



Appendix for test report



1 Appendix_A: Effective (Isotropic) Radiated Power Output Data

Part I - Test Results

Test Band	Test Mode	Test Channel	Conducte d Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	23.77	19.57	38.5	PASS
		MCH	23.79	19.60	38.5	PASS
		HCH	23.76	19.62	38.5	PASS
Test Band	Test Mode	Test Channel	Conducte d Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.26	23.22	30	PASS
		MCH	23.18	23.29	30	PASS
		HCH	23.21	23.20	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.65	23.69	33	PASS
		MCH	23.57	23.72	33	PASS
		HCH	23.58	23.66	33	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	3.08	13	PASS
		MCH	2.99	13	PASS
		HCH	3.1	13	PASS
WCDMA1700	UMTS/TM1	LCH	2.93	13	PASS
		MCH	3.12	13	PASS
		HCH	3.23	13	PASS
WCDMA850	UMTS/TM1	LCH	2.84	13	PASS
		MCH	2.89	13	PASS
		HCH	2.65	13	PASS

3Appendix_C: Modulation Characteristics

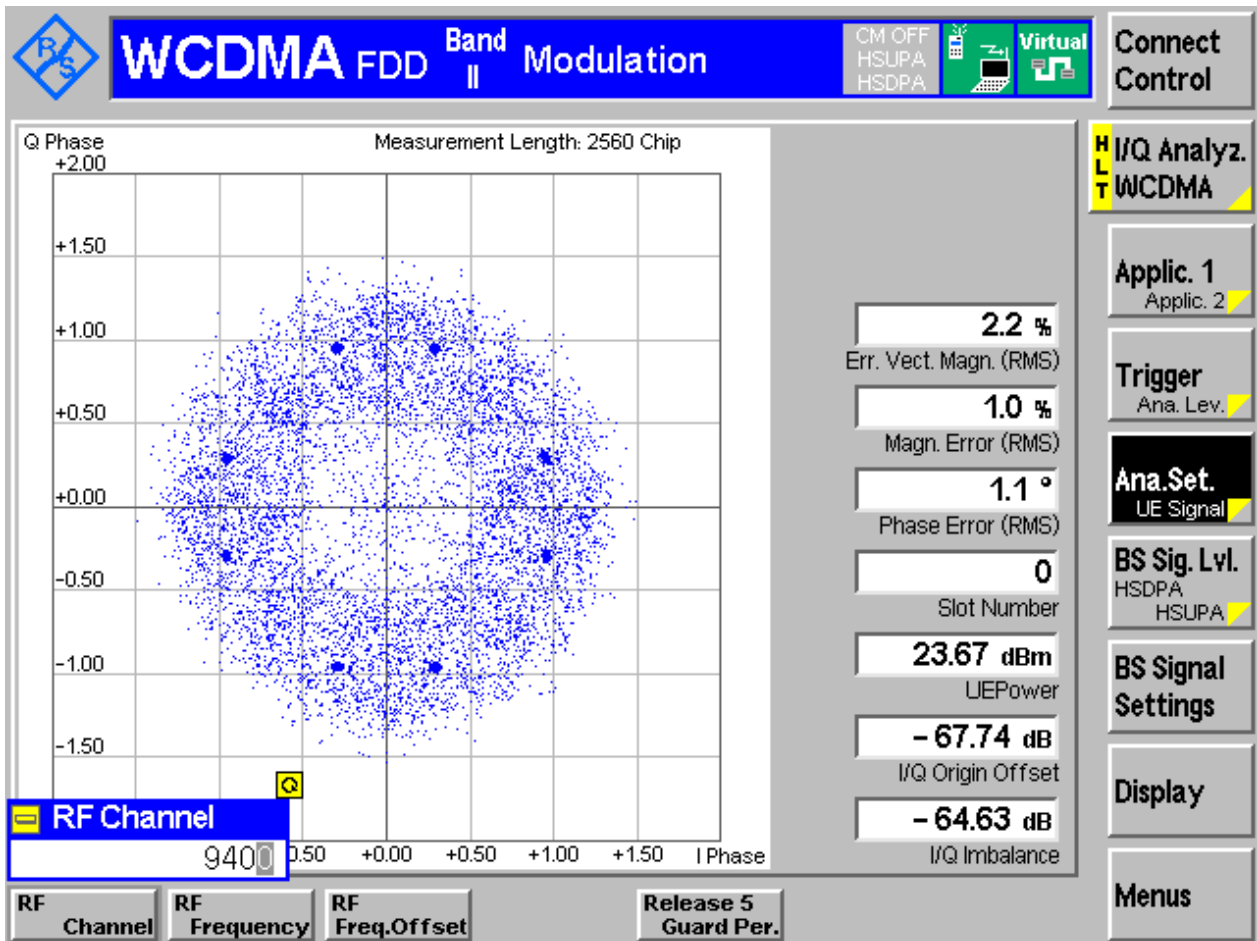
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

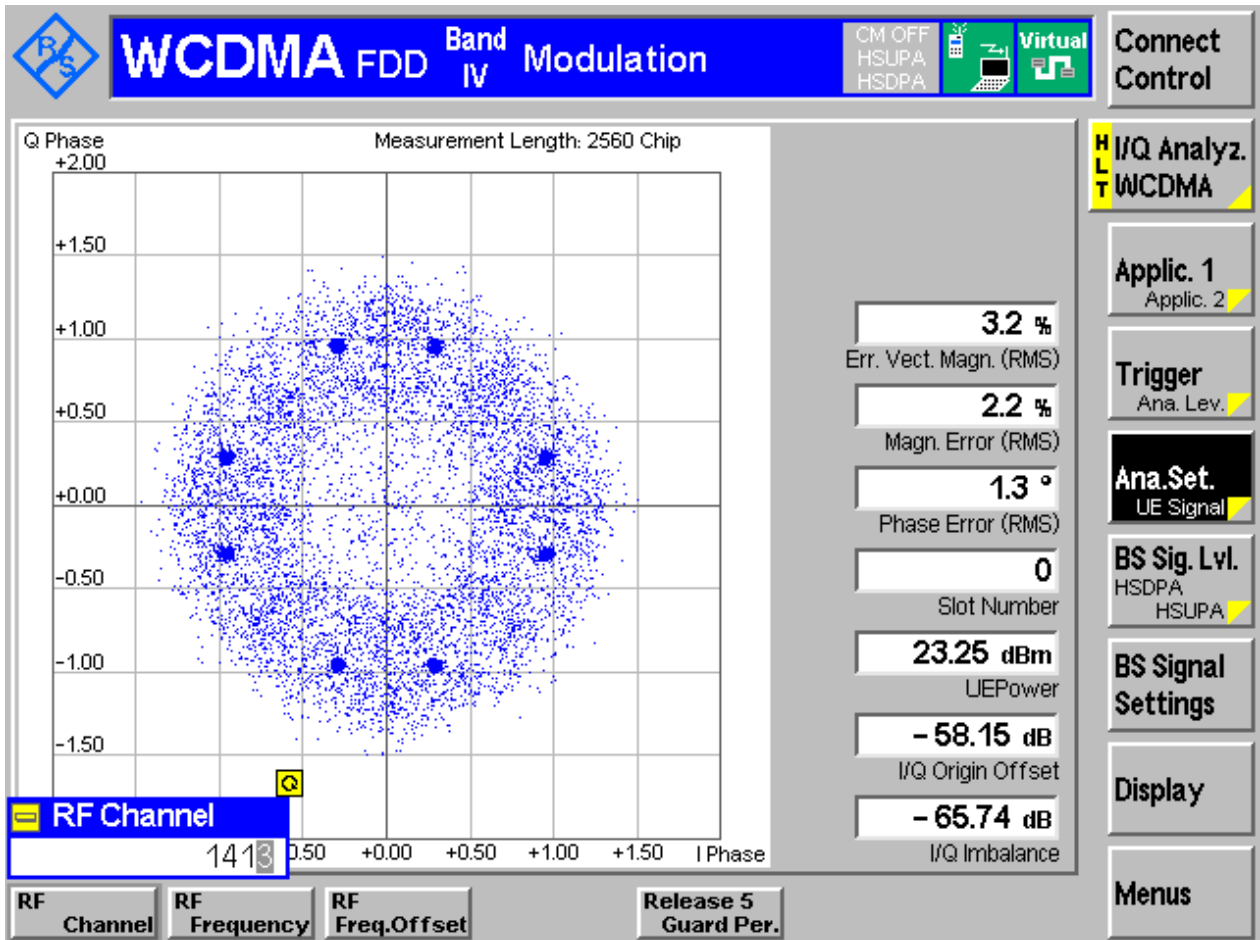
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

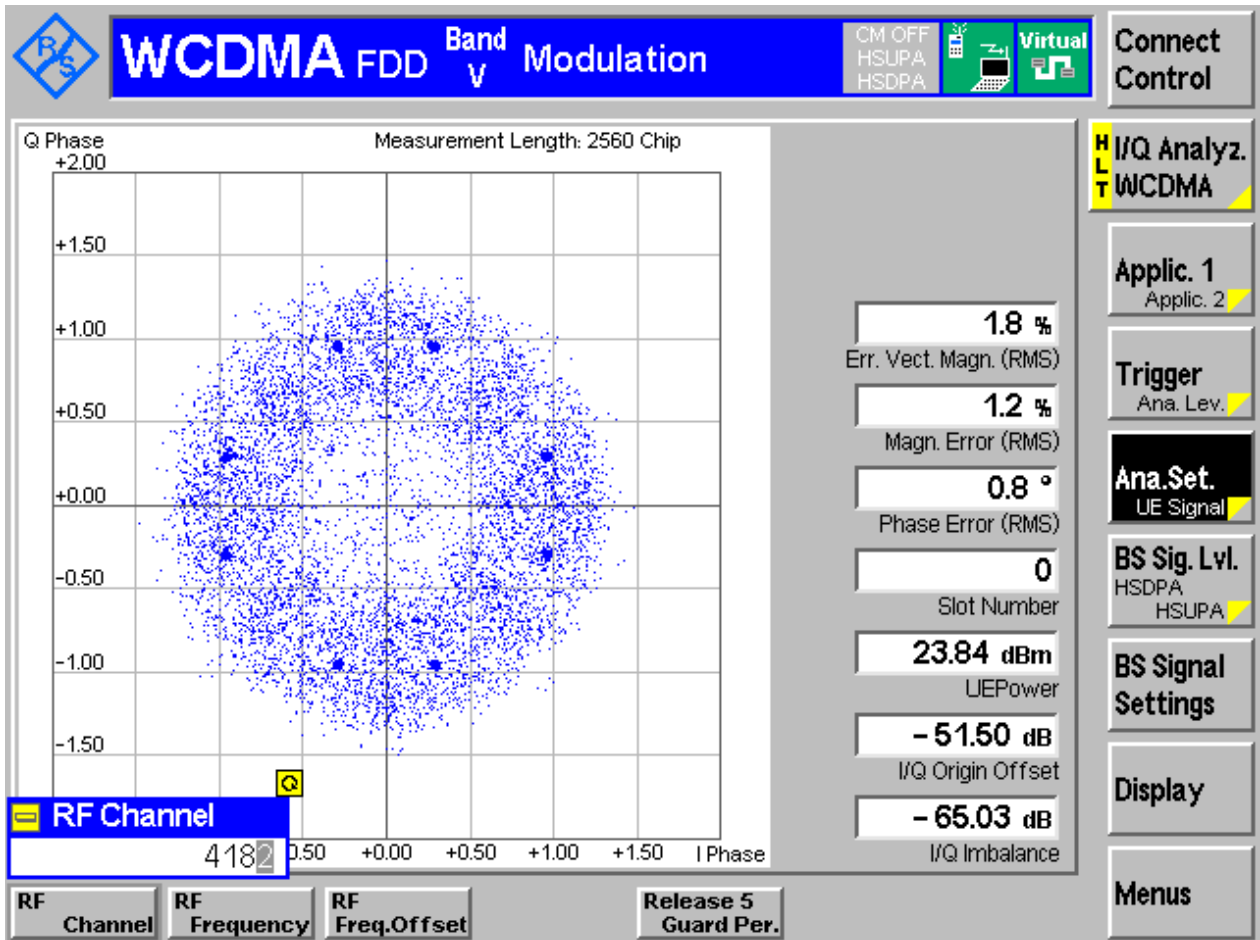
3.1.2.1.1 Test Channel = MCH



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	4.17	4.73	Pass
		MCH	4.17	4.72	Pass
		HCH	4.17	4.72	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.73	Pass
		MCH	4.18	4.73	Pass
		HCH	4.18	4.74	Pass
WCDMA850	UMTS/TM1	LCH	4.18	4.73	Pass
		MCH	4.18	4.74	Pass
		HCH	4.16	4.72	Pass

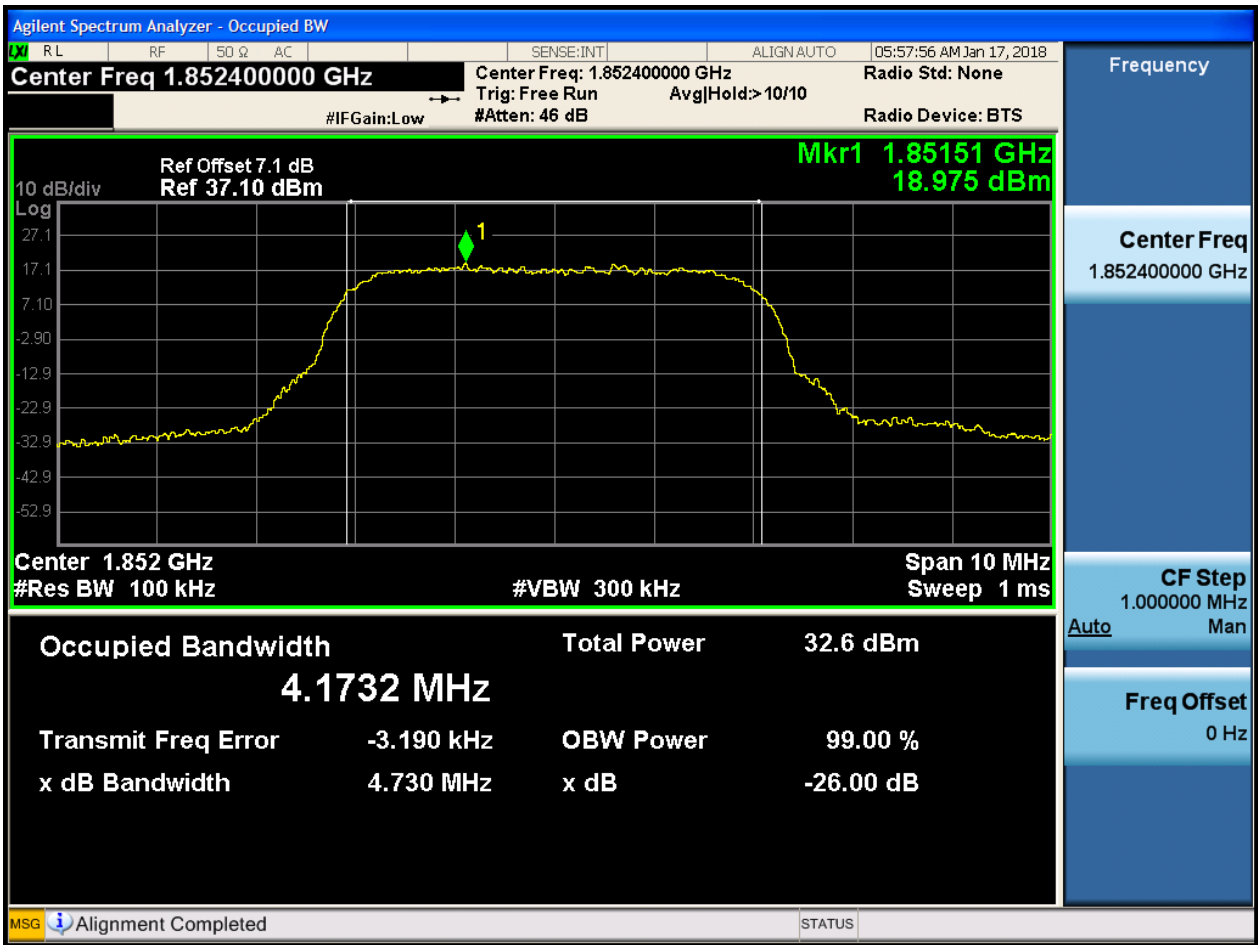
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

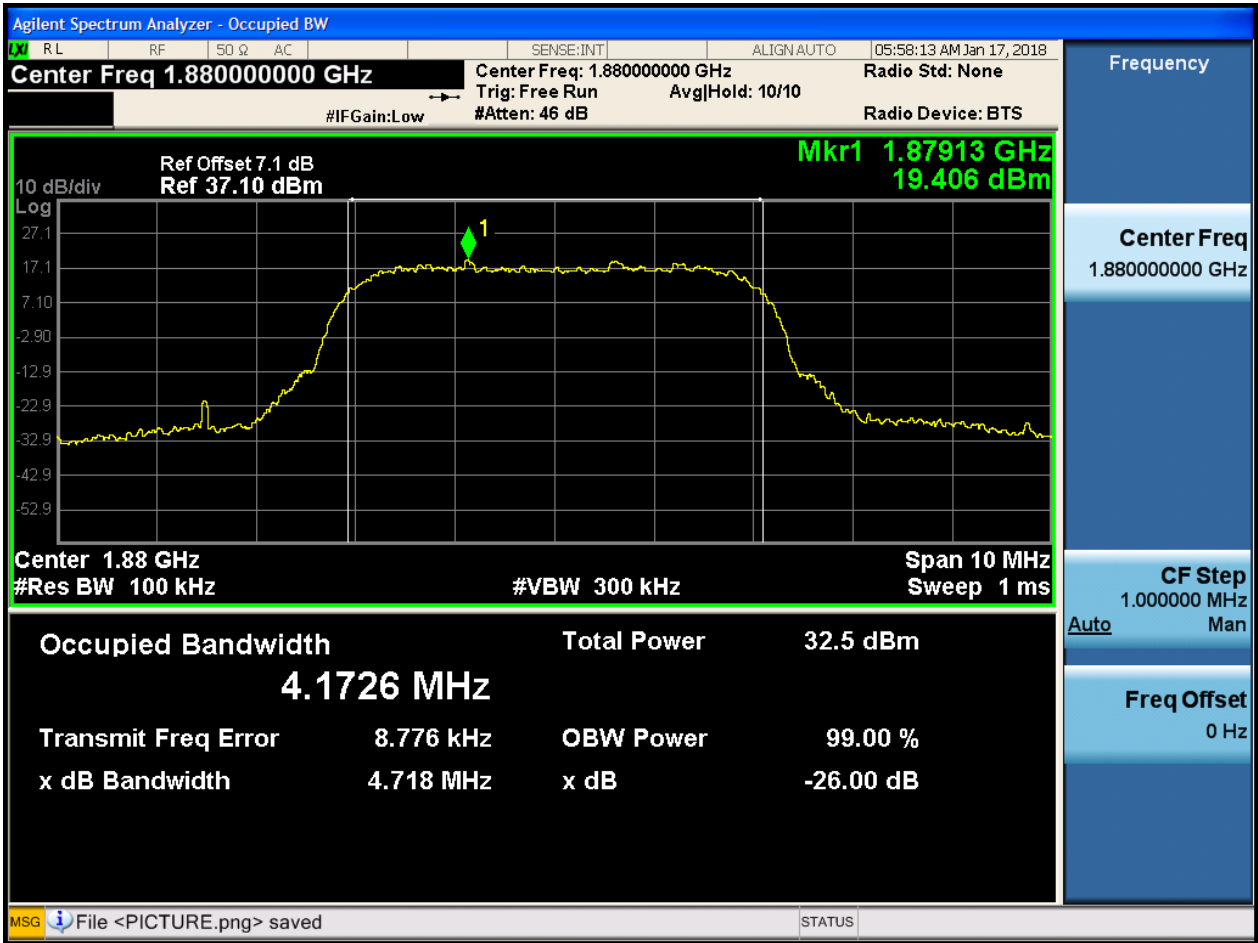
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



