



RADIO EXPOSURE TEST REPORT

FCC ID : MSQ-RTAX5X00
Equipment : ROG Rapture AX10000 Tri-band Gaming Mesh Router
Brand Name : ASUS
Model Name : GT6
Applicant : ASUSTeK COMPUTER INC.
1F., No. 15, Lide Rd., Beitou, 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.
Land plot No. D4-5-6, Thang Long Industrial Park (Vinh Phuc), Thien Ke Commune, Binh Xuyen District, 15000 Vinh Phuc Province, Vietnam
Standard : 47 CFR Part 2.1091

The product was received on Apr. 06, 2022, and testing was started from Apr. 19, 2022 and completed on Jul. 22, 2022. We, Sporton International Inc. Hsinchu 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 report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.


Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 EUT General Information	5
1.2 Antenna Information	6
1.3 Table for EUT supports functions.....	7
1.4 Accessories	7
1.5 Applicable Standards	7
1.6 Testing Location	7
2 Maximum Permissible Exposure	8
2.1 Limit of Maximum Permissible Exposure	8
2.2 MPE Calculation Method	8
2.3 MPE Exemption.....	9
2.4 Calculated Result and Limit.....	10
Photographs of EUT v01	



History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A1_1 Ver1.1

Page Number : 3 of 10
Issued Date : Aug. 01, 2022
Report Version : 01



Summary of Test Result

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

Declaration of Conformity:

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

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: Penny Kao



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 5725-5895	5180-5250 5250-5320 5500-5720 5745-5825 5815-5885	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 Antenna Information

Ant.	Port				Brand Name	Model Name	Antenna Type	Connector	Gain (dBi)
	WLAN 2.4GHz	WLAN 5GHz UNII 1~2A	WLAN 5GHz UNII 2C~4 (Mode 1)	WLAN 5GHz UNII 2C~4 (Mode 2)					
1	2	4	-	-	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	Note1
2	1	3	-	-	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
3	-	2	-	-	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
4	-	1	-	-	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
5	-	-	4	4	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
6	-	-	1	1	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
7	-	-	3	3	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
8	-	-	2	-	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	
9	-	-	-	2	LYNwave	MLX22M-121AA1-A	Dipole	I-PEX	

Note1: <Antenna gain>

Ant.	Port				Gain(dBi)								
	WLAN 2.4GHz	WLAN 5GHz UNII 1~2A	WLAN 5GHz UNII 2C~4 (Mode 1)	WLAN 5GHz UNII 2C~4 (Mode 2)	WLAN 2.4GHz	WLAN 5GHz							
						UNII 1	UNII 2A	UNII 2C		UNII 3		UNII 4	
Mode1	Mode2	Mode1	Mode2	Mode1	Mode2								
1	2	4	-	-	4.1	3.53	3.81	-	-	-	-	-	-
2	1	3	-	-	3.39	3.26	4.32	-	-	-	-	-	-
3	-	2	-	-	-	2.32	2.96	-	-	-	-	-	-
4	-	1	-	-	-	2.31	2.44	-	-	-	-	-	-
5	-	-	4	4	-	-	-	1.43	1.43	2.08	2.08	2.5	2.5
6	-	-	1	1	-	-	-	1.66	1.66	1.91	1.91	2.89	2.89
7	-	-	3	3	-	-	-	2.8	2.8	3.51	3.51	3.79	3.79
8	-	-	2	-	-	-	-	2.55	-	3.36	-	3.65	-
9	-	-	-	2	-	-	-	-	3.64	-	3.64	-	3.29

<Directional Gain>

Directional Gain(dBi)									
Item	WLAN 2.4GHz	WLAN 5GHz							
		UNII 1	UNII 2A	UNII 2C		UNII 3		UNII 4	
				Mode1	Mode2	Mode1	Mode2	Mode1	Mode2
2T1S	6.01	-	-	-	-	-	-	-	-
2T2S	4.1	-	-	-	-	-	-	-	-
4T1S	-	6.24	6.43	6.13	4.83	7.23	5.25	6.76	4.95
4T2S	-	-	4.32	-	-	4.23	3.64	3.79	3.79

Note2: The above information (except gain) was declared by manufacturer.

