



Appendix for WCDMA



1Appendix_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	23.6	25.10	33	PASS
		MCH	23.66	25.16	33	PASS
		HCH	23.69	25.19	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.58	23.88	30	PASS
		MCH	23.58	23.88	30	PASS
		HCH	23.69	23.99	30	PASS
Test Band	Test Mode	Test Channel	Conducted power(dBm)	ERP(dBm)	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.14	20.39	38.5	PASS
		MCH	23.94	20.19	38.5	PASS
		HCH	23.95	20.20	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: SET Span=1.5*OBW

SET RBW=1%of the OBW,not to exceed 1MHz

SET VBW>= 3*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	2.66	13	PASS
		MCH	2.62	13	PASS
		HCH	2.52	13	PASS
Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA1700	UMTS/TM1	LCH	2.67	13	PASS
		MCH	2.75	13	PASS
		HCH	2.6	13	PASS
WCDMA850	UMTS/TM1	LCH	2.2	13	PASS
		MCH	2.14	13	PASS
		HCH	2.18	13	PASS

3Appendix_C: Modulation Characteristics

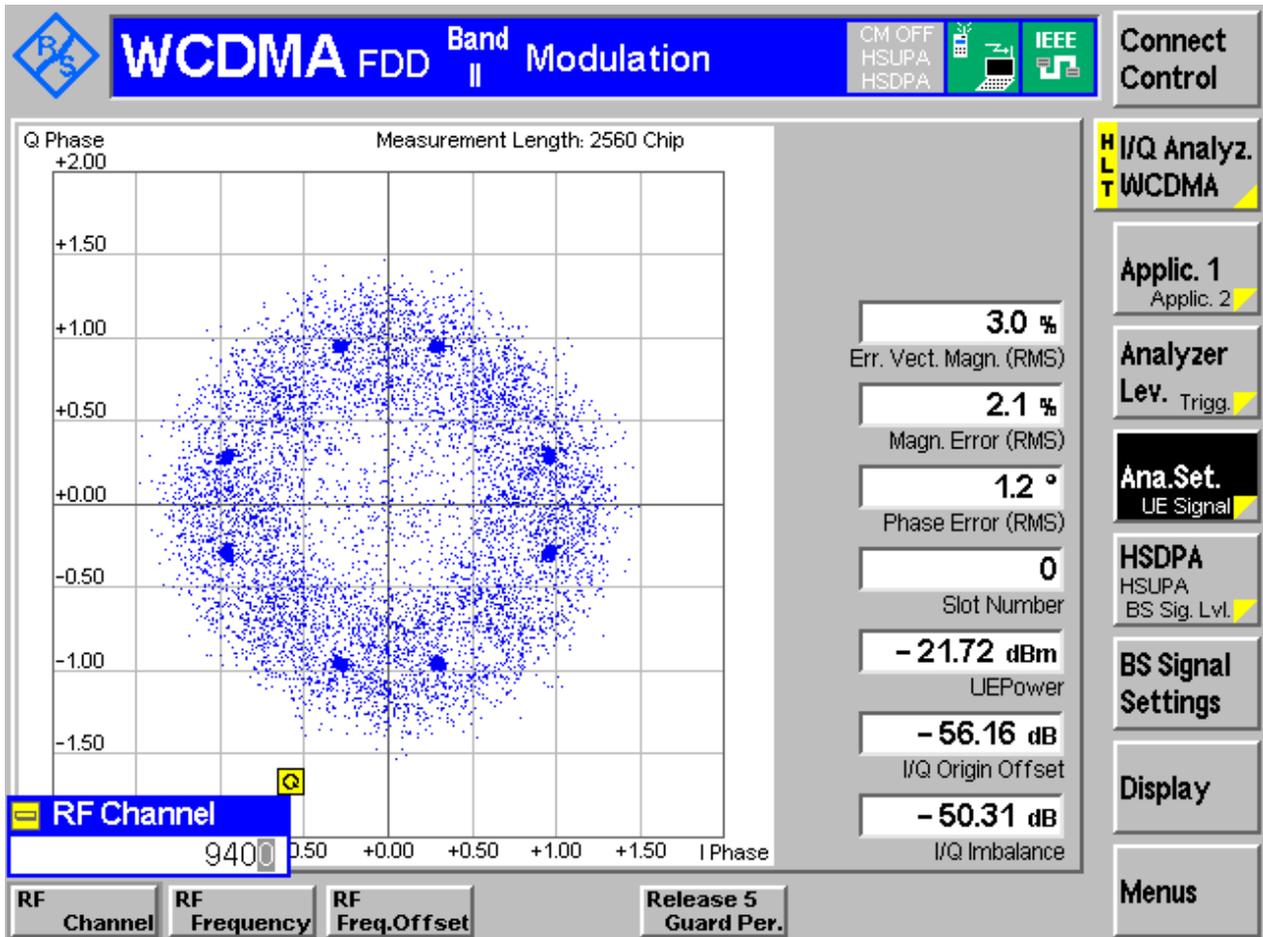
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

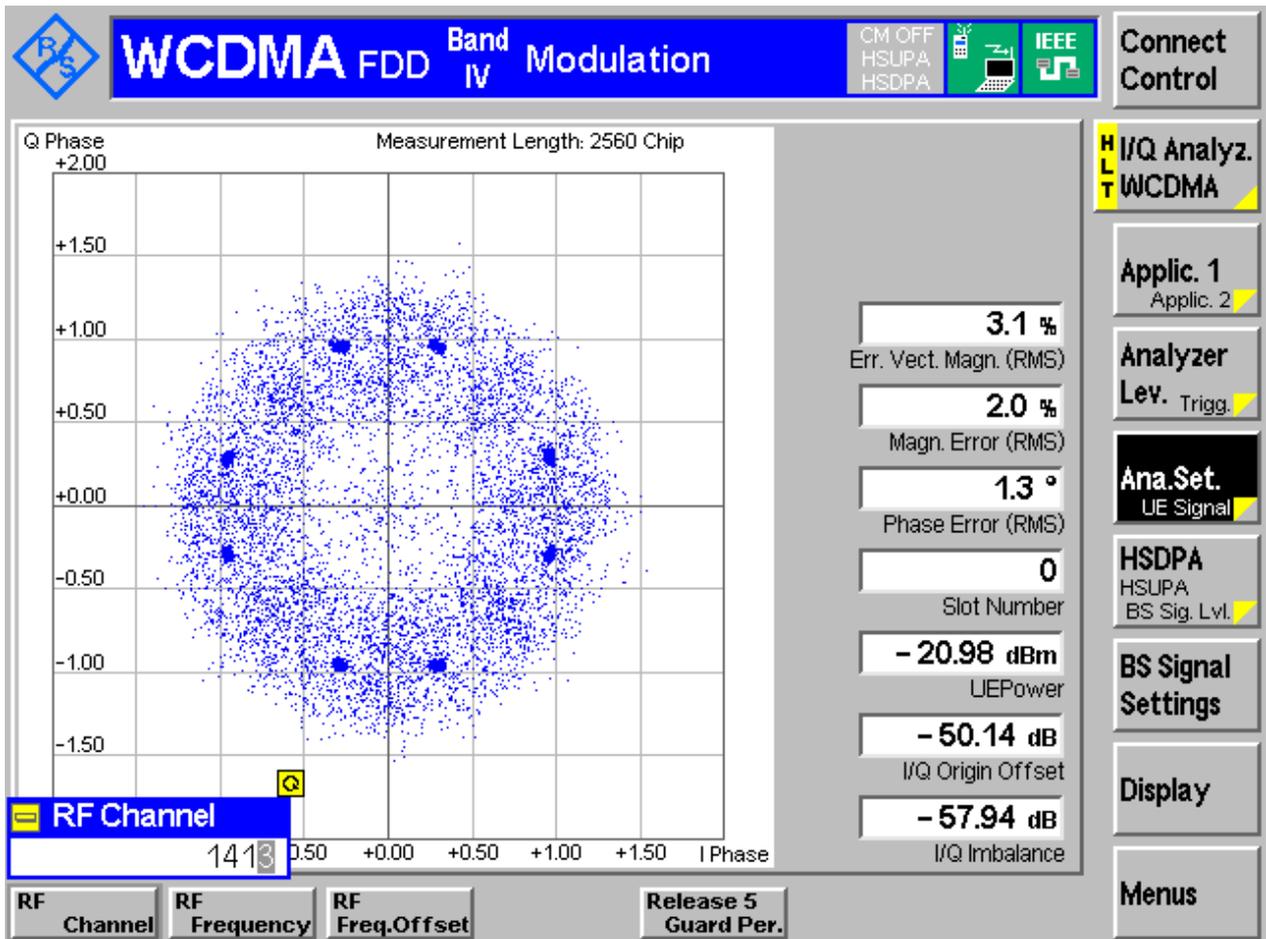
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

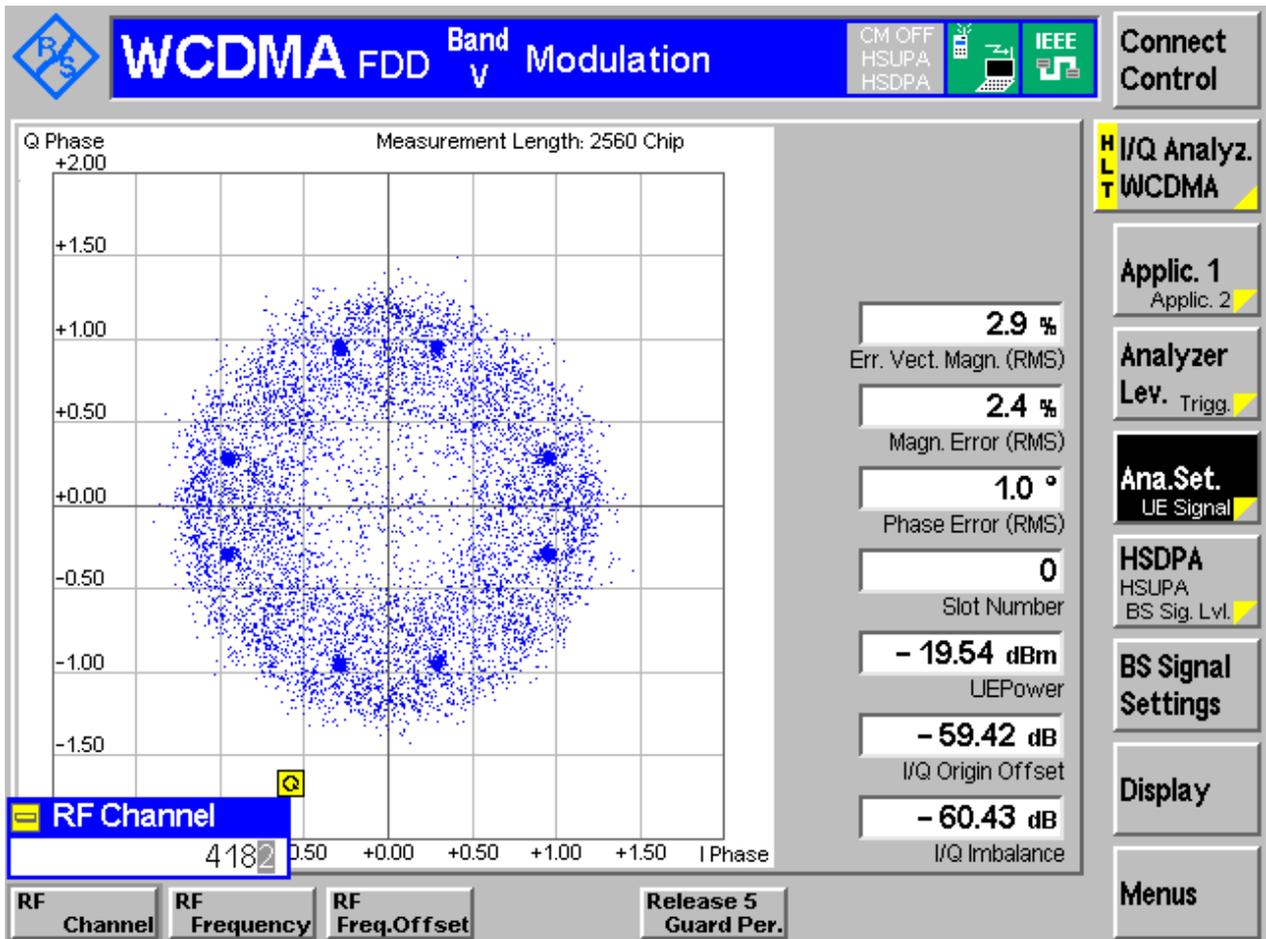
3.1.2.1.1 Test Channel = MCH



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	4.15	4.70	Pass
		MCH	4.16	4.73	Pass
		HCH	4.17	4.76	Pass
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA1700	UMTS/TM1	LCH	4.14	4.71	Pass
		MCH	4.15	4.72	Pass
		HCH	4.15	4.72	Pass
WCDMA850	UMTS/TM1	LCH	4.21	4.78	Pass
		MCH	4.21	4.78	Pass
		HCH	4.18	4.76	Pass



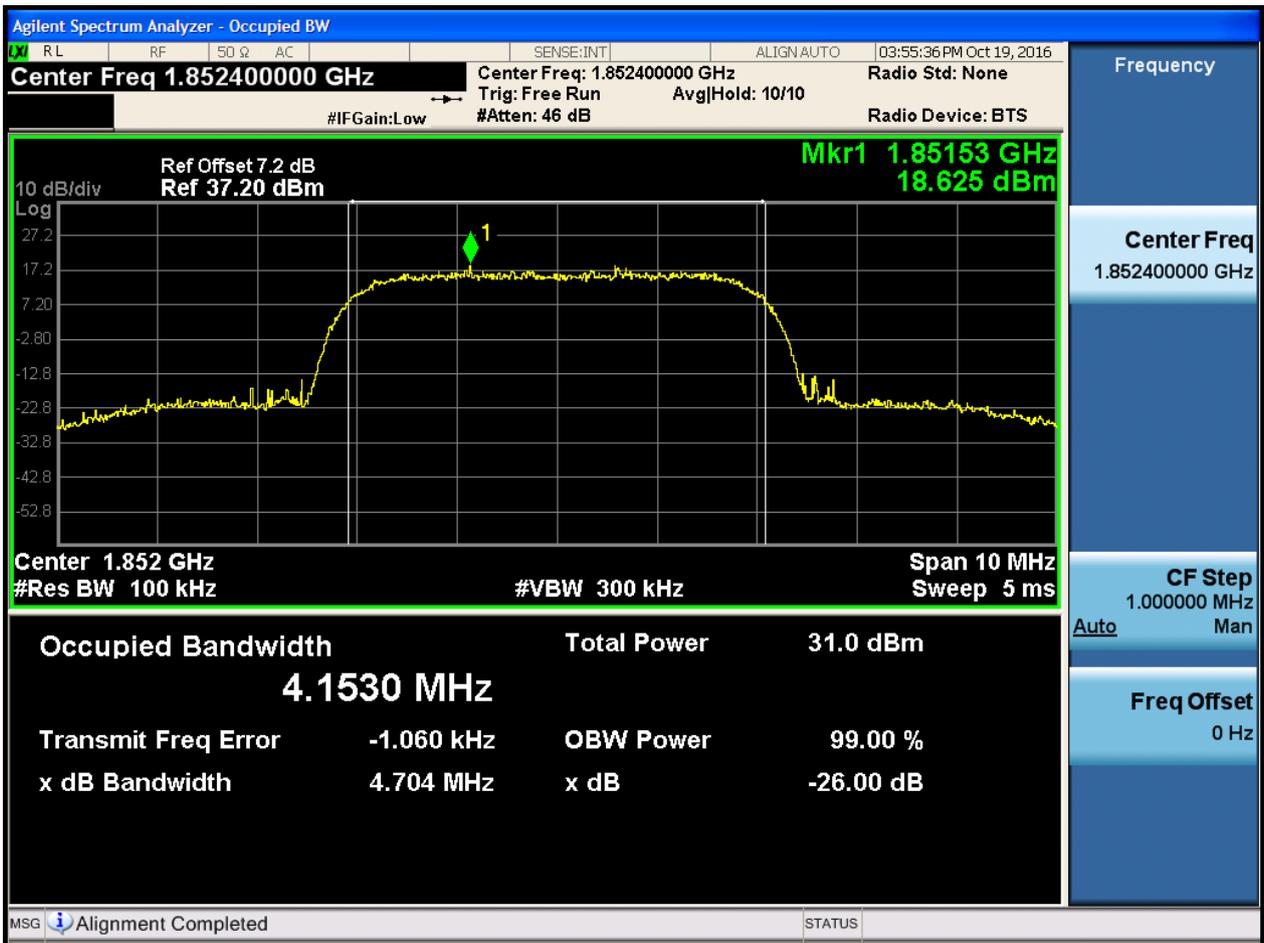
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

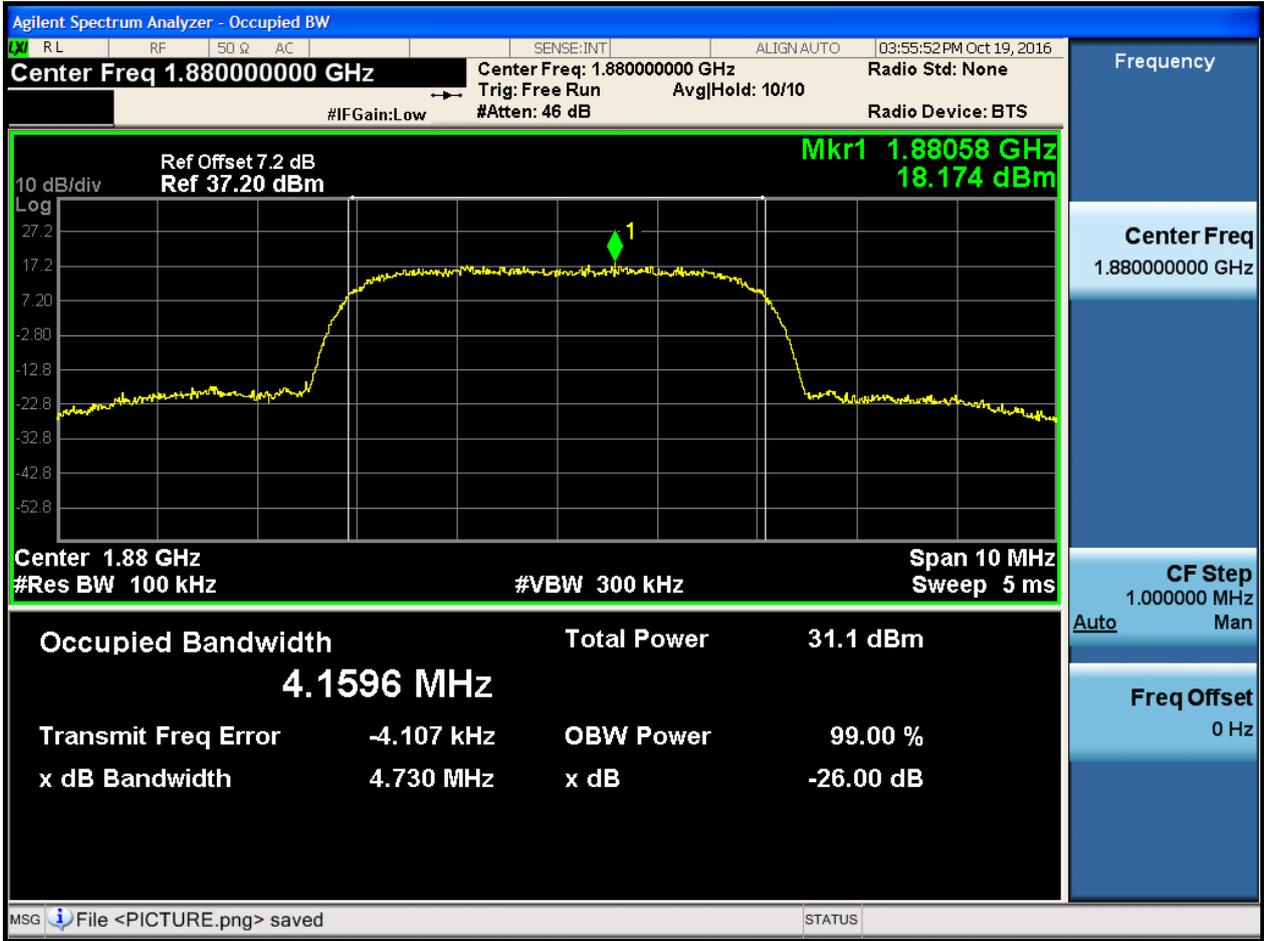
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



