

RF Exposure Report

Report No.: SA180822E04B

FCC ID: XCNUBC1322

Test Model: UBC1322

Received Date: Nov. 12, 2018

Test Date: Dec. 04, 2018

Issued Date: Feb. 26, 2019

Applicant: Ubee Interactive Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA180822E04B	Original release.	Feb. 26, 2019

1 Certificate of Conformity

Product: Wireless eMTA

Brand: Ubee

Test Model: UBC1322

Applicant: Ubee Interactive Corp.

Test Date: Dec. 04, 2018

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.

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Approved by : May Chen , **Date:** Feb. 26, 2019
May Chen / 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

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

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 38cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna No.	Transmitter Circuit	Ant. Net Gain (dBi)	Freq. range (GHz)	Ant. Type	Connector Type	Cable Length (mm)
1	Chain 2	3.48	2.4~2.4835	Dipole	i-pex(MHF)	85
	Chain 1	4.08	5.15~5.85			
2	Chain 1	3.49	2.4~2.4835	Dipole	i-pex(MHF)	73
	Chain 2	4.49	5.15~5.85			
3	Chain 0	4.49	5.15~5.85	Dipole	i-pex(MHF)	42
4	Chain 0	3.49	2.4~2.4835	Dipole	i-pex(MHF)	81
	Chain 3	4.47	5.15~5.85			

2.5 Calculation Result of Maximum Conducted Power

All data was copied from the original test report (Report No.: SA180822E04)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4GHz	2437	837.761	8.26	38	0.30927	1
WLAN UNII-1, UNII-3	5745	995.226	10.4	38	0.60137	1
WLAN UNII-2A, UNII-2C	5610	235.236	10.4	38	0.14214	1

Note:

2.4GHz: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20})^2 / 3] = 8.26\text{dBi}$

5GHz: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 4] = 10.4\text{dBi}$

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

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.30927 / 1 + 0.60137 / 1 = 0.91064$

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

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