



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]	ERP [dBm]	Limit [dBm]	Verdict
WCDMA850	UMTS/TM1	LCH	23.89	19.16	38.5	PASS
		MCH	23.9	19.17	38.5	PASS
		HCH	23.8	19.07	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.51	21.96	30	PASS
		MCH	23.56	22.01	30	PASS
		HCH	23.57	22.02	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.37	21.98	33	PASS
		MCH	23.4	22.01	33	PASS
		HCH	23.32	21.93	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
WCDMA850	UMTS/TM1	LCH	3.35	13	PASS
		MCH	3.33	13	PASS
		HCH	3.29	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.37	13	PASS
		MCH	3.21	13	PASS
		HCH	3.33	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.39	13	PASS
		MCH	3.37	13	PASS
		HCH	3.16	13	PASS

3Appendix_C: Modulation Characteristics

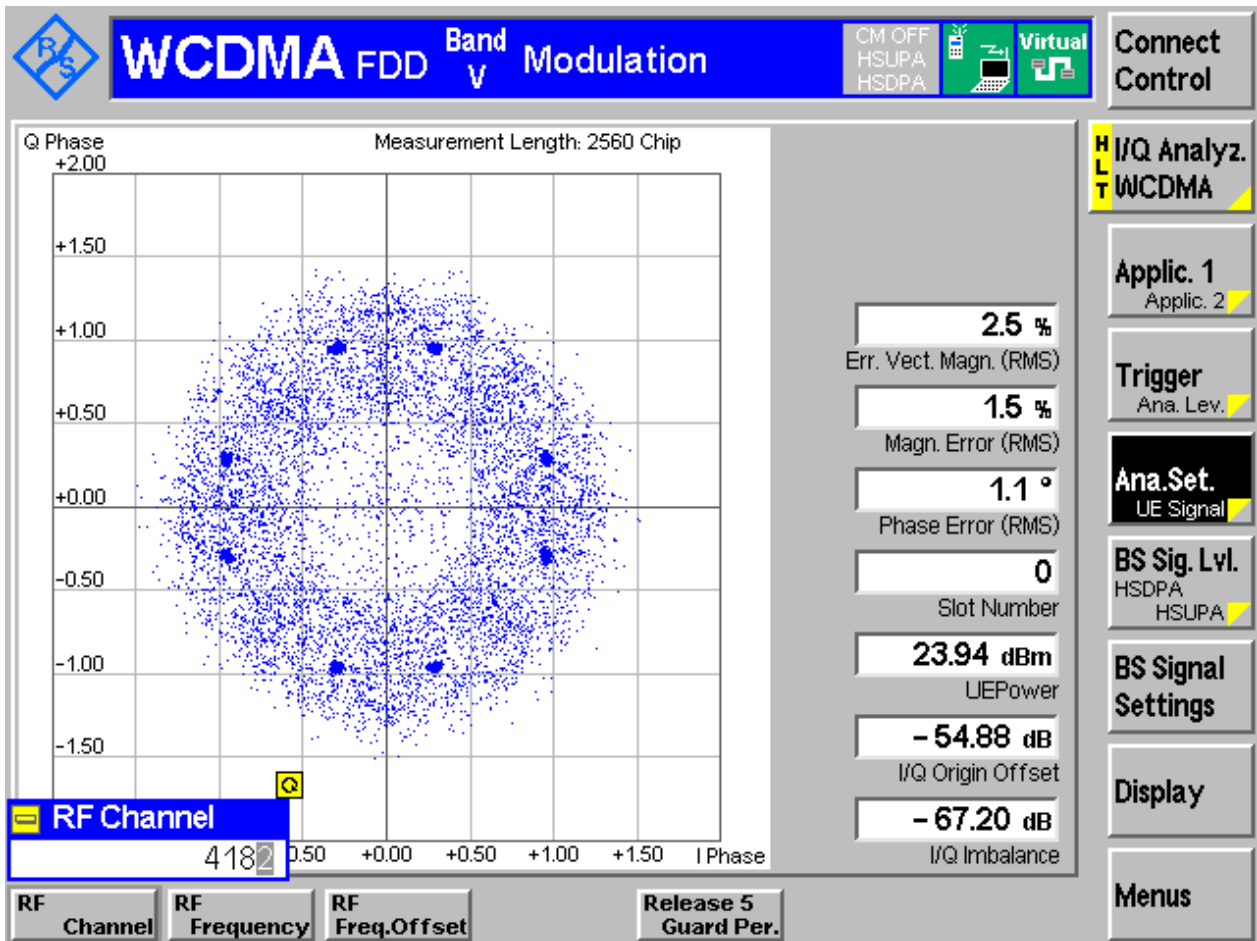
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

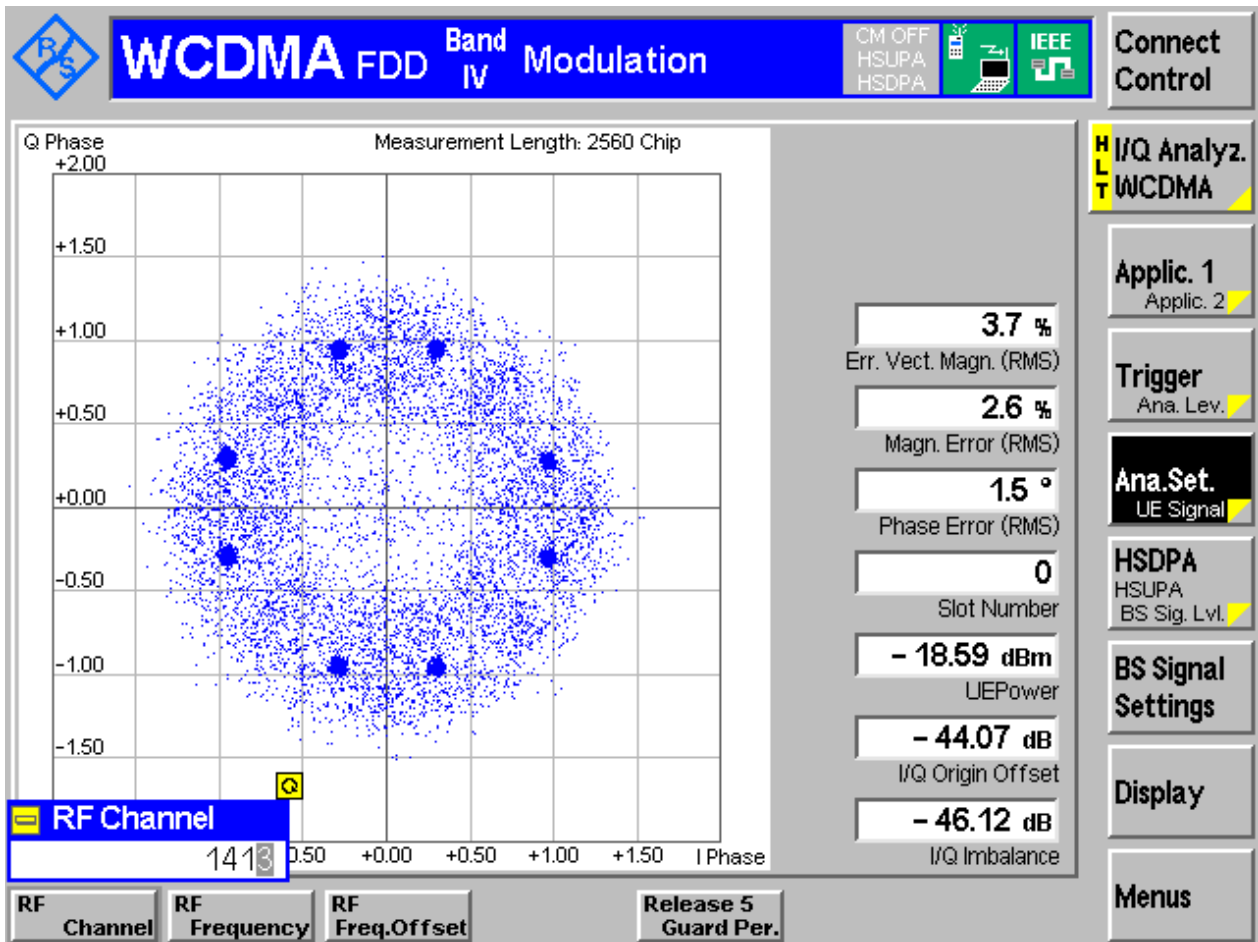
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

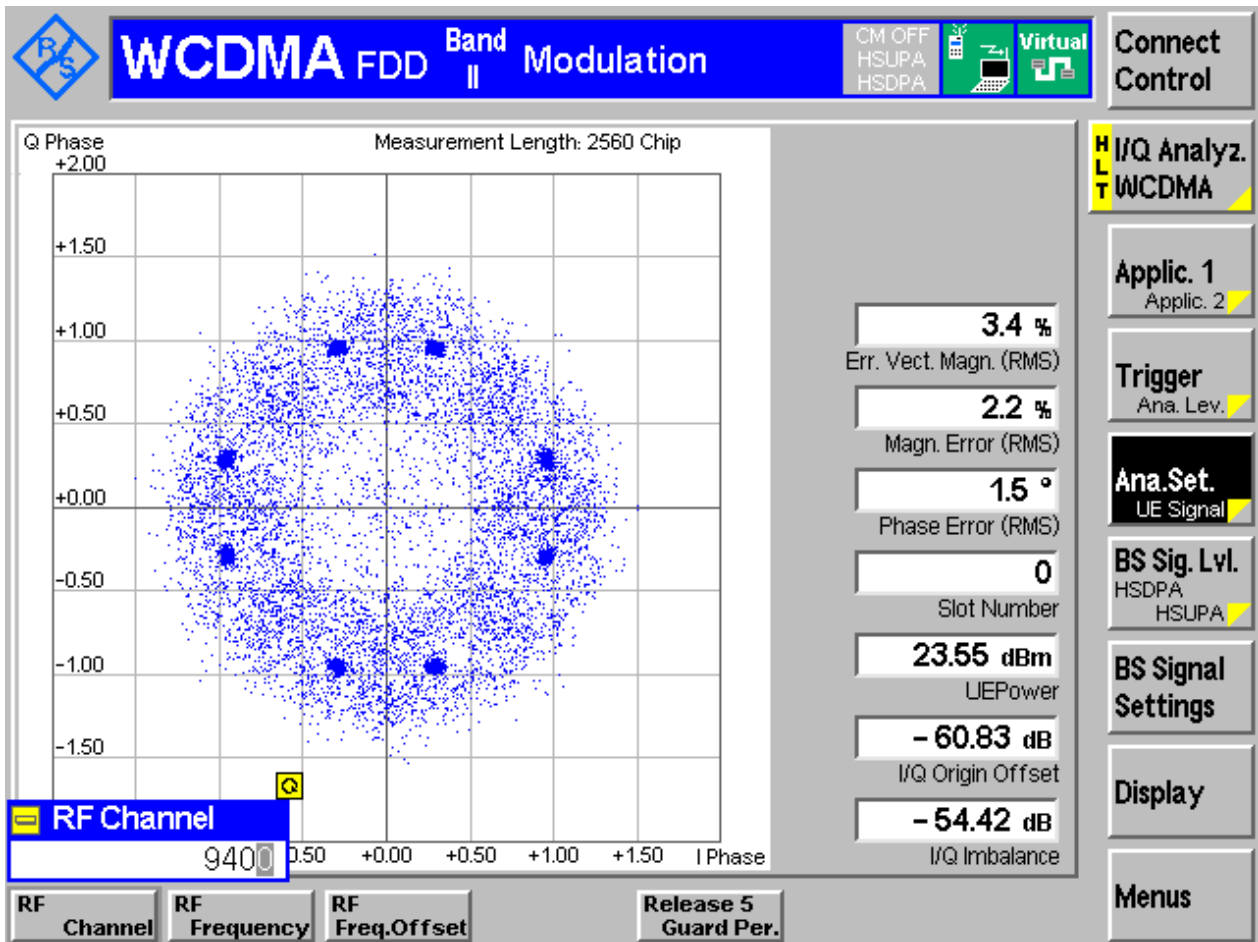
3.1.2.1.1 Test Channel = MCH



3.1.3 Test Band = WCDMA1900

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	4.12	4.73	Pass
		MCH	4.13	4.71	Pass
		HCH	4.14	4.73	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.73	Pass
		MCH	4.15	4.74	Pass
		HCH	4.14	4.73	Pass
WCDMA850	UMTS/TM1	LCH	4.13	4.72	Pass
		MCH	4.14	4.72	Pass
		HCH	4.14	4.73	Pass



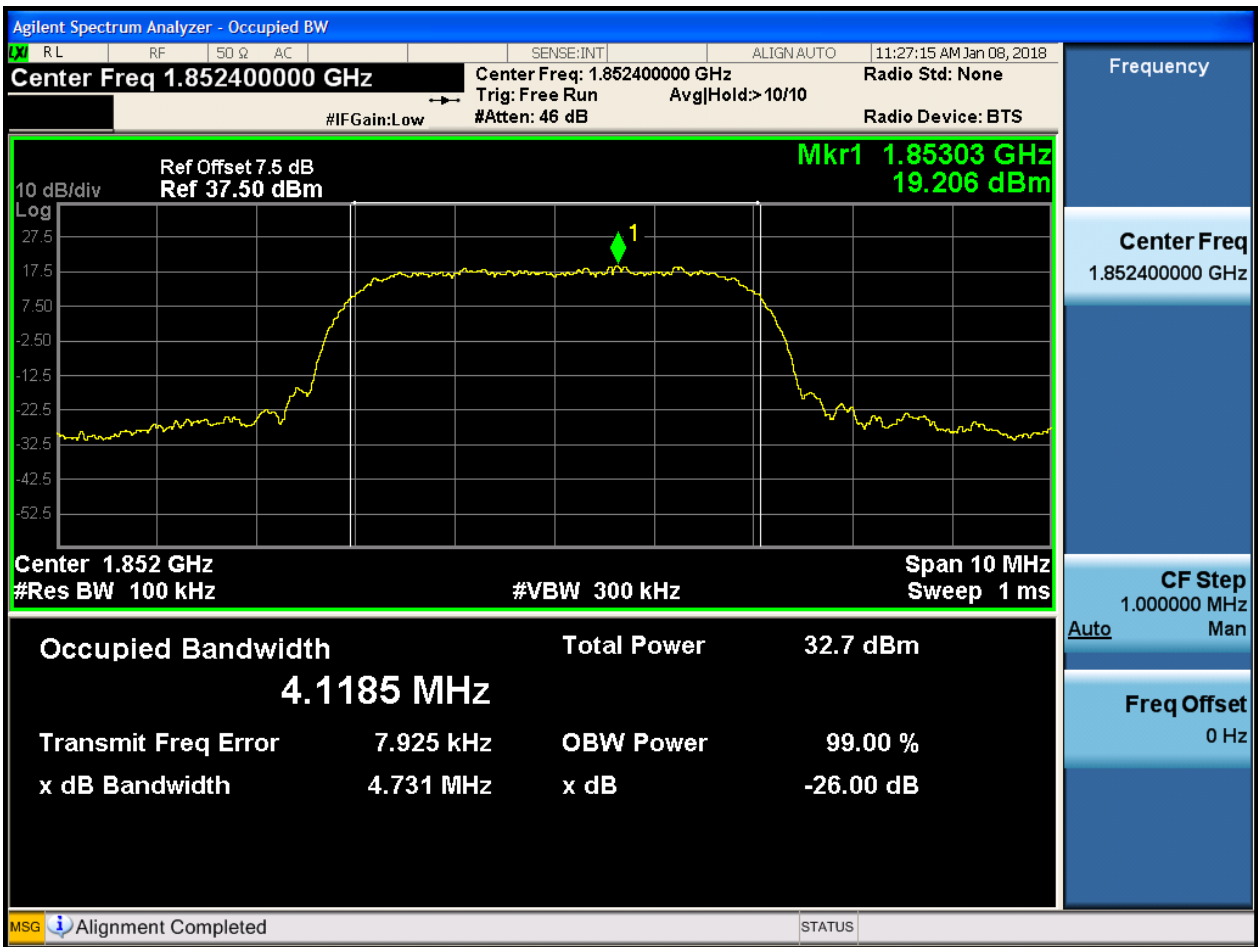
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA1900

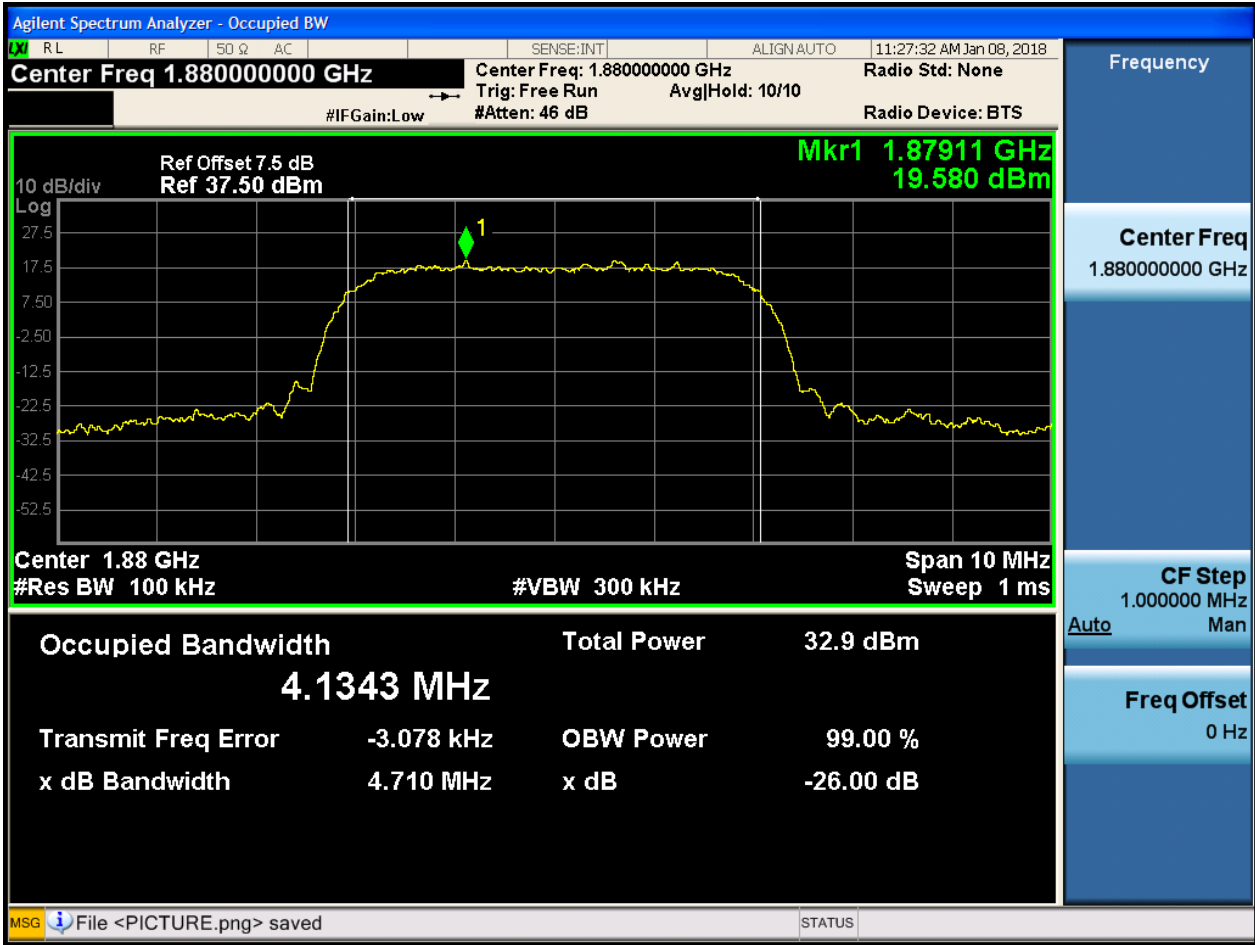
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