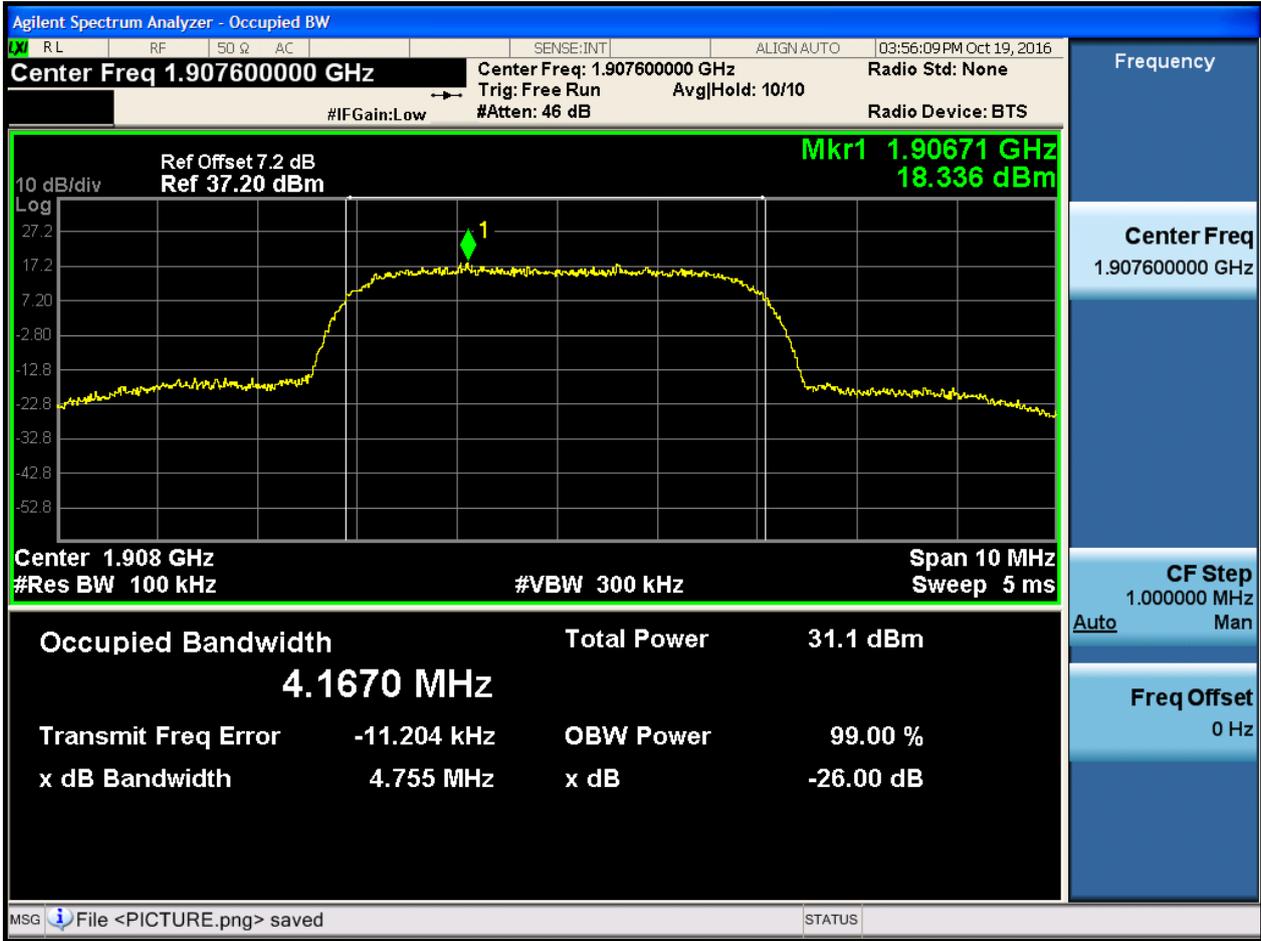


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH



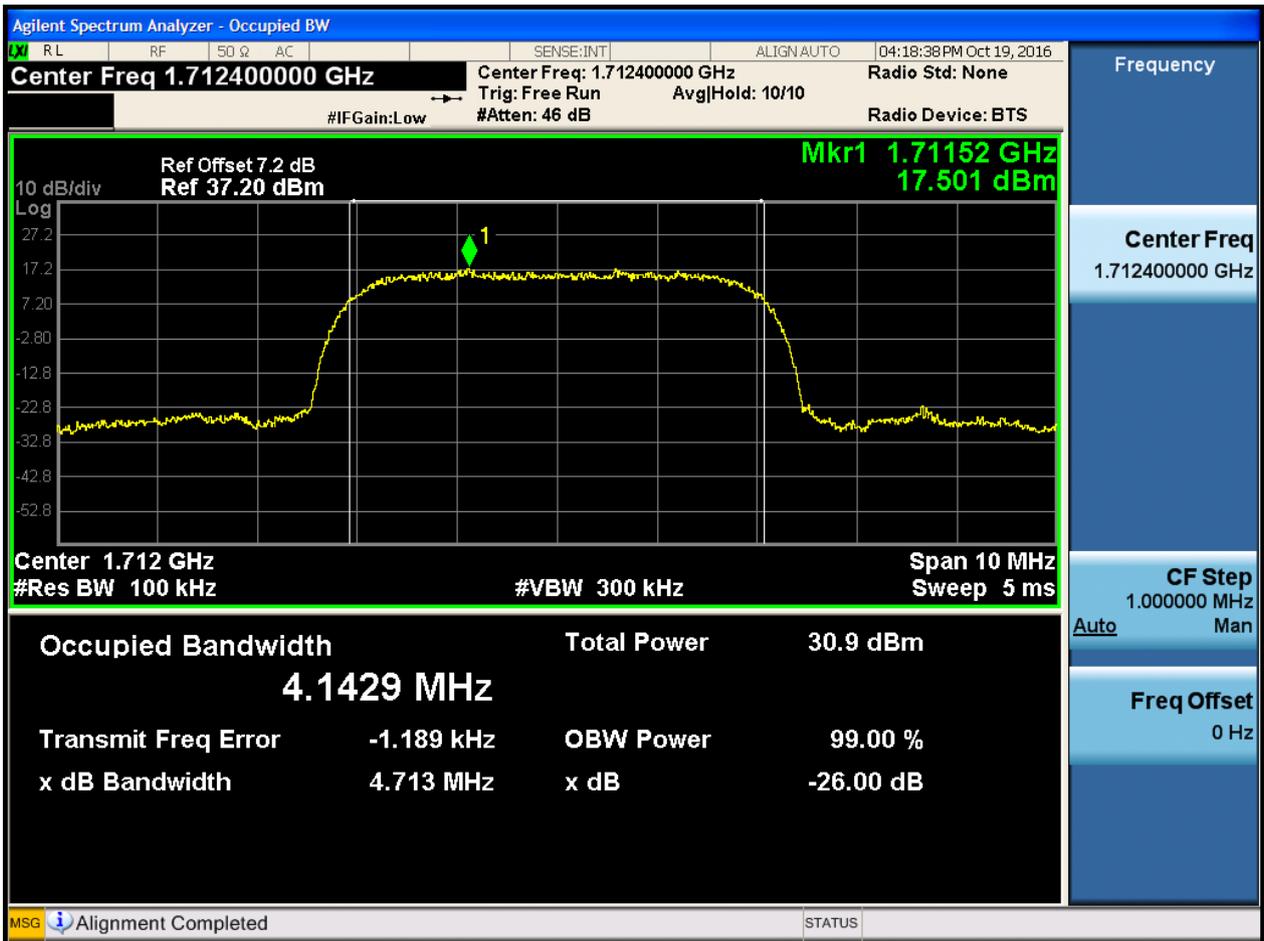


4.2 For UMTS

4.2.1 Test Band = WCDMA1700

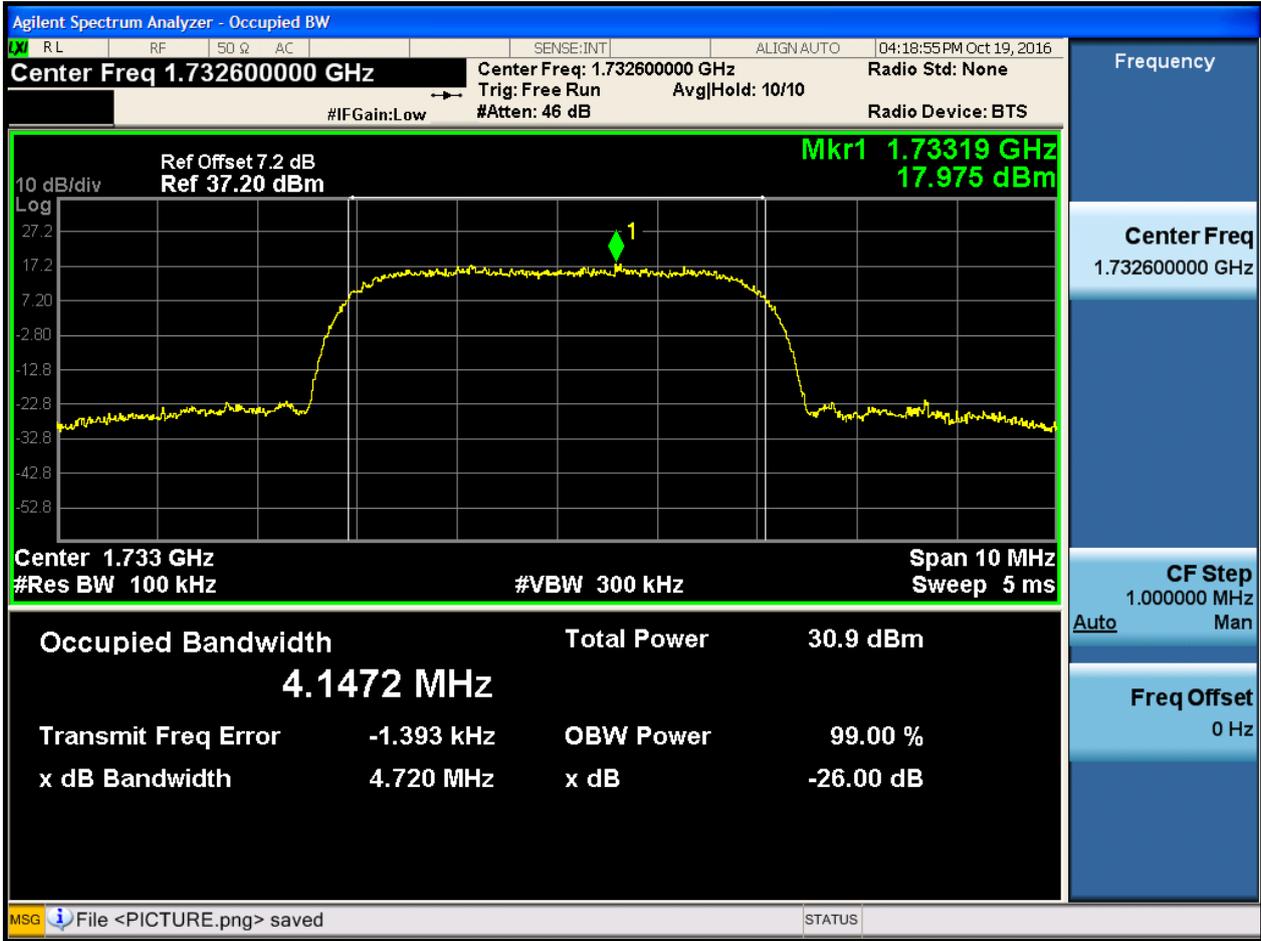
4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



