

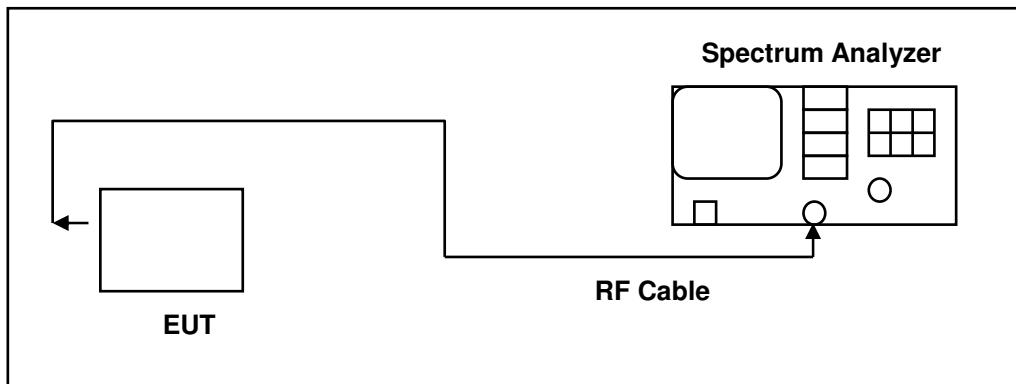
4.6. 6dB RF Bandwidth Measurement

■ Limit

6dB RF Bandwidth

Systems using digital modulation techniques may operate in the 5725~5850MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/15/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Procedure

6dB RF Bandwidth

The EUT tested to UNII test procedure of KDB789033 D02 for compliance to FCC 47CFR 15.407 requirements.

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels.

■ Test Result

Module : QCA9984 (EW-7955MAC)

Test Mode	Mode 2: IEEE 802.11a Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5745	13850	16070	15920	16350	> 500
5785	16320	16340	14640	16360	> 500
5825	15080	16370	14490	16370	> 500

Test Mode	Mode 3: IEEE 802.11ac 20MHz Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5745	13780	17690	13170	17580	> 500
5785	16090	17310	15720	17590	> 500
5825	17200	17570	15710	17570	> 500

Test Mode	Mode 4: IEEE 802.11ac 40MHz Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5755	30090	36360	36380	35760	> 500
5795	35140	36330	36390	33290	> 500

Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5775	75800	75830	76370	75760	> 500

Module : QCA9990 (EW-7944MAC)_Master					
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Test Mode	Mode 2: IEEE 802.11a Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5745	15330	16380	15740	15120	> 500
5785	16390	16400	16400	15110	> 500
5825	15110	16430	16400	15130	> 500

Test Mode	Mode 3: IEEE 802.11ac 20MHz Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5745	16320	17590	13500	15900	> 500
5785	14060	17590	17610	15150	> 500
5825	17600	17610	17660	16540	> 500

Test Mode	Mode 4: IEEE 802.11ac 40MHz Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5755	31320	35070	32620	33820	> 500
5795	33840	33810	34170	35110	> 500

Test Mode	Mode 5: IEEE 802.11ac 80MHz Link Mode				
Frequency (MHz)	6dB Bandwidth (kHz)				Limit (kHz)
	ANT-0	ANT-1	ANT-2	ANT-3	
5775	70340	75190	73240	75270	> 500

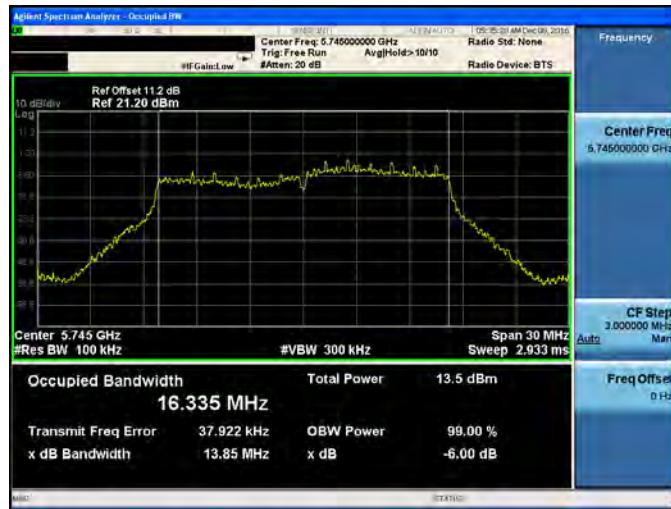
■ Test Graphs

Module : QCA9984 (EW-7955MAC)

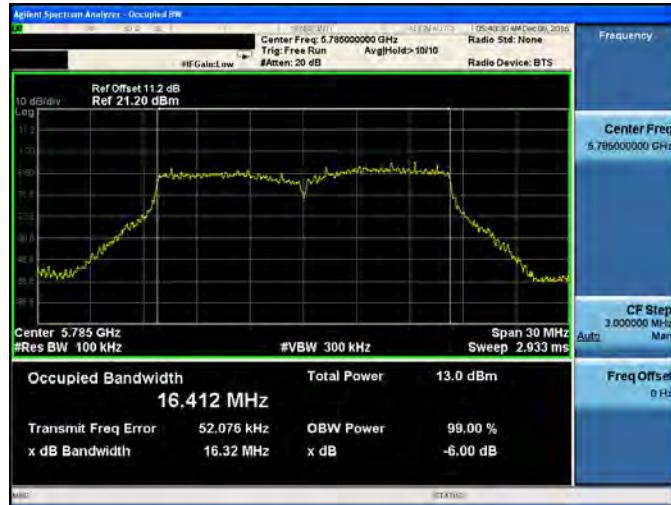
Mode 2: IEEE 802.11a Link Mode

ANT-0

5745 MHz



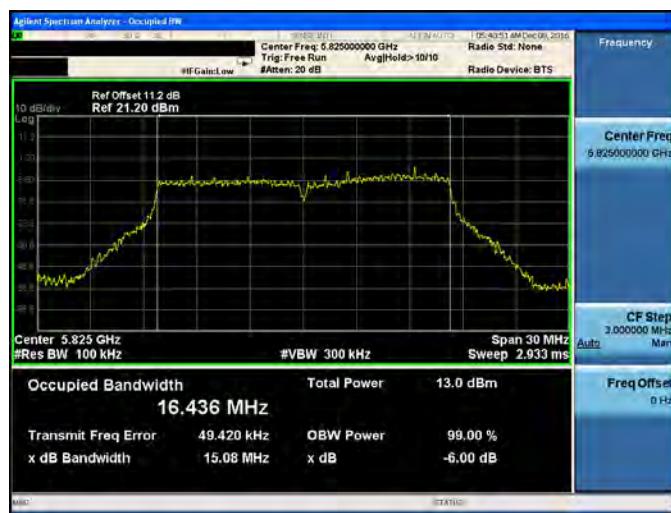
5785 MHz



Mode 2: IEEE 802.11a Link Mode

ANT-0

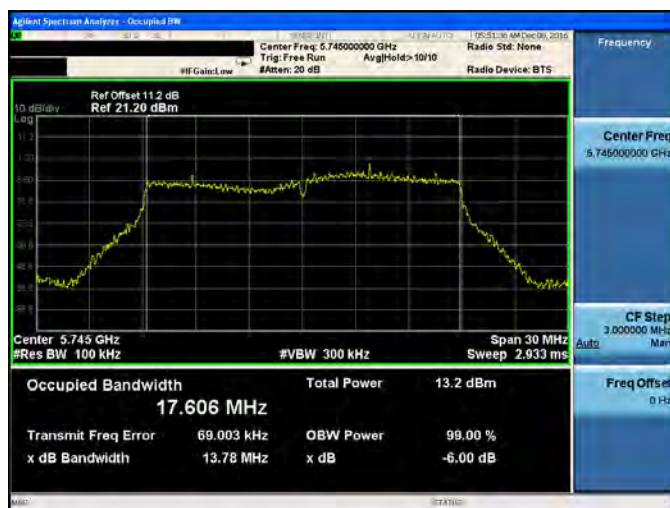
5825 MHz



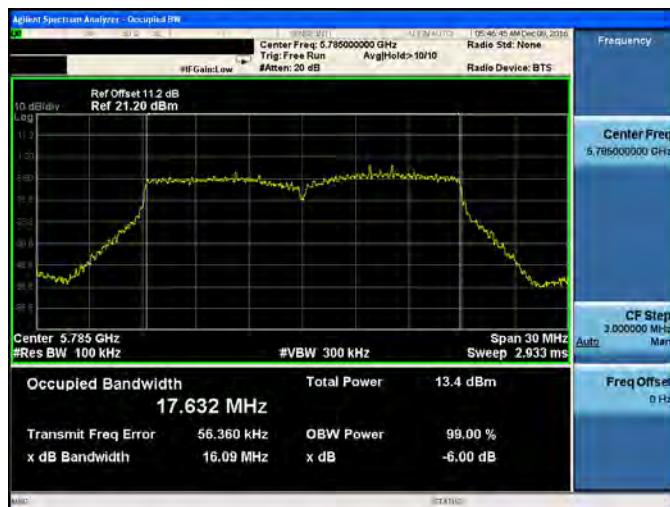
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-0

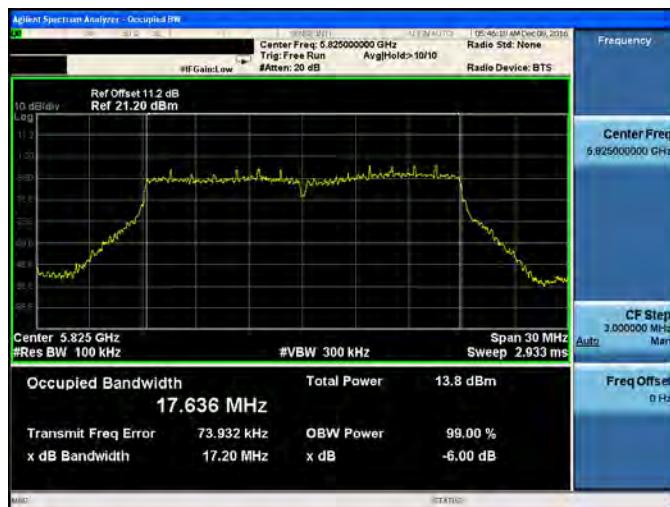
5745 MHz



5785 MHz



5825 MHz



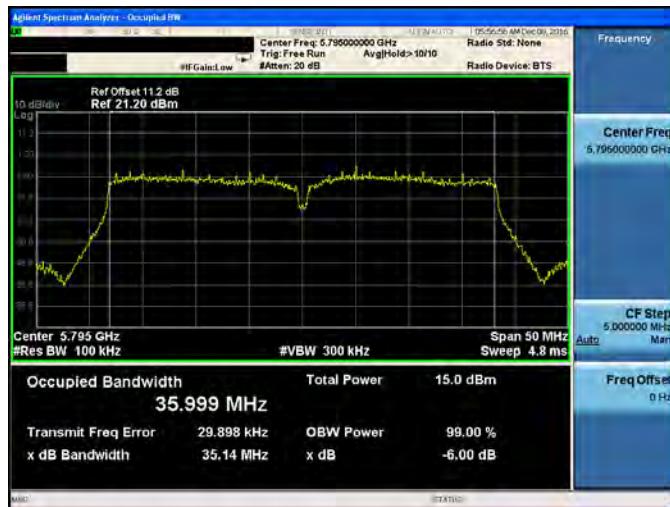
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-0

5755 MHz



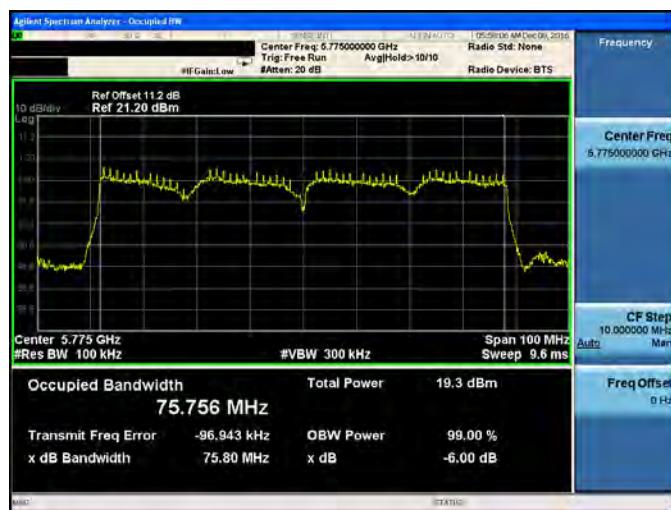
5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-0

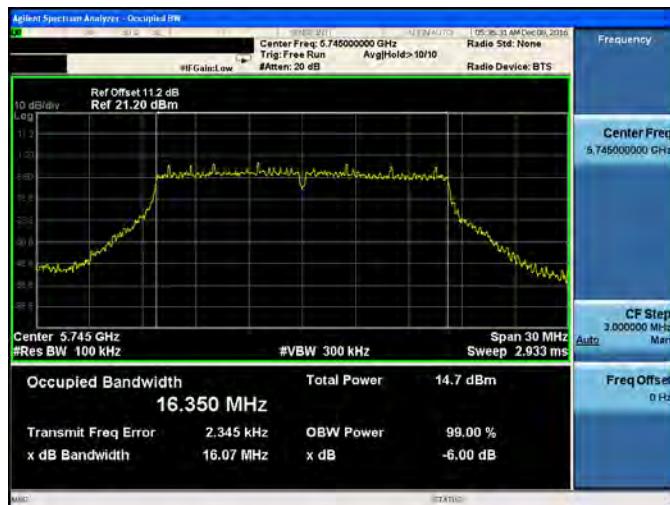
5775 MHz



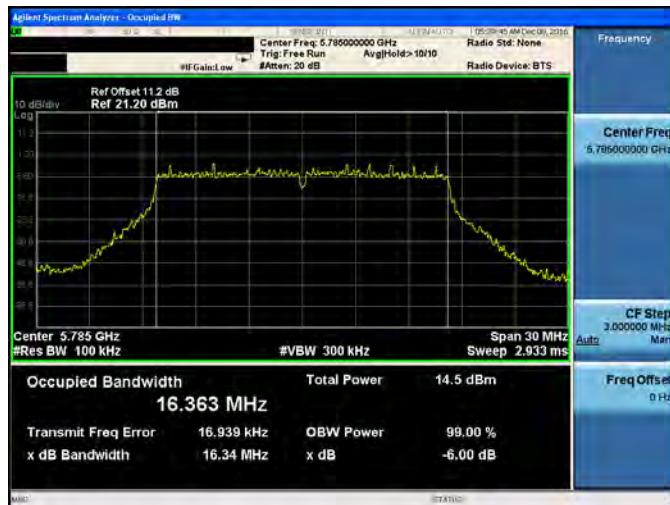
Mode 2: IEEE 802.11a Link Mode

ANT-1

5745 MHz



5785 MHz



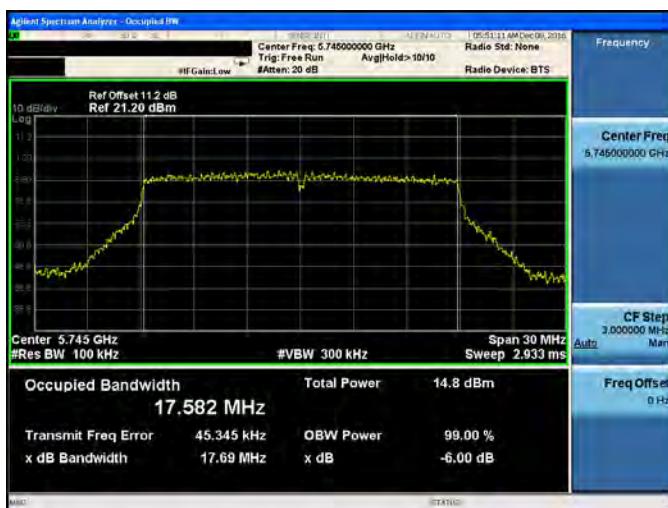
5825 MHz



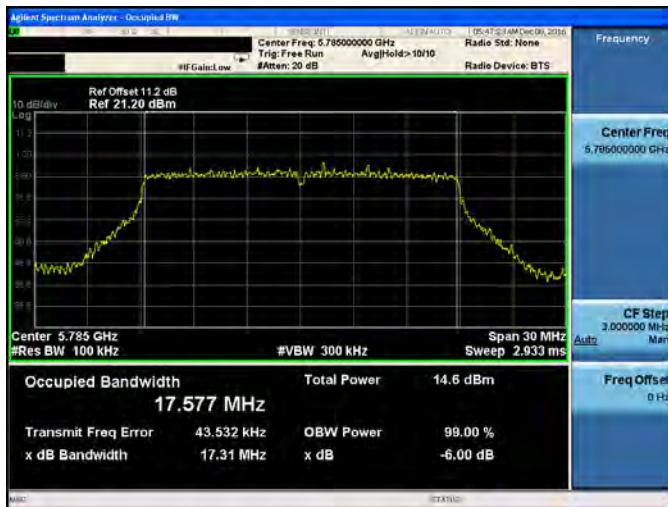
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-1

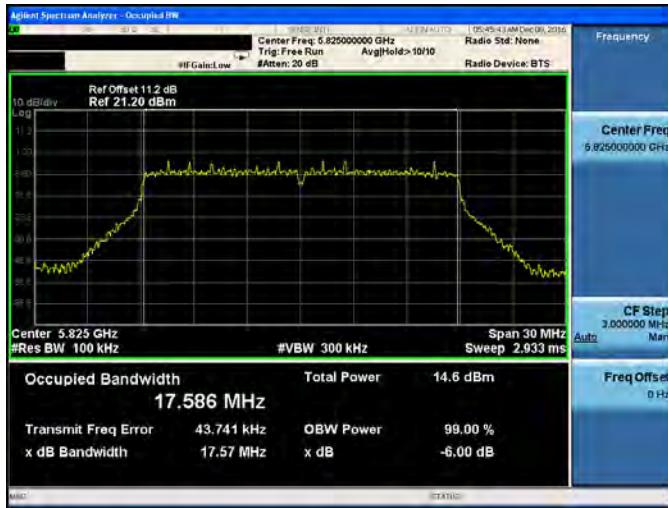
5745 MHz



5785 MHz



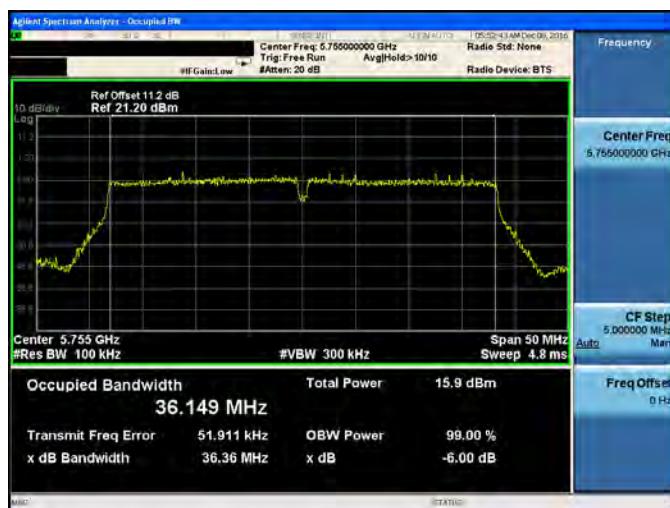
5825 MHz



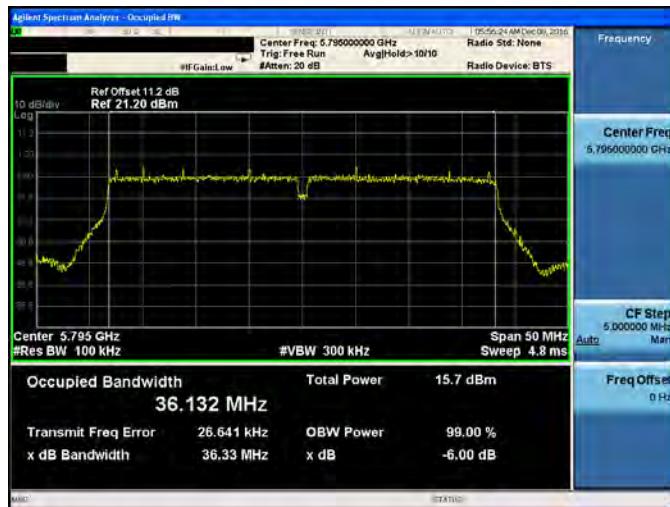
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-1

5755 MHz



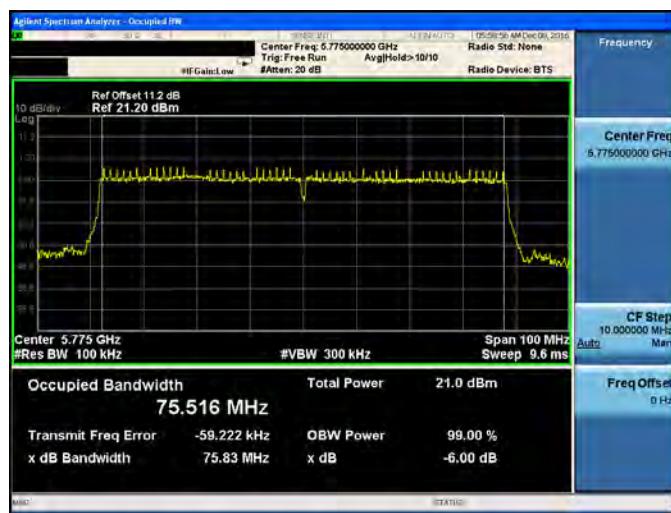
5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-1

