

VARIANT RADIO TEST REPORT

(FCC Part 15 Subpart E / IC RSS-247)

Applicant:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States

Manufacturer:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States
Product:	Mobile Computer
Brand Name:	Honeywell
Model Name:	CT45-L0N
FCC ID:	HD5-CT45L0N
Date of tests:	2021-10-25 to 2022-01-18

The tests have been carried out according to the requirements of the following standard:

☒ **Part 15 Subpart E §15. 407 / IC RSS-247 issue 2**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Jan. 18, 2022	 Date: Jan. 18, 2022

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Report Revise Record

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RFBGDJ-W7L-P21060011-6	Original release	Jul. 14, 2021
W7L-211129W004RF11	Based on the original report RFBGDJ-W7L-P21060011-6 changing components.	Jan. 18, 2022

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Summary of Test Result

FCC Rule	IC Rule	Description	Limit	Result	Remark
2.1049 15.403(i)	RSS-247 Section 6	26dB & 99% Bandwidth	-	(See Note 2)	U-NII-1 U-NII-2A U-NII-2C
			>500kHz	(See Note 2)	U-NII-3
15.407(a)	RSS-247 Section 6	Maximum Conducted Output Power	≤24dBm	Compliance (See Note 1))	U-NII-1 U-NII-2A U-NII-2C
			≤30dBm	Compliance (See Note 1)	U-NII-3
15.407(a)	RSS-247 Section 6	Power Spectral Density	≤11dBm/MHz	(See Note 2)	U-NII-1 U-NII-2A U-NII-2C
			≤30dBm/500kHz	(See Note 2)	U-NII-3
15.407(b)	RSS-247 Section 6	Unwanted Emissions	15.407(b) 15.209(a) RSS-247(6.2) RSS-GEN(8.9 Table 4, Table 5 and Table 6	Compliance (See Note 1)	-
15.207	RSS-Gen 8.8	AC Conducted Emission	15.207(a) RSS-Gen(8.8 Table 3)	(See Note 2)	Under limit 17.16 dB at 0.497 MHz
15.407(g)	RSS-Gen 6.11	Frequency Stability	Within Operation Band	(See Note 2)	-
15.407(c)	RSS-247 6.4(a)	Automatically Discontinue Transmission	Discontinue Transmission	(See Note 2)	-
15.203 & 15.407(a)	RSS-Gen 6.7 RSS-Gen 8.3	Antenna Requirement	N/A	(See Note 2)	-

Note:

1. Per the change notice provide by manufactory, the difference is changing components, all the change no



Test Report No.: W7L-211129W004RF11

effect any RF parameter, Therefore only verify the power and radiated emission worse case. The report only show the verify test data.

2. Please refer to original report RFBGDJ-W7L-P21060011-6



1 General Description

1.1 Applicant

Honeywell International Inc
Honeywell Safety and Productivity Solutions
9680 Old Baires Road, Fort Mill, SC 29707 United States

1.2 Manufacturer

Honeywell International Inc
Honeywell Safety and Productivity Solutions
9680 Old Baires Road, Fort Mill, SC 29707 United States

1.3 General Description Of EUT

Product	Mobile Computer
Model No.	CT45-L0N
Additional No.	N/A
Difference Description	N/A
HW Version	V1.0
SW Version	OS.11.001
Power Supply	3.85Vdc for EUT
Modulation Technology	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Type	802.11a/n/ac : OFDM
Operating Frequency	U-NII-1: 5150~5250MHz U-NII-2A: 5250~5350MHz U-NII-2C: 5470~5725MHz U-NII-3: 5725~5850MHz
Max. Output Power	802.11a : 19.16 dBm (0.0824 W) 802.11n HT20 SISO: 18.06 dBm (0.0640 W) 802.11n HT40 SISO: 18.51 dBm (0.0710 W) 802.11ac VHT20 SISO : 18.17 dBm (0.0656 W) 802.11ac VHT40 SISO: 17.64 dBm (0.0581 W) 802.11ac VHT80 SISO: 16.04 dBm (0.0402 W)
Antenna Type	LDS type Antenna
Antenna Gain (dBi)	1.1dBi Gain at U-NII-1 1.3dBi Gain at U-NII-2A 1.5dBi Gain at U-NII-2C 1.3dBi Gain at U-NII-3
I/O Ports	Refer to user's manual



NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

1.4 Modification of EUT

No modifications are made to the EUT during all test items.

1.5 Applicable Standards and lab information

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

FCC Part 15 Subpart E §15.407

ANSI C63.10-2013

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

IC RSS-247 Issue 2

IC RSS-Gen Issue 5

Remark:

1. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
2. The FCC Site Registration No. is 525120; The Designation No. is CN1171.
3. The IC test Site Registration No. is 21771-1; The CAB Identifier No. is CN0007



2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency and Channel

U-NII-1

Channel	Frequency	Channel	Frequency
36	5180 MHz	46	5230 MHz
38	5190 MHz	48	5240 MHz
40	5200 MHz		
42	5210 MHz		

U-NII-2A

Channel	Frequency	Channel	Frequency
52	5260 MHz	62	5310 MHz
54	5270 MHz	64	5320 MHz
56	5280 MHz		
58	5290 MHz		

U-NII-2C

Channel	Frequency	Channel	Frequency
100	5500 MHz	134	5670 MHz
102	5510 MHz	138	5690 MHz
106	5530 MHz	140	5700 MHz
110	5550 MHz	142	5710 MHz
116	5580 MHz	144	5720 MHz
122	5610 MHz		

TDWR

Channel	Frequency	Channel	Frequency
118	5590 MHz	124	5620 MHz
120	5600 MHz	126	5630 MHz
122	5610 MHz	128	5640 MHz