The directional gain is measured which follows the procedure of KDB 662911 D03.

Note3: Mode1 was Ant.5~7+Ant.8 and Mode 2 was Ant. 5~7+Ant.9.

Note4: The EUT support the antenna with TX/RX diversity functions. Both Ant.8 and Ant.9 can be used as transmitting and receiving antennas, but only one of them will be used at one time.

Ant. 8 generated be the worst case, so it was selected to test and recorded in the report

For 2.4GHz function:

For IEEE 802.11b/g/n/VHT/ax (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11a/n/ac/ax (4TX/4RX):

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

1.3 Table for EUT supports functions

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

Note : The above information was declared by manufacturer.

1.4 Accessories

Accessories					
No.	Equipment Name	Brand Name	Model Name	Rating	Remark
1	Adapter 1	DELTA	ADP-45FE F	INPUT: 100-240V~1.2A, 50-60Hz OUTPUT: 19V, 2.37A	With the DC cable: Non-shielded, 1.6m
2	Adapter 2	AcBel	ADH011	INPUT: 100-240V~1.4A, 50-60Hz OUTPUT: 19.5V, 2.31A, 45W MAX	With the DC cable: Non-shielded, 1.6m
Others					
RJ-45 cable*1: Non-shielded, 1.5m Power cord*2: Non-shielded, 0.8m					

1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2.1091
 - ♦ KDB 447498 D04 Interim General RF Exposure Guidance v01
- The following reference test guidance is not within the scope of accreditation of TAF.
- ♦ 47 CFR Part 1.1307
 - ♦ 47 CFR Part 1.1310

1.6 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISCED.



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 ²)	<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 ²)	<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 62 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 MPE Exemption

Option (A): 1.1307(b)(3)(i)(A): Available maximum time-averaged power is < 1 mW

Option (B): 1.1307(b)(3)(i)(B): Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, <= Pth.

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Option (C): 1.1307(b)(3)(i)(C): ERP is below a threshold calculated based on the distance

R between the person and the antenna / radiating structure, where $R > \lambda / 2 \pi$.

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$
1.34-30	$3,450 R^2 / f^2$
30-300	$3.83 R^2$
300-1,500	$0.0128 R^2 f$
1,500-100,000	$19.2 R^2$
Note: R is in meters, f is in MHz.	



2.4 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	6.01	29.90	35.91	0.08	35.99	3.97192	62	0.08223	1.00000
5.2G;D1D	6.24	29.71	35.95	0.04	35.99	3.97192	62	0.08223	1.00000
5.3G;D1D	6.43	23.47	29.90	0.09	29.99	0.99770	62	0.02065	1.00000
5.6G;D1D	6.13	23.83	29.96	0.03	29.99	0.99770	62	0.02065	1.00000
5.8G;D1D	7.23	28.72	35.95	0.04	35.99	3.97192	62	0.08223	1.00000
5.81G;D1D	3.79	32.18	35.97	0.02	35.99	3.97192	62	0.08223	1.00000
5.87G;D1D	6.76	27.07	33.83	0.50	34.33	2.71019	62	0.05611	1.00000

MPE Exemption Option C							
Frequency (MHz)	$\lambda/2\pi$ (m)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	MPE Exemption
2437	0.0196	0.62	35.99	33.84	2.421	7.380	Complies
5190	0.0092		35.99	33.84	2.421	7.380	Complies
5855	0.0081		35.99	33.84	2.421	7.380	Complies

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz UNII1, 2A+WLAN 5GHz UNII2C~4

Simultaneous Transmissions Option C							
Frequency (MHz)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	Simultaneous Transmissions	Simultaneous Transmissions Limit
2437	0.62	35.99	33.84	2.421	7.380	0.98	<= 1
5190		35.99	33.84	2.421	7.380		
5855		35.99	33.84	2.421	7.380		

————THE END————