



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	24.27	17.42	38.5	PASS
		MCH	24.21	17.36	38.5	PASS
		HCH	24.20	17.35	38.5	PASS
Test Band	Test Mode	Test Channel	Conducted Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1700	UMTS/TM1	LCH	24.13	19.83	30	PASS
		MCH	24.15	19.85	30	PASS
		HCH	24.12	19.82	30	PASS
WCDMA1900	UMTS/TM1	LCH	23.80	20	33	PASS
		MCH	23.77	19.97	33	PASS
		HCH	23.88	20.08	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:

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

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

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

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
WCDMA1700	UMTS/TM1	LCH	2.73	13	PASS
		MCH	2.51	13	PASS
		HCH	2.78	13	PASS
WCDMA850	UMTS/TM1	LCH	2.51	13	PASS
		MCH	2.65	13	PASS
		HCH	2.69	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.6	13	PASS
		MCH	2.66	13	PASS
		HCH	2.67	13	PASS

3Appendix_C: Modulation Characteristics

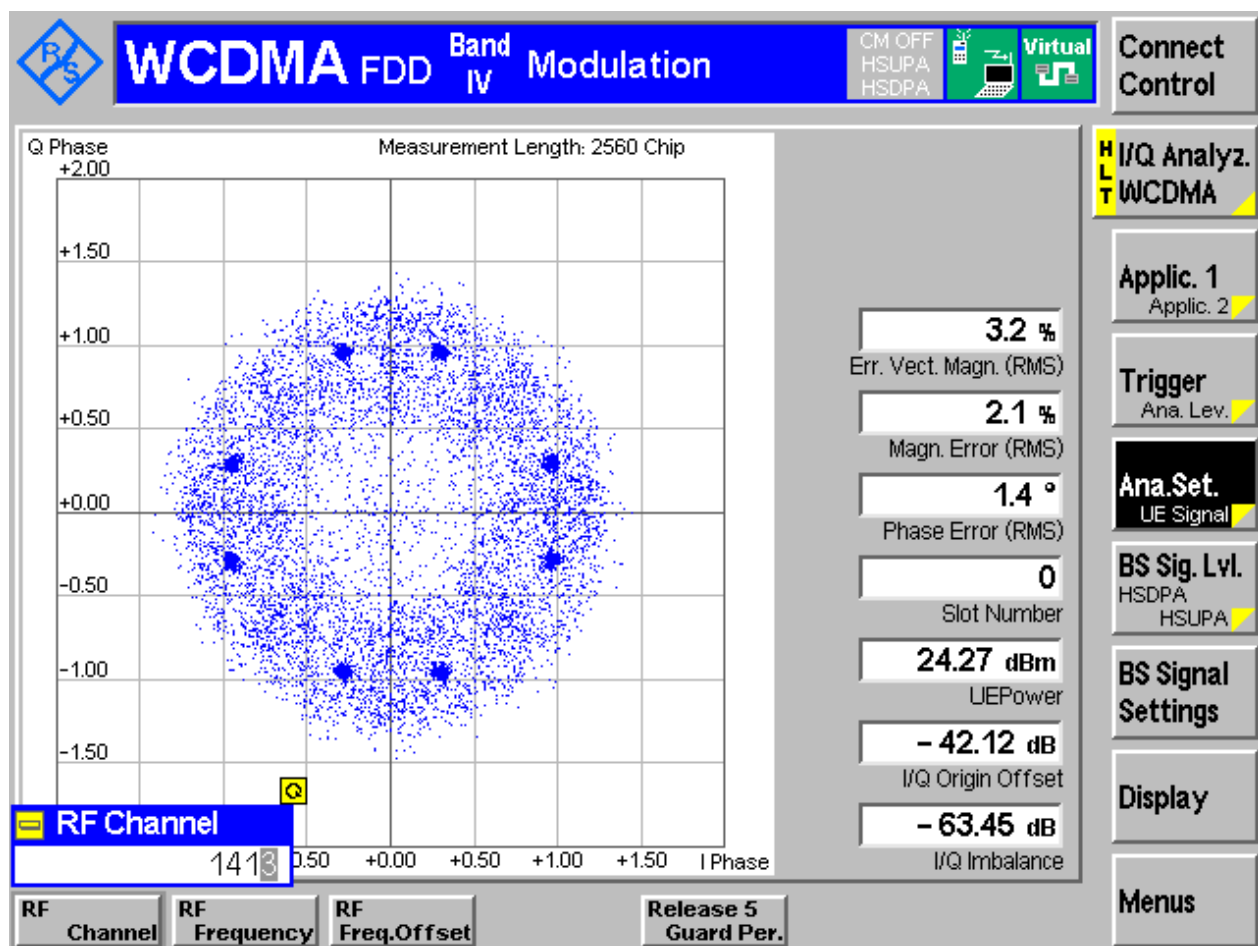
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA1700

3.1.1.1 Test Mode = UMTS/TM1

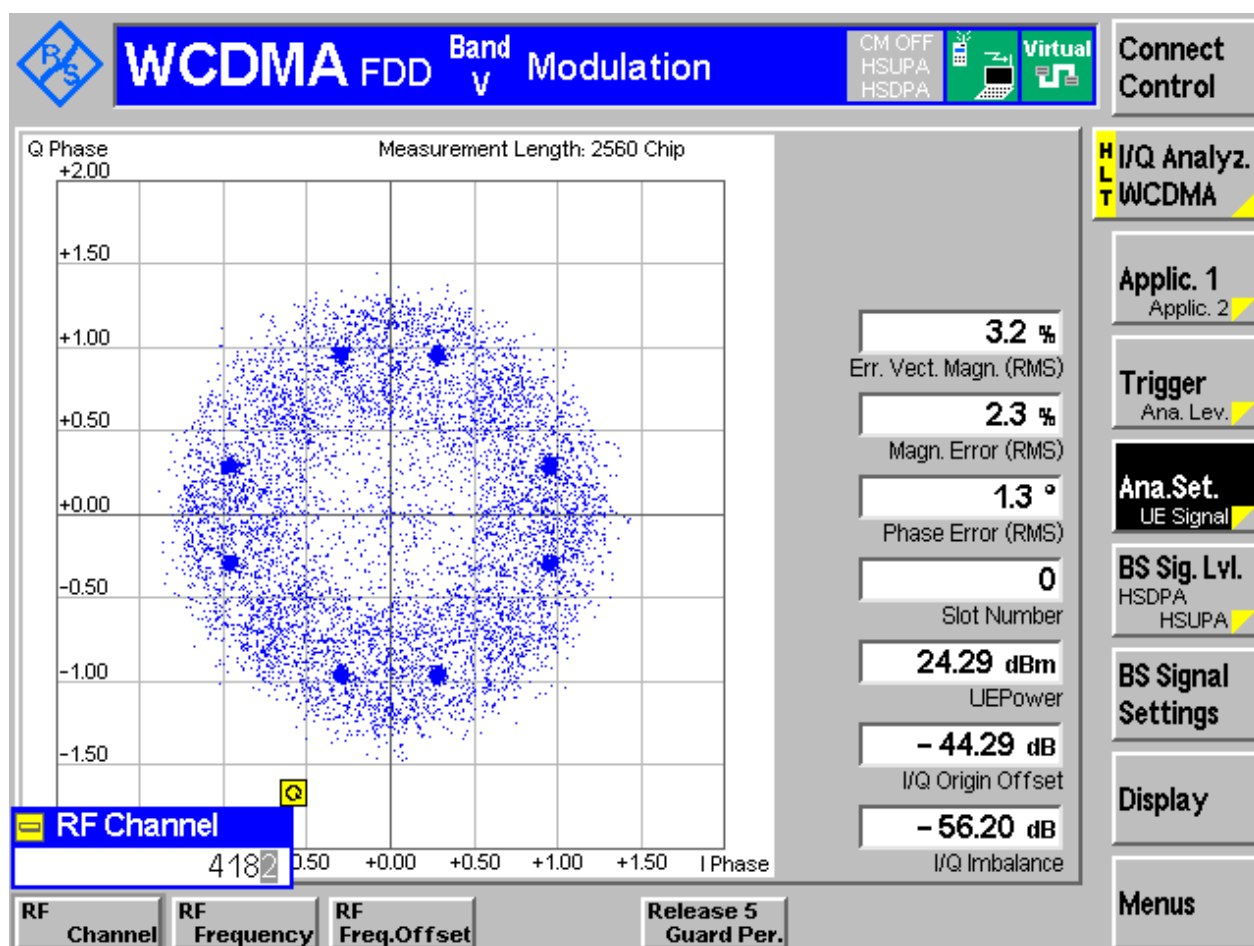
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA850

3.1.2.1 Test Mode = UMTS/TM1

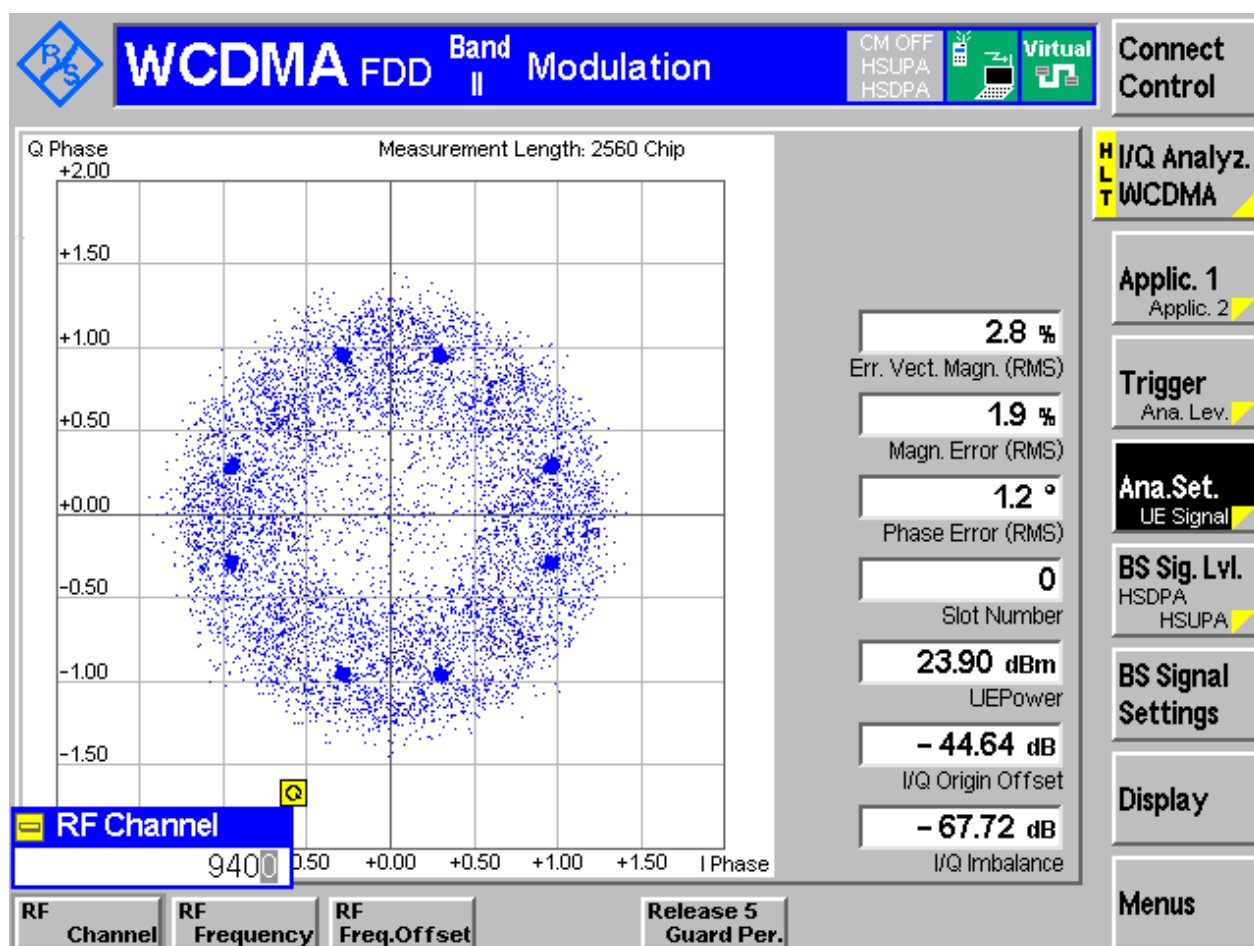
3.1.2.1.1 Test Channel = MCH



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
WCDMA850	UMTS/TM1	LCH	4.14	4.74	Pass
		MCH	4.16	4.75	Pass
		HCH	4.16	4.73	Pass
WCDMA1700	UMTS/TM1	LCH	4.15	4.73	Pass
		MCH	4.16	4.73	Pass
		HCH	4.15	4.73	Pass
WCDMA1900	UMTS/TM1	LCH	4.16	4.73	Pass
		MCH	4.16	4.74	Pass
		HCH	4.15	4.73	Pass

