

Overview

The SDG-854-(v)6 is a carrier-class, dual-band Wi-Fi 6 2.5G router, offering Gigabit speeds and advanced service delivery capabilities.

Table 1: SDG-854-(v)6 Variants

Description	Software	P/N
SDG-854-6	SmartOS	17600026Fxs
	PlumeOS DHCP	17600026Fxp
	PlumeOS PPPoE	17600026FxpP
SDG-854-v6	SmartOS	17600028Fxs
	PlumeOS DHCP	17600028Fxp
	PlumeOS PPPoE	17600028FxpP

Features

- Combo WAN uplink – you can only use one
 - SFP WAN port
 - 2.5 GbE WAN port
- Four GbE LAN ports (RJ45)
- USB 3.0 host port (Type A)
- Two voice ports (RJ11) – SDG-854-v6 only



WARNING

A warning indicates a hazard that, if not avoided, could result in death, injury, or serious property damage.



CAUTION

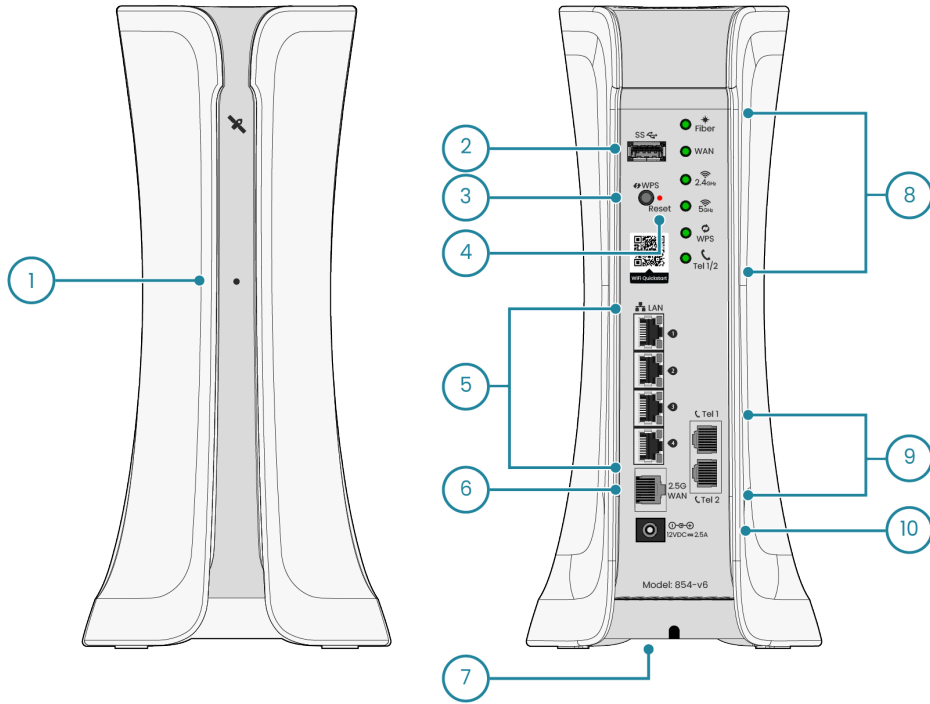
A caution indicates a hazard that, if not avoided, could result in service interruption, damage to the equipment, or minor property damage.



NOTE

A note highlights additional important information or features.

Figure 1: SDG-854-(v)6 Front and Rear View



Callout	Description
1	Multi-function status LED
2	USB 3.0 host port
3	Wi-Fi Protected Setup™ (WPS) button
4	Reset button
5	Four GbE LAN ports
6	2.5G WAN port
7	SFP WAN port – on bottom of the router
8	Status LEDs
9	Two voice ports (Tel 1 and Tel 2) – SDG-854-v6 only
10	12 VDC power input port



CAUTION

Due to compliance certification requirements, use only pluggable optics supplied by Adtran in the SDG-854-v6 SFP WAN port. Adtran cannot certify system integrity with other pluggable optics.

