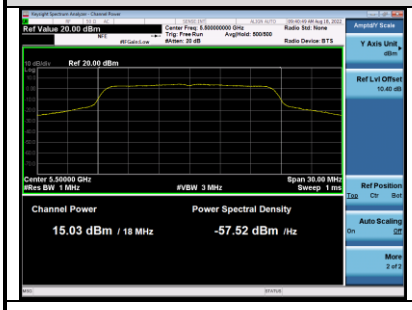
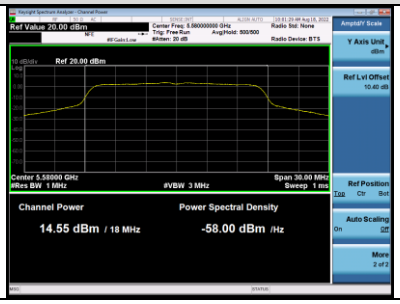
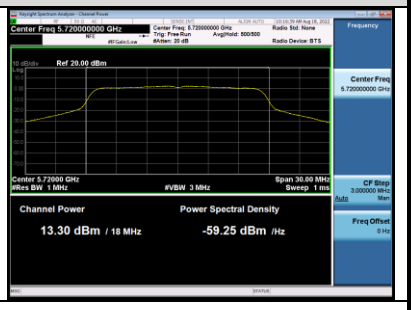
U-NII-2C Band

