Springer Spaniel

Installation Instructions

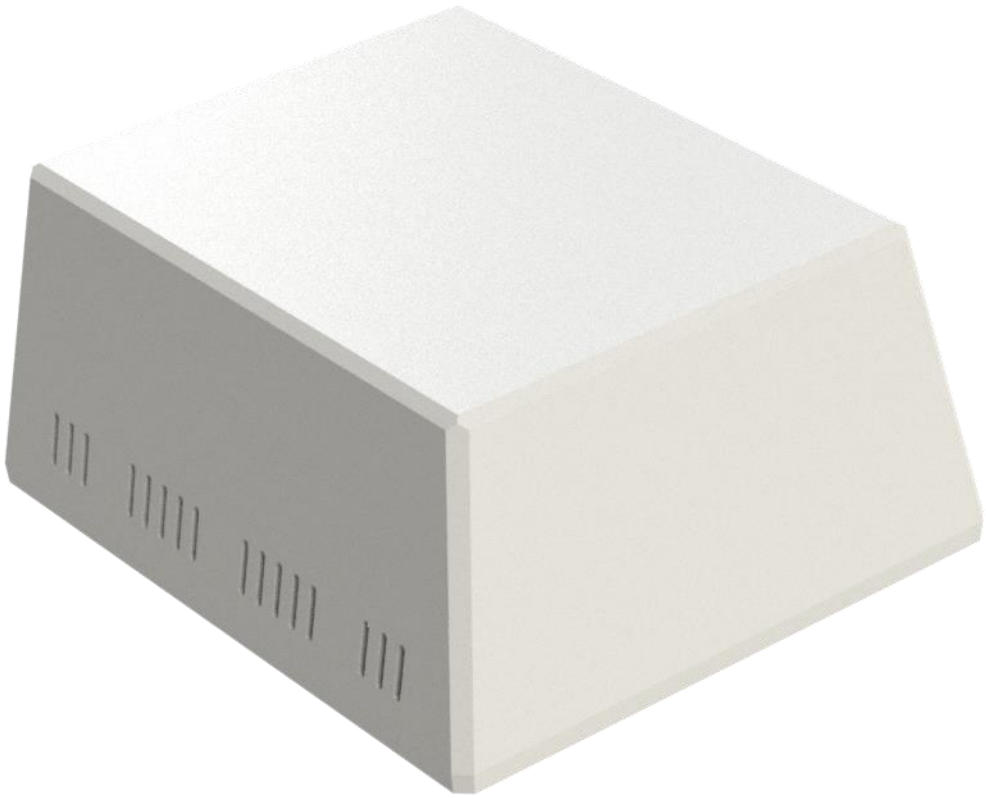
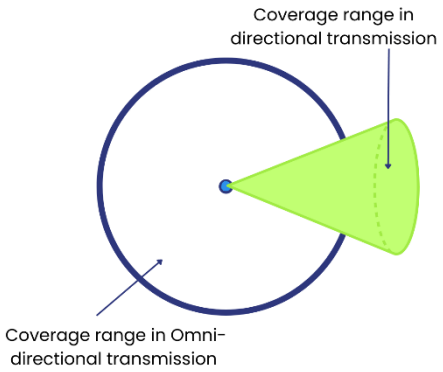


Table of Contents

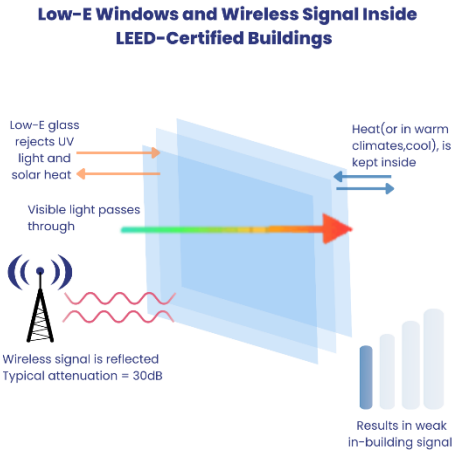
Antenna Location Directions

When selecting the location of an antenna, consider the following factors:

1. **Antenna Directionality** – the direction of the signal is limited by the directionality of the antenna.
   Omni-directional antennas provide a 360-degree horizontal radiation pattern, allowing for coverage in all directions horizontally with varying degrees of vertical coverage.
   When selecting the location of an omni-directional antenna, ensure that the antenna can be mounted in the proper orientation relative to the horizontal plane.



