Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

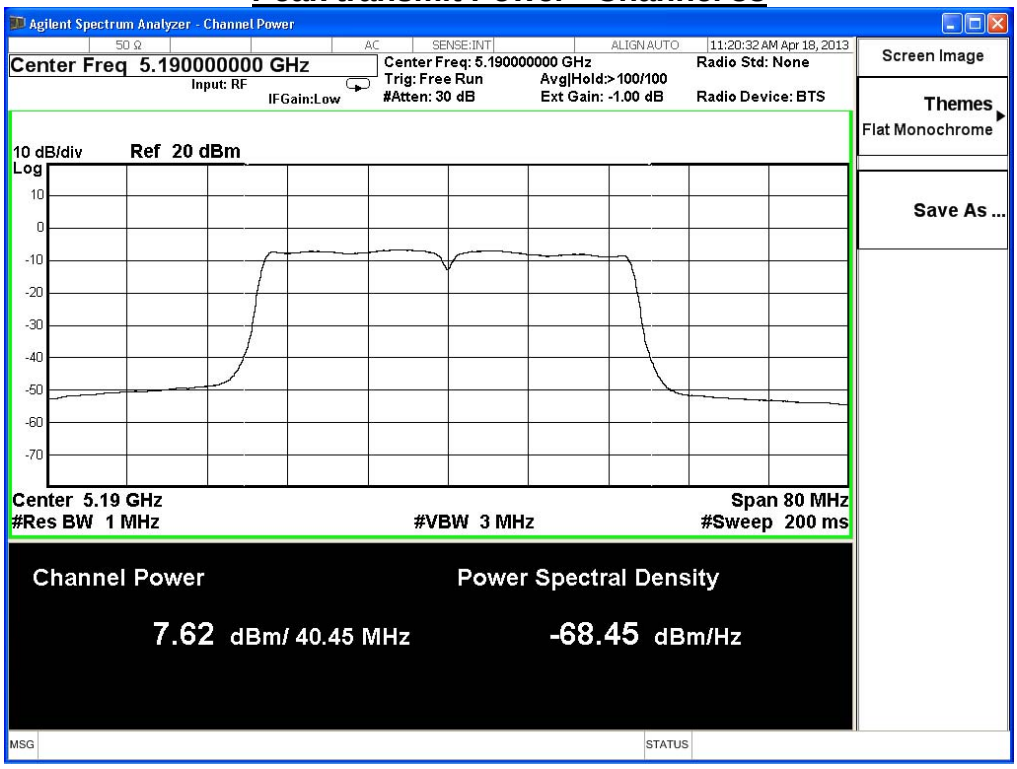
IEEE 802.11n(40MHz)_ANT 1, Power Index : ch38:47, ch46:49						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
38	5190	40.450	7.62	≤ 14.19	≤20.07	Pass
46	5230	40.497	8.18	≤ 14.19	≤20.07	Pass

The worst emission of data rate is 40.5 Mbps

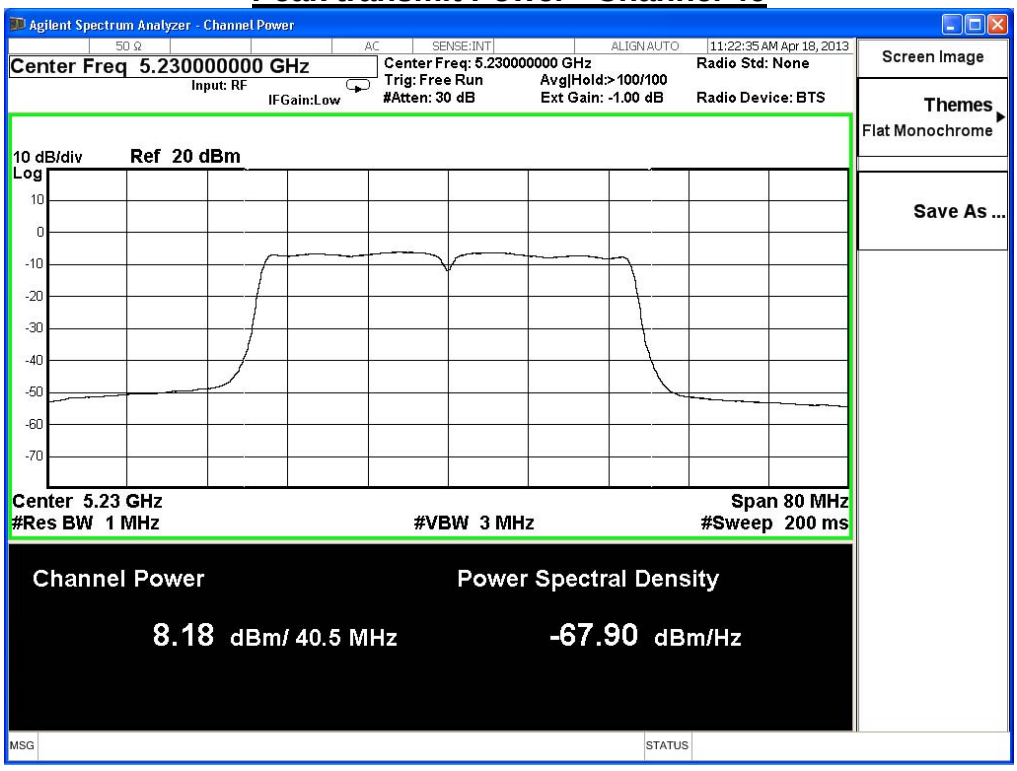
Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81	121.5	162	243	324	364.5	405	
38	5190	7.62	7.58	7.55	7.50	7.45	7.40	7.38	7.33	14.19dBm or 4dBm+10logB
46	5230	8.18	--	--	--	--	--	--	--	

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm

Peak transmit Power - Channel 38



Peak transmit Power - Channel 46



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

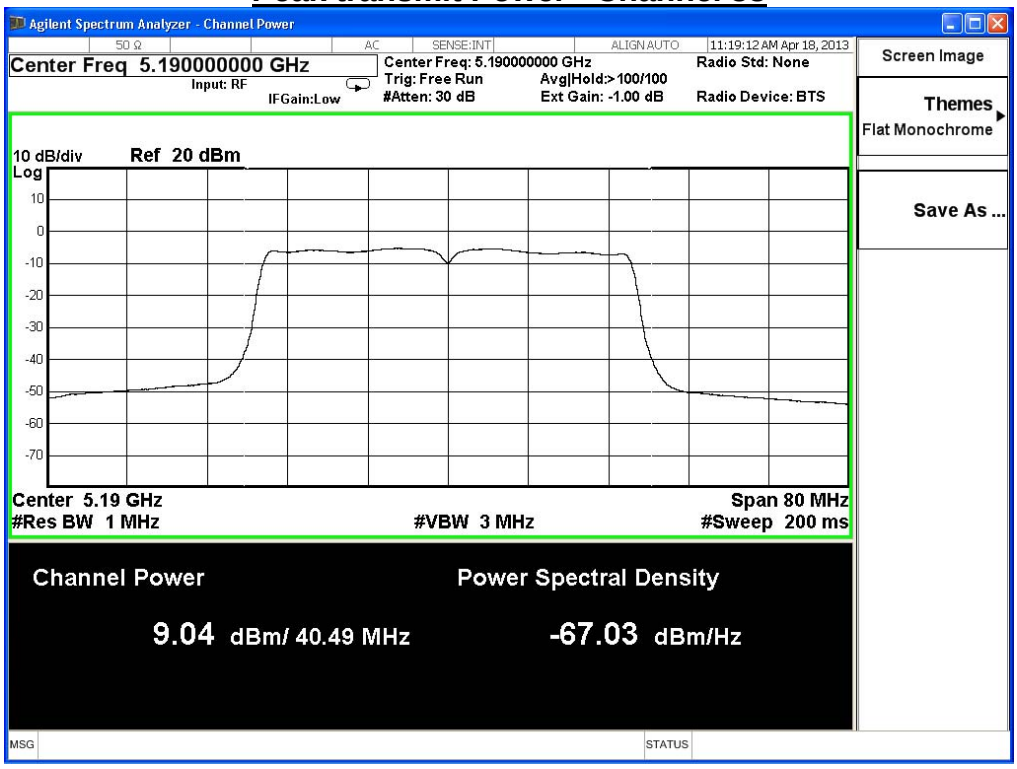
IEEE 802.11n(40MHz)_ANT 2, Power Index : ch38:47, ch46:49						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
38	5190	40.492	9.04	≤ 14.19	≤20.07	Pass
46	5230	40.574	9.39	≤ 14.19	≤20.08	Pass

The worst emission of data rate is 40.5 Mbps

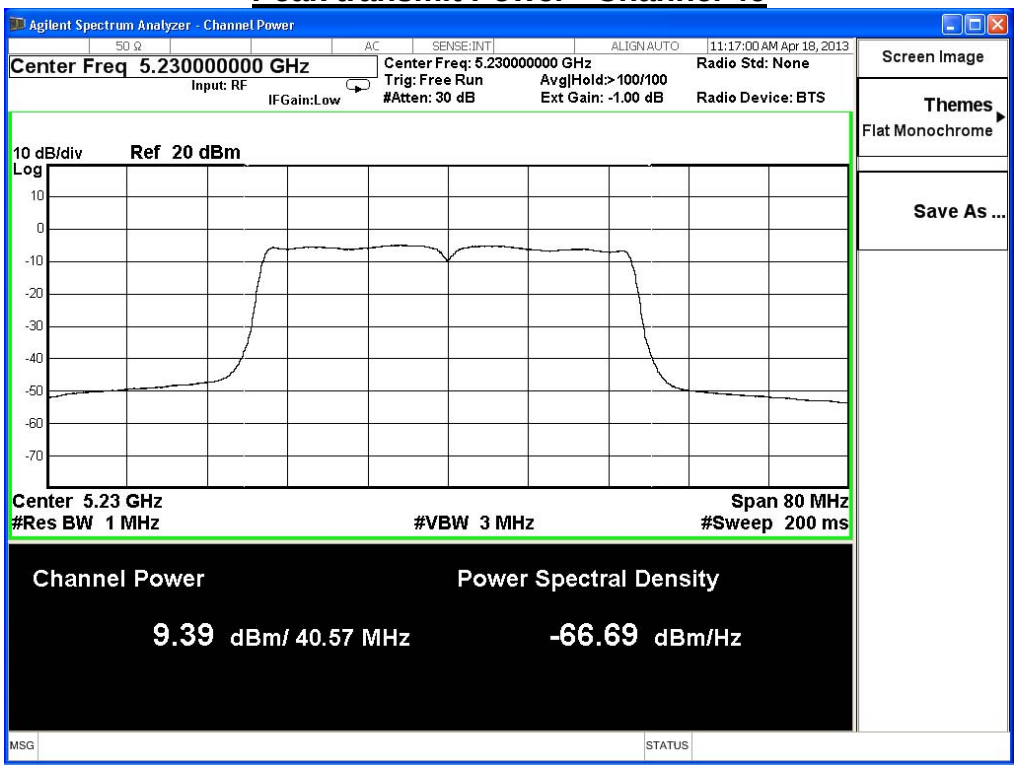
Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81	121.5	162	243	324	364.5	405	
38	5190	9.04	9.00	8.95	8.92	8.88	8.81	8.75	8.70	14.19dBm or 4dBm+10logB
46	5230	9.39	--	--	--	--	--	--	--	

