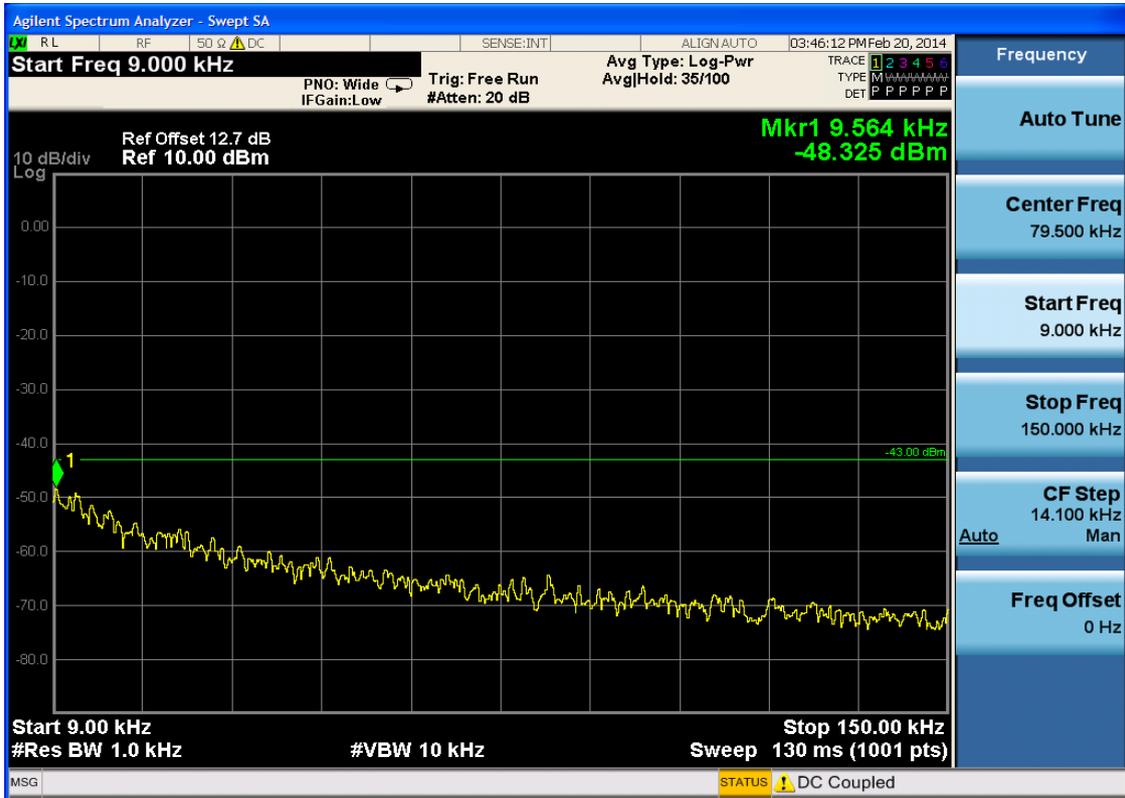
6.2.2.1.2 Test Channel = MCH

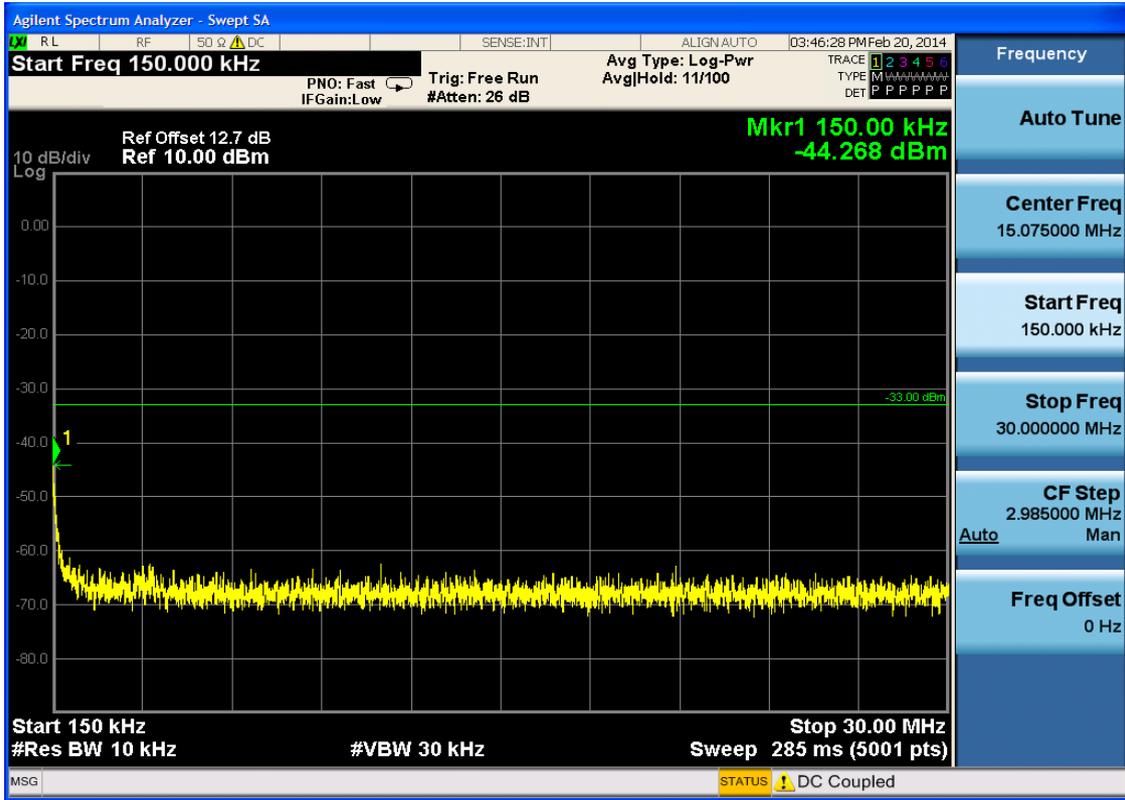