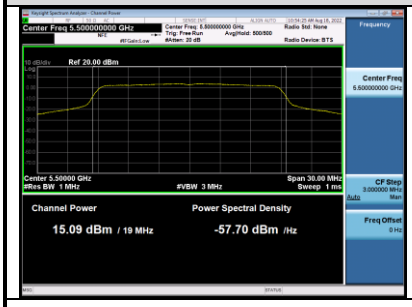
IEEE 802.11a

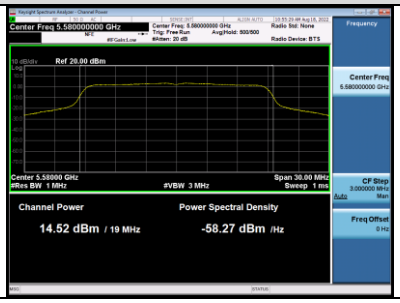




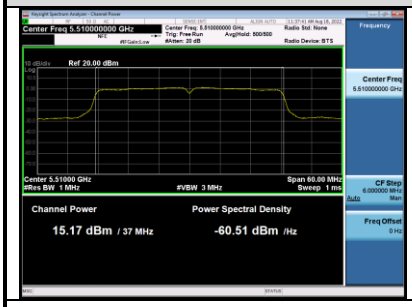


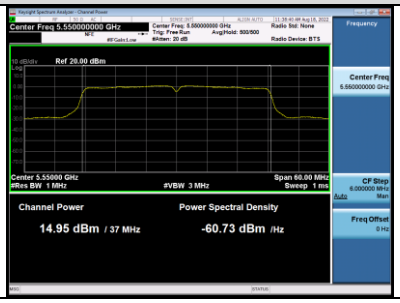
IEEE 802.11n HT20

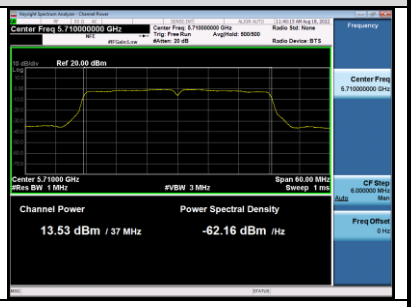




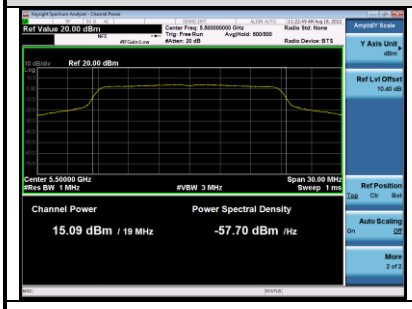
IEEE 802.11n HT40

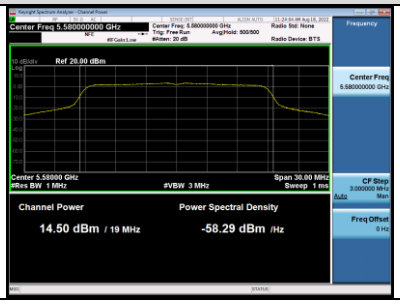


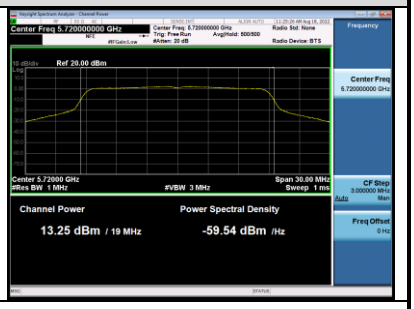




IEEE 802.11ac VHT20







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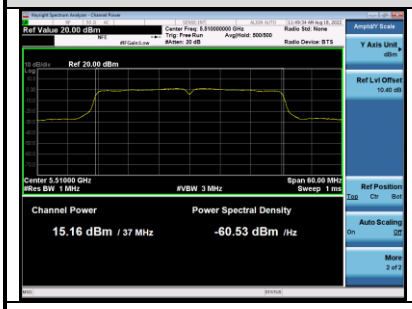
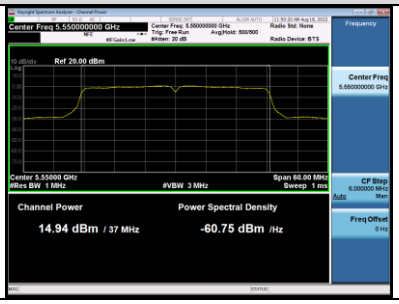
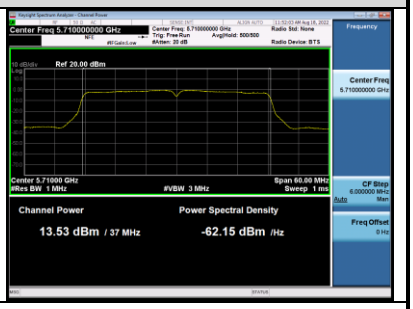
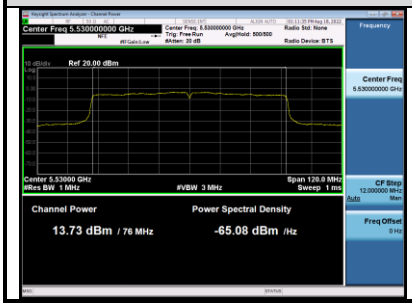
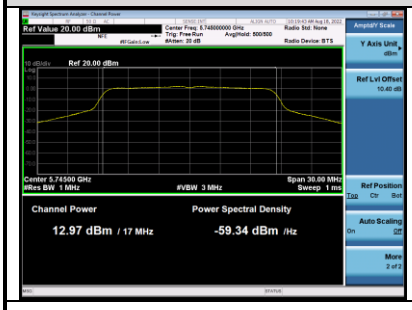
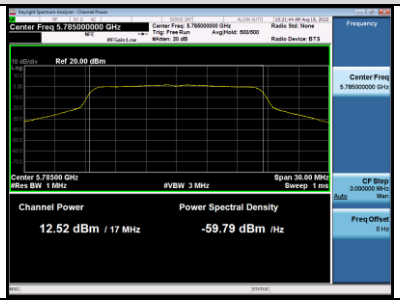
		
IEEE 802.11ac VHT80		---
		---

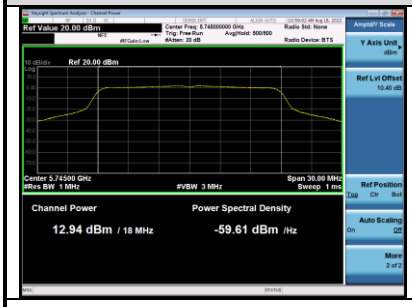
U-NII-3 Band

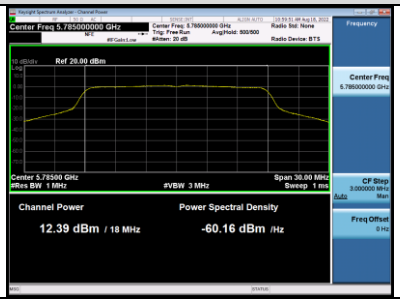
IEEE 802.11a

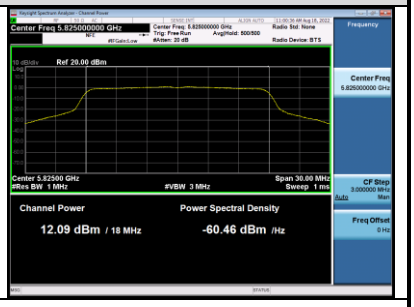




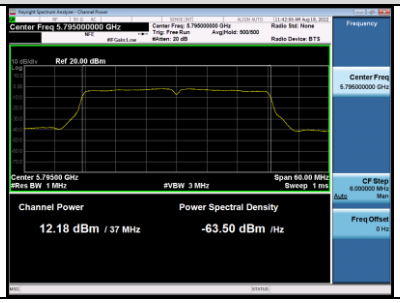
IEEE 802.11n HT20



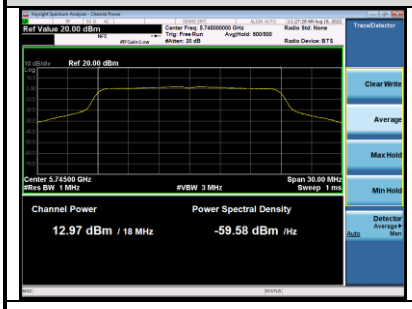


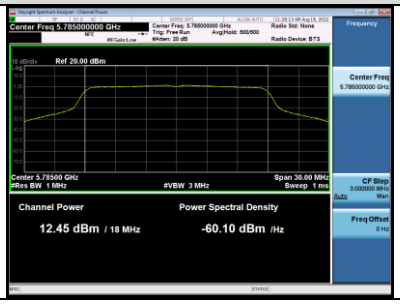


IEEE 802.11n HT40

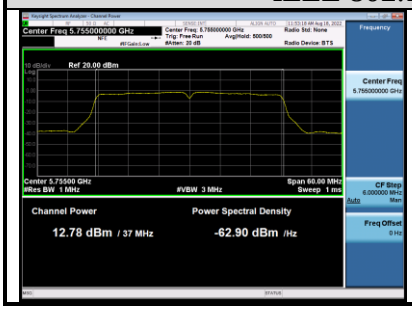


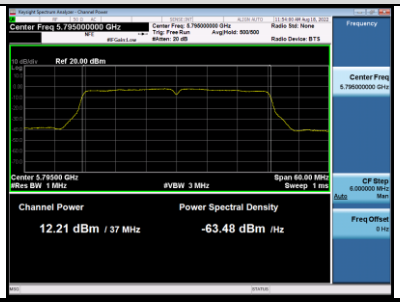
IEEE 802.11ac VHT20





IEEE 802.11ac VHT40





IEEE 802.11ac VHT80

8. POWER 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	Apr.06,22	1 Year
2.	RF Cable	Mini-Circuits	CBL-1M-SMSM+	No.7	Oct.11,21	1 Year
3.	Attenuator	Agilent	8491B	MY39269201	Oct.09,21	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

