



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
WCDMA1900	UMTS/TM1	LCH	23.93	24.45	33	PASS
		MCH	23.87	24.41	33	PASS
		HCH	23.78	24.33	33	PASS
WCDMA1700	UMTS/TM1	LCH	23.98	24.88	30	PASS
		MCH	23.91	24.76	30	PASS
		HCH	23.85	24.73	30	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	24.47	20.69	38.5	PASS
		MCH	24.45	20.58	38.5	PASS
		HCH	24.48	20.64	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	3.32	13	PASS
		MCH	3.47	13	PASS
		HCH	3.44	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.06	13	PASS
		MCH	3.25	13	PASS
		HCH	3.13	13	PASS
WCDMA850	UMTS/TM1	LCH	2.8	13	PASS
		MCH	2.72	13	PASS
		HCH	2.49	13	PASS

3Appendix_C: Modulation Characteristics

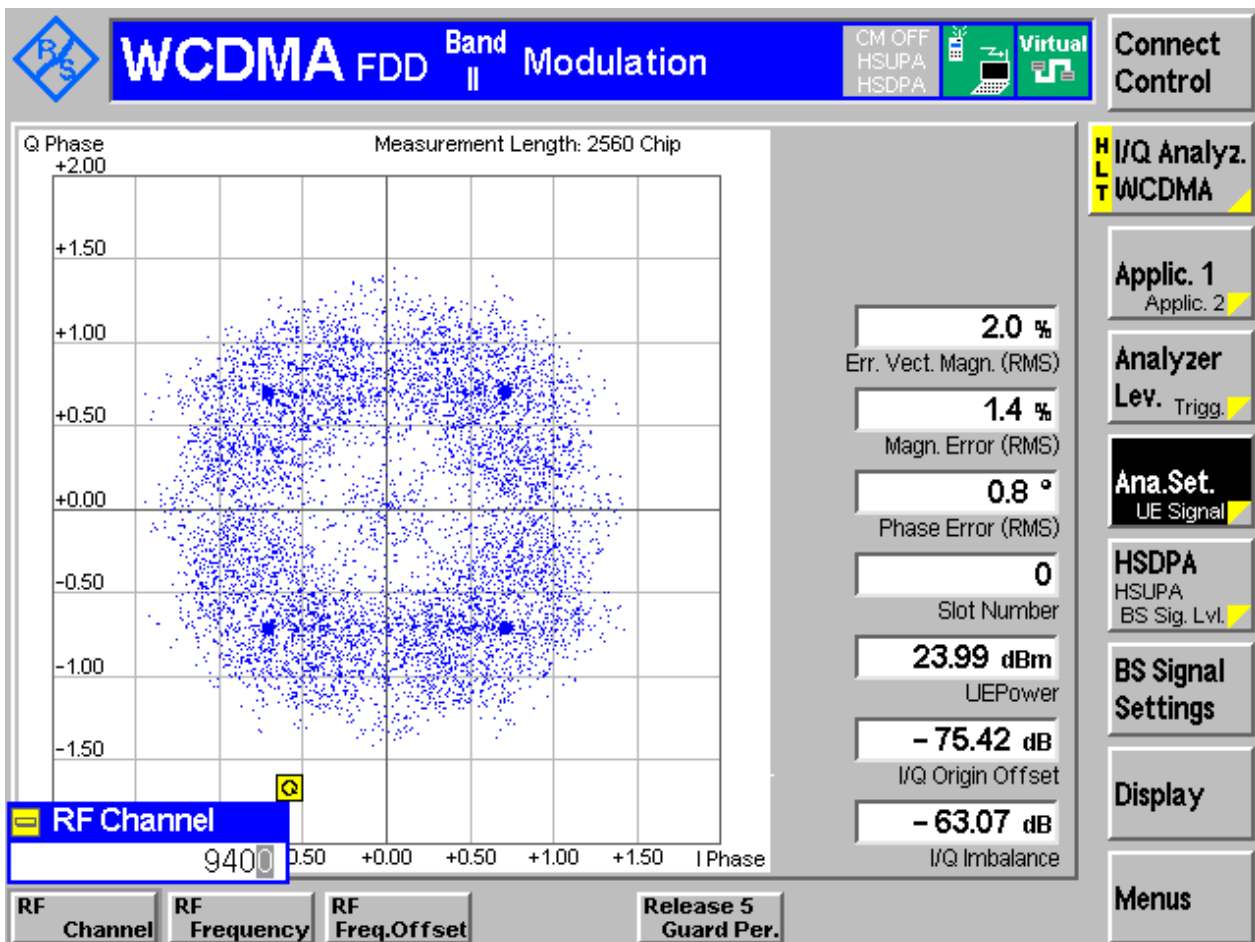
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

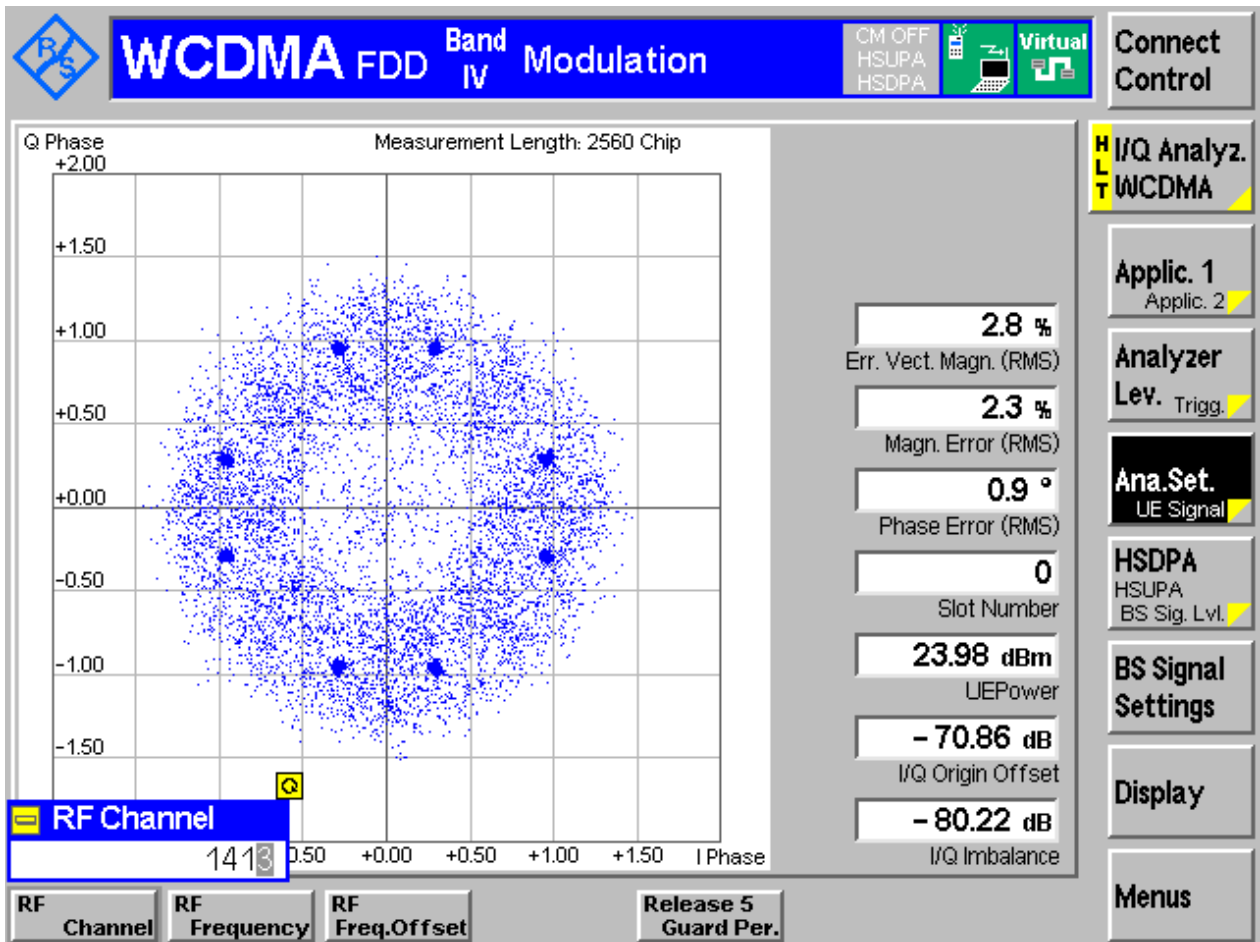
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

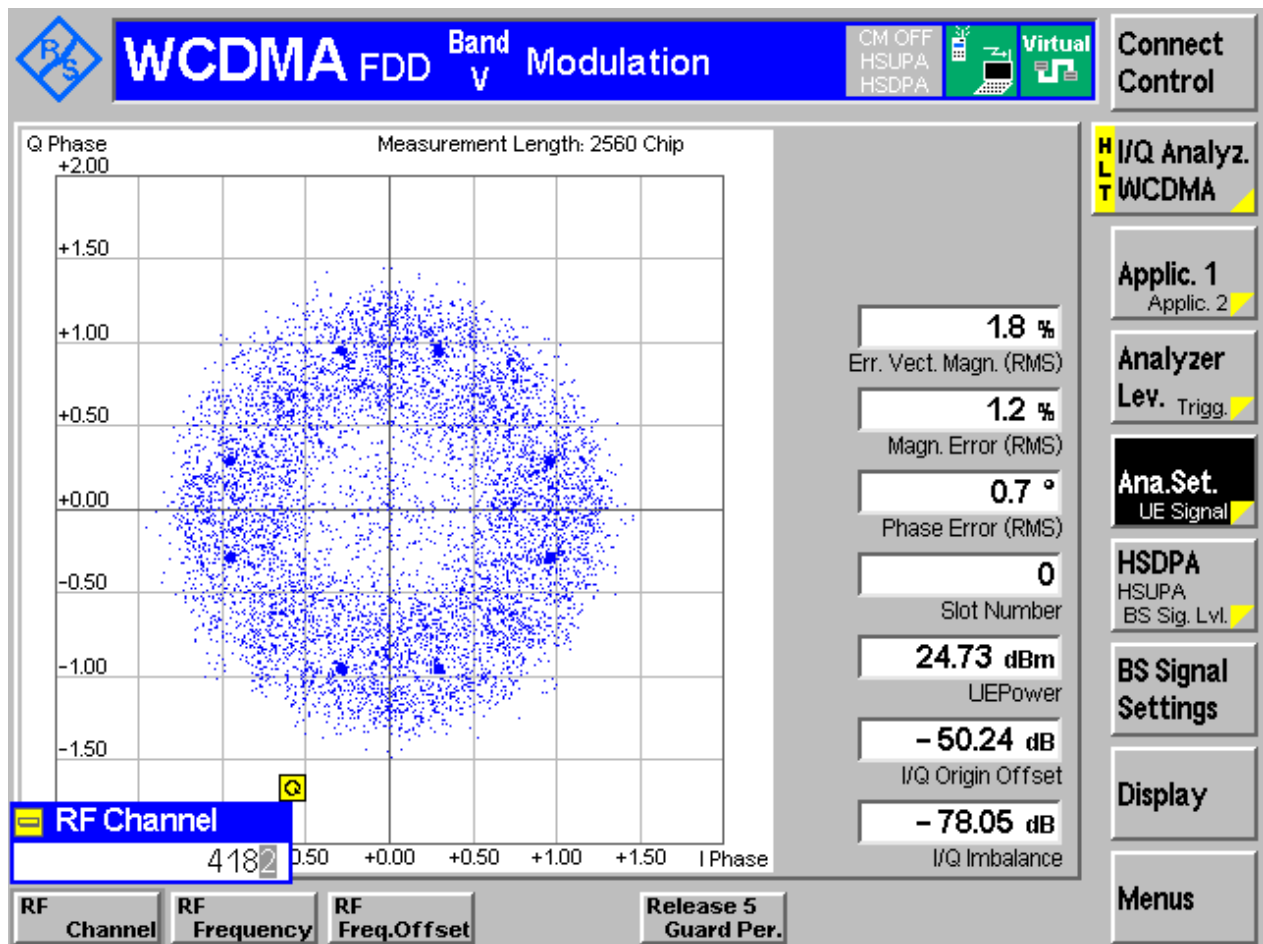
3.1.2.1.1 Test Channel = MCH



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	4.70	Pass
		HCH	4.16	4.69	Pass
WCDMA1700	UMTS/TM1	LCH	4.17	4.71	Pass
		MCH	4.16	4.70	Pass
		HCH	4.16	4.71	Pass
WCDMA850	UMTS/TM1	LCH	4.16	4.73	Pass
		MCH	4.17	4.74	Pass
		HCH	4.17	4.73	Pass



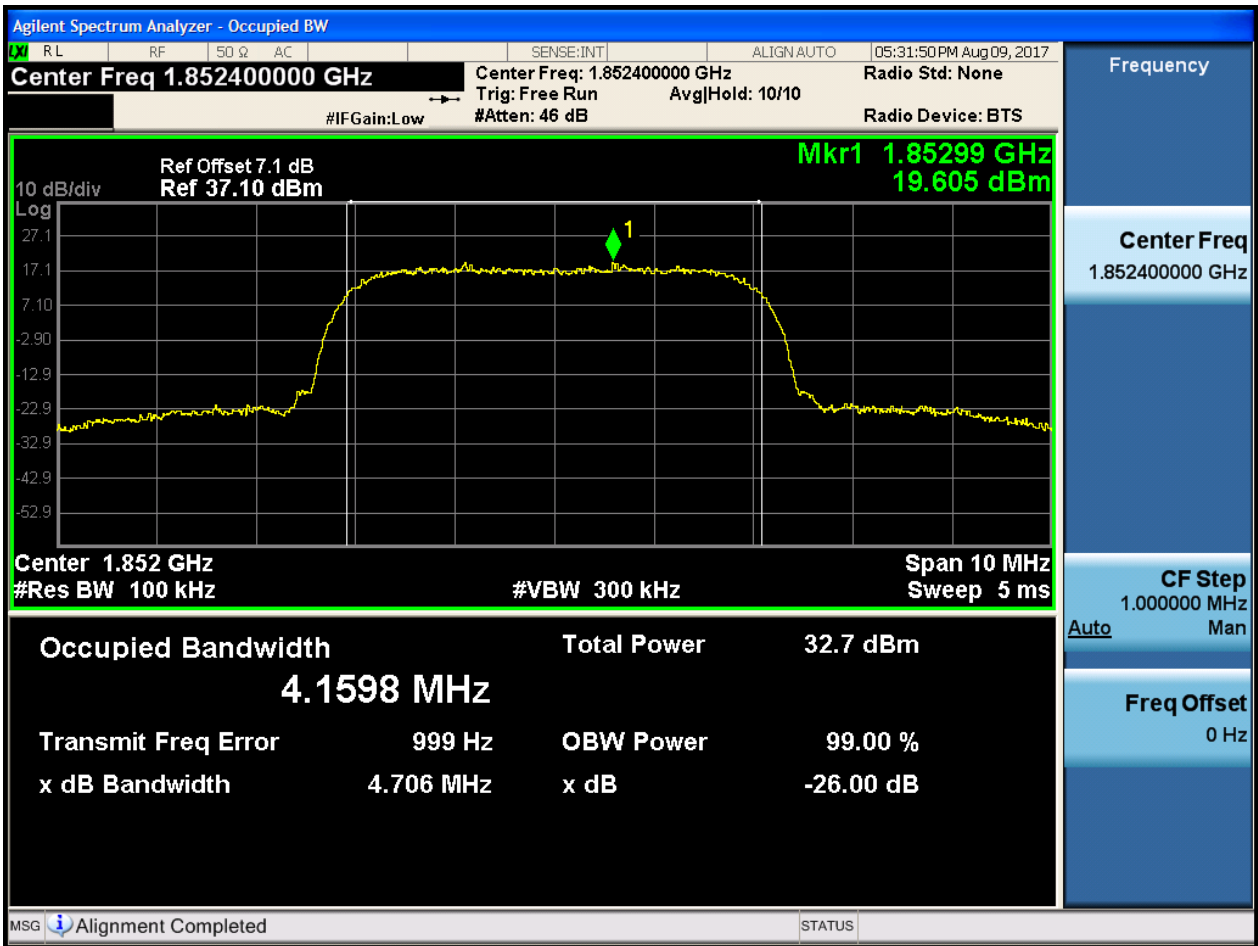
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

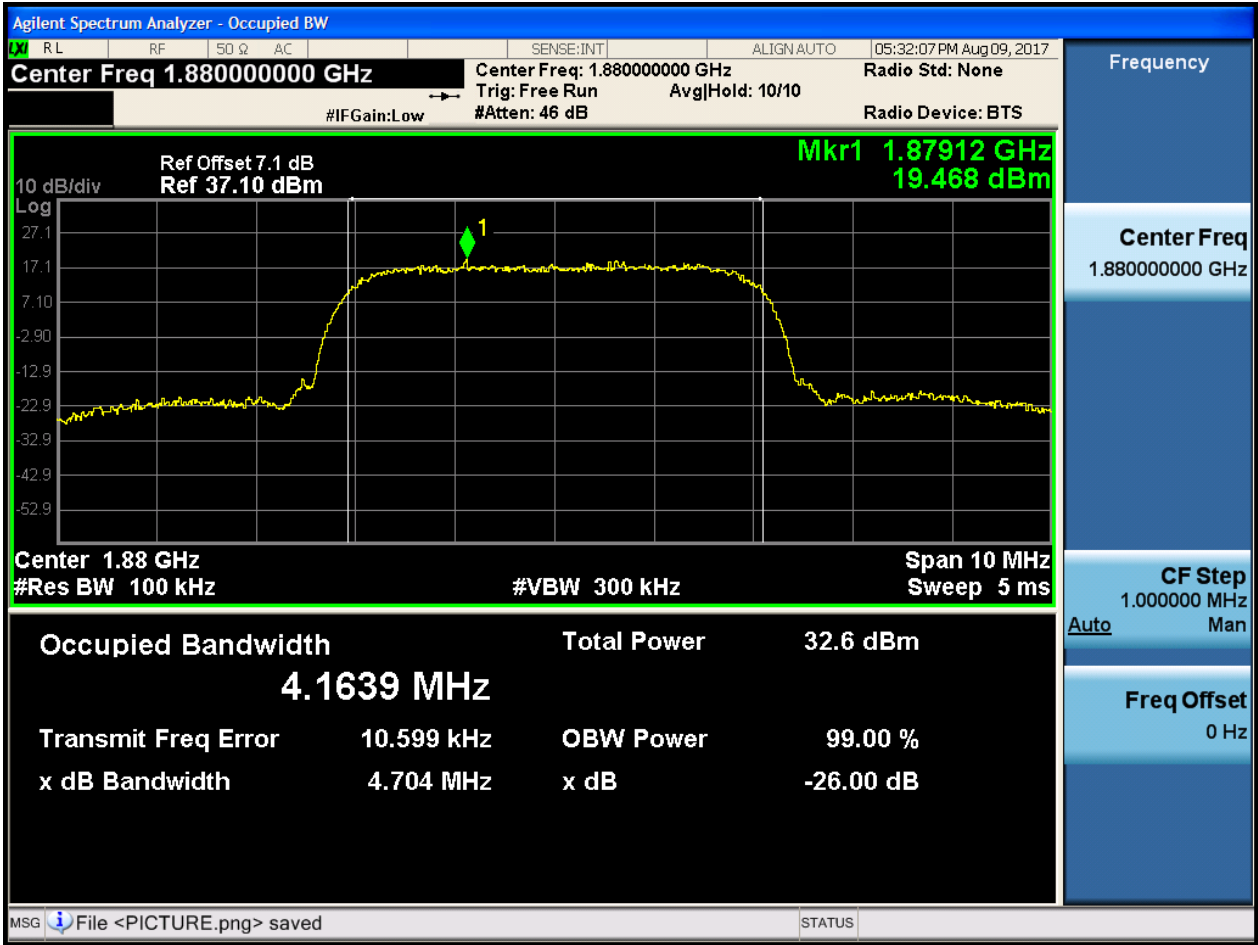
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