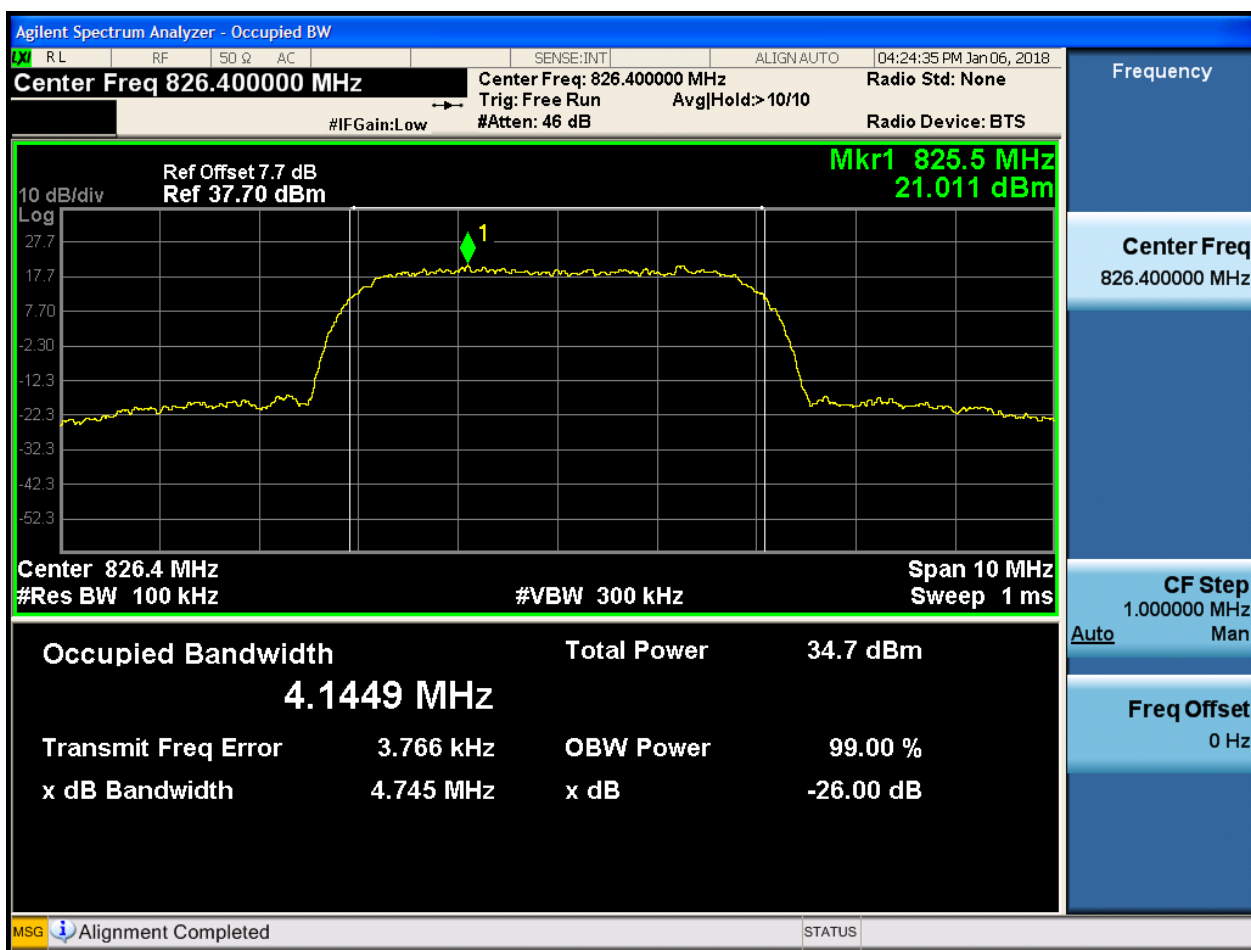
Part II - Test Plots

4.1 For UMTS

4.1.1 Test Band = WCDMA850

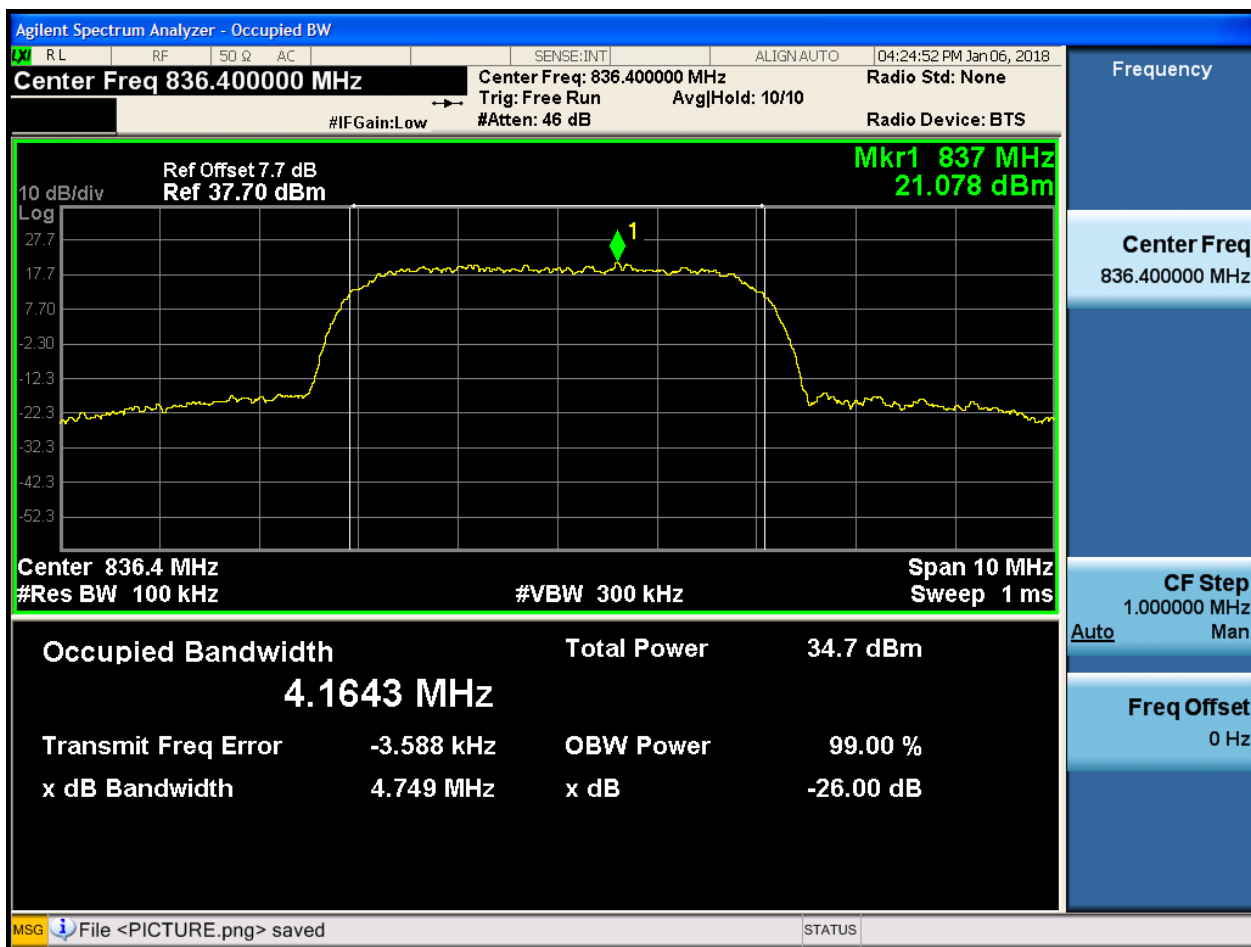
4.1.1.1 Test Mode = UMTS/TM1

4.1.1.1.1 Test Channel = LCH



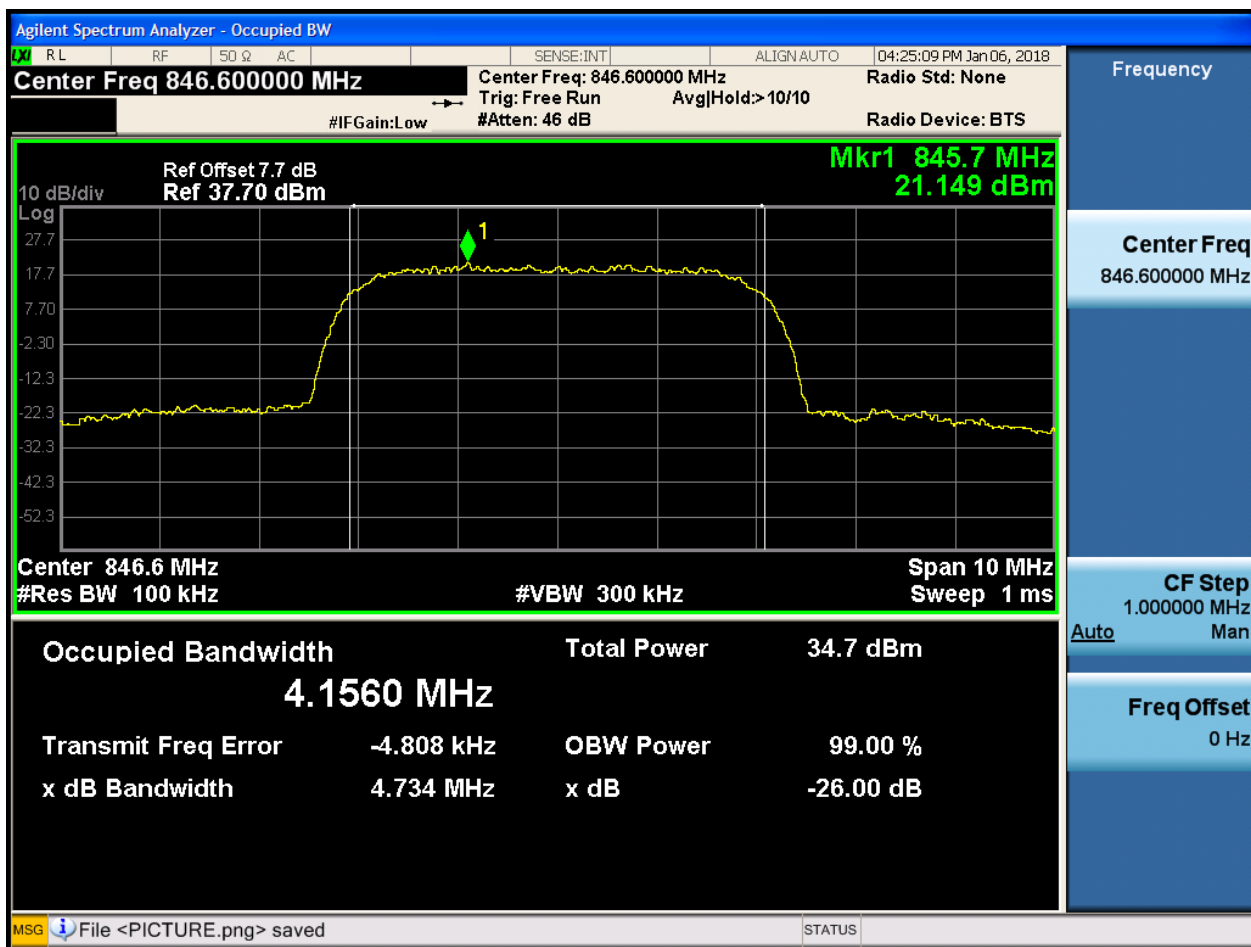


4.1.1.1.2 Test Channel = MCH





4.1.1.1.3 Test Channel = HCH

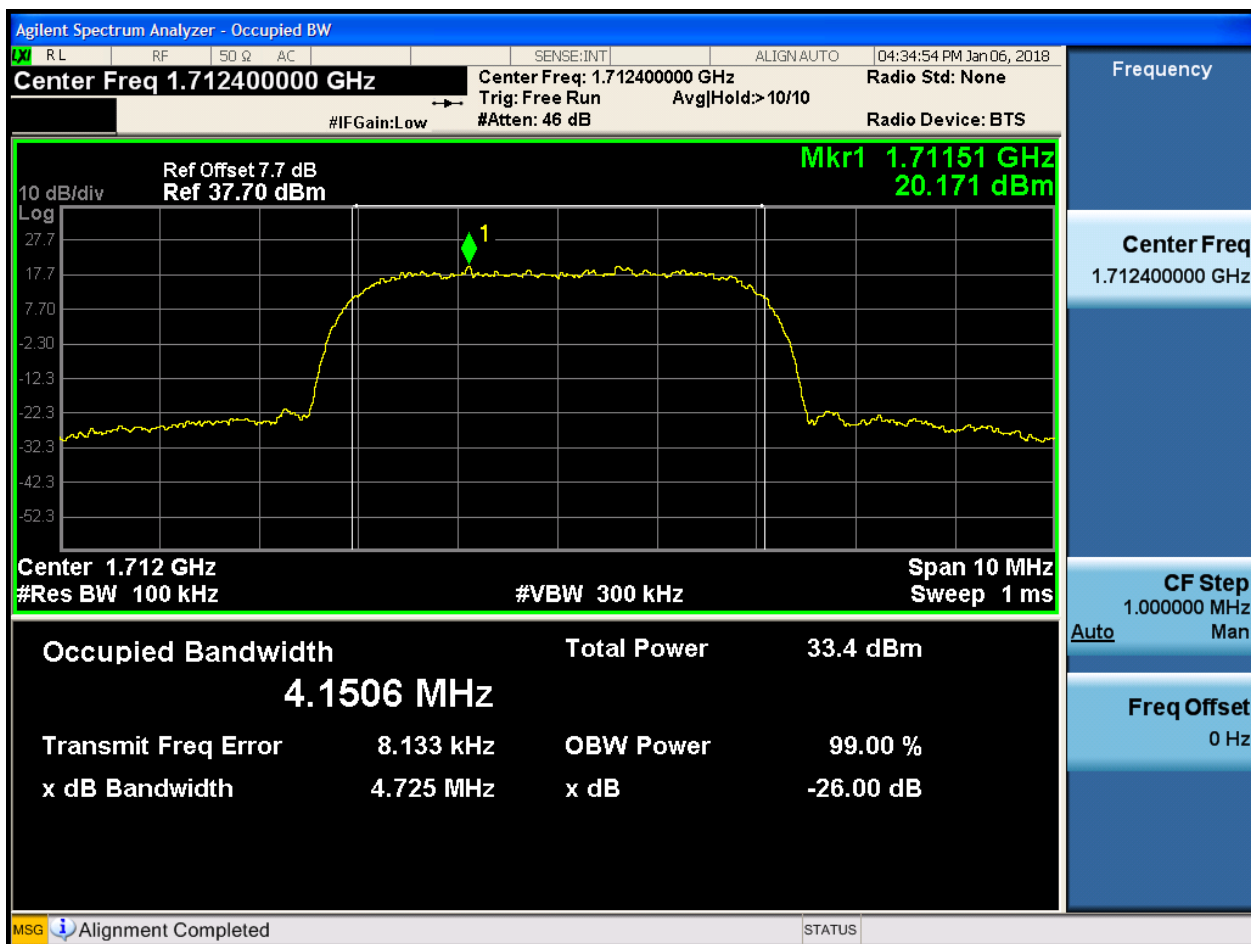




4.1.2 Test Band = WCDMA1700

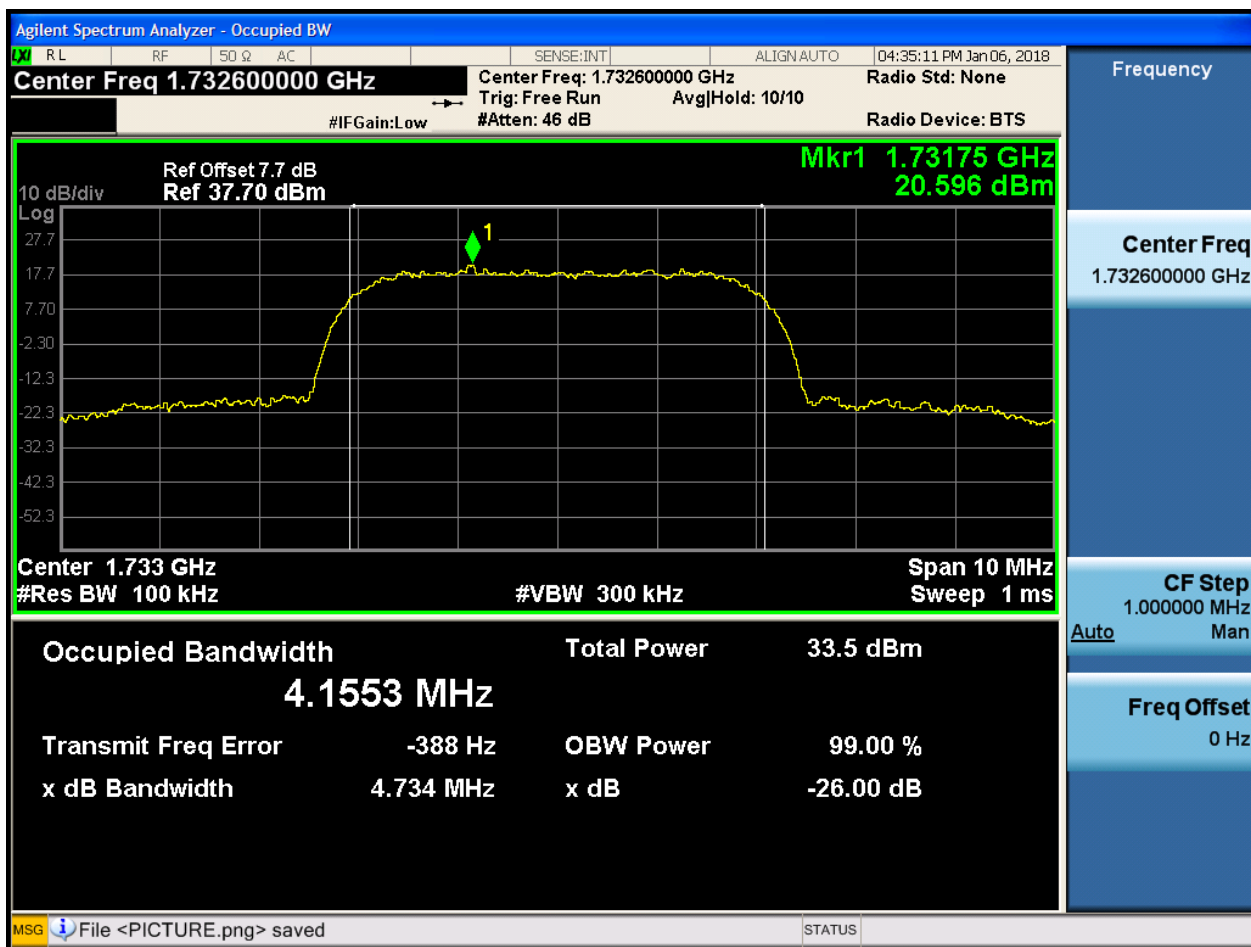
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



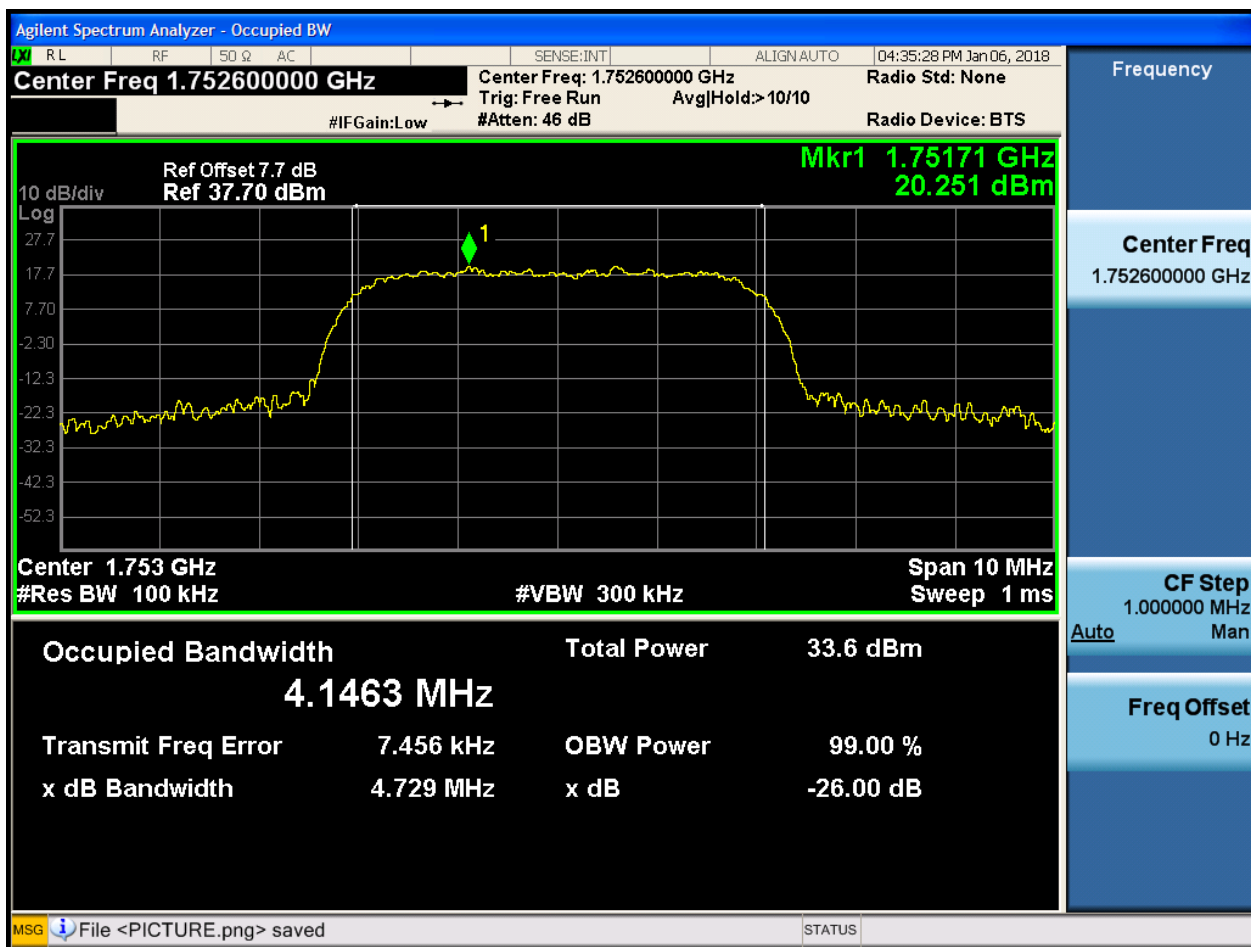


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

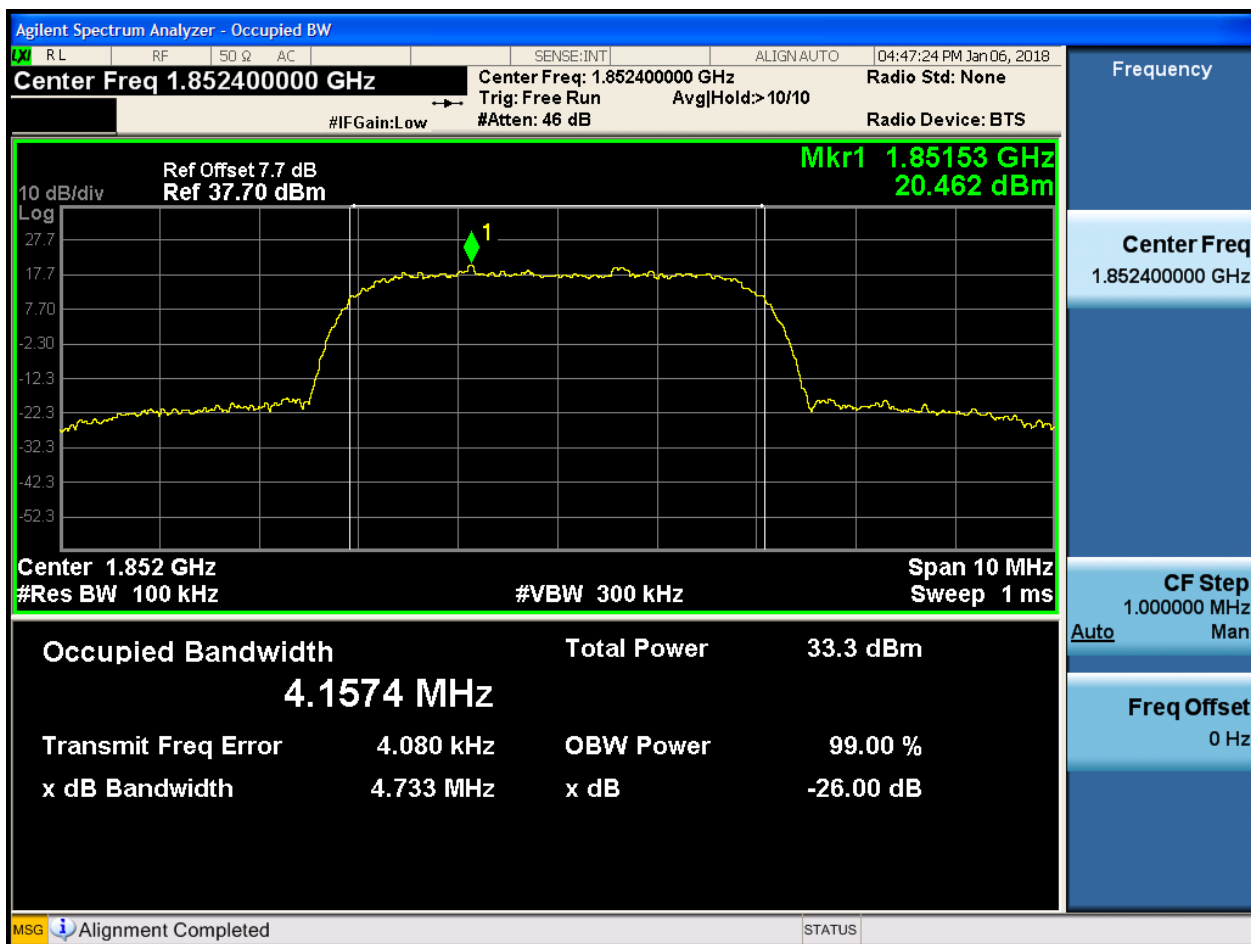




4.1.3 Test Band = WCDMA1900

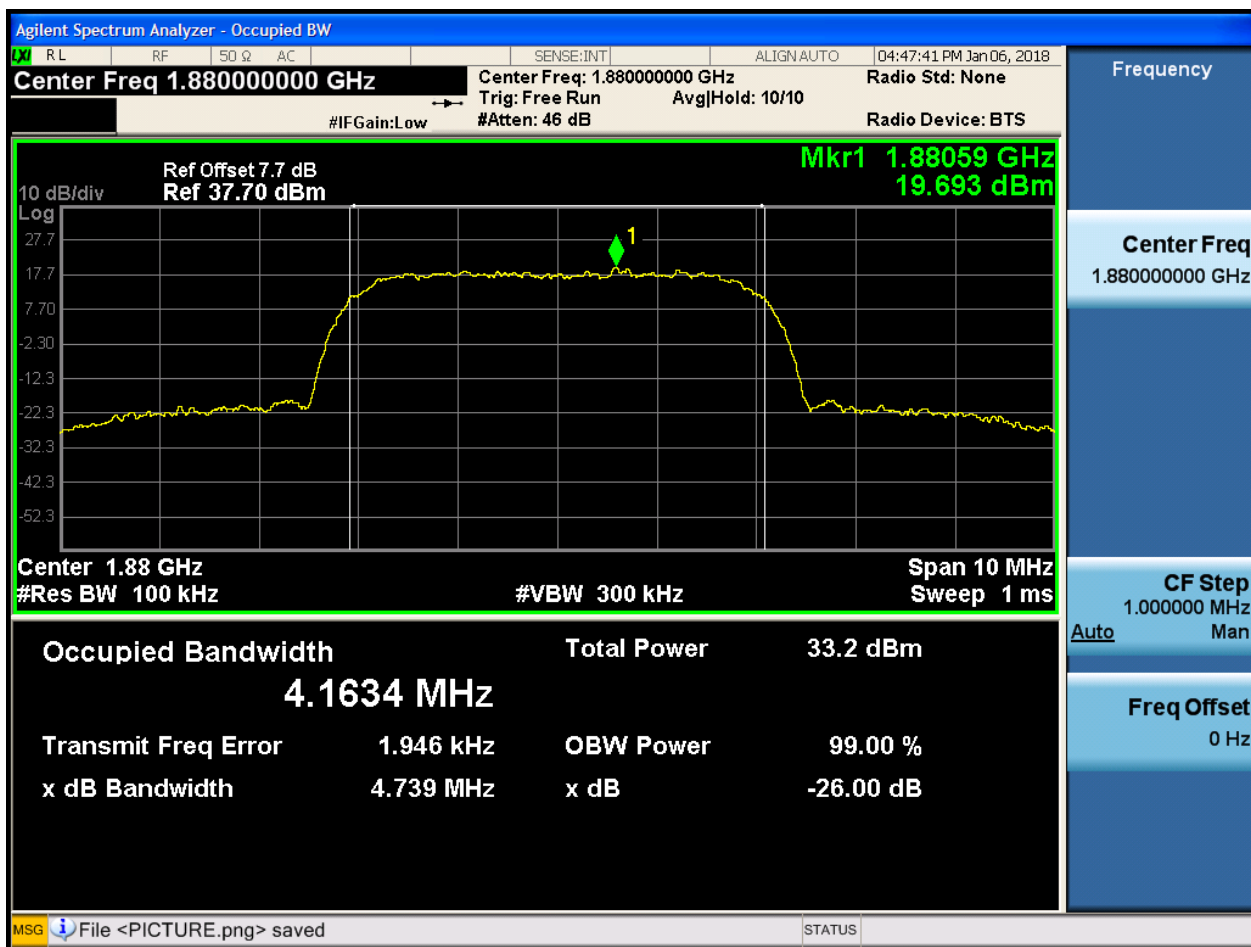
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



