Cambium Networks™

USER GUIDE

Cambium Networks Installer

Release 2.7.3

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Contents

About This User Guide

This document explains how to deploy the Cambium Networks Installer™ along with important safety measures. It is intended for use by the system designer, system installer, and system administrator.

Purpose

The Cambium Networks Installer document is intended to instruct and assist personnel in the operation, installation, and maintenance of the equipment and ancillary devices. It is recommended that all personnel engaged in such activities be properly trained.

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Cross-references

References to external publications are shown in italics. Other cross-references, emphasized in blue text in electronic versions, are active links to the references.

This document is divided into numbered chapters that are divided into sections. Sections are not numbered but are individually named at the top of each page, and are listed in the table of contents.

Feedback

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Introduction to the Cambium Networks Installer

The Cambium Networks Installer communicates with the SM LAN port through a wireless connection from a mobile device to a wireless router, as shown in Figure 1.

Figure 1

For optimal installation ergonomics, Cambium Networks recommends using a portable Wi-Fi access point (AP) with Power over Ethernet (PoE), such as the **LinkTechs PowerLINK**. The LinkTechs PowerLINK PoE patch cable is required and to ensure proper communication between the AP and the subscriber module (SM). For 450i SM installations, use a 48V power converter.

Installers can utilize a separate Wi-Fi access point (AP) in Bridge mode and a power supply to establish communication between the subscriber module (SM) and the Cambium Networks Installer.

By default, the Cambium Networks Installer is designed to communicate with factory default SMs using the IP address 169.254.1.1. Operators can also configure a custom IP address if needed.

Preparing to use Cambium Networks Installer in your network

Follow these steps to use Cambium Networks Installer in your network:

1. Acquire radio, network, and security settings.

   Collaborate with your network administrator to identify the radio, network, and security settings used across networks, as well as the configuration of sectors and towers. These settings and security credentials are crucial to ensure that the SMs are properly configured by the Cambium Networks Installer and are ready to connect with the APs in your network.

2. Gather cnMaestro™ credentials and configurations.

   Note

   Gathering the cnMaestro™ credentials and configuration settings is optional.

   The Cambium Networks Installer is designed to automatically onboard new SMs to cnMaestro™. To onboard SM devices, the network **CAMBIUM_ID** and **Onboarding Key** must be configured in the Cambium Networks Installer. The Cambium Networks Installer supports both Cloud and On-Premises cnMaestro™ environments.

3. Prepare the wireless router.

   To enable communication between the Cambium Networks Installer and the SM LAN port, the wireless router must be configured in **Bridge** mode. In this mode, packets are forwarded directly between the Cambium Networks Installer and the SM without additional routing.

Supporting Device Models

The table below describes the supported device models for the Cambium Networks Installer:

Table 1: Supporting Device Models

Device	Models
PMP 450	• PMP 450 SM • PMP 450b SM • PMP 450i SM • PMP 450v 2x2 **Note:** Firmware version 24.2 (currently in beta) or higher is required for the PMP 450v 2x2 to support the software upgrade functionality within the app. • PMP 450b6
ePMP	• 5 GHz Connectorized Radio • 5 GHz Integrated Radio • 2.4 GHz Connectorized Radio • 2.4 GHz Integrated Radio • 5 GHz Force 200 (ROW) • 5 GHz Force 200 (FCC) • 2.4 GHz Force 200 • 5 GHz Force 180 (ROW) • 5 GHz Force 180 (FCC) • 5 GHz Force 190 Radio (ROW/ETSI) • 5 GHz Force 190 Radio (FCC) • 6 GHz Force 180 Radio • 6 GHz Connectorized Radio • 2.5 GHz Connectorized Radio

Device	Models
	• 5 GHz Force 130 Radio • 2.4 GHz Force 130 Radio • 5 GHz Force 200L Radio • 5 GHz Force 200L Radio V2 • 5 GHz Force 300-25 Radio (FCC) • 5 GHz Force 300-25 Radio (ROW/ETSI) • 5 GHz Force 300-16 Radio (FCC) • 5 GHz Force 300-16 Radio (ROW/ETSI) • 5 GHz Force 300 Connectorized Radio without GPS (FCC) • 5 GHz Force 300 Connectorized Radio without GPS (ROW/ETSI) • 5 GHz Force 300-13 Radio (FCC) • 5 GHz Force 300-13 Radio (ROW/ETSI) • 5 GHz Force 300-19 Radio (FCC) • 5 GHz Force 300-19 Radio (ROW/ETSI) • 5 GHz Force 300-19R IP67 Radio (ROW/ETSI) • 5 GHz Force 300-19R IP67 Radio (FCC) • 5 GHz ePMP Client MAXrP IP67 Radio (FCC) • 5 GHz ePMP Client MAXrP IP67 Radio (ROW/ETSI) • 5 GHz Force 300-25 Radio V2 (FCC) • 5 GHz Force 300 CSML Connectorized Radio • 5 GHz Force 300-25L Radio V2 • 5 GHz Force 300-13L Radio • 5 GHz Force 425 (ROW) • 5 GHz Force 425 (FCC) • 5 GHz Force 400C (FCC) • 6 GHz Force 4600C (ROW/FCC) • 5 GHz Force 4518 (ROW)