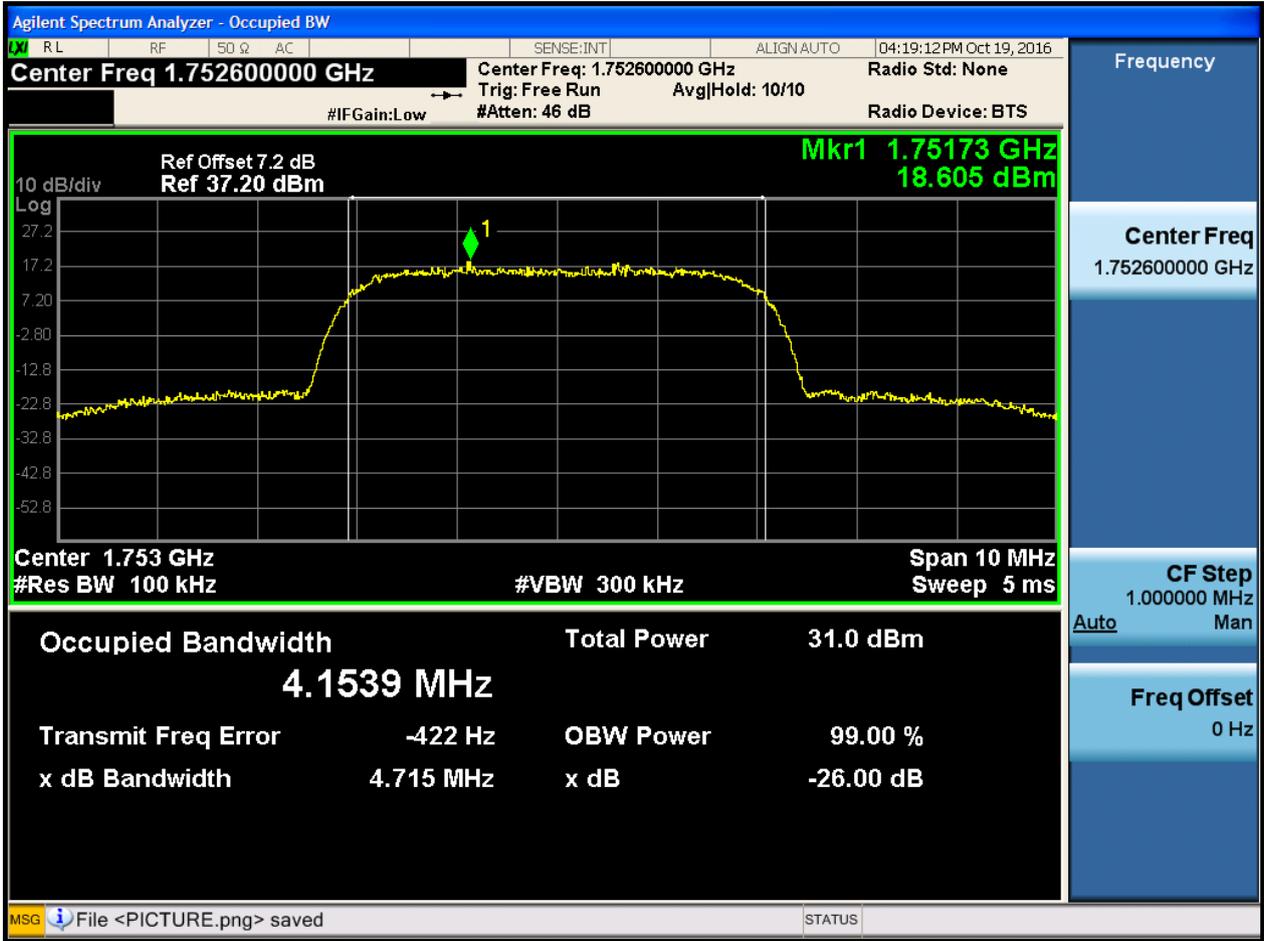


4.2.1.1.2 Test Channel = MCH





4.2.1.1.3 Test Channel = HCH

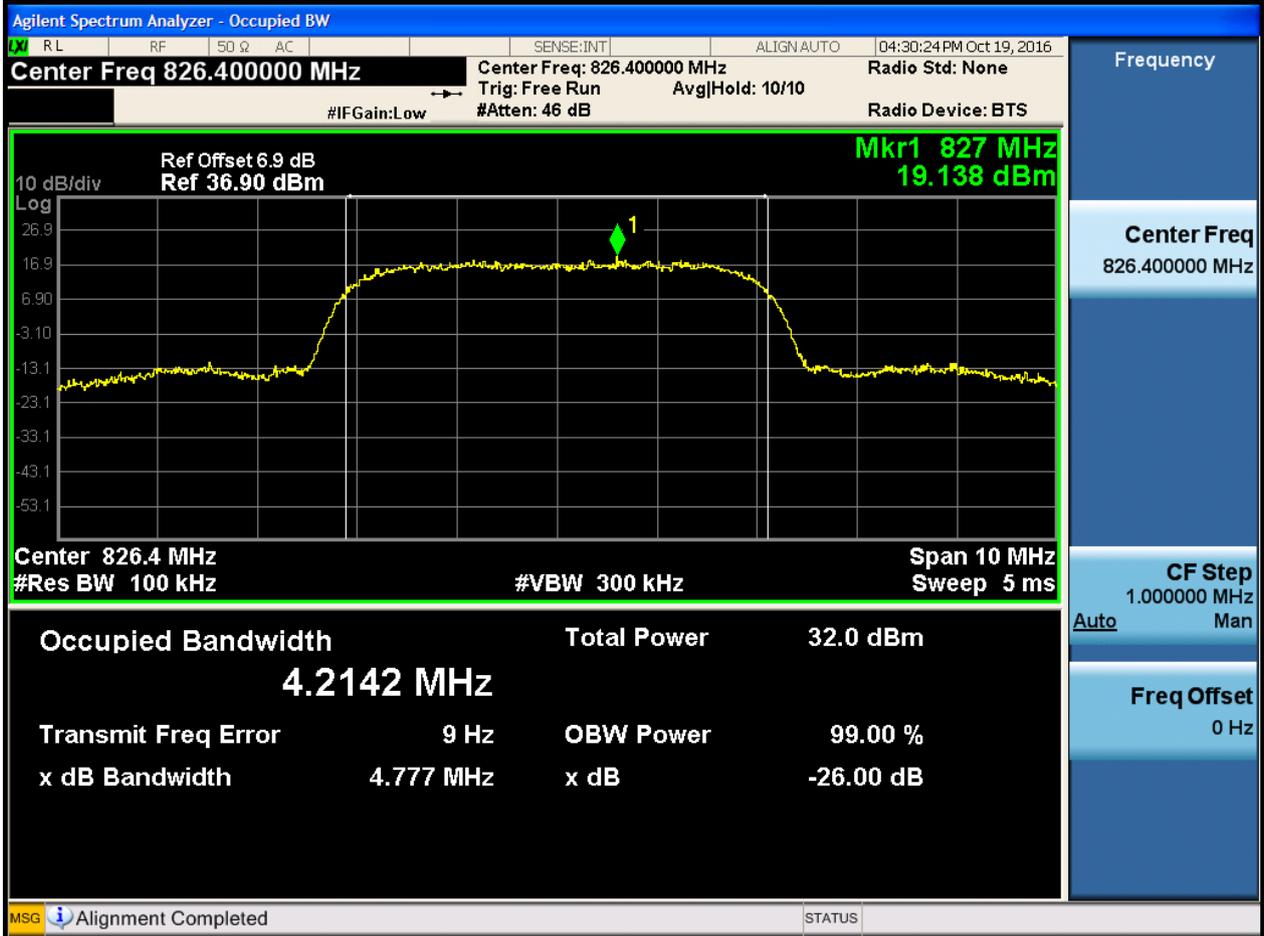




4.2.2 Test Band = WCDMA850

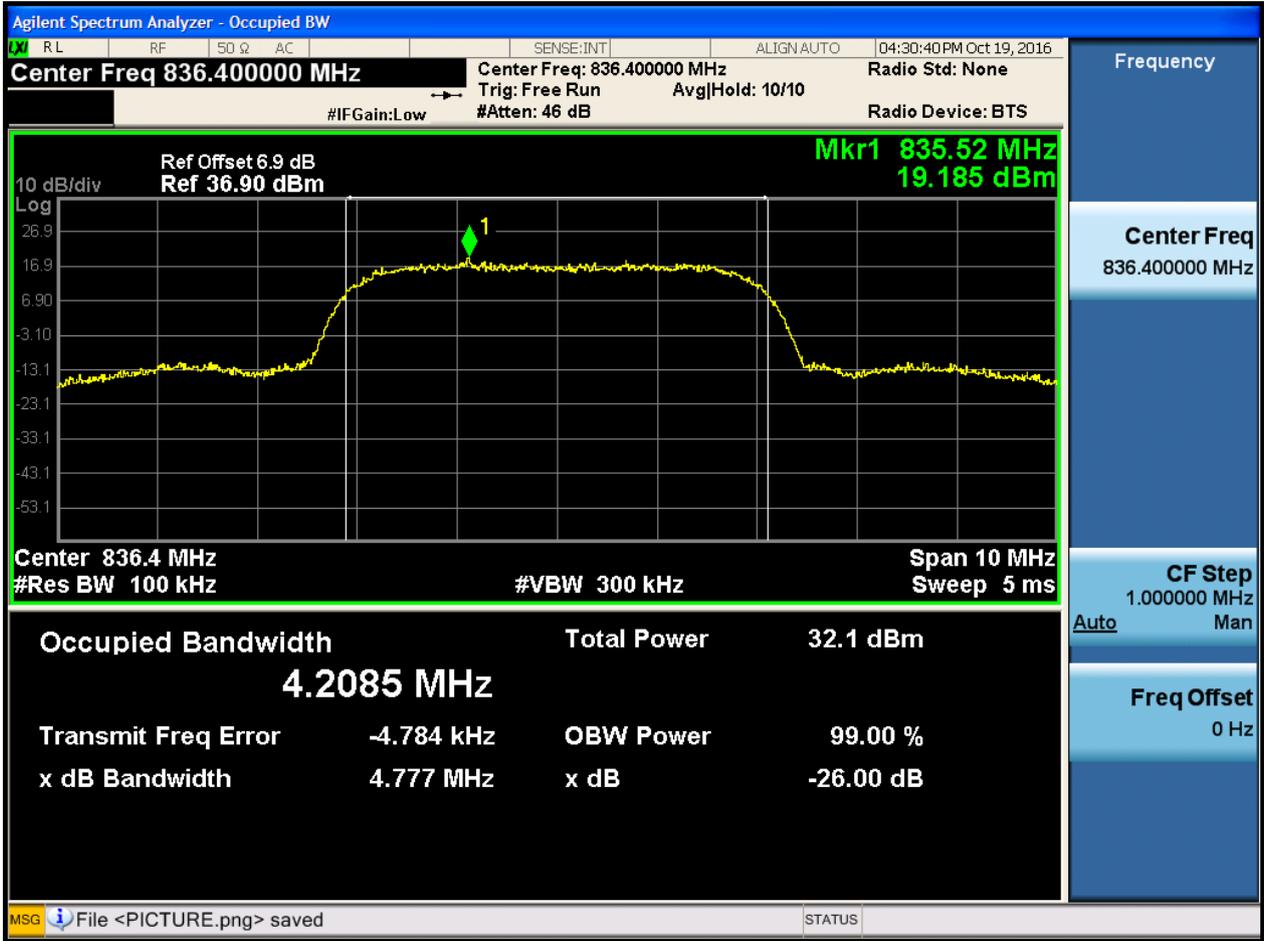
4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH



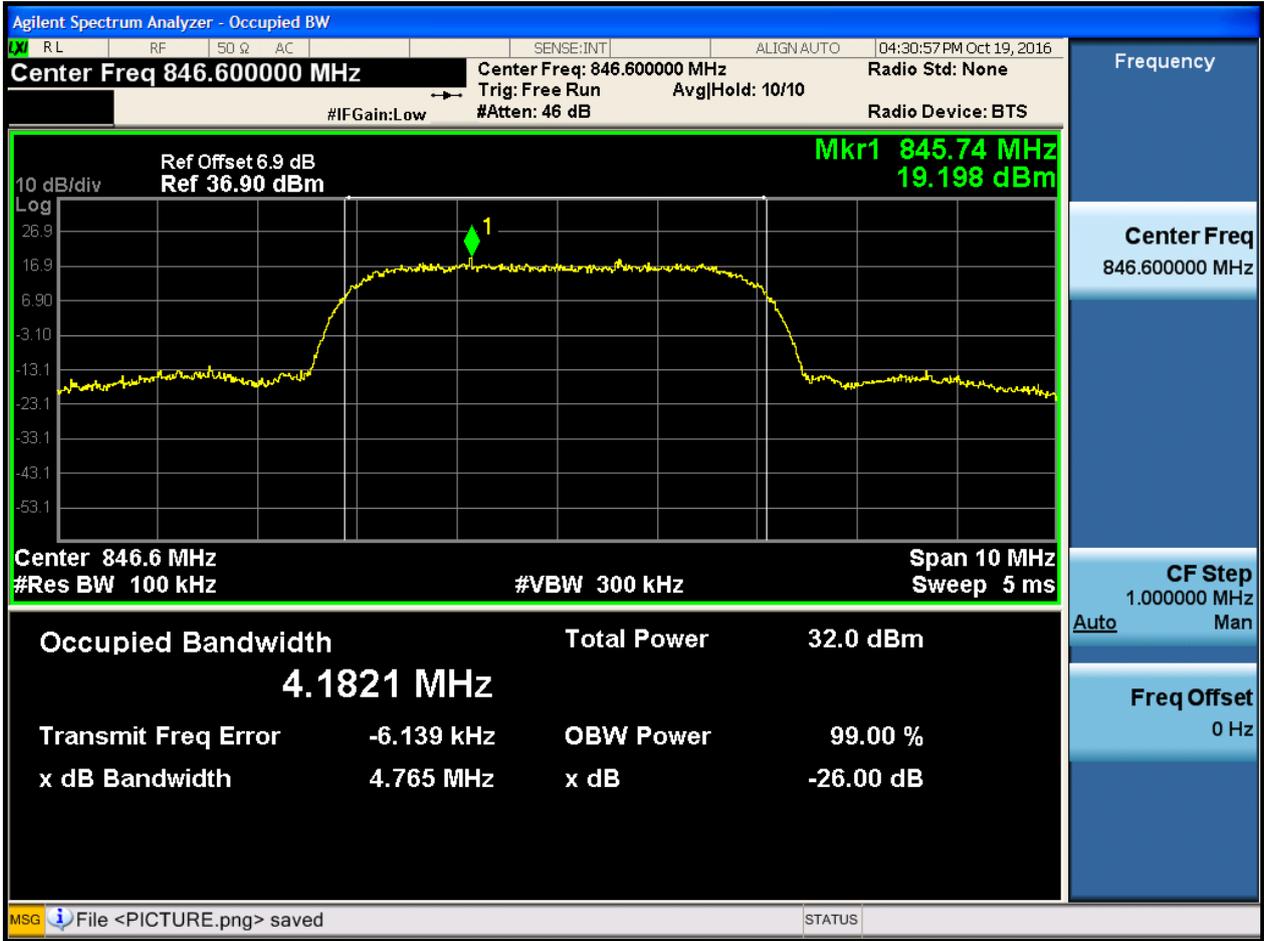


4.2.2.1.2 Test Channel = MCH





4.2.2.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

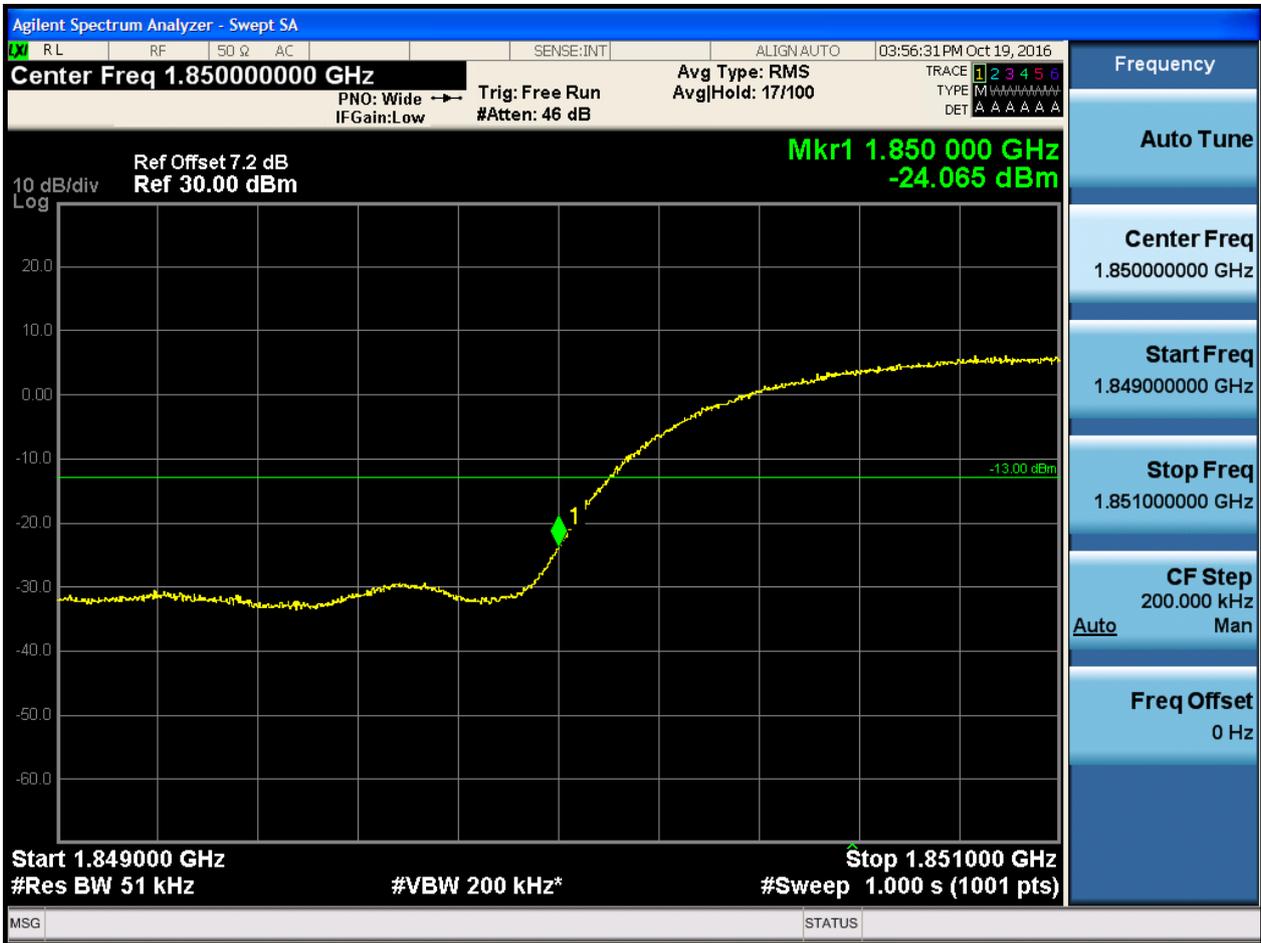
Part I - Test Plots

5.1 For UMTS

5.1.1 Test Band = 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





5.2 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 = WCDMA850

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.