Installation

After you unpack the unit, inspect it for damage. If you notice any damage, file a claim with the carrier and then contact Adtran. For more information, see [Warranty](#).

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Installation Guidelines



WARNING

Read all warnings, cautions, notes, and installation instructions before you install or service this equipment.

- Refer to the national, state, and local electrical codes for the requirements for power, grounding, and wiring, as well as installation methods.
- All installation locations should be within 5 feet (1.5 m) of a wall outlet. The SDG-854-(v)6 includes a 5-foot (1.5 m) power cord.
- The supplied hardware in the optional wall mount kit is intended for drywall mounting only. For mounting on other surfaces, obtain the appropriate mounting hardware and follow the provided instructions.

- Ensure that the SDG-854-(v)6 is not located in direct sunlight or next to any thermal obstructions.
- Ensure that the SDG-854-(v)6 does not come in contact with water or other liquids.



CAUTION

This product is intended for indoor use only. Ethernet cables, Voice cables, USB cables, and attached equipment are intended for use within the same building with equipotential bonding, and not intended to be placed in separate buildings or structures. The Voice and Ethernet cables can be safely connected to network wiring that is distributed within the building (Building Wiring per IEC 62368-1). The USB interfaces are not intended for distribution on Building Wiring. Failure to deploy as described could result in permanent damage from lightning or other electrical events and voids the warranty.

Table 2 shows the recommended minimum distance between the device and household appliances to reduce interference.

Table 2: Recommended Distance Between the Device and Household Appliances

Household Appliance	Minimum Distance
Microwave ovens	30 feet / 9 meters
Baby monitor – analog	20 feet / 6 meters
Baby monitor – digital	40 feet / 12 meters
Cordless phone – analog	20 feet / 6 meters
Cordless phone – digital	30 feet / 9 meters
Bluetooth devices	20 feet / 6 meters
ZigBee	20 feet / 6 meters

Shipment Contents

- SDG-854-6 or SDG-854-v6
- 12 VDC power adapter
- Ethernet cable

Required Equipment

In addition to standard technician tools, use this equipment to install the SDG-854-(v)6:

- Assorted tie wraps for securing cabling and wiring
- Wall mount kit (17600197F1) – optional
 - Mounting bracket
 - Screws and wall anchors
- #2 Phillips screwdriver – for wall mounting
- Drill – for wall mounting
- 1/4-inch (6 mm) drill bit – for wall mounting
- Hammer – for wall mounting
- SFP pluggable optic – optional



NOTE

See the [Pluggable Optics Compatibility Matrix](#) to determine compatible SFL pluggable optics for the SDG-854-(v)6.

Step 1: Installing the SDG-854-(v)6

You can install the router either on a desktop or mounted to a wall.



NOTE

Route and secure the cables in a manner that prevents damage.

Desktop Installation

The router can be located on a desktop. Ensure the desktop location meets the requirements listed in the [Installation Guidelines](#).

