

5. Peak Power Spectrum Density

5.1. Test Equipment

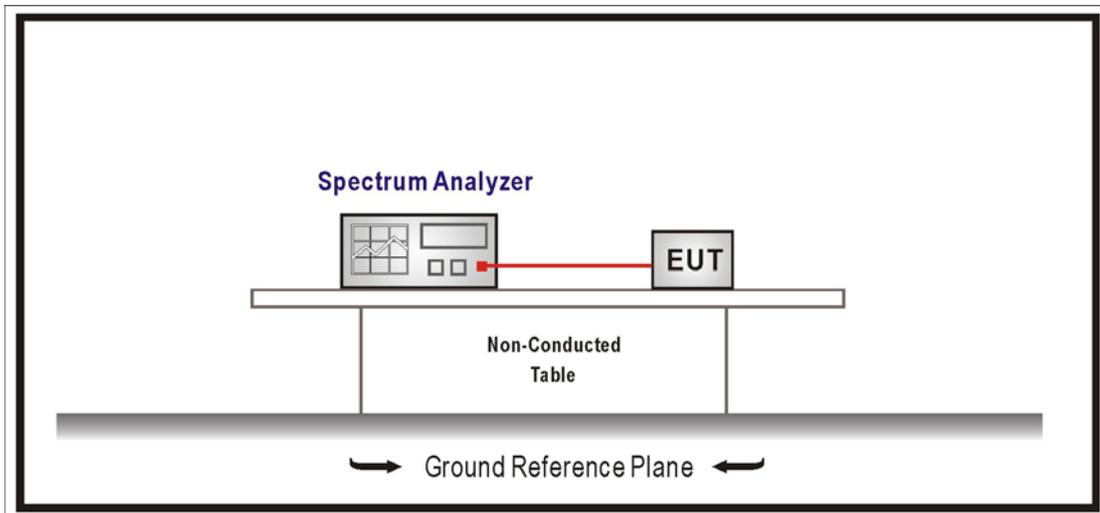
The following test equipments are used during the radiated emission tests:

Peak Power Spectrum Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup



5.3. Limits

1. For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
2. For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

5.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

Set RBW=1MHz, VBW=3MHz with RMS detector. The PPSD is the highest level found across the emission in any 1-MHz band after 100 sweeps of averaging.

5.5. Uncertainty

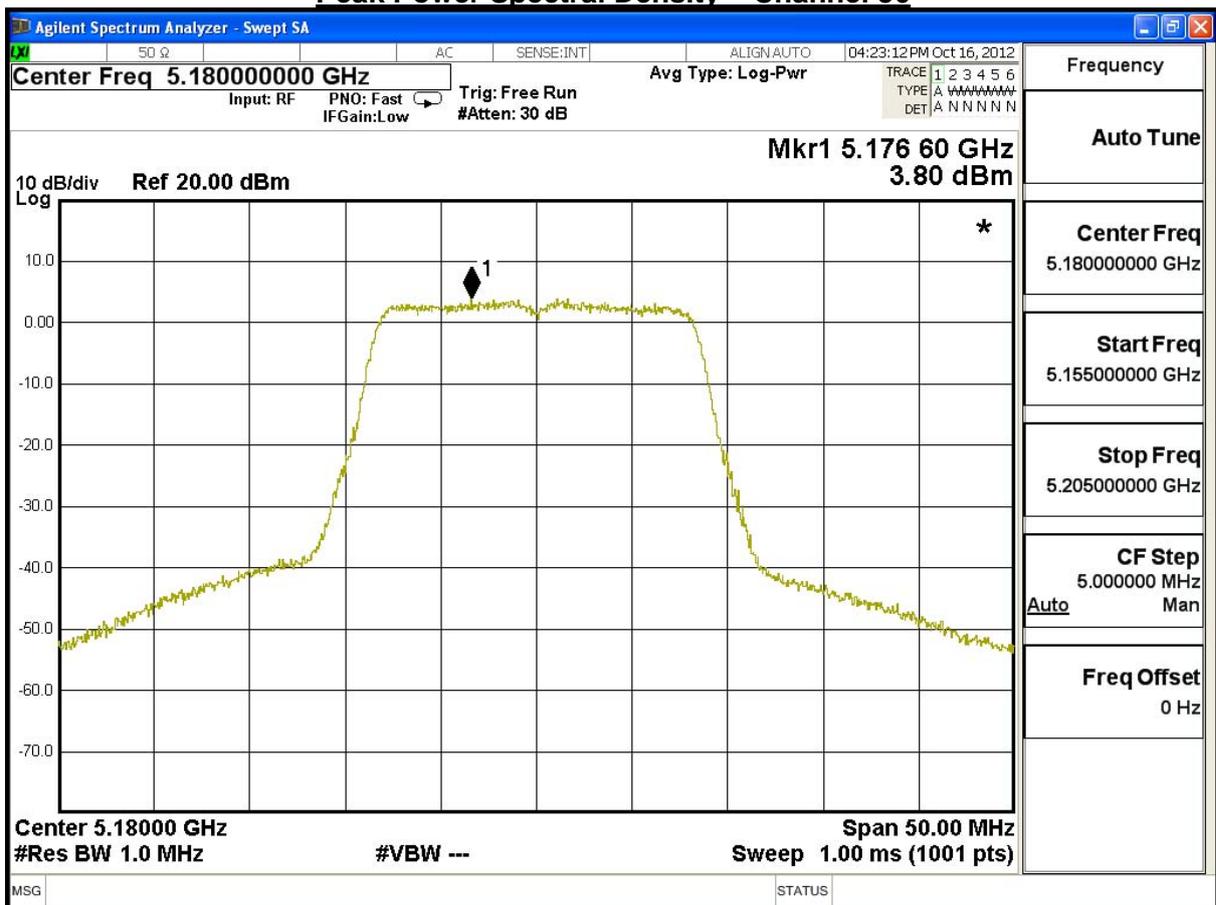
The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

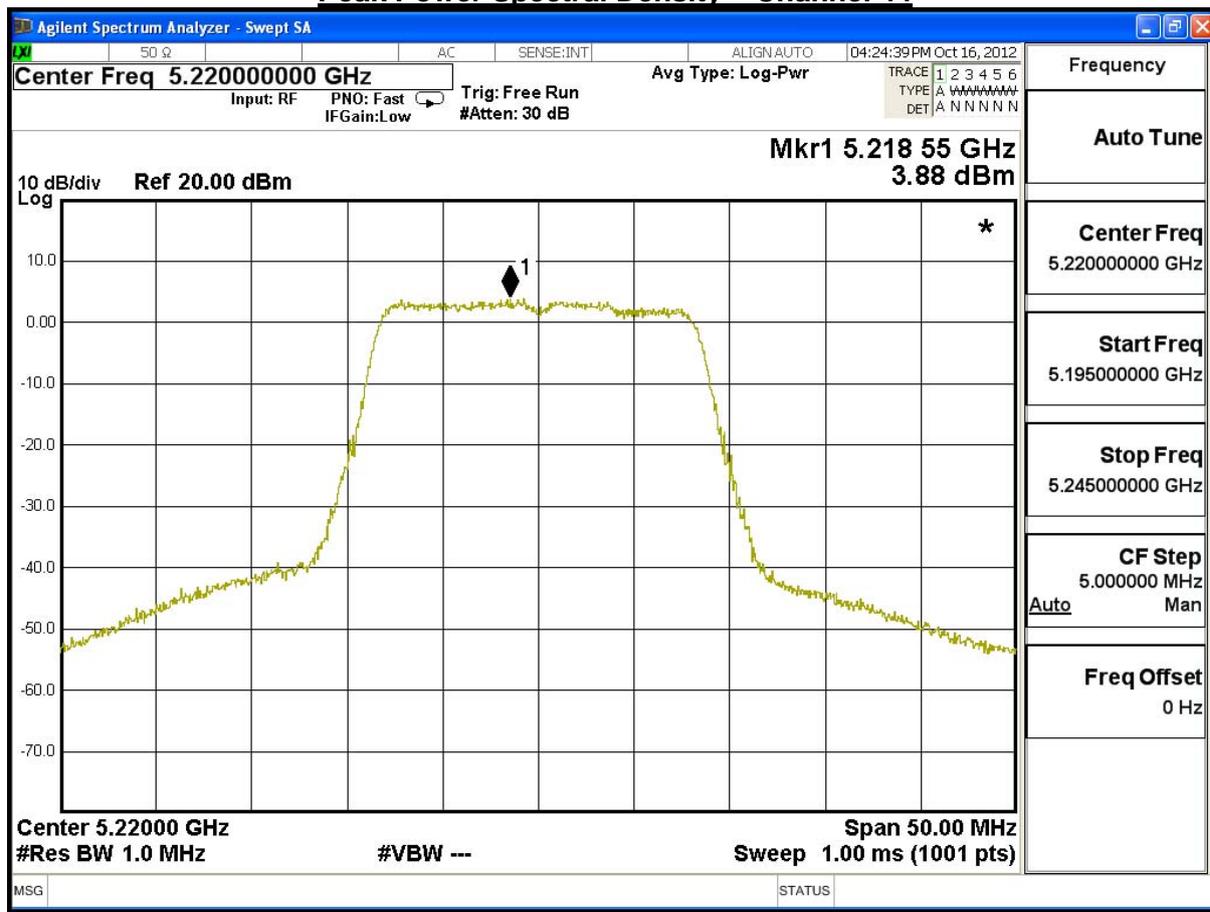
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/16	Test Site	SR7

IEEE 802.11a				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	3.80	≤ 4	Pass
44	5220	3.88	≤ 4	Pass
48	5240	3.84	≤ 4	Pass

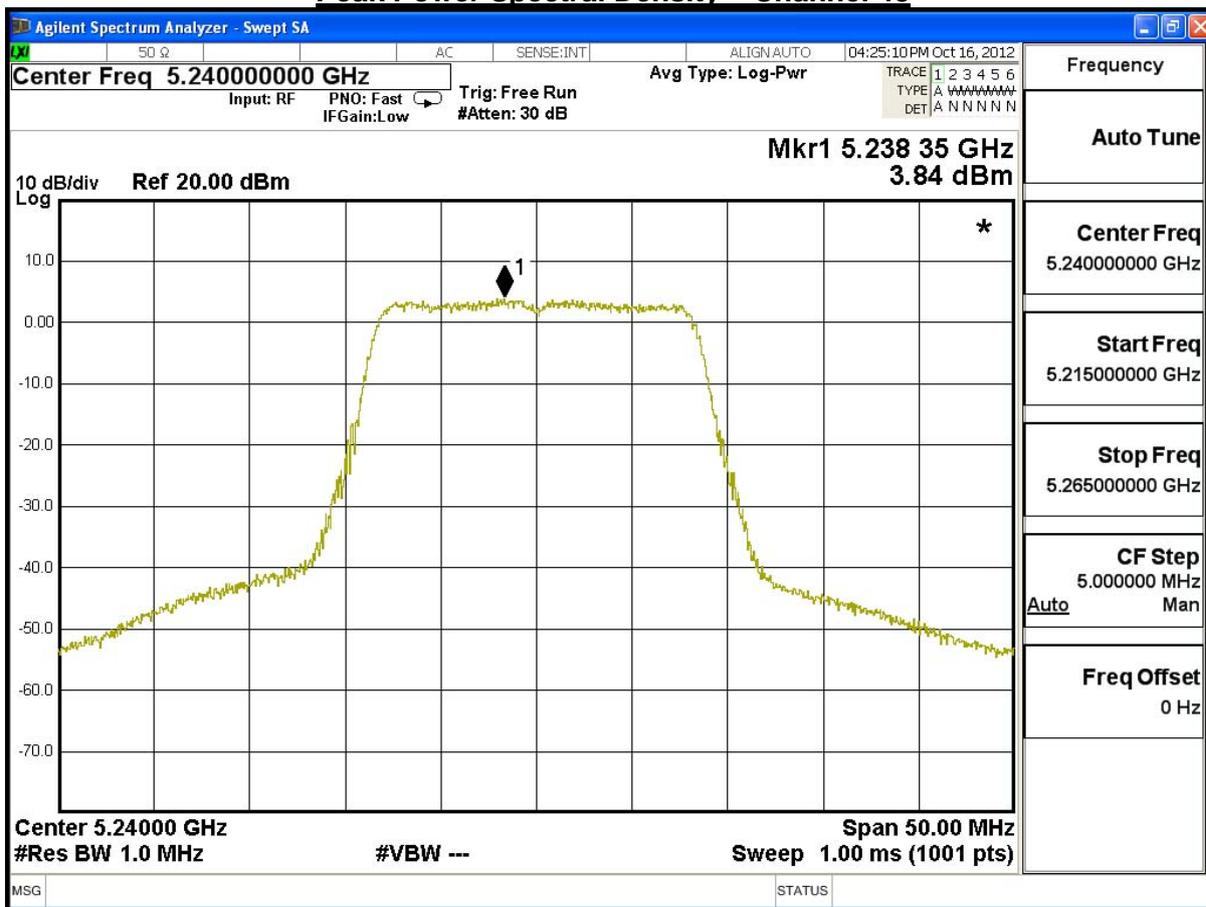
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44

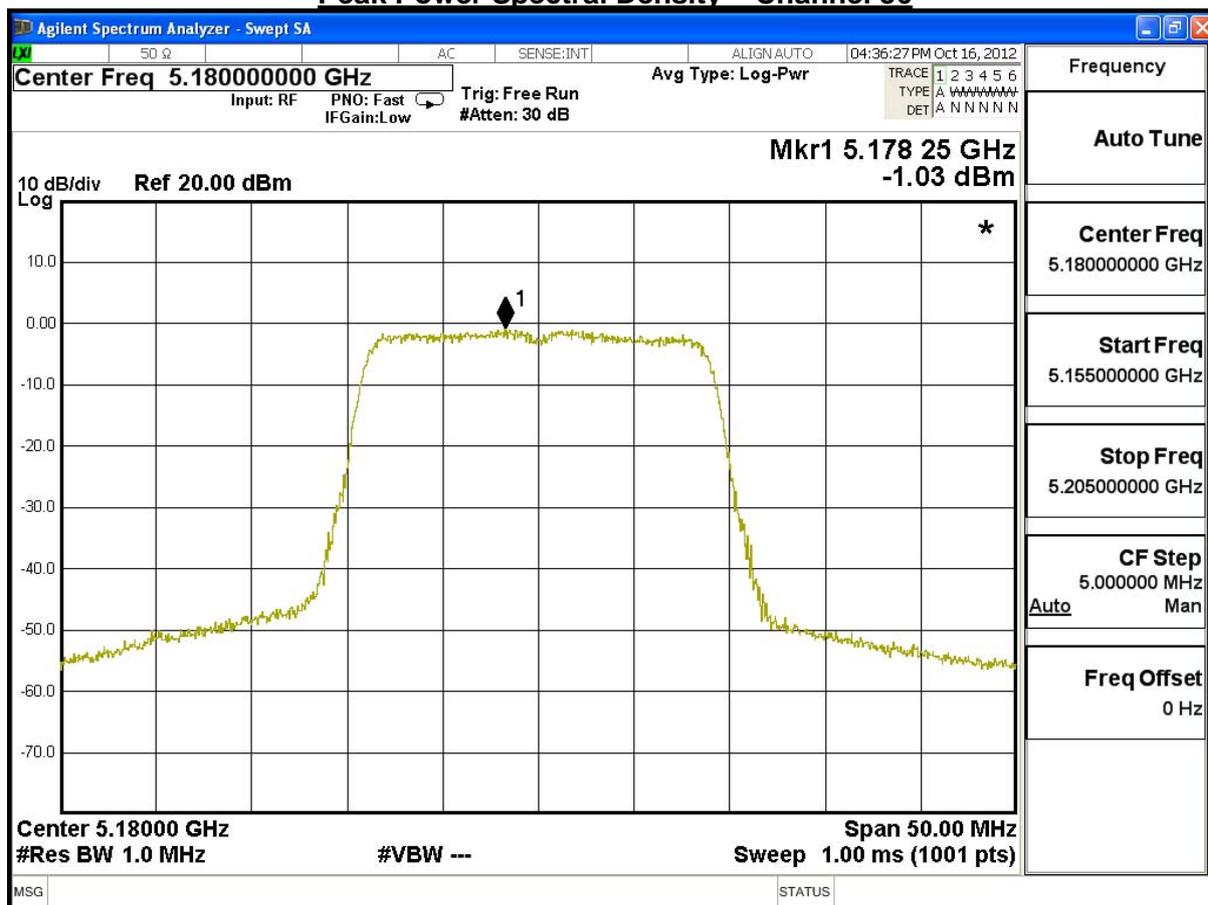


Peak Power Spectral Density – Channel 48

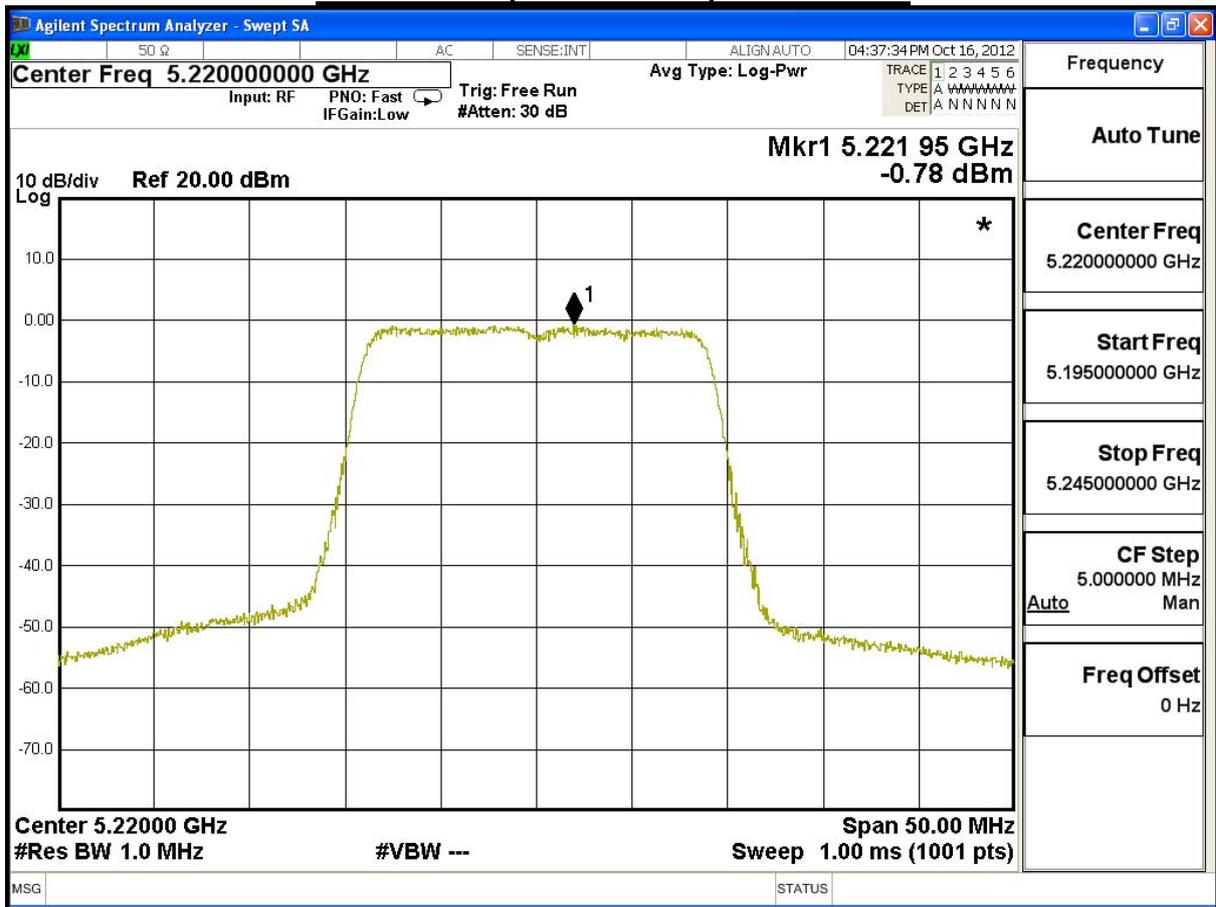


IEEE 802.11n_20M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-1.03	≤ 4	Pass
44	5220	-0.78	≤ 4	Pass
48	5240	-1.31	≤ 4	Pass