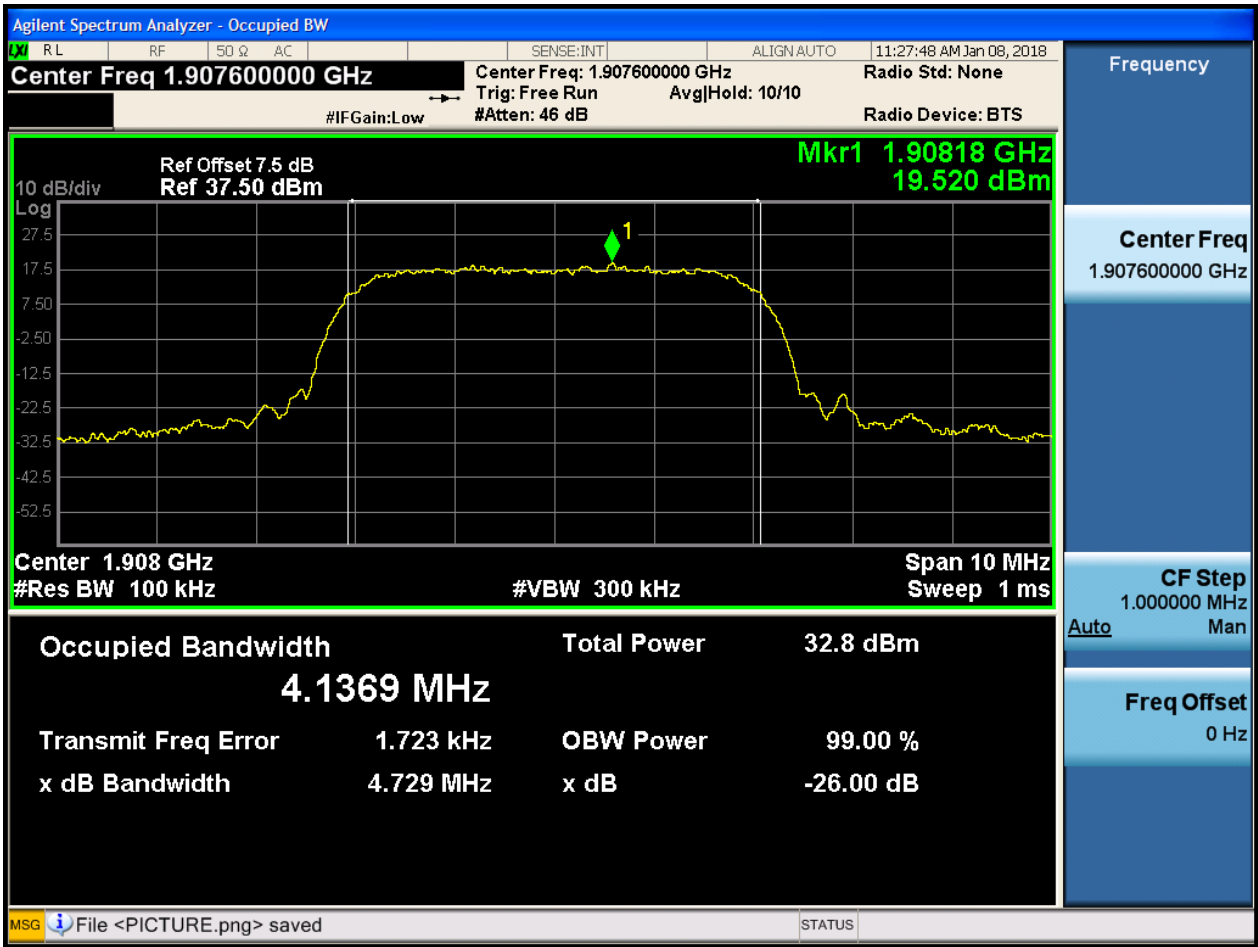


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

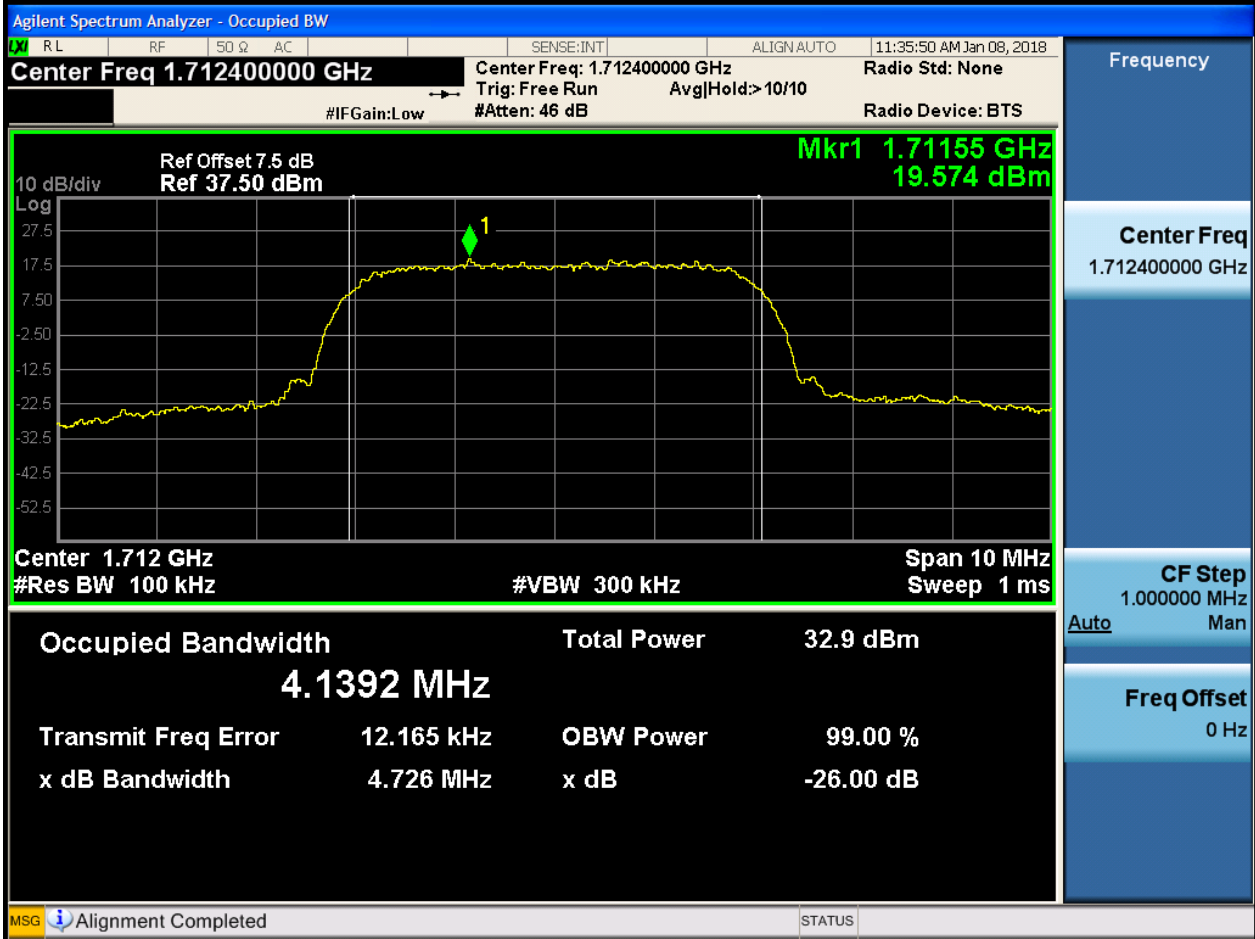




4.1.2 Test Band = WCDMA1700

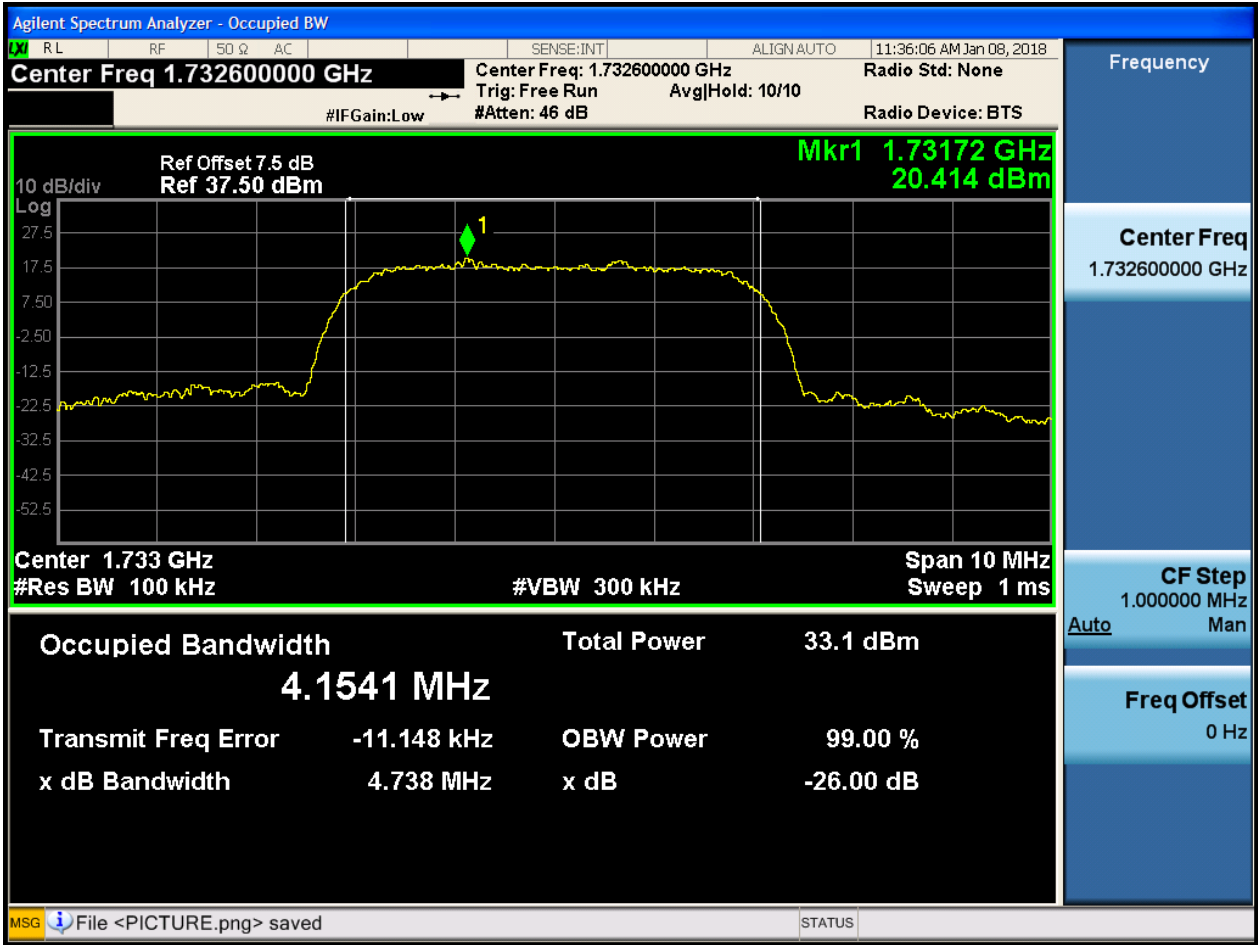
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



