



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/EIRP [dBm]	Limit [dBm]	Verdict
WCDMA1900	UMTS/TM1	LCH	22.13	22.64	33	PASS
		MCH	22.16	22.67	33	PASS
		HCH	22.38	22.89	33	PASS
WCDMA1700	UMTS/TM1	LCH	22.36	22.87	30	PASS
		MCH	22.55	23.06	30	PASS
		HCH	22.44	22.95	30	PASS
WCDMA850	UMTS/TM1	LCH	23.46	20.31	38.5	PASS
		MCH	23.49	20.34	38.5	PASS
		HCH	23.52	20.37	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: RBW > emission bandwidth, VBW > 3 x RBW.

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	3.33	13	PASS
		MCH	3.26	13	PASS
		HCH	3.27	13	PASS
WCDMA1700	UMTS/TM1	LCH	3.46	13	PASS
		MCH	3.42	13	PASS
		HCH	3.41	13	PASS
WCDMA1900	UMTS/TM1	LCH	3.35	13	PASS
		MCH	3.42	13	PASS
		HCH	3.36	13	PASS

3Appendix_C: Modulation Characteristics

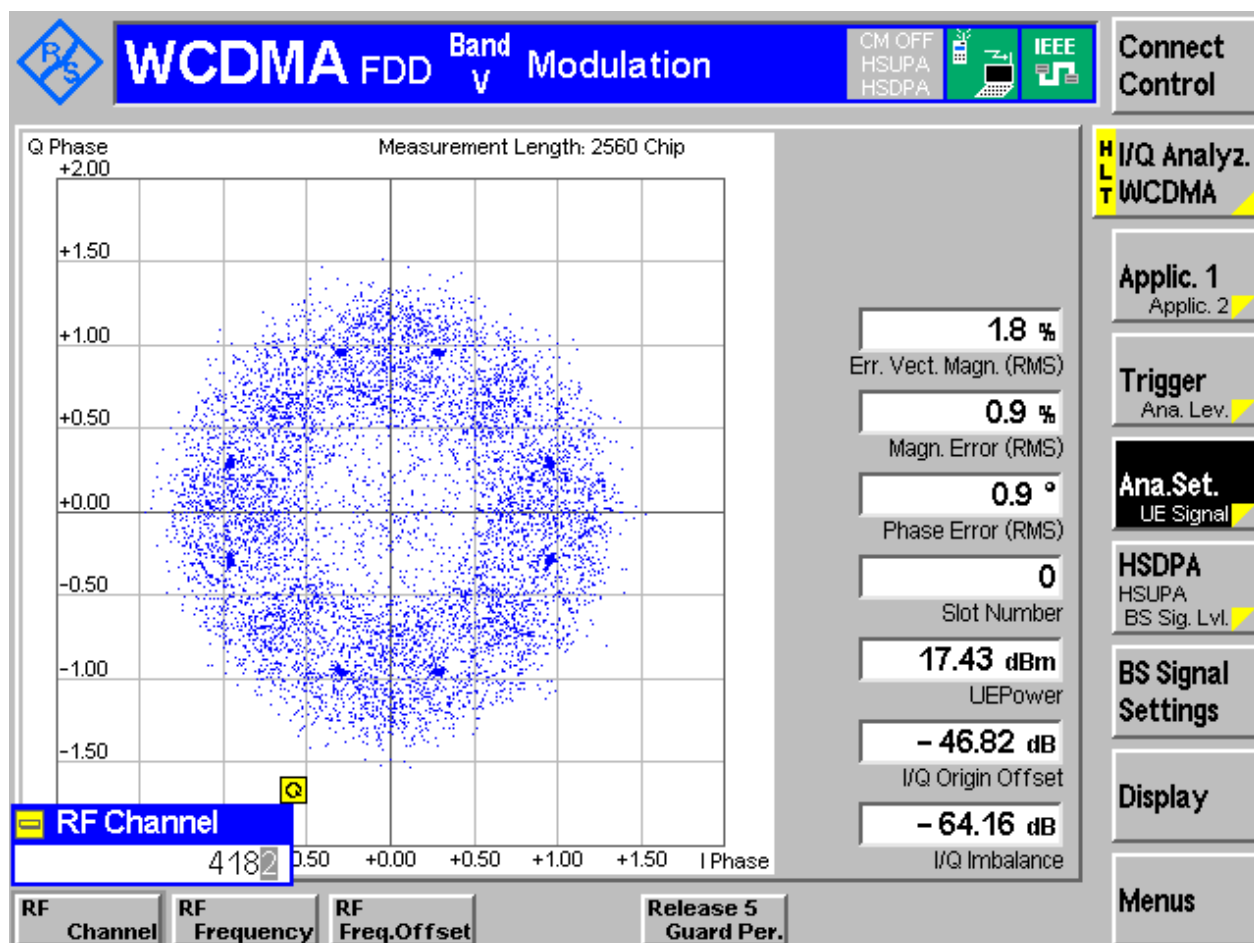
Part I - Test Plots

3.1 For UMTS

3.1.1 Test Band = WCDMA850

3.1.1.1 Test Mode = UMTS/TM1

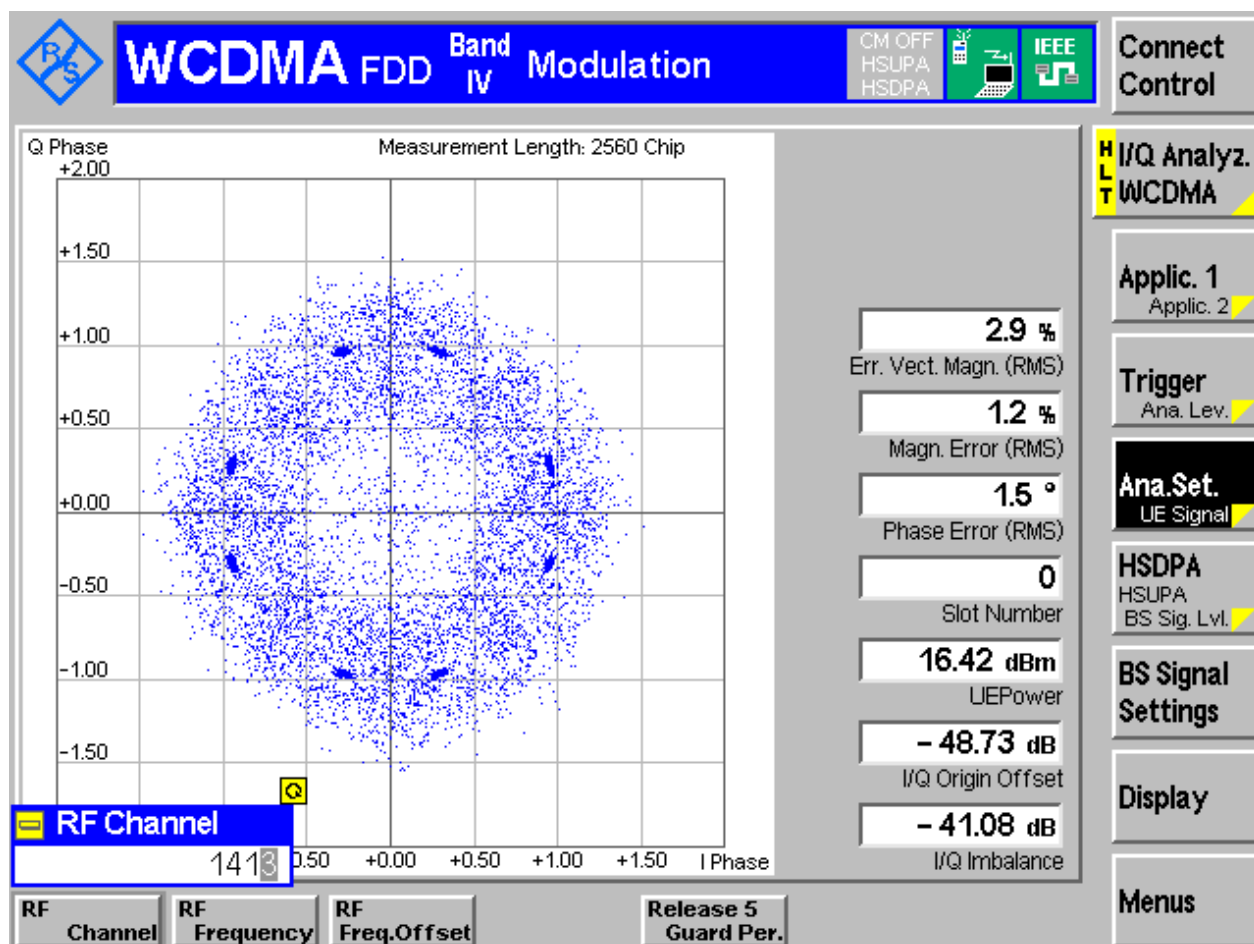
3.1.1.1.1 Test Channel = MCH



3.1.2 Test Band = WCDMA1700

3.1.2.1 Test Mode = UMTS/TM1

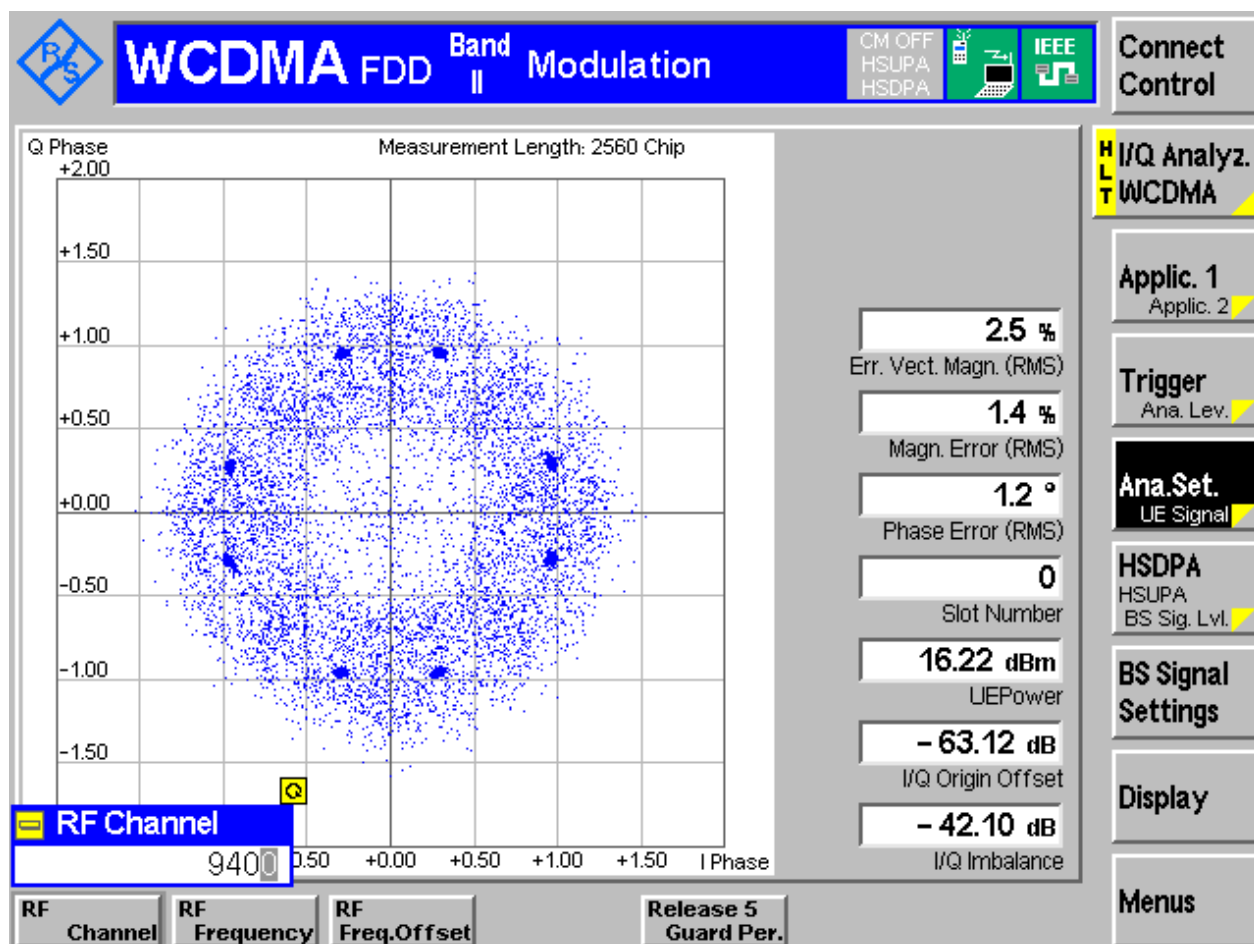
3.1.2.1.1 Test Channel = MCH



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
WCDMA850	UMTS/TM1	LCH	4.13	4.73	Pass
		MCH	4.14	4.70	Pass
		HCH	4.15	4.71	Pass
WCDMA1700	UMTS/TM1	LCH	4.14	4.71	Pass
		MCH	4.13	4.71	Pass
		HCH	4.14	4.70	Pass
WCDMA1900	UMTS/TM1	LCH	4.14	4.71	Pass
		MCH	4.14	4.71	Pass
		HCH	4.14	4.70	Pass