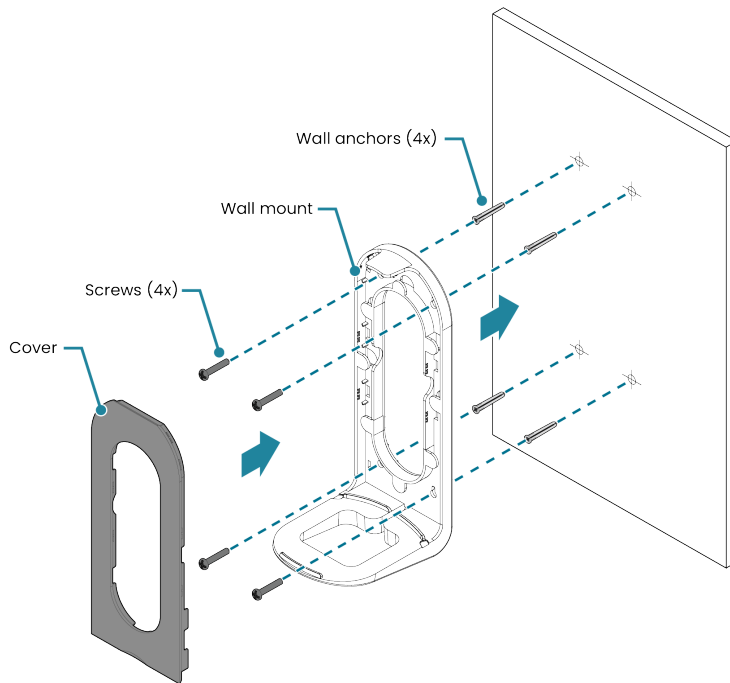
Wall-Mount Installation



NOTE

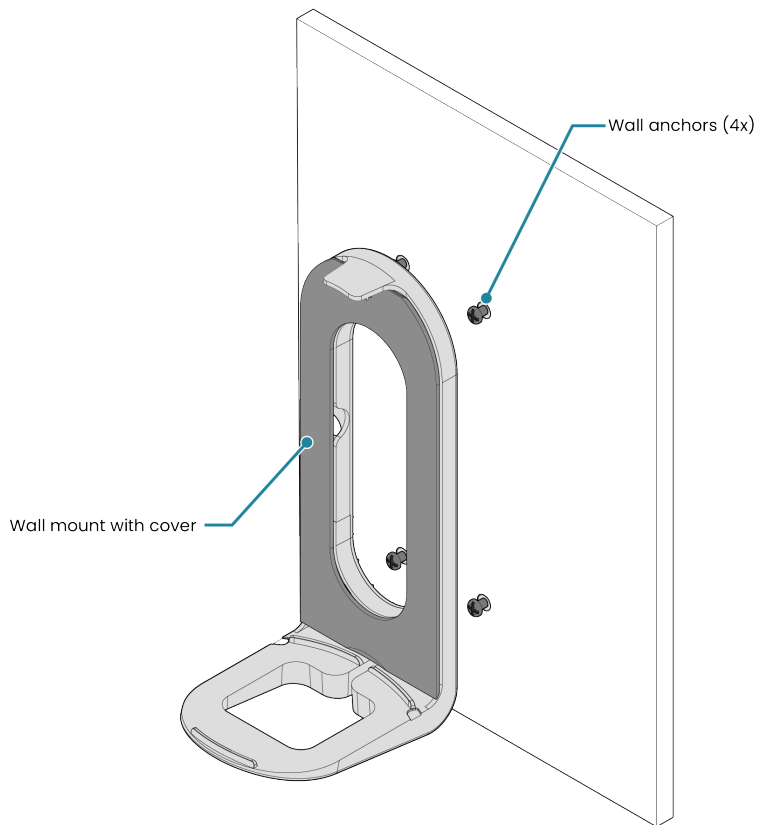
To wall mount your SDG-854-(v)6, use the optional wall mount kit. See [Required Equipment](#) for more information.

1. Determine the location for the SDG-854-(v)6 and ensure that the LEDs are visible.
2. Use the keyholes on the wall-mount kit as a template and mark the wall accordingly.



3. Drill holes using a 1/4-inch (6 mm) drill bit into the marks on the wall.
4. Use a hammer to lightly tap the provided wall anchors into the drilled holes until they are flush with the wall.
5. Use a screwdriver to install the Adtran-provided four screws into the anchor heads, leaving approximately 1/4 inch (6 mm) protruding from the mounting surface.

- Align the SDG-854-(v)6 over the screws and exert a small amount of downward pressure to ensure that the top of the slots are resting on the screw shafts.



