

RF Exposure Report

Report No.: SA200102E06

FCC ID: RAXCM4652442

Test Model: CM4652442-MM

Received Date: Jan. 02, 2020

Test Date: Feb. 06 to 17, 2020

Issued Date: Mar. 30, 2020

Applicant: Arcadyan Technology Corporation

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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
SA200102E06	Original release.	Mar. 30, 2020

1 Certificate of Conformity

Product: DOCSIS® 3.1 Dual-band AX6000 Wi-Fi 6 Cable Gateway
Brand: XTREAM
Test Model: CM4652442-MM
Sample Status: ENGINEERING SAMPLE
Applicant: Arcadyan Technology Corporation
Test Date: Feb. 06 to 17, 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.

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Approved by : Clark Lin, **Date:** Mar. 30, 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

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

where

Pd = power density in mW/cm²

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 32 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

1. The antennas provided to the EUT, please refer to the following table:

Ant. No.	Transmitter Circuit	Model No.	Ant. Net Gain (dBi) (Including cable loss)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length (mm)
1	Chain 0	CM4652442- MM R0B	2.42	2.4~2.4835	PIFA	i-pex(MHF)	227
			0.49	5.15~5.85			
2	Chain 1	CM4652442- MM R0B	0.09	2.4~2.4835	PIFA	i-pex(MHF)	171
			1.42	5.15~5.85			
3	Chain 2	CM4652442- MM R0B	1.38	2.4~2.4835	PIFA	i-pex(MHF)	145
			1.44	5.15~5.85			
4	Chain 3	CM4652442- MM R0B	3.69	2.4~2.4835	PIFA	i-pex(MHF)	73
			2.46	5.15~5.85			

2. The directional gain table:

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4~2.4835	8.02	PIFA	i-pex(MHF)
5.15~5.85	7.5		

Note: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4]$

2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max. Avg. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN (2.4GHz)	2412~2462	969.053	8.02	32	0.47735	1
WLAN (U-NII-1)	5180~5240	902.817	7.50	32	0.39454	1
WLAN (U-NII-3)	5745~5825	934.131	7.50	32	0.40822	1

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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

$WLAN (2.4GHz) + WLAN (5GHz) = 0.47735 / 1 + 0.40822 / 1 = 0.88557$

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

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