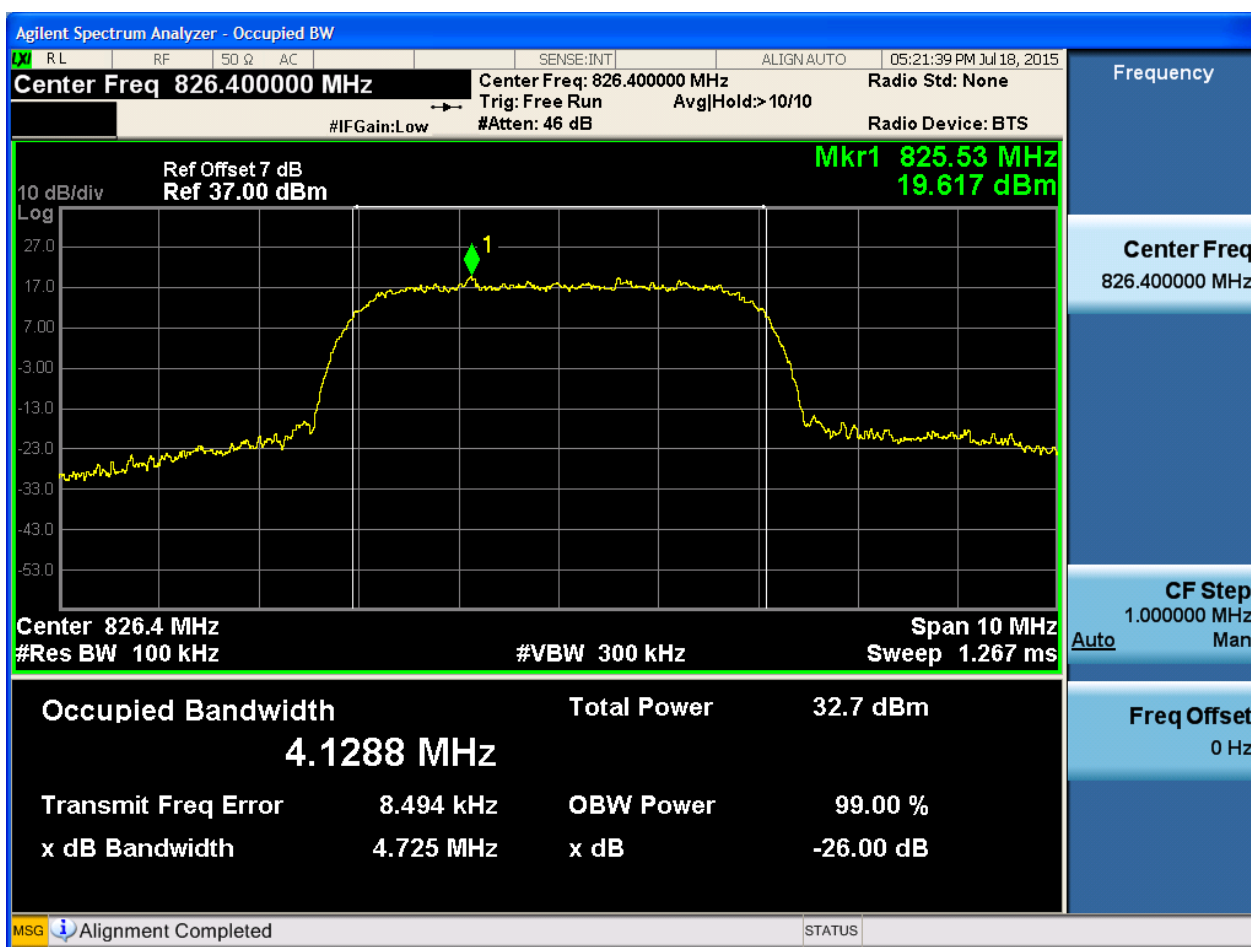
Part II - Test Plots

4.1 For UMTS

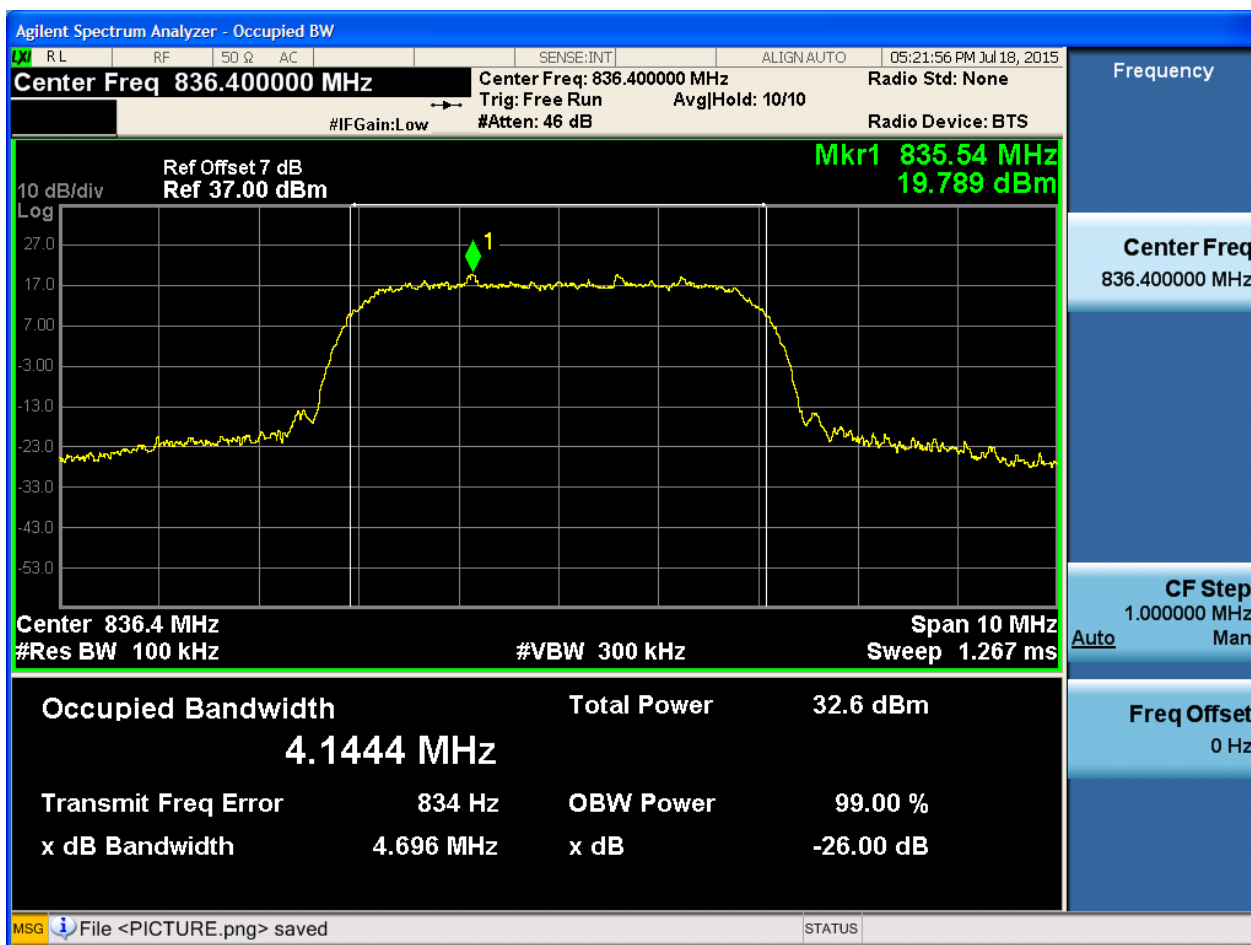
4.1.1 Test Band = WCDMA850

4.1.1.1 Test Mode = UMTS/TM1

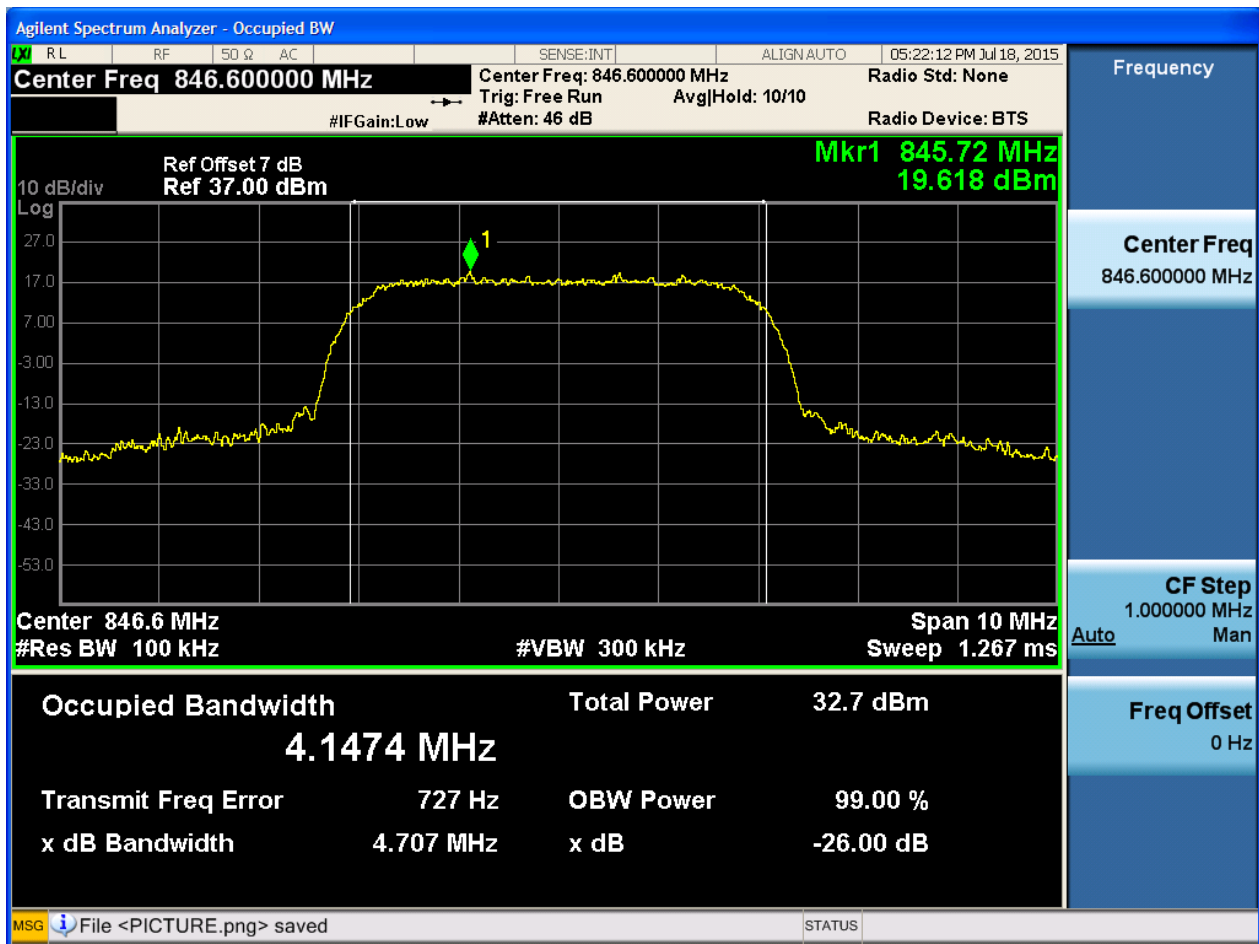
4.1.1.1.1 Test Channel = LCH



4.1.1.1.2 Test Channel = MCH



4.1.1.1.3 Test Channel = HCH

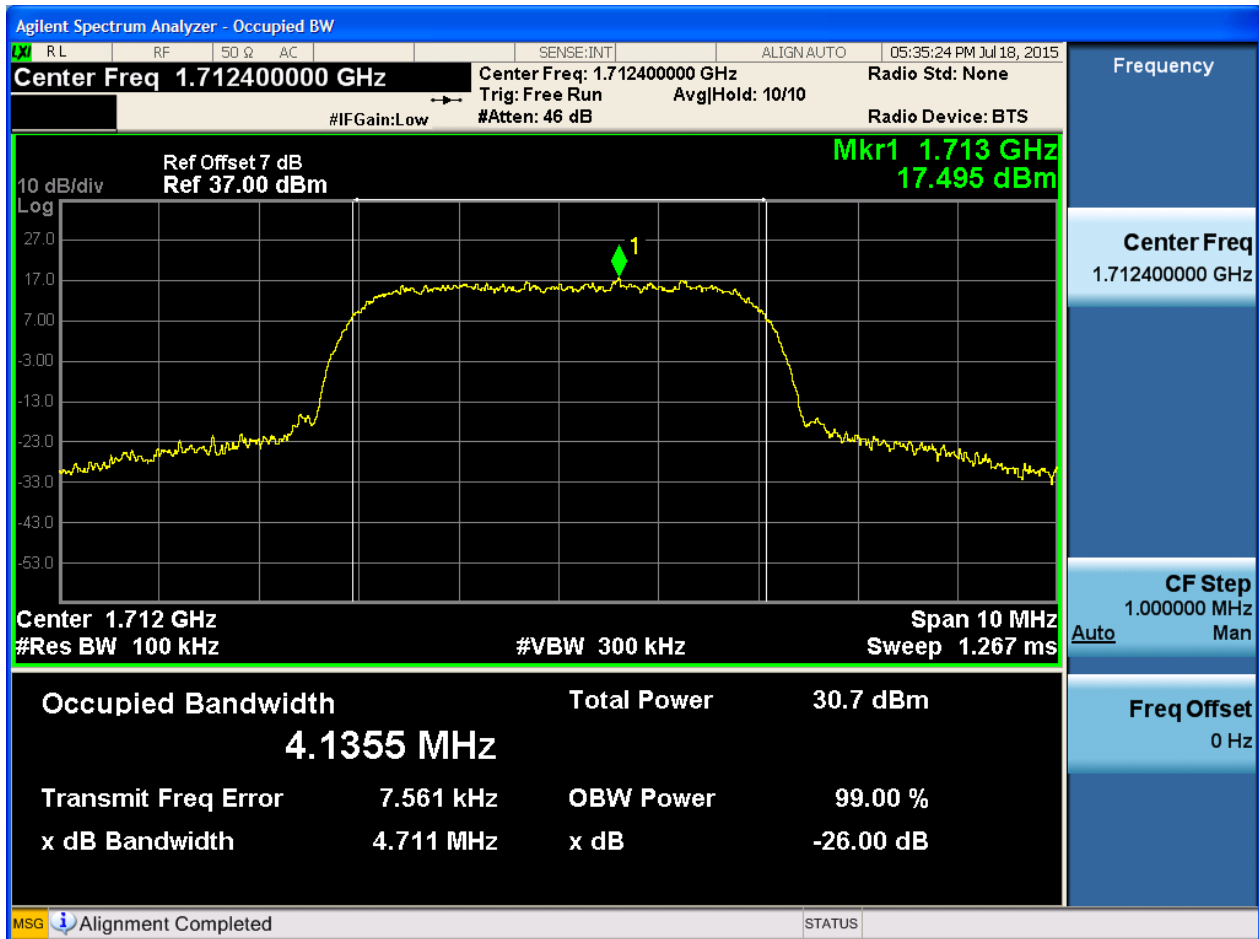




4.1.2 Test Band = WCDMA1700

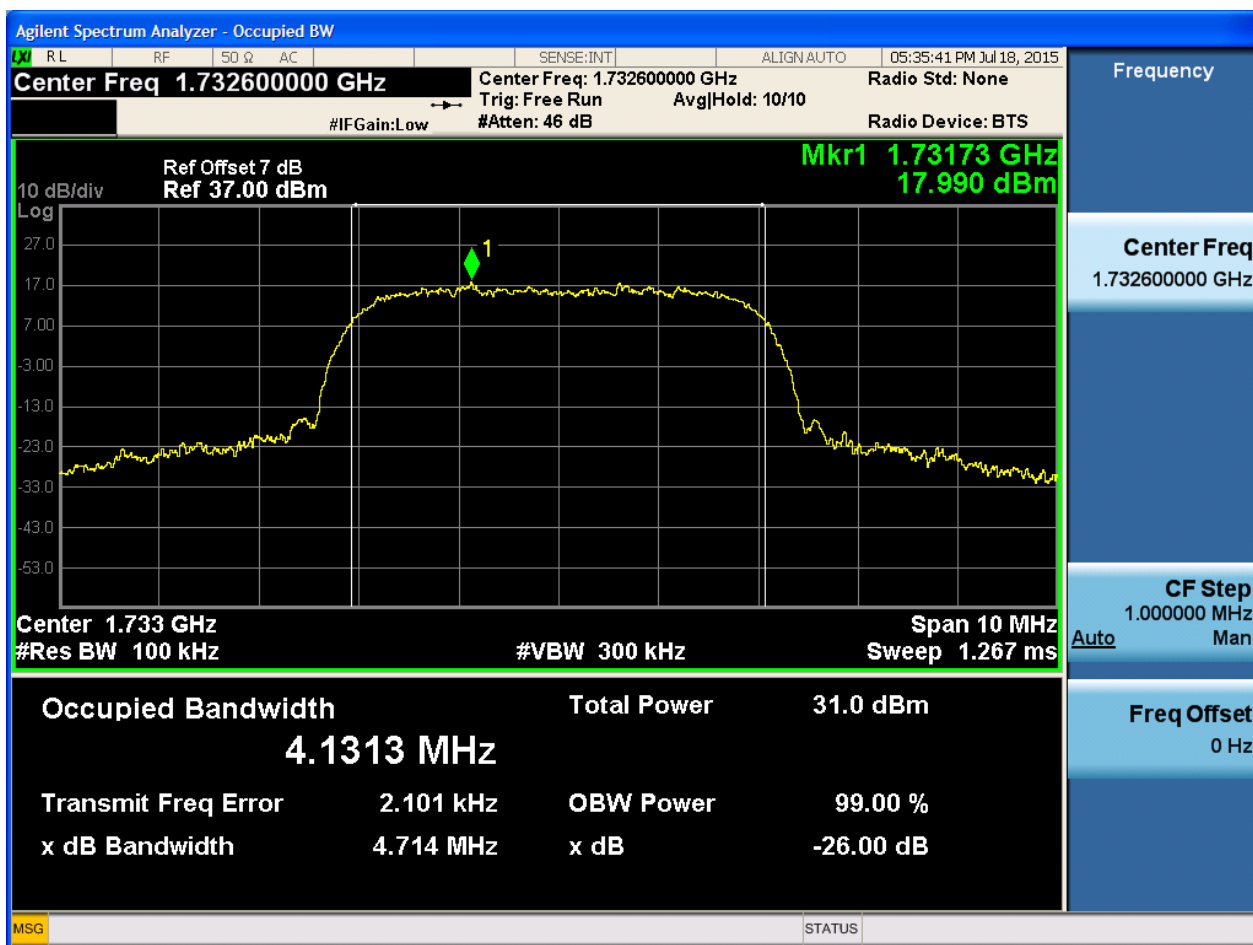
4.1.2.1 Test Mode = UMTS/TM1

4.1.2.1.1 Test Channel = LCH



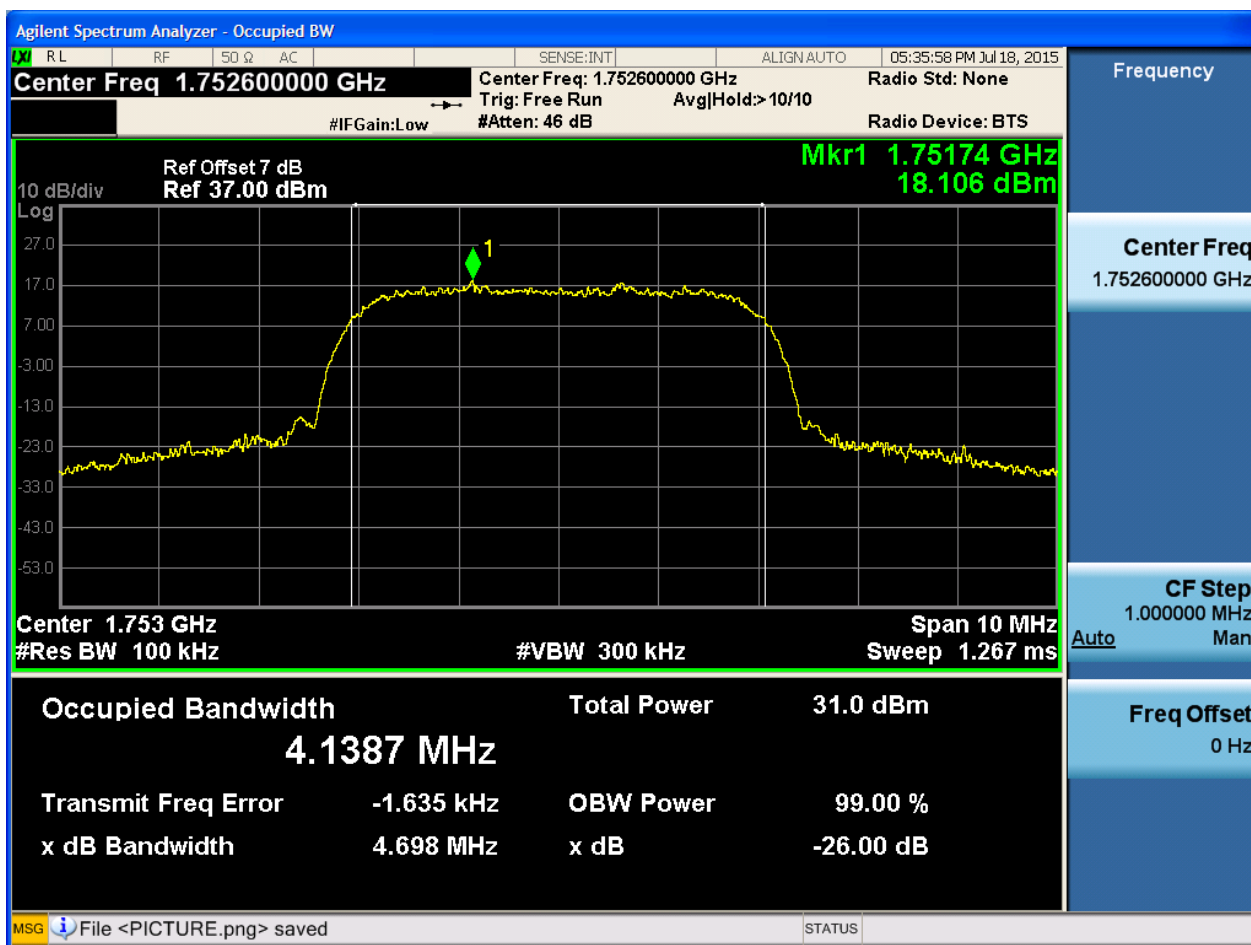


4.1.2.1.2 Test Channel = MCH





4.1.2.1.3 Test Channel = HCH

