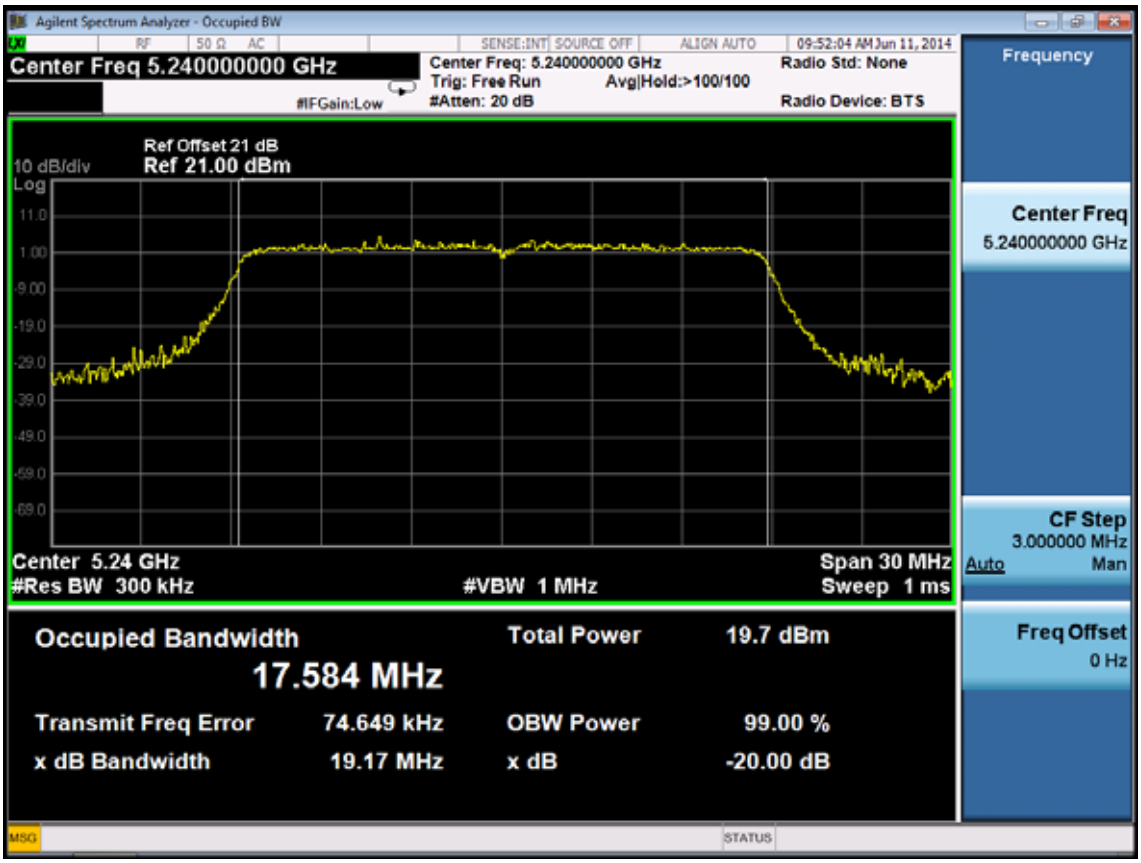
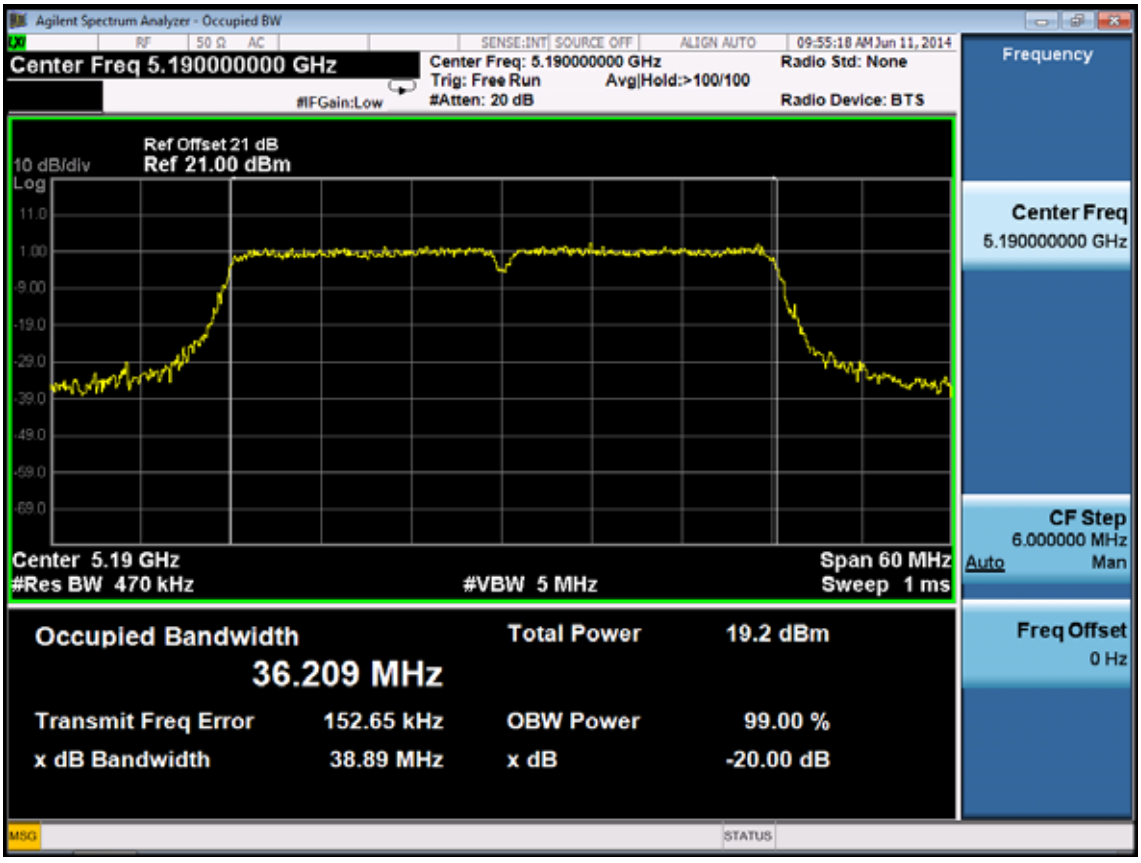
5240MHz

