

RF Exposure Evaluation Report

Product : uKit Robot
Trade mark : UBTECH
Model/Type reference : EREI101, EREwxyy
Product : uKit Robot
Report Number : EED32L00034603
FCC ID : 2AHJX-UKITERE
Date of Issue : Apr. 02, 2019
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB 447498 D01v06
Test result : PASS

Prepared for:

UBTECH ROBOTICS CORP LTD

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2 Version

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4 General Information

4.1 Client Information

Applicant:	UBTECH ROBOTICS CORP LTD
Address of Applicant:	16th and 22nd Floor, Block C1, Nanshan I Park, No.1001 Xueyuan Road, Nanshan District, Shenzhen City, P.R.CHINA
Manufacturer:	UBTECH ROBOTICS CORP LTD
Address of Manufacturer:	16th and 22nd Floor, Block C1, Nanshan I Park, No.1001 Xueyuan Road, Nanshan District, Shenzhen City, P.R.CHINA
Factory:	UBTECH ROBOTICS CORP LTD BAOAN BRANCH
Address of Factory:	1-2 Floor, B Block, Huilongda Industry Park, Shilongzai, Shiyan Street, Baoan District, Shenzhen City, P.R.CHINA

4.2 General Description of EUT

Product Name:	uKit Robot
Model No.:	EREI101, EREwxyy
Test Model No.:	EREI101
Trade mark:	UBTECH
EUT Supports Radios application:	BT 4.2 Dual mode, 2402-2480MHz

4.3 Product Specification subjective to this standard

Frequency Range:	2402-2480MHz	
Modulation Type:	GFSK, π/4DQPSK, 8DPSK	
Hardware Version:	V2.1(manufacturer declare)	
Software Version:	V1.1.13(manufacturer declare)	
Test Power Grade:	N/A	
Test Software of EUT:	BLUETOOL_MI_1.9.2.0(manufacturer declare)	
Antenna Type:	PCB printed Antenna	
Antenna Gain:	0dBi	
Power Supply:	AC Adapter	Model: PS1012-096HIB100 Input: 100-240V~ 50/60Hz, 0.4A Output: 9.6V --- 1.0A
	Battery	Rechargeable Lithium-ion Ploymer Battery:1800mAh 7.4V
Conducted Peak Output Power:	3.124dBm	
	The Conducted Peak Output Power data refer to the report EED32L00034601, EED32L00034602.	
Sample Received Date:	Feb. 26, 2019	
Sample tested Date:	Mar. 11, 2019 to Mar. 28, 2019	
Reamrk: The tested sample(s) and the sample information are provided by the client. Model No.: EREI101, EREwxyy Only the model EREI101 was tested, EREwxyy (" w "can be a-z, indicating the product version; "x"		

can be 0-9, indicating the product category; "y" can be 0-9, indicating the product attributes.). All models are identical in interior structure, electrical circuits and components, only different from model name and color.

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	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
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

A rough estimation of the expected exposure in power flux density on a given point can be made with the following equation:

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R= distance to the centre of radiation of the antenna

EIRP = P*G

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user.

Warning statement to the user for keeping at least 20cm separation distance and the prohibition of operating to a person has been printed on the user's manual. Therefore, the S of the device is calculated with R=20cm, and if it is below the limit S, then we can conclude the device complies with the rules.

5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually.

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5.1.3 EUT RF Exposure Evaluation

Antenna Gain: 0dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power(dBm)	Gain (dBi)	EIRP* (dBm)	EIRP (mW)	R (cm)	S (mW/cm ²)	Limit (mW/cm ²)	Result
Middle	2440	3.124	0	3.124	2.053	20	0.0004	1.0	Pass

Note: Refer to report No. EED32L00034601, EED32L00034602 for EUT test Max Conducted Peak Output Power value.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32L00034601 for EUT external and internal photos.

*** End of Report ***

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