802.11ac (VHT80) Test mode

Channel	Frequency (MHz)	ANT0 Measured Peak Power (dBm)	ANT1 Measured Peak Power (dBm)	Limit (dBm)	Verdict
42	5210	13.20	12.44	24	PASS
58	5290	16.11	15.12		
106	5530	12.21	11.03		
122	5610	12.01	10.02		
138	5690	13.10	12.01		
155	5775	12.55	11.76	30	

Channel	Frequency (MHz)	ANT0 Measured Average Power (dBm)	ANT1 Measured Average Power (dBm)	Limit (dBm)	Verdict
42	5210	12.48	5.39	24	PASS
58	5290	15.11	7.06		
106	5530	10.95	4.43		
122	5610	7.63	6.02		
138	5690	11.83	6.45		
155	5775	11.67	6.77	30	

Total Peak Power (ANT0+ANT1)

Channel	Frequency (MHz)	Total Peak Power (dBm)	Total Peak Power (W)	Limit$_{Note}$ (dBm)	Verdict
42	5210	15.85	0.038	24	PASS
58	5290	18.65	0.073		
106	5530	14.67	0.029		
122	5610	14.14	0.026		
138	5690	15.60	0.036		
155	5775	15.18	0.033	30	
Note: Directional gain = 1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.					

Channel	Frequency (MHz)	Total Average Power (dBm)	Total Average Power (W)	Limit$_{Note}$ (dBm)	Verdict
42	5210	13.26	0.021	24	PASS
58	5290	15.74	0.037		
106	5530	11.82	0.015		
122	5610	9.91	0.010		
138	5690	12.94	0.020		
155	5775	12.89	0.019	30	
Note: Directional gain =1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.					

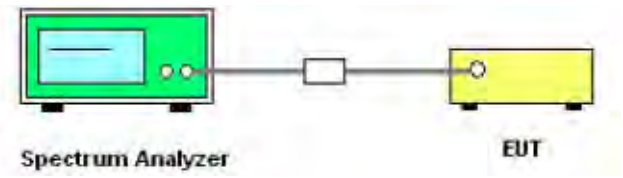
2.5. Peak Power spectral density

2.5.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(4) According to KDB662911D01Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.
(5) According to KDB 662911 D01, the directional gain = G_{ANT} +10log(N_{ANT}) dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.5.2. Test Description

A. Test Set:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

B. Test Procedure

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-1 was used in order to prove compliance

1) Set span to encompass the entire 26-dB emission bandwidth
2) Set RBW = 1 MHz. Set VBW ≥ 3 MHz.
3) Number of points in sweep ≥ 2 Span / RBW. Sweep time = auto.
4) Detector = RMS (i.e., power averaging)
5) Trace average at least 100 traces in power averaging (i.e., RMS) mode
6) Record the max value

2.5.3. Test Result

802.11a Test mode

A. Test Verdict:

Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/MHz)	ANT1 Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	7.02	5.25	11	PASS
44	5220	7.82	5.09		
48	5240	7.87	5.05		
52	5260	8.29	5.00		
60	5300	9.21	4.87		
64	5320	8.89	5.20		
100	5500	6.02	6.10		
120	5600	6.66	6.60		
144	5720	7.73	6.45		
Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/500KHz)	ANT1 Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
144	5720	3.02	3.02	30	PASS
149	5745	4.70	13.21		
157	5785	4.30	13.94		
165	5825	3.65	14.04		

B. Test Plots

(Channel 36, 5180MHz, 802.11a, ANT0)

(Channel 44, 5220 MHz, 802.11a, ANT0)

(Channel 48, 5240MHz, 802.11a, ANT0)

(Channel 52, 5260MHz, 802.11a, ANT0)

(Channel 60, 5300 MHz, 802.11a, ANT0)

(Channel 64, 5320MHz, 802.11a, ANT0)

(Channel 100, 5500MHz, 802.11a, ANT0)

(Channel 120, 5600 MHz, 802.11a, ANT0)

(Channel 144, 5720MHz, 802.11a, ANT0)

(Channel 144, 5720MHz, 802.11a, ANT0)

(Channel 149, 5745MHz, 802.11a, ANT0)

(Channel 157, 5785MHz, 802.11a, ANT0)

(Channel 165, 5825MHz, 802.11a, ANT0)

(Channel 36, 5180MHz, 802.11a, ANT1)

(Channel 44, 5220 MHz, 802.11a, ANT1)

(Channel 48, 5240MHz, 802.11a, ANT1)

(Channel 52, 5260MHz, 802.11a, ANT1)

(Channel 60, 5300 MHz, 802.11a, ANT1)

(Channel 64, 5320MHz, 802.11a, ANT1)

(Channel 100, 5500MHz, 802.11a, ANT1)

(Channel 120, 5600 MHz, 802.11a, ANT1)

(Channel 144, 5720MHz, 802.11a, ANT1)

(Channel 144, 5720MHz, 802.11a, ANT1)

(Channel 149, 5745MHz, 802.11a, ANT1)

(Channel 157, 5785MHz, 802.11a, ANT1)

(Channel 165, 5825MHz, 802.11a, ANT1)

802.11n (HT20) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/MHz)	ANT1 Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	5.99	4.90	11	PASS
44	5220	7.88	4.04		
48	5240	7.80	4.78		
52	5260	7.97	4.97		
60	5300	10.02	3.29		
64	5320	8.89	6.03		
100	5500	5.23	5.97		
120	5600	5.22	6.50		
144	5720	6.09	6.41		
Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/500KHz)	ANT1 Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
144	5720	3.12	3.44	30	PASS
149	5745	12.90	13.70		
157	5785	12.78	13.92		
165	5825	12.49	14.25		

Total Peak Power spectral density (ANT0+ANT1)

Channel	Frequency (MHz)	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	8.49	11	PASS
44	5220	9.38		
48	5240	9.56		
52	5260	9.73		
60	5300	10.86		
64	5320	10.70		
100	5500	8.63		
120	5600	8.92		
144	5720	9.26		
Channel	Frequency (MHz)	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
144	5720	6.29	30	PASS
149	5745	16.33		
157	5785	16.40		
165	5825	16.47		

Note: Directional gain = 1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.

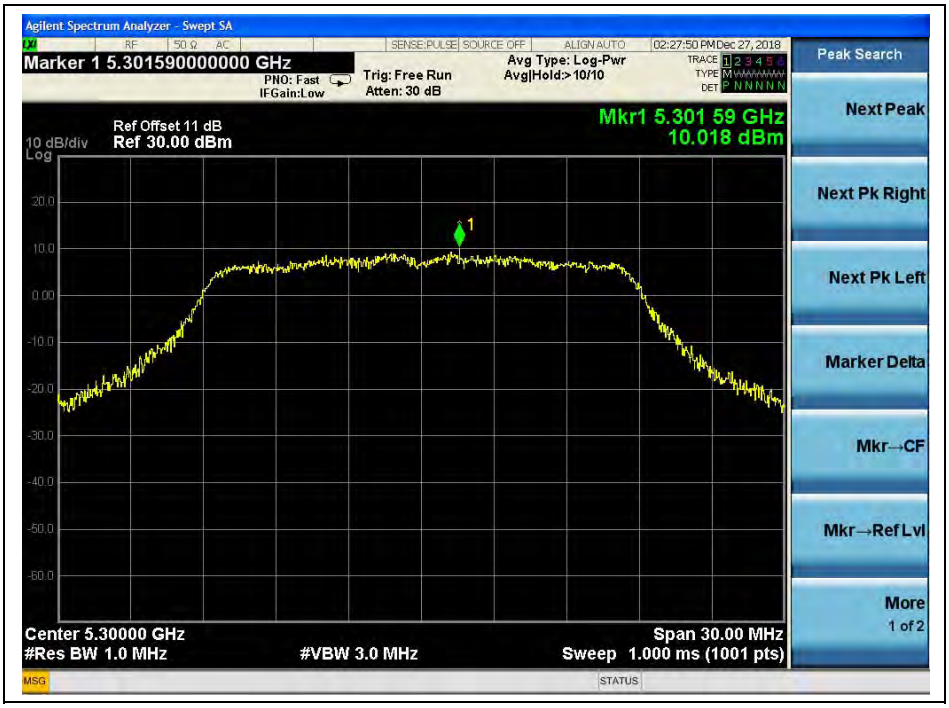
B. Test Plots

(Channel 36, 5180MHz, 802.11 n (HT20), ANT0)

(Channel 44, 5220 MHz, 802.11 n (HT20), ANT0)

(Channel 48, 5240MHz, 802.11 n (HT20), ANT0)

(Channel 52, 5260MHz, 802.11 n (HT20), ANT0)



(Channel 60, 5300 MHz, 802.11 n (HT20), ANT0)

(Channel 64, 5320MHz, 802.11 n (HT20), ANT0)

(Channel 100, 5500MHz, 802.11 n (HT20), ANT0)

(Channel 120, 5600 MHz, 802.11 n (HT20), ANT0)

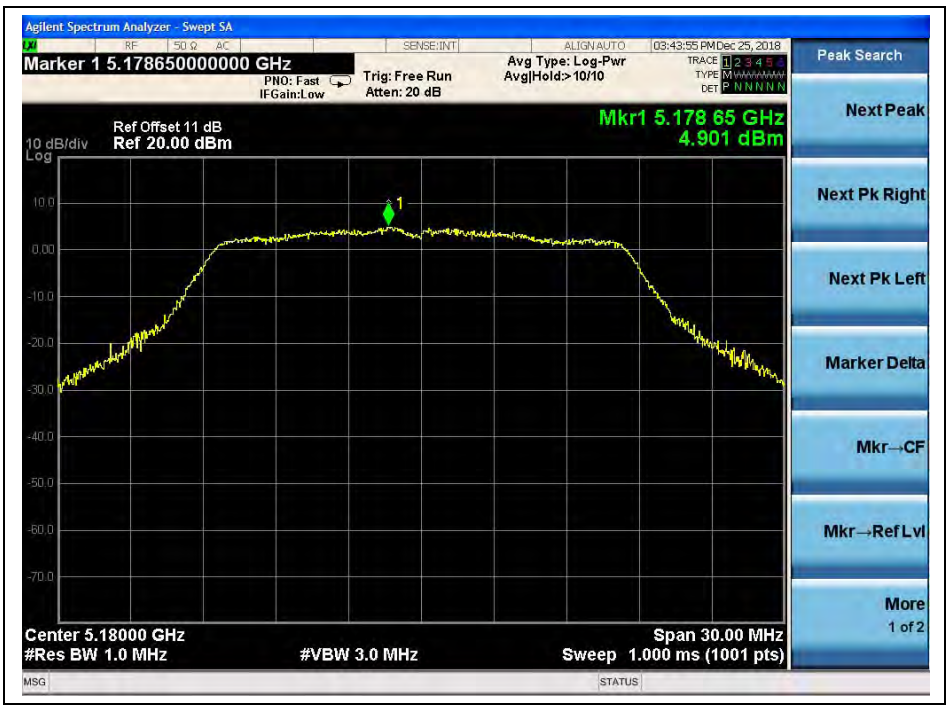
(Channel 144, 5720MHz, 802.11 n (HT20), ANT0)

(Channel 144, 5720MHz, 802.11 n (HT20), ANT0)

(Channel 149, 5745MHz, 802.11 n (HT20), ANT0)

(Channel 157, 5785MHz, 802.11 n (HT20), ANT0)

(Channel 165, 5825MHz, 802.11 n (HT20), ANT0)



(Channel 36, 5180MHz, 802.11 n (HT20), ANT1)

(Channel 44, 5220 MHz, 802.11 n (HT20), ANT1)

(Channel 48, 5240MHz, 802.11 n (HT20), ANT1)

(Channel 52, 5260MHz, 802.11 n (HT20), ANT1)

(Channel 60, 5300 MHz, 802.11 n (HT20), ANT1)

(Channel 64, 5320MHz, 802.11 n (HT20), ANT1)

(Channel 100, 5500MHz, 802.11 n (HT20), ANT1)

(Channel 120, 5600 MHz, 802.11 n (HT20), ANT1)

(Channel 144, 5720MHz, 802.11 n (HT20), ANT1)

(Channel 144, 5720MHz, 802.11 n (HT20), ANT1)

(Channel 149, 5745MHz, 802.11 n (HT20), ANT1)

(Channel 157, 5785MHz, 802.11 n (HT20), ANT1)

(Channel 165, 5825MHz, 802.11 n (HT20), ANT1)

802.11n (HT40) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/MHz)	ANT1 Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	3.79	2.01	11	PASS
46	5230	5.41	2.23		
54	5270	5.69	2.62		
62	5310	6.80	2.42		
102	5510	2.31	3.29		
126	5630	2.75	3.90		
142	5710	4.00	4.04		
Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/500KHz)	ANT1 Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
142	5710	0.07	-0.16	30	PASS
151	5755	9.74	9.53		
159	5795	9.65	10.15		

Total Peak Power spectral density (ANT0+ANT1)

Channel	Frequency (MHz)	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	6.00	11	PASS
46	5230	7.12		
54	5270	7.43		
62	5310	8.15		
102	5510	5.84		
126	5630	6.37		
142	5710	7.03		
Channel	Frequency (MHz)	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
142	5710	2.31	30	PASS
151	5755	12.65		
159	5795	12.92		

Note: Directional gain = 1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.

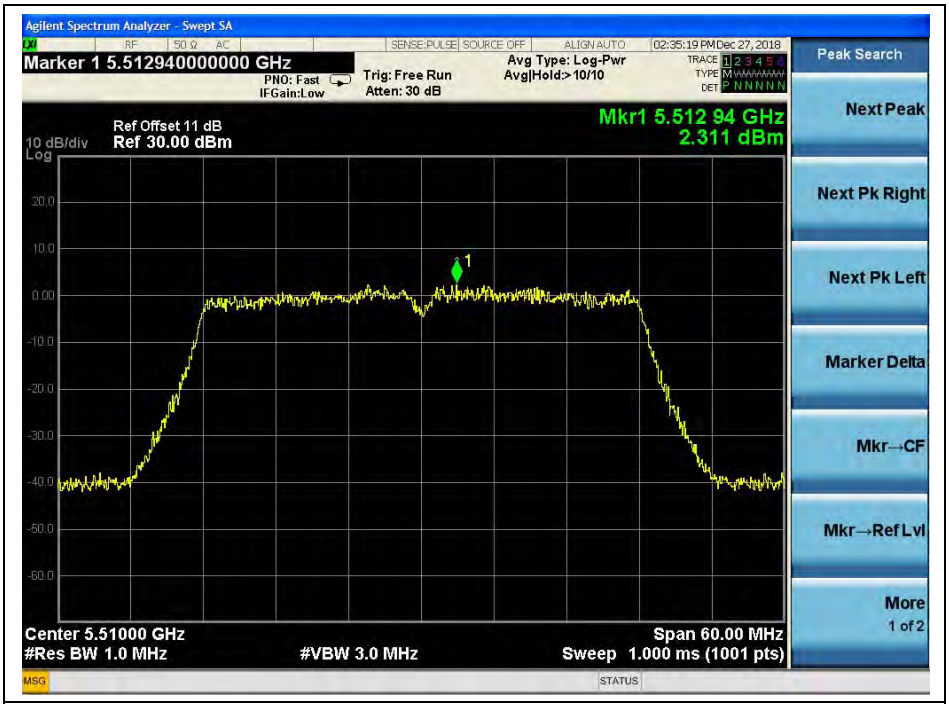
B. Test Plots

(Channel 38, 5190MHz, 802.11n (HT40), ANT0)

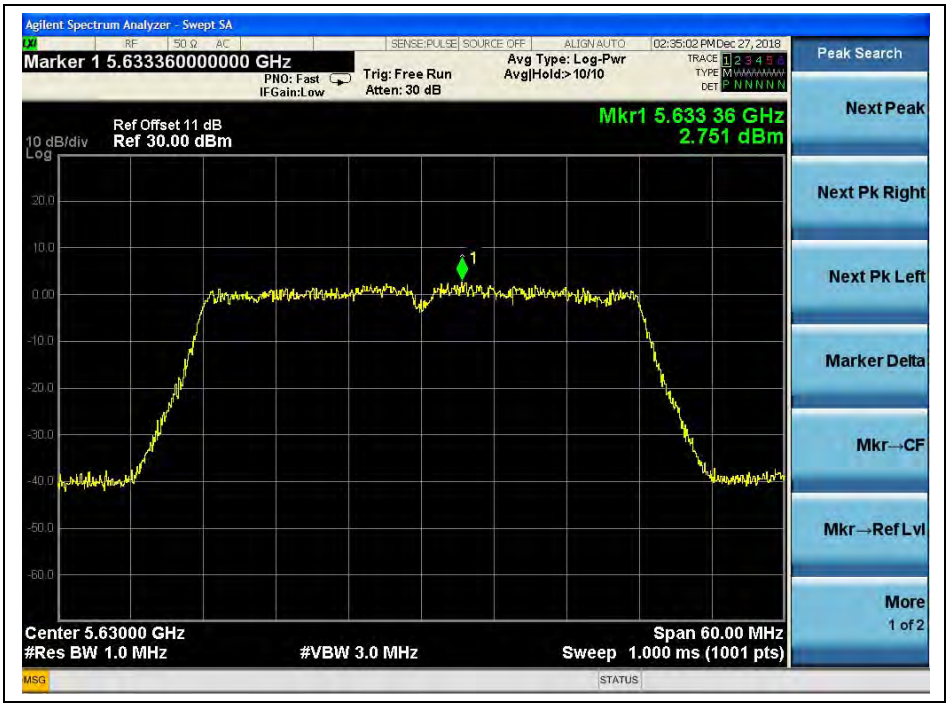
(Channel 46, 5230 MHz, 802.11n (HT40), ANT0)

(Channel 54, 5270MHz, 802.11n (HT40), ANT0)

(Channel 62, 5310 MHz, 802.11n (HT40), ANT0)

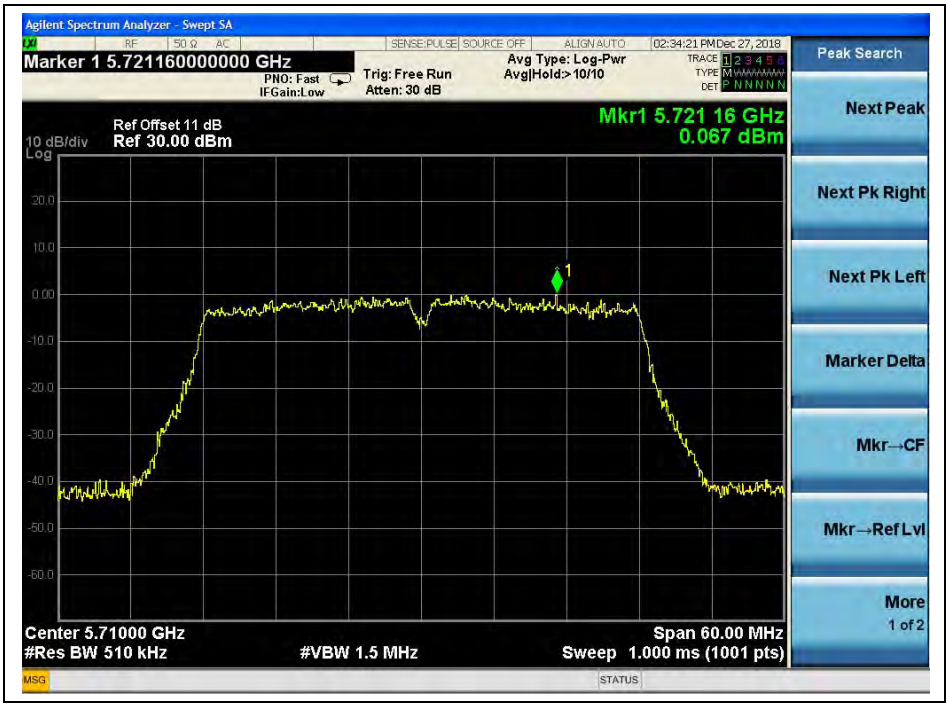


(Channel 102, 5510MHz, 802.11n (HT40), ANT0)



(Channel 126, 5630 MHz, 802.11n (HT40), ANT0)

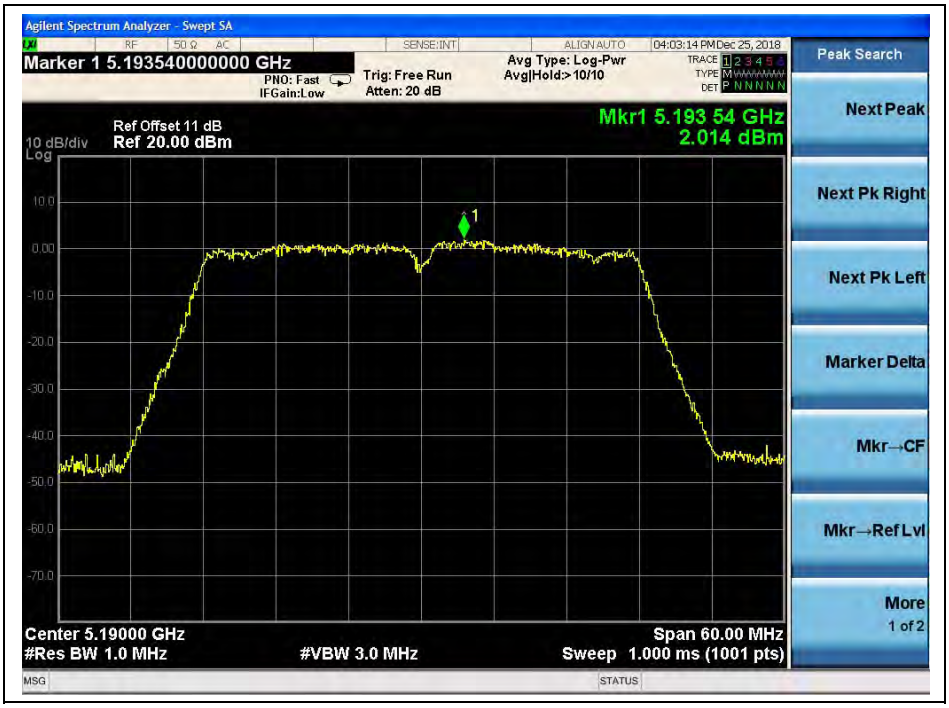
(Channel 142, 5710MHz, 802.11n (HT40), ANT0)



(Channel 142, 5710MHz, 802.11n (HT40), ANT0)

(Channel 151, 5755 MHz, 802.11n (HT40), ANT0)

(Channel 159, 5795MHz, 802.11n (HT40), ANT0)



(Channel 38, 5190MHz, 802.11n (HT40), ANT1)

(Channel 46, 5230 MHz, 802.11n (HT40), ANT1)

(Channel 54, 5270MHz, 802.11n (HT40), ANT1)

(Channel 62, 5310 MHz, 802.11n (HT40), ANT1)

(Channel 102, 5510MHz, 802.11n (HT40), ANT1)

(Channel 126, 5630 MHz, 802.11n (HT40), ANT1)

(Channel 142, 5710MHz, 802.11n (HT40), ANT1)

(Channel 142, 5710MHz, 802.11n (HT40), ANT1)

(Channel 151, 5755 MHz, 802.11n (HT40), ANT1)

(Channel 159, 5795MHz, 802.11n (HT40), ANT1)

802.11ac (VHT20) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/MHz)	ANT1 Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	7.47	4.67	11	PASS
44	5220	9.33	4.27		
48	5240	9.68	4.01		
52	5260	9.03	4.45		
60	5300	9.13	4.95		
64	5320	9.59	5.01		
100	5500	5.49	5.67		
120	5600	4.88	6.05		
144	5720	6.70	6.18		
Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/500KHz)	ANT1 Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
144	5720	3.71	2.58	30	PASS
149	5745	11.74	13.96		
157	5785	11.95	13.92		
165	5825	13.08	13.75		

Total Peak Power spectral density (ANT0+ANT1)

Channel	Frequency (MHz)	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	9.30	11	PASS
44	5220	10.51		
48	5240	10.72		
52	5260	10.33		
60	5300	10.54		
64	5320	10.89		
100	5500	8.59		
120	5600	8.51		
144	5720	9.46		
Channel	Frequency (MHz)	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
144	5720	6.19	30	PASS
149	5745	16.00		
157	5785	16.06		
165	5825	16.44		

Note: Directional gain = 1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.

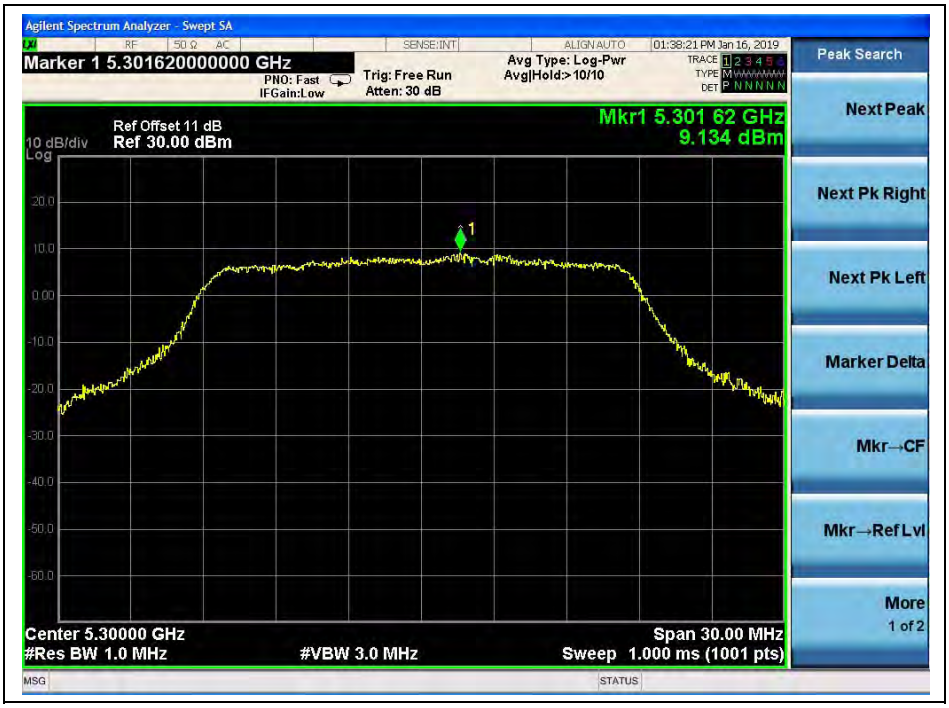
B. Test Plots

(Channel 36, 5180MHz, 802.11 ac (VHT20), ANT0)

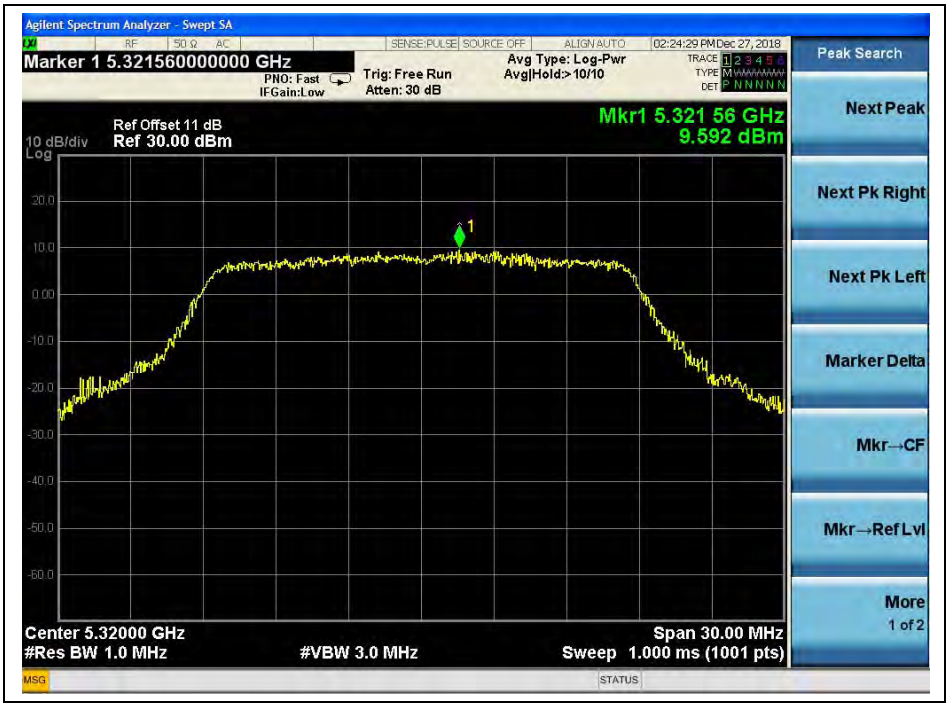
(Channel 44, 5220 MHz, 802.11 ac (VHT20), ANT0)

(Channel 48, 5240MHz, 802.11 ac (VHT20), ANT0)

(Channel 52, 5260MHz, 802.11 ac (VHT20), ANT0)



(Channel 60, 5300 MHz, 802.11 ac (VHT20), ANT0)



(Channel 64, 5320MHz, 802.11 ac (VHT20), ANT0)

(Channel 100, 5500MHz, 802.11 ac (VHT20), ANT0)

(Channel 120, 5600 MHz, 802.11 ac (VHT20), ANT0)

(Channel 144, 5720MHz, 802.11 ac (VHT20), ANT0)

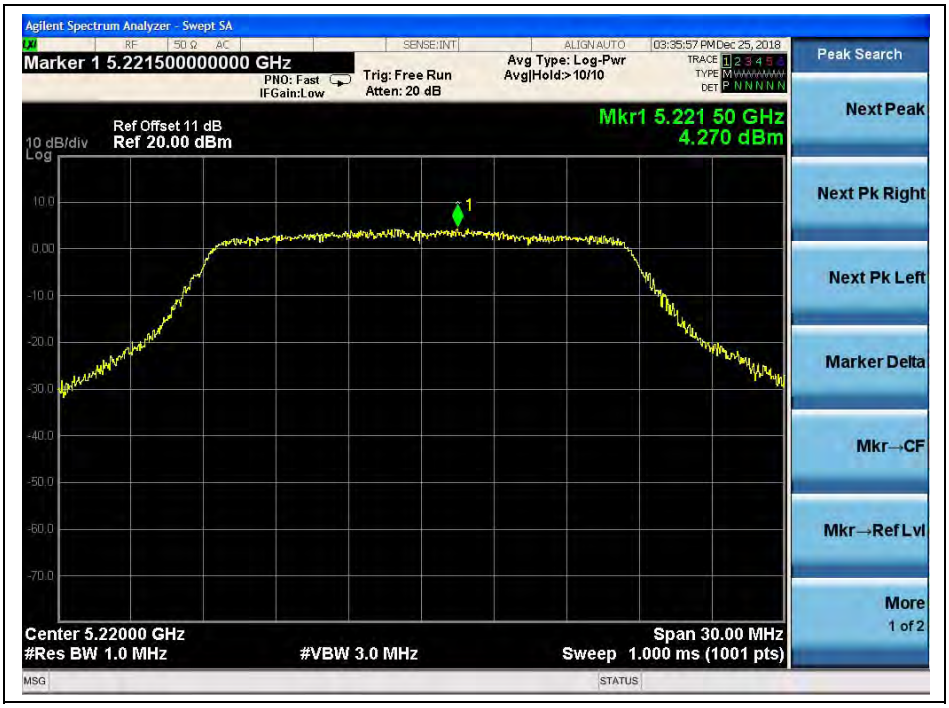
(Channel 144, 5720MHz, 802.11 ac (VHT20), ANT0)