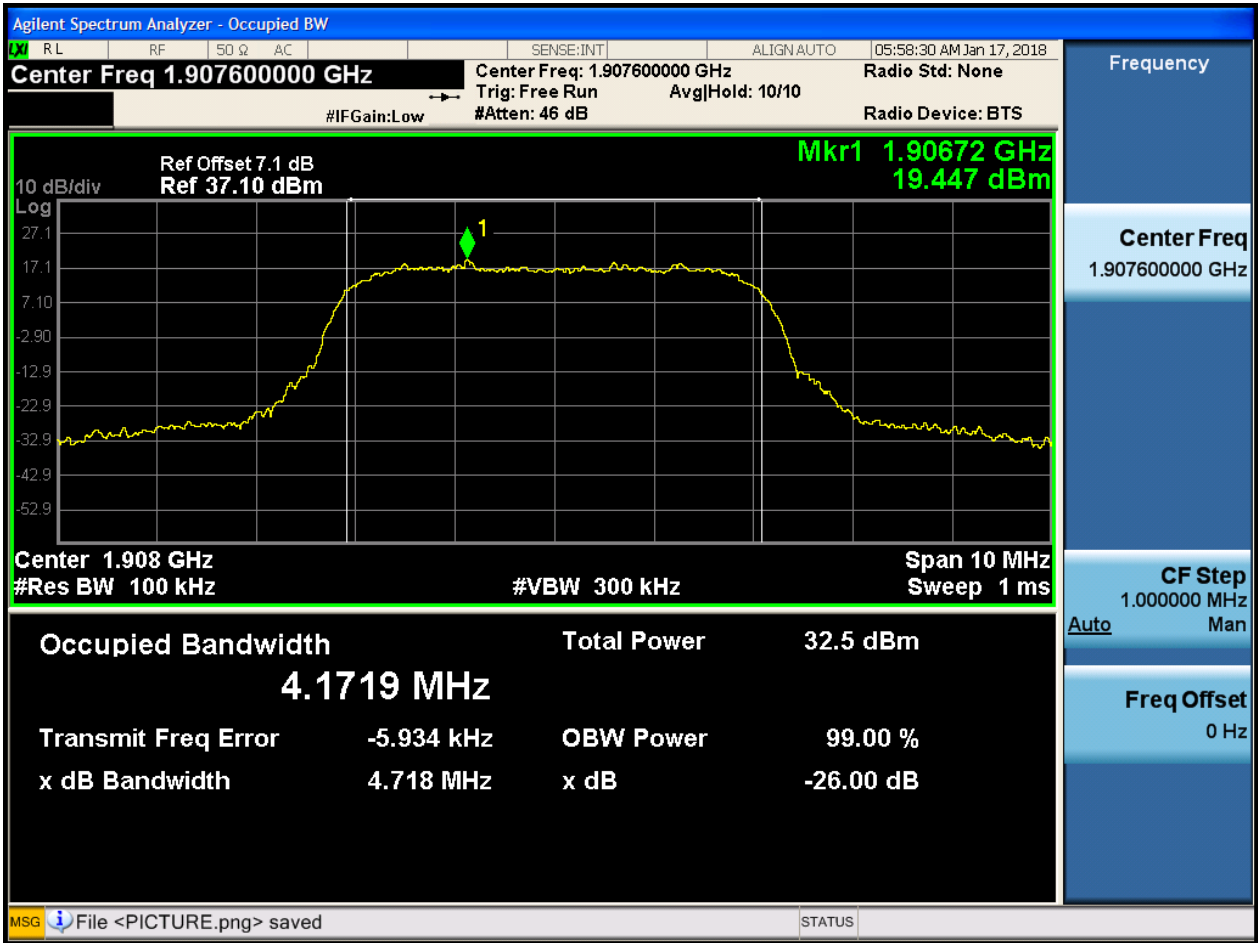


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

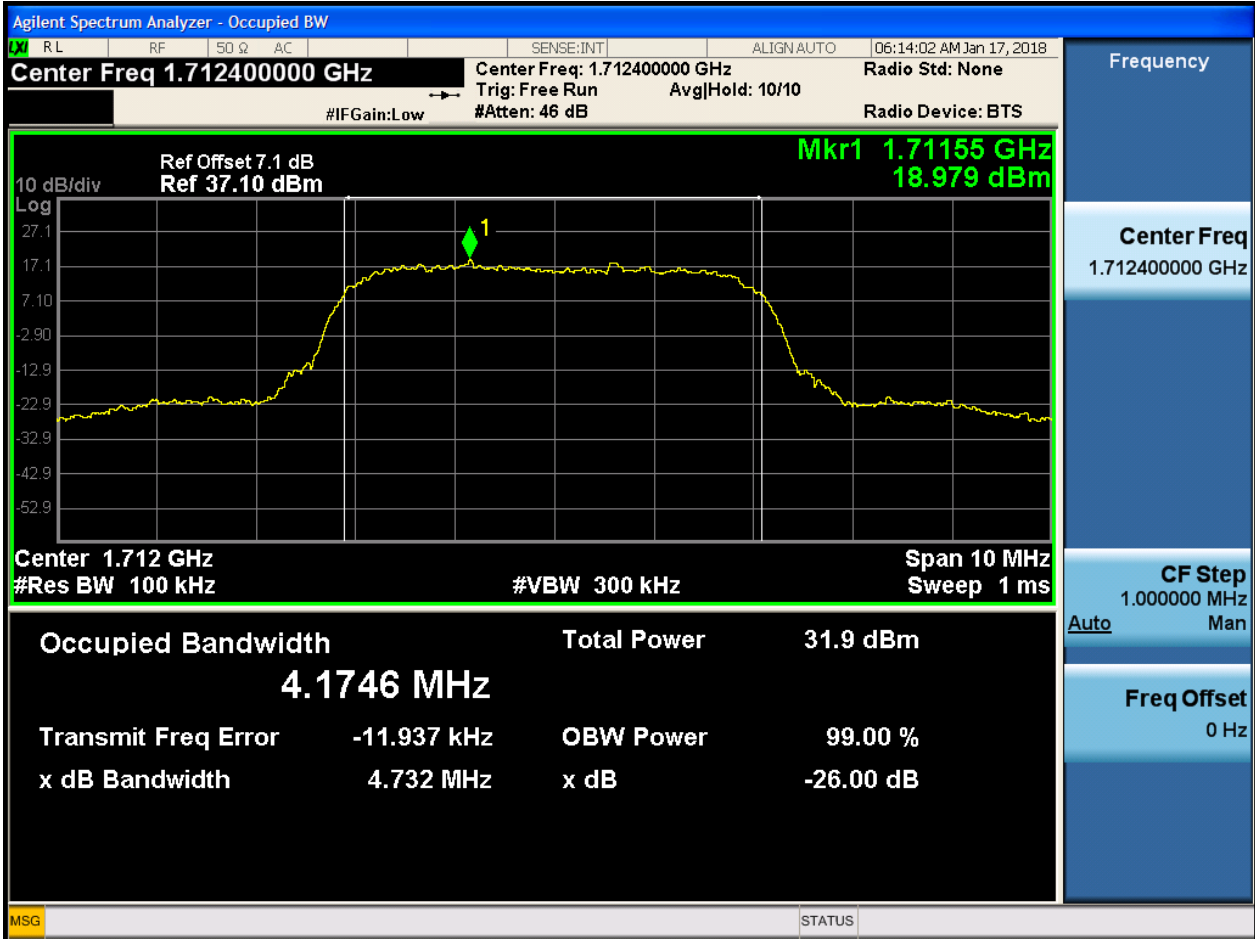




4.1.2 Test Band = WCDMA1700

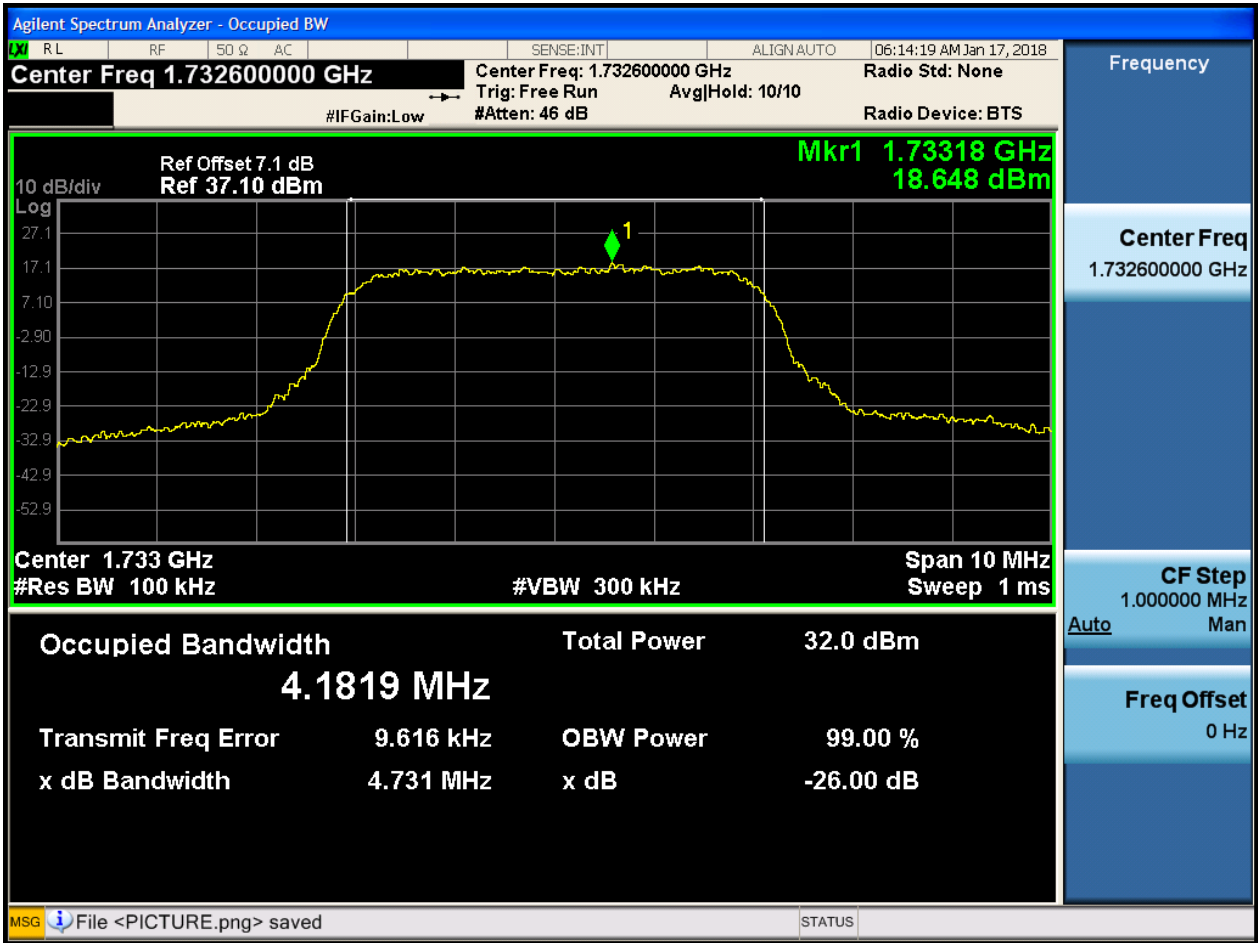
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



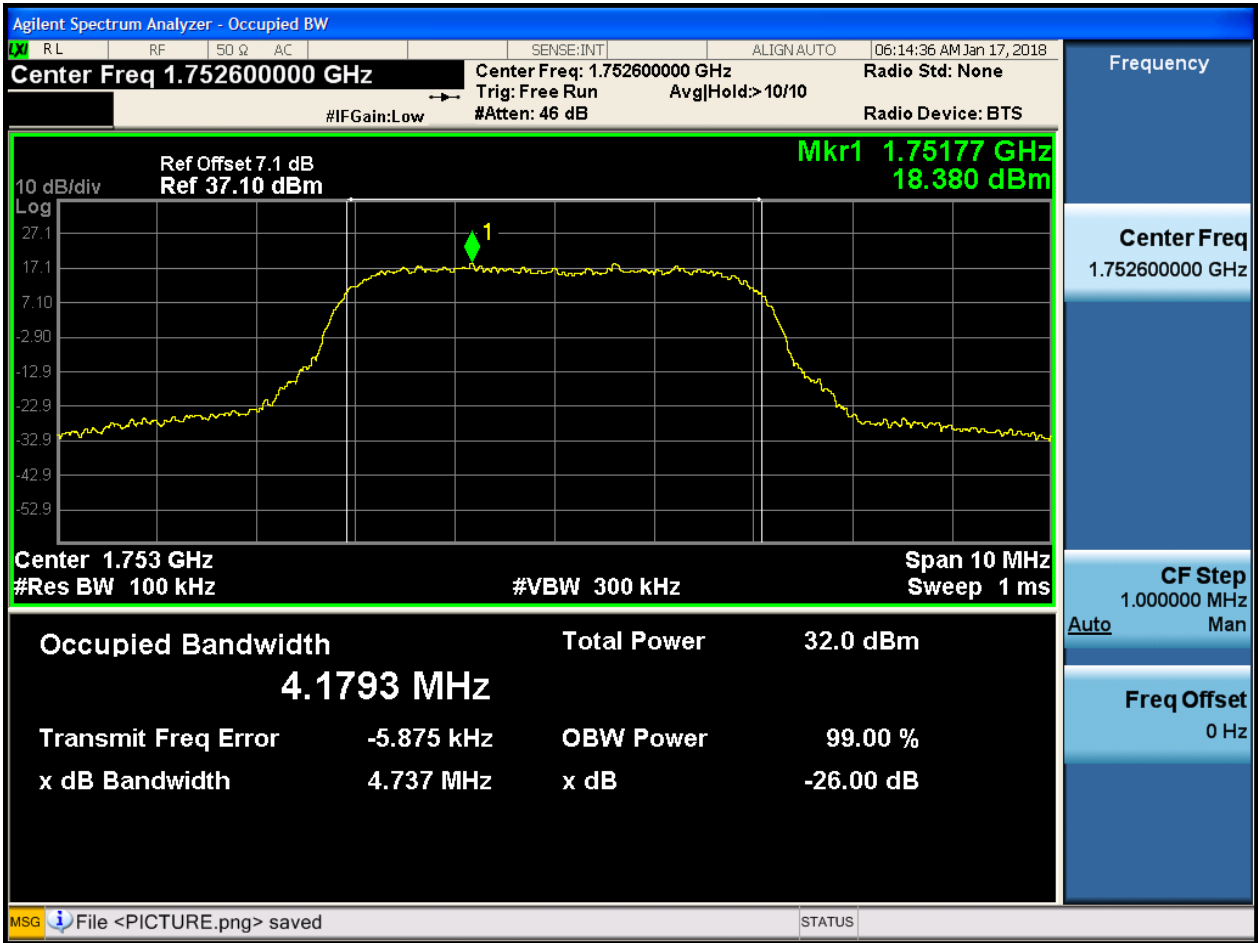


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

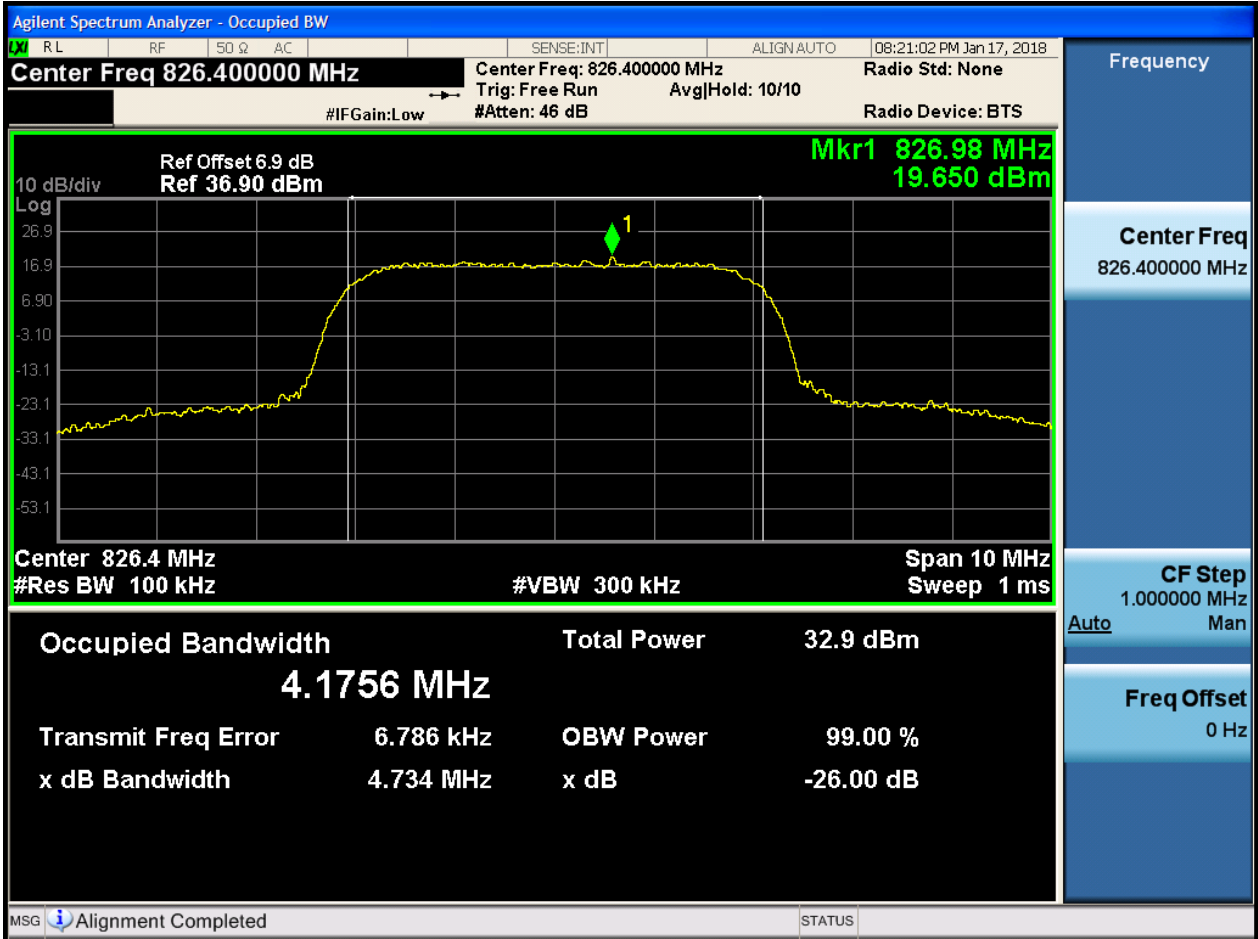




4.1.3 Test Band = WCDMA850

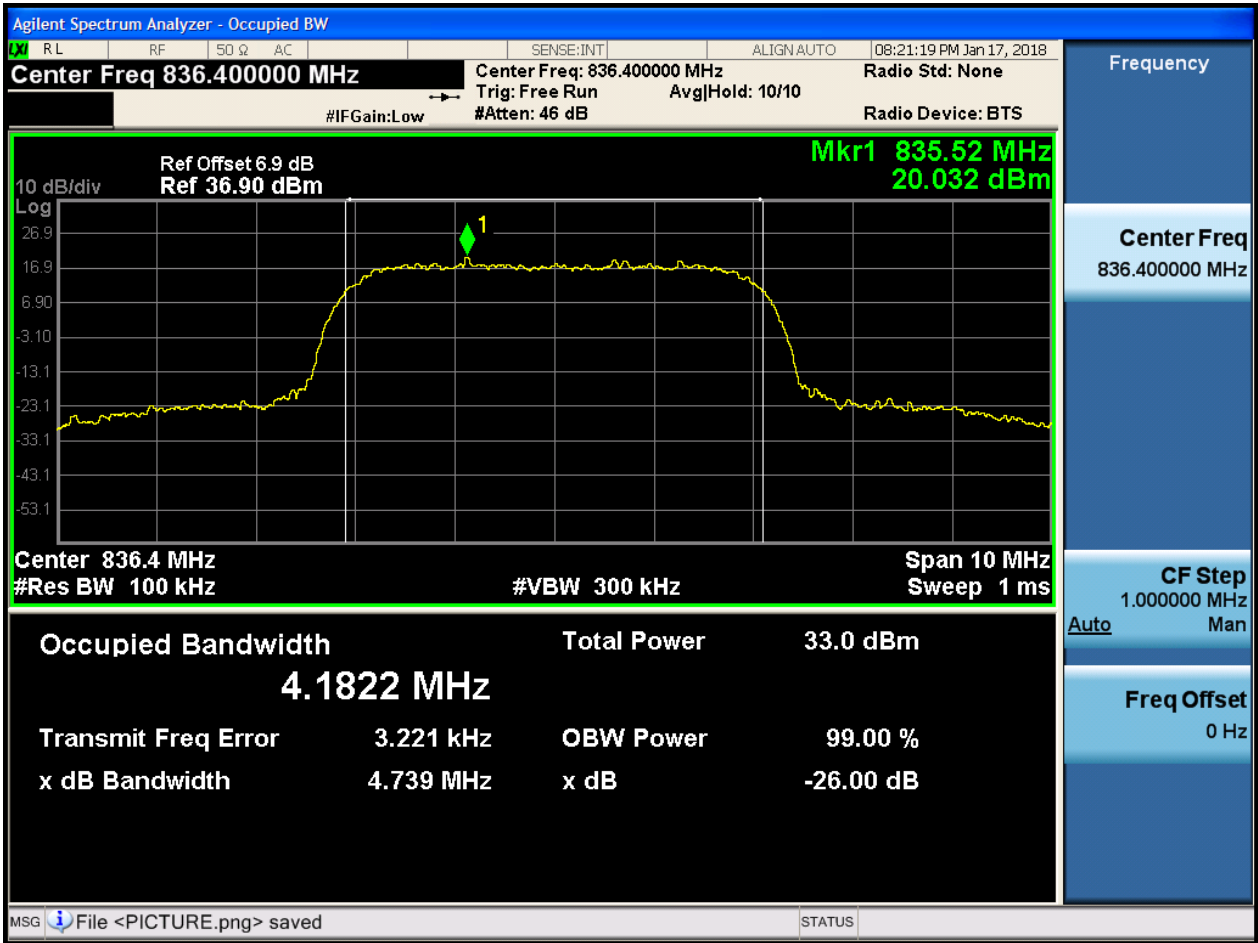
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