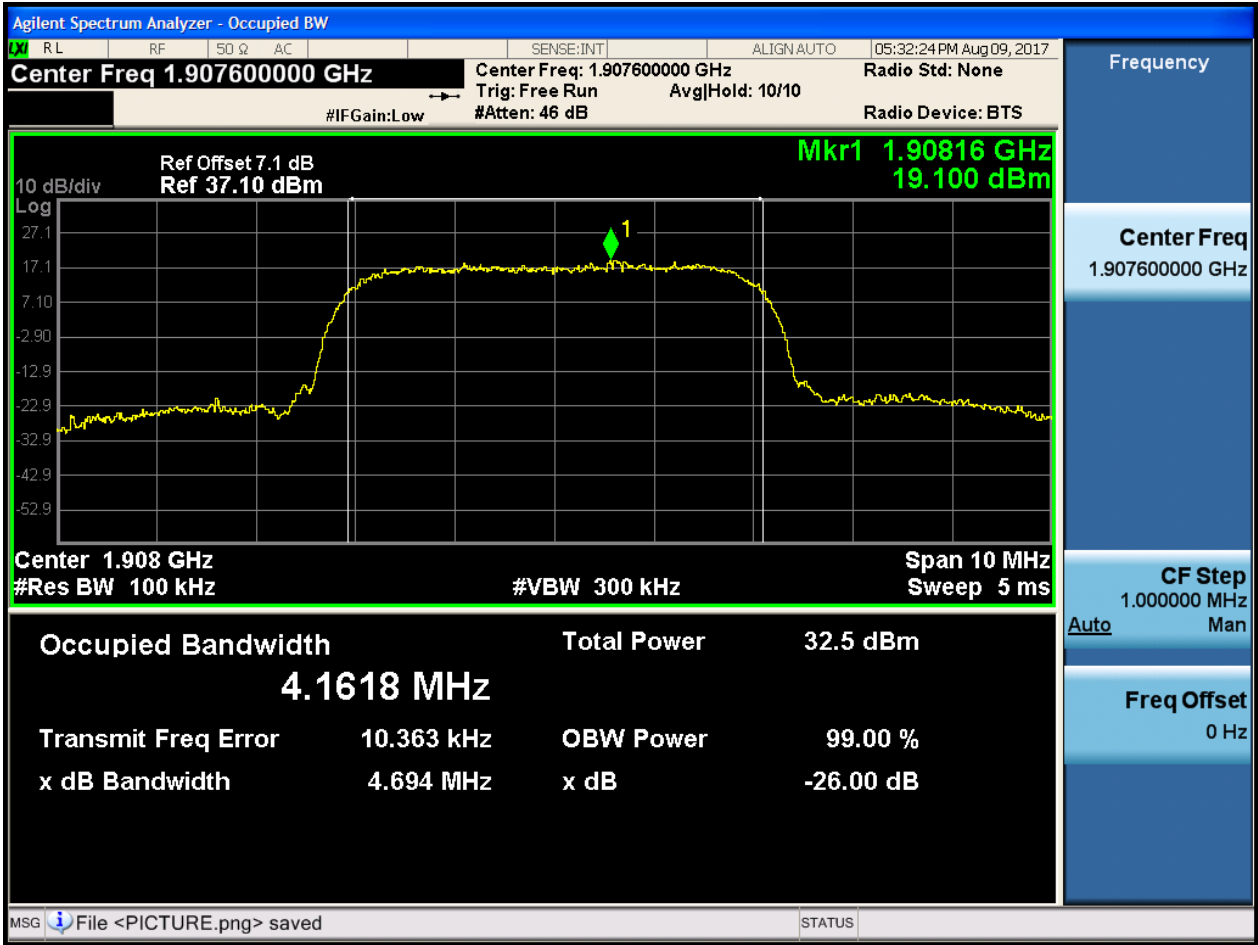


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

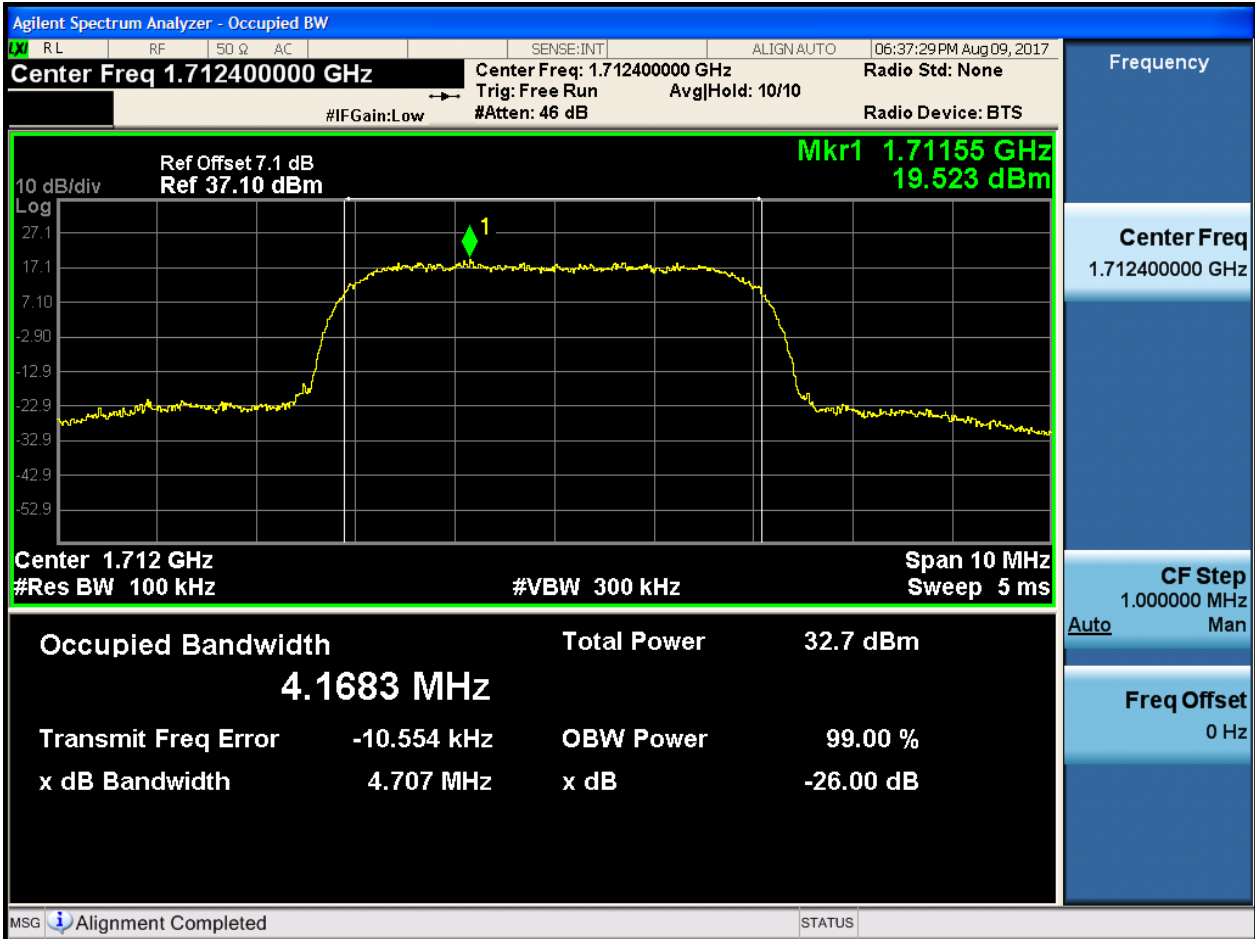




4.1.2 Test Band = WCDMA1700

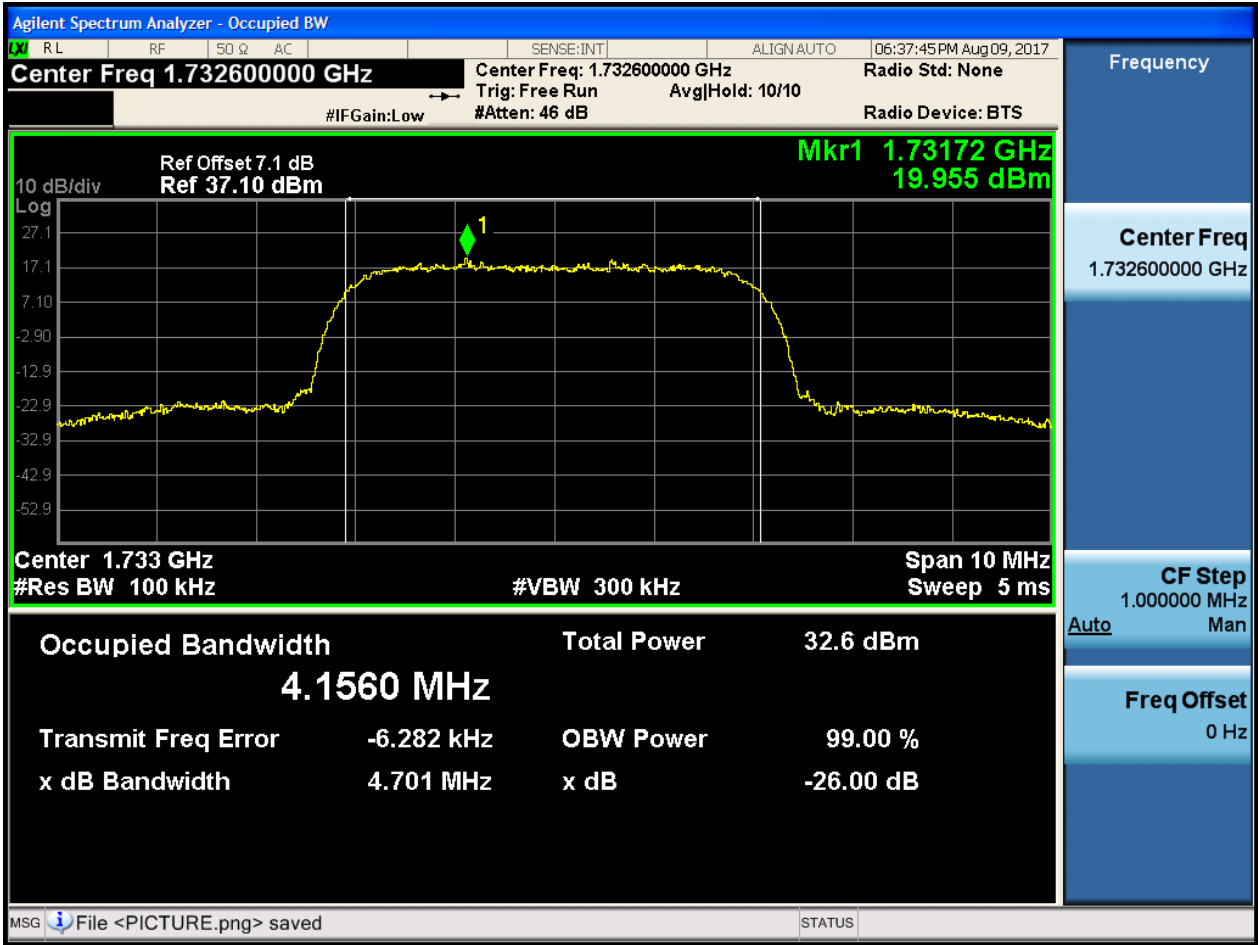
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



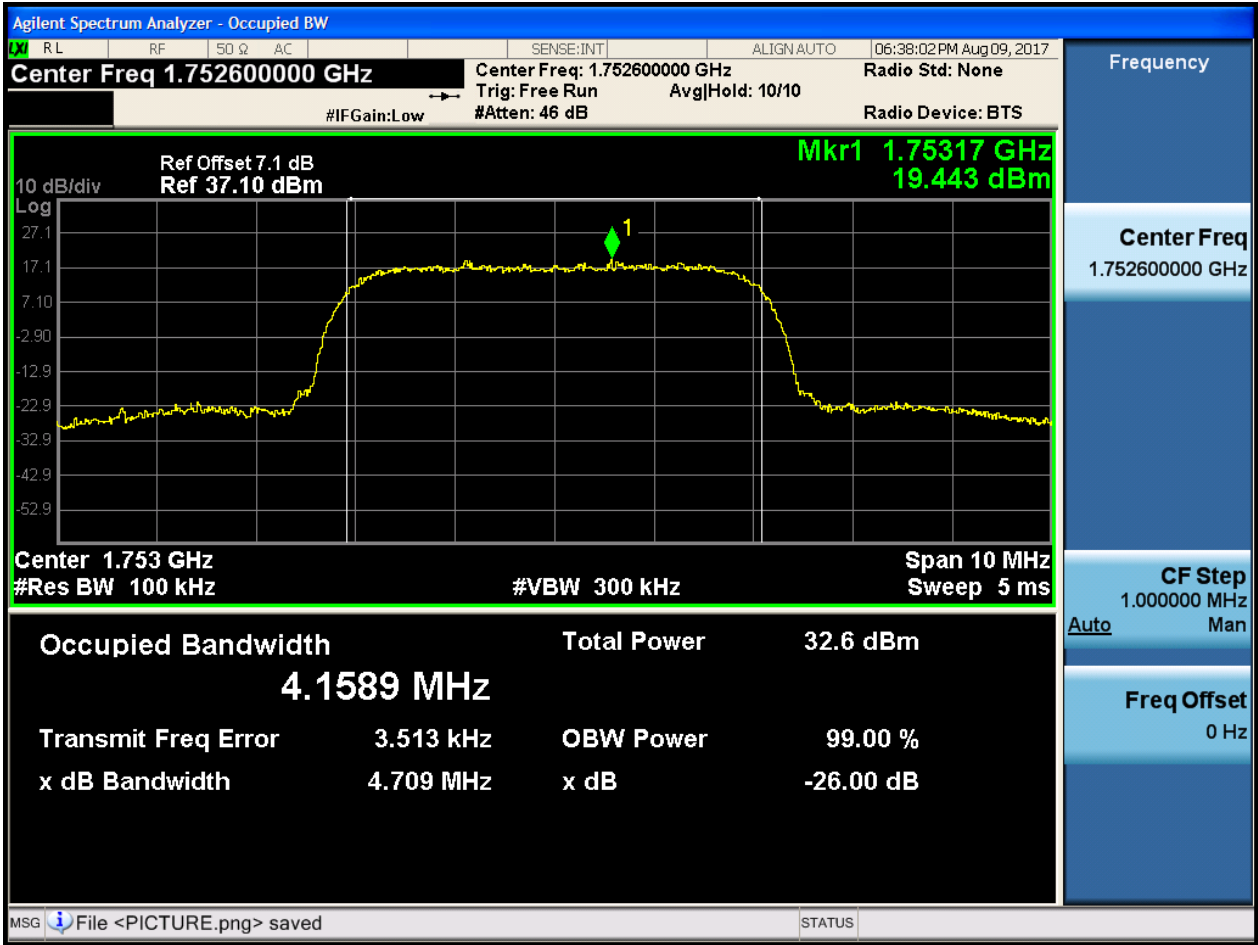


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

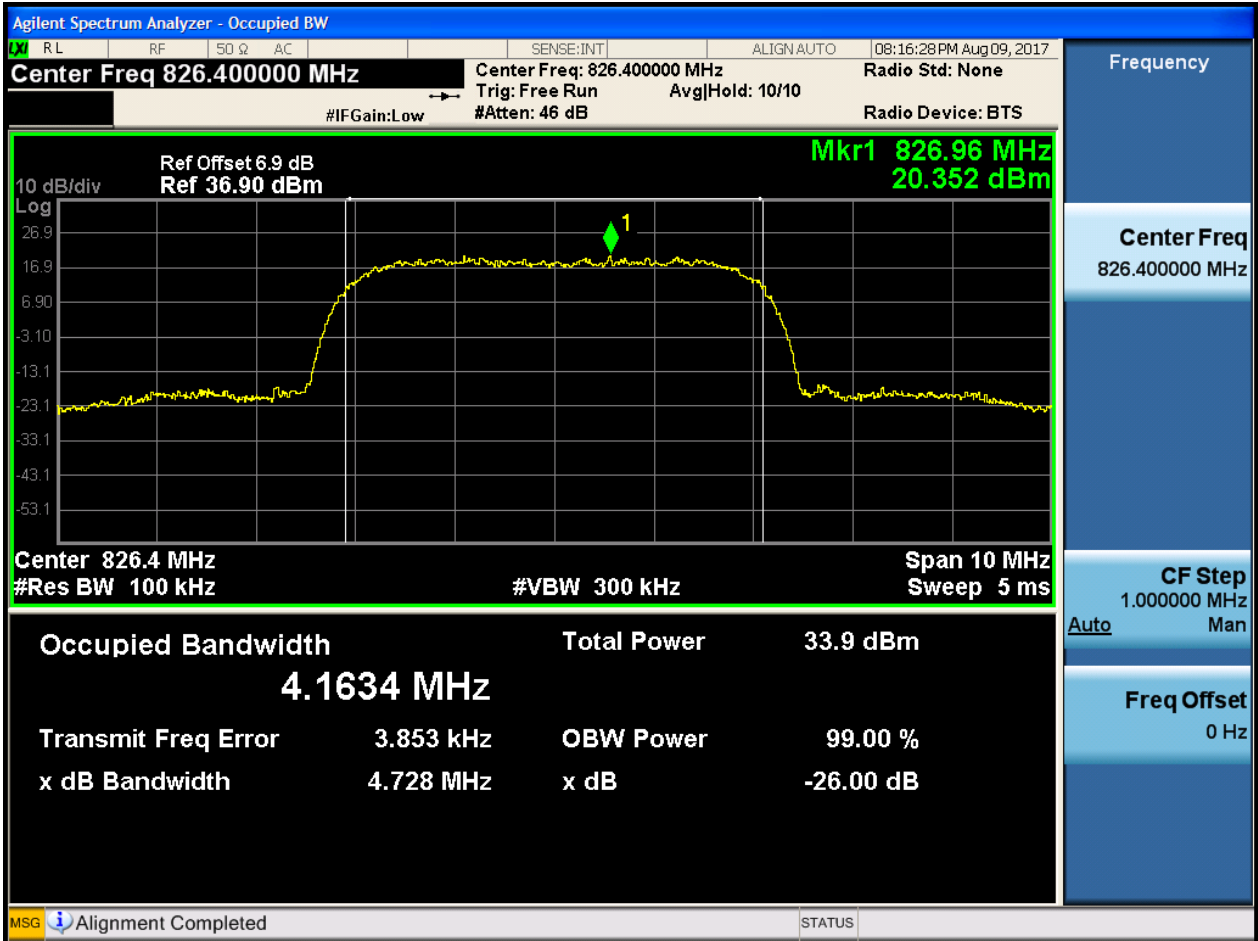




4.1.3 Test Band = WCDMA850

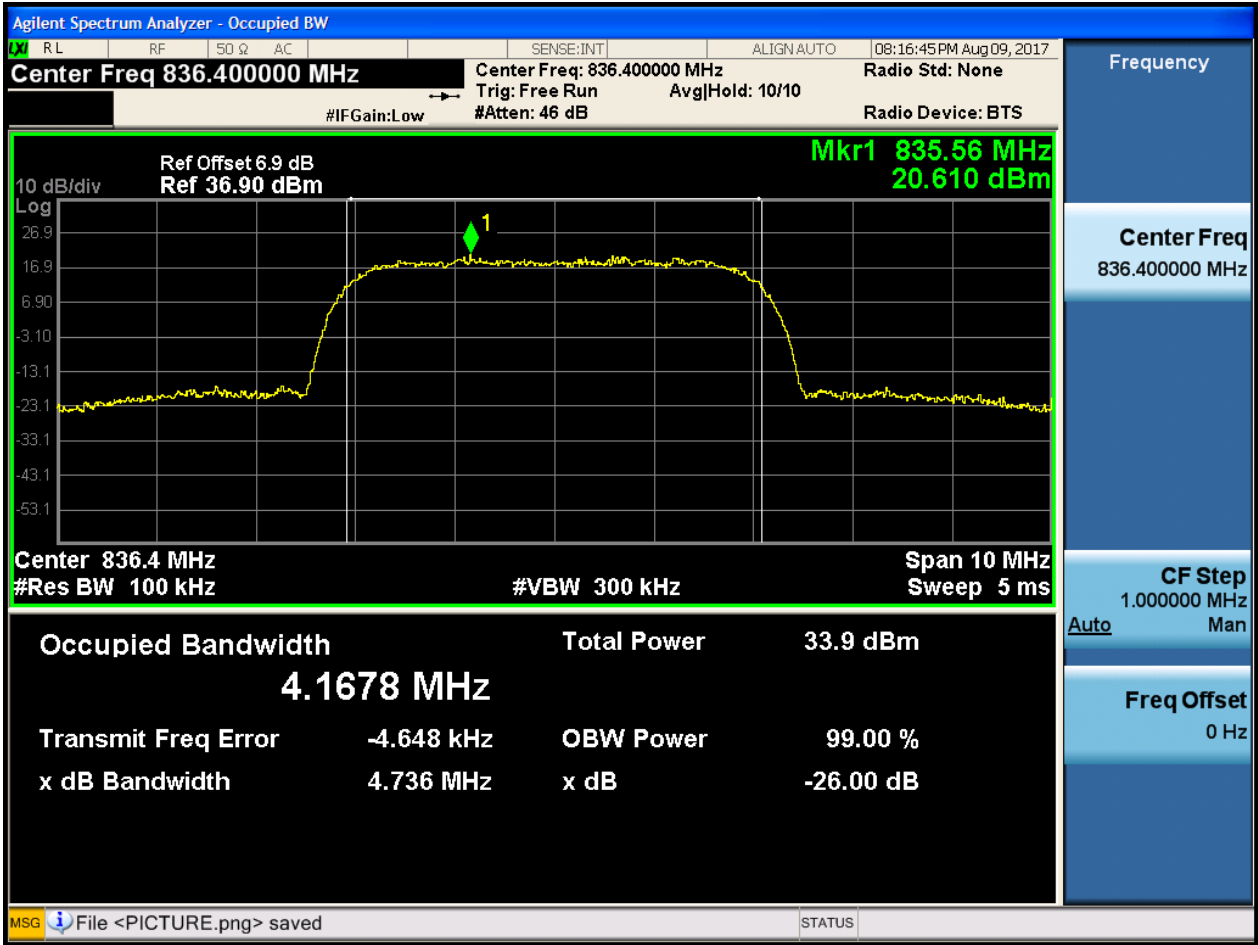
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