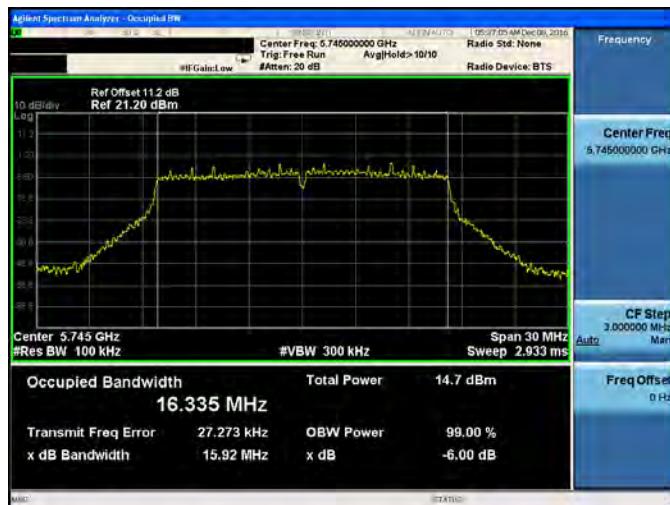
5775 MHz



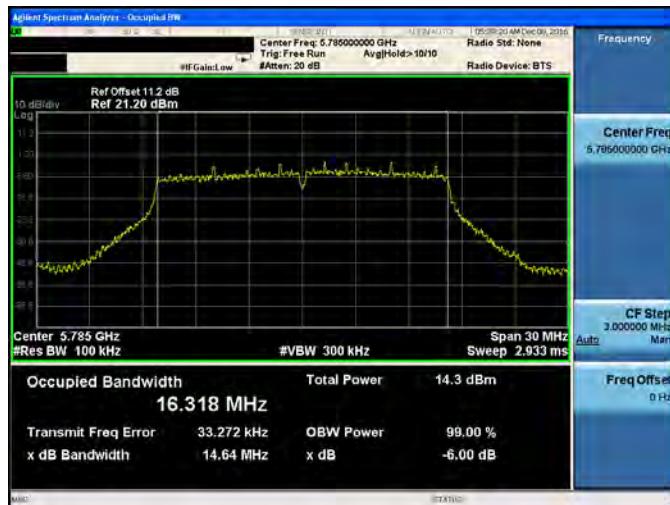
Mode 2: IEEE 802.11a Link Mode

ANT-2

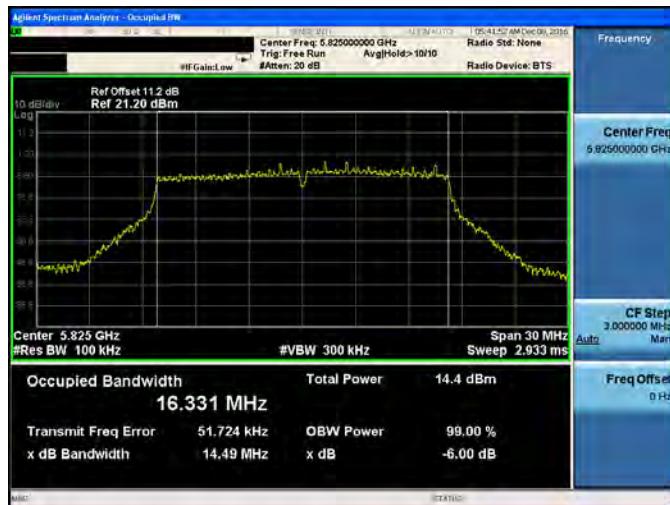
5745 MHz



5785 MHz



5825 MHz



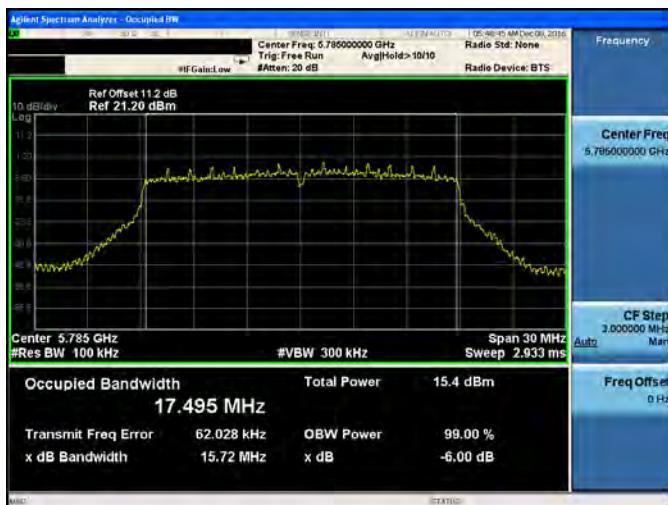
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-2

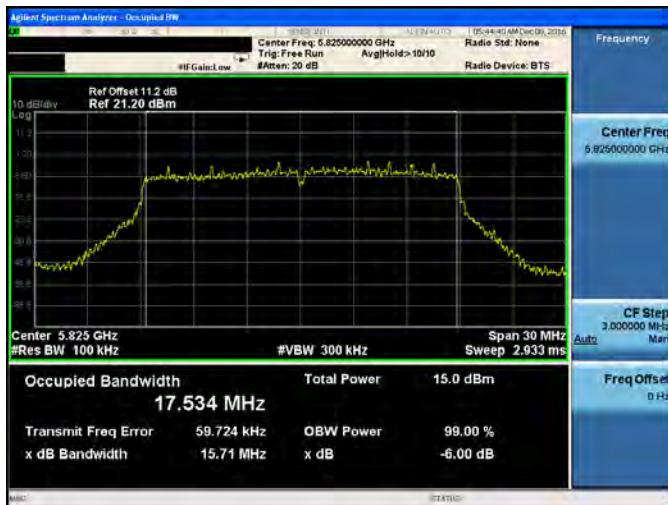
5745 MHz



5785 MHz



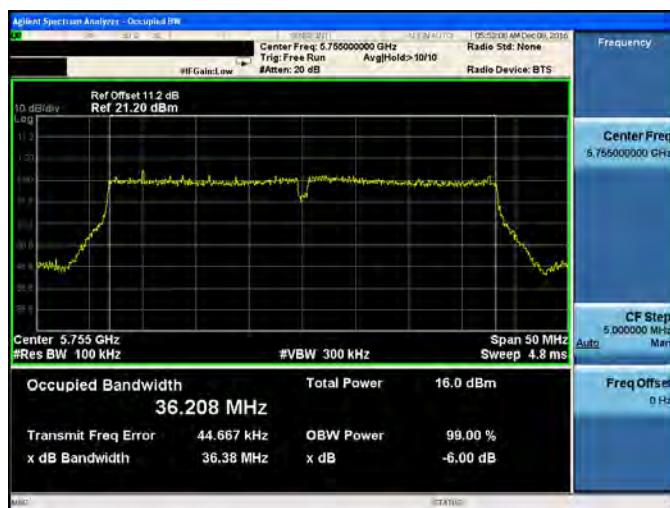
5825 MHz



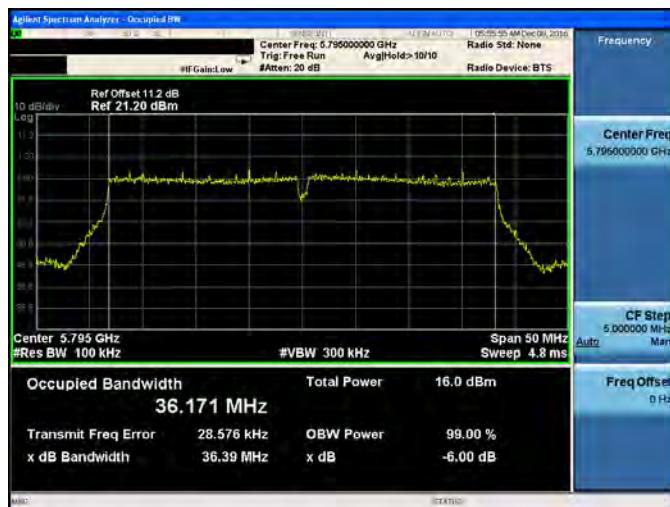
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-2

5755 MHz



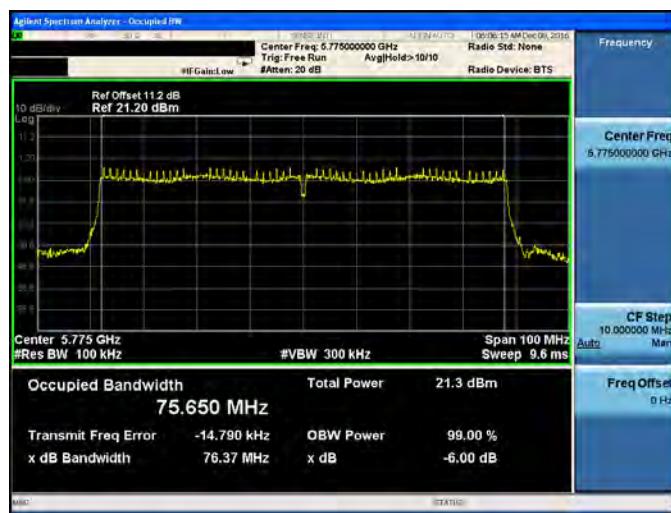
5795 MHz

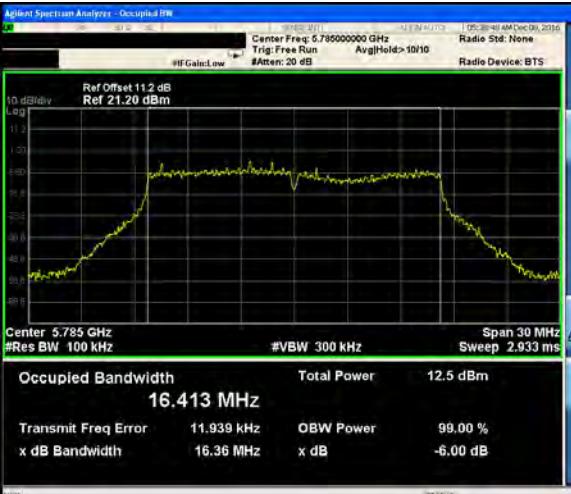


Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-2

5775 MHz



Mode 2: IEEE 802.11a Link Mode	
ANT-3	
5745 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 5.745000000 GHz Radio Std: None Trig: Free Run Avg/Hold>10/10 Radio Device: BTS #IFGain:Low #Atten: 20 dB</p>  <p>Frequency Center Freq 5.745000000 GHz CF Step 3.000000 MHz Man Freq Offset 0 Hz</p> <p>Occupied Bandwidth Total Power 12.8 dBm 16.359 MHz</p> <p>Transmit Freq Error 15.637 kHz OBW Power 99.00 % x dB Bandwidth 16.35 MHz x dB -6.00 dB</p>
5785 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 5.785000000 GHz Radio Std: None Trig: Free Run Avg/Hold>10/10 Radio Device: BTS #IFGain:Low #Atten: 20 dB</p>  <p>Frequency Center Freq 5.785000000 GHz CF Step 3.000000 MHz Man Freq Offset 0 Hz</p> <p>Occupied Bandwidth Total Power 12.5 dBm 16.413 MHz</p> <p>Transmit Freq Error 11.939 kHz OBW Power 99.00 % x dB Bandwidth 16.36 MHz x dB -6.00 dB</p>
5825 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 5.825000000 GHz Radio Std: None Trig: Free Run Avg/Hold>10/10 Radio Device: BTS #IFGain:Low #Atten: 20 dB</p>  <p>Frequency Center Freq 5.825000000 GHz CF Step 3.000000 MHz Man Freq Offset 0 Hz</p> <p>Occupied Bandwidth Total Power 13.2 dBm 16.427 MHz</p> <p>Transmit Freq Error 49.986 kHz OBW Power 99.00 % x dB Bandwidth 16.37 MHz x dB -6.00 dB</p>

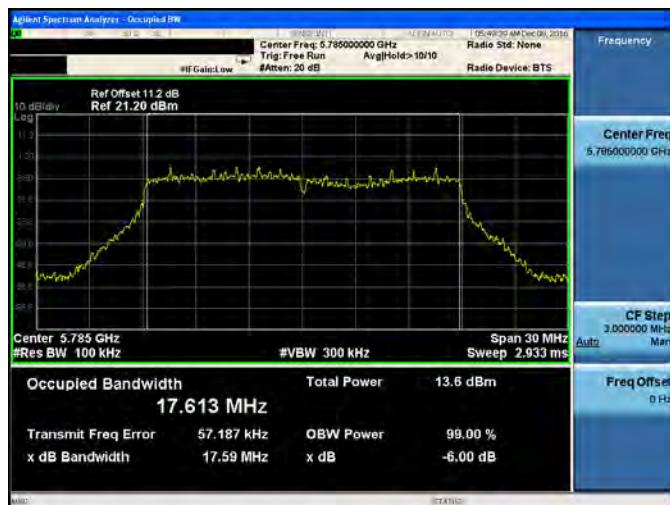
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-3

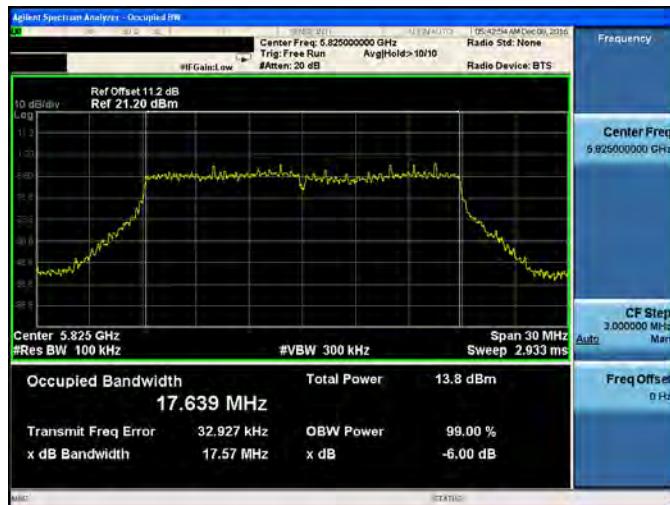
5745 MHz



5785 MHz



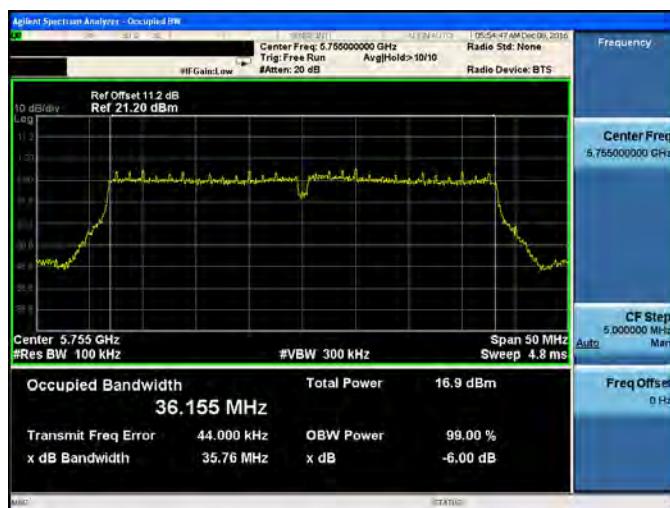
5825 MHz



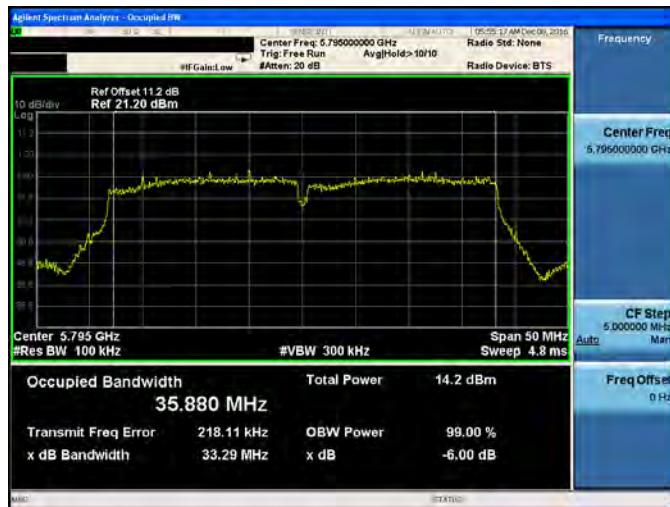
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-3

5755 MHz



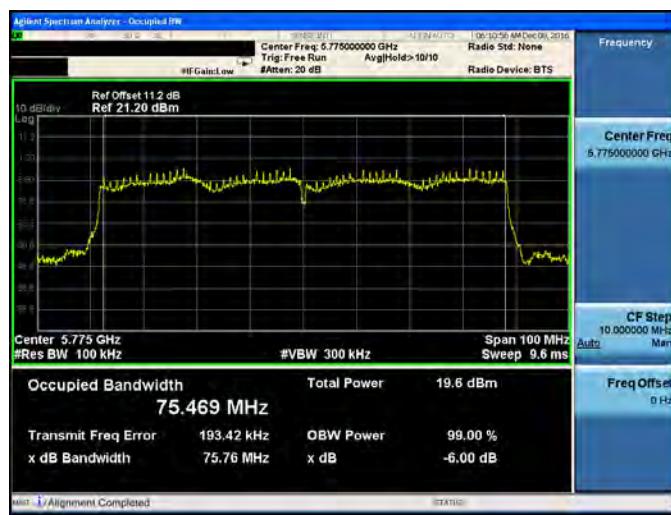
5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-3

5775 MHz



4.7. Peak Power Spectral Density Measurement

■ Limit

Conducted power spectral density

Frequency Range (MHz)	FCC Limit	
	Master	Client
5.150 ~ 5.250 GHz	17 dBm/MHz	11 dBm/MHz
5.725 ~ 5.850 GHz	30 dBm/500KHz	30 dBm/500KHz

According FCC KDB 662911 D01 v02r01 – for power spectral density measurements on IEEE802.11 devices,

Module : QCA9984 (EW-7955MAC)

Master mode

- * CDD mode : Directional Gain = $10 \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}) = 13.02 \text{ dBi} > 6 \text{ dBi}$
CDD mode power spectral density limit shall be reduced = $17 - 7.02 = 9.98 \text{ dBm/MHz}$ (5.150 ~ 5.250 GHz)
CDD mode power spectral density limit shall be reduced = $30 - 7.02 = 22.98 \text{ dBm/500KHz}$ (5.725 ~ 5.850 GHz)
- * MIMO mode : Directional Gain = $10 \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}) = 13.02 \text{ dBi} > 6 \text{ dBi}$
MIMO mode power spectral density limit shall be reduced = $17 - 7.02 = 9.98 \text{ dBm/MHz}$ (5.150 ~ 5.250 GHz)
MIMO mode power spectral density limit shall be reduced = $30 - 7.02 = 22.98 \text{ dBm/500KHz}$ (5.725 ~ 5.850 GHz)

Module : QCA9990 (EW-7944MAC)

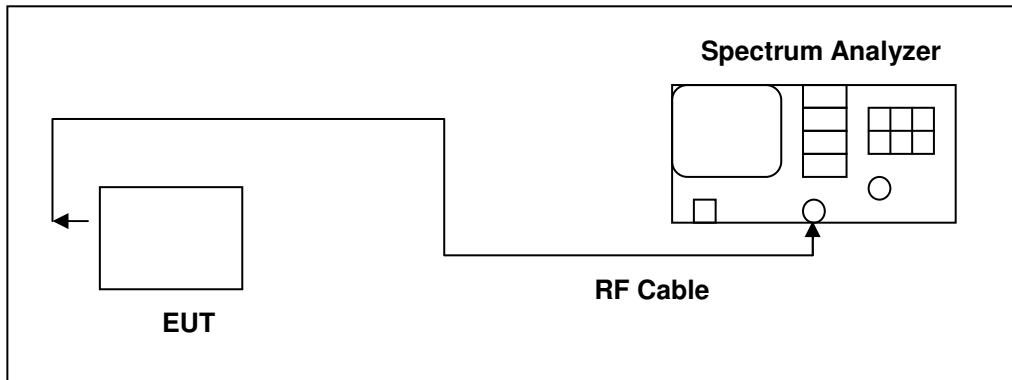
Master mode

- * CDD mode : Directional Gain = $10 \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}) = 12.02 \text{ dBi} > 6 \text{ dBi}$
CDD mode power spectral density limit shall be reduced = $17 - 6.02 = 10.98 \text{ dBm/MHz}$ (5.150 ~ 5.250 GHz)
CDD mode power spectral density limit shall be reduced = $30 - 6.02 = 23.98 \text{ dBm/500KHz}$ (5.725 ~ 5.850 GHz)
- * MIMO mode : Directional Gain = $10 \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}) = 12.02 \text{ dBi} > 6 \text{ dBi}$
MIMO mode power spectral density limit shall be reduced = $17 - 6.02 = 10.98 \text{ dBm/MHz}$ (5.150 ~ 5.250 GHz)
MIMO mode power spectral density limit shall be reduced = $30 - 6.02 = 23.98 \text{ dBm/500KHz}$ (5.725 ~ 5.850 GHz)

Client mode

- * CDD mode : Directional Gain = $10 \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}) = 12.02 \text{ dBi} > 6 \text{ dBi}$
CDD mode power spectral density limit shall be reduced = $11 - 6.02 = 4.98 \text{ dBm/MHz}$ (5.150 ~ 5.250 GHz)
CDD mode power spectral density limit shall be reduced = $30 - 6.02 = 23.98 \text{ dBm/500KHz}$ (5.725 ~ 5.850 GHz)
- * MIMO mode : Directional Gain = $10 \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / N_{ANT}) = 12.02 \text{ dBi} > 6 \text{ dBi}$
MIMO mode power spectral density limit shall be reduced = $11 - 6.02 = 4.98 \text{ dBm/MHz}$ (5.150 ~ 5.250 GHz)
MIMO mode power spectral density limit shall be reduced = $30 - 6.02 = 23.98 \text{ dBm/500KHz}$ (5.725 ~ 5.850 GHz)

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY45300744	12/15/2015	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Procedure

The test is performed in accordance with KDB789033: D02 General UNII Test Procedures New Rules v01r02, Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1 MHz (5725 ~ 5850MHz use 100 kHz)
VBW	3 MHz (5725 ~ 5850MHz use 300 kHz)
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/100\text{kHz})$ to the measured result.	

■ Test Result

Module : QCA9984 (EW-7955MAC)

Test Mode	Mode 2: IEEE 802.11a link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)		
5180	2.146	0.103	2.249	< 9.98	
5200	2.105	0.103	2.208		
5240	2.667	0.103	2.770		
Frequency (MHz)	ANT-1				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	3.401	0.103	3.504	< 9.98	
5200	3.294	0.103	3.397		
5240	4.503	0.103	4.606		
Frequency (MHz)	ANT-2				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	3.234	0.103	3.337	< 9.98	
5200	3.278	0.103	3.381		
5240	3.948	0.103	4.051		
Frequency (MHz)	ANT-3				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	3.055	0.103	3.158	< 9.98	
5200	2.560	0.103	2.663		
5240	3.460	0.103	3.563		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/MHz)			Limit (dBm/MHz)	
5180	9.109			< 9.98	
5200	8.962				
5240	9.820				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 2: IEEE 802.11a link mode				
Frequency (MHz)	ANT-0				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-11.12	0.103	-4.02	< 22.98	
5785	-12.00	0.103	-4.91		
5825	-11.91	0.103	-4.81		
Frequency (MHz)	ANT-1				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-11.41	0.103	-4.31	< 22.98	
5785	-11.69	0.103	-4.59		
5825	-12.70	0.103	-5.61		
Frequency (MHz)	ANT-2				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-11.24	0.103	-4.15	< 22.98	
5785	-11.17	0.103	-4.08		
5825	-11.13	0.103	-4.04		
Frequency (MHz)	ANT-3				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-10.29	0.103	-3.19	< 22.98	
5785	-12.79	0.103	-5.70		
5825	-12.39	0.103	-5.29		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)	
5745	2.12			< 22.98	
5785	1.24				
5825	1.12				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Conversion ratio = $10^{\log(500k/100k)}$

Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)		
5180	2.653	0.026	2.679	< 9.98	
5200	1.897	0.026	1.923		
5240	1.487	0.026	1.513		
ANT-1					
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
	3.859	0.026	3.885	< 9.98	
5180	3.628	0.026	3.654		
5240	3.432	0.026	3.458		
ANT-2					
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
	4.042	0.026	4.068	< 9.98	
5180	3.611	0.026	3.637		
5240	3.057	0.026	3.083		
ANT-3					
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
	3.855	0.026	3.881	< 9.98	
5180	3.142	0.026	3.168		
5240	2.443	0.026	2.469		
ANT-0+1+2+3					
Frequency (MHz)	Calculated (dBm/MHz)			Limit (dBm/MHz)	
	9.682			< 9.98	
5180	9.170				
5240	8.712				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	< 22.98	
5745	-11.11	0.026	-4.09		
5785	-11.34	0.026	-4.32		
5825	-12.17	0.026	-5.15		
Frequency (MHz)	ANT-1				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-11.72	0.026	-4.70	< 22.98	
5785	-12.10	0.026	-5.08		
5825	-12.25	0.026	-5.24		
Frequency (MHz)	ANT-2				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-11.36	0.026	-4.35	< 22.98	
5785	-10.77	0.026	-3.76		
5825	-11.14	0.026	-4.12		
Frequency (MHz)	ANT-3				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-10.58	0.026	-3.57	< 22.98	
5785	-12.65	0.026	-5.64		
5825	-12.23	0.026	-5.21		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)	
5745	1.86			< 22.98	
5785	1.38				
5825	1.12				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Conversion ratio = $10^{\ast}\text{Log}(500\text{k}/100\text{k})$

Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-3.610	0.084	-3.526	< 9.98
5230	0.860	0.084	0.944	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-2.897	0.084	-2.813	< 9.98
5230	2.321	0.084	2.405	
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-2.578	0.084	-2.494	< 9.98
5230	2.132	0.084	2.216	
Frequency (MHz)	ANT-3			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-3.545	0.084	-3.461	< 9.98
5230	1.159	0.084	1.243	
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5190	2.969			< 9.98
5230	7.767			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-13.42	0.084	-6.34	< 22.98
5795	-13.03	0.084	-5.96	
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-13.86	0.084	-6.78	< 22.98
5795	-13.38	0.084	-6.31	
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-13.17	0.084	-6.10	< 22.98
5795	-11.95	0.084	-4.88	
Frequency (MHz)	ANT-3			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-12.89	0.084	-5.82	< 22.98
5795	-13.64	0.084	-6.57	
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)
5755	-0.23			< 22.98
5795	0.14			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result

+ duty factor.

