Test Report

FCC ID: 2AT6NAU-D1

Date of issue: Feb. 25, 2020

Report number:	MTi19111505-4E4
Sample description:	High Resolution Streaming Digital Audio Player
Model(s):	AU-D1
Applicant:	AUSOUNDS INTELLIGENCE, LLC
Address:	929 108TH AVE NE STE 1200, BELLEVUE, WA, 98004-4787, UNITED STATES
Date of test:	Nov. 19, 2019 to Feb. 25, 2020

Shenzhen Microtest Co., Ltd.
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Test Result Certification

Applicant's name:	AUSOUNDS INTELLIGENCE, LLC
Address:	929 108TH AVE NE STE 1200, BELLEVUE, WA, 98004-4787, UNITED STATES
Manufacture's name:	Shenzhen Ausounds Intelligence Co., Ltd.
Address:	606B, 6th Floor, Xuyuan Building, No. 5003 Longgang Avenue, Longgang District, Shenzhen
Product name:	High Resolution Streaming Digital Audio Player
Trademark:	AUSOUNDS
Model name:	AU-D1
Standards:	FCC Part 15.407
Test procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedures New Rules v02r01

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by: Demi Mu Feb. 25, 2020

Reviewed by: Blue Zheng Feb. 25, 2020

Approved by: Smith Chen Feb. 25, 2020

1 General information

1.1 Description of EUT

Equipment:	High Resolution Streaming Digital Audio Player
Model name:	AU-D1
Serial model:	N/A
Model difference:	N/A
Frequency range:	U-NII-1: 5180 MHz to 5240 MHz, U-NII-3: 5745 MHz to 5825 MHz
Modulation type:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Transfer rate:	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40): MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40):NSS1, MCS0-MCS9 802.11ac(VHT80) :NSS1,MCS0-MCS9
Channel bandwidth:	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz 802.11ac: 20 MHz, 40 MHz, 80MHz
Antenna type:	FPC antenna
Antenna gain:	1.41dBi
Max. output power:	U-NII-1: 5.98dBm U-NII-3: 5.85dBm
Hardware version:	F201-MB-V1.1
Software version:	20191107_f201
Power supply:	DC 5V from adapter AC 120V/60Hz or DC 3.8V from battery
Adapter information:	N/A
Battery:	DC 3.8V 1500mAh
Serial number:	MTi19111505-4-S0001

1.2 Operation channel list

For U-NII-1:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190	42	5120
40	5200	46	5230	--	--
44	5220	--	--	--	--
48	5240	--	--	--	--

For U-NII-3:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795	--	--
157	5785	--	--	--	--
161	5805	--	--	--	--
165	5825	--	--	--	--

1.3 Test channel list

U-NII-1 (5150 - 5250 MHz)			U-NII-3(5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
44	Mid	5220	157	Mid	5785
48	High	5240	165	High	5825

80 MHz	
Channel Number	Frequency (MHz)
42	5210

For 802.11n/ac (HT40)

U-NII-1 (5150 - 5250 MHz)			U-NII-3(5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

80 MHz	
Channel Number	Frequency (MHz)
155	5775

1.4 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
Adapter	EQ-24BCN	/	Huizhou Dongyang Yienbi Electronics Co., Ltd.	/

1.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
/	/	/	/	/	/
/	/	/	/	/	/

Note:

(1)The support equipment was authorized by Declaration of Confirmation.

(2)For detachable type I/O cable should be specified the length in cm in『Length』column.

2 Summary of the Test Results

Test procedures according to the technical standards:

No.	Standard Section	Test Item	Result	Remark
1	15.203/15.407	Antenna Requirement	Pass	
2	15.407(a)	RF Output Power	Pass	
3	15.207	Power Line Conducted Emission	Pass	
4	15.407(a)	26dB Emission Bandwidth and Occupied bandwidth	Pass	
5	15.407(e)	6 dB bandwidth	Pass	
6	15.407(a)	Power Spectral Density	Pass	
7	15.407(b) 15.209	Radiation Spurious Emission	Pass	

3 Test Facilities and Accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

3.2 Environmental conditions

Temperature:	15ºC~35℃
Humidity	20%~75%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

The reported uncertainty of measurement y ± U · where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2 · providing a level of confidence of approximately 95 %

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power, conducted	±0.16dB
3	Spurious emissions, conducted	±0.21dB
4	All emissions, radiated(<1G)	±4.68dB
5	All emissions, radiated(>1G)	±4.89dB
6	Temperature	±0.5℃
7	Humidity	±2%

3.4 Test software

Software Name	Manufacturer	Model	Version
Bluetooth and WiFi Test System	Shenzhen JS tonscend co., ltd	JS1120-3	2.5.77.0418

4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI7	100314	2019/10/09	2020/10/08
MTI-E006	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-872	2019/10/15	2020/10/14
MTI-E014	amplifier	Hewlett-Packard	8447D	3113A06150	2019/10/09	2020/10/08
MTI-E036	Single path vehicle AMN(LISN)	Schwarzbeck	NNBM 8124	01175	2019/10/09	2020/10/08
MTI-E038	Low noise active vertical monopole antenna	Schwarzbeck	VAMP 9243	#565	2019/10/16	2020/10/15
MTI-E039	Biconical antenna	Schwarzbeck	BBA 9106	#164	2019/10/15	2020/10/14
MTI-E041	MXG Vector Signal Generator	Agilent	N5182A	MY49060455	2019/04/16	2020/04/15
MTI-E042	ESG Series Analog signal generator	Agilent	E4421B	GB40051240	2019/05/21	2020/05/20
MTI-E044	Thermometer clock humidity monitor	-	HTC-1	/	2019/04/17	2020/04/16
MTI-E049	Spectrum analyzer	Rohde&schwarz	FSP-38	100019	2019/9/18	2020/9/17
MTI-E062	Log Periodic Antenna	Schwarzbeck	VUSLP 9111B	#312	2018/04/11	2020/04/10
MTI-E063	Log Periodic Dipole Array Antenna	ETS-LINDGREN	3148B	00224524	2018/04/11	2020/04/10
MTI-E065	Amplifier	EMtrace	RP06A	00117	2019/04/29	2020/04/28
MTI-E071	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2019/10/25	2020/10/24
MTI-E076	EMI Test Receiver	Rohde&schwarz	ESIB26	100273	2019/04/16	2020/04/15
MTI-E078	Synthesized Sweeper	Agilent	83752A	3610A01957	2019/04/16	2020/04/15
MTI-E079	DC Power Supply	Agilent	E3632A	MY40027695	2019/04/16	2020/04/15
MTI-E092	DC power source	shenzhen tongyuan	TY-500V 100A	201710190325689	2019/4/16	2020/4/15
MTI-E093	Artificial mains network	3ctest	LISN J50	ES3911805	2019/04/16	2020/04/15
MTI-E096	Power amplifier	Space-Dtronicccs	EWLNA0118G-P40	1852001	2019/04/29	2020/04/28
MTI-E097	Current Probe	SOLAR ELECTRONICS CO.	9207-1	220095-1	2019/04/17	2020/04/16
MTI-E098	Loop Sensor	SOLAR ELECTRONICS CO.	7334-1	220095-2	2019/04/21	2020/04/20
MTI-E0123	High and low temperature box	Heron	JHY-HT-80L	LGD-GDW-80	2019/4/16	2020/4/15
MTI-E0124	Horn Antenna	Schwarzbeck	BBHA 9170	9170-181	2019/4/16	2020/4/15

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

5 Test Results

5.1 Antenna requirement

5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 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.

5.1.2 EUT Antenna

The antenna is FPC antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is 1.41dBi.

5.2 RF output power

5.2.1 Limit

For the 5.15-5.25 GHz band

For 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 maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz band

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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

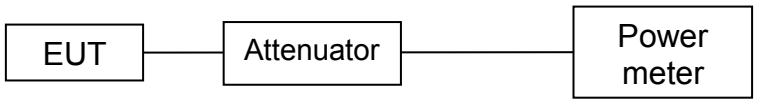
For the band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2.2 Test procedure

The maximum peak conducted output power may be measured using a broadband Average RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

5.2.3 Test setup



5.2.4 Test results

For U-NII-1

Modulation mode	Test Channel	Frequency(MHz)	Average Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH36	5180	5.98	3.96	250
11a	CH40	5200	5.92	3.91	250
11a	CH48	5240	5.90	3.89	250
11n (HT20)	CH36	5180	5.82	3.82	250
11n (HT20)	CH40	5200	5.78	3.78	250
11n (HT20)	CH48	5240	5.84	3.84	250
11n (HT40)	CH38	5190	5.92	3.91	250
11n (HT40)	CH46	5230	5.94	3.93	250

Modulation mode	Test Channel	Frequency(MHz)	Average Conducted Power		Limit(mW)
			(dBm)	(mW)	
11ac (HT20)	CH36	5180	5.78	3.78	250
11ac (HT20)	CH40	5200	5.76	3.77	250
11ac (HT20)	CH48	5240	5.77	3.78	250
11ac (HT40)	CH38	5190	5.80	3.80	250
11ac (HT40)	CH46	5230	5.83	3.83	250
11ac (HT80)	CH42	5210	5.72	3.73	250

For U-NII-3

Modulation mode	Test Channel	Frequency(MHz)	Average Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH149	5745	5.58	3.61	1000
11a	CH157	5785	5.34	3.42	1000
11a	CH165	5825	5.85	3.85	1000
11n (HT20)	CH149	5745	5.33	3.41	1000
11n (HT20)	CH157	5785	5.84	3.84	1000
11n (HT20)	CH165	5825	5.27	3.37	1000
11n (HT40)	CH151	5755	5.31	3.40	1000
11n (HT40)	CH159	5795	5.69	3.71	1000

Modulation mode	Test Channel	Frequency(MHz)	Average Conducted Power		Limit(mW)
			(dBm)	(mW)	
11ac (HT20)	CH149	5745	5.30	3.39	1000
11ac (HT20)	CH157	5785	5.47	3.52	1000
11ac (HT20)	CH165	5825	5.49	3.54	1000
11ac (HT40)	CH151	5755	5.41	3.48	1000
11ac (HT40)	CH159	5795	5.17	3.29	1000
11ac (HT80)	CH155	5775	5.12	3.25	1000

5.3 Power line conducted emission

5.3.1 Limits

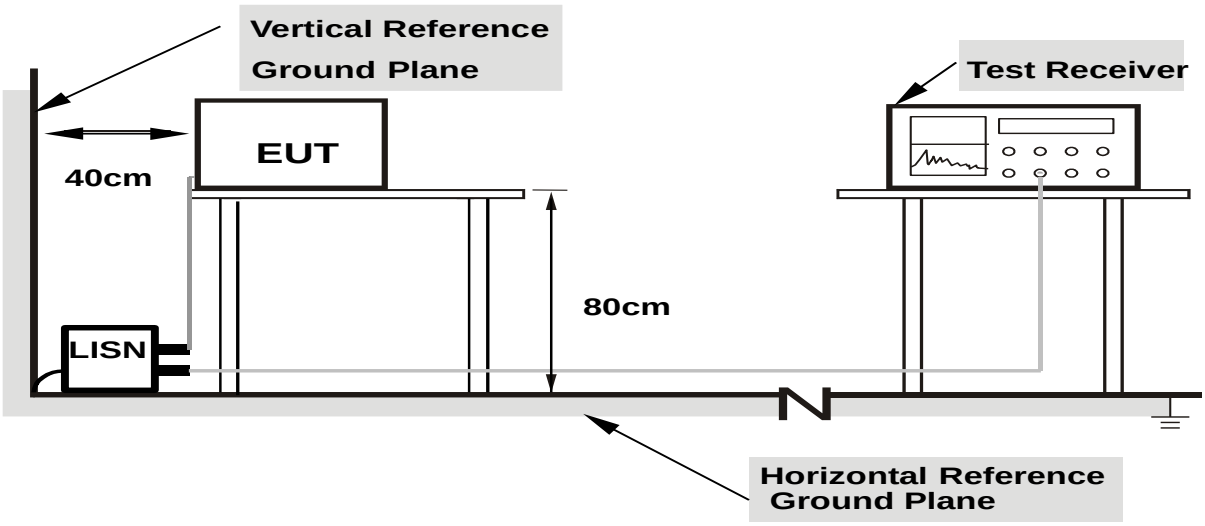
FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note

(1)The tighter limit applies at the band edges.

(2)The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.3.2 Test setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

5.3.3 Test procedure

a. EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b. The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

d. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

f. LISN at least 80 cm from nearest part of EUT chassis.

