

## 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

**Address:** No.8, Sec.2, Guangfu Rd., Hsinchu City 30071, Taiwan, R.O.C.

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

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**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

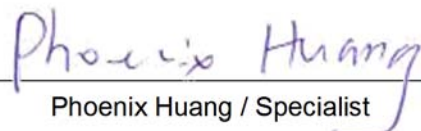
**Test Date:** Feb. 06 to 17, 2020

**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.

**Prepared by :**

  
Phoenix Huang / Specialist

**Date:**

Mar. 30, 2020

**Approved by :**

  
Clark Lin / Technical Manager

**Date:**

Mar. 30, 2020

## 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

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

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 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 <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------------|----------------------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 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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