U-NII-3

Channel	Frequency	Channel	Frequency
149	5745 MHz	159	5795 MHz
151	5755 MHz	165	5825 MHz
155	5775 MHz		
157	5785 MHz		



2.2 Test Mode

Based on the baseline scan, the worst - case data rates were:

802.11a mode: 6 Mbps

802.11n HT20 mode: MCS0

802.11n HT40 mode: MCS0

802.11ac VHT20 mode: MCS0

802.11ac VHT40 mode: MCS0

802.11ac VHT80 mode: MCS0

2.2.1 Antenna Port Conducted Measurement

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-1	Mode 1: CH36 Mode 2: CH40 Mode 3: CH48	Mode 1: CH36 Mode 2: CH40 Mode 3: CH48	Mode 1: CH38 Mode 2: CH46 Mode 3: -	Mode 1: CH42 Mode 2: - Mode 3: -

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-2A	Mode 1: CH52 Mode 2: CH56 Mode 3: CH64	Mode 1: CH52 Mode 2: CH56 Mode 3: CH64	Mode 1: CH54 Mode 2: CH62 Mode 3: -	Mode 1: CH58 Mode 2: - Mode 3: -

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-2C	Mode 1: CH100 Mode 2: CH116 Mode 3: CH140 Mode 4: CH144	Mode 1: CH100 Mode 2: CH116 Mode 3: CH140 Mode 4: CH144	Mode 1: CH102 Mode 2: CH110 Mode 3: CH134 Mode 4: CH142	Mode 1: CH106 Mode 2: CH138 Mode 3: -

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-3	Mode 1: CH149 Mode 2: CH157 Mode 3: CH165	Mode 1: CH149 Mode 2: CH157 Mode 3: CH165	Mode 1: CH151 Mode 2: CH159	Mode 1: CH155 Mode 2: - Mode 3: -

2.2.2 Radiated Emission Test (Below 1GHz)

Radiated Test Cases	802.11n HT40
	Mode 1: CH62

Note : 1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type. It was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

2. Following channel(s) was (were) selected for the final test as listed above

2.2.3 Radiated Bandedge and Radiated Emission Test (Above 1GHz)

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20 SISO	802.11n HT40/ 802.11ac VHT40 SISO	802.11ac VHT80 SISO
U-NII-1 & U-NII-2A	Mode 1: CH36 Mode 2: CH48 Mode 3: CH64	Mode 1: CH36 Mode 2: CH48 Mode 3: CH64	Mode 1: CH38 Mode 2: CH46 Mode 3: CH62	Mode 1: CH42 Mode 2: CH58

Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-2C	Mode 1: CH100 Mode 2: CH116 Mode 3: CH140 Mode 4: CH144	Mode 1: CH100 Mode 2: CH116 Mode 3: CH140 Mode 4: CH144	Mode 1: CH102 Mode 2: CH110 Mode 3: CH134 Mode 4: CH142	Mode 1: CH106 Mode 2: CH122 Mode 3: CH138



Summary table of Test Cases				
Test Item	Modulation			
	802.11 a	802.11n HT20/ 802.11ac VHT20	802.11n HT40/ 802.11ac VHT40	802.11ac VHT80
U-NII-3	Mode 1: CH149 Mode 2: CH157 Mode 3: CH165	Mode 1: CH149 Mode 2: CH157 Mode 3: CH165	Mode 1: CH151 Mode 2: CH159	Mode 1: CH155 Mode 2: - Mode 3: -

- Note :
1. The power under SISO is greater than the power under SISO, so the radiated spurious test under SISO
 2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type. It was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.
 3. Following channel(s) was (were) selected for the final test as listed above
 4. For frequency above 18GHz, the measured value is much lower than the limit, therefore, it is not reflected in the report.

2.2.4 Power Line Conducted Emission Test:

AC Conducted Emission	Mode 1 : RLAN Linking + Earphone + Adapter
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2.3 Support Equipment

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	NETGARE	R7800	PY315100319	N/A	unshielded AC I/P cable1.2 m
2.	Notebook	Lenovo	E470C	FCC sDoC	N/A	shielded cable DC O/P 1.8 m unshielded AC I/P cable1.2 m
3.	Earphone	Honeywell	PTE-300N	FCC sDoC	N/A	N/A
4.	Adapter	Honeywell	ADS-12B-06 05010E	FCC sDoC	N/A	N/A

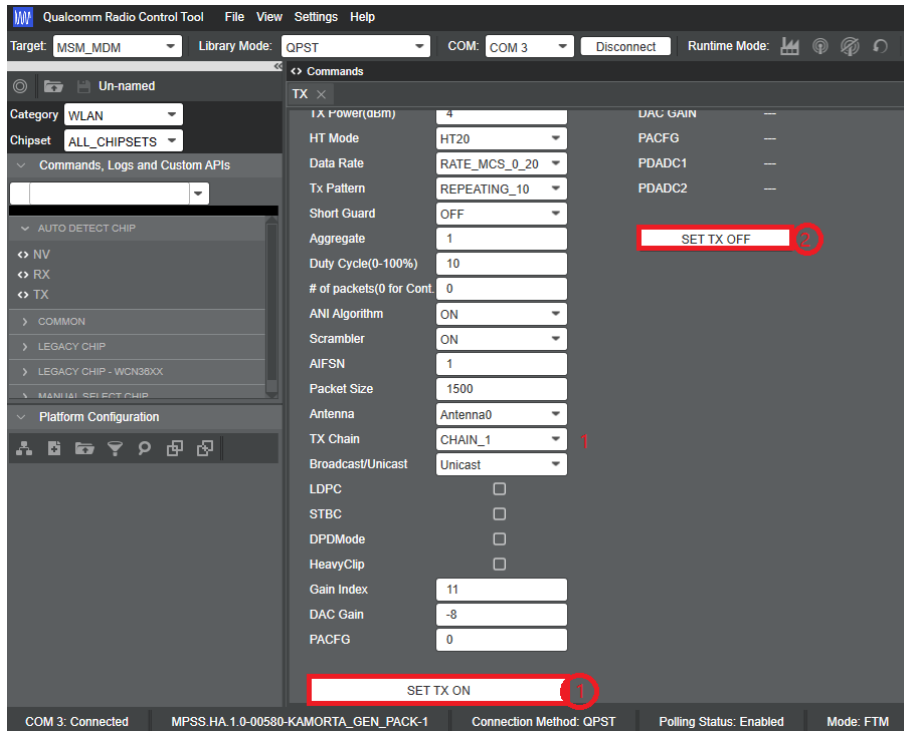
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Apr. 02,21	Apr. 01,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 22
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	Sep. 05,21	Sep. 04,22