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm

Peak transmit Power - Channel 38



Peak transmit Power - Channel 46



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

IEEE 802.11n(40MHz)_ANT 0+1+2					
Channel No.	Frequency (MHz)	Total Output Power		Required Limit (dBm)	Result
		(mW)	(dBm)		
38	5190	21.11	13.24	≤ 14.19	Pass
46	5230	23.39	13.69	≤ 14.19	Pass

802.11 n(40M), Antenna 0+1+2

Peak Power Output (dBm)										
MCS Index		16	17	18	19	20	21	22	23	Required Limit
Channel No	Frequency (MHz)	Data Rate								
		40.5	81	121.5	162	243	324	364.5	405	
38	5190	13.24	13.20	13.16	13.12	13.09	13.02	12.97	12.92	14.19dBm or
46	5230	13.69	--	--	--	--	--	--	--	4dBm+10logB

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm

Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

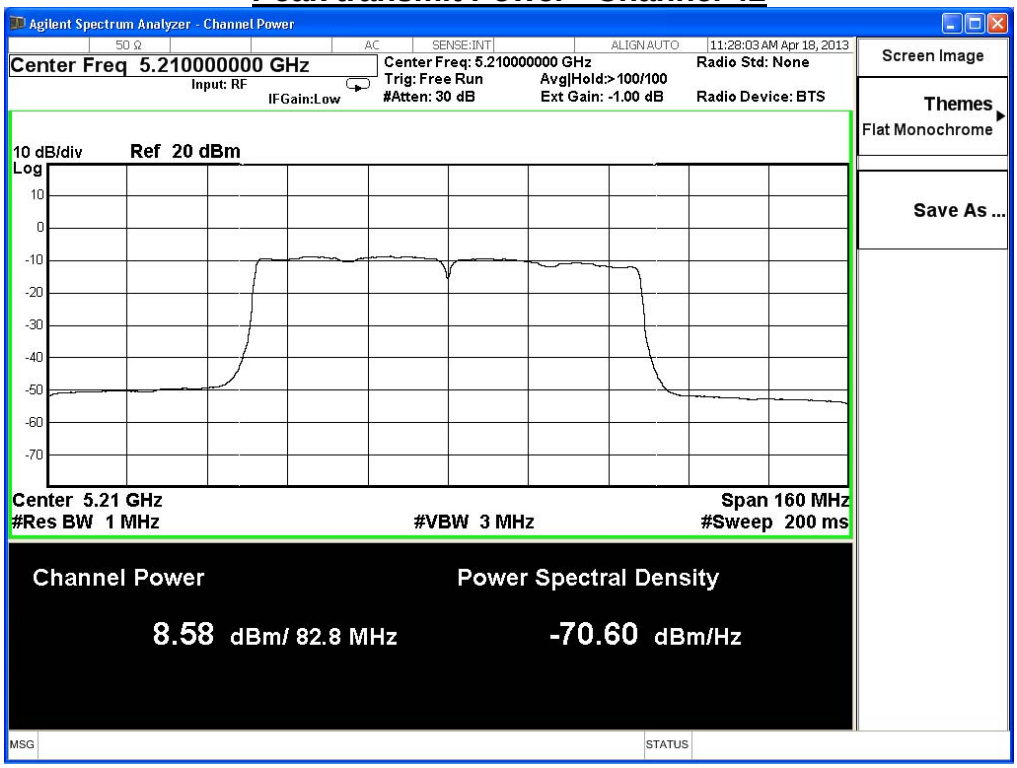
IEEE 802.11ac(80MHz)_ANT 0, Power Index : ch42:47						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
42	5210	82.798	8.58	≤ 14.19	≤23.18	Pass

The worst emission of data rate is 87.9 Mbps

Peak Power Output (dBm)											
MCS Index		0	1	2	3	4	5	6	7	8	9	Required Limit
Channel No	Frequency (MHz)	Data Rate										
		87.9	175.5	263.4	351	526.5	702	789.9	877.5	1053	1170	
42	5210	8.58	8.50	8.45	8.41	8.38	8.32	8.24	8.21	8.18	8.11	14.19 or 4dBm+10logB

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm

Peak transmit Power - Channel 42



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

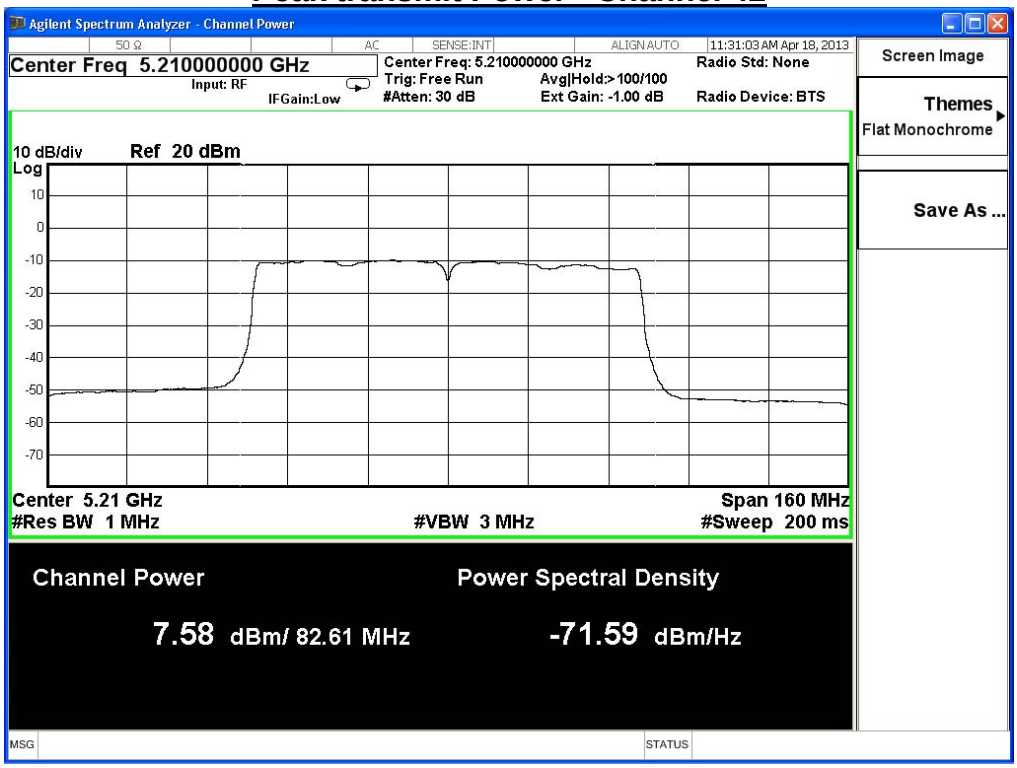
IEEE 802.11ac(40MHz)_ANT 1, Power Index : ch42:47						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
42	5210	82.614	7.58	≤ 14.19	≤23.17	Pass

The worst emission of data rate is 87.9 Mbps

Peak Power Output (dBm)											
MCS Index		0	1	2	3	4	5	6	7	8	9	Required Limit
Channel No	Frequency (MHz)	Data Rate										
		87.9	175.5	263.4	351	526.5	702	789.9	877.5	1053	1170	
42	5210	7.58	7.55	7.48	7.42	7.37	7.33	7.24	7.20	7.15	7.11	14.19 or 4dBm+10logB

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm m

Peak transmit Power - Channel 42



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

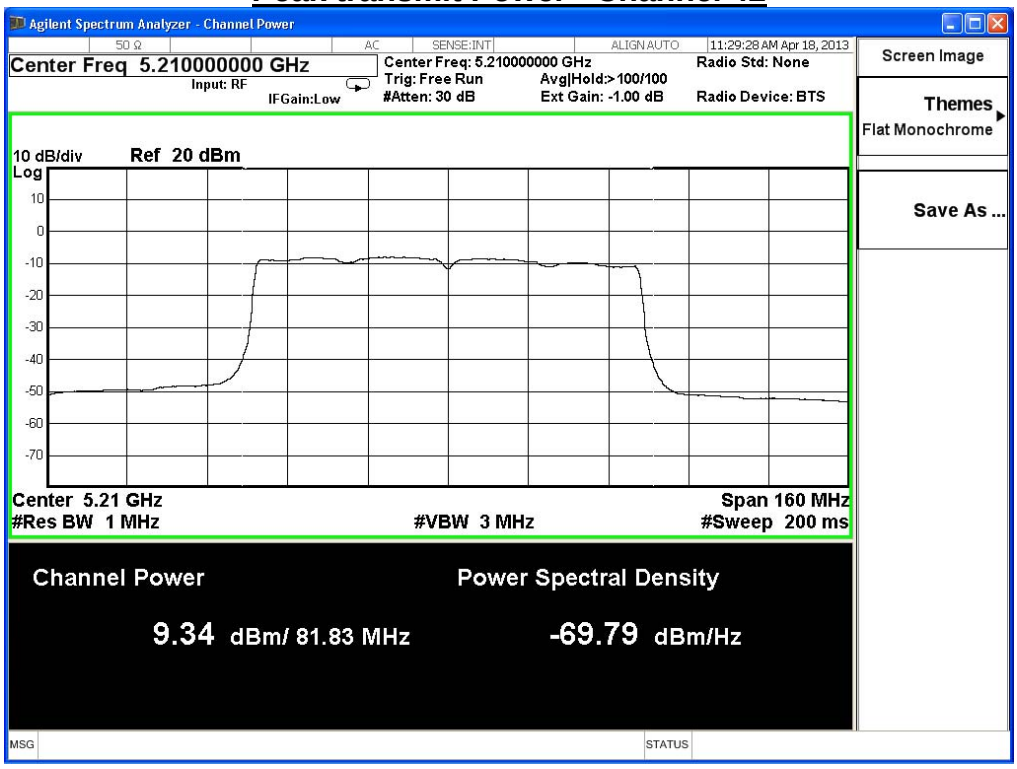
IEEE 802.11ac(40MHz)_ANT 2, Power Index : ch42:47						
Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Required Limit		Result
				Fixed Limit (dBm)	4+10logB Limit (dBm)	
42	5210	81.825	9.34	≤ 14.19	≤23.13	Pass

