

RF Exposure Evaluation Report

Product : Yarbo Wi-Fi Module
Trade mark : Yarbo
Model/Type reference : WF2
Serial Number : N/A
Report Number : EED32P80994902
FCC ID : 2A9JF-HY0710-YARBO
Date of Issue : Aug. 03, 2023
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
47 CFR Part 2.1091
47 CFR Part 2.1093
447498 D04 Interim General RF
Exposure Guidance v01
Test result : PASS

Prepared for:

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Aug. 03, 2023



Check No.: 9753030723

2 Version

Version No.	Date	Description
00	Aug. 03, 2023	Original

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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 No.(EUT):	WF2
Trade Mark:	Yarbo

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 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Test Power Grade:	Default
Test Software of EUT:	QATool_Dbg.exe
Antenna Type:	External Antenna
Antenna Gain:	1.78dBi
Power Supply:	DC 12.0V
Sample Received Date:	Jul. 03, 2023
Sample tested Date:	Jul. 10, 2023 to Jul. 15, 2023
Remark:	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 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

5.1.2 Test Procedure

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

5.1.3 EUT RF Exposure Evaluation

(1)For 2.4G Wi-Fi:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	Ratio 1	Result
2437	15.78	1.78	17.56	15.41	34.7536	3060	0.0114	PASS

Note:

- ①EIRP=conducted power+antenna gain;
- ②ERP=EIRP-2.15
- ③The separation distance is 20cm;
- ④The test data refer to the report of EED32P80994901,and nly the worst case data was recorded in the report.

(2)For LTE module:

Frequency (MHz)	Max. Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Limit (mW)	Ratio 2	Result
795.5	23.90	0.44	24.34	22.19	165.5770	1622.820	0.1020	PASS

Note:

- ①EIRP=conducted power+antenna gain;
- ②ERP=EIRP-2.15
- ③The separation distance is 20cm;
- ④The product includes a certified LTE module(FCC ID:XMR202008EC25AFXD),and the test report are report No.:R2203A0238-R1,report No.:R2203A0238-R2,report No.:R2203A0238-R3,report No.:R2203A0238-R4,report No.:R2203A0238-M1.So we took that into account.,only the worst case data was recorded in the report.

(3)For SUM:

2.4G Wi-Fi+ LTE module=Ratio 1+Ratio 2=0.0114+0.1020=0.1134 < 1 ,
Result: Pass

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 ***