



# Compliance Testing, LLC

Previously Flom Test Lab

EMI, EMC, RF Testing Experts Since 1963

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## Test Report

Prepared for: Ubiquiti Networks, Inc

Model: UAP-AC-M

Description: UniFi® AC Access Point

Serial Number: NA

FCC ID: SWX-UAPACM

To

FCC Part 15.407

Date of Issue: November 30, 2017

On the behalf of the applicant:

Ubiquiti Networks, Inc  
2580 Orchard Parkway  
San Jose, CA 95131

Attention of:

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Project No: p1770021

Poona Saber  
Project Test Engineer

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All results contained herein relate only to the sample tested.



### Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	August 14, 2017	Poona Saber	Original Document
2.0	October 13, 2017	Poona Saber	Added band Edge measurements and annex A
3.0	November 10,2017	Poona Saber	Revised page 6 reference data explanation Revised sot check power and power spectral density tables Revised page 16 Revised page 15
4.0	November 14,2017	Poona Saber	Added setup photo for radiated measurement and receiver antenna on the test Equipment table Revised power table headings
5.0	November 30,2017	Poona Saber	Added Block Diagram for the band edge test procedure



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**ILAC / A2LA**

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



**FCC Site Reg. #349717**

**IC Site Reg. #2044A-2**

**Non-accredited tests contained in this report:**

**N/A**



**The applicant has been cautioned as to the following**

15.21 - Information to User

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) - Special Accessories

Equipment marked to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.



## Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.10-2013 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Pressure (mbar)
20.6 – 21.7	44.7 – 47.2	975.7 – 980.4

### EUT Operation during Tests

EUT was put on continuous transmission test mode

### EUT Description

**Model:** UAP-AC-M

**Description:** UniFi® AC Access Point

**Firmware:** N/A

**Software:** N/A

**Serial Number:** N/A

**Additional Information:** None

### Reference Test Data

This report contains test data for new antenna for ubiquity access point model UAP-AC-M which has already been certified pursuant to Part 15.407 with following FCC ID: SWX-UAPACM.

The Class II permissive change being sought for UAP-AC-M contains the same RF circuitry as the mentioned FCC ID With a new antenna model UMA-D added.

Spot check testing has been done conducted on UAP-AC-M for power and power spectral density on selected modes and frequency with highest output power and results are included and can be compared with reference data in reports under the original gran with above FCC ID.

Power tables has been adjusted for new antenna (UMA-D) gain per rule part 15.407 and included below. Other testing is referenced to the part 407 report for the mentioned FCC ID.



### EUT Specifications

<b>Equipment Code</b>	NII
<b>Model(s) Tested</b>	UAP-AC-M
<b>EUT Supports Radio Application</b>	WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80
<b>Frequency Range</b>	5180 MHz - 5240 MHz 5260 MHz - 5320 MHz 5500 MHz - 5720 MHz 5745 MHz - 5825 MHz
<b>Modulations</b>	802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11a/c: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

### Antenna List

No.	Manufacturer	Model	Antenna Type	Peak Gain
1	Ubiquiti	UMA-D	Dual Band Directional Array	15 dBi

### 15.203: Antenna Requirement:

- The antenna is permanently attached to the EUT
- The antenna uses a unique coupling
- The EUT must be professionally installed
- The antenna requirement does not apply



**Accessories:**

Qty	Description	Manufacturer	Model	S/N
1	POE Power Adapter	Ubiquiti	N/A	N/A

**Cables:**

Qty	Description	Length (M)	Shielding Y/N	Shielded Hood Y/N	Ferrite Y/N
2	Ethernet Cables	<3	N	N	N

**Modifications:** None





## Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
§15.203	Antenna Requirements	PASS	
§15.407(a)(1)	Conducted Output Power	PASS	
§15.407(a)(1),(5)	Power Spectral Density	PASS	
§15.205 §15.407(b)(1),(5),(6)(7)	Emissions At Band Edges	PASS	

References	Description
CFR47, Part 15, Subpart B	Unintentional Radiators
CFR47, Part 15, Subpart C	Intentional Radiators
CFR47, Part 15, Subpart E	Unlicensed Nation Information Infrastructure Devices (U-NII)
ANSI C63.10-2009	American National standard for testing Unlicensed Wireless Devices
ANSI C63.4-2009	Method and Measurements of Radio-Noise Emissions from low-Voltage Electrical and Electronic Equipment in the range 9kHz to 40GHz.
ISO/IEC 17025:2005	General requirements for the Competence of Testing and Calibrations Laboratories
KDB 644545 D03	Guidance for IEEE 802 11ac New Rules
KDB 789033 D02	General U-NII Test Procedures New Rules V01
KDB 926956 D01	U-NII Transition Plan



**Peak Output Power**

**Engineer:** Poona Saber

**Test Date:** 8/14/16

**Test Requirements**

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(v) For the 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  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. 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.