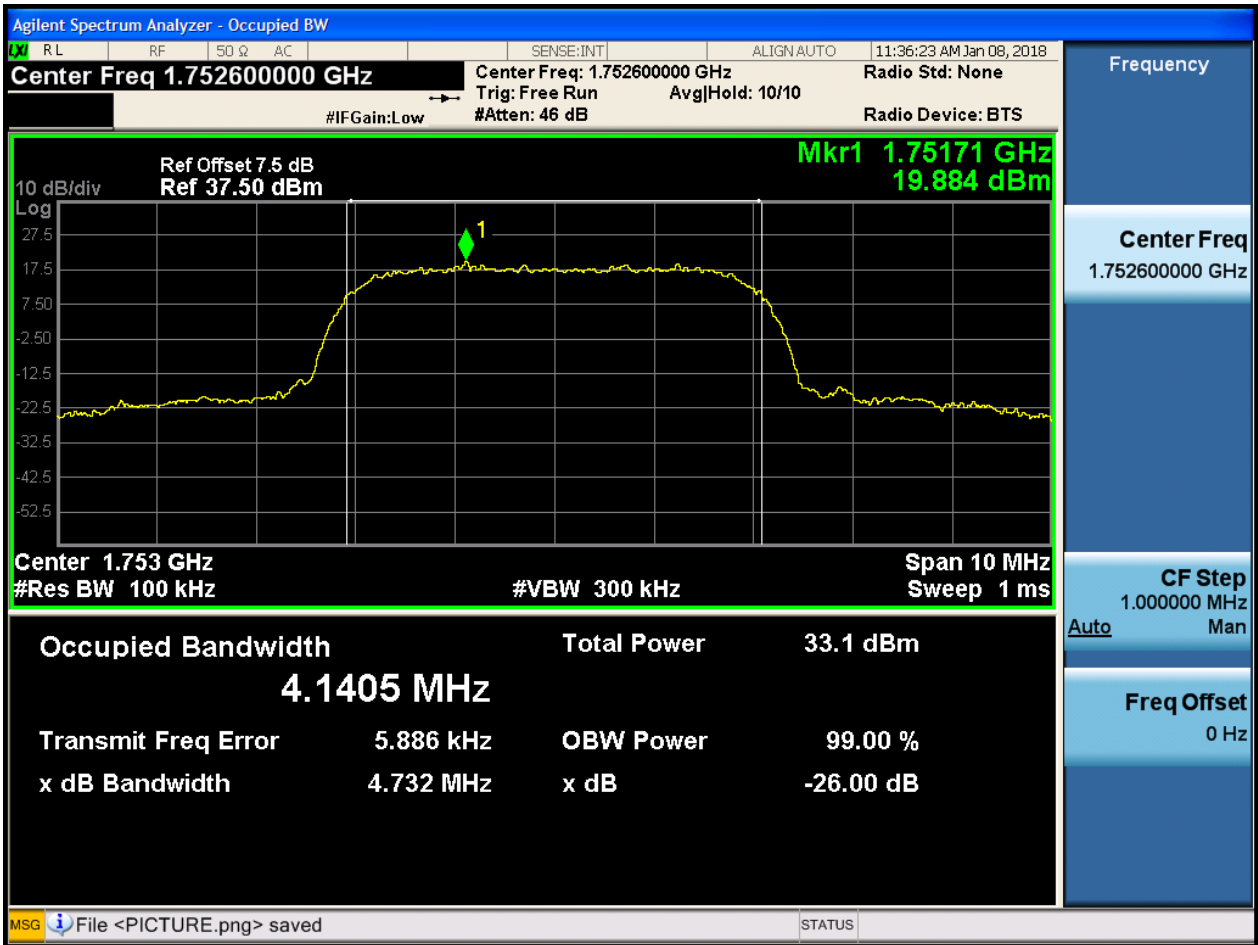


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

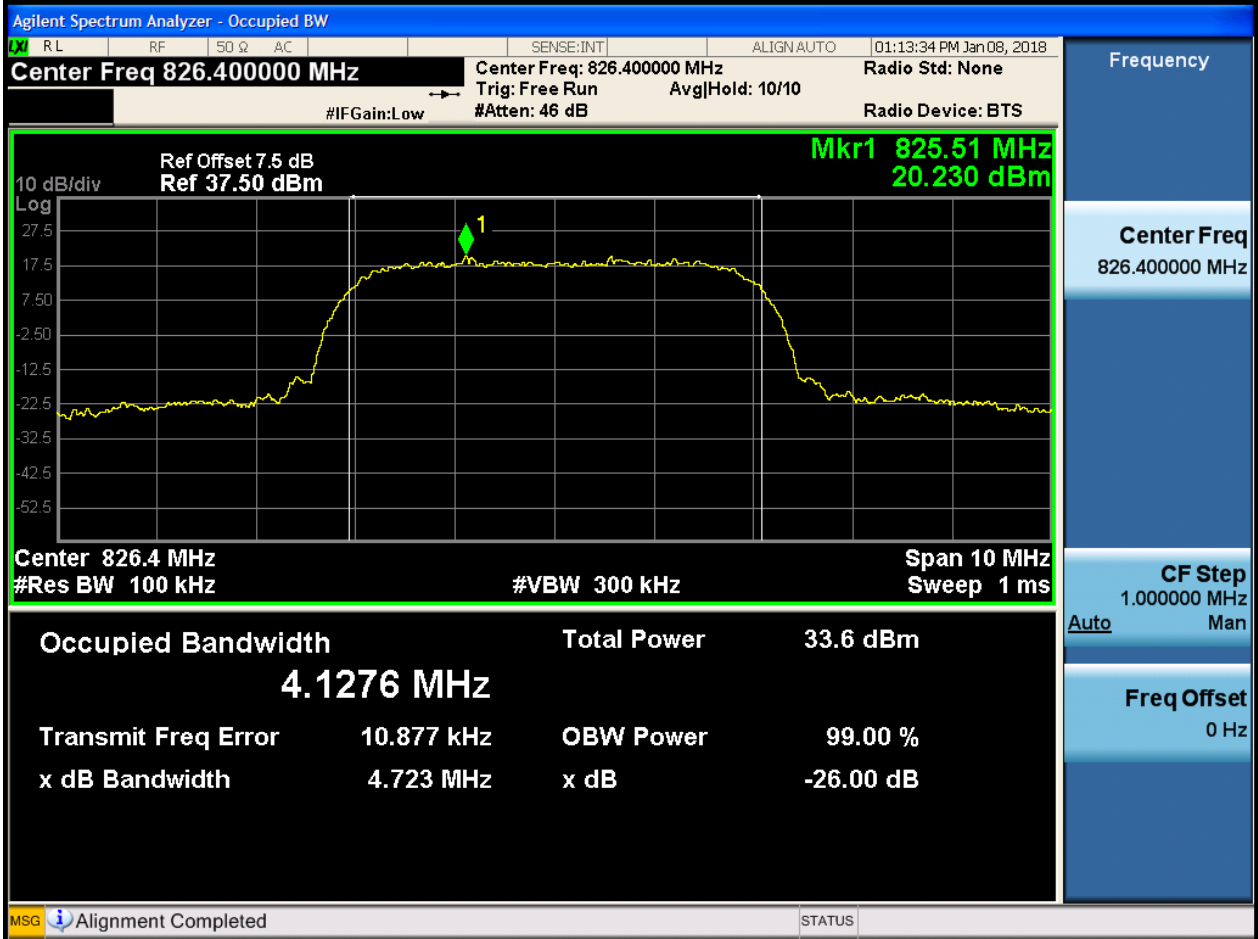




4.1.3 Test Band = WCDMA850

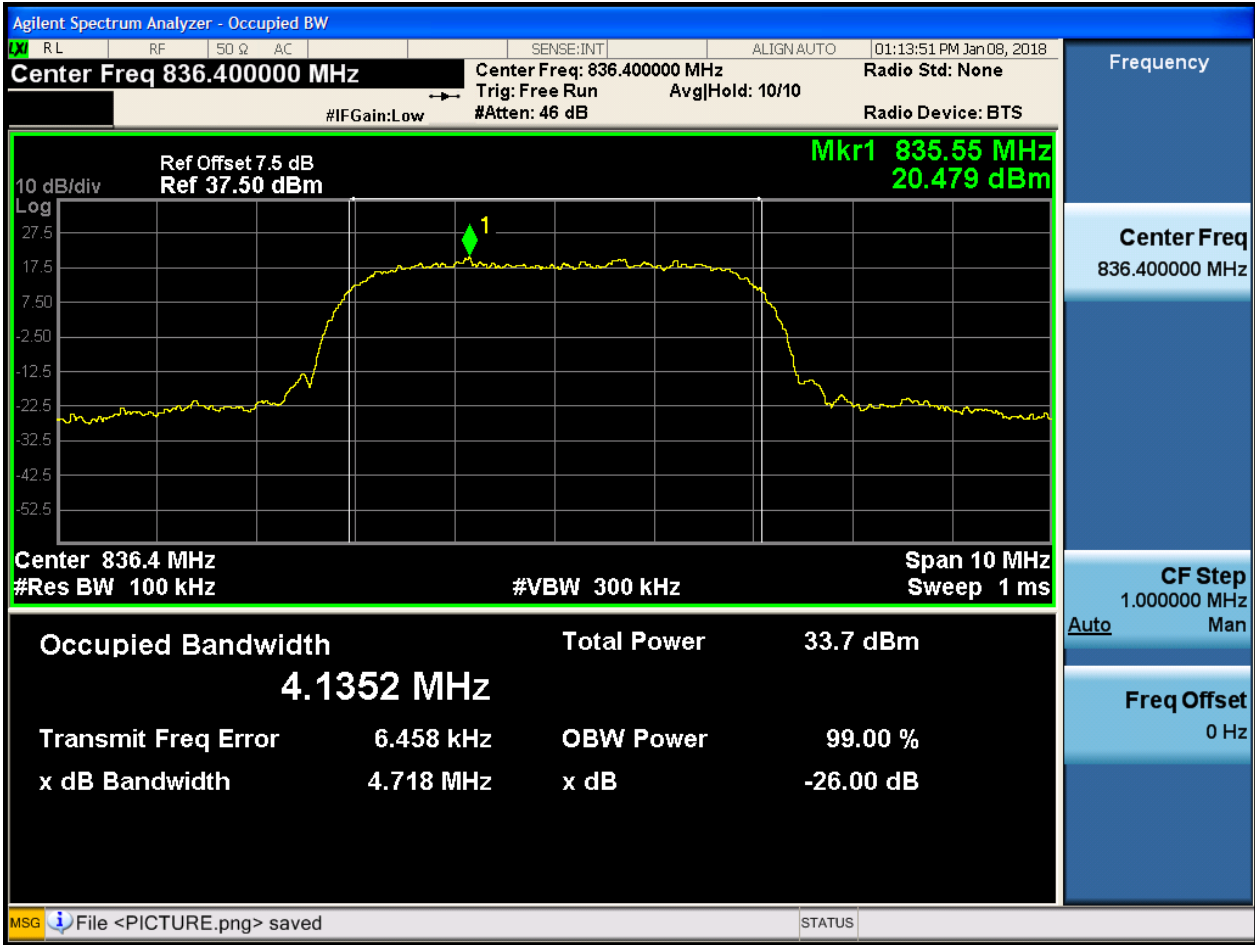
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



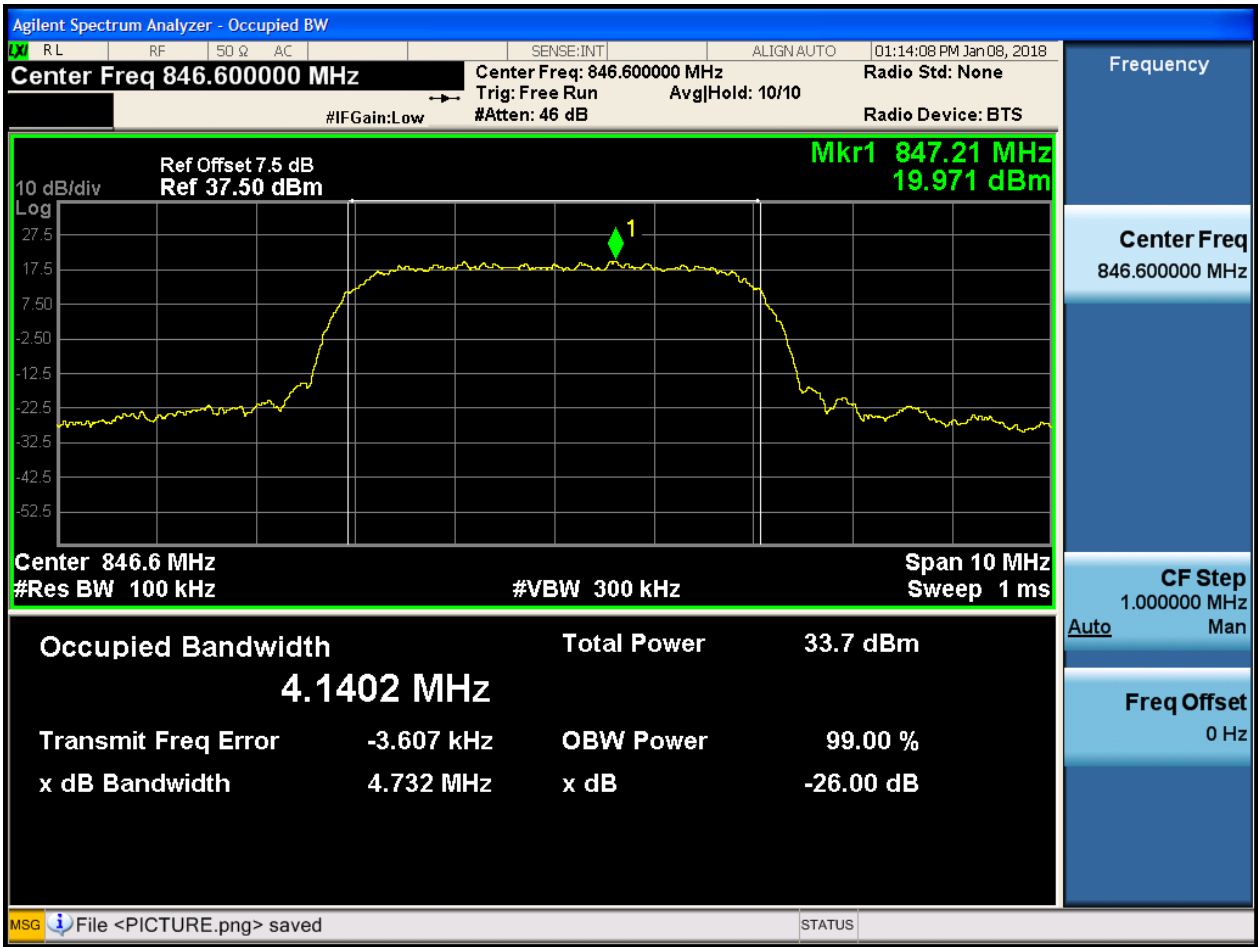


4.1.3.1.2 Test Channel = MCH





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

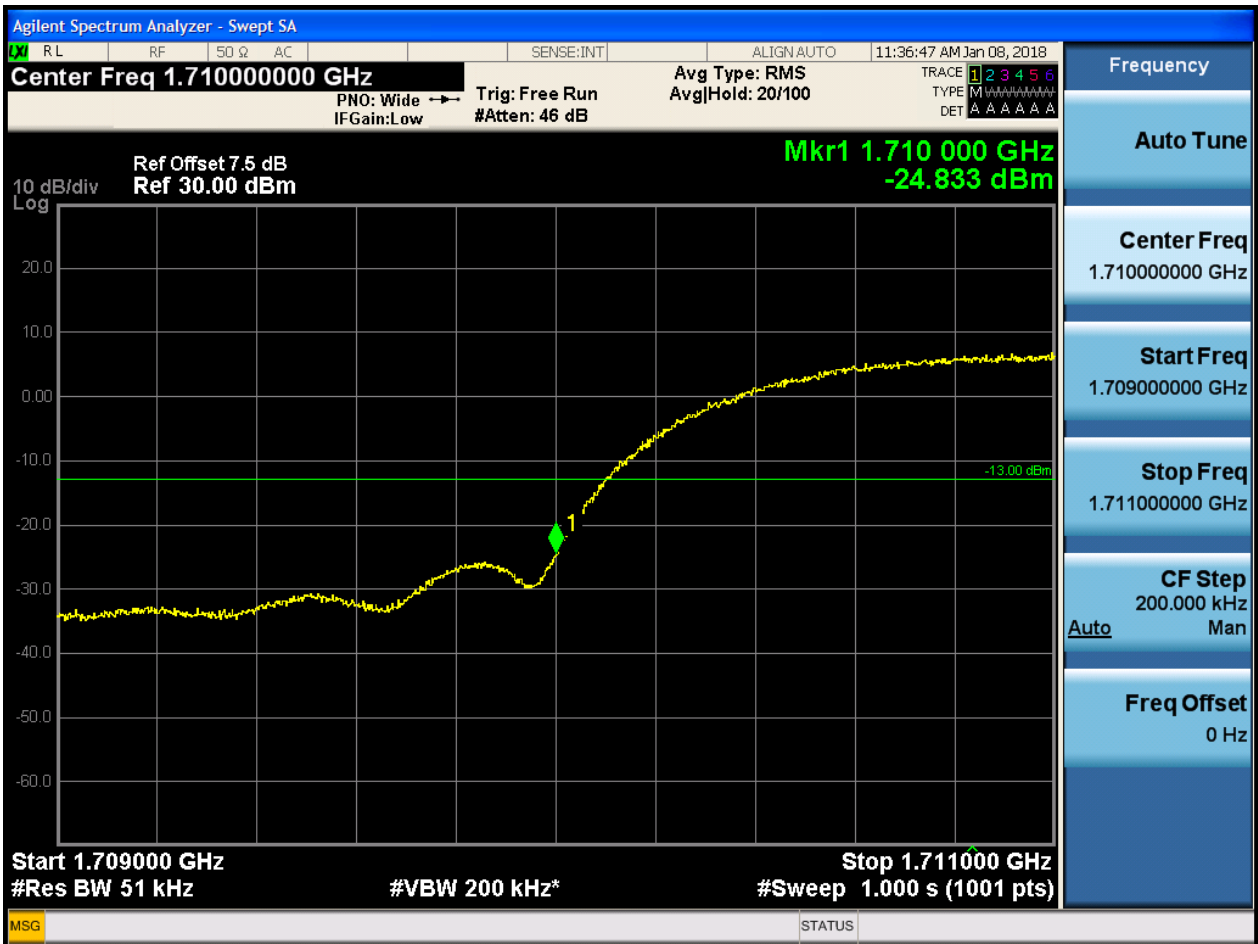




5.1.2 Test Band = WCDMA1700

5.1.2.1 Test Mode = UMTS/TM1

5.1.2.1.1 Test Channel = LCH



5.1.2.1.2 Test Channel = HCH

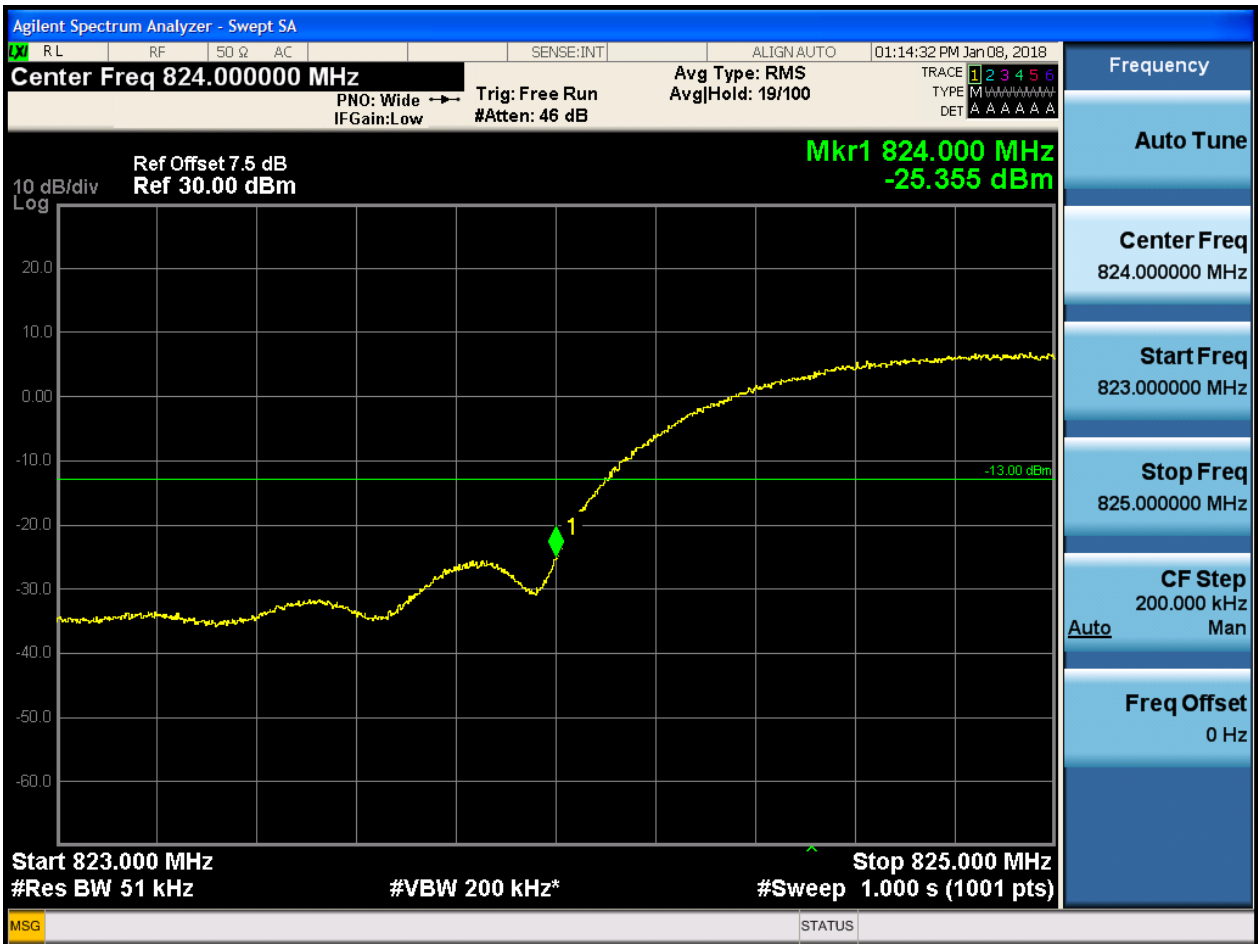




5.1.3 Test Band = WCDMA850

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.

