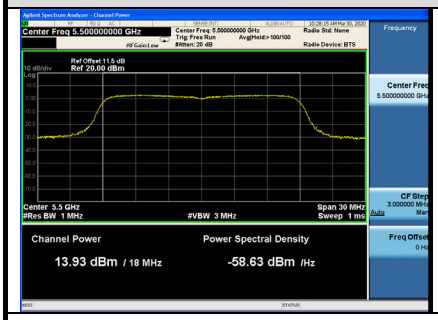
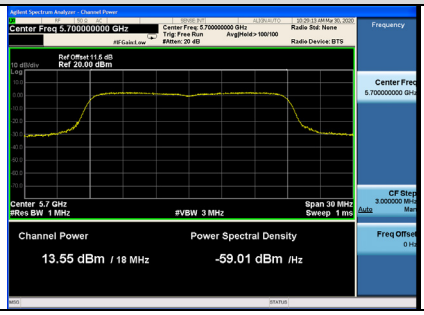
U-NII-2C Band: ANTB

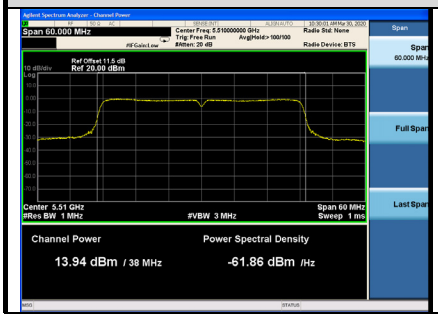
IEEE 802.11a

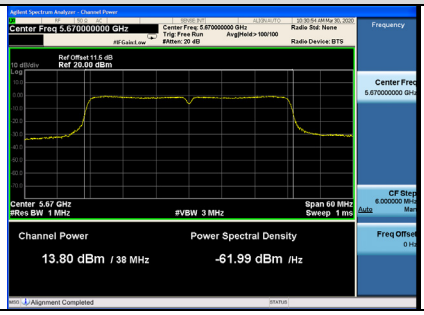
IEEE 802.11n HT20

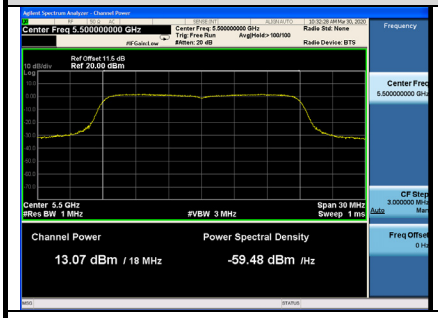




IEEE 802.11n HT40





IEEE 802.11ac VHT20		
		
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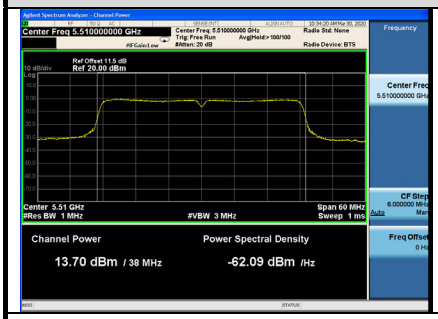
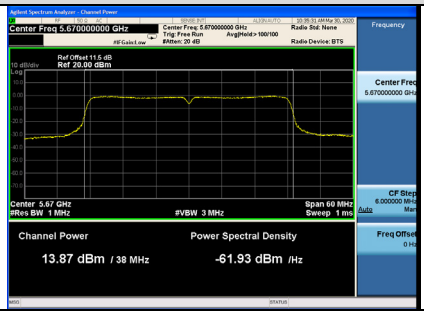
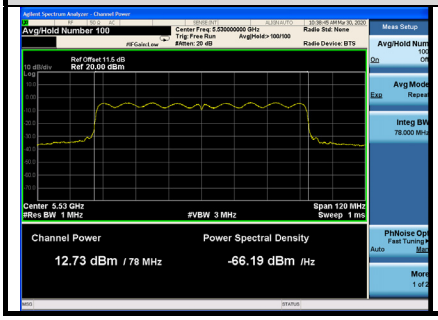
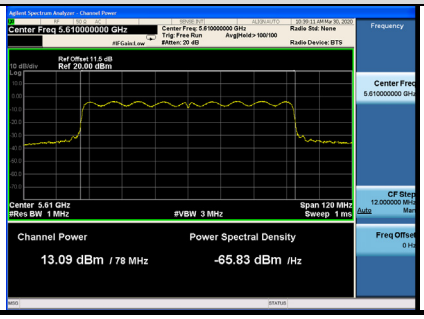
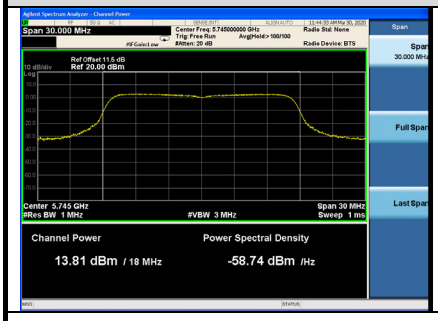
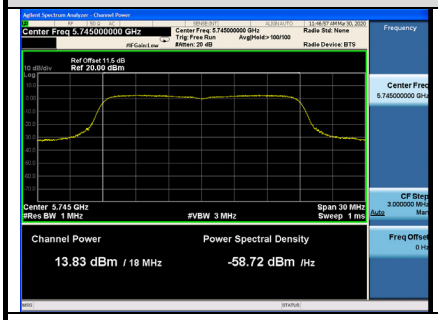
		
