

## RF EXPOSURE REPORT

**REPORT NO.:** SA140221E06

UBW1J1-1AXY-ZZ

**MODEL NO.:** (X= 0~9 or A~Z, Shell Colour ; Y= 0~9 or A~Z,

Cosmetic Variant; Z =0~9 or A~Z, Brand digit

#1; Z= 0~9 or A~Z, Brand digit #2)

FCC ID: Z3M-GUBW1J1

**RECEIVED:** Feb. 21, 2014

**TESTED:** Mar. 20, 2014

**ISSUED:** Apr. 16, 2014

APPLICANT: Greenwave Reality Pte Ltd

ADDRESS: 41 Science Park Road, #03-01, The Gemini,

Science Park II, Singapore, 117610 Singapore

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)

Ltd., Taoyuan Branch Hsin Chu Laboratory

LAB ADDRESS: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,

Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,

R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by any government agencies.

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 specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification



# **TABLE OF CONTENTS**

REL	EASE CONTROL RECORD	. 3
1.	CERTIFICATION	. 4
	RF EXPOSURE LIMIT	
3.	MPE CALCULATION FORMULA	. 5
	CLASSIFICATION	
5.	ANTENNA GAIN	. 5
	CALCULATION RESULT OF MAXIMUM CONDUCTED POWER	



## **RELEASE CONTROL RECORD**

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA140221E06	Original release	Apr. 16, 2014

Report No.: SA140221E06 3 of 6 Report Format Version 5.0.0



#### 1. CERTIFICATION

**PRODUCT:** Lighting Gateway

**BRAND NAME:** GreenWave Reality

UBW1J1-1AXY-ZZ

**MODEL NO.:** (X= 0~9 or A~Z, Shell Colour ; Y= 0~9 or A~Z, Cosmetic Variant ;

 $Z = 0 \sim 9$  or  $A \sim Z$ , Brand digit #1;  $Z = 0 \sim 9$  or  $A \sim Z$ , Brand digit #2)

**TEST SAMPLE:** ENGINEERING SAMPLE

APPLICANT: Greenwave Reality Pte Ltd

TESTED DATE: Mar. 20, 2014

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

FCC OET Bulletin 65, Supplement C (01-01)

**IEEE C95.1** 

The above equipment (Model: UBW1J1-1A01-TP) 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: Apr. 16, 2014

( Midoli Peng, Specialist )

(May Chen, Manager)



#### 2. RF EXPOSURE LIMIT

## LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm²)	AVERAGE TIME (minutes)			
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE							
300-1500			F/1500	30			
1500-100,000			1.0	30			

F = Frequency in MHz

#### 3. MPE CALCULATION FORMULA

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

where

Pd = power density in mW/cm<sup>2</sup>

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

#### 4. 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**.

#### 5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

WLAN Antenna Spec.						
Antenna Type	Antenna Connector	Gain(dBi)	Frequency range (GHz)			
PCB	NA	0.07	2.4~2.4835			
Zigbee Antenna Spec.						
Antenna Type	Antenna Connector	Gain(dBi)	Frequency range (GHz)			
PCB	NA	1.14	2.4~2.4835			



### 6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

#### For WLAN

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm²)	LIMIT (mW/cm²)
2412-2462	161.808	0.07	20	0.03271	1.00

### For Zigbee

FREQUENCY BAND (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm²)
2405 - 2480	1.824	1.14	20	0.00047	1.00

#### **CONCLUSION:**

Both of the WLAN and Zigbee can transmit simultaneously, the formula of calculated the MPE is:

 $CPD_1/LPD_1 + CPD_2/LPD_2 + \dots etc. < 1$ 

**CPD** = Calculation power density

**LPD** = Limit of power density

Therefore, the worst-case situation is 0.03271 / 1 + 0.00047 / 1 = 0.033, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

--- END ---