

Installation Guide

This document provides a brief overview of the R2400 Ruggedized Router, discusses what's inside the box, and provides setup and install instructions for the router.

If you find information in this guide that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

NOTE: The Verify app includes many of the same instructions with an alternate order. This document supports the Verify app instructions. Use the Navigation section below to locate the topics most applicable to troubleshooting your setup issues. For additional setup support, contact a professional installer or see the [Contact Us](#) page.

Intended Audience

This article is intended for professional networking hardware installers. It provides basic knowledge and should be used only as a reference guide for installing the R2400 Ruggedized Router. Due to the unique nature of each installation, potential for RF exposure, and enhanced separation requirements, customers must have a professional install their hardware. This document is a reference guide and is intended only to provide best practices.

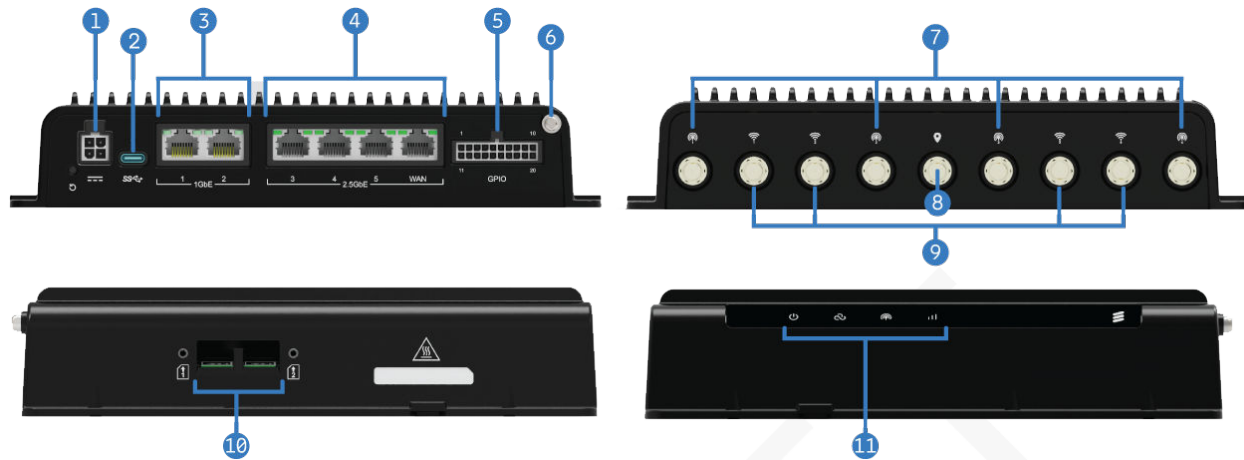
See the Product Disclaimer and Limitation of Liability section for further information.

R2400 Ruggedized Router Models

This document applies to the following R2400 Ruggedized Router models:

Product	Model
R2400-5GF-NA	S5A609A
R2400-5GF-GL	S5A610A

External device components



1	DC Power Port
2	Locking USB-C Port
3	Gigabit Ethernet (1 GbE) Ports
4	Gigabit Ethernet (2.5 GbE) Ports
5	GPIO Port
6	Ground Connector
7	Cellular Antenna Connectors (Female SMA)
8	GNSS Antenna Connector (Female SMA)
9	Wi-Fi Antenna Connectors (Female SMA)
10	SIM Sockets (behind SIM Cover, not shown)
11	LED Panel

Before You Begin

Read through the following before you set up your R2400 Ruggedized Router.

Location Considerations

The R2400 router is built for installation in a variety of environments. Ericsson recommends having a professional install the R2400 router to ensure proper signal reception and usage. The following are best practices for determining the location for the installation:

- Ensure that the mounting surface is flat and clear of any obstructions or objects that may interfere with the antennas, signal reception, or cables.

