

Thermal Camera

Quick Start Guide

本手册可能因为产品功能增强或者版本变更出现与产品不一致的地方，请以实际产品为准。

This manual may be inconsistent with the product due to product enhancements or version changes, please refer to the actual product.

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01 重要说明

本手册为通用手册，涵盖一个产品线中的多款热像仪，这意味着某些功能和说明并不适用于您特定型号的热像仪。

02 注意事项

在任何时候都请严格遵守下列注意事项：

1. 在使用设备时请尽量保持稳定，避免剧烈晃动。
2. 不要在超出设备许可的工作温度或储存温度环境中使用或存放仪器。
3. 不要将设备直接对准很高强度的热辐射源，例如太阳，激光器，点焊机等。
4. 不要将设备暴露在灰尘或潮湿的环境中。在有水的环境中使用时，应避免水溅到仪器上。在不使用仪器时应盖上镜头盖。
5. 当不使用本设备时，请将仪器和所有配件放置在专用包装箱内。
6. 不要堵塞设备上的孔。
7. 不要敲打，扔掷或震动仪器和配件，以免造成损坏。
8. 请勿自行拆卸本机，这有可能造成设备损坏，并丧失保修权利。
9. 勿在超过设备工作温度的环境下使用该设备，这可能会造成设备损坏。
10. 不要将有溶解性或类似的液体用于设备，线缆，这可能会导致设备的损坏。
11. 擦拭本设备时请遵照以下措施：
 - 非光学表面：在必要时可以使用干净柔软的布擦拭热像仪的非光学表面。
 - 光学表面：使用热像仪时请避免弄脏镜头的光学表面，特别要避免用手触碰镜头，因手上的汗迹会在镜头玻璃上留下痕迹且可能会腐蚀玻璃表面的光学镀膜层。当光学镜头表面受到污染时，使用专业镜头纸小心的擦拭。

03 红外热像仪充电使用说明

【安全须知】

1. 请仔细阅读并遵守本说明书中的所有指示。
2. 请勿在易爆环境中充电或使用红外热像仪。
3. 请勿将红外热像仪暴露于雨水或潮湿环境中。
4. 请勿尝试自行拆解或修理红外热像仪，以免发生电击或损坏设备。
5. 请使用原装充电器和电池，以确保充电效果和安全。

【充电前准备】

1. 确保红外热像仪、充电器和电池处于干燥状态。
2. 确保充电器和电源插座的电压相符。
3. 确保电源插座接地良好。

【充电步骤】

1. 将充电器插入电源插座，确保插头插紧。
2. 将充电器另一端连接到红外热像仪的充电接口上，确保连接牢固。
3. 打开红外热像仪的电源开关，此时设备屏幕亮起显示电量图标，表示开始充电。
4. 当屏幕点亮图标满格时，表示充电完成。

【充电步骤】

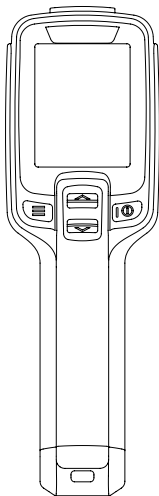
1. 请勿在充电过程中触摸电池或充电器，以免触电。
2. 请勿在充电过程中使用红外热像仪。
3. 若发现充电器或电池过热，请立即停止充电并检查设备。
4. 若长时间不使用红外热像仪，请定期为其充电，以维持电池性能。