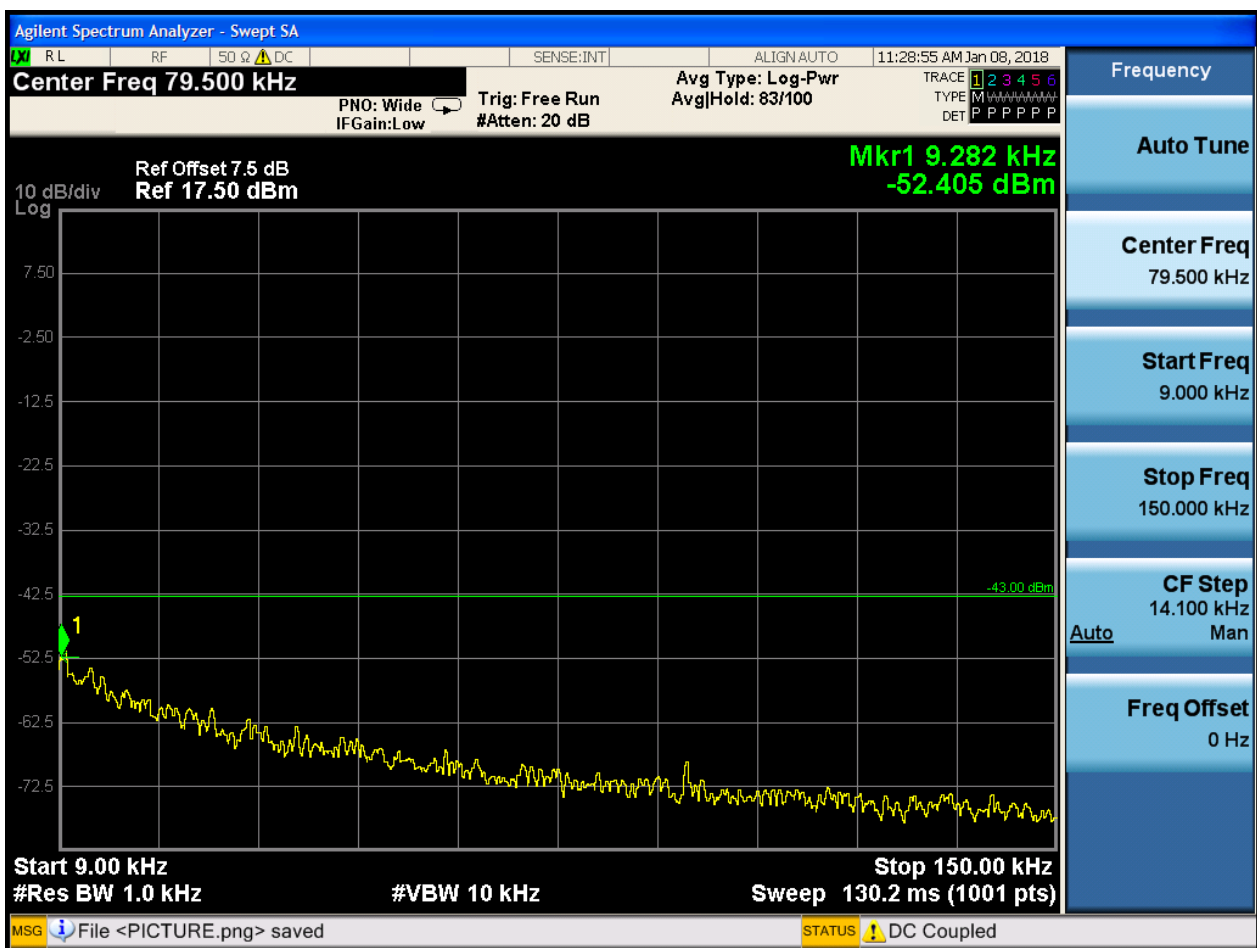
Part I - Test Plots

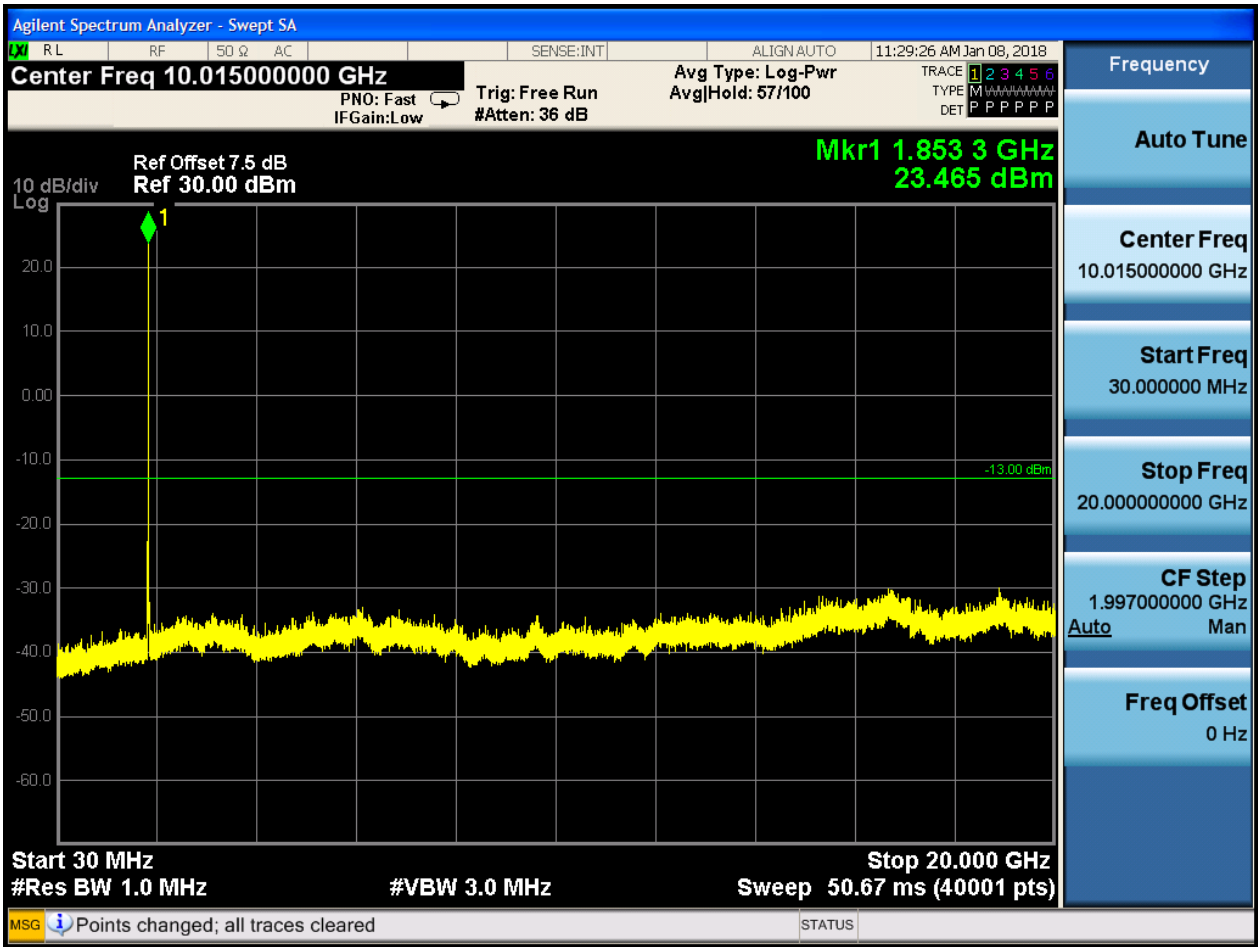
6.1 For UMTS

6.1.1 Test Band = WCDMA1900

6.1.1.1 Test Mode = UMTS/TM1

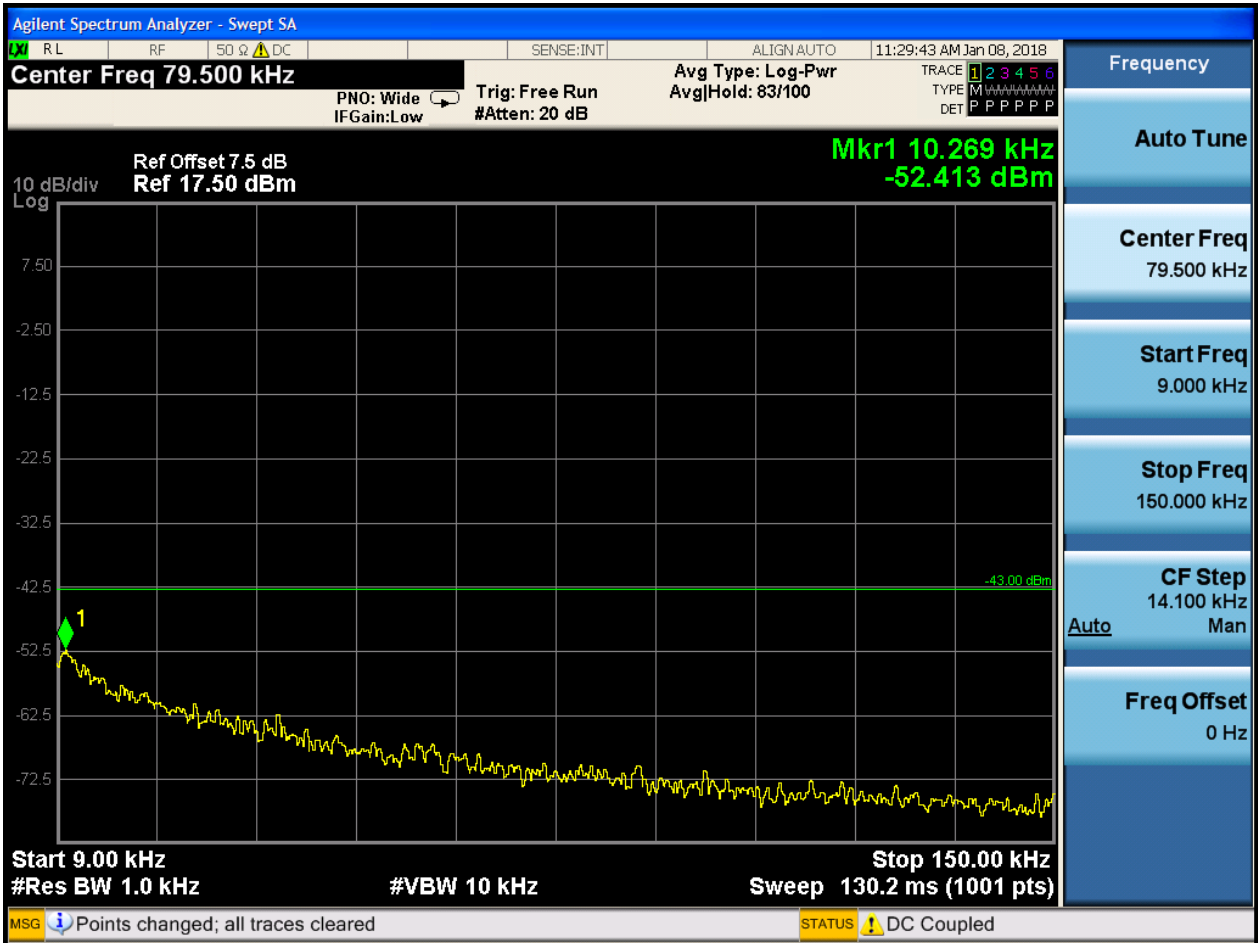
6.1.1.1.1 Test Channel = LCH

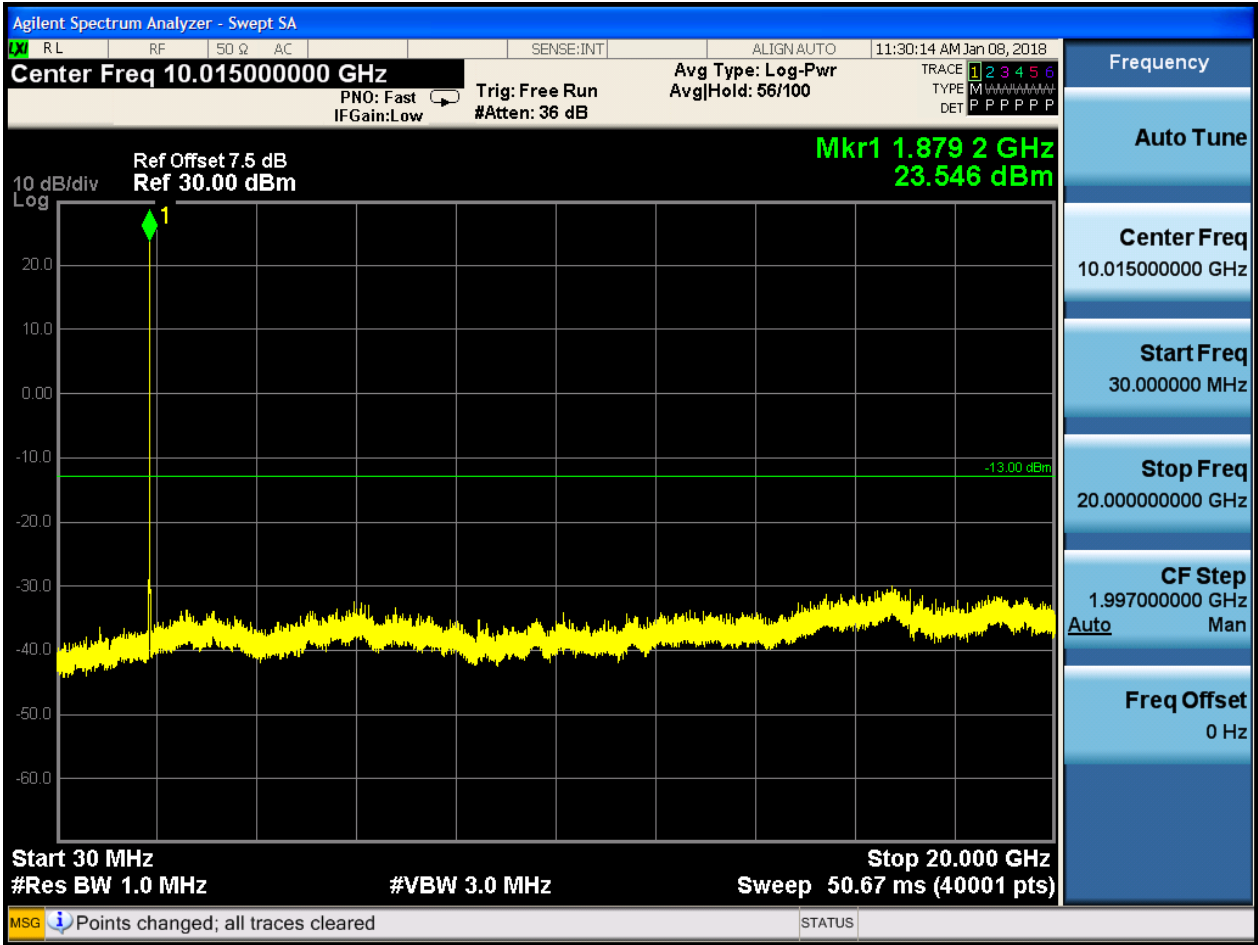




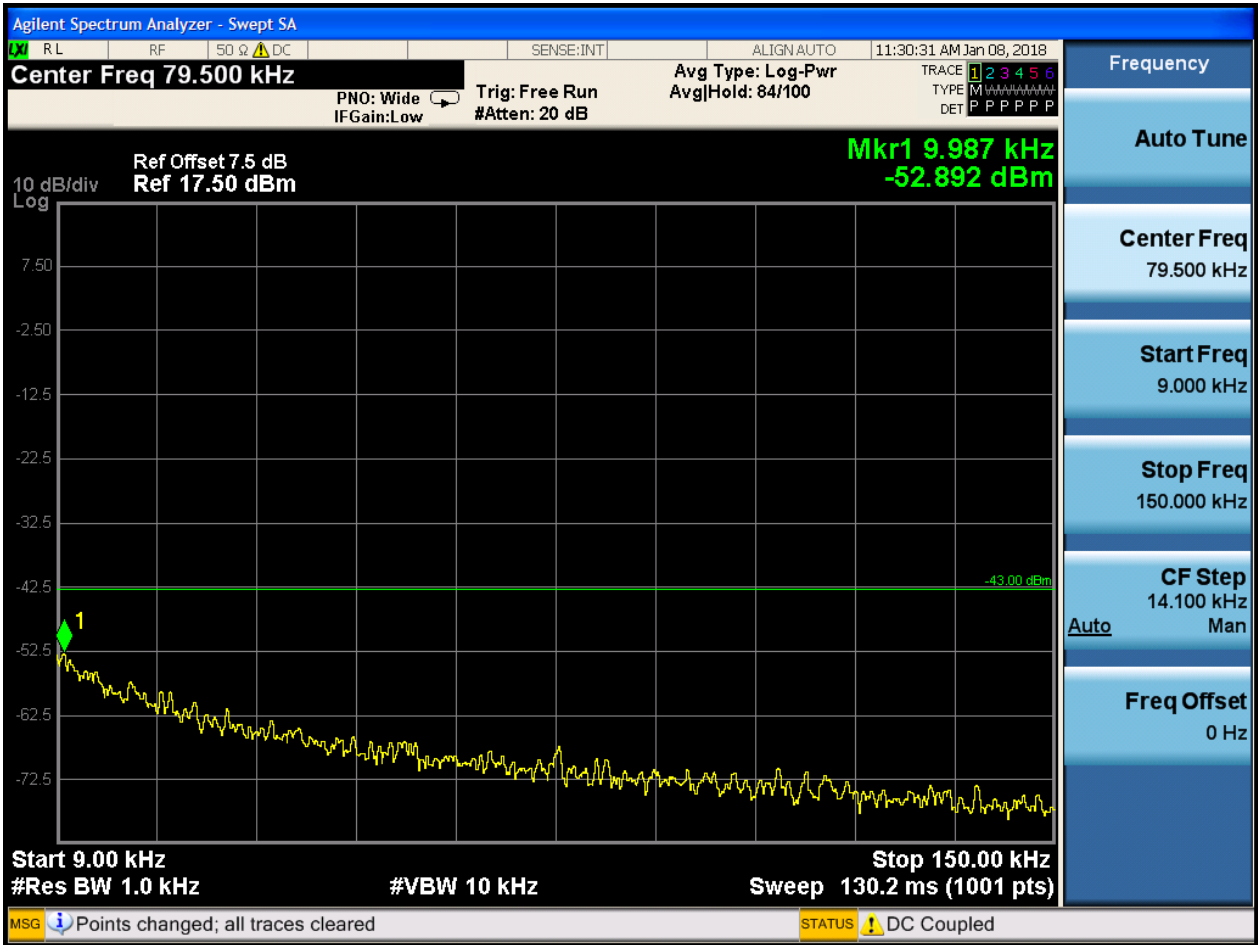


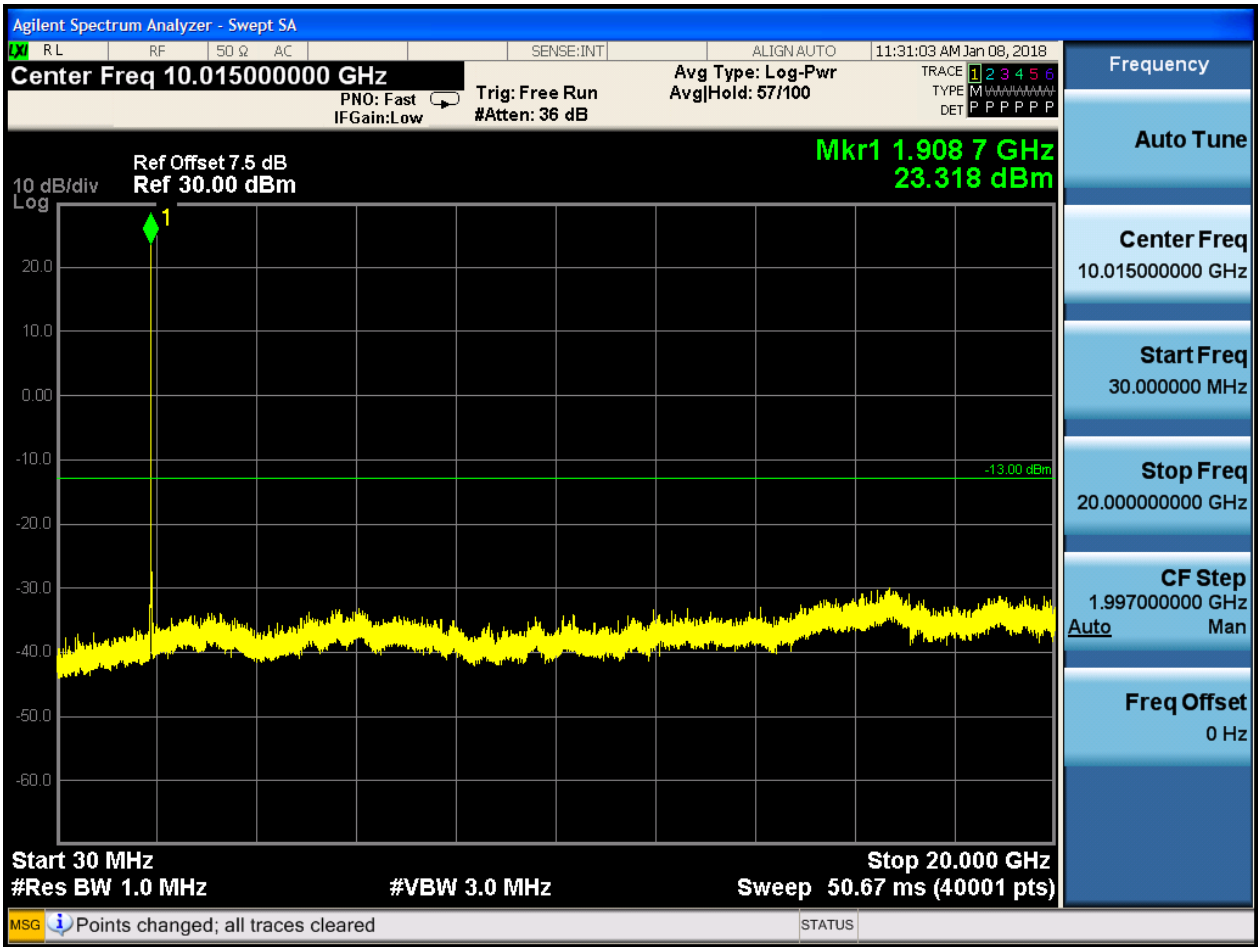
6.1.1.1.2 Test Channel = MCH