Conversion ratio = $10^{\star}\log(500k/100k)$

Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-10.183	0.201	-9.982	< 9.98
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-9.551	0.201	-9.350	< 9.98
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-9.311	0.201	-9.110	< 9.98
Frequency (MHz)	ANT-3			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-9.693	0.201	-9.492	< 9.98
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5210	-3.451			< 9.98

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-14.19	0.201	-7.00	< 22.98
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-13.28	0.201	-6.08	< 22.98
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-13.02	0.201	-5.83	< 22.98
Frequency (MHz)	ANT-3			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-12.14	0.201	-4.95	< 22.98
Frequency (MHz)	ANT-0+1+2+3			Limit (dBm/500KHz)
	Calculated (dBm/500KHz)			
5775	0.12			< 22.98

Note: Method SA-2, Power density = measured result + 10log(1/duty cycle) + Conversion ratio = measured result

+ duty factor.

Conversion ratio = $10 \cdot \log(500k/100k)$

Module : QCA9990 (EW-7944MAC)_Master

Test Mode	Mode 2: IEEE 802.11a link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)		
5180	3.583	0.124	3.707	< 10.98	
5200	3.817	0.124	3.941		
5240	3.730	0.124	3.854		
Frequency (MHz)	ANT-1				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	4.894	0.124	5.018	< 10.98	
5200	4.930	0.124	5.054		
5240	4.998	0.124	5.122		
Frequency (MHz)	ANT-2				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	4.688	0.124	4.812	< 10.98	
5200	4.415	0.124	4.539		
5240	4.397	0.124	4.521		
Frequency (MHz)	ANT-3				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	4.343	0.124	4.467	< 10.98	
5200	4.072	0.124	4.196		
5240	4.263	0.124	4.387		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/MHz)			Limit (dBm/MHz)	
5180	10.549			< 10.98	
5200	10.473				
5240	10.515				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 2: IEEE 802.11a link mode				
Frequency (MHz)	ANT-0				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-9.79	0.124	-2.68	< 23.98	
5785	-9.80	0.124	-2.69		
5825	-9.02	0.124	-1.91		
Frequency (MHz)	ANT-1				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-10.11	0.124	-3.00	< 23.98	
5785	-10.10	0.124	-2.99		
5825	-9.98	0.124	-2.86		
Frequency (MHz)	ANT-2				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-9.11	0.124	-1.99	< 23.98	
5785	-9.84	0.124	-2.73		
5825	-10.07	0.124	-2.95		
Frequency (MHz)	ANT-3				
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)	
5745	-9.40	0.124	-2.28	< 23.98	
5785	-9.26	0.124	-2.15		
5825	-9.31	0.124	-2.19		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)	
5745	3.55			< 23.98	
5785	3.39				
5825	3.56				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Conversion ratio = $10^{\log(500k/100k)}$

Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)		
5180	4.279	0.041	4.320	5180	
5200	4.182	0.041	4.223		
5240	4.130	0.041	4.171		
Frequency (MHz)	ANT-1				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	5.009	0.041	5.050	5180	
5200	5.089	0.041	5.130		
5240	5.338	0.041	5.379		
Frequency (MHz)	ANT-2				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	5.020	0.041	5.061	5180	
5200	4.493	0.041	4.534		
5240	4.641	0.041	4.682		
Frequency (MHz)	ANT-3				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	4.489	0.041	4.530	5180	
5200	4.546	0.041	4.587		
5240	4.337	0.041	4.378		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/MHz)			Limit (dBm/MHz)	
5180	10.773			5180	
5200	10.652				
5240	10.698				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode						
Frequency (MHz)	Conducted power spectral density						
	ANT-0						
Frequency (MHz)	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)			
	5745	-10.05	0.041	-3.02			
	5785	-9.27	0.041	-2.24			
Frequency (MHz)	5825	-8.64	0.041	-1.61			
	ANT-1						
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)			
Frequency (MHz)	5745	-10.18	0.041	-3.15			
	5785	-9.73	0.041	-2.70			
	5825	-9.37	0.041	-2.34			
Frequency (MHz)	ANT-2						
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)			
	5745	-8.88	0.041	-1.85			
Frequency (MHz)	5785	-9.51	0.041	-2.48			
	5825	-9.85	0.041	-2.82			
	ANT-3						
Frequency (MHz)	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)			
	5745	-9.85	0.041	-2.82			
	5785	-9.43	0.041	-2.40			
Frequency (MHz)	5825	-8.84	0.041	-1.81			
ANT-0+1+2+3							
Calculated (dBm/500KHz)			Limit (dBm/500KHz)				
5745	3.34		< 23.98				
5785				3.57			
				3.90			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Conversion ratio = $10^{\ast}\log(500k/100k)$

Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	0.959	0.098	1.057	< 10.98
5230	3.699	0.098	3.797	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	1.606	0.098	1.704	< 10.98
5230	4.511	0.098	4.609	
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	1.388	0.098	1.486	< 10.98
5230	4.328	0.098	4.426	
Frequency (MHz)	ANT-3			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	1.415	0.098	1.513	< 10.98
5230	4.007	0.098	4.105	
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5190	7.467			< 10.98
5230	10.266			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-12.55	0.098	-5.46	< 23.98
5795	-9.50	0.098	-2.41	
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-12.70	0.098	-5.61	< 23.98
5795	-10.67	0.098	-3.58	
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-11.87	0.098	-4.78	< 23.98
5795	-10.14	0.098	-3.05	
Frequency (MHz)	ANT-3			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5755	-12.58	0.098	-5.50	< 23.98
5795	-9.19	0.098	-2.10	
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/500KHz)			Limit (dBm/500KHz)
5755	0.70			< 23.98
5795	3.27			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result

+ duty factor.

Conversion ratio = $10^{\log(500k/100k)}$

Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	0.916	0.231	0.542	< 10.98
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	0.916	0.231	1.147	< 10.98
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	0.706	0.231	0.937	< 10.98
Frequency (MHz)	ANT-3			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	0.105	0.231	0.336	< 10.98
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5210	6.772			< 10.98

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-12.26	0.231	-5.04	< 23.98
Frequency (MHz)	ANT-1			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-13.64	0.231	-6.42	< 23.98
Frequency (MHz)	ANT-2			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-12.63	0.231	-5.40	< 23.98
Frequency (MHz)	ANT-3			
	Measurement (dBm/100KHz)	Duty Factor (dB)	Calculated (dBm/500KHz)	Limit (dBm/500KHz)
5775	-13.10	0.231	-5.87	< 23.98
Frequency (MHz)	ANT-0+1+2+3			Limit (dBm/500KHz)
	Calculated (dBm/500KHz)			
5775	0.37			< 23.98

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result

+ duty factor.

Conversion ratio = $10^{\log(500k/100k)}$

Module : QCA9990 (EW-7944MAC)_Client

Test Mode	Mode 2: IEEE 802.11a link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)		
5180	-1.554	0.124	-1.430	< 4.98	
5200	-1.569	0.124	-1.445		
5240	-1.429	0.124	-1.305		
Frequency (MHz)	ANT-1				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	-0.885	0.124	-0.761	< 4.98	
5200	-1.032	0.124	-0.908		
5240	-0.903	0.124	-0.779		
Frequency (MHz)	ANT-2				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	-1.192	0.124	-1.068	< 4.98	
5200	-1.358	0.124	-1.234		
5240	-1.716	0.124	-1.592		
Frequency (MHz)	ANT-3				
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	-1.913	0.124	-1.789	< 4.98	
5200	-1.446	0.124	-1.322		
5240	-1.738	0.124	-1.614		
Frequency (MHz)	ANT-0+1+2+3				
	Calculated (dBm/MHz)			Limit (dBm/MHz)	
5180	4.775			< 4.98	
5200	4.798				
5240	4.711				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 3: IEEE 802.11ac 20MHz link mode				
Frequency (MHz)	Conducted power spectral density				
	ANT-0				
Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)		
5180	-1.957	0.041	-1.916	< 4.98	
5200	-1.635	0.041	-1.594		
5240	-1.482	0.041	-1.441		
ANT-1					
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	-1.086	0.041	-1.045	< 4.98	
5200	-0.921	0.041	-0.880		
5240	-0.834	0.041	-0.793		
ANT-2					
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	-1.224	0.041	-1.183	< 4.98	
5200	-1.471	0.041	-1.430		
5240	-1.892	0.041	-1.851		
ANT-3					
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)	
5180	-1.647	0.041	-1.606	< 4.98	
5200	-1.797	0.041	-1.756		
5240	-1.648	0.041	-1.607		
ANT-0+1+2+3					
Frequency (MHz)	Calculated (dBm/MHz)			Limit (dBm/MHz)	
5180	4.597			< 4.98	
5200	4.619				
5240	4.616				

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 4: IEEE 802.11ac 40MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-2.050	0.098	-1.952	< 4.98
5230	-1.914	0.098	-1.816	
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-1.037	0.098	-0.939	< 4.98
5230	-1.317	0.098	-1.219	
Frequency (MHz)	ANT-2			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-1.270	0.098	-1.172	< 4.98
5230	-1.614	0.098	-1.516	
Frequency (MHz)	ANT-3			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5190	-1.803	0.098	-1.705	< 4.98
5230	-1.659	0.098	-1.561	
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5190	4.597			< 4.98
5230	4.498			

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

Test Mode	Mode 5: IEEE 802.11ac 80MHz link mode			
Frequency (MHz)	Conducted power spectral density			
	ANT-0			
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-6.351	0.231	-6.120	< 4.98
Frequency (MHz)	ANT-1			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-5.357	0.231	-5.126	< 4.98
Frequency (MHz)	ANT-2			
Frequency (MHz)	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-5.461	0.231	-5.230	< 4.98
Frequency (MHz)	ANT-3			
	Measurement (dBm/MHz)	Duty Factor (dB)	Calculated (dBm/MHz)	Limit (dBm/MHz)
5210	-5.645	0.231	-5.414	< 4.98
Frequency (MHz)	ANT-0+1+2+3			
	Calculated (dBm/MHz)			Limit (dBm/MHz)
5210	0.565			< 4.98

Note: Method SA-2, Power density = measured result + $10\log(1/\text{duty cycle})$ + Conversion ratio = measured result + duty factor.

■ Test Graphs

Module : QCA9984 (EW-7955MAC)

Mode 2: IEEE 802.11a Link Mode

ANT-0

5180 MHz



5200 MHz



Mode 2: IEEE 802.11a Link Mode

ANT-0

5240 MHz



Mode 2: IEEE 802.11a Link Mode	
ANT-0	
5745 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast Trig: Free Run Avg Type: RMS Avg Hold: 100/100 IF Gain: Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Span 30.00 MHz Center 5.74500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts) Mkr1 5.748 48 GHz -11.119 dBm</p>
5785 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast Trig: Free Run Avg Type: RMS Avg Hold: 100/100 IF Gain: Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Span 30.00 MHz Center 5.78500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts) Mkr1 5.788 48 GHz -12.000 dBm</p>
5825 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast Trig: Free Run Avg Type: RMS Avg Hold: 100/100 IF Gain: Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Span 30.00 MHz Center 5.82500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts) Mkr1 5.830 40 GHz -11.907 dBm</p>

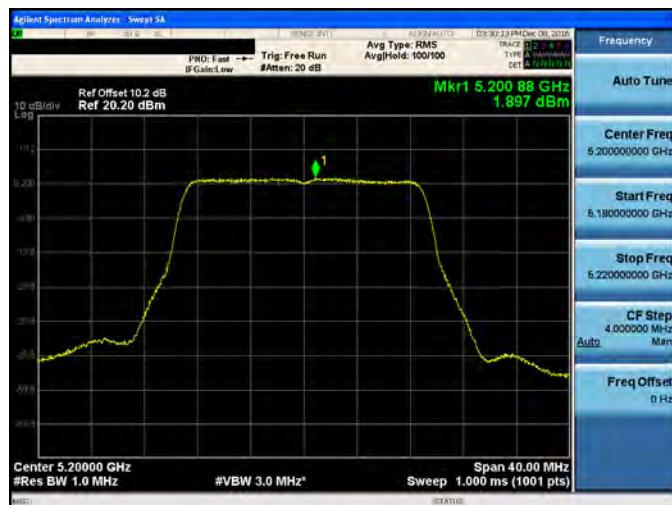
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-0

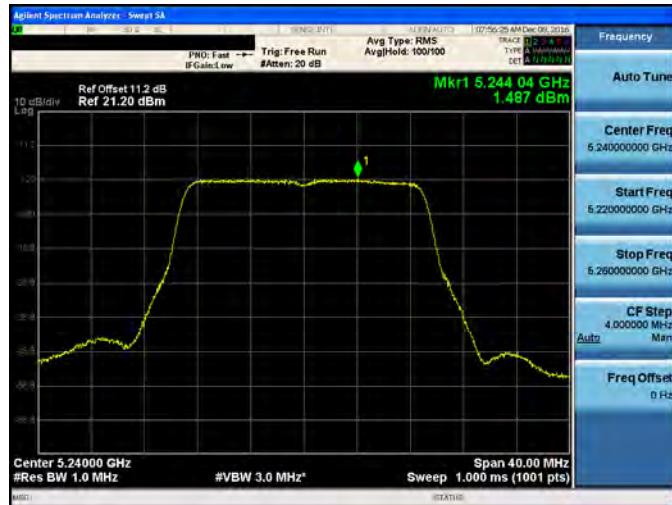
5180 MHz



5200 MHz



5240 MHz



Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-0

5745 MHz



5785 MHz



5825 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-0

5190 MHz



5230 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-0

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-0

5210 MHz

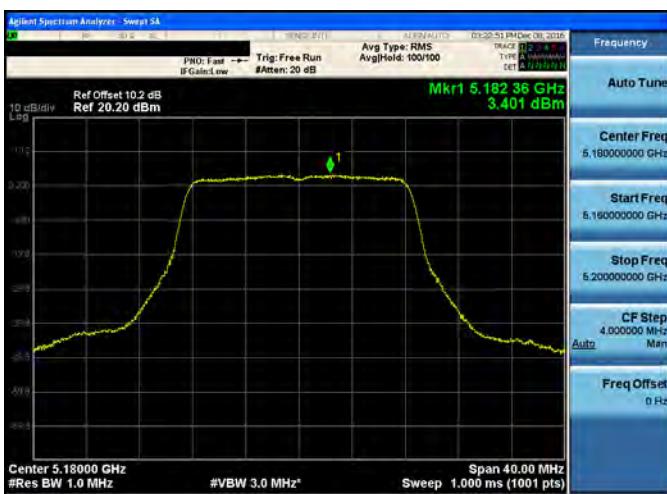


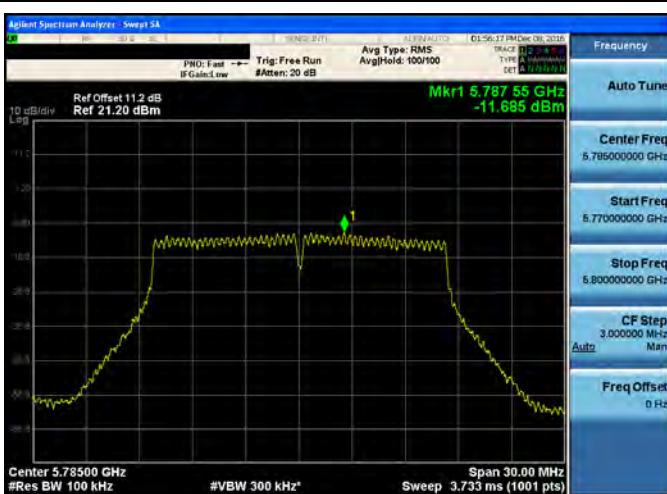
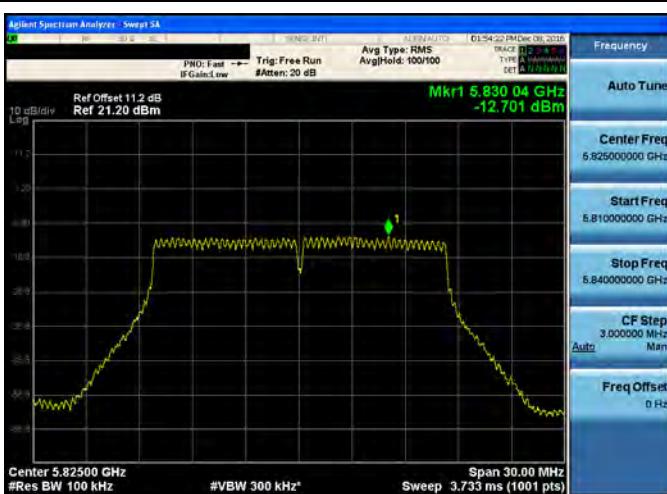
Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-0

5775 MHz



Mode 2: IEEE 802.11a Link Mode	
ANT-1	
5180 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 10.2 dB Ref 20.20 dBm</p> <p>Mkr1 5.182 36 GHz 3.401 dBm</p> <p>Center 5.18000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.18000000 GHz Start Freq 5.16000000 GHz Stop Freq 5.20000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz</p>
5200 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 10.2 dB Ref 20.20 dBm</p> <p>Mkr1 5.201 08 GHz 3.294 dBm</p> <p>Center 5.20000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.20000000 GHz Start Freq 5.18000000 GHz Stop Freq 5.22000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz</p>
5240 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.241 48 GHz 4.503 dBm</p> <p>Center 5.24000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.24000000 GHz Start Freq 5.22000000 GHz Stop Freq 5.26000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz</p>

Mode 2: IEEE 802.11a Link Mode	
ANT-1	
5745 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.740 05 GHz -11.405 dBm</p> <p>Center 5.745000 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Span 30.00 MHz</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 5.745000000 GHz</p> <p>Start Freq 5.730000000 GHz</p> <p>Stop Freq 5.790000000 GHz</p> <p>CF Step 3.000000 MHz Man</p> <p>Freq Offset 0 Hz</p>
5785 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.787 55 GHz -11.685 dBm</p> <p>Center 5.785000 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Span 30.00 MHz</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 5.785000000 GHz</p> <p>Start Freq 5.770000000 GHz</p> <p>Stop Freq 5.800000000 GHz</p> <p>CF Step 3.000000 MHz Man</p> <p>Freq Offset 0 Hz</p>
5825 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.830 04 GHz -12.701 dBm</p> <p>Center 5.825000 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Span 30.00 MHz</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 5.825000000 GHz</p> <p>Start Freq 5.810000000 GHz</p> <p>Stop Freq 5.840000000 GHz</p> <p>CF Step 3.000000 MHz Man</p> <p>Freq Offset 0 Hz</p>

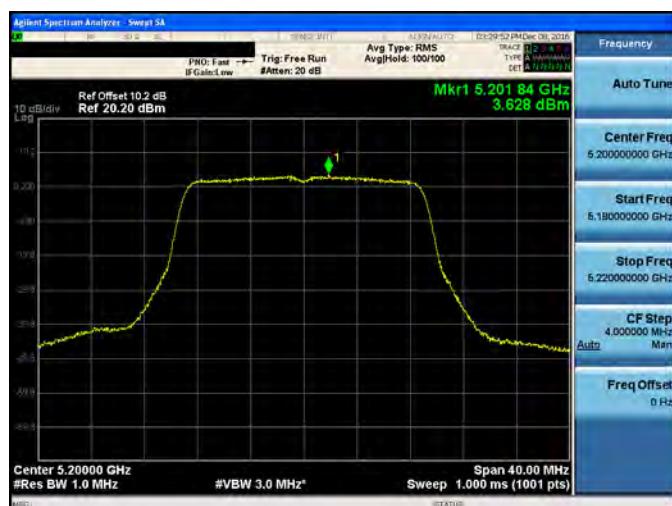
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-1

