



RADIO EXPOSURE TEST REPORT

FCC ID : MSQ-RTBE8T00

Equipment : TUF Gaming BE9400 Tri Band WiFi 7 Router,
BE9400 Tri Band WiFi 7 Router

Brand Name : ASUS

Model Name : TUF-BE9400, RT-BE90U, RT-BE9400

Applicant : ASUSTeK COMPUTER INC.
1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan

Standard : 47 CFR Part 2.1091

The product was received on Mar. 13, 2025, and testing was started from Mar. 31, 2025 and completed on Jun. 30, 2025. 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 variant 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

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History of this test report

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Summary of Test Result

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

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

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) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
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) 802.11be/EHT240: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
6GHz WLAN	5925-7125	5955-7055	802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)



1.2 Antenna Information

Ant.	Port			Brand	Model Name	Antenna Type	Connector	Gain (dBi)
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz					
1	1	-	-	RFlink	3020202219	Dipole Antenna	I-PEX	Note 1
2	2	-	-	RFlink	3020202220	Dipole Antenna	I-PEX	
3	-	1	-	RFlink	3020202222	Dipole Antenna	I-PEX	
4	-	2	-	RFlink	3020202221	Dipole Antenna	I-PEX	
5	-	-	1	RFlink	3020202223	Dipole Antenna	I-PEX	
6	-	-	2	RFlink	3020202224	Dipole Antenna	I-PEX	

Note 1

Ant.	Antenna Gain (dBi)								
	WLAN 2.4GHz	WLAN 5GHz				WLAN 6GHz			
		UNII 1	UNII 2A	UNII 2C	UNII 3	UNII 5	UNII 6	UNII 7	UNII 8
1	2.55	-	-	-	-	-	-	-	-
2	2.25	-	-	-	-	-	-	-	-
3	-	2.89	2.28	2.67	2.74	-	-	-	-
4	-	2.37	2.68	2.85	2.48	-	-	-	-
5	-	-	-	-	-	2.05	1.97	2.39	2.37
6	-	-	-	-	-	1.97	1.97	2.17	2.56

Note 2: The above information was declared by manufacturer.

Note3: Directional gain information

Type	Maximum Output Power	Power Spectral Density
Non-BF	Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for N ANT ≤ 4	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$
BF	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$

Ex.

Directional Gain (NSS1) formula :

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$$

$$NSS1(g1,1) = 10^{G1/20} ; NSS1(g1,2) = 10^{G2/20} ; NSS1(g1,3) = 10^{G3/20} ; NSS1(g1,4) = 10^{G4/20}$$

$$g_{j,k} = (NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2$$

$$DG = 10 \log[(NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2 / N_{ANT}] \Rightarrow 10$$

$$\log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / N_{ANT}]$$

Where ;

$$2.4G \ G1 = 2.55 \text{ dBi} ; G2 = 2.25 \text{ dBi} ; DG = 5.41 \text{ dBi}$$

$$5G \text{ UNII-1} \ G1 = 2.89 \text{ dBi} ; G2 = 2.37 \text{ dBi} ; DG = 5.64 \text{ dBi}$$

$$5G \text{ UNII-2A} \ G1 = 2.28 \text{ dBi} ; G2 = 2.68 \text{ dBi} ; DG = 5.49 \text{ dBi}$$

$$5G \text{ UNII-2C} \ G1 = 2.67 \text{ dBi} ; G2 = 2.85 \text{ dBi} ; DG = 5.77 \text{ dBi}$$

$$5G \text{ UNII-3} \ G1 = 2.74 \text{ dBi} ; G2 = 2.48 \text{ dBi} ; DG = 5.62 \text{ dBi}$$

$$6G \text{ UNII-5} \ G1 = 2.05 \text{ dBi} ; G2 = 1.97 \text{ dBi} ; DG = 5.02 \text{ dBi}$$

$$6G \text{ UNII-6} \ G1 = 1.97 \text{ dBi} ; G2 = 1.97 \text{ dBi} ; DG = 4.98 \text{ dBi}$$

$$6G \text{ UNII-7} \ G1 = 2.39 \text{ dBi} ; G2 = 2.17 \text{ dBi} ; DG = 5.29 \text{ dBi}$$

$$6G \text{ UNII-8} \ G1 = 2.37 \text{ dBi} ; G2 = 2.56 \text{ dBi} ; DG = 5.48 \text{ dBi}$$

For 2.4GHz function:

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 a/ax/be (2TX/2RX):

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

Port 1 and Port 2 could transmit/receive simultaneously.