2. **Signal Path Loss** – signal strength is greatly affected by the materials that the signal passes through. Severe signal loss can be caused by concrete and brick walls. Metals can absorb and/or reflect the signal, affecting the signal path. **For best antenna performance, select an antenna location with minimal obstructions between the antenna and the signal source(s).**
3. **Reflection & Diffraction** – the signal will bounce off certain materials and bend around obstacles. For best antenna performance, the antenna should be installed in a location where the signal path is not interfered with by materials like Low E glass, Metal, Tinted glass, etc., that reflect RF Energy.



4. **Interference** – electrical devices and appliances interfere with the antenna's signal.
   Electrical devices and appliances, such as refrigerators, microwaves, AC units, and cameras, can cause electromagnetic interference with the antenna signal.
   Select a location that is as far as possible from electrical devices and appliances and minimizes the amount of such devices between the antenna and the signal source(s). For best antenna performance, install antennas as far away as possible from each other and other devices. In general, separate antennas by at least 24 inches (61 cm).
5. **Cable Loss** – signal strength is lost as RF waves travel through cables.
   The longer the cable, the more electrical energy is lost as heat and the higher the signal loss.
   Therefore, it is best to select a location for the antenna that allows the cables to be as short as possible and still reach the router.
   The size of the cable also affects cable loss; coaxial cables with higher center conductor diameters have less cable loss compared to thinner coaxial cables.
   It is critical to avoid bending coaxial cables sharply to avoid shearing of the Aluminum foil shield, which can result in a significant or complete loss of antenna functionality.
   Coaxial cables should not be bent sharply; they have a minimum bend radius which varies depending on the size of cable.

Required Tools & Accessories

The following tools (not provided) are required in for the installation of the Springer Spaniel antenna:

- Philips Screwdriver
- SMA Wrench

The tables below list the required accessories for the Bloodhound case antenna.

	Springer Spaniel
Provided with Antenna	• PTA0368-B Black Flat Heat Machine Screws, Oval Head Screws with Washers, 4 pcs • PTA0071 Thread forming screws, 14 pcs
To be Purchased by Customer	• Ethernet Cords, 2 pcs **

	• Router Options for Springer Spaniel:
	  • Cradlepoint IBR600
	  • Cradlepoint IBR900
	  • Cradlepoint S700
	  • Peplink MAX BR1 Pro 5G
	• 12V 2x2 Power Supply (Cradlepoint #170716-001)

** Optional, for connecting external devices to the case, length as required by customer

Router Installation

1. Remove the tape holding the Base as shown in Figure 1:

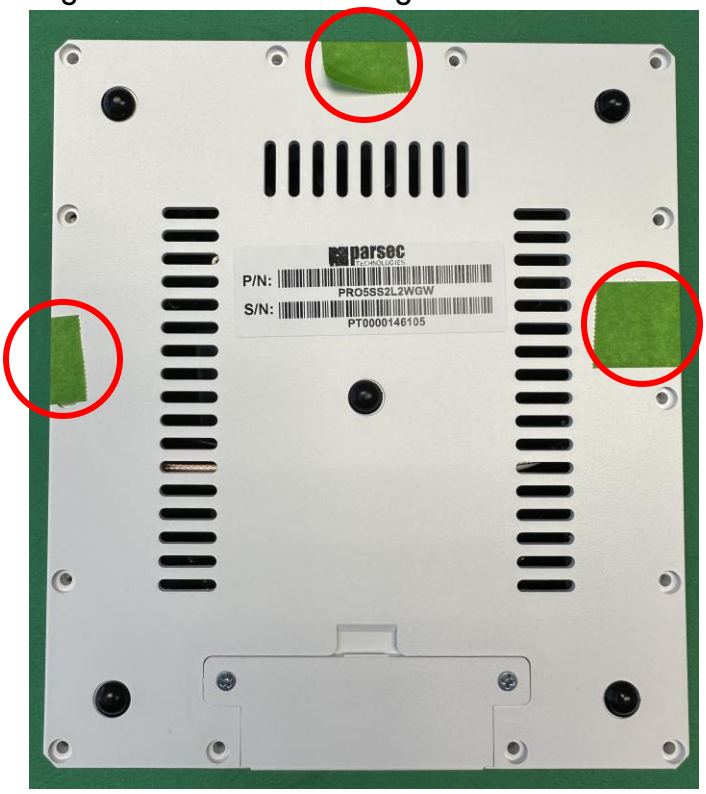


Figure 1: Remove tape

2. Align the router as shown in Figures 2 – 4. The router RJ-45 and power ports should be oriented towards the slot as shown:

Figures 2 – 4: Router Orientation

3. Install the antenna cables to the Router as shown in Figures 5 – 7. Please see the Router Connections shown on Page 9:

Figures 5-7: Connecting antenna cables to Router

4. Mount the router to the antenna plate using the PTA0368-B Screws as shown in Figures 8 – 10:

Figures 8 – 10: Mounting the router to the antenna

5. Pass the power and/or RJ-45 cables through the slot in the Base and install the cables as shown in Figure 11:

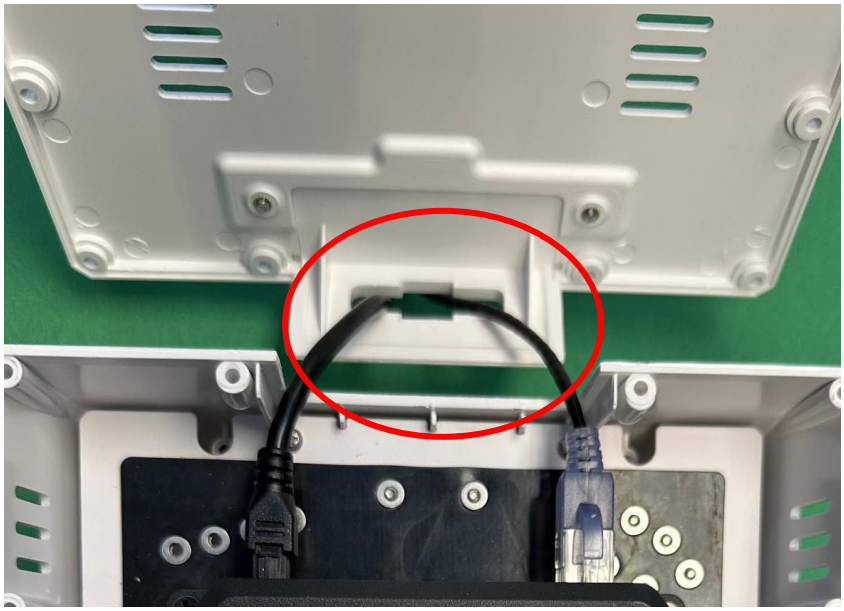


Figure 11: Passing cables through the slot

6. Install the base using the Qty. 14: PTA0071 screws as shown in Figure 12:

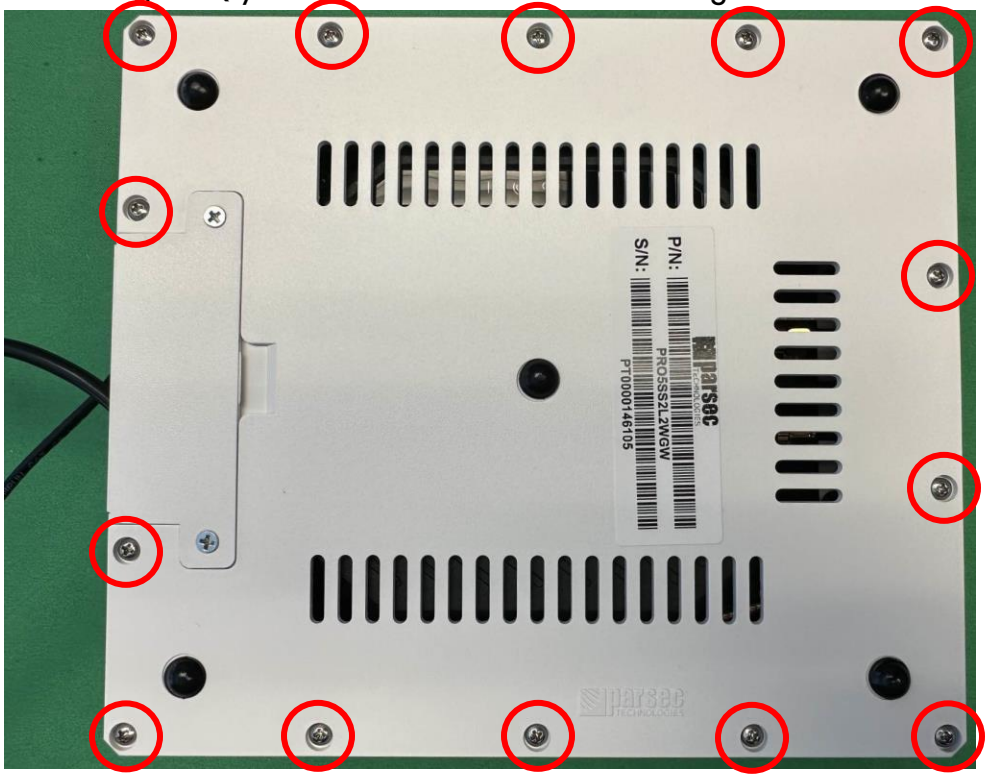


Figure 12: Installing the base

Connection:

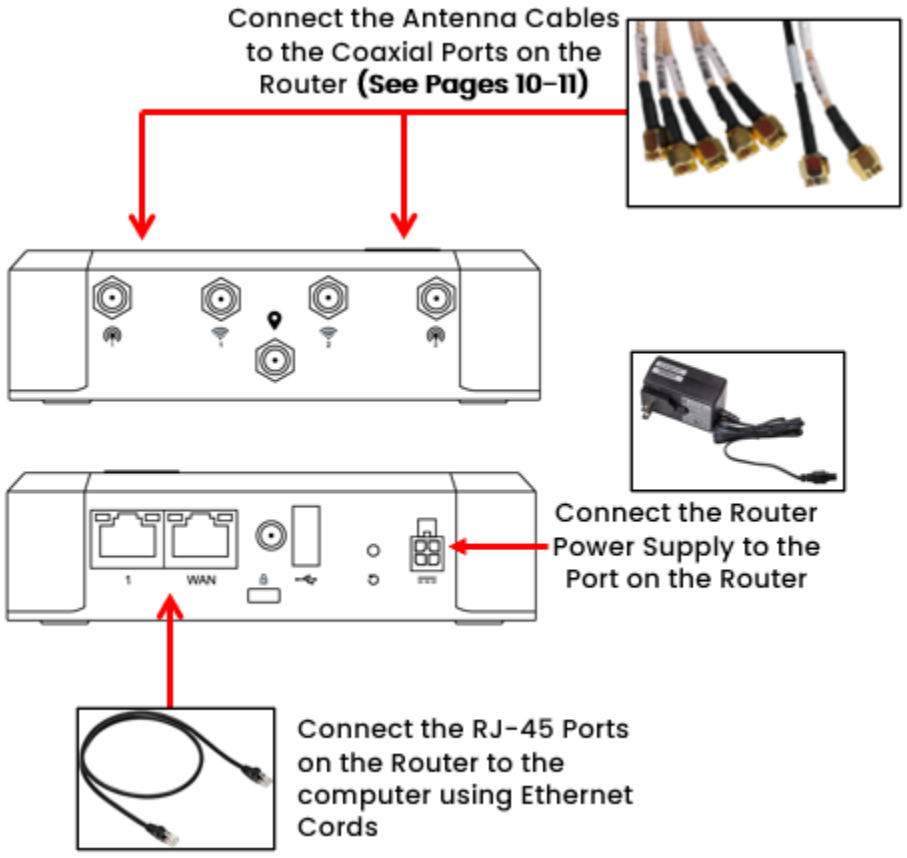


Figure 13: Connection Diagram for Springer Spaniel

Step 1: Connect the antenna cables to the router.

A. Use canned air or isopropyl alcohol to clean all the connectors to ensure that there is no dust in the terminals.
B. Connect the antenna cables to the designated terminals on the router, as shown in the tables and images below.

Cradlepoint S700	
Antenna Cable	Router Terminal
CELL 1	1
CELL 2	2
GPS	GNSS
Wi-Fi 1	Wi-Fi 1
Wi-Fi 2	Wi-Fi 2

Cradlepoint IBR600 & IBR900	
Antenna Cable	Router Terminal
CELL 1	MAIN
CELL 2	AUX
GPS	GPS
Wi-Fi 1	2.4/5 GHz, left
Wi-Fi 2	2.4/5 GHz, right

Peplink MAX BR1 Pro 5G	
Antenna Cable	Router Terminal
CELL 1	Cellular A
CELL 2	Cellular B
CELL 3	Cellular C
CELL 4	Cellular D
GPS	GPS
Wi-Fi 1	Wi-Fi A
Wi-Fi 2	Wi-Fi B

