# M082

# Hardware User Manual

## Product Version: 1.0
## Date: 2023-9-21

**Vantron**

For any question, please contact Chengdu Vantron Technology, Ltd.

## Change History

This table describes the version and release date.

| Rev. | Date | Description | Author |
|------|------|-------------|--------|
| 1.0 | 2023-9-21 | First release. | Shun Zhang |
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# Foreword

## Copyright

While all information contained herein have been carefully checked to assure its accuracy in technical details and printing, Vantron assumes no responsibility resulting from any error or features of this manual, or from improper uses of this manual or the software. Please contact our technical department for relevant operation solutions if there is any problem that cannot be solved according to this manual.

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## Symbol Conventions

The symbols that may be found in this document are defined as follows.

| Symbol | Type | Description |
|--------|------|-------------|
| ⓘ▷ | Notice | Important information and regulations |
| ⚠ | Caution | Caution for latent damage to system or harm to personnel |

## Statement & Disclaimer

It is recommended to read and comply with this manual which provides important guidance and helps decreasing the danger of injury, electric shock, fire, or any damage to the device.

Vantron assumes no legal liability of accidents resulting from failure of conforming to the safety instructions.

## Limitation of Liability/Non-warranty

For direct or indirect damage to this device or other devices of Vantron caused by failure of conforming to this manual or the safety instructions on device label, Vantron assumes neither warranty nor legal liability even if the device is still under warranty.

The device should be installed, debugged and maintained by professionals.

The outside antennas are not permitted to be installed or to be changed by non-professionals. To run the device normally, only specified antennas are approved to be assembled together by professionals.

Unit shall be used with indoor-use antenna only. No antenna for this unit can be installed outdoor.

## Safety Instructions

✧ Keep and comply with all operation instructions, warnings, and information.

✧ Pay attention to warnings on this device.

✧ Read the following precautions so as to decrease the danger of injury, electric shock, fire, or any damage to the device.

✧ Operations and service instructions are provided with the equipment.

✧ Unit shall be used with indoor-use antenna only. No antenna for this unit can be installed outdoor.

✧ The maximum operation temperature is 60°C.

## Precautions

✧ Pay attention to the product labels/safety instructions printed on silk screens.

✧ Do not try repairing this product unless declared in this manual.

✧ Keep away from heat source, such as heater, heat dissipater, or engine casing.

✧ Do not insert other items into the slot (if any) of this device.

◆ Ensure ventilation of the ventilation slot.

◆ System fault may arise if other items are inserted into this device.

✧ Installation: ensure correct installation according to instructions from the manufacturer with recommended installation tools.

✧ Ensure ventilation and smoothness according to relevant ventilation standards.

## Safety Instructions for Power Cables and Accessories

⚠️ Use Proper power source only. Start only with power source that satisfies voltage label and the voltage necessary according to this manual. Please contact technical support personnel of Vantron for any uncertainty about the requirements of necessary power source.

⚠️ Use tested power source. This product still contains a button lithium battery as a real-time clock after its external power source is removed and therefore should not be short-circuited during transportation or placed under high temperature.

⚠️ Place cables properly: Do not place cables at any place with extrusion danger.

⚠️ **Cleaning Instructions**

✧ Please power off before cleaning the device.

✧ Do not use spray detergent.

✧ Clean with a damp cloth.

✧ Do not try cleaning exposed electronic components unless with a dust collector.

✧ Support for special fault: Power off and contact technical support personnel of Vantron in case of the following faults:

  ➤ The device is damaged.

  ➤ The temperature is excessively high.

  ➤ Fault is still not solved after operations according to the manual.

