Appendix for test report

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1Appendix_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
WCDMA850	UMTS/TM1	LCH	24.35	20.2	38..5	PASS
		MCH	24.29	20.14	38.5	PASS
		HCH	24.35	20.49	38.5	PASS
WCDMA1900	UMTS/TM1	LCH	23.91	23.71	33	PASS
		MCH	23.74	23.81	33	PASS
		HCH	23.97	23.77	33	PASS
WCDMA 1700	UMTS/TM1	LCH	24.16	24.83	30	PASS
		MCH	24.08	24.74	30	PASS
		HCH	24.22	24.9	30	PASS

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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,

ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]

EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]

b, SGP=Signal Generator Level

Note2: RBW > emission bandwidth, VBW > 3 x RBW.

Detector: RMS

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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	3.7	13	PASS
		MCH	3.54	13	PASS
		HCH	3.82	13	PASS
WCDMA1900	UMTS/TM1	LCH	2.11	13	PASS
		MCH	3.75	13	PASS
		HCH	3.4	13	PASS

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3Appendix_C: Modulation Characteristics

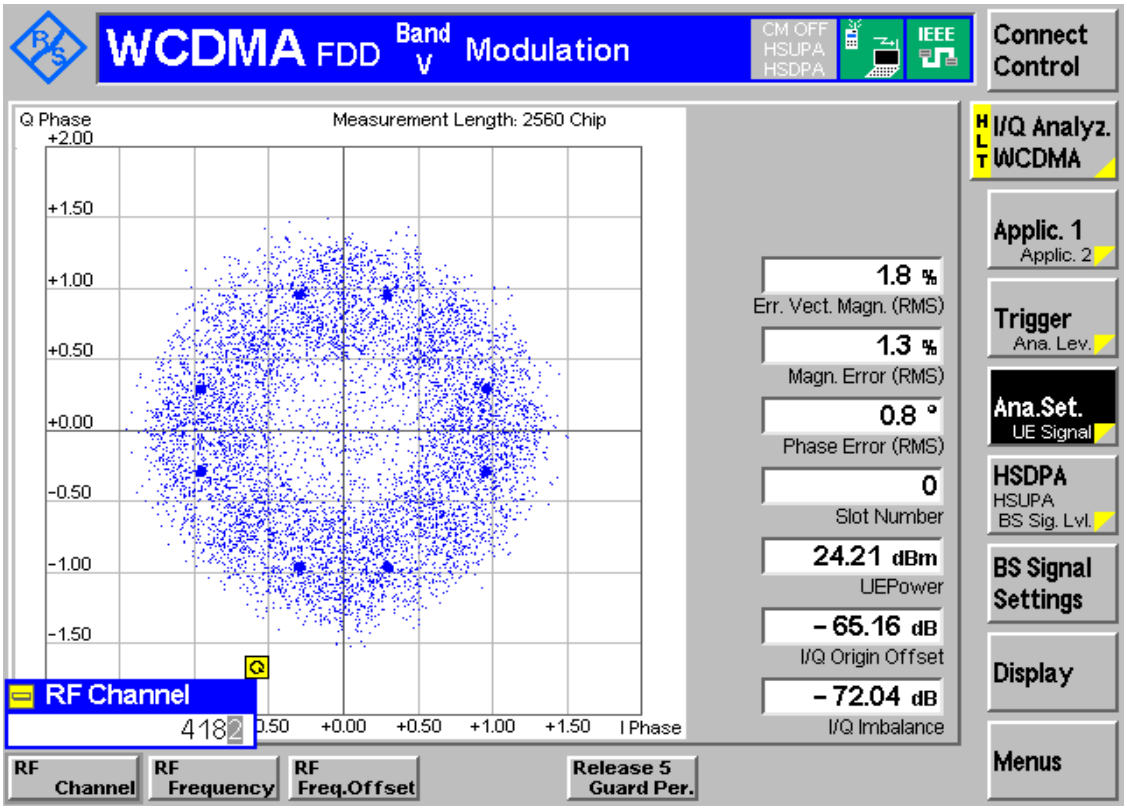
Part I - Test Plots

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



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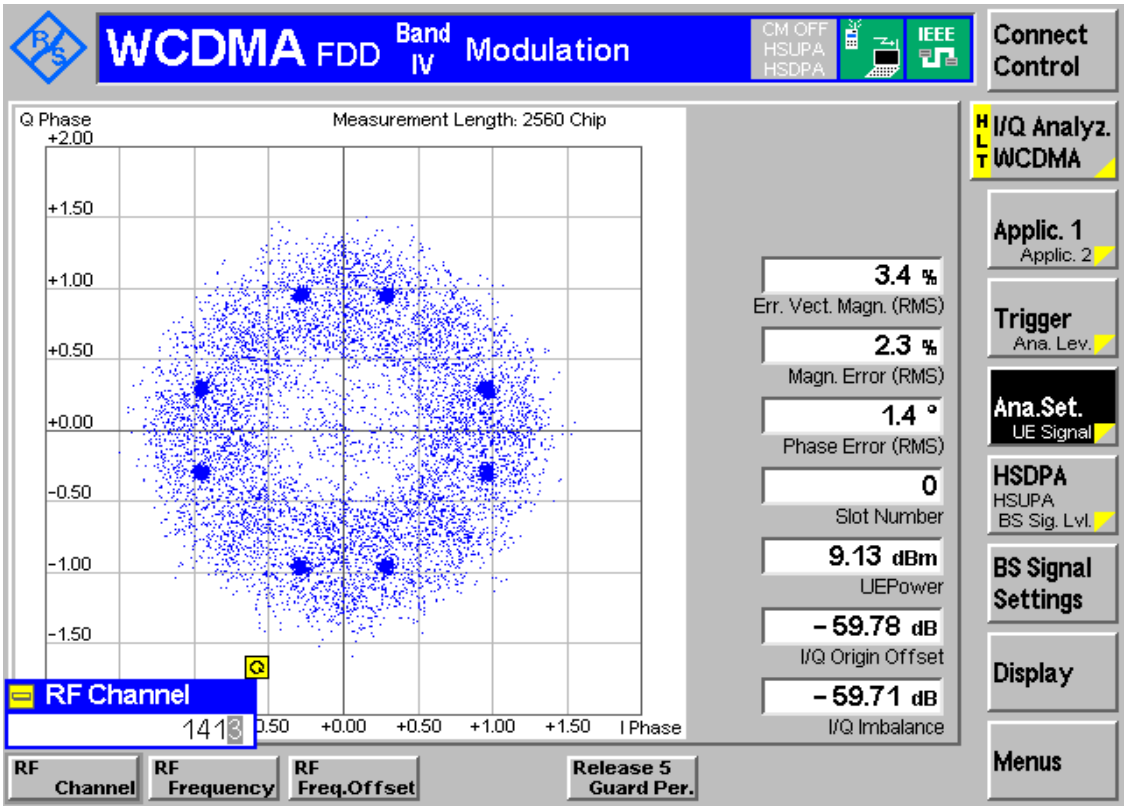
3.2 For UMTS

3.2.1 Test Band = WCDMA1700

3.2.1.1 Test Mode = UMTS/TM1

3.2.1.1.1 Test Channel = MCH



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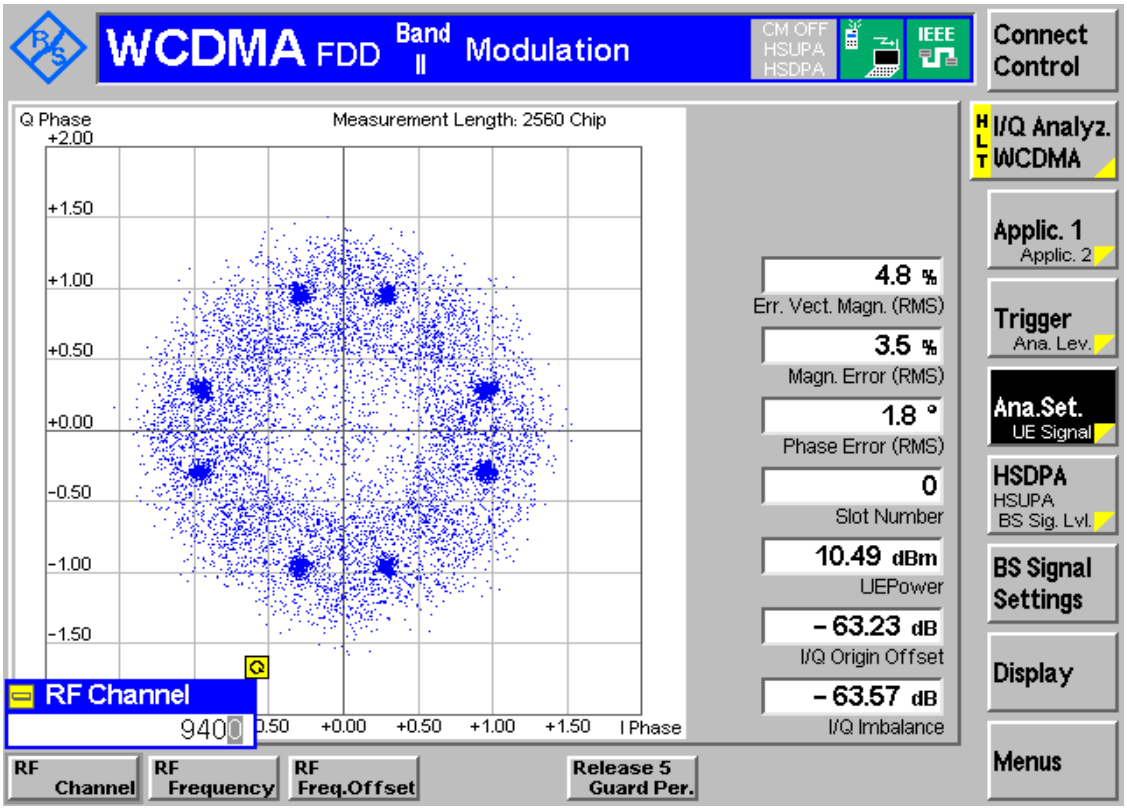
3.2.2 Test Band = WCDMA1900

3.2.2.1 Test Mode = UMTS/TM1

3.2.2.1.1 Test Channel = MCH



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4Appendix_D: Bandwidth

Part I - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA850	UMTS/TM1	LCH	4.17	4.67	Pass
		MCH	4.17	4.67	Pass
		HCH	4.16	4.66	Pass
Test Band	**Test Mode**	**Test Channel**	**Occupied Bandwidth [MHz]**	**Emission Bandwidth [MHz]**	**Verdict**
WCDMA1700	UMTS/TM1	LCH	4.16	4.66	Pass
		MCH	4.17	4.66	Pass
		HCH	4.17	4.66	Pass
WCDMA1900	UMTS/TM1	LCH	4.22	4.76	Pass
		MCH	4.17	4.66	Pass
		HCH	4.14	4.66	Pass

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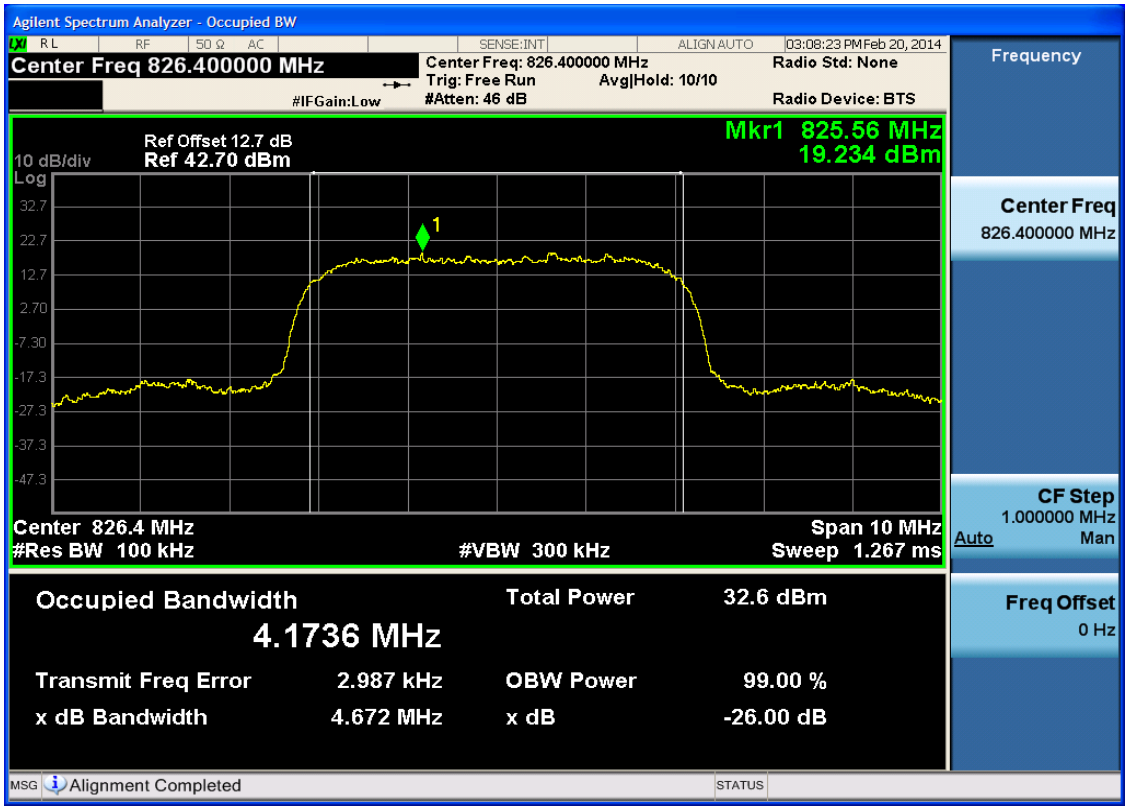
Part II - Test Plots

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



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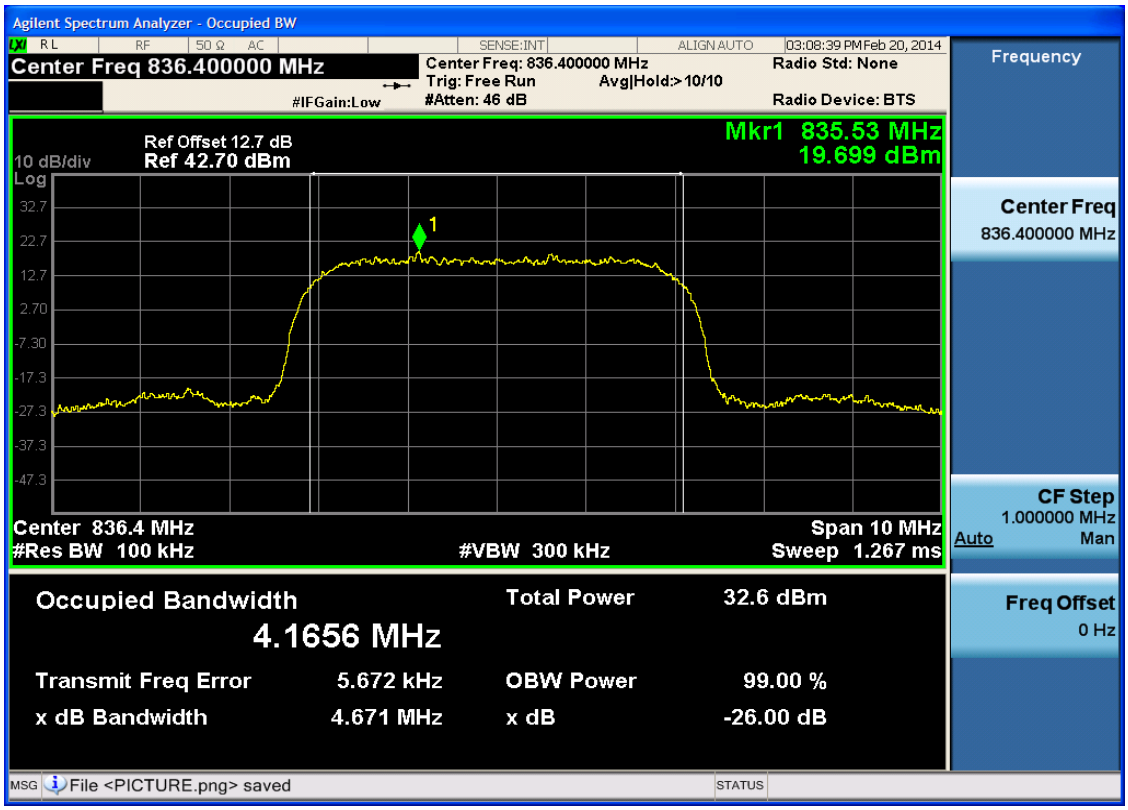
4.1.1.1.2 Test Channel = MCH



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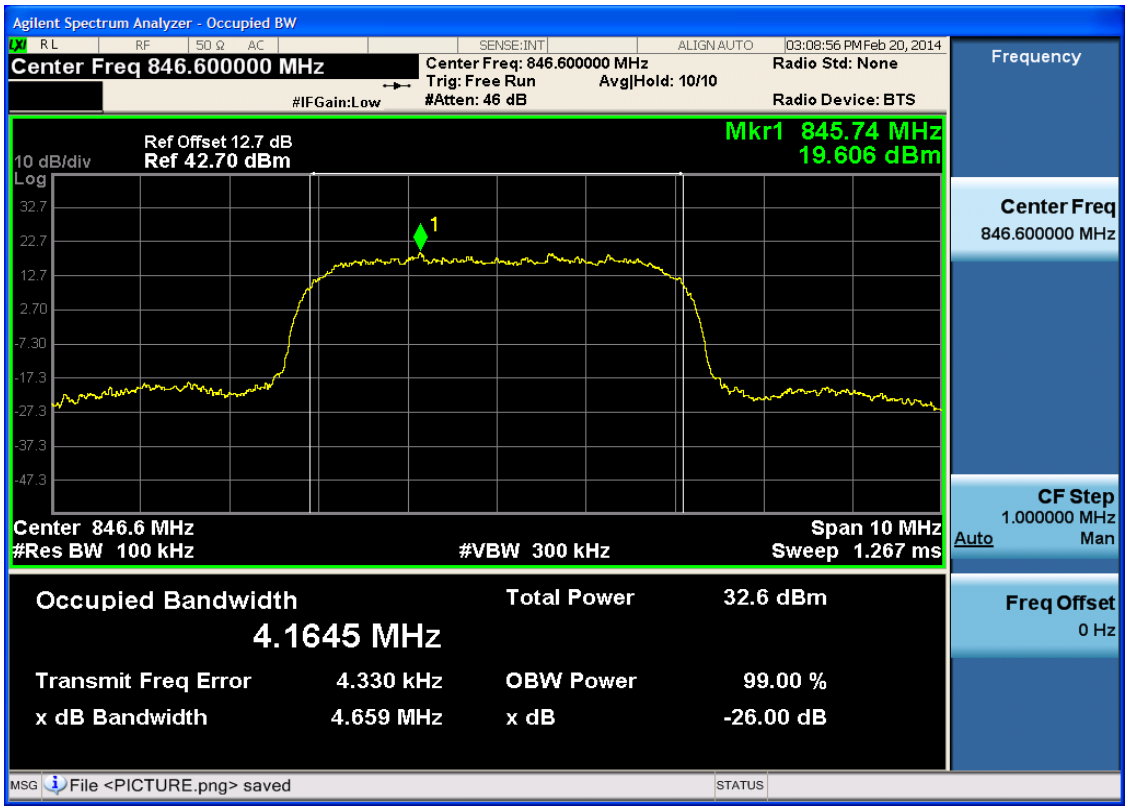
4.1.1.1.3 Test Channel = HCH