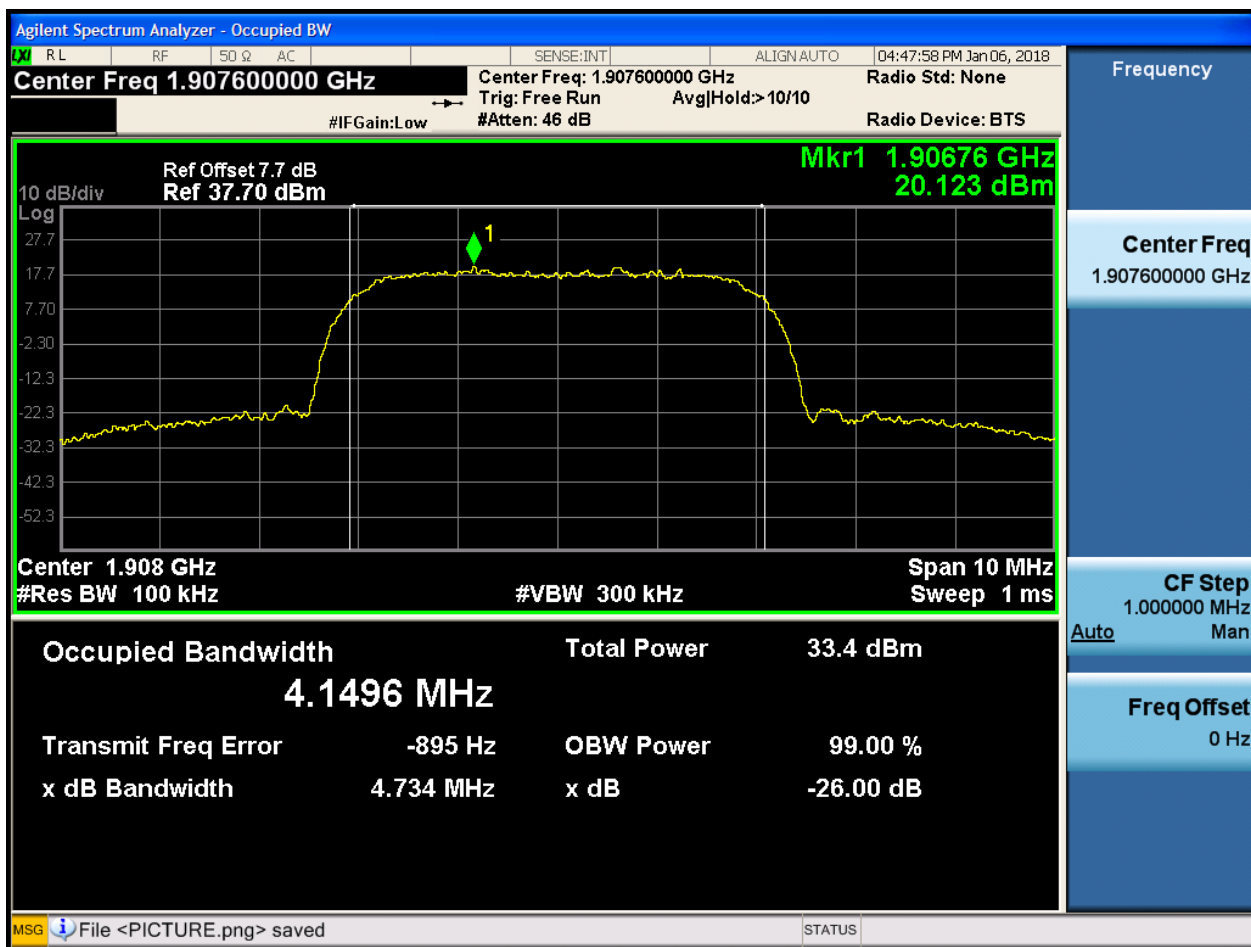


4.1.3.1.2 Test Channel = MCH





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.

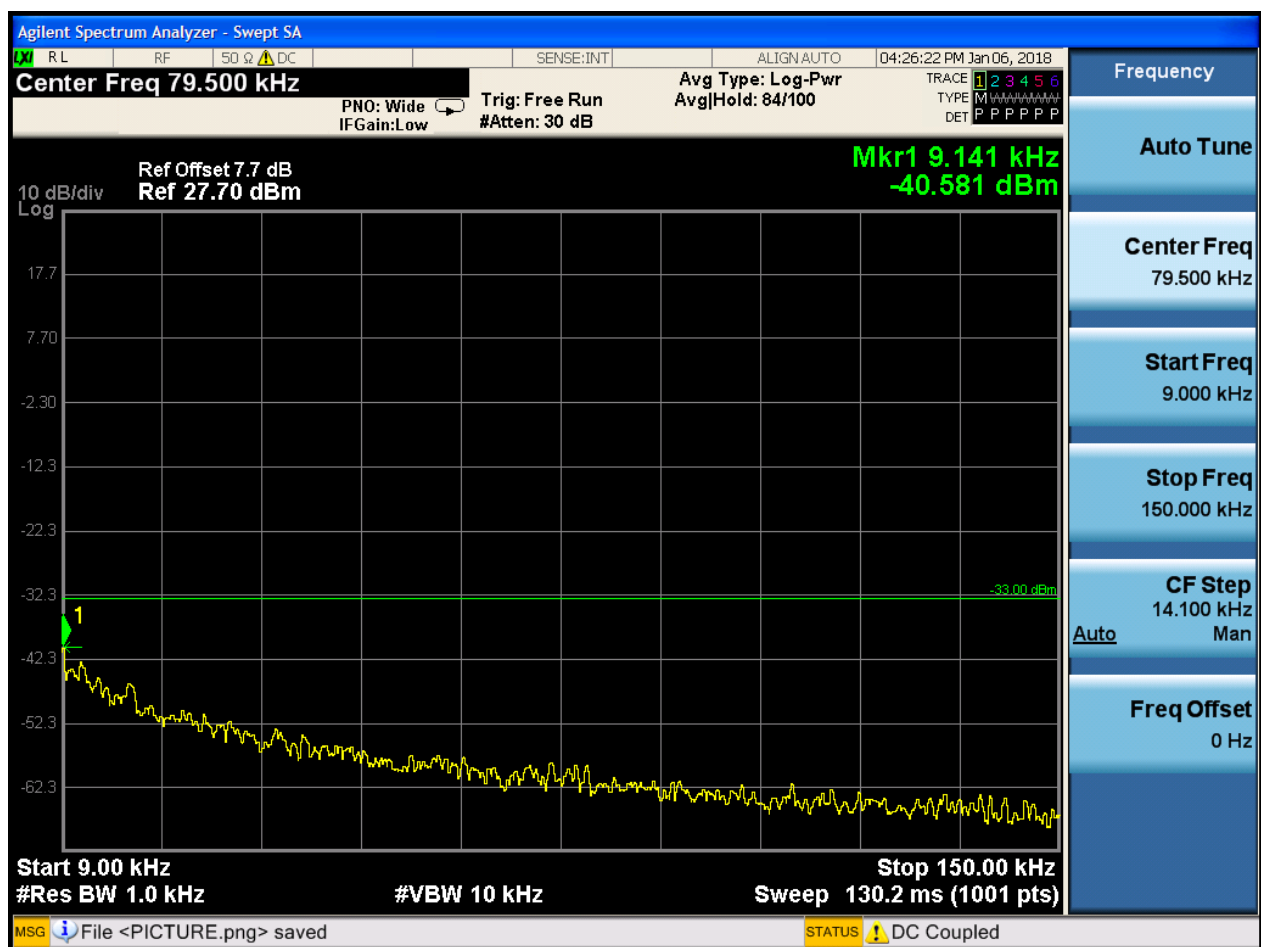
Part I - Test Plots

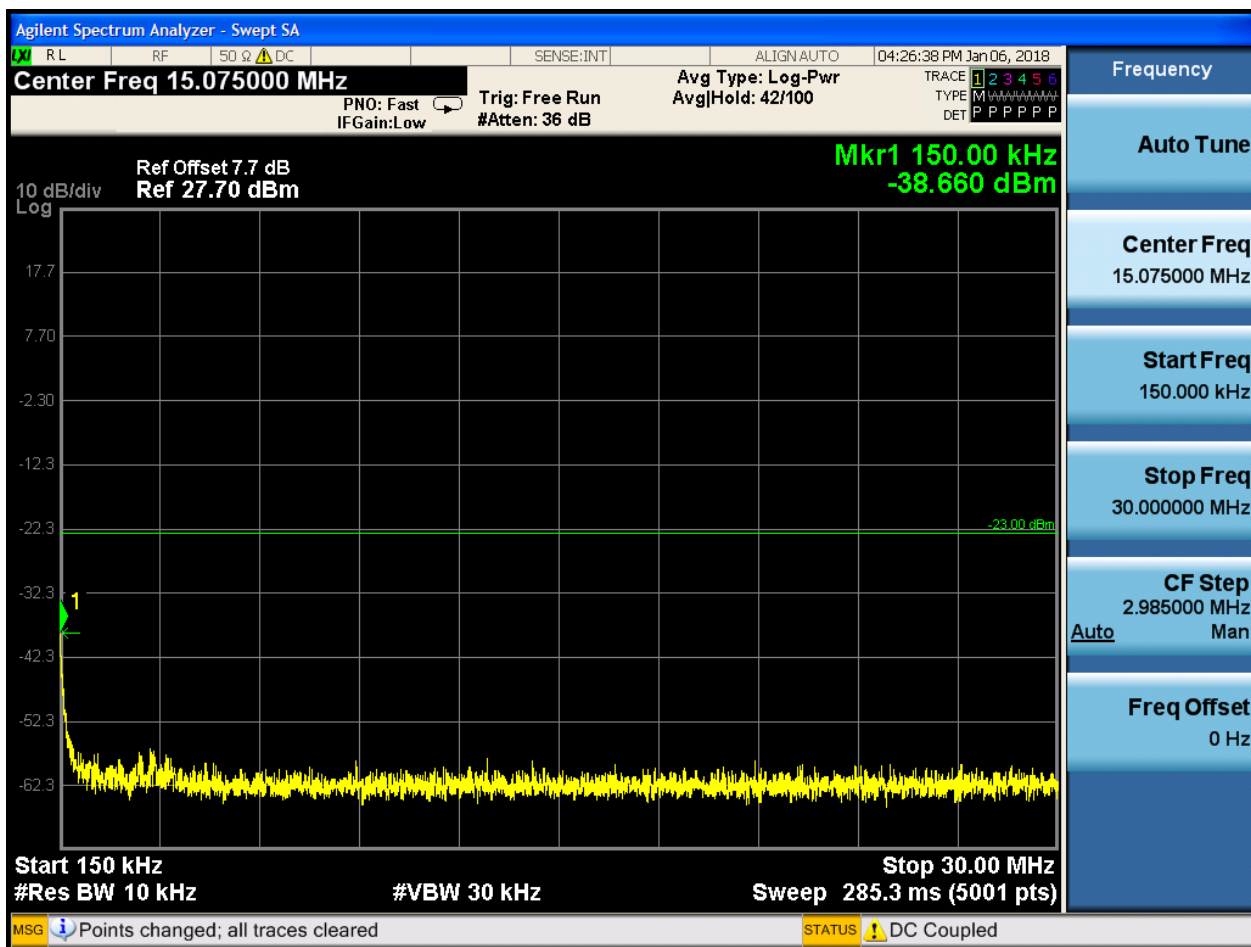
6.1 For UMTS

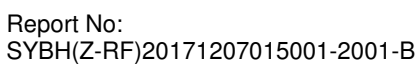
6.1.1 Test Band = WCDMA850

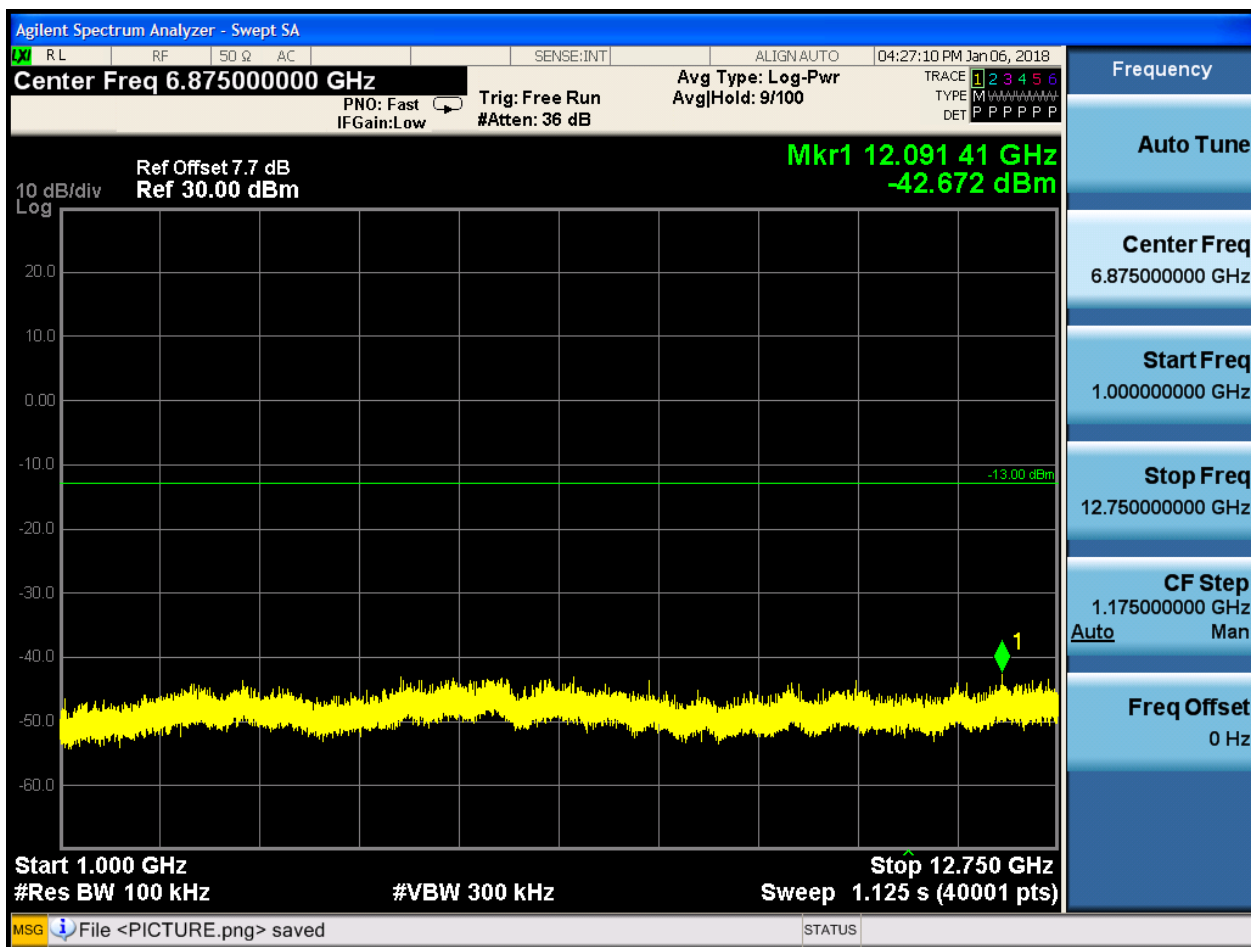
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH



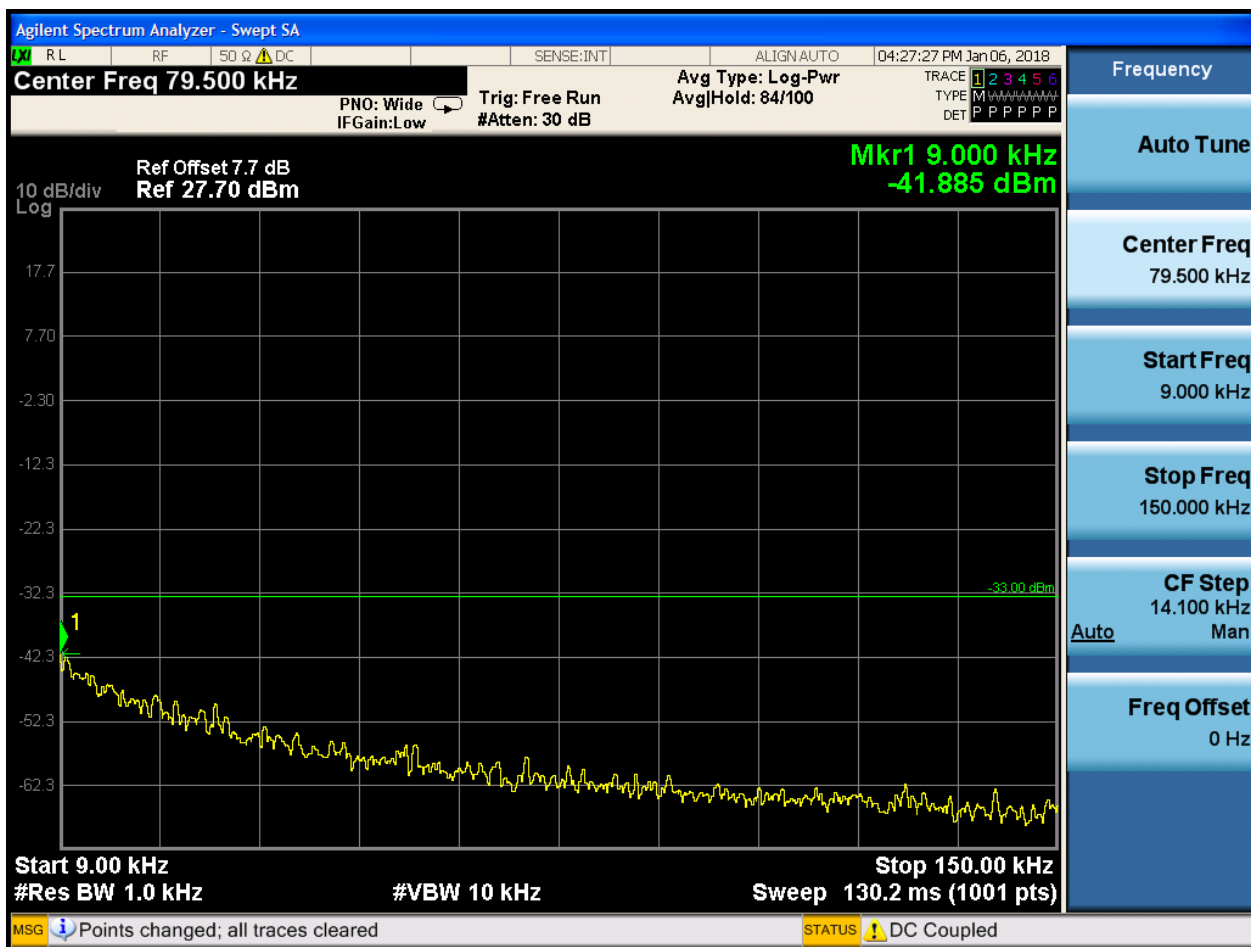


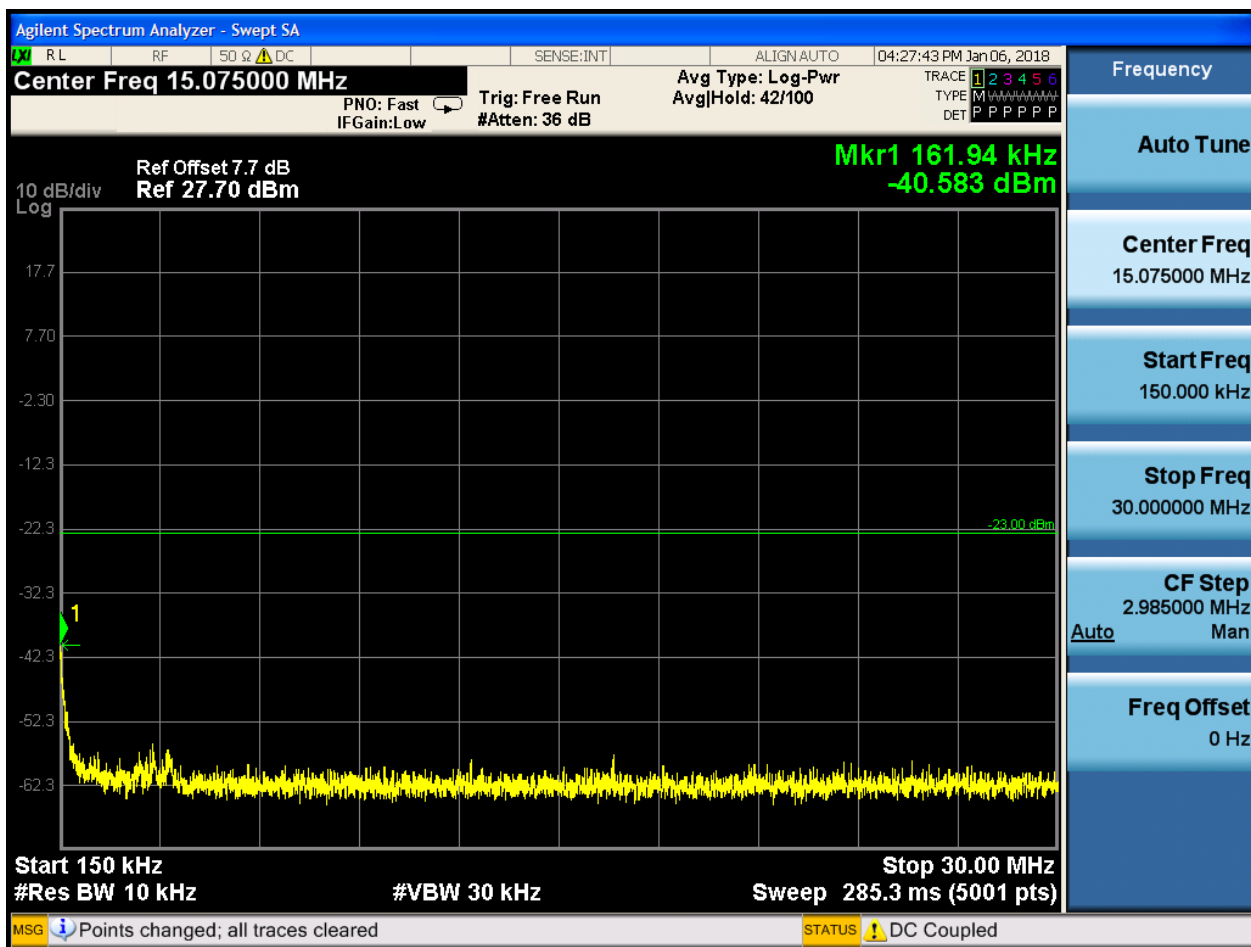


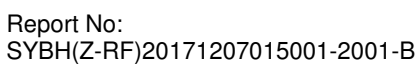


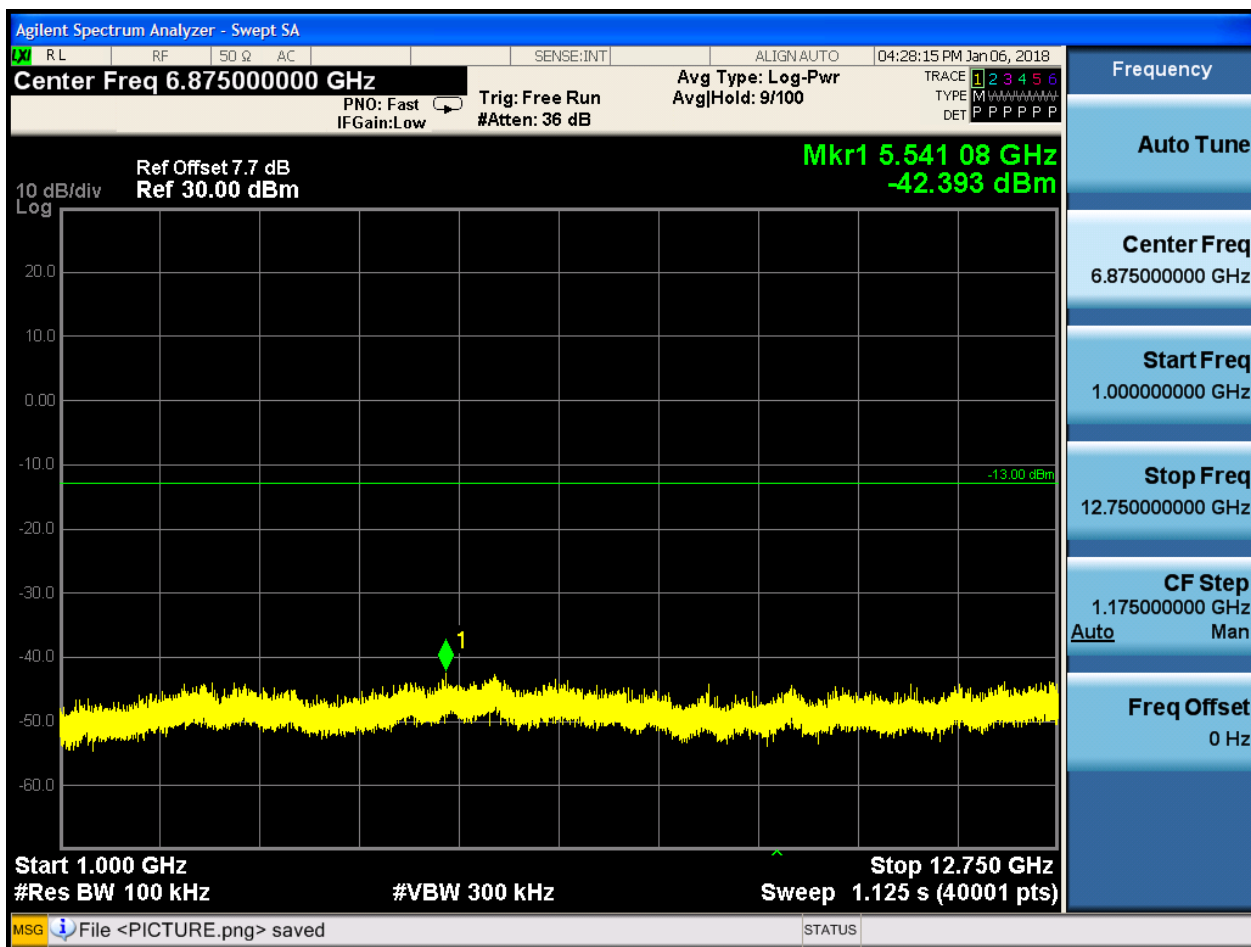


6.1.1.1.2 Test Channel = MCH



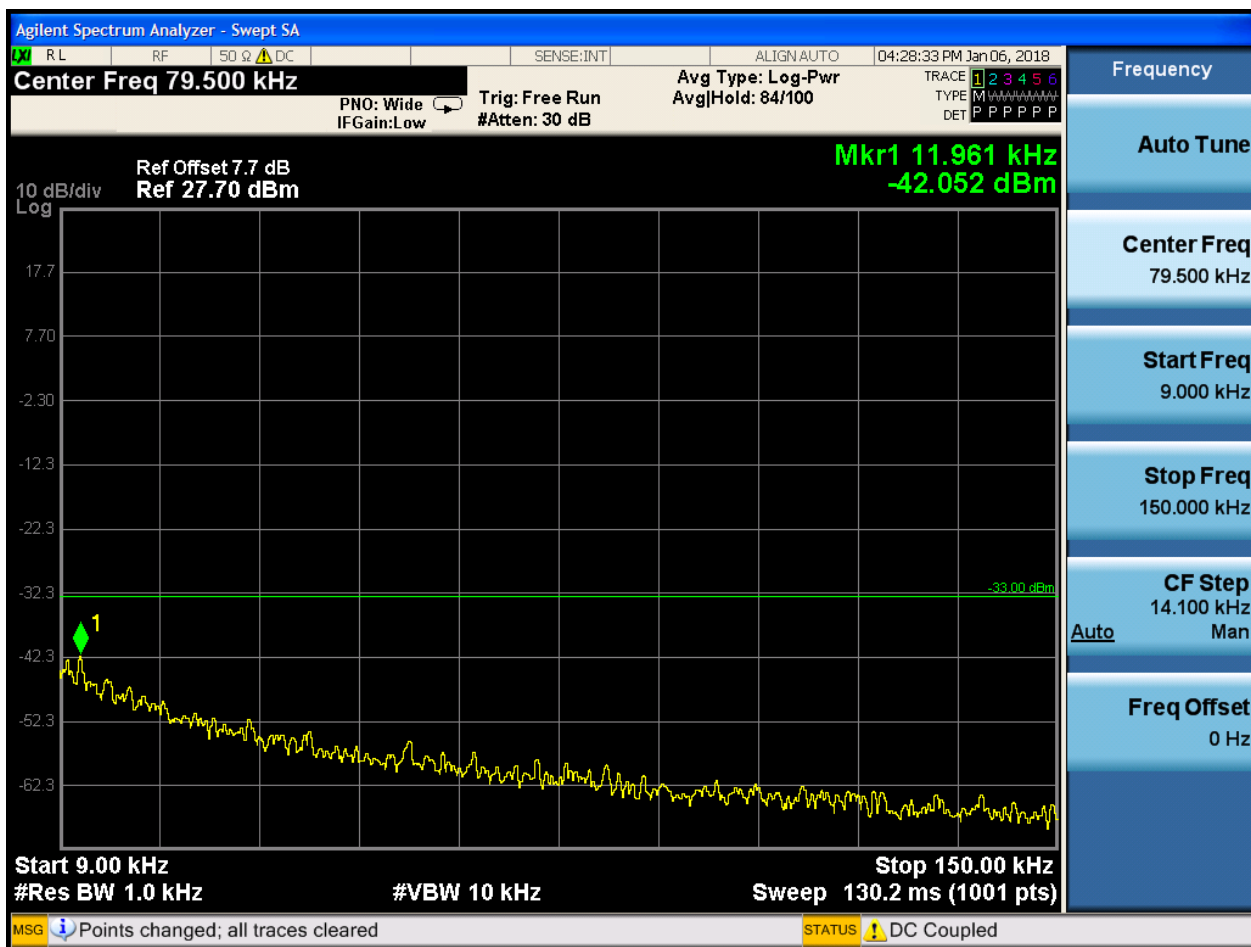


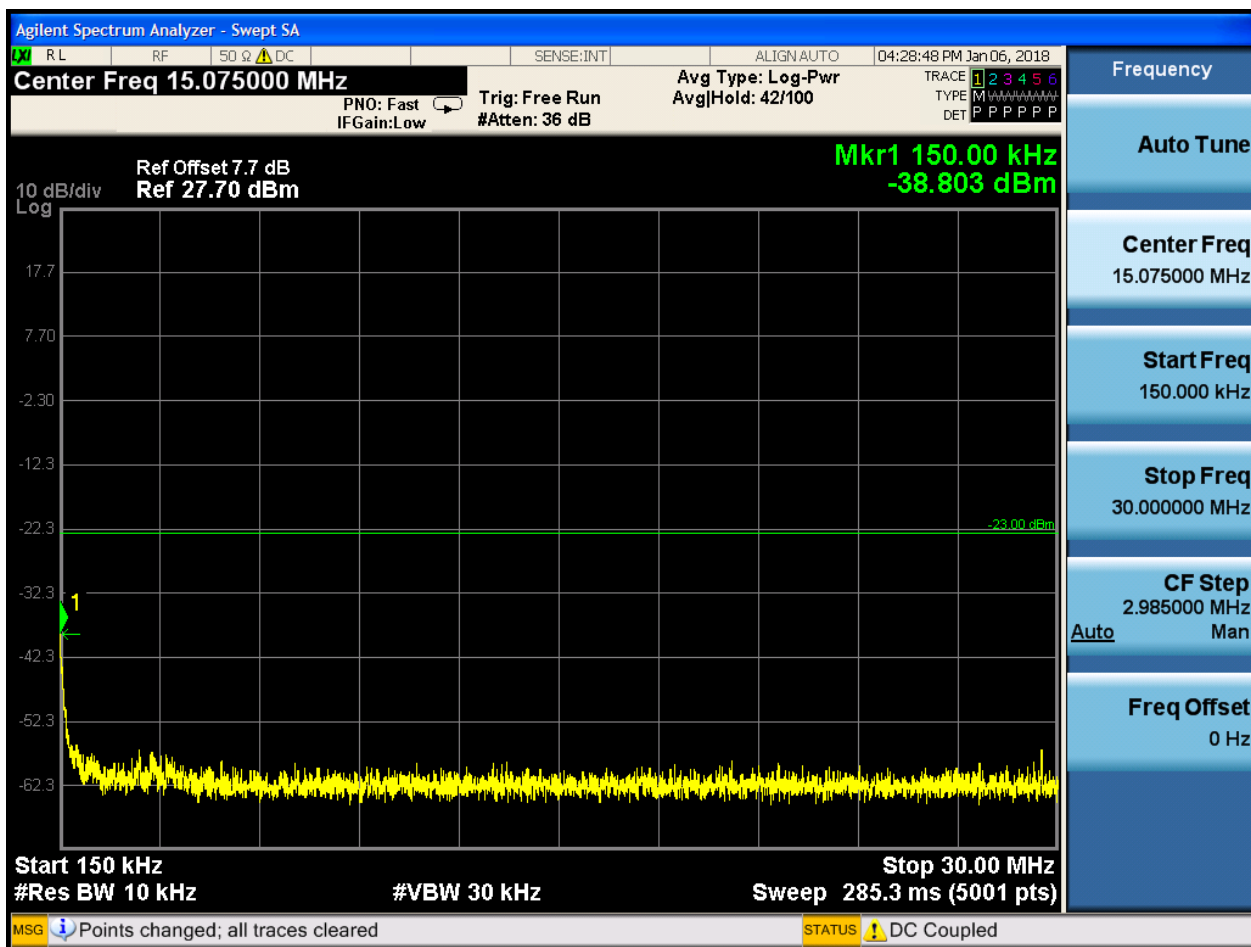


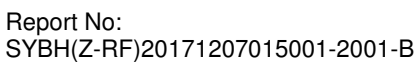


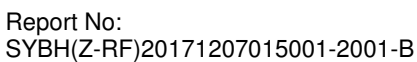


6.1.1.1.3 Test Channel = HCH





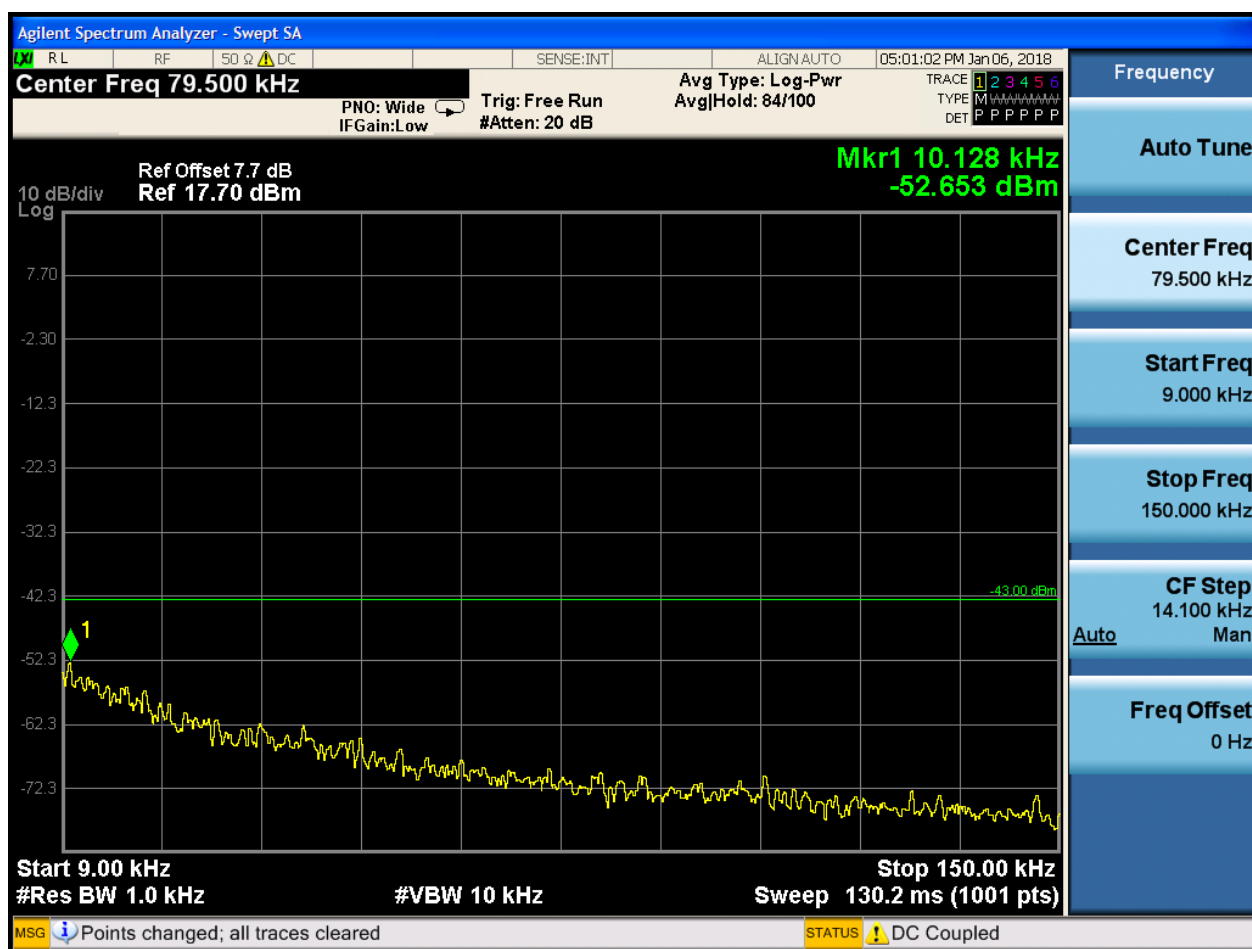


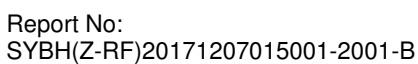