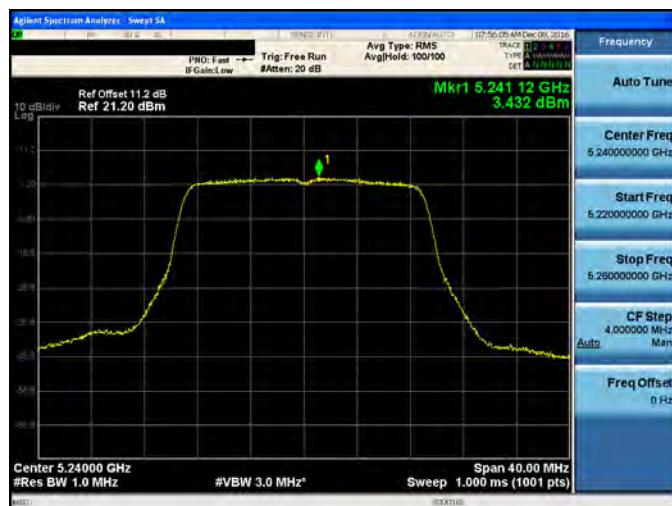
5180 MHz



5200 MHz

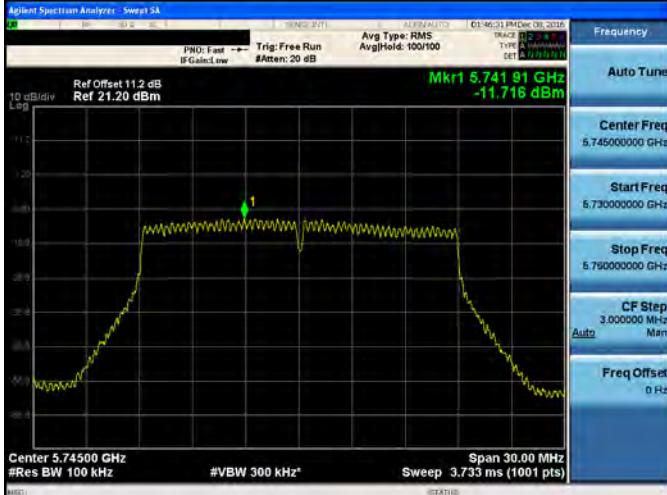
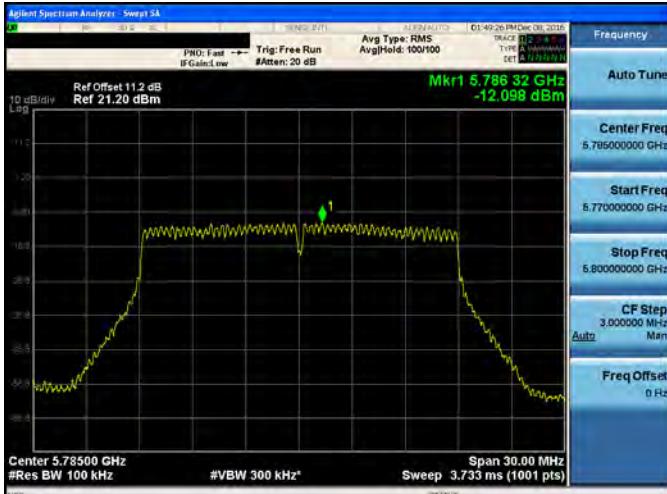
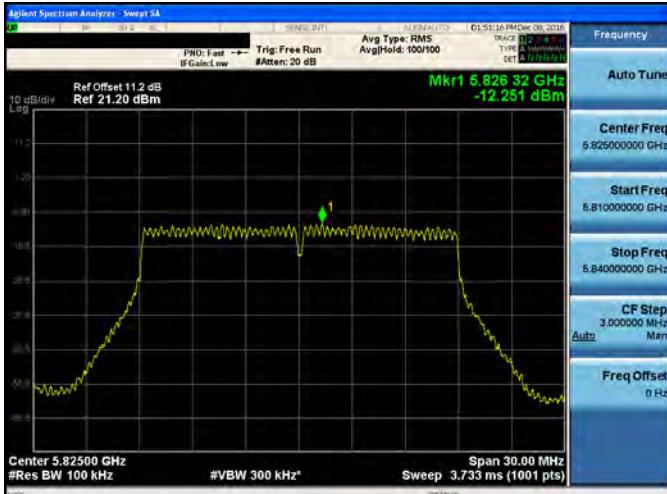


5240 MHz



Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-1

5745 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast --> Trig: Free Run IFGain:Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Log Mkr1 5.741 91 GHz -11.716 dBm Center 5.74500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts) SPAN: 30.00 MHz</p>
5785 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast --> Trig: Free Run IFGain:Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Log Mkr1 5.786 32 GHz -12.098 dBm Center 5.78500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts) SPAN: 30.00 MHz</p>
5825 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast --> Trig: Free Run IFGain:Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Log Mkr1 5.826 32 GHz -12.251 dBm Center 5.82500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts) SPAN: 30.00 MHz</p>

Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-1

5190 MHz



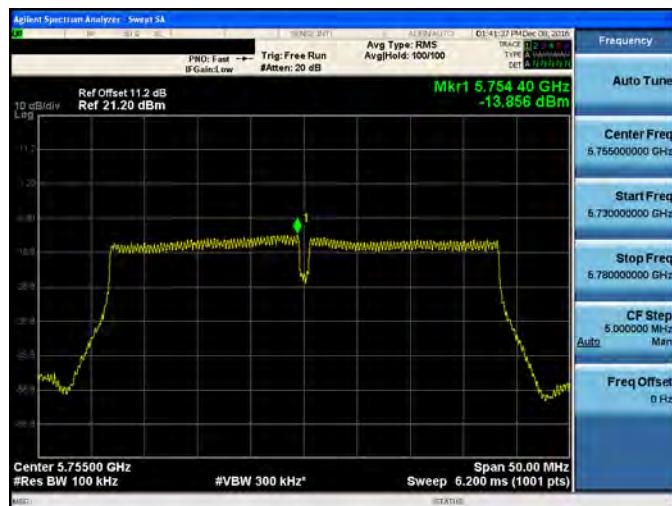
5230 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-1

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-1

5210 MHz



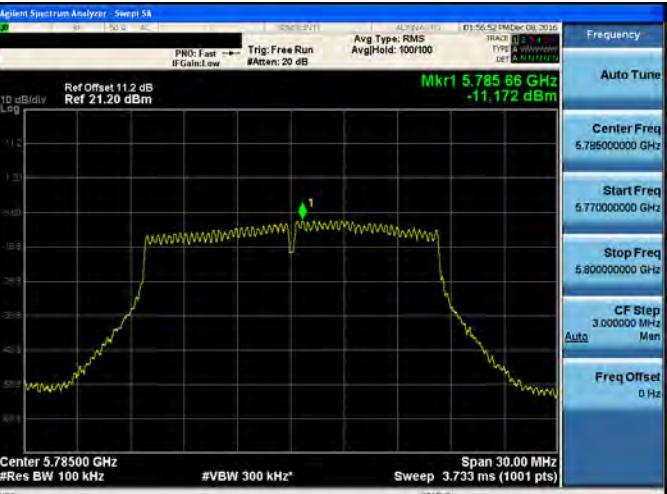
Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-1

5775 MHz



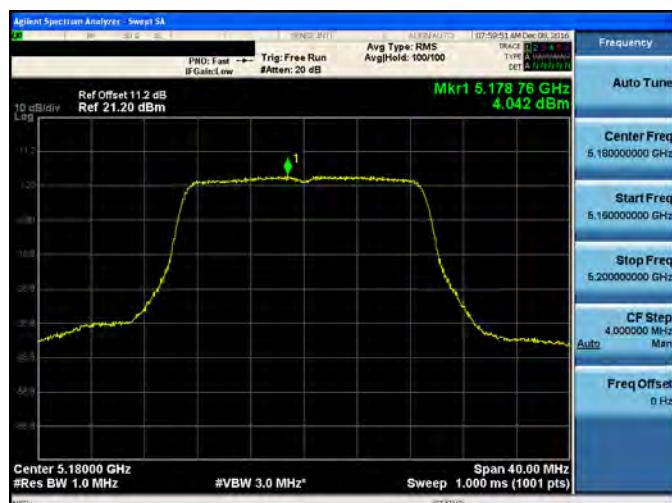
Mode 2: IEEE 802.11a Link Mode	
ANT-2	
5180 MHz	<p>Spectrum analysis plot showing a single emission at 5.18252 GHz with a power of 3.234 dBm.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> PW0: Fast → IF Gain: Low Trig: Free Run #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 TYPE A: 1000 pts DET A: 1000 pts <p>Marker 1: Mkr1 5.18252 GHz 3.234 dBm</p> <p>Panel controls (right):</p> <ul style="list-style-type: none"> Frequency: Auto Tune Center Freq: 5.180000000 GHz Start Freq: 5.160000000 GHz Stop Freq: 5.200000000 GHz CF Step: 4.000000 MHz Man Freq Offset: 0 Hz
5200 MHz	<p>Spectrum analysis plot showing a single emission at 5.19708 GHz with a power of 3.278 dBm.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> PW0: Fast → IF Gain: Low Trig: Free Run #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 TYPE A: 1000 pts DET A: 1000 pts <p>Marker 1: Mkr1 5.19708 GHz 3.278 dBm</p> <p>Panel controls (right):</p> <ul style="list-style-type: none"> Frequency: Auto Tune Center Freq: 5.200000000 GHz Start Freq: 5.180000000 GHz Stop Freq: 5.220000000 GHz CF Step: 4.000000 MHz Man Freq Offset: 0 Hz
5240 MHz	<p>Spectrum analysis plot showing a single emission at 5.24544 GHz with a power of 3.948 dBm.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> PW0: Fast → IF Gain: Low Trig: Free Run #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 TYPE A: 1000 pts DET A: 1000 pts <p>Marker 1: Mkr1 5.24544 GHz 3.948 dBm</p> <p>Panel controls (right):</p> <ul style="list-style-type: none"> Frequency: Auto Tune Center Freq: 5.240000000 GHz Start Freq: 5.220000000 GHz Stop Freq: 5.260000000 GHz CF Step: 4.000000 MHz Man Freq Offset: 0 Hz

Mode 2: IEEE 802.11a Link Mode	
ANT-2	
5745 MHz	<p>Spectrum analysis plot for 5745 MHz:</p> <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.748 51 GHz -11.241 dBm</p> <p>Center 5.74500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> 
5785 MHz	<p>Spectrum analysis plot for 5785 MHz:</p> <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.785 86 GHz -11.172 dBm</p> <p>Center 5.78500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> 
5825 MHz	<p>Spectrum analysis plot for 5825 MHz:</p> <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.826 32 GHz -11.133 dBm</p> <p>Center 5.82500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> 

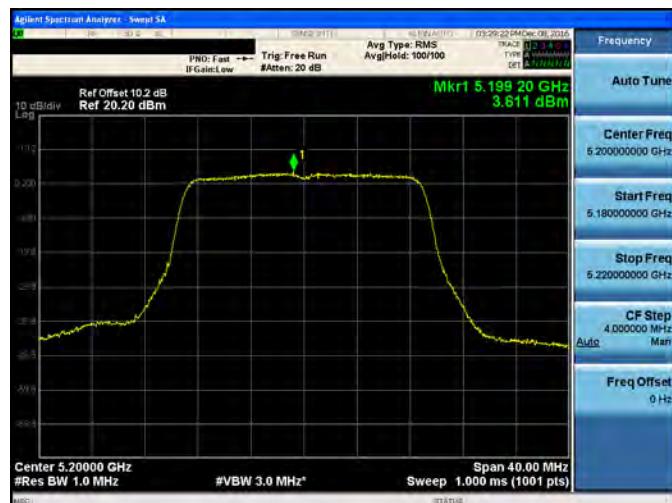
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-2

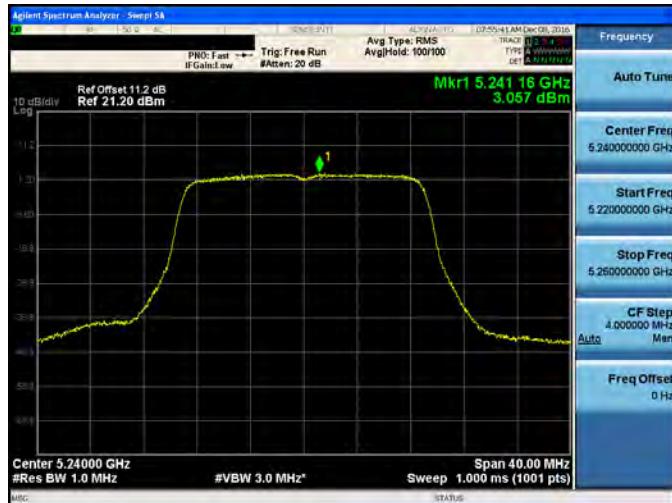
5180 MHz



5200 MHz



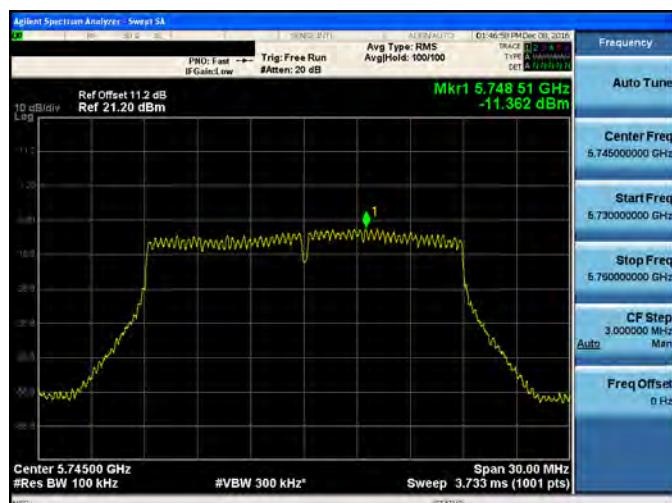
5240 MHz



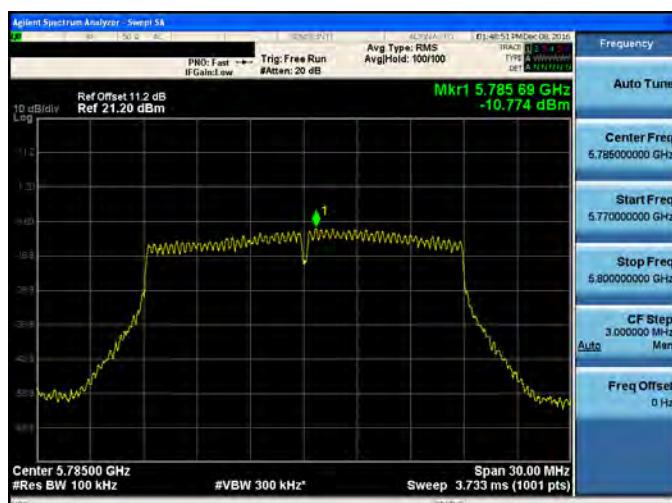
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-2

5745 MHz



5785 MHz



5825 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-2

5190 MHz



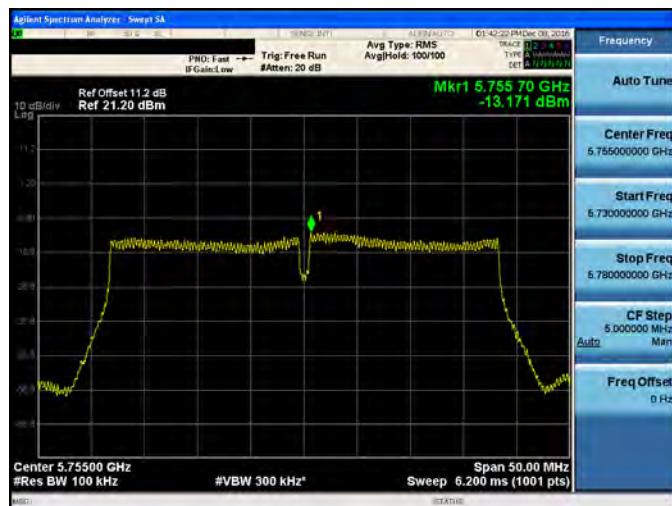
5230 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-2

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-2

5210 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-2

5775 MHz



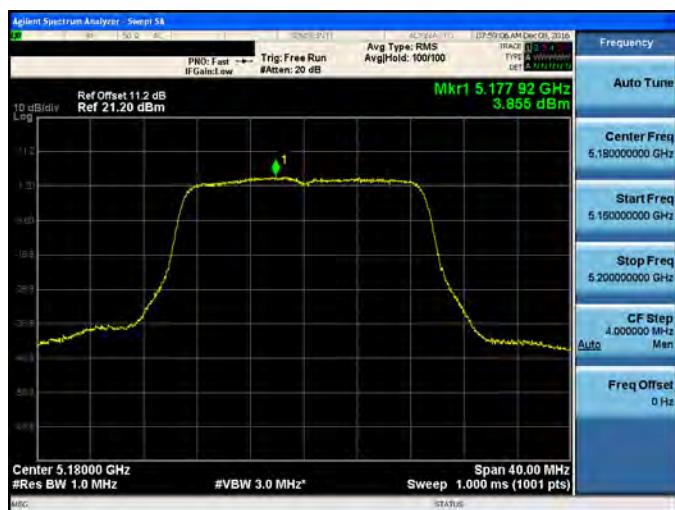
Mode 2: IEEE 802.11a Link Mode	
ANT-3	
5180 MHz	<p>Spectrum analysis plot showing a single emission at 5.18 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 10.2 dB Ref: 20.20 dBm Center Freq: 5.18000000 GHz Start Freq: 5.18000000 GHz Stop Freq: 5.20000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz <p>Measurement results:</p> <ul style="list-style-type: none"> Mkr1: 5.178 20 GHz, 3.055 dBm Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts)
5200 MHz	<p>Spectrum analysis plot showing a single emission at 5.20 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 10.2 dB Ref: 20.20 dBm Center Freq: 5.20000000 GHz Start Freq: 5.18000000 GHz Stop Freq: 5.22000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz <p>Measurement results:</p> <ul style="list-style-type: none"> Mkr1: 5.197 72 GHz, 2.560 dBm Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts)
5240 MHz	<p>Spectrum analysis plot showing a single emission at 5.24 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.24000000 GHz Start Freq: 5.22000000 GHz Stop Freq: 5.26000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz <p>Measurement results:</p> <ul style="list-style-type: none"> Mkr1: 5.239 00 GHz, 3.460 dBm Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts)

Mode 2: IEEE 802.11a Link Mode	
ANT-3	
5745 MHz	<p>Spectrum analysis plot showing a single emission at 5.74380 GHz with -10.285 dBm power.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> PW0: Fast → IF Gain:Low Trig: Free Run #Aver: 20 dB Avg Type: RMS Avg Hold: 100/100 Trace: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Type A: 1000 pts DET A: 1000 pts <p>Marker 1: 5.74380 GHz, -10.285 dBm</p> <p>Other settings:</p> <ul style="list-style-type: none"> Frequency: Auto Tune Center Freq: 5.74500000 GHz Start Freq: 5.73000000 GHz Stop Freq: 5.78000000 GHz CF Step: 3.000000 MHz Freq Offset: 0 Hz
5785 MHz	<p>Spectrum analysis plot showing a single emission at 5.78443 GHz with -12.793 dBm power.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> PW0: Fast → IF Gain:Low Trig: Free Run #Aver: 20 dB Avg Type: RMS Avg Hold: 100/100 Trace: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Type A: 1000 pts DET A: 1000 pts <p>Marker 1: 5.78443 GHz, -12.793 dBm</p> <p>Other settings:</p> <ul style="list-style-type: none"> Frequency: Auto Tune Center Freq: 5.78500000 GHz Start Freq: 5.77000000 GHz Stop Freq: 5.80000000 GHz CF Step: 3.000000 MHz Freq Offset: 0 Hz
5825 MHz	<p>Spectrum analysis plot showing a single emission at 5.83193 GHz with -12.386 dBm power.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> PW0: Fast → IF Gain:Low Trig: Free Run #Aver: 20 dB Avg Type: RMS Avg Hold: 100/100 Trace: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Type A: 1000 pts DET A: 1000 pts <p>Marker 1: 5.83193 GHz, -12.386 dBm</p> <p>Other settings:</p> <ul style="list-style-type: none"> Frequency: Auto Tune Center Freq: 5.82500000 GHz Start Freq: 5.81000000 GHz Stop Freq: 5.84000000 GHz CF Step: 3.000000 MHz Freq Offset: 0 Hz

Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-3

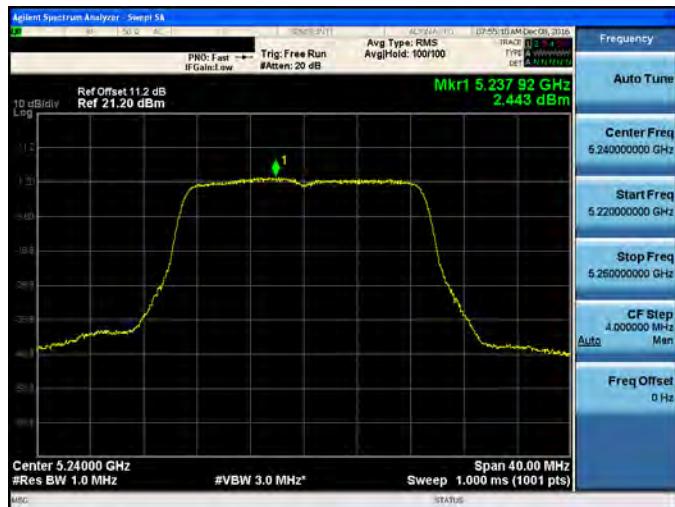
5180 MHz



5200 MHz



5240 MHz



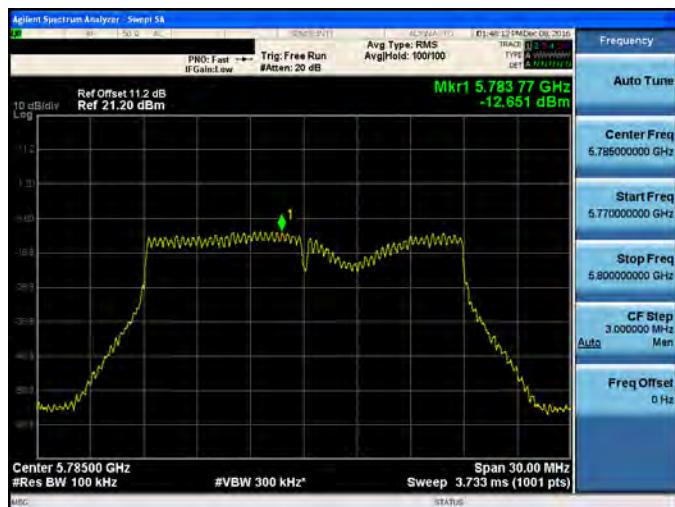
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-3

5745 MHz



5785 MHz



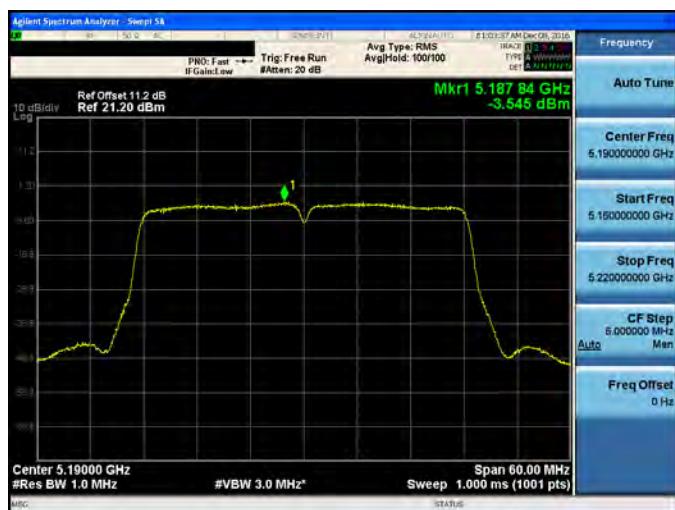
5825 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-3

