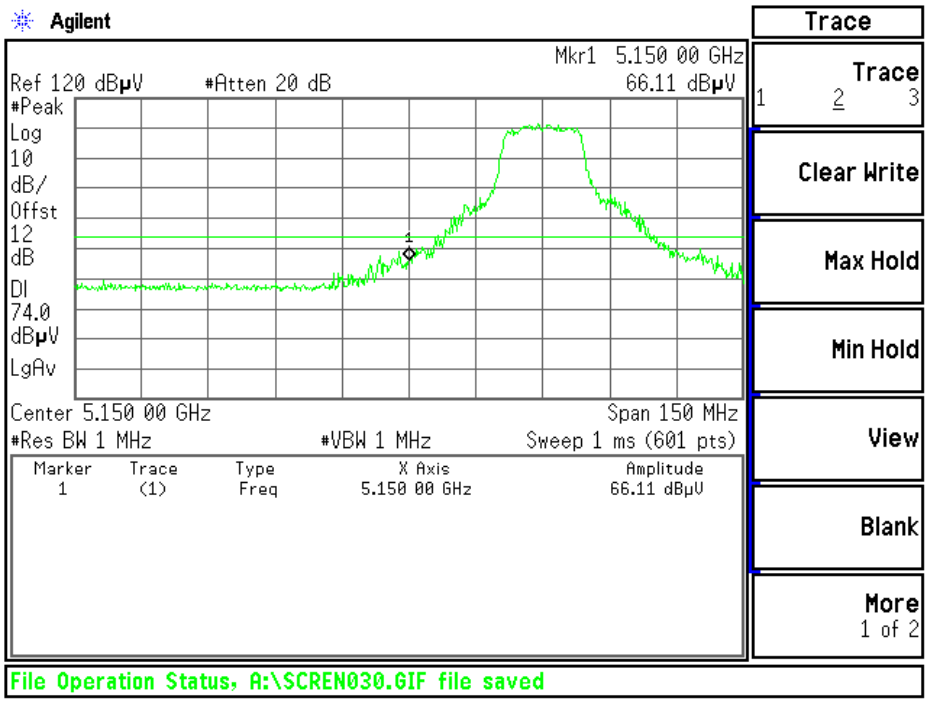
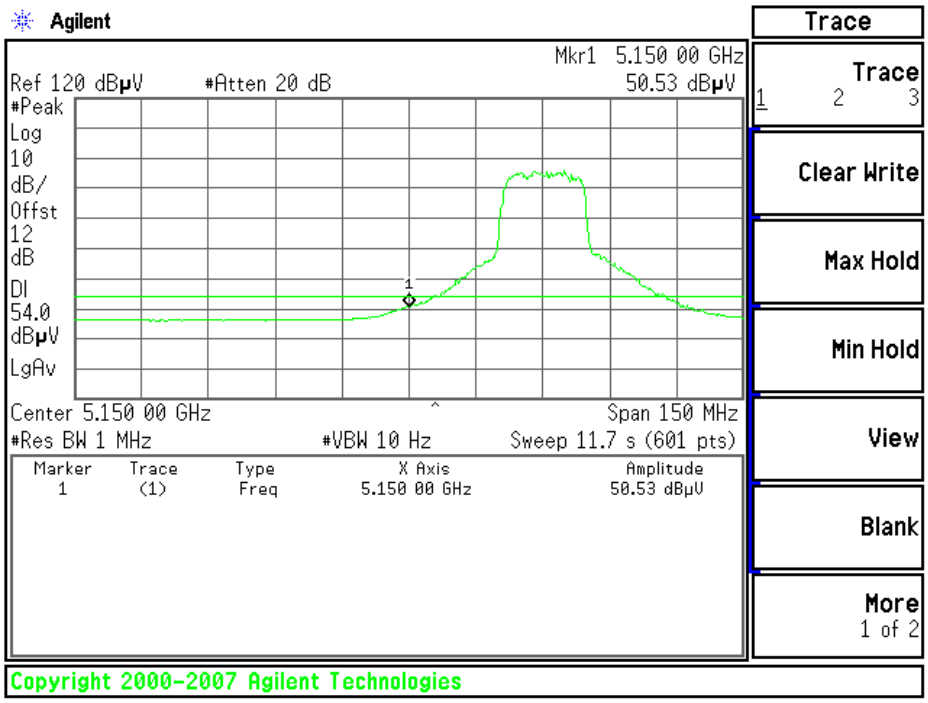
Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5180MHz)

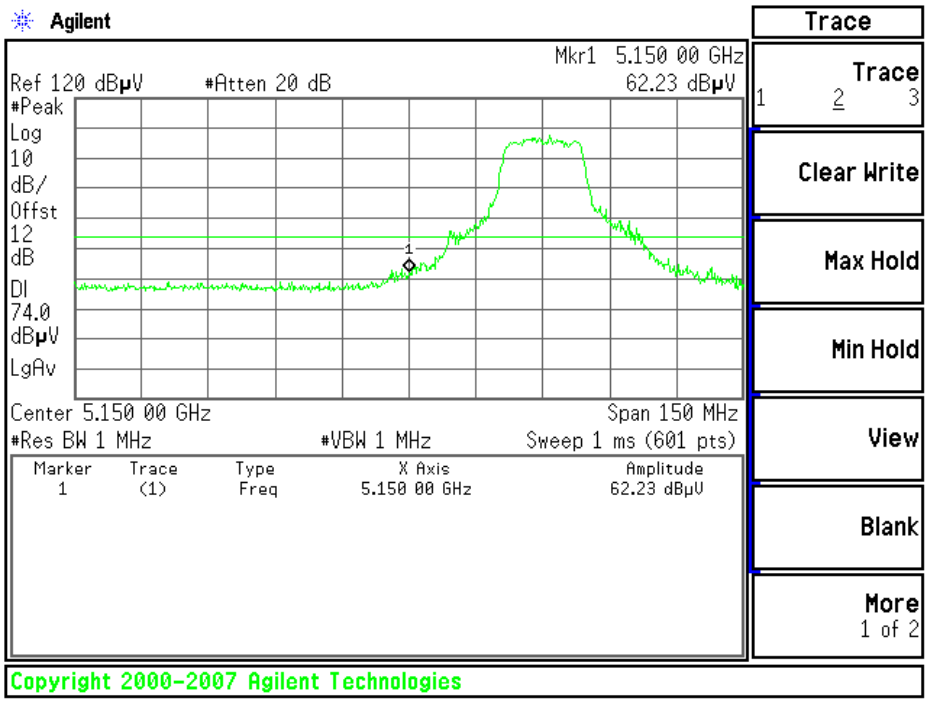
Detector mode: Peak **Polarity: Vertical**



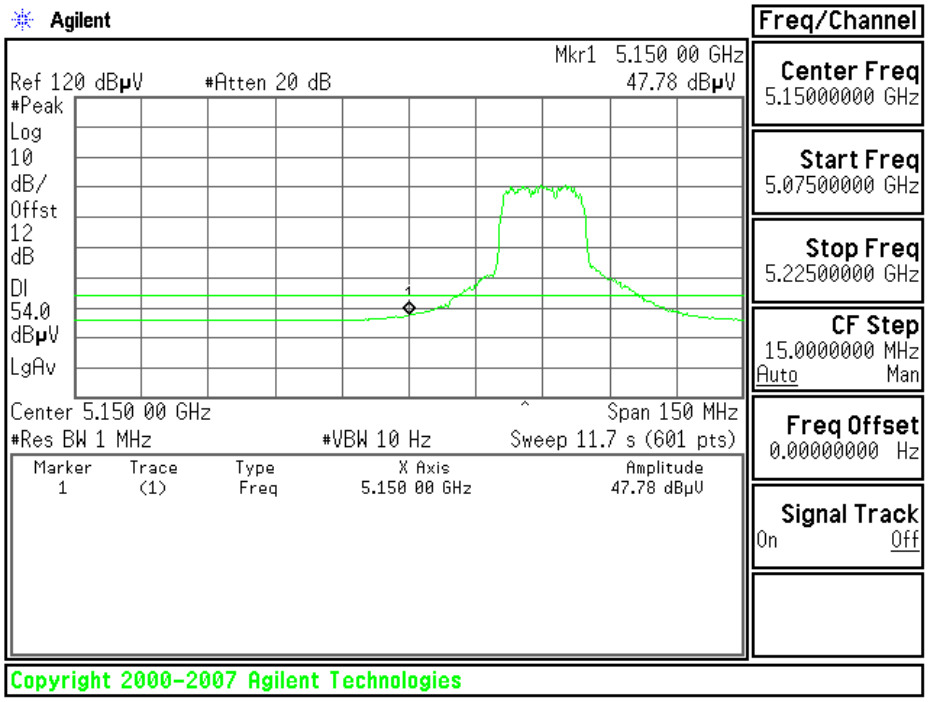
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

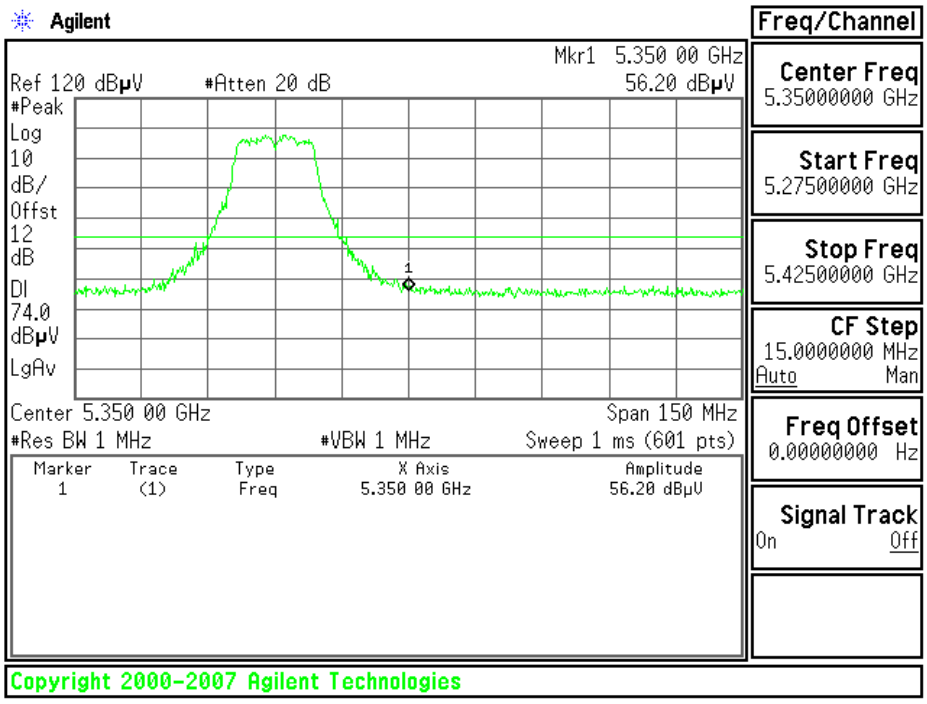


Detector mode: Average **Polarity: Horizontal**

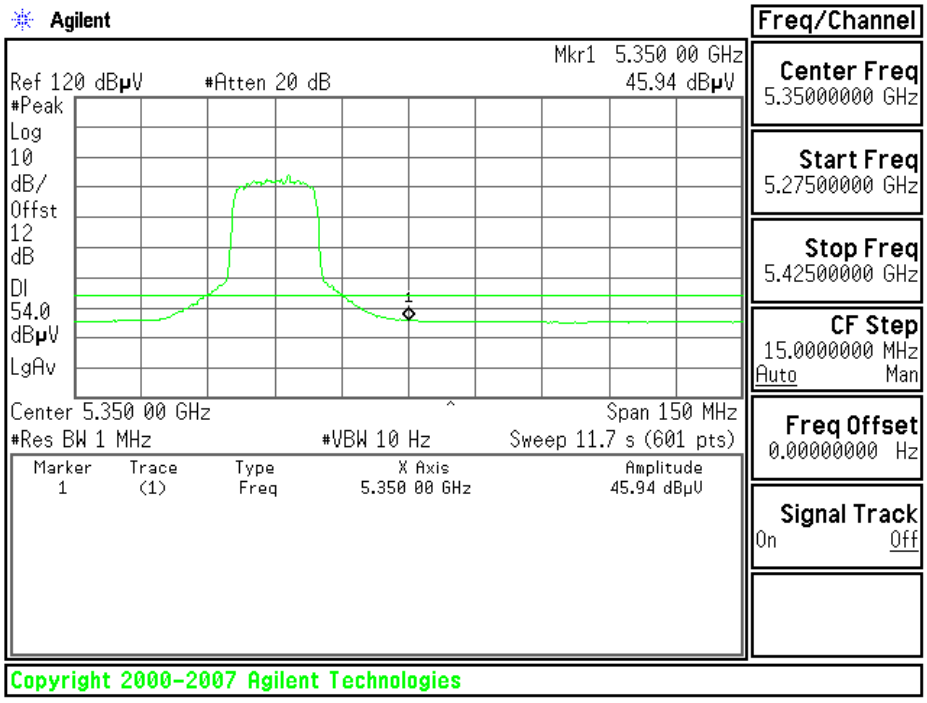


Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5320MHz)

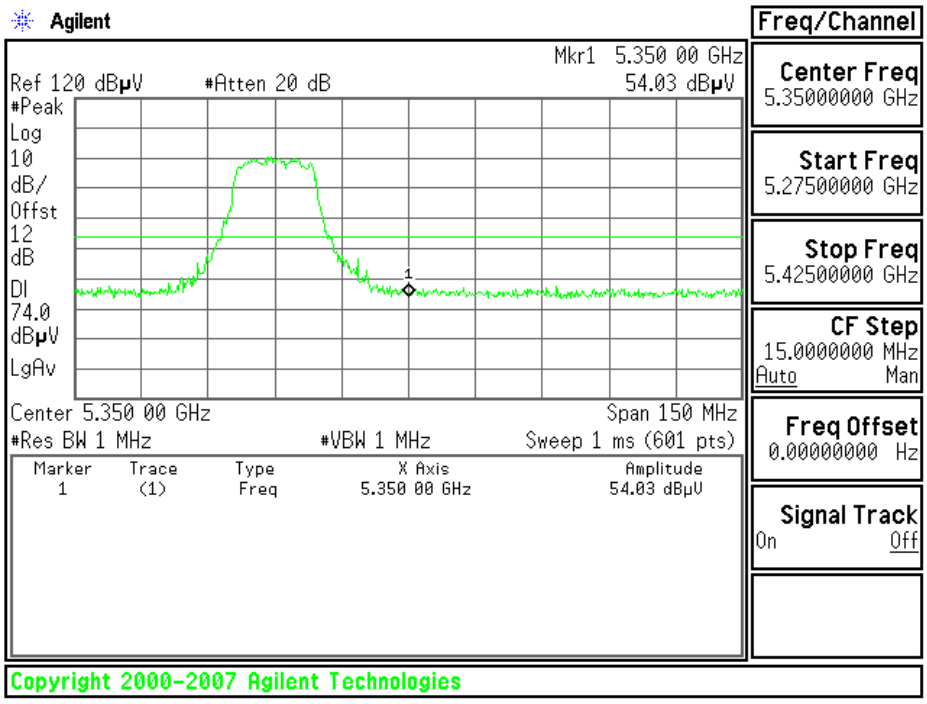
Detector mode: Peak **Polarity: Vertical**



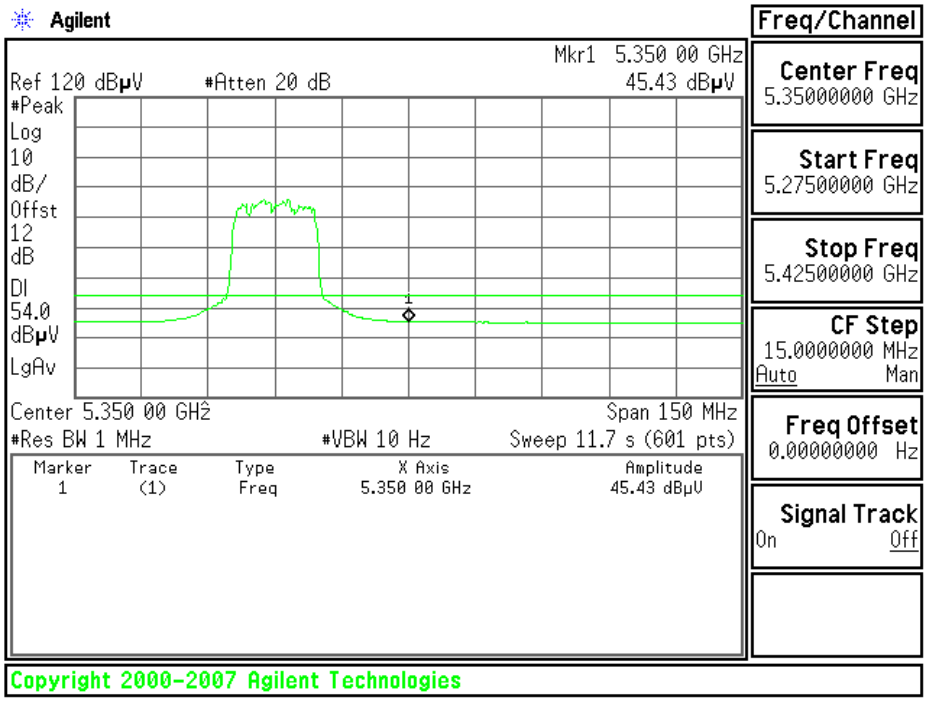
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

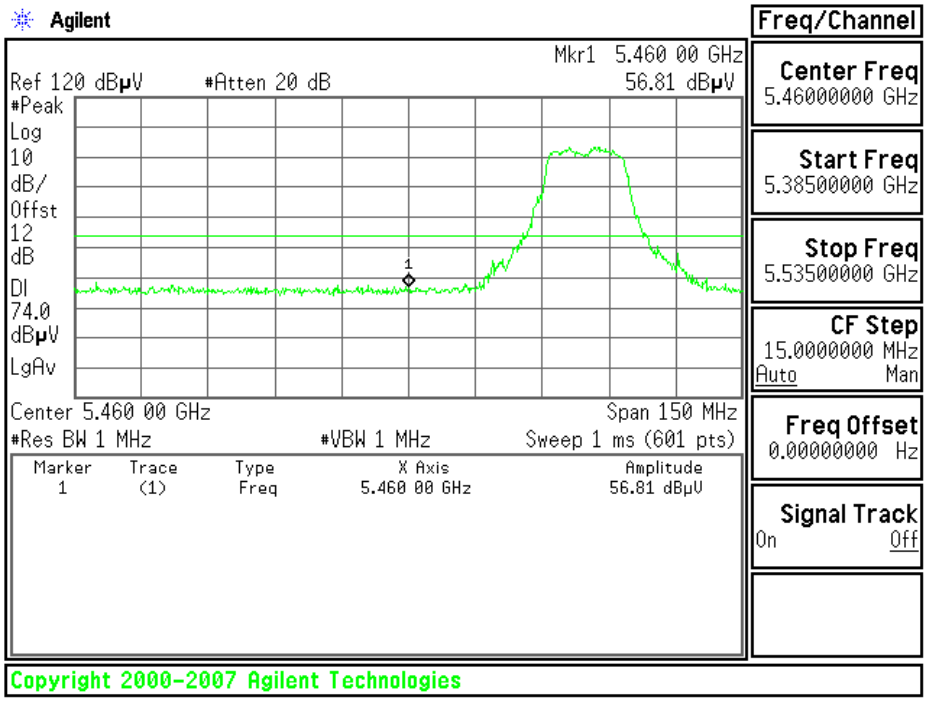


Detector mode: Average **Polarity: Horizontal**

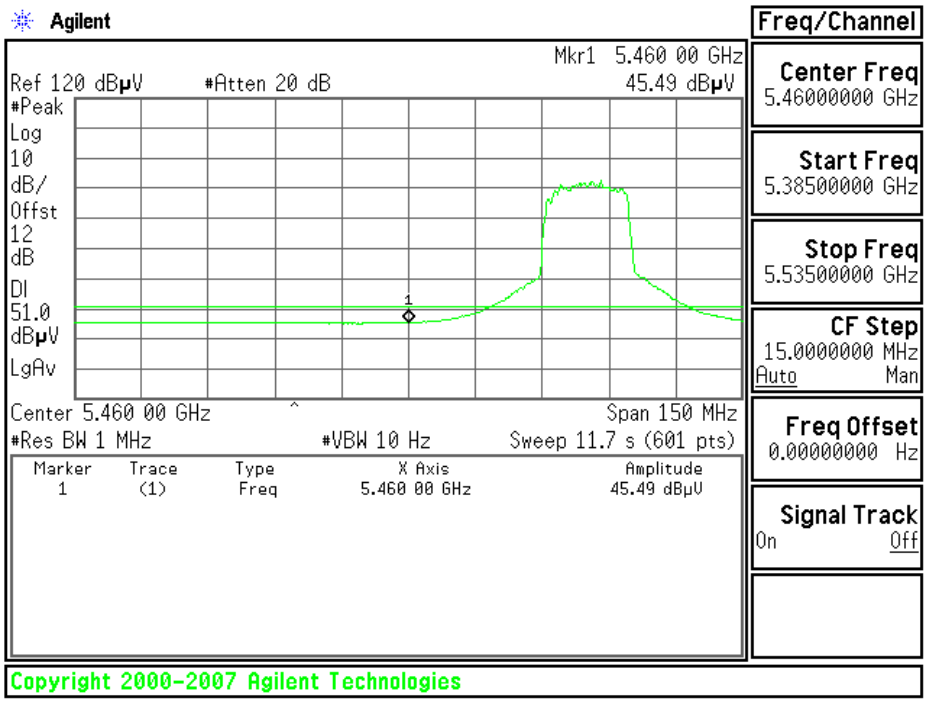


Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5500MHz)

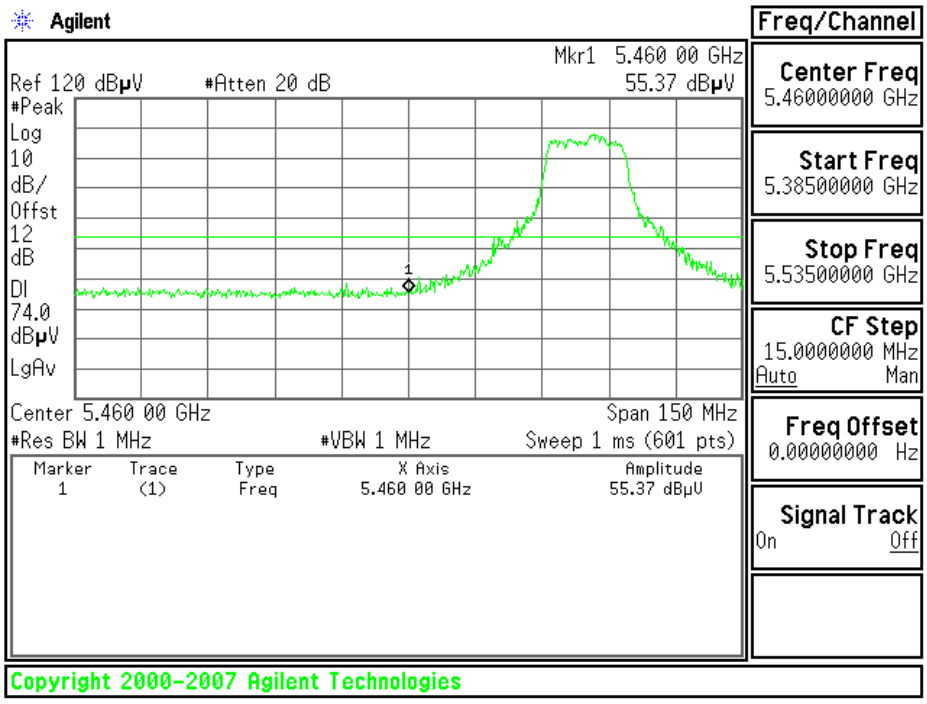
Detector mode: Peak **Polarity: Vertical**



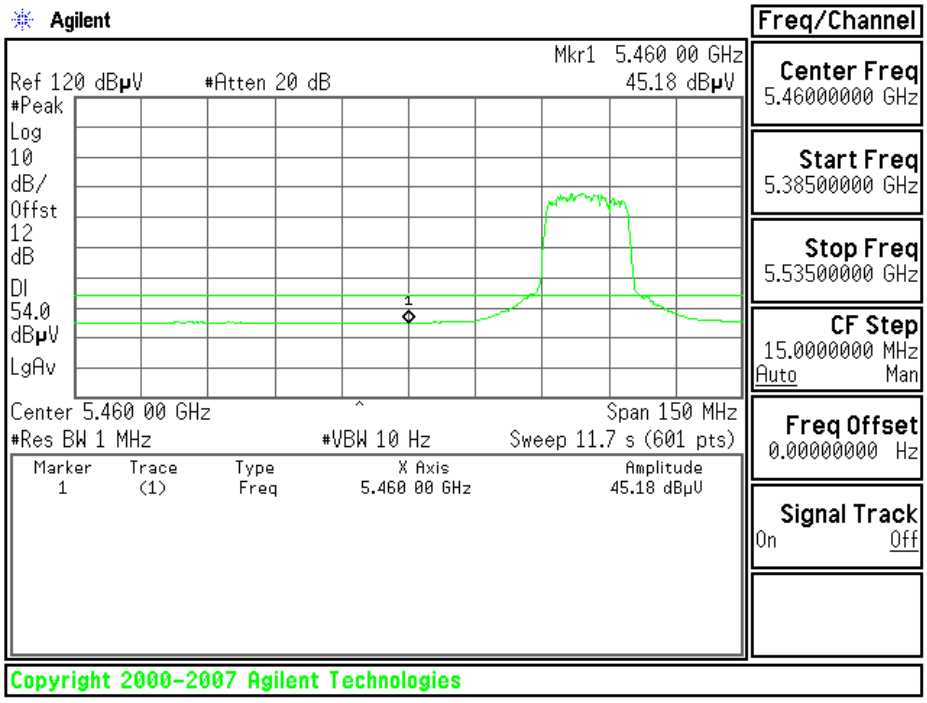
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

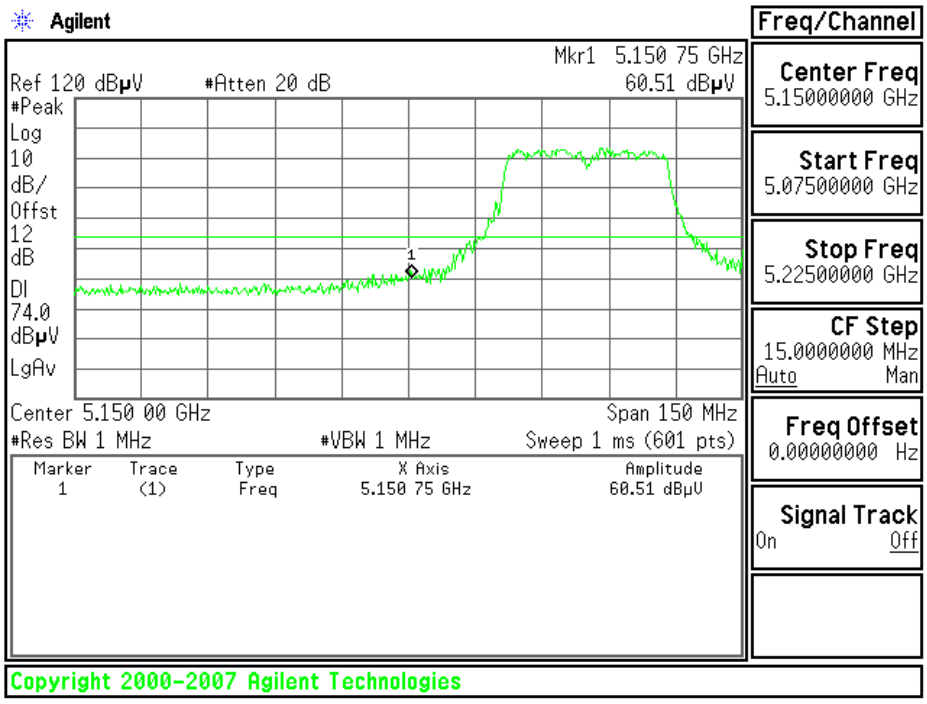


Detector mode: Average **Polarity: Horizontal**

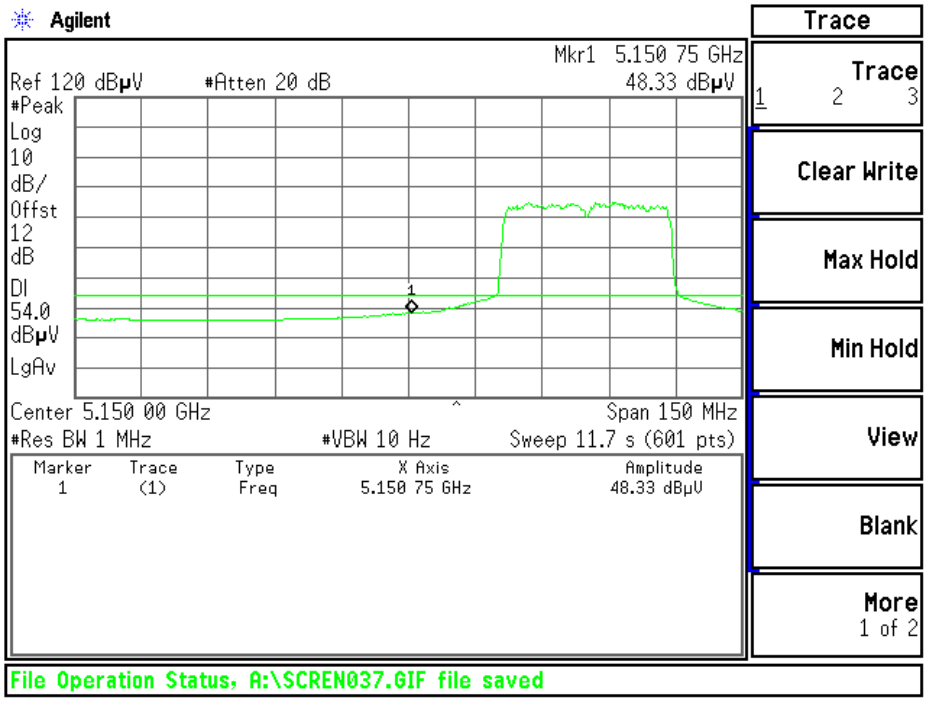


Band Edges (draft 802.11n Wide-40 MHz Channel mode / 5190)

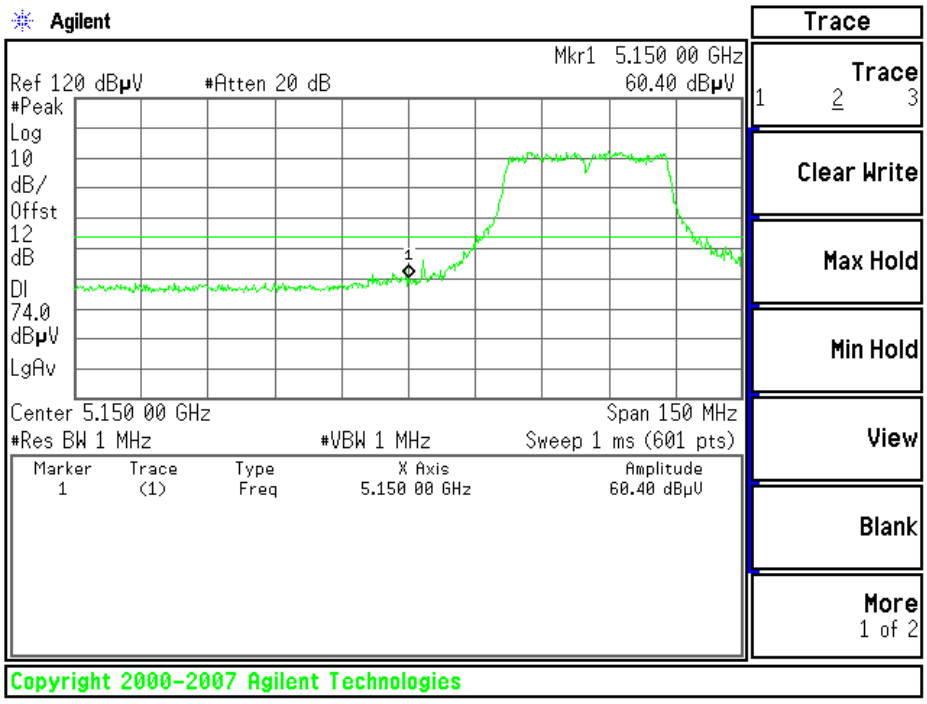
Detector mode: Peak **Polarity: Vertical**



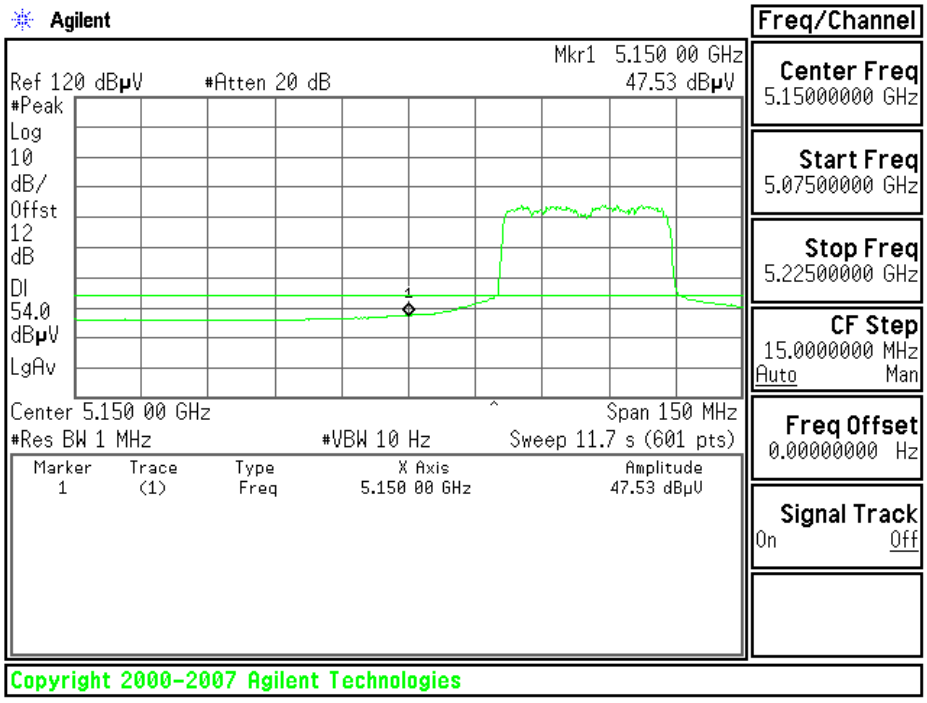
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

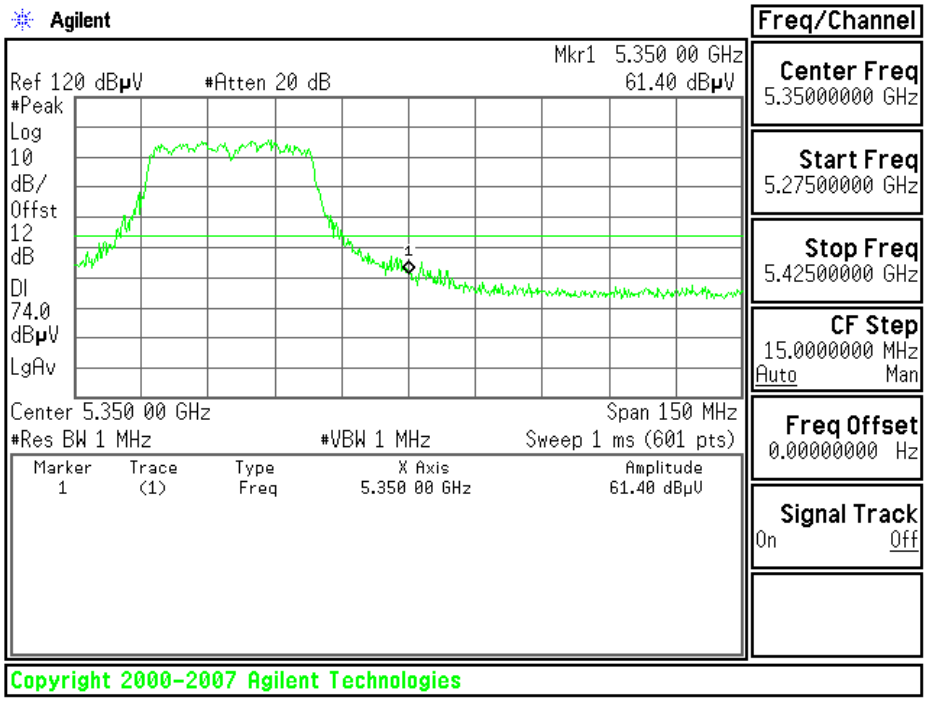


Detector mode: Average **Polarity: Horizontal**

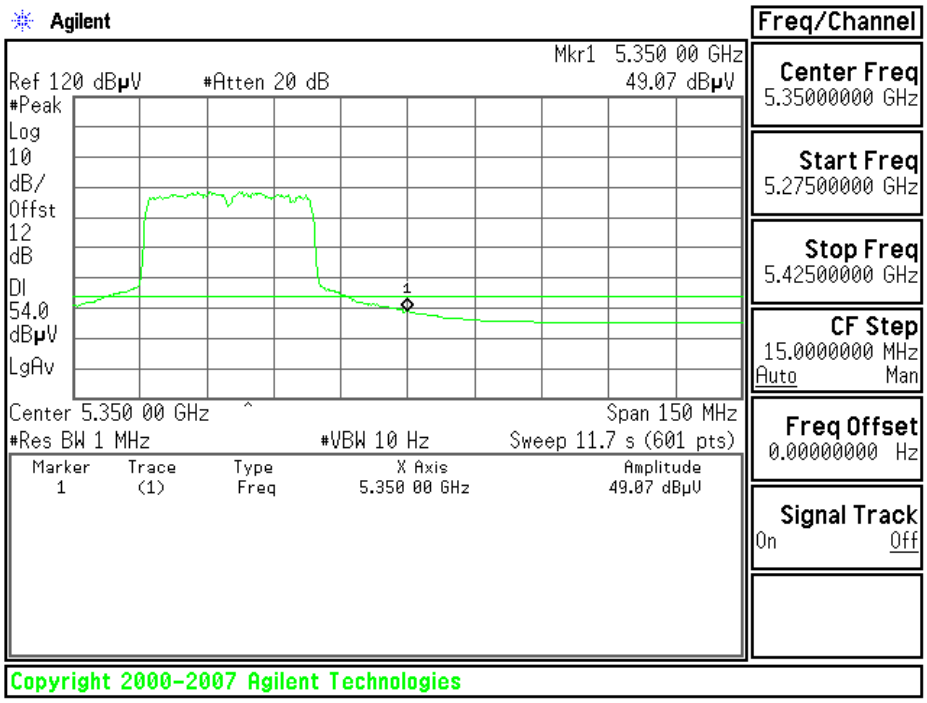


Band Edges (draft 802.11n Standard-40 MHz Channel mode / 5310MHz)

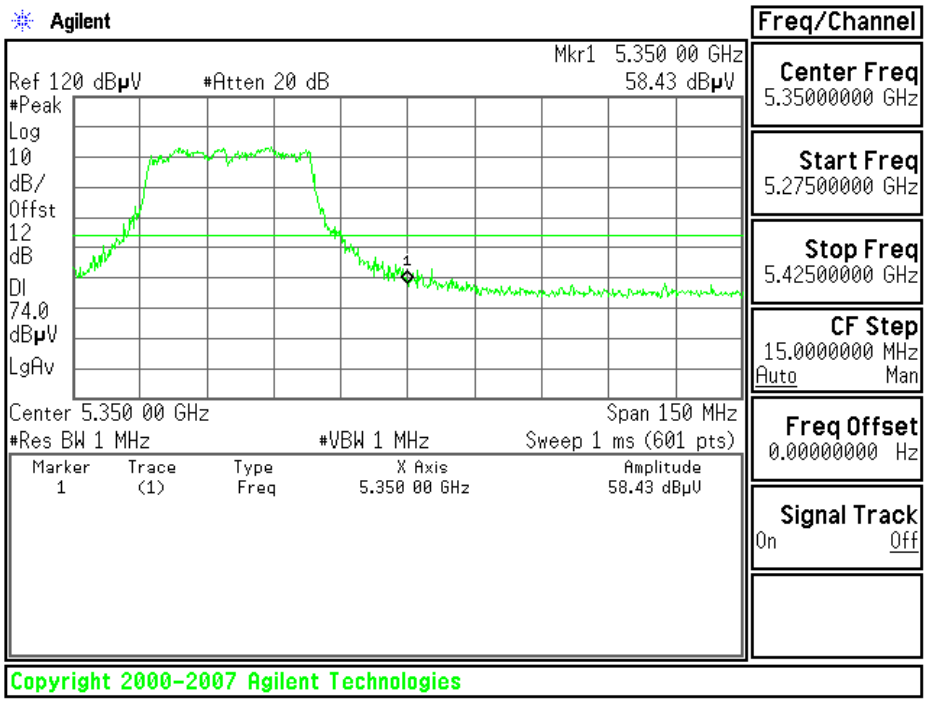
Detector mode: Peak **Polarity: Vertical**



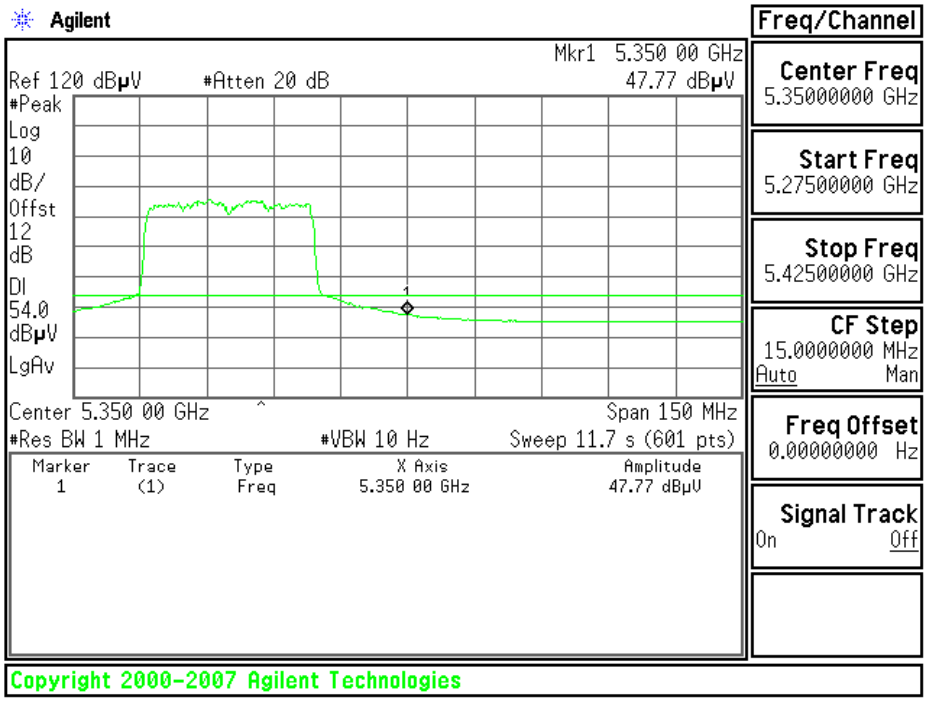
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

