

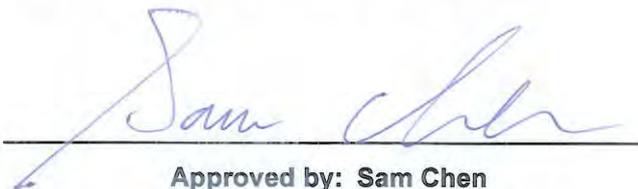


# FCC RADIO EXPOSURE TEST REPORT

**FCC ID** : MSQ-RTAXJG00  
**Equipment** : AX5400 Dual Band WiFi Router  
**Brand Name** : ASUS  
**Model Name** : ZenWiFi XD6/ASUS ZenWiFi XD6/RT-AX5400/XD6  
(Refer to section 1.3 for detail information)  
**Applicant** : ASUSTeK COMPUTER INC.  
1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112,  
Taiwan  
**Manufacturer (1)** : Datamax Electronics (DongGuan) Co., Ltd.  
Niu Shan Foreign Economic Industrial Park, Dong  
Cheng District, Dong Guan City, Guang Dong, China  
**Manufacturer (2)** : Lukisen Electronic Corp.  
3F.,No.236,Boai St., Shulin Dist.,New Taipei City  
23845, Taiwan  
**Manufacturer (3)** : Lih Rong Electronic Enterprise Co.,Ltd.  
No. 486, Sec. 1, Wanshou Road, Guishan District,  
Taoyuan City, Taiwan  
**Standard** : 47 CFR Part 2.1091

The product was received on Dec. 09, 2020, and testing was started from Dec. 22, 2020 and completed on Feb. 05, 2021. 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 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.)



## Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
<b>1 General Description .....</b>	<b>5</b>
1.1 EUT General Information .....	5
1.2 Antenna Information .....	6
1.3 Table for Multiple Listing .....	8
1.4 Accessories .....	8
<b>2 Maximum Permissible Exposure .....</b>	<b>9</b>
2.1 Limit of Maximum Permissible Exposure .....	9
2.2 MPE Calculation Method.....	9
2.3 Calculated Result and Limit.....	10
<b>Photographs of EUT v01</b>	





### Summary of Test Result

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

**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:**

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: **Viola Huang**



# 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)
Bluetooth	2400-2483.5	2402-2480	LE: GFSK



### 1.2 Antenna Information

Set	Ant.	2.4GHz Port	5GHz Port	Bluetooth	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	2	-	-	M.gear	C660-510545-A (SRF20201842)	PCB Antenna	I-PEX	Note 1
	2	-	2	-	M.gear	C660-510545-A (SRF20201842)	Dipole Antenna	I-PEX	
	3	-	4	-	M.gear	C660-510545-A (SRF20201842)	Dipole Antenna	I-PEX	
	4	1	-	-	M.gear	C660-510545-A (SRF20201842)	PCB Antenna	I-PEX	
	5	-	3	-	M.gear	C660-510545-A (SRF20201842)	Dipole Antenna	I-PEX	
	6	-	1	-	M.gear	C660-510545-A (SRF20201842)	Dipole Antenna	I-PEX	
2	1	2	-	-	PSA	RFPCA351314 IMAB702	PCB Antenna	I-PEX	
	2	-	2	-	PSA	RFPCA351314 IMAB702	Dipole Antenna	I-PEX	
	3	-	4	-	PSA	RFPCA351314 MAB702	Dipole Antenna	I-PEX	
	4	1	-	-	PSA	RFPCA351314 MAB702	PCB Antenna	I-PEX	
	5	-	3	-	PSA	RFPCA351314 MAB702	Dipole Antenna	I-PEX	
	6	-	1	-	PSA	RFPCA351314 MAB702	Dipole Antenna	I-PEX	
3	1	-	-	1	YAGEO	ANT3216A063R 2400A	Chip Antenna	N/A	



Note 1:

Set	Ant.	Gain (dBi)															Bluet ooth
		2.4GHz			5GHz Band 1			5GHz Band 2			5GHz Band 3			5GHz Band 4			
		CDD	DG (Nss1)	DG (Nss2)	CDD	DG (Nss1)	DG (Nss2)	CDD	DG (Nss1)	DG (Nss2)	CDD	DG (Nss1)	DG (Nss2)	CDD	DG (Nss1)	DG (Nss2)	
1	1~6	1.21	4.16	-	1.21	6.96	4.14	1.39	7.19	4.37	0.99	6.75	3.93	1.24	7.00	4.25	-
2	1~6	1.21	4.16	-	1.21	6.96	4.14	1.39	7.19	4.37	0.99	6.75	3.93	1.24	7.00	4.25	-
3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.69

Note 2: The above information was declared by manufacturer.

Note 3: The EUT has two set of antenna and each set has six antennas for WLAN. There are the same type, so only the set 1 antenna was selected to test and record in this report.

**For 2.4GHz function:**

**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:**

**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.

**For Bluetooth Function (1TX/1RX):**

Only Port 1 can be used as transmitting/receiving antenna.



### 1.3 Table for Multiple Listing

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

Model Name	Description
ZenWiFi XD6	All the models are identical, the different model names served as marketing strategy.
ASUS ZenWiFi XD6	
RT-AX5400	
XD6	

Note 1: From the above models, model: XD6 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.

### 1.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	LEI	MU24D1120200-A1	INPUT: 100-240V ~ 50/60Hz, 0.7A OUTPUT: 12V, 2A
Adapter 2	DVE	DSA-24PFS-12 FUS 120200	INPUT: 100-240V ~ 50/60Hz, 0.8A OUTPUT: 12.0V, 2.0A, 24.0W
Others			
RJ-45 cable 1: Non-shielded, 2m			
Wall-mounted rack*1			



## 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	<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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	<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:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**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 <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )
2.4G;D1D	4.16	29.75	33.91	0.50	34.41	2.76058	24	0.38138	1.00000
5.2G;D1D	6.96	29.02	35.98	0.01	35.99	3.97192	24	0.54873	1.00000
5.3G;D1D	7.19	22.78	29.97	0.02	29.99	0.99770	24	0.13783	1.00000
5.6G;D1D	6.75	23.22	29.97	0.02	29.99	0.99770	24	0.13783	1.00000
5.8G;D1D	7.00	28.99	35.99	0.00	35.99	3.97192	24	0.54873	1.00000
2.4G;BT-LE	1.69	0.62	2.31	0.50	2.81	0.00191	24	0.00026	1.00000

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

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
2.4G;D1D	4.16	29.75	33.91	0.50	34.41	2.76058	24	0.38138	1.00000	0.38138
5.8G;D1D	7.00	28.99	35.99	0.00	35.99	3.97192	24	0.54873	1.00000	0.54873
2.4G;BT-LE	1.69	0.62	2.31	0.50	2.81	0.00191	24	0.00026	1.00000	0.00026
									Sum Ratio	0.93037
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————