(Channel 149, 5745MHz, 802.11 ac (VHT20), ANT0)

(Channel 157, 5785MHz, 802.11 ac (VHT20), ANT0)

(Channel 165, 5825MHz, 802.11 ac (VHT20), ANT0)

(Channel 36, 5180MHz, 802.11 ac (VHT20), ANT1)



(Channel 44, 5220 MHz, 802.11 ac (VHT20), ANT1)

(Channel 48, 5240MHz, 802.11 ac (VHT20), ANT1)

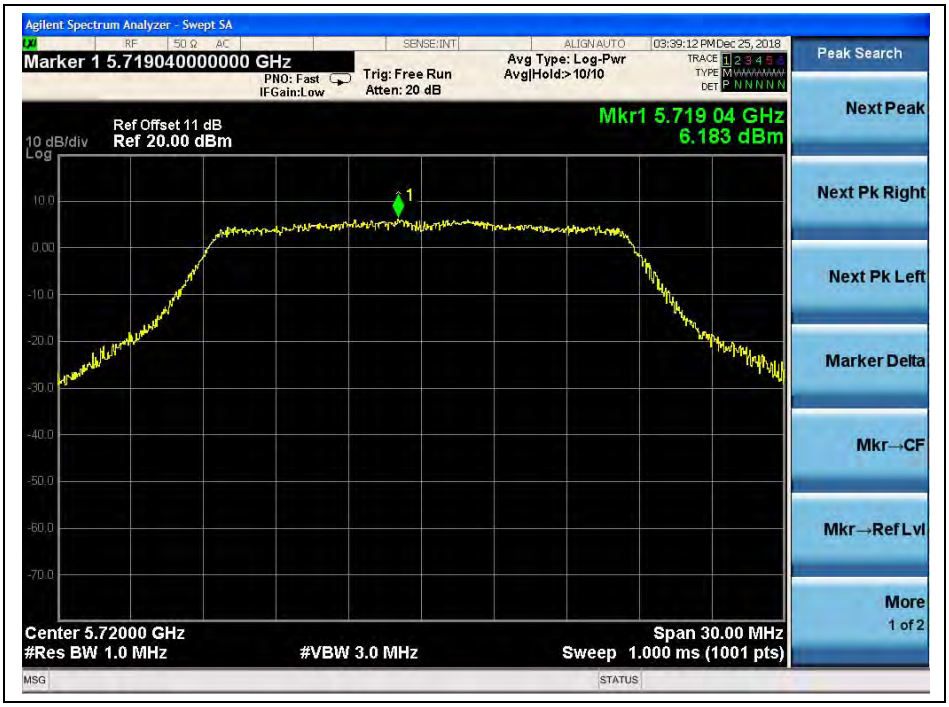
(Channel 52, 5260MHz, 802.11 ac (VHT20), ANT1)

(Channel 60, 5300 MHz, 802.11 ac (VHT20), ANT1)

(Channel 64, 5320MHz, 802.11 ac (VHT20), ANT1)

(Channel 100, 5500MHz, 802.11 ac (VHT20), ANT1)

(Channel 120, 5600 MHz, 802.11 ac (VHT20), ANT1)



(Channel 144, 5720MHz, 802.11 ac (VHT20), ANT1)

(Channel 144, 5720MHz, 802.11 ac (VHT20), ANT1)

(Channel 149, 5745MHz, 802.11 ac (VHT20), ANT1)

(Channel 157, 5785MHz, 802.11 ac (VHT20), ANT1)

(Channel 165, 5825MHz, 802.11 ac (VHT20), ANT1)

802.11 ac (VHT40) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/MHz)	ANT1 Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	3.61	2.05	11	PASS
46	5230	4.99	2.04		
54	5270	6.11	2.32		
62	5310	6.43	2.72		
102	5510	2.54	3.18		
126	5630	3.04	4.18		
142	5710	3.71	3.60		
Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/500KHz)	ANT1 Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
142	5710	1.01	0.34	30	PASS
151	5755	10.58	9.66		
159	5795	10.65	10.70		

Total Peak Power spectral density (ANT0+ANT1)

Channel	Frequency (MHz)	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	5.91	11	PASS
46	5230	6.77		
54	5270	7.63		
62	5310	7.97		
102	5510	5.88		
126	5630	6.66		
142	5710	6.67		
Channel	Frequency (MHz)	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
142	5710	3.70	30	PASS
151	5755	13.15		
159	5795	13.69		

Note: Directional gain = 1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.

