

# User's Manual

# Vantron

## VT-TABLET-5081G

Hardware Manual

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Chengdu Vantron Technology Ltd. Co.

## Revision record

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## 1 Introduction

### 1.1 Product Description

Vantron offers both ARM and ATOM based Single Boards Computer (SBC) platforms including Cirrus LogicEP9315, RockChipRK3128, RK3368,RK3288,RK3399, Freescale iMX6, iMX8, TI OMAP35xx CortexA8 series, and Intel Skylake and ApolloLake processor boards. In addition 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 saving more cost.

### 1.2 Connectors Description

This table is the respective describe valid signal of connector on Vantronboard.

Figure type:

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

Signal type:

|         |                  |
|---------|------------------|
| I       | Input            |
| O       | Output           |
| I/O     | input/output     |
| P       | Power or ground  |
| A       | Analog           |
| OD      | Open drain       |
| CMOS    | 3.3 V CMOS       |
| LVC MOS | 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 Foreword

### 2.1 Copyright Notice

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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**E-mail:** [sales@vantrontech.com](mailto:sales@vantrontech.com)

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### 2.2 Notes

Applicable notes are listed in the following table:

| Sign                                                                                | Notice Type | Description                                              |
|-------------------------------------------------------------------------------------|-------------|----------------------------------------------------------|
|  | Notice      | Important information and regulations                    |
|  | Caution     | Caution for latent damage to system or harm to personnel |

### 2.3 Statement

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

### 2.4 Disclaimer

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

### 2.5 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.

### 2.6 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.

### 2.7 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.
- ✧ Keep the ventilation slot ventilated for cooling.
- ✧ 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 standard.

### 2.8 Safety Instructions for Power Cables and Accessories



#### 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 the operation according to the manual.

## 3 Over View

### 3.1 Introduction

VT-TABLET-5081G is based on Rockchip RK3368 Cortex-A53 Octa-Core tablet. Built-in 2GB LPDDR3 and 32GB NAND Flash, 8 " high resolution LCD with a Capacitive Touch Screen, 5MP Camera, And support wireless and POE power supply.

### 3.2 Order information

| Order Part Example |                                                                   |
|--------------------|-------------------------------------------------------------------|
| VT-TABLET-5081G    | Rockchip, RK3368,1.5GHz, Octa-Core,2GB LPDDR3,<br>32GB NAND Flash |

## 4 Hardware Instructions

### 4.1 Appearance



Figure 4-1

## 4.2 Interfaces

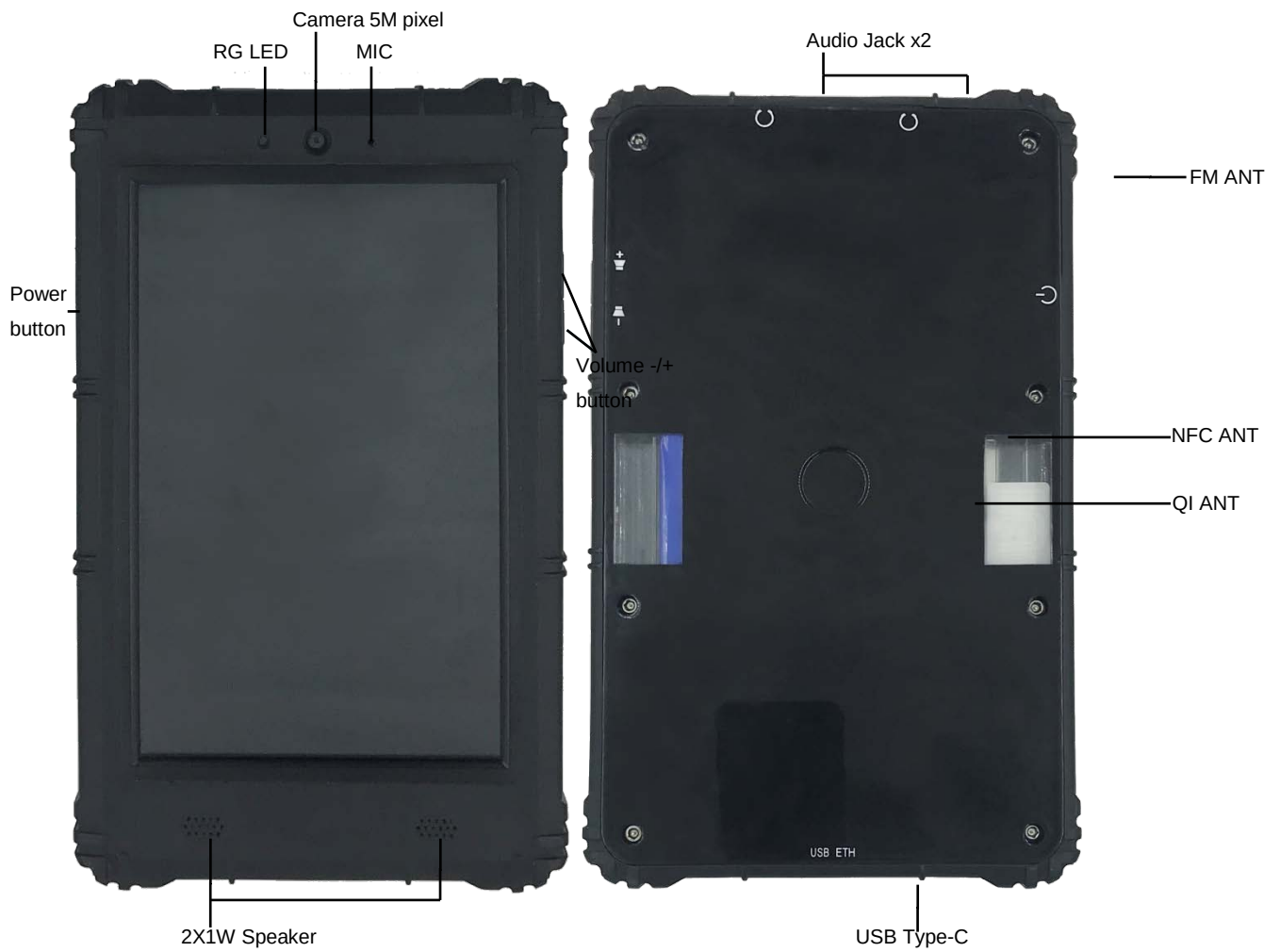
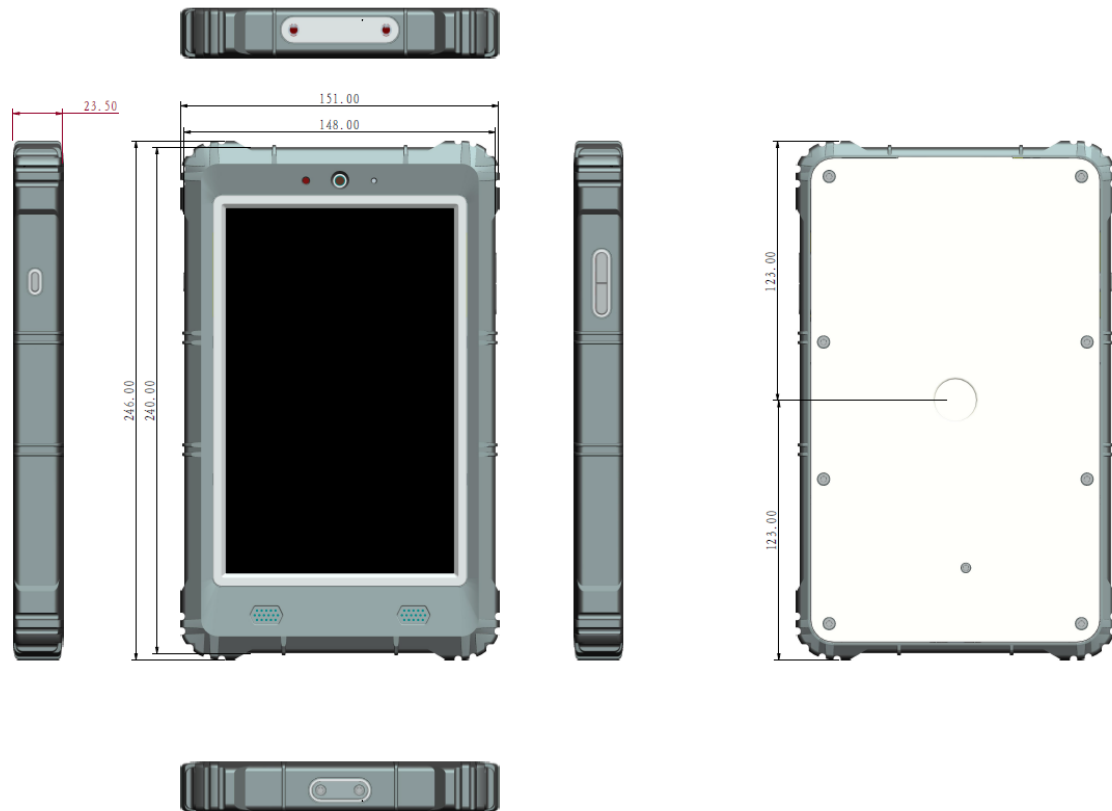


Figure 4-3

### 4.3 Structure

Download the board structure document from Vantron technology sustain or Vantron net site: [www.vantrontech.com.cn](http://www.vantrontech.com.cn)



246x151x23.5mm

Figure 4-4

## 5 Hardware Function Description

This chapter describe the hardware Features include, switch, jumper, connector and PIN function

The interface description ought to consult the connector sketch map. And attach necessary message such as picture. Indicate the figure, PIN1 and match jack

### 5.1 LG750 LTE module

The functions and characteristics of LG750 LTE module are shown as follows:

- GCT chipset: GDM7243QT;
- Support Band48 (Fre: 3552.5MHz ~ 3697.5MHz);
- DL: 220Mbps, UL: 45Mbps
- LTE Category3GPP Release 11 Cat 6
- Provide 4 antenna interfaces;
- Support standard AT instruction set;
- 1 USIM card signal (Support 3.0v or 1.8v)
- FCC ID: 2ASRY-LG750

### 5.2 Batteries and Charger

The VT-TABLET-5081G built-in 8000mAh BAT, USB Type-C double-side charging interface, suggest that the input 5V/2A, and support max 10W wireless charging, Qi v1.2.1.

### 5.3 Audio

The VT-TABLET-5081G have 2x3.5mm Stereo headphone Audio Jack, And support Simultaneously recording and simultaneously playing audio, 1x MIC on board, And with 2x1W/4Ω speaker.

And built-in FM antenna, frequency range is 87MHz to 108MHz.

### 5.4 RGB LED

The VT-TABLET-5081G has three ways of lighting, as follow:

| LED Color | Status              |
|-----------|---------------------|
| Red       | Power less than 15% |
| Green     | Power more than 95% |
| Yellow    | Charging            |

### 5.5 Display

The VT-TABLET-5081G display is an 8" LCD, more parameters are listed below:

| Item              | Specification          | Unit                 |
|-------------------|------------------------|----------------------|
| Panel Size        | 8.0"                   | Inch                 |
| Number of Pixels  | 800x1280               | pixels               |
| Shape Size        | 114.6*184.1*2.5        | mm                   |
| Display Area      | 107.64(H) x 172.224(V) | mm                   |
| Pixel Pitch       | 0.0448*0.1344          | Mm                   |
| Number of Colors  | 16.7M                  | -                    |
| Display Mode      | Normally Black         | -                    |
| Viewing Direction | Full View              | -                    |
| Luminance         | 250(TYP.)              | (cd/m <sup>2</sup> ) |
| Contrast Ratio    | 700(TYP.)              |                      |
| Interface         | MIPI                   | -                    |

## 5.6 Wi-Fi + Bluetooth 4.1

The wireless module complies with IEEE 802.11 a/b/g/n/ac 2x2 MIMO standard and it can achieve up to a speed of 867Mbps with dual stream in 802.11n to connect the wireless LAN. The integrated module provides SDIO interface for Wi-Fi, UART interface for Bluetooth.

Features:

1. Lead Free design which is compliant with ROHS requirements.
2. 802.11a/b/g/n/ac dual-band radio with virtual-simultaneous dual-band operation
3. Dual-stream spatial multiplexing up to 867 Mbps data rate.
4. Supports 20, 40, 80 MHz channels.

## 5.7 NFC

The VT-TABLET-5081G built-in NFC, and 13.56 MHz RF clock recovered from RF field, RF protocols supported: ISO/IEC 14443A, ISO/IEC 14443B PICC, and read card distance is less than 10cm.

## 6 Hardware Operation Notes

This section provides a guide to setting up and using of some of the features of the board. For more detailed information on any aspect of the board see detailed hardware description.

### 6.1 Power preparation

#### 6.1.1 Environment

For the assembled or debug platform, be sure there hasn't any risk of circuit shortness for the board. And make sure the anti-static is done well.

#### 6.1.2 Type-C Power in

Please confirm the power input is 5V. And the reference current is 2A. Make sure the power input positive is not reversed.

#### 6.1.3 Wireless Charging

Please ensure that the QI antenna is central axisymmetric with the base antenna, not too far away.

### 6.2 Antenna

The design of the internal antenna position of the VT-TABLET-5081G will be shown as follow:

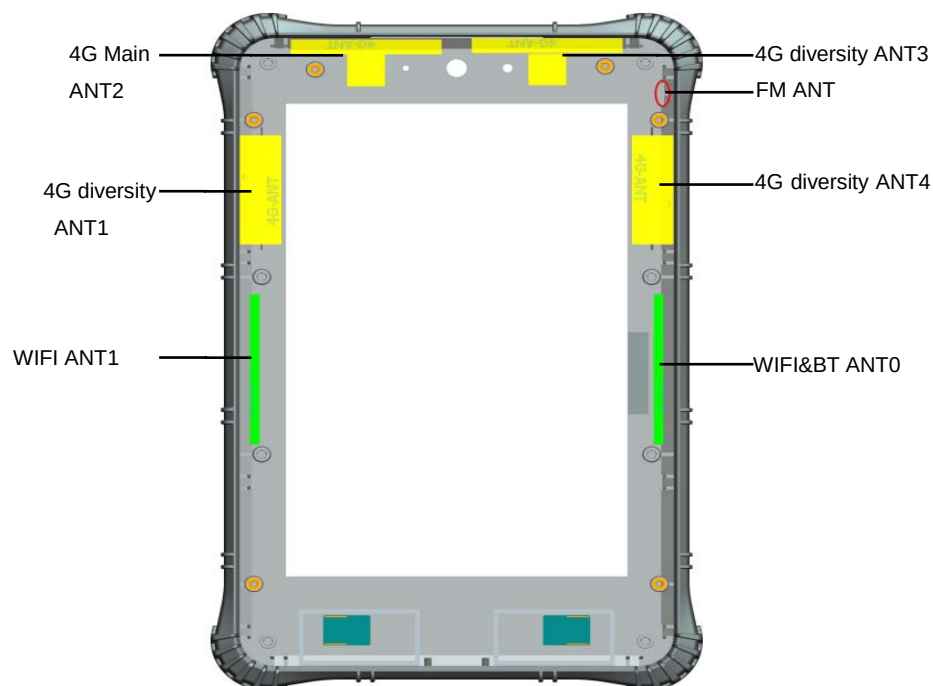


Figure 5-1

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

Note: 4G antenna frequency is 3552.5MHz ~ 3697.5MHz

WIFI and BT antenna frequency is 2.4G and 5G

FM antenna frequency is 87 to 108MHz

## 7 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.

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### FCC RF Exposure Information and Statement

This device meets the government's requirements for exposure to radio waves.

The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough 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 1.6 W/kg averaged. Device types: Tablet (FCC ID: 2AAGE5081G) 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. This device was tested simulation typical 0mm to body. 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.



### FCC Warning

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.

NOTE 1: 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



US Office: Vantron Technology, Inc.  
Address: Address: 440 Boulder Court,  
Suite 300 Pleasanton, CA 94566  
Tel: 916-202-7042  
Email: [sales@vantrontech.com](mailto:sales@vantrontech.com)  
<http://www.vantrontech.us/>