6.1.1.1.3 Test Channel = HCH



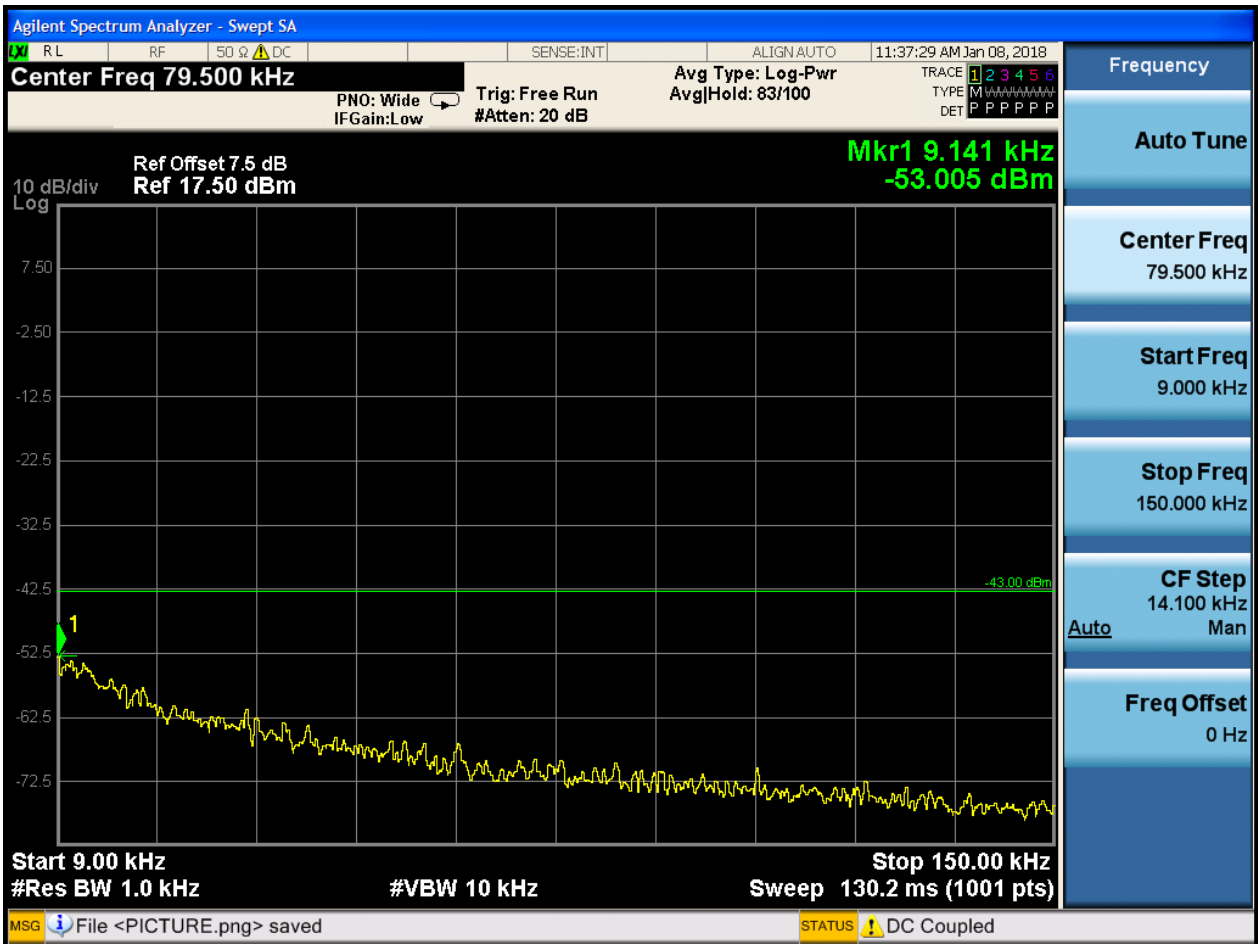


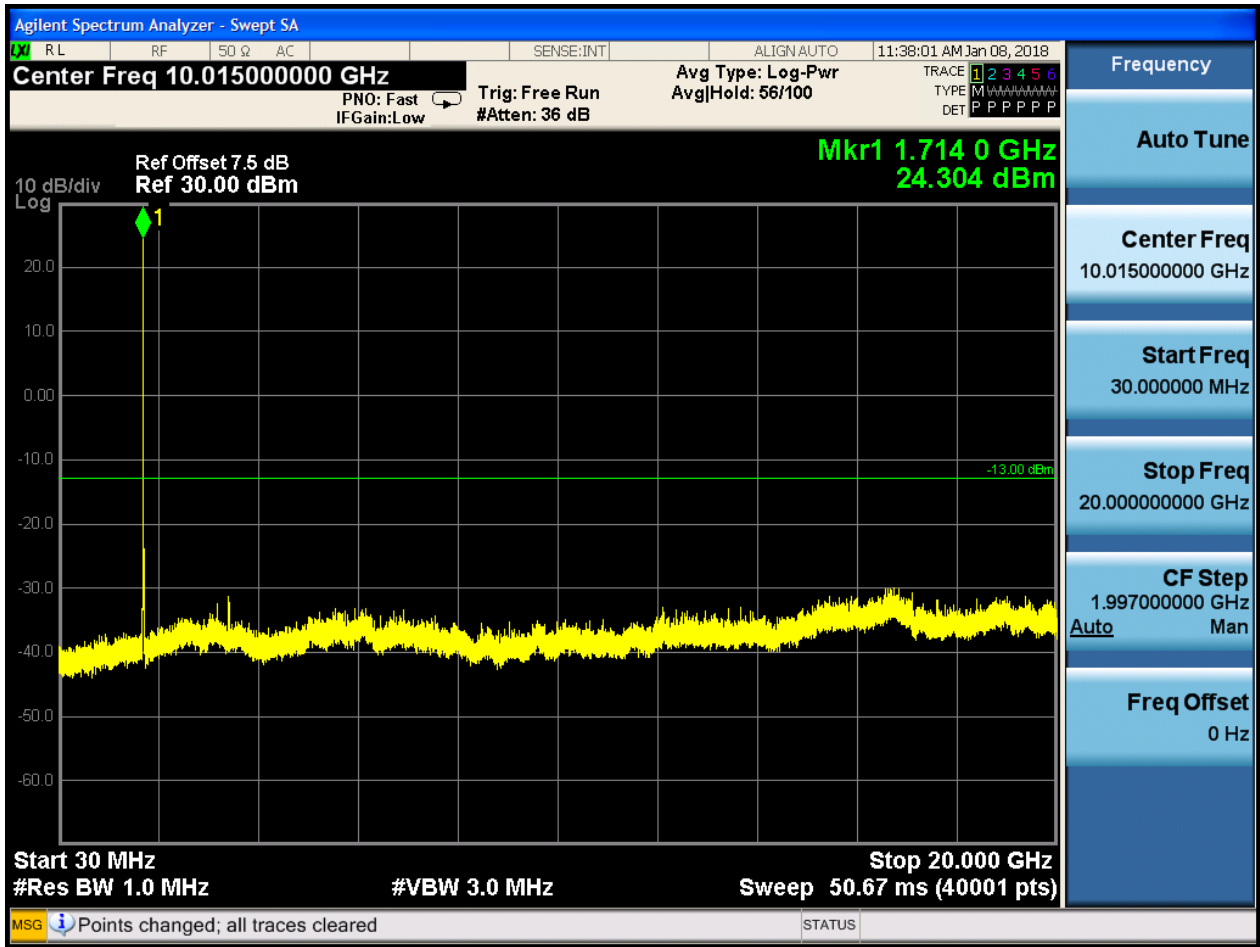


6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

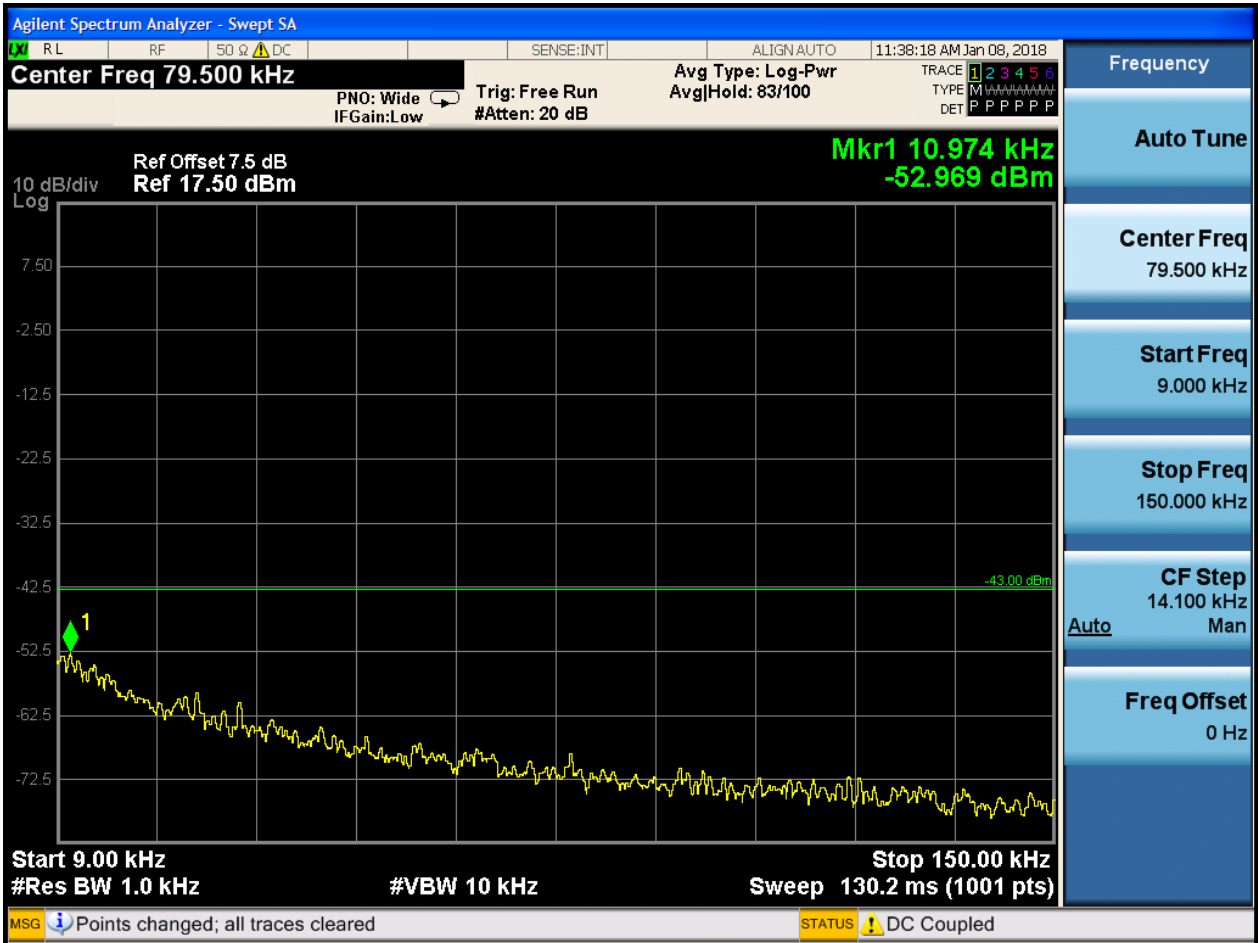
6.1.2.1.1 Test Channel = LCH

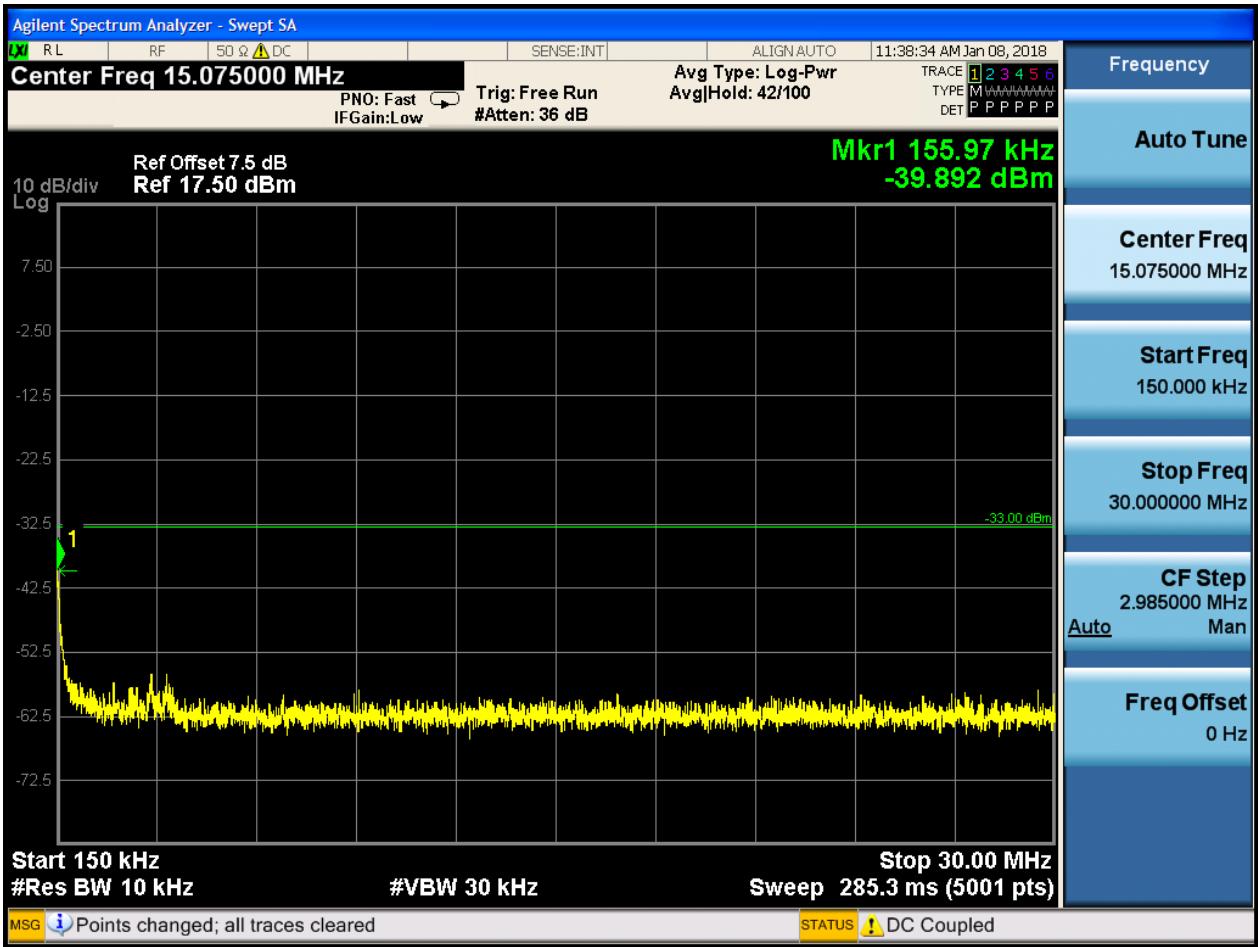


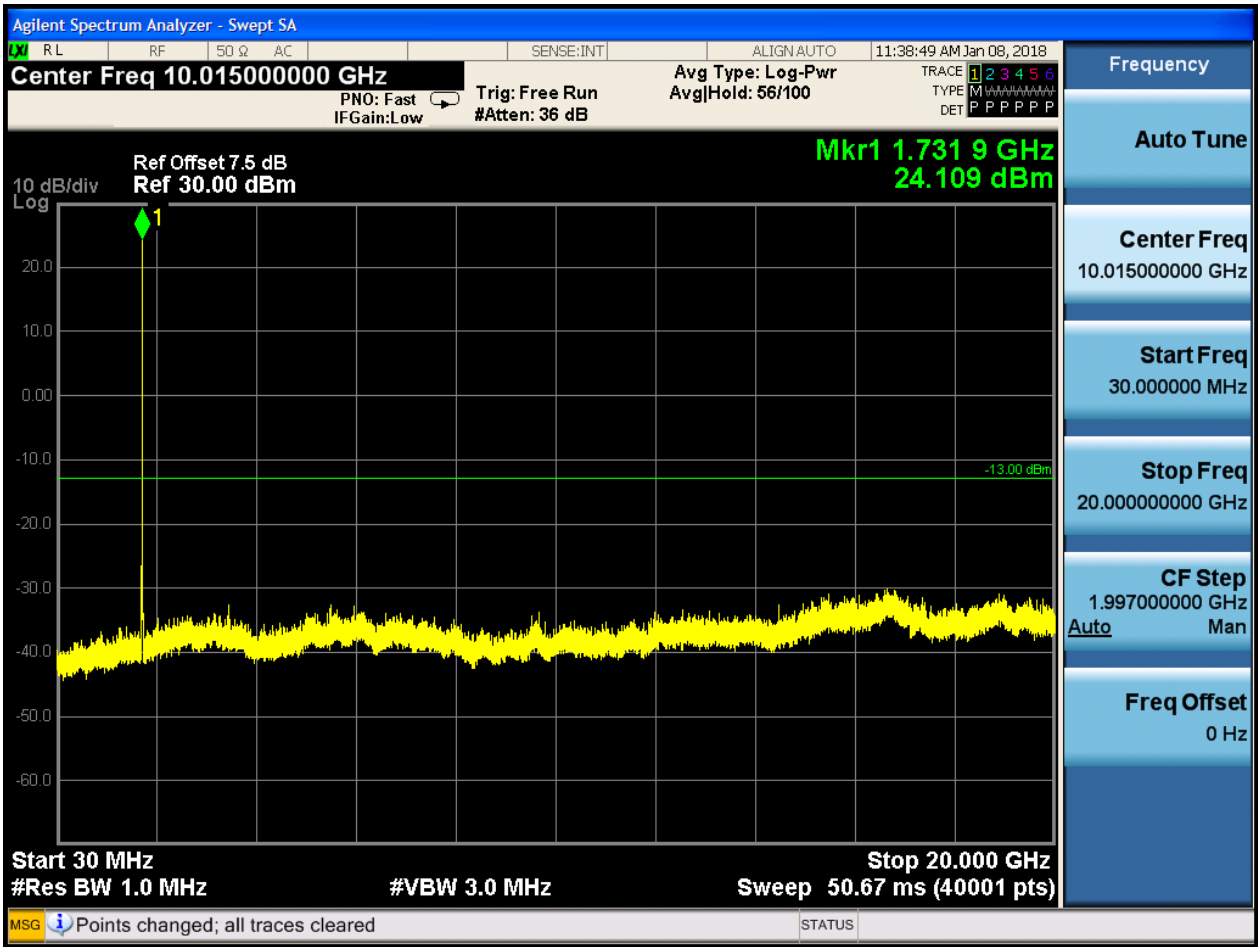




6.1.2.1.2 Test Channel = MCH

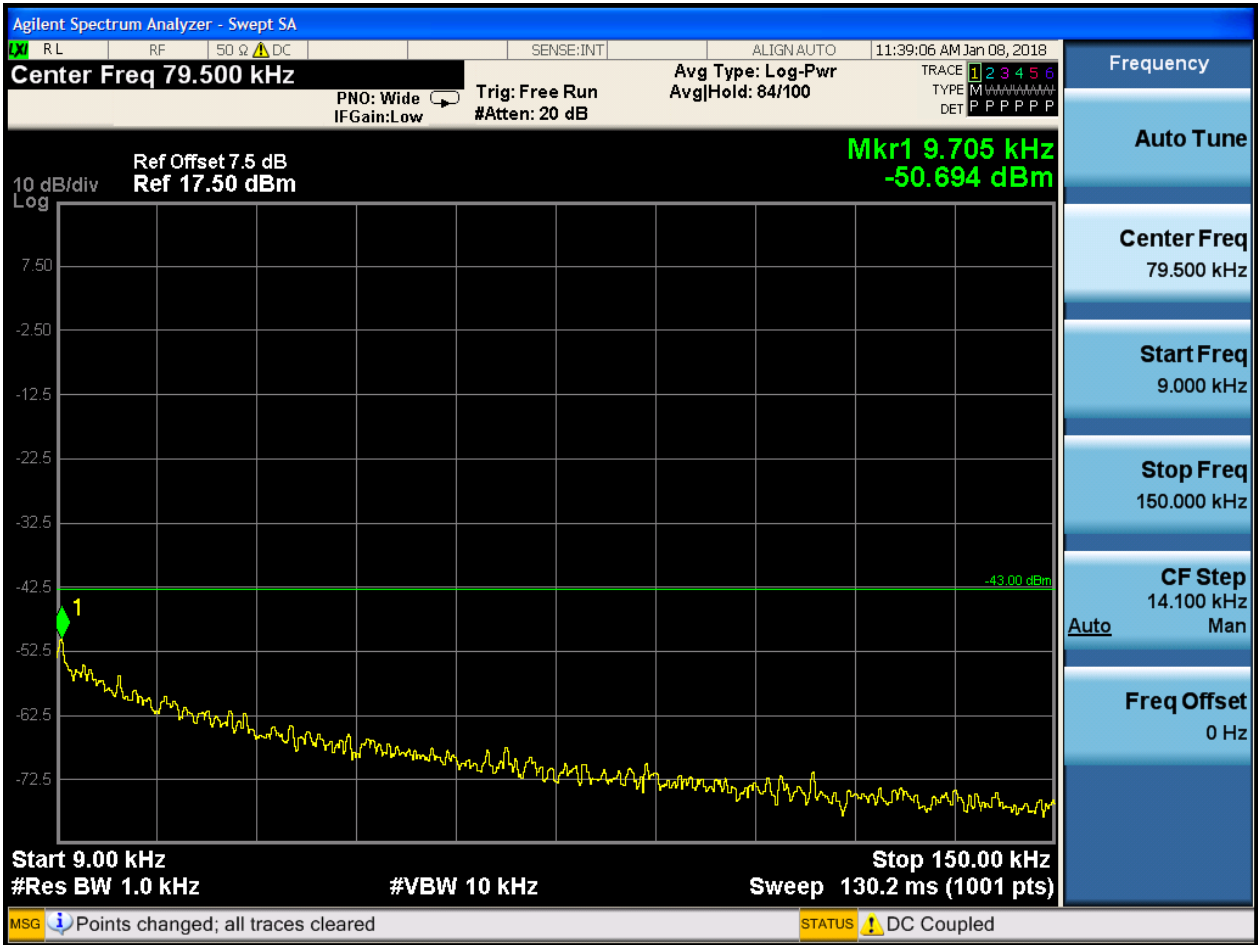