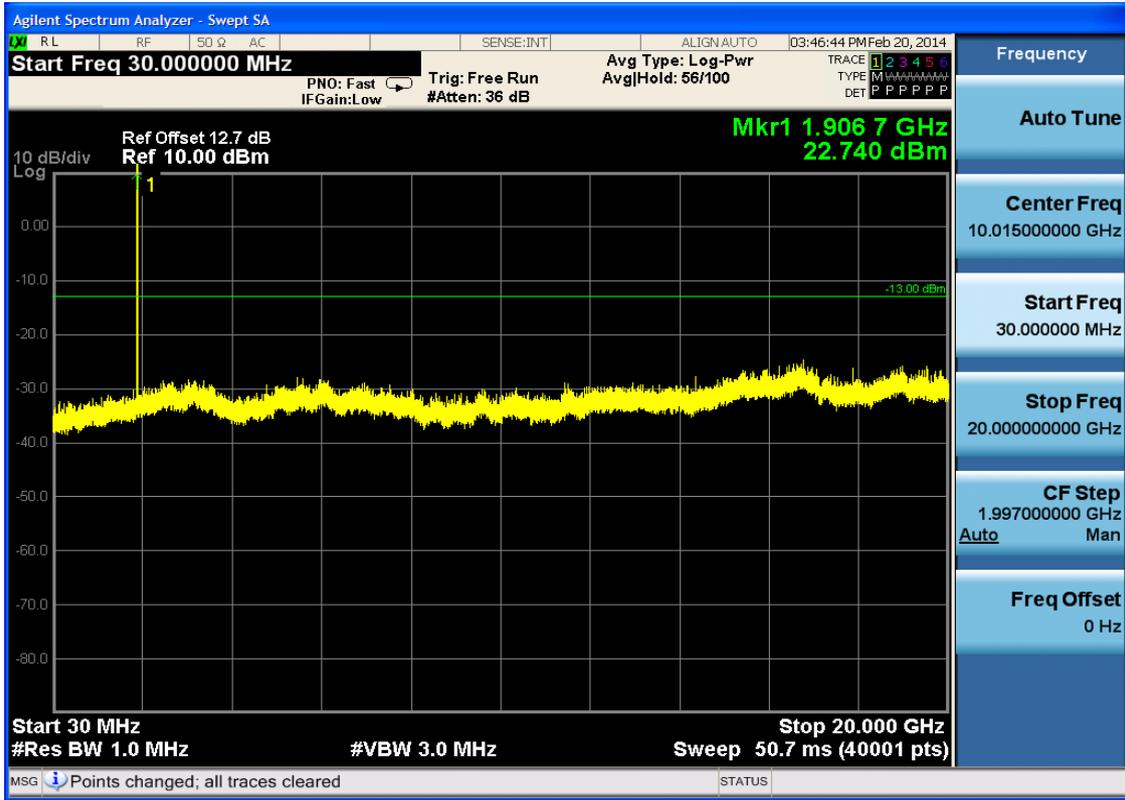




6.2.2.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note:

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

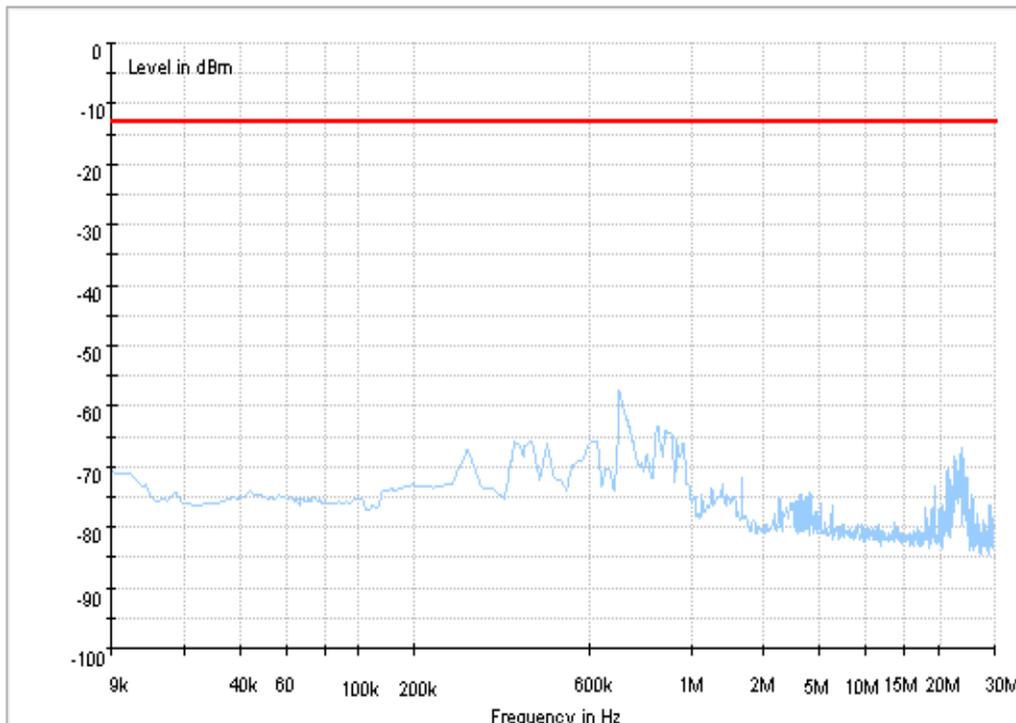
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