The worst emission of data rate is 87.9 Mbps

Peak Power Output (dBm)											
MCS Index		0	1	2	3	4	5	6	7	8	9	Required Limit
Channel No	Frequency (MHz)	Data Rate										
		87.9	175.5	263.4	351	526.5	702	789.9	877.5	1053	1170	
42	5210	9.34	9.30	9.24	9.21	9.14	9.10	9.07	9.02	8.89	8.81	14.19 or 4dBm+10log B

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm

Peak transmit Power - Channel 42



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Transmit Output		
Test Mode	Mode 2: Transmit (Beamforming Mode)_Adapter: EXA1206UH		
Date of Test	2013/04/18	Test Site	SR7

IEEE 802.11ac(80MHz)_ANT 0+1+2					
Channel No.	Frequency (MHz)	Total Output Power		Required Limit (dBm)	Result
		(mW)	(dBm)		
42	5210	21.53	13.33	≤ 14.19	Pass

802.11 AC(80M), Antenna 0+1+2

Peak Power Output (dBm)												
MCS Index		0	1	2	3	4	5	6	7	8	9	Required Limit
Channel No	Frequency (MHz)	Data Rate										
		87.9	175.5	263.4	351	526.5	702	789.9	877.5	1053	1170	
42	5210	13.33	13.28	13.22	13.18	13.13	13.08	13.02	12.98	12.90	12.84	14.19 or 4dBm+10log B

Note:
Total Gain : 10log(Ant N) + Max Gain = 10log(3)+4.04dBi =8.81dBi
Required Limit = 17dBm - (8.81dBi – 6dBi) = 17 – 2.81 = 14.19 dBm

5. Peak Power Spectrum Density

5.1. Test Equipment

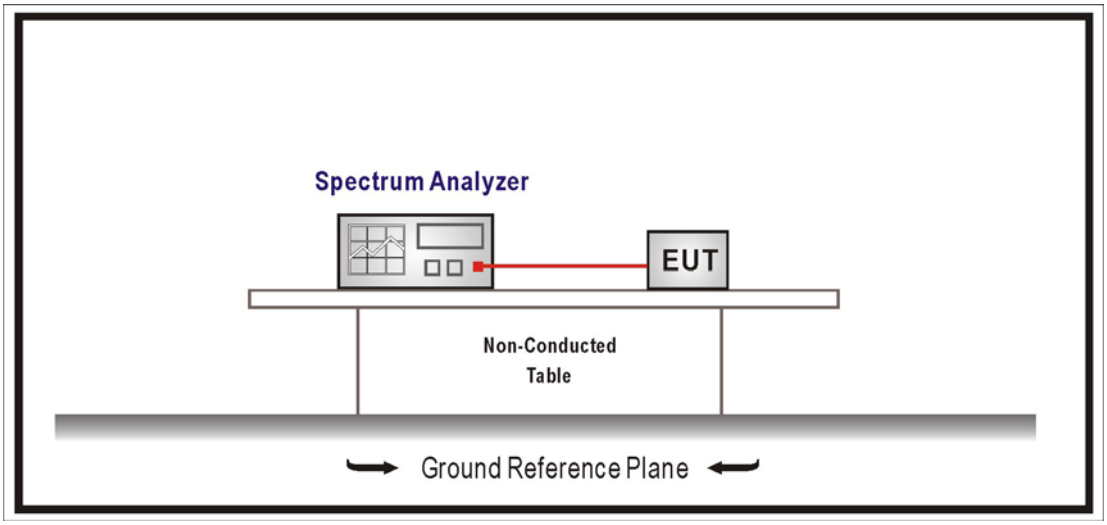
The following test equipments are used during the radiated emission tests:

Peak Power Spectrum Density / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

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

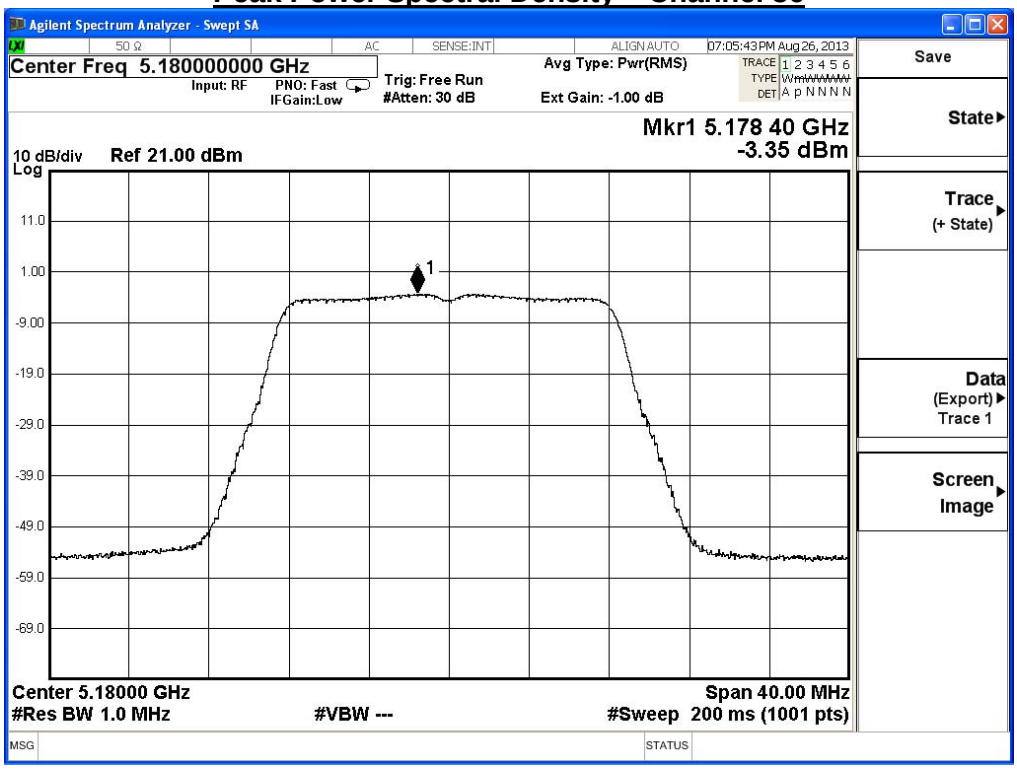
5.6. Test Result

Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

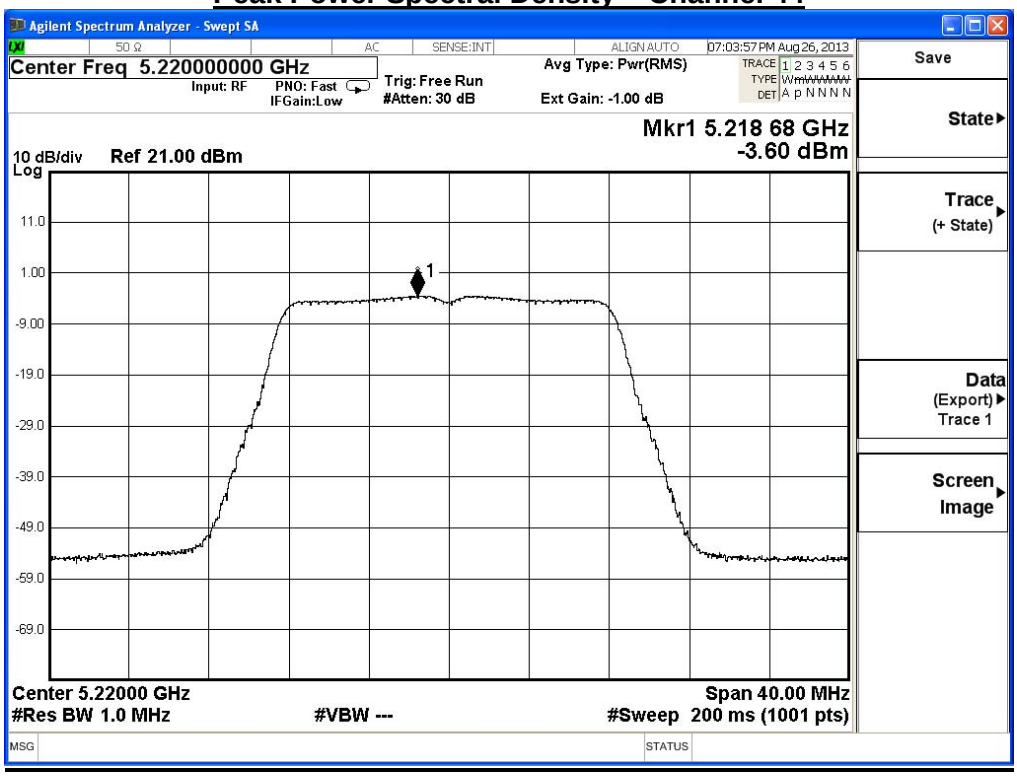
IEEE 802.11a (ANT0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-3.35	≦1.19	Pass
44	5220	-3.60	≦1.19	Pass
48	5240	-3.76	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