1.3 Table for EUT supports function

Function	Supports type
AP Router	Master
Bridge	Slave without radar detection
Repeater	Master
Mesh	Master

Note 1: The USB port on this device supports both storage and WWAN functionality.

Note 2: The above information was declared by manufacturer.

1.4 Table for Multiple Listing

EUT	Equipment Name	Model Name	DDR4 (Location: TP7)	Heatsink with Thermal Pad	Housing and Heatsink Design	Description
1	TUF Gaming BE9400 Tri Band WiFi 7 Router	TUF-BE9400	Brand Name: Samsung Model Name: K4A8G165WG- BCWE	Without	-	For Retail Channel
2	BE9400 Tri Band WiFi 7 Router	RT-BE90U	Brand Name: Nanya Model Name: NT5AD512M16 C4-JR	With	Different from TUF-BE9400	For Wholesales
		RT-BE9400			Same with RT-BE90U	For Retail Channel

Note 1: From the above models, model: TUF-BE9400 (EUT 1) was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA531325

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

Modifications	Performance Checking
Adding the EUT 2 (Please refer to section 1.4 for detailed information.)	After evaluating, this test report is not influenced.

Note: All test results were based on original.



1.6 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	Frecom	F30L10-120250SPAU	Input: 100-240V~50/60Hz, 1.25A Output: 12.0V, 2.5A, 30.0W
Adapter 2	SOY	SOY-1200250US-540	Input: 100-240V~50/60Hz, 0.9A Max. Output: 12.0V, 2.5A
Other			
RJ-45 cable*1, Non-Shielded, 1.5m			

1.7 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/ 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 24 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)	Ratio (S/Limit)
2.4G;D1D	5.41	28.05	33.46	0.50	33.96	2.48886	24	0.34384	1.00000	0.34384
5.2G;D1D	5.64	27.71	33.35	0.50	33.85	2.42661	24	0.33524	1.00000	0.33524
5.3G;D1D	5.49	22.32	27.81	0.50	28.31	0.67764	24	0.09362	1.00000	0.09362
5.6G;D1D	5.77	23.16	28.93	0.50	29.43	0.87700	24	0.12116	1.00000	0.12116
5.8G;D1D	5.62	28.92	34.54	0.43	34.97	3.14051	24	0.43387	1.00000	0.43387
6.2G;D1D	5.02	24.71	29.73	0.26	29.99	0.99770	24	0.13783	1.00000	0.13783
6.4G;D1D	4.98	24.30	29.28	0.50	29.78	0.95060	24	0.13133	1.00000	0.13133
6.7G;D1D	5.29	24.36	29.65	0.34	29.99	0.99770	24	0.13783	1.00000	0.13783
7.0G;D1D	5.48	21.99	27.47	0.50	27.97	0.62661	24	0.08657	1.00000	0.08657
Band12;G7D	-	-	24.00	0.50	24.50	0.28184	24	0.03894	0.46600	0.08356

Simultaneous Transmission Analysis Mode:

Mode 1: WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz

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	5.41	28.05	33.46	0.50	33.96	2.48886	24	0.34384	1.00000	0.34384
5.8G;D1D	5.62	28.92	34.54	0.43	34.97	3.14051	24	0.43387	1.00000	0.43387
6.2G;D1D	5.02	24.71	29.73	0.26	29.99	0.99770	24	0.13783	1.00000	0.13783
									Sum Ratio	0.91554
									Ratio Limit	1

Mode 1: WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz + WWAN dongle

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	5.41	28.05	33.46	0.50	33.96	2.48886	24	0.34384	1.00000	0.34384
5.8G;D1D	5.62	28.92	34.54	0.43	34.97	3.14051	24	0.43387	1.00000	0.43387
6.2G;D1D	5.02	24.71	29.73	0.26	29.99	0.99770	24	0.13783	1.00000	0.13783
Band12;G7D	-	-	24.00	0.50	24.50	0.28184	24	0.03894	0.46600	0.08356
									Sum Ratio	0.99910
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————