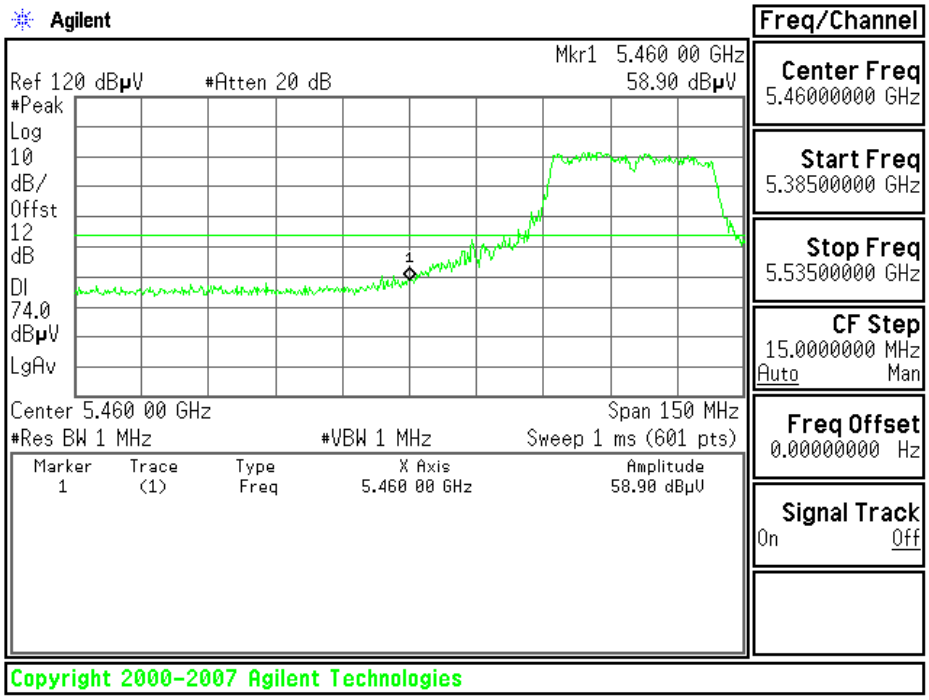


Detector mode: Average **Polarity: Horizontal**

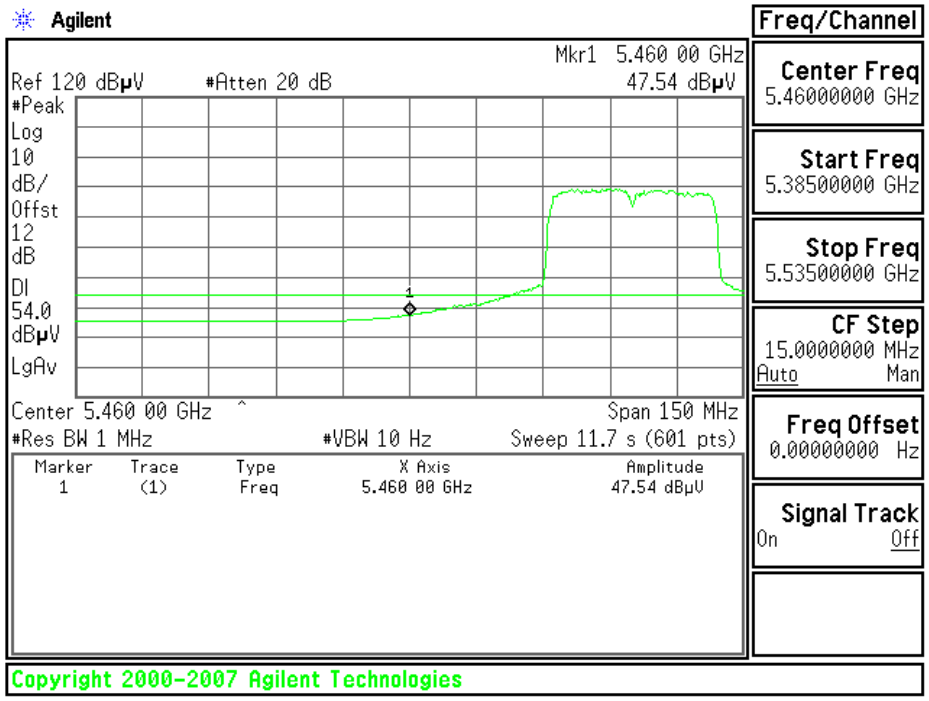


Band Edges (draft 802.11n Standard-40 MHz Channel mode / 5510MHz)

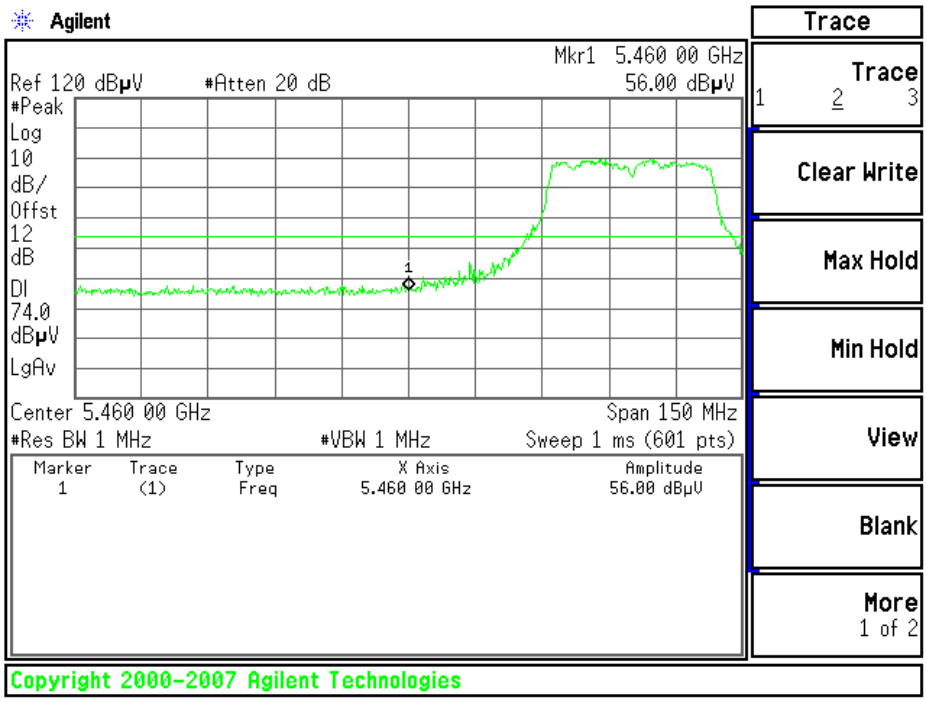
Detector mode: Peak **Polarity: Vertical**



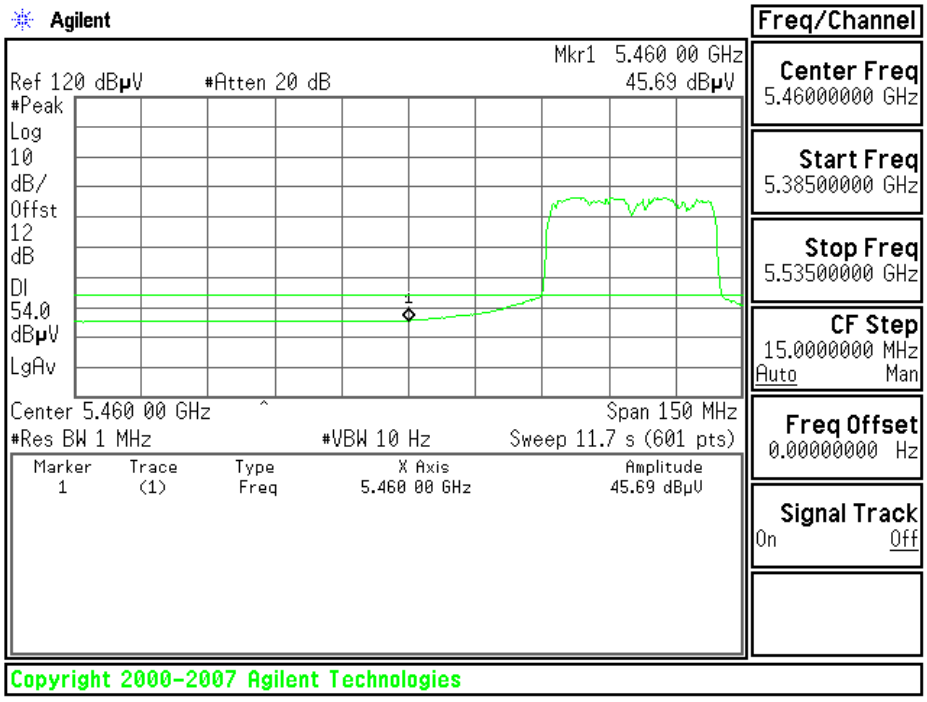
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**



PEAK POWER SPECTRAL DENSITY

LIMIT

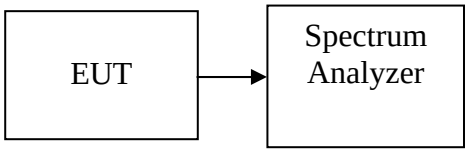
According to §15.407(a),

For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
   Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = Sweep= AUTO
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode

5150~5250MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	2.93	4.00	-1.07	PASS
Mid	5200	2.82	4.00	-1.18	PASS
High	5240	2.63	4.00	-1.37	PASS

5250~5350MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	5.40	11.00	-5.60	PASS
Mid	5300	4.36	11.00	-6.64	PASS
High	5320	4.03	11.00	-6.97	PASS

5470~5725MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	4.48	11.00	-6.52	PASS
Mid	5600	5.58	11.00	-5.42	PASS
High	5700	5.35	11.00	-5.65	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	-2.24	-2.75	-2.93	2.14	4.00	-1.86	PASS
Mid	5200	-2.57	-2.46	-2.63	2.22	4.00	-1.78	PASS
High	5240	-2.88	-2.63	-2.56	2.08	4.00	-1.92	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10)+ 10^(chain2PPSD/10))

5250~5350MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	4.38	3.88	4.05	8.88	11.00	-2.12	PASS
Mid	5300	4.00	4.88	3.26	8.87	11.00	-2.13	PASS
High	5320	3.49	4.51	4.05	8.81	11.00	-2.19	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10)+ 10^(chain2PPSD/10))

5470~5725MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	4.54	4.16	4.33	9.12	11.00	-1.88	PASS
Mid	5600	4.52	4.16	4.21	9.07	11.00	-1.93	PASS
High	5700	4.50	4.07	4.26	9.05	11.00	-1.95	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10)+ 10^(chain2PPSD/10))

Test mode: draft 802.11n Wide-40 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5190	-2.44	-2.76	-2.55	2.19	4.00	-1.81	PASS
Mid	5230	-2.72	-2.63	-2.39	2.19	4.00	-1.81	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10)+ 10^(chain2PPSD/10))

5250~5350MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5270	4.60	3.87	4.15	8.99	11.00	-2.01	PASS
Mid	5310	4.18	3.75	4.13	8.80	11.00	-2.20	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10)+ 10^(chain2PPSD/10))

5470~5725MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5510	4.00	3.63	4.14	8.70	11.00	-2.30	PASS
Mid	5590	4.00	4.41	4.30	9.01	11.00	-1.99	PASS
High	5670	4.81	3.92	3.98	9.03	11.00	-1.97	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10)+ 10^(chain2PPSD/10))

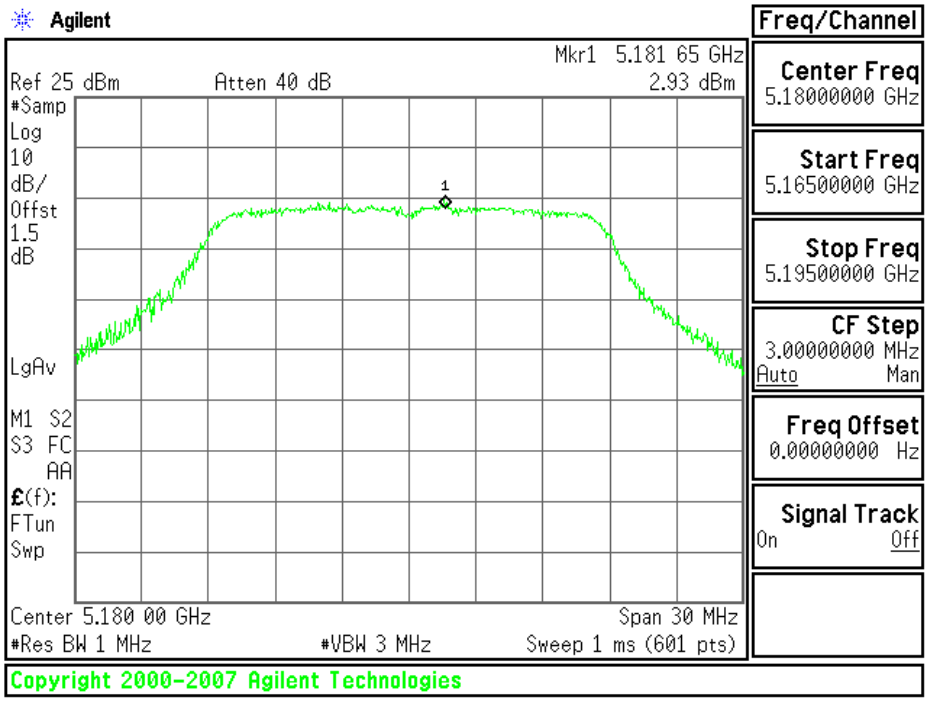
*(**Remark:** 1. Maximum antenna gain =3dBi, therefore there is no reduction due to antenna gain.)*

Test Plot

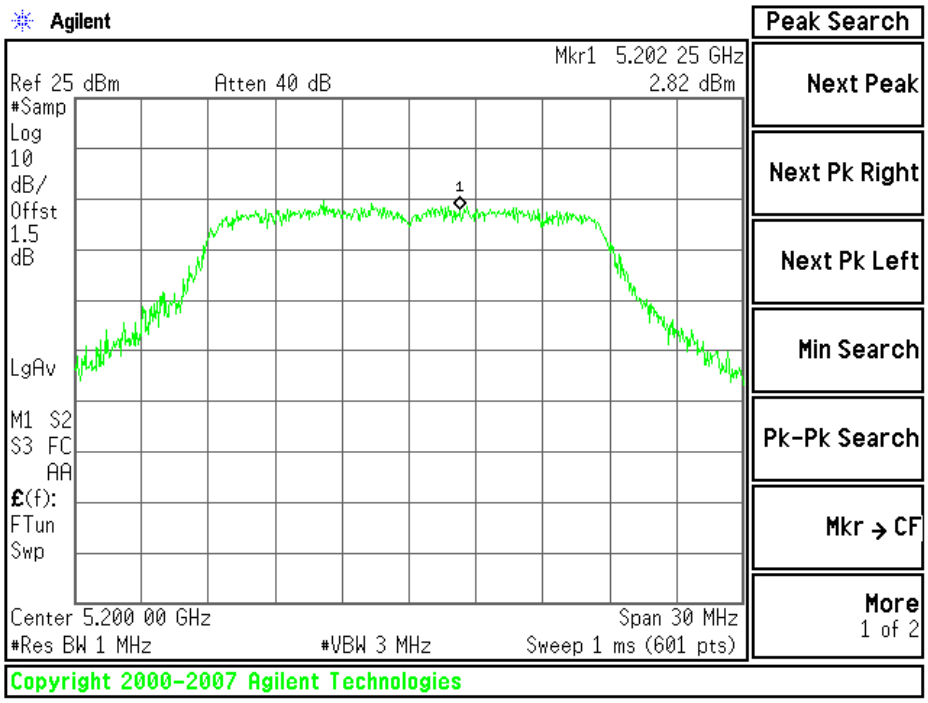
Test mode: IEEE 802.11a mode:

5150~5250MHz

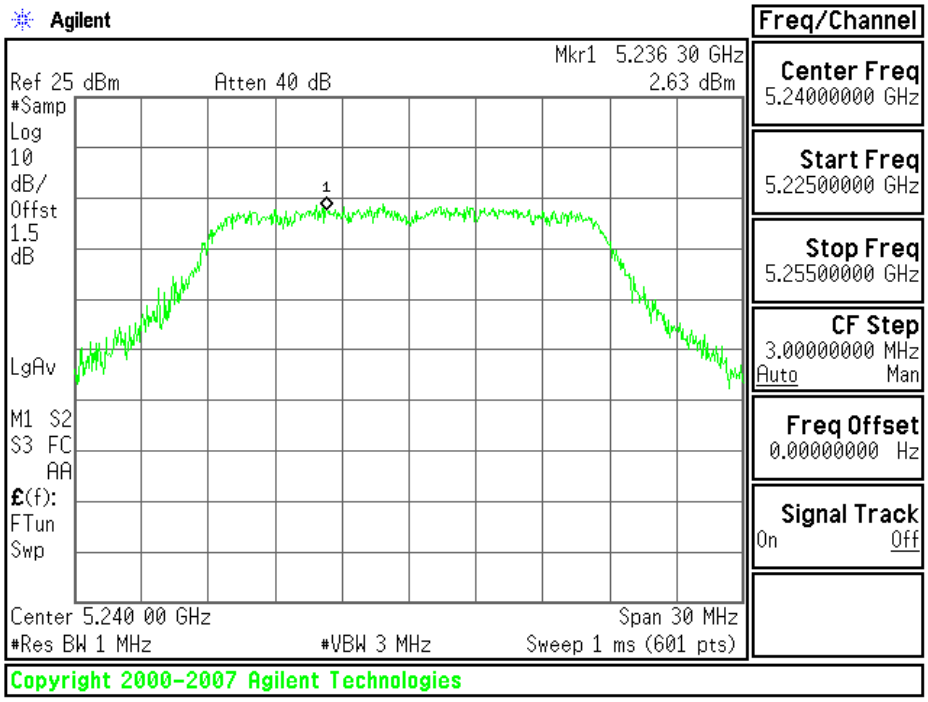
CH Low



CH Mid

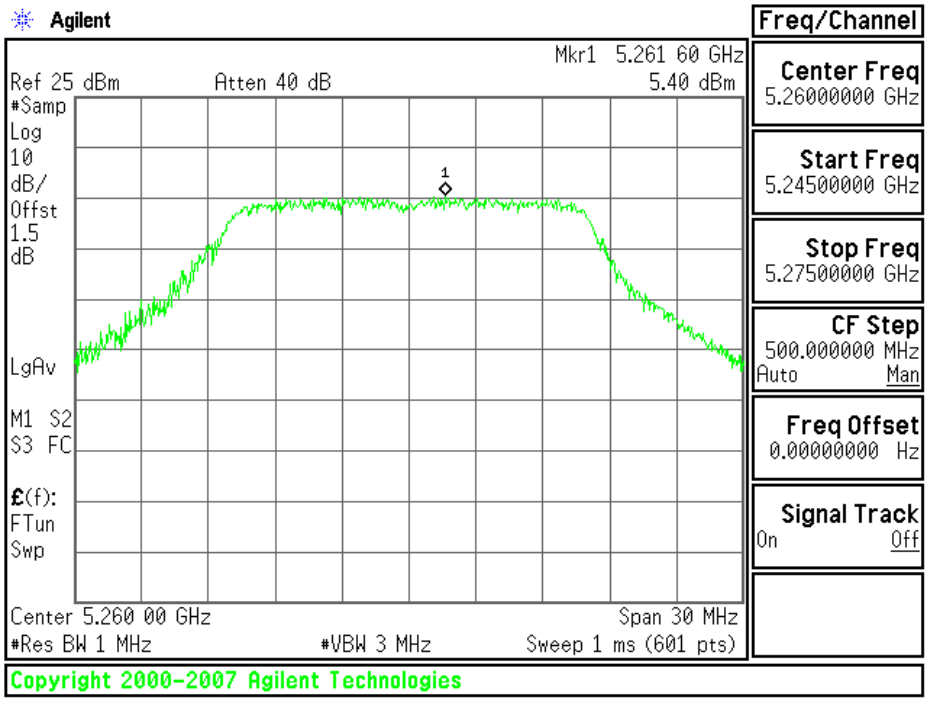


CH High

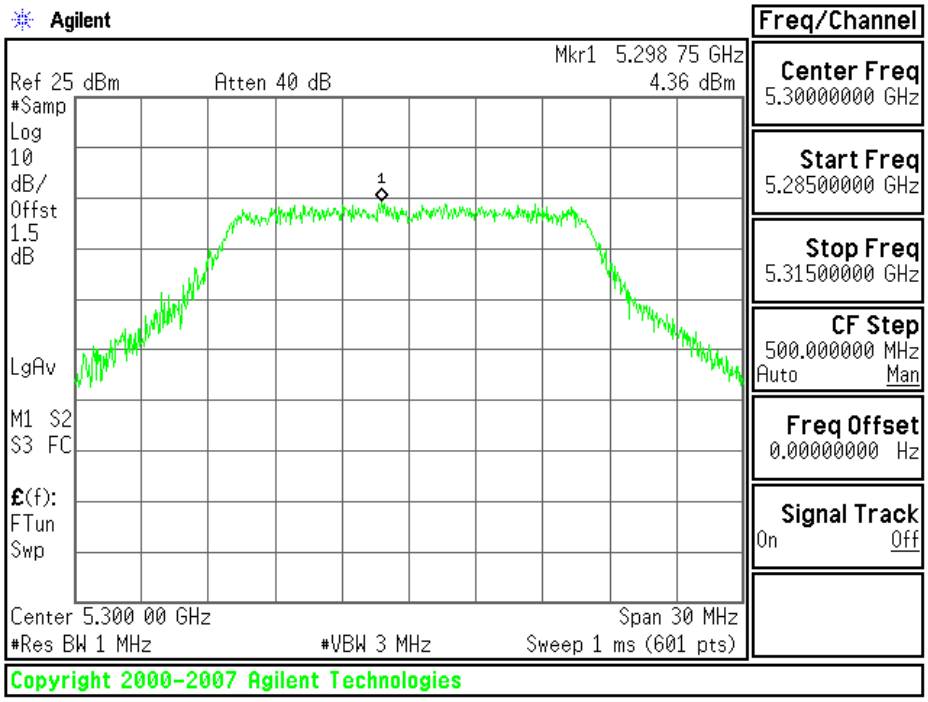


5250~5350MHz

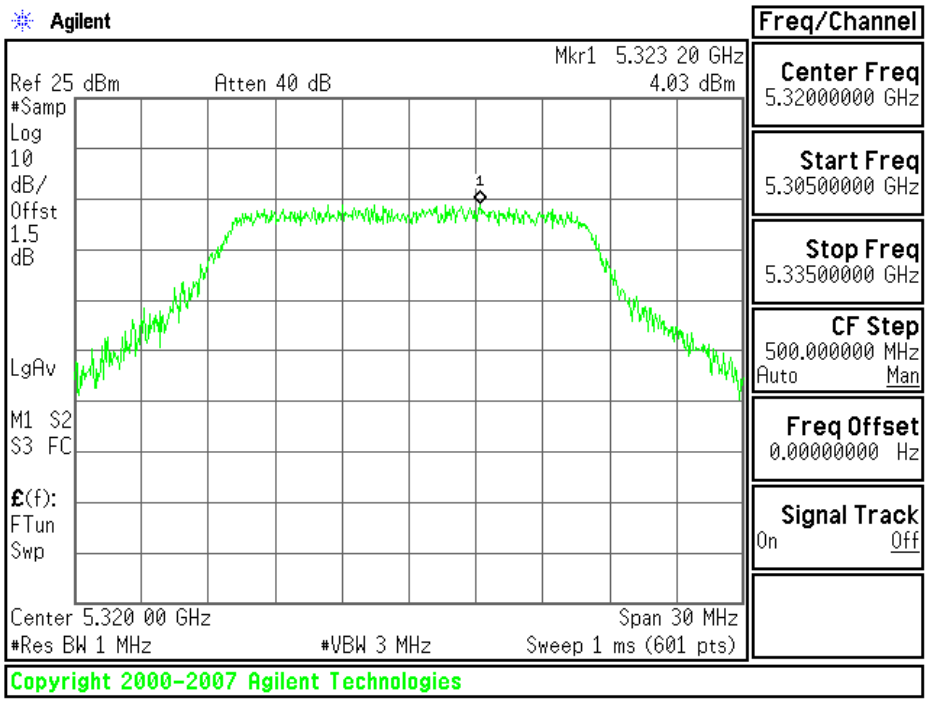
CH Low



CH Mid

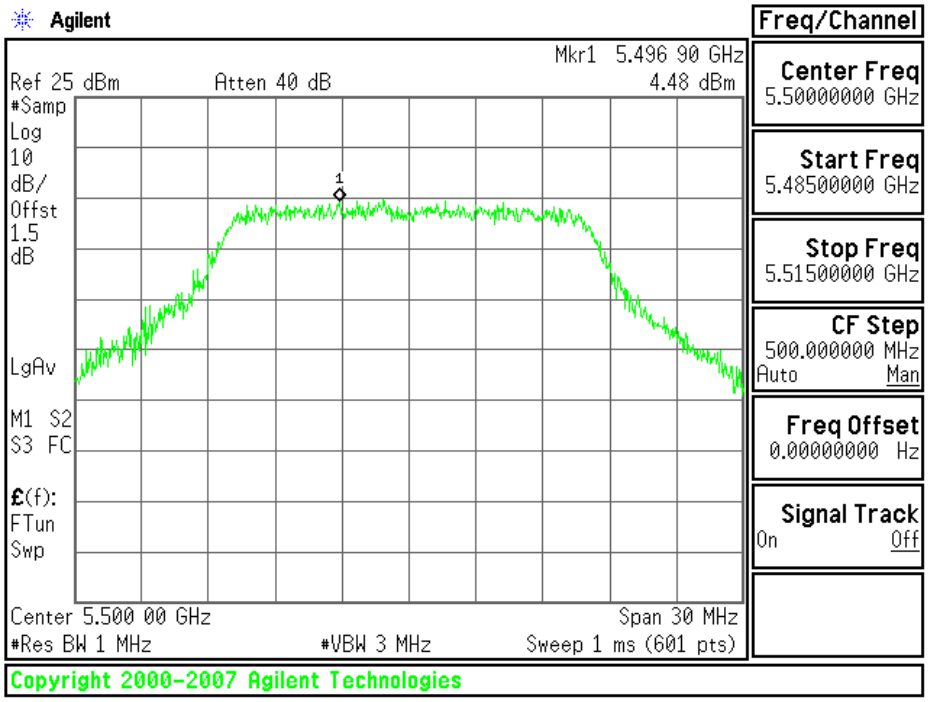


CH High

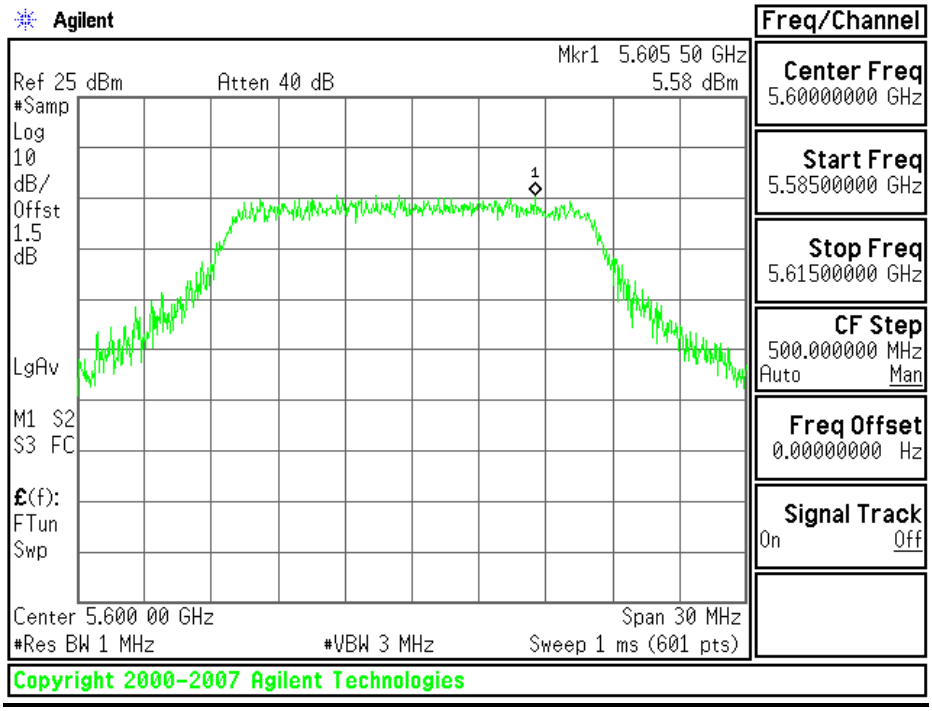


5470~5725MHz

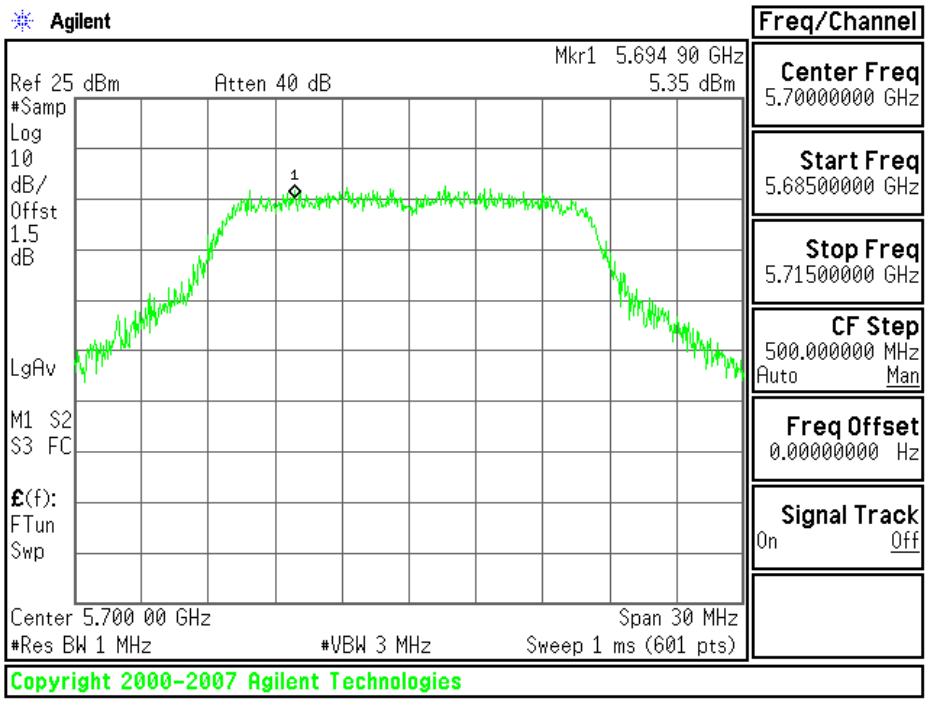
CH Low



CH Mid



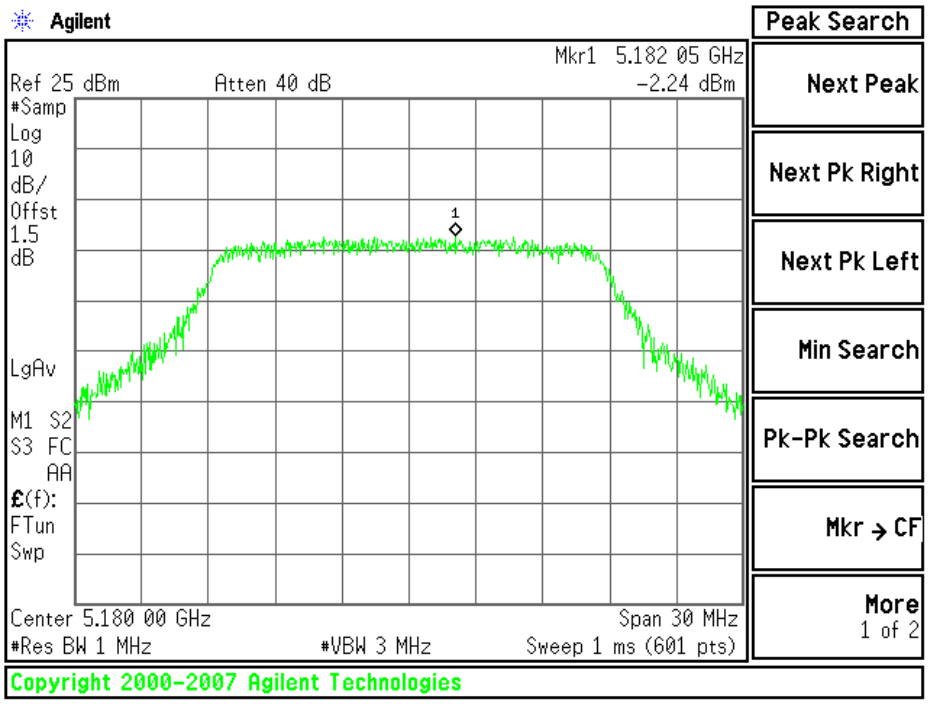
CH High



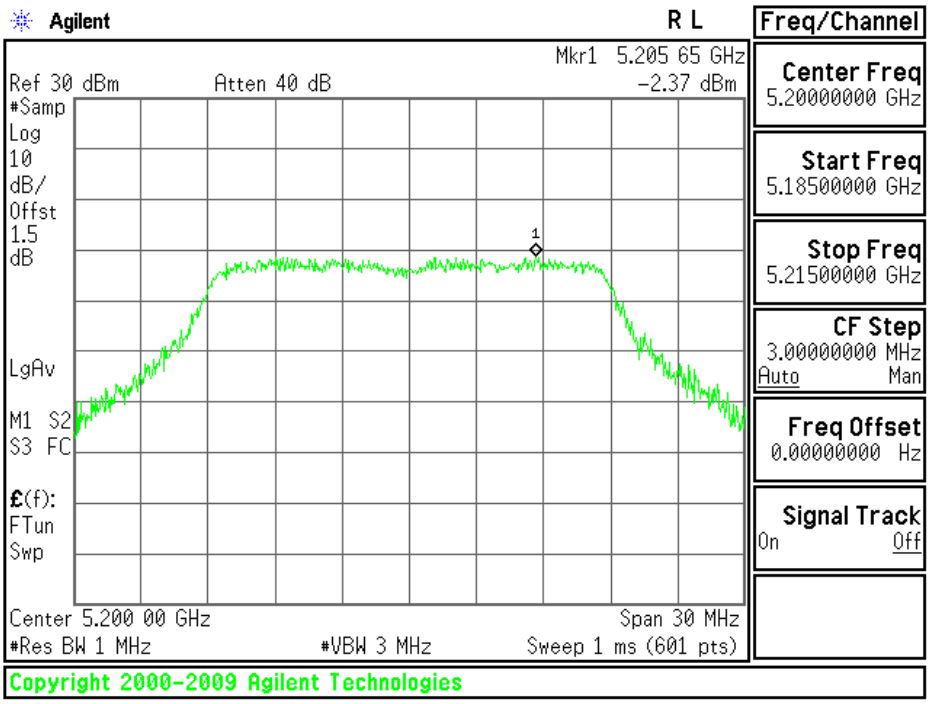
<u>Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0:</u>

