

RF EXPOSURE REPORT

Applicant	Shenzhen Hopewin Electronic Material Co.,Ltd
Address	Room O-P,Floor 4th,Block 9C,Baoneng Science Park, Longhua New District,Shenzhen,Guangdong



Manufacturer or Supplier	Shenzhen Hopewin Electronic Material Co.,Ltd
Address	Room O-P,Floor 4th,Block 9C,Baoneng Science Park, Longhua New District,Shenzhen,Guangdong
Product	Cloudleaf Gateway
Brand Name	Cloudleaf
Model	GW-1A2I2, GW-1A2E3
Additional Model & Model Difference	N/A
Date of tests	Oct. 10. 2017 ~ Jan. 25, 2018

☒ **FCC Part 2 (Section 2.1091)**

☒ **KDB 447498 D01**

☒ **IEEE C95.1**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Andy Zhu Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
	 Date: Apr. 10, 2018

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Test Report No.: FM171010N004

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FM171010N004	Original release	Apr. 10, 2018

1. CERTIFICATION

FCC ID:	2AM29-HBW03
PRODUCT:	Cloudleaf Gateway
BRAND NAME:	Cloudleaf
MODEL NO.:	GW-1A2I2, GW-1A2E3
ADDITIONAL NO.:	N/A
TEST SAMPLE:	Engineering Sample
APPLICANT:	Shenzhen Hopewin Electronic Material Co.,Ltd
STANDARDS:	KDB 447498 D01
	IEEE C95.1
	FCC Part 2 (Section 2.1091)

NOTE:

1. The models GW-1A2I2 and GW-1A2E3 are identical except the antenna and model number for marketing purpose, GW- 1A2I2 is Internal antenna model, GW-1A2E3 is dipole antenna.
2. The model: GW-1A2E3 full test, the model: GW-1A2I2 partial test, test radiated emissions

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/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

3. MPE CALCULATION FORMULA

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

where

P_d = power density in mW/m²

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

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:

Model no.	Peak Gain (dBi)	Total Gain (dBi)	Antenna Type
GW-1A2I2	1.5	1.5	Internal Antenna
GW-1A2E3	2	2	Dipole Antenna

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

The tuned conducted Average Power (declared by client)

Model no.	Frequency (MHz)	Target Power (dBm)	Tolerance (dBm)	Lower Tolerance (dBm)	Upper Tolerance (dBm)
GW-1A2E3	2402-2480MHz	-3	+2	-5	-1

The measured conducted Average Power

Mode	Frequency (MHz)	Averaged Power (dBm)
BT-LE (GFSK)	2480	-1.63

Model	FREQUENCY BAND (MHz)	MAX AVERAGE POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
BT-LE (GFSK)	2402-2480	-1	2	20	0.00025	1.0

Note: The device has two Bluetooth modules, they are identical in circuitry and antenna

CONCLUSION:

The two bluetooth modules can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$(0.00025/1) + (0.00025/1) = 0.0005 < 1, \text{ which is less than the "1" limit.}$$

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