

## MPE Report RF Exposure Exemption

Applicant : AcSiP Technology Corporation  
Product Name : Wi-Fi 6 (1x1) 802.11a/b/g/n/ac/ax + BLE5.0 Combo IoT Module  
Trade Name : AcSiP  
Model Number : AI7933ALD  
Applicable Standard : 47 CFR § 2.1091  
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Issued by

Approved By :



(William Chung)

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Taiwan Accreditation Foundation accreditation number: 1330

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### Revision History

| Rev. | Issued Date  | Revisions     | Revised By  |
|------|--------------|---------------|-------------|
| 00   | May 09, 2023 | Initial Issue | Rowan Hsieh |
|      |              |               |             |
|      |              |               |             |
|      |              |               |             |

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## 1. General Information

### 1.1 Reference Applicable Standard

| Standard        | Description                                                                                                                                      | Version |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| IEEE C95.1      | American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York. | 1992    |
| 47 CFR § 2.1091 | Radiofrequency radiation exposure evaluation: mobile devices.                                                                                    | 2023    |
| 47 CFR § 1.1307 | Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.                            | 2023    |
| 47 CFR § 1.1310 | Radiofrequency radiation exposure limits.                                                                                                        | 2023    |
| KDB 447498 D01  | RF exposure procedures and equipment authorization policies for mobile and portable devices                                                      | v06     |

### 1.2 Testing Location

Site Name: Site Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ☐ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☒ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

## 2. Description of Equipment under Test (EUT)

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Applicant                       | AcSiP Technology Corporation<br>9F, No. 242, Bo'ai St., Shulin Dist 23805 New Taipei Taiwan                       |
| Manufacturer                    | AcSiP Technology Corporation<br>9F, No. 242, Bo'ai St., Shulin Dist 23805 New Taipei Taiwan                       |
| Product Name                    | Wi-Fi 6 (1x1) 802.11a/b/g/n/ac/ax + BLE5.0 Combo IoT Module                                                       |
| Model Number                    | AI7933ALD                                                                                                         |
| FCC ID                          | 2ADWC-AI7933ALD                                                                                                   |
| Operating Frequency Range (MHz) | WLAN 2.4G: 2412~2472 MHz<br>WLAN 5.2G: 5150~5250 MHz<br>WLAN 5.8G: 5725~5850 MHz<br>Bluetooth LE: 2402 – 2480 MHz |
| Supported Modulations           | IEEE 802.11 a/b/g/n/ac/ax: DSSS, OFDM                                                                             |
|                                 | Bluetooth LE 5.0: GFSK                                                                                            |
| USE Distance                    | 20 cm                                                                                                             |

Note:

The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### 3. RF Exposure Limit

For devices that operate at larger distances from persons, where there are minimal RF coupling interactions between a device and the user or nearby persons, RF exposure compliance using maximum permissible exposure (MPE) limits is applied. The limits for MPE is listed as below:

| Limits for General Population / Uncontrolled Exposure |                                   |                                   |                                         |                                                                 |
|-------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------------|-----------------------------------------------------------------|
| Frequency Range (MHz)                                 | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Time E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
| 0.3-1.34                                              | 614                               | 1.63                              | (100)*                                  | 30                                                              |
| 1.34-30                                               | 824 / f                           | 2.19 / f                          | (180 / f <sup>2</sup> )*                | 30                                                              |
| 30-300                                                | 27.5                              | 0.073                             | 0.2                                     | 30                                                              |
| 300-1500                                              | -                                 | -                                 | F / 1,500                               | 30                                                              |
| 1,500-100,000                                         | -                                 | -                                 | 1.0                                     | 30                                                              |
| Limits for Occupational / Controlled Exposure         |                                   |                                   |                                         |                                                                 |
| Frequency Range (MHz)                                 | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Time E  <sup>2</sup> , H  <sup>2</sup> or S (minutes) |
| 0.3-3.0                                               | 614                               | 1.63                              | (100)*                                  | 6                                                               |
| 3.0-30                                                | 1,842 / f                         | 4.89 / f                          | (900 / f <sup>2</sup> )*                | 6                                                               |
| 30-300                                                | 61.4                              | 0.163                             | 1.0                                     | 6                                                               |
| 300-1,500                                             | -                                 | -                                 | F / 300                                 | 6                                                               |
| 1,500-100,000                                         | -                                 | -                                 | 5                                       | 6                                                               |