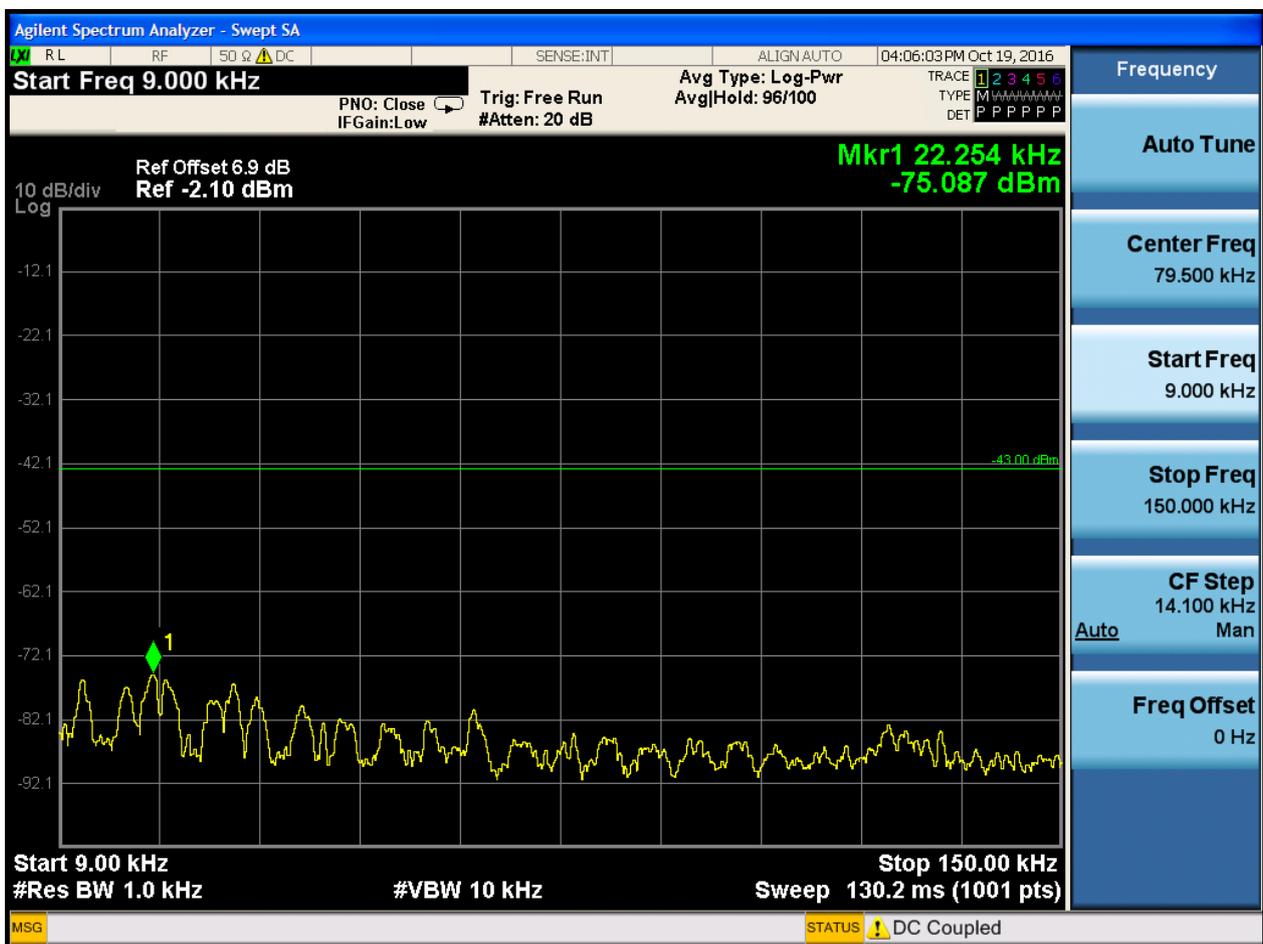
Part I - Test Plots

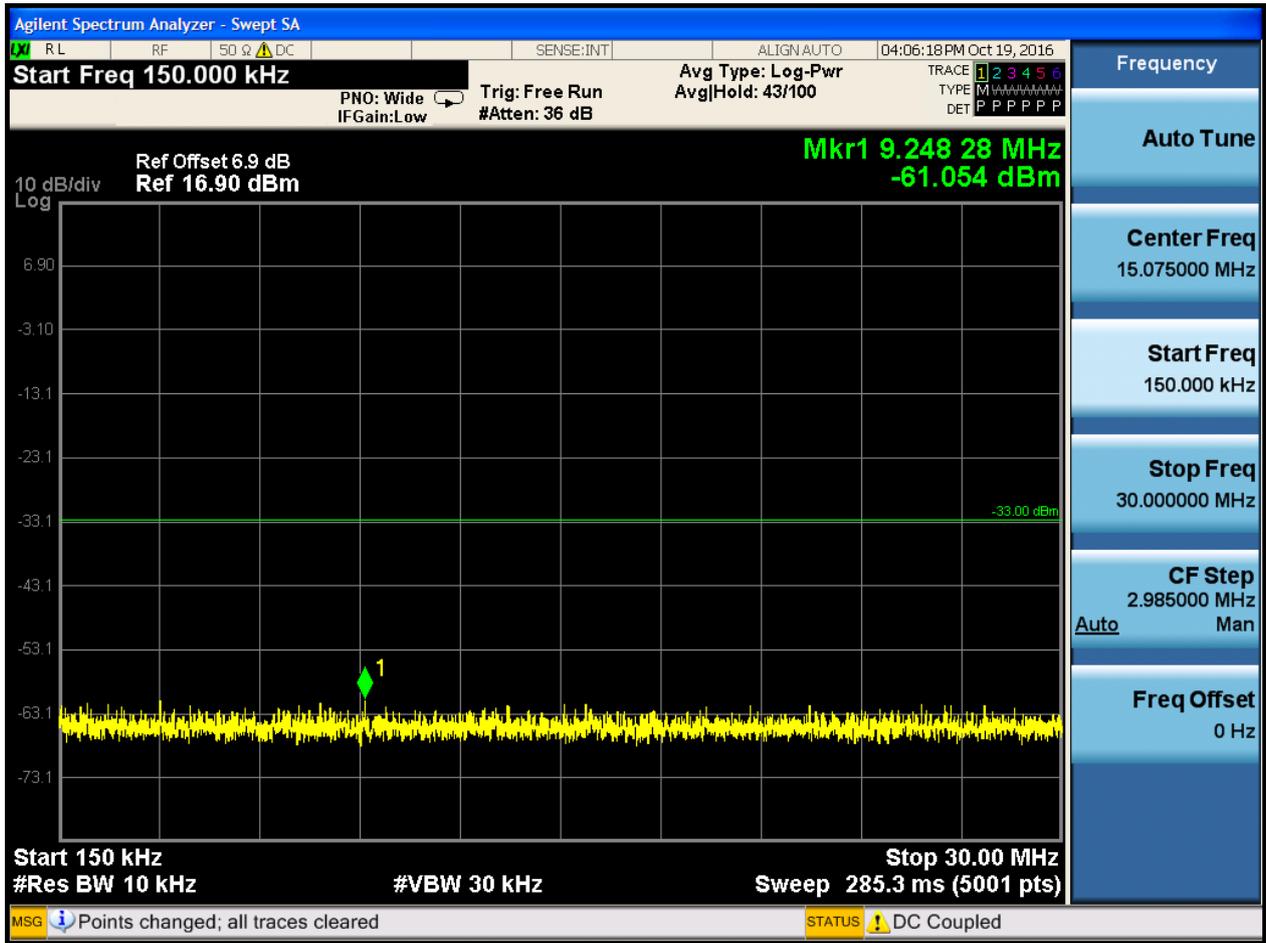
6.1 For UMTS

6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

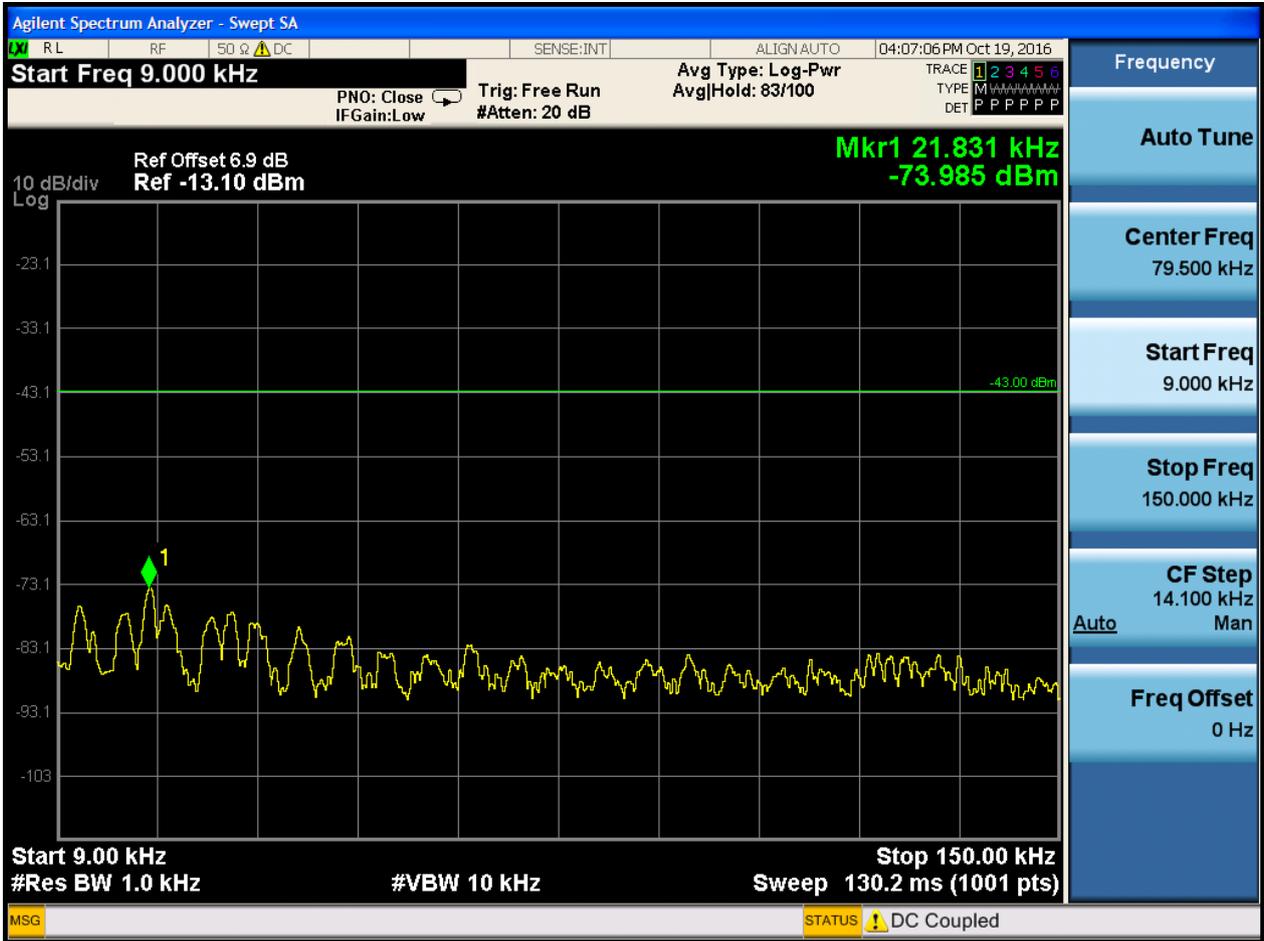
6.1.1.1.1 Test Channel = LCH

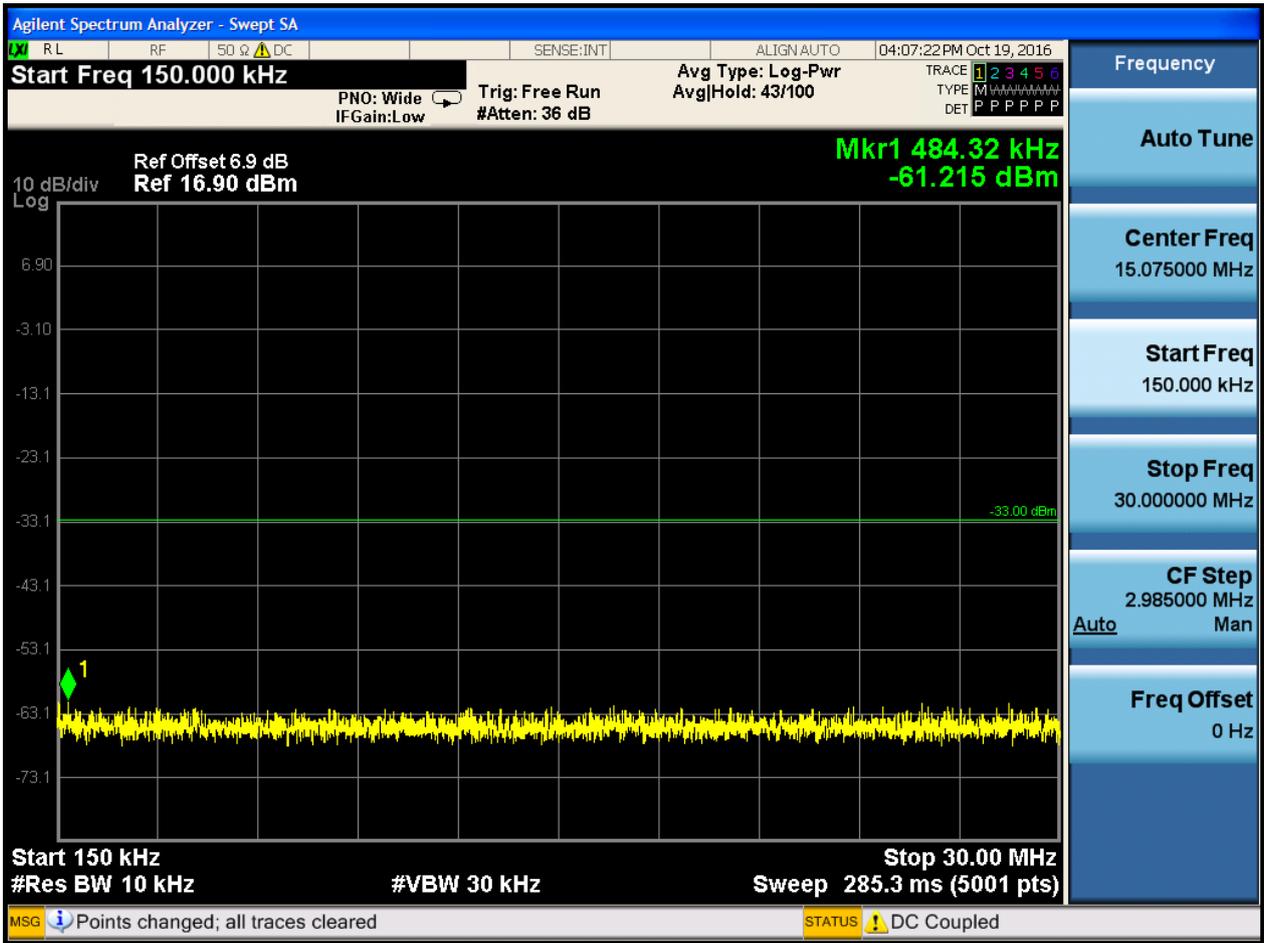






6.1.1.1.2 Test Channel = MCH

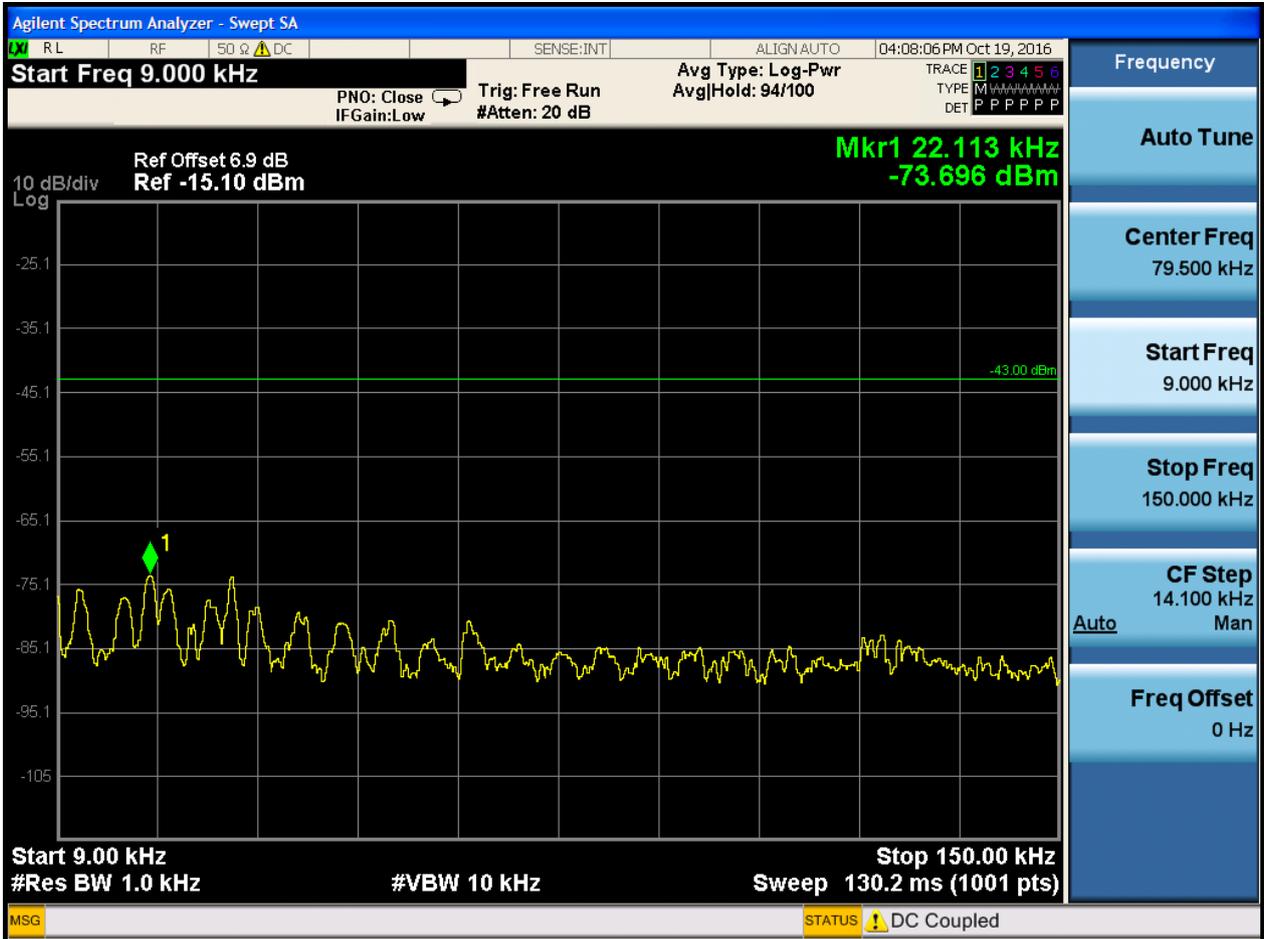