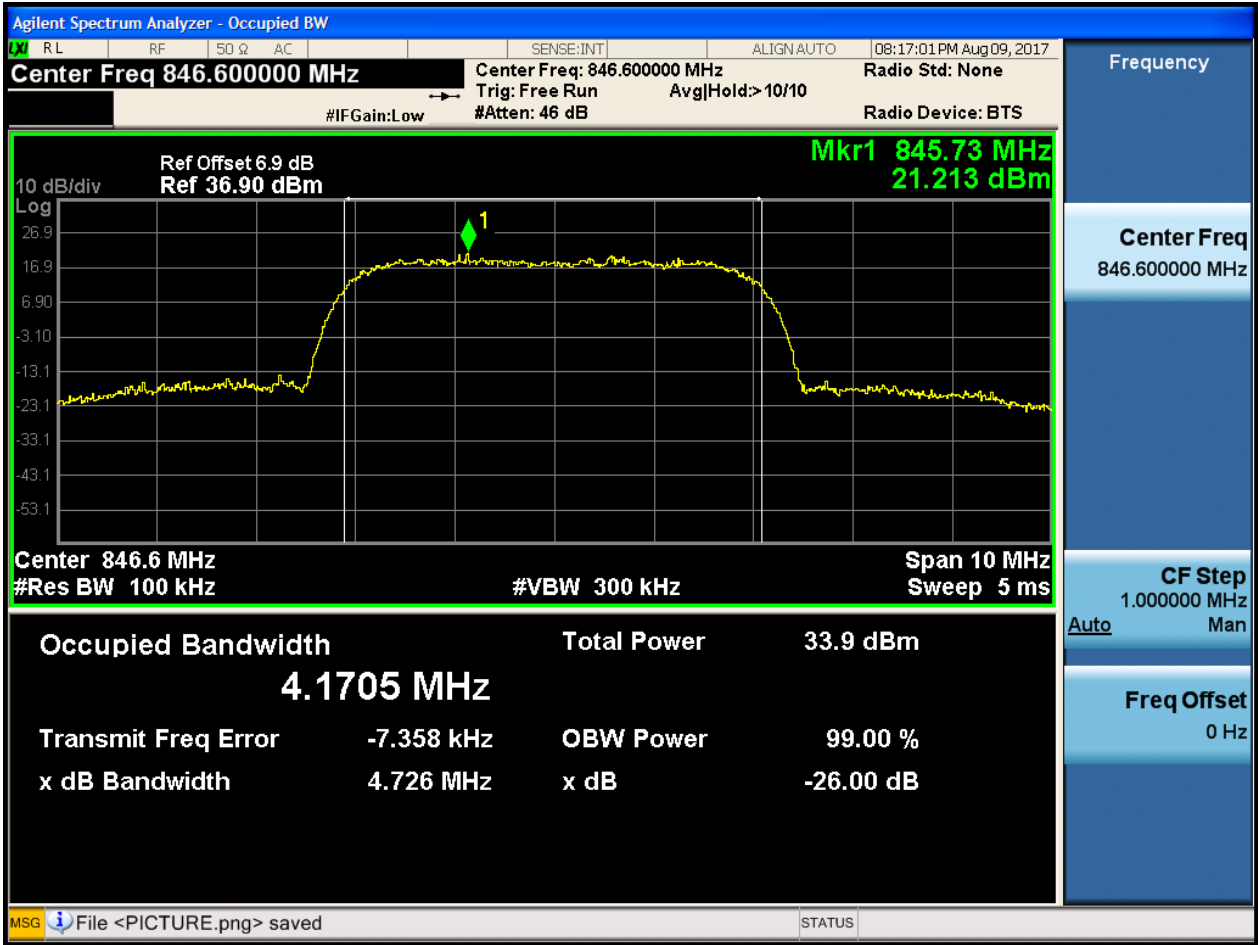


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH





5Appendix_E: Band Edges Compliance

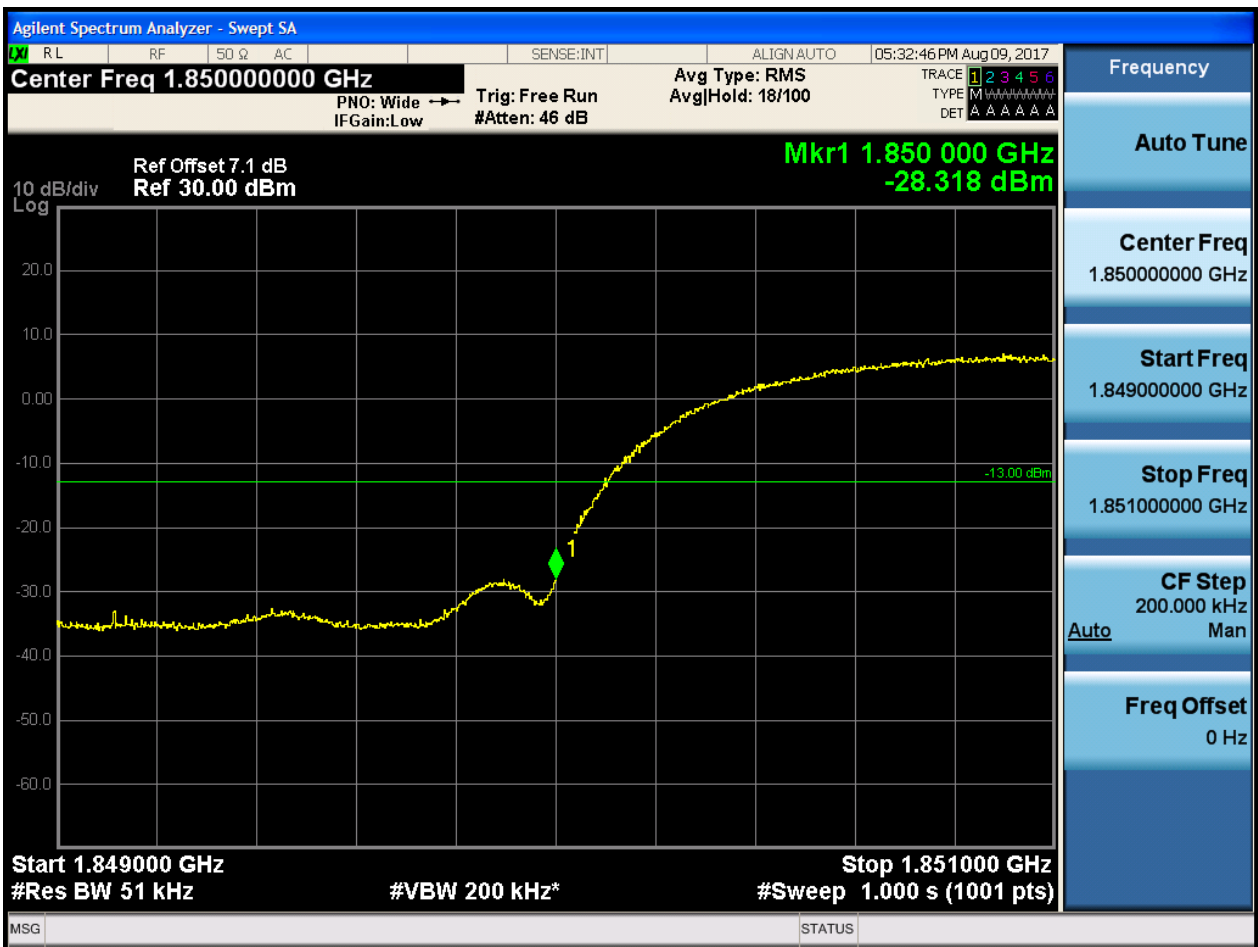
Part I - Test Plots

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

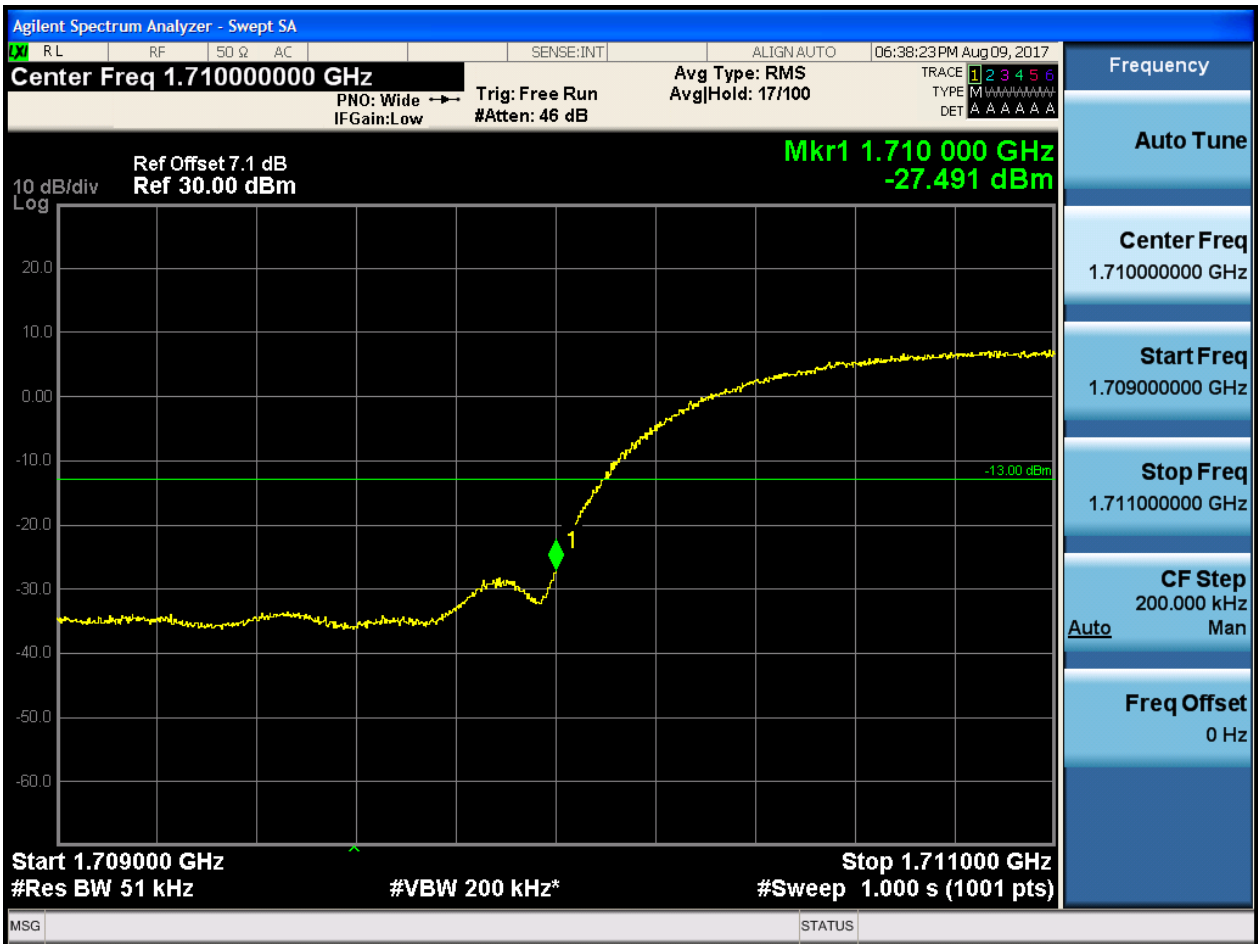




5.1.2 Test Band = WCDMA1700

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 Test Channel = HCH

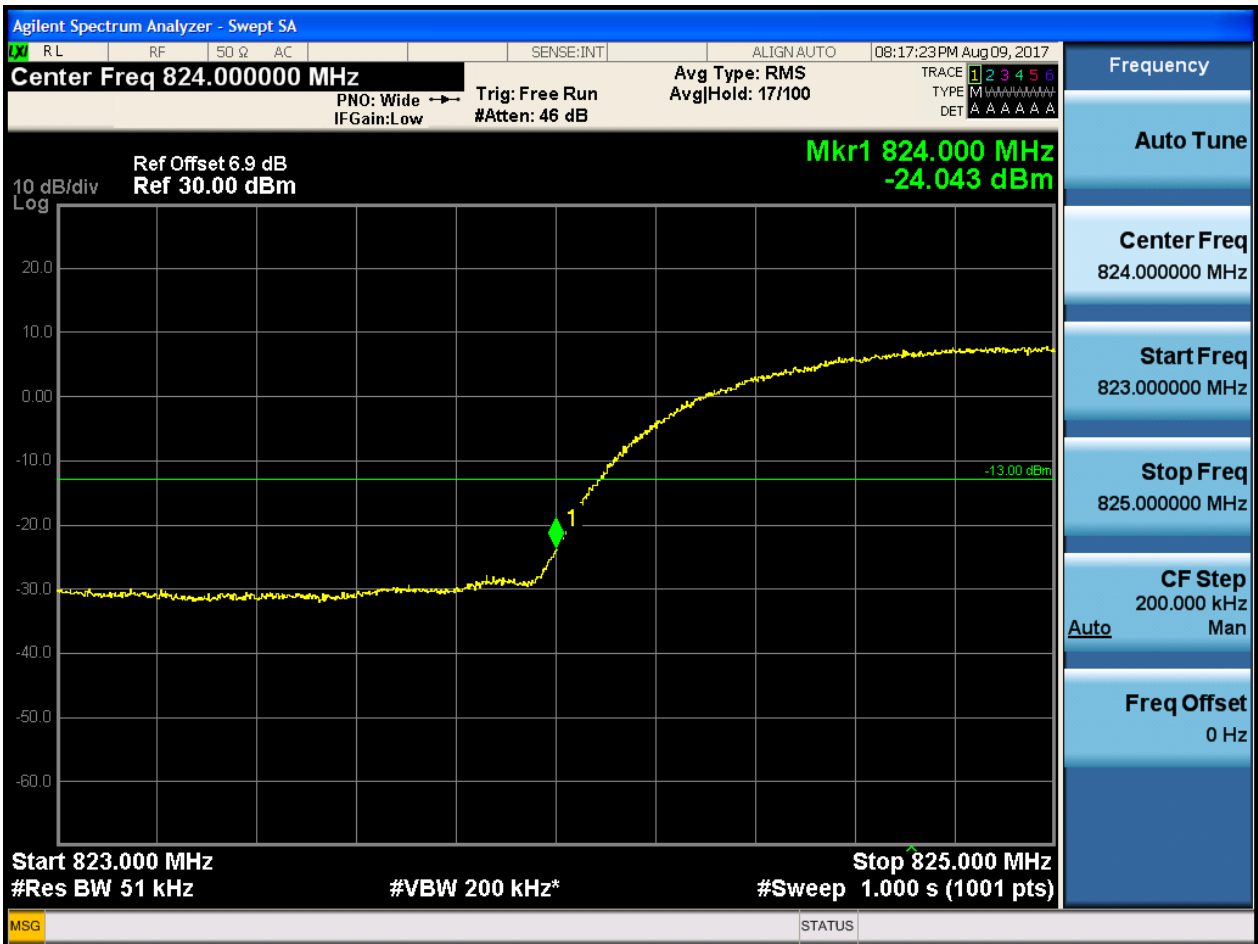




5.1.3 Test Band = WCDMA850

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.

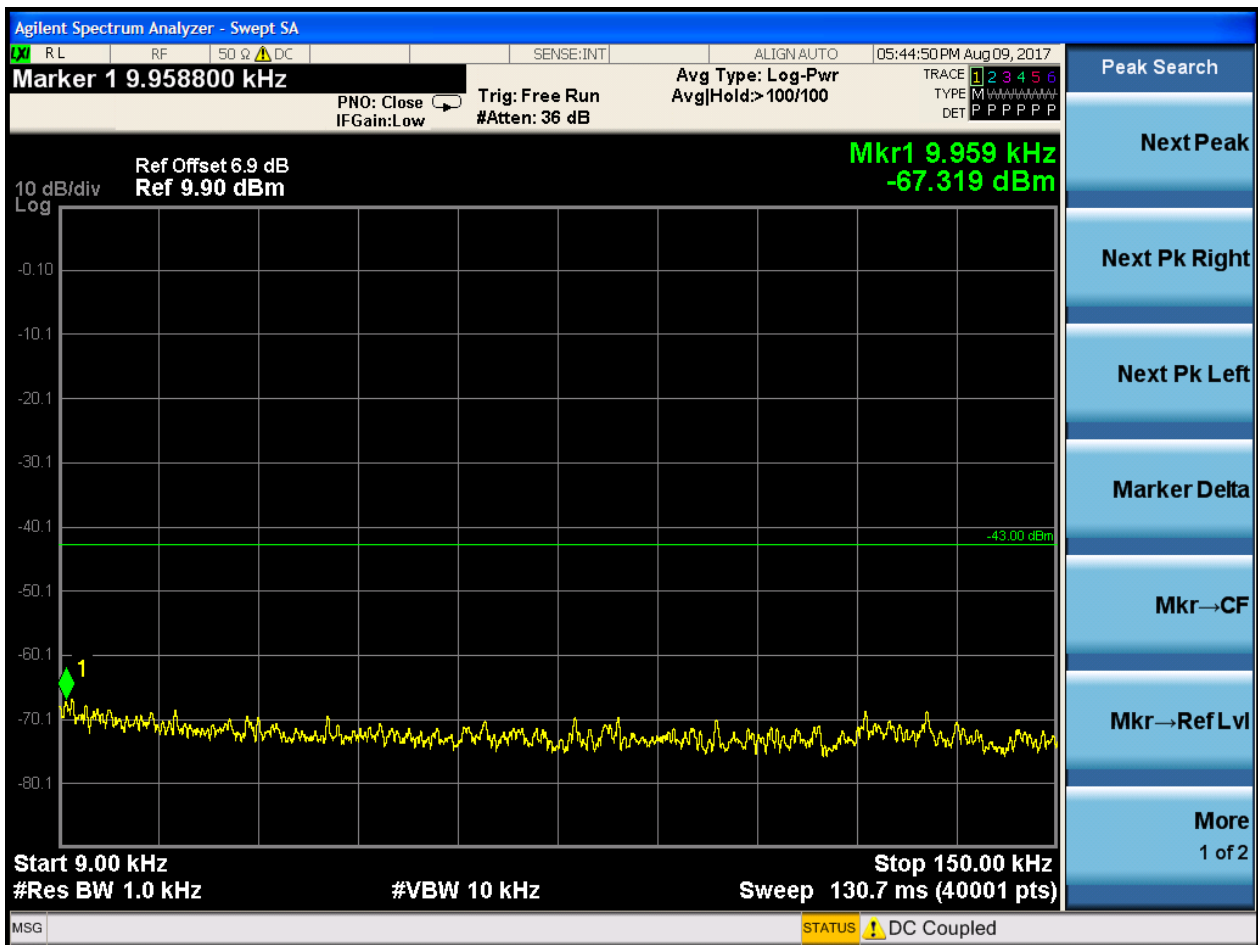
Part I - Test Plots

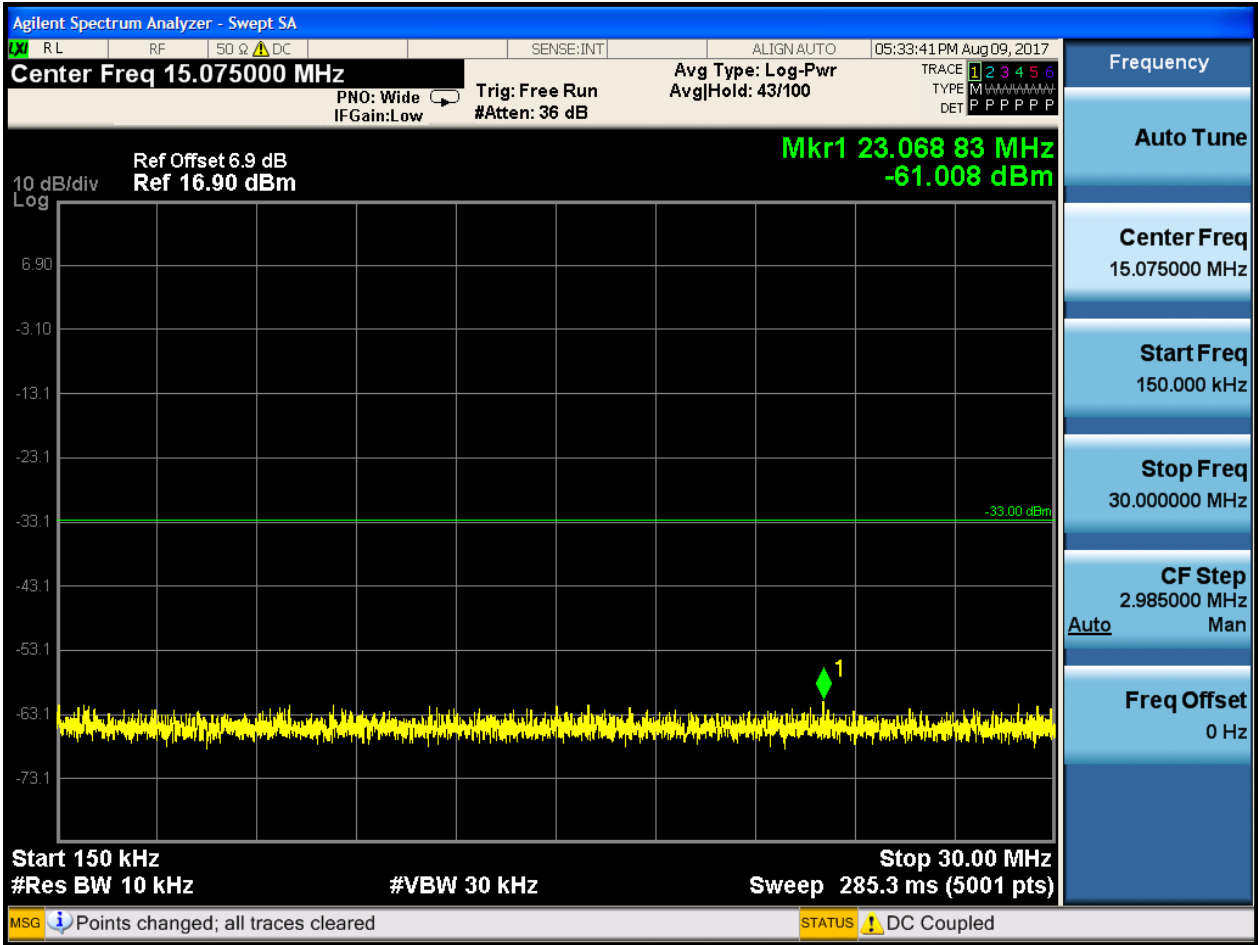
6.1 For UMTS

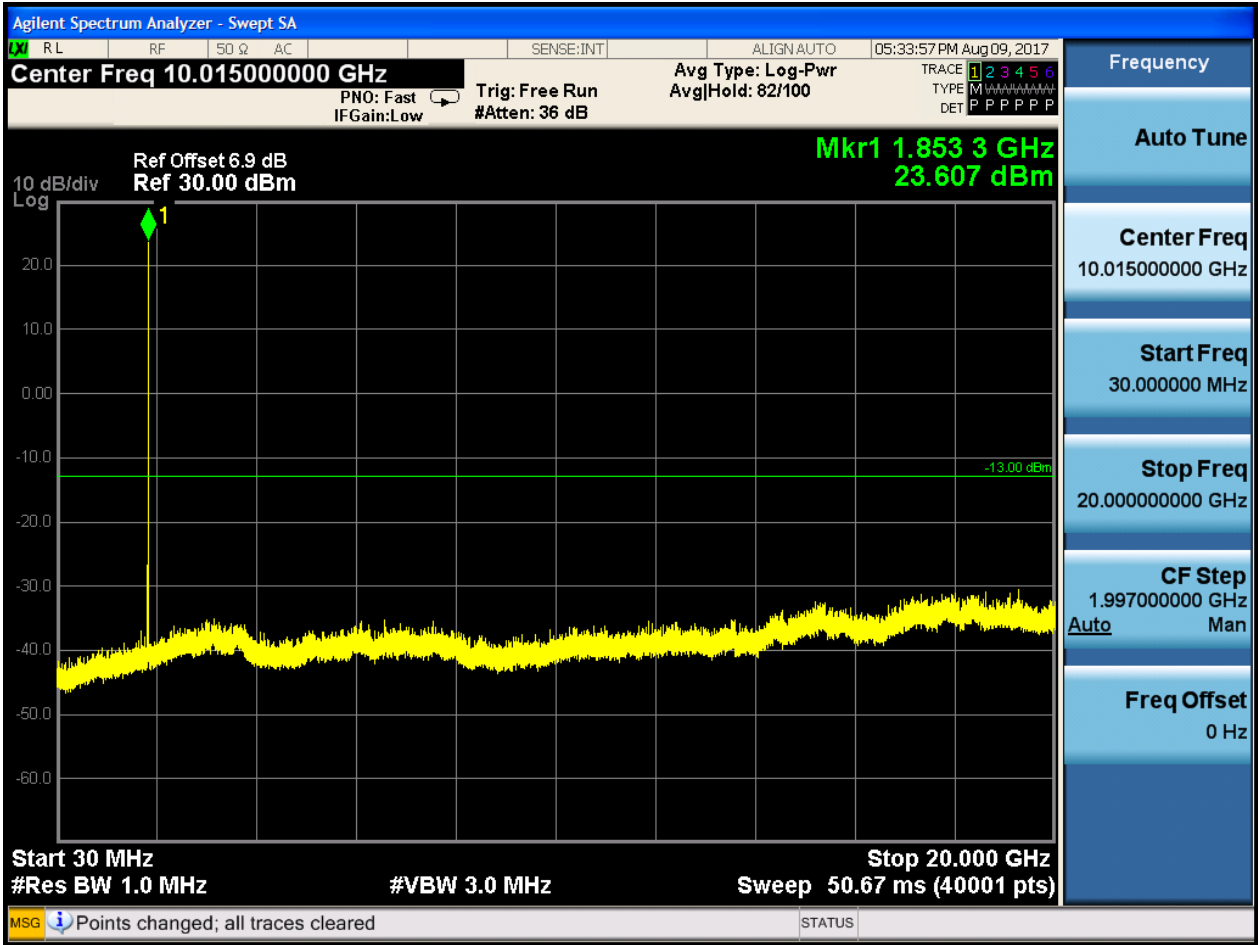
6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

