

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: 2AU2N-PMM-130

Equipment Under Test : picohome
Model Name : PMM-130
Applicant : Brilliant and Company Co., Ltd
Manufacturer : Brilliant and Company Co., Ltd
Date of Receipt : 2018.09.27
Date of Test(s) : 2019.12.03 ~ 2020.01.15
Date of Issue : 2020.01.28

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Murphy Kim

Date:

2020.01.28

Technical
Manager:



Jungmin Yang

Date:

2020.01.28

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SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 688 0901

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1.2. Details of Applicant

Applicant : Brilliant and Company Co., Ltd

Address : H-1-912D, 5, Hwarang-ro 14-gil, Seongbuk-gu, Seoul, South Korea, 02792

Contact Person : Han, Cheol-min

Phone No. : +82 2 6959 5538

1.3. Details of Manufacturer

Company : Same as applicant

Address : Same as applicant

1.4. Description of EUT

Kind of Product	picohome
Model Name	PMM-130
Power Supply	DC 5.0 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy), 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20)
Modulation Technique	GFSK, DSSS, OFDM
Number of Channels	40 channels (Bluetooth Low Energy), 11 channels (11b/g/n_HT20)
Antenna Type	PCB pattern antenna
Antenna Gain	2 402 MHz ~ 2 480 MHz: -2.61 dB i 2 412 MHz ~ 2 462 MHz: -2.90 dB i

1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501/RF-RTL014676	2020.01.28	Initial

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2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

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
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1 500	-	-	f/300	6
1 500-100 000	-	-	5	6
(B) 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
300-1 500	-	-	f/1500	30
<u>1 500-100 000</u>	-	-	<u>1.0</u>	<u>30</u>

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where P_d = power density in mW/cm^2

P_{out} = 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

P_d the limit of MPE, 1 mW/cm^2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

Bluetooth Low Energy

- Maximum tune up tolerance

Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
2 402 ~ 2 480	-14	-2.61	0.000 004	1

WLAN (2.4G)

- Maximum tune up tolerance

Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
2 412 ~ 2 462	16	-2.90	0.004 062	1

Note:

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.

Simultaneous transmission of RF Exposure test exclusion for worst case configuration.

Bluetooth Low Energy: the ratio is 0.000 004 / 1

WLAN: the ratio is 0.004 062 / 1

Confirm the sum result of individual MPEs ratio is ≤ 1.0 ;

Bluetooth Low Energy + WLAN: $(0.000\ 004\ / 1) + (0.004\ 062\ / 1)$
 $= 0.004\ 066 \leq 1.0$

- End of the Test Report -

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