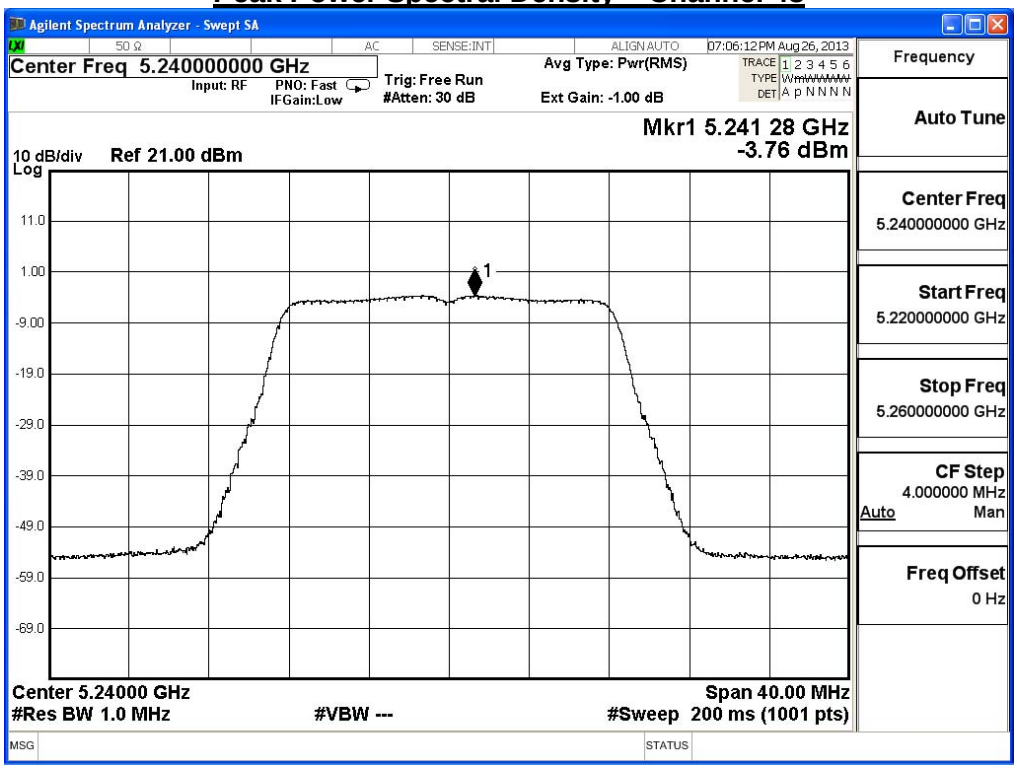
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48

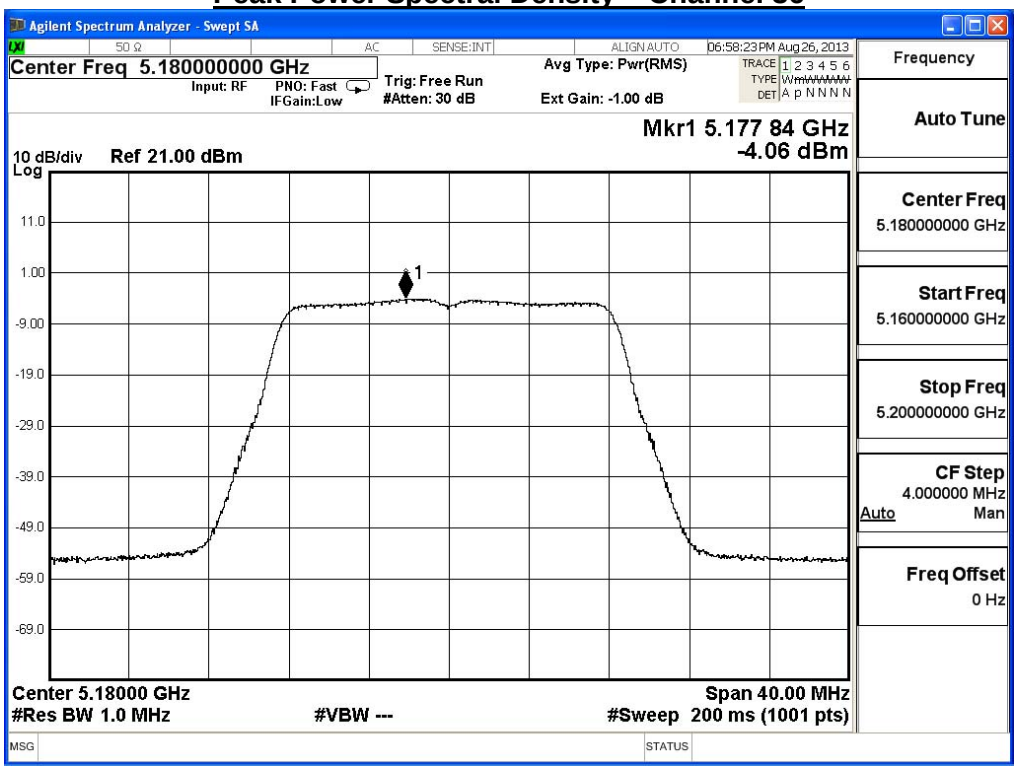


Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

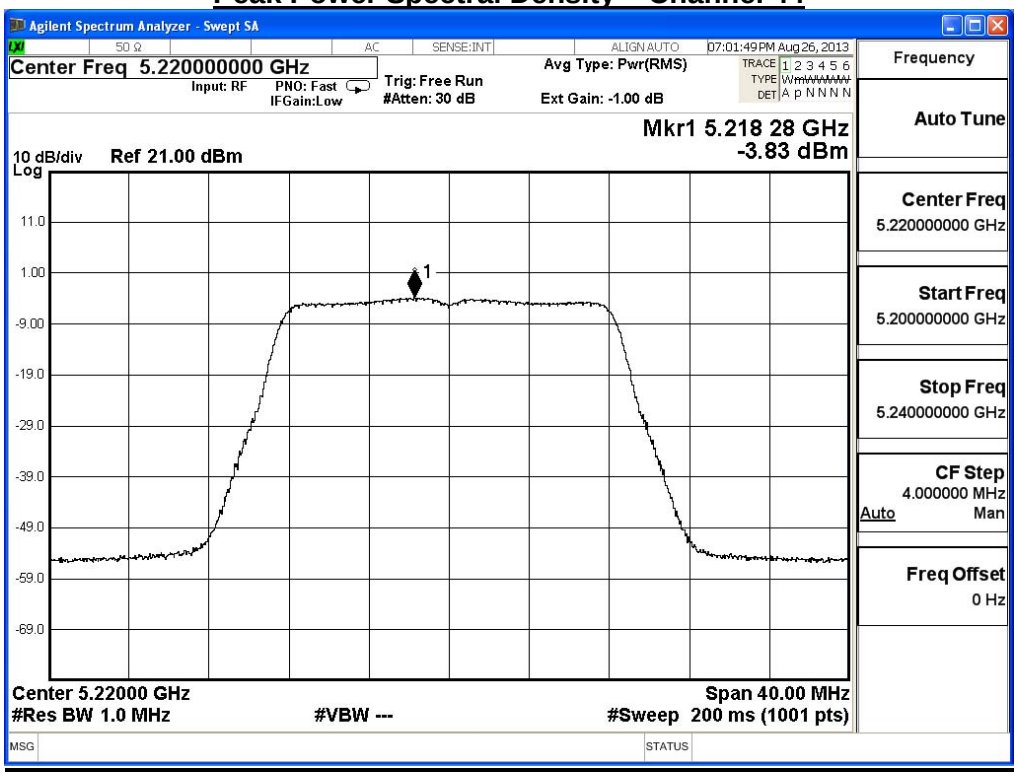
IEEE 802.11a (ANT1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-4.06	≦1.19	Pass
44	5220	-3.83	≦1.19	Pass
48	5240	-4.10	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

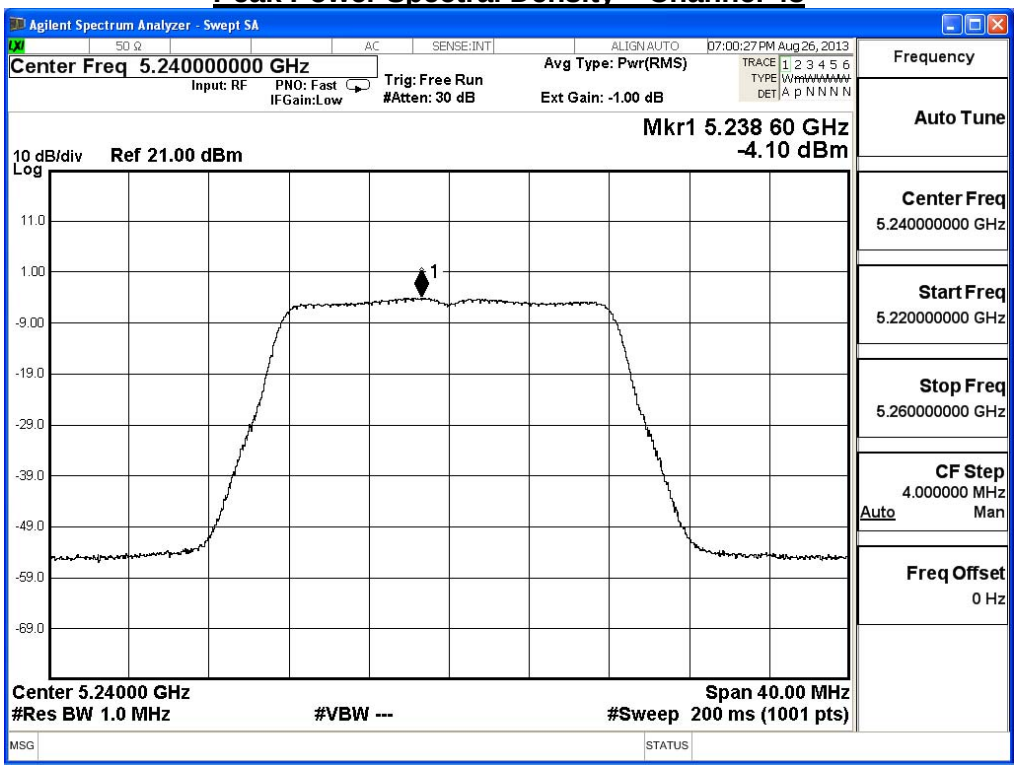
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48

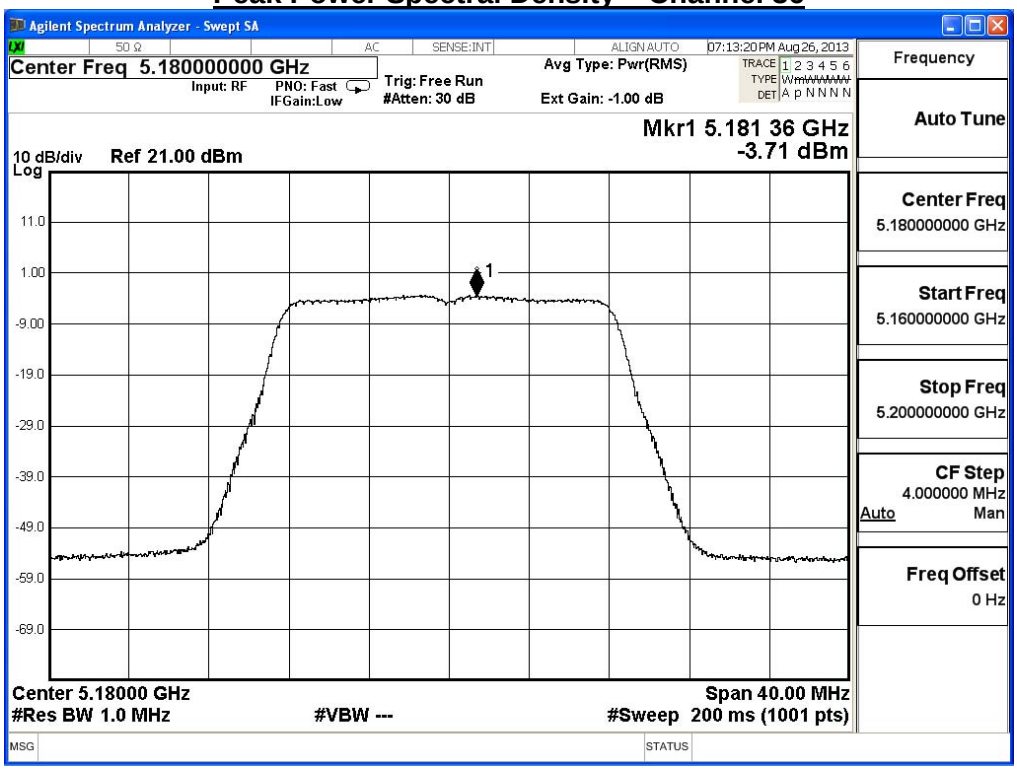


Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

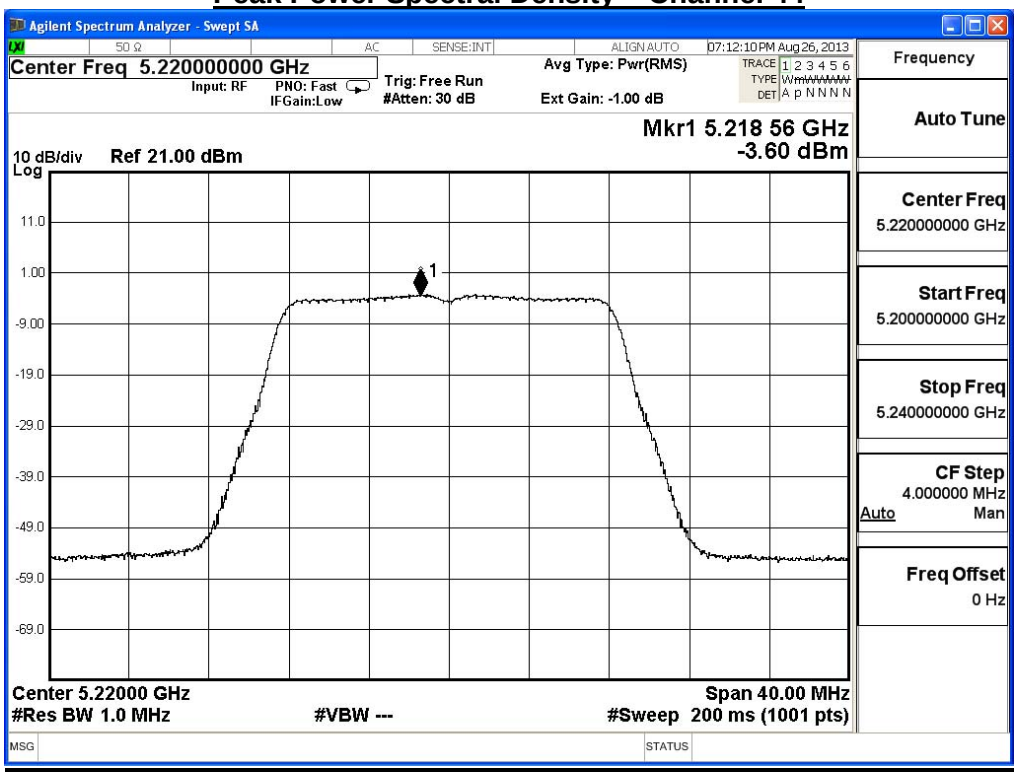
IEEE 802.11a (ANT2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-3.71	≦1.19	Pass
44	5220	-3.60	≦1.19	Pass
48	5240	-3.21	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

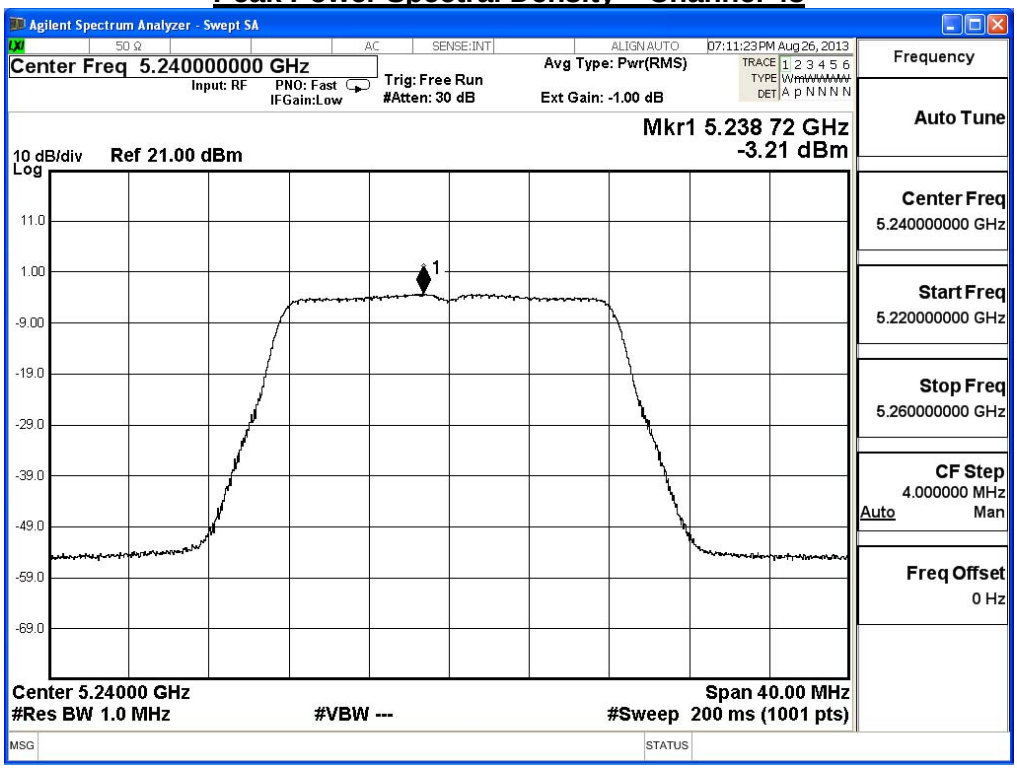
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

IEEE 802.11a (ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	1.07	≦1.19	Pass
44	5220	1.10	≦1.19	Pass
48	5240	1.10	≦1.19	Pass

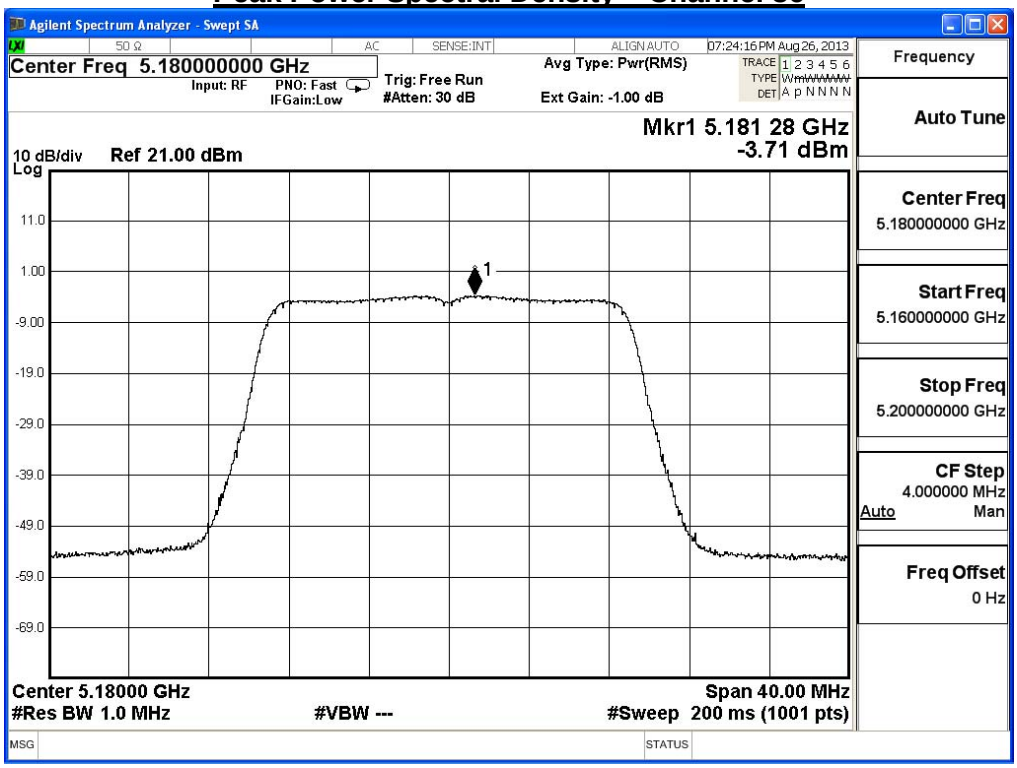
Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