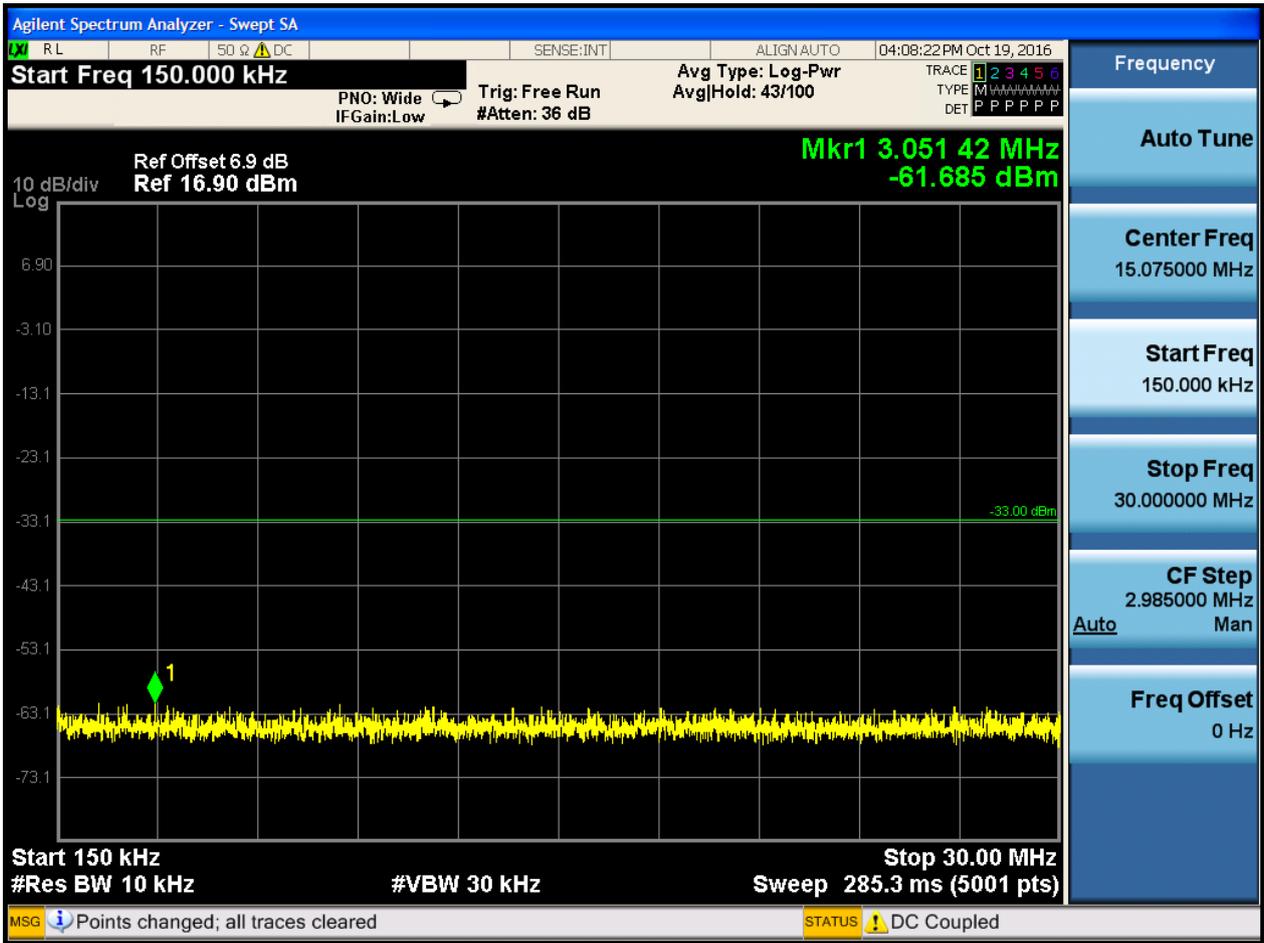


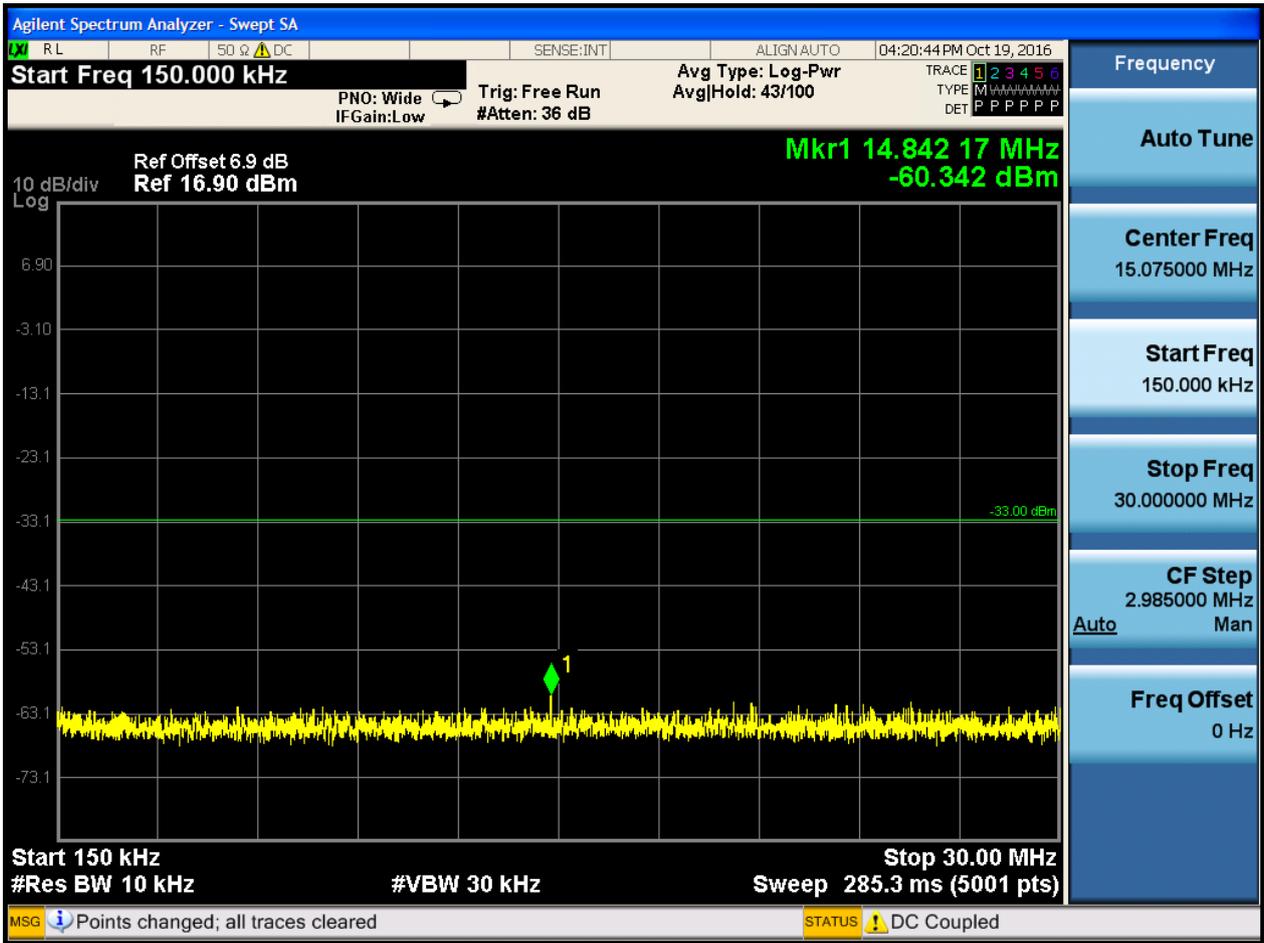




6.1.1.1.3 Test Channel = HCH



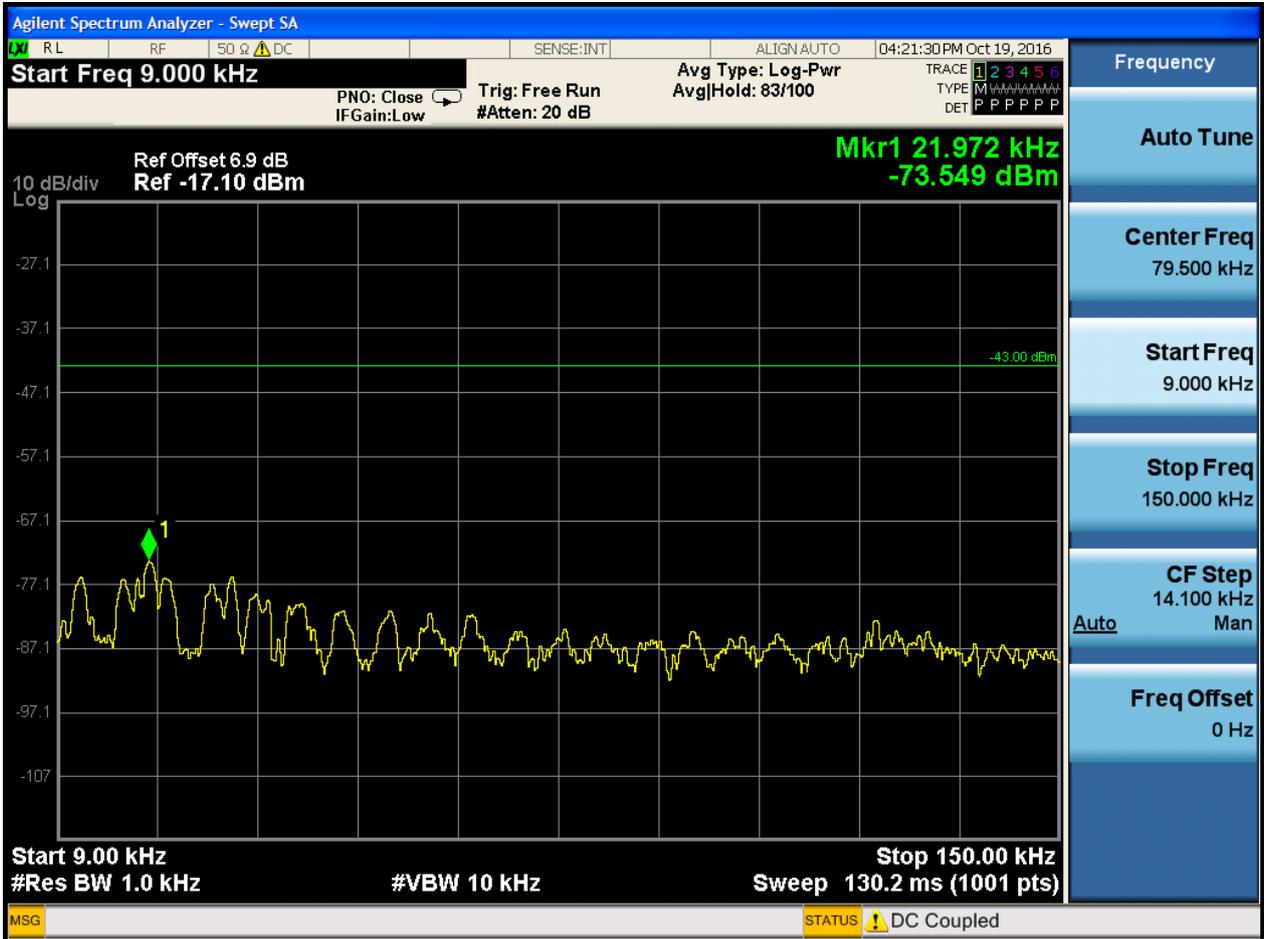






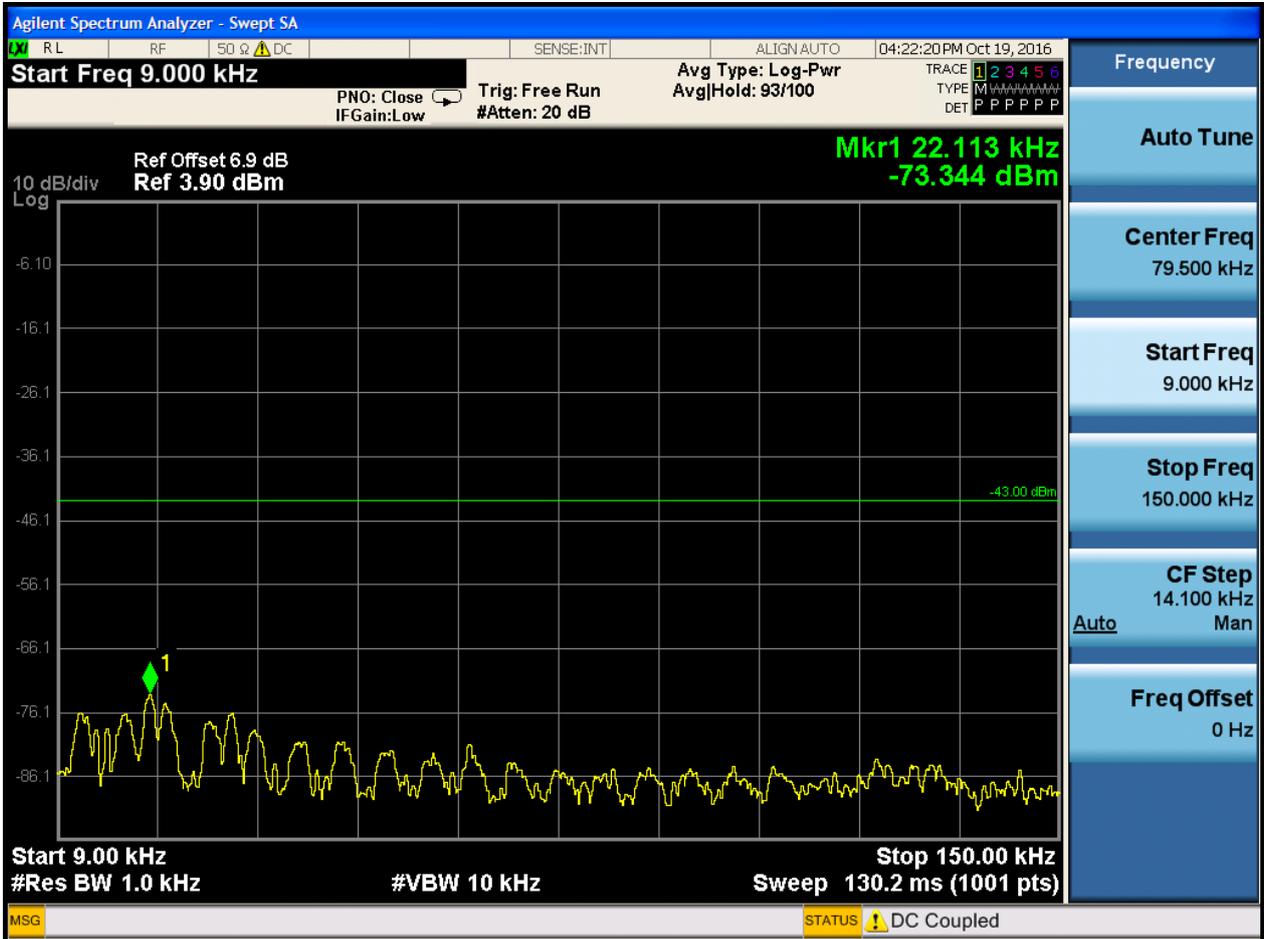


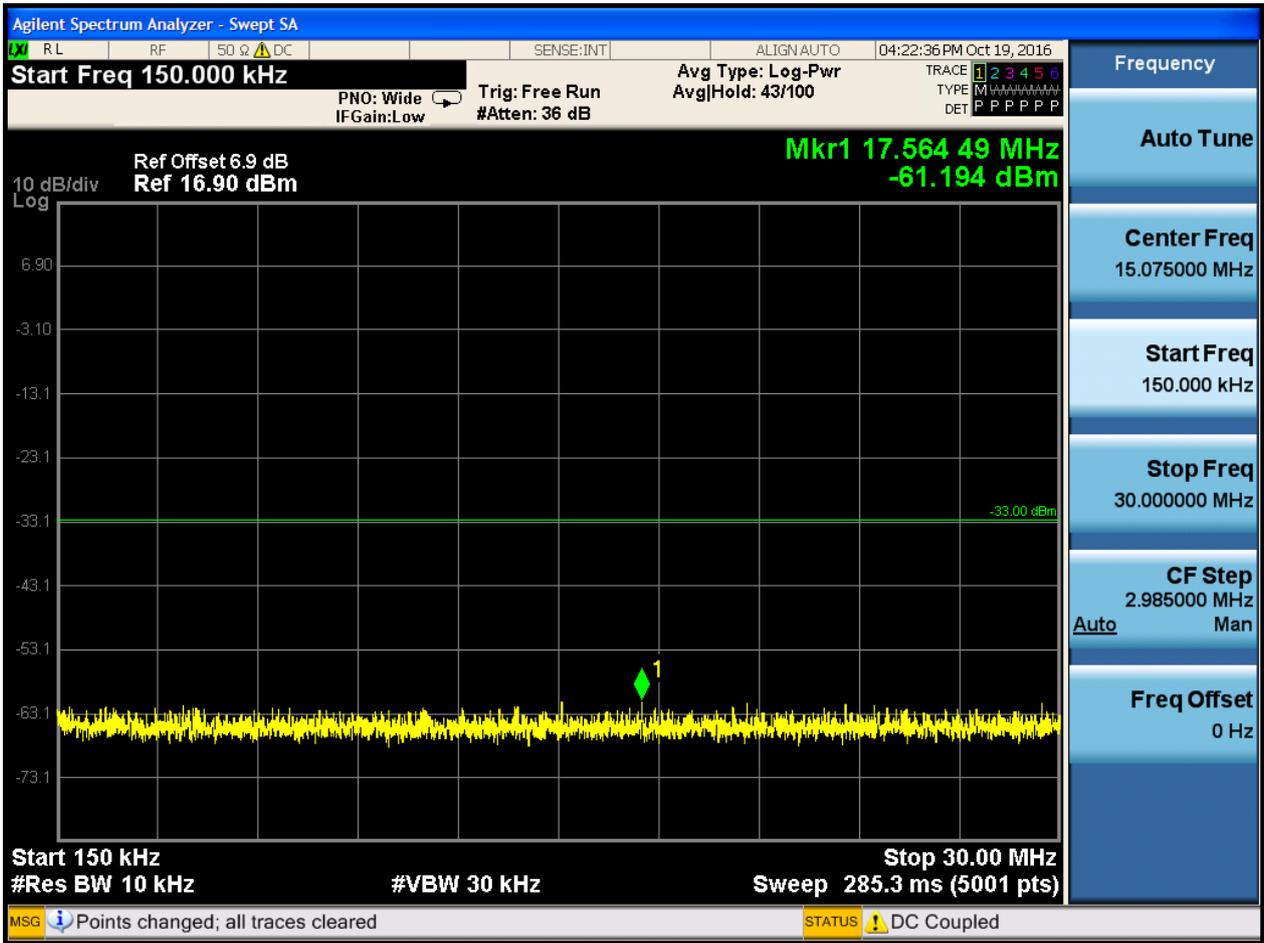
6.1.2.1.2 Test Channel = MCH





6.1.2.1.3 Test Channel = HCH



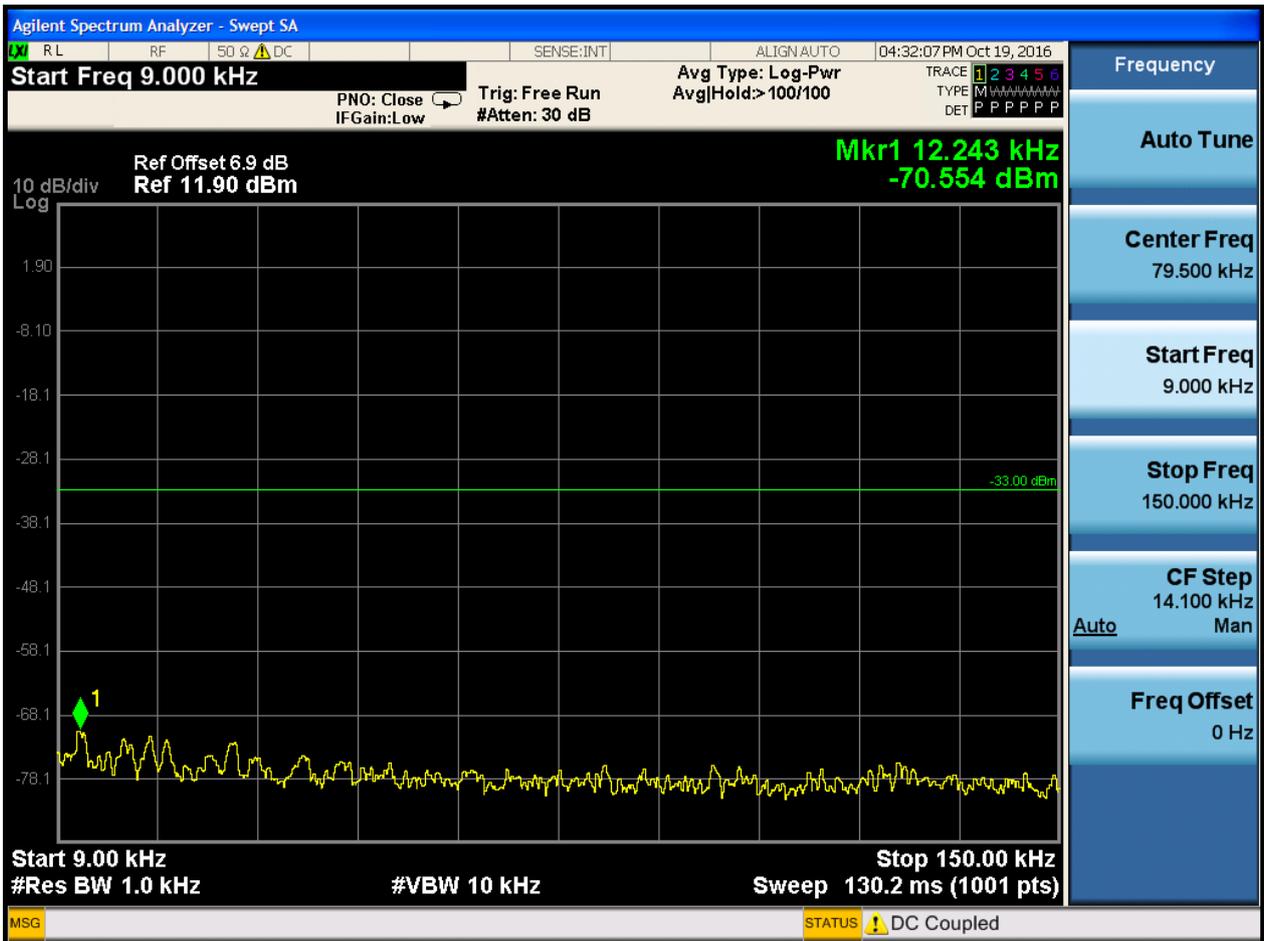


