7. OUTPUT POWER TEST

7.1. 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.	Power meter	HP	436A	2016A07891	Oct.13,19	1 Year
3.	Power sensor	Agilent	8482B	MY41090514	Oct.13,19	1 Year
4.	Attenuator	Agilent	8491B	MY39269201	Oct.13,19	1 Year
5.	RF Cable	EMCI	EMC102-KM-KM 3500	170702	May.13,19	1 Year

7.2. Limit

For the band 5.15–5.25 GHz.

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the max-imum antenna gain does not exceed 6 dBi.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

7.3. Test Procedure

1. Connected the EUT's antenna port to measure device by 20dB attenuator.
   1) Measure the duty cycle, x, of the transmitter output signal as described in II.B.
   2) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
   3) Set RBW = 1 MHz.
   4) Set VBW ≥ 3 MHz.
   5) 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.)
   6) Sweep time = auto.
   7) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
   8) Do not use sweep triggering. Allow the sweep to "free run."
   9) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
   10) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
   11) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times

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

7.4.Test Results

U-NII-1 Band:

EUT: WiFi +BT module		
M/N: WCT5GM2511		
Test date: 2020-03-07	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Lynn	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT A	ANT B	Total	
11a	5180	13.58	12.26	15.98	23.92
	5200	13.69	12.46	16.13	
	5240	14.11	13.10	16.65	
11n HT20	5180	12.76	11.09	15.02	23.92
	5200	12.54	11.18	14.92	
	5240	12.98	11.63	15.37	
11n HT40	5190	12.52	10.61	14.68	23.92
	5230	12.38	10.10	14.40	
11ac VHT20	5180	12.52	10.84	14.77	23.92
	5200	12.59	10.71	14.76	
	5240	12.97	11.39	15.26	
11ac VHT40	5190	12.20	10.53	14.46	23.92
	5230	12.47	10.87	14.75	
11ac VHT80	5210	10.63	8.74	12.80	23.92
Conclusion: PASS					

Note: 1. Directional Gain= $10\log[(10^{3.06/20}+10^{3.04/20})^2/2]$dBi

= 6.06dBi＞6dBi.

2. The transmit signals are correlated.

U-NII-3 Band:

EUT: WiFi +BT module		
M/N: WCT5GM2511		
Test date: 2020-03-07	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Lynn	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT A	ANT B	Total	
11a	5745	12.60	12.29	15.46	29.9
	5785	12.87	12.33	15.62	
	5825	12.75	12.04	15.42	
11n HT20	5745	11.81	11.66	14.75	29.9
	5785	12.06	11.56	14.83	
	5825	12.15	11.26	14.74	
11n HT40	5755	11.81	11.20	14.16	29.9
	5795	12.05	11.19	14.65	
11ac VHT20	5745	11.77	11.38	14.59	29.9
	5785	12.23	11.33	14.81	
	5825	12.08	11.01	14.59	
11ac VHT40	5755	11.71	11.12	14.44	29.9
	5795	11.93	11.08	14.54	
11ac VHT80	5775	9.38	9.08	12.24	29.9
Conclusion: PASS					

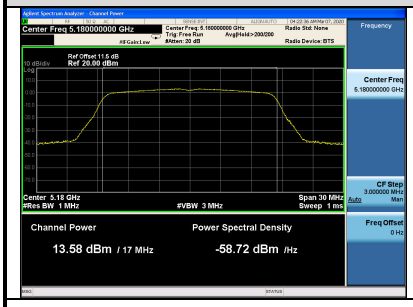
Note: 1. Directional Gain= 10 log$[(10^{3.08/20}+10^{3.10/20})^2/2]$dBi

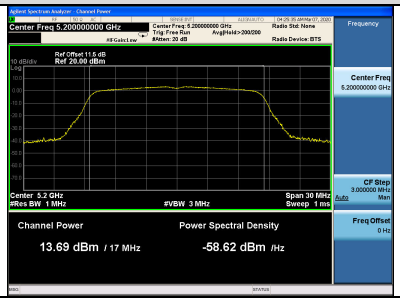
= 6.1dBi＞6dBi

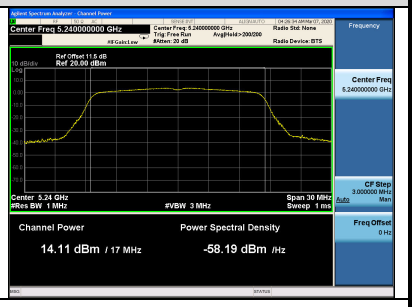
2. The transmit signals are correlated.