- Position the device for optimal cellular and Wi-Fi signal reception.
- Avoid mounting in direct sunlight or in locations where it may be exposed to the weather. Ensure plenty of airflow for ventilation.
- Keep the device out of reach. It is required that the endpoint be installed behind a locked or gated enclosure to restrict unauthorized access. The R2400 is designed to work in elevated ambient temperatures, which may cause the surface of the device to become too hot to safely touch.
- Mount in locations compliant with the Safety, Regulatory, and Warranty guide, included in the product shipping box.

For details about mobile installations, see the [Vehicle Installation Guide for Mobile Routers](#) for more information.

IMPORTANT: The R2400 router requires separation distances between the Ericsson hardware and human beings. The recommended minimum separation distance is listed on the Safety, Regulatory, and Warranty guide included in the shipping box. For assistance with installation or in locating a professional installer, contact [Sales and Support](#).

SIM Card for Wireless Connectivity

A wireless broadband data plan must be added to your R2400 Ruggedized Router for wireless broadband connectivity. The SIM must be provisioned by the carrier. Contact your carrier for details about selecting a data plan and about the process for provisioning your SIM. To configure the router for failover and failback functionality, see [NCOS: Effectively utilizing 2-SIM modems](#).

Router Communication and Data Usage

The factory default configuration of the router is set to communicate with Ericsson and other resources at regular intervals to access the latest NetCloud OS and modem updates, clock synchronization (NTP), and NetCloud Manager. Such communication may result in data usage and applicable charges regardless of whether the router uses a wired or wireless internet connect. To avoid such data usage and potential charges, see [Router Communication/Data Usage](#) for more information.

Required Tools for Setup

Ericsson recommends that a professional install the R2400 in any environment. However, the following tools may be necessary for setup:

- #0 Philips-head screwdriver for SIM cover screws
- #2 Philips-head screwdriver for mounting screws
- Mounting tools – Depending on the location of installation, additional mounting tools may be necessary. These tools may include, but are not limited to:
 - Screwdrivers
 - Drill and drill bits
 - Additional screws
 - Zip ties

Condensed Installation

For installers familiar with Ericsson Cradlepoint router installation, see the procedure below. Otherwise see the detailed steps later in this document.

1. Unpack router and [verify box contents \[4\]](#).
2. Remove SIM cover and install at least one SIM, and then reinstall SIM cover.
3. (Optional) If you are connecting to a RC1250 Captive Modem Accessory, connect an Ethernet cable between the WAN port on the R2400 and the RC1250.
4. Mount the router (and RC1250, if present).
5. Attach antennas.
6. Power up the router (and RC1250, if present).
7. Activate the router through Ericsson NetCloud Manager.

Setup

The following steps provide general setup instructions.

