| | |
|---|---|
| **Report No.:** | SABAOZ-WTW-P20090121A |
| **FCC ID:** | 2AHKM-ARIA2210 |
| **Test Model:** | ARIA2210 |
| **Series Model:** | OS2210 |
| **Received Date:** | Sep. 04, 2020 |
| **Test Date:** | Sep. 30, 2020 |
| **Issued Date:** | July 20, 2021 |
| **Applicant:** | Hitron Technologies Inc. |
| **Address:** | No. 1-8, Li-Hsin 1st Rd., Hsinchu Science Park, Hsinchu 30078, 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 |

## Table of Contents

## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| SABAOZ-WTW-P20090121A | Original release. | July 20, 2021 |

## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | WiFi Extender |
| **Brand:** | hitron |
| **Test Model:** | ARIA2210 |
| **Series Model:** | OS2210 |
| **Applicant:** | Hitron Technologies Inc. |
| **Test Date:** | Sep. 30, 2020 |
| **Standards:** | FCC Part 2 (Section 2.1091)<br>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:** July 20, 2021

Vivian Huang / Specialist

**Approved by :** , **Date:** July 20, 2021

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 $mW/cm^2$

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

## 2.4 Antenna Gain

| Antenna NO. | Chain No. | Brand | Model | Antenna Net Gain(dBi) | Frequency range | Antenna Type | Connector Type | Cable Length (mm) |
|---|---|---|---|---|---|---|---|---|
| WiFi 2.4G | 1 | ALPHA | RFPCA252007IMAB301 | 3.5 | 2.4~2.4835GHz | PIFA | i-pex(MHF) | 7 |
| | 2 | | RFPCA252023IMAB301 | 2.7 | 2.4~2.4835GHz | | | 23.5 |
| WiFi 5G | 1 | | RFPCA251812IM5B302 | 4 | 5.15~5.85GHz | | | 12 |
| | 2 | | RFPCA251817IM5B301 | 3.5 | 5.15~5.85GHz | | | 18 |
| BT | - | | RFPCA252019IMAB302 | 2.8 | 2.4~2.4835GHz | | | 19 |

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.5 Calculation Result

For WLAN (U-NII-1), WLAN (U-NII-3) and Bluetooth data was copied from the original test report (Report No.: SABAOZ-WTW-P20090121)

| 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 | 912.141 | 6.12 | 26 | 0.43945 | 1 |
| WLAN (U-NII-1) | 5180-5240 | 735.268 | 6.76 | 26 | 0.41048 | 1 |
| WLAN (U-NII-2A) | 5260-5320 | 247.699 | 6.76 | 26 | 0.13828 | 1 |
| WLAN (U-NII-2C) | 5500-5700 | 245.948 | 6.76 | 26 | 0.13731 | 1 |
| WLAN (U-NII-3) | 5745-5825 | 664.858 | 6.76 | 26 | 0.37117 | 1 |
| Bluetooth | 2402~2480 | 5.636 | 2.80 | 26 | 0.00126 | 1 |

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.12 dBi
3. 5GHz: The directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.76 dBi

**Conclusion:**

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz + Bluetooth = 0.43945 / 1 + 0.41048 / 1 + 0.00126 / 1= 0.85119

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

**--- END ---**