

1 Cover Page

RF Exposure REPORT

Application No.: SHEM2007000791CR
FCC ID: 2AMVQ-WK31
IC: 22969-WK31
Applicant: Hangzhou Virtual And Reality Technology Co.,LTD.
Address of Applicant: Room 901,Building 6,No.1818-2,West Wenyi Road,Yuhang Street,Yuhang District, Hangzhou,Zhejiang Province
Manufacturer: Hangzhou Virtual And Reality Technology Co.,LTD.
Address of Manufacturer: Room 901,Building 6,No.1818-2,West Wenyi Road,Yuhang Street,Yuhang District, Hangzhou,Zhejiang Province

Equipment Under Test (EUT):
EUT Name: Foot Sensor
Model No.: WK311
Trade mark: KATVR
Standard(s) : FCC Rules 47 CFR §2.1093
 KDB447498 D01 General RF Exposure Guidance v06
 RSS-102 Issue 5 March 2019 Amendment 1

Date of Receipt: 2020-07-13
Date of Test: 2020-07-15 to 2020-09-18
Date of Issue: 2020-09-19

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

* 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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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

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| Revision Record | | | |
|-----------------|-------------|------------|--------|
| Version | Description | Date | Remark |
| 00 | Original | 2020-09-19 | / |
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| Authorized for issue by: | | | |
| | | <i>Damon Zhou</i> | |
| | | _____ | |
| | | Damon Zhou / Project Engineer | |
| | | <i>Eric Lin</i> | |
| | | _____ | |
| | | Eric Lin / Reviewer | |



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3 General Information

3.1 General Description of E.U.T.

| | |
|-------------------|---------------------------------|
| Power supply: | DC 3.7V by Rechargeable battery |
| Serial Number: | KSK11B50001 |
| Firmware Version: | V2.0.0 |

3.2 Details of E.U.T.

| | |
|----------------------|--------------------|
| Antenna Gain: | 2.1dBi |
| Antenna Type: | PCB Antenna |
| Bluetooth Version: | V4.2 LE |
| Channel Spacing: | 2MHz |
| Modulation Type: | GFSK |
| Data Rate: | 1Mbps |
| Number of Channels: | 40 |
| Operation Frequency: | 2402MHz to 2480MHz |

3.3 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.

3.4 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.

4 Test Standards and Limits

4.1 FCC Radiofrequency radiation exposure limits

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

$[(\text{max power of channel})/(\text{min test separation distance})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds

The test exclusions are applicable only when the minimum test separation distance is ≤ 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 according to 4.1 f) is applied to determine SAR test exclusion.

For 2.4G band device, the limit of worse case is

$$P_{\text{max}} \leq 7.5 \cdot D_{\text{min}} / \sqrt{f} = 7.5 \cdot 5 / \sqrt{2.480} = 23.810 \text{mW}$$

4.2 IC Radiofrequency radiation exposure limits

According to RSS-102 section 2.5.1, SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance

| MHz | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | mm |
|------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| ≤300 | 71 | 101 | 132 | 162 | 193 | 223 | 254 | 284 | 315 | 345 | mW |
| 450 | 52 | 70 | 88 | 106 | 123 | 141 | 159 | 177 | 195 | 213 | |
| 835 | 17 | 30 | 42 | 55 | 67 | 80 | 92 | 105 | 117 | 130 | |
| 1900 | 7 | 10 | 18 | 34 | 60 | 99 | 153 | 225 | 316 | 431 | |
| 2450 | 4 | 7 | 15 | 30 | 52 | 83 | 123 | 173 | 235 | 309 | |
| 3500 | 2 | 6 | 16 | 32 | 55 | 86 | 124 | 170 | 225 | 290 | |
| 5800 | 1 | 6 | 15 | 27 | 41 | 56 | 71 | 85 | 97 | 106 | |

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

The practical use condition for this device is as a limb-worn accessories. So the applicable limit is 10-g extremity SAR

For 2.4G band device, the limit is $P_{\max} \leq 2.5 \times 4 = 10 \text{ mW}$

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report KSEM200700079101.

Test Data:

| Test Mode | Test Channel | Power[dBm] | Peak Power (mW) |
|-----------|--------------|------------|-----------------|
| BLE | 2402 | 4.88 | 3.08 |
| BLE | 2440 | 4.06 | 2.55 |
| BLE | 2480 | 4.12 | 2.58 |

5.2 RF Exposure Calculation

The Max Conducted Peak Output Power is 3.08mW. The best case gain of the antenna is 2.1dBi.

2.1dBi logarithmic terms convert to numeric result is nearly 1.62

According to the formula. calculate the EIRP test result:

$$\text{EIRP} = P \times G = 3.08\text{mW} \times 1.62 = 4.99\text{mW} < 10 \text{ mW} < 23.810\text{mW}$$

So the SAR report is not required.

--End of the Report--