



Appendix for Testreport



Appendix A: DTS (6 dB) Bandwidth

In this document, the "DTS6dBBW" refers to the measured "DTS (6 dB) Bandwidth" value. In this Appendix, the "fc(DTS6dBBW)" refers to the centre of the measured "DTS6dBBW". The introduction of the "fc(DTS6dBBW)" is due to that other measurements use it as the spectrum analyzer setting.

For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

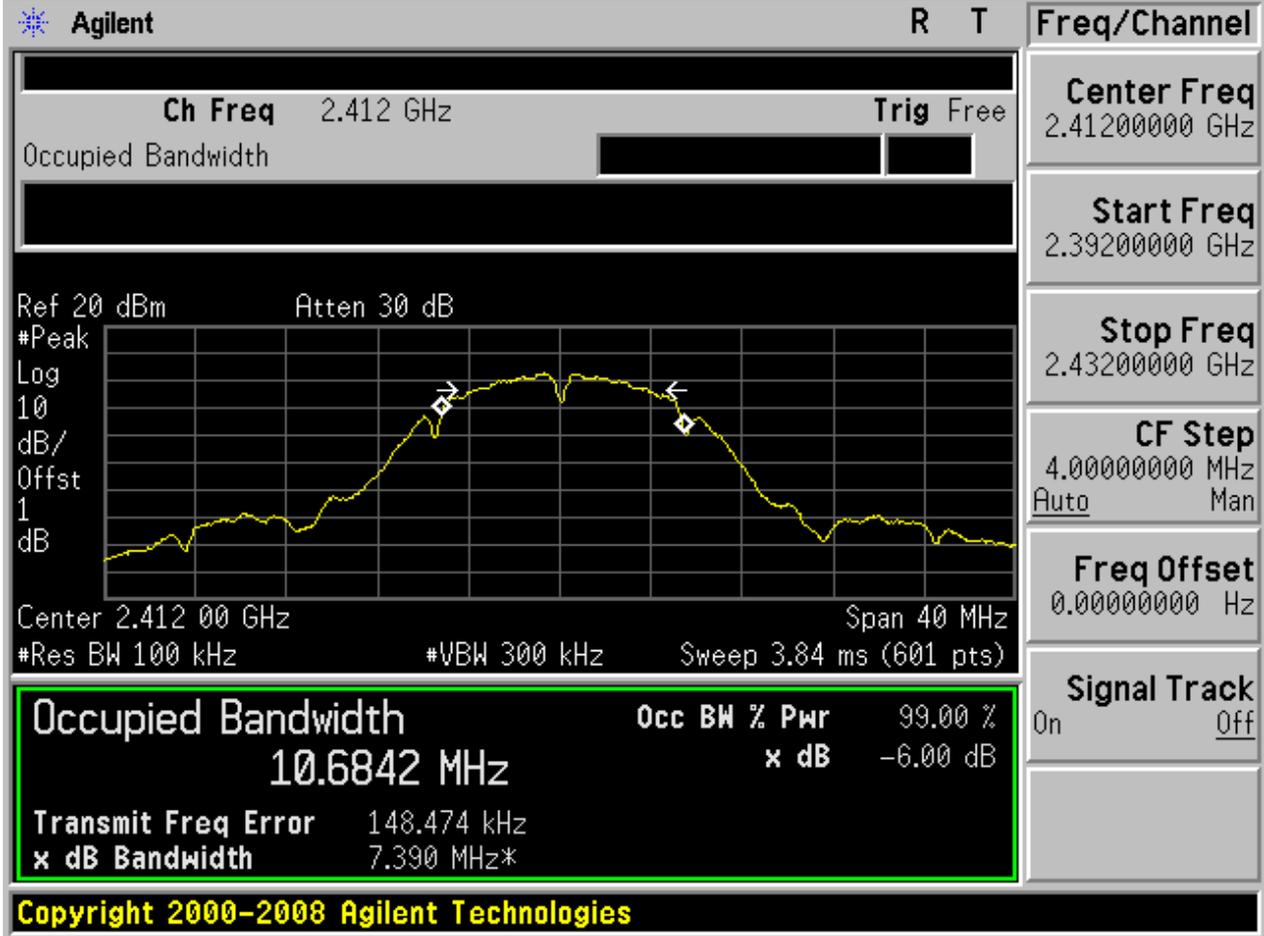
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	7.39	pass
11B	M	2437	Ant 1	6.90	pass
11B	H	2462	Ant 1	7.25	pass
11G	L	2412	Ant 1	16.60	pass
11G	M	2437	Ant 1	16.58	pass
11G	H	2462	Ant 1	16.57	pass
11N20	L	2412	Ant 1	17.82	pass
11N20	M	2437	Ant 1	17.84	pass
11N20	H	2462	Ant 1	17.81	pass



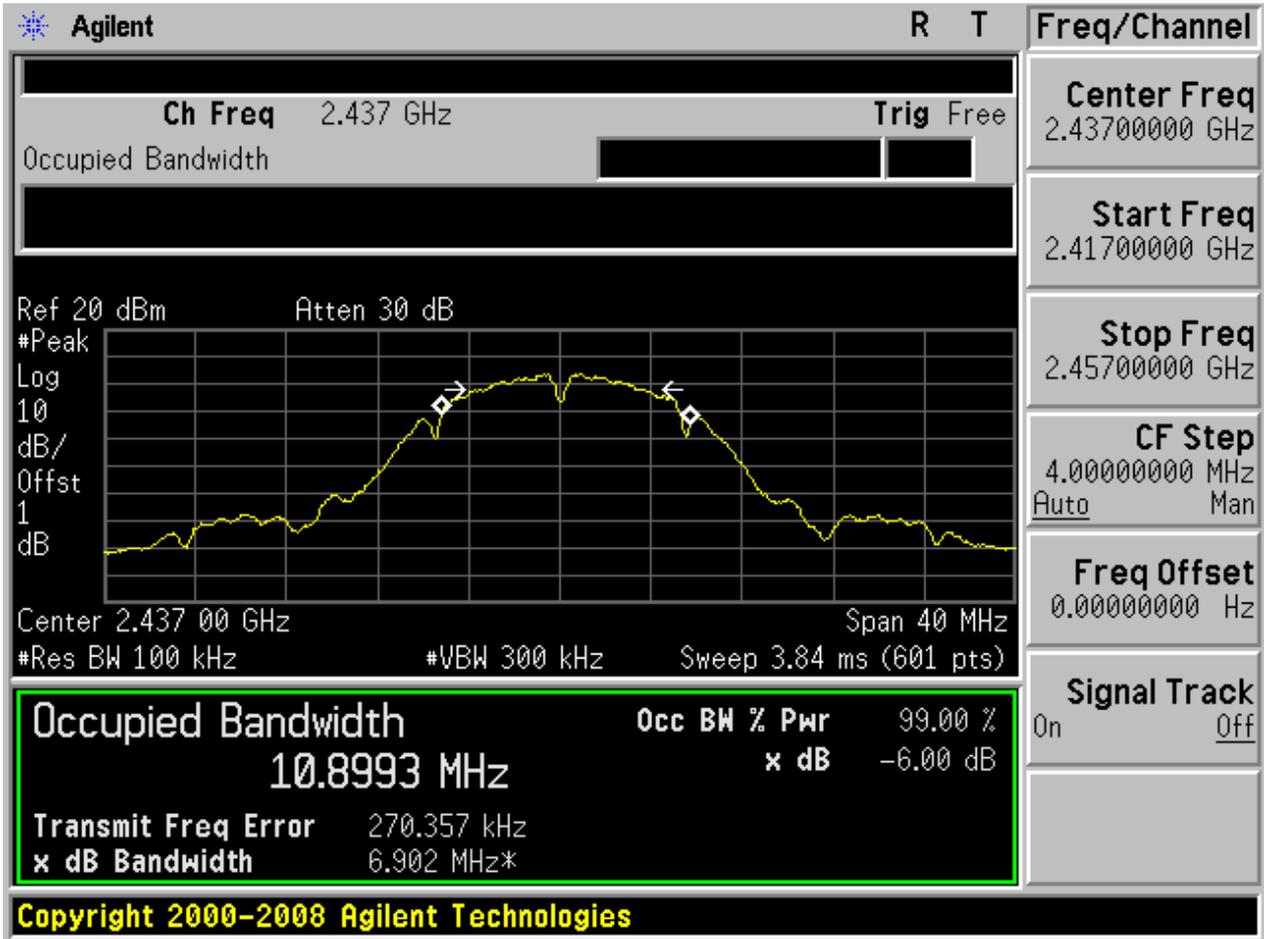
Part II - Test Plots

2.1 11B_L@Ant 1



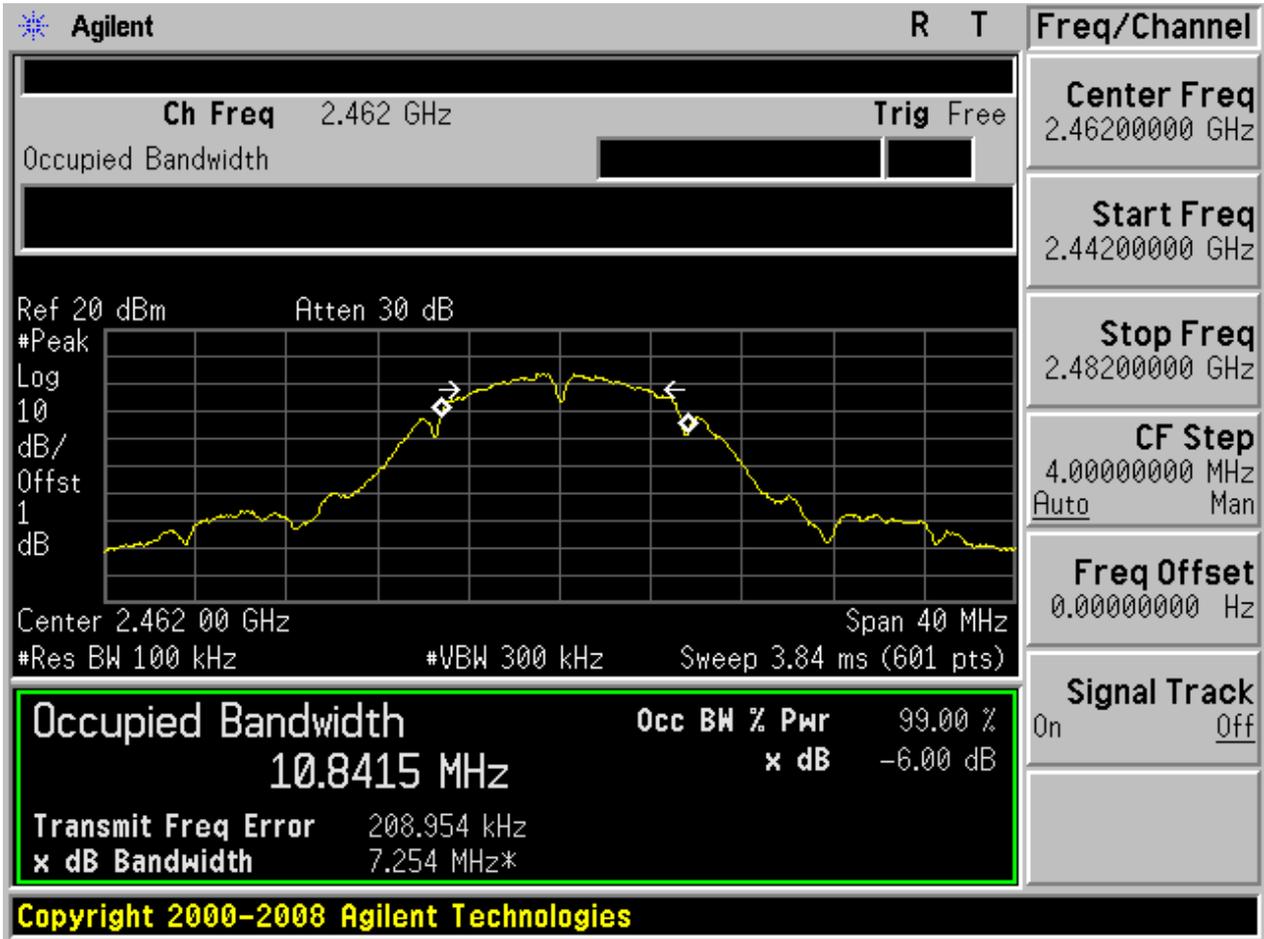


2.2 11B_M@Ant 1



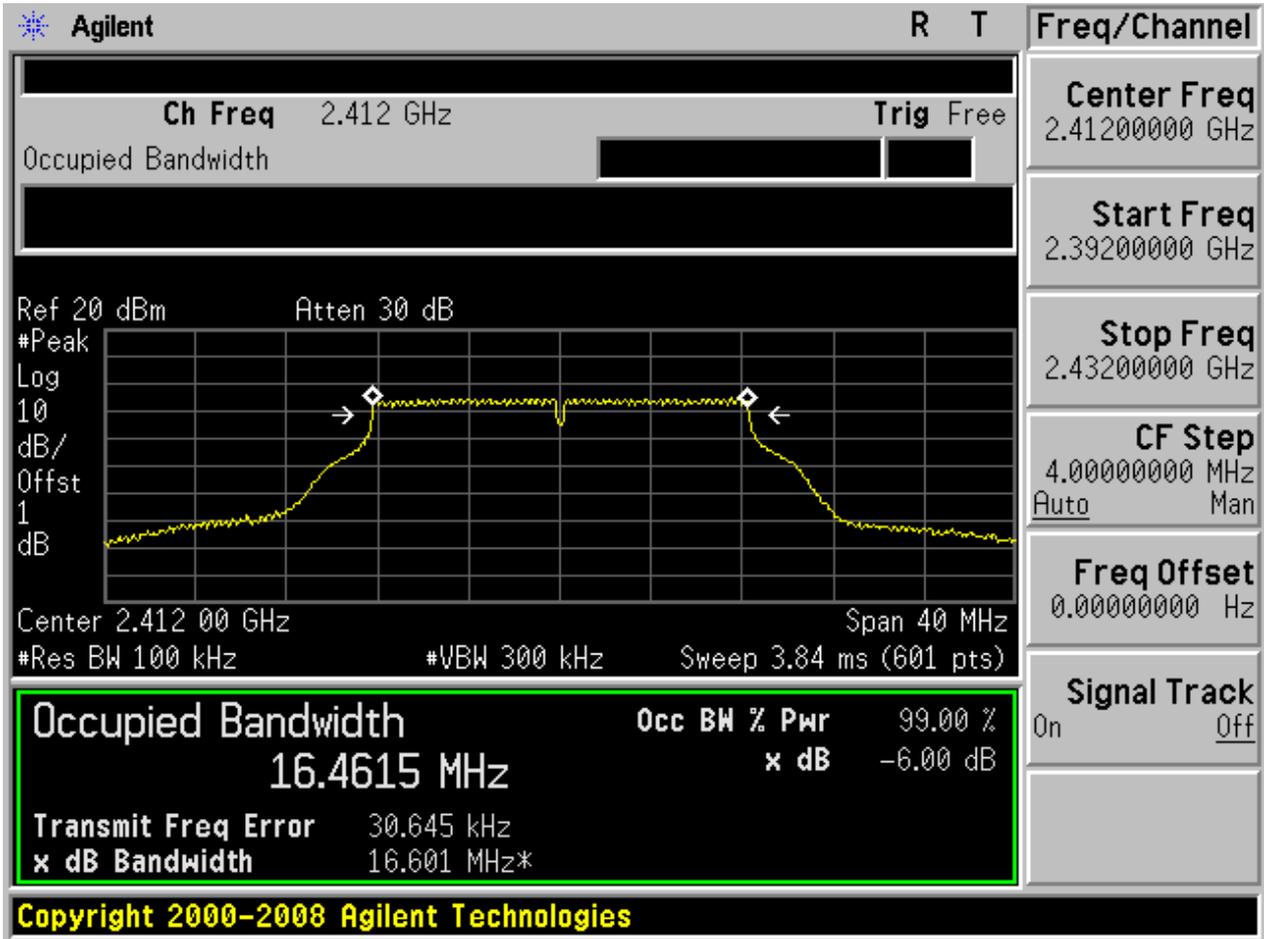


2.3 11B_H@Ant 1



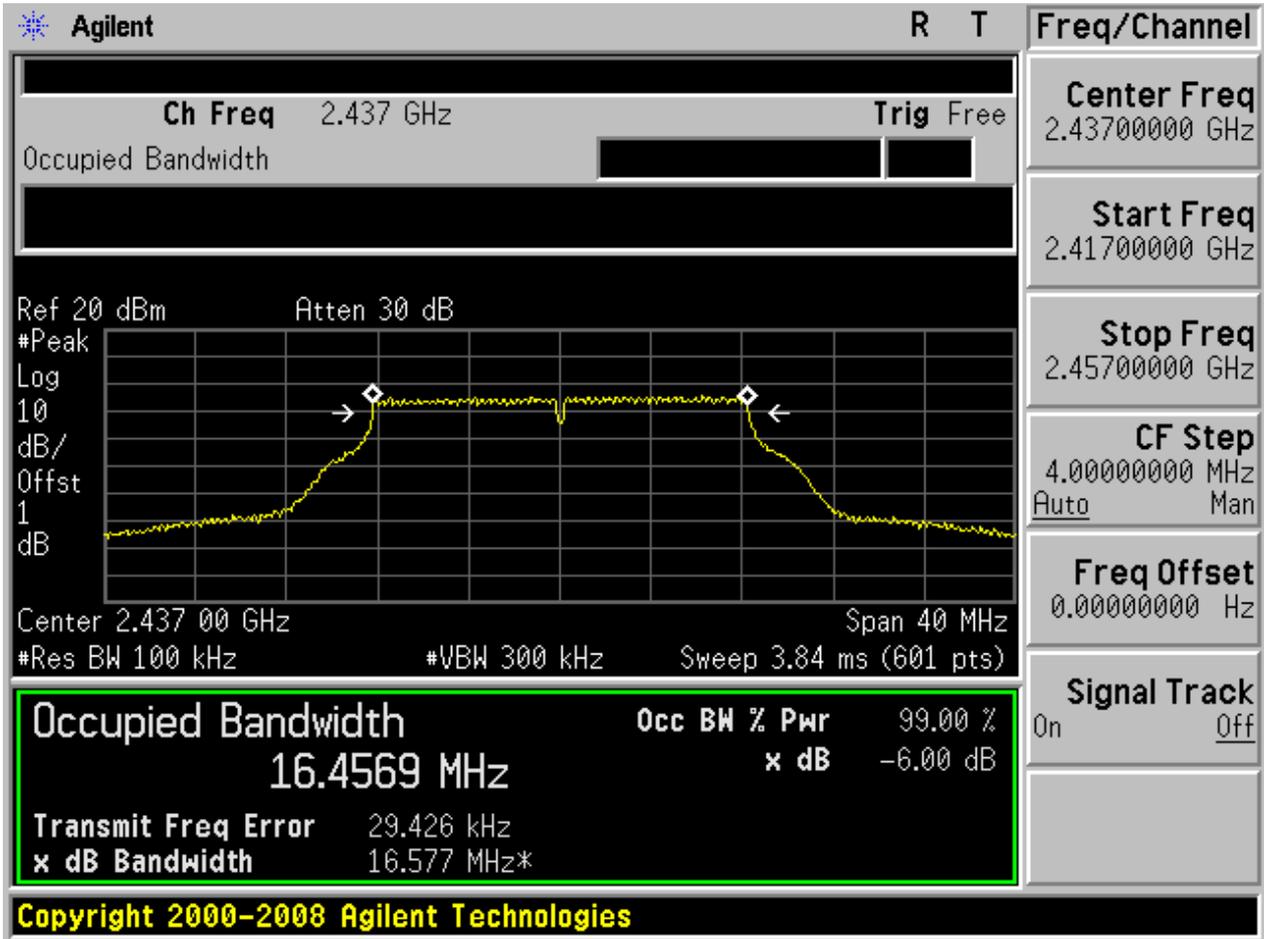


2.4 11G_L@Ant 1



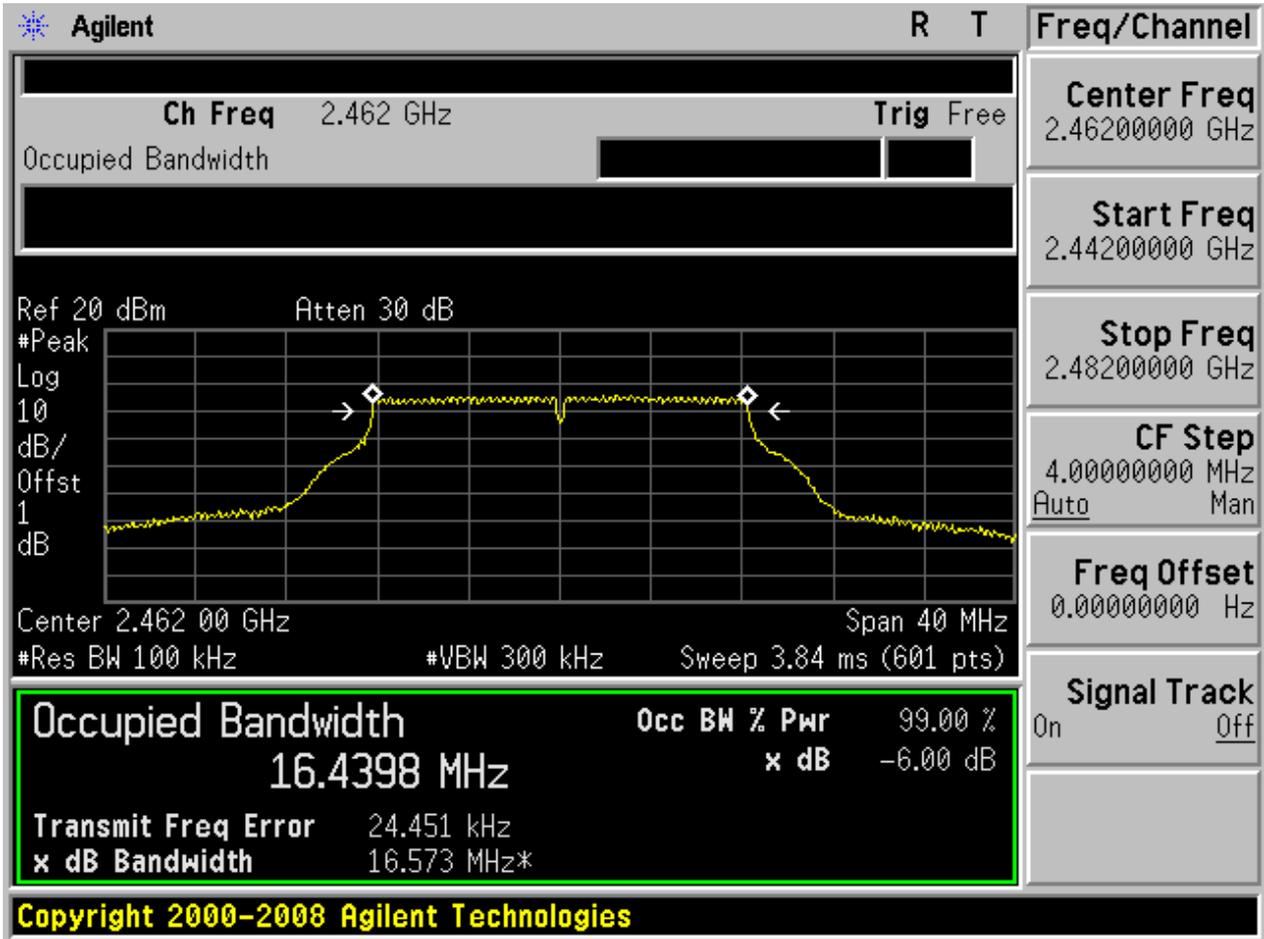


2.5 11G_M@Ant 1



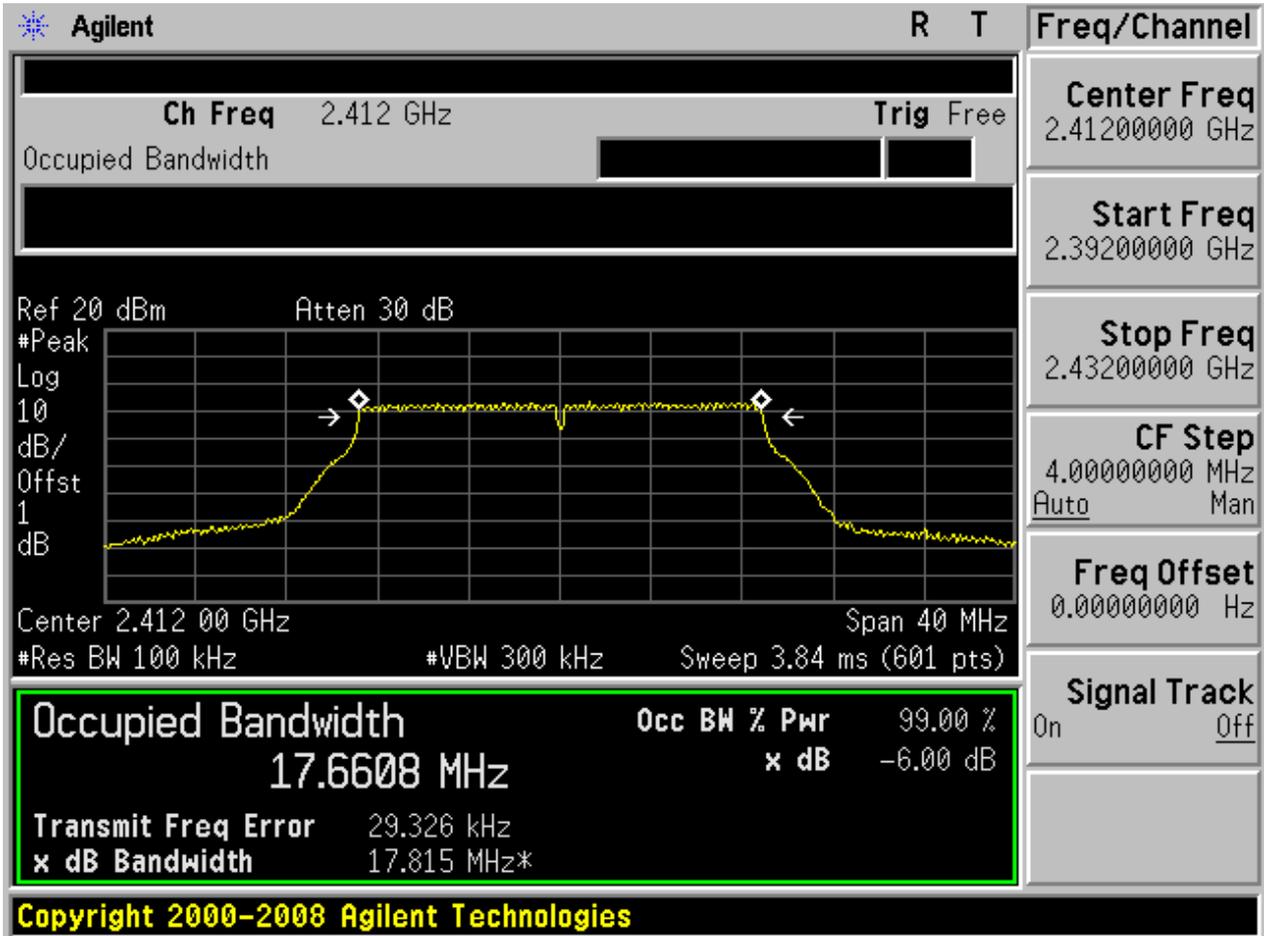


2.6 11G_H@Ant 1



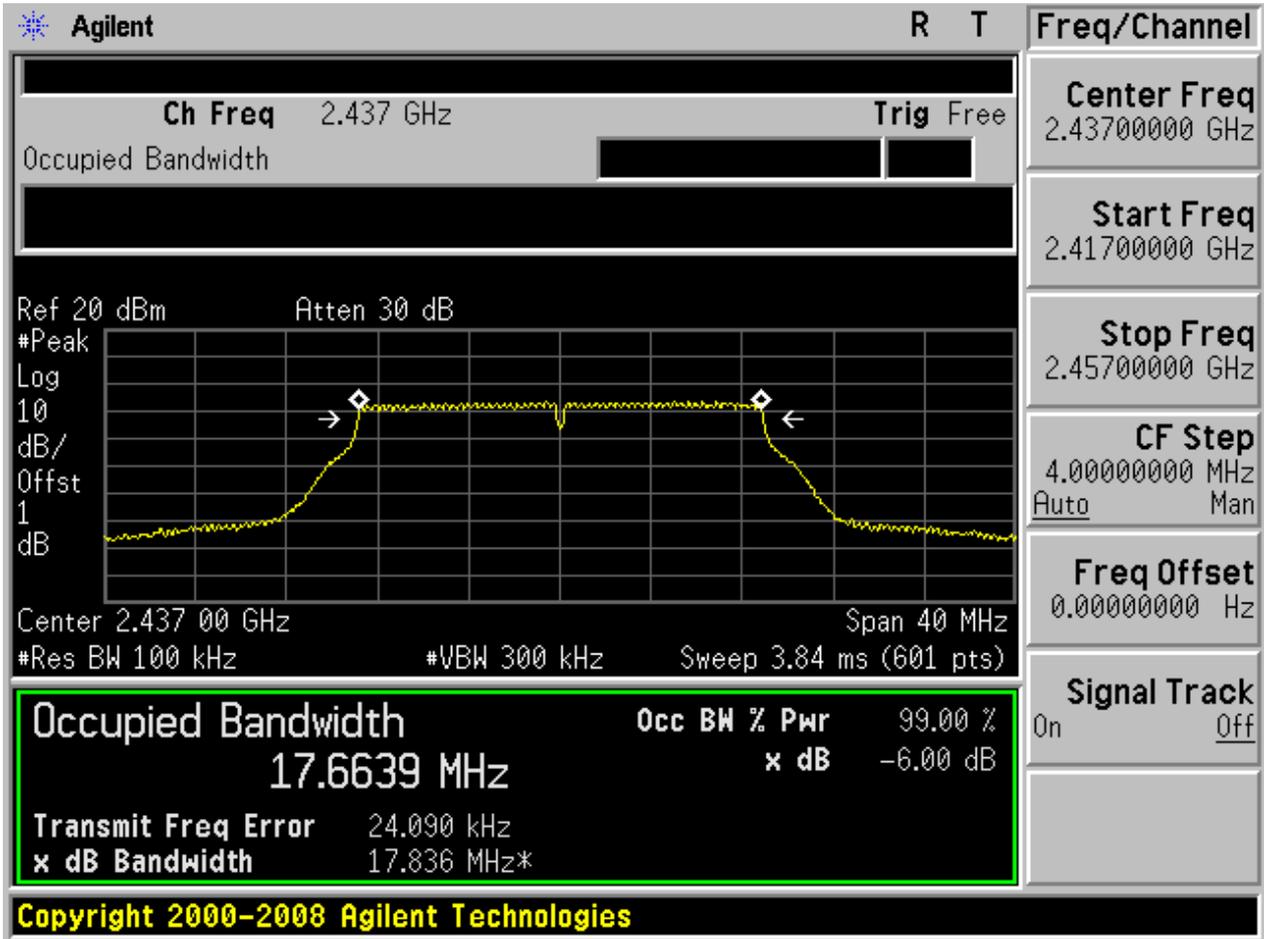


2.7 11N20_L@Ant 1



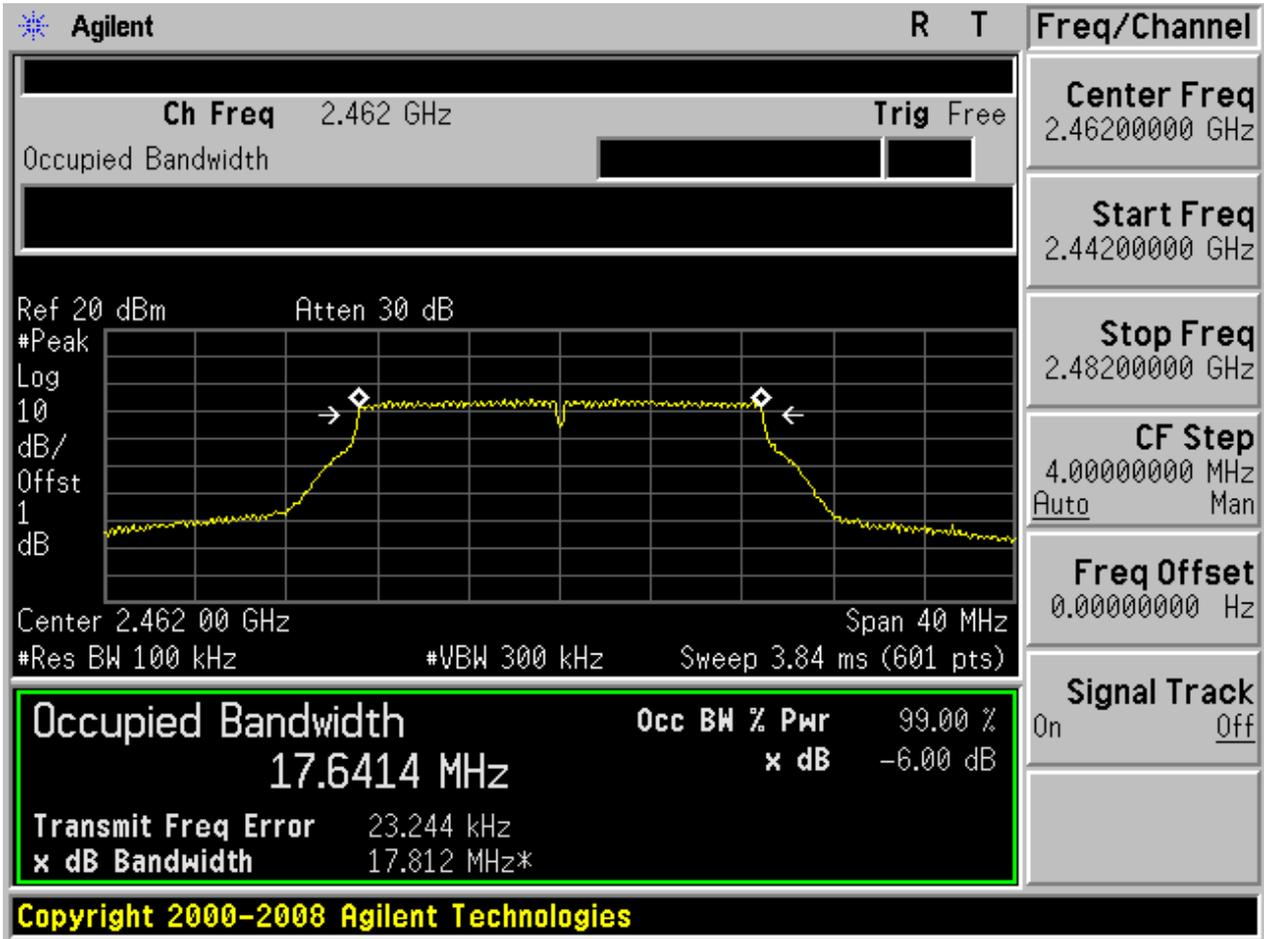


2.8 11N20_M@Ant 1





2.9 11N20_H@Ant 1





Appendix B: Occupied Bandwidth

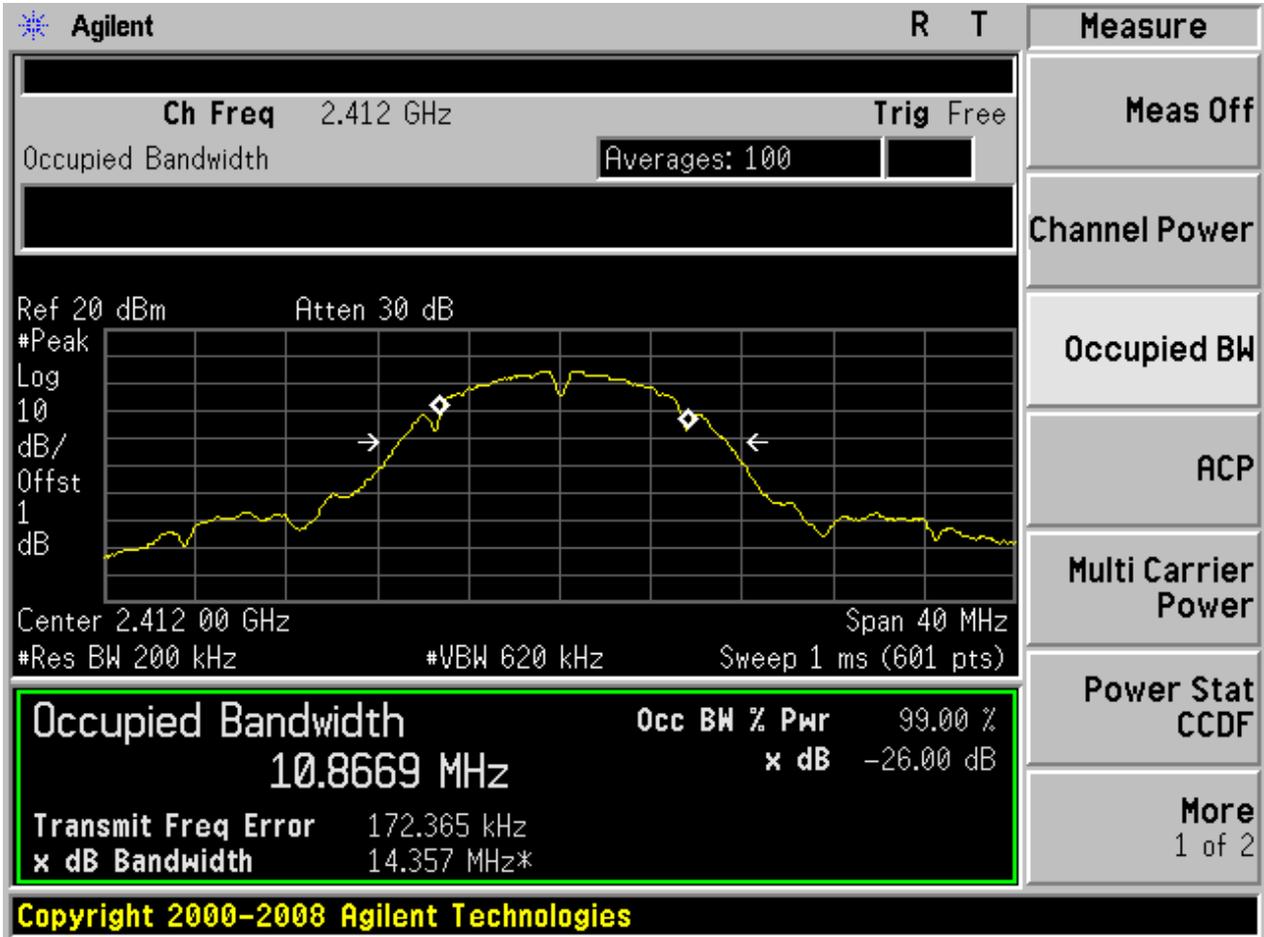
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	10.87	pass
11B	M	2437	Ant 1	10.90	pass
11B	H	2462	Ant 1	10.93	pass
11G	L	2412	Ant 1	16.55	pass
11G	M	2437	Ant 1	16.51	pass
11G	H	2462	Ant 1	16.52	pass
11N20	L	2412	Ant 1	17.70	pass
11N20	M	2437	Ant 1	17.73	pass
11N20	H	2462	Ant 1	17.66	pass

Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_M@Ant 1

Agilent R T

Ch Freq 2.437 GHz **Trig** Free

Occupied Bandwidth Averages: 100

Ref 20 dBm Atten 30 dB

#Peak
Log
10
dB/
Offst
1
dB

Center 2.437 00 GHz Span 40 MHz

#Res BW 200 kHz #VBW 620 kHz Sweep 1 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
10.8982 MHz	x dB	-26.00 dB
Transmit Freq Error	241.753 kHz	
x dB Bandwidth	14.343 MHz*	

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Measure

Meas Off

Channel Power

Occupied BW

ACP

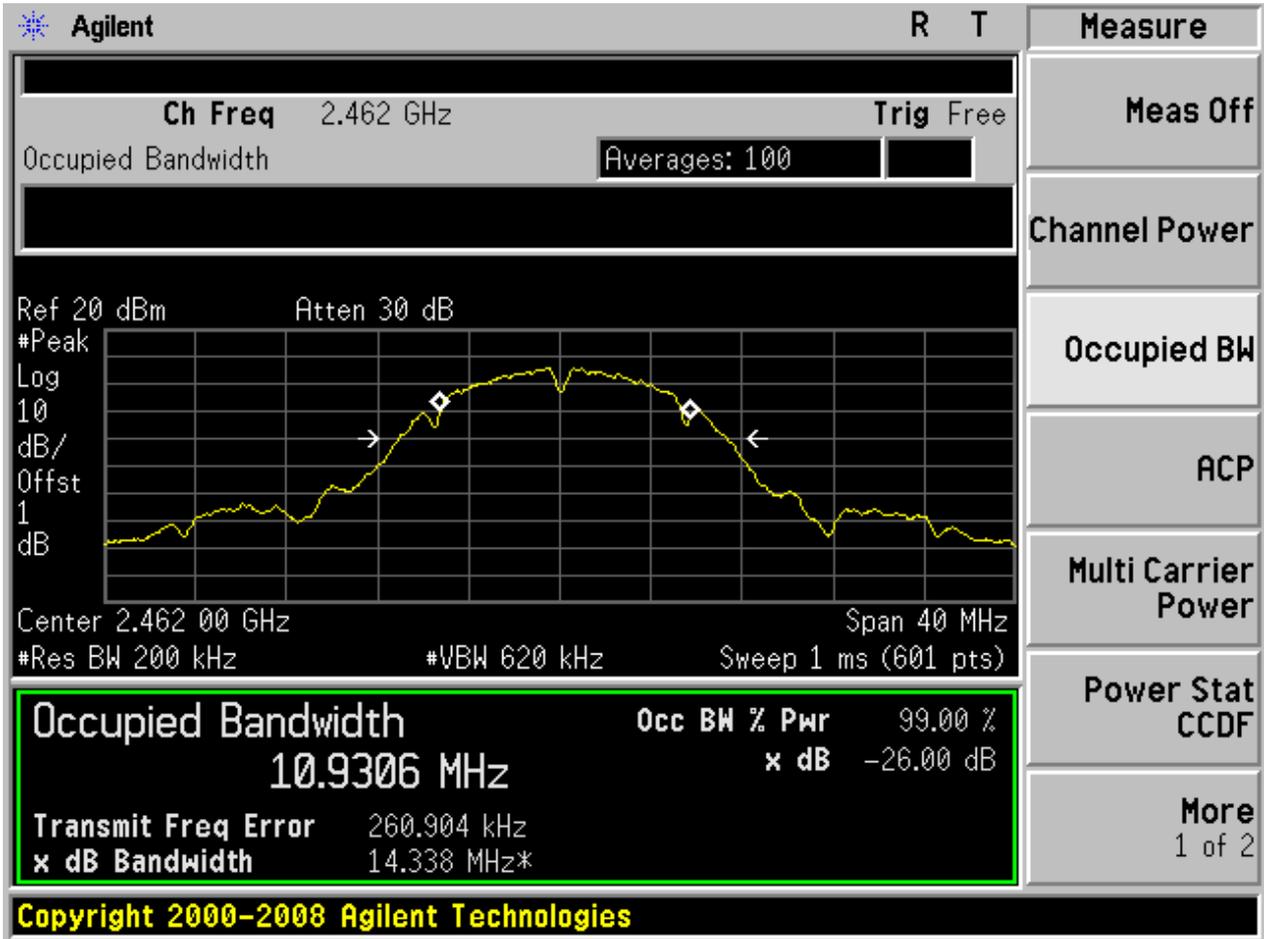
Multi Carrier Power

Power Stat CCDF

More
1 of 2

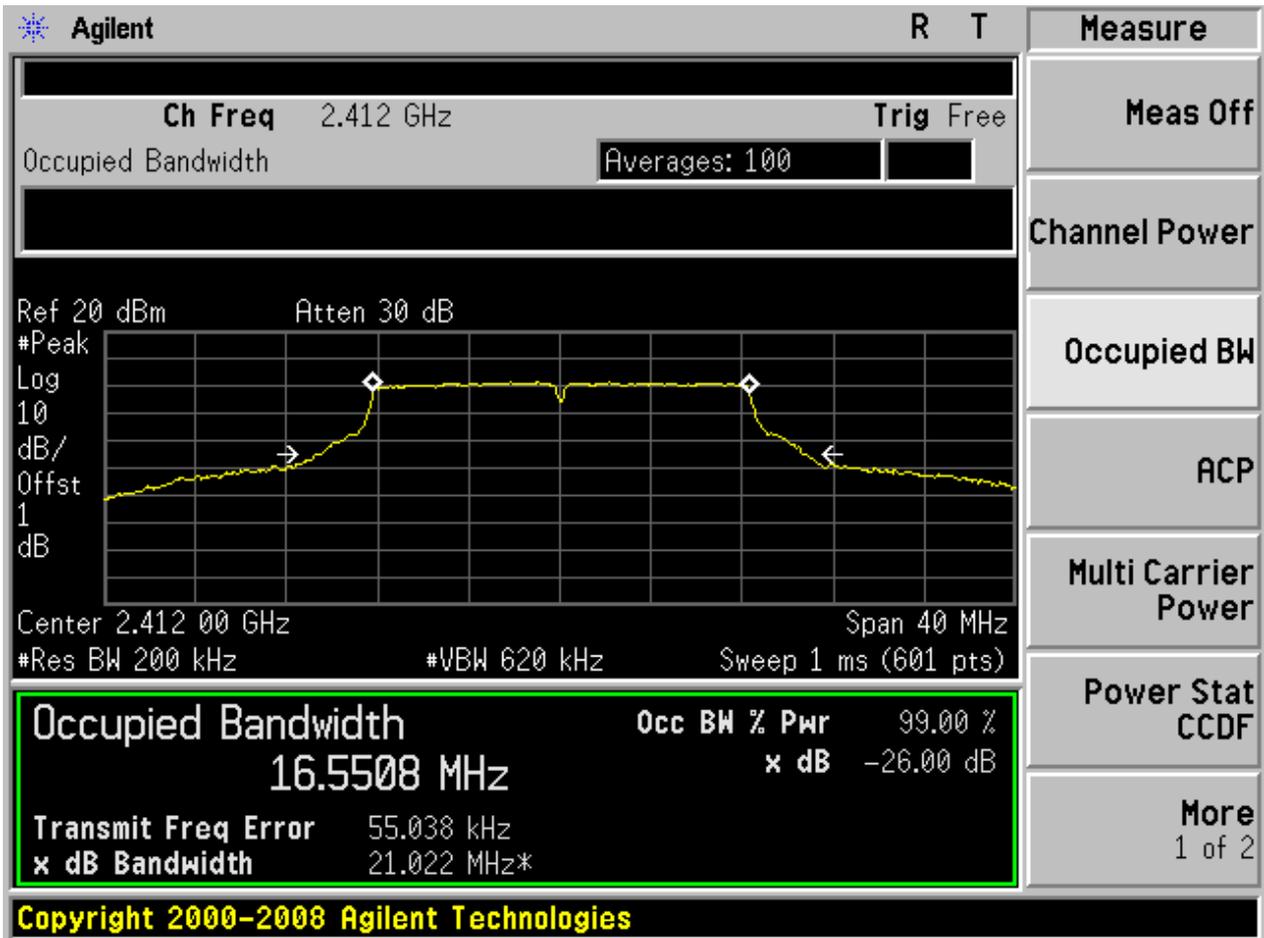


2.3 11B_H@Ant 1



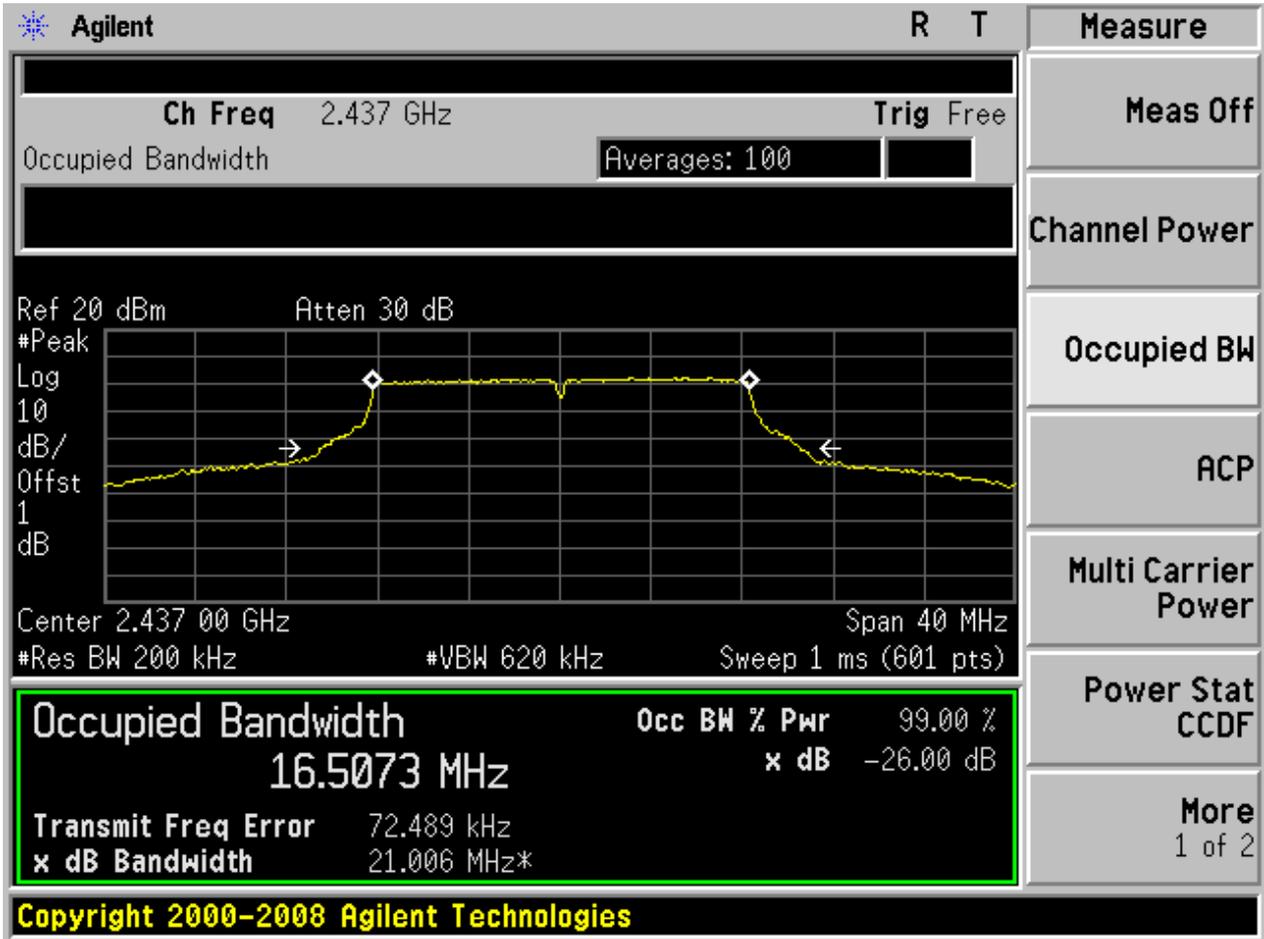


2.4 11G_L@Ant 1



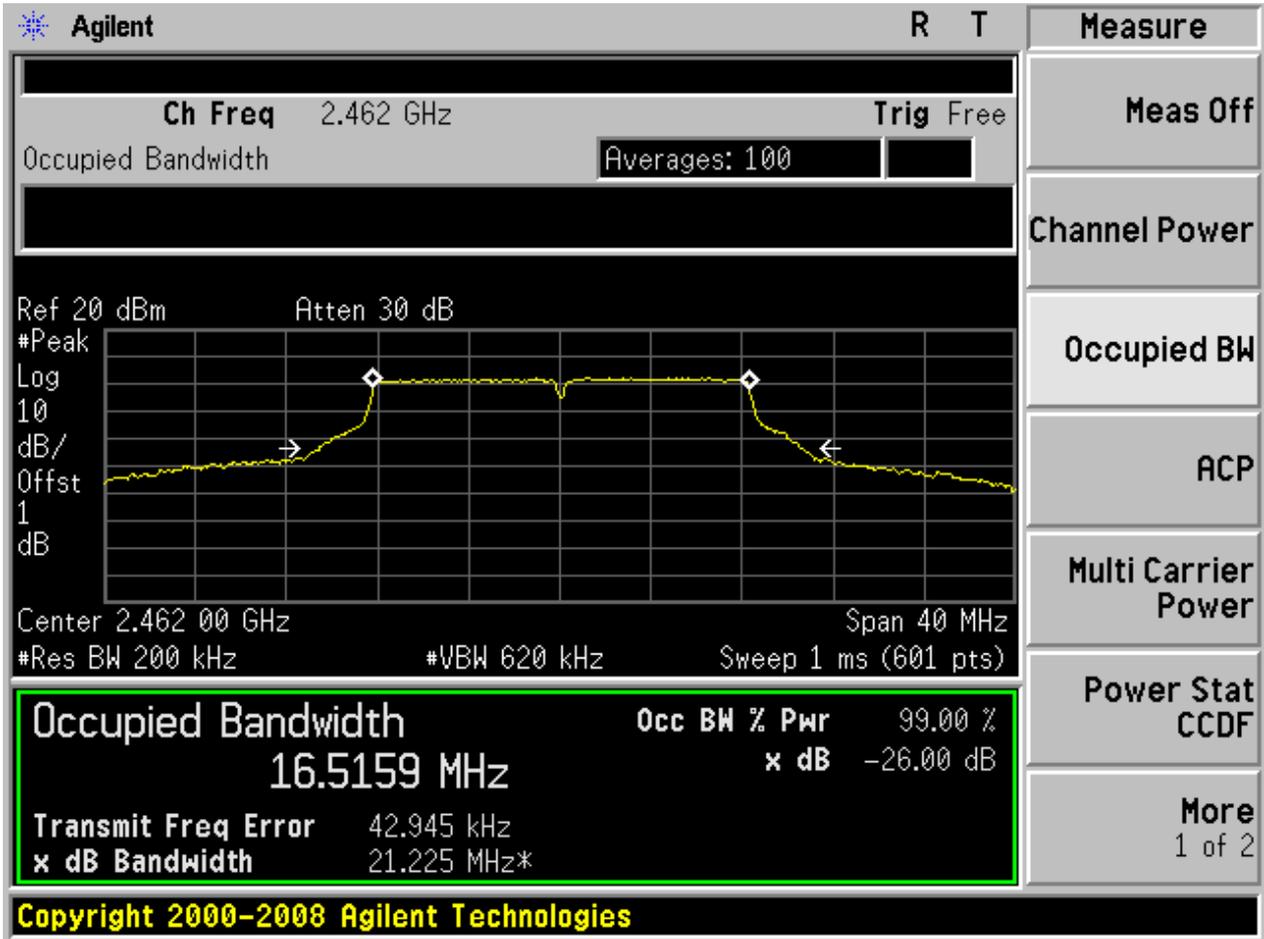


2.5 11G_M@Ant 1





2.6 11G_H@Ant 1





2.7 11N20_L@Ant 1

Agilent R T Measure

Ch Freq 2.412 GHz Trig Free

Occupied Bandwidth Averages: 100

Ref 20 dBm Atten 30 dB

#Peak Log 10 dB/ Offst 1 dB

Center 2.412 00 GHz Span 40 MHz

#Res BW 200 kHz #VBW 620 kHz Sweep 1 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
17.6985 MHz	x dB	-26.00 dB
Transmit Freq Error	37.763 kHz	
x dB Bandwidth	21.023 MHz*	

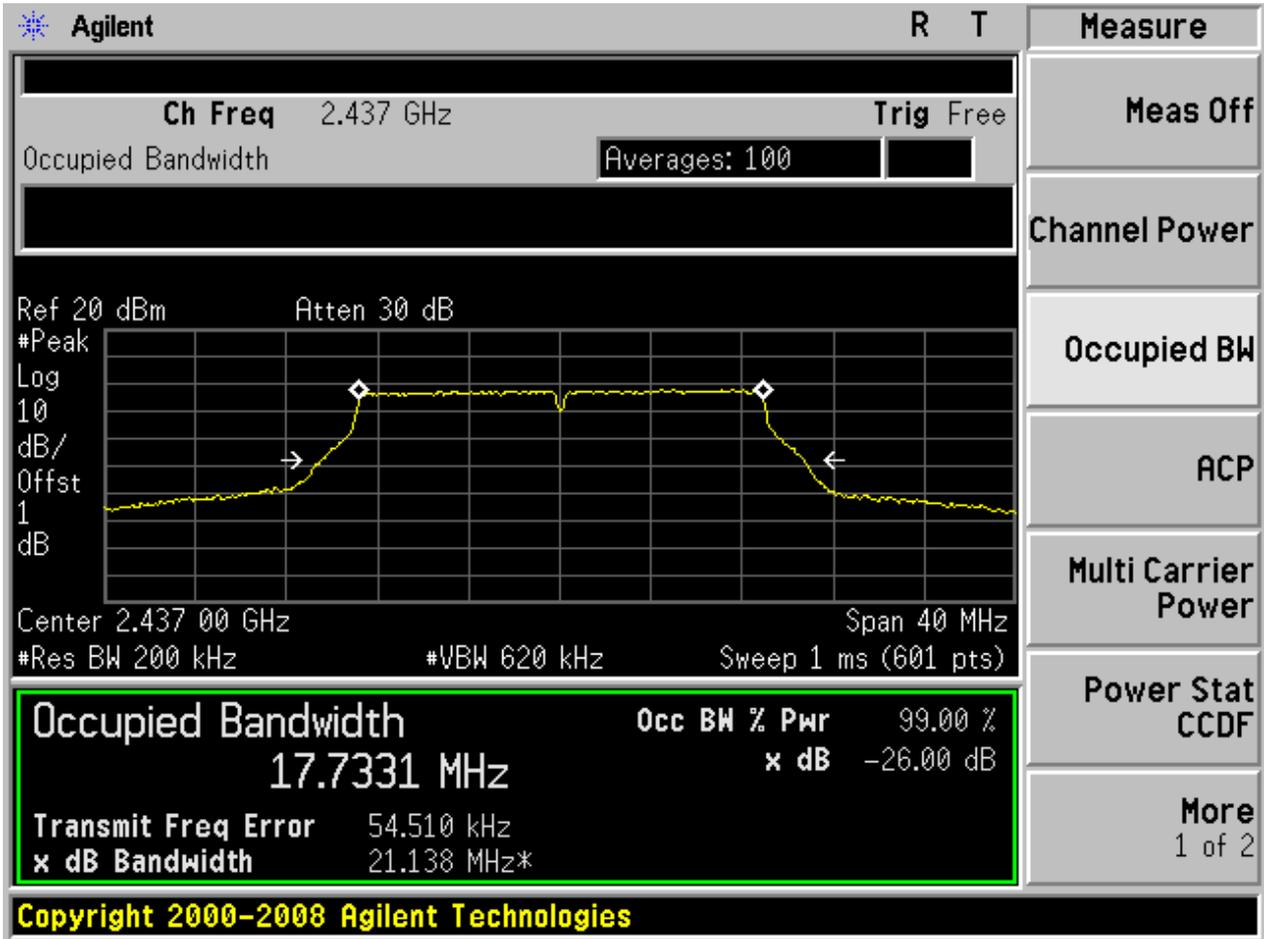
Power Stat CCDF

More 1 of 2

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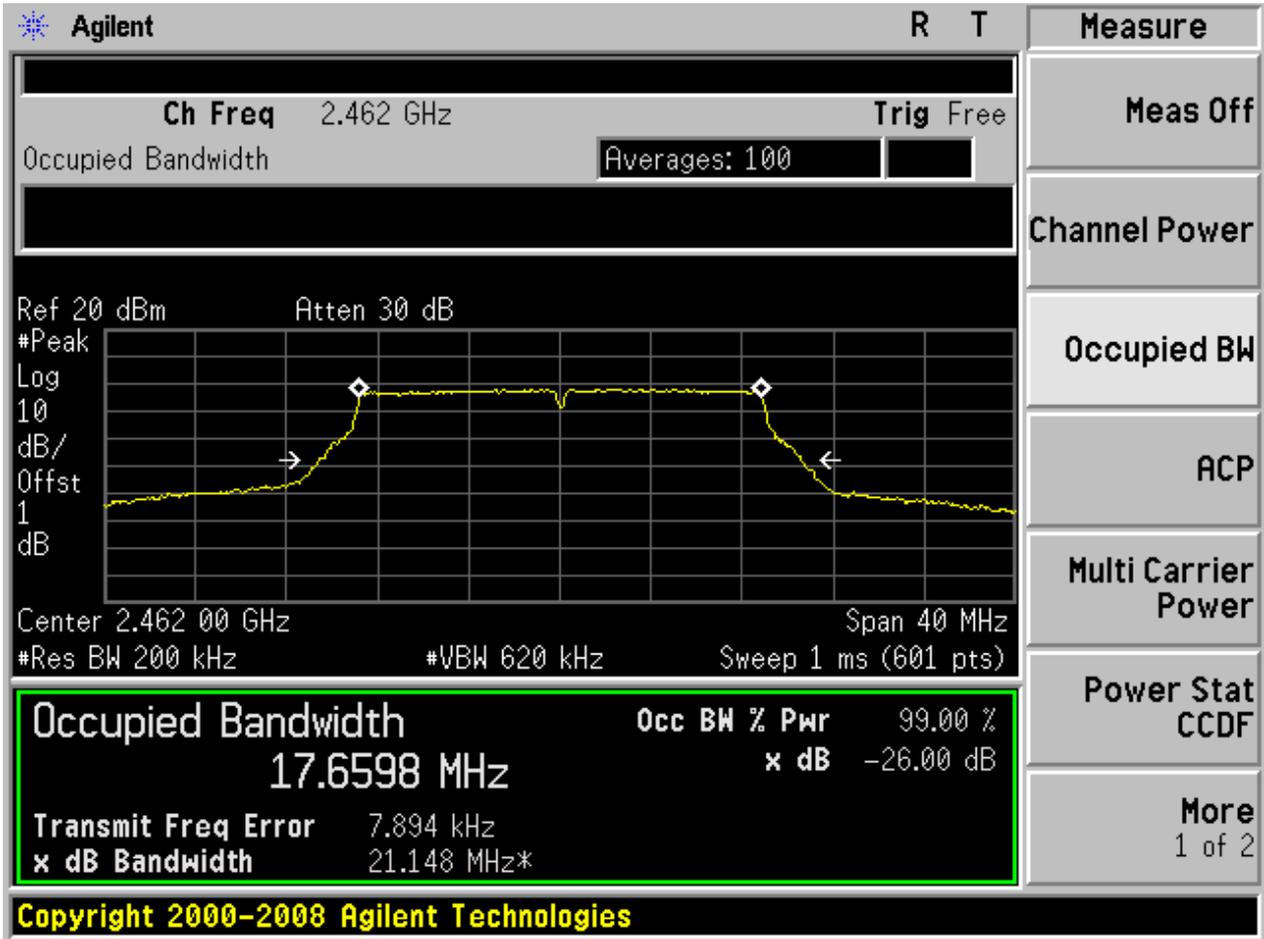


2.8 11N20_M@Ant 1





2.9 11N20_H@Ant 1





Appendix C: Duty cycle

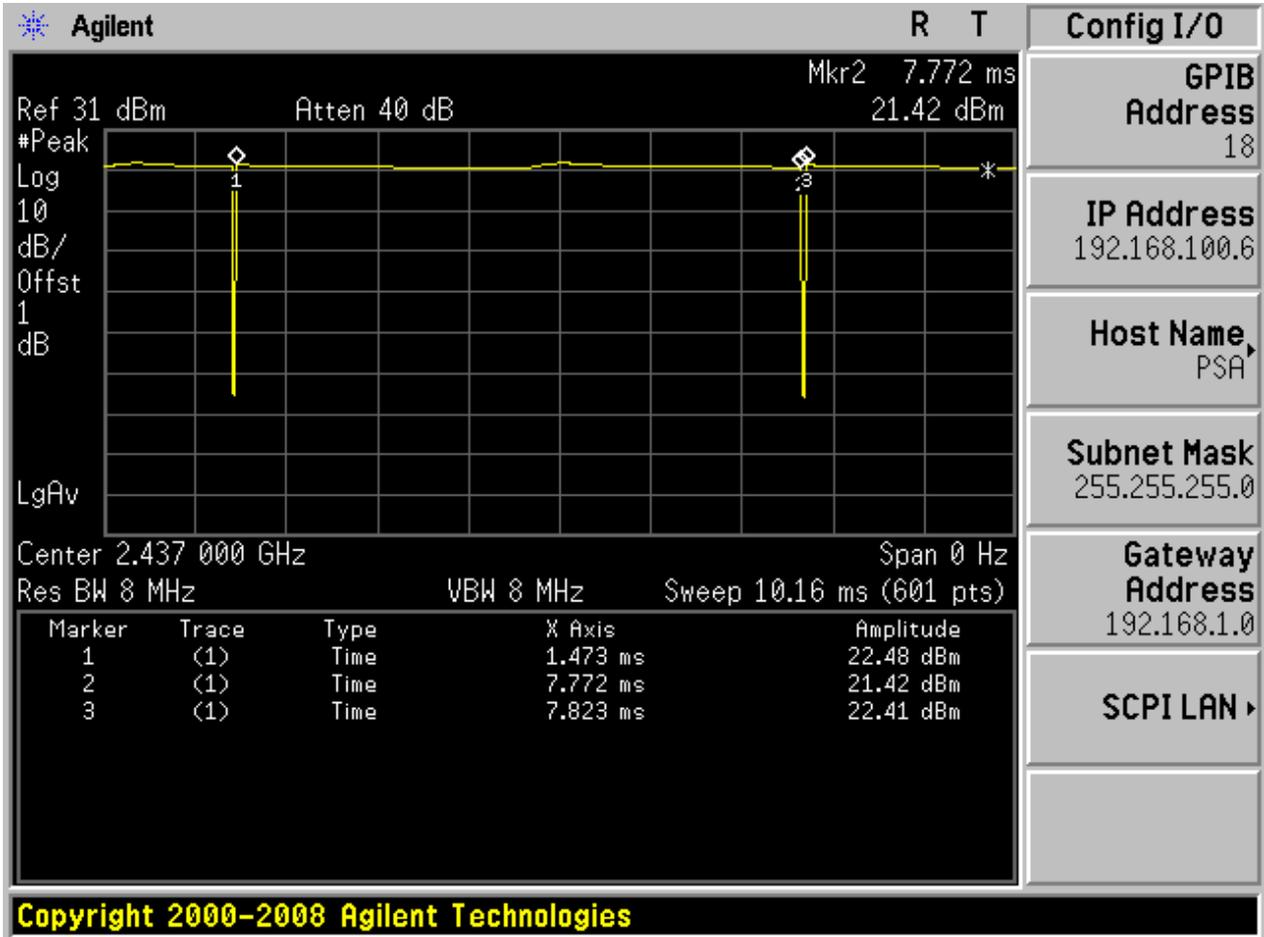
Part I - Test Results

Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
11B	CH1,CH6,CH11	Ant 1	99
11G	CH1,CH6,CH11	Ant 1	95
11N20SISO	CH1,CH6,CH11	Ant 1	95



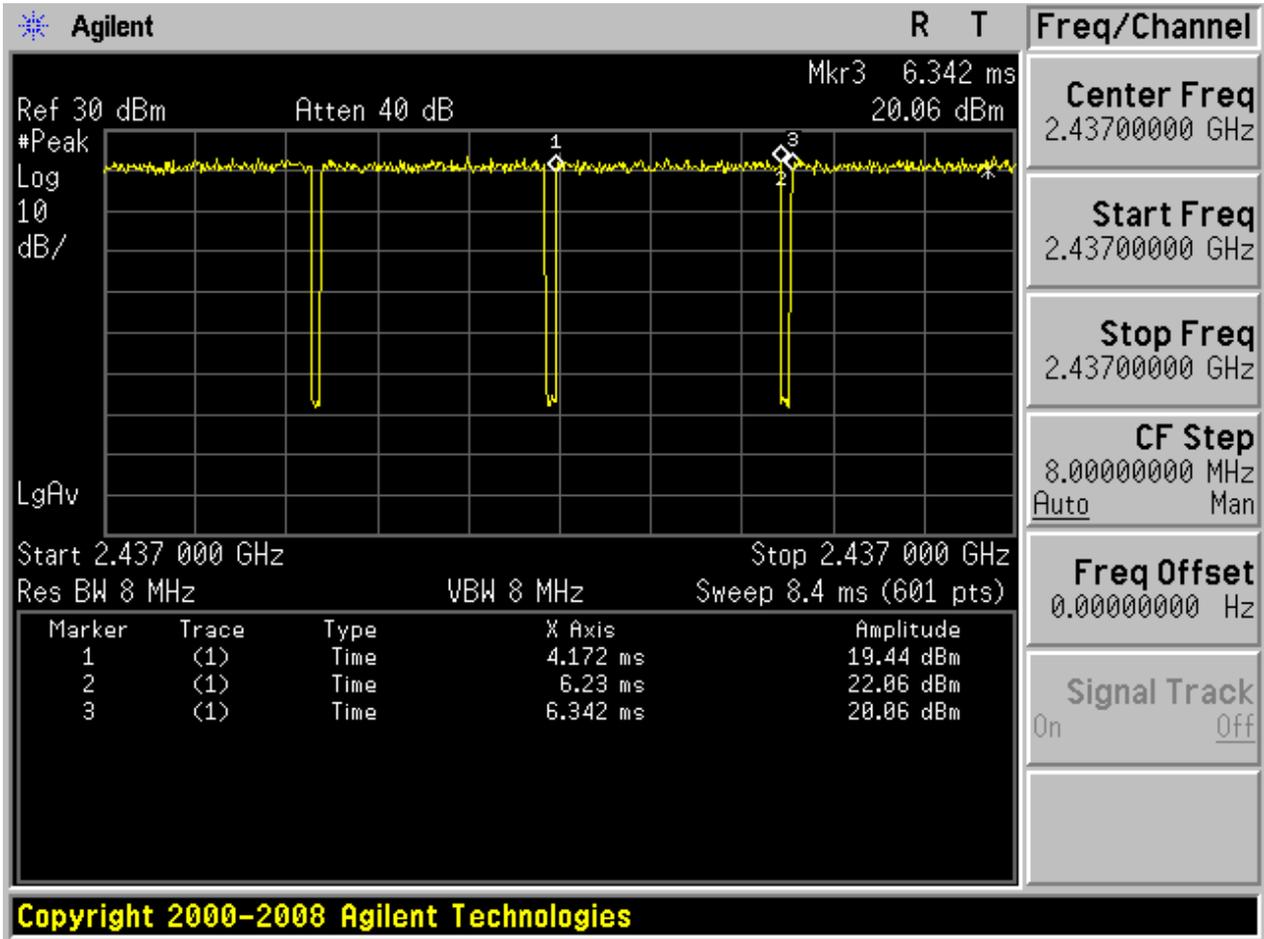
Part II - Test Plots

2.1 11B_Ant 1

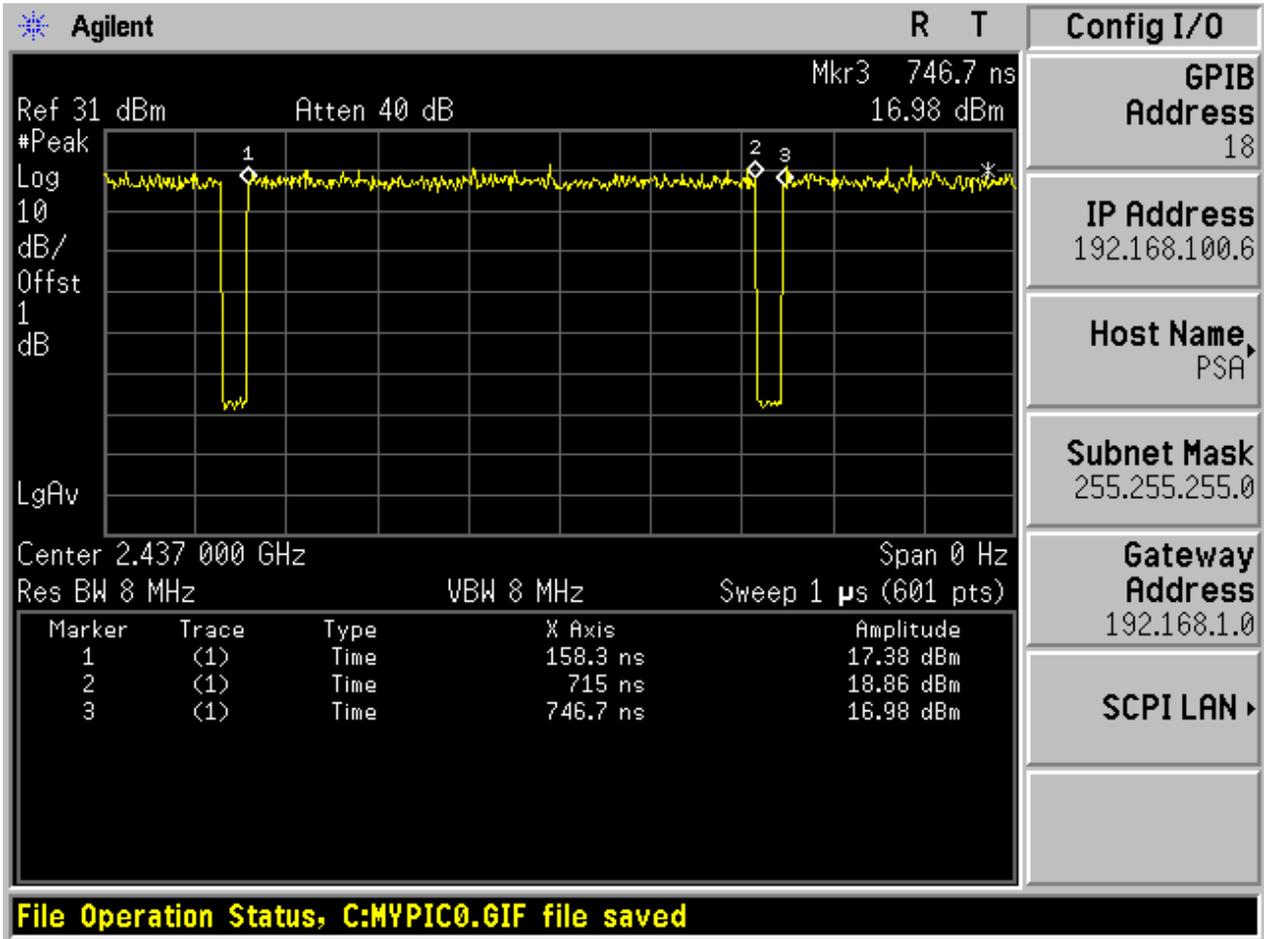




2.2 11G_Ant 1



2.3 11N_ Ant 1





Appendix D: Maximum Conducted Average Output Power

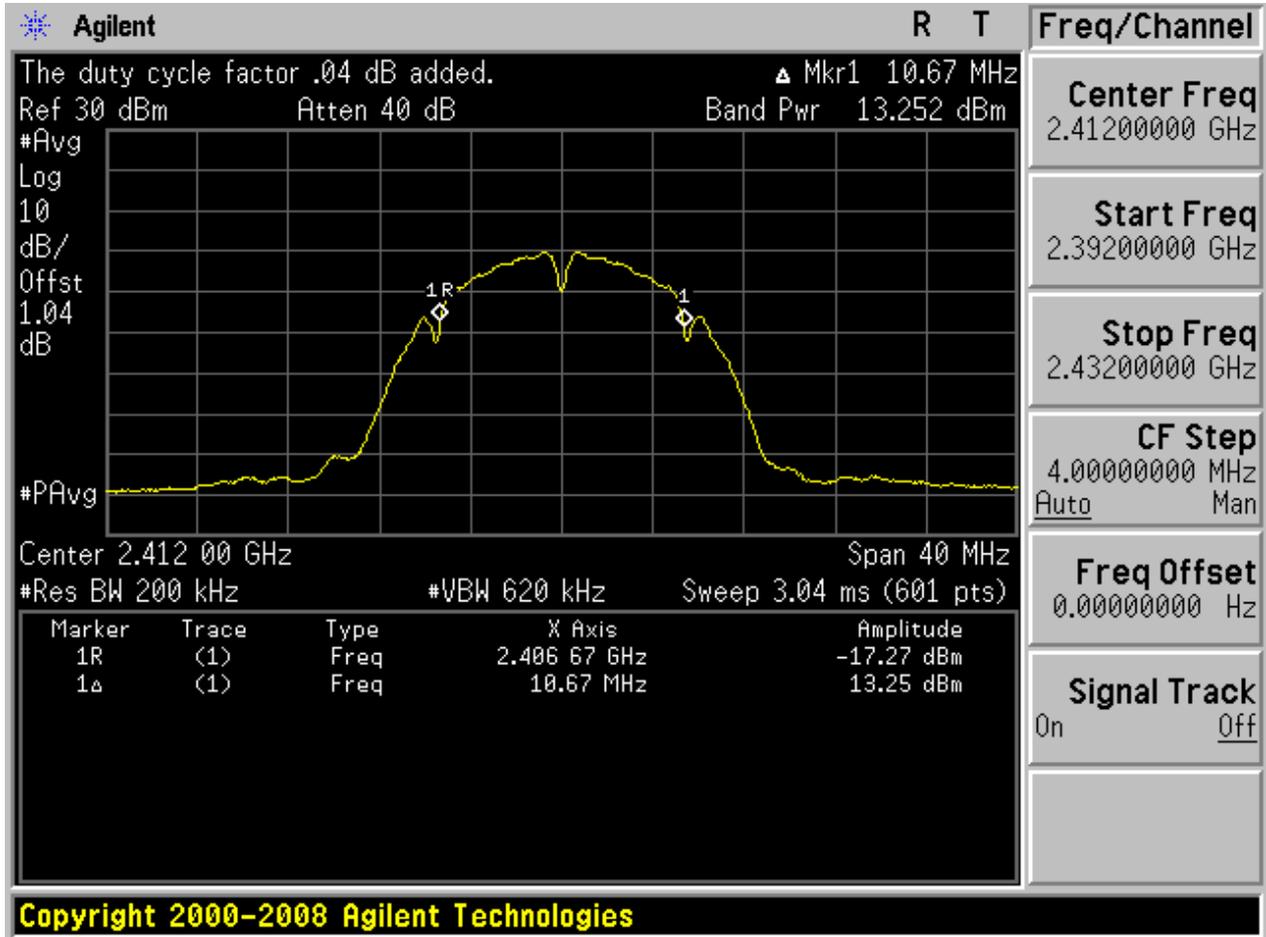
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	13.25	pass
11B	M	2437	Ant 1	13.83	pass
11B	H	2462	Ant 1	14.35	pass
11G	L	2412	Ant 1	14.10	pass
11G	M	2437	Ant 1	14.54	pass
11G	H	2462	Ant 1	14.95	pass
11N20	L	2412	Ant 1	12.92	pass
11N20	M	2437	Ant 1	13.39	pass
11N20	H	2462	Ant 1	13.63	pass



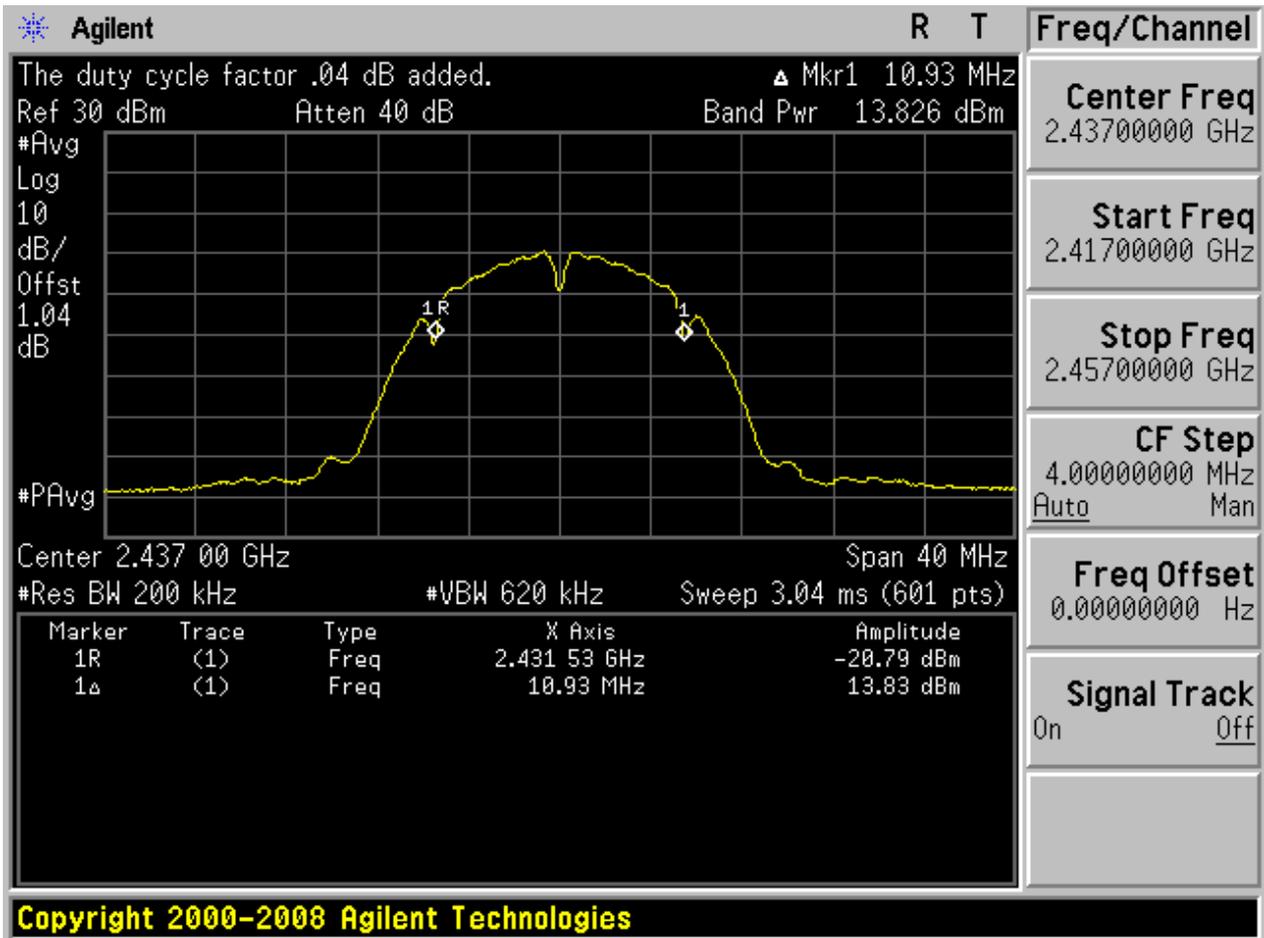
Part II - Test Plots

2.1 11B_L@Ant 1



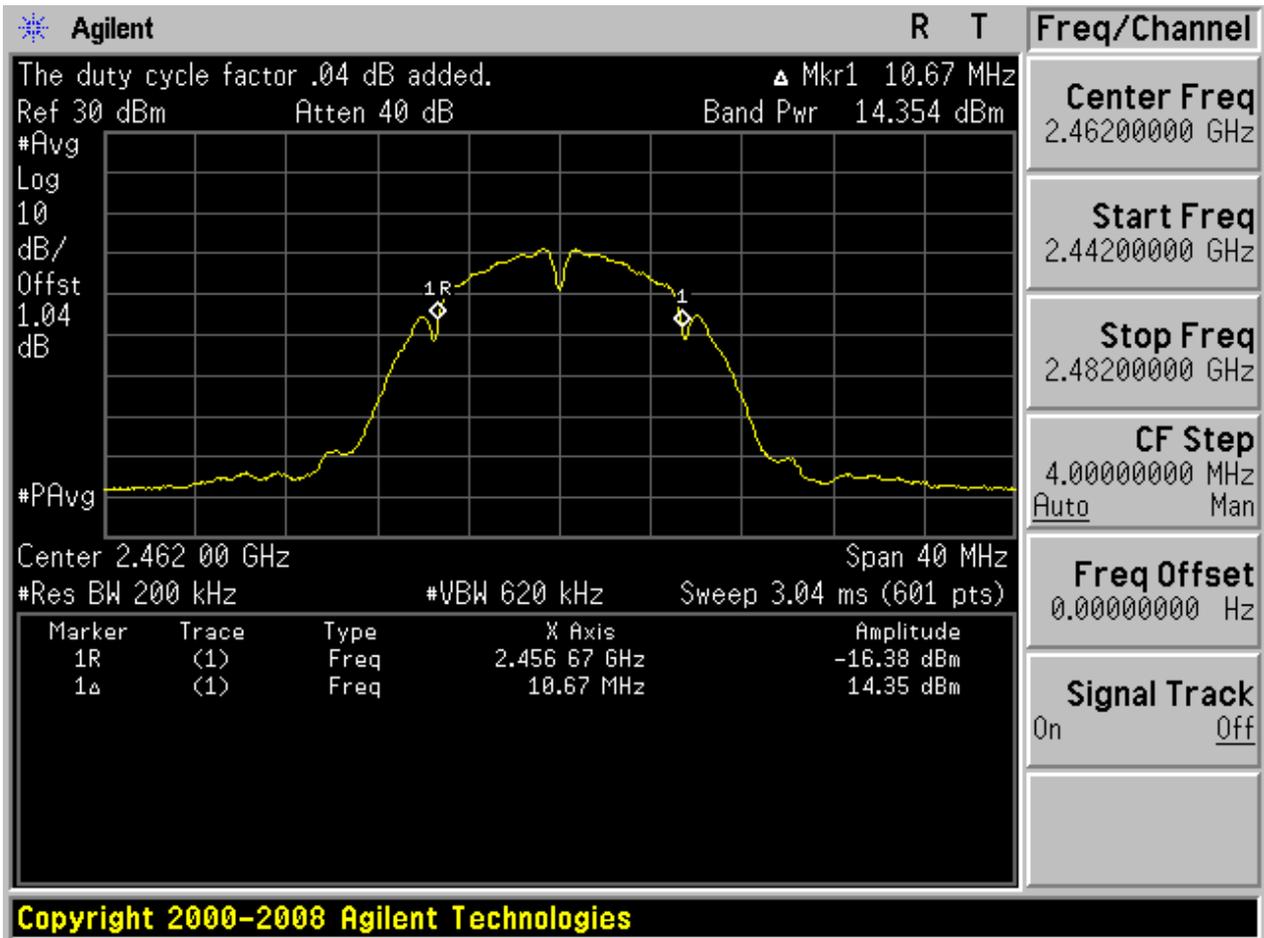


2.2 11B_M@Ant 1





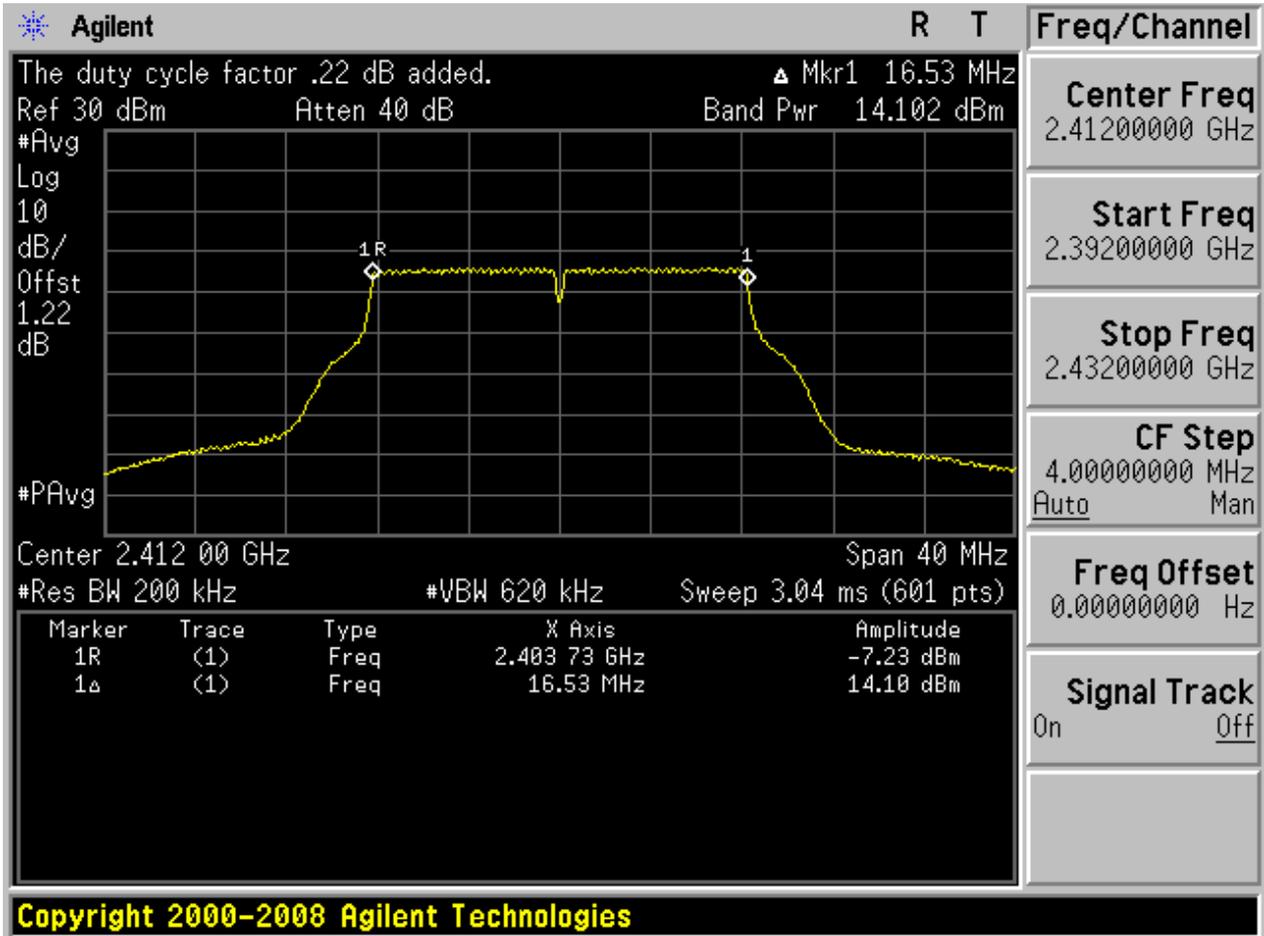
2.3 11B_H@Ant 1



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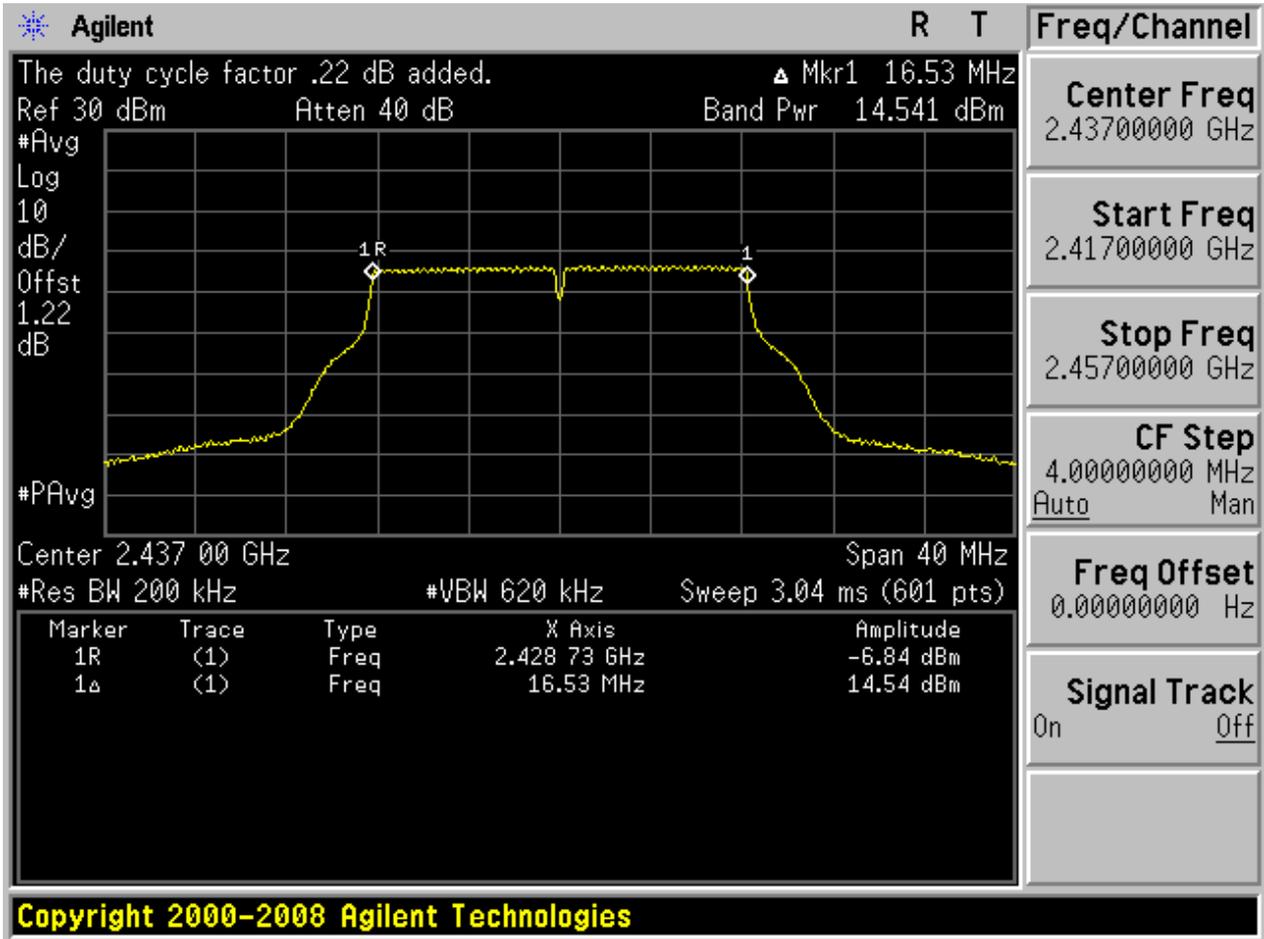


2.4 11G_L@Ant 1



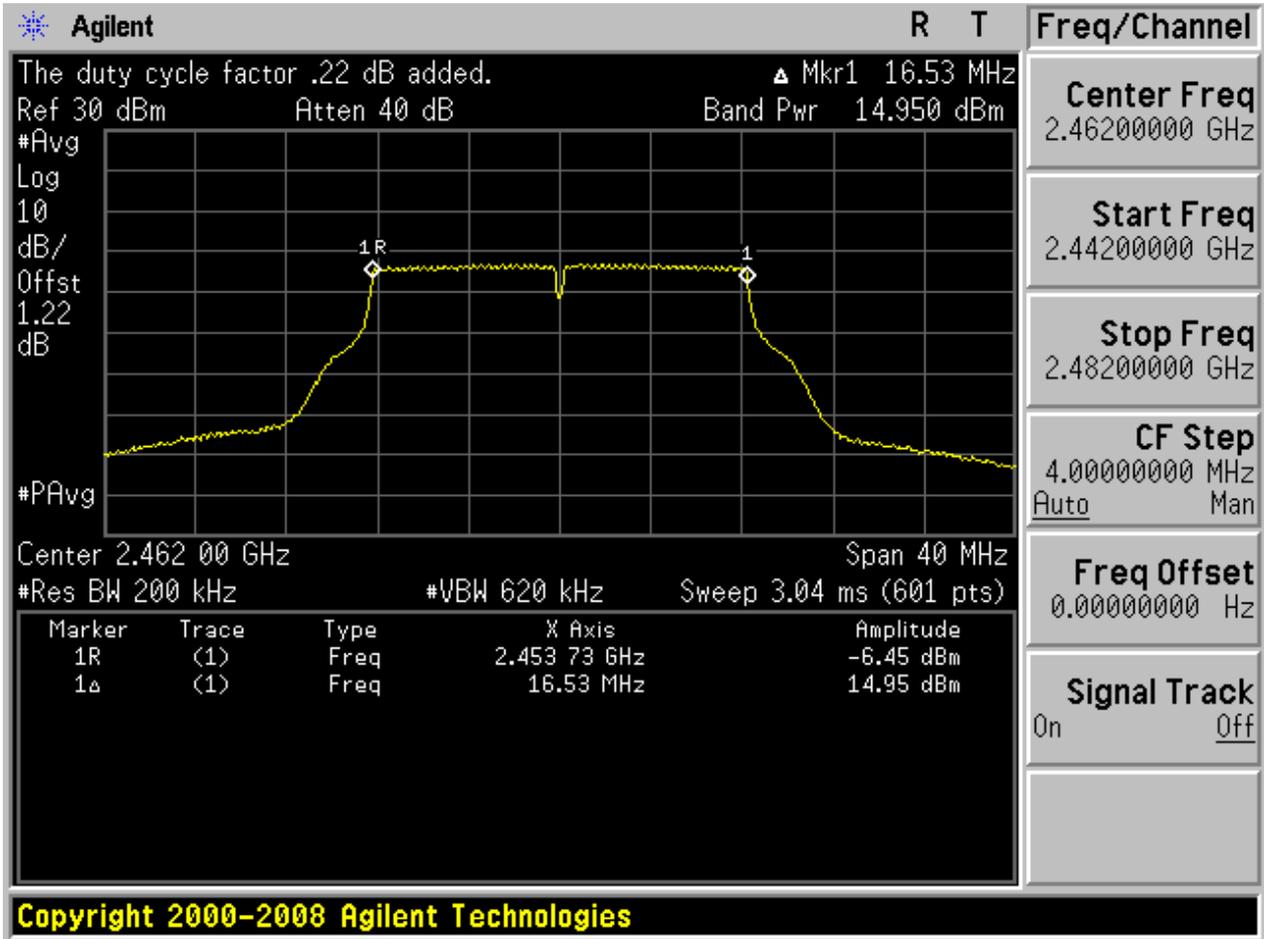


2.5 11G_M@Ant 1



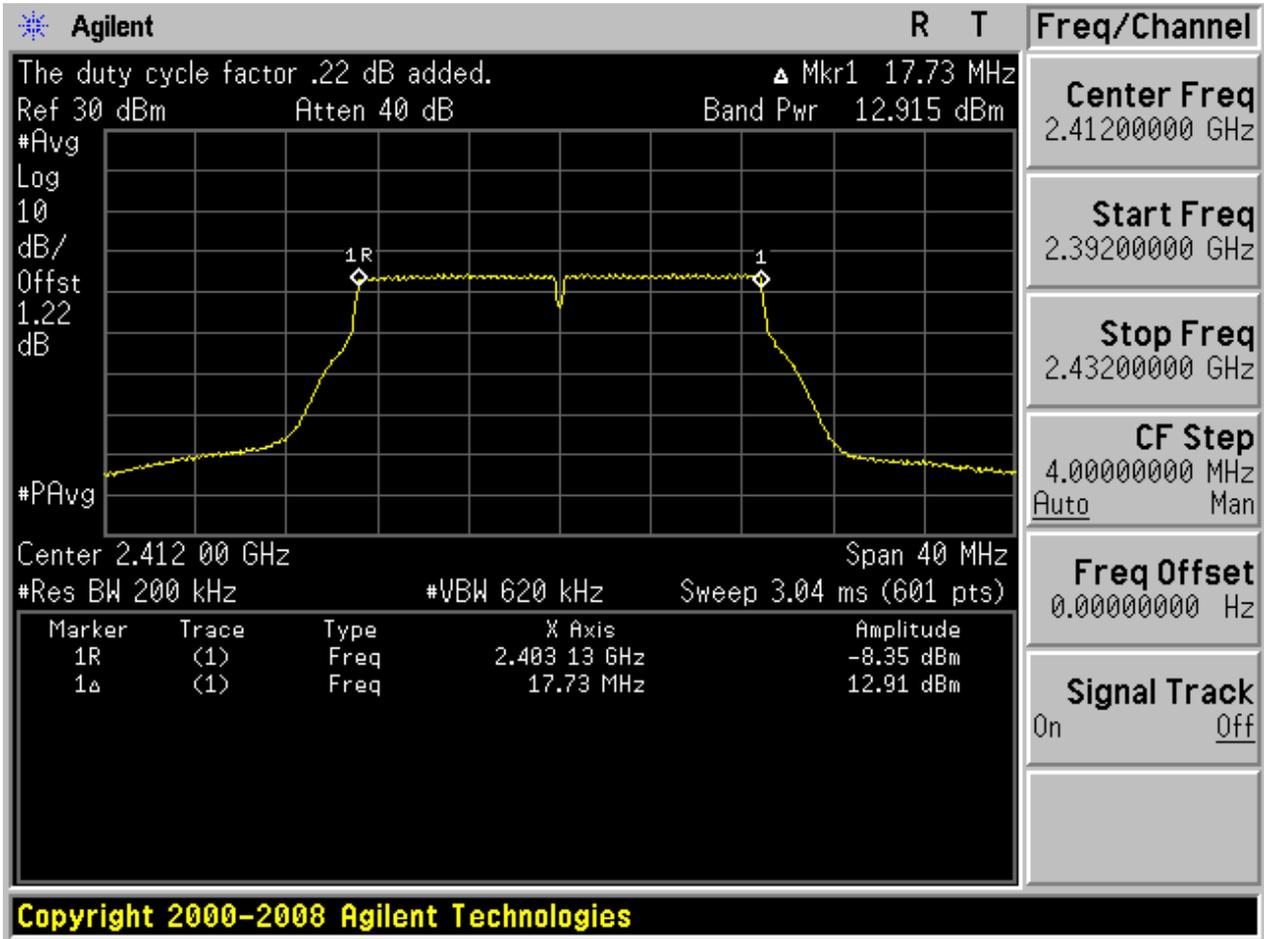


2.6 11G_H@Ant 1





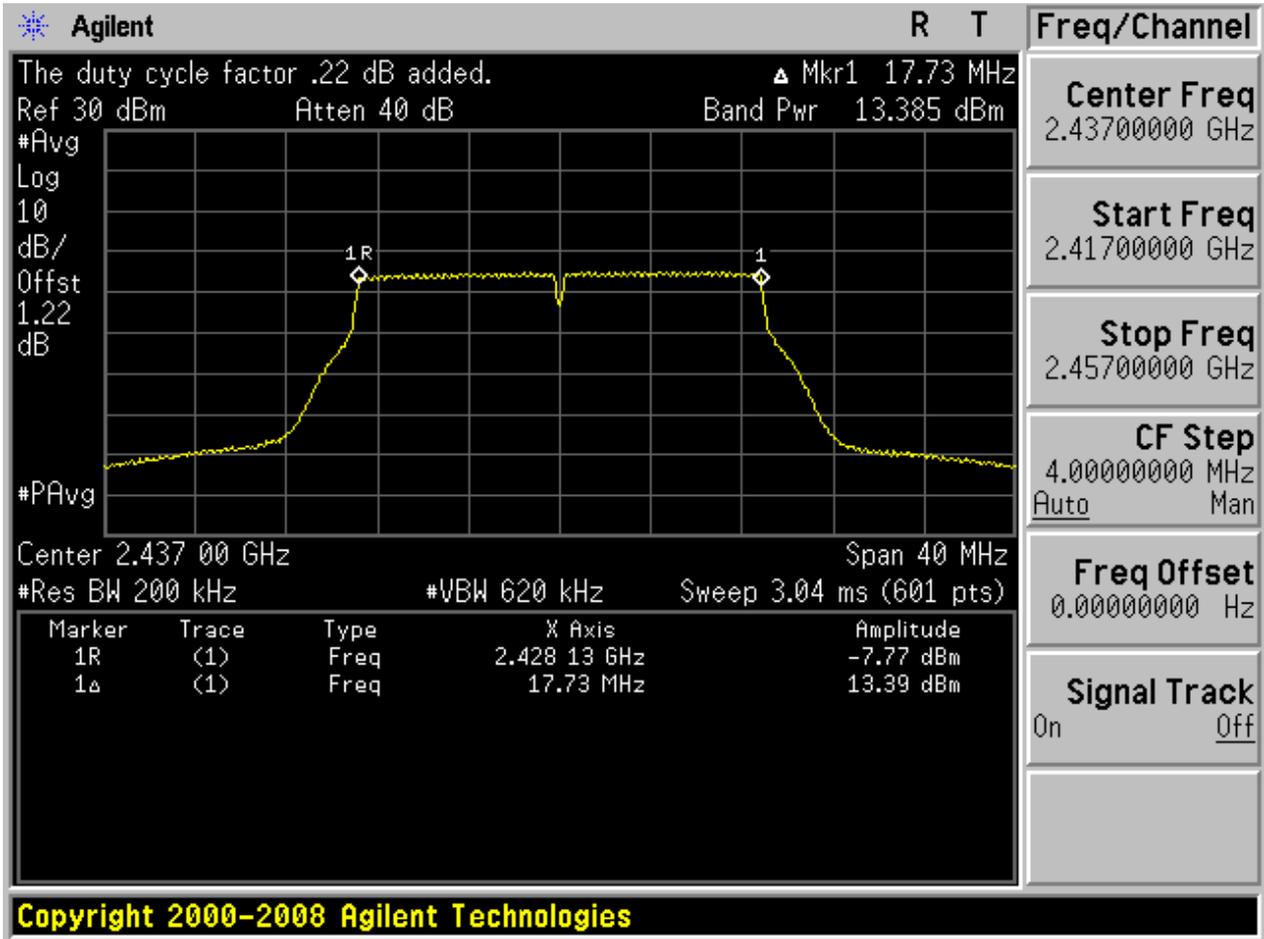
2.7 11N20_L@Ant 1



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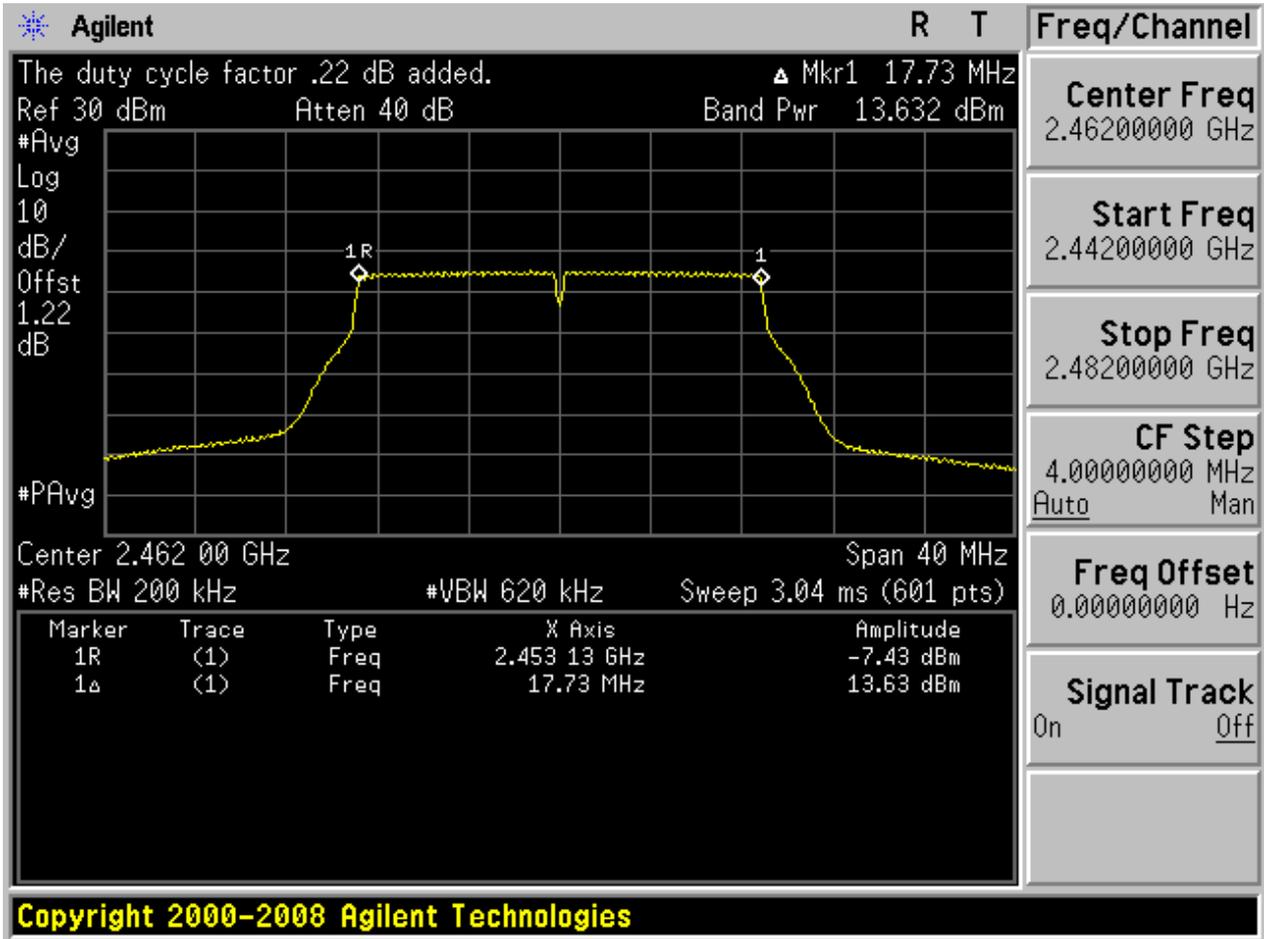
2.8 11N20_M@Ant 1



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2.9 11N20_H@Ant 1





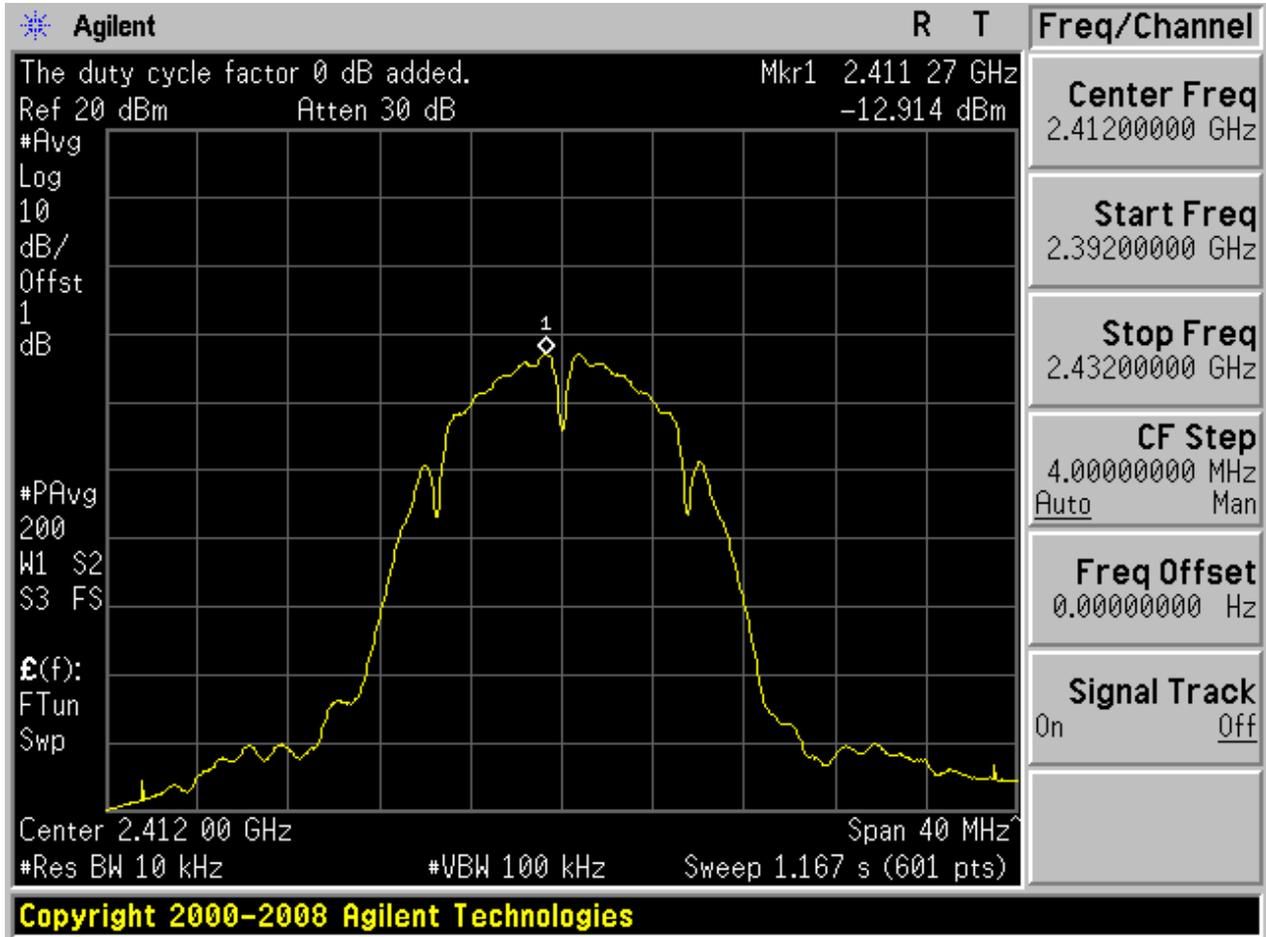
Appendix E: Maximum Power Spectral Density Level

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
11B	L	2412	Ant 1	-12.91	pass
11B	M	2437	Ant 1	-12.48	pass
11B	H	2462	Ant 1	-11.91	pass
11G	L	2412	Ant 1	-15.44	pass
11G	M	2437	Ant 1	-15.18	pass
11G	H	2462	Ant 1	-14.38	pass
11N20	L	2412	Ant 1	-16.17	pass
11N20	M	2437	Ant 1	-15.64	pass
11N20	H	2462	Ant 1	-15.19	pass

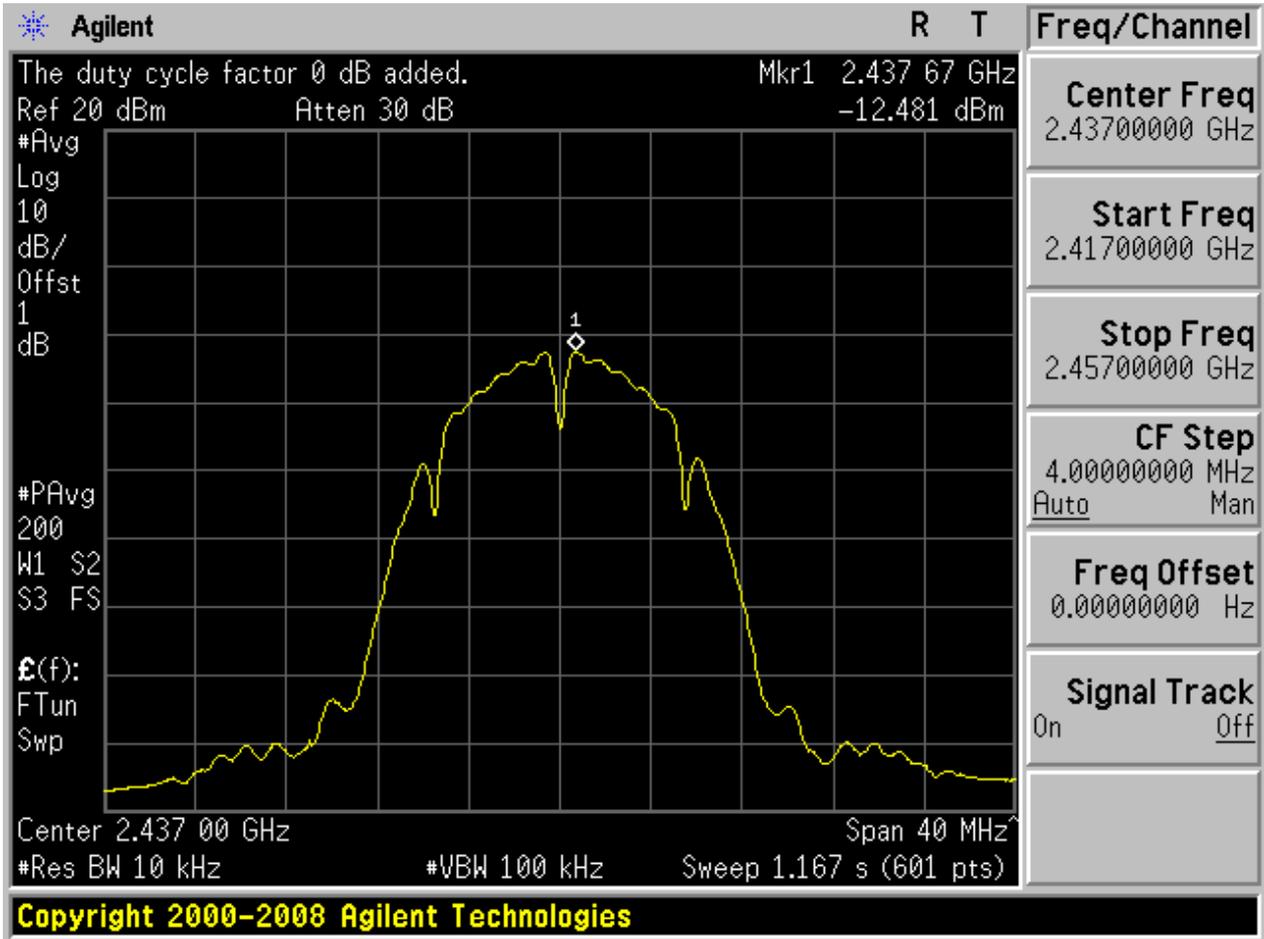
Part II - Test Plots

2.1 11B_L@Ant 1



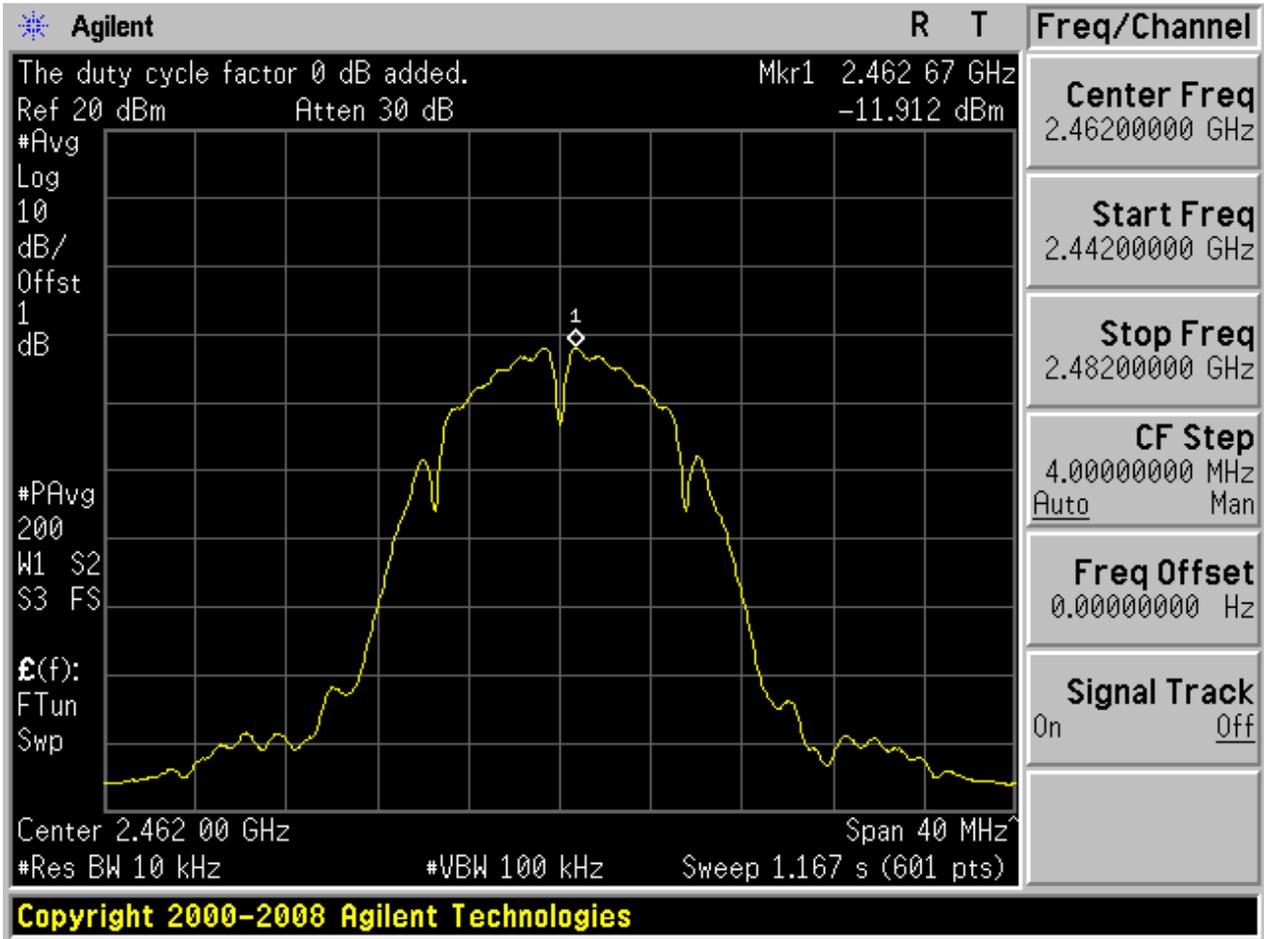


2.2 11B_M@Ant 1



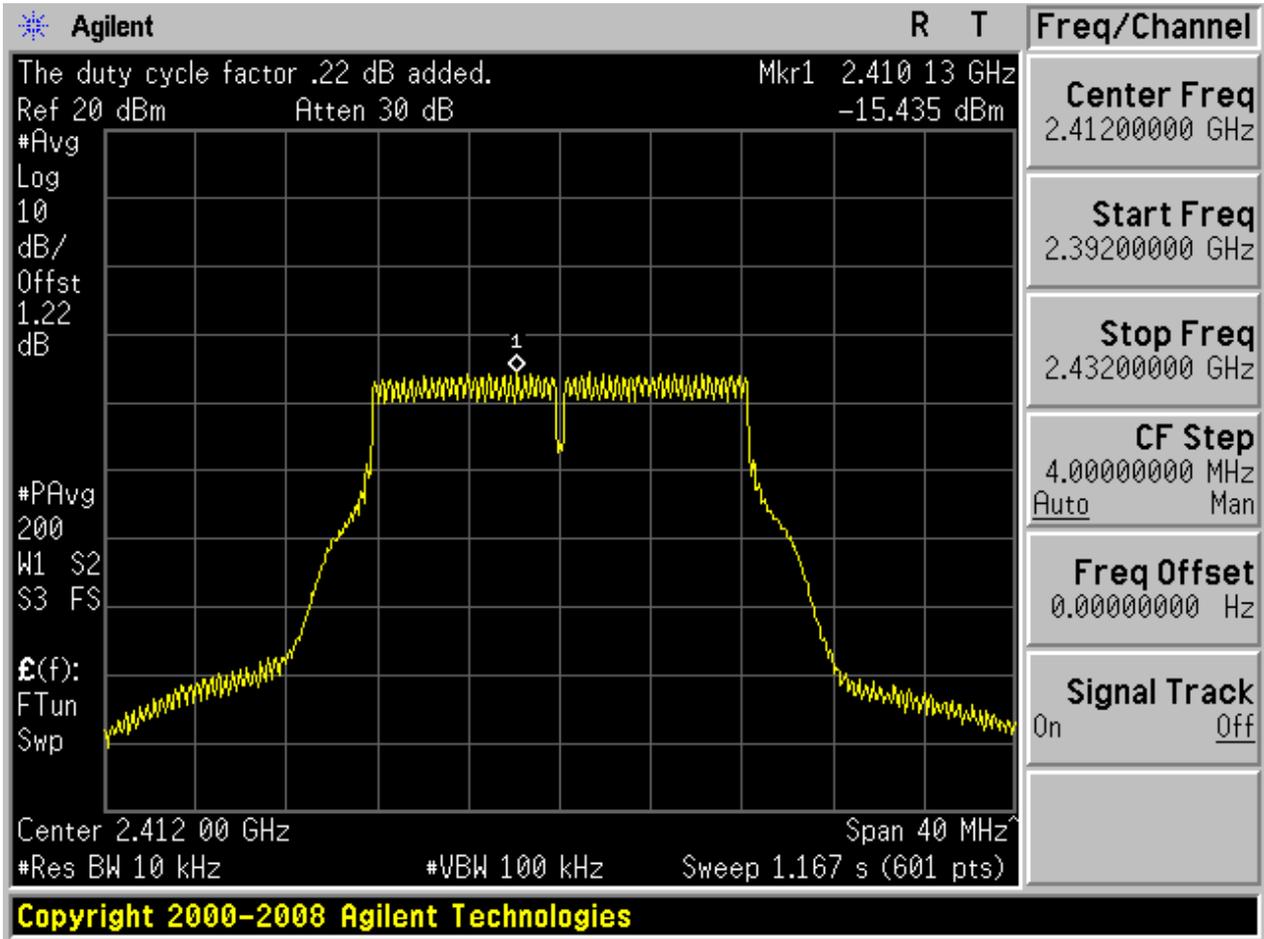


2.3 11B_H@Ant 1



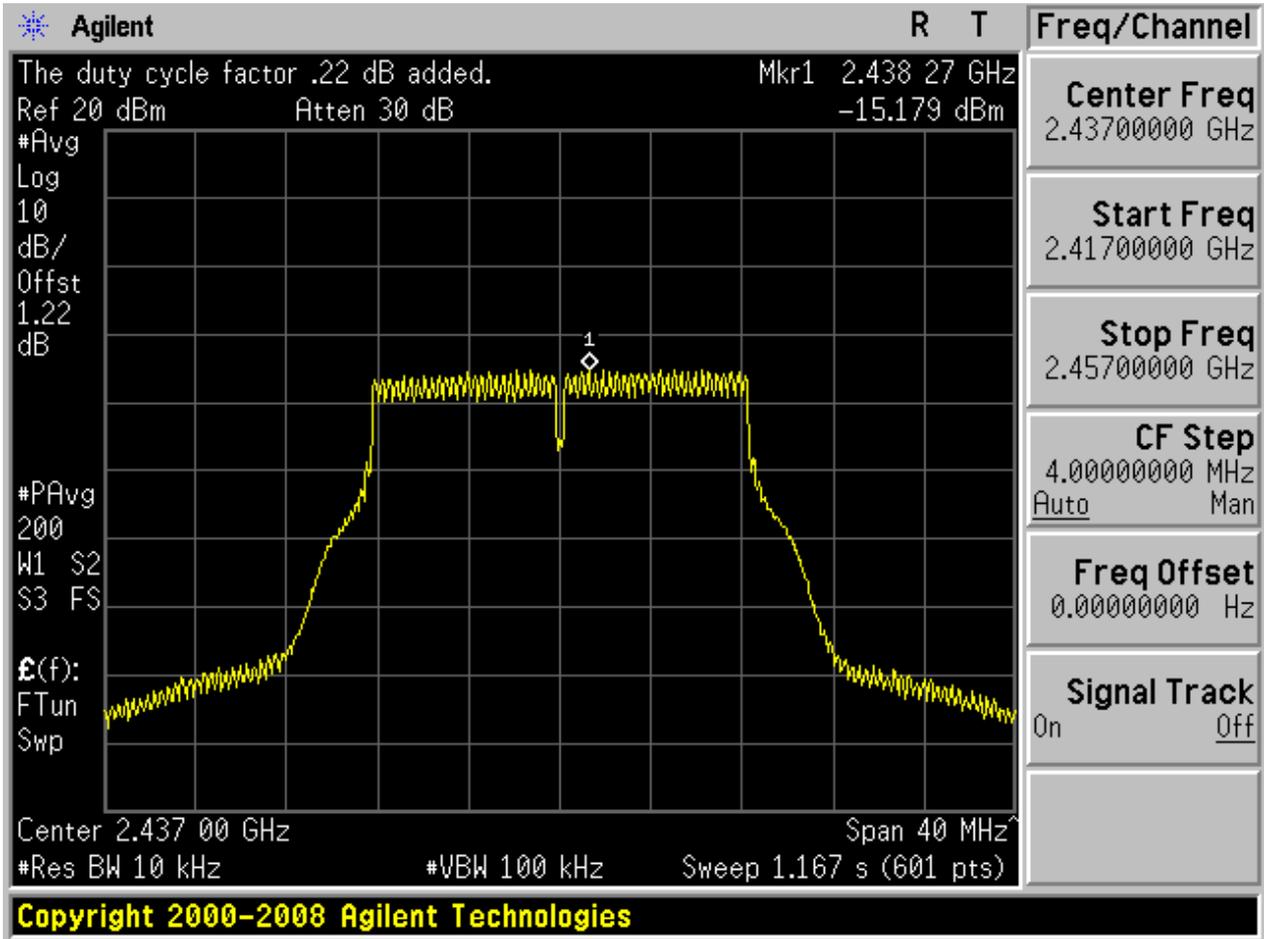


2.4 11G_L@Ant 1



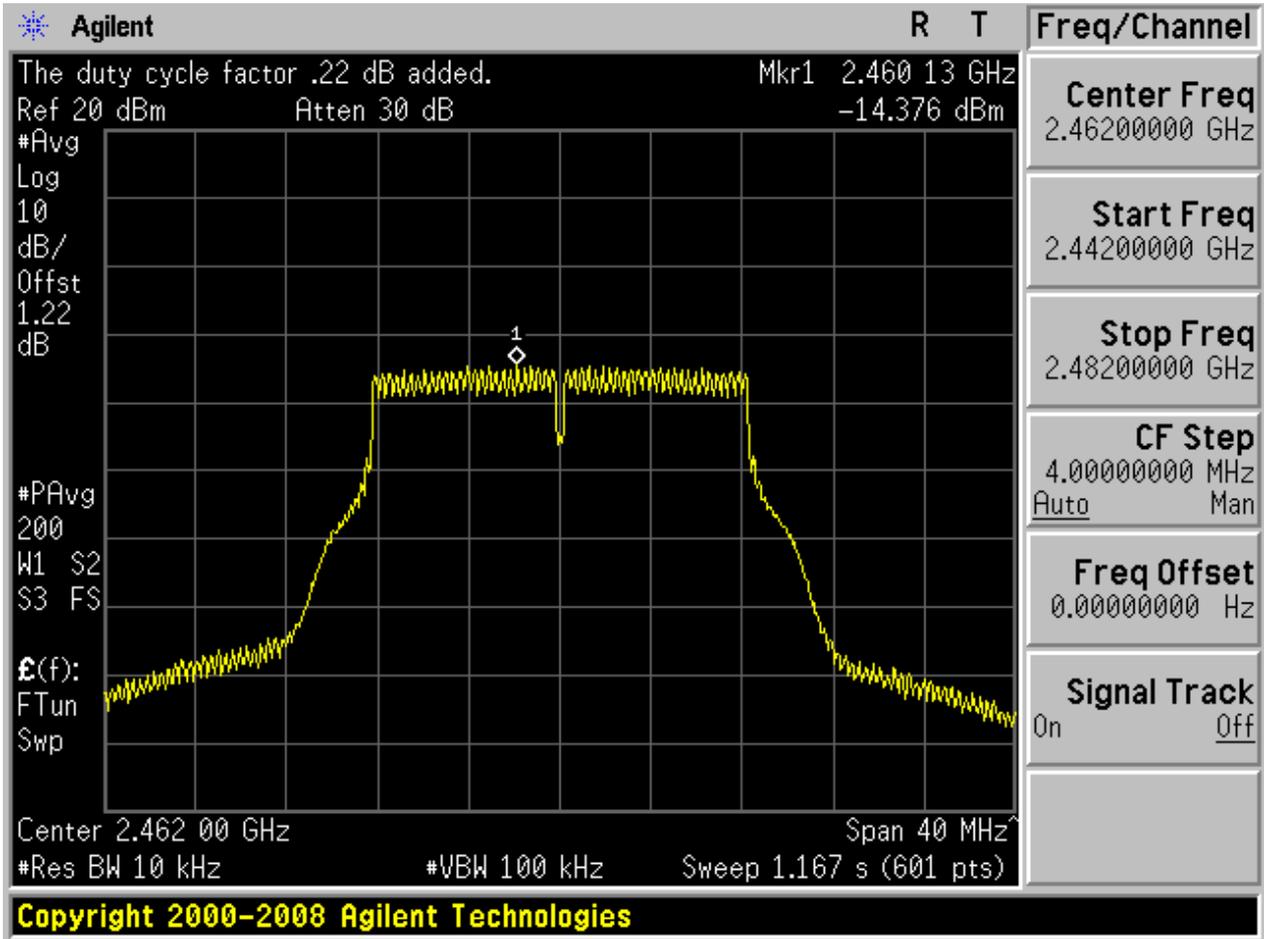


2.5 11G_M@Ant 1





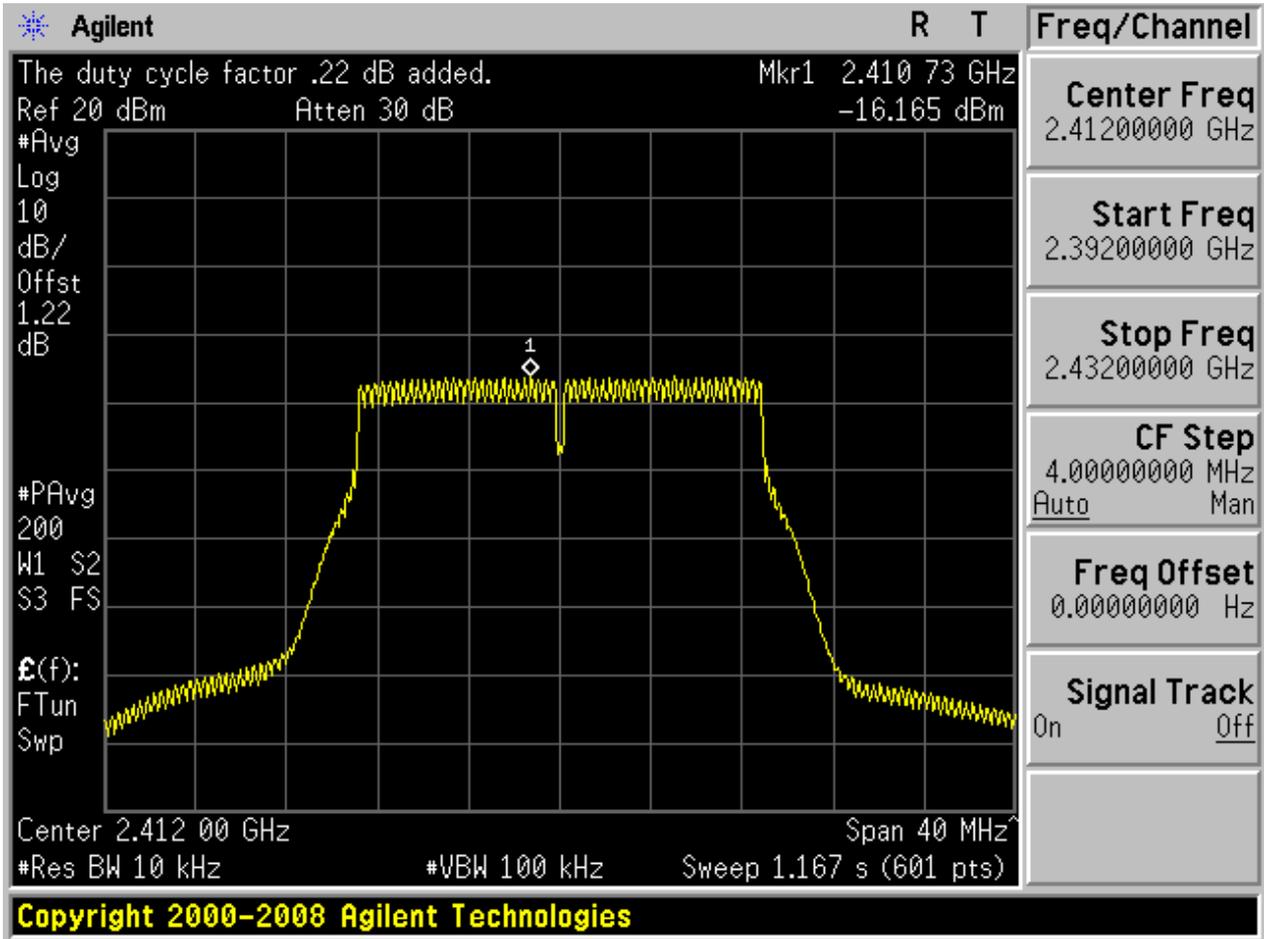
2.6 11G_H@Ant 1



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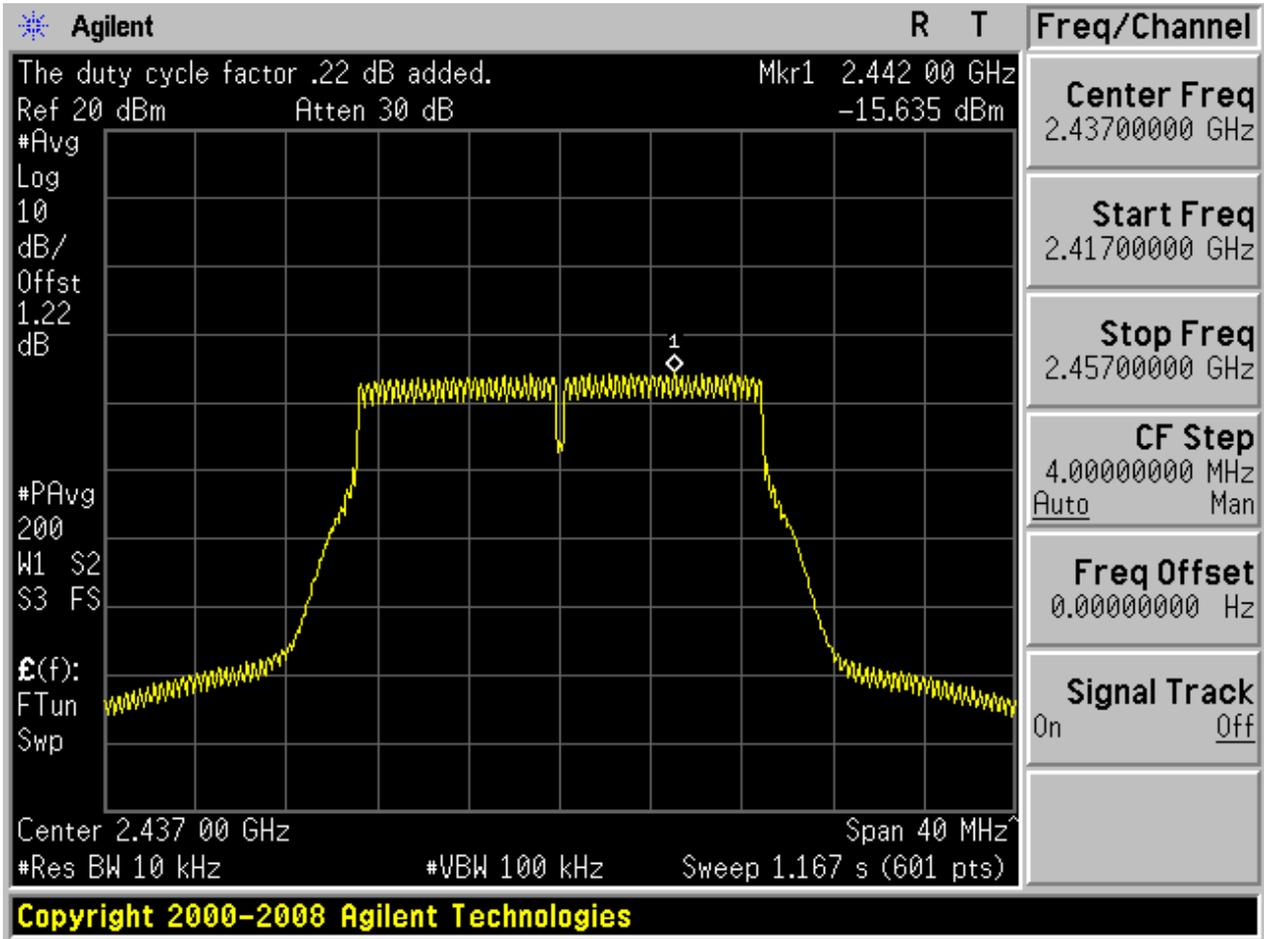


2.7 11N20_L@Ant 1



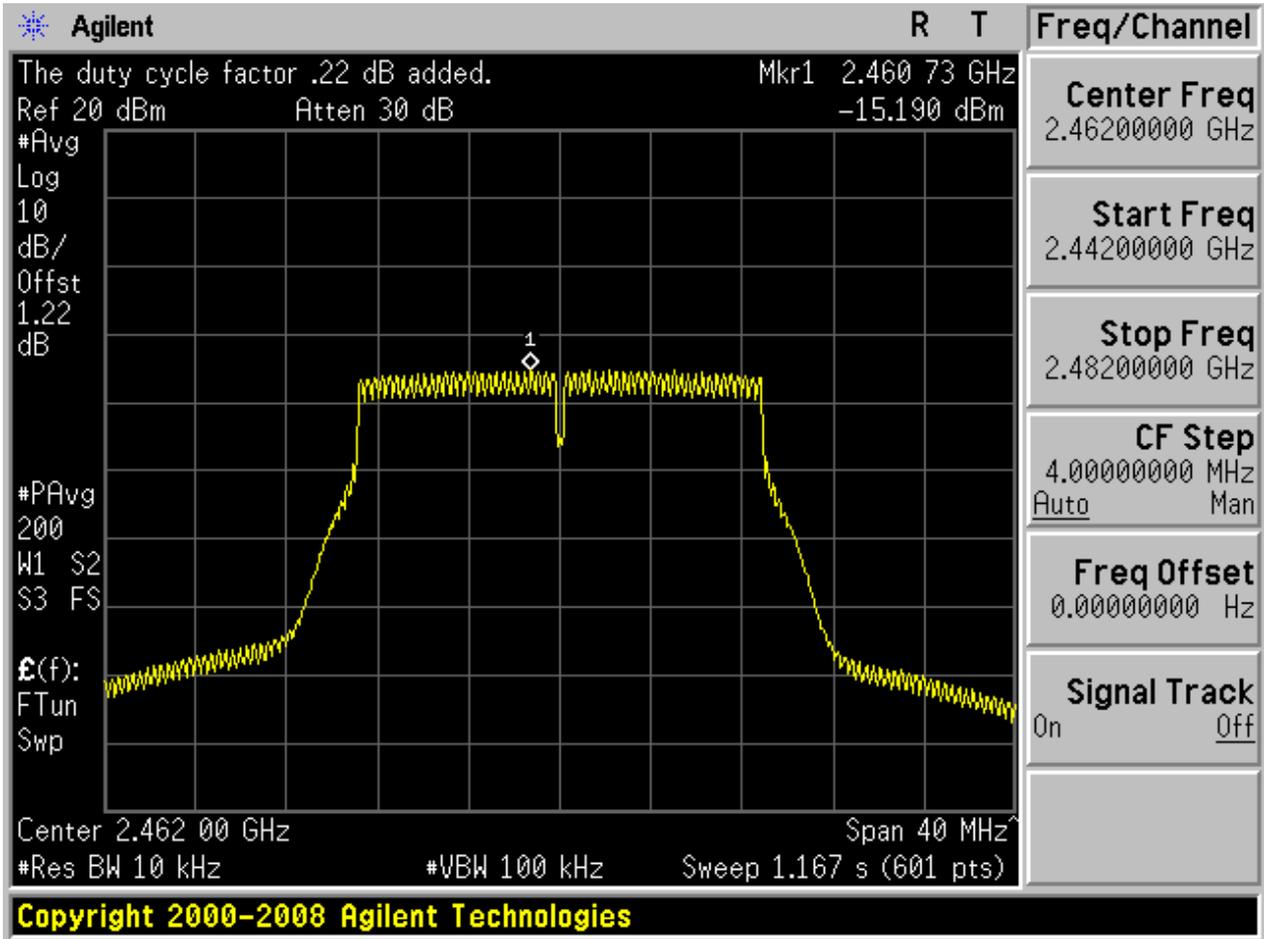


2.8 11N20_M@Ant 1





2.9 11N20_H@Ant 1





Appendix F: Band Edges Compliance

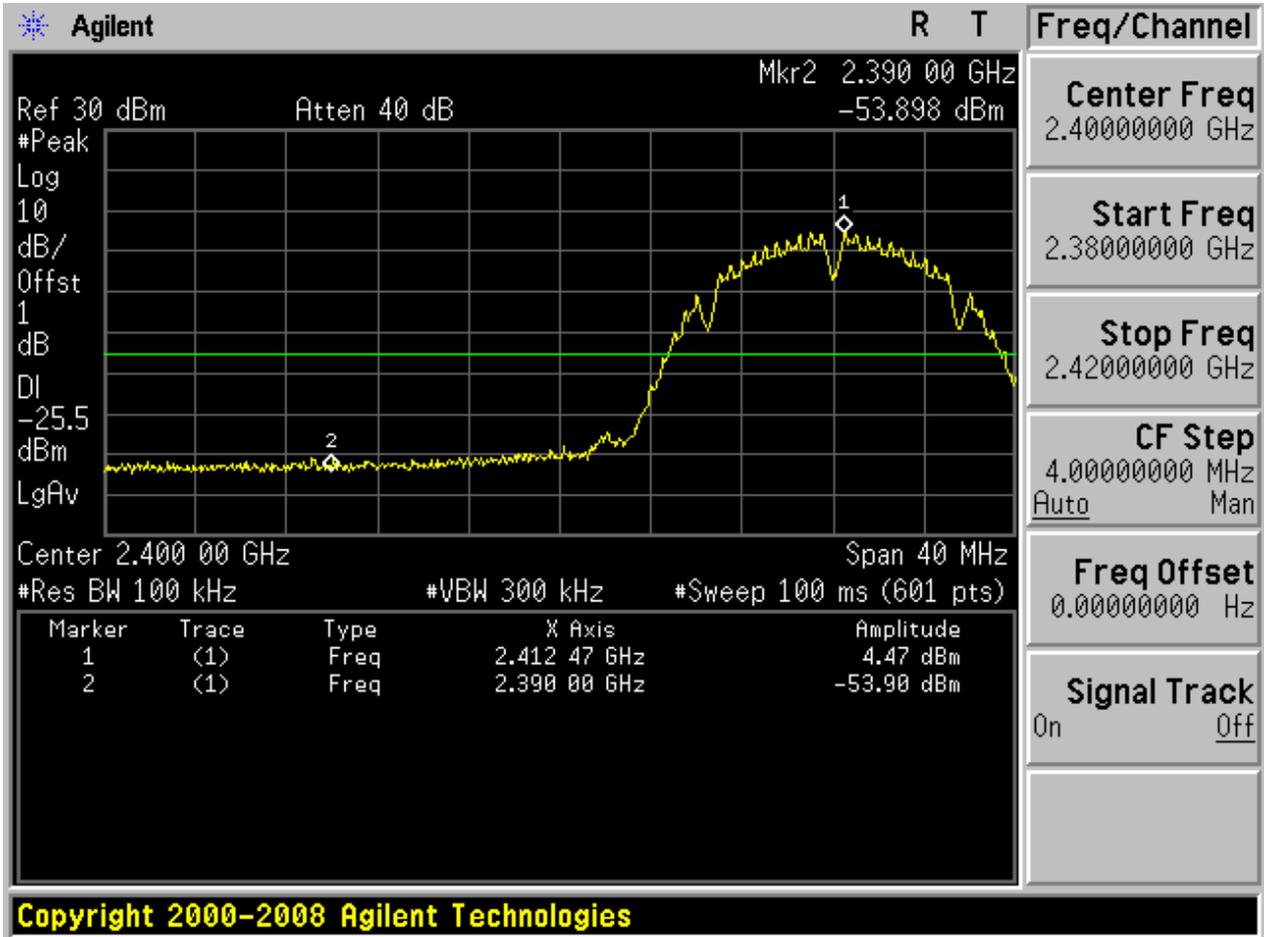
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Carrier Power[dBm]	Max.Spurious Level[dBm]	Verdict
11B	L	2412	Ant 1	4.47	-53.90	pass
11B	H	2462	Ant 1	6.08	-51.62	pass
11G	L	2412	Ant 1	1.82	-51.66	pass
11G	H	2462	Ant 1	2.60	-46.08	pass
11N20	L	2412	Ant 1	0.65	-50.92	pass
11N20	H	2462	Ant 1	1.71	-43.19	pass



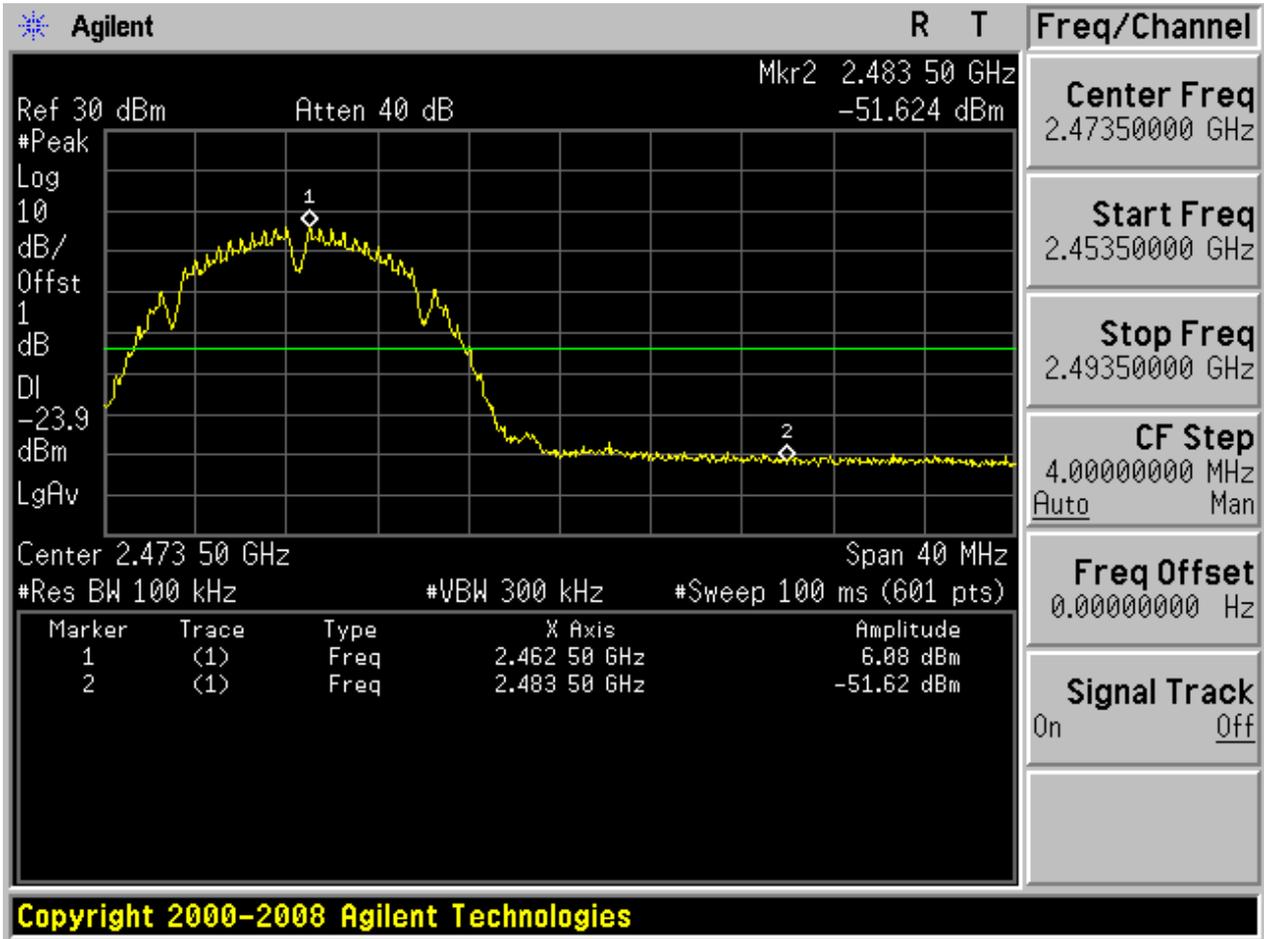
Part II - Test Plots

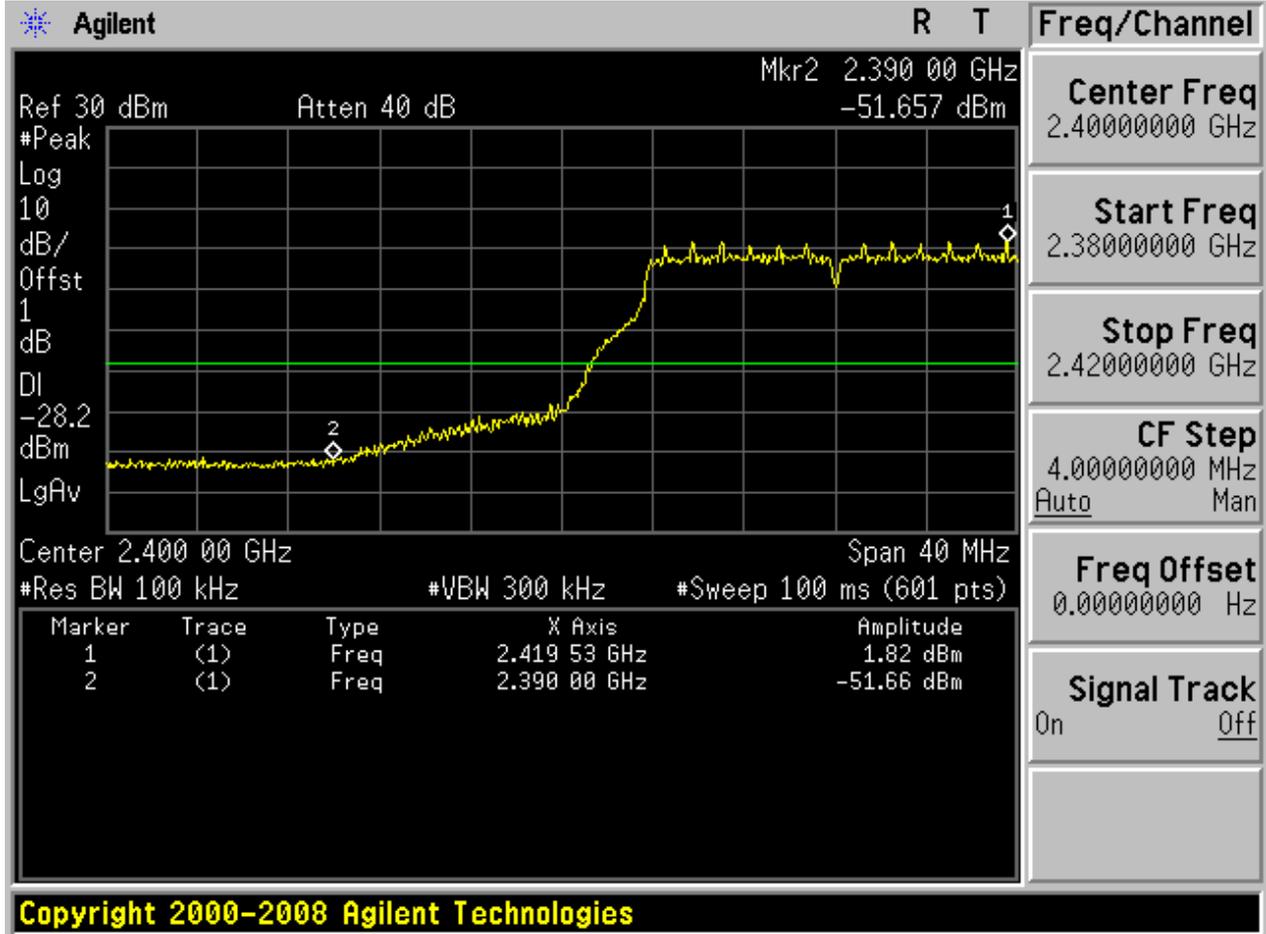
2.1 11B_L@Ant 1



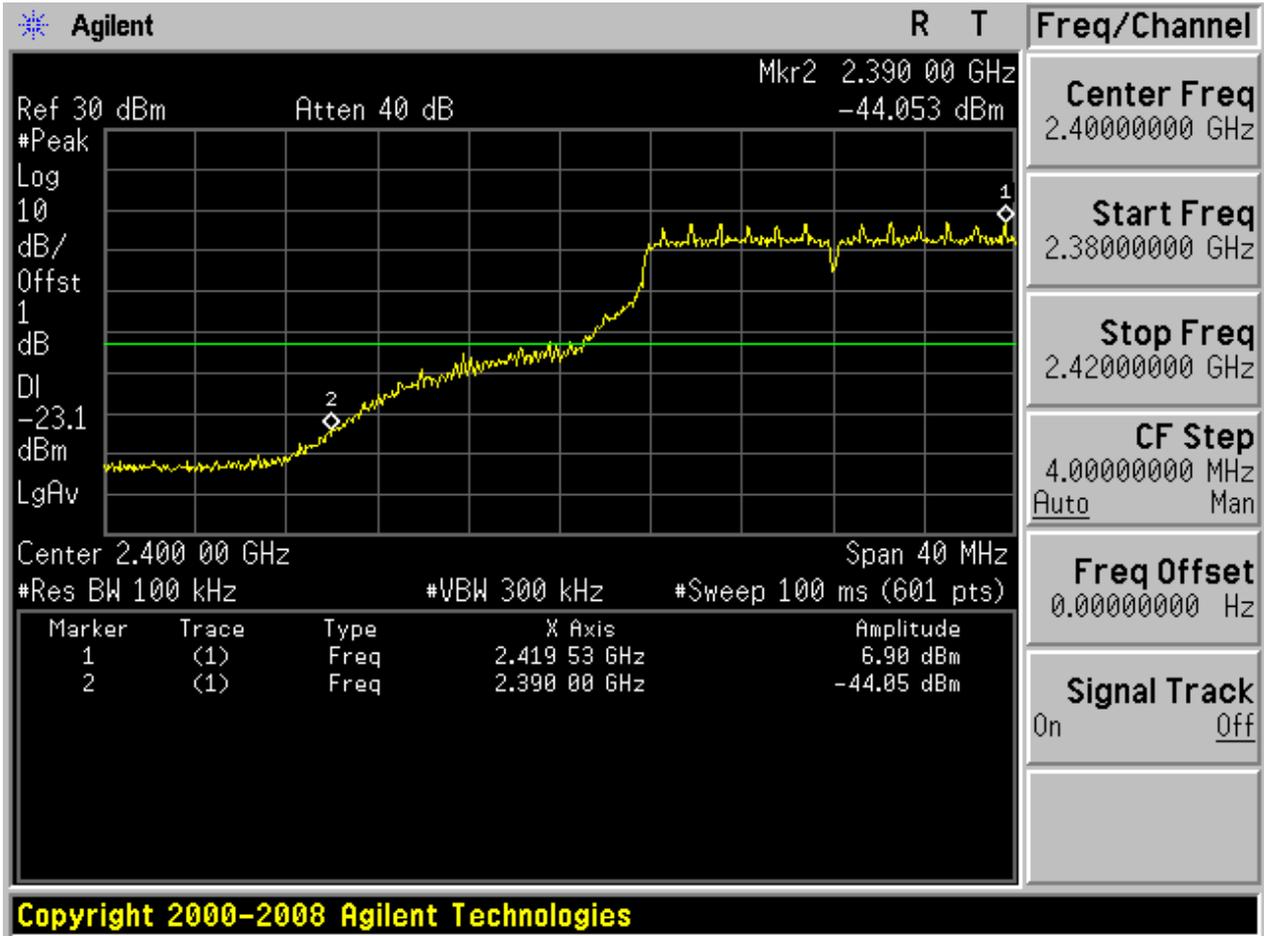


2.2 11B_H@Ant 1



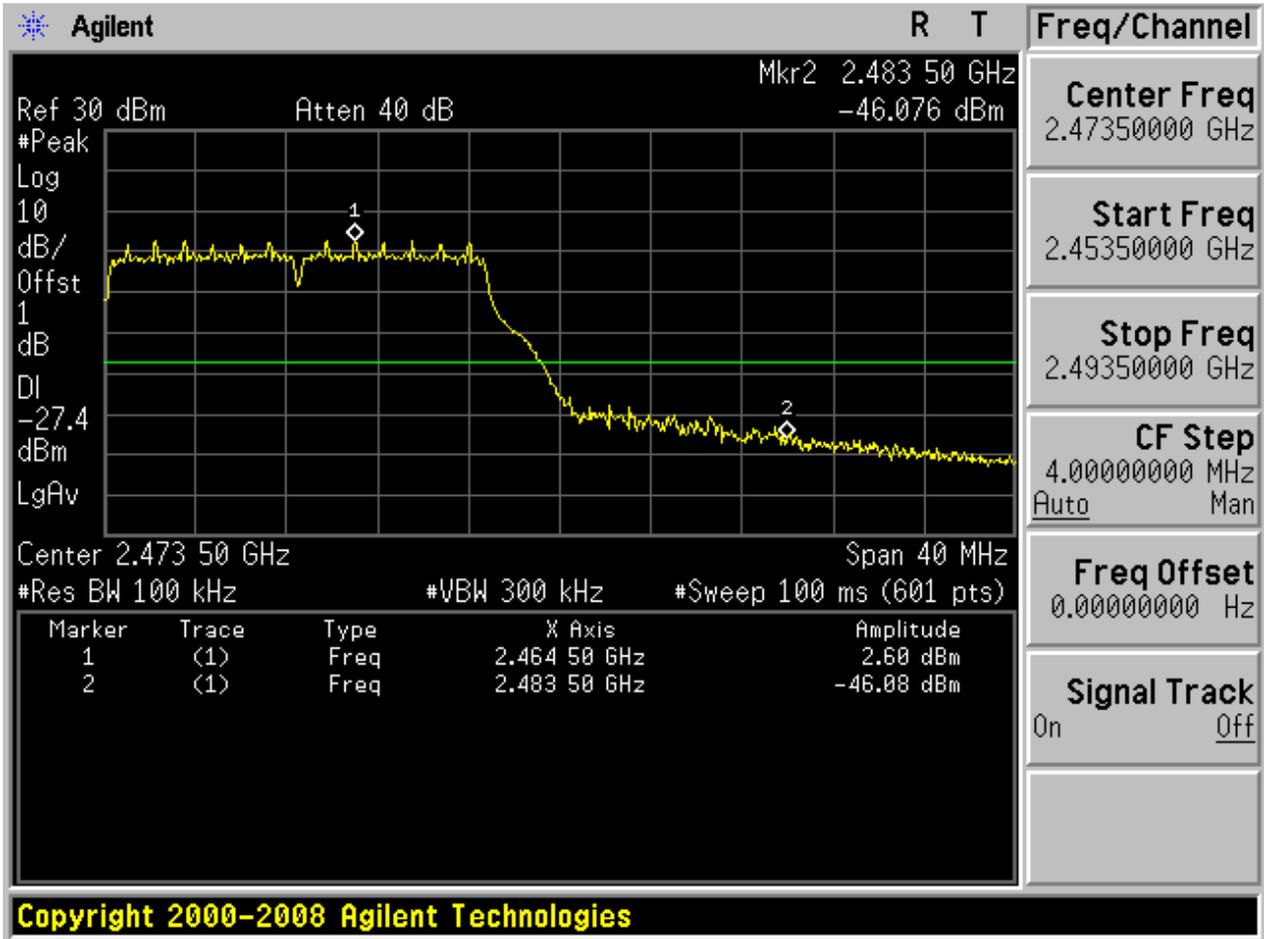


2.3 11G_L@Ant 1



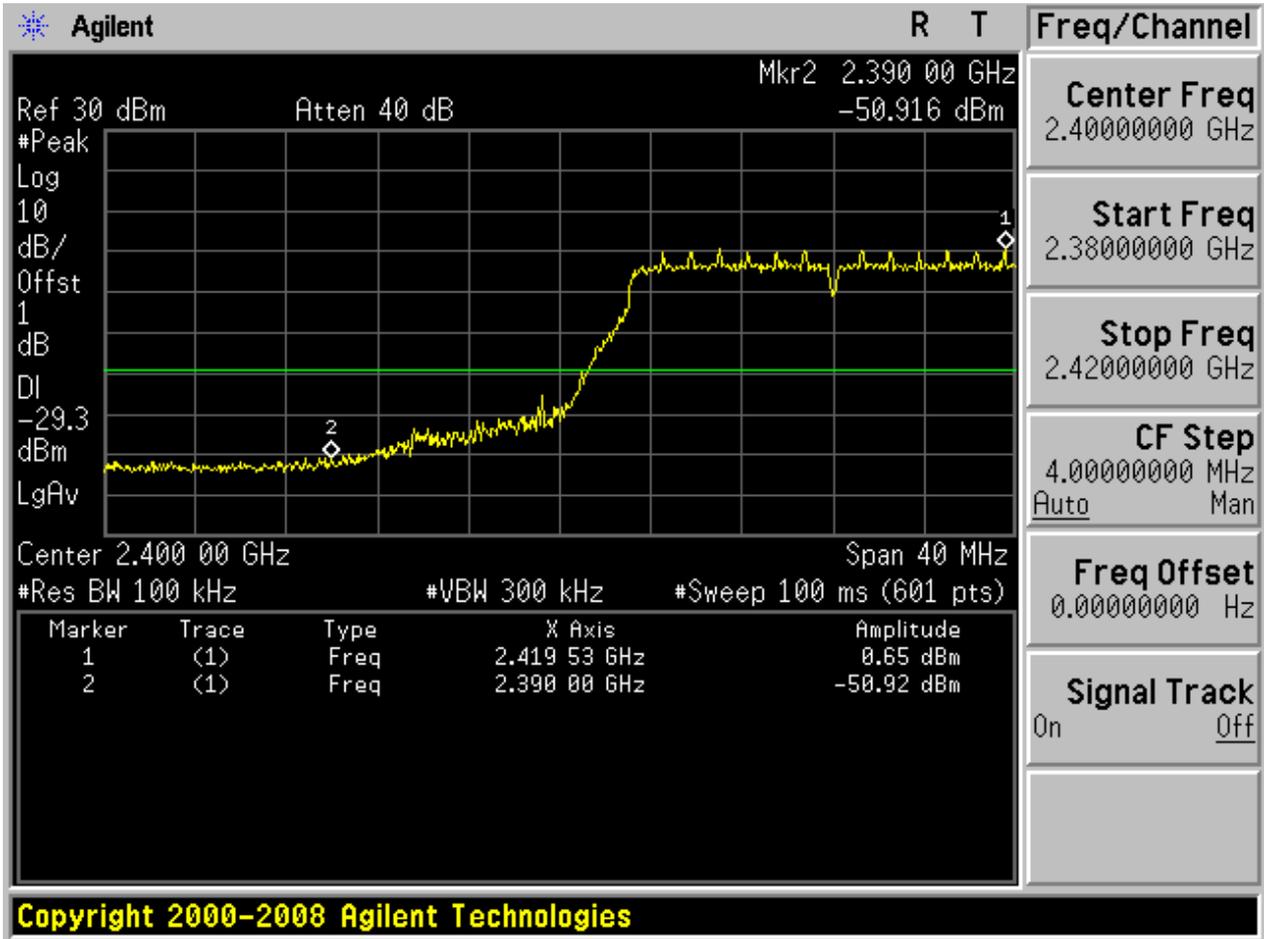


2.4 11G_H@Ant 1



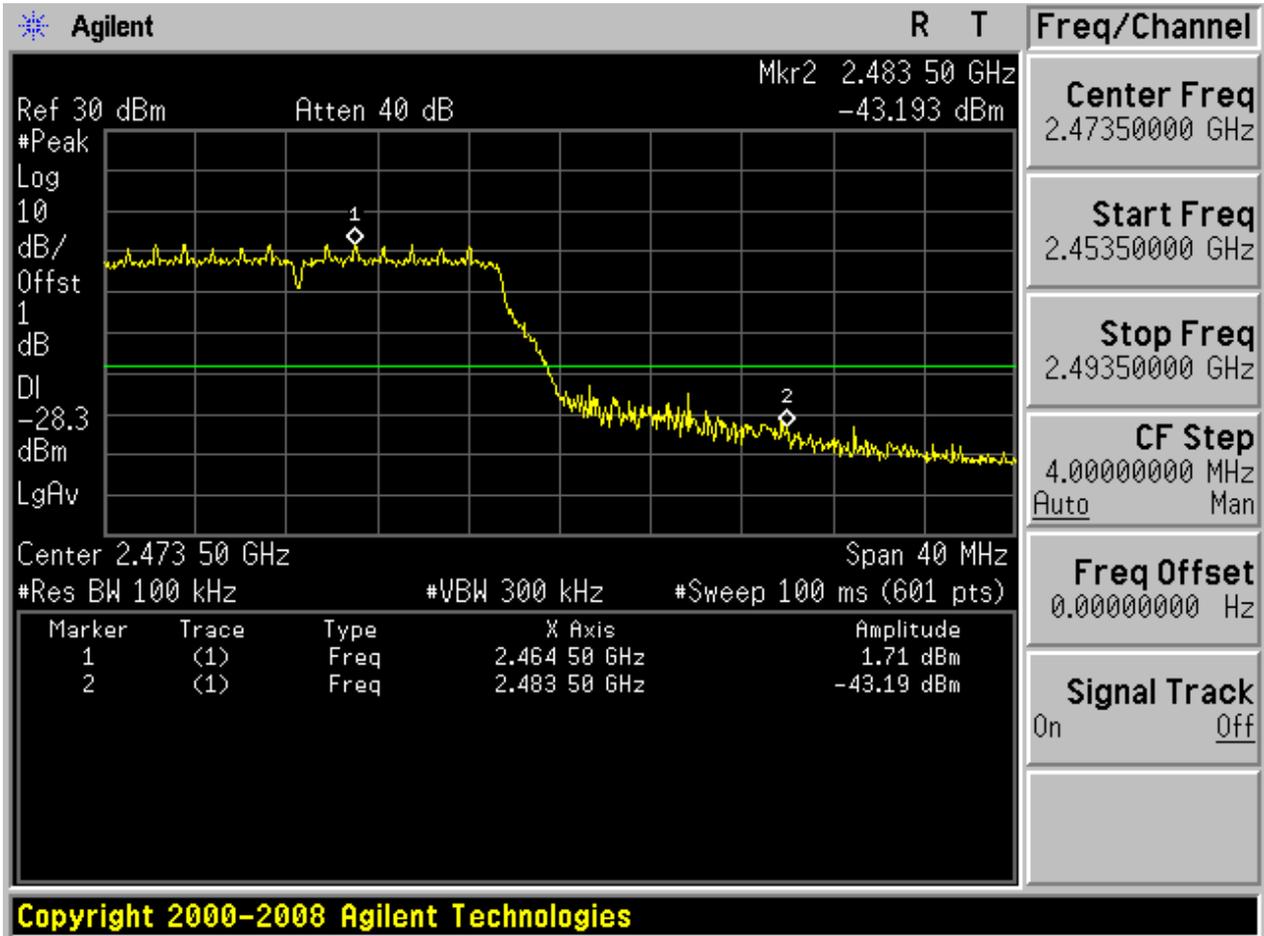


2.5 11N20_L@Ant 1





2.6 11N20_H@Ant 1



Appendix G: Unwanted Emissions into Non-Restricted Frequency

Bands

In this Appendix, the "Pref", which is used as the reference level, refers to the peak power level in any 100 kHz bandwidth within the fundamental emission, the "Puw" refers to the maximum emission power in 100 kHz band segments outside of the authorized frequency band.

Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower RBW [kHz]})$. As to this Appendix, the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain and used as respective results for each chain, due to the relative-limit requirement.

In the result table, the "< Limit" denotes that "The Puw [dBm] is less than Pref[dBm]-20[dBm], see test plots for detailed".

Part I - Test Results

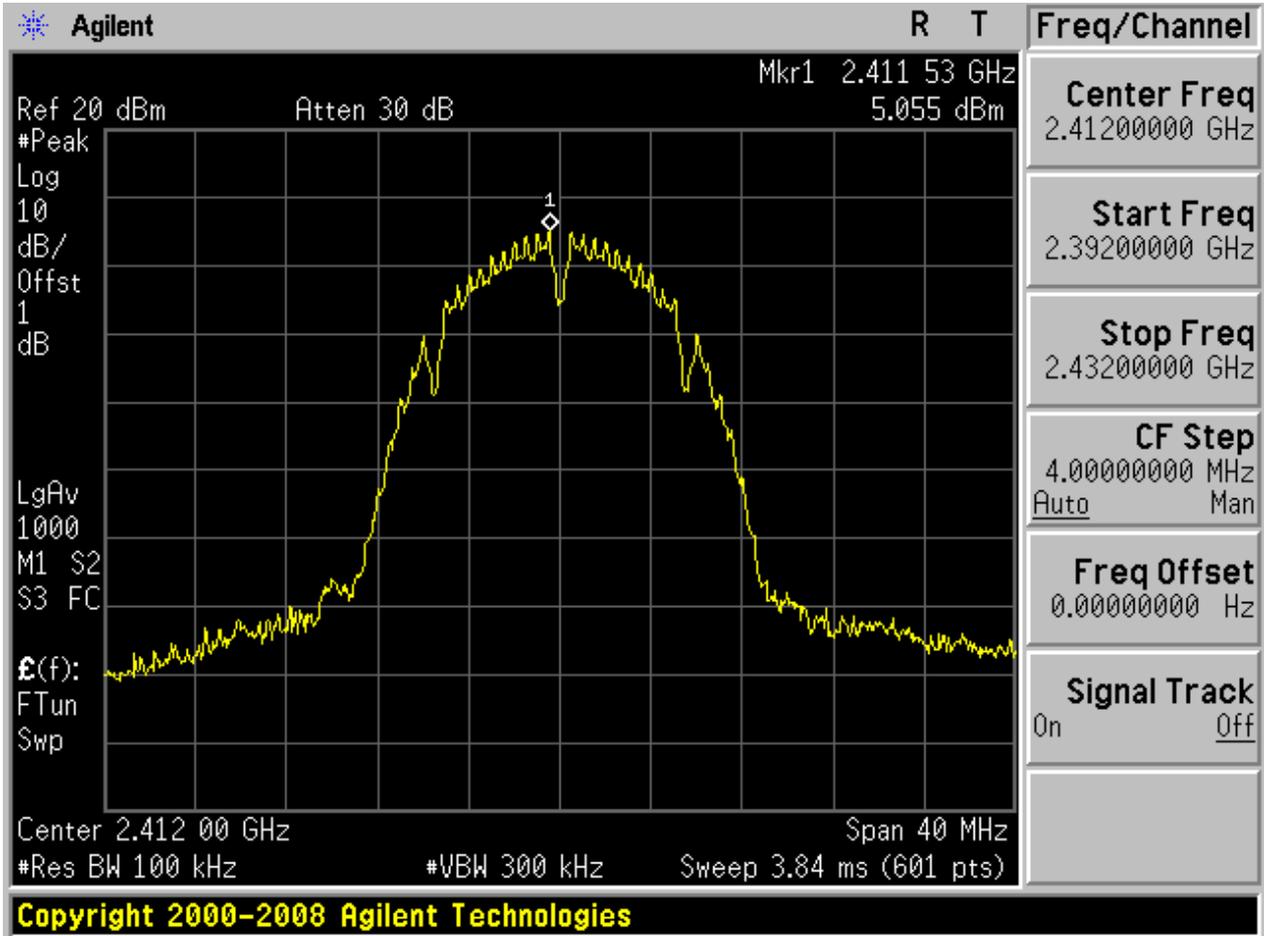
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	5.06	<limit	pass
11B	M	2437	Ant 1	5.58	<limit	pass
11B	H	2462	Ant 1	6.18	<limit	pass
11G	L	2412	Ant 1	2.20	<limit	pass
11G	M	2437	Ant 1	2.66	<limit	pass
11G	H	2462	Ant 1	3.17	<limit	pass
11N20	L	2412	Ant 1	.87	<limit	pass
11N20	M	2437	Ant 1	1.47	<limit	pass
11N20	H	2462	Ant 1	2.15	<limit	pass



Part II - Test Plots

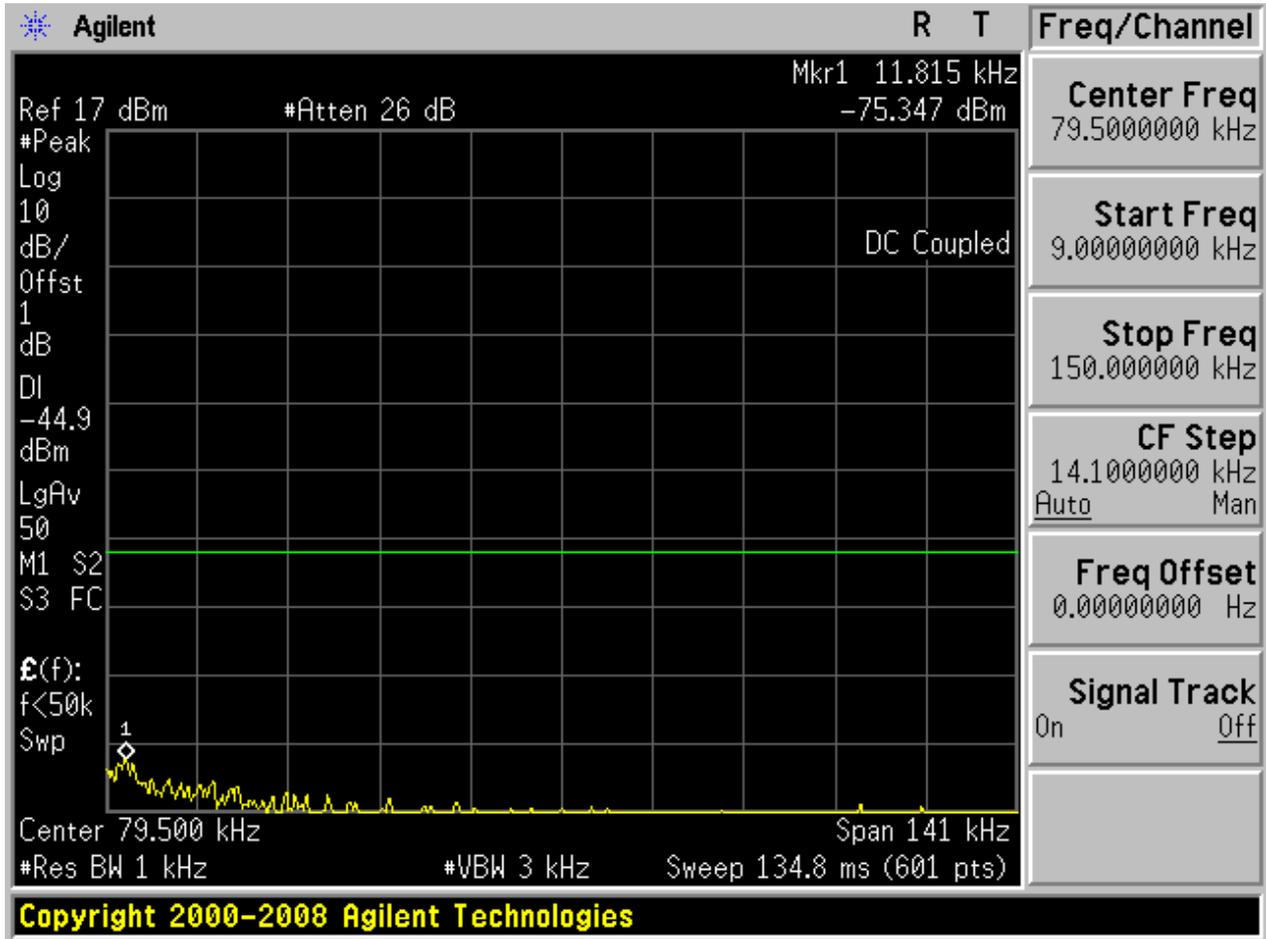
2.1 11B_L@Ant 1

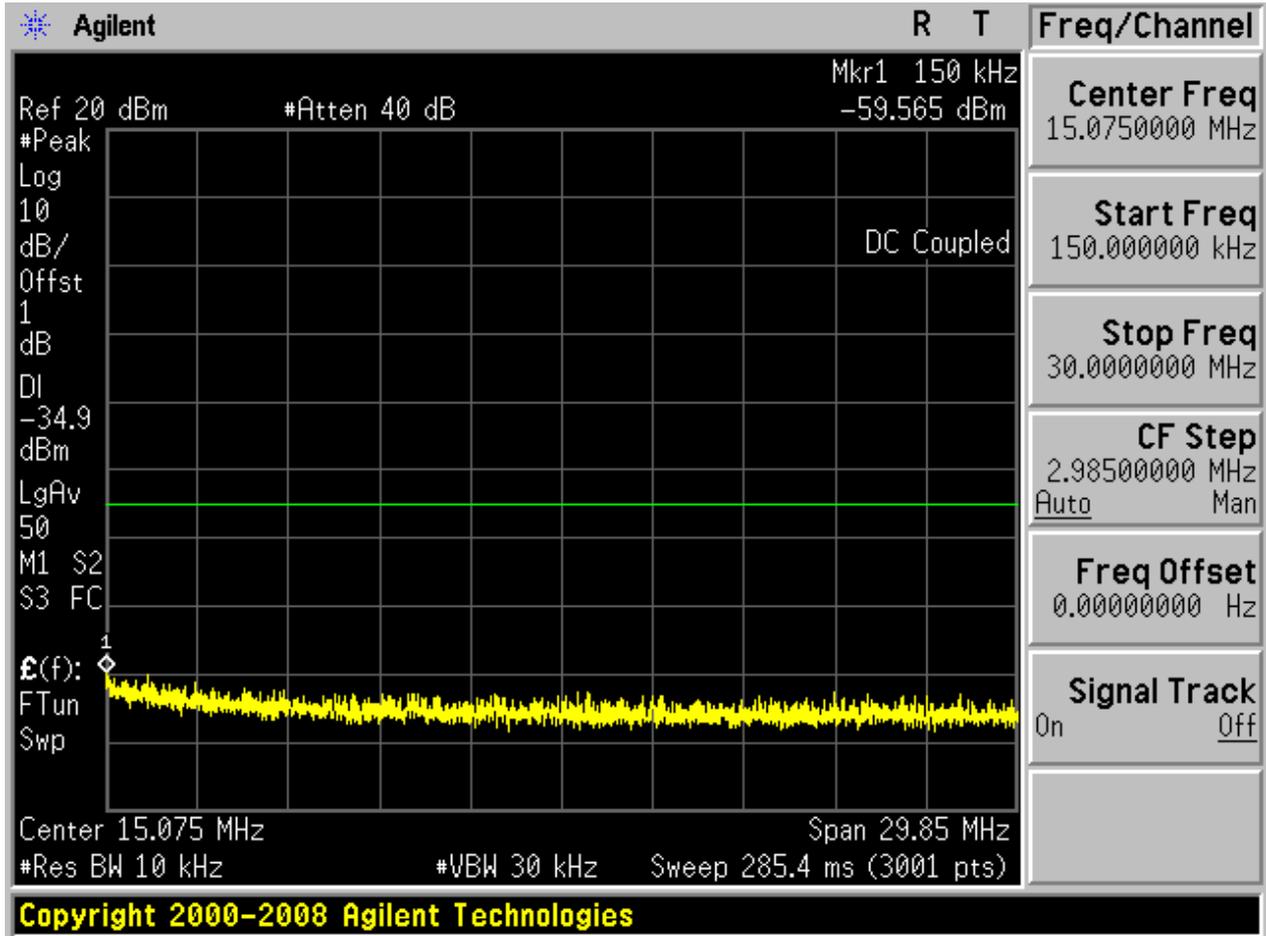
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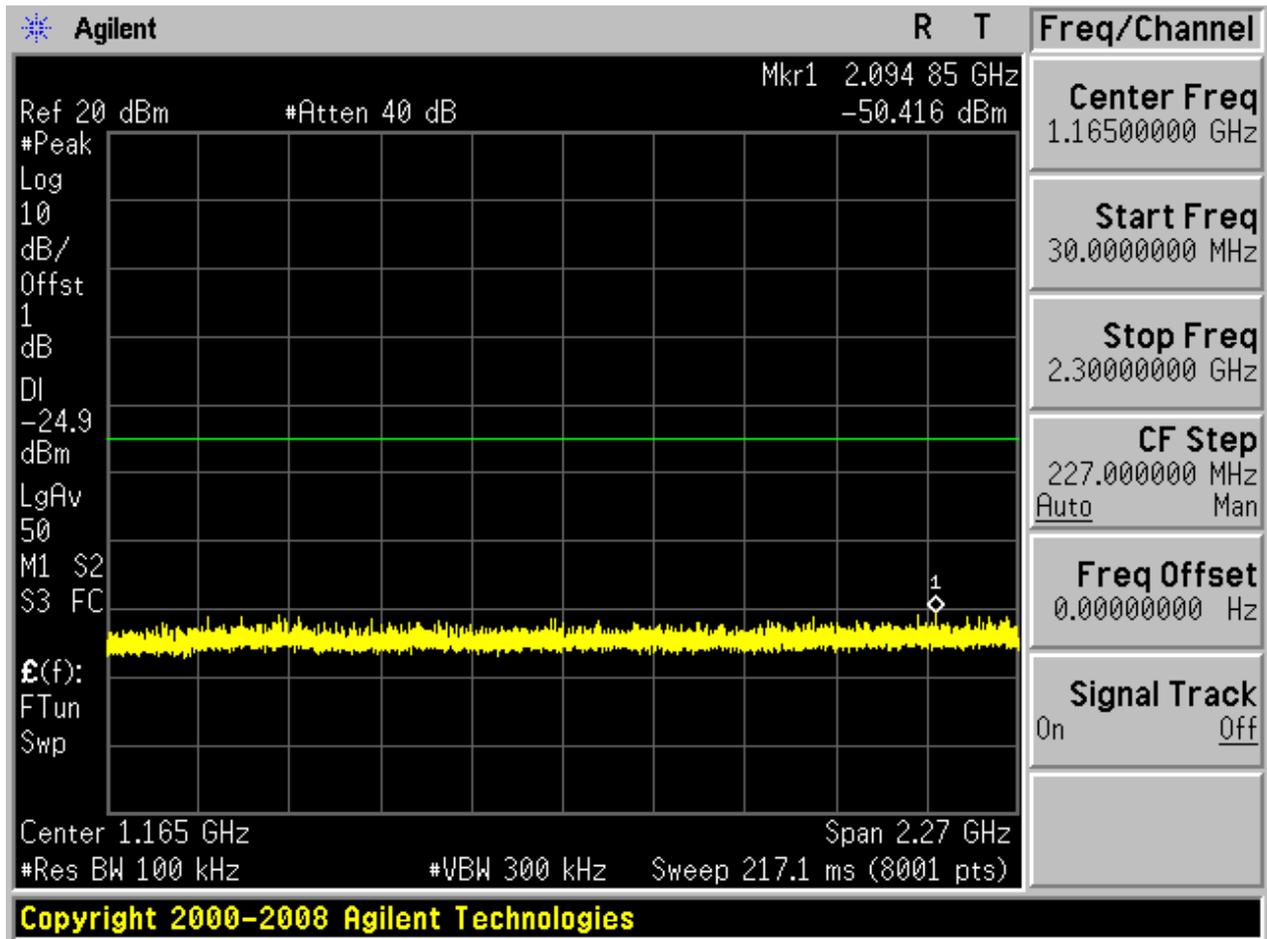


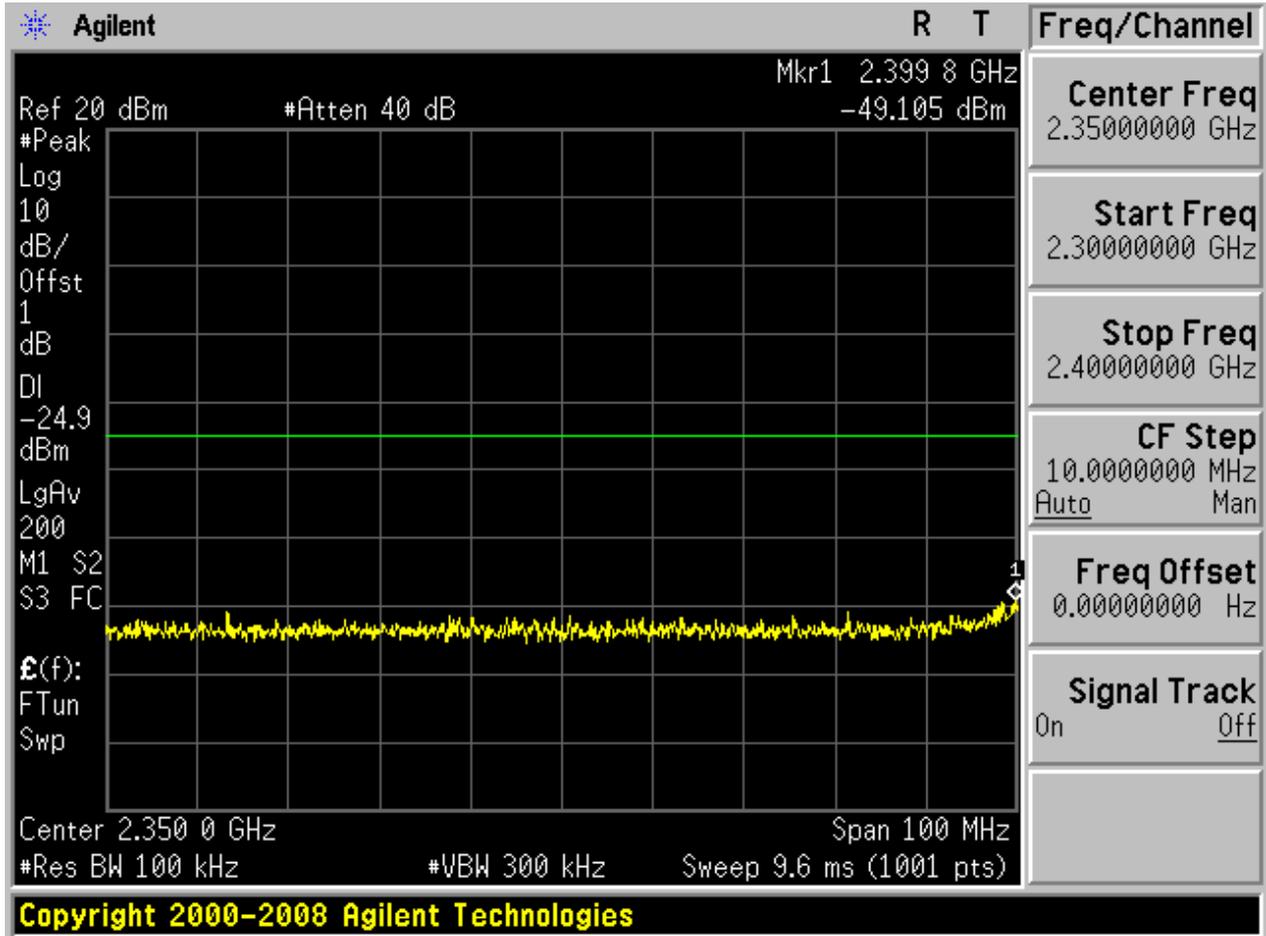


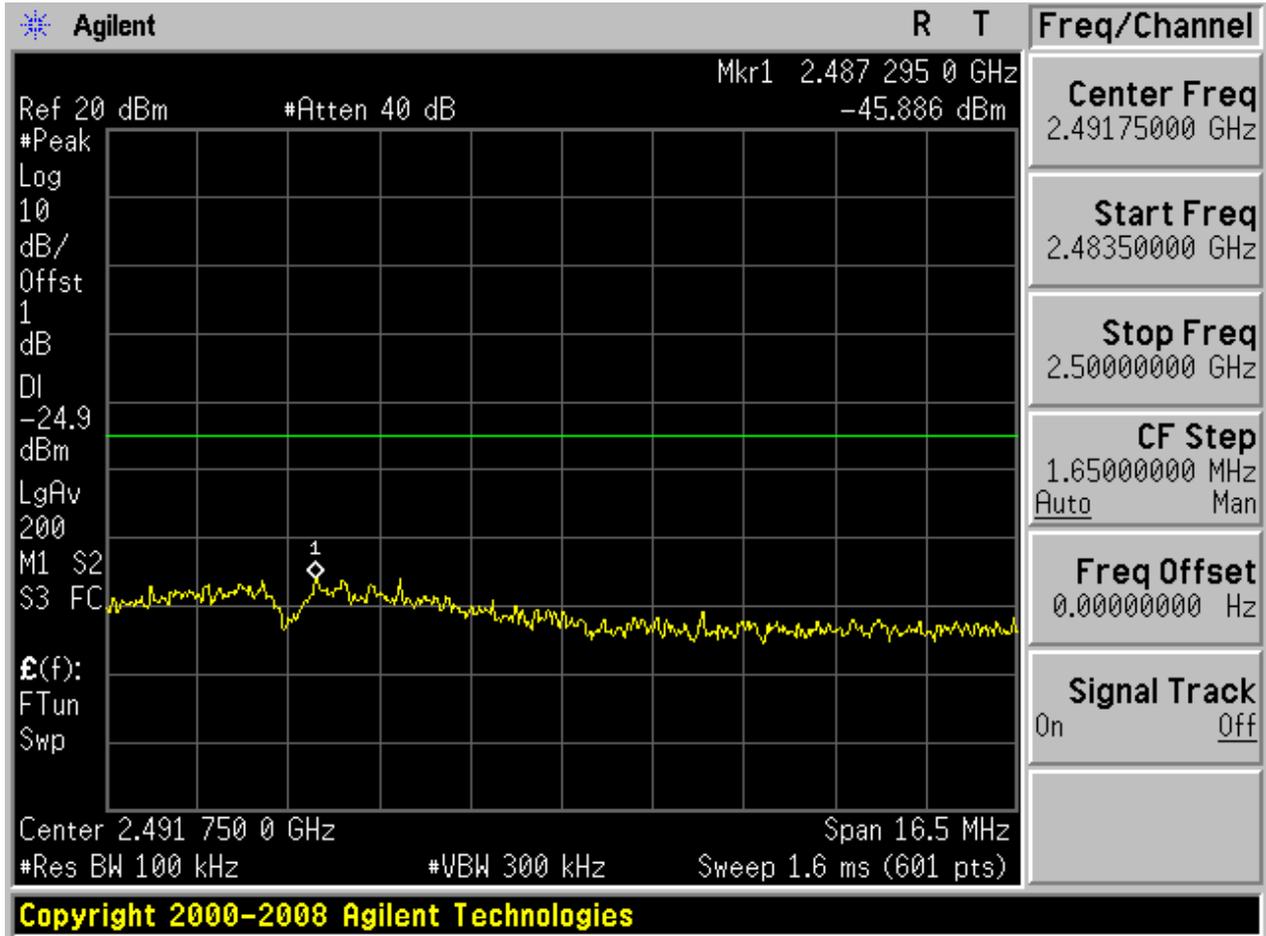
Puw:

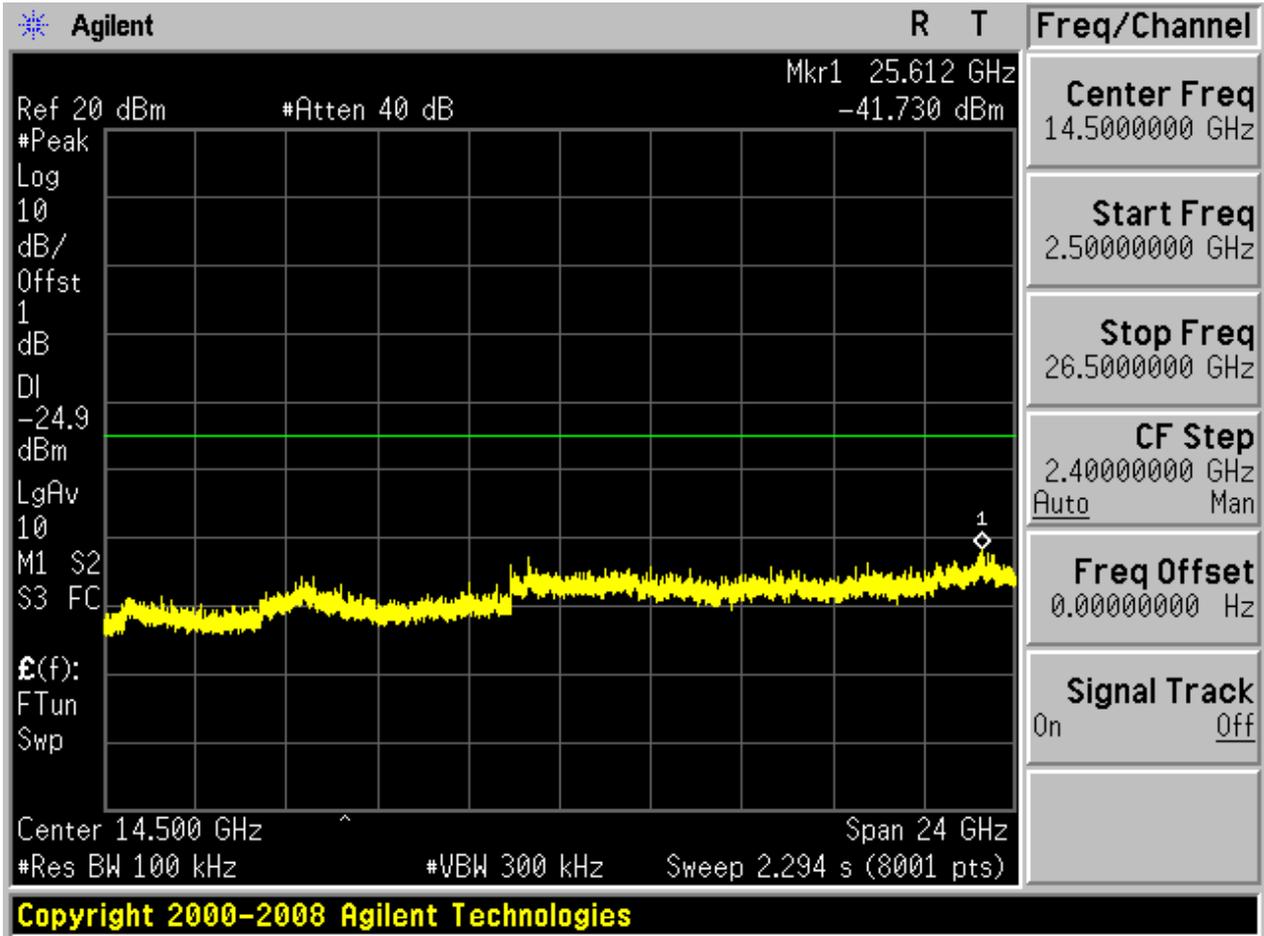








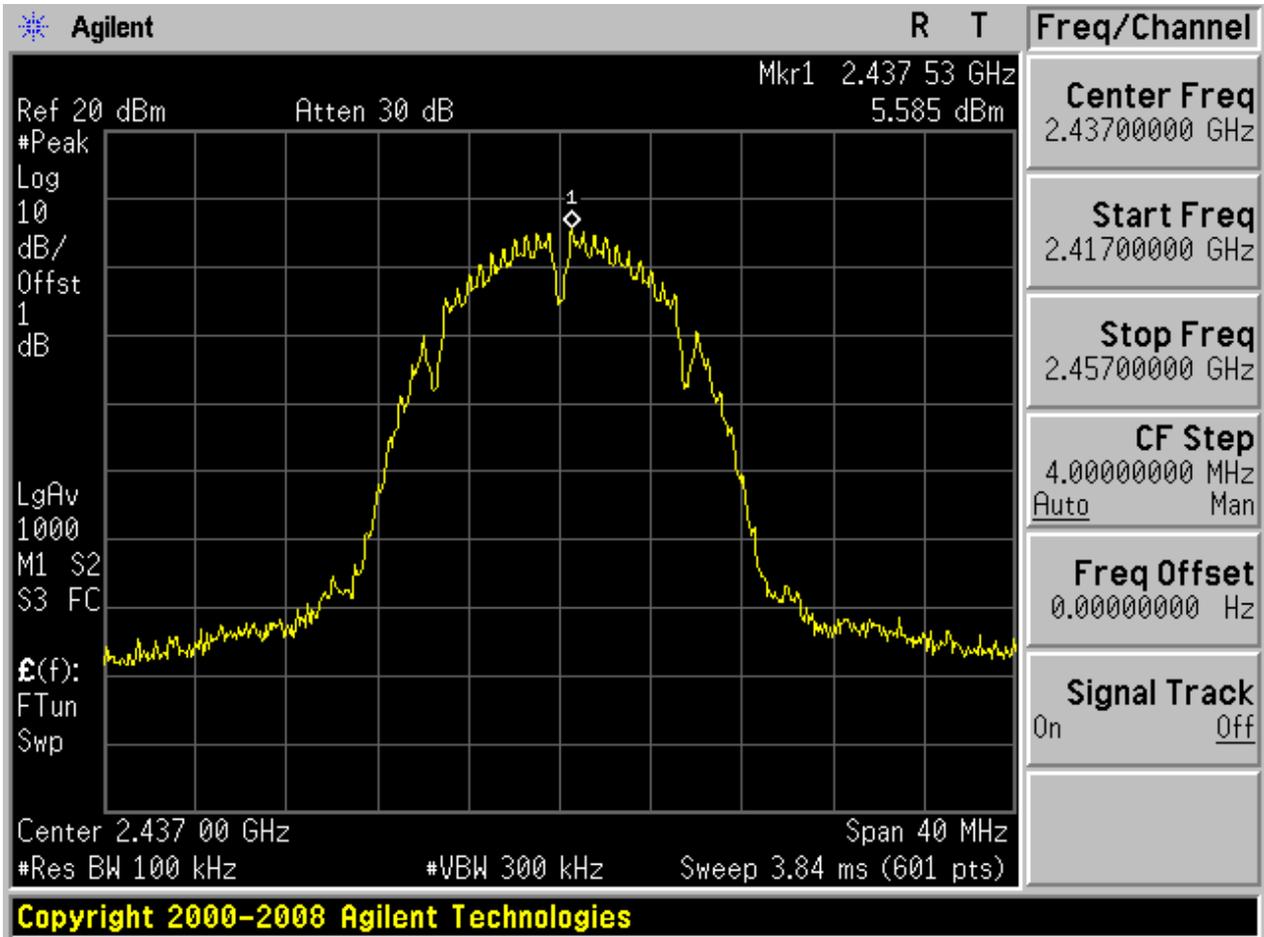






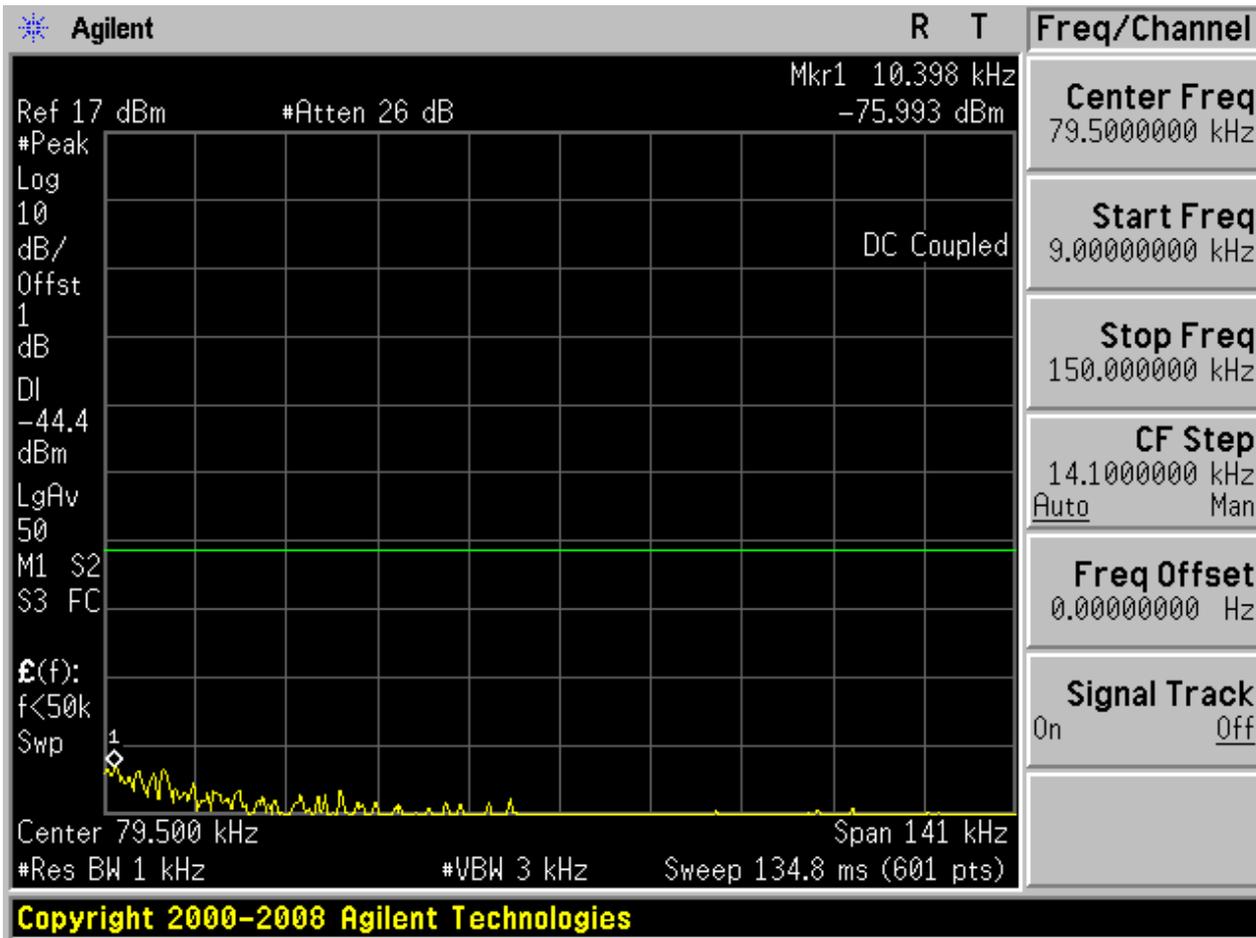
2.211B_M@Ant 1

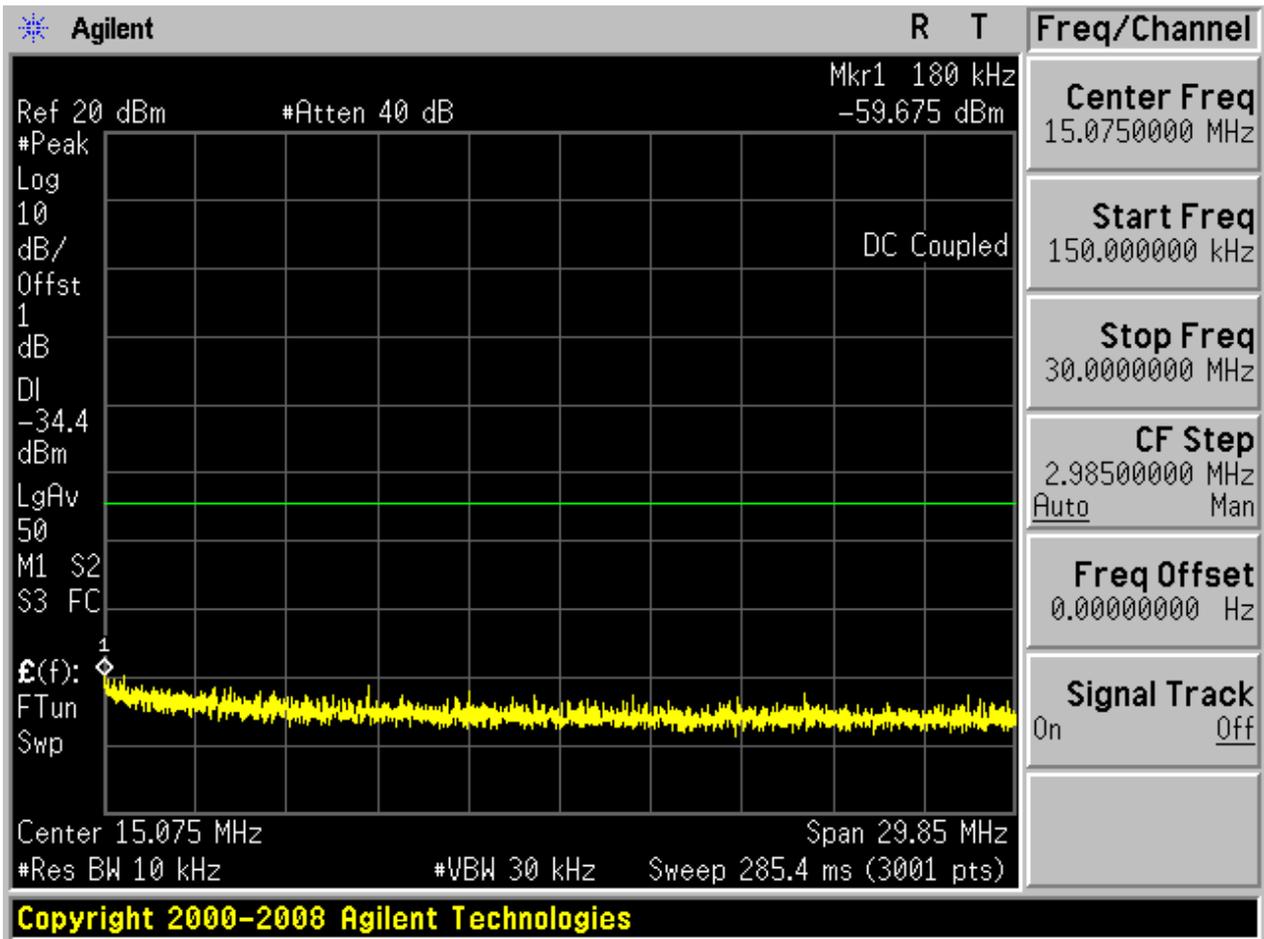
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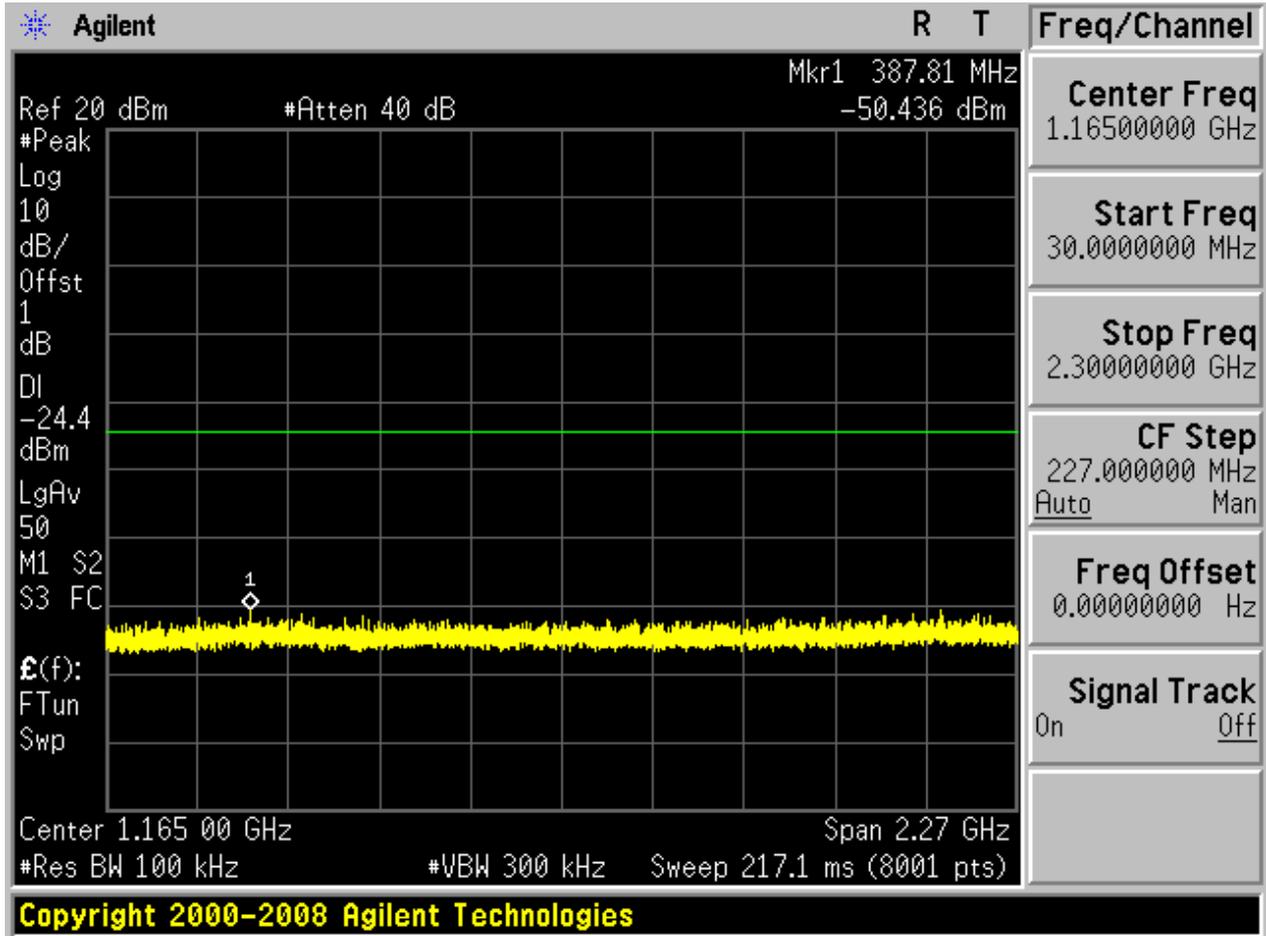


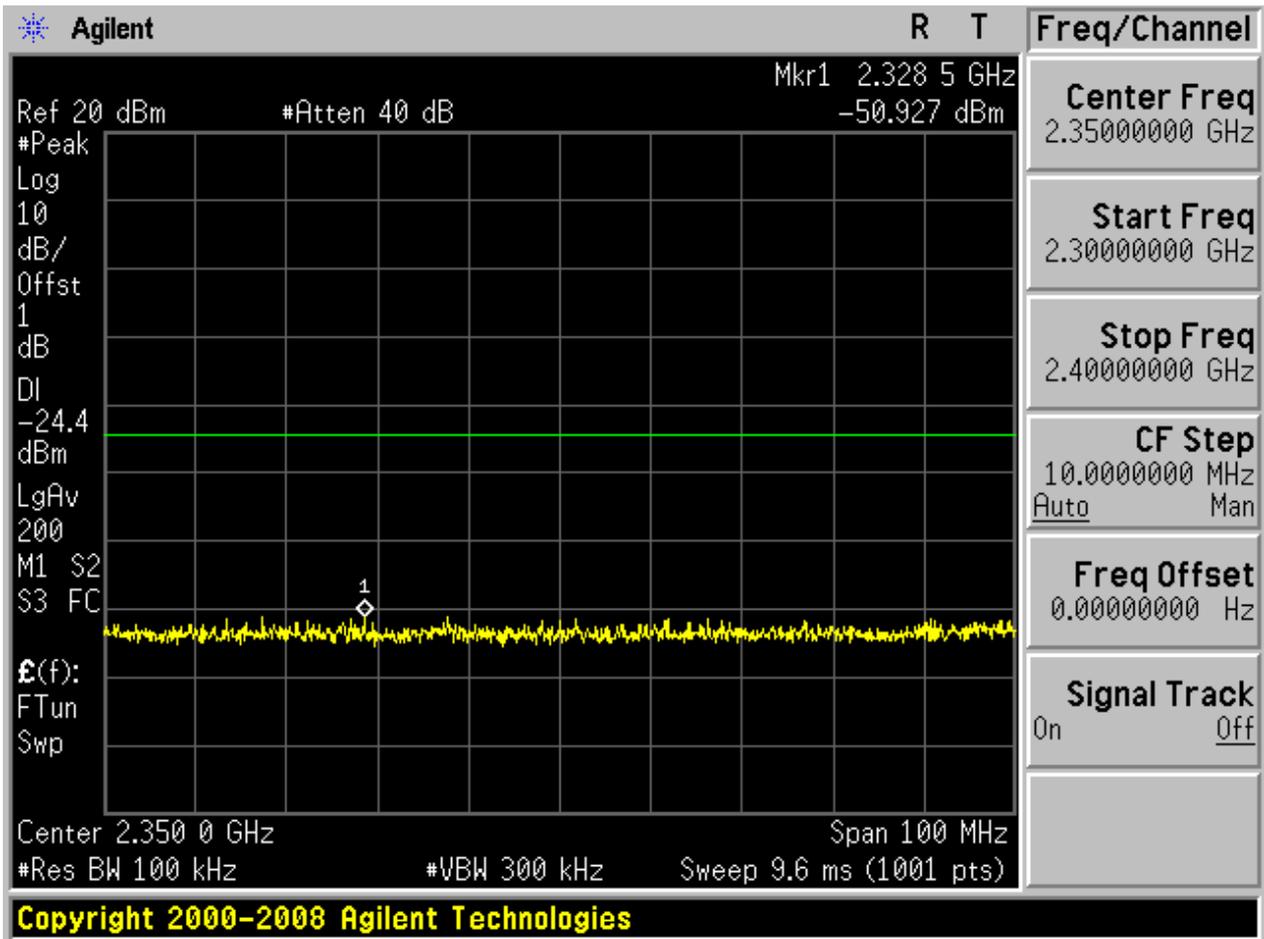


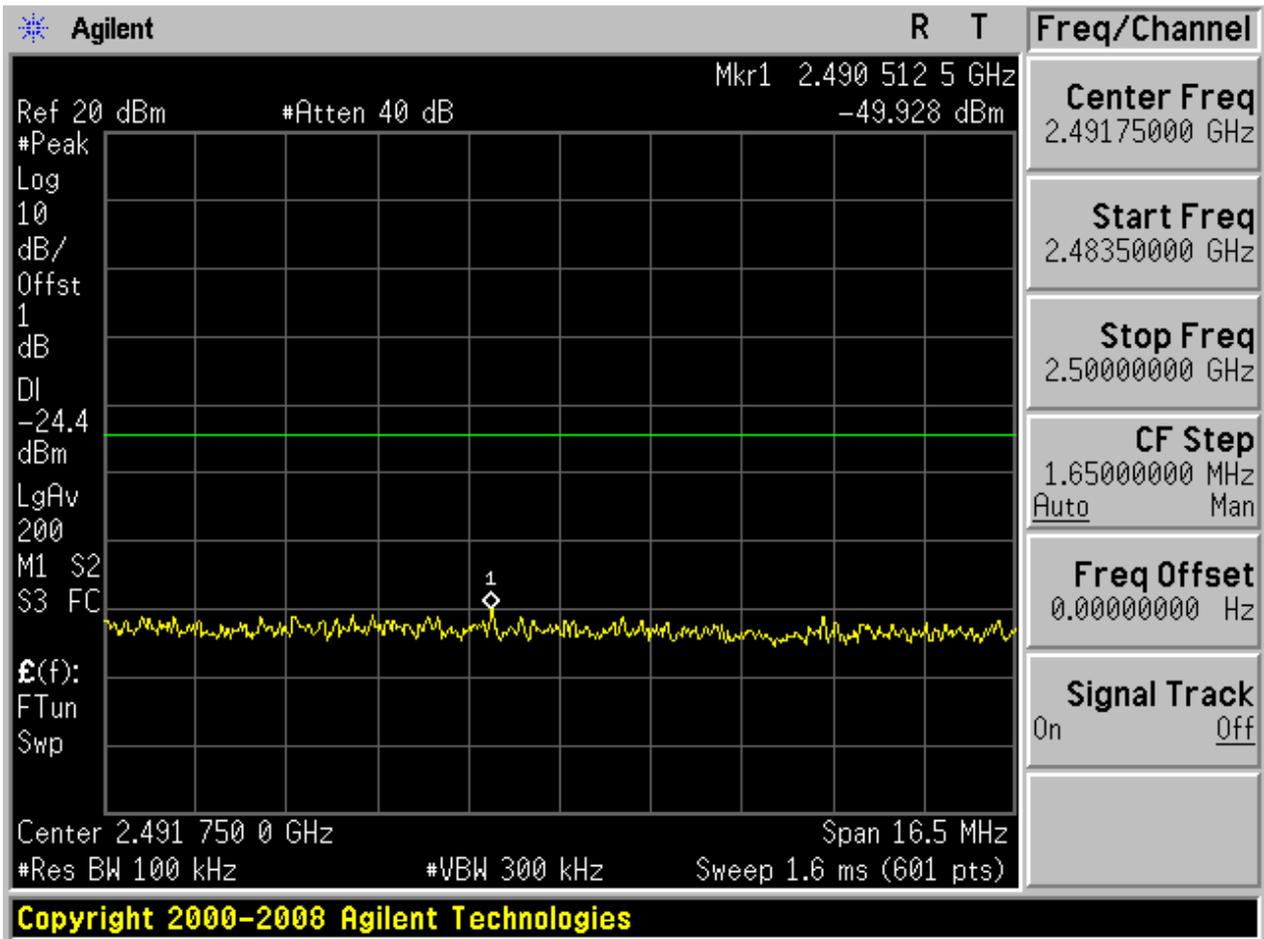
Puw:

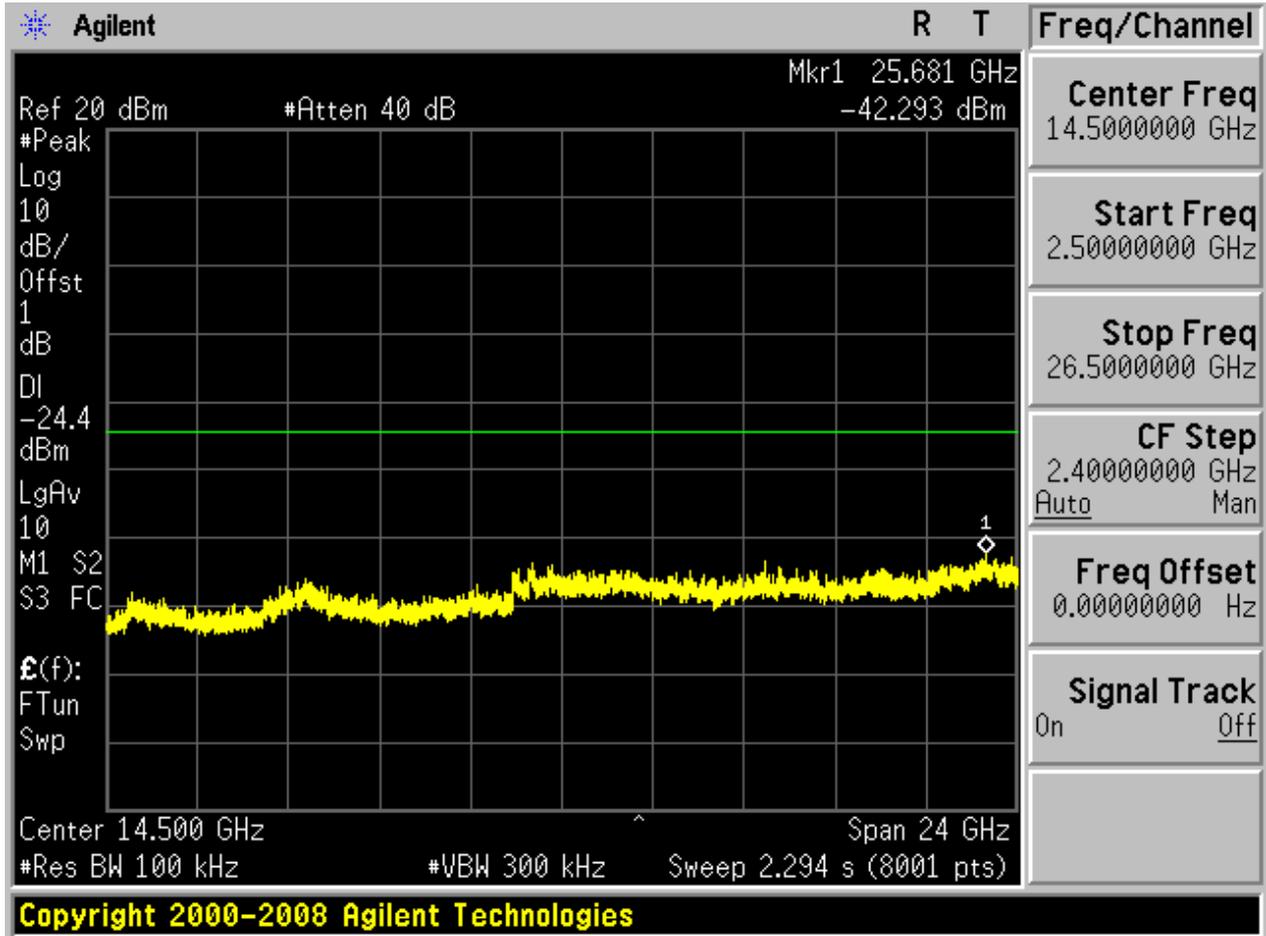








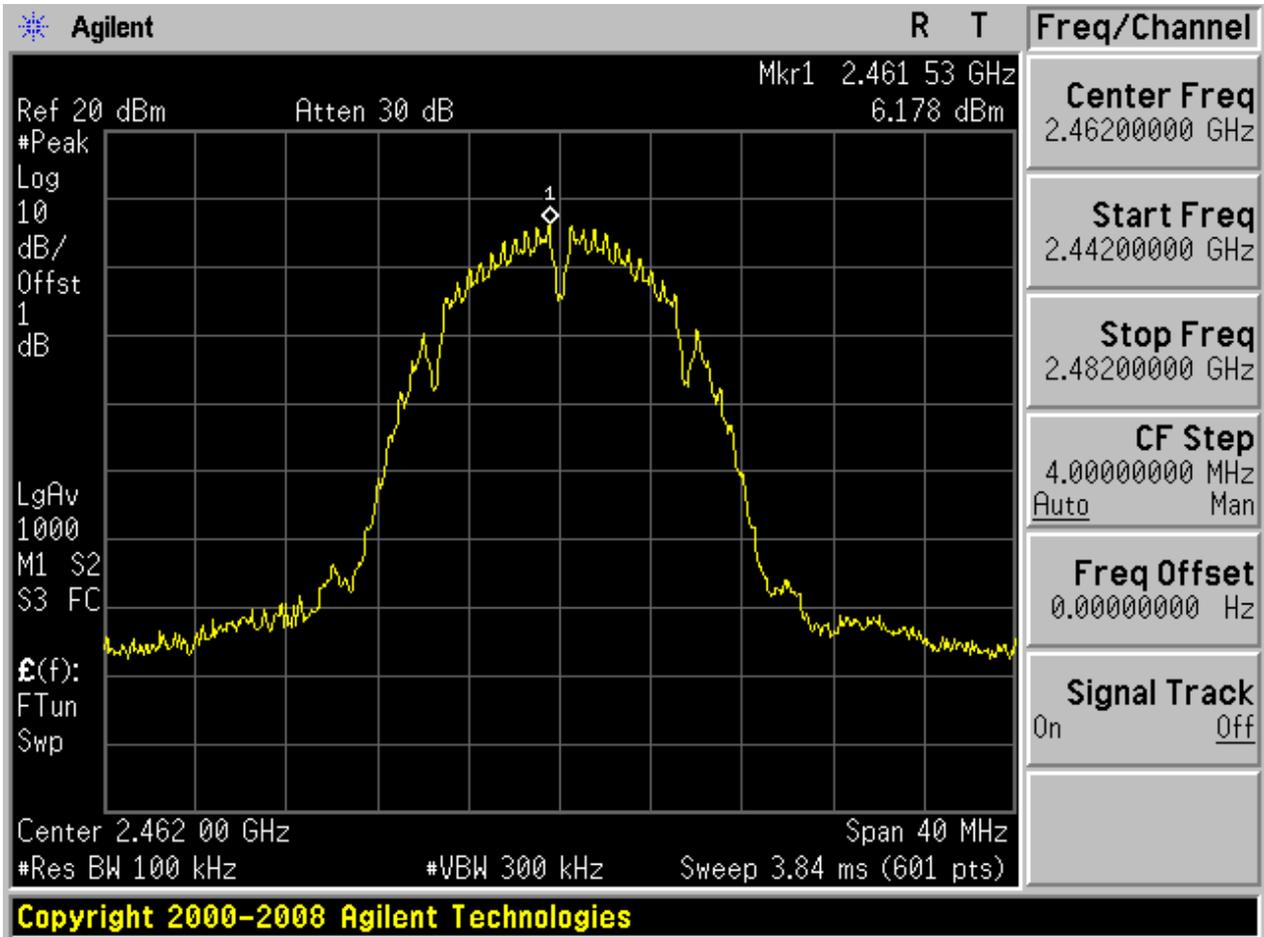






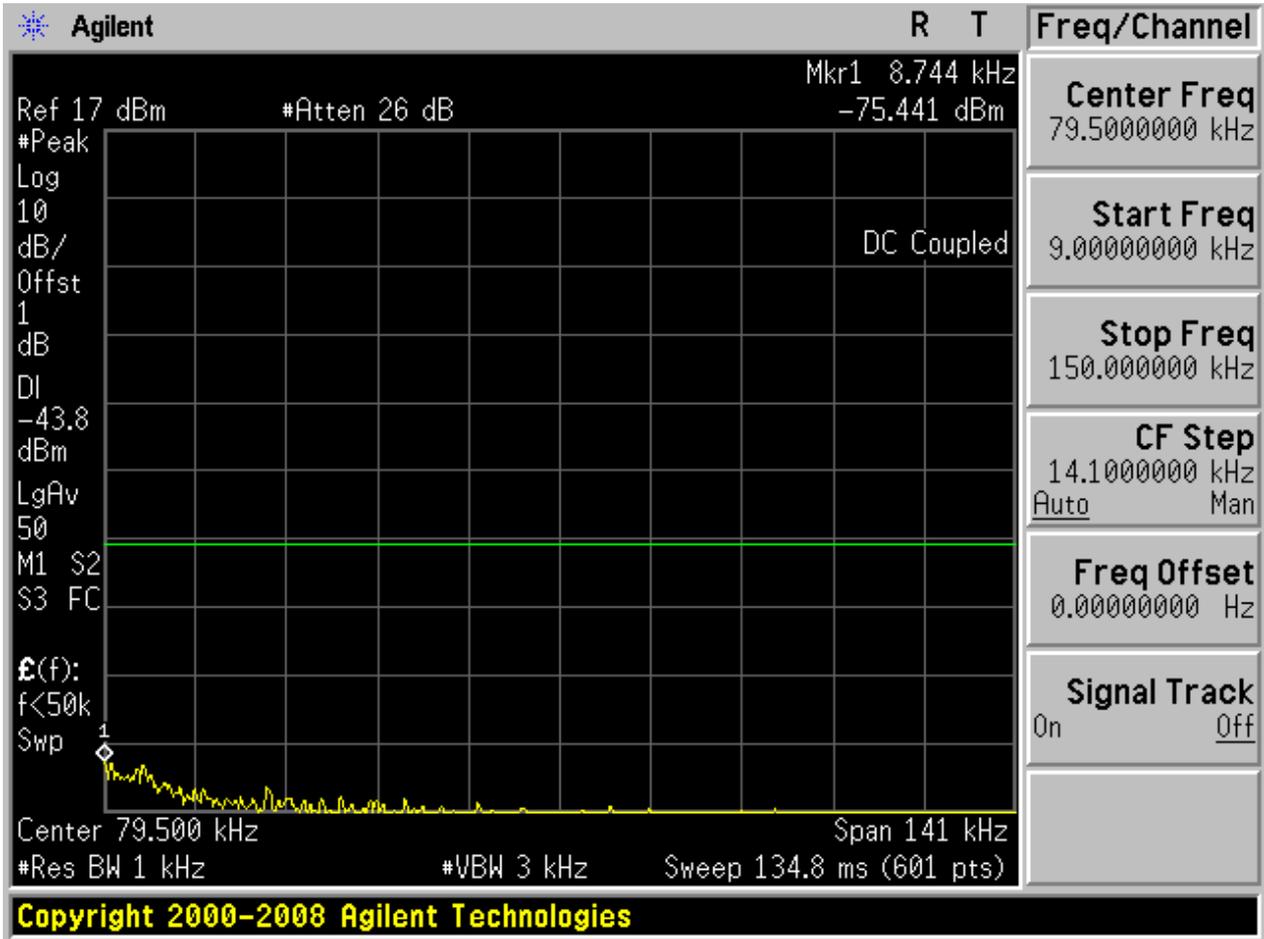
2.311B_H@Ant 1

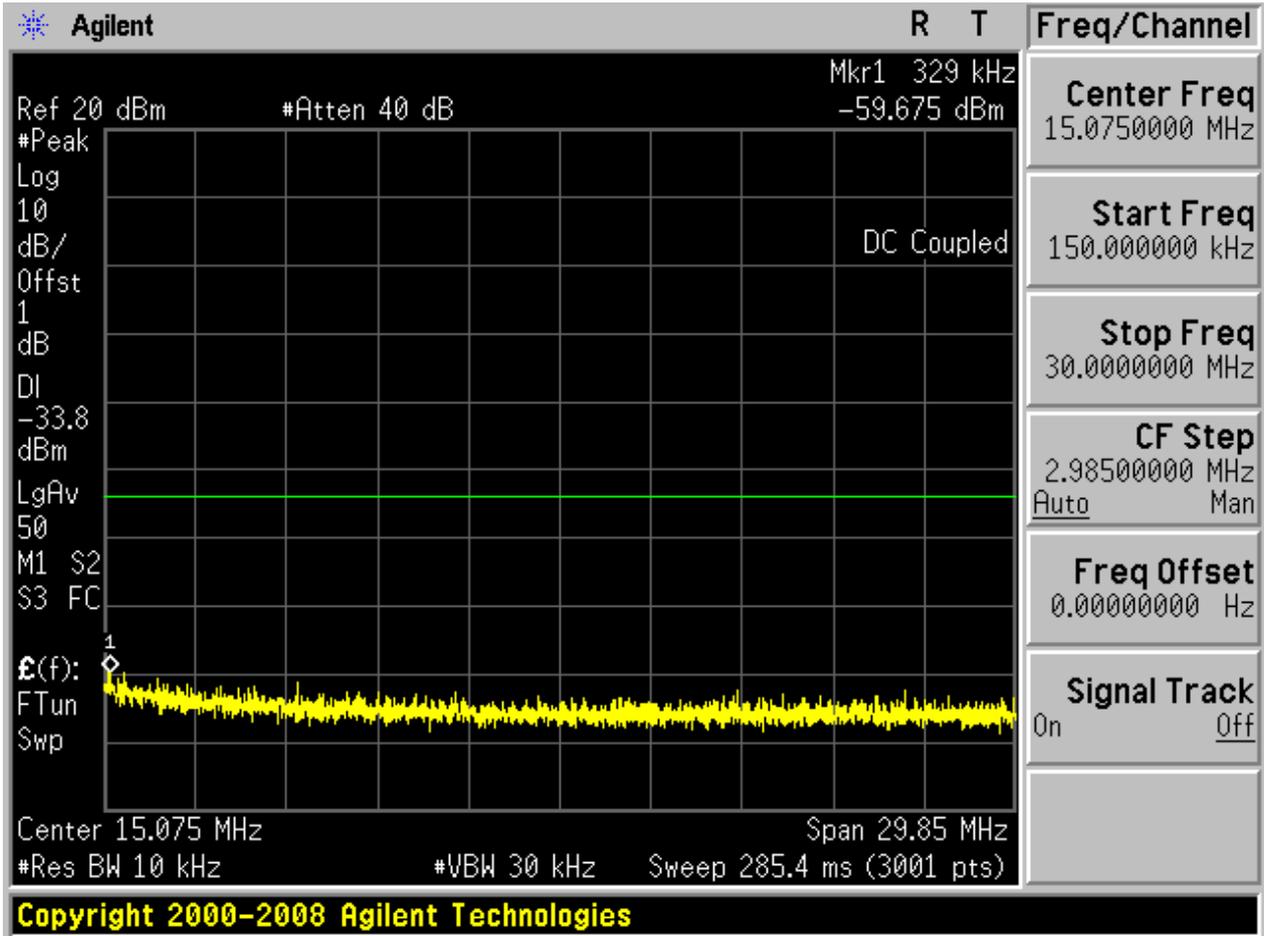
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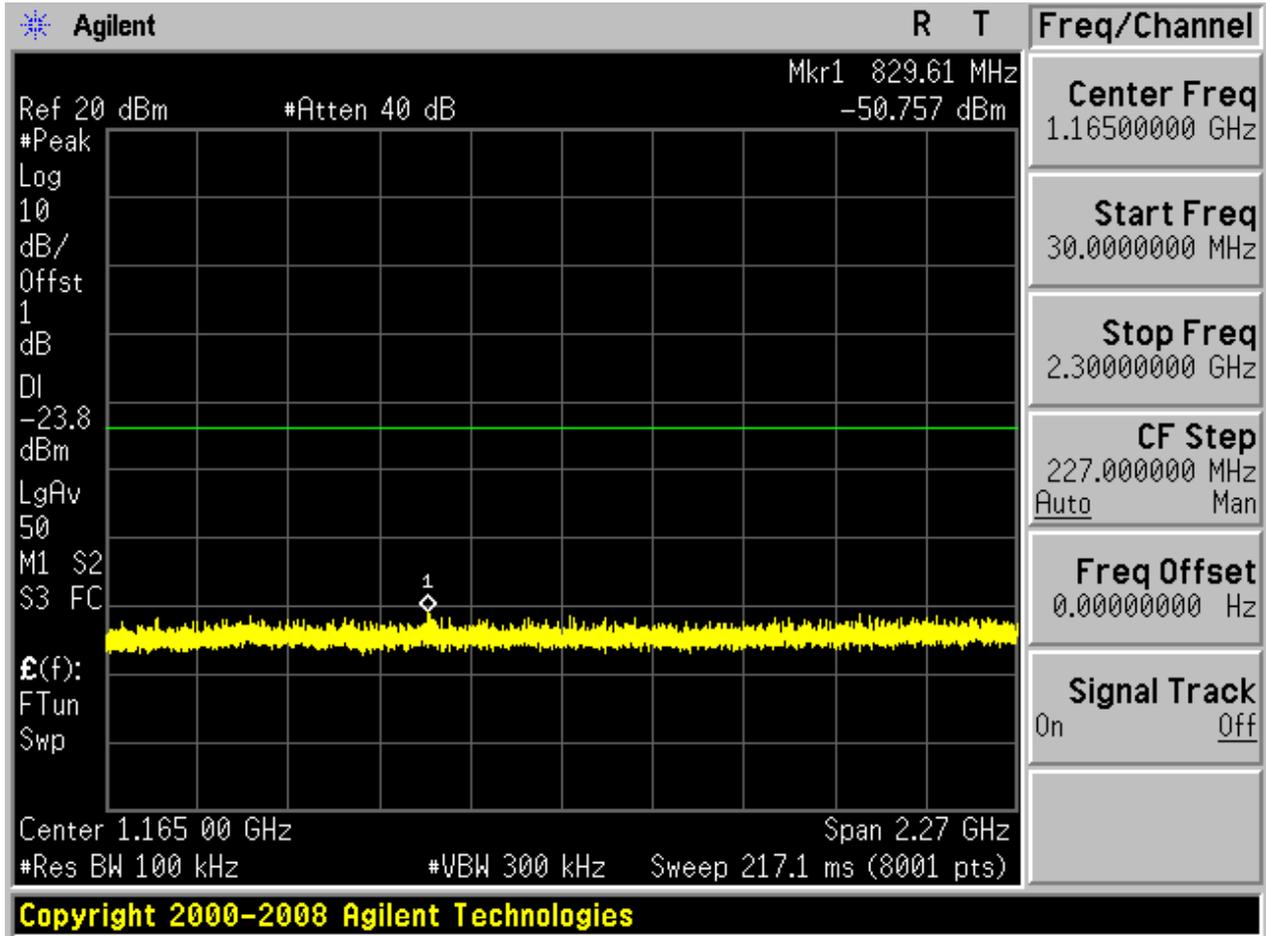


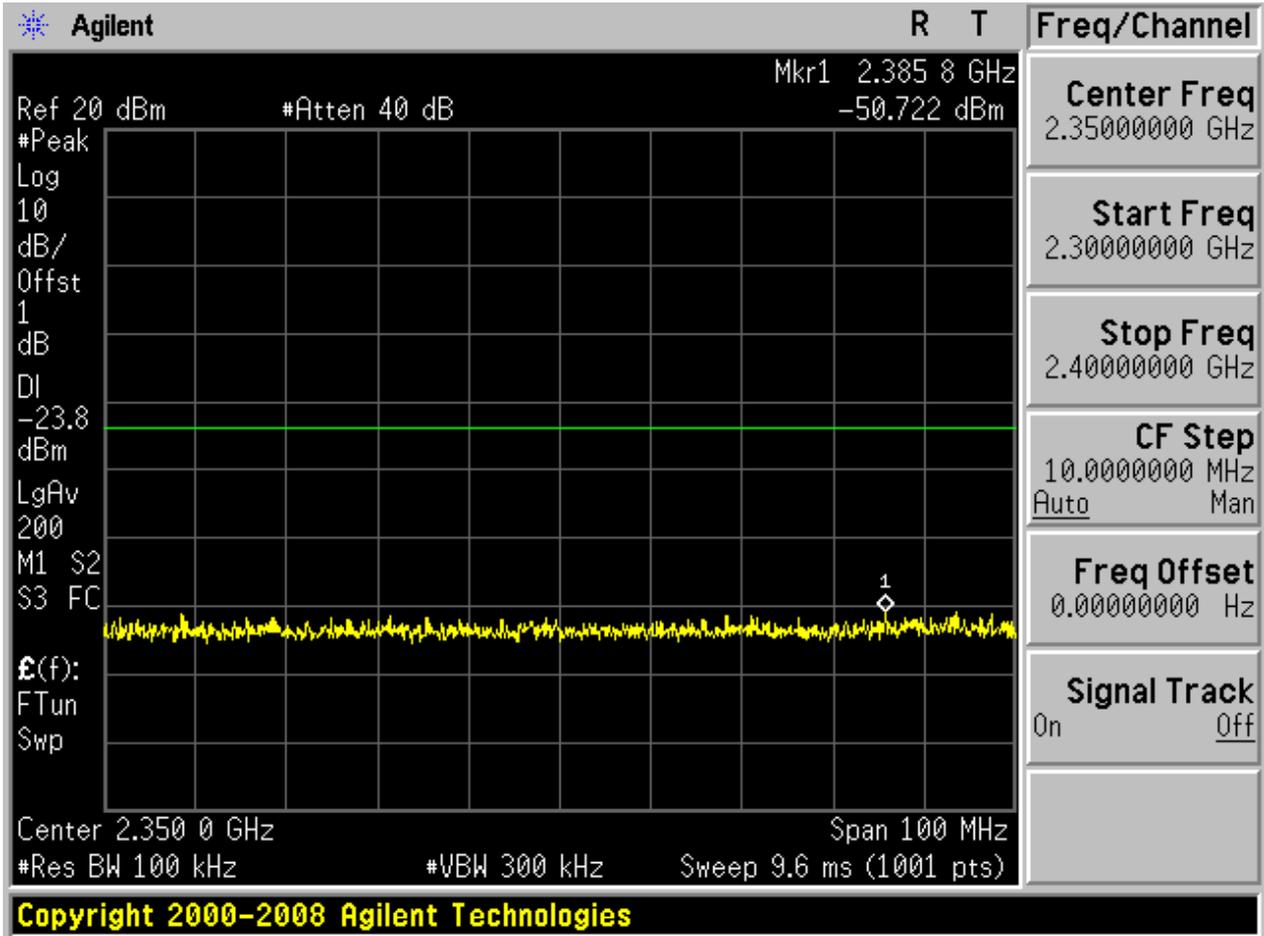


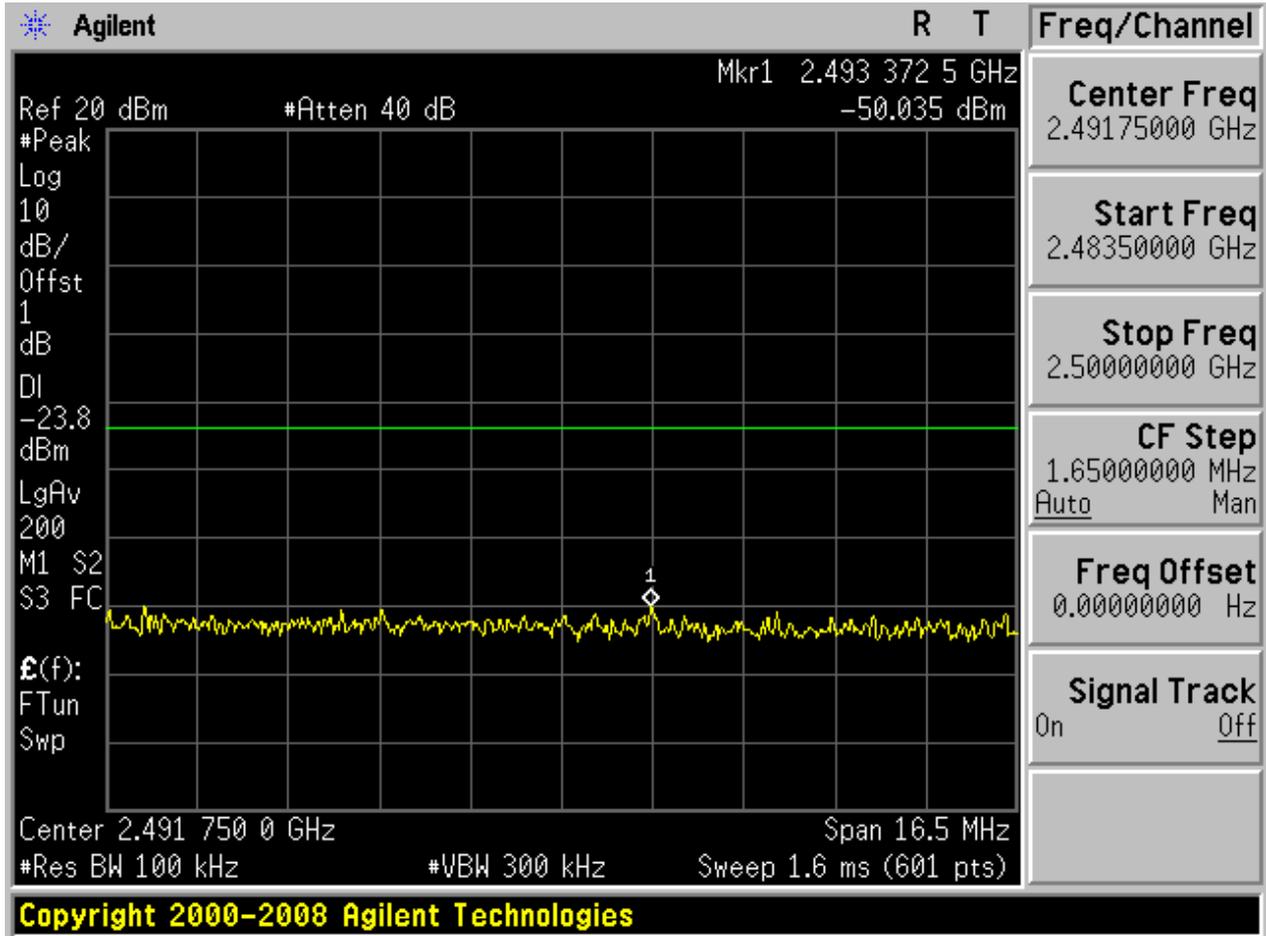
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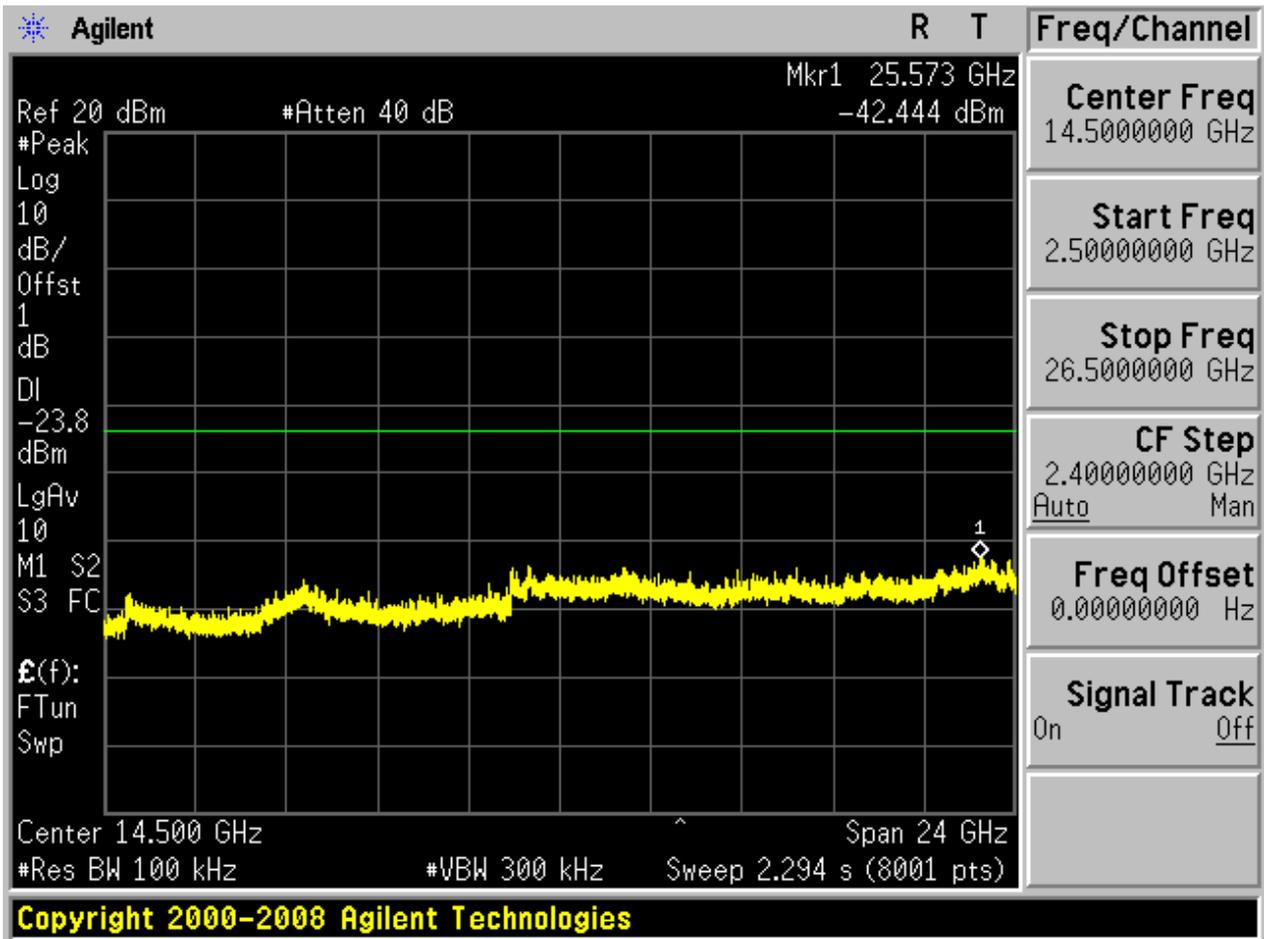








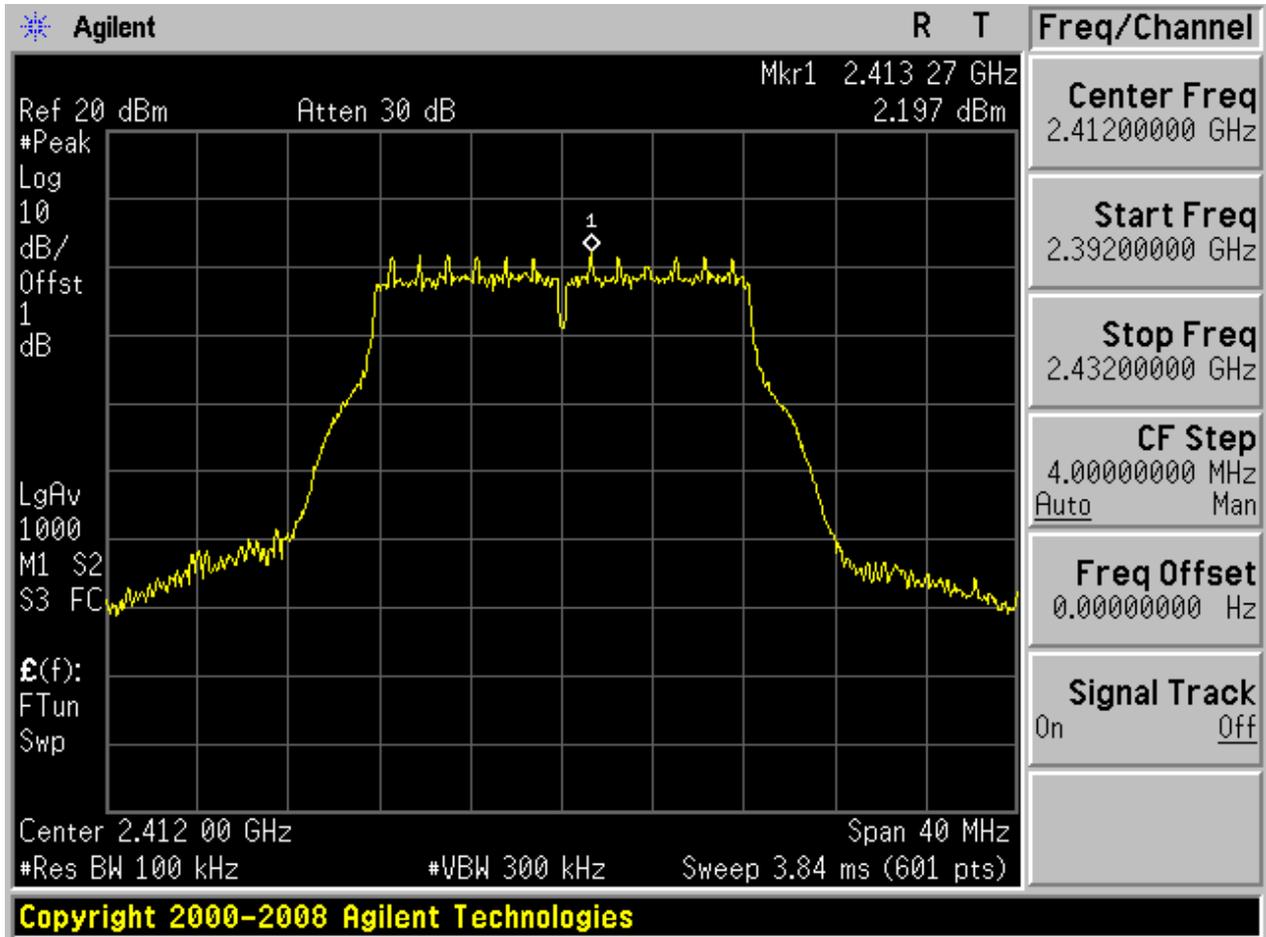






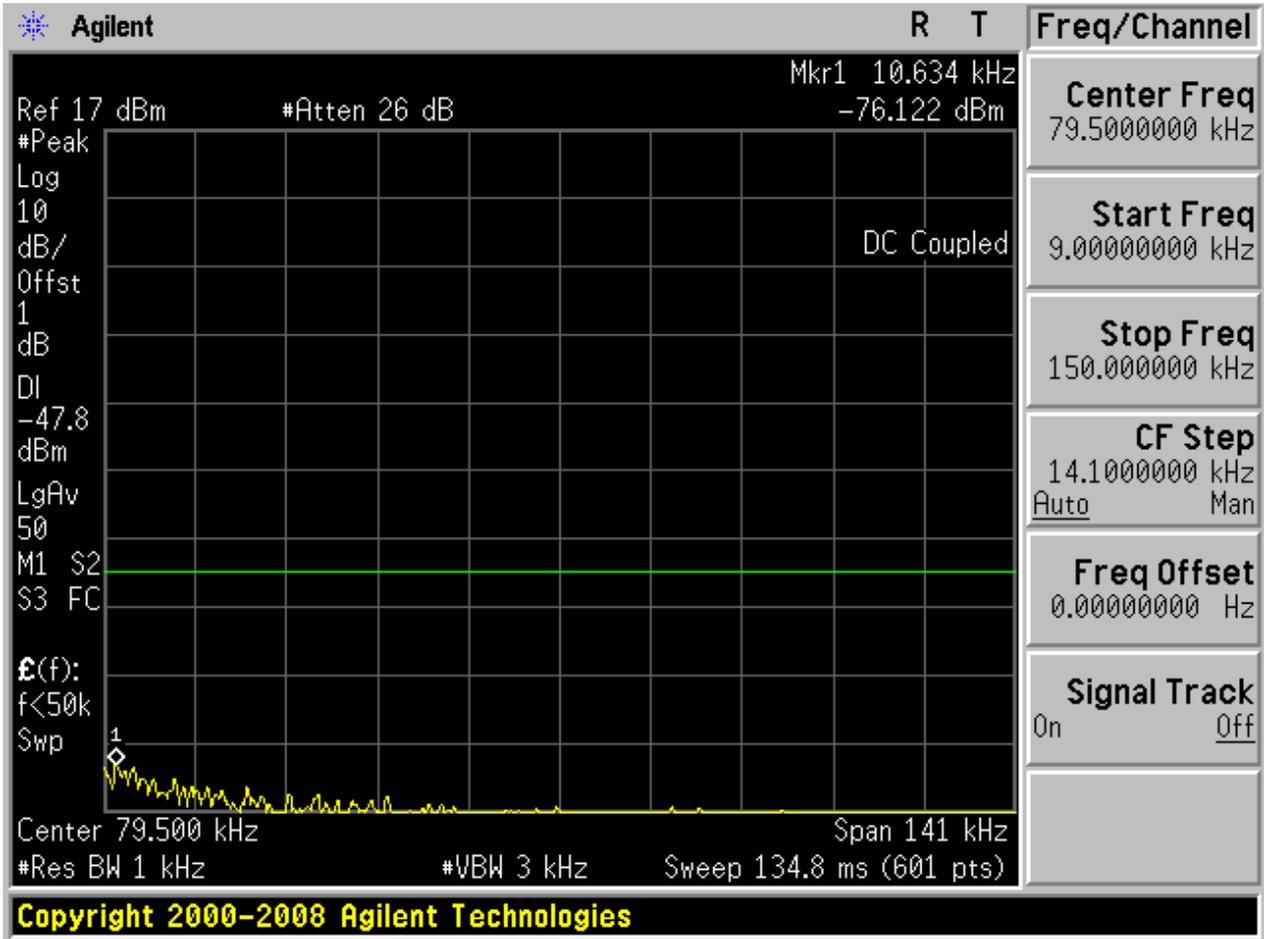
2.4 11G_L@Ant 1

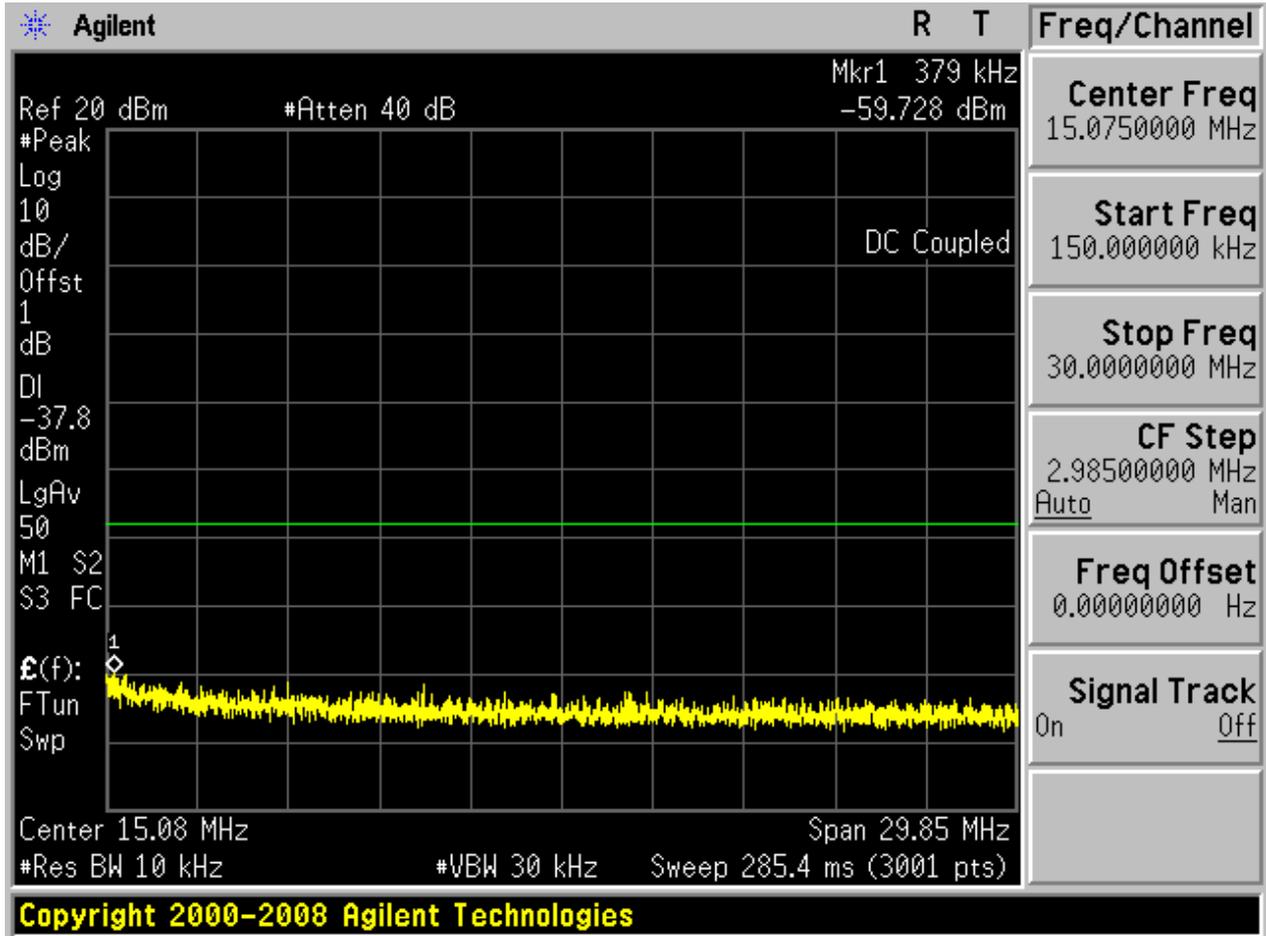
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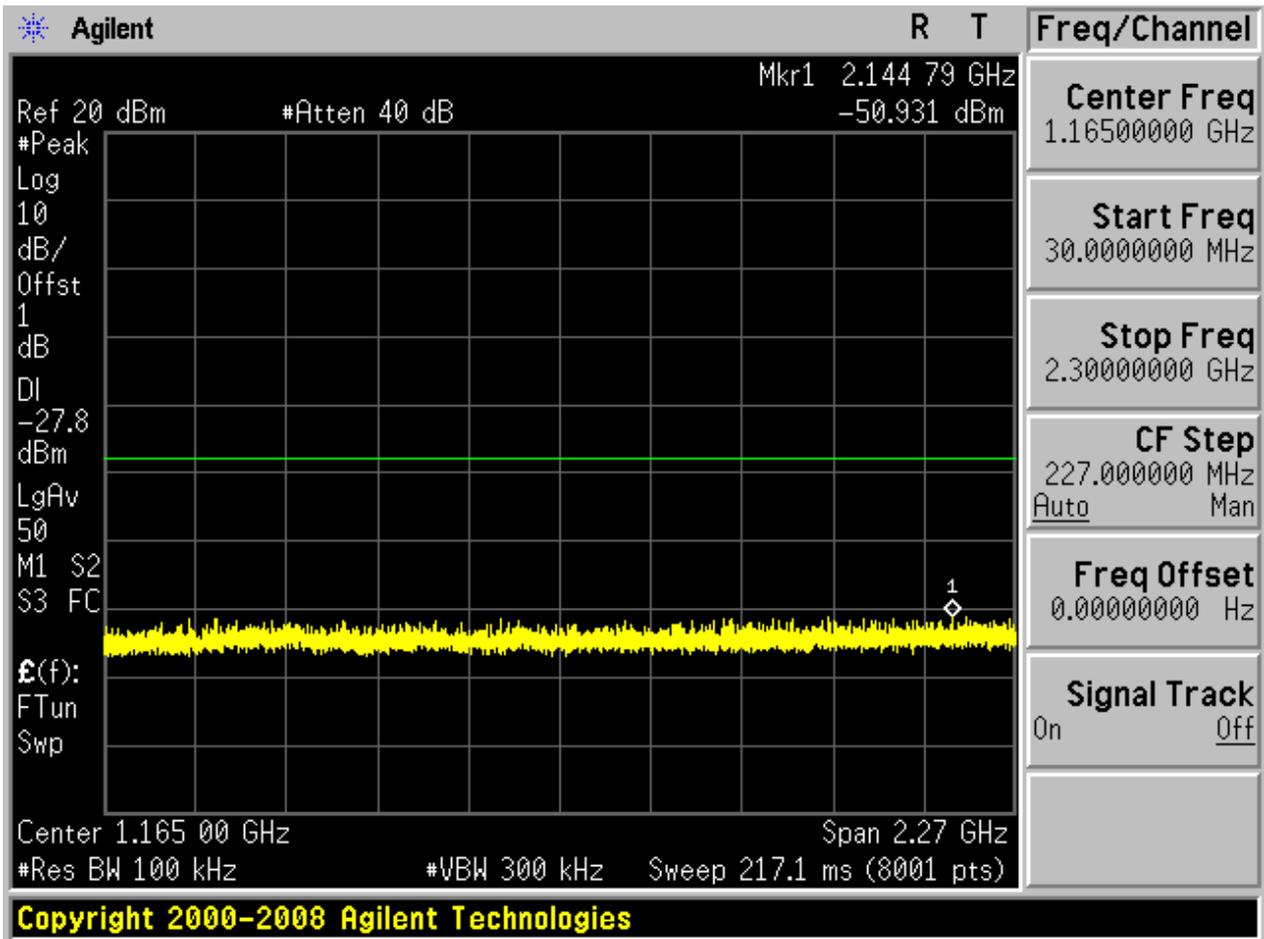


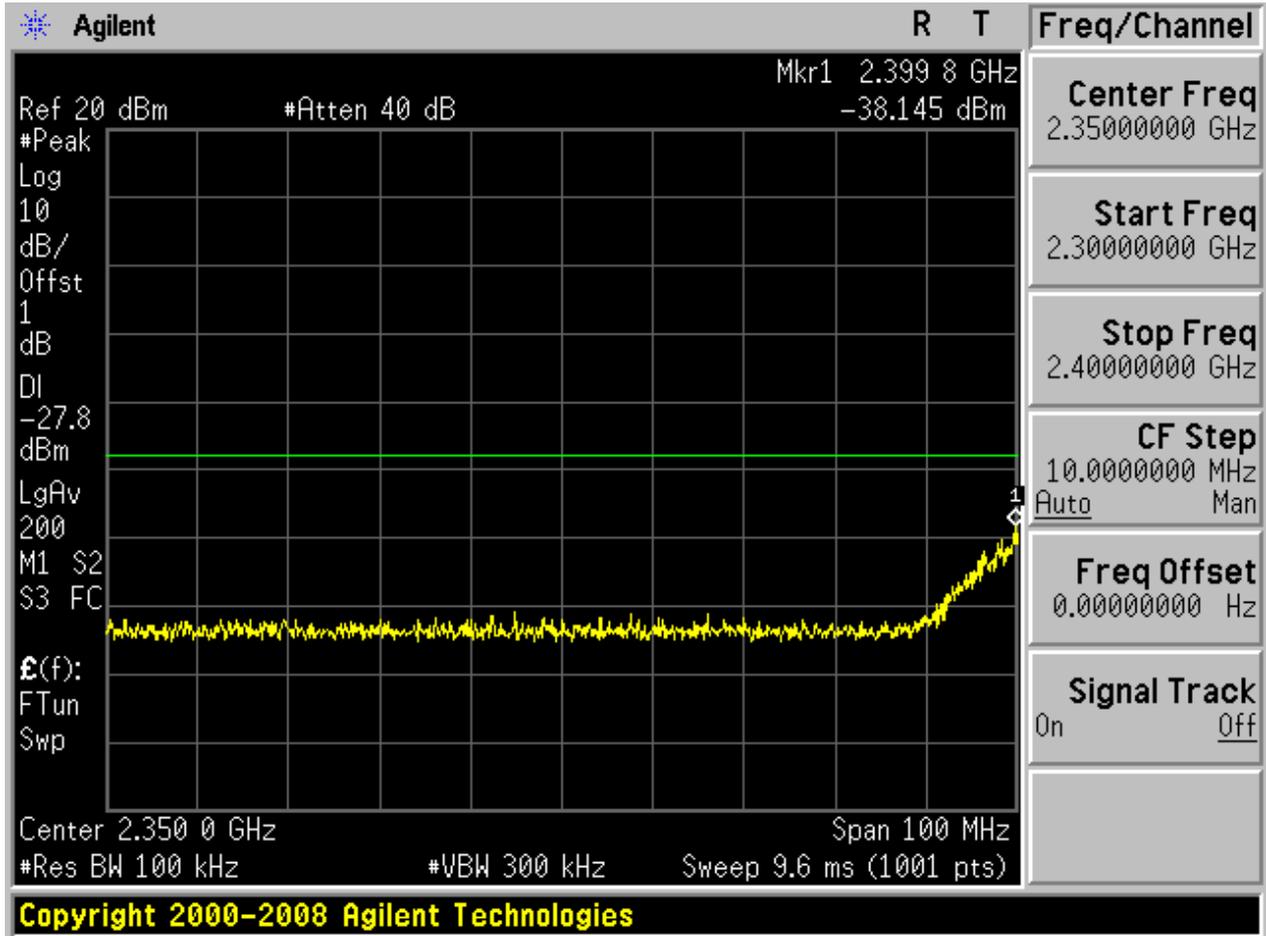


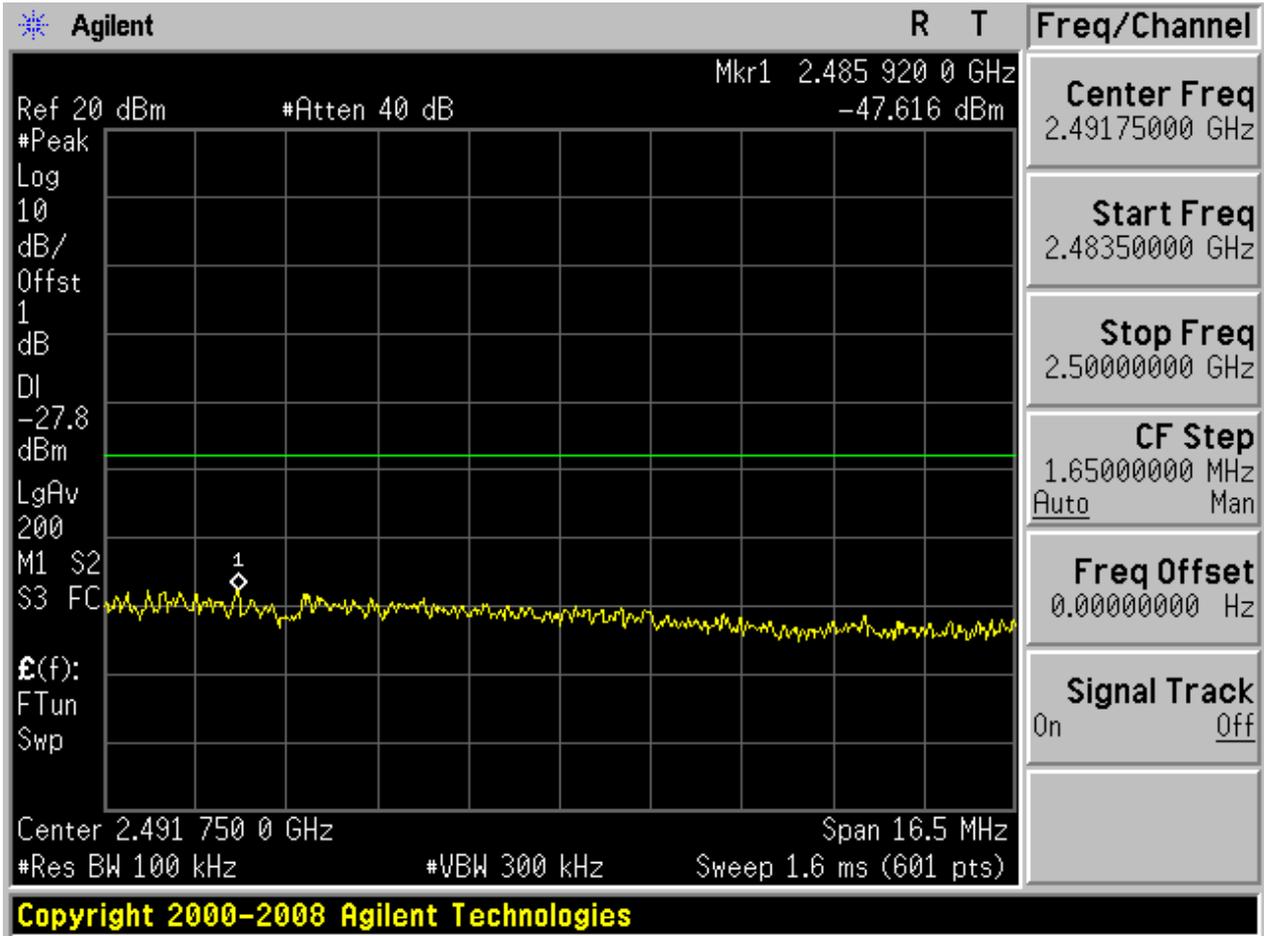
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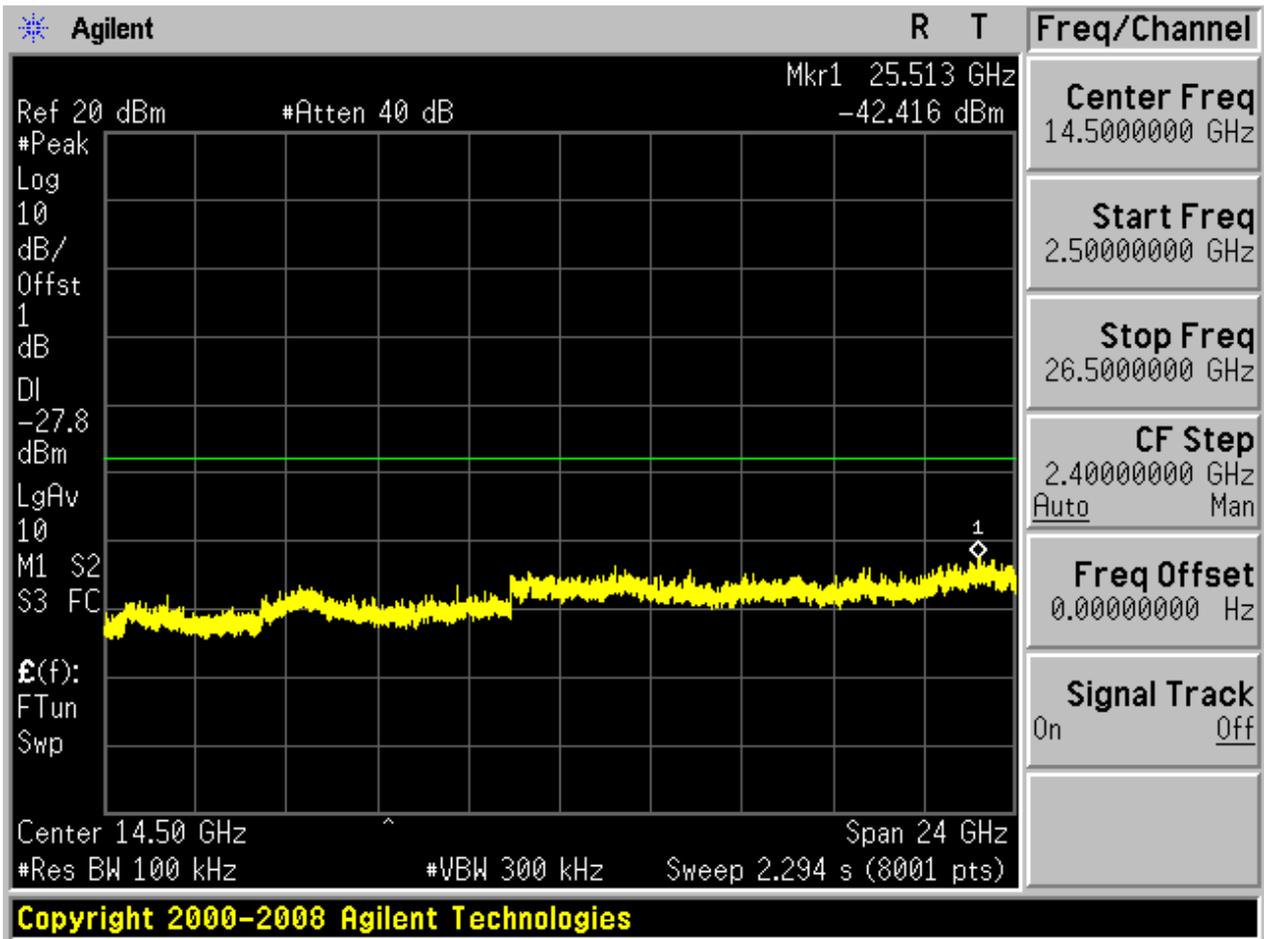








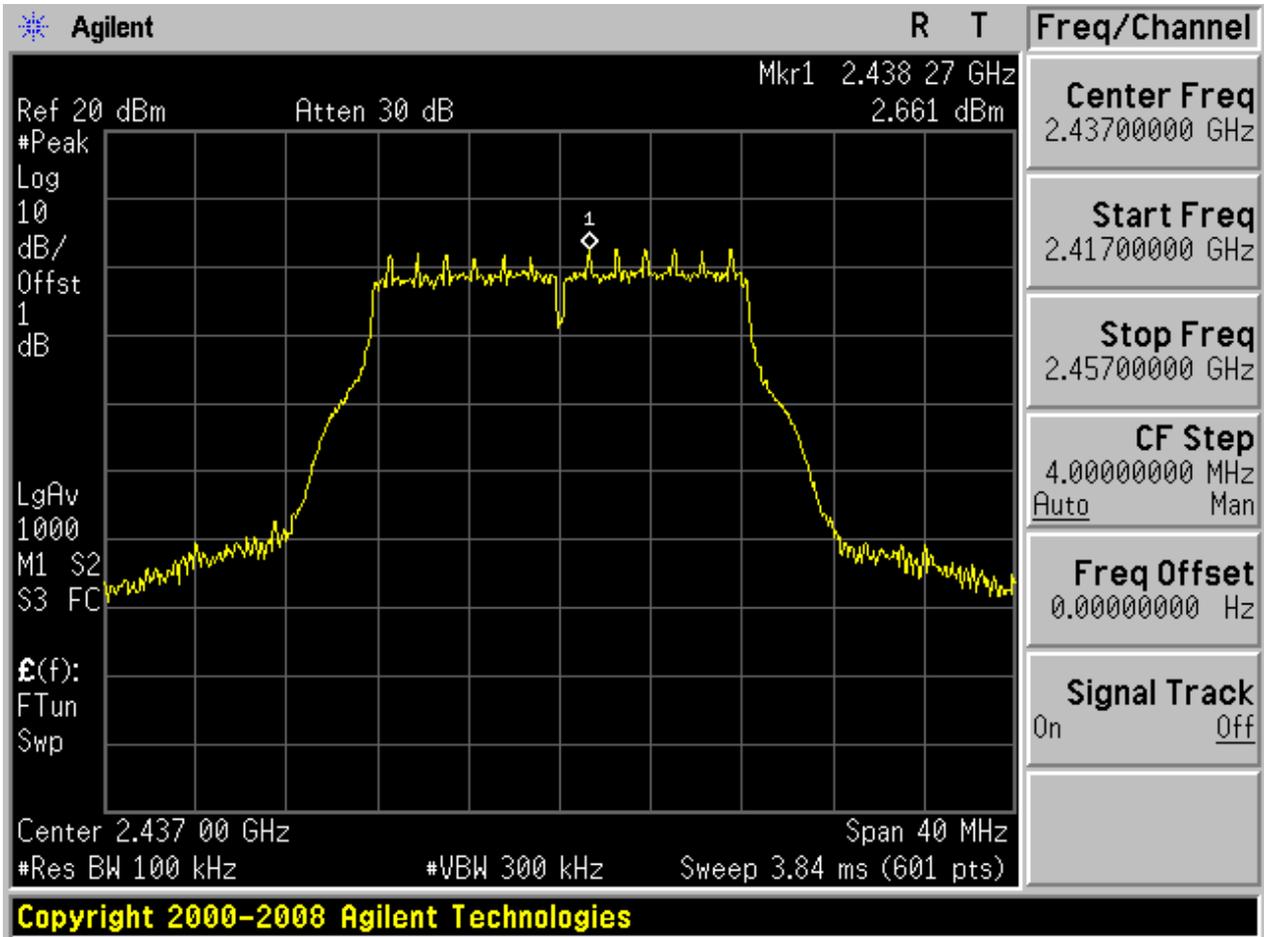






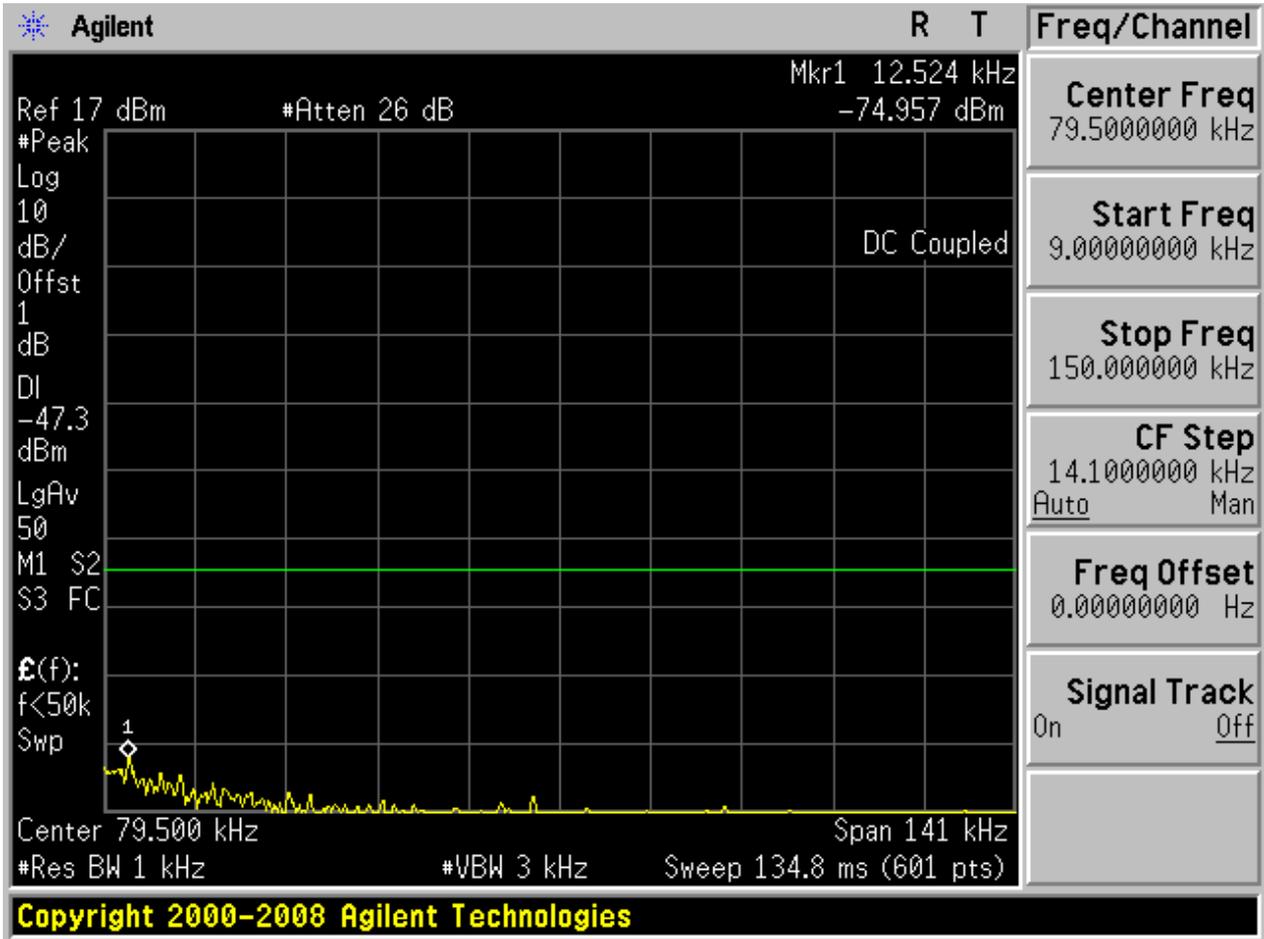
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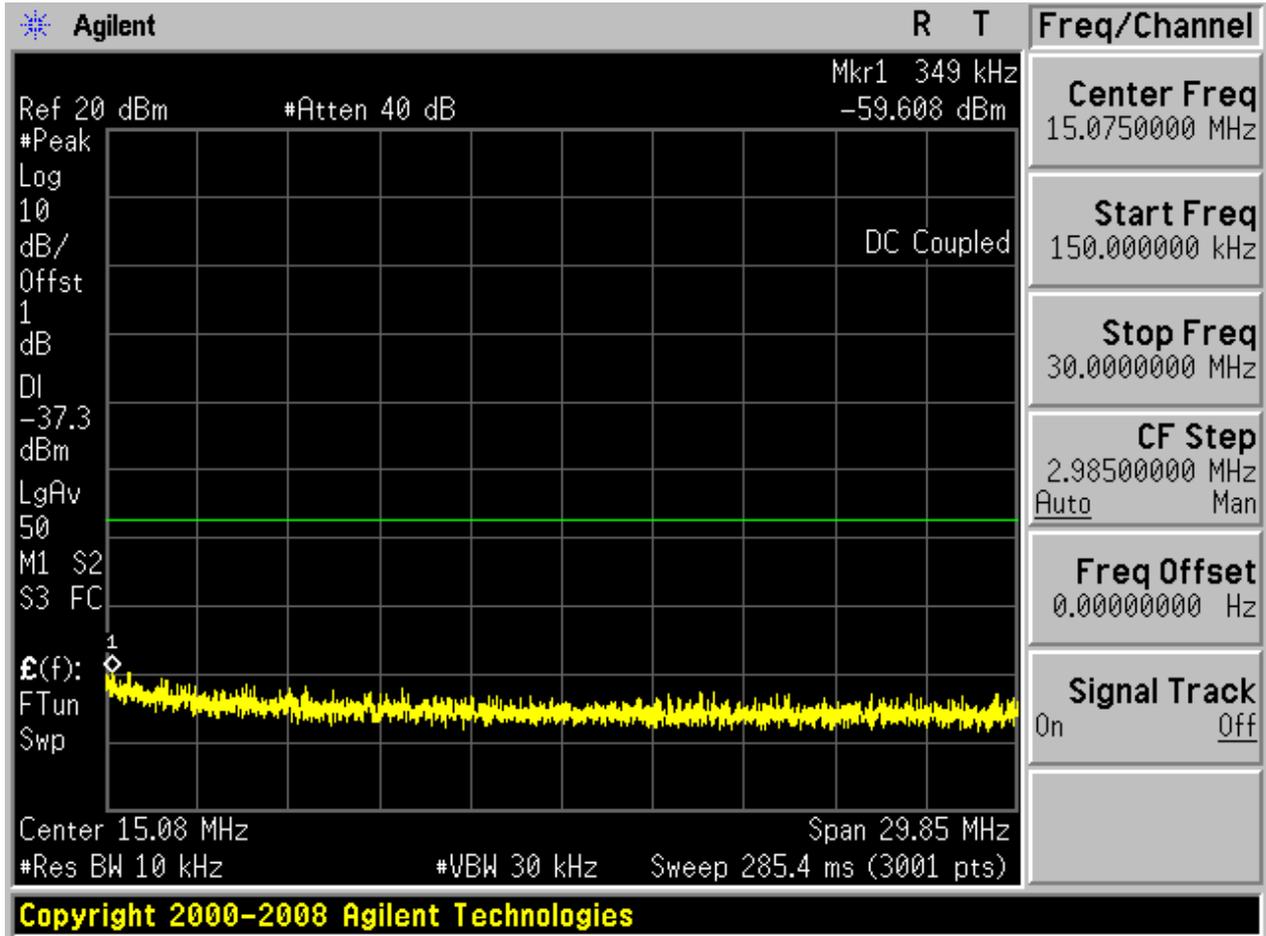
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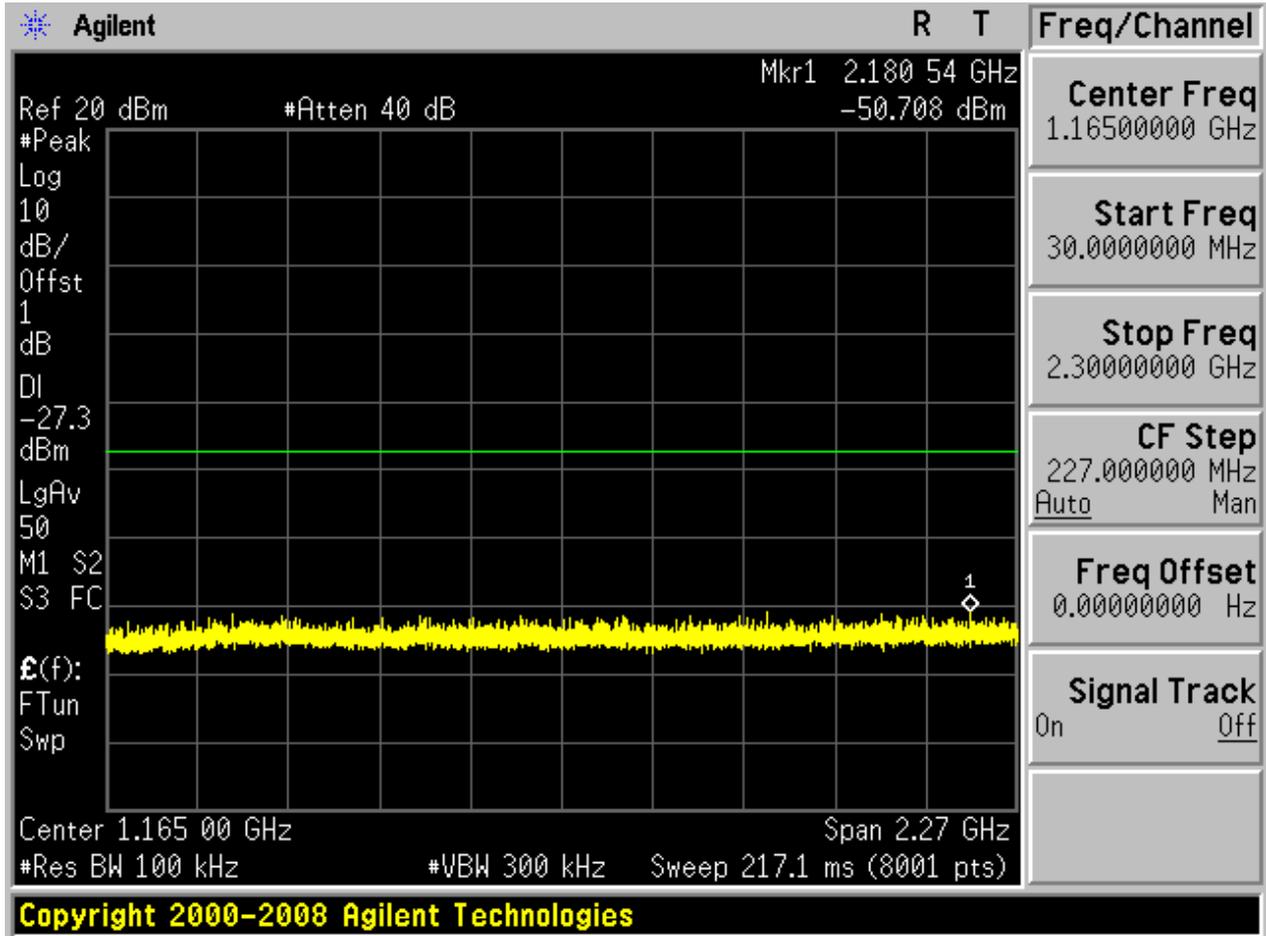


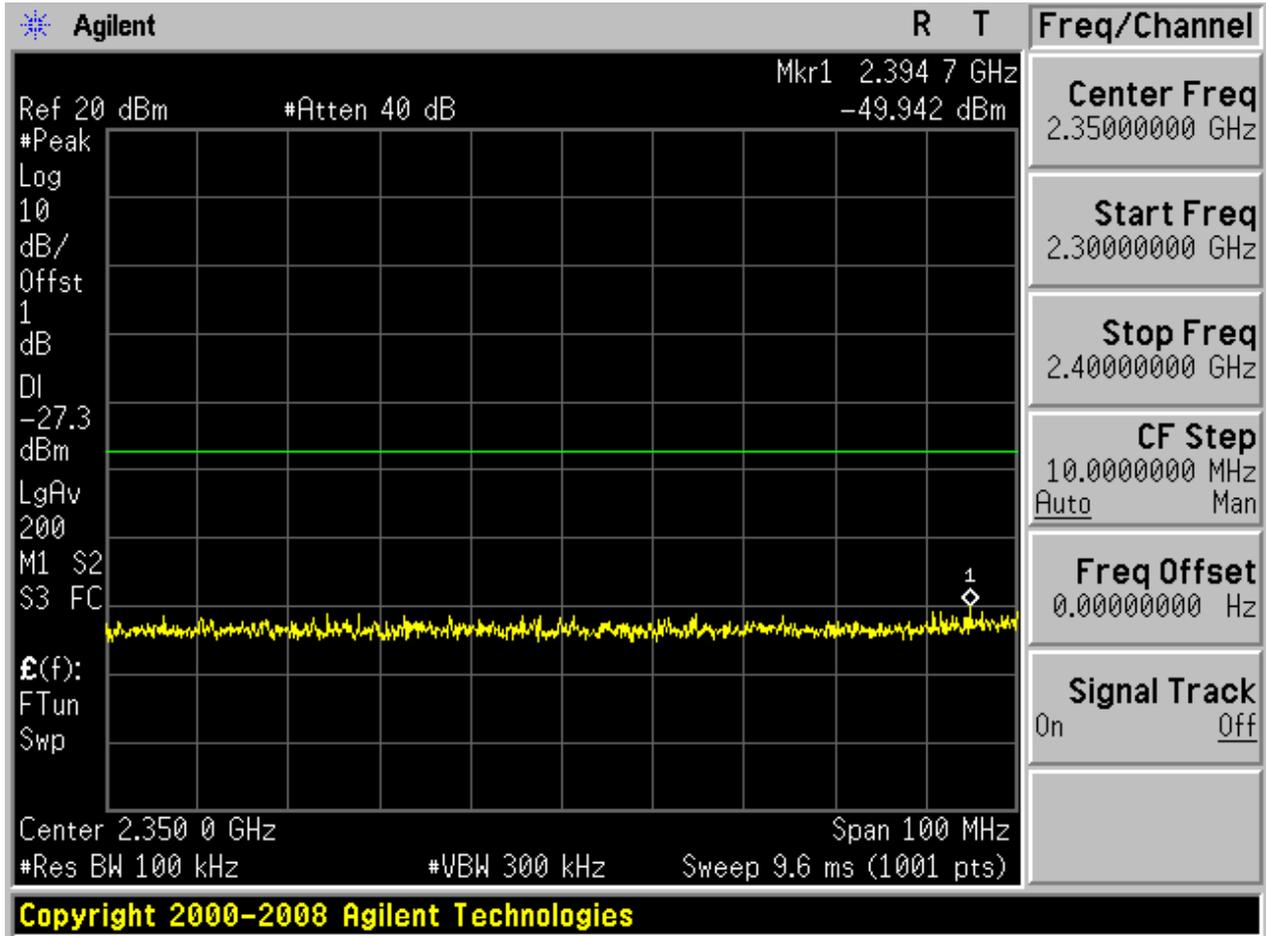


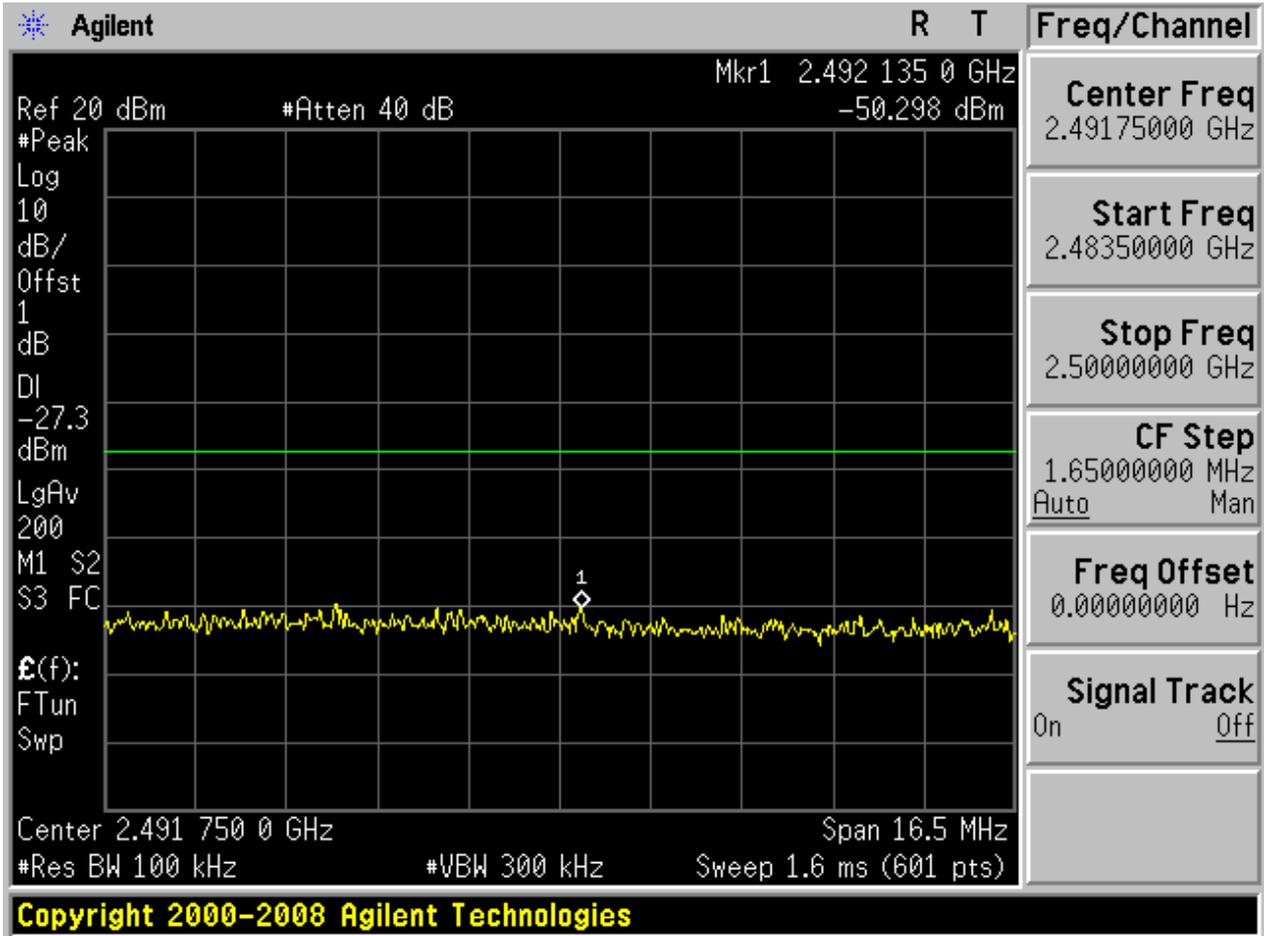
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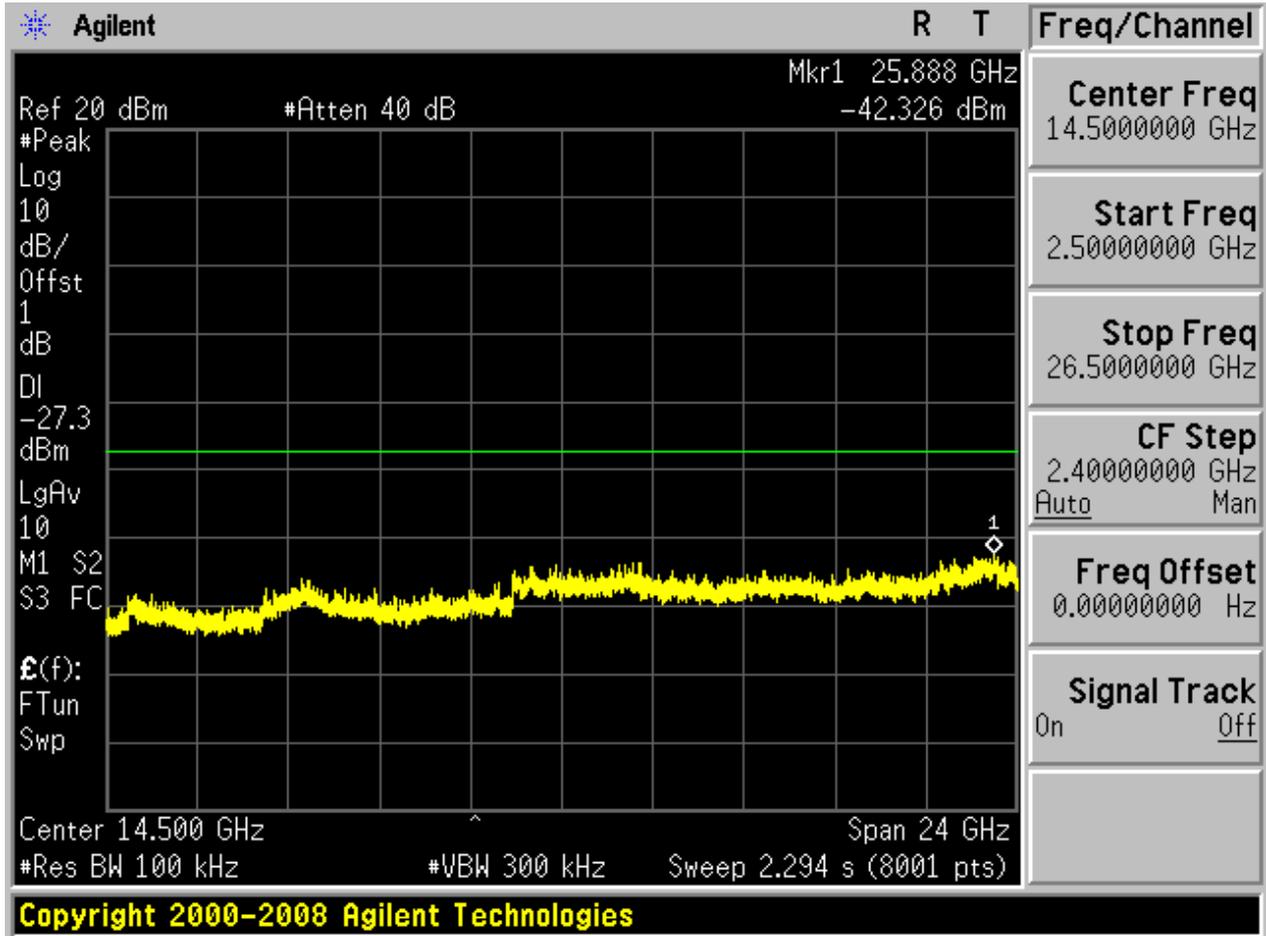








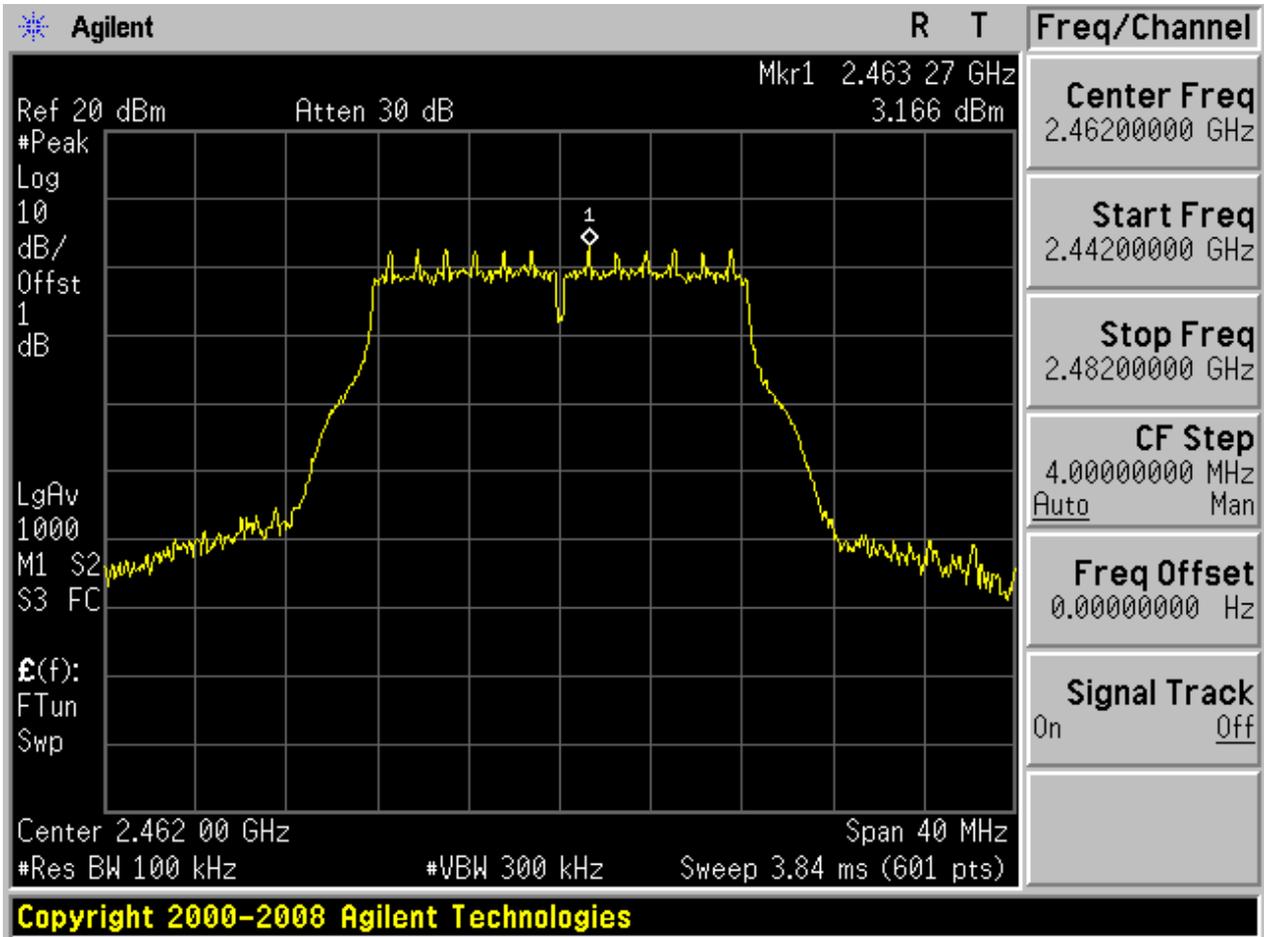






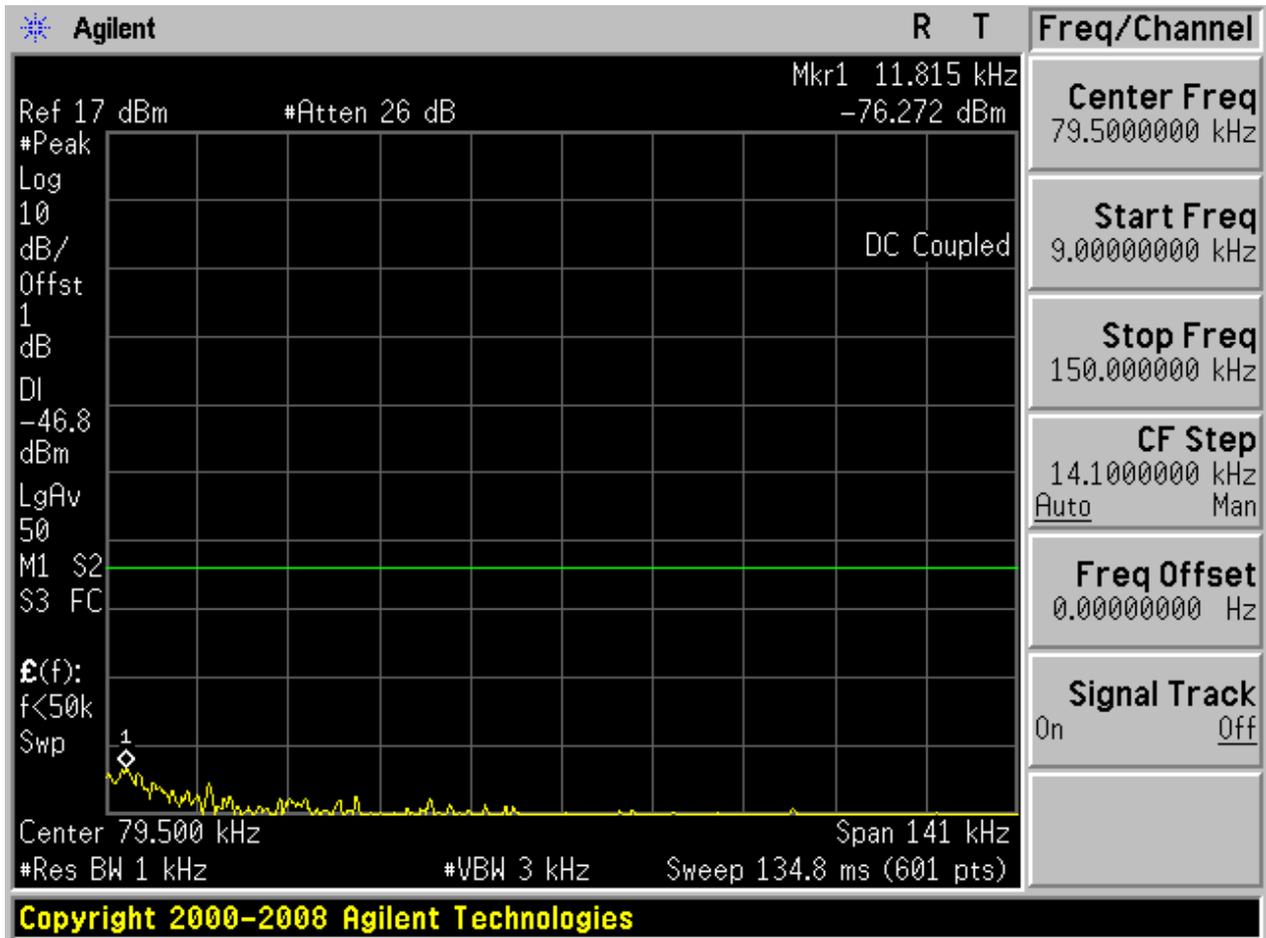
2.6 11G_H@Ant 1

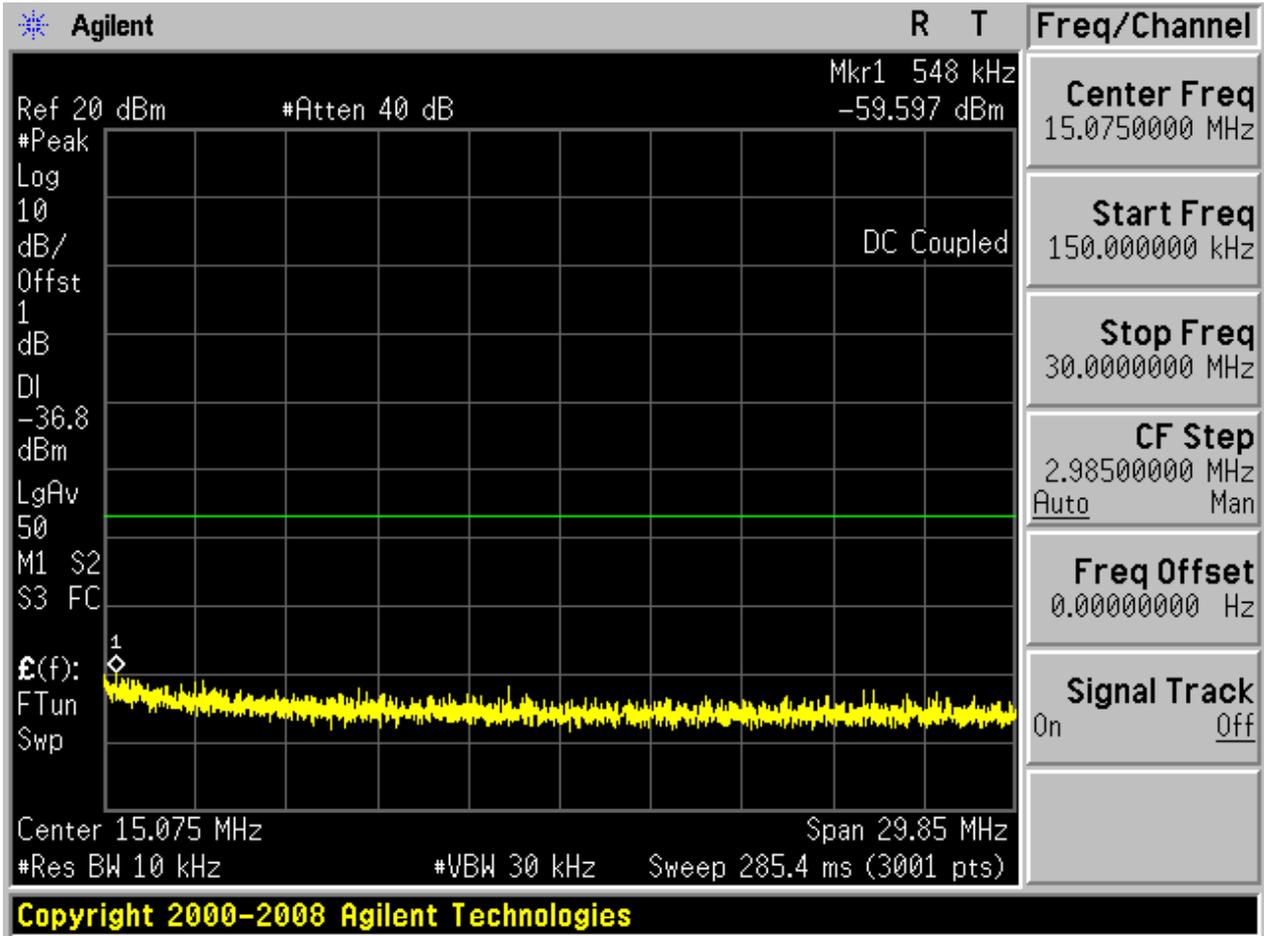
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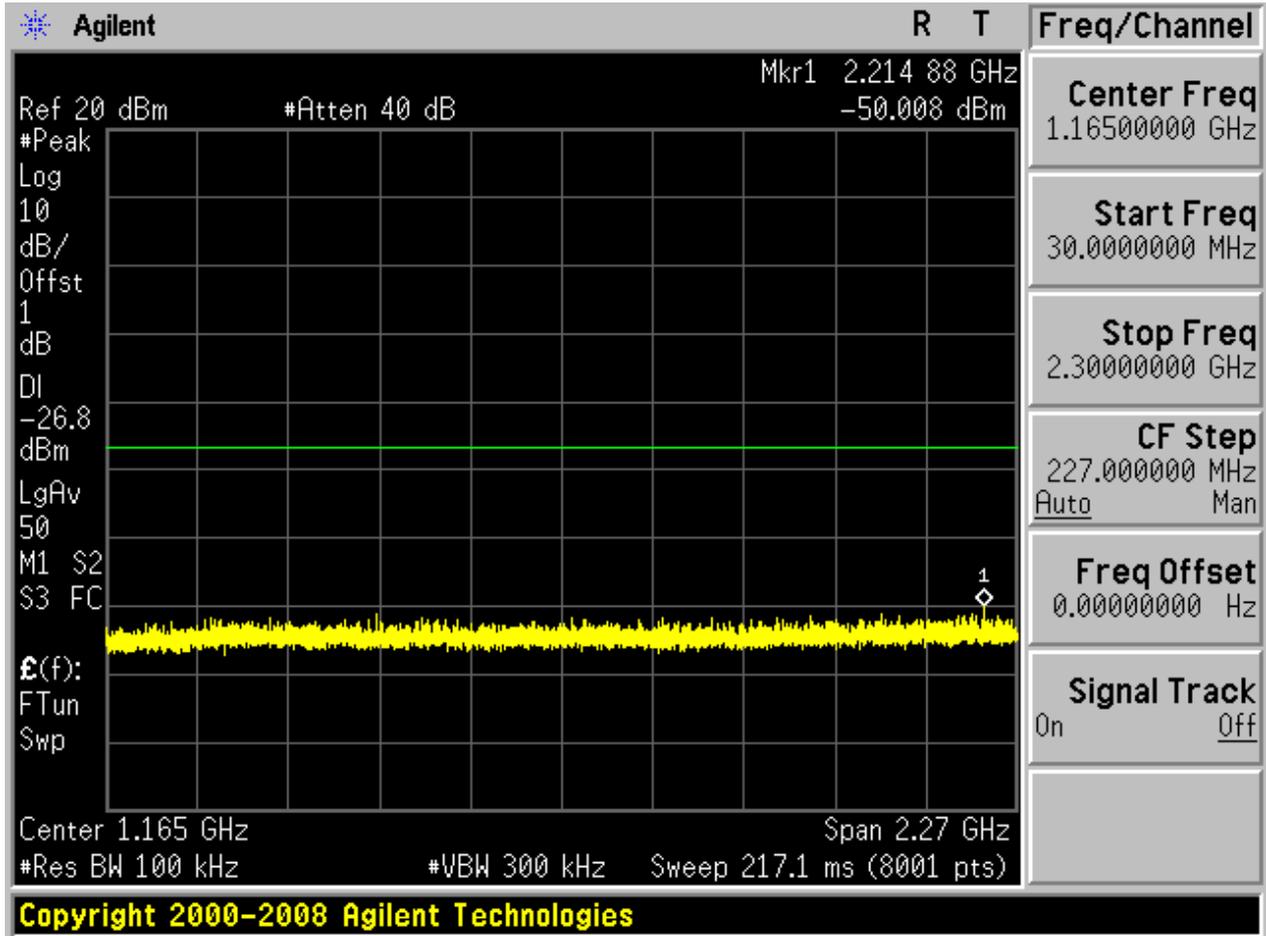


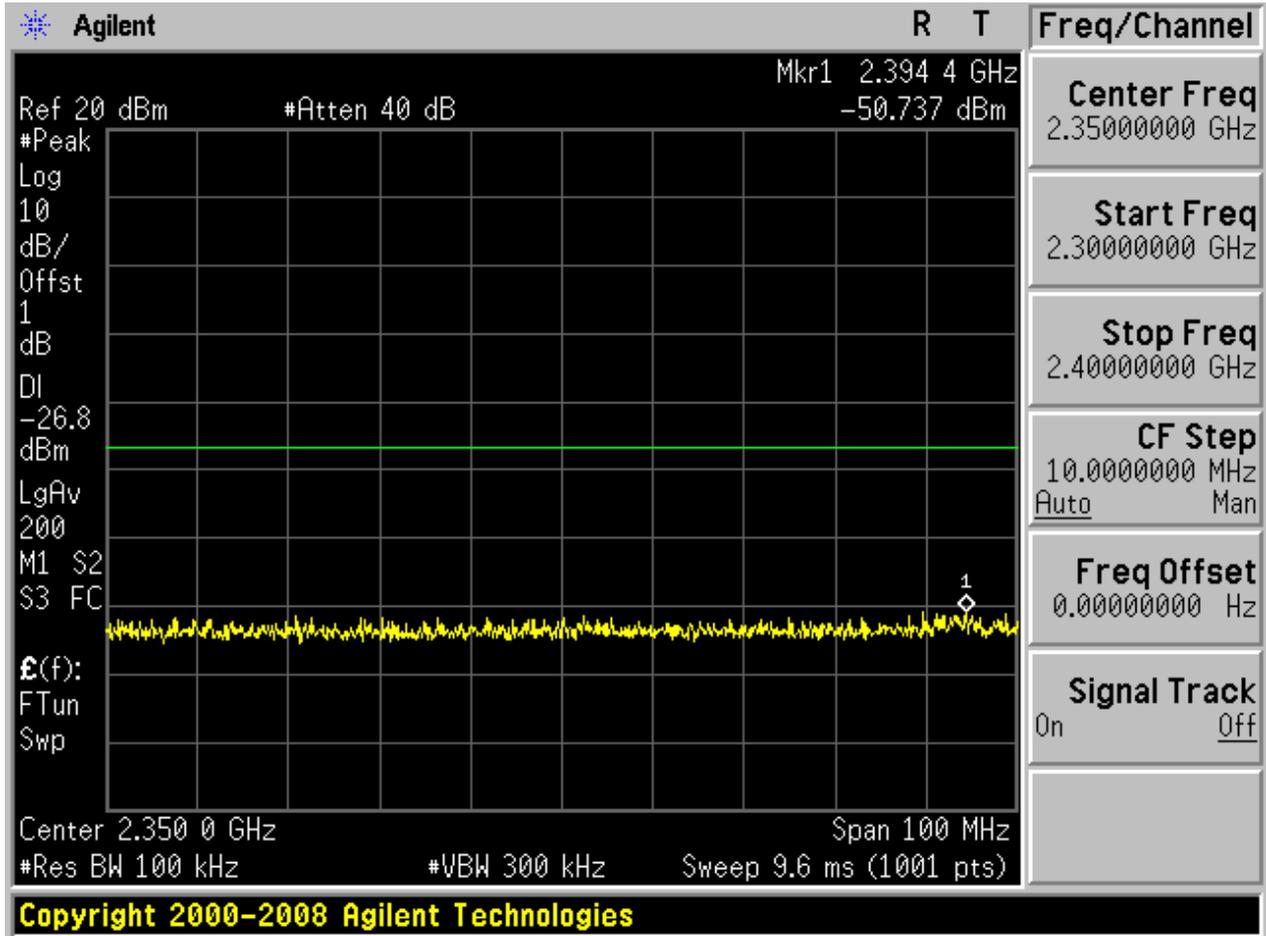


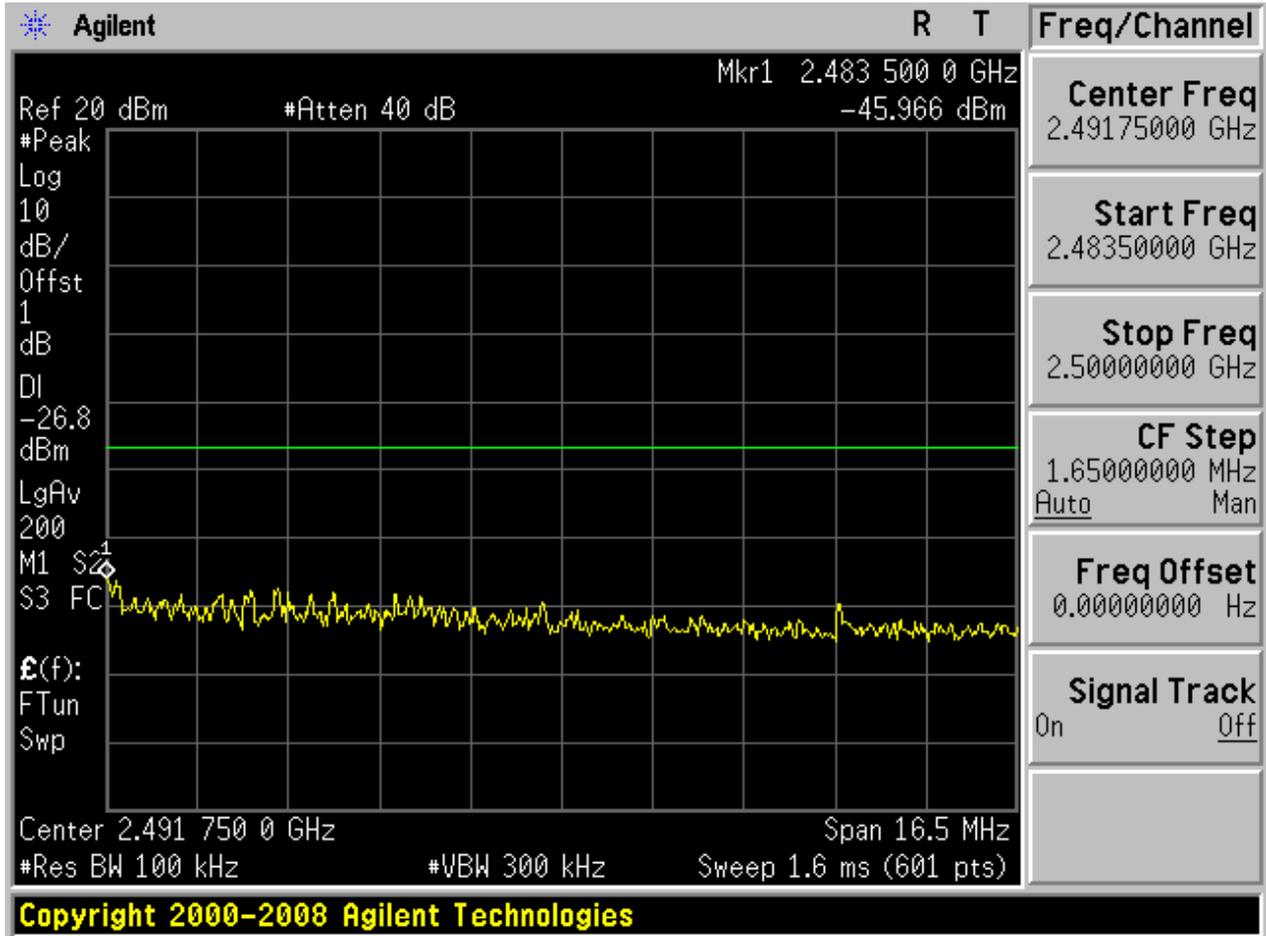
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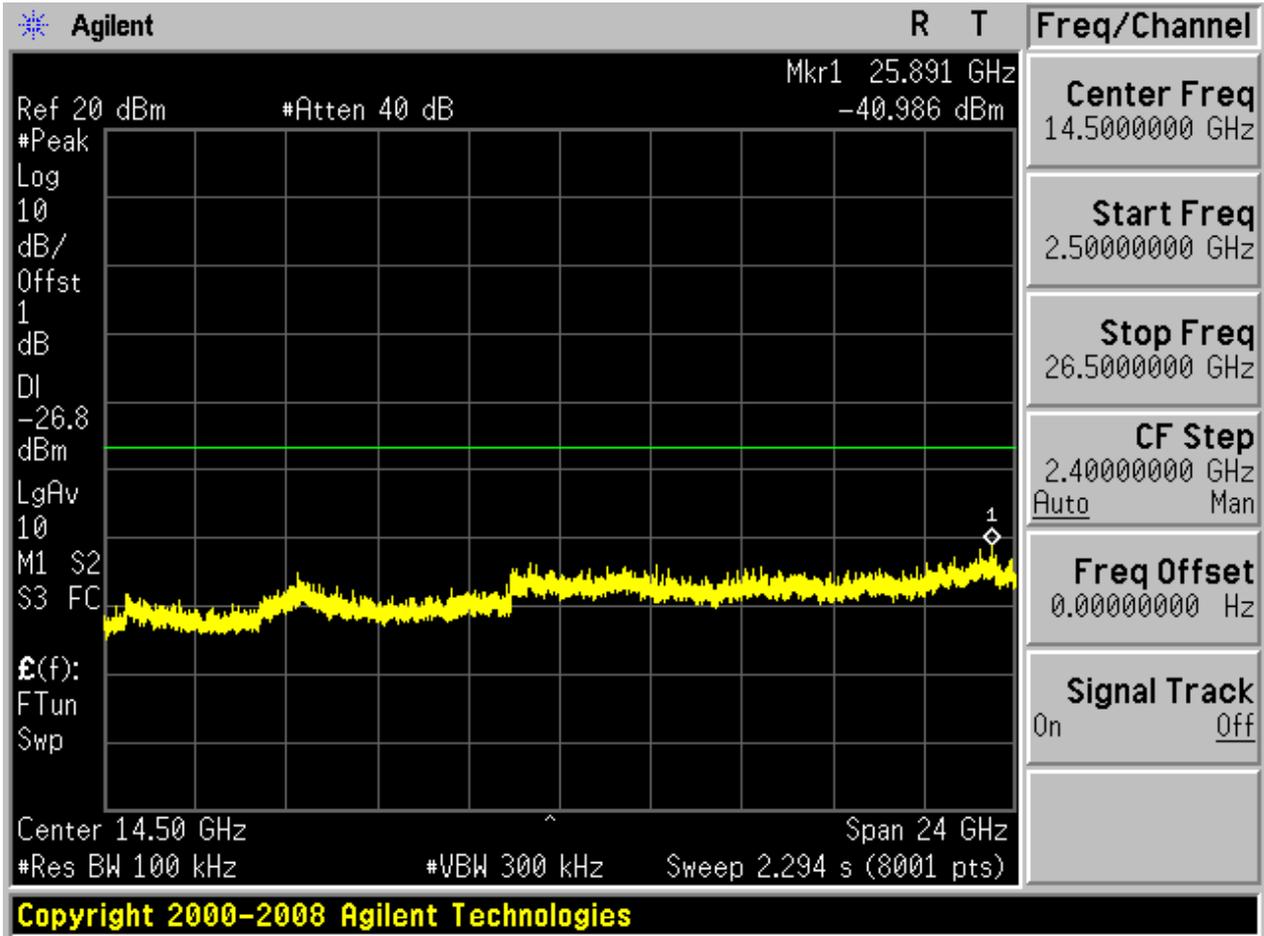








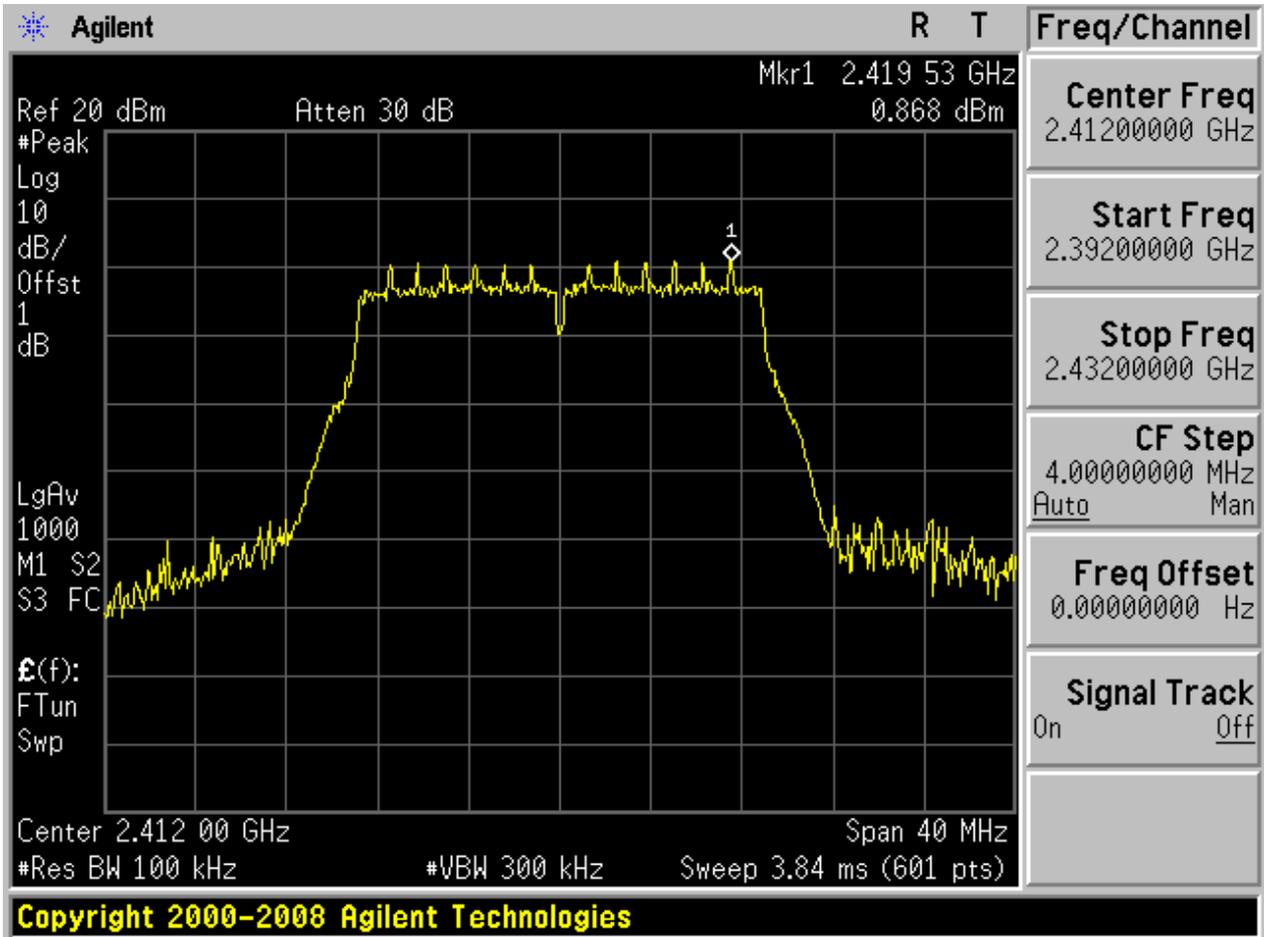






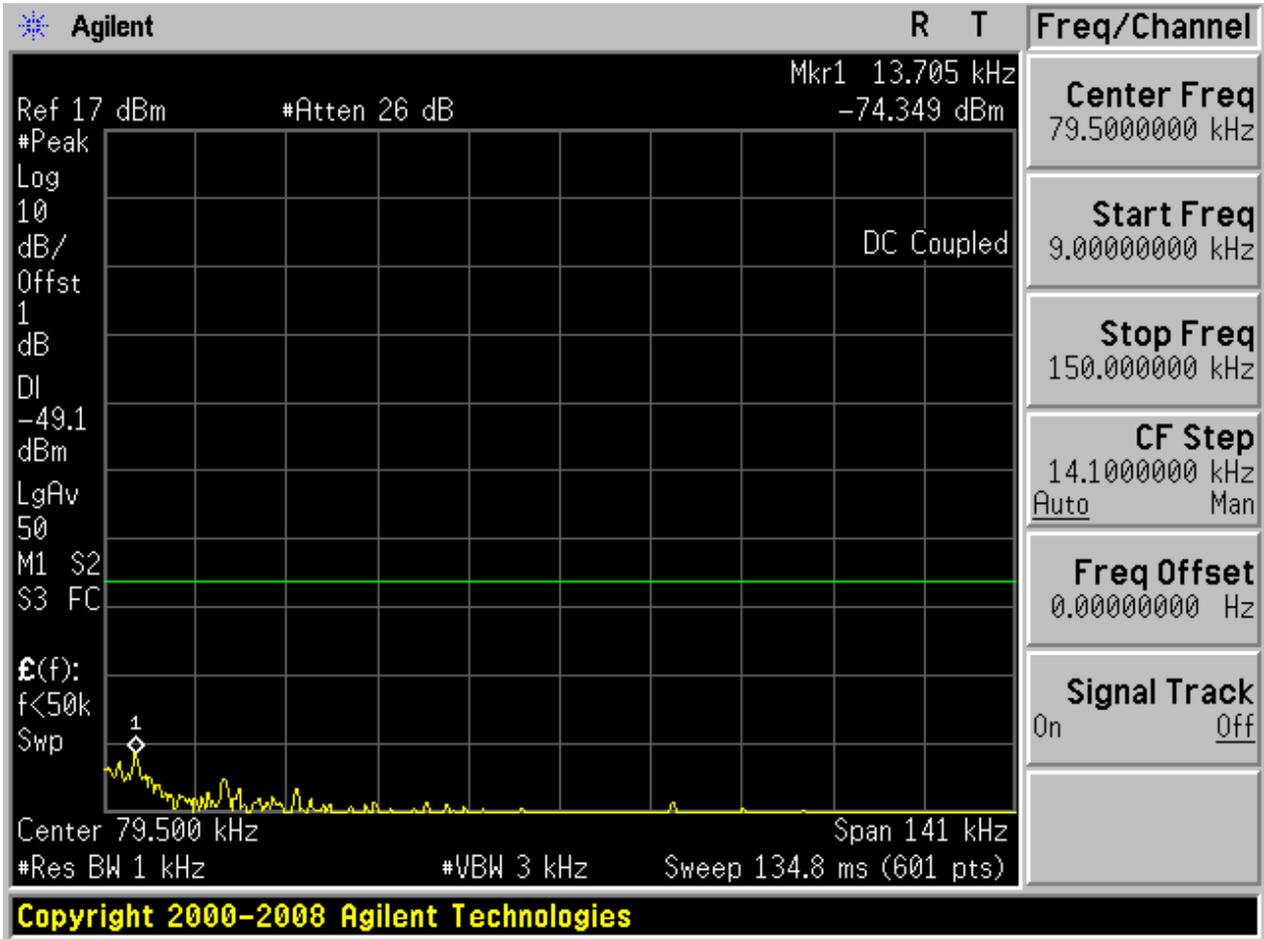
2.7 11N20_L@Ant 1

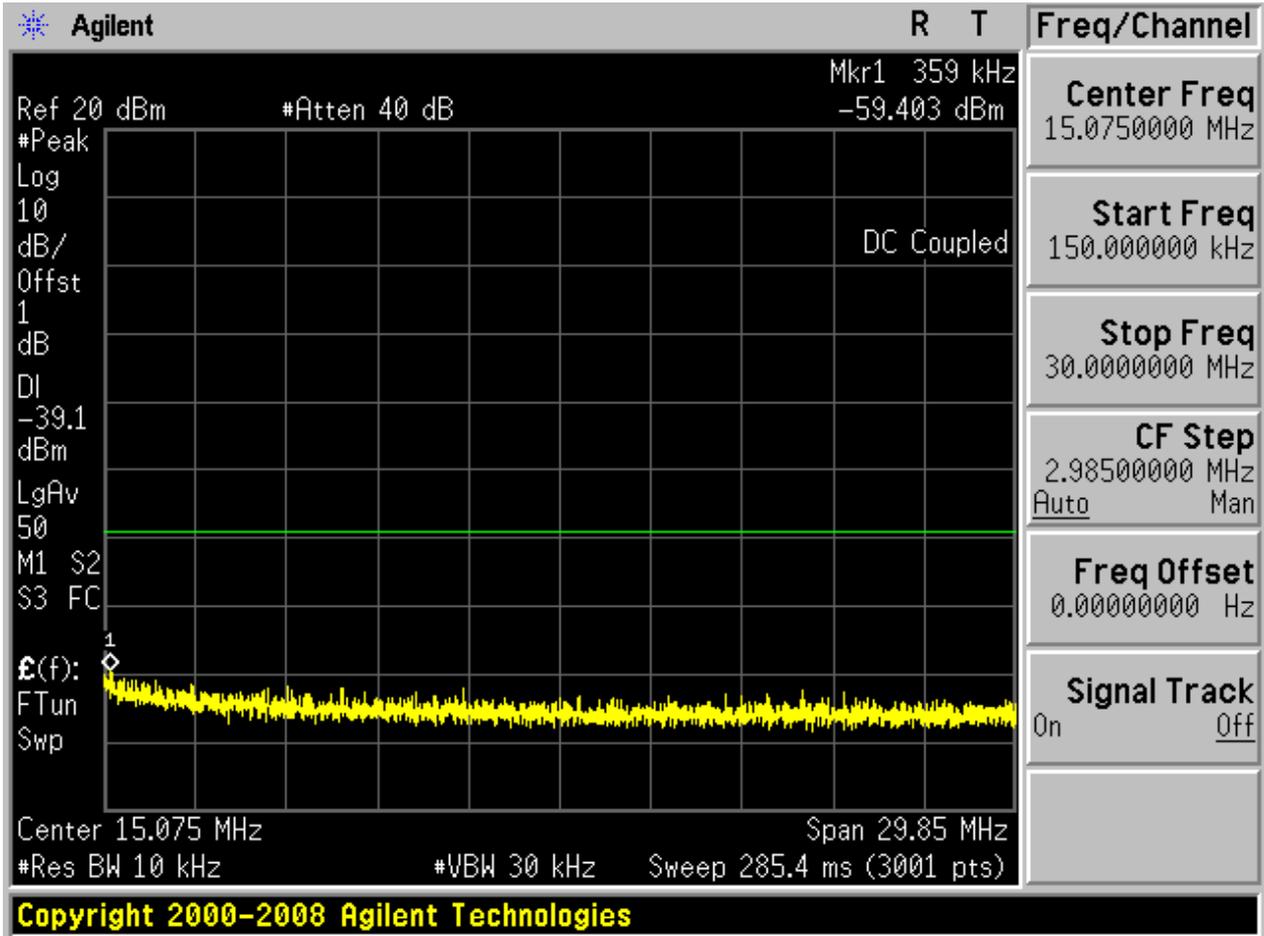
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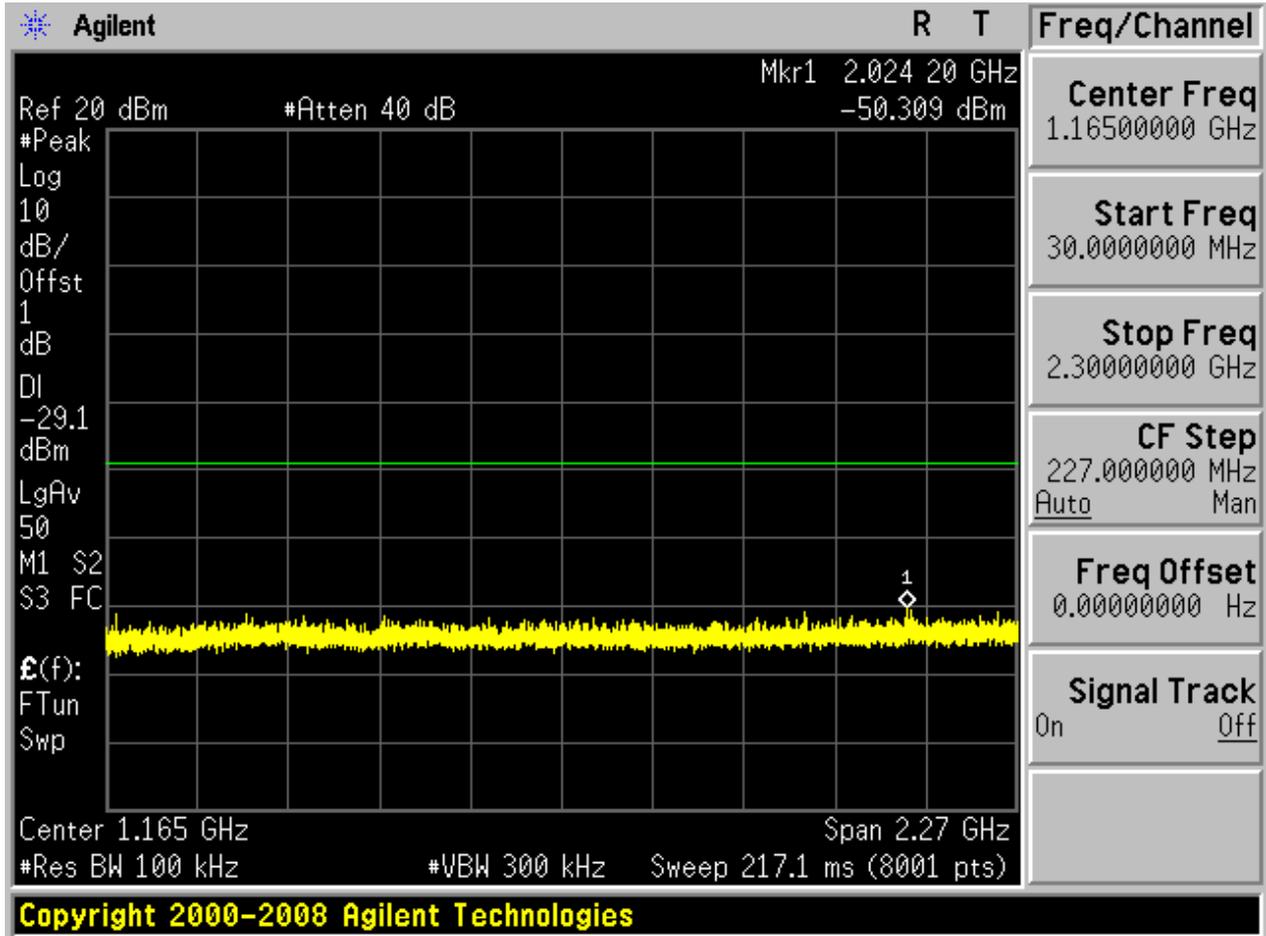


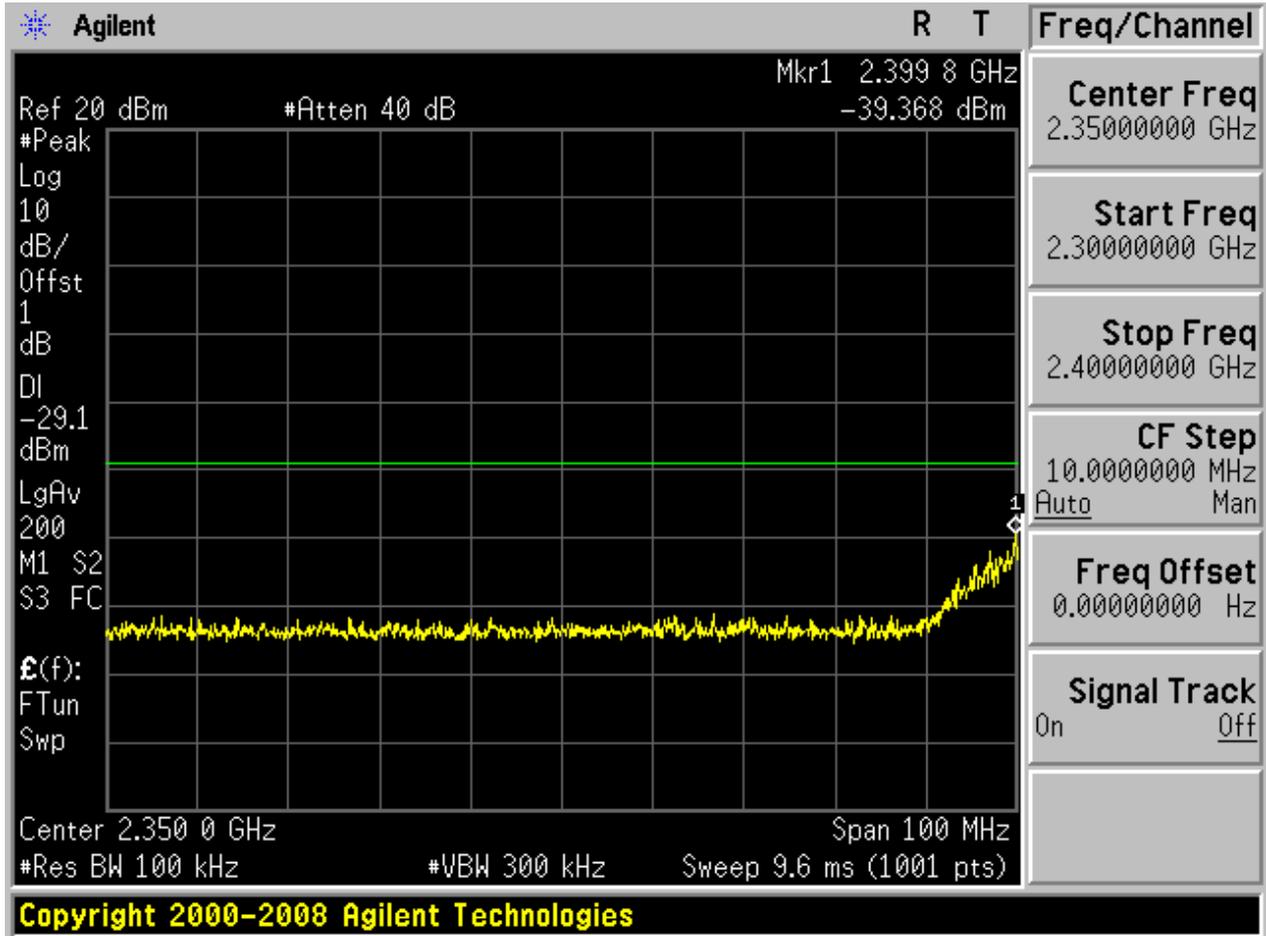


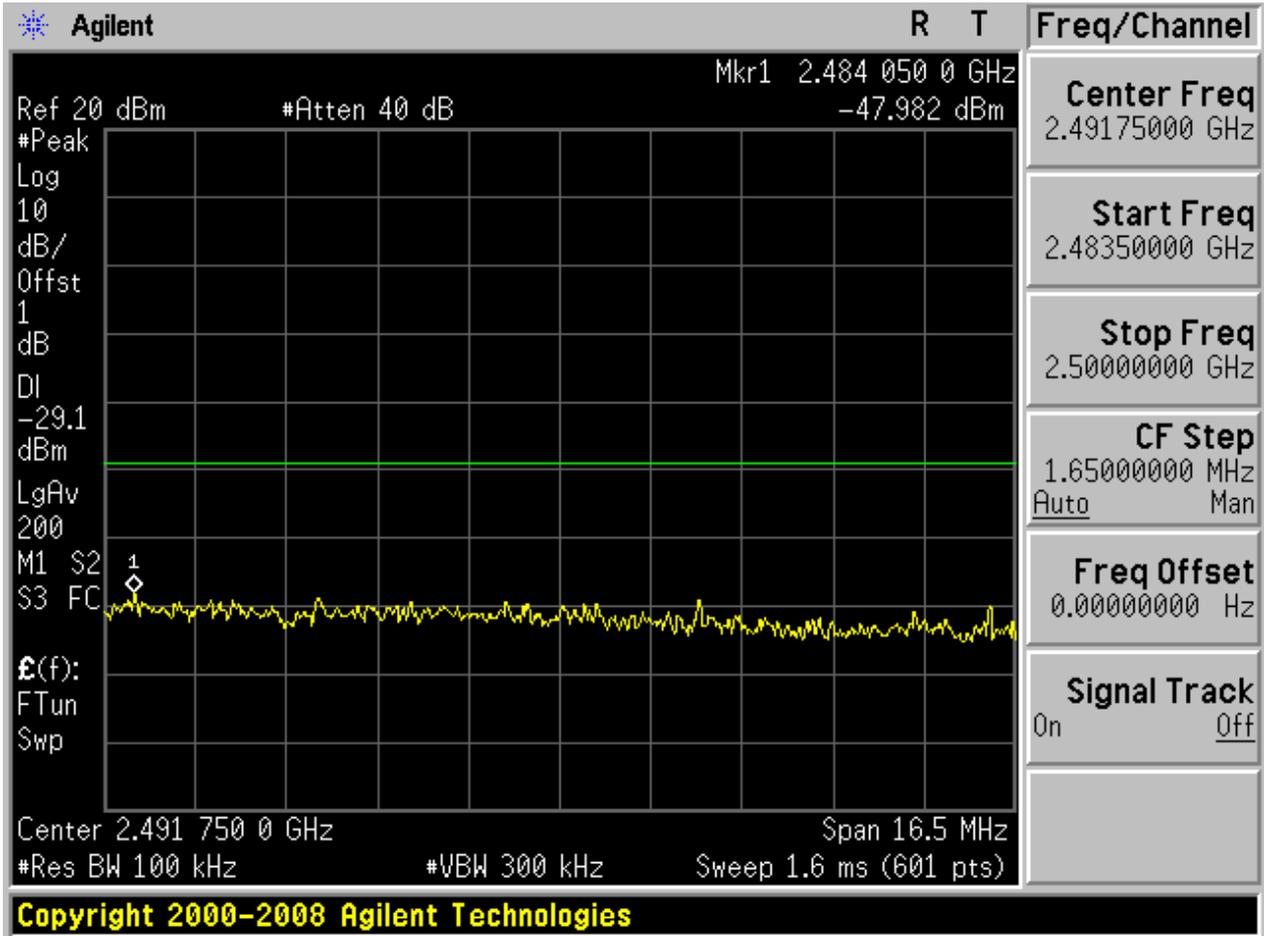
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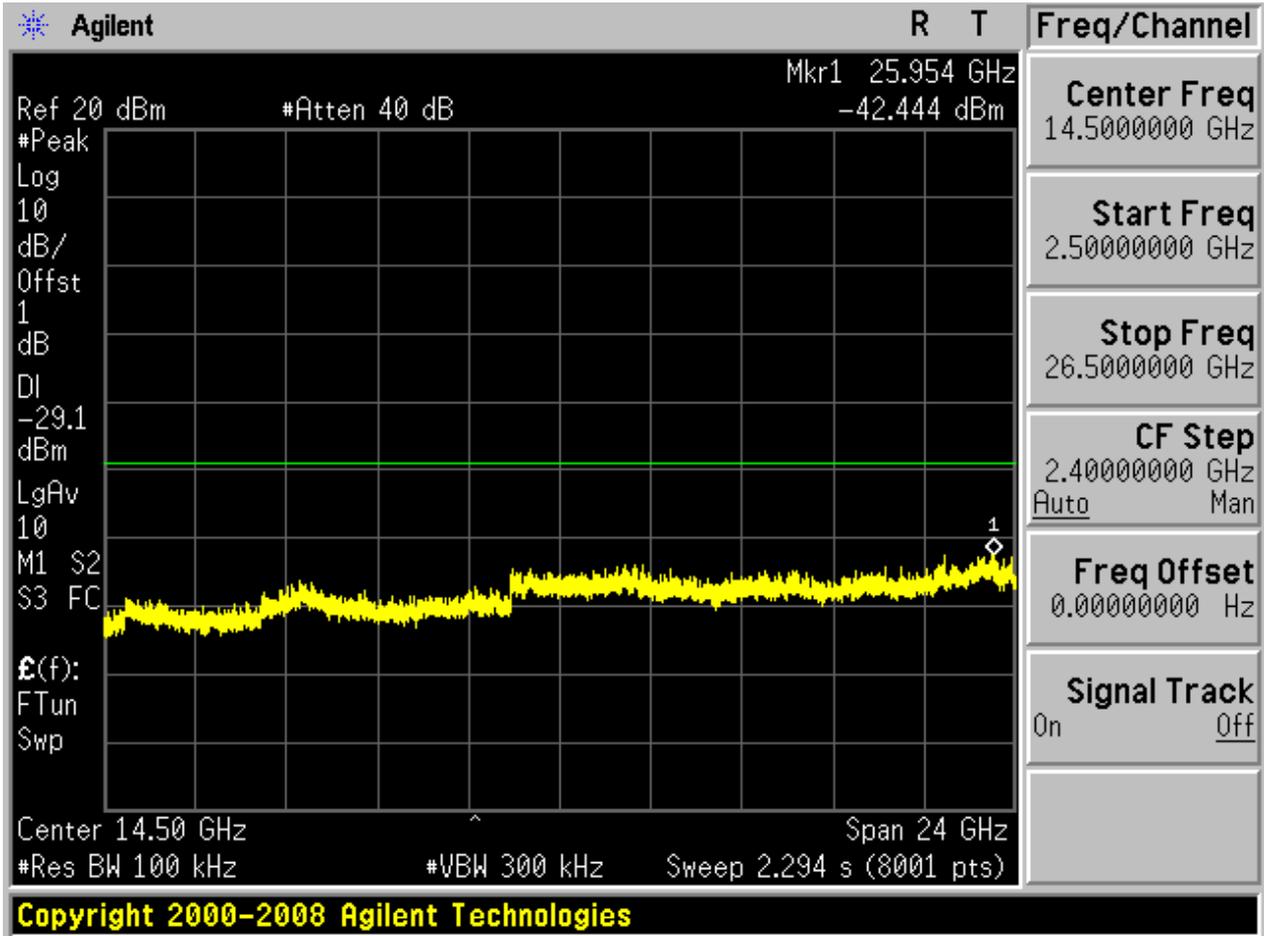








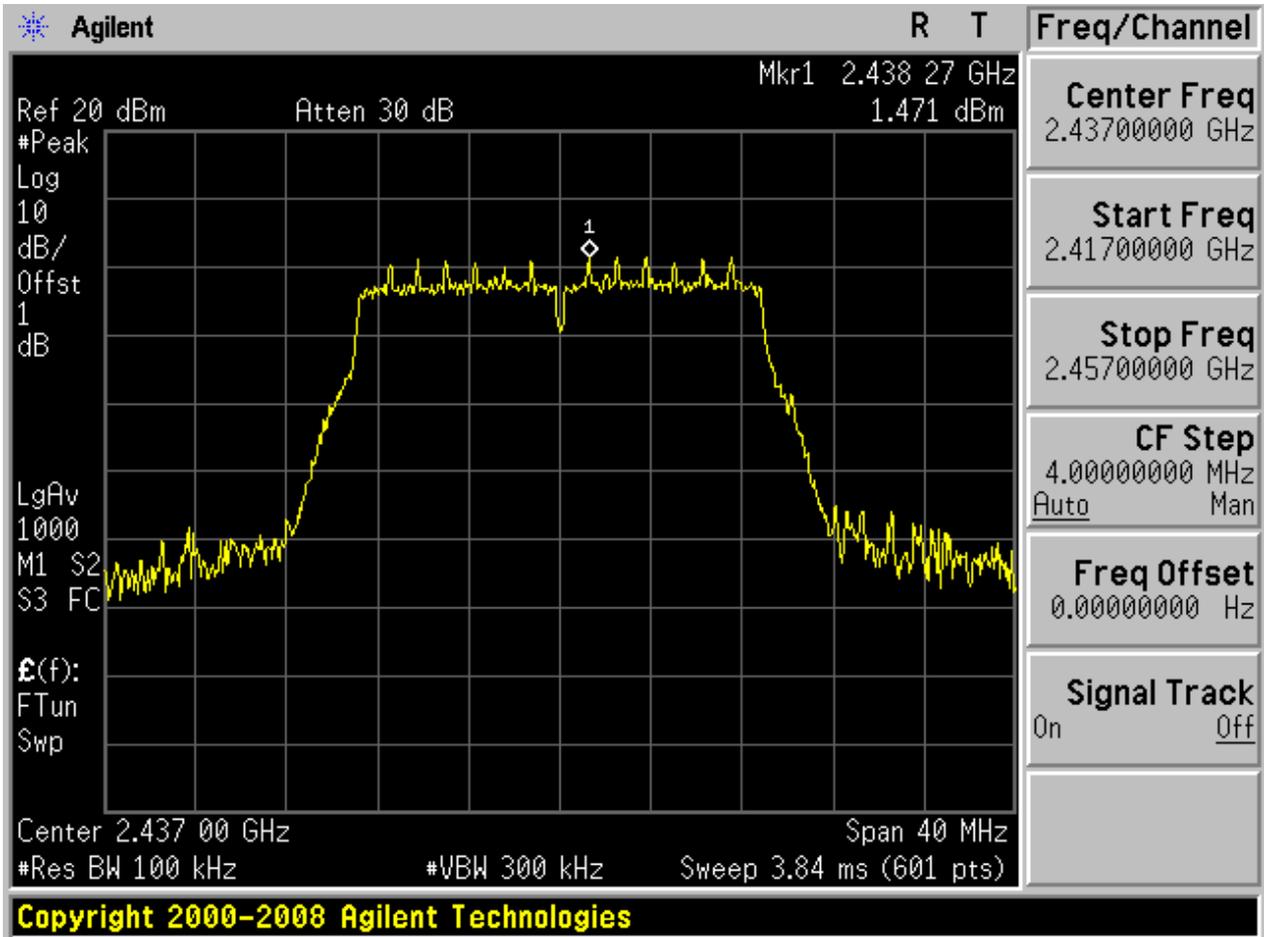






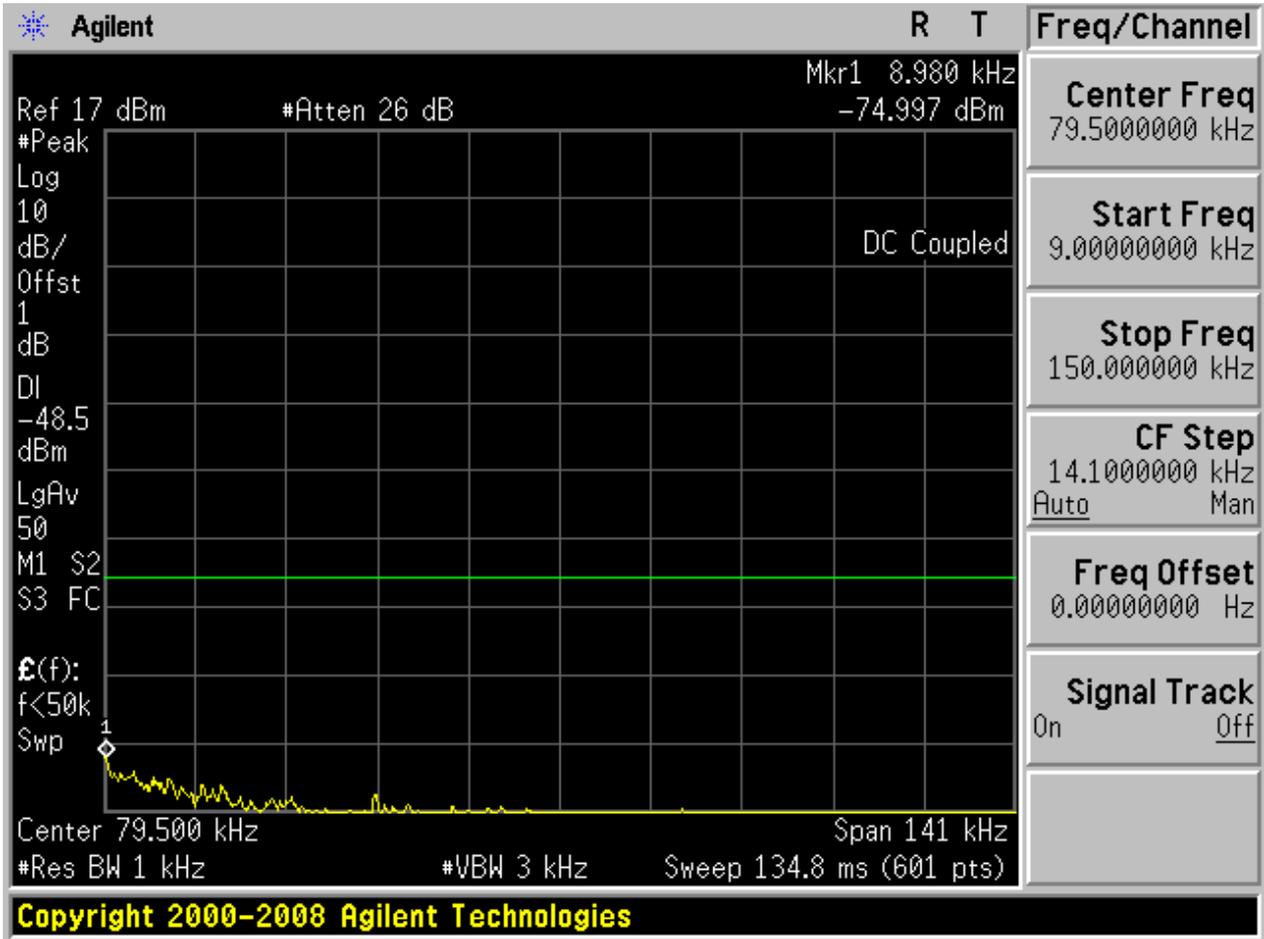
2.8 11N20_M@Ant 1

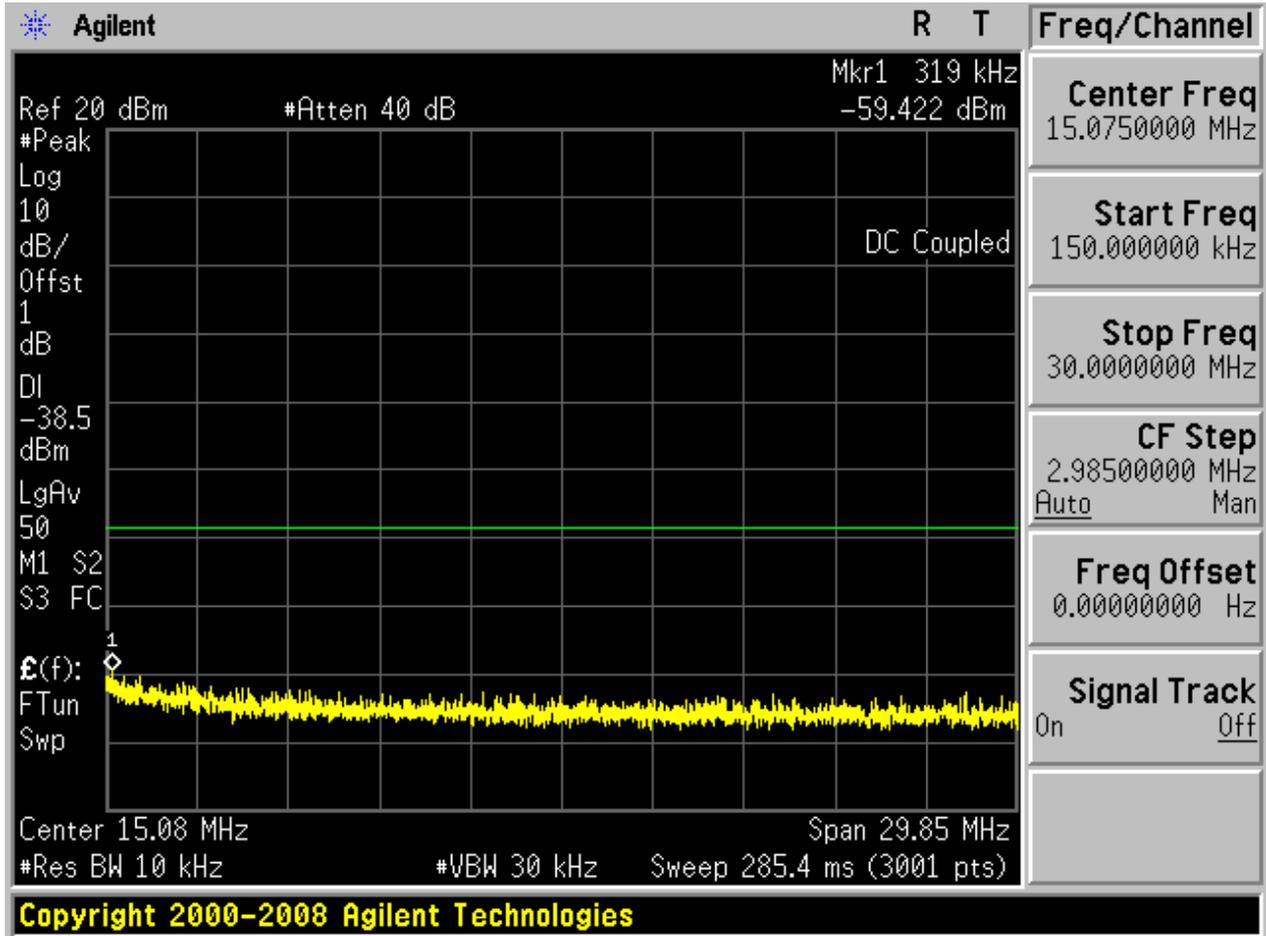
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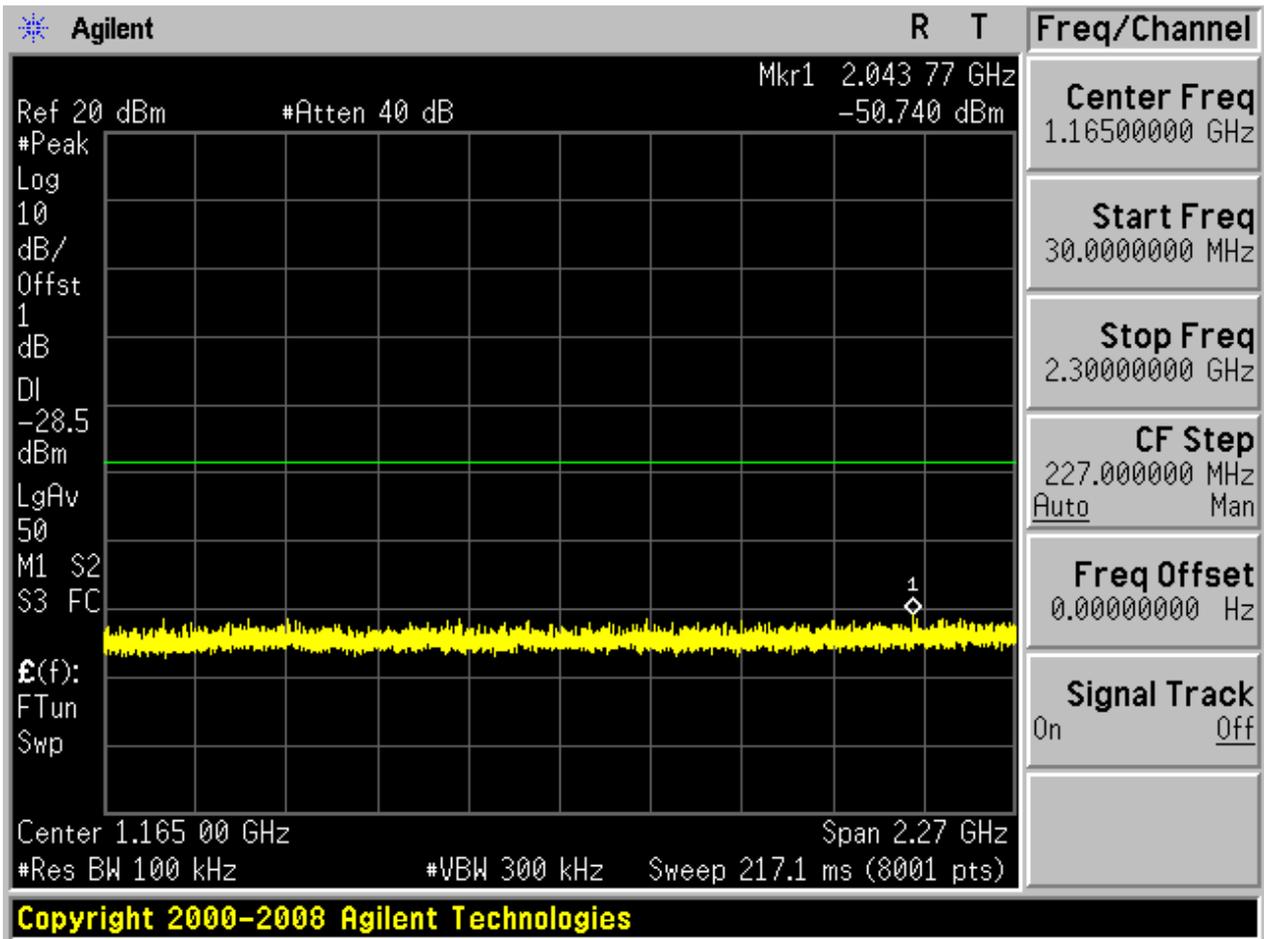


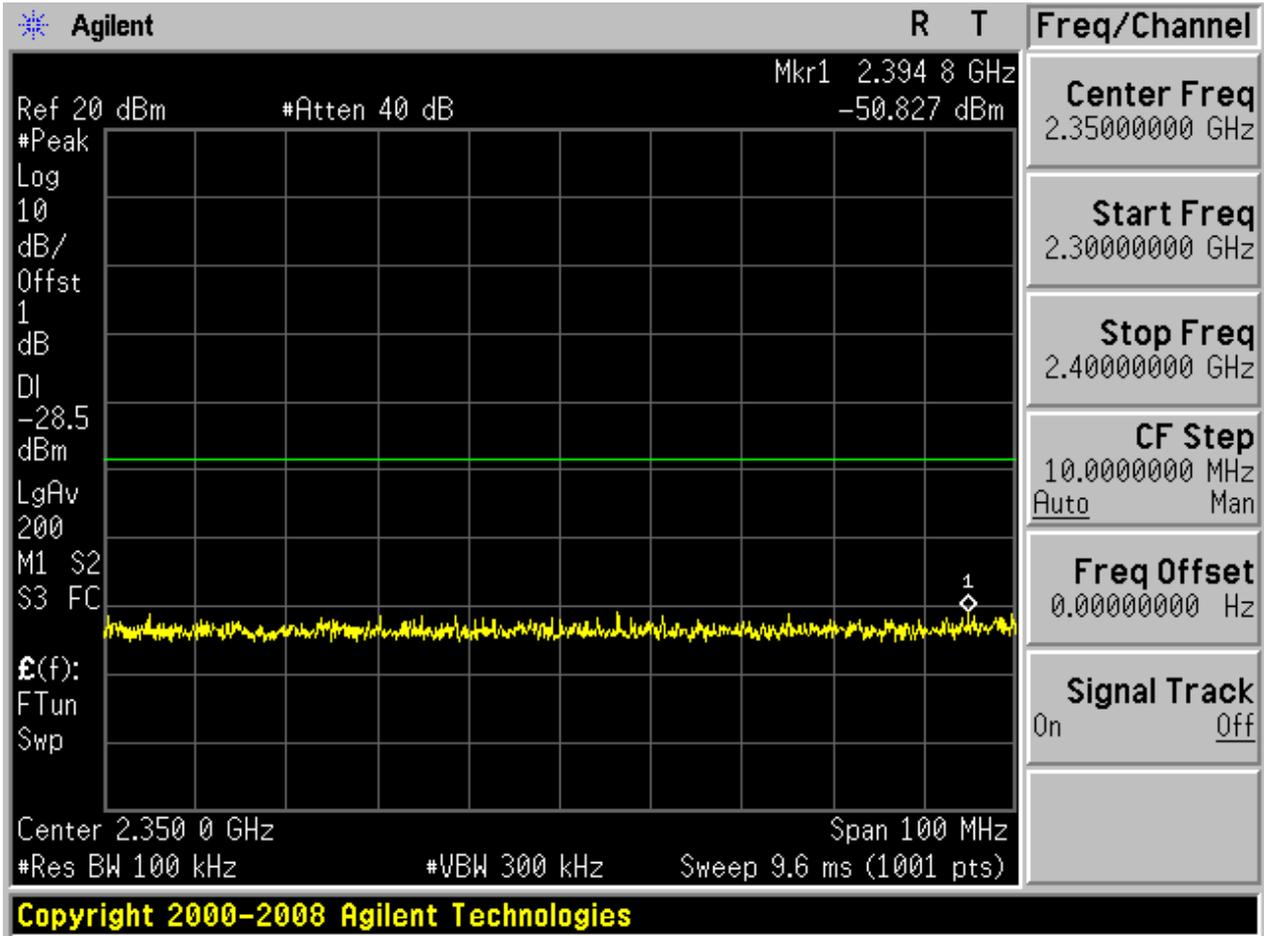


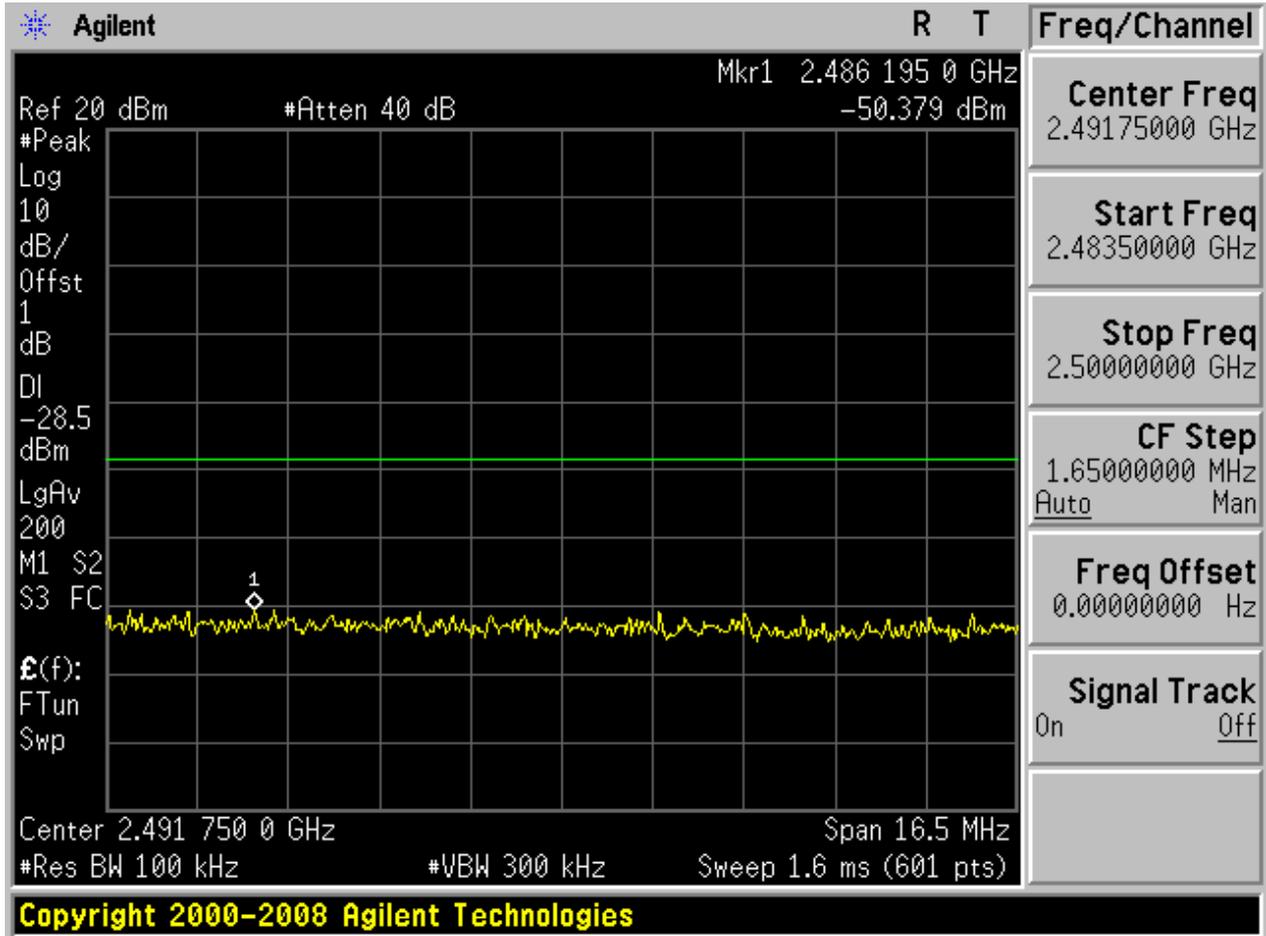
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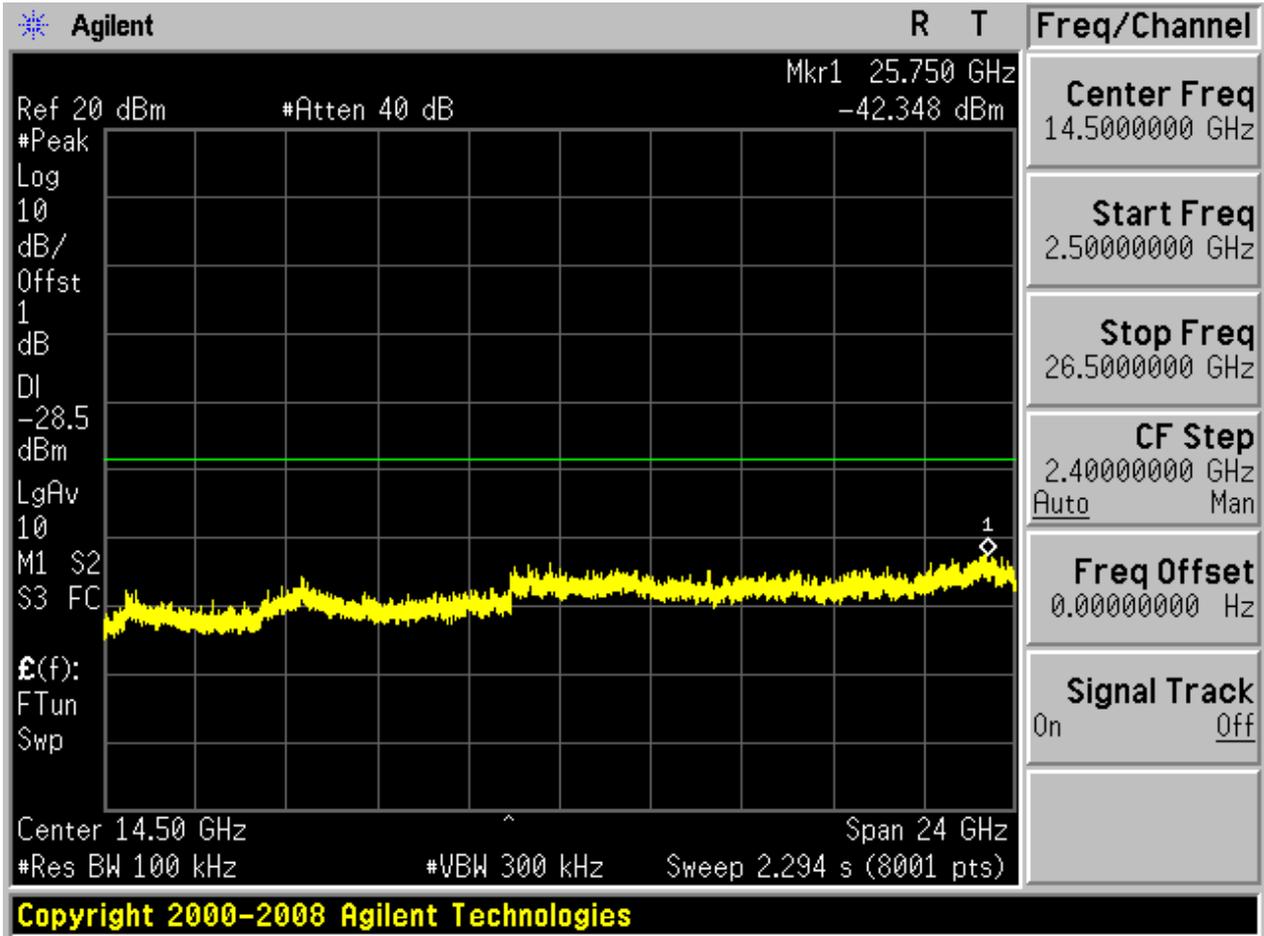








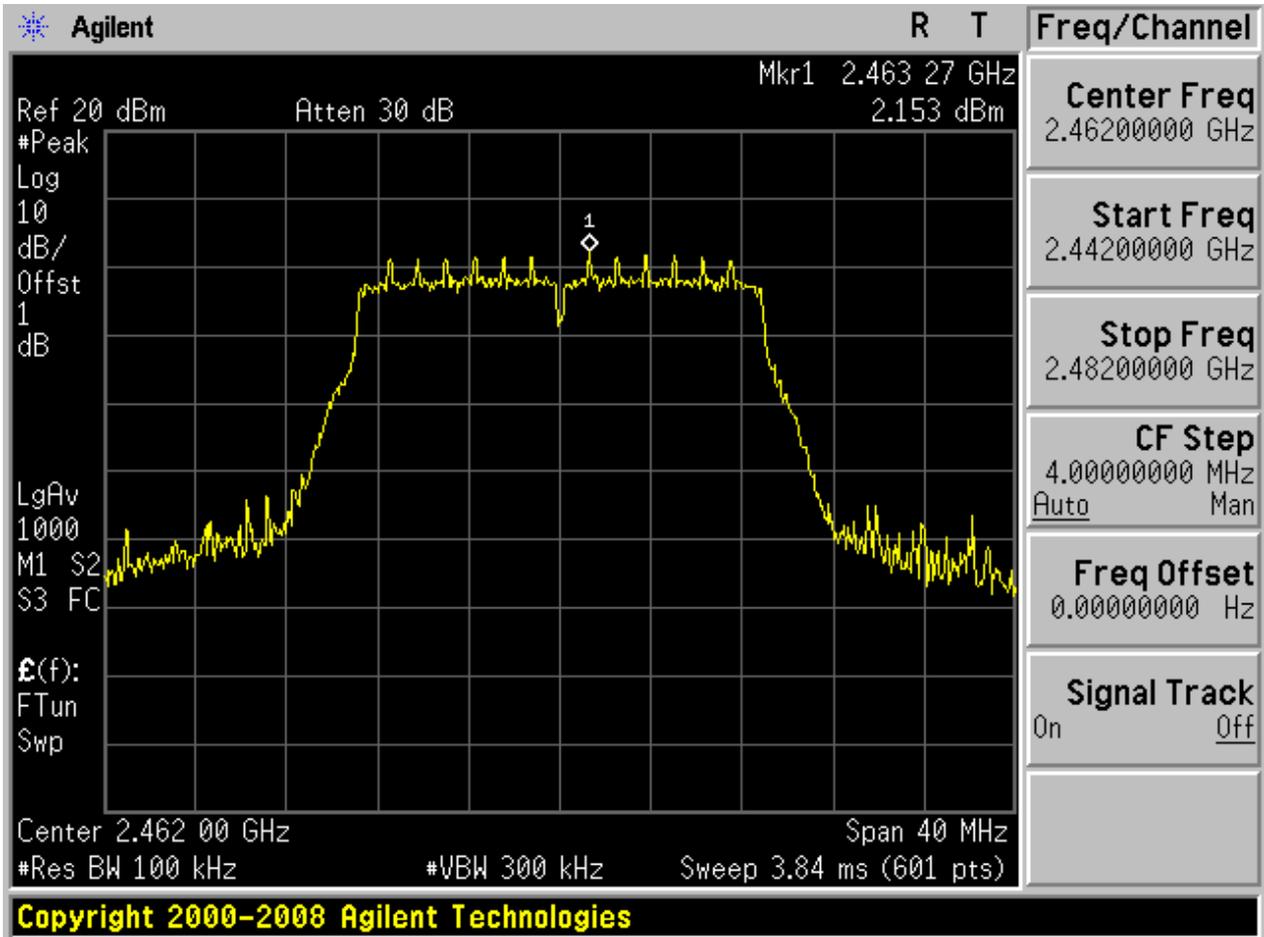






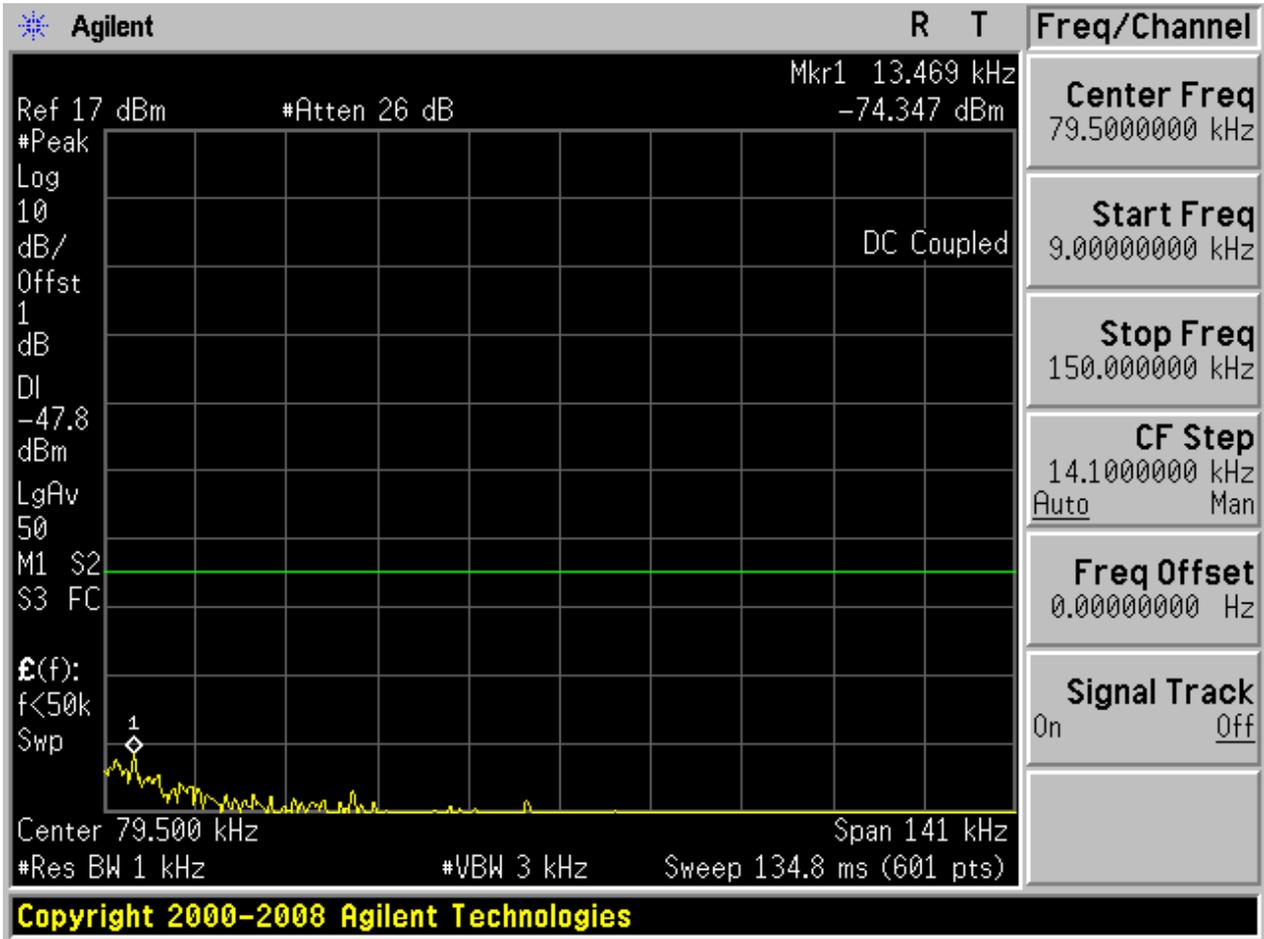
2.9 11N20_H@Ant 1

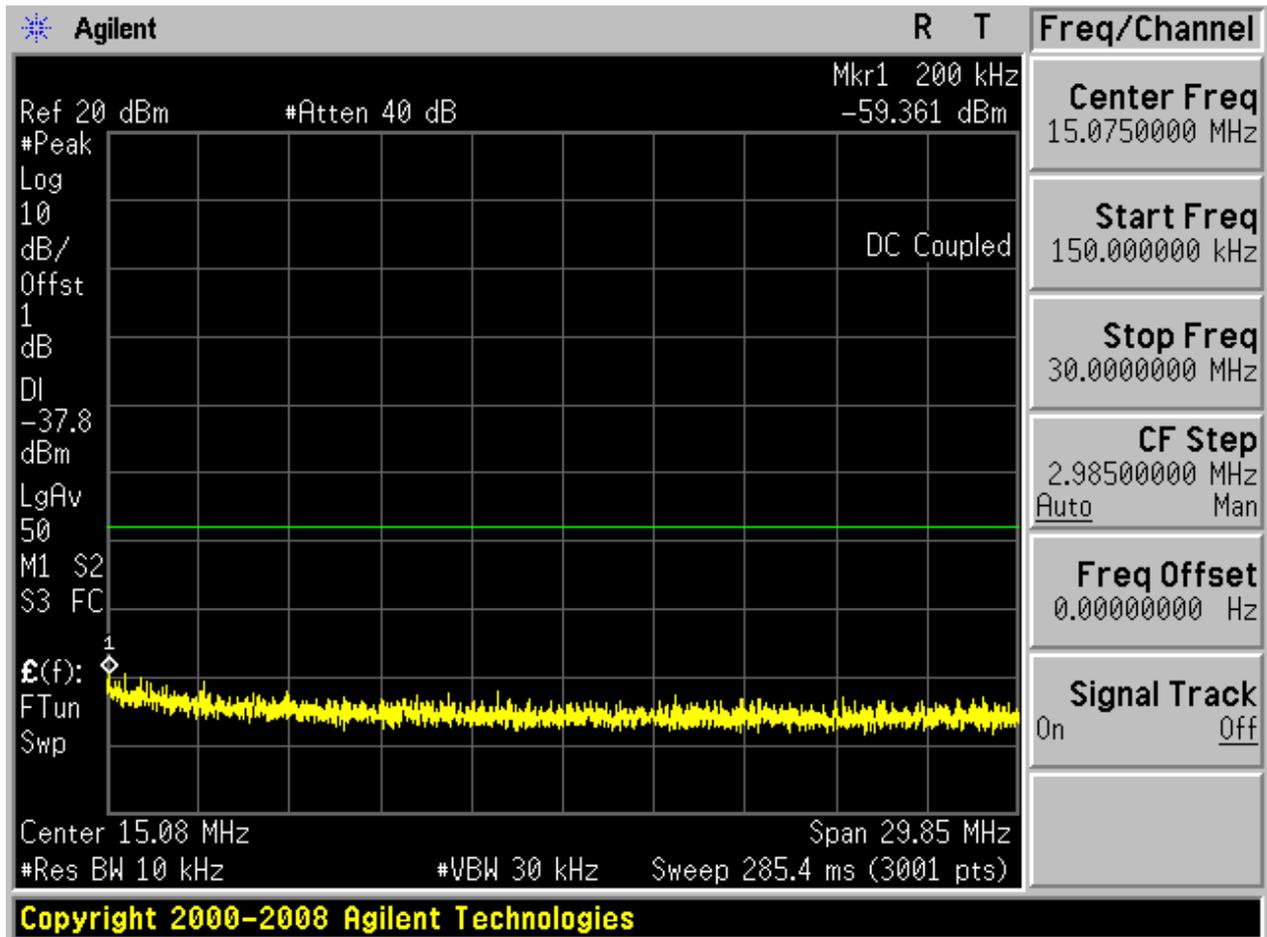
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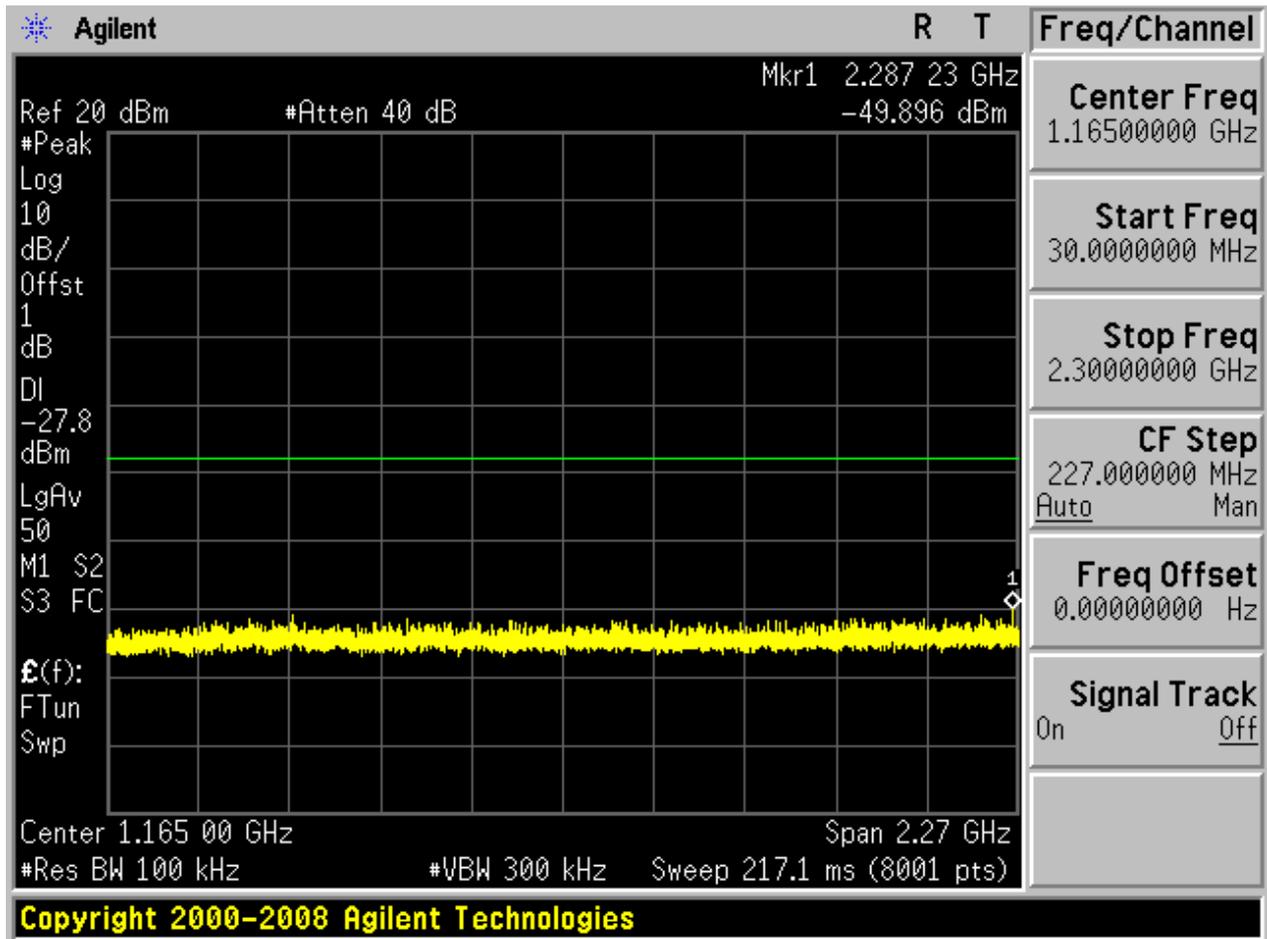


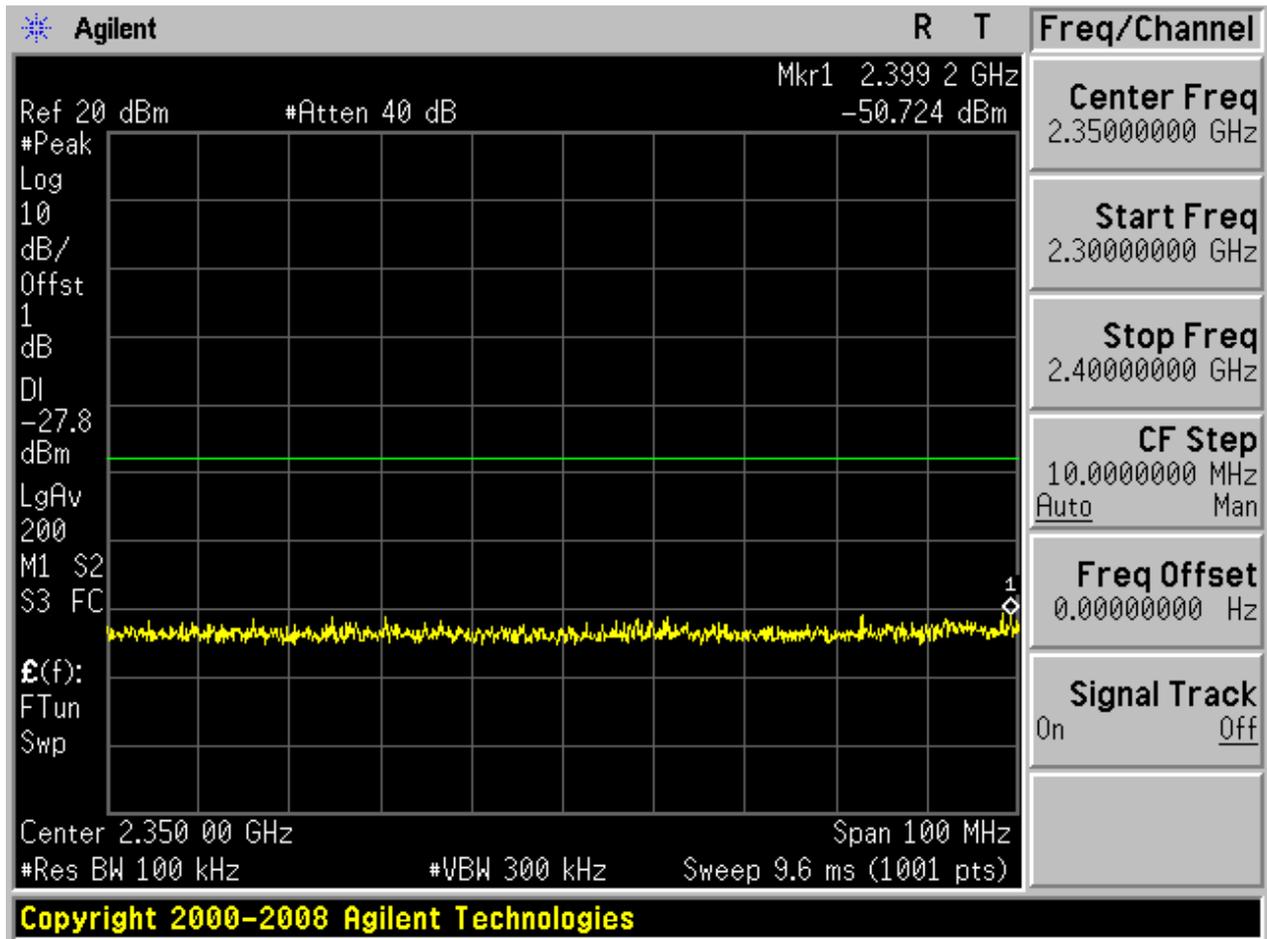


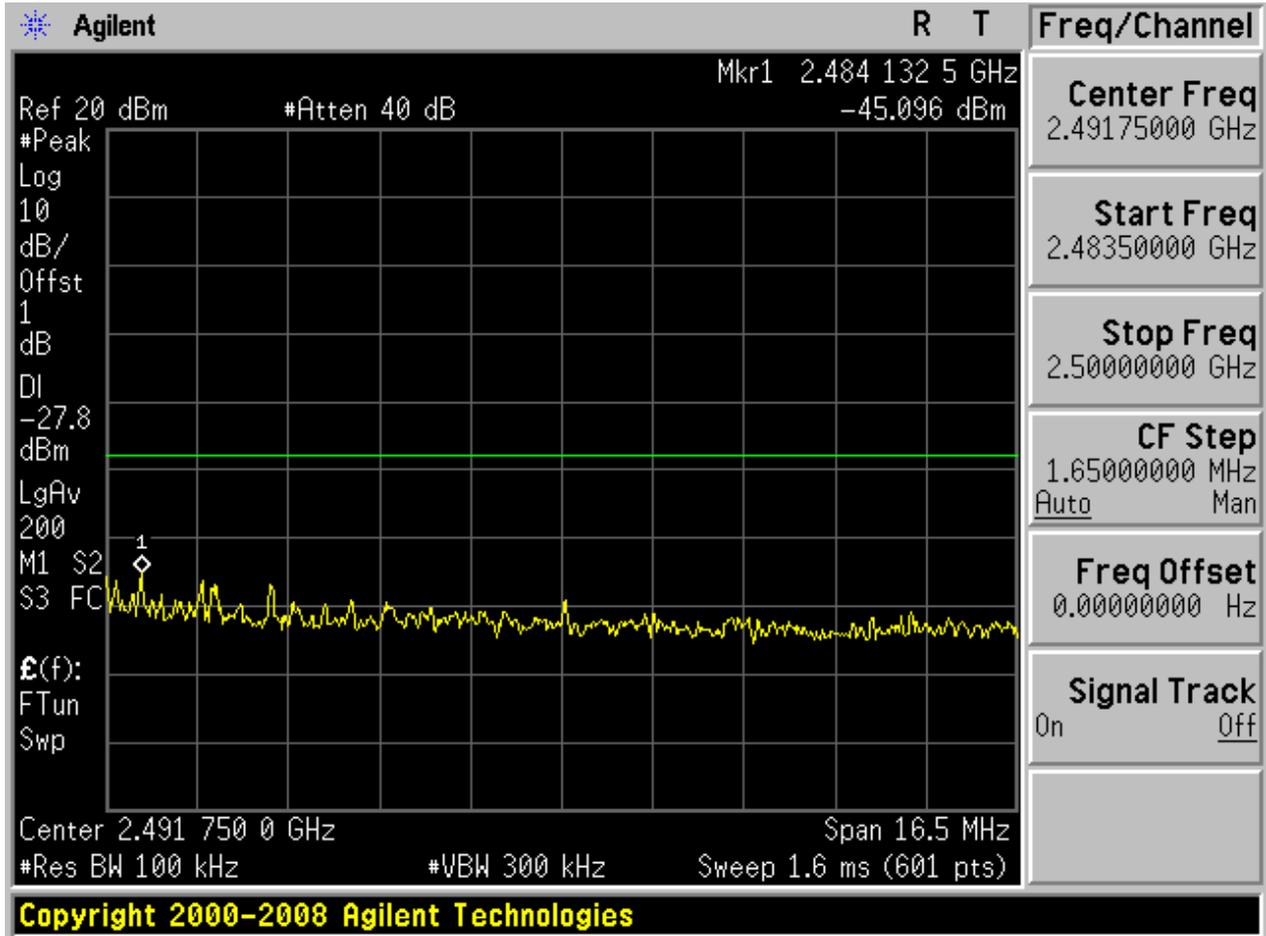
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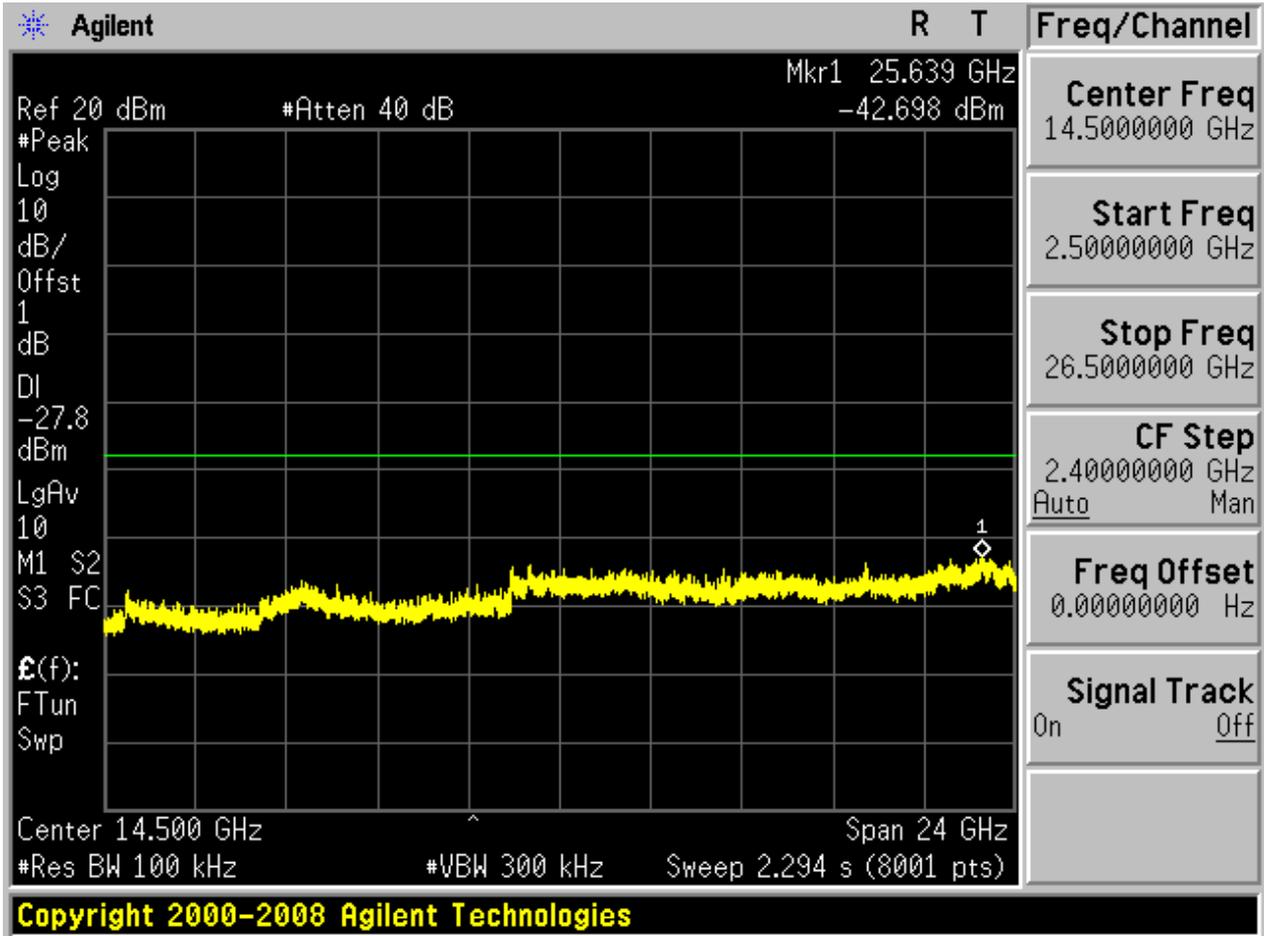














Appendix H: Radiated Spurious Emission & Spurious in Restricted Band

Note: Below 1GHz, RBW = 100 kHz, VBW = 300 kHz.

Above 1GHz, RBW = 1 MHz, VBW = 3 MHz.

The simultaneous transmission has been considered

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

Part 1: Testing Range of “9 kHz to 30MHz”

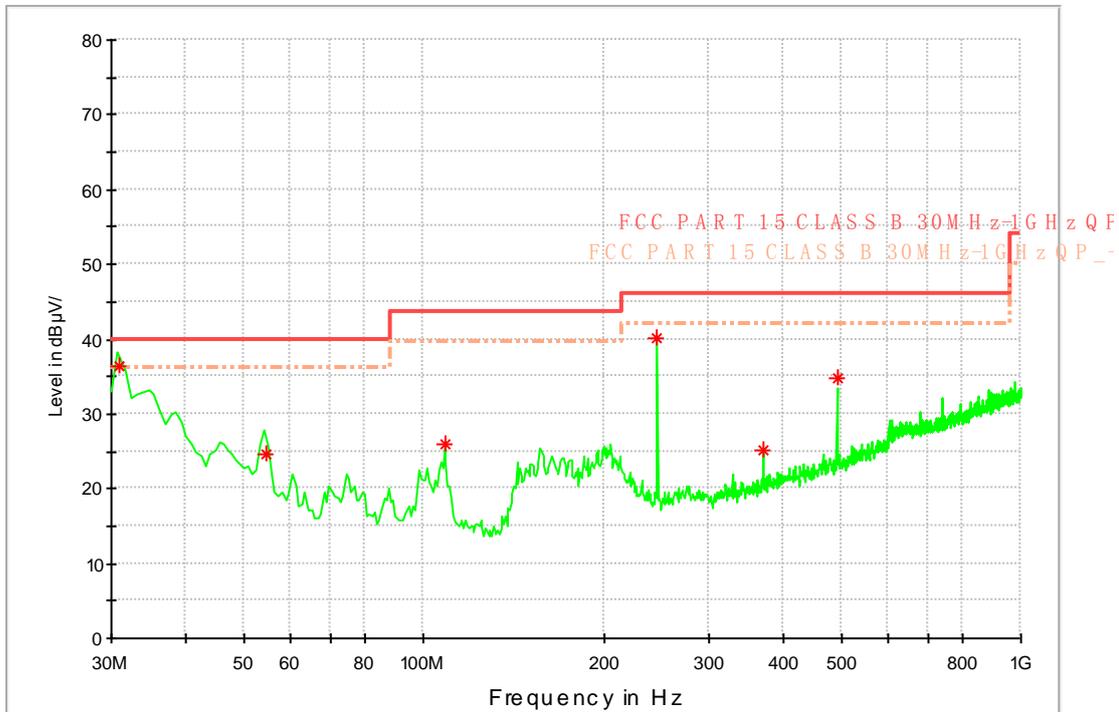
NOTE1: No peak found in the Test Range of “9 kHz to 30MHz”

Part 2: Testing Range of “30 MHz to 1 GHz”

Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is **the WORST case for all Test Modes and Channels**. This range will not be presented for each Test Mode and each Channel.

Note 2: **The emissions in this range are mainly from the Platform Device (Notepad PC and its ancillary components).**

FCC CLASS B RE 30MHz-1GHz



Frequency (MHz)	QuasiPeak (dBµ V/m)	Band width	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµ)
30.855859	36.3	120.00	100.0	V	262.0	13.9	3.7	40.0
54.555200	24.7	120.00	113.0	V	-20.0	14.6	15.3	40.0
108.798400	25.9	120.00	280.0	H	319.0	13.3	17.6	43.5
246.408000	40.1	120.00	146.0	H	133.0	14.3	5.9	46.0
369.588480	25.2	120.00	146.0	H	246.0	17.3	20.8	46.0
492.803200	34.8	120.00	222.0	H	116.0	19.7	11.2	46.0



Part 3: Testing Range of “18 GHz to 26.5 GHz”

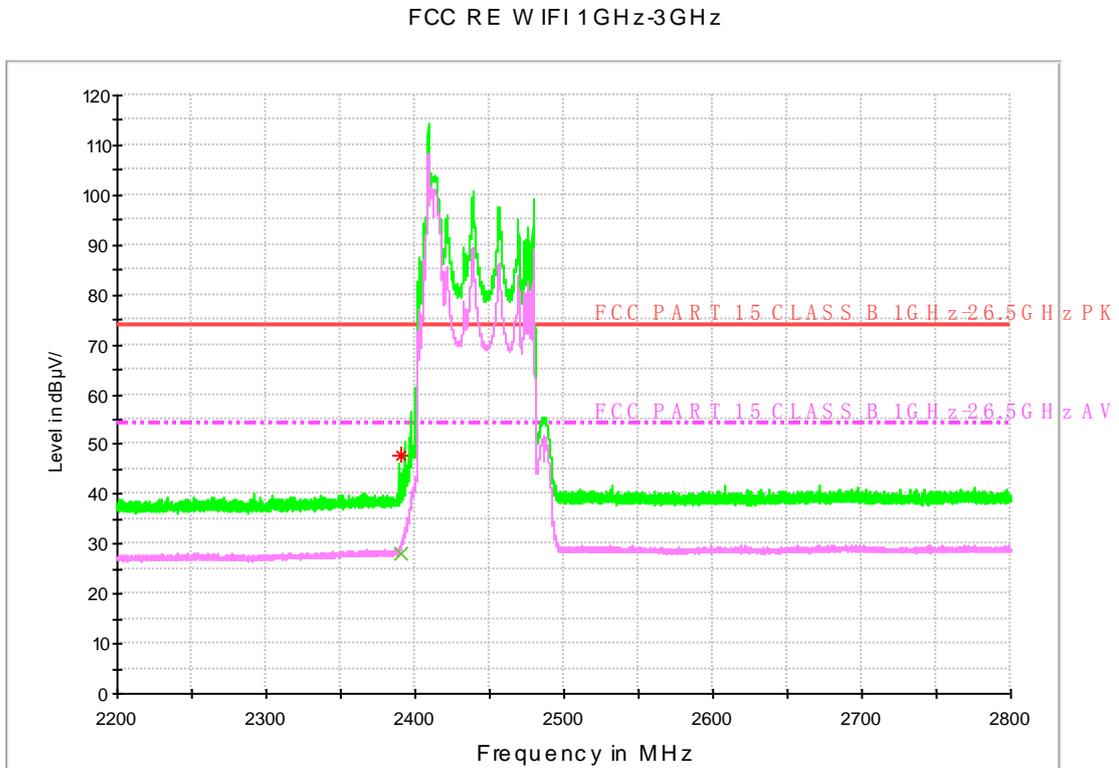
NOTE1: No peak found in the Test Range of “18 GHz to 26.5GHz”

Part 4: Testing Range of “2.3GHz to 2.5GHz”

- Note 1: The testing range of “2.3 GHz to 2.5 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dBμV/m) and Average Limit (54 dBμV/m).
- Note 3: The peak spike exceeds the limit line is EUT’s operating frequency.

Test Mode: 11b

Channel 1



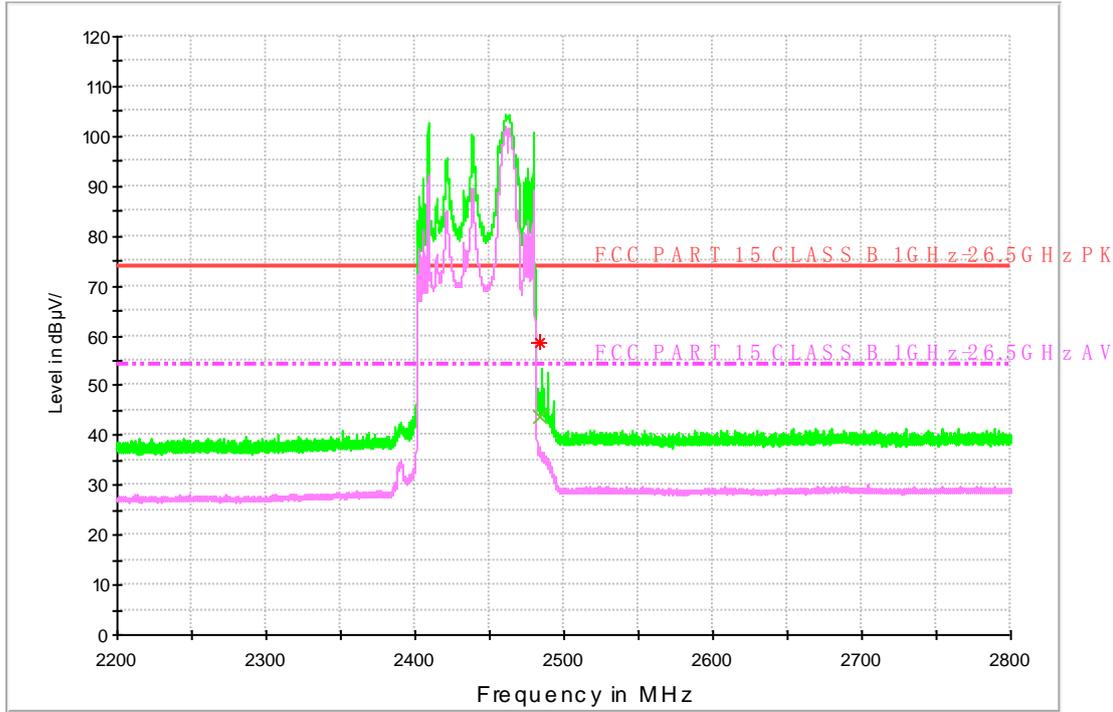
Note: The peak exceeds the limit line is carrier frequency.

MEASUREMENT RESULT: PK/ AV Detector

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2390.452000	47.7	15000.0	1000.000	100.0	H	32.0	-7.6	26.3
Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2390.584800	28.1	15000.0	1000.000	100.0	H	46.0	-7.6	25.9

Channel 11

FCC RE WIFI 1GHz-3GHz



Note: The peak exceeds the limit line is carrier frequency.

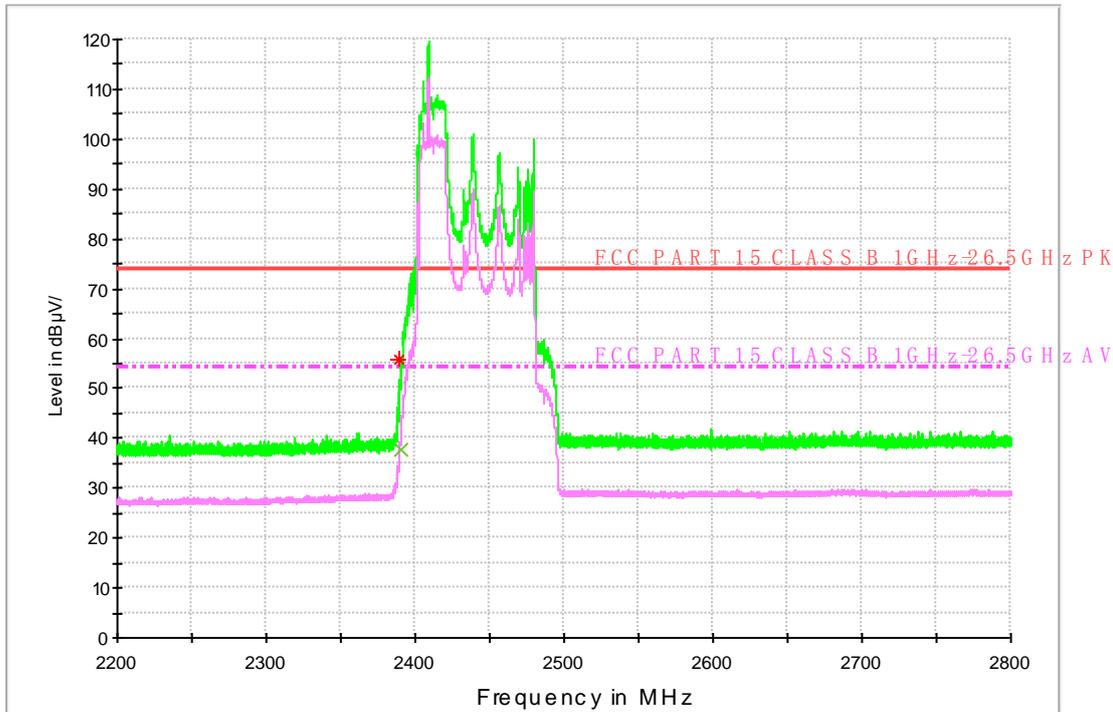
MEASUREMENT RESULT: PK/ AV Detector

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2483.500000	58.6	15000.0	1000.000	100.0	H	59.0	10.5	9.4
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2483.500000	43.6	15000.0	1000.000	100.0	H	59.0	9.1	8.4

Test Mode: 11g

Channel 1

FCC RE WIFI 1GHz-3GHz



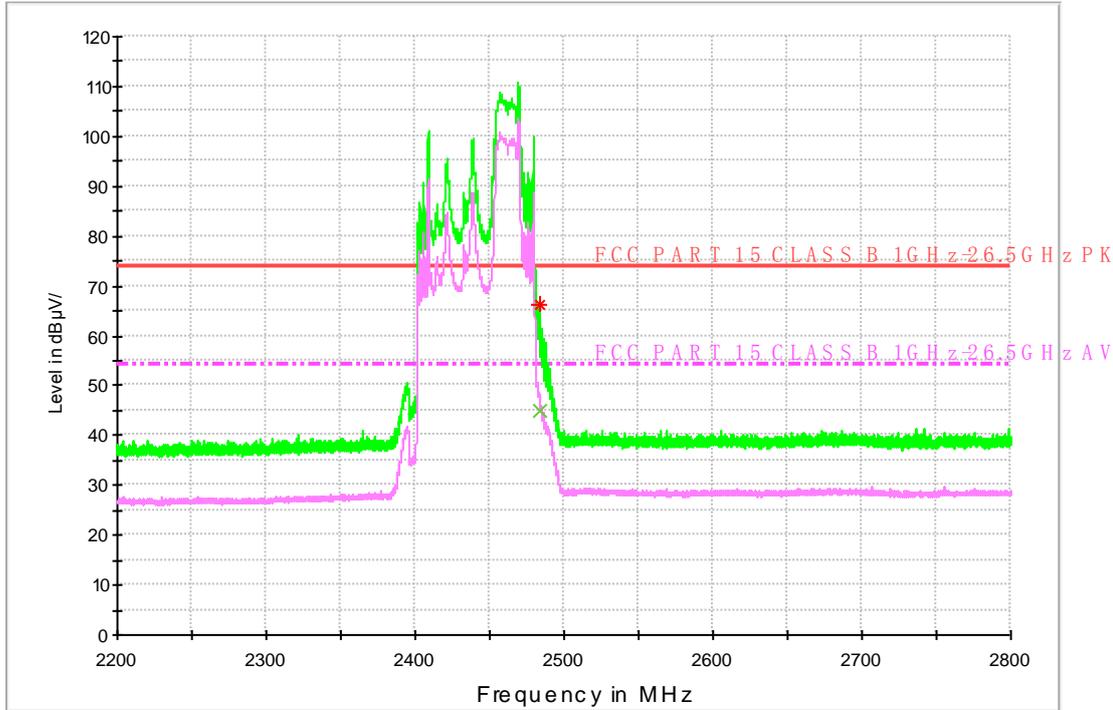
Note: The peak exceeds the limit line is carrier frequency.

MEASUREMENT RESULT: PK/ AV Detector

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2389.73800	55.7	15000.0	1000.000	100.0	H	61.0	-7.6	18.3
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2389.97800	37.6	15000.0	1000.000	100.0	H	53.0	-7.6	16.4

Channel 11

FCC RE WIFI 1GHz-3GHz



Note: The peak exceeds the limit line is carrier frequency.

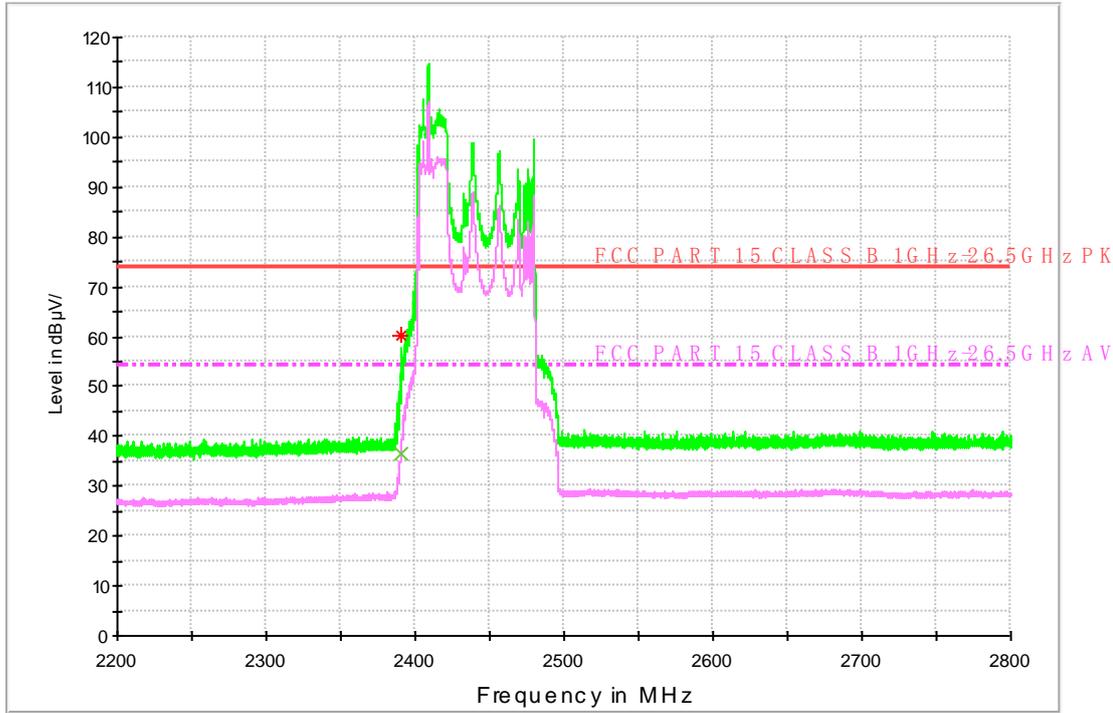
MEASUREMENT RESULT: PK/ AV Detector

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2483.55820	66.1	15000.0	1000.000	100.0	H	18.0	-5.5	7.9
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2483.61340	45.0	15000.0	1000.000	100.0	H	18.0	-5.5	9.0

Test Mode: 11N

Channel 1

FCC RE WIFI 1GHz-3GHz



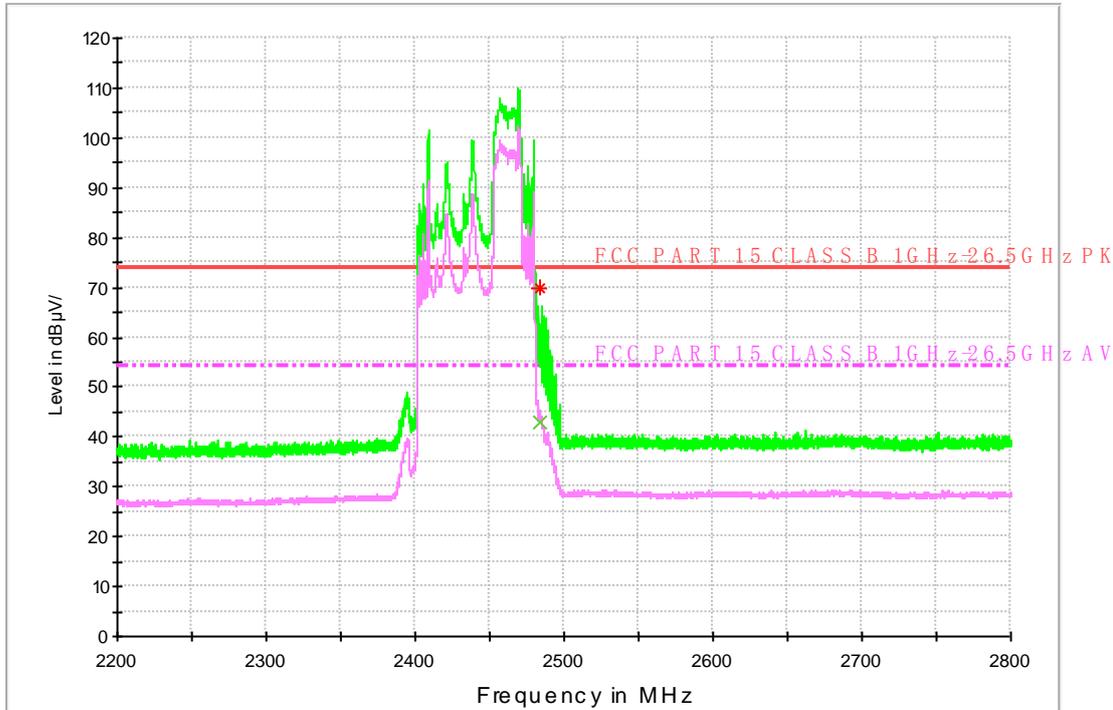
Note: The peak exceeds the limit line is carrier frequency.

MEASUREMENT RESULT: PK/ AV Detector

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2390.30740	60.0	15000.0	1000.000	100.0	H	32.0	-7.6	14.0
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2390.51360	36.6	15000.0	1000.000	100.0	H	32.0	-7.6	17.4

Channel 11

FCC RE WIFI 1GHz-3GHz



Note: The peak exceeds the limit line is carrier frequency.

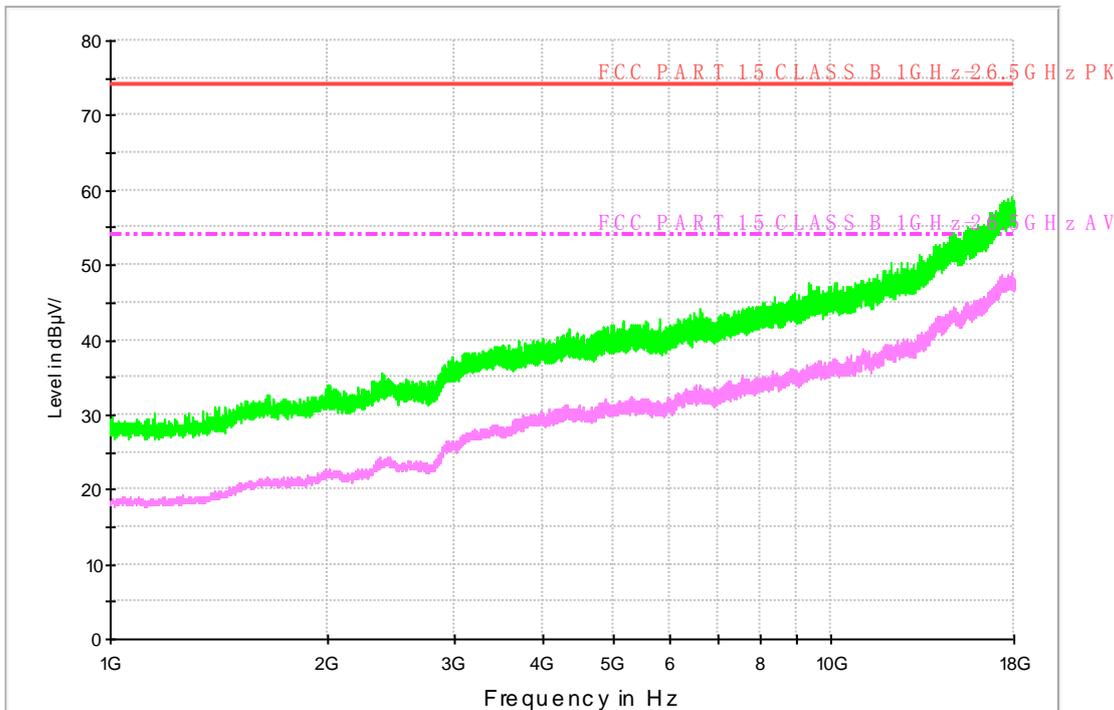
MEASUREMENT RESULT: PK/ AV Detector

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2483.78780	70.0	15000.0	1000.000	100.0	H	52.0	-5.6	4.0
Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
2484.01840	43.1	15000.0	1000.000	100.0	H	59.0	-5.7	10.9

Part 5: Testing Range of “1 GHz to 18 GHz”

- Note 1: The test results and plot for testing range of “1 GHz to 18 GHz” showed as below is **the WORST case for all Test Modes and Channels**. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “1 GHz to 18 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).

FCC CLASS B RE 1GHz-18GHz

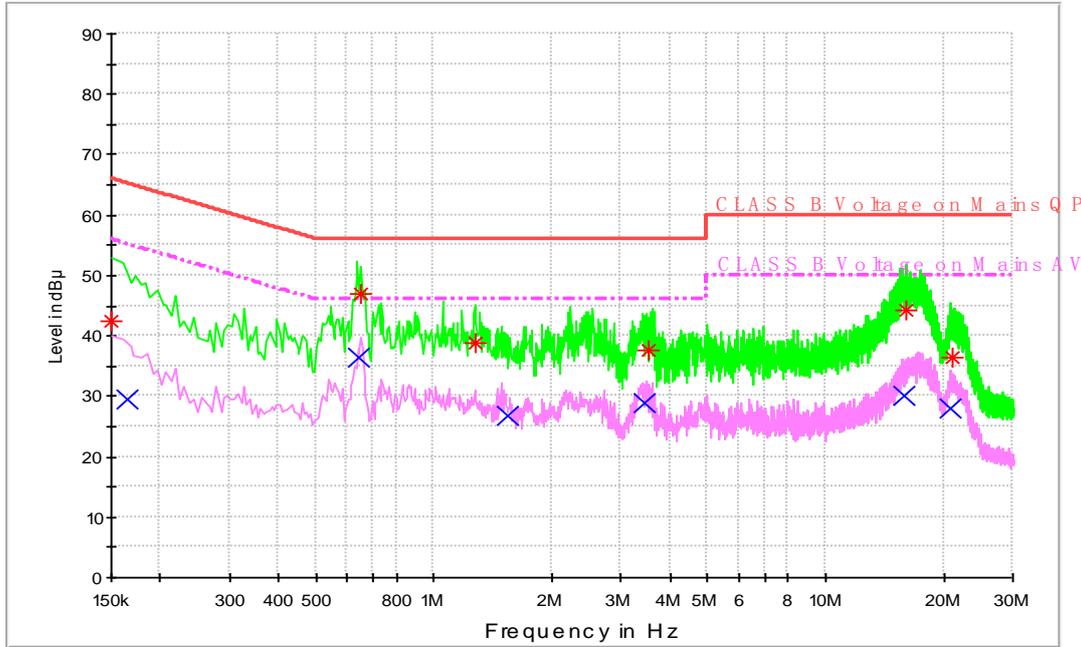


Appendix I: Conducted Emission at Power Port

Note: RBW =9 kHz, VBW = 30 kHz

Channel 6

CLASS B Voltage with ENV216



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150387	42.5	L1	9.8	23.5	66.0
0.651531	46.9	N	9.8	9.1	56.0
1.282587	38.8	N	9.7	17.2	56.0
3.533556	37.7	N	9.8	18.3	56.0
15.978063	44.1	N	10.2	15.9	60.0
20.945730	36.5	L1	10.1	23.5	60.0

Final Result 2

Frequency (MHz)	Average (dBµ V)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.164425	29.5	L1	9.8	25.7	55.2
0.638937	36.4	N	9.8	9.6	46.0
1.533249	26.8	N	9.8	19.2	46.0
3.428790	29.0	N	9.8	17.0	46.0
15.856719	30.2	L1	10.2	19.8	50.0
20.787900	27.9	L1	10.1	22.1	50.0