

TEST REPORT

of

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

FCC ID: 2ABMZ-BR-PTF-100

Equipment Under Test : Wifi camera kit
Model Name : BR-PTF-100
Applicant : BYROBOT Co., Ltd.
Manufacturer : BYROBOT Co., Ltd.
Date of Test(s) : 2016.04.01 ~ 2016.04.24
Date of Issue : 2016.06.15

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

Tested By:



Jinhyoung Cho

Date:

2016.06.15

Approved By:



Hyunchoe You

Date:

2016.06.15

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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>

RTT5041-20(2015.10.01)(3)

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

A4(210mm x 297mm)

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

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 : BYROBOT Co., Ltd.

Address : #417, Human Sky Valley, 33, Omokcheon-ro 132beon-gil, Gyeonggi-do, South Korea

Contact Person : Hong, James

Phone No. : +82 31 227 9675

1.3. Description of EUT

Kind of Product	Wifi camera kit
Model Name	BR-PTF-100
Main Body FCC ID	2AMBZ-BR-PT-PTF-100
Approved WLAN Module FCC ID	2AATL-F89ESSM23
Power Supply	DC 3.7 V
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/g)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channels (11b/g)
Antenna Type	PCB Antenna
Antenna Gain	5.3 dBi

1.4. Declaration by the manufacturer

- The EUT only operate 11b/g mode.
- The EUT cannot be operated alone. It works with the main body. (FCC ID: 2AMBZ-BR-PT-PTF-100)

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1.5. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL009951	2016.06.08	Initial
1	F690501/RF-RTL009951-1	2016.06.15	Modified Bluetooth Low Energy Maximum Average Output Power

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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/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

P_d the limit of MPE, 1 mW/cm². 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 (The Main Body)

- Maximum tune up tolerance

Operating Frequency Range (MHz)	Maximum Average Output 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	-12	5.3	0.000 043	1

WLAN

- Maximum tune up tolerance

Operating Frequency Range (MHz)	Maximum Average Output 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	7.5	5.3	0.003 791	1

Note :

1. 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.

Simultaneous transmission MPE test exclusion

Bluetooth Low Energy : the ratio is 0.000 043 / 1

WLAN 802.11 : the ratio is 0.003 791 / 1

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

$$(0.000\ 043 / 1) + (0.003\ 791 / 1) = 0.003\ 834 \leq 1.0$$

So this device meets the KDB447498 D01 v06 section 7.2 requirement of "Simultaneous transmission MPE test exclusion".

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