04 产品简介

本产品是工具型手持测温红外热像仪，它具有120*90及256*192两款分辨率，配置激光，照明灯和可见光，可外接PC机，满足不同场合下的使用需求。

05 物品清单

☑ 热像仪（含电池）	1台	☑ 腕带	1根
☑ 快速操作指南	1份	☑ 充电器	1个
☑ 资料下载卡	1份		
☑ USB数据线	1根		



热像仪（含电池）



快速操作指南



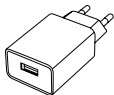
资料下载卡



USB数据线



腕带



欧规插头



澳规插头



中规插头



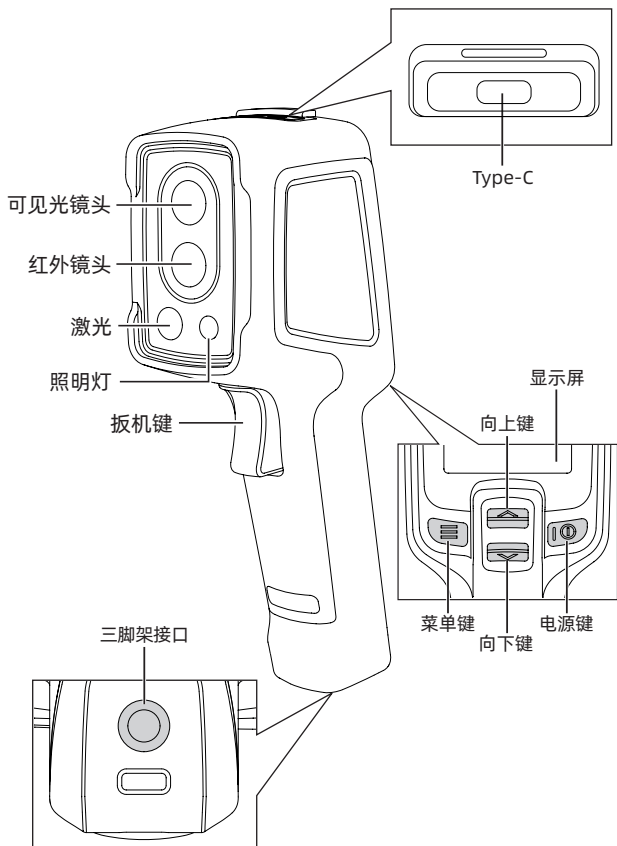
美规插头



英规插头

不同地区产品装配对应插头

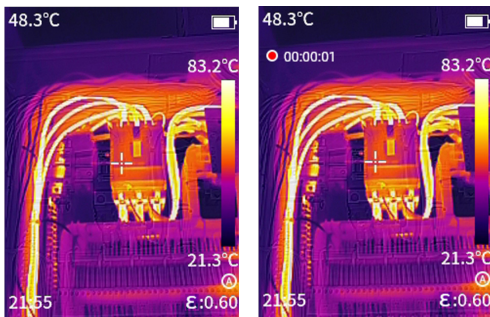
06 产品部件



07 基本操作

【拍照录像】

在实时观测界面，短按“扳机键”冻结图像，根据当前界面提示选择对应按钮保存或取消。



在实时观测界面，长按“扳机键”进行录像，录制完成后短按“扳机键”或“菜单键”保存视频。

【图库】

在实时观测界面，按“菜单键”进入菜单，选择“图库”后按“菜单键”进入图库，显示：查看图片、查看视频和全部删除菜单。

用户可根据自身需求，选择对应菜单进行操作。

【调光模式】

在实时观测界面下，长按“菜单键”直至屏幕左上方出现【A】标识，进入调光模式设置。本机支持三种调光模式，分别是自动调光（A）、半自动调光（S）、手动调光（M）。

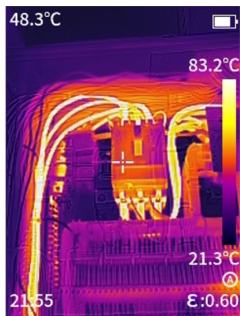
1. 长按“菜单键”进入调光模式设置后，通过短按“上/下键”依次切换A-S-M。
2. S为半自动调光模式，可调整 ΔT 值。在S模式下，短按“上/下键”

- ，可选中想要调整的数值。选中向上箭头，短按“菜单键”，可增加 ΔT 值；选中向下箭头，短按“菜单键”，可减小 ΔT 值。
3. M为手动调光模式，可调整Tmax和Tmin值。在M模式下，短按“上/下键”，可选中想要调整的数值。选中向上箭头，短按“菜单键”，可同时增加Tmax和Tmin值；选中向下箭头，短按“菜单键”，可同时减小Tmax和Tmin值；选中向左箭头，短按“菜单键”，可增加Tmin值，并减小Tmax值；选中向右箭头，短按“菜单键”，可增加Tmax值，并减小Tmin值。
 4. A为自动调光模式，数值根据所拍摄的实时场景而定，不可手动调整。
 5. 短按“返回键”保存并退出。