(vi) 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.



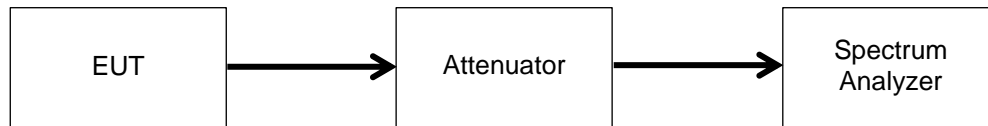
### Test Procedure

The RF power was calculated using the spectrum analyzers' band power function per Method SA-1 from KDB 789033 D02 General U-NII Test Procedures New Rules v01. Measurements were made at the low, mid, and high channels of the band.

**The Spectrum Analyzer was set to the following:**

- a. RBW = 1 MHz
- b. VBW  $\geq$  3 MHz
- c. Sweep time = auto
- d. Detector = RMS
- e. 100 traces in power averaging mode

### Test Setup





**Test Results for 15 dBi U-MAD antenna**

Power	5150-5250								
Mode	Data Rate	Frequency	Port 1	Port 2	Port 1	Port 2	Combined power	Limit	Margin
MHz		MHz	dBm	dBm	mW	mW	dBm	dBm	dB
11a	6Mbps	5180	13.7	13.7	23.7	23.4	16.7	21	-4.3
11a	6Mbps	5220	14.0	13.4	25.4	21.9	16.7	21	-4.3
11a	6Mbps	5240	14.3	13.6	26.9	22.9	17.0	21	-4.0
HT20	MCS0	5180	13.7	13.7	23.3	23.3	16.7	21	-4.3
HT20	MCS0	5220	14.0	13.6	25.2	23.1	16.8	21	-4.2
HT20	MCS0	5240	14.3	13.6	27.0	22.8	17.0	21	-4.0
HT40	MCS0	5190	8.5	7.5	7.1	5.6	11.0	21	-10.0
HT40	MCS0	5230	13.8	13.6	24.2	23.1	16.7	21	-4.3
VHT20	MCS0	5180	13.8	13.6	23.7	22.8	16.7	21	-4.3
VHT20	MCS0	5220	14.1	13.5	25.8	22.3	16.8	21	-4.2
VHT20	MCS0	5240	14.2	13.6	26.5	23.0	16.9	21	-4.1
VHT40	MCS0	5190	8.2	7.7	6.5	5.9	10.9	21	-10.1
VHT40	MCS0	5230	13.8	13.7	23.8	23.2	16.7	21	-4.3
vht80	MCS0	5210	6.8	6.2	4.8	4.2	9.5	21	-11.5

Power	5250-5350								
Mode		Frequency	Port 1	Port 2	Port 1	Port 2	Combined power	Limit	Margin
MHz		MHz	dBm	dBm	mW	mW	dBm	dBm	dB
11a	6Mbps	5260	10.3	11.2	10.8	13.3	13.8	15	-1.2
11a	6Mbps	5300	10.4	11.5	11.0	14.2	14.0	15	-1.0
11a	6Mbps	5320	9.1	9.9	8.1	9.8	12.5	15	-2.5
HT20	MCS0	5260	10.9	11.6	12.2	14.3	14.2	15	-0.8
HT20	MCS0	5300	10.7	11.8	11.7	15.1	14.3	15	-0.7
HT20	MCS0	5320	9.1	10.0	8.1	9.9	12.5	15	-2.5
HT40	MCS0	5270	10.9	11.7	12.3	14.7	14.3	15	-0.7
HT40	MCS0	5310	8.1	8.9	6.4	7.8	11.5	15	-3.5
VHT20	MCS0	5260	10.8	11.6	12.0	14.3	14.2	15	-0.8
VHT20	MCS0	5300	10.6	11.8	11.5	15.1	14.2	15	-0.8
VHT20	MCS0	5320	9.0	10.0	7.9	10.0	12.5	15	-2.5
VHT40	MCS0	5270	11.1	11.4	13.0	13.9	14.3	15	-0.7
VHT40	MCS0	5310	8.0	8.9	6.3	7.7	11.5	15	-3.5
vht80	MCS0	5290	5.0	5.8	3.2	3.8	8.5	15	-6.5