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Chamber.
 3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.
 4. The IC test Site Registration No. is 21771-1; The CAB Identifier No. is CN0007.

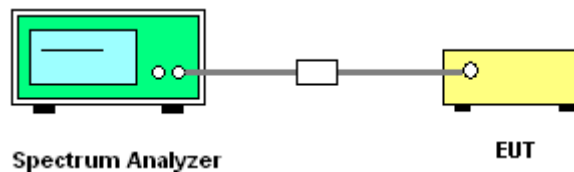
2.4 Test Setup

EUT was set in the Hidden menu mode to enable RLAN communications.

The following picture is a screenshot of the test software

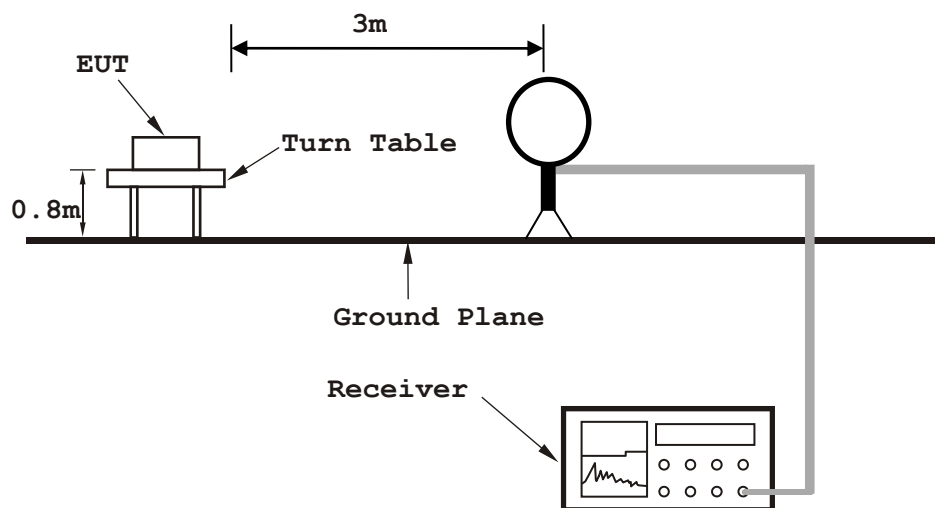


Setup diagram for Conducted Test

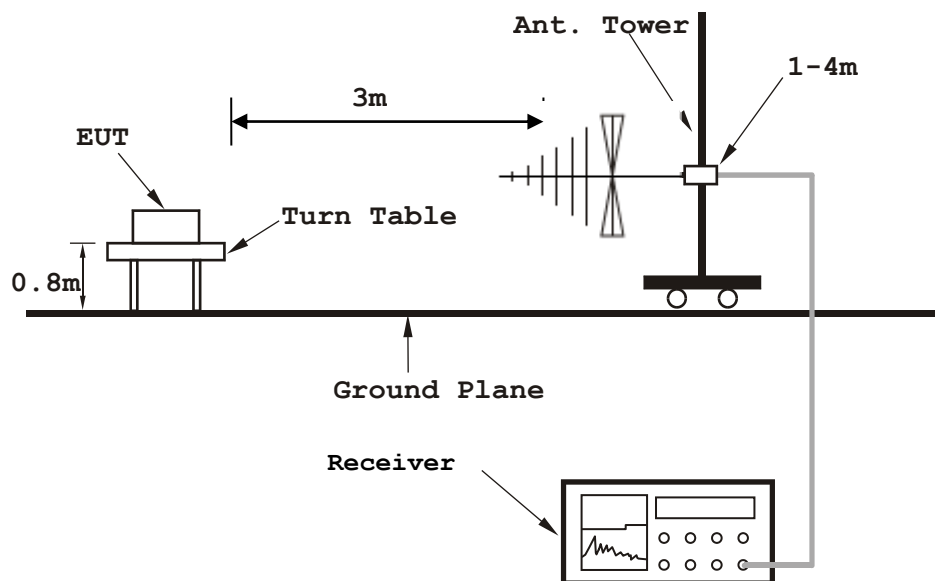




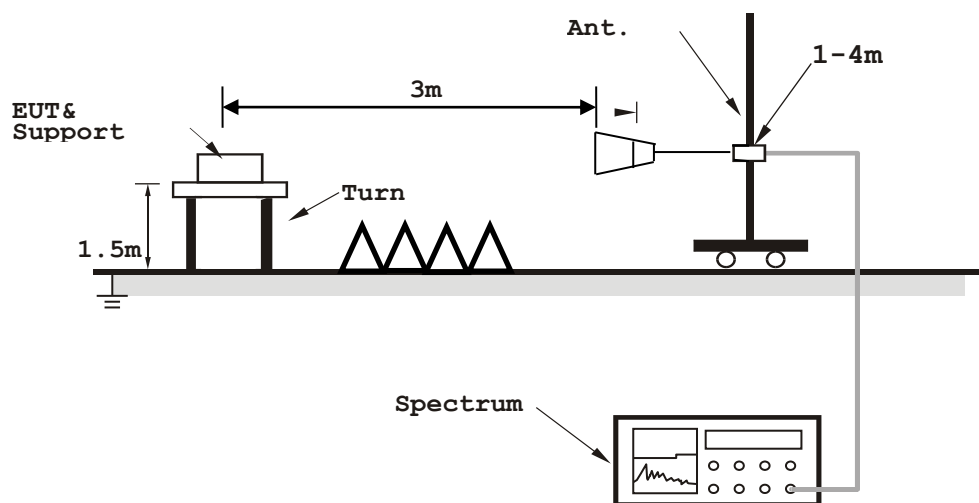
Setup diagram for Radiation(9KHz~30MHz) Test



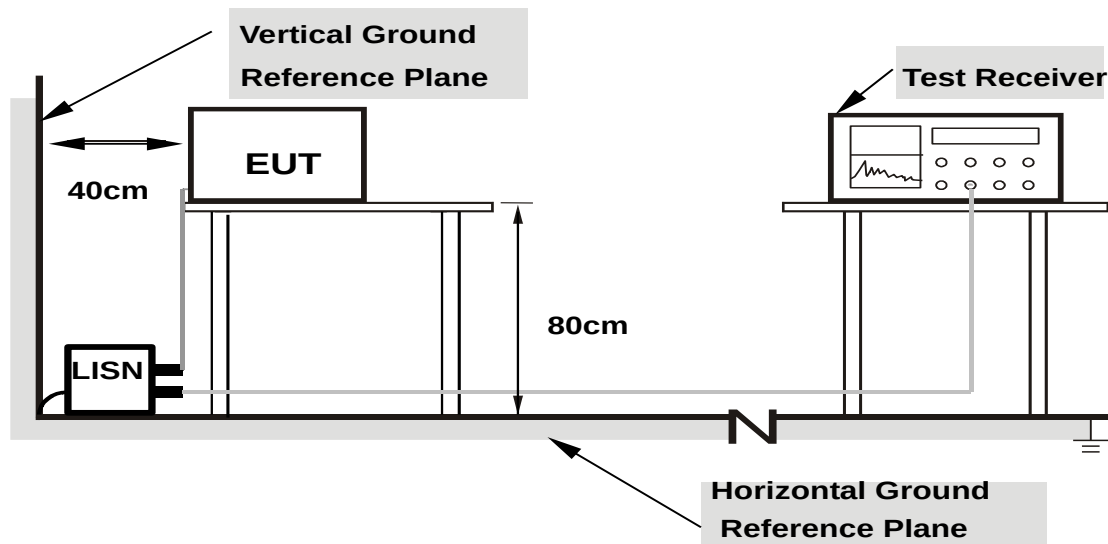
Setup diagram for Radiation(Below 1G) Test



Setup diagram for Radiation(Above1G) Test



Setup diagram for AC Conducted Emission Test



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



2.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 5 + 10 = 15 \text{ (dB)}\end{aligned}$$

For all radiated test items:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Over Limit (dBμV/m) = Level(dBμV/m) - Limit Level (dBμV/m)

2.6 Maximum Conducted Output Power Measurement

2.6.1 Limit of Output Power

FCC

Operation Band	EUT Category		Limit
U-NII-1		Access Point(Mater Device)	1 Watt(30dBm)
		Fixed point-to-point Acess Ponit	1 Watt(30dBm)
	√	Mobile and portable clinet device	250mW(23.98dBm)