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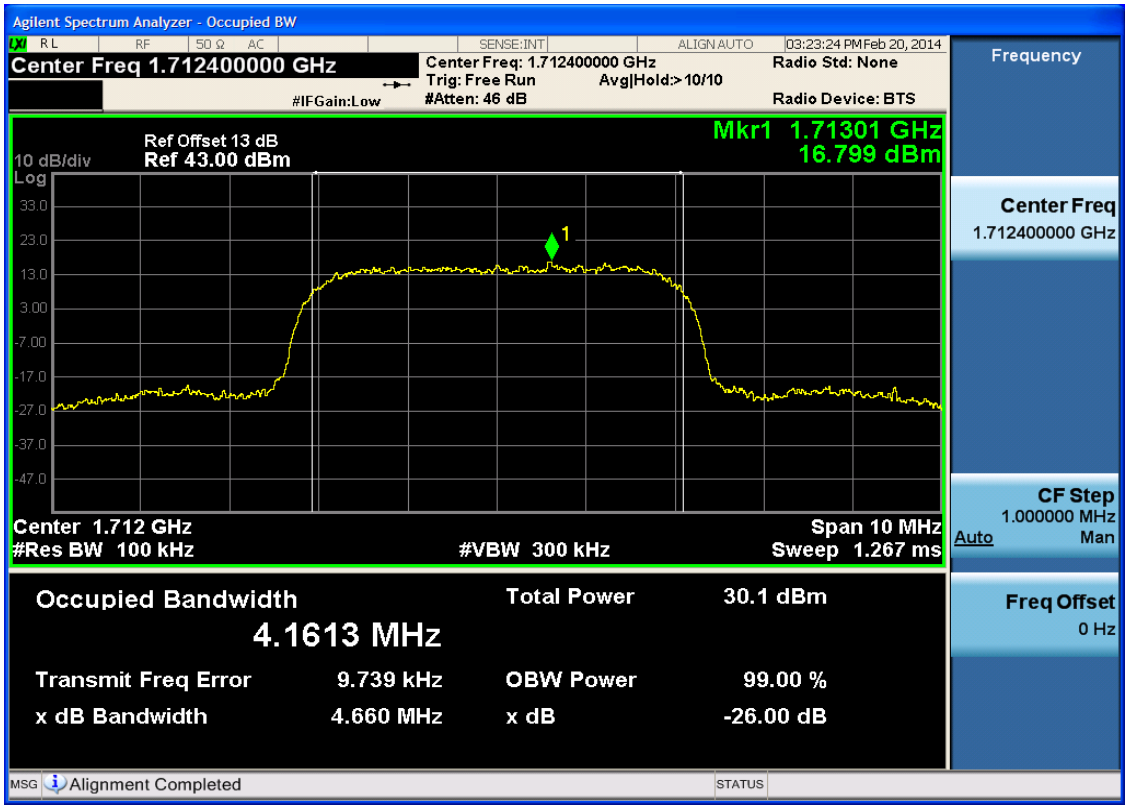
4.2 For UMTS

4.2.1 Test Band = WCDMA1700

4.2.1.1 Test Mode = UMTS/TM1

4.2.1.1.1 Test Channel = LCH



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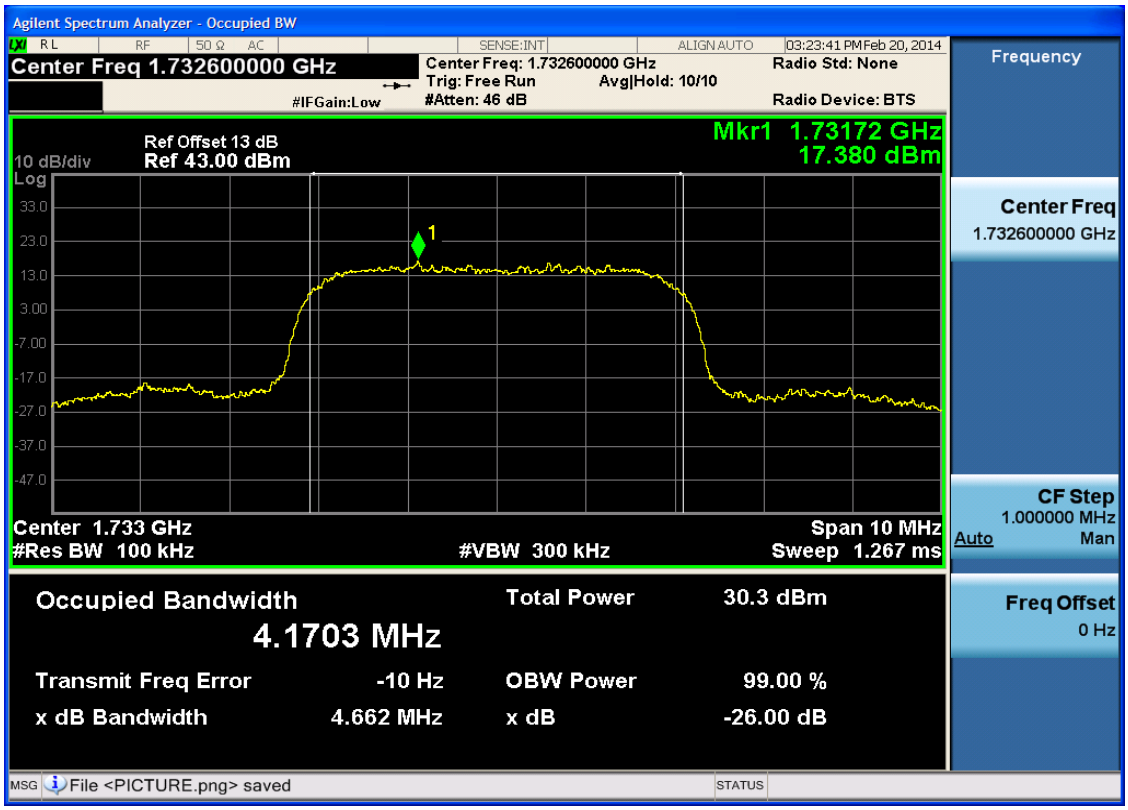
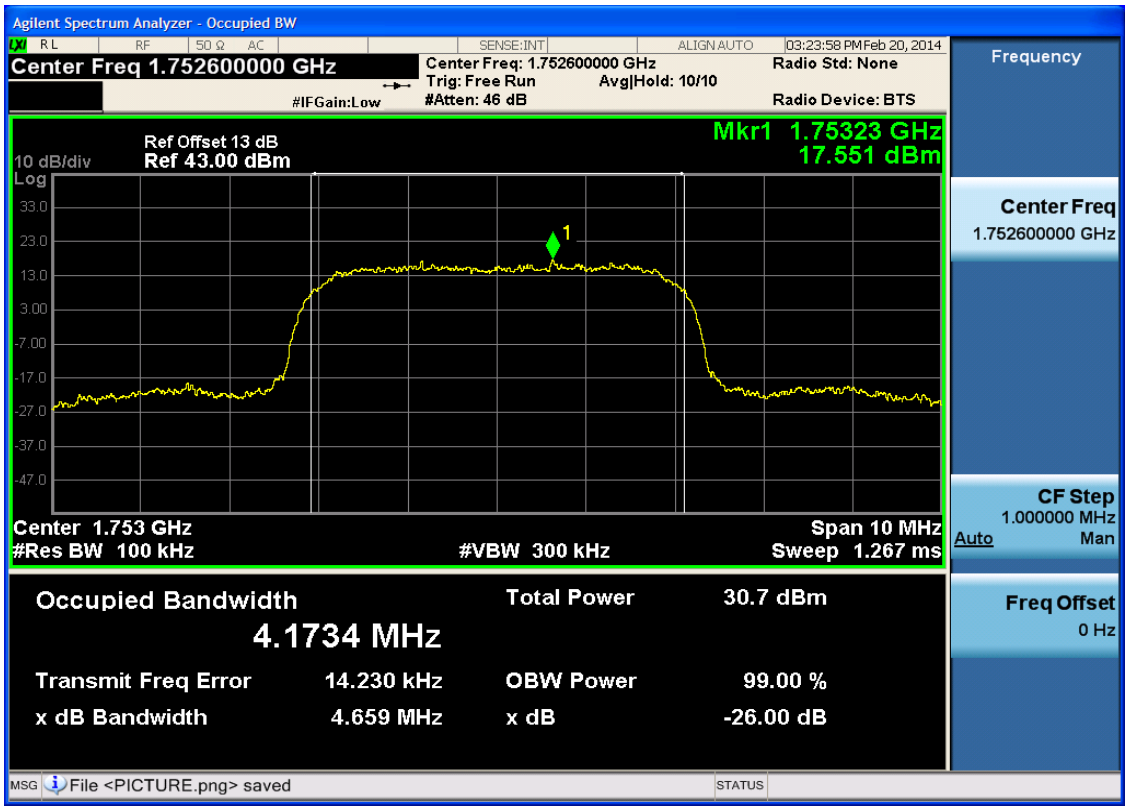
4.2.1.1.2 Test Channel = MCH



4.2.1.1.3 Test Channel = HCH



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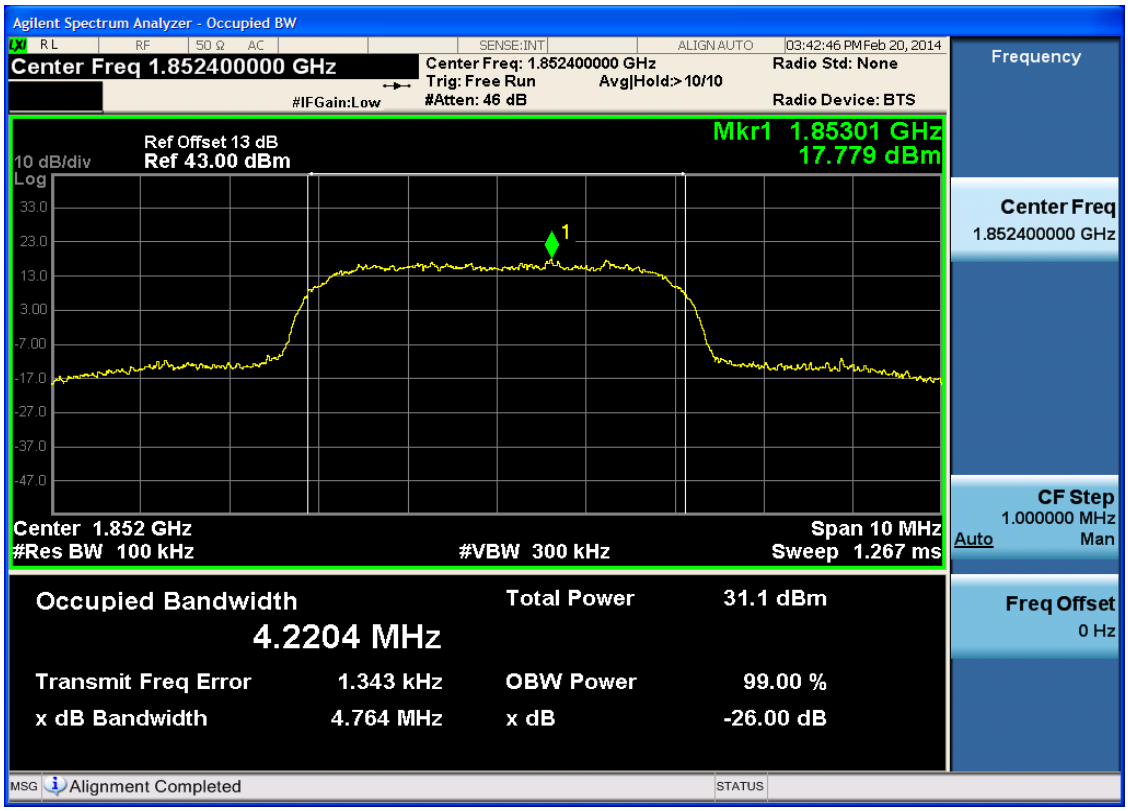
4.2.2 Test Band = WCDMA1900

4.2.2.1 Test Mode = UMTS/TM1

4.2.2.1.1 Test Channel = LCH



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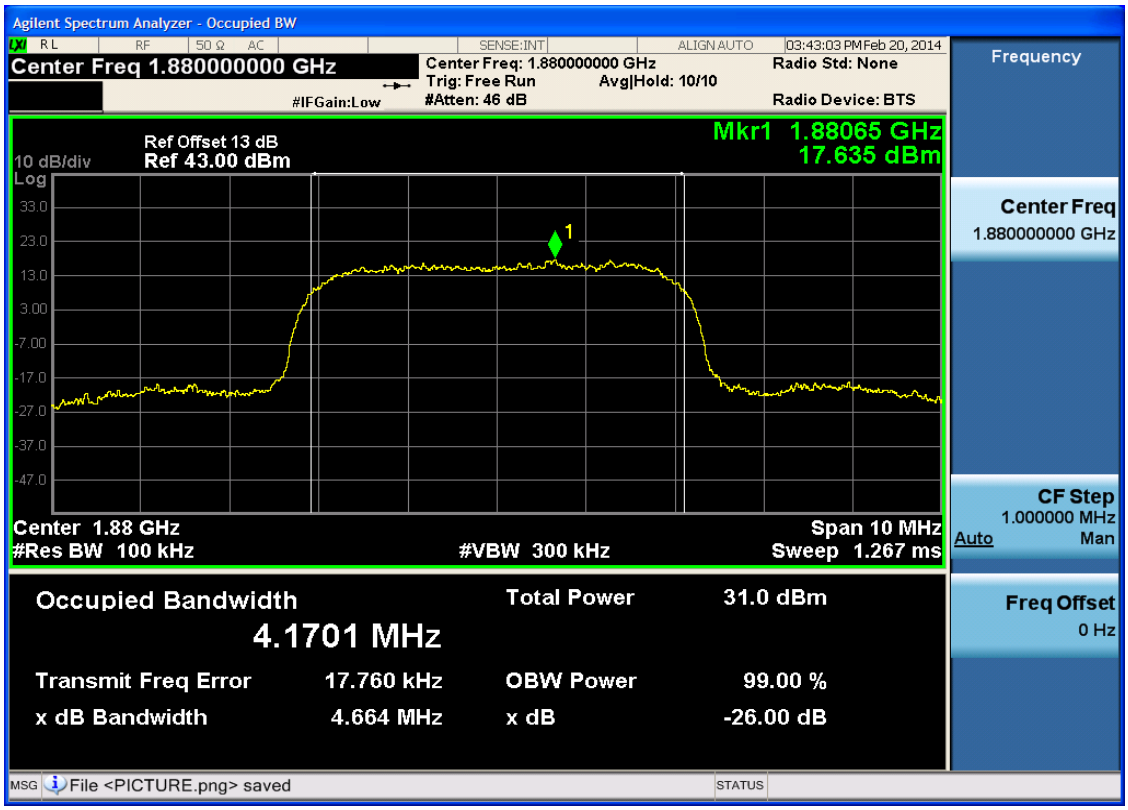
4.2.2.1.2 Test Channel = MCH



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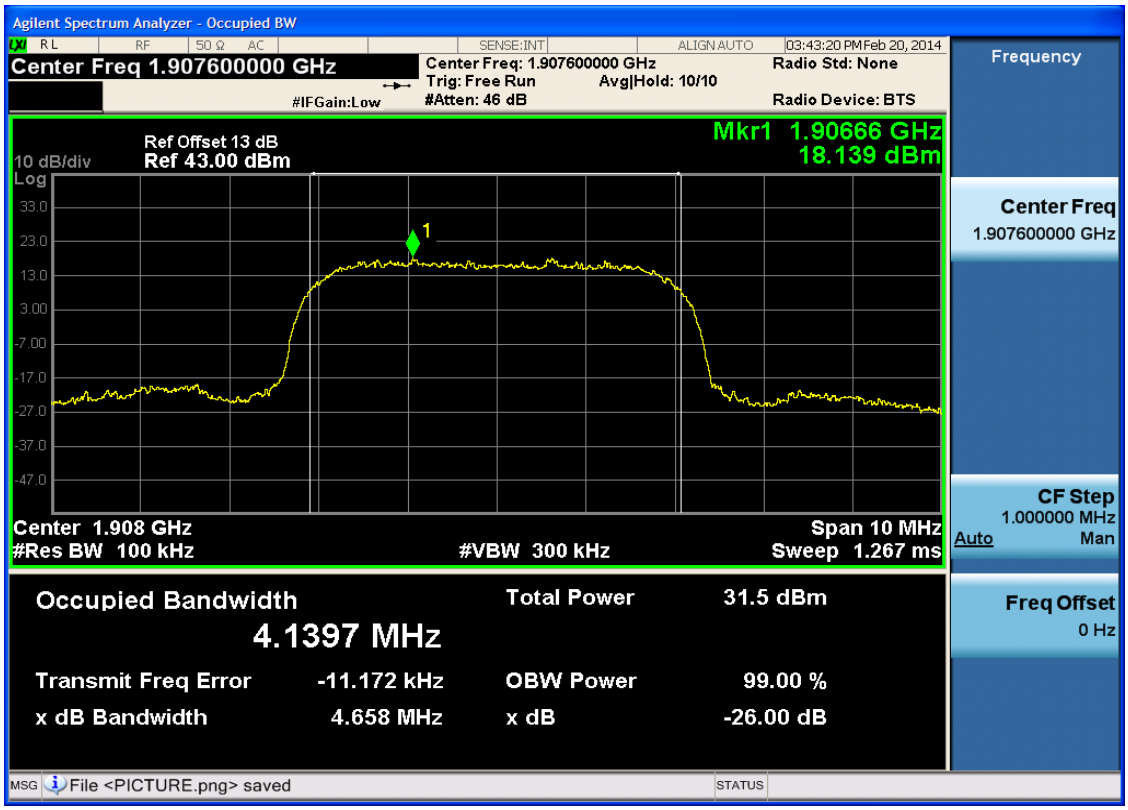
4.2.2.1.3 Test Channel = HCH



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5Appendix_E: Band Edges Compliance

