FCC RADIO EXPOSURE TEST REPORT

FCC ID	:	SWX-UAPXG
Equipment	:	UniFi XG
Brand Name	:	UBIQUITI
Model Name	:	UAP-XG
Applicant	:	Ubiquiti Networks, Inc. 685 Third Avenue, 27th Floor New York, New York 10017 USA
Manufacturer	:	Ubiquiti Networks, Inc. 685 Third Avenue, 27th Floor New York, New York 10017 USA
Standard	:	47 CFR Part 2.1091

The product was received on May 02, 2017, and testing was started from Sep. 06, 2017 and completed on Sep. 22, 2017. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cliff Chang

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FA661623-29	01	Initial issue of report	Jul. 10, 2018

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Reviewed by: Sam Chen

Report Producer: Cindy Peng

1 General Description

1.1 EUT General Information

For Radio 1: 2.4GHz WLAN function (module FCC ID: SWX-M442G)

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

For Radio 2: 5GHz WLAN Band 1~ Band 2 function (module FCC ID: SWX-M445GL)

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
5GHz WLAN	5150-5250 5250-5350	5180-5240 5260-5320	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

For Radio 3: 5GHz WLAN Band 3~ Band 4 function (module FCC ID: SWX-M445GH)

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
5GHz WLAN	5470-5725 5725-5850	5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

For Radio 4: 2.4GHz WLAN function, 5GHz WLAN Band 1~ Band 4 function (FCC ID: SWX-M11DB)

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)

For Radio 5: Bluetooth function (FCC ID: SWX-UAPXG)

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / π/4-DQPSK / 8DPSK) LE: DSSS (GFSK)

Note 1: This device contains transmitter 2.4GHz WLAN module FCC ID: SWX-M442G, 5GHz Band 1~ Band 2 module FCC ID: SWX-M445GL, 5GHz Band 3~ Band 4 module FCC ID: SWX-M445GH and 2.4GHz/5GHz full band module FCC ID: SWX-M11DB.

1.2 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA661623-08

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. One of the original modules of the device supports RX only before, but it supports TX and RX now (Radio 4, FCC ID: SXW-M11DB).	Maximum Permissible Exposure.
2. Changing the Equipment Name to "UniFi XG" from "UniFi Access Point". 3. Changing the antenna type name to "Internal" from "PIFA".	Do not effect the test results.

Note: Maximum Permissible Exposure of Radio 1: 2.4GHz WLAN function (module FCC ID: SWX-M442G), Radio 2: 5GHz WLAN Band 1~ Band 2 function (module FCC ID: SWX-M445GL), Radio 3: 5GHz WLAN Band 3~ Band 4 function (module FCC ID: SWX-M445GH) and Radio 5: Bluetooth function (FCC ID: SWX-UAPXG) are based on original test report.

1.3 Testing Location

Testing Location		
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 29 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd = $\frac{30 \times P \times G}{377 \times d^2}$

2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Simultaneous Transmission Analysis Mode:

1. Radio 1: 2.4GHz WLAN + Radio 2: 5GHz WLAN Band 1~ Band 2 + Radio 3: 5GHz WLAN Band 3~ Band 4 + Radio 4: 2.4GHz WLAN + Radio 5: Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)	Ratio (S/Limit)
Radio 1: 2.4G	12.02	23.18	35.20	0.50	35.70	3.71535	29	0.35155	1	0.35155
Radio 2: 5.2G	8.00	24.53	32.53	0.50	33.03	2.00909	29	0.19010	1	0.19010
Radio 3: 5.8G	8.00	27.96	35.96	0.04	36.00	3.98107	29	0.37669	1	0.37669
Radio 4: 2.4G	4.00	17.98	21.98	0.50	22.48	0.17701	29	0.01675	1	0.01675
Radio 5: BT	1.00	8.64	9.64	0.50	10.14	0.01033	29	0.00098	1	0.00098
									Sum Ratio	0.93607
									Ratio Limit	1

2. Radio 1: 2.4GHz WLAN + Radio 2: 5GHz WLAN Band 1~ Band 2 + Radio 3: 5GHz WLAN Band 3~ Band 4 + Radio 4: 5GHz WLAN + Radio 5: Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)	Ratio (S/Limit)
Radio 1: 2.4G	12.02	23.18	35.20	0.50	35.70	3.71535	29	0.35155	1	0.35155
Radio 2: 5.2G	8.00	24.53	32.53	0.50	33.03	2.00909	29	0.19010	1	0.19010
Radio 3: 5.8G	8.00	27.96	35.96	0.04	36.00	3.98107	29	0.37669	1	0.37669
Radio 4: 5.6G	4.00	15.94	19.94	0.50	20.44	0.11066	29	0.01047	1	0.01047
Radio 5: BT	1.00	8.64	9.64	0.50	10.14	0.01033	29	0.00098	1	0.00098
									Sum Ratio	0.92979
									Ratio Limit	1

———THE END———