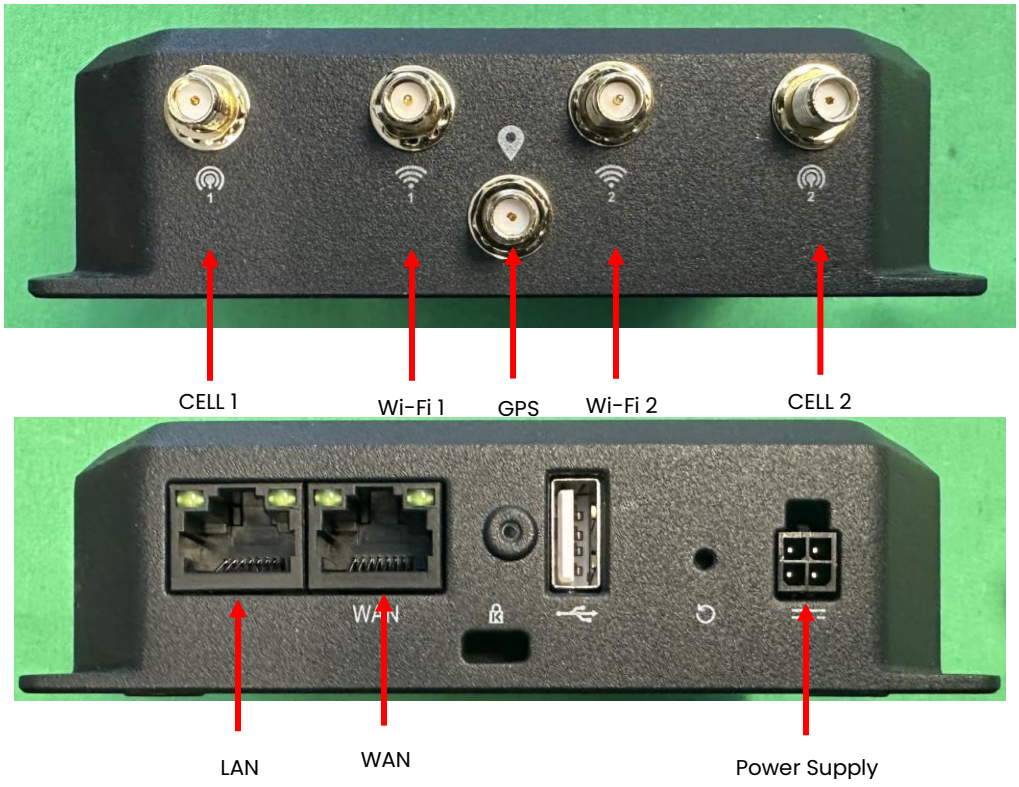


Figure 14: Cradlepoint S700 Connections

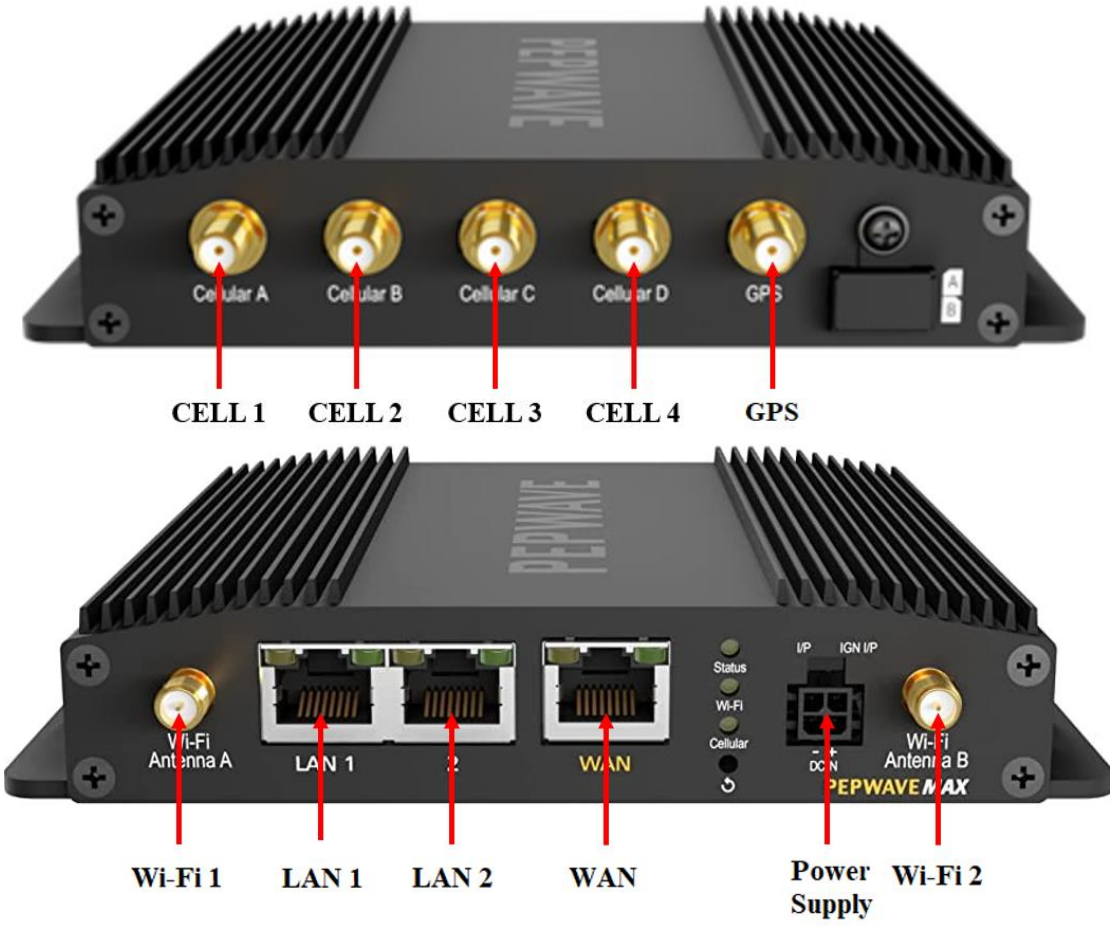


Figure 15: Peplink MAX BR1 Pro 5G Connections