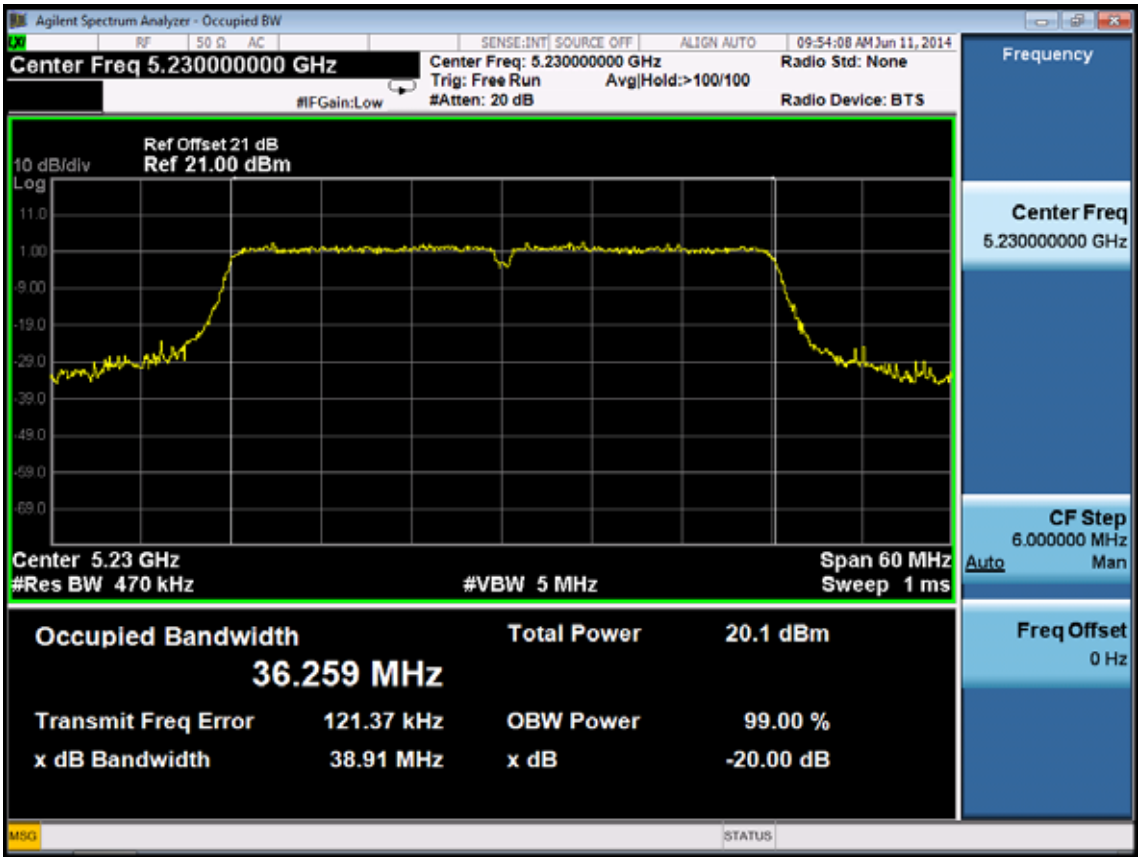


11ac VHT40

5190MHz

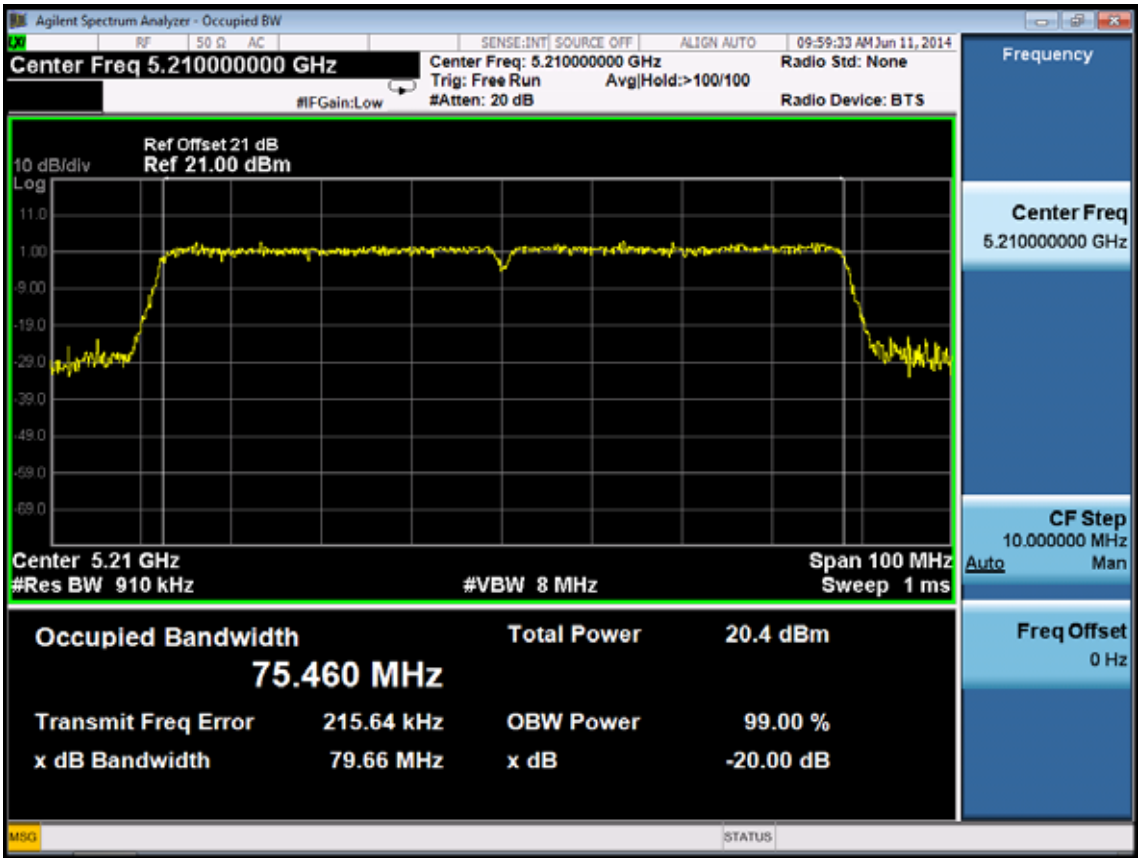


5230MHz



11ac VHT80

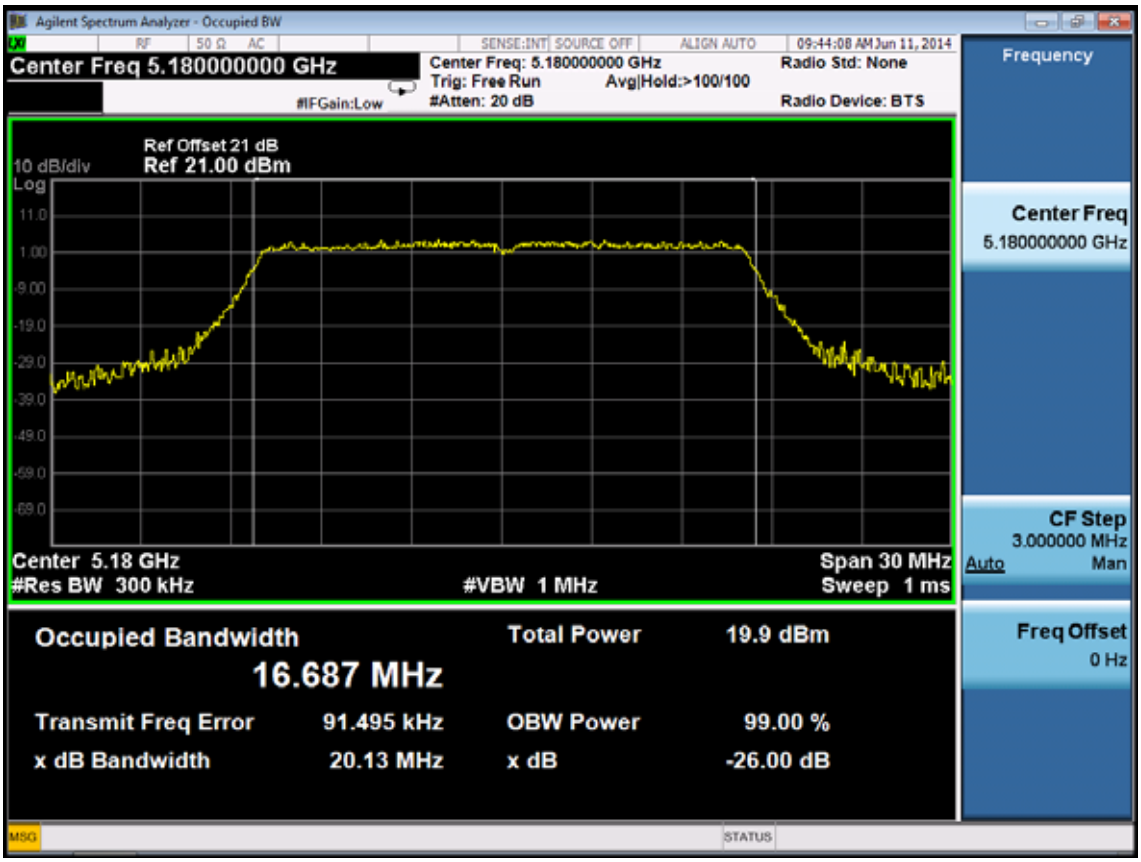
5210MHz



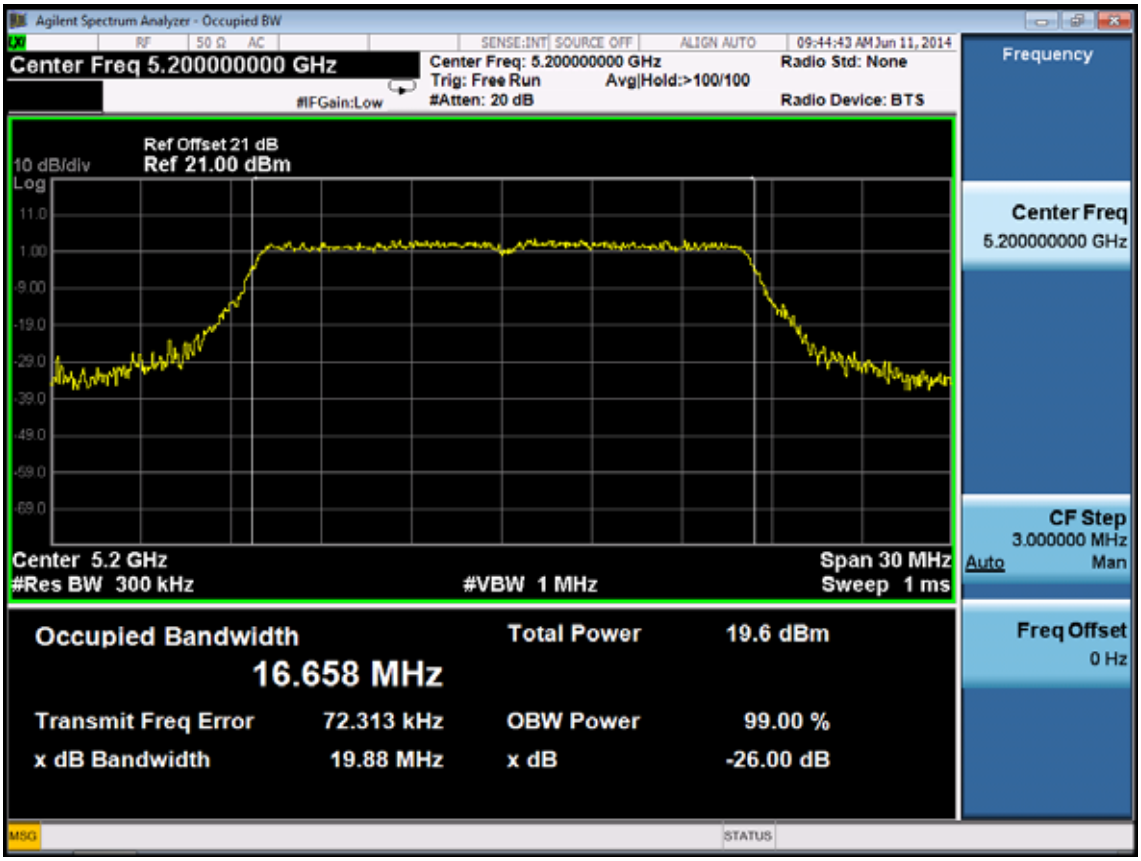
26dB bandwidth:

11a

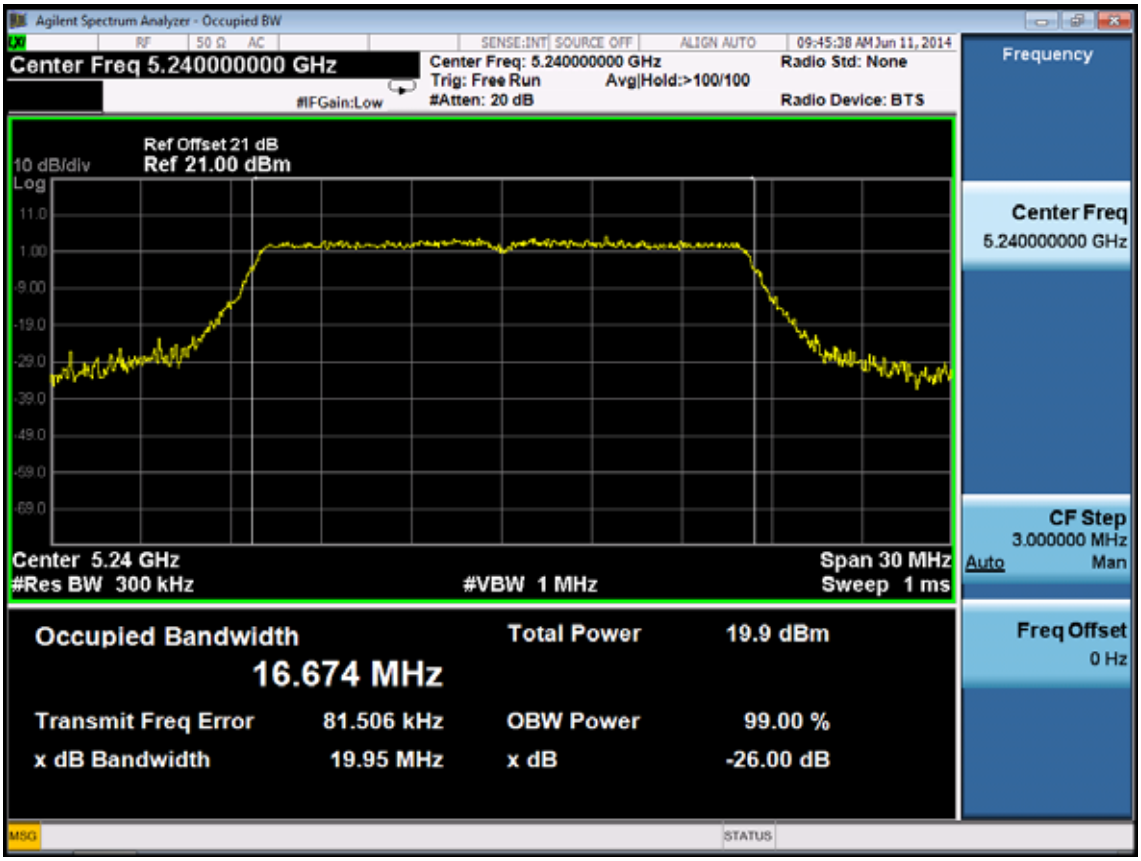
5180MHz



5200MHz

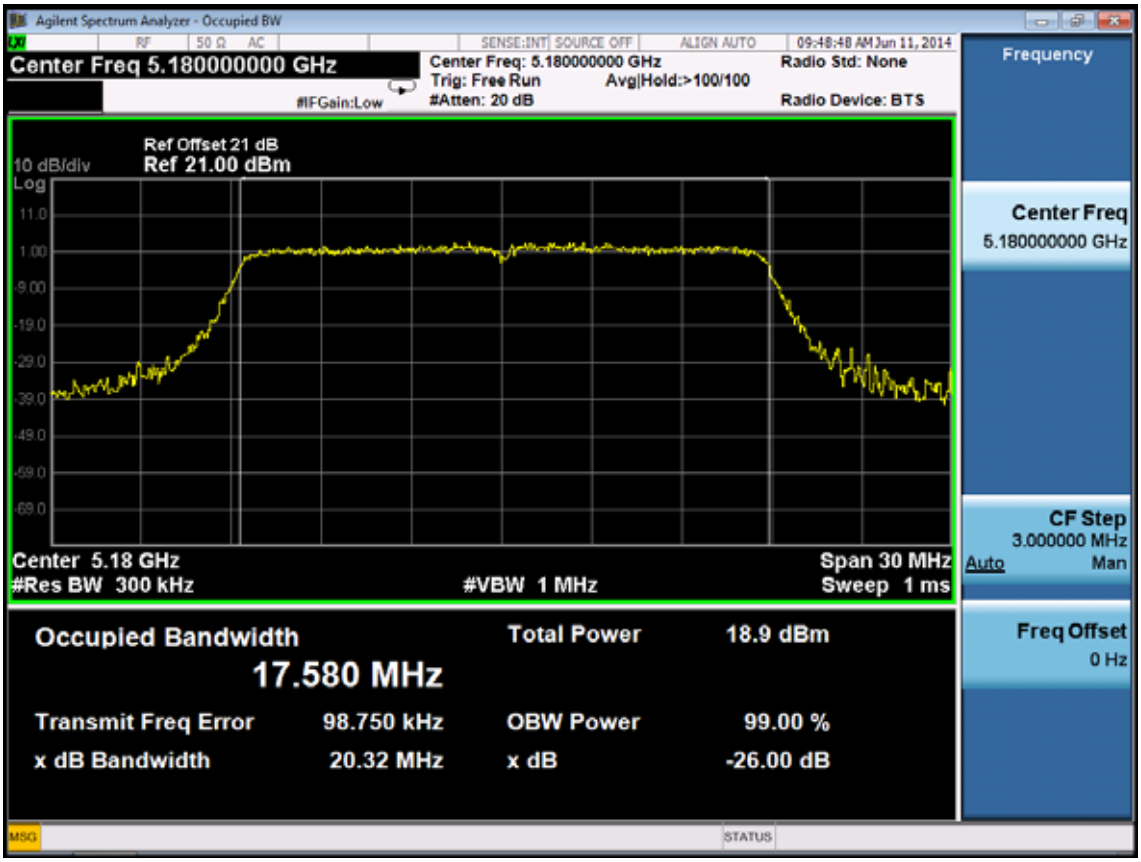


5240MHz

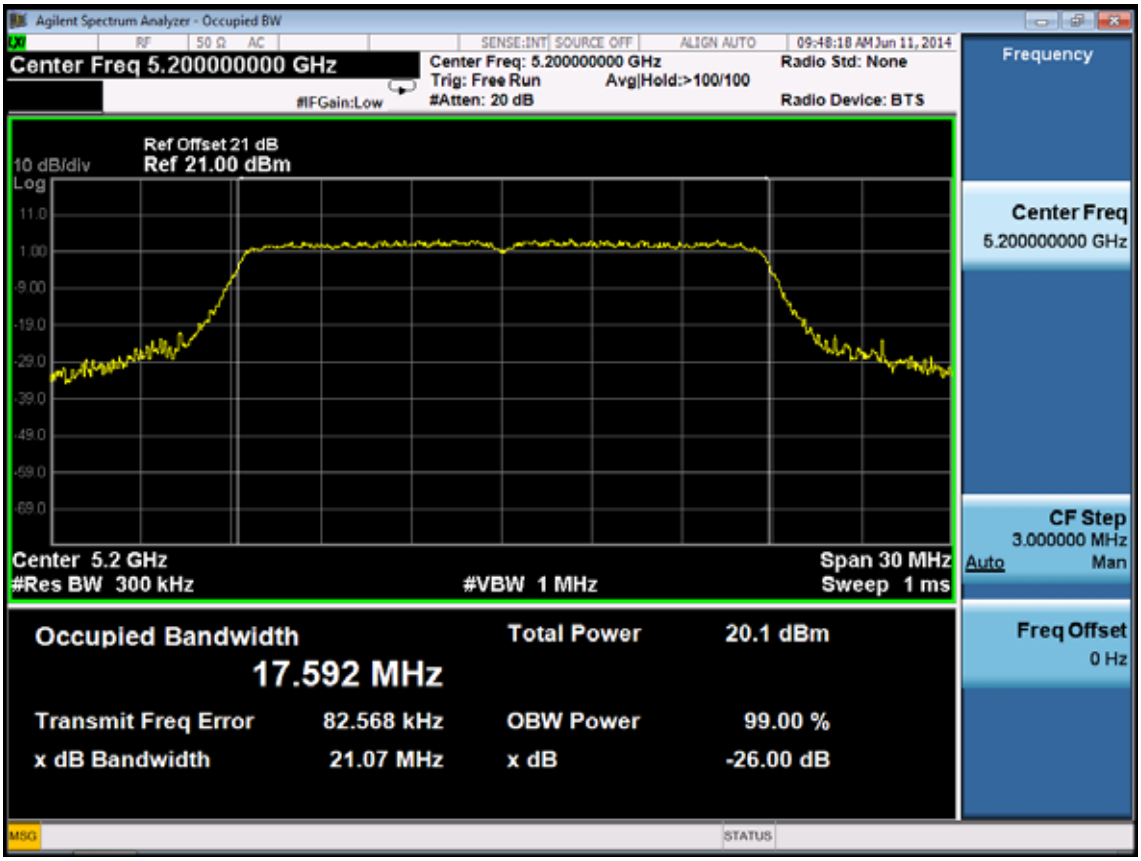


11n HT20

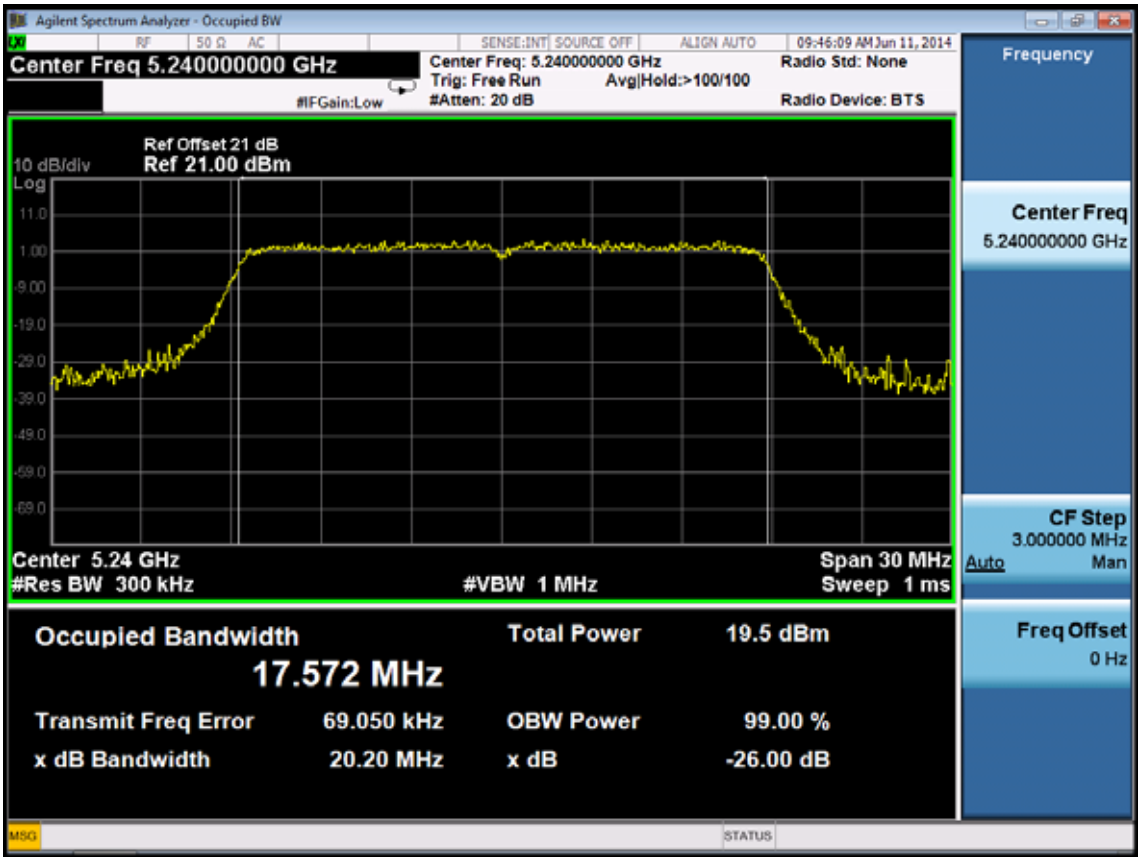
5180MHz



5200MHz

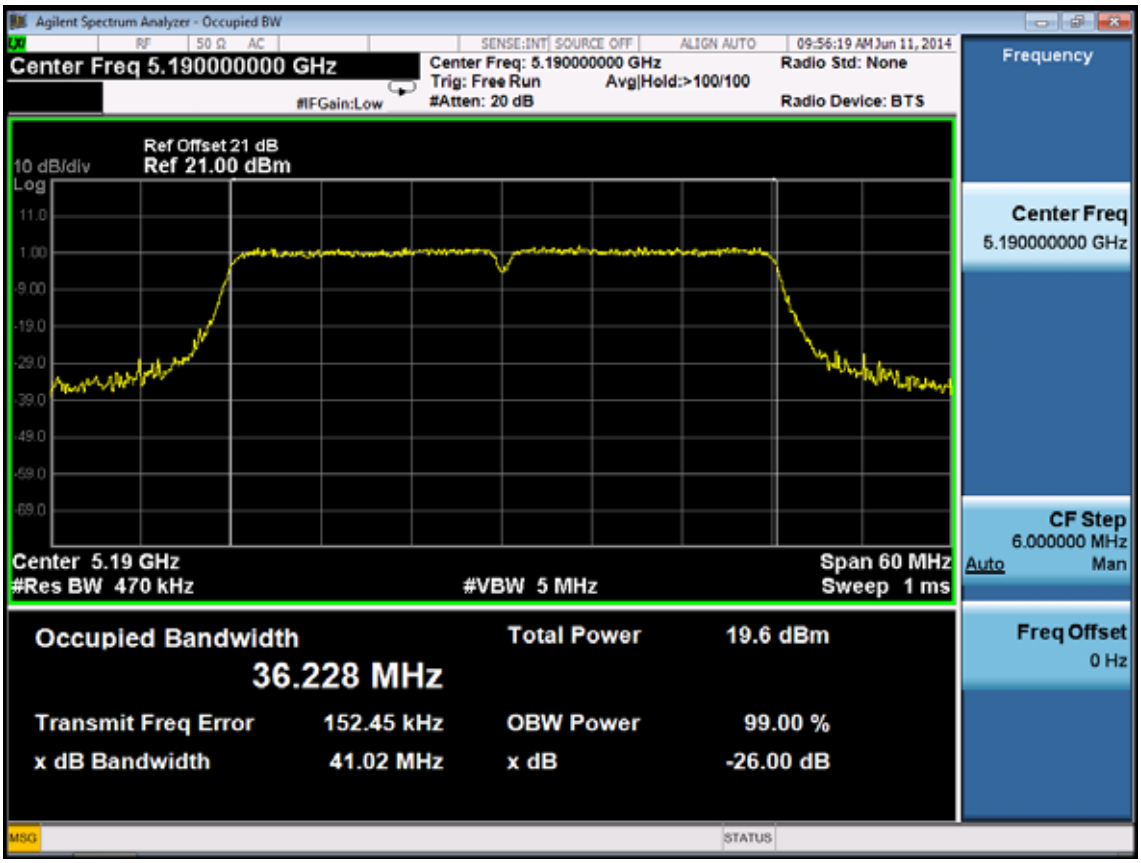


5240MHz

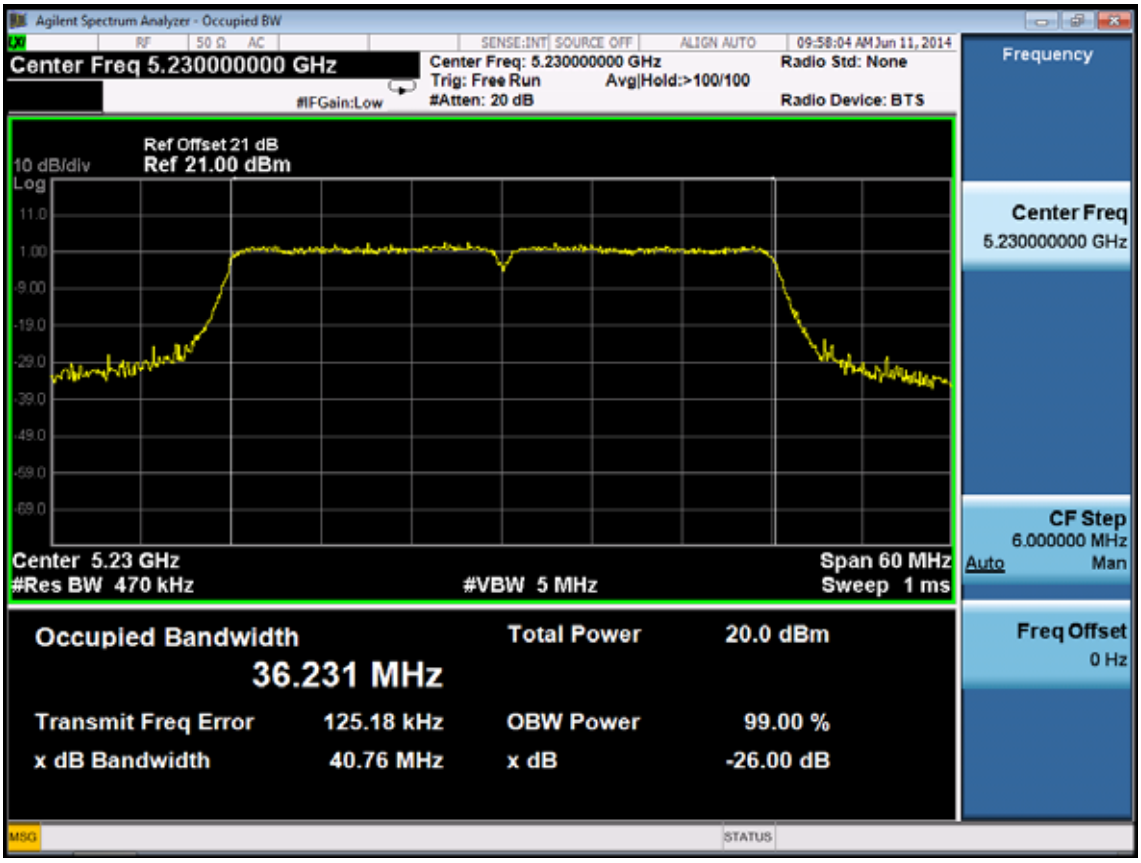


11n HT40

5190MHz

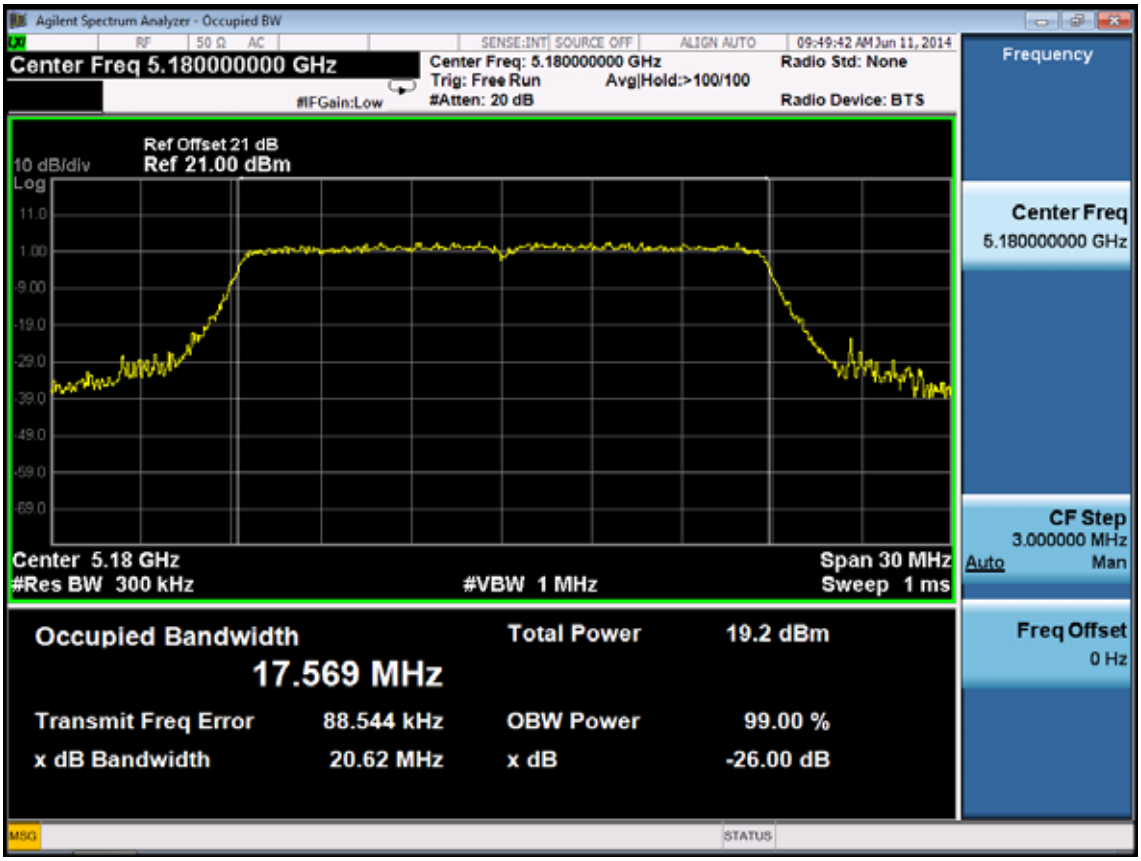


5230MHz

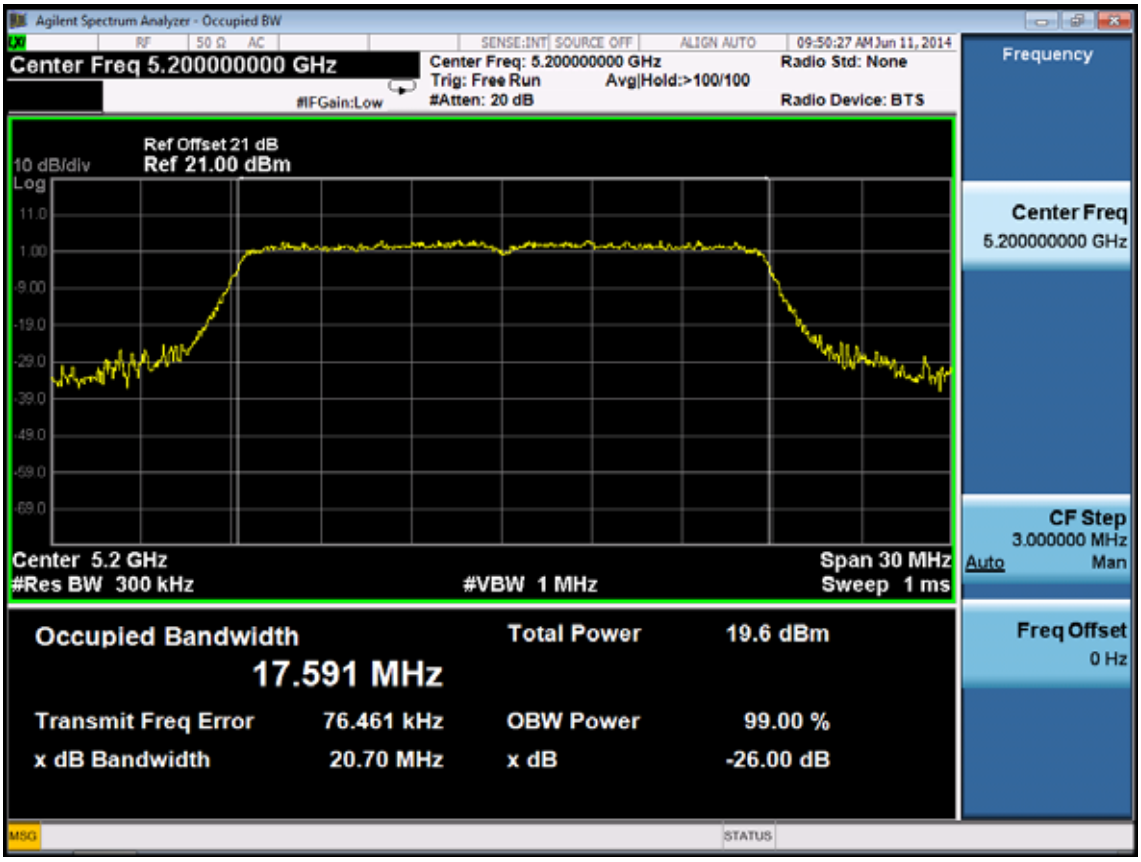


11ac VHT20

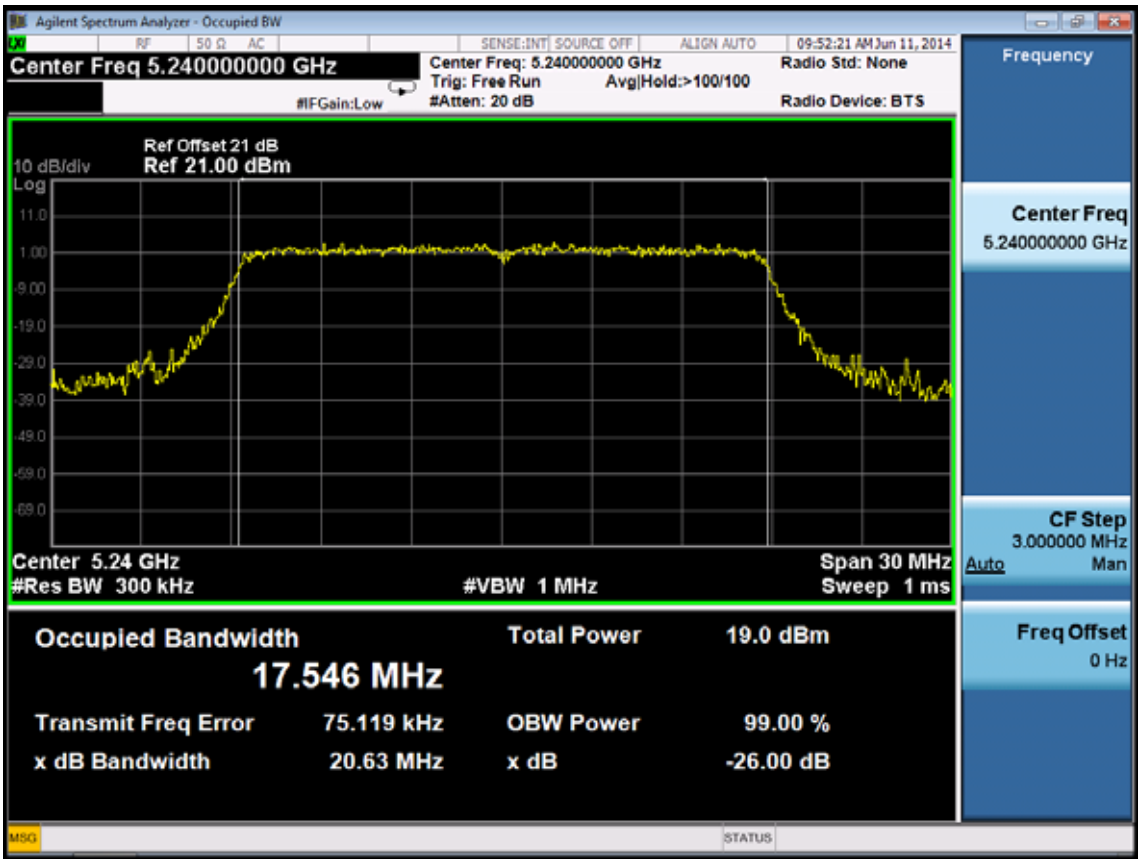
5180MHz



5200MHz

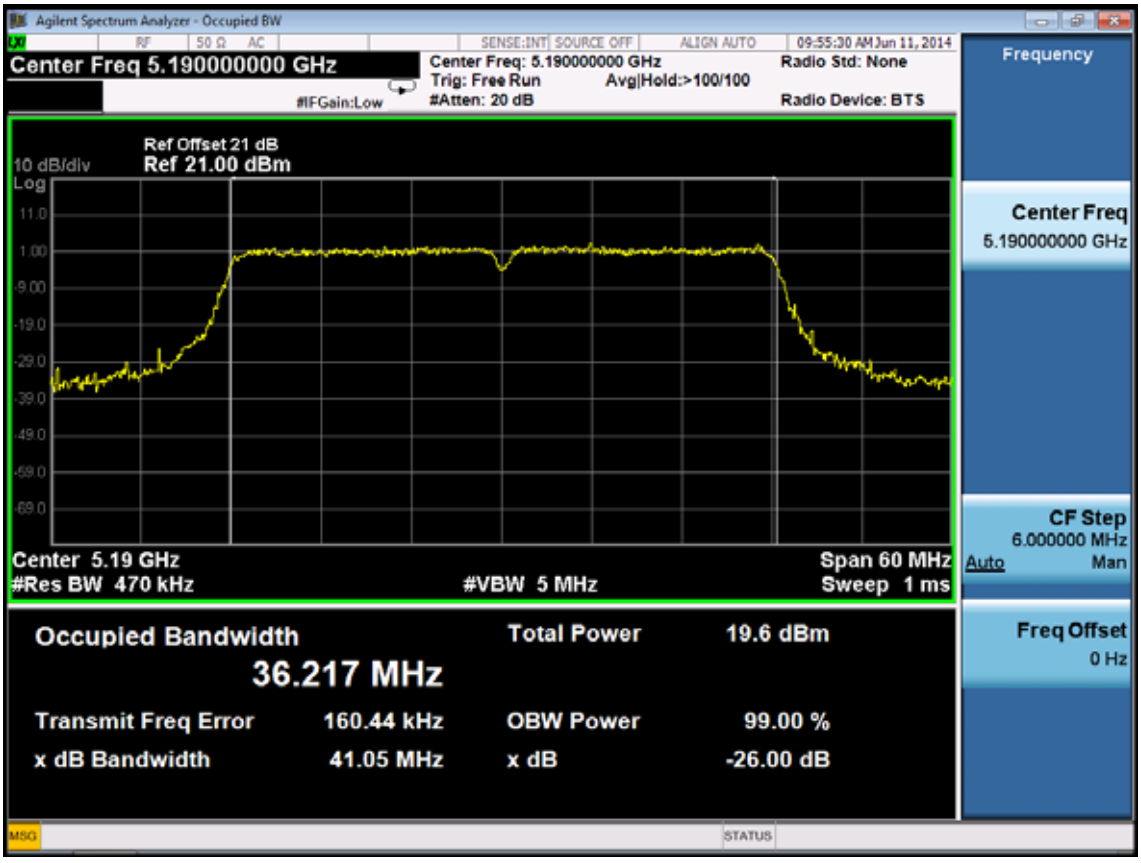


5240MHz

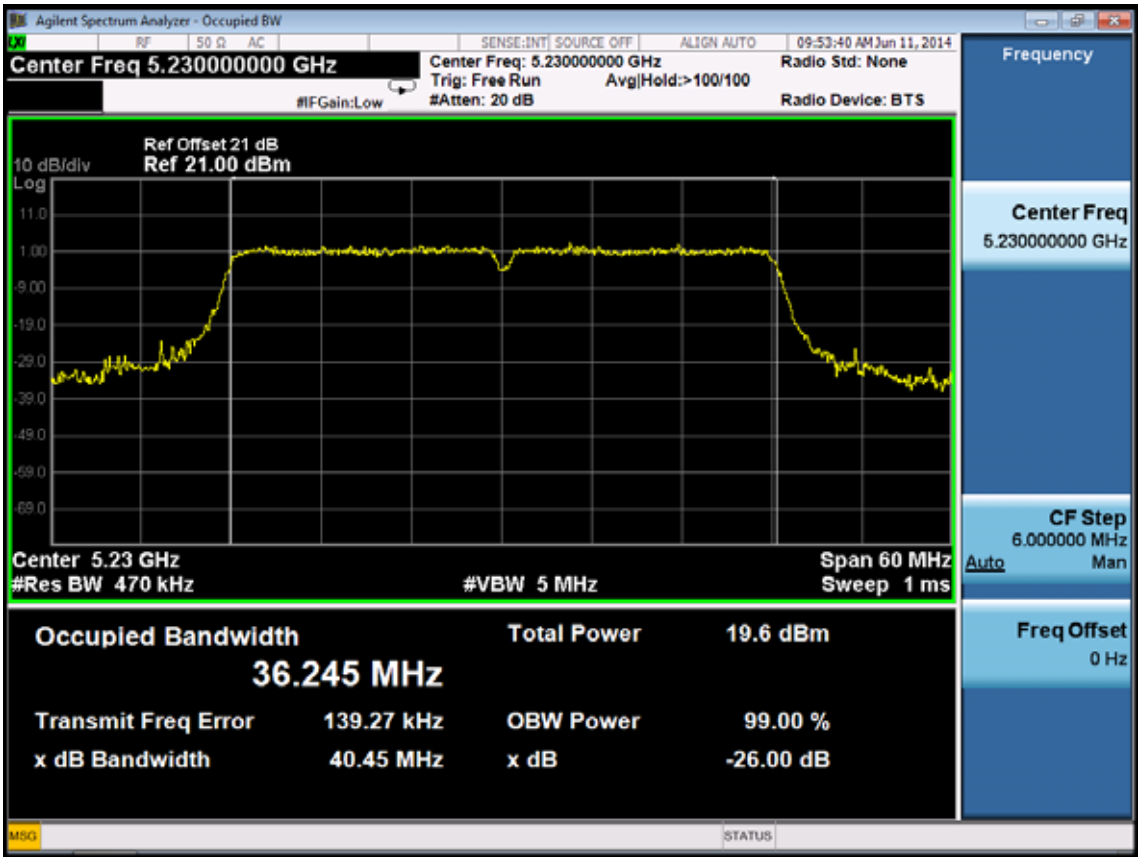


11ac VHT40

5190MHz

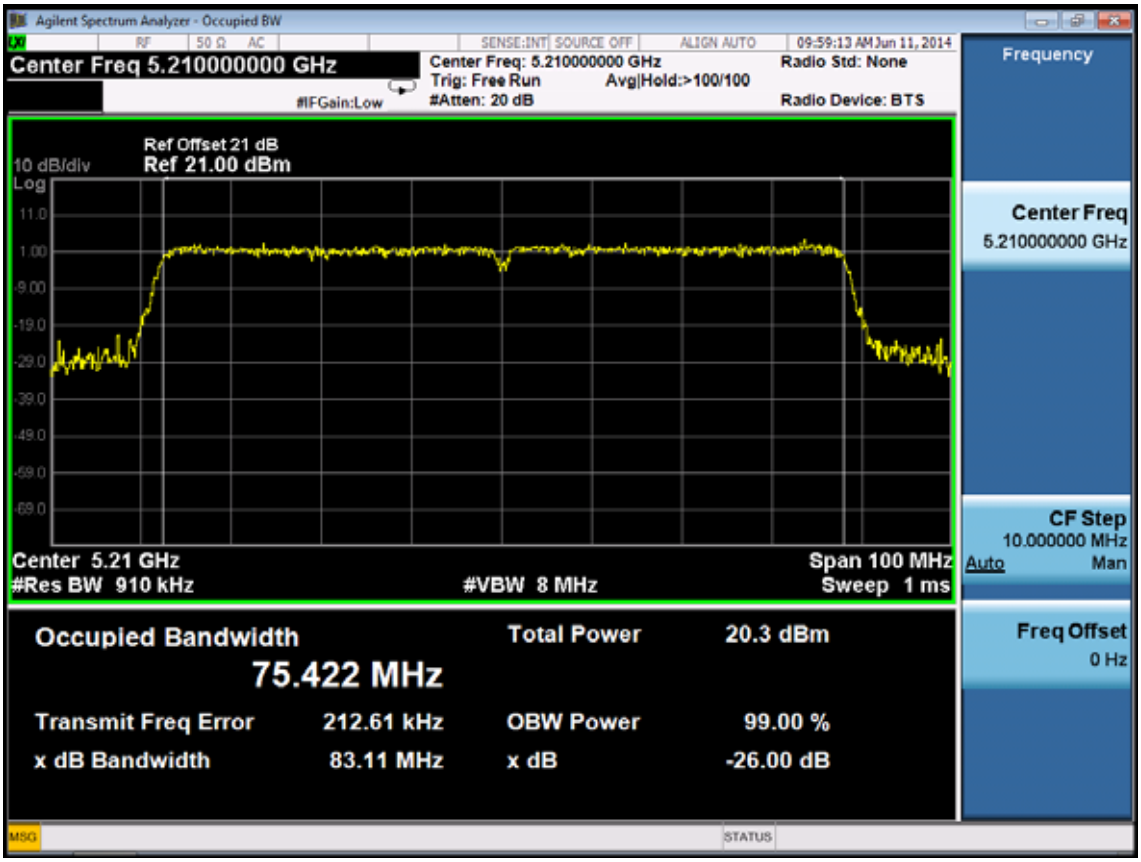


5230MHz



11ac VHT80

5210MHz



7. OUTPUT POWER TEST

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.31, 13	1Year
2.	Power meter	Anritsu	ML2487A	6K00002472	April 28,14	1Year
3.	Power sensor	Anritsu	MA2491A	0033005	April 28,14	1Year
4.	Attenuator (20dB)	Agilent	8491B	MY39262165	April 28,14	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	April 28,14	1 Year

7.2. Limit

For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, For the 5250-5350MHz and 5.47-5.725GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250Mw or 11dBm+10 log B. where B is the 26-dB emission bandwidth in MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.3. Test Procedure

1. Connected the EUT's antenna port to measure device by 26dB attenuator.
2. For IEEE 802.11a and IEEE802.11n HT20 and 802.11ac VHT20 mode, use a PK power meter which's bandwidth is 20MHz and above 26dB bandwidth of signal to measure out each test modes' PK output power.
3. For IEEE802.11n HT40 and 802.11ac VHT40 & 80 mode, because the signal's bandwidth is about 40MHz and above 20MHz bandwidth of power sensor ML2491A. So use the test method described in KBD789033 clause E Method SA-1
   1) Connect the antenna port to the spectrum analyzer and Set span of the spectrum to encompass the entire 26-dB emission bandwidth (EBW) of the signal.
   2) Set the RBW=1MHz and VBW =3MHz
   3) Number of points in sweep ≥ 2 Span / RBW
   4) Detector = RMS
   5) Sweep time = auto couple
   6) Allow the sweep to "free run" and set the Trace average at least 100 traces in power averaging (i.e., RMS) mode.
   7) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW band edges.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