Power	5470-5725								
Mode	Data Rate	Frequency	Port 1	Port 2	Port 1	Port 2	Combined power	Limit	Margin
MHz		MHz	dBm	dBm	mW	mW	dBm	dBm	dB
11a	6Mbps	5500	8.4	9.0	6.9	8.0	11.7	15	-3.3
11a	6Mbps	5580	6.4	8.2	4.4	6.6	10.4	15	-4.6
11a	6Mbps	5700	7.5	9.5	5.6	8.9	11.6	15	-3.4
HT20	MCS0	5500	8.3	9.0	6.8	8.0	11.7	15	-3.3
HT20	MCS0	5580	5.6	7.9	3.6	6.1	9.9	15	-5.1
HT20	MCS0	5700	7.4	9.5	5.5	8.9	11.6	15	-3.4
HT40	MCS0	5510	7.8	8.7	6.0	7.4	11.3	15	-3.7
HT40	MCS0	5550	10.9	12.1	12.4	16.3	14.6	15	-0.4
HT40	MCS0	5670	9.7	11.2	9.3	13.2	13.5	15	-1.5
VHT20	MCS0	5500	8.4	8.9	6.9	7.7	11.7	15	-3.3
VHT20	MCS0	5580	5.7	7.7	3.7	5.9	9.8	15	-5.2
VHT20	MCS0	5700	7.3	9.5	5.4	8.8	11.5	15	-3.5
VHT40	MCS0	5510	8.0	8.5	6.2	7.1	11.3	15	-3.7
VHT40	MCS0	5550	10.9	12.0	12.4	15.9	14.5	15	-0.5
VHT40	MCS0	5670	9.6	11.2	9.2	13.2	13.5	15	-1.5
VHT80	MCS0	5530	1.2	2.5	1.3	1.8	4.9	15	-10.1
VHT80	MCS0	5610	8.2	9.6	6.6	9.1	11.9	15	-3.1

Power	5725-5850								
Mode	Data Rate	Frequency	Port 1	Port 2	Port 1	Port 2	Combined power	Limit	Margin
MHz		MHz	dBm	dBm	mW	mW	dBm	dBm	dB
11a	6Mbps	5745	12.4	14.2	17.2	26.2	16.4	21	-4.6
11a	6Mbps	5785	15.9	17.4	38.5	54.3	19.7	21	-1.3
11a	6Mbps	5825	16.3	17.7	42.7	58.5	20.0	21	-1.0
HT20	MCS0	5745	12.5	14.1	17.6	25.6	16.4	21	-4.6
HT20	MCS0	5785	15.5	17.8	35.8	60.4	19.8	21	-1.2
HT20	MCS0	5825	15.9	18.3	39.3	67.0	20.3	21	-0.7
HT40	MCS0	5755	10.5	12.7	11.1	18.5	14.7	21	-6.3
HT40	MCS0	5795	15.5	17.8	35.2	59.6	19.8	21	-1.2
VHT20	MCS0	5745	12.4	14.1	17.3	25.6	16.3	21	-4.7
VHT20	MCS0	5785	15.8	17.7	37.7	58.5	19.8	21	-1.2
VHT20	MCS0	5825	16.2	18.0	41.2	63.4	20.2	21	-0.8
VHT40	MCS0	5755	10.3	12.6	10.7	18.3	14.6	21	-6.4
VHT40	MCS0	5795	15.1	17.8	32.1	59.8	19.6	21	-1.4
VHT80	MCS0	5775	9.3	11.5	8.4	14.1	13.5	21	-7.5