6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

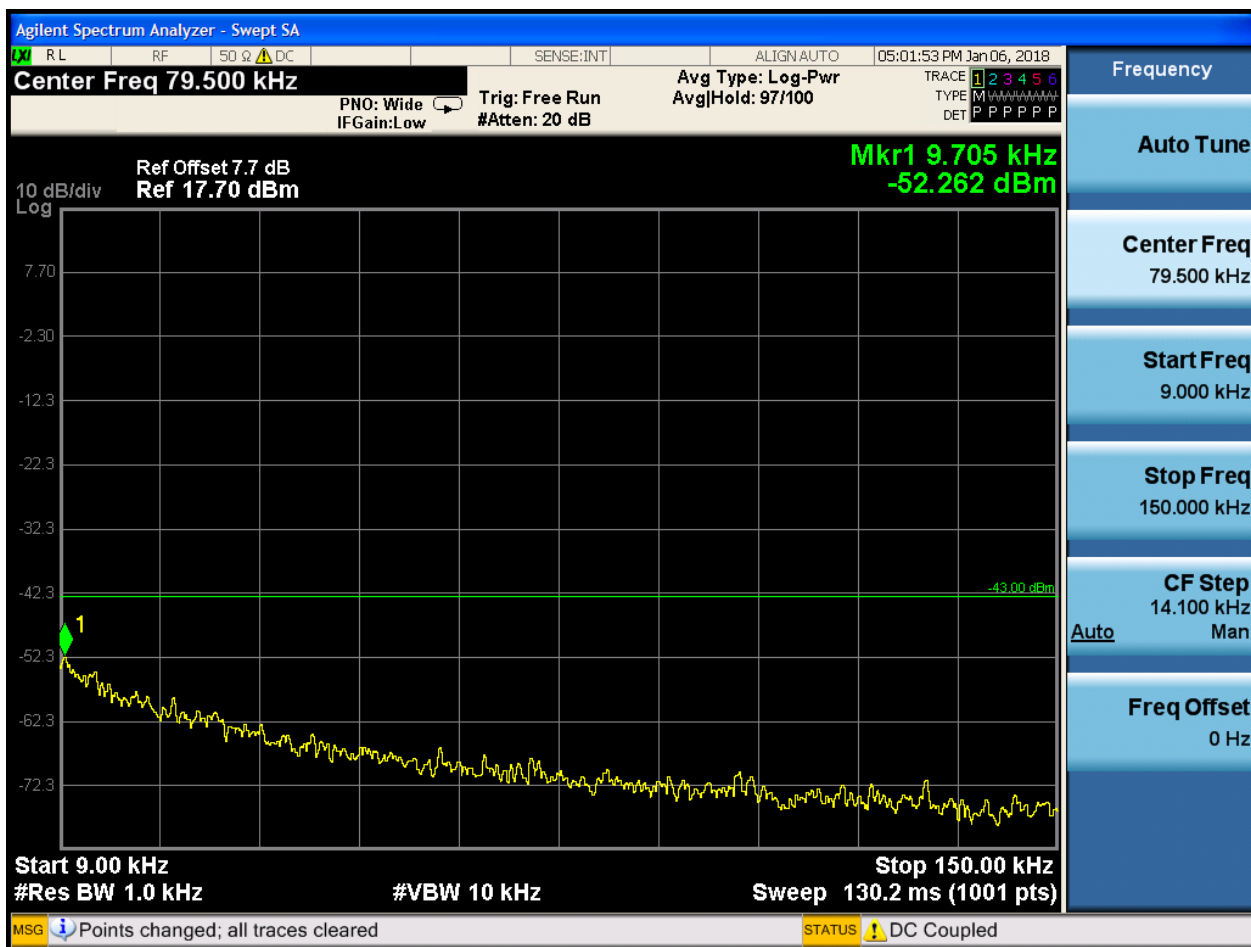
6.1.2.1.1 Test Channel = LCH

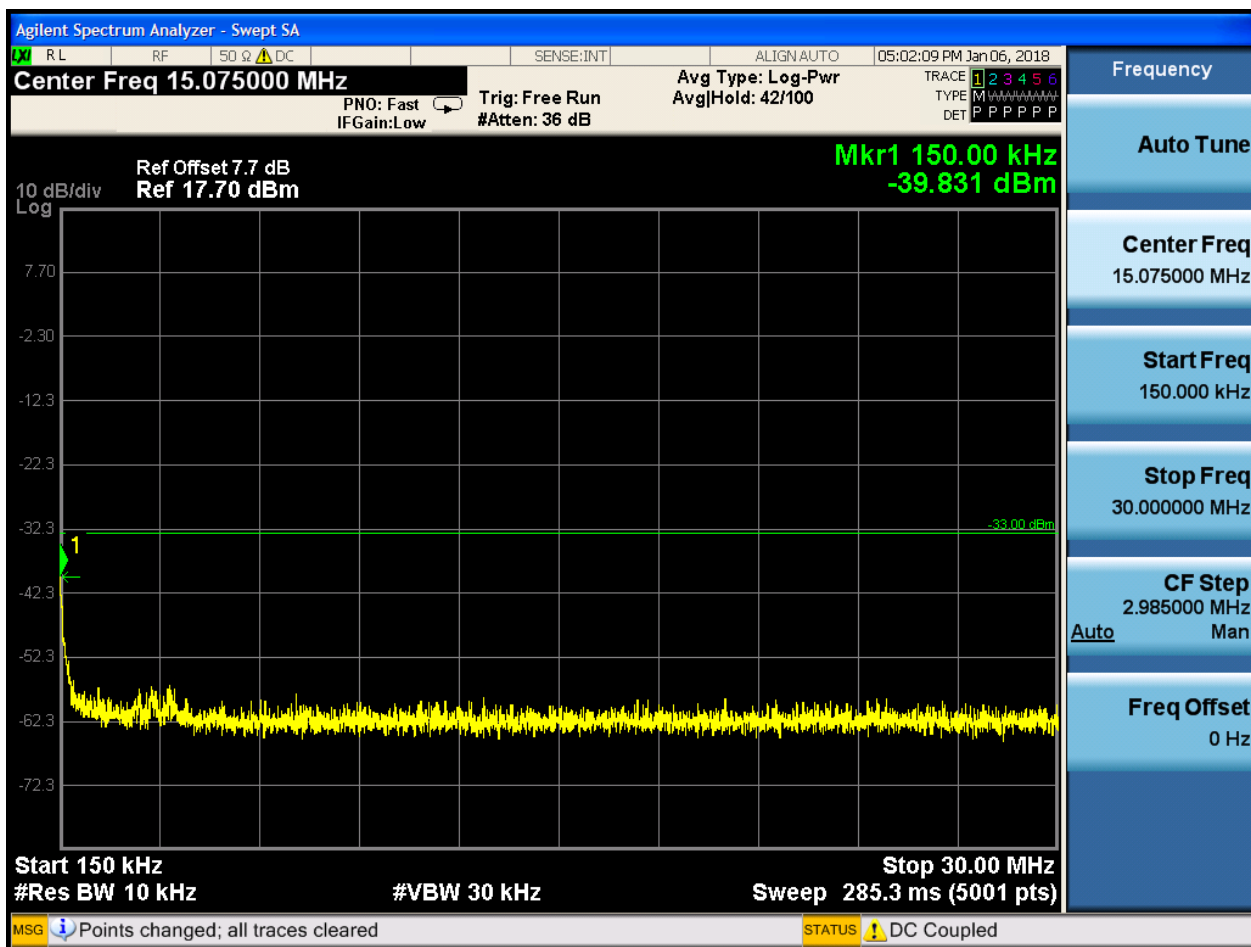


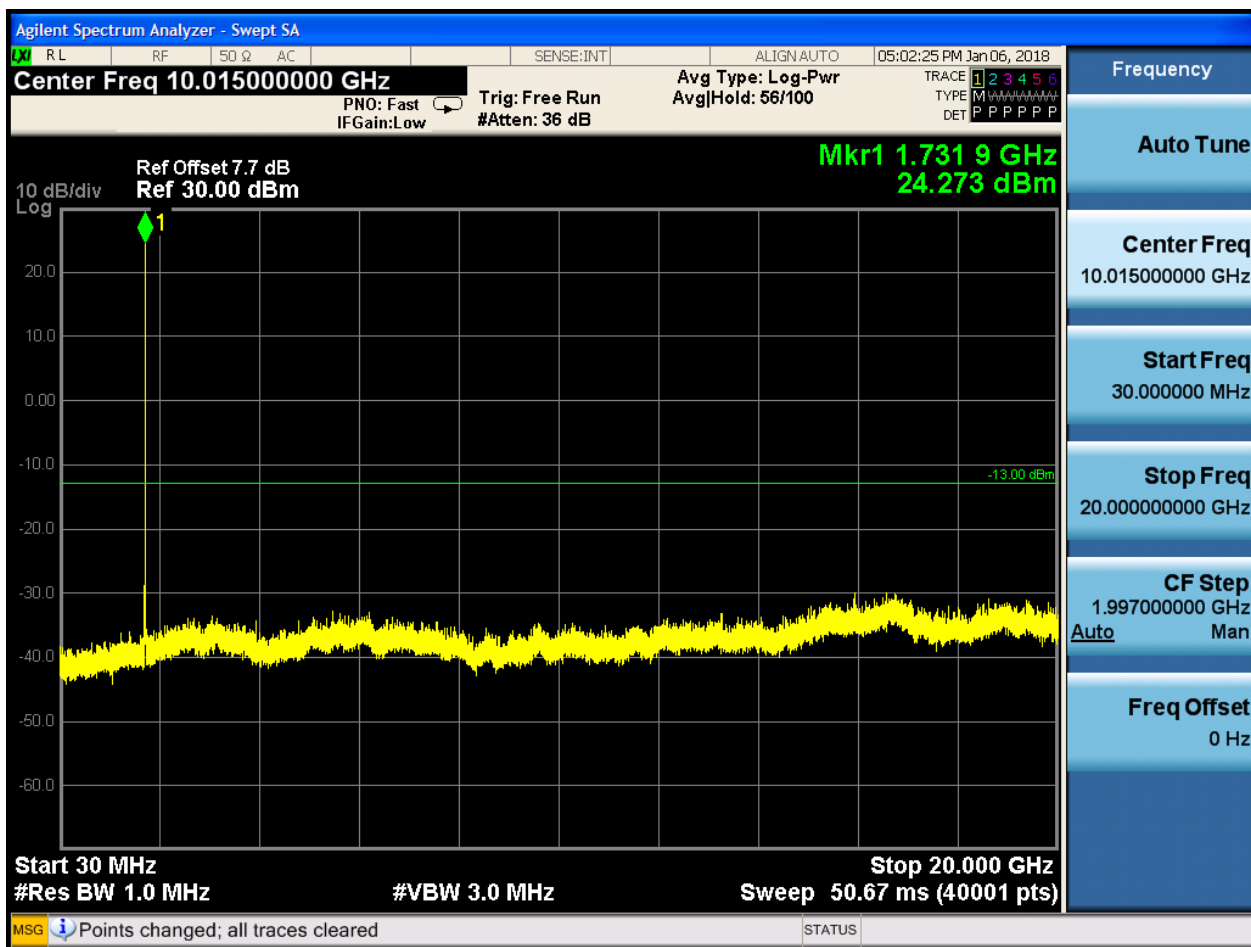




6.1.2.1.2 Test Channel = MCH

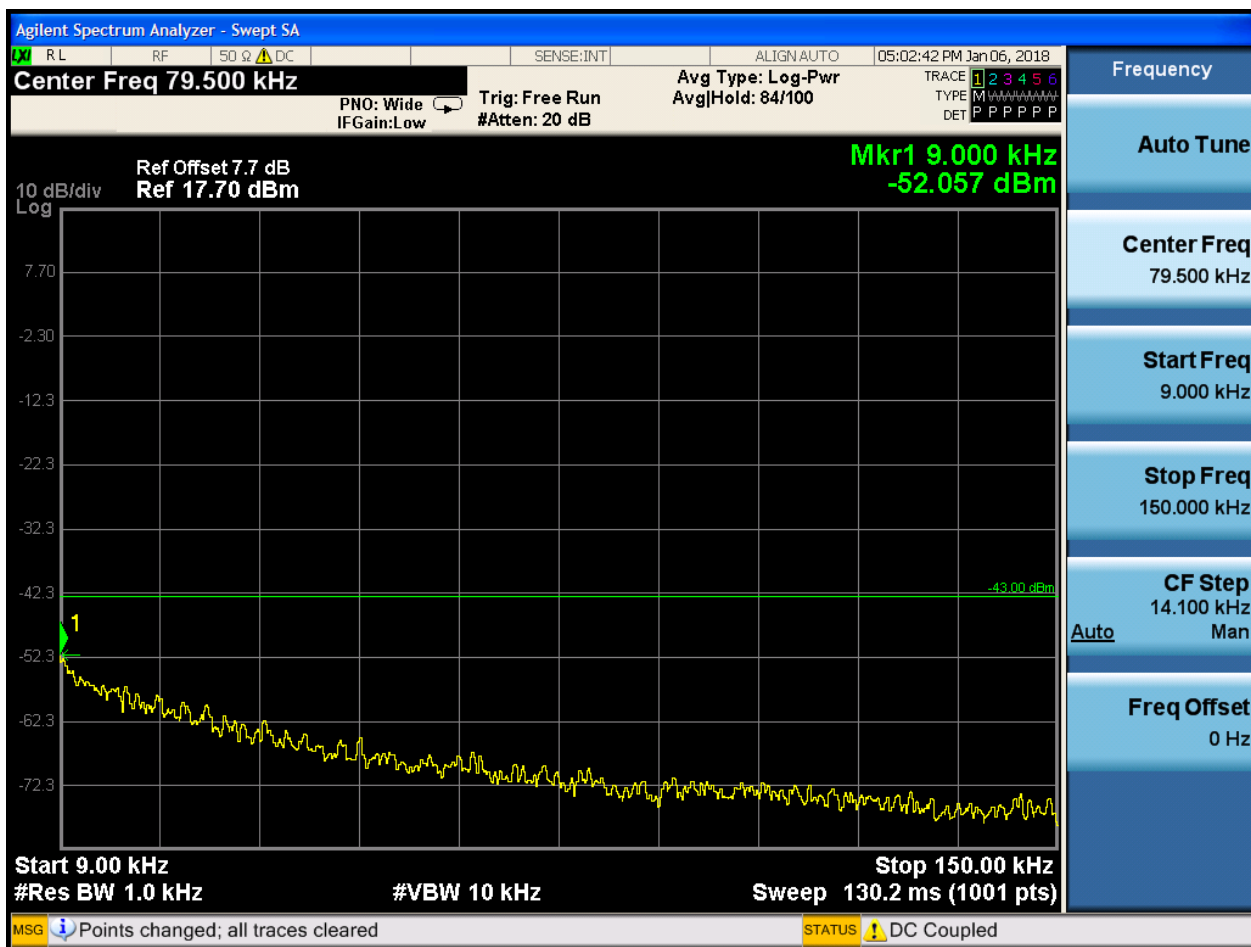


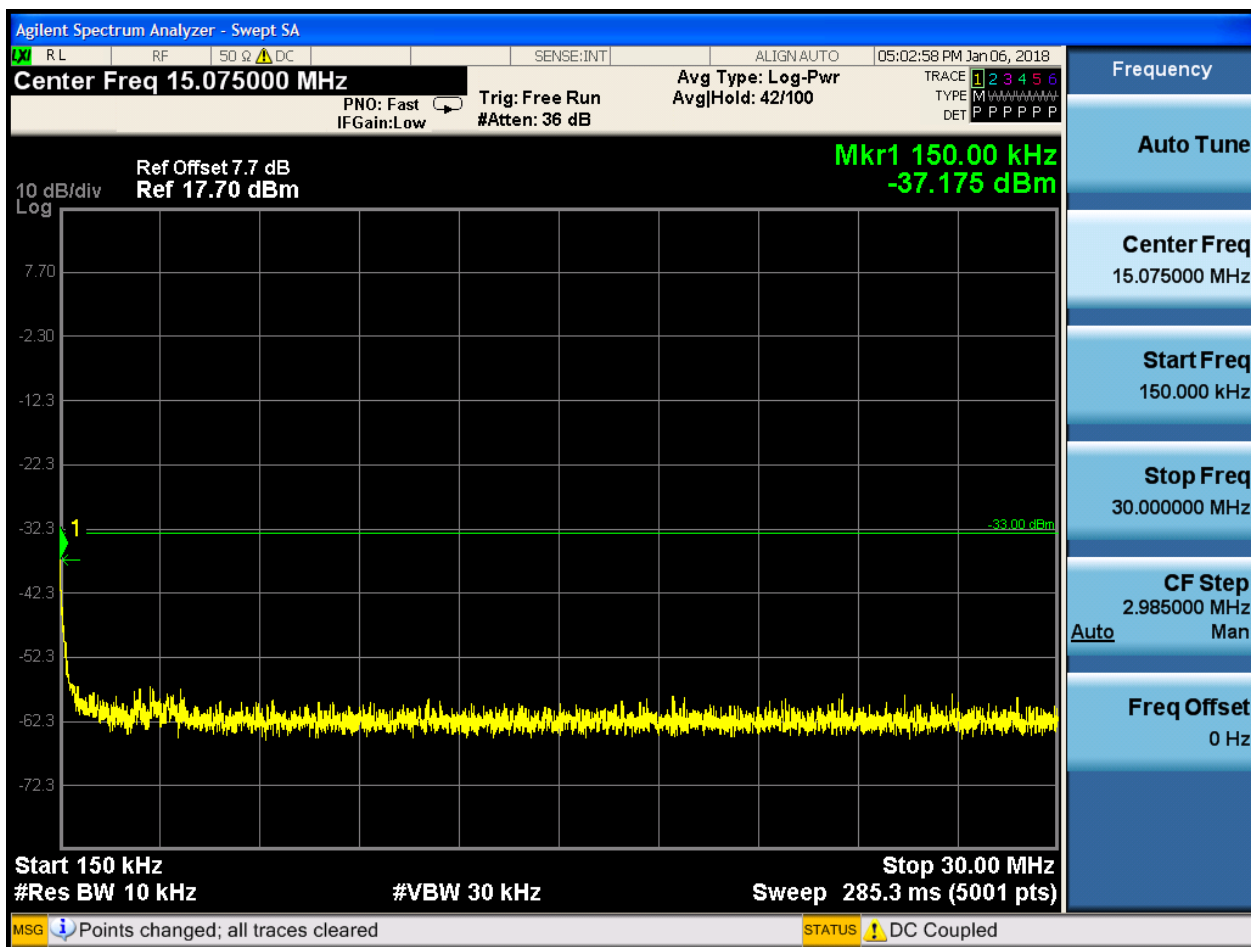


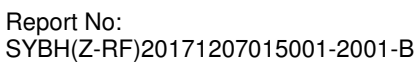




6.1.2.1.3 Test Channel = HCH







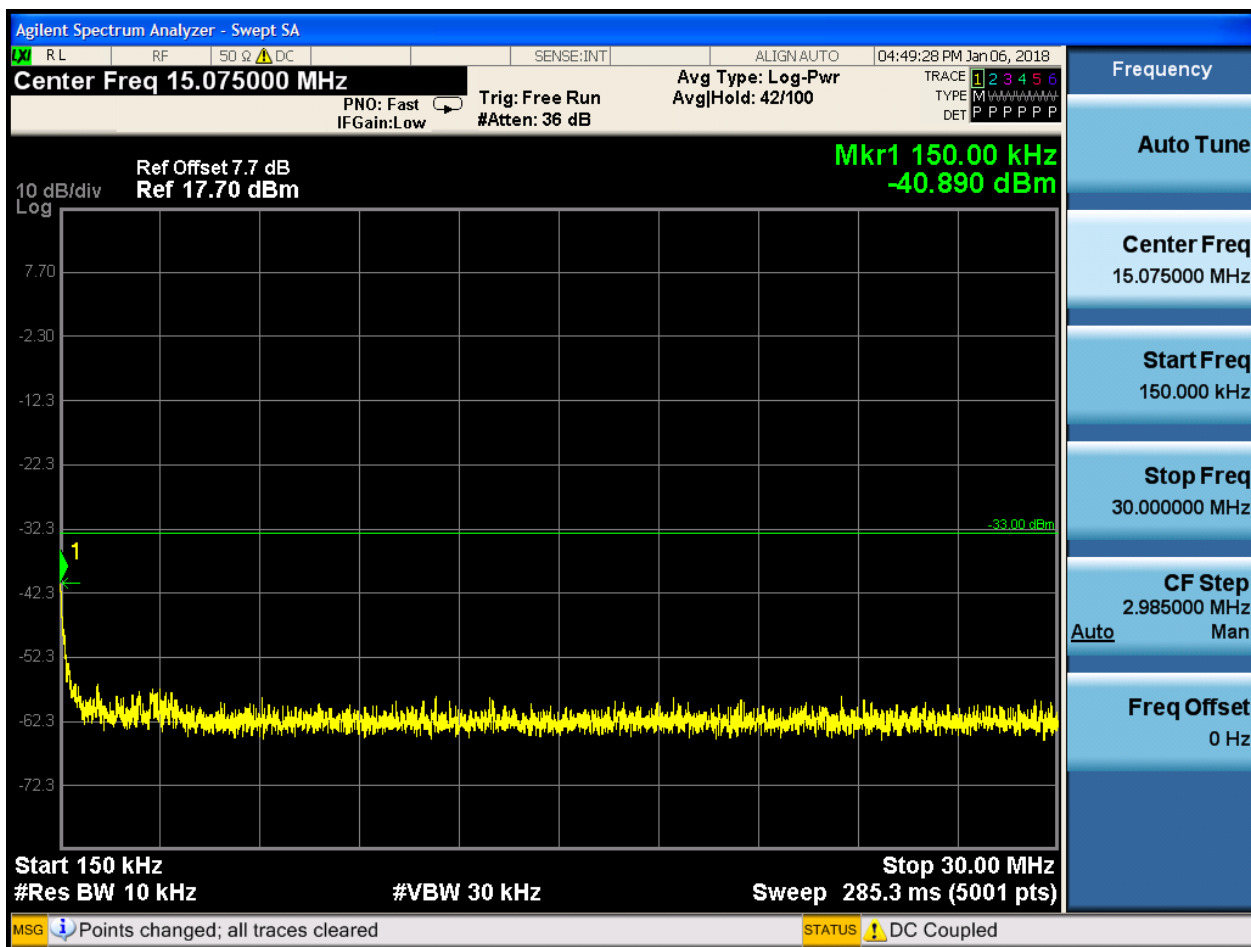


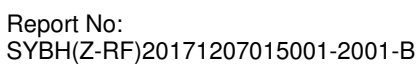
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

