

## RF EXPOSURE REPORT



**FCC Applicant:** InfoChamp Systems Corporation  
19F, No. 88, Chenggong 2nd Rd., Qianzhen Dist., Kaohsiung  
City, Taiwan

**FCC Manufacturer:** CiaoDa Cloud Technology Co., Ltd.  
17F.-1, No. 104, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei  
City, Taiwan

**Product Name:** UHF RFID Reader Module

**Brand Name:** InfoChamp

**Model No.:** ICSC-RFIDM01

**Model Difference:** N/A

**Report Number:** TESA2204000072ES

**FCC ID** 2A8BK-ICSC-M7E2

**Issue Date:** Sep. 27, 2022

**Date of EUT Received:** Apr. 22, 2022

Approved By

John Yeh

**We hereby certify that:**

The above equipment was evaluate by SGS Taiwan Ltd. The evaluation in this report is in compliance with KDB 447498 D04 Interim General RF Exposure Guidance v01.

The results of this report relate to the specific sample identified in this report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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## Revision History

| Report Number    | Revision | Description        | Issue Date    | Revised By   | Remark |
|------------------|----------|--------------------|---------------|--------------|--------|
| TESA2204000072ES | 00       | Original.          | Sep. 15, 2022 | Yi-Shan Tsai |        |
| TESA2204000072ES | 01       | Revise description | Sep. 27, 2022 | Yi-Shan Tsai | *      |

**Note:**

- 1、The remark "\*" indicates modification of the report upon requests from certification body.

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## 1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

### 1.1 Product Description

|                   |                        |
|-------------------|------------------------|
| Product Name:     | UHF RFID Reader Module |
| Brand Name:       | InfoChamp              |
| Model No.:        | ICSC-RFIDM01           |
| Model Difference: | N/A                    |
| Hardware Version: | N/A                    |
| Firmware Version: | N/A                    |
| EUT Series No.:   | TE-2204000177P         |
| Power Supply:     | 5Vdc                   |

### 1.2 Evaluation site

| Laboratory  | Site Address                        |   | FCC Designation number |
|---|-------------------------------------|---|------------------------|
| SGS Taiwan Ltd.<br>Central RF Lab.<br>(TAF code 3702) | <input type="checkbox"/>            | No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan. | TW0027                 |
|   | <input checked="" type="checkbox"/> | No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.                                | TW0028                 |
|   | <input type="checkbox"/>            | 1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Nei Hu District, Taipei City, 222 Taiwan.     | TW0029                 |

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## 2 DETERMINATION OF MPE EXEMPTION

### 2.1 Single RF Source

As per §1.1307(b)(3)(i),

- (A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);
- (B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold  $P_{th}$  (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{th}$  is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

$d$  = the separation distance (cm);

**Note:** when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

- (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  $\lambda$  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).

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Table 1 to § 1.1307(b)(3)(i)(C) –

## Single RF Sources Subject to Routine Environmental Evaluation

| RF Source frequency (MHz) |   |        | Minimum Distance   |   |                    | Threshold ERP (W)                   |
|---------------------------|---|--------|--------------------|---|--------------------|-------------------------------------|
| fL                        |   | fH     | $\lambda L / 2\pi$ |   | $\lambda H / 2\pi$ |                                     |
| 0.3                       | - | 1.34   | 159m               | - | 35.6m              | 1920 R <sup>2</sup>                 |
| 1.34                      | - | 30     | 35.6m              | - | 1.6m               | 3450 R <sup>2</sup> /f <sup>2</sup> |
| 30                        | - | 300    | 1.6m               | - | 159mm              | 3.83 R <sup>2</sup>                 |
| 300                       | - | 1500   | 159mm              | - | 31.8mm             | 0.0128 R <sup>2</sup> f             |
| 1500                      | - | 100000 | 31.8mm             | - | 0.5mm              | 19.2R <sup>2</sup>                  |

R= minimum separation distance in meter

f = frequency in MHz

## 2.2 Multiple RF Sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

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## 2.3 Single RF Source Evaluation Results

| Chain 0 | Frequency (MHz) | Max. tune-up power (dBm) | Peak gain (dBi) | ERP (dBm) | ERP (W) | Permissible Minimum separation distance ( l/2p ) (m) | R = actual Minimum separation distance(m) | ERP <sub>th</sub> (W) | ERP/ERP <sub>th</sub> |
|---------|-----------------|--------------------------|-----------------|-----------|---------|--|---|-----------------------|-----------------------|
| RFID    | 902.75          | 30                       | 5.24            | 33.09     | 2.037   | 0.0529   | 0.450                                     | 2.340                 | 0.871                 |

| Chain 1 | Frequency (MHz) | Max. tune-up power (dBm) | Peak gain (dBi) | ERP (dBm) | ERP (W) | Permissible Minimum separation distance ( l/2p ) (m) | R = actual Minimum separation distance(m) | ERP <sub>th</sub> (W) | ERP/ERP <sub>th</sub> |
|---------|-----------------|--------------------------|-----------------|-----------|---------|--|---|-----------------------|-----------------------|
| RFID    | 915             | 30                       | 5.24            | 33.09     | 2.037   | 0.0522   | 0.450                                     | 2.372                 | 0.859                 |

### Note:

- For conservativeness, the lowest uplink frequency of each band is used to determine the minimum separation distance of that band. All the single RF source results (P or ERP) are less than their corresponding threshold (P<sub>th</sub> or ERP<sub>th</sub>), so they are exempt from RF exposure evaluation.
- Chain 0 and Chain 1 can't transmit simultaneously.

~ End of Report ~

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