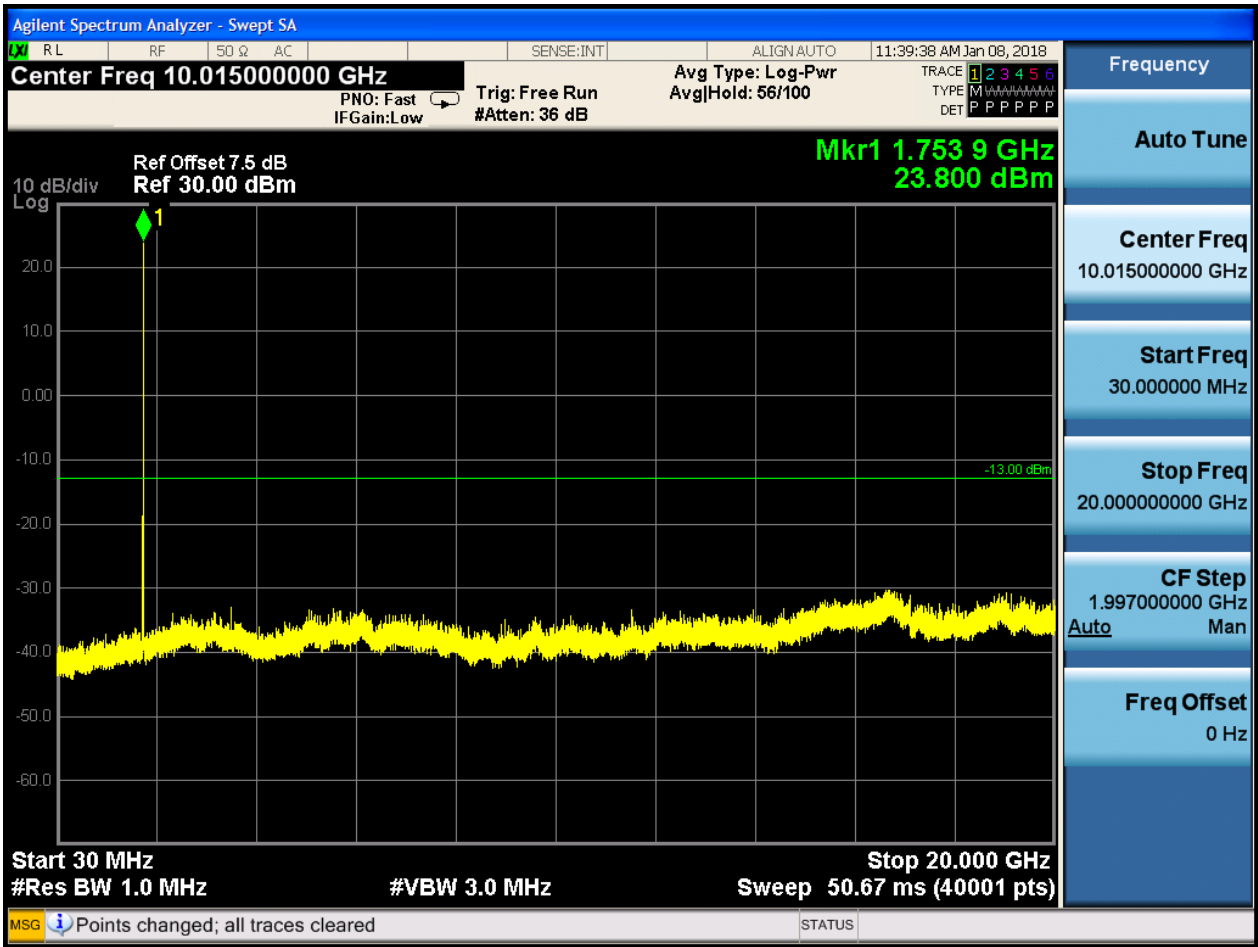






6.1.2.1.3 Test Channel = HCH





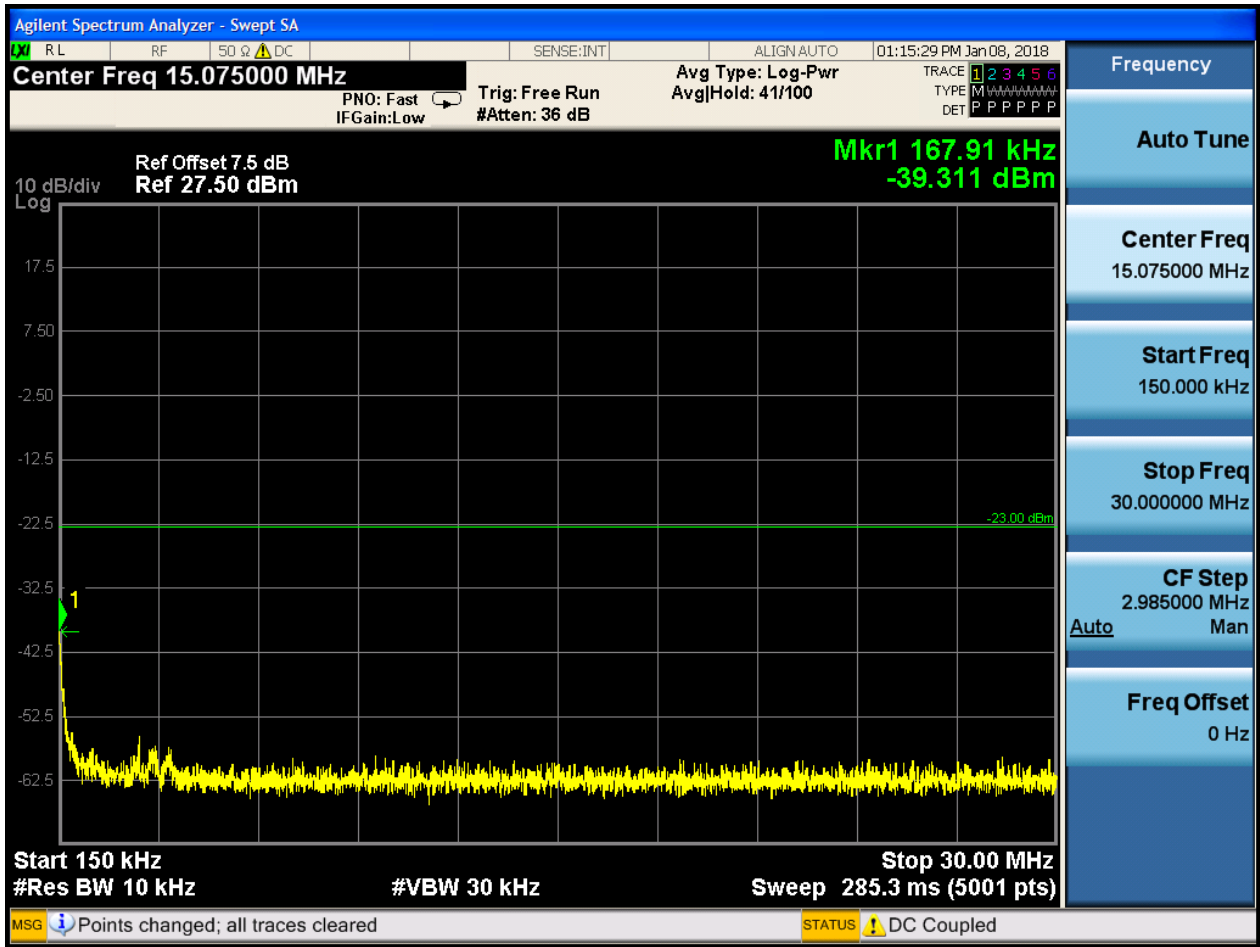


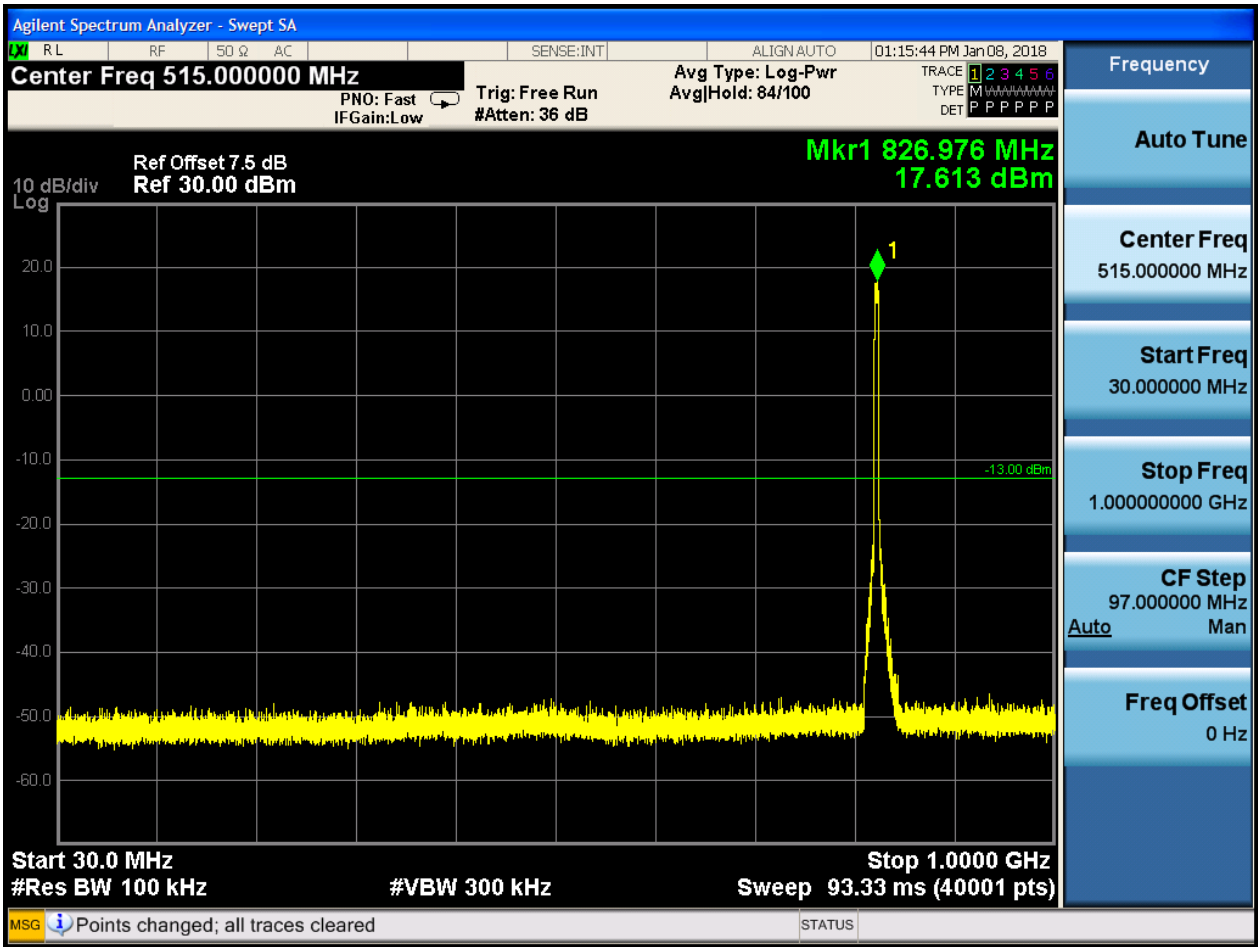
6.1.3 Test Band = WCDMA850

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

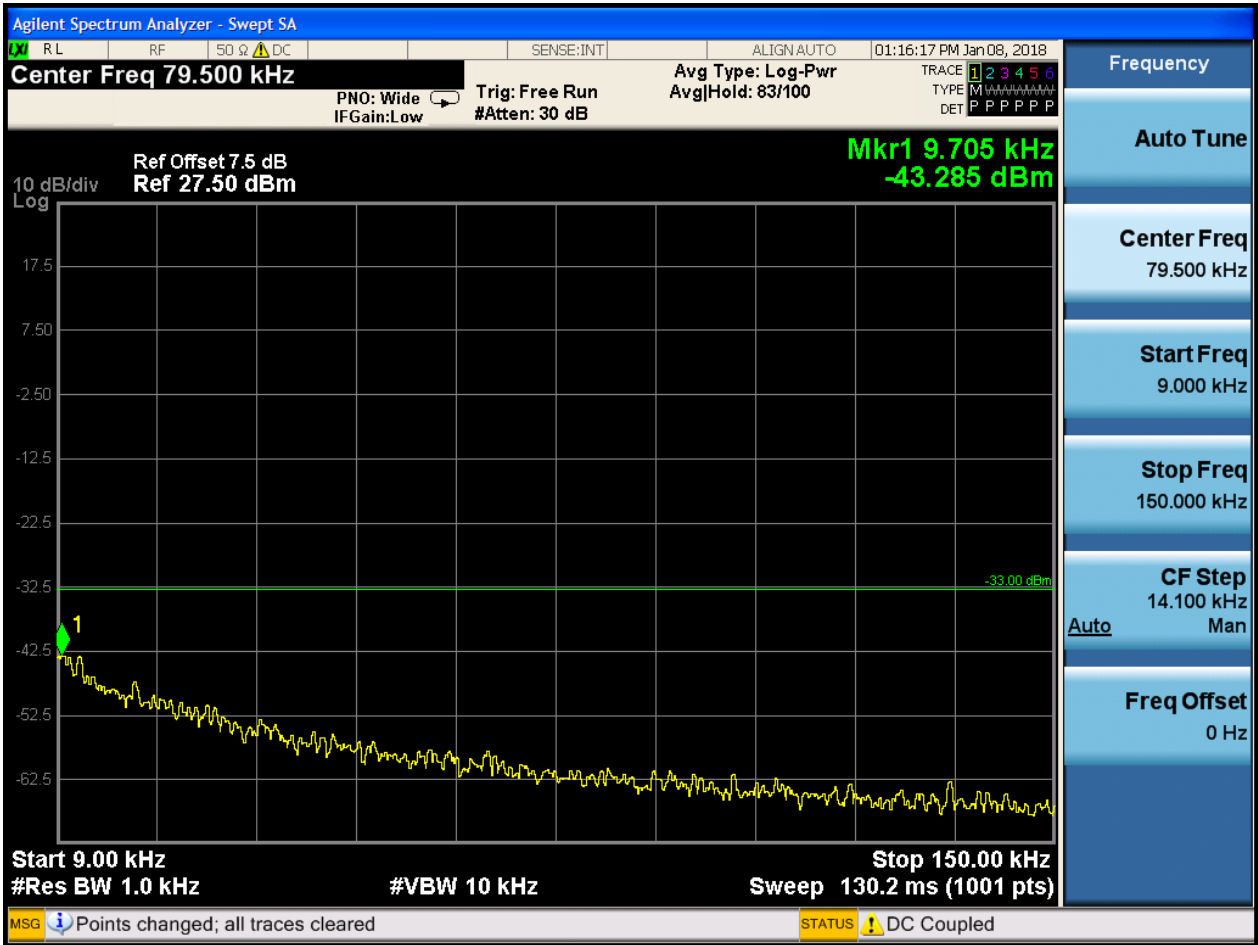


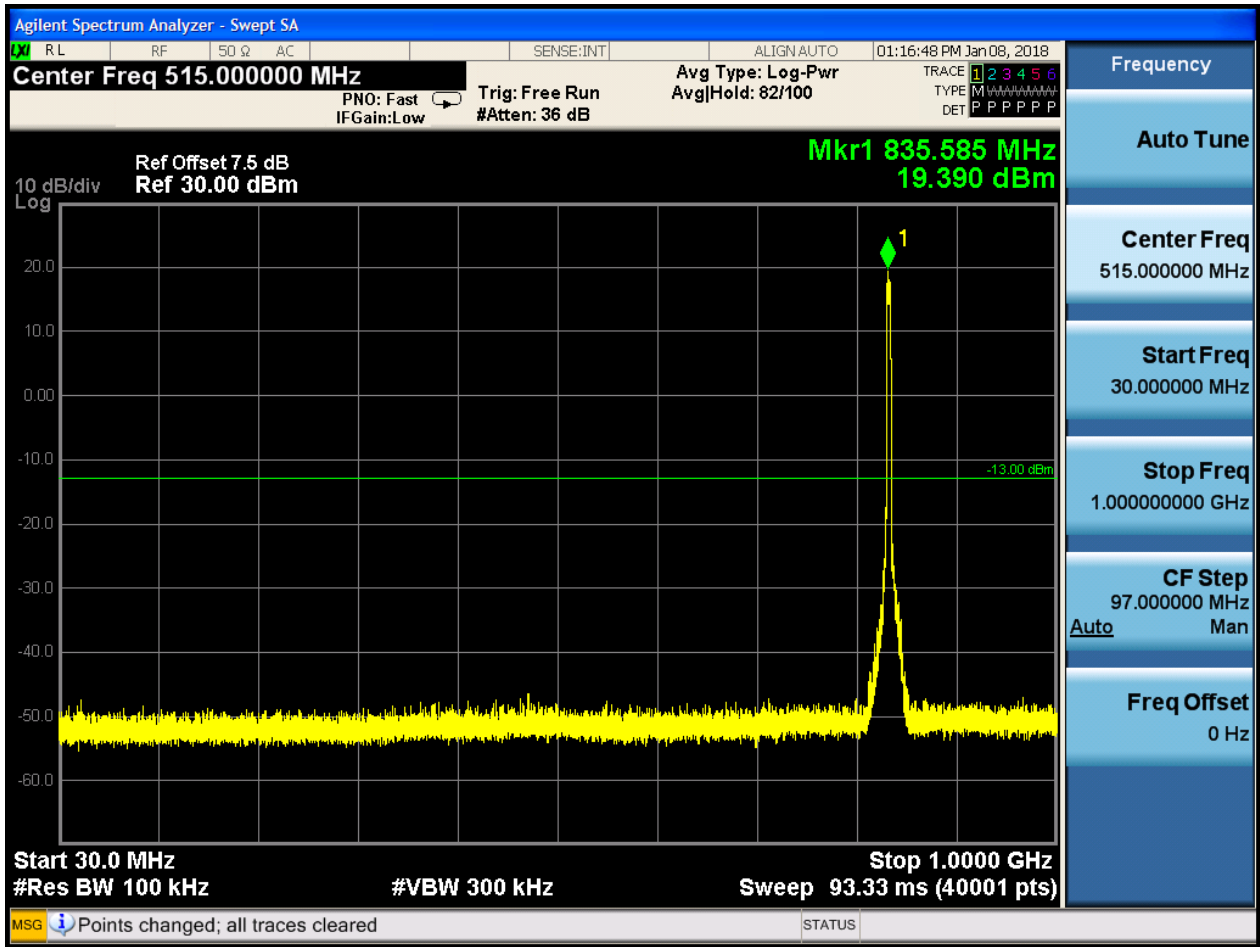






6.1.3.1.2 Test Channel = MCH

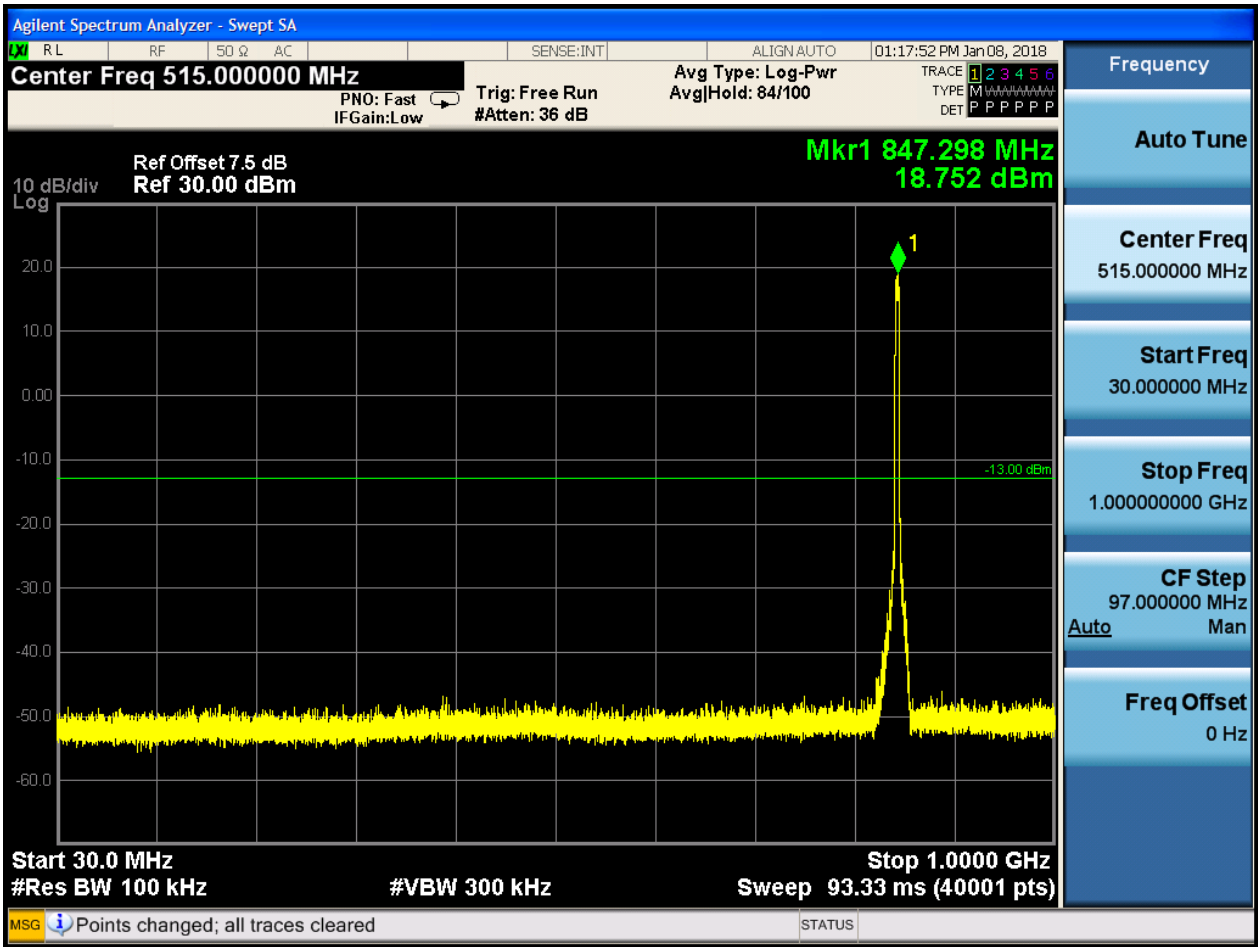