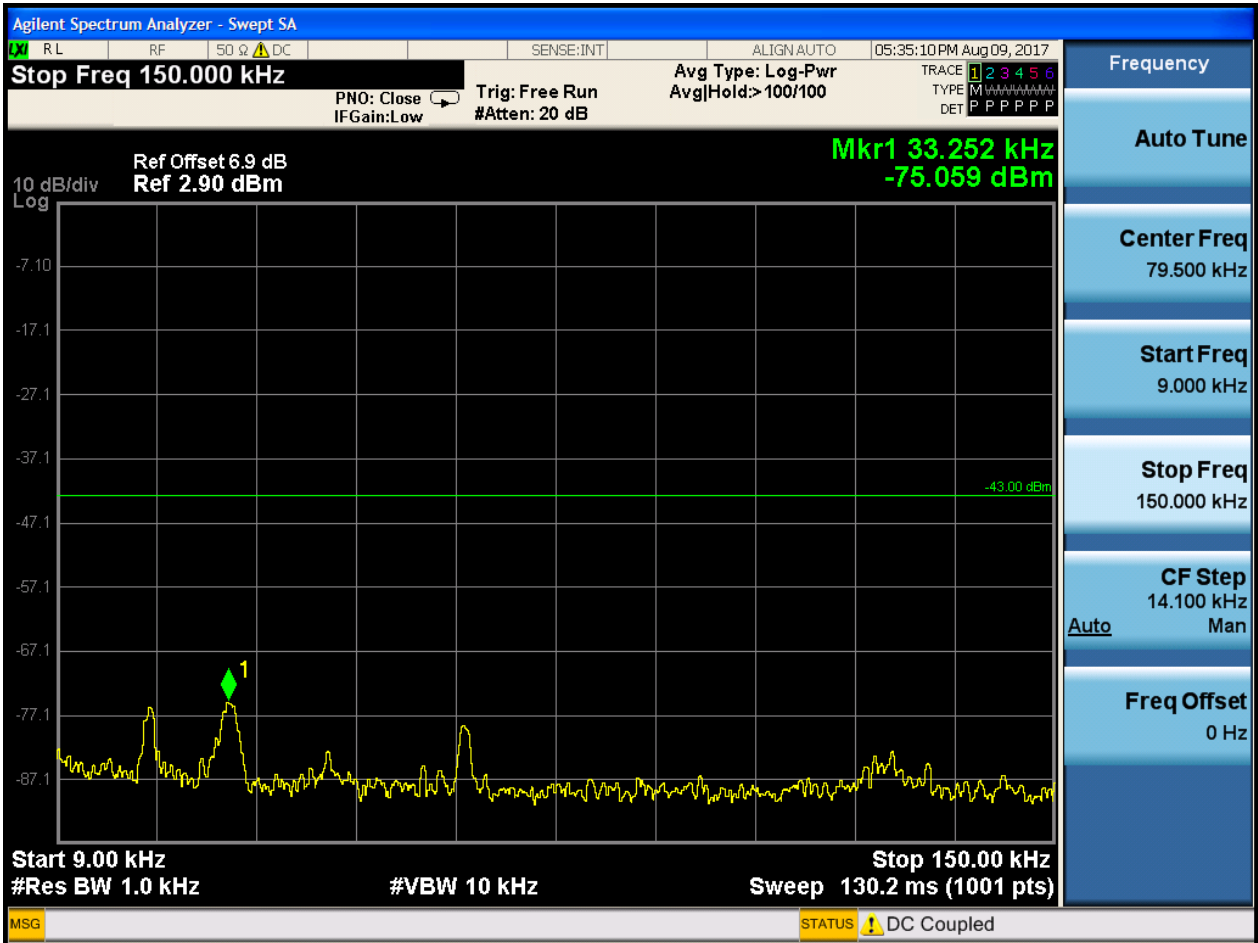
6.1.1.1.1 Test Channel = LCH







6.1.1.1.3 Test Channel = HCH

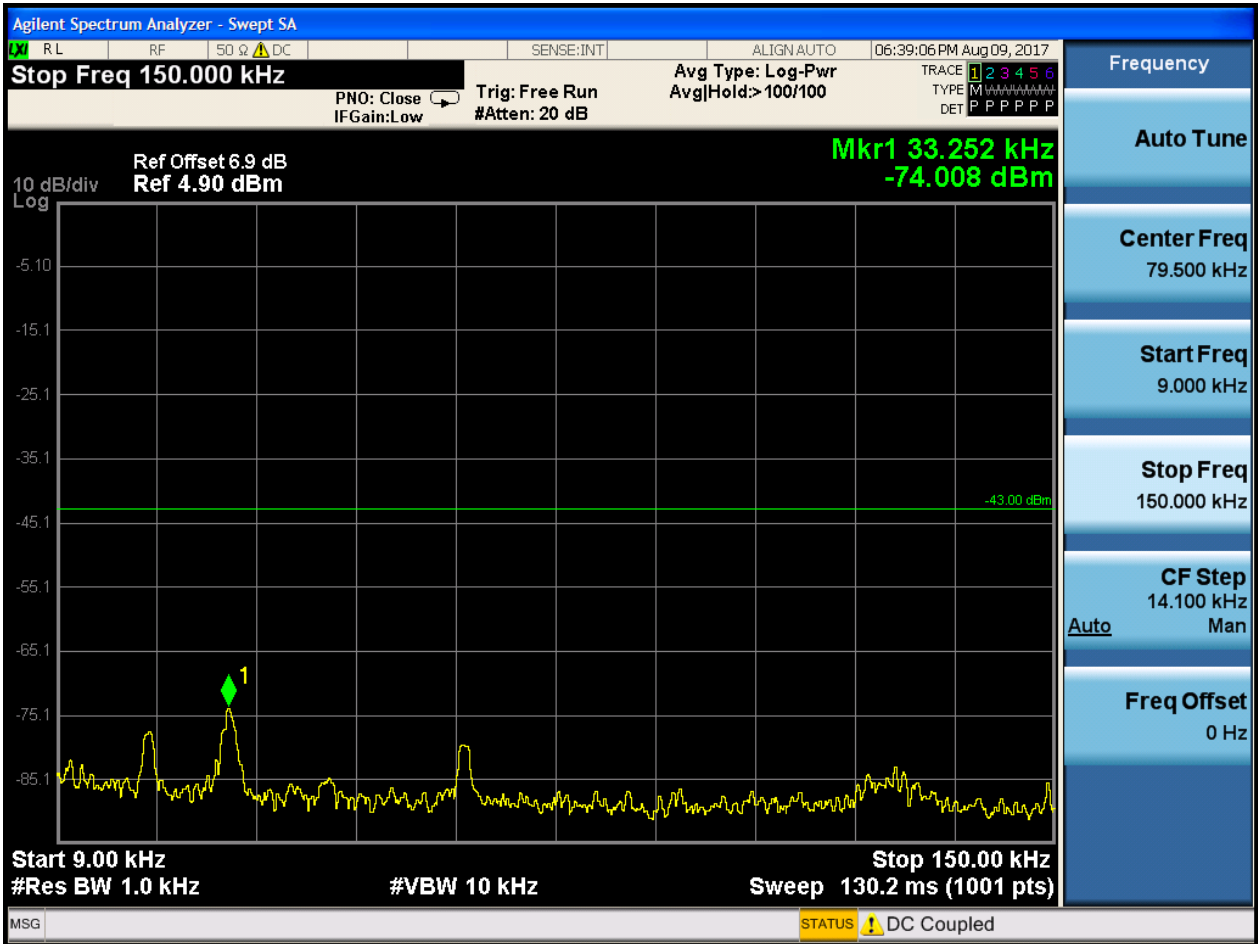


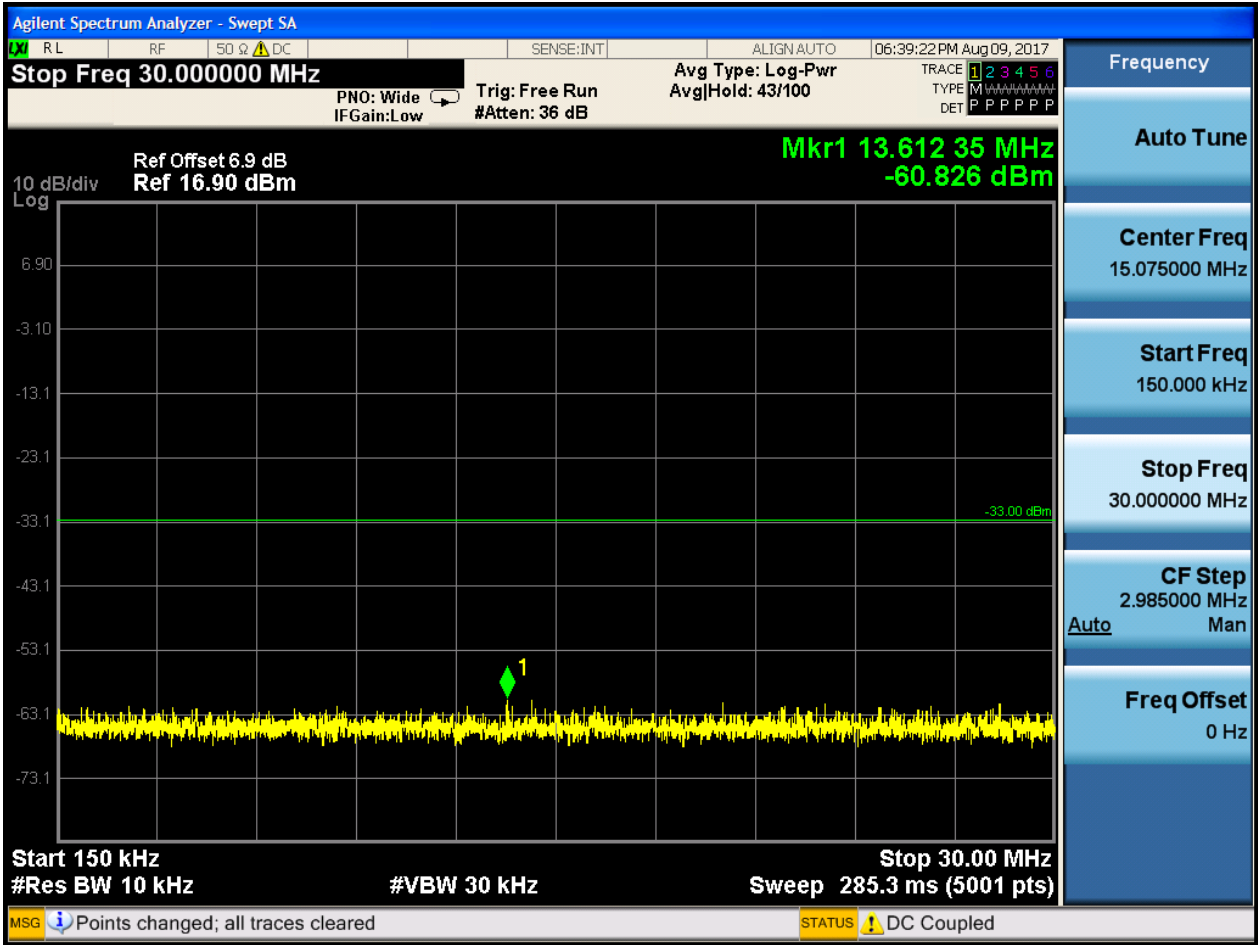


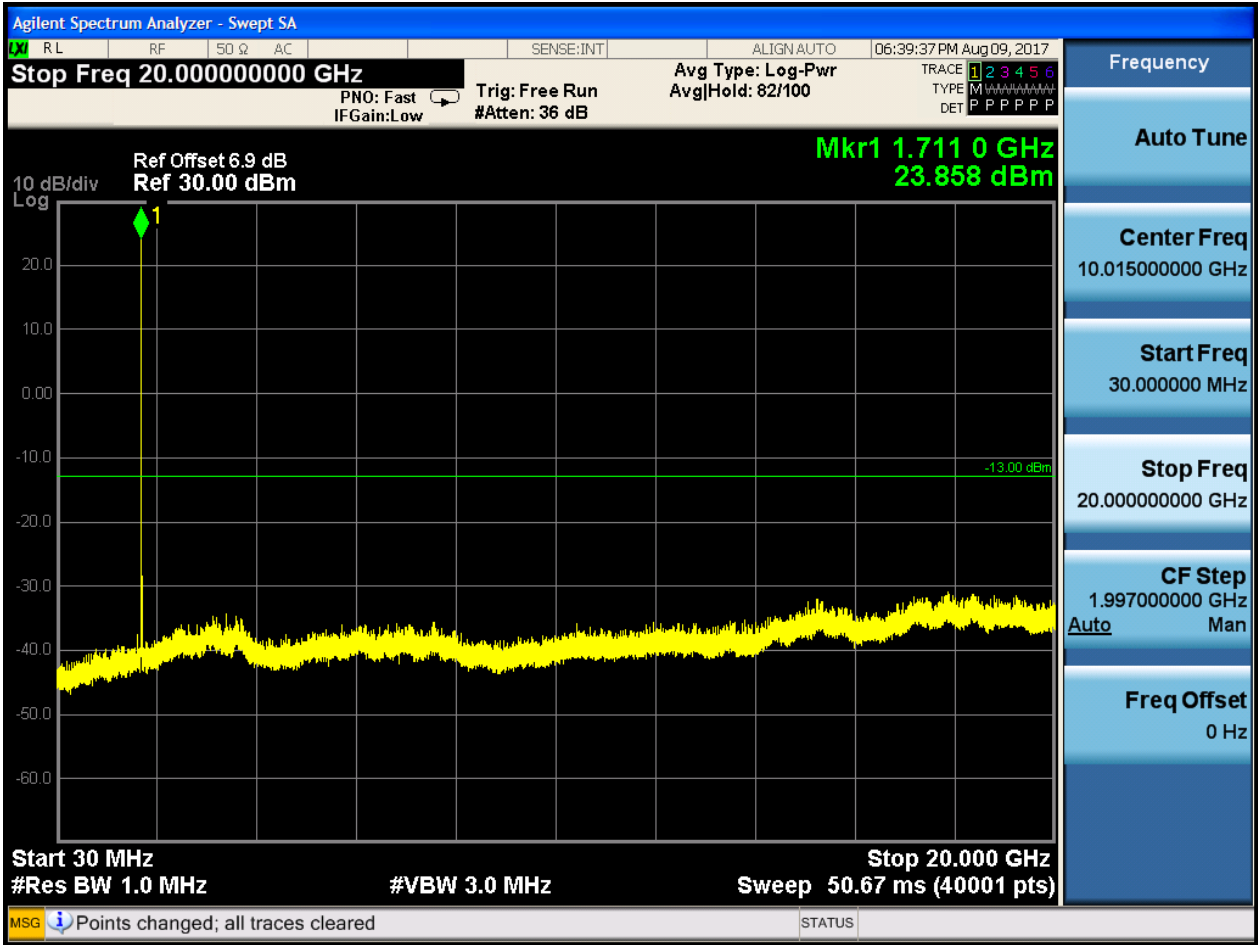
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

