



Appendix for test report



1Appendix_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	23.63	20.05	38.5	PASS
		MCH	23.64	20.11	38.5	PASS
		HCH	23.65	20.23	38.5	PASS

Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	23.27	22.75	33	PASS
		MCH	23.37	22.91	33	PASS
		HCH	23.45	22.96	33	PASS
WCDMA1900	UMTS/TM1	LCH	23.28	21.91	33	PASS
		MCH	23.24	21.88	33	PASS
		HCH	23.31	21.98	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:

$$\text{SET Span} = 1.5 * \text{OBW}$$

$$\text{SET RBW} = 1\% \text{ of the OBW, not to exceed 1MHz}$$

$$\text{SET VBW} \geq 3 * \text{RBW}$$

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	3.16	13	PASS
		MCH	3.1	13	PASS
		HCH	2.92	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.3	13	PASS
		MCH	2.96	13	PASS
		HCH	3.15	13	PASS
WCDMA850	UMTS/TM1	LCH	9.81	13	PASS
		MCH	2.87	13	PASS
		HCH	3.07	13	PASS

3Appendix_C: Modulation Characteristics

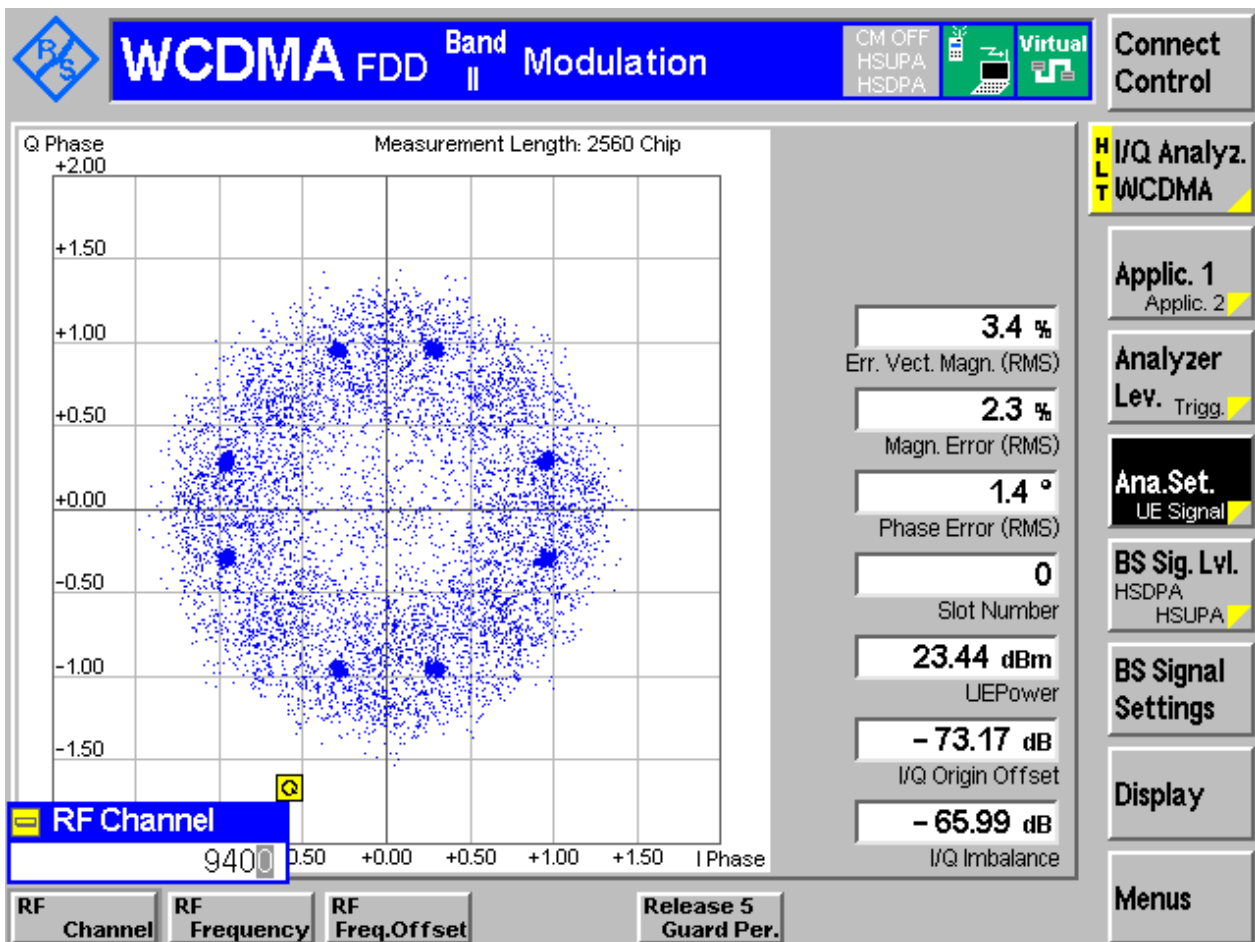
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1900

3.1.1.1 Test Mode = UMTS/TM1

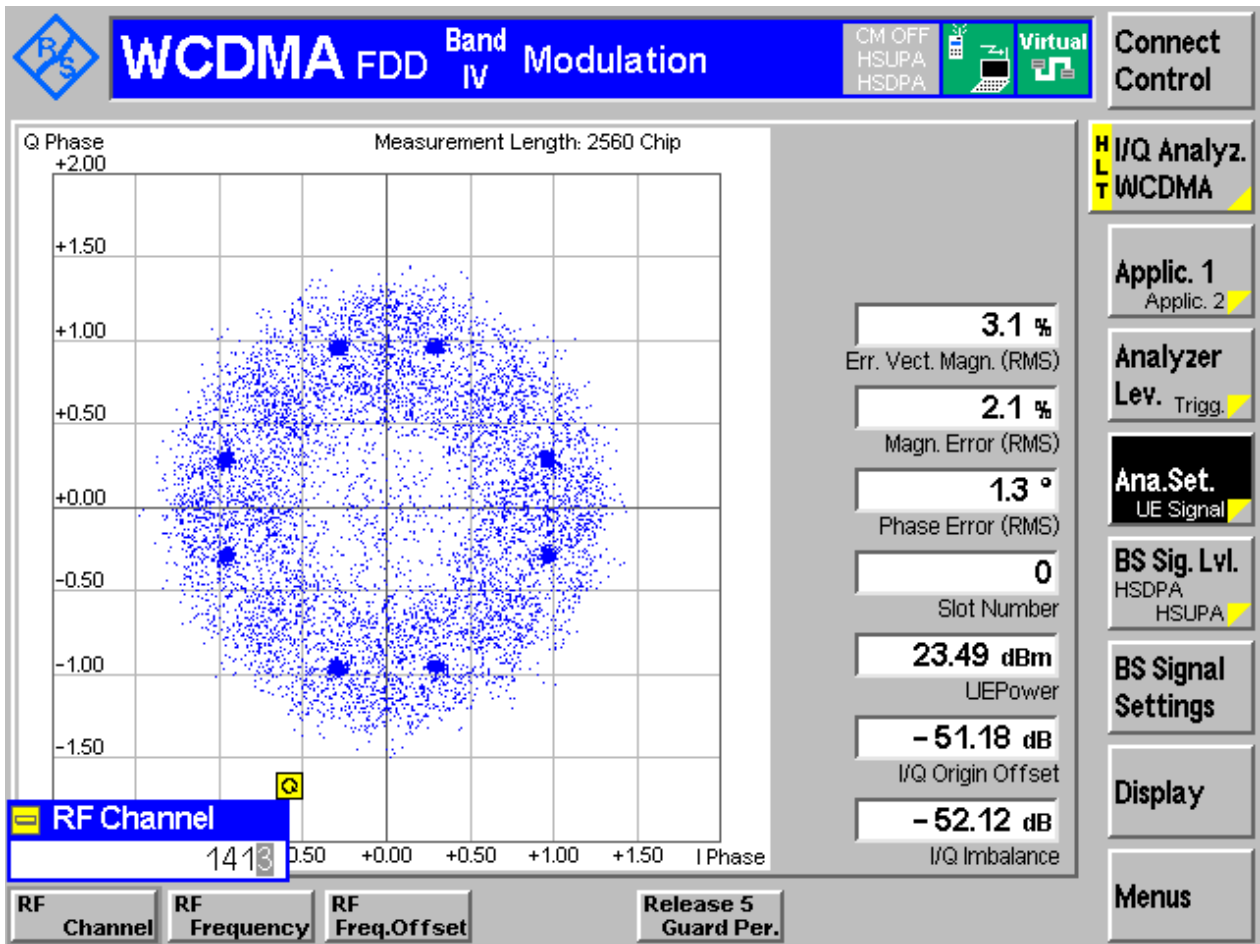
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

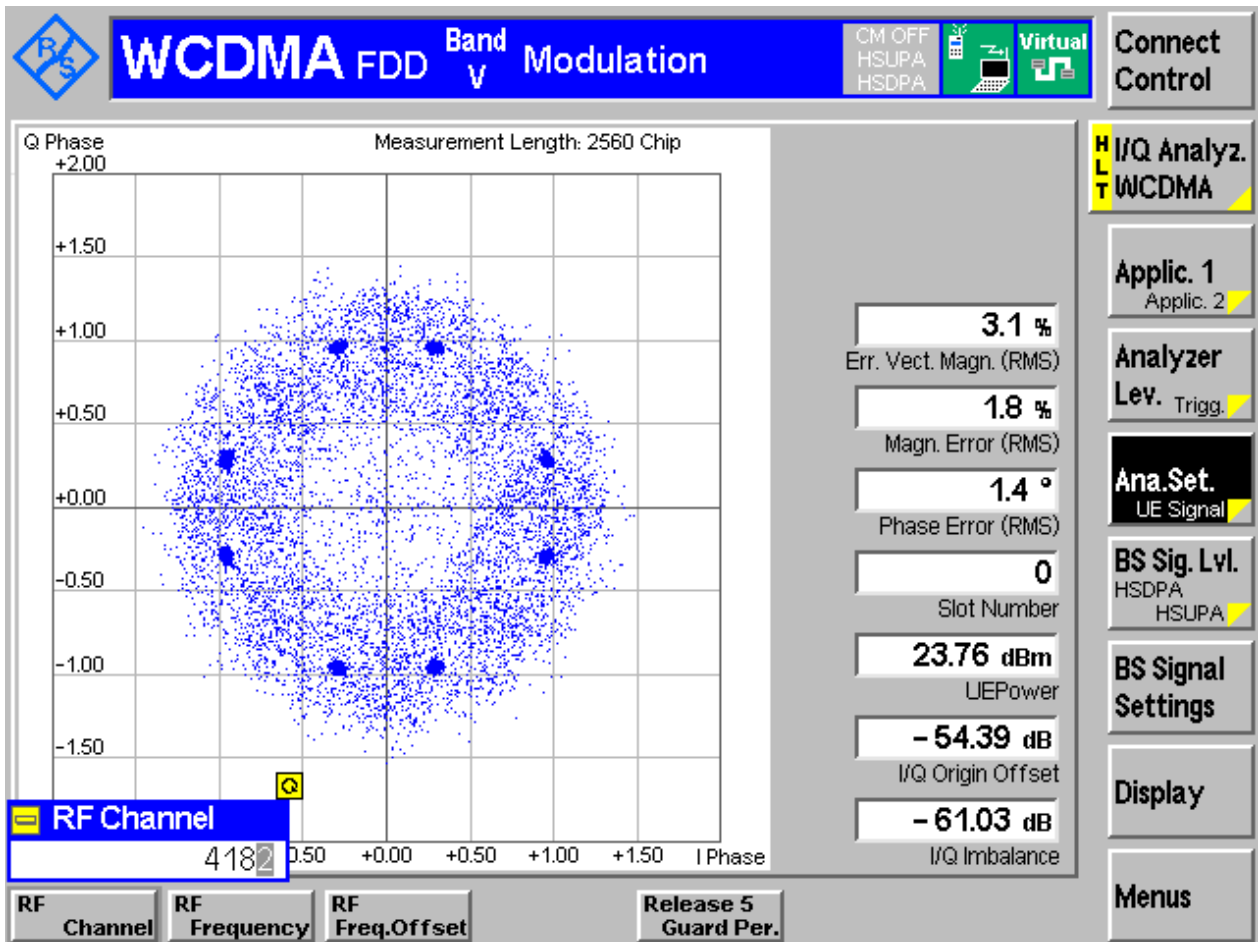
3.1.2.1.1 Test Channel = MCH



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
WCDMA850	UMTS/TM1	LCH	4.15	4.70	Pass
		MCH	4.15	4.72	Pass
		HCH	4.15	4.72	Pass
WCDMA1700	UMTS/TM1	LCH	4.13	4.69	Pass
		MCH	4.14	4.71	Pass
		HCH	4.14	4.69	Pass
WCDMA1900	UMTS/TM1	LCH	4.13	4.69	Pass
		MCH	4.14	4.69	Pass
		HCH	4.14	4.71	Pass



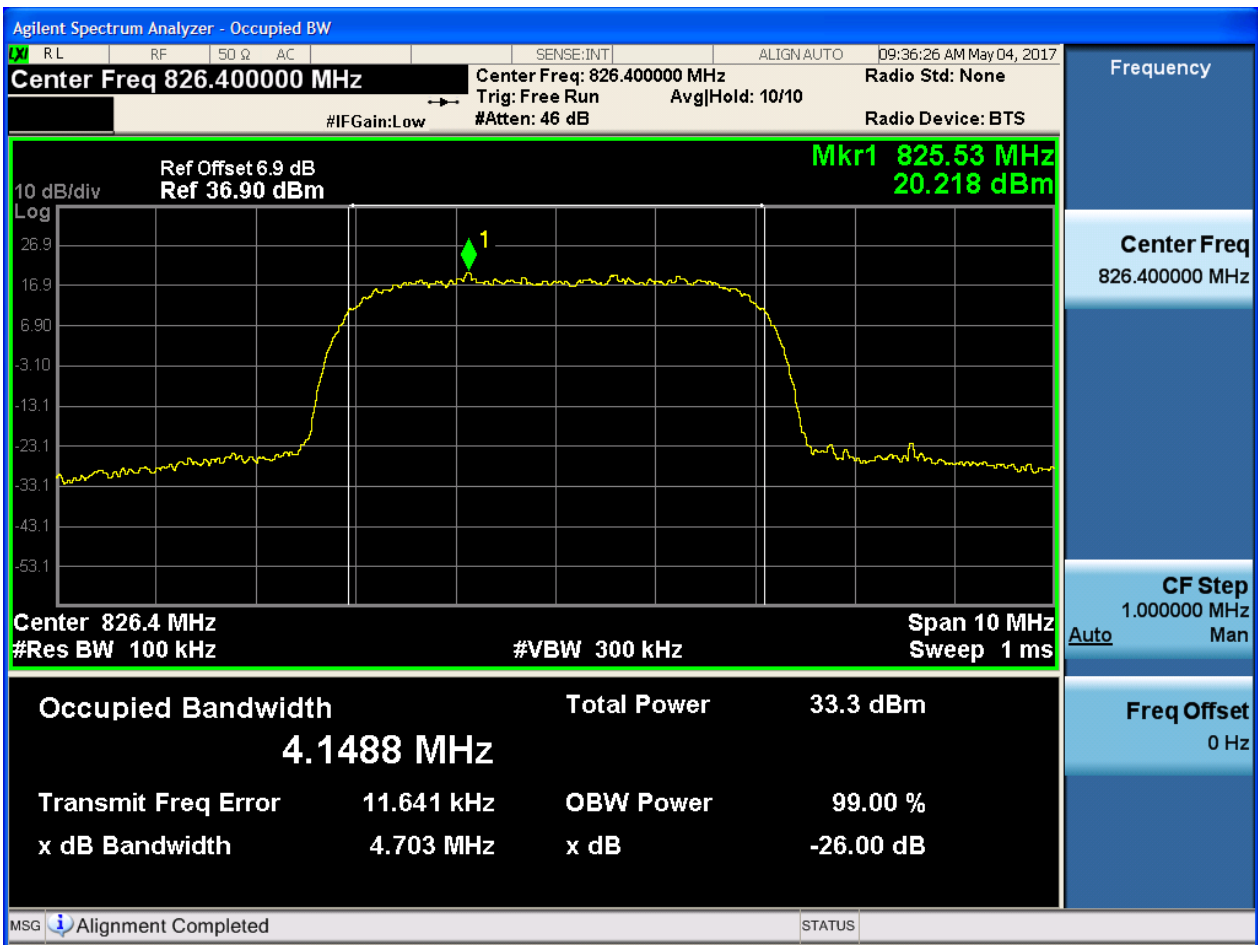
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

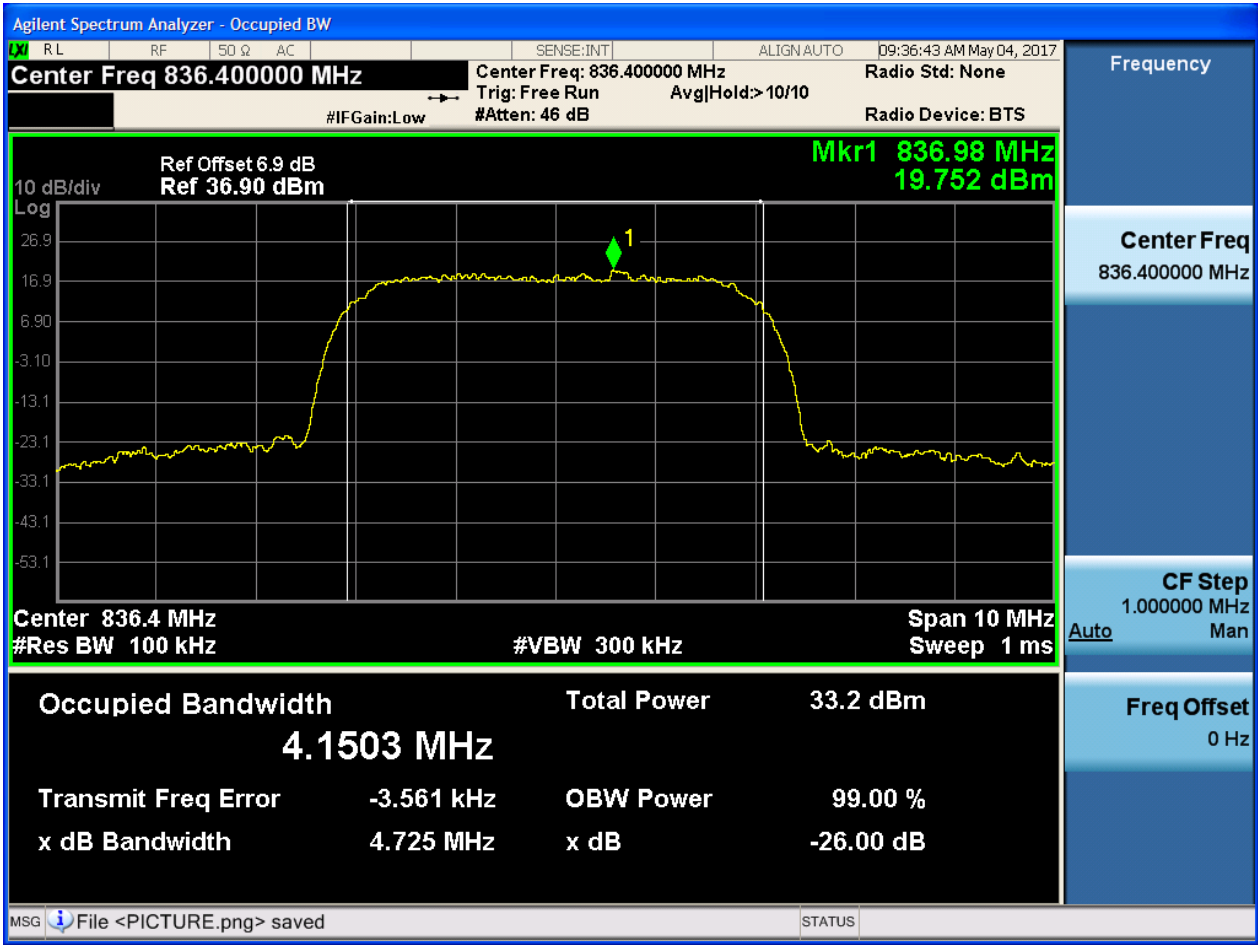
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



