



Test Report No.:
FCCSZ2023-0009-H

RF Test Report

FCC ID : 2AOKI-AL8731B
IC : 23460-AL8731B
EUT : WIFI Module
MODEL : AL-8731B-WG-A,WF-R31B-UWD1
BRAND NAME : AI-Link
APPLICANT : Sichuan AI-Link Technology Co., Ltd.
Classification Of Test : N/A

CVC Testing Technology (Shenzhen) Co., Ltd.

| | | | |
|---|--|---|-----------------------|
| Applicant | | Name: Sichuan AI-Link Technology Co.,Ltd. Address: Anzhou Industrial Park, Mianyang, Sichuan, P.R.C | |
| Manufacturer | | Name: Sichuan AI-Link Technology Co.,Ltd. Address: Anzhou Industrial Park, Mianyang, Sichuan, P.R.C | |
| Equipment Under Test | | Product Name:WIFI Module Model/Type: AL-8731B-WG-A, WF-R31B-UWD1 Brand Name: AI-Link Serial NO.: N/A Sample NO.:4-1 | |
| Date of Receipt. | 2023.09.13 | Date of Testing | 2023.09.13~2023.09.26 |
| Test Specification | | Test Result | |
| FCC Part 2 (Section 2.1091) KDB 447498 D04 IEEE C95.3 ISED RSS-102 Issue 5 | | PASS | |
| Evaluation of Test Result | The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC Issue Date: 2023.09.26 | | |
| Tested by: Liang JiaTong Name Signature | Reviewed by: Huang Meng Name Signature | Approved by: Dong Sanbi Name Signature | |
| Other Aspects: NONE. | | | |
| Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested | | | |

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.

TABLE OF CONTENTS

| | |
|--|---|
| RELEASE CONTROL RECORD | 4 |
| 1 GENERAL PRODUCT INFORMATION | 5 |
| 1.1 ANTENNA GAIN | 6 |
| 2 RF EXPOSURE LIMITGENERAL INFORMATION | 7 |
| 2.1 CLASSIFICATION | 7 |
| 2.2 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (FCC) | 7 |
| 2.3 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (IC) | 8 |
| 2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED AV POWER | 9 |

RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|------------------|-------------------|-------------|
| FCCSZ2023-0009-H | Original release | 2023.09.26 |

1 GENERAL PRODUCT INFORMATION

| | |
|--------------------------|-----------------------------|
| PRODUCT | WIFI Module |
| BRAND | AI-Link |
| TEST MODEL | AL-8731B-WG-A |
| ADDITIONAL MODEL | WF-R31B-UWD1 |
| POWER SUPPLY | DC 3.3V from host unit |
| HARDWARE REVISION | JU17.820.1171-3 |
| SOFTWARE REVISION | v5.13.0.1 |
| STANDARDS | FCC Part 2 (Section 2.1091) |
| | IC RSS-102 Issue 5 |
| | KDB 447498 D01 |
| | IEEE C95.3 |

1. AL-8731B-WG-A and WF-R31B-UWD1 are electrical identical including the same software parameter and hardware design (i.e., circuit design, PCB Layout, RF module/circuit, antenna type(s) and antenna location, components on PCB, etc.), same mechanical structure and design (including product enclosure, materials, etc.), the only difference is the model name

1.1 ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

Antenna 1 has four different manufacturers of antennas, and antenna 2 has only one manufacturer

ANT1

| | | |
|---------------------|------|-------------------|
| NUMBER | | 1# |
| MANUFACTURER | | B&T |
| ANTENNA TYPE | | PIFA Antenna |
| MODEL | | TX-DM200BD113B63M |
| PEAK GIAN | 2.4G | 2.18dBi |
| | 5G | 4.33dBi |

| | | |
|---------------------|------|-------------------|
| NUMBER | | 2# |
| MANUFACTURER | | Yishengbang |
| ANTENNA TYPE | | PIFA Antenna |
| MODEL | | TX-DM200BD113Y63M |
| PEAK GIAN | 2.4G | 4.29dBi |
| | 5G | 4.55dBi |

| | | |
|---------------------|------|-------------------|
| NUMBER | | 3# |
| MANUFACTURER | | Jiexuntong |
| ANTENNA TYPE | | PIFA Antenna |
| MODEL | | TX-DM200BD113Y63M |
| PEAK GIAN | 2.4G | 3.92dBi |
| | 5G | 2.66dBi |

| | | |
|---------------------|------|--------------------|
| NUMBER | | 4# |
| MANUFACTURER | | JINGHONG |
| ANTENNA TYPE | | PIFA Antenna |
| MODEL | | TX-DM300BD113JH63M |
| PEAK GIAN | 2.4G | 2.72dBi |
| | 5G | 2.64dBi |