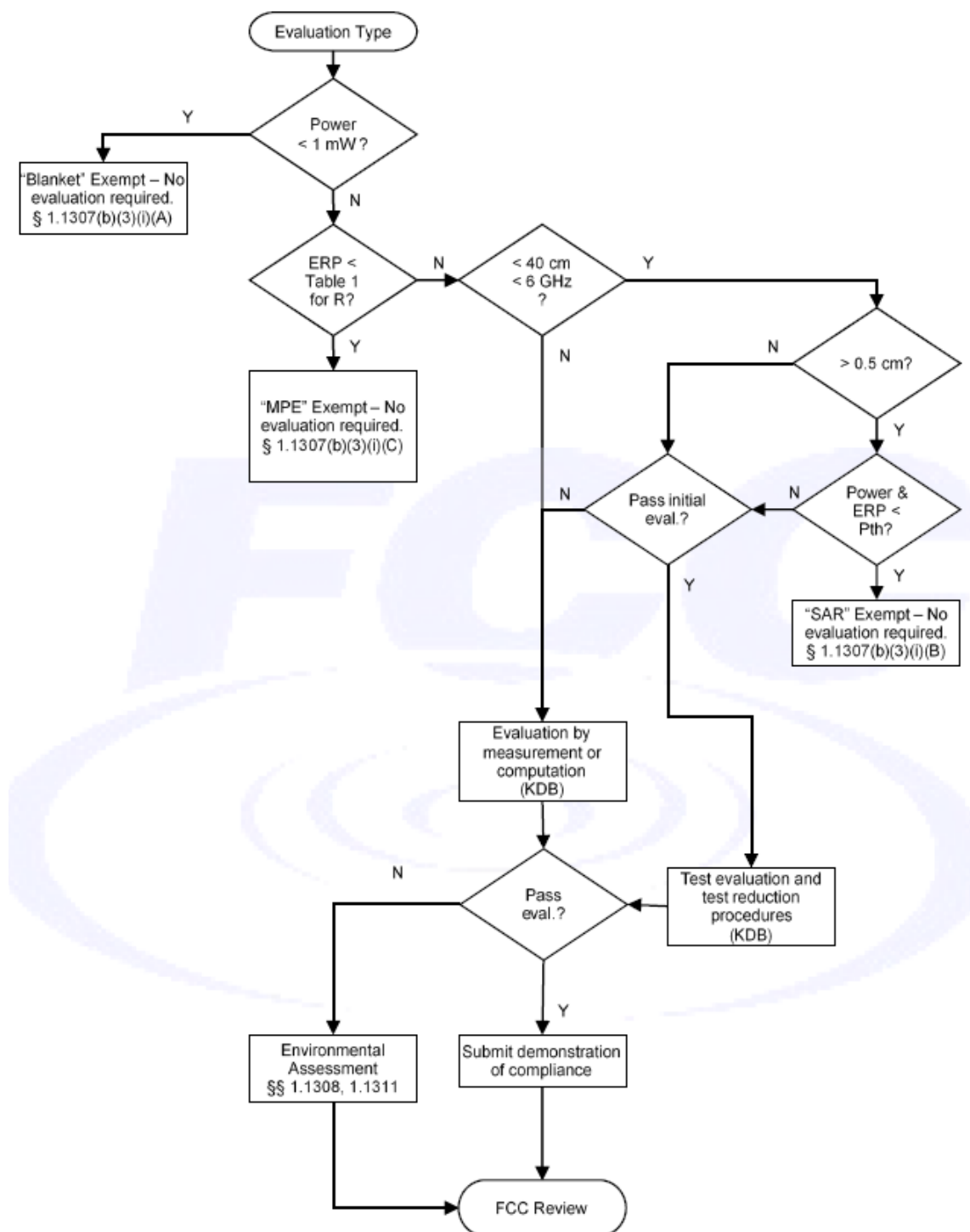
f = frequency in MHz. \* = Plane-wave equivalent power density.

## 4. RF Exposure Assessment

### 4.1 Exemption Evaluation

Exemption evaluation was performed according to the appendix A and B in KDB447498 D04.

The General Sequence for Determination of Procedure demonstrated in Figure A.1 of KDB447498 D04 was applied.



## 4.2 Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons."

Exposure evaluation

$$S_{eirp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2} (W / m^2)$$

Where

S: is the input power (W);

G: is the antenna gain;

d : is the distance between antennas and evaluation point (m).

## 5. Maximum Tune-up Power

| Band      | Frequency (MHz) | MAX AVG Power (dBm) |
|-----------|-----------------|---------------------|
| 2.4 GHz   | 2412 - 2472     | 23.63               |
| 5.2 GHz   | 5180 - 5240     | 17.64               |
| 5.8 GHz   | 5745 - 5825     | 19.01               |
| Bluetooth | 2402 - 2480     | 13.32               |

## 6. Result

| Band      | Frequency (MHz) | Maximum AVG Power (dBm) | ANT Gain (dBi) | ERP (W) | <§1.1307(b)(3)(i)(C)> Exemption Minimum Distance (m) | <§1.1307(b)(3)(i)(C)> Exemption Threshold ERP (W) | <§1.1307(b)(3)(i)(C)> Exemption considerations |
|-----------|-----------------|-------------------------|----------------|---------|------------------------------------------------------|---------------------------------------------------|------------------------------------------------|
| 2.4 GHz   | 2412 - 2462     | 23.63                   | 2.80           | 0.268   | 0.020                                                | 0.768                                             | Qualified                                      |
| 5.2 GHz   | 5150 - 5250     | 17.64                   | 4.99           | 0.112   | 0.009                                                | 0.768                                             | Qualified                                      |
| 5.8 GHz   | 5725 - 5850     | 19.01                   | 4.75           | 0.145   | 0.008                                                | 0.768                                             | Qualified                                      |
| Bluetooth | 2402 - 2480     | 13.32                   | 2.80           | 0.025   | 0.020                                                | 0.768                                             | Qualified                                      |

Note:

1. The Calculation are based on Max AVG power and Max Antenna gain.
2. the device is qualified for exemption under 47 CFR §1.1307(b)(3)(i)(C).

### Simultaneous Transmitting :

#### WLAN 2.4G + WLAN 5.8G

Total Exposure Ratio: 0.54

## 7. Conclusion

The result shows that this device is qualified for MPE-Based Exemption in KDB447498 and compliant to exposure limits in 47 CFR §1.1310.

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