



1 Cover Page

RF MPE REPORT

Application No.: CKSEM1909000508CR
FCC ID: 2AMVQ-LC01
IC: 22969-LC01
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: KAT loco
Model No.: LC011, LC012
Standard(s): FCC Rules 47 CFR §2.1093
KDB447498 D01 General RF Exposure Guidance v06
RSS-102 Issue 5 (March 2015)
Date of Receipt: 2019-09-17
Date of Test: 2019-10-13 to 2019-10-14
Date of Issue: 2019-10-22

Test Result:	Pass*
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* 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.



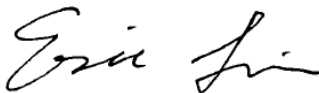
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Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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Revision Record			
Version	Description	Date	Remark
00	Original	2019-10-22	/

Authorized for issue by:				
				
		Ken Yao / Project Engineer		
				
		Eric Lin / Reviewer		

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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 3.7V, 370mAh by rechargeable battery DC 5V by PC
Test voltage:	DC 5V

3.2 Technical Specifications

BLE

Antenna Gain	2.1 dBi
Antenna Type	PCB Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz

3.3 Test Location

All tests were performed at:

Compliance Certification Services Inc.

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

Tel: +86-512-57355888 Fax: +86-512-57370818

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 17025:2005 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. Test Firm Registration Number: 995260.

- **Industry Canada (IC) – IC Assigned Code: 2324E**

The 10m and 3m Semi-anechoic chamber of Compliance Certification Services (Kunshan) Inc. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 2324E-1 for 10m chamber, 2324E-2 for 3m chamber.

- **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-216 respectively.

3.5 Deviation from Standards

None

3.6 Abnormalities from Standard Conditions

None

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

$$P_{\max} \leq 3.0 \cdot D_{\min} / \sqrt{f} = 3.0 \cdot 5 / \sqrt{2.480} = 9.525 \text{ mW}$$

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 body accessories. So the applicable limit is 1-g extremity SAR

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

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report CKSEM190900050801CR.

Test Data:

Test Mode	Test Channel	Power[dBm]	Peak Power (mW)
BLE	2402	2.91	1.95
BLE	2440	2.87	1.94
BLE	2480	2.99	1.99

5.2 RF Exposure Calculation

The Max Conducted Peak Output Power is 1.99mW. 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:

$$\text{EIRP} = P \times G = 1.99 \text{ mW} \times 1.62 = 3.22\text{mW} < 4 \text{ mW} < 9.525\text{mW}$$

So the SAR report is not required.

--End of the Report--