5190 MHz



5230 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-3

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-3

5210 MHz



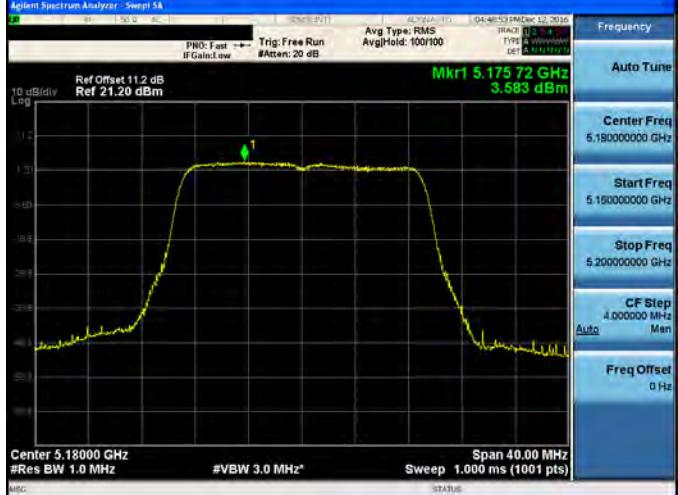
Mode 5: IEEE 802.11ac 80MHz Link Mode

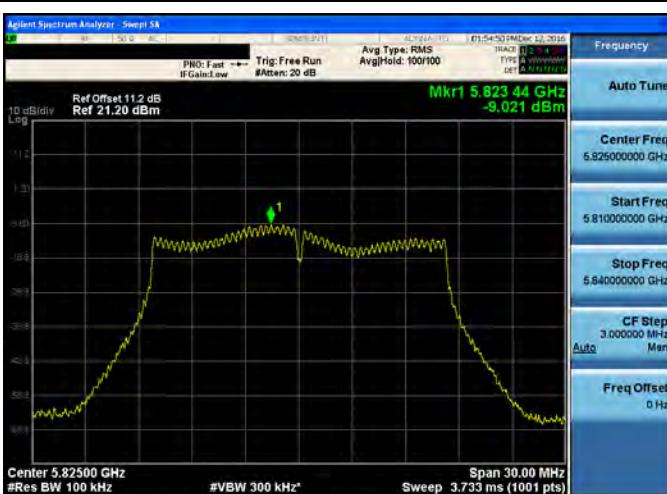
ANT-3

5775 MHz



Module : QCA9990 (EW-7944MAC)_Master

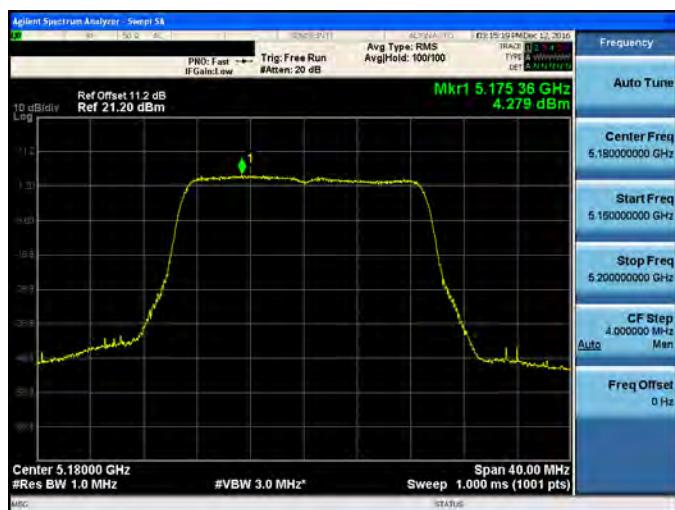
Mode 2: IEEE 802.11a Link Mode	
ANT-0	
5180 MHz	 <p>Agilent Spectrum Analyzer - Sweep SA PNO: Fast → Trig: Free Run IFGain:Low #Atten: 20 dB Ref Offset 11.2 dB Ref 21.20 dBm 10 dB/div Log Mkr1 5.175 72 GHz 3.583 dBm Center 5.18000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Span 40.00 MHz Sweep 1.000 ms (1001 pts) 0 dB 0.5 dB 1 dB 1.5 dB 2 dB 2.5 dB 3 dB 3.5 dB 4 dB 4.5 dB 5 dB 5.5 dB 6 dB 6.5 dB 7 dB 7.5 dB 8 dB 8.5 dB 9 dB 9.5 dB 10 dB 10.5 dB 11 dB 11.5 dB 12 dB 12.5 dB 13 dB 13.5 dB 14 dB 14.5 dB 15 dB 15.5 dB 16 dB 16.5 dB 17 dB 17.5 dB 18 dB 18.5 dB 19 dB 19.5 dB 20 dB 20.5 dB 21 dB 21.5 dB 22 dB 22.5 dB 23 dB 23.5 dB 24 dB 24.5 dB 25 dB 25.5 dB 26 dB 26.5 dB 27 dB 27.5 dB 28 dB 28.5 dB 29 dB 29.5 dB 30 dB 30.5 dB 31 dB 31.5 dB 32 dB 32.5 dB 33 dB 33.5 dB 34 dB 34.5 dB 35 dB 35.5 dB 36 dB 36.5 dB 37 dB 37.5 dB 38 dB 38.5 dB 39 dB 40 dB 41 dB 42 dB 43 dB 44 dB 45 dB 46 dB 47 dB 48 dB 49 dB 50 dB 51 dB 52 dB 53 dB 54 dB 55 dB 56 dB 57 dB 58 dB 59 dB 60 dB 61 dB 62 dB 63 dB 64 dB 65 dB 66 dB 67 dB 68 dB 69 dB 70 dB 71 dB 72 dB 73 dB 74 dB 75 dB 76 dB 77 dB 78 dB 79 dB 80 dB 81 dB 82 dB 83 dB 84 dB 85 dB 86 dB 87 dB 88 dB 89 dB 90 dB 91 dB 92 dB 93 dB 94 dB 95 dB 96 dB 97 dB 98 dB 99 dB 100 dB 101 dB 102 dB 103 dB 104 dB 105 dB 106 dB 107 dB 108 dB 109 dB 110 dB 111 dB 112 dB 113 dB 114 dB 115 dB 116 dB 117 dB 118 dB 119 dB 120 dB 121 dB 122 dB 123 dB 124 dB 125 dB 126 dB 127 dB 128 dB 129 dB 130 dB 131 dB 132 dB 133 dB 134 dB 135 dB 136 dB 137 dB 138 dB 139 dB 140 dB 141 dB 142 dB 143 dB 144 dB 145 dB 146 dB 147 dB 148 dB 149 dB 150 dB 151 dB 152 dB 153 dB 154 dB 155 dB 156 dB 157 dB 158 dB 159 dB 160 dB 161 dB 162 dB 163 dB 164 dB 165 dB 166 dB 167 dB 168 dB 169 dB 170 dB 171 dB 172 dB 173 dB 174 dB 175 dB 176 dB 177 dB 178 dB 179 dB 180 dB 181 dB 182 dB 183 dB 184 dB 185 dB 186 dB 187 dB 188 dB 189 dB 190 dB 191 dB 192 dB 193 dB 194 dB 195 dB 196 dB 197 dB 198 dB 199 dB 200 dB 201 dB 202 dB 203 dB 204 dB 205 dB 206 dB 207 dB 208 dB 209 dB 210 dB 211 dB 212 dB 213 dB 214 dB 215 dB 216 dB 217 dB 218 dB 219 dB 220 dB 221 dB 222 dB 223 dB 224 dB 225 dB 226 dB 227 dB 228 dB 229 dB 230 dB 231 dB 232 dB 233 dB 234 dB 235 dB 236 dB 237 dB 238 dB 239 dB 240 dB 241 dB 242 dB 243 dB 244 dB 245 dB 246 dB 247 dB 248 dB 249 dB 250 dB 251 dB 252 dB 253 dB 254 dB 255 dB 256 dB 257 dB 258 dB 259 dB 260 dB 261 dB 262 dB 263 dB 264 dB 265 dB 266 dB 267 dB 268 dB 269 dB 270 dB 271 dB 272 dB 273 dB 274 dB 275 dB 276 dB 277 dB 278 dB 279 dB 280 dB 281 dB 282 dB 283 dB 284 dB 285 dB 286 dB 287 dB 288 dB 289 dB 290 dB 291 dB 292 dB 293 dB 294 dB 295 dB 296 dB 297 dB 298 dB 299 dB 300 dB 301 dB 302 dB 303 dB 304 dB 305 dB 306 dB 307 dB 308 dB 309 dB 310 dB 311 dB 312 dB 313 dB 314 dB 315 dB 316 dB 317 dB 318 dB 319 dB 320 dB 321 dB 322 dB 323 dB 324 dB 325 dB 326 dB 327 dB 328 dB 329 dB 330 dB 331 dB 332 dB 333 dB 334 dB 335 dB 336 dB 337 dB 338 dB 339 dB 340 dB 341 dB 342 dB 343 dB 344 dB 345 dB 346 dB 347 dB 348 dB 349 dB 350 dB 351 dB 352 dB 353 dB 354 dB 355 dB 356 dB 357 dB 358 dB 359 dB 360 dB 361 dB 362 dB 363 dB 364 dB 365 dB 366 dB 367 dB 368 dB 369 dB 370 dB 371 dB 372 dB 373 dB 374 dB 375 dB 376 dB 377 dB 378 dB 379 dB 380 dB 381 dB 382 dB 383 dB 384 dB 385 dB 386 dB 387 dB 388 dB 389 dB 390 dB 391 dB 392 dB 393 dB 394 dB 395 dB 396 dB 397 dB 398 dB 399 dB 400 dB 401 dB 402 dB 403 dB 404 dB 405 dB 406 dB 407 dB 408 dB 409 dB 410 dB 411 dB 412 dB 413 dB 414 dB 415 dB 416 dB 417 dB 418 dB 419 dB 420 dB 421 dB 422 dB 423 dB 424 dB 425 dB 426 dB 427 dB 428 dB 429 dB 430 dB 431 dB 432 dB 433 dB 434 dB 435 dB 436 dB 437 dB 438 dB 439 dB 440 dB 441 dB 442 dB 443 dB 444 dB 445 dB 446 dB 447 dB 448 dB 449 dB 450 dB 451 dB 452 dB 453 dB 454 dB 455 dB 456 dB 457 dB 458 dB 459 dB 460 dB 461 dB 462 dB 463 dB 464 dB 465 dB 466 dB 467 dB 468 dB 469 dB 470 dB 471 dB 472 dB 473 dB 474 dB 475 dB 476 dB 477 dB 478 dB 479 dB 480 dB 481 dB 482 dB 483 dB 484 dB 485 dB 486 dB 487 dB 488 dB 489 dB 490 dB 491 dB 492 dB 493 dB 494 dB 495 dB 496 dB 497 dB 498 dB 499 dB 500 dB 501 dB 502 dB 503 dB 504 dB 505 dB 506 dB 507 dB 508 dB 509 dB 510 dB 511 dB 512 dB 513 dB 514 dB 515 dB 516 dB 517 dB 518 dB 519 dB 520 dB 521 dB 522 dB 523 dB 524 dB 525 dB 526 dB 527 dB 528 dB 529 dB 530 dB 531 dB 532 dB 533 dB 534 dB 535 dB 536 dB 537 dB 538 dB 539 dB 540 dB 541 dB 542 dB 543 dB 544 dB 545 dB 546 dB 547 dB 548 dB 549 dB 550 dB 551 dB 552 dB 553 dB 554 dB 555 dB 556 dB 557 dB 558 dB 559 dB 560 dB 561 dB 562 dB 563 dB 564 dB 565 dB 566 dB 567 dB 568 dB 569 dB 570 dB 571 dB 572 dB 573 dB 574 dB 575 dB 576 dB 577 dB 578 dB 579 dB 580 dB 581 dB 582 dB 583 dB 584 dB 585 dB 586 dB 587 dB 588 dB 589 dB 590 dB 591 dB 592 dB 593 dB 594 dB 595 dB 596 dB 597 dB 598 dB 599 dB 600 dB 601 dB 602 dB 603 dB 604 dB 605 dB 606 dB 607 dB 608 dB 609 dB 610 dB 611 dB 612 dB 613 dB 614 dB 615 dB 616 dB 617 dB 618 dB 619 dB 620 dB 621 dB 622 dB 623 dB 624 dB 625 dB 626 dB 627 dB 628 dB 629 dB 630 dB 631 dB 632 dB 633 dB 634 dB 635 dB 636 dB 637 dB 638 dB 639 dB 640 dB 641 dB 642 dB 643 dB 644 dB 645 dB 646 dB 647 dB 648 dB 649 dB 650 dB 651 dB 652 dB 653 dB 654 dB 655 dB 656 dB 657 dB 658 dB 659 dB 660 dB 661 dB 662 dB 663 dB 664 dB 665 dB 666 dB 667 dB 668 dB 669 dB 670 dB 671 dB 672 dB 673 dB 674 dB 675 dB 676 dB 677 dB 678 dB 679 dB 680 dB 681 dB 682 dB 683 dB 684 dB 685 dB 686 dB 687 dB 688 dB 689 dB 690 dB 691 dB 692 dB 693 dB 694 dB 695 dB 696 dB 697 dB 698 dB 699 dB 700 dB 701 dB 702 dB 703 dB 704 dB 705 dB 706 dB 707 dB 708 dB 709 dB 710 dB 711 dB 712 dB 713 dB 714 dB 715 dB 716 dB 717 dB 718 dB 719 dB 720 dB 721 dB 722 dB 723 dB 724 dB 725 dB 726 dB 727 dB 728 dB 729 dB 730 dB 731 dB 732 dB 733 dB 734 dB 735 dB 736 dB 737 dB 738 dB 739 dB 740 dB 741 dB 742 dB 743 dB 744 dB 745 dB 746 dB 747 dB 748 dB 749 dB 750 dB 751 dB 752 dB 753 dB 754 dB 755 dB 756 dB 757 dB 758 dB 759 dB 760 dB 761 dB 762 dB 763 dB 764 dB 765 dB 766 dB 767 dB 768 dB 769 dB 770 dB 771 dB 772 dB 773 dB 774 dB 775 dB 776 dB 777 dB 778 dB 779 dB 780 dB 781 dB 782 dB 783 dB 784 dB 785 dB 786 dB 787 dB 788 dB 789 dB 790 dB 791 dB 792 dB 793 dB 794 dB 795 dB 796 dB 797 dB 798 dB 799 dB 800 dB 801 dB 802 dB 803 dB 804 dB 805 dB 806 dB 807 dB 808 dB 809 dB 8010 dB 8011 dB 8012 dB 8013 dB 8014 dB 8015 dB 8016 dB 8017 dB 8018 dB 8019 dB 8020 dB 8021 dB 8022 dB 8023 dB 8024 dB 8025 dB 8026 dB 8027 dB 8028 dB 8029 dB 8030 dB 8031 dB 8032 dB 8033 dB 8034 dB 8035 dB 8036 dB 8037 dB 8038 dB 8039 dB 8040 dB 8041 dB 8042 dB 8043 dB 8044 dB 8045 dB 8046 dB 8047 dB 8048 dB 8049 dB 8050 dB 8051 dB 8052 dB 8053 dB 8054 dB 8055 dB 8056 dB 8057 dB 8058 dB 8059 dB 8060 dB 8061 dB 8062 dB 8063 dB 8064 dB 8065 dB 8066 dB 8067 dB 8068 dB 8069 dB 8070 dB 8071 dB 8072 dB 8073 dB 8074 dB 8075 dB 8076 dB 8077 dB 8078 dB 8079 dB 8080 dB 8081 dB 8082 dB 8083 dB 8084 dB 8085 dB 8086 dB 8087 dB 8088 dB 8089 dB 8090 dB 8091 dB 8092 dB 8093 dB 8094 dB 8095 dB 8096 dB 8097 dB 8098 dB 8099 dB 80100 dB 80101 dB 80102 dB 80103 dB 80104 dB 80105 dB 80106 dB 80107 dB 80108 dB 80109 dB 80110 dB 80111 dB 80112 dB 80113 dB 80114 dB 80115 dB 80116 dB 80117 dB 80118 dB 80119 dB 80120 dB 80121 dB 80122 dB 80123 dB 80124 dB 80125 dB 80126 dB 80127 dB 80128 dB 80129 dB 80130 dB 80131 dB 80132 dB 80133 dB 80134 dB 80135 dB 80136 dB 80137 dB 80138 dB 80139 dB 80140 dB 80141 dB 80142 dB 80143 dB 80144 dB 80145 dB 80146 dB 80147 dB 80148 dB 80149 dB 80150 dB 80151 dB 80152 dB 80153 dB 80154 dB 80155 dB 80156 dB 80157 dB 80158 dB 80159 dB 80160 dB 80161 dB 80162 dB 80163 dB 80164 dB 80165 dB 80166 dB 80167 dB 80168 dB 80169 dB 80170 dB 80171 dB 80172 dB 80173 dB 80174 dB 80175 dB 80176 dB 80177 dB 80178 dB 80179 dB 80180 dB 80181 dB 80182 dB 80183 dB 80184 dB 80185 dB 80186 dB 80187 dB 80188 dB 80189 dB 80190 dB 80191 dB 80192 dB 80193 dB 80194 dB 80195 dB 80196 dB 80197 dB 80198 dB 80199 dB 80200 dB 80201 dB 80202 dB 80203 dB 80204 dB 80205 dB 80206 dB 80207 dB 80208 dB 80209 dB 80210 dB 80211 dB 80212 dB 80213 dB 80214 dB 80215 dB 80216 dB 80217 dB 80218 dB 80219 dB 80220 dB 80221 dB 80222 dB 80223 dB 80224 dB 80225 dB 80226 dB 80227 dB 80228 dB 80229 dB 80230 dB 80231 dB 80232 dB 80233 dB 80234 dB 80235 dB 80236 dB 80237 dB 80238 dB 80239 dB 80240 dB 80241 dB 80242 dB 80243 dB 80244 dB 80245 dB 80246 dB 80247 dB 80248 dB 80249 dB 80250 dB 80251 dB 80252 dB 80253 dB 80254 dB 80255 dB 80256 dB 80257 dB 80258 dB 80259 dB 80260 dB 80261 dB 80262 dB 80263 dB 80264 dB 80265 dB 80266 dB 80267 dB 80268 dB 80269 dB 80270 dB 80271 dB 80272 dB 80273 dB 80274 dB 80275 dB 80276 dB 80277 dB 80278 dB 80279 dB 80280 dB 80281 dB 80282 dB 80283 dB 80284 dB 80285 dB 80286 dB 80287 dB 80288 dB 80289 dB 80290 dB 80291 dB 80292 dB 80293 dB 80294 dB 80295 dB 80296 dB 80297 dB 80298 dB 80299 dB 80300 dB 80301 dB 80302 dB 80303 dB 80304 dB 80305 dB 80306 dB 80307 dB 80308 dB 80309 dB 80310 dB 80311 dB 80312 dB 80313 dB 80314 dB 80315 dB 80316 dB 80317 dB 80318 dB 80319 dB 80320 dB 80321 dB 80322 dB 80323 dB 80324 dB 80325 dB 80326 dB 80327 dB 80328 dB 80329 dB 80330 dB 80331 dB 80332 dB 80333 dB 80334 dB 80335 dB 80336 dB 80337 dB 80338 dB 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80450 dB 80451 dB 80452 dB 80453 dB 80454 dB 80455 dB 80456 dB 80457 dB 80458 dB 80459 dB 80460 dB 80461 dB 80462 dB 80463 dB 80464 dB 80465 dB 80466 dB 80467 dB 80468 dB 80469 dB 80470 dB 80471 dB 80472 dB 80473 dB 80474 dB 80475 dB 80476 dB 80477 dB 80478 dB 80479 dB 80480 dB 80481 dB 80482 dB 80483 dB 80484 dB 80485 dB 80486 dB 80487 dB 80488 dB 80489 dB 80490 dB 80491 dB 80492 dB 80493 dB 80494 dB 80495 dB 80496 dB 80497 dB 80498 dB 80499 dB 80500 dB 80501 dB 80502 dB 80503 dB 80504 dB 80505 dB 80506 dB 80507 dB 80508 dB 80509 dB 80510 dB 80511 dB 80512 dB 80513 dB 80514 dB 80515 dB 80516 dB 80517 dB 80518 dB 80519 dB 80520 dB 80521 dB 80522 dB 80523 dB 80524 dB 80525 dB 80526 dB 80527 dB 80528 dB 80529 dB 80530 dB 80531 dB 80532 dB 80533 dB 80534 dB 80535 dB 80536 dB 80537 dB 80538 dB 80539 dB 80540 dB 80541 dB 80542 dB 80543 dB 80544 dB 80545 dB 80546 dB 80547 dB 80548 dB 80549 dB 80550 dB 80551 dB 80552 dB 80553 dB 80554 dB 80555 dB 80556 dB 80557 dB 80558 dB 80559 dB 80560 dB 80561 dB 80562 dB 80563 dB 80564 dB 80565 dB 80566 dB 80567 dB 80568 dB 80569 dB 80570 dB 80571 dB 80572 dB 80573 dB 80574 dB 80575 dB 80576 dB 80577 dB 80578 dB 80579 dB 80580 dB 80581 dB 80582 dB 80583 dB 80584 dB 80585 dB 80586 dB 80587 dB 80588 dB 80589 dB 80590 dB 80591 dB 80592 dB 80593 dB 80594 dB 80595 dB 80596 dB 80597 dB 80598 dB 80599 dB 80600 dB 80601 dB 80602 dB 80603 dB 80604 dB 80605 dB 80606 dB 80607 dB 80608 dB 80609 dB 80610 dB 80611 dB 80612 dB 80613 dB 80614 dB 80615 dB 80616 dB 80617 dB 80618 dB 80619 dB 80620 dB 80621 dB 80622 dB 80623 dB 80624 dB 80625 dB 80626 dB 80627 dB 80628 dB 80629 dB 80630 dB 80631 dB 80632 dB 80633 dB 80634 dB 80635 dB 80636 dB 80637 dB 80638 dB 80639 dB 80640 dB 80641 dB 80642 dB 80643 dB 80644 dB 80645 dB 80646 dB 80647 dB 80648 dB 80649 dB 80650 dB 80651 dB 80652 dB 80653 dB 80654 dB 80655 dB 80656 dB 80657 dB 80658 dB 80659 dB 80660 dB 80661 dB 80662 dB 80663 dB 80664 dB 80665 dB 80666 dB 80667 dB 80668 dB 80669 dB 80670 dB 80671 dB 80672 dB 80673 dB 80674 dB 80675 dB 80676 dB 80677 dB 80678 dB 80679 dB 80680 dB 80681 dB 80682 dB 80683 dB 80684 dB 80685 dB 80686 dB 80687 dB 80688 dB 80689 dB 80690 dB 80691 dB 80692 dB 80693 dB 80694 dB 80695 dB 80696 dB 80697 dB 80698 dB 80699 dB 80700 dB 80701 dB 80702 dB 80703 dB 80704 dB 80705 dB 80706 dB 80707 dB 80708 dB 80</p>

Mode 2: IEEE 802.11a Link Mode	
ANT-0	
5745 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p>  <p>Mkr1 5.741 28 GHz -9.792 dBm</p> <p>Center 5.74500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.745000000 GHz Start Freq 5.730000000 GHz Stop Freq 5.780000000 GHz CF Step 3.000000 MHz Man Freq Offset 0 Hz</p>
5785 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p>  <p>Mkr1 5.781 91 GHz -9.803 dBm</p> <p>Center 5.78500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.785000000 GHz Start Freq 5.770000000 GHz Stop Freq 5.800000000 GHz CF Step 3.000000 MHz Man Freq Offset 0 Hz</p>
5825 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p>  <p>Mkr1 5.823 44 GHz -9.021 dBm</p> <p>Center 5.82500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.825000000 GHz Start Freq 5.810000000 GHz Stop Freq 5.840000000 GHz CF Step 3.000000 MHz Man Freq Offset 0 Hz</p>