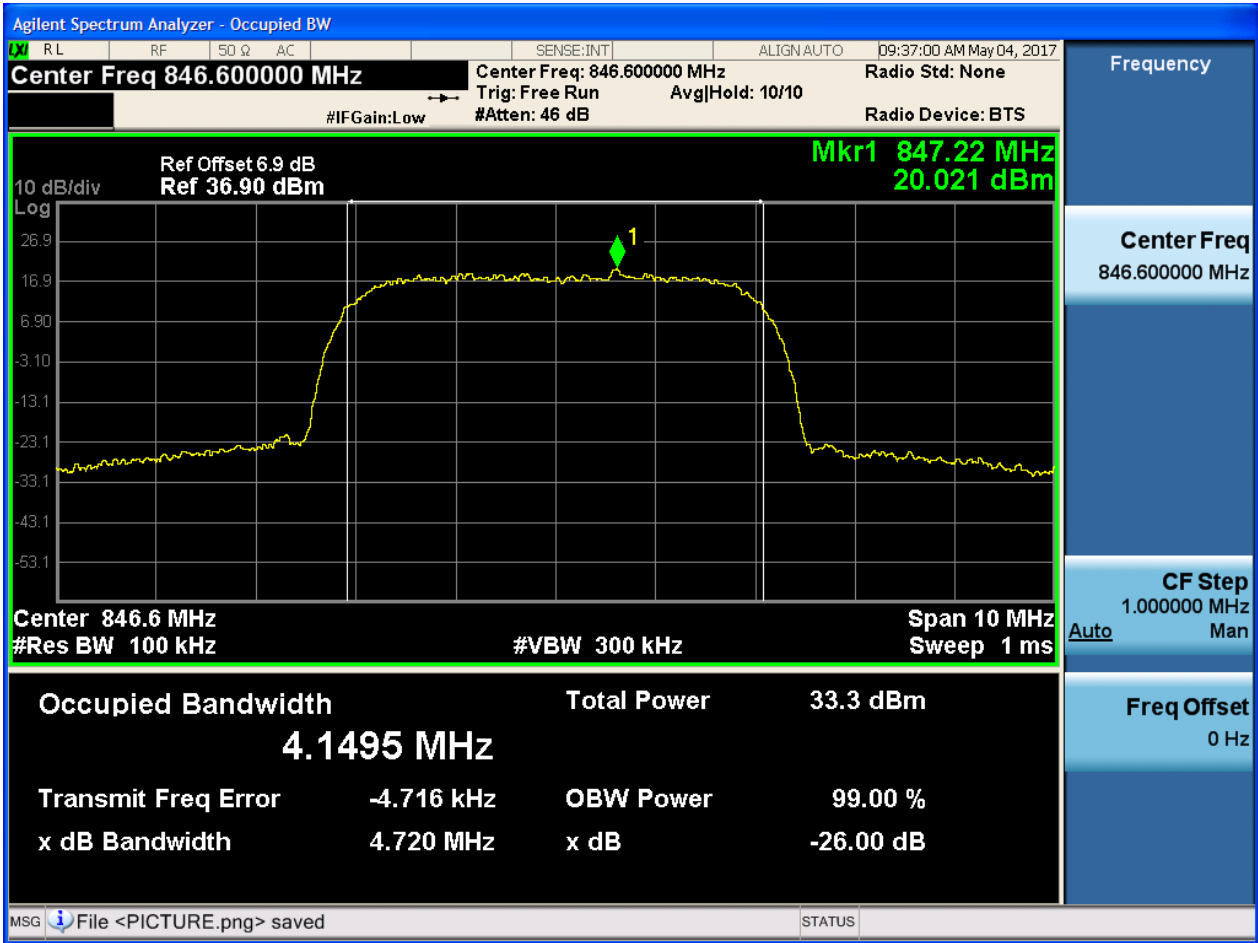


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

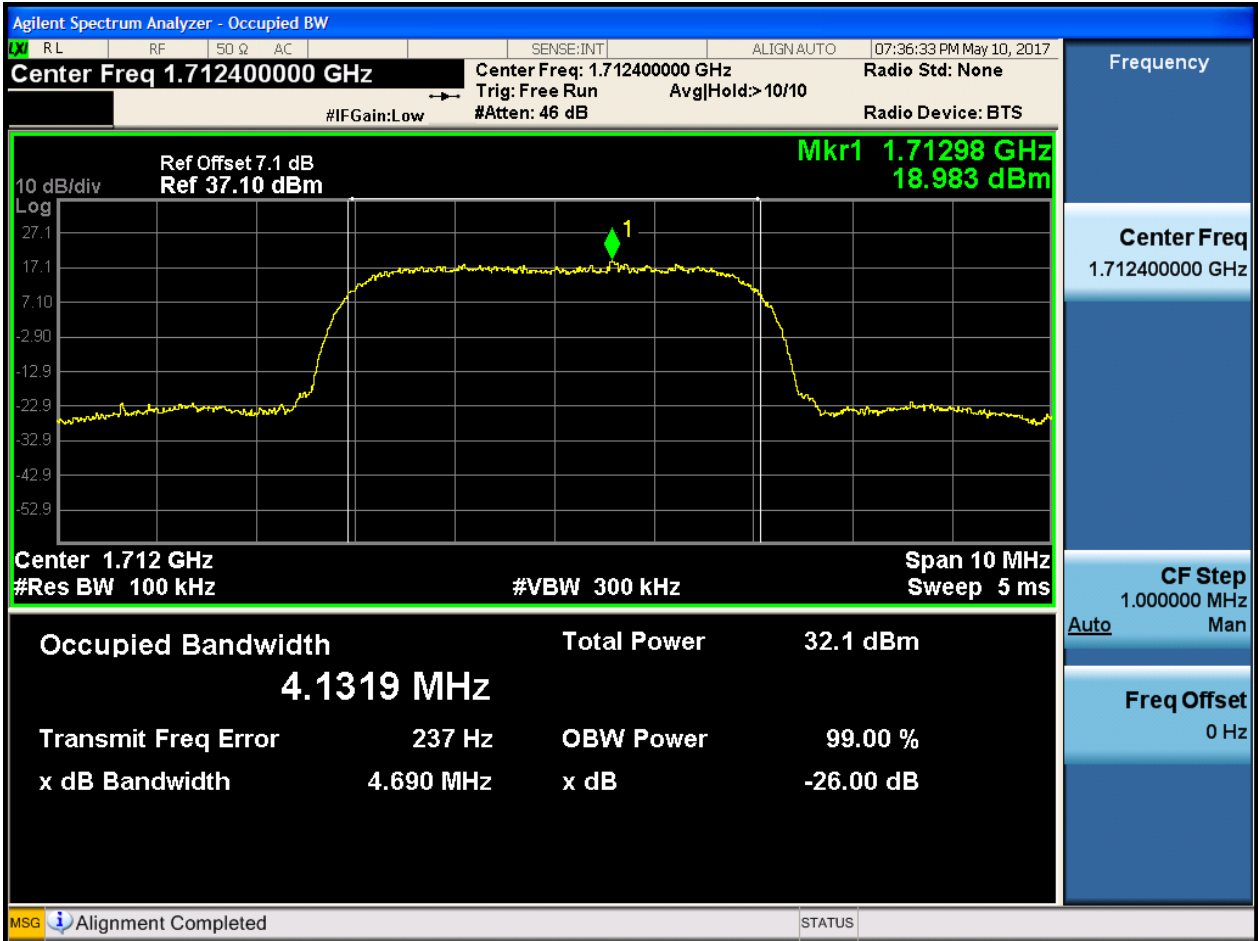




4.1.2 Test Band = WCDMA1700

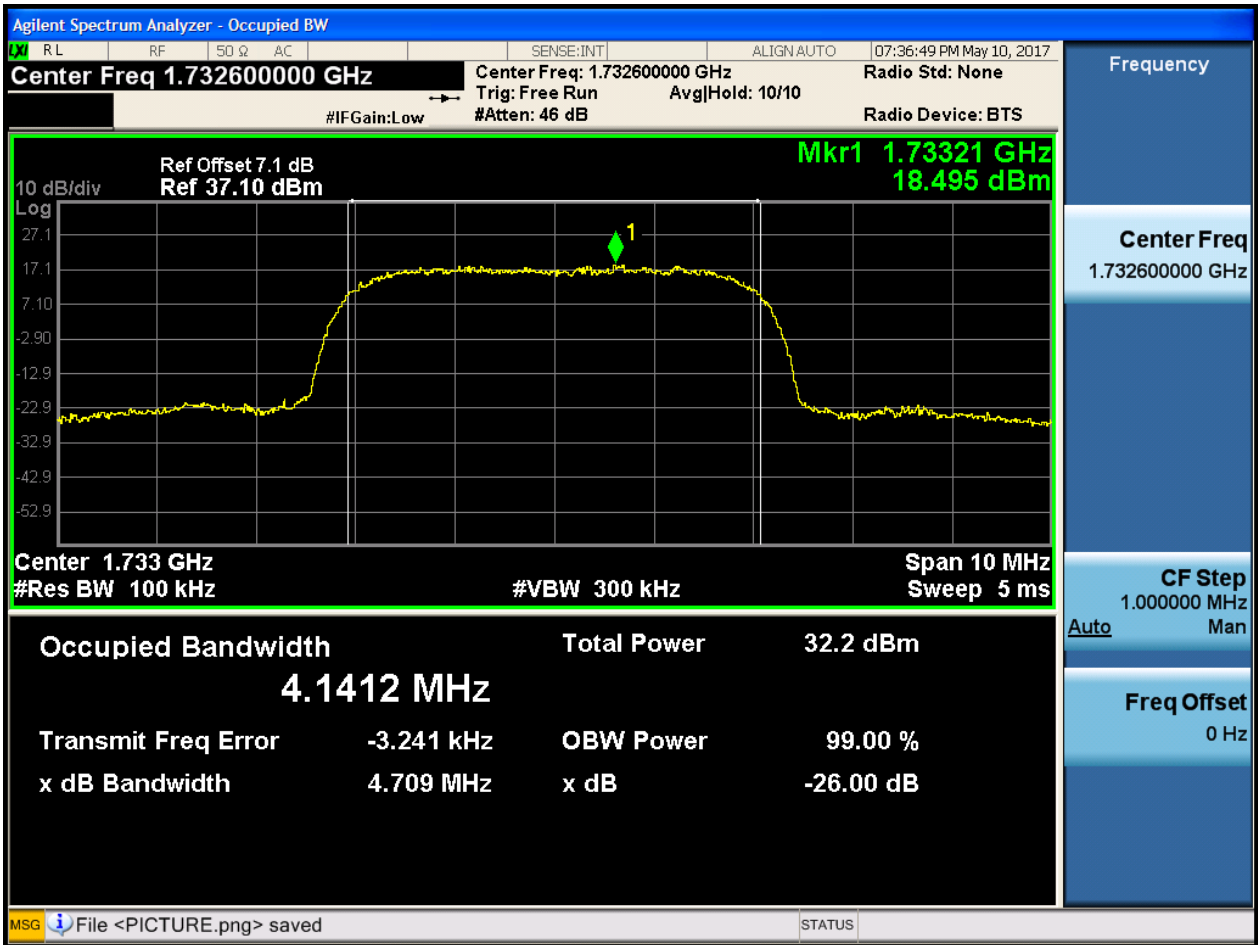
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



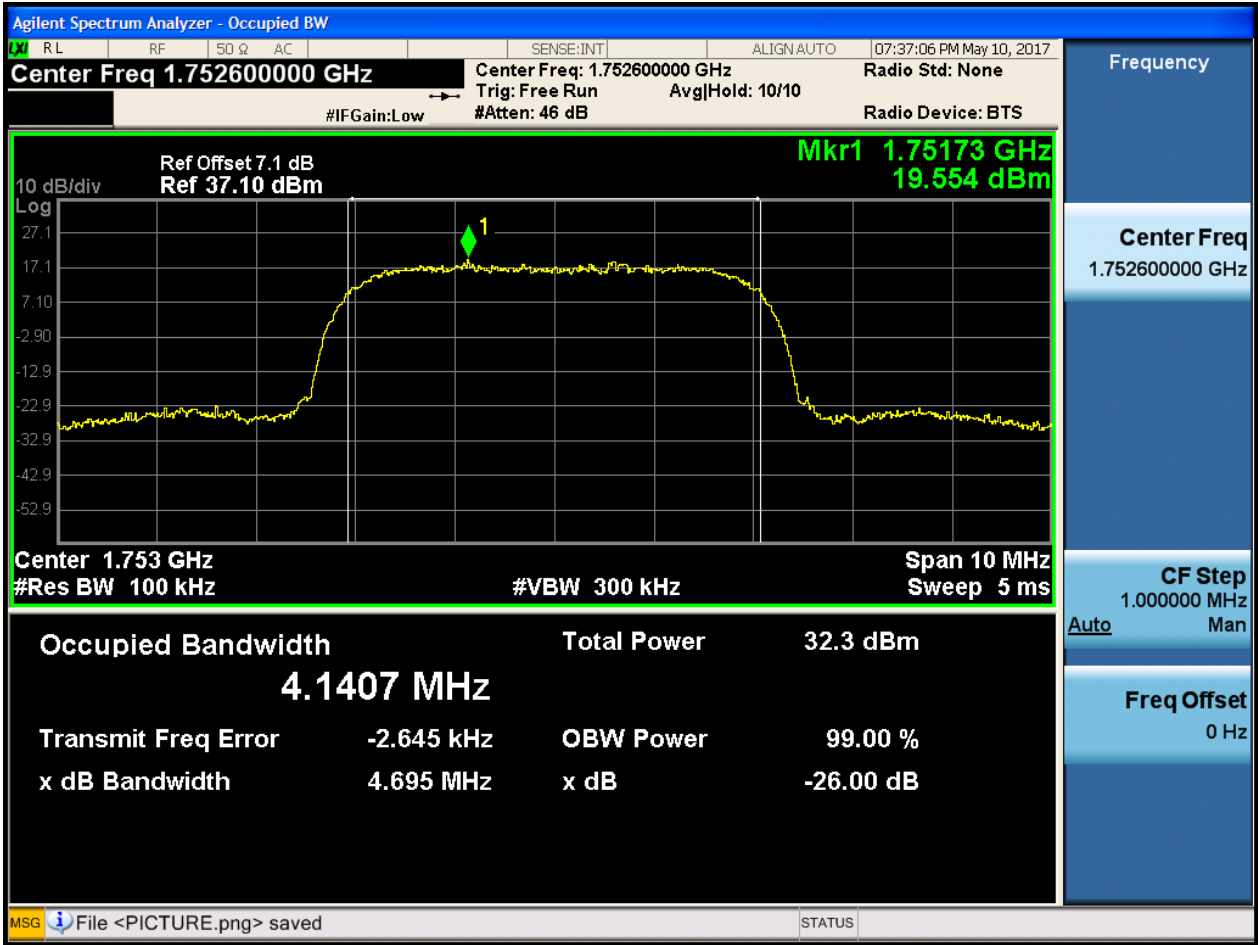


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

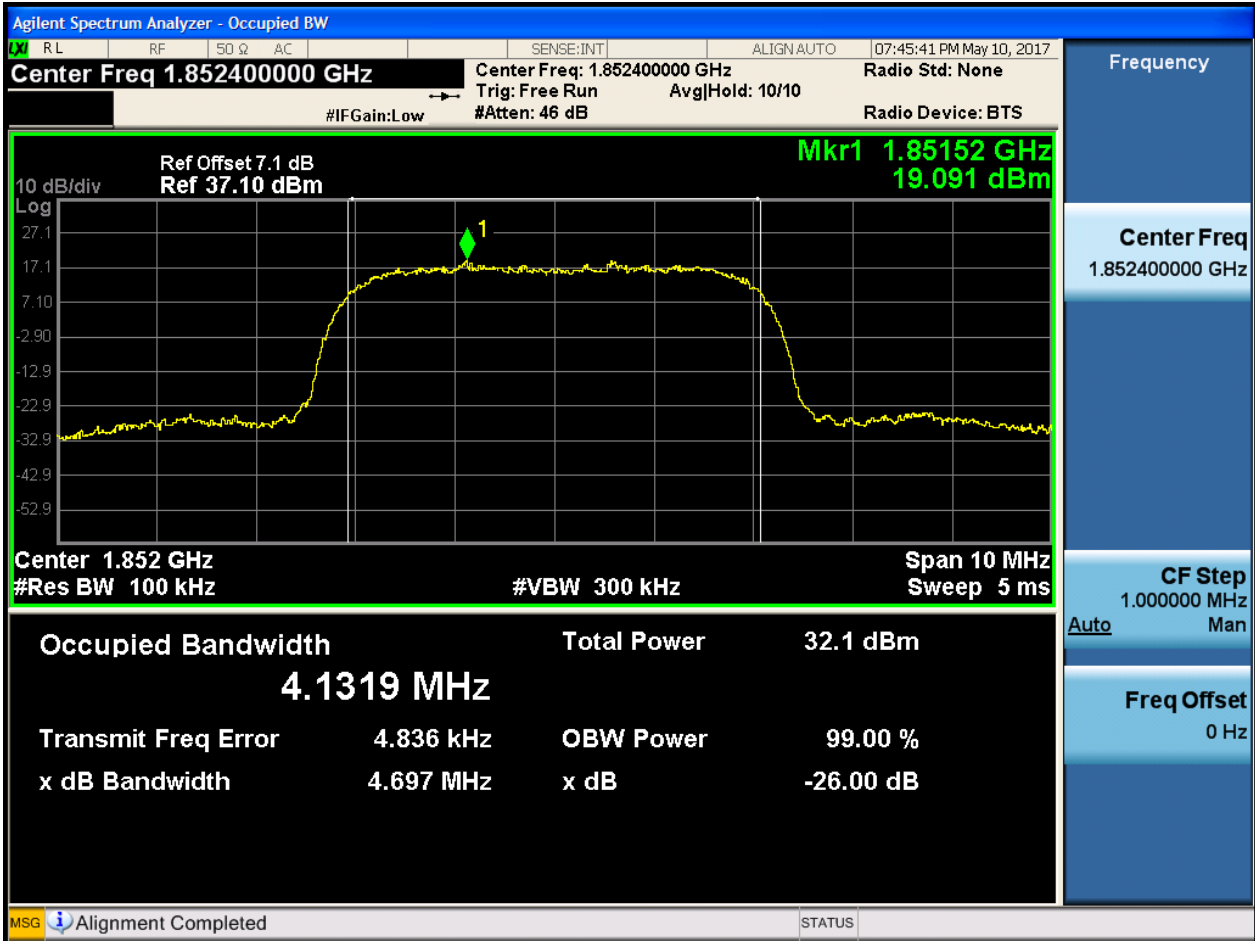




4.1.3 Test Band = WCDMA1900

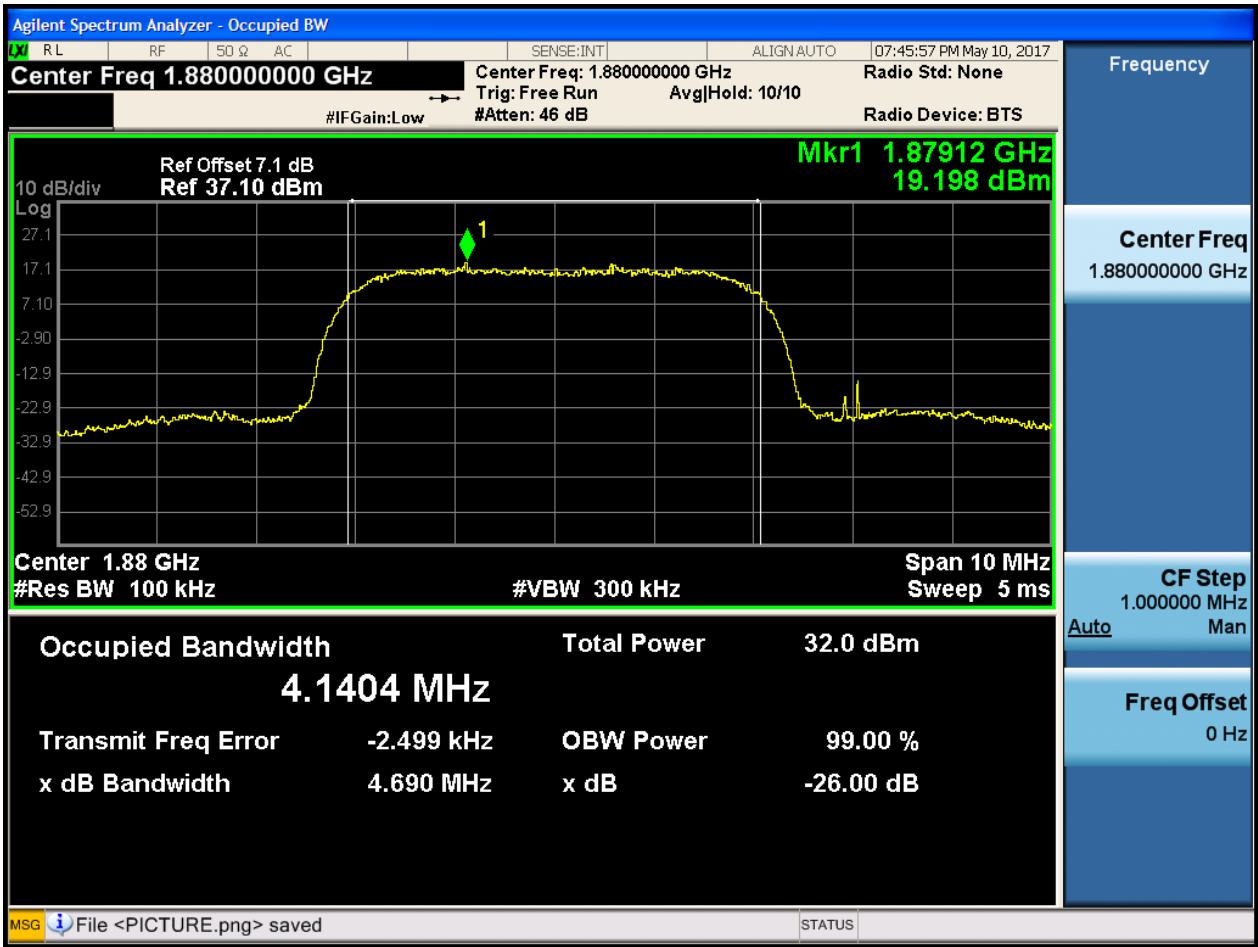
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



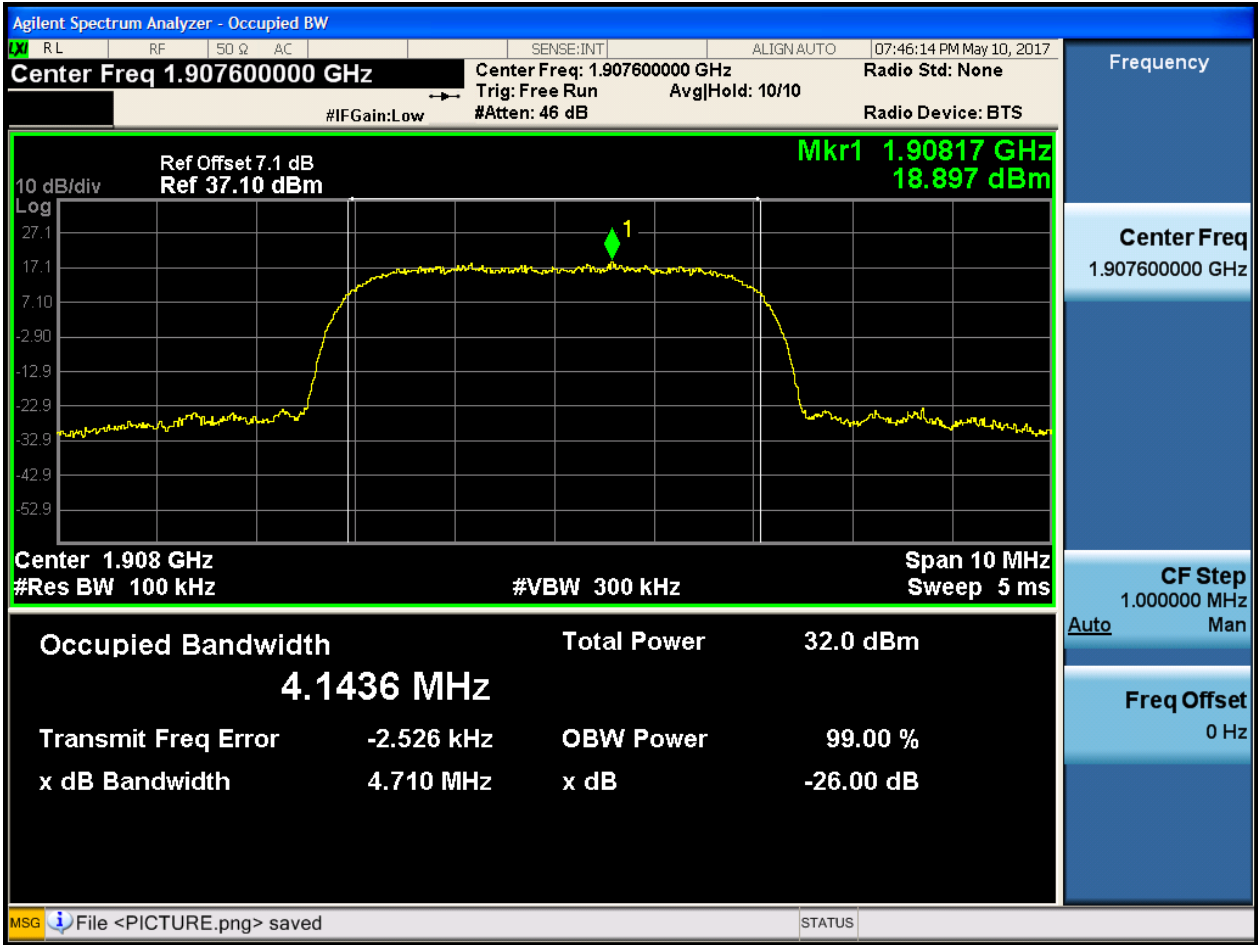


4.1.3.1.2 Test Channel = MCH





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 = 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

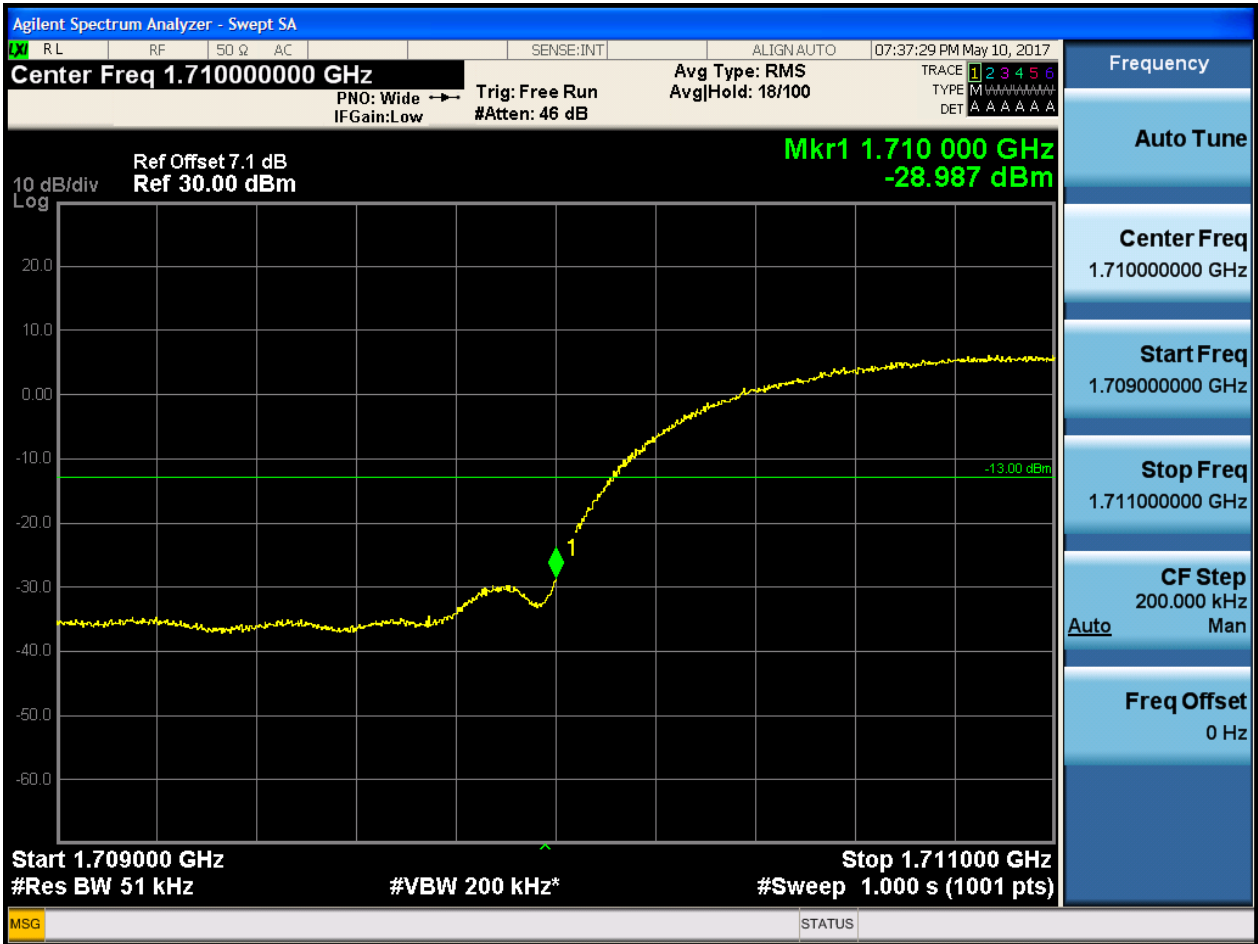




5.1.2 Test Band = WCDMA1700

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 = WCDMA1900

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.