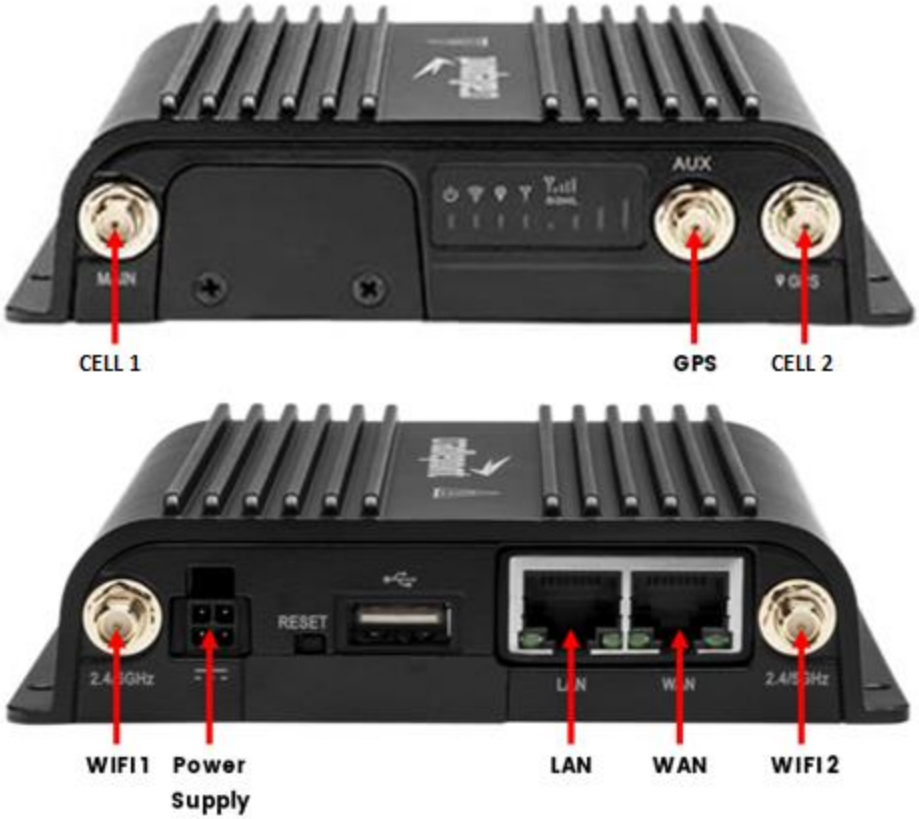


Figure 16: Cradlepoint IBR600 & IBR900 Connections

Final Assembly

Step 1: Make sure all the cables and devices are properly connected.