U-NII-2A	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-2C	√		250mW(23.98dBm) or 11dBm+10 log B
U-NII-3	√		1 W(30dBm)

IC

Operation Frequency Band	Limit
5150~5250 MHz	EIRP shall not exceed 200 mW or 10 + 10 logB, dBm
5250~5350 MHz	Conducted output power shall not exceed 250 mW or 11 +10 logB EIRP shall not exceed 1.0 W or 17 + 10 logB, dBm
5470~5600 MHz and 5650~5725 MHz	Conducted output power shall not exceed 250 mW or 11 +10 logB EIRP shall not exceed 1.0 W or 17 + 10 logB, dBm
5725~5850 MHz	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, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi.

2.6.2 Test Procedures

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
4. Spectrum Analyzer is used as the auxiliary test equipment to conduct the output power measurement.
5. Set span to encompass the entire emission bandwidth (EBW) of the signal. Set sweep trigger to "free run.", RBW = 1 MHz, Set VBW $\geq 1/T$, where T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, Sweep time = auto, Detector = peak..
6. Video filtering shall be applied to power signal (rms), it shall be set to operate on a linear voltage signal.
7. Trace mode = max hold. Allow max hold to run for at least 60 seconds
8. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

2.6.3 Test Result of Output Power

Refer to Appendix A1 of this test report.

2.6.4 Test Result of E.I.R.P

Refer to Appendix A2 of this test report.