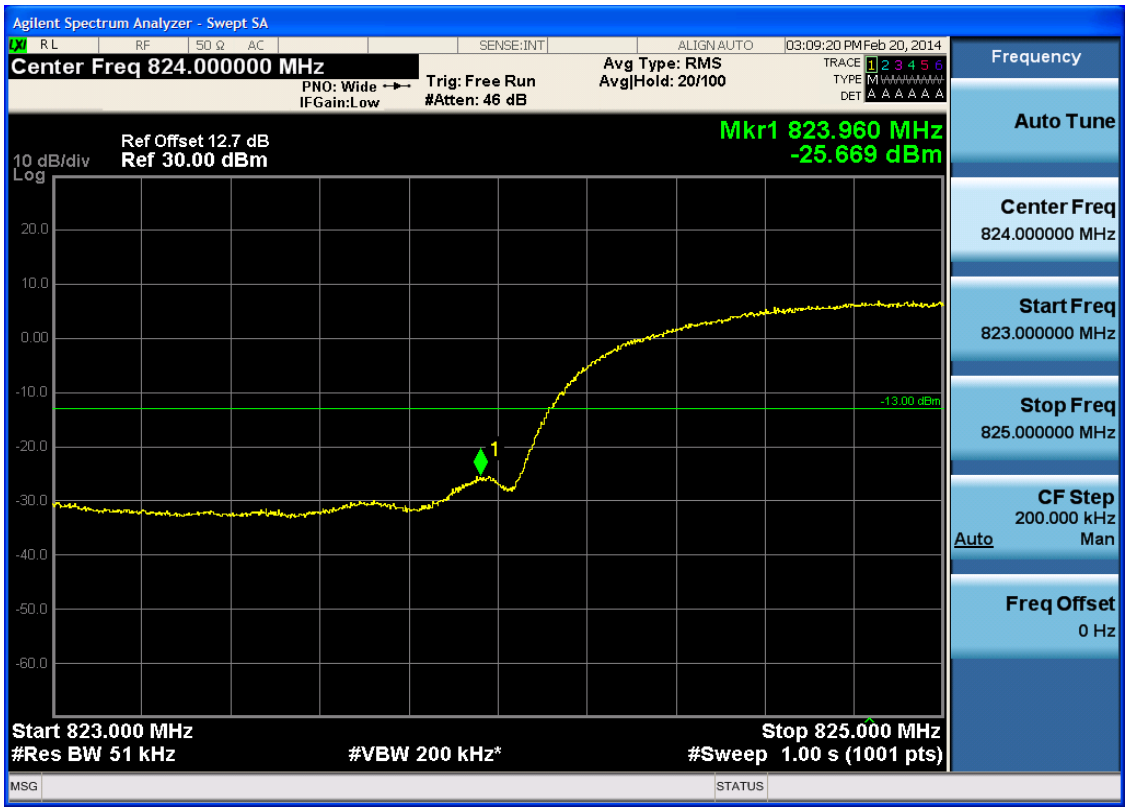
Part I - Test Plots

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



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5.1.1.1.2 Test Channel = HCH

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5.2 For UMTS

5.2.1 Test Band = WCDMA1700

5.2.1.1 Test Mode = UMTS/TM1

5.2.1.1.1 Test Channel = LCH

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5.2.1.1.2 Test Channel = HCH

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5.2.2 Test Band = WCDMA1900

5.2.2.1 Test Mode = UMTS/TM1

5.2.2.1.1 Test Channel = LCH

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5.2.2.1.2 Test Channel = HCH

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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.

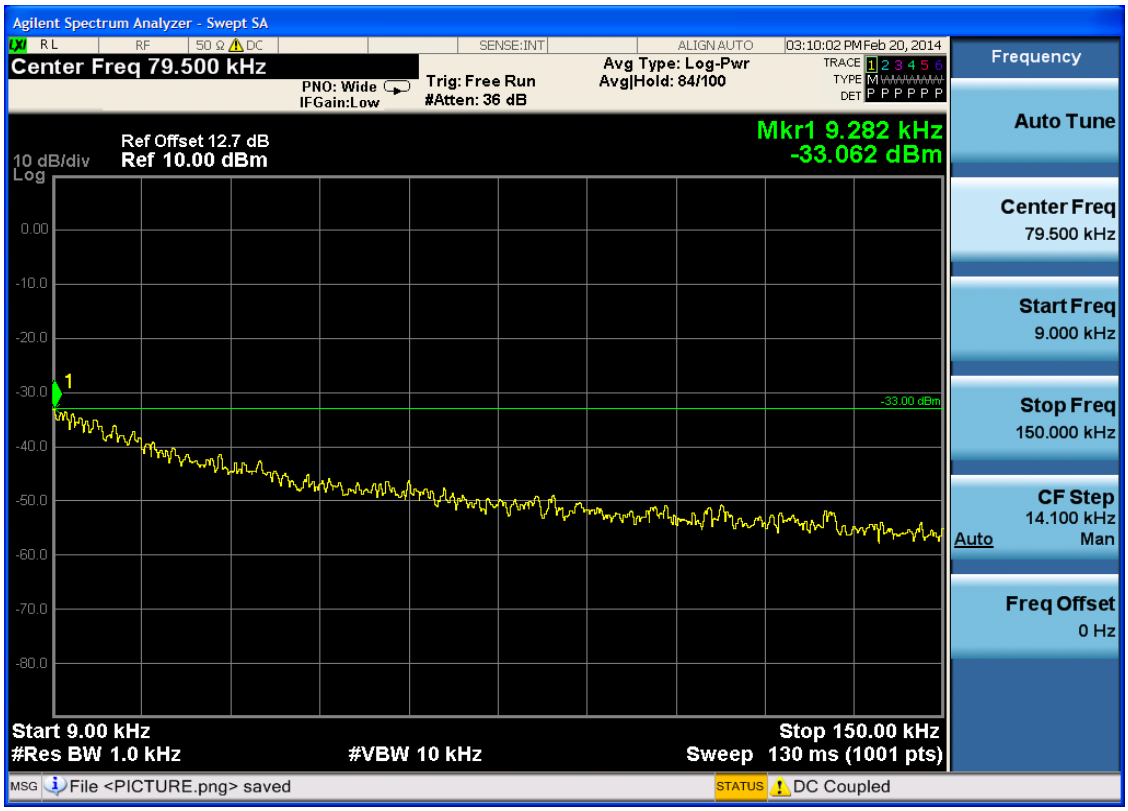
Part I - Test Plots

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



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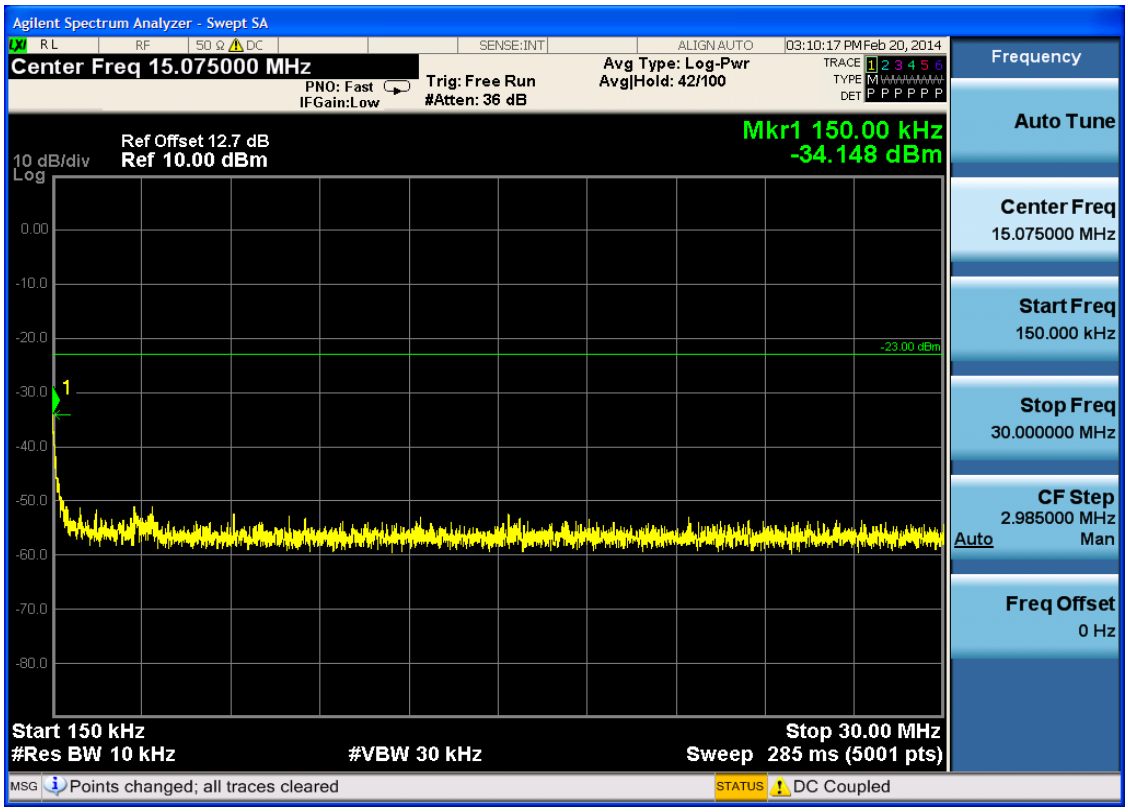

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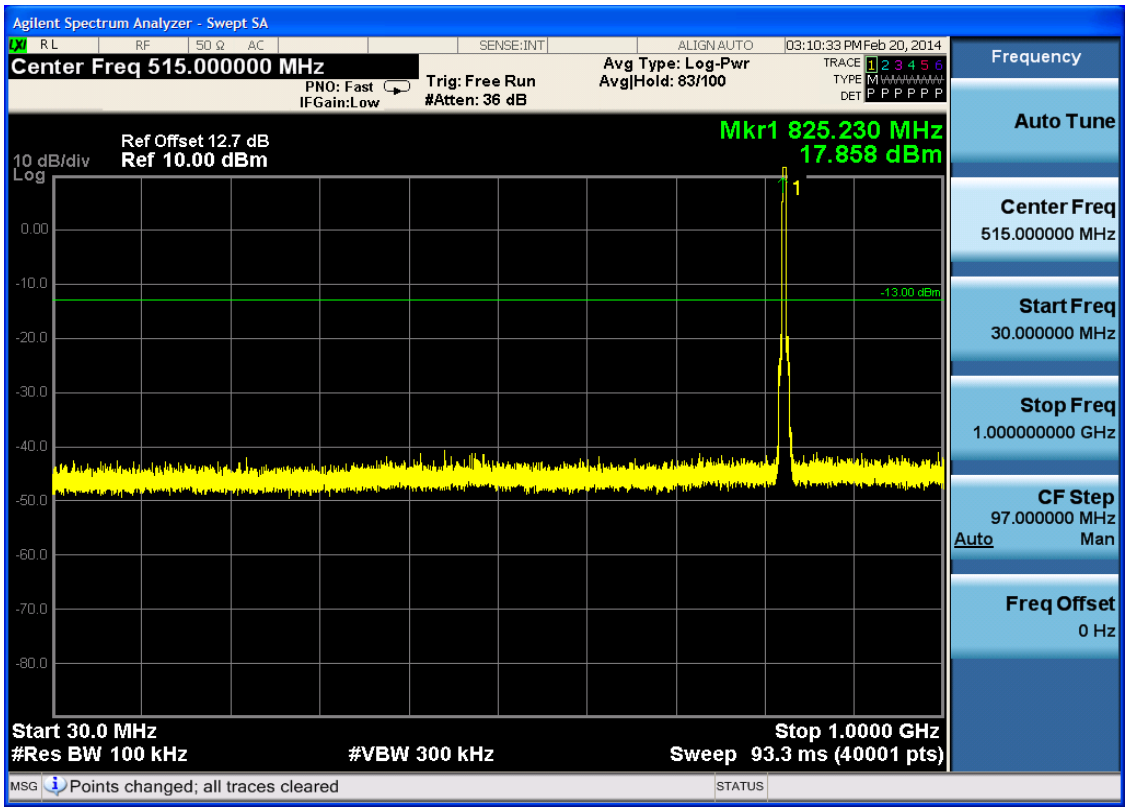
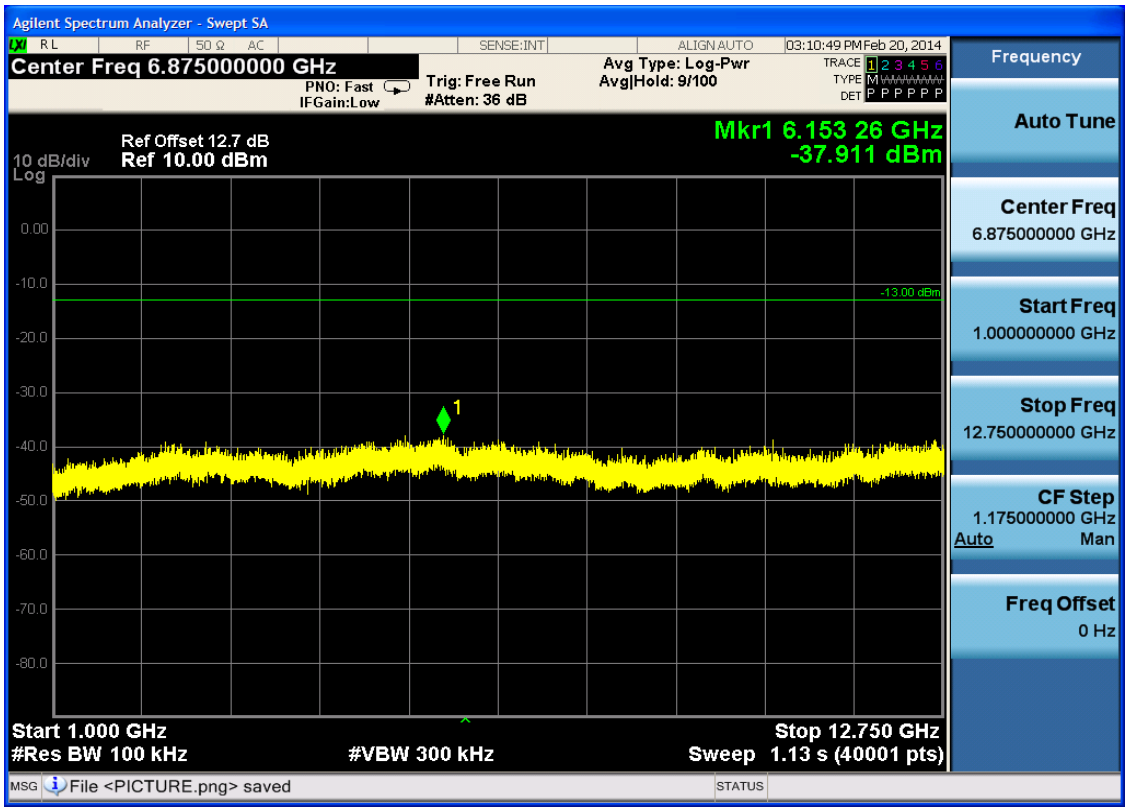

Agilent Spectrum Analyzer - Swept SA
Center Freq 515.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 36 dB
Avg Type: Log-Pwr
Avg|Hold: 83/100
03:10:33 PM Feb 20, 2014
Ref Offset 12.7 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 825.230 MHz
17.858 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (40001 pts)
Points changed; all traces cleared
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz



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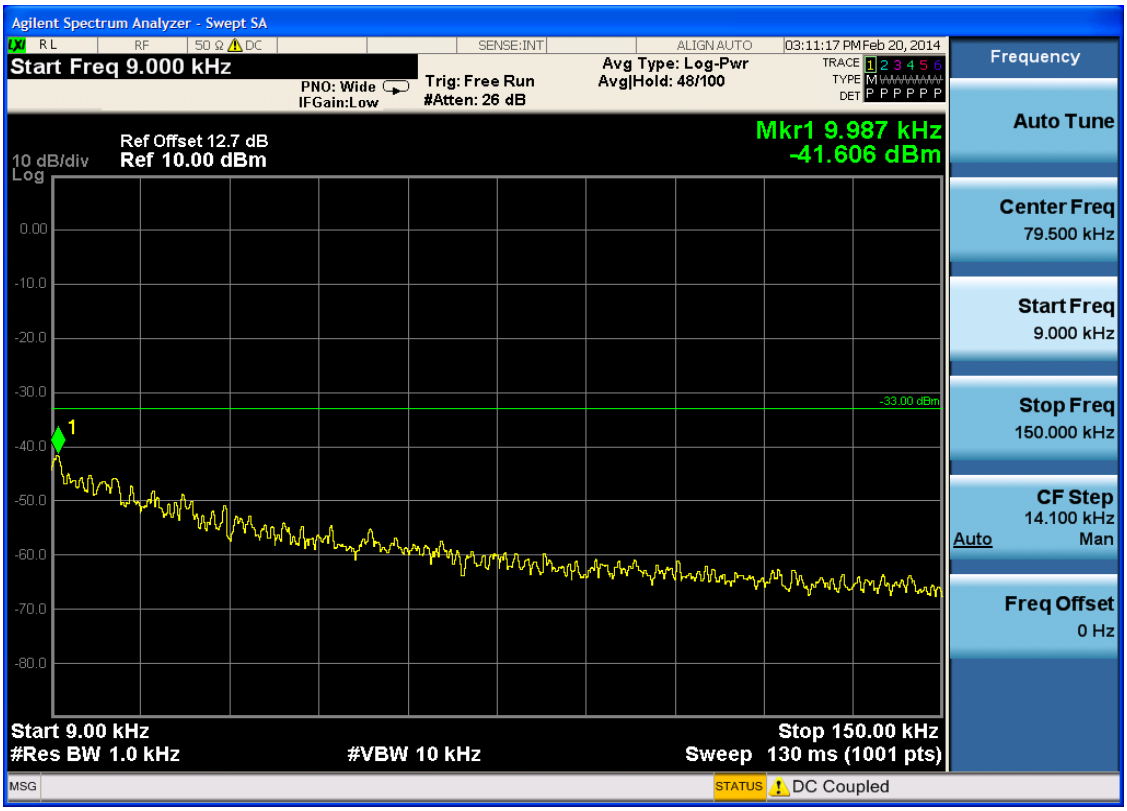
6.1.1.1.2 Test Channel = MCH