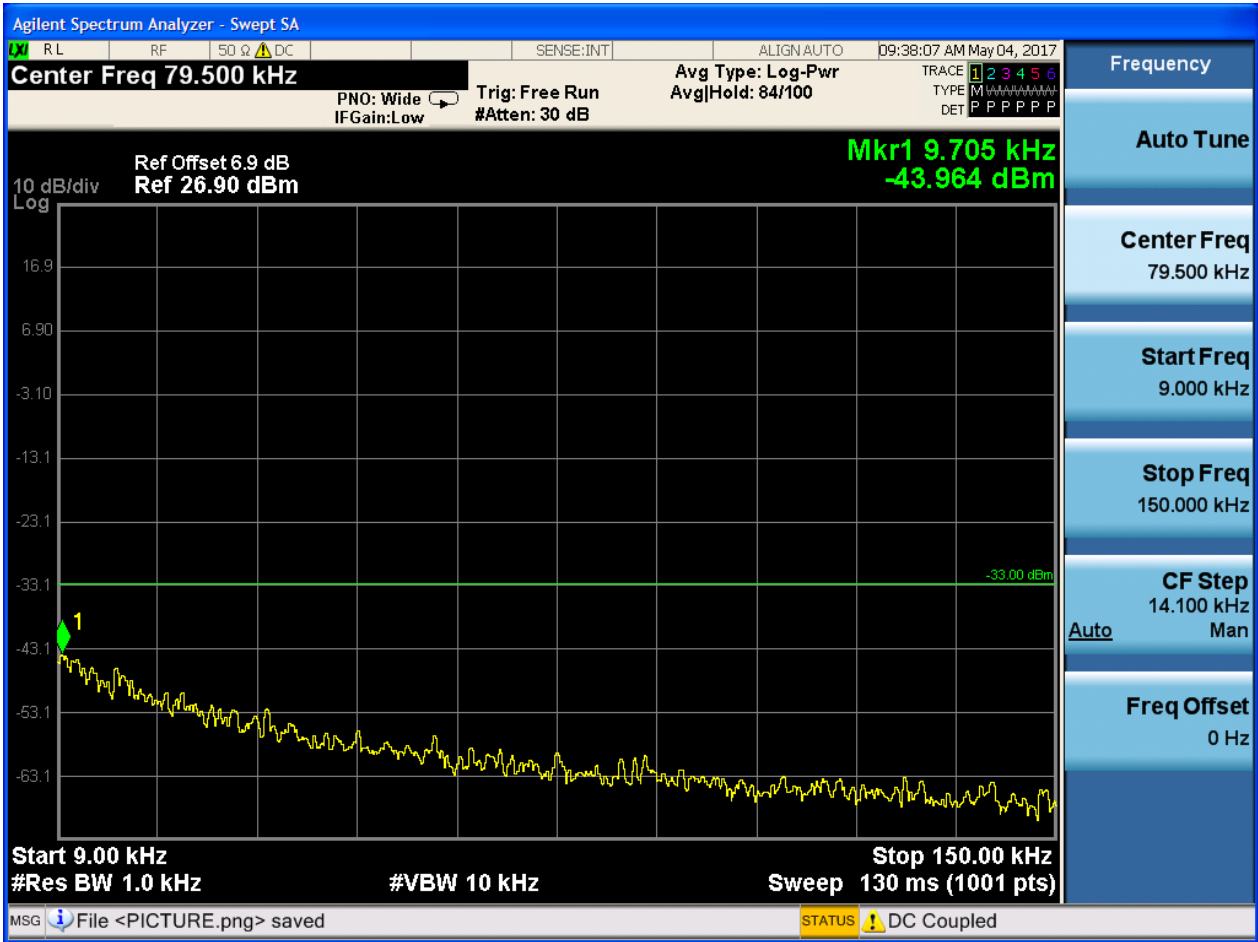
Part I - Test Plots

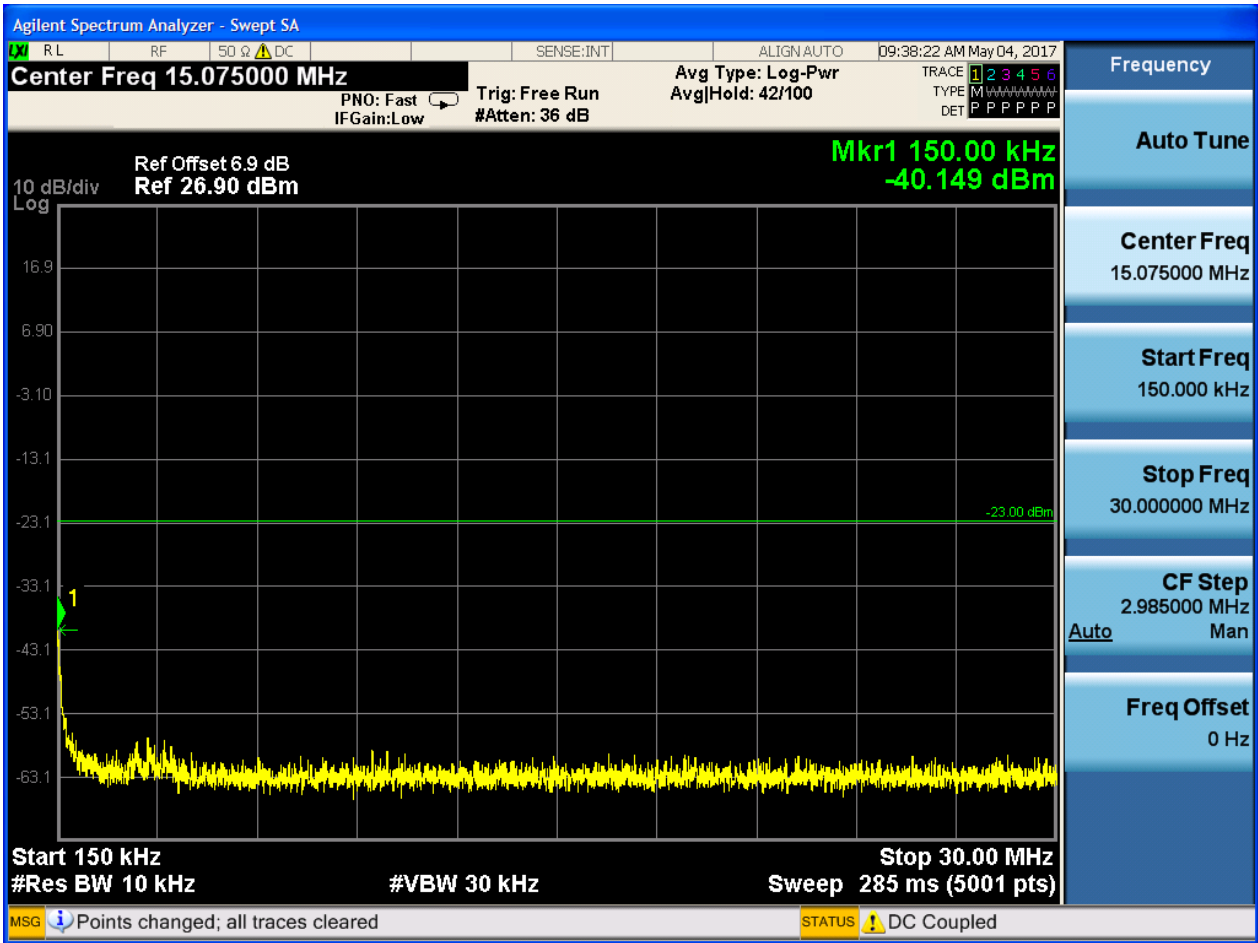
6.1 For UMTS

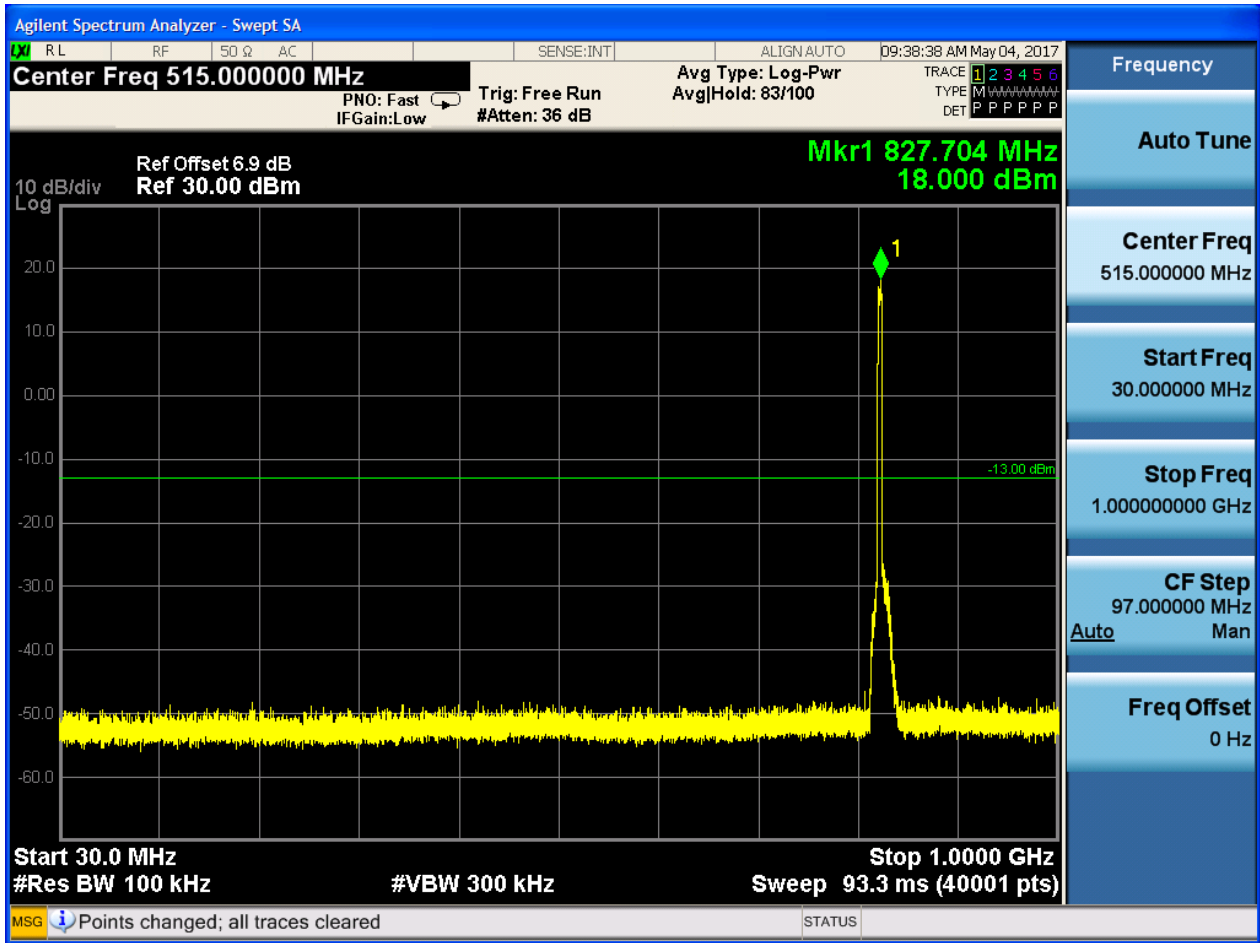
6.1.1 Test Band = WCDMA850

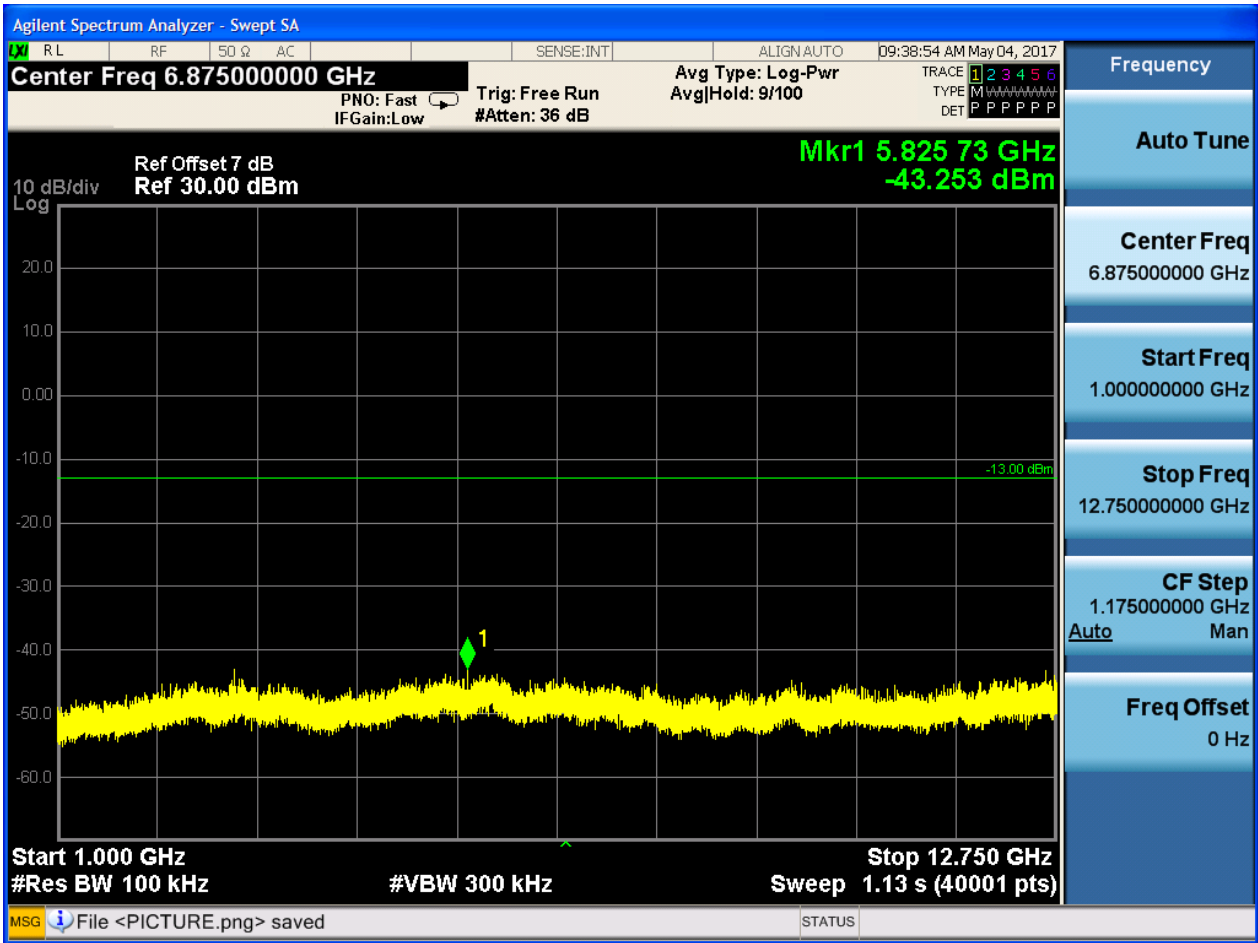
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