**Spot Check Test Results**

**Ubiquiti Test Spot for U-NII-1**

Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combined output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n-HT20</b>										
20	5180	t0	4	13.5	13.6	22.1309	23.0144	16.5	30	-13.5
20	5220	t0	4	14.1	13.8	25.7040	23.9883	17.0	30	-13.0
20	5240	t0	4	13.9	13.7	24.5471	23.6048	16.8	30	-13.2
<b>ac VHT20</b>										
20	5180	vt0	4	13.6	13.5	22.9087	22.4905	16.6	30	-13.4
20	5220	vt0	4	14.0	13.9	24.9459	24.3220	16.9	30	-13.1
20	5240	vt0	4	14.2	14.1	26.3027	25.7040	17.2	30	-12.8

**Ubiquiti Test spot for U-NII-2A**

Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combined output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n-HT20</b>										
40	5270	t0	9	18.6	18.8	72.4436	75.8578	21.7	24	-2.3
40	5310	t0	8	16.2	16.6	41.7830	46.1318	19.4	24	-4.6
<b>ac VHT20</b>										
20	5260	vt0	9	19.1	18.7	81.2831	74.1310	21.9	24	-2.1
20	5300	vt0	9	18.9	19.0	77.0903	79.0679	21.9	24	-2.1
20	5320	vt0	8	16.9	17.1	49.0908	51.7607	20.0	24	-4.0



**Ubiquiti Test Spot for U-NII-2B**

Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combined output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n HT40</b>										
40	5510	f0	4	14.6	14.9	28.8403	31.1172	17.8	24	-6.2
40	5550	f0	6	17.5	18.5	56.6239	69.9842	21.0	24	-3.0
40	5670	f0	5	16.5	17.1	44.3609	51.2861	19.8	24	-4.2
<b>ac VHT40</b>										
40	5510	vf0	4	14.8	15.1	30.0608	32.3594	18.0	24	-6.0
40	5550	vf0	6	17.8	18.2	60.3949	66.0693	21.0	24	-3.0
40	5670	vf0	5	16.3	17.5	42.8549	56.7545	20.0	24	-4.0

**Ubiquiti Test Spot for U-NII-III**

Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combined output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n HT20</b>										
20	5745	t0	3	13.5	14.0	22.1309	24.8313	16.7	30	-13.3
20	5785	t0	5	16.2	16.4	41.6869	43.9542	19.3	30	-10.7
20	5825	t0	5	16.7	16.8	46.4515	47.6431	19.7	30	-10.3
<b>ac VHT20</b>										
20	5745	vt0	3	13.4	13.7	21.9786	23.2274	16.6	30	-13.4
20	5785	vt0	4	16.76	17.5	47.4242	55.5904	20.1	30	-9.9
20	5825	vt0	5	17.7	18.3	58.2103	68.2339	21.0	30	-9.0



## Transmitter Power Spectral Density

**Engineer:** Poona Saber

**Test Date:** 8/11/2017

### Test Requirements

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 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.

(v) For the 5.47-5.725 GHz bands, 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.

(vi) 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in power spectral density.

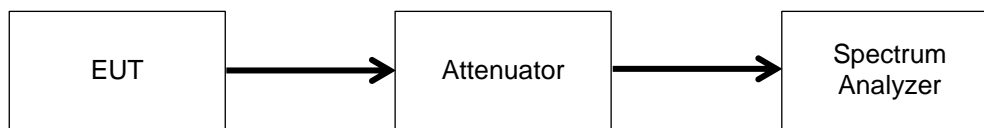
### Test Procedure

The Power Spectral Density was measured using the method per SA-1 from KDB 789033 D02 General U-NII Test Procedures New Rules v01. Measurements were made at the low, mid, and high channels of the band. The maximum PSD was determined by finding the peak value across the carrier bandwidth.

#### The Spectrum Analyzer was set to the following:

- RBW = 1 MHz
- VBW  $\geq$  3 MHz
- Span  $1.5 * BW$
- Sweep time = auto
- Detector = RMS
- 100 traces in power averaging mode

### Test Setup







Power Spectral Density (5150-5250 MHz)							
Mode		Frequency	Port 1	Port 2	Combined spectral density	Limit	Margin
MHz		MHz	dBm	dBm	dBm	dBm	dB
11a	6Mbps	5180			4.5	8	-3.5
11a	6Mbps	5220			4.7	8	-3.3
11a	6Mbps	5240			5.0	8	-3.0
HT20	MCS0	5180			4.3	8	-3.7
HT20	MCS0	5220			4.4	8	-3.6
HT20	MCS0	5240			4.7	8	-3.3
HT40	MCS0	5190			-4.1	8	-12.1
HT40	MCS0	5230			1.2	8	-6.8
VHT20	MCS0	5180			4.3	8	-3.7
VHT20	MCS0	5220			4.4	8	-3.6
VHT20	MCS0	5240			4.7	8	-3.3
VHT40	MCS0	5190			-4.4	8	-12.4
VHT40	MCS0	5230			1.3	8	-6.7
vht80	MCS0	5210			-8.5	8	-16.5