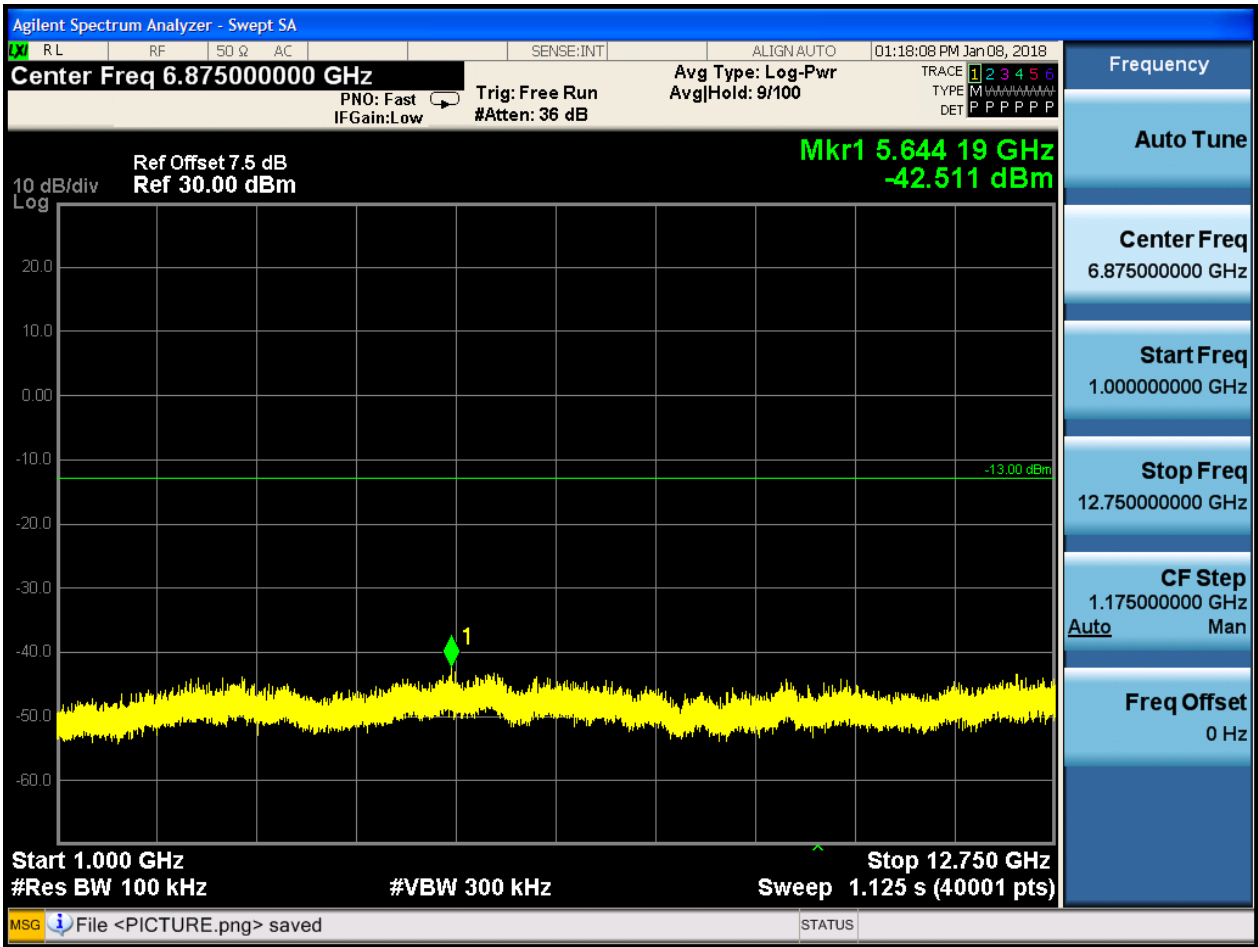




6.1.3.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

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

9 kHz~150 kHz, RBW = 200Hz, VBW = 600 Hz, Detector: PK

150 kHz~30MHz, RBW = 9 kHz, VBW = 30k Hz, Detector: PK

30MHz~1GHz, RBW = 100 kHz, VBW = 300 kHz. Detector: PK

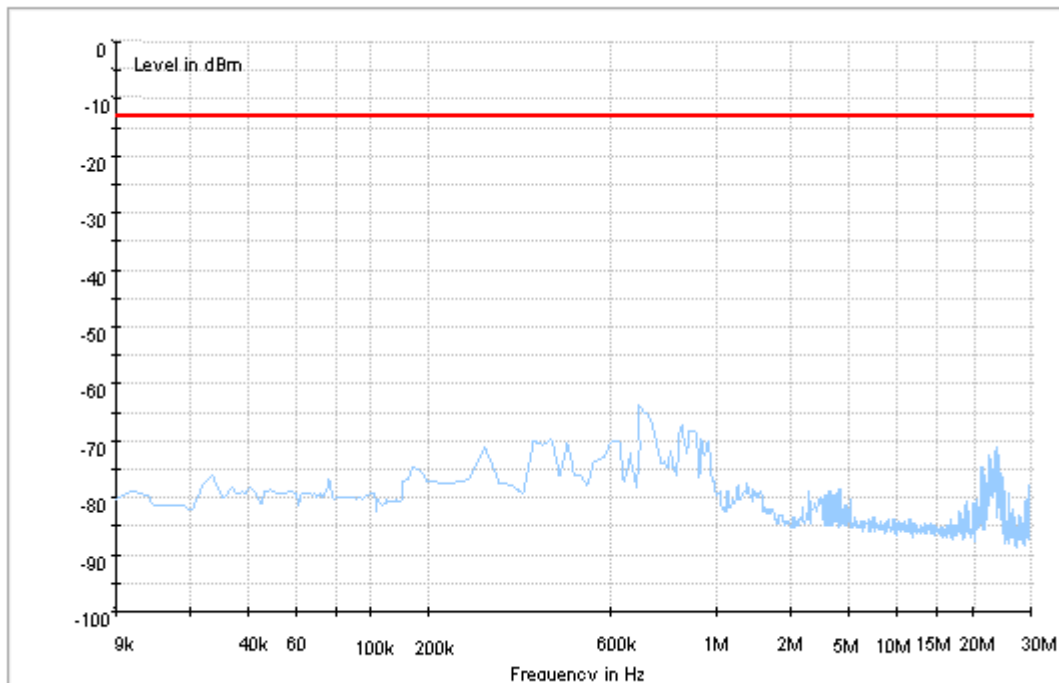
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

