

ADTRAN

**SR820ac
Wireless Voice Gateway**

Quick Installation Guide

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Overview

The ADTRAN SR820ac Wireless Voice Gateway is the 3.0 Wireless Voice Gateway with stylish and elegant outlook, designed for your home, home office, or small business/enterprise. It can be used in households with one or more computers capable of wireless connectivity for remote access to the voice gateway.

This installation guide provides product overview and setup information for the SR820ac. It also provides instructions for installing the voice gateway and configuring the wireless LAN, Ethernet, router, DHCP, and security settings.

Standard Features

The SR820ac Wireless Voice Gateway combines high-speed Internet access, networking, and computer security for a home or small-office LAN. It offers the following features:

- Combination of five separate products in one compact unit — a DOCSIS® 3.0 cable modem, IEEE 802.11a/b/g/n/ac wireless access point, Ethernet 10/100/1000 Base-T connections, VoIP Internet telephone connections, and firewall.
- An integrated high-speed cable modem for continuous broadband access to the Internet and other online services with much faster data transfer than traditional dial-up or ISDN modems.
- Advanced firewall for enhanced network security from undesired attacks over the Internet. It supports stateful-inspection, intrusion detection, DMZ, denial-of-service attack prevention, and Network Address Translation (NAT).
- One broadband connection for up to 252 computers to surf the web; all computers on the LAN communicate as if they were connected to the same physical network.
- Four 10/100/1000Base-T Ethernet uplink ports supporting half-duplex or full-duplex connections with auto-MDIX capability.
- An IEEE 802.11a/b/g/n/ac wireless access point to enable users to remain connected while moving around the home or small office or to connect desktop computers without installing network wiring. Depending on distance, wireless connection speeds can vary.
- SR820ac wireless function supports Wi-Fi 2.4GHz/5GHz dual-band mode.
- A secure Wireless Fidelity (Wi-Fi) broadband connection for Wi-Fi enabled devices on your network, such as your mobile, laptops, tablet, printers, PDAs, and desktops.
- Routing for a wireless LAN (WLAN) or a wired Ethernet LAN; you can connect more than four computers using hubs and/or switches.
- A built-in DHCP server to easily configure a combined wired and/or wireless Class C private LAN.
- Virtual private network (VPN) pass-through operation supporting IPSec, PPTP, or L2TP to securely connect remote computers over the Internet.
- SR820ac Configuration Manager (CMGR) which provides a graphical user interface (GUI) for easy configuration of necessary wireless, Ethernet, router, DHCP, and security settings.

SR820ac LAN Choices

You can connect up to 252 client computers to the SR820ac using one or any combination of the following network connections:

- Wi-Fi wireless LAN (WLAN)
- Ethernet local area network (LAN)

Wireless LAN

Wireless communication occurs over radio waves rather than a wire. Like a cordless telephone, a WLAN uses radio signals instead of wires to exchange data. A wireless network eliminates the need for expensive and intrusive wiring to connect computers throughout the home or office. Mobile users can remain connected to the network even when carrying their laptop to different locations in the home or office.

Each computer or other device on a WLAN must be Wi-Fi enabled with either a built-in or external wireless adapter.

Laptops — Use a built-in wireless notebook adapter, a wireless PCMCIA slot adapter, or a wireless USB adapter.

Desktops — Use a wireless PCI adapter, wireless USB adapter, or compatible product in the PCI slot or USB port, respectively



Sample Wireless Network Connections (SR820ac model shown)