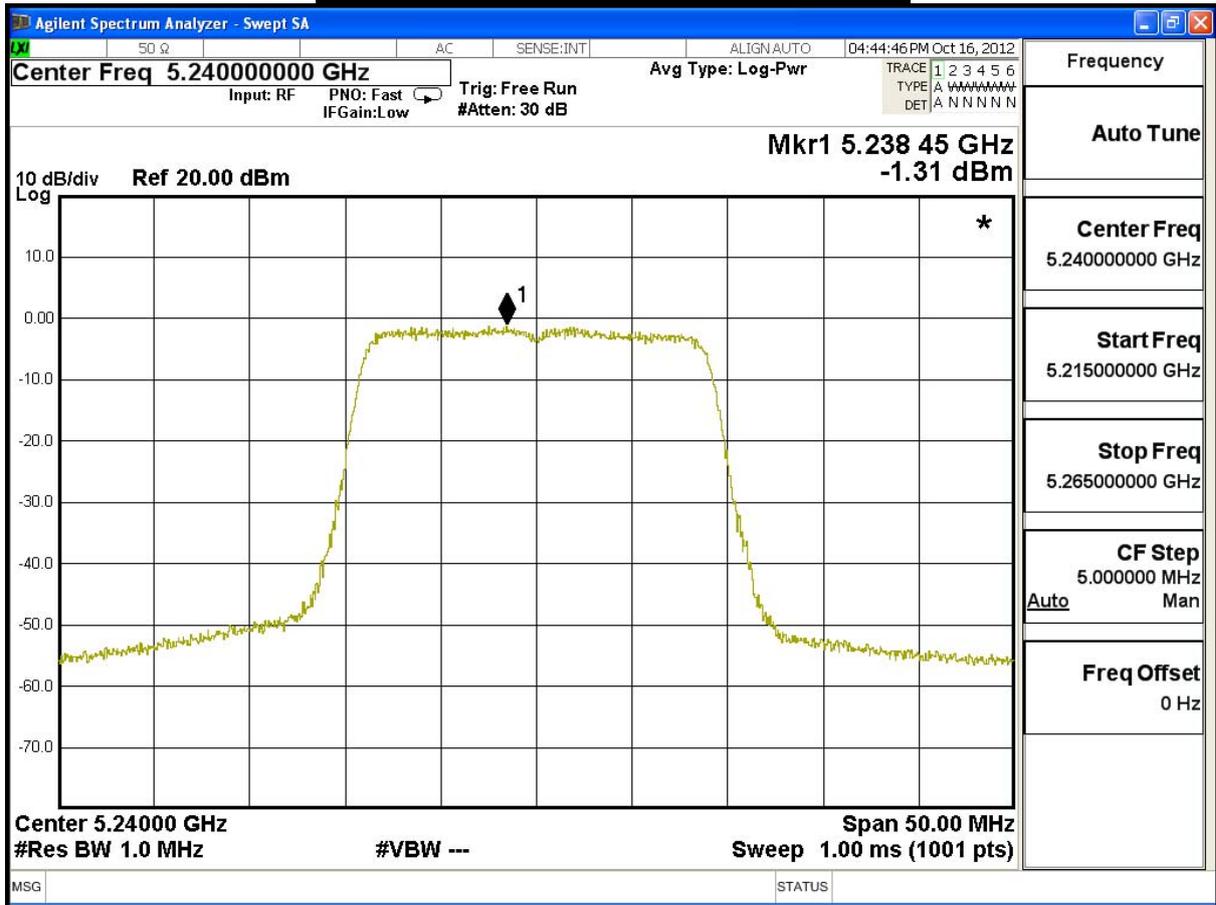
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44

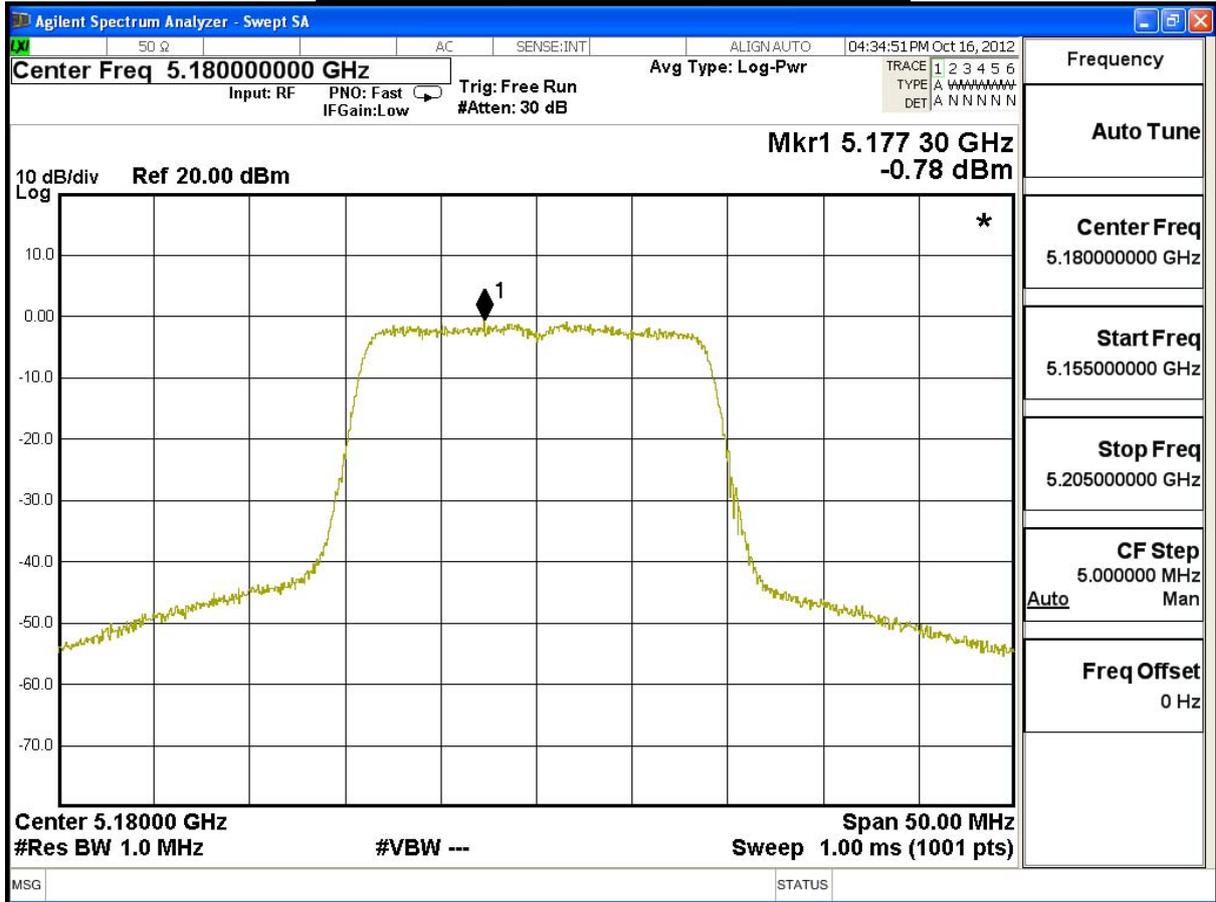


Peak Power Spectral Density – Channel 48

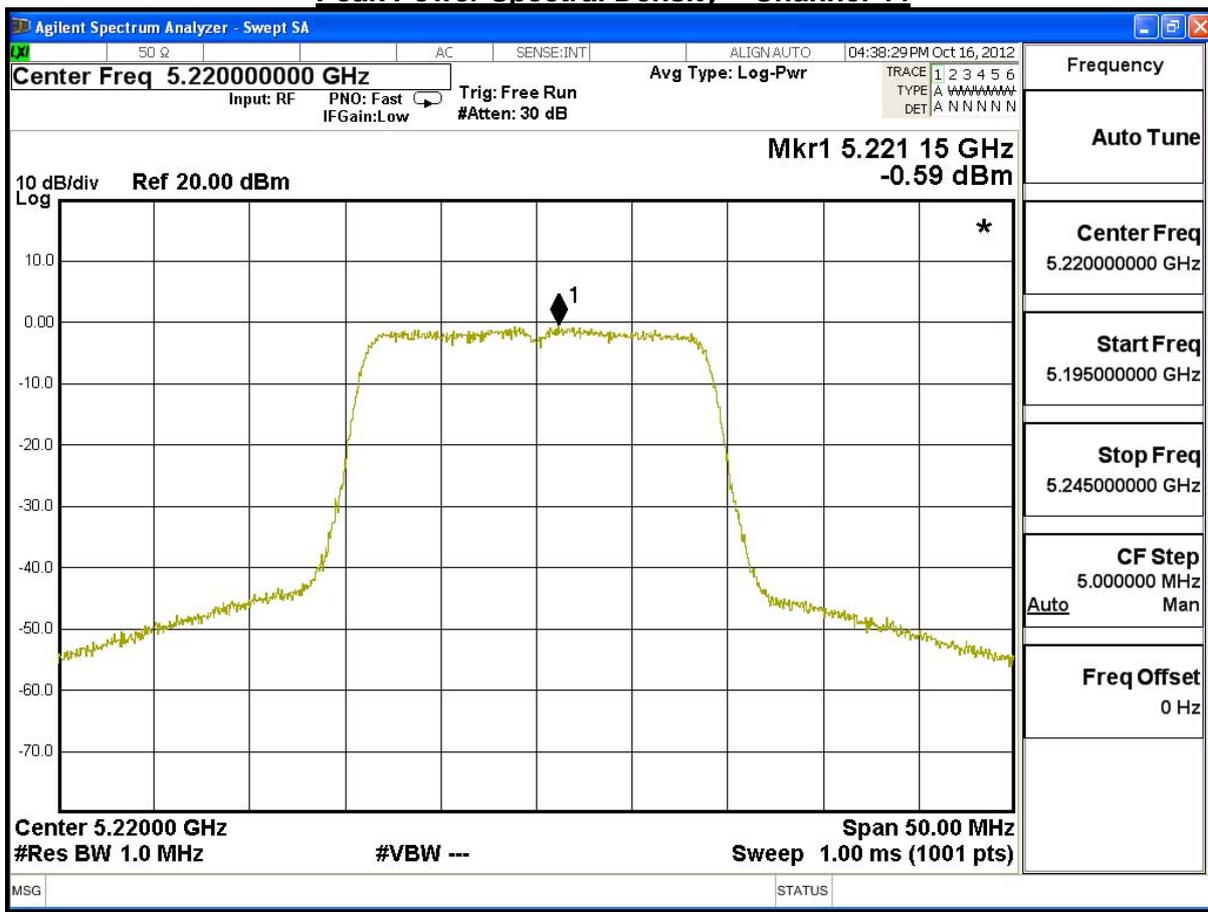


IEEE 802.11n_20M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-0.78	≤ 4	Pass
44	5220	-0.59	≤ 4	Pass
48	5240	-0.88	≤ 4	Pass

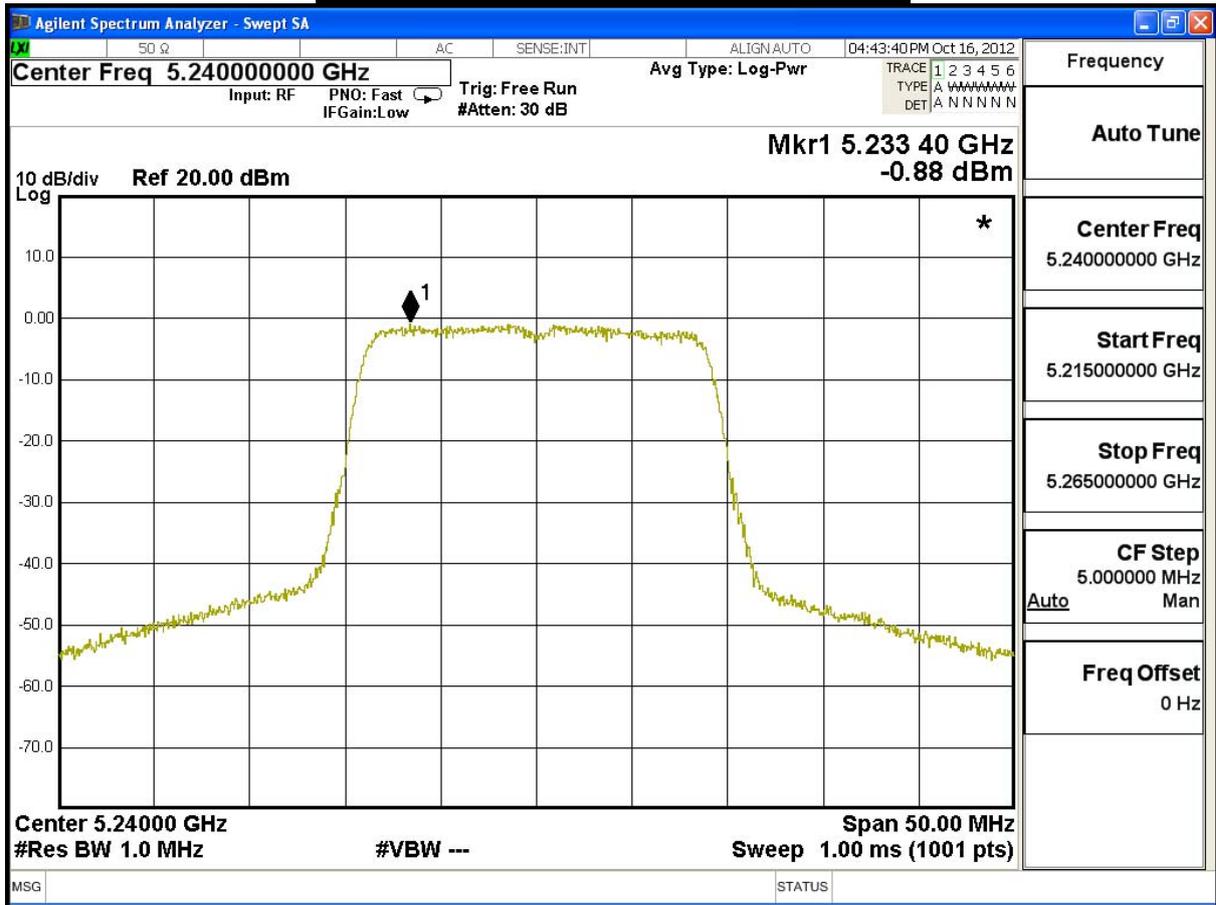
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44