# Contents

# 1 Introduction

## 1.1 Product Description

Vantron offers both ARM and ATOM based Single Boards Computer (SBC) platforms including Cirrus Logic EP9315, RockChip RK3128, RK3368, RK3288, RK3399,RK3566, Freescale iMX6, iMX8, TI OMAP35xx CortexA8 series, and Intel Skylake and ApolloLake processor boards. In additional to offering the standard SBCs, we also provide professional customization board design services. Our seamless project management, efficient error-free development process, strong fundamentals in technology, sufficient in human resources, and on-time delivery will guarantee the success in your project development.

Based on idea of "Application Ready" products and services, our embedded computers have embedded basic operation system which includes the drivers of its interfaces. So it is easy to be used by adding your application software only. It can speed Time to Market of your products, and save more cost.

## 1.2 Connector Description

This table respectively describes the valid signal of connectors on the Vantron board.

| N/C | Not connect |
|-----|-------------|
| GND | Ground |
| / | Active low signal |
| + | Positive of difference signal |
| - | negative of difference signal |

| I | Input |
|---|-------|
| O | Output |
| I/O | input/output |
| P | Power or ground |
| A | Analog |
| OD | Open drain |
| CMOS | 3.3 V CMOS |
| LVCMOS | Low Voltage CMOS |
| LVTTL | Low Voltage TTL |

| | |
|---|---|
| 3.3V | 3.3 V signal level |
| 5V | 5 V signal level |
| USB | 5 V tolerant signal |
| PCIe | PCI Express signal, not 3.3 V tolerant |
| NC | No Connection |

# 2 Overview

## 2.1 Introduction

M082 is a Ruggedized Tablet computer designed for industrial application. This product is based on RK3566 which has Quad-cores and one of them is Cortex-A55 with a maximum clock frequency of 1.8GHz, supporting 8" LCD and capacity touch screen.

## 2.2 Feature

| Specification | | |
|---|---|---|
| **System** | CPU | Rockchip RK3566, Quad core, ARM Cortex-A55, 1.8GHz (Max) |
| | GPU | Mali-G52 |
| | Memory | 4GB or 2GB Optional |
| | Storage | 32GB or 16GB Optional |
| | EEPROM | 2Kbit, For Device information |
| **Media** | Display | 8" LCD, Resolution1280x800. Color depth: 16.7M. brightness : Typical 250 cd/m2 |
| | TP | Capacity Touch screen, support 10 point and double tap to wake up |
| | Camera | Front Camera, 500W Pixel, Auto Focus, MIPI 4Line interface. |
| | Audio | 1x3.5mm Audio Jack, 4 sections. Stereo output, Mic input. Internal Mic. Support 2x 0.8W/8R Speaker. Codec IC：ES8388. support FM audio by RDA5807FP. |
| **I/Os** | USB | USB2.0 Type-C. Support OTG, Debug and Image Download. Support PD up to 18W. |
| | Button | Internal Reset button for Debug. External Power/Vol+/Vol- Button. The device auto charging when the USB power plug in. |
| **Wireless** | Wi-Fi & Bluetooth | Wi-Fi 802.11 ac/a/b/g/n + BT 5.0 |
| | NFC | Optional |
| **Sensor** | Fingerprint Sensor | Optional |
| | G-Sensor | Accelerometer, KXTJ3-1057 |
| **Debug CON** | UART | UART TTL level. 1x4x2.0mm Hole. |
| **Watchdog** | Watchdog | Support by CPU RK3566 |
| **RTC** | RTC | Supported |
| **Software** | OS | Android 11 |