5150~5250MHz

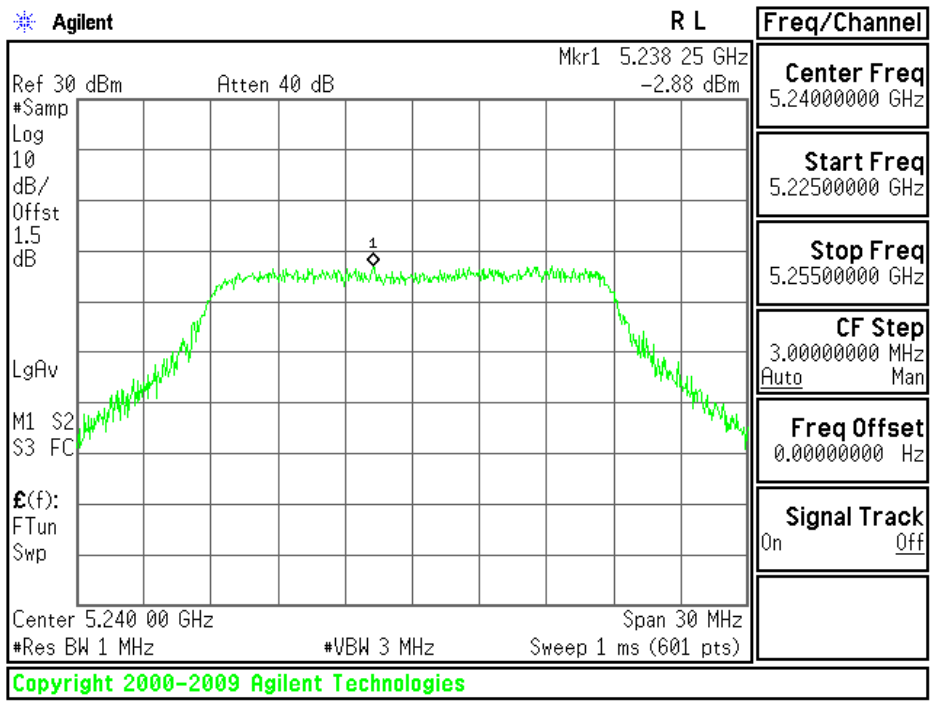
CH Low



CH Mid

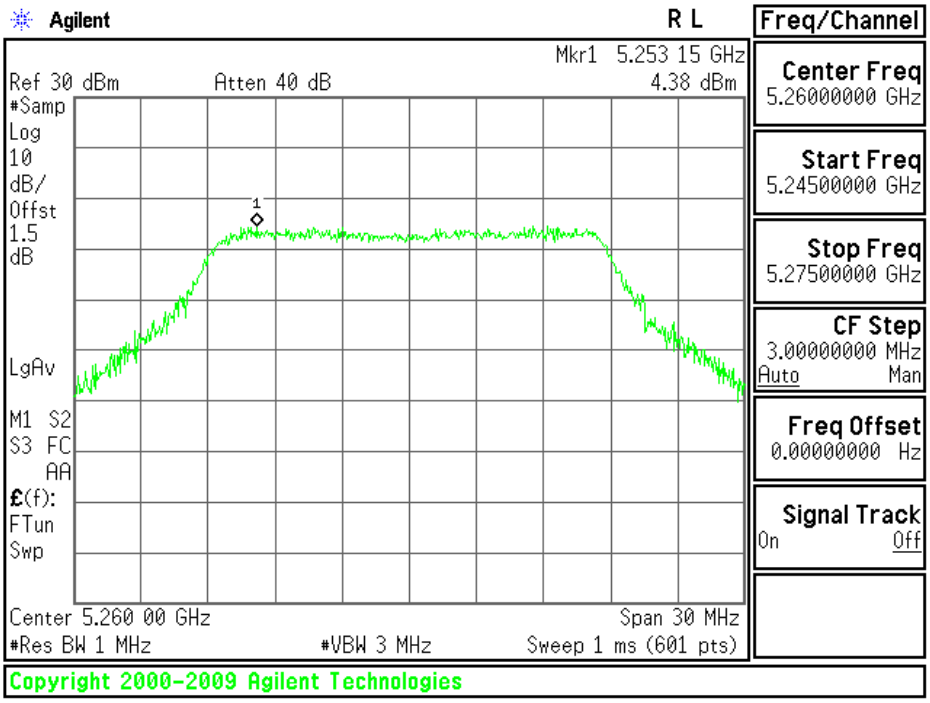


CH High

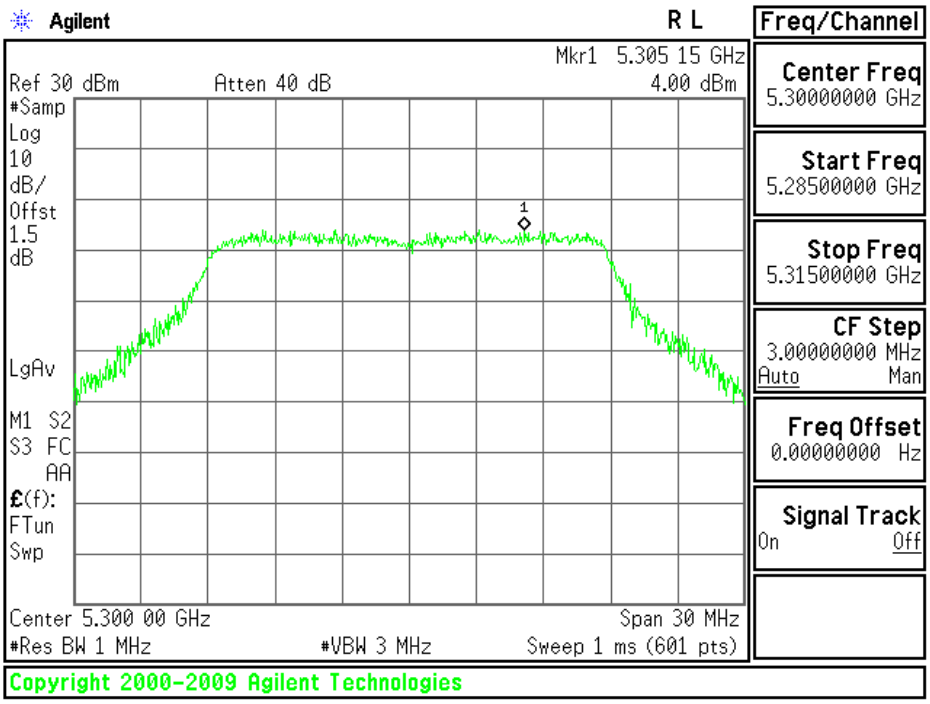


5250~5350MHz

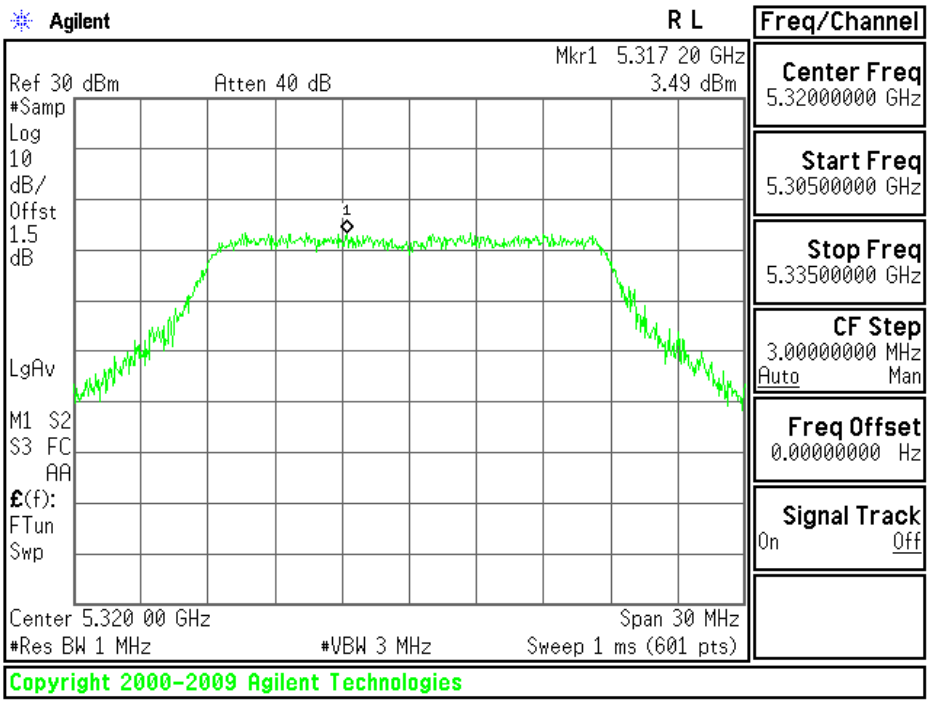
CH Low



CH Mid

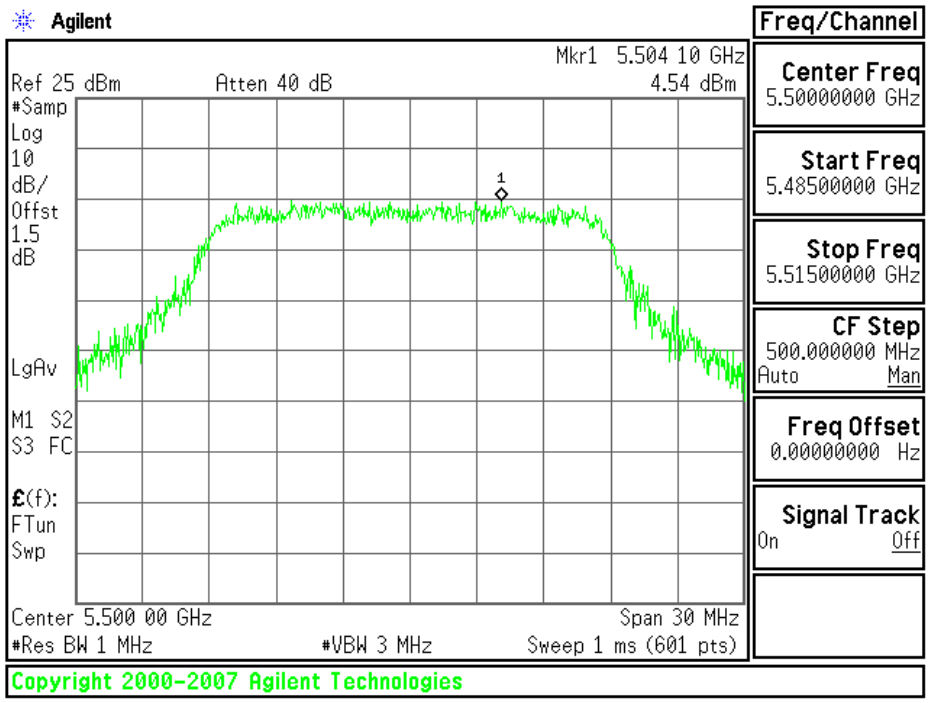


CH High

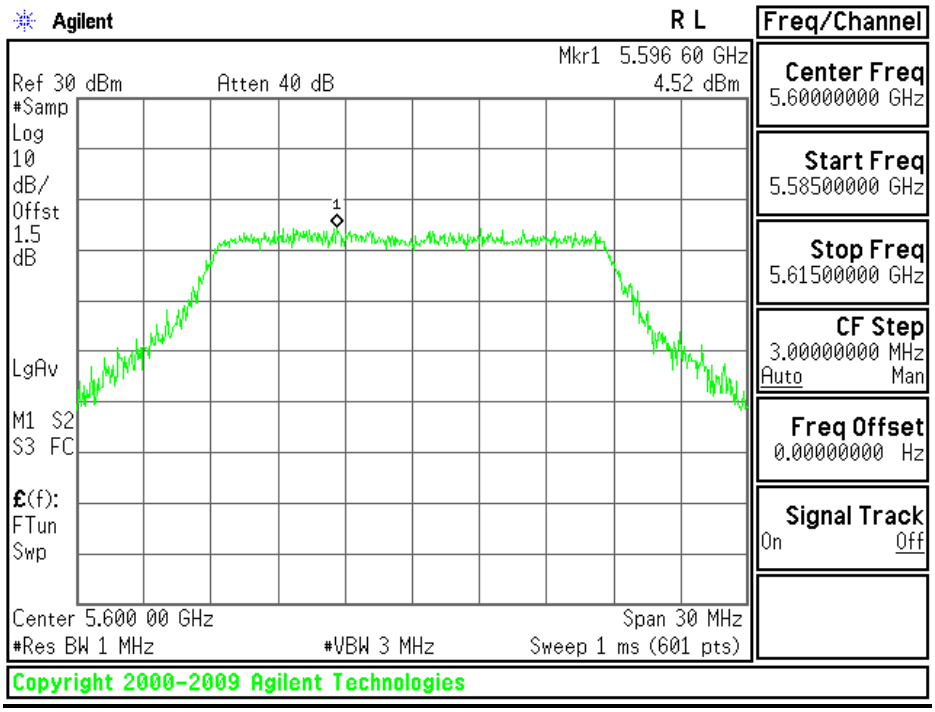


5470~5725MHz

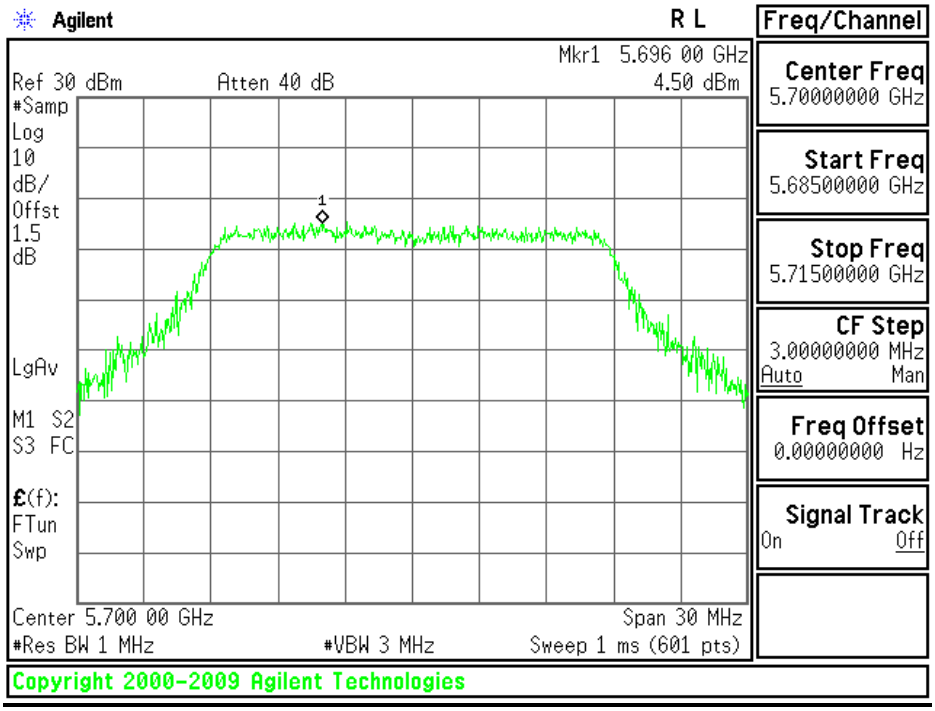
CH Low



CH Mid



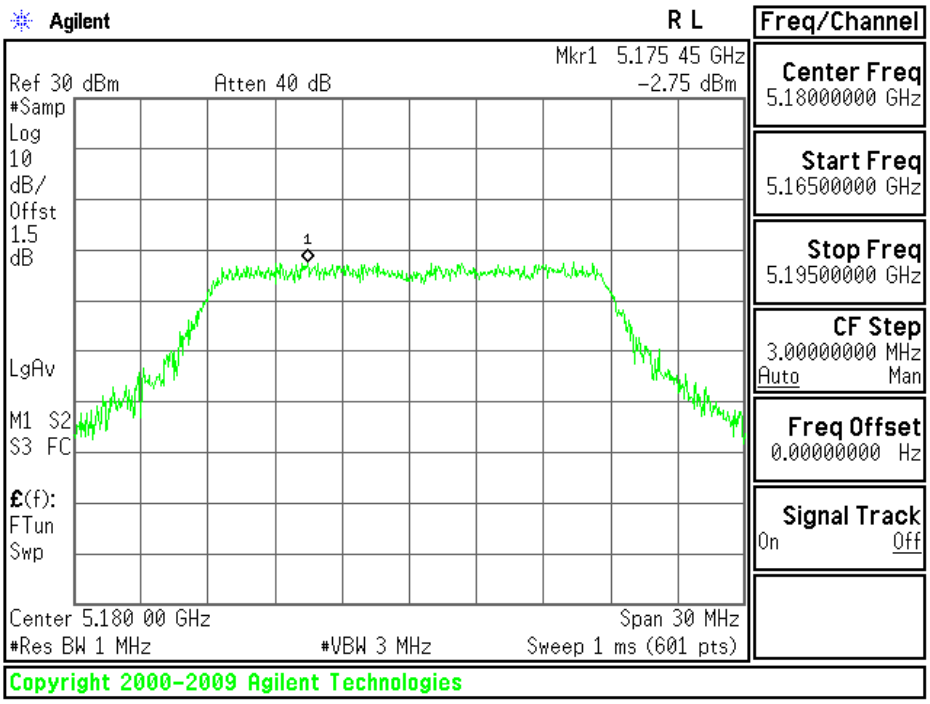
CH High



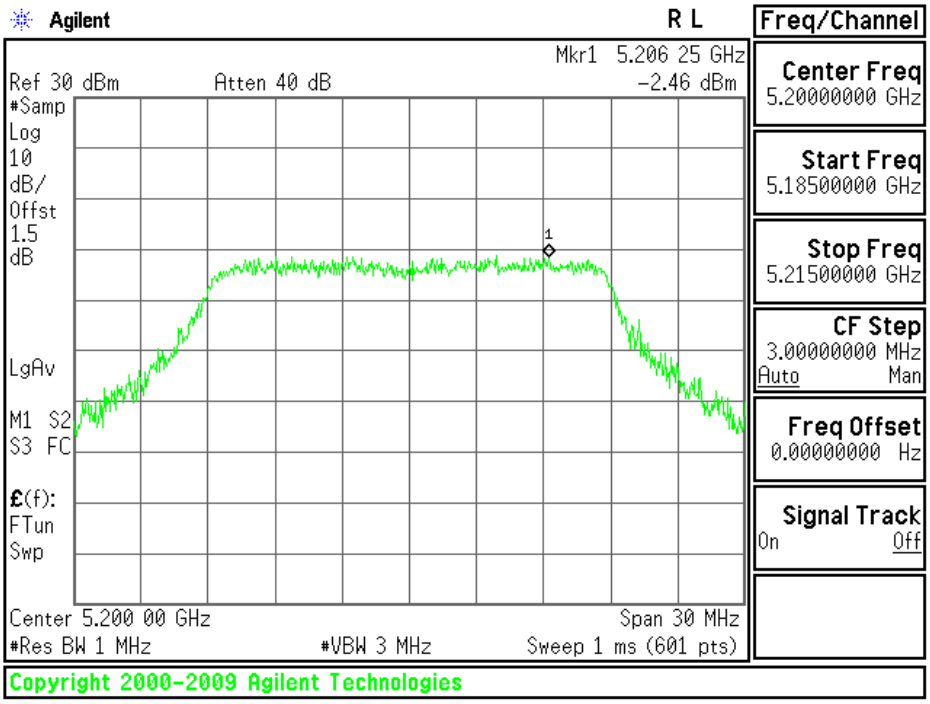
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1:

5150~5250MHz

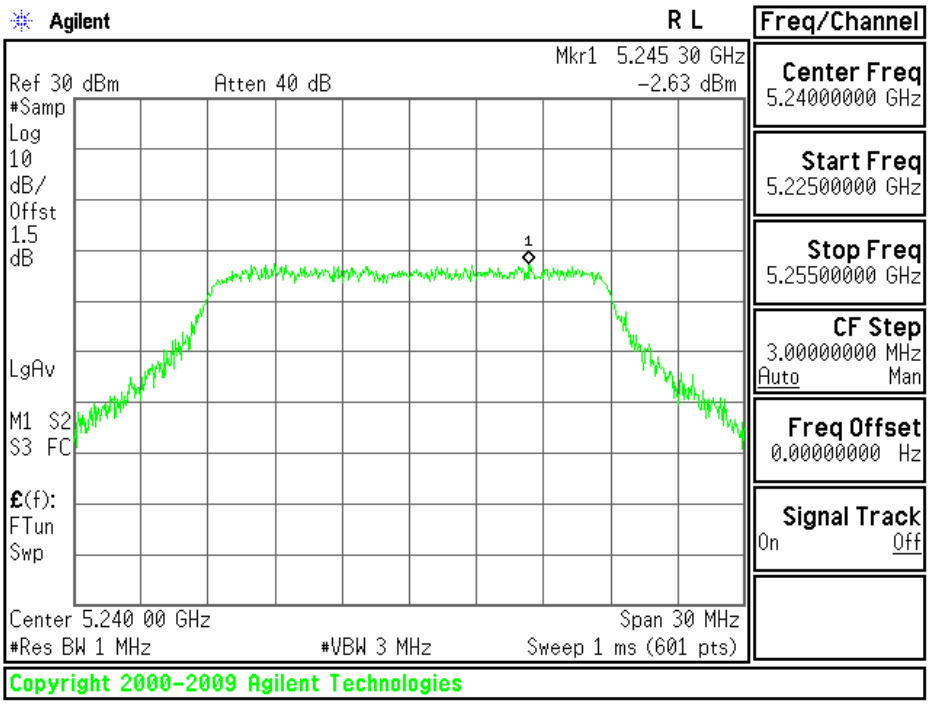
CH Low



CH Mid

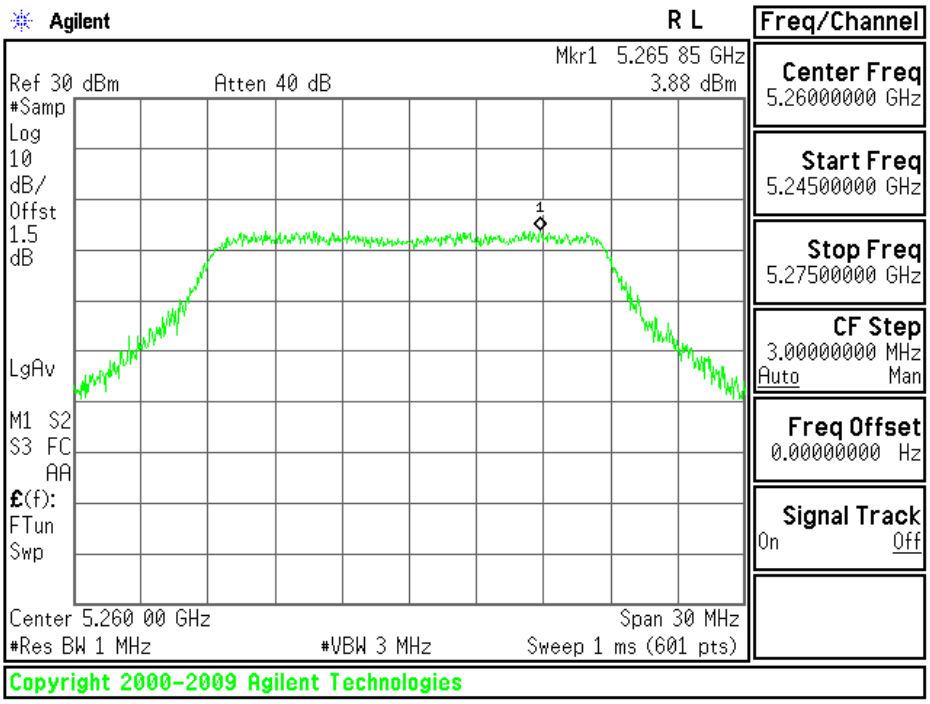


CH High

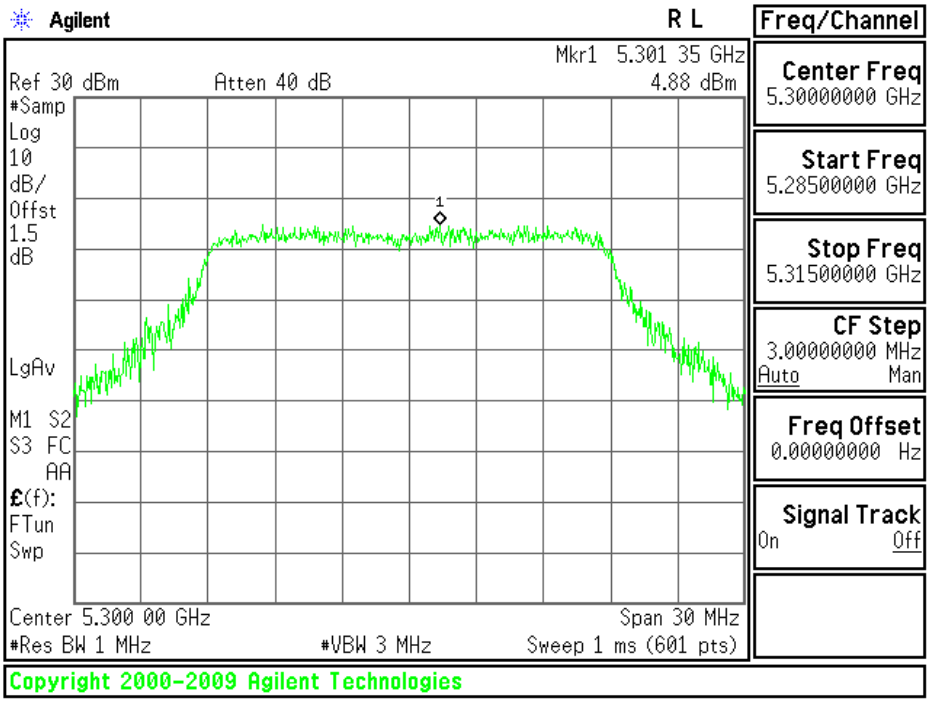


5250~5350MHz

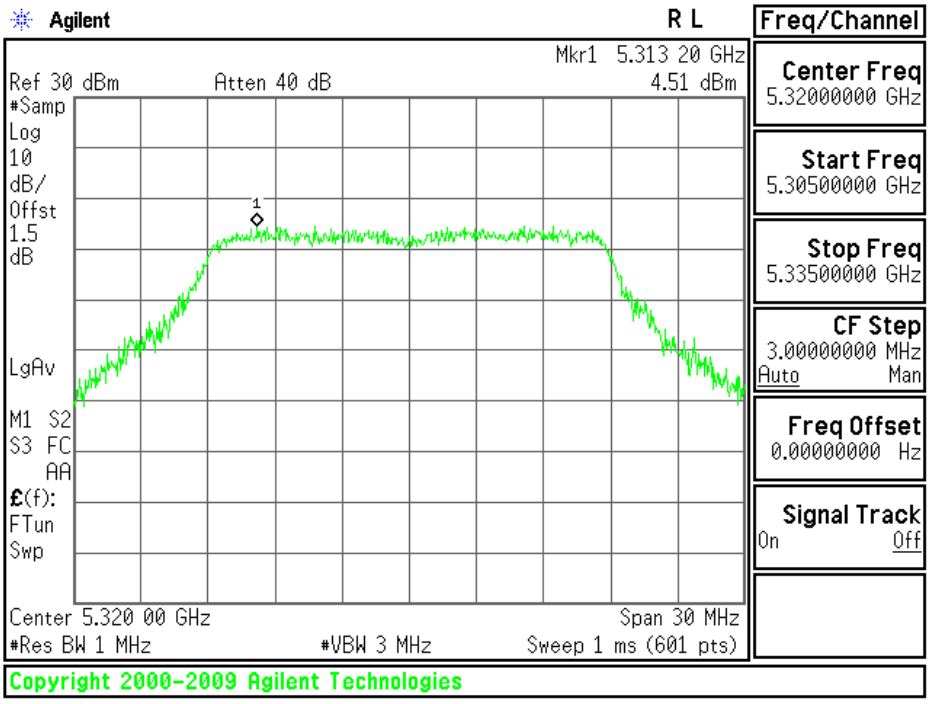
CH Low



CH Mid

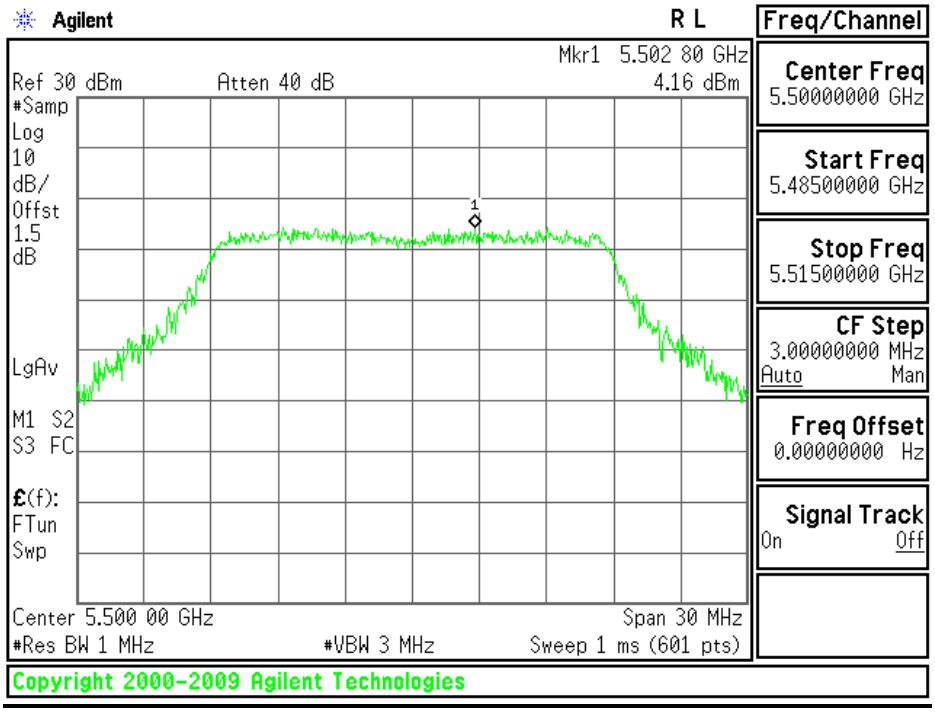


CH High

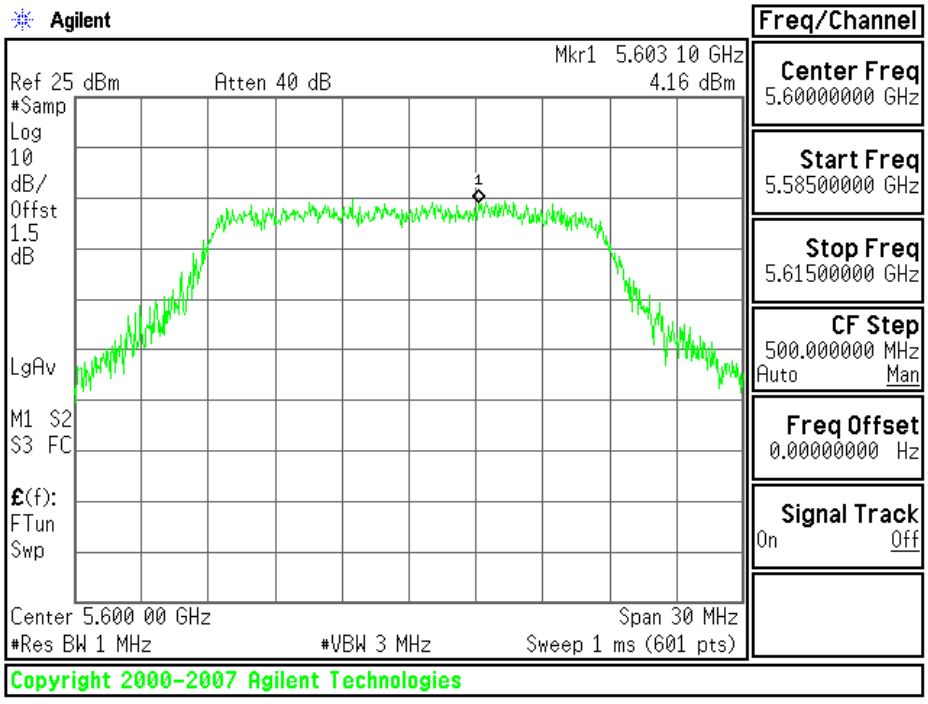


5470~5725MHz

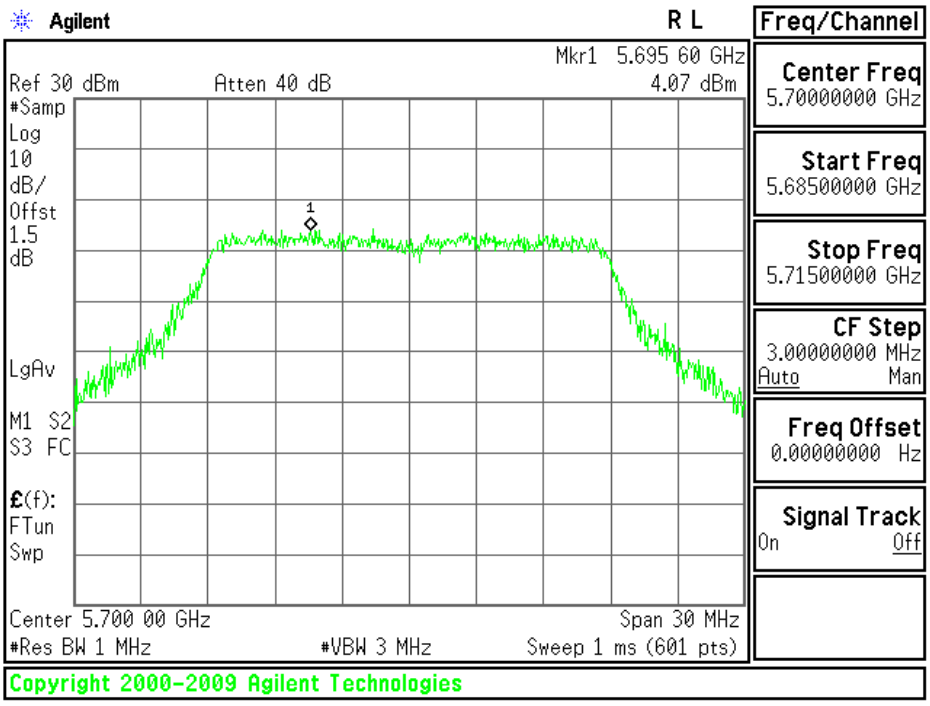
CH Low



CH Mid



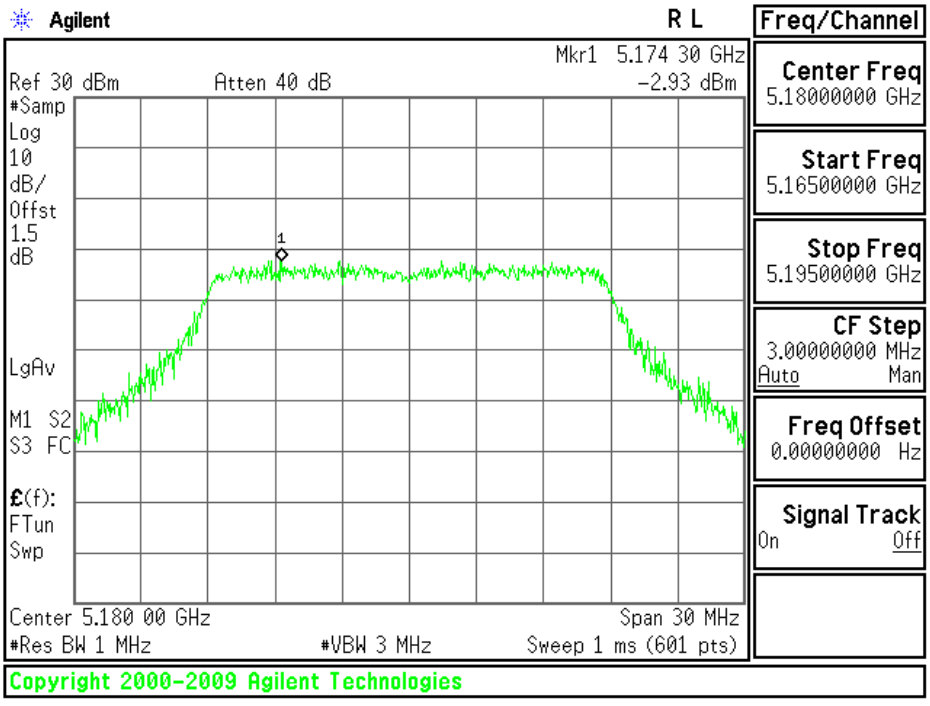
CH High



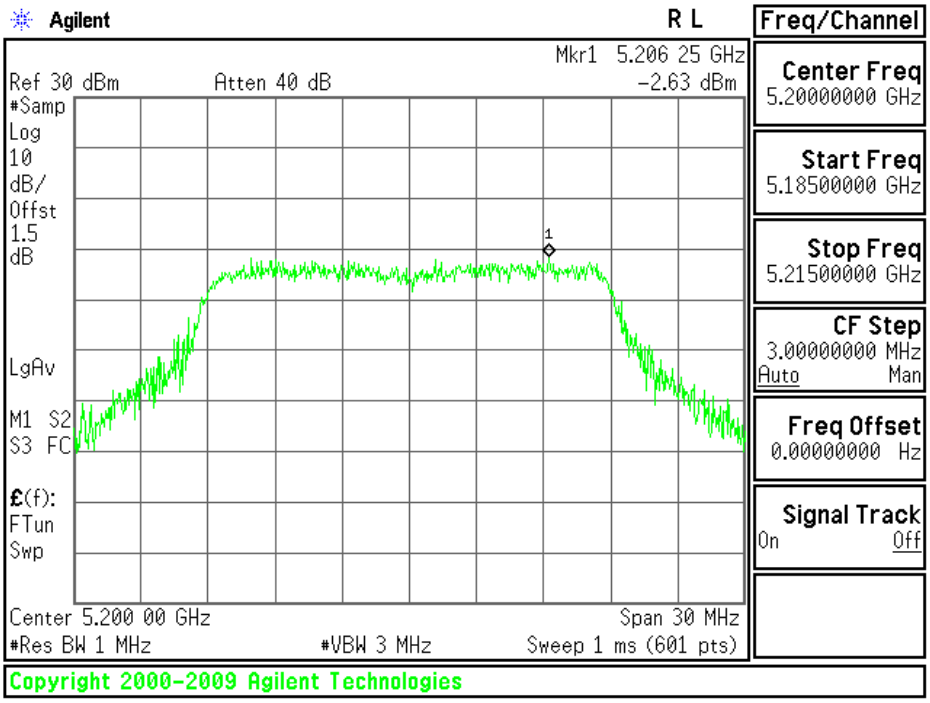
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 2:

5150~5250MHz

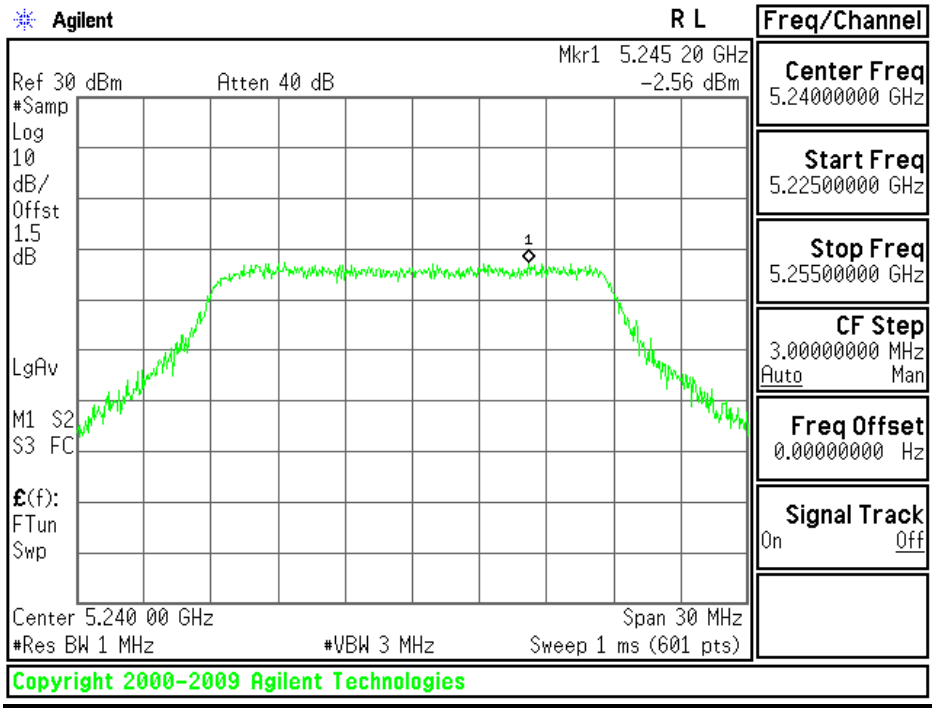
CH Low



CH Mid

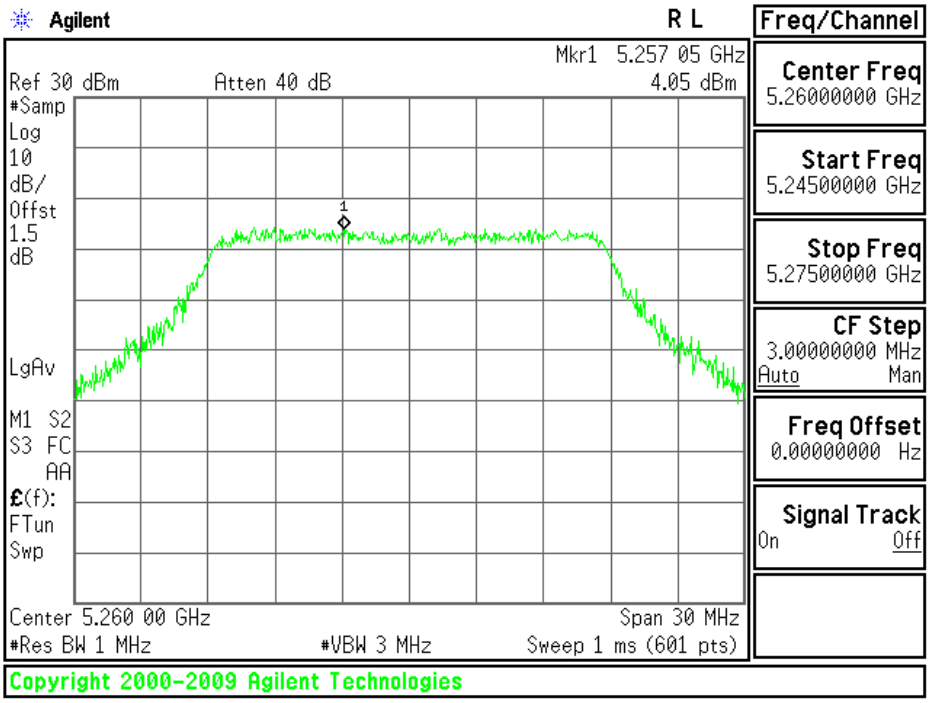


CH High

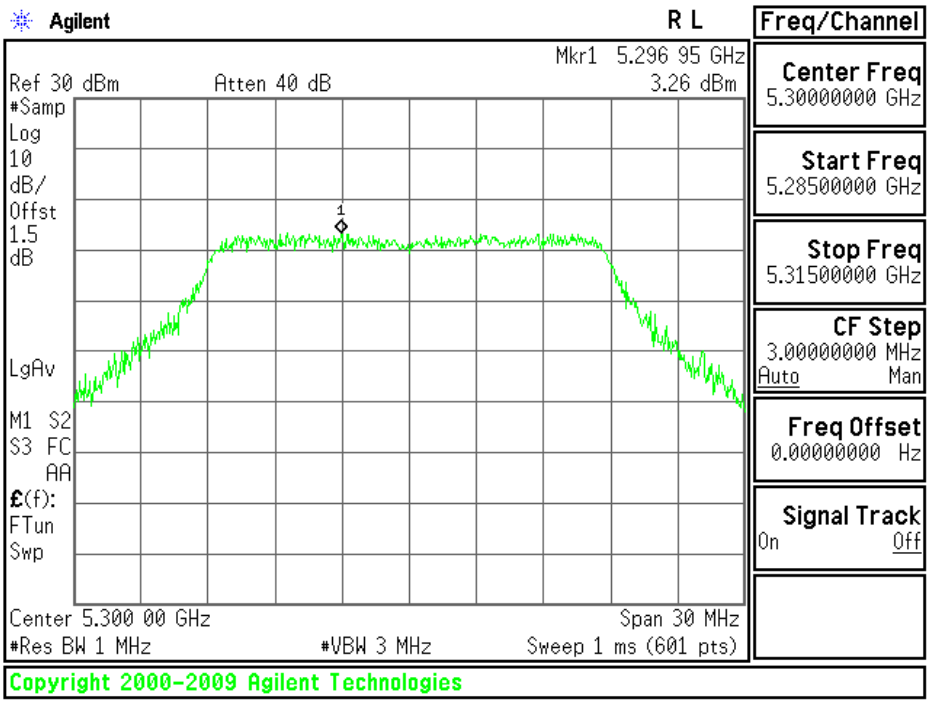


5250~5350MHz

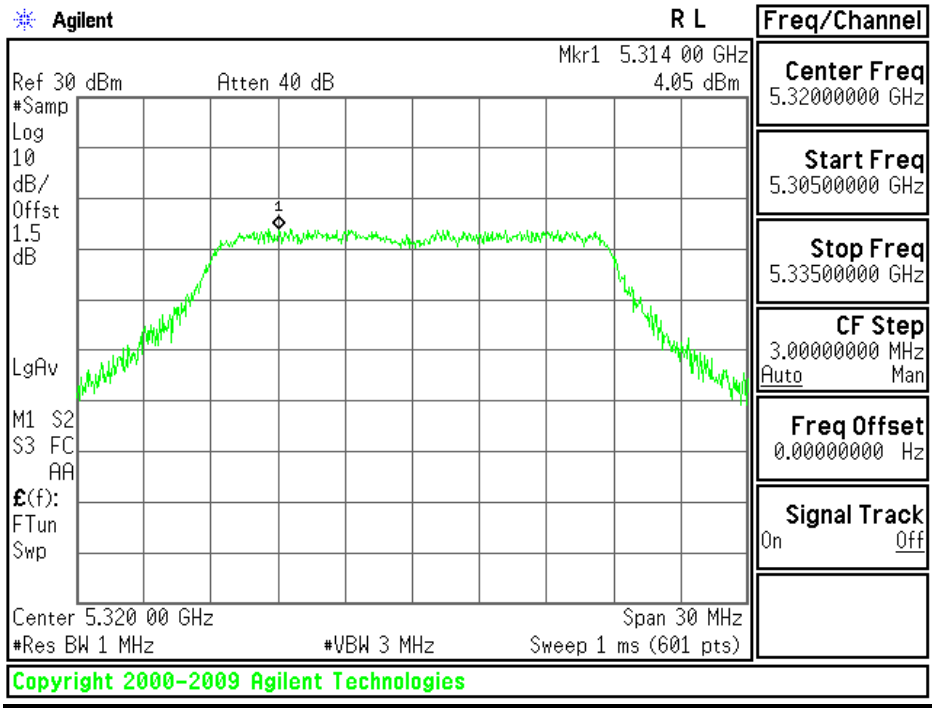
CH Low



CH Mid

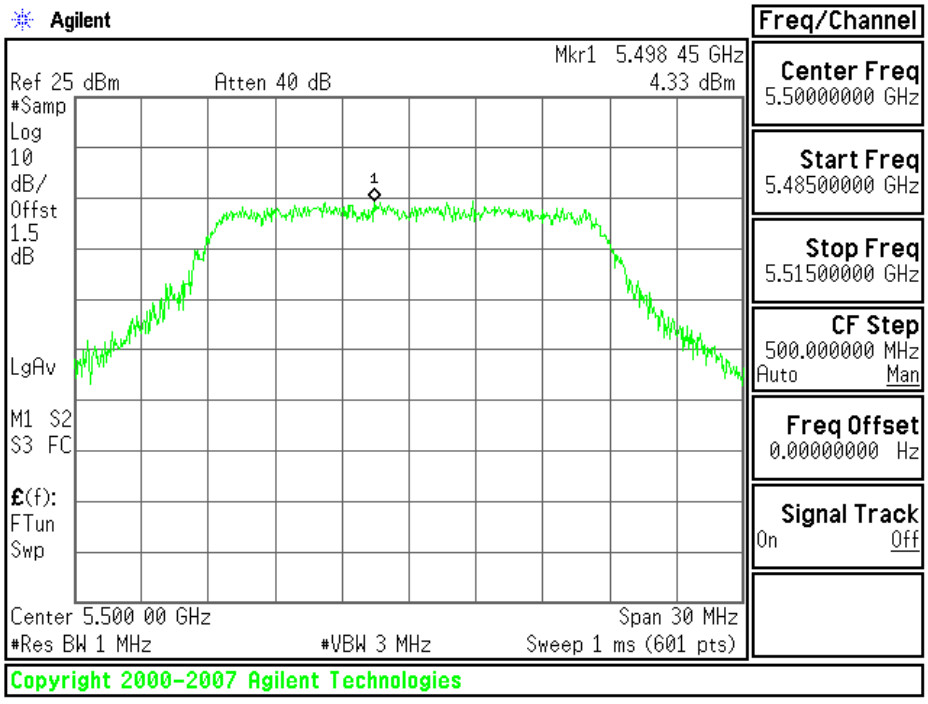


CH High

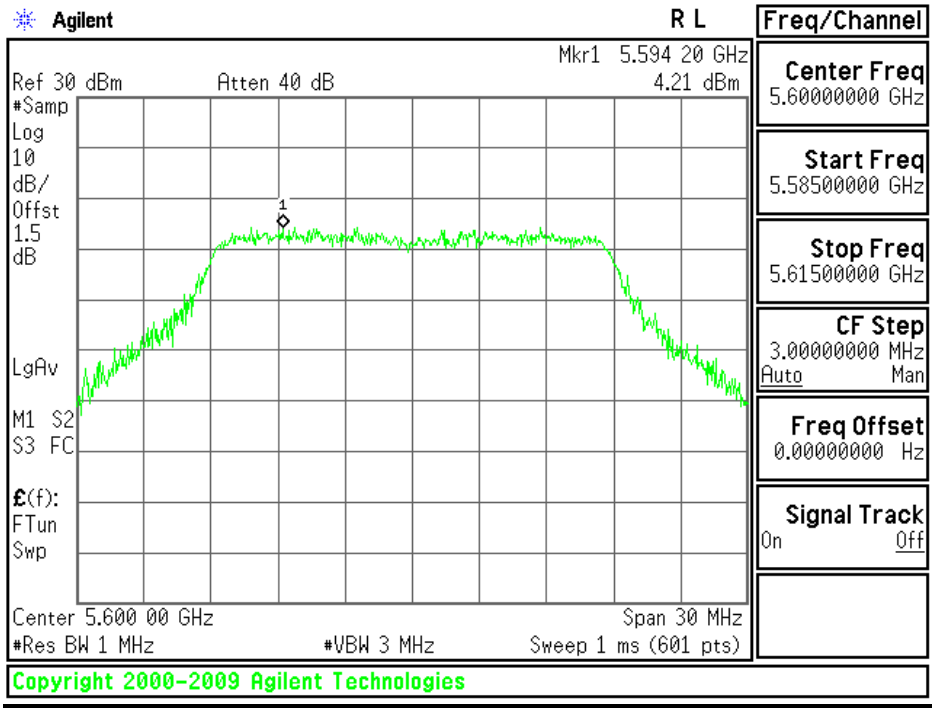


5470~5725MHz

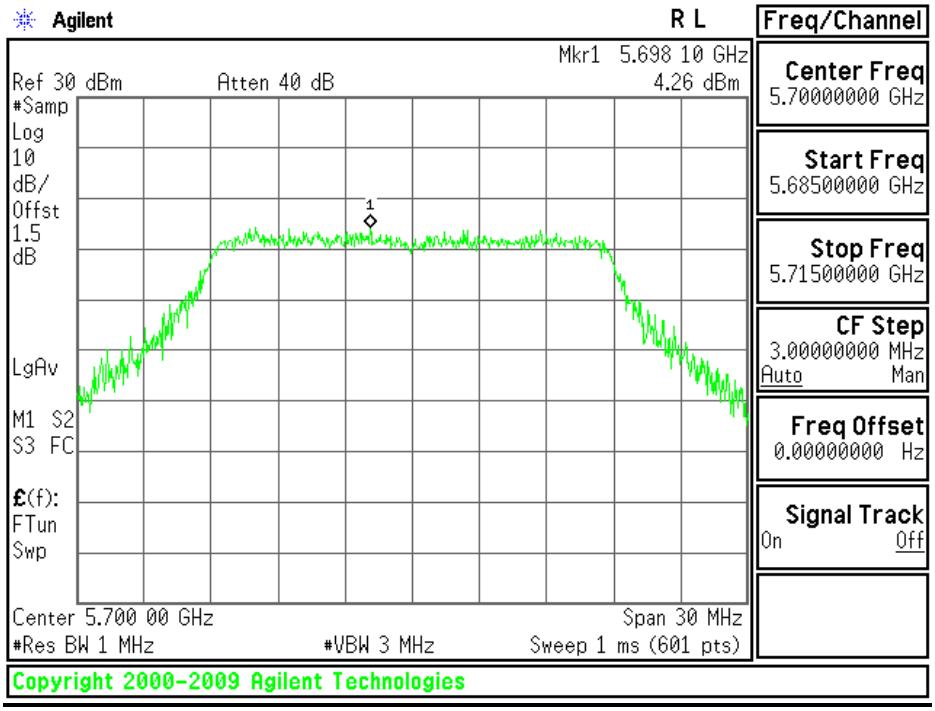
CH Low



CH Mid



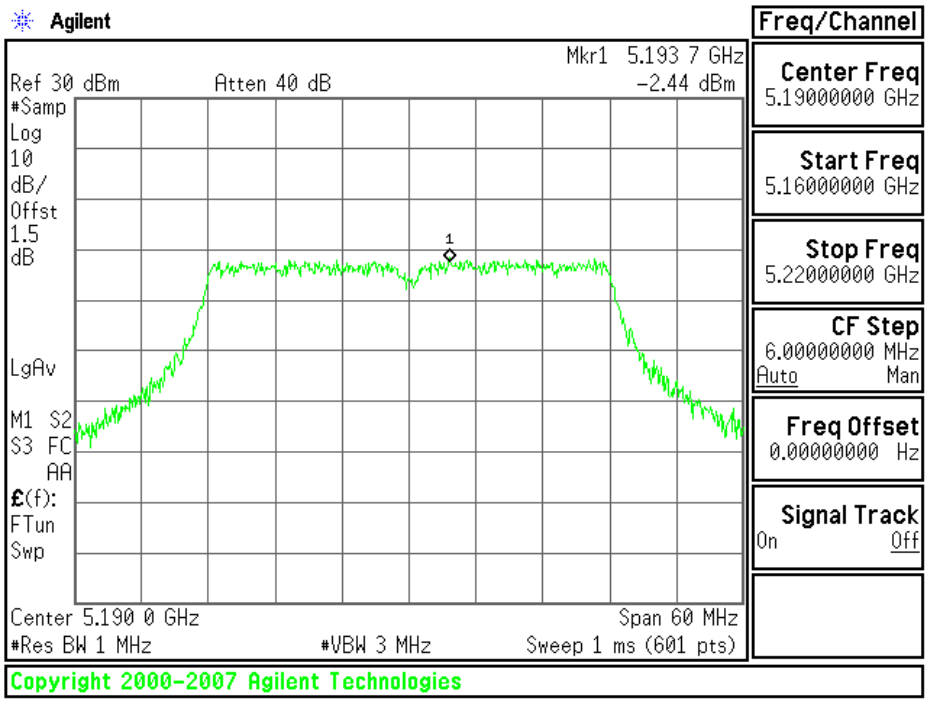
CH High



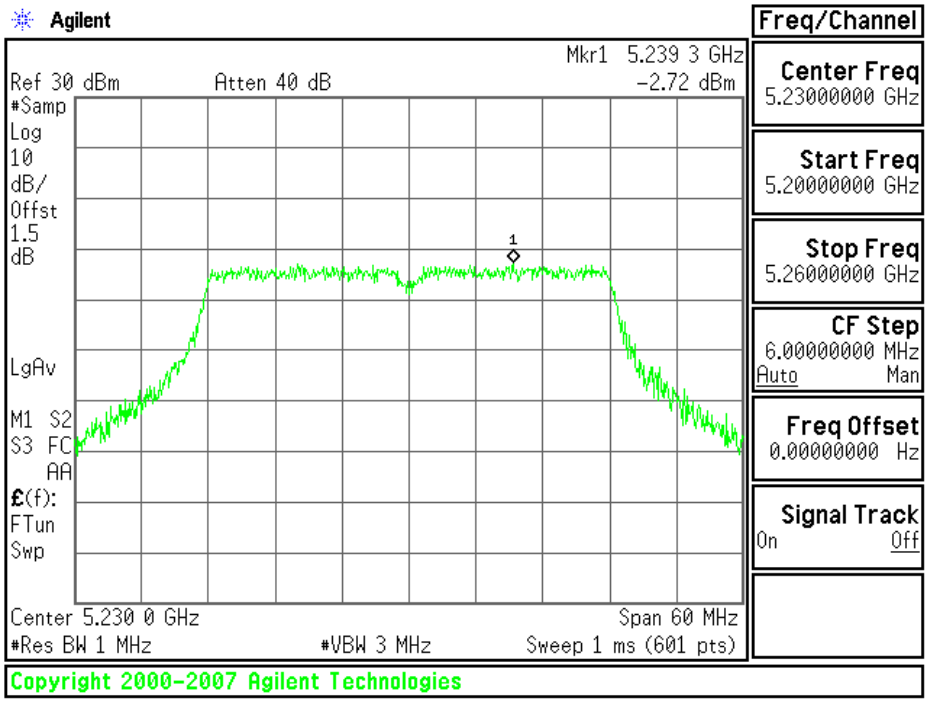
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0:

5150~5250MHz

CH Low

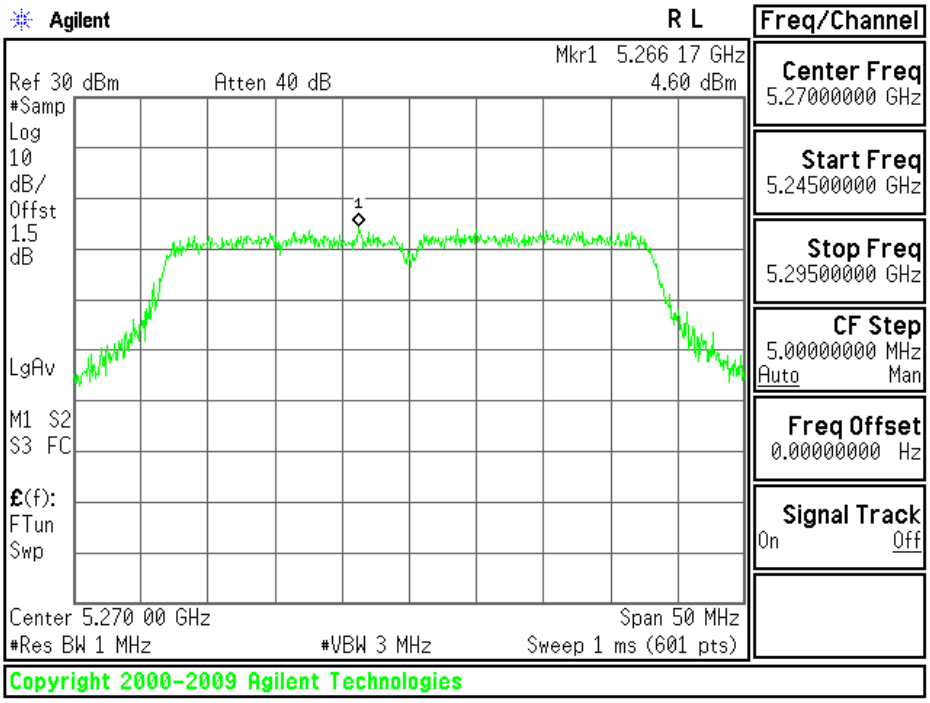


CH High

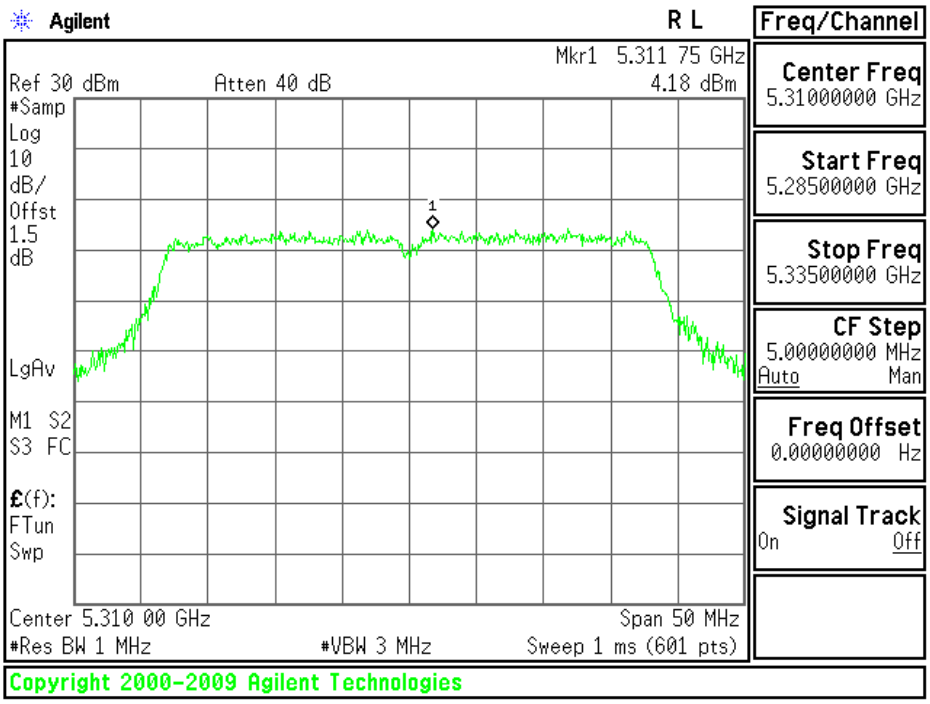


5250~5350MHz

CH Low

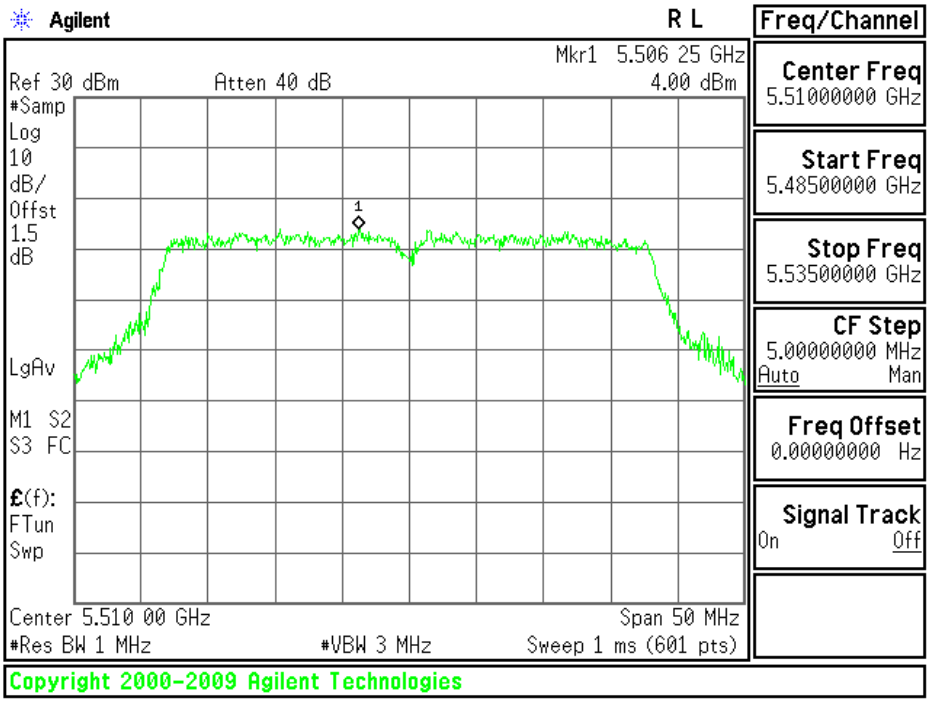


CH High

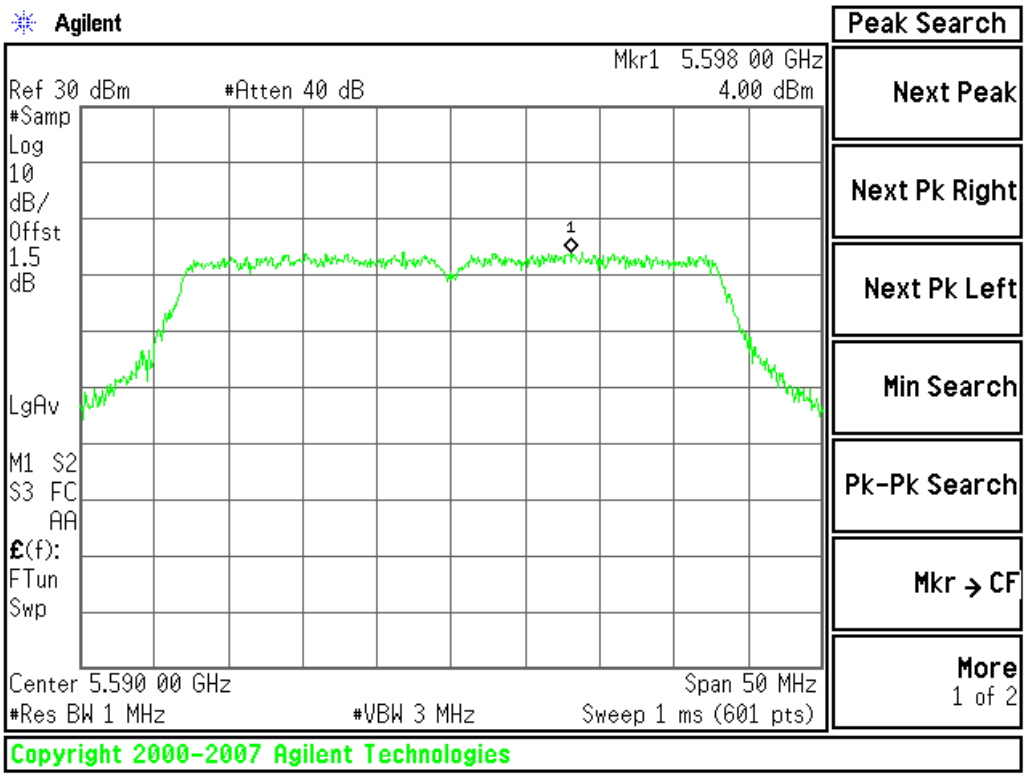


5470~5725MHz

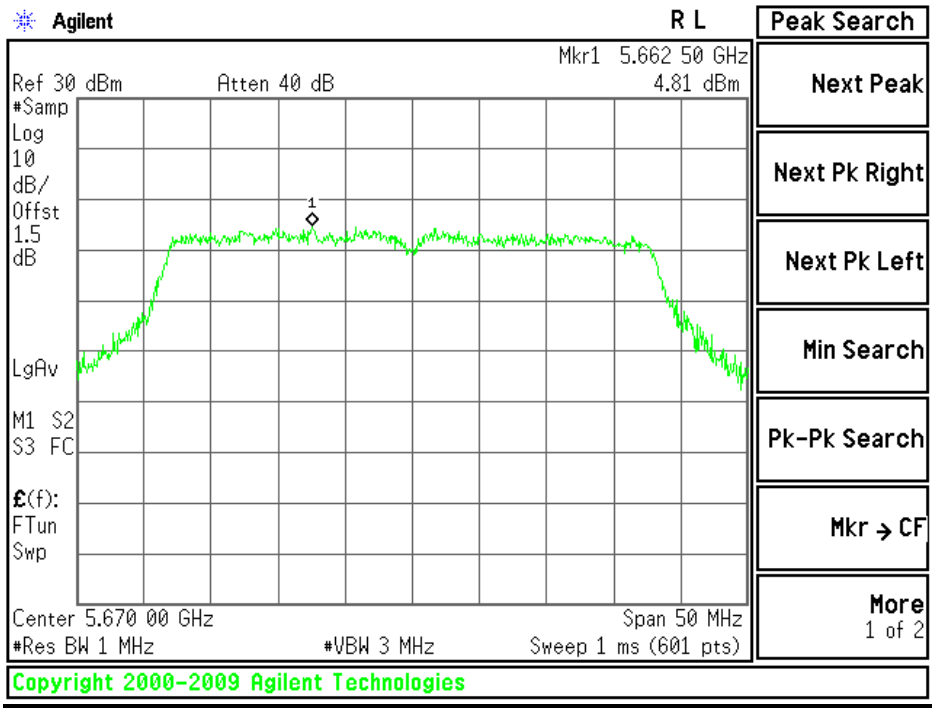
CH Low



CH Mid



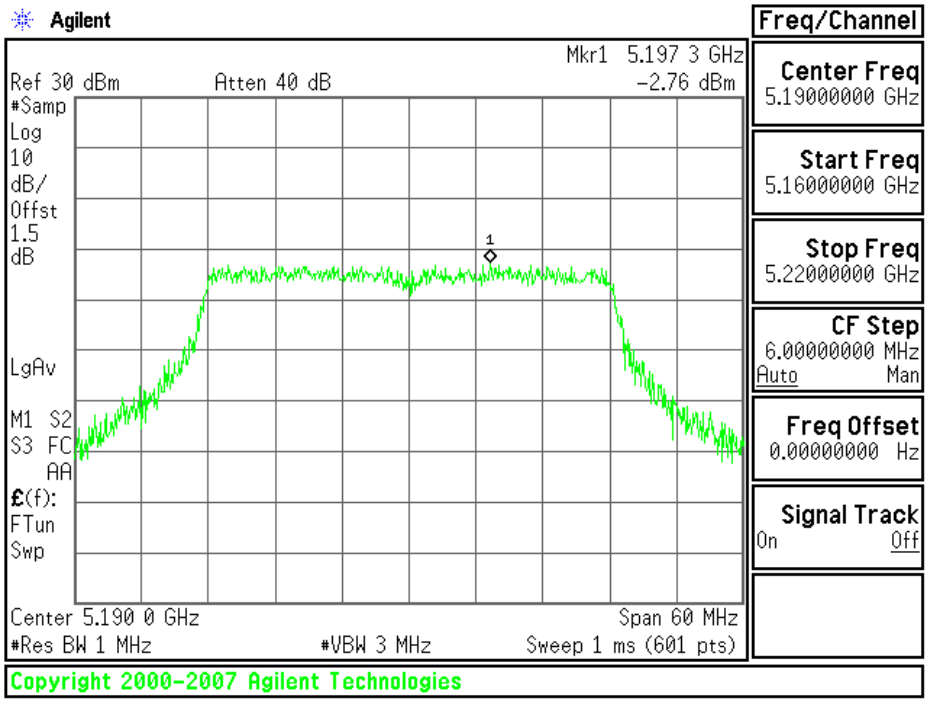
CH High



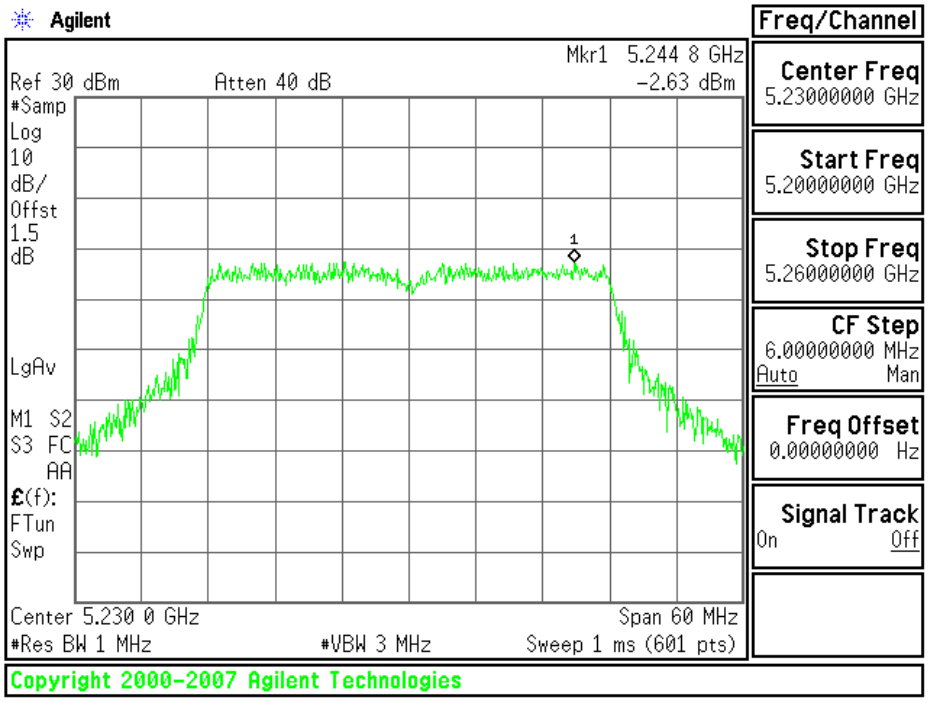
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1:

5150~5250MHz

CH Low

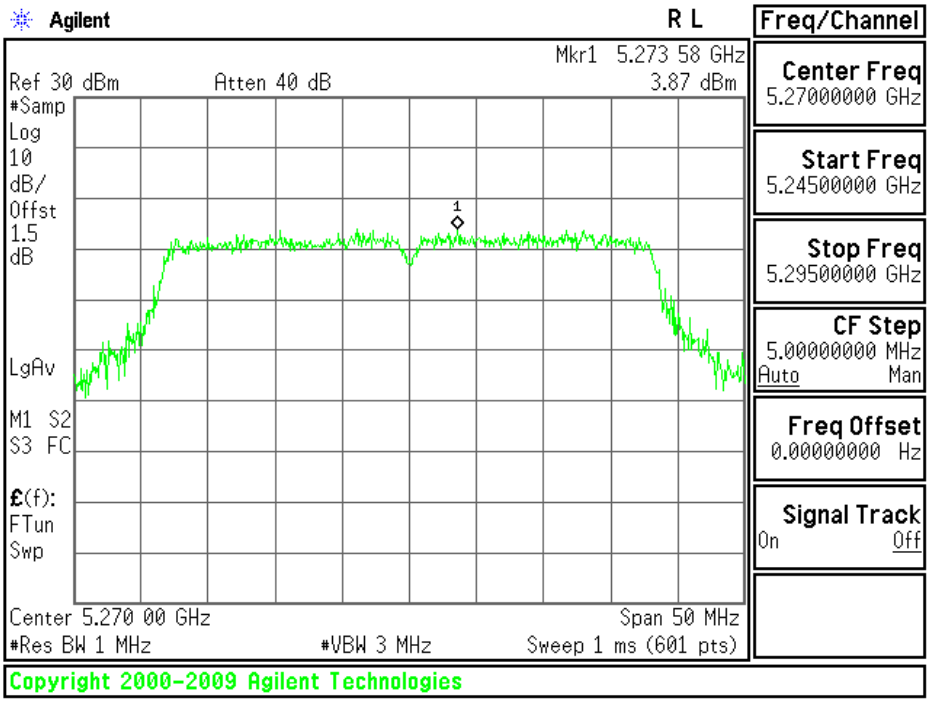


CH High

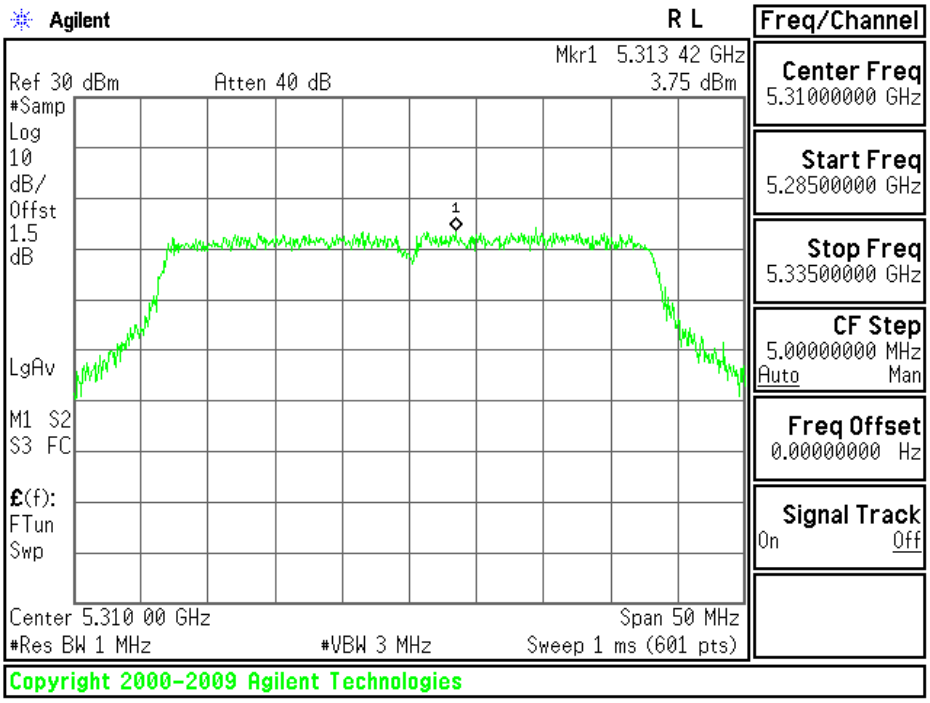


5250~5350MHz

CH Low

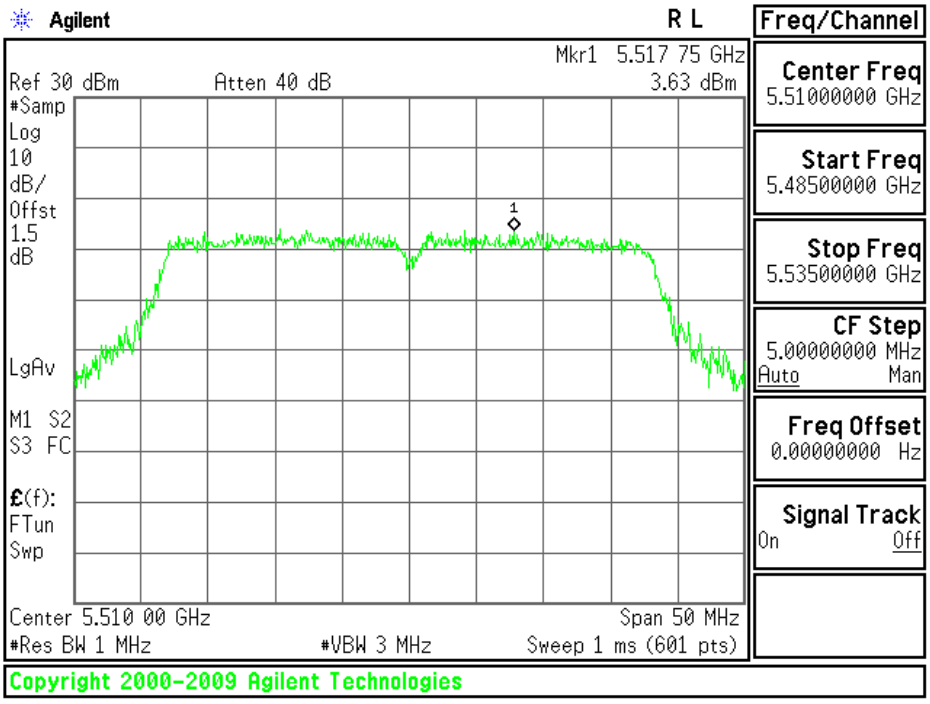


CH High

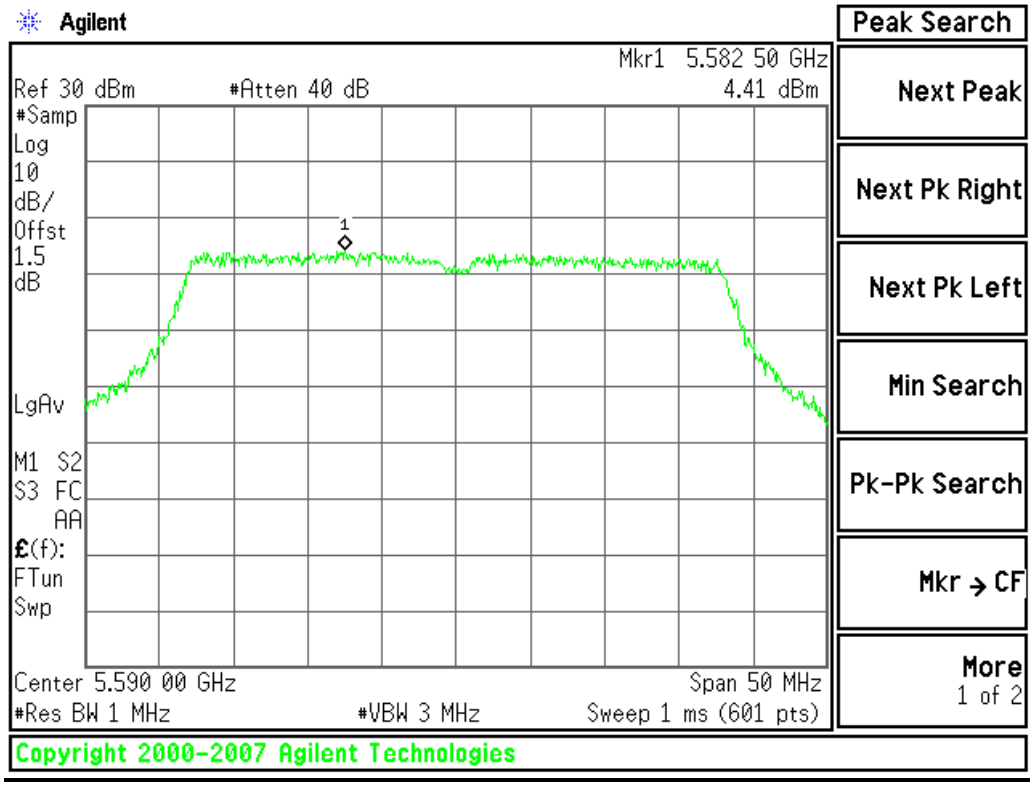


5470~5725MHz

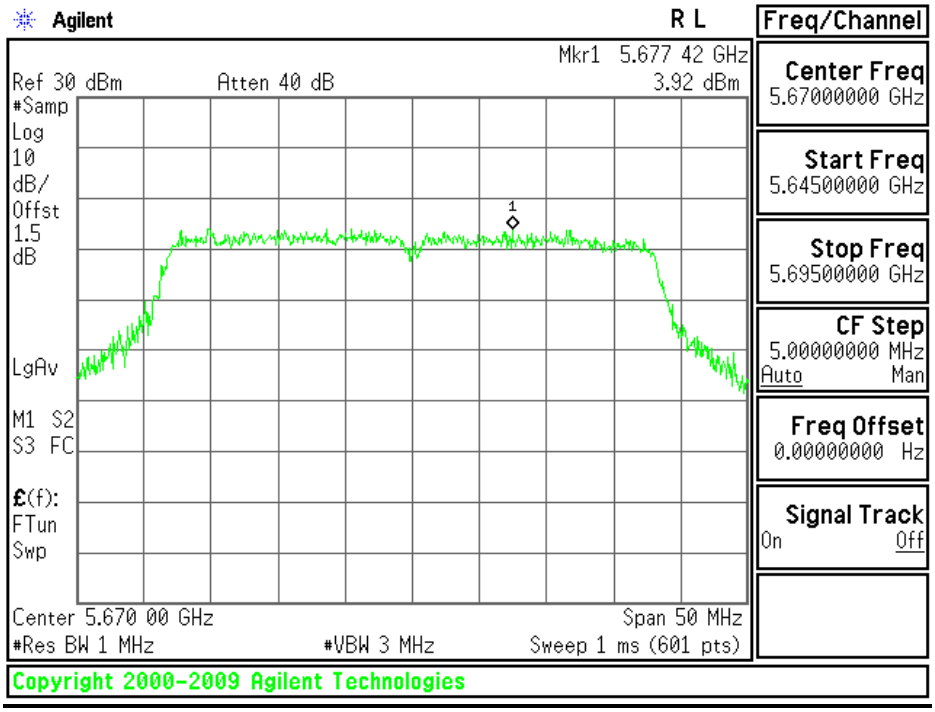
CH Low



CH Mid



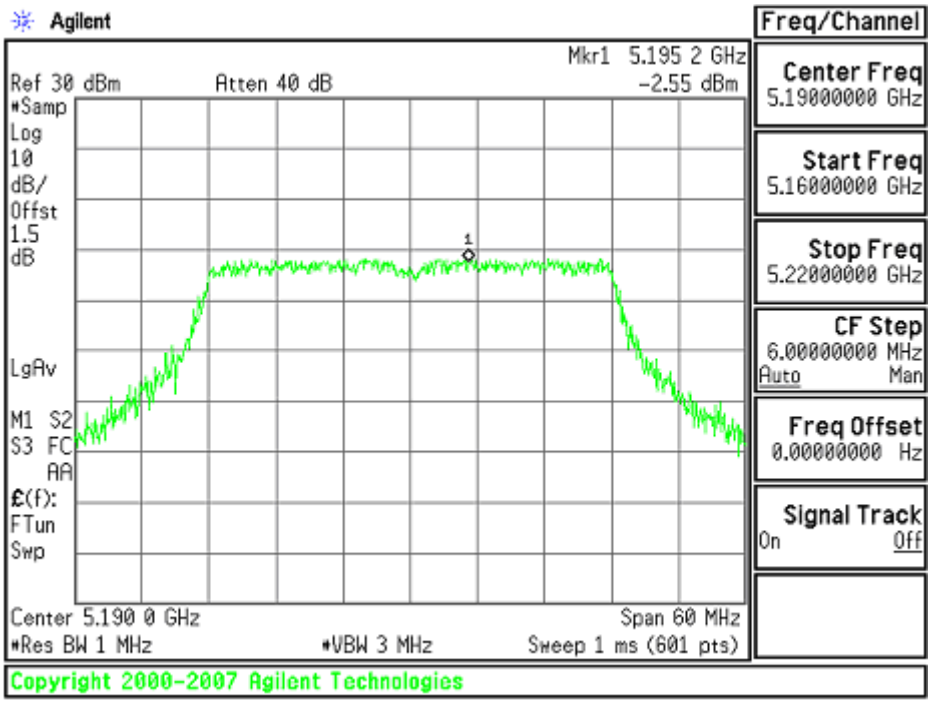
CH High



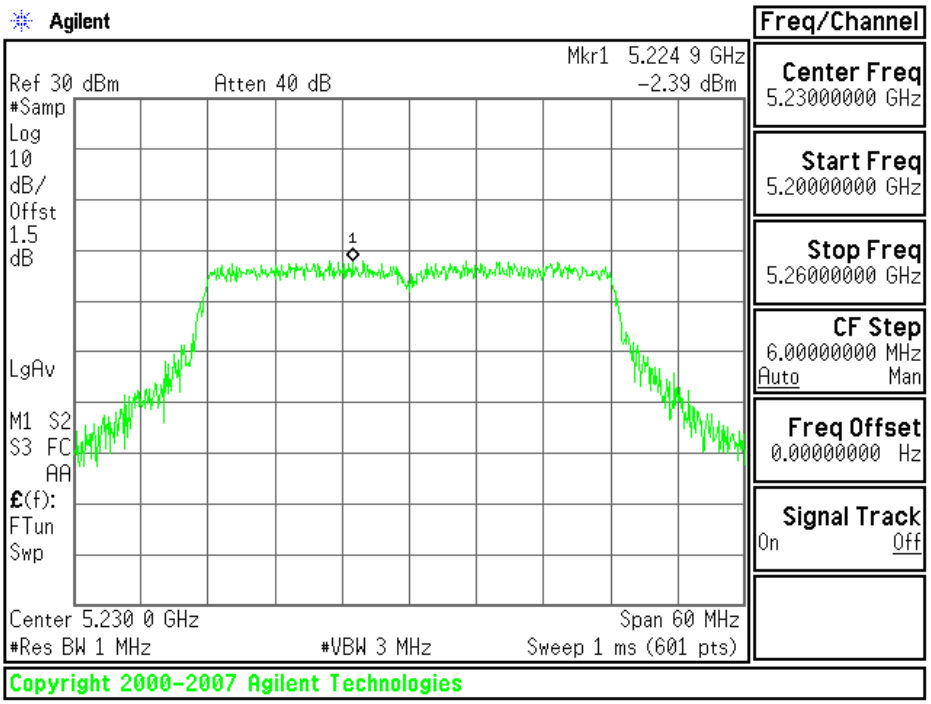
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 2:

5150~5250MHz

CH Low

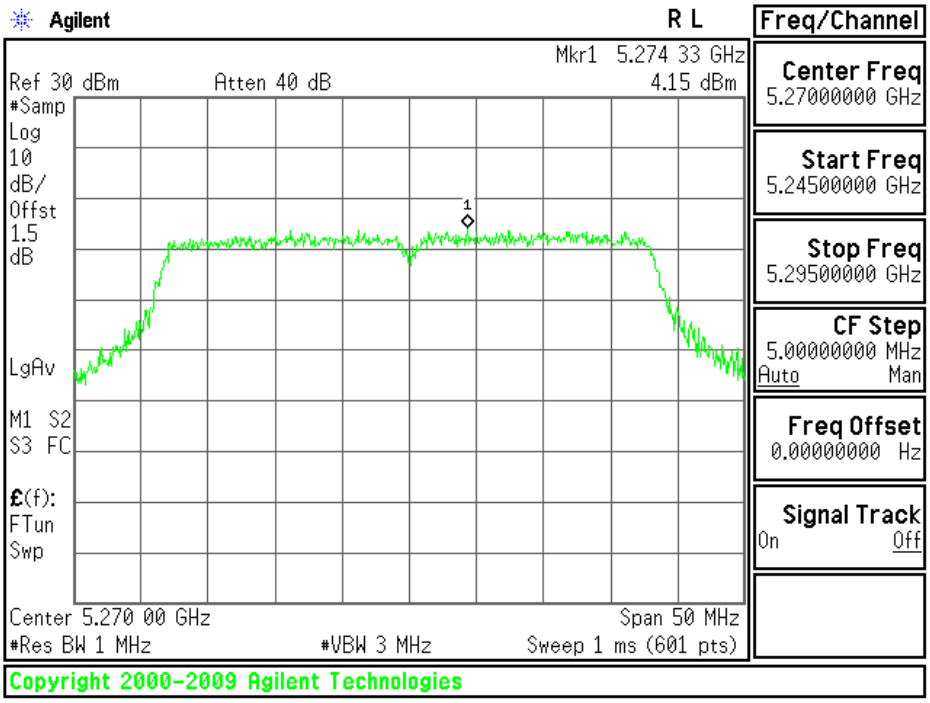


CH High

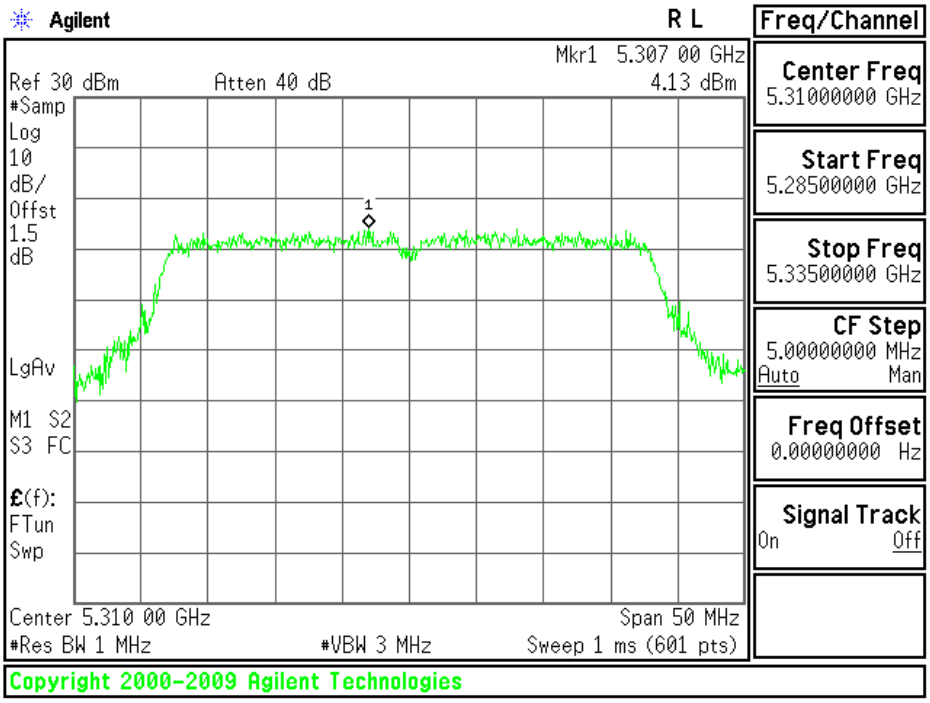


5250~5350MHz

CH Low

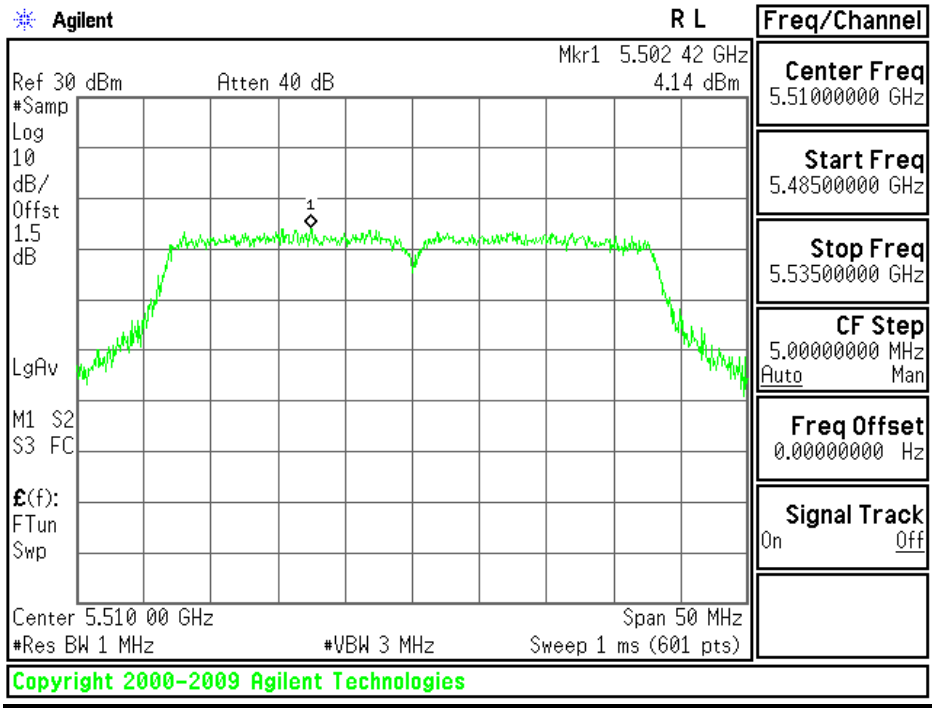


CH High

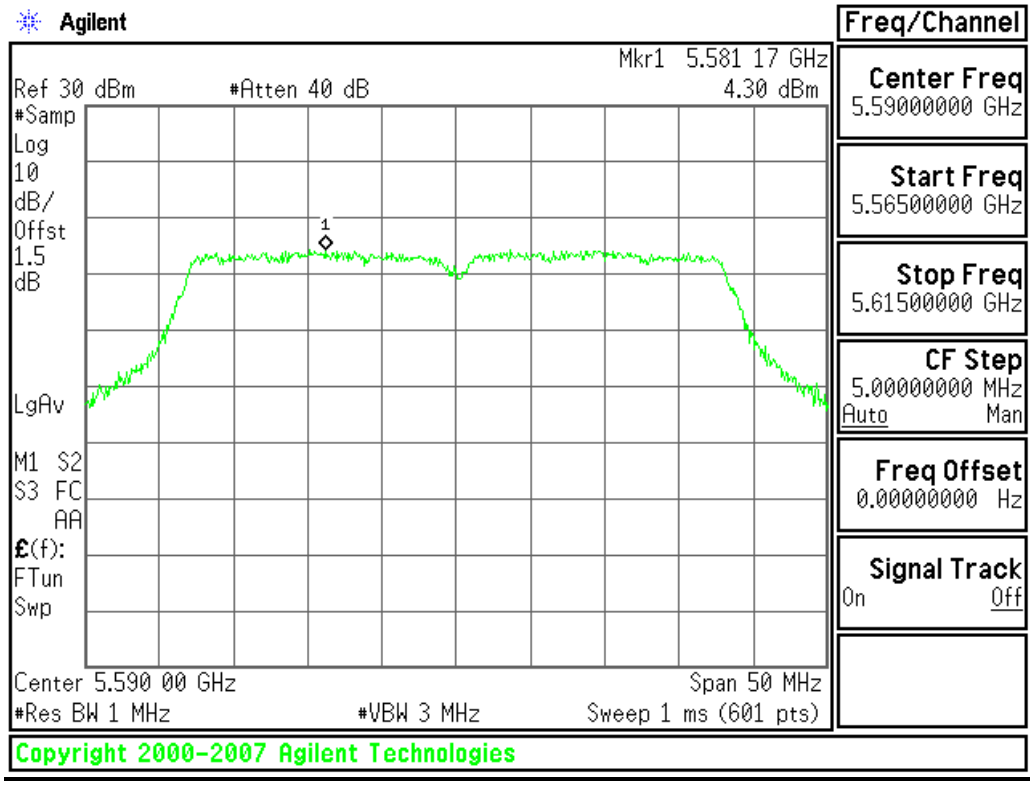


5470~5725MHz

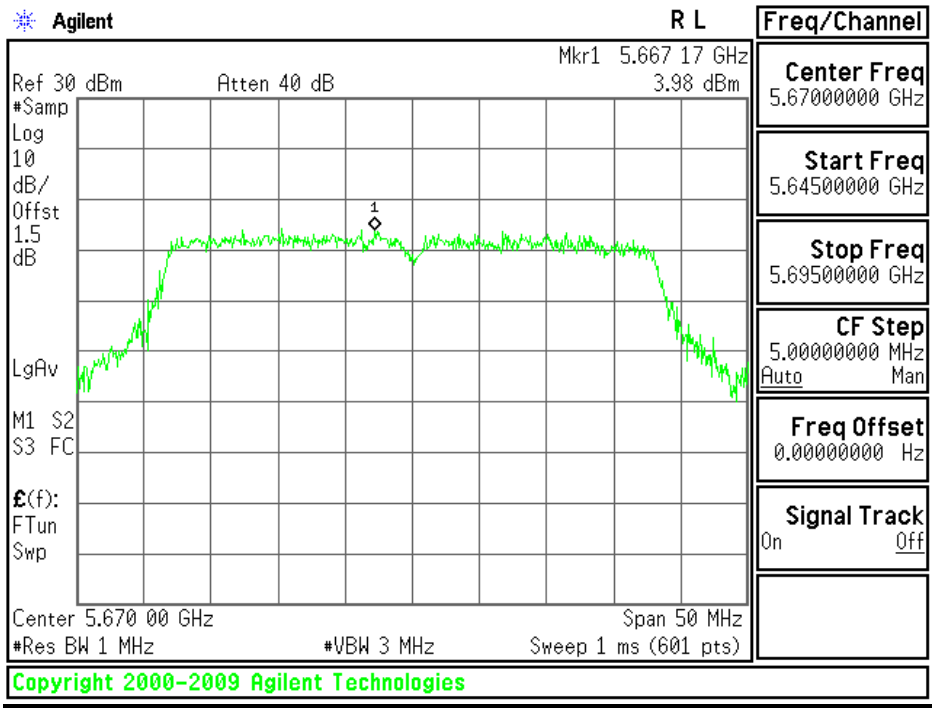
CH Low



CH Mid



CH High

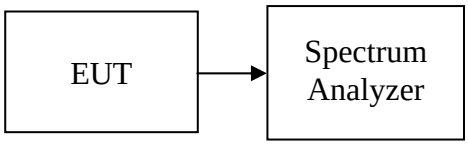

Agilent
R L
Freq/Channel
Mkr1 5.667 17 GHz
Ref 30 dBm
Atten 40 dB
3.98 dBm
#Samp
Log
10
dB/
Offst
1.5
dB
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center Freq
5.67000000 GHz
Start Freq
5.64500000 GHz
Stop Freq
5.69500000 GHz
CF Step
5.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 5.670 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2009 Agilent Technologies

PEAK EXCURSION

LIMIT

According to §15.407(a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Test Configuration



TEST PROCEDURE

The test is performed in accordance with <FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices> – Part 15, Subpart E, August 2002.

