

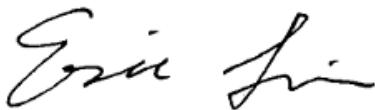
## 1 Cover Page

# 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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Dокумент.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)

No.10, Weiyi Road, Innovation Park, Kunshan, Jiangsu, China 215300  
中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

l(86-512)57355888 f(86-512)57370818 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
l(86-512)57355888 f(86-512)57370818 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

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

Authorized for issue by:			
		Damon Zhou	
		<b>Damon Zhou / Project Engineer</b>	
		Eric Lin	
		<b>Eric Lin / Reviewer</b>	



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 83071443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)**

No.10, Weiyi Road, Innovation Park, Kunshan, Jiangsu, China 215300

中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

t(86-512)57355888 f(86-512)57370818 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)

t(86-512)57355888 f(86-512)57370818 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 2 Contents

	Page
<b>1 COVER PAGE</b> .....	<b>1</b>
<b>2 CONTENTS</b> .....	<b>3</b>
<b>3 GENERAL INFORMATION</b> .....	<b>4</b>
3.1 GENERAL DESCRIPTION OF E.U.T. .....	4
3.2 TEST LOCATION.....	4
3.3 TEST FACILITY .....	5
<b>4 TEST STANDARDS AND LIMITS</b> .....	<b>6</b>
4.1 FCC RADIOFREQUENCY RADIATION EXPOSURE LIMITS: .....	6
<b>5 MEASUREMENT AND CALCULATION</b> .....	<b>6</b>
5.1 MAXIMUM TRANSMIT POWER .....	6
5.2 MPE CALCULATION .....	7



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)**

Compliance Certification Services (Kunshan) Inc.  
EMC Laboratory

No.10, Weiyi Road, Innovation Park, Kunshan, Jiangsu, China 215300  
中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

t(86-512)57355888 f(86-512)57370818 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
t(86-512)57355888 f(86-512)57370818 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

### 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 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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)**

Compliance Certification Services (Kunshan) Inc.  
EMC Laboratory

No.10, Weiye Road, Innovation Park, Kunshan, Jiangsu, China 215300  
中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

t(86-512)57355888      f(86-512)57370818      [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
t(86-512)57355888      f(86-512)57370818      [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

### 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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-512) 8307 1443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)**

No.10, Weiyi Road, Innovation Park, Kunshan, Jiangsu, China 215300  
中国 · 江苏 · 昆山市留学生创业园伟业路10号 邮编 215300

t(86-512)57355888 f(86-512)57370818 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
t(86-512)57355888 f(86-512)57370818 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 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/f2)	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

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)**



No.10, Weiyi Road, Innovation Park, Kunshan, Jiangsu, China 215300  
中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

t(86-512)57355888 f(86-512)57370818 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
t(86-512)57355888 f(86-512)57370818 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

## 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--

Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-512) 8307 1443, or email: [CN\\_Doccheck@sgs.com](mailto:CN_Doccheck@sgs.com)**



Compliance Certification Services (Kunshan) Inc.  
EMC Laboratory

No.10, Weiyi Road, Innovation Park, Kunshan, Jiangsu, China 215300  
中国·江苏·昆山市留学生创业园伟业路10号 邮编 215300

t(86-512)57355888 f(86-512)57370818 [www.sgsgroup.com.cn](http://www.sgsgroup.com.cn)  
t(86-512)57355888 f(86-512)57370818 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)