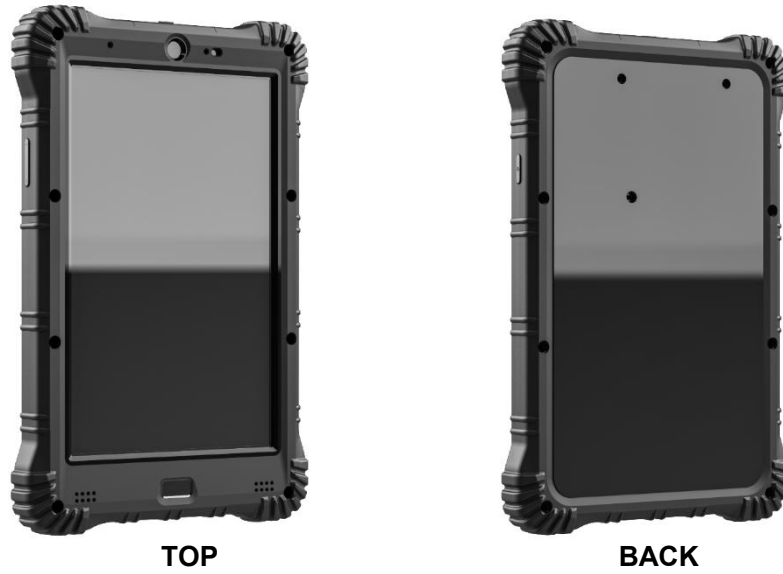| Power | Power input | Type-C USB power input, support 5V/3A..Support 9V/2A PD Fast Charge. Wireless charge, support 9V/15W by SY65153 |
|---|---|---|
| | Adapter | Adapter Type-C 5V/3A or 9V/2A. |
| | Power indicator LED | Yellow: Charging<br>Red: Low power<br>Green: Charged |
| | Battery | Single Li-ion battery: 8000mAh/3.8V |
| Mechanical | Dimensions | 235x153x21mm |
| Environment Condition | Temperature | Operating: -10℃~+60℃<br>Storage: -20℃~+70℃ |
| | Humidity | Operating: RH 20%-80%<br>Storage: RH 5%-90% |

## 2.3    Order Information

| Order Info | -x | -xx | -xxx |
|---|---|---|---|
| M10 Pro | -2: NFC supported<br>-1: NFC not supported | -x2: Light/proximity sensor supported<br>-x1: Light/proximity sensor not supported | -xx2: 9V/2A fast charge<br>-xx1: 5V/2A standard charge |
| Example | M10 Lite-221: 2GB DDR and Wi-Fi ac/a/b/g/n & BT5.0, 4000mAH battery<br>M10 Pro -112: No NFC, no light/proximity sensor, but 9V/2A fast change | | |

# 3 Hardware Instructions

## 3.1 Appearance

Figure 3-1 Views



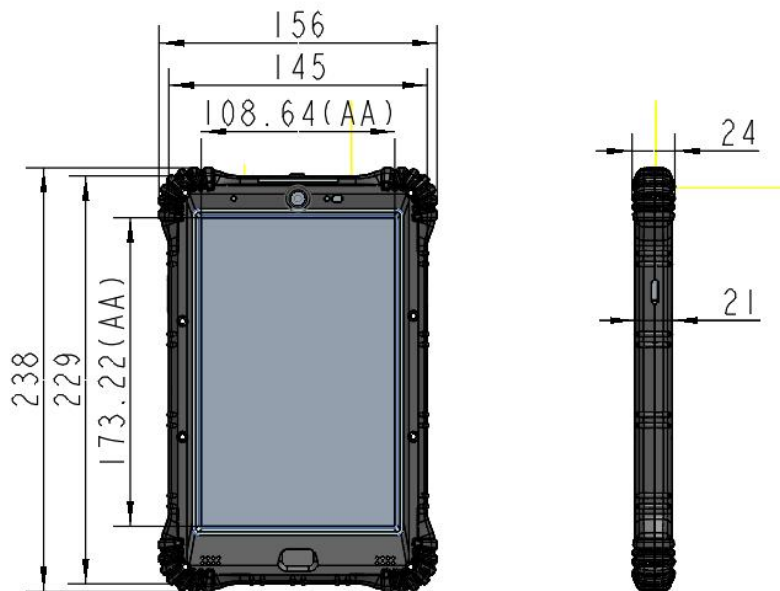**TOP**                    **BACK**

## 3.2 Structure

Download the board structure document from Vantron technology or Vantron net site:

www.vantrontech.com.cn

Figure 3-4 Structure

Unit: mm

# 4 Hardware Function Description

This chapter mainly describes the main hardware functions of this product, including WIFI/BT, Audio, Display, Camera,Battery and Charging and NFC.