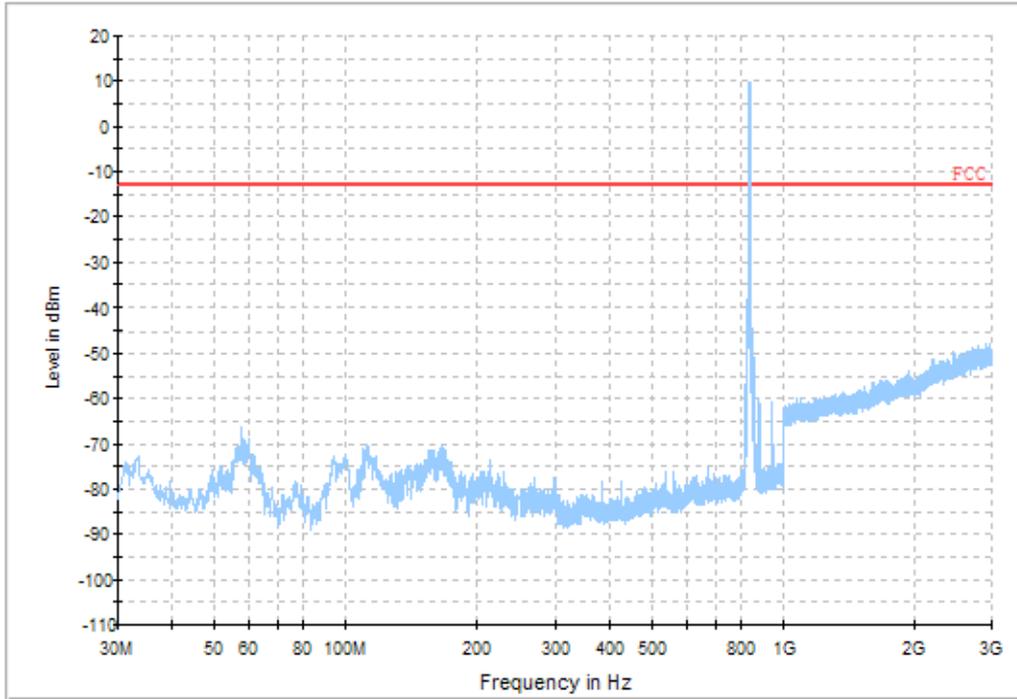
7.1 For UMTS

7.1.1 Test Band = WCDMA850

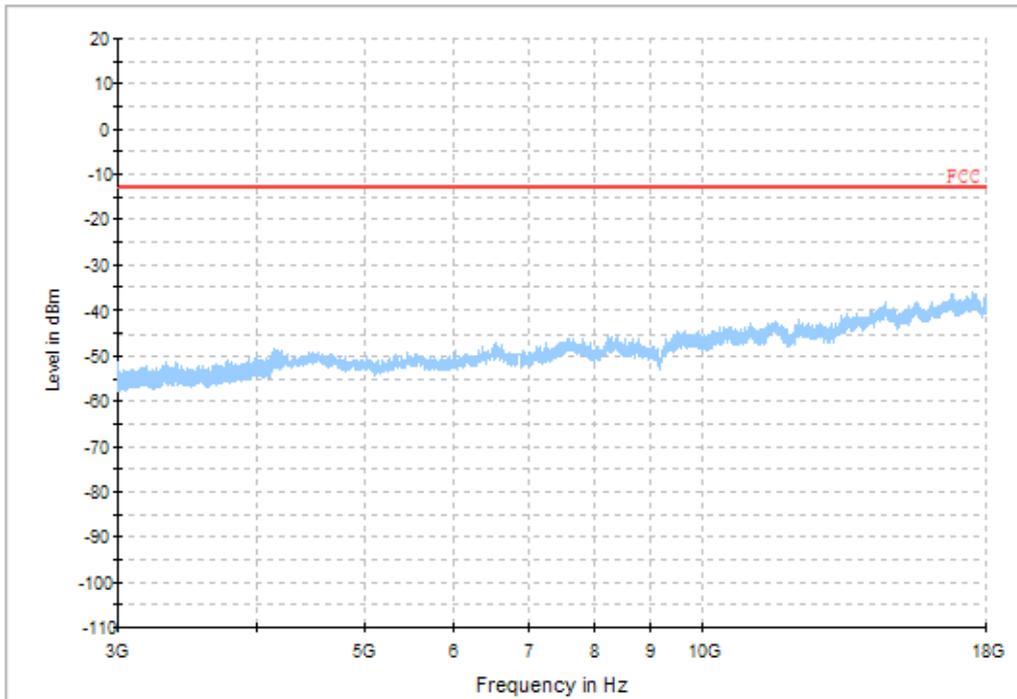
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 WCDMA850_L