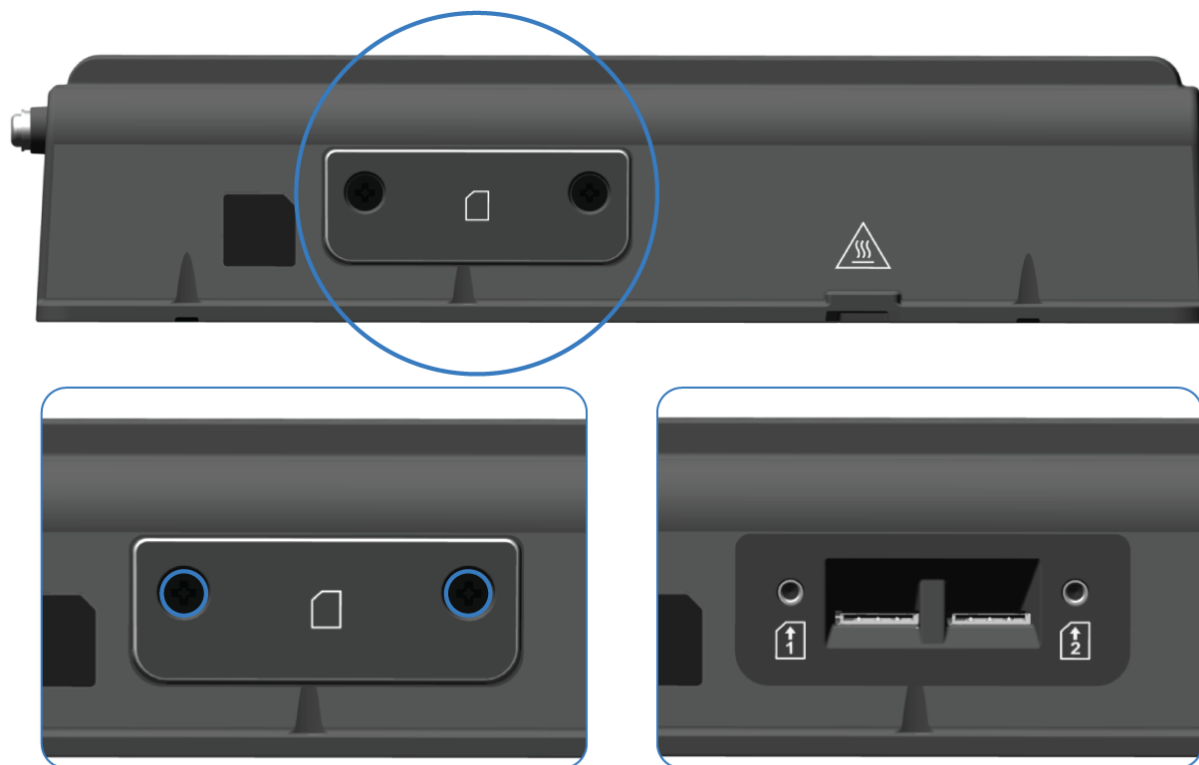
Step 1: Check box for contents

Prior to having the R2400 router installed, open the box and ensure that all items are present. You should have received the following:

Model	Orders include
R2400-5GF-NA	• [1] R2400 Ruggedized Router • [1] Small Accessories Kit, which includes: • [4] M5 Screws • [4] M5 Nuts • [4] M5 washers • [1] Getting Started Insert Card • [1] SRWG Insert • [1] Power/GPIO 2x2 3M cable with mini-fit connector
R2400-5GF-GL	

Step 2: Remove the SIM cover

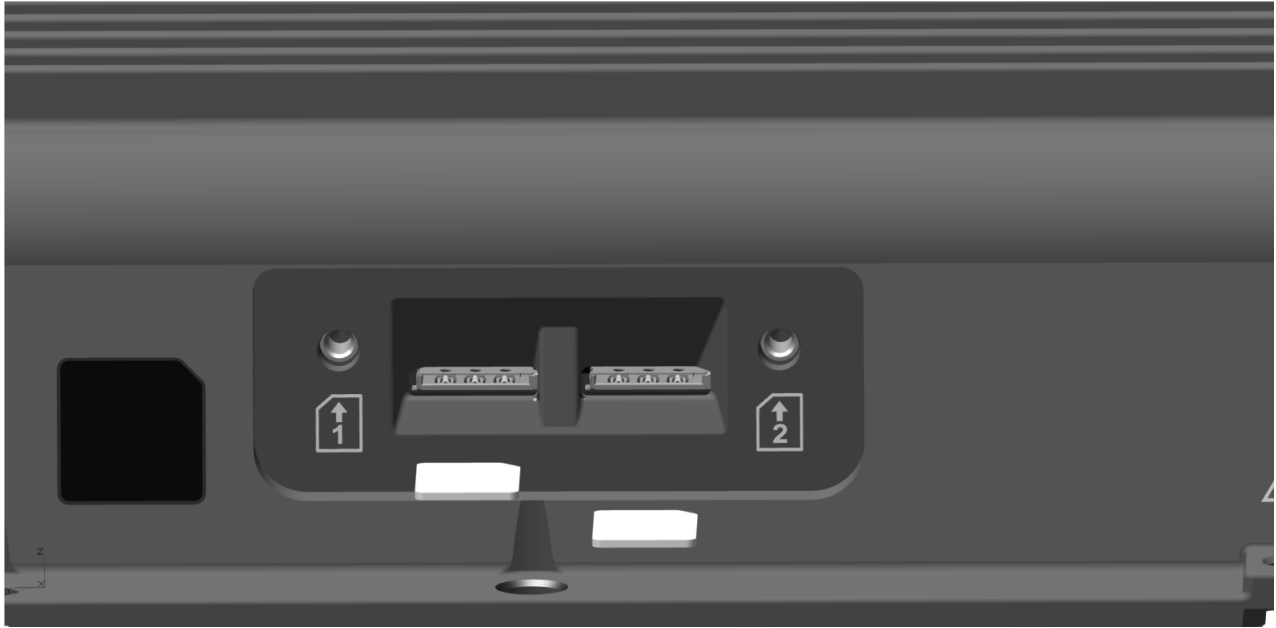
Remove the screws and remove the SIM cover from the router.