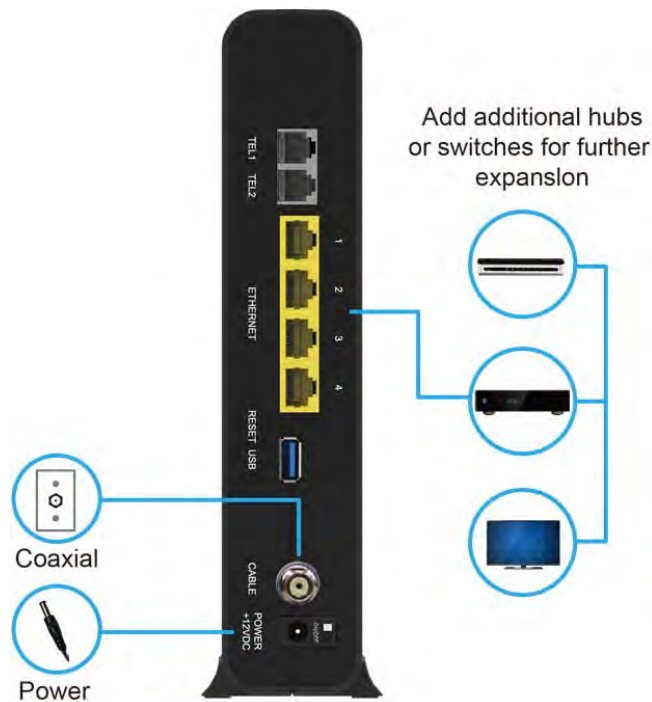
Your maximum wireless operation distance depends on the type of materials through which the signal

must pass and the location of your SR820ac and clients (stations). ADTRAN cannot guarantee wireless operation for all supported distances in all environments.

Note: To get better wireless coverage, please put your SR820ac Wireless Voice Gateway vertically.

Wired Ethernet LAN

You can easily connect any PC with an Ethernet cable to the SR820AC Ethernet port. Because the SR820ac Ethernet port supports auto-MDIX, you can use a straight-through or cross-over cable to connect a hub, switch, or computer. Use CAT-5, or better, cabling for all Ethernet connections.



Sample Ethernet to Computer Connection (SR820ac model shown)

A wired Ethernet LAN with more than four computers requires one or more hubs, switches, or routers. You can:

- Connect a hub or switch to any Ethernet port on the SR820ac.

- Use Ethernet hubs, switches, or routers to connect up to any combination of 253 computers and wireless clients to the SR820ac.

More detailed information on Ethernet cabling is beyond the scope of this document.

Front Panel

The SR820ac front panel contains indicator lights and the Wi-Fi / WPS button which is used to configure Wi-Fi Protected Security (WPS) on compatible clients connected to the SR820ac network.

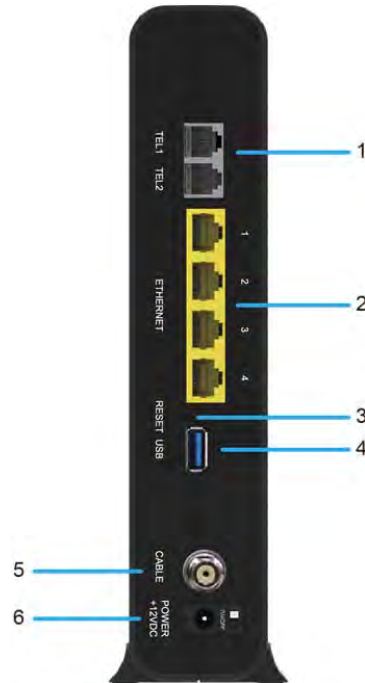


The SR820ac front panel LED indicators provide the following status information for power, communications, and errors:

LED	Status	Description
Power	Solid Green	Power On
	Blinking Green	Booting
	Off	Power Off
Downstream	Solid Green	Downstream channel is connected, Locked
	Blinking Green	Downstream channel scanning
Upstream	Solid Green	Upstream channel is connected
	Blinking Green	Acquiring Upstream
	Off	Waiting for DS to complete scanning
Online	Solid Green	The cable router is synchronized and has successfully registered
	Blinking Green	Registering or Provisioning
	Off	DS/US channel not locked yet. Unable to connect CMTS
Ethernet	Solid Green	One or more devices connected to RJ45.
	Blinking Green	Any RG45 connector is transmitting data.
	Off	No device connected

2.4GHz	Solid Green	Wi-Fi 2.4G is active
	Off	Wi-Fi 2.4G is disabled / no function
5GHz	Solid Green	Wi-Fi 5G is active
	Off	Wi-Fi 5G is disabled / no function
WPS	Solid Green	WPS service Available
	Off	WPS Service disable / Both 2.4G and 5G are not in function
Telephony (Tel1/Tel2)	Solid Green	Service Available
	Blinking Green	This line is in use
DS + US	Off	Service Unavailable
	Blinking Green	Firmware Upgrade in Progress

Rear Panel









The SR820ac (shown above) rear panel contains the following cabling port and connectors:

	Item	Description
1	TEL 1 TEL 2	Phone connection for a single telephone.
2	Ethernet	Use any Ethernet port to connect an Ethernet-equipped computer, hub, bridge, or switch using an RJ-45 cable.
3	RESET	Press and hold the RESET button for five seconds or longer to restore SR820ac to factory default settings. After factory default settings are restored, the gateway will restart and may take 5 to 30 minutes to find and lock on the appropriate communication channels.
4	USB	USB host port for USB storage devices like flash drives or hard drives.
5	CABLE	Connect the SR820ac to a cable wall outlet.
6	POWER	Switch gear for power on/off the SR820ac.

MAC Label

The SR820ac Media Access Control (MAC) label is located on the bottom of the SR820ac. The label contains the MAC address which is a unique, 48-bit value that identifies each Ethernet network device. To receive data service, you will need to provide the MAC address marked HFC MAC ID to your Internet Service provider.

<p>User Name: Nom d'utilisateur</p> <p>cusadmin</p> <p>Router Password: Mot de passe du routeur</p> <p>XXXXXXXXXXXXXX</p> <p>To access the settings page: http://192.168.0.1 Pour accéder à la page des paramètres</p>	<p>My WiFi Name: Mon nom WiFi</p> <input type="text"/>
	<p>My WiFi Password: Mon mot de passe WiFi</p> <input type="text"/>
	<p>My Router Password: Mon mot de passe de routeur</p> <input type="text"/>



<p>SR820ac ADTRAN[®]</p> <p>S/N :XXXXXXXXXXXXXXXXXXXXXXXXXXXX</p>  <p>CM MAC :XXXXXXXXXXXX</p>  <p>MTA MAC :XXXXXXXXXXXX</p>  <p>GATEWAY MAC :XXXXXXXXXXXX</p>  <p>Input Voltage: +12V  3.5A  tension d'entrée:</p>	<p>Your WiFi Network Name (SSID): Votre nom de réseau WiFi (SSID)</p> <p>SmartRG-xxxx</p> <p>WiFi Password: Mot de passe WiFi</p> <p>XXXXXXXXXXXXXX</p> <p>To access the settings page: http://192.168.0.1 Pour accéder à la page des paramètres</p> <p>wifi[®] FC CERTIFIED FCC ID:HDCSR820AC</p> <p>E499060 UL[®] US LISTED I.T.E. BCT</p>
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Note: Label may differ according to local settings or requirements.

Getting Started

Inside the Box

Before you install the SR820ac Voice Gateway, verify that the following items are included in the box with the SR820AC:

Item		Description
Power Adapter		Connect the SR820ac to an AC electrical outlet
Ethernet Cable RJ 45 (TAE)		Connect the SR820ac to PC or Notebook

You must have the latest service packs and patches installed on your computer for your operating system.

You will need a 75-ohm coaxial cable with F-type connectors to connect the SR820ac to the nearest cable outlet. If a TV is connected to the cable outlet, you may need a 5 to 900 MHz RF splitter and two additional coaxial cables to use the TV and the SR820ac.

Before You Begin

Take the following precautions before installing the SR820ac:

- The SR820ac should always be put in a vertical upright position.
- There should always be a clearance of at least 30 mm between each of the side covers and any object that might block the air flow through the unit.
- If the unit is attached by means of the comprised bracket, the FNC connector should protrude on the left hand side when attaching the unit to the bracket.
- Strive to deploy the unit in a central location of the livable areas where most of the wireless devices are used.

