Sichuan AI-Link Technology Co., Ltd.

MPE ASSESSMENT REPORT

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

Model:
WF-R11C-UWD1, WF-R11C-UWD2

REPORT NUMBER:
210401190SHA-004

ISSUE DATE:
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Report no.: 210401190SHA-004

Total Quality. Assured.

TEST REPORT

Applicant:	Sichuan AI-Link Technology Co., Ltd. Anzhou, Industrial park, Mianyang, Sichuan, China
Manufacturer:	Sichuan AI-Link Technology Co., Ltd. Anzhou, Industrial park, Mianyang, Sichuan, China
Product Name:	WIFI Module
Type/Model:	WF-R11C-UWD1, WF-R11C-UWD2
FCC ID:	2AOKI-WFR11CUWD1

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)

PREPARED BY:	**REVIEWED BY:**
Project Engineer Dylan Tang	Reviewer Daniel Zhao

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Revision History

Report No.	Version	Description	Issued Date
210401190SHA-004	Rev. 01	Initial issue of report	September 23, 2021

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1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	WIFI Module
Type/Model:	WF-R11C-UWD1, WF-R11C-UWD2
Description of EUT:	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. We choose WF-R11C-UWD1 to test as representative
Rating:	DC 3.3V
EUT type:	☒ Table top ☐ Floor standing
Software Version:	RTL8821CU_RTL8731AU_WiFi_linux_v5.12.0.4
Hardware Version:	JUI7.820.0867-1
Sample received date:	April 15, 2021
Date of test:	April 20, 2021 ~ September 20, 2021

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)
Operating Frequency:	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) IEEE 802.11n(HT40): OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Type of Modulation:	2412MHz to 2462MHz for IEEE 802.11b/g/n(HT20) 2422MHz to 2452MHz for IEEE 802.11n(HT40)
Channel Number:	11 Channels for 802.11b, 802.11g and 802.11n(HT20) 7 Channels for 802.11n(HT40)
Channel Separation:	2400MHz ~ 2483.5MHz
Antenna Information:	Metal Antenna: 3.79dBi PIFA Antenna: 3.46dBi PIFA Antenna: 1.72dBi

Frequency Range:	5150 ~ 5250MHz 5250 ~ 5350MHz 5470 ~ 5725MHz 5725 ~ 5850MHz
Support Standards:	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(VHT20), 802.11ac(VHT40), 802.11ac(VHT80)
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

Channel Number:	For 5150 ~ 5250MHz band: Channel 36 - 48 For 5250 ~ 5350MHz Band: Channel 52 - 64 For 5470 ~ 5725MHz Band: Channel 100 - 140 For 5725 ~ 5850MHz band: Channel 149 - 165
Antenna Information:	Metal Antenna: 3.68dBi PIFA Antenna: 3.37dBi PIFA Antenna: 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, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN1175
	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 S_{eq} (W/m^2)
0-1 Hz	-	$3,2 \times 10^4$	4×10^4	-
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 ≤ 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 210401190SHA-001&210401190SHA-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	(cm)	(mW/cm^2)	(mW/cm^2)
2412 - 2462	18.08	64.27	3.79	20	0.048	1
5180 - 5825	17.68	58.61	3.68	20	0.043	1

Note: 1 mW/cm2 from 1.310 Table 1.

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Appendix I

Definition below must be outlined in the User Manual:

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

**********END**********