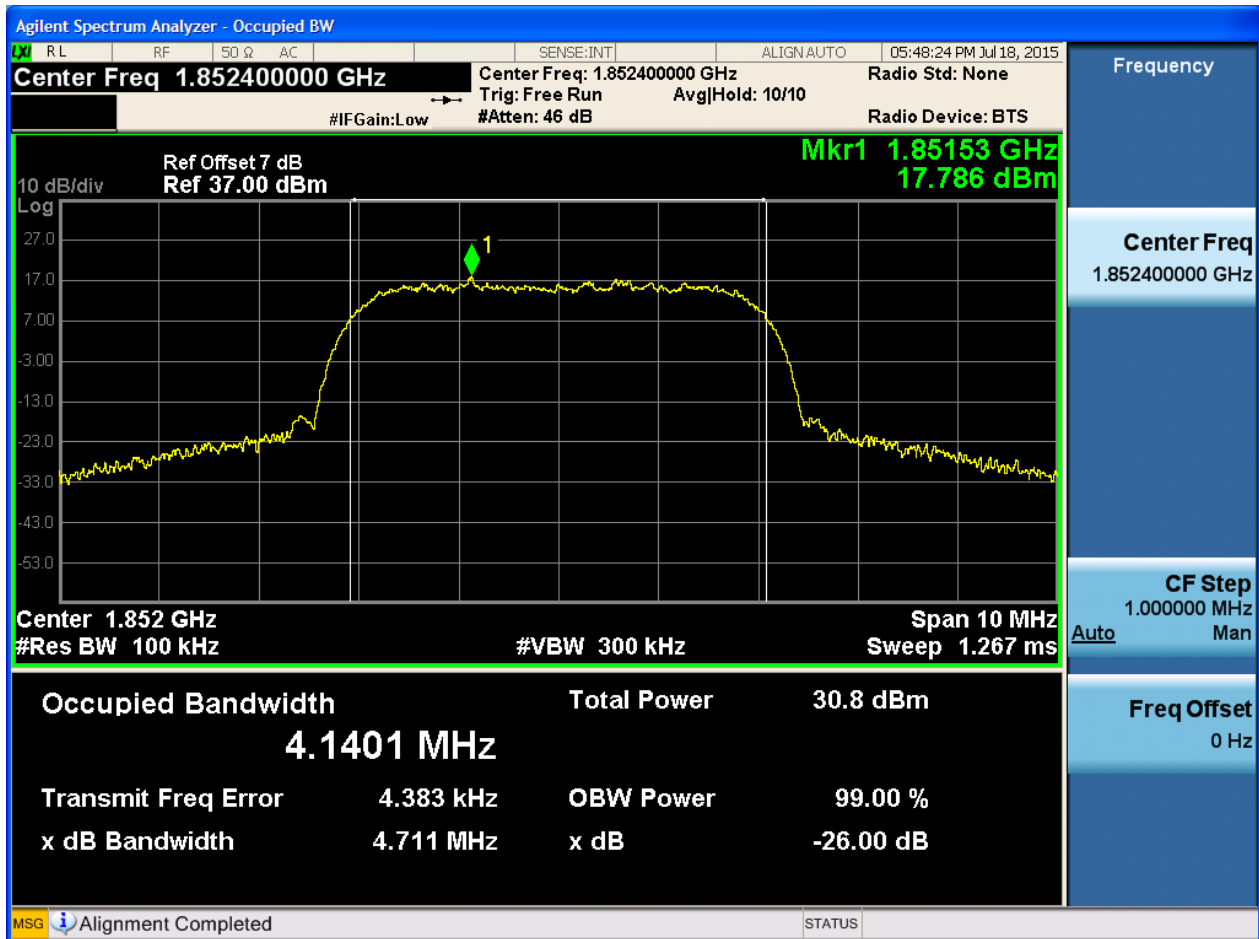




4.1.3 Test Band = WCDMA1900

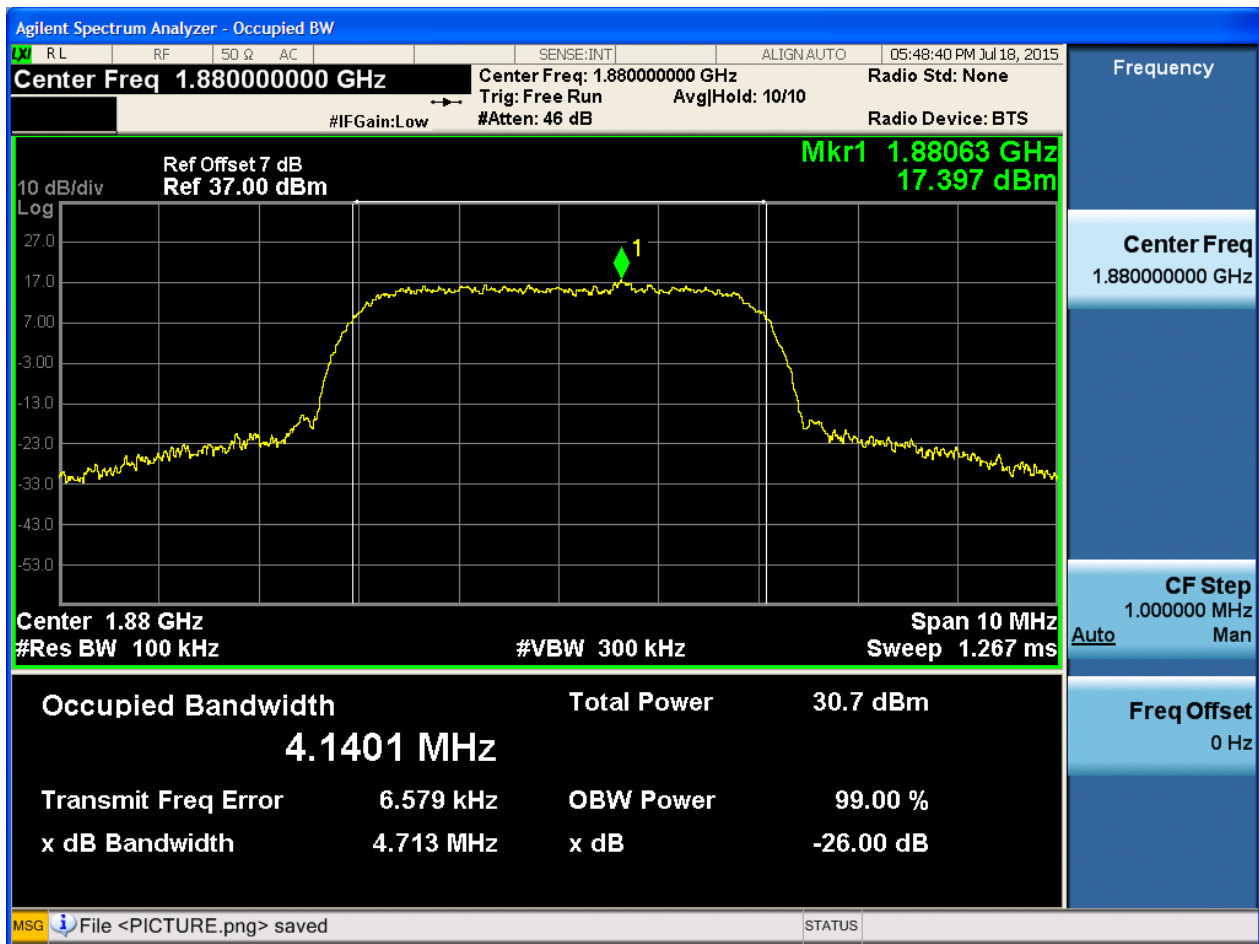
4.1.3.1 Test Mode = UMTS/TM1

4.1.3.1.1 Test Channel = LCH



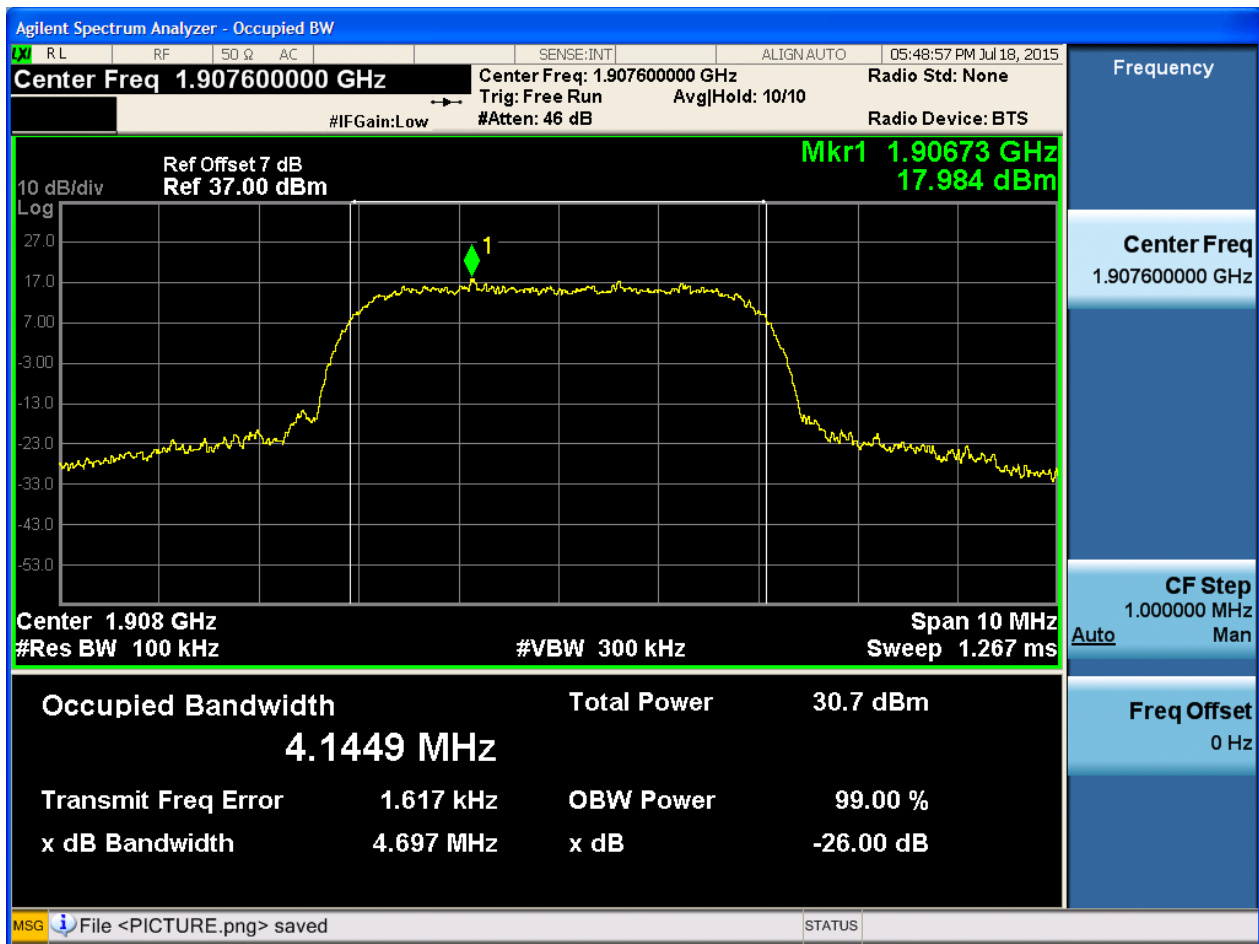


4.1.3.1.2 Test Channel = MCH





4.1.3.1.3 Test Channel = HCH



5Appendix_E: Band Edges Compliance

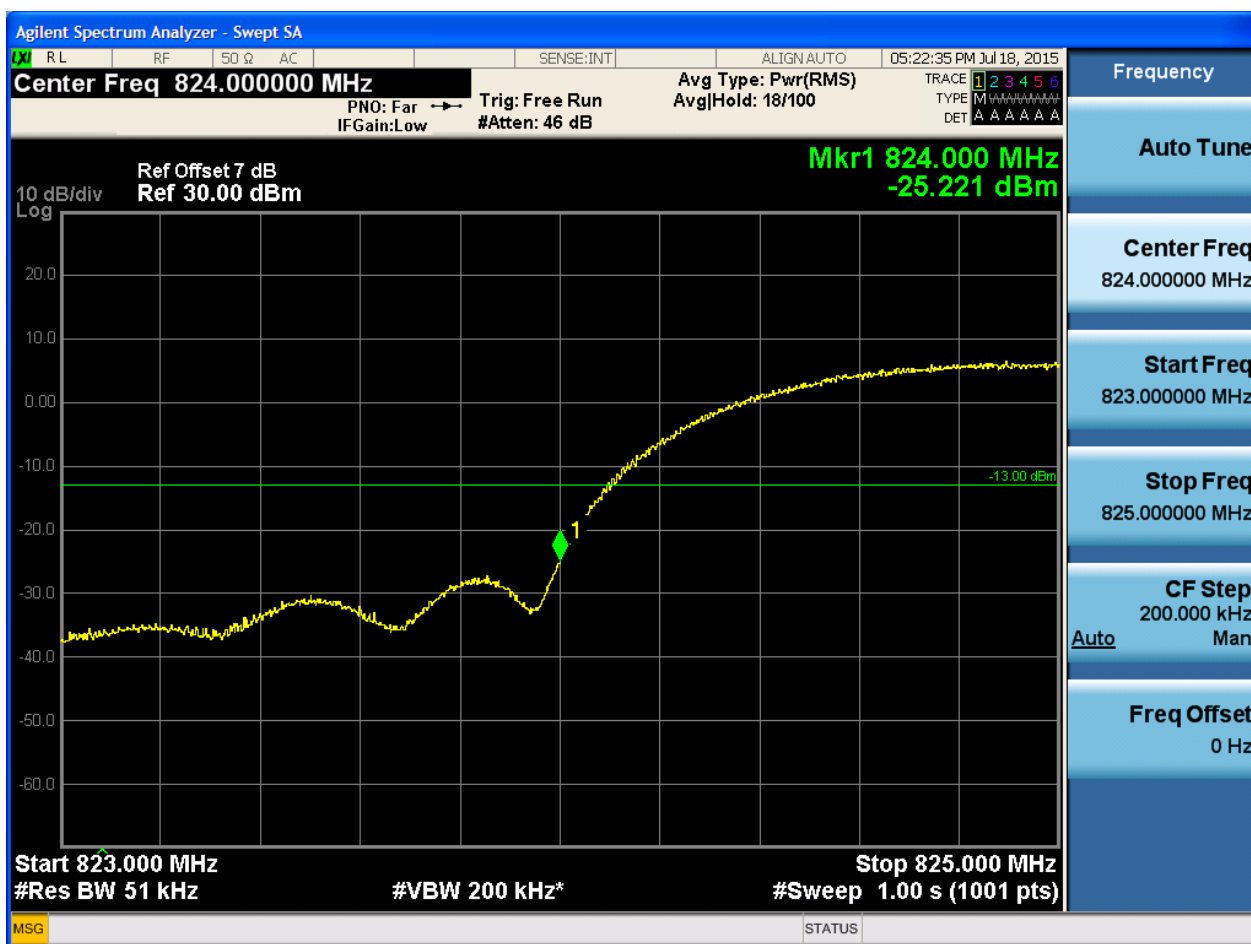
Part I - Test Plots

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



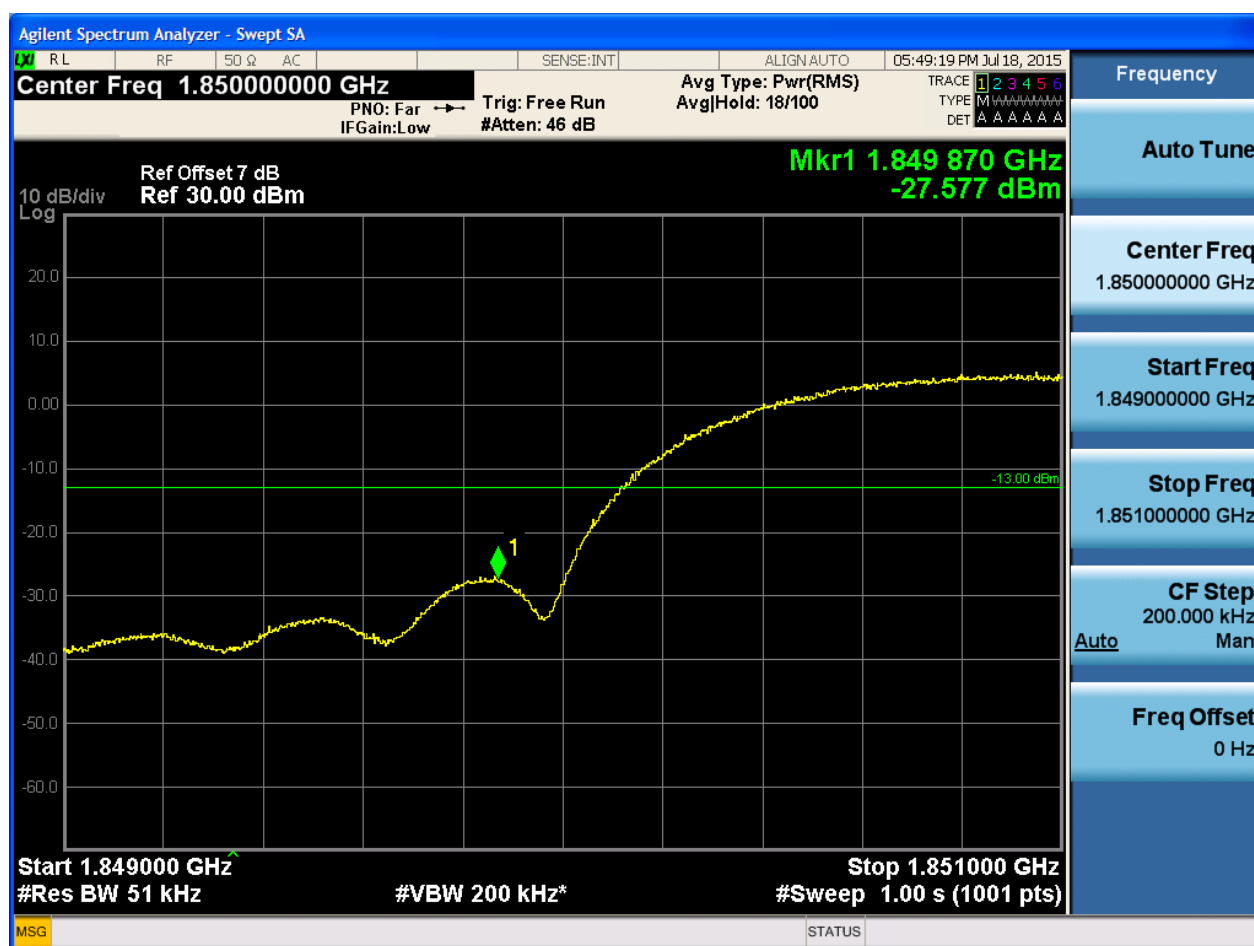
5.1.2.1.2 Test Channel = HCH



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.

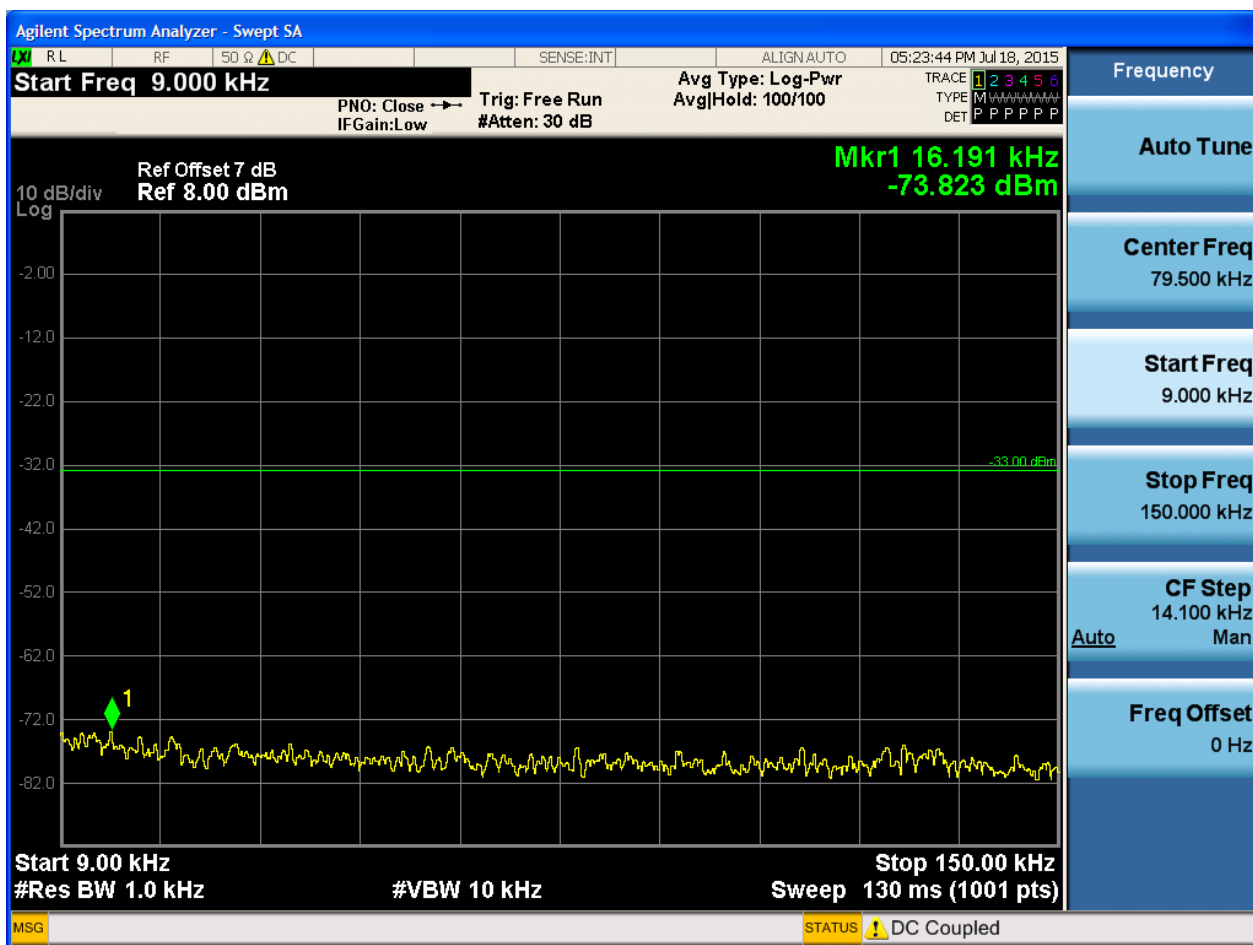
Part I - Test Plots

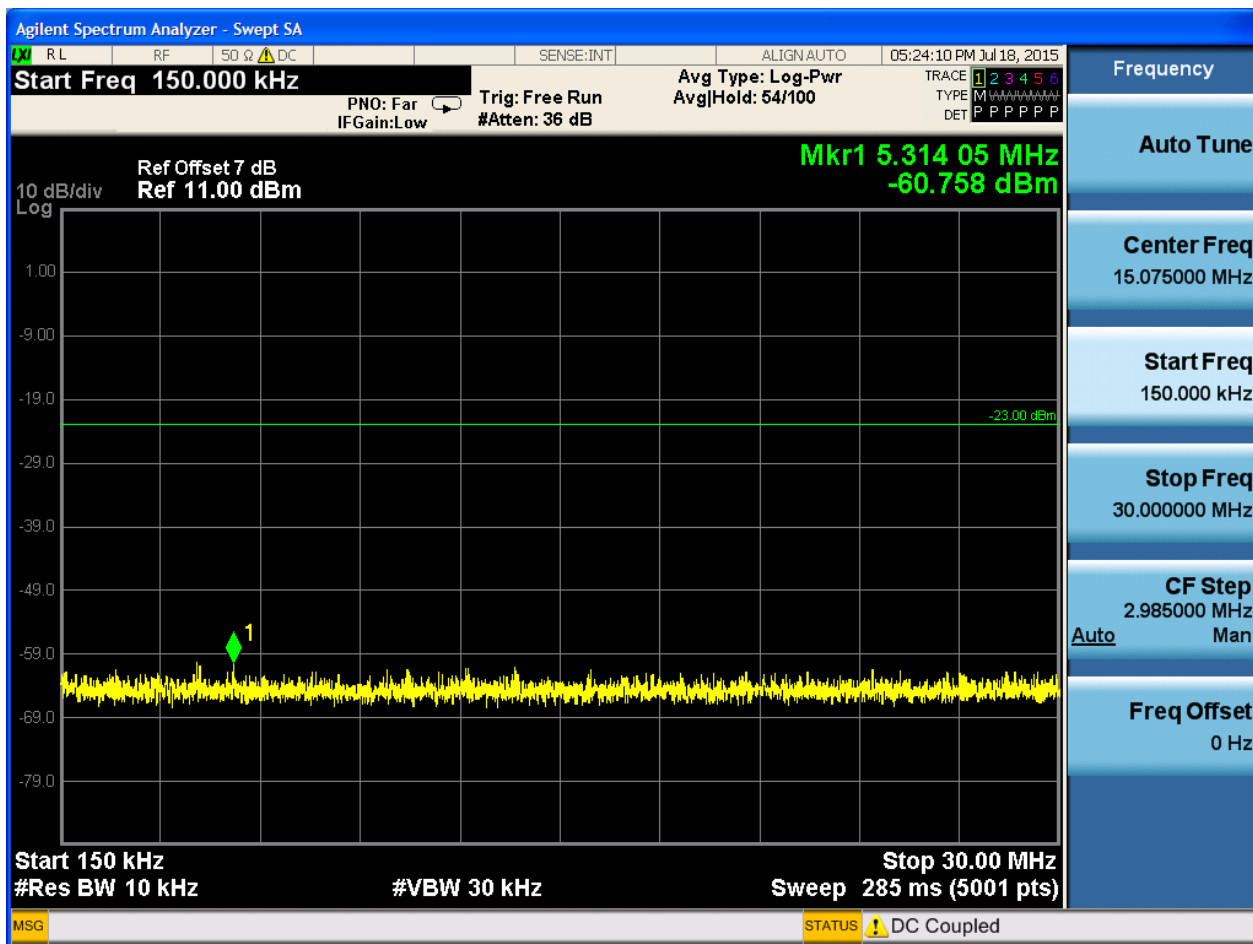
6.1 For UMTS

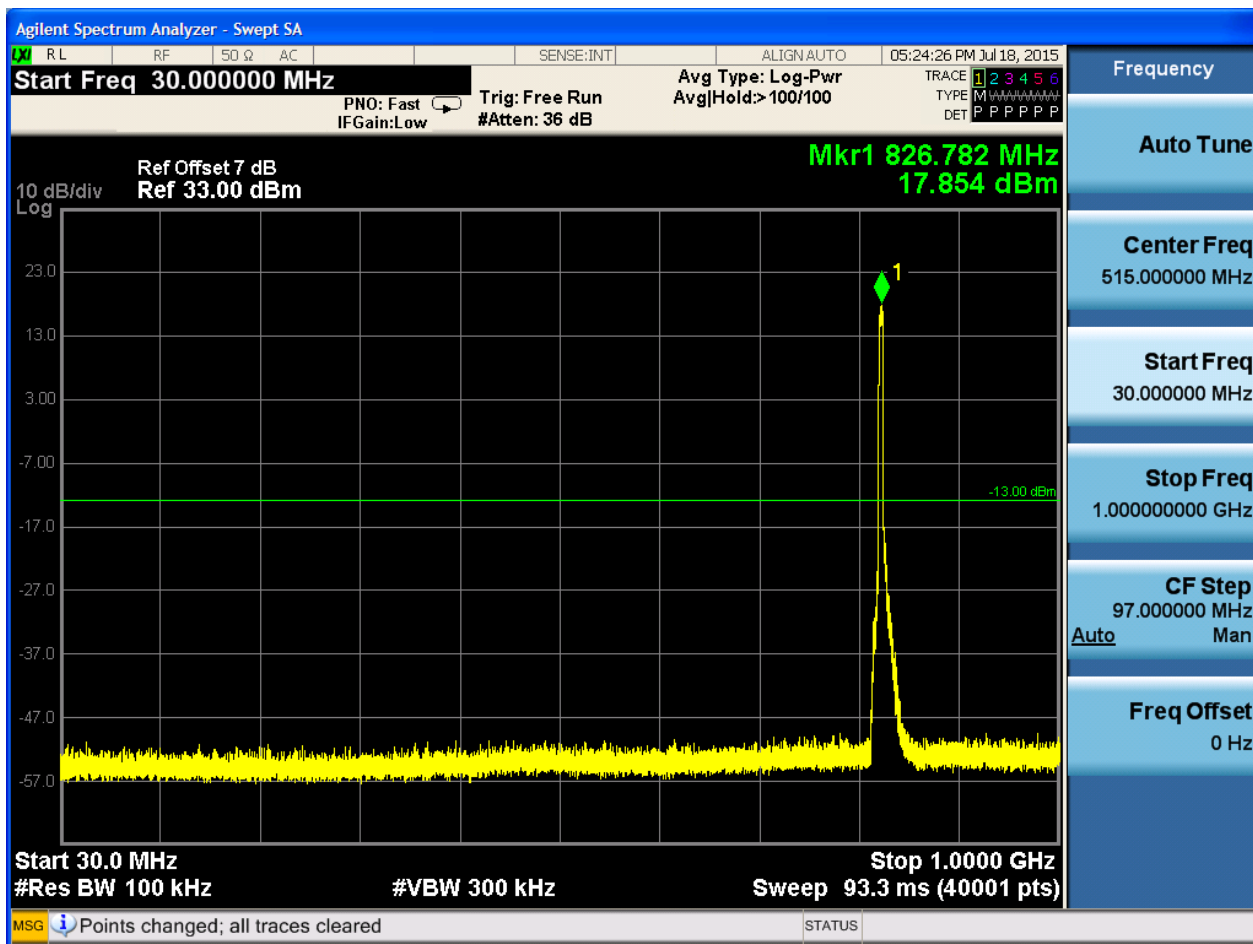
6.1.1 Test Band = WCDMA850

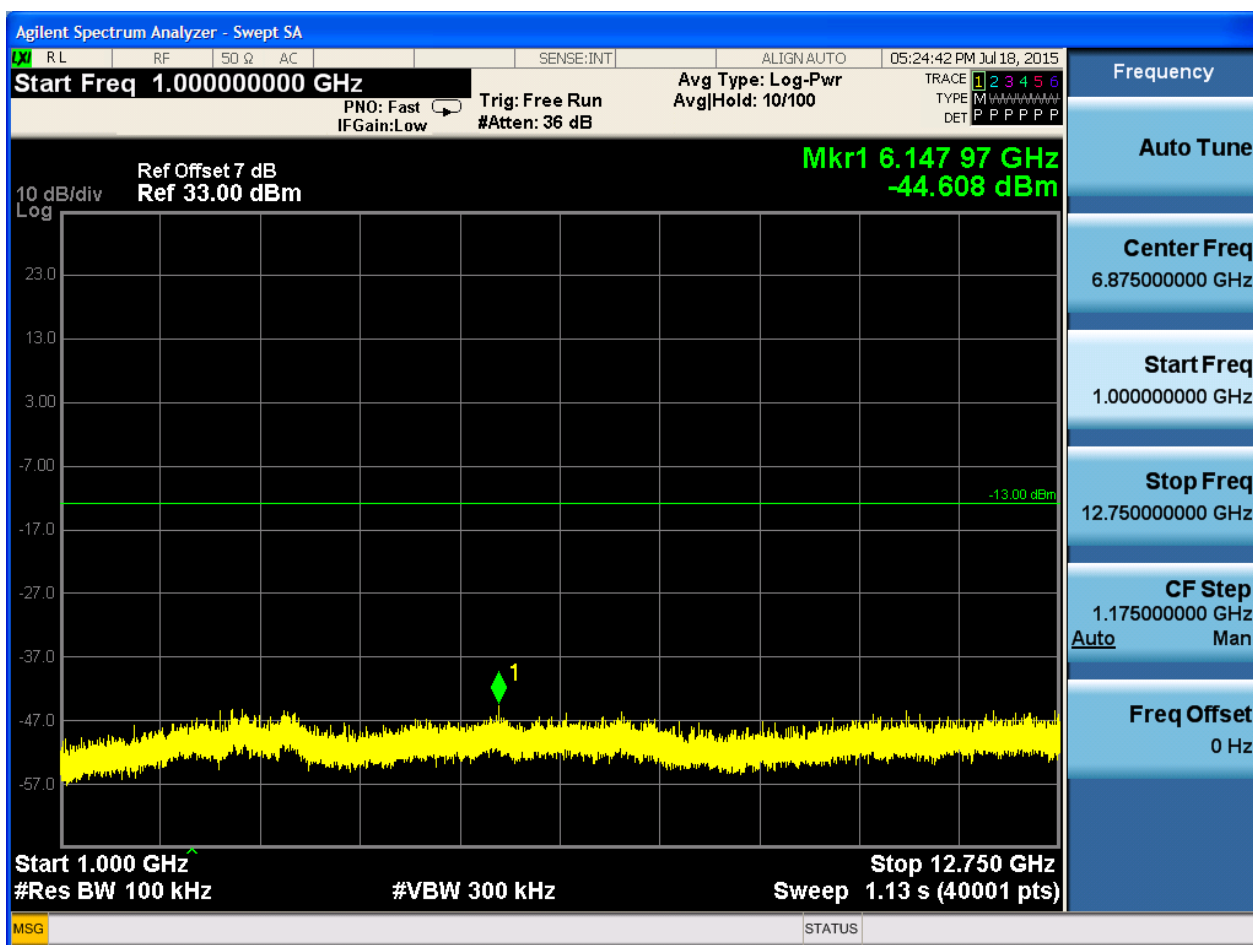
6.1.1.1 Test Mode = UMTS/TM1

6.1.1.1.1 Test Channel = LCH

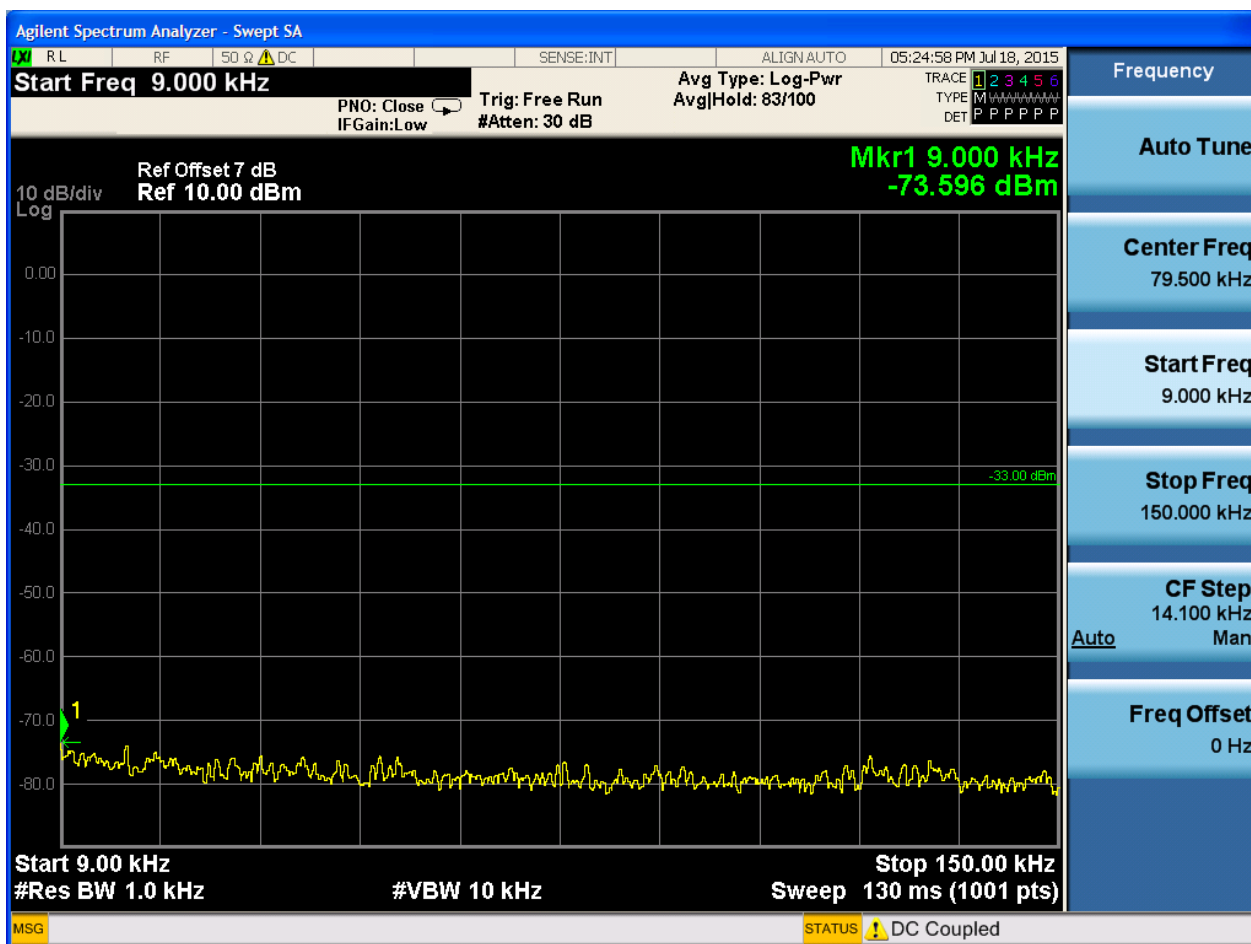


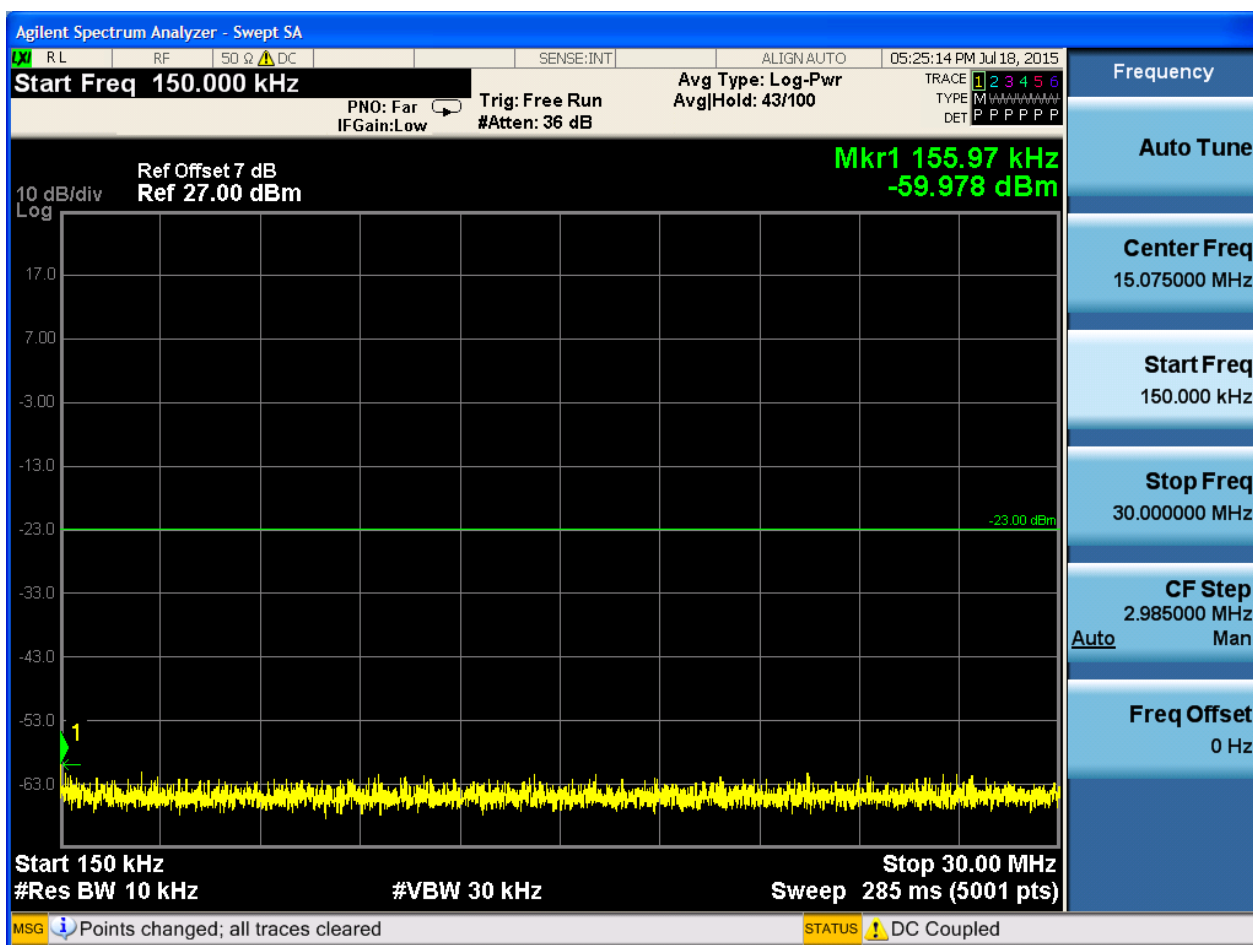


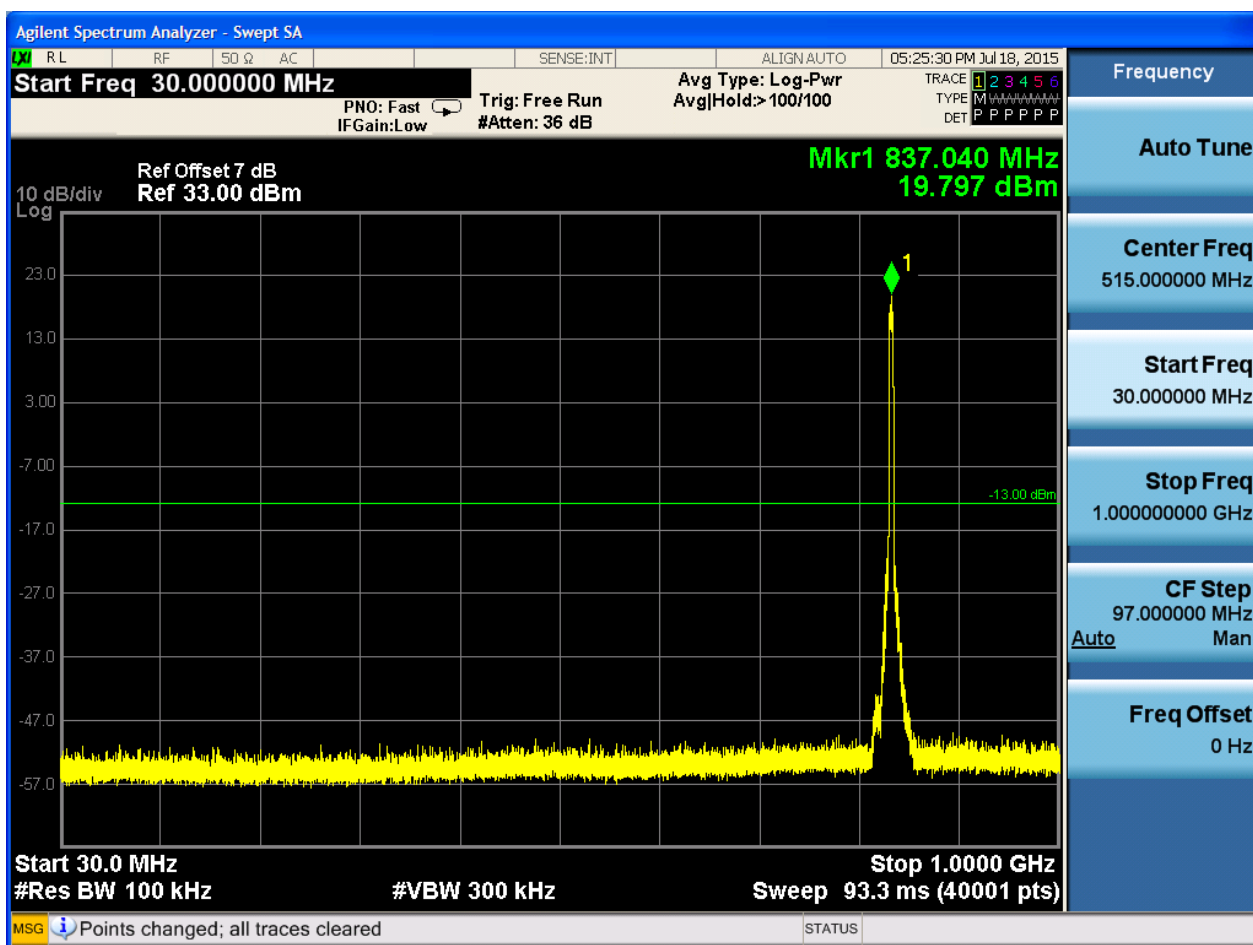


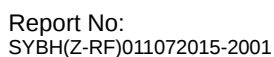


6.1.1.1.2 Test Channel = MCH











Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω ⚠ DC SENSE:INT ALIGN:AUTO 05:26:02 PM Jul 18, 2015

Start Freq 9.000 kHz Avg Type: Log-Pwr PNO: Close Trig: Free Run
IFGain:Low #Atten: 30 dB AvgHold: 83/100 TYPE M DET P P P P P

Ref Offset 7 dB Mkr1 10.692 kHz
Ref 6.00 dBm -73.844 dBm

10 dB/div Log

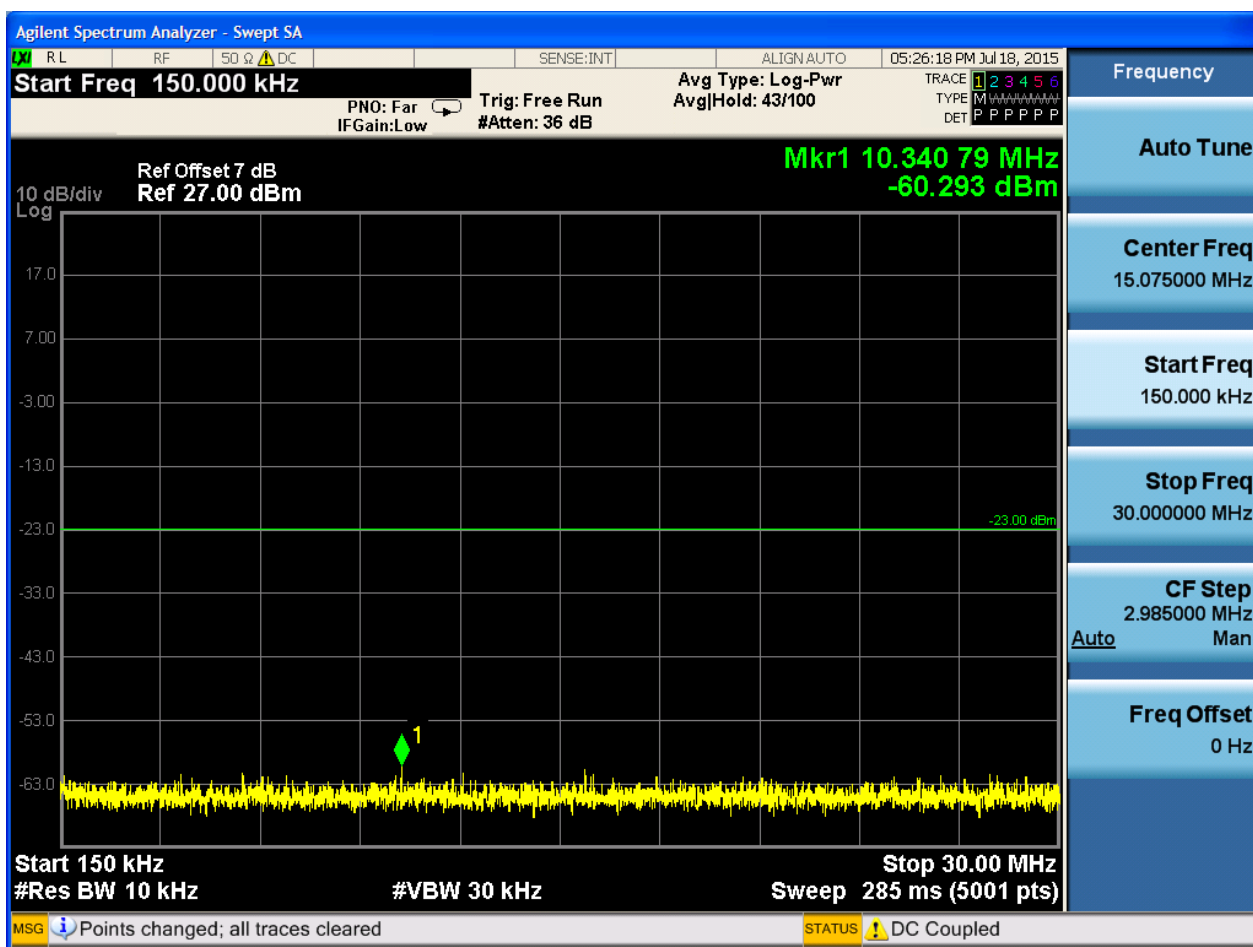
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-84.0

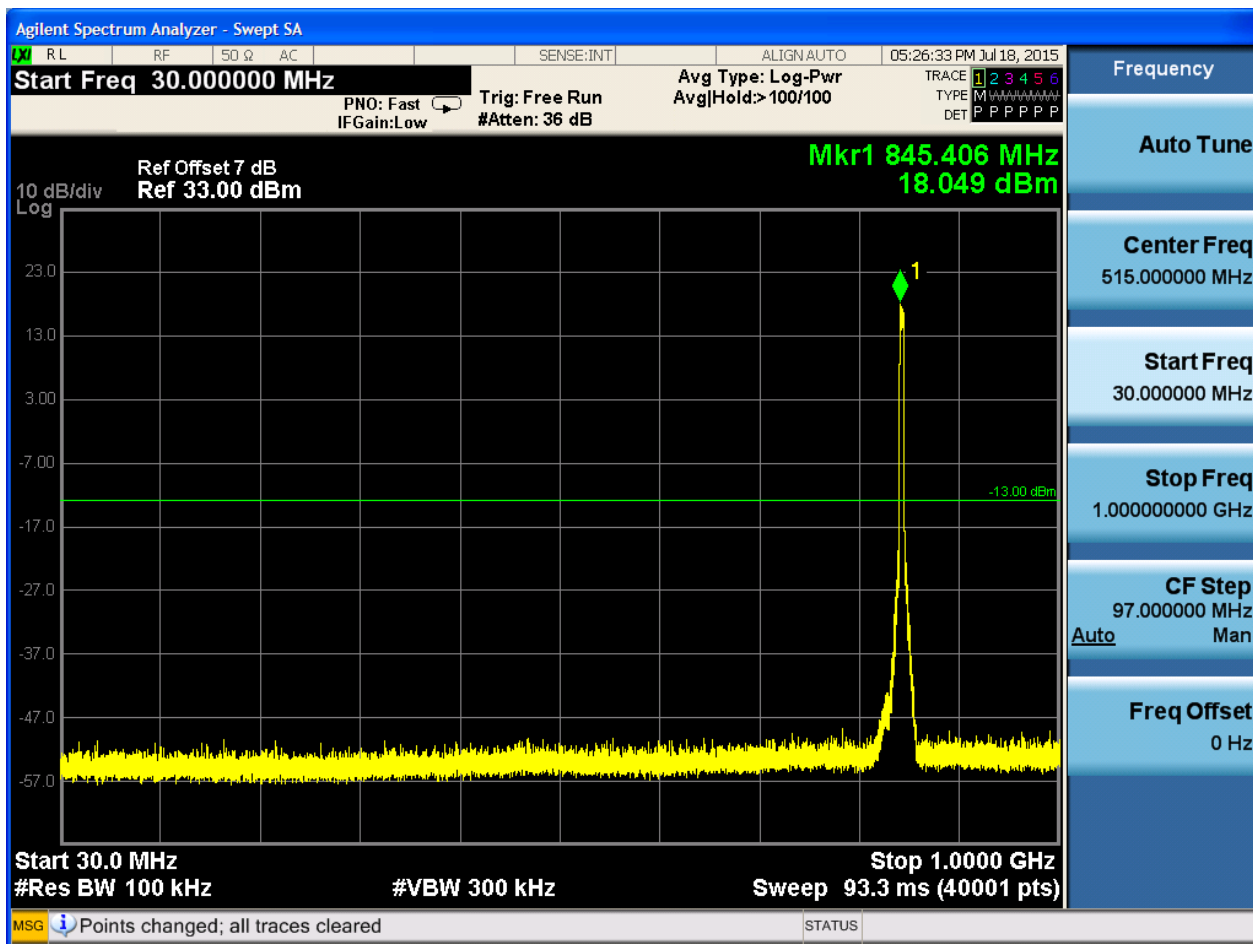
-33.00 dBm

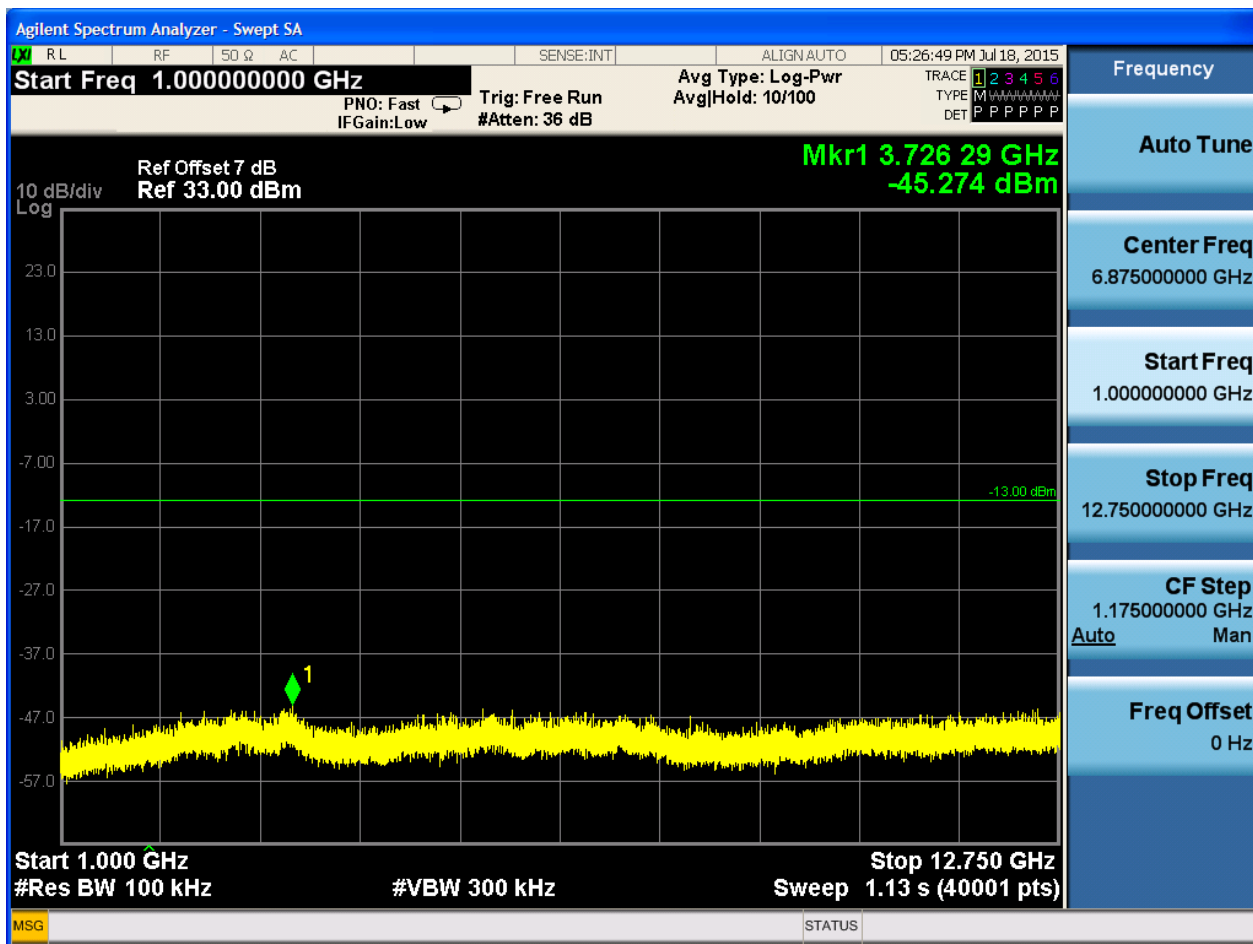
Start 9.00 kHz **Stop 150.00 kHz**
#Res BW 1.0 kHz **#VBW 10 kHz** **Sweep 130 ms (1001 pts)**

MSG STATUS ⚠ DC Coupled

Frequency
Auto Tune
Center Freq 79.500 kHz
Start Freq 9.000 kHz
Stop Freq 150.000 kHz
CF Step 14.100 kHz Man
Freq Offset 0 Hz



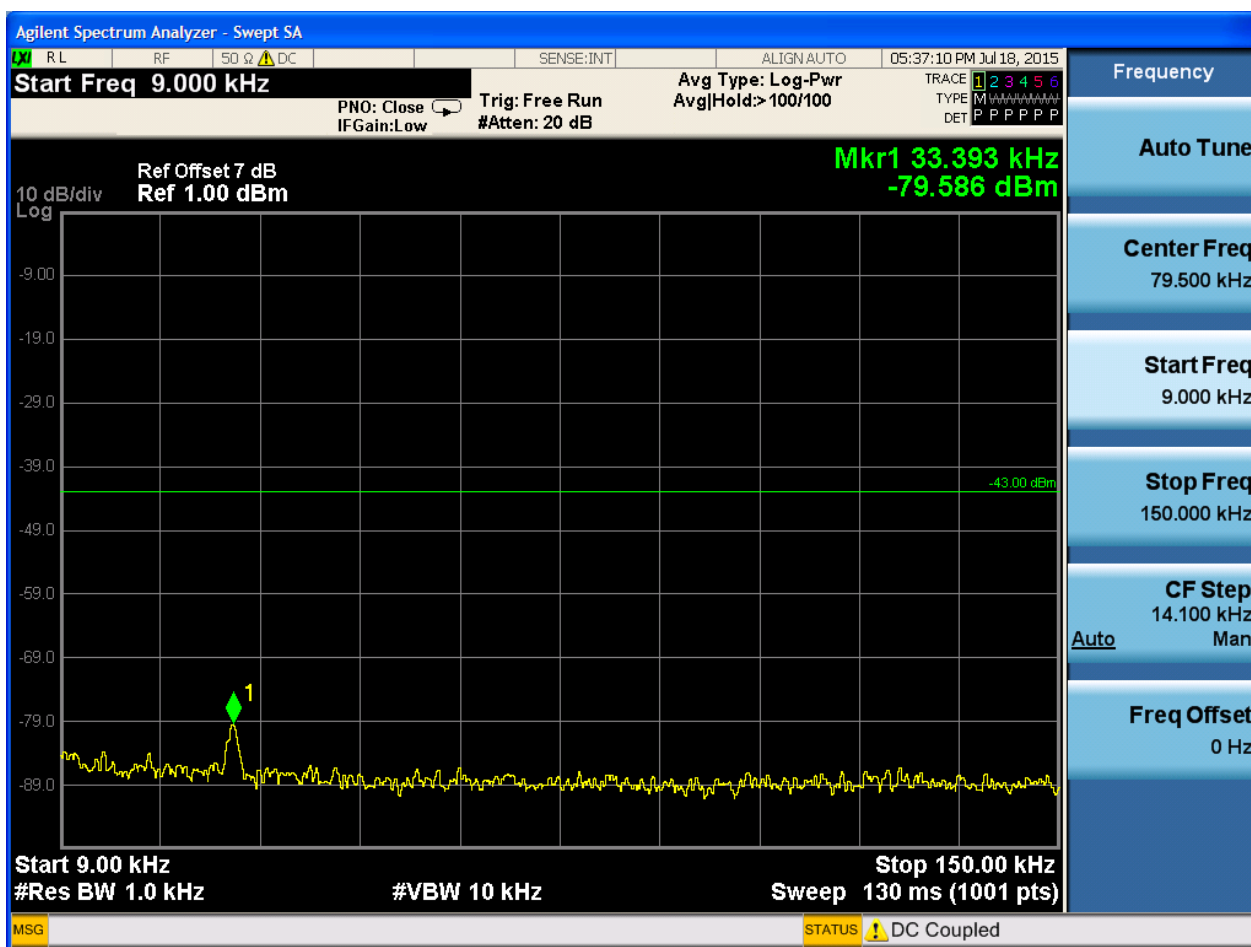


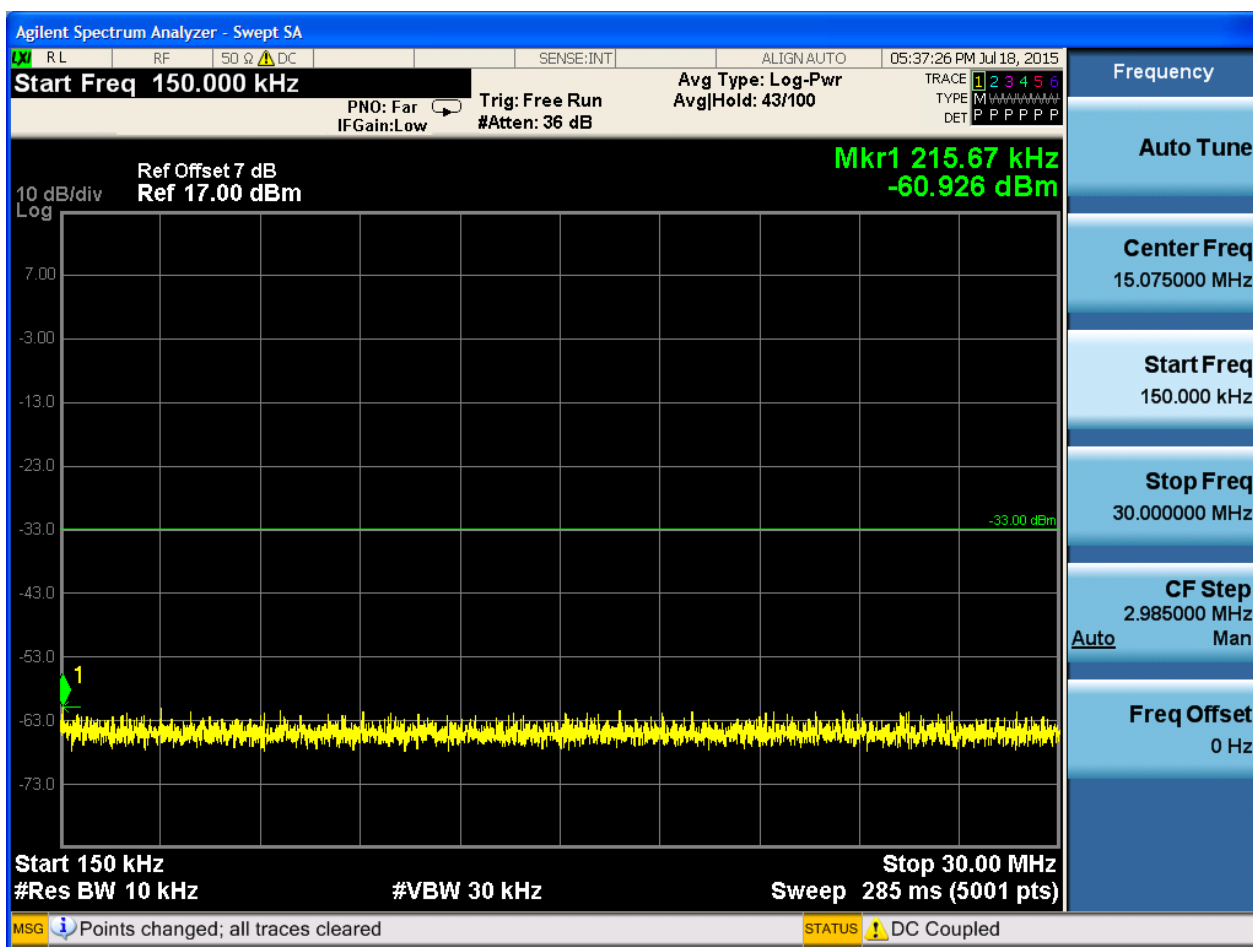


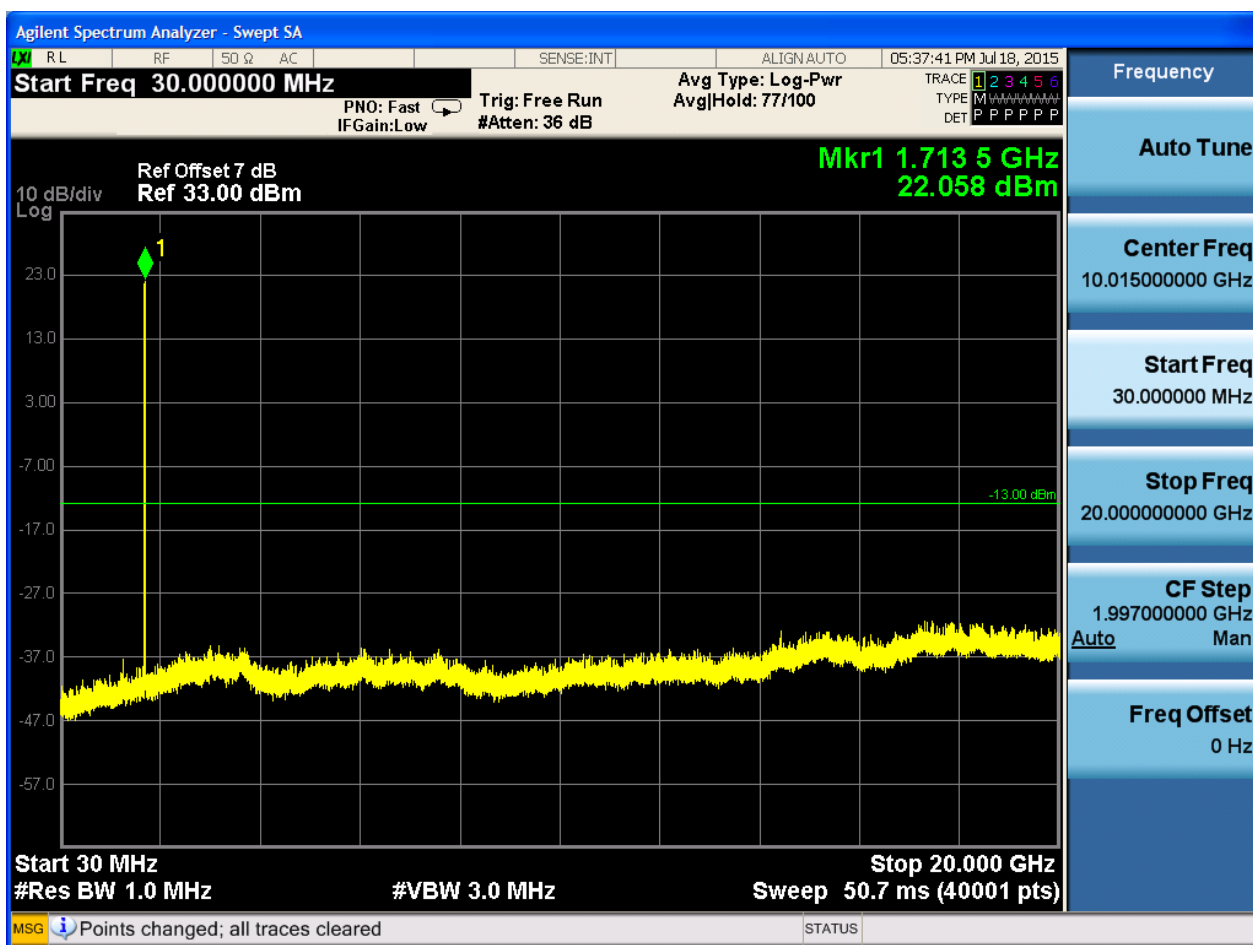
6.1.2 Test Band = WCDMA1700

6.1.2.1 Test Mode = UMTS/TM1

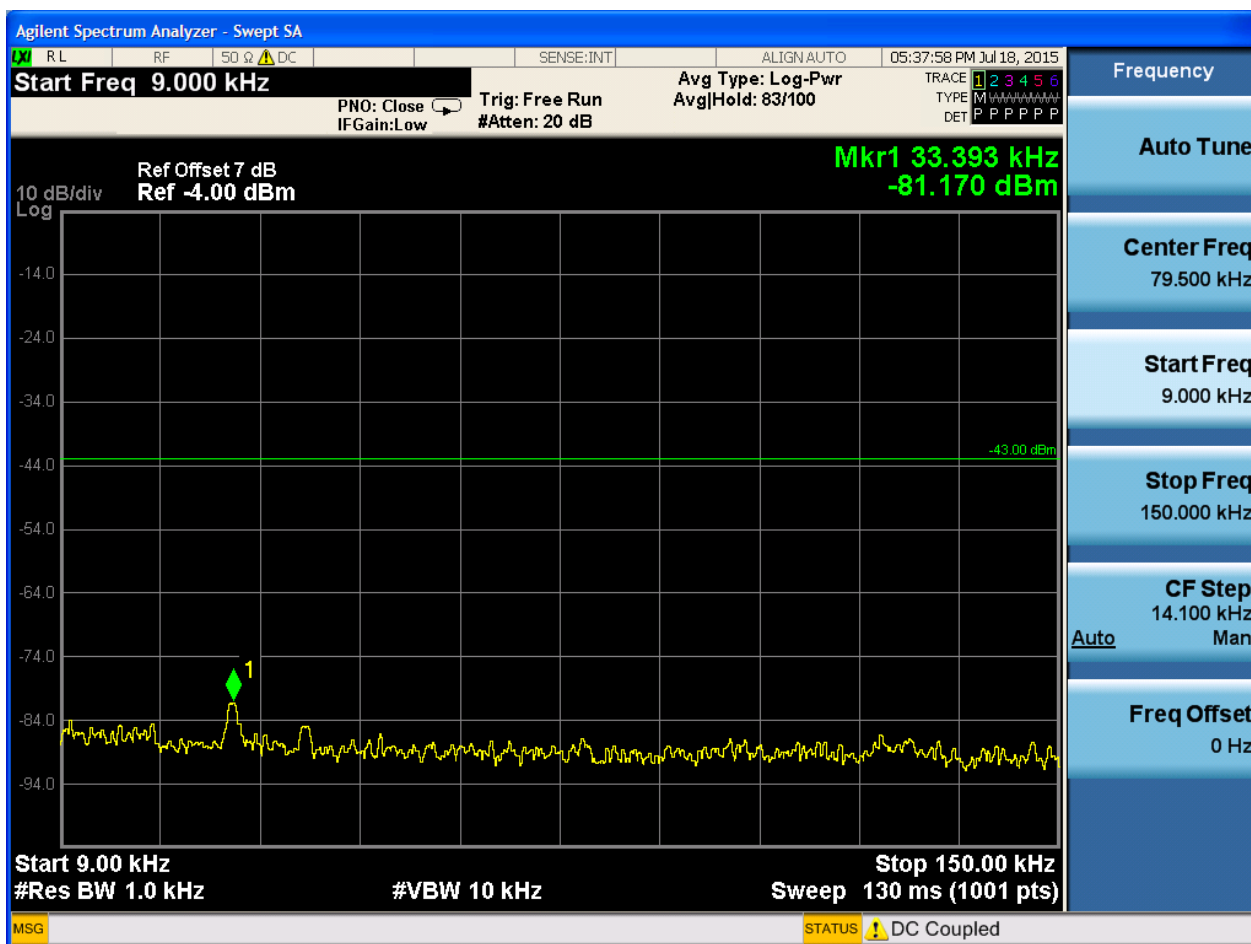
6.1.2.1.1 Test Channel = LCH

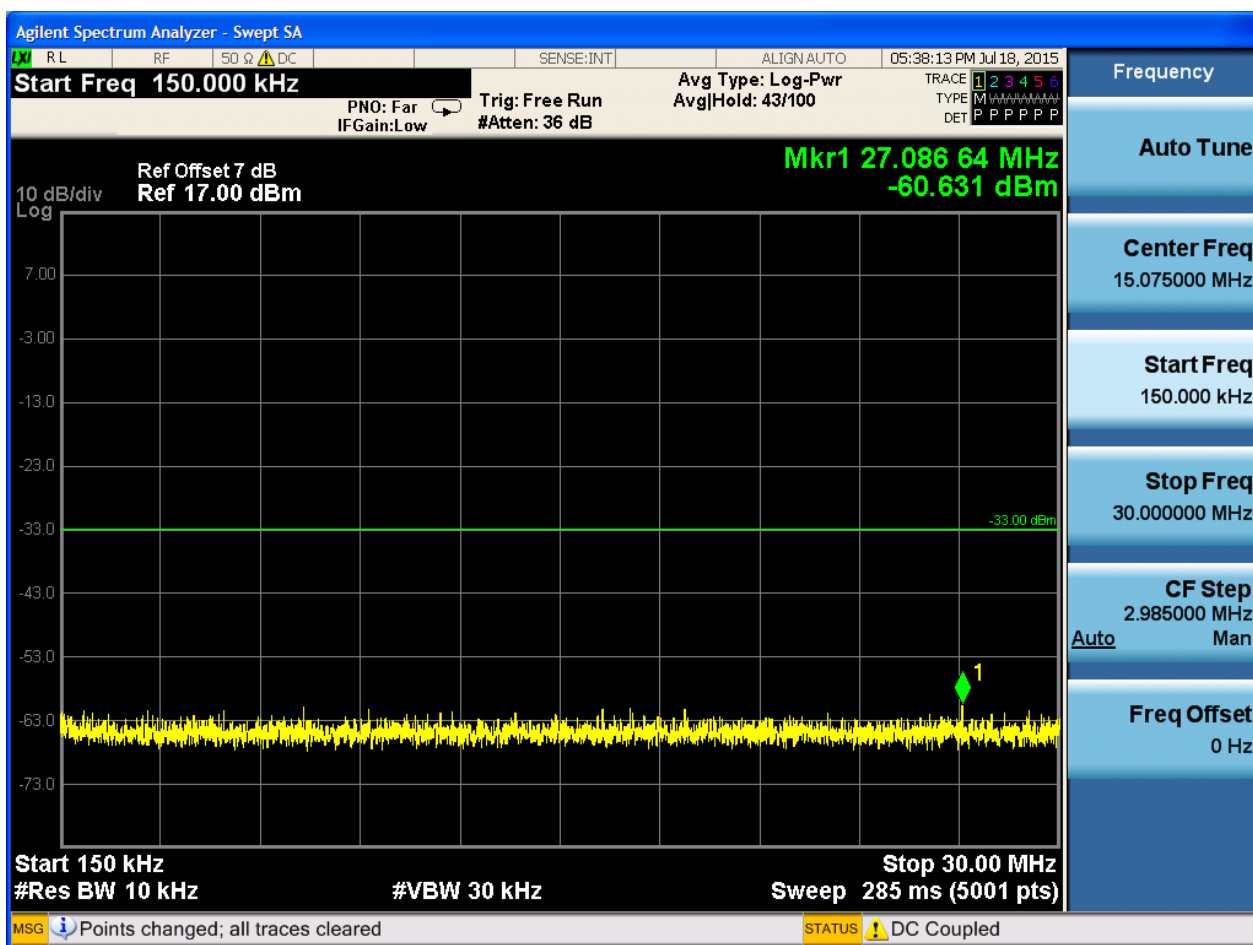


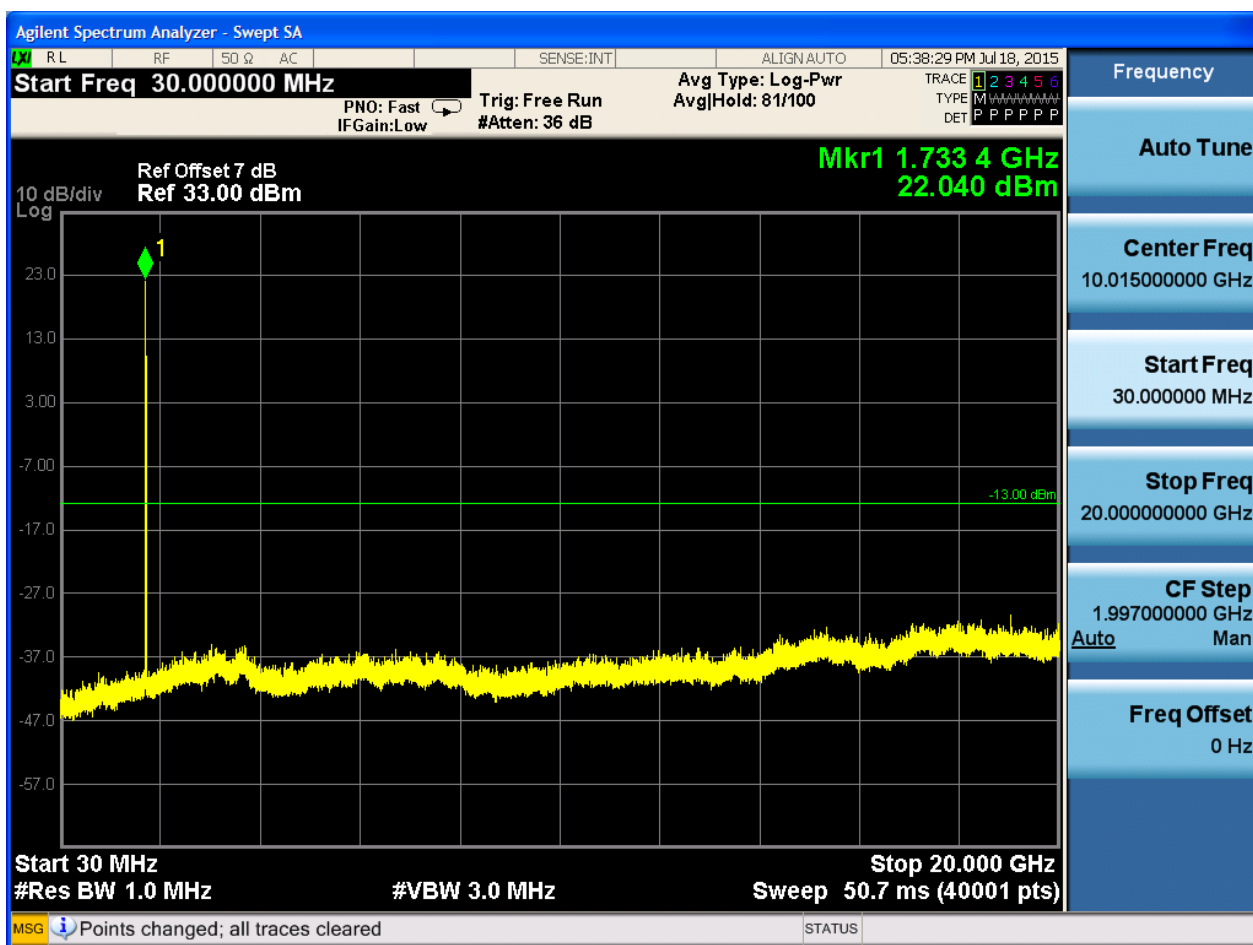




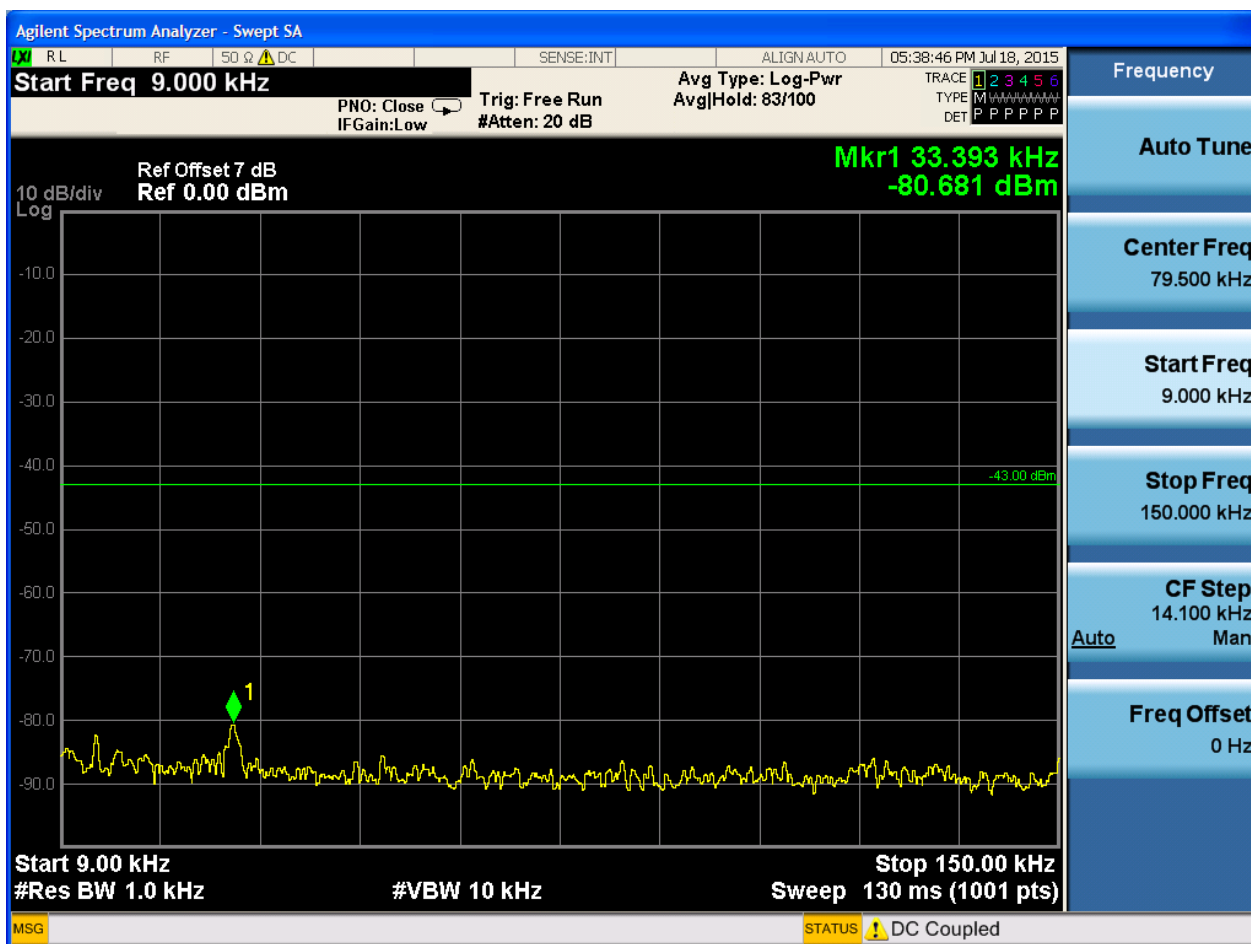
6.1.2.1.2 Test Channel = MCH