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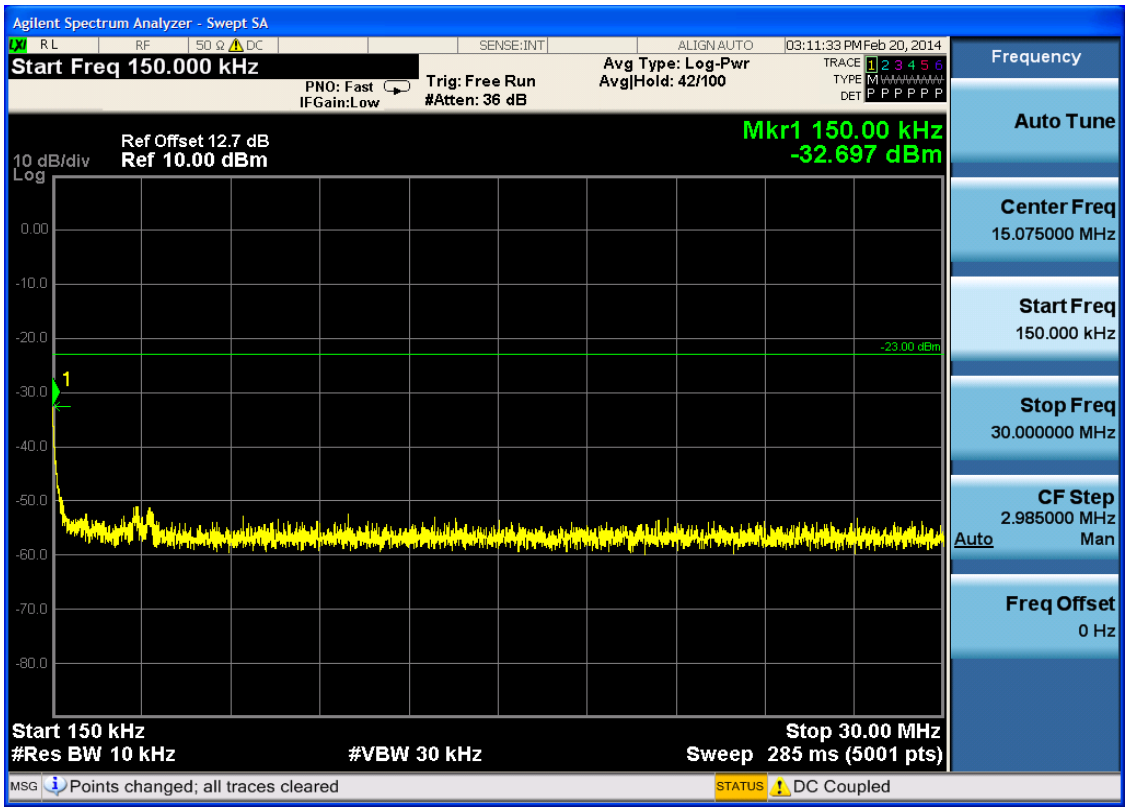

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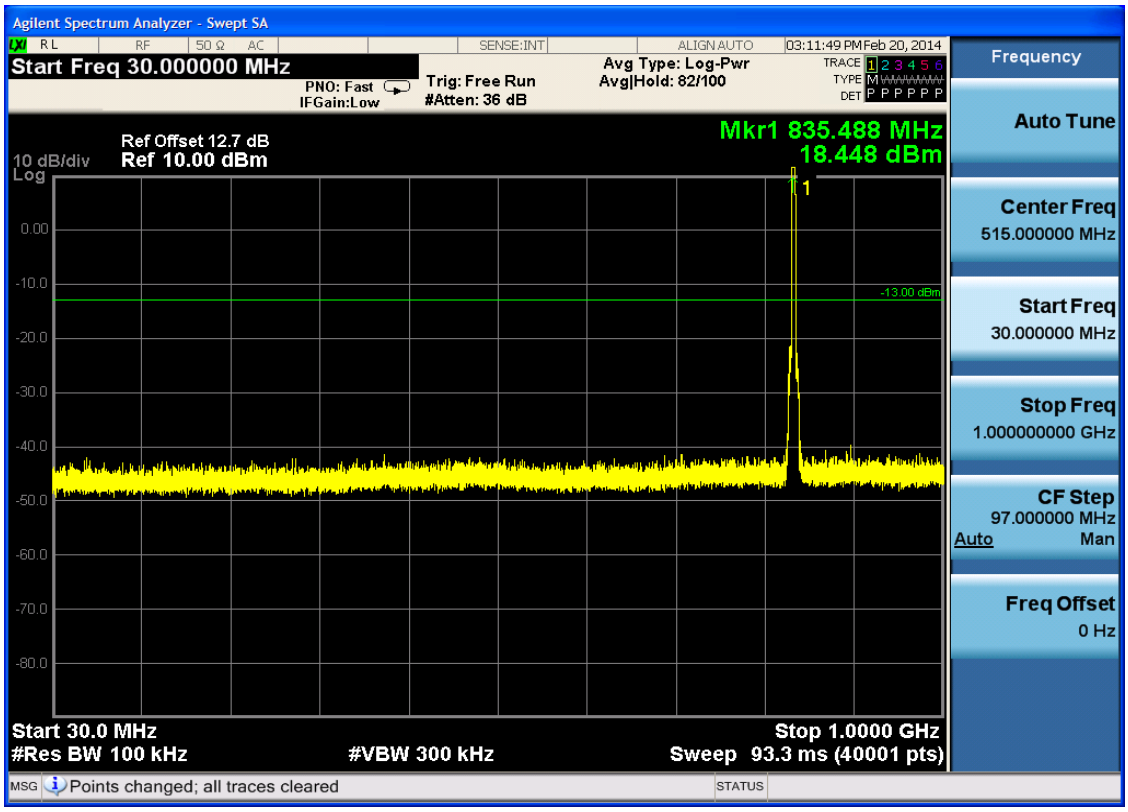
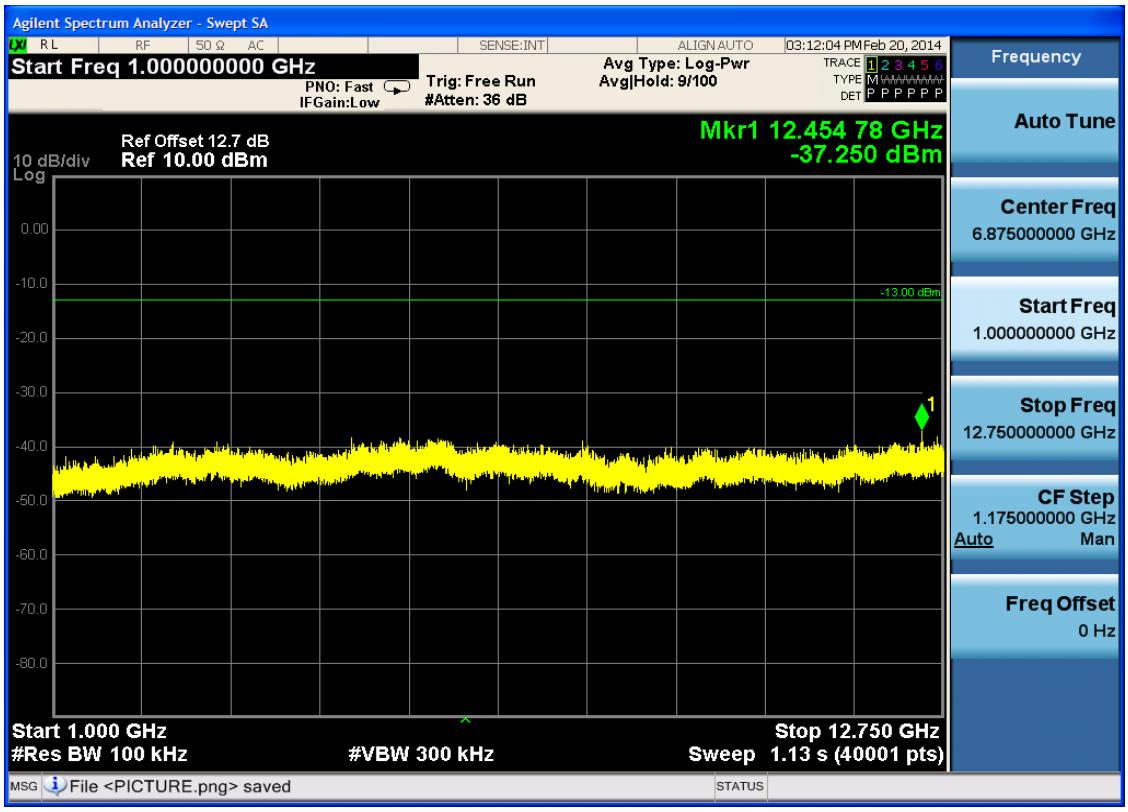

Agilent Spectrum Analyzer - Swept SA
Start Freq 30.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 36 dB
Avg Type: Log-Pwr
Avg|Hold: 82/100
03:11:49 PM Feb 20, 2014
Ref Offset 12.7 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 835.488 MHz
18.448 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (40001 pts)
Points changed; all traces cleared
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz



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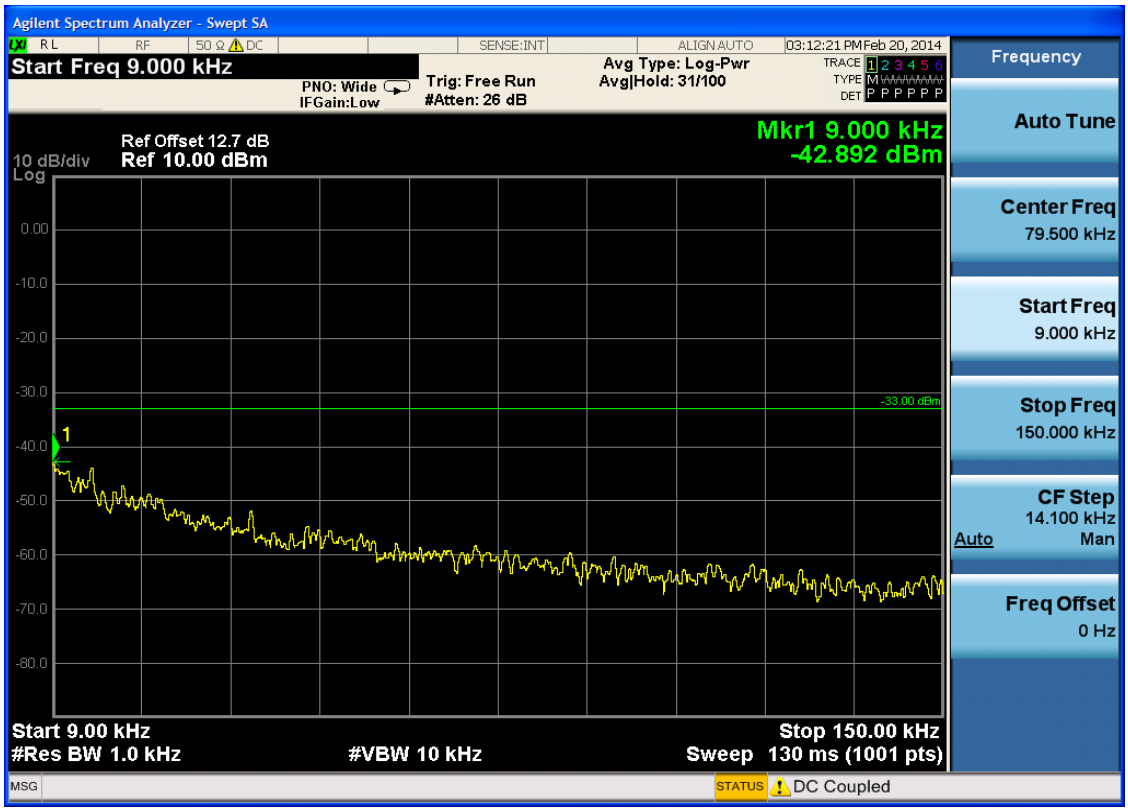
6.1.1.1.3 Test Channel = HCH



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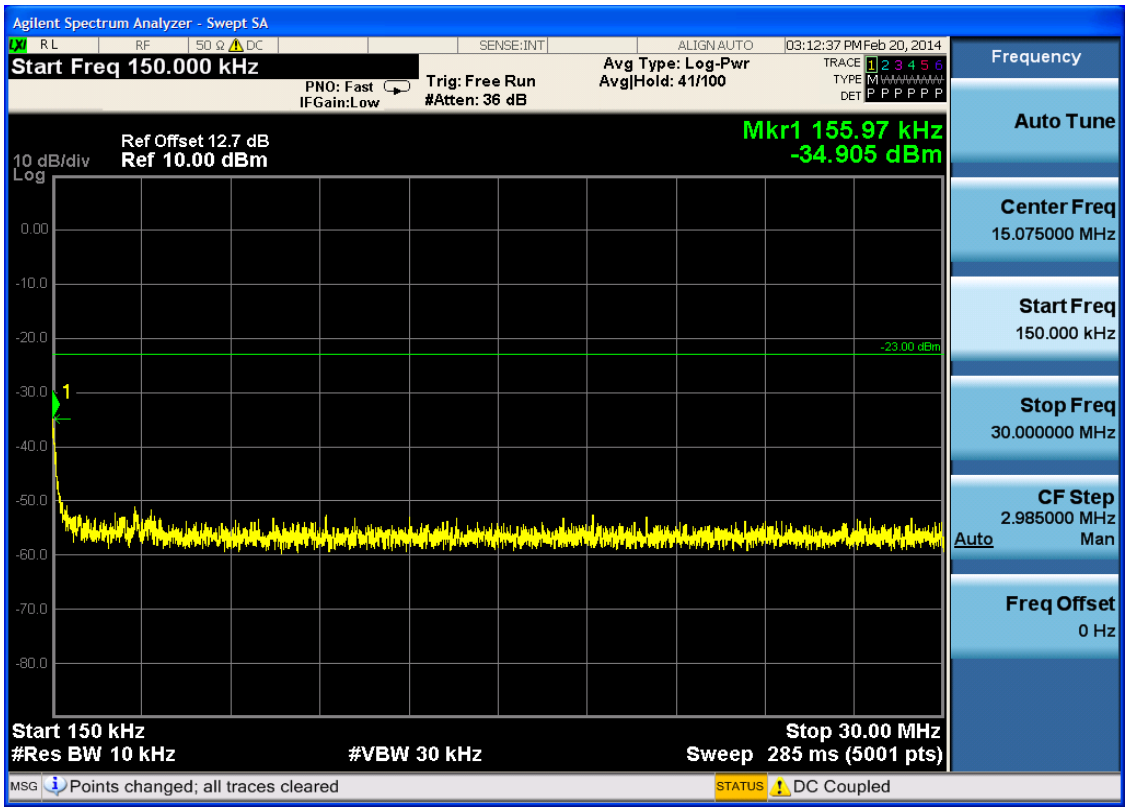

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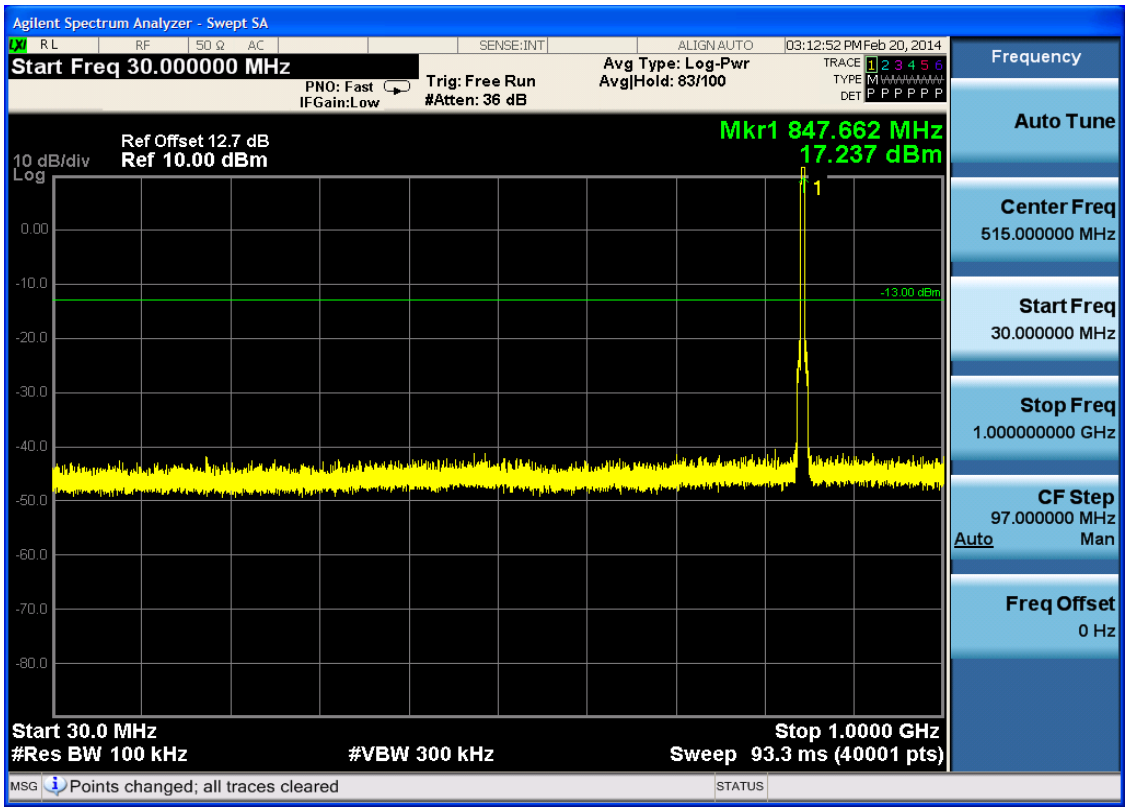
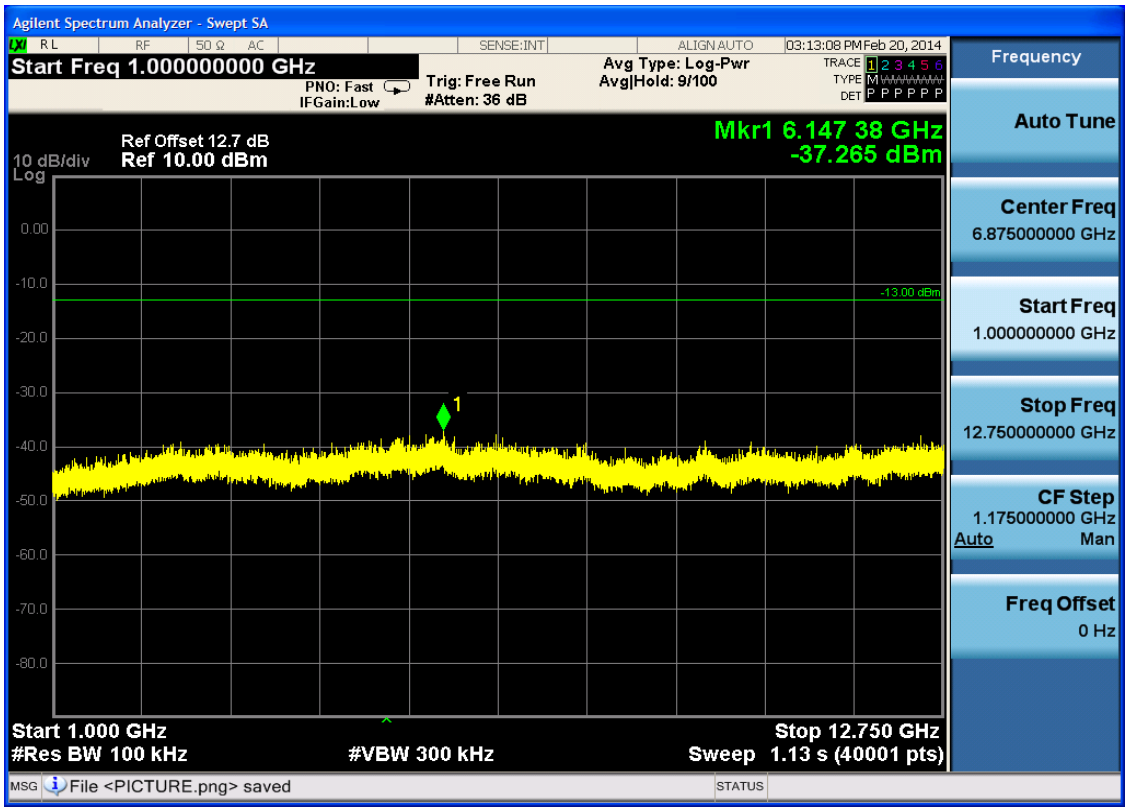