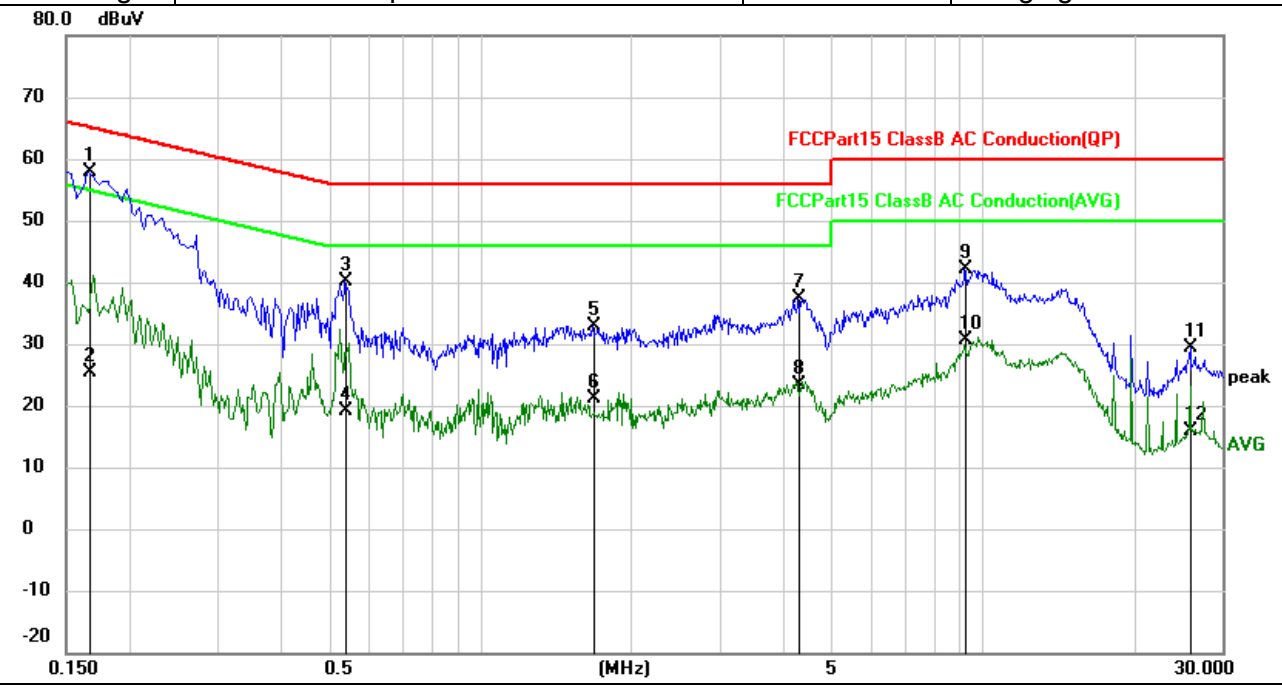
For the actual test configuration, please refer to the related Item –EUT Test Photos.

5.3.4 Test results

Note: All the mode has been tested for this test, the mode 11a CH36 is the worst mode. Just report the worst data.

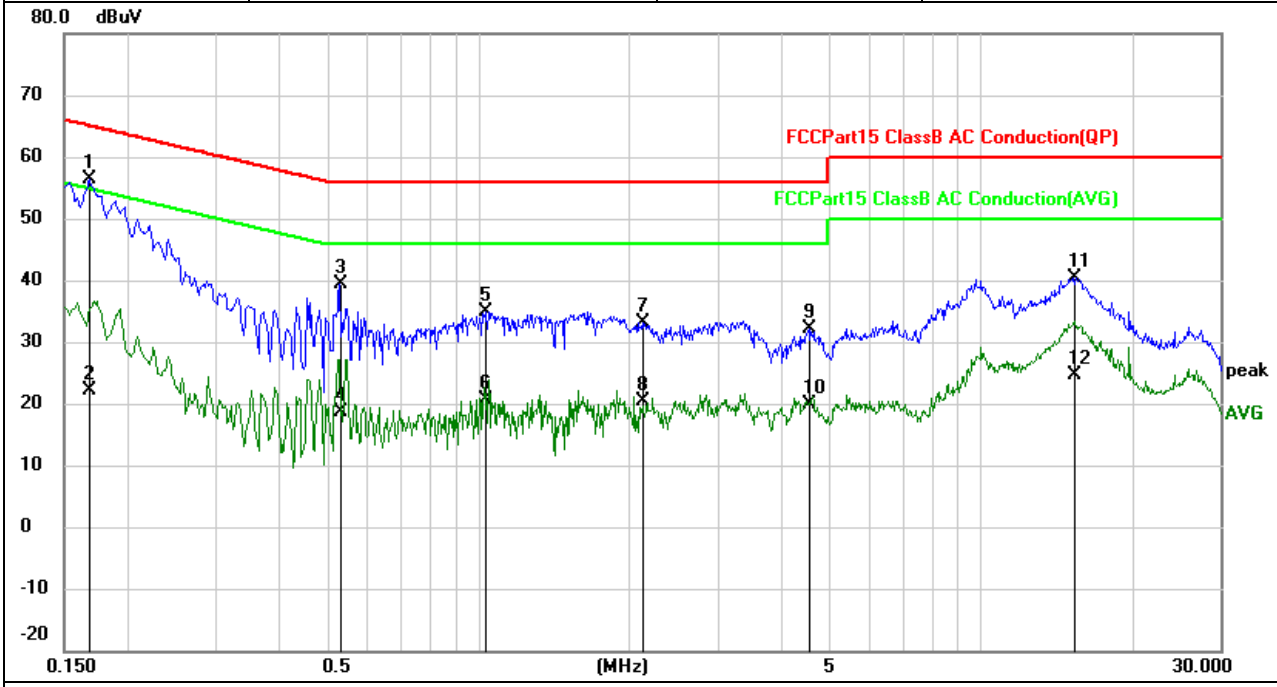
Note1: Emission Level =Reading Level + Factor, Margin= Emission Level- Limit, Factor = LISN modulus + Cable Loss

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010hPa	Phase:	L
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Test Mode:	Charging+TX



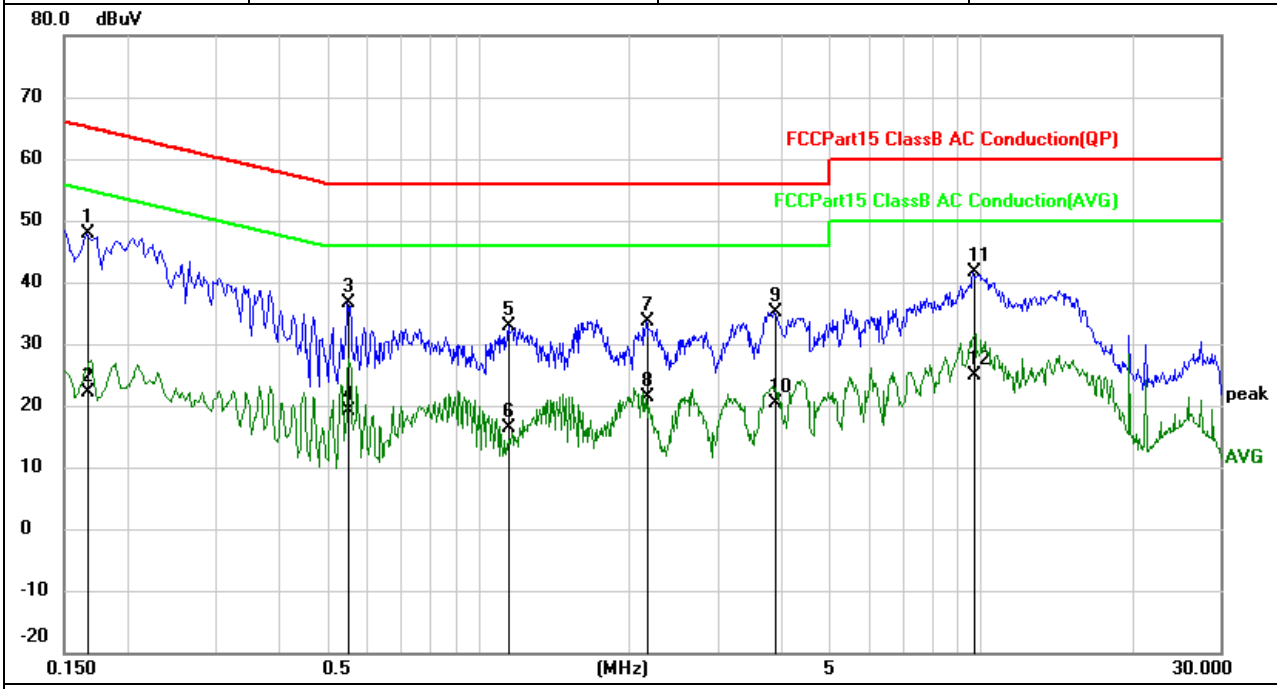
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1660	48.25	9.73	57.98	65.16	-7.18	QP
2		0.1660	15.58	9.73	25.31	55.16	-29.85	AVG
3		0.5380	30.21	9.92	40.13	56.00	-15.87	QP
4		0.5380	9.21	9.92	19.13	46.00	-26.87	AVG
5		1.6737	22.93	10.00	32.93	56.00	-23.07	QP
6		1.6737	11.08	10.00	21.08	46.00	-24.92	AVG
7		4.3059	27.37	10.05	37.42	56.00	-18.58	QP
8		4.3059	13.40	10.05	23.45	46.00	-22.55	AVG
9		9.2378	31.89	10.29	42.18	60.00	-17.82	QP
10		9.2378	20.35	10.29	30.64	50.00	-19.36	AVG
11		25.9100	19.10	10.37	29.47	60.00	-30.53	QP
12		25.9100	5.47	10.37	15.84	50.00	-34.16	AVG

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010hPa	Phase:	N
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Test Mode:	Charging+TX



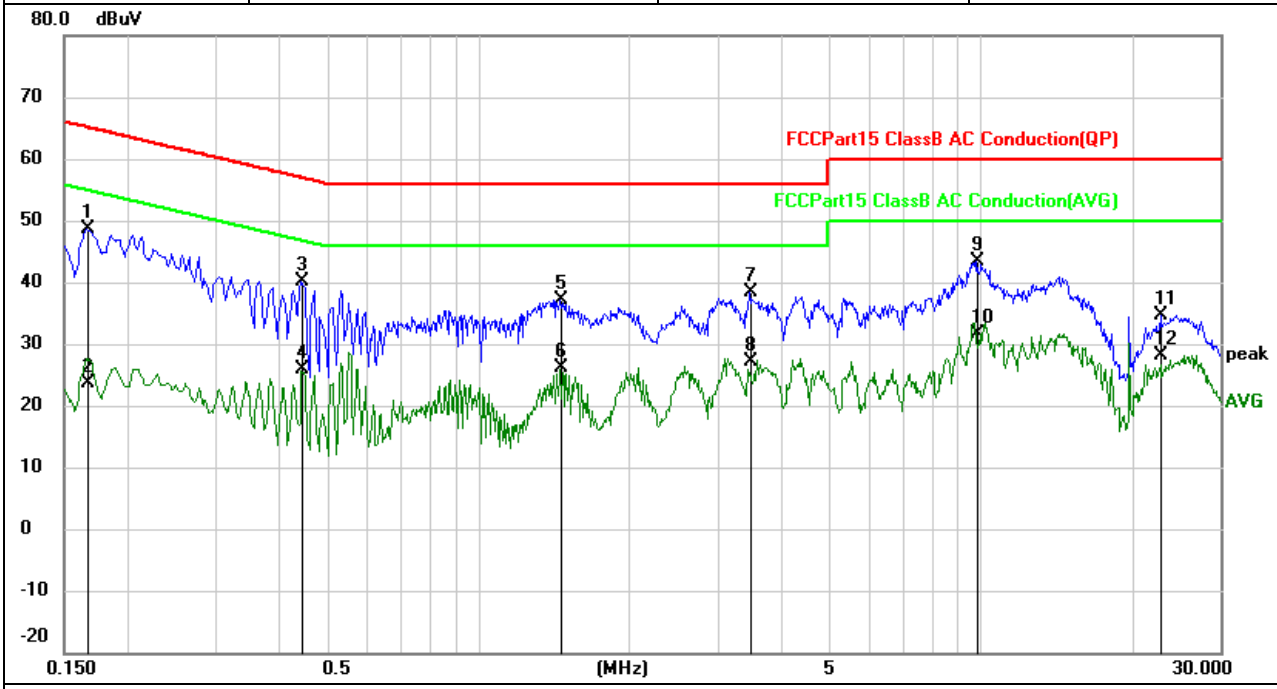
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1685	46.56	9.73	56.29	65.03	-8.74	QP
2		0.1685	12.50	9.73	22.23	55.03	-32.80	AVG
3		0.5299	29.55	9.92	39.47	56.00	-16.53	QP
4		0.5299	8.83	9.92	18.75	46.00	-27.25	AVG
5		1.0339	24.95	9.98	34.93	56.00	-21.07	QP
6		1.0339	10.60	9.98	20.58	46.00	-25.42	AVG
7		2.1300	23.06	10.01	33.07	56.00	-22.93	QP
8		2.1300	10.46	10.01	20.47	46.00	-25.53	AVG
9		4.5579	22.12	10.06	32.18	56.00	-23.82	QP
10		4.5579	9.89	10.06	19.95	46.00	-26.05	AVG
11		15.3739	30.12	10.26	40.38	60.00	-19.62	QP
12		15.3739	14.44	10.26	24.70	50.00	-25.30	AVG