Power Spectral Density (5250-5350 MHz)							
Mode		Frequency	Port 1	Port 2	Combined spectral density	Limit	Margin
MHz		MHz	dBm	dBm	dBm	dBm	dB
11a	6Mbps	5260			1.8	2	-0.3
11a	6Mbps	5300			1.8	2	-0.3
11a	6Mbps	5320			0.4	2	-1.6
HT20	MCS0	5260			1.7	2	-0.3
HT20	MCS0	5300			1.8	2	-0.2
HT20	MCS0	5320			0.2	2	-1.8
HT40	MCS0	5270			-1.4	2	-3.4
HT40	MCS0	5310			-3.9	2	-5.9
VHT20	MCS0	5260			1.7	2	-0.3
VHT20	MCS0	5300			1.7	2	-0.3
VHT20	MCS0	5320			0.2	2	-1.9
VHT40	MCS0	5270			-1.2	2	-3.2
VHT40	MCS0	5310			-3.8	2	-5.8
vht80	MCS0	5290			-10.0	2	-12.0



Power Spectral Density (5470-5725 MHz)							
Mode	Data Rate	Frequency	Port 1	Port 2	Combined spectral density	Limit	Margin
MHz		MHz	dBm	dBm	dBm	dBm	dB
11a	6Mbps	5500			0.7	2	-1.3
11a	6Mbps	5580			-0.4	2	-2.4
11a	6Mbps	5700			-0.2	2	-2.2
HT20	MCS0	5500			0.2	2	-1.8
HT20	MCS0	5580			-1.5	2	-3.5
HT20	MCS0	5700			-0.4	2	-2.4
HT40	MCS0	5510			-3.2	2	-5.2
HT40	MCS0	5550			0.2	2	-1.8
HT40	MCS0	5670			-1.2	2	-3.2
VHT20	MCS0	5500			0.4	2	-1.7
VHT20	MCS0	5580			-1.3	2	-3.3
VHT20	MCS0	5700			-0.5	2	-2.5
VHT40	MCS0	5510			-3.1	2	-5.1
VHT40	MCS0	5550			0.2	2	-1.8
VHT40	MCS0	5670			-1.1	2	-3.1
VHT80	MCS0	5530			-12.3	2	-14.3
VHT80	MCS0	5610			-5.3	2	-7.3



Power Spectral Density (5725-5850 MHz)							
Mode	Data Rate	Frequency	Port 1	Port 2	Combined spectral density	Limit	Margin
MHz		MHz	dBm	dBm	dBm	dBm	dB
11a	6Mbps	5745			2.8	21	-18.2
11a	6Mbps	5785			6.1	21	-14.9
11a	6Mbps	5825			6.3	21	-14.7
HT20	MCS0	5745			2.7	21	-18.3
HT20	MCS0	5785			6.5	21	-14.5
HT20	MCS0	5825			6.6	21	-14.4
HT40	MCS0	5755			-1.7	21	-22.7
HT40	MCS0	5795			3.1	21	-17.9
VHT20	MCS0	5745			2.9	21	-18.1
VHT20	MCS0	5785			6.2	21	-14.8
VHT20	MCS0	5825			6.7	21	-14.3
VHT40	MCS0	5755			-1.7	21	-22.7
VHT40	MCS0	5795			3.2	21	-17.8
VHT80	MCS0	5775			-5.5	21	-26.5



**Spot Check Test Results**

Ubiquiti Test Spot for U-NII-1										
Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combine d output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n-HT20</b>										
20	5180	t0	4	1.2	1.3	1.3243	1.3583	4.3	15.99	-11.7
20	5220	t0	4	1.3	1.5	1.3552	1.3964	4.4	15.99	-11.6
20	5240	t0	4	1.5	1.7	1.4191	1.4723	4.6	15.99	-11.4
<b>ac VHT20</b>										
20	5180	vt0	4	1.3	1.3	1.3335	1.3521	4.3	15.99	-11.7
20	5220	vt0	4	1.3	1.4	1.3583	1.3836	4.4	15.99	-11.6
20	5240	vt0	4	1.6	1.7	1.4388	1.4894	4.7	15.99	-11.3