- For SDG devices that have a Fiber interface, wrap any excess incoming fiber inside the wall mount before installing the cover.
- Secure the wall mount cover plate by snapping it into the wall mount.
- Insert the device into the wall mount, base first. Then, snap the top support of the wall mount into place on the device. Once the mount is securely attached to the wall, the installation is complete.

Step 2: Connecting the Subscriber Services

These subscriber connections are available on the SDG-854-(v)6 and are shown in [Figure 1](#):

- Combo WAN uplink – you can only use one
 - SFP WAN port
 - 2.5 GbE WAN port
- Four GbE LAN ports (RJ45)
- USB 3.0 host port (Type A)
- Two voice ports (RJ11) – SDG-854-v6 only



NOTE

Route and secure the fiber and cables in a manner that prevents damage.



NOTE

Care should be exercised to ensure that if connecting the Voice cables to existing premises jacks or wiring that the premises wiring is disconnected at the outdoor service providers connection point.

Connecting the Ethernet Ports

To connect the Ethernet ports:

1. Insert the Category 5e (or higher) Ethernet cable coming from the service provider Ethernet port into the 2.5G WAN port until you hear an audible click.



NOTE

If you are using the SFP WAN port, you cannot use this port.

2. For wired Ethernet service, insert one end of a Category 5e (or higher) Ethernet cable into the appropriate LAN port until you hear an audible click. The port you choose should be compatible with your local device.
3. Connect the other end to any local device requiring wired Ethernet service.

Installing the Pluggable Optic and Connecting the Optical Cable



NOTE

If you are using the 2.5G WAN port, you cannot use this port.



CAUTION

Do not look into the ends of optical fibers. Exposure to invisible laser radiation can cause serious retinal damage or even blindness. Before you handle optical fibers, verify the optical source is disabled using an optical power meter.



CAUTION

- Use caution when installing pluggable optics and optical fiber cables so you do not damage the optical fiber cable. The optical fiber cable should not have a bend radius smaller than one inch or 25.4 millimeters.
- Do not remove the protective dust cover from the pluggable optic until you are ready to connect the fiber optic cable.
- Due to compliance certification requirements, use only SFP+ and QSFP28 pluggable optics approved by Adtran. Adtran cannot certify system integrity with other pluggable optics and cables. See the [Adtran Pluggable Optics Compatibility Matrix](#).



NOTE

For this procedure, ensure that:

- The pluggable optic is installed correctly.
- The fiber-optic cable ends and pluggable optic receptacles are properly inspected and cleaned.

To install an SFP+ into the SDG-854-(v)6:

1. Verify that you are properly connected to an appropriate ESD ground connection using an anti-static wrist strap or heel strap.
2. Remove the pluggable optic from its packaging and inspect the connectors for damage. If you find any damage, do not use this pluggable optic. Contact Adtran Technical Support for assistance. Do not attempt to repair it yourself.
3. Ensure that the latch on the pluggable optic is closed.
4. Insert the pluggable optic into the SFP cage located on the bottom of the router until you hear an audible click.
5. Select the correct fiber cable types.
6. Prepare each cable:
 - a. Remove the protective cap from one end of the fiber, and the dust plug from the pluggable optic.
 - b. Inspect the fiber connector for damage. If you find any damage, replace the cable.
 - c. Clean the fiber end and pluggable optic receptacle using a standard cleaning kit. Be careful not to contaminate the surfaces after cleaning.
7. Insert the cable into the pluggable optic.
8. Repeat this section as appropriate to connect the other end.

9. Route and secure the fiber cables appropriately to prevent damage.
10. As you complete each connection, check the status LEDs to verify the links are valid. See [LEDs](#) for more information.



NOTE

- Use the pluggable optic latch only when you remove the pluggable optic from the router. Rotate the latch away from the port during removal. The pluggable optic should easily slide out of the cage.
- Only CDRH certified laser class I (1) pluggable optics must be used when connecting a pluggable optic to the SFP+ cage. Do not remove the protective dust cover from the SFP+ until the fiber optic cable is ready to be connected.