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010hPa	Phase:	L
Test Voltage:	DC 5V from adapter AC 240V/60Hz	Test Mode:	Charging+TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1660	38.05	9.73	47.78	65.16	-17.38	QP
2		0.1660	12.35	9.73	22.08	55.16	-33.08	AVG
3		0.5500	26.58	9.93	36.51	56.00	-19.49	QP
4		0.5500	9.13	9.93	19.06	46.00	-26.94	AVG
5		1.1500	22.88	9.98	32.86	56.00	-23.14	QP
6		1.1500	6.36	9.98	16.34	46.00	-29.66	AVG
7		2.1579	23.50	10.01	33.51	56.00	-22.49	QP
8		2.1579	11.33	10.01	21.34	46.00	-24.66	AVG
9		3.8940	25.11	10.05	35.16	56.00	-20.84	QP
10		3.8940	10.34	10.05	20.39	46.00	-25.61	AVG
11		9.6938	31.20	10.31	41.51	60.00	-18.49	QP
12		9.6938	14.63	10.31	24.94	50.00	-25.06	AVG

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010hPa	Phase:	N
Test Voltage:	DC 5V from adapter AC 240V/60Hz	Test Mode:	Charging+TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1660	38.81	9.73	48.54	65.16	-16.62	QP
2		0.1660	14.02	9.73	23.75	55.16	-31.41	AVG
3		0.4460	30.27	9.88	40.15	56.95	-16.80	QP
4		0.4460	16.09	9.88	25.97	46.95	-20.98	AVG
5		1.4578	27.18	9.99	37.17	56.00	-18.83	QP
6		1.4578	16.06	9.99	26.05	46.00	-19.95	AVG
7		3.4780	28.23	10.04	38.27	56.00	-17.73	QP
8		3.4780	17.13	10.04	27.17	46.00	-18.83	AVG
9		9.8258	32.99	10.32	43.31	60.00	-16.69	QP
10		9.8258	21.25	10.32	31.57	50.00	-18.43	AVG
11		22.8260	24.35	10.29	34.64	60.00	-25.36	QP
12		22.8260	17.94	10.29	28.23	50.00	-21.77	AVG

5.4 26dB Emission Bandwidth and Occupied bandwidth

5.4.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.4.2 Test procedure

26d Emission bandwidth

Set RBW = approximately 1% of the emission bandwidth.

Set VBW ≥ 3*RBW

Detector = Peak.

Trace mode = Max hold.

Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

Set Span = 1.5 times to 5.0 times the OBW

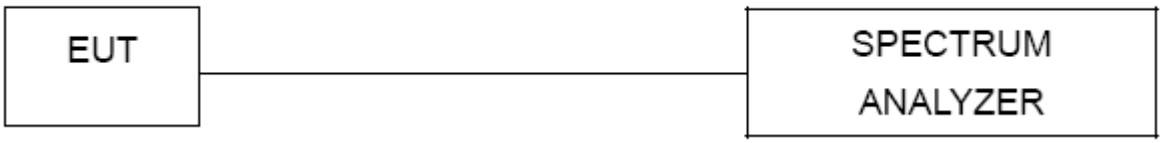
Set RBW = 1% to 5% of the OBW.

Set VBW ≥ 3*RBW, Detector = Peak.

Trace mode = Max hold.

Use the 99% power bandwidth function of the instrument.

5.4.3 Test setup



5.4.4 Test results

For U-NII-1

Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH36	5180	20.55	17.666	/	Pass
11a	CH40	5200	20.36	17.615	/	Pass
11a	CH48	5240	20.21	17.605	/	Pass
11n (HT20)	CH36	5180	20.21	17.604	/	Pass
11n (HT20)	CH40	5200	20.35	17.615	/	Pass
11n (HT20)	CH48	5240	20.20	17.612	/	Pass
11n (HT40)	CH38	5190	40.59	36.005	/	Pass
11n (HT40)	CH46	5230	39.73	35.890	/	Pass

Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11ac (HT20)	CH36	5180	20.31	17.625	/	Pass
11ac (HT20)	CH40	5200	20.44	17.615	/	Pass
11ac (HT20)	CH48	5240	20.26	17.621	/	Pass
11ac (HT40)	CH38	5190	39.92	35.955	/	Pass
11ac (HT40)	CH46	5230	39.71	35.863	/	Pass
11ac (HT80)	CH42	5210	80.76	75.282	/	Pass

For U-NII-3

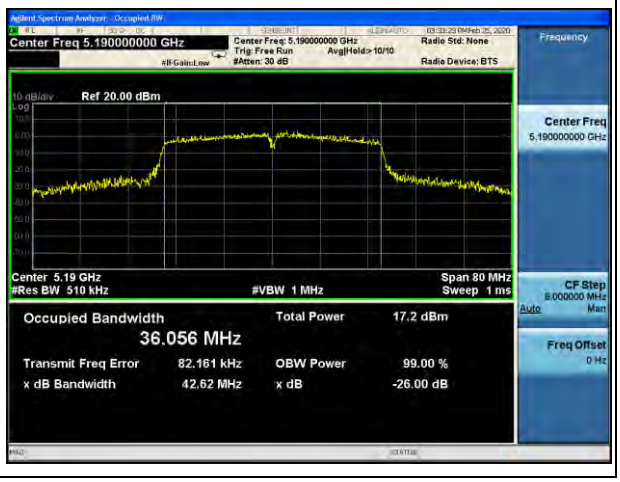
Channel	Test Channel	Frequency(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH149	5745	16.995	/	Pass
11a	CH157	5785	16.898	/	Pass
11a	CH165	5825	16.923	/	Pass
11n (HT20)	CH149	5745	17.987	/	Pass
11n (HT20)	CH157	5785	17.929	/	Pass
11n (HT20)	CH165	5825	17.931	/	Pass
11n (HT40)	CH151	5755	35.875	/	Pass
11n (HT40)	CH159	5795	36.006	/	Pass

Channel	Test Channel	Frequency(MHz)	99% bandwidth	Limit(kHz)	Result
11ac (HT20)	CH149	5745	17.901	/	Pass
11ac (HT20)	CH157	5785	17.851	/	Pass
11ac (HT20)	CH165	5825	17.905	/	Pass
11ac (HT40)	CH151	5755	36.004	/	Pass
11ac (HT40)	CH159	5795	35.886	/	Pass
11ac (HT80)	CH155	5775	75.372	/	Pass

Test plots:

For U-NII-1

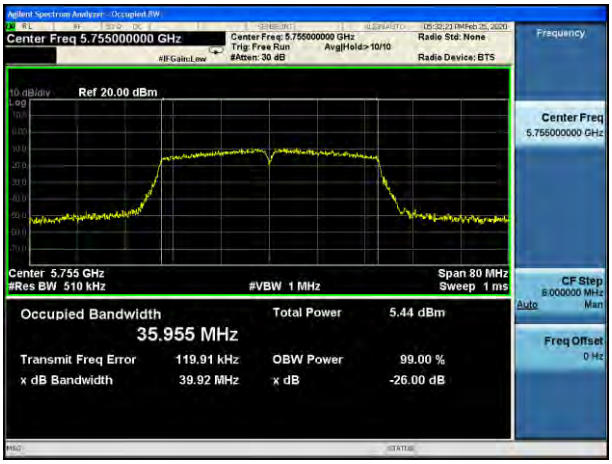
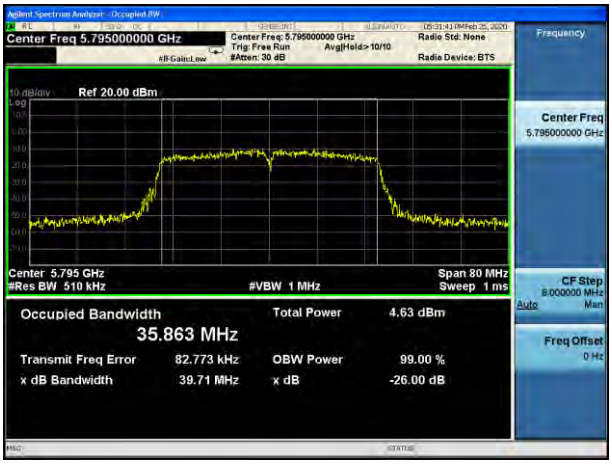
11a CH36	11a CH40
	
11a CH48	**11n (HT20) CH36**
	
11n (HT20) CH40	**11n (HT20) CH48**
	

11n (HT40) CH38	11n (HT40) CH46
	
11ac (HT20) CH36	**11ac (HT20) CH40**
	
11ac (HT20) CH48	**11ac (HT40) CH38**
	

11ac (HT40) CH46	11ac (HT80) CH42
	

For U-NII-3

11a CH149	11a CH157
	
11a CH165	**11n(HT20) CH149**
	

11n(HT20) CH157	11n(HT20) CH165
	
11n (HT40) CH151	**11n (HT40) CH159**
	
11ac (HT20) CH149	**11ac (HT20) CH157**
	

11ac(HT20) CH165	11ac(HT40) CH151
	
11ac(HT40) CH159	**11ac (HT80) CH155**
	

5.5 6dB Bandwidth

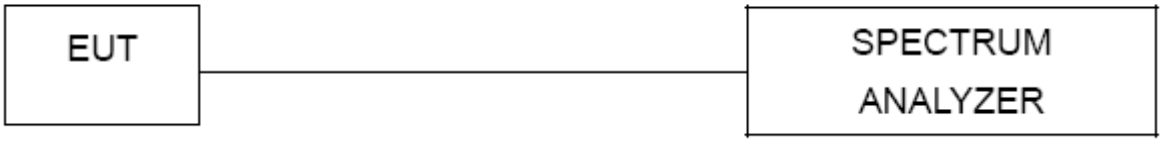
5.5.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.5.2 Test procedure

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

5.5.3 Test setup



5.5.4 Test results

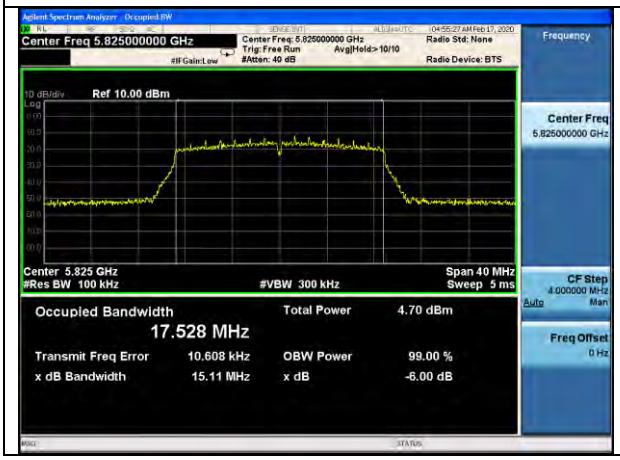
For U-NII-3

Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11a	CH149	5745	15.11	500	Pass
11a	CH157	5785	15.12	500	Pass
11a	CH165	5825	15.11	500	Pass
11n (HT20)	CH149	5745	17.29	500	Pass
11n (HT20)	CH157	5785	17.37	500	Pass
11n (HT20)	CH165	5825	17.16	500	Pass
11n (HT40)	CH151	5755	35.62	500	Pass
11n (HT40)	CH159	5795	35.50	500	Pass

