1 Cover Page

RF Exposure Evaluation Report

Application No.:	KSCR2208001547AT
FCC ID:	2AXVM-G61G31
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:	Handheld Thermography Camera
Model No.:	HM-TP76-25SVF/W-G61;
Add Model No:	HM-TP73-15SVF/W-G31;HM-TP73-15SVF/W-G31H;HM-TP74-25SVF/W-G41;HM-TP74-25SVF/W-G41H;HM-TP76-25SVF/W-G61H
Trade mark:	HIKMICRO
Standard(s) :	FCC Rules 47 CFR §2.1093 KDB447498 D01 General RF Exposure Guidance v06
Date of Receipt:	2022-08-31
Date of Test:	2022-09-04 to 2022-09-04
Date of Issue:	2022-09-06
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Eric Lin
Laboratory Manager

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Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2022-09-06	/

Authorized for issue by:				
		Tommie Tang **Tommie_Tang/Project Engineer**		
		Eric Lin **Eric Lin /Reviewer**		

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3 General Information

3.1 General Description of E.U.T.

Power supply:	DC 5V by USB or DC 4.2V by Li-ion battery Battery Model: INR 18650-35E-1S2P Typical Capacity: 6.7Ah 24.12Wh Rated Capacity: 6.23Ah 22.43Wh Limited Charge Voltage: 4.2V Nominal Voltage: 3.6V

3.2 General Description of E.U.T.

2.4G

Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz;802.11n(HT40): 2422MHz to 2452MHz
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
Channel Spacing:	5MHz
Antenna Type:	FPC Antenna
Antenna Gain:	1.39dBi (Provided by the manufacturer)

BT

Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V4.2 Dual mode
Modulation Type:	GFSK, pi/4DQPSK, 8DPSK
Number of Channels:	79

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Channel Spacing:	1MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Antenna Type:	FPC Antenna
Antenna Gain:	1.39dBi (Provided by the manufacturer)

BLE

Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V4.2 Dual mode
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	FPC Antenna
Antenna Gain:	1.39dBi (Provided by the manufacturer)

5G

Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	UNII Band I	802.11a/n(HT20)/ac(VHT20)	5180-5240	4
		802.11n(HT40)/ac(VHT40)	5190-5230	2
		802.11ac(VHT80)	5210	1
	UNII Band II-A	802.11a/n(HT20)/ac(VHT20)	5260-5320	4

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		802.11n(HT40)/ac(VHT 40)	5270-5310	2
		802.11ac(VHT80)	5290	1
	UNII Band II-C	802.11a/n(HT20)/ac(VHT20)	5500-5700	11
		802.11n(HT40)/ac(VHT 40)	5510-5670	5
		802.11ac(VHT80)	5530~5610	2
	UNII Band III	802.11a/n(HT20)/ac(VHT20)	5745-5825	5
		802.11n(HT40)/ac(VHT 40)	5755-5795	2
		802.11ac(VHT80)	5775	1
Moudulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)			
Data Rate:	802.11a: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS0-7 802.11ac: MCS0-9			
Channel Spacing:	802.11a/n(HT20)/ac(VHT20): 20MHz; 802.11n(HT40)/ac(VHT40): 40MHz; 802.11ac(VHT80): 80MHz			
DFS Function:	Slave without Radar detection			
Antenna Type:	FPC Antenna			
Antenna Gain:	5150-5250MHz: 0.70dBi, (Provided by the manufacturer) 5250-5350MHz: 0.83dBi, (Provided by the manufacturer) 5470-5725MHz: 1.17dBi, (Provided by the manufacturer) 5725-5850MHz: 1.17dBi, (Provided by the manufacturer)			

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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.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).

2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).

3.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS**

Compliance Certification Services (Kunshan) Inc. is accredited by the China National Accreditation Service for Conformity Assessment (CNAS). Registration No. CNAS L4354

- **A2LA**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

- **ISED**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

- **VCCI**

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-20134, R-11600, C-11707, T-11499, 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:
[(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.

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, the device is handhold device, so the limit of worse case is

$P_{max} \leq 7.5*D_{min})/\sqrt{f} = 7.5*5/\sqrt{2.462} = 23.9mW$

For BT, the device is handhold device, so the limit of worse case is

$P_{max} \leq 7.5*D_{min})/\sqrt{f} = 7.5*5/\sqrt{2.462} = 23.8mW$

For BLE, the device is handhold device, so the limit of worse case is

$P_{max} \leq 7.5*D_{min})/\sqrt{f} = 7.5*5/\sqrt{2.462} = 23.8mW$

For 5G band, the device is handhold device, so the limit of worse case is

$P_{max} \leq 7.5*D_{min})/\sqrt{f} = 7.5*5/\sqrt{5.825} = 15.5mW$

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5 Measurement and Calculation