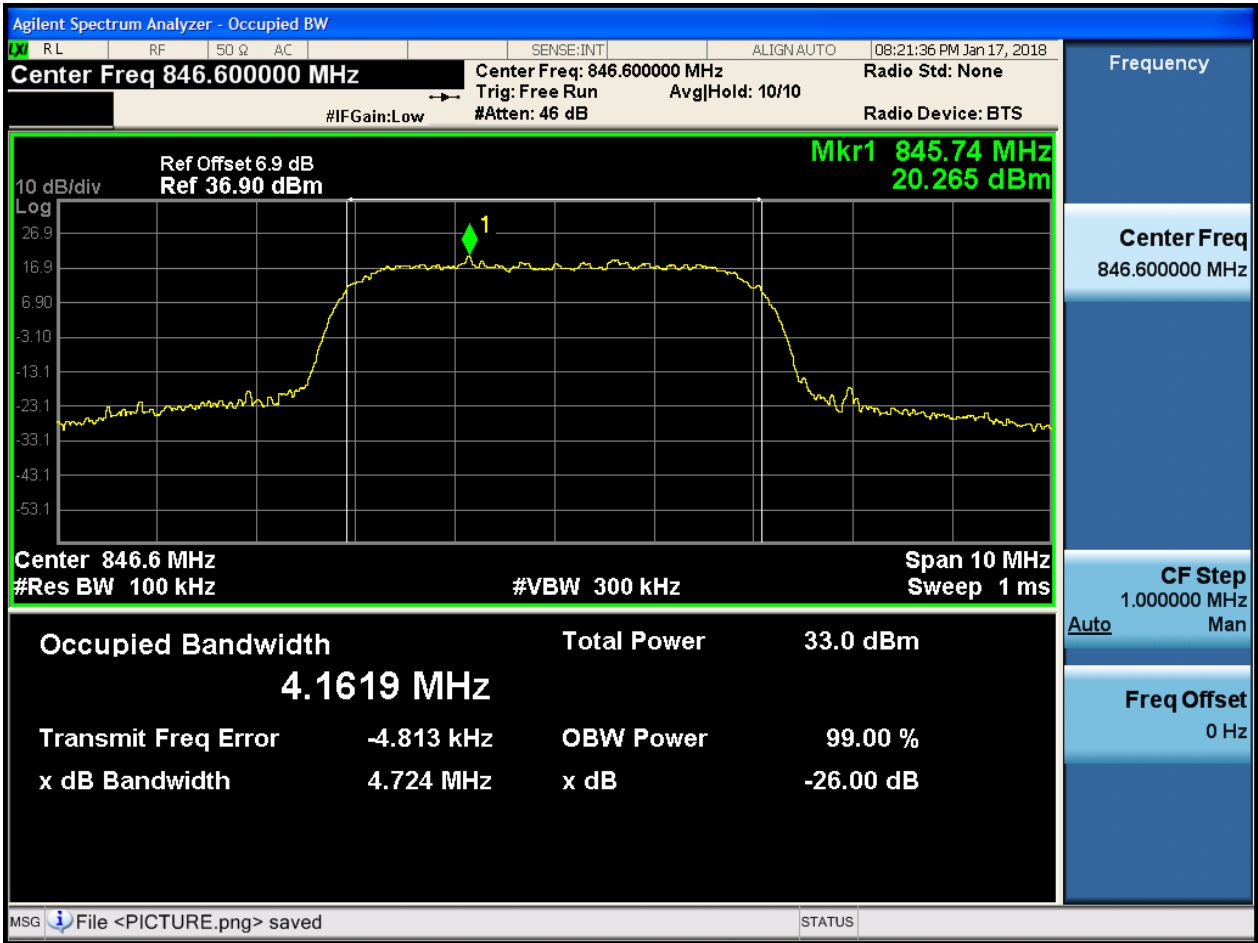


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

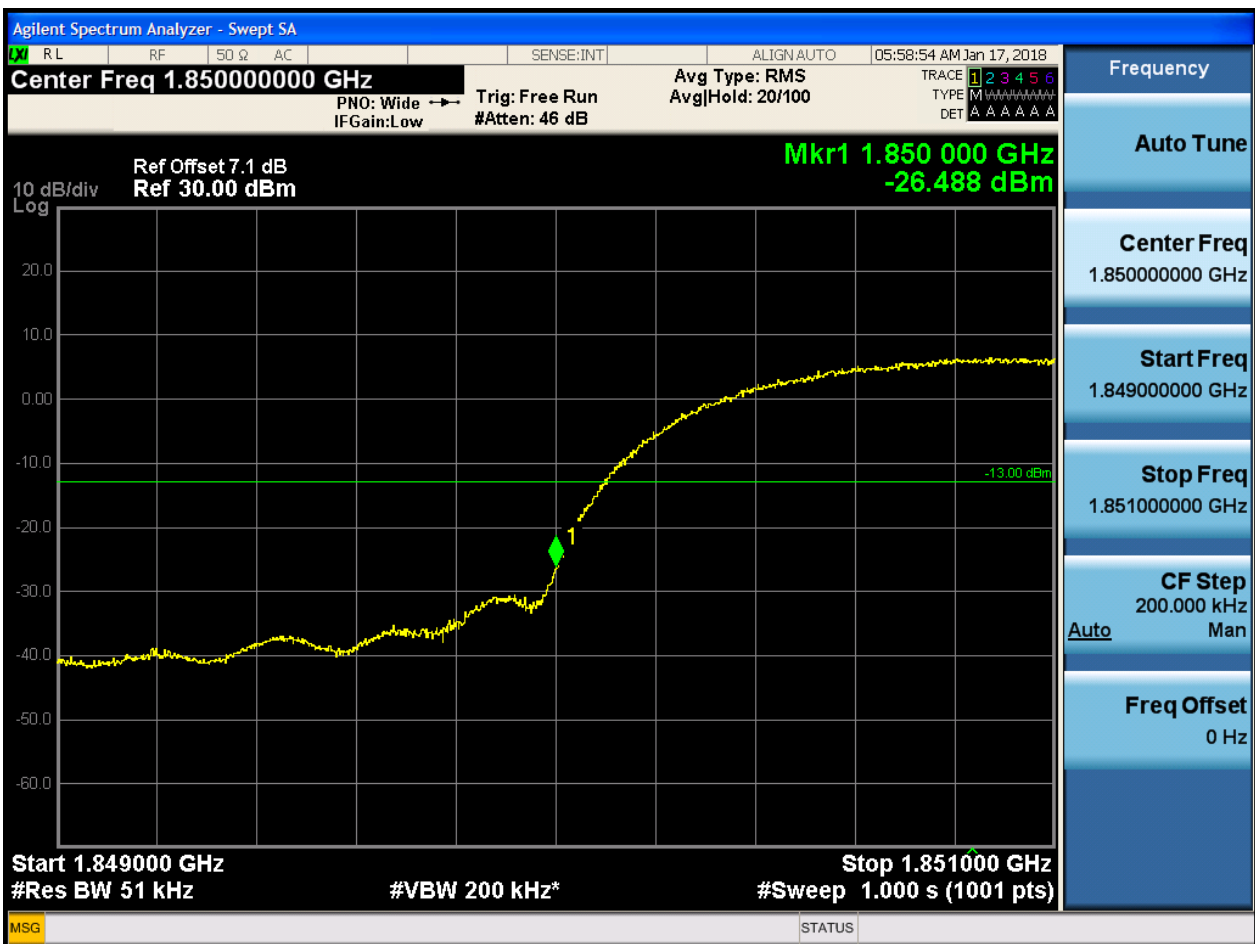
Part I - Test Plots

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

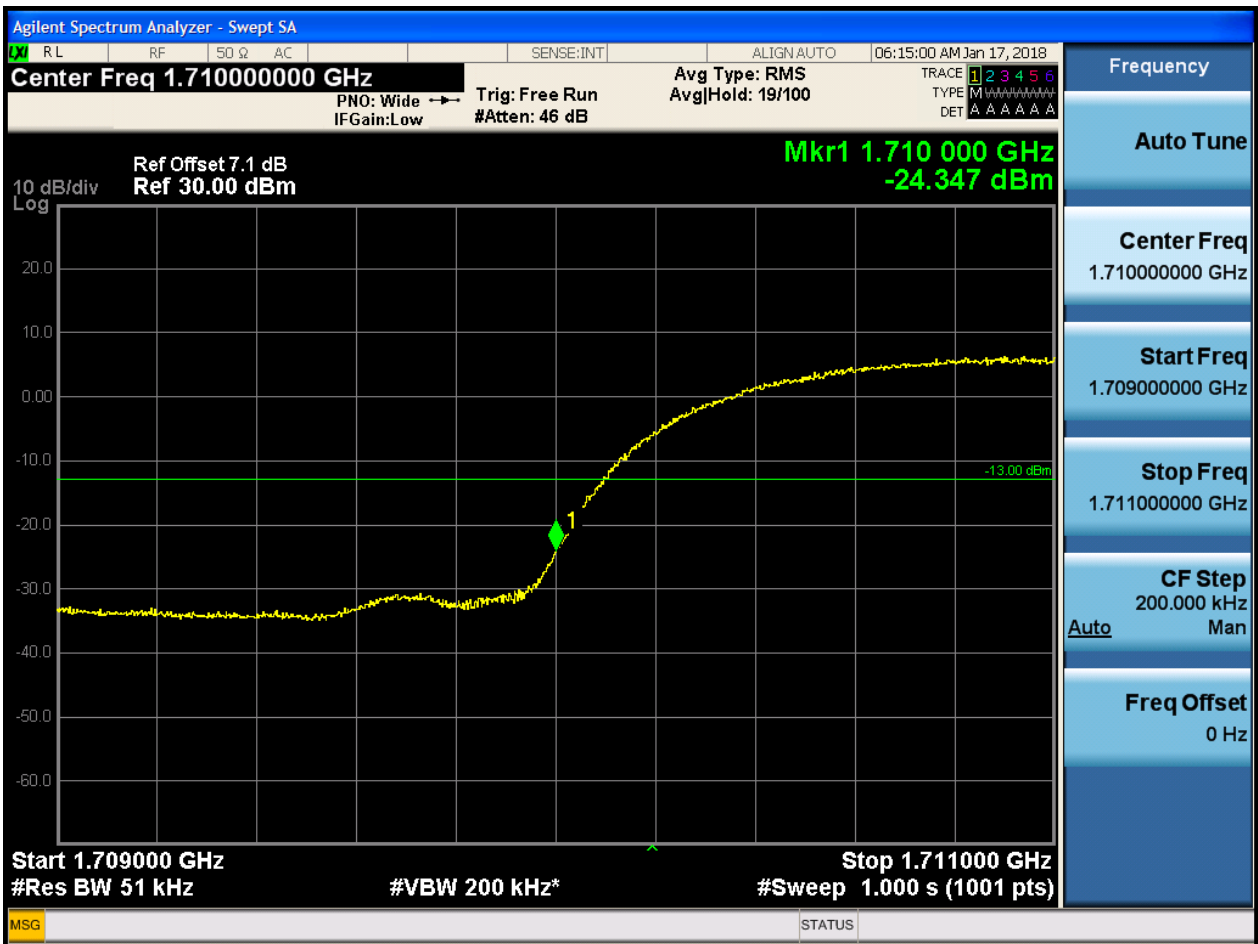




5.1.2 Test Band = WCDMA1700

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 Test Channel = HCH

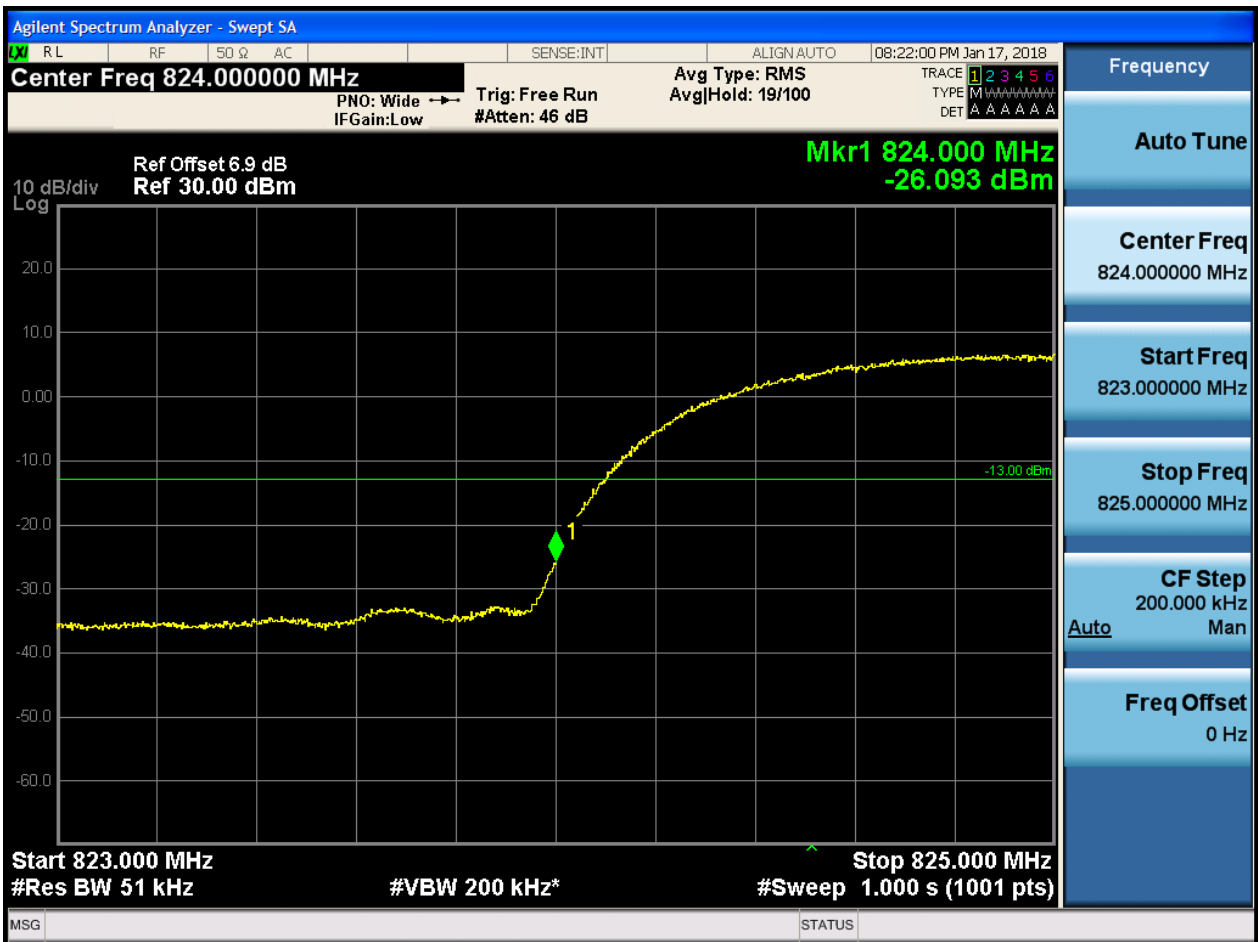




5.1.3 Test Band = WCDMA850

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.