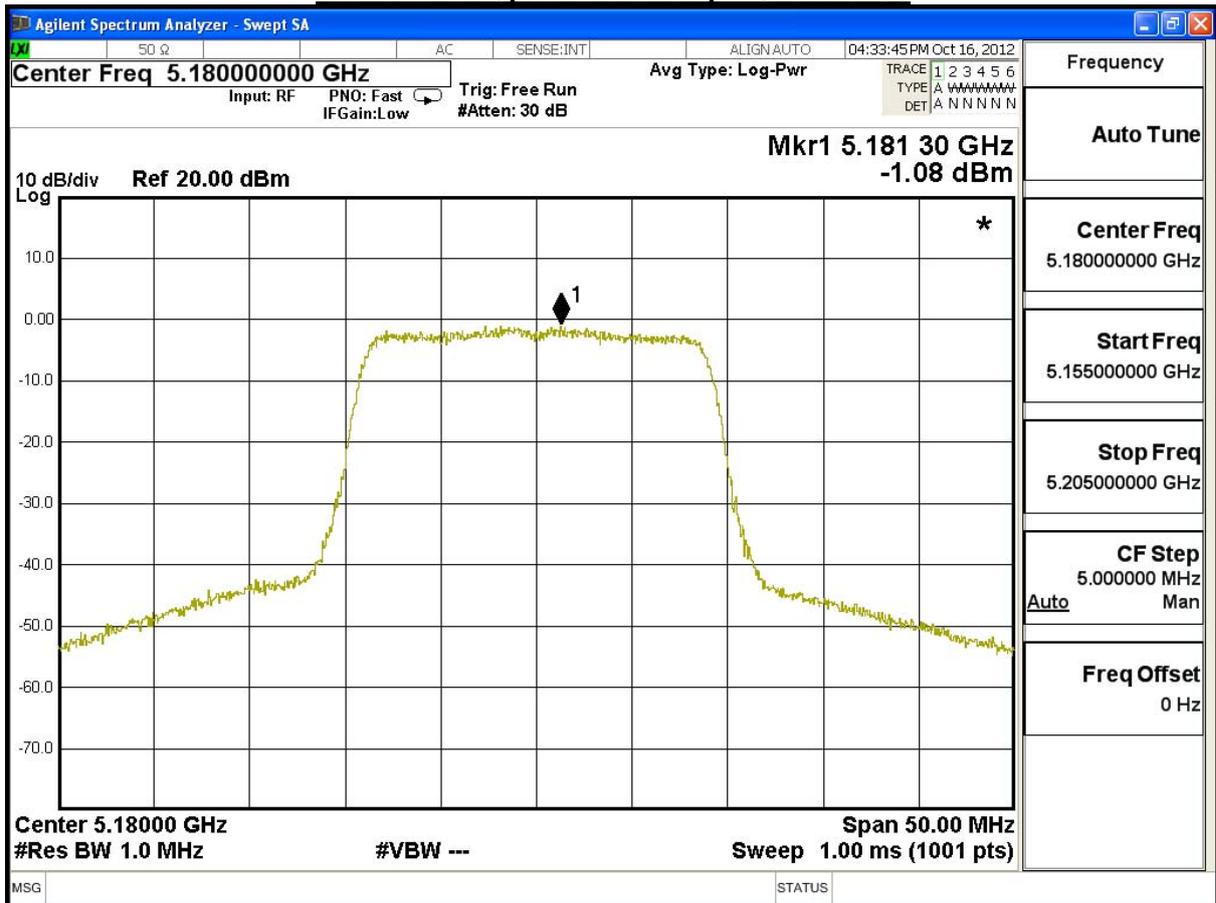


Peak Power Spectral Density – Channel 48

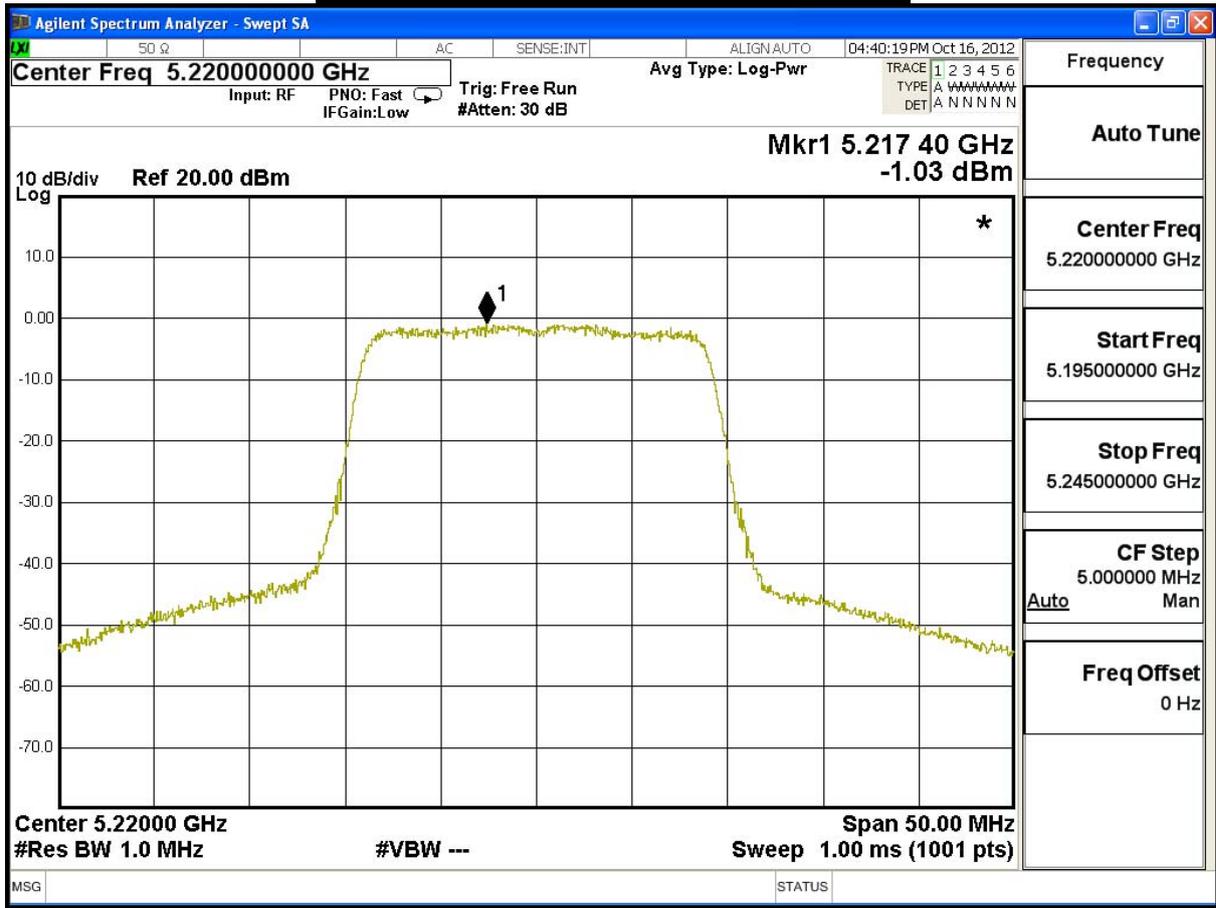


IEEE 802.11n_20M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-1.08	≤ 4	Pass
44	5220	-1.03	≤ 4	Pass
48	5240	-0.76	≤ 4	Pass

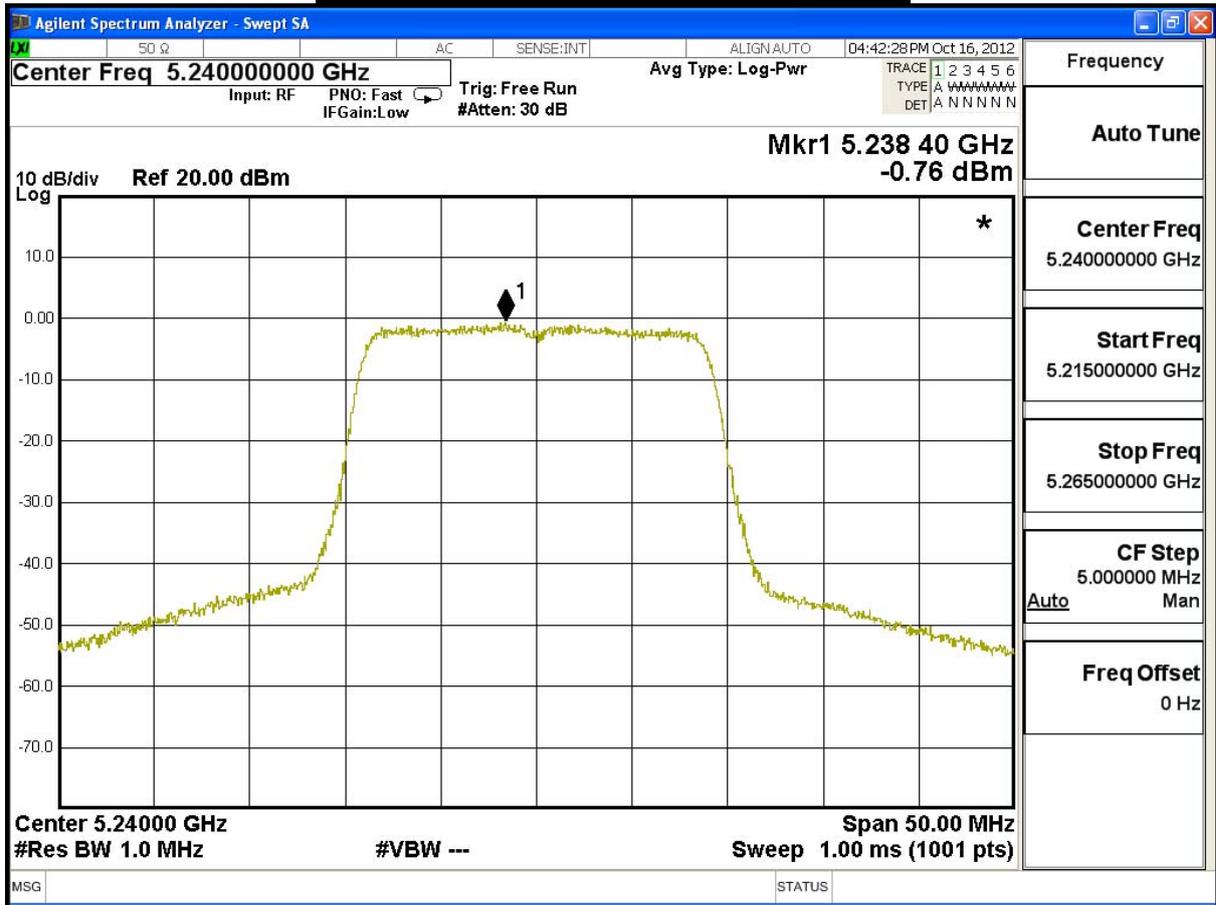
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



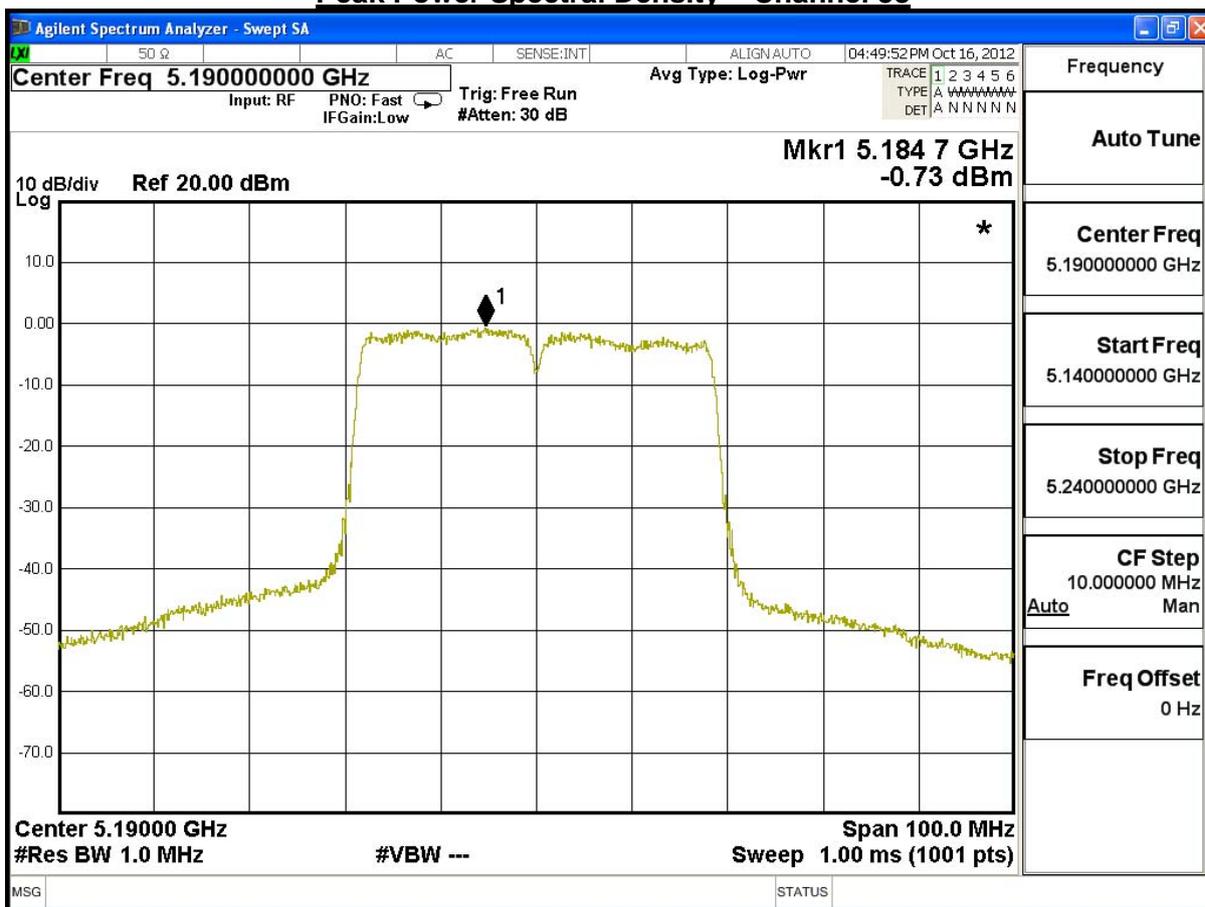
Peak Power Spectral Density – Channel 48



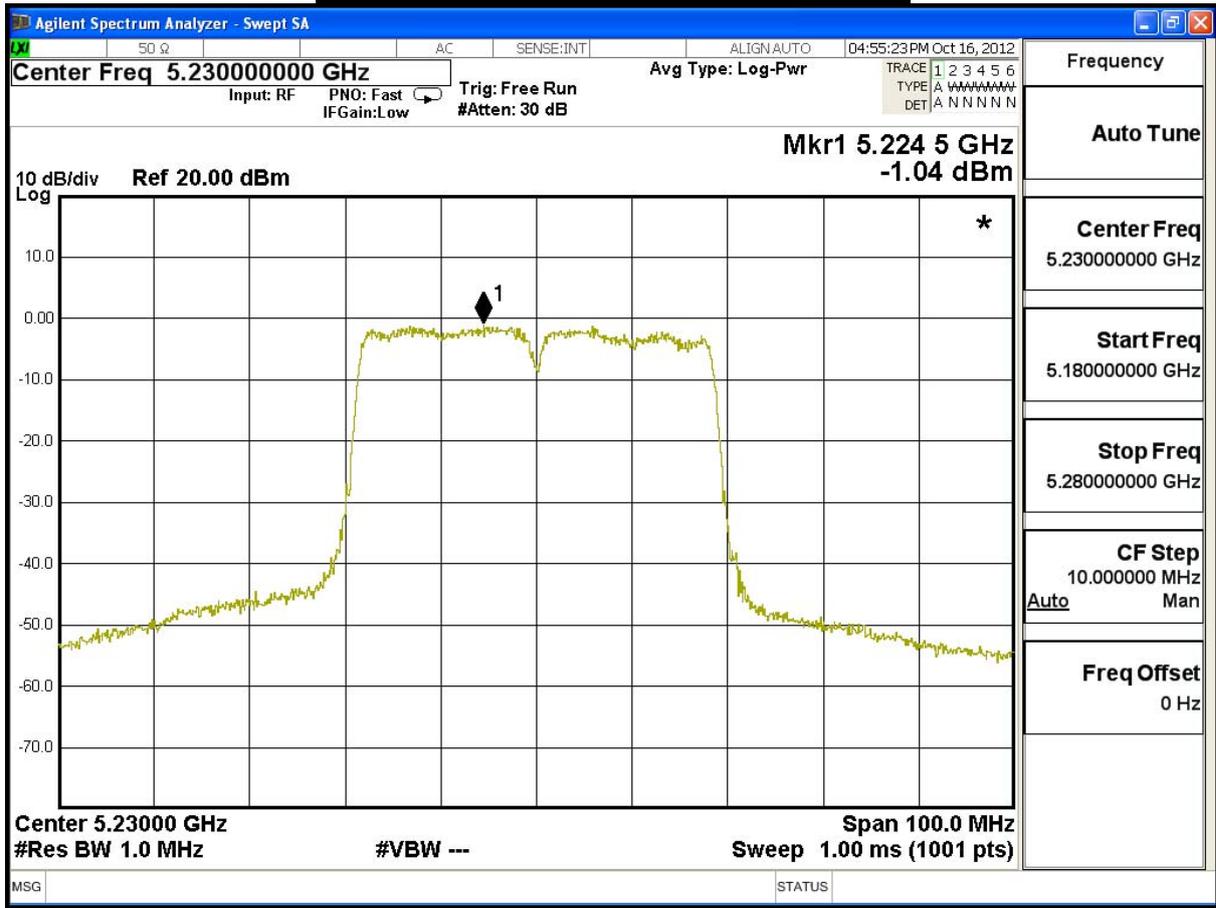
IEEE 802.11n_20M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	3.81	≤ 4	Pass
44	5220	3.97	≤ 4	Pass
48	5240	3.79	≤ 4	Pass

IEEE 802.11n_40M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-0.73	≤ 4	Pass
46	5230	-1.04	≤ 4	Pass