IEEE 802.11ac VHT80		---
		---

U-NII-3 Band: ANTA

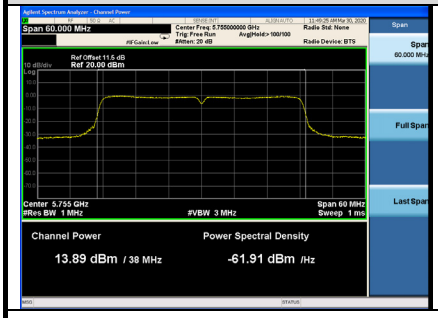
IEEE 802.11a

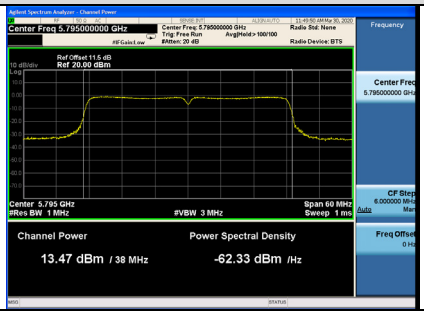


IEEE 802.11n HT20

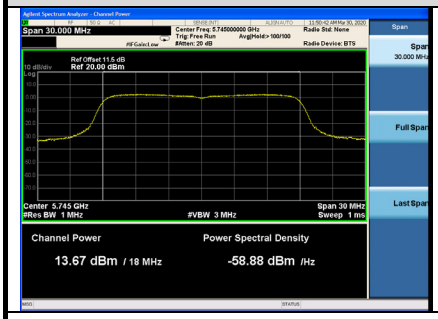


IEEE 802.11n HT40





IEEE 802.11ac VHT20



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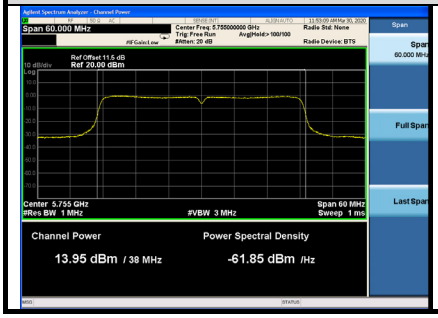
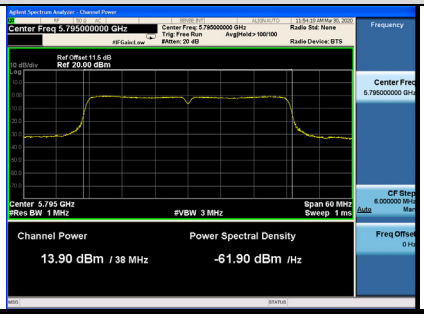
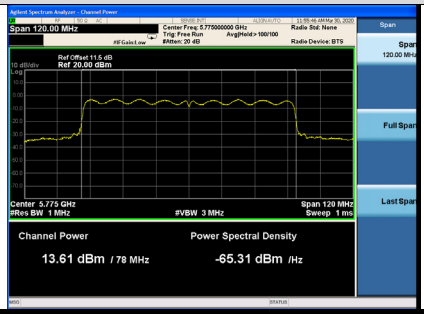