Connecting the Voice Ports – SDG-854-v6 only

Insert an RJ11 cable into the Tell or Tel2 port until you hear an audible click. See [Figure 1](#) for the port location. Connect the other end of the cable to the voice device/telephone or to the connection point providing voice service.



NOTE

The voice ports become inactive on the SDG-854-v6 if you are using PlumeOS.

Connecting the USB Port

The USB 3.0 host port is used for the direct connection of a USB memory stick or an Adtran-approved LTE communication module.

Step 3: Connecting the Power

The SDG-854-(v)6 includes a 12 VDC power adapter. The power adapter connects to a 100 to 240 VAC, 50 to 60 Hz power source. The nominal output is 12 VDC ±5% with a minimum current rating of 3.0 Amps. The SDG-854-(v)6 ships with a region-specific power adapter: North America, United Kingdom, European Union, and Australia/New Zealand.



NOTE

Adtran recommends only using the DC power adapter provided with the SDG-854-(v)6 and that it be connected to a surge protection device, which can have its own extension cable. The surge protection device should provide LN, L-G, and N-G protection. Adtran also recommends that the device contains a visual *good* indicator.



CAUTION

For United States and Canada applications, use an NRTL Listed Limited Power Source (LPS) power supply. For deployment in international applications, use an LPS power supply, specifically approved for that country, as indicated by a CE or RCM mark.

1. Plug the provided 12 VDC power adapter into the power input port on the rear of the router.
2. Connect the power adapter to a standard 100 to 240 VAC outlet. The router begins powering up immediately as it has no on/off power switch.
3. Verify that the multi-function status LED is green, indicating that the router is receiving power.

Step 4: Setting Up

The SDG-854-(v)6 ships with two possible firmware options:

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Setting up with PlumeOS

For devices with PlumeOS installed, you need to download and install the HomePass Smartphone app by Plume. This app can be found in the Google Play Store or the Apple App Store. The workflow for initializing an Adtran SDG device differs slightly from other Plume enabled devices. See the *PlumeOS User Guide* or the HomePass app for quick setup instructions.

Setting up with SmartOS

For devices with SmartOS installed, scan the QR code labeled *Wi-Fi Quick Start* located on the back of the unit. You will be presented with a series of self-guided steps to choose your account password, select the gateway or access point mode, and configure the Wi-Fi SSID and passphrase. The specified account password will be used when initially logging into the GUI on the SDG device.

Step 5: Logging In

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Logging In Using PlumeOS

When running PlumeOS, all settings are configured through either the HomePass Smartphone app (customers) or the Frontline app in the Plume portal (ISPs). HomePass can be found in the Google Play Store or the Apple App Store. Frontline is located in the Plume portal at <https://portal.plume.com/home>.

Logging In Using SmartOS

You use a browser-based user interface to manually configure the router. These steps describe how to connect and login to the device using SmartOS:

1. Ensure your computer is connected to the router either using Wi-Fi or the Ethernet connection to one of the LAN ports.
2. Configure your computer network interface to acquire an IP address automatically using DHCP.
3. Open a web browser and enter **http://router** or **http://setup**. A sign-in page appears. If you are unable to connect to the router using either of these shortcuts, you can also enter the IP address of the unit. The default IP address is **192.168.1.1**.
4. Enter the default username (**admin**) and password. The password is the account password that was specified during the quick setup.



NOTE

If you have forgotten the password for this device, select **Forgot password?** and follow the instructions to reset the gateway configuration to the factory defaults.

5. Select **Sign In**. The Dashboard page appears, showing data about the system.



NOTE

If you are using the Intellifi MeshView solution, use the setup procedures found in the Intellifi Mobile App.

LEDs

When the SDG-854-(v)6 first powers up, it performs self-tests. When the tests are complete, the LEDs display the device status.

