

## RF Exposure Report

**Report No.:** SA200511E11A

**FCC ID:** MSQ-CMAXI800

**Test Model:** CMAX6000

**Series Model:** CMAX6000V

**Received Date:** May 11, 2020

**Test Date:** June 05, 2020

**Issued Date:** Oct. 07, 2020

**Applicant:** ASUSTeK Computer Inc.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

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Taiwan

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
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**FCC Registration /  
Designation Number:** 723255 / TW2022

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### Release Control Record

Issue No.	Description	Date Issued
SA200511E11A	Original release.	Oct. 07, 2020

## 1 Certificate of Conformity

**Product:** AX6000 Dual Band DOCSIS 3.1 Cable Modem Router,  
AX6000 Dual Band DOCSIS 3.1 Cable Modem Voice Router

**Brand:** ASUS

**Test Model:** CMAX6000

**Series Model:** CMAX6000V

**Sample Status:** ENGINEERING SAMPLE


**Applicant:** ASUSTeK Computer Inc.

**Test Date:** June 05, 2020

**Standards:** FCC Part 2 (Section 2.1091)  
IEEE C95.3 -2002

**References Test Guidance:** KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :**  \_\_\_\_\_, **Date:** Oct. 07, 2020  
Joyce Kuo / Specialist

**Approved by :**  \_\_\_\_\_, **Date:** Oct. 07, 2020  
Clark Lin / Technical Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
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

f = Frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 31cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

Antenna NO.	Chain No.	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length (mm)
1	0	2.42	2.4~2.4835GHz	PIFA	i-pex(MHF)	227
		0.49	5.15~5.85GHz			
2	1	0.09	2.4~2.4835GHz	PIFA	i-pex(MHF)	171
		1.42	5.15~5.85GHz			
3	2	1.38	2.4~2.4835GHz	PIFA	i-pex(MHF)	145
		1.44	5.15~5.85GHz			
4	3	3.69	2.4~2.4835GHz	PIFA	i-pex(MHF)	73
		2.46	5.15~5.85GHz			

## 2.5 Calculation Result

For 2.4GHz, 5GHz (U-NII-1 & U-NII-3 band) data was copied from the original test report (Report No.: SA200511E11)

Operation Mode	Evaluation Frequency (MHz)	Max Avg. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN 2.4GHz	2412~2462	984.387	8.02	31	0.51669	1
WLAN 5GHz U-NII-1	5180~5250	901.087	7.50	31	0.41960	1
WLAN 5GHz U-NII-2A	5250~5320	249.327	7.50	31	0.1161	1
WLAN 5GHz U-NII-2C	5500~5720	250.403	7.50	31	0.1166	1
WLAN 5GHz U-NII-3	5745~5825	862.325	7.50	31	0.40155	1

### NOTE:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- 2.4GHz:  $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4] = 8.02 \text{ dBi}$   
 5GHz: For U-NII-1:  $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4] = 7.5 \text{ dBi}$   
 For U-NII-2A:  $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4] = 7.5 \text{ dBi}$   
 For U-NII-2C:  $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4] = 7.5 \text{ dBi}$   
 For U-NII-3:  $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4] = 7.5 \text{ dBi}$

### Conclusion:

The formula of calculated the MPE is:

$$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} = 0.51669 / 1 + 0.41960 / 1 = 0.93629$$

Therefore the maximum calculations of above situations are less than the "1" limit.

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