RADIO EXPOSURE TEST REPORT

FCC ID	:	MSQ-RTAX4S00
Equipment	:	AX7800 Tri Band WiFi Router AX6600 Tri Band WiFi Router
Brand Name	:	ASUS
Model Name	:	ZenWiFi XT9/ASUS ZenWiFi XT9/XT8/BR-XT9/ZenWiFi Business BR-XT9/XT9
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. No. D4-5-6, Thang Long Industrial Park (Vinh Phuc), Thien Ke Commune, Binh Xuyen District, Vinh Phuc Province, Vietnam
Standard	:	47 CFR Part 2.1091

The product was received on Oct. 19, 2021, and testing was started from Nov. 21, 2021 and completed on Mar. 23, 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

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History of this test report

Report No.	Version	Description	Issued Date
FA162917-01	01	Initial issue of report	Mar. 02, 2022
FA162917-01	02	1. Revising ant.1~ant.6 antenna gain of section 1.2. 2. Revising Calculated Result of section 2.3.	Mar. 25, 2022

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: Wendy Pan

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	Ant. Type	Connector	Gain (dBi)
	WLAN 2.4GHz	WLAN 5GHz UNII 1~ UNII 2A	WLAN 5GHz UNII 2C~ UNII 4					
1	2	2	-	PSA	RFDPA230508I MLB902	Dipole	I-PEX	Note2
2	1	1	-	PSA	RFDPA230508I MLB902	Dipole	I-PEX	
3	-	-	3	PSA	RFDPA230508I MLB902	Dipole	I-PEX	
4	-	-	1	PSA	RFDPA230508I MLB902	Dipole	I-PEX	
5	-	-	2	PSA	RFDPA230508I MLB902	Dipole	I-PEX	
6	-	-	4	PSA	RFDPA230508I MLB902	Dipole	I-PEX	

Note1: The above information was declared by manufacturer.
Note2:

Ant.	Antenna Gain (dBi)					
	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	WLAN 5GHz UNII 4
1	3.86	4.25	4.45	-	-	-
2	3.94	4.53	4.52	-	-	-
3	-	-	-	3.8	4.05	4.73
4	-	-	-	4.06	4.23	4.23
5	-	-	-	3.66	3.65	4.78
6	-	-	-	4.32	4.76	5.08

Directional Gain (dBi)											
WLAN 2.4GHz		WLAN 5GHz UNII 1		WLAN 5GHz UNII 2A		WLAN 5GHz UNII 2C		WLAN 5GHz UNII 3		WLAN 5GHz UNII 4	
2T1S	2T2S	2T1S	2T2S	2T1S	2T2S	4T1S	4T2S	4T1S	4T2S	4T1S	4T2S
5.38	2.46	5.83	2.82	5.56	2.8	6.86	4.32	7.11	4.76	7.71	5.08

Note3: The directional gain is measured which follows the procedure of KDB 662911 D03.
The antenna report is provided in the operational description for this application.

For 2.4GHz and 5GHz UNII 1~UNII 2A function:
For IEEE 802.11a/b/g/n/VHT/ac/ax mode (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 UNII 2C~UNII 4 function:
For IEEE 802.11a/n/ac/ax mode (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 Multiple Listing

Brand Name	Equipment Name	Model Name	Description
ASUS	AX7800 Tri Band WiFi Router, AX6600 Tri Band WiFi Router	ZenWiFi XT9	All the equipment names and model names are identical, the different equipment names and model names served as a marketing strategy.
		ASUS ZenWiFi XT9	
		XT8	
		BR-XT9	
		ZenWiFi Business BR-XT9	
		XT9	

Note: From the above model: XT9 was selected as representative model for the test and its data was recorded in this report.
The above information was declared by manufacturer.

1.4 Table for Components Source Information

Items	Main Source	Second Source
Reserve resistor position for I/O board	V	N/A

Note: The above information was declared by manufacturer.

1.5 Table for EUT information

EUT	Reserve resistor position for I/O board
EUT 1	Main Source
EUT 2	Second Source

Note: The EUT 1 was performed testing for all items.

1.6 Table for EUT Supports Function

Function	Support Type	Remark
AP Router	Master	Support 2.4GHz/5GHz UNII 1-4
Bridge	Slave without radar detection	Support 2.4GHz/5GHz UNII 1-4
Mesh	Master	Support 2.4GHz/5GHz UNII 2C-4

Note: The AP Router (Master) mode has been tested and recorded in this test report.

The above information was declared by manufacturer.

1.7 Accessories

Accessories				
Equipment Name	**Brand Name**	**Model Name**	**Rating**	**Color**
Adapter 1	LEI	MU36D1120300-A1	INPUT: 100-240V~50/60Hz, 1.0A OUTPUT: 12V, 3A	White
Adapter 2	APD	WA-36N12FU	INPUT: 100-240V~, 50-60Hz, 0.9A, Max. OUTPUT: 12.0V, 3.0A	White
Adapter 3	LEI	MU36D1120300-A1	INPUT: 100-240V~50/60Hz, 1.0A OUTPUT: 12V, 3A	Black
Adapter 4	APD	WA-36N12FU	INPUT: 100-240V~, 50-60Hz, 0.9A, Max. OUTPUT: 12.0V, 3.0A	Black
Other				
RJ-45 cable*1: Non-shielded, 1.5m				

Note: The difference between Adapter1 & Adapter 3 is only color, there is only adapter 1 tested and recorded in this report.
The difference between Adapter2 & Adapter 4 is only color, there is only adapter 2 tested and recorded in this report.

1.8 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 ISED.

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^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/ 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^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 31 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

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	5.38	29.96	35.34	0.50	35.84	3.83707	31	0.31774	1.00000
5.2G;D1D	5.83	29.57	35.40	0.50	35.90	3.89045	31	0.32215	1.00000
5.3G;D1D	5.56	23.92	29.48	0.50	29.98	0.99541	31	0.08801	1.00000
5.6G;D1D	6.86	23.07	29.93	0.06	29.99	0.99770	31	0.08262	1.00000
5.8G;D1D	7.11	28.87	35.98	0.01	35.99	3.97192	31	0.32890	1.00000
5.81G;D1D	5.08	30.90	35.98	0.01	35.99	3.97192	31	0.32890	1.00000

Simultaneous Transmission Analysis Mode: EUT 1 + WLAN 2.4GHz + WLAN 5GHz (UNII 1~UNII 2A) + WLAN 5GHz (UNII 2C~UNII 4)

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	5.38	29.96	35.34	0.50	35.84	3.83707	31	0.31773	1.00000	0.31773
5.2G;D1D	5.83	29.57	35.40	0.50	35.90	3.89045	31	0.32215	1.00000	0.32215
5.81G;D1D	5.08	30.90	35.98	0.01	35.99	3.97192	31	0.32889	1.00000	0.32889
									Sum Ratio	0.96877
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

———THE END———