EUT: Digital Media Player		
M/N: YY1302B2		
Test date: 2022-08-13~18	Pressure: 102.5±1.0 kpa	Humidity: 53.6±3.0%
Tested by: Xinyao	Test site: RF site	Temperature: 22.4±0.6℃

U-NII-1 Band:

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
11a	5180	4.313	10
	5200	4.778	
	5240	5.289	
11n HT20	5180	3.593	10
	5200	3.753	
	5240	4.902	
11n HT40	5190	0.728	10
	5230	1.085	
11ac VHT20	5180	3.795	10
	5200	4.122	
	5240	4.986	
11ac VHT40	5190	0.742	10
	5230	1.210	
11ac VHT80	5210	-3.061	10
Conclusion:Pass			

U-NII-2A Band:

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
11a	5260	5.728	11
	5300	6.038	
	5320	6.214	
11n HT20	5260	5.297	11
	5300	5.430	
	5320	5.861	
11n HT40	5270	1.819	11
	5310	1.968	
11ac VHT20	5260	5.251	11
	5300	5.727	
	5320	5.660	
11ac VHT40	5270	1.648	11
	5310	2.282	
11ac VHT80	5290	-2.271	11
Conclusion:Pass			

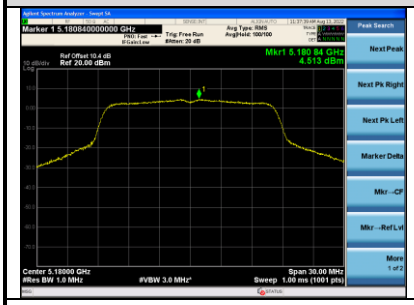
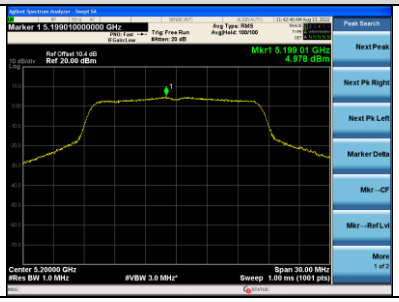
U-NII-2C Band:

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
11a	5500	5.685	11
	5580	4.191	
	5720	2.989	
11n HT20	5500	5.066	11
	5580	3.899	
	5720	2.597	
11n HT40	5510	2.306	11
	5550	1.333	
	5710	-0.014	
11ac VHT20	5500	5.169	11
	5580	3.813	
	5720	2.836	
11ac VHT40	5510	2.631	11
	5550	1.407	
	5710	-0.138	
11ac VHT80	5530	-1.834	11
	5690	-3.042	
Conclusion:Pass			

U-NII-3 Band:

Test Mode	Frequency (MHz)	Power Spectral Density (dBm/500KHz)	Limit (dBm/500KHz)
11a	5745	1.888	30
	5785	1.600	
	5825	1.227	
11n HT20	5745	1.551	30
	5785	0.906	
	5825	0.831	
11n HT40	5755	-1.766	30
	5795	-2.105	
11ac VHT20	5745	1.652	30
	5785	0.804	
	5825	0.814	
11ac VHT40	5755	-2.095	30
	5795	-2.230	
11ac VHT80	5775	-6.678	30
Conclusion:Pass			

Note; The result = Reading + 10 log(500kHz/100kHz).