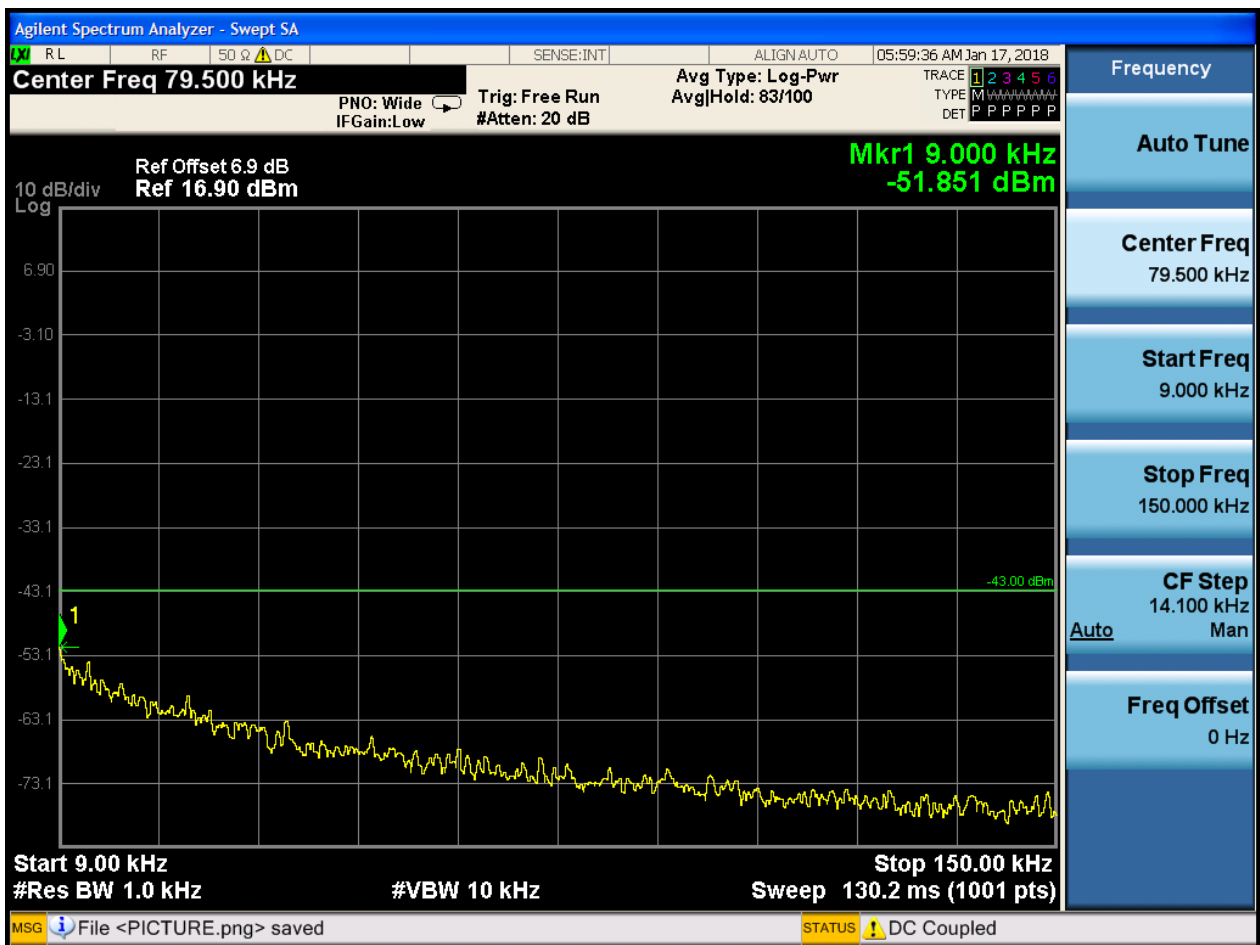
Part I - Test Plots

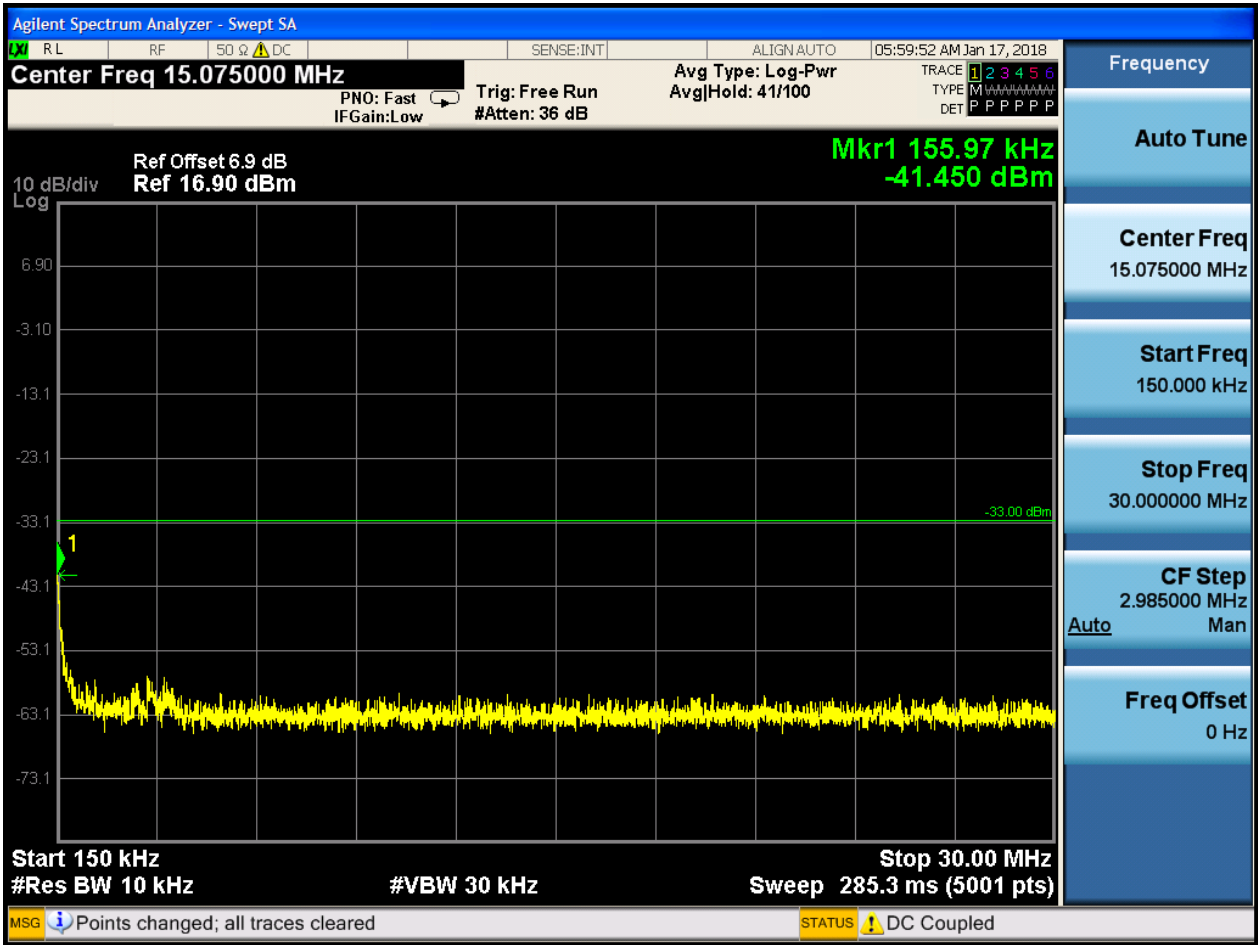
6.1 For UMTS

6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

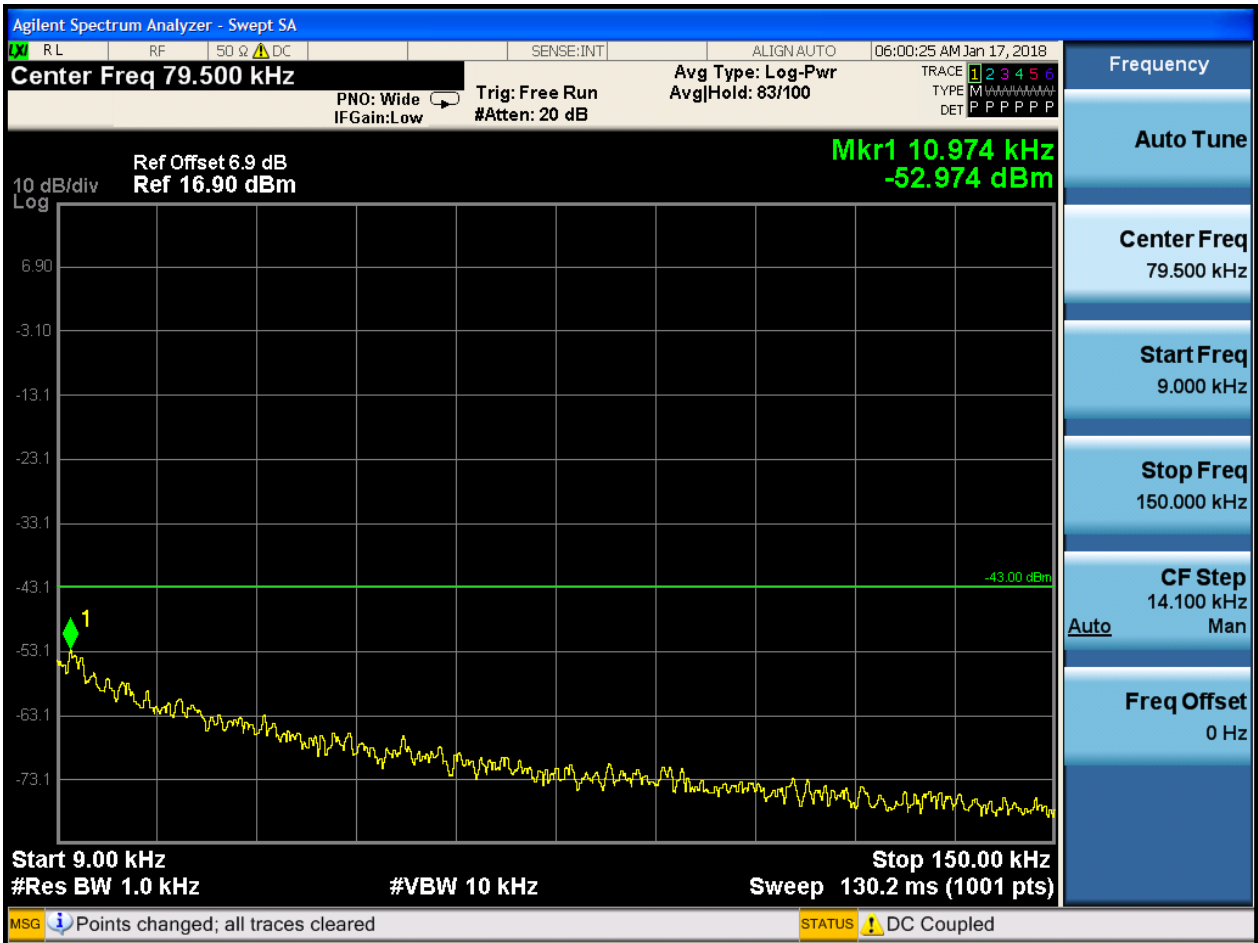
6.1.1.1.1 Test Channel = LCH

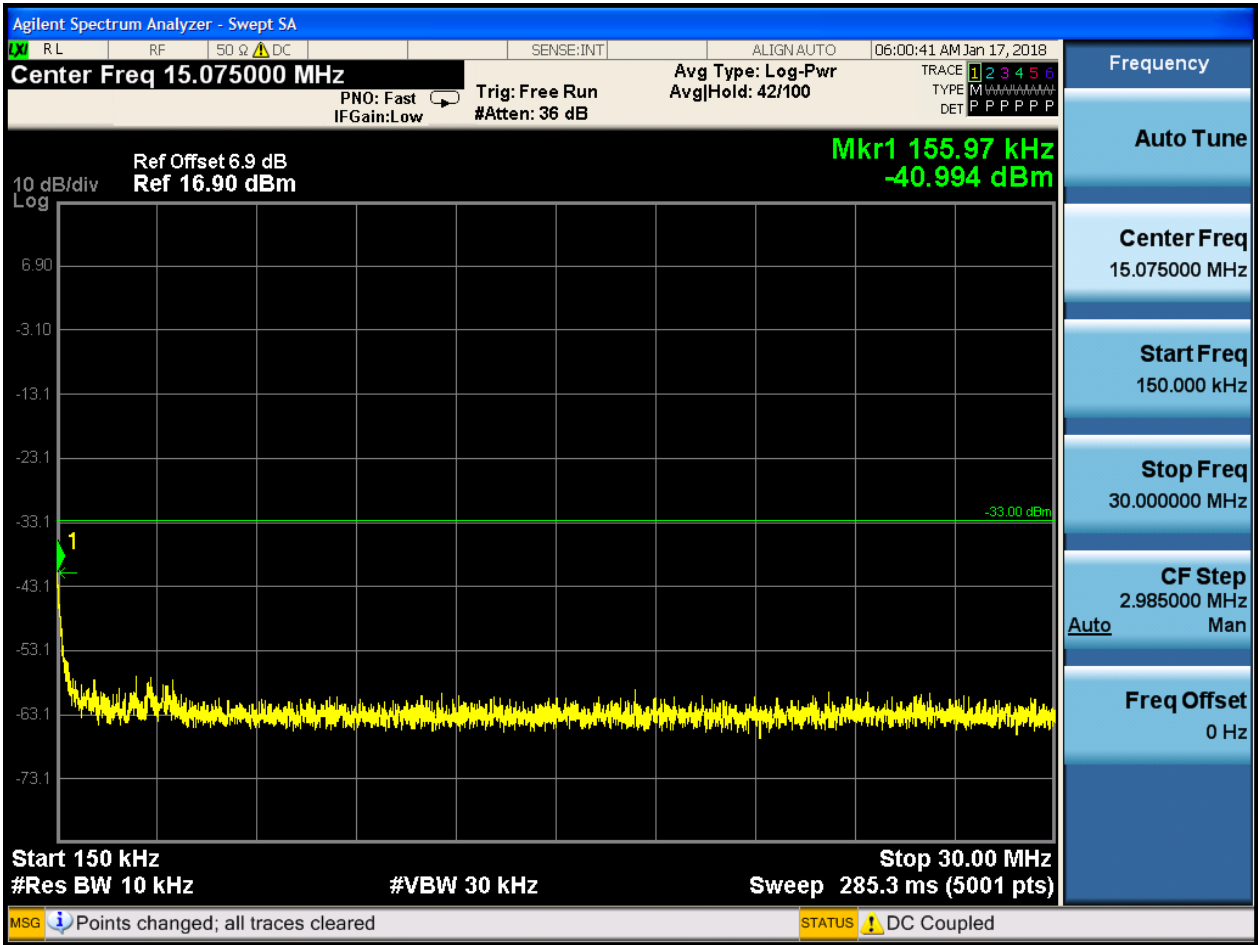


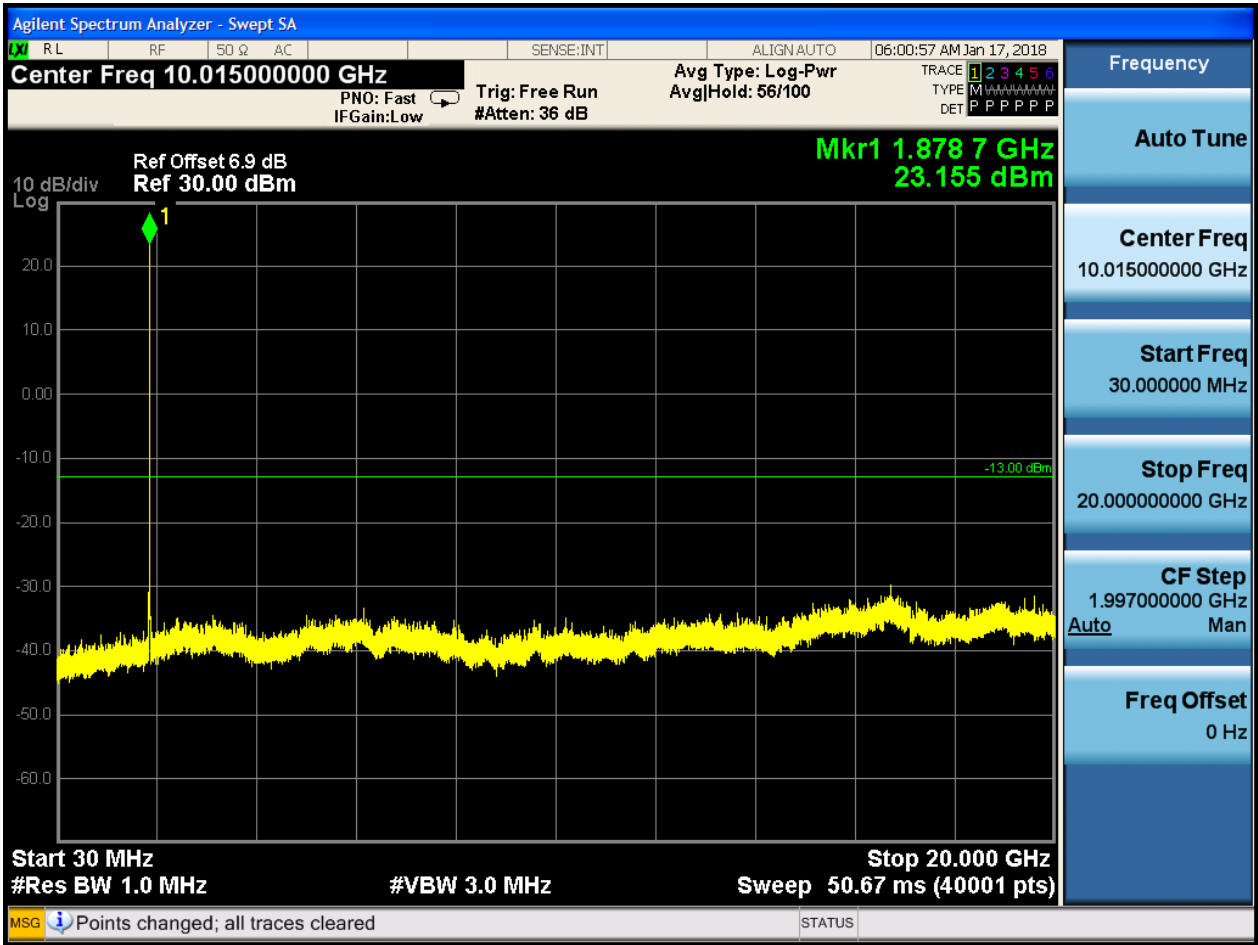




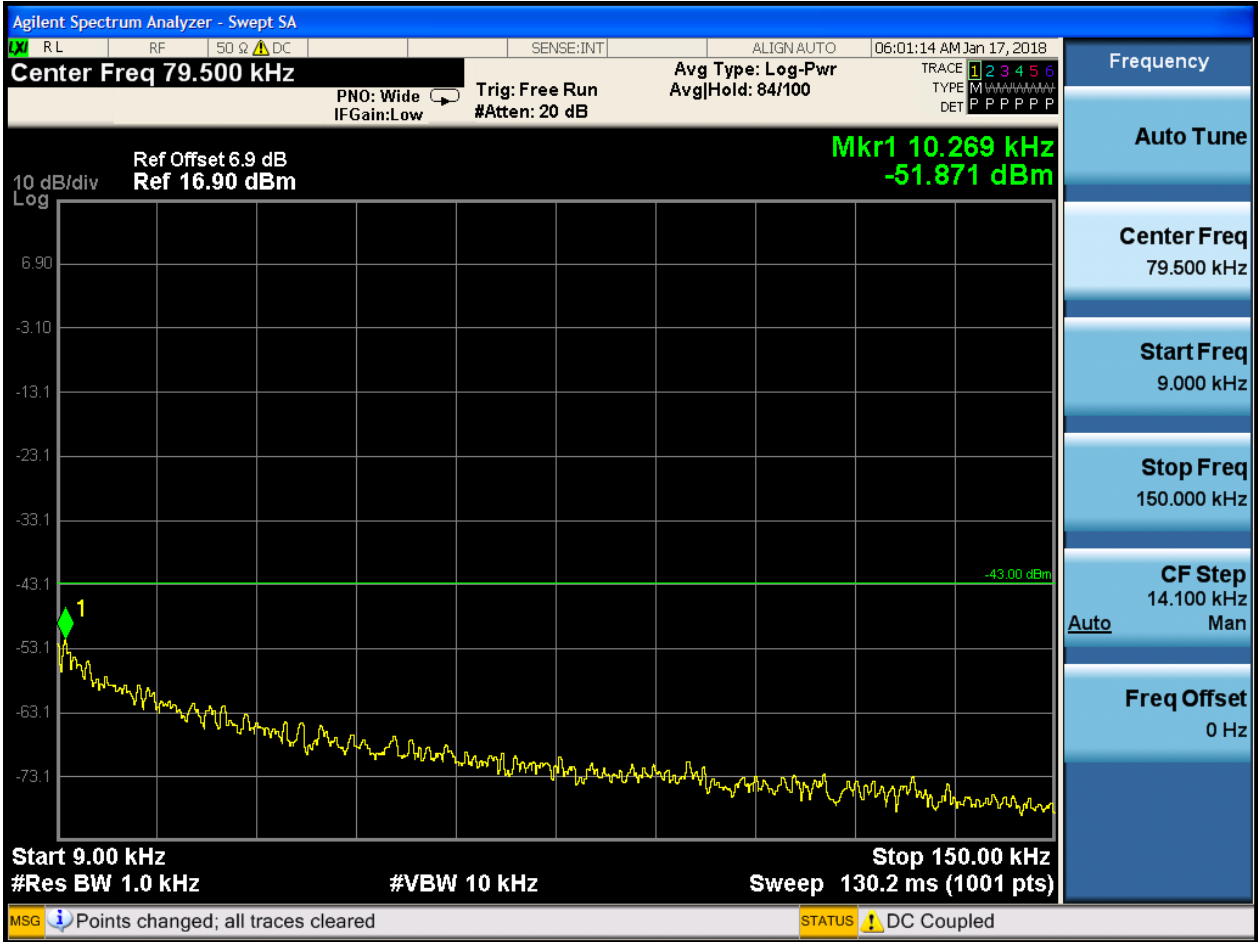
6.1.1.1.2 Test Channel = MCH

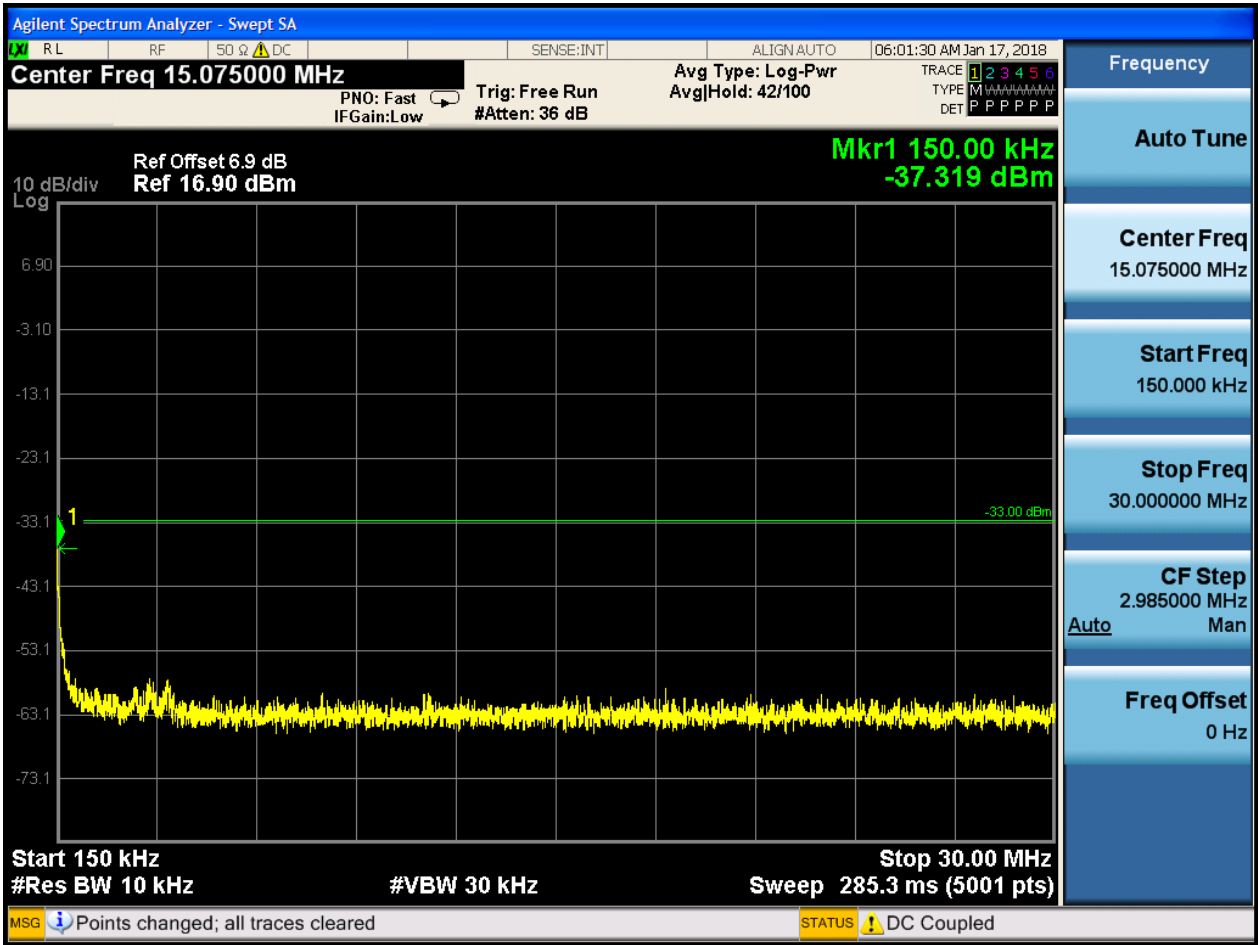


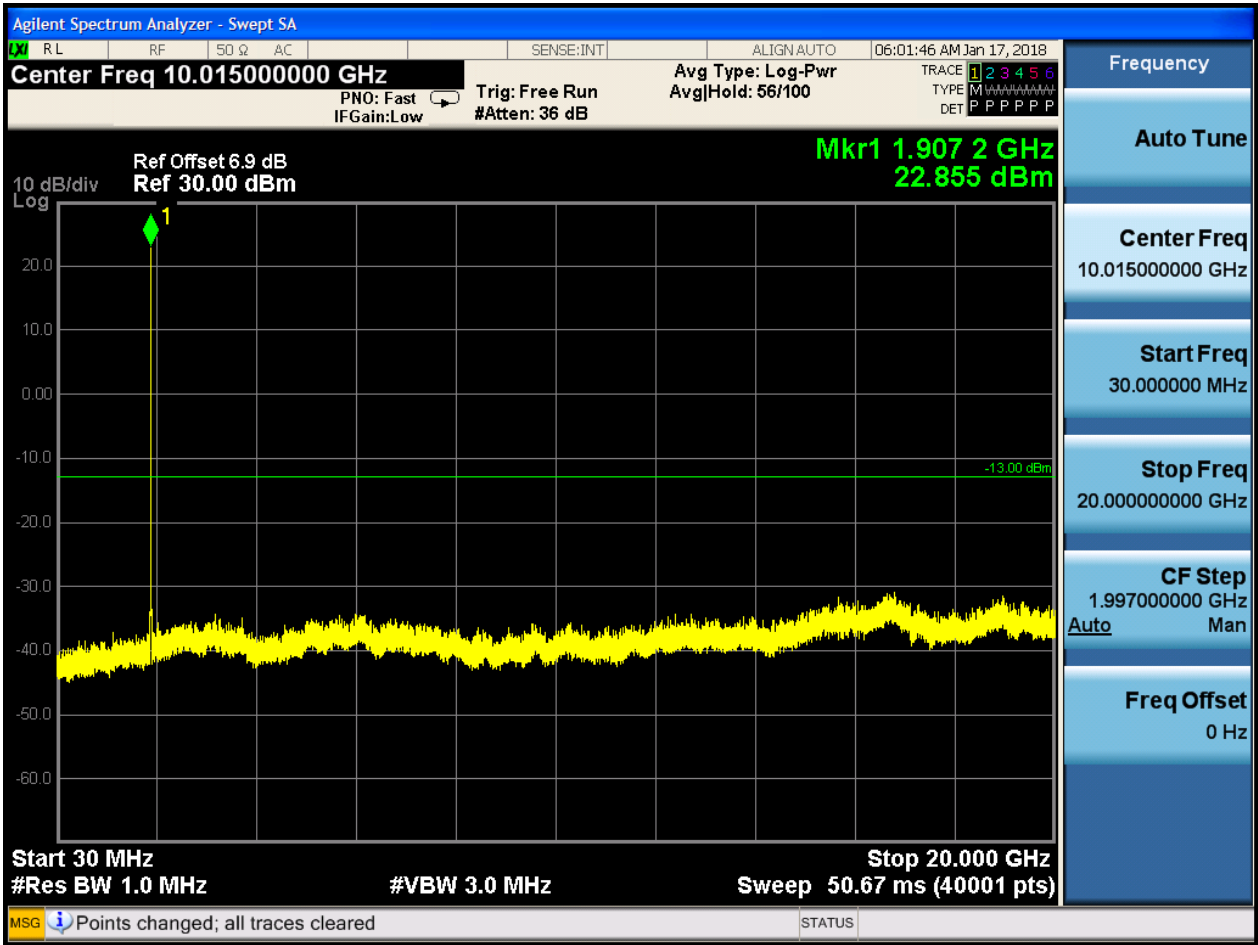




6.1.1.1.3 Test Channel = HCH





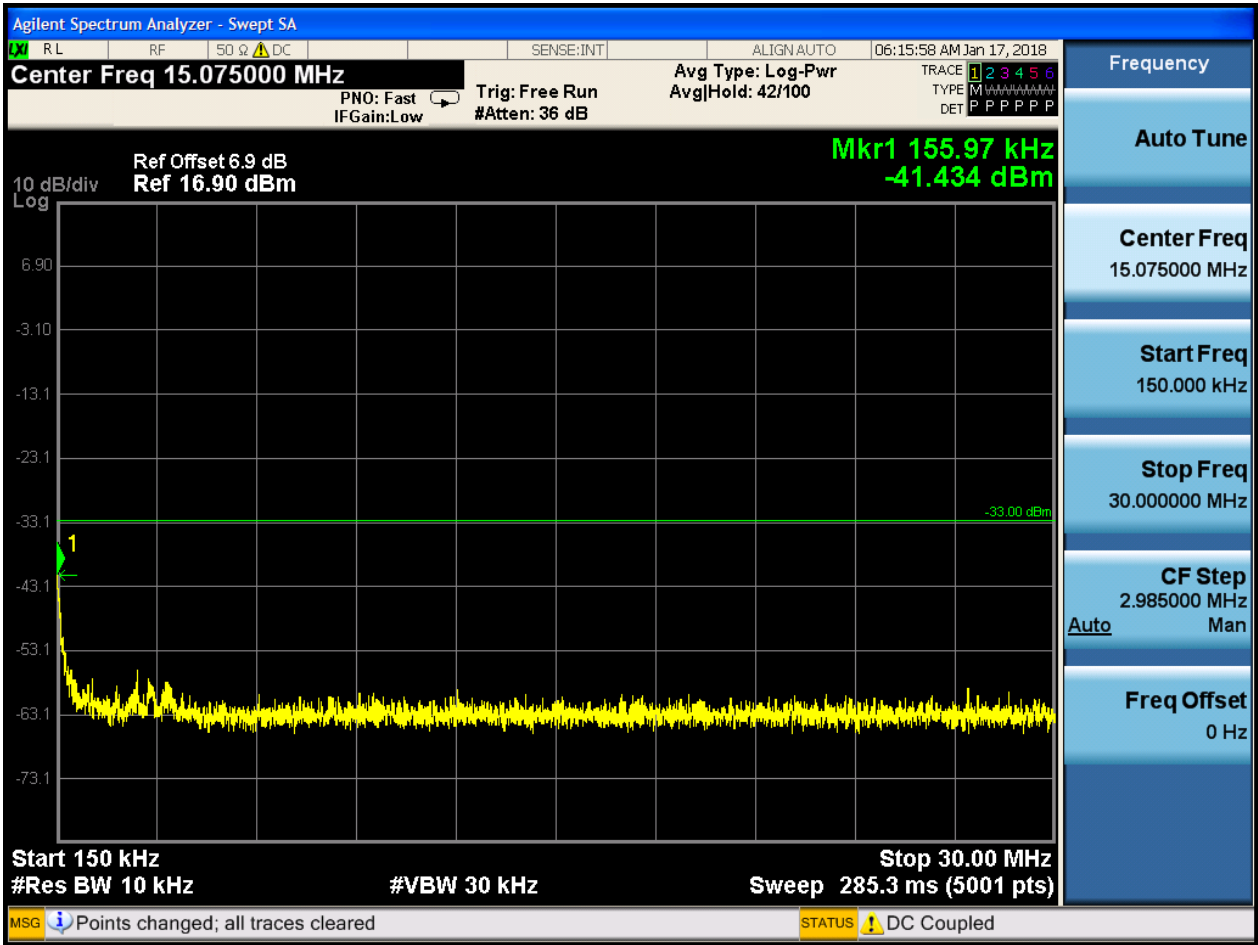


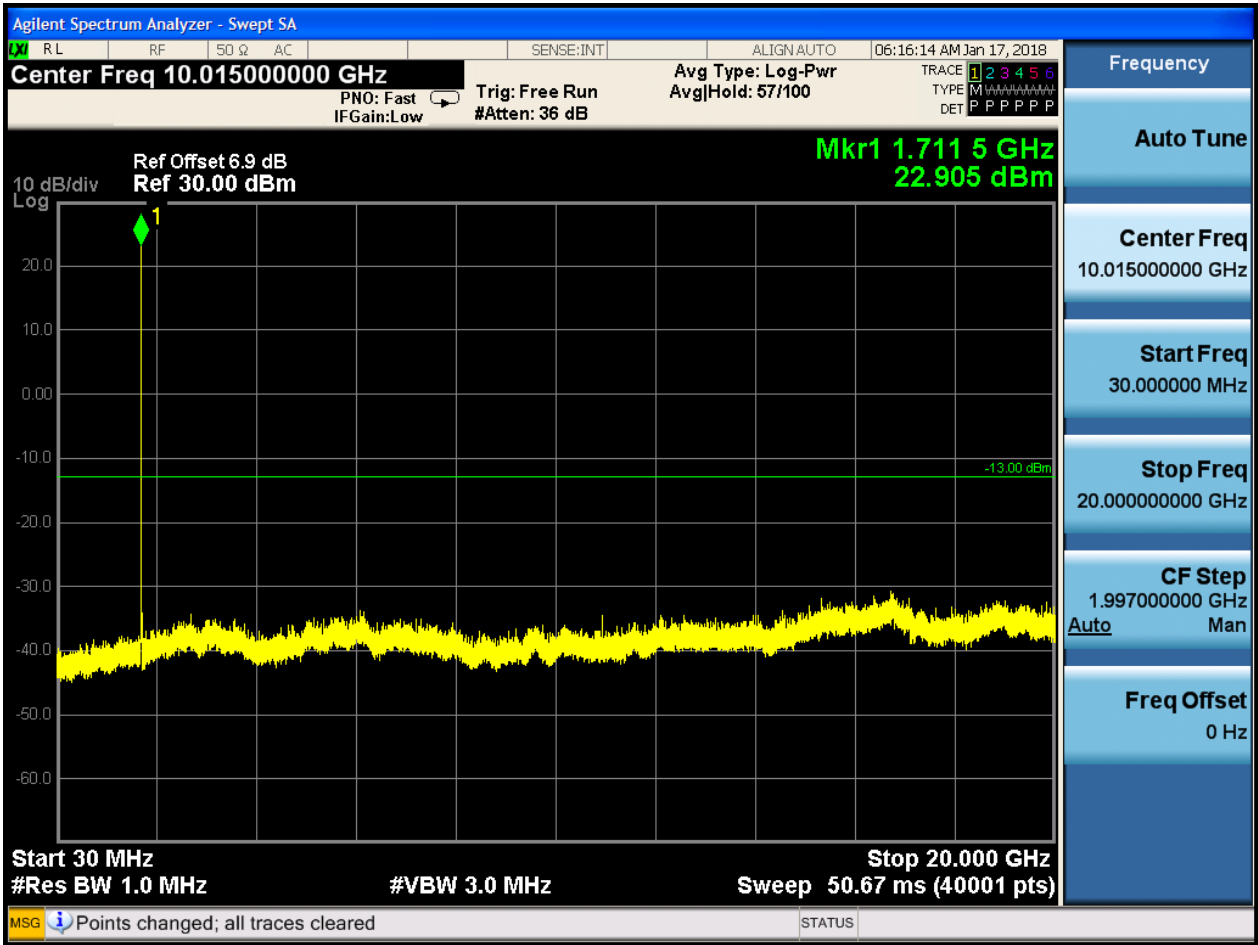
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