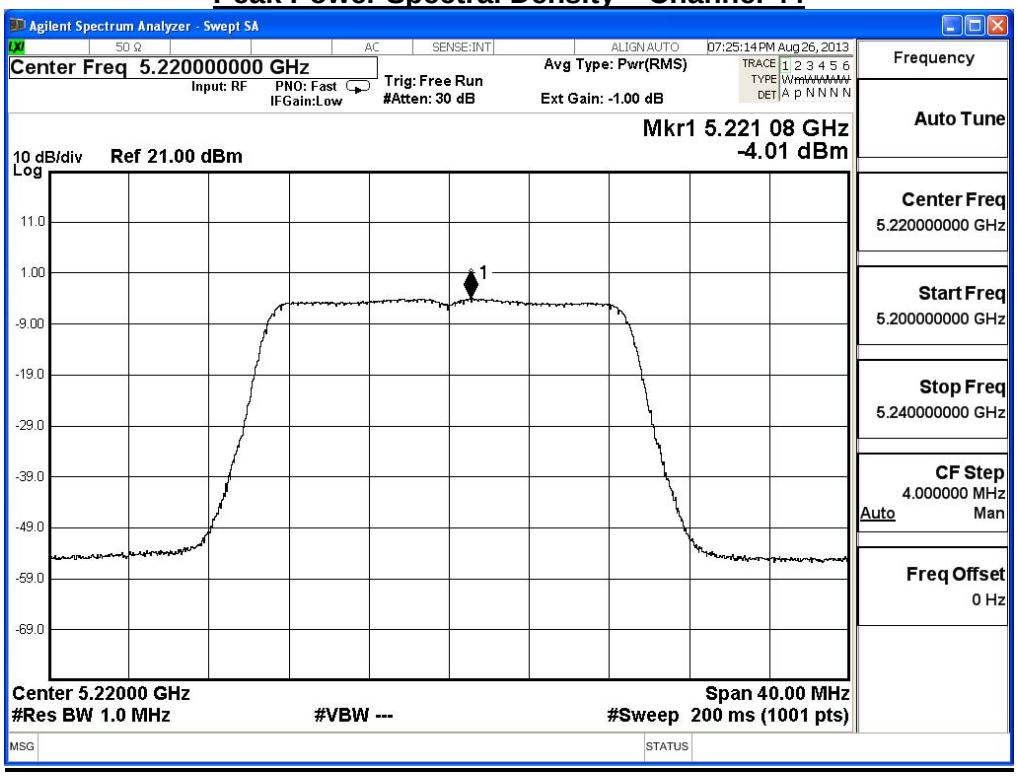
IEEE 802.11n_20M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-3.71	≦1.19	Pass
44	5220	-4.01	≦1.19	Pass
48	5240	-3.79	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

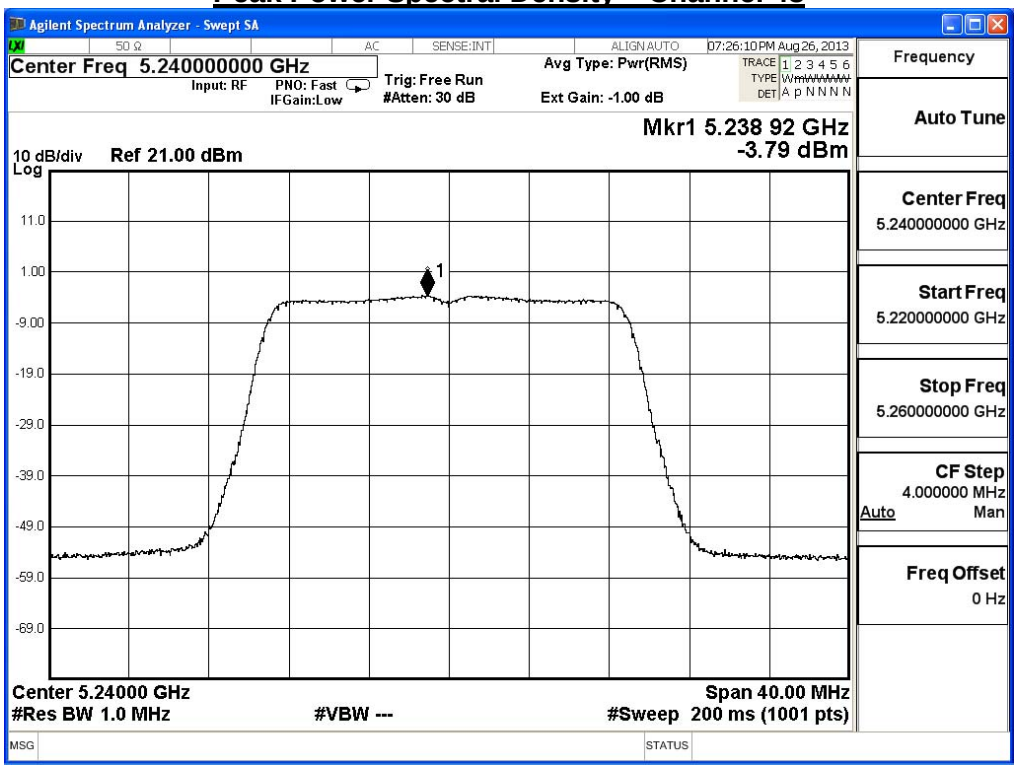
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48

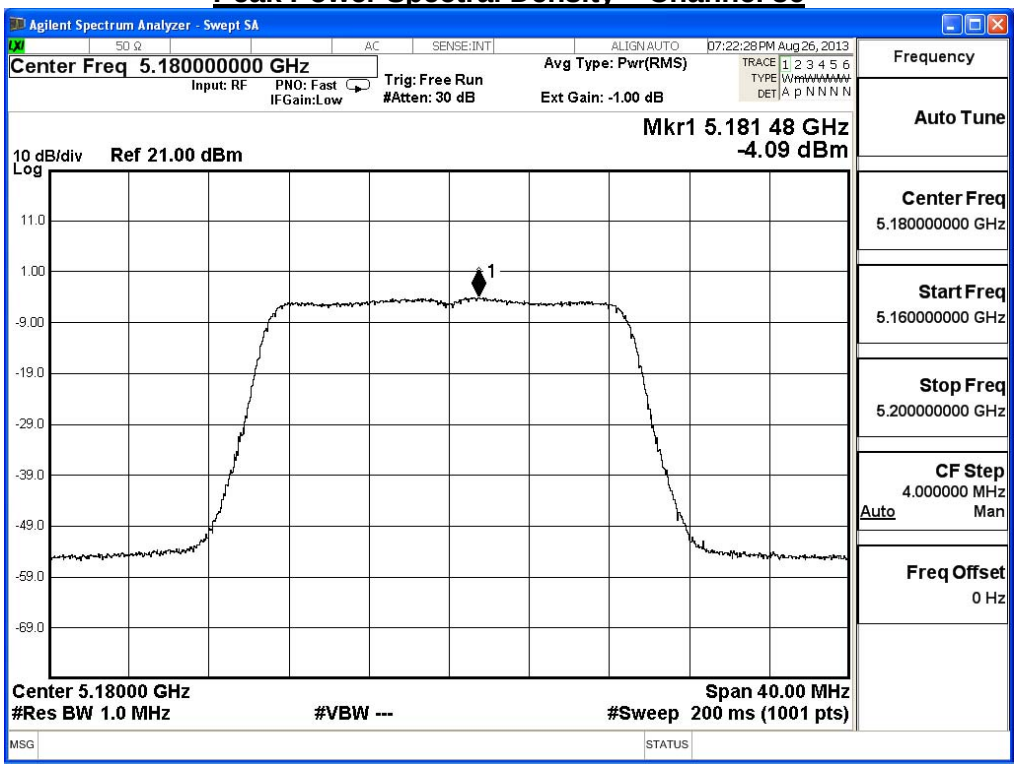


Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

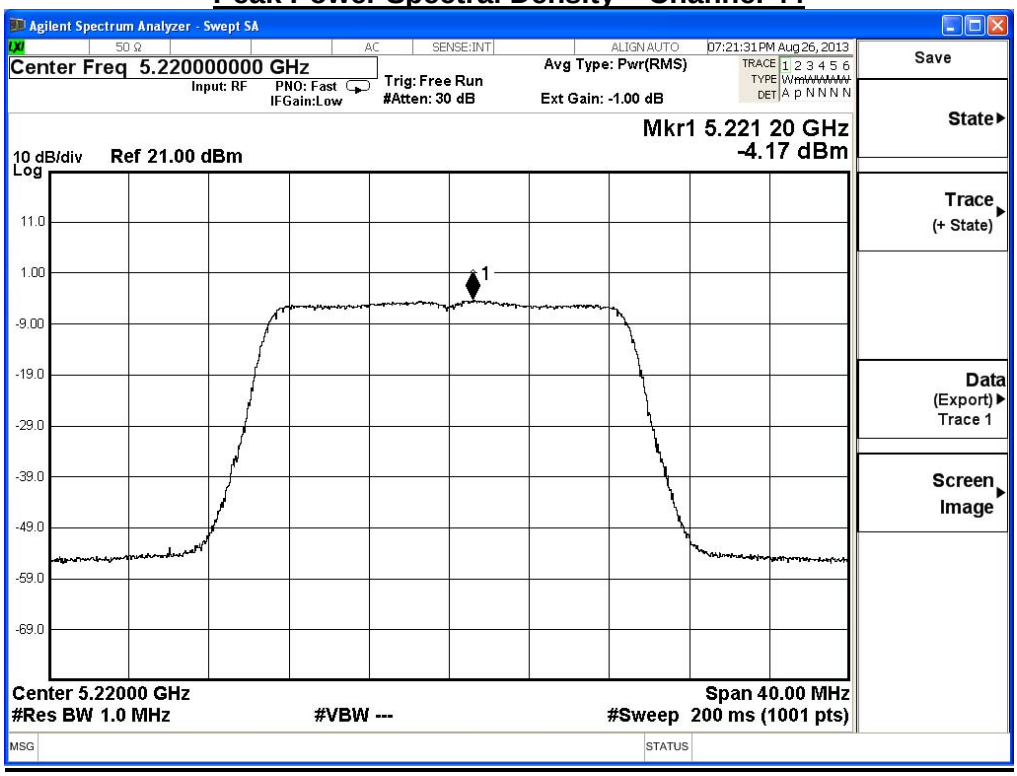
IEEE 802.11n_20M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-4.09	≦1.19	Pass
44	5220	-4.17	≦1.19	Pass
48	5240	-4.43	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