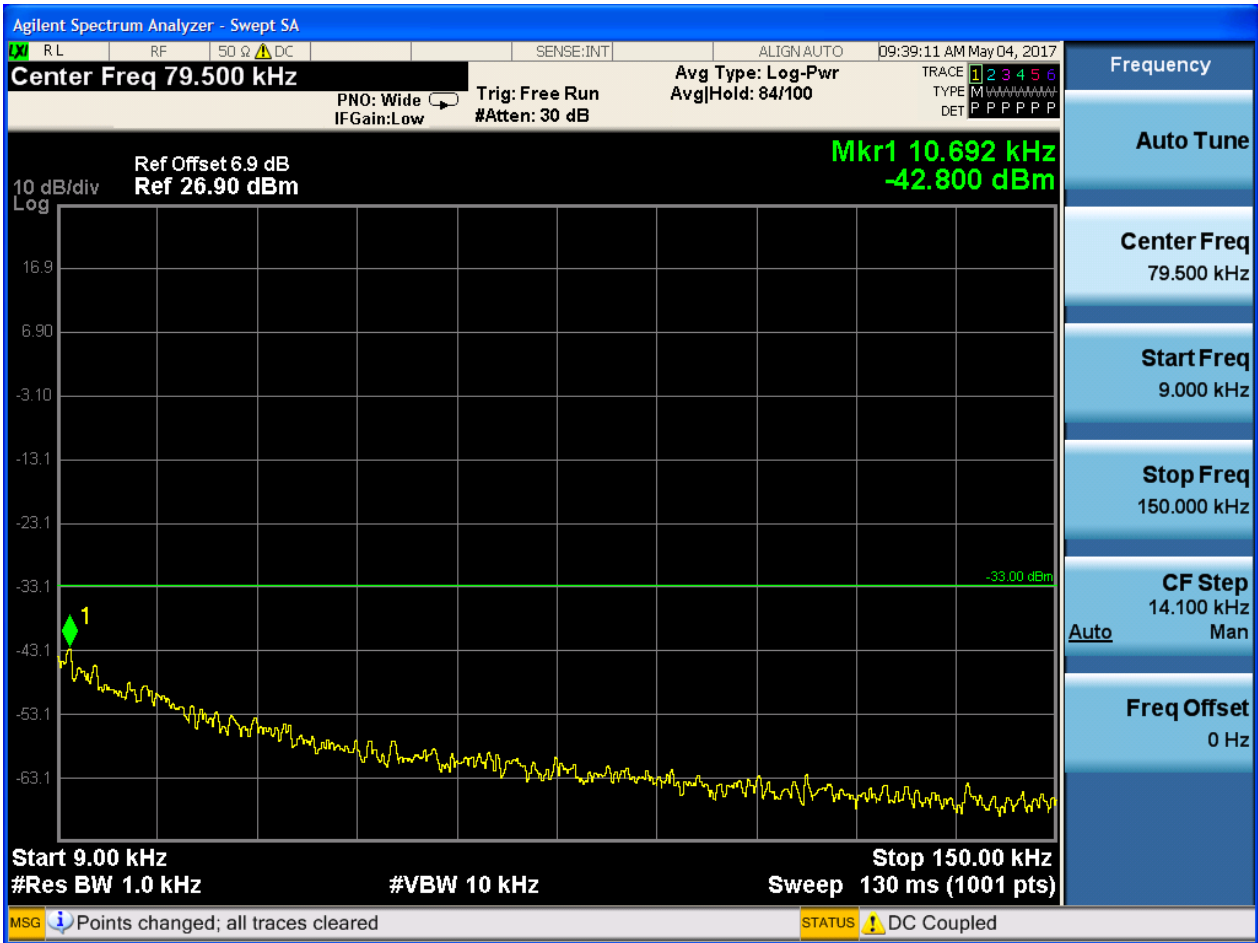


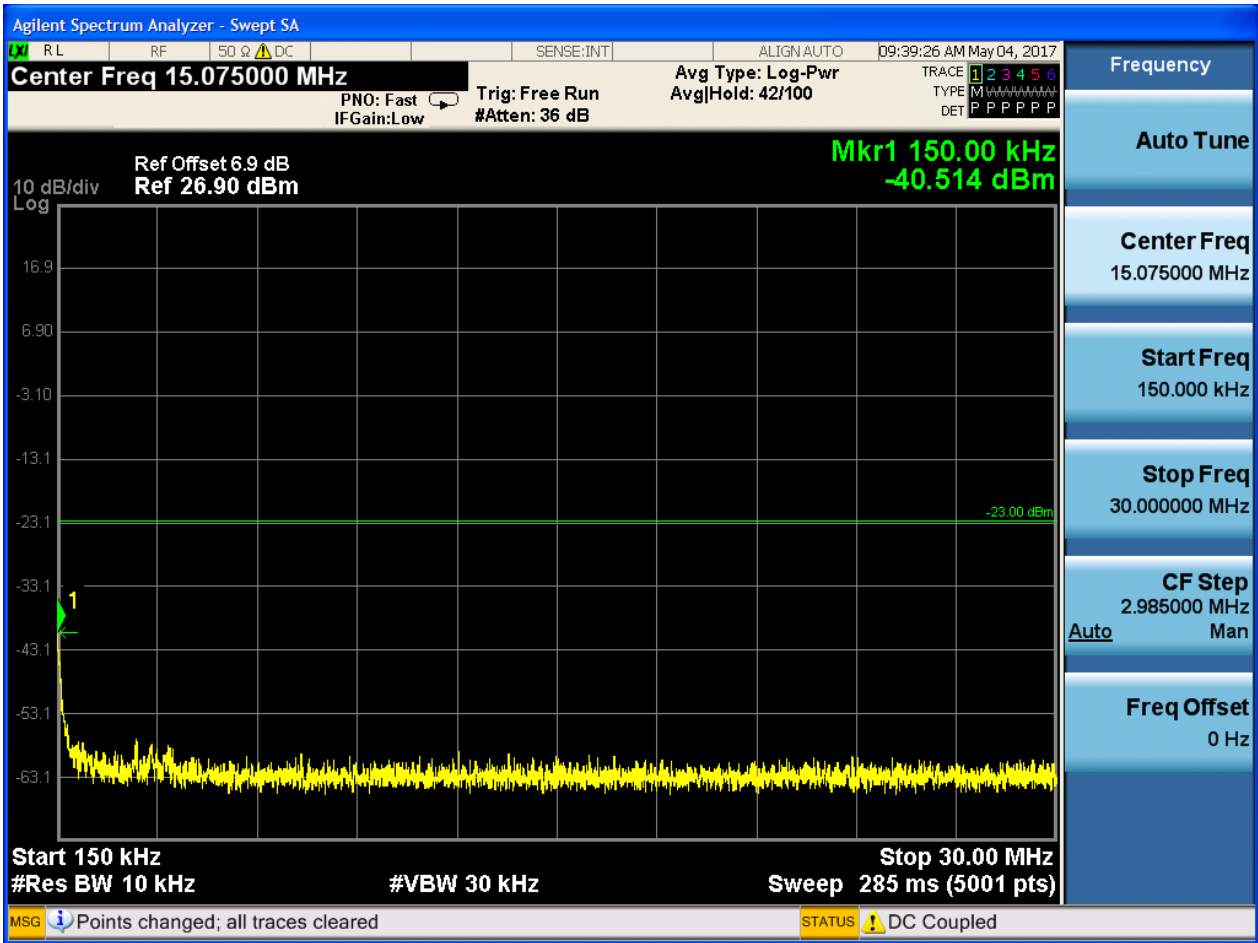


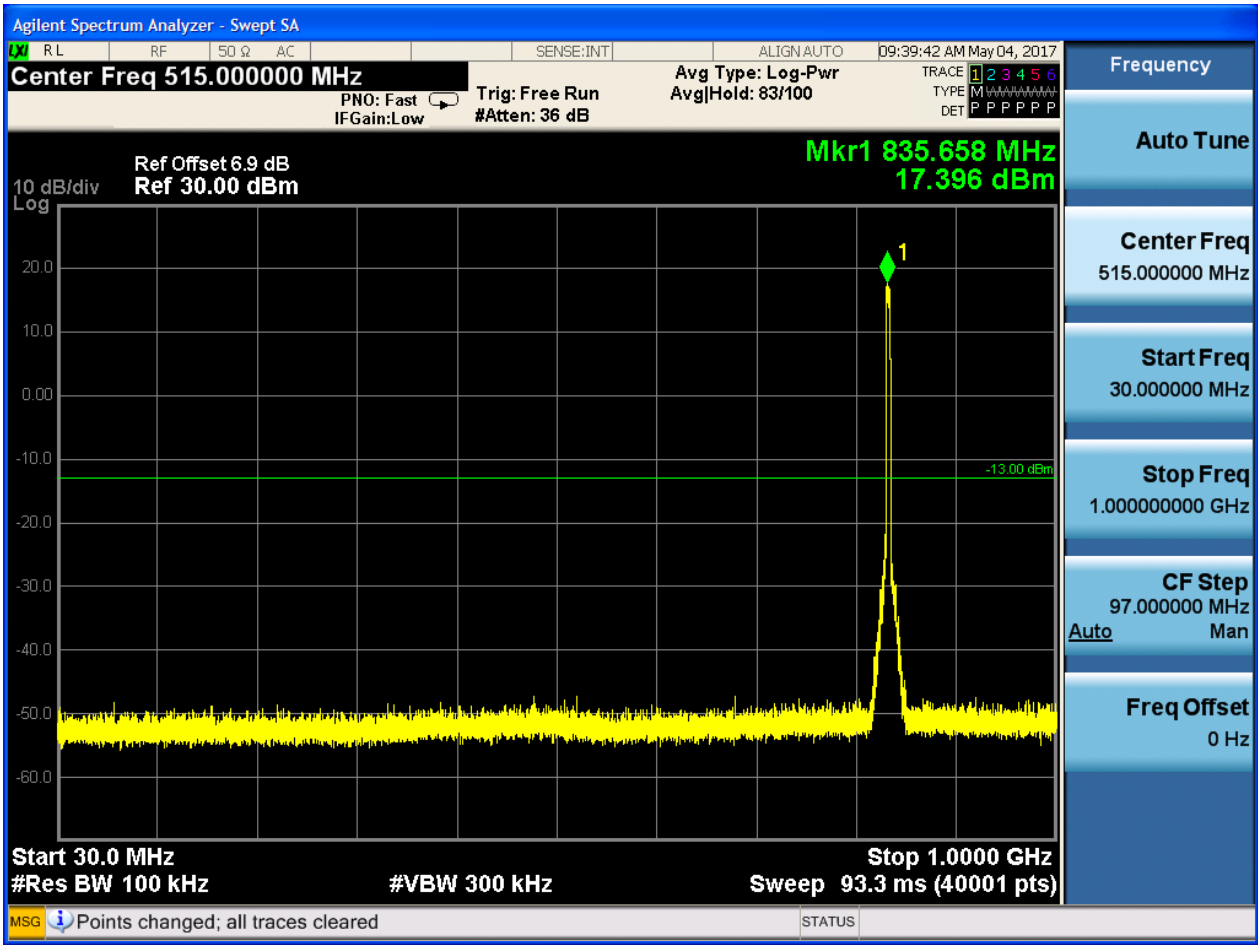


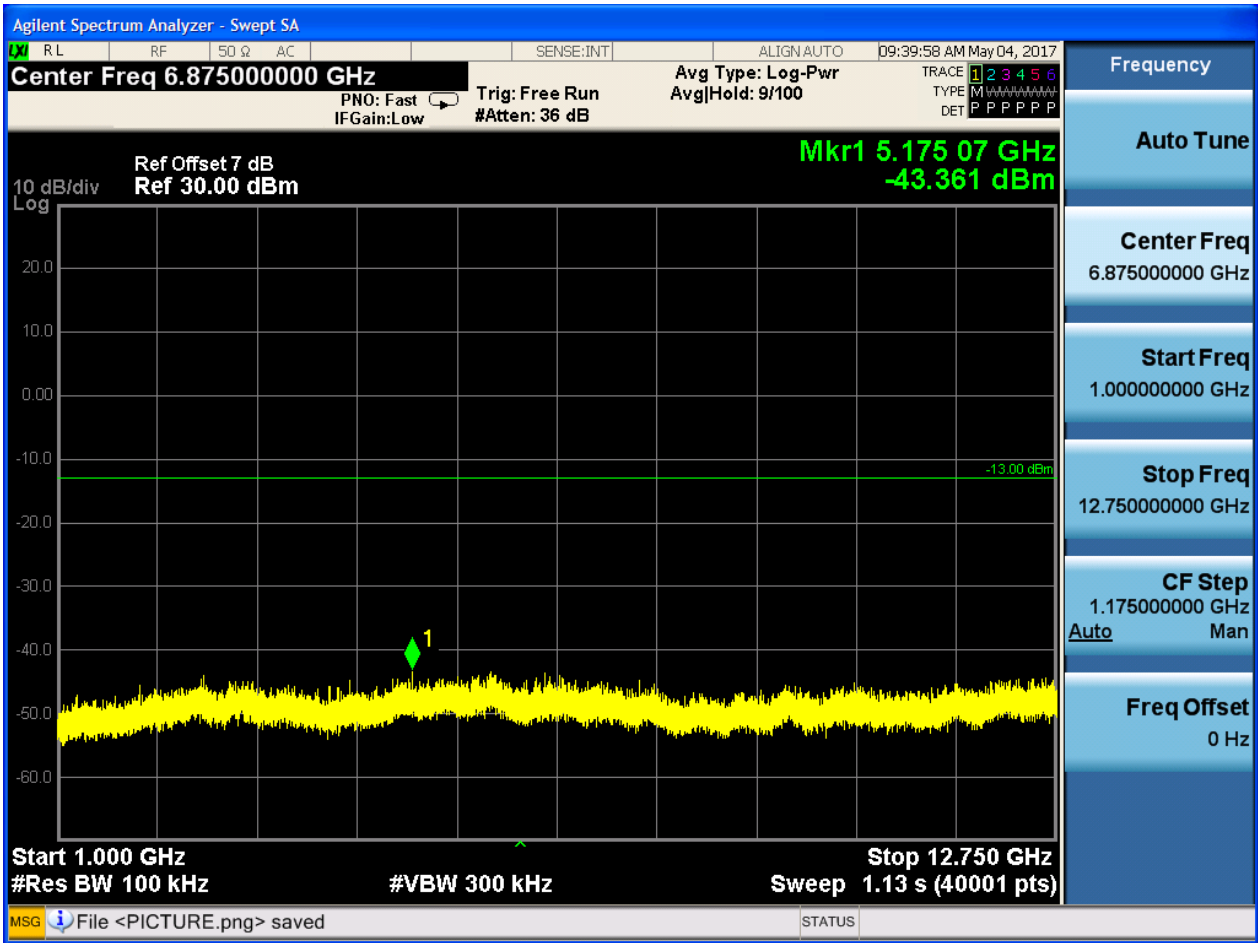


6.1.1.1.2 Test Channel = MCH



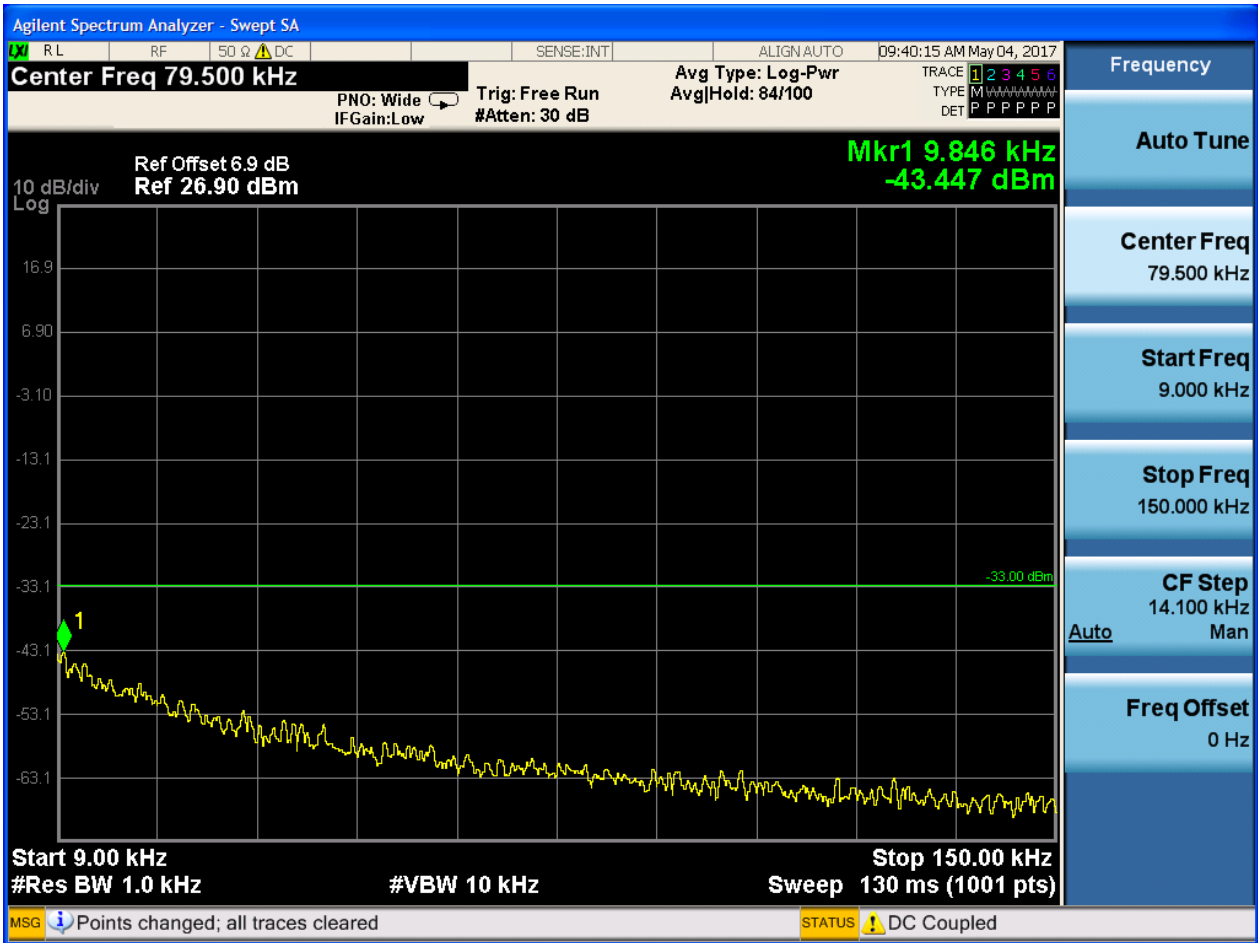


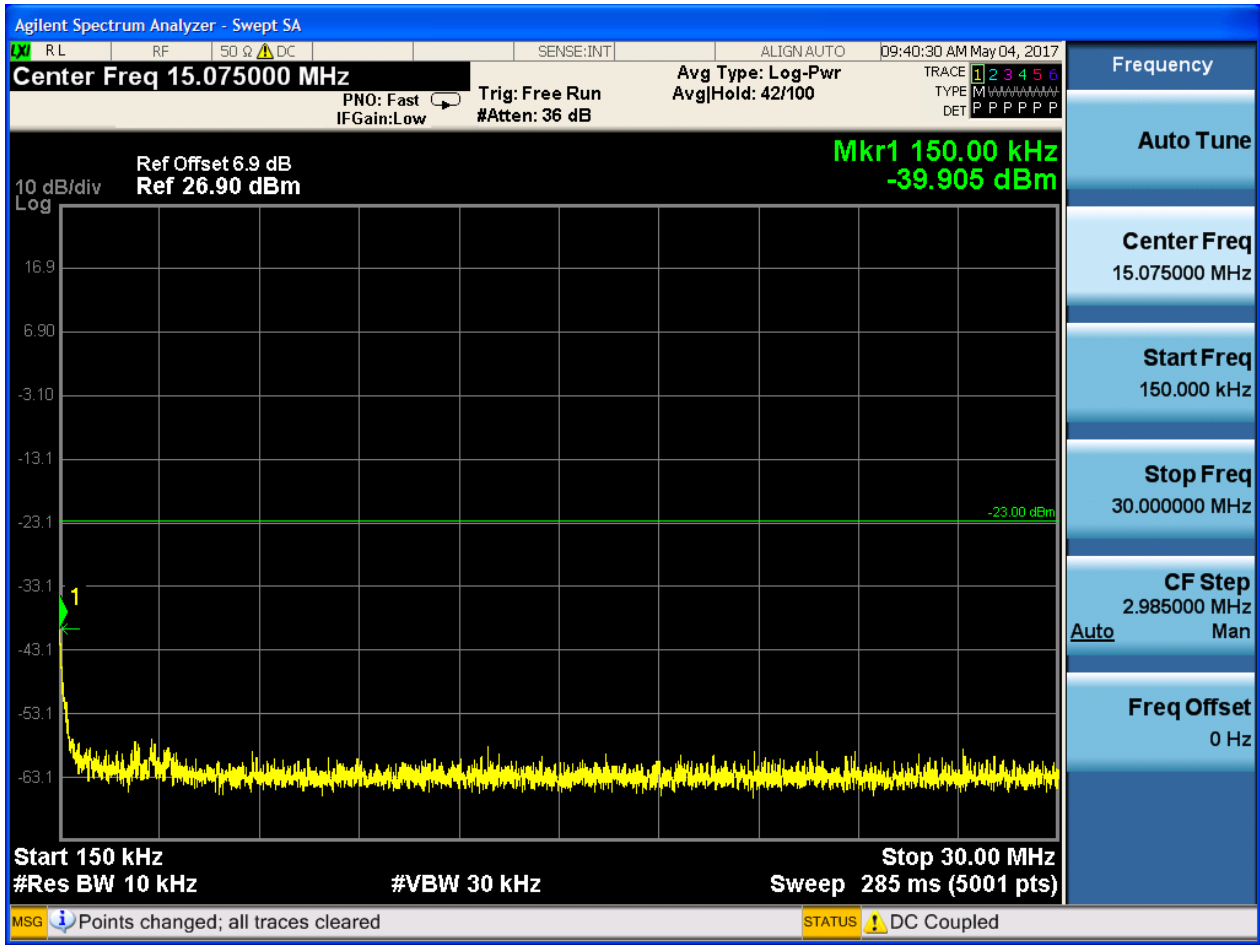


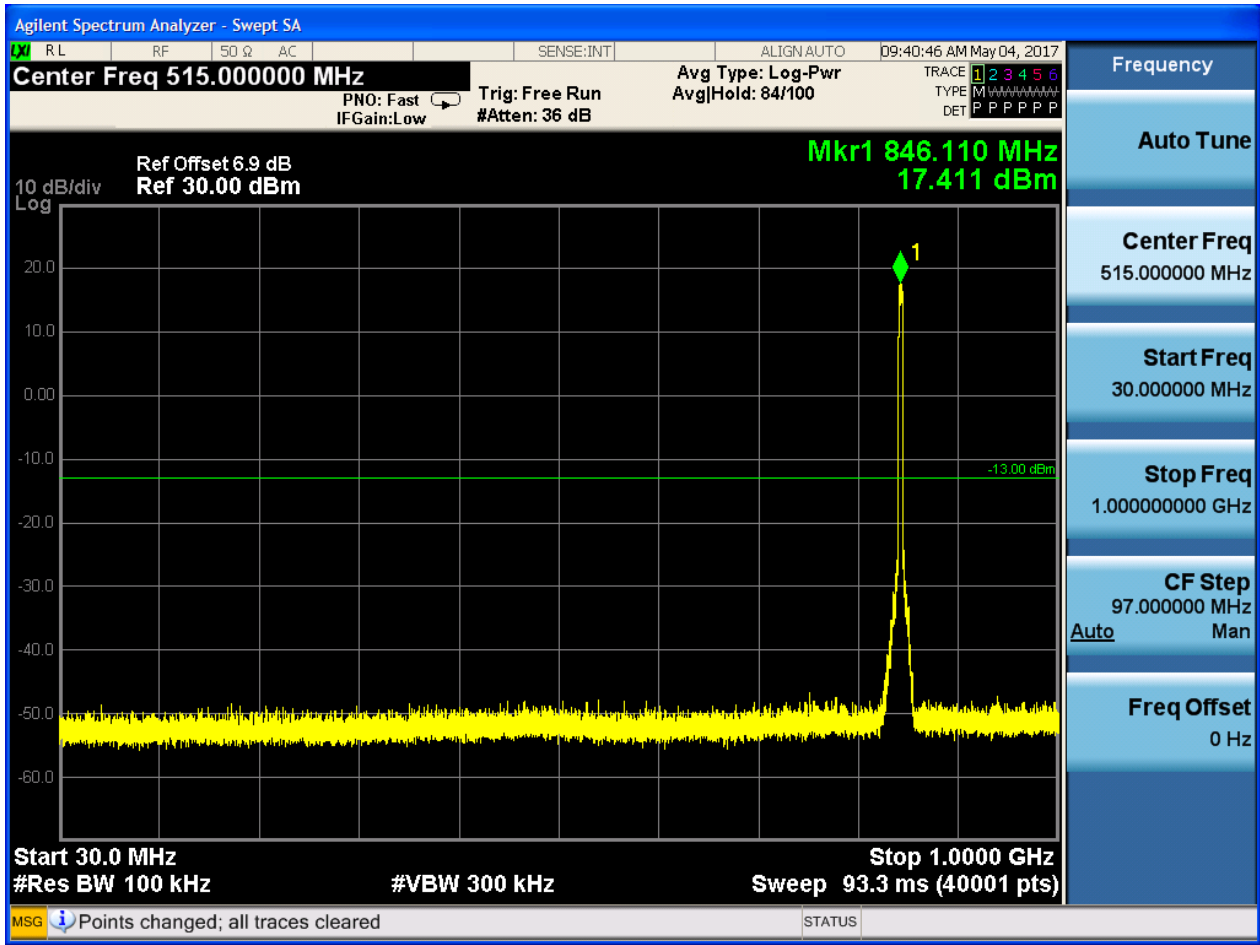


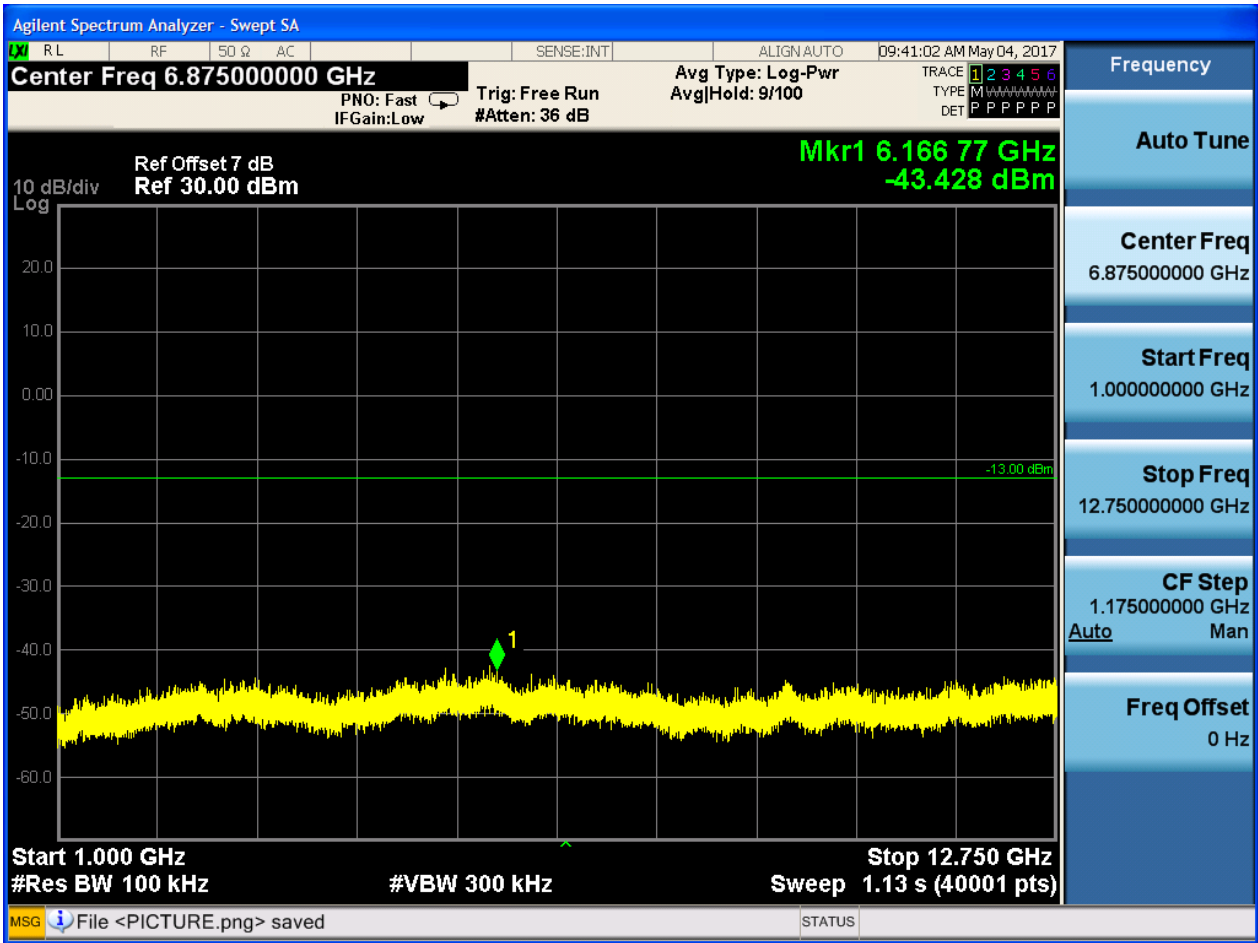


6.1.1.1.3 Test Channel = HCH







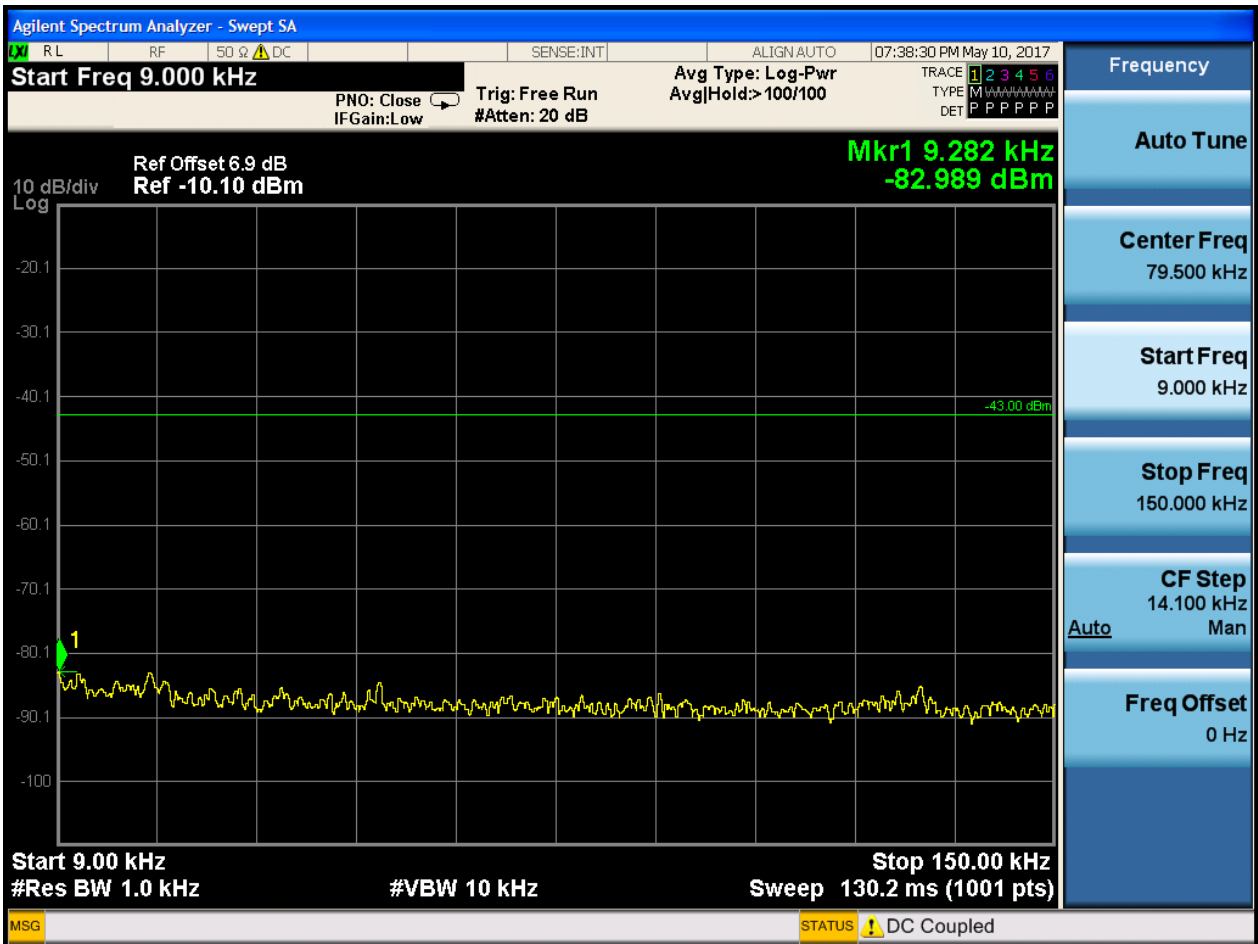


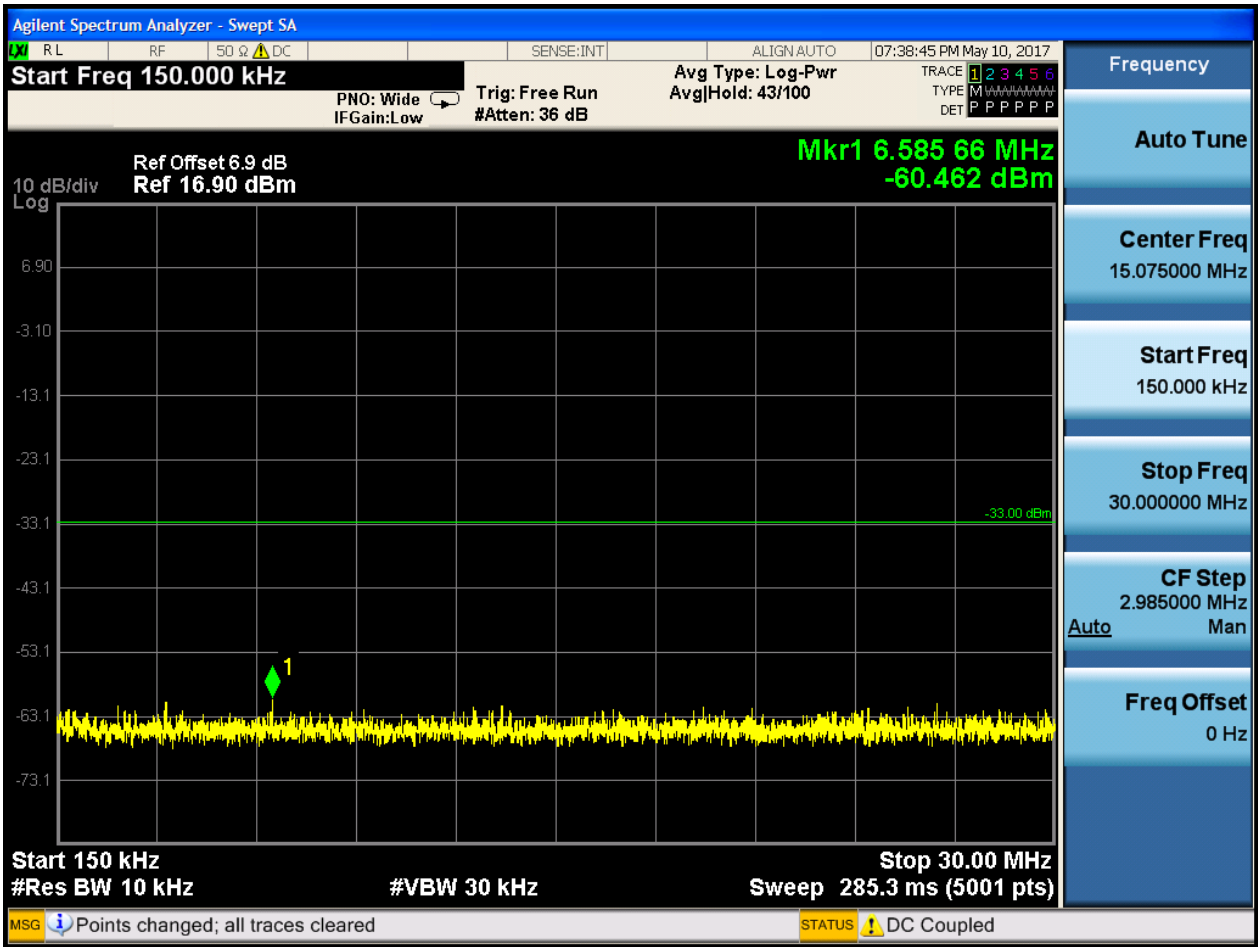


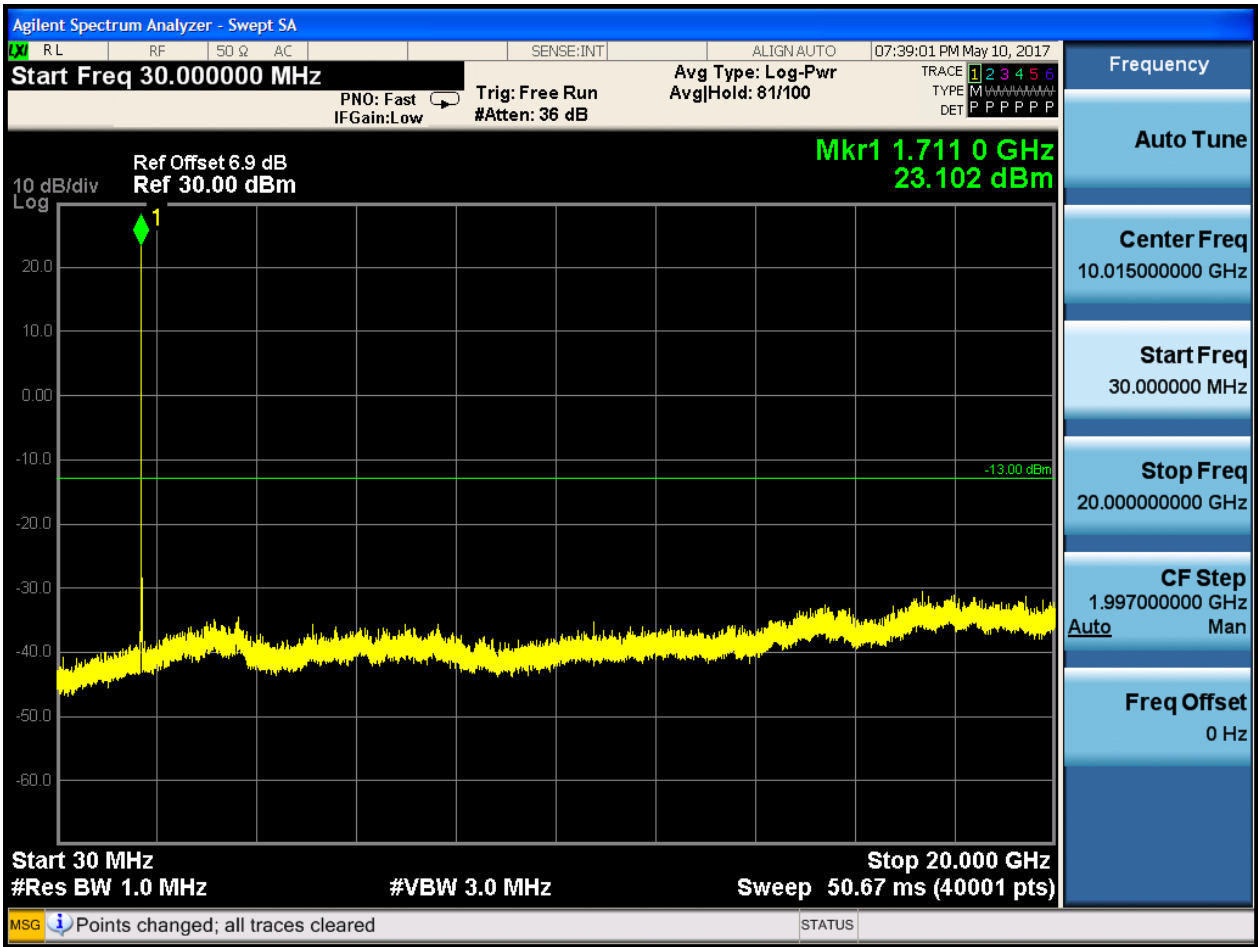
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