**NOTE**

The screws on the SIM cover are captive, so they will not come fully away from the SIM cover.

Step 3: Insert an activated 4FF-sized SIM into the router

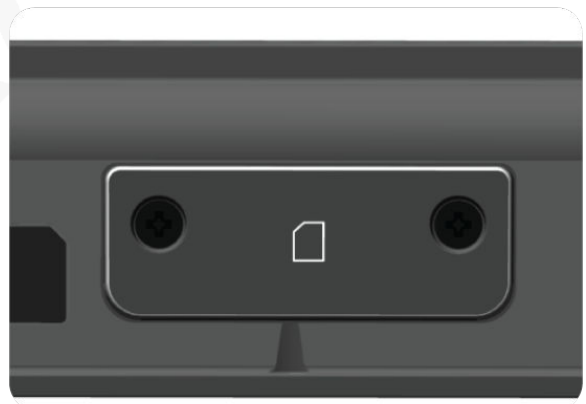
- Insert an activated 4FF-sized SIM card into the SIM1 slot (contacts down, notch in). The SIM card will click into place.
- Optionally, insert an active 4FF-sized SIM into the SIM2 slot with the same orientation.



To remove a SIM, press in on a SIM card until it clicks, and then it ejects a short distance. Grasp the SIM card to remove it.

Step 4: Reinstall the SIM cover

Replace the SIM cover and secure with the SIM cover screws.



Step 5 (optional): Connect to an RC1250 modem

See the installation instructions detailed in the RC1250 Modem Quick Start Guide and then continue to the next step when the managed accessory is attached.

Connect an Ethernet cable from the Ethernet port on the RC1250 to the WAN port on the R2400:

**NOTE**

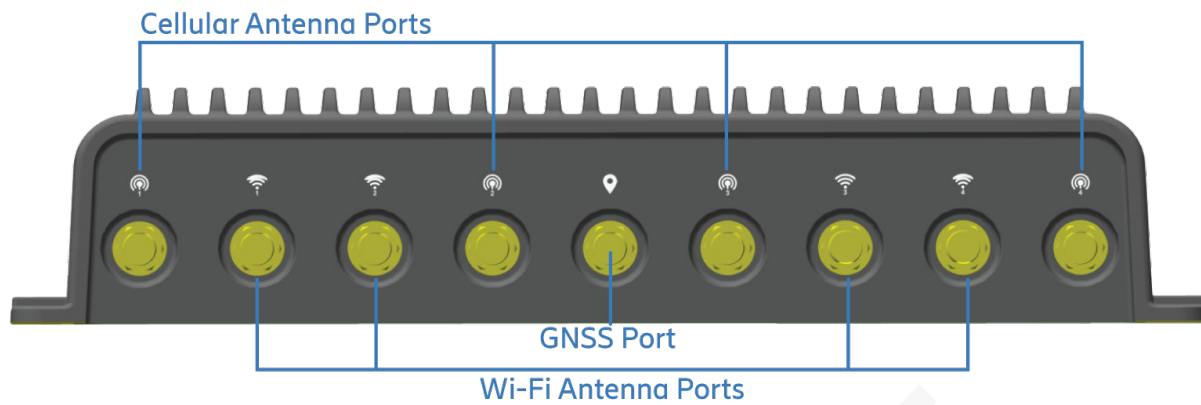
For compact, unified installation, add the optional bracket to mount the RC1250 just above the R2400. <link to QSG for bracket>.