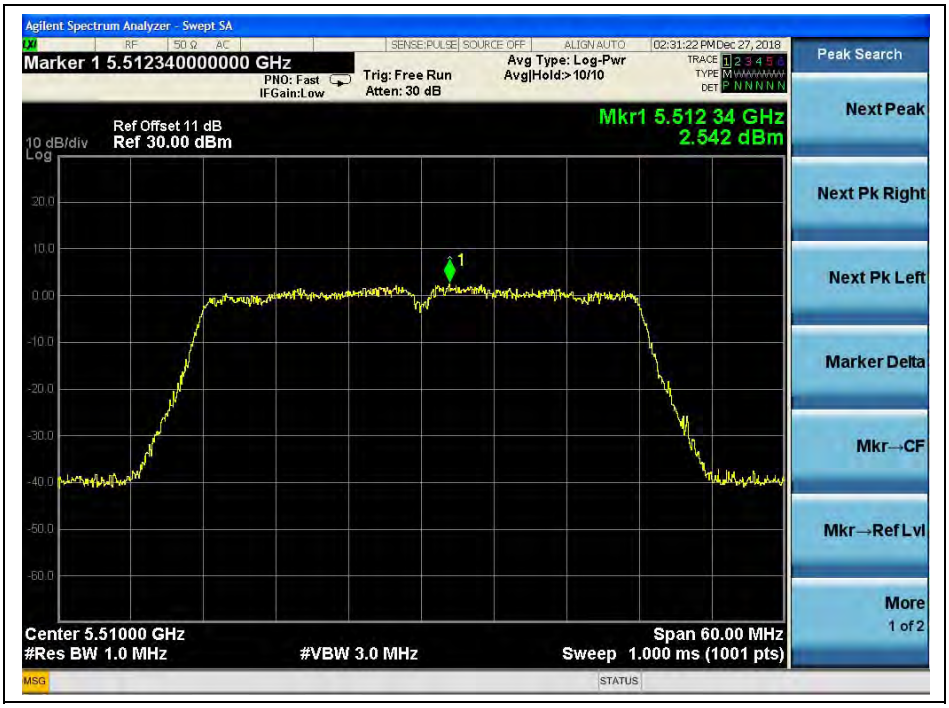
B. Test Plots

(Channel 38, 5190MHz, 802.11 ac (VHT40), ANT0)

(Channel 46, 5230 MHz, 802.11 ac (VHT40), ANT0)

(Channel 54, 5270MHz, 802.11 ac (VHT40), ANT0)

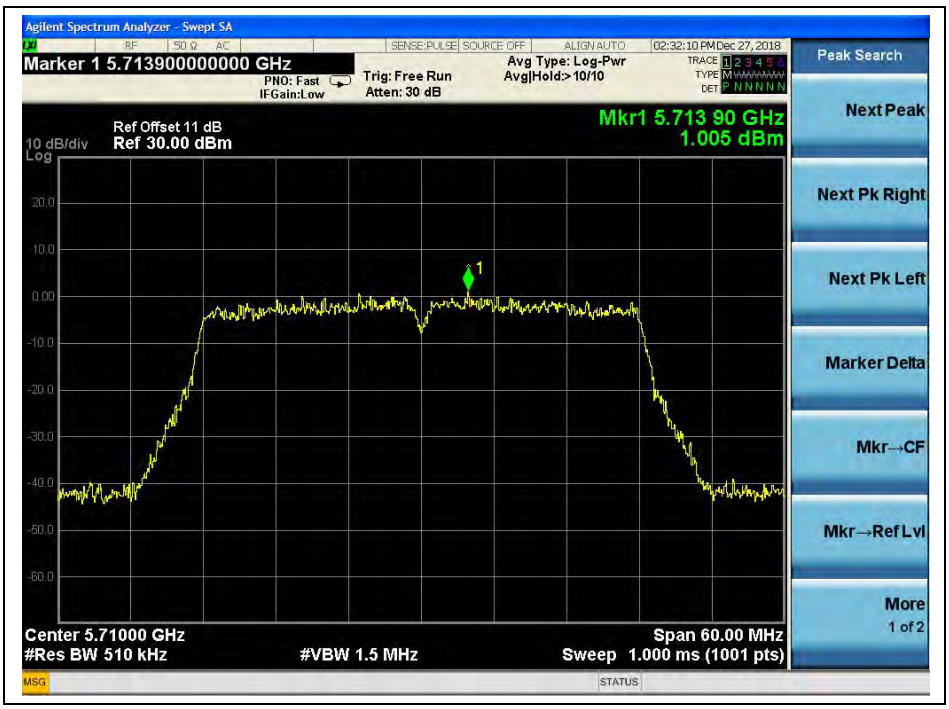
(Channel 62, 5310 MHz, 802.11 ac (VHT40), ANT0)



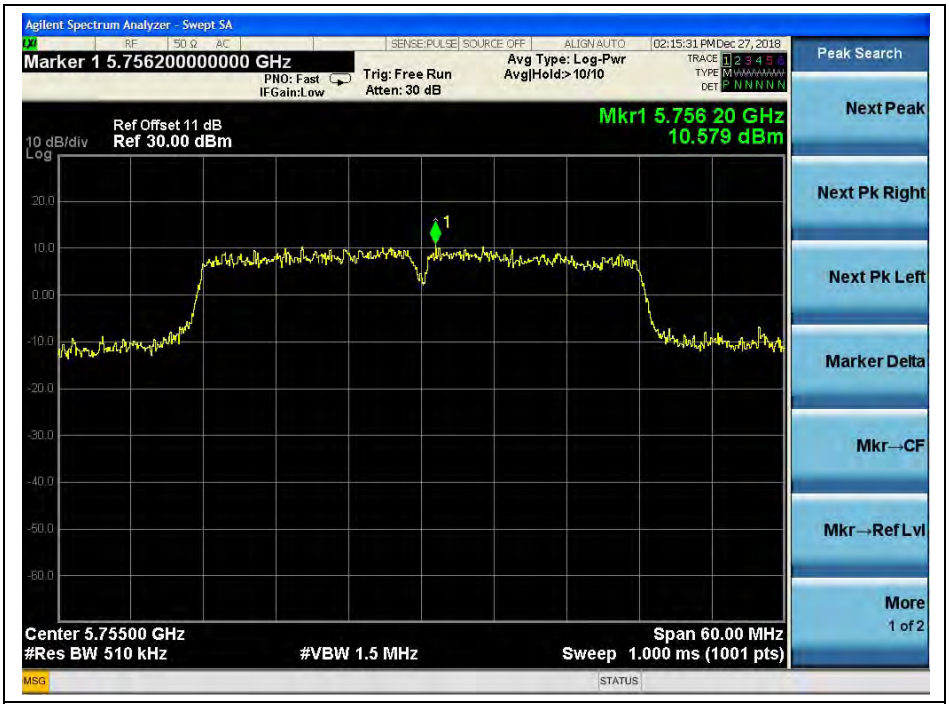
(Channel 102, 5510MHz, 802.11 ac (VHT40), ANT0)

(Channel 126, 5630 MHz, 802.11 ac (VHT40), ANT0)