6.1.2.1.1 Test Channel = LCH

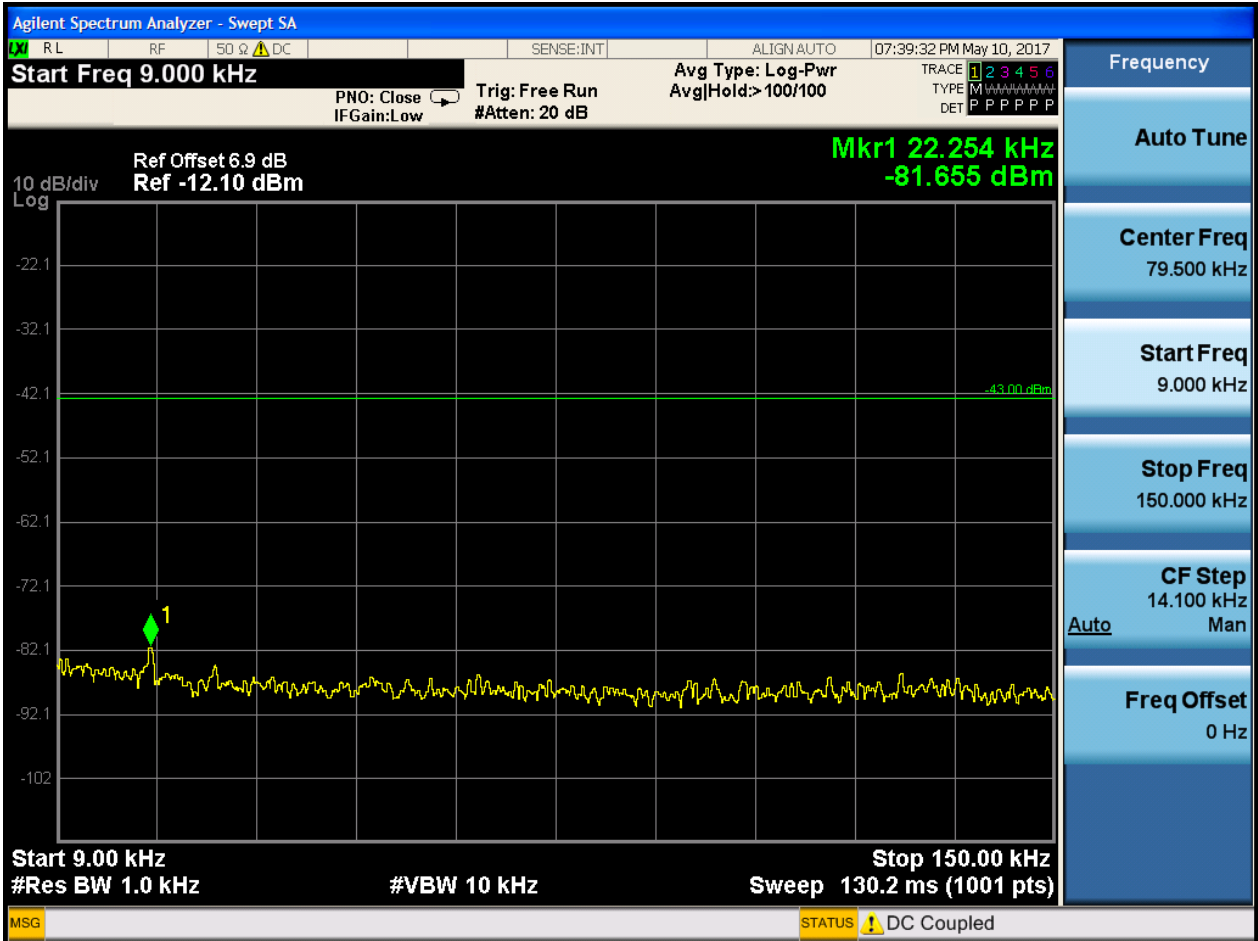


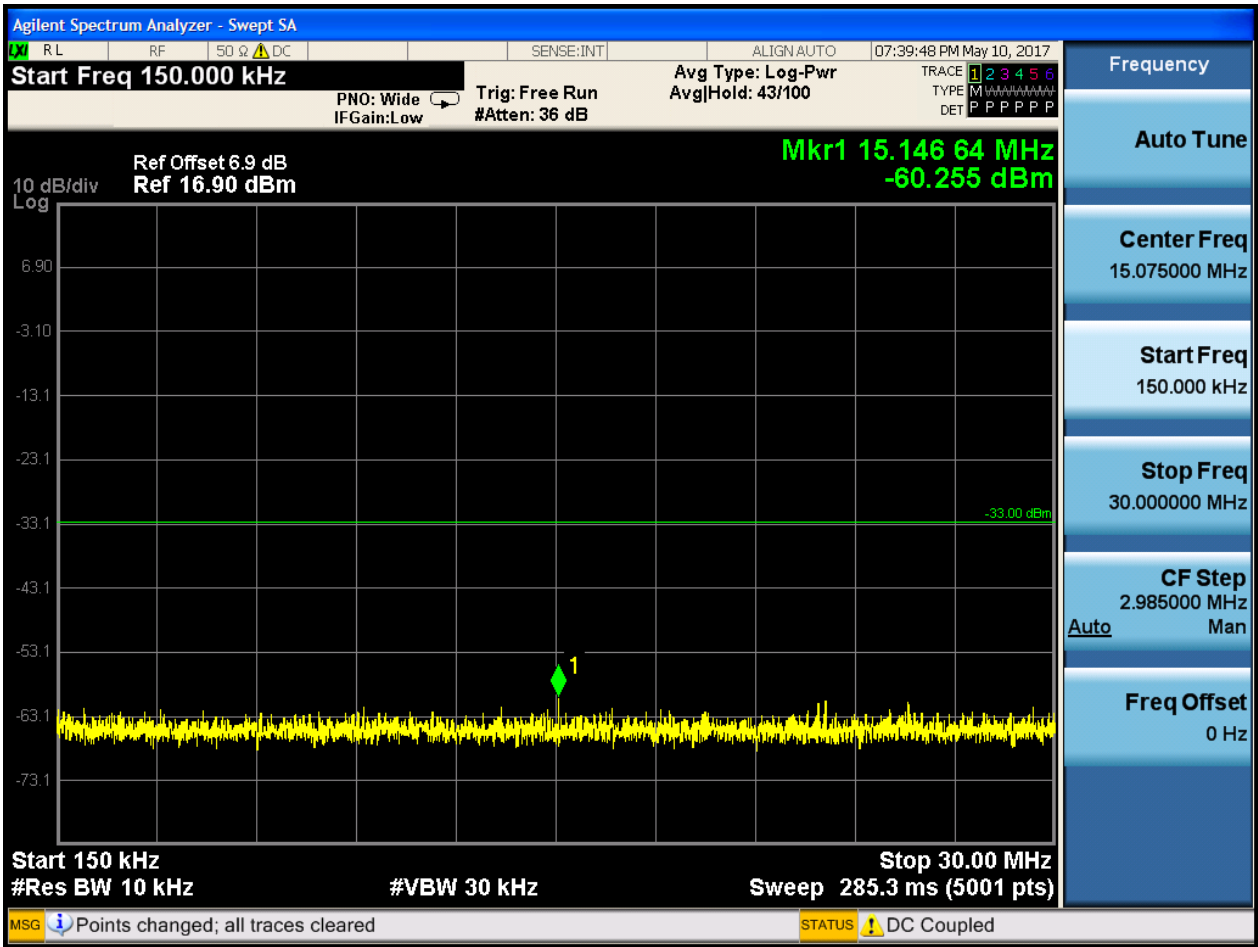


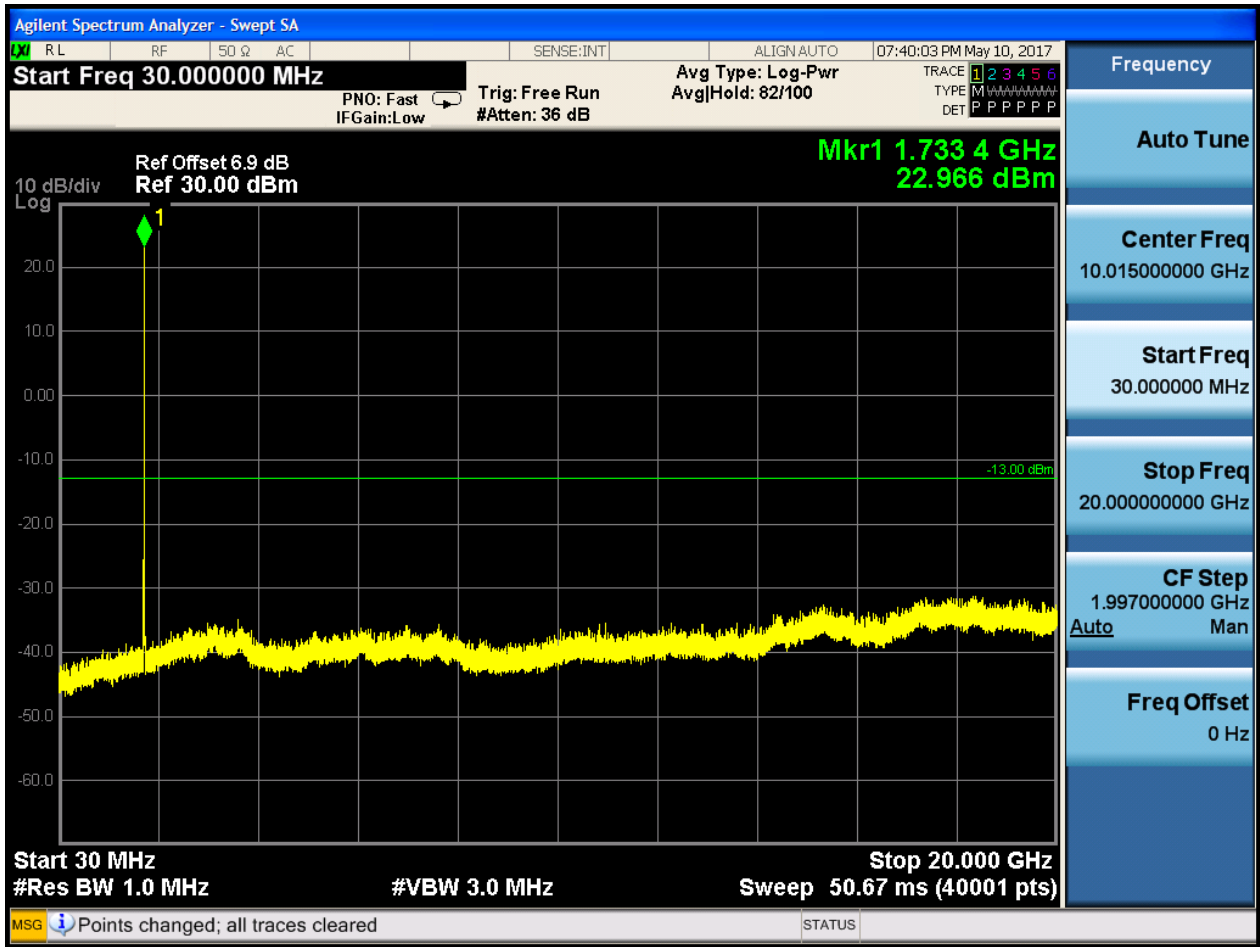




6.1.2.1.2 Test Channel = MCH

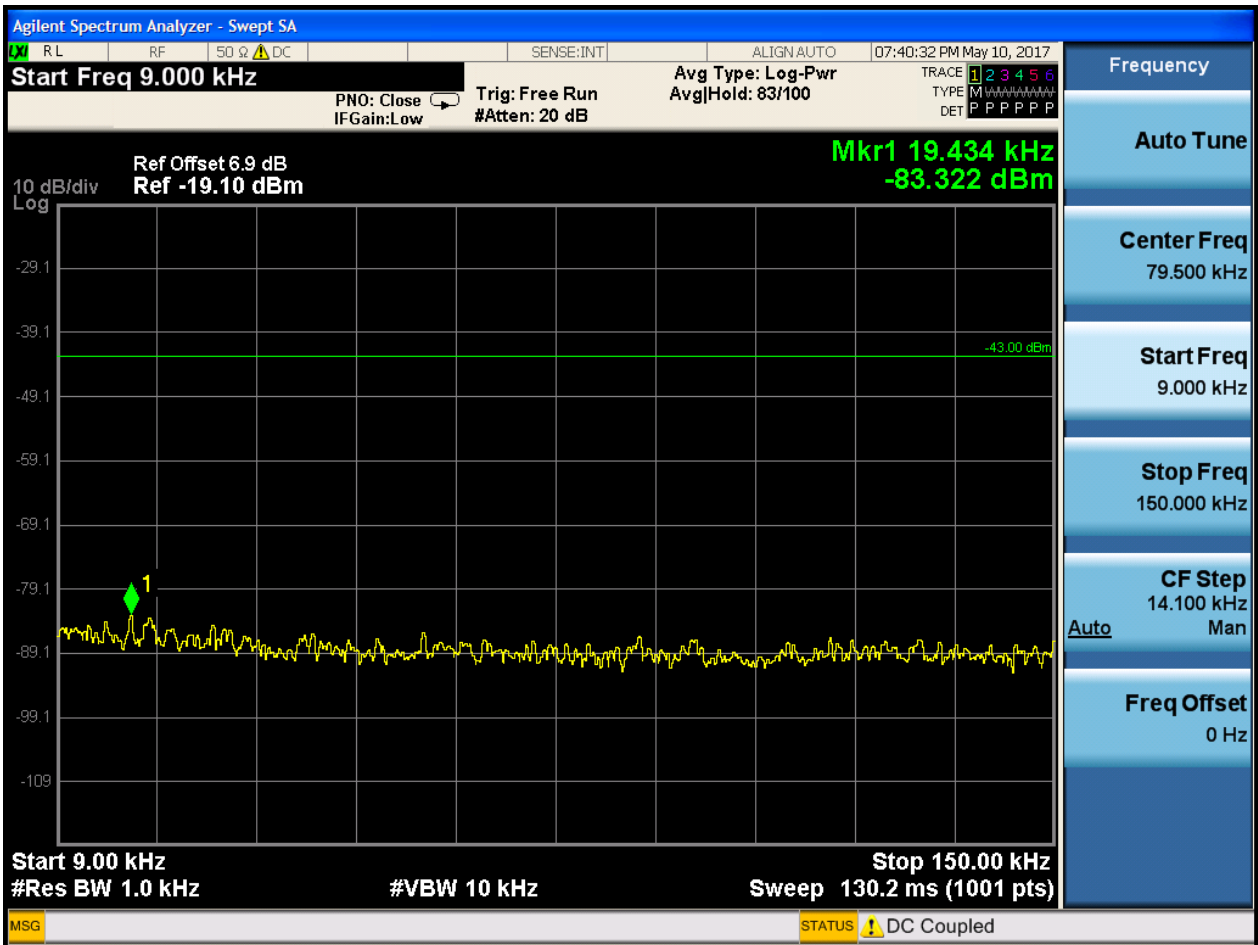


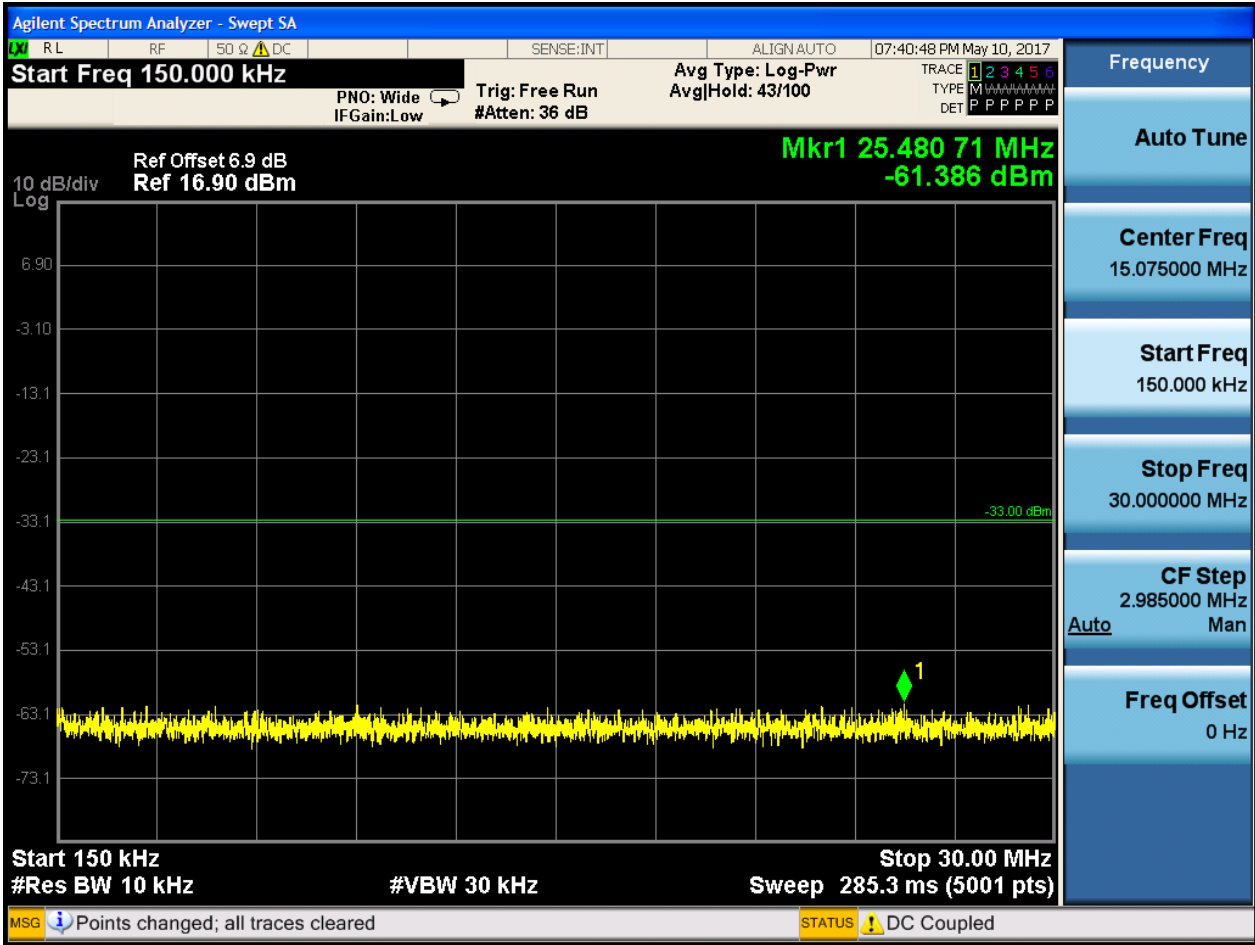


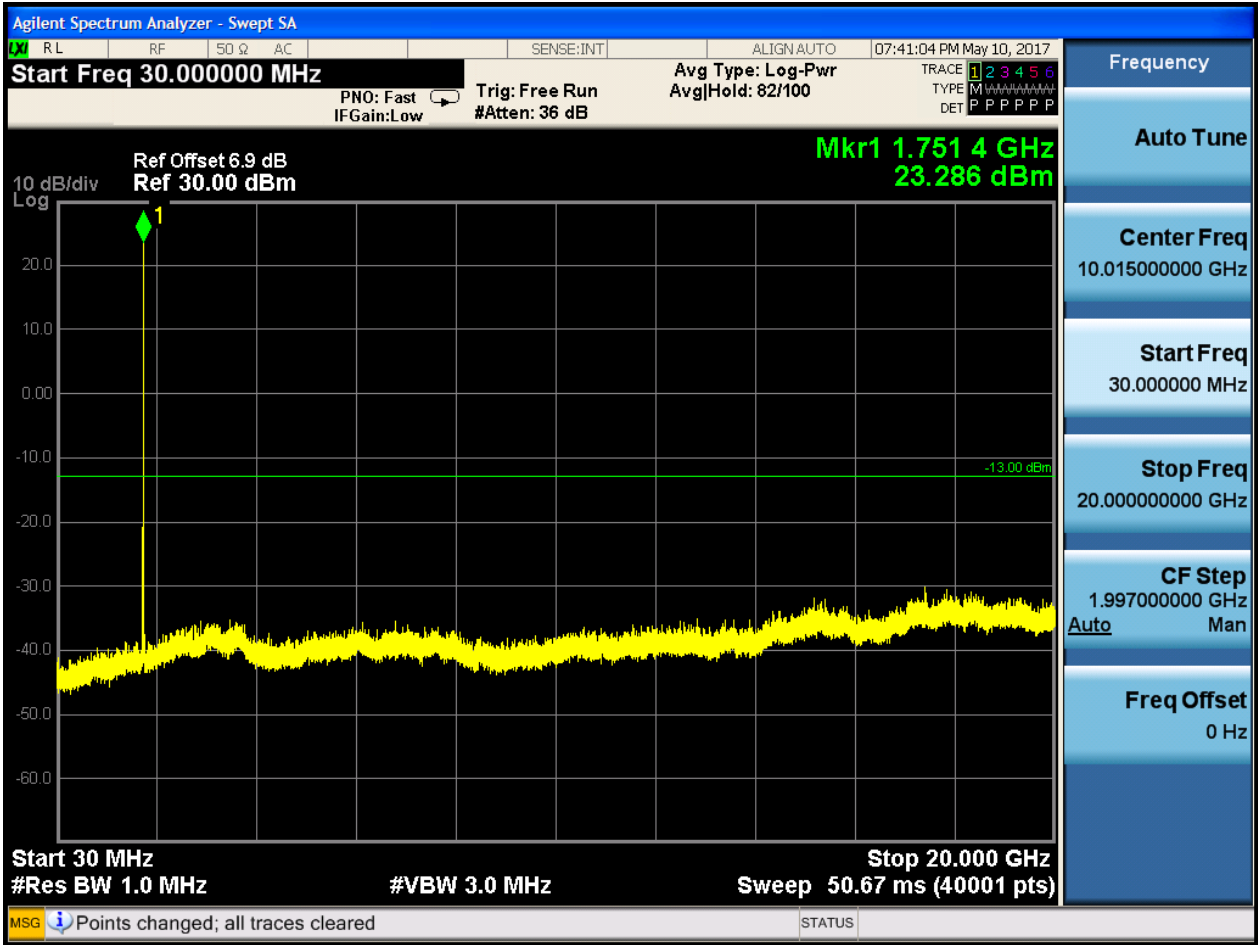




6.1.2.1.3 Test Channel = HCH





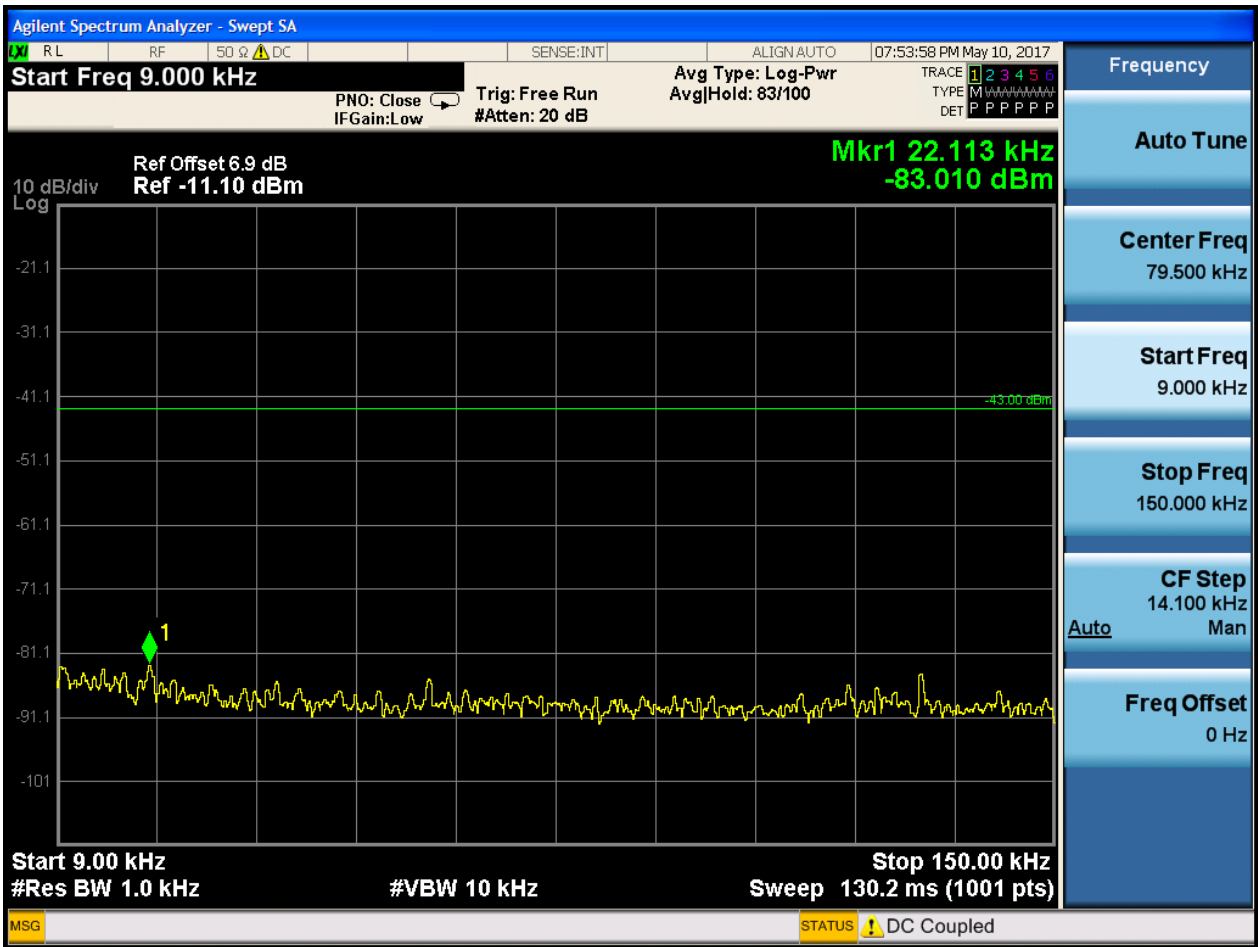


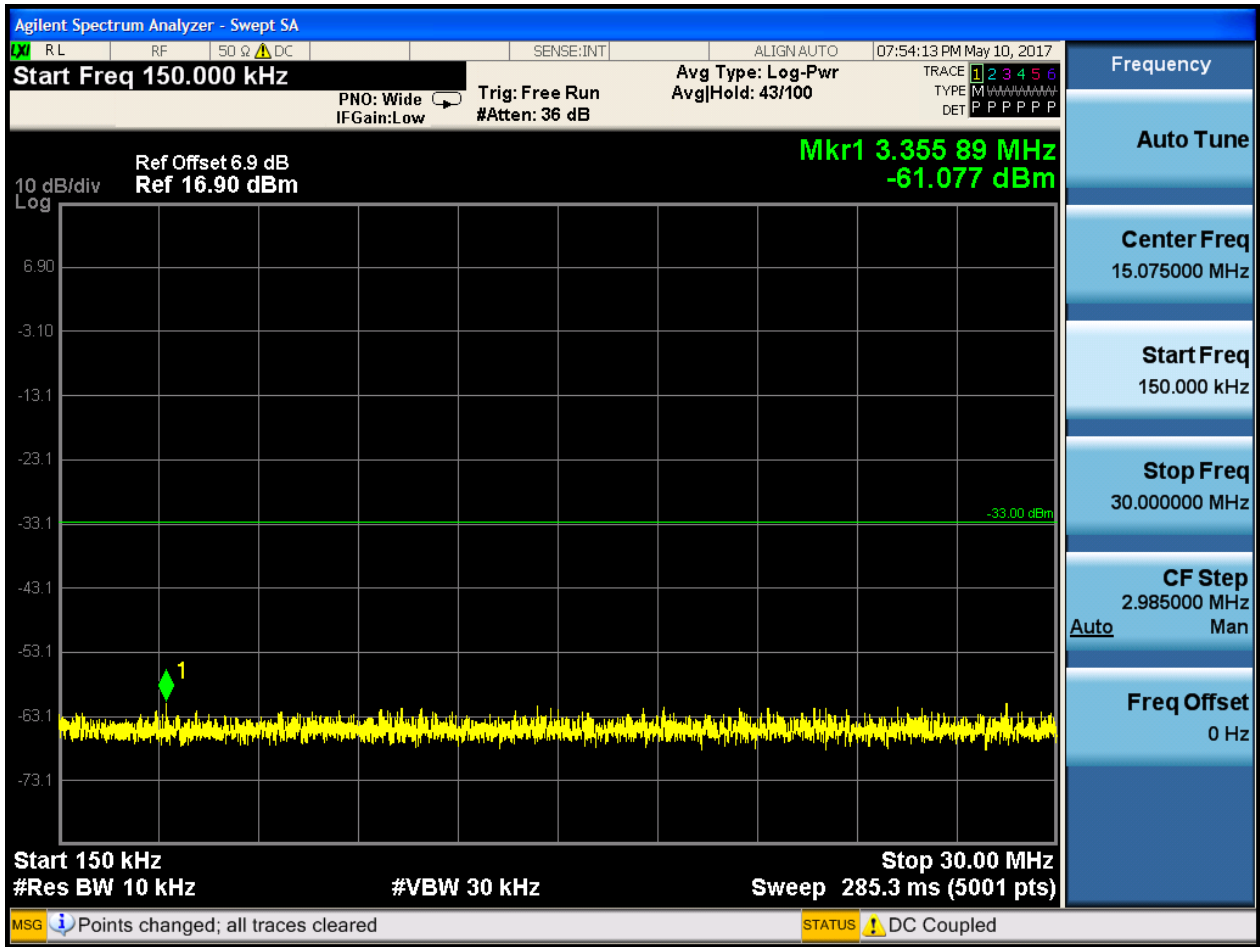


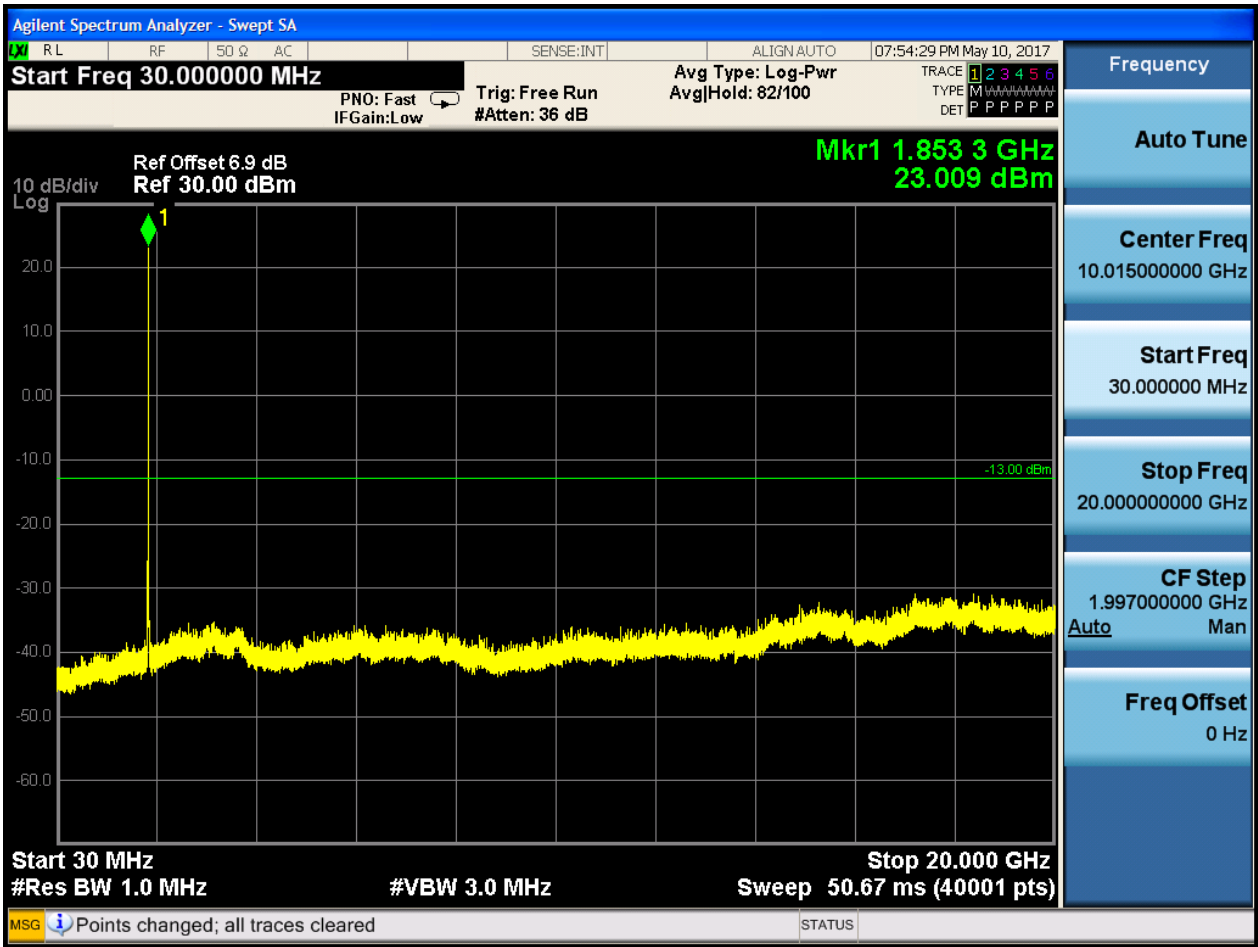
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