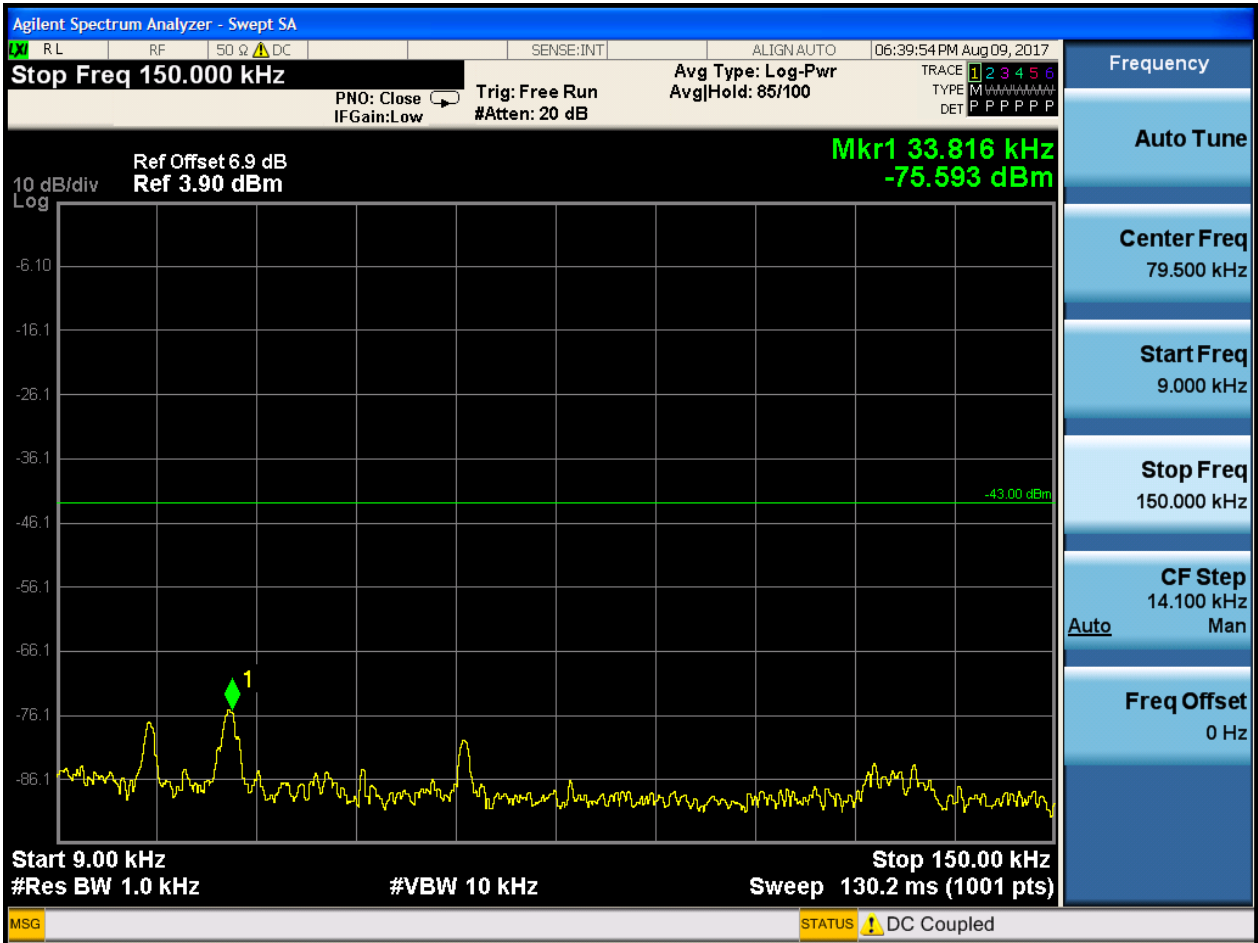
6.1.2.1.1 Test Channel = LCH

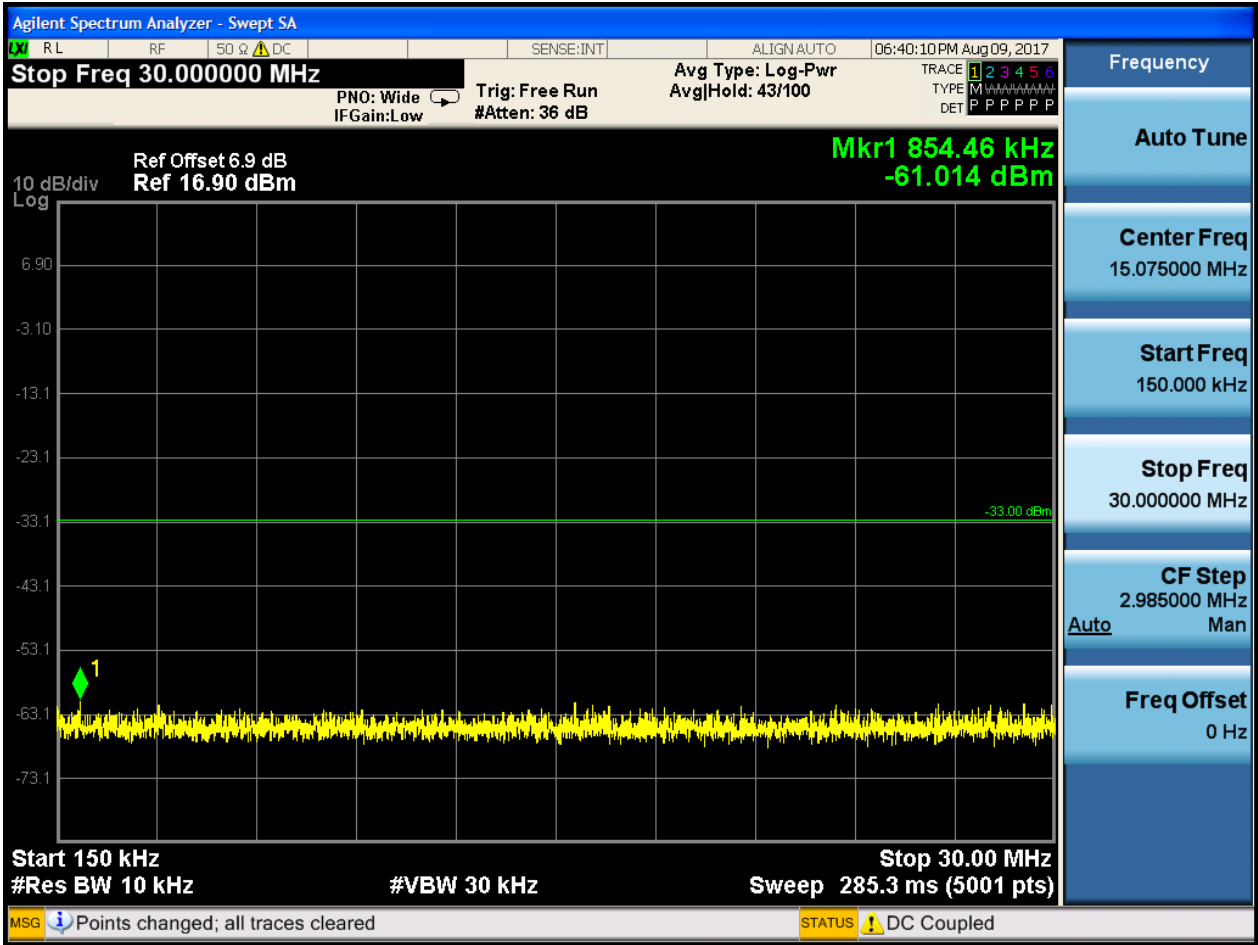


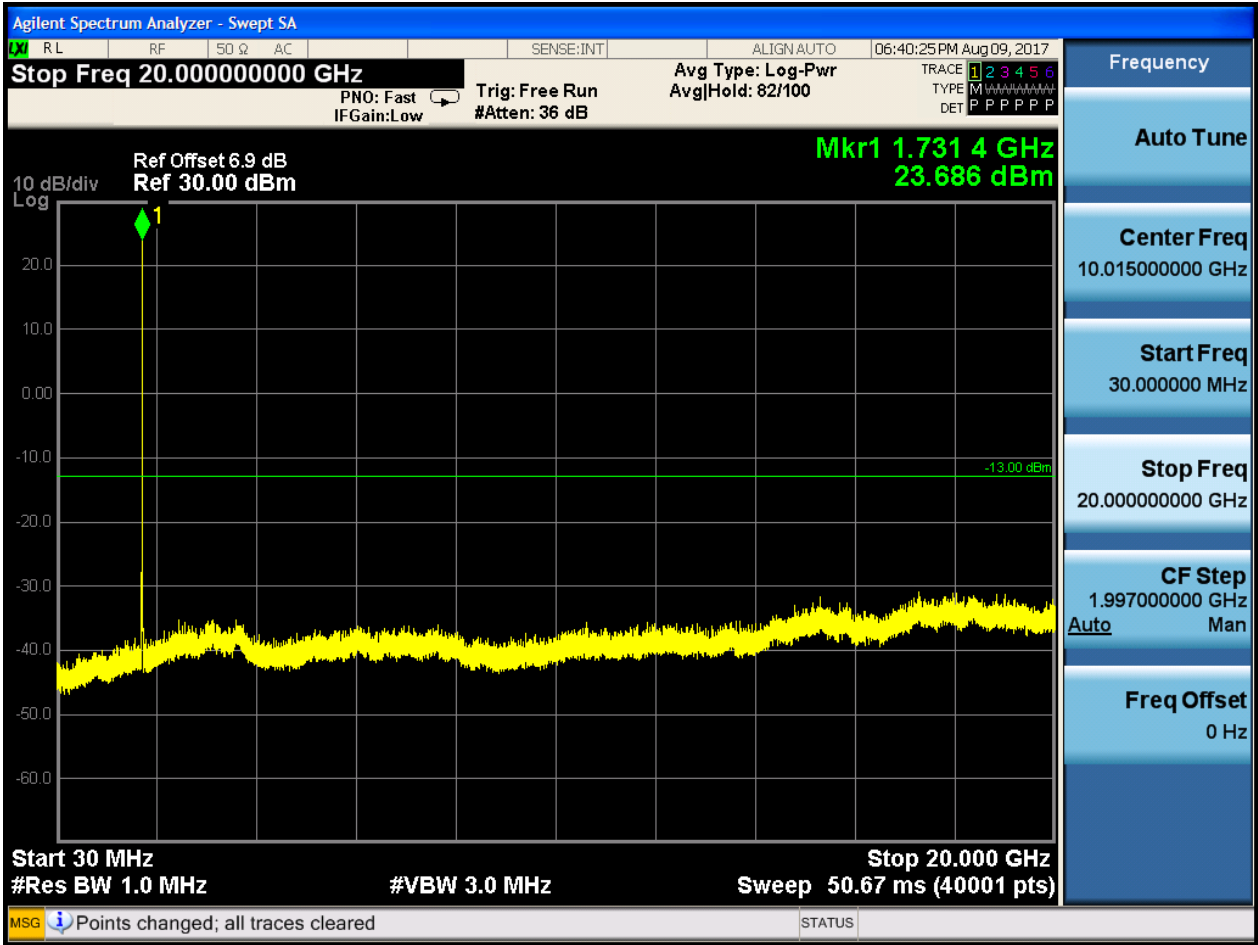


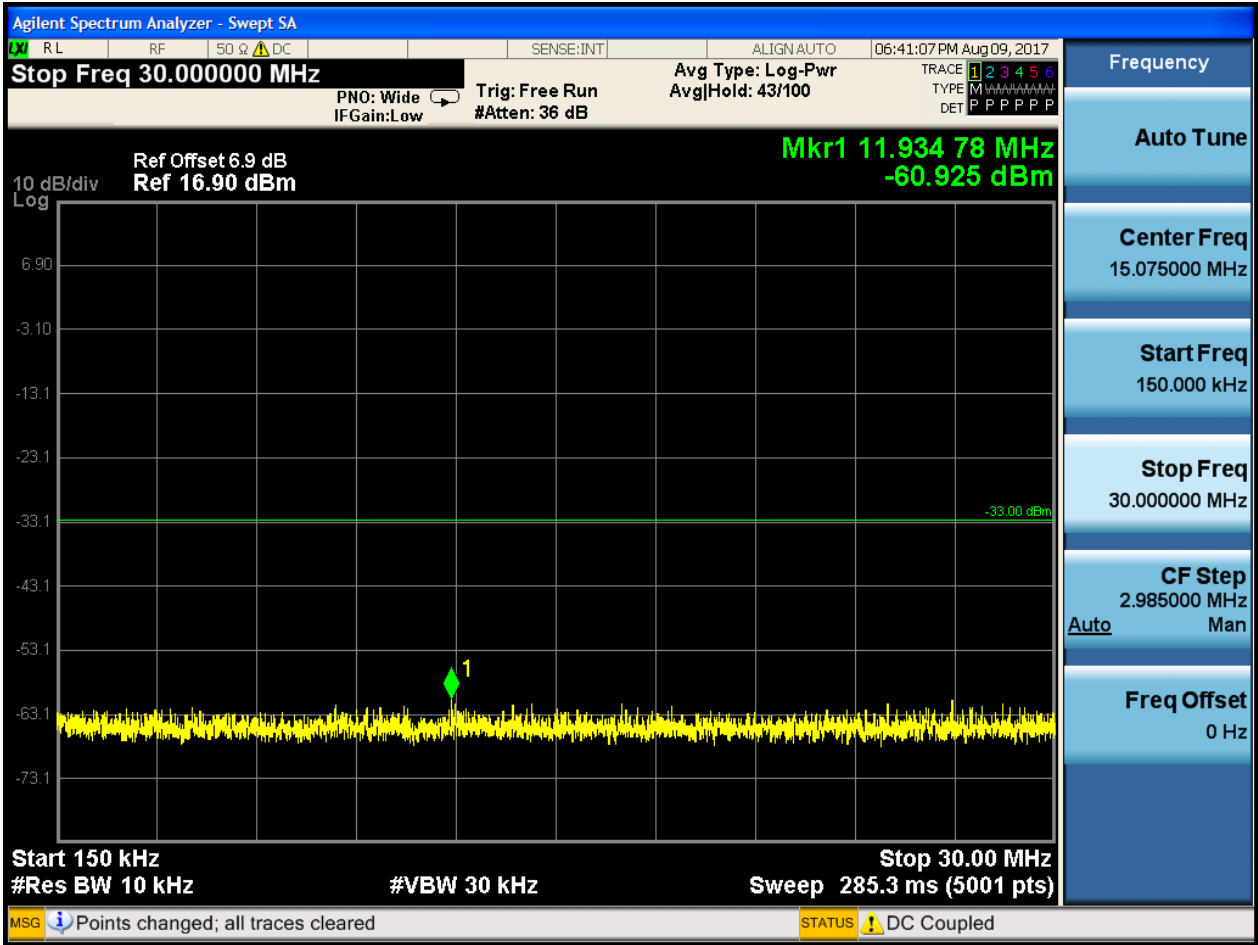


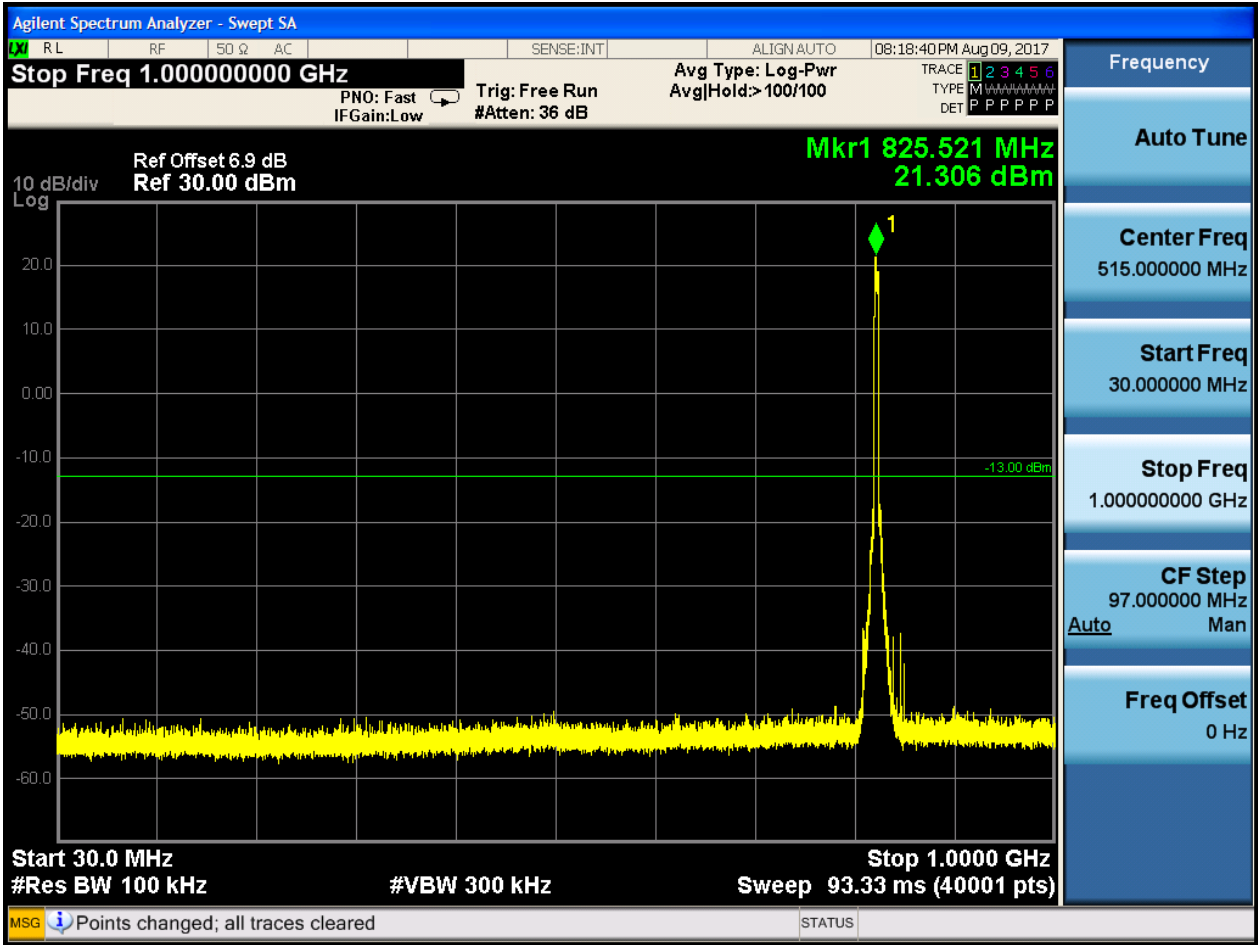
6.1.2.1.2 Test Channel = MCH

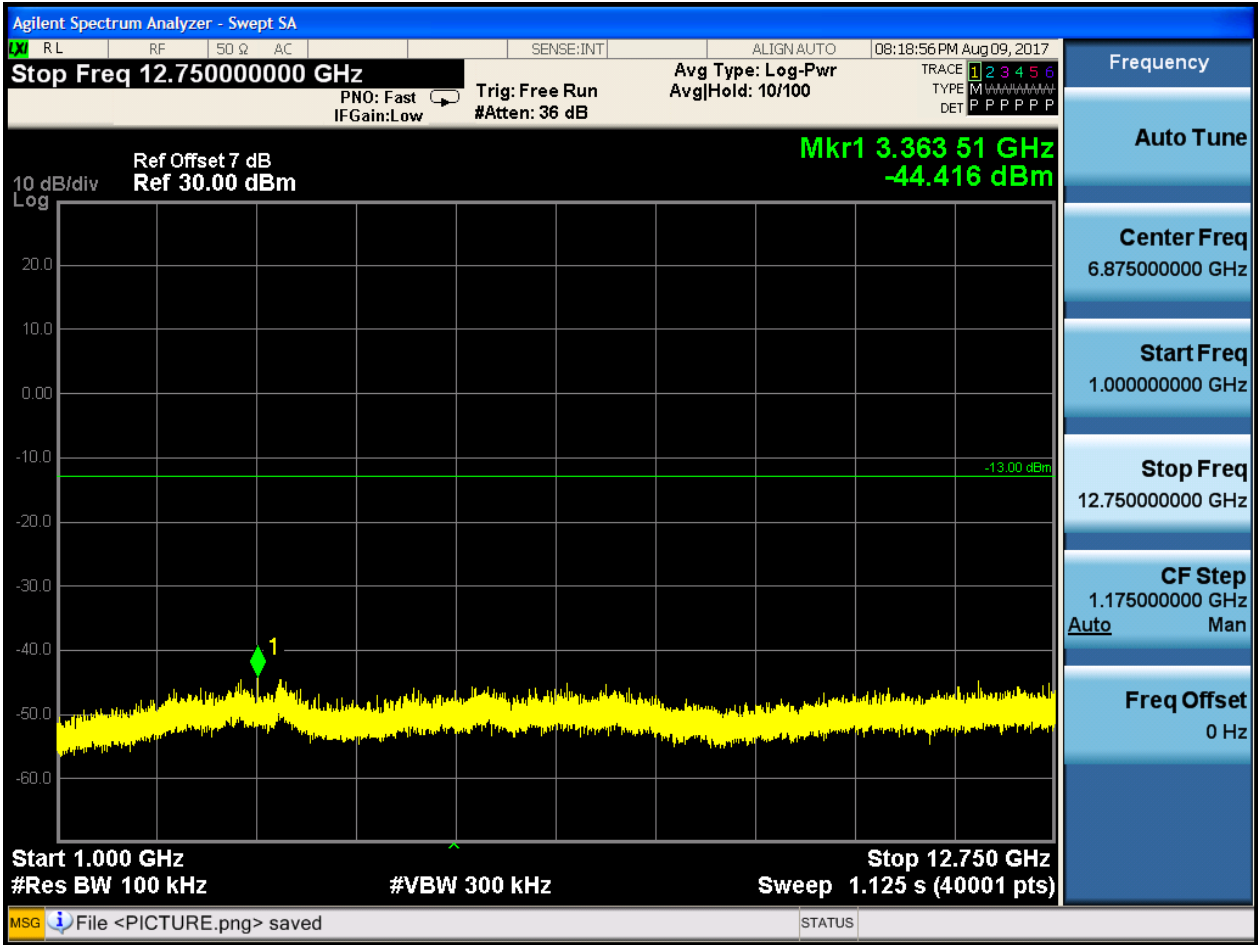




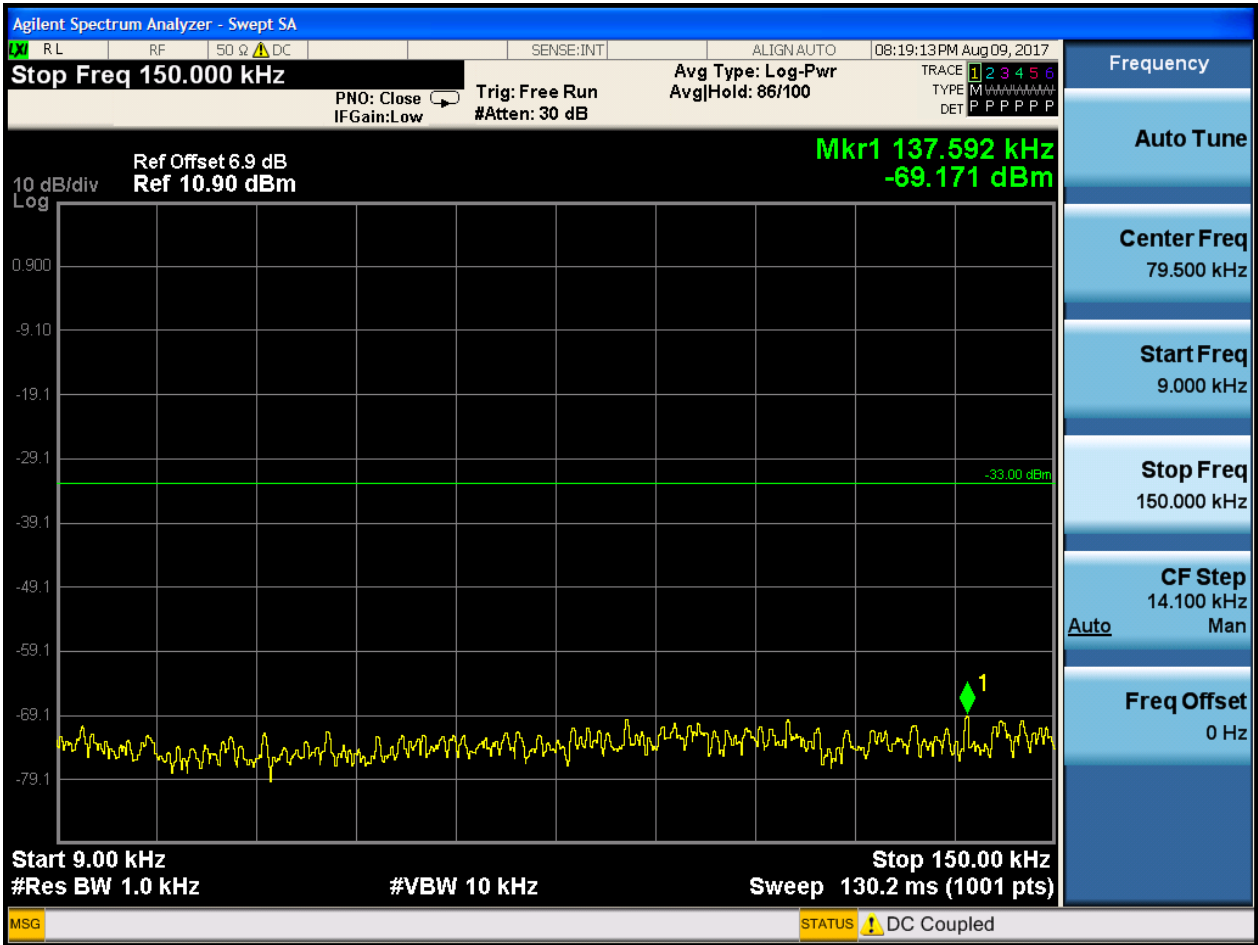


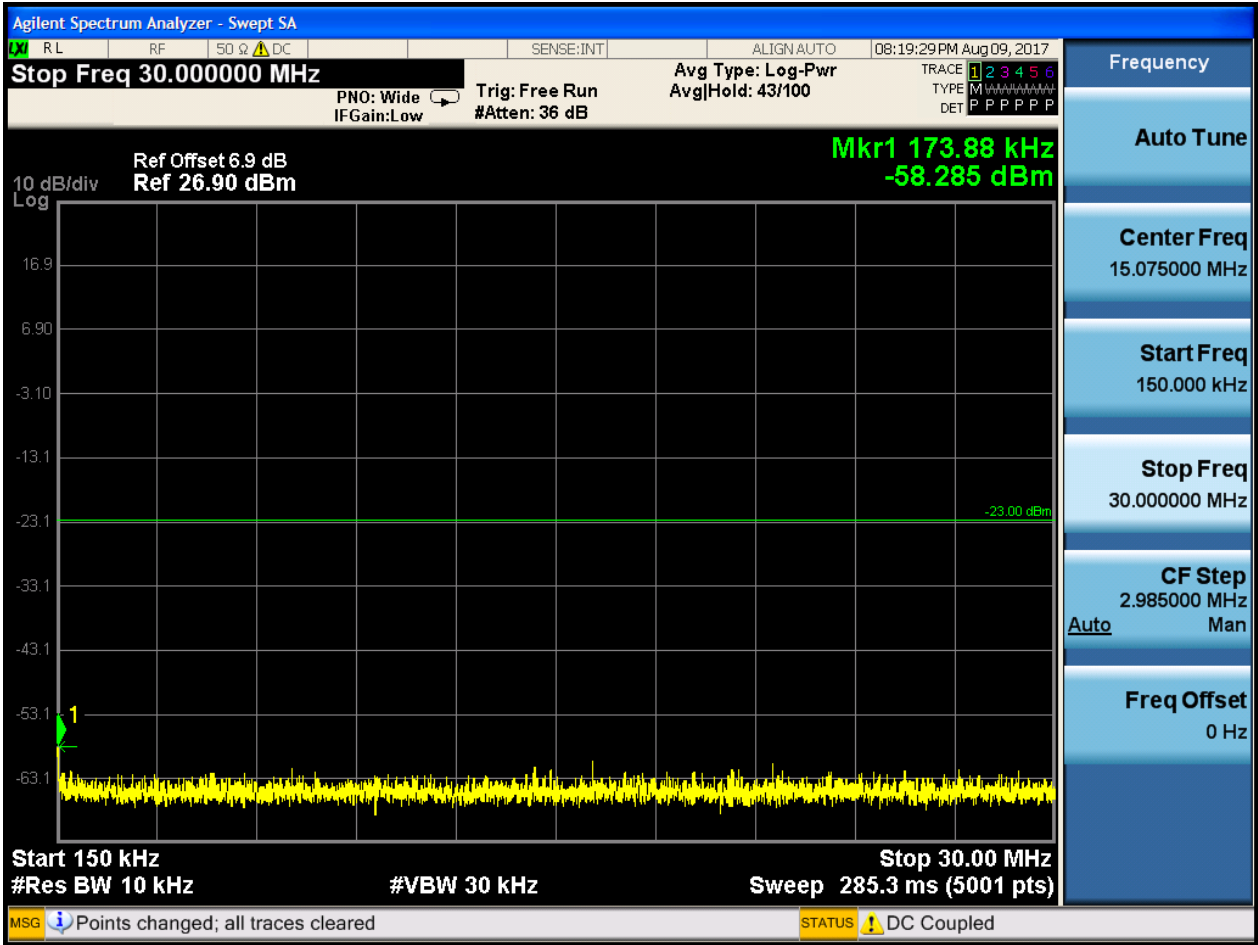


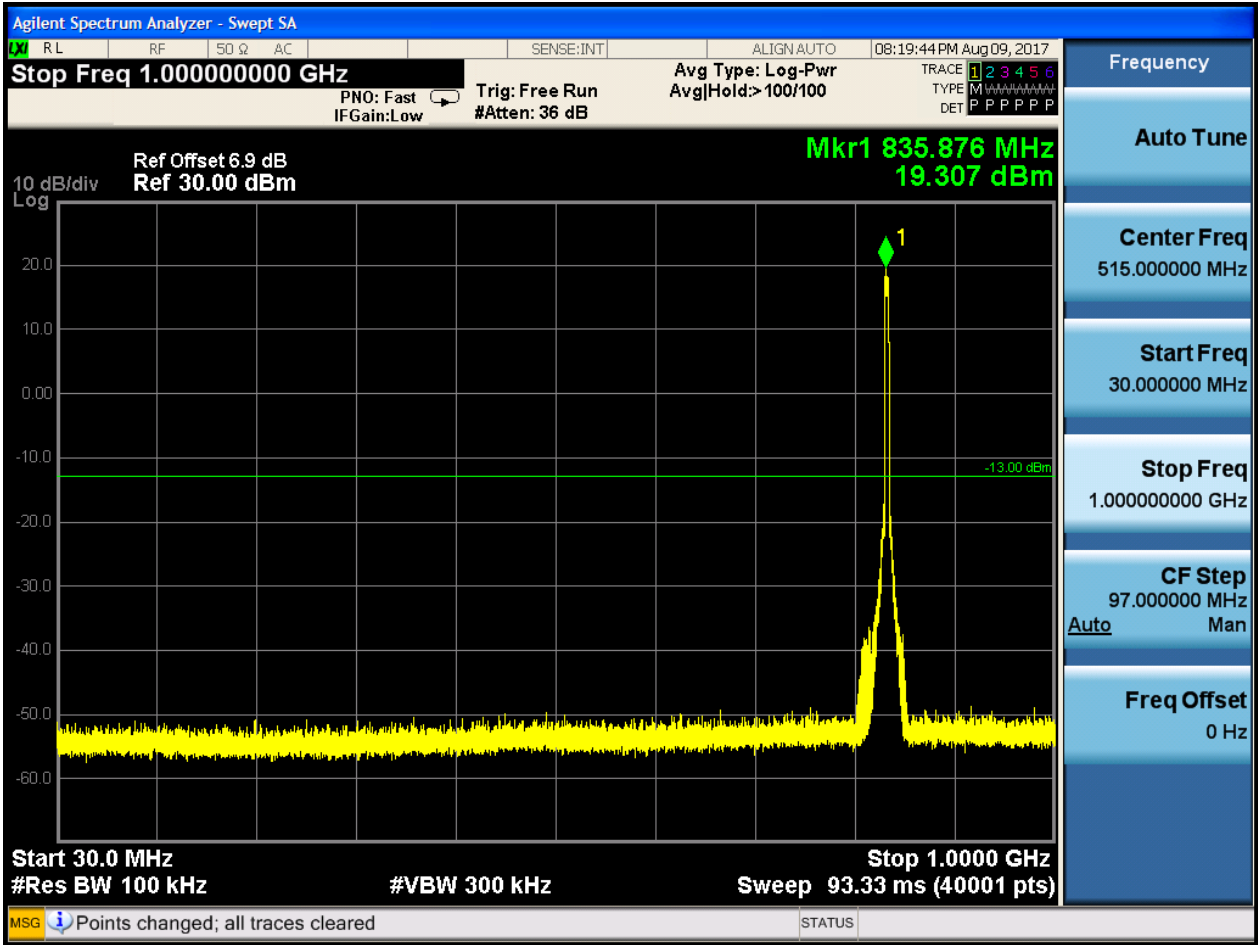


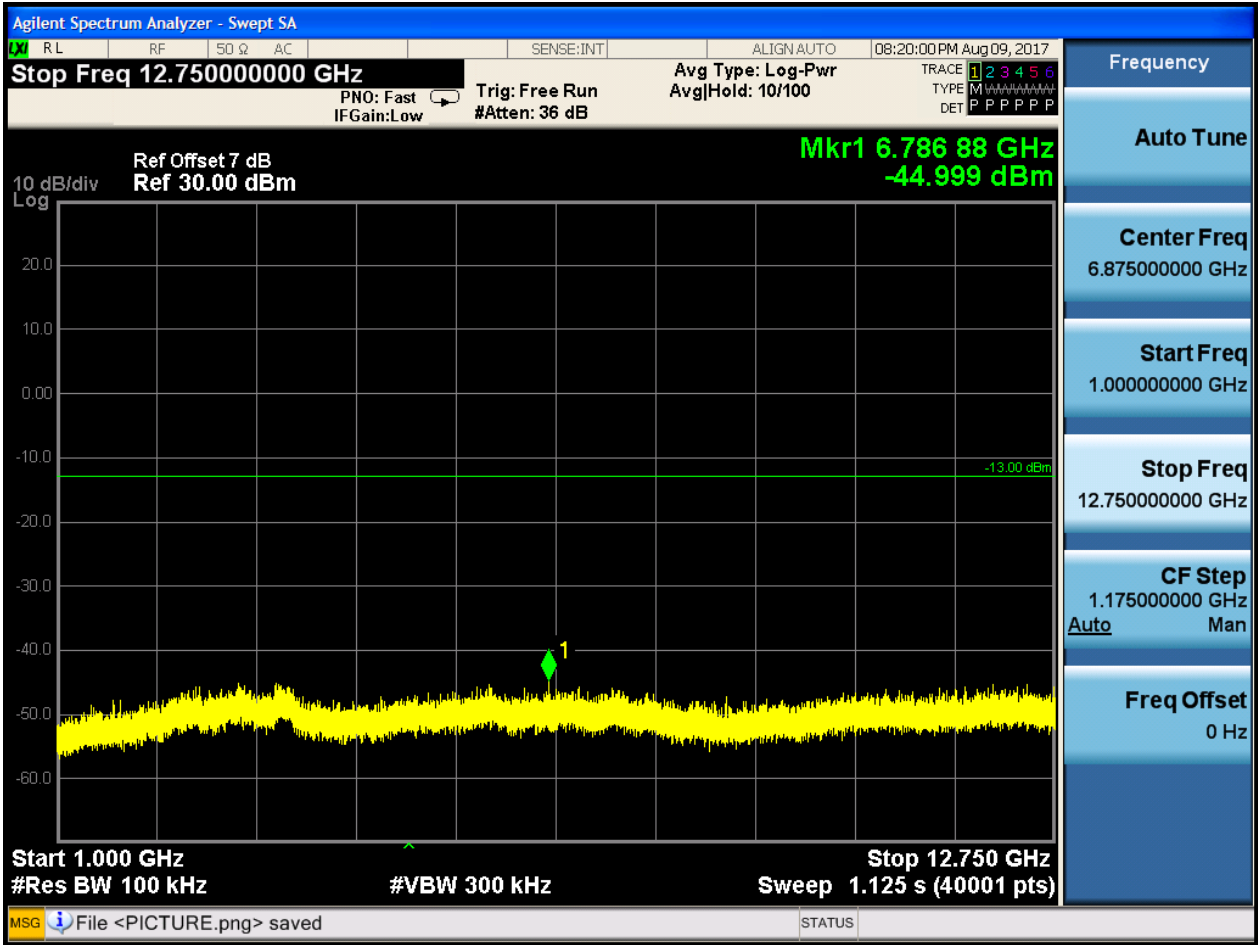