A. Inspect every cable connection and ensure that no connections are loose.

Note: Ensure that the antenna cables are not excessively bent (1/2" minimum bend radius).

Operational Setup

Step 1: Place the antenna with the router on the bottom, as shown in Figure 17.

Figure 17: Springer Spaniel Orientation

Step 2: Power on the router.

Step 3: Connect the router to a computer.

A. Use an ethernet cable to connect a computer to the LAN port on the router.

Step 4: Login to Cradlepoint NetCloud. **For Peplink Routers, please see Step 6.**

A. Open a web browser on the computer and type 192.168.0.1 into the address bar. This will bring up the Cradlepoint NetCloud login, shown in Figure 18.
B. Login to Cradlepoint NetCloud. The username is “admin”, and the password is found on the router, shown in Figure 19.

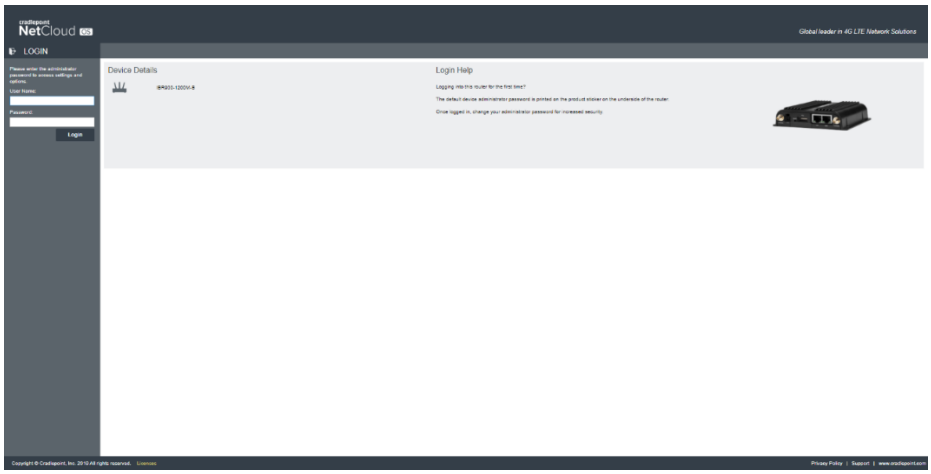


Figure 18: Access Cradlepoint NetCloud.

Figure 19: Cradlepoint NetCloud Login Password

Step 5: Select the router in the device list on Cradlepoint NetCloud.

A. On the left side of the page, select STATUS. From the dropdown menu, select INTERNET and then CONNECTIONS.
B. In the Device List table, select the option with a cellular SIM, as shown in Figure 20.

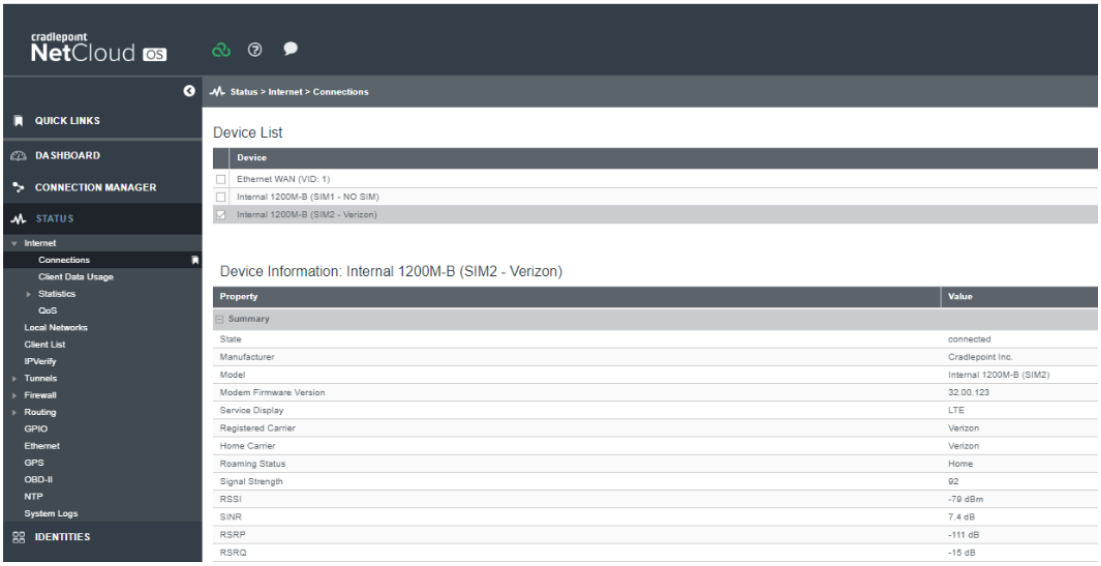


Figure 20: Select the device with a cellular SIM in Cradlepoint NetCloud.