Step 6: Attach the antennas

The R2400 router does not include antennas. Antennas must be purchased separately or through a third-party vendor. See the [Ericsson Enterprise Wireless Solutions Antennas](#) web page for more information and options. Only use remote or cabled-out (x-in-1) antennas. Paddle antennas are not recommended for optimal performance.

**ATTACH ALL ANTENNAS**

All cellular and Wi-Fi antenna ports must be occupied with a proper specification antenna element that matches the operational capabilities of the radio. Leaving antenna ports open or capped with terminators is not a supported configuration for operation.



Step 7: Mount the router

The R2400 Ruggedized Router may be mounted in a number of ways and should be completed by a professional installer.

See the following for best practices:

- Mark the desired mounting location on the ceiling, wall, kiosk, or vehicle using a pen or marker.
- Ensure the mounting location is away from RF interfering materials and objects, such as reflective surfaces, brick and concrete, microwaves, and so on.
- Pre-drill holes for the mounting screws.
- Use anchors and other screw-securing accessories to ensure the device is securely mounted in place.
- See the Location Considerations section of this document.

Mounting Multiple Devices (R2400 and RC1250)

An optional mounting bracket is available to mount an RC2400 and up to two RC1250 captive modem accessories. See the <Multi-mount installation guide-tbd> for details.

Product	Model
RC1250 mount for R2400	TBD



Single RC1250 Captive Modem Accessories Mounted



Dual RC1250 Captive Modem Accessories Mounted

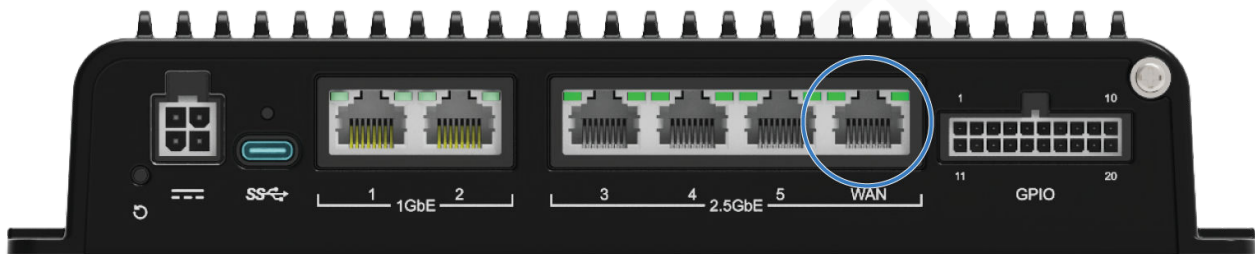
Rack Mount

The R2400 can optionally be installed in a rack with an optional rack mount.

Product	Model
IBR1700 and R2400 Rack Mount	170750-001

Step 8 (optional): Connect the Ethernet cable

- If you are using a wired Ethernet WAN connection, connect the Ethernet cable to the WAN port. Connect the other end to your WAN source, which can be the Ethernet port on the optional RC1250.
- If you are using a wireless WAN (using cellular connectivity), power up the router first, access your NetCloud Manager account, and then complete the setup.



