

# 1 Cover Page

## ***RF Exposure Evaluation Report***

**Application No.:** SHEM2011009663CR  
**FCC ID:** 2AXVM-HM-TS03XG  
**IC:** 26572-HMTS03XG  
**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 Telescope  
**Model No.:** HM-TS03-19XG/W-LH19  
 HM-TS03-10XG/W-LH10, HM-TS03-15XG/W-LH15, HM-TS03-25XG/W-LH25, HM-TS03-19XG/W-LH19UHK, HM-TS03-10XG/W-LH10UHK, HM-TS03-15XG/W-LH15UHK, HM-TS03-25XG/W-LH25UHK, HM-TS03-19XG/W-LH19CKV, HM-TS03-10XG/W-LH10CKV, HM-TS03-15XG/W-LH15CKV, HM-TS03-25XG/W-LH25CKV, HM-TS03-19XG/W-LH19UVS, HM-TS03-10XG/W-LH10UVS, HM-TS03-15XG/W-LH15UVS, HM-TS03-25XG/W-LH25UVS, HM-TS03-19XG/W-LH19KVO, HM-TS03-10XG/W-LH10KVO, HM-TS03-15XG/W-LH15KVO, HM-TS03-25XG/W-LH25KVO, HM-TS03-19XG/W-LH19HUN, HM-TS03-10XG/W-LH10HHUN, HM-TS03-15XG/W-LH15HUN, HM-TS03-25XG/W-LH25HUN  
**Add Model No.:**  
**Trade mark:** HIKMICRO  
 FCC Rules 47 CFR §2.1093  
**Standard(s) :** KDB447498 D01 General RF Exposure Guidance v06  
 RSS-102 Issue 5 (March 2015)  
**Date of Receipt:** 2020-11-03  
**Date of Test:** 2020-11-17 to 2020-12-17  
**Date of Issue:** 2020-12-18

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

*Parlam Zhan*

Parlam Zhan  
E&E Section Manager

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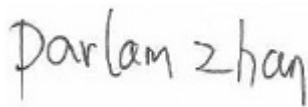
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For IC Model No: HM-TS03-19XG/W-LH19, HM-TS03-10XG/W-LH10, HM-TS03-15XG/W-LH15, HM-TS03-25XG/W-LH25



Revision Record			
Version	Description	Date	Remark
00	Original	2020-12-18	/

Authorized for issue by:				
				
		Micheal Niu / Project Engineer		
				
		Parlam Zhan / Reviewer		



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### 3 General Information

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

Power supply:	DC 5V by adapter
Serial Number:	E63983793
Firmware Version:	V5.4.24_200720

#### 3.2 Technical Specifications

Antenna Gain:	1dBi (Provided by the manufacturer)
Antenna Type:	PCB Antenna
Channel Spacing:	5MHz
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
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz

### 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 Canada (ISED) 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 DUT Antenna Locations



- Note 1) The distance between WIFI antenna and eyepiece of the EUT is 140mm.  
2) Only eyepiece side contact with human head.

## 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  $\leq 50$  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  $\leq 7.5$  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  $\leq 50$  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):<sup>32</sup>

- 1)  $\{[\text{Power allowed at numeric threshold for } 50 \text{ mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$  mW, for 100 MHz to 1500 MHz
- 2)  $\{[\text{Power allowed at numeric threshold for } 50 \text{ mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$  mW, for  $> 1500$  MHz and  $\leq 6$  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.

For 2.4G band limb-worn device, the limit of worse case is  $P_{\text{max}} \leq 7.5 \cdot D_{\text{min}} / \sqrt{f} = 7.5 \cdot 5 / \sqrt{2.462} = 23.9 \text{ mW}$

For 2.4G band head device, the limit of worse case is  $P_{\text{max}} \leq 3 \cdot D_{\text{min}} / \sqrt{f} = 3 \cdot 50 / \sqrt{2.462} + [(140 - 50) \cdot 10] = 995.6 \text{ mW}$



### 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

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 and head accessories. So the applicable limit are both 10-g and 1-g SAR.

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

For 2.4G band head device when distance is 140mm, the limit is  $P_{\max} \leq 309\text{mW}$

## 5 Measurement and Calculation

### 5.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM201100966301

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	7.29	5.36
11B	2437	Ant1	7.30	<b>5.37</b>
11B	2462	Ant1	6.97	4.98
11G	2412	Ant1	6.25	4.22
11G	2437	Ant1	7.18	5.22
11G	2462	Ant1	6.96	4.97
11N20SISO	2412	Ant1	6.53	4.50
11N20SISO	2437	Ant1	7.10	5.13
11N20SISO	2462	Ant1	6.83	4.82

### 5.2 MPE Calculation

The Max Conducted Peak Output Power is 5.37mW. The best case gain of the antenna is 1dBi.  
1dBi logarithmic terms convert to numeric result is nearly 1.259

*For limb-worn*

Max Output Power = 5.37 mW x 1.259=6.76 mW < 10mW <23.9mW

*For head*

Max Output Power = 5.37 mW x 1.259=6.76 mW <309mW<995.6mW

So the SAR report is not required.

**--End of the Report--**