Multifunction Status LED for SmartOS

The Multifunction Status LED on the front indicates the status of the device while running SmartOS. The LEDs appear in order of operation.

Color	LED State	Indication
Initial Set Up		
Blue	Solid	Cold boot
Red	Pulsing	Reboot and system upgrade (persists over uboot)
Green	Pulsing	Linux booting up
Light blue	Pulsing	Quick start
White	Solid	Controller WAN up, Internet
Amber	Solid	Controller WAN down, no Internet
Satellite Set Up		
Purple	Pulsing	Satellite set up
White	Solid	Satellite up

Color	LED State	Indication
Red	Pulsing	Satellite up, fair signal
Amber	Pulsing	Satellite up, poor signal
White	Pulsing	Reverting

Multifunction Status LED for PlumeOS

The Multifunction Status LED on the front indicates the status of the device while running PlumeOS.

Color	LED State	Indication
Red	Short pulse	Plume error or hardware error
Green	Long pulse	Connecting
White	Long pulse	Connection failure
Blue	Short pulse	WPS/Bluetooth connecting
Green	Blinking	Locating a device
Green	Blinking	Optimizing
Off	Off	Connected

Fiber Status LED

When the SFP fiber connection is active, the Fiber LED indicates the status of fiber connectivity.

Color	LED State	Indication
Green	Solid	Fiber connection is active
	Flashing	Transferring data over fiber
None	Off	Fiber connection is down

WAN Status LED

The WAN Status LED indicates the status of the WAN.

Color	LED State	Indication
Green	Solid	WAN is active
	Flashing	Transferring data over WAN
None	Off	WAN is down

Ethernet Status LEDs

The Ethernet Status LEDs, 2.4GHz and 5GHz, indicate the status of the Ethernet ports.

Color	LED State	Indication
Green	Solid	Wi-Fi radio is up
	Flashing	Wi-Fi radio is transferring data
None	Off	Wi-Fi connection is down

WPS Status LED

The WPS status LED indicates the status of the WPS (Wi-Fi protected setup).

Color	LED State	Indication
Green	Solid	WPS is enabled
	Flashing	WPS is passing traffic
None	Off	WPS is not active

Tel1 and Tel2 LEDs

The Tel 1 and Tel2 status LEDs indicates the state of the voice connections on the gateway.

Color	LED State	Indication
Green	Solid	Voice connection active
	Flashing	Transferring voice data
None	Off	Voice connections are not active

Reset Button

If you need to reboot the SDG-854-(v)6, press **Reset** for less than five seconds.



WARNING

If you press the reset button for longer than five seconds, all settings return to factory defaults and registration provisioning will be lost.

WPS Button

To enable WPS on the SDG, press the WPS button. This enables a WPS broadcast capable of onboarding a nearby satellite or other WPS client devices. If you use WPS to onboard multiple satellites, you should press the button for each satellite until they are all claimed.

A short press of the button enables WPS on the 5G radio. To enable WPS on the 2.4G radio, press and hold down the button for 5 seconds.

See [WAN Status LED](#).

Specifications

- Electrical
 - Input: 12 VDC, 3.0 A
 - Power supply adapter: 12 VDC power adapter
 - Input voltage rating: 100 to 240 VAC, 50 to 60 Hz
 - Output voltage rating: 12 VDC
 - Nominal output: 12 VDC ±5%
 - Output current rating: 3.0 A, minimum
- Environmental
 - Operational temperature range: 32°F to 104°F (0°C to +40°C)
 - Storage temperature range: -40°F to +158°F (-40°C to 70°C)
 - Relative humidity: 10% to 95%, non-condensing

- Compliance
 - UL,cUL Listed
 - FCC Part 15, Class B
 - ICES-003, Class B
 - IEC 62368-1
 - EN 62368-1, AS/NZS 62368.1
 - RoHS Compliant



NOTE

Changes or modifications not expressly approved by Adtran voids the warranty.