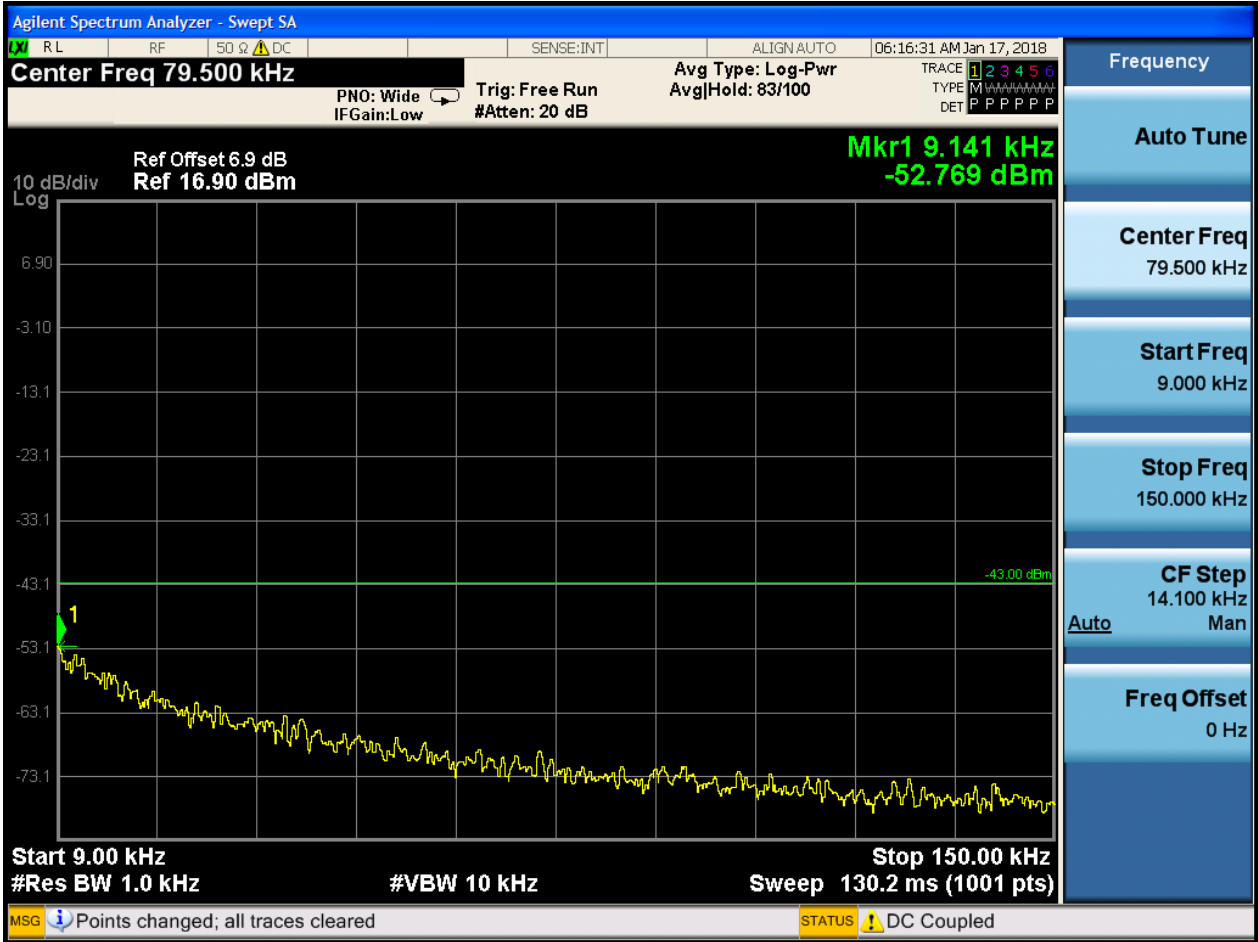
6.1.2.1.1 Test Channel = LCH

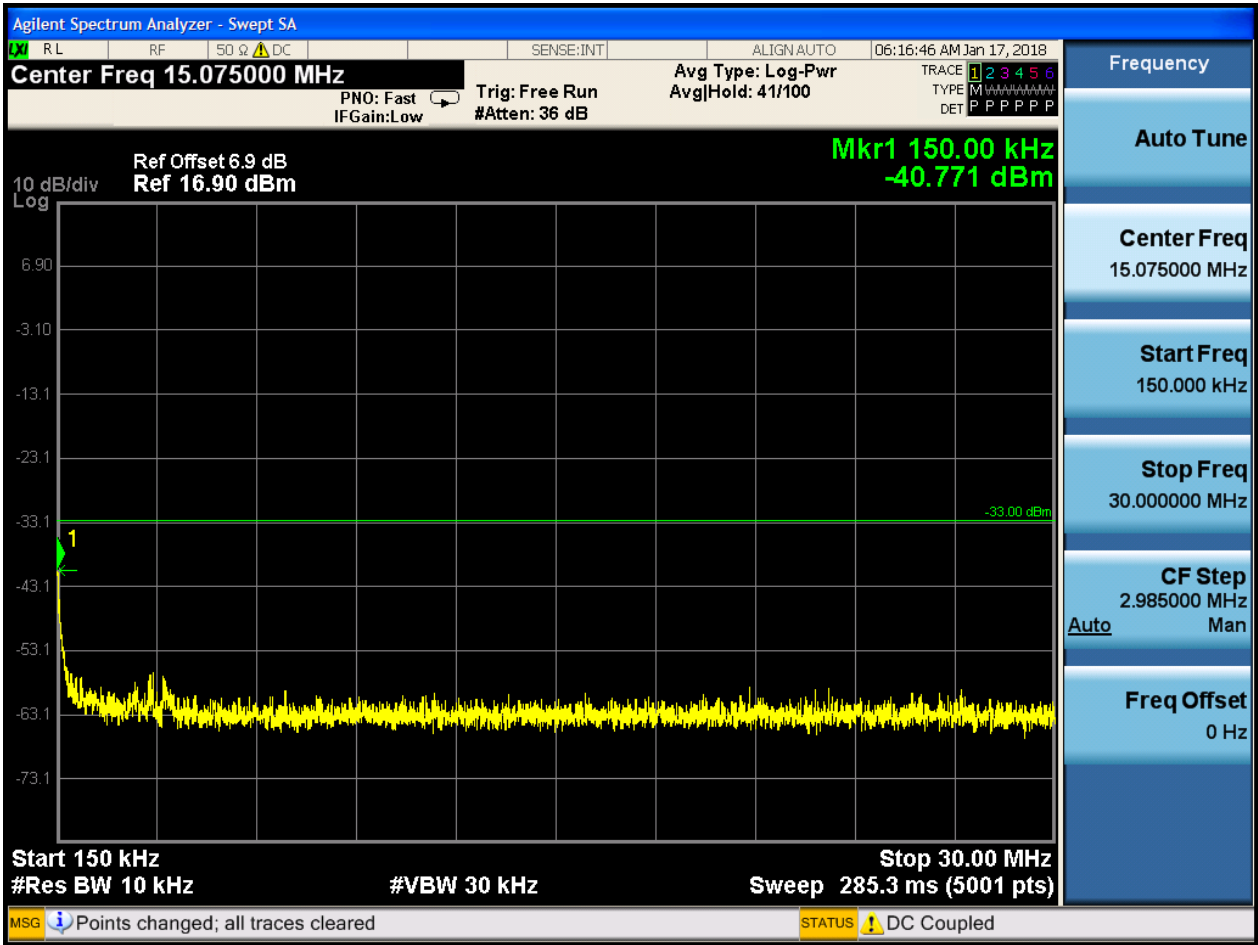


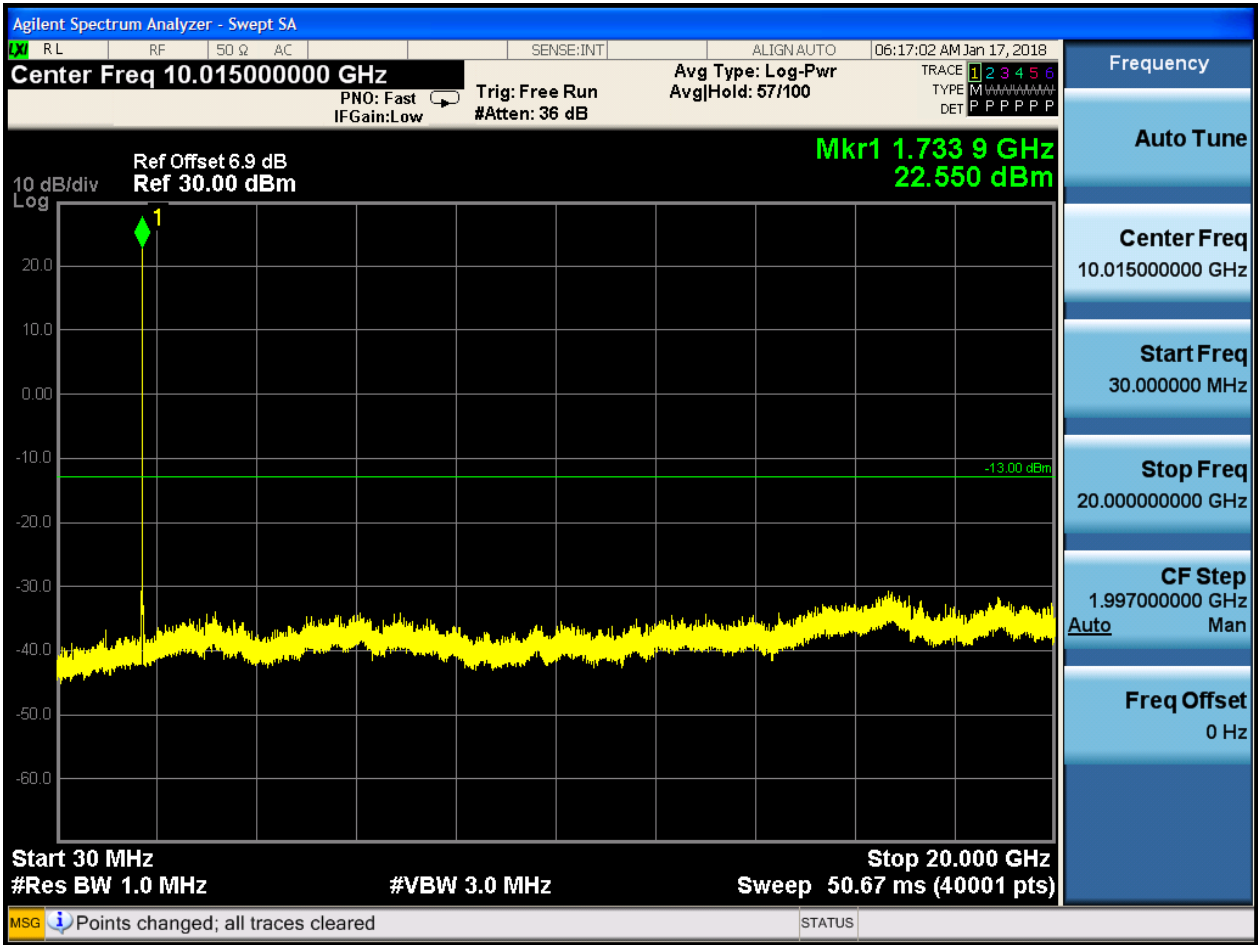




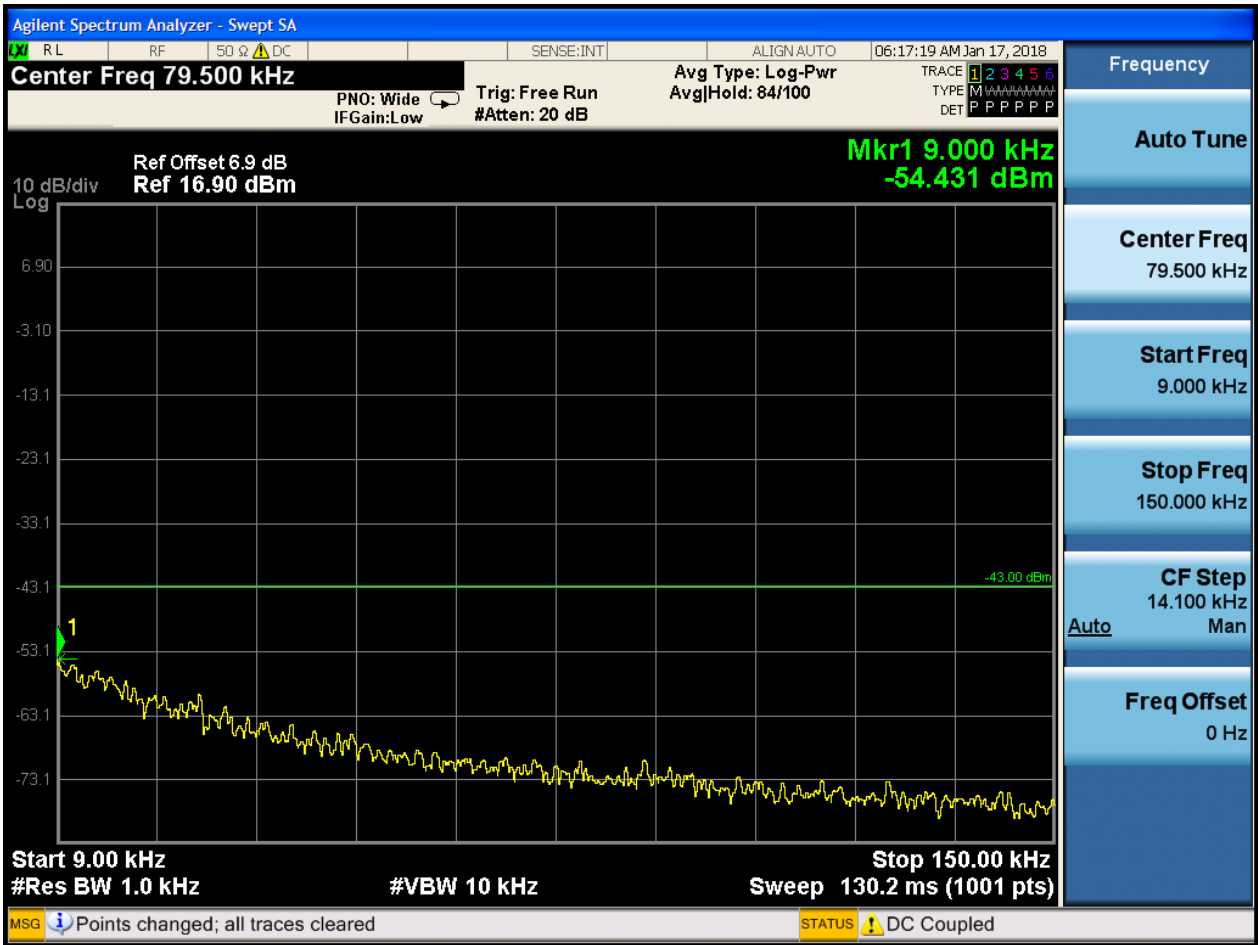
6.1.2.1.2 Test Channel = MCH

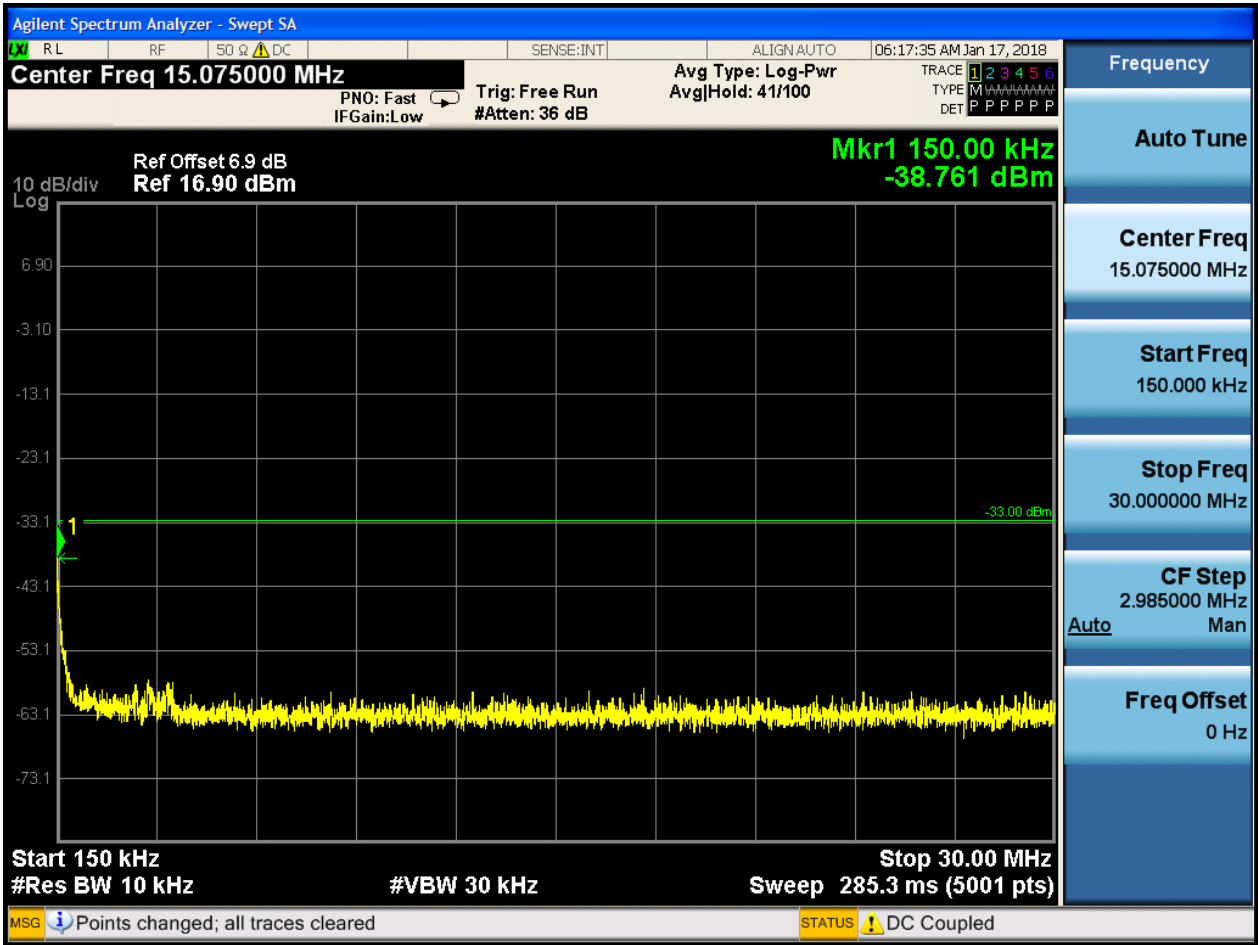


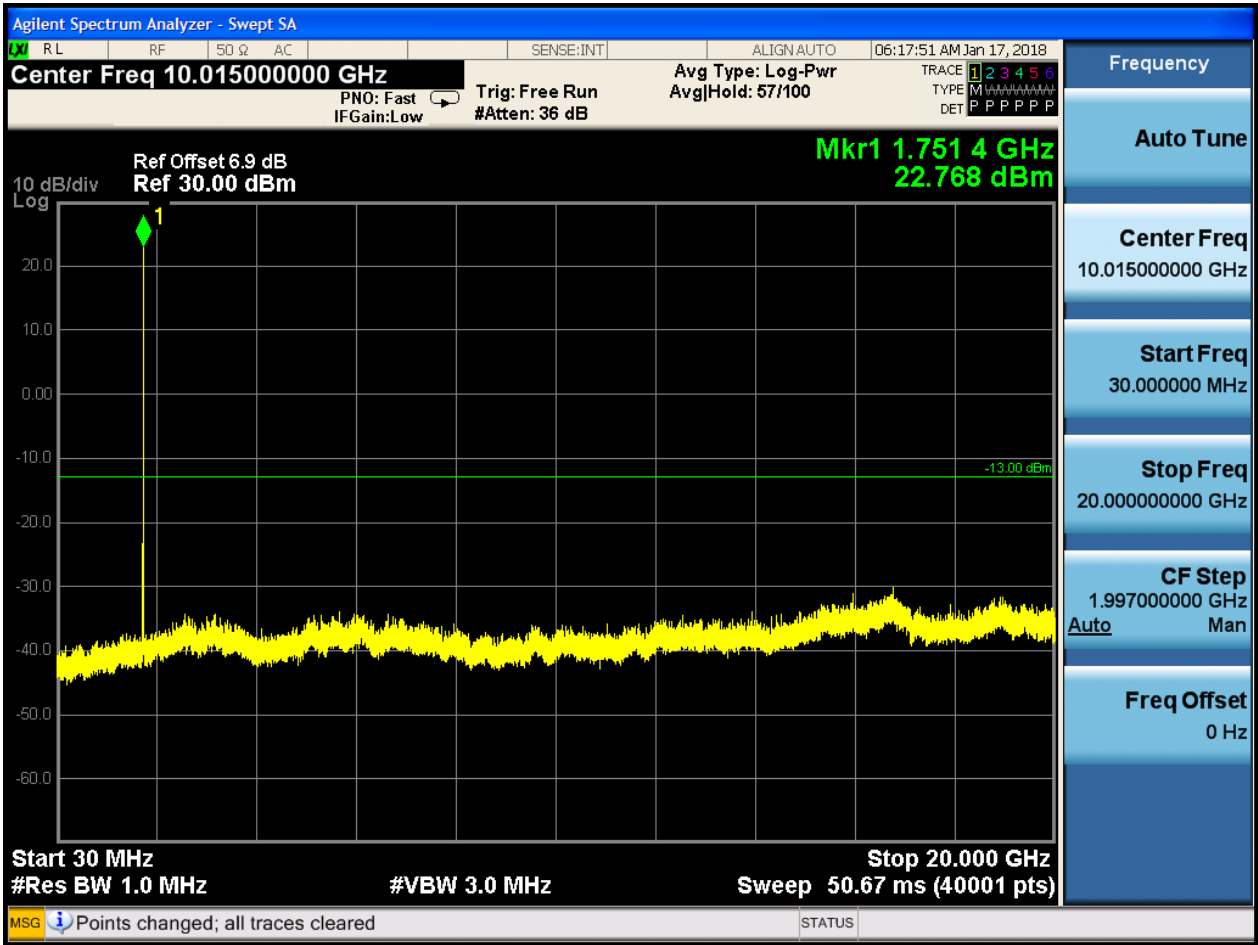




6.1.2.1.3 Test Channel = HCH





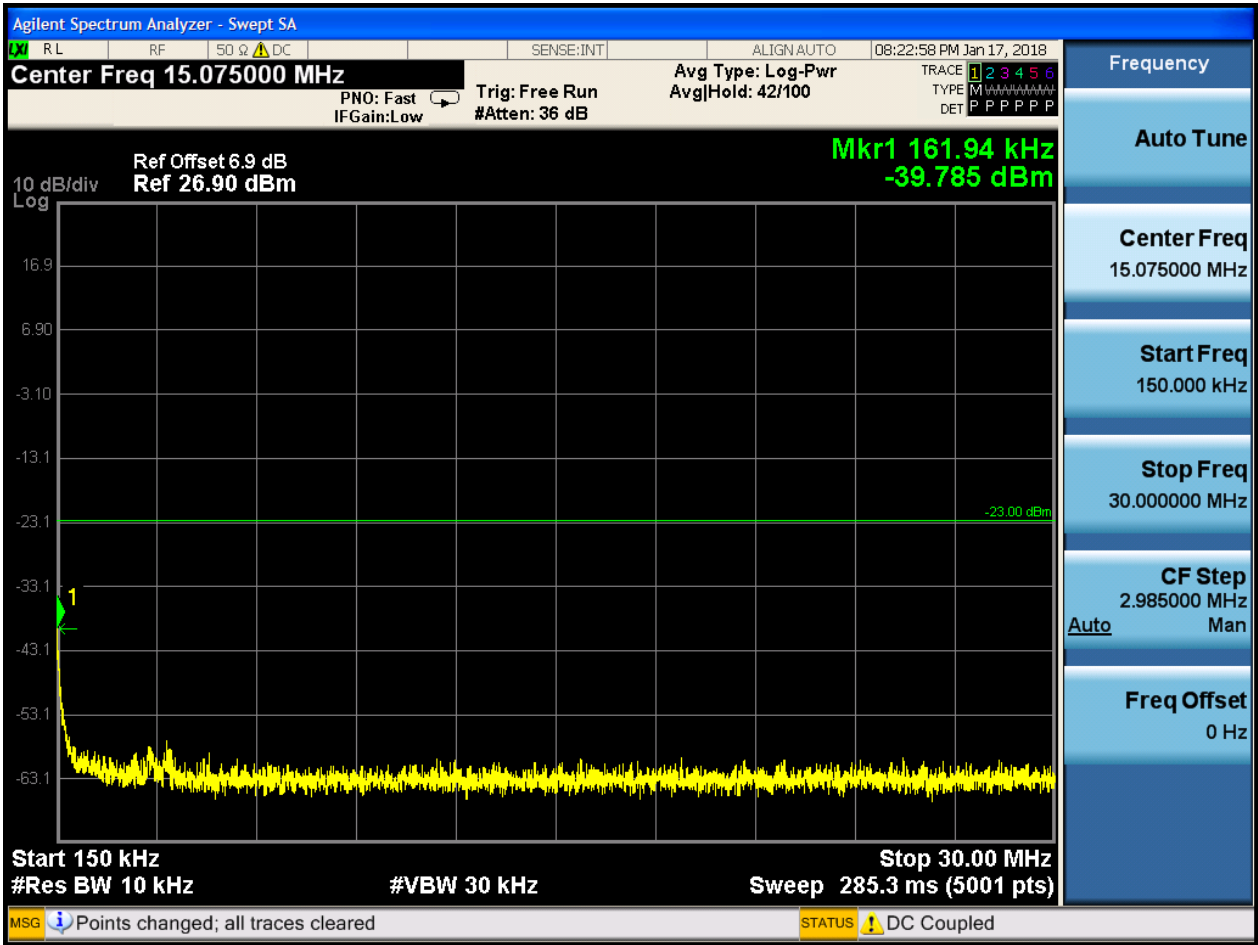


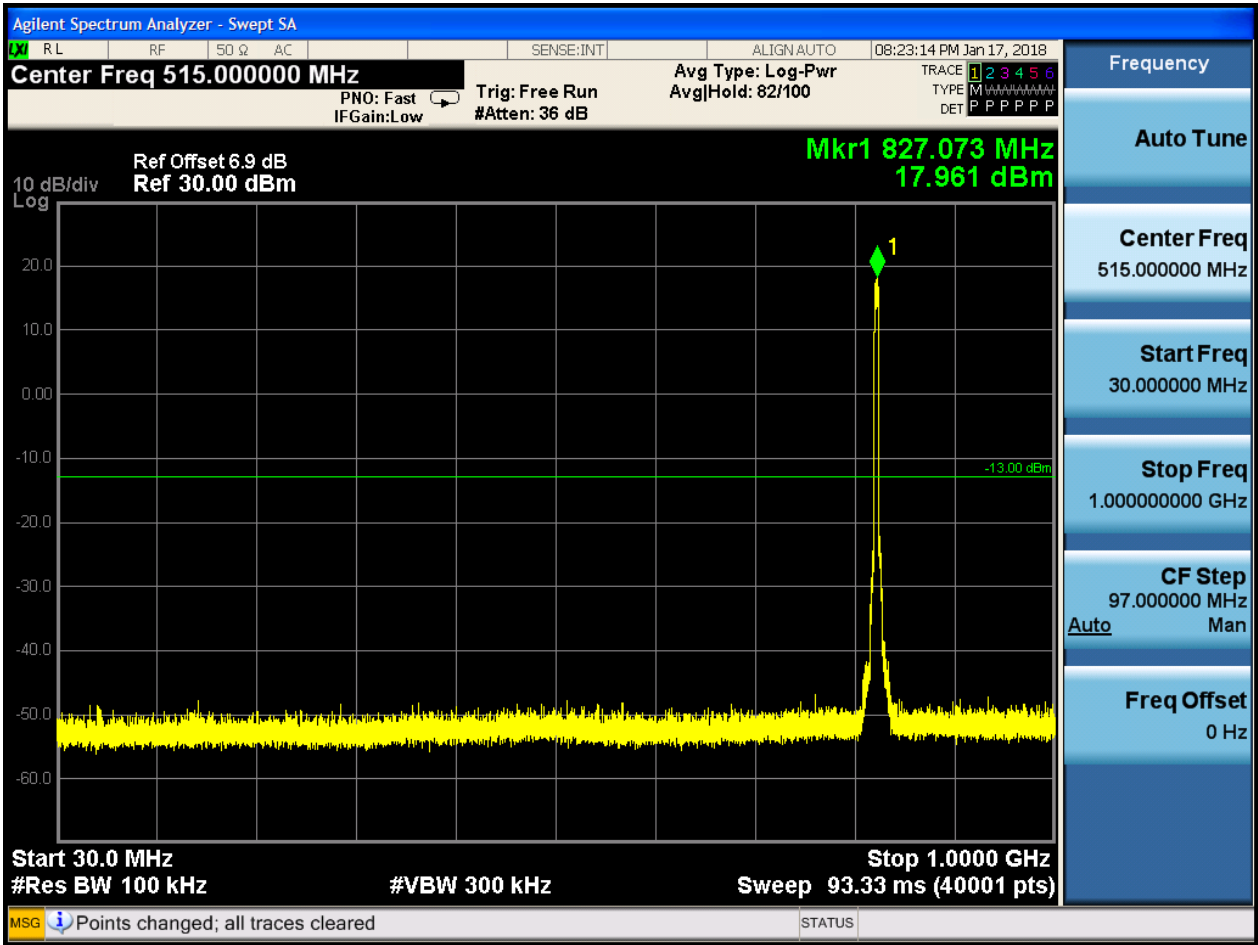
6.1.3 Test Band = WCDMA850

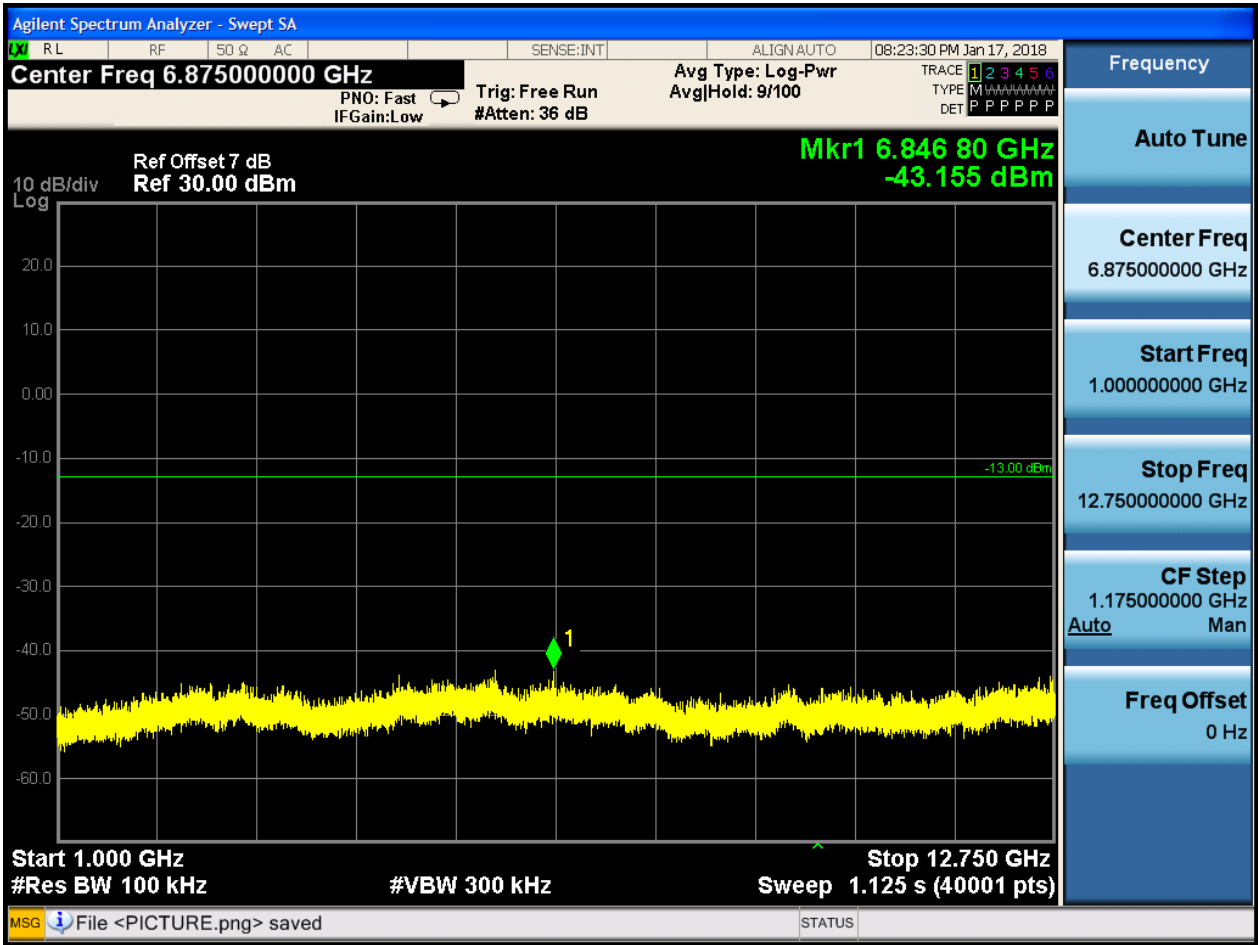
6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