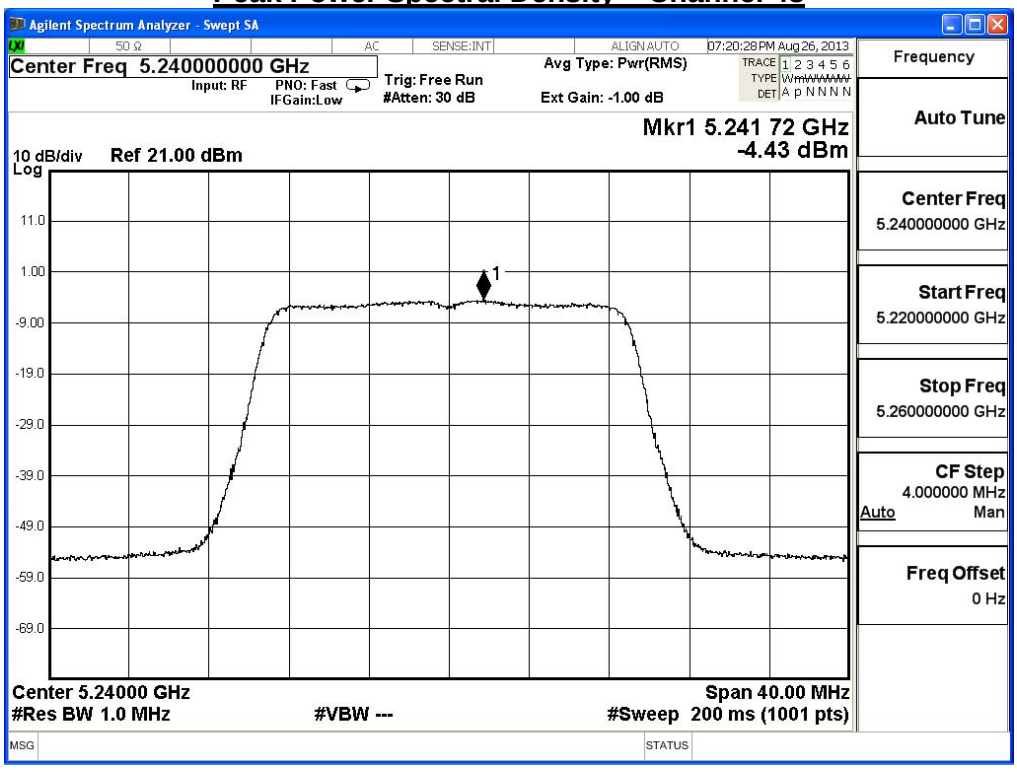
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48

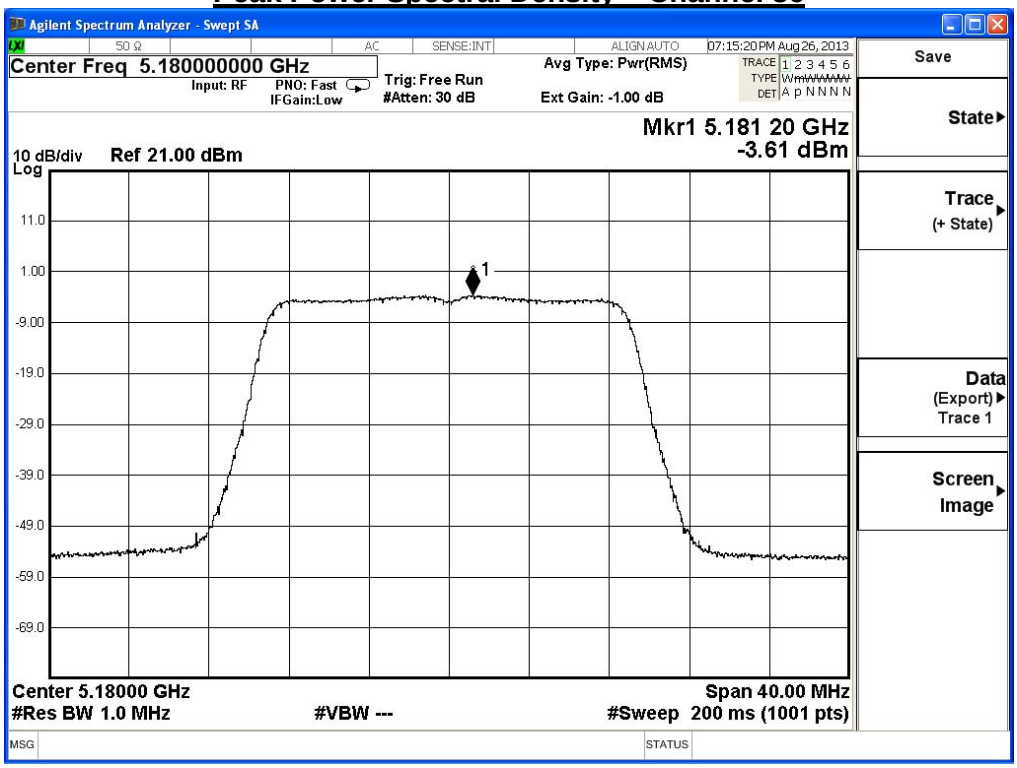


Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

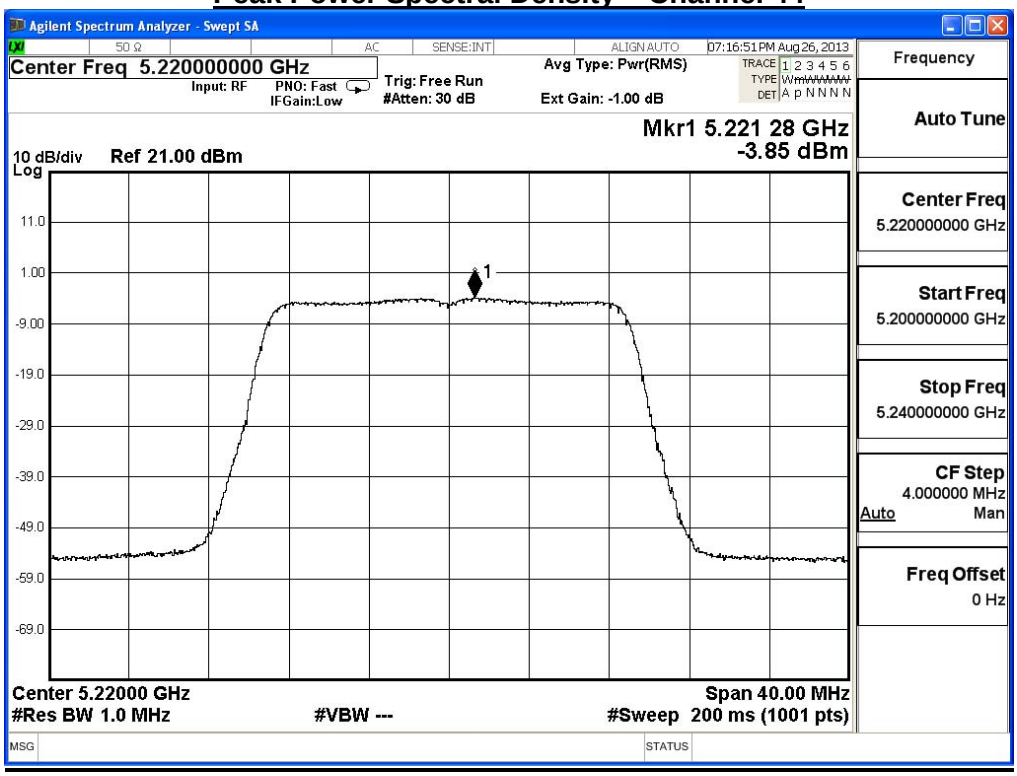
IEEE 802.11n_20M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-3.61	≦1.19	Pass
44	5220	-3.85	≦1.19	Pass
48	5240	-4.00	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

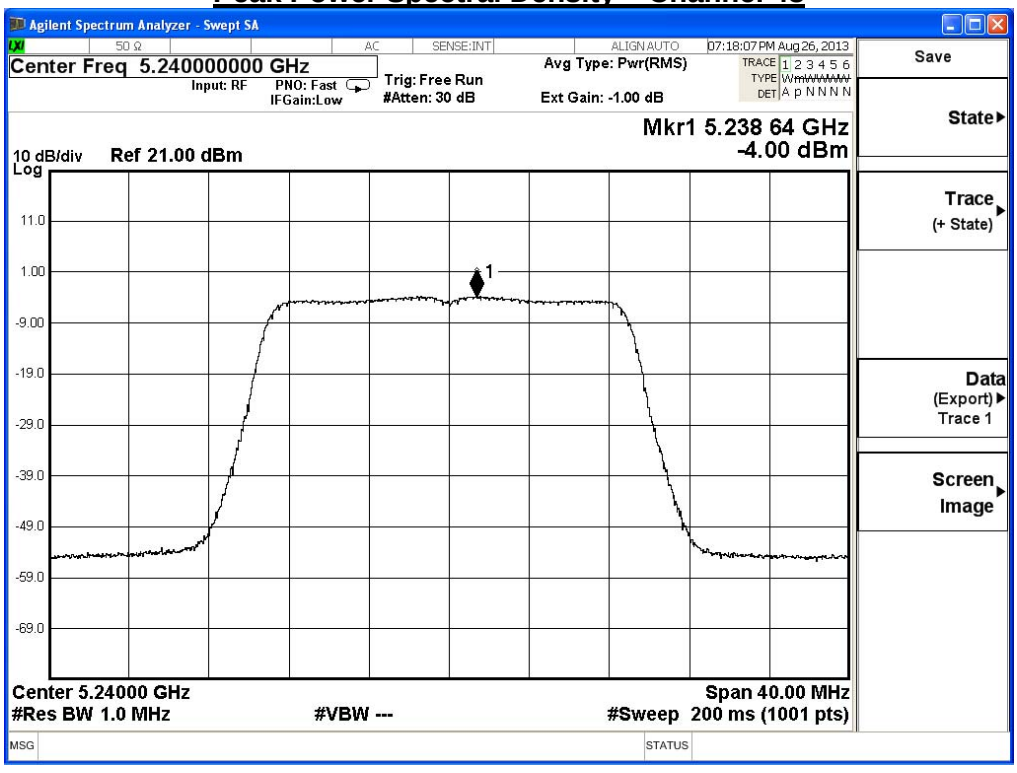
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

IEEE 802.11n_20M(ANT 0+1+2)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	0.97	≦1.19	Pass
44	5220	0.76	≦1.19	Pass
48	5240	0.71	≦1.19	Pass

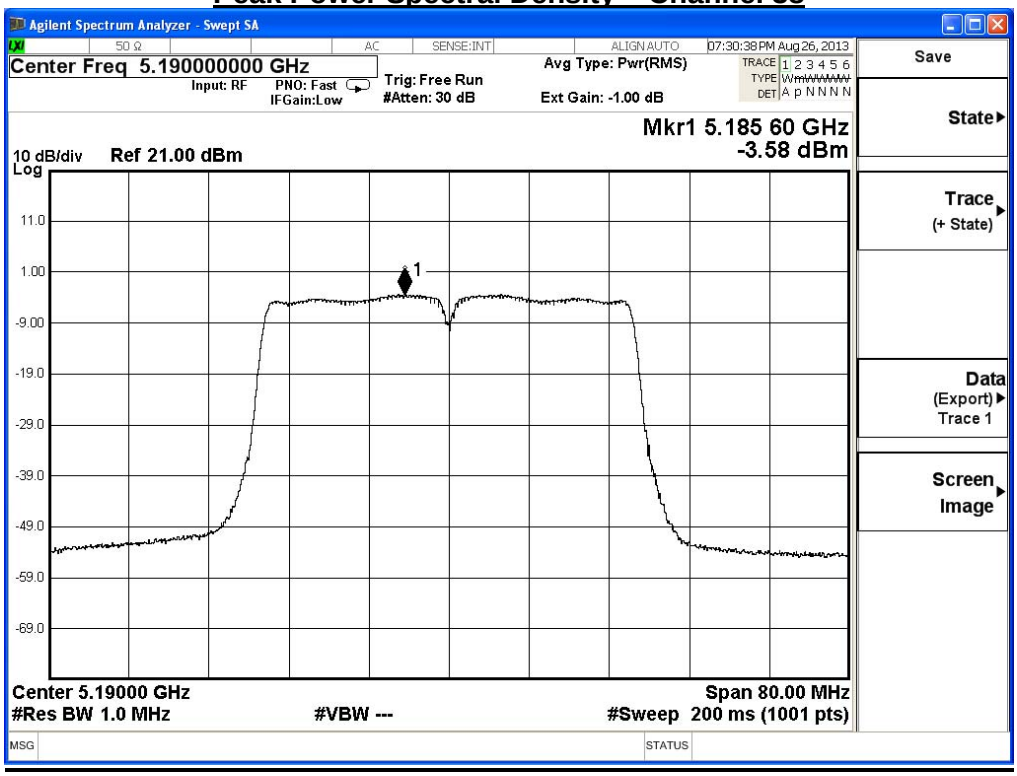
Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

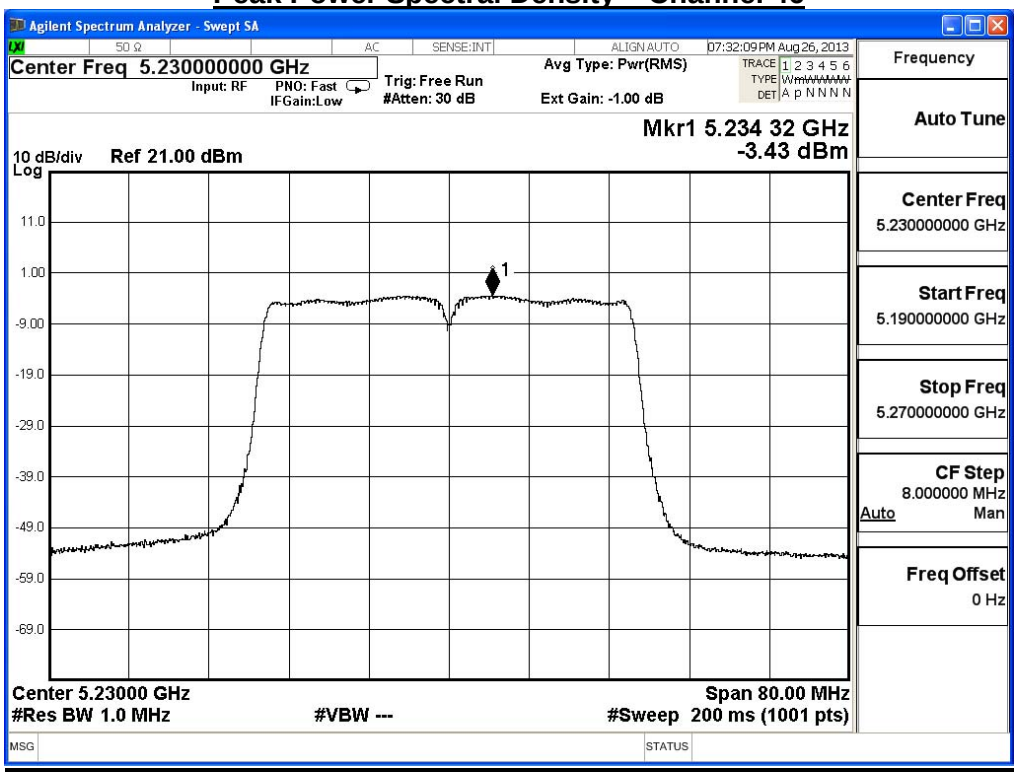
IEEE 802.11n_40M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-3.58	≦1.19	Pass
46	5230	-3.43	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46

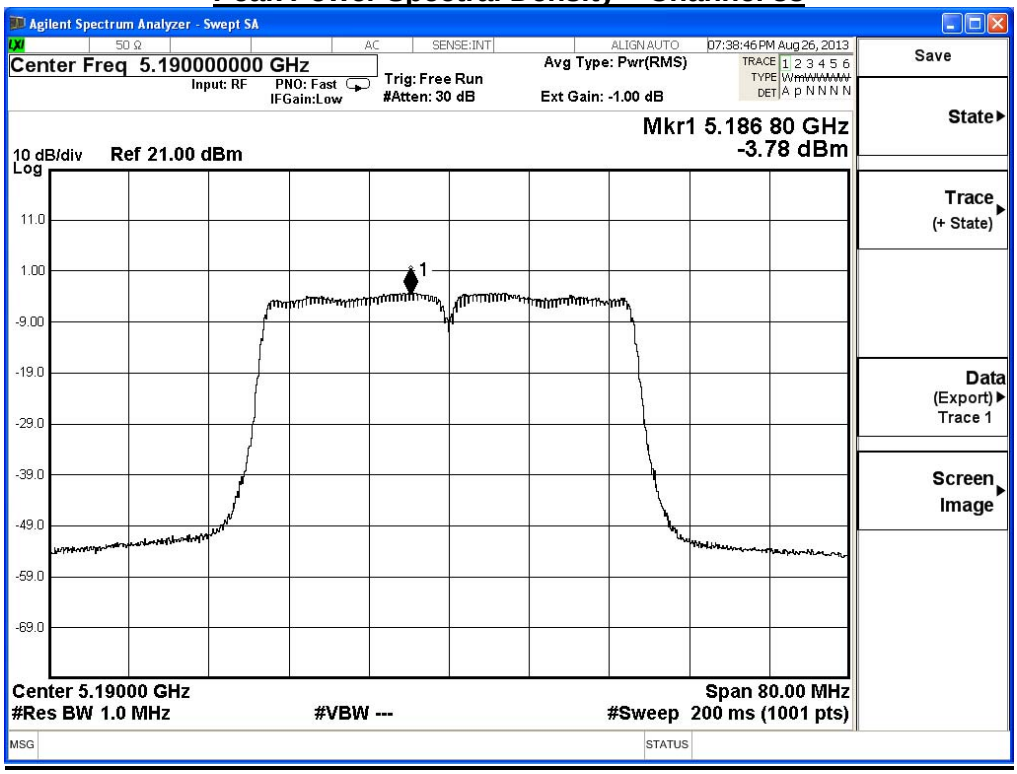


Product	Wireless-AC1900 Dual Band Gigabit Router		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 1: Transmit (CDD Mode)_Adapter: EXA1206UH		
Date of Test	2013/08/26	Test Site	SR7

IEEE 802.11n_40M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-3.78	≦1.19	Pass
46	5230	-3.83	≦1.19	Pass

Note:
Total Gain = 10log(3) + Max Gain = 8.81dBi
Required Limit = 4dBm – (8.81dBi - 6dB) = 1.19dBm

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46