U-NII-1 Band: ANTA

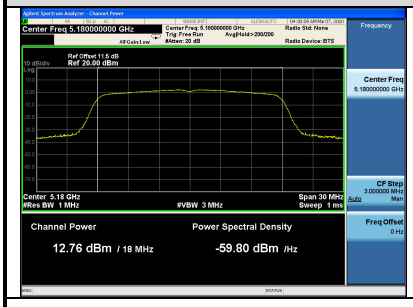
IEEE 802.11a

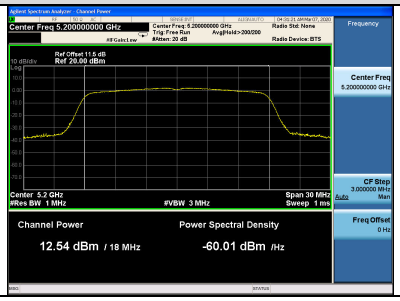


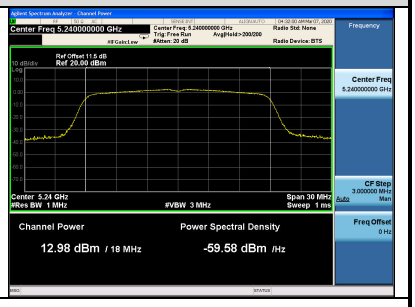




IEEE 802.11n HT20







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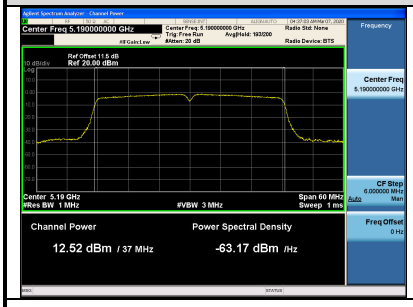
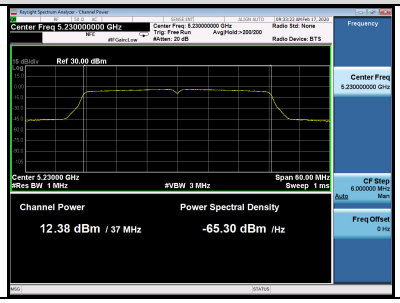
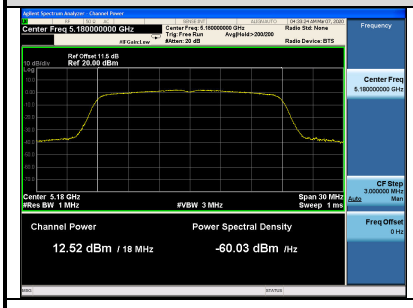
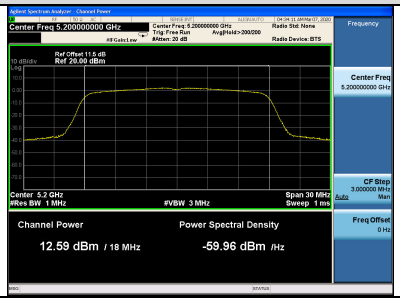
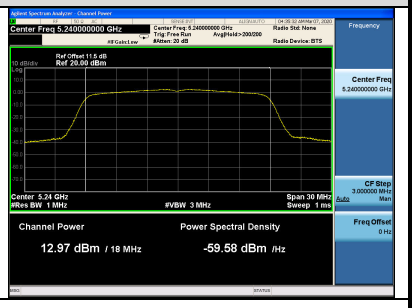




IEEE 802.11ac VHT20







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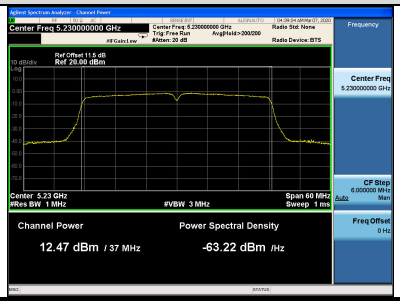

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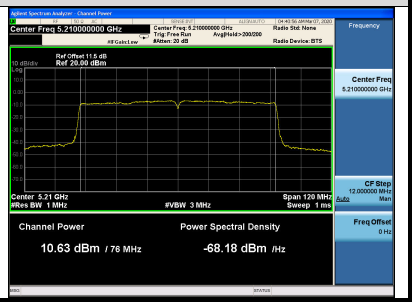
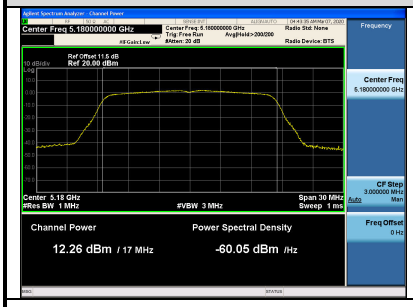
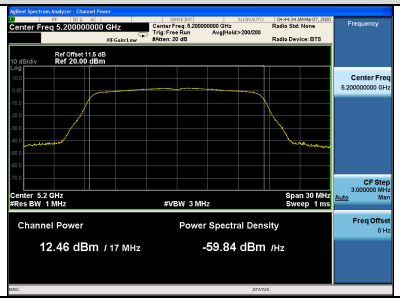
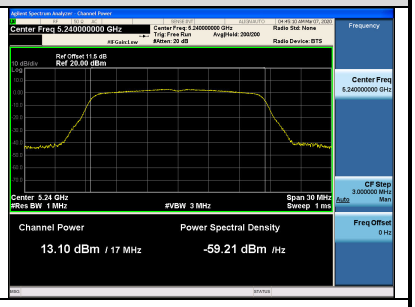