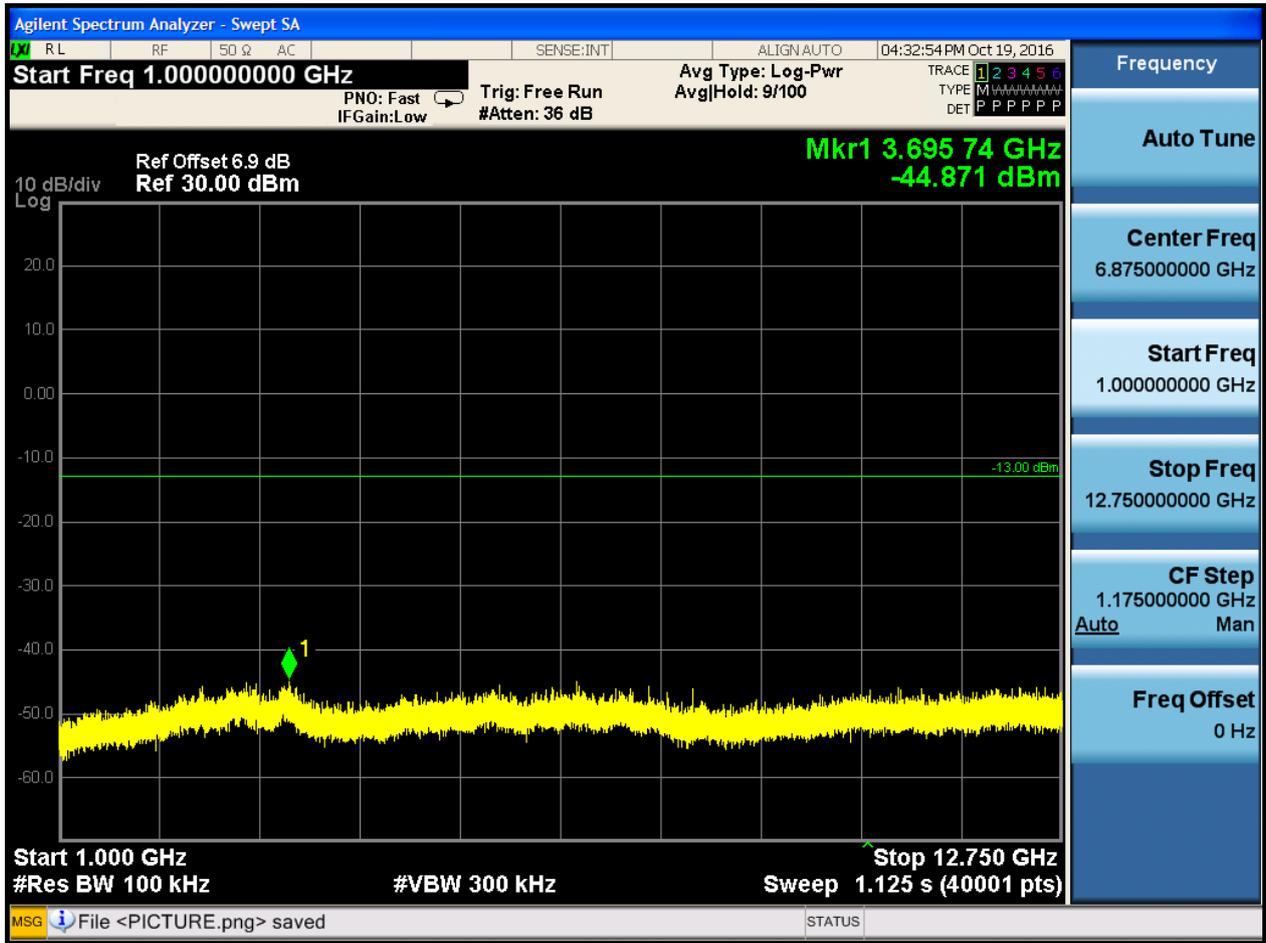


6.1.3 Test Band = WCDMA850

6.1.3.1 Test Mode = UMTS/TM1

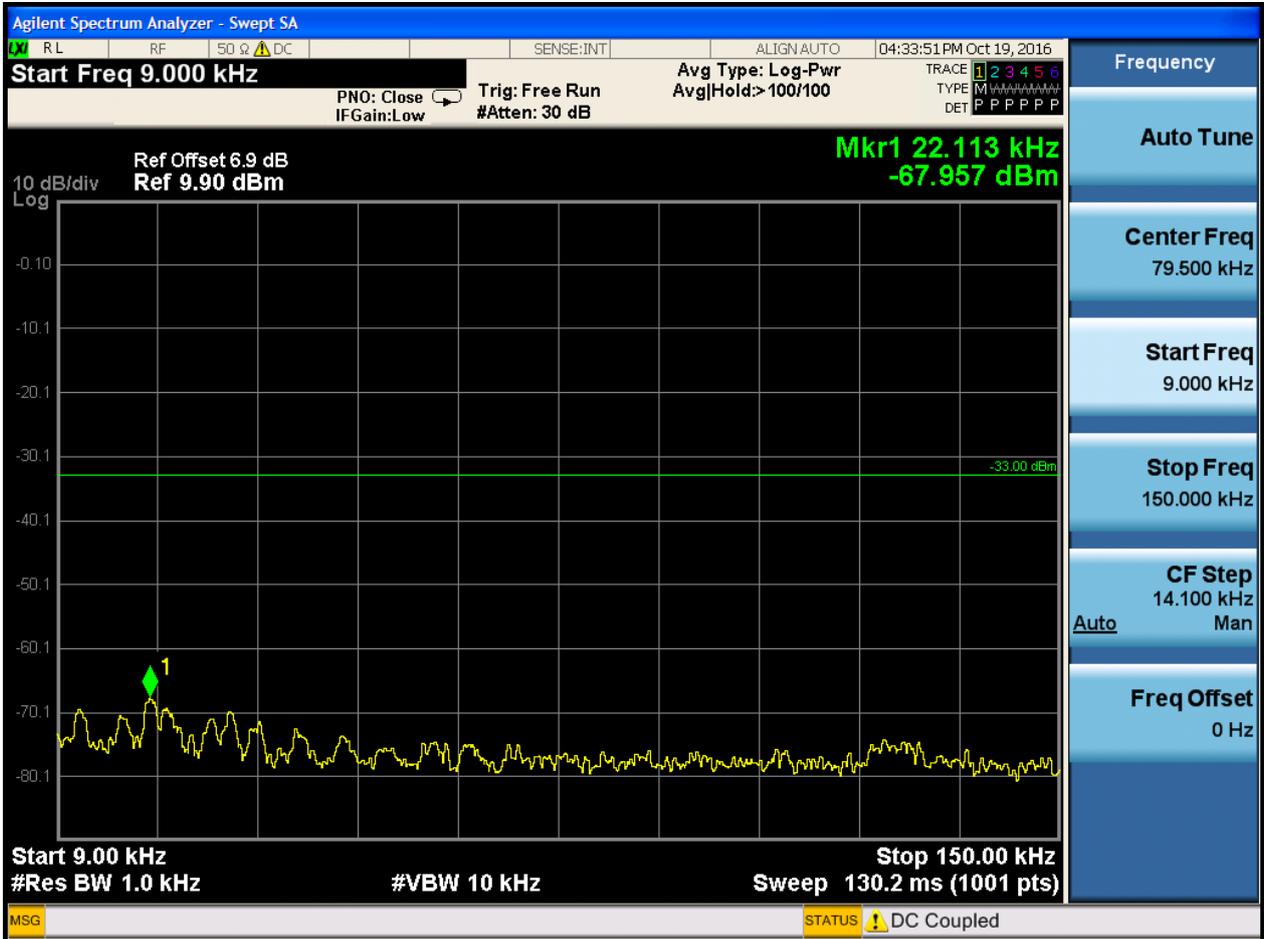
6.1.3.1.1 Test Channel = LCH

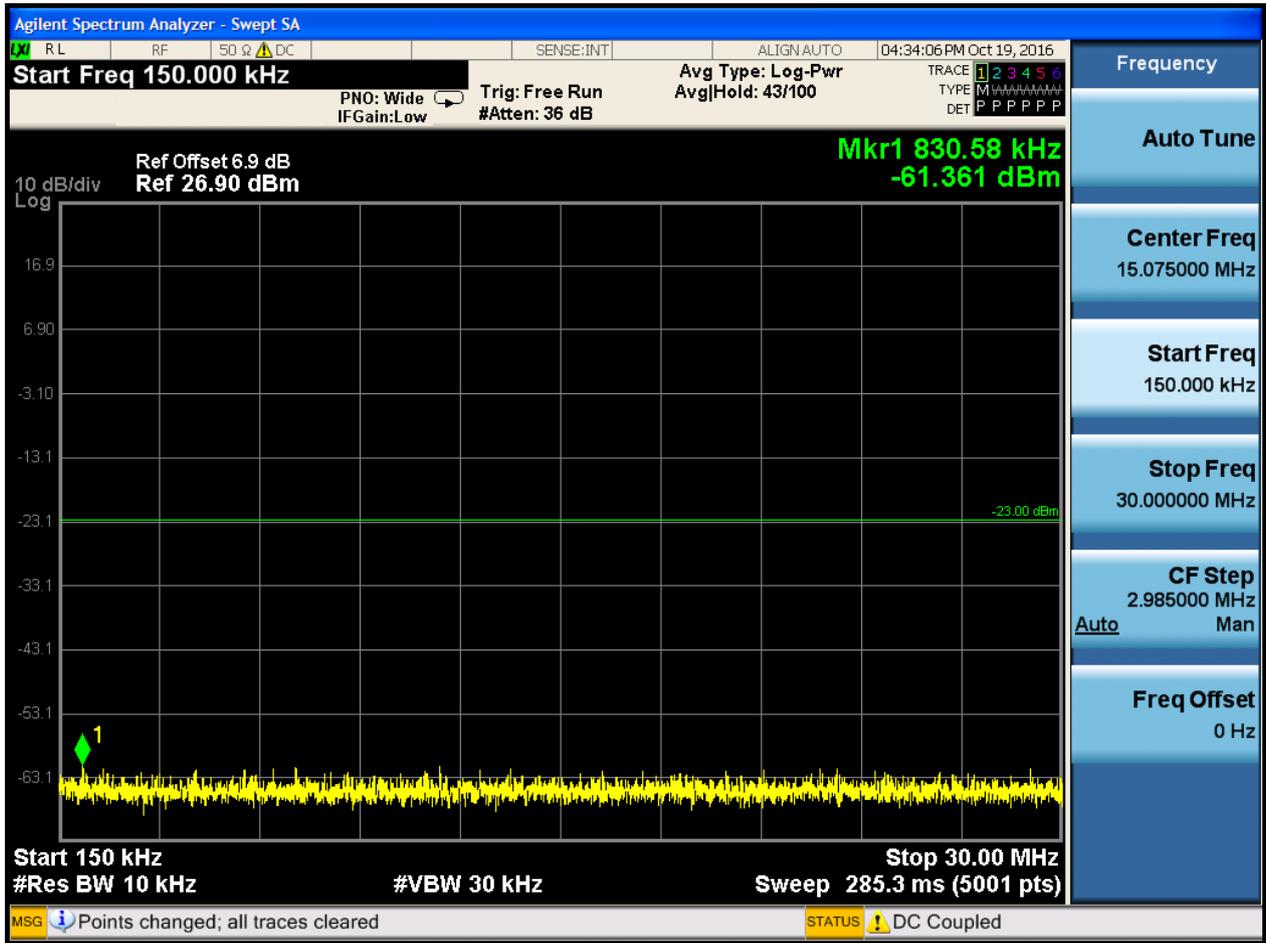


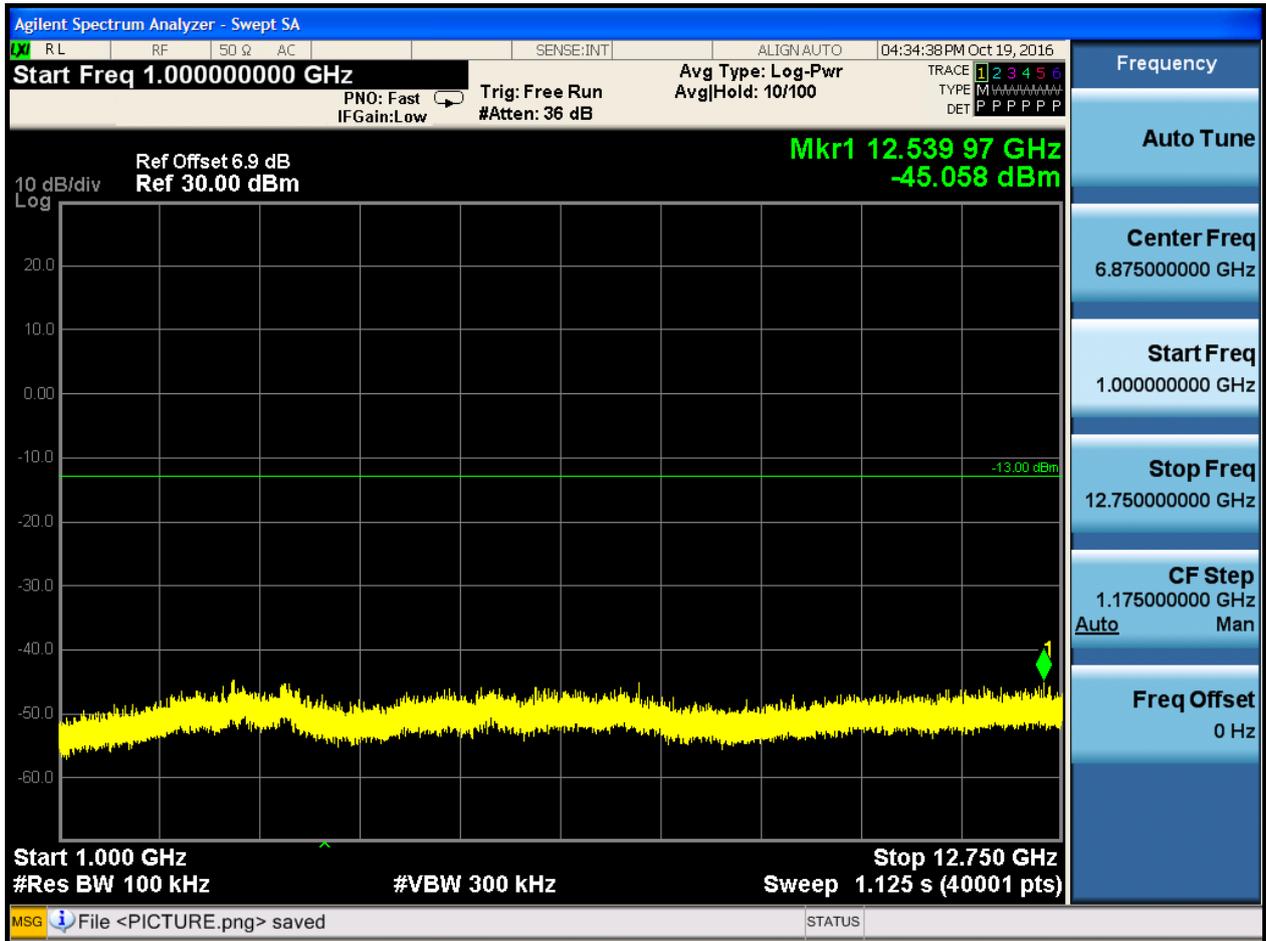




6.1.3.1.2 Test Channel = MCH

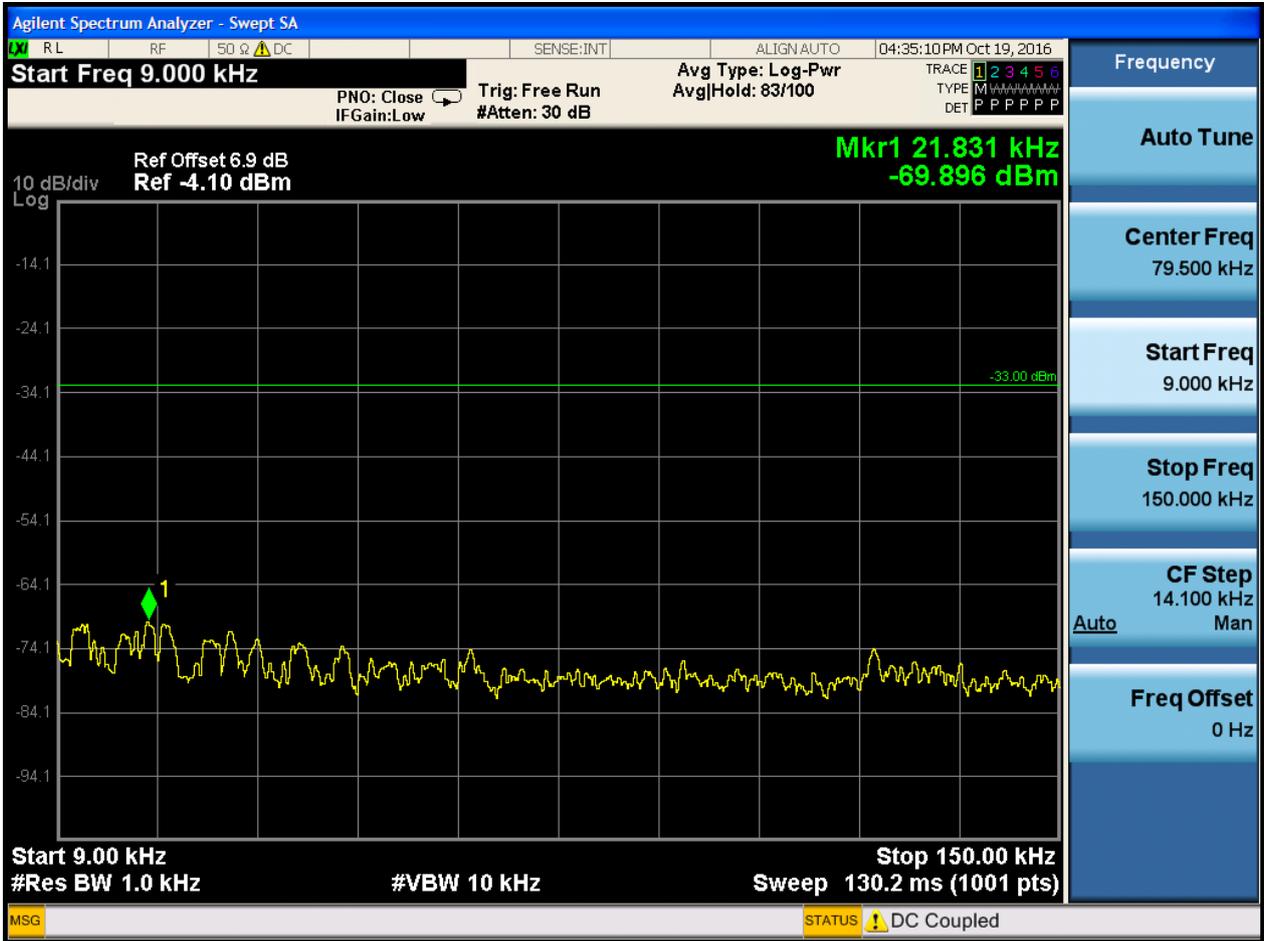


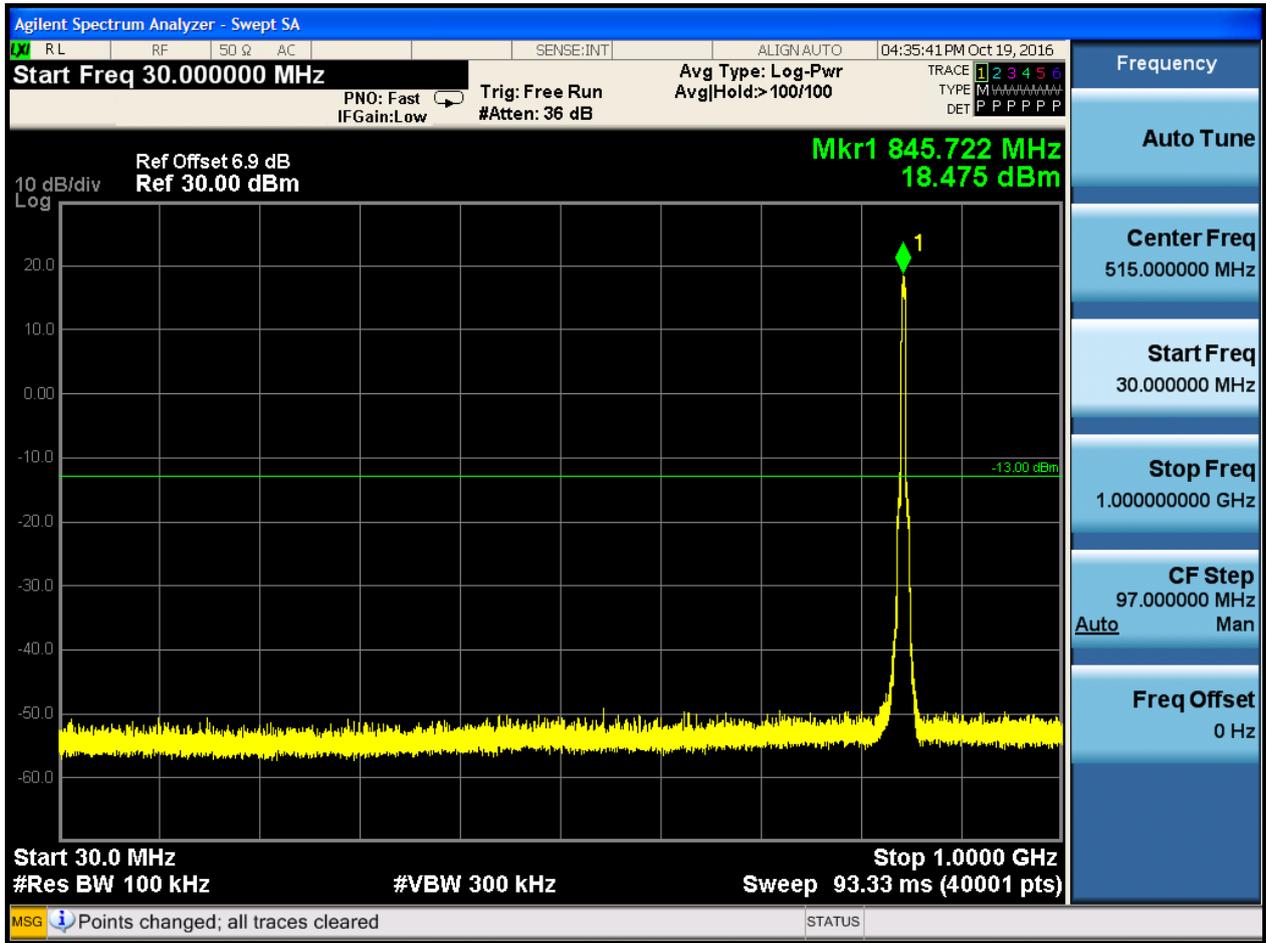