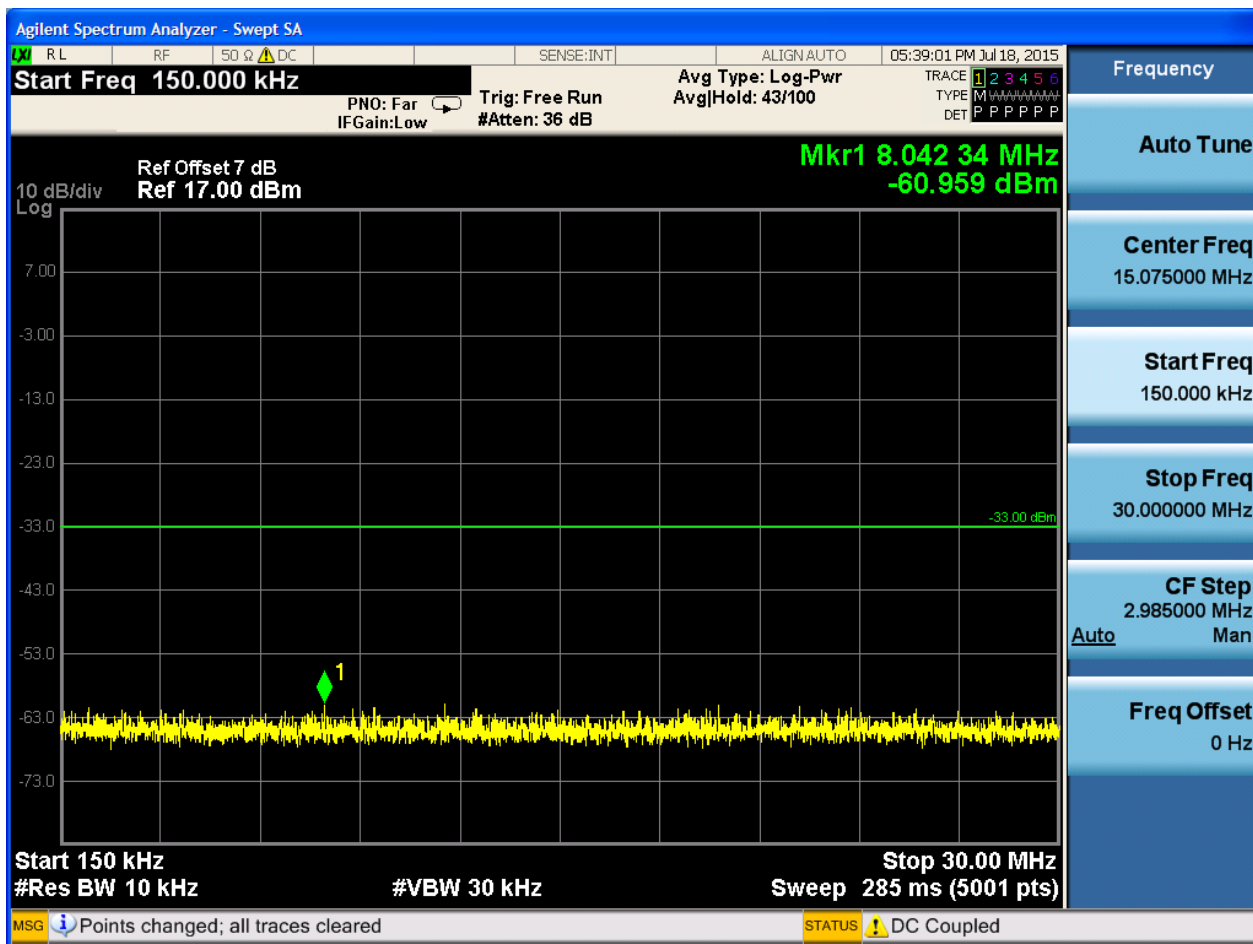


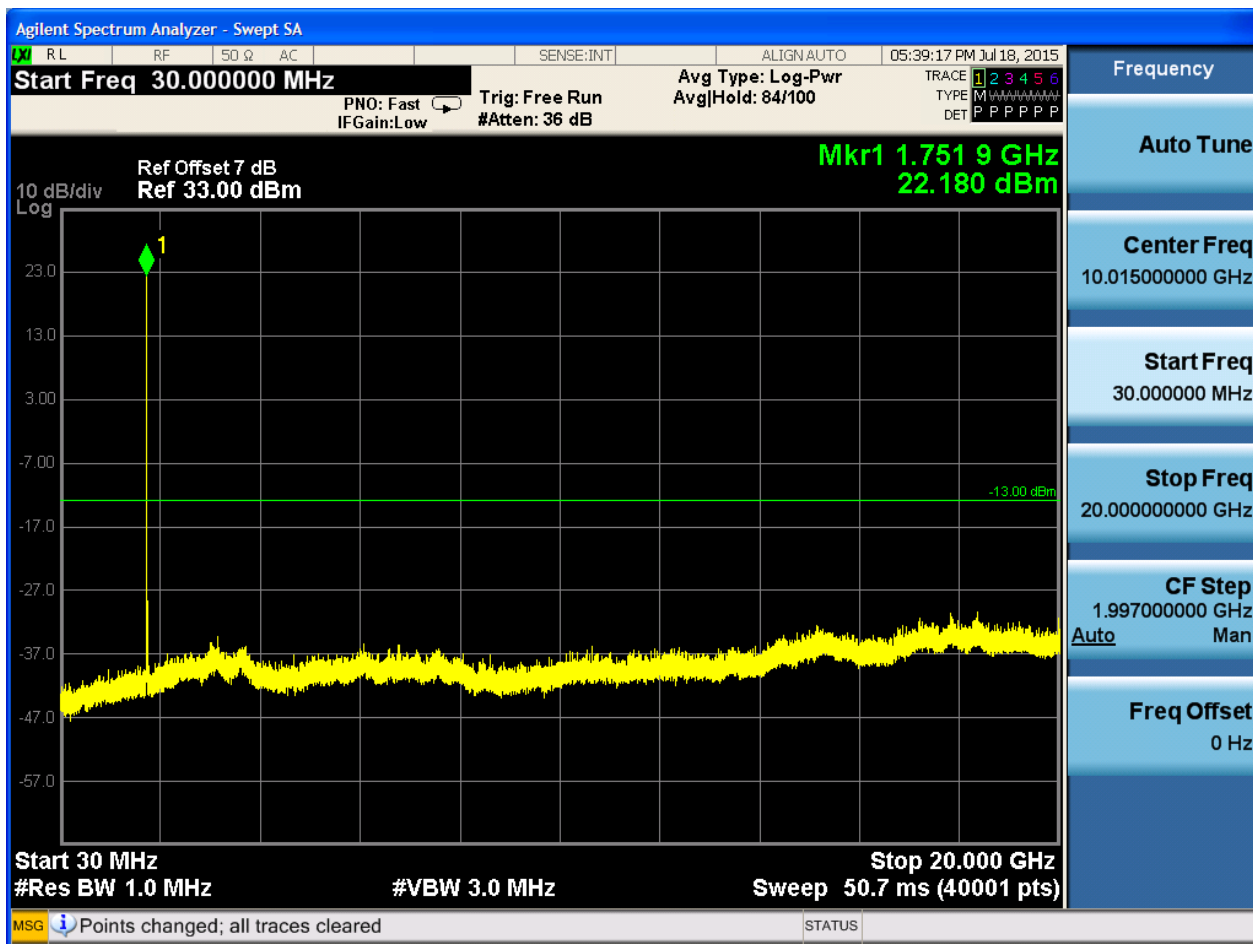




6.1.2.1.3 Test Channel = HCH



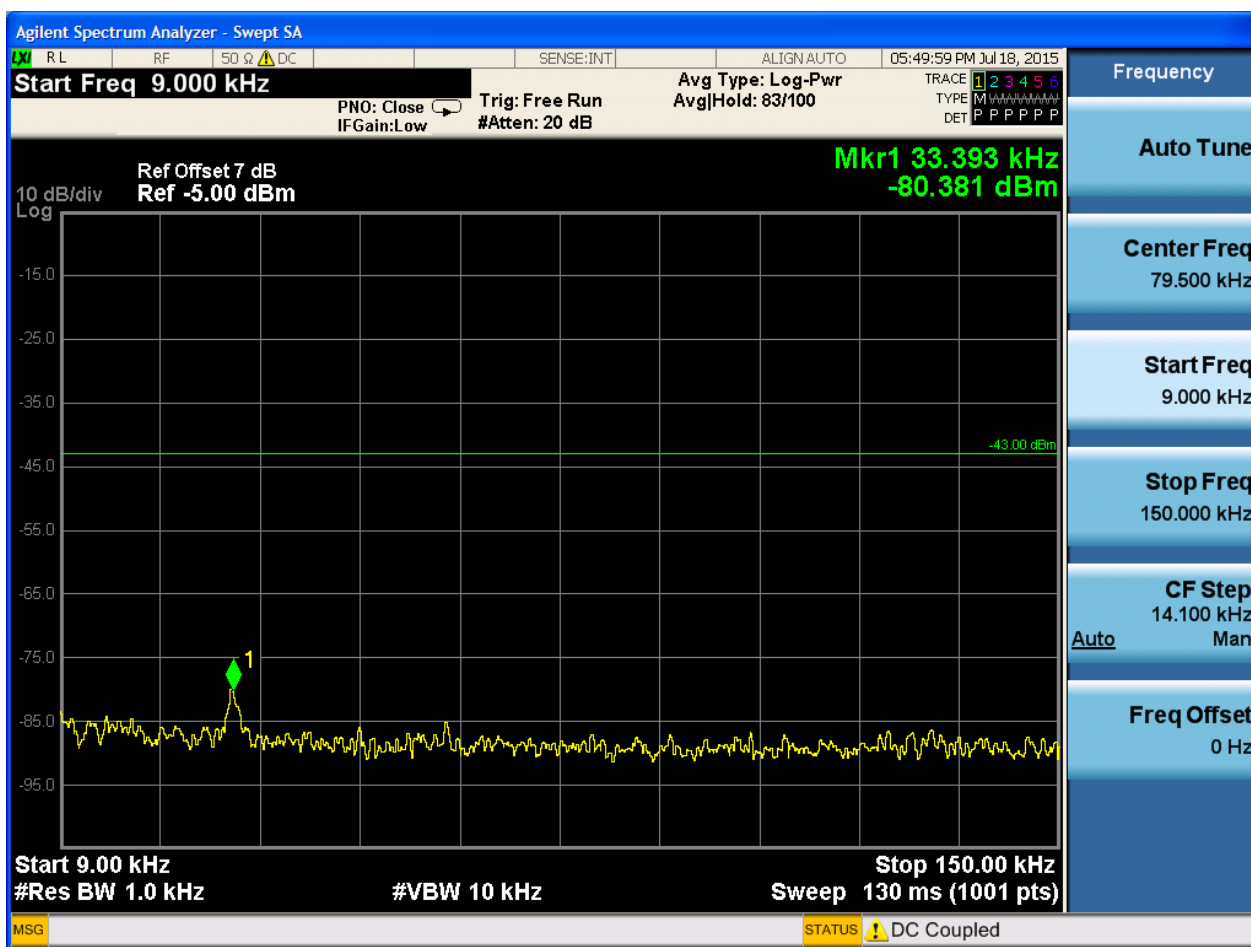


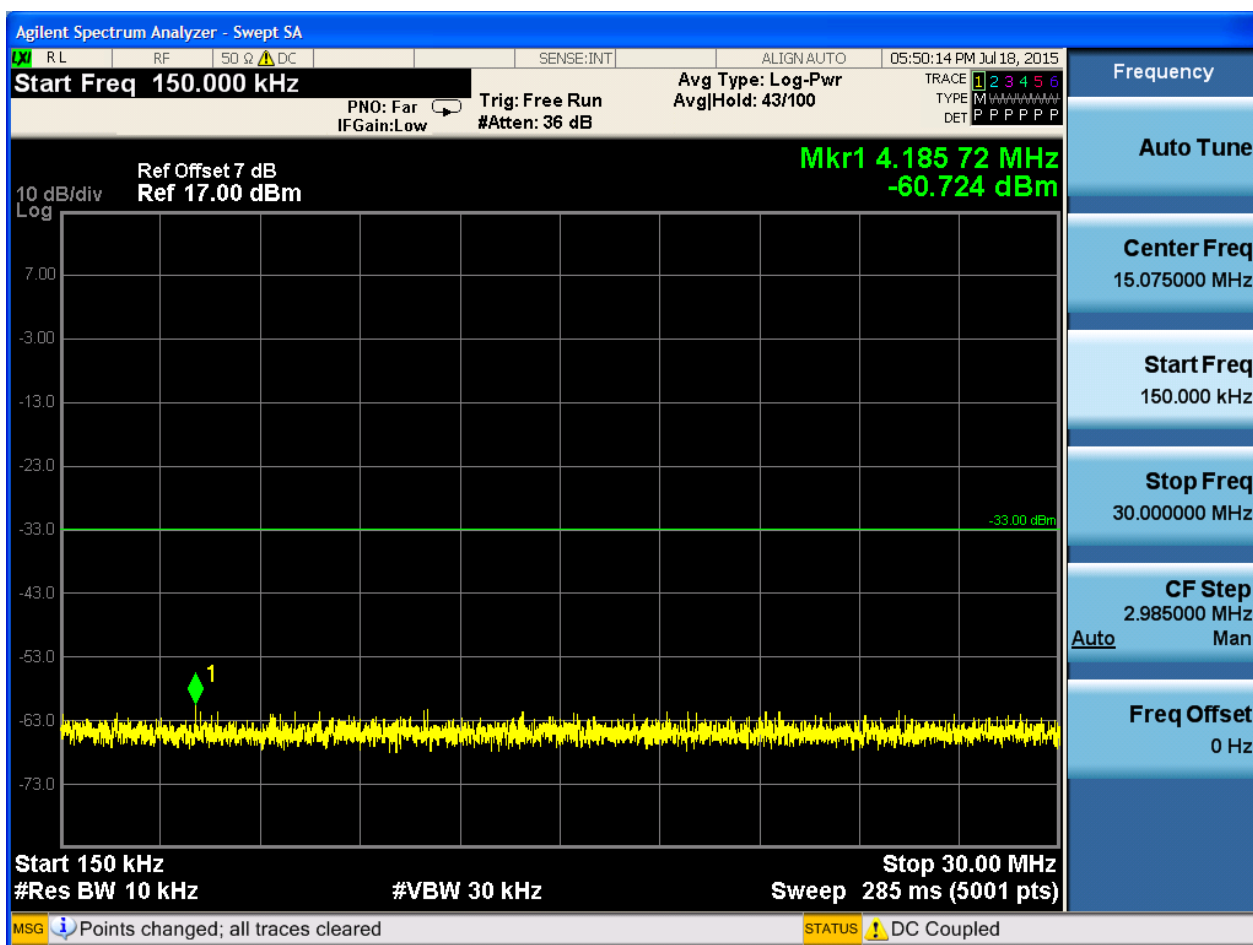


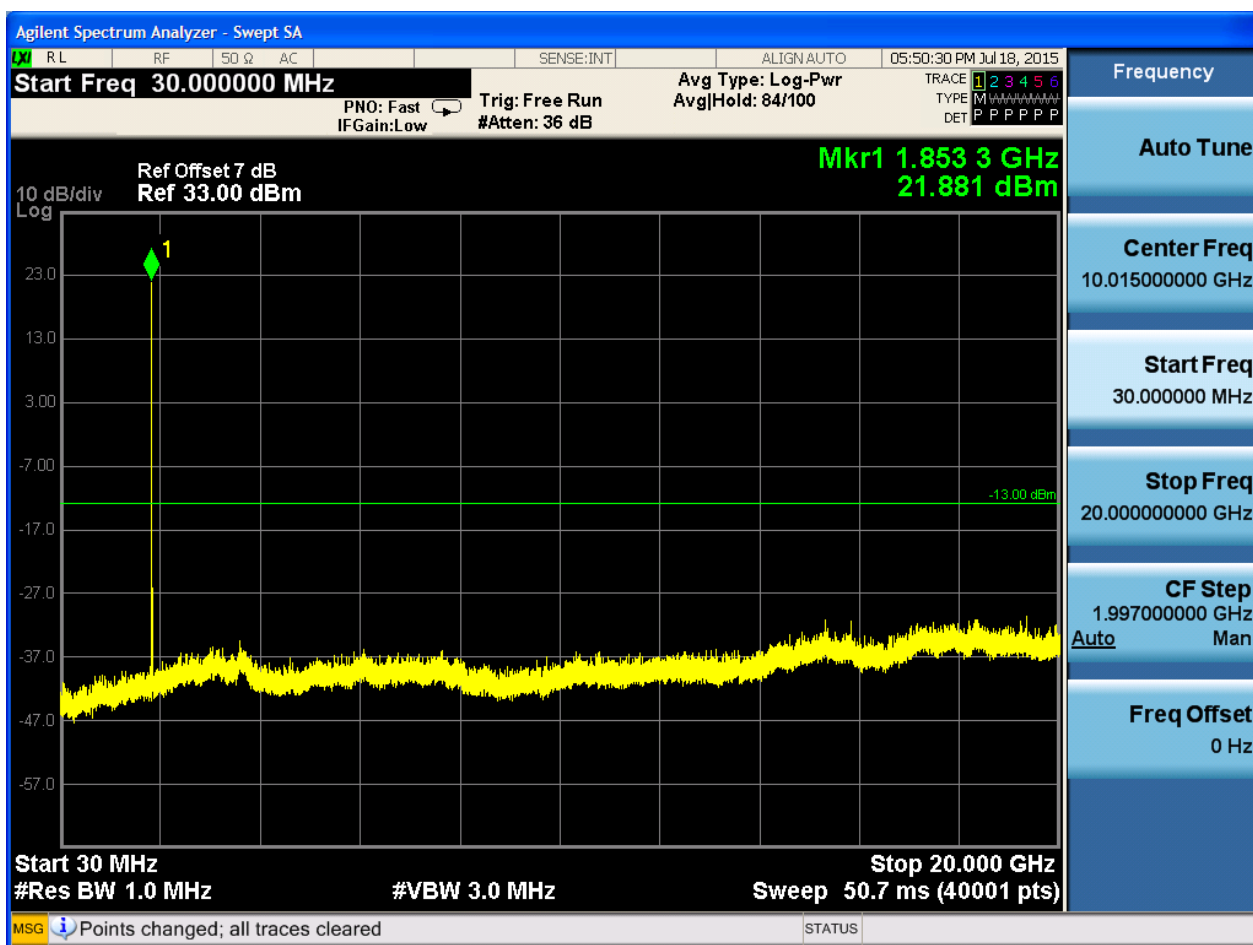
6.1.3 Test Band = WCDMA1900

6.1.3.1 Test Mode = UMTS/TM1

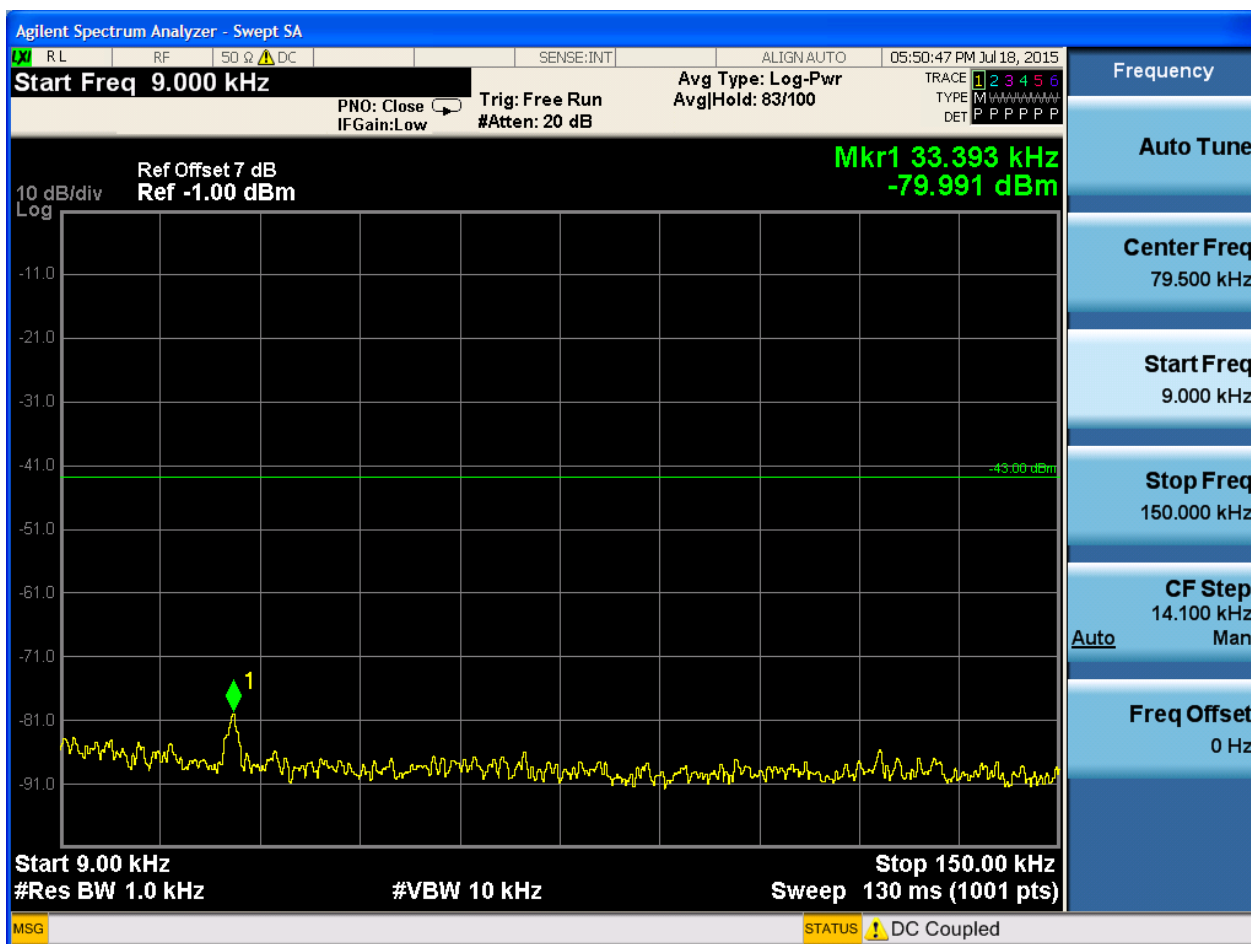
6.1.3.1.1 Test Channel = LCH

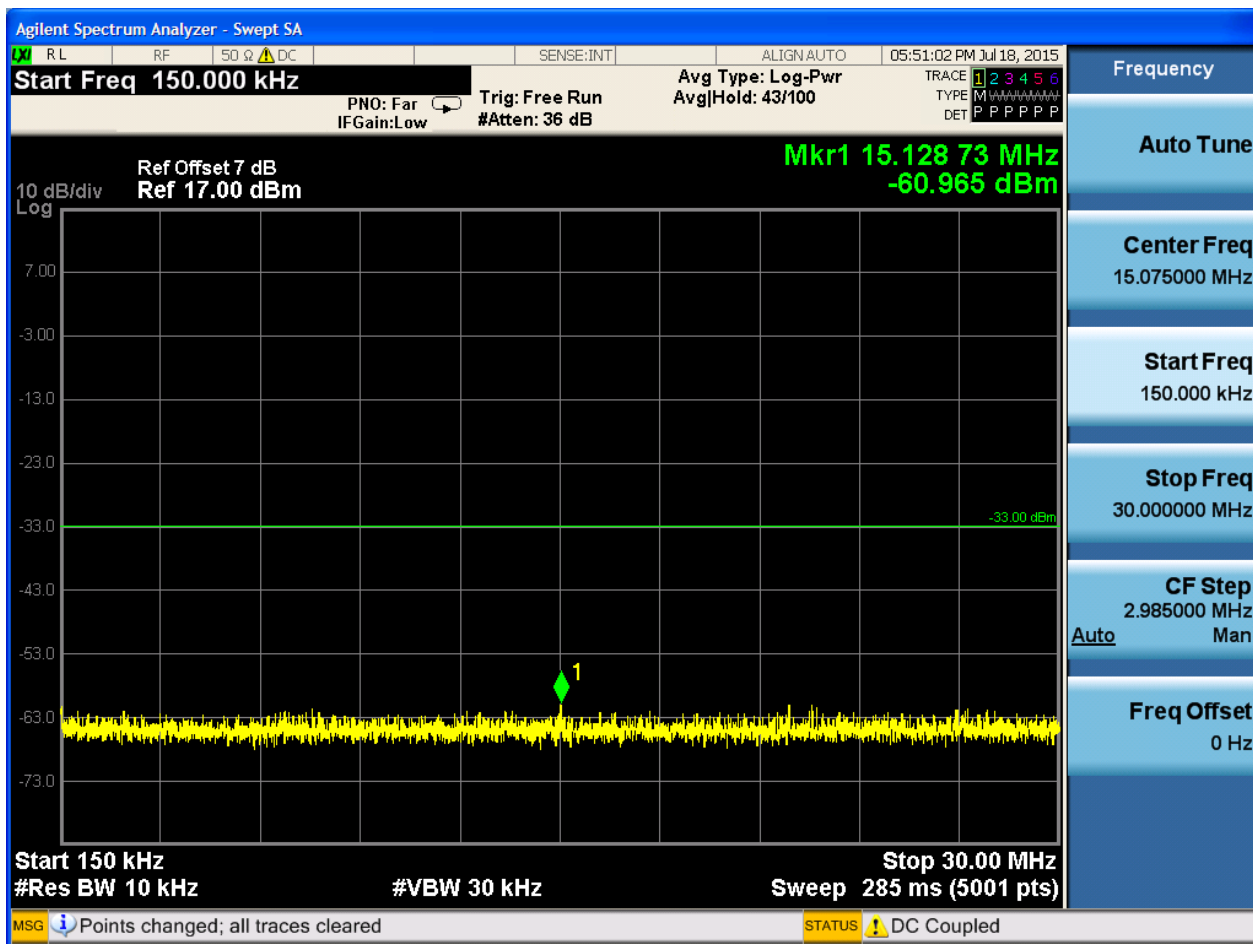


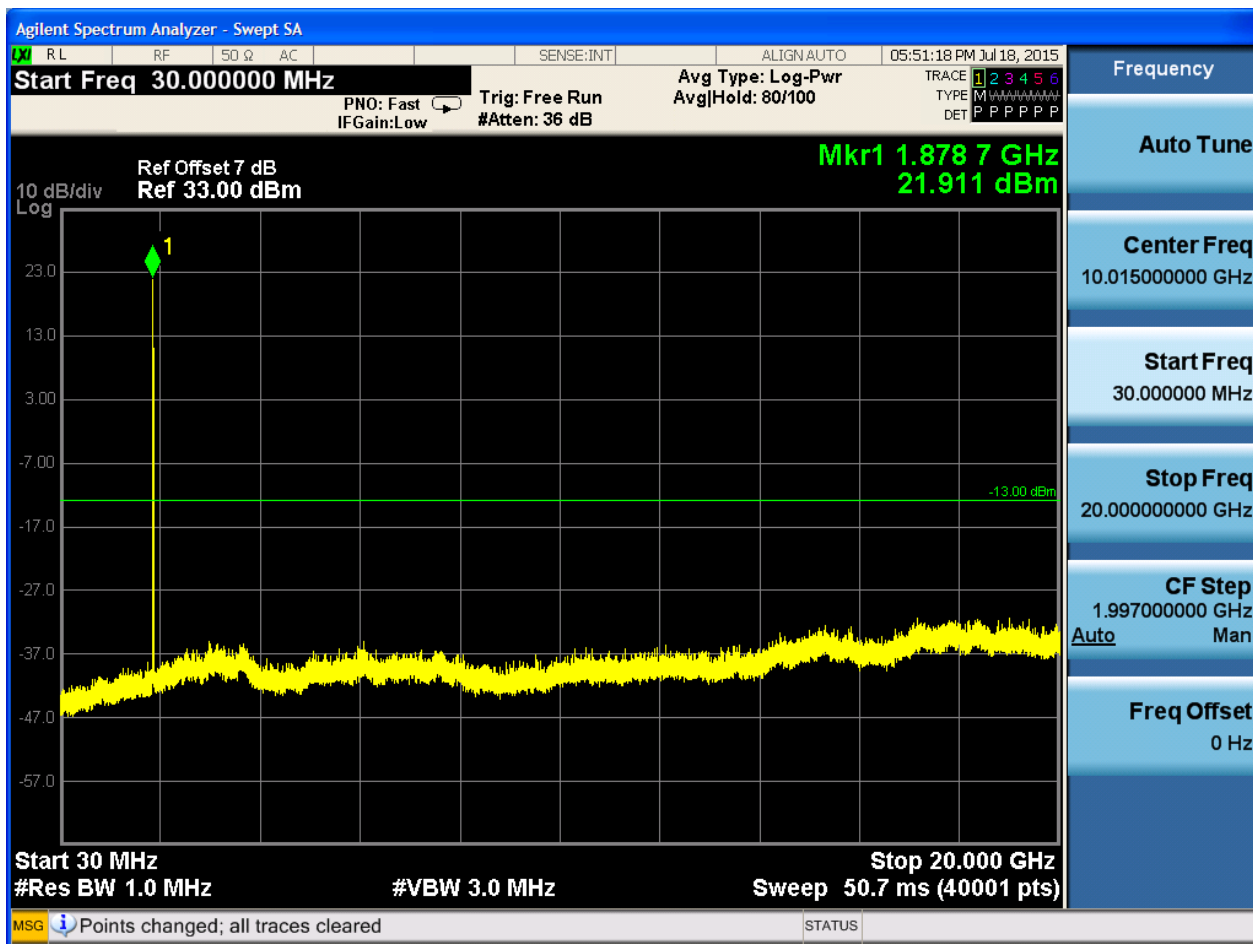