Peak Power Spectral Density – Channel 38

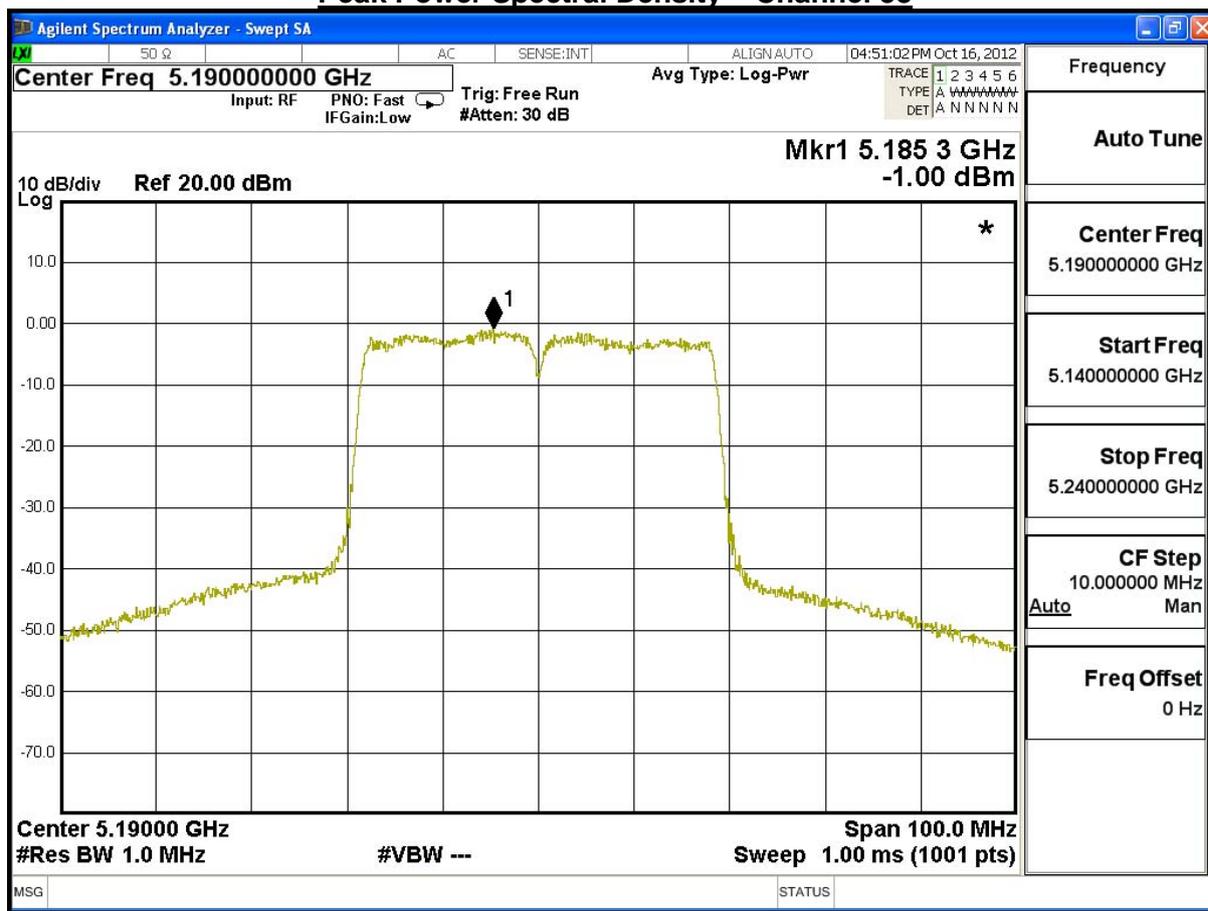


Peak Power Spectral Density – Channel 46

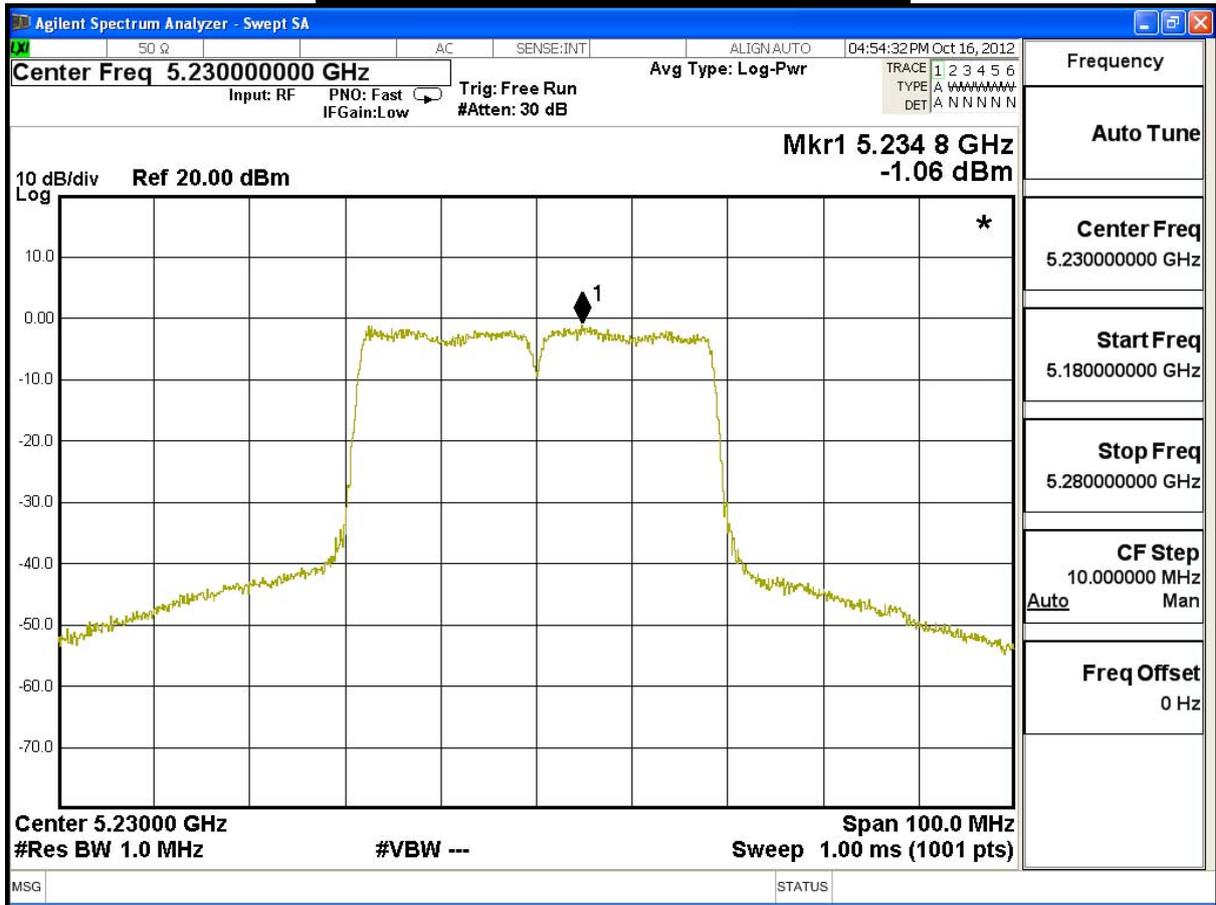


IEEE 802.11n_40M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-1.00	≤ 4	Pass
46	5230	-1.06	≤ 4	Pass

Peak Power Spectral Density – Channel 38

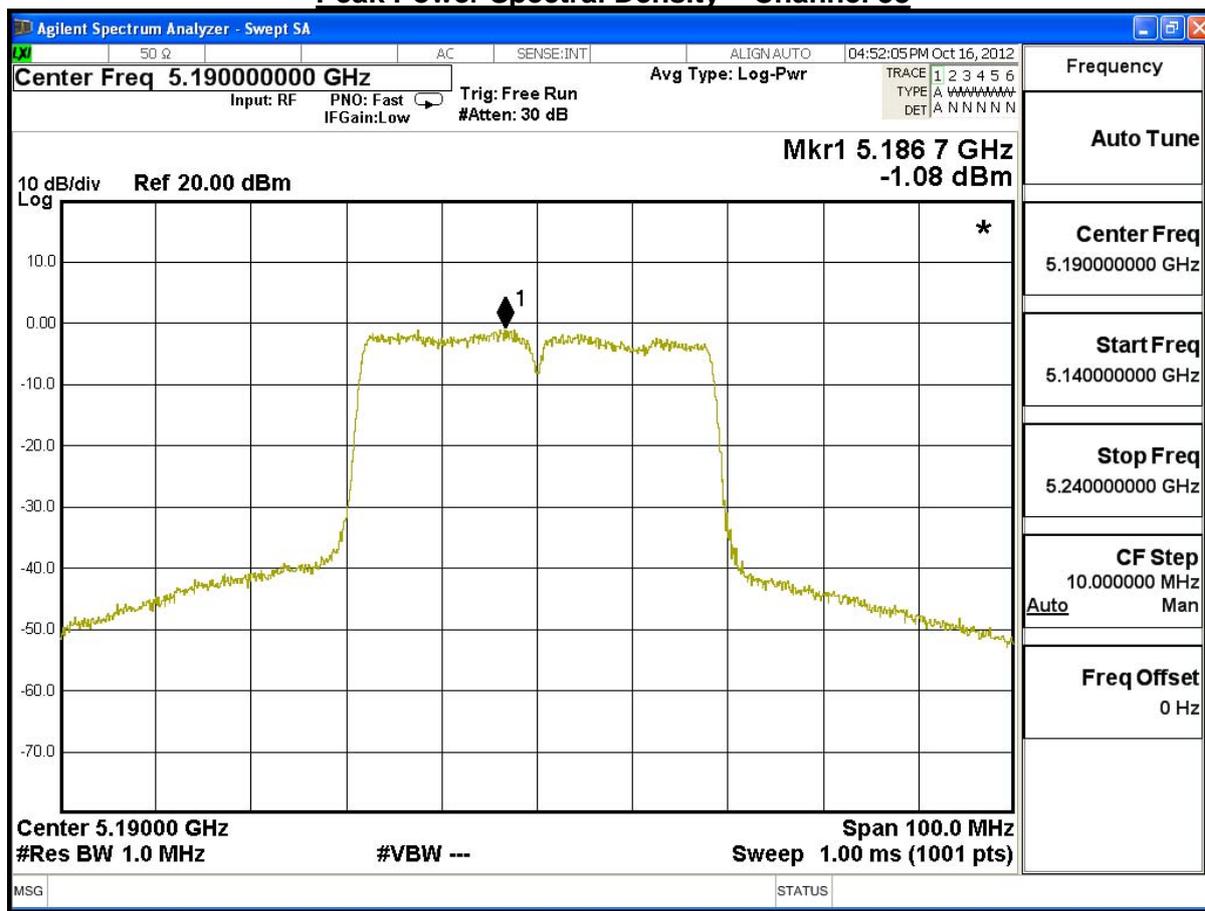


Peak Power Spectral Density – Channel 46

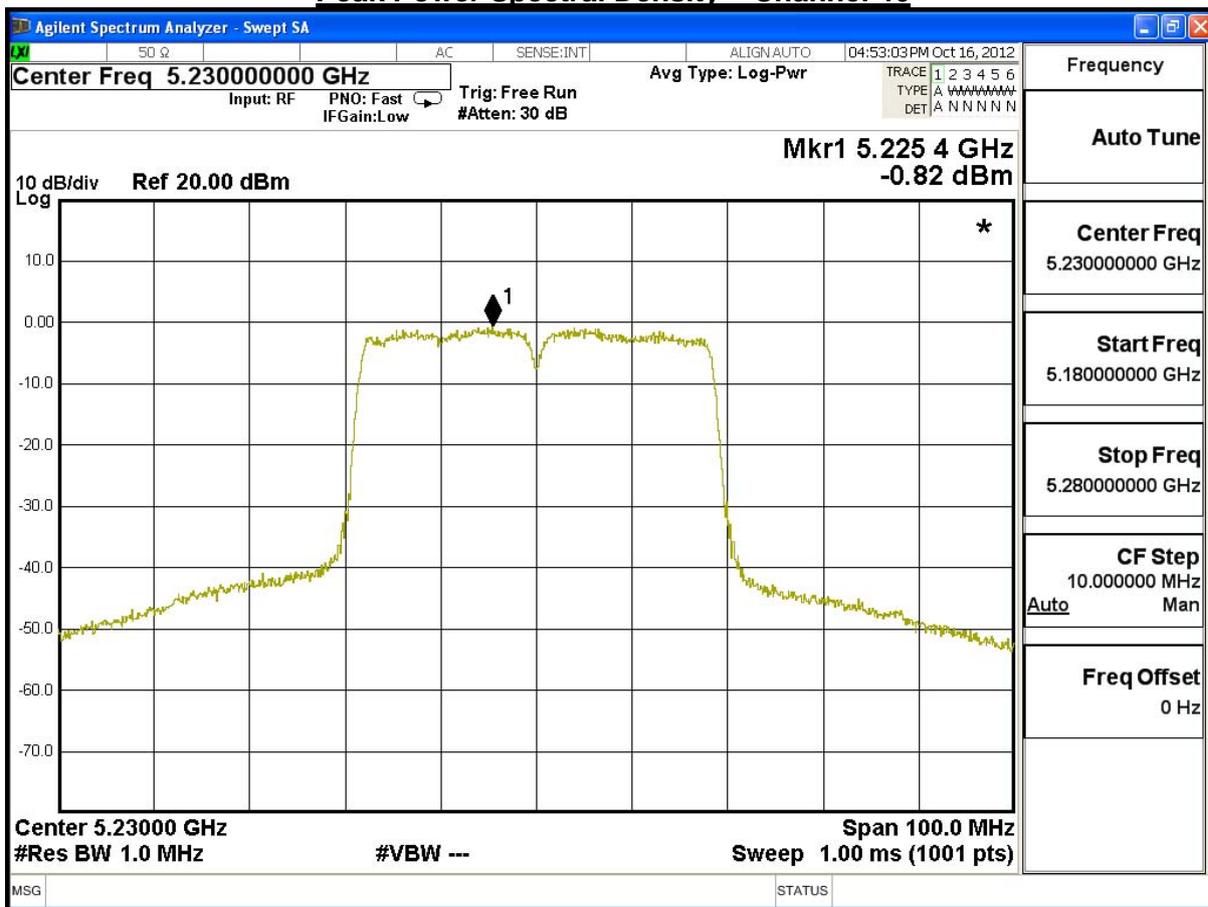


IEEE 802.11n_40M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-1.08	≤ 4	Pass
46	5230	-0.82	≤ 4	Pass

Peak Power Spectral Density – Channel 38



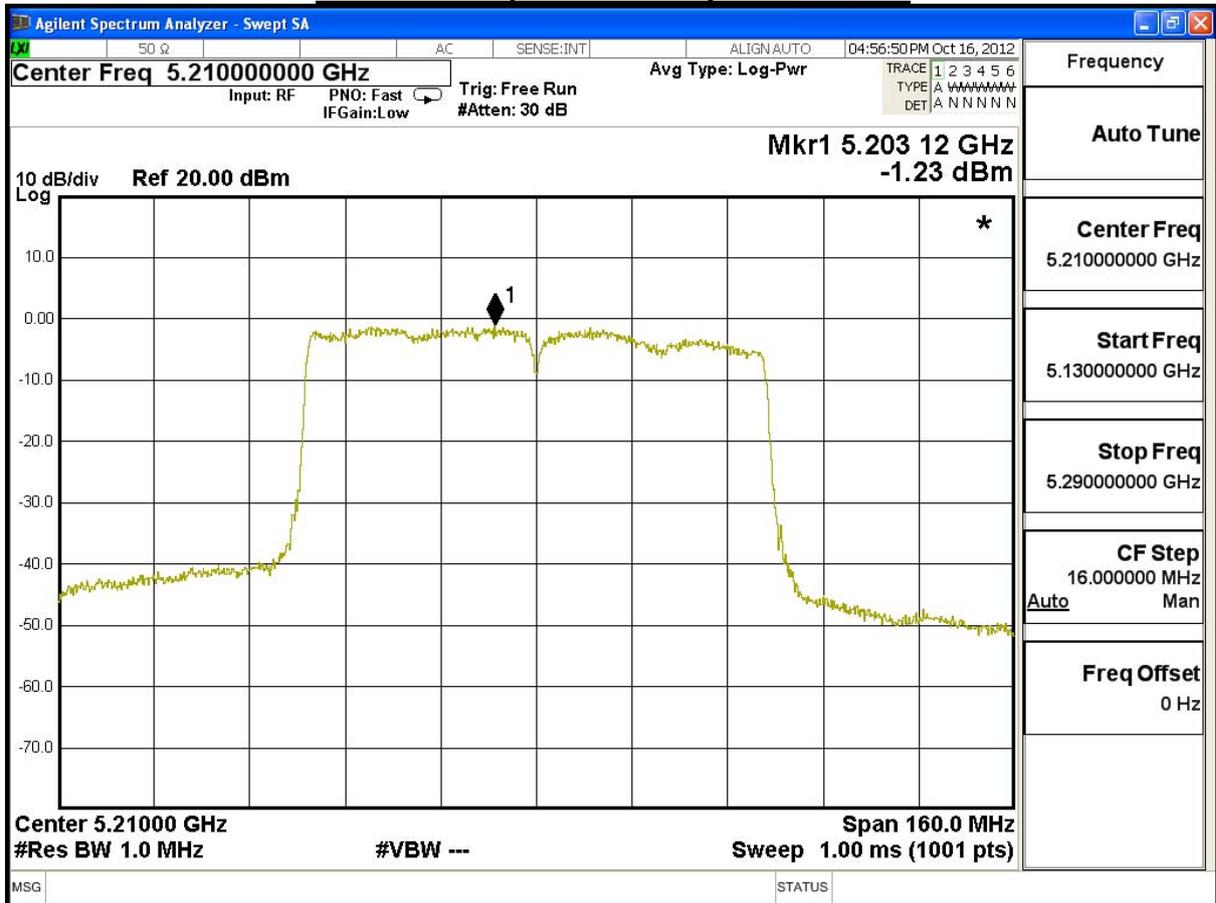
Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	3.84	≤ 4	Pass
46	5230	3.80	≤ 4	Pass

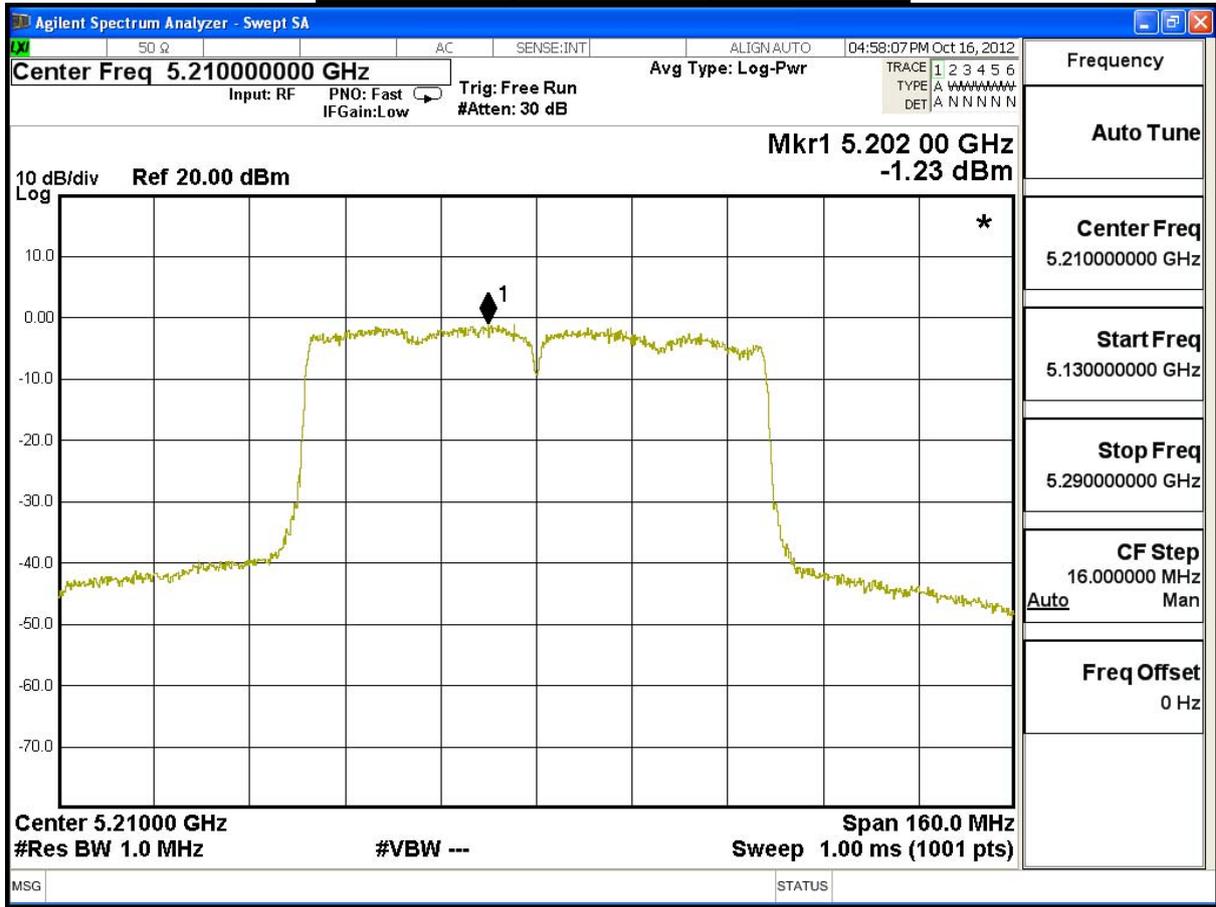
IEEE 802.11ac_80M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-1.23	≤ 4	Pass