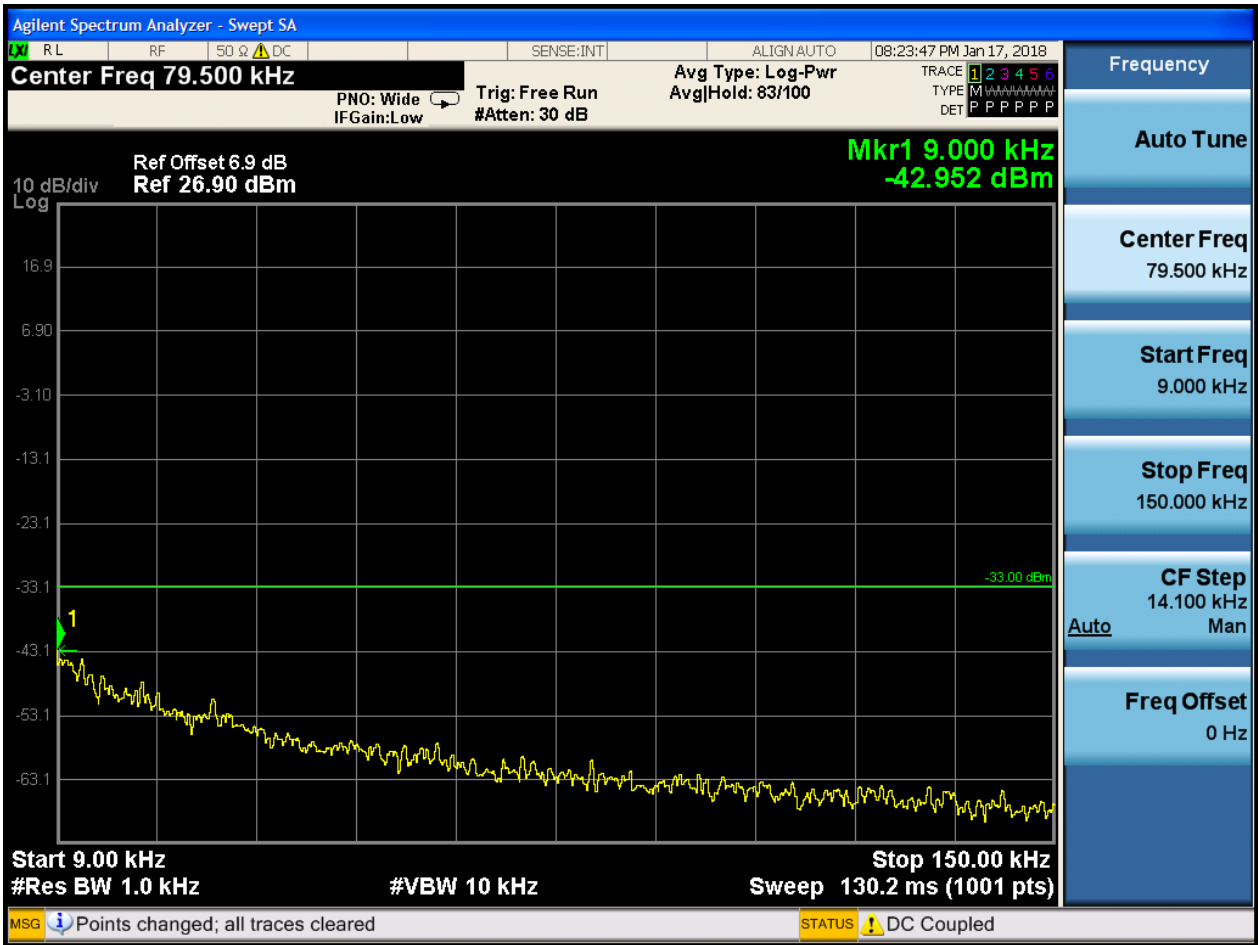


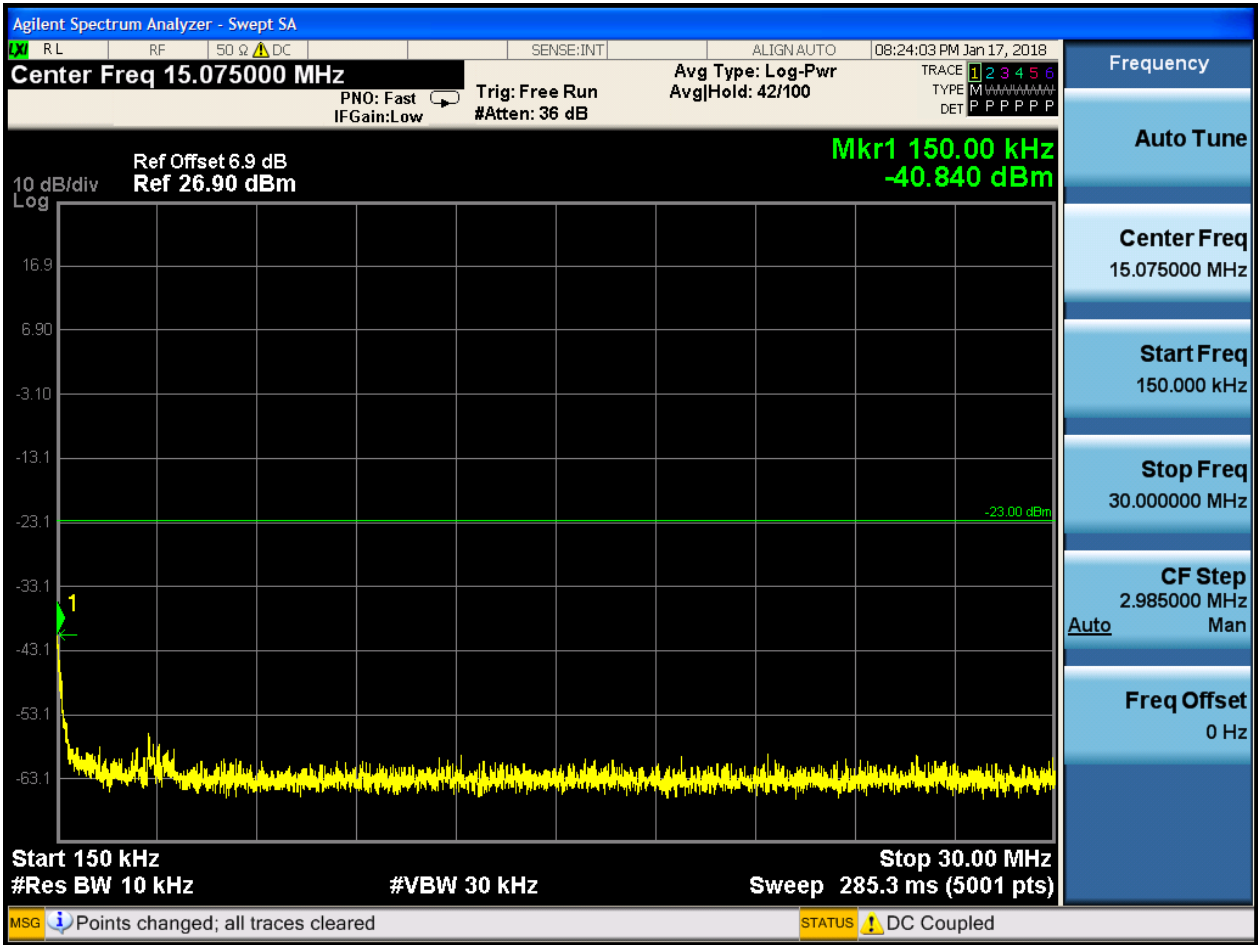


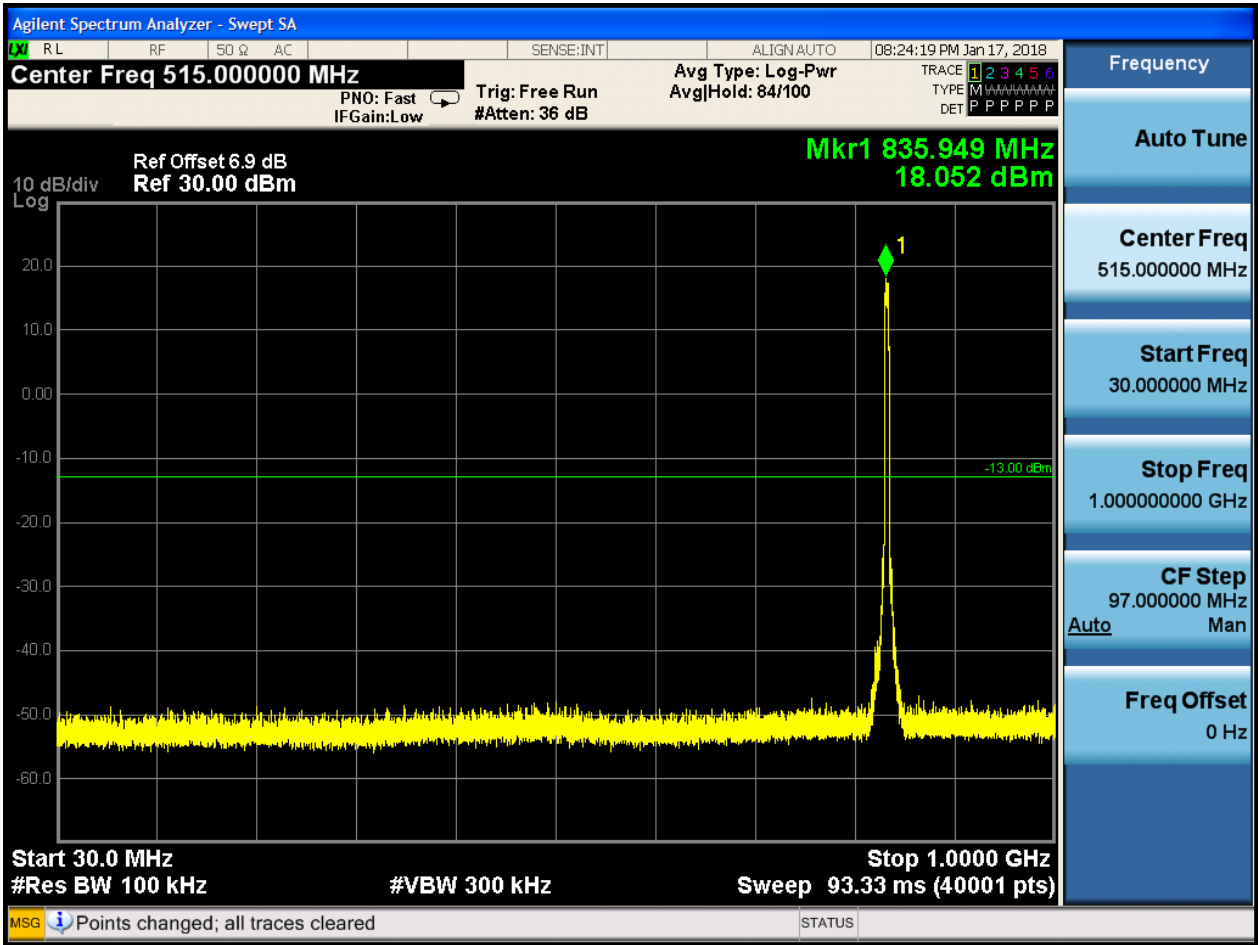


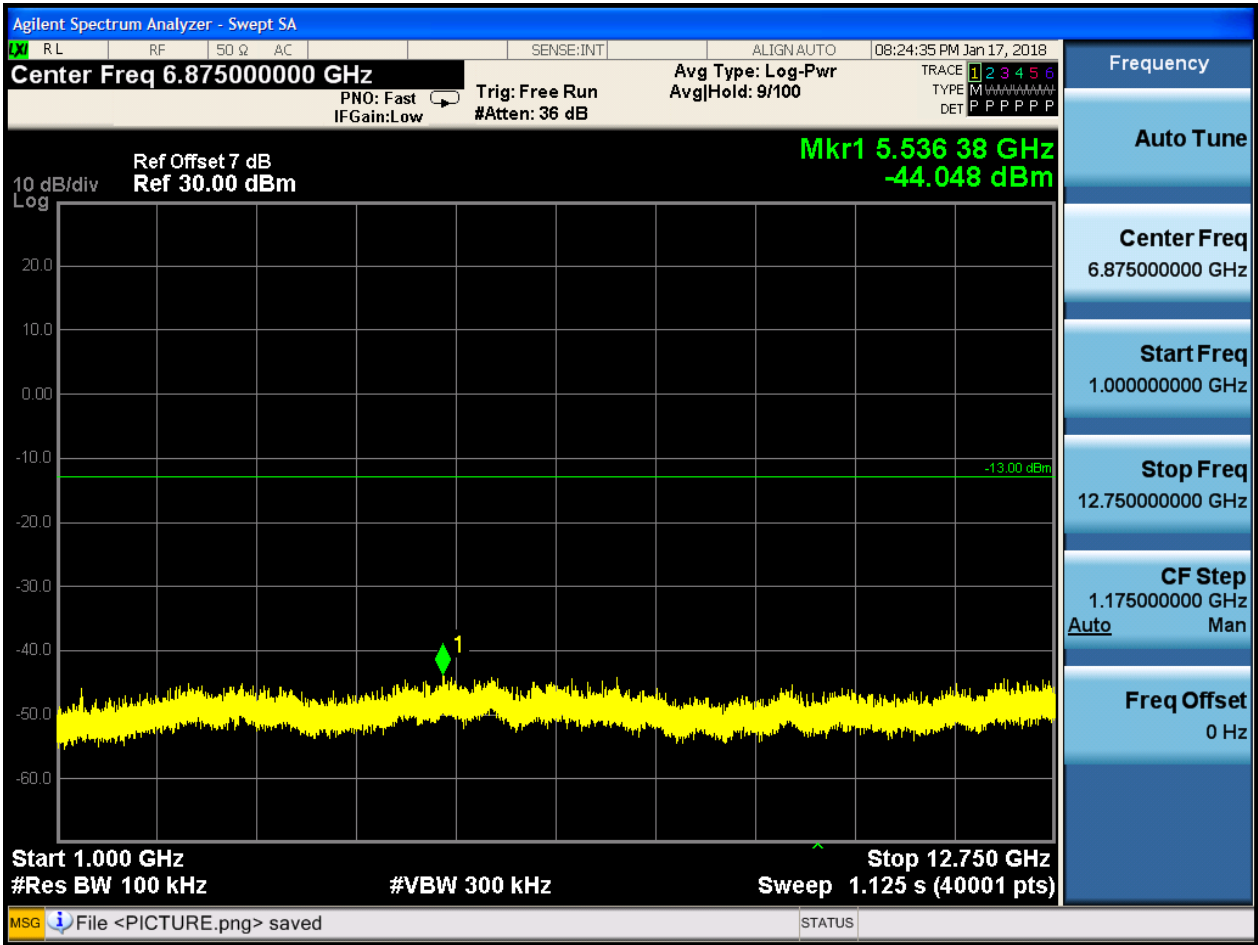


6.1.3.1.2 Test Channel = MCH

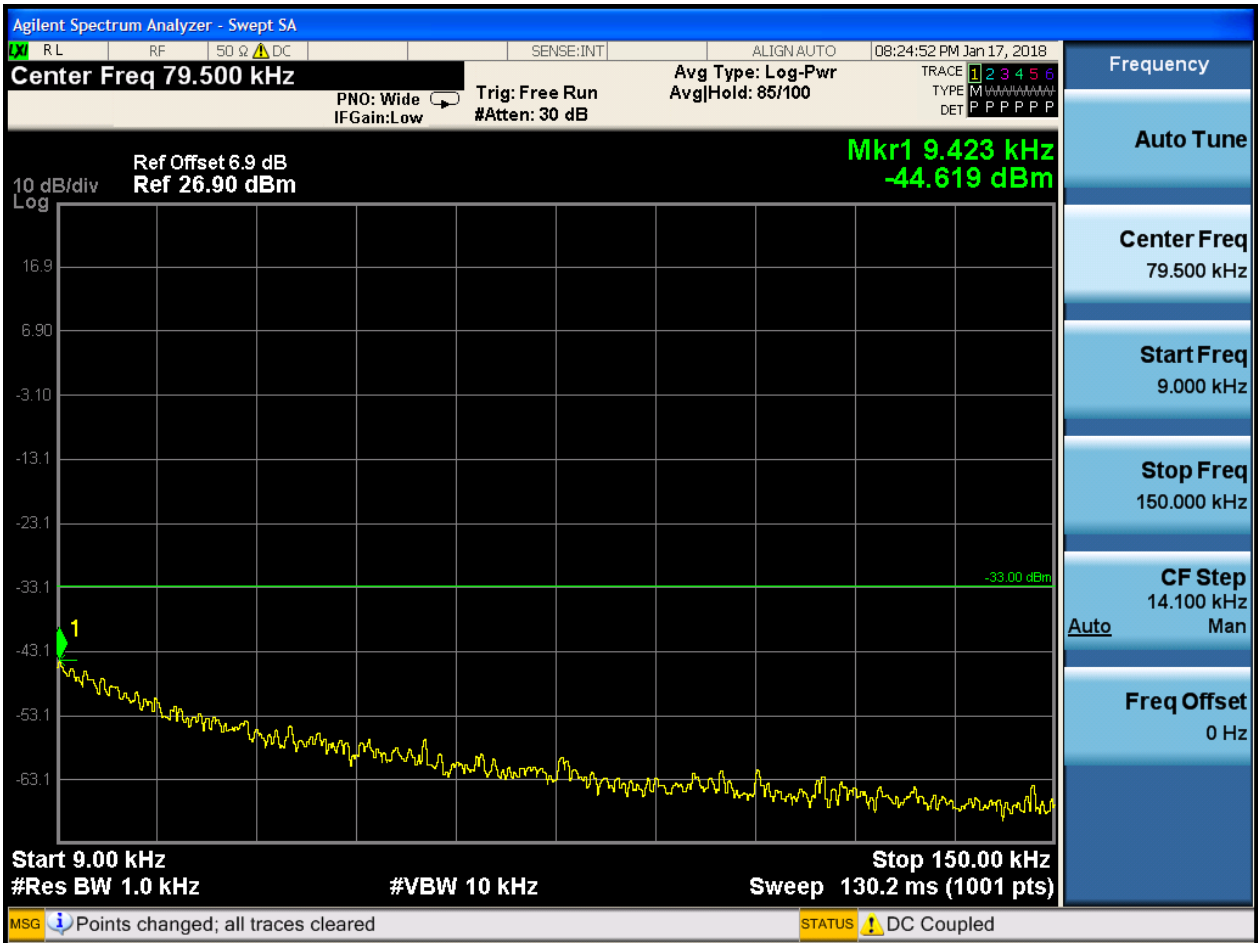


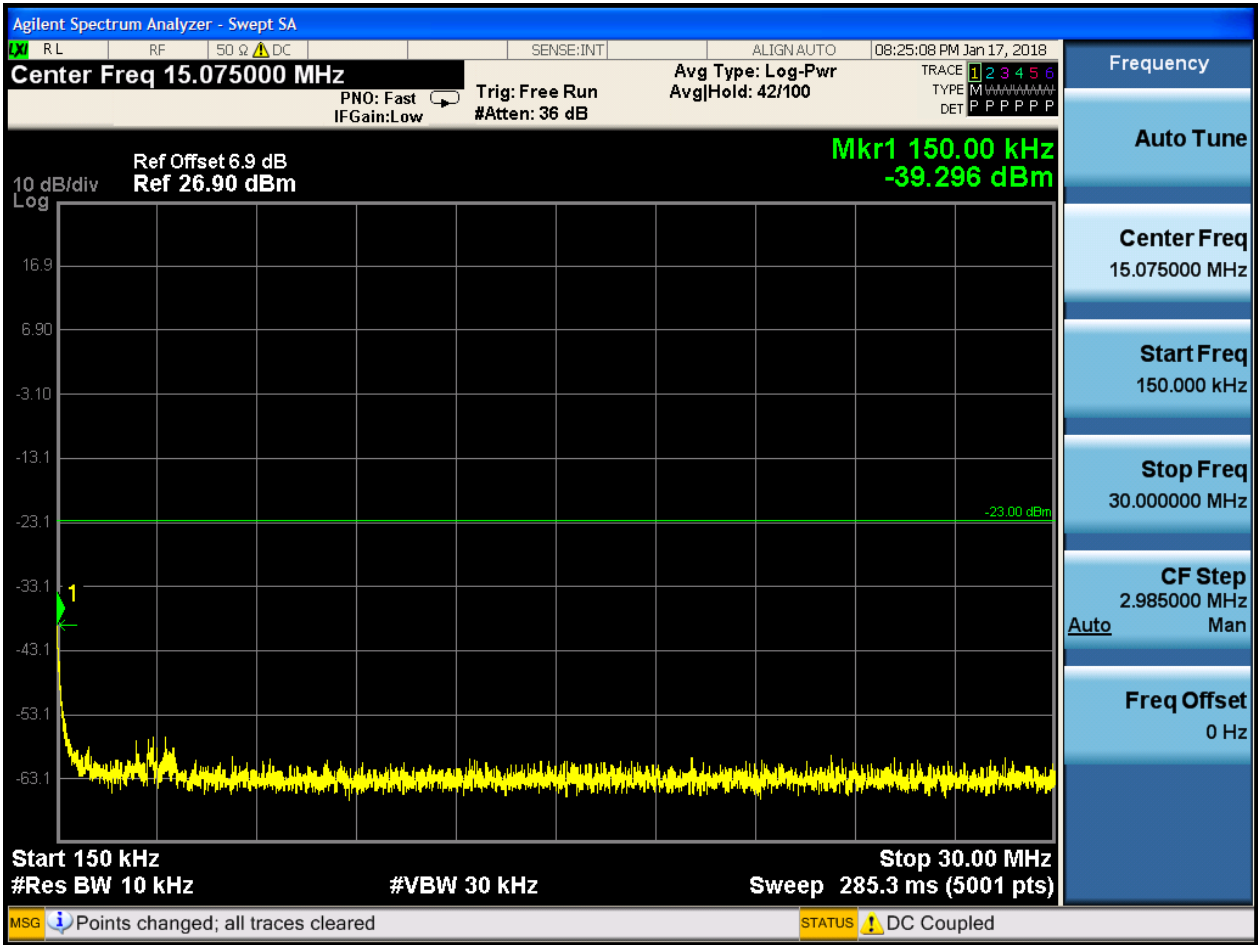


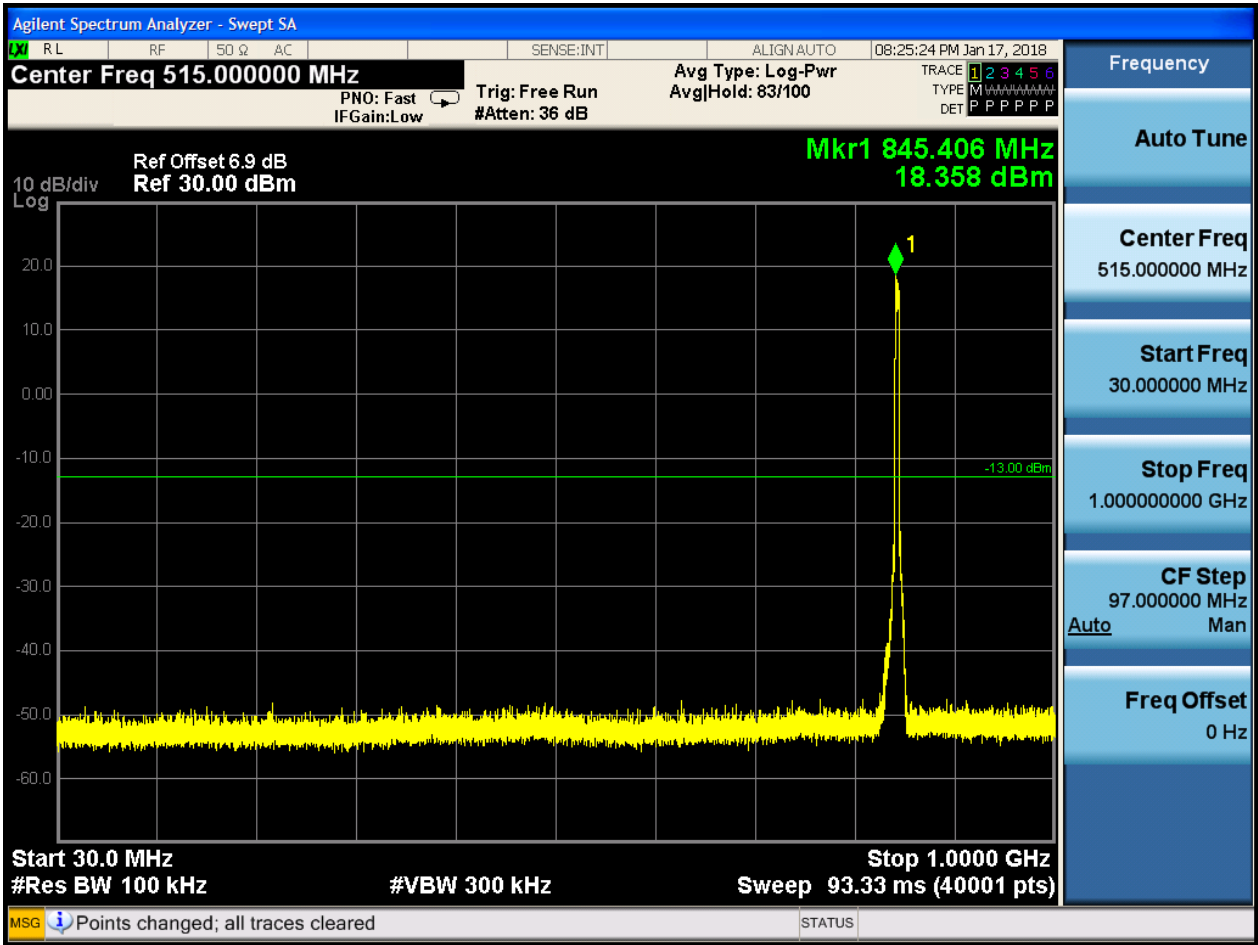


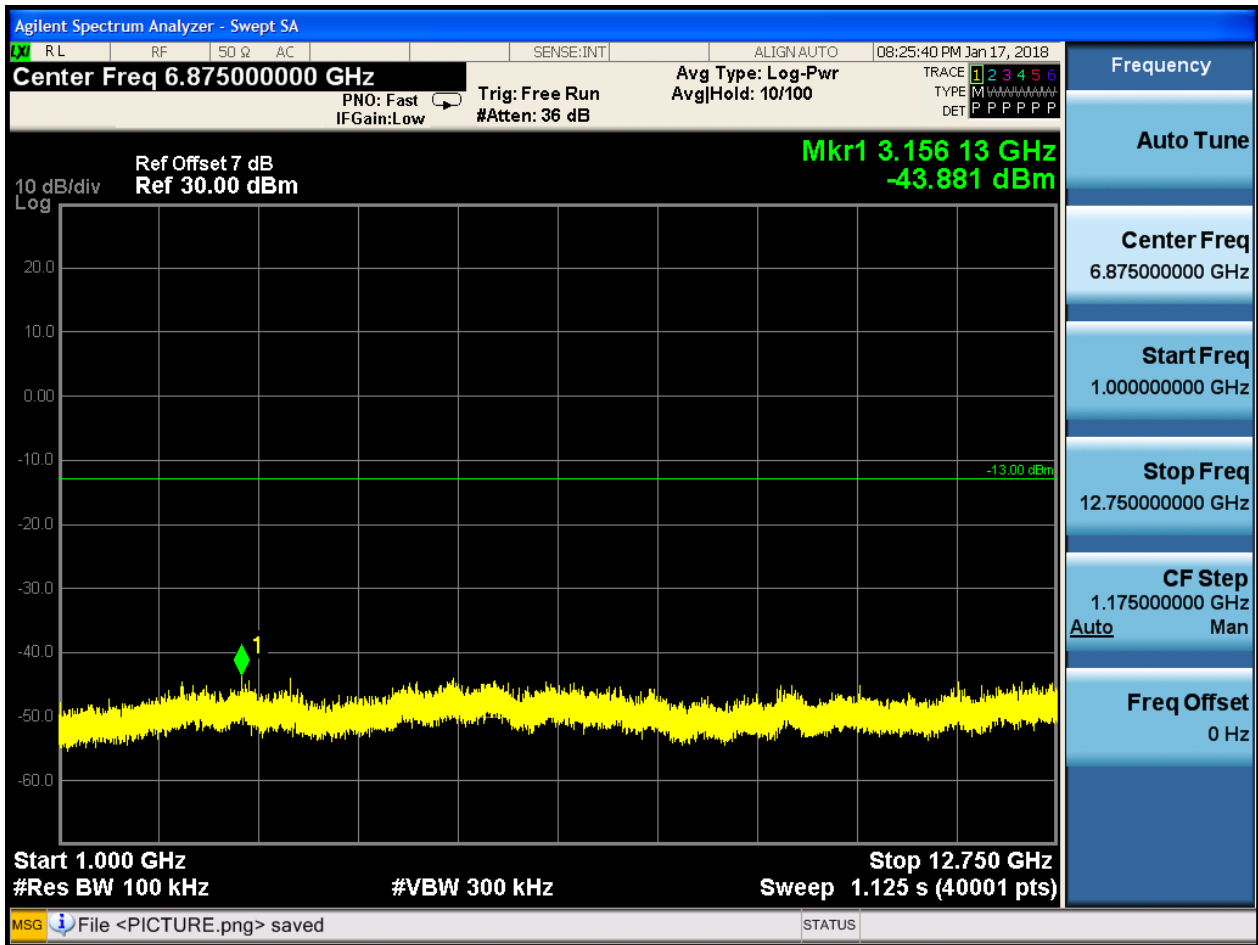


6.1.3.1.3 Test Channel = HCH









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

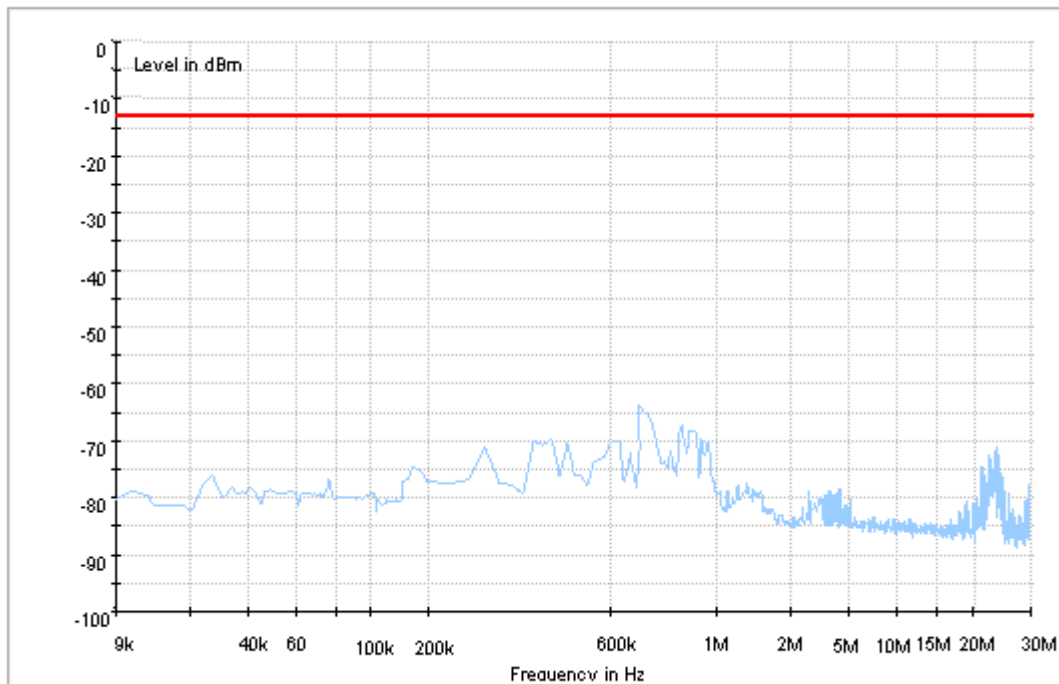
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