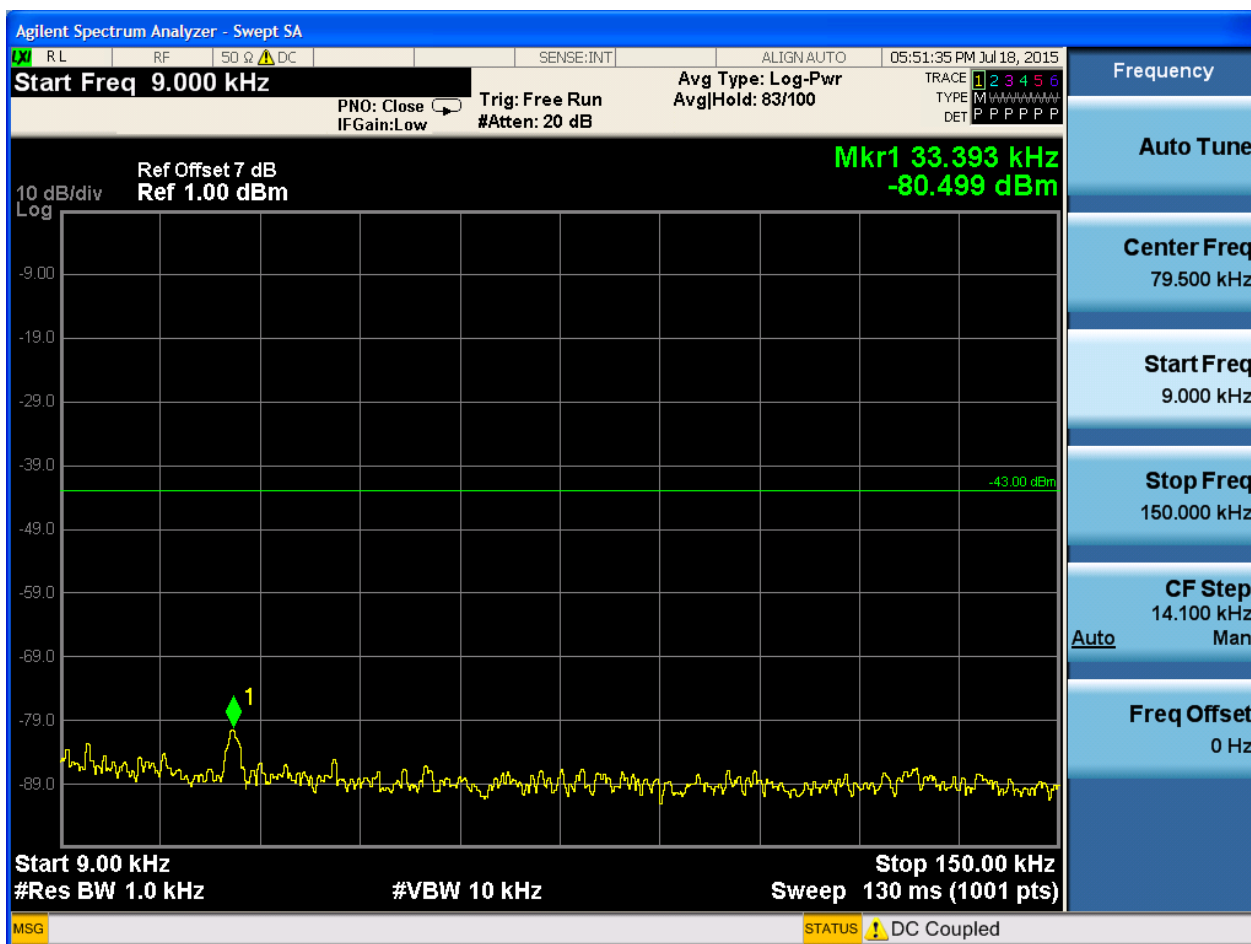
6.1.3.1.2 Test Channel = MCH

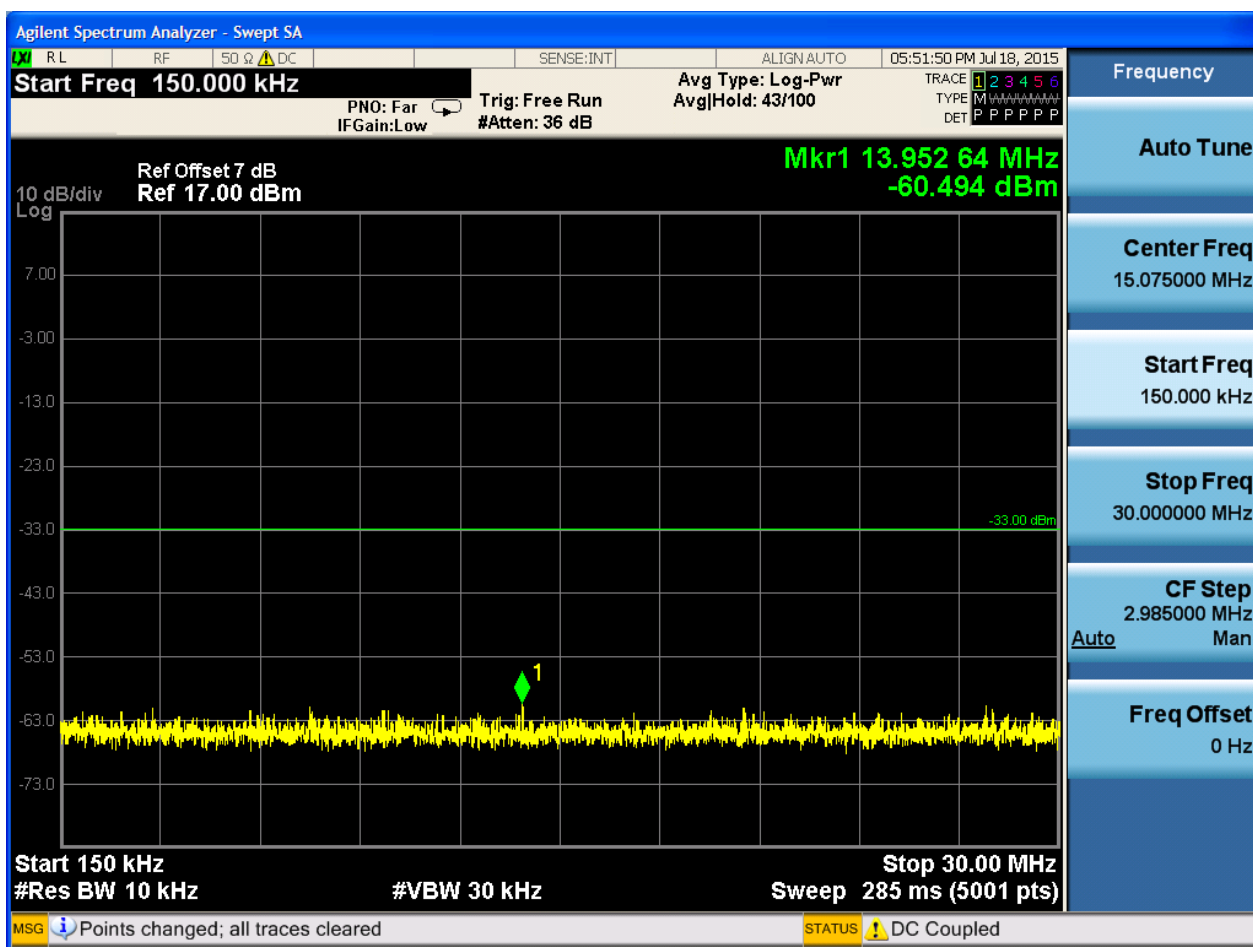


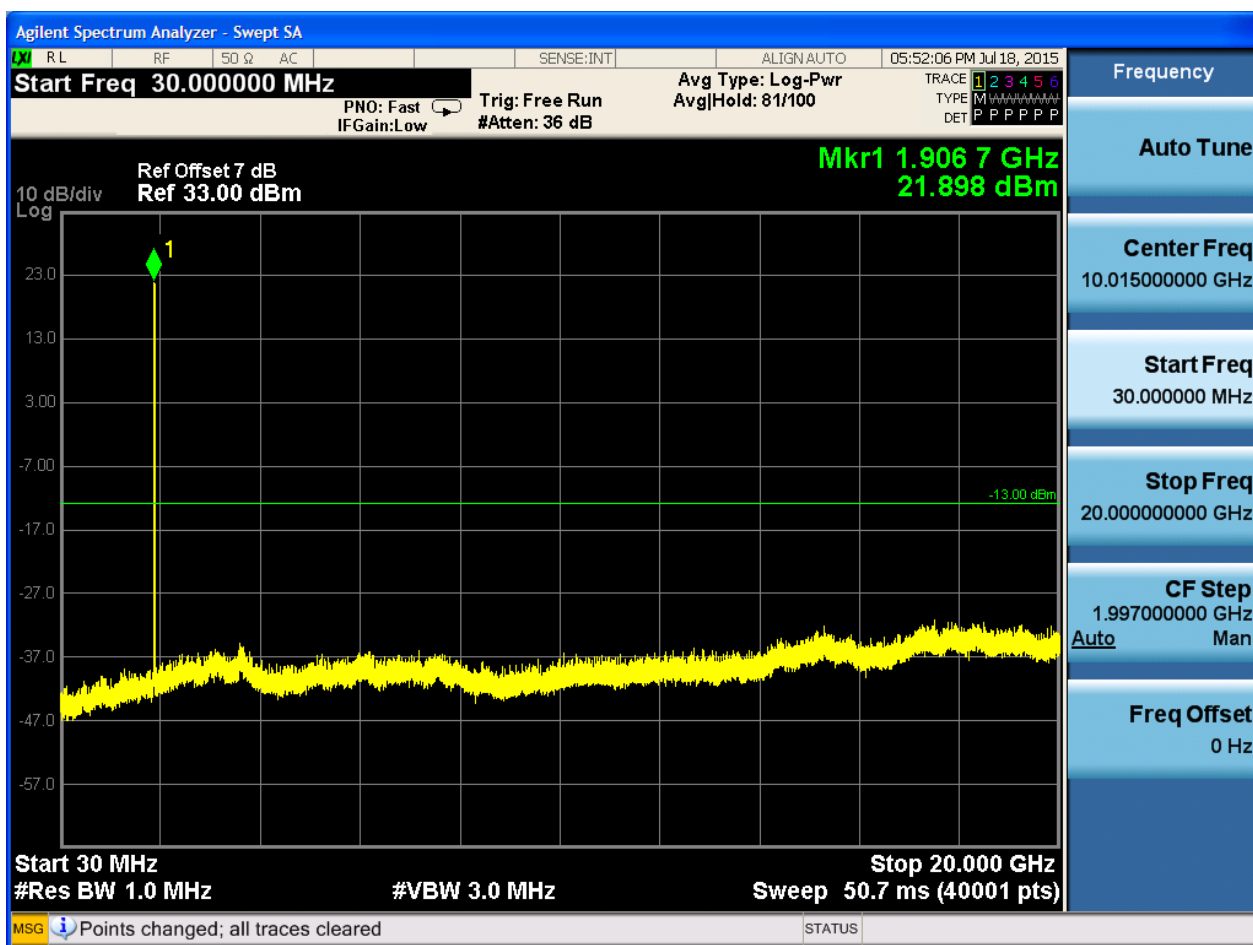




6.1.3.1.3 Test Channel = HCH







7Appendix_G: Field Strength of Spurious Radiation

Note:

9kHz~150kHz, 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

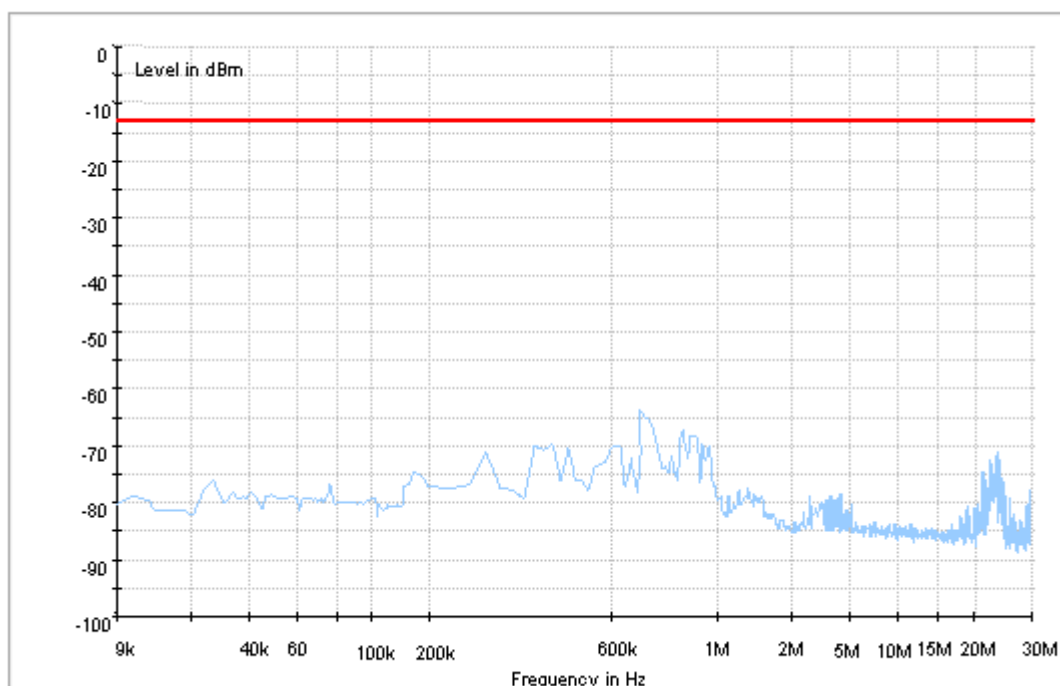
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