7.4.Test Results

EUT: AC750 Wireless Dual Band Gigabit Router		
M/N:PW-AC4573R		
Test date: 2014-06-11	Pressure: 101.3±1.0 kpa	Humidity: 52.6±3.0%
Tested by: Kevin_Hu	Test site: RF site	Temperature:22.3±0.6 ℃

Cable loss: 1 dB		Attenuator loss: 20 dB	
Test Mode	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
		ANT 0	
11a	5180	14.40	17
	5200	14.05	17
	5240	14.16	17
11n HT20	5180	14.28	17
	5200	14.53	17
	5240	13.86	17
11n HT40	5190	15.02	17
	5230	15.62	17
11ac VHT20	5180	14.43	17
	5200	14.80	17
	5240	14.61	17
11ac VHT40	5190	15.69	17
	5230	16.09	17
11ac VHT80	5210	15.94	17
Conclusion: PASS			

11n HT40
5190MHz

5230MHz

11ac VHT40
5190MHz

5230MHz

11ac VHT80
5210MHz

8. POWER SPECTRAL DENSITY TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Oct.31, 13	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 13	1 Year
3.	Antenna	EMCO	3115	9607-4877	Aug.28, 13	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 13	1 Year

8.2. Limit

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 antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. 5250-5350MHz, 5470-5725MHz shall not exceed 11dBm in any 1-MHz band.

8.3. Test Procedure

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW,RMS Detector.
So use the test method described in KDB789033 clause E

1) Set span of the spectrum to encompass the entire 26-dB emission bandwidth (EBW) of the signal.
2) Set the RBW=1MHz and VBW =3MHz
3) Number of points in sweep ≥ 2 Span / RBW
4) Detector = RMS
5) Sweep time = auto couple
6) Allow the sweep to “free run” and set the Trace average at least 100 traces in power averaging (i.e., RMS) mode.
7) Use the peak search function find the max value as the power density in 1MHz.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

8.4.Test Results

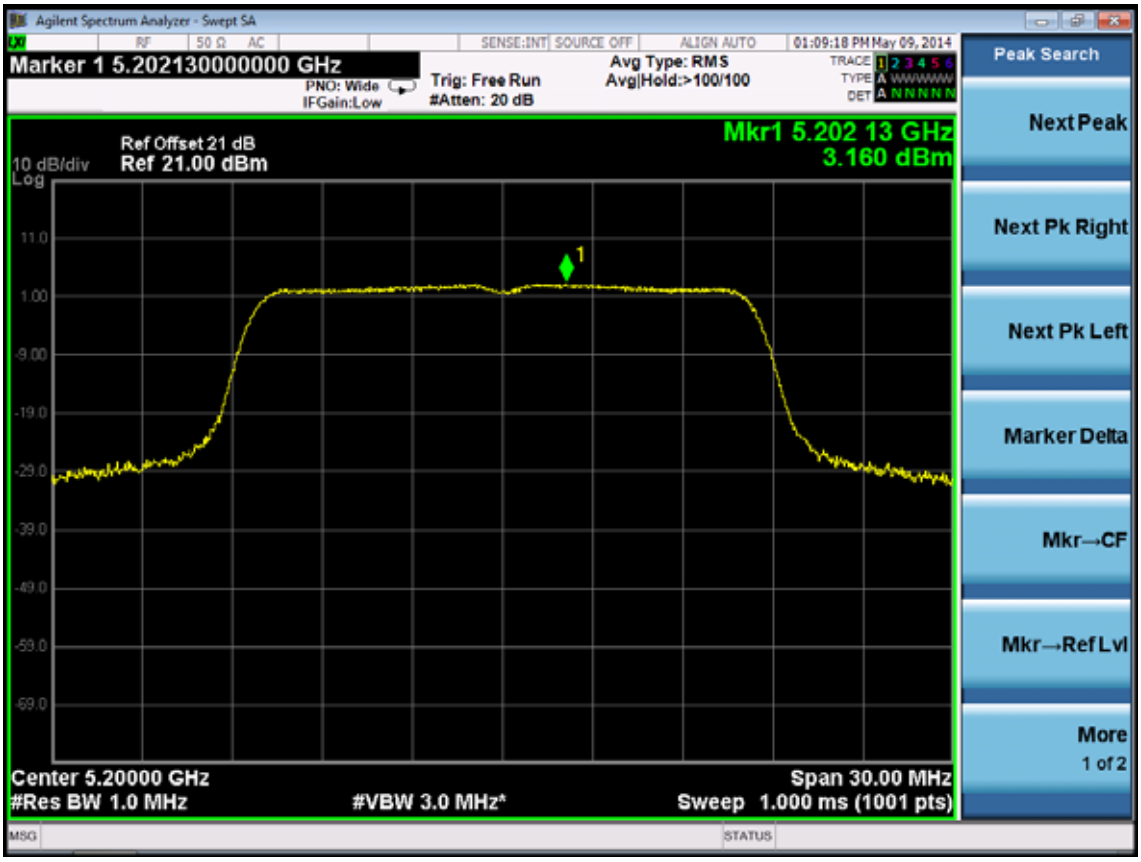
EUT:AC750 Wireless Dual Band Gigabit Router		
M/N:PW-AC4573R		
Test date: 2014-04-20	Pressure: 101.3±1.0kpa	Humidity:52.6±3.0%
Tested by:Kevin_Hu	Test site: RF site	Temperature:22.7±0.6 ℃

Cable loss: 1 dB		Attenuator loss: 20 dB	
Test Mode	Frequency（MHz）	Power density (dBm/MHz)	Limit （dBm/MHz）
11a	5180	2.984	4
	5200	3.160	4
	5240	3.283	4
11n HT20	5180	2.844	4
	5200	2.634	4
	5240	2.676	4
11n HT40	5190	1.437	4
	5230	1.542	4
11ac VHT20	5180	2.777	4
	5200	3.034	4
	5240	2.883	4
11ac VHT40	5190	1.624	4
	5230	1.631	4
11ac VHT80	5210	-1.180	4
Conclusion: PASS			