Agilent Spectrum Analyzer - Swept SA
Start Freq 30.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 36 dB
Avg Type: Log-Pwr
Avg|Hold: 83/100
03:12:52 PM Feb 20, 2014
Ref Offset 12.7 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 847.662 MHz
17.237 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 93.3 ms (40001 pts)
Points changed; all traces cleared
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz



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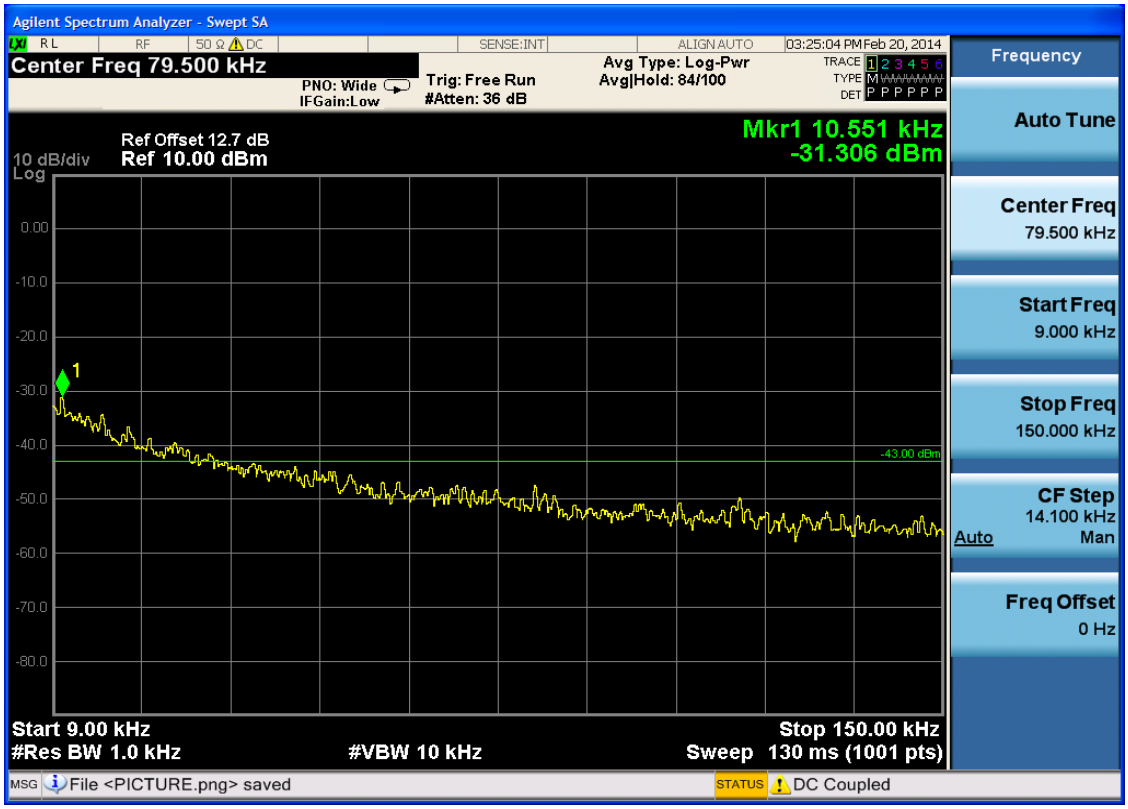
6.2 For UMTS

6.2.1 Test Band = WCDMA1700

6.2.1.1 Test Mode = UMTS/TM1

6.2.1.1.1 Test Channel = LCH



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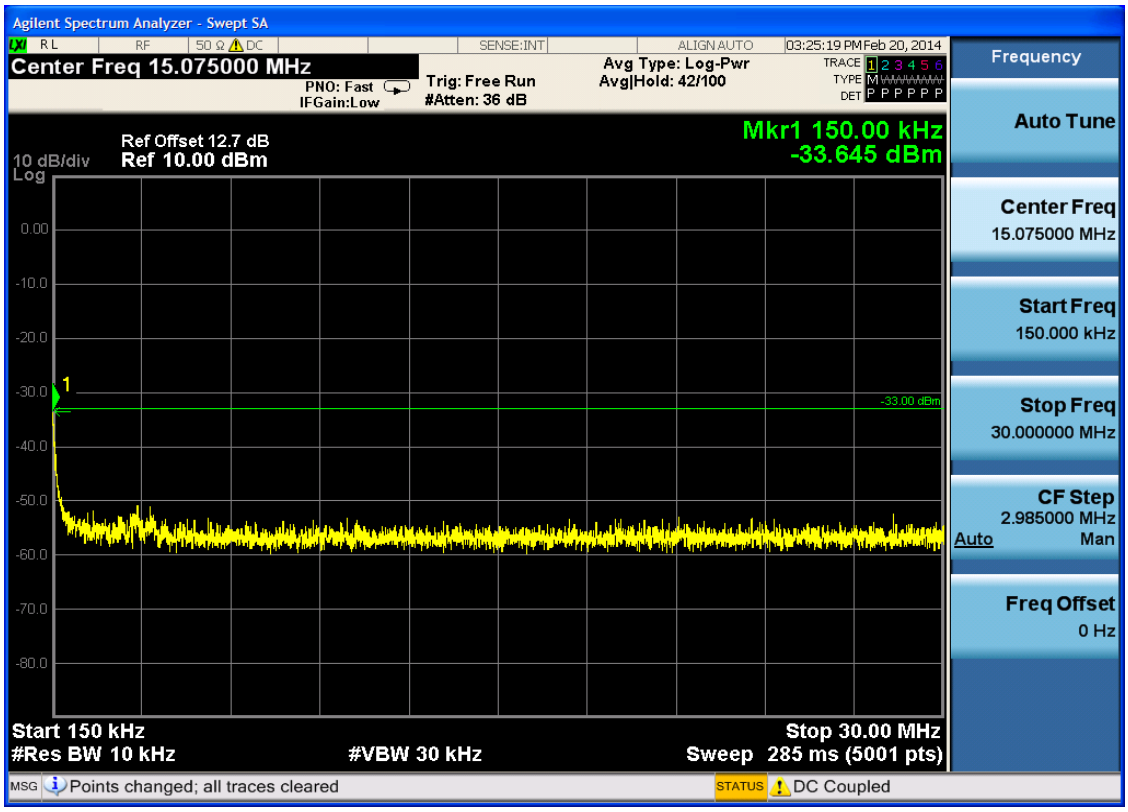

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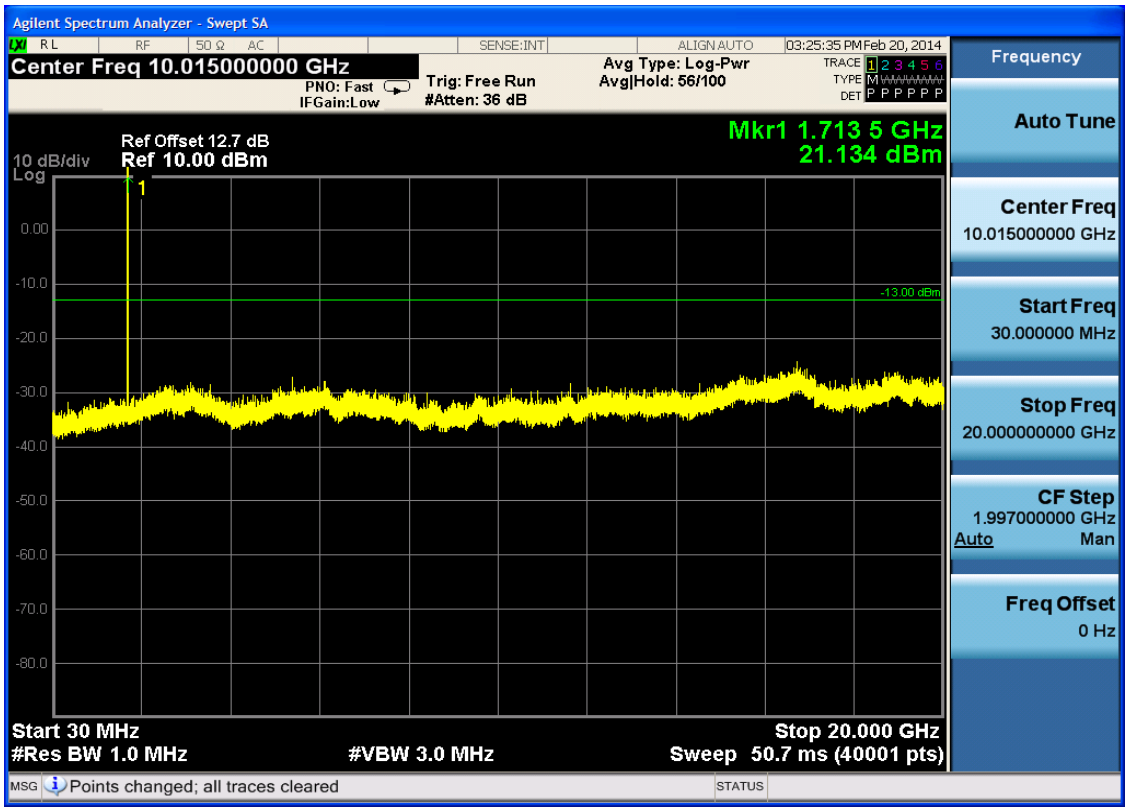

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6.2.1.1.2 Test Channel = MCH

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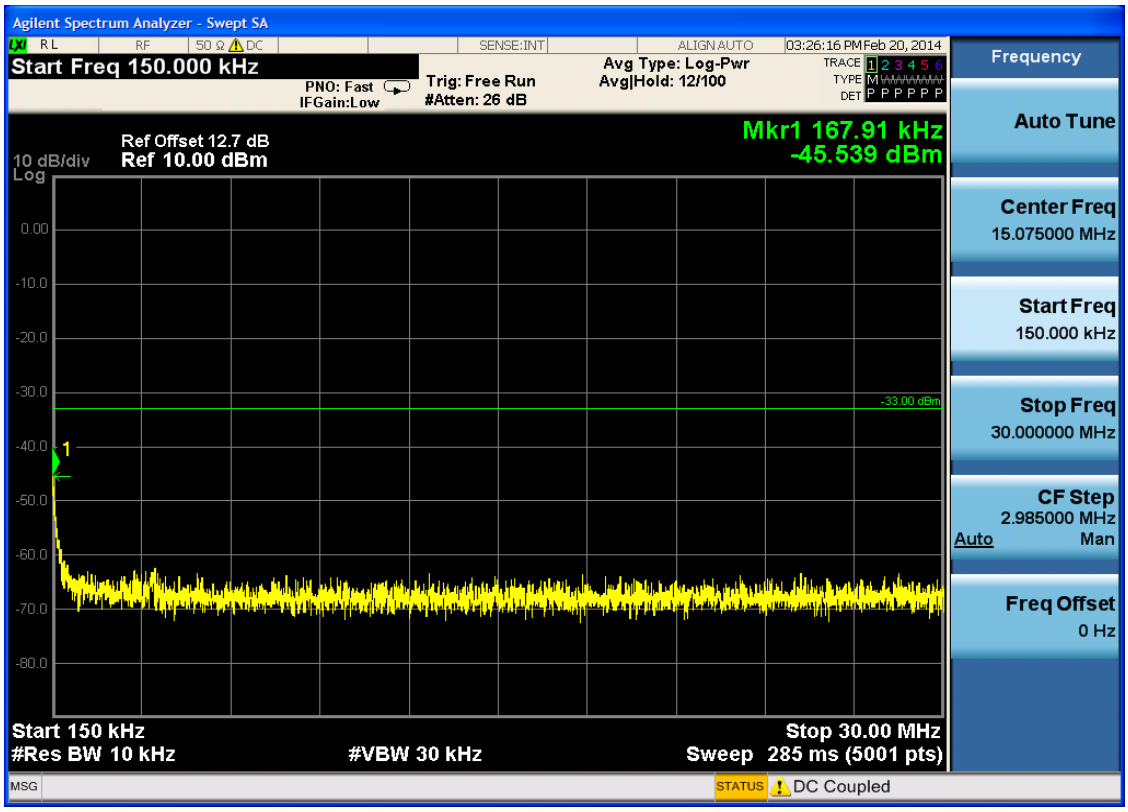
Agilent Spectrum Analyzer - Swept SA
Start Freq 150.000 kHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold: 12/100
03:26:16 PM Feb 20, 2014
Ref Offset 12.7 dB
10 dB/div
Ref 10.00 dBm
Log
Mkr1 167.91 kHz
-45.539 dBm
-33.00 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 30 kHz
Stop 30.00 MHz
Sweep 285 ms (5001 pts)
DC Coupled
Frequency
Auto Tune
Center Freq
15.075000 MHz
Start Freq
150.000 kHz
Stop Freq
30.000000 MHz
CF Step
2.985000 MHz
Auto
Man
Freq Offset
0 Hz

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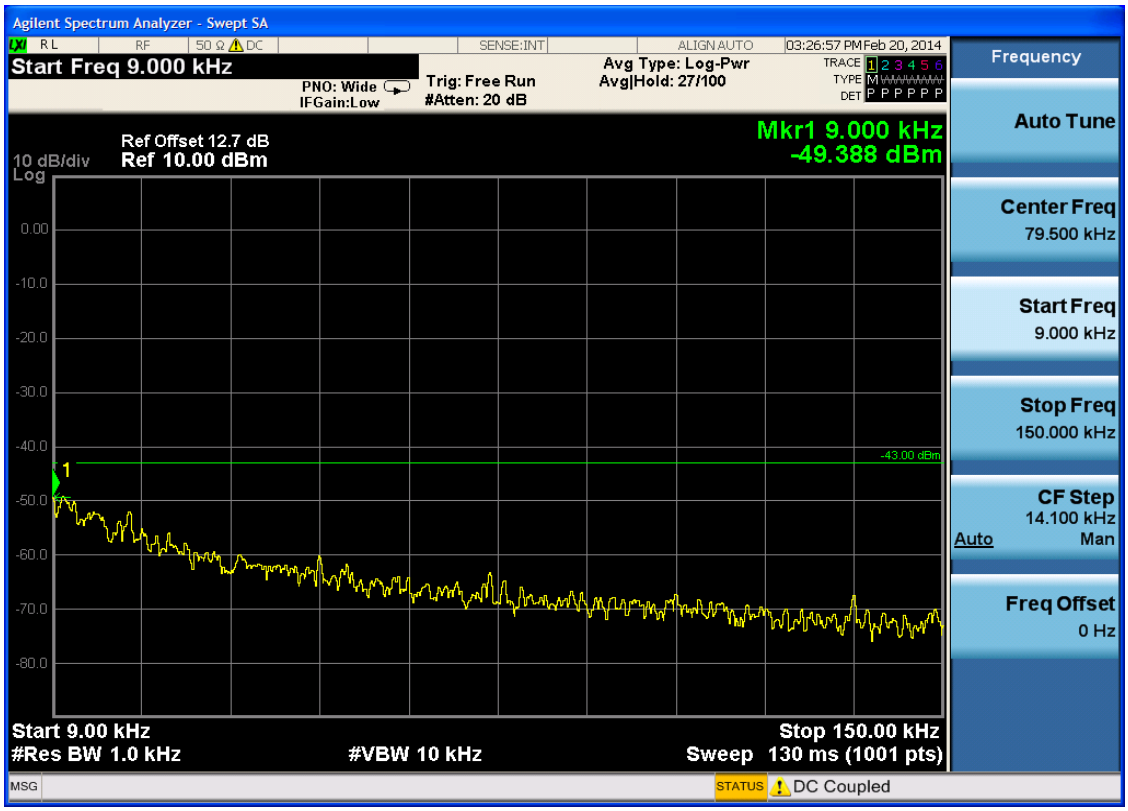
6.2.1.1.3 Test Channel = HCH



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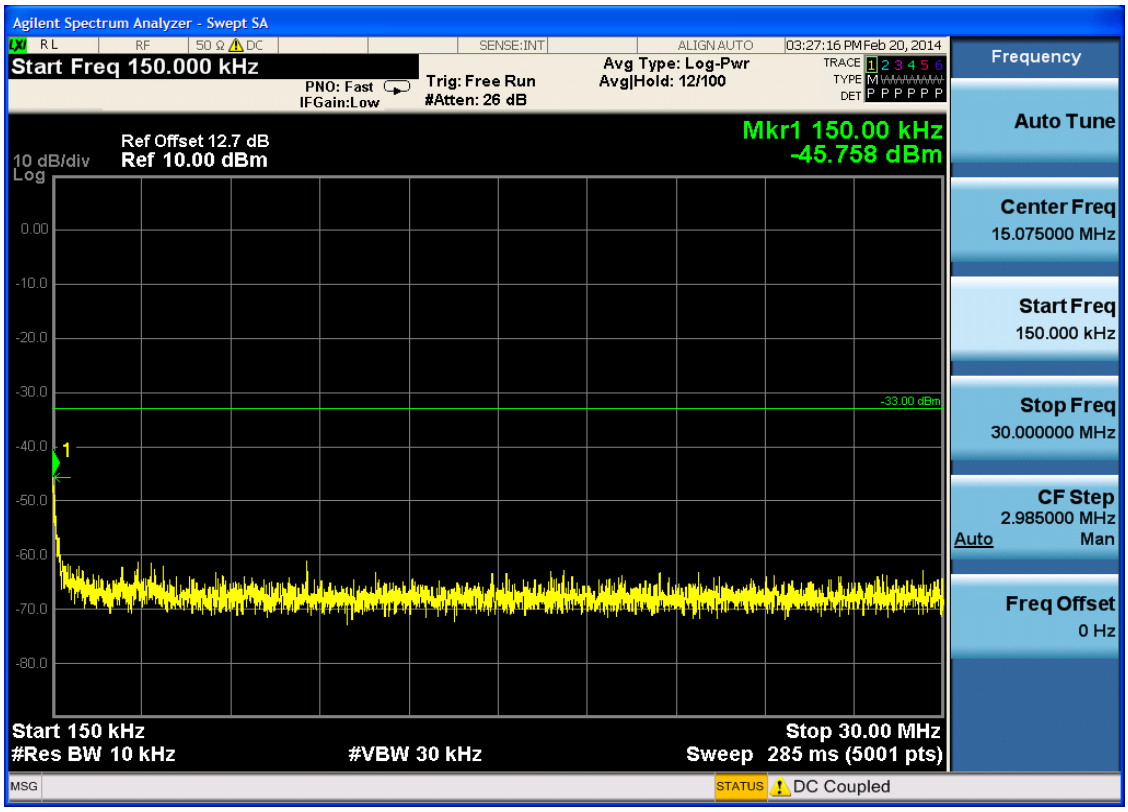