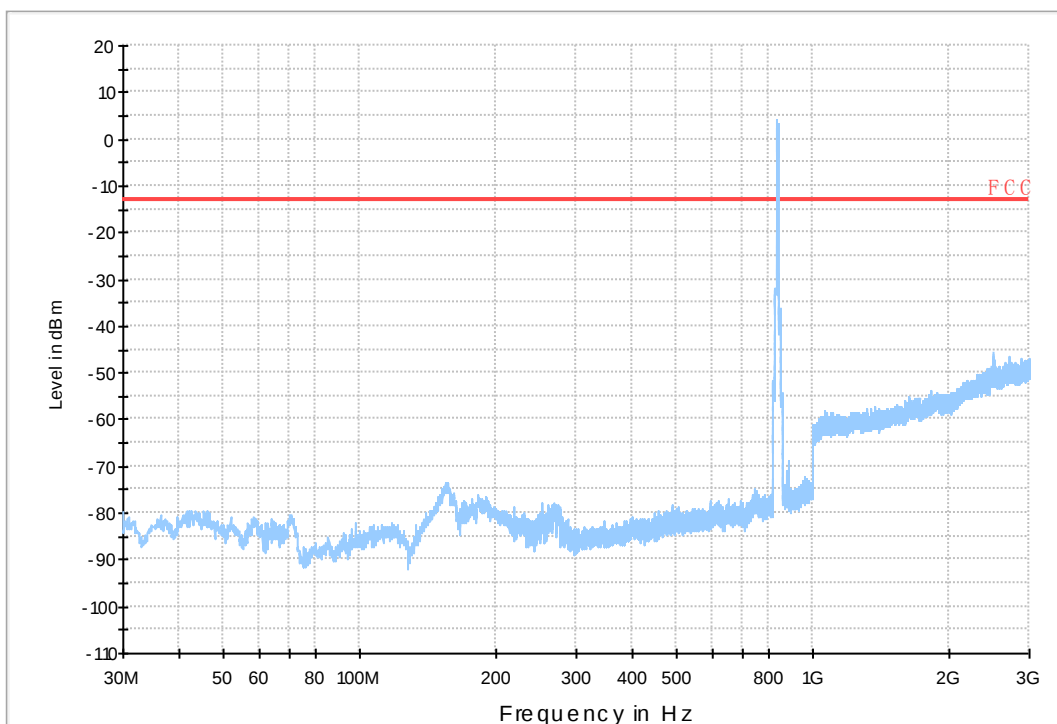
7.1 For UMTS

7.1.1 Test Band = WCDMA850

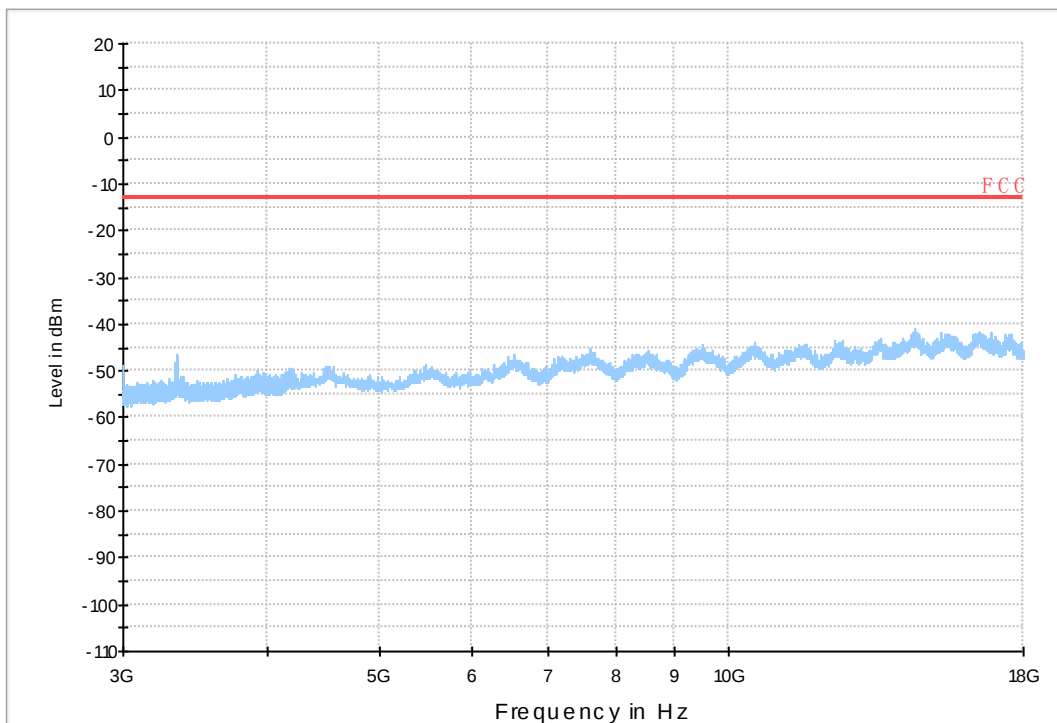
7.1.1.1 Test Mode = UMTS/TM1



Copy of FCC PART22 W CDMA850_L

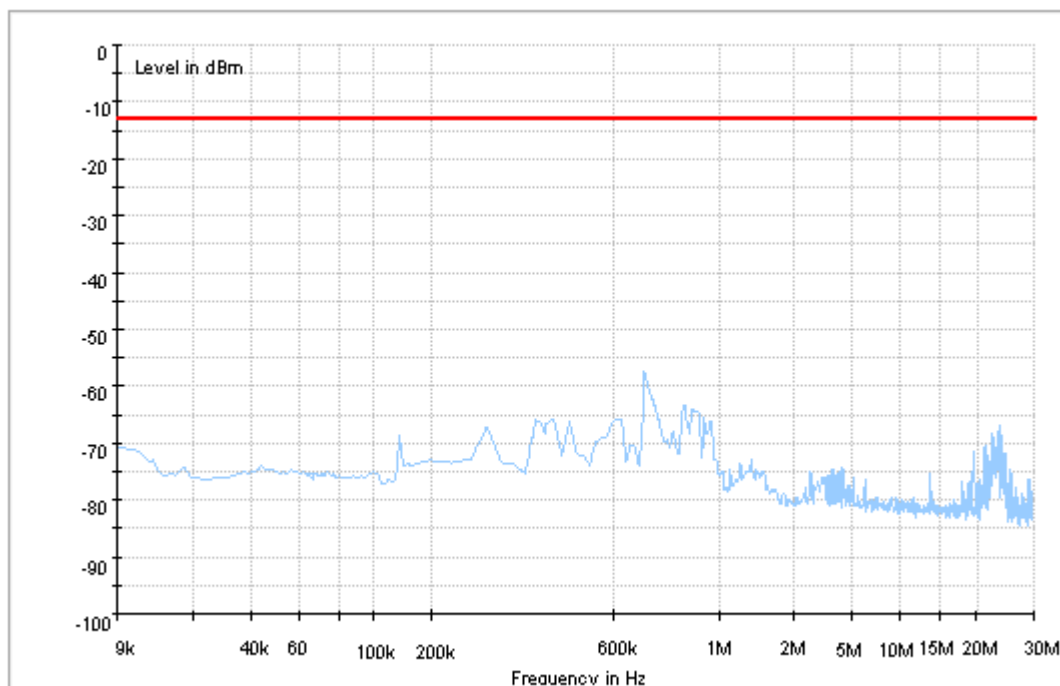


Copy of FCC PART22 W CDMA850_H

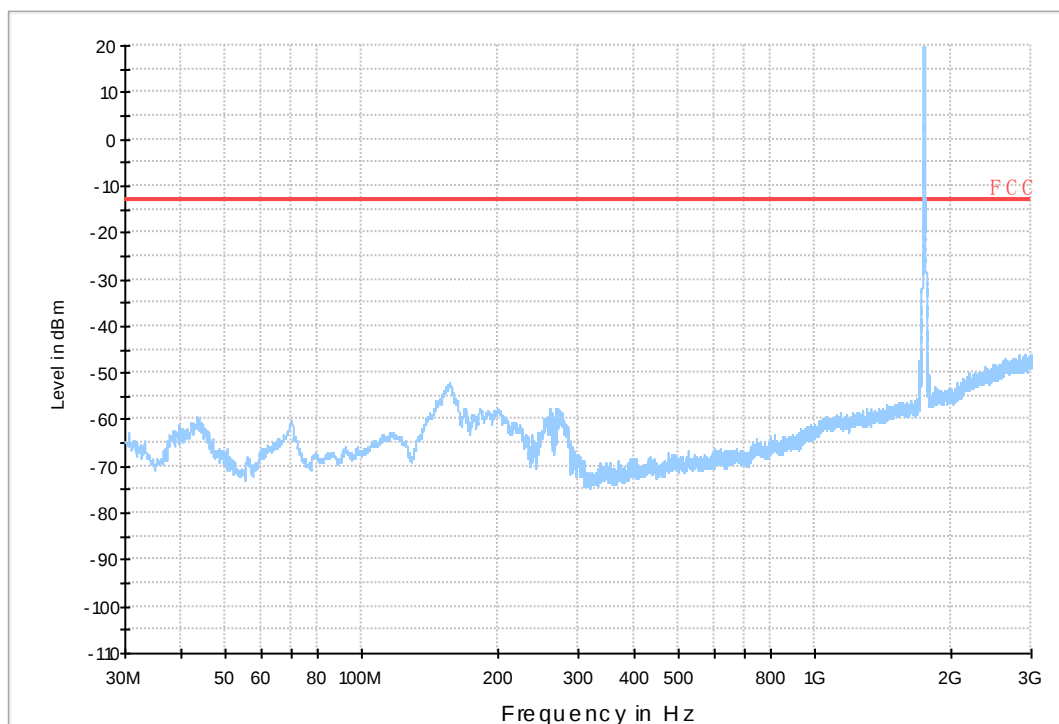


7.1.2 Test Band = WCDMA1700

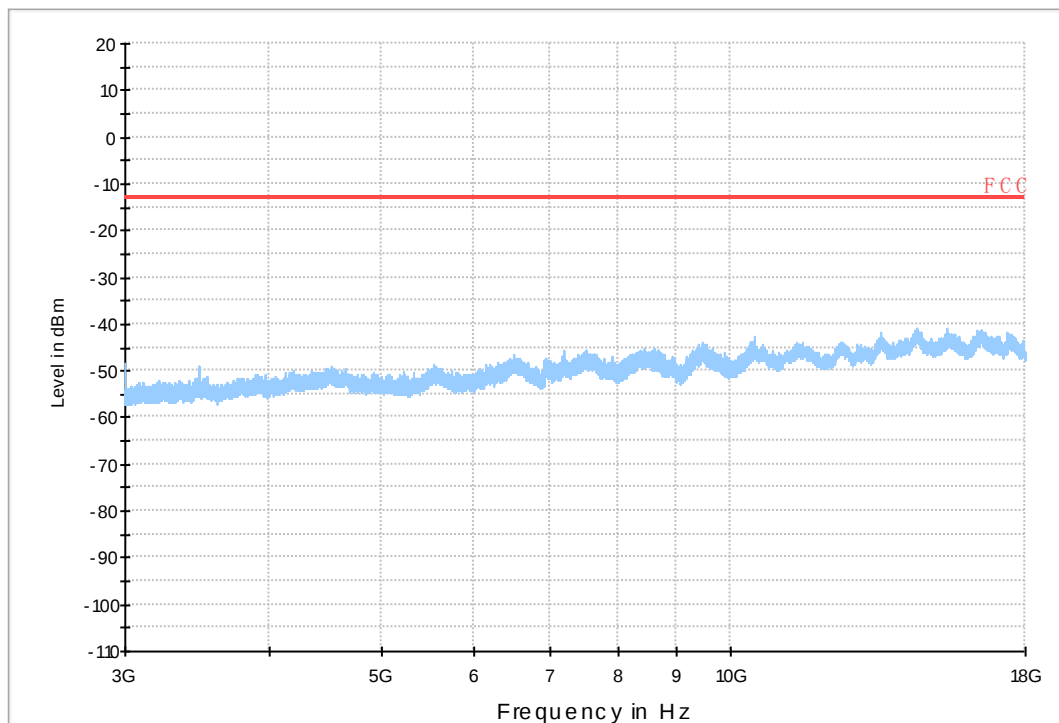
7.1.2.1 Test Mode = UMTS/TM1



Copy of FCC PART27 W CDMA1700_L

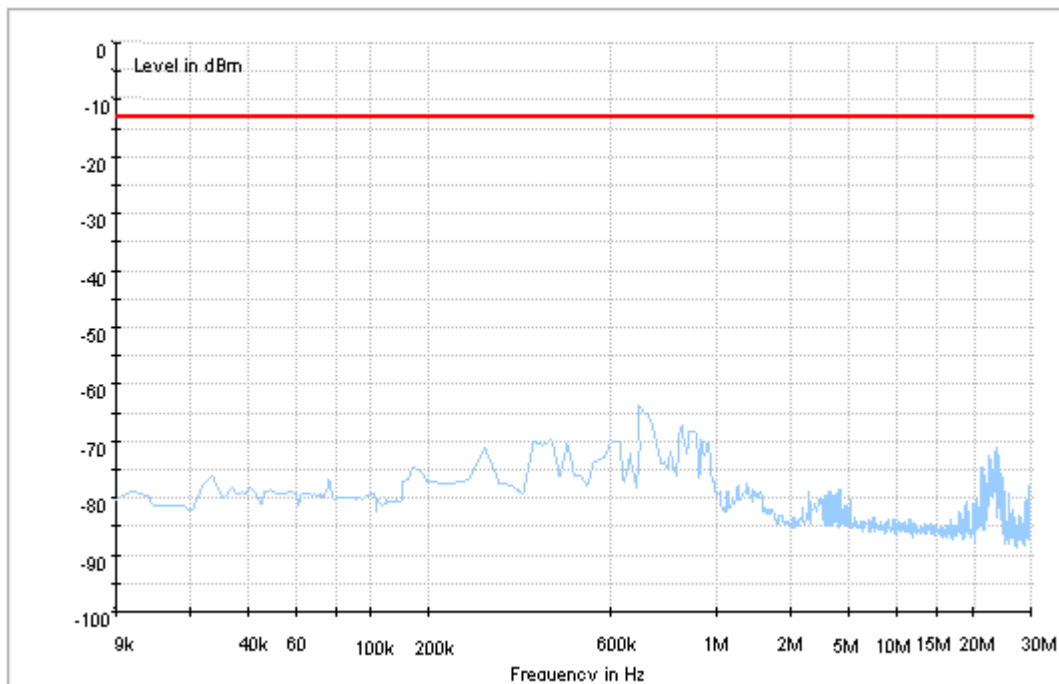


Copy of FCC PART27 W CDMA1700_H

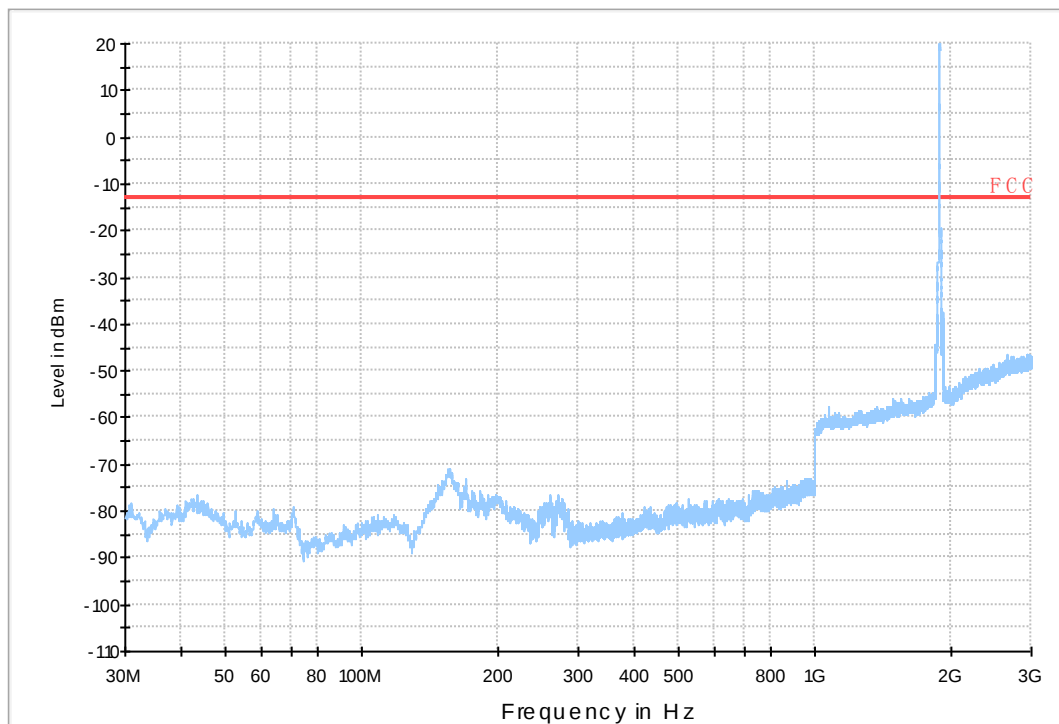


7.1.3 Test Band = WCDMA1900

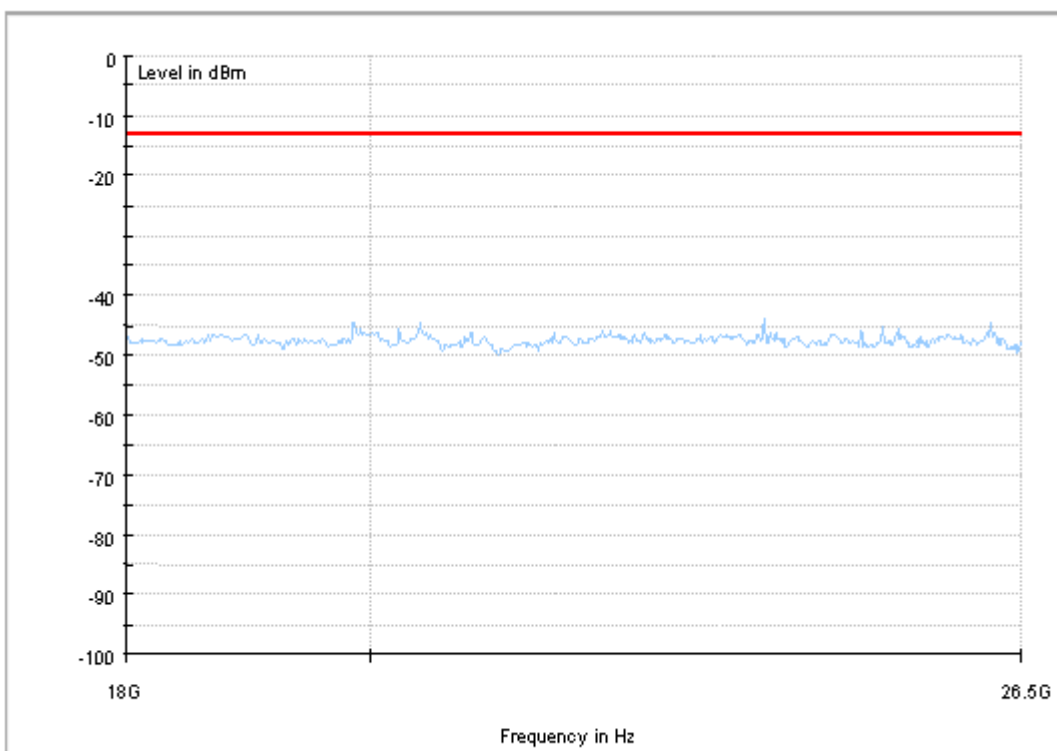
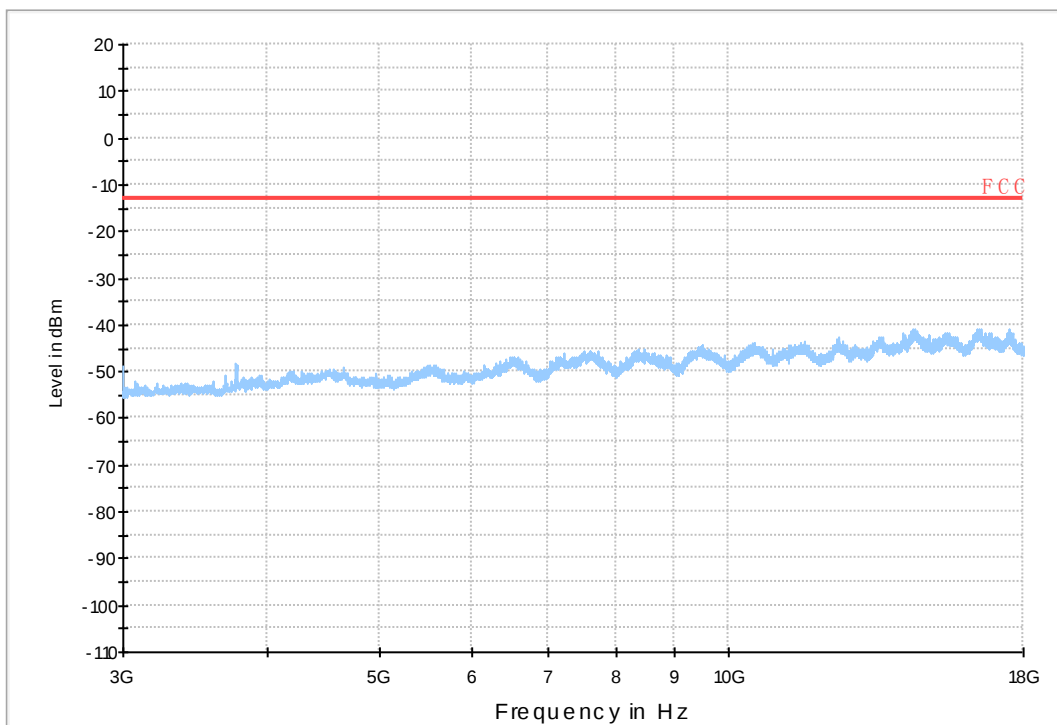
7.1.3.1 Test Mode = UMTS/TM1



Copy of FCC PART 24 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	-1.66	-0.00201	PASS
				VN	-0.69	-0.00083	PASS
				VH	-1.02	-0.00123	PASS
		MCH	TN	VL	0.7	0.00084	PASS
				VN	0.4	0.00048	PASS
				VH	1.21	0.00145	PASS
		HCH	TN	VL	-0.85	-0.001	PASS
				VN	-0.92	-0.00109	PASS
				VH	0.4	0.00047	PASS
WCDMA1700	UMTS/TM1	LCH	TN	VL	0.38	0.00022	PASS
				VN	1.6	0.00093	PASS
				VH	2.15	0.00126	PASS
		MCH	TN	VL	-4.35	-0.00251	PASS
				VN	-1.48	-0.00085	PASS
				VH	-1.97	-0.00114	PASS
		HCH	TN	VL	-2.37	-0.00135	PASS
				VN	-1.24	-0.00071	PASS
				VH	-2.4	-0.00137	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	-1.82	-0.00098	PASS
				VN	-2.33	-0.00126	PASS
				VH	-2.78	-0.0015	PASS
		MCH	TN	VL	-1.24	-0.00066	PASS
				VN	-0.08	-0.00004	PASS
				VH	-1.24	-0.00066	PASS
		HCH	TN	VL	-1.17	-0.00061	PASS
				VN	-0.06	-0.00003	PASS
				VH	-0.99	-0.00052	PASS

8.1.2Frequency 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	-2.85	-0.00345	PASS
				-20	-0.21	-0.00025	PASS
				-10	-1.72	-0.00208	PASS
				0	-3.83	-0.00463	PASS
				10	0.2	0.00024	PASS
				20	-2.38	-0.00288	PASS
				30	-0.34	-0.00041	PASS
				40	-1.48	-0.00179	PASS
				50	-3.91	-0.00473	PASS
		MCH	VN	-30	-1.91	-0.00228	PASS
				-20	0.23	0.00027	PASS
				-10	-0.79	-0.00094	PASS
				0	-0.7	-0.00084	PASS
				10	-0.98	-0.00117	PASS
				20	-1.45	-0.00173	PASS
				30	0.24	0.00029	PASS
				40	-0.63	-0.00075	PASS
				50	-0.14	-0.00017	PASS
		HCH	VN	-30	1.83	0.00216	PASS
				-20	-0.92	-0.00109	PASS
				-10	-3.77	-0.00445	PASS
				0	-0.84	-0.00099	PASS
				10	1.65	0.00195	PASS
				20	-1.59	-0.00188	PASS
				30	-0.58	-0.00069	PASS
				40	0.96	0.00113	PASS
				50	-1.45	-0.00171	PASS
WCDMA1700	UMTS/TM1	LCH	VN	-30	1.68	0.00098	PASS
				-20	-2.27	-0.00133	PASS
				-10	-0.29	-0.00017	PASS
				0	0.12	0.00007	PASS
				10	1.24	0.00072	PASS
				20	2.76	0.00161	PASS
				30	-0.11	-0.00006	PASS
				40	1.95	0.00114	PASS
				50	1.16	0.00068	PASS
		MCH	VN	-30	-4.18	-0.00241	PASS
				-20	-4.7	-0.00271	PASS
				-10	-2.7	-0.00156	PASS
				0	-3.75	-0.00216	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				10	-3.27	-0.00189	PASS
				20	-3.25	-0.00188	PASS
				30	-1.37	-0.00079	PASS
				40	-1.89	-0.00109	PASS
				50	-3.08	-0.00178	PASS
		HCH	VN	-30	-2.04	-0.00116	PASS
				-20	-0.15	-0.00009	PASS
				-10	-0.15	-0.00009	PASS
				0	-0.79	-0.00045	PASS
				10	1.01	0.00058	PASS
				20	-2.4	-0.00137	PASS
				30	-0.53	-0.0003	PASS
				40	-3.39	-0.00193	PASS
				50	-0.78	-0.00045	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	-2.87	-0.00155	PASS
				-20	-3.05	-0.00165	PASS
				-10	-4.79	-0.00259	PASS
				0	-3.07	-0.00166	PASS
				10	0.46	0.00025	PASS
				20	-3.57	-0.00193	PASS
				30	-1.19	-0.00064	PASS
				40	-1.79	-0.00097	PASS
				50	-3.78	-0.00204	PASS
		MCH	VN	-30	-3.65	-0.00194	PASS
				-20	-3.37	-0.00179	PASS
				-10	-1.34	-0.00071	PASS
				0	-5.11	-0.00272	PASS
				10	-1.3	-0.00069	PASS
				20	-1.77	-0.00094	PASS
				30	-2.82	-0.0015	PASS
				40	-1.08	-0.00057	PASS
				50	-3.65	-0.00194	PASS
		HCH	VN	-30	-3.69	-0.00193	PASS
				-20	-1.66	-0.00087	PASS
				-10	-2.35	-0.00123	PASS
				0	-3.68	-0.00193	PASS
				10	-3.71	-0.00194	PASS
				20	-1.94	-0.00102	PASS
				30	-1.72	-0.0009	PASS
				40	-2.75	-0.00144	PASS



Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				50	-2.17	-0.00114	PASS

END