2.7 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

2.7.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(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.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table

Frequency (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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.2
-27	68.2

2.7.2 Test Procedures

- The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

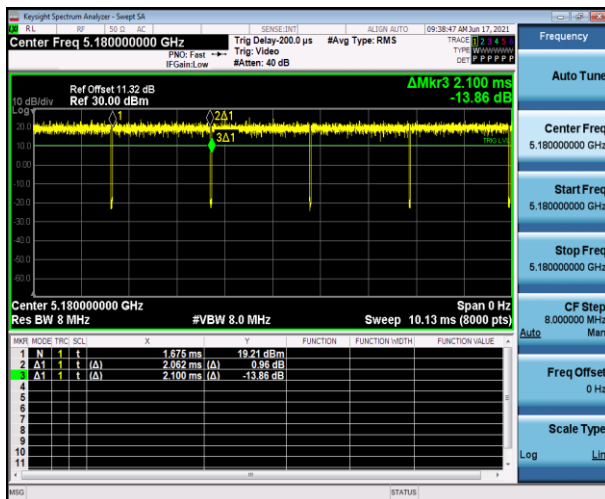
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its



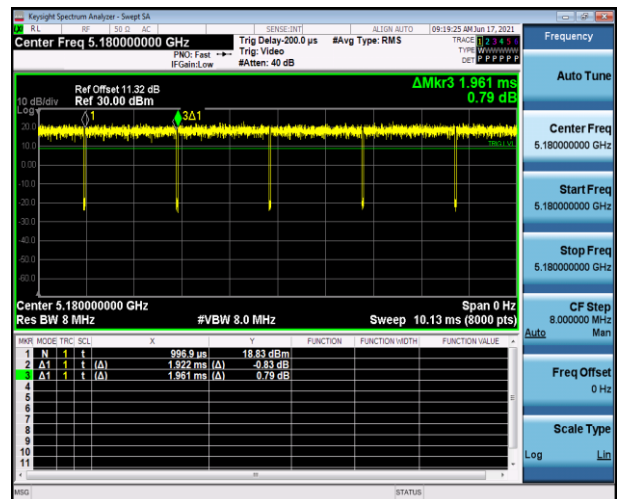
maximum power control level for the tested mode of operation.

2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground..
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

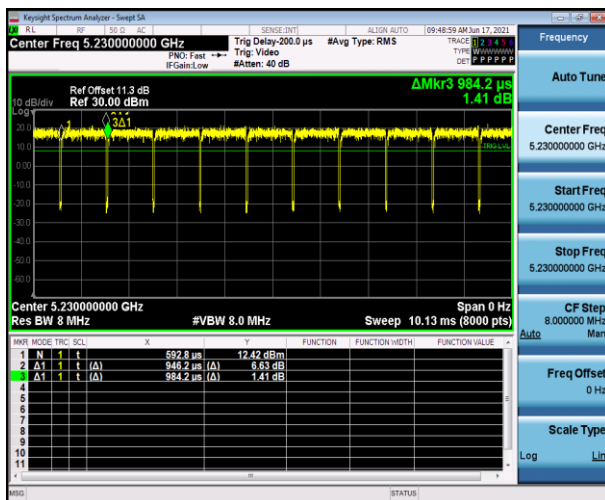
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	98.10	-		10Hz
802.11n HT20	97.96	1.92	0.52	1kHz
802.11n HT40	96.94	0.95	1.05	3kHz
802.11ac HT20	97.97	1.93	0.52	1kHz
802.11ac HT40	95.96	0.95	1.05	3kHz
802.11ac HT80	92	0.46	2.17	3kHz