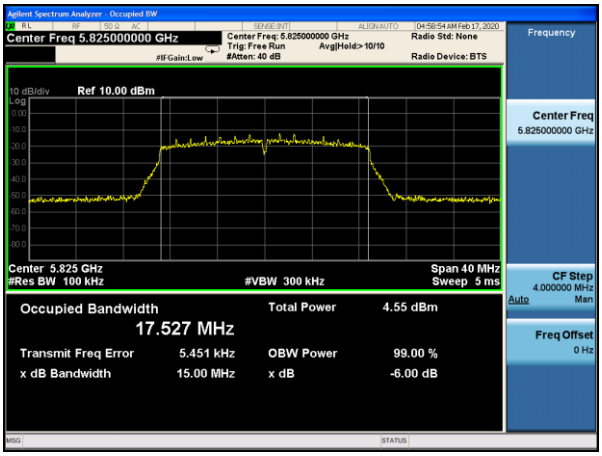
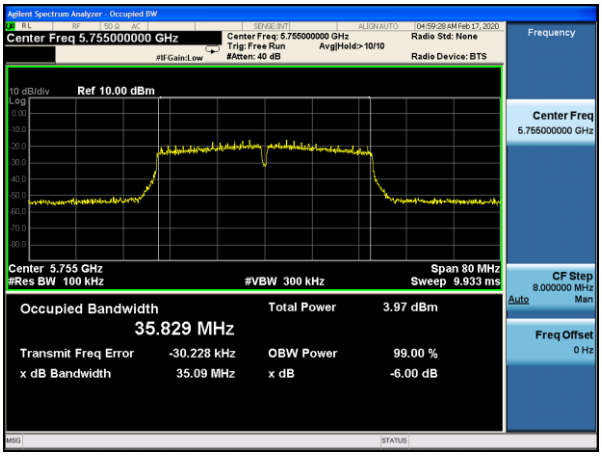
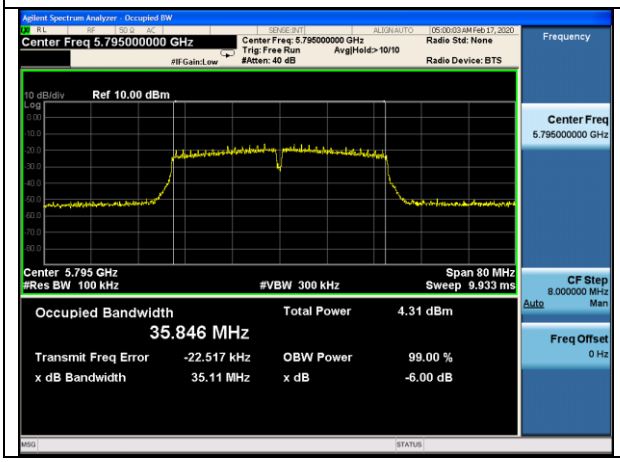
Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11ac (HT20)	CH149	5745	15.12	500	Pass
11ac (HT20)	CH157	5785	15.06	500	Pass
11ac (HT20)	CH165	5825	15.00	500	Pass
11ac (HT40)	CH151	5755	35.09	500	Pass
11ac (HT40)	CH159	5795	35.11	500	Pass
11ac (HT80)	CH155	5775	75.22	500	Pass

Test plots:

For U-NII-3

11a CH149	11a CH157
	
11a CH165	**11n(HT20) CH149**
	

11n(HT20) CH157	11n(HT20) CH165
	
11n (HT40) CH151	**11n (HT40) CH159**
	
11ac (HT20) CH149	**11ac (HT20) CH157**
	

11ac(HT20) CH165	11ac(HT40) CH151
	
11ac(HT40) CH159	**11ac(HT80) CH155**
	

5.6 Radiated spurious emission

5.6.1 Radiated Emission Limits

(1) For transmitters operating in the 5.15-5.25 GHz band:
All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band:
All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band:
All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Frequency Range	RBW	VBW	Measurement
30MHz-1GHz	1MHz	3MHz	Peak
Above 1GHz	1MHz	10Hz[Note1]	Average
	1MHz	>1/T [Note2]	Average
Note1	When duty cycle is no less than 98%		
Note2	When duty cycle is less than 98%		

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.6.2 Test procedure

The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the floor on a support that is RF transparent for the frequencies of interest. Final measurements for the EUT require a measurement antenna height scan of 1 m to 4 m.

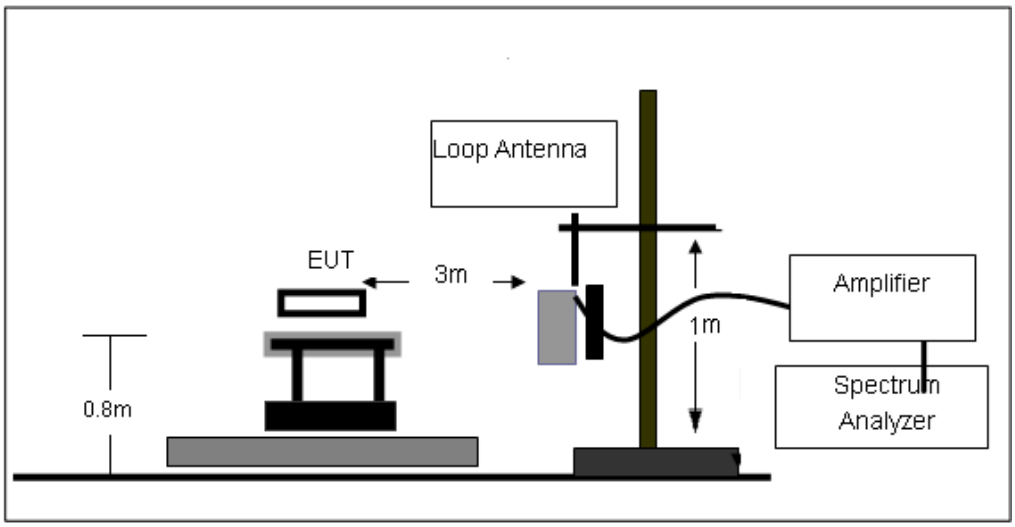
The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
For the actual test configuration, please refer to the related Item –EUT Test Photos.

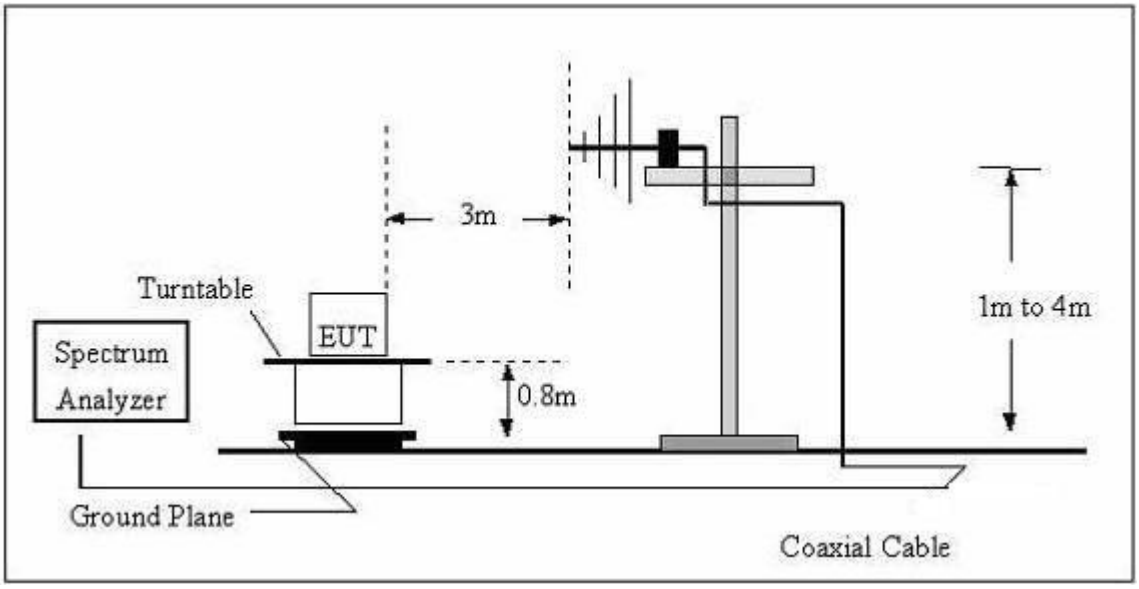
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.6.3 Test setup

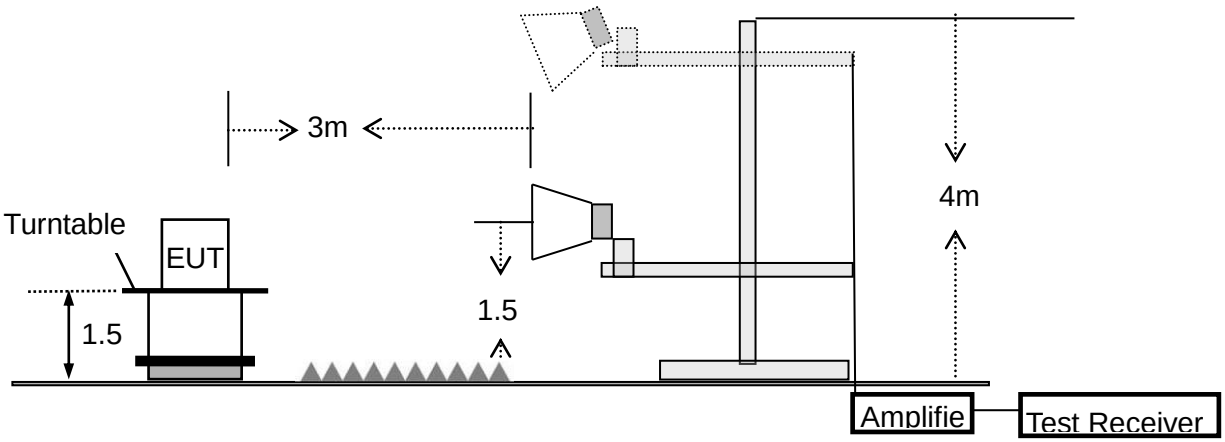
（A）Radiated Emission test-up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



5.6.4 Test results

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX	Polarization:	--

Below 30MHz

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note1:The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Note2:Distance extrapolation factor =40 log (specific distance/test distance)(dB);Limit line = specific limits (dBuV) + distance extrapolation factor.

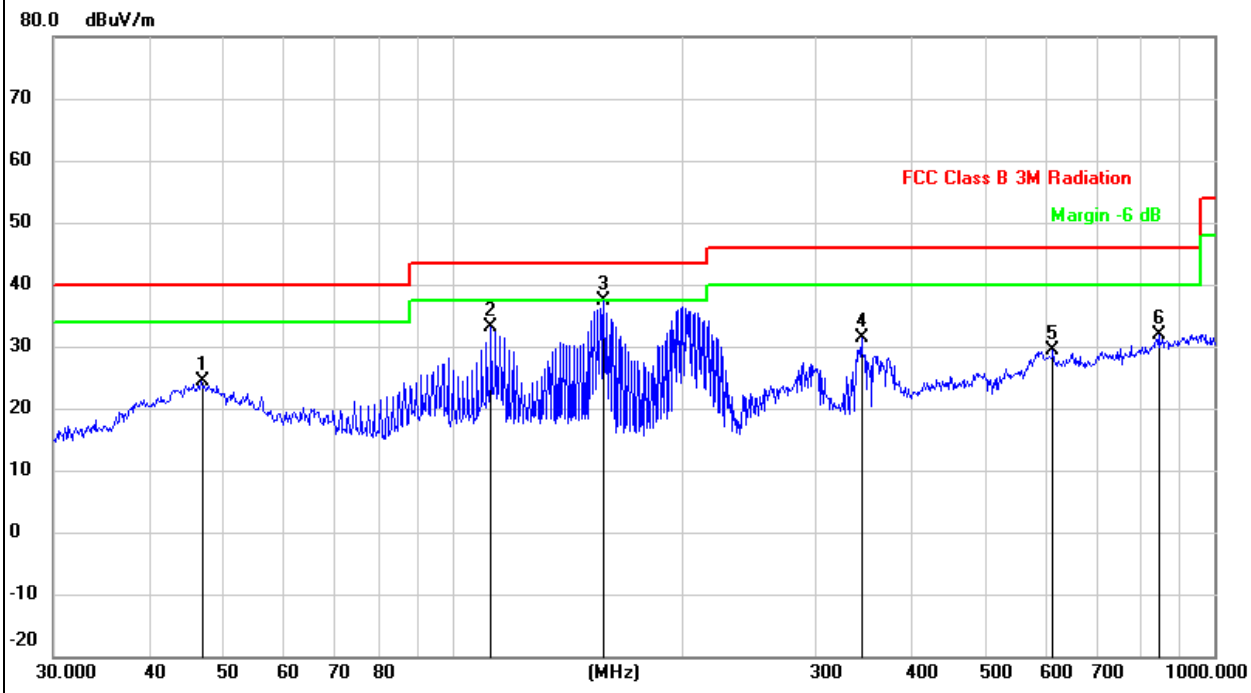
Between 30MHz – 1GHz

Note: All the mode has been tested for this test, the mode 11a CH36 is the worst mode. Just report the worst data.

