

Sichuan Al-Link Technology Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:

FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

Model:

WF-R12C-UWD2, WF-R12C-UWD3

REPORT NUMBER:

200801864SHA-004

ISSUE DATE:

October 22, 2020

DOCUMENT CONTROL NUMBER:

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Intertek Testing Services Shanghai Building No.86, 1198 Qinzhou Road (North) Caohejing Development Zone Shanghai 200233, China

Telephone: 86 21 6127 8200

www.intertek.com

Report no.: 200801864SHA-004

Applicant: Sichuan Al-Link Technology Co., Ltd.

Anzhou, Industrial park, Mianyang, Sichuan, China

Manufacturer: Sichuan Al-Link Technology Co., Ltd.

Anzhou, Industrial park, Mianyang, Sichuan, China

Product Name: WIFI Module

Type/Model: WF-R12C-UWD2, WF-R12C-UWD3

FCC ID: 2AOKI-WFR12CUWD2

SUMMARY:

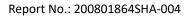
The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

FREFARED DI.	REVIEWED DT.	
Wade zhang	Daniel.	
Project Engineer	Reviewer	
Wade Zhang	Daniel Zhao	

DEVIEWED BY

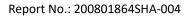
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Revision History

Report No.	Version	Description	Issued Date	
200801864SHA-004	Rev. 01	Initial issue of report	October 22, 2020	





1 GENERAL INFORMATION

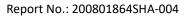
1.1 Description of Equipment Under Test (EUT)

Product name:	WIFI Module
Type/Model:	WF-R12C-UWD2, WF-R12C-UWD3
	The EUT is a WIFI module which supports 802.11a/b/g/n/ac mode,
	there have two models and they are same except the connector.
Description of EUT:	We choose WF-R12C-UWD2 to test as representative.
Rating:	DC 3.3V
EUT type:	☐ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	July 29, 2020
Date of test:	July 29, 2020 ~ October 22, 2020

1.2 Technical Specification

Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20), IEEE 802.11n(HT40)
	2412MHz to 2462MHz for IEEE 802.11b/g/n(HT20)
Operating Frequency:	2422MHz to 2452MHz for IEEE 802.11n(HT40)
	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK)
	IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
	IEEE 802.11n(HT20): OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Type of Modulation:	IEEE 802.11n(HT40): OFDM (64-QAM, 16-QAM, QPSK, BPSK)
	11 Channels for 802.11b, 802.11g and 802.11n(HT20)
Channel Number:	7 Channels for 802.11n(HT40)
Channel Separation:	5 MHz
	PIFA Antenna
Antenna Information:	Antenna 0: 3.79dBi, Antenna 1: 3.46dBi Alternative Antenna 2: 1.72dBi

	5150 ~ 5250MHz
	5250 ~ 5350MHz
	5470 ~ 5725MHz
Frequency Range:	5725 ~ 5850MHz
	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20),
Support Standards:	802.11ac(VHT40), 802.11ac(VHT80)
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
	For 5150 ~ 5250MHz band: Channel 36 - 48
Channel Number:	For 5250 ~ 5350MHz Band: Channel 52 - 64





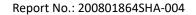
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	For 5470 ~ 5725MHz Band: Channel 100 - 140 For 5725 ~ 5850MHz band: Channel 149 - 165
	PIFA Antenna
Antenna Information:	Antenna 0: 3.68dBi, Antenna 1: 3.37dBi, Alternative Antenna 2: 2.57dBi

1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized,	CNAS Accreditation Lab Registration No. CNAS L0139
certified, or accredited by these	FCC Accredited Lab Designation Number: CN1175
organizations:	IC Registration Lab CAB identifier.: CN0051
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02





2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density Seq (W/m²)
0-1 Hz	-	3,2 × 10 ⁴	4 × 10 ⁴	- Seq (**/111)
1-8 Hz	10 000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	87/f ^{1/2}	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	1,375 f ^{1/2}	0,0037 f ^{1/2}	0,0046 f ^{1/2}	f/200
2-300 GHz	61	0,16	0,20	10

Mobile device exposure for simultaneous transmission operations: the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is \leq 1.0



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2.2 Assessment Results

Power density (S) is calculated according to the formula:

 $S = PG / (4\pi R^2)$

Where $S = power density in mW/cm^2$

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

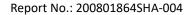
As we can see from the test report 200801864SHA-001, 200801864SHA-002:

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

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Frequency band	Power		Antenna Gain		R	S	Limits
(MHz)	dBm	mW	dBi	(Numeric)	(cm)	(mW/cm²)	(mW/cm²)
2412 - 2462	19.90	97.72	3.79	2.39	20	0.046	1
5180 - 5240	18.19	65.92	3.68	2.33	20	0.031	1
5260 - 5320	18.65	73.28	3.53	2.25	20	0.033	1
5500 - 5700	17.90	61.66	3.53	2.25	20	0.028	1
5745 - 5825	17.34	54.20	3.53	2.25	20	0.024	1

Note: 1 mW/cm2 from 1.310 Table 1.





Appendix I

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be
maintained between the antenna of this device and persons during device operation

Definition below must be outlined in the User Manual:

maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.