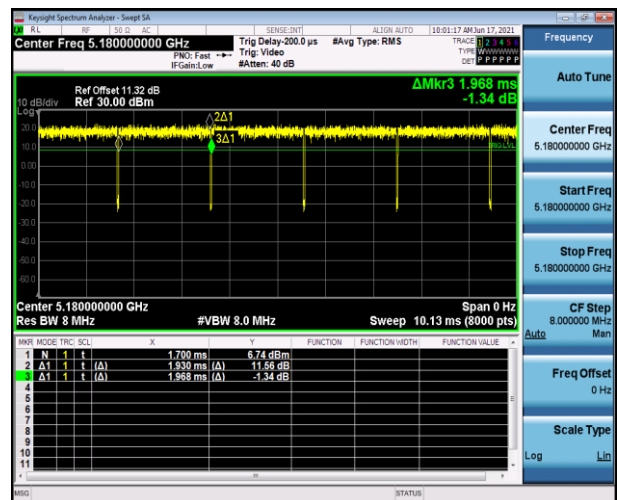
802.11a



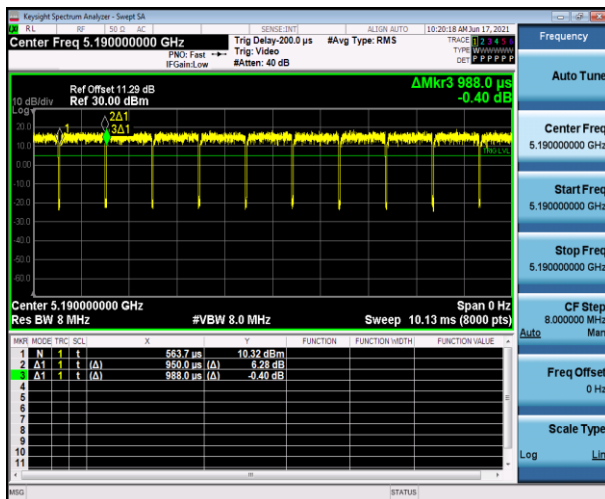
802.11ac HT20



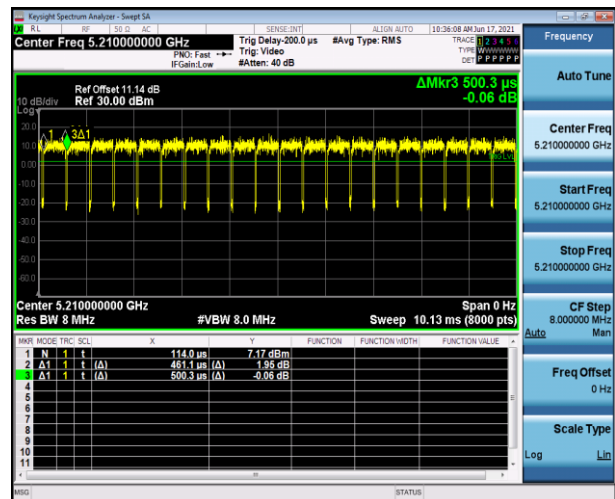
802.11ac HT40



802.11ac VHT20



802.11ac VHT40



802.11ac VHT80

8. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

2.7.3 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

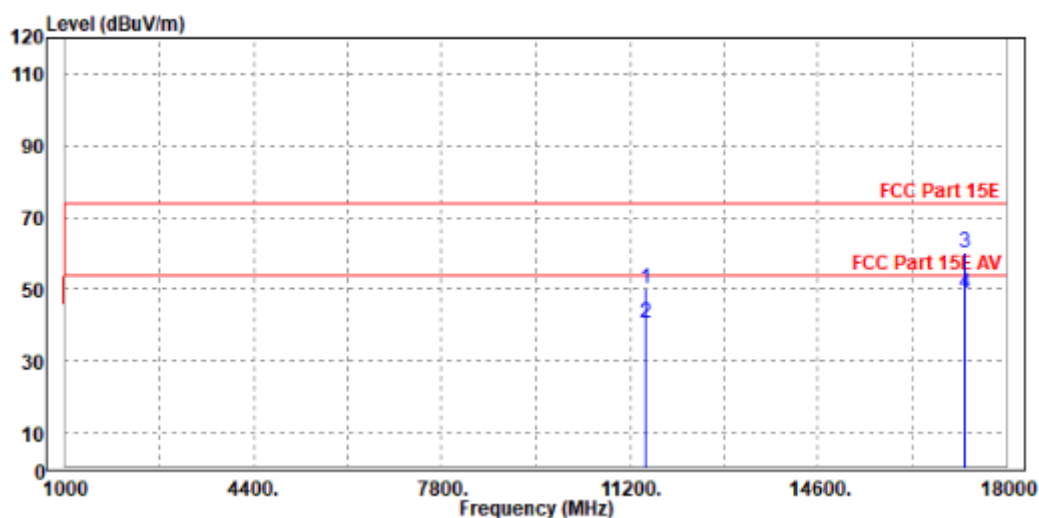
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



2.7.4 Test Result of Radiated Spurious Emission (1GHz ~ 10th Harmonic)

Test Mode :	802.11 n HT20 CH149 5745MHz	Temperature :	19~23°C
Test Engineer :	Jace Hu	Relative Humidity :	59~62%
Frequency Range	1GHz~18GHz	Polarization :	Horizontal

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	11489.000	50.33	44.10	74.00	-23.67	6.23	Peak	Horizontal
2	11489.000	40.76	34.53	54.00	-13.24	6.23	Average	Horizontal
3	PK17235.000	60.05	43.60	74.00	-13.95	16.45	Peak	Horizontal
4	PP17235.000	49.02	32.57	54.00	-4.98	16.45	Average	Horizontal

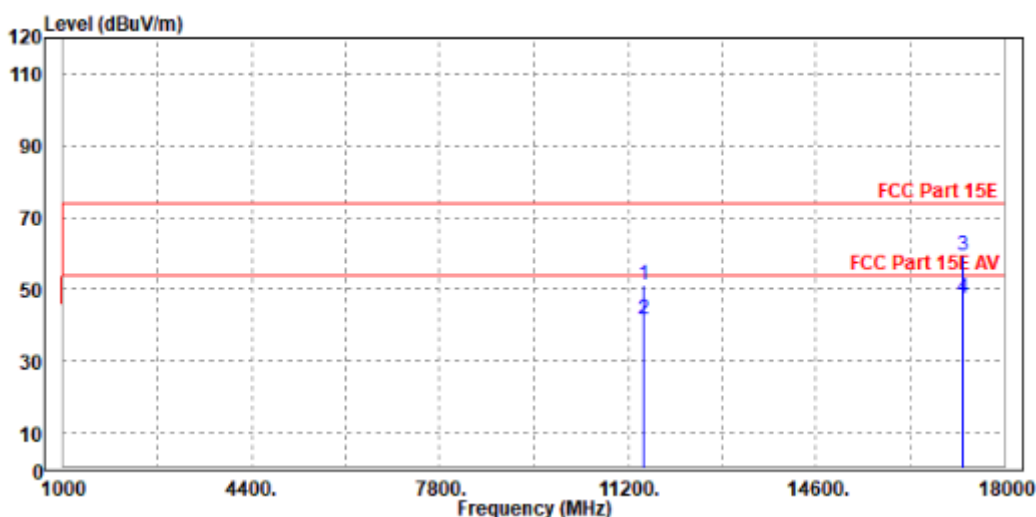


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



Test Mode :	802.11 n HT20 CH149 5745MHz	Temperature :	19~23°C
Test Engineer :	Jace Hu	Relative Humidity :	59~62%
Frequency Range	1GHz~18GHz	Polarization :	Vertical

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	11489.000	51.09	44.27	74.00	-22.91	6.82	Peak	Vertical
2	11489.000	41.65	34.83	54.00	-12.35	6.82	Average	Vertical
3	PK17235.000	59.19	44.16	74.00	-14.81	15.03	Peak	Vertical
4	PP17235.000	47.62	32.59	54.00	-6.38	15.03	Average	Vertical