6.1.3.1.1 Test Channel = LCH

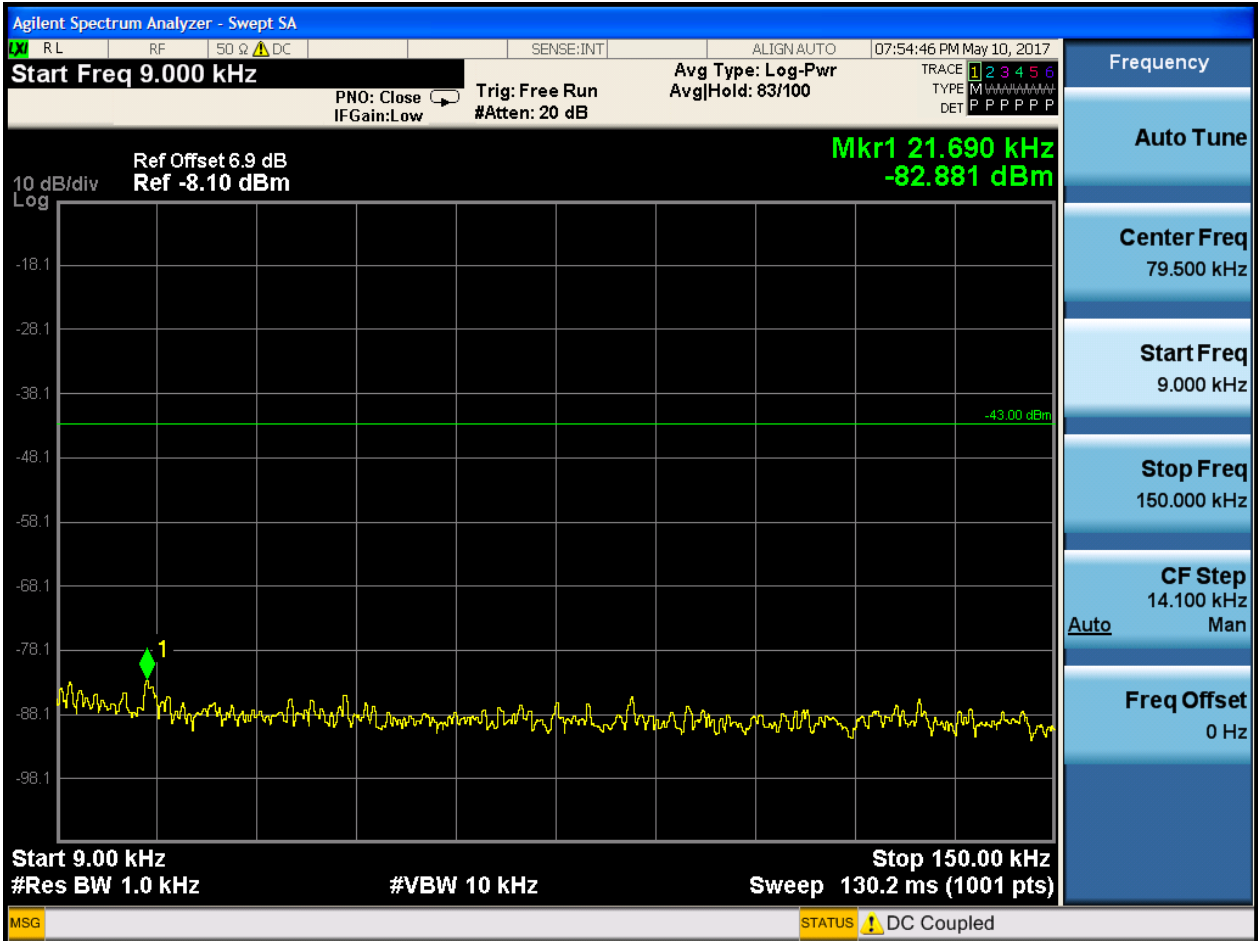


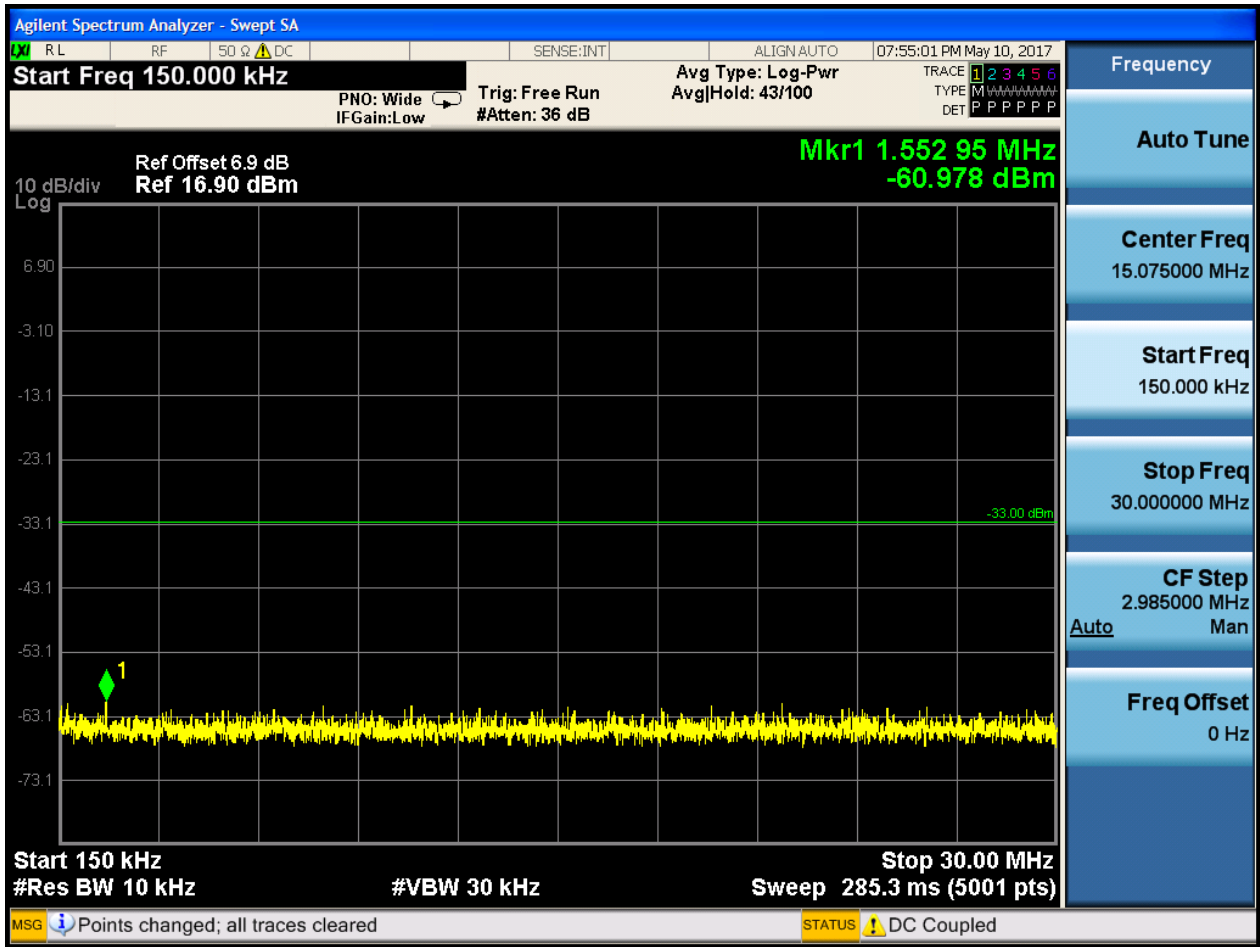


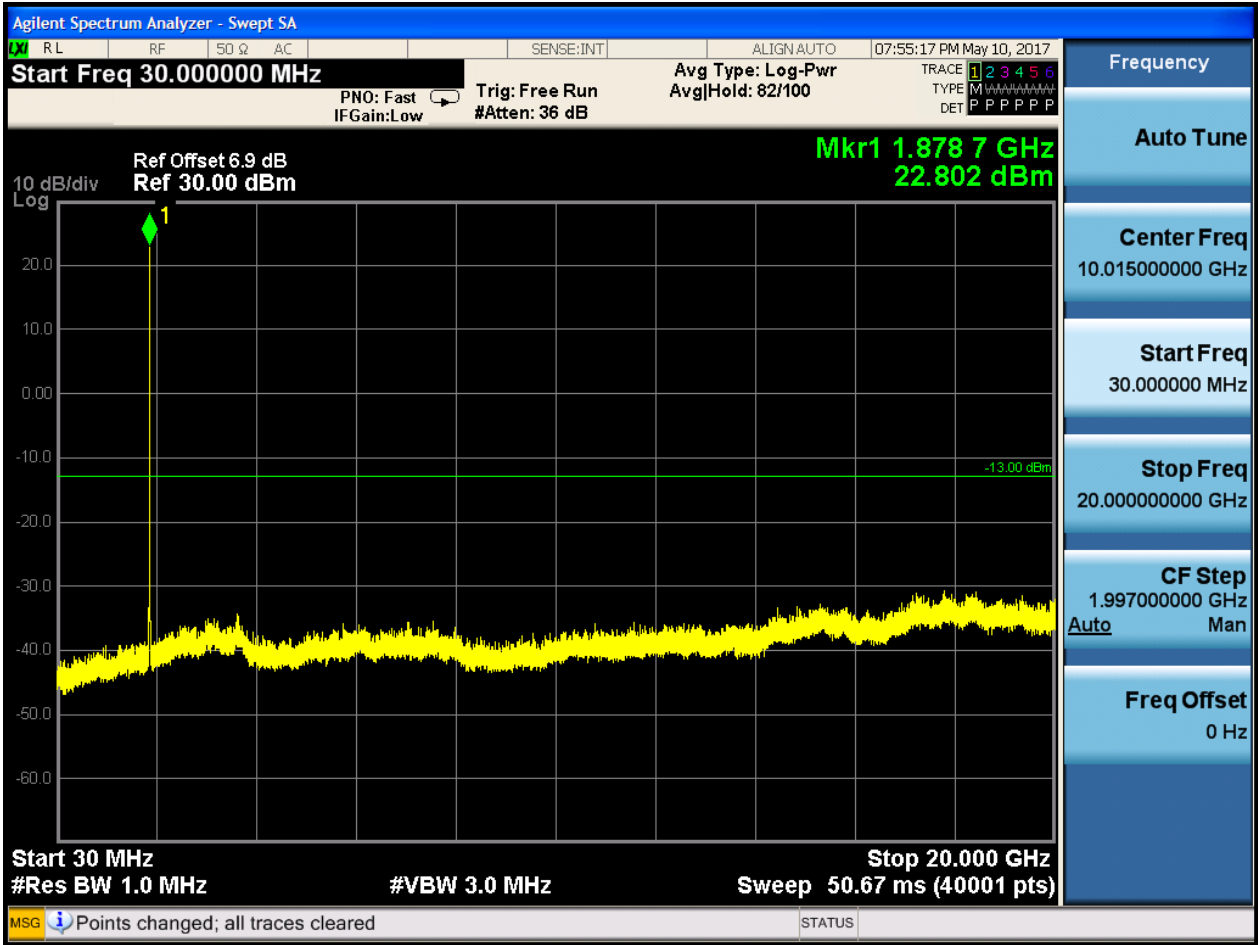




6.1.3.1.2 Test Channel = MCH

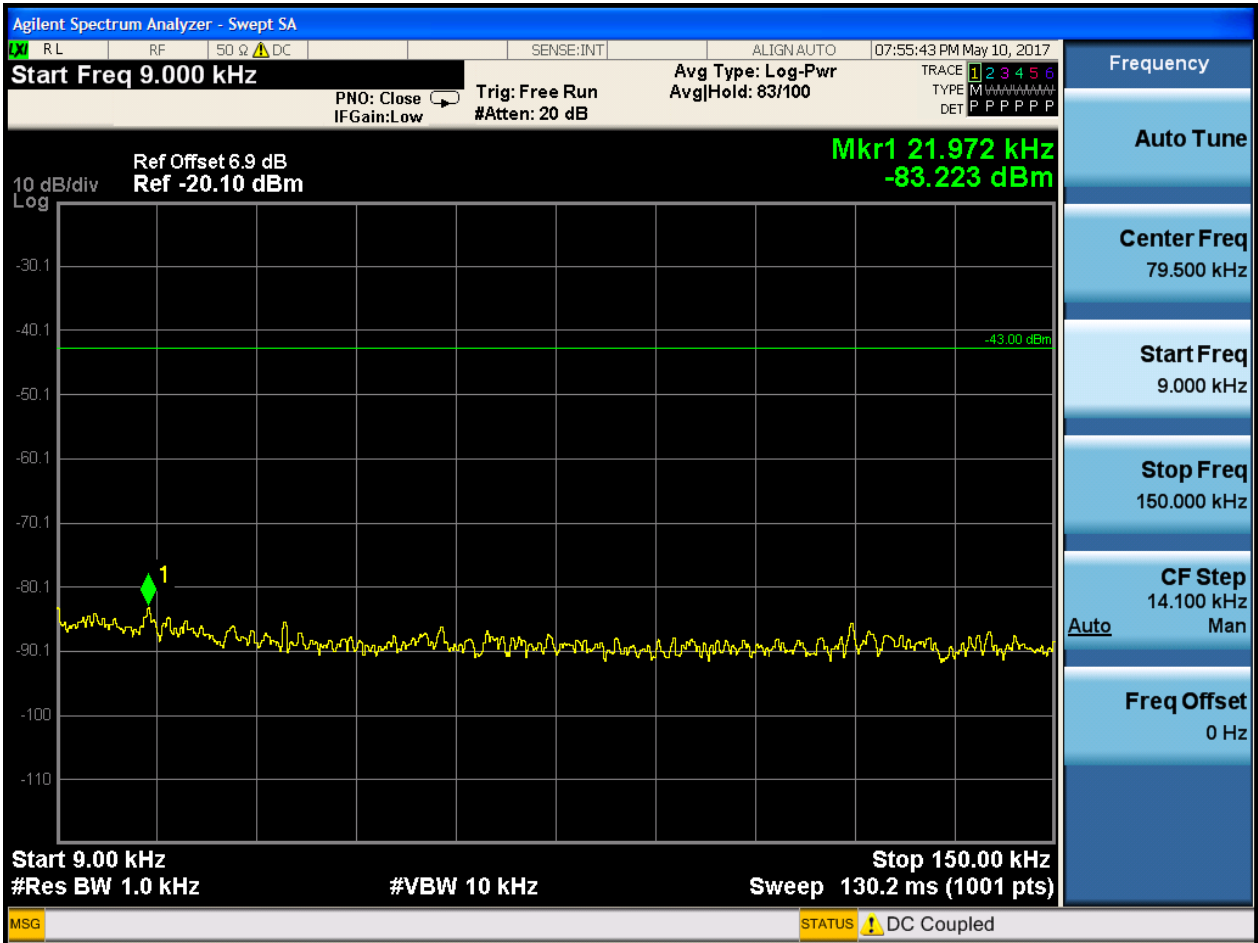


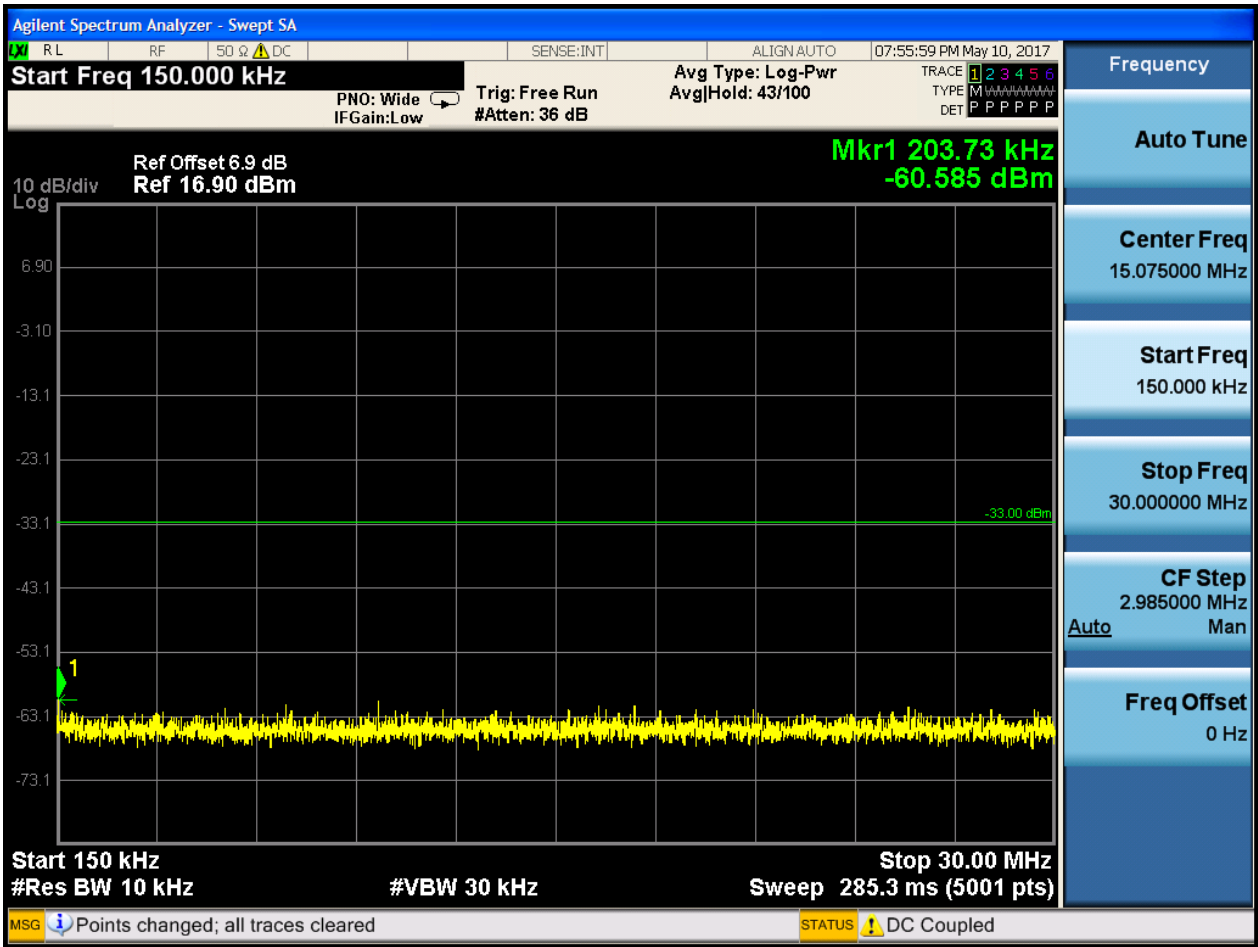


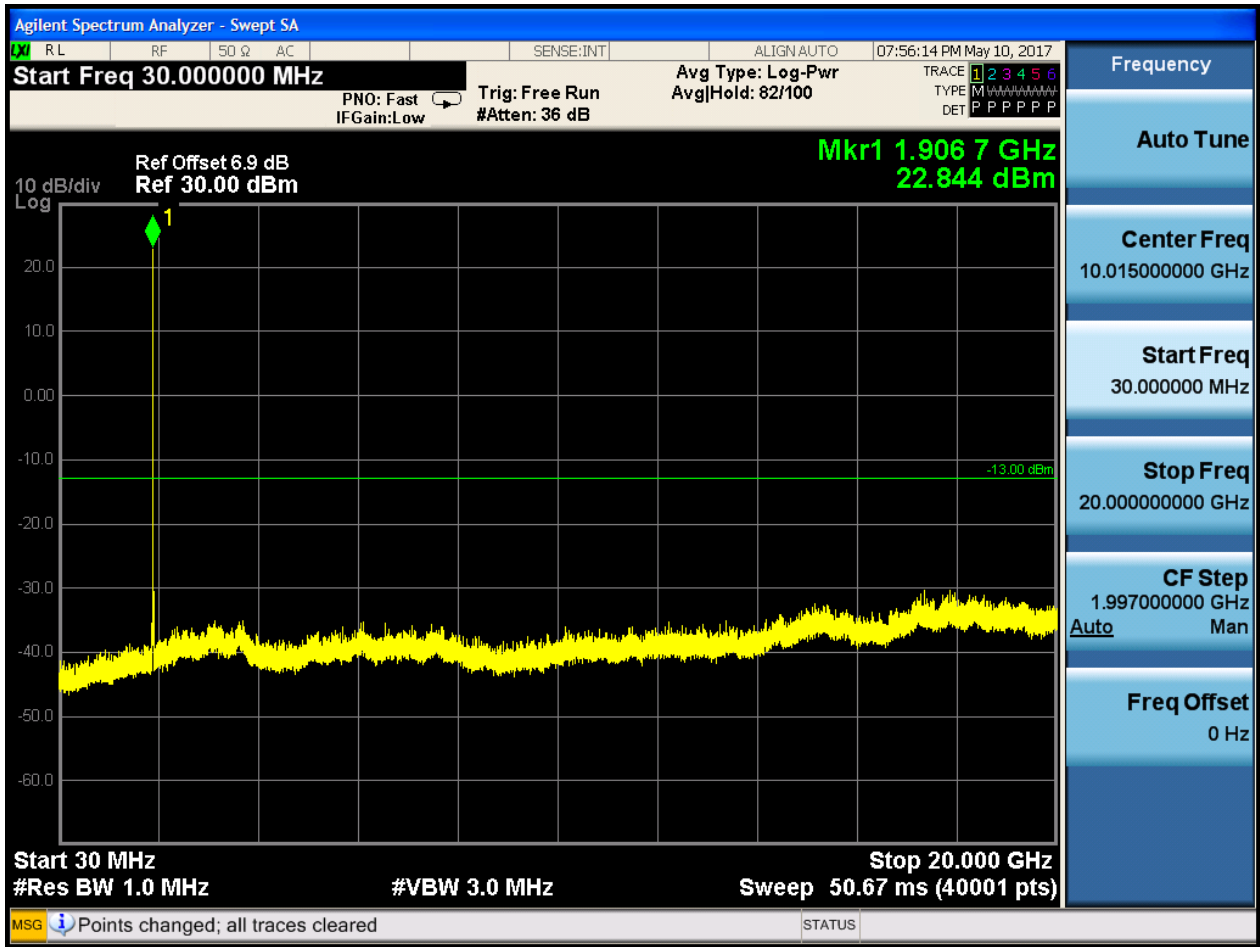




6.1.3.1.3 Test Channel = HCH







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

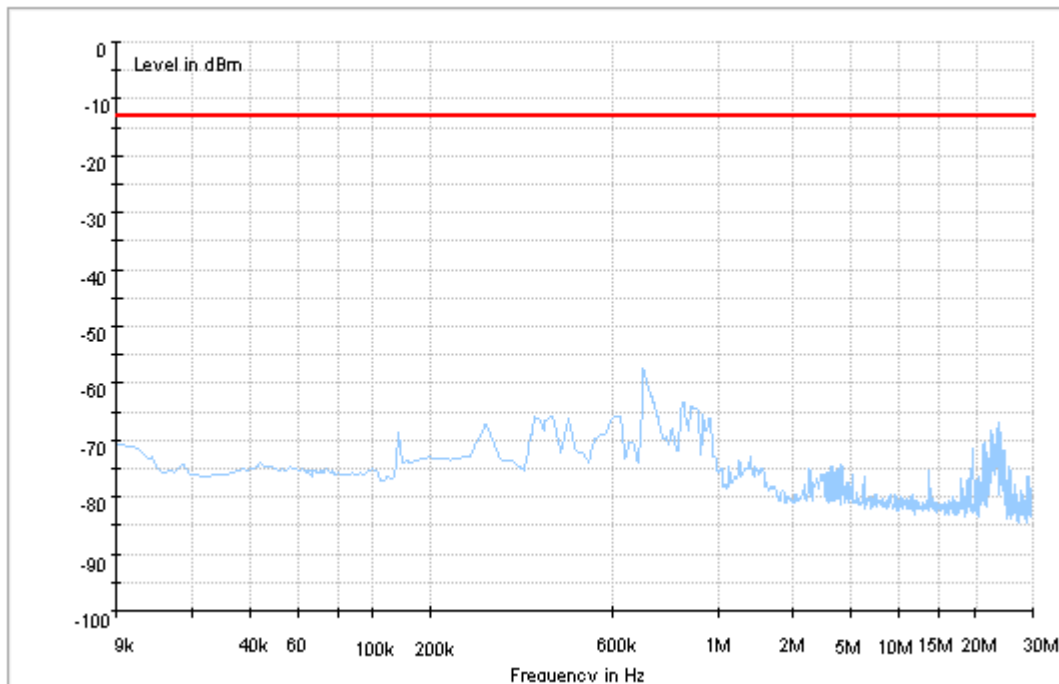
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