Note 1: Emission Level = Meter Reading + Factor, Margin= Emission Level- Limit, Factor = Antenna Factor + Cable Loss – Pre-amplifier.

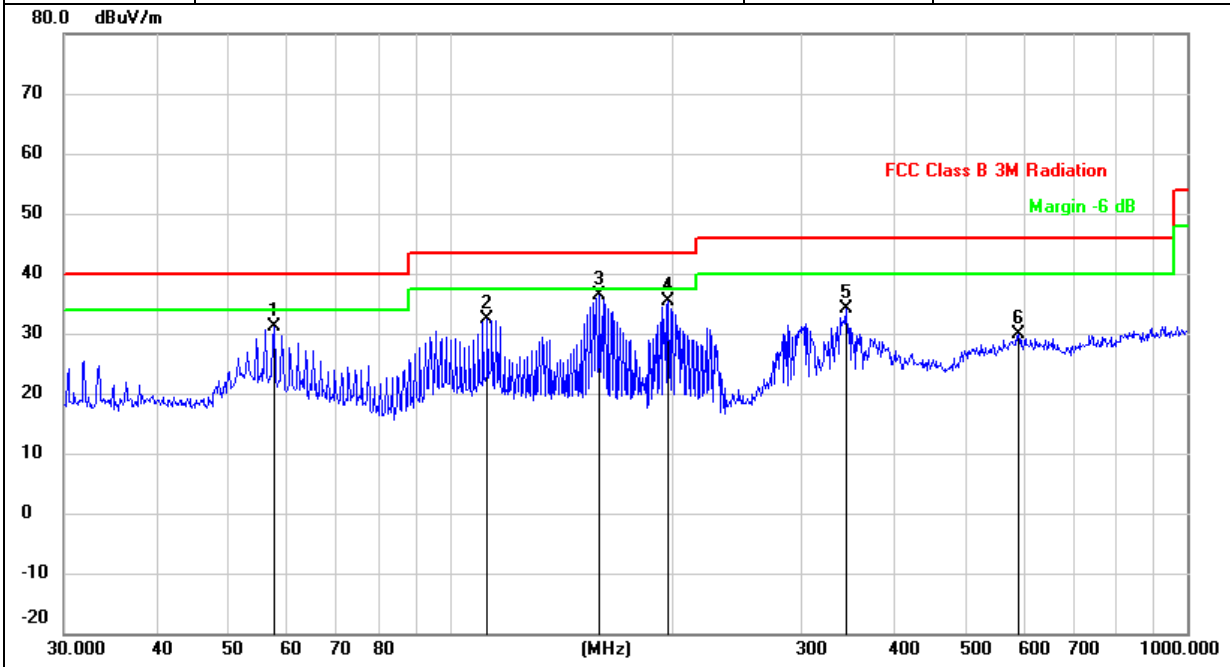
Note 2: The peak value is less than the AV value, AV value is not required Factor added by measurement software automatically.

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010 hPa	Phase:	H
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Mode:	Charging+TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		46.8303	30.71	-6.29	24.42	40.00	-15.58	QP
2		112.5241	40.89	-7.81	33.08	43.50	-10.42	QP
3	*	158.1123	47.35	-9.98	37.37	43.50	-6.13	QP
4		344.3854	34.41	-3.09	31.32	46.00	-14.68	QP
5		614.2142	28.87	0.55	29.42	46.00	-16.58	QP
6		845.0878	28.45	3.33	31.78	46.00	-14.22	QP

EUT:	High Resolution Streaming Digital Audio Player	Model Name:	AU-D1
Pressure:	1010 hPa	Phase:	V
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Mode:	Charging+TX



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	Detector
1		57.7961	38.60	-7.55	31.05	40.00	-8.95	QP
2		112.5242	40.23	-7.81	32.42	43.50	-11.08	QP
3	*	159.7844	46.35	-9.94	36.41	43.50	-7.09	QP
4		197.8926	42.47	-6.97	35.50	43.50	-8.00	QP
5		344.3854	37.31	-3.09	34.22	46.00	-11.78	QP
6		590.9737	29.36	0.50	29.86	46.00	-16.14	QP

1G-40GHz:

Note1: Emission Level = Meter Reading + Factor, Margin= Emission Level- Limit, Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Note2: The peak value is less than the AV value, AV value is not required Factor added by measurement software automatically.

Note3: The spurious emission of 25GHz – 40GHz band which the margin is lower more than 20dB, So that it is not reported in this test report.

Note4: All modes have been tested and the report only shows the worst case scenario. The worst mode is U-NII-1 802.11a CH36 / U-NII-3 CH149.

For U-NII-1

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4534.205	54.94	5.94	35.40	44.00	52.28	74.00	-21.72	Pk
Vertical	4534.205	45.00	5.94	35.40	44.00	42.34	54.00	-11.66	AV
Vertical	10370.154	63.40	8.46	39.75	44.50	67.11	68.20	-6.89	Pk
Vertical	15540.126	55.62	10.12	38.80	44.10	60.44	74.00	-13.56	Pk
Vertical	15540.126	42.48	10.12	38.80	42.70	48.70	54.00	-5.30	AV
Horizontal	4534.242	59.21	5.94	35.18	44.00	56.33	74.00	-17.67	Pk
Horizontal	4534.242	43.57	5.94	35.18	44.00	40.69	54.00	-13.31	AV
Horizontal	10370.121	61.54	8.46	38.71	44.50	64.21	68.20	-9.79	Pk
Horizontal	15540.115	58.20	10.12	38.38	44.10	62.60	68.20	-11.40	Pk
Horizontal	15540.115	42.74	10.12	38.38	44.10	47.14	54.00	-6.86	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4592.142	58.33	6.48	36.35	44.05	57.11	74.00	-16.89	Pk
Vertical	4592.142	42.22	6.48	36.35	44.05	41.00	54.00	-13.00	AV
Vertical	10401.205	60.47	8.47	37.88	44.51	62.31	68.20	-11.69	Pk
Vertical	15600.176	57.88	10.12	38.8	44.10	62.70	68.20	-11.30	Pk
Vertical	15600.176	42.59	10.12	38.8	42.70	48.81	54.00	-5.19	AV
Horizontal	4592.313	59.96	6.48	36.37	44.05	58.76	74.00	-15.24	Pk
Horizontal	4592.313	43.23	6.48	36.37	44.05	42.03	54.00	-11.97	AV
Horizontal	10400.215	62.40	8.47	38.64	44.50	65.01	68.20	-8.99	Pk
Horizontal	15600.175	58.07	10.12	38.38	44.10	62.47	68.20	-11.53	Pk
Horizontal	15600.175	43.64	10.12	38.38	44.10	48.04	54.00	-5.96	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.216	59.25	7.10	37.24	43.50	60.09	74.00	-13.91	Pk
Vertical	4739.216	46.63	7.10	37.24	43.50	47.47	54.00	-6.53	AV
Vertical	10480.274	62.10	8.46	37.68	44.50	63.74	68.20	-10.26	Pk
Vertical	15720.189	58.17	10.12	38.8	44.10	62.99	68.20	-11.01	Pk
Vertical	15720.189	43.74	10.12	38.8	42.70	49.96	54.00	-4.04	AV

Horizontal	4739.116	60.12	7.10	37.24	43.50	60.96	74.00	-13.04	Pk
Horizontal	4739.116	44.84	7.10	37.24	43.50	45.68	54.00	-8.32	AV
Horizontal	10481.402	58.64	8.46	38.57	44.50	61.17	68.20	-12.83	Pk
Horizontal	15720.263	57.88	10.12	38.38	44.10	62.28	68.20	-11.72	Pk
Horizontal	15720.263	42.66	10.12	38.38	44.10	47.06	54.00	-6.94	AV

Note: Both horizontal and vertical antenna polarities were tested and only the worst case (horizontal) emissions were reported.

For U-NII-3

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4679.136	59.21	5.94	35.40	44.00	56.55	74.00	-17.45	Pk
Vertical	4679.136	46.87	5.94	35.40	44.00	44.21	54.00	-9.79	AV
Vertical	11490.052	60.67	8.46	39.75	44.50	64.38	74.00	-9.62	Pk
Vertical	11490.052	46.71	8.46	39.75	44.50	50.42	54.00	-3.58	AV
Vertical	17235.261	57.31	10.12	38.80	44.10	62.13	68.20	-11.87	Pk
Horizontal	4679.135	58.13	5.94	35.18	44.00	55.25	74.00	-18.75	Pk
Horizontal	4679.135	44.40	5.94	35.18	44.00	41.52	54.00	-12.48	AV
Horizontal	11490.302	60.32	8.46	38.71	44.50	62.99	74.00	-11.01	Pk
Horizontal	11490.302	45.87	8.46	38.71	44.50	48.54	54.00	-5.46	AV
Horizontal	17235.246	60.47	10.12	38.38	44.10	64.87	68.20	-9.13	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.208	60.27	6.48	36.35	44.05	59.05	74.00	-14.95	Pk
Vertical	4592.208	43.96	6.48	36.35	44.05	42.74	54.00	-11.26	AV
Vertical	11570.136	59.87	8.47	37.88	44.51	61.71	74.00	-12.29	Pk
Vertical	11570.136	44.65	8.47	37.88	44.51	46.49	54.00	-7.51	AV
Vertical	17355.249	57.43	10.12	38.8	44.10	62.25	68.20	-11.75	Pk
Horizontal	4592.138	61.43	6.48	36.37	44.05	60.23	74.00	-13.77	Pk
Horizontal	4592.138	43.67	6.48	36.37	44.05	42.47	54.00	-11.53	AV
Horizontal	11570.256	61.45	8.47	38.64	44.50	64.06	74.00	-9.94	Pk
Horizontal	11570.256	47.47	8.47	38.64	44.50	50.08	54.00	-3.92	AV
Horizontal	17355.127	61.13	10.12	38.38	44.10	65.53	68.20	-8.47	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5039.156	59.71	7.10	37.24	43.50	60.55	74.00	-13.45	Pk
Vertical	5039.156	47.26	7.10	37.24	43.50	48.10	54.00	-5.90	AV
Vertical	11650.131	56.30	8.46	37.68	44.50	57.94	74.00	-16.06	Pk
Vertical	11650.131	43.46	8.46	37.68	44.50	45.10	54.00	-8.90	AV
Vertical	17475.289	59.96	10.12	38.8	44.10	64.78	68.20	-9.22	Pk
Horizontal	5039.316	67.00	7.10	37.24	43.50	67.84	74.00	-6.16	Pk
Horizontal	5039.316	42.54	7.10	37.24	43.50	43.38	54.00	-10.62	AV
Horizontal	11650.203	58.10	8.46	38.57	44.50	60.63	74.00	-13.37	Pk
Horizontal	11650.203	44.75	8.46	38.57	44.50	47.28	54.00	-6.72	AV
Horizontal	17475.152	60.82	10.12	38.38	44.10	65.22	68.20	-8.78	Pk

Band edge - radiated

For U-NII-1

For 802.11a mode: (CH36 5180MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	65.46	8.69	29.40	42.59	60.96	74.00	-13.04	Pk
Horizontal	5350.00	62.40	9.37	30.41	43.25	58.93	74.00	-15.07	Pk
Horizontal	5460.00	60.03	8.46	30.75	43.96	55.28	74.00	-18.72	Pk
Vertical	5150.00	67.39	9.21	29.40	42.59	63.41	74.00	-10.59	Pk
Vertical	5350.00	59.27	9.12	30.41	43.25	55.55	74.00	-18.45	Pk
Vertical	5460.00	62.31	8.46	30.75	43.96	57.56	74.00	-16.44	Pk