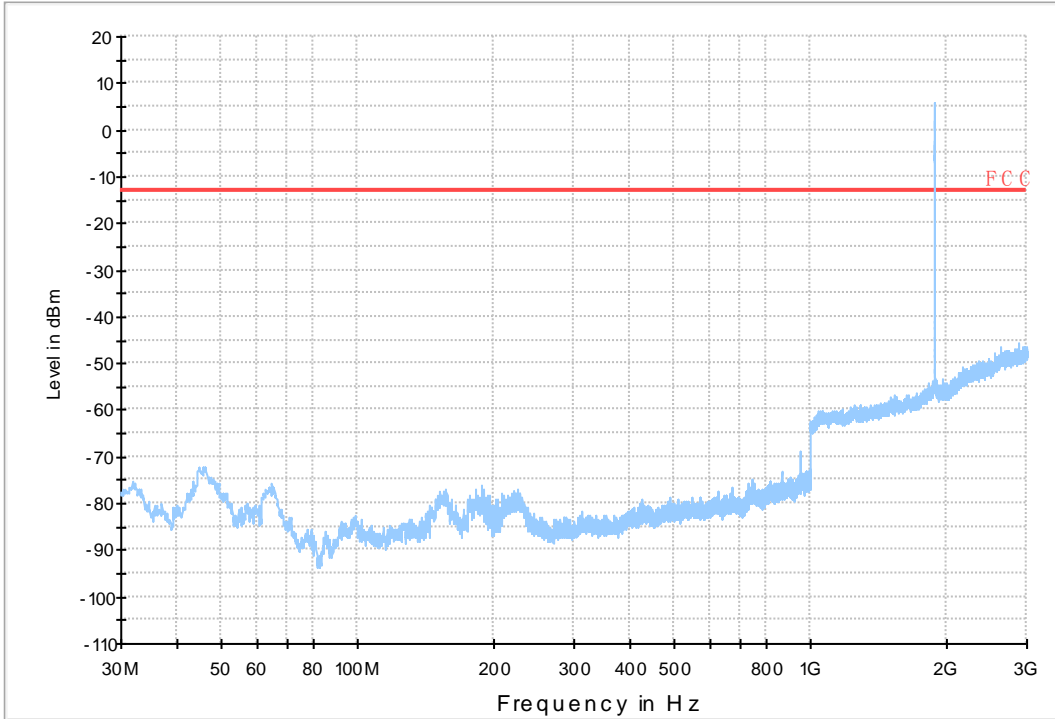
7.1 For UMTS

7.1.1 Test Band = WCDMA1900

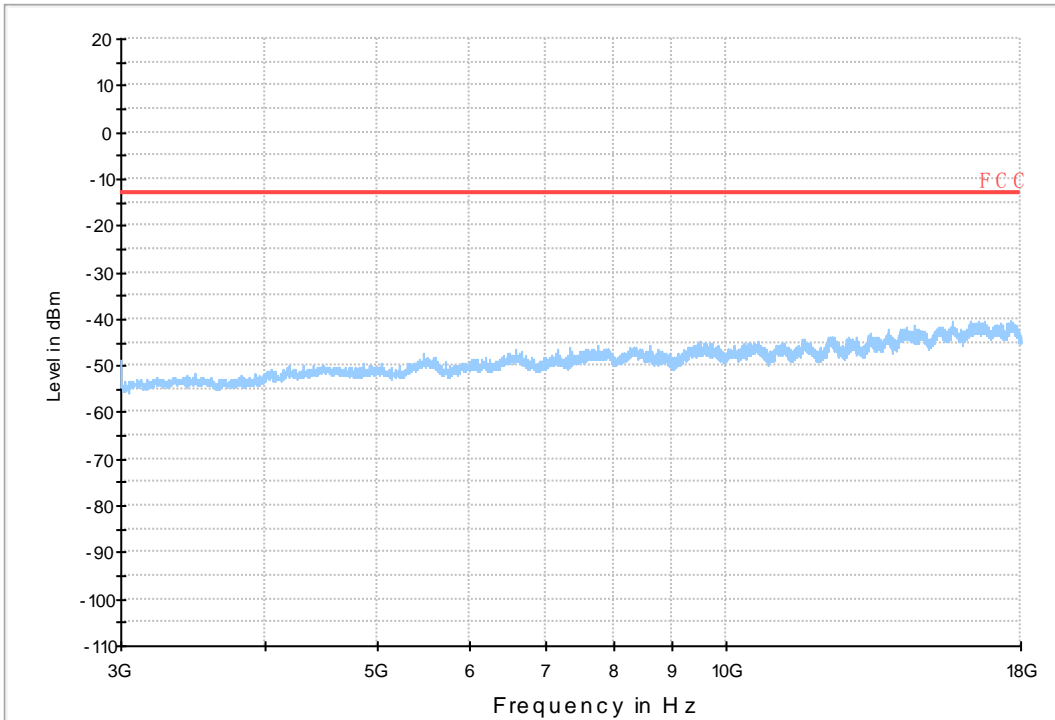
7.1.1.1 Test Mode = UMTS/TM1

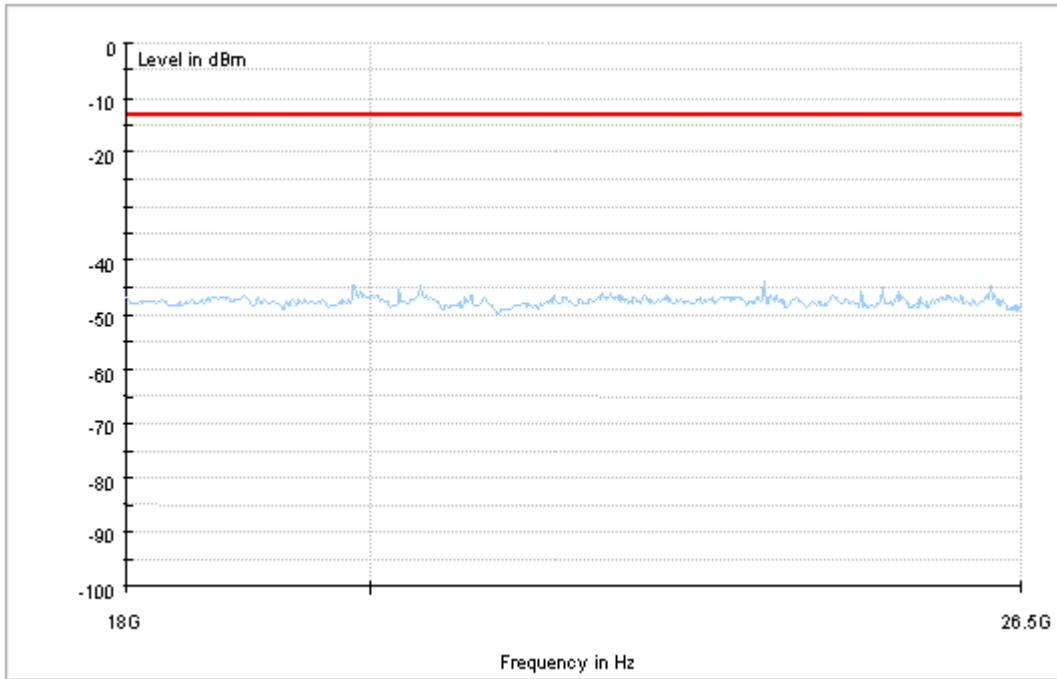


Copy of FCC PART24 W CDMA1900_L



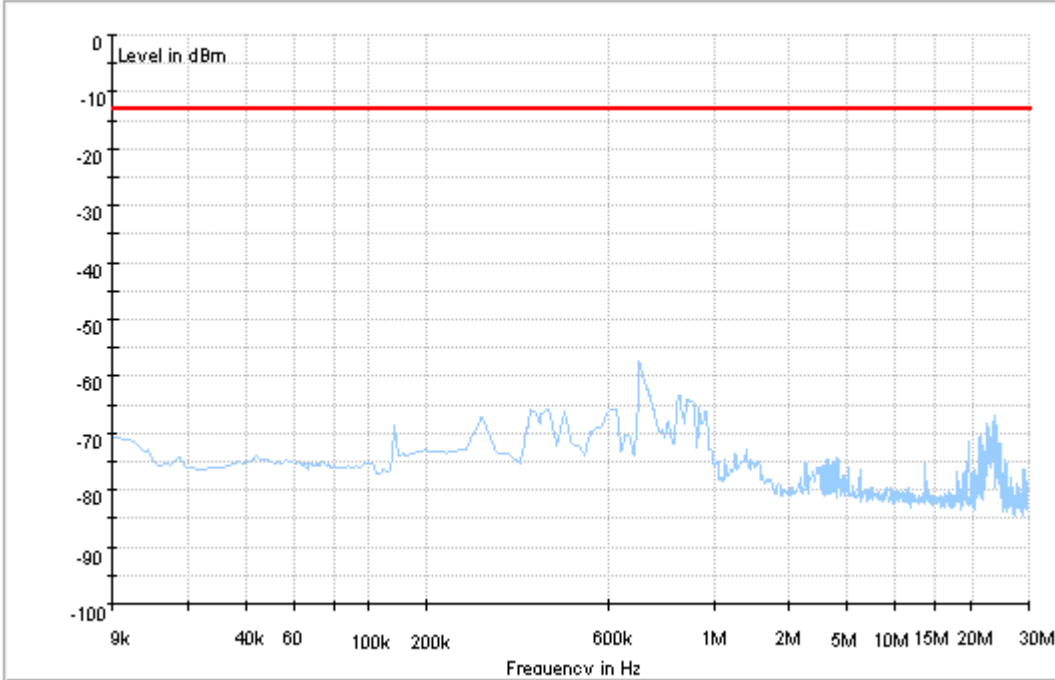
Copy of FCC PART24 W CDMA1900_H



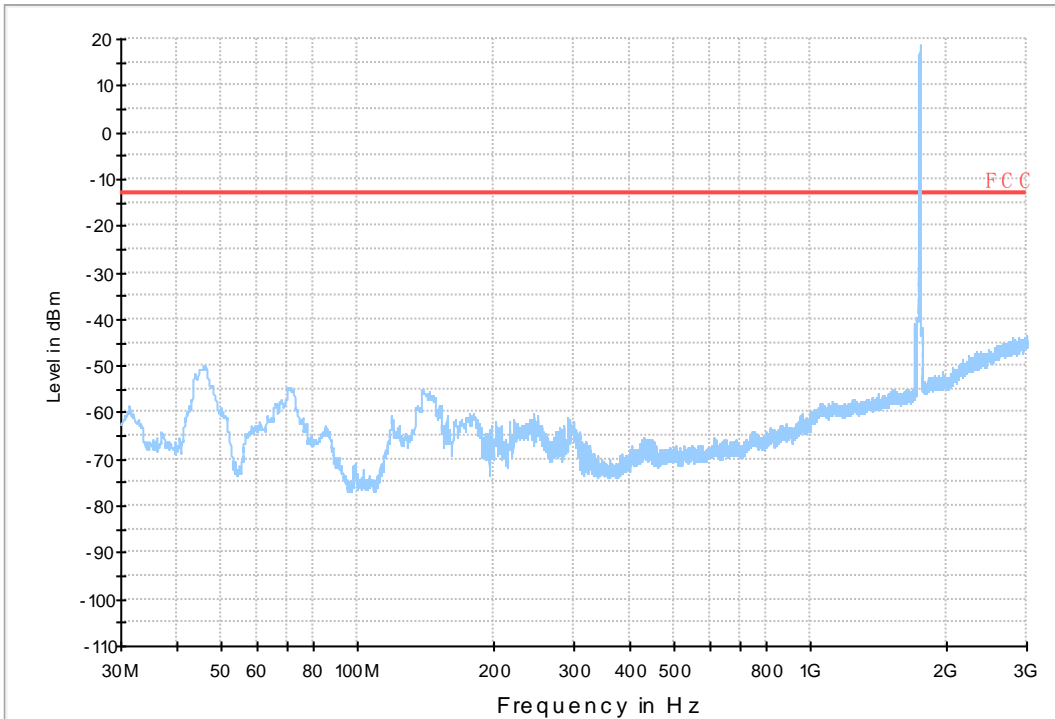


7.1.2 Test Band = WCDMA1700

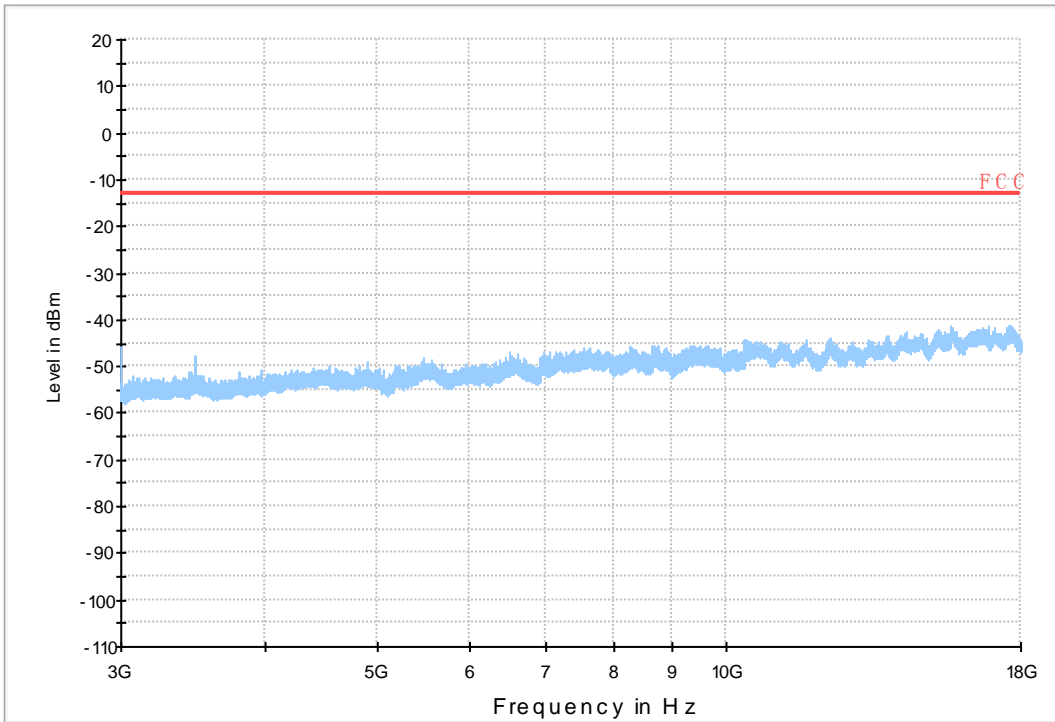
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

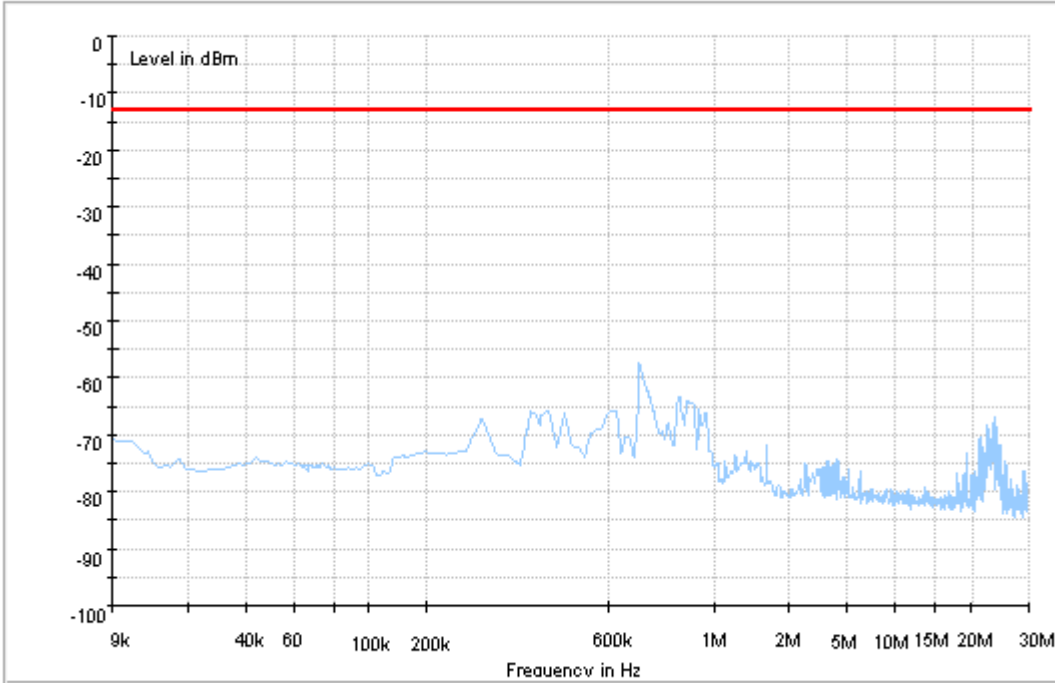


Copy of FCC PART 27 W CDMA1700_H

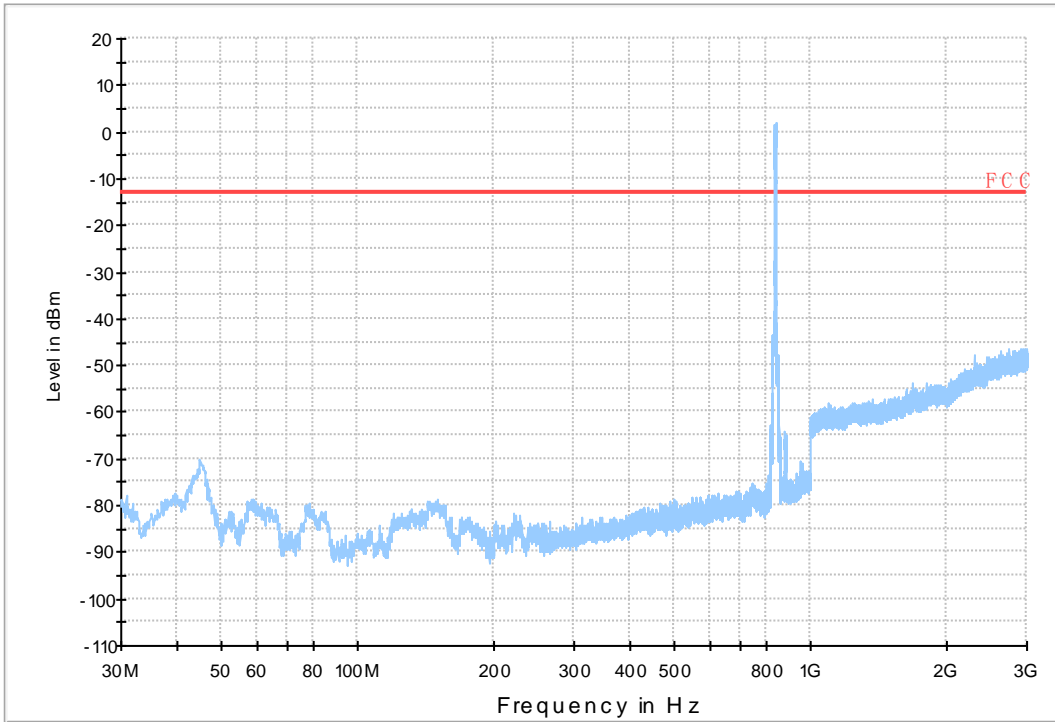


7.1.3 Test Band = WCDMA850

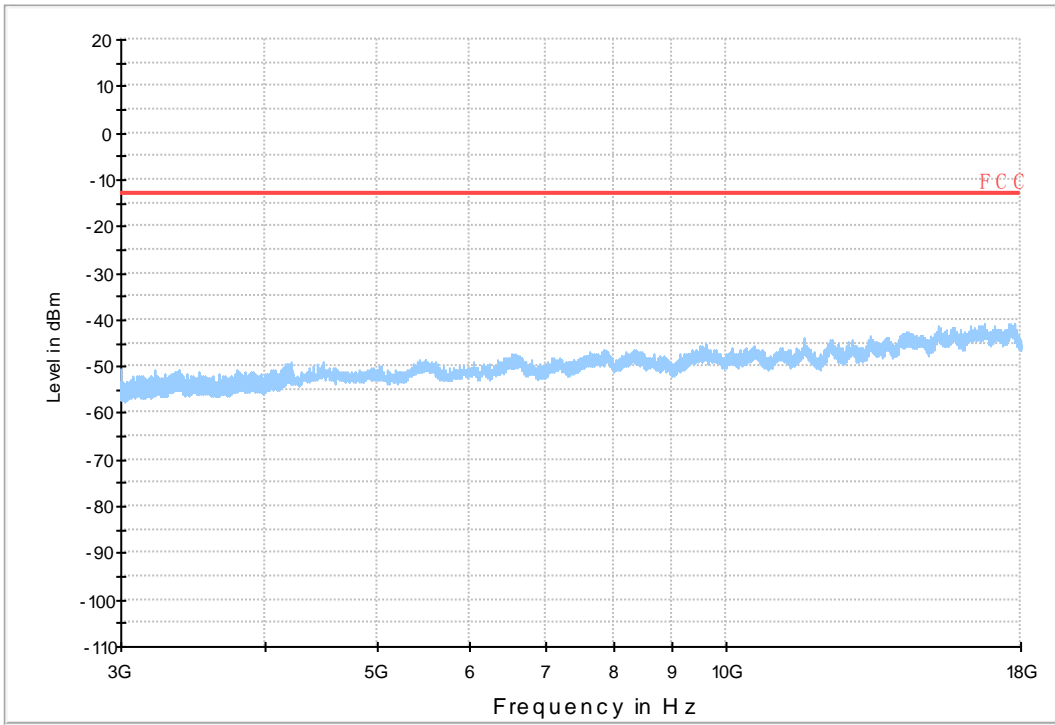
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L



Copy of FCC PART22 W CDMA850_H



8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1 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	0.6	0.00032	PASS
				VN	2.64	0.00143	PASS
				VH	3.57	0.00193	PASS
		MCH	TN	VL	-0.96	-0.00051	PASS
				VN	-2.73	-0.00145	PASS
				VH	-0.66	-0.00035	PASS
		HCH	TN	VL	-2.46	-0.00129	PASS
				VN	-4.61	-0.00242	PASS
				VH	-4.04	-0.00212	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	9.11	0.00532	PASS
				VN	6.52	0.00381	PASS
				VH	5.92	0.00346	PASS
		MCH	TN	VL	-0.43	-0.00025	PASS
				VN	-1.46	-0.00084	PASS
				VH	-0.47	-0.00027	PASS
		HCH	TN	VL	-8.67	-0.00495	PASS
				VN	-9.98	-0.00569	PASS
				VH	-9	-0.00514	PASS
WCDMA850	UMTS/TM1	LCH	TN	VL	-1.66	-0.00201	PASS
				VN	-1.46	-0.00177	PASS
				VH	-1.63	-0.00197	PASS
		MCH	TN	VL	0.02	0.00002	PASS
				VN	0.12	0.00014	PASS
				VH	-3.23	-0.00386	PASS
		HCH	TN	VL	-1.45	-0.00171	PASS
				VN	-1.43	-0.00169	PASS
				VH	-1.46	-0.00172	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	1.8	0.00097	PASS
				-20	2.69	0.00145	PASS
				-10	-0.78	-0.00042	PASS
				0	-1.28	-0.00069	PASS
				10	-0.79	-0.00043	PASS
				20	2.62	0.00141	PASS
				30	4.62	0.00249	PASS
				40	1.63	0.00088	PASS
				50	-1.56	-0.00084	PASS
		MCH	VN	-30	-2.33	-0.00124	PASS
				-20	-0.34	-0.00018	PASS
				-10	-1.51	-0.0008	PASS
				0	2.2	0.00117	PASS
				10	-1.45	-0.00077	PASS
				20	-0.63	-0.00034	PASS
				30	0.63	0.00034	PASS
				40	-2.11	-0.00112	PASS
				50	-3.27	-0.00174	PASS
		HCH	VN	-30	-5.97	-0.00313	PASS
				-20	-4.21	-0.00221	PASS
				-10	-2.88	-0.00151	PASS
				0	-3.46	-0.00181	PASS
				10	-3.2	-0.00168	PASS
				20	-2.46	-0.00129	PASS
				30	-3.17	-0.00166	PASS
				40	-5.2	-0.00273	PASS
				50	-1.66	-0.00087	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	9.93	0.0058	PASS
				-20	6.58	0.00384	PASS
				-10	6.61	0.00386	PASS
				0	7.93	0.00463	PASS
				10	9.11	0.00532	PASS
				20	10.62	0.0062	PASS
				30	9.86	0.00576	PASS
				40	8.45	0.00493	PASS
				50	9.45	0.00552	PASS
		MCH	VN	-30	-0.08	-0.00005	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	0.11	0.00006	PASS
				-10	0.4	0.00023	PASS
				0	-3.13	-0.00181	PASS
				10	-1.56	-0.0009	PASS
				20	-0.37	-0.00021	PASS
				30	-2.53	-0.00146	PASS
				40	1.53	0.00088	PASS
				50	-0.79	-0.00046	PASS
		HCH	VN	-30	-9.75	-0.00556	PASS
				-20	-6.39	-0.00365	PASS
				-10	-8.67	-0.00495	PASS
				0	-7.23	-0.00413	PASS
				10	-5.08	-0.0029	PASS
				20	-9.17	-0.00523	PASS
				30	-8.76	-0.005	PASS
				40	-7.1	-0.00405	PASS
				50	-8.16	-0.00466	PASS
				WCDMA850	UMTS/TM1	LCH	VN
-20	-0.67	-0.00081	PASS				
-10	-2.26	-0.00273	PASS				
0	1.01	0.00122	PASS				
10	0.41	0.0005	PASS				
20	-0.69	-0.00083	PASS				
30	-1.53	-0.00185	PASS				
40	0.7	0.00085	PASS				
50	-2.49	-0.00301	PASS				
MCH	VN	-30	-2.43			-0.00291	PASS
		-20	-0.63			-0.00075	PASS
		-10	-0.15			-0.00018	PASS
		0	-2.96			-0.00354	PASS
		10	-2.12			-0.00253	PASS
		20	-1.04			-0.00124	PASS
		30	-2.64			-0.00316	PASS
		40	0.49			0.00059	PASS
		50	-1.83			-0.00219	PASS
HCH	VN	-30	-2.66			-0.00314	PASS
		-20	-1.02			-0.0012	PASS
		-10	-0.46			-0.00054	PASS
		0	-1.75			-0.00207	PASS
		10	-1.82			-0.00215	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	-4.15	-0.0049	PASS
				30	-2.73	-0.00322	PASS
				40	0.27	0.00032	PASS
				50	-1.16	-0.00137	PASS

END