

RF Exposure Evaluation Report

Product : Yanshee Robot
Trade mark : UBTCH
Model/Type reference : ERHA101
Serial Number : N/A
Report Number : EED32L00193804
FCC ID : 2AHJX-YANSHEE-1
Date of Issue : Aug. 26, 2019
: IEEE C95.1 2005
: KDB 447498 D03
Test Standards : 47 C.F.R. Part 1, Subpart I, Section 1.1310
: 47 C.F.R. Part 2, Subpart J, Section 2.1091
Test result : PASS

Prepared for:

UBTECH ROBOTICS CORP LTD

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Prepared by:

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Aug. 26, 2019

Check No.: 3096399624



2 Version

Version No.	Date	Description
00	2019-08-26	Original

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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:	Yanshee Robot
Model No.(EUT):	ERHA101
Trade Mark:	UBTCH
EUT Supports Radios application	4.1 BT Dual mode, WiFi 802.11b/g/n(20MHz)

4.3 Product Specification subjective to this standard

Frequency Range:	BT: 2402MHz to 2480MHz WIFI: 2412MHz to 2462MHz		
Modulation Type:	GFSK, 8DPSK, π /4DQPSK, OFDM, DSSS		
Number of Channels:	BT 3.0: 79 Channels BLE 4.1: 40 Channels WIFI: 11 Channels		
Test Power Grade:	802.11b:18 802.11g:12/11/11 802.11n:11/11/10		
Test Software of EUT:	War exe (manufacturer declare)		
Antenna Type:	Chip antenna		
Antenna Gain:	2.4GHz	Antenna Gain :	1.50 dBi (Numeric gain: 1.41)
Power Supply:	AC adapter	MODEL: HKA03609640-8A INPUT: 100-240V 1.5A, 50/60Hz OUTPUT: 9.6V---4.0A	
	Battery:	Model: Yanshee 1.1-2S1P Capacity: 7.4V, 3000mAh/ 22.2Wh	
Conducted Peak Output Power:	BT		
	GFSK:	6.00 dBm	(3.981 mW)
	π /4DQPSK:	3.00 dBm	(1.995 mW)
	8DPSK:	3.00 dBm	(1.995 mW)
	BLE:	6.00 dBm	(3.981 mW)
	Wi-Fi		
	IEEE 802.11b Mode:	18.50 dBm	(70.795 mW)
	IEEE 802.11g Mode:	18.00 dBm	(63.096 mW)
	IEEE 802.11n HT 20 Mode:	17.00 dBm	(50.119 mW)
	The Conducted Peak Output Power data refer to the report EED32L00193801, EED32L00193803		
Sample Received Date:	Jul. 22, 2019		
Sample tested Date:	Jul. 22, 2019 to Aug. 23, 2019		
The tested sample(s) and the sample information are provided by the client.			

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

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

5.2 Maximum Permissible Exposure

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

Bluetooth:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
78	2480	3.981	1.41	20	0.0011	1

IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
6	2437	70.795	1.41	20	0.0199	1

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
1	2412	63.096	1.41	20	0.0177	1

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm ²	Limit (mW/cm ²)
6	2437	50.119	1.41	20	0.0141	1

Remark: WLAN and Bluetooth technology can not transmit at same time.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32L00193801 for EUT external and internal photos.

*** End of Report ***

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