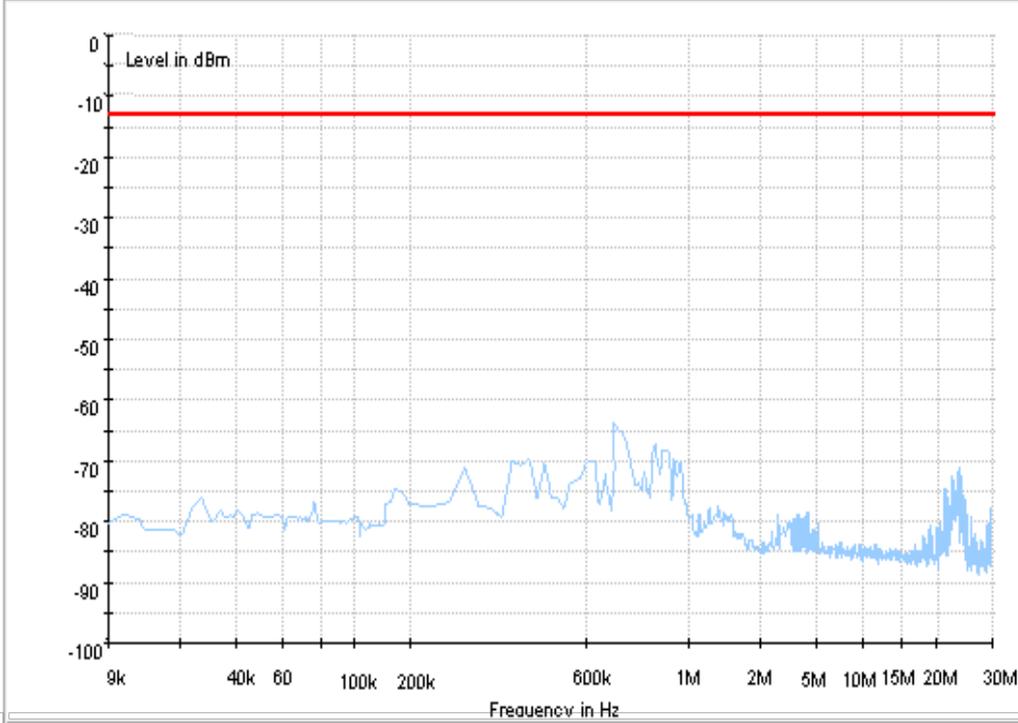


Copy of FCC PART22 WCDMA850_H

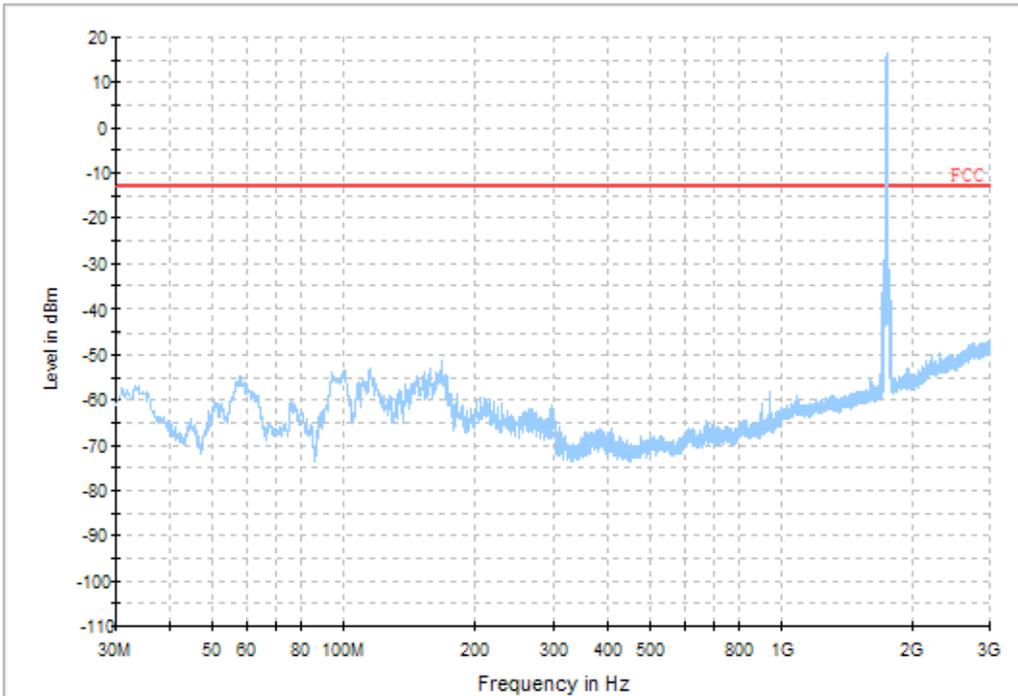


7.2.1 Test Band = WCDMA1700

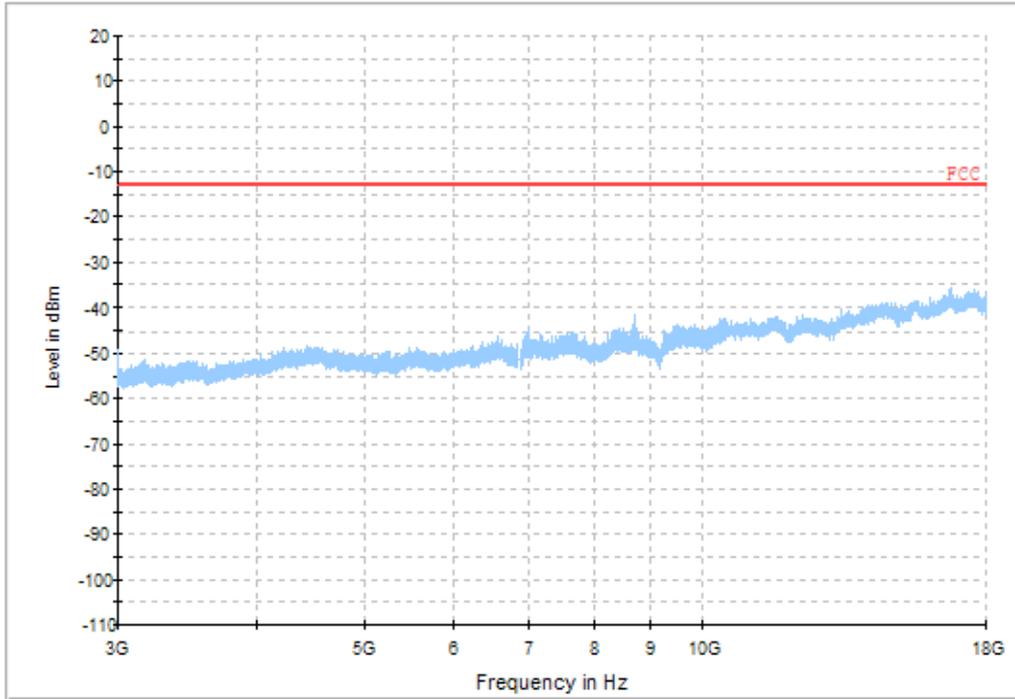