Ubiquiti Test spot for U-NII-2A										
Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combine d output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n-HT20</b>										
40	5270	t0	9	3.3	3.7	2.1232	2.3659	6.5	9.99	-3.5
40	5310	t0	8	1.1	1.2	1.2735	1.3243	4.1	9.99	-5.8
<b>ac VHT20</b>										
20	5260	vt0	9	6.5	6.8	4.4771	4.7643	9.7	9.99	-0.3
20	5300	vt0	9	6.5	6.7	4.4668	4.6559	9.6	9.99	-0.4
20	5320	vt0	8	5.0	5.4	3.1769	3.4995	8.2	9.99	-1.7



Ubiquiti Test Spot for U-NII-2B										
Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combine d output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n HT40</b>										
40	5510	f0	4	0.7	0.9	1.1776	1.2331	3.8	9.99	-6.2
40	5550	f0	6	3.9	4.3	2.4717	2.6977	7.1	9.99	-2.9
40	5670	f0	5	2.6	2.8	1.8030	1.8967	5.7	9.99	-4.3
<b>ac VHT40</b>										
40	5510	vf0	4	0.8	1.0	1.2050	1.2618	3.9	9.99	-6.1
40	5550	vf0	6	3.9	4.5	2.4378	2.8054	7.2	9.99	-2.8
40	5670	vf0	5	2.6	2.7	1.8365	1.8664	5.7	9.99	-4.3

Ubiquiti Test Spot for U-NII-III

Band Width	Frequency	Data Rate	TP	J1 Level	J5 Level	J1 Level	J5 Level	Combine d output power	Limit	Margin
MHz	MHz			dBm	dBm	mW	mW	dBm	dBm	dB
<b>n HT20</b>										
20	5745	t0	3	0.7	0.8	1.1722	1.1912	3.7	28.99	-25.3
20	5785	t0	5	4.3	4.5	2.7164	2.8314	7.4	28.99	-21.5
20	5825	t0	5	4.3	4.6	2.7102	2.9107	7.5	28.99	-21.5
<b>ac VHT20</b>										
20	5745	vt0	3	0.8	0.9	1.2078	1.2190	3.9	28.99	-25.1
20	5785	vt0	4	4.17	4.3	2.6122	2.6977	7.3	28.99	-21.7
20	5825	vt0	5	4.5	4.6	2.8445	2.8576	7.6	28.99	-21.4



## Unwanted Band Edge Emissions Measurements

**Engineer:** Poona Saber

**Test Date:** 10/13/2017

Unwanted emissions at the Band edges that fall within FCC part 15.205 are tested for spot check to make sure they comply with the general field strength limits of 15.209 at 3 meters distance

Procedure for peak band edge measurement for above 1000 MHz is as following:

RBW= 1 MHz

VBW= 3 Mhz

Detector= Peak

Sweep time= auto

Trace mode= Max hold

Procedure for Average band edge measurement for above 1000 MHz is as following:

RBW= 1 MHz

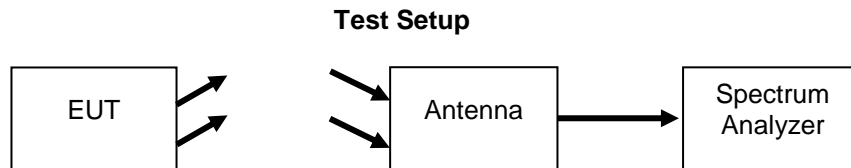
VBW= 30 Hz

Detector= Peak

Sweep time= auto

Trace mode= Max hold

EUT was placed on a turn table at 1.5 meter above the ground and 3 meters away from the receive antenna. The receive antenna was adjusted from 1-4 meter and turn table was positioned from 0 to 360 degrees to capture the highest emission coming from the EUT. The spot check data was captured for worst case transmission mode from the EUT and is included in Annex A.



**Please refer to Annex A for test results.**



**Test Equipment Utilized**

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Spectrum Analyzer	Agilent	E4407B	i00331	09/18/15	09/18/16
Horn Antenna	ARA	DRG-118/A	i00271	6/16/16	6/16/18
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	8/15/16	8/15/19

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT