

9401-2HDT-V01

(Hardware) User Manual

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Vantron

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Change History

This table describes the versions and release date.

No.	Version	Author	Date	Description
1	1.0	Xiaojun Lu	2023/2/1	First release

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1 Foreword

1.1 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.

Vantron reserves all rights of this manual, including the right to change the content, form, product features, and specifications contained herein at any time without prior written notice.

The trademarks and registered trademarks in this manual are properties of their respective owners. No part of this manual may be copied, reproduced, translated or sold. No changes or other purposes are permitted without the prior written consent of Vantron.

Vantron reserves the right of all publicly-released copies of this manual.

1.2 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

1.3 Statement

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.

1.4 Disclaimer

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

1.5 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.

1.6 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.

1.7 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.

1.8 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 the operation according to the manual.

2 Overview

2.1 Introduction

Vantron offers Intel X86-based Single Boards Computer (SBC) platforms including Intel® Atom™ APL-I E3900 series, Intel® Atom™ Bay Trail E3800 series, Intel® Atom™ Denverton C3000 series, Intel Core™ SKL i3-i7 series and Intel Core™ TGL i3-i7 series processor boards. In addition to offering the standard SBCs, we also provide professional customized board design services. Our seamless project management, efficient error-free development process, strong fundamentals in technology, sufficient human resources, and on-time delivery will guarantee the success in your project development.

With the idea of “Application Ready” products and services, our embedded computers have embedded basic operation systems which include the drivers of its interfaces. So, it is easy to use and you only need to add your application software. It can speed Time to Market of your products, and save more cost.

2.2 Order Information

Table 2-1 describes the order information.

Table 2-1 Order Information

Order Information	
9401-2HDT-V01	X86 PCBA, I7-1195G7,8GB,128GB,4USB,1xLAN,HDMI,2xHDBase-T,RoHS

3 9401-2HDT-V01 Hardware Instructions

9401-2HDT-V01 is developed based on Intel Tiger Lake I7-1195G7 series.

3.1 Product Appearance and Interfaces

Figure 3-1, Figure 3-2, and Figure 3-3 show the top view, right view, and front view of our products.

Figure 3-1 Top View



Figure 3-2 Right View



Figure 3-3 Front View



3.2 Features

The features of Vantron **9401-2HDT-V01** Board are listed in Table 3-1.

Table 3-1 Features

Features
■ Processor, Intel® Core™, I7-1195G7, Quad core, 2.9GHz(5Ghz Turbo)
■ Processor, Intel® Core™, I7-1185G7E, Quad core, 1.8GHz(4.4Ghz Turbo)
■ 2xDDR4 SO-DIMM socket, default 8GB (up to 32GB supported)
■ 1xM.2 M-KEY 2242/2280 Slot, SATA/PCIE protocol supported ;default 128GB SATA SSD
■ 1xWireless-AC 9260 M.2 2230, 2x2 WiFi/BT, Gigabit
■ 1xHDMI Connector
■ 2 x HDBase-T Ports
■ 2xUSB 3.0 Type-A
■ 1x10/100/1000M Ethernet LAN port
■ FTPM Supported
■ RTC Supported
■ Smart FAN Supported
■ 15-36V Power Supply
■ Win10 IoT Ent. /Win11 /Linux

3.3 Board Diagram

Figure 3-4 shows the board diagram of our product.

Figure 3-4 Board Diagram

3.4 Specifications

Table 3-2 describes the CPU board specifications.

Table 3-2 CPU Board Specifications

Media Player Specifications		
System	Processor	Processor, Intel® Core™, I7-1195G7, Quad core, 5.0GHz (Max) (optional I7-1185G7E)
	RAM	2XDDR4 SO-DIMM (Default 8GB max 32GB)
	ROM	1xM.2 M-key 2242/2280 SSD Slot (Support both SATA and PCIE bus, Default Capacity is 128GB) 1xSATA3.0 Connector
Display	Resolution	HDMI 1.4b 3840x2160@30Hz 2xHDBT 1920 x 1080 @ 60Hz
Peripheral I/O	LAN	1x10/100/1000M Ethernet, RJ45
	M.2	1xM.2 B-KEY, 1xM.2 E-KEY
	Security	1xTPM
	USB	2xUSB 3.0 Type-A
	Fan	2xStandard Fan Connector
	Front Button	1xStandard Power/reset Button, LED
	RTC	Supported
Software	OS	Win10/Win11 or Linux
Power	Input	19V Power DC Input
	Consumption	Max 60W
Mechanical	Dimensions	214 x 181 x 40mm
	Gross Weight	TBD KG
Environment Condition	Temperature	Operating: 0°C ~ 35°C
	Humidity	10-85%RH(Non-Condensation), operating and storage
	Cooling Mode	Fan, heat sink
	Approvals	RoHS compliance
	IP Level	IP40

3.5 Part Placement

Figure 3-5 and Figure 3-6 show positions of main ports.

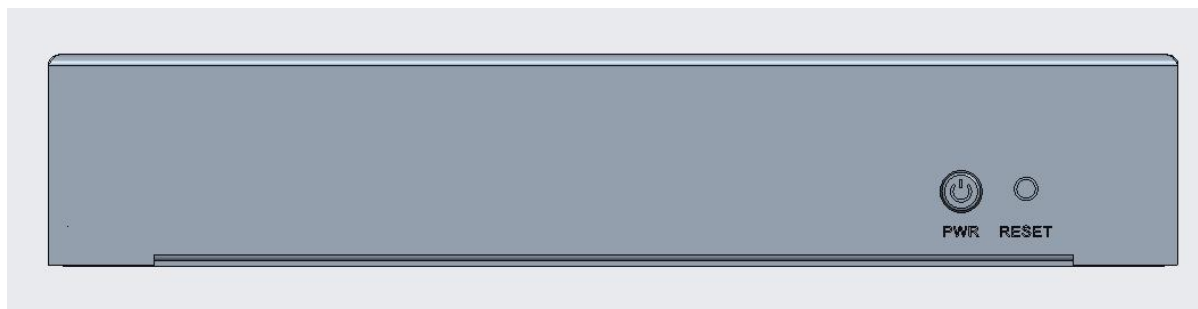


Figure 3-5 Part Top

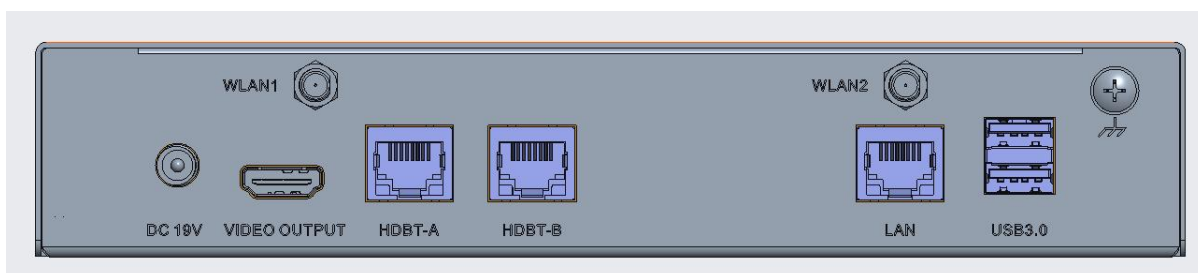
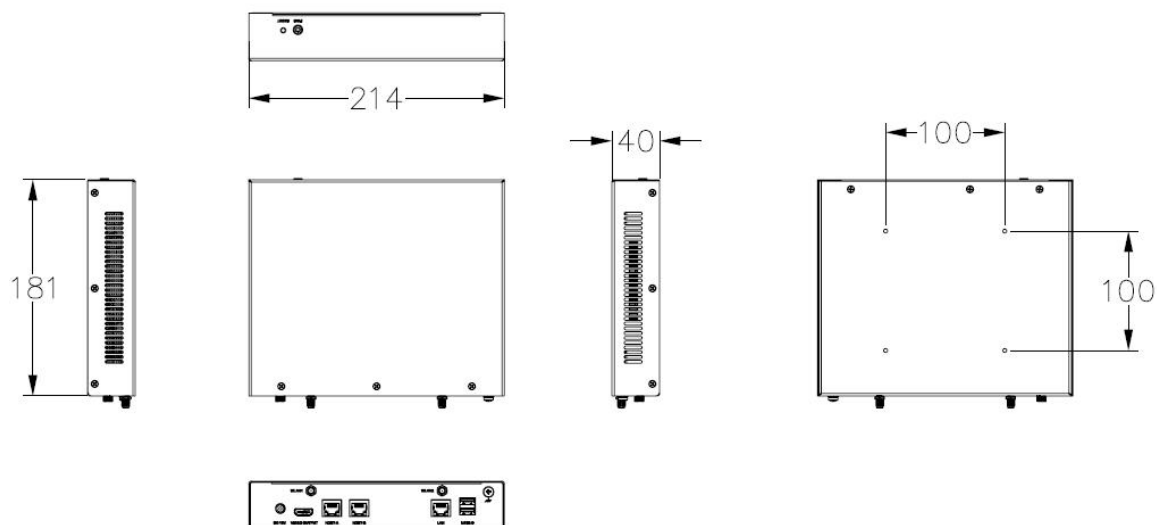


Figure 3-6 Part Bottom

3.6 Dimensions

Figure 3-7 shows the dimensions of the media player.

Figure 3-7 Dimensions



Media player dimensions: 214.4 * 181 * 40 mm

4 Hardware Description

This chapter describes the hardware features such as switch, jumper, connector and PIN functions.

The interface description is based on the connector sketch map. Necessary messages, such as pictures, are attached.

4.1 Connector Identification

This section describes how to locate the connector and PIN1 on 9401-2HDT-V01 single computer board.

4.1.1 Locate the Connector

Figure 3.6 shows the positions of main ports and connectors on the 9401-2HDT-V01.

4.1.2 Confirm the Pin Direction

There is a pin number order in all Vantron products. Figure 4-1 indicates each pin's number, as shown on the top side (component side) of the main board. On a double-row connector, odd numbers and even numbers are placed in two rows separately. Confirm the Pin1 of the connector and jumper according to the below method:

Figure 4-1 Pin Number



1. Usually, there is a number or mark on the connector of the main board, such as trigonal mark. Dot and number "1" both indicate the pin1 of the connector.
2. For the hole connector, you can see the pin number on the reversed side.
3. Download the mechanical drawing of 9401-2HDT-V01 from Vantron technology or Vantron website: www.vantrontechnology.com.

4.2 Connector Description

Table 4-1 and Table 4-2 describe the valid signal of the connector on the 9401-2HDT-V01 board.

Table 4-1 Figure Type

NC	Not Connect
GND	Ground
#	Active low signal
P	Positive of difference signal
N	Negative of difference signal

Table 4-2 Signal Type

I	Input
O	Output
IO	Input/output
P	Power or ground
A	Analog
OD	Open drain

4.2.1 Power (DC 19V) Connector

Specifications: 2.5mmD, 5.5mmD, 5A, Male, RA, WDT, THR, RoHS

CUIINC: PJ-082BH



Pin	Name	Type	Description
1	+VDC	P	DC-IN POWER +
2	GND	P	Ground
3	GND	P	Ground

4.2.2 Ethernet (LAN) Connector

Specifications: standard RJ45 interface, supporting 10M/100M/1000M Base-T LED: L-Y; R-G.

UNE: B50 (02-41) G8-140-A123-B52

When the yellow LED on the left goes on, it indicates LINK UP; when the light blinks, it indicates Activity.

When the green LED on the right goes on, it indicates that the link speed is 100/1000M.



Pin	Name	Type	Description
1	L_MDI_OP	IO	Ethernet MDI0+ Signal
2	L_MDI_ON	IO	Ethernet MDI0- Signal

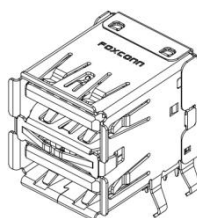
3	L_MDI_1P	IO	Ethernet MDI1+ Signal
4	L_MDI_2P	IO	Ethernet MDI2+ Signal
5	L_MDI_2N	IO	Ethernet MDI2- Signal
6	L_MDI_1N	IO	Ethernet MDI1- Signal
7	L_MDI_3P	IO	Ethernet MDI3+ Signal
8	L_MDI_3N	IO	Ethernet MDI3- Signal

4.2.3 USB3.0 (USB3.0) JACK

Specifications: 3.0, Type A, 2 Port, female, 17.5mm, right angle, WDT, THR, RoHS

FOXCONN: UEA1112C-8HS1-4F

U116 USB3.0 JACK meets the standard USB3.0 PIN definition.



4.2.4 Video Output

Specifications: Type-A, FLN, Female, Right Angle, WDT, SMT, RoHS

MOLEX: 500254-1931

Pin	Name	Type	Description
1	HDMI_DATA2+	O	HDMI DATA
2	GND	P	Ground
3	HDMI_DATA2-	O	HDMI DATA
4	HDMI_DATA1+	O	HDMI DATA
5	GND	P	Ground
6	HDMI_DATA1-	O	HDMI DATA
7	HDMI_DATA0+	O	HDMI DATA
8	GND	P	Ground
9	HDMI_DATA0-	O	HDMI DATA
10	HDMI_CLK+	O	HDMI CLK

11	GND	P	Ground
12	HDMI_CLK-	O	HDMI CLK
13	NC		
14	NC		
15	HDMI_DDC_SCL	IO	HDMI DDC I2C CLK
16	HDMI_DDC_SDA	IO	HDMI DDC I2C DATA
17	GND	P	Ground
18	VCC_HDMI	P	HDMI POWER +5V
19	HDMI_HPD	I	HDMI HOT PLUG DETECTION

4.2.5 HDT-A Connector

Specifications: standard RJ45 interface, supporting 10M/100M/1000M Base-T LED: L-Y; R-G.

UNE: B50 (02-41) G8-140-A123-B52

When the yellow LED on the left goes on, it indicates that the HDMI is active.

When the green LED on the right goes on, it indicates that the HDBase-T is linked up.



Pin	Name	Type	Description
1	HDSRC_PO_R	IO	HDBT MDI0+ Signal
2	HDSRC_NO_R	IO	HDBT MDI0- Signal
3	HDSRC_P1_R	IO	HDBT MDI1+ Signal
4	HDSRC_P2_R	IO	HDBT MDI2+ Signal
5	HDSRC_N2_R	IO	HDBT MDI2- Signal
6	HDSRC_N1_R	IO	HDBT MDI1- Signal
7	HDSRC_P3_R	IO	HDBT MDI3+ Signal
8	HDSRC_N3_R	IO	HDBT MDI3- Signal

4.2.6 HDT-B Connector

Specifications: standard RJ45 interface, supporting 10M/100M/1000M Base-T LED: L-Y; R-G.

UNE: B50 (02-41) G8-140-A123-B52

When the yellow LED on the left goes on, it indicates that the HDMI is active.

When the green LED on the right goes on, it indicates that the HDBase-T is linked up.



Pin	Name	Type	Description
1	HDSRC_P0_R	IO	HDBT MDI0+ Signal
2	HDSRC_N0_R	IO	HDBT MDI0- Signal
3	HDSRC_P1_R	IO	HDBT MDI1+ Signal
4	HDSRC_P2_R	IO	HDBT MDI2+ Signal
5	HDSRC_N2_R	IO	HDBT MDI2- Signal
6	HDSRC_N1_R	IO	HDBT MDI1- Signal
7	HDSRC_P3_R	IO	HDBT MDI3+ Signal
8	HDSRC_N3_R	IO	HDBT MDI3- Signal

4.2.7 HDT-C (OPT)Connector

Specifications: standard RJ45 interface, supporting 10M/100M/1000M Base-T LED: L-Y; R-G.