7.2.1.1 Test Mode = UMTS/TM1



Copy of FCC PART27 WCDMA1700_L

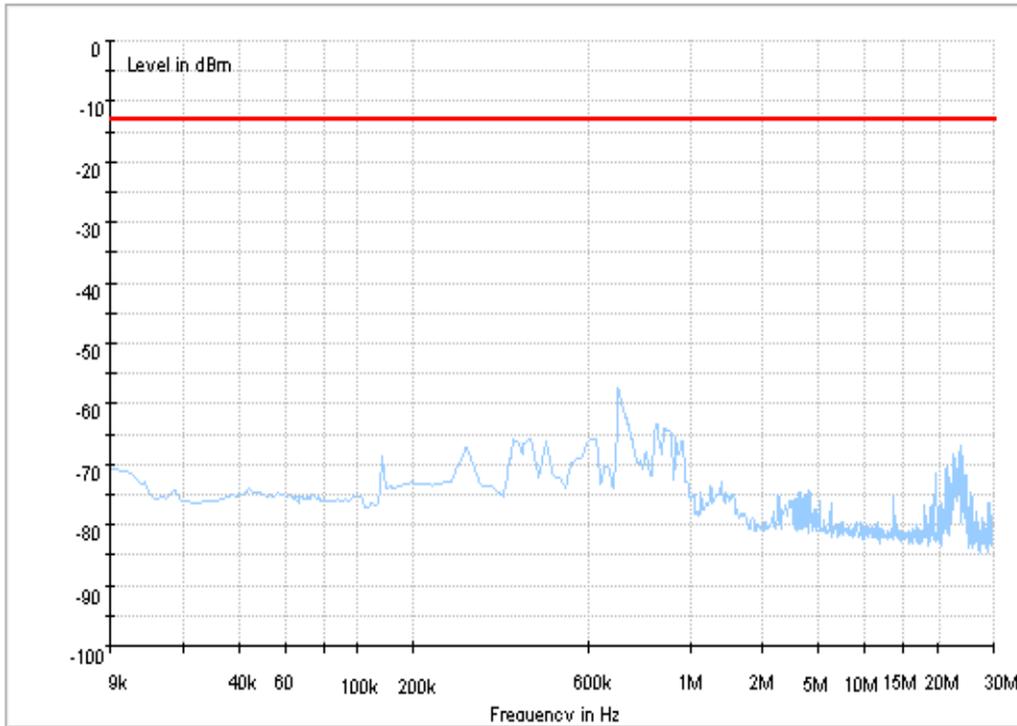


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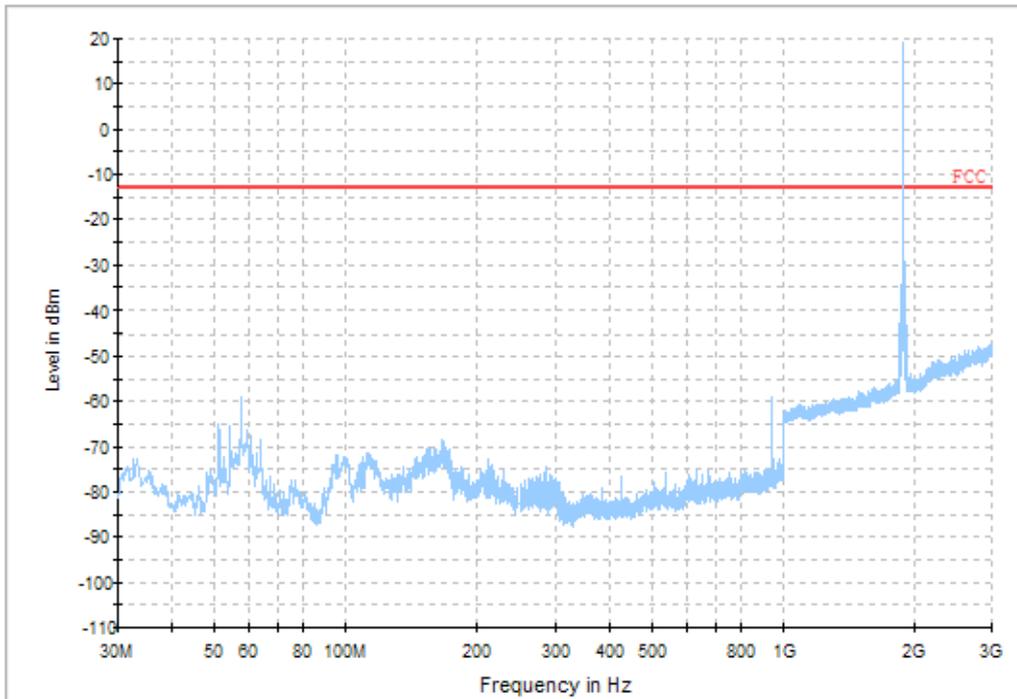


