1 Cover Page

RF Exposure Evaluation Report

Application No.:	KSEM2108001507CR
FCC ID:	2AXVM-HM-TR23
IC:	26572-HMTR23
Applicant:	Hangzhou Microimage Software Co., Ltd.
Address of Applicant:	Room 313, Unit B, Building 2, 399 Danfeng Road, Xixing Subdistrict,Binjiang District, Hangzhou, Zhejiang
Manufacturer:	Hangzhou Microimage Software Co., Ltd.
Address of Manufacturer:	Room 313, Unit B, Building 2, 399 Danfeng Road, Xixing Subdistrict,Binjiang District, Hangzhou, Zhejiang
Factory:	Hangzhou Microimage Intelligent Technology Co., Ltd.
Address of Factory:	Floor 2, Building A1, 299 Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou City, Zhejiang Province
Equipment Under Test (EUT):	
EUT Name:	Thermal Image Scope
Model No.:	HM-TR23-35XG/W-PH35L; HM-TR23-50XG/W-PH50L; HM-TR26-35XG/W-PQ35L; HM-TR26-50XG/W-PQ50L
Trade mark:	Thermal Image Scope
Standard(s) :	FCC Rules 47 CFR §2.1093 RSS-102 Issue 5 Amendment 1 (February 2, 2021)
Date of Receipt:	2021-08-27
Date of Test:	2021-09-18 to 2021-09-25
Date of Issue:	2021-09-26
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.

No.10, Weiye Road, Innovation Park, Kunshan, Jiangsu, China 215300 t(86-512)57355888 f(86-512)57370818 www.sgsgroup.com.cn
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Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2021-09-26	/

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

2 Contents

3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 3.6V, 3350mAh by rechargeable lithium battery

3.2 Technical Specifications

2.4GHz

Antenna Gain:	1dBi (Provided by the manufacturer)
Antenna Type:	PCB Antenna
Channel Spacing:	5MHz
Data Rate:	802.11b: 1/2/5.5/11Mbps, 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS 0 to 7 for HT20MHz; MCS 0 to 7 for HT40MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20):11 802.11n(HT40):7
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz
Firmware version：	V5.5.28 build 211021
S/N:	C12345678

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)

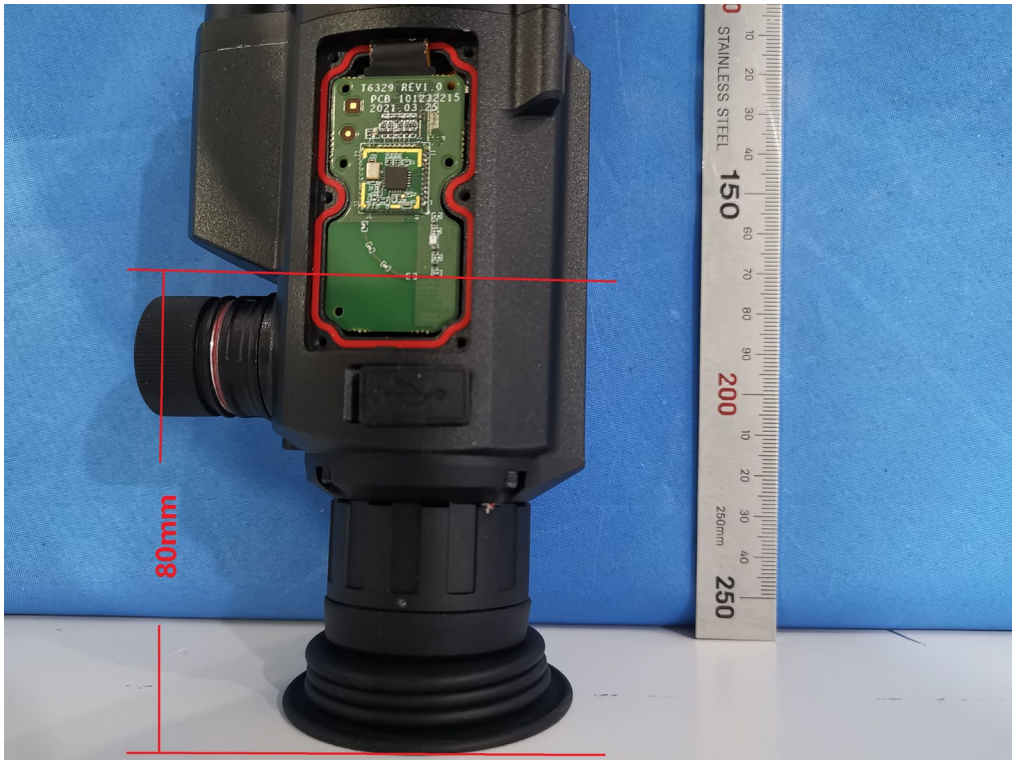
Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development (ISED) Canada as an accredited testing laboratory.
CAB Identifier: CN0072.

• 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-11600, C-11707, T-11499, G-10216 respectively.

4 Test Standards and Limits

4.1 DUT Antenna Locations



Note 1) The distance between WIFI antenna and handle of the EUT is <5mm.
2) The distance between WIFI antenna and the head of human is 80mm.
3) Only the handle is in contact with human hand in practical use condition.

4.2 FCC Radiofrequency radiation exposure limits:

a) 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:
[(max power of channel)/(min test separation distance)]*[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(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.
b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):32
1) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm) • (f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
2){[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50mm) • 10]} mW, for > 1500 MHz and ≤ 6 GHz
The practical use condition for this device is as a limb-worn and head accessories. So the applicable limit are both 10-g and 1-g SAR.

The practical use condition for this device is as a limb accessories. So the applicable limit is

For the hand: $P_{max} \leqslant 7.5 / (\sqrt{f} / D_{min}) = 7.5 / (\sqrt{2.452} / 5) = 23.95mW$

For the head: $D_{min} \geqslant [Pt - (3/\sqrt{f})*d1] / 10 + 50 = [7.85 - (3/(\sqrt{2.452})*50)]/10+50 = 41.21mm$

4.3 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 defined in Table 1.

Table 1: SAR evaluation - Exemption limits for routine evaluation based on frequency and separation distance [4, 5]

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥ 50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

The practical use condition for this device is as a limb accessories. So the applicable limit is

For the hand: 4*2.5=10mW

For the head: 309mW

5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report KSEM210800150701

2.4GHz

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	8.67	7.36
11B	2437	Ant1	8.76	7.52
11B	2462	Ant1	8.61	7.26
11G	2412	Ant1	8.53	7.13
11G	2437	Ant1	8.53	7.13
11G	2462	Ant1	8.16	6.55
11N20SISO	2412	Ant1	7.82	6.05
11N20SISO	2437	Ant1	8.93	7.82
11N20SISO	2462	Ant1	8.45	7.00
11N40SISO	2422	Ant1	8.43	6.97
11N40SISO	2437	Ant1	8.94	7.83
11N40SISO	2452	Ant1	8.95	7.85

5.2 MPE Calculation

The Max Conducted Peak Output Power is 7.85mW. The best case gain of the antenna is 1dBi logarithmic terms convert to numeric result is nearly 1.26

For FCC:

For the hand: P = 7.85mW < 23.95mW

For the head: D_{min}= 8mm < 41.21mm

For IC:

E.I.R.P.= P*G = 7.85 * 1.26 = 9.89mW < 10mW < 309mW

So the SAR report is not required.

--End of the Report--