



FCC RADIO EXPOSURE TEST REPORT

FCC ID : MSQ-RTAXI600
Equipment : Wireless-AX5700 Dual-band Gigabit Router
Brand Name : ASUS
Model Name : RT-AX86U/RT-AX5700
Applicant : ASUSTeK COMPUTER INC.
1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112,
Taiwan
Manufacturer (1) : Compal Networking(KunShan) CO., LTD.
No.520,Nan Bang RD., Economic & Technical
Development Zone, KunShan,JiangSu,China
Manufacturer (2) : ARCADYAN TECHNOLOGY (VIETNAM) CO., LTD.
Ba Thien Industrial Park, Ba Hien commune, Binh
Xuyen district, Vinh Phuc Province
Standard : 47 CFR Part 2.1091

The product was received on Dec. 05, 2019, and testing was started from Dec. 05, 2019 and completed on Sep.08, 2020. 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 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: Sam Chen

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



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Photographs of EUT v01



Summary of Test Result

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

Reference to Sporton Project No.: 9D0510-01.

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:

1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.
2. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: **Sam Chen**

Report Producer: **Cindy Peng**



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) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (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: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)

1.2 Table for EUT Supports Functions

Function	Support Type
AP Router	Master
Bridge	Client without radar detection
Repeater	Master
Mesh	Master

1.3 Table for Multiple Listing

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

Model Name	Description
RT-AX86U	There is nothing different of two model names, just for different marketing use.
RT-AX5700	

From the above models, model: RT-AX86U was selected as representative model for the test and its data was recorded in this report.



1.4 Table for SKU Information

EUT	2.4G FEM	
	Brand Name	Model Name
SKU 1	Qorvo	QPF4216B
SKU 2	SKYWORKS	SKY85331-11

Note: The SKU 2 is same as SKU 1 except for the 2.4G FEM.

1.5 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA9D0510

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

Modifications	Performance Checking
1. Adding SKU 2 (The SKU 2 is same as SKU 1 except for the 2.4G FEM).	Maximum Permissible Exposure.
2. Add LED Light PCB Board for the SKU 1. 3. Changing the applicant address to "1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan" from "4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan". 4. Updating adapter 3 label (Adding BSMI Labeling information)	Do not affect the test results.

Note: Other test results were based on original report.

1.6 Testing Location

Testing Location		
<input type="checkbox"/>	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
<input checked="" type="checkbox"/>	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:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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;D1D	6.43	29.51	35.94	0.05	35.99	3.97192	26	0.46757	1.00000
5.2G;D1D	6.63	29.35	35.98	0.01	35.99	3.97192	26	0.46757	1.00000
5.3G;D1D	6.63	23.32	29.95	0.04	29.99	0.99770	26	0.11745	1.00000
5.6G;D1D	6.67	23.29	29.96	0.03	29.99	0.99770	26	0.11745	1.00000
5.8G;D1D (Nss1)	6.61	29.33	35.94	0.05	35.99	3.97192	26	0.46757	1.00000
5.8G;D1D (Nss2)	4.85	29.37	34.22	0.5	34.72	2.96483	26	0.34901	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;D1D	6.43	29.51	35.94	0.05	35.99	3.97192	26	0.46757	1.00000	0.46757
5.2G;D1D	6.63	29.35	35.98	0.01	35.99	3.97192	26	0.46757	1.00000	0.46757
									Sum Ratio	0.93514
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————