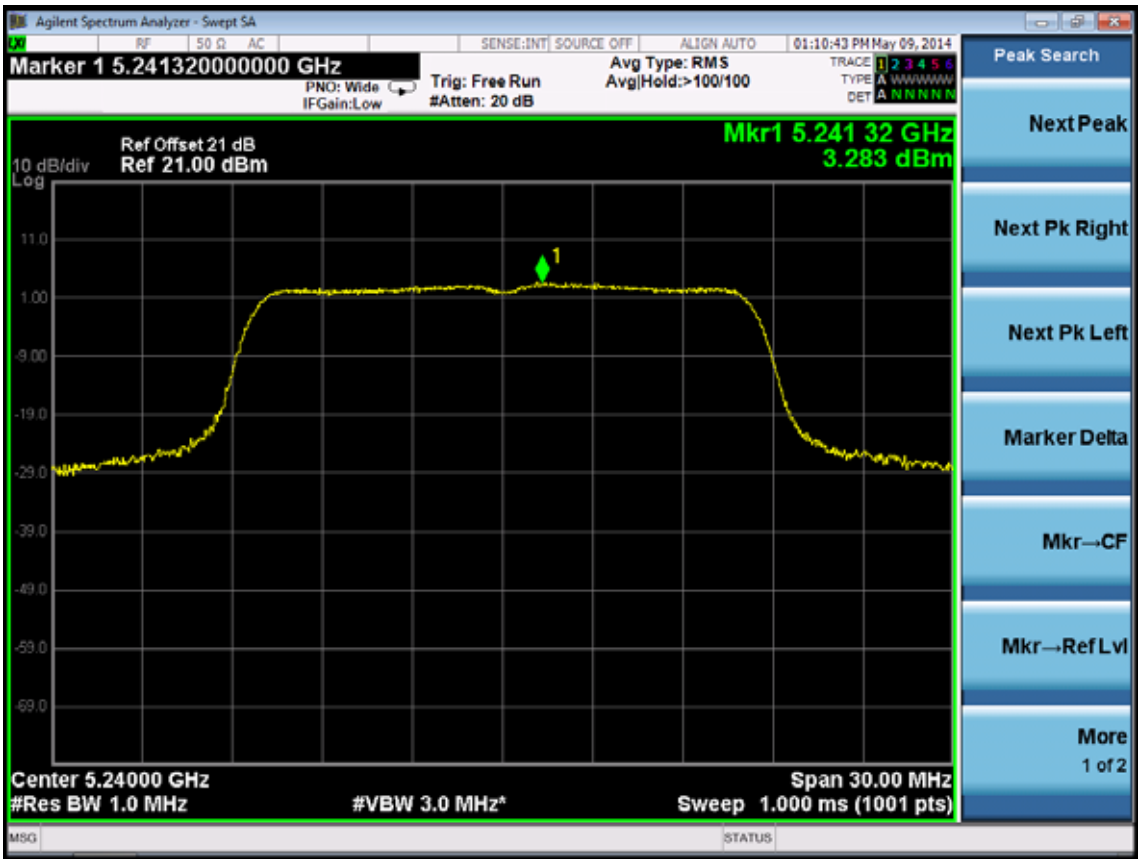
11a

5180MHz

5210MHz



5240MHz



11nHT20

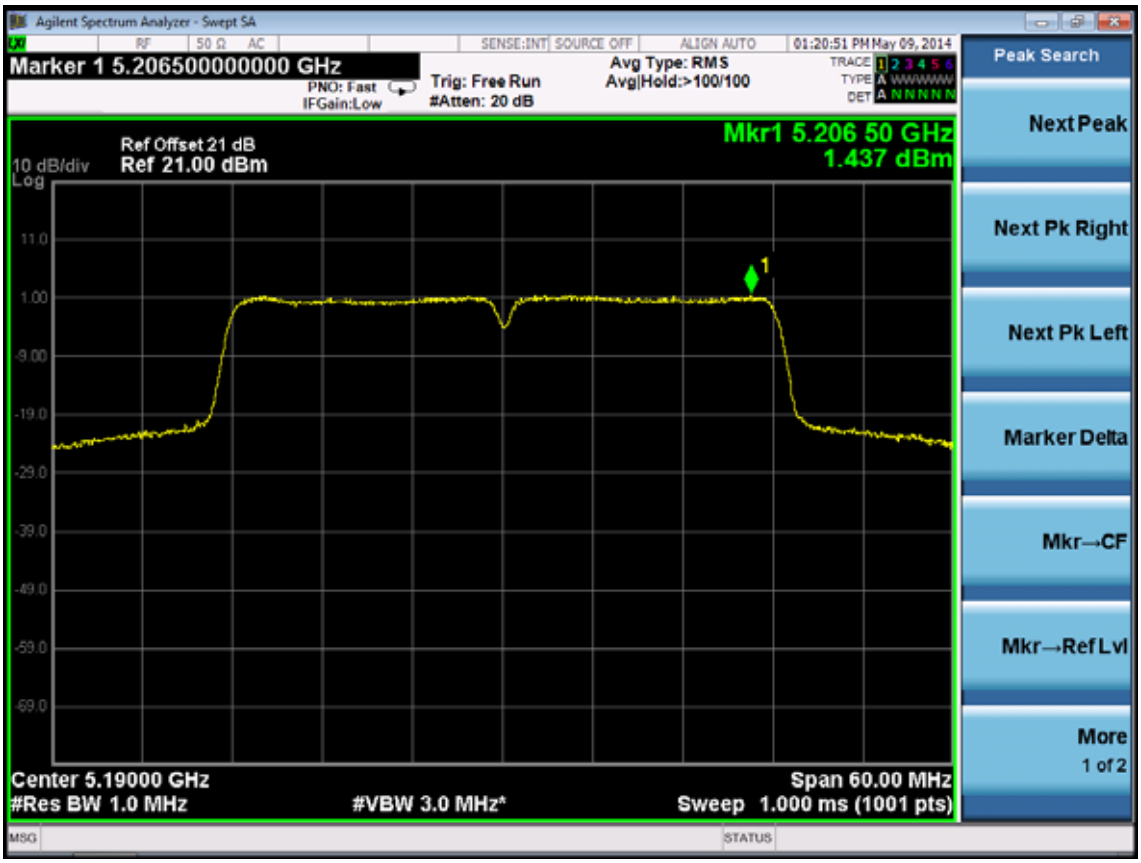
5180MHz

5210MHz

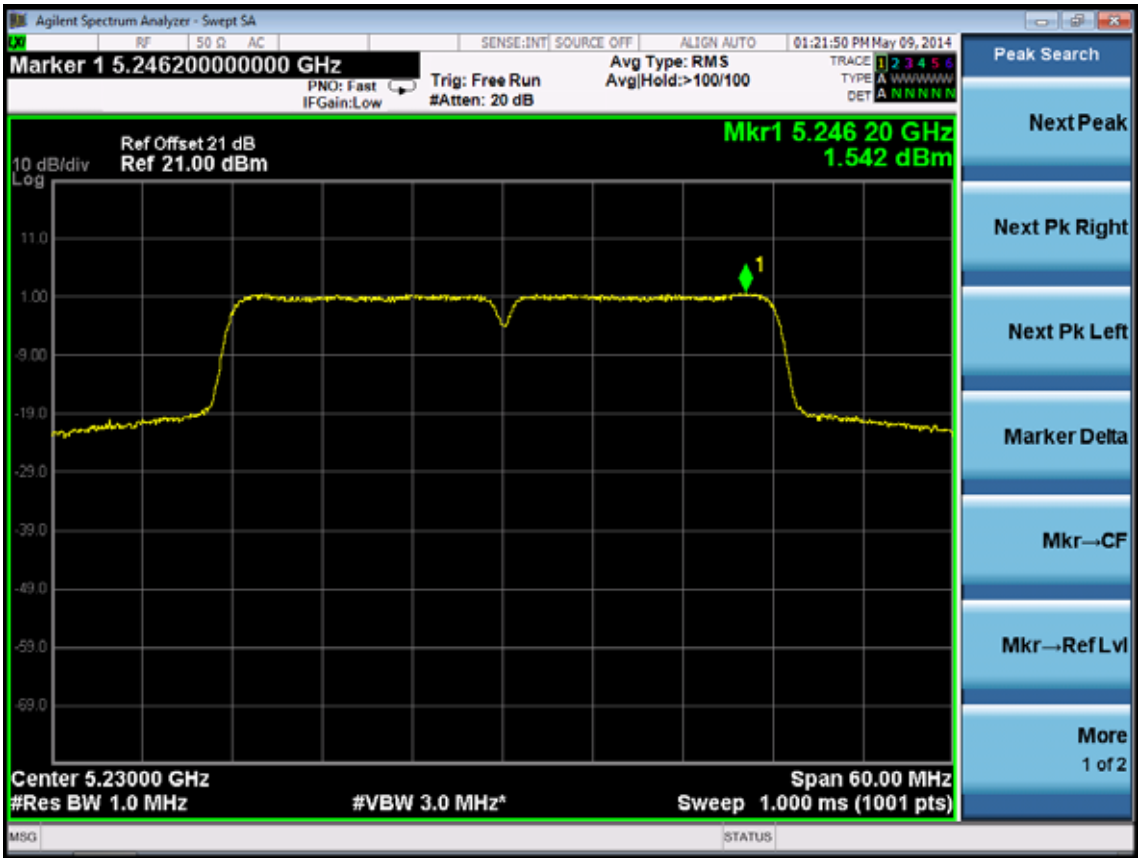
5240MHz

11nHT40

5190MHz



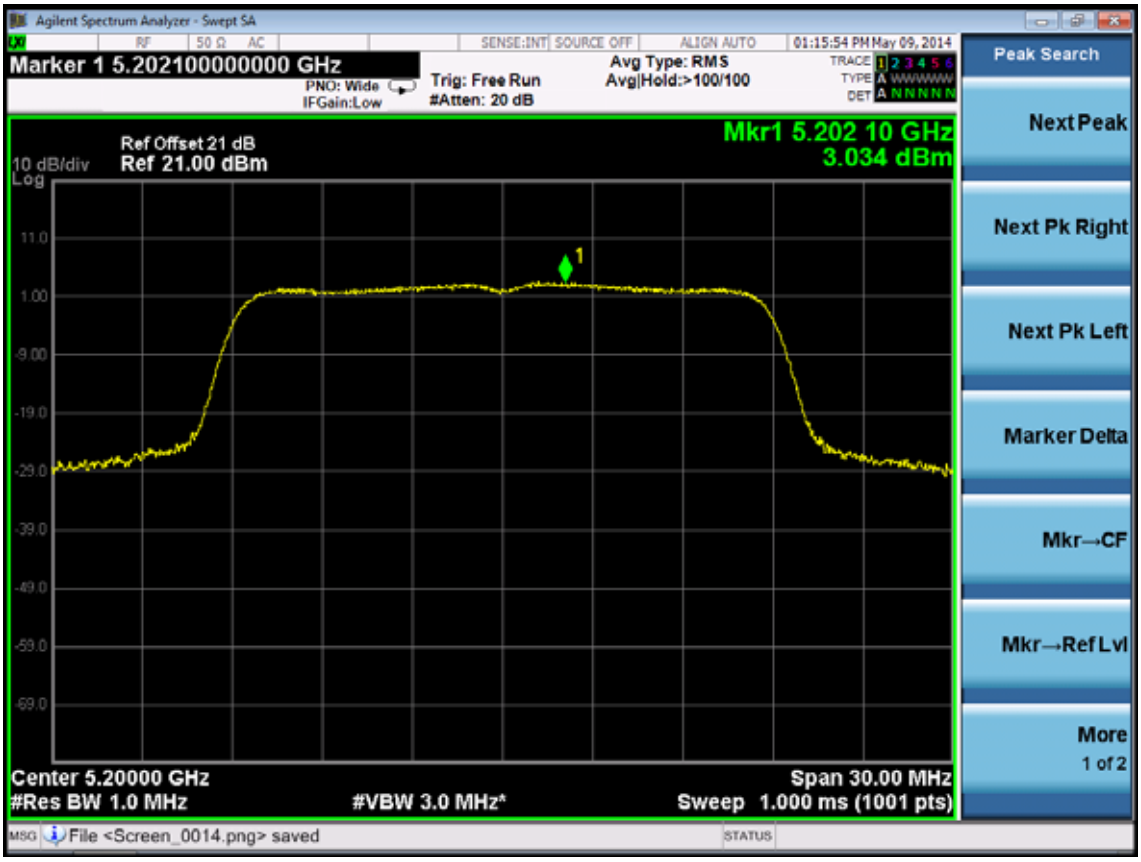
5230MHz



11ac VHT20

5180MHz

5210MHz



5240MHz

11nc VHT40

5190MHz

5230MHz

11ac VHT80

5210MHz

9. PEAK EXCURSION MEASUREMENT

9.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	April 28,14	1 Year
2.	Amp	HP	8449B	3008A02495	April 28,14	1 Year
3.	Horn Antenna	EMCO	3115	9510-4580	May.28, 13	1 Year
4.	HF Cable	Hubersuhne	SUCOFLEX104	274094/4	April 28,14	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	April 28,14	1 Year

9.2.Limit

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

9.3.Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emissions bandwidth. The largest difference between the following two traces (Peak Trace and Average Trace) must be ≤ 13 dB for all frequencies across the emissions bandwidth. Submit a plot.
3. Peak Trace: Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and max-hold settings.
4. Average Trace: Method #3—video averaging with max hold--and sum power across the band. Set span to encompass the entire emissions bandwidth (EBW) of the signal. Set sweep trigger to “free run”. Set RBW = 1 MHz. Set VBW ≥ 1/T (Draft n VBW = 300kHz ≥ 1/4 μ s). Use sample detector mode if bin width (i.e., span/number of points in spectrum) < 0.5 RBW. Otherwise use peak detector mode. Set max hold. Allow max hold to run for 60 seconds.

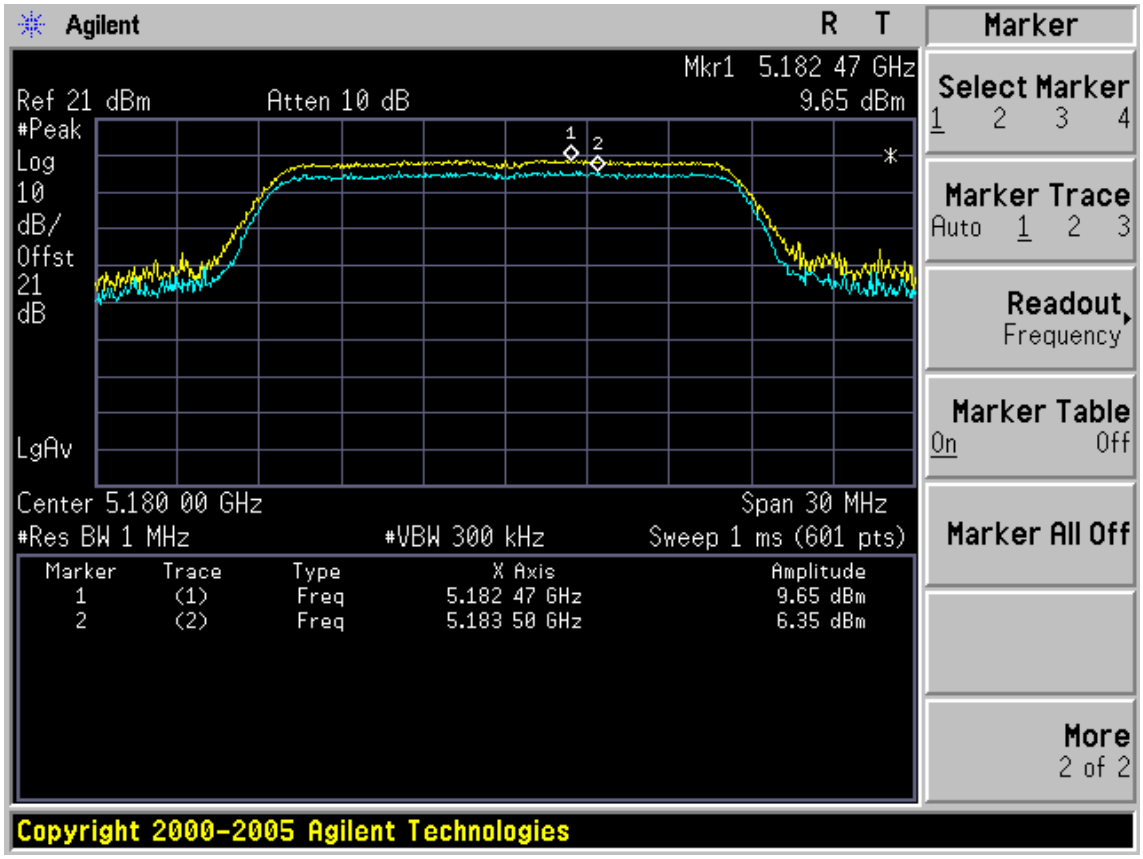
9.4.Test Results

EUT:AC750 Wireless Dual Band Gigabit Router		
M/N:PW-AC4573R		
Test date: 2014-04-17	Pressure: 101.1±1.0 kpa	Humidity: 51.3±3.0%
Tested by: Kevin_Hu	Test site: RF Site	Temperature：22.5±0.6℃

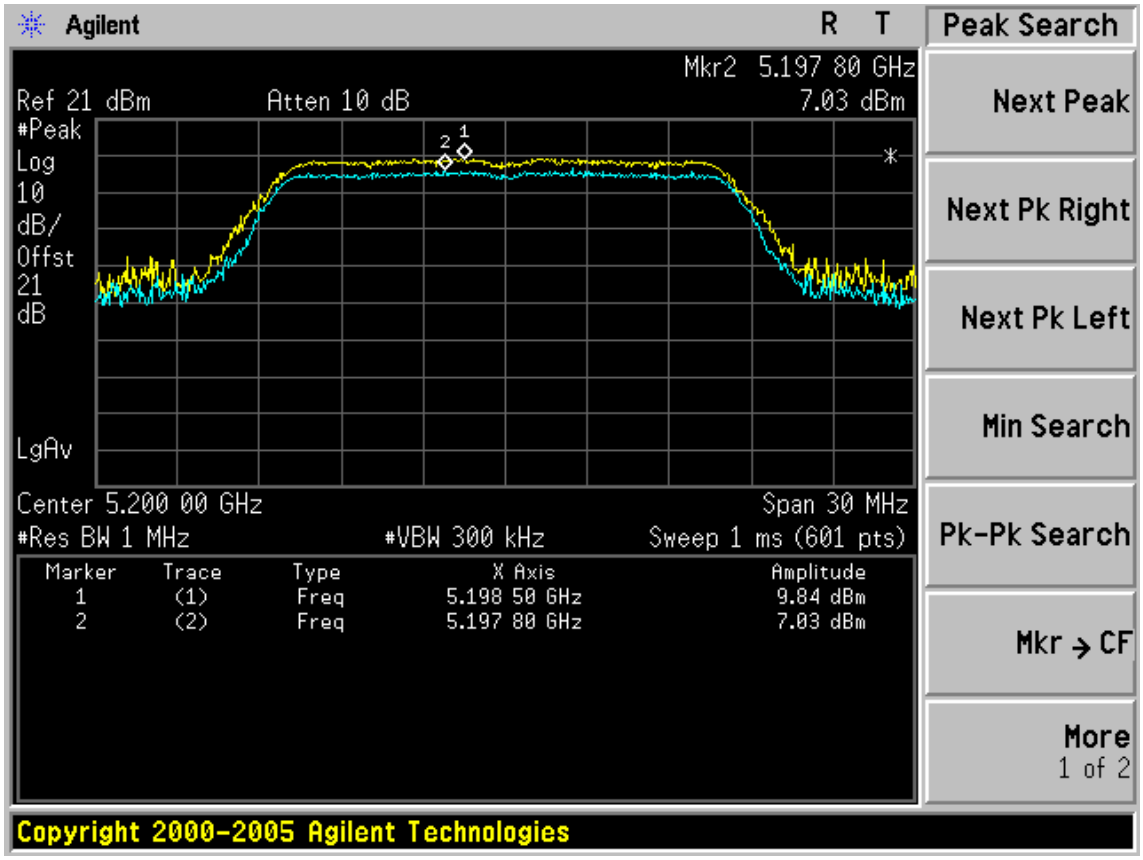
Cable loss: 1 dB		Attenuator loss: 20 dB	
Test Mode	Frequency（MHz）	Power excursion（dB） ANT 0	Limit (dB)
11a	5180	3.3	13
	5200	2.81	13
	5240	3.71	13
11nHT20	5180	3.14	13
	5200	3.83	13
	5240	3.61	13
11nHT40	5190	4.14	13
	5230	3.66	13
11ac VTH20	5180	3.69	13
	5200	3	13
	5240	2.69	13
11ac VTH40	5190	4.17	13
	5230	3.74	13
11ac VTH80	5210	3.57	13
Conclusion：PASS			

11a

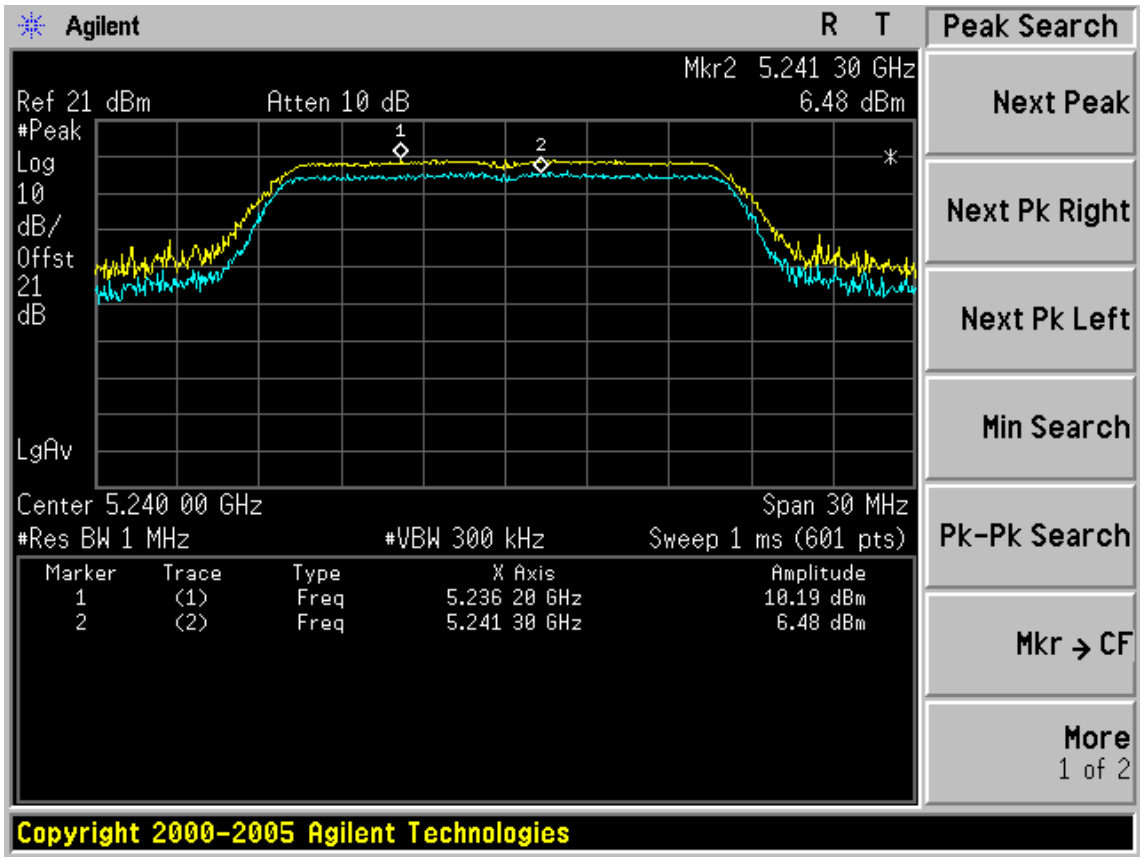
5180MHz



5210MHz

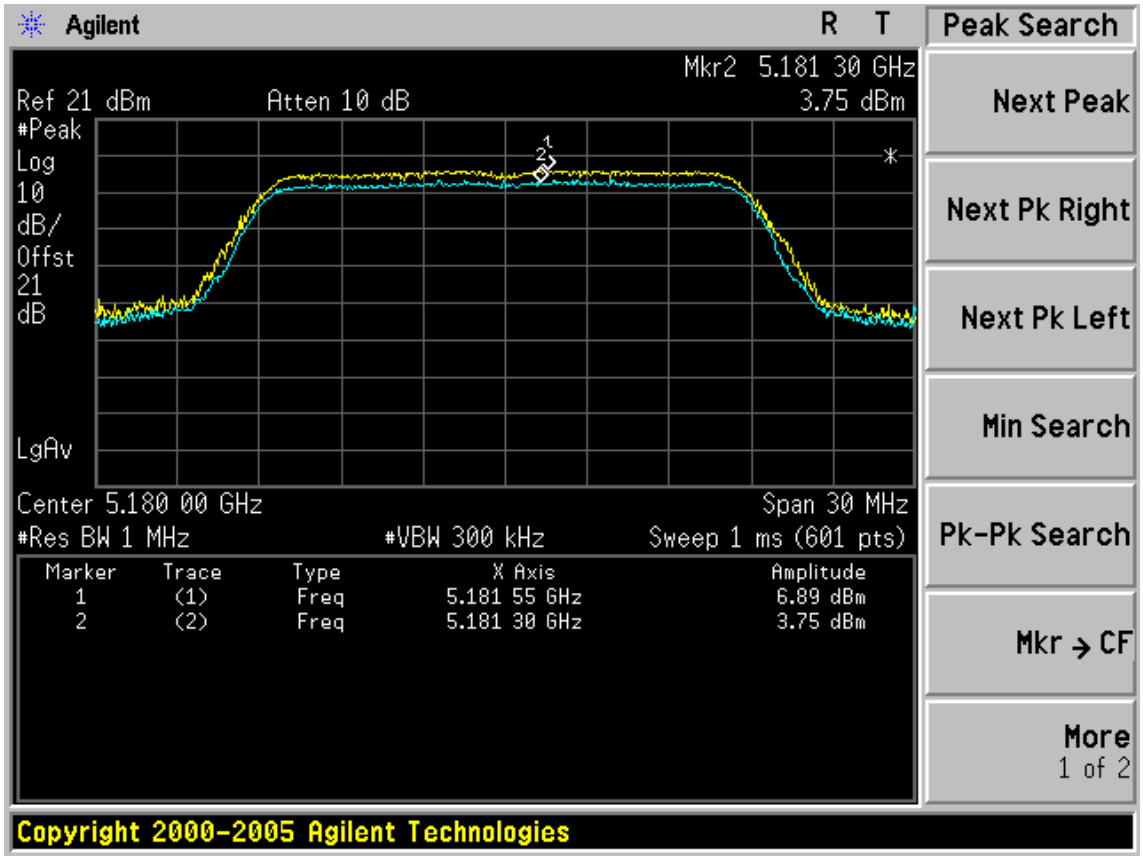


5240MHz

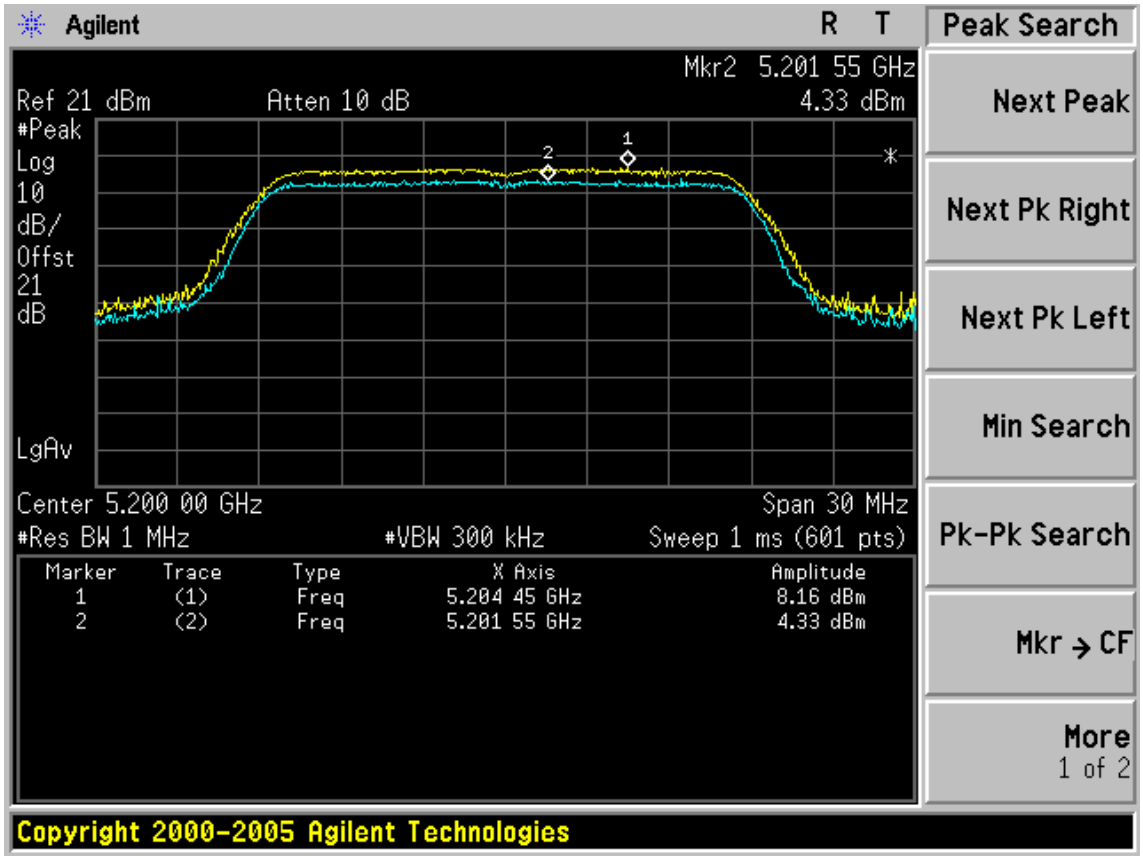


11nHT20

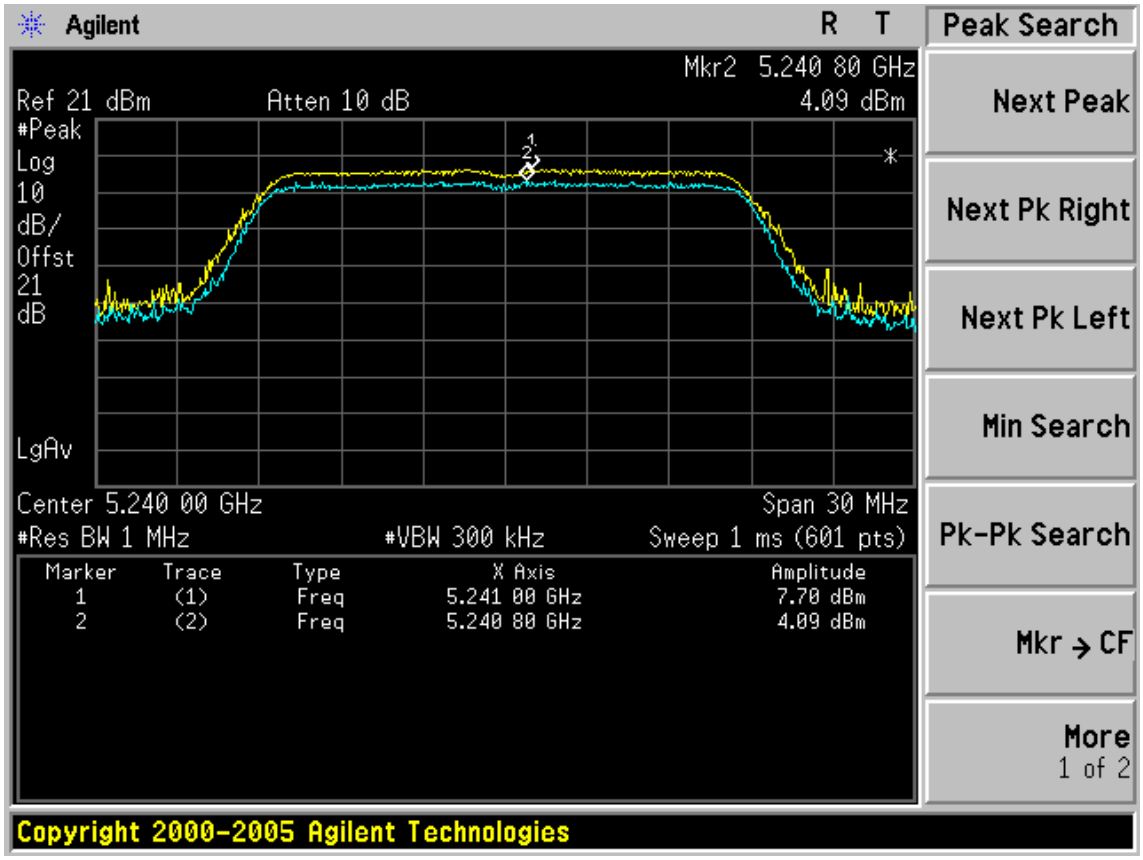
5180MHz



5210MHz

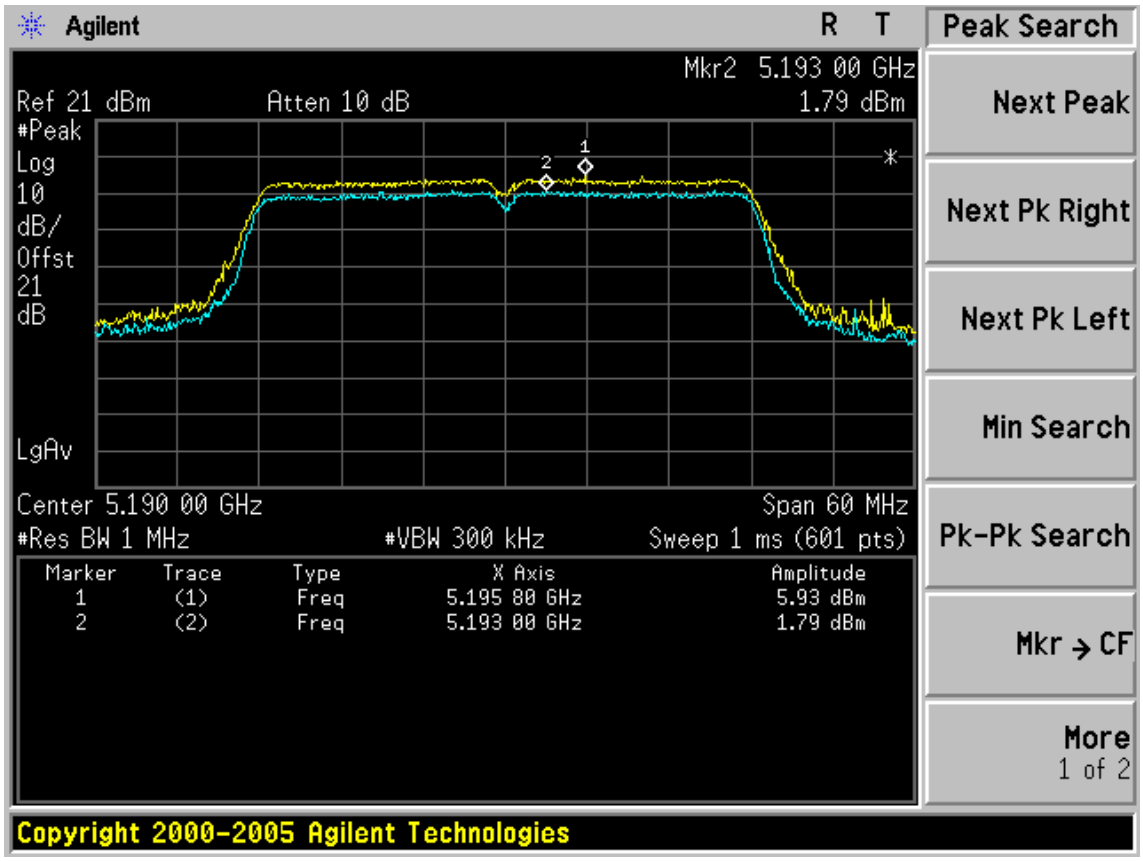


5240MHz

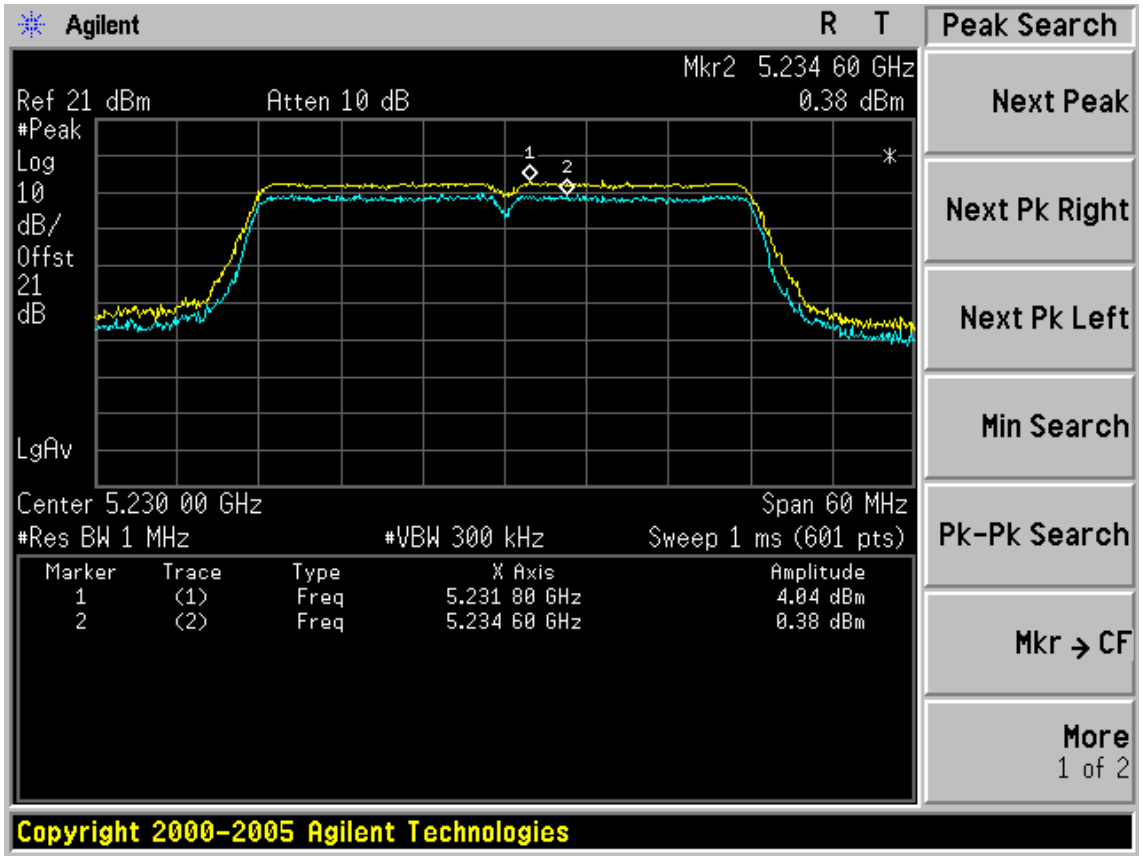


11nHT40

5190MHz

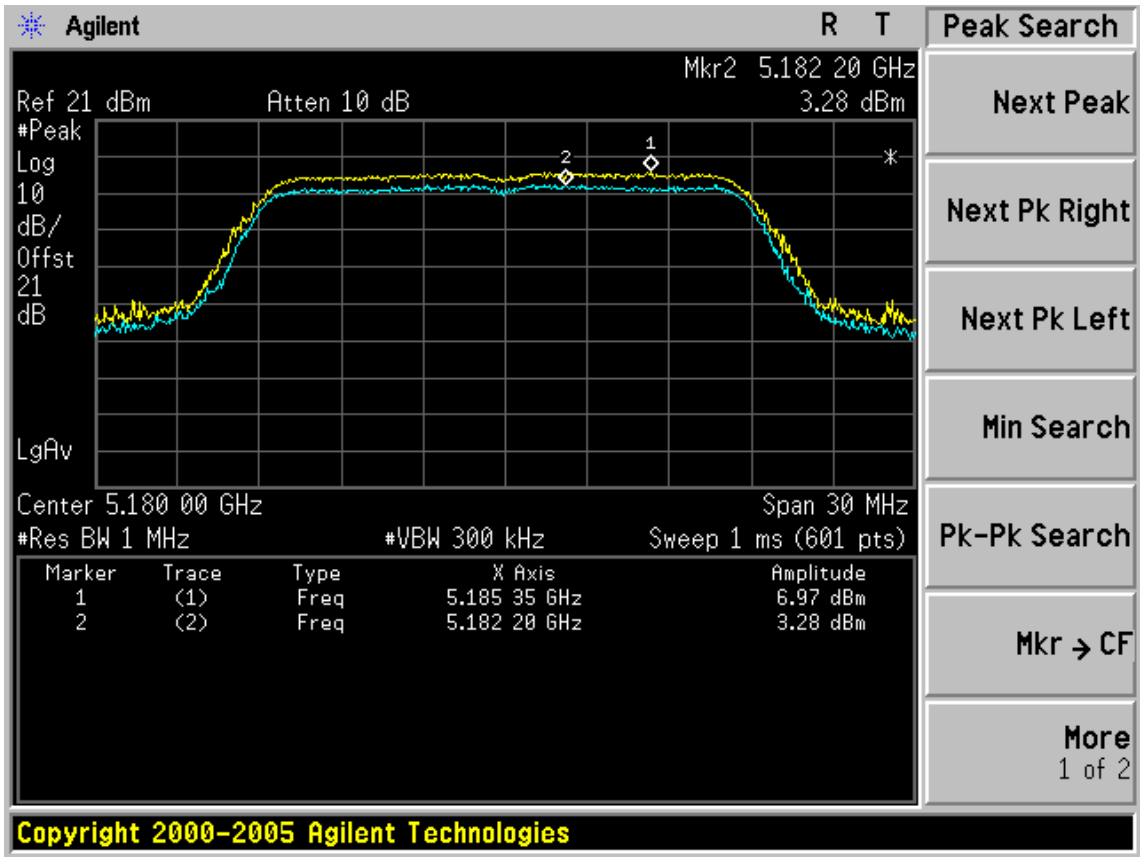


5230MHz

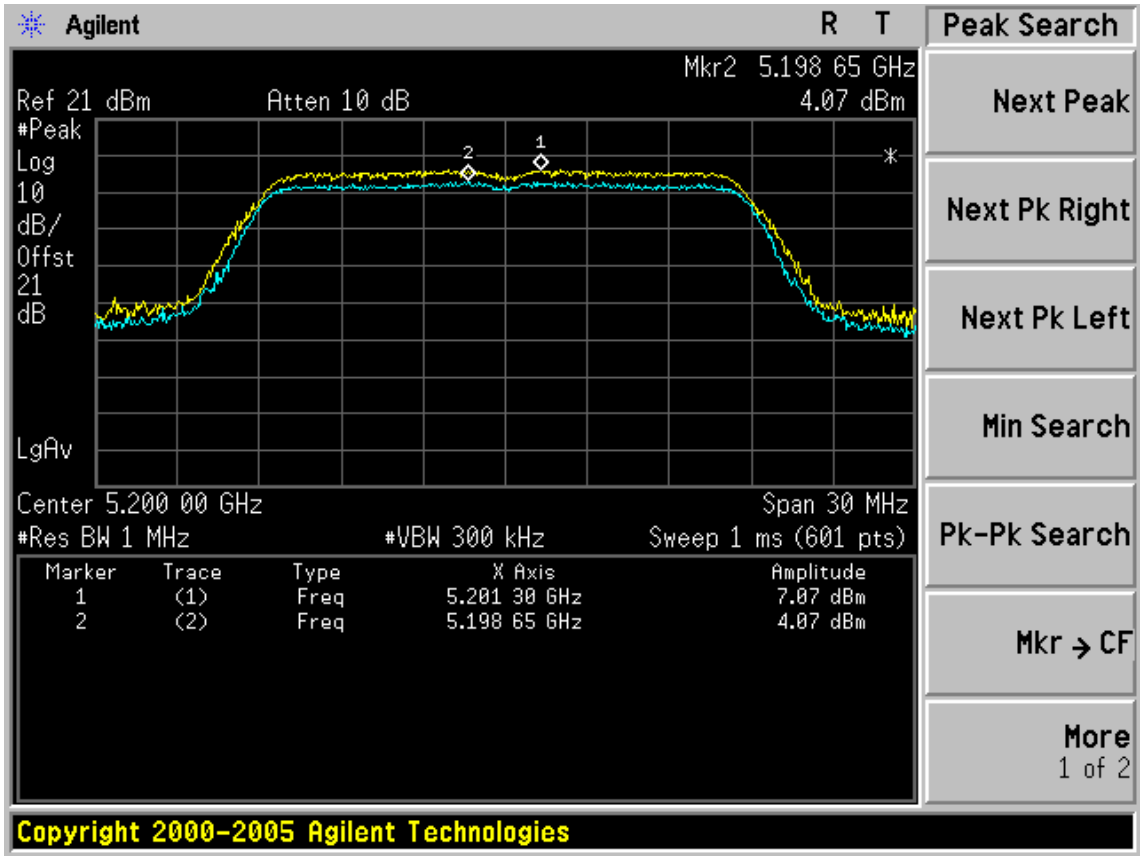


11ac VHT20

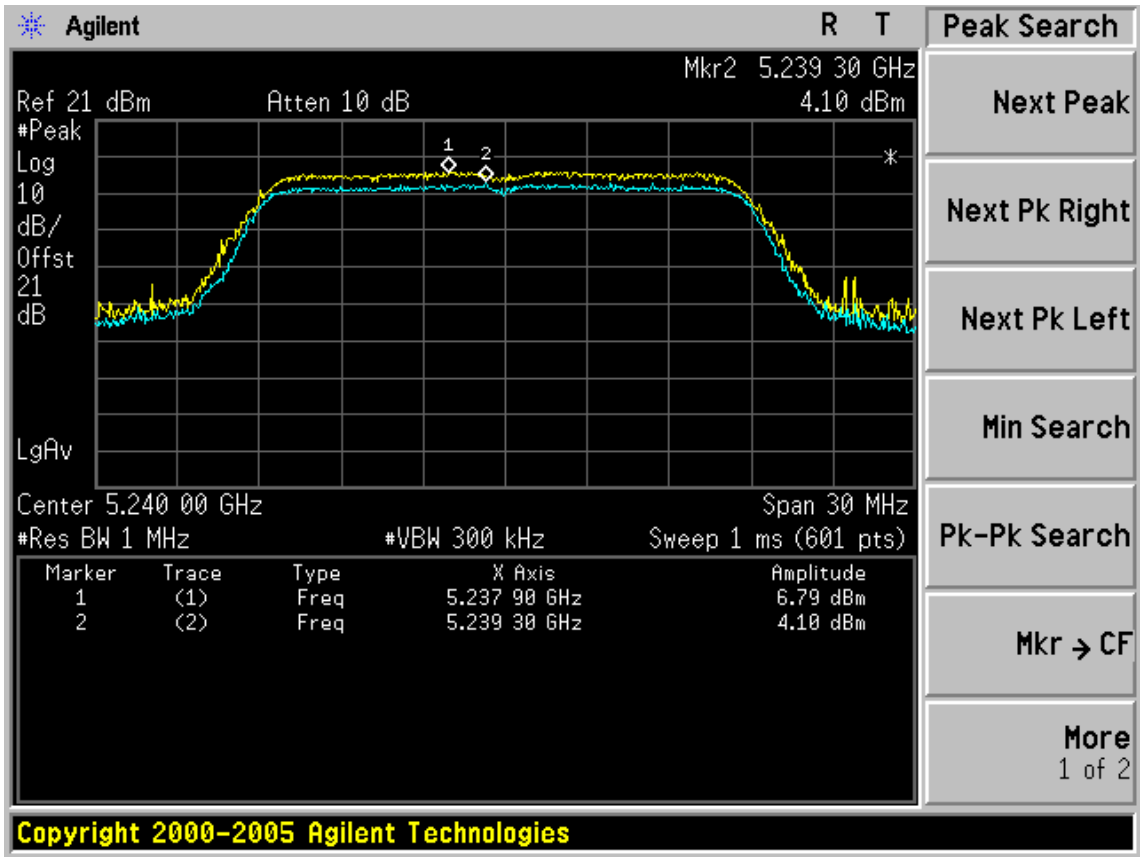
5180MHz



5210MHz

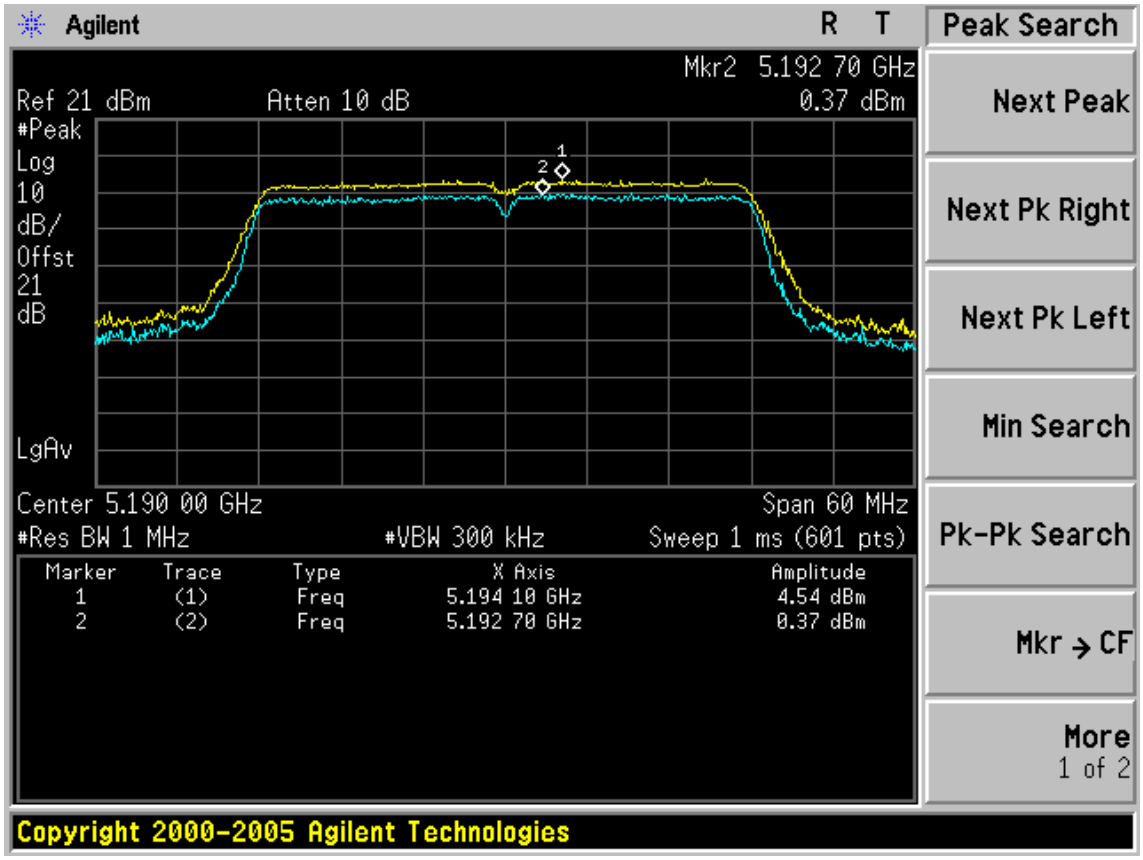


5240MHz

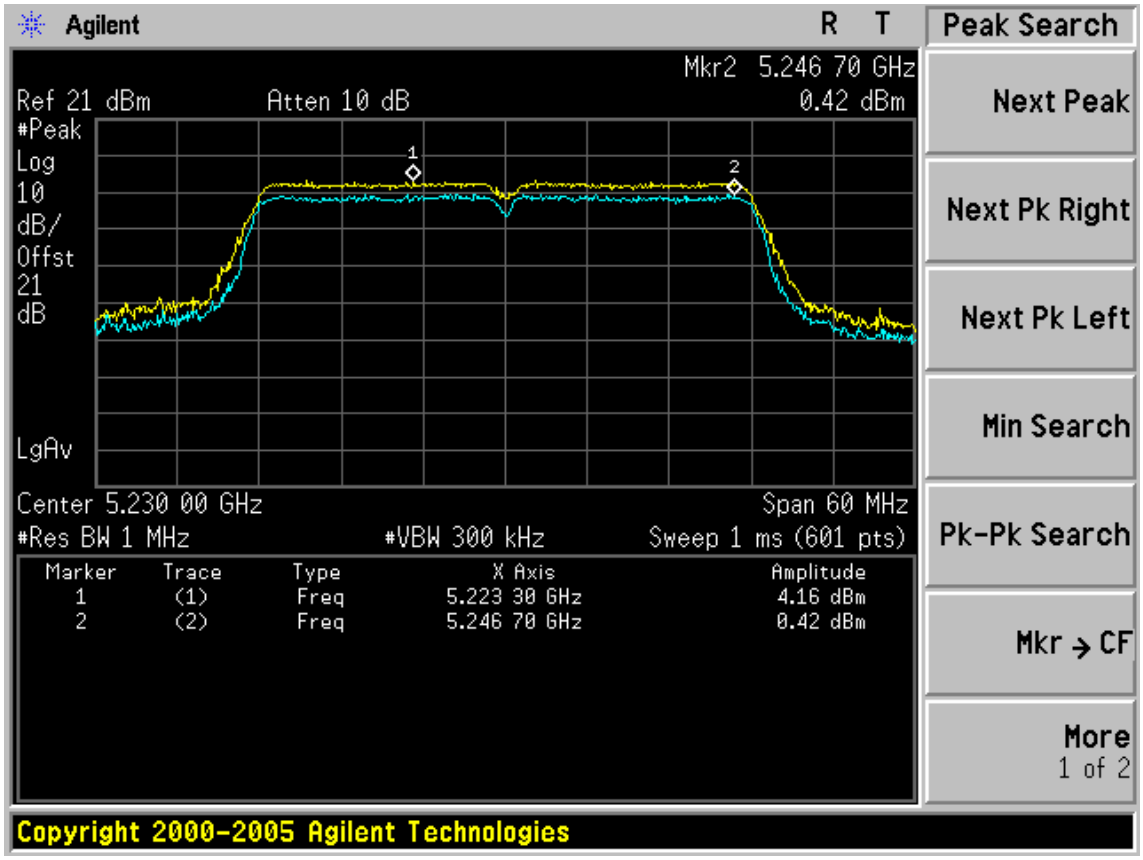


11ac VHT40

5190MHz

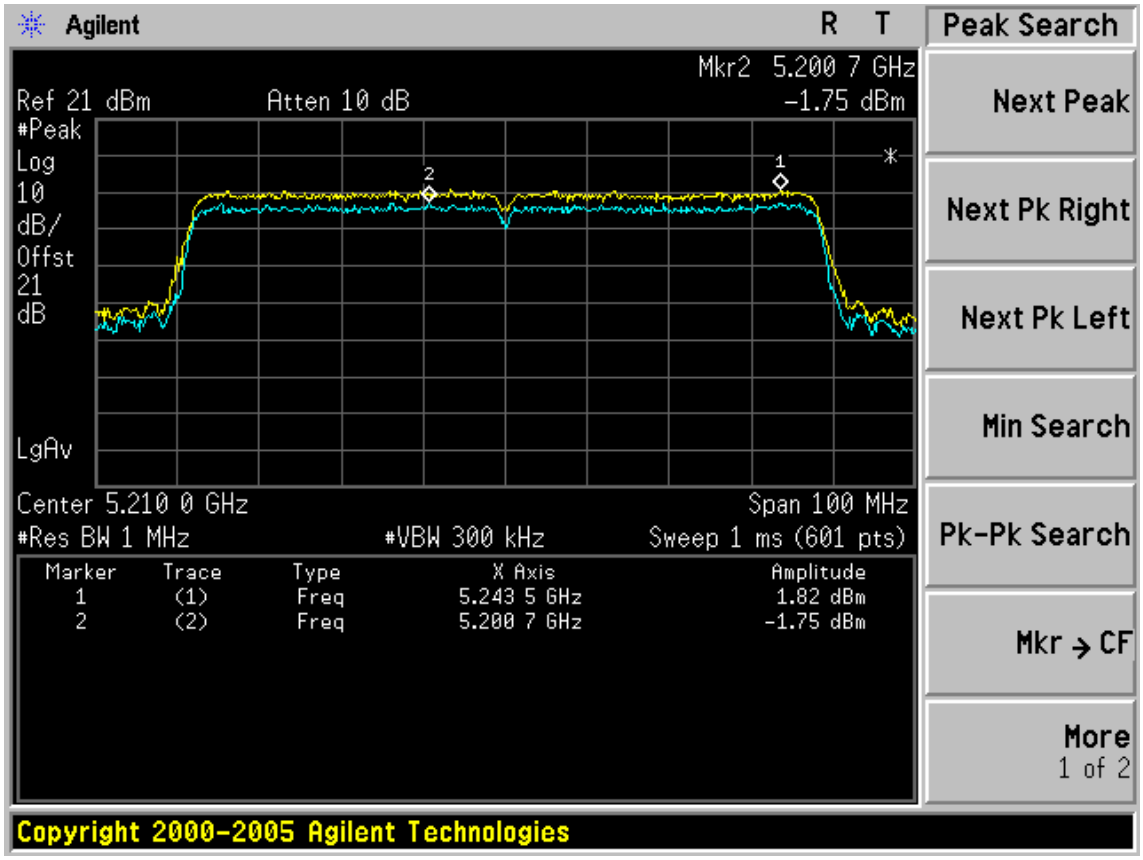


5230MHz



11ac VHT80

5210MHz



10. FREQUENCY STABILITY MEASUREMENT

10.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	April 28,14	1 Year
2.	Amp	HP	8449B	3008A02495	April 28,14	1 Year
3.	Horn Antenna	EMCO	3115	9510-4580	May.28, 13	1 Year
4.	HF Cable	Hubersuhne	SUCOFLEX 104	274094/4	April 28,14	1 Year

10.2.Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or ±20ppm

10.3.Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyser. EUT have transmitted absence of modulation signal and fixed channelize. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
2. Extreme temperature rule is 0°C~50°C.

10.4.Test Result

EUT:AC750 Wireless Dual Band Gigabit Router						
M/N:PW-AC4573R						
Power: DC 12V From Adapter Input AC 120V/60Hz						
Test date: 2014-04-16	Test site: RF Chamber		Tested by: Kevin_Hu			
Ambient Temperature: 21.9±1.0℃	Relative Humidity: 53.5±1.0%		Pressure:101.1±1.0 kpa			
Frequency stability VS Voltage (Temperature:20℃)						
Supply Voltage （V）	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
102V	5180	5179.9830	0.017	-3.28	+/-20	PASS
120V	5180	5179.9845				
138V	5180	5179.8450				
102V	5200	5199.9815	0.0185	-3.56	+/-20	
120V	5200	5199.9820				
138V	5200	5199.9845				
102V	5240	5239.9835	0.0165	-3.15	+/-20	
120V	5240	5239.9840				
138V	5240	5239.9865				
Frequency stability VS Temperature (supply voltage AC 120V/60Hz)						
Temperature （℃）	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
0℃	5180	5179.9815	0.0185	-3.57	+/-20	PASS
10℃	5180	5179.9830				
20℃	5180	5179.9845				
30℃	5180	5179.9850				
40℃	5180	5179.9865				
50℃	5180	5179.9875				

Frequency stability VS Temperature (supply voltage AC 120V/60Hz)						
Temperature (℃)	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
0℃	5200	5199.9800	0.02	-3.85	+/-20	PASS
10℃	5200	5199.9815				
20℃	5200	5199.9820				
30℃	5200	5199.9830				
40℃	5200	5199.9835				
50℃	5200	5199.9845				
Frequency stability VS Temperature (supply voltage AC 120V/60Hz)						
Temperature (℃)	Test frequency (MHz)	Test result (MHz)	Max Deviation (MHz)	Max Deviation (ppm)	Limit (ppm)	Conclusion
0℃	5240	5239.9810	0.019	-3.63	+/-20	PASS
10℃	5240	5239.9825				
20℃	5240	5239.9840				
30℃	5240	5239.9855				
40℃	5240	5239.9860				
50℃	5240	5239.9865				

11.MPE ESTIMATION

11.1.Limit for General Population/ Uncontrolled Exposures

Frequency	**Power density (mW/ cm^2)**	**Averaging time(minutes)**
300MHz----1.5GHz	F/1500	30
1.5GHz---100GHz	1.0	30

Frequency(MHz)	**Power density (mW/ cm^2)**	**Averaging time(minutes)**
2412	1	30
2437	1	30
2462	1	30

Note: F= Frequency in MHz

11.2. Estimation Result

EUT:AC750 Wireless Dual Band Gigabit Router		
M/N:PW-AC4573R		
Test date: 2014-05-09	Pressure: 101.6±1.0 kpa	Humidity: 48.4±3.0%
Tested by: Kevin_Hu	Test site: RF site	Temperature:22.7±0.6 ℃

Cable loss: 1 dB		Attenuator loss: 20 dB				Antenna Gain: 3dBi	
Test Mode	CH	Frequency（MHz）	Maximum Conducted Output Power (dBm)	Output Power (mW)	Antenna Gain (dBi)	Antenna Gain (Linear)	MPE
11a	CH36	5180	14.40	27.54	3	2.00	0.0109
	CH40	5200	14.05	25.41	3	2.00	0.0101
	CH48	5240	14.16	26.06	3	2.00	0.0104
11n HT20	CH36	5180	14.28	26.79	3	2.00	0.0106
	CH40	5200	14.53	28.38	3	2.00	0.0113
	CH48	5240	13.86	24.32	3	2.00	0.0097
11n HT40	CH38	5190	15.02	31.77	3	2.00	0.0126
	CH46	5230	15.62	36.48	3	2.00	0.0145
11ac VHT20	CH36	5180	14.43	27.73	3	2.00	0.0110
	CH40	5200	14.80	30.20	3	2.00	0.0120
	CH48	5240	14.61	28.91	3	2.00	0.0115
11ac VHT40	CH38	5190	15.69	37.07	3	2.00	0.0147
	CH46	5230	16.09	40.64	3	2.00	0.0161
11ac VHT80	CH42	5210	15.94	39.26	3	2.00	0.0156

$$MPE=\frac{PG}{4\Pi R^2} \quad (R=20cm)$$

12. NTENNA REQUIREMENT

12.1. STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2. ANTENNA CONNECTED CONSTRUCTION

The antennas used for this product are dipole antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 3dBi.

13.DEVIATION TO TEST SPECIFICATIONS

[NONE]