U-NII-1 Band	
IEEE 802.11a	
  	
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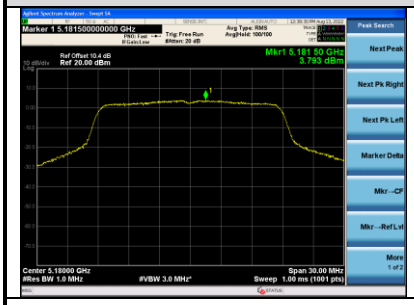 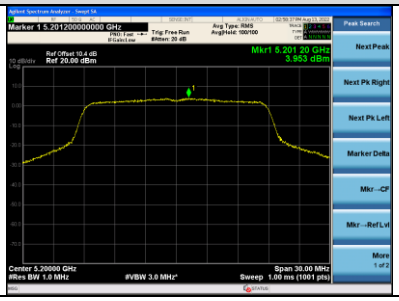 	
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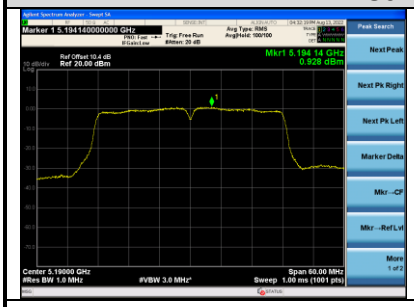 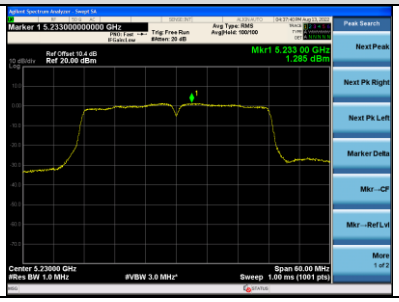	---
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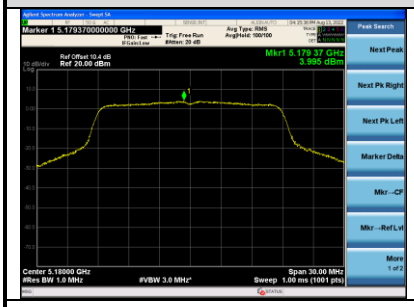 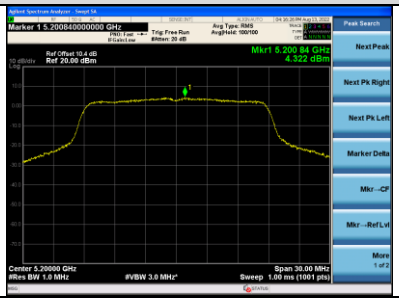 	
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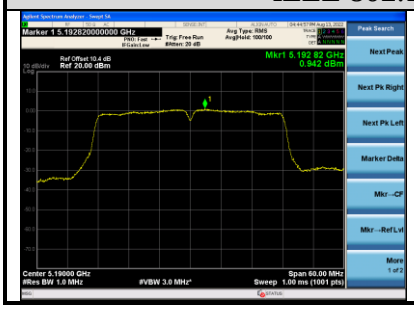
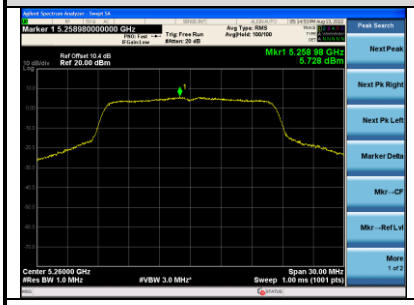
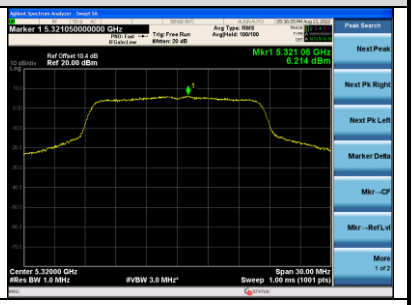
 	

U-NII-2A Band	
IEEE 802.11a	
  	
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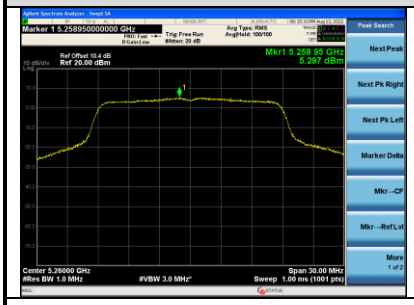 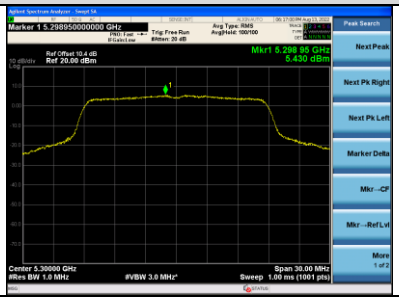 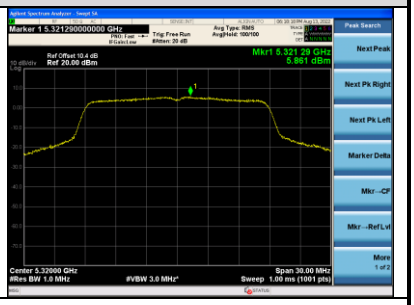	
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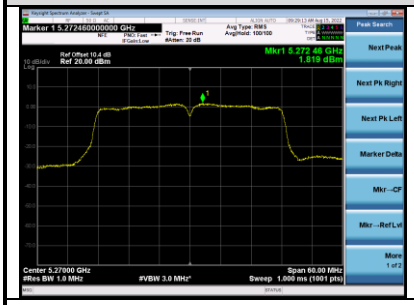 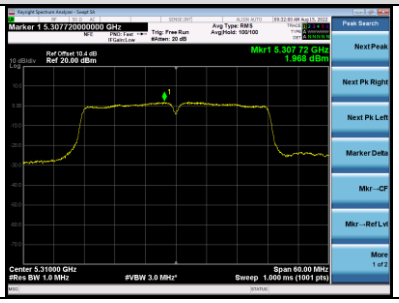	---
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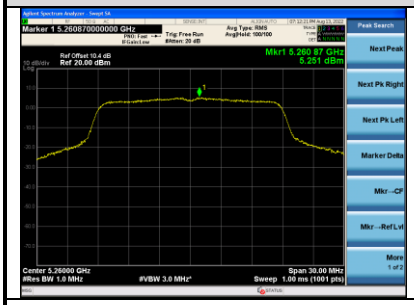  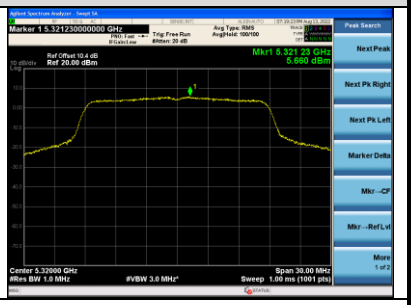	
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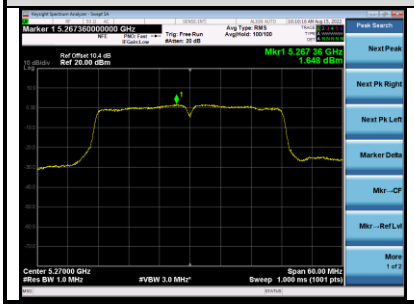
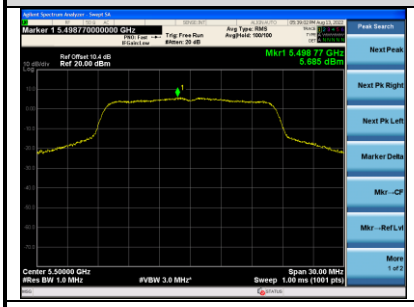
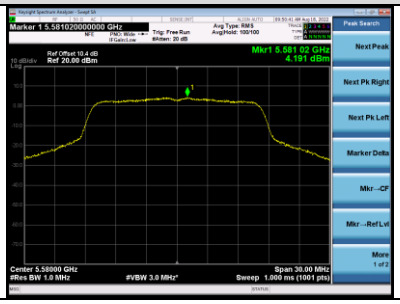
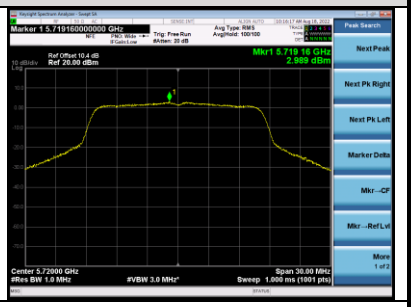
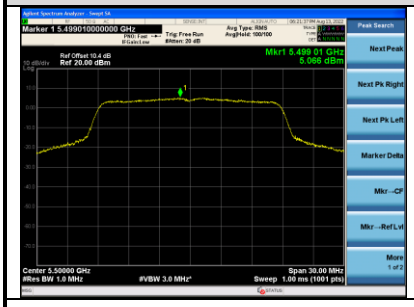
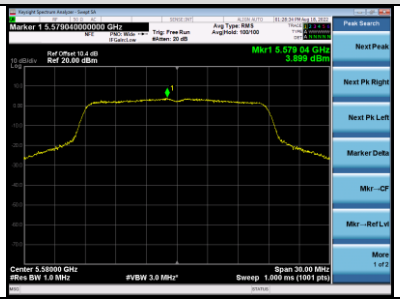
 	