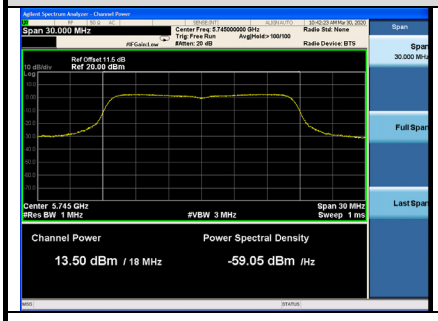


IEEE 802.11ac VHT80

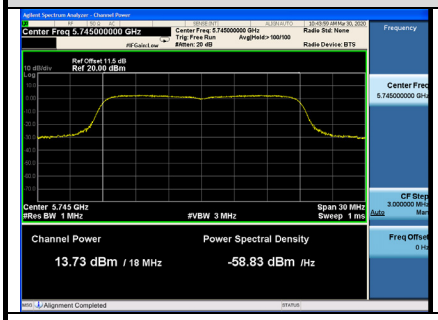


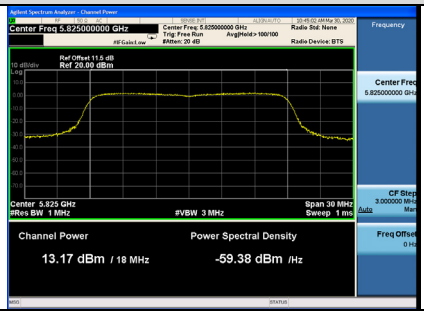
U-NII-3 Band: ANTB

IEEE 802.11a



IEEE 802.11n HT20





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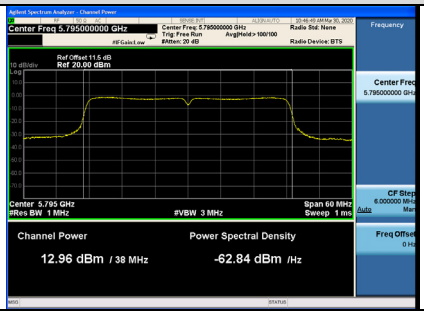
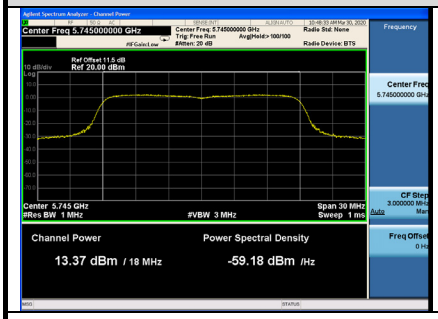
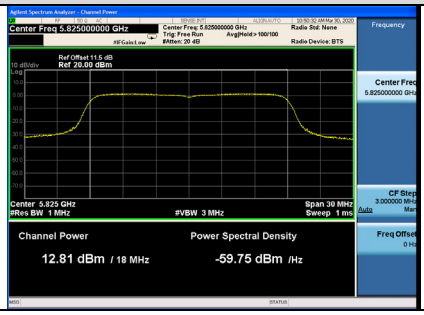
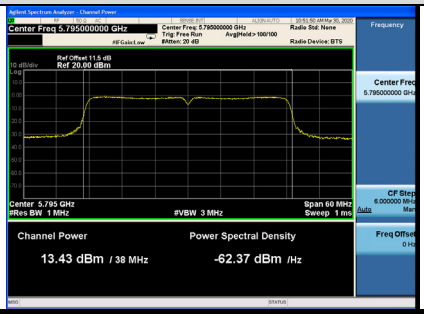


IEEE 802.11ac VHT20

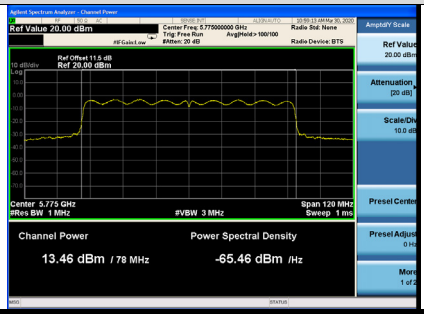




IEEE 802.11ac VHT40



IEEE 802.11ac VHT80



8. SPECTRAL DENSITY TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Jun.30,19	1 Year
2.	Attenuator	Agilent	8491B	MY39269201	Oct.13,19	1 Year
3.	RF Cable	EMCI	EMC102-KM-KM 3500	170702	May.13,19	1 Year
4.	RF Cable	EMCI	EMC102-KM-KM 3500	170702	Apr.12,20	1 Year

8.2. Limit

Band 5150-5250 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5250-5350 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5470-5725 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5725-5850 MHz:
The power spectral density shall not exceed 30 dBm in any 500 KHz band.

8.3. Test Procedure

Use the test method described in ANSI C63.10 clause 12.5:
For the Band 5.15-5.35GHz; 5.47-5.725 GHz:
The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW; Detector: RMS mode.

For the band 5.725-5.85 GHz:
The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW,RMS Detector.
So use the test method described in KDB789033 clause E

1) Set the RBW=100kHz and VBW =300kHz
2) Number of points in sweep ≥ 2 Span / RBW.(This ensures that bin-to-bin spacing is ≤ RBW/2 so that narrowband signals are not lost between frequency bins.)
3) Sweep time = auto
4) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
5) Use the “peak search” function of spectrum analyzer find the max value, then add 10log (500kHz/RBW) to the measured result.

