

RF Exposure Report

Report No.: SA200511E11

FCC ID: MSQ-CMAXI800

Test Model: CMAX6000

Series Model: CMAX6000V

Received Date: May 11, 2020

Test Date: June 01, 2020

Issued Date: Sep. 14, 2020

Applicant: ASUSTeK Computer Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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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
SA200511E11	Original release.	Sep. 14, 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 01, 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 : Vivian Huang , **Date:** Sep. 14, 2020
Vivian Hunag / Specialist

Approved by : [Signature] , **Date:** Sep. 14, 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 ²)	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 ²)*	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

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 31 cm 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			

*The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

2.5 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4GHz	2412~2462	984.387	8.02	31	0.51669	1
WLAN 5GHz U-NII-1	5180~5240	901.087	7.50	31	0.41960	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-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:

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

CPD = Calculation power density

LPD = Limit of power density

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

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

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