8. EQUIVALENT ISOTROPIC RADIATED POWER TEST

8.1. Limit

Use the test method described in FCC Part 15.407(h) (1):

Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

8.2. Test Procedure

Use the test method described in ANSI C63.10 Annex G :

(1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator ,set the Spectrum Analyzer as below:

Span: Zero
RBW:100KHz
VBW:100KHz

Read out the duty cycle(X) of the transmitter and record as X

(2) The channel power measure function of spectrum Analyzer was used to measure out average output power of transmitter.

(3)Calculated e.i.r.p according to the formula: Read + Cable loss + Atten loss + Antenna Gain + 10log(1/x)

(4)Repeated test at the lowest, the middle, and the highest frequency of the stated frequency range.

8.3.Test Results

U-NII-1 Band:

EUT: WiFi +BT module		
M/N: WCT5GM2511		
Test date: 2020-03-07	Pressure: 102.5±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Lynn	Test site: RF site	Temperature:22.6±0.6 ℃

Test Mode	Frequency (MHz)	EIRP (dBm)			Limit (dBm)
		ANT A	ANT B	Total	
11a	5180	16.64	15.30	19.03	N/A
	5200	16.75	15.50	19.18	
	5240	17.17	16.14	19.70	
11n HT20	5180	15.82	14.13	18.07	N/A
	5200	15.60	14.22	17.98	
	5240	16.04	14.67	18.42	
11n HT40	5190	15.58	13.65	17.73	N/A
	5230	15.44	13.14	17.45	
11ac VHT20	5180	15.58	13.88	17.82	N/A
	5200	15.65	13.75	17.81	
	5240	16.03	14.43	18.31	
11ac VHT40	5190	15.26	13.57	17.51	N/A
	5230	15.53	13.91	17.81	
11ac VHT80	5210	13.69	11.78	15.85	N/A
Conclusion: PASS					

9. SPECTRAL DENSITY TEST

9.1. 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

9.2. Limit

Band 5150-5250 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.

9.3. Test Procedure

For the Band 5.15-5.25GHz:
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 ≥3 RBW
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.

9.4.Test Results

U-NII-1 Band:

EUT: WiFi +BT module		
M/N: WCT5GM2511		
Test date: 2020-03-07	Pressure: 102.5±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Lynn	Test site: RF site	Temperature:22.6±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT A	ANT B	Total	
11a	5180	3.795	2.104	6.04	10.94
	5200	3.629	2.289	6.02	
	5240	3.829	2.877	6.39	
11n HT20	5180	2.531	1.118	4.89	10.94
	5200	2.333	0.900	4.69	
	5240	2.703	1.519	5.16	
11n HT40	5190	-1.088	-3.146	1.01	10.94
	5230	-0.878	-3.080	1.17	
11ac VHT20	5180	2.109	0.580	4.42	10.94
	5200	2.508	0.754	4.73	
	5240	2.618	1.179	4.97	
11ac VHT40	5190	-1.160	-3.116	0.98	10.94
	5230	-1.276	-2.727	1.07	
11ac VHT80	5210	-6.275	-7.945	-4.02	10.94
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: 102.7±1.0 kpa	Humidity: 54.1±3.0%
Tested by: Lynn	Test site: RF site	Temperature:23.4±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/500KHz)			Limit (dBm/500KHz)
		ANT A	ANT B	Total	
11a	5745	0.018	0.430	3.24	29.9
	5785	0.866	0.250	3.58	
	5825	0.895	-0.056	3.46	
11n HT20	5745	-0.180	-0.142	2.85	29.9
	5785	-0.520	-0.253	2.63	
	5825	-0.127	-0.770	2.57	
11n HT40	5755	-3.744	-4.685	-1.18	29.9
	5795	-3.322	-4.522	-0.87	
11ac VHT20	5745	-0.203	-0.224	2.80	29.9
	5785	0.144	-0.849	2.69	
	5825	-0.080	-1.138	2.43	
11ac VHT40	5755	-3.673	-4.328	-0.98	29.9
	5795	-3.157	-3.966	-0.53	
11ac VHT80	5775	-8.938	-8.994	-5.96	29.9
Conclusion: PASS					

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

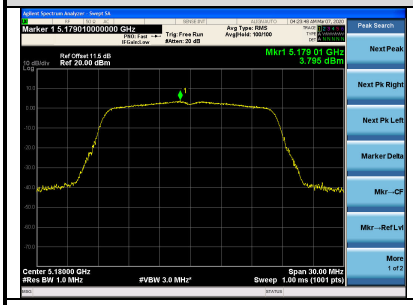
= 6.1dBi＞6dBi

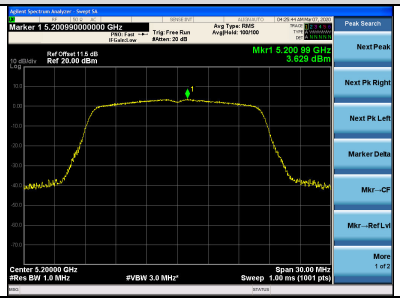
2. The transmit signals are correlated.