Peak Power Spectral Density – Channel 42



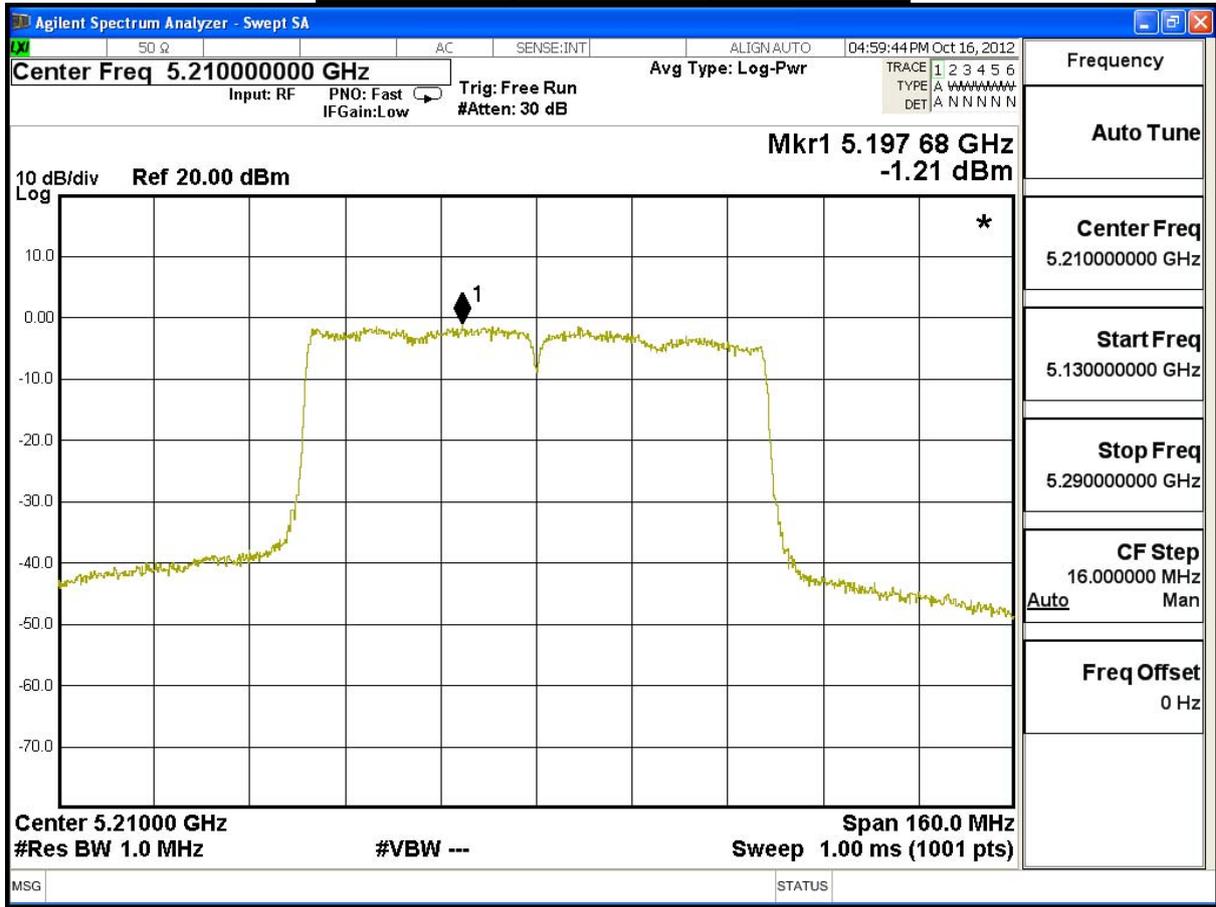
IEEE 802.11ac_80M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-1.23	≤ 4	Pass

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-1.21	≤ 4	Pass

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	3.55	≤ 4	Pass

6. Peak Excursion

6.1. Test Equipment

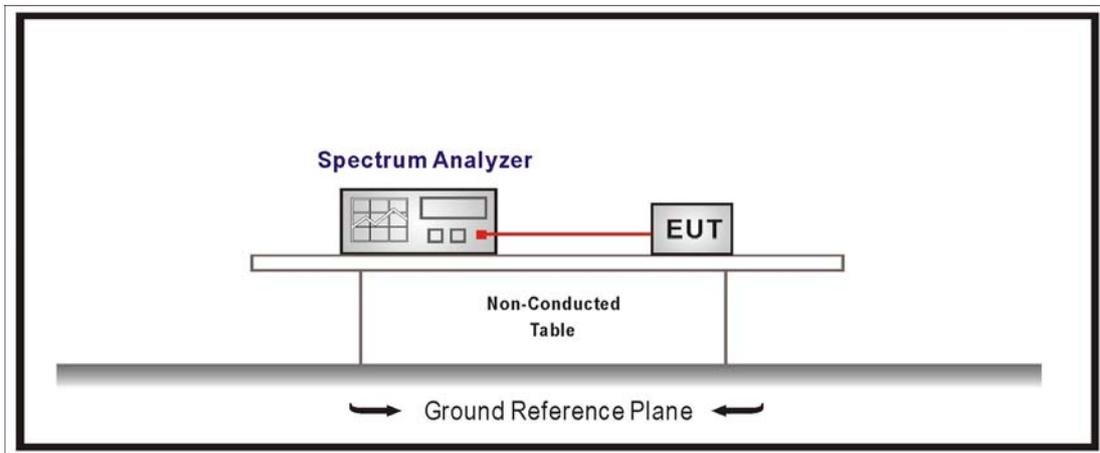
The following test equipments are used during the radiated emission tests:

Peak Excursion / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup



6.3. Limits

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

6.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

1st Trace:

Set RBW = 1MHz, VBW = 3MHz with peak detector and max-hold settings.

2nd Trace:

Set RBW = 1MHz, VBW = 3MHz with RMS detector and trace average 100 traces in power averaging mode.

6.5. Uncertainty

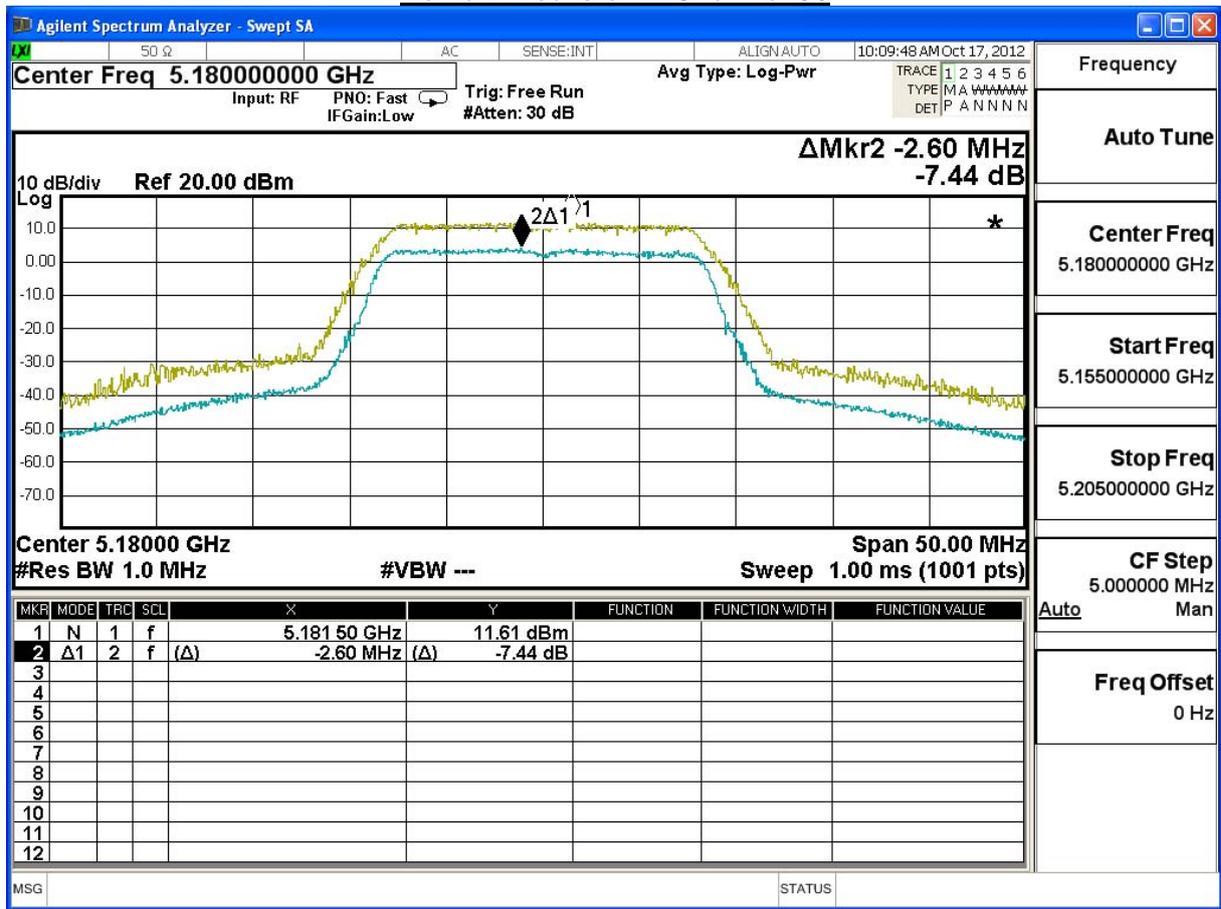
The measurement uncertainty is defined as ± 1.27 dB

6.6. Test Result

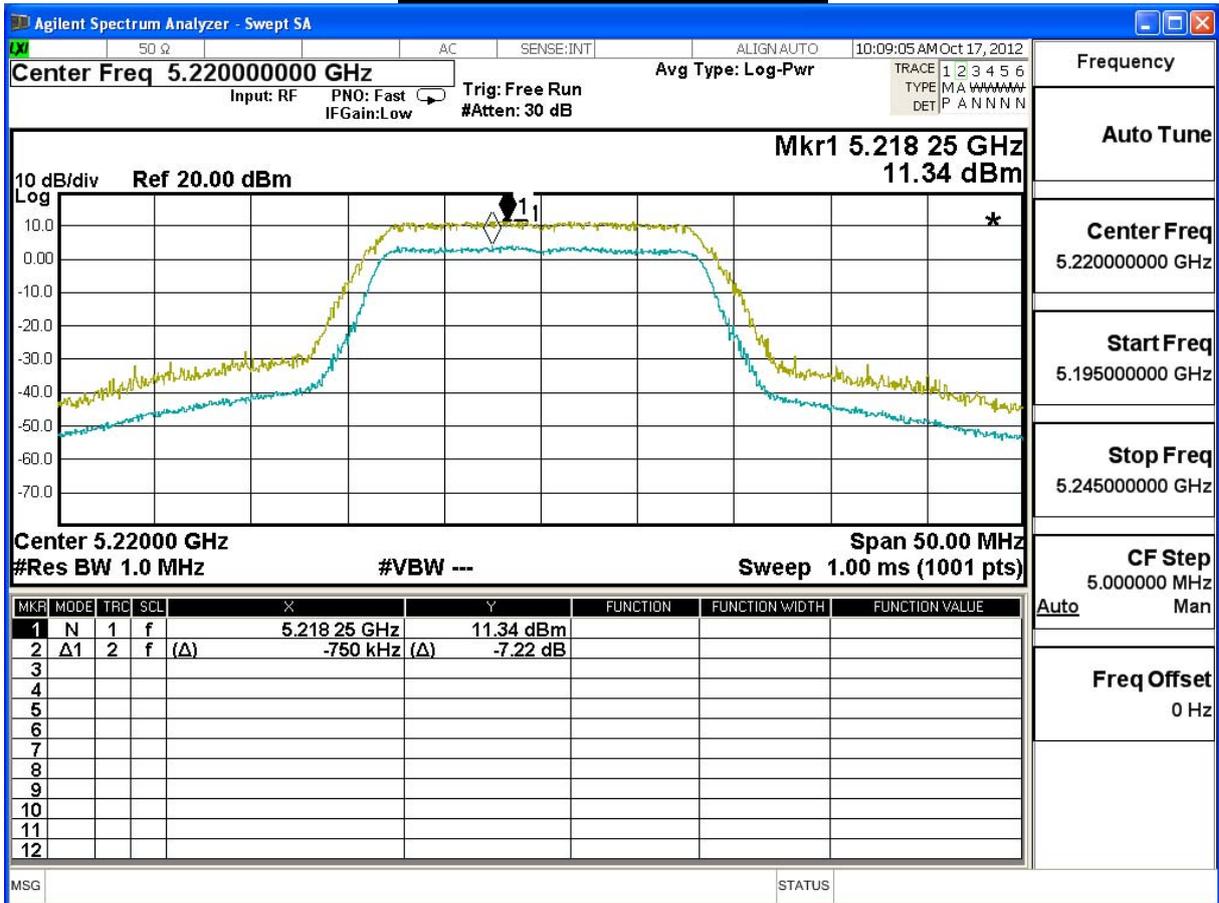
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11a				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	7.44	≤ 13	Pass
44	5220	7.22	≤ 13	Pass
48	5240	7.43	≤ 13	Pass