7.2.2 Test Band = WCDMA1900

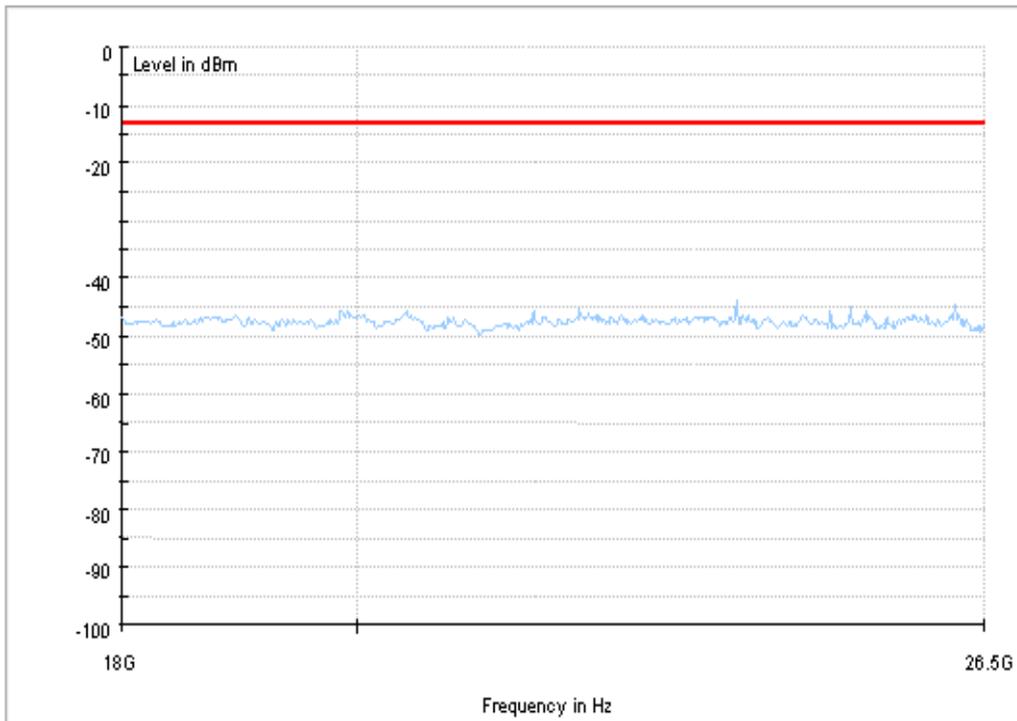
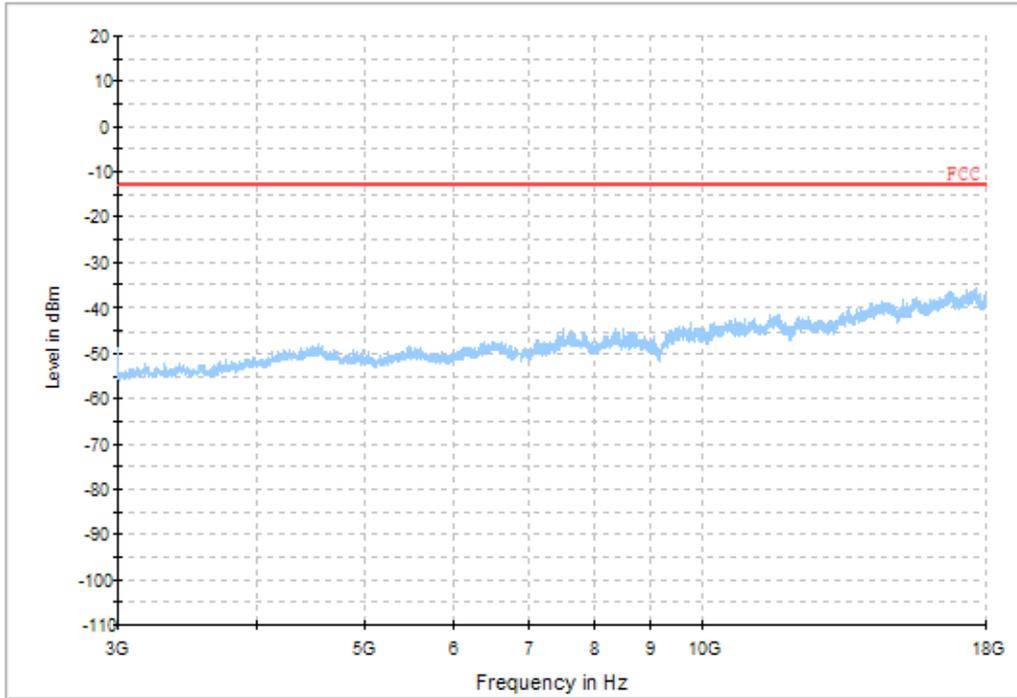
7.2.2.1 Test Mode = UMTS/TM1



