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

Table of Contents

Release Control Record

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

1 Certificate of Conformity

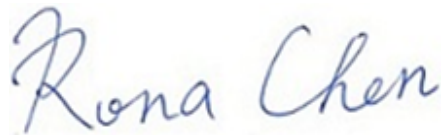|	
Product:	Wireless IoT Gateway
Brand:	ECOLUMINA
Test Model:	Cloud Master Jr.
Sample Status:	Mass product
Applicant:	ECOLUMINA TECHNOLOGIES, INC.
Date of Evaluation:	Jan. 17, 2019
Standards:	FCC Part 2 (Section 2.1091)
	KDB 447498 D01 General RF Exposure Guidance v06
	IEEE C95.1-1992

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.
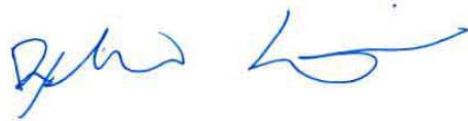
Prepared by : _Rona Chen_ , **Date:** Jan. 19, 2019

Rona Chen / Specialist

Approved by : _(signature)_ , **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^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

3.2   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

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^2)	Limit (mW/cm^2)
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 + ……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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