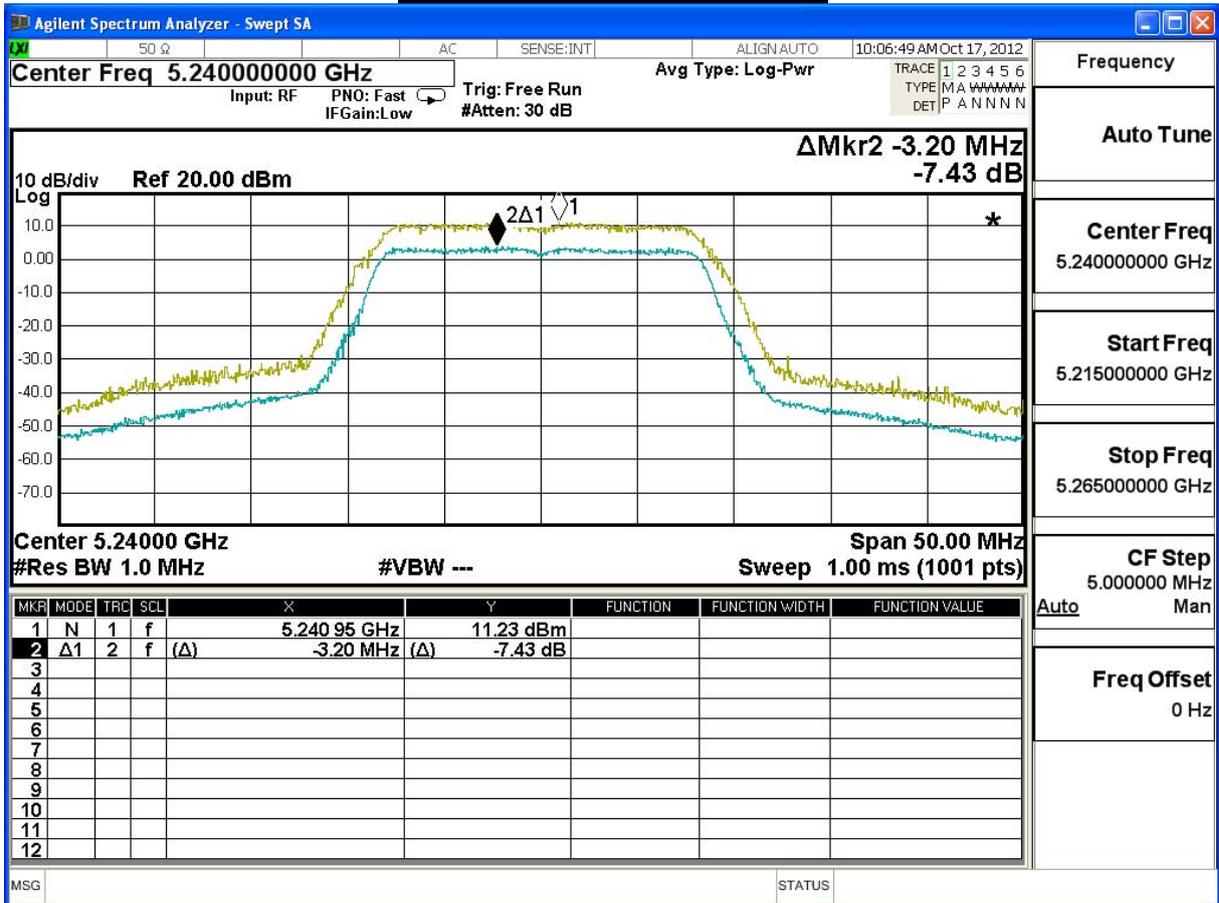
Power Excursion – Channel 36



Power Excursion – Channel 44



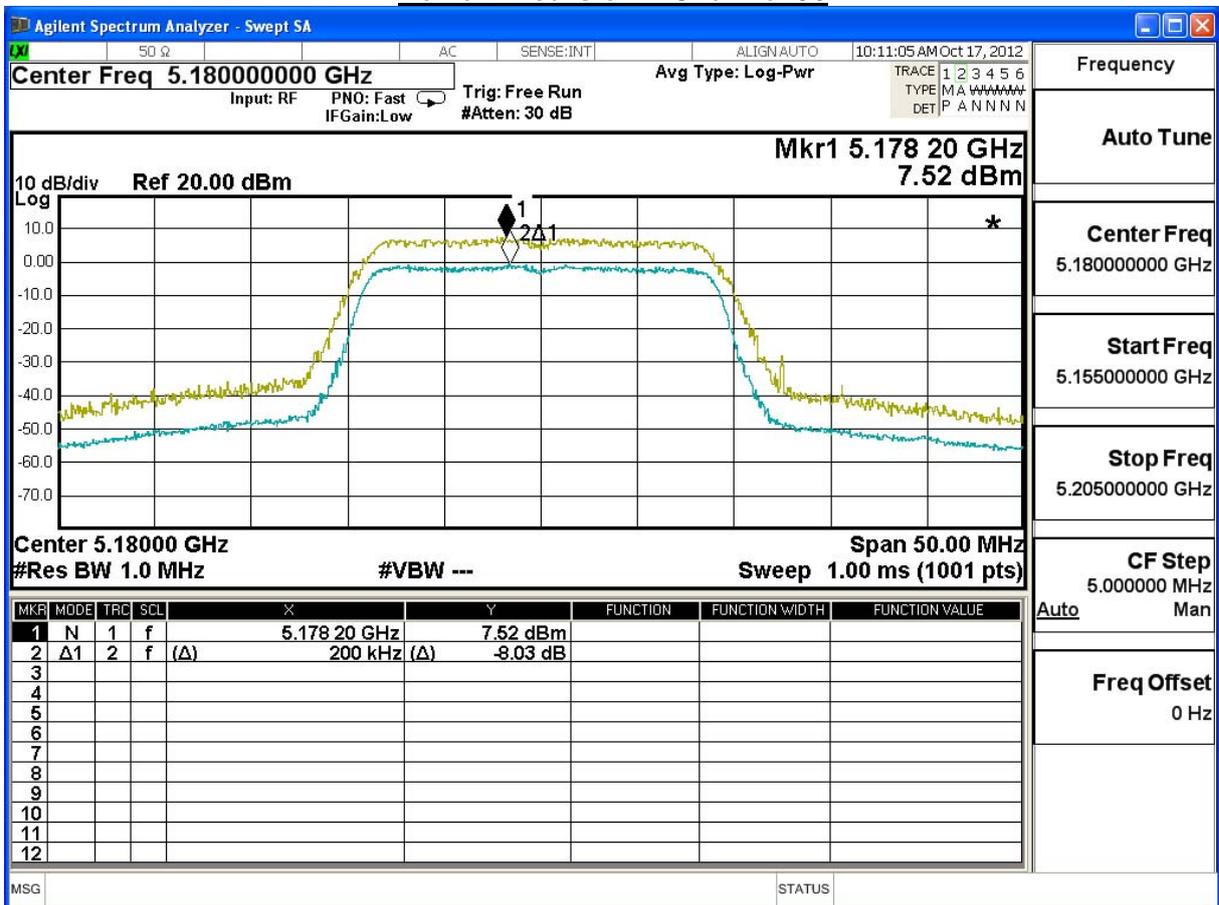
Power Excursion – Channel 48



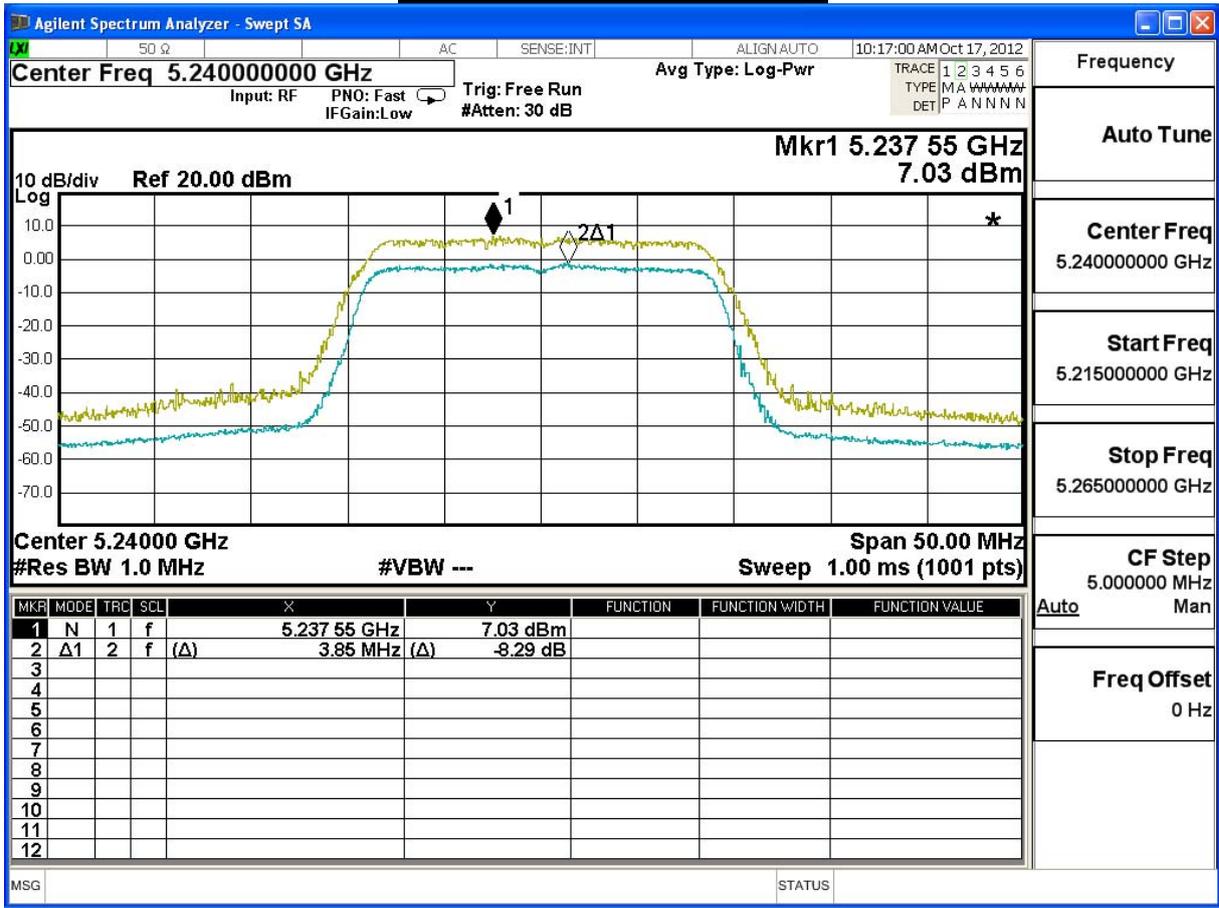
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_20M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	8.03	≤ 13	Pass
44	5220	8.35	≤ 13	Pass
48	5240	8.29	≤ 13	Pass

Power Excursion – Channel 36



Power Excursion – Channel 48

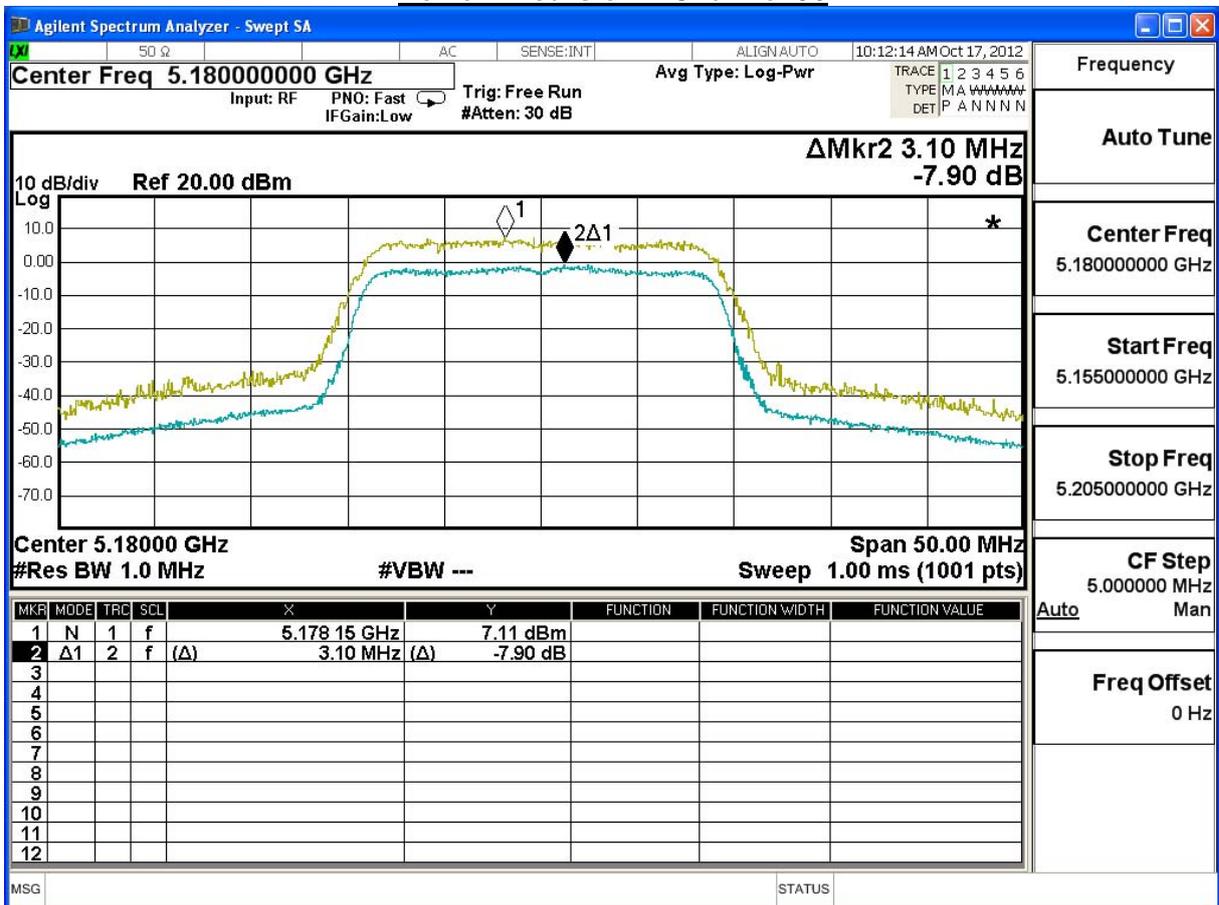


Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

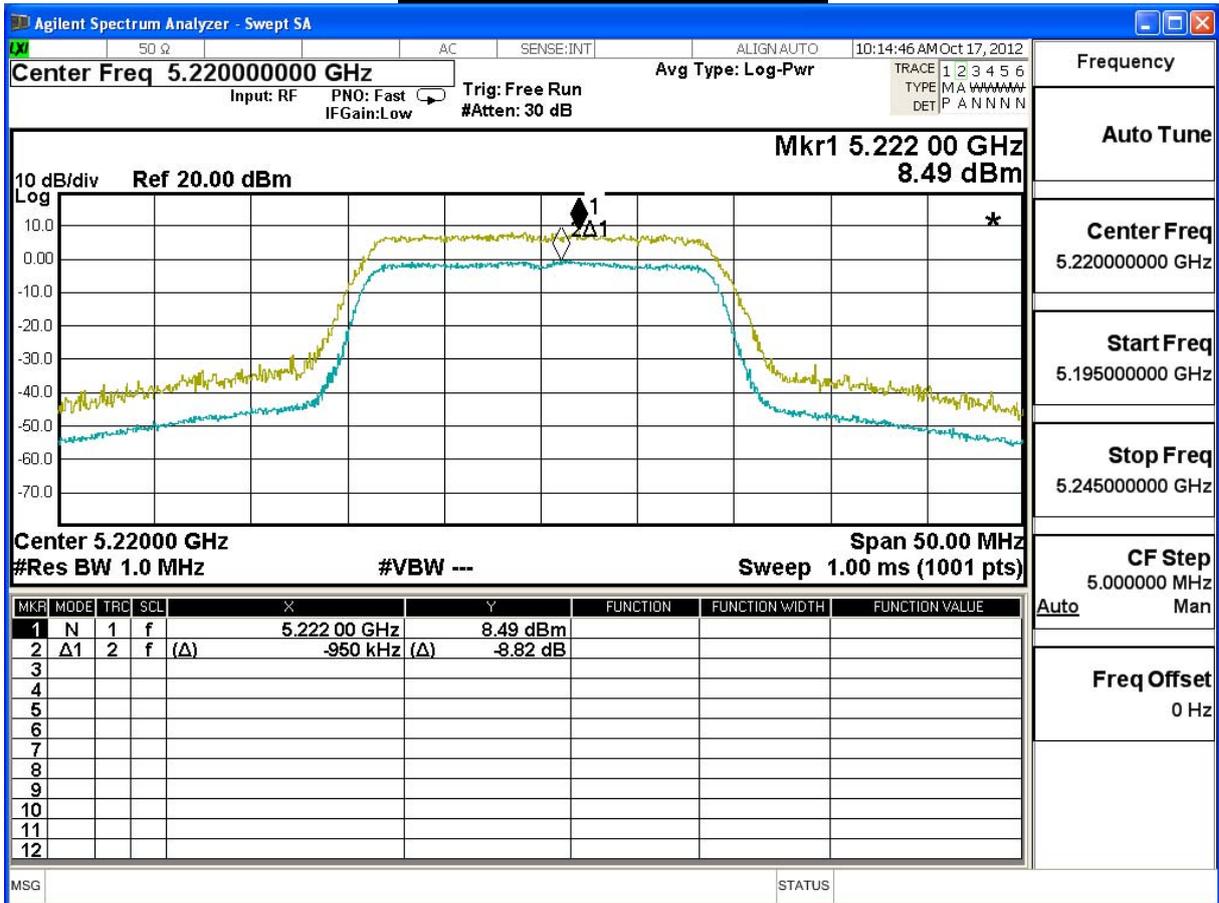
IEEE 802.11n_20M(ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	7.90	≤ 13	Pass
44	5220	8.82	≤ 13	Pass
48	5240	8.54	≤ 13	Pass

