



RF Exposure Evaluation Report

Equipment : Wireless-AX6000 Dual Band Gigabit Router
Brand Name : ASUS
Model No. : RT-AX88U, RT-AX6000, RT-AX88P, RT-AX88R,
RT-AX88A
FCC ID : MSQ-RTAXHP00
Standard : 47 CFR Part 2.1091
Applicant : ASUSTeK COMPUTER INC.
4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan
Manufacturer (1) : Compal Networking (KunShan) Co., LTD.
No. 520, Nanbang Rd., Economic & Technical
Development Zone Kunshan, Jiangsu Province
China
Manufacturer (2) : ASKEY TECHNOLOGY (JIANG SU) LTD
NO1388, Jiao Tong Road, Wujiang Economic
Technological Development Area Jiangsu Province
215200 China

The product sample received on Dec. 18, 2017 and completely tested on Feb. 01, 2018. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, pass the limit.

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Sam Chen
SPORTON INTERNATIONAL INC.





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PHOTOGRAPHS OF EUT V01

REVISION HISTORY

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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) 802.11ac/ax: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5250 5250-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac/ax: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)

1.2 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
RT-AX88U	All the models are identical, the different model names served as marketing strategy.
RT-AX6000	
RT-AX88P	
RT-AX88R	
RT-AX88A	

From the above models, model: RT-AX88U was selected as representative model for the test and its data was recorded in this report.

1.3 Table for SKU information

EUT No.	SUK No. / Brand Name	P/N
1	SUK 1 / SWAPnet	NS604804
2	SUK 2 / Mingtek	HN4821CG

Note: The SKU does not affect the test result of RF tests, so only SUK 1 was tested and recorded in this report.



1.4 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA780707

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

Modifications	Description
1. Add beamforming function for 2.4GHz 2. Adding 5 GHz Band 2 and Band 3 (5250~5350 MHz, 5470~5725 MHz) 3. Adding 160MHz (only supports 802.11ac mode)	MPE
4. Add Client without radar detection mode.	Do not affect the test results in this test report.

Note: Maximum Permissible Exposure of 2.4GHz Band and 5GHz Band1, Band4 are based on original test report.

1.5 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/ cm ²)	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/ cm ²)	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 26 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

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	1.94	29.92	31.86	0.50	32.36	1.72187	26	0.20270	1.00000
2.4G;D1D (BF Mode)	7.96	28.00	35.96	0.04	36.00	3.98107	26	0.46888	1.00000
5.2G;D1D	8.35	27.63	35.98	0.02	36.00	3.98107	26	0.46888	1.00000
5.3G;D1D	8.35	21.61	29.96	0.04	30.00	1.00000	26	0.11772	1.00000
5.6G;D1D	8.37	21.59	29.96	0.04	30.00	1.00000	26	0.11772	1.00000
5.8G;D1D	7.96	28.01	35.97	0.03	36.00	3.98107	26	0.46888	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz

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)
2.4G;G1D	7.96	28.00	35.96	0.04	36.00	3.98107	26	0.46888	1.00000	0.46888
5.2G;D1D	8.35	27.63	35.98	0.02	36.00	3.98107	26	0.46888	1.00000	0.46888
									Sum Ratio	0.93776
									Ratio Limit	1