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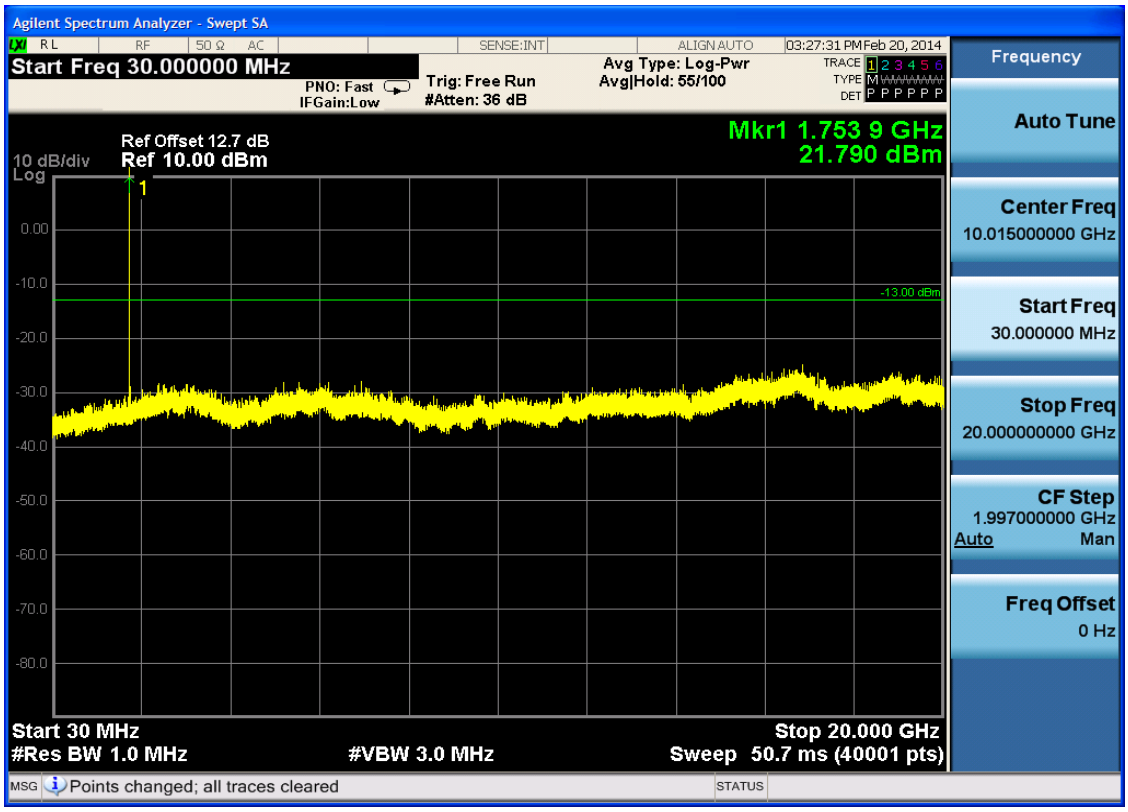

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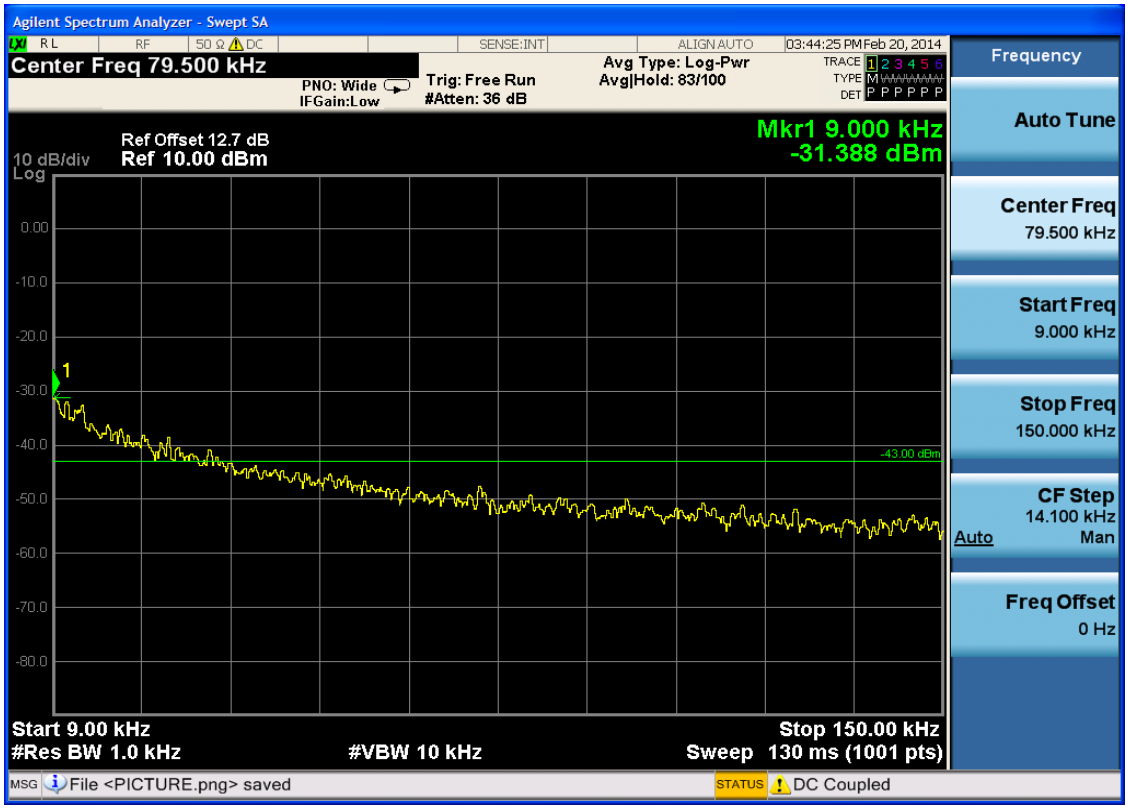
6.2.2 Test Band = WCDMA1900

6.2.2.1 Test Mode = UMTS/TM1

6.2.2.1.1 Test Channel = LCH



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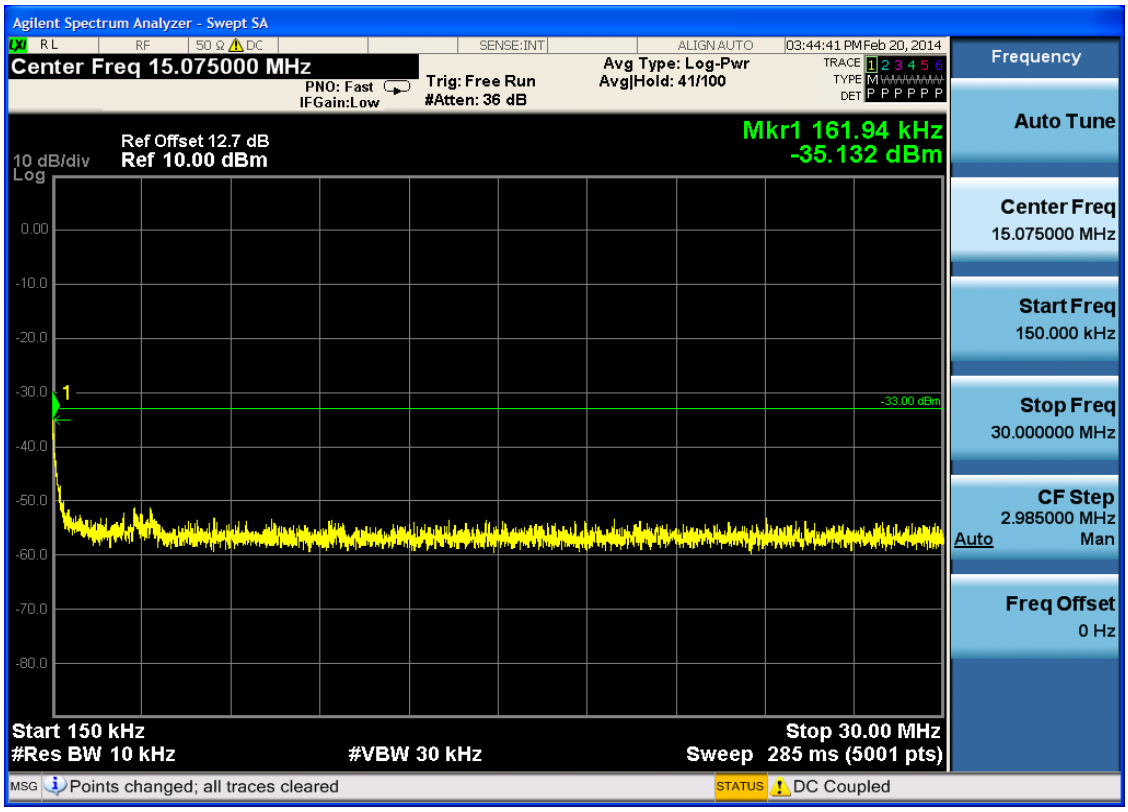

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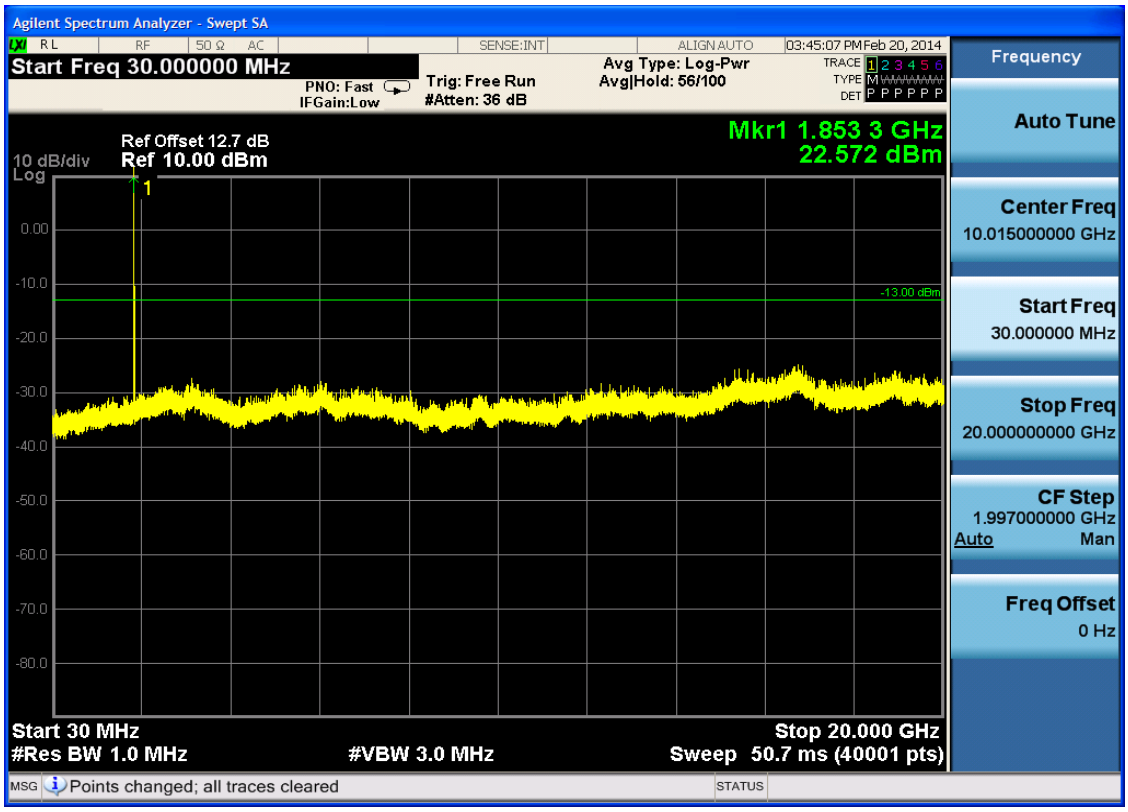

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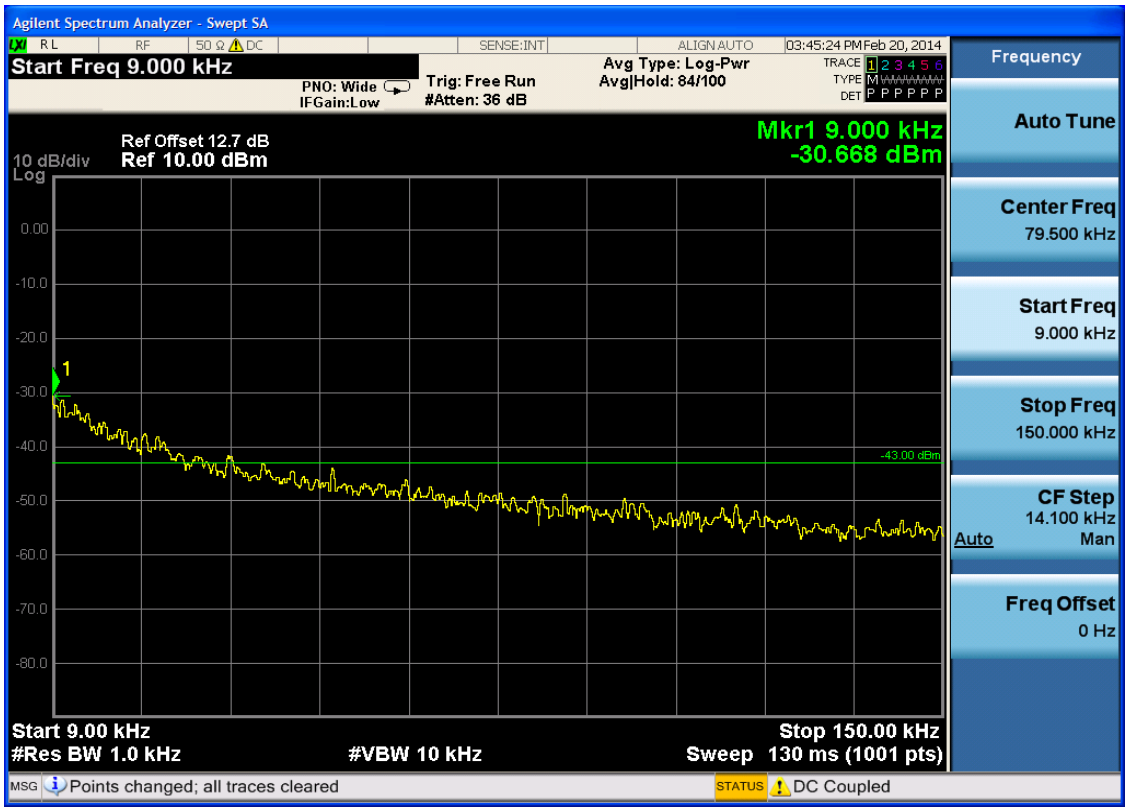
6.2.2.1.2 Test Channel = MCH



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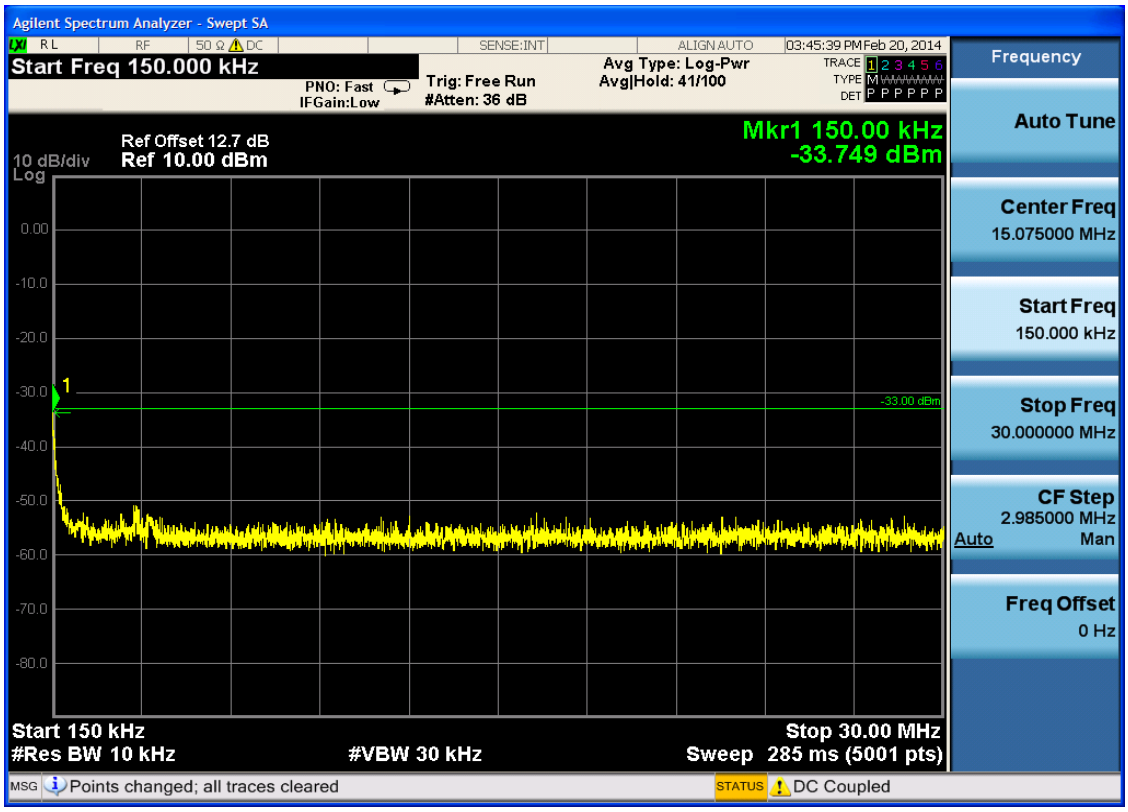

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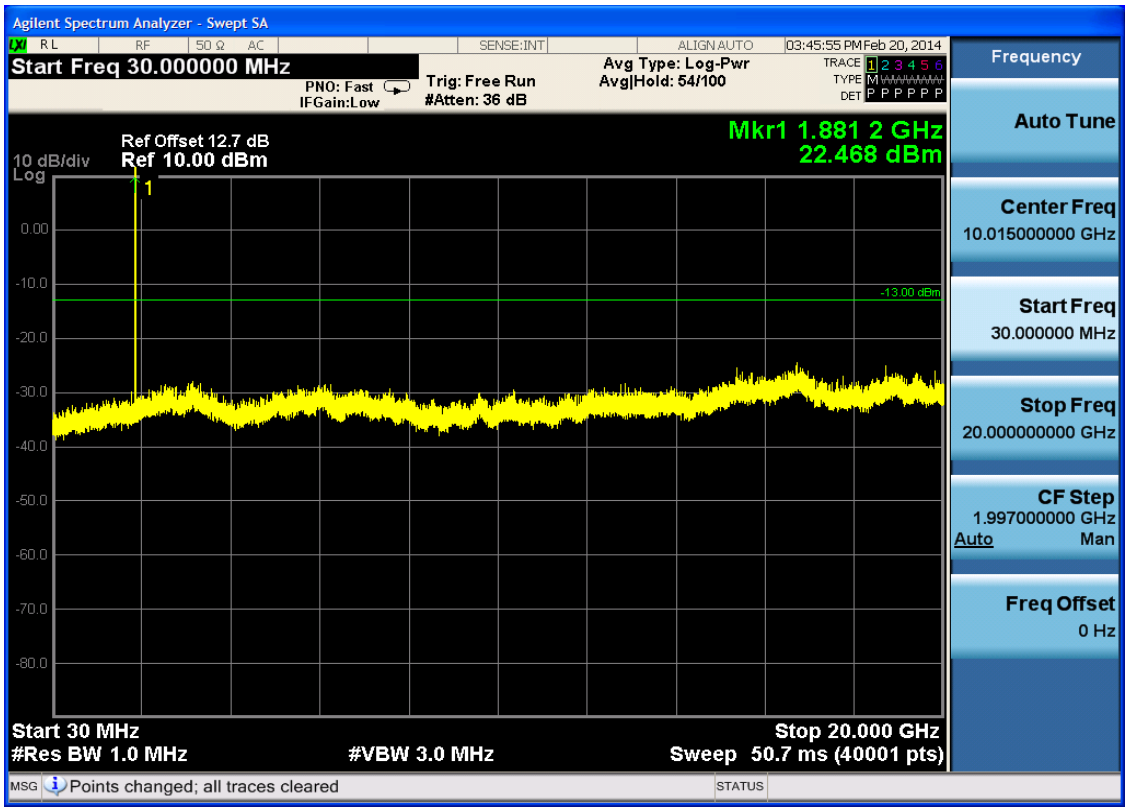

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6.2.2.1.3 Test Channel = HCH

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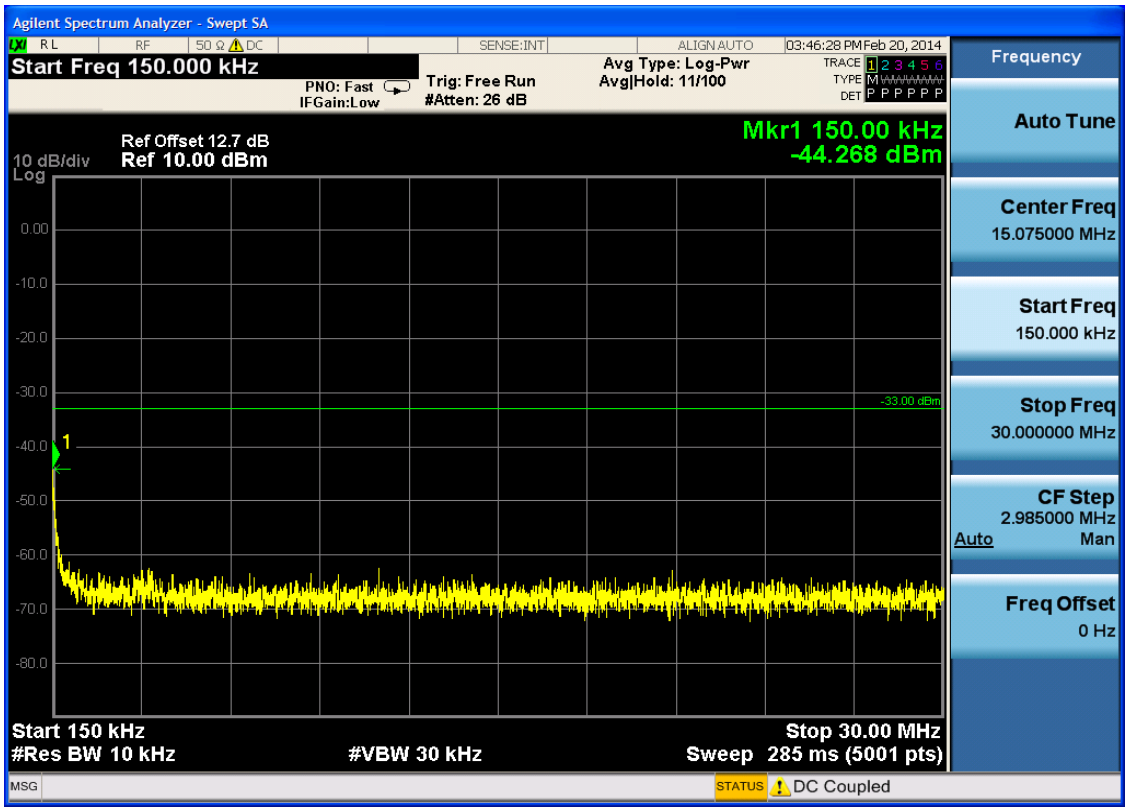

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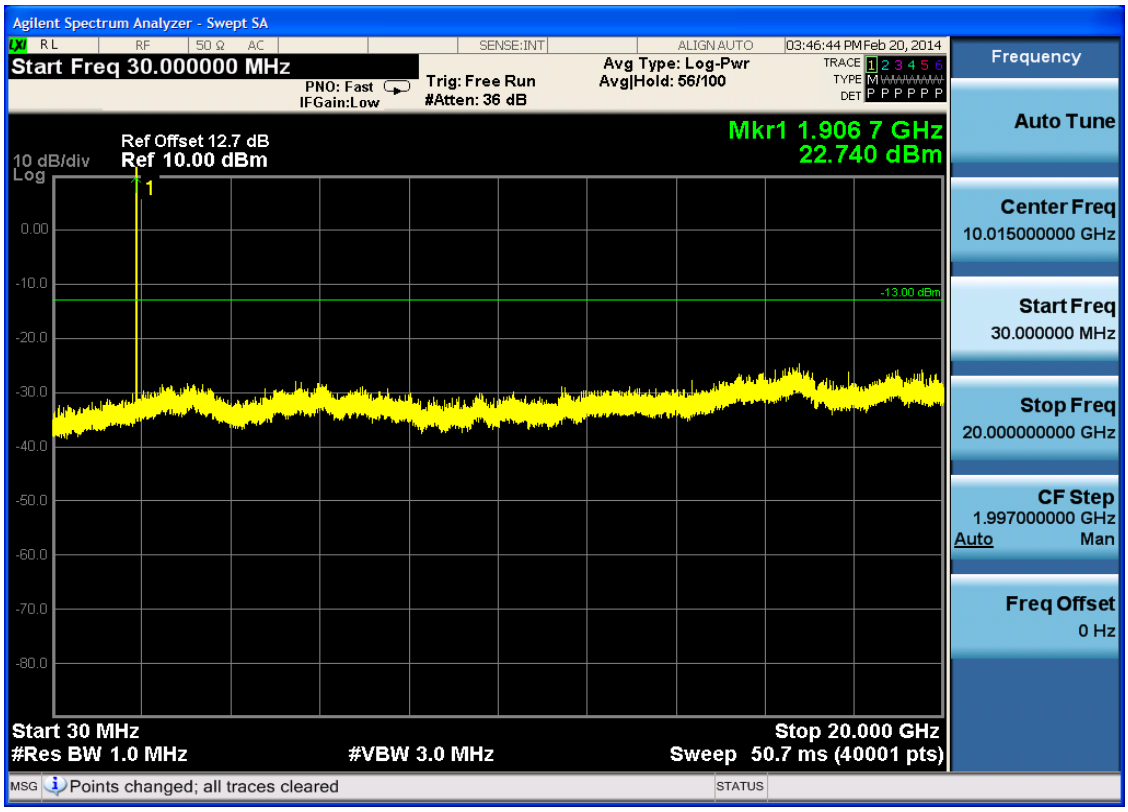

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7Appendix_G: Field Strength of Spurious Radiation

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

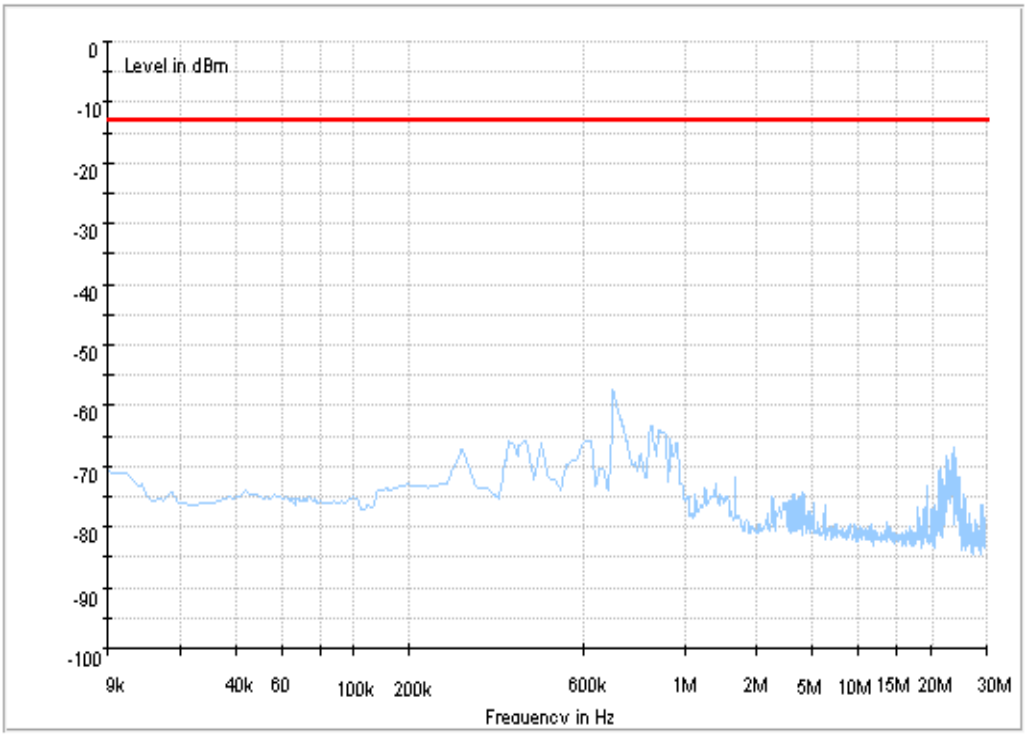
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz. Detector: PK

Part I - Test Plots

7.1 For UMTS

7.1.1 Test Band = WCDMA850

7.1.1.1 Test Mode = UMTS/TM1



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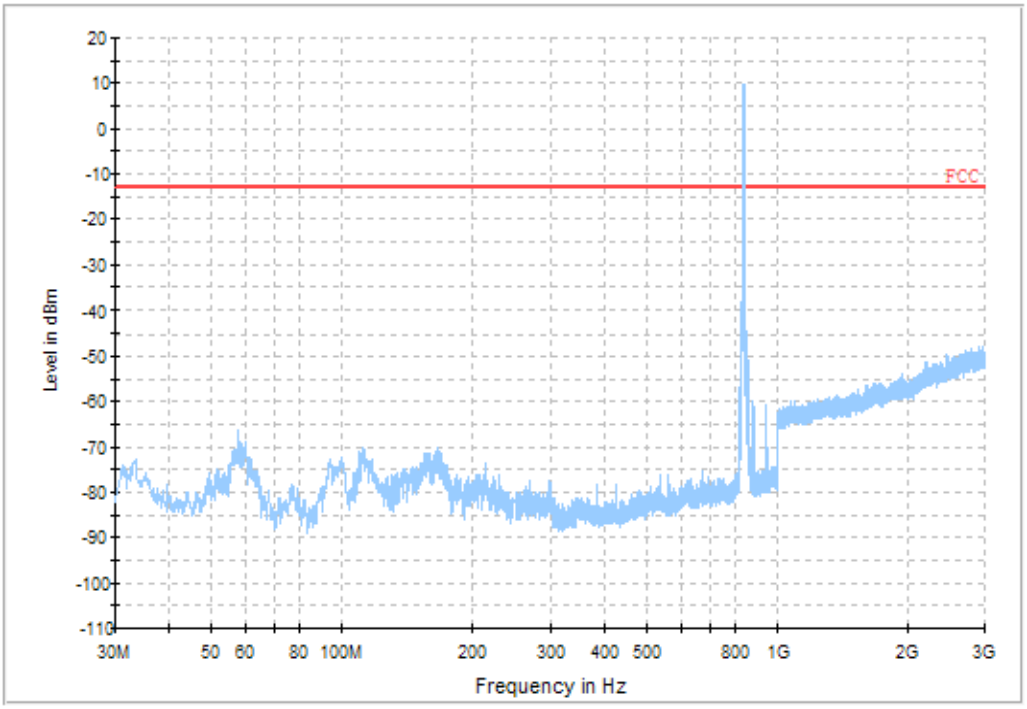
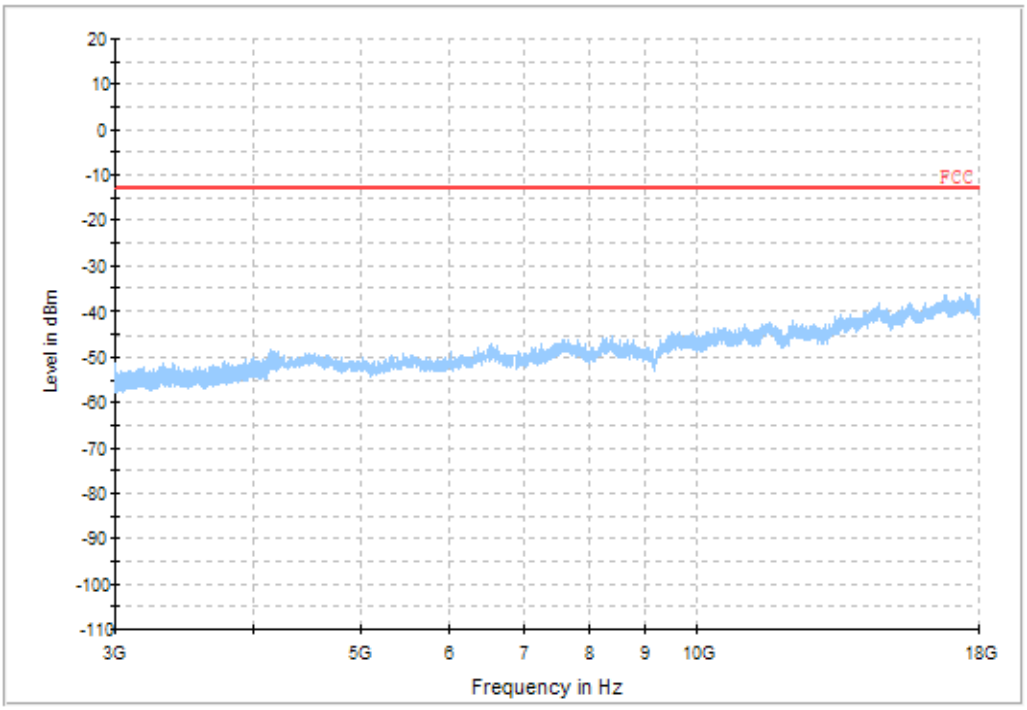
Copy of FCC PART22 WCDMA850_L



Copy of FCC PART22 WCDMA850_H



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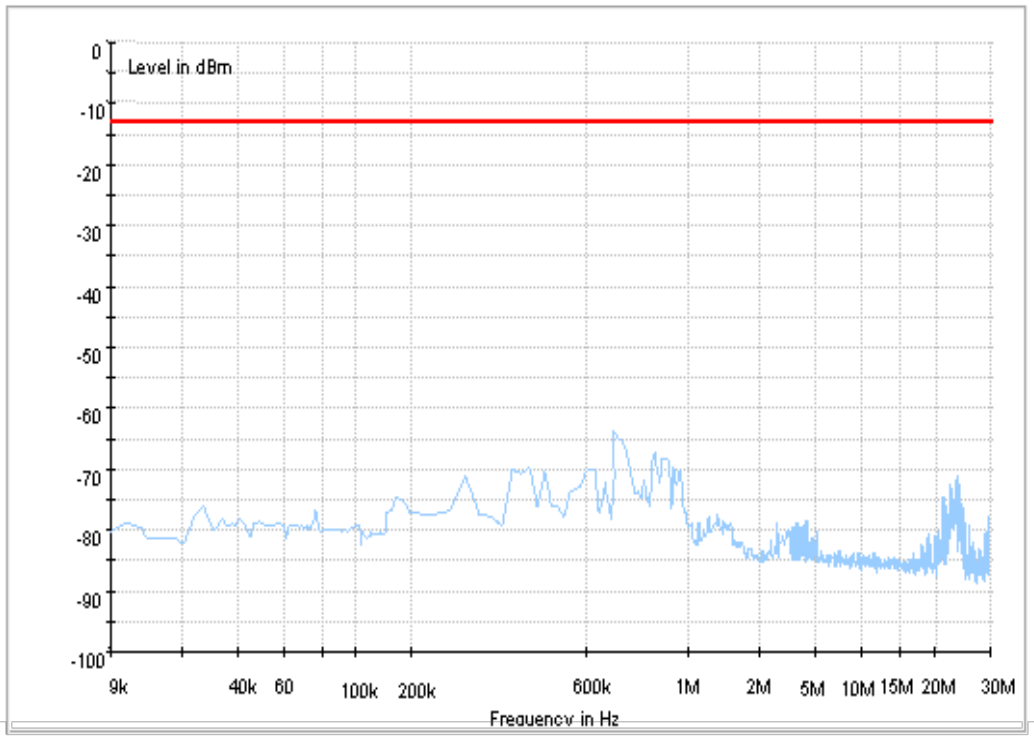
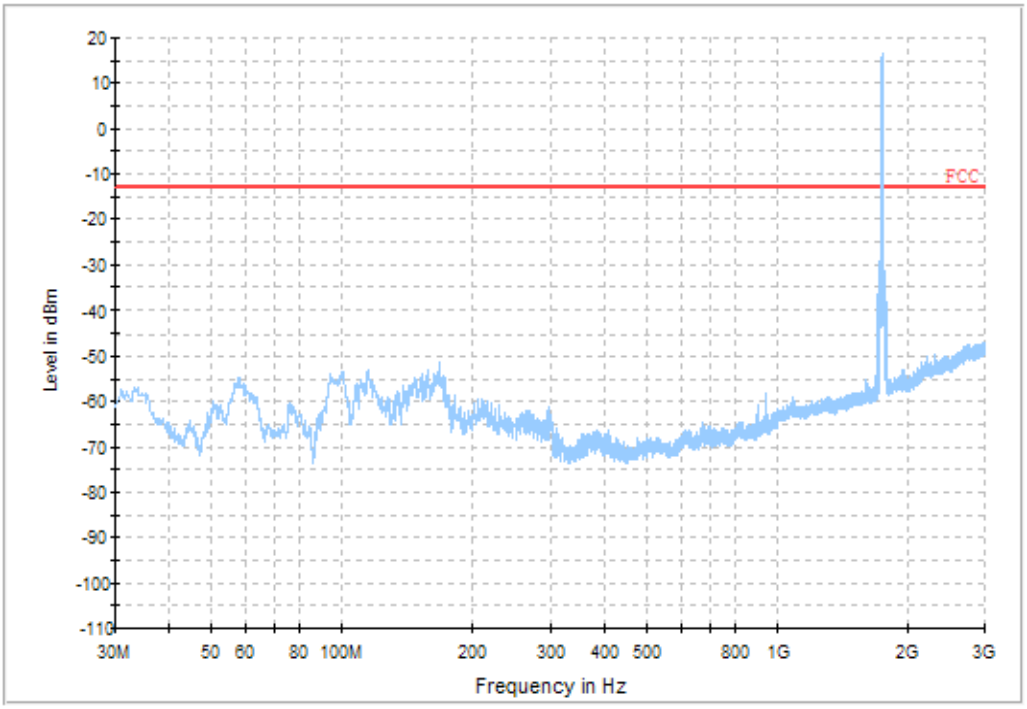
7.2.1 Test Band = WCDMA1700