Take into account the following environmental conditions

- Avoid physical obstructions of the wireless signal for optimal line of sight (walls, ceilings, floors, furniture)
- Avoid reflective surfaces (Wi-Fi signals may bounce off Windows, mirrors, metal file cabinets, stainless steel countertops, aluminum foil)
- Avoid electrical home appliances like microwaves, home security systems, cordless/mobile phones, fans that might cause interference with the wireless signal
- Postpone installation until there is no risk of thunderstorm or lightning activity in the area.
- To avoid potential shock, always unplug the power cord from the wall outlet or other power source before disconnecting it from the SR820AC rear panel.
- To prevent overheating the SR820ac, do not block the ventilation holes on the sides of the unit. Do not open the unit. Refer all service to your Internet Service provider.

Check that you have the required cables, adapters, and adapter software. Verify that the proper drivers are installed for the Ethernet adapter on each networked computer. For information on WLAN setup, see *Setting up Your Wireless LAN*.

System Requirements

Your computer must meet the following minimum requirements:

- Computer with Pentium[®] class or better processor Windows XP, Windows 7, Windows 8, Windows 10, Macintosh, or UNIX operating system with available operating system CD-ROM
- Any web browser, such as Microsoft Internet Explorer, Netscape Navigator[®], or Mozilla[®] Firefox

Connecting the SR820ac

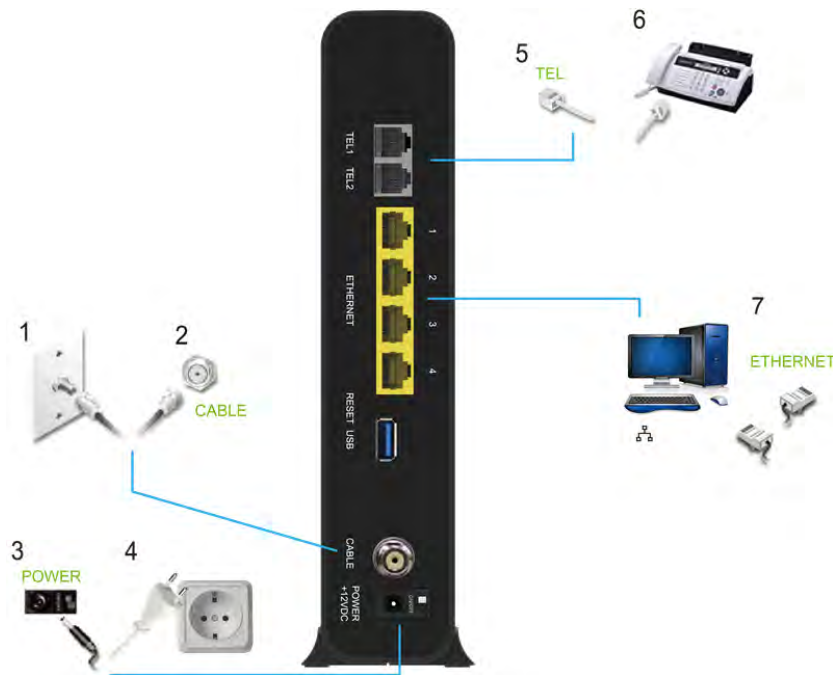
Before starting, be sure the computer is turned on and the SR820ac power cord is unplugged.

1. Connect one end of the coaxial cable to the cable outlet or splitter.
2. Connect the other end of the coaxial cable to the Cable connector on the SR820ac. Hand-tighten the connectors to avoid damaging them.
3. Plug the power cord into the Power port on the SR820ac.
4. Plug the other end of the power cord into an electrical wall outlet.

This automatically powers on the gateway. You do not need to unplug the gateway when it is not in use. The first time you plug in the SR820ac, allow it 5 to 30 minutes to find and lock on the appropriate communications channels.

5. Plug the other end of the telephone cord of a single or two-line telephone into the TEL 1/2 port on the rear of the SR820ac.

6. Plug the telephone cord of a single or two-line telephone into the telephone.
7. Connect the Ethernet cable to the Ethernet port on the computer, and connect the other end of the Ethernet cable to the Ethernet port on the gateway.



