

RF Exposure Evaluation Report

Product : Yarbo Wi-Fi Module
Trade mark : Yarbo
Model/Type reference : WF1
Serial Number : N/A
Report Number : EED32O81789102
FCC ID : 2A9JF-HY0915-YARBO
Date of Issue : Dec. 10, 2022
Test Standards : 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General
RF Exposure Guidance v06
Test result : PASS

Prepared for:

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Dec. 10, 2022



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2 Version

Version No.	Date	Description
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4 General Information

4.1 Client Information

Applicant:	Shenzhen Hanyang Technology Co., Ltd.
Address of Applicant:	Room 12KLM, Building 6B, Baoneng Science and Technology Park, Qinghu Community, Longhua Street, Longhua District, Shenzhen
Manufacturer:	Shenzhen Hanyang Technology Co., Ltd.
Address of Manufacturer:	Room 12KLM, Building 6B, Baoneng Science and Technology Park, Qinghu Community, Longhua Street, Longhua District, Shenzhen
Factory:	Shenyang Robotics (Huizhou) Co., Ltd.
Address of Factory:	7th Floor, Building 2, Huizhou Shenghong Electric Industrial Park, No. 31, Huifeng West 2nd Road, Huihuan Street, Zhongkai High-tech District, Huizhou City, Guangdong Province

4.2 General Description of EUT

Product Name:	Yarbo Wi-Fi Module
Model/Type reference:	WF1
Trade mark:	Yarbo
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location

4.3 Product Specification subjective to this standard

Frequency Range:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	IEEE for 802.11b:DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g:OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20/HT40): OFDM (64QAM, 16QAM,QPSK,BPSK)
Test Power Grade:	Default
Antenna Type	FPC Antenna
Antenna Gain	ANT1:1.82dBi,ANT2:1.82dBi
Test Voltage:	DC 12V

Function (Wi-Fi):	☒ SISO ☒ 2x2 MIMO ☐ 3x3 MIMO ☐ 4x4MIMO
Power Supply:	DC 12V
Max Conducted Peak Output Power:	17.81dBm The Max Conducted Peak Output Power data refer to the report EED32O81789101
Sample Received Date:	Nov. 11, 2022
Sample tested Date:	Nov. 11, 2022 to Nov. 28, 2022
Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

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 / cm^2

1) For 2.4G WIFI:

The WIFI ant1 test data was worst, only the worst case was recorded in the report.

802.11b mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	17.16	17±1	18	63.096
Middle(2437MHz)	17.81	17±1	18	63.096
Highest(2462MHz)	17.32	17±1	18	63.096

2.4G WIFI:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/ cm^2)
9	2437	63.096	1.52	20	0.0191	1

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***