6.1.3.1.2 Test Channel = MCH

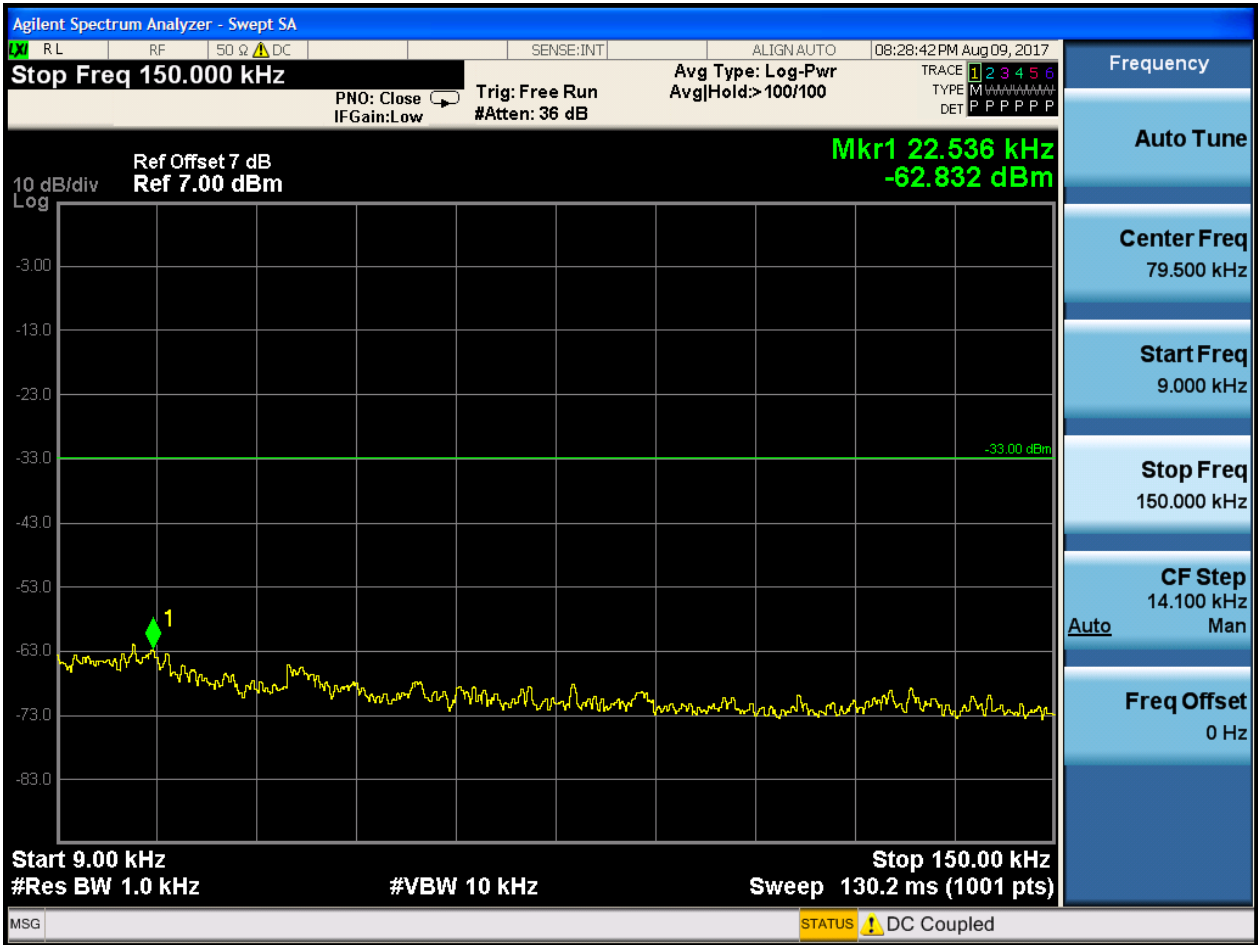


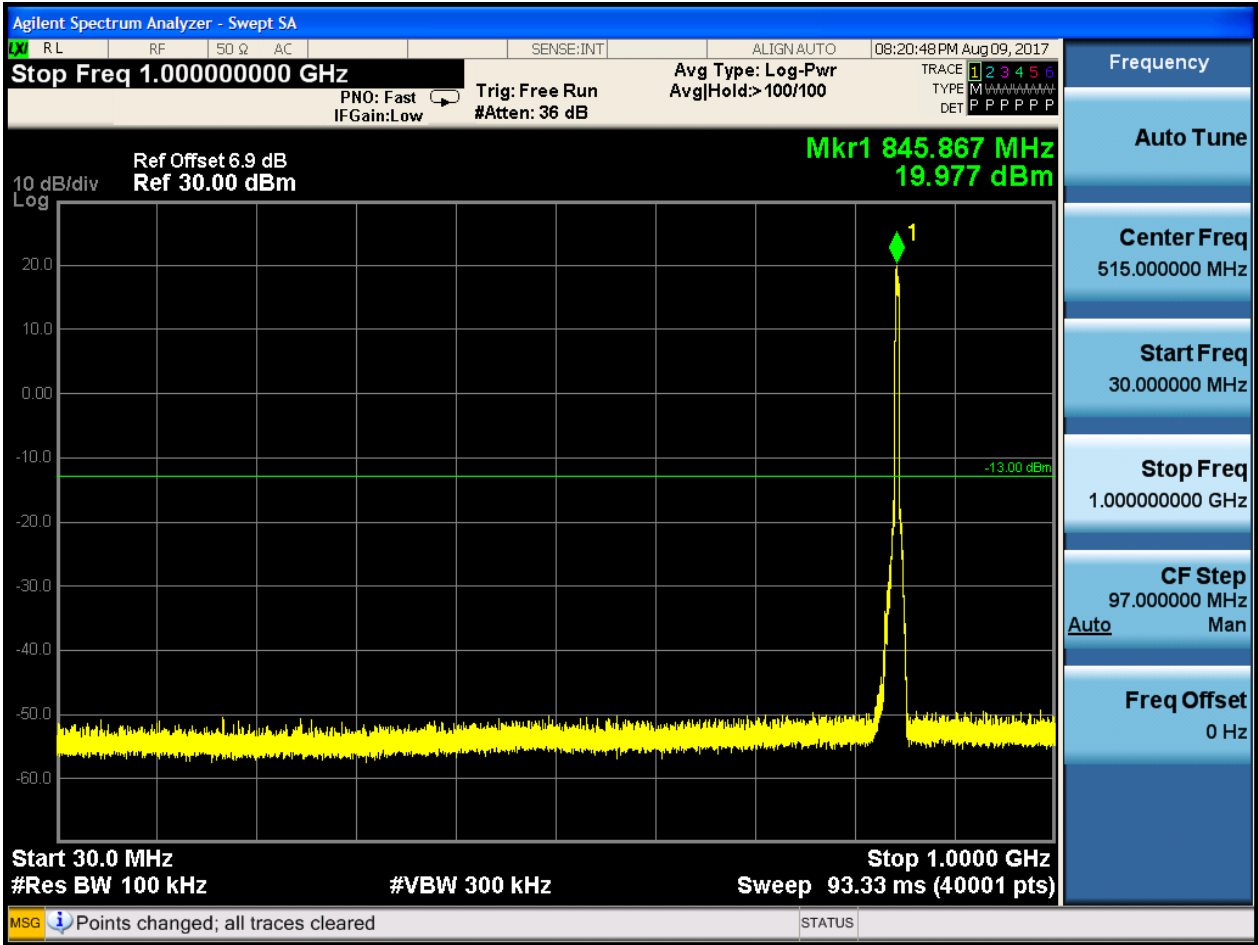






6.1.3.1.3 Test Channel = HCH





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

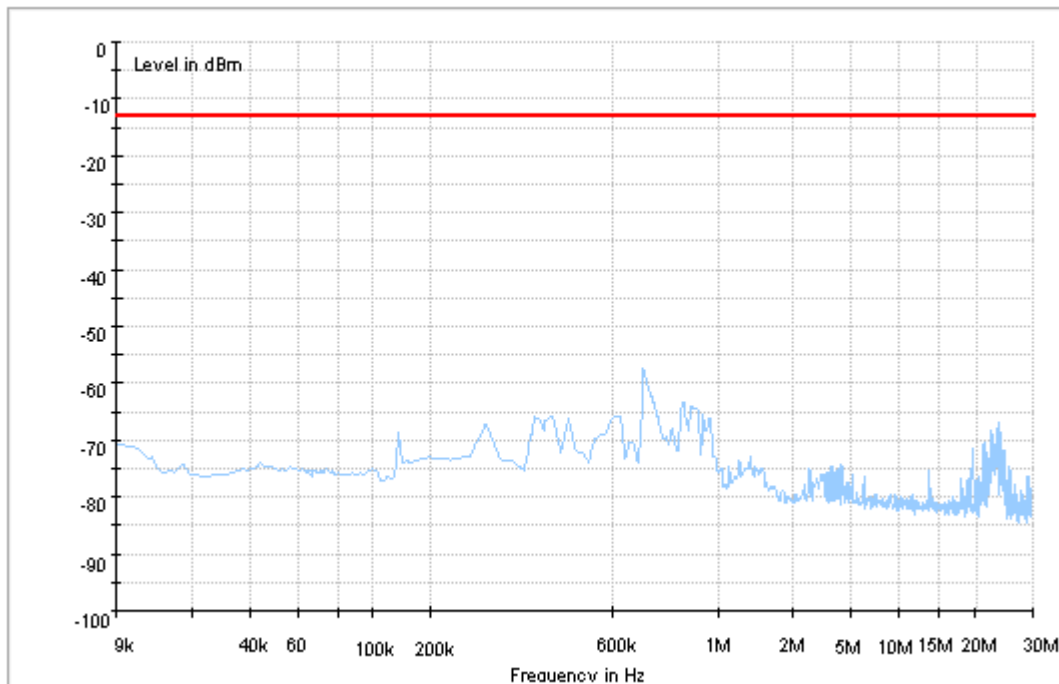
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

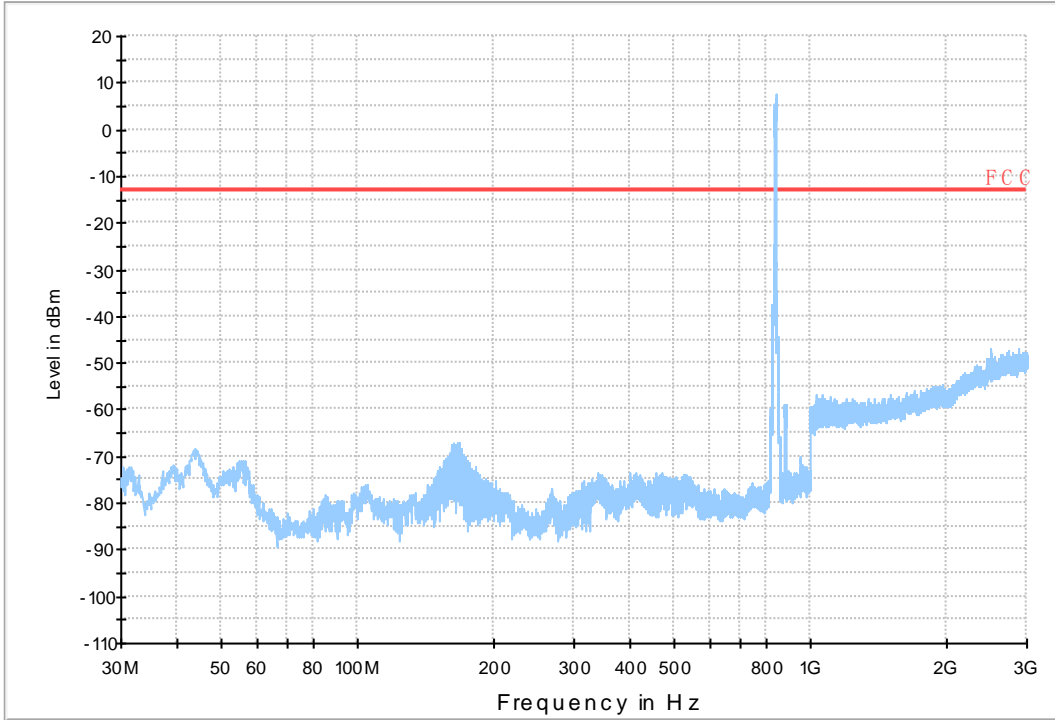
7.1 For UMTS

7.1.1 Test Band = WCDMA850_ANT1

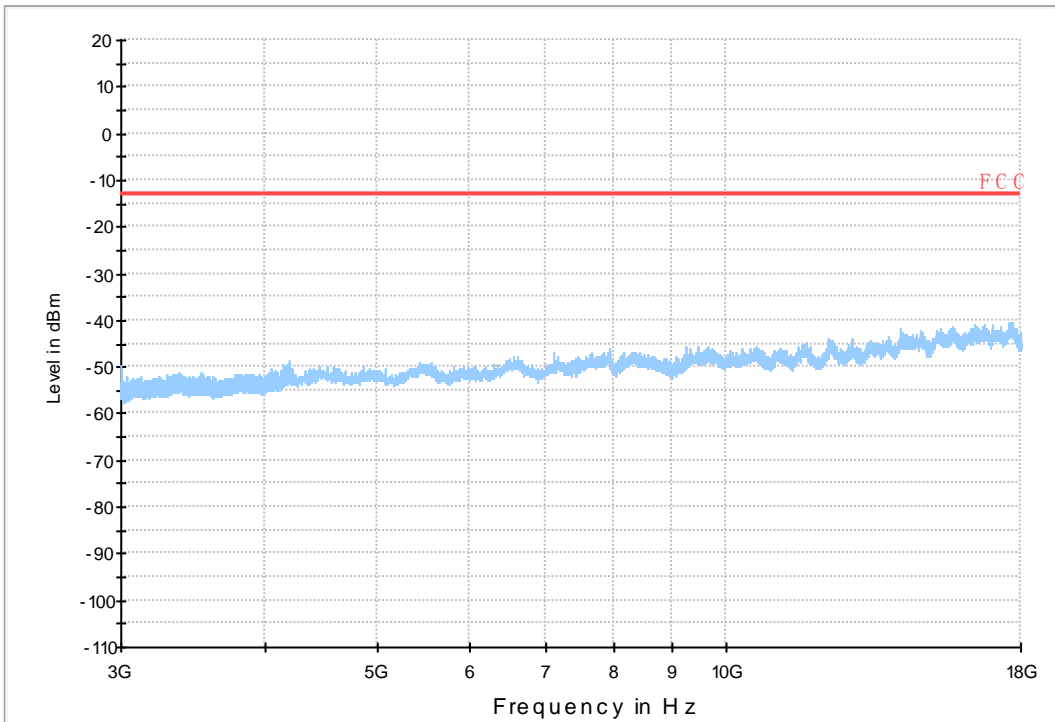
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

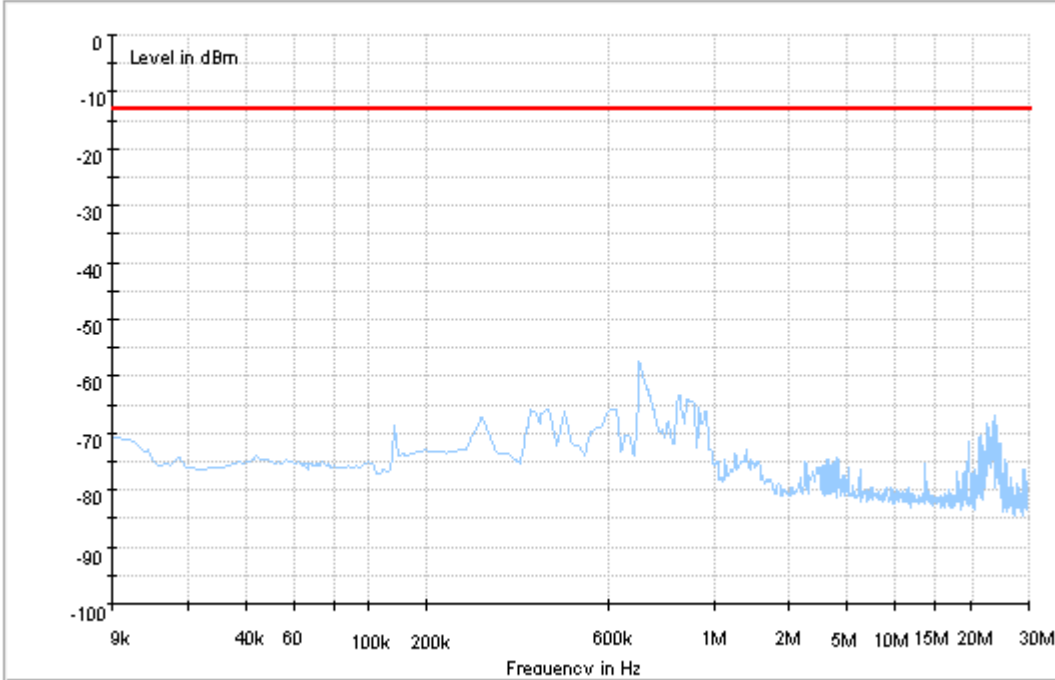


Copy of FCC PART22 W CDMA850_H

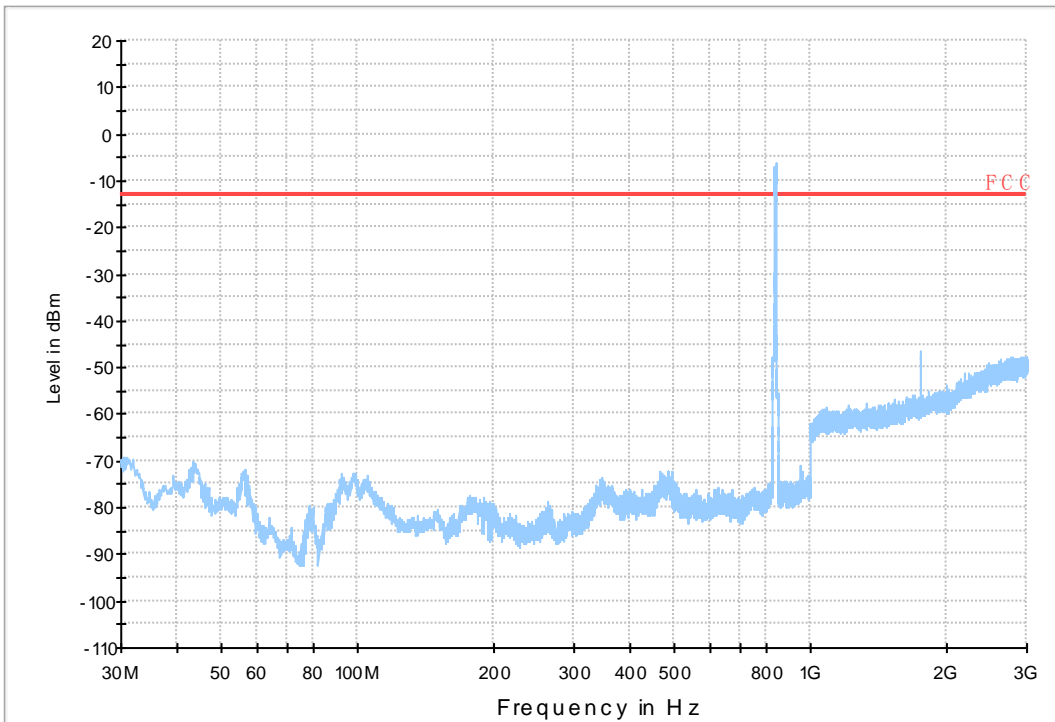


7.1.2 Test Band = WCDMA850_ANT2

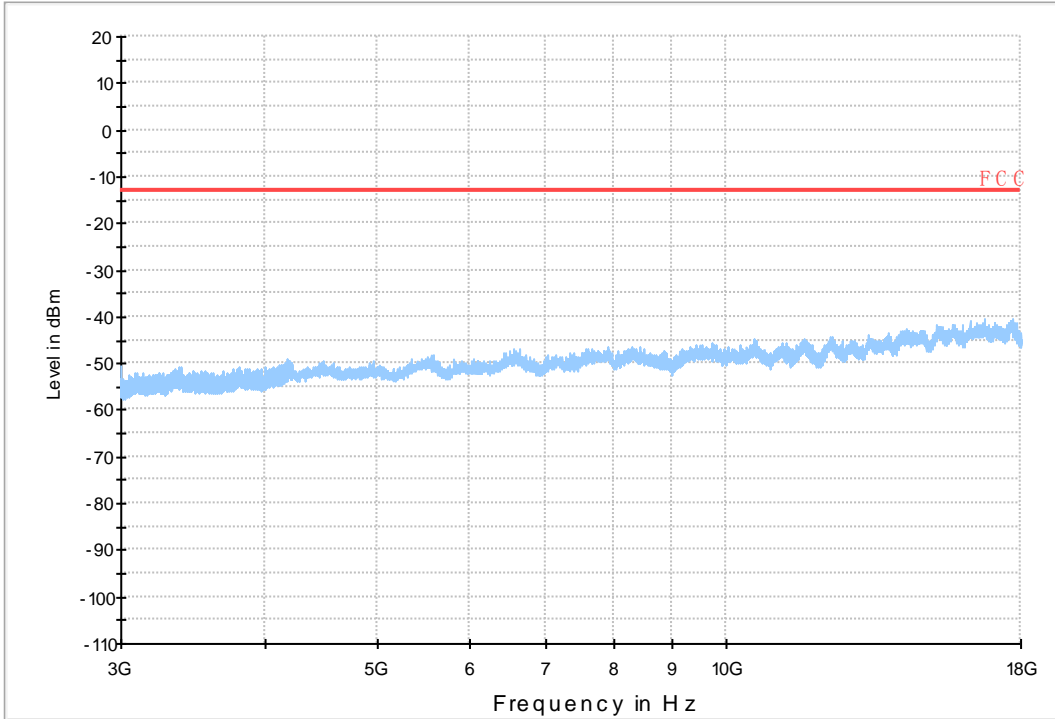
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

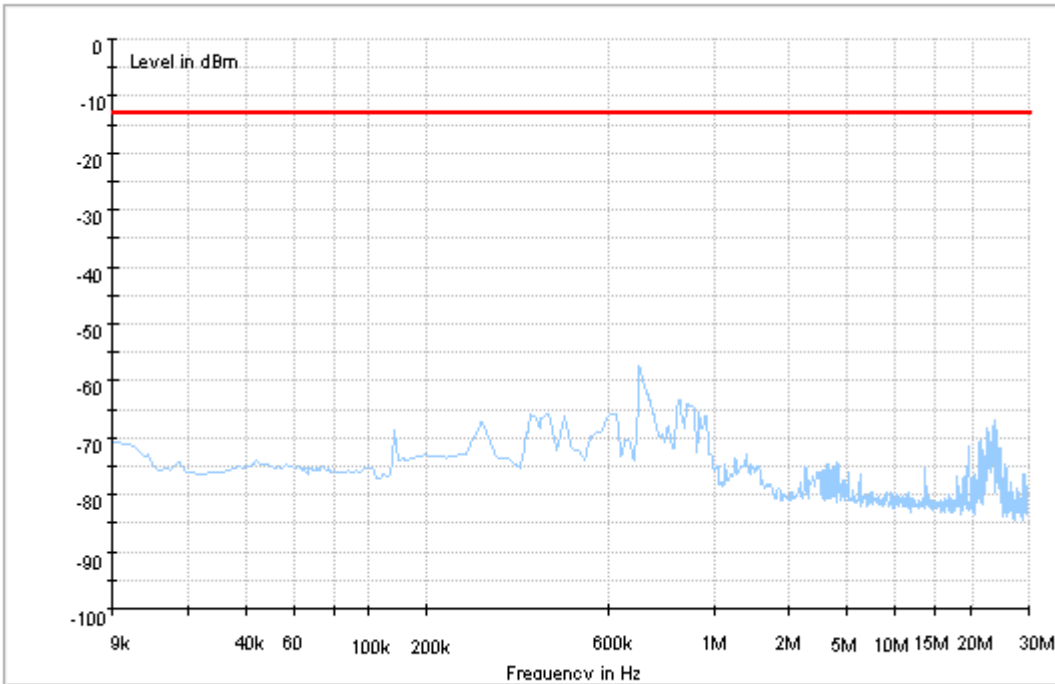


Copy of FCC PART22 W CDMA850_H

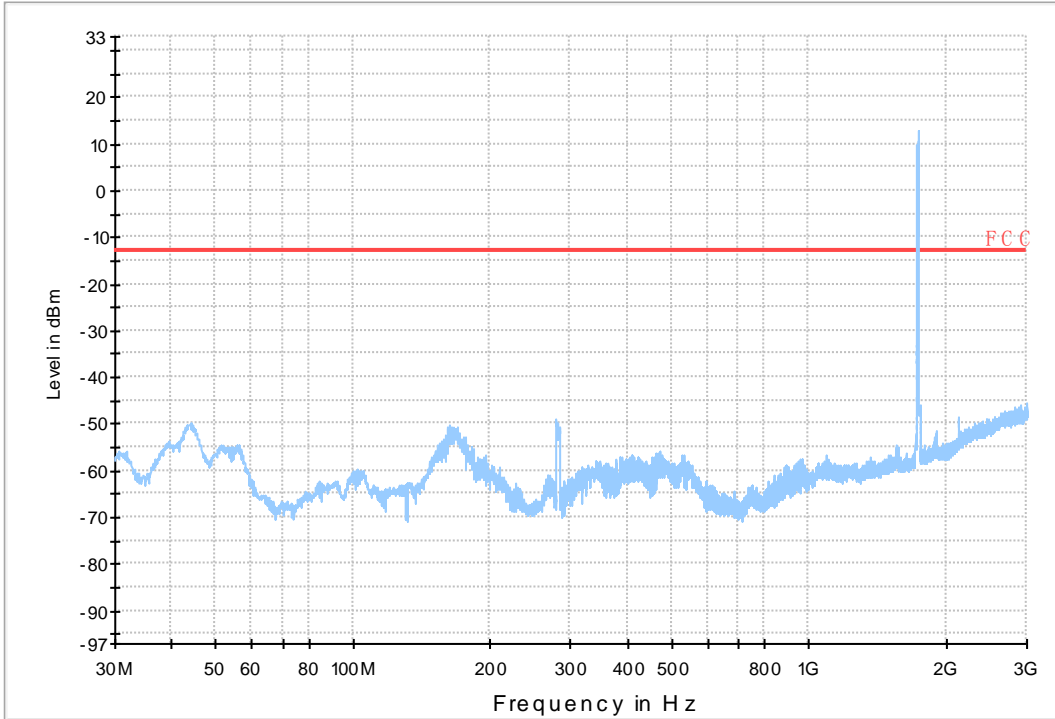


7.1.3 Test Band = WCDMA1700_ANT1

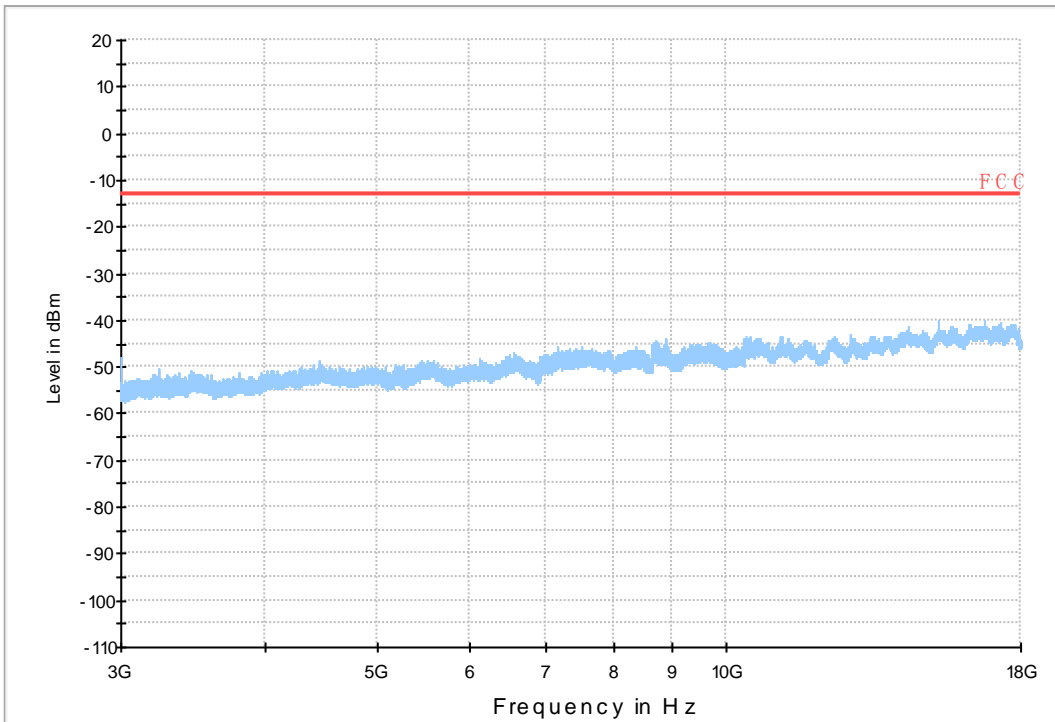
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