Copy of FCC PART24 WCDMA1900_L



Copy of FCC PART24 WCDMA1900_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	0.41	0.0005	PASS
				VN	2.82	0.00341	PASS
				VH	1.82	0.0022	PASS
		MCH	TN	VL	2.27	0.00271	PASS
				VN	0.41	0.00049	PASS
				VH	-1.33	-0.00159	PASS
		HCH	TN	VL	-4.26	-0.00503	PASS
				VN	-0.72	-0.00085	PASS
				VH	-1.02	-0.0012	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	2.09	0.00253	PASS
				-20	1.56	0.00189	PASS
				-10	0.82	0.00099	PASS
				0	3.28	0.00397	PASS
				10	0.08	0.0001	PASS
				20	0.69	0.00083	PASS
				30	5.17	0.00626	PASS
				40	2.15	0.0026	PASS
		MCH	VN	-30	-0.98	-0.00117	PASS
				-20	-1.04	-0.00124	PASS
				-10	-0.87	-0.00104	PASS
				0	-0.99	-0.00118	PASS
				10	0.98	0.00117	PASS
				20	0.84	0.001	PASS
			30	-1.36	-0.00163	PASS	

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict		
				40	0.64	0.00077	PASS		
				50	-0.27	-0.00032	PASS		
				HCH	VN	-30	-0.5	-0.00059	PASS
						-20	-1.45	-0.00171	PASS
						-10	-0.61	-0.00072	PASS
						0	-0.63	-0.00074	PASS
		10	-0.17			-0.0002	PASS		
		20	-0.81			-0.00096	PASS		
		30	-2.5	-0.00295	PASS				
		40	-2.69	-0.00318	PASS				
		50	-3.4	-0.00402	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	12.27	0.00717	PASS
				VN	10.6	0.00619	PASS
				VH	12.12	0.00708	PASS
		MCH	TN	VL	-3.19	-0.00184	PASS
				VN	-4.21	-0.00243	PASS
				VH	-3.34	-0.00193	PASS
		HCH	TN	VL	-9.51	-0.00543	PASS
				VN	-9.43	-0.00538	PASS
				VH	-12.48	-0.00712	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	2.87	0.00155	PASS
				VN	7.63	0.00412	PASS
				VH	7.22	0.0039	PASS
		MCH	TN	VL	0.67	0.00036	PASS
				VN	1.04	0.00055	PASS
				VH	-4.44	-0.00236	PASS
		HCH	TN	VL	-5.4	-0.00283	PASS
				VN	1.42	0.00074	PASS
				VH	-0.14	-0.00007	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	10.28	0.006	PASS
				-20	10.57	0.00617	PASS
				-10	12.95	0.00756	PASS
				0	9.8	0.00572	PASS
				10	12.19	0.00712	PASS
				20	13.14	0.00767	PASS
				30	10.96	0.0064	PASS
				40	11.15	0.00651	PASS
				50	11.44	0.00668	PASS
		MCH	VN	-30	-5.19	-0.003	PASS
				-20	-0.53	-0.00031	PASS
				-10	-6.5	-0.00375	PASS
				0	-3.52	-0.00203	PASS
				10	-3.42	-0.00197	PASS
				20	-1.88	-0.00109	PASS
				30	-0.79	-0.00046	PASS
				40	-2.79	-0.00161	PASS
				50	-3.52	-0.00203	PASS
		HCH	VN	-30	-8.44	-0.00482	PASS
				-20	-8.13	-0.00464	PASS
				-10	-10.73	-0.00612	PASS
				0	-10.59	-0.00604	PASS
				10	-6.96	-0.00397	PASS
				20	-11.02	-0.00629	PASS
				30	-10.59	-0.00604	PASS
				40	-10.19	-0.00581	PASS
				50	-9.57	-0.00546	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	6.65	0.00359	PASS
				-20	5.26	0.00284	PASS
				-10	5.31	0.00287	PASS
				0	7.57	0.00409	PASS
				10	8.85	0.00478	PASS
				20	6.97	0.00376	PASS
				30	9.77	0.00527	PASS
				40	8.68	0.00469	PASS
				50	9.86	0.00532	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		MCH	VN	-30	-0.08	-0.00004	PASS
				-20	5.43	0.00289	PASS
				-10	3.49	0.00186	PASS
				0	3.83	0.00204	PASS
				10	0.43	0.00023	PASS
				20	0.75	0.0004	PASS
				30	3.6	0.00191	PASS
				40	5.02	0.00267	PASS
				50	1.31	0.0007	PASS
		HCH	VN	-30	-3.75	-0.00197	PASS
				-20	-0.79	-0.00041	PASS
				-10	-2.4	-0.00126	PASS
				0	1.89	0.00099	PASS
				10	0.26	0.00014	PASS
				20	3.42	0.00179	PASS
				30	-2.99	-0.00157	PASS
				40	-3.85	-0.00202	PASS
				50	-0.63	-0.00033	PASS

END