U-NII-2C Band

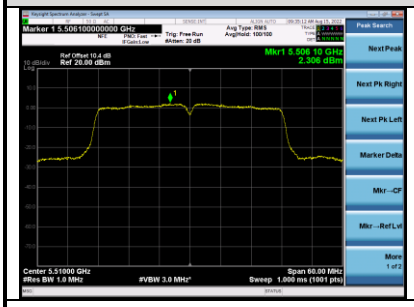
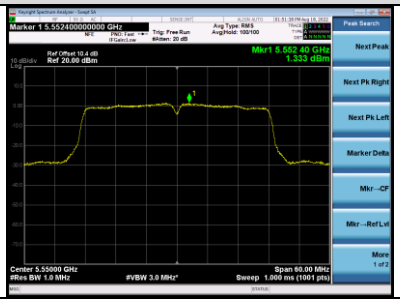
IEEE 802.11a

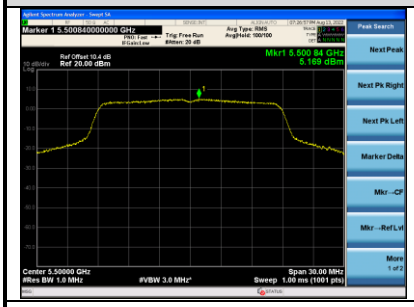
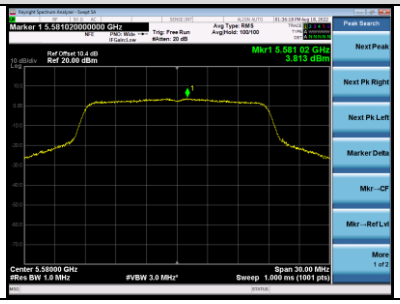
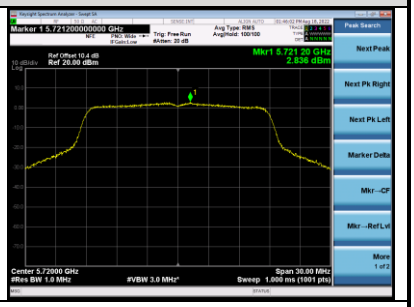
IEEE 802.11n HT20