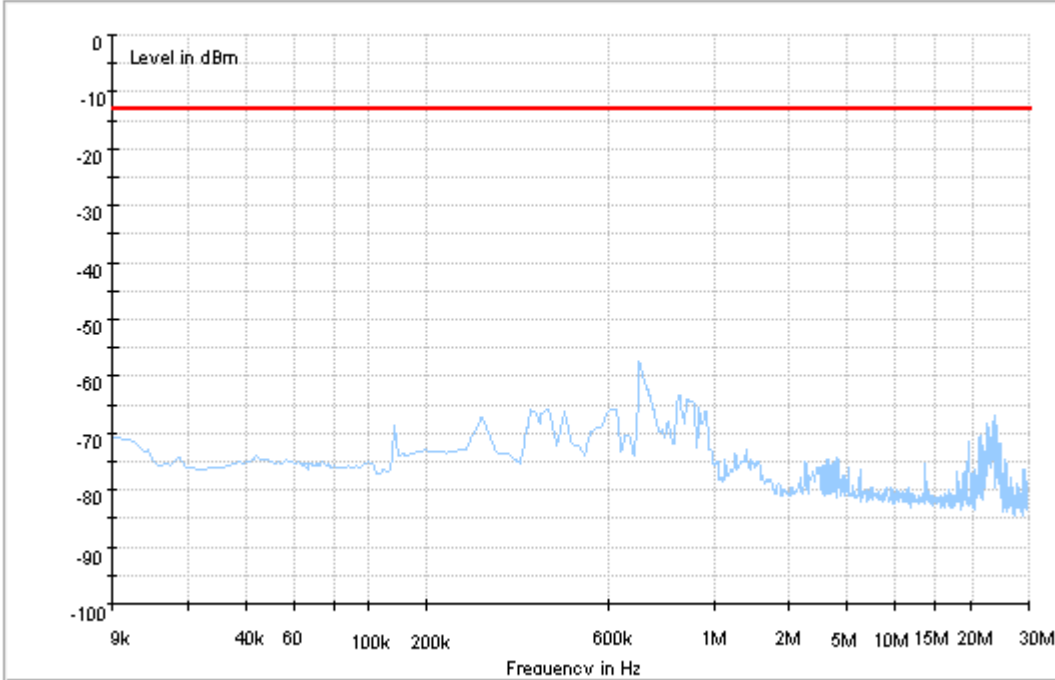


Copy of FCC PART27 W CDMA1700_H

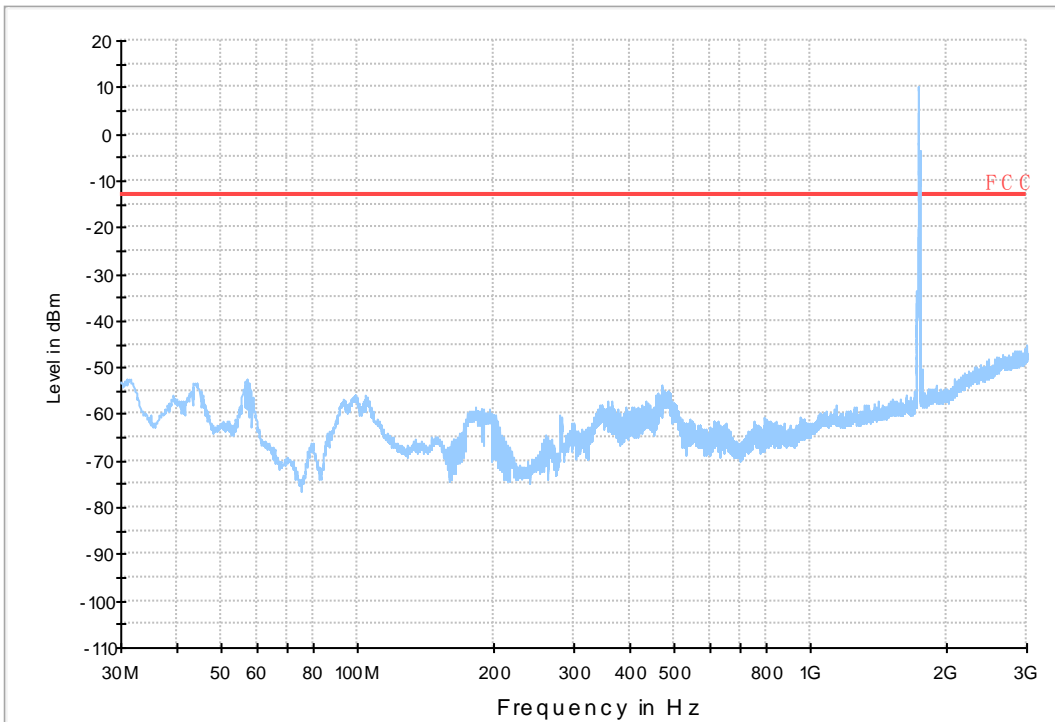


7.1.4 Test Band = WCDMA1700_ANT2

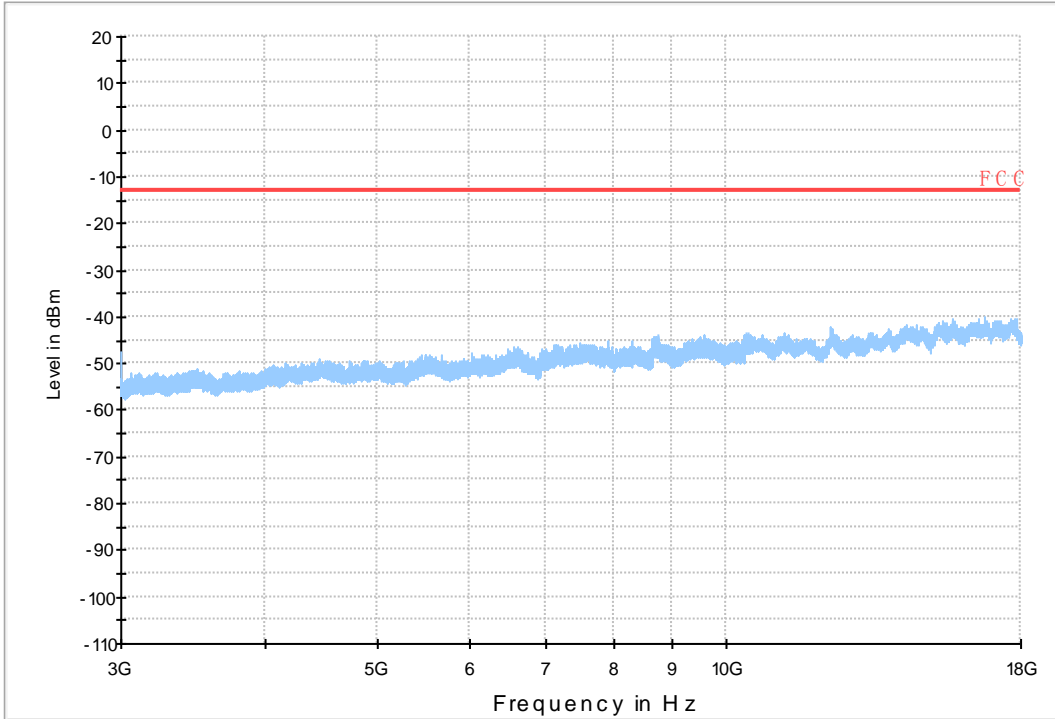
7.1.4.1 Test Mode = UMTS/TM1



Copy of FCC PART 27 W CDMA1700_L

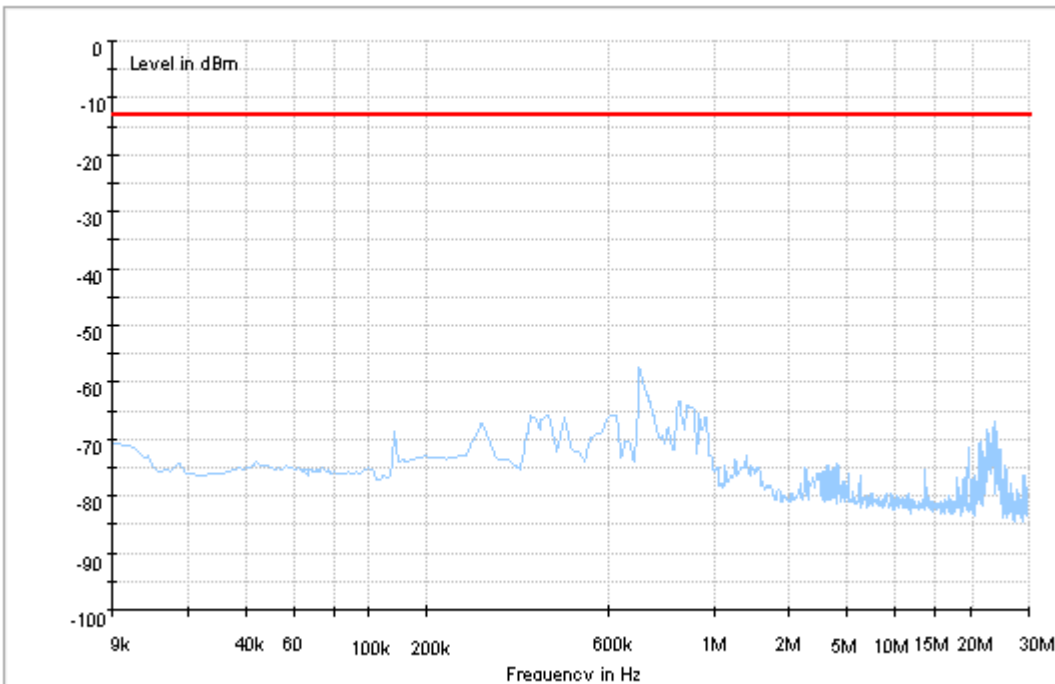


Copy of FCC PART27 W CDMA1700_H

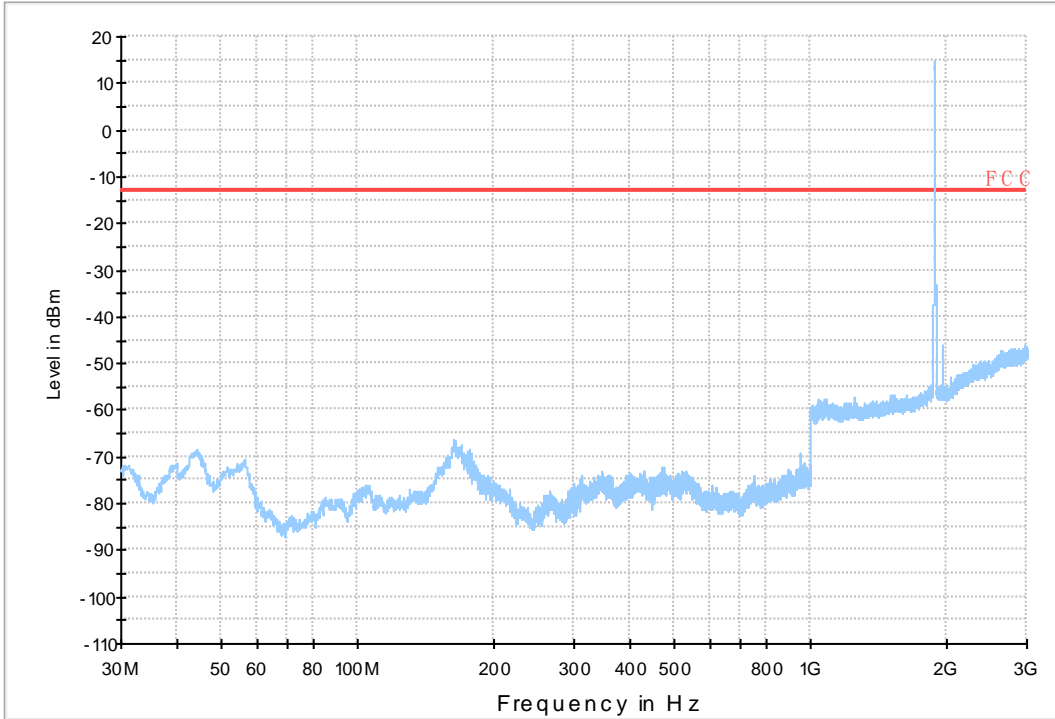


7.1.5 Test Band = WCDMA1900_ANT1

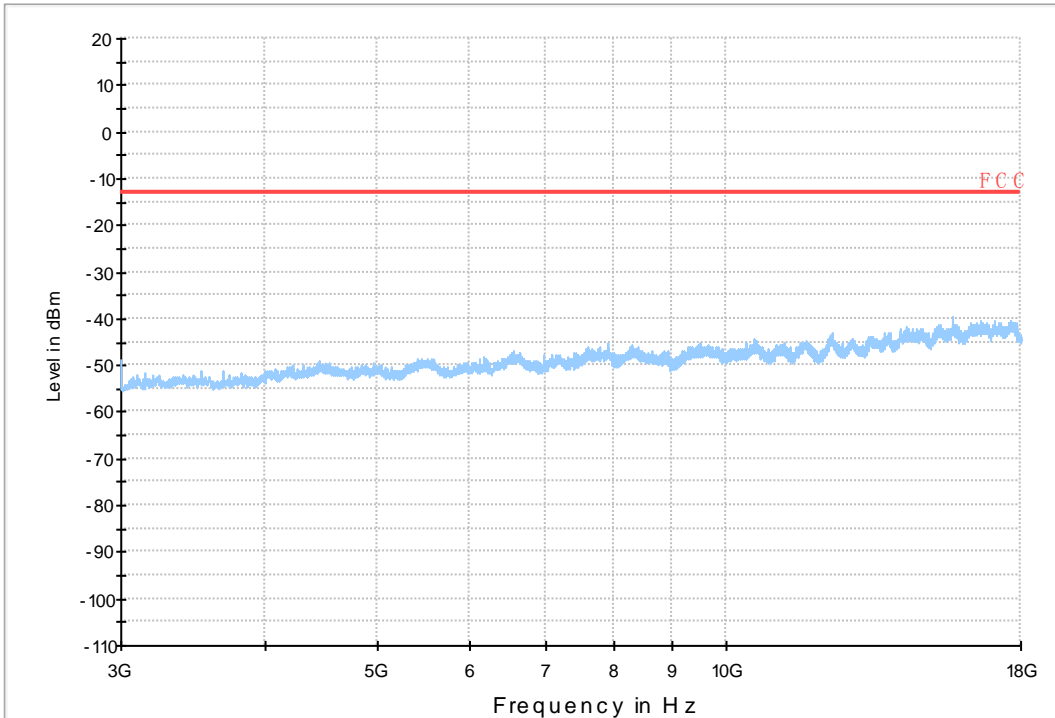
7.1.5.1 Test Mode = UMTS/TM1

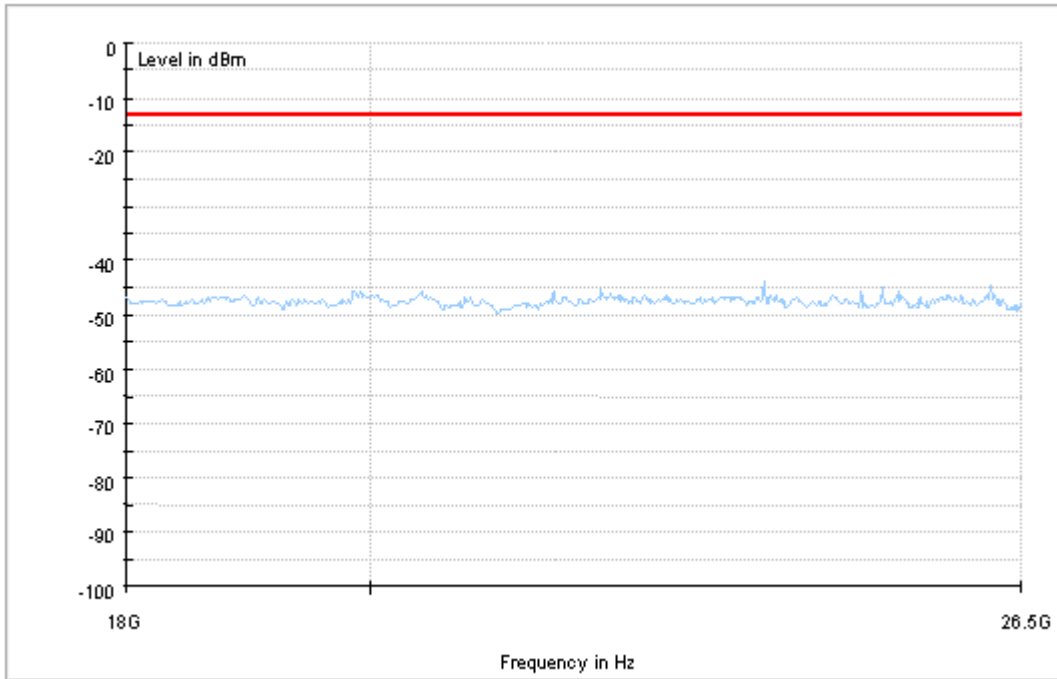


Copy of FCC PART24 W CDMA1900_L



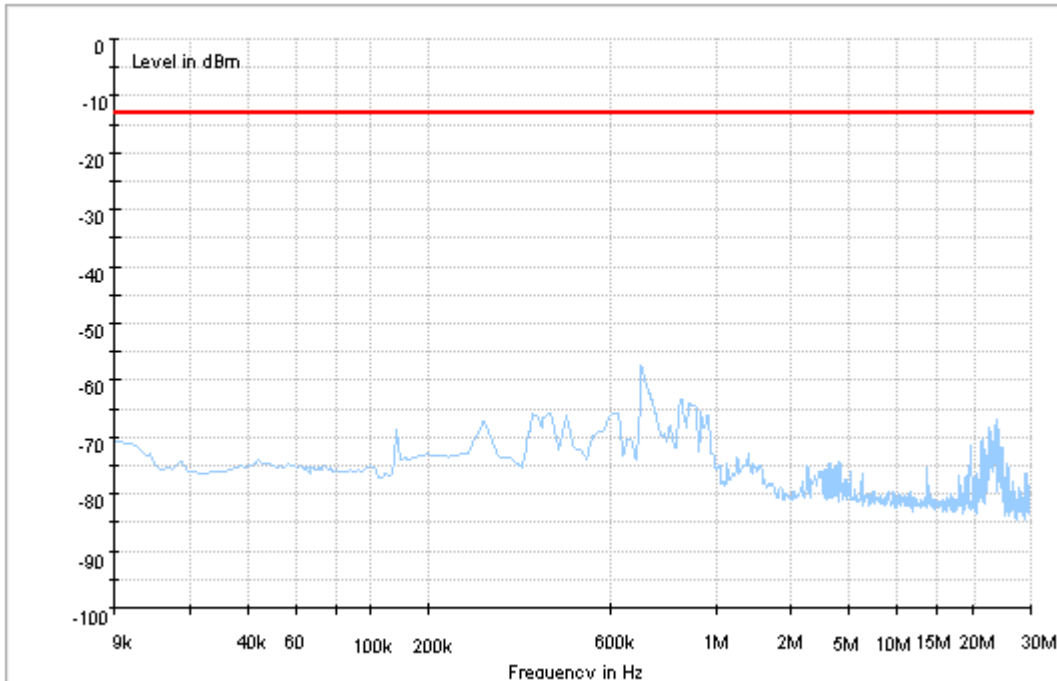
Copy of FCC PART24 W CDMA1900_H



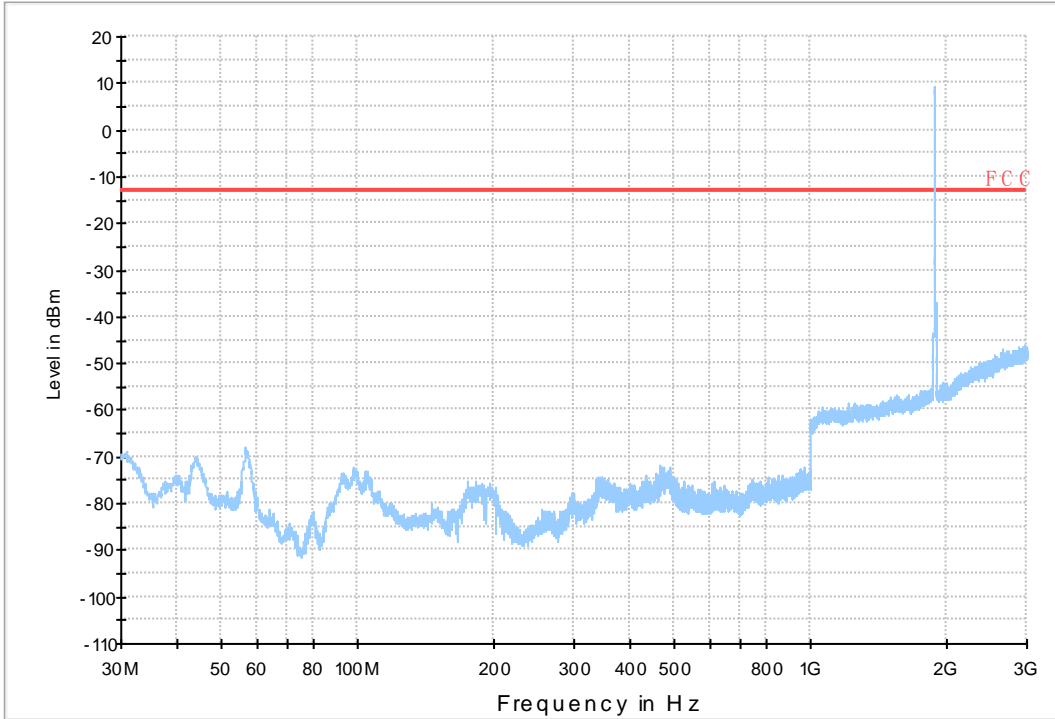


7.1.6 Test Band = WCDMA1900_ANT2

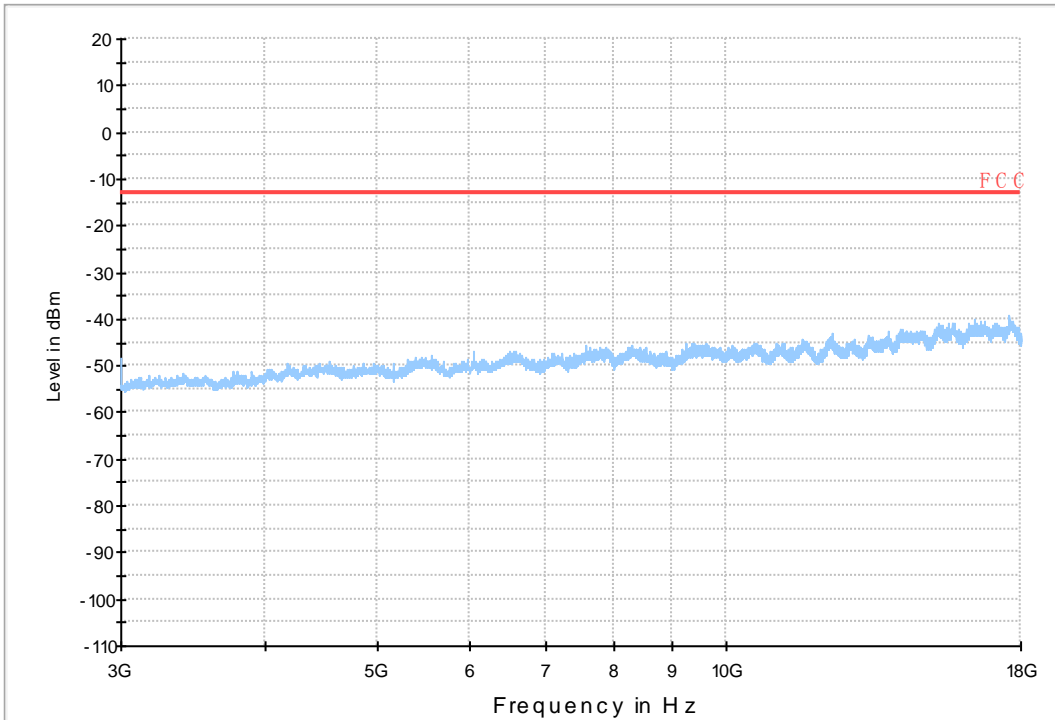
7.1.6.1 Test Mode = UMTS/TM1

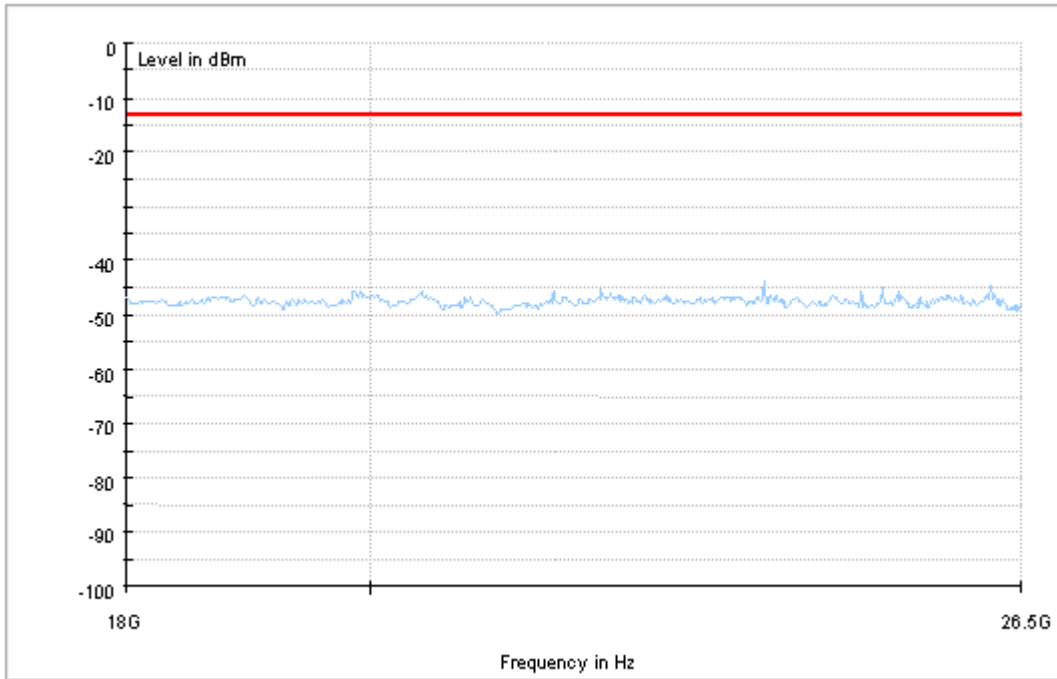


Copy of FCC PART24 W CDMA1900_L



Copy of FCC PART24 W CDMA1900_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	-3.77	-0.00204	PASS
				VN	0.06	0.00003	PASS
				VH	-2.30	-0.00124	PASS
		MCH	TN	VL	3.75	0.00199	PASS
				VN	2.50	0.00133	PASS
				VH	6.06	0.00322	PASS
		HCH	TN	VL	4.30	0.00225	PASS
				VN	2.18	0.00114	PASS
				VH	-4.06	-0.00213	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	-0.14	-0.00008	PASS
				VN	-1.05	-0.00061	PASS
				VH	-0.53	-0.00031	PASS
		MCH	TN	VL	5.77	0.00333	PASS
				VN	1.79	0.00103	PASS
				VH	4.07	0.00235	PASS
		HCH	TN	VL	-2.58	-0.00147	PASS
				VN	0.14	0.00008	PASS
				VH	-5.20	-0.00297	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	-3.25	-0.00393	PASS
				VN	3.27	0.00396	PASS
				VH	-5.72	-0.00692	PASS
		MCH	TN	VL	4.50	0.00538	PASS
				VN	6.90	0.00825	PASS
				VH	2.79	0.00334	PASS
		HCH	TN	VL	3.17	0.00374	PASS
				VN	6.53	0.00771	PASS
				VH	0.69	0.00082	PASS

8.1.2 Frequency Error vs. Temperature:

Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1900	-30	UMTS/TM1	LCH	VN	-3.04	-0.00164	PASS
			MCH	VN	4.71	0.00251	PASS
			HCH	VN	-2.70	-0.00142	PASS
	-20	UMTS/TM1	LCH	VN	-4.61	-0.00249	PASS
			MCH	VN	3.60	0.00191	PASS
			HCH	VN	6.13	0.00321	PASS
	-10	UMTS/TM1	LCH	VN	-3.45	-0.00186	PASS
			MCH	VN	8.76	0.00466	PASS
			HCH	VN	-1.79	-0.00094	PASS
	0	UMTS/TM1	LCH	VN	-2.67	-0.00144	PASS
			MCH	VN	4.47	0.00238	PASS
			HCH	VN	-4.53	-0.00237	PASS
	10	UMTS/TM1	LCH	VN	-1.77	-0.00096	PASS
			MCH	VN	2.37	0.00126	PASS
			HCH	VN	6.64	0.00348	PASS
	20	UMTS/TM1	LCH	VN	-3.49	-0.00188	PASS
			MCH	VN	3.37	0.00179	PASS
			HCH	VN	1.16	0.00061	PASS
	30	UMTS/TM1	LCH	VN	0.02	0.00001	PASS
			MCH	VN	4.15	0.00221	PASS
			HCH	VN	0.26	0.00014	PASS
	40	UMTS/TM1	LCH	VN	-3.22	-0.00174	PASS
			MCH	VN	6.13	0.00326	PASS
			HCH	VN	1.48	0.00078	PASS
50	UMTS/TM1	LCH	VN	-5.68	-0.00307	PASS	
		MCH	VN	6.52	0.00347	PASS	
		HCH	VN	-0.26	-0.00014	PASS	
WCDMA1700	-30	UMTS/TM1	LCH	VN	-3.19	-0.00186	PASS
			MCH	VN	3.45	0.00199	PASS
			HCH	VN	-2.53	-0.00144	PASS
	-20	UMTS/TM1	LCH	VN	-2.82	-0.00165	PASS
			MCH	VN	-4.44	-0.00256	PASS
			HCH	VN	5.14	0.00293	PASS
	-10	UMTS/TM1	LCH	VN	-0.32	-0.00019	PASS
			MCH	VN	-2.14	-0.00124	PASS
			HCH	VN	-1.04	-0.00059	PASS
	0	UMTS/TM1	LCH	VN	-5.20	-0.00304	PASS



Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
	10	UMTS/TM1	MCH	VN	2.09	0.00121	PASS
			HCH	VN	-6.93	-0.00395	PASS
			LCH	VN	-3.59	-0.0021	PASS
	20	UMTS/TM1	MCH	VN	5.11	0.00295	PASS
			HCH	VN	-6.65	-0.00379	PASS
			LCH	VN	-5.34	-0.00312	PASS
	30	UMTS/TM1	LCH	VN	-0.96	-0.00056	PASS
			MCH	VN	6.68	0.00386	PASS
			HCH	VN	-0.14	-0.00008	PASS
	40	UMTS/TM1	LCH	VN	-5.49	-0.00321	PASS
			MCH	VN	-5.55	-0.0032	PASS
			HCH	VN	5.46	0.00312	PASS
	50	UMTS/TM1	LCH	VN	-3.97	-0.00232	PASS
			MCH	VN	6.65	0.00384	PASS
			HCH	VN	-2.56	-0.00146	PASS
WCDMA850	-30	UMTS/TM1	LCH	VN	8.39	0.01015	PASS
			MCH	VN	4.91	0.00587	PASS
			HCH	VN	-2.61	-0.00308	PASS
	-20	UMTS/TM1	LCH	VN	-1.77	-0.00214	PASS
			MCH	VN	-1.65	-0.00197	PASS
			HCH	VN	2.29	0.0027	PASS
	-10	UMTS/TM1	LCH	VN	6.91	0.00836	PASS
			MCH	VN	5.46	0.00653	PASS
			HCH	VN	-3.77	-0.00445	PASS
	0	UMTS/TM1	LCH	VN	2.12	0.00257	PASS
			MCH	VN	1.75	0.00209	PASS
			HCH	VN	5.98	0.00706	PASS
	10	UMTS/TM1	LCH	VN	0.90	0.00109	PASS
			MCH	VN	0.58	0.00069	PASS
			HCH	VN	3.97	0.00469	PASS
	20	UMTS/TM1	LCH	VN	4.85	0.00587	PASS
			MCH	VN	-5.55	-0.00664	PASS
			HCH	VN	2.88	0.0034	PASS
	30	UMTS/TM1	LCH	VN	-0.23	-0.00028	PASS
			MCH	VN	-3.01	-0.0036	PASS
			HCH	VN	1.28	0.00151	PASS
40	UMTS/TM1	LCH	VN	-7.14	-0.00864	PASS	
		MCH	VN	4.79	0.00573	PASS	



Test Band	Test Temp.	Test Mode	Test Channel	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
			HCH	VN	5.65	0.00667	PASS
	50	UMTS/TM1	LCH	VN	11.38	0.01377	PASS
			MCH	VN	4.64	0.00555	PASS
			HCH	VN	-0.95	-0.00112	PASS

END