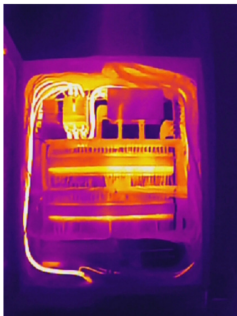
【图像模式】

在实时观测界面，通过短按“上/下键”选择图像模式，本机支持四种图像模式，分别是IR（红外）模式、VL（可见光）模式、MIF（融合）模式、PIP（画中画）模式。

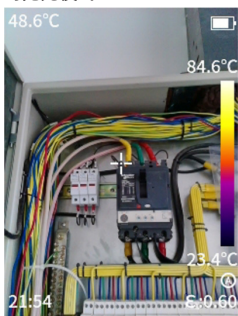
普通红外模式：



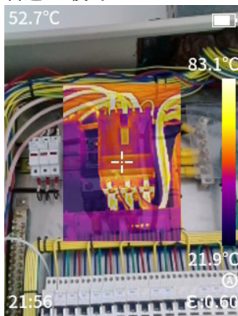
普通MIF模式：



可见光模式：



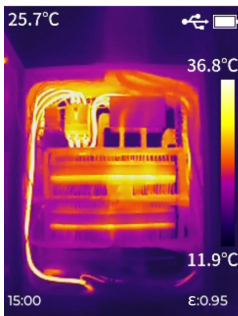
普通PIP模式：



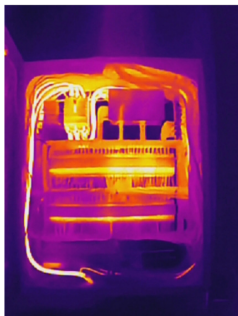
【超分模式】

在实时观测界面，按“菜单键”进入一级菜单，通过短按“上/下键”选择超分模式开关，短按“菜单键”开启/关闭超分模式。超分模式下拍照会使图像细节更清晰，对比度、清晰度更明显。

超分前：



超分后：



【测温参数】

测温参数会影响测温结果的准确性，测温前需要提前设置好测温参数。

1. 测温范围：根据被测量目标的温度选择合适的测温范围。
2. 发射率：根据被测目标的发射率调节，本机中有常用物体的发射率，也可以自定义。
3. 反射温度：当前观测的目标环境温度对目标的温度影响。
4. 目标距离：根据被测目标的距离，调节设备的对应距离参数，测温更精准。

【常见物体发射率】

材质	发射率
木	0.85
水	0.96
砖	0.75
不锈钢	0.14
胶带	0.96
铝板	0.09
铜板	0.06
黑铝	0.95
人体皮肤	0.98
沥青	0.96
PVC塑料	0.93

材质	发射率
黑纸	0.86
聚碳酸	0.8
混凝土	0.97
氧化铜	0.78
铸铁	0.81
锈	0.8
石膏	0.75
油漆	0.9
橡胶	0.95
土壤	0.93

08 常见问题汇总

症状	原因	措施
无法开机	电池电量不足	充电10分钟后开机
	外接电源的插头没插到位	拔出电源插头，重新插入并推到位
	电池寿命已到	更换新电池
红外图像不清晰	镜头蒙上水气或被污染	使用专业设备清洁镜头
可见光图像不清晰	环境太暗	采取适当照明措施
	可见光前端有水汽或被污染	使用专业设备清洁可见光前端
测温不准	与测温相关的参数设置不对	更改参数设置，或直接恢复默认参数值
	开机立刻测温	为保证测温精度，我们建议您打开热像仪之后，等待5~10分钟再开始测温
	长时间没有校准	为获取精确的测温结果，我们建议您每年将热像仪送回校准一次

01 NOTES

This is a general manual that covers multiple thermal cameras in a product line, indicating that certain functions and instructions are not applicable to your specific model of thermal camera.