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
3. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
4. Delta Mark trace A Maximum frequency and trace B same frequency.
5. Repeat the above procedure until measurements for all frequencies were complete.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	9.50	13.00	-3.50	PASS
Mid	5260	8.21	13.00	-4.79	PASS
High	5320	8.13	13.00	-4.87	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	8.62	13.00	-4.38	PASS
Mid	5300	7.48	13.00	-5.52	PASS
High	5320	7.58	13.00	-5.42	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	7.19	13.00	-5.81	PASS
Mid	5600	7.57	13.00	-5.43	PASS
High	5700	7.92	13.00	-5.08	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	7.54	13.00	-5.46	PASS
Mid	5260	8.45	13.00	-4.55	PASS
High	5320	8.26	13.00	-4.74	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	7.51	13.00	-5.49	PASS
Mid	5300	7.45	13.00	-5.55	PASS
High	5320	7.75	13.00	-5.25	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	7.66	13.00	-5.34	PASS
Mid	5600	7.91	13.00	-5.09	PASS
High	5700	7.10	13.00	-5.90	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	8.38	13.00	-4.62	PASS
Mid	5260	8.81	13.00	-4.19	PASS
High	5320	7.86	13.00	-5.14	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	7.91	13.00	-5.09	PASS
Mid	5300	8.49	13.00	-4.51	PASS
High	5320	8.29	13.00	-4.71	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	8.14	13.00	-4.86	PASS
Mid	5600	7.73	13.00	-5.27	PASS
High	5700	7.68	13.00	-5.32	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 2

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	8.53	13.00	-4.47	PASS
Mid	5260	9.19	13.00	-3.81	PASS
High	5320	8.44	13.00	-4.56	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	8.10	13.00	-4.90	PASS
Mid	5300	9.15	13.00	-3.85	PASS
High	5320	8.27	13.00	-4.73	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	7.64	13.00	-5.36	PASS
Mid	5600	8.67	13.00	-4.33	PASS
High	5700	9.29	13.00	-3.71	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	7.90	13.00	-5.10	PASS
High	5230	7.97	13.00	-5.03	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	7.87	13.00	-5.13	PASS
High	5310	7.59	13.00	-5.41	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	8.35	13.00	-4.65	PASS
Mid	5590	8.31	13.00	-4.69	PASS
High	5670	8.12	13.00	-4.88	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	8.54	13.00	-4.46	PASS
High	5230	7.75	13.00	-5.25	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	9.01	13.00	-3.99	PASS
High	5310	8.09	13.00	-4.91	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	8.06	13.00	-4.94	PASS
Mid	5590	8.28	13.00	-4.72	PASS
High	5670	7.99	13.00	-5.01	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 2

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	7.86	13.00	-5.14	PASS
High	5230	8.07	13.00	-4.93	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	8.06	13.00	-4.94	PASS
High	5310	8.57	13.00	-4.43	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	8.62	13.00	-4.38	PASS
Mid	5590	8.92	13.00	-4.08	PASS
High	5670	7.94	13.00	-5.06	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0+ Chain 1+ Chain 2
5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	7.91	13.00	-5.09	PASS
Mid	5260	8.60	13.00	-4.40	PASS
High	5320	8.76	13.00	-4.24	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	8.28	13.00	-4.72	PASS
Mid	5300	8.28	13.00	-4.72	PASS
High	5320	7.88	13.00	-5.12	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	8.33	13.00	-4.67	PASS
Mid	5600	7.83	13.00	-5.17	PASS
High	5700	8.01	13.00	-4.99	PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0+ Chain 1+ Chain 2
5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	8.42	13.00	-4.58	PASS
High	5230	7.51	13.00	-5.49	PASS

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	7.77	13.00	-5.23	PASS
High	5310	7.82	13.00	-5.18	PASS

5470~5725MHz

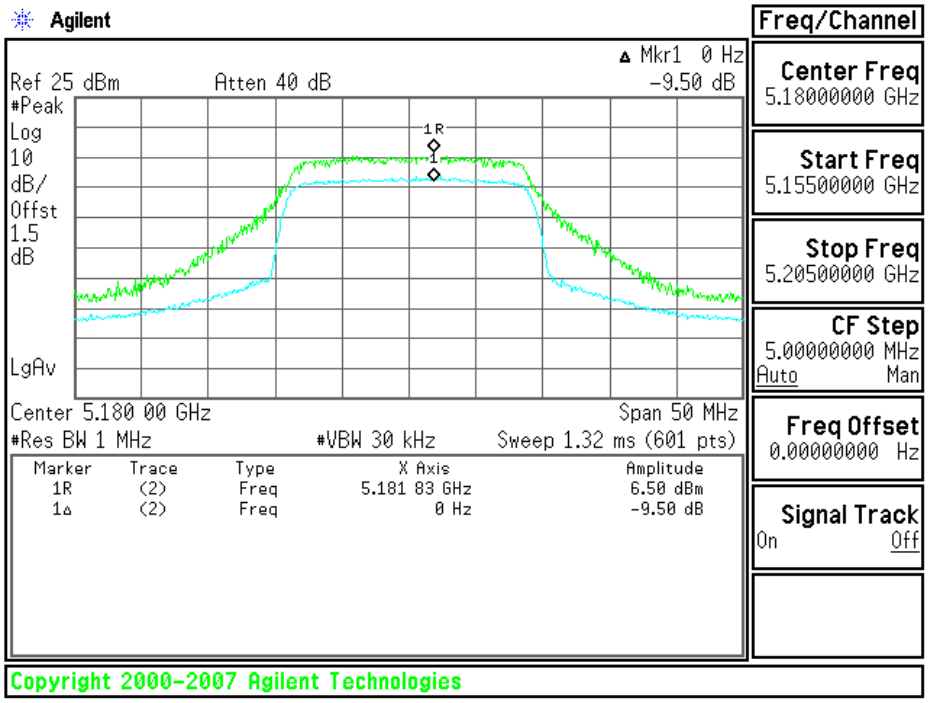
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	7.44	13.00	-5.56	PASS
Mid	5590	8.74	13.00	-4.26	PASS
High	5670	8.72	13.00	-4.28	PASS

Test Plot

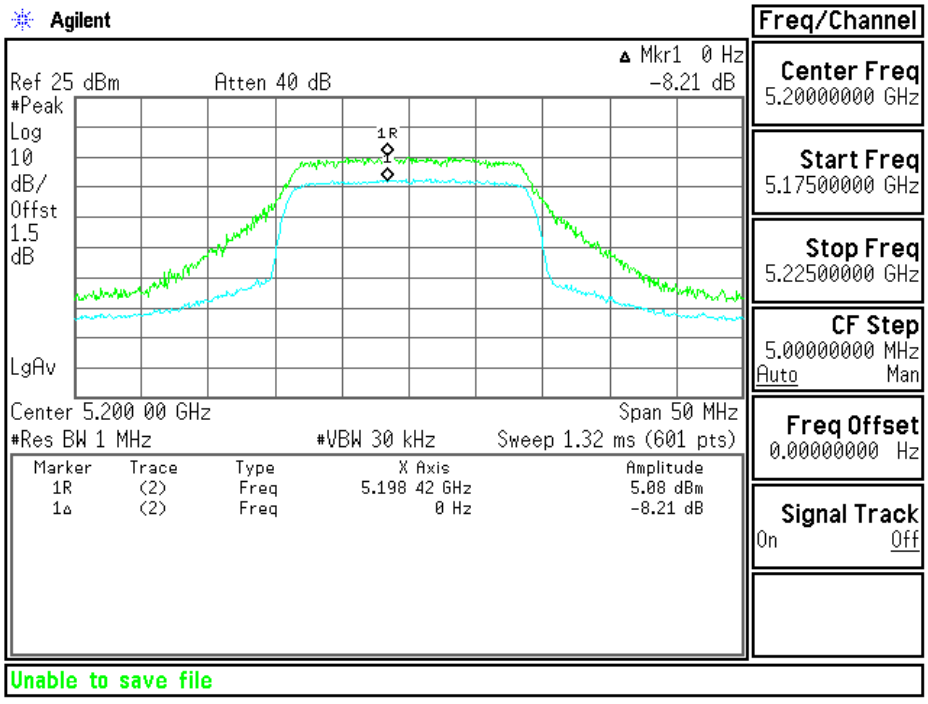
Test mode: IEEE 802.11a mode:

5150~5250MHz

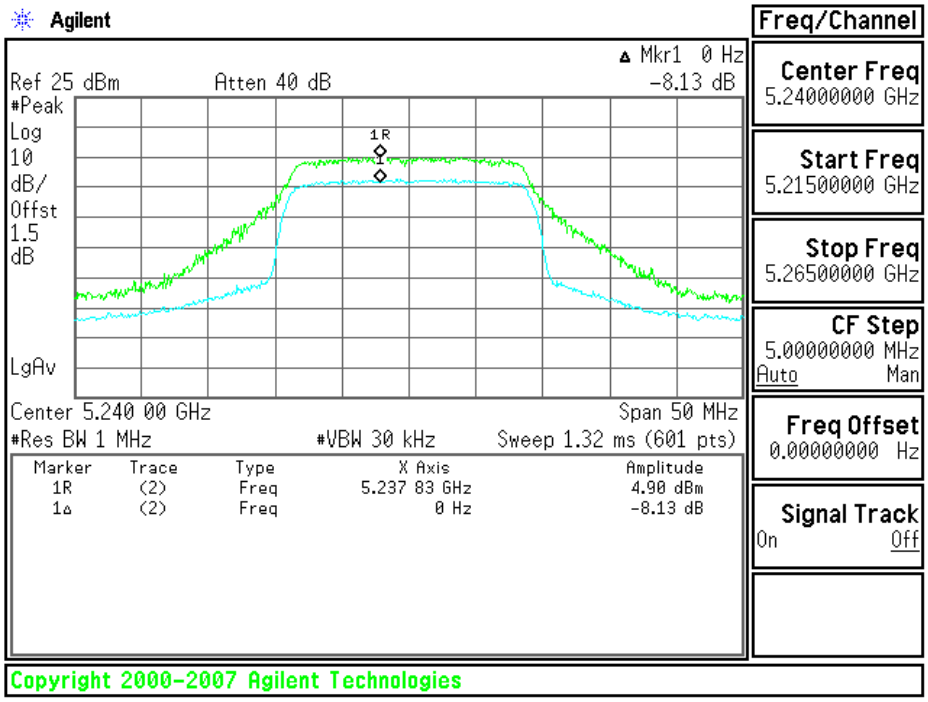
CH Low



CH Mid

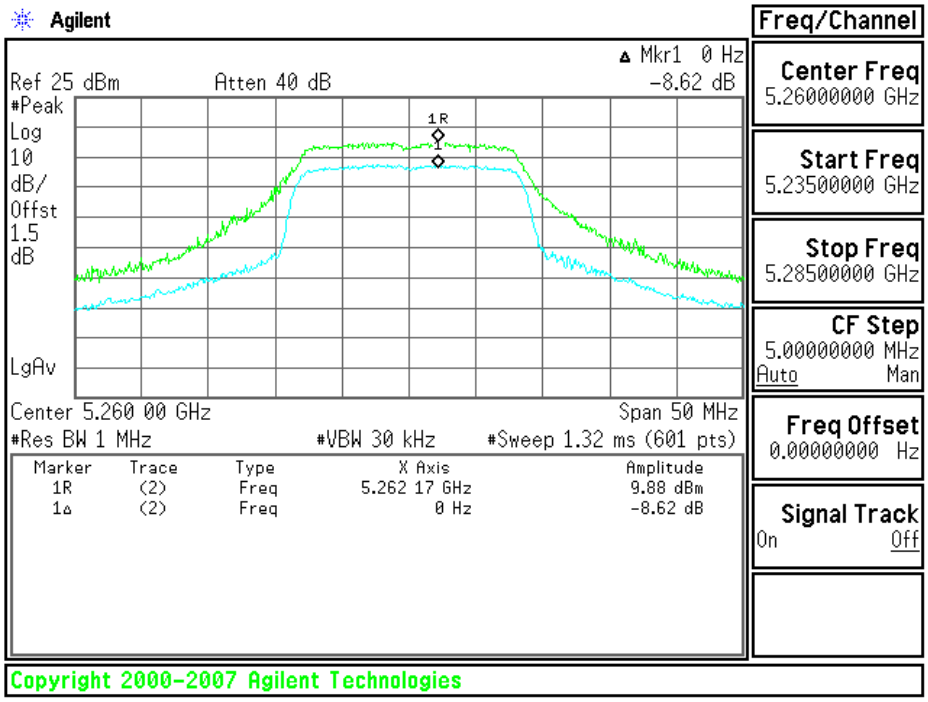


CH High

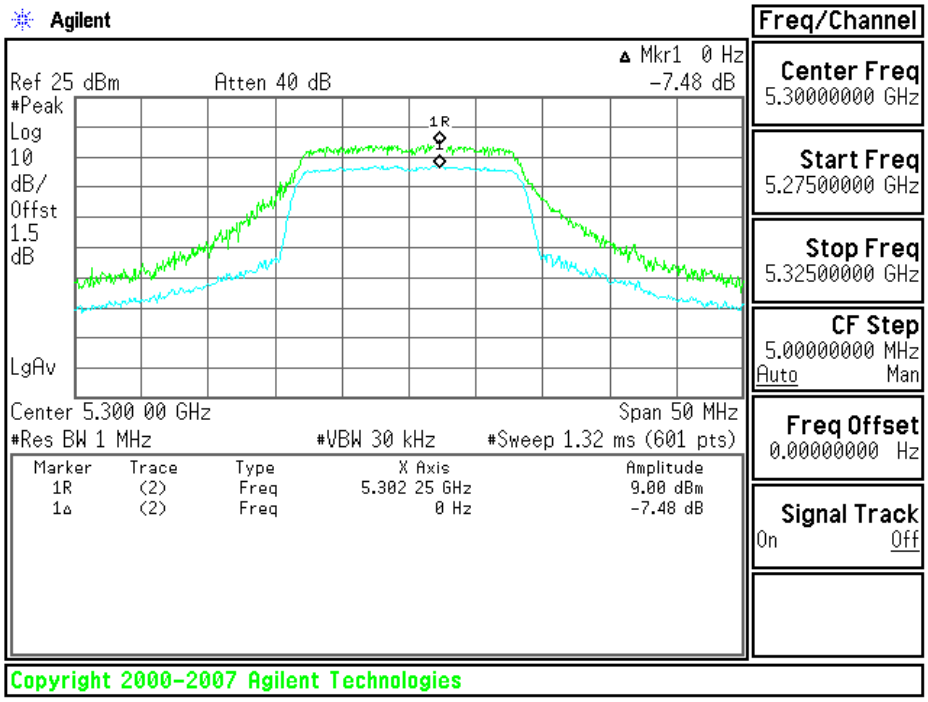


5250~5350MHz

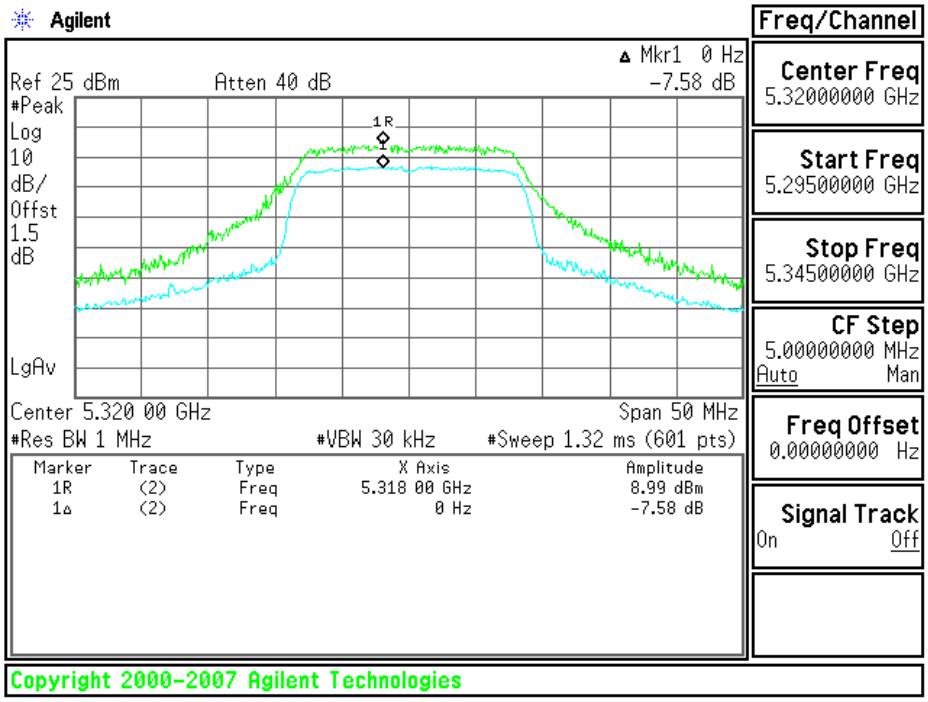
CH Low



CH Mid

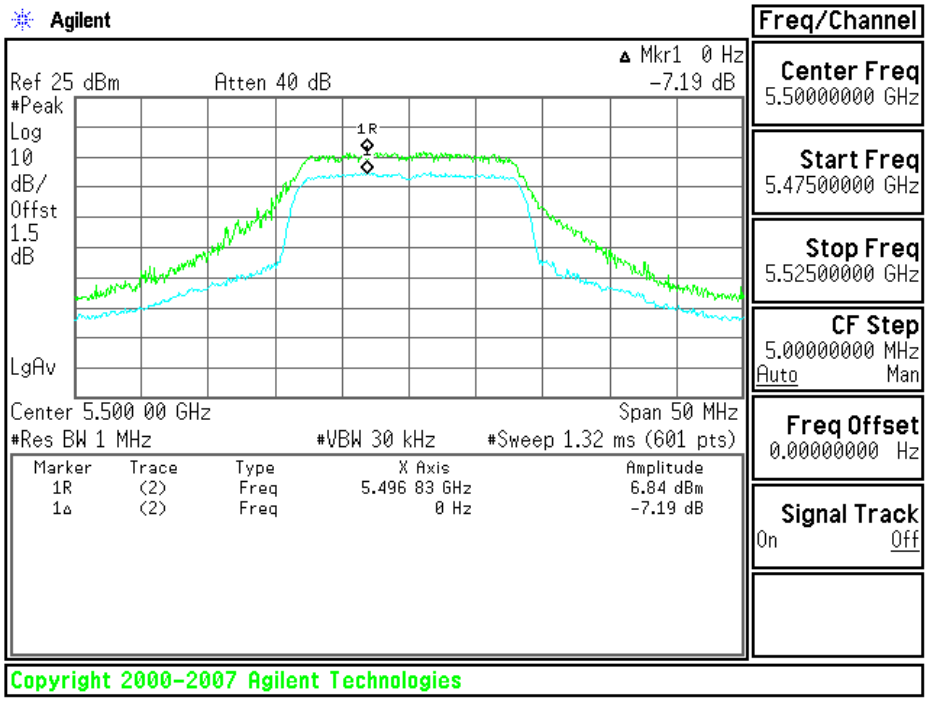


CH High

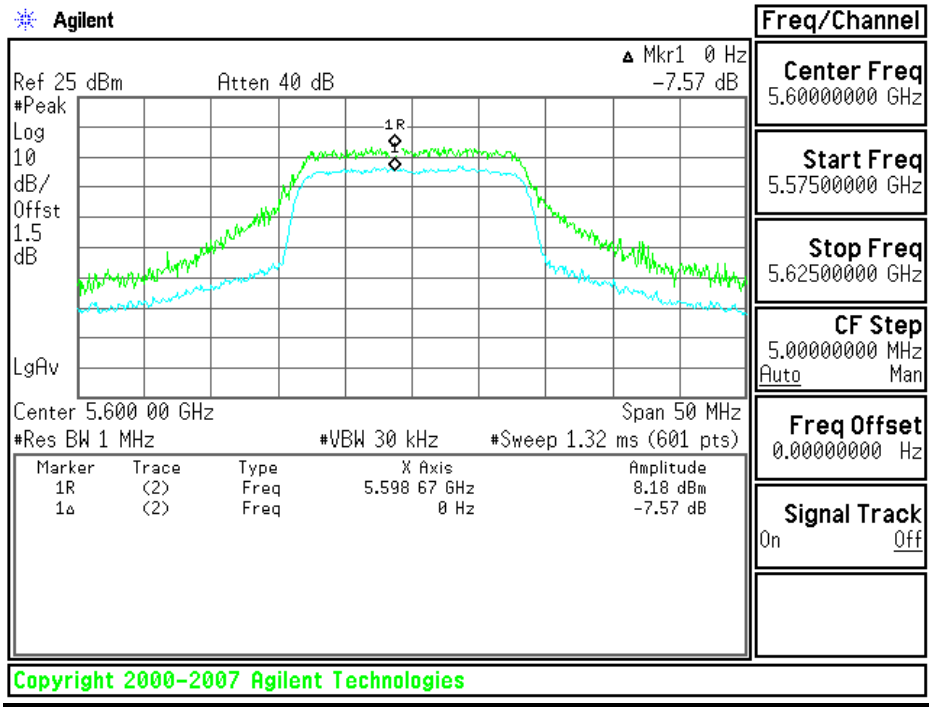


5470~5725MHz

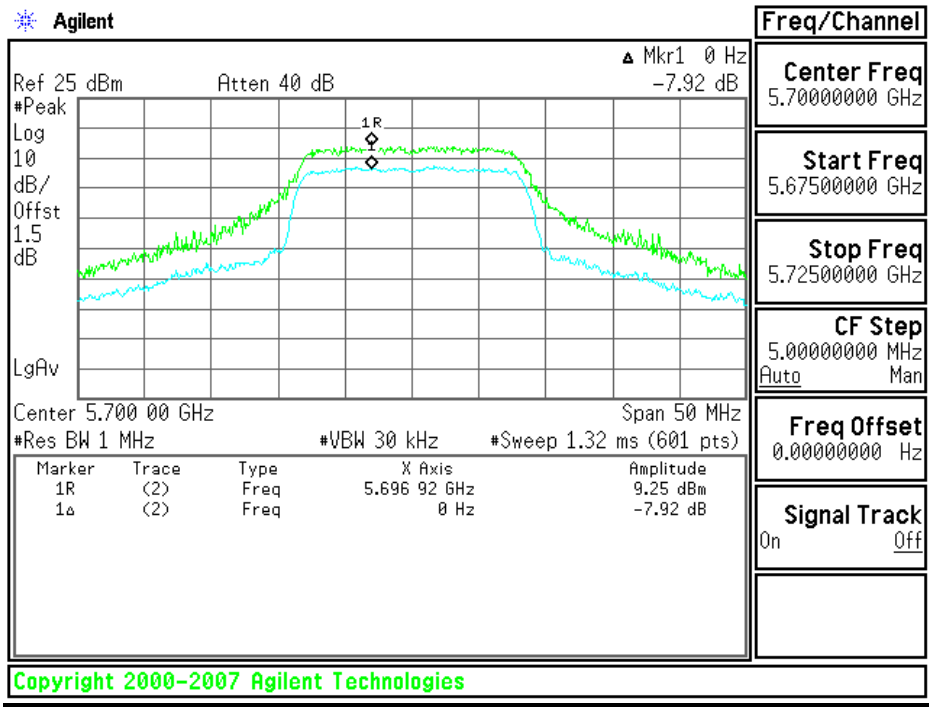
CH Low



CH Mid



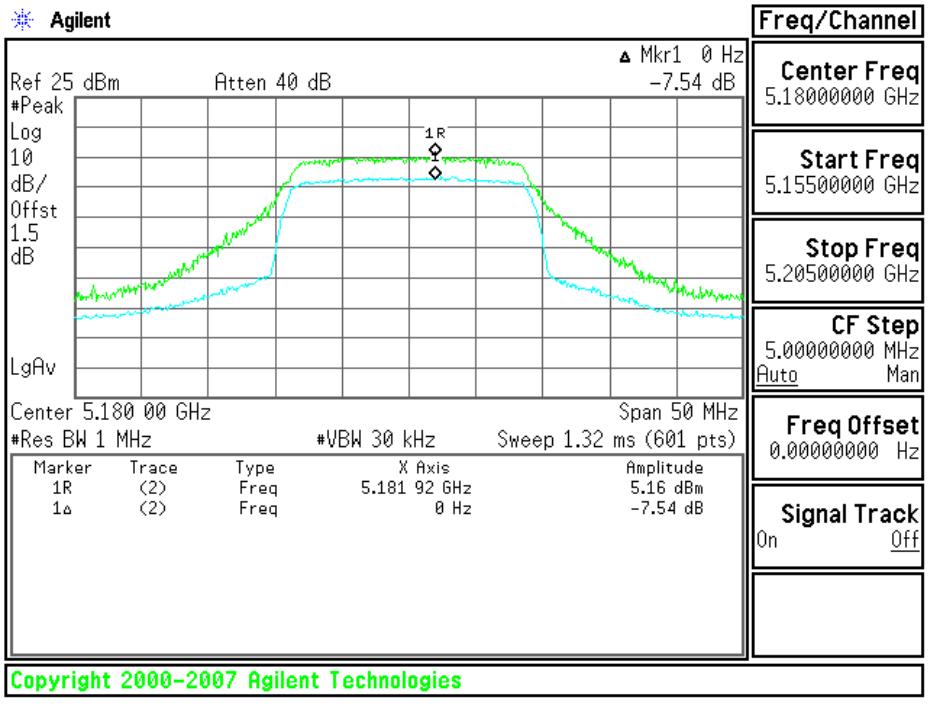
CH High



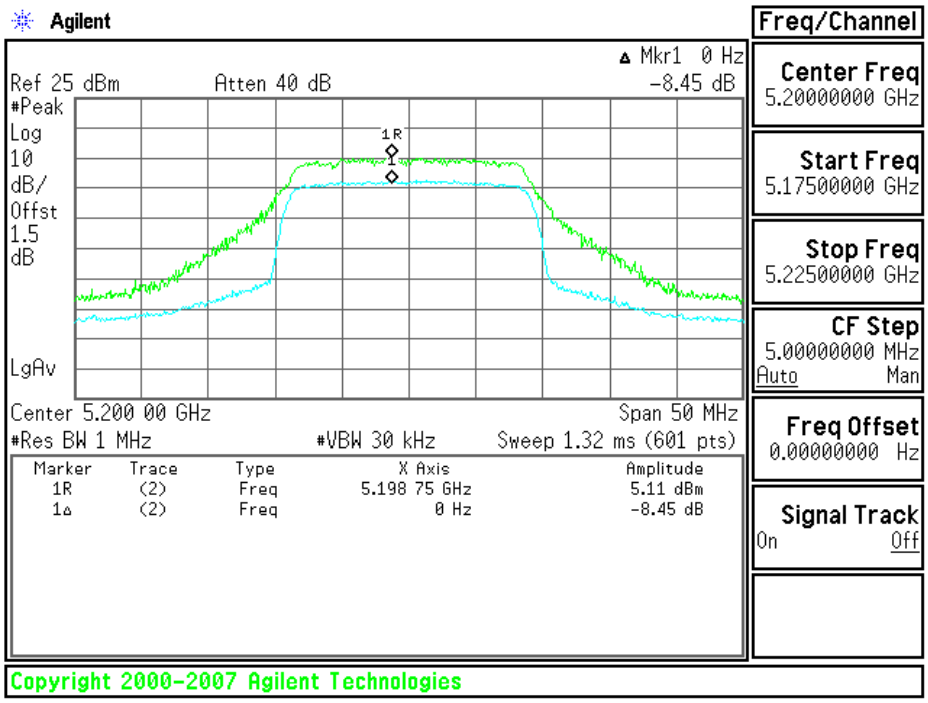
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0:

5150~5250MHz

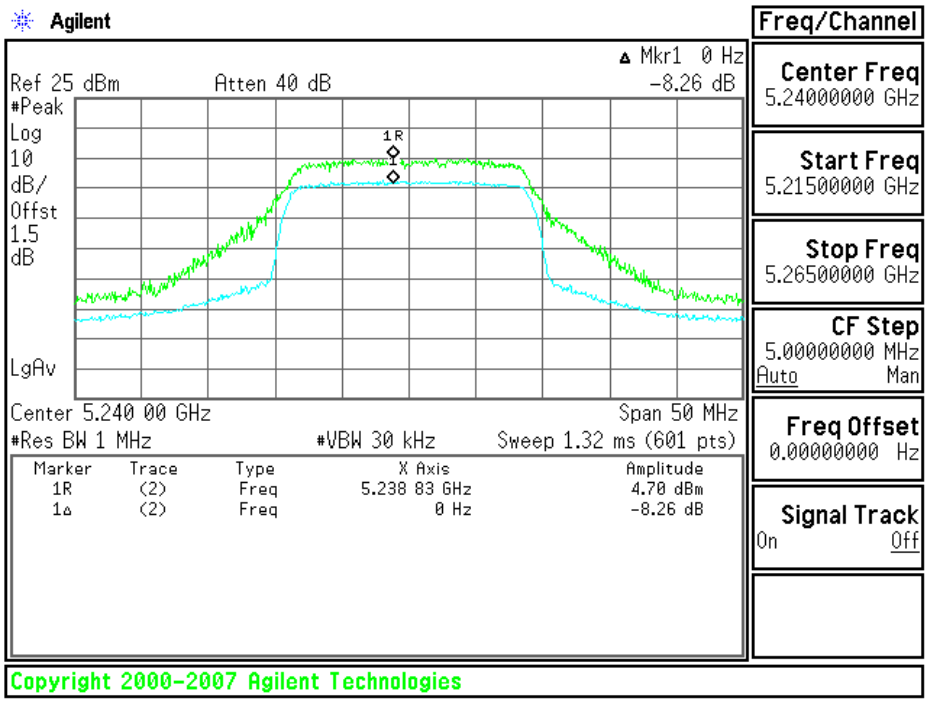
CH Low



CH Mid

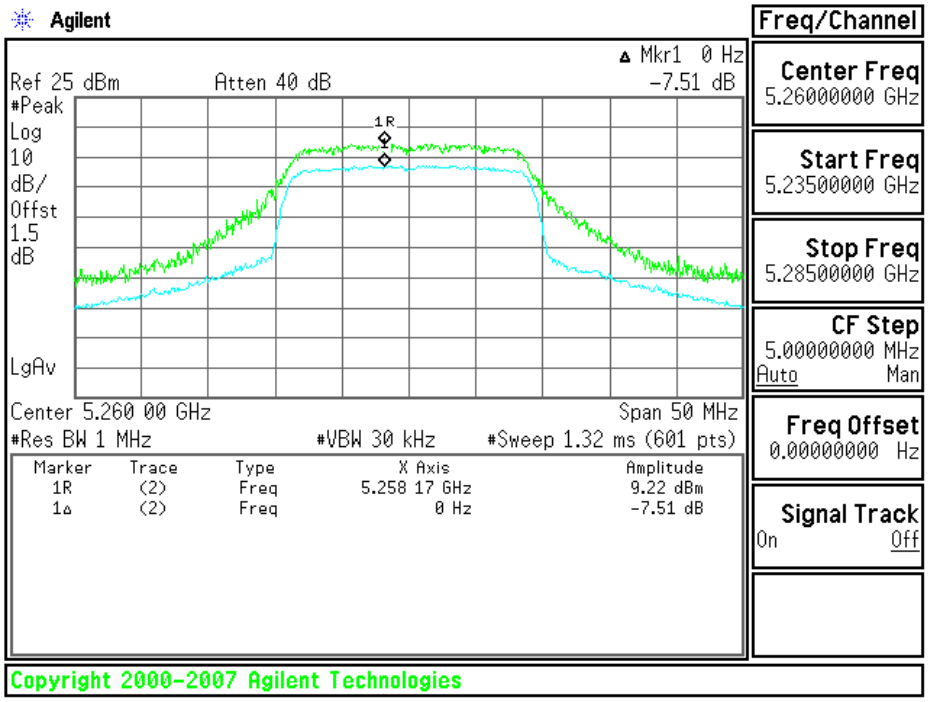


CH High

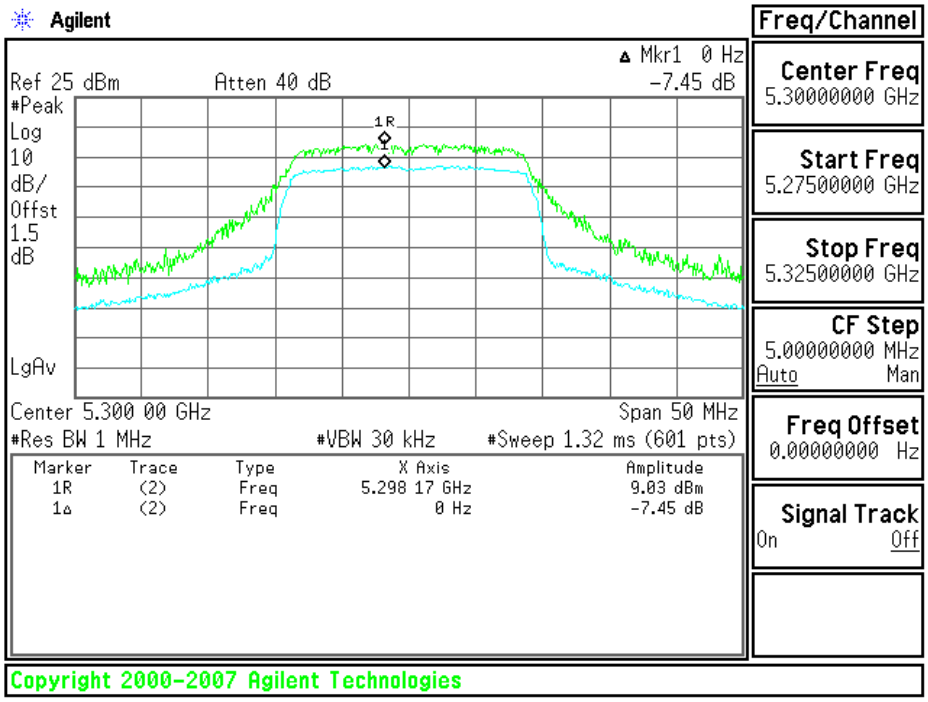


5250~5350MHz

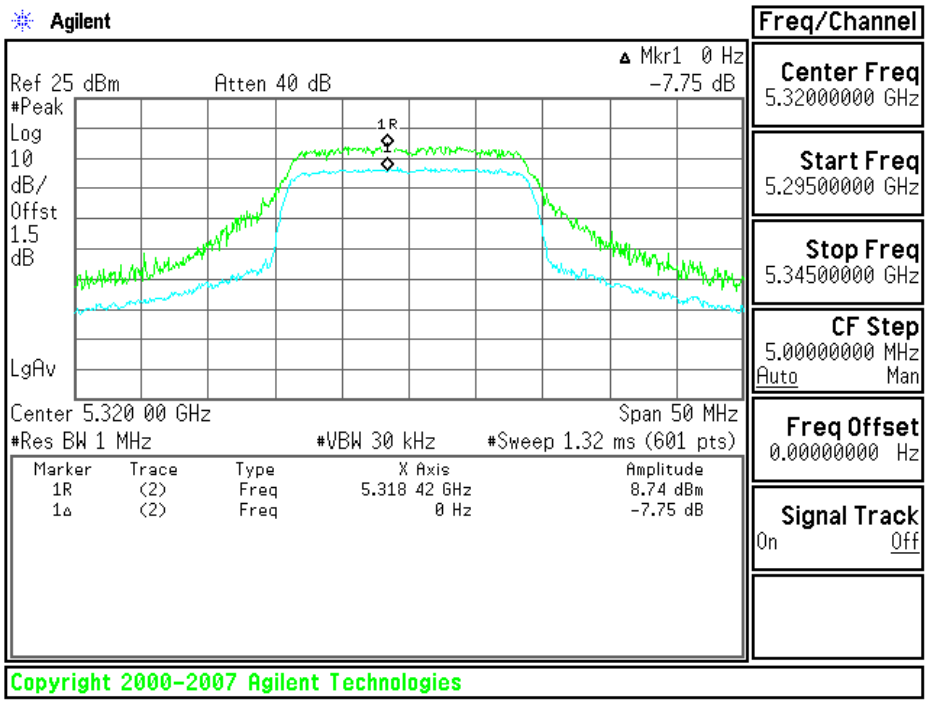
CH Low



CH Mid

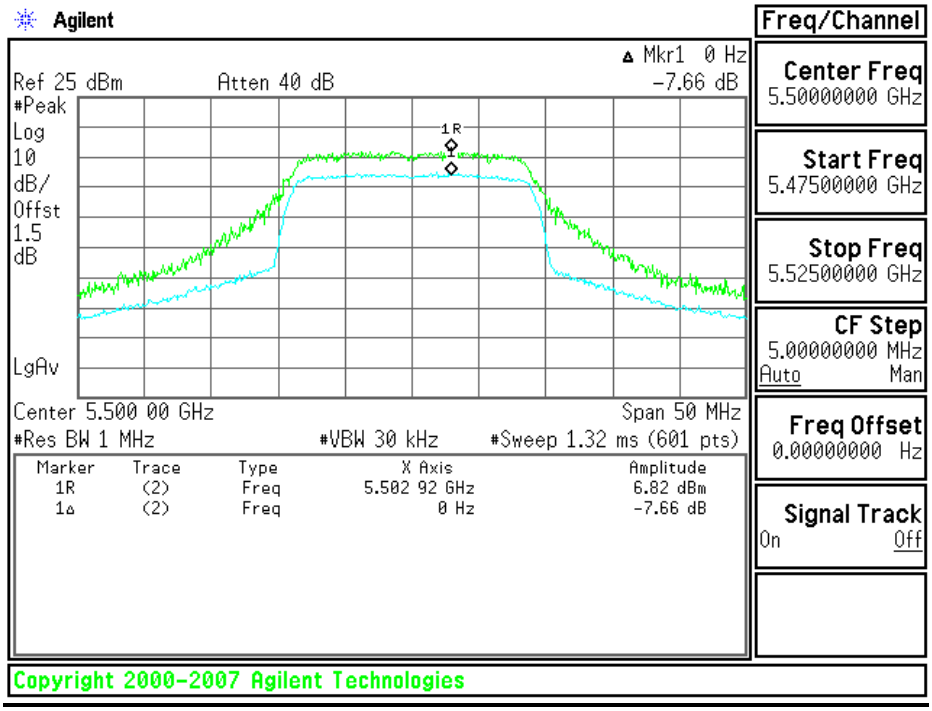


CH High

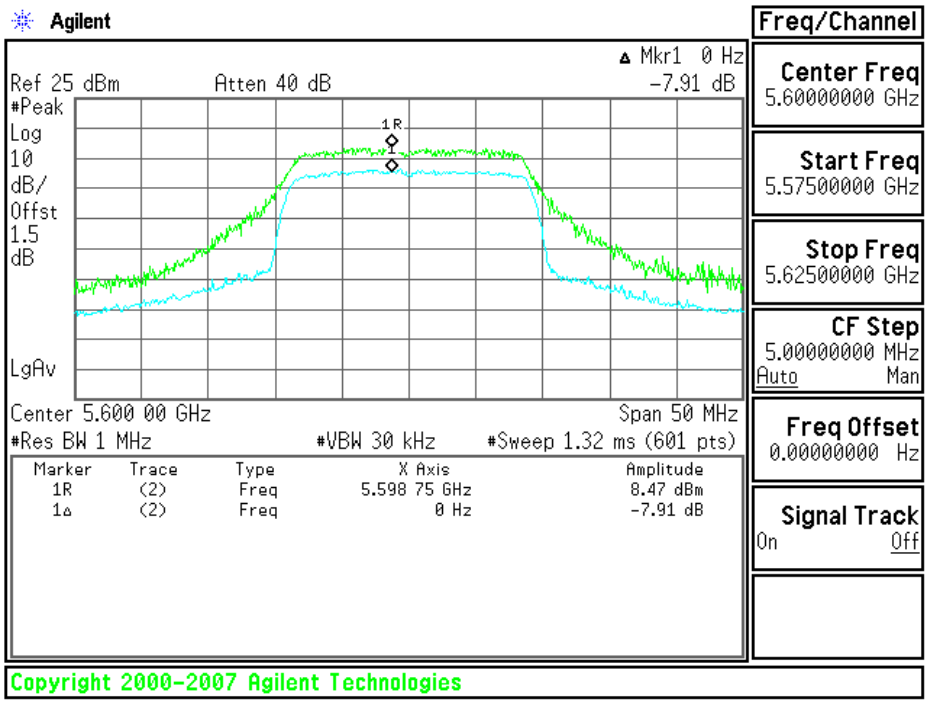


5470~5725MHz

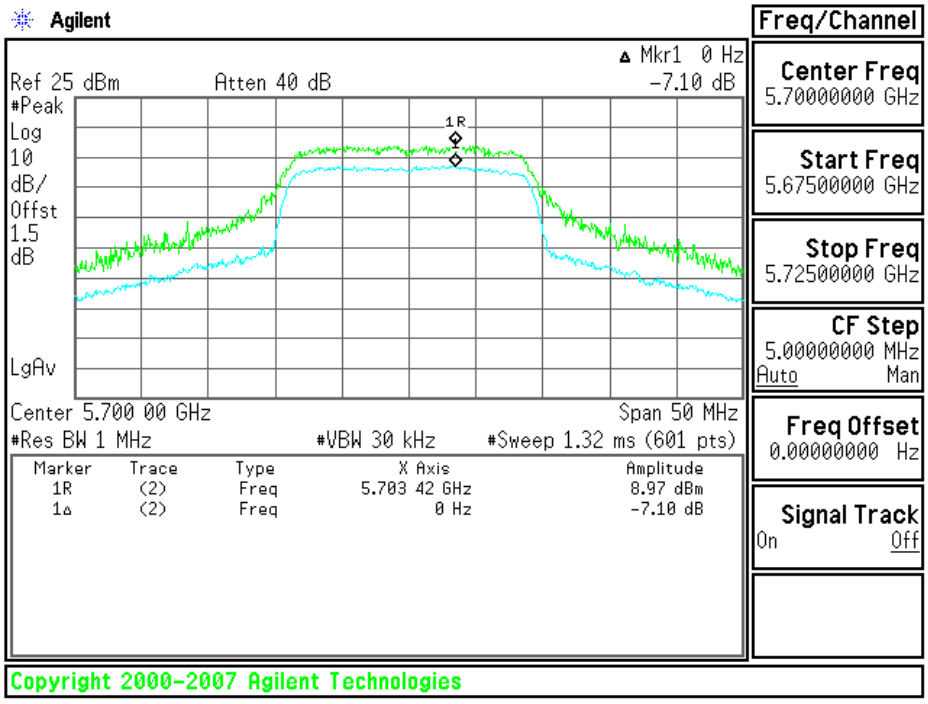
CH Low



CH Mid



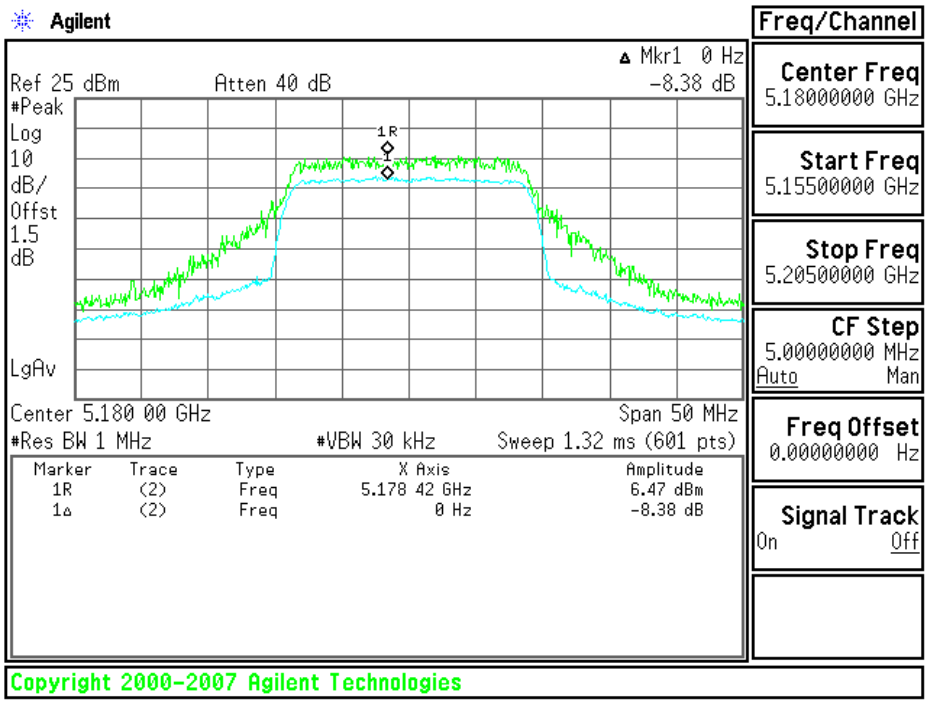
CH High



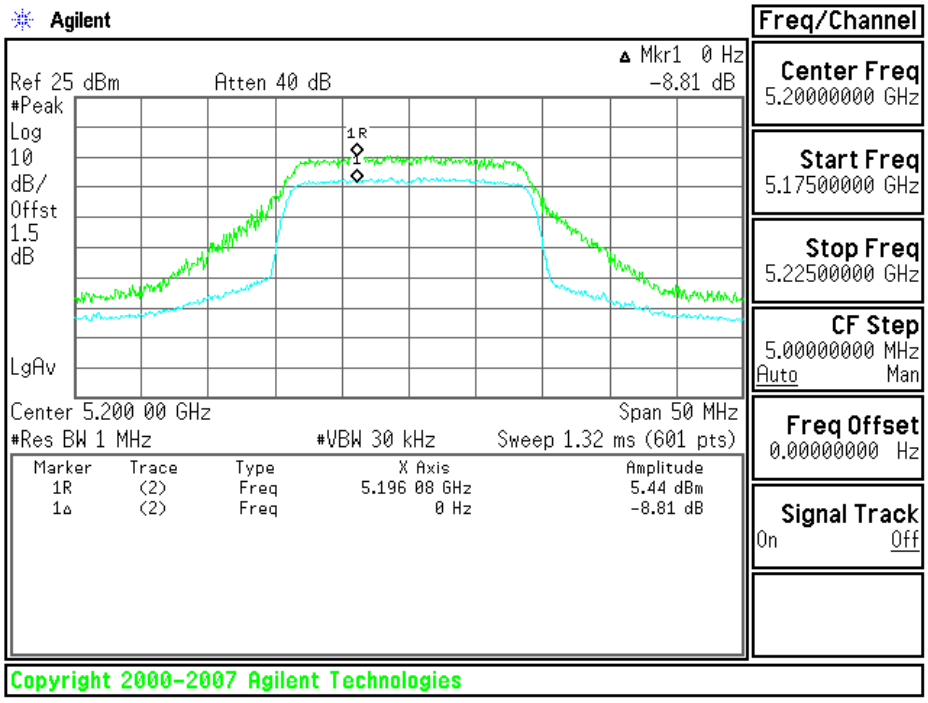
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1:

5150~5250MHz

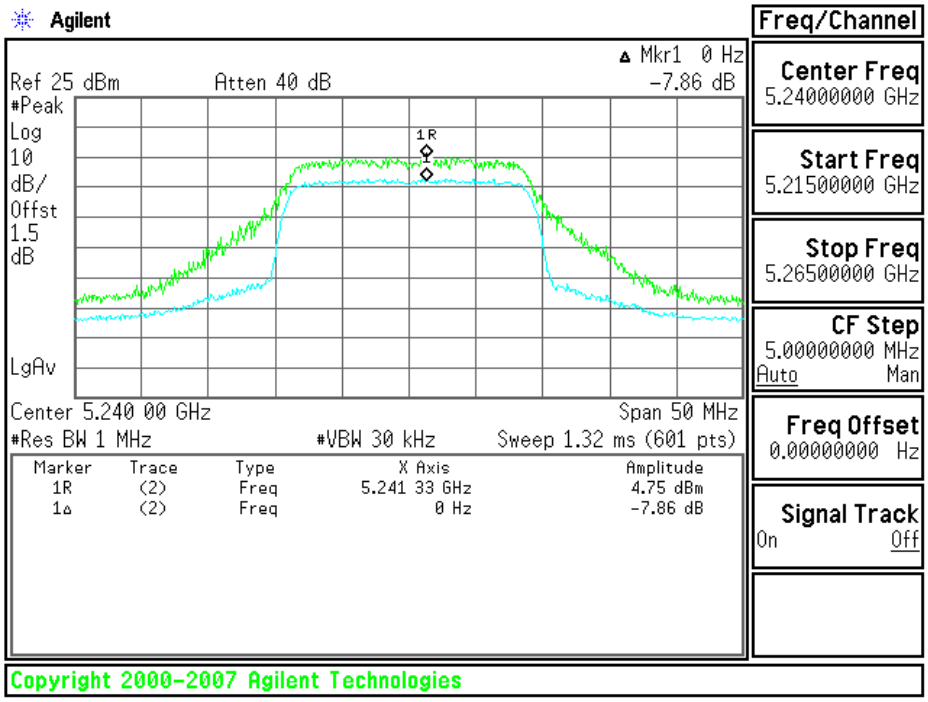
CH Low



CH Mid

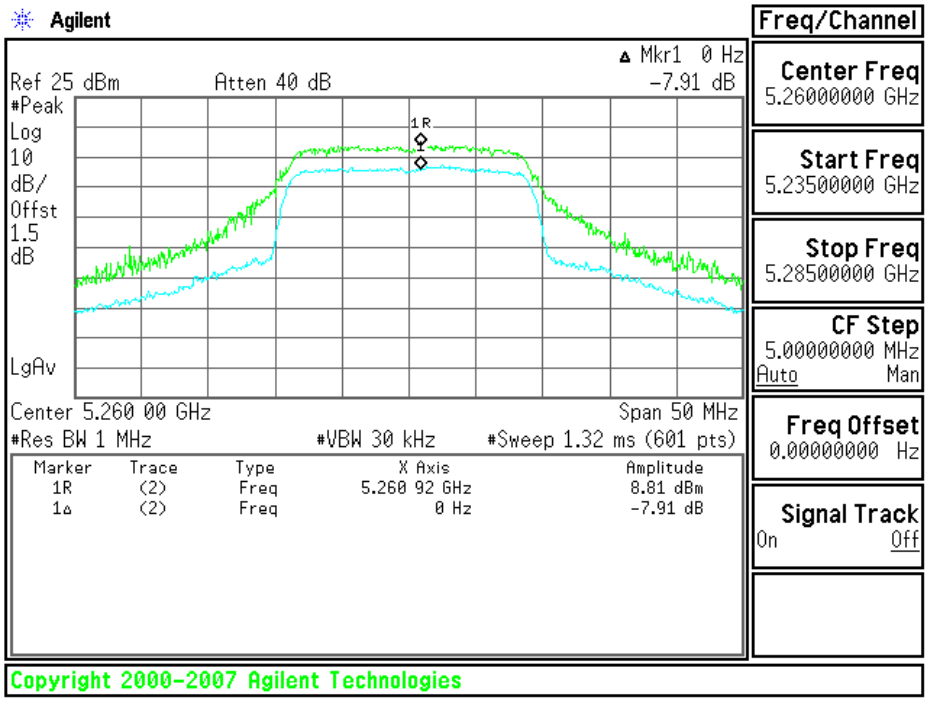


CH High

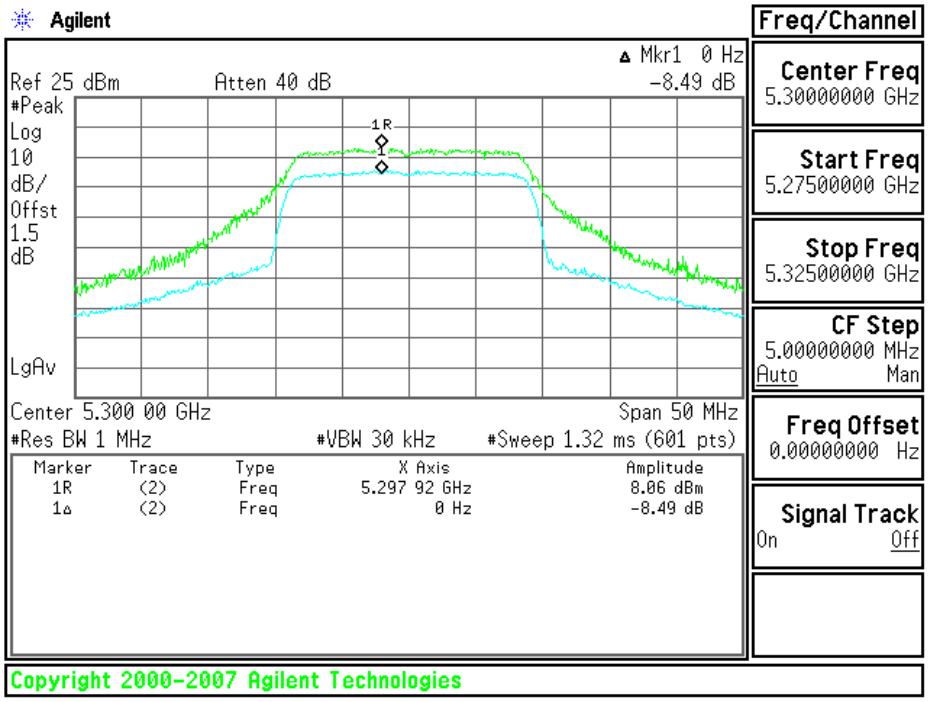


5250~5350MHz

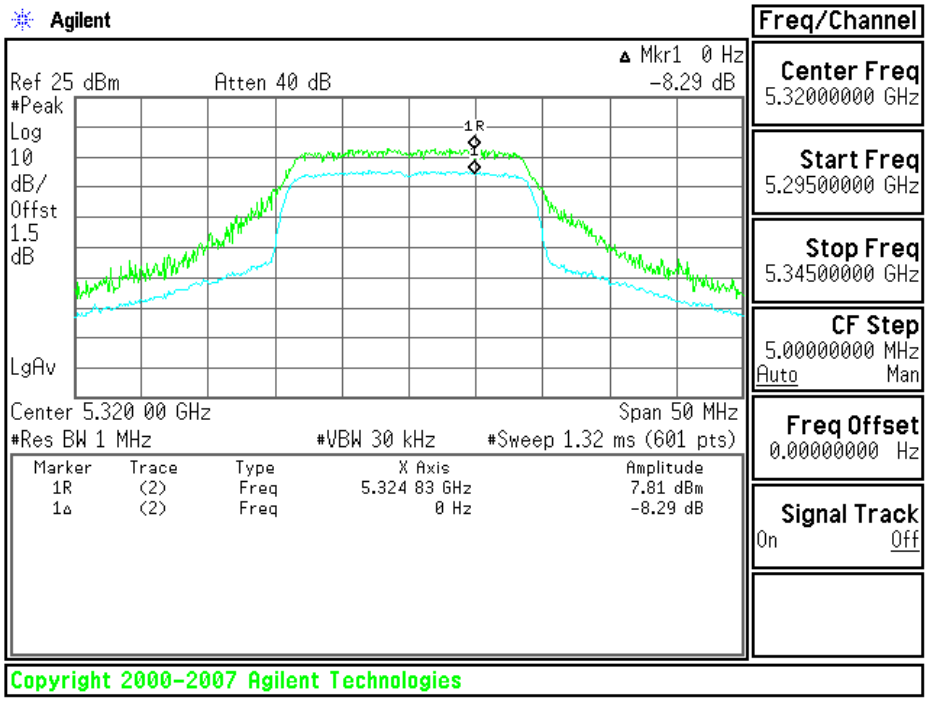
CH Low



CH Mid

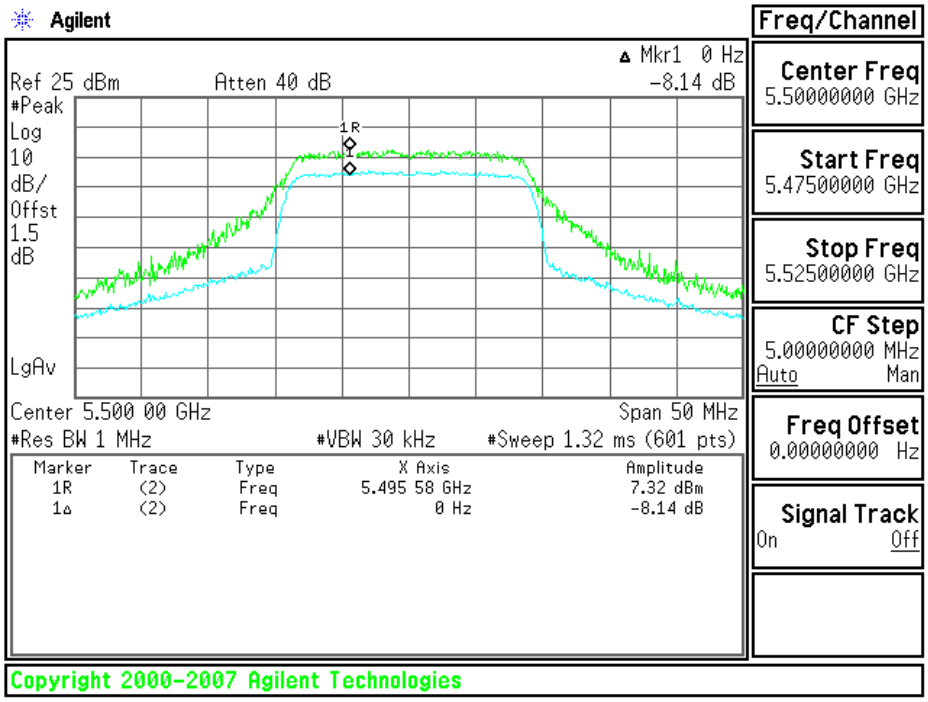


CH High

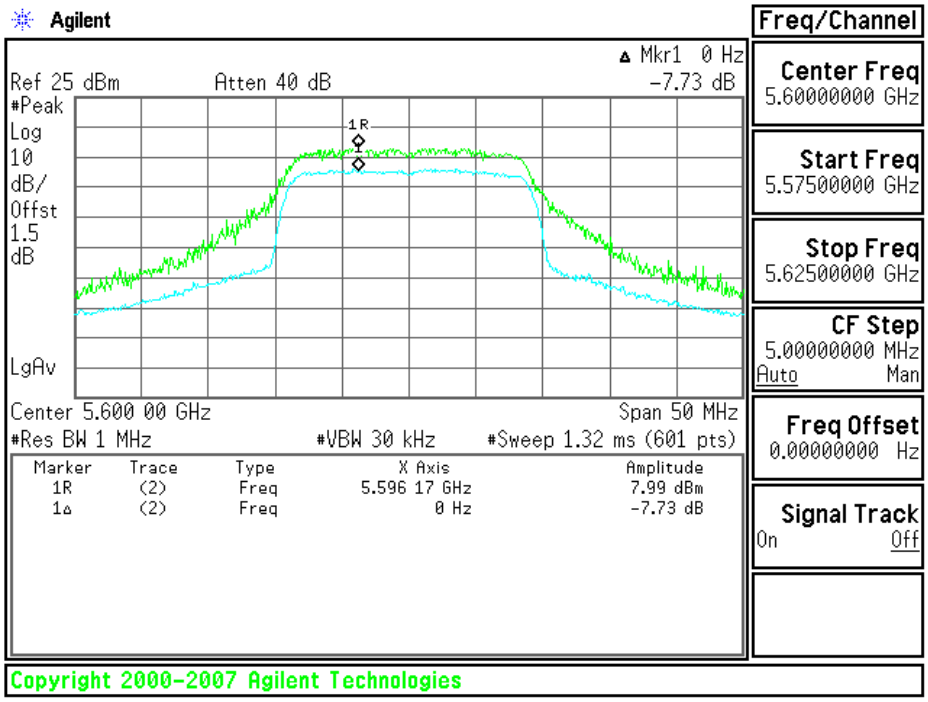


5470~5725MHz

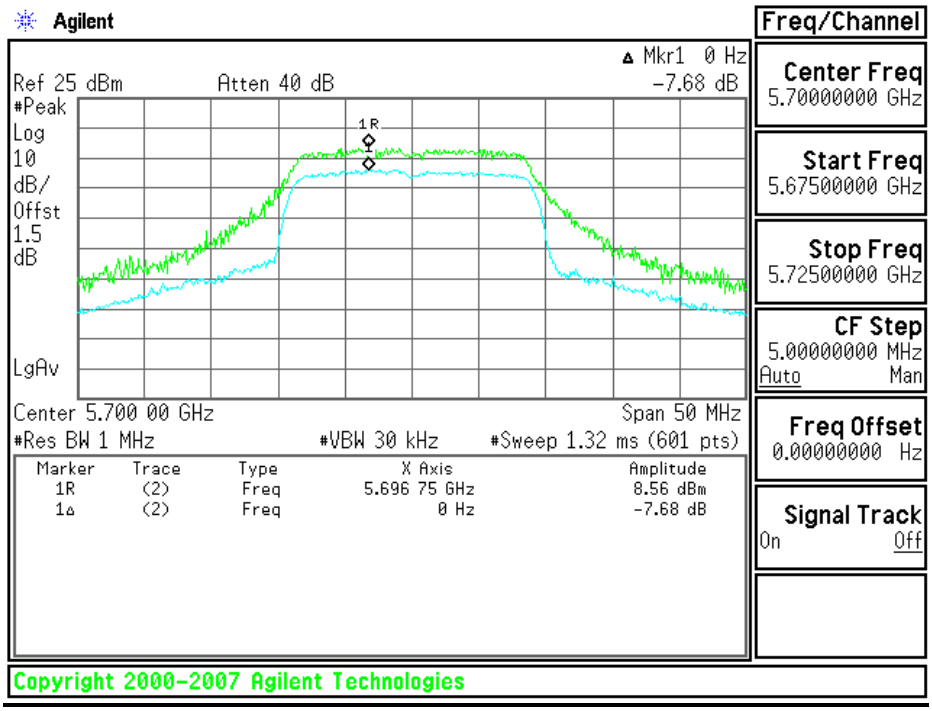
CH Low



CH Mid



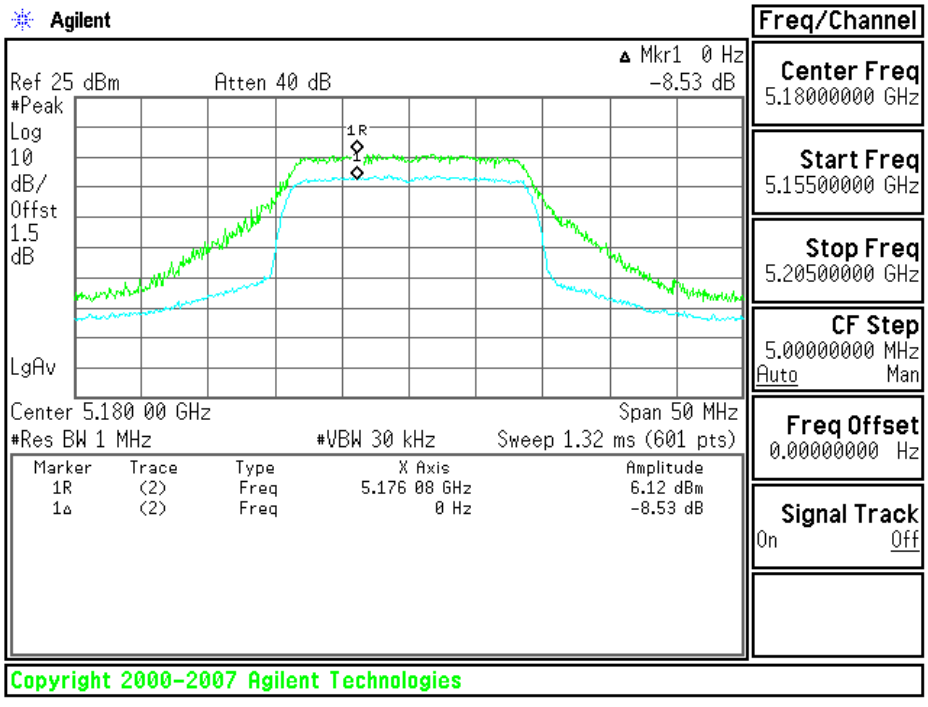
CH High



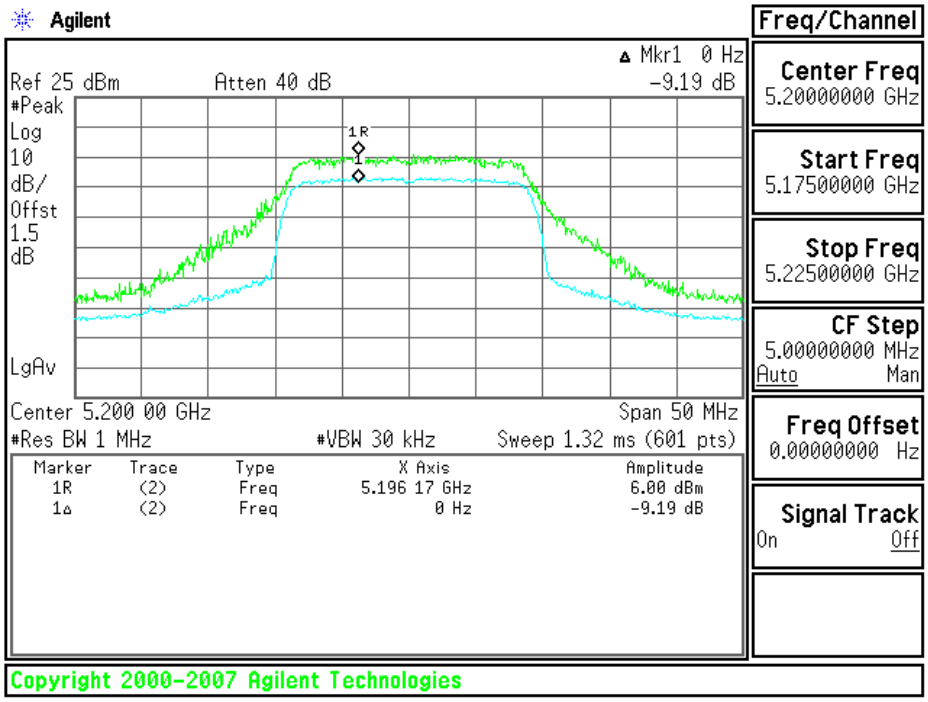
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 2:

5150~5150MHz

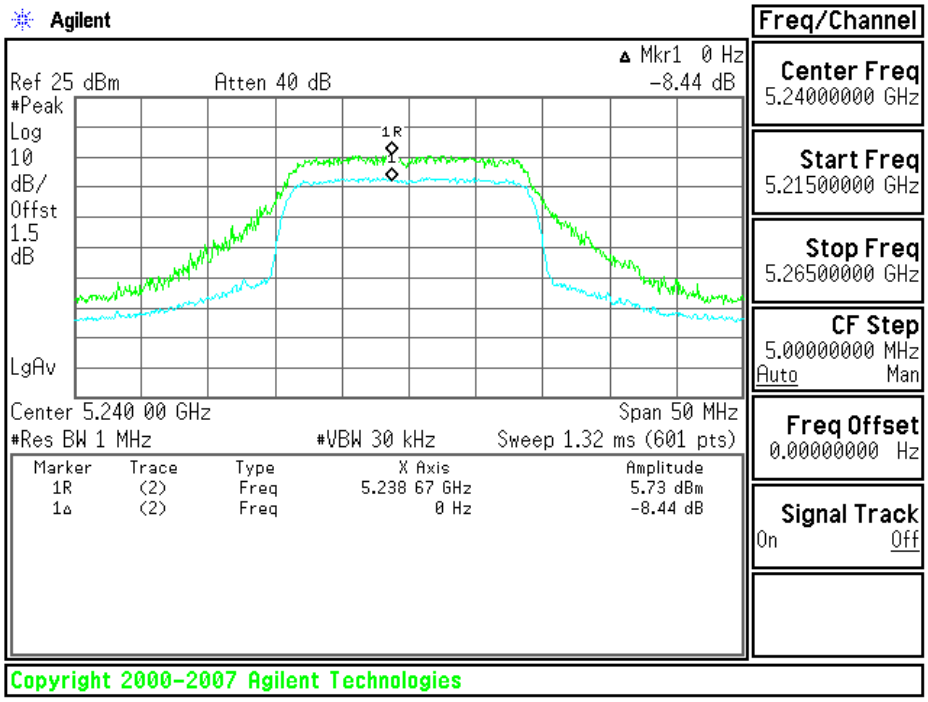
CH Low



CH Mid

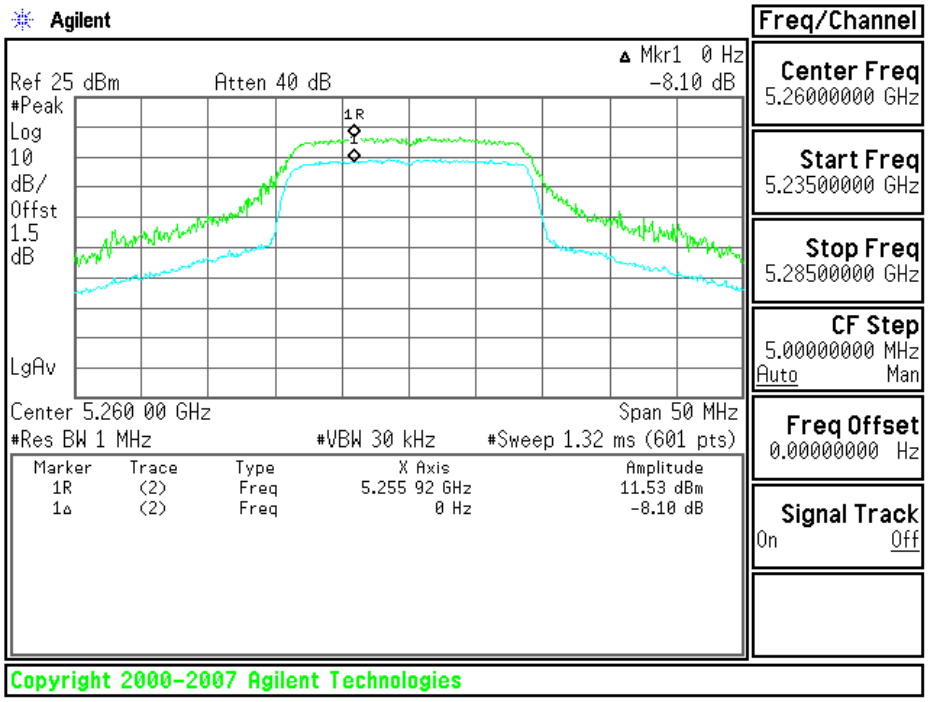


CH High

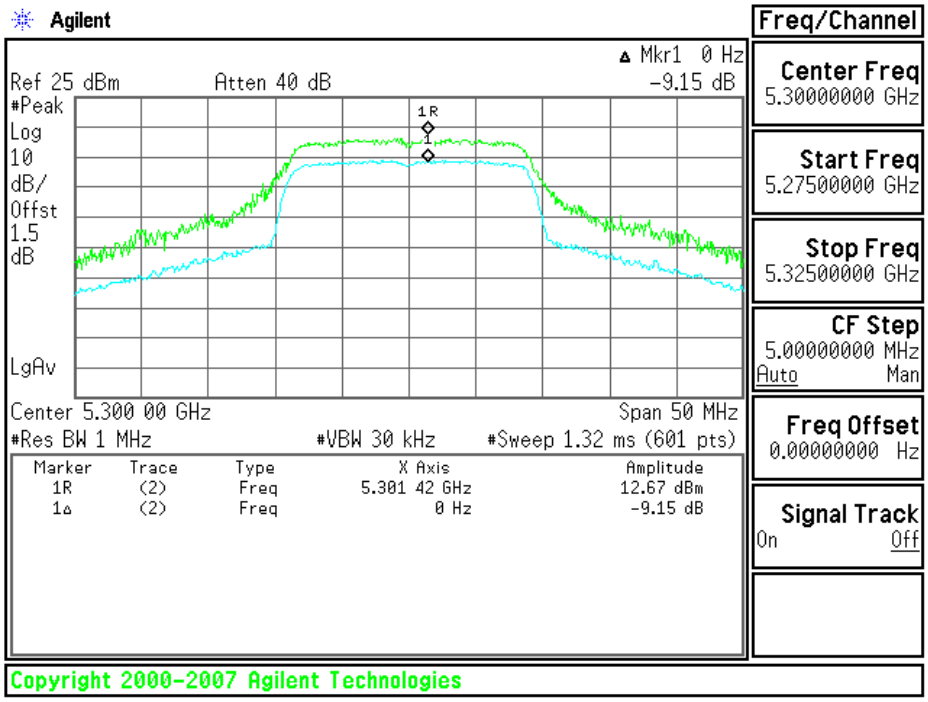


5250~5350MHz

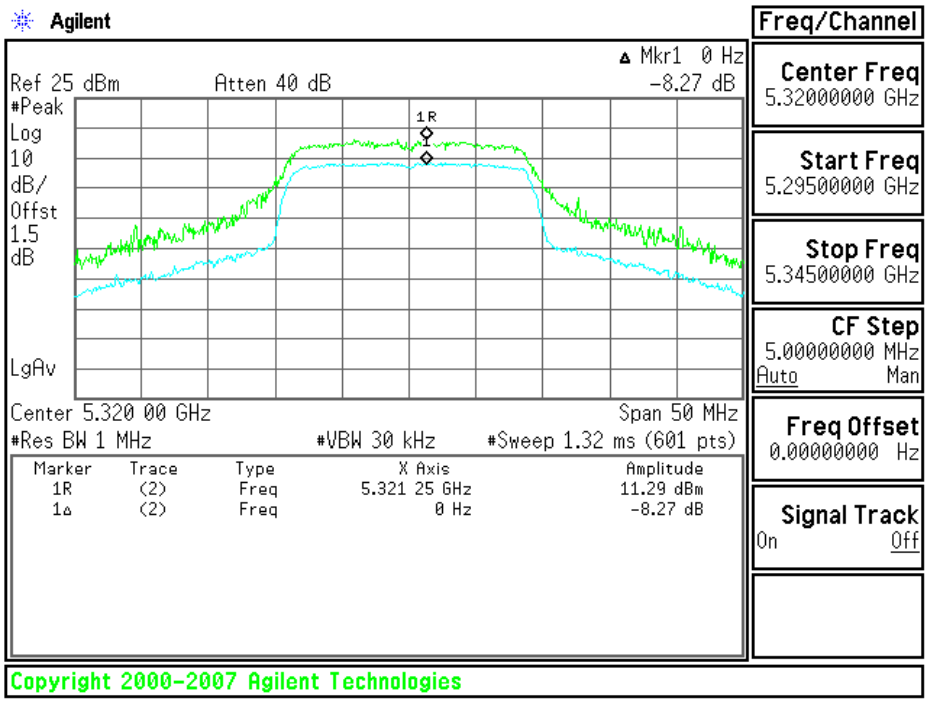
CH Low



CH Mid

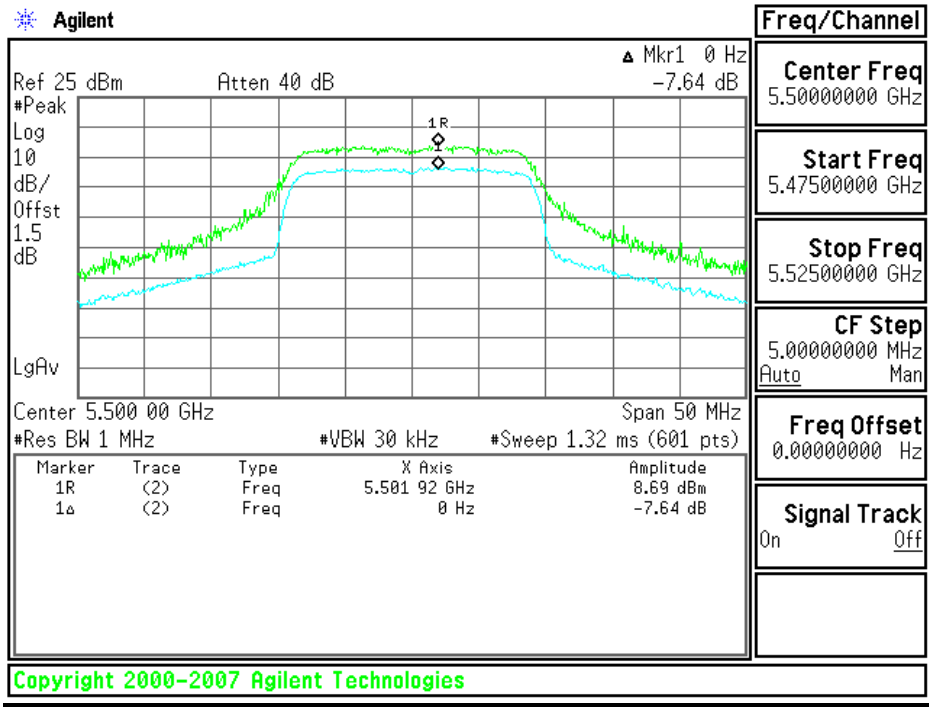


CH High

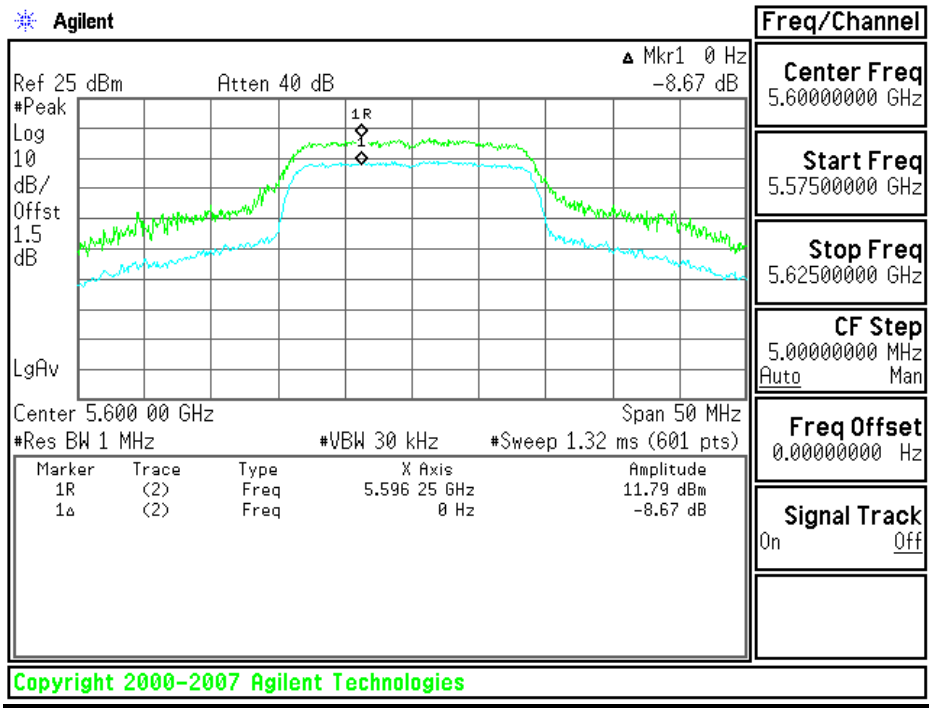


5470~5725MHz

CH Low



CH Mid



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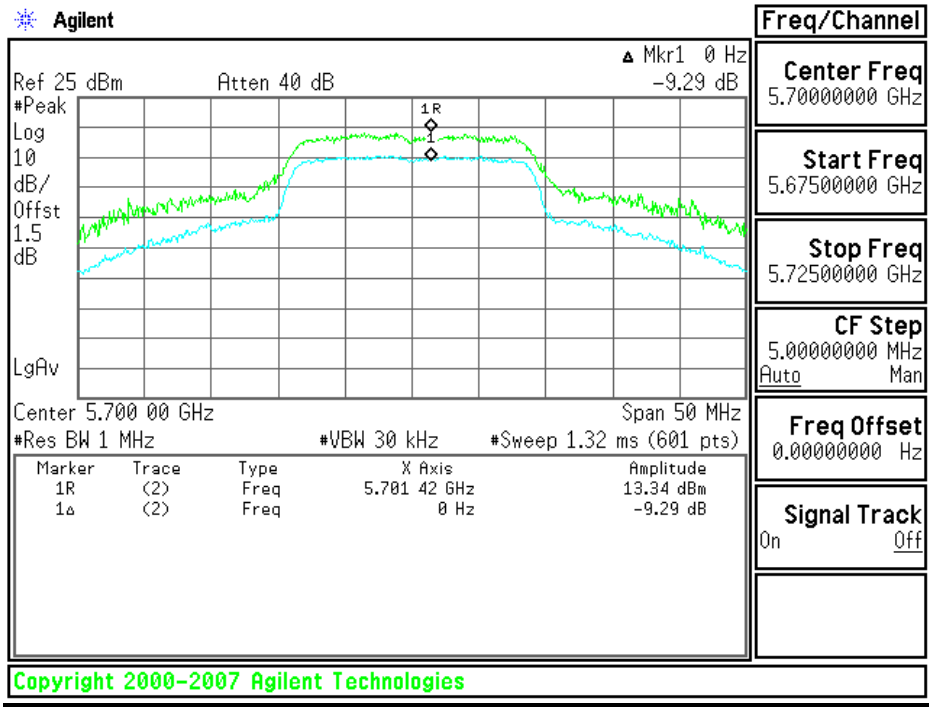
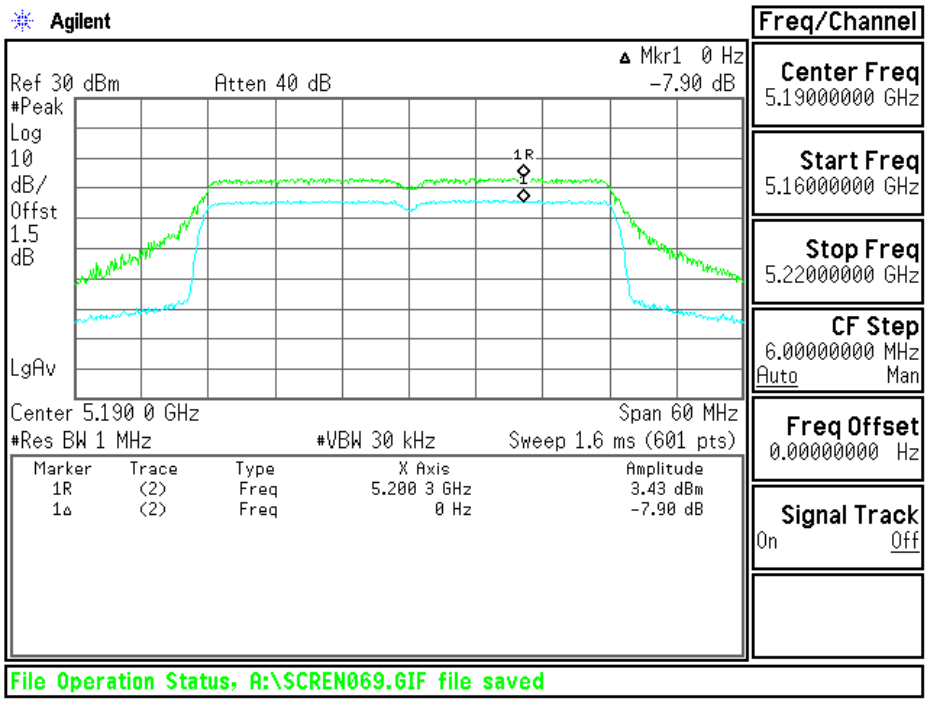