Safety and Regulatory



CAUTION

- Connect the DC power input to an approved Limited Power Source (LPS) power supply only.
- This product is intended to operate in ambient temperatures up to 40°C.



NOTE

This product meets these compliance requirements:

- This equipment contains no parts that can be serviced by the user.
- This product meets EU RoHS Directive. See www.adtran.com/environmental for further information on RoHS/WEEE.
- This product is NRTL Safety Listed to the applicable UL/CSA Standards.
- This product has also been evaluated to applicable international standards as indicated by CE, UKCA, and RCM marking.
- The AC branch circuit socket-outlet must be installed near the equipment and must be easily accessible.
- The RJ45 jacks are not used for Voice connections.

Regulatory Compliance

This section includes user requirements for operating this product in accordance with national laws for usage of radio spectrum and operation of radio devices. Your failure to comply with the applicable requirements can result in unlawful operation and adverse action against you by the applicable national regulatory authority.

This product's firmware limits operation to only the channels allowed in a particular region or country. Therefore, all options described in this guide might not be available in your version of the product.

Europe – EU Declaration of Conformity

Products bearing the marking comply with these EU Directives:

- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- WEEE Directive reference: 2012/19/EU
- RED 2014/53/EU – if there is telecommunications functionality

Compliance with these directives implies conformity to harmonized European standards that are noted in the EU Declaration of Conformity.

For indoor use only. Valid in all EU member states and EFTA states.

This device cannot be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 to 2483.5 MHz. For detailed information, you should contact the national spectrum authority in France.

FCC Requirements for Operation in the United States

FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals.

FCC Guidelines for Human Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 25 cm between the radiator and your body.

This device must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

FCC Declaration of Conformity

This device complies with Part 15 of the FCC rules. Operation is subject to these two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

FCC Radio Frequency Interference Warnings and Instructions

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, you are encouraged to try to correct the interference by one or more of these 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.

CAN ICES-3(B)/NMB-3(B)

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (Wi-Fi 6 Mesh Access Point Model SDG-854-(v)6) does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Industry Canada

This device complies with RSS-247 of the Industry Canada Rules.

Operation is subject to these 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.



CAUTION

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



ATTENTION

Déclaration d'exposition aux radiations: 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 20 cm de distance entre la source de rayonnement et votre corps.

This radio transmitter (IC: 2250A-649B) has been approved by Industry Canada to operate with these antenna types. Antenna types not included in this list are strictly prohibited for use with this device.



CAUTION

- i. The device for operation in the band 5150 to 5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- ii. The maximum antenna gain permitted for devices in the band 5725 to 5850 MHz shall be such that the equipment still complies with the EIRP limits specified for point-to-point and non-point-to-point operation as appropriate.
- iii. The worst-case tilt angle(s) necessary to remain compliant with the EIRP elevation mask requirement set forth in Section 6.2.2(3) shall be clearly indicated.
- iv. Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250 to 5350 MHz and 5650 to 5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.



ATTENTION

- i. Les dispositifs fonctionnant dans la bande 5150-5250MHz 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;
- ii. Le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350 MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e.;
- iii. Le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;
- iv. Les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, telle qu'énoncée à la section 6.2.2 3), doivent être clairement indiqués.

Documentation

You can view and download the Adtran product documentation from our documentation portal. To access our documentation portal, click one of these options:

- docs.adtran.com
- [My Adtran](#) > [Support Community](#) > [Technical Documentation](#)

Training

Adtran offers training courses for our products, including customized training and courses taught at our facilities or at customer sites. For inquiries, go to: <https://adtran.com/training>.

Warranty

Adtran will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. For more information, go to <https://www.adtran.com/warranty>.



CAUTION!

SUBJECT TO ELECTROSTATIC DAMAGE
OR DECREASE IN RELIABILITY
HANDLING PRECAUTIONS REQUIRED

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