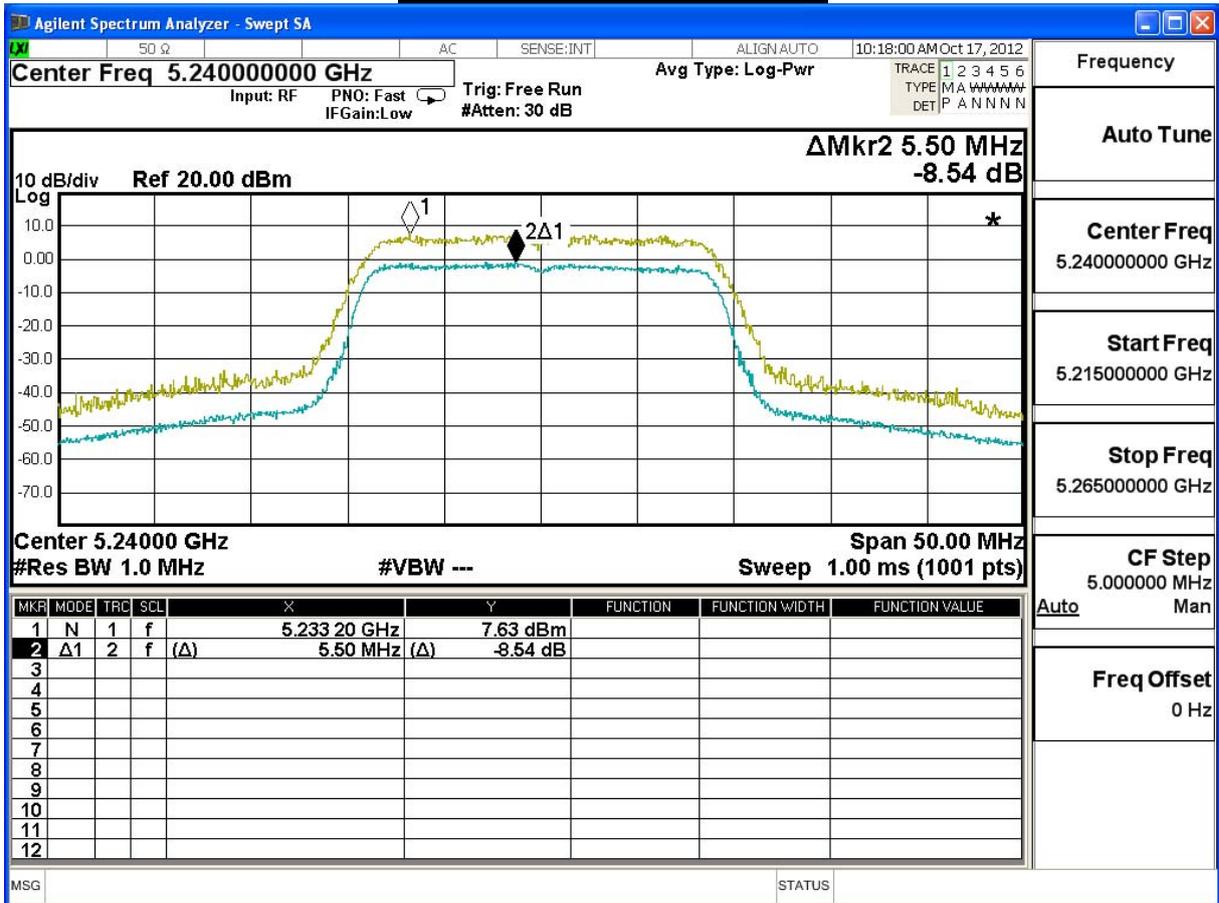
Power Excursion – Channel 36



Power Excursion – Channel 44



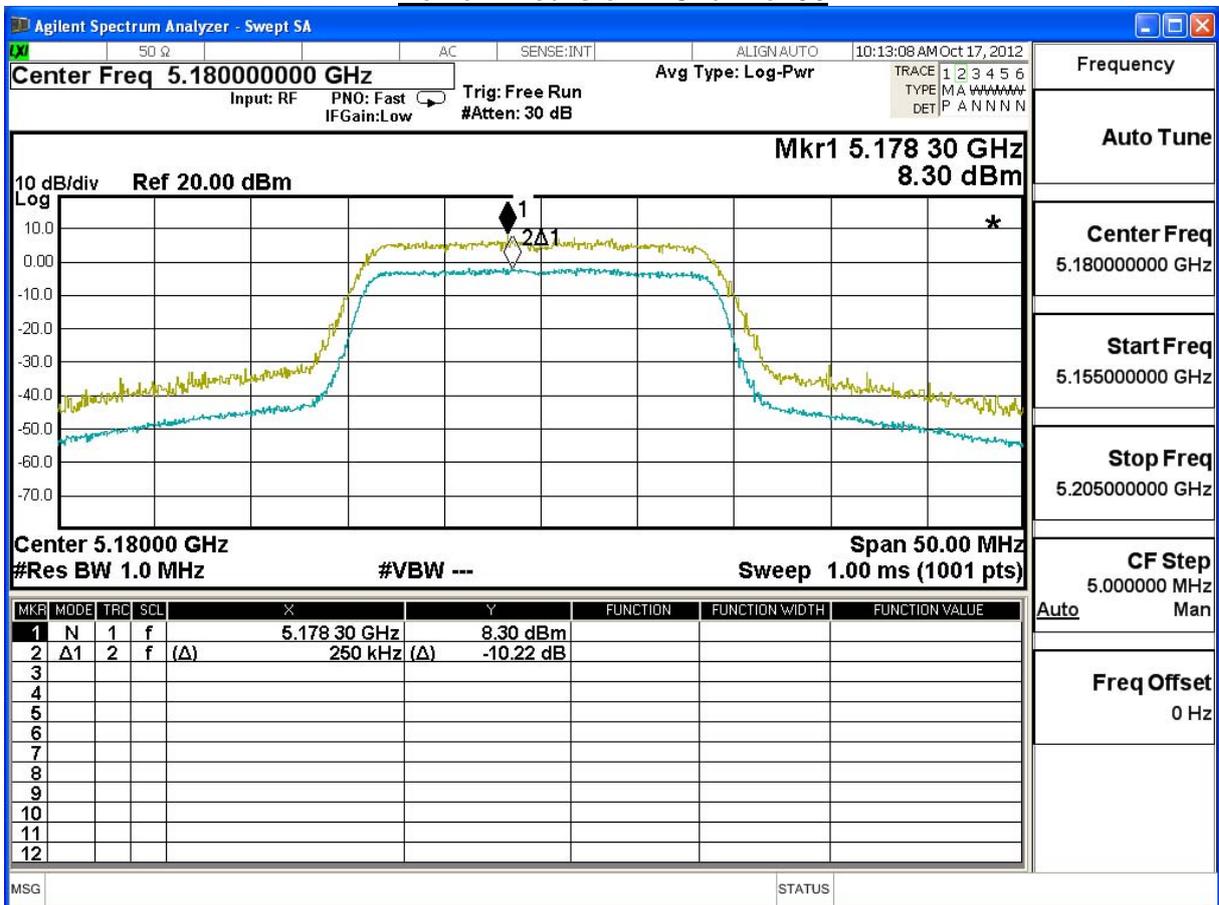
Power Excursion – Channel 48



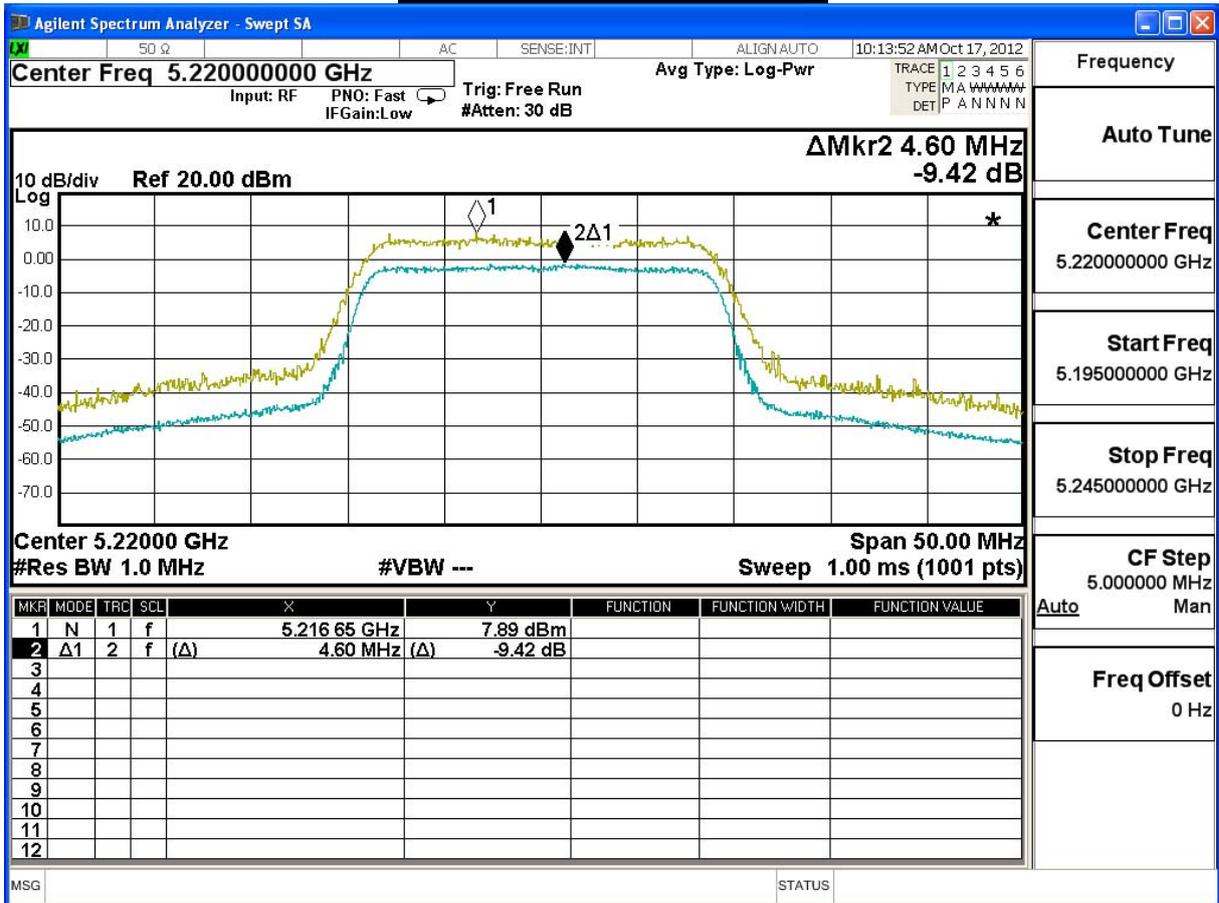
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_20M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	10.22	≤ 13	Pass
44	5220	9.42	≤ 13	Pass
48	5240	10.17	≤ 13	Pass

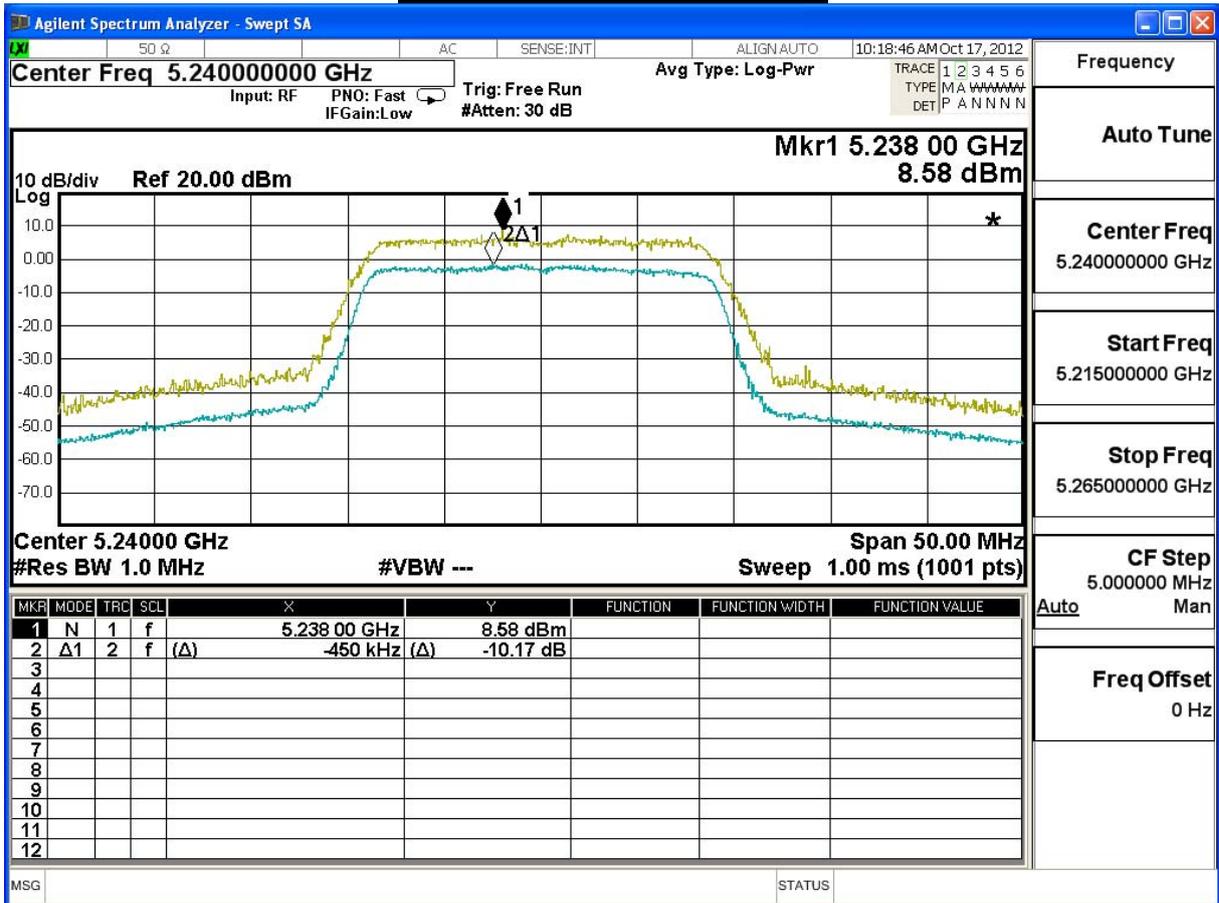
Power Excursion – Channel 36



Power Excursion – Channel 44



Power Excursion – Channel 48

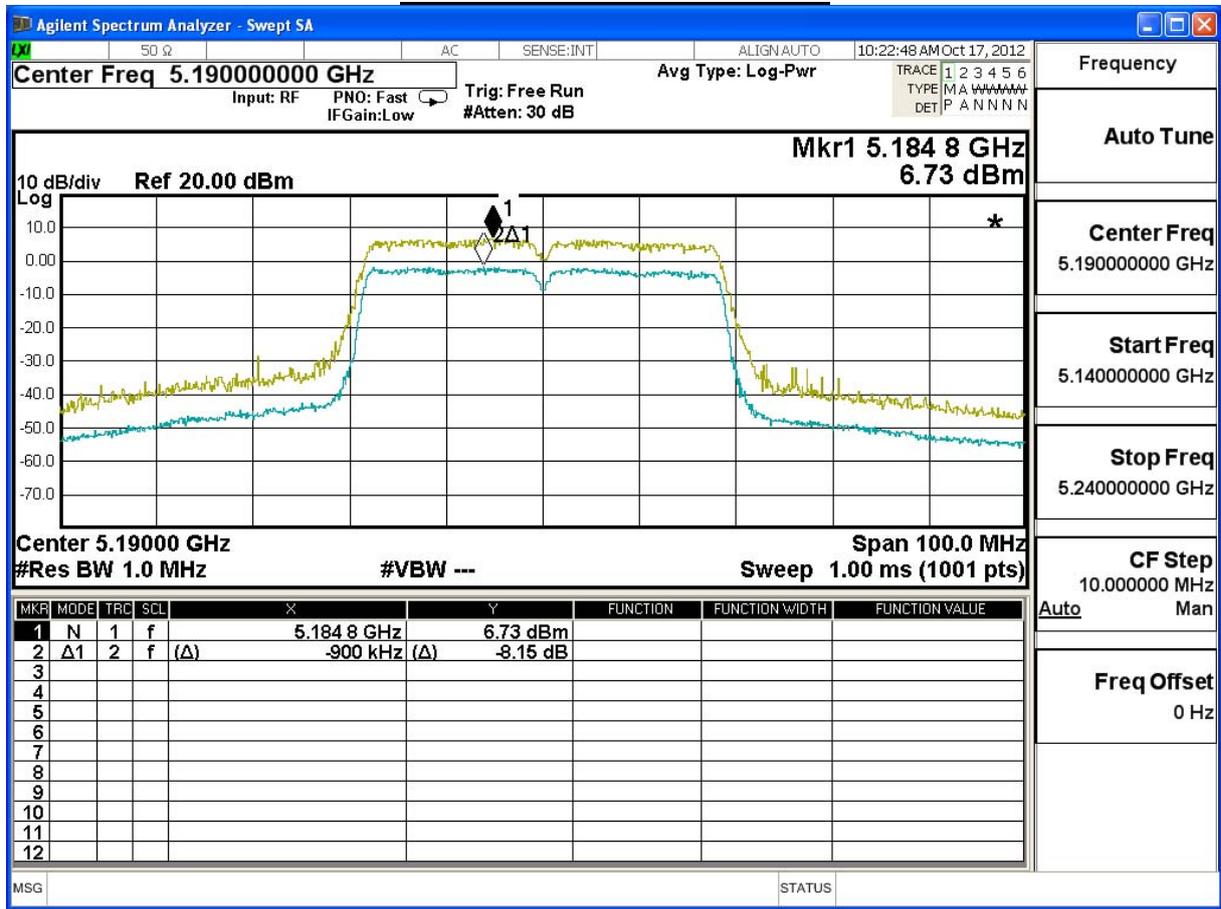


Frequency
Auto Tune
Center Freq 5.24000000 GHz
Start Freq 5.21500000 GHz
Stop Freq 5.26500000 GHz
CF Step 5.000000 MHz
Auto Man
Freq Offset 0 Hz

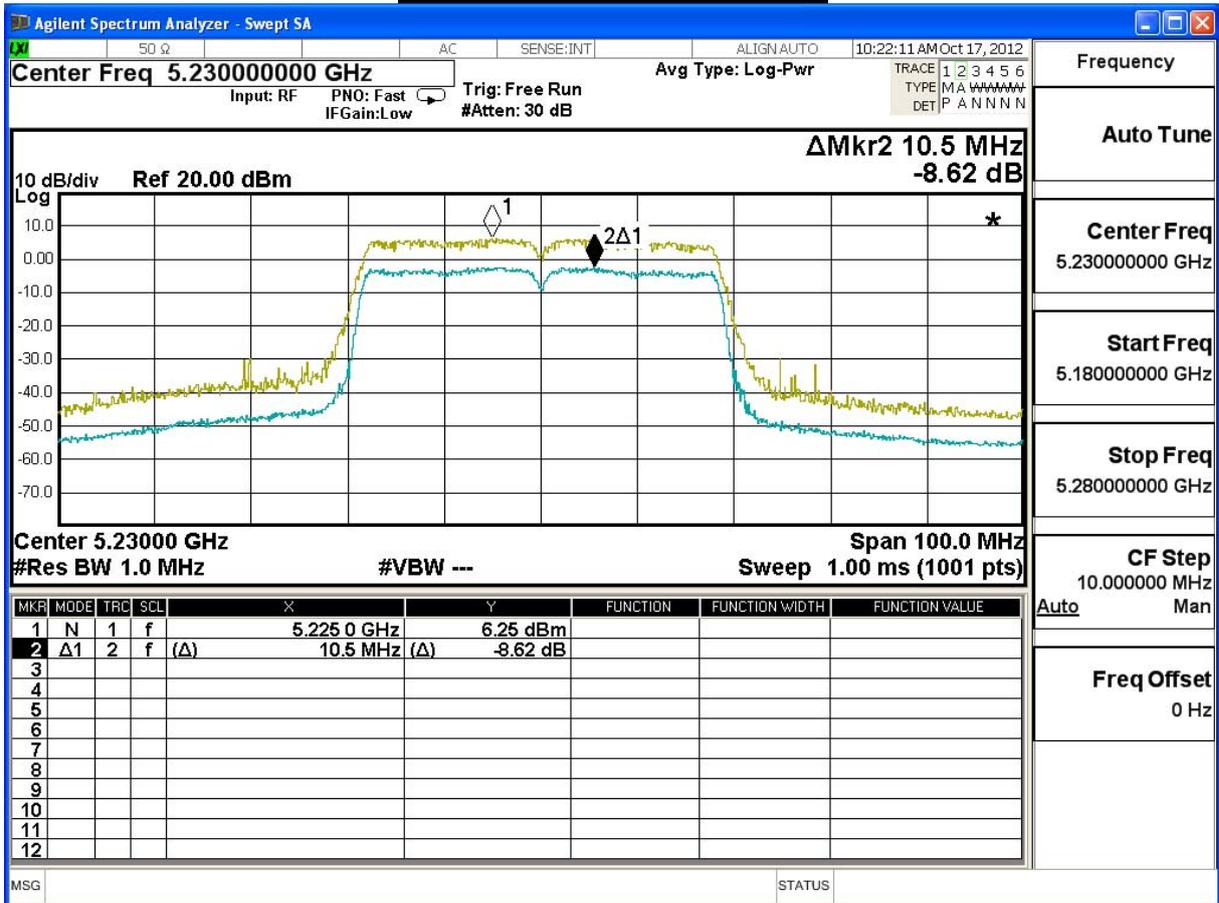
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_40M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
38	5190	8.15	≤ 13	Pass
46	5230	8.62	≤ 13	Pass