Step 9: Power up the router



The 4-pin GPIO cable socket is configured to allow for using a 4-wire/GPIO cable to hardwire power for DC connections, or for using GPIO. See the following for pin configuration:

	PIN	Definition	Details
	1	Ground	—
	2	Power	9-36 VDC
	3	Input	High: 3.4 VDC threshold Low: 2.2 VDC threshold Ignition Sense Capable

	PIN	Definition	Details
	4	Input/Output (high sink current)	High: LVTTTL Logic Level Low: LVTTTL Logic Level Capable of sinking 250 mA

- Insert the 4-pin end of the power adapter into the 4-pin port on the router, ensuring appropriate alignment of pins as illustrated above.

NOTE: The diagram shows looking into the router socket. When making a custom cable, be sure to account for this.

- Connect the wires on the other end to the appropriate fuse or power source.

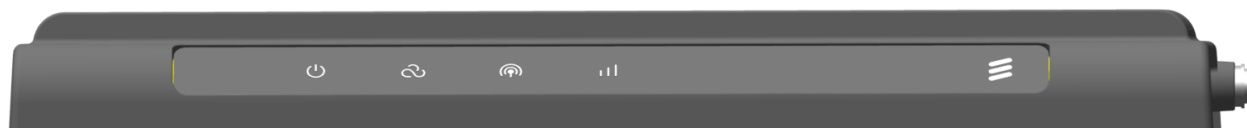
NOTE: A 3 A fused circuit is required for vehicle installations. In North America, a UL listed fuse must be used.

- Allow one minute for the router to run through its boot sequence.

Step 10: Activate the router through NetCloud Manager

Activate your R2400 Ruggedized Router through NetCloud Manager (NCM). Your router is packaged with NetCloud services and requires that you log into your NetCloud account to activate. Refer to [Getting Started with NetCloud Manager](#) for more information.

Understanding LEDs



See the following table for information about LED indicators.

Status Indicator	Behavior	
	POWER: The Cradlepoint R920 must be powered using an approved 9-36 V DC power source.	
		No Light = Not receiving power. Check the power switch and source connection.
		Solid White = Powered on.
	NCM STATE: Detects whether the device is able to connect to NetCloud Manager.	
		No Light = Unable to connect to NetCloud Manager.

Status Indicator	Behavior	
		Solid White = Connected to NetCloud Manager.
	EMBEDDED MODEM STATE: Indicates information about the integrated modem.	
		No Light = Modem not connected. NOTE: You will not be able to see the icon when the modem is not connected.
		Solid Green = Modem has established an active WAN connection.
		Flashing Green = Modem is connecting.
		Solid Yellow = Modem is not active.
		Flashing Yellow = Data connection error. No modem connection possible.
		Solid Red = Carrier reject.
		Flashing Red = No SIM or SIM Door Open.
	CELLULAR HEALTH: Indicates the health of the primary cellular modem's signal.	
		No Light = No cellular connection.
		Solid Green = Cellular health is excellent/good.
		Solid Yellow = Cellular health is fair.
		Solid Red = Cellular health is poor.

Installation Specifications

GPIO Pinouts (2x10)



See the following table when building a custom 2x10 cable for GPIO on the R2400 router.



NOTE

The GPIO connector on the cable available from Ericsson Cradlepoint (170934-000) requires force to seat correctly. When seated correctly, it produces an audible click. Similarly, removing the GPIO connector can require a strong pull.

Pin	Cable Color	Signal Name	Description
1	Red	VIN	Router power (input ONLY — 9 V-36 V, 42 W min.)
2	Red	VIN	Router power (input ONLY — 9 V-36 V, 42 W min.)
3	Brown	CAN Low	CANBus differential signal, low
4	Purple	CAN High	CANBus differential signal, high
5	Orange	Ignition Sense	
6	Yellow	GPIO_1	
7	Blue	GPIO_2	
8	White	GPIO_3	
9	Green	GPIO_4	
10	Grey	+5 V Output	Low Current 5 VDC output (100 mA max)
11-20	Black	Ground	

Performance Characteristics for GPIO (2x10)

TBD

ADC Input Characteristics for GPIO (2x10)

TBD

Troubleshooting

If the device takes longer than five minutes to connect to the internet, you may need to log into the local UI of the device to make configuration changes or start the troubleshooting process. You must be physically co-located with the device to do this. If there is no internet connection, see the following:

[No Internet or Connection Issues](#)

[NCOS: How to Configure WAN Interfaces](#)

Once the device connects to the internet, ensure that desired functionality is working appropriately through NetCloud Manager.

