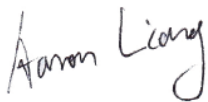
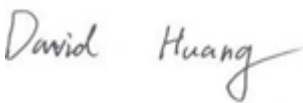


# RF EXPOSURE REPORT



Report No.: 18070475-FCC-H

Supersede Report No.: N/A

|                                                                                                                                      |                                                                                     |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Applicant                                                                                                                            | Hale Devices, Inc.                                                                  |                                                                                       |
| Product Name                                                                                                                         | Bluetooth Headphone                                                                 |                                                                                       |
| Model No.                                                                                                                            | Aiwa Arc-1-US, Arc-1-XX (X=blank, 0~9, A~Z)                                         |                                                                                       |
| Serial No.                                                                                                                           | N/A                                                                                 |                                                                                       |
| Test Standard                                                                                                                        | FCC 2.1093                                                                          |                                                                                       |
| Test Date                                                                                                                            | April 29 to May 10, 2018                                                            |                                                                                       |
| Issue Date                                                                                                                           | May 11, 2018                                                                        |                                                                                       |
| Test Result                                                                                                                          | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail              |                                                                                       |
| Equipment complied with the specification <input checked="" type="checkbox"/>                                                        |                                                                                     |                                                                                       |
| Equipment did not comply with the specification <input type="checkbox"/>                                                             |                                                                                     |                                                                                       |
|                                                   |  |  |
| Aaron Liang<br>Test Engineer                                                                                                         | David Huang<br>Checked By                                                           |                                                                                       |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |                                                                                     |                                                                                       |

Issued by:

**SIEMIC (SHENZHEN-CHINA) LABORATORIES**

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## Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

| Country/Region | Scope                              |
|----------------|------------------------------------|
| USA            | EMC, RF/Wireless, SAR, Telecom     |
| Canada         | EMC, RF/Wireless, SAR, Telecom     |
| Taiwan         | EMC, RF, Telecom, SAR, Safety      |
| Hong Kong      | RF/Wireless, SAR, Telecom          |
| Australia      | EMC, RF, Telecom, SAR, Safety      |
| Korea          | EMI, EMS, RF, SAR, Telecom, Safety |
| Japan          | EMI, RF/Wireless, SAR, Telecom     |
| Singapore      | EMC, RF, SAR, Telecom              |
| Europe         | EMC, RF, SAR, Telecom, Safety      |

|             |                |
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## 1. Report Revision History

| Report No.     | Report Version | Description | Issue Date   |
|----------------|----------------|-------------|--------------|
| 18070475-FCC-H | NONE           | Original    | May 11, 2018 |
|                |                |             |              |
|                |                |             |              |
|                |                |             |              |
|                |                |             |              |
|                |                |             |              |

## 2. Customer information

|                  |                                                    |
|------------------|----------------------------------------------------|
| Applicant Name   | Hale Devices, Inc.                                 |
| Applicant Add    | 650 W. Lake St. Suite#220, Chicago, IL, 60661, USA |
| Manufacturer     | Hale Devices, Inc.                                 |
| Manufacturer Add | 650 W. Lake St. Suite#220, Chicago, IL, 60661, USA |

## 3. Test site information

|                      |                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES                                                                                                         |
| Lab Address          | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park<br>South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China<br>518108 |
| FCC Test Site No.    | 535293                                                                                                                                       |
| IC Test Site No.     | 4842E-1                                                                                                                                      |
| Test Software        | Radiated Emission Program-To Shenzhen v2.0                                                                                                   |

## 4. Equipment under Test (EUT) Information

|                               |                                                    |
|-------------------------------|----------------------------------------------------|
| Description of EUT:           | Bluetooth Headphone                                |
| Main Model:                   | Aiwa Arc-1-US, Arc-1-XX (X=blank, 0~9, A~Z)        |
| Serial Model:                 | N/A                                                |
| Date EUT received:            | April 28, 2018                                     |
| Test Date(s):                 | April 29 to May 10, 2018                           |
| Antenna Gain:                 | Bluetooth/BLE: 0dBi                                |
| Antenna Type:                 | PIFA Antenna                                       |
| Type of Modulation:           | Bluetooth: GFSK, $\pi$ /4DQPSK, 8DPSK<br>BLE: GFSK |
| RF Operating Frequency (ies): | Bluetooth& BLE: 2402-2480 MHz                      |
| Number of Channels:           | Bluetooth: 79CH<br>BLE: 40CH                       |
| Port:                         | Please refer to the user' s manual                 |
| Input Power:                  | Model: 652035<br>Spec: 3.7V, 420mAh                |
| Trade Name :                  | AIWA                                               |
| FCC ID:                       | 2AERPAIWAARC-1                                     |

## 5. FCC §2.1093 - Radiofrequency radiation exposure evaluation: portable devices.

### 5.1 RF Exposure

#### Standard Requirement:

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances*  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,<sup>16</sup> where

- $f_{\text{(GHz)}}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum *test separation distance* is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

$$\text{result} = P\sqrt{F} / D$$

P= Maximum turn-up power in mW

F= Channel frequency in GHz

D= Minimum test separation distance in mm

## 5.2 Test Result

### Bluetooth Mode:

| Modulation | CH   | Frequency (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|------------|------|-----------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK       | Low  | 2402            | 3.242                 | 3±1                 | 4                       | 2.512                  | 0.78   | 3     |
|            | Mid  | 2441            | 3.748                 | 3±1                 | 4                       | 2.512                  | 0.78   | 3     |
|            | High | 2480            | 3.884                 | 3±1                 | 4                       | 2.512                  | 0.79   | 3     |
| π /4 DQPSK | Low  | 2402            | 3.157                 | 3±1                 | 4                       | 2.512                  | 0.78   | 3     |
|            | Mid  | 2441            | 3.451                 | 3±1                 | 4                       | 2.512                  | 0.78   | 3     |
|            | High | 2480            | 2.632                 | 3±1                 | 4                       | 2.512                  | 0.79   | 3     |
| 8-DPSK     | Low  | 2402            | 3.608                 | 3±1                 | 4                       | 2.512                  | 0.78   | 3     |
|            | Mid  | 2441            | 3.793                 | 3±1                 | 4                       | 2.512                  | 0.78   | 3     |
|            | High | 2480            | 3.986                 | 3±1                 | 4                       | 2.512                  | 0.79   | 3     |

### BLE Mode:

| Modulation | CH   | Freq (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|------------|------|------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK       | Low  | 2402       | 2.17                  | 2±1                 | 3                       | 1.995                  | 0.62   | 3     |
|            | Mid  | 2440       | 1.61                  | 2±1                 | 3                       | 1.995                  | 0.62   | 3     |
|            | High | 2480       | 1.82                  | 2±1                 | 3                       | 1.995                  | 0.63   | 3     |

**Result:** Compliance

No SAR measurement is required.