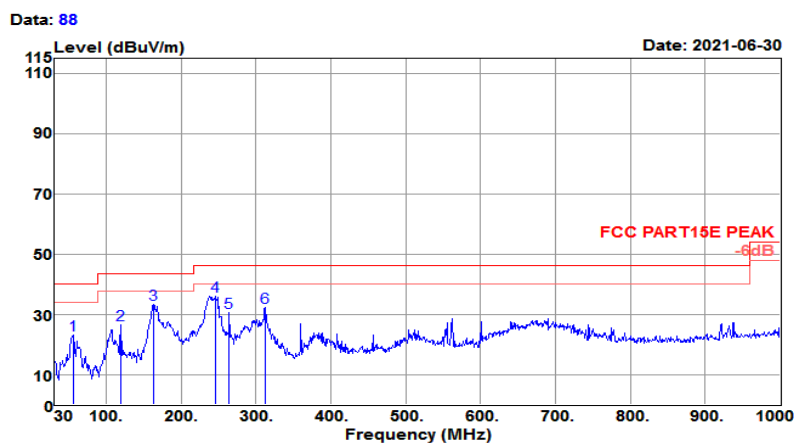
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



2.7.5 Test Result of Radiated Spurious Emission (30MHz ~ 1GHz)

Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	19~23°C
Test Engineer :	Jack Liu	Relative Humidity :	59~62%
Frequency Range	30MHz~1GHz	Polarization :	Horizontal

Test Site	: 3m Chamber	Temp/Humi	: 23°C / 60%
Tested by	: Jack	Pol/Phase	: HORIZONTAL
Test Mode	: 802.11n HT20 CH48 (5240MHz)	Power rating:	DC 3.85V



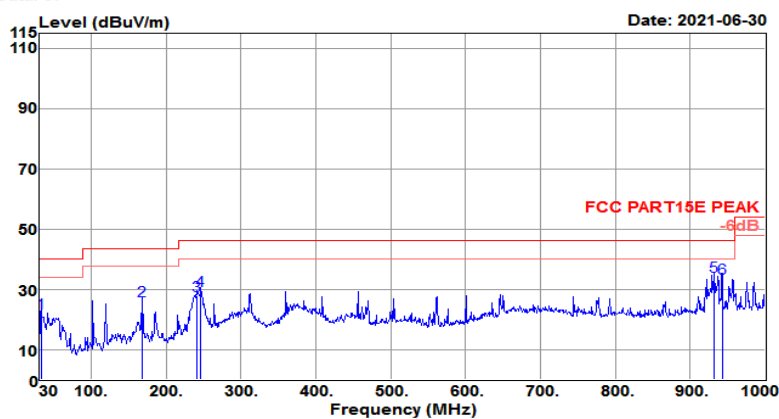
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamplifier factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
55.220	39.46	14.91	1.23	32.59	23.01	40.00	-16.99	QP
119.240	46.01	11.23	1.86	32.52	26.58	43.50	-16.92	QP
162.890	49.70	13.79	2.19	32.56	33.12	43.50	-10.38	QP
246.310	54.20	11.64	2.74	32.60	35.98	46.00	-10.02	QP
263.770	48.36	11.84	2.81	32.60	30.41	46.00	-15.59	QP
312.270	48.38	13.30	3.10	32.61	32.17	46.00	-13.83	QP



Test Mode :	802.11n HT20 CH48 5240MHz	Temperature :	19~23°C
Test Engineer :	Jack Liu	Relative Humidity :	59~62%
Frequency Range	30MHz~1GHz	Polarization :	Vertical

Test Site : 3m Chamber
Temp/Humi : 23°C/60%
Tested by : Jack
Pol/Phase : VERTICAL
Test Mode : 802.11n HT20 CH48 (5240MHz)
Power rating: DC 3.85V

Data: 87



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
32.910	39.83	13.94	0.95	32.60	22.12	40.00	-17.88	QP
167.740	43.20	13.45	2.22	32.57	26.30	43.50	-17.20	QP
241.460	45.78	11.76	2.74	32.60	27.68	46.00	-18.32	QP
246.310	47.70	11.64	2.74	32.60	29.48	46.00	-16.52	QP
932.100	37.58	22.39	5.75	31.51	34.21	46.00	-11.79	QP
942.770	36.72	22.40	5.76	31.43	33.45	46.00	-12.55	QP



3 Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.42dB
Radiated emission	9kHz~30MHz	2.68dB
	30MHz ~ 1GMHz	2.50dB
	1GHz ~ 18GHz	3.51dB
	18GHz ~ 40GHz	3.96dB

MEASUREMENT	UNCERTAINTY
Occupied Channel Bandwidth	±196.4Hz
RF output power, conducted	±2.31dB
Power density, conducted	±2.31dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



Appendix A1: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	17.16	<=23.98	PASS
		5200	18.99	<=23.98	PASS
		5240	18.83	<=23.98	PASS
		5260	18.85	<=23.98	PASS
		5280	19.16	<=23.98	PASS
		5320	17.23	<=23.98	PASS
		5500	17.88	<=23.98	PASS
		5580	18.13	<=23.98	PASS
		5700	17.01	<=23.98	PASS
		5720_UNII-2C	15.98	<=23.38	PASS
		5720_UNII-3	9.14	<=30	PASS
		5745	18.49	<=30	PASS
		5785	17.78	<=30	PASS
		5825	17.06	<=30	PASS
11N20SISO	Ant1	5180	16.08	<=23.98	PASS
		5200	17.91	<=23.98	PASS
		5240	17.94	<=23.98	PASS
		5260	17.94	<=23.98	PASS
		5280	18.06	<=23.98	PASS
		5320	16.15	<=23.98	PASS
		5500	16.93	<=23.98	PASS
		5580	17.56	<=23.98	PASS
		5700	17.42	<=23.98	PASS
		5720_UNII-2C	16.29	<=23.52	PASS
		5720_UNII-3	9.79	<=30	PASS
		5745	17.88	<=30	PASS
		5785	17.3	<=30	PASS
		5825	16.52	<=30	PASS
11N40SISO	Ant1	5190	16.77	<=23.98	PASS
		5230	18.51	<=23.98	PASS
		5270	18.24	<=23.98	PASS
		5310	11.79	<=23.98	PASS
		5510	15.83	<=23.98	PASS