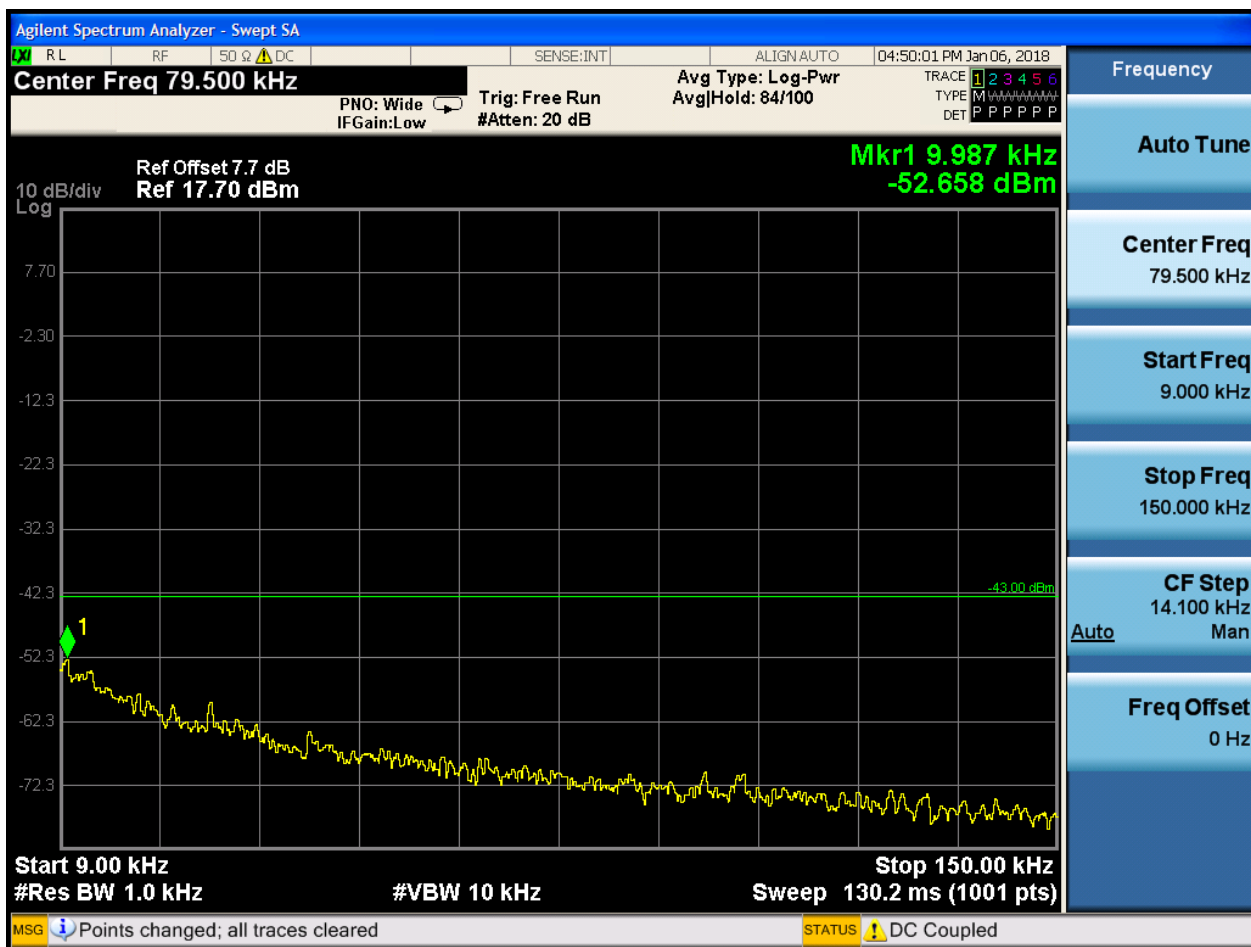
6.1.3.1.1 Test Channel = LCH

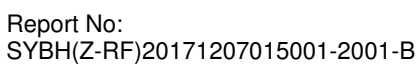


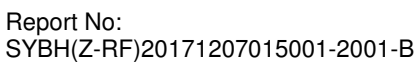




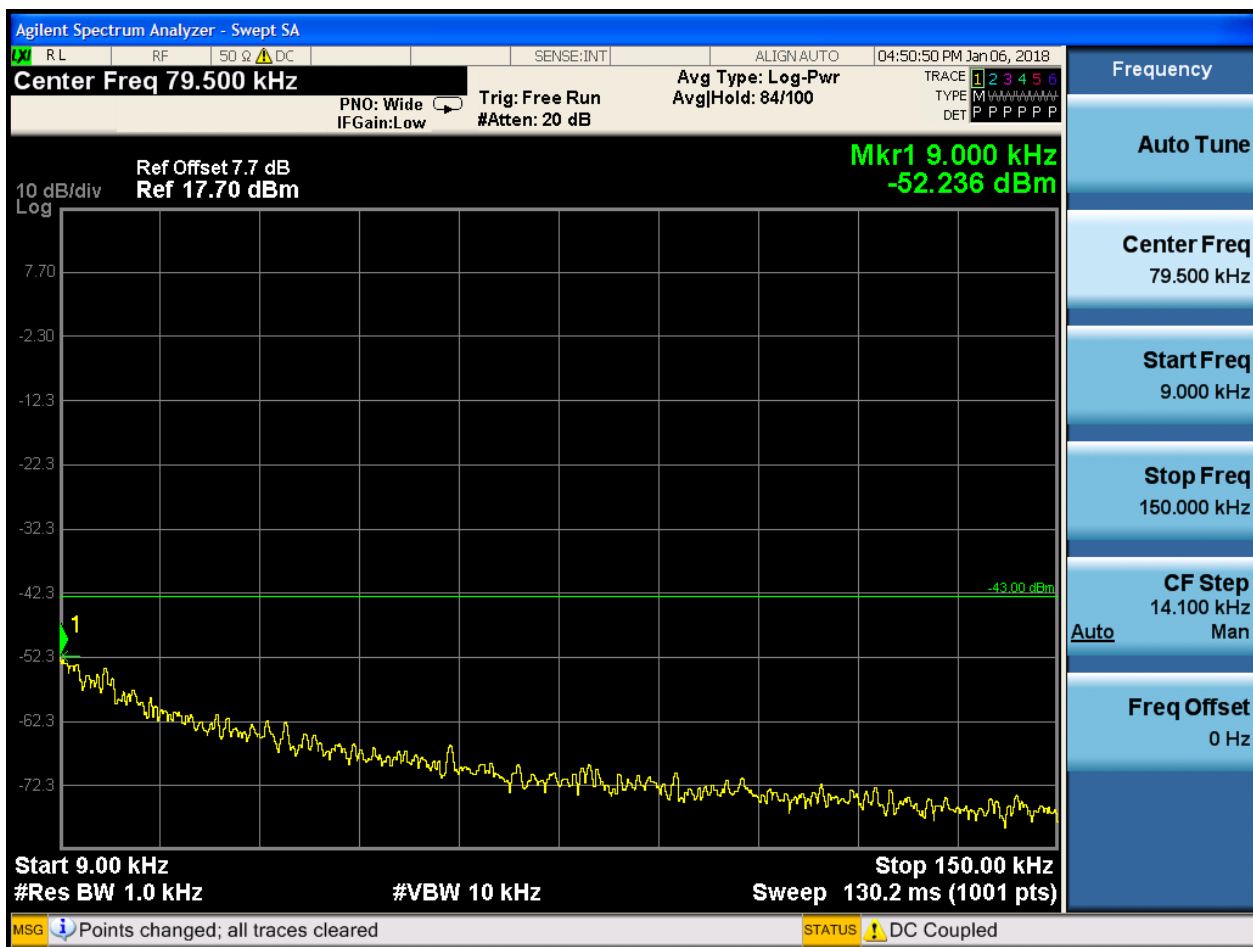
6.1.3.1.2 Test Channel = MCH

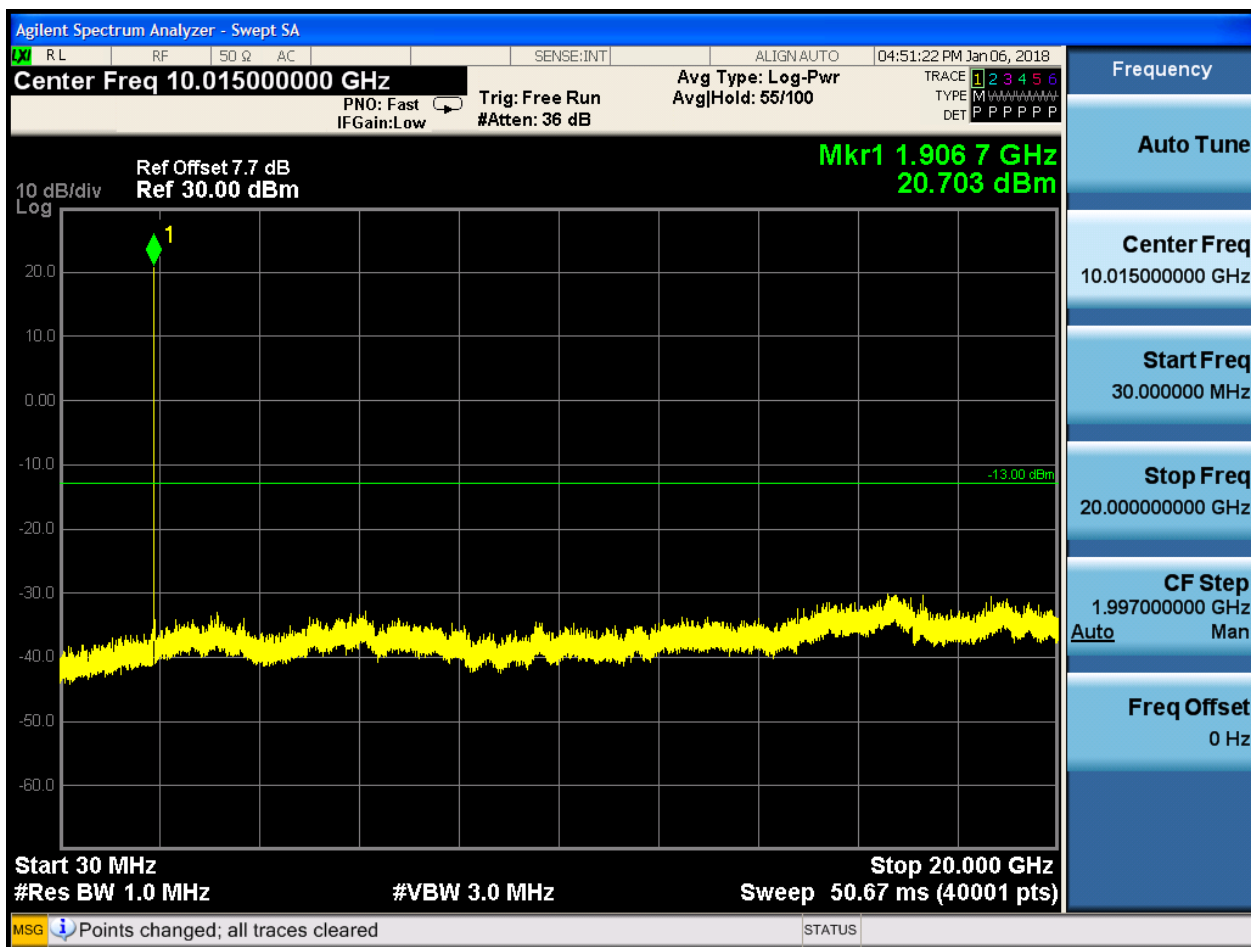






6.1.3.1.3 Test Channel = HCH





7Appendix_G: Field Strength of Spurious Radiation

Note:

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

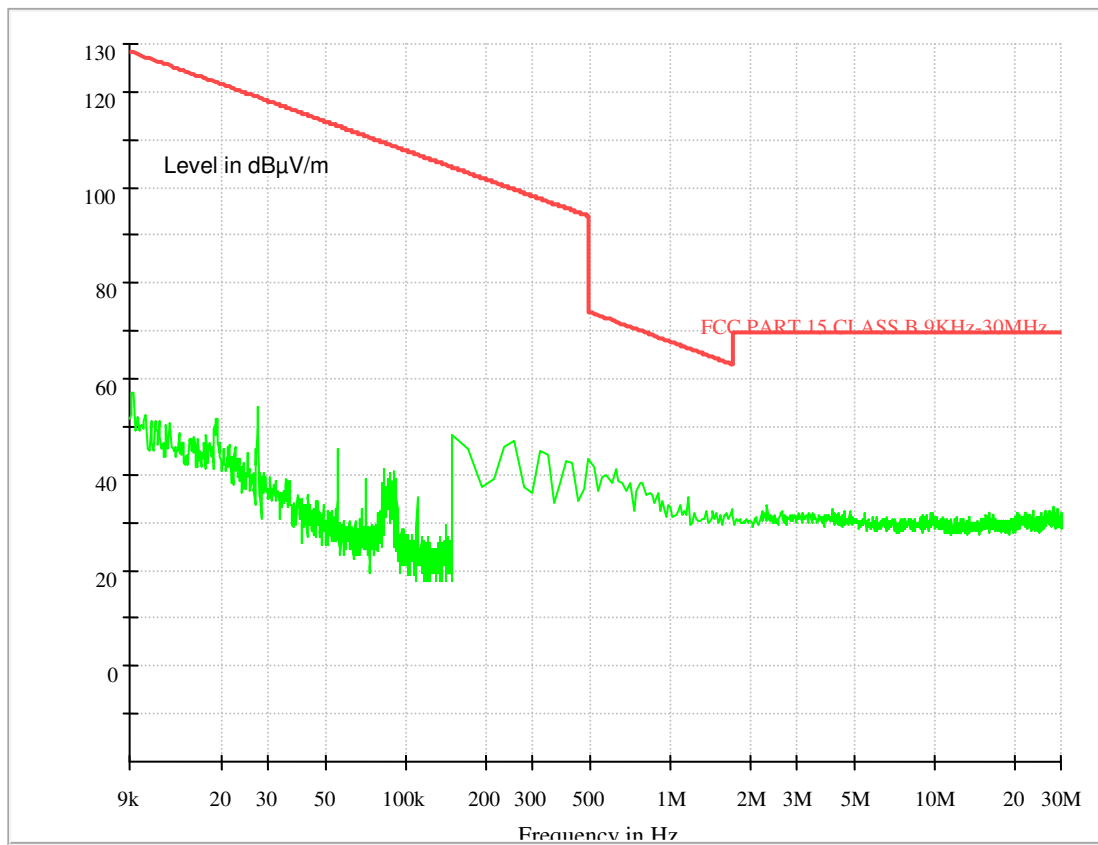
We tested all modes, but the data presented below is the worst case.

Part I - Test Plots

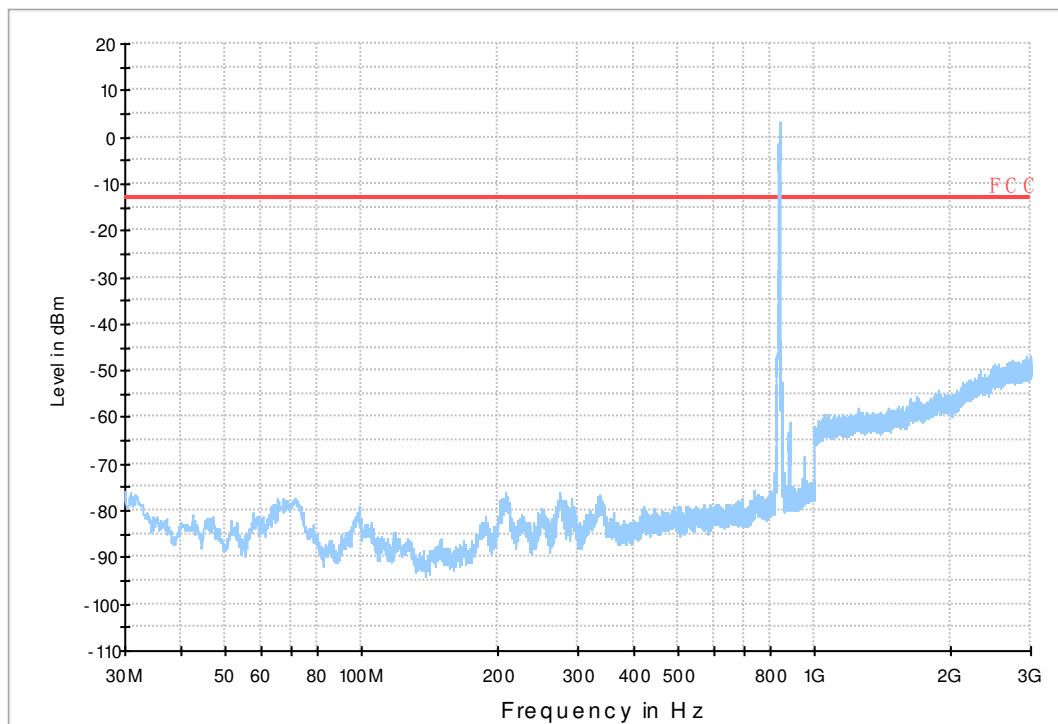
7.1 For UMTS

7.1.1 Test Band = WCDMA850_ANT1

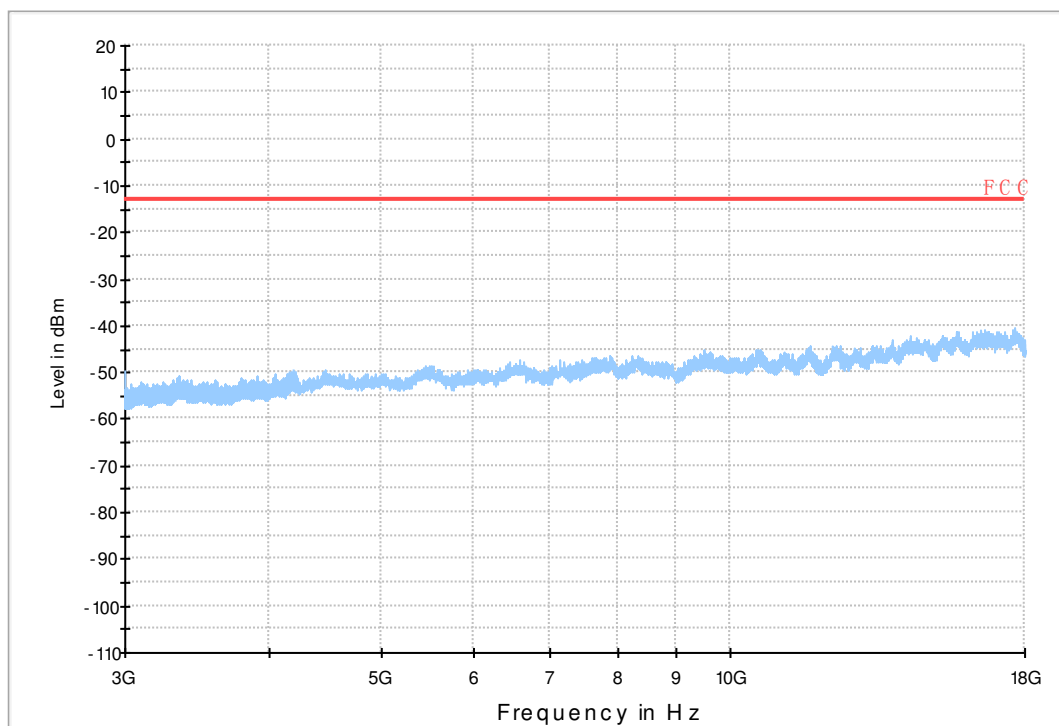
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

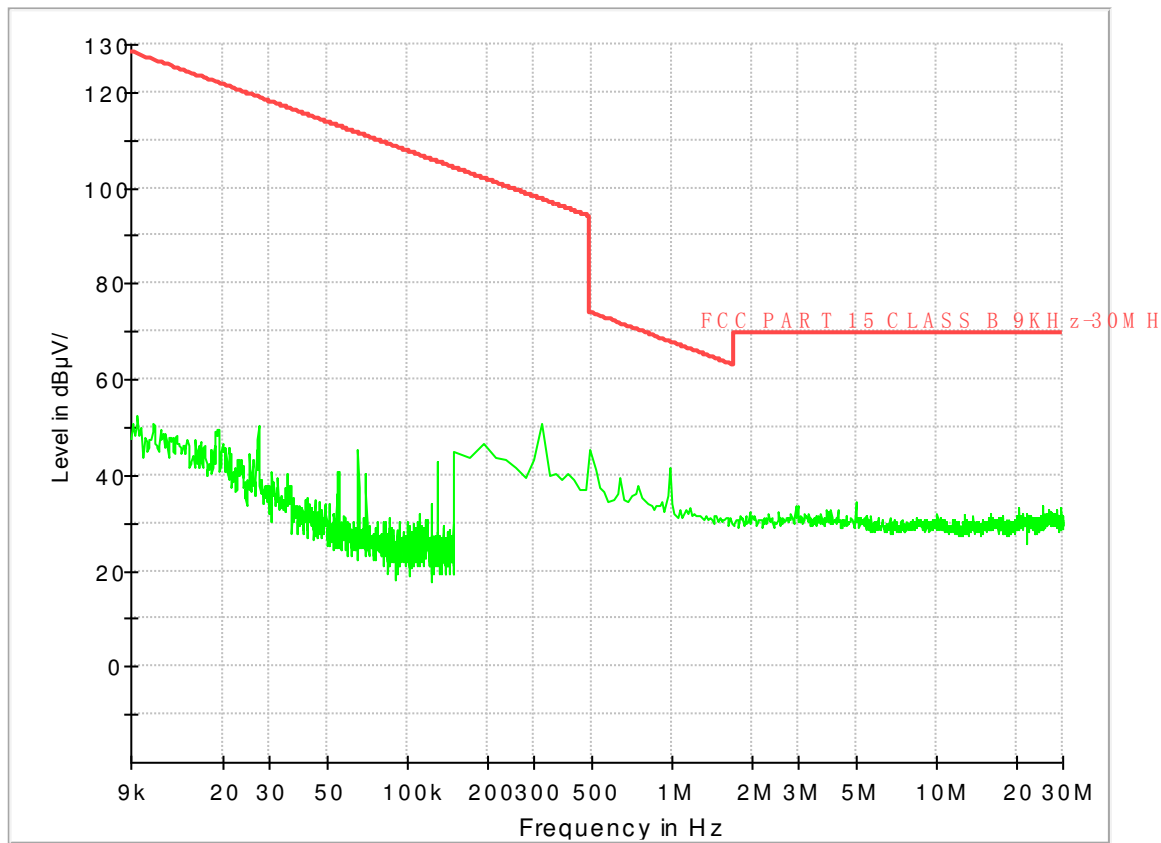


Copy of FCC PART22 W CDMA850_H

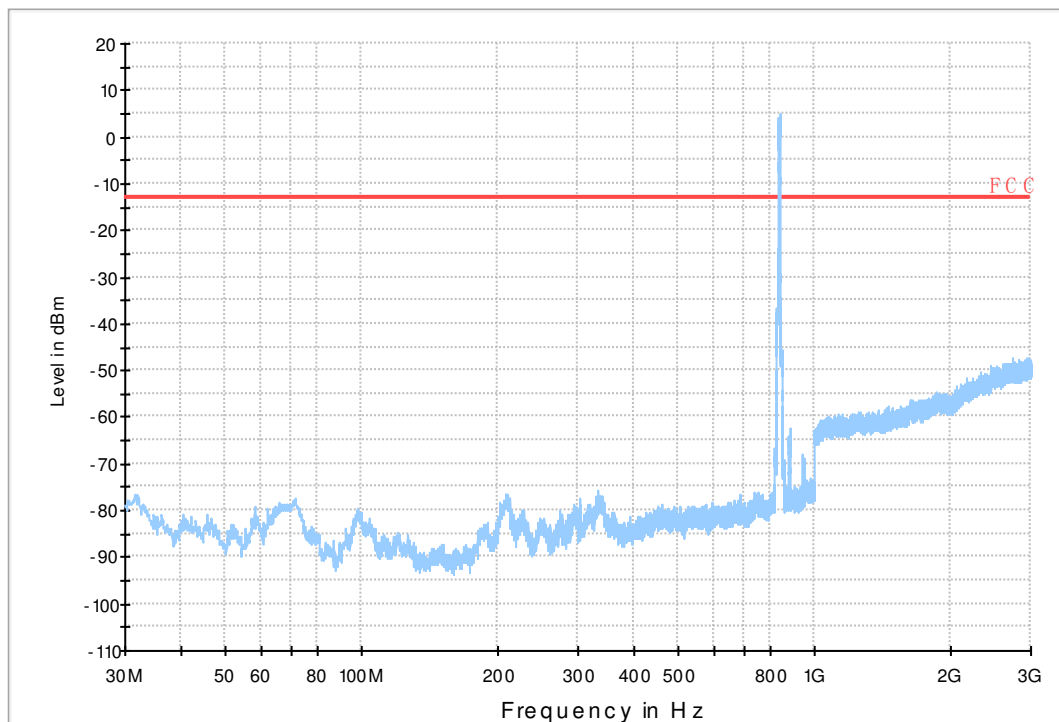


7.1.2 Test Band = WCDMA850_ANT2

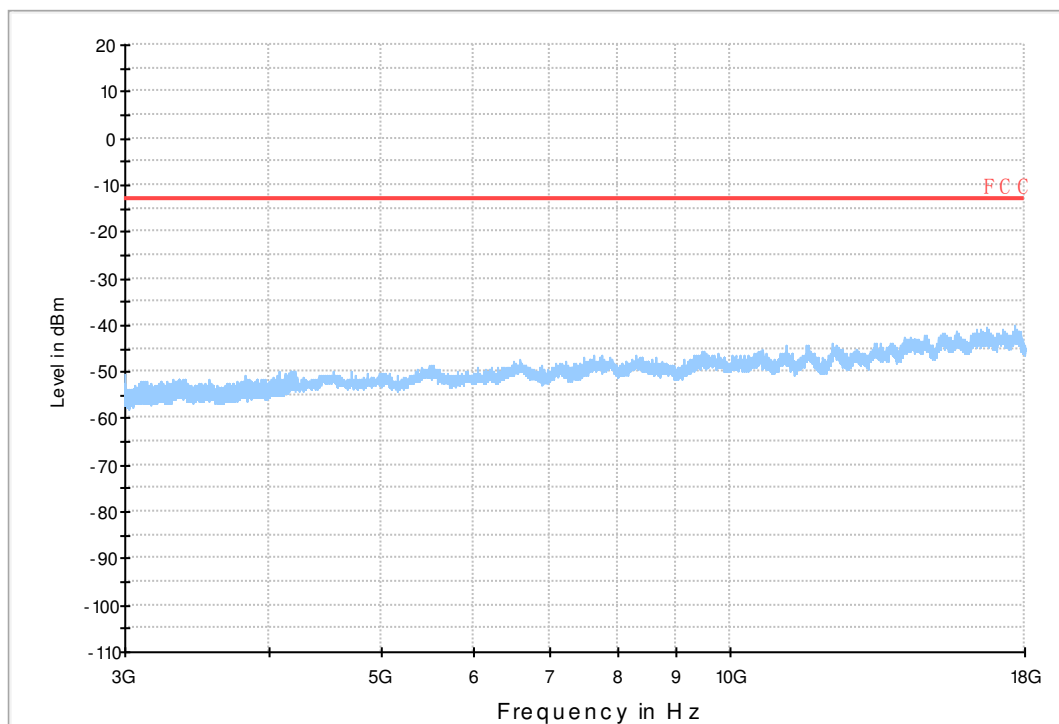
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