Step 6: Login to PEPWAVE.

A. Open a web browser on the computer and type 192.168.50.1 into the address bar. This will bring up the PEPWAVE, shown in Figure 21.
B. Login to PEPWAVE. The username is “admin”, and the password is “admin”.

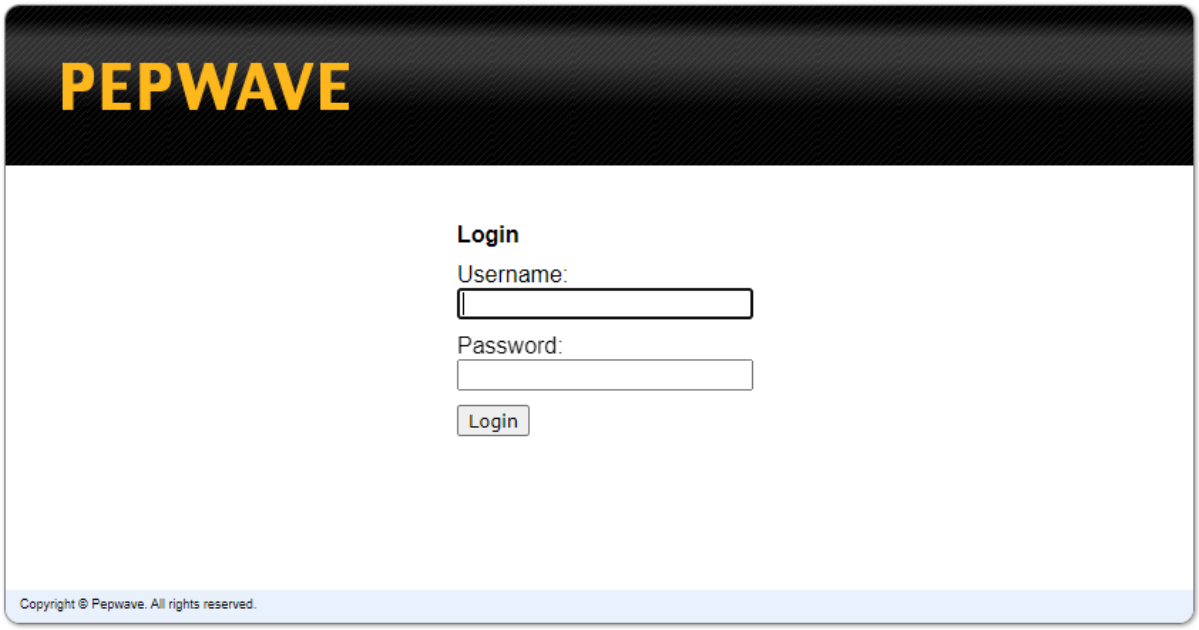


Figure 21: Access PEPWAVE.

Antenna setup is complete!

For best antenna performance, operate the antenna with the router on the bottom and the antenna oriented as shown in Figure 17.

Commission and Testing

Check each coaxial cable connector and confirm that it cannot be easily loosened. Visually inspect the coaxial cables to ensure that they are not sharply bent and are sufficiently secured and supported between the antenna and the router.

Use a cellular device's built-in diagnostics to confirm the RSSI is higher than -75dB. Confirm the cellular connection supports communications at required data rates.

Connect the cellular/LTE cables to the router and stow any unused coaxial cables to avoid damage.

CAUTION
To comply with FOC RF Exposure requirements in section 1.1310 of the FCC Rules, antennas used with this device must be installed to provide a separation distance of at least 20 cm from all persons to satisfy RF exposure compliance.

DO NOT
- Operate the transmitter when someone is within 24 inches of the antenna
- Install the antenna or mast assembly on a windy day
- Install the mast close to power lines as it can cause serious injuries or death

WARNING

Watch out for overhead power lines. Check the distance to power lines before beginning installation.

WARNING
This document gives the detailed instructions to install an antenna to the best of our knowledge. This document is for general information only. It cannot be used as a warranty. Parsec Technologies Inc. will not accept any liability for any damage caused by an antenna due to unknown variables.

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Last Revised: 07.02.2024