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

U-NII-1 Band: ANTA

IEEE 802.11a





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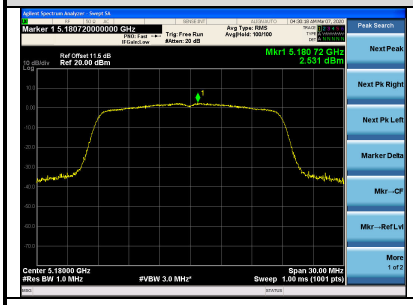

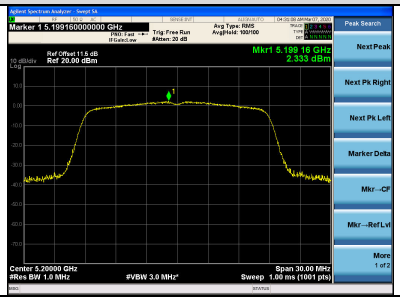

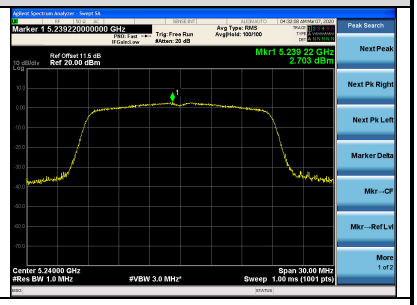

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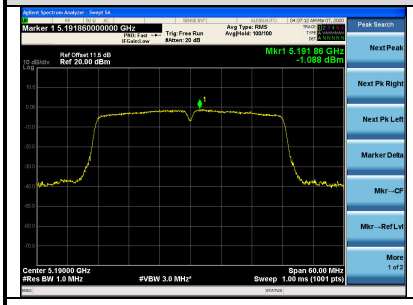

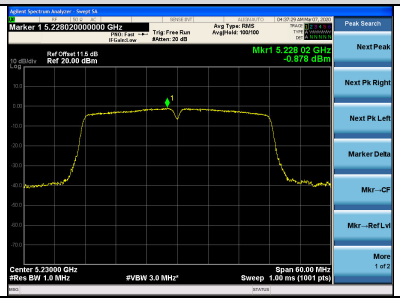

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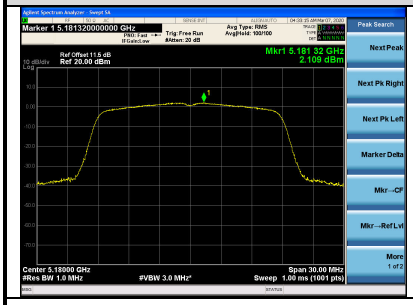

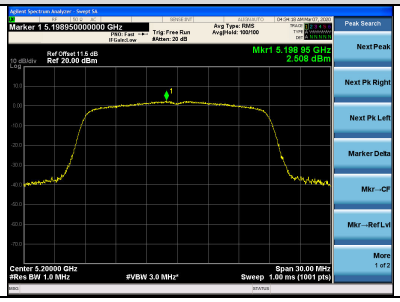

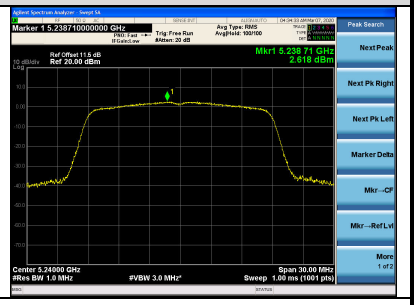

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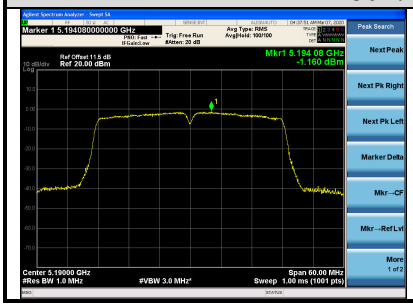

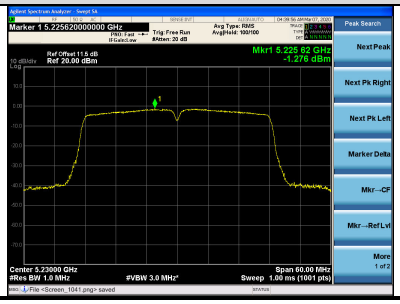

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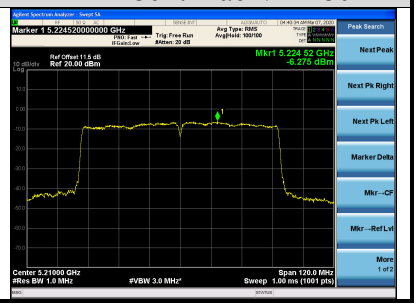
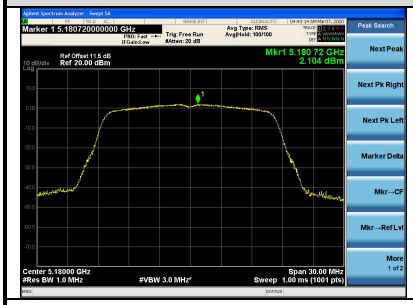
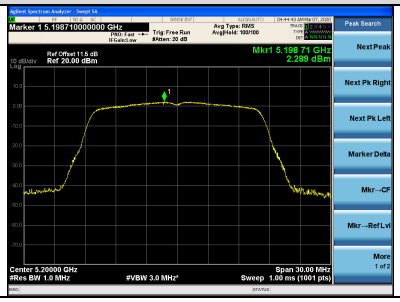