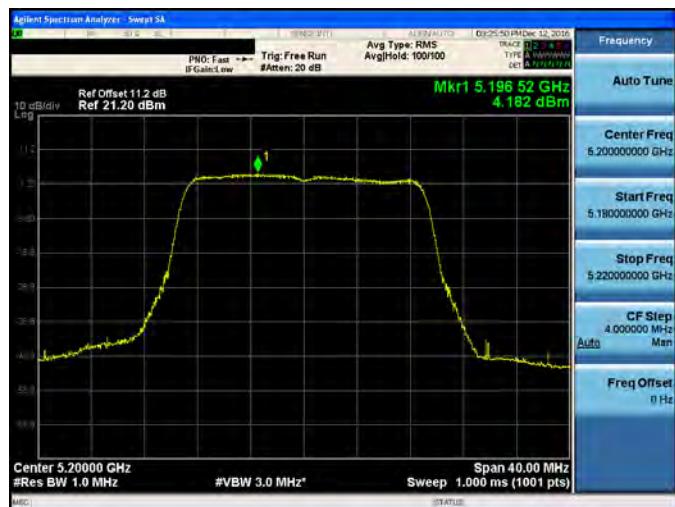
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-0

5180 MHz



5200 MHz



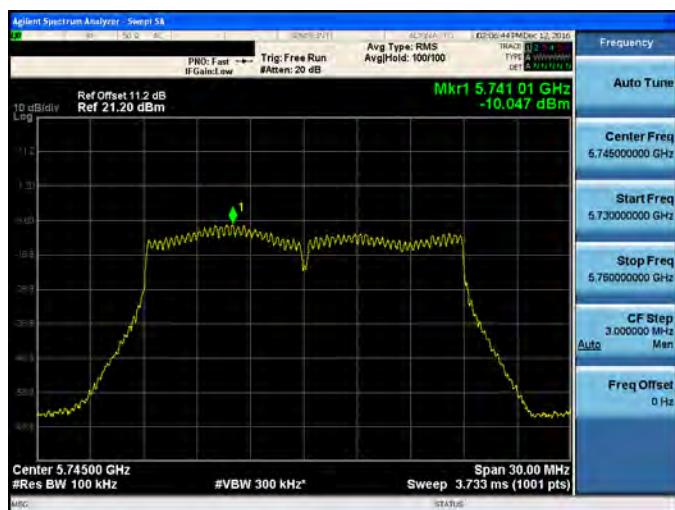
5240 MHz



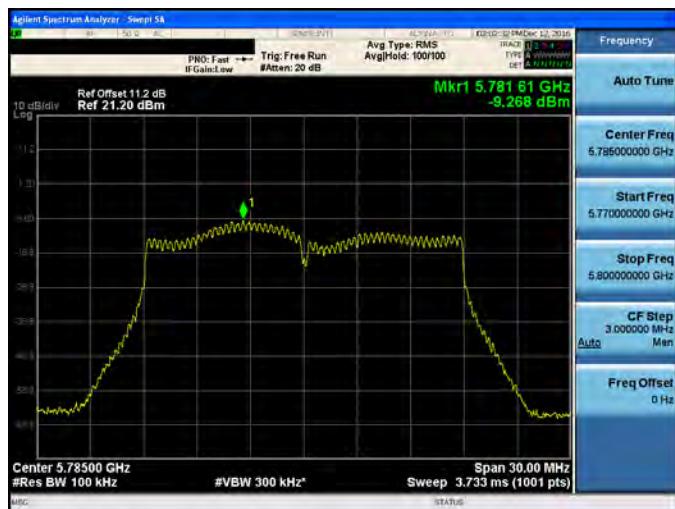
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-0

5745 MHz



5785 MHz



5825 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-0

5190 MHz



5230 MHz



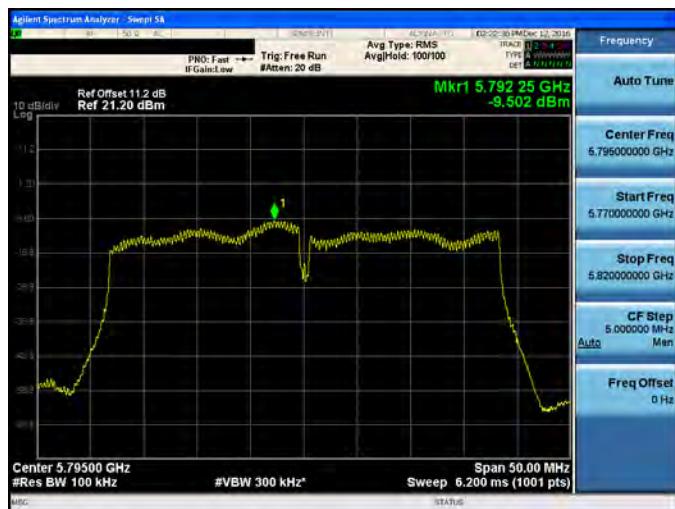
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-0

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-0

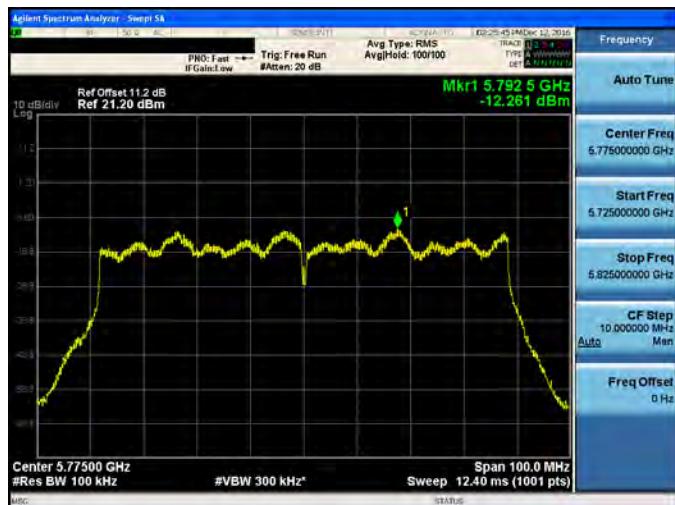
5210 MHz



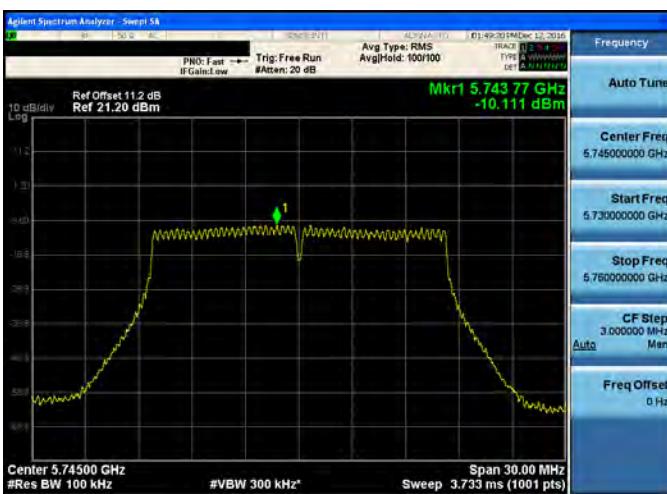
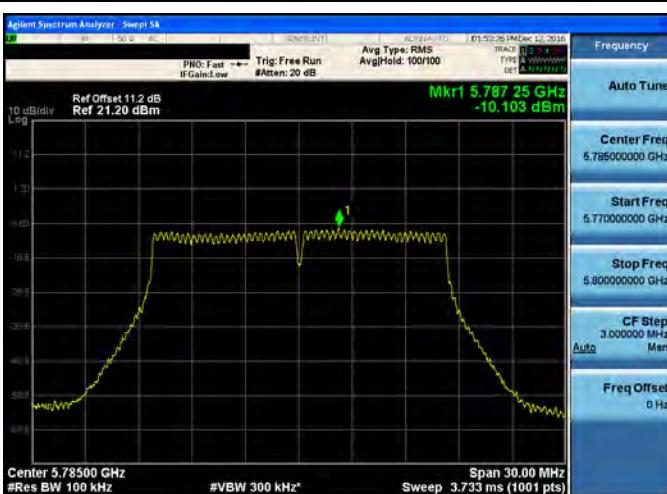
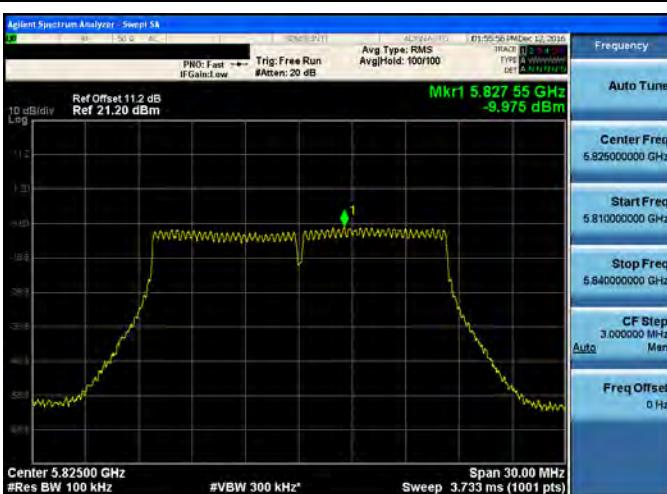
Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-0

5775 MHz



Mode 2: IEEE 802.11a Link Mode	
ANT-1	
5180 MHz	<p>Spectrum analysis plot showing a single emission at 5.177 GHz with 4.894 dBm power.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.18000000 GHz Start Freq: 5.16000000 GHz Stop Freq: 5.20000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz
5200 MHz	<p>Spectrum analysis plot showing a single emission at 5.201 GHz with 4.930 dBm power.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.20000000 GHz Start Freq: 5.18000000 GHz Stop Freq: 5.22000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz
5240 MHz	<p>Spectrum analysis plot showing a single emission at 5.243 GHz with 4.998 dBm power.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.24000000 GHz Start Freq: 5.22000000 GHz Stop Freq: 5.26000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz

Mode 2: IEEE 802.11a Link Mode	
ANT-1	
5745 MHz	<p>Spectrum analysis plot for 5745 MHz:</p>  <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.743 77 GHz -10.111 dBm</p> <p>Center 5.74500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.745000000 GHz Start Freq 5.730000000 GHz Stop Freq 5.760000000 GHz CF Step 3.00000 MHz Man Freq Offset 0 Hz</p>
5785 MHz	<p>Spectrum analysis plot for 5785 MHz:</p>  <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.787 25 GHz -10.103 dBm</p> <p>Center 5.78500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.785000000 GHz Start Freq 5.770000000 GHz Stop Freq 5.800000000 GHz CF Step 3.00000 MHz Man Freq Offset 0 Hz</p>
5825 MHz	<p>Spectrum analysis plot for 5825 MHz:</p>  <p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p> <p>Mkr1 5.827 55 GHz -9.975 dBm</p> <p>Center 5.82500 GHz #Res BW 100 kHz #VBW 300 kHz* Sweep 3.733 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.825000000 GHz Start Freq 5.810000000 GHz Stop Freq 5.840000000 GHz CF Step 3.00000 MHz Man Freq Offset 0 Hz</p>

Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-1

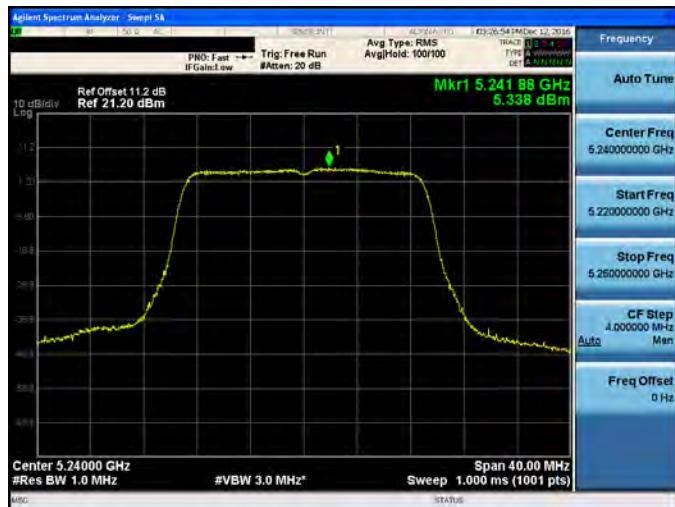
5180 MHz



5200 MHz



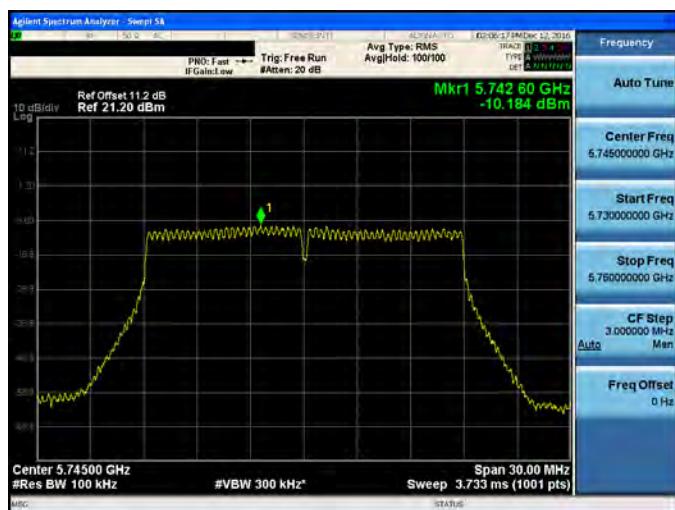
5240 MHz



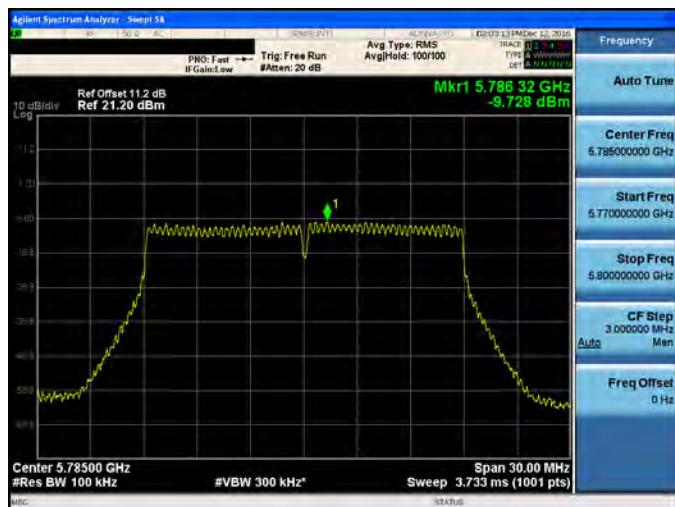
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-1