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

8.4.Test Results

U-NII-1 Band:

EUT: WiFi module		
M/N: WC0SR2511		
Test date: 2020-03-31~04-01	Pressure: 102.5±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Jerry	Test site: RF site	Temperature:22.6±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANTA	ANTB	Total	
11a	5180	1.187	0.306	3.78	11
	5200	1.134	0.562	3.87	
	5240	1.092	0.187	3.67	
11n HT20	5180	1.049	0.764	3.92	11
	5200	1.326	0.377	3.89	
	5240	1.284	0.431	3.89	
11n HT40	5190	-0.362	-2.448	1.73	11
	5230	-0.531	-1.811	1.89	
11ac VHT20	5180	1.248	0.531	3.92	11
	5200	1.279	0.328	3.84	
	5240	1.047	0.764	3.92	
11ac VHT40	5190	0.189	-1.180	2.57	11
	5230	-0.730	-1.300	2.01	
11ac VHT80	5210	-3.042	-4.206	-0.58	11
Conclusion: PASS					

Note: Directional Gain= 10 log[($10^{3.04/10}$+$10^{3.06/10}$)/2]dBi= 3.05dBi＜6dBi.

U-NII-2A Band:

EUT: WiFi module		
M/N: WC0SR2511		
Test date: 2020-03-31~04-01	Pressure: 102.3±1.0 kpa	Humidity: 51.6±3.0%
Tested by: Jerry	Test site: RF site	Temperature:22.5±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANTA	ANTB	Total	
11a	5260	3.214	-0.066	4.89	11
	5300	0.289	-0.725	2.82	
	5320	1.597	0.106	3.93	
11n HT20	5260	2.259	0.729	4.57	11
	5300	1.651	0.147	3.97	
	5320	1.254	-0.324	3.55	
11n HT40	5270	-0.978	-2.252	1.44	11
	5310	0.024	-2.646	1.90	
11ac VHT20	5260	2.978	1.189	5.19	11
	5300	0.897	0.741	3.83	
	5320	1.036	0.135	3.62	
11ac VHT40	5270	-0.608	-1.742	1.87	11
	5310	-1.257	-2.255	1.28	
11ac VHT80	5290	-3.642	-5.219	-1.35	11
Conclusion: PASS					

Note: Directional Gain= 10 log[($10^{3.04/10}$+$10^{3.04/10}$)/2]dBi= 3.04dBi＜6dBi.

U-NII-2C Band:

EUT: WiFi module		
M/N: WC0SR2511		
Test date: 2020-03-31~04-01	Pressure: 102.8±1.0 kpa	Humidity: 51.8±3.0%
Tested by: Jerry	Test site: RF site	Temperature:23.2±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANTA	ANTB	Total	
11a	5500	3.157	1.541	5.43	11
	5600	3.725	0.973	5.57	
	5700	3.988	1.426	5.90	
11n HT20	5500	2.886	1.660	5.33	11
	5600	1.380	1.089	4.25	
	5700	2.322	1.066	4.75	
11n HT40	5510	-0.253	-3.470	1.44	11
	5590	-1.067	-2.877	1.13	
	5670	0.508	-1.783	2.52	
11ac VHT20	5500	2.705	0.953	4.93	11
	5600	2.056	0.285	4.27	
	5700	2.947	0.685	4.97	
11ac VHT40	5510	-0.881	-2.691	1.32	11
	5590	-0.975	-2.024	1.54	
	5670	-0.536	-2.155	1.74	
11ac VHT80	5530	-3.802	-5.285	-1.47	11
	5610	-3.954	-4.665	-1.29	
Conclusion: PASS					

Note: Directional Gain= 10 log$[(10^{2.87/20}+10^{2.84/20})^2/2]$dBi= 2.855dBi＜6dBi.

U-NII-3 Band:

EUT: WiFi module		
M/N: WC0SR2511		
Test date: 2020-03-31~04-01	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Jerry	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/500KHz)			Limit (dBm/500KHz)
		ANTA	ANTB	Total	
11a	5745	6.933	5.349	9.22	30
	5785	5.471	2.911	7.39	
	5825	5.458	2.636	7.28	
11n HT20	5745	7.117	3.395	8.65	30
	5785	6.171	2.514	7.73	
	5825	6.456	2.276	7.86	
11n HT40	5755	3.673	0.471	5.37	30
	5795	3.206	-0.254	4.82	
11ac VHT20	5745	6.196	2.592	7.77	30
	5785	6.547	2.647	8.03	
	5825	5.631	2.613	7.39	
11ac VHT40	5755	3.418	0.468	5.20	30
	5795	2.672	0.003	4.55	
11ac VHT80	5775	0.390	-2.812	2.09	30
Conclusion: PASS					

Notes: 1. Directional Gain= 10 log[($10^{3.10/10}$+$10^{3.08/10}$)/2]dBi= 3.09dBi＜6dBi.

2. The total result = Reading + 10log(500kHz/100kHz)