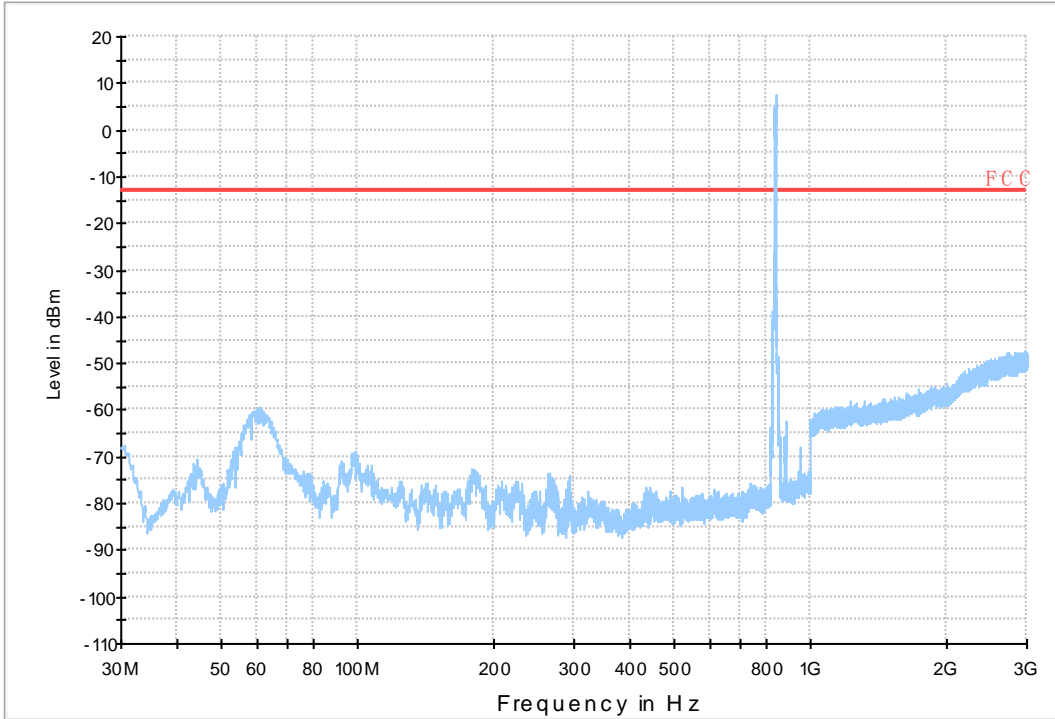
7.1 For UMTS

7.1.1 Test Band = WCDMA850_ANT1

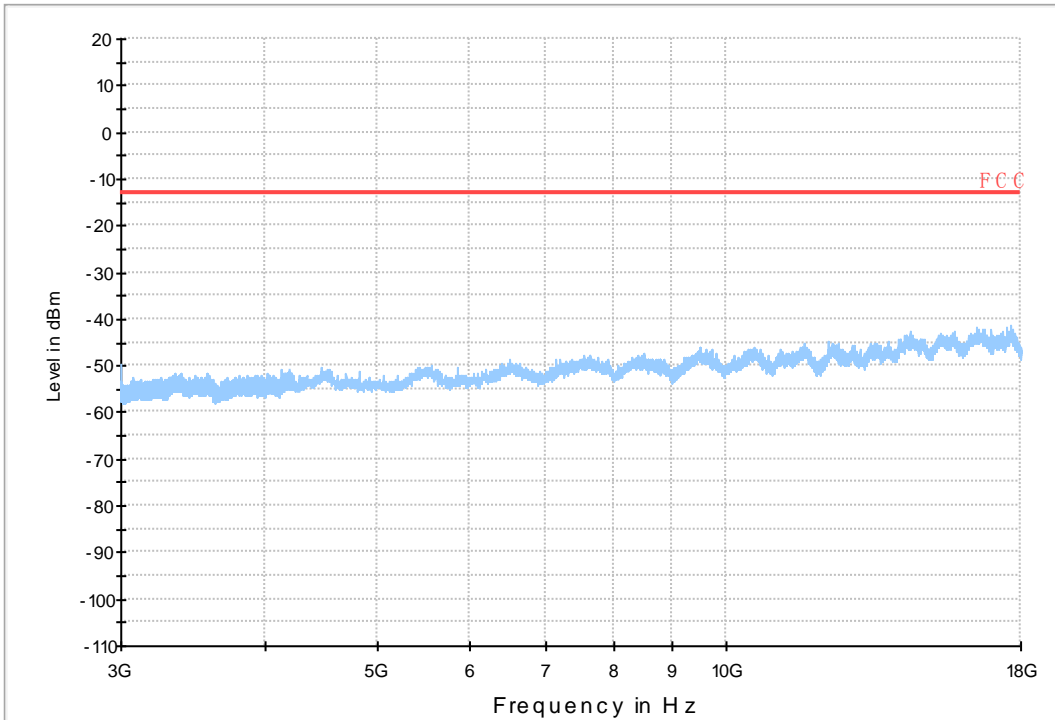
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

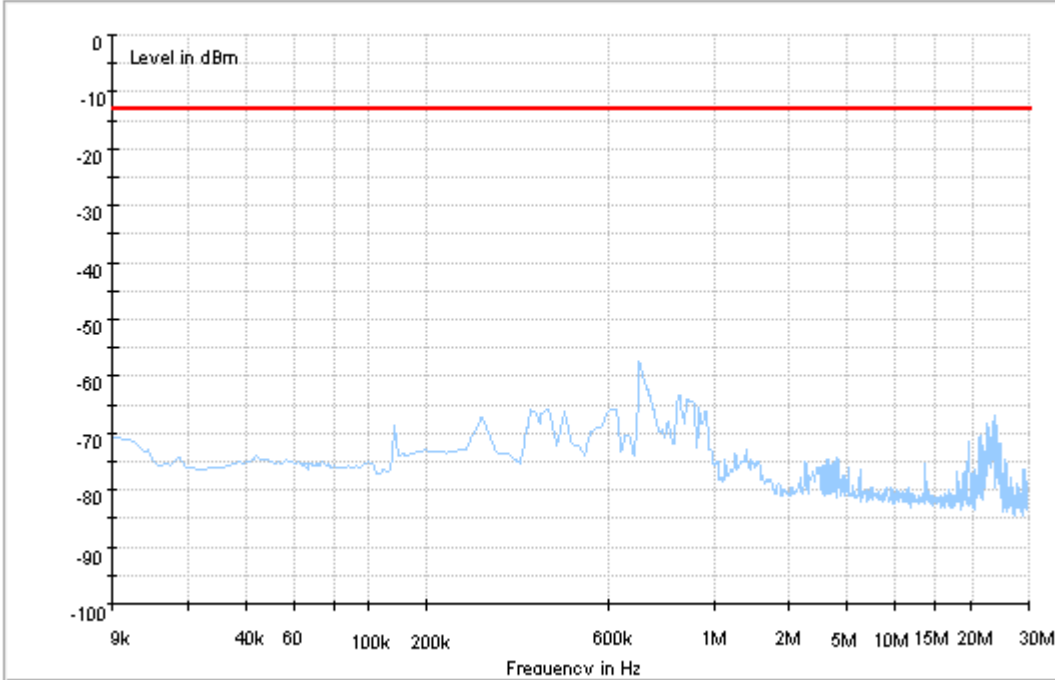


Copy of FCC PART22 W CDMA850_H

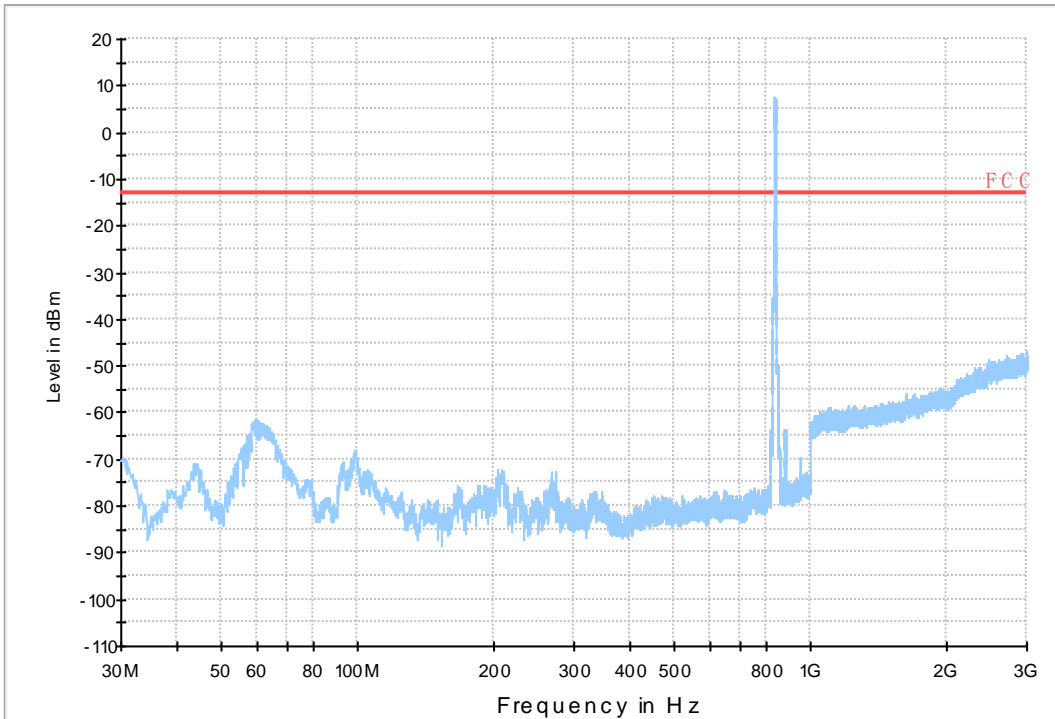


7.1.2 Test Band = WCDMA850_ANT2

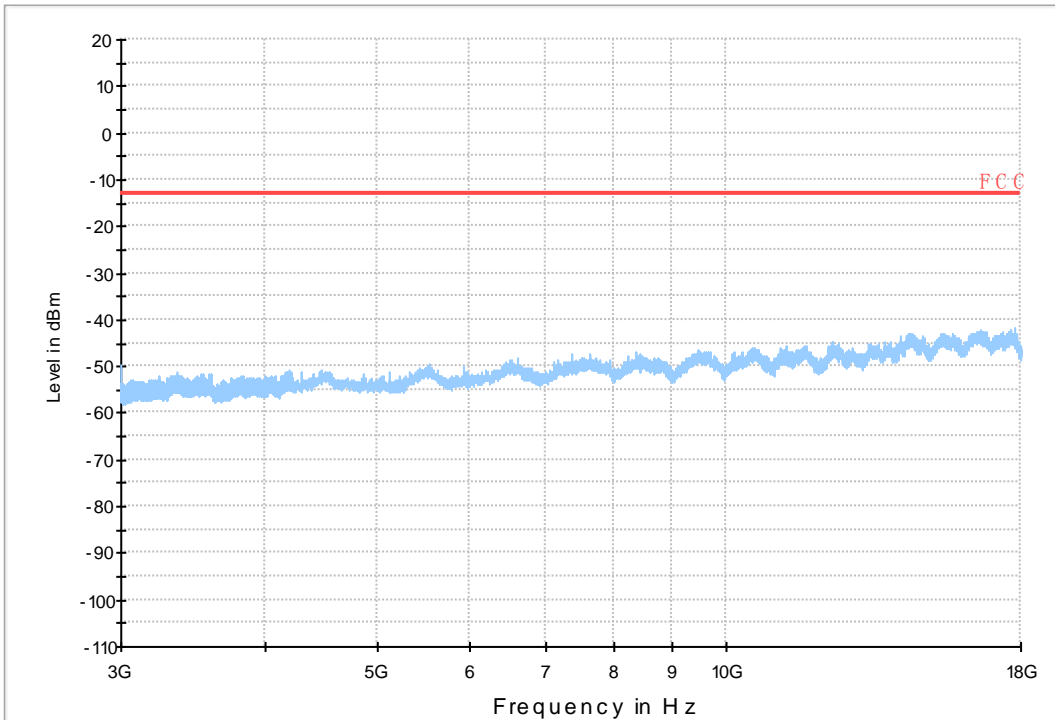
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

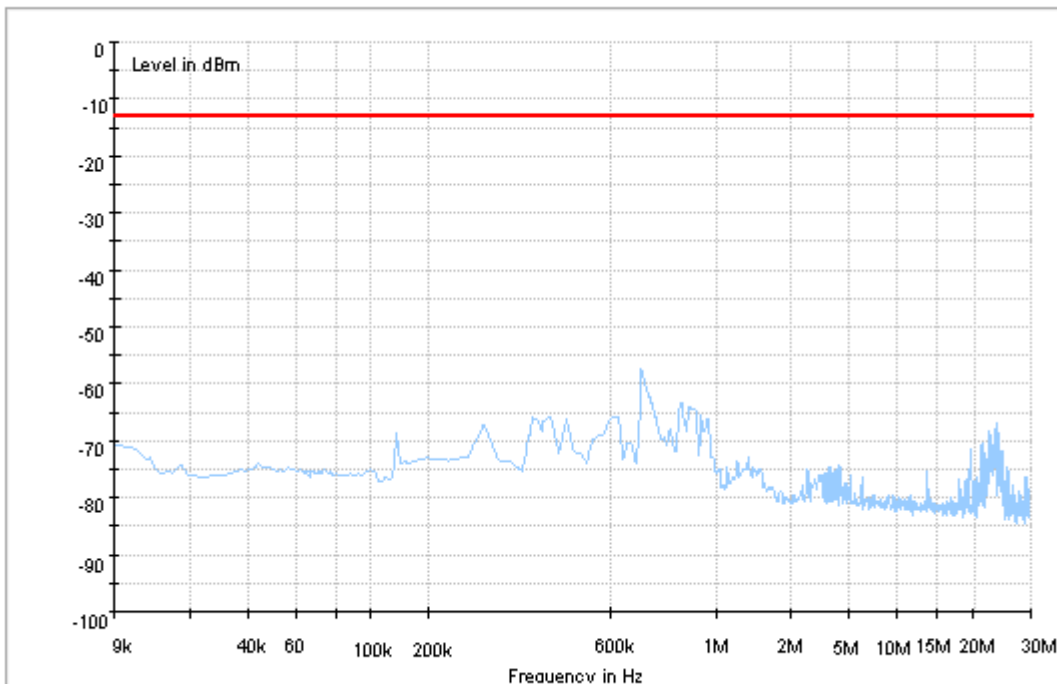


Copy of FCC PART22 W CDMA850_H

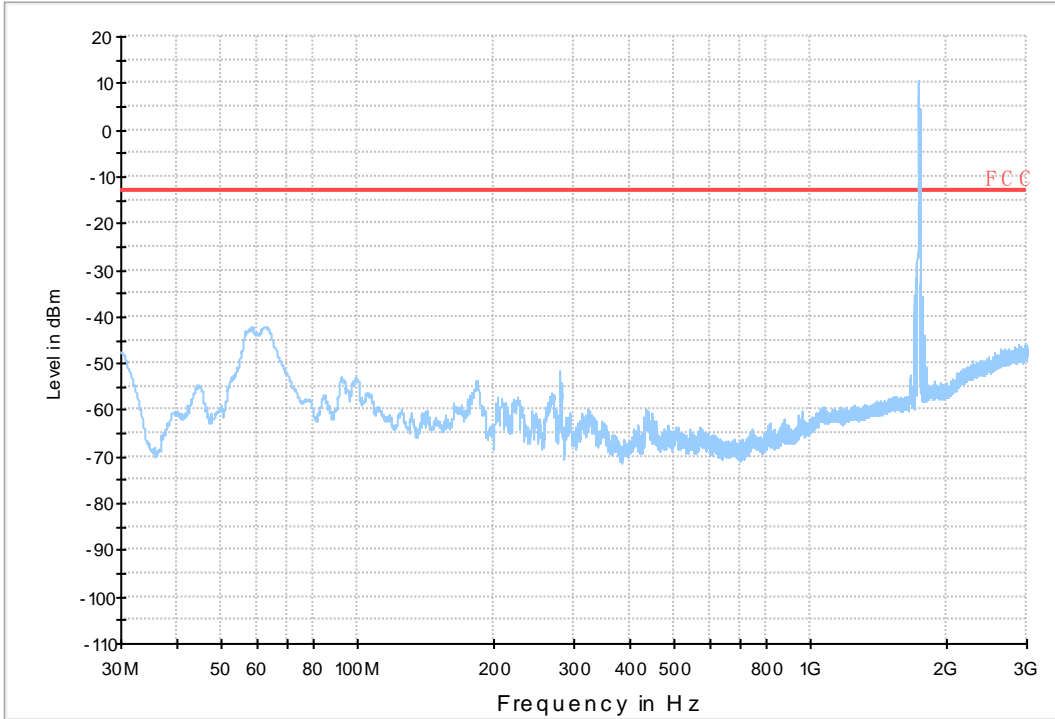


7.1.3 Test Band = WCDMA1700_ANT1

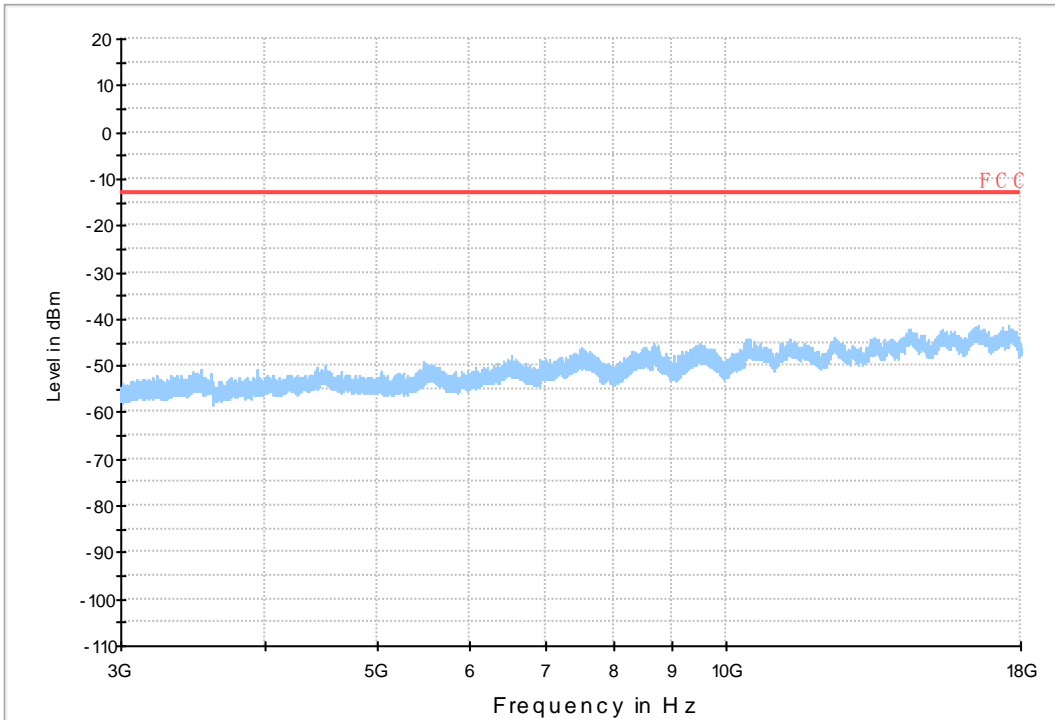
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

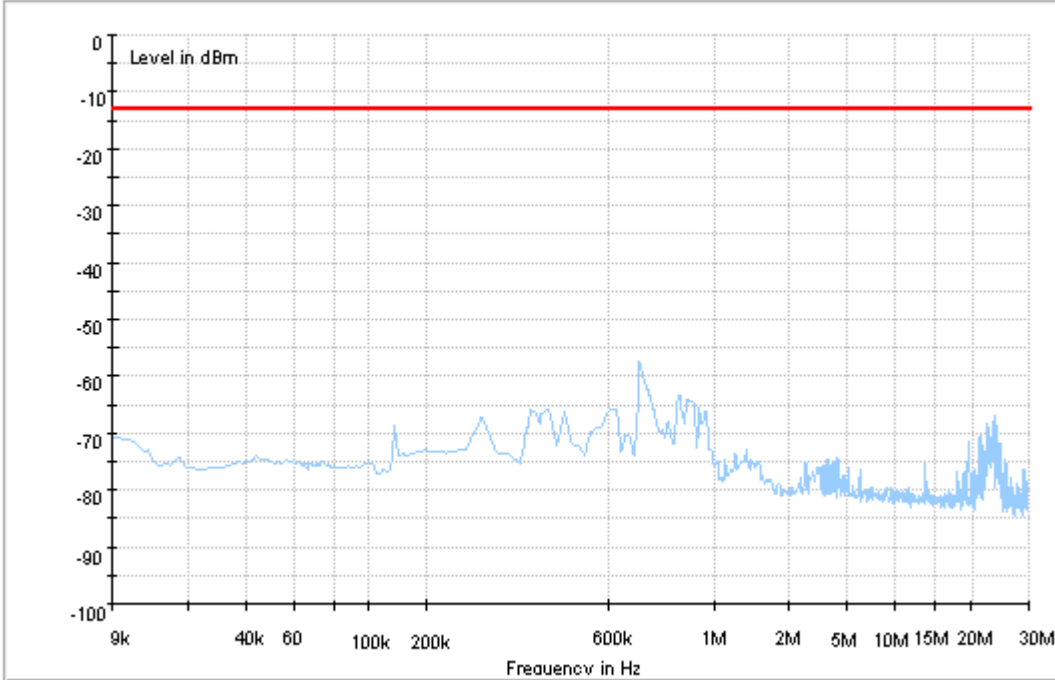


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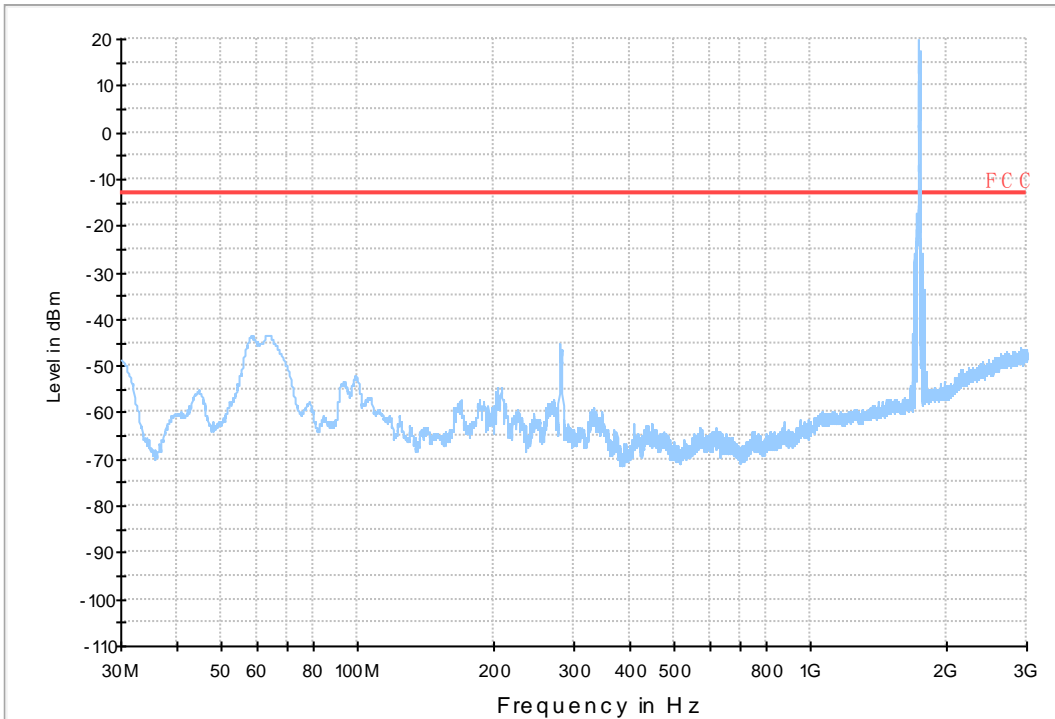