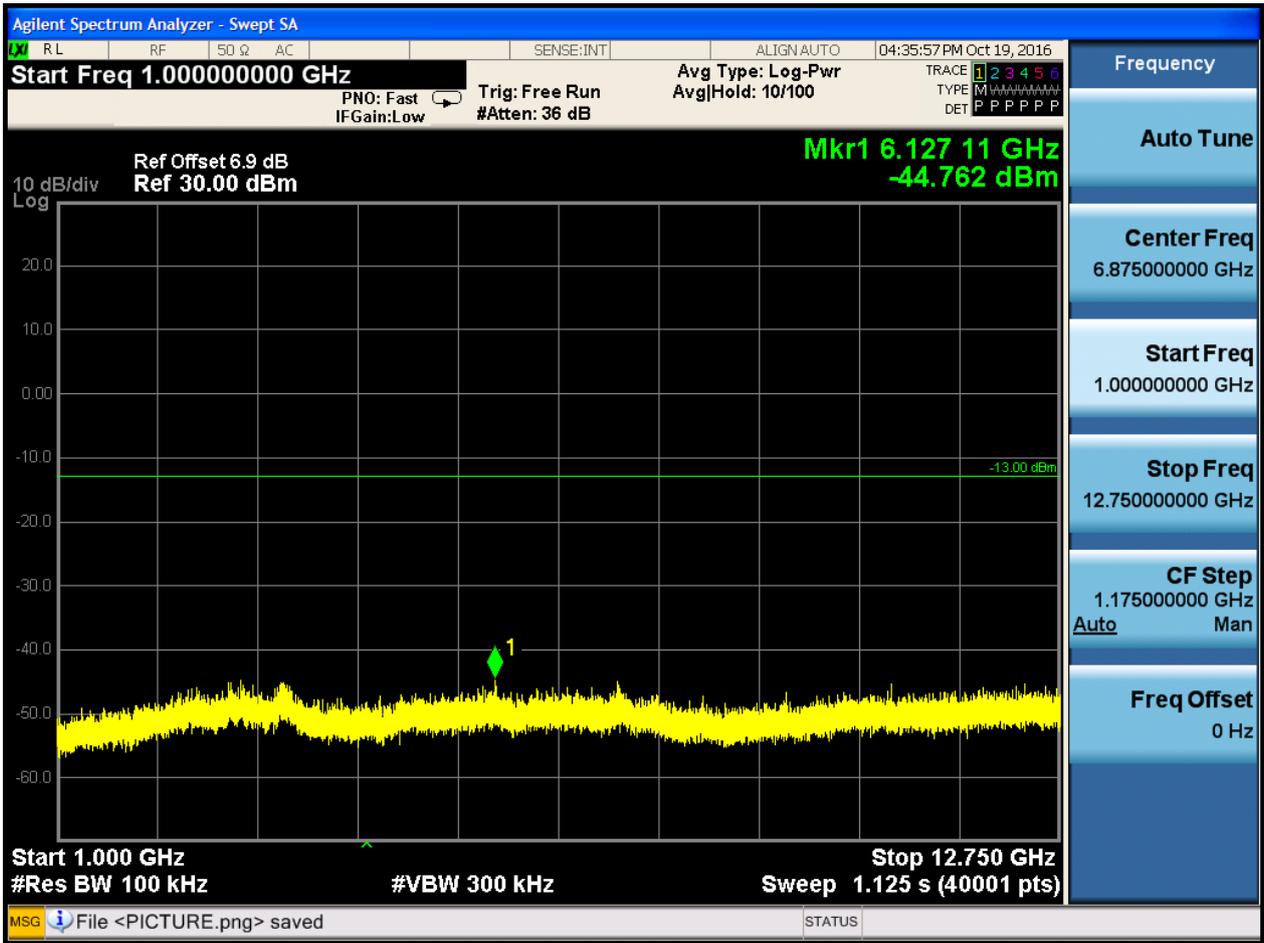




6.1.3.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note: We tested all modes, but the data presented below is the worst case.

9kHz~150kHz, 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

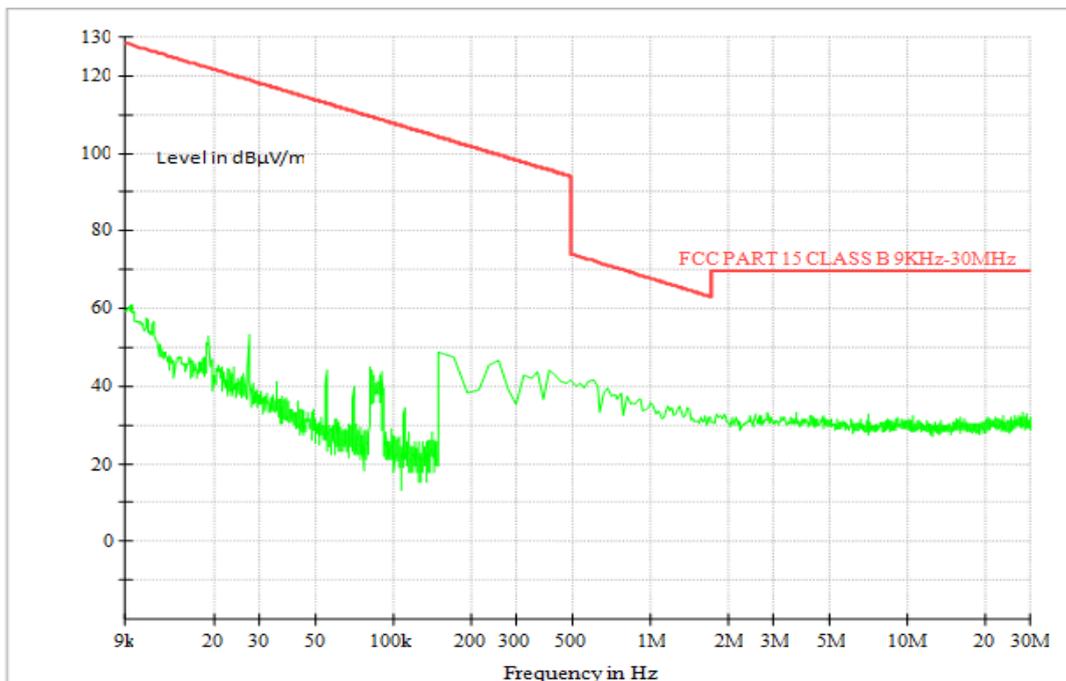
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