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
Horizontal	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	45.60	8.69	29.40	42.59	41.10	54.00	-12.90	AV
Horizontal	5350.00	49.41	8.46	30.41	43.25	45.03	54.00	-8.97	AV
Horizontal	5460.00	48.58	9.36	30.75	43.96	44.73	54.00	-9.27	AV
Vertical	5150.00	48.12	9.21	29.40	42.59	44.14	54.00	-9.86	AV
Vertical	5350.00	49.69	9.12	30.41	43.25	45.97	54.00	-8.03	AV
Vertical	5460.00	43.74	8.46	30.75	43.96	38.99	54.00	-15.01	AV

For 802.11n-(HT20) mode: (CH36 5180MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	65.39	8.69	29.40	42.59	60.89	74.00	-13.11	Pk
Horizontal	5350.00	62.40	9.37	30.41	43.25	58.93	74.00	-15.07	Pk
Horizontal	5460.00	60.10	8.46	30.75	43.96	55.35	74.00	-18.65	Pk
Vertical	5150.00	67.86	9.21	29.40	42.59	63.88	74.00	-10.12	Pk
Vertical	5350.00	60.01	9.12	30.41	43.25	56.29	74.00	-17.71	Pk
Vertical	5460.00	62.65	8.46	30.75	43.96	57.90	74.00	-16.10	Pk

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
Horizontal	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	45.76	8.69	29.40	42.59	41.26	54.00	-12.74	AV
Horizontal	5350.00	46.36	8.46	30.41	43.25	41.98	54.00	-12.02	AV
Horizontal	5460.00	46.67	9.36	30.75	43.96	42.82	54.00	-11.18	AV
Vertical	5150.00	48.05	9.21	29.40	42.59	44.07	54.00	-9.93	AV
Vertical	5350.00	46.14	9.12	30.41	43.25	42.42	54.00	-11.58	AV
Vertical	5460.00	43.49	8.46	30.75	43.96	38.74	54.00	-15.26	AV

For 802.11n-(HT40) mode: (CH38 5190MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	65.45	8.69	29.40	42.59	60.95	74.00	-13.05	Pk
Horizontal	5350.00	62.42	9.37	30.41	43.25	58.95	74.00	-15.05	Pk
Horizontal	5460.00	60.21	8.46	30.75	43.96	55.46	74.00	-18.54	Pk
Vertical	5150.00	67.75	9.21	29.40	42.59	63.77	74.00	-10.23	Pk
Vertical	5350.00	59.97	9.12	30.41	43.25	56.25	74.00	-17.75	Pk
Vertical	5460.00	62.87	8.46	30.75	43.96	58.12	74.00	-15.88	Pk

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	45.77	8.69	29.40	42.59	41.27	54.00	-12.73	AV
Horizontal	5350.00	46.08	8.46	30.41	43.25	41.70	54.00	-12.30	AV
Horizontal	5460.00	46.49	9.36	30.75	43.96	42.64	54.00	-11.36	AV
Vertical	5150.00	47.55	9.21	29.40	42.59	43.57	54.00	-10.43	AV
Vertical	5350.00	47.03	9.12	30.41	43.25	43.31	54.00	-10.69	AV
Vertical	5460.00	43.71	8.46	30.75	43.96	38.96	54.00	-15.04	AV

For 802.11n-(ac80) mode: (CH42 5210MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	65.71	8.69	29.40	42.59	61.21	74.00	-12.79	Pk
Horizontal	5350.00	62.39	9.37	30.41	43.25	58.92	74.00	-15.08	Pk
Horizontal	5460.00	60.12	8.46	30.75	43.96	55.37	74.00	-18.63	Pk
Vertical	5150.00	67.75	9.21	29.40	42.59	63.77	74.00	-10.23	Pk
Vertical	5350.00	59.94	9.12	30.41	43.25	56.22	74.00	-17.78	Pk
Vertical	5460.00	62.97	8.46	30.75	43.96	58.22	74.00	-15.78	Pk

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150.00	45.59	8.69	29.40	42.59	41.09	54.00	-12.91	AV
Horizontal	5350.00	46.50	8.46	30.41	43.25	42.12	54.00	-11.88	AV
Horizontal	5460.00	46.60	9.36	30.75	43.96	42.75	54.00	-11.25	AV
Vertical	5150.00	47.62	9.21	29.40	42.59	43.64	54.00	-10.36	AV
Vertical	5350.00	46.62	9.12	30.41	43.25	42.90	54.00	-11.10	AV
Vertical	5460.00	44.01	8.46	30.75	43.96	39.26	54.00	-14.74	AV

For U-NII-3

For 802.11a mode: (CH149 5745MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5650.00	56.04	8.78	31.45	46.58	49.69	68.20	-18.51	Pk
Horizontal	5700.00	66.32	9.35	32.16	47.71	60.12	85.20	-25.08	Pk
Horizontal	5720.00	72.56	9.37	32.67	47.79	66.81	110.80	-43.99	Pk
Horizontal	5725.00	80.50	9.46	32.94	47.96	74.94	122.20	-47.26	Pk
Vertical	5650.00	67.49	8.78	31.45	46.58	61.14	68.20	-7.06	Pk
Vertical	5700.00	57.47	9.35	32.16	47.71	51.27	85.20	-33.93	Pk
Vertical	5720.00	79.51	9.37	32.67	47.79	73.76	110.80	-37.04	Pk
Vertical	5725.00	83.01	9.46	32.94	47.96	77.45	122.20	-44.75	Pk

For 802.11n-(HT20) mode: (CH149 5745MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5650.00	55.50	8.78	31.45	46.58	49.15	68.20	-19.05	Pk
Horizontal	5700.00	66.36	9.35	32.16	47.71	60.16	85.20	-25.04	Pk
Horizontal	5720.00	72.69	9.37	32.67	47.79	66.94	110.80	-43.86	Pk
Horizontal	5725.00	80.49	9.46	32.94	47.96	74.93	122.20	-47.27	Pk
Vertical	5650.00	68.04	8.78	31.45	46.58	61.69	68.20	-6.51	Pk
Vertical	5700.00	57.45	9.35	32.16	47.71	51.25	85.20	-33.95	Pk
Vertical	5720.00	79.83	9.37	32.67	47.79	74.08	110.80	-36.72	Pk
Vertical	5725.00	83.00	9.46	32.94	47.96	77.44	122.20	-44.76	Pk

For 802.11n-(HT40) mode: (CH151 5755MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5650.00	55.50	8.78	31.45	46.58	49.15	68.20	-19.05	Pk
Horizontal	5700.00	65.78	9.35	32.16	47.71	59.58	85.20	-25.62	Pk
Horizontal	5720.00	72.78	9.37	32.67	47.79	67.03	110.80	-43.77	Pk
Horizontal	5725.00	80.27	9.46	32.94	47.96	74.71	122.20	-47.49	Pk
Vertical	5650.00	58.11	8.78	31.45	46.58	51.76	68.20	-16.44	Pk
Vertical	5700.00	57.41	9.35	32.16	47.71	51.21	85.20	-33.99	Pk
Vertical	5720.00	79.52	9.37	32.67	47.79	73.77	110.80	-37.03	Pk
Vertical	5725.00	82.49	9.46	32.94	47.96	76.93	122.20	-45.27	Pk

For 802.11n-(ac80) mode: (CH155 5775MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
/	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5650.00	56.19	8.78	31.45	46.58	49.84	68.20	-18.36	Pk
Horizontal	5700.00	66.16	9.35	32.16	47.71	59.96	85.20	-25.24	Pk
Horizontal	5720.00	72.98	9.37	32.67	47.79	67.23	110.80	-43.57	Pk
Horizontal	5725.00	80.03	9.46	32.94	47.96	74.47	122.20	-47.73	Pk
Vertical	5650.00	57.52	8.78	31.45	46.58	51.17	68.20	-17.03	Pk
Vertical	5700.00	57.25	9.35	32.16	47.71	51.05	85.20	-34.15	Pk
Vertical	5720.00	79.47	9.37	32.67	47.79	73.72	110.80	-37.08	Pk
Vertical	5725.00	82.75	9.46	32.94	47.96	77.19	122.20	-45.01	Pk

5.7 Power spectral density

5.7.1 Limit

For the band 5.15-5.25 GHz

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. 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.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz 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.

For the band 5.725-5.85 GHz

The maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

5.7.2 Test procedure

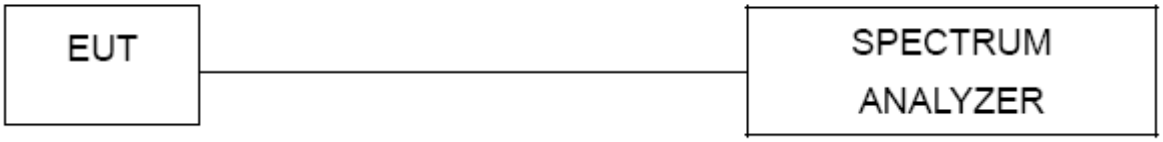
For U-NII-1

1. Set analyzer center frequency to NII channel center frequency.
2. Set the RBW ≥ 1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

For U-NII-3

1. Set analyzer center frequency to NII channel center frequency.
2. Set the RBW ≥ 510kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

5.7.3 Test setup



5.7.4 Test results

For U-NII-1

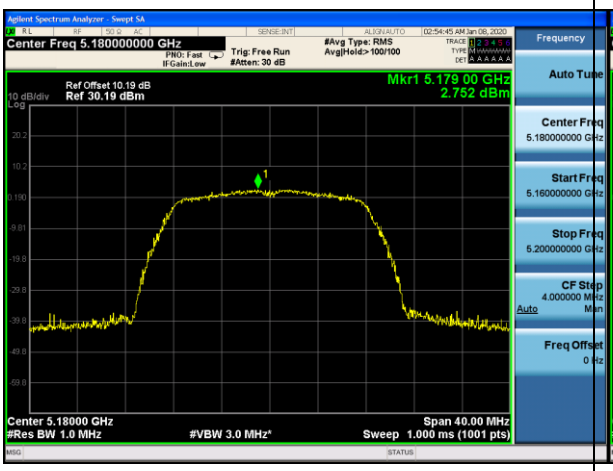
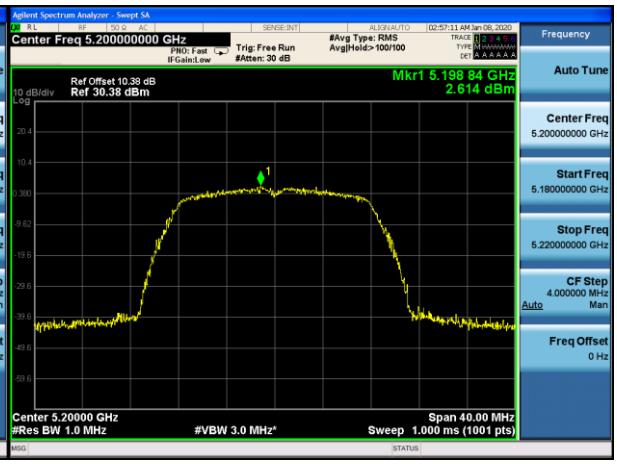
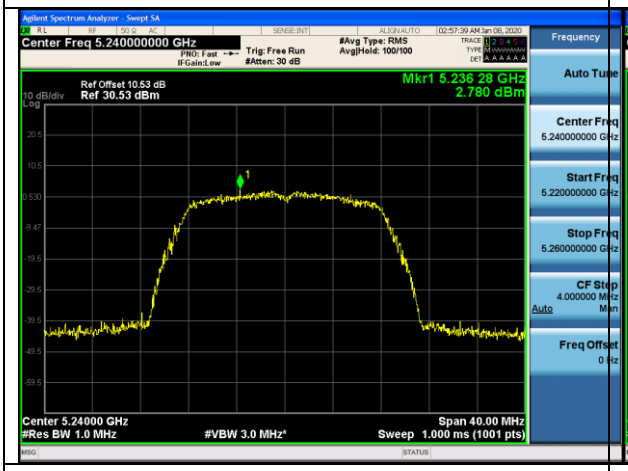
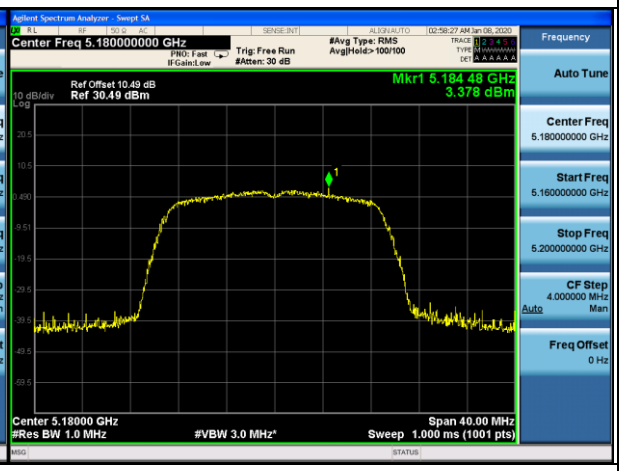
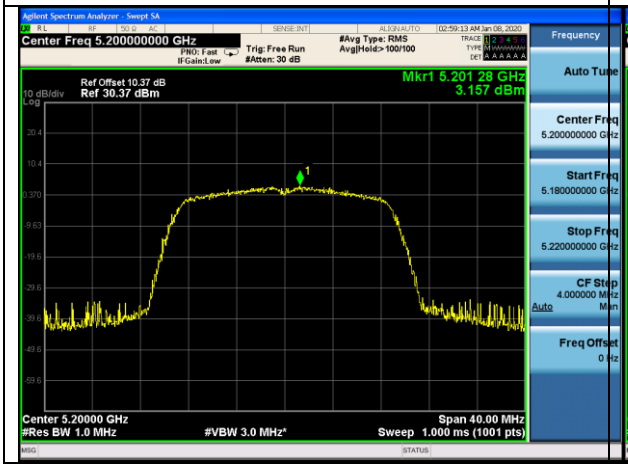
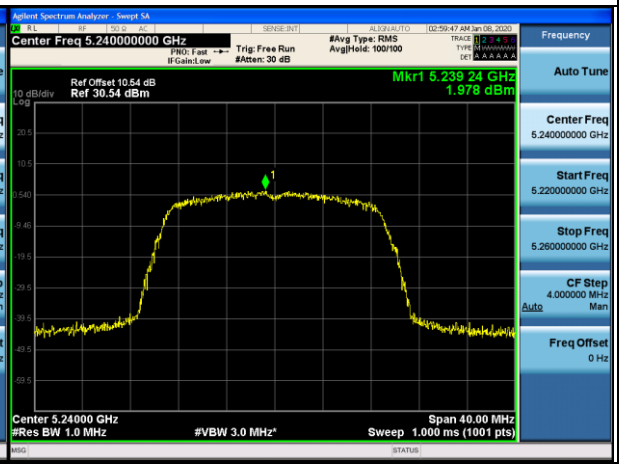
Mode	Channel	Frequency(MHz)	Measurement PSD (dBm/MHz)	Limit (dBm/MHz)	Result
11a	CH36	5180	2.752	11	Pass
11a	CH44	5220	2.614	11	Pass
11a	CH48	5240	2.780	11	Pass
11n(HT20)	CH36	5180	3.378	11	Pass
11n(HT20)	CH44	5220	3.157	11	Pass
11n(HT20)	CH48	5240	1.978	11	Pass
11n(HT40)	CH38	5190	1.584	11	Pass
11n(HT40)	CH46	5230	2.196	11	Pass
11ac(HT20)	CH36	5180	1.848	11	Pass
11ac (HT20)	CH40	5200	2.145	11	Pass
11ac (HT20)	CH48	5240	1.970	11	Pass
11ac (HT40)	CH38	5190	2.295	11	Pass
11ac (HT40)	CH46	5230	1.962	11	Pass
11ac (HT80)	CH42	5210	-1.351	11	Pass