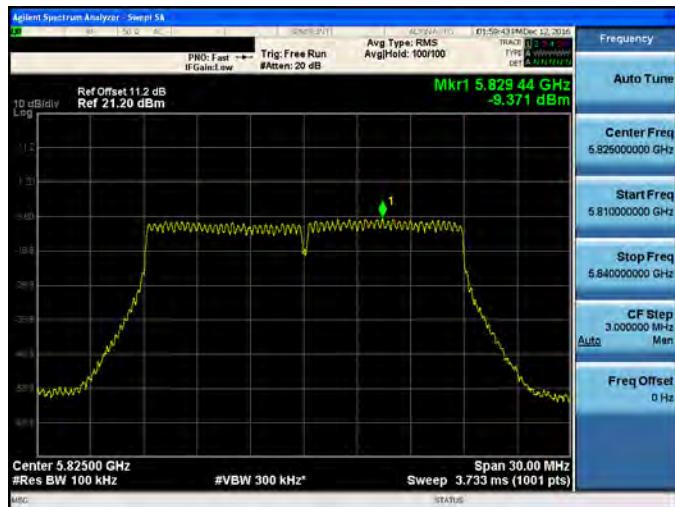
5745 MHz

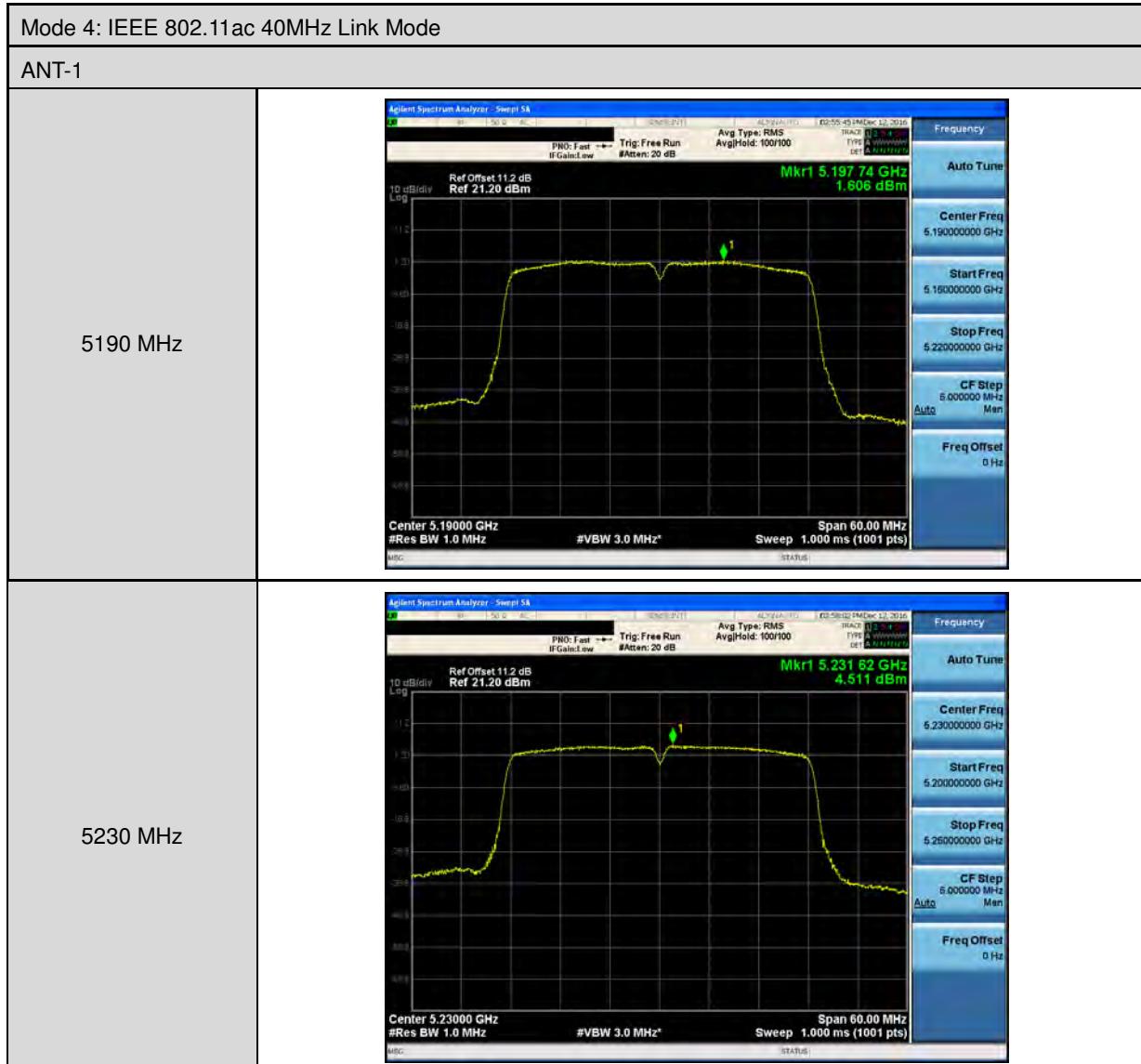


5785 MHz



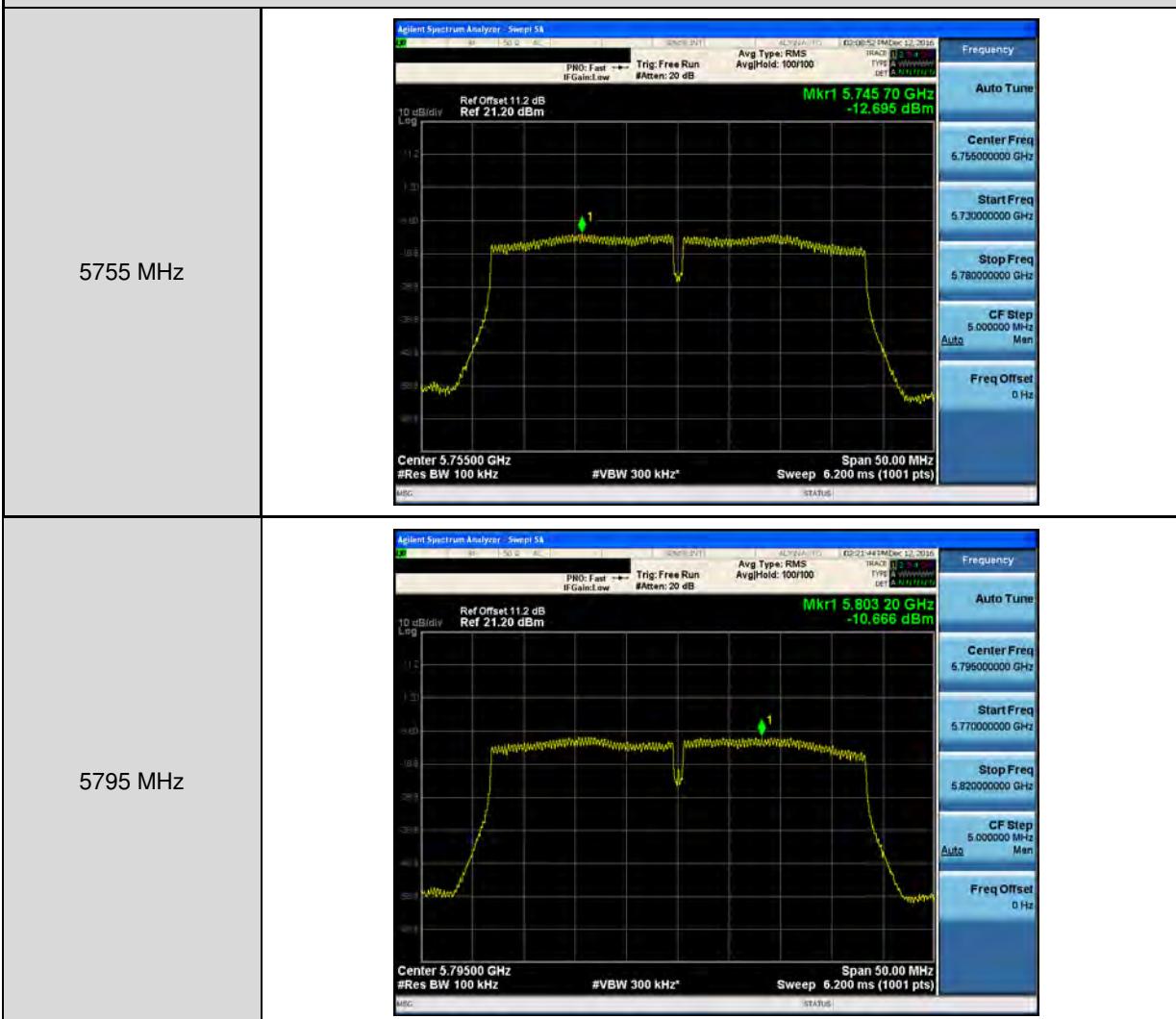
5825 MHz





Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-1



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-1

5210 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-1

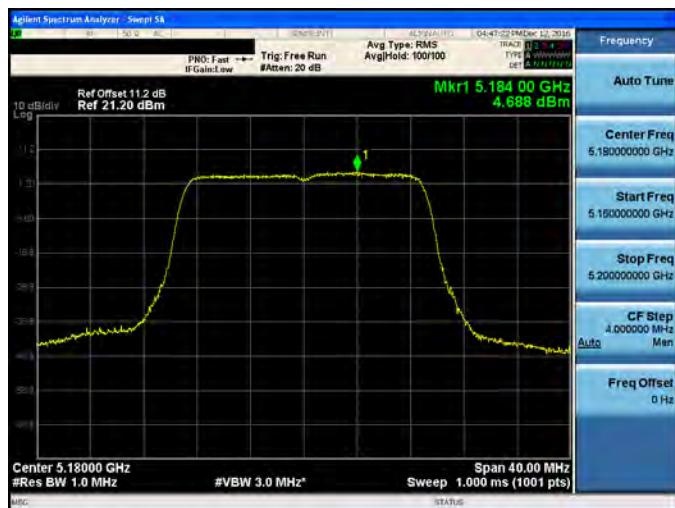
5775 MHz



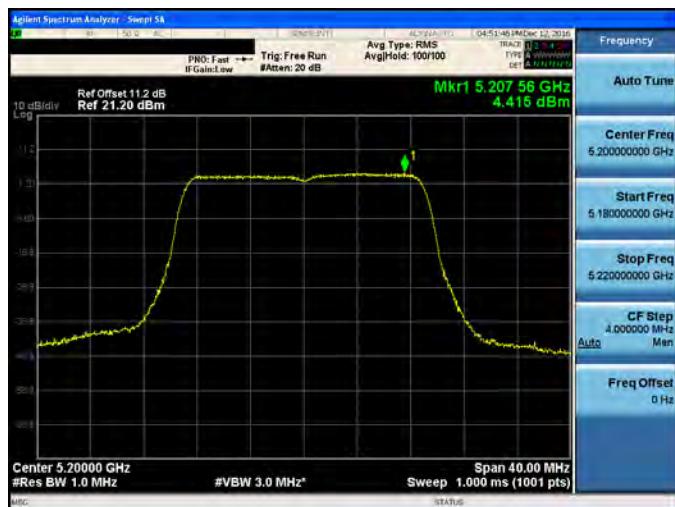
Mode 2: IEEE 802.11a Link Mode

ANT-2

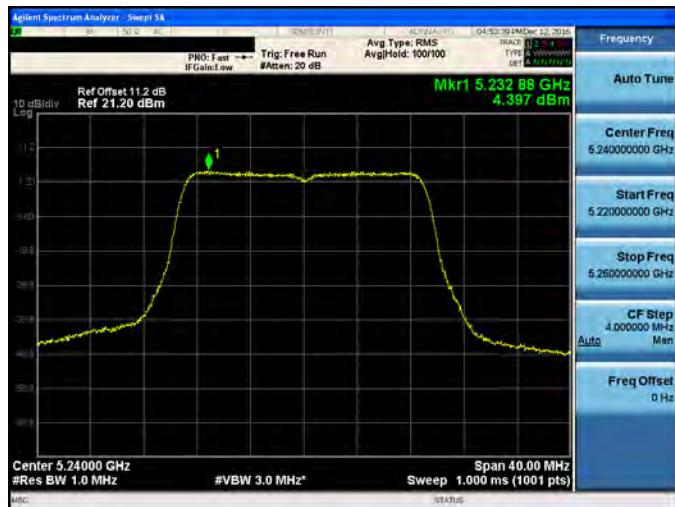
5180 MHz



5200 MHz



5240 MHz



Mode 2: IEEE 802.11a Link Mode	
ANT-2	
5745 MHz	<p>Spectrum analysis plot showing a single emission at 5.745 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.74500000 GHz Start Freq: 5.73000000 GHz Stop Freq: 5.78000000 GHz CF Step: 3.000000 MHz Freq Offset: 0 Hz <p>Measurement results:</p> <ul style="list-style-type: none"> Mkr1: 5.747 22 GHz -9.105 dBm Span: 30.00 MHz #VBW: 300 kHz Sweep: 3.733 ms (1001 pts)
5785 MHz	<p>Spectrum analysis plot showing a single emission at 5.785 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.78500000 GHz Start Freq: 5.77000000 GHz Stop Freq: 5.80000000 GHz CF Step: 3.000000 MHz Freq Offset: 0 Hz <p>Measurement results:</p> <ul style="list-style-type: none"> Mkr1: 5.788 45 GHz -9.839 dBm Span: 30.00 MHz #VBW: 300 kHz Sweep: 3.733 ms (1001 pts)
5825 MHz	<p>Spectrum analysis plot showing a single emission at 5.825 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Center Freq: 5.82500000 GHz Start Freq: 5.81000000 GHz Stop Freq: 5.84000000 GHz CF Step: 3.000000 MHz Freq Offset: 0 Hz <p>Measurement results:</p> <ul style="list-style-type: none"> Mkr1: 5.818 19 GHz -10.068 dBm Span: 30.00 MHz #VBW: 300 kHz Sweep: 3.733 ms (1001 pts)

Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-2

5180 MHz



5200 MHz

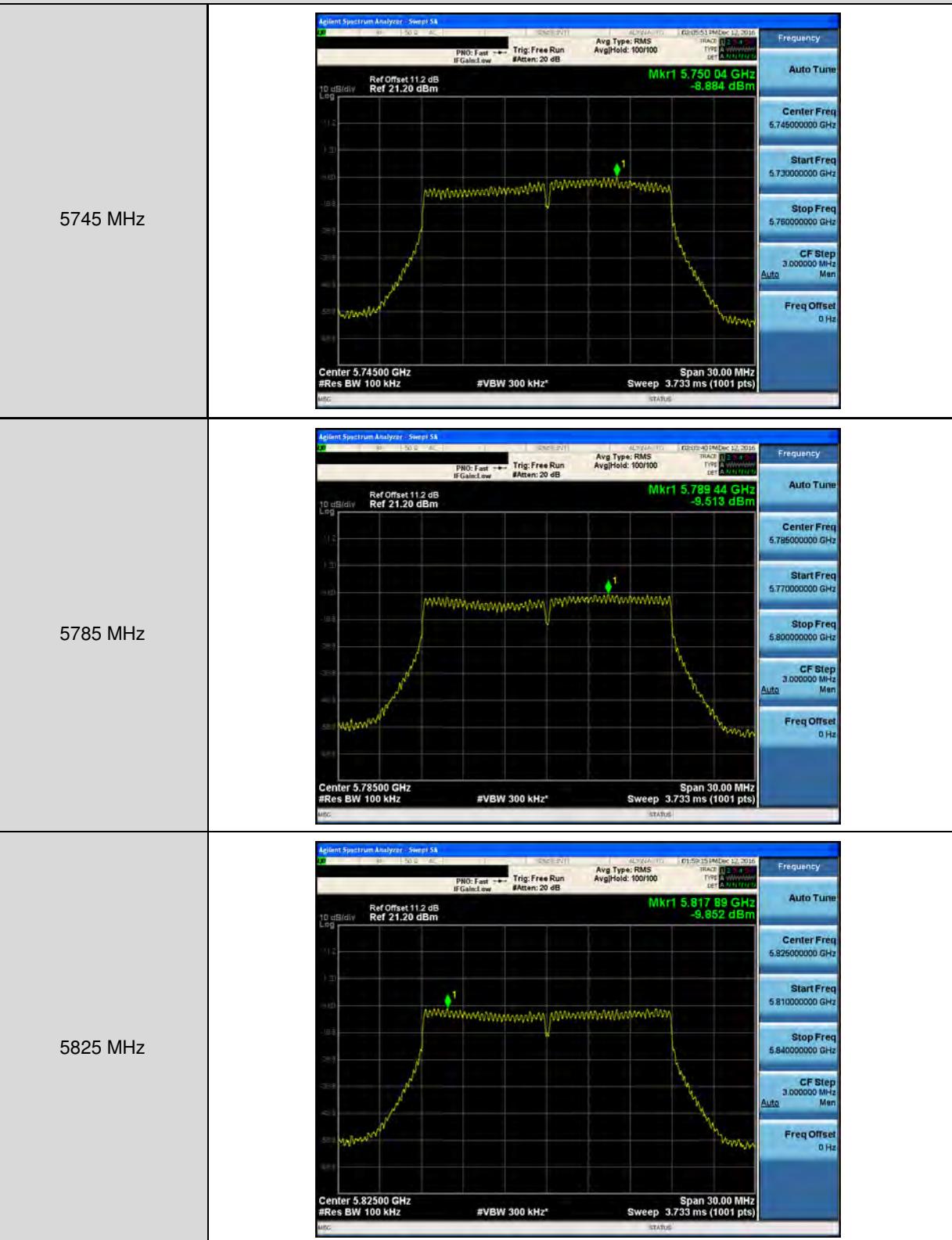


5240 MHz



Mode 3: IEEE 802.11ac 20MHz Link Mode

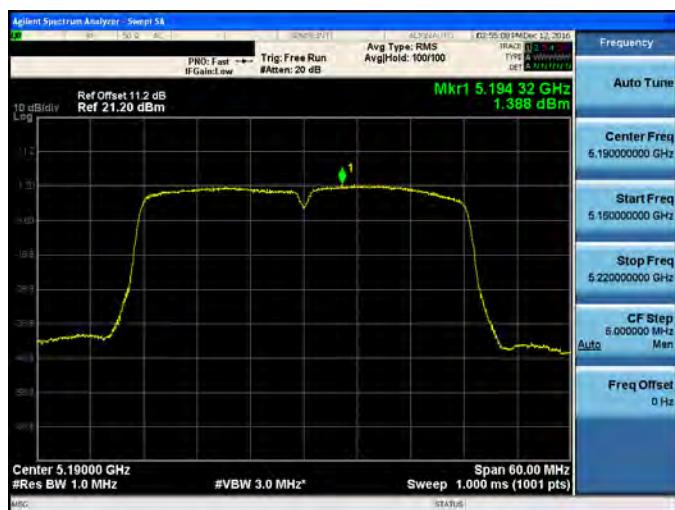
ANT-2



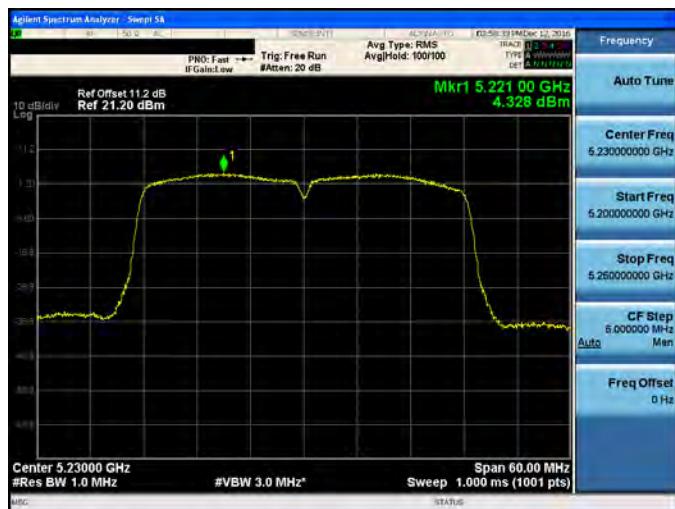
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-2

5190 MHz



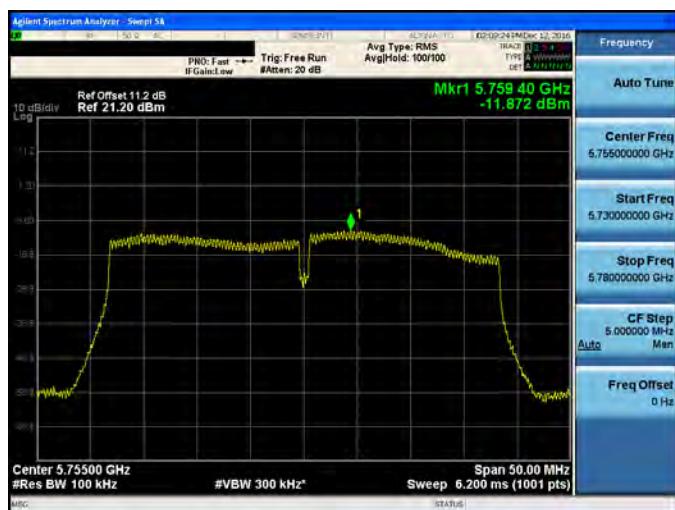
5230 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-2

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-2

5210 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-2

5775 MHz



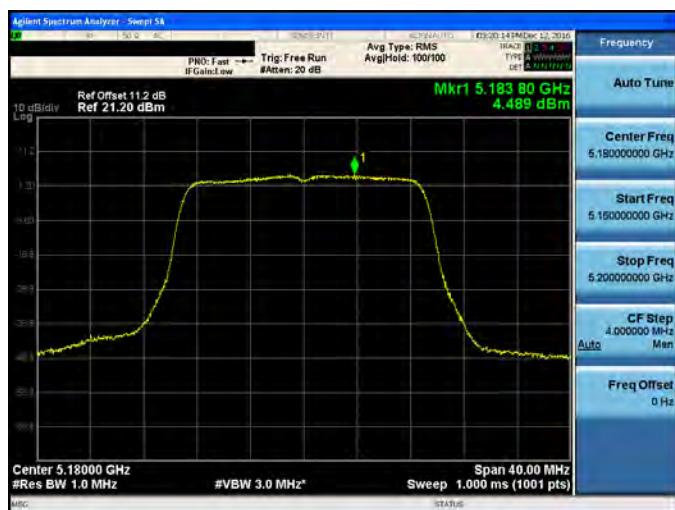
Mode 2: IEEE 802.11a Link Mode	
ANT-3	
5180 MHz	<p>Spectrum analysis plot showing a single emission at 5.18156 GHz with a power of 4.343 dBm.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts) <p>Marker 1 indicates the emission peak at 5.18156 GHz.</p>
5200 MHz	<p>Spectrum analysis plot showing a single emission at 5.19880 GHz with a power of 4.072 dBm.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts) <p>Marker 1 indicates the emission peak at 5.19880 GHz.</p>
5240 MHz	<p>Spectrum analysis plot showing a single emission at 5.24104 GHz with a power of 4.263 dBm.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts) <p>Marker 1 indicates the emission peak at 5.24104 GHz.</p>

Mode 2: IEEE 802.11a Link Mode	
ANT-3	
5745 MHz	<p>Spectrum analysis plot showing a single emission at 5.745 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Trig: Free Run IF Gain: Low Avg Type: RMS Avg Hold: 100/100 Span: 30.00 MHz #VBW: 300 kHz Sweep: 3.733 ms (1001 pts) <p>Marker 1 shows a signal at 5.74848 GHz with -9.397 dBm.</p>
5785 MHz	<p>Spectrum analysis plot showing a single emission at 5.785 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Trig: Free Run IF Gain: Low Avg Type: RMS Avg Hold: 100/100 Span: 30.00 MHz #VBW: 300 kHz Sweep: 3.733 ms (1001 pts) <p>Marker 1 shows a signal at 5.78848 GHz with -9.280 dBm.</p>
5825 MHz	<p>Spectrum analysis plot showing a single emission at 5.825 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Trig: Free Run IF Gain: Low Avg Type: RMS Avg Hold: 100/100 Span: 30.00 MHz #VBW: 300 kHz Sweep: 3.733 ms (1001 pts) <p>Marker 1 shows a signal at 5.82755 GHz with -9.308 dBm.</p>

Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-3

5180 MHz



5200 MHz



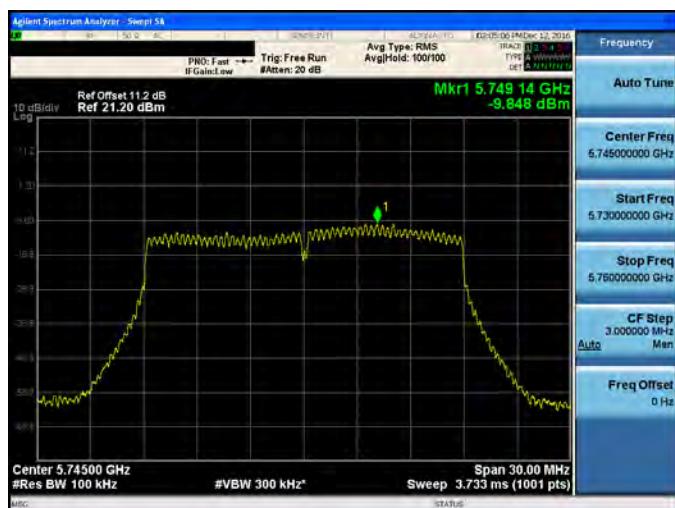
5240 MHz



Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-3

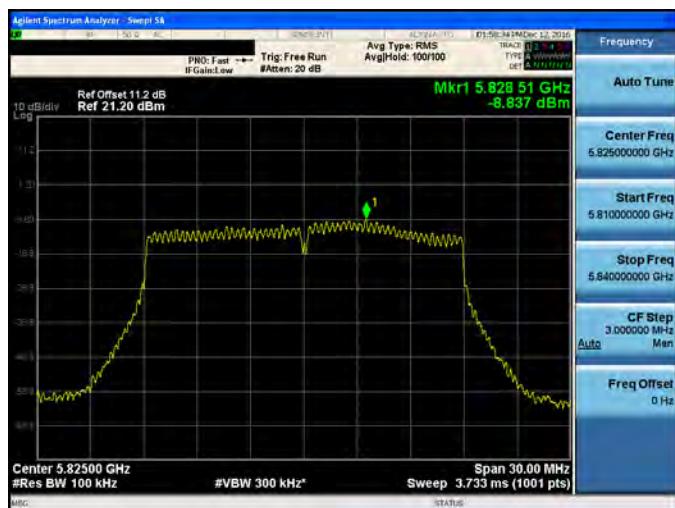
5745 MHz



5785 MHz



5825 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-3

5190 MHz



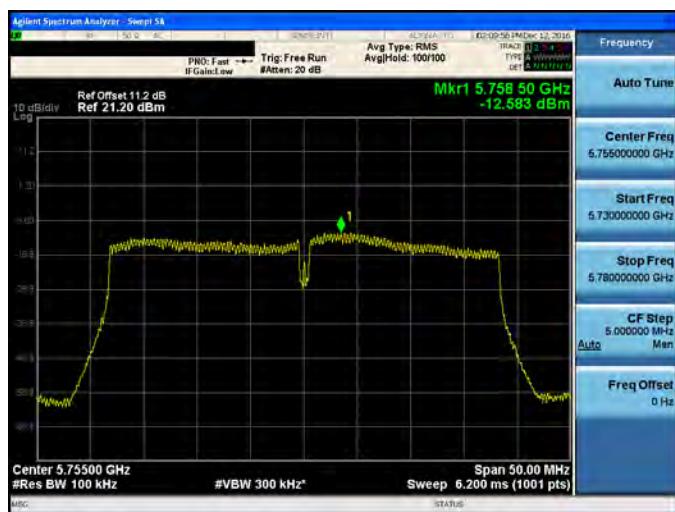
5230 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-3

5755 MHz



5795 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-3

5210 MHz



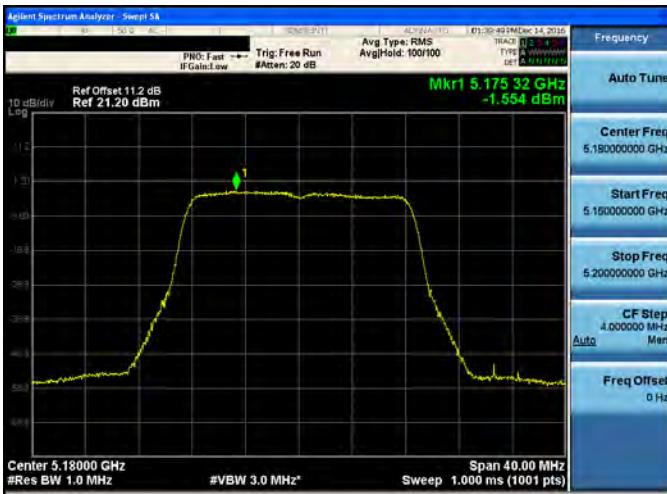
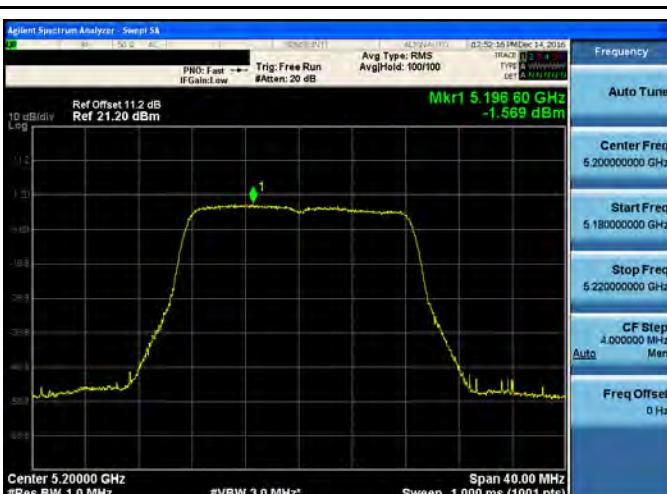
Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-3

5775 MHz



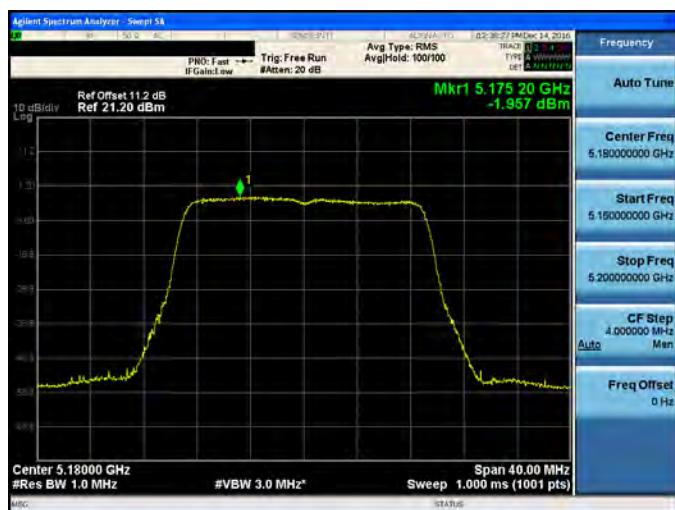
Module : QCA9990 (EW-7944MAC)_Client

Mode 2: IEEE 802.11a Link Mode	
ANT-0	
5180 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>PNO: Fast → Trig: Free Run IF Gain: Low #Atten: 20 dB</p> <p>Avg Type: RMS Avg/Hold: 100/100</p> <p>Mkr1 5.175 32 GHz -1.554 dBm</p>  <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 5.18000000 GHz</p> <p>Start Freq 5.16000000 GHz</p> <p>Stop Freq 5.20000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Span 40.00 MHz</p> <p>#Res BW 1.0 MHz</p> <p>#VBW 3.0 MHz*</p> <p>Sweep 1.000 ms (1001 pts)</p>
5200 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>PNO: Fast → Trig: Free Run IF Gain: Low #Atten: 20 dB</p> <p>Avg Type: RMS Avg/Hold: 100/100</p> <p>Mkr1 5.196 60 GHz -1.569 dBm</p>  <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 5.20000000 GHz</p> <p>Start Freq 5.18000000 GHz</p> <p>Stop Freq 5.22000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Span 40.00 MHz</p> <p>#Res BW 1.0 MHz</p> <p>#VBW 3.0 MHz*</p> <p>Sweep 1.000 ms (1001 pts)</p>
5240 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>PNO: Fast → Trig: Free Run IF Gain: Low #Atten: 20 dB</p> <p>Avg Type: RMS Avg/Hold: 100/100</p> <p>Mkr1 5.237 52 GHz -1.429 dBm</p>  <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 5.24000000 GHz</p> <p>Start Freq 5.22000000 GHz</p> <p>Stop Freq 5.26000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Span 40.00 MHz</p> <p>#Res BW 1.0 MHz</p> <p>#VBW 3.0 MHz*</p> <p>Sweep 1.000 ms (1001 pts)</p>

Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-0

5180 MHz



5200 MHz



5240 MHz

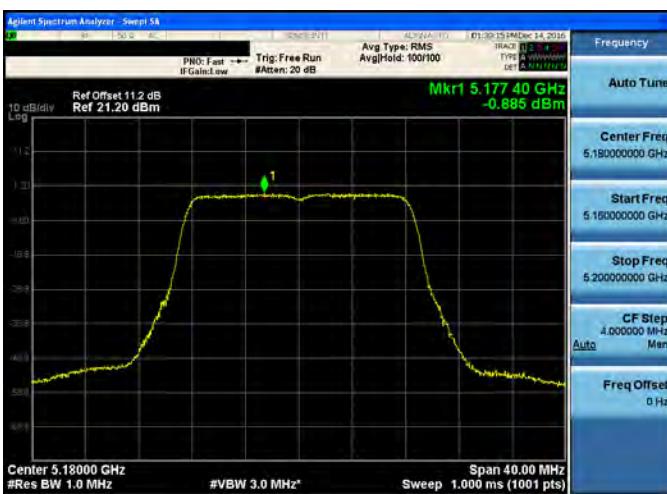
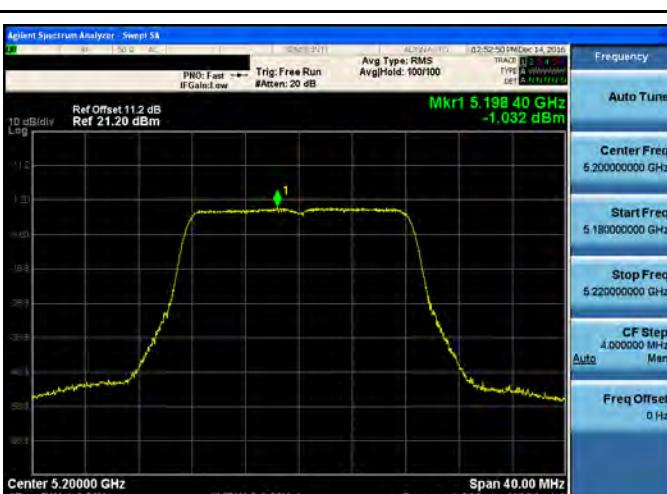
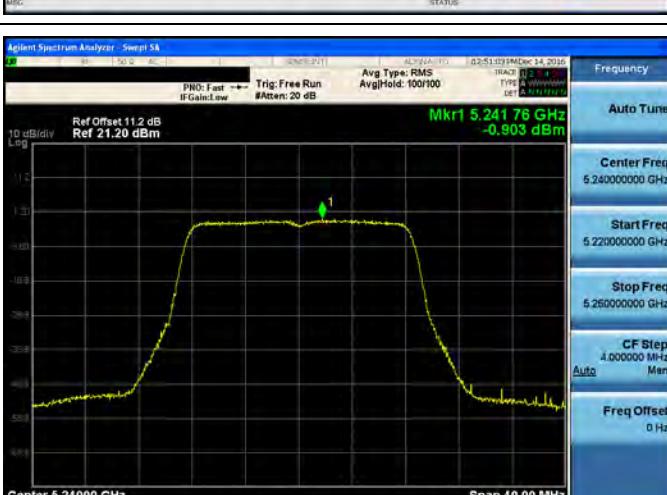




Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-0

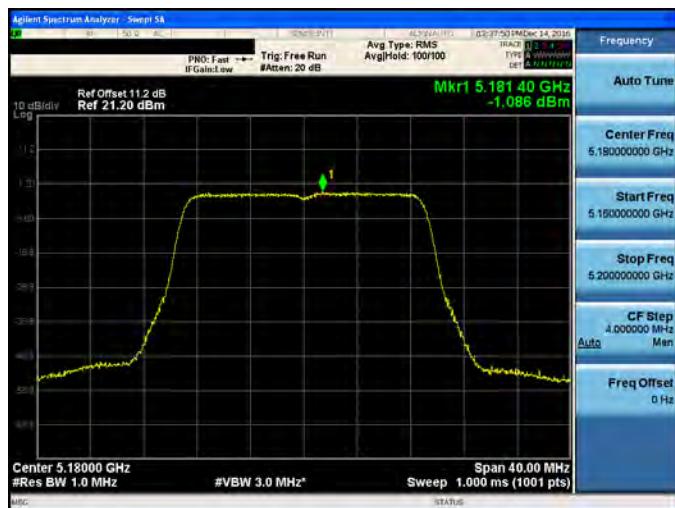


Mode 2: IEEE 802.11a Link Mode	
ANT-1	
5180 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p>  <p>Mkr1 5.177 40 GHz -0.885 dBm</p> <p>Center 5.18000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.18000000 GHz Start Freq 5.16000000 GHz Stop Freq 5.20000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz</p>
5200 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p>  <p>Mkr1 5.198 40 GHz -1.032 dBm</p> <p>Center 5.20000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.20000000 GHz Start Freq 5.18000000 GHz Stop Freq 5.22000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz</p>
5240 MHz	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset 11.2 dB Ref 21.20 dBm</p>  <p>Mkr1 5.241 78 GHz -0.903 dBm</p> <p>Center 5.24000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.000 ms (1001 pts)</p> <p>Frequency Auto Tune Center Freq 5.24000000 GHz Start Freq 5.22000000 GHz Stop Freq 5.26000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz</p>

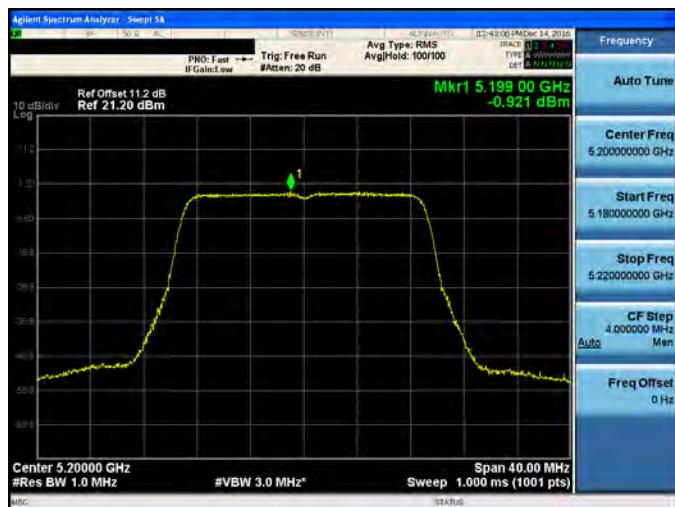
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-1

5180 MHz



5200 MHz



5240 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-1

5190 MHz



5230 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-1

5210 MHz



Mode 2: IEEE 802.11a Link Mode	
ANT-2	
5180 MHz	<p>Spectrum analysis plot showing a single emission at 5.18 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Trig: Free Run Avg Type: RMS Avg Hold: 100/100 Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts) <p>Marker 1 indicates a signal level of -1.192 dBm.</p>
5200 MHz	<p>Spectrum analysis plot showing a single emission at 5.20 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Trig: Free Run Avg Type: RMS Avg Hold: 100/100 Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts) <p>Marker 1 indicates a signal level of -1.358 dBm.</p>
5240 MHz	<p>Spectrum analysis plot showing a single emission at 5.24 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm Trig: Free Run Avg Type: RMS Avg Hold: 100/100 Span: 40.00 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts) <p>Marker 1 indicates a signal level of -1.716 dBm.</p>

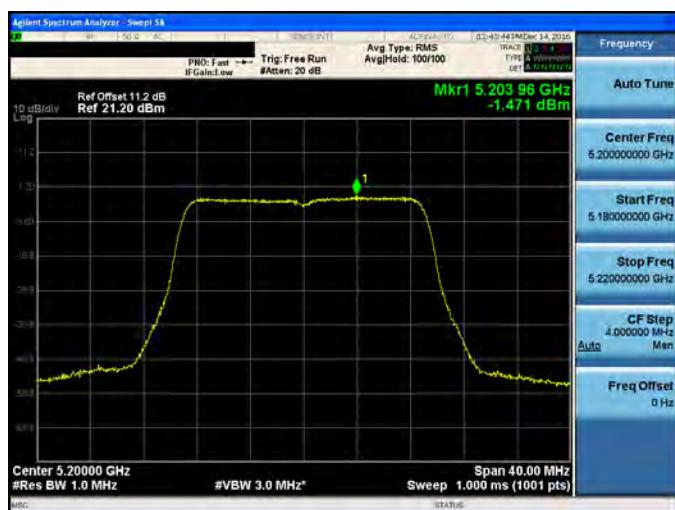
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-2

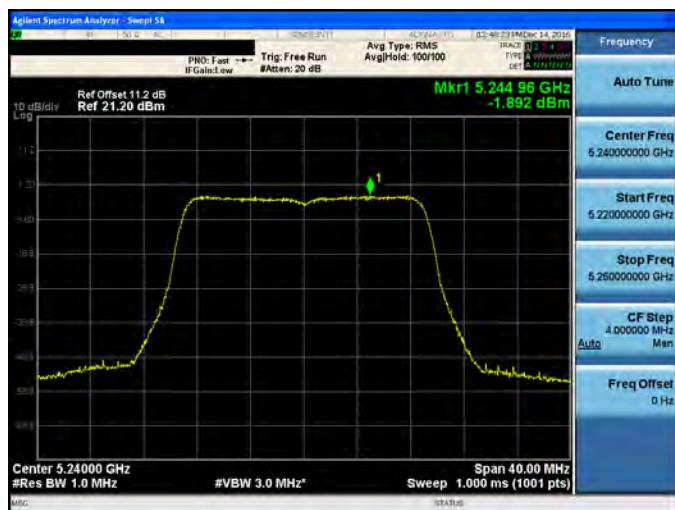
5180 MHz



5200 MHz



5240 MHz



Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-2

5190 MHz



5230 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-2

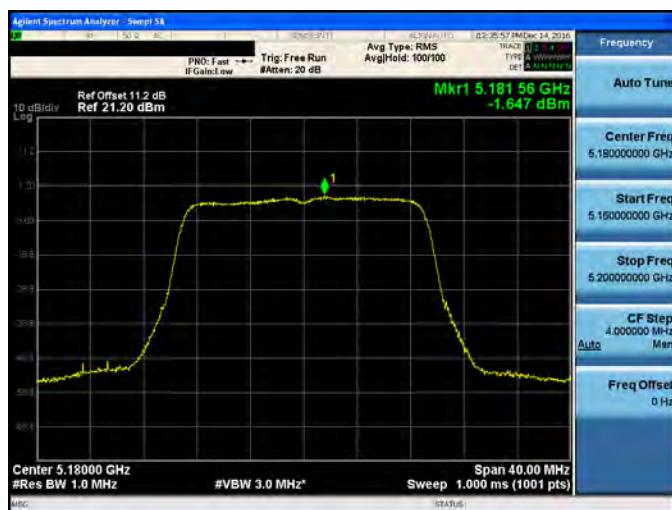


Mode 2: IEEE 802.11a Link Mode	
ANT-3	
5180 MHz	<p>Spectrum analysis plot showing a single emission at 5.18 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm PW0: Fast Trig: Free Run If Gain: Low #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 Trace 1: Mkr1 5.183 28 GHz -1.913 dBm Frequency: Auto Tune Center Freq: 5.180000000 GHz Start Freq: 5.160000000 GHz Stop Freq: 5.200000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz <p>Measurement details:</p> <ul style="list-style-type: none"> Center: 5.18000 GHz #Res BW: 1.0 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts)
5200 MHz	<p>Spectrum analysis plot showing a single emission at 5.20 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm PW0: Fast Trig: Free Run If Gain: Low #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 Trace 1: Mkr1 5.202 12 GHz -1.446 dBm Frequency: Auto Tune Center Freq: 5.200000000 GHz Start Freq: 5.180000000 GHz Stop Freq: 5.220000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz <p>Measurement details:</p> <ul style="list-style-type: none"> Center: 5.20000 GHz #Res BW: 1.0 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts)
5240 MHz	<p>Spectrum analysis plot showing a single emission at 5.24 GHz.</p> <p>Instrument parameters:</p> <ul style="list-style-type: none"> Ref Offset: 11.2 dB Ref: 21.20 dBm PW0: Fast Trig: Free Run If Gain: Low #Atten: 20 dB Avg Type: RMS Avg Hold: 100/100 Trace 1: Mkr1 5.239 00 GHz -1.738 dBm Frequency: Auto Tune Center Freq: 5.240000000 GHz Start Freq: 5.220000000 GHz Stop Freq: 5.260000000 GHz CF Step: 4.000000 MHz Freq Offset: 0 Hz <p>Measurement details:</p> <ul style="list-style-type: none"> Center: 5.24000 GHz #Res BW: 1.0 MHz #VBW: 3.0 MHz* Sweep: 1.000 ms (1001 pts)

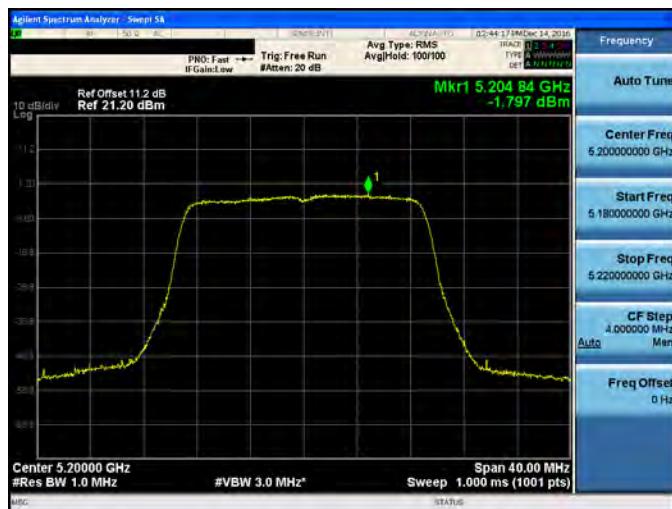
Mode 3: IEEE 802.11ac 20MHz Link Mode

ANT-3

5180 MHz



5200 MHz



5240 MHz



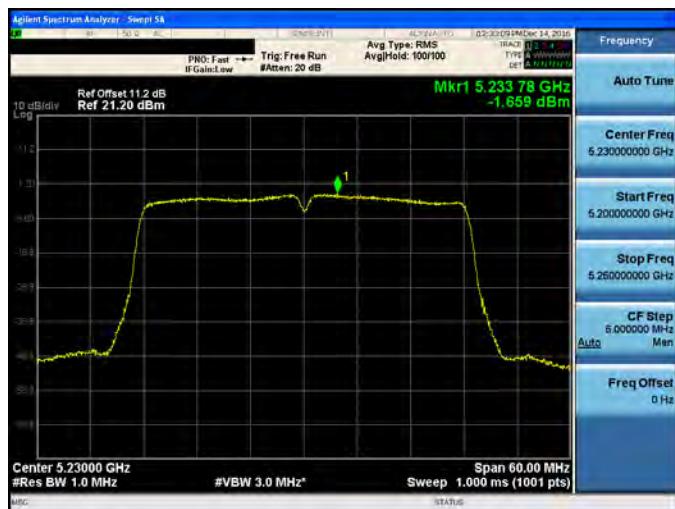
Mode 4: IEEE 802.11ac 40MHz Link Mode

ANT-3

5190 MHz



5230 MHz



Mode 5: IEEE 802.11ac 80MHz Link Mode

ANT-3

5210 MHz

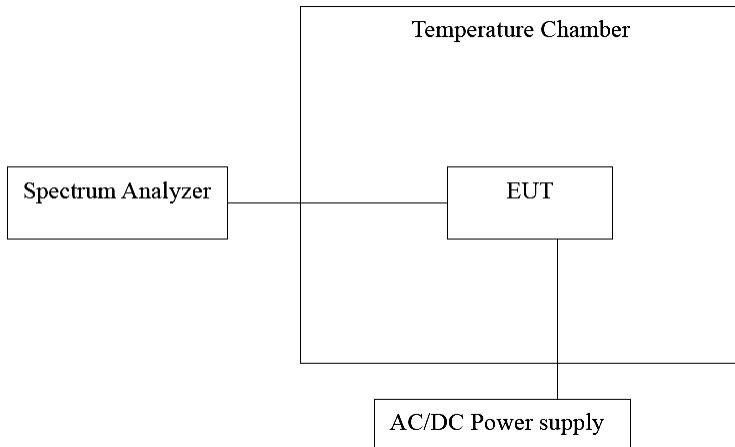


4.8. Frequency Stability Measurement

■ Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

■ Test Setup



■ Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	08/08/2016	1 year
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	04/18/2016	1 year
Test Site	ATL	TE05	TE05	N.C.R.	-----

Note: N.C.R. = No Calibration Request.

■ Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

■ Test Result

Module : QCA9984 (EW-7955MAC)

Temperature Variations

Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	-30	120	5200.0436	43600	8.385	Pass
	-20		5200.0419	41900	8.058	Pass
	-10		5200.0449	44900	8.635	Pass
	0		5200.0459	45900	8.827	Pass
	10		5200.04	40000	7.692	Pass
	20		5200.0465	46500	8.942	Pass
	30		5200.0565	56500	10.865	Pass
	40		5200.0513	51300	9.865	Pass
	50		5200.0471	47100	9.058	Pass
	-30		5785.0436	43600	7.537	Pass
5785 MHz	-20	120	5785.0436	43600	7.537	Pass
	-10		5785.0436	43600	7.537	Pass
	0		5785.0436	43600	7.537	Pass
	10		5785.0436	43600	7.537	Pass
	20		5785.0498	49800	8.608	Pass
	30		5785.0525	52500	9.075	Pass
	40		5785.0574	57400	9.922	Pass
	50		5785.0517	51700	8.937	Pass

Voltage Variations

Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	20	138.00	5200.0453	45300	8.712	Pass
		120.00	5200.0465	46500	8.942	Pass
		102.00	5200.0557	55700	10.712	Pass
5785 MHz	20	138.00	5785.0486	48600	8.401	Pass
		120.00	5785.0498	49800	8.608	Pass
		102.00	5785.0565	56500	9.767	Pass

Note: The manufacturer's frequency stability specification is better than 20ppm.

Module : QCA9990 (EW-7944MAC)_Master

Temperature Variations

Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	-30	120	5200.0412	41200	7.923	Pass
	-20		5200.0392	39200	7.538	Pass
	-10		5200.0432	43200	8.308	Pass
	0		5200.0402	40200	7.731	Pass
	10		5200.0392	39200	7.538	Pass
	20		5200.0432	43200	8.308	Pass
	30		5200.0502	50200	9.654	Pass
	40		5200.0492	49200	9.462	Pass
	50		5200.0452	45200	8.692	Pass
	-30		5785.042	42000	7.260	Pass
5785 MHz	-20	120	5785.037	37000	6.396	Pass
	-10		5785.039	39000	6.742	Pass
	0		5785.034	34000	5.877	Pass
	10		5785.038	38000	6.569	Pass
	20		5785.042	42000	7.260	Pass
	30		5785.043	43000	7.433	Pass
	40		5785.051	51000	8.816	Pass
	50		5785.047	47000	8.124	Pass

Voltage Variations

Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	20	138.00	5200.0372	37200	7.154	Pass
		120.00	5200.0432	43200	8.308	Pass
		102.00	5200.0472	47200	9.077	Pass
5785 MHz	20	138.00	5785.041	41000	7.087	Pass
		120.00	5785.042	42000	7.260	Pass
		102.00	5785.046	46000	7.952	Pass

Note: The manufacturer's frequency stability specification is better than 20ppm.

Module : QCA9990 (EW-7944MAC)_Client

Temperature Variations

Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	-30	120	5200.0412	41200	7.923	Pass
	-20		5200.0392	39200	7.538	Pass
	-10		5200.0432	43200	8.308	Pass
	0		5200.0402	40200	7.731	Pass
	10		5200.0392	39200	7.538	Pass
	20		5200.0432	43200	8.308	Pass
	30		5200.0502	50200	9.654	Pass
	40		5200.0492	49200	9.462	Pass
	50		5200.0452	45200	8.692	Pass

Voltage Variations

Frequency	Temp. (°C)	Voltage (Vac)	Measured Freq. (MHz)	Delta Freq. (Hz)	Tolerance (ppm)	Result (Pass/Fail)
5200 MHz	20	138.00	5200.0372	37200	7.154	Pass
		120.00	5200.0432	43200	8.308	Pass
		102.00	5200.0472	47200	9.077	Pass

Note: The manufacturer's frequency stability specification is better then 20ppm.

4.9. Antenna Requirement

■ Limit

For intentional device, according to 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 15.407 (a), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

■ Antenna Connector Construction

See section 2 – antenna information.

■ Directional Gain Calculated

For Maximum Conducted Output Power

$$\text{Directional Gain} = 10 * \log([10^{(G1/20)} + 10^{(G2/20)} + \dots + 10^{(Gn/20)}]^2 / NANT)$$

Module : QCA9984 (EW-7955MAC)		
Operate Freq. Band		Directional Gain (dBi)
IEEE 802.11ac 20MHz	U-NII Band I	13.02
	U-NII Band III	13.02
IEEE 802.11ac 40MHz	U-NII Band I	13.02
	U-NII Band III	13.02
IEEE 802.11ac 80MHz	U-NII Band I	13.02
	U-NII Band III	13.02

Module : QCA9990 (EW-7944MAC)		
Operate Freq. Band		Directional Gain (dBi)
IEEE 802.11ac 20MHz	U-NII Band I	12.02
	U-NII Band III	12.02
IEEE 802.11ac 40MHz	U-NII Band I	12.02
	U-NII Band III	12.02
IEEE 802.11ac 80MHz	U-NII Band I	12.02
	U-NII Band III	12.02

For Peak Power Spectral Density

Directional Gain = $10^{\log\{[10^{(G1/20)}+10^{(G2/20)}+\dots+10^{(Gn/20)}]^2/NANT\}}$

Module : QCA9984 (EW-7955MAC)		
Operate Freq. Band		Directional Gain (dBi)
IEEE 802.11a	U-NII Band I	13.02
	U-NII Band III	13.02
IEEE 802.11ac 20MHz	U-NII Band I	13.02
	U-NII Band III	13.02
IEEE 802.11ac 40MHz	U-NII Band I	13.02
	U-NII Band III	13.02
IEEE 802.11ac 80MHz	U-NII Band I	13.02
	U-NII Band III	13.02
Module : QCA9984 (EW-7955MAC)		
Operate Freq. Band		Directional Gain (dBi)
IEEE 802.11a	U-NII Band I	12.02
	U-NII Band III	12.02
IEEE 802.11ac 20MHz	U-NII Band I	12.02
	U-NII Band III	12.02
IEEE 802.11ac 40MHz	U-NII Band I	12.02
	U-NII Band III	12.02
IEEE 802.11ac 80MHz	U-NII Band I	12.02
	U-NII Band III	12.02