8. Check that the LEDs on the front panel cycle through the following sequence:

SR820ac LED Activity during Startup

LED	Description
POWER	Off: No power
	Blinking Green: Booting
	Solid Green: Power on
INTERNET	Off: No Internet connection available (error)
	Fast Blinking Green: Acquiring DOCSIS Channels
	Blinking Green: Registering with CMTS
	Solid Green: Internet connection available

Setting up Internet Access

After installing the SR820ac , check that you can connect to the Internet. You can retrieve an IP address for your computer's network interface using one of the following options:

- Retrieve the statically defined IP address and DNS address
- Automatically retrieve the IP address using the Network DHCP server

The ADTRAN SR820ac Voice Gateway provides a DHCP server on its LAN. It is recommended that you configure your LAN to obtain the IPs for the LAN and DNS server automatically.

Make sure all computers on your LAN are configured for TCP/IP. After configuring TCP/IP on your computer, you should verify the IP address.

Note: For UNIX or Linux systems follow the instructions in the applicable user documentation.

Configuring TCP/IP in Windows 7

1. Open the Control Panel.
2. Click Network and Internet to display the Network and Internet window.
3. Click Network and Sharing Center to display the Network and Sharing Center window.
4. Click change adapter settings
5. Right-click the network connection for the network interface you want to change.
6. Click Properties to display the Local Area Connection Properties window
7. Select Internet Protocol Version 4(TCP/IPv4), double click it or click Properties
8. Select Obtain an IP address automatically and Obtain DNS server address automatically.
9. Click OK to save the TCP/IP settings and close the Internet Protocol Version 4 (TCP/IPv4) Properties window.
10. Click OK to close the Local Area Connection Properties window.
11. Close the remaining Windows and exit the Control Panel.
12. When you complete the TCP/IP configuration, continue with Verifying the IP Address in Windows 7

Verifying the IP Address for Windows 7

1. On the Windows taskbar, click Start.
2. Click All Programs.
3. Click Accessories.
4. Click Run to open the Run window.
5. Type cmd and click OK to open a command prompt window.
6. Type ipconfig and press Enter to display the IP Configuration.

Configuring TCP/IP in Windows 8

1. Press Windows key on the keyboard to go into Desktop mode.
2. Move the mouse's cursor to the lower right corner of the screen. A right panel will now appear. Click the settings icon. The settings panel will now appear.
3. On the settings panel, click the Control panel link.
4. Open the Control Panel.

5. Click network and internet to display the network and Internet window.
6. Click Network and sharing center to display the Network and Sharing Centre window.
7. Click change adapter settings.
8. Right click the network connection for the network interface you want to change
9. Click properties to display the Local Area Connection properties window.
10. Select Internet protocol version 4 (TCP/IPv4), double click it or click properties.
11. Select obtain IP address automatically and obtain DNS server address automatically.
12. Click ok to save the TCP/IP settings and close the internet protocol version 4
13. (TCP/IP) settings and close the internet protocol version 4 (TCP/IPV4) properties window.
14. Click ok to close the Local Area Connection properties window.
15. Close the remaining Windows and exit the control panel.
16. When you complete the TCP/IP configuration, continue with verifying the IP address in Windows 8.

Verifying the IP Address in Windows 8

1. Press the Windows + R keys on your keyboard.
2. Enter CMD in the Open field
3. Type ipconfig and press Enter to display the IP Configuration.

Configuring TCP/IP in Windows 10

1. Open the Control Panel
2. Click Network and Internet to display the Network and Internet window.
3. Click Network and Sharing Center to display the Network and Sharing Center window.
4. Click change adapter settings
5. Right-click the network connection for the network interface you want to change.
6. Click Properties to display the Local Area Connection Properties window
7. Select Internet Protocol Version 4(TCP/IPv4), double click it or click Properties
8. Select Obtain an IP address automatically and Obtain DNS server address automatically.
9. Click OK to save the TCP/IP settings and close the Internet Protocol Version 4 (TCP/IPv4) Properties window.
10. Click OK to close the Local Area Connection Properties window.
11. Close the remaining Windows and exit the Control Panel.
12. When you complete the TCP/IP configuration, continue with Verifying the IP Address in Windows 10

Verifying the IP Address for Windows 10

7. On the Windows taskbar, click Start.
8. Click All Programs.
9. Click Accessories.
10. Click Run to open the Run window.
11. Type cmd and click OK to open a command prompt window.
12. Type ipconfig and press Enter to display the IP Configuration.