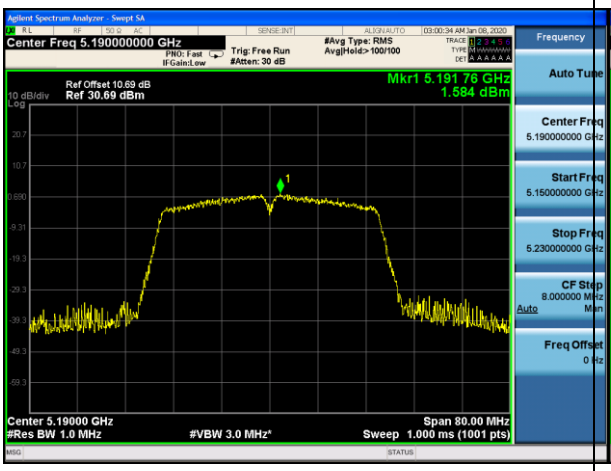
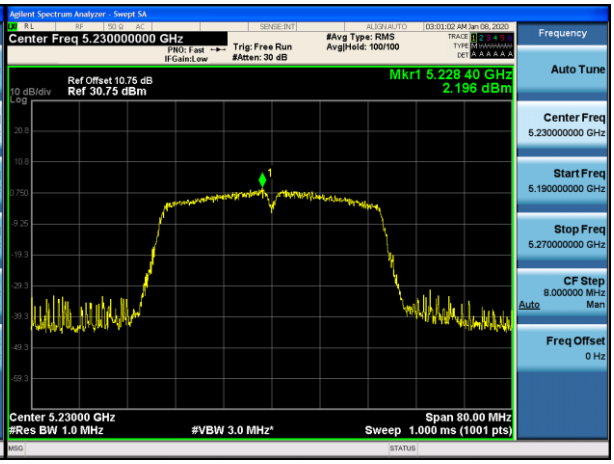
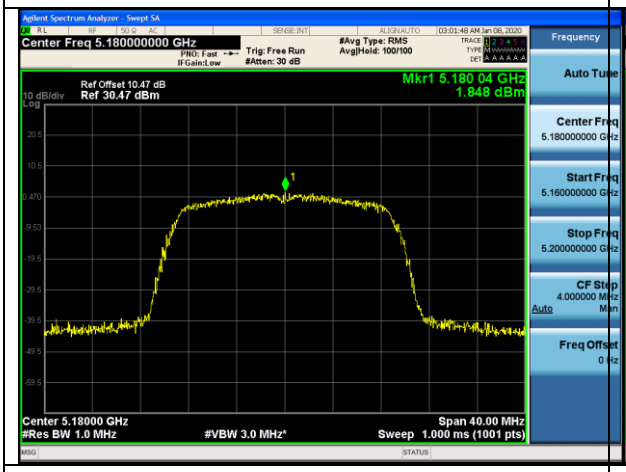
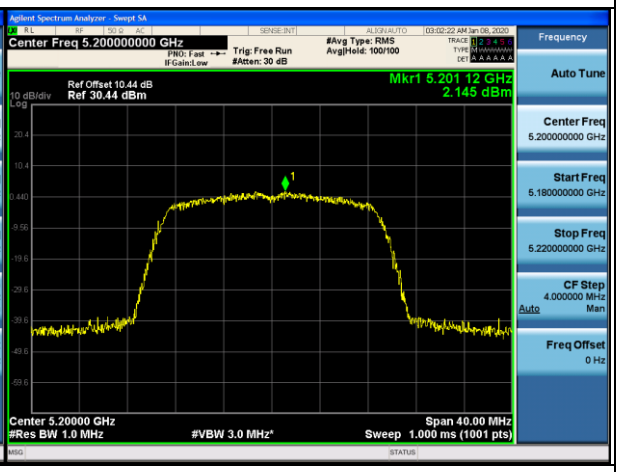
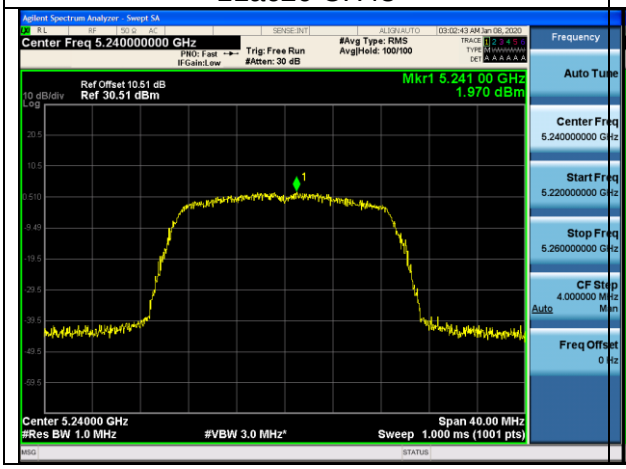
For U-NII-3

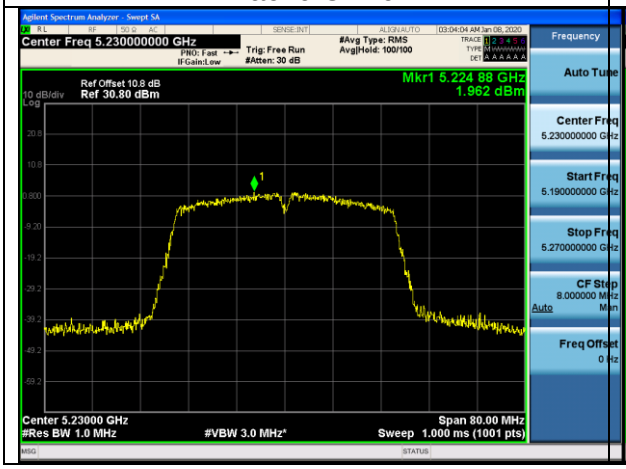
Mode	Channel	Frequency(MHz)	PSD (dBm/510kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
11a	CH149	5745	0.428	0.342	30	Pass
11a	CH157	5785	1.204	1.118	30	Pass
11a	CH165	5825	1.668	1.582	30	Pass
11n20	CH149	5745	-0.192	-0.278	30	Pass
11n20	CH157	5785	0.267	0.181	30	Pass
11n20	CH165	5825	0.714	0.628	30	Pass
11n40	CH151	5755	-2.163	-2.249	30	Pass
11n40	CH159	5795	-2.652	-2.738	30	Pass
11ac20	CH149	5745	0.067	-0.019	30	Pass
11ac20	CH157	5785	0.142	0.056	30	Pass
11ac20	CH165	5825	1.229	1.143	30	Pass
11ac40	CH151	5755	-2.392	-2.478	30	Pass
11ac40	CH159	5795	-2.282	-2.368	30	Pass
11ac80	CH155	5775	-4.21	0.342	30	Pass
Note: If the measurement is X dBm/510kHz, thus X dBm/510kHz = $(10^{X/10})*(500 / 510)$ mW/500kHz =10*lgo10{$(10^{X/10})*(500 / 510)$ } dBm/500kHz						

Test plots

For U-NII-1

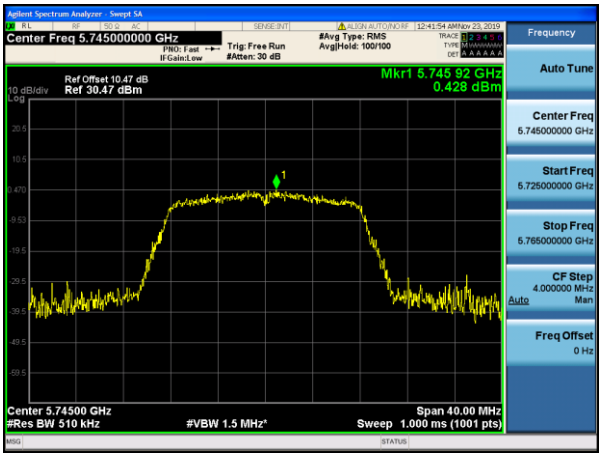
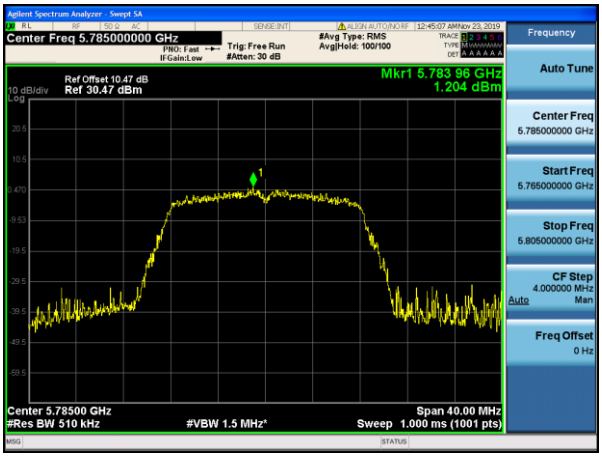
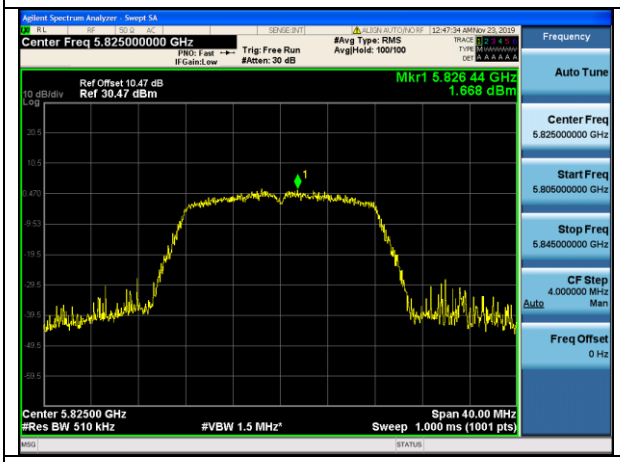
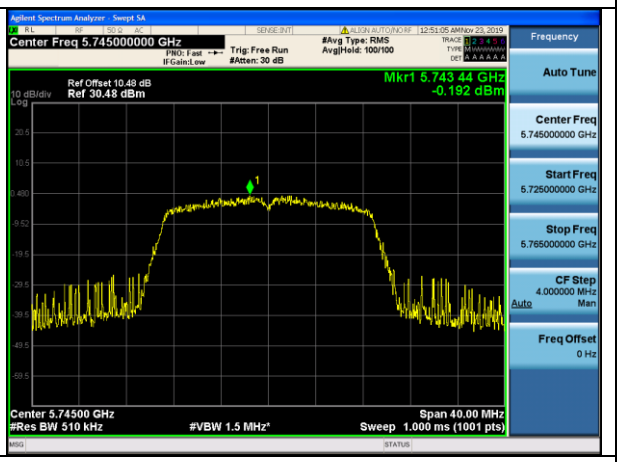
11a CH36	11a CH44
	