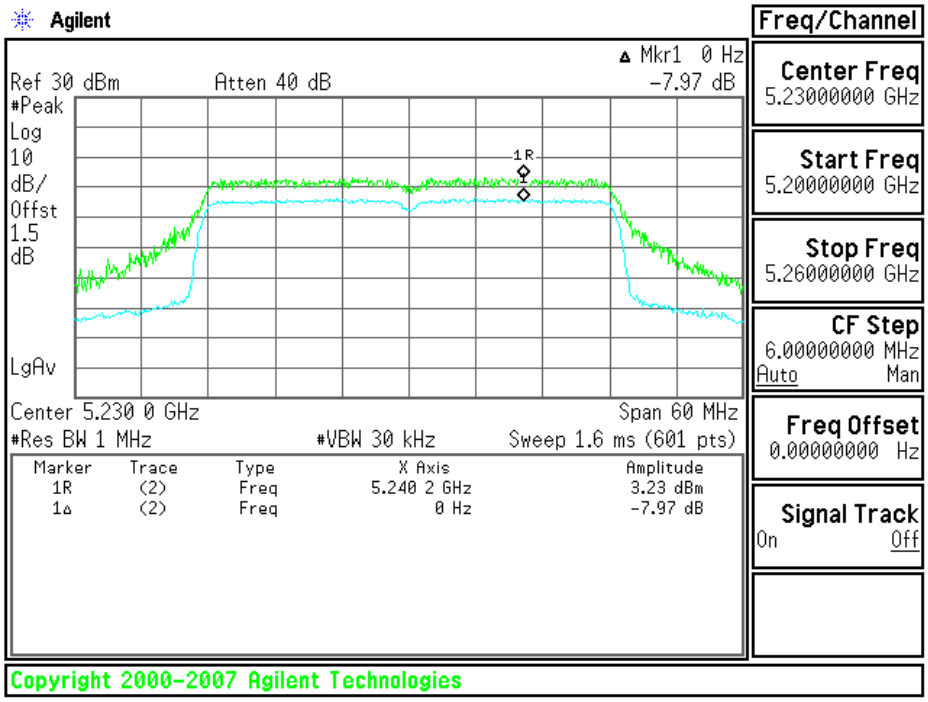
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0:

5150~5250MHz

CH Low

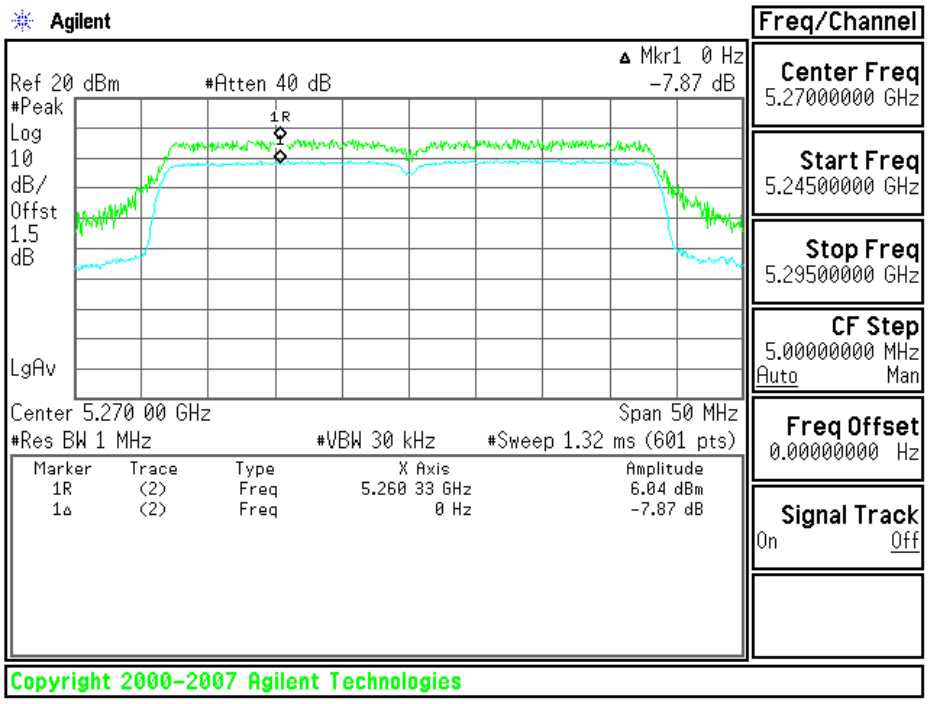


CH High

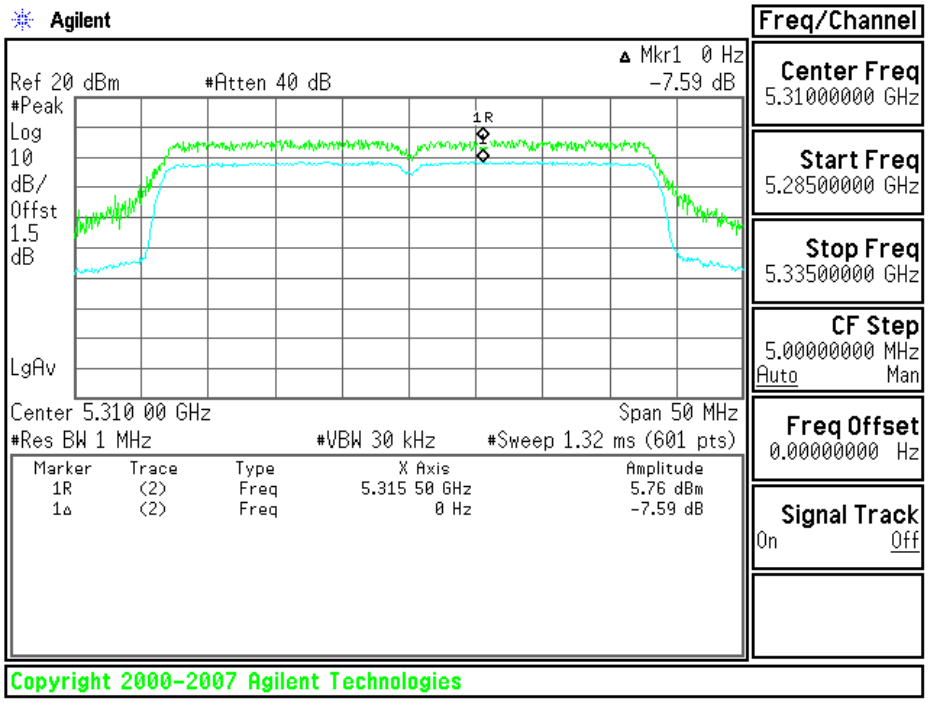


5250~5350MHz

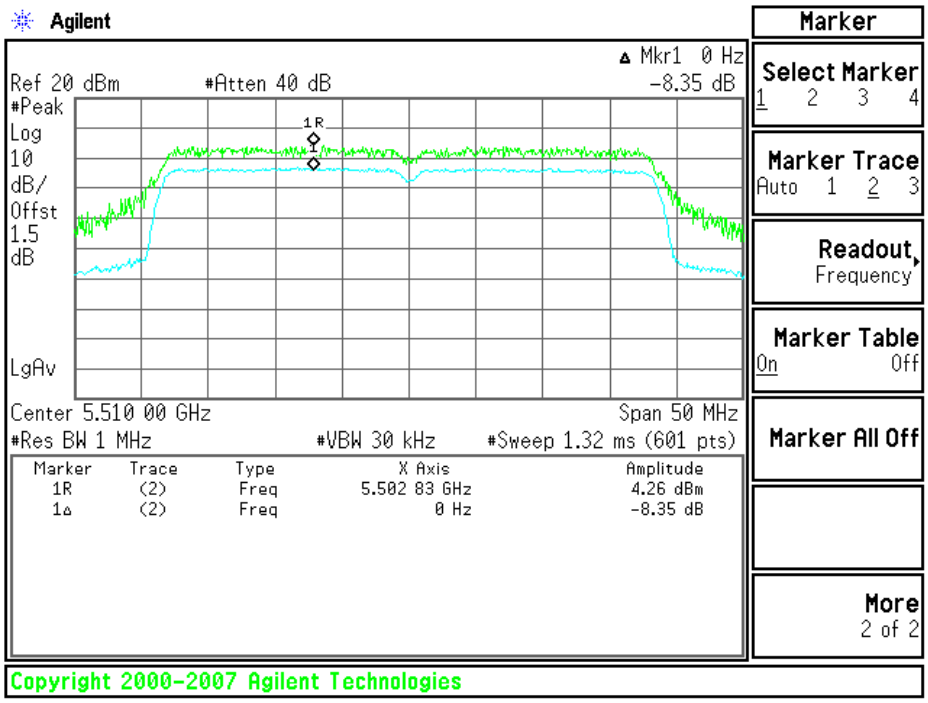
CH Low



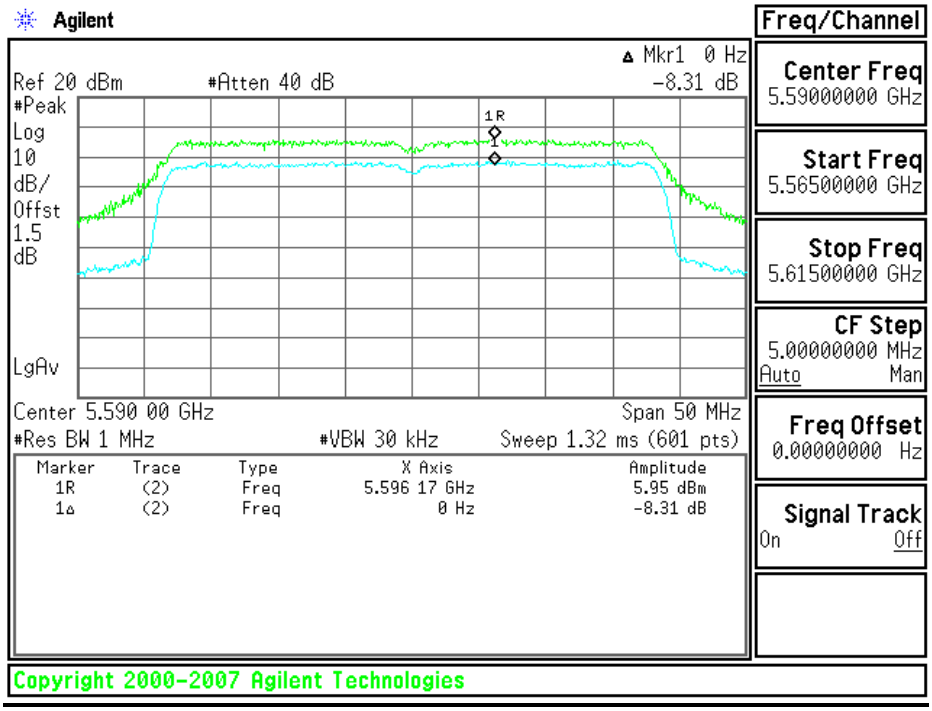
CH High



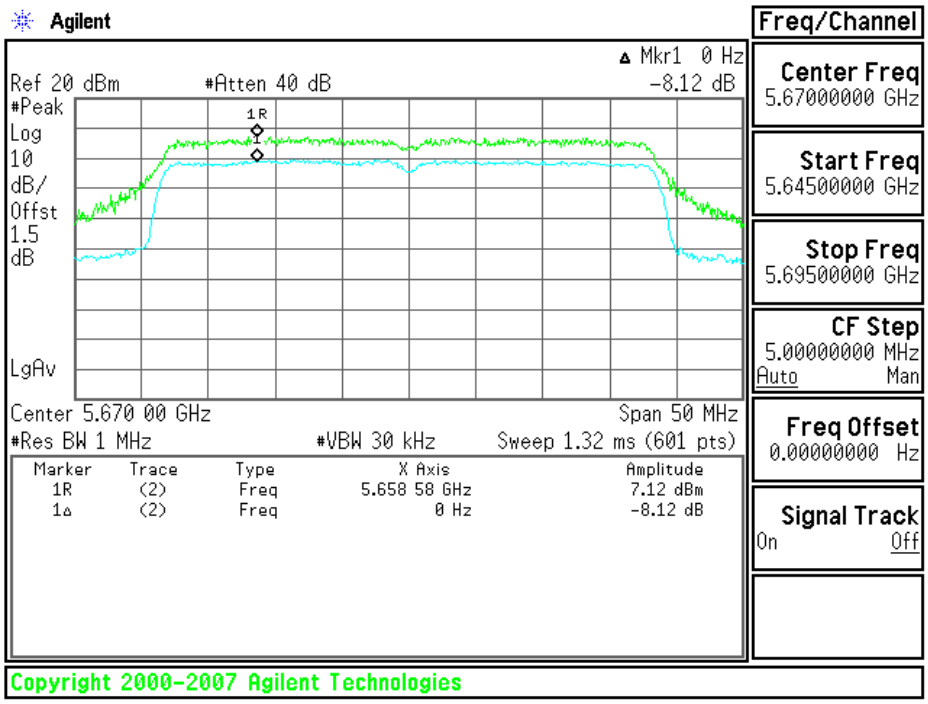
5470~5725MHz
CH Low



CH Mid



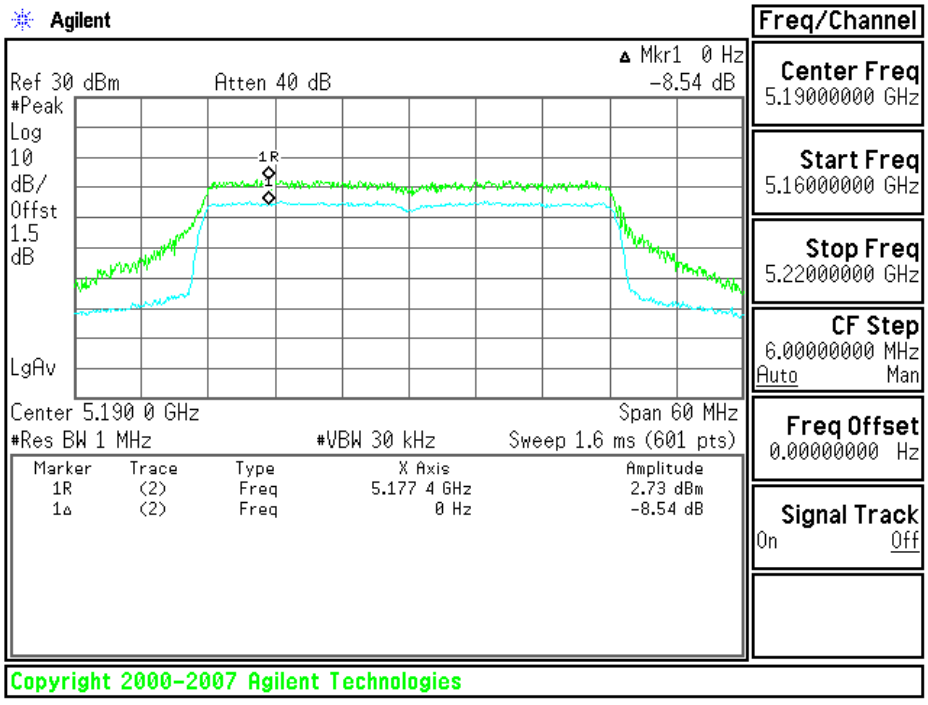
CH High



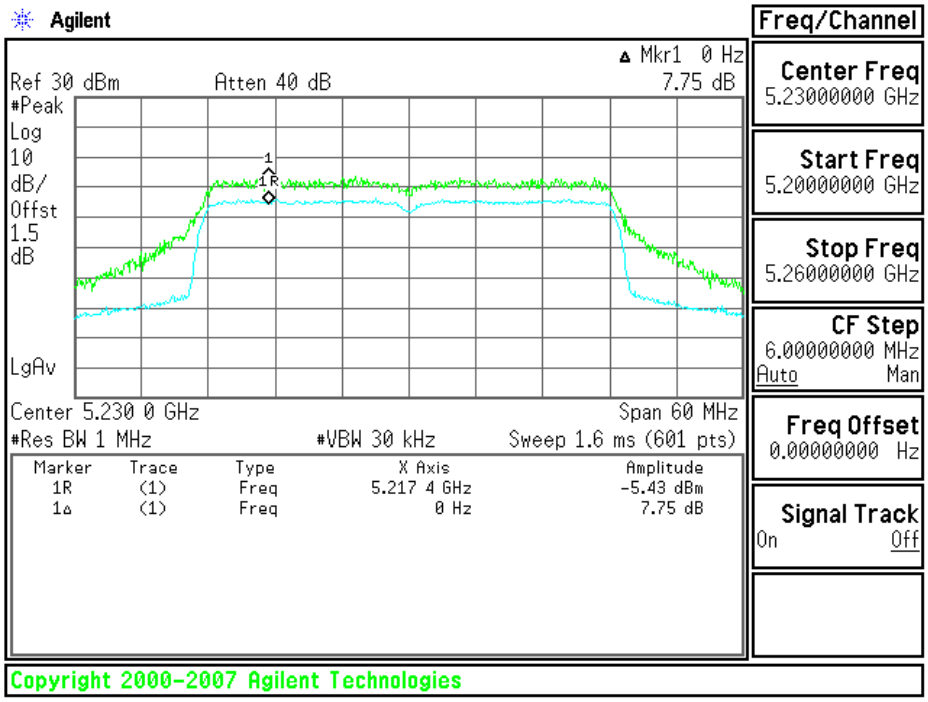
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1:

5150~5250MHz

CH Low

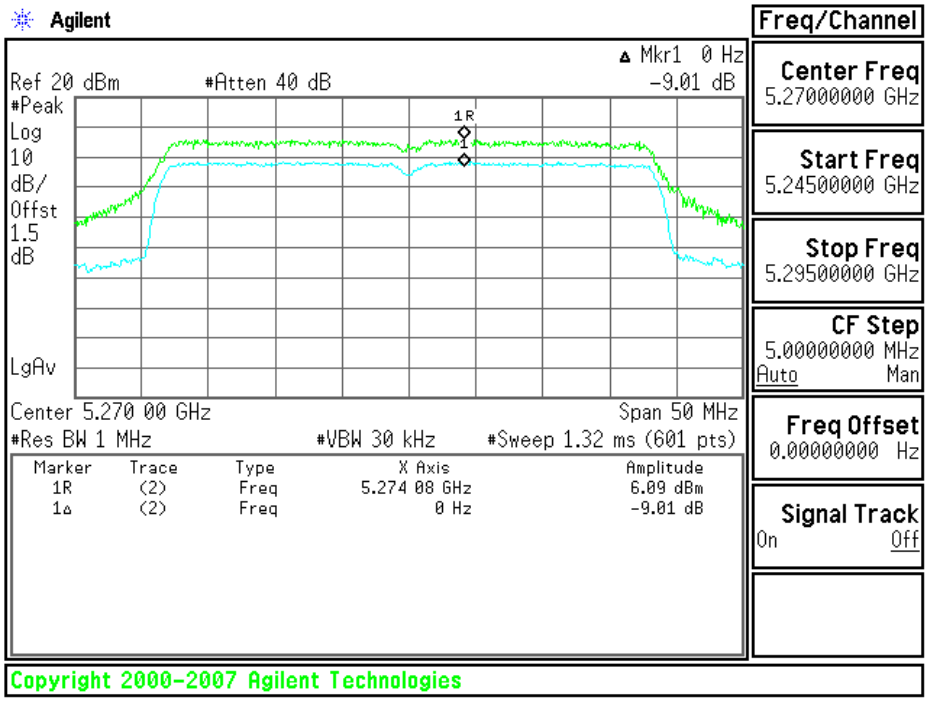


CH High

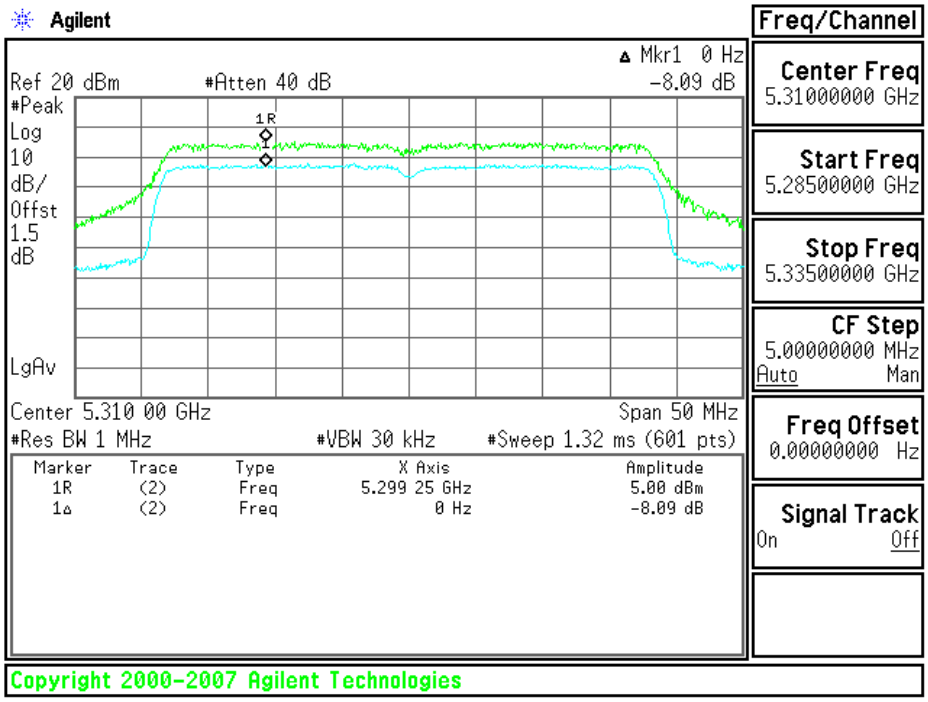


5250~5350MHz

CH Low

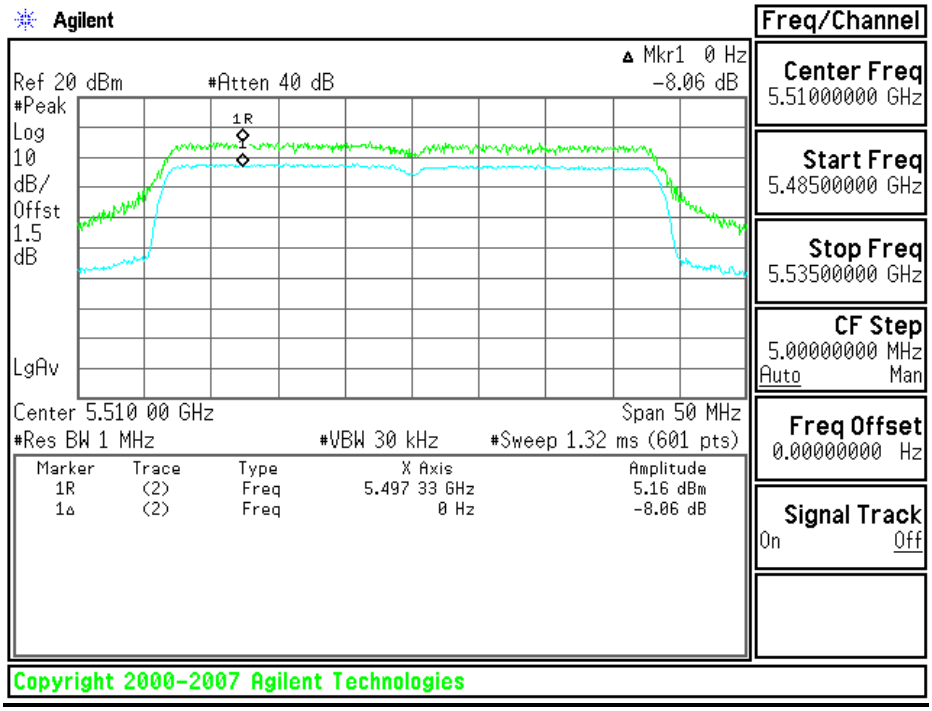


CH High

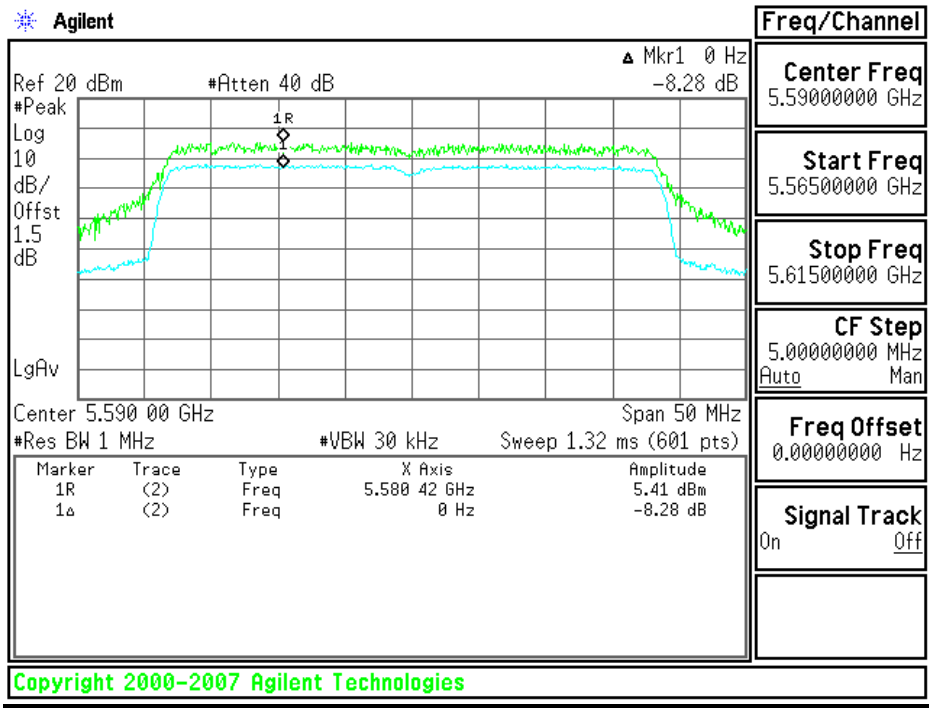


5470~5725MHz

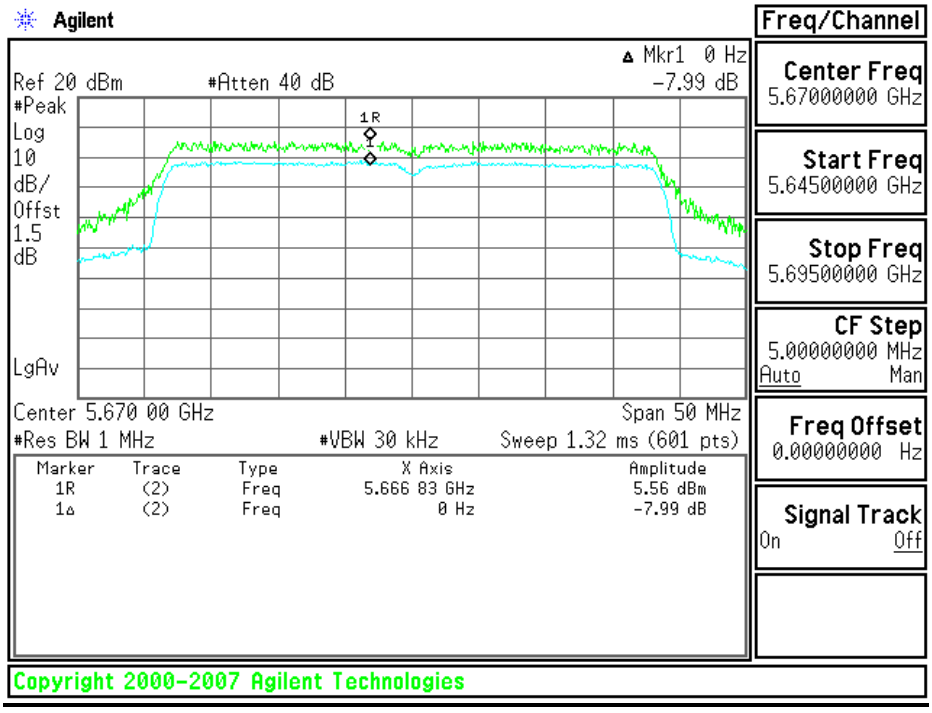
CH Low



CH Mid



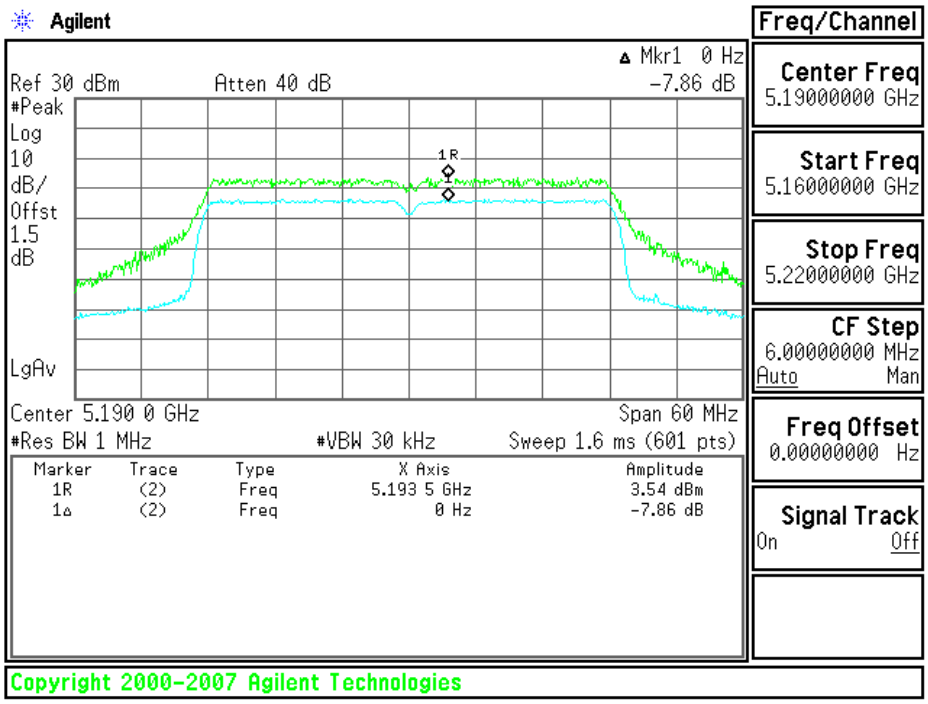
CH High



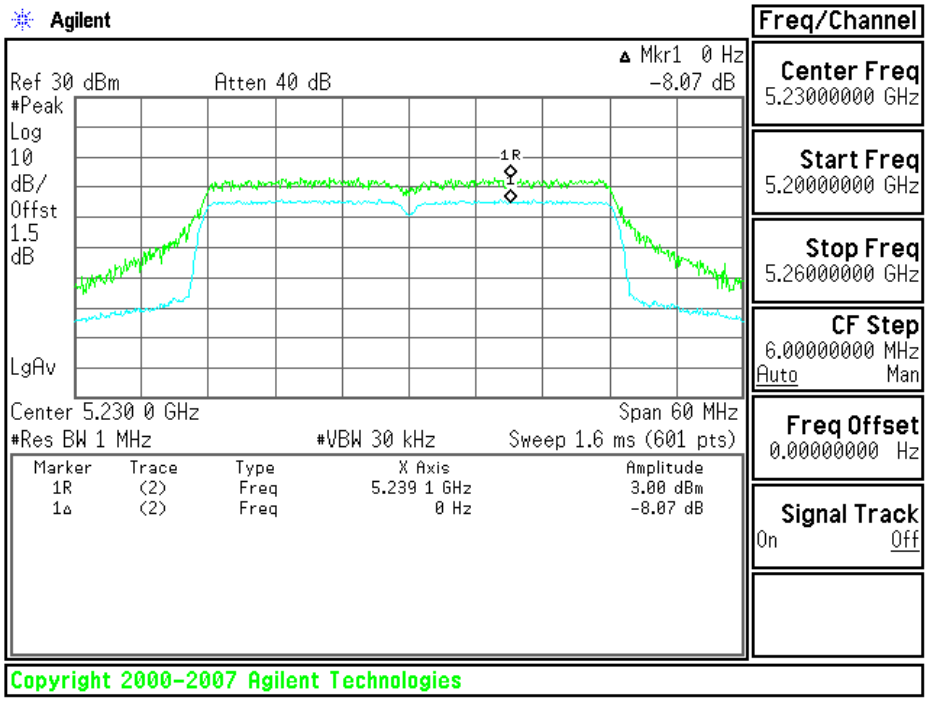
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 2:

5150~5250MHz

CH Low

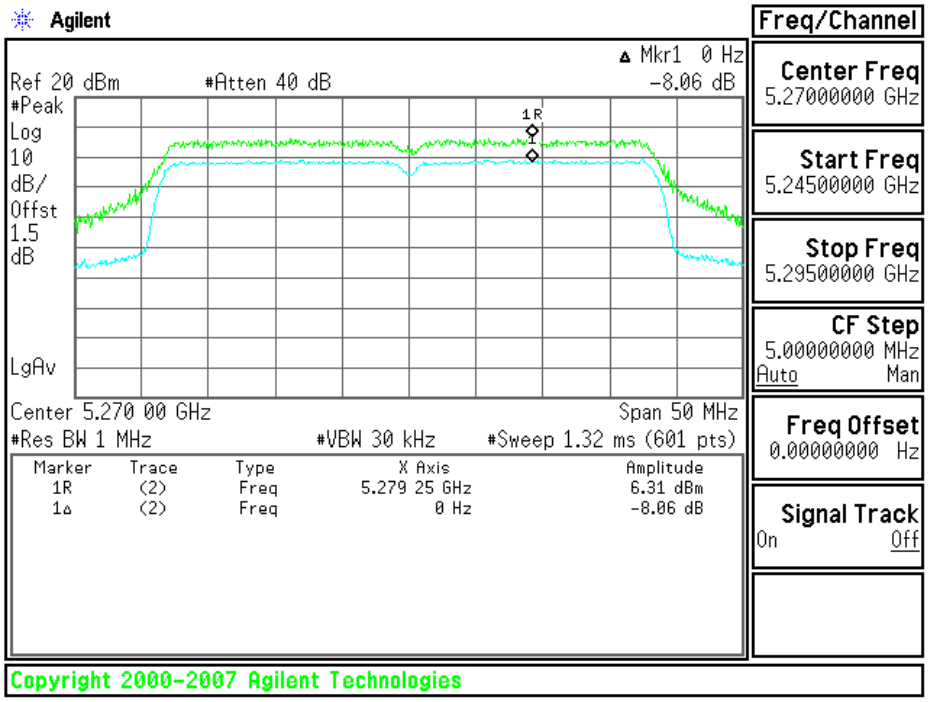


CH High

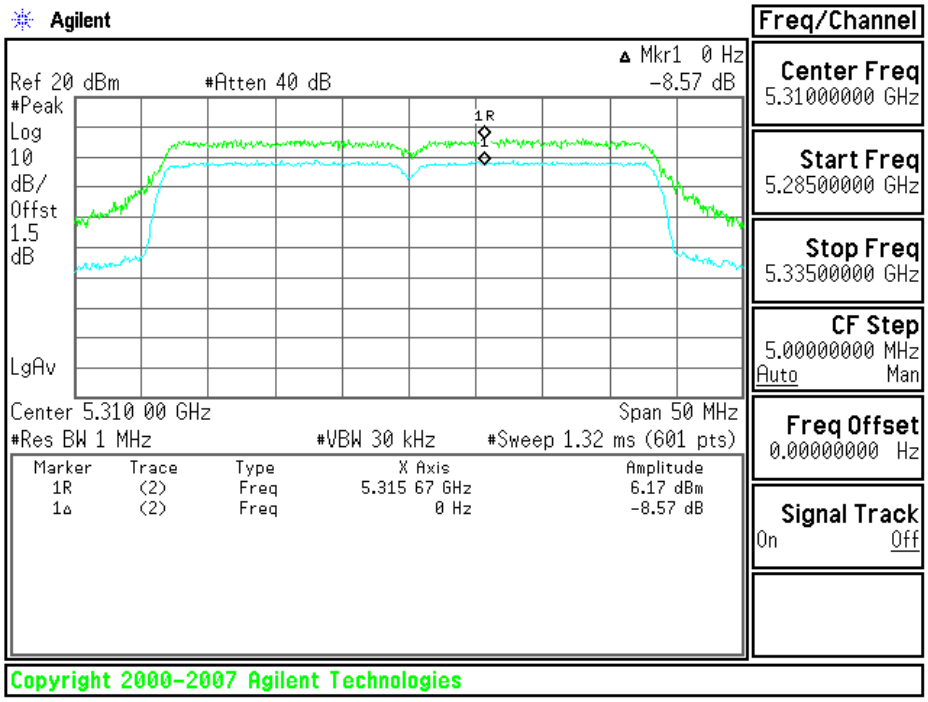


5250~5350MHz

CH Low

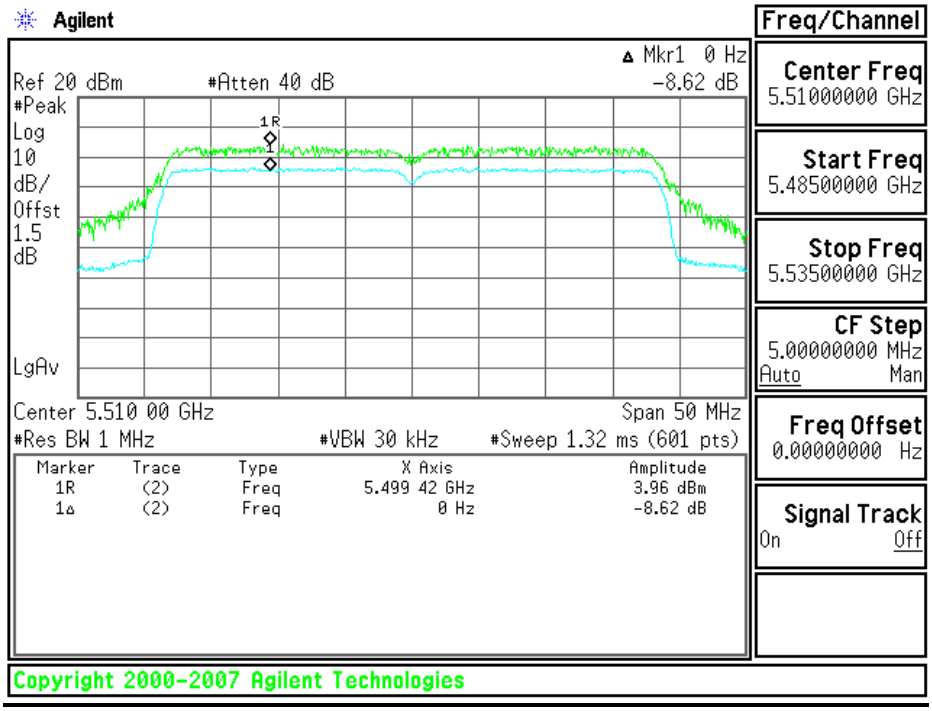


CH High

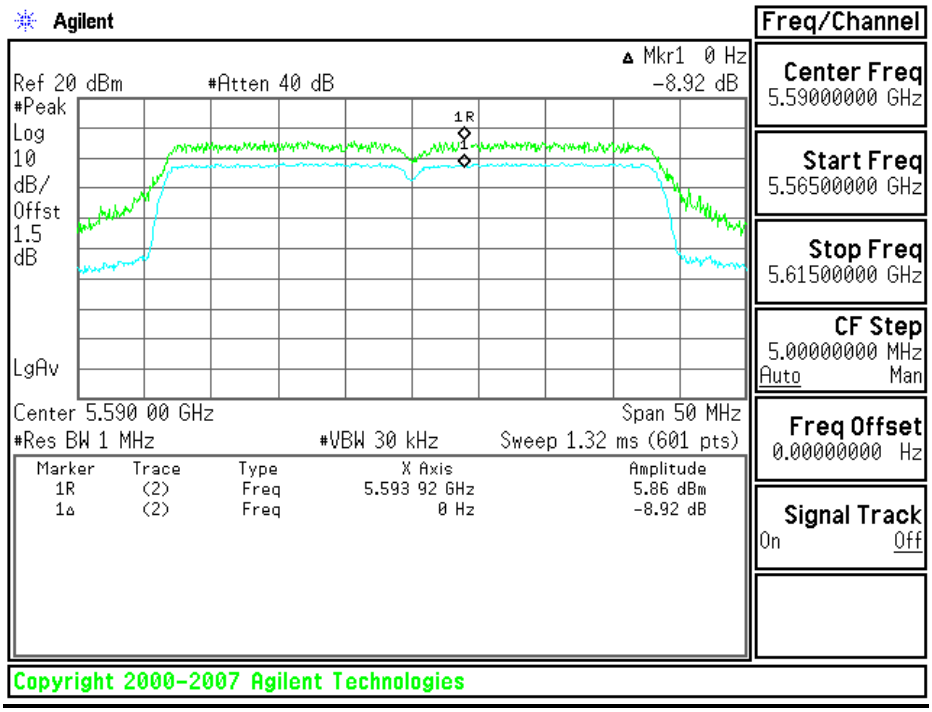


5470~5725MHz

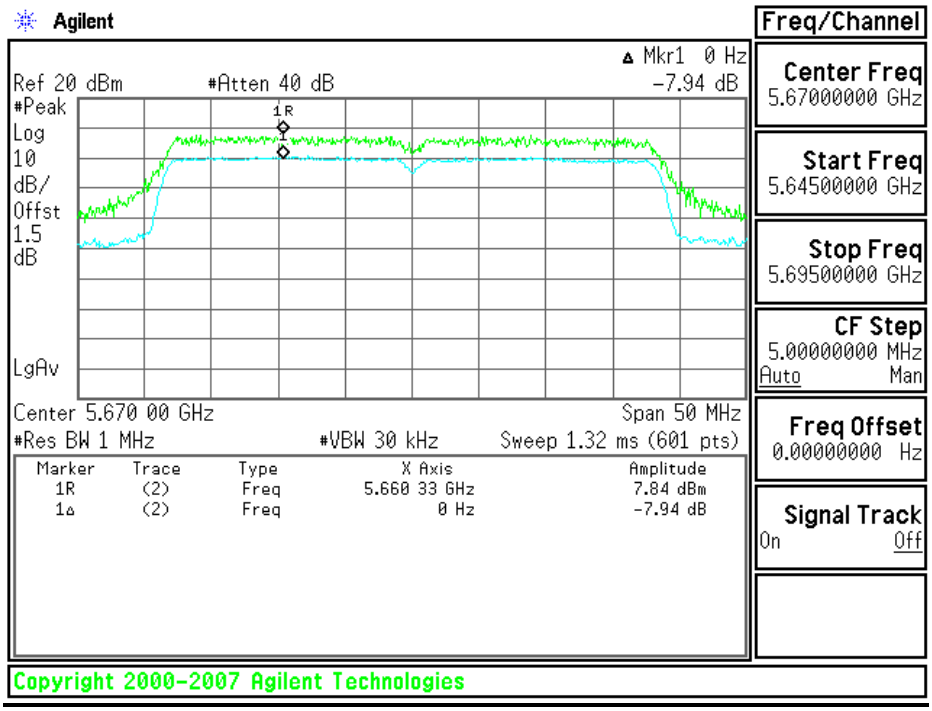
CH Low



CH Mid



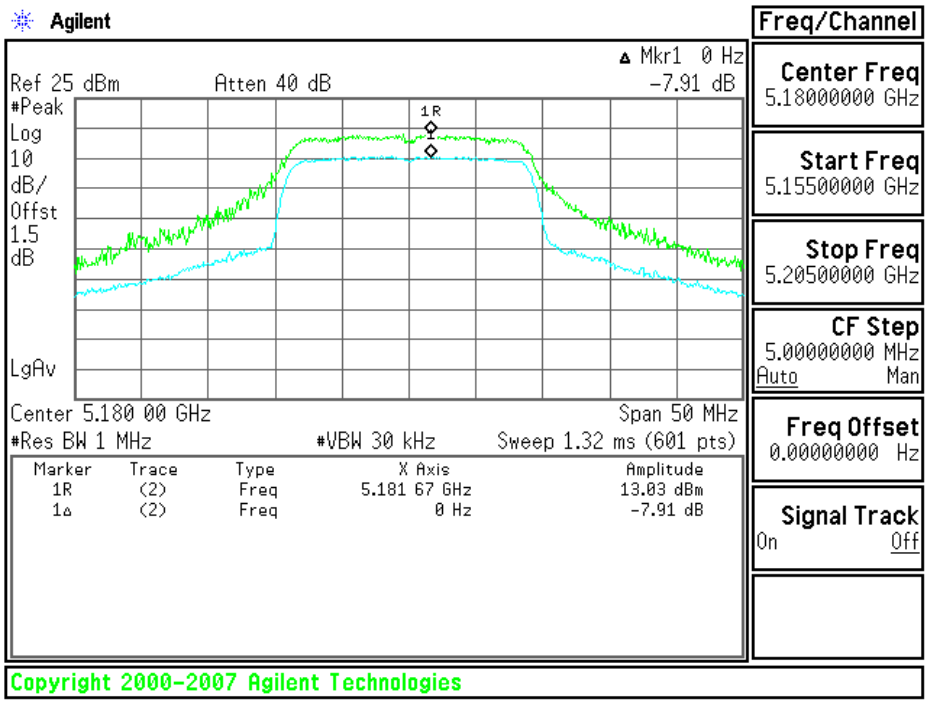
CH High


Agilent
Freq/Channel
Mkr1 0 Hz
Ref 20 dBm
#Atten 40 dB
-7.94 dB
#Peak
Log
10
dB/
Offst
1.5
dB
1R
LgAv
Center 5.670 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 30 kHz
Sweep 1.32 ms (601 pts)
Marker Trace Type X Axis Amplitude
1R (2) Freq 5.660 33 GHz 7.84 dBm
1Δ (2) Freq 0 Hz -7.94 dB
Center Freq
5.67000000 GHz
Start Freq
5.64500000 GHz
Stop Freq
5.69500000 GHz
CF Step
5.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2007 Agilent Technologies