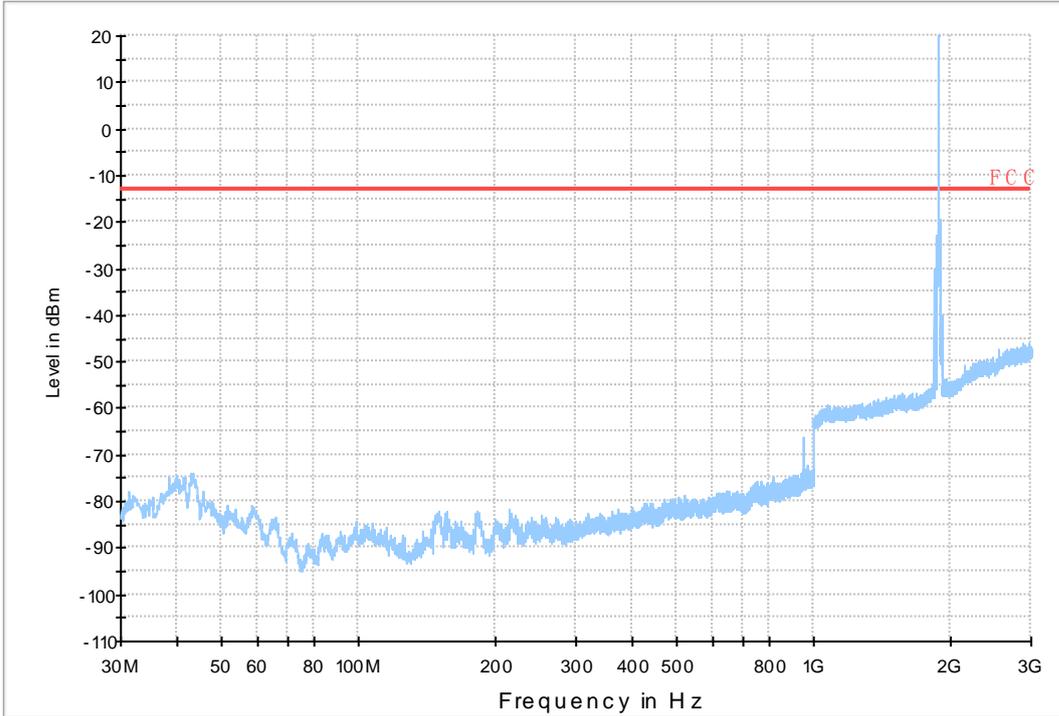
7.1 For UMTS

7.1.1 Test Band = WCDMA1900

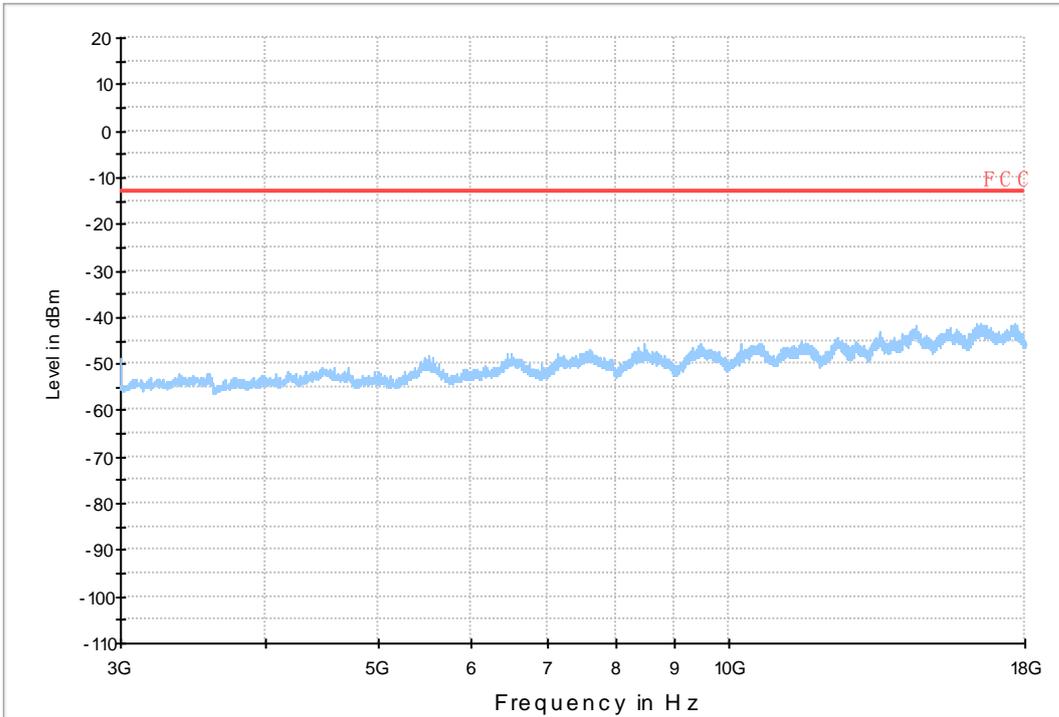
7.1.1.1 Test Mode = UMTS/TM1

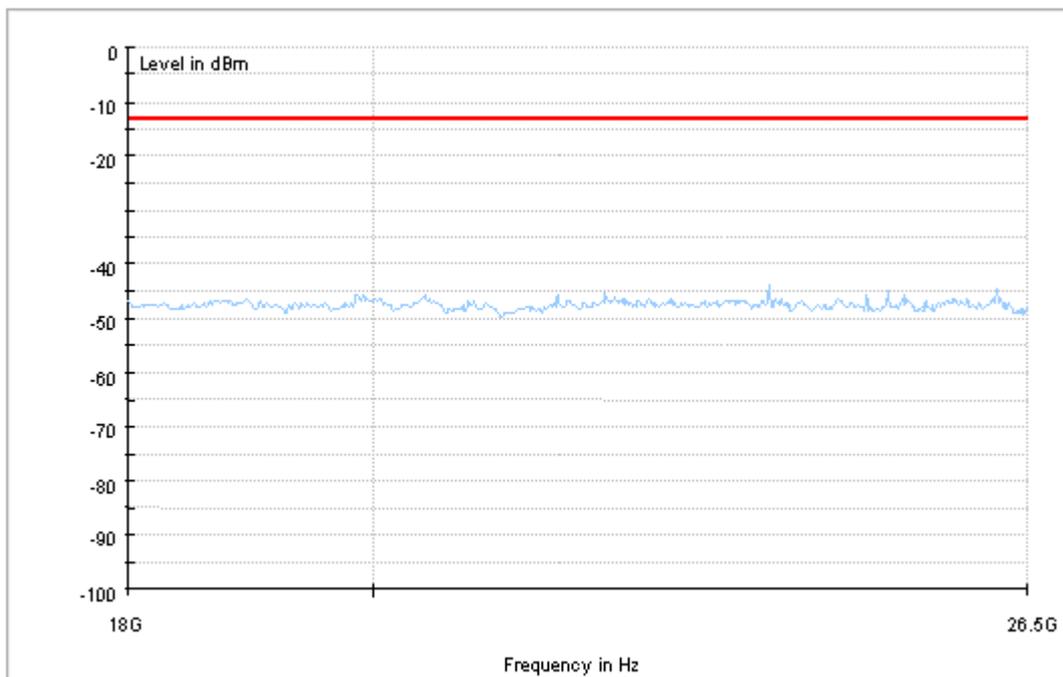


Copy of FCC PART24 W CDMA1900_L



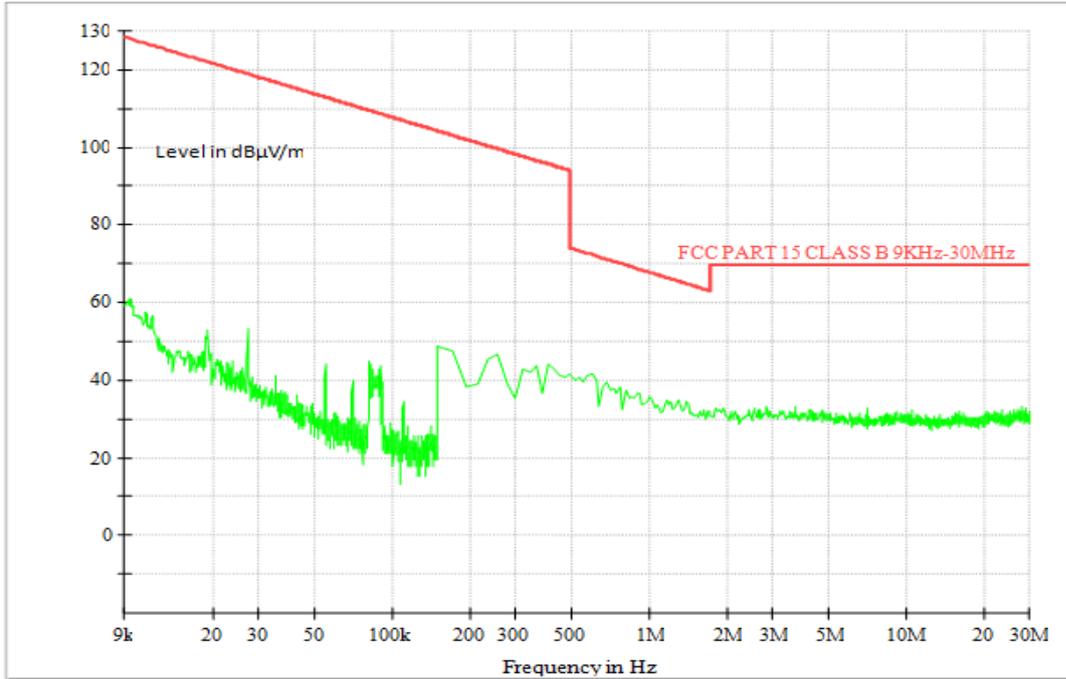
Copy of FCC PART24 W CDMA1900_H



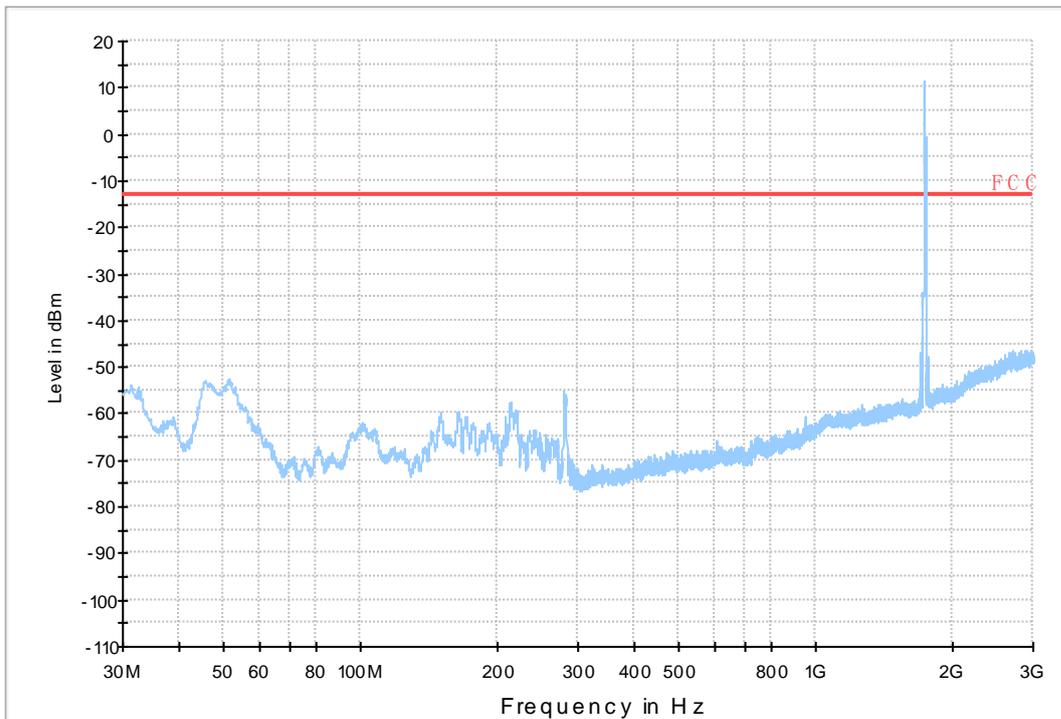


7.1.2 Test Band = WCDMA1700

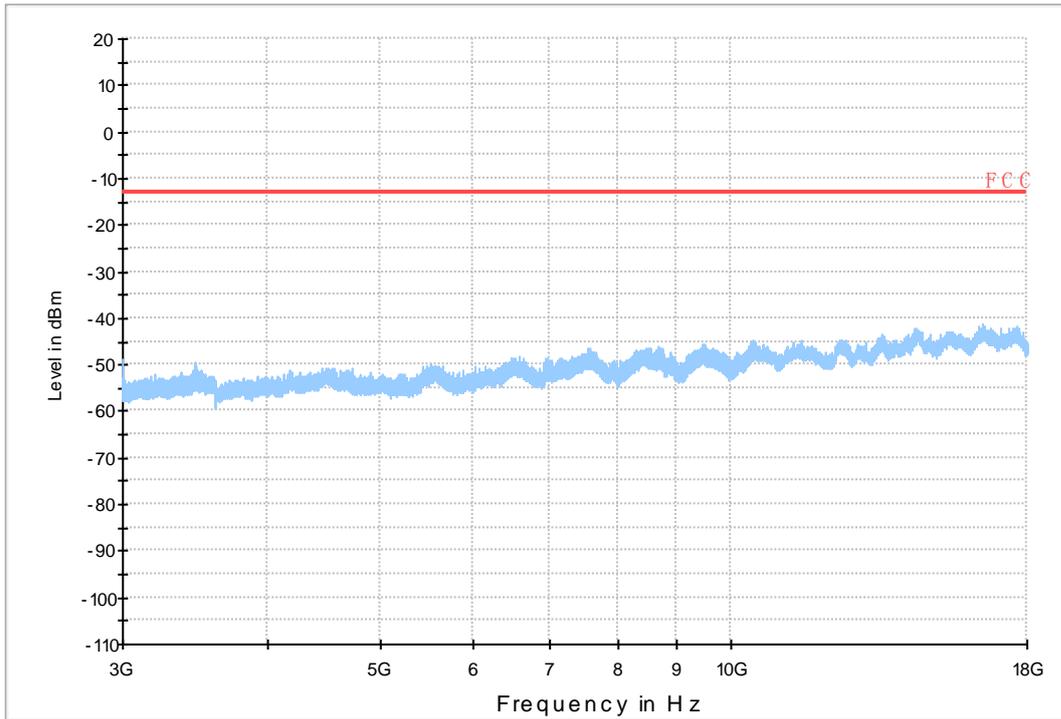
7.1.2.1 Test Mode = UMTS/TM1



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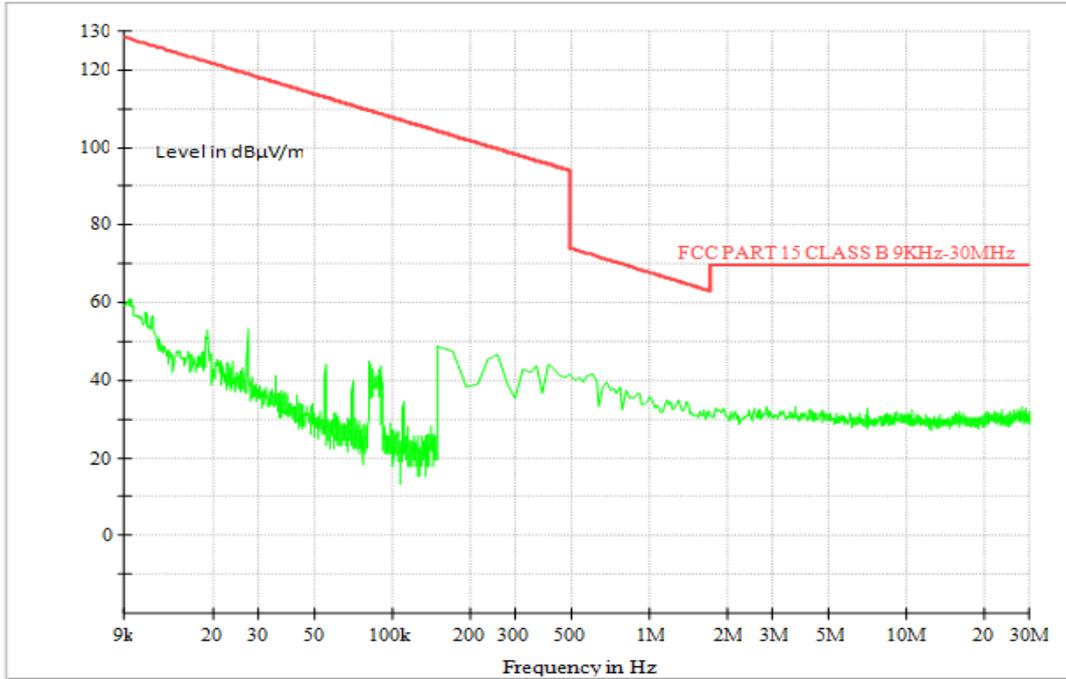


Copy of FCC PART 27 W CDMA1700_H

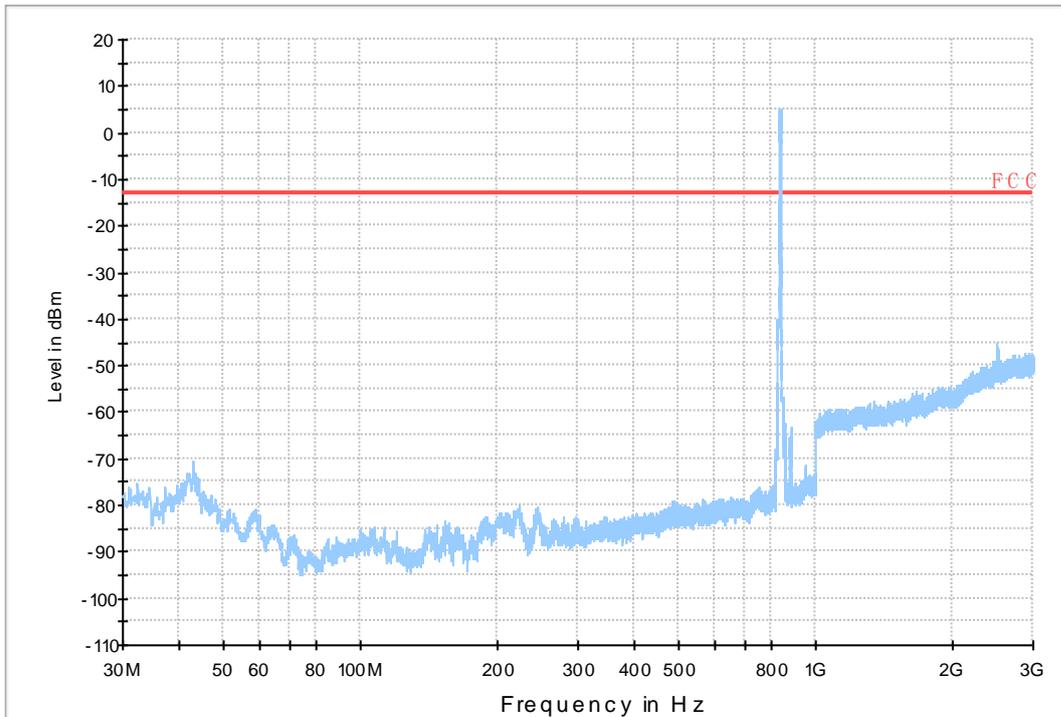


7.1.3 Test Band = WCDMA850

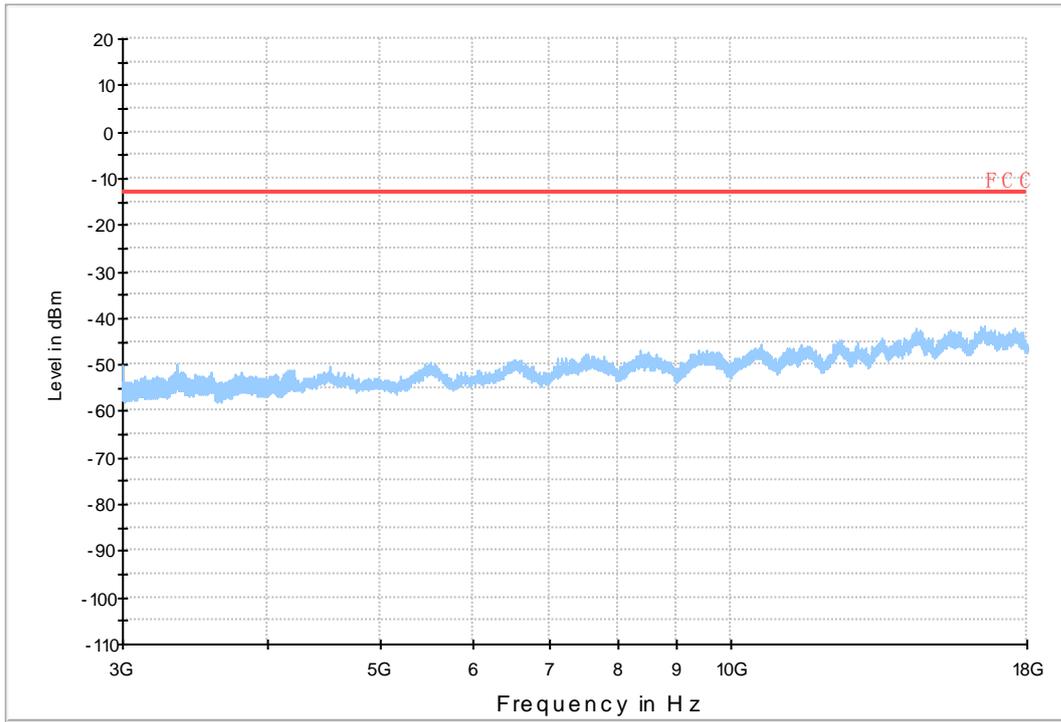
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L



Copy of FCC PART22 W CDMA850_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	5.54	0.00299	PASS
				VN	-3.31	-0.00179	PASS
				VH	0.87	0.00047	PASS
		MCH	TN	VL	1.13	0.0006	PASS
				VN	-2.09	-0.00111	PASS
				VH	-0.56	-0.0003	PASS
		HCH	TN	VL	2.27	0.00119	PASS
				VN	-1.34	-0.0007	PASS
				VH	2.47	0.00129	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	2.75	0.00148	PASS
				-20	-0.53	-0.00029	PASS
				-10	0.89	0.00048	PASS
				0	3.74	0.00202	PASS
				10	-0.92	-0.0005	PASS
				20	-1.88	-0.00101	PASS
				30	2.03	0.0011	PASS
				40	-4.58	-0.00247	PASS
		MCH	VN	-30	2.62	0.00139	PASS
				-20	1.21	0.00064	PASS
				-10	2.26	0.0012	PASS
				0	-0.78	-0.00041	PASS
				10	-2.94	-0.00156	PASS
				20	0.98	0.00052	PASS
				30	-0.63	-0.00034	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	-0.60	-0.00032	PASS
				50	4.23	0.00225	PASS
		HCH	VN	-30	1.39	0.00073	PASS
				-20	-0.56	-0.00029	PASS
				-10	3.30	0.00173	PASS
				0	-7.28	-0.00382	PASS
				10	-2.40	-0.00126	PASS
				20	4.79	0.00251	PASS
				30	-0.06	-0.00003	PASS
				40	-0.78	-0.00041	PASS
				50	-2.49	-0.00131	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	-0.43	-0.00025	PASS
				VN	2.87	0.00168	PASS
				VH	3.89	0.00227	PASS
		MCH	TN	VL	-1.77	-0.00102	PASS
				VN	0.11	0.00006	PASS
				VH	-2.4	-0.00139	PASS
		HCH	TN	VL	2.62	0.00149	PASS
				VN	2.03	0.00116	PASS
				VH	1.21	0.00069	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	-4	-0.00484	PASS
				VN	-2.14	-0.00259	PASS
				VH	4.44	0.00537	PASS
		MCH	TN	VL	-8.79	-0.01051	PASS
				VN	-11.41	-0.01364	PASS
				VH	-3.17	-0.00379	PASS
		HCH	TN	VL	0.27	0.00032	PASS
				VN	1.63	0.00193	PASS
				VH	9.32	0.01101	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	1.19	0.00069	PASS
				-20	-0.49	-0.00029	PASS
				-10	1.85	0.00108	PASS
				0	-1.11	-0.00065	PASS
				10	-1.17	-0.00068	PASS
				20	4	0.00234	PASS
				30	1.79	0.00105	PASS
				40	-3.19	-0.00186	PASS
				50	-5.39	-0.00315	PASS
		MCH	VN	-30	1.89	0.00109	PASS
				-20	0.26	0.00015	PASS
				-10	2.17	0.00125	PASS
				0	-0.43	-0.00025	PASS
				10	0.09	0.00005	PASS
				20	-0.12	-0.00007	PASS
				30	1.22	0.0007	PASS
				40	0.41	0.00024	PASS
		50	1.21	0.0007	PASS		
		HCH	VN	-30	-0.95	-0.00054	PASS
				-20	1.28	0.00073	PASS
				-10	-4.59	-0.00262	PASS
				0	4.9	0.0028	PASS
				10	-0.95	-0.00054	PASS
				20	-1.91	-0.00109	PASS
30	-1.13			-0.00064	PASS		
40	2.35			0.00134	PASS		
50	1.07	0.00061	PASS				
WCDMA850	UMTS/TM1	LCH	VN	-30	-3.46	-0.00419	PASS
				-20	-5.19	-0.00628	PASS
				-10	3.52	0.00426	PASS
				0	-6.2	-0.0075	PASS
				10	-1.25	-0.00151	PASS
				20	10.22	0.01237	PASS
				30	-8.13	-0.00984	PASS
				40	-6.62	-0.00801	PASS
				50	-1.92	-0.00232	PASS
		MCH	VN	-30	-11.72	-0.01401	PASS
				-20	1.59	0.0019	PASS

				-10	-1.83	-0.00219	PASS
				0	-1.28	-0.00153	PASS
				10	-5.04	-0.00603	PASS
				20	5.57	0.00666	PASS
				30	-8.24	-0.00985	PASS
				40	-6.87	-0.00821	PASS
				50	-1.85	-0.00221	PASS
		HCH	VN	-30	3.14	0.00371	PASS
				-20	-4.47	-0.00528	PASS
				-10	-14.47	-0.01709	PASS
				0	1.59	0.00188	PASS
				10	-5.69	-0.00672	PASS
				20	-8.51	-0.01005	PASS
				30	-3.14	-0.00371	PASS
				40	-8.91	-0.01052	PASS
				50	-0.47	-0.00056	PASS

END