U-NII-1 Band: ANTB

IEEE 802.11a





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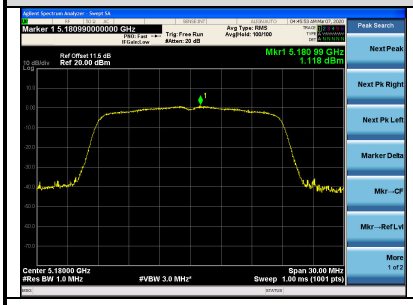

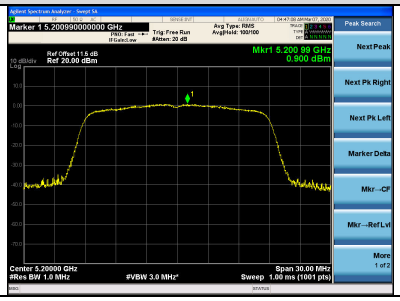

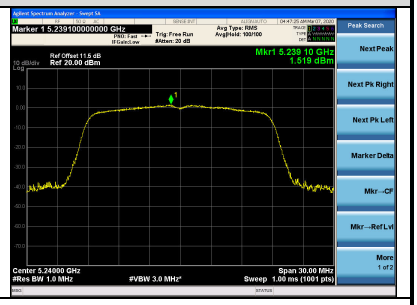

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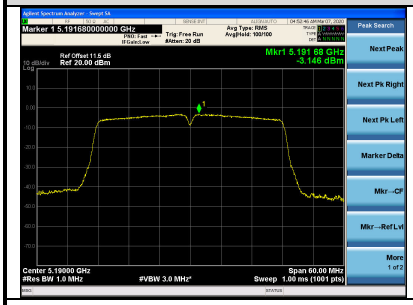

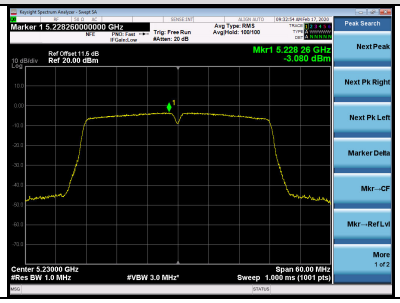

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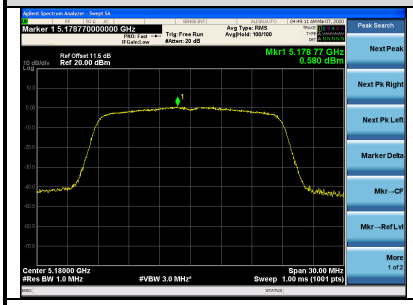

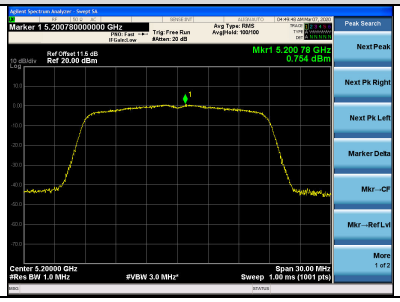

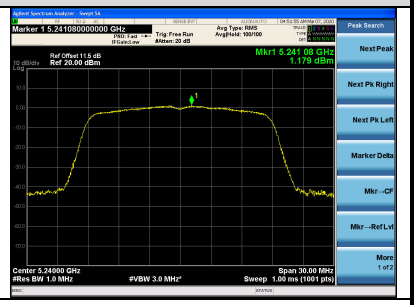

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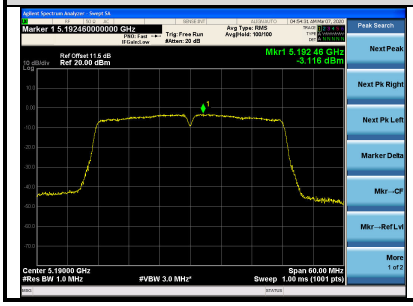

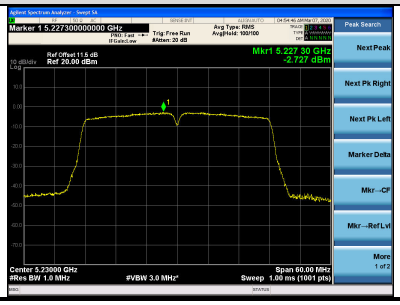

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