IEEE 802.11n HT40


IEEE 802.11ac VHT20

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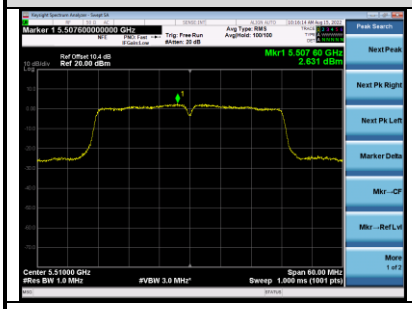	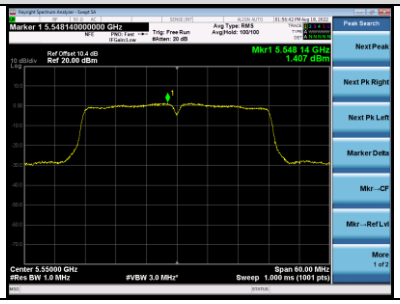	
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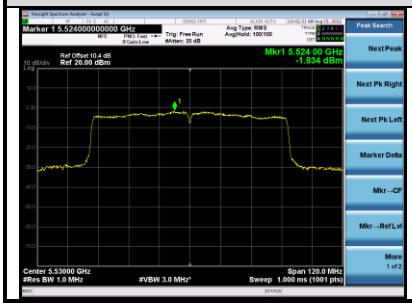
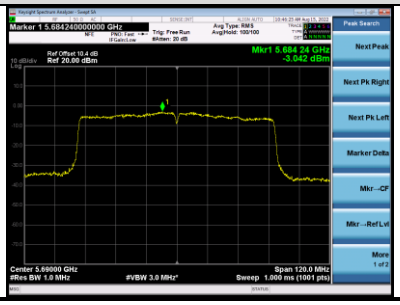
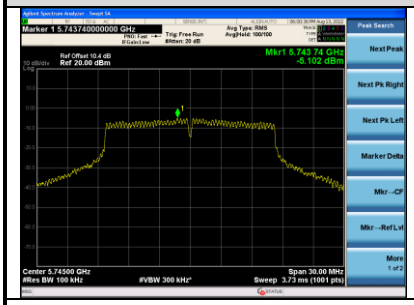
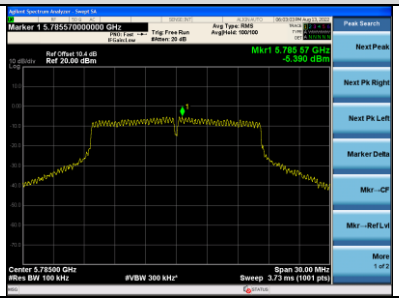
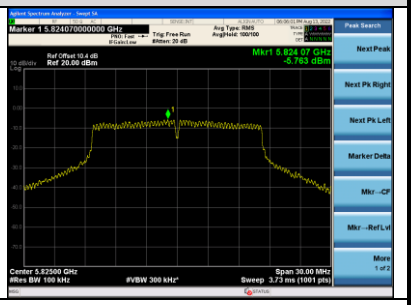
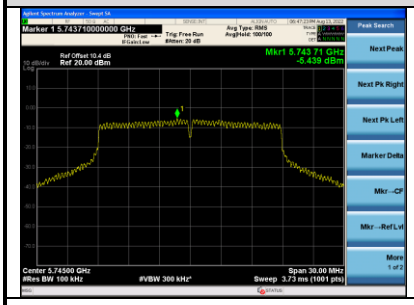
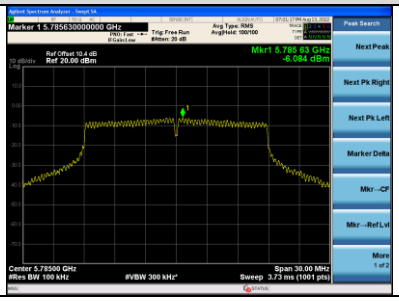
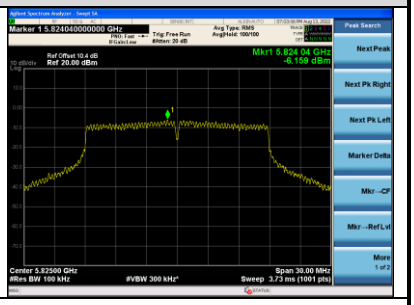
		---

U-NII-3 Band		
IEEE 802.11a		
		
IEEE 802.11n HT20		
		
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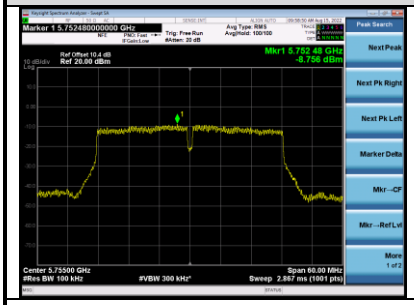
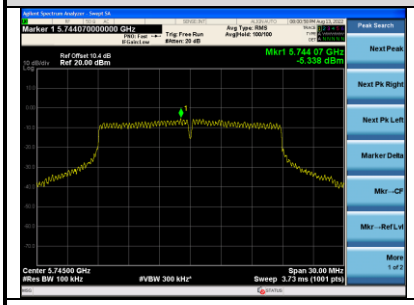
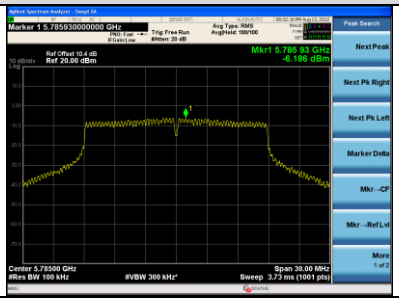
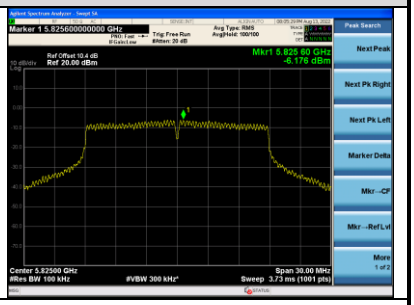
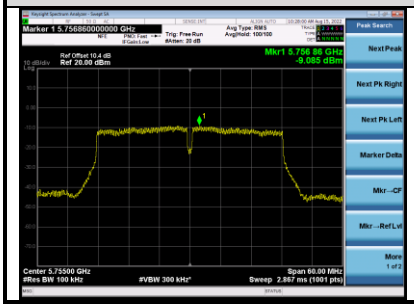
		---
IEEE 802.11ac VHT20		
		
IEEE 802.11ac VHT40		IEEE 802.11ac VHT80
		

9. FREQUENCY STABILITY MEASUREMENT

9.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Apr.06,22	1 Year
2.	RF Cable	eastsheep	141-SMA-JJ-1000	NO.1	Jul.01,22	1 Year
3.	Attenuator	Agilent	8491B	MY39269201	Oct.09,21	1 Year

9.2.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 user's manual.