7.1.4 Test Band = WCDMA1700_ANT2

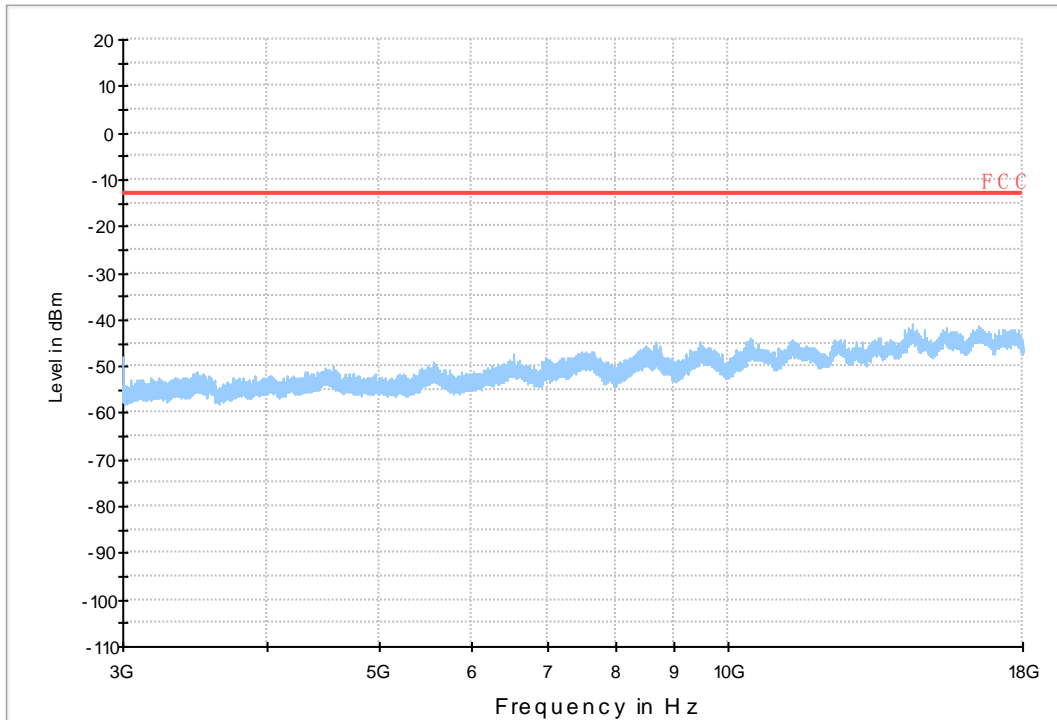
7.1.4.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

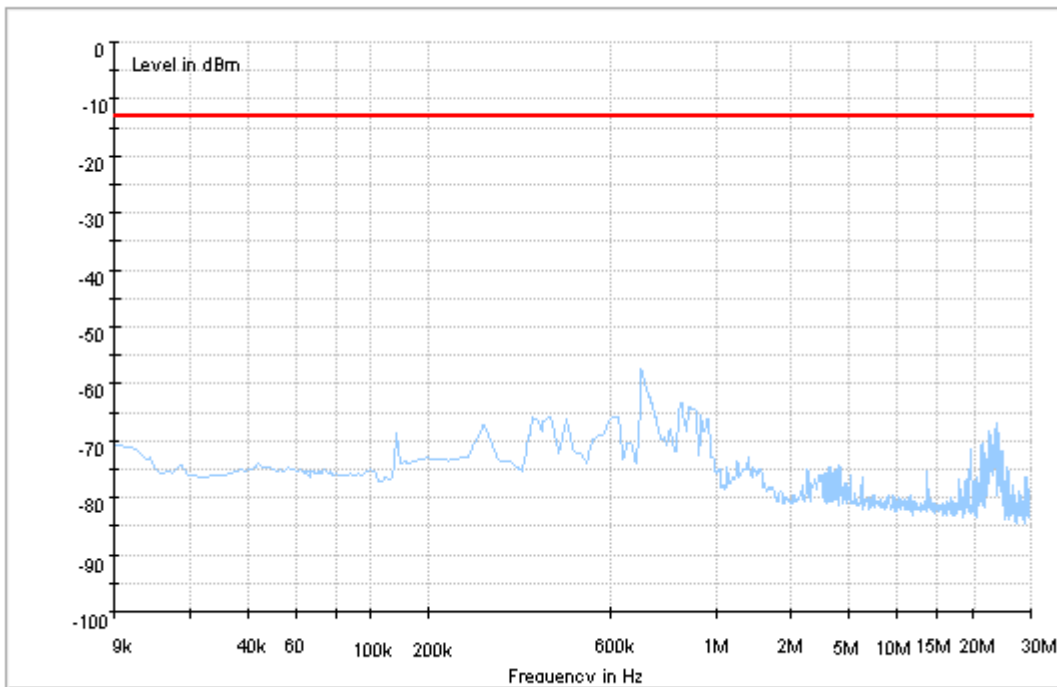


Copy of FCC PART27 W CDMA1700_H

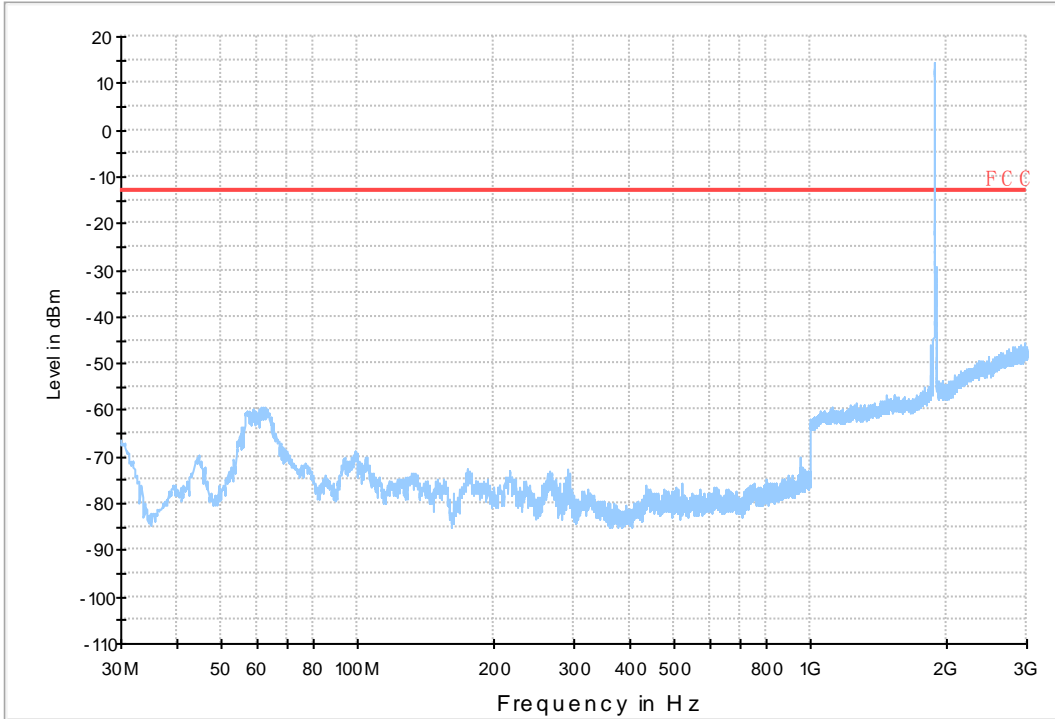


7.1.5 Test Band = WCDMA1900_ANT1

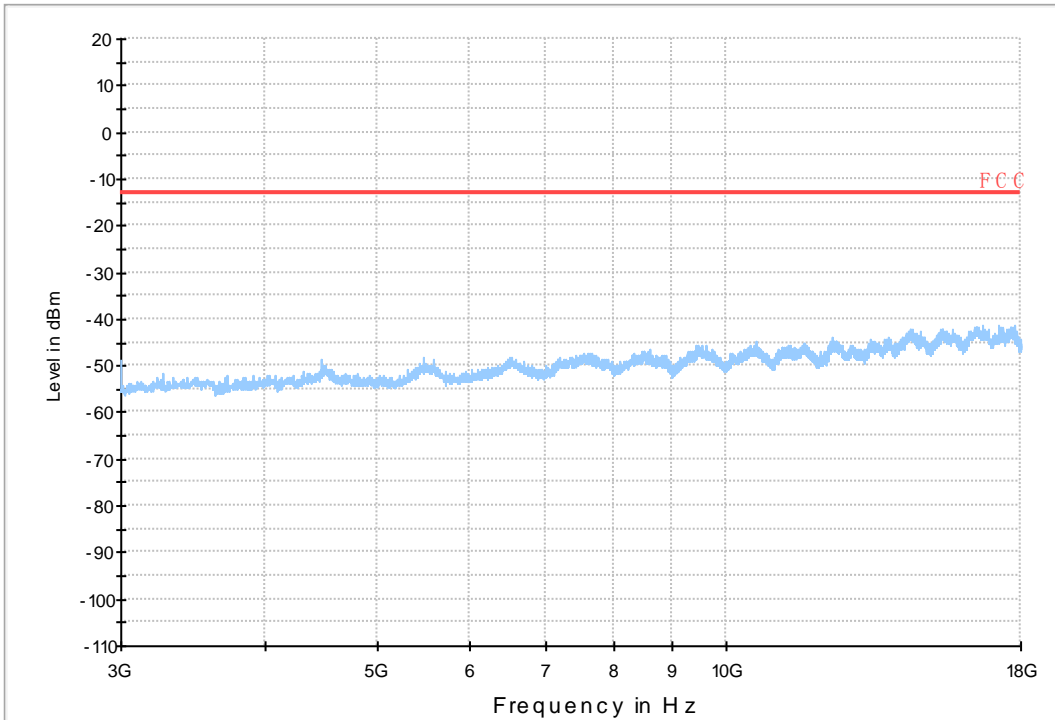
7.1.5.1 Test Mode = UMTS/TM1

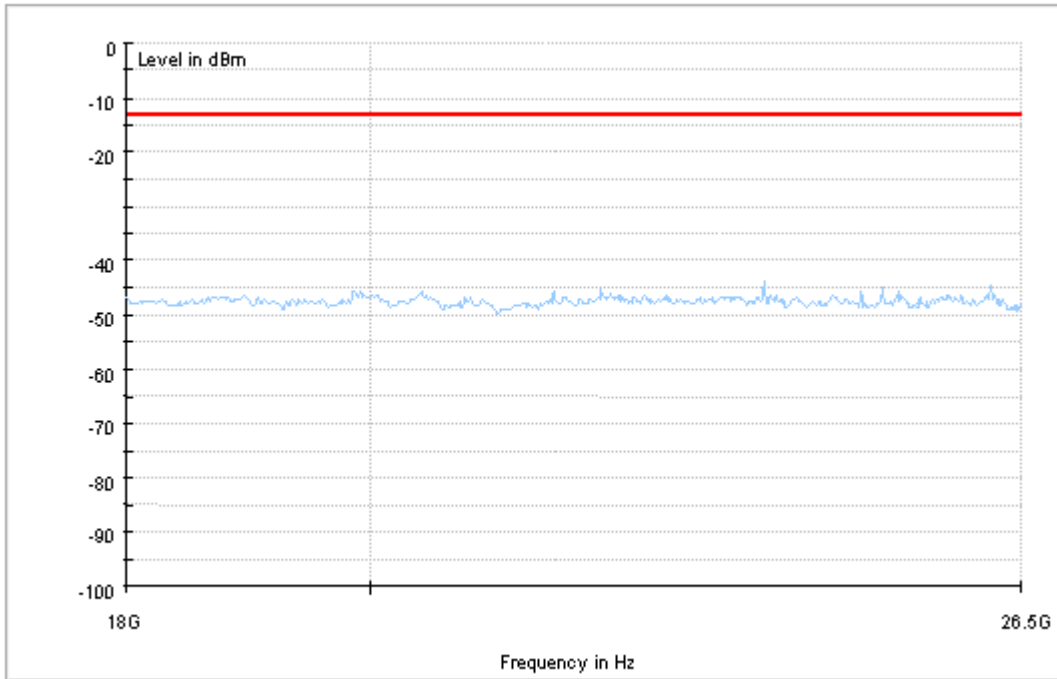


Copy of FCC PART24 W CDMA1900_L



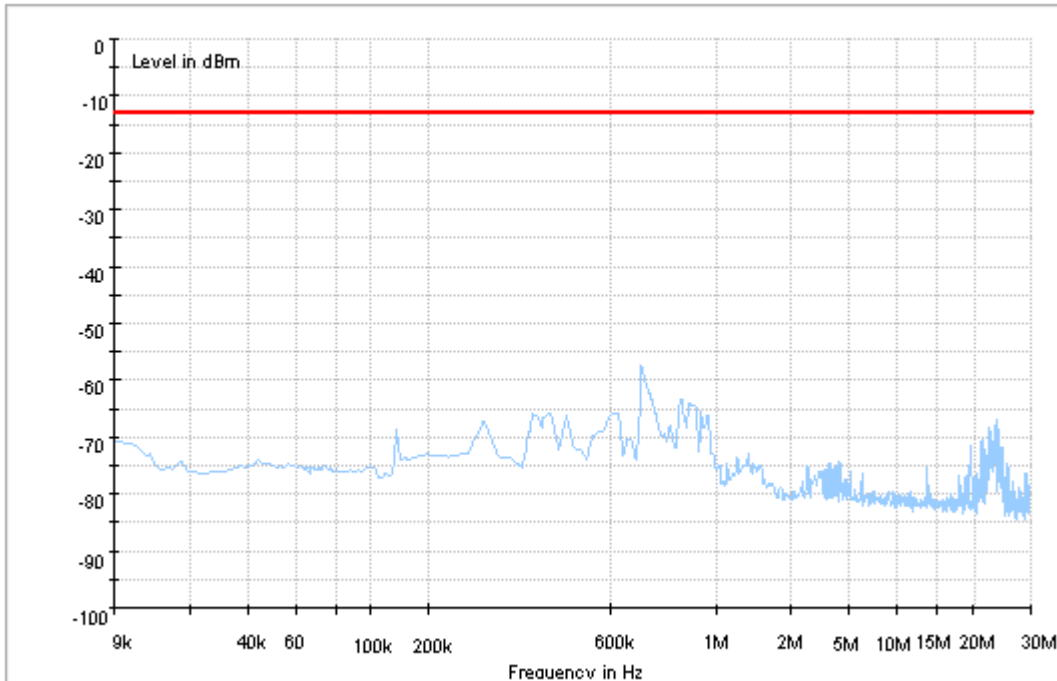
Copy of FCC PART24 W CDMA1900_H



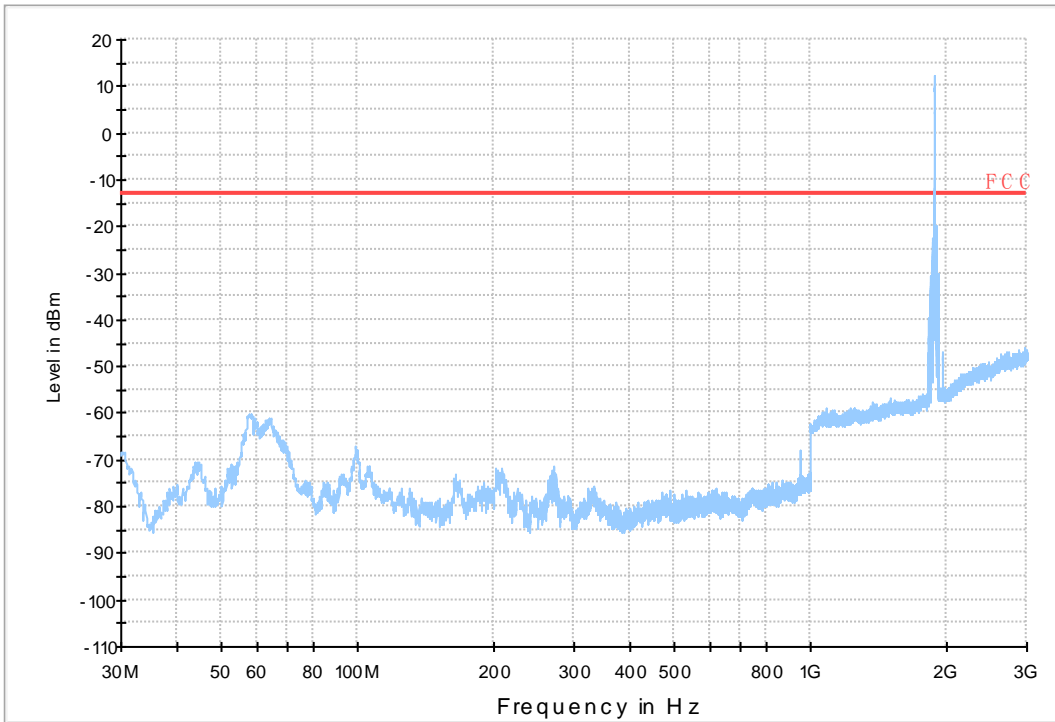


7.1.6 Test Band = WCDMA1900_ANT2

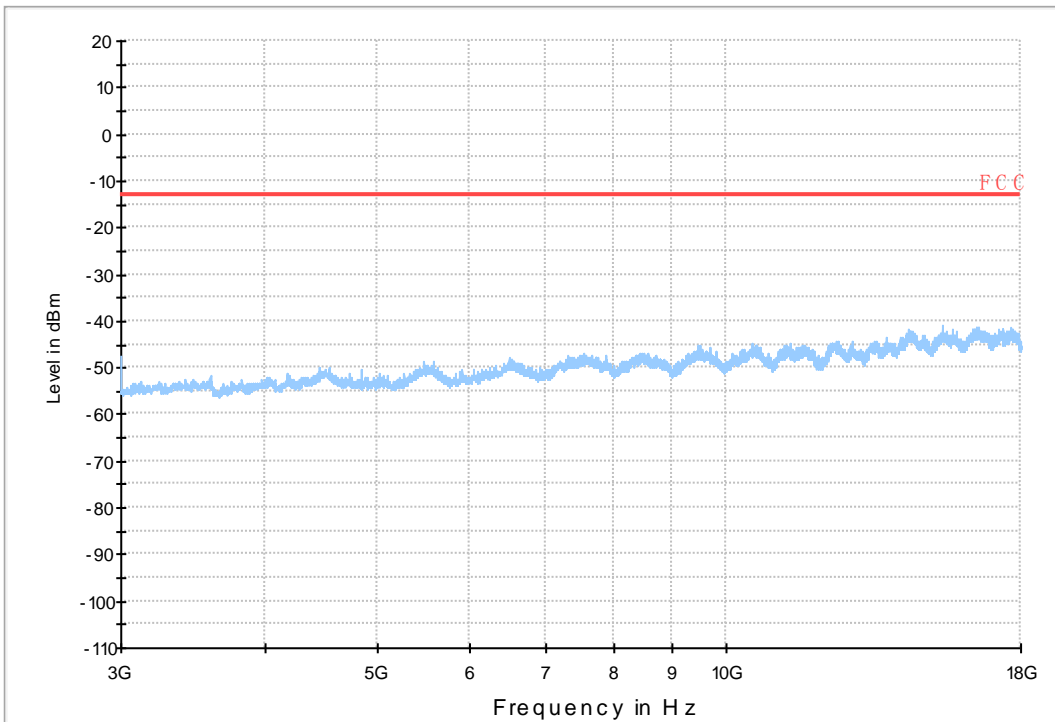
7.1.6.1 Test Mode = UMTS/TM1

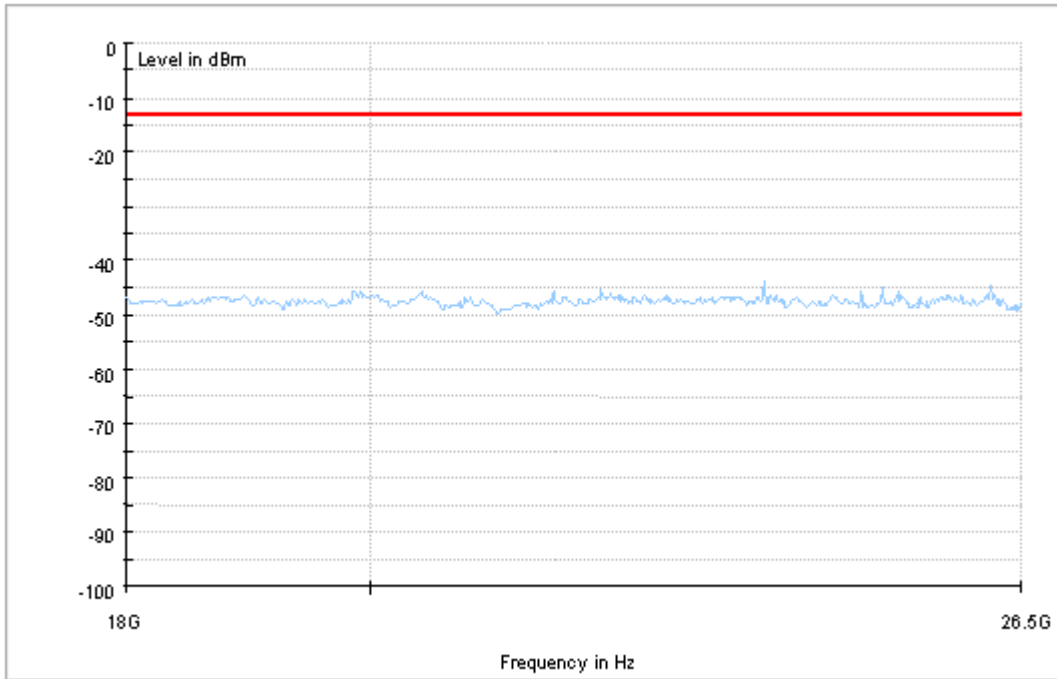


Copy of FCC PART24 W CDMA1900_L



Copy of FCC PART24 W CDMA1900_H





8Appendix_H: Frequency Stability

8.1 For UMTS

8.1.1Frequency 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	2.73	0.0033	PASS
				VN	-2.06	-0.00249	PASS
				VH	-11.15	-0.01349	PASS
		MCH	TN	VL	-1.65	-0.00197	PASS
				VN	-15.47	-0.0185	PASS
				VH	-5.83	-0.00697	PASS
		HCH	TN	VL	6.52	0.0077	PASS
				VN	-6.85	-0.00809	PASS
				VH	-7.84	-0.00926	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	5.05	0.00295	PASS
				VN	12.50	0.0073	PASS
				VH	2.82	0.00165	PASS
		MCH	TN	VL	-1.11	-0.00064	PASS
				VN	-2.99	-0.00173	PASS
				VH	2.98	0.00172	PASS
		HCH	TN	VL	-3.49	-0.00199	PASS
				VN	2.12	0.00121	PASS
				VH	0.81	0.00046	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-1.27	-0.00069	PASS
				VN	0.43	0.00023	PASS
				VH	10.53	0.00568	PASS
		MCH	TN	VL	-8.42	-0.00448	PASS
				VN	-5.68	-0.00302	PASS
				VH	-1.54	-0.00082	PASS
		HCH	TN	VL	7.51	0.00394	PASS
				VN	0.56	0.00029	PASS
				VH	0.38	0.0002	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	-13.84	-0.01675	PASS
				-20	-7.43	-0.00899	PASS
				-10	-0.06	-0.00007	PASS
				0	-4.65	-0.00563	PASS
				10	-14.18	-0.01716	PASS
				20	-10.54	-0.01275	PASS
				30	0.55	0.00067	PASS
				40	-13.28	-0.01607	PASS
				50	3.74	0.00453	PASS
		MCH	VN	-30	0.31	0.00037	PASS
				-20	-10.24	-0.01224	PASS
				-10	-4.35	-0.0052	PASS
				0	-1.30	-0.00155	PASS
				10	-9.34	-0.01117	PASS
				20	-9.83	-0.01175	PASS
				30	-5.14	-0.00615	PASS
				40	0.11	0.00013	PASS
				50	4.18	0.005	PASS
		HCH	VN	-30	-6.47	-0.00764	PASS
				-20	-9.80	-0.01158	PASS
				-10	-15.44	-0.01824	PASS
				0	-3.33	-0.00393	PASS
				10	-2.93	-0.00346	PASS
				20	6.79	0.00802	PASS
				30	-8.47	-0.01	PASS
				40	5.69	0.00672	PASS
				50	-0.82	-0.00097	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	3.94	0.0023	PASS
				-20	3.51	0.00205	PASS
				-10	0.69	0.0004	PASS
				0	0.75	0.00044	PASS
				10	0.34	0.0002	PASS
				20	0.03	0.00002	PASS
				30	-2.06	-0.0012	PASS
				40	7.46	0.00436	PASS
				50	-3.72	-0.00217	PASS
		MCH	VN	-30	1.39	0.0008	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	-1.46	-0.00084	PASS
				-10	0.78	0.00045	PASS
				0	-0.53	-0.00031	PASS
				10	-1.63	-0.00094	PASS
				20	4.20	0.00242	PASS
				30	0.11	0.00006	PASS
				40	-2.66	-0.00154	PASS
				50	5.04	0.00291	PASS
		HCH	VN	-30	0.18	0.0001	PASS
				-20	-1.65	-0.00094	PASS
				-10	8.83	0.00504	PASS
				0	-0.31	-0.00018	PASS
				10	-1.43	-0.00082	PASS
				20	10.48	0.00598	PASS
				30	1.80	0.00103	PASS
				40	-0.60	-0.00034	PASS
				50	-0.03	-0.00002	PASS
				WCDMA1900	UMTS/TM1	LCH	VN
-20	0.85	0.00046	PASS				
-10	3.27	0.00177	PASS				
0	3.52	0.0019	PASS				
10	1.89	0.00102	PASS				
20	7.71	0.00416	PASS				
30	2.99	0.00161	PASS				
40	-0.18	-0.0001	PASS				
50	-6.53	-0.00353	PASS				
MCH	VN	-30	3.52			0.00187	PASS
		-20	-3.94			-0.0021	PASS
		-10	8.61			0.00458	PASS
		0	1.31			0.0007	PASS
		10	5.00			0.00266	PASS
		20	-3.49			-0.00186	PASS
		30	-6.96			-0.0037	PASS
		40	-5.91			-0.00314	PASS
HCH	VN	-30	5.83			0.00306	PASS
		-20	8.53			0.00447	PASS
		-10	1.27			0.00067	PASS
		0	0.00			0	PASS
		10	-6.12			-0.00321	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	4.94	0.00259	PASS
				30	1.69	0.00089	PASS
				40	-6.12	-0.00321	PASS
				50	0.11	0.00006	PASS

END