UNE: B50 (02-41) G8-140-A123-B52

When the yellow LED on the left goes on, it indicates that the HDMI is active.

When the green LED on the right goes on, it indicates that the HDBase-T is linked up.



Pin	Name	Type	Description
1	HDSRC_P0_R	IO	HDBT MDI0+ Signal
2	HDSRC_N0_R	IO	HDBT MDI0- Signal
3	HDSRC_P1_R	IO	HDBT MDI1+ Signal
4	HDSRC_P2_R	IO	HDBT MDI2+ Signal
5	HDSRC_N2_R	IO	HDBT MDI2- Signal
6	HDSRC_N1_R	IO	HDBT MDI1- Signal

7	HDSRC_P3_R	IO	HDBT MDI3+ Signal
8	HDSRC_N3_R	IO	HDBT MDI3- Signal

4.2.8 HDT-D (OPT) Connector

Specifications: standard RJ45 interface, supporting 10M/100M/1000M Base-T LED: L-Y; R-G.

UNE: B50 (02-41) G8-140-A123-B52

When the yellow LED on the left goes on, it indicates that the HDMI is active.

When the green LED on the right goes on, it indicates that the HDBase-T is linked up.



Pin	Name	Type	Description
1	HDSRC_P0_R	IO	HDBT MDI0+ Signal
2	HDSRC_N0_R	IO	HDBT MDI0- Signal
3	HDSRC_P1_R	IO	HDBT MDI1+ Signal
4	HDSRC_P2_R	IO	HDBT MDI2+ Signal
5	HDSRC_N2_R	IO	HDBT MDI2- Signal
6	HDSRC_N1_R	IO	HDBT MDI1- Signal
7	HDSRC_P3_R	IO	HDBT MDI3+ Signal
8	HDSRC_N3_R	IO	HDBT MDI3- Signal

4.2.9 WLAN RF

Specifications: SMA, WDT, SMT, RoHS



4.2.10 PWR Button

Specifications: 7.5mm, 8.7mmH, WDT, SMT, RoHS

CHA: C602B-5H7RFL-14-101



4.2.11 RESET Button

Specifications: 7.3mm, 6.25mmH, WDT, SMT, RoHS

CHA: CTSAB-62N-V



4.3 Power Characteristics

For players only, the power supply is DC 12-36V. To use the 9401-2HDT-V01 player, the minimum adaptor power is 36W. For the best performance of player, we recommend the adaptor power should be 65W or above.

For other external devices, the power consumption is related to connected device such as USB storage, HDMI, and HDBase-T.

4.4 Hardware Operation Notes

- a) Power preparations: Please confirm that the power input is 19V (12-36V) and the recommended current is 3.25A. Make sure the plugs are not connected reversely.
- b) Environments: For the assembled or debug platform, be sure that there is no risk of short circuit for the board and that ESD protections are taken.

5 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.

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

Exposure to radio frequency energy:

The radiated output power of this device meets the limits of FCC radio frequency exposure limits. This device should be operated with a minimum separation distance of 20 cm (8 inches) between the equipment and a person's body.

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.

ISED Canada compliance statement:

This device complies with ISED Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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.

Exposure to radio frequency energy:

The radiated output power of this device meets the limits of ISED Canada radio frequency exposure limits. This device should be operated with a minimum separation distance of 20 cm (8 inches) between the equipment and a person's body.

Le présent appareil est conforme aux CNR d'ISDE Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

La bande 5150–5250 MHz est réservée uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

L'exposition à l'énergie radiofréquence.

La puissance de sortie rayonné de cet appareil est conforme aux limites de la ISDE Canada limites d'exposition aux fréquences

radio. Cet appareil doit être utilisé avec une distance minimale de séparation de 20 cm entre l'appareil et le corps d'une personne.

Appendix A: How to Contact Us

If you have any problems or suggestions, or want to know more about our products, visit

www.vantrontech.com.

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