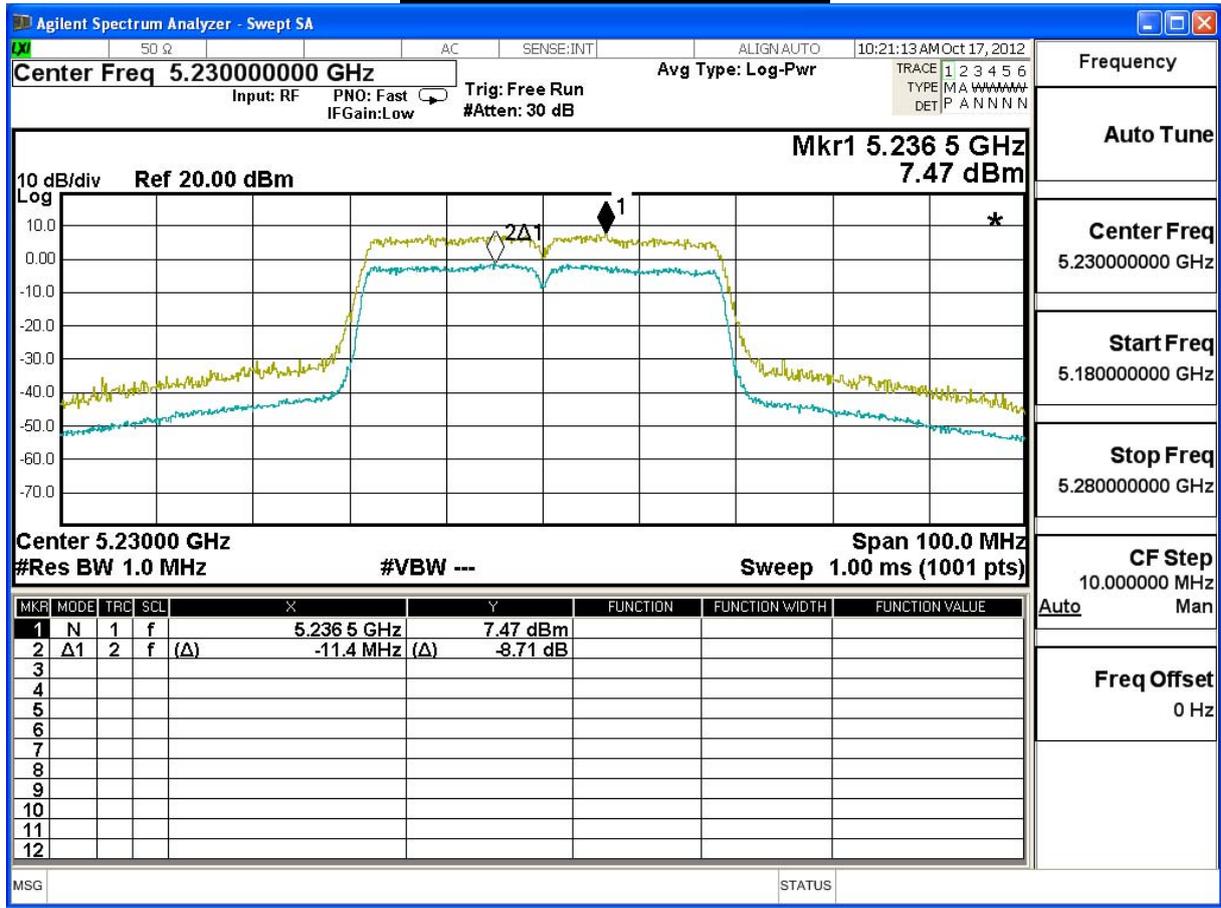
Power Excursion – Channel 38



Power Excursion – Channel 46



Power Excursion – Channel 46

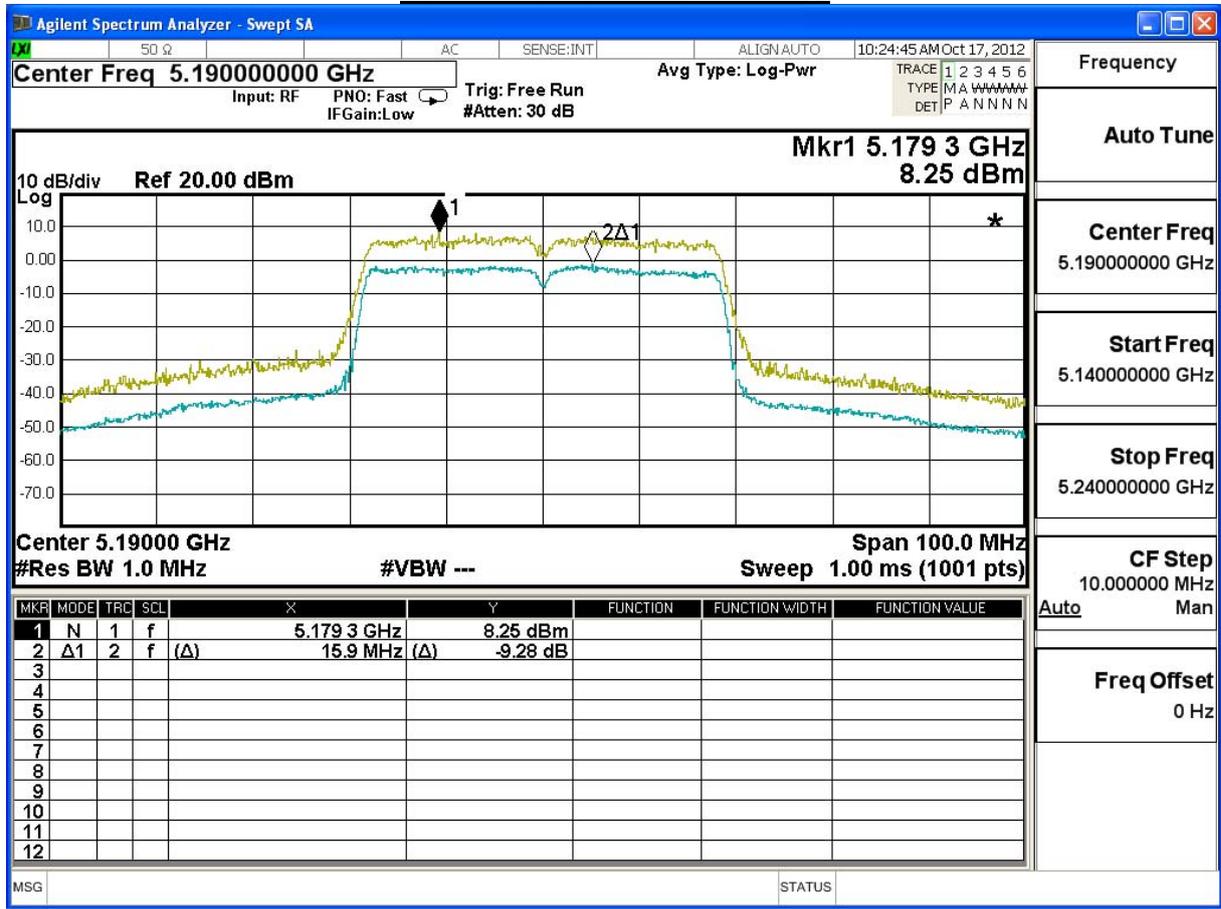


Frequency
Auto Tune
Center Freq 5.230000000 GHz
Start Freq 5.180000000 GHz
Stop Freq 5.280000000 GHz
CF Step 10.000000 MHz
Auto Man
Freq Offset 0 Hz

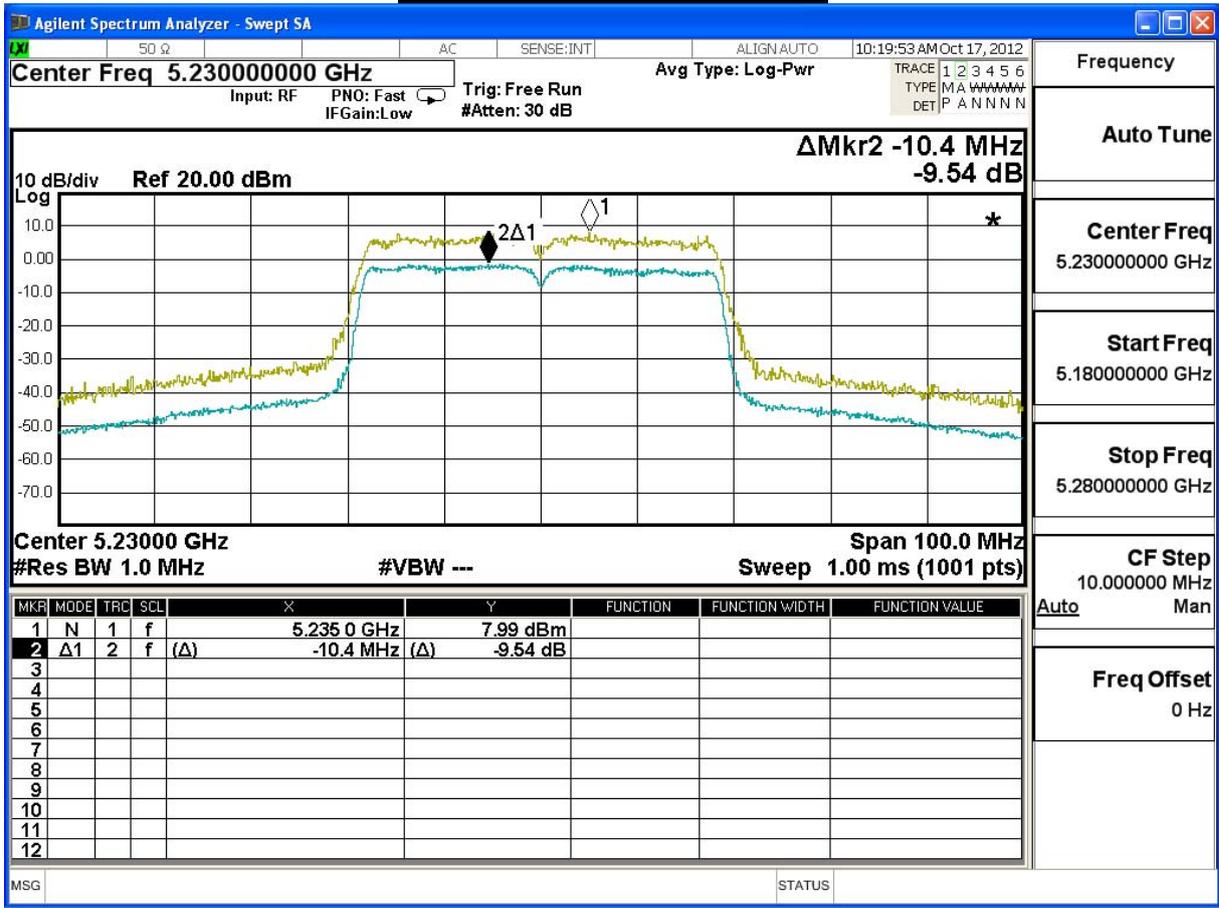
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_40M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
38	5190	9.28	≤ 13	Pass
46	5230	9.54	≤ 13	Pass

Power Excursion – Channel 38



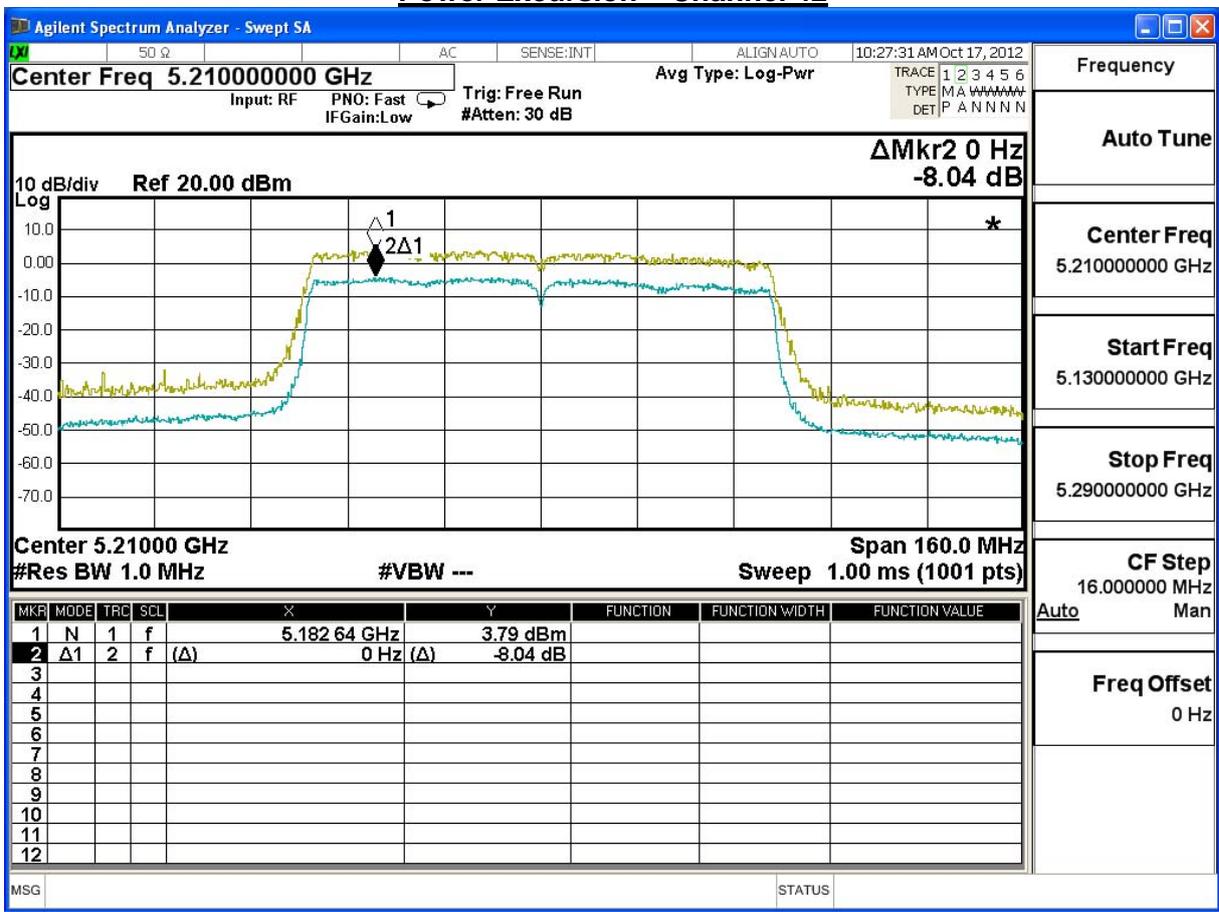
Power Excursion – Channel 46



Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11ac_80M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
42	5210	8.04	≤ 13	Pass

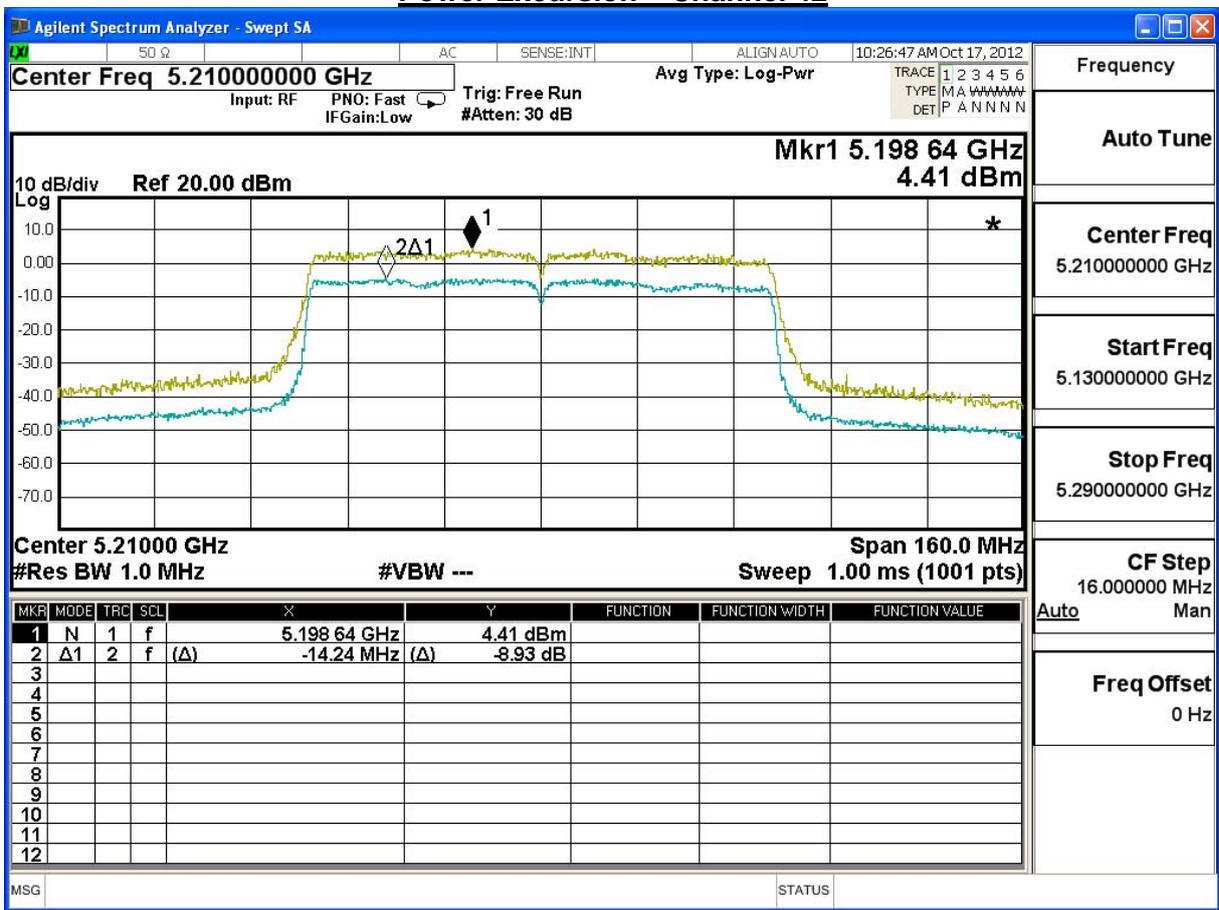
Power Excursion – Channel 42



Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11ac_80M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
42	5210	8.93	≤ 13	Pass

Power Excursion – Channel 42



Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11ac_80M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
42	5210	10.52	≤ 13	Pass

Power Excursion – Channel 42