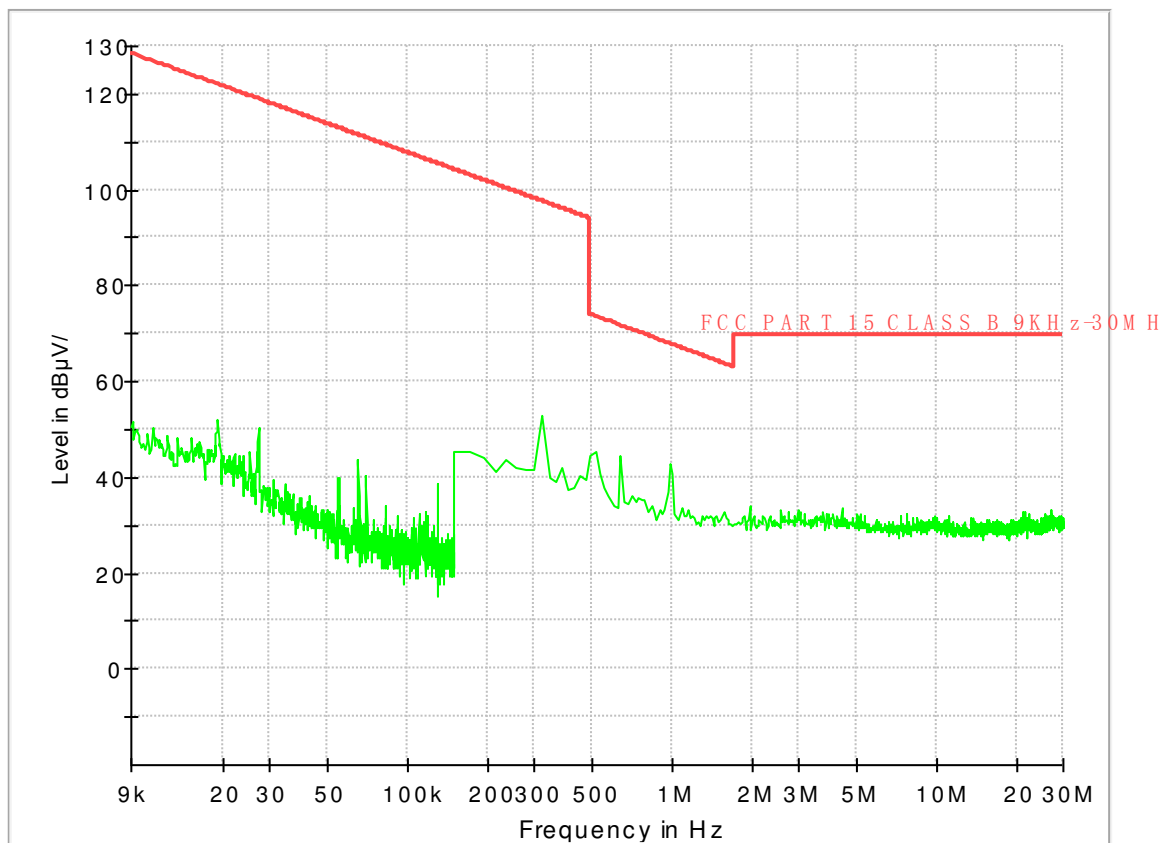


Copy of FCC PART22 W CDMA850_H

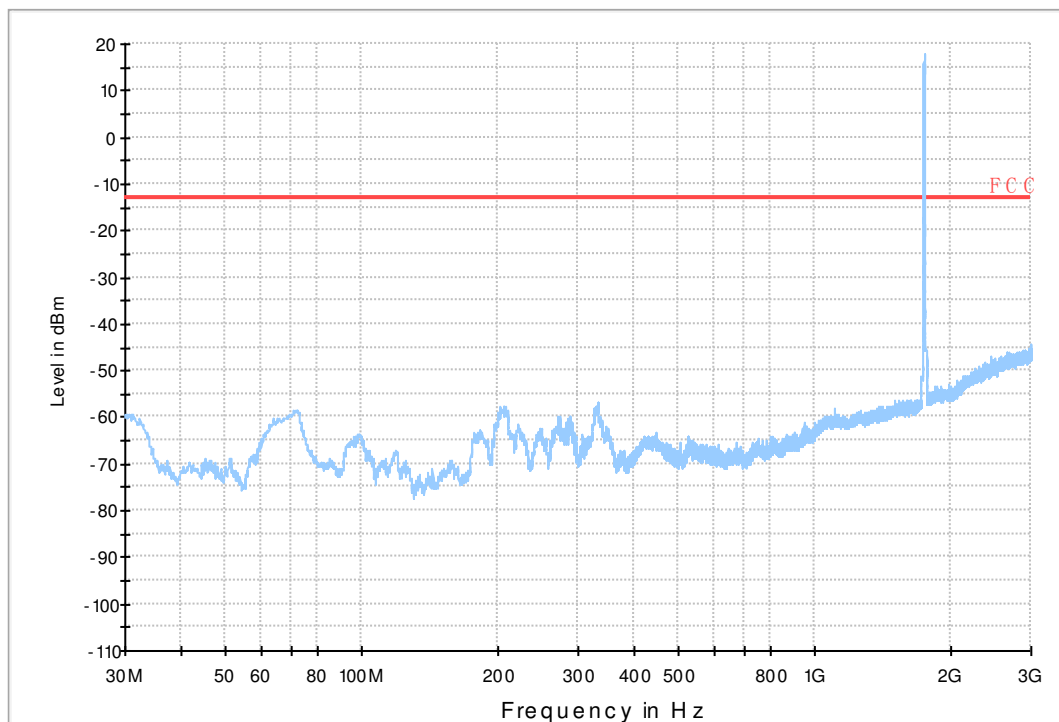


7.1.3 Test Band = WCDMA1700_ANT1

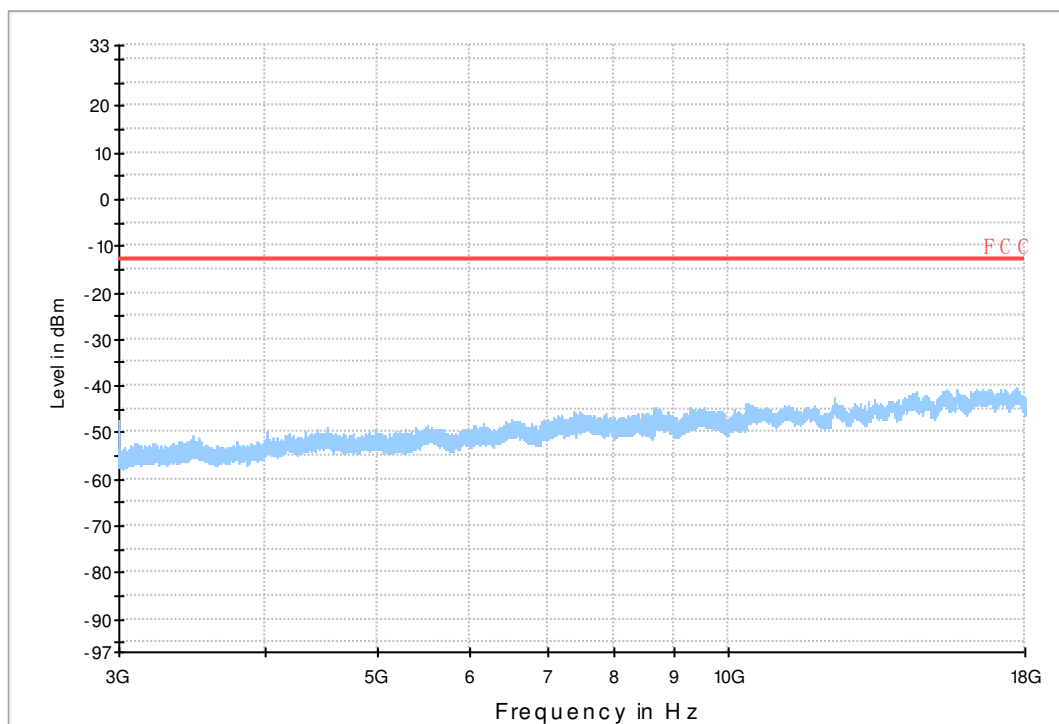
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

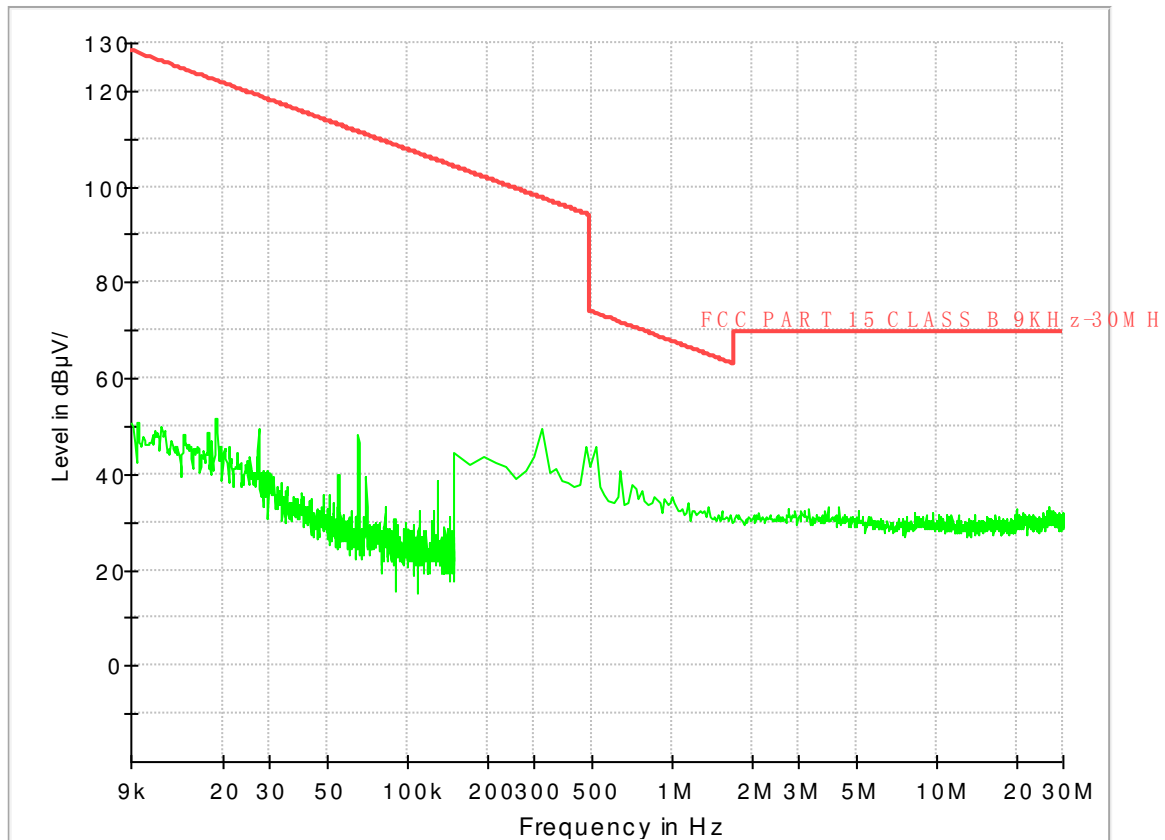


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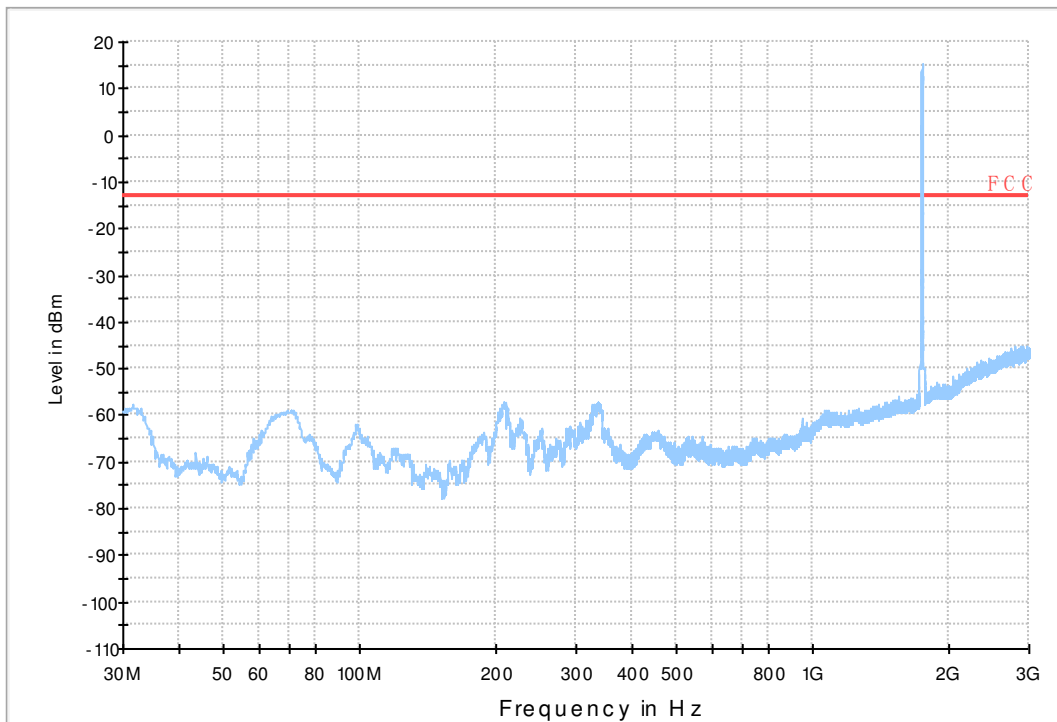


7.1.4 Test Band = WCDMA1700_ANT2

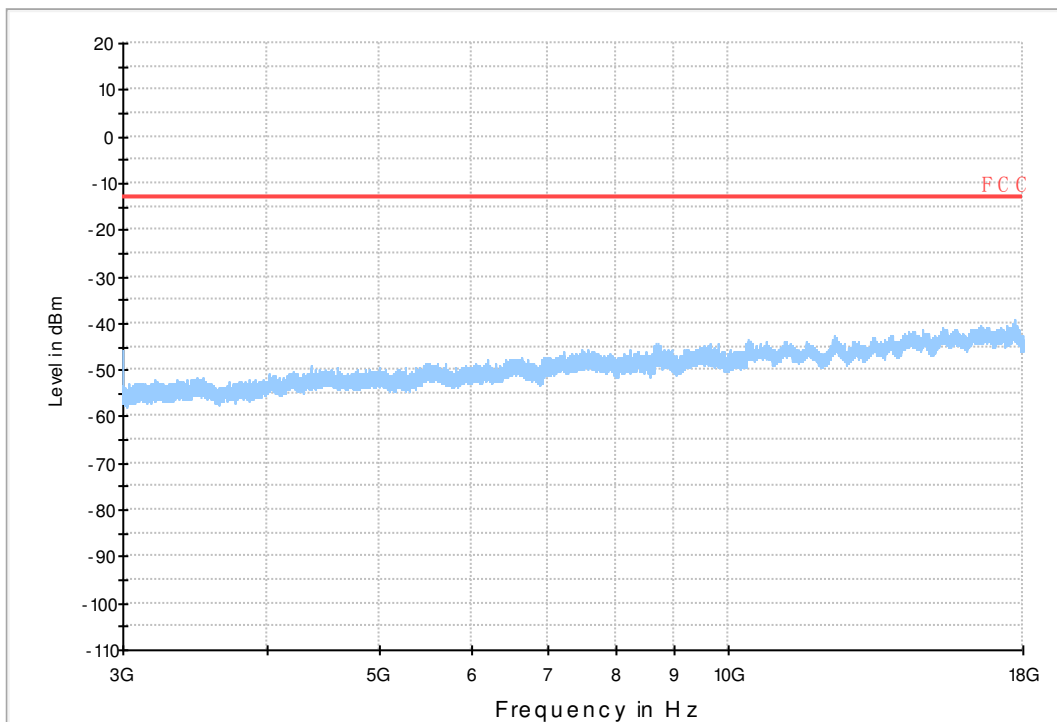
7.1.4.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