02 PRECAUTIONS

The following precautions shall be strictly followed at any time:

1. Keep the equipment in use stably to the greatest extent and avoid violent shaking.
2. Do not use or store the instrument in an environment exceeding the allowable operating temperature or storage temperature of equipment.
3. Do not directly align the equipment at high-intensity heat radiation sources, such as the sun, lasers and spot welders.
4. Do not expose the equipment to the environments with dust or damp. The instrument shall be avoided from water during the use in an environment with water. The instrument not in use shall be covered with lens cap.
5. The instrument and all accessories shall be placed in the dedicated packaging box if the equipment is not used.
6. Do not block the holes on the equipment.
7. Do not tap, throw or shake the instrument and accessories to avoid damage.
8. Do not disassemble this machine by yourself, which may damage the equipment and cause the void warranty rights.
9. Do not use the equipment in an environment exceeding its operating temperature, which may damage the equipment.

10. Soluble or similar liquids are not allowed in the equipment, which may damage the equipment.
11. The following measures shall be taken when wiping the equipment:
 - Non-optical surface: When necessary, the non-optical surface of thermal camera can be wiped by the clean and soft cloth.
 - Optical surface: The optical surface of lens shall be prevented from pollution when using the thermal camera. Particularly, the lens cannot be touched by hands, as the sweat on hands will leave marks on the lens glass and may corrode the optical coated layer on the glass surface. The polluted surface of optical lens (if any) shall be wiped carefully with dedicated lens paper.

03 INSTRUCTIONS ON CHARGING OF INFRARED THERMAL CAMERA

Safety Instructions

1. Carefully read and follow all instructions in this Manual.
2. Do not charge or use the infrared thermal camera in an explosive environment.
3. Do not expose the infrared thermal camera to the environments with rainwater or damp.
4. Do not attempt to disassemble or repair the infrared thermal camera by yourself to avoid electric shock or equipment damage.
5. Use the original charger and batteries to ensure charging effect and safety.

Pre-charging Preparations

1. Ensure the infrared thermal camera, charger and batteries in a dry state.
2. Ensure the same voltage of charger and power socket.
3. Ensure that the power socket is well grounded.

Charging Steps

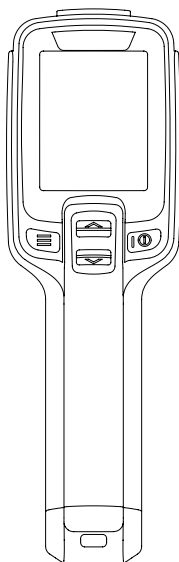
1. Insert the charger into the power socket, and ensure that the plug is tightly plugged.
2. Connect the other end of charger to the charging port of infrared thermal camera, and ensure that they are firmly connected.
3. Turn on the power switch of infrared thermal camera. At this time, the equipment screen is on with the battery icon displayed, indicating that charging starts.
4. Full-grid screen ON icon indicates that charging is completed.

04 INTRODUCTION TO PRODUCT

This is a tool-type handheld temperature measurement infrared thermal camera with two resolutions, i.e. 120*90 and 256*192. It is equipped with laser, lamps and visible light, and can be connected to an external PC to meet the services demand in different occasions.

05 LIST OF ITEMS

✓ Thermal camera (including battery)	1	✓ USB cable	1
✓ Quick Start Guide	1	✓ List of Items	1
✓ Data download card	1		



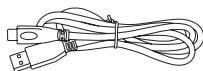
Thermal camera
(including battery)