7.2.1.1 Test Mode = UMTS/TM1



Copy of FCC PART27 WCDMA1700_L



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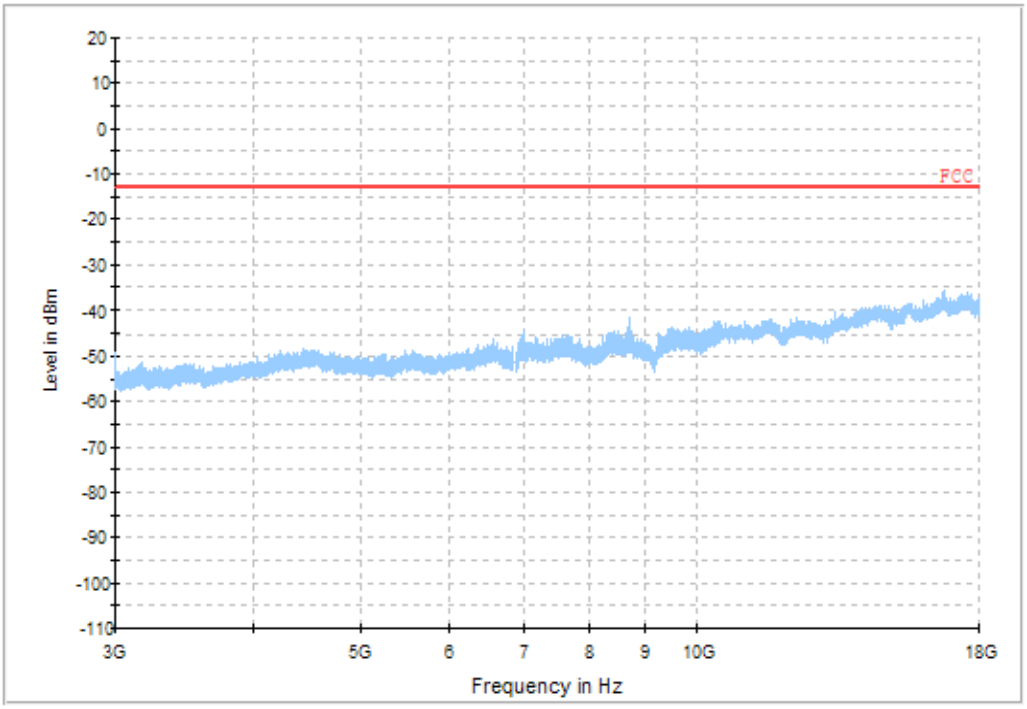
Copy of FCC PART27 WCDMA1700_H



7.2.2 Test Band = WCDMA1900

7.2.2.1 Test Mode = UMTS/TM1

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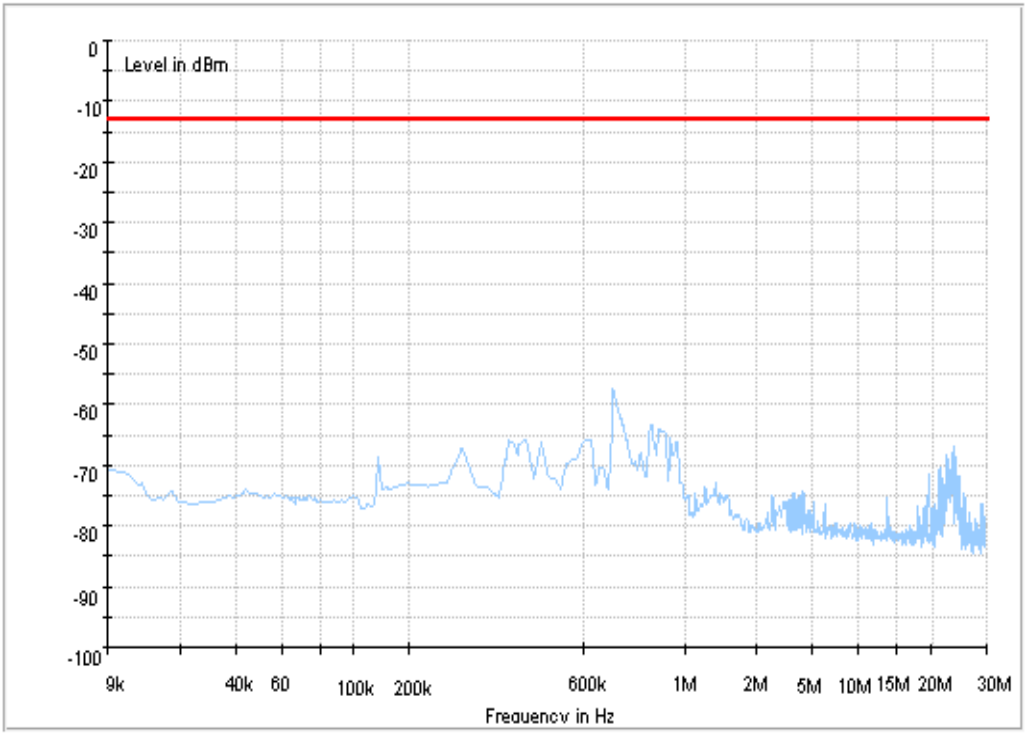
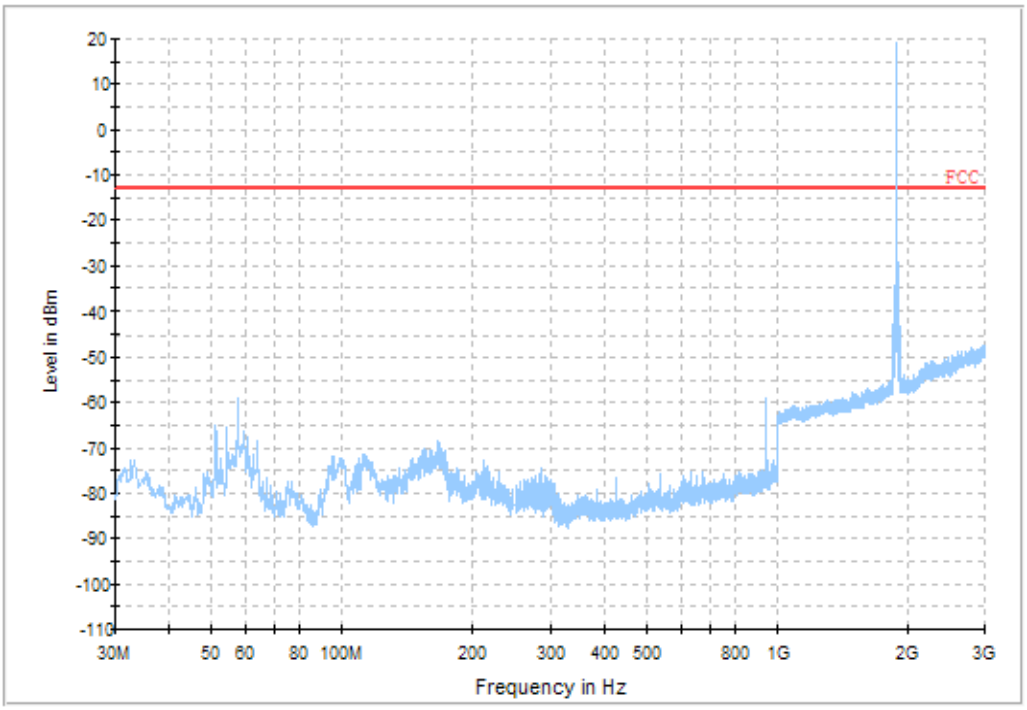


Copy of FCC PART24 WCDMA1900_L



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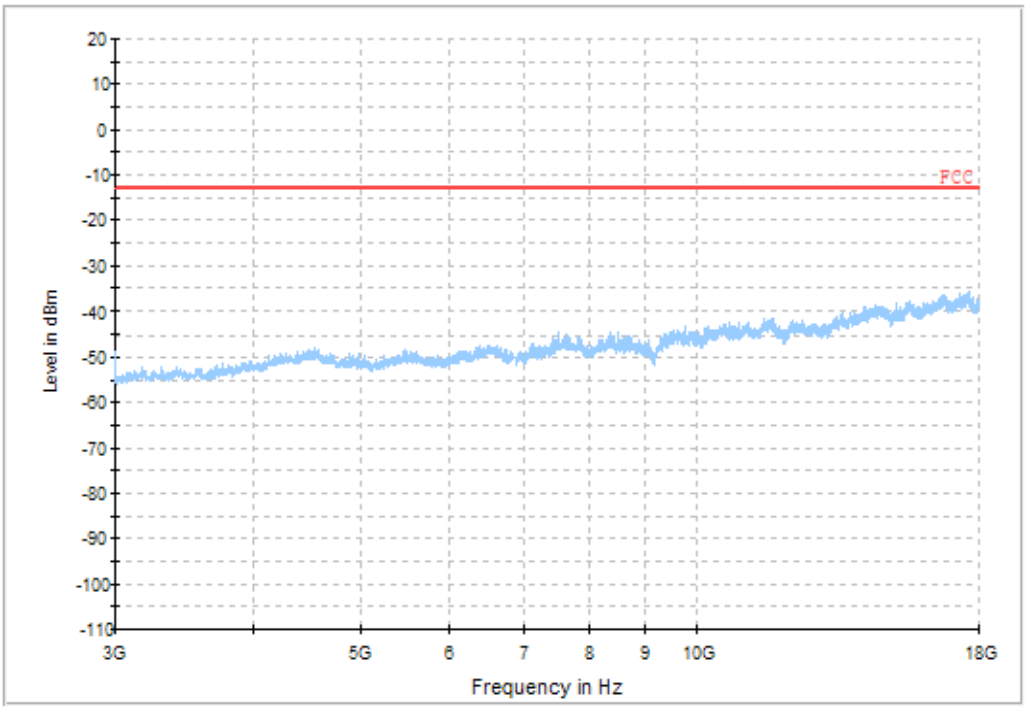
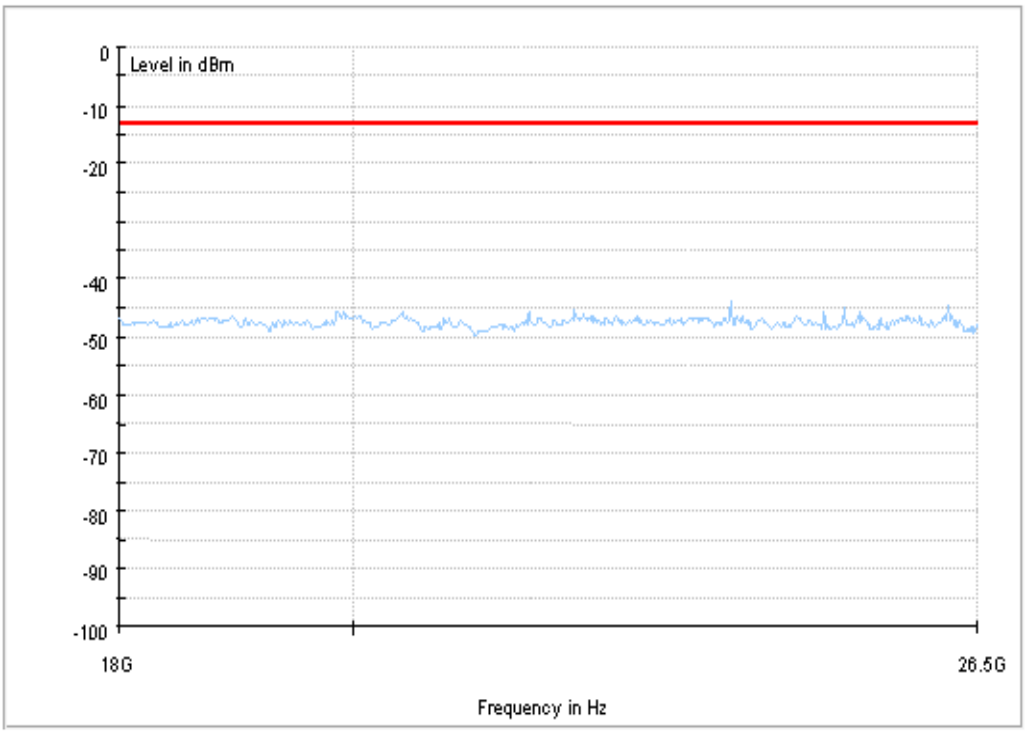
Copy of FCC PART24 WCDMA1900_H





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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	0.41	0.0005	PASS
				VN	2.82	0.00341	PASS
				VH	1.82	0.0022	PASS
		MCH	TN	VL	2.27	0.00271	PASS
				VN	0.41	0.00049	PASS
				VH	-1.33	-0.00159	PASS
		HCH	TN	VL	-4.26	-0.00503	PASS
				VN	-0.72	-0.00085	PASS
				VH	-1.02	-0.0012	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	2.09	0.00253	PASS
				-20	1.56	0.00189	PASS
				-10	0.82	0.00099	PASS
				0	3.28	0.00397	PASS
				10	0.08	0.0001	PASS
				20	0.69	0.00083	PASS
				30	5.17	0.00626	PASS
				40	2.15	0.0026	PASS
				50	2.64	0.00319	PASS
		MCH	VN	-30	-0.98	-0.00117	PASS
				-20	-1.04	-0.00124	PASS
				-10	-0.87	-0.00104	PASS
				0	-0.99	-0.00118	PASS
				10	0.98	0.00117	PASS
				20	0.84	0.001	PASS
				30	-1.36	-0.00163	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
				40	0.64	0.00077	PASS
				50	-0.27	-0.00032	PASS
		HCH	VN	-30	-0.5	-0.00059	PASS
				-20	-1.45	-0.00171	PASS
				-10	-0.61	-0.00072	PASS
				0	-0.63	-0.00074	PASS
				10	-0.17	-0.0002	PASS
				20	-0.81	-0.00096	PASS
				30	-2.5	-0.00295	PASS
				40	-2.69	-0.00318	PASS
				50	-3.4	-0.00402	PASS

8.2 For UMTS

8.2.1Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1700	UMTS/TM1	LCH	TN	VL	12.27	0.00717	PASS
				VN	10.6	0.00619	PASS
				VH	12.12	0.00708	PASS
		MCH	TN	VL	-3.19	-0.00184	PASS
				VN	-4.21	-0.00243	PASS
				VH	-3.34	-0.00193	PASS
		HCH	TN	VL	-9.51	-0.00543	PASS
				VN	-9.43	-0.00538	PASS
				VH	-12.48	-0.00712	PASS
WCDMA1900	UMTS/TM1	LCH	TN	VL	2.87	0.00155	PASS
				VN	7.63	0.00412	PASS
				VH	7.22	0.0039	PASS
		MCH	TN	VL	0.67	0.00036	PASS
				VN	1.04	0.00055	PASS
				VH	-4.44	-0.00236	PASS
		HCH	TN	VL	-5.4	-0.00283	PASS
				VN	1.42	0.00074	PASS
				VH	-0.14	-0.00007	PASS

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8.2.2Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA1700	UMTS/TM1	LCH	VN	-30	10.28	0.006	PASS
				-20	10.57	0.00617	PASS
				-10	12.95	0.00756	PASS
				0	9.8	0.00572	PASS
				10	12.19	0.00712	PASS
				20	13.14	0.00767	PASS
				30	10.96	0.0064	PASS
				40	11.15	0.00651	PASS
				50	11.44	0.00668	PASS
		MCH	VN	-30	-5.19	-0.003	PASS
				-20	-0.53	-0.00031	PASS
				-10	-6.5	-0.00375	PASS
				0	-3.52	-0.00203	PASS
				10	-3.42	-0.00197	PASS
				20	-1.88	-0.00109	PASS
				30	-0.79	-0.00046	PASS
				40	-2.79	-0.00161	PASS
				50	-3.52	-0.00203	PASS
		HCH	VN	-30	-8.44	-0.00482	PASS
				-20	-8.13	-0.00464	PASS
				-10	-10.73	-0.00612	PASS
				0	-10.59	-0.00604	PASS
				10	-6.96	-0.00397	PASS
				20	-11.02	-0.00629	PASS
				30	-10.59	-0.00604	PASS
				40	-10.19	-0.00581	PASS
				50	-9.57	-0.00546	PASS
WCDMA1900	UMTS/TM1	LCH	VN	-30	6.65	0.00359	PASS
				-20	5.26	0.00284	PASS
				-10	5.31	0.00287	PASS
				0	7.57	0.00409	PASS
				10	8.85	0.00478	PASS
				20	6.97	0.00376	PASS
				30	9.77	0.00527	PASS
				40	8.68	0.00469	PASS
				50	9.86	0.00532	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
		MCH	VN	-30	-0.08	-0.00004	PASS
				-20	5.43	0.00289	PASS
				-10	3.49	0.00186	PASS
				0	3.83	0.00204	PASS
				10	0.43	0.00023	PASS
				20	0.75	0.0004	PASS
				30	3.6	0.00191	PASS
				40	5.02	0.00267	PASS
				50	1.31	0.0007	PASS
		HCH	VN	-30	-3.75	-0.00197	PASS
				-20	-0.79	-0.00041	PASS
				-10	-2.4	-0.00126	PASS
				0	1.89	0.00099	PASS
				10	0.26	0.00014	PASS
				20	3.42	0.00179	PASS
				30	-2.99	-0.00157	PASS
				40	-3.85	-0.00202	PASS
				50	-0.63	-0.00033	PASS

END

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