Terms of Service

[Terms of Service](#)

[Privacy Policy](#)

[GDPR Privacy Policy](#)

Product Disclaimer and Limitation of Liability

Cradlepoint, Inc. ("Cradlepoint") does not warrant that the hardware described herein will work properly in all environments or applications, and makes no warranty or representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose even when installed in accordance with this Professional Installation Guide.

This Professional Installation Guide is provided "AS IS," without any warranty of any kind. Without limiting the foregoing, to the maximum extent permitted by applicable law Cradlepoint expressly disclaims all representations, warranties and conditions, whether express, implied, statutory, or otherwise, with respect to this Professional Installation Guide, including without limitation any warranty of title, non-infringement, merchantability or fitness for a particular purpose. While Cradlepoint has made every effort to ensure this Professional Installation Guide is accurate, Cradlepoint disclaims liability for any inaccuracies or omissions that may have occurred and shall not be liable for any adverse results caused, in whole or in part, by the installer's reliance upon the instructions in this Professional Installation Guide. Information in this Professional Installation Guide is subject to change without notice and does not represent a commitment on the part of Cradlepoint. Cradlepoint assumes no responsibility for any inaccuracies that may be contained

in this Professional Installation Guide. Cradlepoint makes no commitment to update or keep current the information in this Professional Installation Guide and reserves the right to make improvements to this Professional Installation Guide and/or to the products described in this Professional Installation Guide, at any time without notice.

Installer Responsibility

Cradlepoint hereby disclaims any liability for failure of the installer to install the hardware properly and for any other acts and omissions of the installer. By using this Professional Installation Guide, you agree to indemnify and hold Cradlepoint harmless from and against any and all, liabilities, losses, damages, costs and expenses (including without limitation attorneys' fees and costs) incurred by Cradlepoint arising out of or in connection with any installation work that is done other than in accordance with the instructions in this Professional Installation Guide.

Limitation of Liability

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT WILL CRADLEPOINT BE LIABLE TO YOU OR TO ANYONE CLAIMING THROUGH OR UNDER YOU FOR ANY LOST PROFITS, EQUIPMENT DOWNTIME, OR LOSS OF DATA OR BUSINESS OPPORTUNITY, OR FOR ANY INDIRECT, SPECIAL, EXEMPLARY, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND UNDER ANY THEORY OF LIABILITY, ARISING IN ANY WAY IN CONNECTION WITH YOUR INSTALLATION ACTIVITIES, EVEN IF CRADLEPOINT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. SOME JURISDICTIONS (SUCH AS THE STATE OF NEW JERSEY) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN NO EVENT SHALL THE AGGREGATE LIABILITY OF CRADLEPOINT AND/OR ITS AFFILIATES ARISING UNDER OR IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING, REGARDLESS OF THE NUMBER OF EVENTS, OCCURRENCES, OR CLAIMS GIVING RISE TO LIABILITY, EXCEED THE PRICE PAID BY THE ORIGINAL PURCHASER OF THE PRODUCT. IN NO EVENT SHALL THE AGGREGATE LIABILITY OF CRADLEPOINT AND/OR ITS AFFILIATES ARISING UNDER OR IN CONNECTION WITH THE PRODUCT, HOWEVER ARISING, REGARDLESS OF THE NUMBER OF EVENTS, OCCURRENCES, OR CLAIMS GIVING RISE TO LIABILITY, EXCEED THE PRICE PAID BY THE ORIGINAL PURCHASER OF THE PRODUCT. THE FOREGOING LIMITATIONS WILL APPLY EVEN IF THE ABOVE STATED REMEDY FAILS OF ITS ESSENTIAL PURPOSE.