5.1 Maximum transmit power

The Power Data is based on the RF Test Report KSCR220800154701; KSCR220800154702; KSCR220800154703; KSCR220800154704

2.4G

Test Mode	Test Channel	Ant	Power [dBm]	Power [mW]
11B	2412	Ant1	10.13	10.30
11B	2437	Ant1	9.94	9.86
11B	2462	Ant1	10.21	10.50
11G	2412	Ant1	10.47	**11.14**
11G	2437	Ant1	9.94	9.86
11G	2462	Ant1	10.25	10.59
11N20SISO	2412	Ant1	9.93	9.84
11N20SISO	2437	Ant1	9.70	9.33
11N20SISO	2462	Ant1	9.95	9.89
11N40SISO	2422	Ant1	9.82	9.59
11N40SISO	2437	Ant1	9.94	9.86
11N40SISO	2452	Ant1	9.96	9.91

BT

Test mode	Channel	Peak Power (dBm)	Peak Power (mW)
GFSK	2402	7.42	**5.52**
	2441	7.17	5.21
	2480	6.69	4.67
π/4DQPSK	2402	3.67	2.33
	2441	3.45	2.21

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	2480	2.51	1.78
8DPSK	2402	4.19	2.62
	2441	3.95	2.48
	2480	3.01	2.00

BLE

Test mode	Channel	Peak Power (dBm)	Peak Power (mW)
1M	2402	4.95	**3.13**
	2440	4.71	2.96
	2480	3.89	2.45

5G

Mode	TX Type	Frequency (MHz)	Power [dBm]	Power [mW]
802.11a	SISO	5180	10.29	10.69
		5200	10.13	10.30
		5240	10.19	10.45
		5260	9.98	9.95
		5300	10.37	10.89
		5320	10.15	10.35
		5500	10.31	10.74
		5580	9.87	9.71
		5700	9.79	9.53
		5745	10.14	10.33
		5785	9.96	9.91
		5825	9.40	8.71
802.11n (HT20)	SISO	5180	9.95	9.89
		5200	6.76	4.74
		5240	9.56	9.04
		5260	9.39	8.69
		5300	6.89	4.89
		5320	9.55	9.02
		5500	9.59	9.10
		5580	9.22	8.36
		5700	9.10	8.13
		5745	9.42	8.75
		5785	9.15	8.22
		5825	8.79	7.57

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802.11n (HT40)	SISO	5190	10.43	11.04
		5230	10.33	10.79
		5270	10.30	10.72
		5310	10.48	**11.17**
		5510	10.44	11.07
		5550	10.10	10.23
		5670	10.00	10.00
		5755	10.20	10.47
		5795	9.98	9.95
802.11ac (VHT20)	SISO	5180	9.95	9.89
		5200	9.90	9.77
		5240	9.94	9.86
		5260	9.40	8.71
		5300	9.76	9.46
		5320	9.88	9.73
		5500	9.73	9.40
		5580	9.24	8.39
		5700	9.32	8.55
		5745	9.48	8.87
		5785	9.30	8.51
		5825	8.99	7.93
802.11ac (VHT40)	SISO	5190	10.34	10.81
		5230	10.37	10.89
		5270	10.31	10.74
		5310	10.32	10.76
		5510	10.42	11.02
		5550	10.34	10.81
		5670	10.10	10.23
		5755	10.34	10.81
		5795	9.96	9.91
802.11ac (VHT80)	SISO	5210	9.97	9.93
		5290	10.41	10.99
		5530	9.97	9.93
		5610	9.72	9.38
		5775	9.77	9.48

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5.2 MPE Calculation

For 2.4G WIFI, the Max Conducted Peak Output Power is 11.14mW. The best case gain of the antenna is 1.39dBi logarithmic terms convert to numeric result is nearly 1.38

P =11.14* 1.38 = 15.3732mW < 23.9mW

For BT, the Max Conducted Peak Output Power is 5.52mW. The best case gain of the antenna is 1.39dBi logarithmic terms convert to numeric result is nearly 1.38

P =5.52* 1.38 = 7.6176mW < 23.8mW

For BLE, the Max Conducted Peak Output Power is 3.13mW. The best case gain of the antenna is 1.39dBi logarithmic terms convert to numeric result is nearly 1.38

P =3.13* 1.38 = 4.3194mW < 23.8mW

For 5G WIFI, the Max Conducted Peak Output Power is 11.17mW. The best case gain of the antenna is 0.83dBi logarithmic terms convert to numeric result is nearly 1.21

P =11.17* 1.21 = 13.5157mW < 15.5mW.

So the device is exclusion from SAR test.

--End of the Report--

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