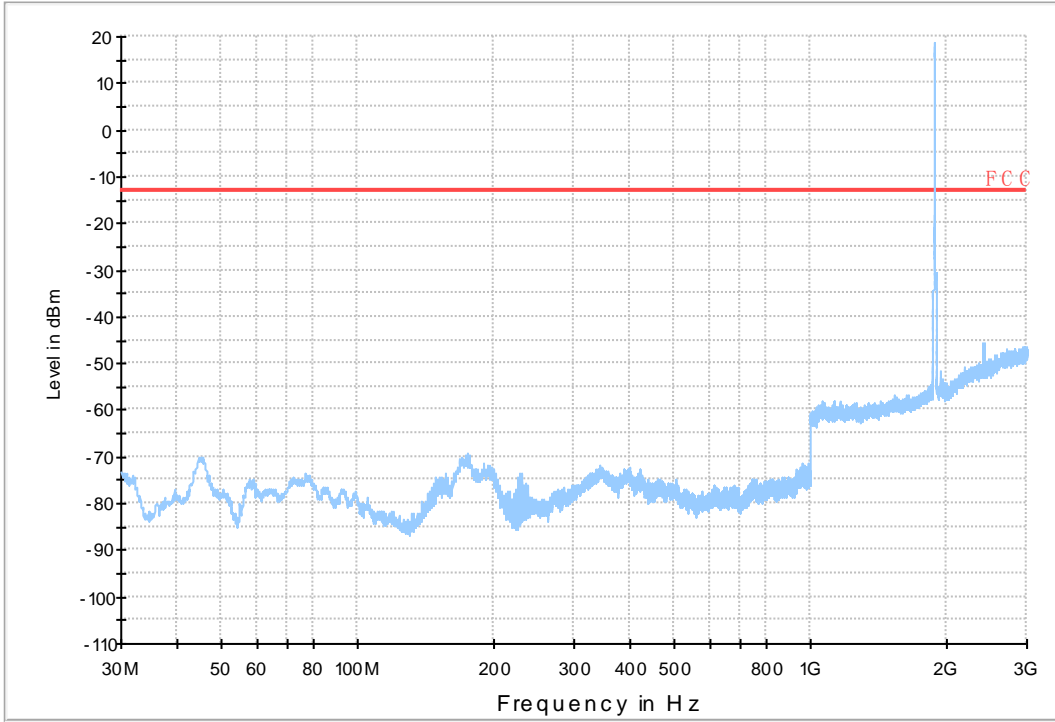
7.1 For UMTS

7.1.1 Test Band = WCDMA1900_ANT1

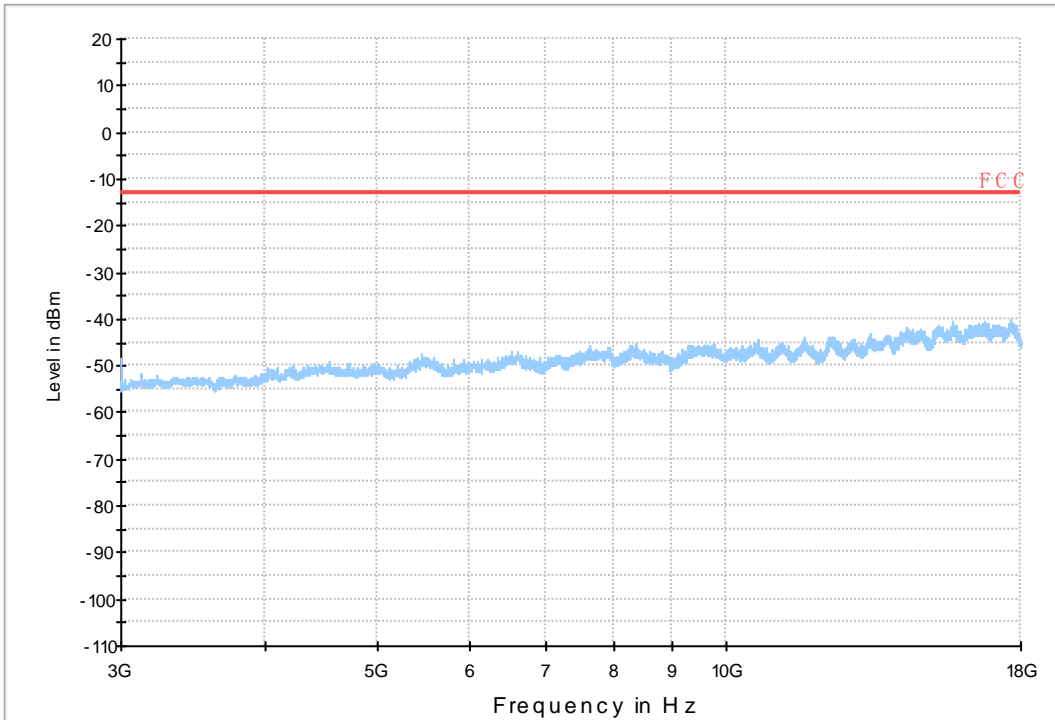
7.1.1.1 Test Mode = UMTS/TM1

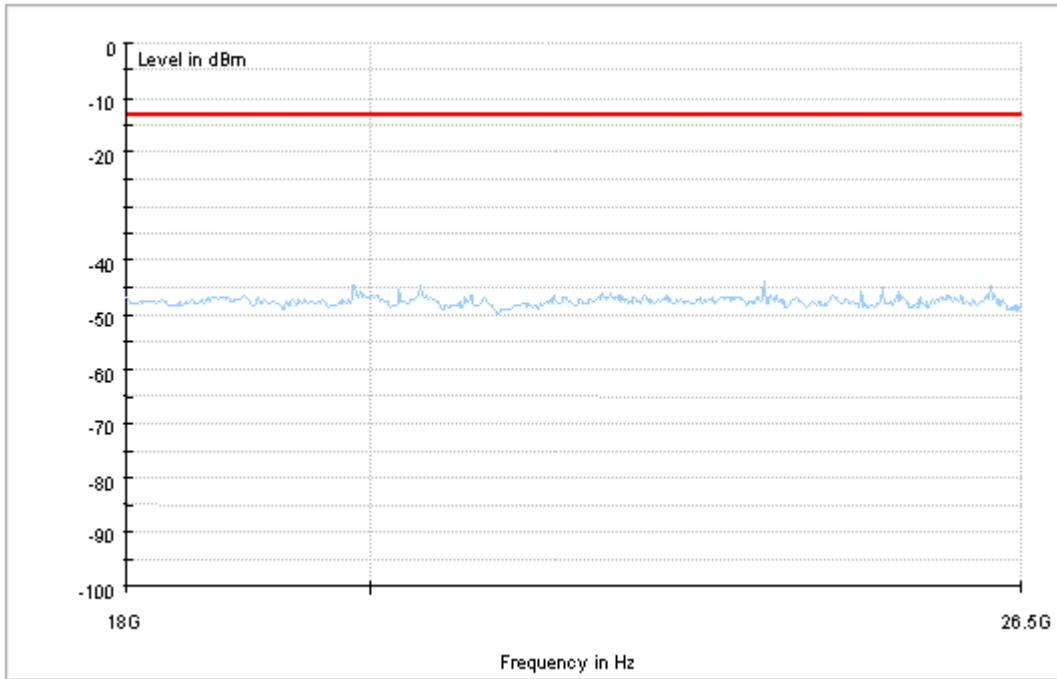


Copy of FCC PART24 W CDMA1900_L



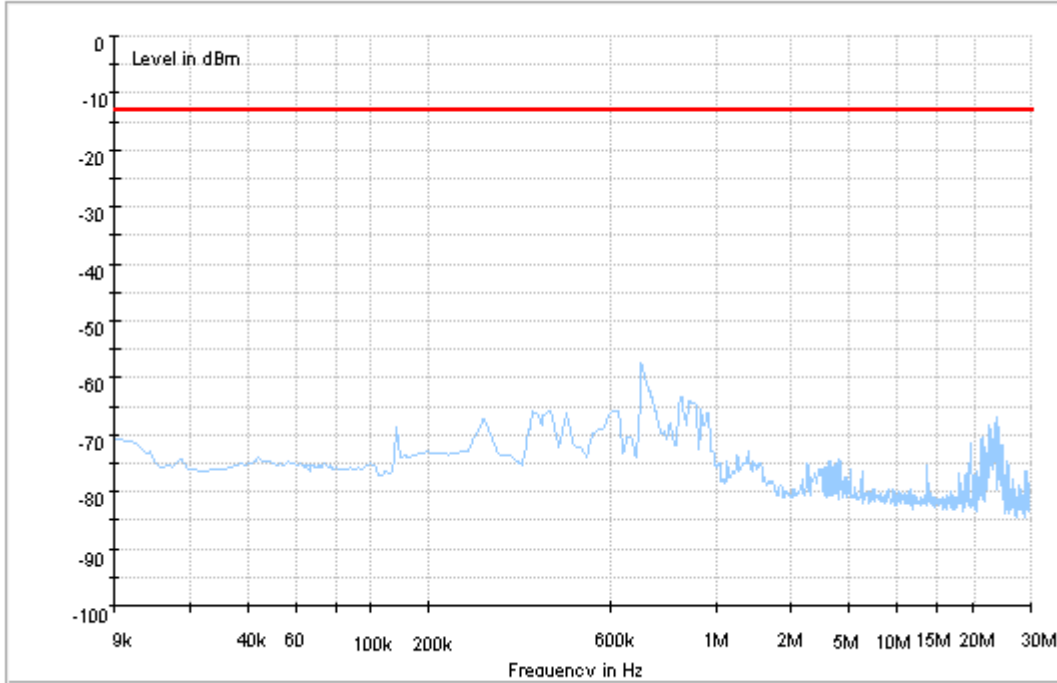
Copy of FCC PART24 W CDMA1900_H



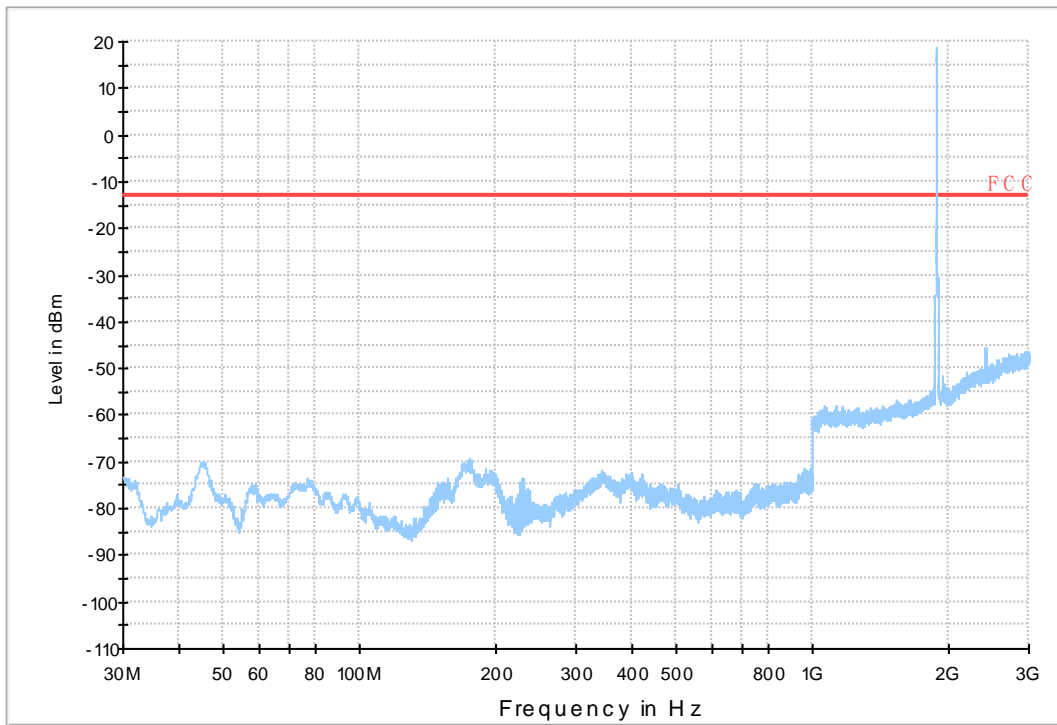


7.1.1 Test Band = WCDMA1900_ANT2

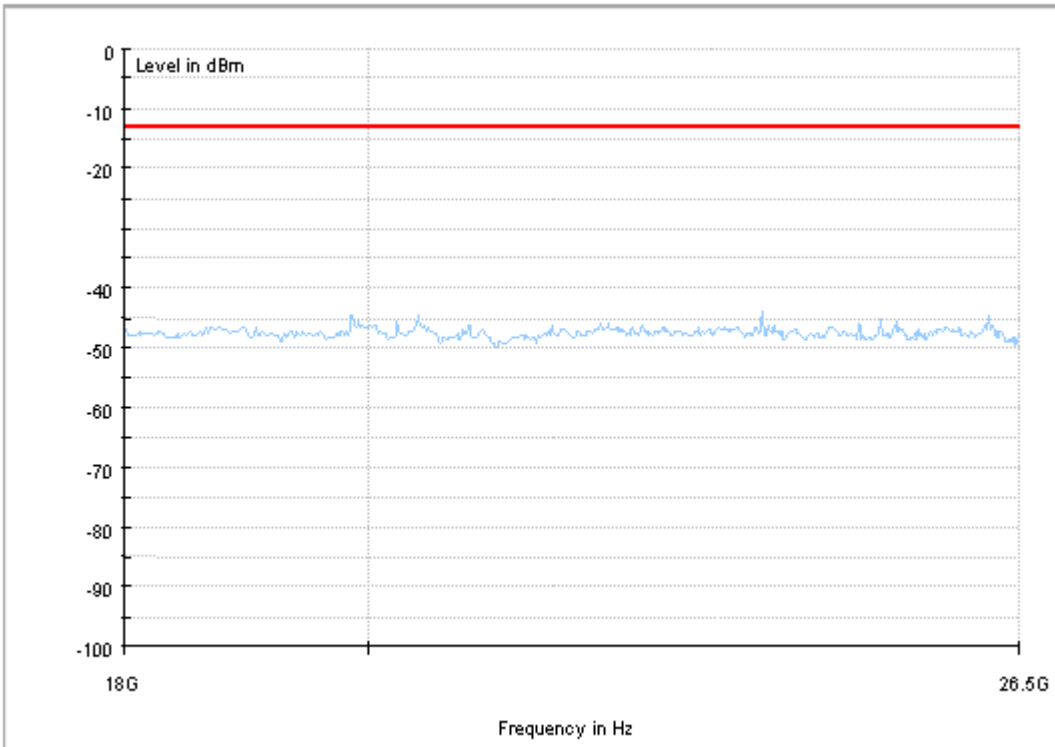
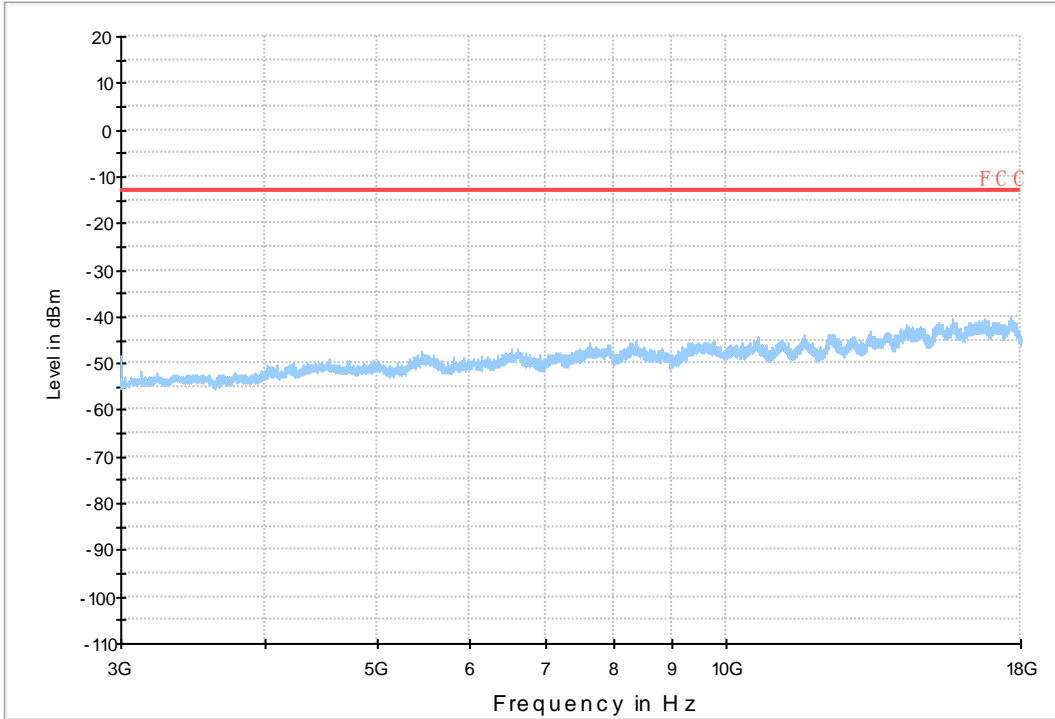
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART 24 W CDMA1900_L

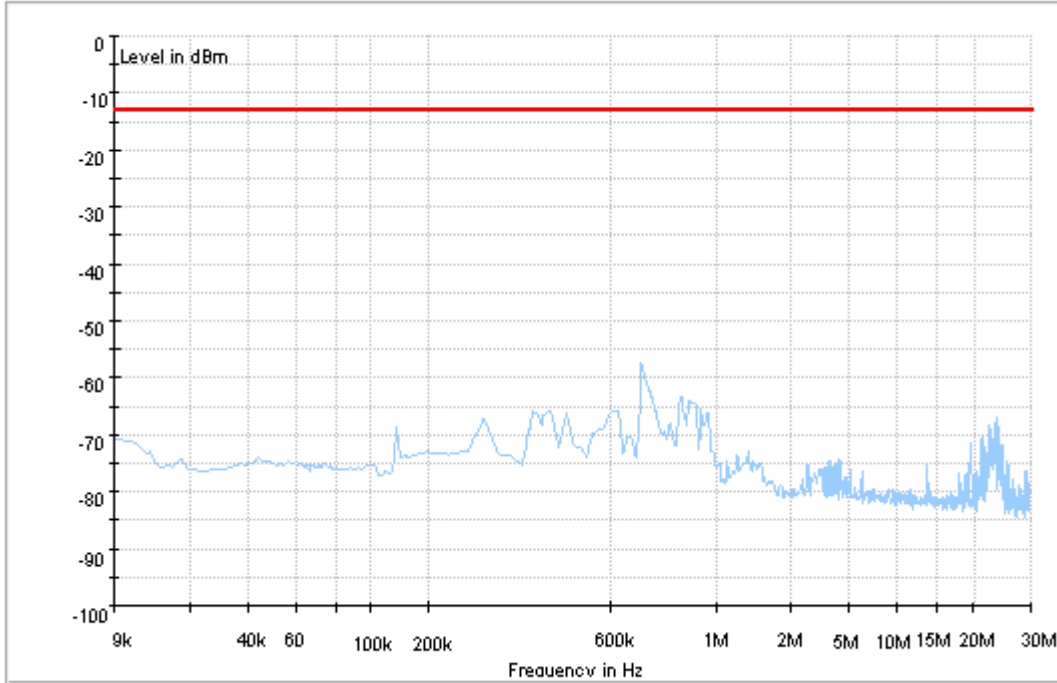


Copy of FCC PART 24 W CDMA1900_H

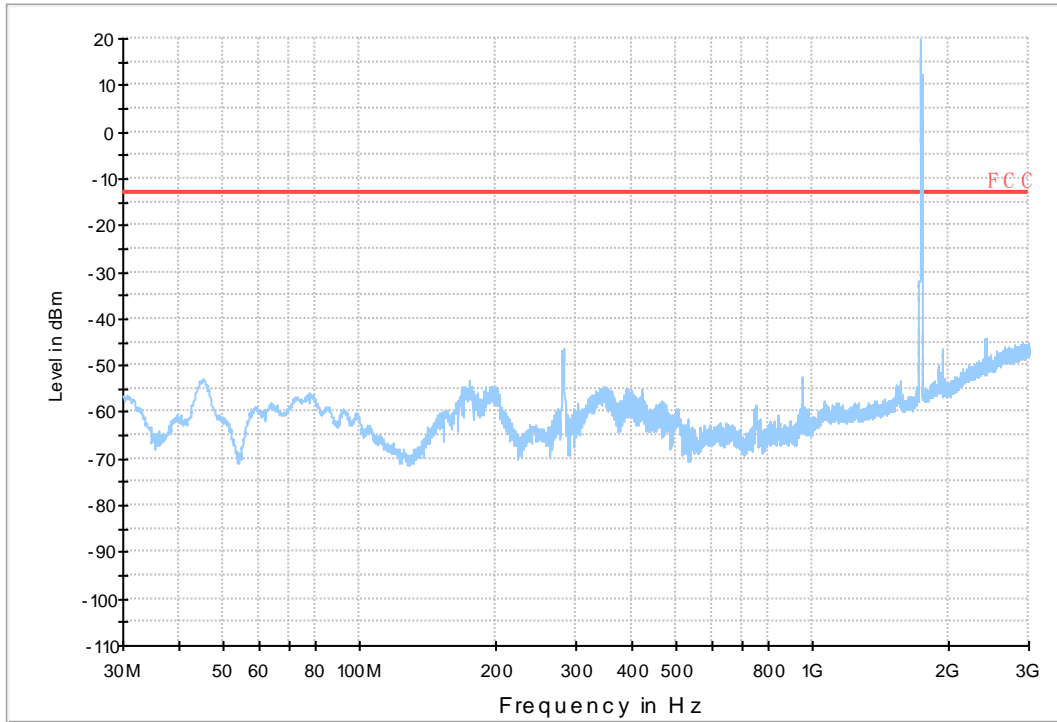


7.1.2 Test Band = WCDMA1700_ANT1

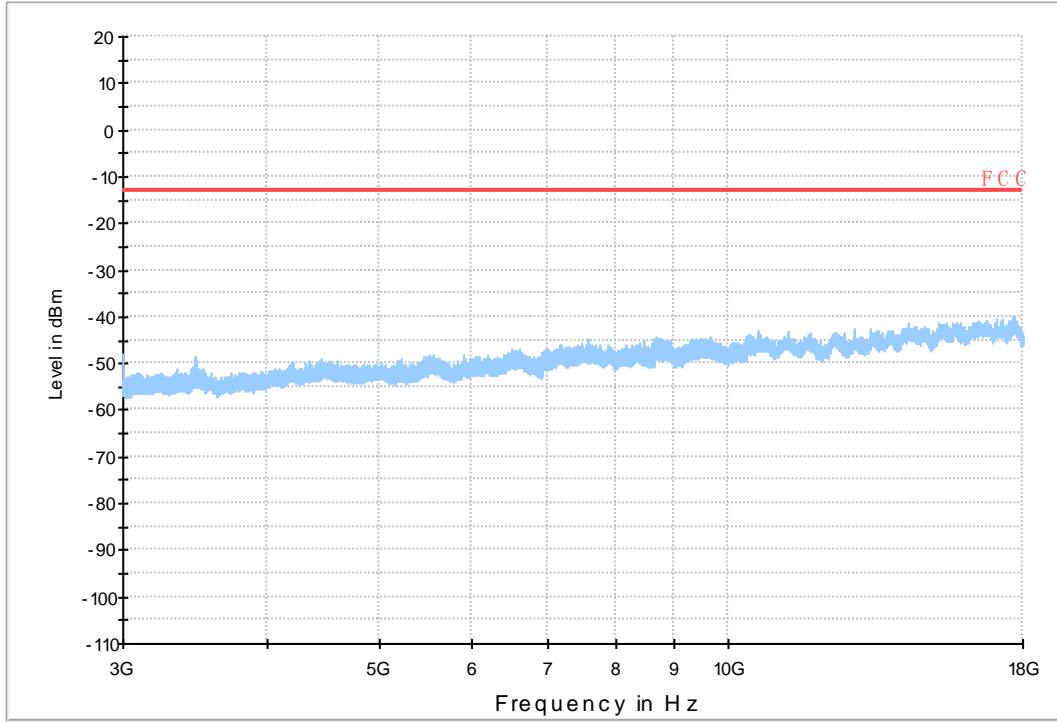
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART 27 W CDMA1700_L