Renewing the IP Address for Windows 7 ,Windows 8 & Windows 10

1. Press the Windows key / Windows +R key
2. Type cmd and click OK to open a command prompt window.
3. Type ipconfig/renew and press Enter. A valid IP address should appear indicating that Internet access is available.
4. If, after performing this procedure, your computer still cannot access the Internet, call your service provider.

Setting up a WLAN

Do the following to set up a Wi-Fi network using the WPS button on the SR820ac:

1. Power on the SR820ac.
2. Power on the WPS-enabled devices you want to have access to the network, such as a PC & Router.
3. The Wi-Fi network will automatically detect the WPS devices.
4. Press WPS button on the SR820ac for 5 seconds until WLAN LED starts flashing.
5. If applicable, press WPS button on the other WPS devices.

Troubleshooting

If the solutions listed here do not solve your problem, contact your service provider.

Before calling your service provider, try pressing the Reset button on the rear panel of the SR820ac. Please note, if you press the Reset button, you will lose all your custom configuration settings, including Firewall and Advanced settings. Your service provider may ask for the front panel LED status; see Front-Panel LEDs and Error Conditions.

Solutions

Table 1 – Troubleshooting Solutions

Problem	Possible Solution
Power light is off	Check that the SR820ac is properly plugged into the electrical outlet. Check that the electrical outlet is working.
Cannot send or receive data	On the front panel, note the status of the LEDs and refer to Front-Panel LEDs and Error Conditions to identify the error. If you have cable TV, check that the TV is working and the picture is clear. If you cannot receive regular TV channels, the data service will not function. Check the coaxial cable at the SR820ac and wall outlet. Hand-tighten, if necessary. Check the IP address. Check that the Ethernet cable is properly connected to the SR820ac and the computer. If a device is connected via the Ethernet port, verify connectivity by checking the LINK LEDs on the rear panel.
Wireless client(s) cannot send or receive data	Perform the first four checks in “Cannot send or receive data.” Check the Security Mode setting on the Wireless Security Page: <ul style="list-style-type: none">• If you enabled WPA and configured a passphrase on the SR820ac, be sure each affected wireless client has the identical passphrase. If this does not solve the problem, check whether the wireless client supports WPA.• If you enabled WEP and configured a key on the SR820ac, be sure each affected wireless client has the identical WEP key. If this does not solve the problem, check whether the client’s wireless adapter supports the type of WEP key configured on the SR820ac.• To temporarily eliminate the Security Mode as a potential issue, disable security. After resolving your problem, be sure to re-enable wireless security. <ul style="list-style-type: none">• On the Wireless Access Control Page, be sure the MAC address for each affected wireless client is correctly listed.
Slow wireless transmission speed	On the Wireless Primary Network Page, check whether the WPA Encryption

with WPA enabled

type is TKIP. If all of your wireless clients support AES, change the WPA Encryption to AES.

Front-Panel LEDs and Error Conditions

The SR820AC front panel LEDs provides status information for the following error conditions:

Table 2 – Front-Panel LEDs and Error Conditions

LED	Status	if, During Startup:	if, During Normal Operation:
POWER	OFF	SR820ac is not properly plugged into the power outlet	The SR820ac is unplugged
ONLINE	FLASHING	IP registration is unsuccessful	The IP registration is lost

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Federal Communication Commission Interference Statement

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 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.

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

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.

This device is restricted for indoor use.

Professional installation is required

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes au (x) RSS (s) exemptés de licence d'Innovation, Sciences et Développement économique Canada.

L'opération est soumise aux deux conditions suivantes:

- (1) Cet appareil ne doit pas provoquer d'interférences.*
- (2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.*

The device for 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.

les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

For indoor use only.

Pour une utilisation en intérieur uniquement.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 21m between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 21cm de distance entre la source de rayonnement et votre corps.