

RF Exposure Report

Report No.: SA160601C24

FCC ID: XCNUBC1301

Test Model: UBC1301

Received Date: June 01, 2016

Test Date: July 20, 2016

Issued Date: Aug. 25, 2016

Applicant: Ubee Interactive Corp.

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

Issue No.	Description	Date Issued
SA160601C24	Original release.	Aug. 25, 2016

1 Certificate of Conformity

Product: Wireless eMTA

Brand: Ubee

Test Model: UBC1301

Sample Status: ENGINEERING SAMPLE

Applicant: Ubee Interactive Corp.

Test Date: July 20, 2016

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 : Midoli Peng , **Date:** Aug. 25, 2016
Midoli Peng / Specialist

Approved by : May Chen , **Date:** Aug. 25, 2016
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				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

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 30cm away from the body of the user.

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

2.4 Antenna Gain

Frequency (MHz)	Ant 1 2.4GHz (Chain 0) / 5GHz (Chain 3)		Ant 2 2.4GHz (Chain 1) / 5GHz (Chain 2)	
	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)
2400	3.1	69.4	4.0	65.5
2450	3.5	68.0	4.0	65.0
2500	3.9	63.5	3.5	69.9
5050	4.5	73.3	4.9	63.1
5150	4.8	71.7	4.9	64.7
5350	4.4	70.8	4.2	72.5
5725	4.7	67.0	4.6	67.6
5825	4.3	67.1	4.3	69.6

Frequency (MHz)	Ant 3 2.4GHz (Chain 2) / 5GHz (Chain 1)		Ant 4 2.4GHz (Chain 3) / 5GHz (Chain 0)	
	Peak Gain (dBi)	Efficiency (%)	Peak Gain (dBi)	Efficiency (%)
2400	3.9	66.1	3.9	63.0
2450	3.4	66.8	3.8	65.3
2500	3.8	67.0	3.8	65.2
5050	4.8	67.5	4.9	62.4
5150	4.8	69.1	4.7	70.2
5350	4.7	69.4	4.9	63.4
5725	4.9	64.9	4.9	62.1
5825	4.9	63.9	4.9	64.2

2.5 Calculation Result Of Maximum Conducted Power

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	346.172	9.95	30	0.30258	1
5180-5240	474.593	10.82	30	0.50684	1
5745-5825	558.098	10.8	30	0.59328	1

Note: 1. For 2.4: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 9.95\text{dBi}$.
 2. For 5GHz (UNII-1): Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 10.82\text{dBi}$.
 3. For 5GHz (UNII-3): Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 10.8\text{dBi}$.

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

$WLAN\ 2.4\text{GHz} + WLAN\ 5\text{GHz} = 0.30258 / 1 + 0.59328 / 1 = 0.89586$

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

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