U-NII-1 Band: ANTB

IEEE 802.11a







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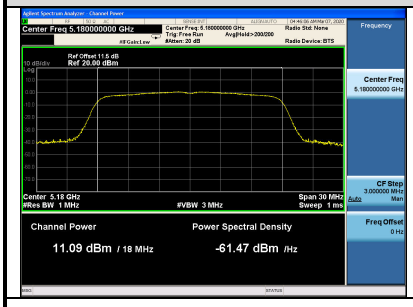

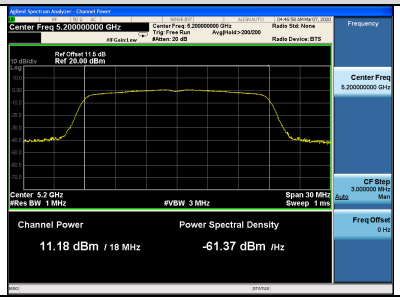

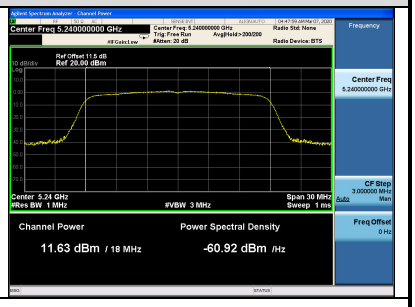

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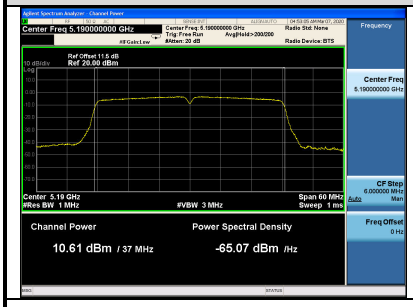

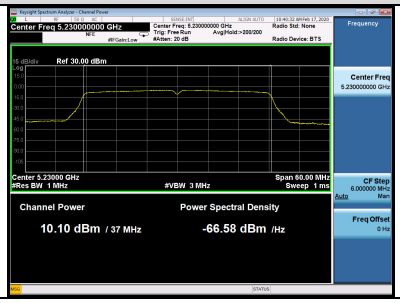

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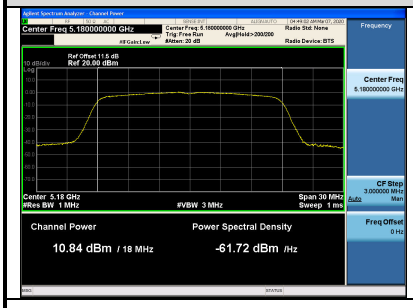

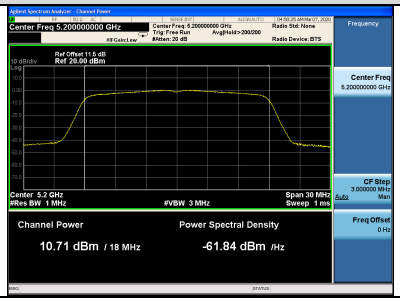

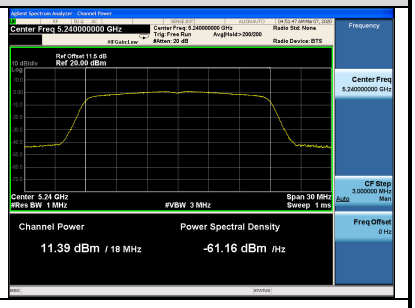

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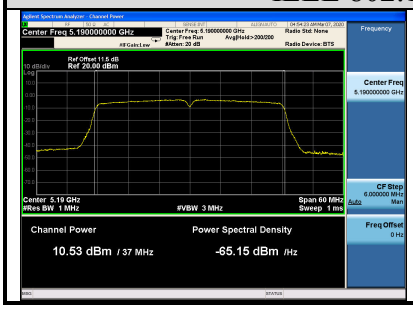

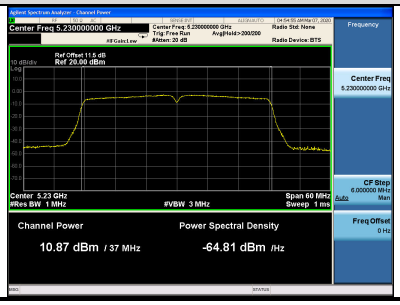

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