

Radio Exposure Evaluation Report

Equipment : 牆座式雙頻無線接入點
Brand Name : UBIQUITI
Model Name : UAP-IW-HD
Applicant : 香港商優比快科技有限公司台灣分公司
臺北市信義區松仁路 107 號 12 樓
Manufacturer : Ubiquiti Networks, Inc.
685 Third Avenue, 27th Floor New York,
New York 10017 USA
Standard : LP0002 Section 5.20.2 (2018-01-10)

The product was received on Oct. 30, 2017, and testing was started from Nov. 07, 2017 and completed on Mar. 24, 2018. 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 LP0002 Section 5.20.2 (2018-01-10) 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 United States government.

The test results in this 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: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Report Template No.: HE1-A1 Ver2.0

Summary of Test Result

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

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

None.

Reviewed by: Jackson Tsai

Report Producer: Michelle Tsai

1 General Description

1.1 EUT General Information

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)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: DSSS (GFSK)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

1.2 Testing Location

Testing Location					
☒	HWA YA	ADD	:	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL	:	886-3-327-3456	FAX : 886-3-327-0973
☐	JHUBEI	ADD	:	No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL	:	886-3-656-9065	FAX : 886-3-656-9085

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/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*100	6
3-30	1842 / f	4.89 / f	*900 / f ²	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5.0	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/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*100	30
3-30	1842/f	4.89/f	*180/f ²	30
30-300	27.5	0.073	1.0	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 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

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

For Bluetooth function:

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)
2.4G;BT-LE	1.40	7.30	8.70	0.50	9.20	0.00832	20	0.00165	1.00000

For Wi-Fi 2.4G function:

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)
2.4G;G1D	1.80	22.92	24.72	0.50	25.22	0.33266	20	0.06618	1.00000
2.4G;D1D	1.80	22.98	24.78	0.50	25.28	0.33729	20	0.06710	1.00000

For Wi-Fi 5GHz function:

(Non-Beamforming_Indoor)

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)
5.2G;D1D	4.00	25.24	29.24	0.00	29.24	0.83946	20	0.16701	1.00000
5.3G;D1D	4.00	18.95	22.95	0.00	22.95	0.19724	20	0.03924	1.00000
5.6G;D1D	4.00	23.82	27.82	0.00	27.82	0.60534	20	0.12043	1.00000
5.8G;D1D	4.00	26.13	30.13	0.00	30.13	1.03039	20	0.20499	1.00000

(Beamforming_Indoor)

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)
5.2G;D1D	10.02	25.77	35.79	0.00	35.79	3.79315	20	0.75462	1.00000
5.3G;D1D	10.02	19.77	29.79	0.00	29.79	0.95280	20	0.18955	1.00000
5.6G;D1D	10.02	19.89	29.91	0.00	29.91	0.97949	20	0.19486	1.00000
5.8G;D1D	10.02	24.10	34.12	0.00	34.12	2.58226	20	0.51372	1.00000

For Wi-Fi 5GHz function:

(Non-Beamforming_Outdoor)

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)
5.2G;D1D	4.00	16.98	20.98	0.50	21.48	0.14060	20	0.02797	1.00000
5.3G;D1D	4.00	21.29	25.29	0.50	25.79	0.37931	20	0.07546	1.00000
5.6G;D1D	4.00	23.82	27.82	0.50	28.32	0.67920	20	0.13512	1.00000
5.8G;D1D	4.00	26.13	30.13	0.50	30.63	1.15611	20	0.23000	1.00000

(Beamforming_Outdoor)

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)
5.2G;D1D	10.02	10.92	20.94	0.50	21.44	0.13932	20	0.02772	1.00000
5.3G;D1D	10.02	19.77	29.79	0.21	30.00	1.00000	20	0.19894	1.00000
5.6G;D1D	10.02	19.89	29.91	0.09	30.00	1.00000	20	0.19894	1.00000
5.8G;D1D	10.02	24.10	34.12	0.50	34.62	2.89734	20	0.57641	1.00000

————THE END————