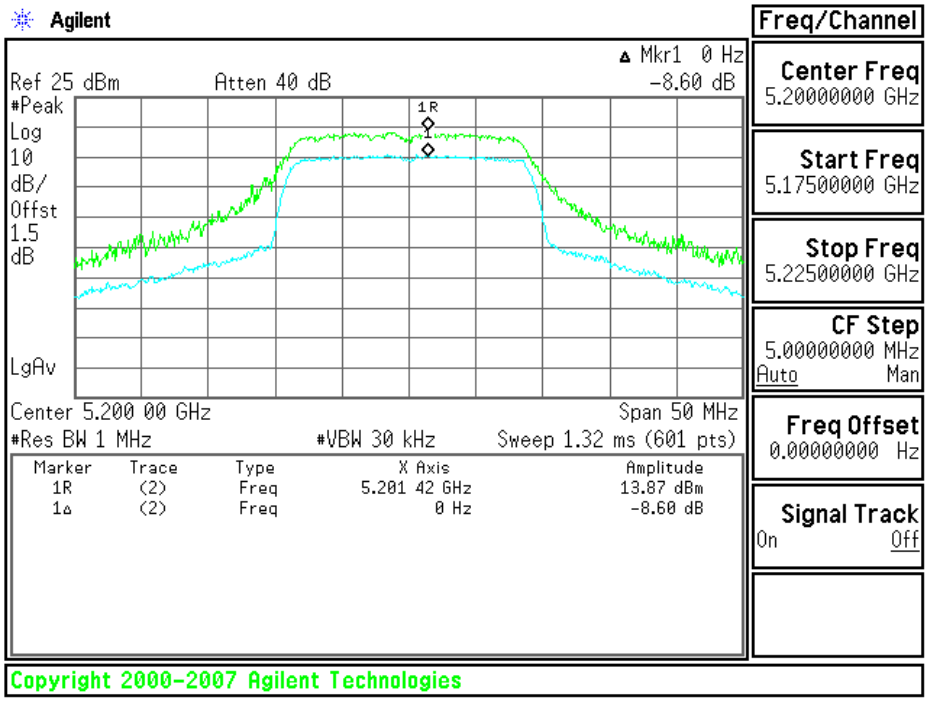
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0+ Chain 1+ Chain 2:

5150~5250MHz

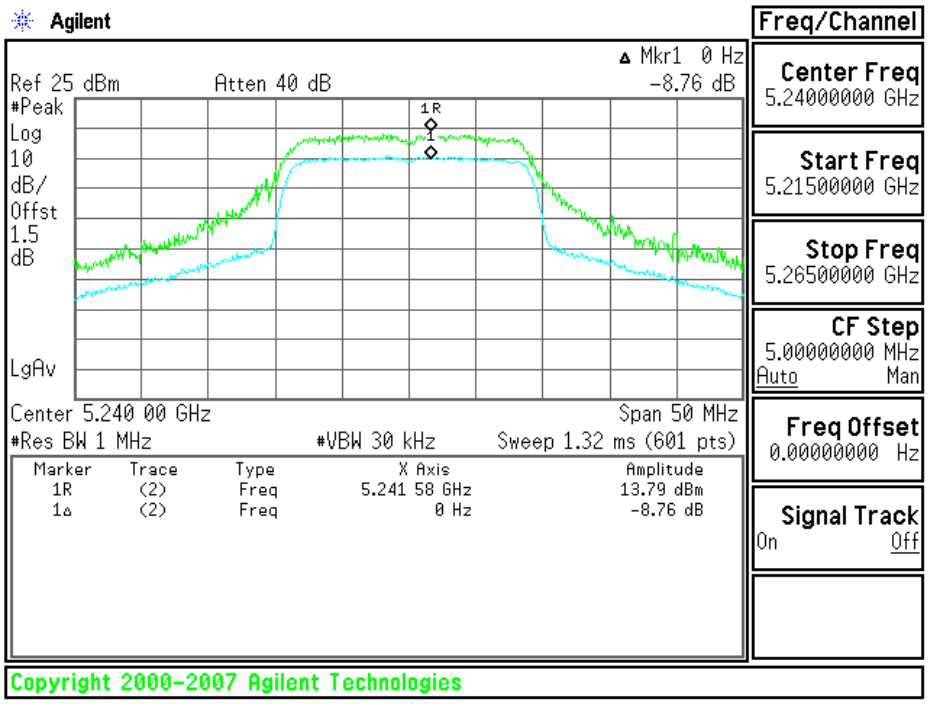
CH Low



CH Mid

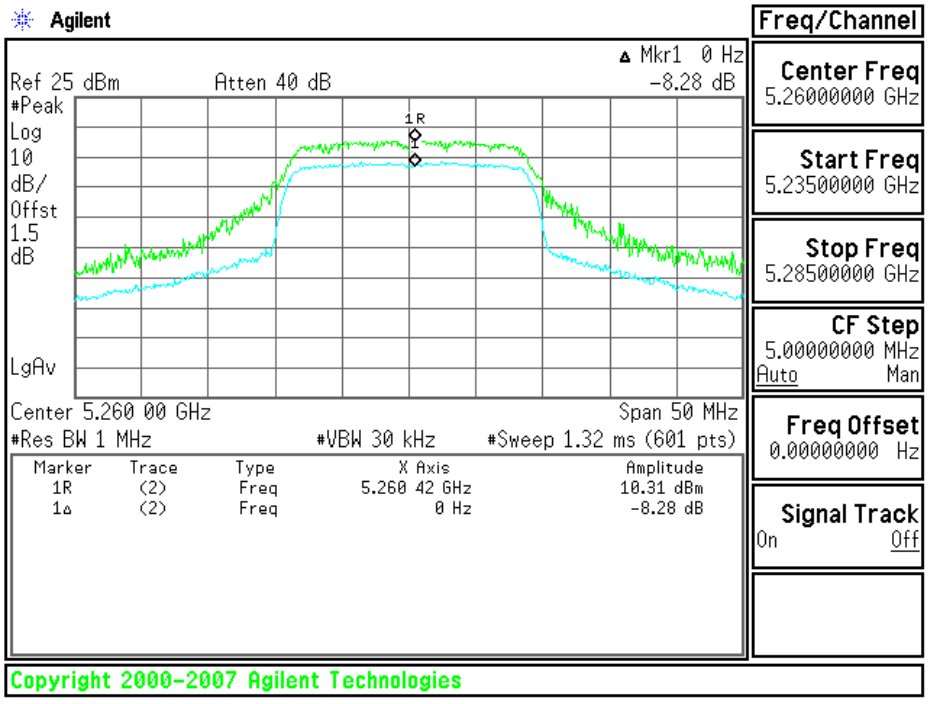


CH High

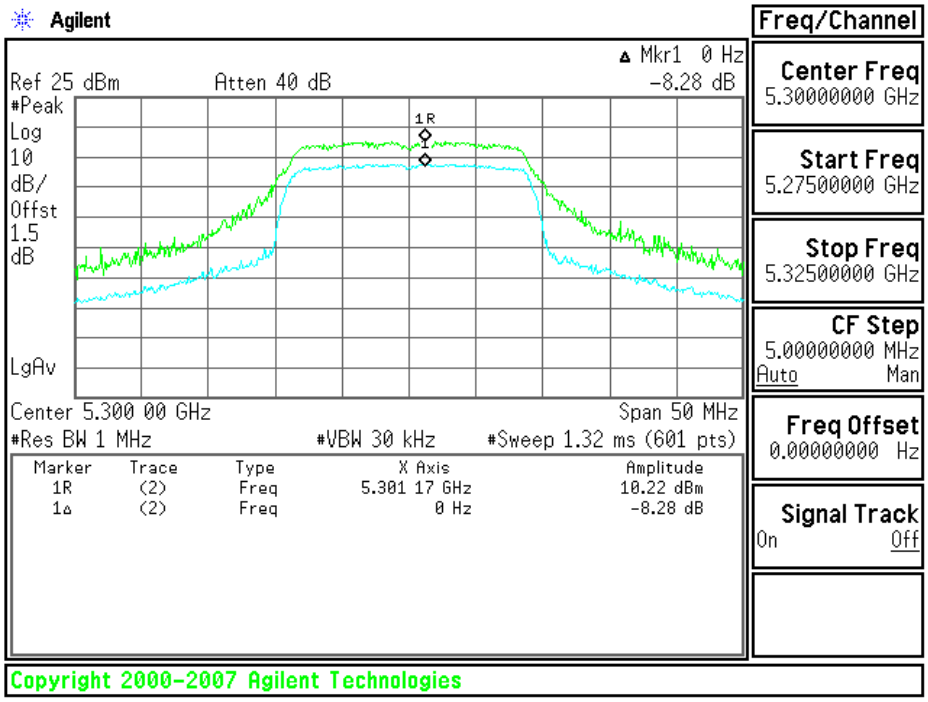


5250~5350MHz

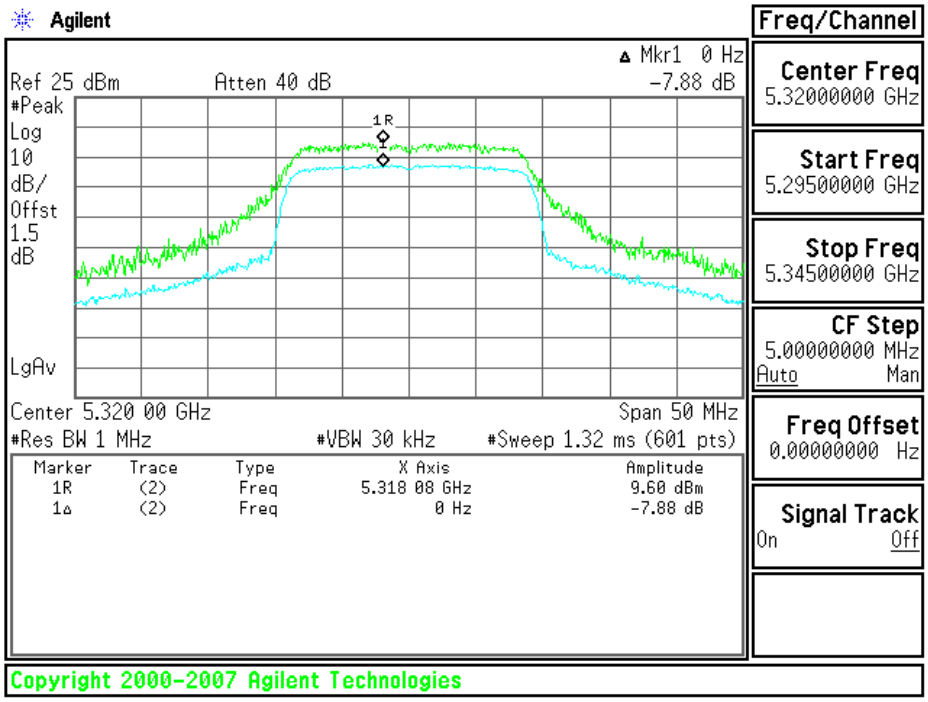
CH Low



CH Mid

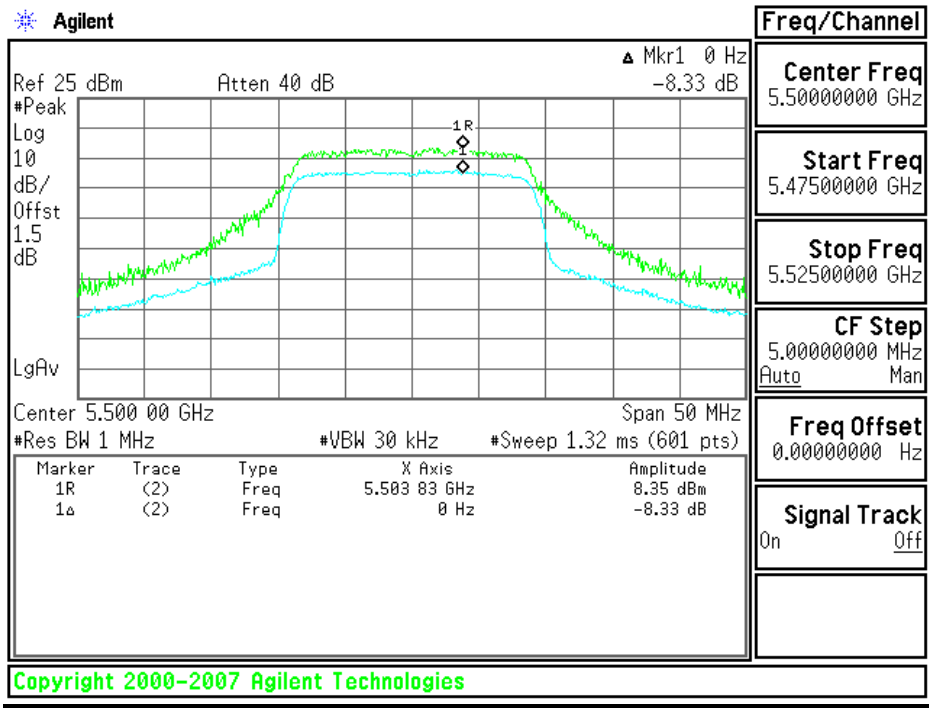


CH High

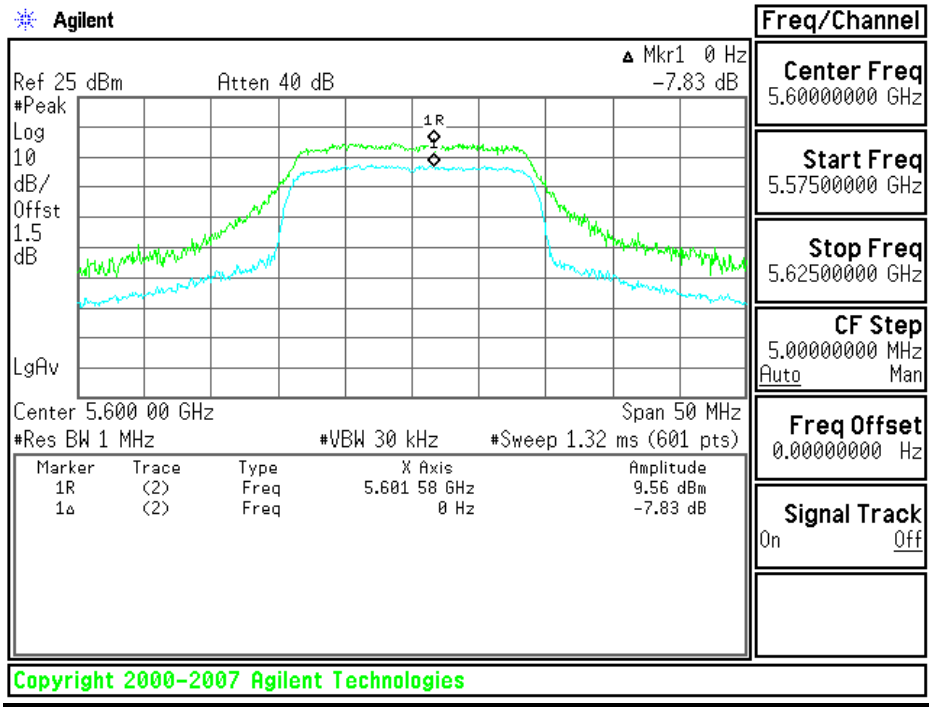


5470~5725MHz

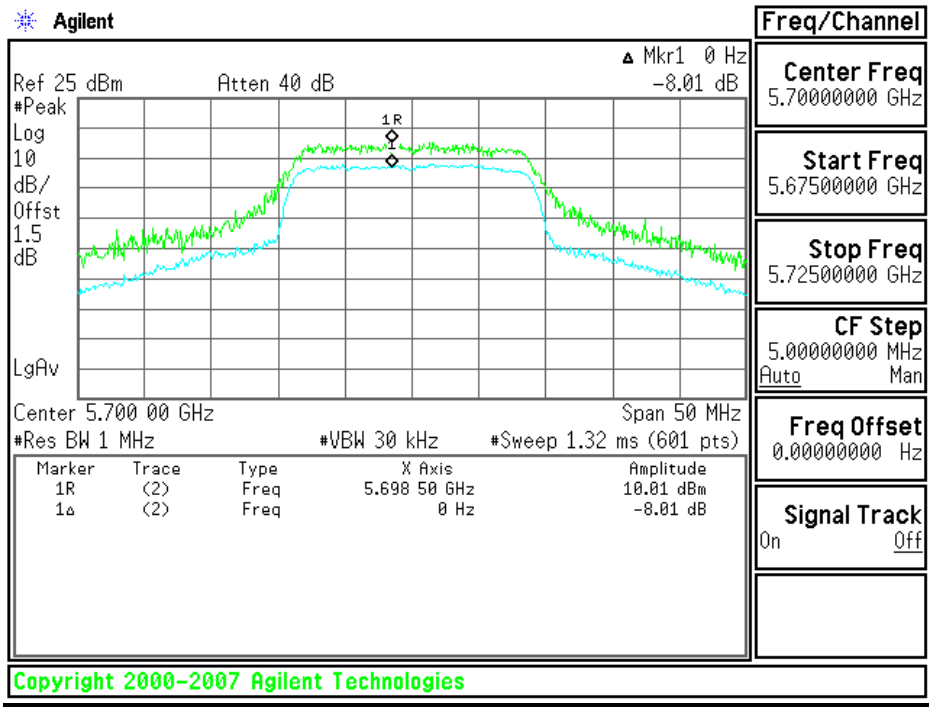
CH Low



CH Mid



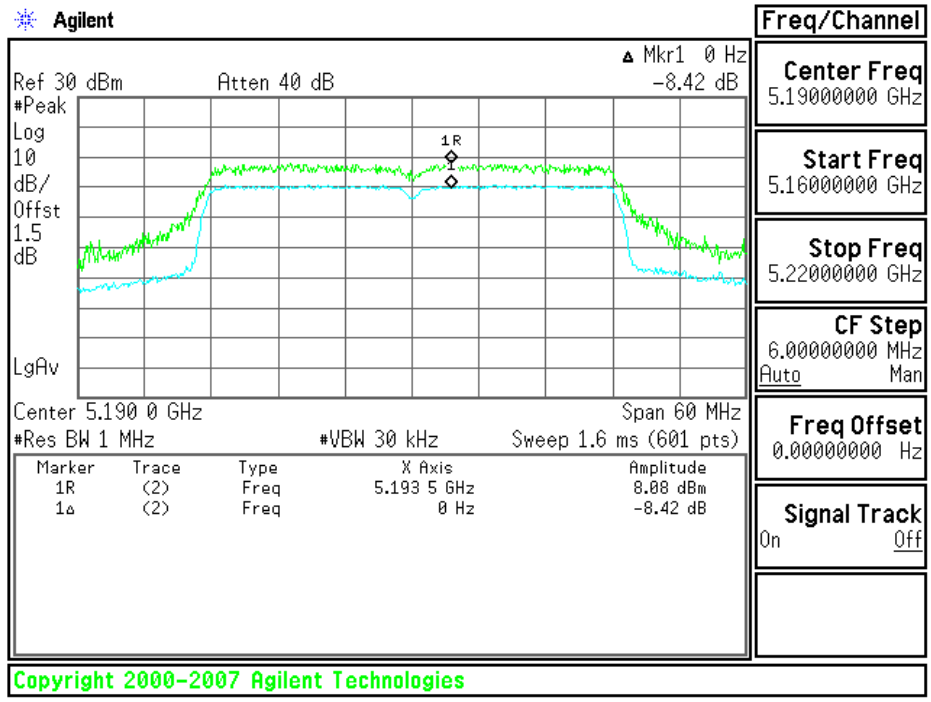
CH High



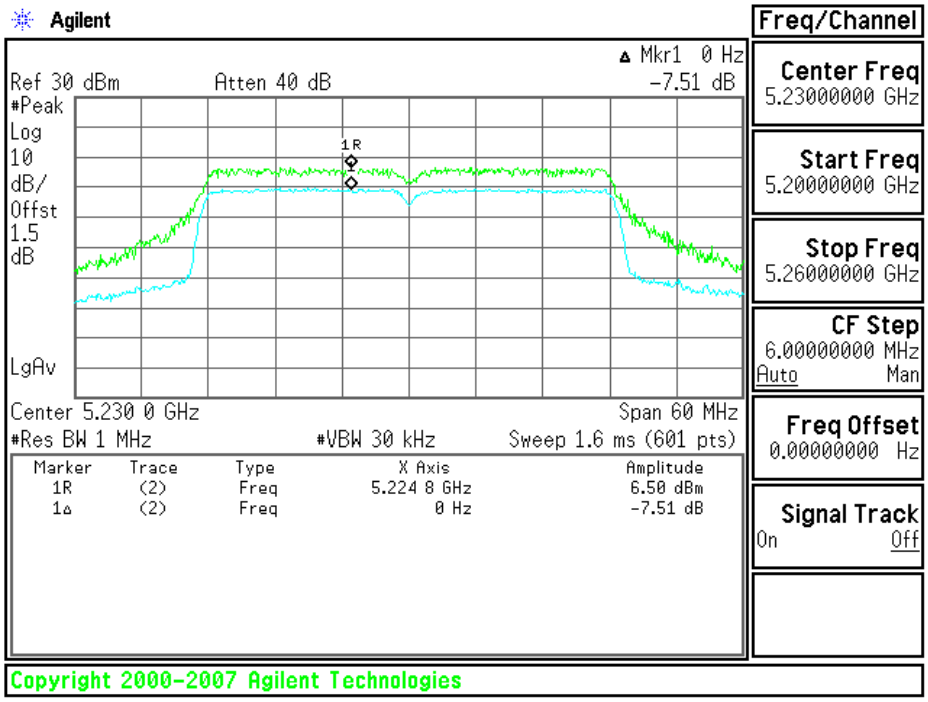
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0+ Chain 1+ Chain 2:

5150~5250MHz

CH Low

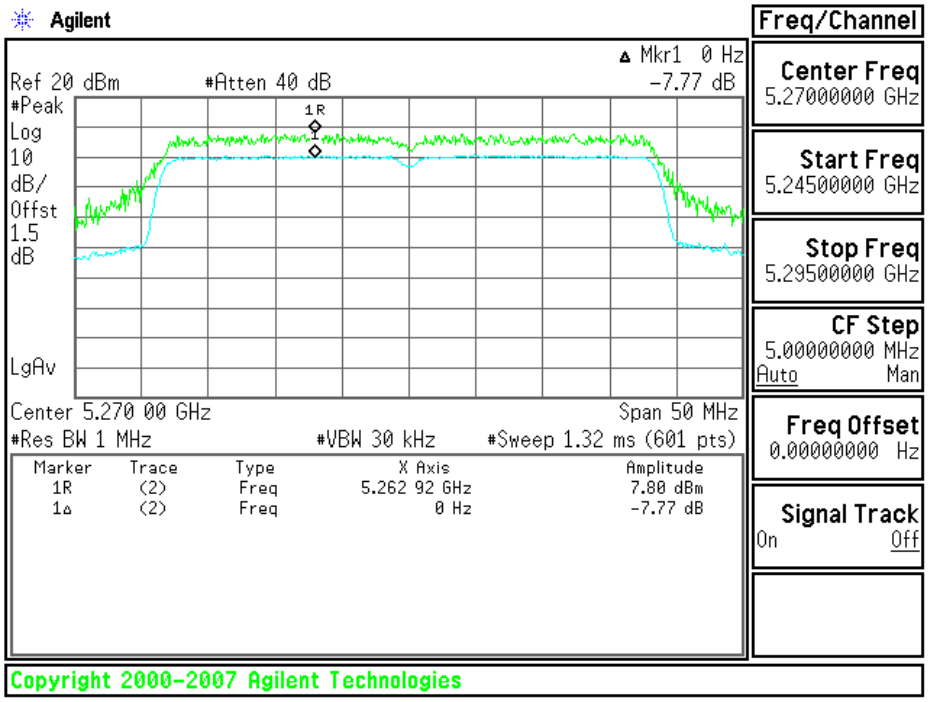


CH High

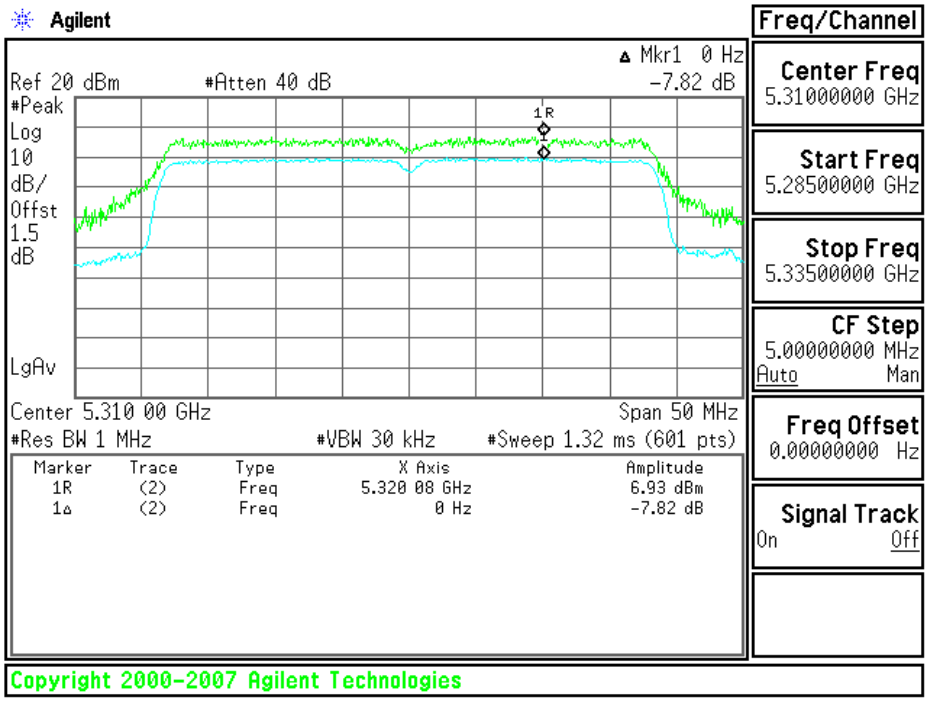


5250~5350MHz

CH Low

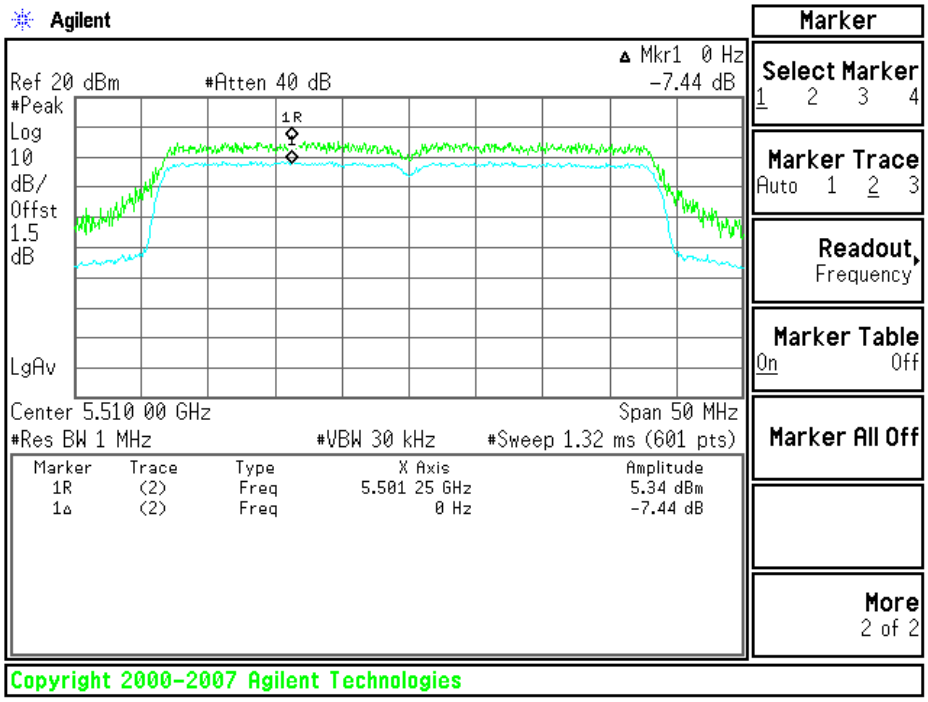


CH High

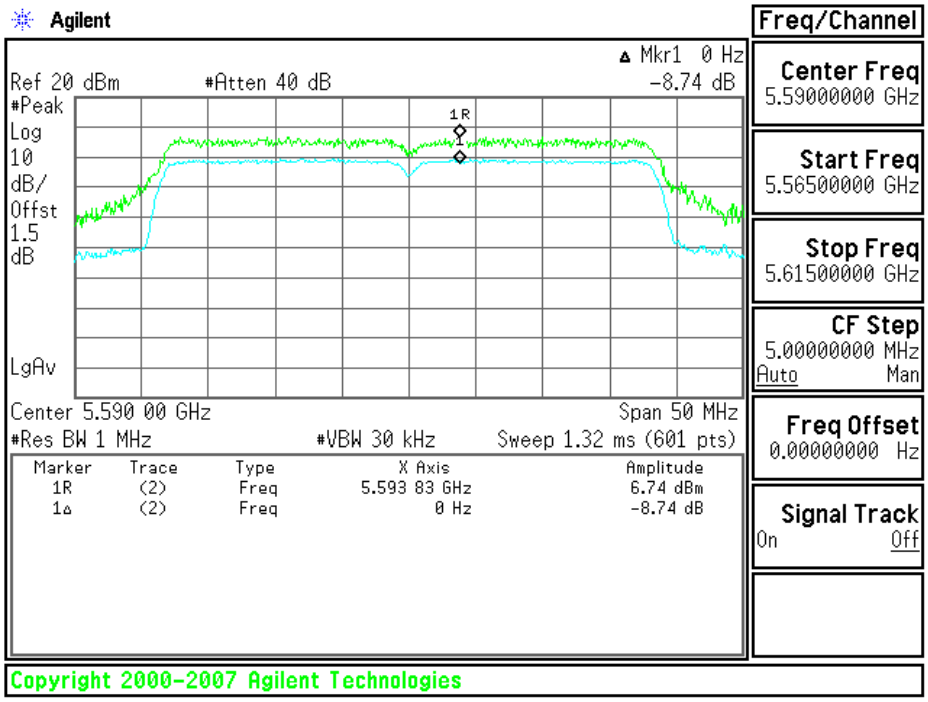


5470~5725MHz

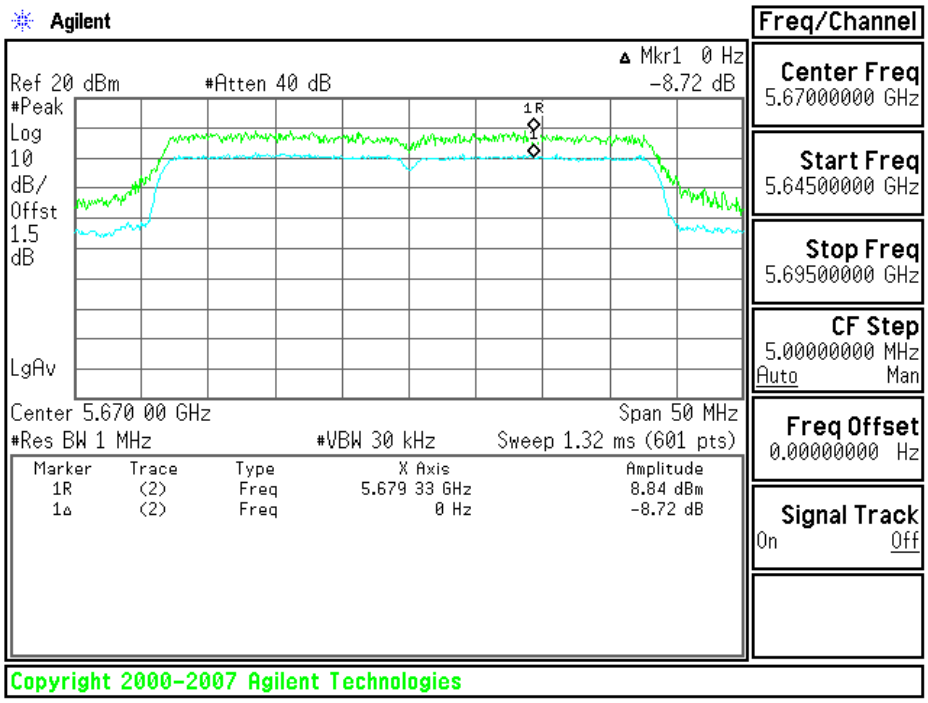
CH Low



CH Mid



CH High



RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

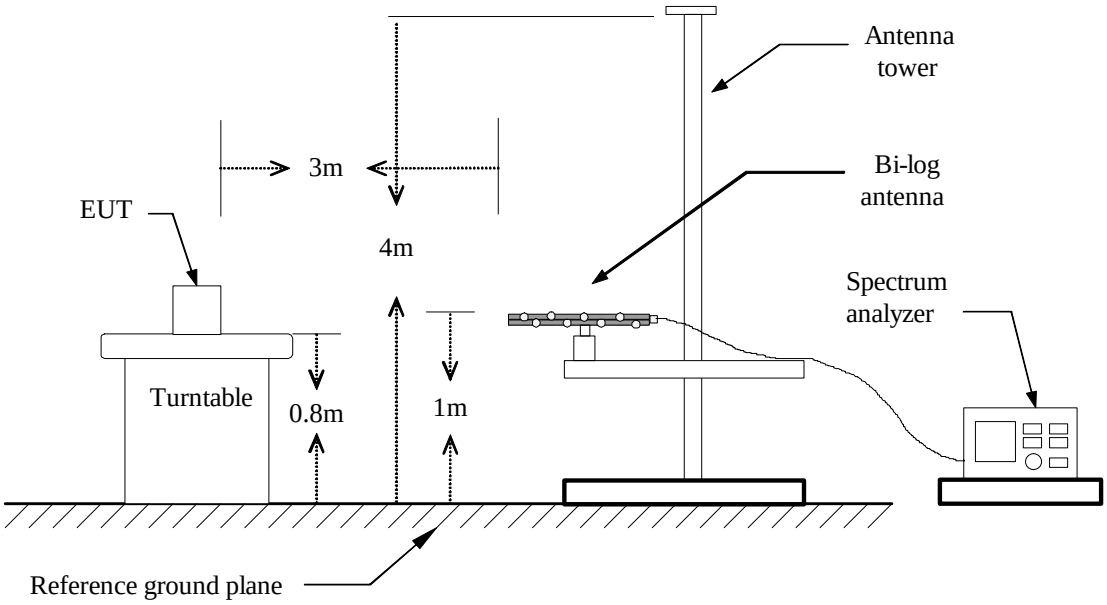
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the emission table above, the tighter limit applies at the band edges.

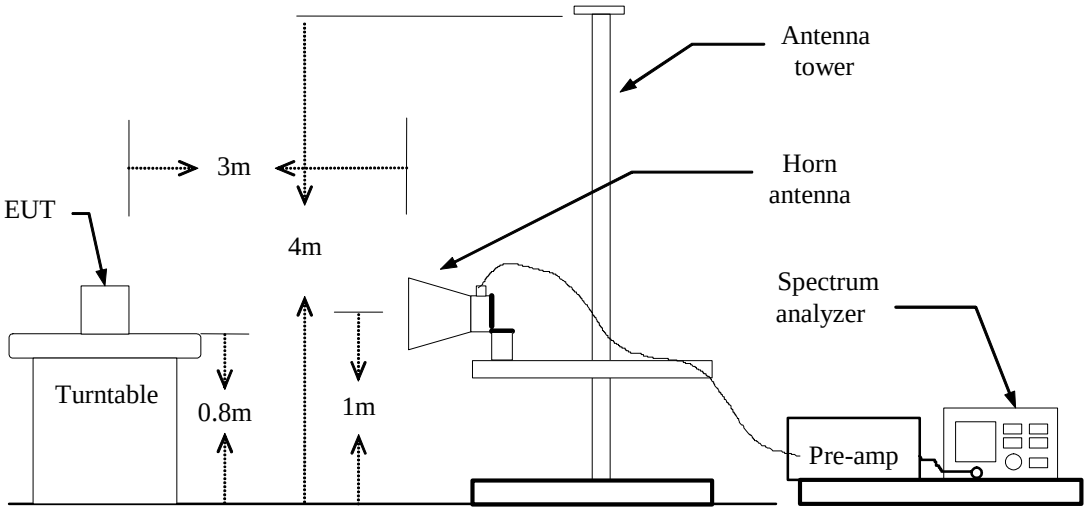
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Link **Test Date:** February 11, 2009

Temperature: 25°C **Tested by:** Nan Tsai

Humidity: 55% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
65.3258	V	49.17	-12.22	36.95	40.00	-3.05	Peak
71.6033	V	42.79	-14.41	28.38	40.00	-11.62	Peak
199.5741	V	34.53	-9.49	25.04	43.50	-18.46	Peak
399.4669	V	31.90	1.44	33.34	46.00	-12.66	Peak
760.3878	V	30.50	2.38	32.88	46.00	-13.12	Peak
765.3658	V	35.90	3.27	39.17	46.00	-6.83	Peak
66.2535	H	33.96	-5.87	28.09	40.00	-11.91	Peak
70.6471	H	42.67	-14.45	28.22	46.00	-11.78	Peak
198.3694	H	38.03	-9.01	29.02	46.00	-14.48	Peak
398.2554	H	35.63	1.44	37.07	46.00	-8.93	Peak
755.1420	H	34.24	2.38	36.62	46.00	-9.38	Peak
796.2545	H	39.96	3.24	43.20	46.00	-2.80	QP

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.(no emission found from the lowest internal used/generated frequency to 30MHz)*
2. *Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.*
3. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.*
4. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
5. *Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).*

5150~5250MHz

Above 1 GHz

Operation Mode: Tx / IEEE 802.11a mode / CH Low **Test Date:** February 2, 2009

Temperature: 25°C **Tested by:** Steven Young

Humidity: 55% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10360.12	V	44.76	38.04	2.40	46.40	40.44	74.00	54.00	-13.56	AVG
N/A										
10351.31	H	40.85	36.78	2.40	43.25	39.18	74.00	54.00	-14.82	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: Tx / IEEE 802.11a mode / CH Mid **Test Date:** February 2, 2009

Temperature: 25°C **Tested by:** Steven Young

Humidity: 55% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10461.67	V	44.02	39.14	2.40	46.42	41.54	74.00	54.00	-12.46	AVG
N/A										
10430.67	H	41.06	36.11	2.40	43.46	38.51	74.00	54.00	-15.49	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: Tx / IEEE 802.11a mode / CH High **Test Date:** February 2, 2009

Temperature: 25°C **Tested by:** Steven Young

Humidity: 55% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10481.33	V	45.13	37.68	3.56	48.69	41.24	74.00	54.00	-12.76	AVG
N/A										
10488.33	H	39.94	33.74	3.56	43.50	37.30	74.00	54.00	-16.70	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	February 2, 2009
Temperature:	25°C	**Tested by:**	Steven Young
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10320.67	V	45.06	38.21	2.40	47.46	40.61	74.00	54.00	-13.39	AVG
N/A										
10325.67	H	40.26	34.96	2.40	42.66	37.36	74.00	54.00	-16.64	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	February 2, 2009
Temperature:	25°C	**Tested by:**	Steven Young
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10410.67	V	50.93	38.02	3.56	54.49	41.58	74.00	54.00	-12.42	AVG
N/A										
10409.33	H	42.36	35.14	3.56	45.92	38.7	74.00	54.00	-15.30	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	TX / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	August 22, 2008
Temperature:	25°C	**Tested by:**	Steven Young
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10500.33	V	48.36	38.14	2.4	50.76	40.54	74	54	-13.46	AVG
N/A										
10493.67	H	45.36	34.22	3.56	48.92	37.78	74	54	-16.22	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	TX / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	February 2, 2009
Temperature:	25°C	**Tested by:**	Steven Young
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10383.33	V	45.36	36.55	3.56	48.92	40.11	74	54	-13.89	AVG
N/A										
10385.67	H	40.11	35.24	3.56	43.67	38.8	74	54	-15.2	AVG
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*