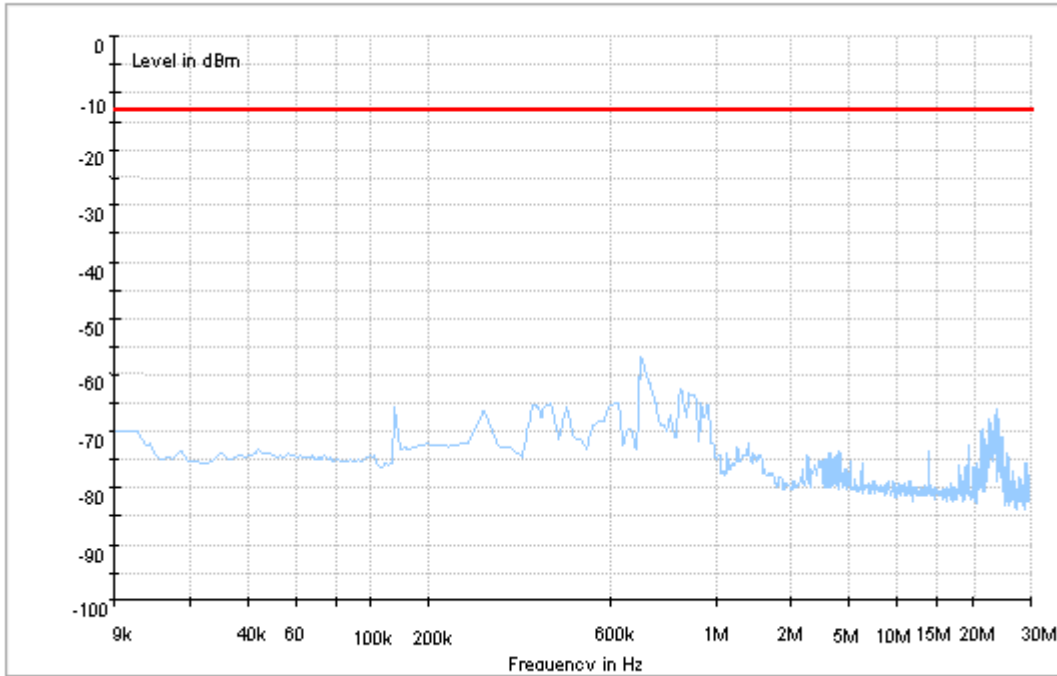


Copy of FCC PART 27 W CDMA1700_H

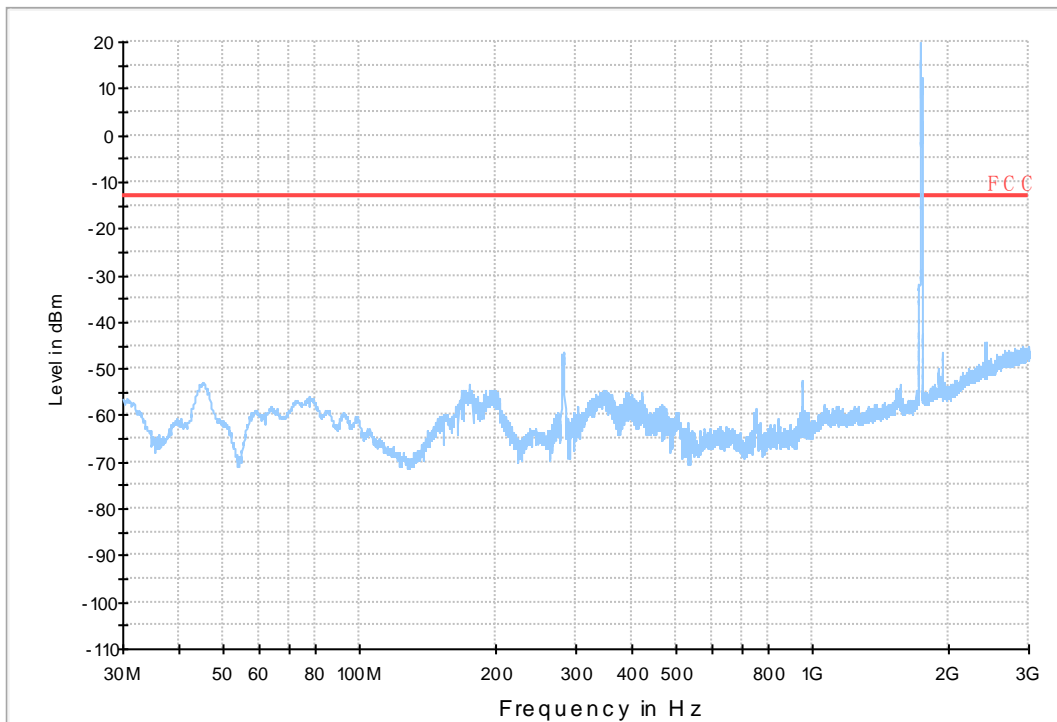


7.1.2 Test Band = WCDMA1700_ANT2

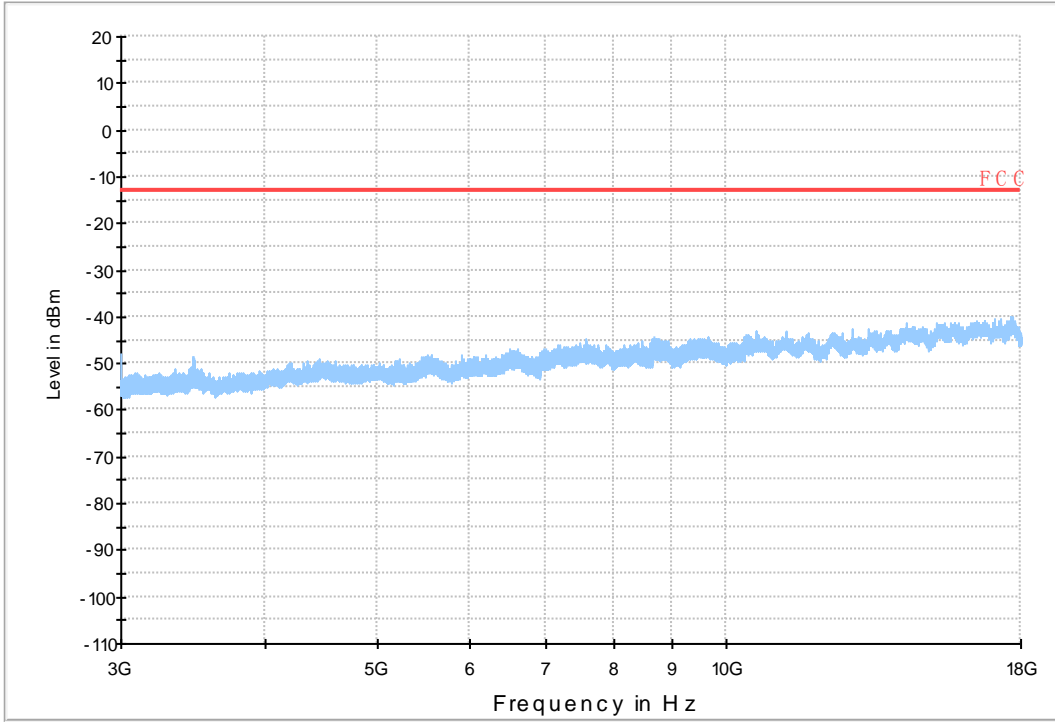
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

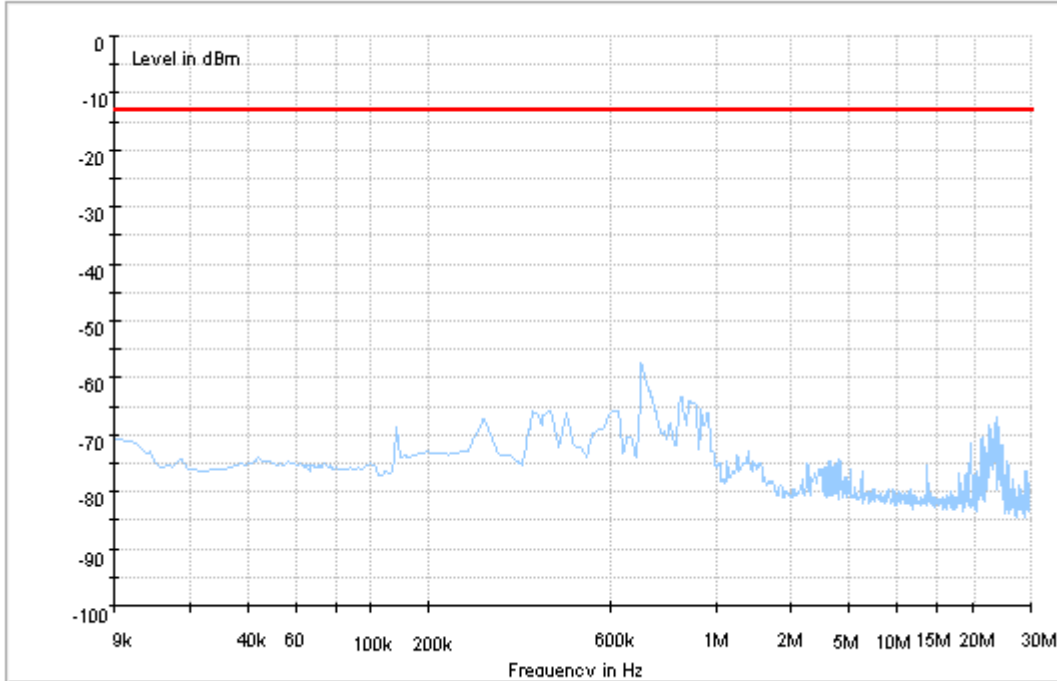


Copy of FCC PART 27 W CDMA1700_H

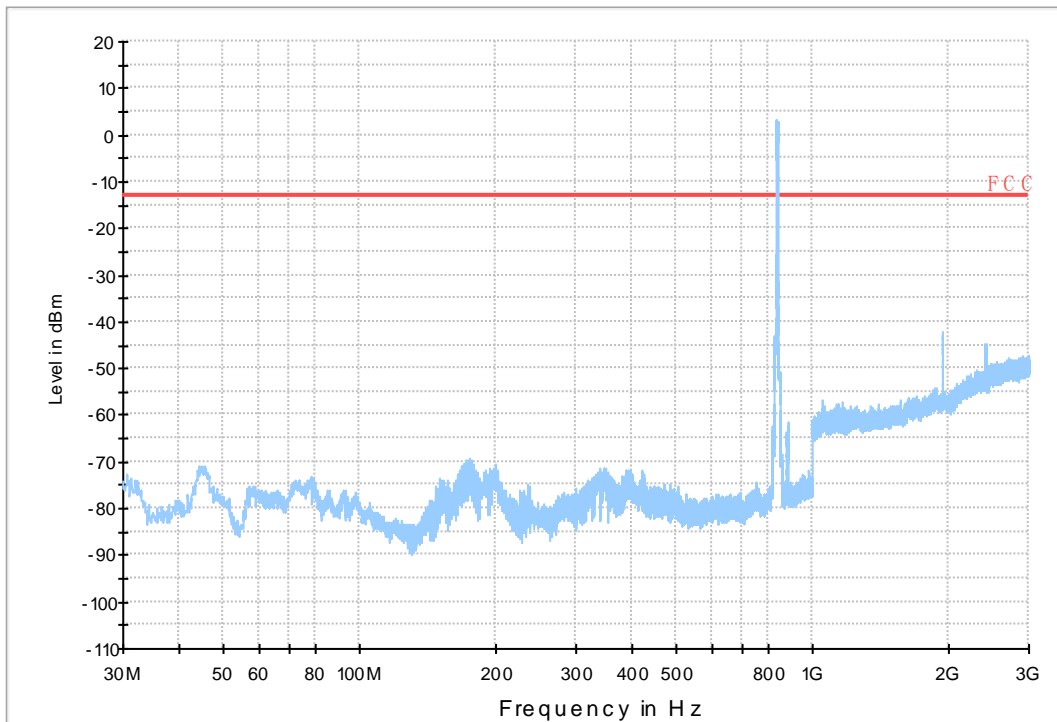


7.1.3 Test Band = WCDMA850_ANT1

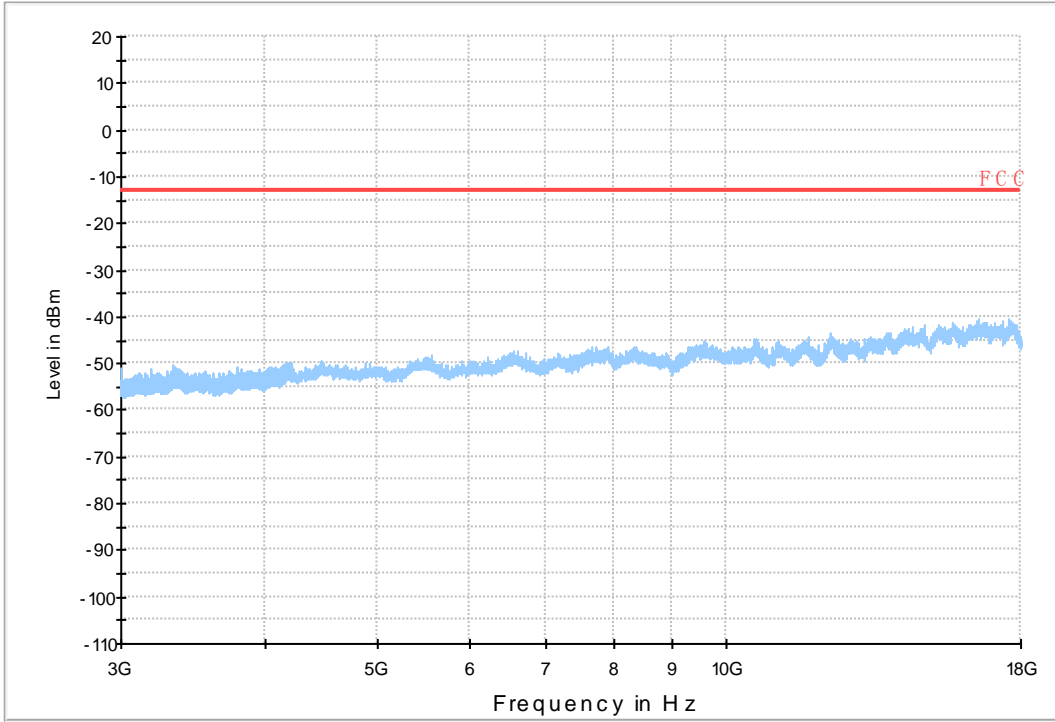
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

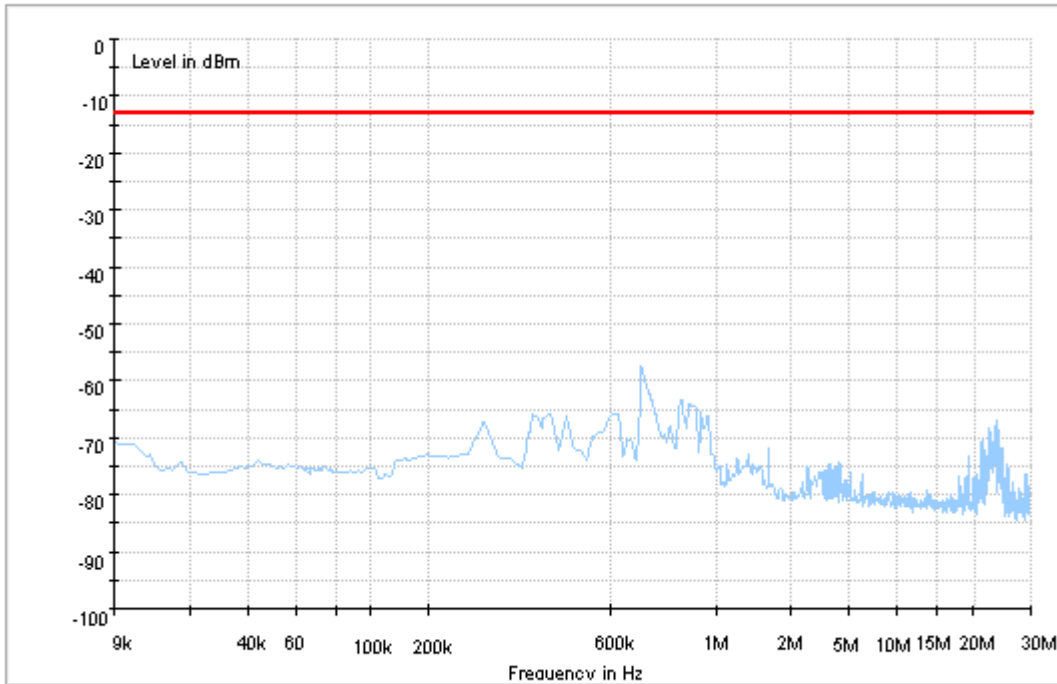


Copy of FCC PART22 W CDMA850_H

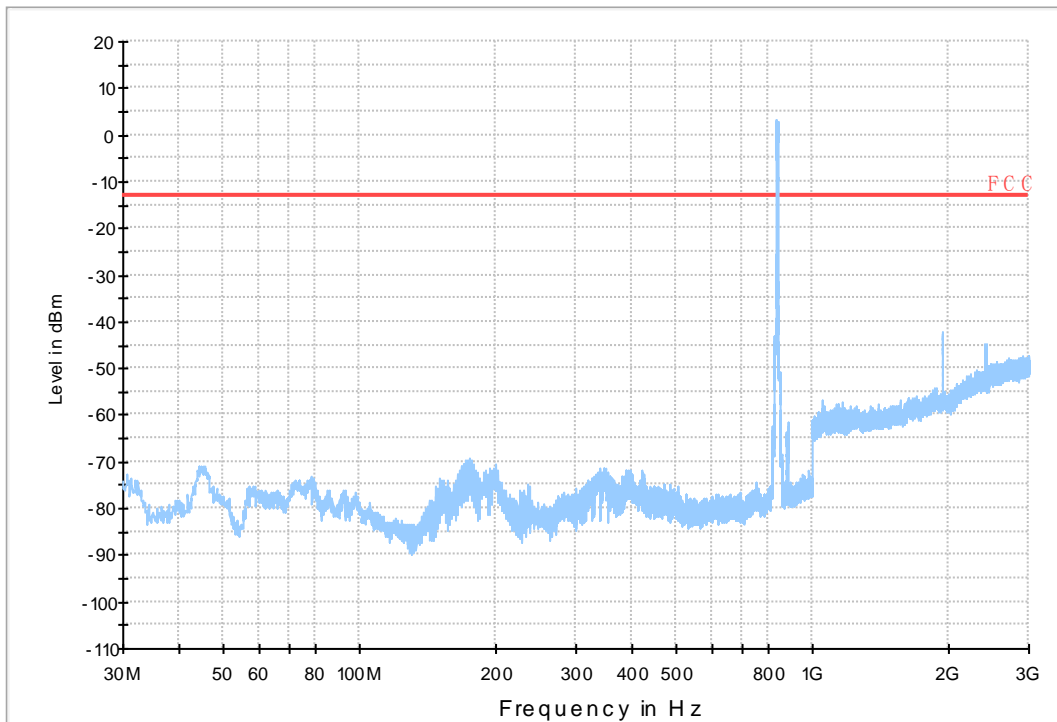


7.1.3 Test Band = WCDMA850_ANT2

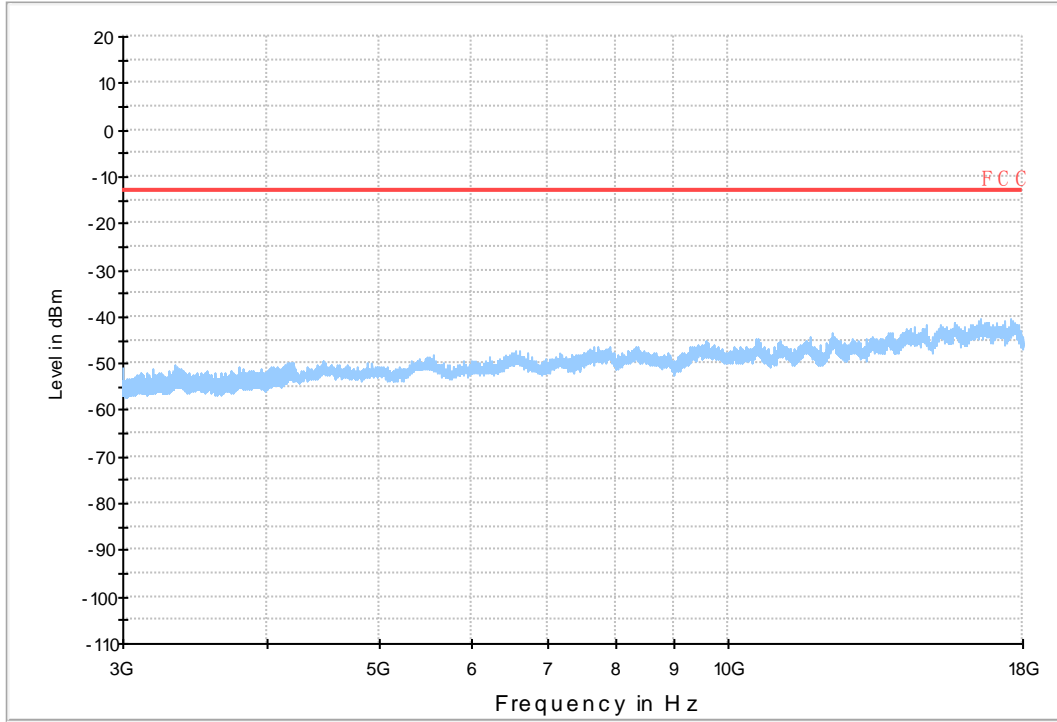
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L



Copy of FCC PART22 W CDMA850_H



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1 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	1.50	0.00081	PASS
				VN	-0.49	-0.00026	PASS
				VH	-4.90	-0.00265	PASS
		MCH	TN	VL	3.83	0.00204	PASS
				VN	2.55	0.00136	PASS
				VH	4.99	0.00265	PASS
		HCH	TN	VL	2.24	0.00117	PASS
				VN	5.98	0.00313	PASS
				VH	7.97	0.00418	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	8.03	0.00469	PASS
				VN	4.76	0.00278	PASS
				VH	-3.72	-0.00217	PASS
		MCH	TN	VL	8.04	0.00464	PASS
				VN	2.47	0.00143	PASS
				VH	5.17	0.00298	PASS
		HCH	TN	VL	10.21	0.00583	PASS
				VN	6.03	0.00344	PASS
				VH	-3.07	-0.00175	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	4.12	0.00499	PASS
				VN	6.18	0.00748	PASS
				VH	-3.05	-0.00369	PASS
		MCH	TN	VL	1.79	0.00214	PASS
				VN	6.48	0.00775	PASS
				VH	-1.60	-0.00191	PASS
		HCH	TN	VL	1.68	0.00198	PASS
				VN	-7.72	-0.00912	PASS
				VH	-3.37	-0.00398	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	7.81	0.00422	PASS
				-20	3.11	0.00168	PASS
				-10	8.96	0.00484	PASS
				0	-0.43	-0.00023	PASS
				10	-0.38	-0.00021	PASS
				20	2.37	0.00128	PASS
				30	-1.42	-0.00077	PASS
				40	1.59	0.00086	PASS
				50	6.79	0.00367	PASS
		MCH	VN	-30	8.80	0.00468	PASS
				-20	9.41	0.00501	PASS
				-10	-0.37	-0.0002	PASS
				0	0.95	0.00051	PASS
				10	0.93	0.00049	PASS
				20	5.98	0.00318	PASS
				30	-0.15	-0.00008	PASS
				40	0.41	0.00022	PASS
				50	-0.40	-0.00021	PASS
		HCH	VN	-30	-1.14	-0.0006	PASS
				-20	1.11	0.00058	PASS
				-10	-0.08	-0.00004	PASS
				0	-1.43	-0.00075	PASS
				10	1.33	0.0007	PASS
				20	-4.20	-0.0022	PASS
30	0.03			0.00002	PASS		
40	2.53			0.00133	PASS		
50	-0.90			-0.00047	PASS		
WCDMA1700	UMTS/TM1	LCH	VN	-30	6.53	0.00381	PASS
				-20	4.67	0.00273	PASS
				-10	2.33	0.00136	PASS
				0	2.75	0.00161	PASS
				10	1.39	0.00081	PASS
				20	2.04	0.00119	PASS
				30	5.84	0.00341	PASS
				40	-0.47	-0.00027	PASS
				50	-2.87	-0.00168	PASS
		MCH	VN	-30	3.19	0.00184	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	-1.48	-0.00085	PASS
				-10	1.10	0.00063	PASS
				0	6.62	0.00382	PASS
				10	-1.91	-0.0011	PASS
				20	1.83	0.00106	PASS
				30	-3.78	-0.00218	PASS
				40	-1.57	-0.00091	PASS
				50	-3.83	-0.00221	PASS
		HCH	VN	-30	1.63	0.00093	PASS
				-20	0.31	0.00018	PASS
				-10	11.32	0.00646	PASS
				0	6.33	0.00361	PASS
				10	-1.88	-0.00107	PASS
				20	-5.94	-0.00339	PASS
				30	7.69	0.00439	PASS
				40	6.50	0.00371	PASS
				50	4.01	0.00229	PASS
				WCDMA850	UMTS/TM1	LCH	VN
-20	2.66	0.00322	PASS				
-10	4.36	0.00528	PASS				
0	9.84	0.01191	PASS				
10	7.32	0.00886	PASS				
20	6.03	0.0073	PASS				
30	-5.07	-0.00614	PASS				
40	7.60	0.0092	PASS				
50	2.81	0.0034	PASS				
MCH	VN	-30	6.73			0.00805	PASS
		-20	0.73			0.00087	PASS
		-10	-2.27			-0.00271	PASS
		0	8.04			0.00961	PASS
		10	2.82			0.00337	PASS
		20	-6.06			-0.00725	PASS
		30	-4.52			-0.0054	PASS
		40	-2.49			-0.00298	PASS
		50	8.48			0.01014	PASS
HCH	VN	-30	4.01			0.00474	PASS
		-20	-3.36			-0.00397	PASS
		-10	-1.62			-0.00191	PASS
		0	10.70			0.01264	PASS
		10	10.12			0.01195	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	-3.23	-0.00382	PASS
				30	6.15	0.00726	PASS
				40	-4.29	-0.00507	PASS
				50	-4.30	-0.00508	PASS

END