## 4.1 WIFI/BT

The wireless module inside the tablet complies with IEEE 802.11 a/b/g/n/ac standard and it can achieve up to a speed of 433.3 Mbps with single stream in 802.11ac conn-ect to the wireless LAN. The integrated module provides SDIO interface for Wi-Fi and Bluetooth.

Features:

- Dual band 2.4/5 GHz 1x1 20/40/80 MHz IEEE 802.11a/b/g/n/ac.
- Spreadtrum Extreme provides QAM-256 in 2.4 GHz band to improve 33% PHY data rate.
- Spreadtrum Chorale antenna sharing and coexistence solution delivers excellent Wi-Fi, Bluetooth 5 concurrent operation performance in a compact and cost effective system design.
- Spreadtrum Green Wi-Fi provides excellent low power consumption features in Wi-Fi normal operation and low power states.
- Supports IEEE 802.11 FTM, Wi-Fi Location and timing measurement.
- Supports WMM-PS QoS, Wi-Fi Direct, Miracast R2, Passpoint 2.0, Wi-Fi Aware, etc.
- Supports WEP,WPA/WPA2/WPA3-Personal/WPA3-Enhanced Open, WPS 2.0, WAPI, WPI-SMS4, EAP-TLS/EAP-TTLS/EAP-PEAP/EAP-SIM/EAP-AKA/EAP-AKA', IEEE 802.11w Protected Management Frame.
- Complies with IEEE 802.11 d/e/h/i/k/r/u/v/z.
- Supports single channel .
- Supports background scan, ARP, TCP/UDP checksum offload, IPv6 NS/RA offloading.
- Bluetooth 5, Bluetooth Smart Ready compliant.
- Bluetooth classic and Low Energy dual mode concurrent operation.
- Supports LE 2 Mbps, LE Advertise Extension, Long Range, AoD Rx Direction

Finding and Mesh.

- ● Integrated 10 dBm high efficiency on-chip PA for low energy application.
- ● Integrated 20 dBm high power on-chip PA for Bluetooth high power mode application.
- ● Integrated wide-band speech processing to improve voice quality.
- ● Supports Low Energy background scan for context awareness applications.
- ● Supports multiple piconets and up to 8 concurrent Bluetooth Low Energy concurrent links.

## 4.2    Audio

M082 has a 3.5 mm Headphone jack, two 0.8W Speaker and a Mic. The headphone jack supports stereo output and it can drive-by-wire control and mic function. If you want to use both of these features, your headphones must support them, too. Our headphone jack is compatible with three-section headphone and four-section headphone. It also support FM.

## 4.3    Display

M082 has a 8" screen. The screen is made up of a display screen and a touch screen. More parameters are shown in the table.

| Item | Specifications | Unit |
|------|----------------|------|
| Screen Size | 8" | Inch |
| Viewing direction | Full View | - |
| Resolution | 800x1280 | - |
| Display Mode | Normally Black | - |
| Number of Colors | 16.7M | - |
| LCM Luminance | 250( Typ. ) | cd/m2 |
| Contrast Ratio | 1500:1 | - |
| Interface | MIPI | - |
| Touch Screen | Cap-touch, 10-point | |

## 4.4    Camera

M082 has a front camera.The camera has 5 million pixel with auto focus and 2 line MIPI interface.Maximum inmage transfer rate:

QSXGA(2592X1944):15 fps

1080p:30 fps

960p:45 fps

720p:60 fps

VGA(640x480):90 fps

## 4.5    Battery and Charging

M082 has a powerful 8000 mAh battery. The time to play the video, listen to the music and standby is not confirmed. It theoretically supports 5V/3A charging and 9V/2A fast charging.It also supports maximum 15W wireless charging.