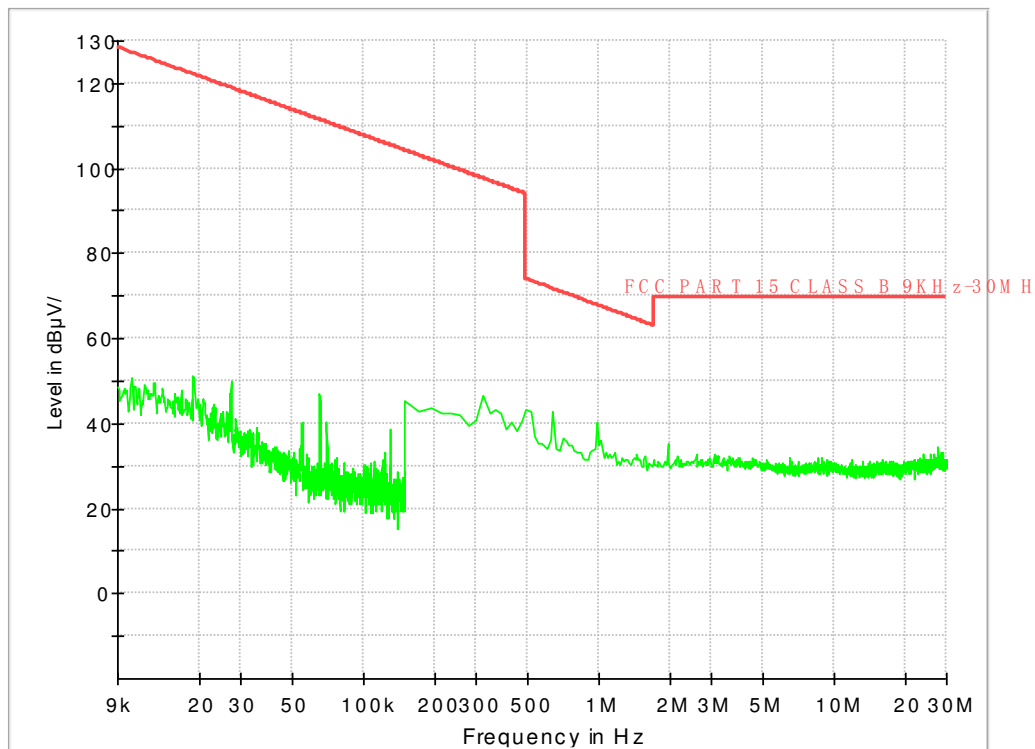


Copy of FCC PART27 W CDMA1700_H

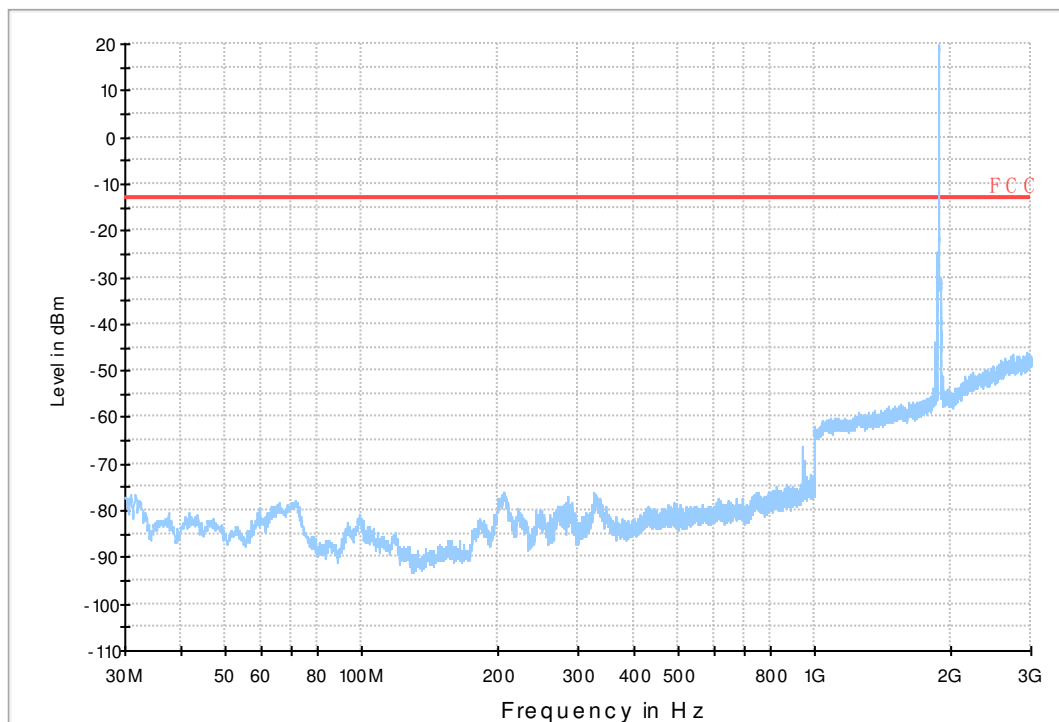


7.1.5 Test Band = WCDMA1900_ANT1

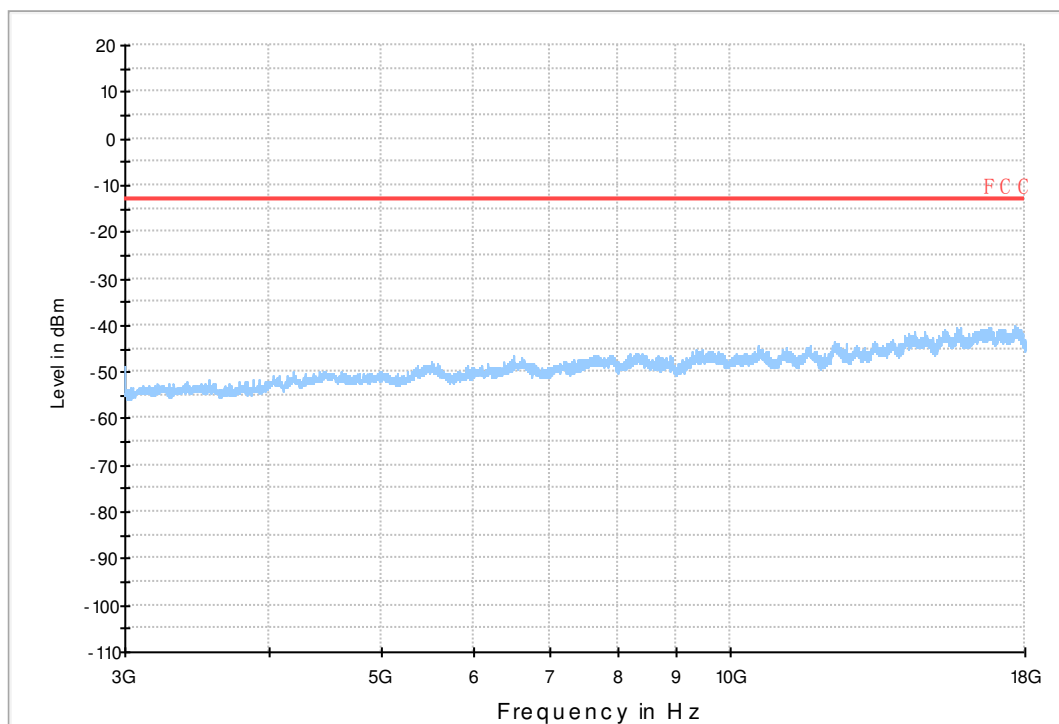
7.1.5.1 Test Mode = UMTS/TM1

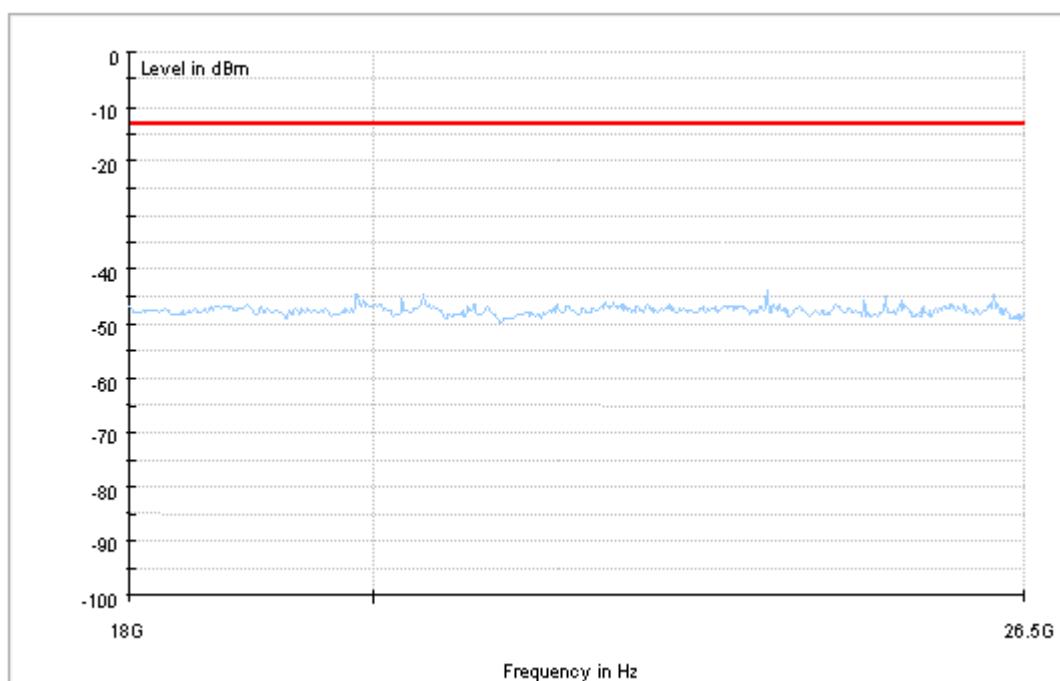


Copy of FCC PART24 W CDMA1900_L



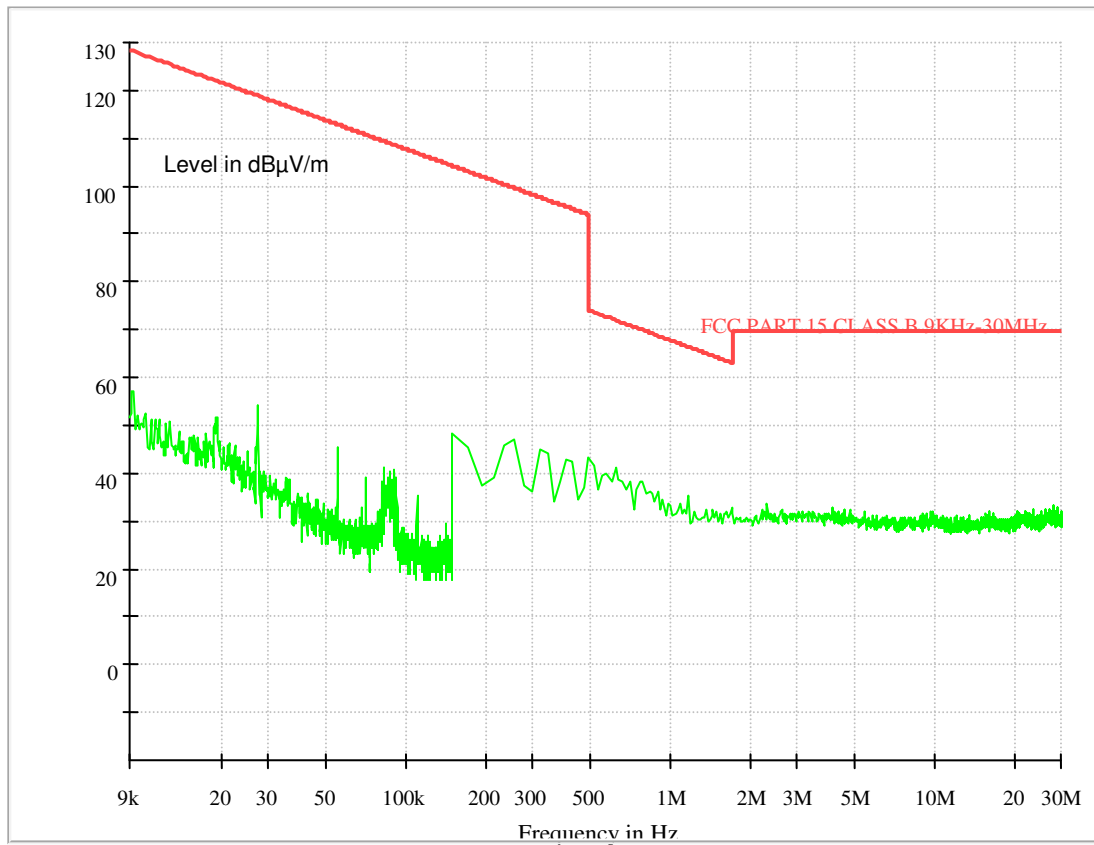
Copy of FCC PART24 W CDMA1900_H



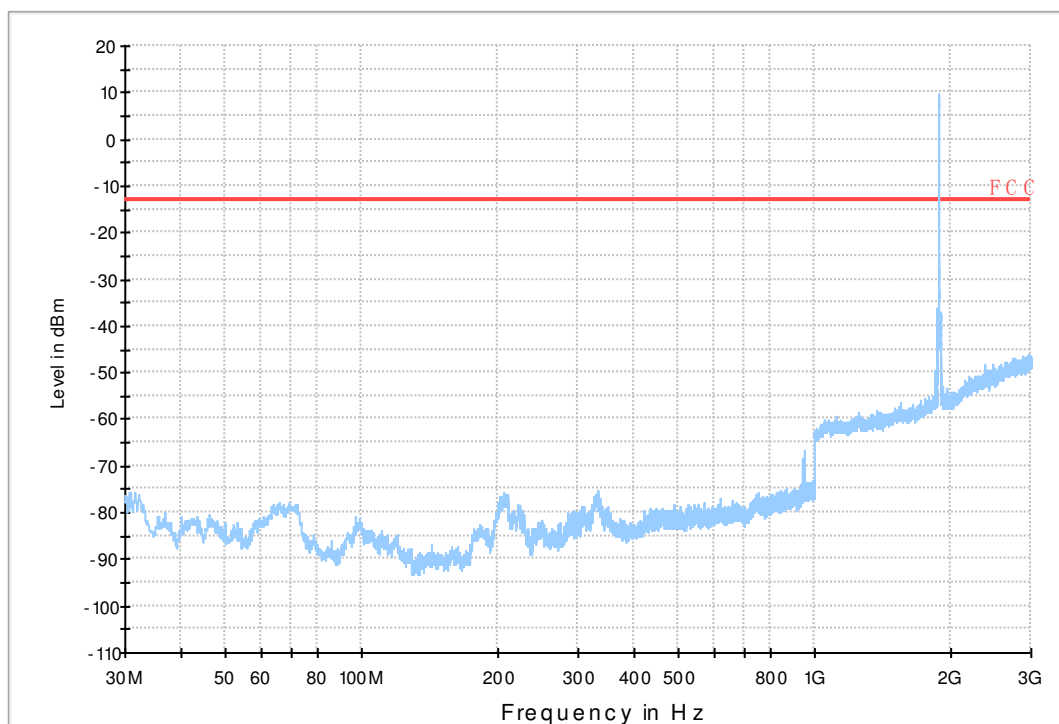


7.1.6 Test Band = WCDMA1900_ANT2

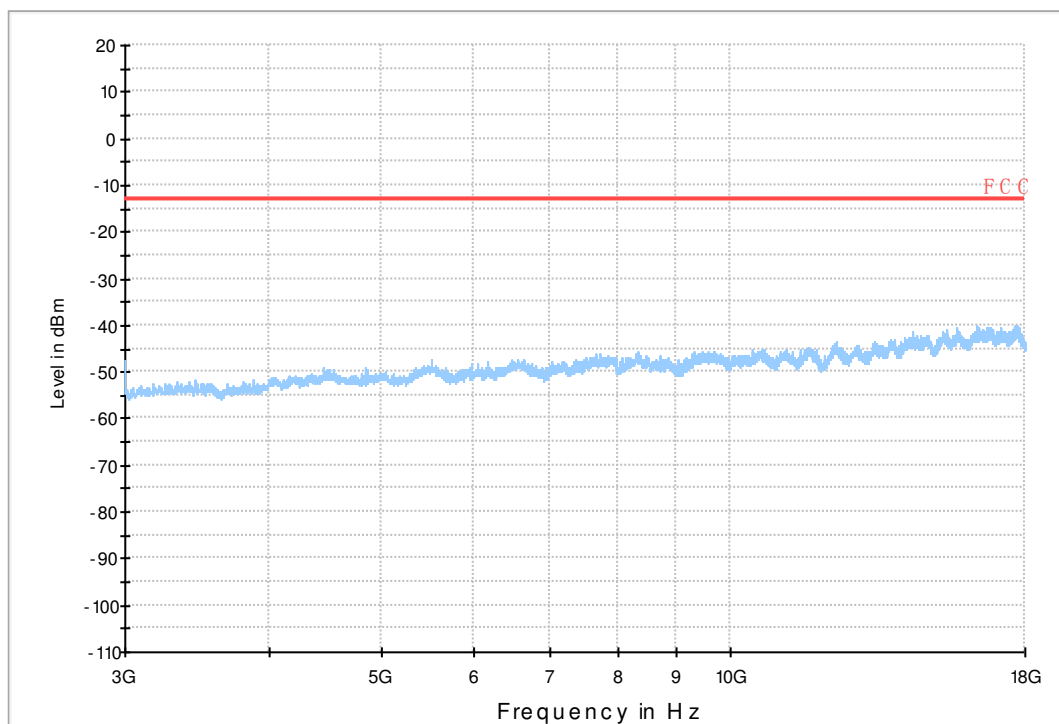
7.1.6.1 Test Mode = UMTS/TM1

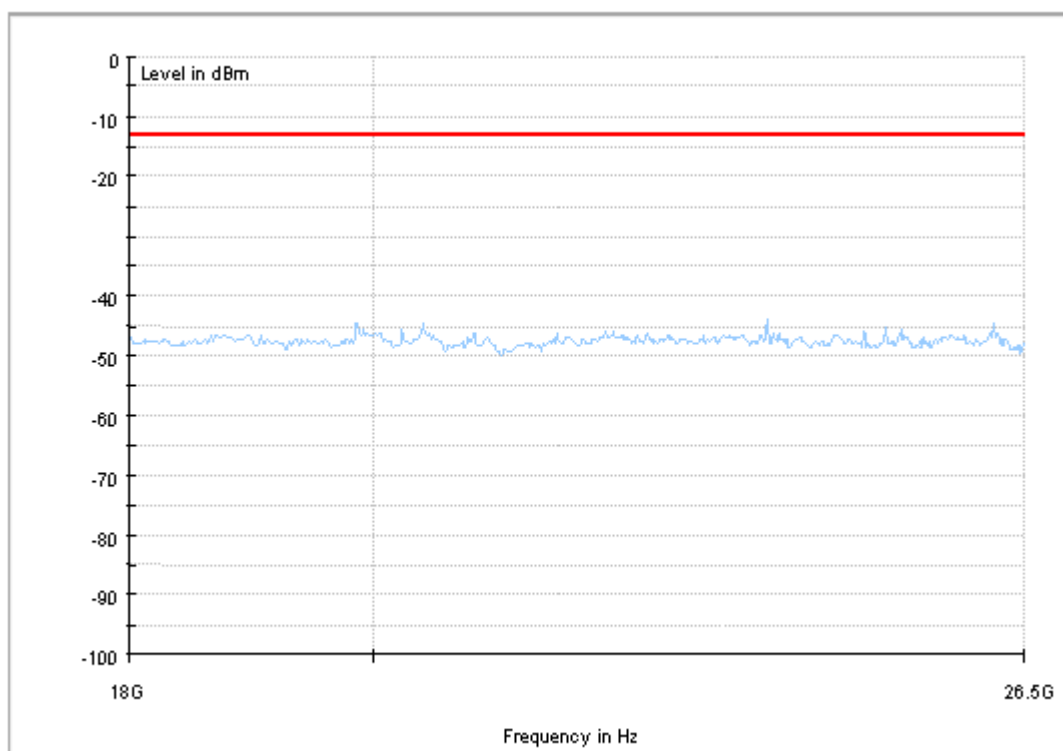


Copy of FCC PART24 W CDMA1900_L



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	17.79	0.02153	PASS
				VN	-9.48	-0.01147	PASS
				VH	3.34	0.00404	PASS
		MCH	TN	VL	-1.22	-0.00146	PASS
				VN	-9.37	-0.0112	PASS
				VH	-4.09	-0.00489	PASS
		HCH	TN	VL	-9.52	-0.01124	PASS
				VN	-17.78	-0.021	PASS
				VH	5.36	0.00633	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	5.91	0.00345	PASS
				VN	-5.43	-0.00317	PASS
				VH	4.93	0.00288	PASS
		MCH	TN	VL	7.98	0.00461	PASS
				VN	4.52	0.00261	PASS
				VH	-4.9	-0.00283	PASS
		HCH	TN	VL	9.02	0.00515	PASS
				VN	-0.99	-0.00056	PASS
				VH	7.1	0.00405	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-8	-0.00432	PASS
				VN	-2.27	-0.00123	PASS
				VH	1.39	0.00075	PASS
		MCH	TN	VL	1.56	0.00083	PASS
				VN	-1.22	-0.00065	PASS
				VH	4.56	0.00243	PASS
		HCH	TN	VL	-7.39	-0.00387	PASS
				VN	2.56	0.00134	PASS
				VH	4.03	0.00211	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	-0.89	-0.00108	PASS
				-20	-7.25	-0.00877	PASS
				-10	-4.24	-0.00513	PASS
				0	2.18	0.00264	PASS
				10	5.29	0.0064	PASS
				20	7.8	0.00944	PASS
				30	2.79	0.00338	PASS
				40	0.24	0.00029	PASS
				50	0.03	0.00004	PASS
		MCH	VN	-30	-11.93	-0.01426	PASS
				-20	-1.33	-0.00159	PASS
				-10	2.69	0.00322	PASS
				0	1.22	0.00146	PASS
				10	-3.3	-0.00395	PASS
				20	-5.39	-0.00644	PASS
				30	-13.52	-0.01616	PASS
				40	-8.01	-0.00958	PASS
				50	-10.25	-0.01225	PASS
		HCH	VN	-30	-15.5	-0.01831	PASS
				-20	-5.65	-0.00667	PASS
				-10	-1.65	-0.00195	PASS
				0	-6.06	-0.00716	PASS
				10	-2.38	-0.00281	PASS
				20	-15.79	-0.01865	PASS
				30	1.69	0.002	PASS
				40	4.07	0.00481	PASS
				50	0.11	0.00013	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	9.22	0.00538	PASS
				-20	-0.69	-0.0004	PASS
				-10	4.61	0.00269	PASS
				0	8.36	0.00488	PASS
				10	2.94	0.00172	PASS
				20	8.1	0.00473	PASS
				30	3.14	0.00183	PASS
				40	9.81	0.00573	PASS
				50	-1.88	-0.0011	PASS
		MCH	VN	-30	2.29	0.00132	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				-20	8.87	0.00512	PASS
				-10	-0.78	-0.00045	PASS
				0	5.75	0.00332	PASS
				10	6.36	0.00367	PASS
				20	3.68	0.00212	PASS
				30	2.99	0.00173	PASS
				40	-1.57	-0.00091	PASS
				50	7.26	0.00419	PASS
		HCH	VN	-30	-2.14	-0.00122	PASS
				-20	-0.08	-0.00005	PASS
				-10	5.25	0.003	PASS
				0	4.36	0.00249	PASS
				10	1.04	0.00059	PASS
				20	2	0.00114	PASS
				30	0.41	0.00023	PASS
				40	-0.76	-0.00043	PASS
				50	3.4	0.00194	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	-0.38	-0.00021	PASS
				-20	-1.72	-0.00093	PASS
				-10	7.55	0.00408	PASS
				0	5.46	0.00295	PASS
				10	0.55	0.0003	PASS
				20	-1.75	-0.00094	PASS
				30	2.61	0.00141	PASS
				40	0.23	0.00012	PASS
				50	0.27	0.00015	PASS
		MCH	VN	-30	3.59	0.00191	PASS
				-20	-0.17	-0.00009	PASS
				-10	6.55	0.00348	PASS
				0	1.88	0.001	PASS
				10	2.67	0.00142	PASS
				20	-0.6	-0.00032	PASS
				30	0.32	0.00017	PASS
				40	-0.58	-0.00031	PASS
				50	-3.59	-0.00191	PASS
		HCH	VN	-30	12.7	0.00666	PASS
				-20	0.03	0.00002	PASS
				-10	6.74	0.00353	PASS
				0	-0.17	-0.00009	PASS
				10	4.14	0.00217	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				20	-3.63	-0.0019	PASS
				30	0.63	0.00033	PASS
				40	-4.2	-0.0022	PASS
				50	0.41	0.00021	PASS

END