ANT2

| | | |
|---------------------|------|--------------------|
| MANUFACTURER | | WALSIN |
| ANTENNA TYPE | | PIFA Antenna |
| MODEL | | RFMTA170900NNLB003 |
| PEAK GIAN | 2.4G | 3.79dBi |
| | 5G | 3.68dBi |

NOTE:

1. Since the above data and/or information is provided by the client, CVC is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2. For the test results, the EUT had been tested with all Antenna. Only the worst case(**Antenna1 2#**) was shown in test report

2 RF EXPOSURE LIMIT GENERAL INFORMATION

2.1 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.2 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (FCC)

(Option C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda / 2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda / 4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

| RF SOURCE FREQUENCY (MHZ) | THRESHOLD ERP(W) |
|---------------------------|------------------|
| 0.3 -1.34 | $1,920 R^2$ |
| 1.34 - 30 | $3,450 R^2 F^2$ |
| 30 -300 | $3.83 R^2$ |
| 300-1500 | $0.0128 R^2 F$ |
| 1500-100,000 | $19.2R^2$ |

2.3 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (IC)

Option1

| FREQUENCY RANGE (MHz) | ELECTRIC FIELD STRENGTH (V/m) | MAGNETIC FIELD STRENGTH (A/m) | POWER DENSITY (W/m ²) | AVERAGE TIME (minutes) |
|--|-------------------------------|-------------------------------|-----------------------------------|------------------------|
| LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE | | | | |
| 48-300 | 22.06 | 0.05852 | 1.291 | 6 |
| 300-6000 | $3.142 * F^{0.3417}$ | $0.008335 * F^{0.3417}$ | $0.02619 * F^{0.6834}$ | 6 |

F = Frequency in MHz

MPE calculation Formula(IC)

$$Pd = (Pout * G) / (4 * Pi * R^2)$$

where

Pd = power density in W/m²

Pout = output power to antenna in W

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in m

Option2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49 / f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED AV POWER

The measured conducted Average Power

| Mode | Averaged Power (dBm) |
|-----------|----------------------|
| 2.4G WIFI | 17.67 |
| 5G WIFI | 17.94 |

The tuned conducted Average Power (declared by client)

| Mode | Frequency (MHz) | Target Power (dBm) | Tolerance (dBm) | Lower Tolerance (dBm) | Upper Tolerance (dBm) |
|-----------|-----------------|--------------------|-----------------|-----------------------|-----------------------|
| 2.4G WIFI | 2412-2462 | 18 | ±1 | 17 | 19 |
| 5G WIFI | 5180-5825 | 18 | ±1 | 17 | 19 |

MAXIMUM PERMISSIBLE EXPOSURE (FCC)

| Frequency Band (MHz) | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | ERP (dBm) | EIRP (W) | Threshold ERP(W) |
|----------------------|-----------------|--------------------|---------------|-----------|----------|------------------|
| 2412-2462 | 19 | 4.29 | 20 | 21.24 | 0.130 | 0.77 |
| 5180-5825 | 19 | 4.55 | 20 | 21.24 | 0.130 | 0.77 |

Note: This device can not operate simultaneously in 2.4G WIFI and 5GWIFI.

Conclusion:

Based on FCC 47 CFR § 1.1307, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the FCC RF exposure requirements.

MAXIMUM PERMISSIBLE EXPOSURE (IC)

| FREQUENCY BAND (MHz) | Max power (dBm) | Antenna gain (dBi) | DISTANCE (m) | POWER DENSITY (W/m ²) | LIMIT (W/m ²) |
|----------------------|-----------------|--------------------|--------------|-----------------------------------|---------------------------|
| 2412-2462 | 19 | 4.29 | 0.2 | 1.689 | 5.37 |
| 5180-5240 | 19 | 4.55 | 0.2 | 0.451 | 9.05 |

Note: This device can not operate simultaneously in 2.4G WIFI and 5G WIFI.

Conclusion:

Based on RSS-102, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the ISED RF exposure requirements.

----- End of the Report -----

Important

- (1) The test report is valid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of Approval and Reviewer;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days.
- (6) Generally, commission test is responsible for the tested samples only.
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

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