

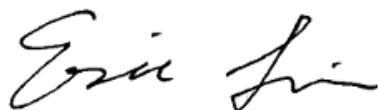
## 1 Cover Page

**RF Exposure Evaluation Report**

**Application No.:** KSEM210400482CR (SHEM2101000002CR)  
**FCC ID:** 2AYQ7FRESH-KEYRTH  
**Applicant:** Fresh-key (Shanghai) Technology Co., Ltd  
**Address of Applicant:** R412, Building 7, No.999 Dongye Road, Songjiang, Shanghai, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Fresh-key RTH Data Logger  
**Model No.:** RTH  
**Trade mark:** Fresh-key  
**Standard(s) :** FCC Rules 47 CFR §2.1091  
KDB447498 D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2020-12-24  
**Date of Test:** 2021-01-11 to 2021-01-13  
**Date of Issue:** 2021-04-12

|                     |              |
|---------------------|--------------|
| <b>Test Result:</b> | <b>Pass*</b> |
|---------------------|--------------|

\* In the configuration tested, the EUT complied with the standards specified above.



Eric Lin  
EMC Lab Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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| Revision Record |             |            |        |
|-----------------|-------------|------------|--------|
| Version         | Description | Date       | Remark |
| 00              | Original    | 2021-04-12 | /      |
|                 |             |            |        |
|                 |             |            |        |

|                          |  |                               |  |  |
|--------------------------|--|-------------------------------|--|--|
| Authorized for issue by: |  |                               |  |  |
|                          |  | Damon Zhou                    |  |  |
|                          |  | Damon Zhou / Project Engineer |  |  |
|                          |  | Eric Lin                      |  |  |
|                          |  | Eric Lin / Reviewer           |  |  |



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### 3 General Information

#### 3.1 General Description of E.U.T.

|                           |                                      |
|---------------------------|--------------------------------------|
| Power supply:             | DC 3.7V 2000mAh rechargeable battery |
| Sample Type:              | Portable production                  |
| Support Network:          | GPRS, EGPRS                          |
| Operation Frequency Band: | GSM850/GSM1900                       |
| Modulation Type:          | GMSK for GPRS<br>8PSK for EGPRS      |
| GPRS Class:               | 12                                   |
| EGPRS Class:              | 12                                   |
| Antenna Type:             | Integral Antenna                     |
| Antenna Gain:             | 2dBi(Provided by manufacturer)       |
| Extreme temp. Tolerance:  | -20°C to +55°C                       |
| Extreme vol. Limits:      | 3.3VDC to 4.2VDC (nominal: 3.7VDC)   |
| IMEI:                     | 863188040006347                      |

#### 3.2 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.



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### 3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC (Designation Number: CN1172)**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

- **ISED (CAB Identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development (ISED) Canada as an accredited testing laboratory.

CAB Identifier: CN0072.

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1600, C-1707, T-1499, G-10216 respectively.



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## 4 Test Standards and Limits

### 4.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

| Frequency range (MHz)                               | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|-----------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
| 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/1500                              | 30                       |
| 1500-100,000                                        | /                             | /                             | 1.0                                 | 30                       |

## 5 Measurement and Calculation

### 5.1 Maximum transmit power

The Power Data is based on the RF Test Report KSEM21040048201

**GSM850:**

| Test Mode |            | Conducted Power (dBm) |       |       | Conducted Power (mW) |        |        |
|-----------|------------|-----------------------|-------|-------|----------------------|--------|--------|
|           |            | LCH                   | MCH   | HCH   | LCH                  | MCH    | HCH    |
| EGPRS     | 1 TX Slot  | 22.24                 | 22.46 | 22.96 | 167.49               | 176.20 | 197.70 |
|           | 2 TX Slots | 21.94                 | 22.09 | 22.23 | 156.31               | 161.81 | 167.11 |
|           | 3 TX Slots | 20.93                 | 20.65 | 20.45 | 123.88               | 116.14 | 110.92 |
|           | 4 TX Slots | 19.62                 | 19.24 | 18.90 | 91.62                | 83.95  | 77.62  |
| GPRS      | 1 TX Slot  | 22.32                 | 22.53 | 23.09 | 170.61               | 179.06 | 203.70 |
|           | 2 TX Slots | 22.00                 | 22.17 | 22.40 | 158.49               | 164.82 | 173.78 |
|           | 3 TX Slots | 21.04                 | 20.77 | 20.57 | 127.06               | 119.40 | 114.02 |
|           | 4 TX Slots | 19.73                 | 19.36 | 19.03 | 93.97                | 86.30  | 79.98  |



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## PCS 1900:

| Test Mode |            | Conducted Power (dBm) |       |       | Conducted Power (mW) |       |       |
|-----------|------------|-----------------------|-------|-------|----------------------|-------|-------|
|           |            | LCH                   | MCH   | HCH   | LCH                  | MCH   | HCH   |
| EGPRS     | 1 TX Slot  | 18.27                 | 19.19 | 19.65 | 67.14                | 82.99 | 92.26 |
|           | 2 TX Slots | 17.97                 | 18.90 | 18.96 | 62.66                | 77.62 | 78.70 |
|           | 3 TX Slots | 17.31                 | 18.06 | 17.44 | 53.82                | 63.97 | 55.46 |
|           | 4 TX Slots | 16.95                 | 17.43 | 16.68 | 49.55                | 55.34 | 46.56 |
| GPRS      | 1 TX Slot  | 19.20                 | 19.18 | 19.67 | 83.18                | 82.79 | 92.68 |
|           | 2 TX Slots | 18.03                 | 18.87 | 18.97 | 63.53                | 77.09 | 78.89 |
|           | 3 TX Slots | 17.37                 | 18.10 | 17.45 | 54.58                | 64.57 | 55.59 |
|           | 4 TX Slots | 17.00                 | 17.48 | 16.68 | 50.12                | 55.98 | 46.56 |

## 5.2 MPE Calculation

According to the formula  $S=P/4\pi R^2$ , we can calculate S which is MPE.

Note:

- 1) P (mW)
- 2) R = distance to the center of radiation of antenna (in meter) = 20cm
- 3) MPE limit = 1mW/cm<sup>2</sup>

| Band Information | Antenn a Gain (dBi) | Gain in Linear Scale G | Operation Distance R(cm) | Max Tune-up power (dBm) | Max Tune-up power (mW) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Result |
|------------------|---------------------|------------------------|--------------------------|-------------------------|------------------------|-------------------------------------|-----------------------------|--------|
| GSM 850          | 2                   | 1.58                   | 20                       | 23.5                    | 223.87                 | 0.071                               | 0.55                        | Pass   |
| GSM 1900         | 2                   | 1.58                   | 20                       | 20.0                    | 100.00                 | 0.032                               | 1                           | Pass   |

According to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

--End of the Report--



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