Note: Please use the Vantron-provided charger.

## 4.6    NFC

M082 has a NFC feature, which is an optional feature. If the customer needs it, we can provide it.It Support 40mm away identify for tag1,42mm for tag 2 and 22mm for tag 4.

# 5 Hardware Operation Note

This chapter provides a guide to set up and use some of the features of the tablet. For more details, see hardware description.

## 5.1 Power Preparation

### 5.1.1 Environment

Before the equipment is powered on, please confirm whether the environmental conditions meet the requirements. Environmental conditions are as follows:

- Operation Temperature: 0°C ~ +60°C
- Operation Humidity: 20-85%RH (Non-Condensation)

### 5.1.2 Type-C Power Input

Please confirm the power input is 5V or 9V, and the reference current is 3A or 2A.

Do not use unauthorized or incompatible power adaptors to charge the device, otherwise fire, explosion or other danger may be caused.
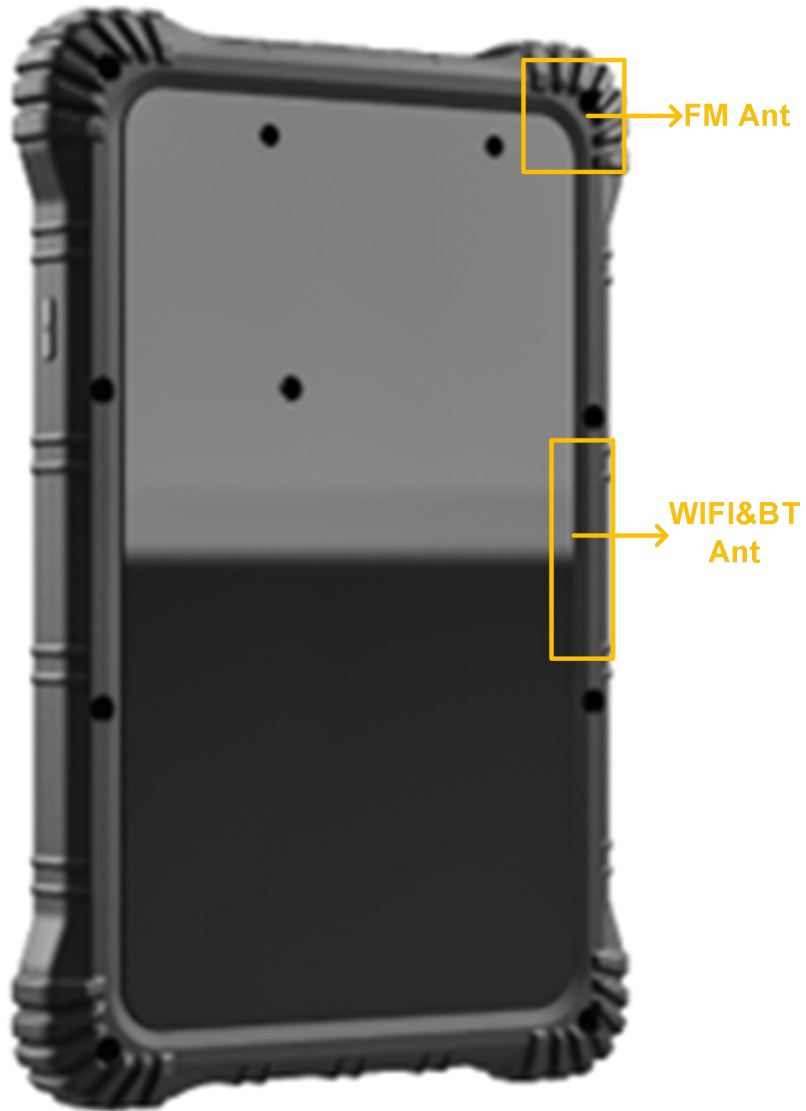
### 5.1.3 Wireless Charing

Please confirm the wireless power transfer support QI standard. In order to achieve maximum 15W charging, the wireless power transfer must supports 15W power transfer.

## 5.2 Antenna

The design of the internal antenna position of M082 will be shown as follows:

Figure 5-1 Internal antenna

**FM Ant**

**WIFI&BT Ant**

In order to ensure that the tablet functions can work properly, please do not cover the antenna area with metal shielding devices.

Note: WIFI and BT antenna frequency is 2.4G and 5G respectively.
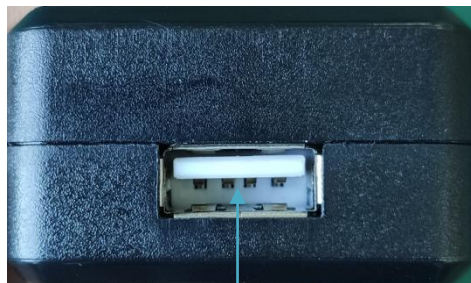
# 6 Parts Description

## 6.1 USB Power Adapter

### 6.1.1 Appearance

Figure 6-1 View



### 6.1.2 Interfaces

Figure 6-2 Interfaces



USB TYPE-A

US 2 pins plug

### 6.1.3 Structure
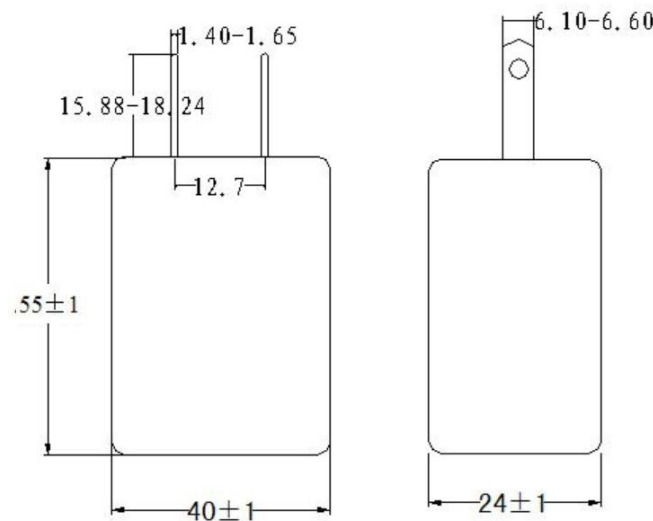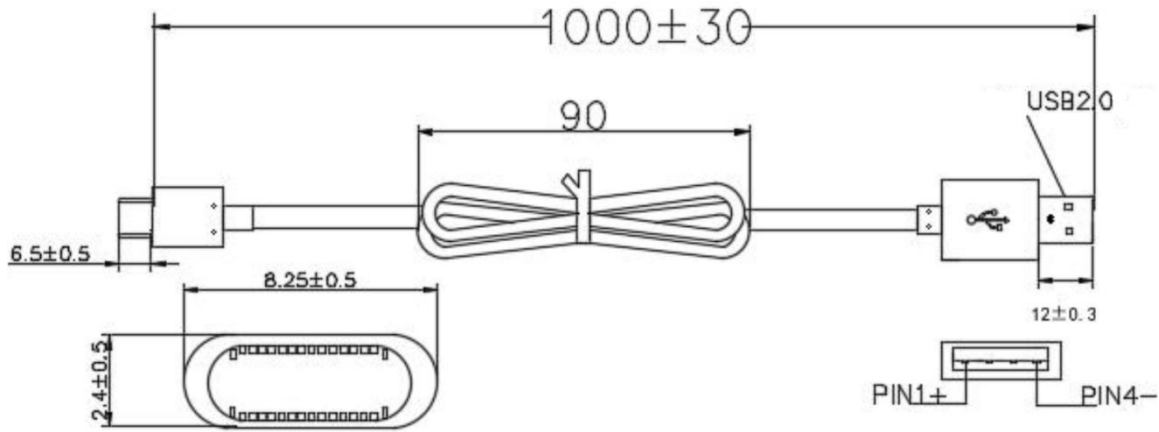
Figure 6-3 Structure (1)

Unit: mm

Figure 6-4 Structure (2)

Unit: mm



## 6.1.4　Hardware Instructions

| Specifications | |
|---|---|
| **Product Name** | AC/DC ADAPTER |
| **MODEL No.** | MX15U-0503000UU |
| **Interface Type** | USB Type-A ( Female ) |
| **Input Parameter** | 100-240V ~ 50-60 Hz 0.5A |
| **Output Parameter** | 5 VDC 3A |
| **Product Dimensions** | 40 x 24 x 55 mm (Pins are not included ) |
| **Operating Temperature** | 0℃-40℃ |

# 7    Software Instructions

M082 has been pre-loaded firmware. For more information, please refer to software user manual for software operation.

# 8 Tips

⚠ Waste Disposal

It is recommended to disassemble the device before abandoning it in conformity with local regulations. Please ensure that the abandoned batteries are disposed according to local regulations on waste disposal. Do not throw batteries into fire (explosive) or put in common waste canister. Products or product packages with the sign of "explosive" should not be disposed like household waste but delivered to specialized electrical＆electronic waste recycling/disposal center. Proper disposal of this sort of waste helps avoiding harm and adverse effect upon surroundings and people's health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

Comply with the following safety tips:

⚠ Do not use in combustible and explosive environment

Keep away from combustible and explosive environment for fear of danger.

⚠ Keep away from all energized circuits.

Operators should not remove enclosure from the device. Only the group or person with factory certification is permitted to open the enclosure to adjust and replace the structure and components of the device. Do not change components unless the power cord is removed. In some cases, the device may still have residual voltage even if the power cord is removed. Therefore, it is a must to remove and fully discharge the device before contact so as to avoid injury.

⚠ Unauthorized changes to this product or its components are prohibited.

In the aim of avoiding accidents as far as possible, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical department of Vantron or local branches for help.

⚠ Pay attention to caution signs.

Caution signs in this manual remind of possible danger. Please comply with relevant safety tips below each sign. Meanwhile, you should strictly conform to all safety tips for operation environment.

> **Notice**

Considering that reasonable efforts have been made to assure accuracy of this manual, Vantron assumes no responsibility of possible missing contents and information, errors in contents, citations, examples, and source programs. Vantron reserves the right to make necessary changes to this manual without prior notice. No part of this manual may be reprinted or publicly released in forms of photocopy, tape, broadcast, e-document, etc.

**FCC compliance statement**

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.

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.

Operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

RF exposure information and statement: this device meets government requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. The SAR limit of USA (FCC) is 1.6W/Kg averaged. Has also been tested against this SAR limit. SAR information on this and other pad can be viewed on-line at http://www.fcc.gov/oet/ea/fccid/. Please use the device FCC ID number for search. To maintain compliance with FCC RF exposure requirements, the use of belt clips, holsters and similar accessories should not contain metallic components in its assembly, the use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

## Appendix A: How to Contact Us

If you have any problem or want to know more about our products, visit **www.vantrontech.com** or contact us.

**US Office: Vantron Technology, Inc.**

Address: 440 Boulder Court, Suite 300,

Pleasanton, CA 94566, USA

Tel: 925-621-8758

Email: sales@vantrontech.com

**China Office: Chengdu Vantron Technology, Ltd**

Address: 6th Floor, 1st Building, No.9, 3rd Wu Ke East Street,

Wu Hou District, Chengdu 610045, China

Tel: 86-28-8512-3930/3931, 8515-7572/6320

Email: sales@vantrontech.com.cn