Quick Start Guide



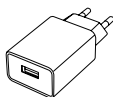
Data download card



USB cable



Wristband



European
plug



Australian
plug



Standard
plug



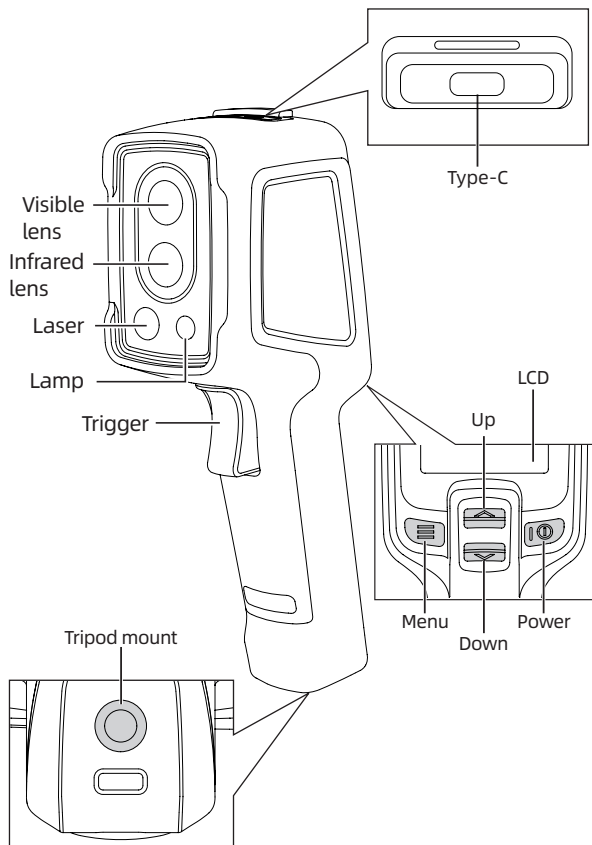
US plug



UK plug

Corresponding plugs for product
assembly in different regions

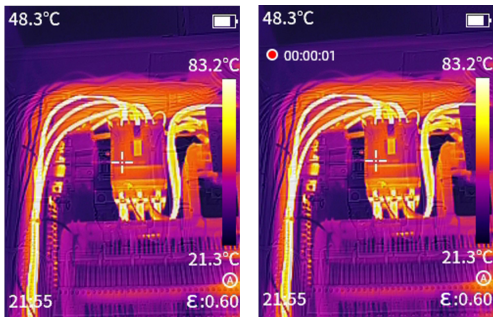
06 PRODUCT COMPONENTS



07 BASIC OPERATION

【Photographing and Video Recording】

On the real-time observation interface, short press the "Trigger" to freeze the image, and select the corresponding button to save or cancel based on the prompt on the current interface.



On the real-time observation interface, long press the "Trigger" to record videos. After recording, short press the "Trigger" or "Menu" to save videos.

【Gallery】

On the real-time observation interface, press the "Menu" to enter the menu, select "Gallery", and then press the "Menu" to enter the gallery, displaying: View Pictures, View Videos, and Delete All.

Users may select the corresponding menu for operation based on their own needs.

【Dimming Mode】

On the real-time observation interface, long press the "Menu" until that the symbol [A] is shown at the top left of screen for

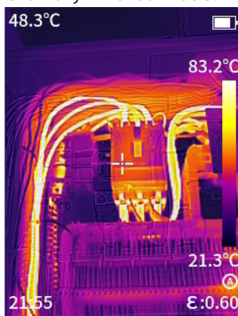
dimming mode setting. Three dimming modes are available in this machine, i.e. automatic dimming (A), semi-automatic dimming (S), and manual dimming (M).

1. After long pressing the "Menu" for dimming mode setting, switch A-S-M successively by short pressing the "Up/Down".
2. The ΔT value is adjustable through S as the semi-automatic dimming mode. In the S mode, short press the "Up/Down" to select the value to be adjusted. Select the up arrow, and short press the "Menu" to increase the ΔT value. Select the down arrow, and short press the "Menu" to decrease the ΔT value.
3. The Tmax and Tmin values are adjustable through M as the semi-automatic dimming mode. In the M mode, short press the "Up/Down" to select the value to be adjusted. Select the up arrow, and short press the "Menu" to simultaneously increase the Tmax and Tmin values. Select the down arrow, and short press the "Menu" to simultaneously decrease the Tmax and Tmin values. Select the left arrow, and short press the "Menu" to increase the Tmin value and to decrease the Tmax value. Select the right arrow, and short press the "Menu" to increase the Tmax value and to decrease the Tmin value.
4. A is the automatic dimming mode. The value depends on the real-time scenario to be shot, and cannot be manually adjusted.
5. Short pressure the "Return" to save and quit.