9.3.Test Procedure

Use the test method described in ANSI C63.10 clause 6.8:

1. The transmitter output (antenna port) was connected to the spectrum analyzer. EUT have transmitted absence of modulation signal and fixed channelise. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. fc is declaring of channel frequency. Then the frequency error formula is $(fc-f)/f \times 10^{-6}$ppm. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
2. Extreme temperature is 5℃~35℃.

9.4.Test Result

EUT: Digital Media Player		
M/N: YY1302B2		
Test date: 2022-08-15	Pressure: 102.5±1.0 kpa	Humidity: 53.6±3.0%
Tested by: Xinyao	Test site: RF site	Temperature: 22.4±0.6℃

Frequency Stability vs.Voltage:

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 3.15V	25℃	CH36	5179.9860	5180	-2.7027
		CH38	5189.9855	5190	-2.7938
		CH40	5199.9860	5200	-2.6923
		CH42	5209.9850	5210	-2.8791
		CH46	5229.9855	5230	-2.7725
		CH48	5239.9855	5240	-2.7672
		CH52	5259.9850	5260	-2.8517
		CH54	5269.9845	5270	-2.9412
		CH58	5289.9845	5290	-2.9301
		CH60	5299.9845	5300	-2.9245
		CH62	5309.9840	5310	-3.0132
		CH64	5319.9840	5320	-3.0075
		CH100	5499.9835	5500	-3.0000
		CH102	5509.9835	5510	-2.9946
		CH106	5529.9840	5530	-2.8933
		CH110	5549.9835	5550	-2.9730
		CH116	5579.9840	5580	-2.8674
		CH138	5689.9820	5690	-3.1634
		CH142	5709.9825	5710	-3.0648
		CH144	5719.9825	5720	-3.0594
		CH149	5744.9820	5745	-3.1332
		CH151	5754.9825	5755	-3.0408
		CH155	5774.9825	5775	-3.0303
		CH157	5784.9820	5785	-3.1115
		CH159	5794.9825	5795	-3.0198
		CH165	5824.9820	5825	-3.0901

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 3.7V	25℃	CH36	5179.9865	5180	-2.6062
		CH38	5189.9860	5190	-2.6975
		CH40	5199.9865	5200	-2.5962
		CH42	5209.9855	5210	-2.7831
		CH46	5229.9860	5230	-2.6769
		CH48	5239.9860	5240	-2.6718
		CH52	5259.9855	5260	-2.7567
		CH54	5269.9850	5270	-2.8463
		CH58	5289.9850	5290	-2.8355
		CH60	5299.9850	5300	-2.8302
		CH62	5309.9845	5310	-2.9190
		CH64	5319.9845	5320	-2.9135
		CH100	5499.9840	5500	-2.9091
		CH102	5509.9840	5510	-2.9038
		CH106	5529.9845	5530	-2.8029
		CH110	5549.9840	5550	-2.8829
		CH116	5579.9845	5580	-2.7778
		CH138	5689.9825	5690	-3.0756
		CH142	5709.9830	5710	-2.9772
		CH144	5719.9830	5720	-2.9720
		CH149	5744.9825	5745	-3.0461
		CH151	5754.9830	5755	-2.9540
		CH155	5774.9830	5775	-2.9437
		CH157	5784.9825	5785	-3.0251
		CH159	5794.9830	5795	-2.9336
		CH165	5824.9825	5825	-3.0043

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 4.26V	25℃	CH36	5179.9870	5180	-2.5097
		CH38	5189.9865	5190	-2.6012
		CH40	5199.9870	5200	-2.5000
		CH42	5209.9860	5210	-2.6871
		CH46	5229.9865	5230	-2.5813
		CH48	5239.9865	5240	-2.5763
		CH52	5259.9860	5260	-2.6616
		CH54	5269.9855	5270	-2.7514
		CH58	5289.9855	5290	-2.7410
		CH60	5299.9855	5300	-2.7358
		CH62	5309.9850	5310	-2.8249
		CH64	5319.9850	5320	-2.8195
		CH100	5499.9845	5500	-2.8182
		CH102	5509.9845	5510	-2.8131
		CH106	5529.9850	5530	-2.7125
		CH110	5549.9845	5550	-2.7928
		CH116	5579.9850	5580	-2.6882
		CH138	5689.9830	5690	-2.9877
		CH142	5709.9835	5710	-2.8897
		CH144	5719.9835	5720	-2.8846
		CH149	5744.9830	5745	-2.9591
		CH151	5754.9835	5755	-2.8671
		CH155	5774.9835	5775	-2.8571
		CH157	5784.9830	5785	-2.9386
		CH159	5794.9835	5795	-2.8473
		CH165	5824.9830	5825	-2.9185

Frequency Stability vs. Temperature:

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 3.7V	5℃	CH36	5179.9820	5180	-3.4749
		CH38	5189.9815	5190	-3.5645
		CH40	5199.9820	5200	-3.4615
		CH42	5209.9810	5210	-3.6468
		CH46	5229.9815	5230	-3.5373
		CH48	5239.9815	5240	-3.5305
		CH52	5259.9810	5260	-3.6122
		CH54	5269.9805	5270	-3.7002
		CH58	5289.9805	5290	-3.6862
		CH60	5299.9805	5300	-3.6792
		CH62	5309.9800	5310	-3.7665
		CH64	5319.9800	5320	-3.7594
		CH100	5499.9795	5500	-3.7273
		CH102	5509.9795	5510	-3.7205
		CH106	5529.9800	5530	-3.6166
		CH110	5549.9795	5550	-3.6937
		CH116	5579.9800	5580	-3.5842
		CH138	5689.9780	5690	-3.8664
		CH142	5709.9785	5710	-3.7653
		CH144	5719.9785	5720	-3.7587
		CH149	5744.9780	5745	-3.8294
		CH151	5754.9785	5755	-3.7359
		CH155	5774.9785	5775	-3.7229
		CH157	5784.9780	5785	-3.8029
		CH159	5794.9785	5795	-3.7101
		CH165	5824.9780	5825	-3.7768

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 3.7V	15℃	CH36	5179.9850	5180	-2.8958
		CH38	5189.9845	5190	-2.9865
		CH40	5199.9850	5200	-2.8846
		CH42	5209.9840	5210	-3.0710
		CH46	5229.9845	5230	-2.9637
		CH48	5239.9845	5240	-2.9580
		CH52	5259.9840	5260	-3.0418
		CH54	5269.9835	5270	-3.1309
		CH58	5289.9835	5290	-3.1191
		CH60	5299.9835	5300	-3.1132
		CH62	5309.9830	5310	-3.2015
		CH64	5319.9830	5320	-3.1955
		CH100	5499.9825	5500	-3.1818
		CH102	5509.9825	5510	-3.1760
		CH106	5529.9830	5530	-3.0741
		CH110	5549.9825	5550	-3.1532
		CH116	5579.9830	5580	-3.0466
		CH138	5689.9810	5690	-3.3392
		CH142	5709.9815	5710	-3.2399
		CH144	5719.9815	5720	-3.2343
		CH149	5744.9810	5745	-3.3072
		CH151	5754.9815	5755	-3.2146
		CH155	5774.9815	5775	-3.2035
		CH157	5784.9810	5785	-3.2844
		CH159	5794.9815	5795	-3.1924
		CH165	5824.9810	5825	-3.2618

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 3.7V	25℃	CH36	5179.9865	5180	-2.6062
		CH38	5189.9860	5190	-2.6975
		CH40	5199.9865	5200	-2.5962
		CH42	5209.9855	5210	-2.7831
		CH46	5229.9860	5230	-2.6769
		CH48	5239.9860	5240	-2.6718
		CH52	5259.9855	5260	-2.7567
		CH54	5269.9850	5270	-2.8463
		CH58	5289.9850	5290	-2.8355
		CH60	5299.9850	5300	-2.8302
		CH62	5309.9845	5310	-2.9190
		CH64	5319.9845	5320	-2.9135
		CH100	5499.9840	5500	-2.9091
		CH102	5509.9840	5510	-2.9038
		CH106	5529.9845	5530	-2.8029
		CH110	5549.9840	5550	-2.8829
		CH116	5579.9845	5580	-2.7778
		CH138	5689.9825	5690	-3.0756
		CH142	5709.9830	5710	-2.9772
		CH144	5719.9830	5720	-2.9720
		CH149	5744.9825	5745	-3.0461
		CH151	5754.9830	5755	-2.9540
		CH155	5774.9830	5775	-2.9437
		CH157	5784.9825	5785	-3.0251
		CH159	5794.9830	5795	-2.9336
		CH165	5824.9825	5825	-3.0043

Test Voltage	Temperature	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)
DC 3.7V	35℃	CH36	5179.9895	5180	-2.0270
		CH38	5189.9890	5190	-2.1195
		CH40	5199.9895	5200	-2.0192
		CH42	5209.9885	5210	-2.2073
		CH46	5229.9890	5230	-2.1033
		CH48	5239.9890	5240	-2.0992
		CH52	5259.9885	5260	-2.1863
		CH54	5269.9880	5270	-2.2770
		CH58	5289.9880	5290	-2.2684
		CH60	5299.9880	5300	-2.2642
		CH62	5309.9875	5310	-2.3540
		CH64	5319.9875	5320	-2.3496
		CH100	5499.9870	5500	-2.3636
		CH102	5509.9870	5510	-2.3593
		CH106	5529.9875	5530	-2.2604
		CH110	5549.9870	5550	-2.3423
		CH116	5579.9875	5580	-2.2401
		CH138	5689.9855	5690	-2.5483
		CH142	5709.9860	5710	-2.4518
		CH144	5719.9860	5720	-2.4476
		CH149	5744.9855	5745	-2.5239
		CH151	5754.9860	5755	-2.4327
		CH155	5774.9860	5775	-2.4242
		CH157	5784.9855	5785	-2.5065
		CH159	5794.9860	5795	-2.4159
		CH165	5824.9855	5825	-2.4893

10. ANTENNA REQUIREMENT

10.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 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 FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. Antenna Connected Construction

The antennas used for this product are Internal PIFA Antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is U-NII Band 1: -0.2dBi & U-NII Band 2A: 0.2dBi & U-NII Band 2C: 0.5dBi & U-NII Band 3: 1.6dBi.

11. DEVIATION TO TEST SPECIFICATIONS

[NONE]

THE END