		5550	17.86	<=23.98	PASS
		5670	16.48	<=23.98	PASS
		5710_UNII-2C	16.52	<=23.98	PASS
		5710_UNII-3	5.37	<=30	PASS
		5755	18.36	<=30	PASS
		5795	17.85	<=30	PASS
11AC20SISO	Ant1	5180	16.01	<=23.98	PASS
		5200	18.02	<=23.98	PASS
		5240	17.84	<=23.98	PASS
		5260	17.99	<=23.98	PASS
		5280	18.17	<=23.98	PASS
		5320	16.2	<=23.98	PASS
		5500	16.68	<=23.98	PASS
		5580	17.61	<=23.98	PASS
		5700	16.55	<=23.98	PASS
		5720_UNII-2C	15.42	<=23.61	PASS
		5720_UNII-3	9.02	<=30	PASS
		5745	18.06	<=30	PASS
		5785	17.32	<=30	PASS
		5825	16.6	<=30	PASS
11AC40SISO	Ant1	5190	15.64	<=23.98	PASS
		5230	17.6	<=23.98	PASS
		5270	17.49	<=23.98	PASS
		5310	16.12	<=23.98	PASS
		5510	15.22	<=23.98	PASS
		5550	17.21	<=23.98	PASS
		5670	16.93	<=23.98	PASS
		5710_UNII-2C	17.4	<=23.98	PASS
		5710_UNII-3	5.89	<=30	PASS
		5755	17.64	<=30	PASS
		5795	17.05	<=30	PASS
11AC80SISO	Ant1	5210	14.44	<=23.98	PASS
		5290	13.44	<=23.98	PASS
		5530	15.26	<=23.98	PASS
		5610	15.99	<=23.98	PASS
		5690_UNII-2C	16.04	<=23.98	PASS
		5690_UNII-3	1.22	<=30	PASS



		5775	16.32	<=30	PASS
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Appendix A2: E.I.R.P

Test Result

TestMode	Antenna	Channel	Conducted output power [dBm]	Antenna gain[dBi]	E.I.R.P[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	17.16	1.1	18.26	<=22.44	PASS
		5200	18.99	1.1	20.09	<=22.44	PASS
		5240	18.83	1.1	19.93	<=22.44	PASS
		5260	18.85	1.3	20.15	<=29.42	PASS
		5280	19.16	1.3	20.46	<=29.42	PASS
		5320	17.23	1.3	18.53	<=29.42	PASS
		5500	17.88	1.5	19.38	<=29.44	PASS
		5580	18.13	1.5	19.63	<=29.44	PASS
		5700	17.01	1.5	18.51	<=29.44	PASS
		5720_UNII-2C	15.98	1.5	17.48	<=29.44	PASS
11N20SISO	Ant1	5180	16.08	1.1	17.18	<=22.60	PASS
		5200	17.91	1.1	19.01	<=22.60	PASS
		5240	17.94	1.1	19.04	<=22.60	PASS
		5260	17.94	1.3	19.24	<=29.61	PASS
		5280	18.06	1.3	19.36	<=29.61	PASS
		5320	16.15	1.3	17.45	<=29.61	PASS
		5500	16.93	1.5	18.43	<=29.70	PASS
		5580	17.56	1.5	19.06	<=29.70	PASS
		5700	17.42	1.5	18.92	<=29.70	PASS
		5720_UNII-2C	16.29	1.5	17.79	<=29.70	PASS
11N40SISO	Ant1	5190	16.77	1.1	17.87	<=23.01	PASS
		5230	18.51	1.1	19.61	<=23.01	PASS
		5270	18.24	1.3	19.54	<=30	PASS
		5310	11.79	1.3	13.09	<=30	PASS
		5510	15.83	1.5	17.33	<=30	PASS
		5550	17.86	1.5	19.36	<=30	PASS
		5670	16.48	1.5	17.98	<=30	PASS



		5710_UNII-2C	16.52	1.5	18.02	<=30	PASS
11AC20SISO	Ant1	5180	16.01	1.1	17.11	<=22.60	PASS
		5200	18.02	1.1	19.12	<=22.60	PASS
		5240	17.84	1.1	18.94	<=22.60	PASS
		5260	17.99	1.3	19.29	<=29.62	PASS
		5280	18.17	1.3	19.47	<=29.62	PASS
		5320	16.2	1.3	17.5	<=29.62	PASS
		5500	16.68	1.5	18.18	<=29.66	PASS
		5580	17.61	1.5	19.11	<=29.66	PASS
		5700	16.55	1.5	18.05	<=29.66	PASS
		5720_UNII-2C	15.42	1.5	16.92	<=29.66	PASS
11AC40SISO	Ant1	5190	15.64	1.1	16.74	<=23.01	PASS
		5230	17.6	1.1	18.7	<=23.01	PASS
		5270	17.49	1.3	18.79	<=30	PASS
		5310	16.12	1.3	17.42	<=30	PASS
		5510	15.22	1.5	16.72	<=30	PASS
		5550	17.21	1.5	18.71	<=30	PASS
		5670	16.93	1.5	18.43	<=30	PASS
		5710_UNII-2C	17.4	1.5	18.9	<=30	PASS
11AC80SISO	Ant1	5210	14.44	1.1	15.54	<=23.01	PASS
		5290	13.44	1.3	14.74	<=30	PASS
		5530	15.26	1.5	16.76	<=30	PASS
		5610	15.99	1.5	17.49	<=30	PASS
		5690_UNII-2C	16.04	1.5	17.54	<=30	PASS