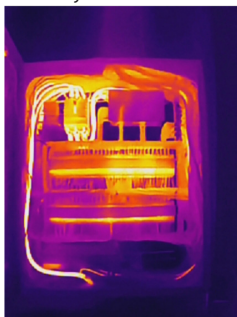
【Image Mode】

On the real-time observation interface, short press the "Up/Down" to select the image mode. There are four image modes available in this machine, i.e. IR (infrared) mode, VL (visible light) mode, MIF (fusion) mode and PIP (picture in picture) mode.

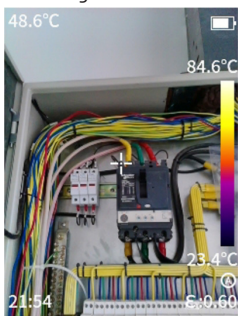
Ordinary infrared mode:



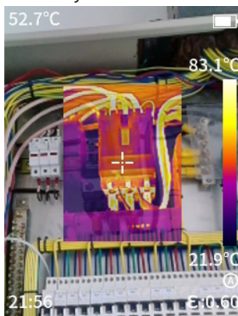
Ordinary MIF mode:



Visible light mode:



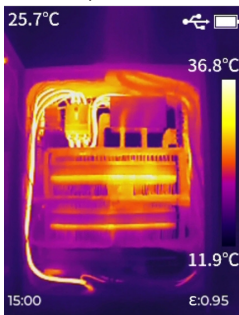
Ordinary PIP mode:



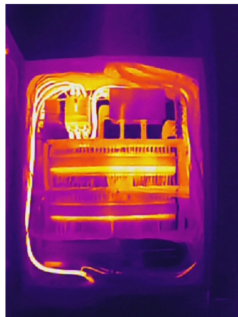
【Super-resolution Mode】

On the real-time observation interface, press the "Menu" to enter the first-level menu. Short press the "Up/Down" to select the super-resolution mode switch, and short press the "Menu" to enable/shut down the super-resolution mode. Images will be clearer in details if taken at the super-resolution mode, with more obvious contrast and sharpness.

Before super-resolution :



After super-resolution:



【Temperature Measurement Parameters】

Temperature measurement parameters will affect the accuracy of temperature measurement results, and they shall be properly set in advance before temperature measurement.

1. Temperature measurement range: An appropriate temperature measurement range is selected based on the temperature of the measured target.
2. Emissivity: adjusted based on the emissivity of the measured target. There is the emissivity of common objects for this machine, and the emissivity is customizable.

3. Reflection temperature: temperature impact of the currently observed target ambient temperature on the target.
4. Target distance: Corresponding distance parameters of equipment are adjusted based on the distance of the measured target for more accurate temperature measurement.

【Emissivity of common objects】

Materials	Emissivity
Wood	0.85
Water	0.96
Brick	0.75
Stainless steel	0.14
Adhesive tape	0.96
Aluminum plate	0.09
Copper plate	0.06
Black aluminum	0.95
Human skin	0.98
Asphalt	0.96
PVC plastic	0.93

Materials	Emissivity
Black paper	0.86
Polycarbonate	0.8
Concrete	0.97
Copper oxide	0.78
Cast iron	0.81
Rust	0.8
Gypsum	0.75
Paint	0.9
Rubber	0.95
Soil	0.93

08 FAQs

Fault	Cause	Measures
Start failure	Low battery	Start the device after charging for 10 minutes
	The plug of the external power supply is not plugged in place	Unplug, reconnect and push it into place
	Battery life has expired	Replace the battery with a new one
Infrared image is not clear	The lens is covered with water vapor or contaminated	Clean the lens with dedicated device
Visible light image is not clear	The environment is too dark	Take proper lighting measures
	Water vapor or contamination in the front end of visible light	Clean the visible light front end with dedicated device
Inaccurate temperature measurement	The parameters related to temperature measurement are not set correctly	Change the parameter settings or restore the default parameter values directly
	Measure temperature immediately after startup	To ensure the accuracy of temperature measurement, we recommend to start temperature measurement after 5 ~ 10 minutes when the device is turned on
	No calibration for a long time	For accurate temperature measurement results, we recommend to calibrate the thermographic camera once a year

FCC warning:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

特别声明：说明书版本将会在产品技术改进后更新。

Notice: or any technical improvement, we will specify in the latest user manual.