

## RF Exposure Report

**Report No.:** SA181206C23

**FCC ID:** R59CMJUNIOR

**Test Model:** Cloud Master Jr.

**Received Date:** Dec. 06, 2018

**Date of Evaluation:** Jan. 17, 2019

**Issued Date:** Jan. 19, 2019

**Applicant:** ECOLUMINA TECHNOLOGIES, INC.

**Address:** 6F-5, No.432 Sec.1, Keelung Rd., Xinyi Dist., Taipei City 11051, Taiwan.

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

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

**Test Location:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)

**FCC Registration /  
Designation Number:** 788550 / TW0003



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specifically mentioned, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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### Release Control Record

| Issue No.   | Description      | Date Issued   |
|-------------|------------------|---------------|
| SA181206C23 | Original Release | Jan. 19, 2019 |

## 1 Certificate of Conformity

**Product:** Wireless IoT Gateway

**Brand:** ECOLUMINA

**Test Model:** Cloud Master Jr.

**Sample Status:** Mass product

**Applicant:** ECOLUMINA TECHNOLOGIES, INC.

**Date of Evaluation:** Jan. 17, 2019

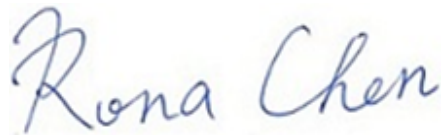
**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 :**

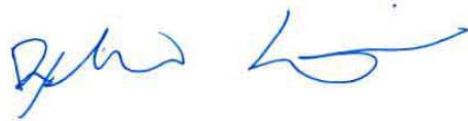


**Date:**

Jan. 19, 2019

Rona Chen / Specialist

**Approved by :**



**Date:**

Jan. 19, 2019

Dylan Chiou / Project Engineer

## 2 General Information

This report is issued as a duplicate report to BV CPS report no.: SA180627C01. The difference compared with original report is modifying product name of EUT. Due to no effect on RF exposure, the original evaluation result is kept in this report.

## 3 RF Exposure

### 3.1 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

### 3.2 MPE Calculation Formula

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

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

### 3.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

### 2.1 Antenna Gain

WLAN 2.4GHz: PCB antenna with 3.6 dBi gain

Zigbee: PIFA antenna with 3.74 dBi gain

### 3.4 Calculation Result of Maximum Conducted Power

| Band   | Frequency Band (MHz) | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|--------|----------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| WLAN   | 2412-2462            | 22.79           | 3.6                | 20            | 0.087                               | 1.00                        |
| Zigbee | 2405-2480            | 4.77            | 3.74               | 20            | 0.001                               | 1.00                        |

#### 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

$WLAN\ 2.4GHz + Zigbee = 0.087 / 1.00 + 0.001 / 1.00 = 0.088$

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

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