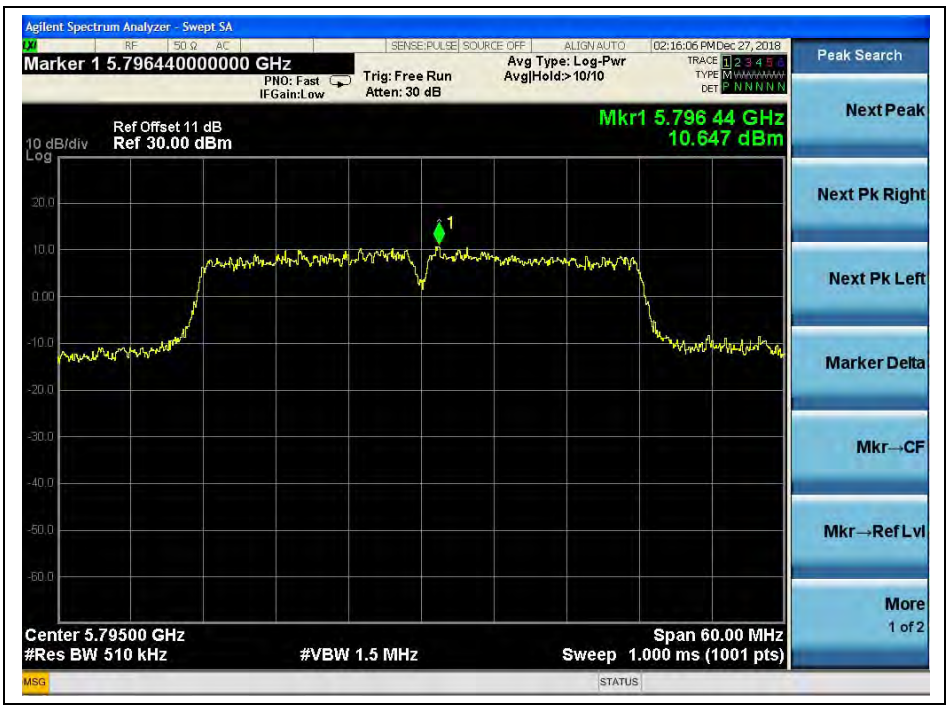
(Channel 142, 5710MHz, 802.11 ac (VHT40), ANT0)



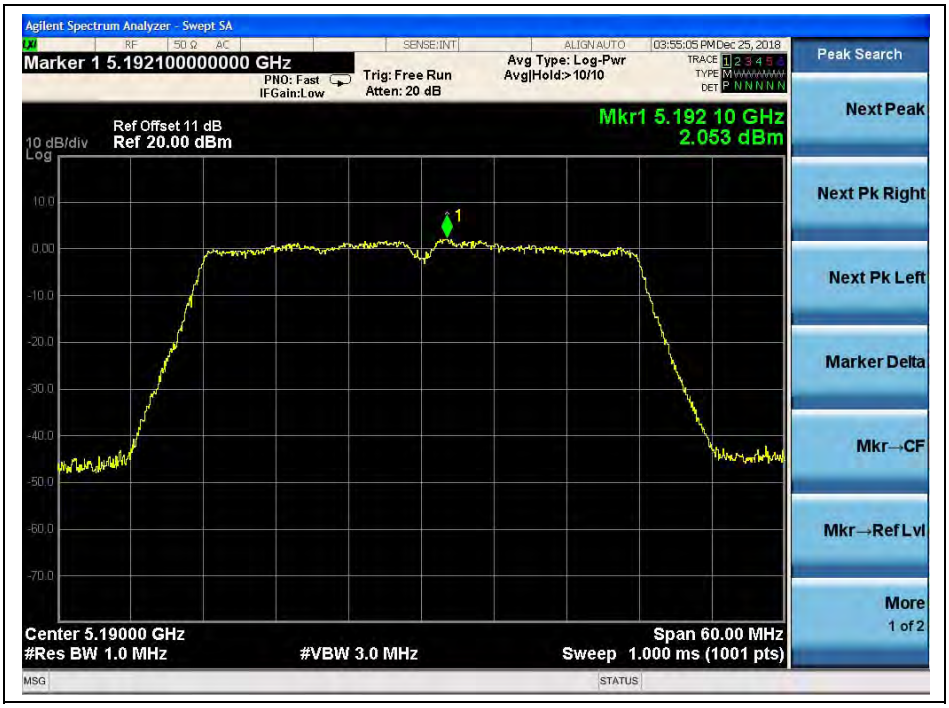
(Channel 142, 5710MHz, 802.11 ac (VHT40), ANT0)



(Channel 151, 5755 MHz, 802.11 ac (VHT40), ANT0)



(Channel 159, 5795MHz, 802.11 ac (VHT40), ANT0)



(Channel 38, 5190MHz, 802.11 ac (VHT40), ANT1)

(Channel 46, 5230 MHz, 802.11 ac (VHT40), ANT1)

(Channel 54, 5270MHz, 802.11 ac (VHT40), ANT1)

(Channel 62, 5310 MHz, 802.11 ac (VHT40), ANT1)

(Channel 102, 5510MHz, 802.11 ac (VHT40), ANT1)

(Channel 126, 5630 MHz, 802.11 ac (VHT40), ANT1)

(Channel 142, 5710MHz, 802.11 ac (VHT40), ANT1)

(Channel 142, 5710MHz, 802.11 ac (VHT40), ANT1)

(Channel 151, 5755 MHz, 802.11 ac (VHT40), ANT1)

(Channel 159, 5795MHz, 802.11ac (VHT40), ANT1)

802.11 ac (VHT80) Test mode

A. Test Verdict:

Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/MHz)	ANT1 Measured PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
42	5210	1.62	-0.23	11	PASS
58	5290	3.11	0.36		
106	5530	-0.34	-0.09		
122	5610	-0.70	0.13		
138	5690	1.20	1.34		
Channel	Frequency (MHz)	ANT0 Measured PPSD (dBm/500KHz)	ANT1 Measured PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
138	5690	-1.94	-2.38	30	PASS
155	5775	7.97	8.67		

Total Peak Power spectral density (ANT0+ANT1)

Channel	Frequency (MHz)	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
42	5210	3.80	11	PASS
58	5290	4.96		
106	5530	2.80		
122	5610	2.75		
138	5690	4.28		
Channel	Frequency (MHz)	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
138	5690	0.86	30	PASS
155	5775	11.34		
Note: Directional gain = 1.71dBi +10log(2) = 4.72dBi＜6dBi, so the power limit shall be 24dBm for 5.18-5.24 GHz band, 5.26-5.32 GHz band, 5.50-5.70 GHz band and 30dBm for 5.745-5.825 GHz band.				