11a CH48	11n20 CH36
	
11n20 CH44	11n20 CH48
	

11n40 CH38	11n40 CH46
	
11ac20 CH36	**11ac20 CH40**
	
11ac20 CH48	**11ac40 CH38**
	

11ac40 CH46	11ac80 CH42
	

Test plots

For U-NII-3

11a CH149	11a CH157
	
11a CH165	**11n20 CH149**
	
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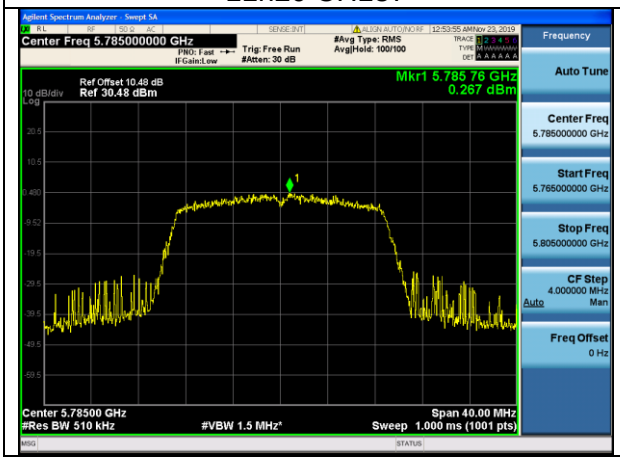	

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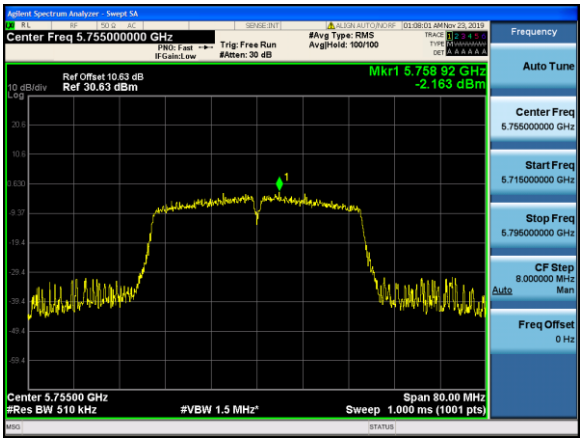	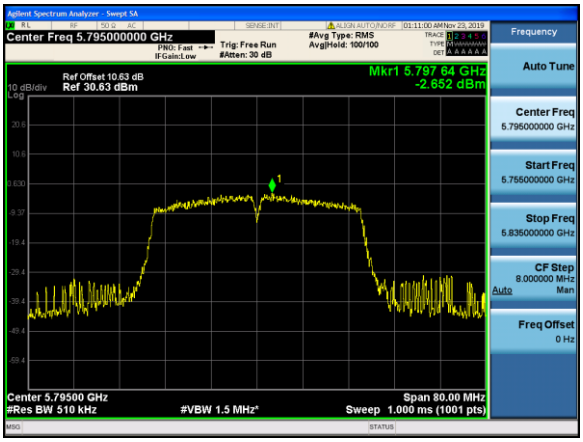
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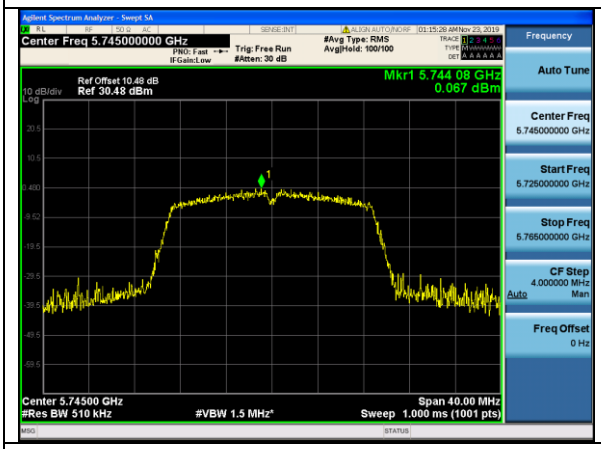	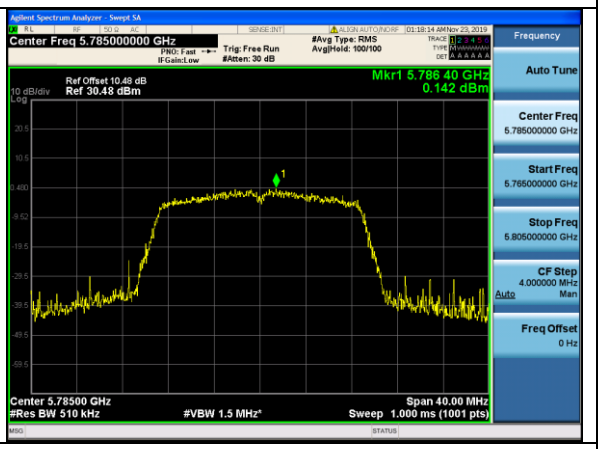
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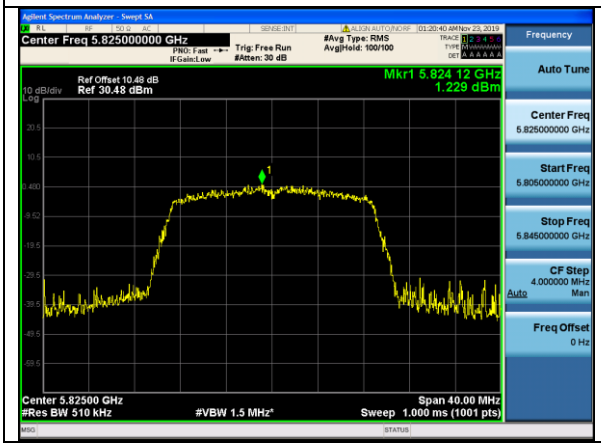	

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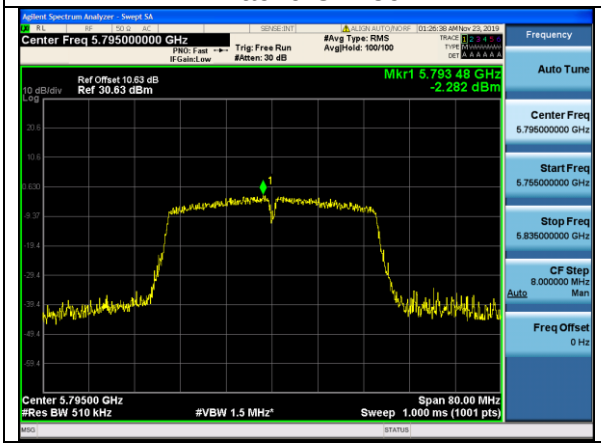
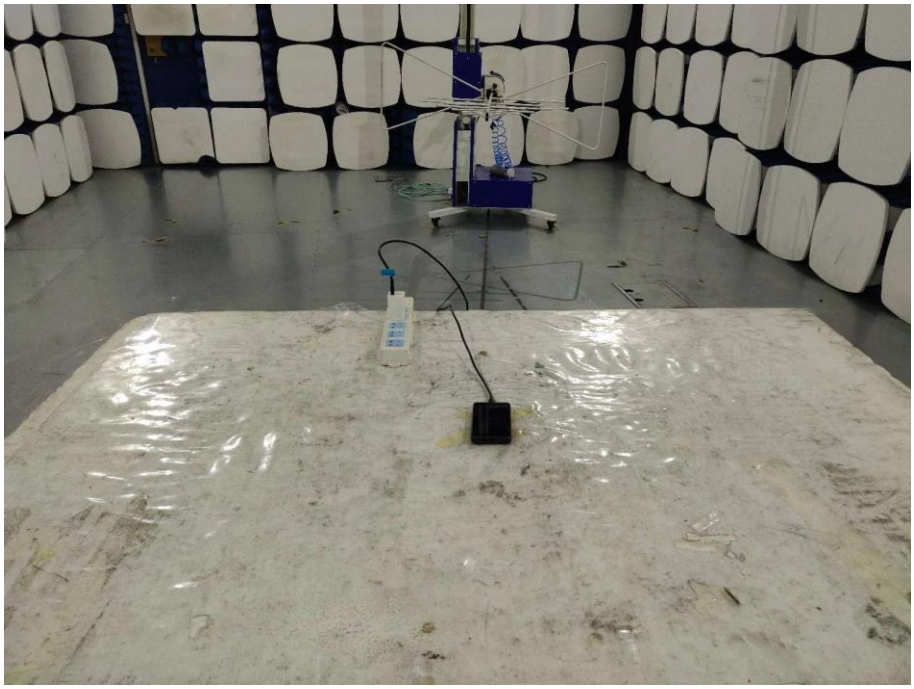
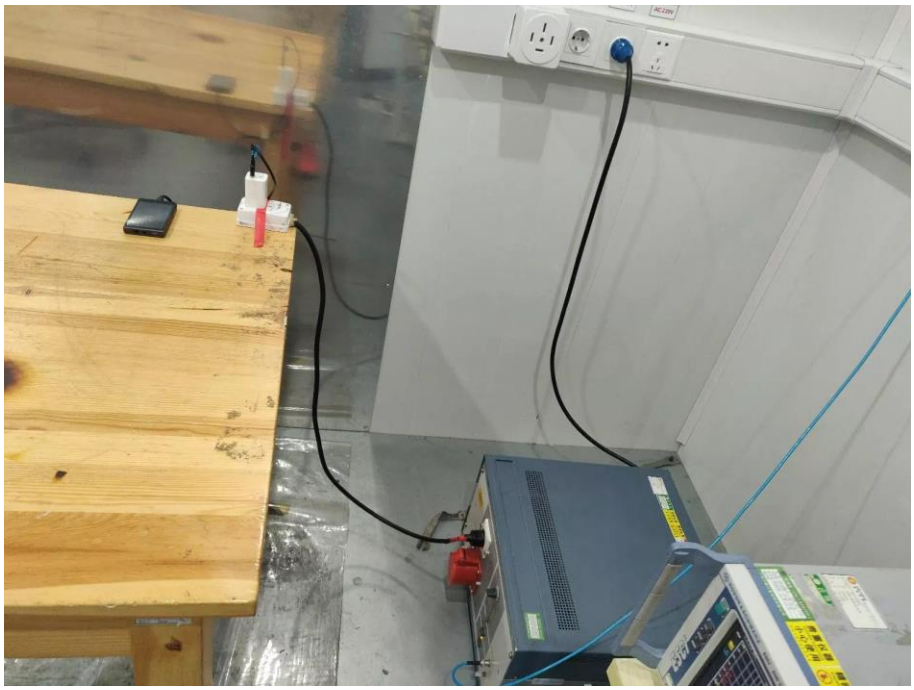
	

Photographs of the Test Setup

Radiated emission



Conducted emission


Photographs of the EUT

See the APPENDIX 1: EUT PHOTO in the report No.: MTi19111505-4E1-1.

----END OF REPORT----