Device	Models
	• 5 GHz Force 4525 (ROW) • 5 GHz Force 4525L (ROW) • 5 GHz Force 4518 (FCC) • 5 GHz Force 4525 (FCC) • 6 GHz Force 4616 (ROW) • 6 GHz Force 4625 (ROW) • 6 GHz Force 4616 USB GPS Radio (FCC) • 6 GHz Force 4625 USB GPS Radio (FCC)
60GHz cnWave	• cnWave V2000 • cnWave V3000 • cnWave V5000
28GHz cnWave	cnWave 5G Fixed C100 CPE

Installing Cambium Networks Installer

To install the **Cambium Networks Installer** mobile application, download the application using the following links:

- For iOS
- For Android

Configuring the Cambium Networks Installer

Cambium Networks Installer setup

If you are using the Cambium Networks Installer application for the first time, you must configure cnMaestro™ (if applicable), set the radio scanning parameters, and download the Subscriber Module (SM) software package. After the initial setup, you can update the configuration anytime by navigating to the **Settings** menu.

Configuring cnMaestro™

Follow these steps to configure cnMaestro™:

1. Open the Cambium Networks Installer ( ) application from your mobile phone.

   The **Scanning for Device** page appears.

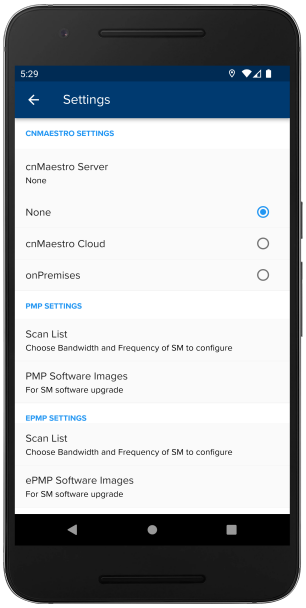
   Figure 2

2. Tap the **Settings** icon, as shown in Figure 2.

   The **Settings** page appears.

Figure 3



3. Select the required deployment type. The following options are supported:
    - cnMaestro Cloud
    - onPremises

Note

Select the **None** option if you don't have a cnMaestro™ account.

If you select the **cnMaestro Cloud** option, follow the steps listed in the Configuring cloud server credentials section.

If you select the **onPremises** option, follow the steps listed in the Configuring onPremises server credentials section.

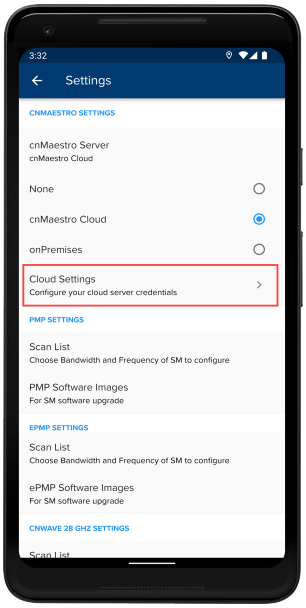
Configuring cloud server credentials

Follow these steps to configure the cloud server credentials:

1. Select the **cnMaestro Cloud** deployment option.

    The **Cloud Settings** option is displayed, as shown in Figure 4.

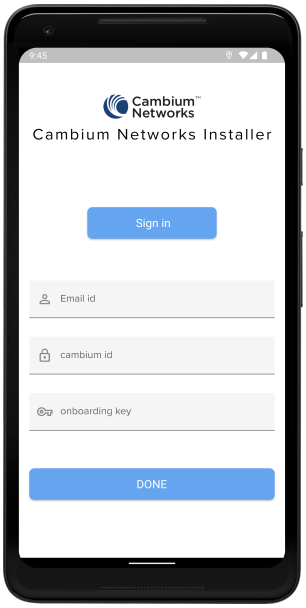
Figure 4



a. Tap the **Cloud Settings** option.

   The **Sign in** page appears.

Figure 5



b. Tap **Sign in**.

c. Enter and validate your credentials.

Note

- Internet connectivity for the mobile device is required.
- The user credentials must match the credentials created in cnMaestro™. For more information, see the *Users* section in the *cnMaestro User Guide*.
- After validating the credentials, you will be redirected to the **Sign in** page, where your email ID and cambium ID are auto-populated.
- The onboarding key must be pre-configured in cnMaestro™ based on the user credentials. For more information, see the *Onboarding/Claim Device* section in the *cnMaestro User Guide*.

d. Enter the onboarding key in the **onboarding key** field.

e. Tap **Done**.

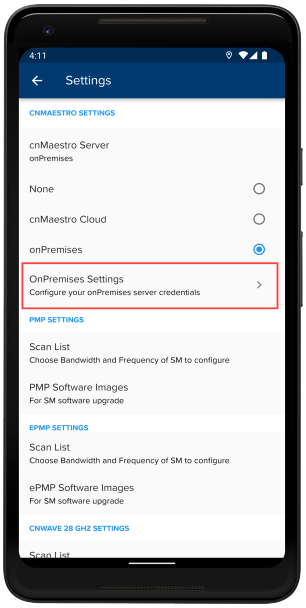
Configuring onPremises server credentials

Follow these steps to configure the onPremises server credentials:

1. Select the **onPremises** deployment option.

   The **OnPremises Settings** option is displayed, as shown in Figure 6.

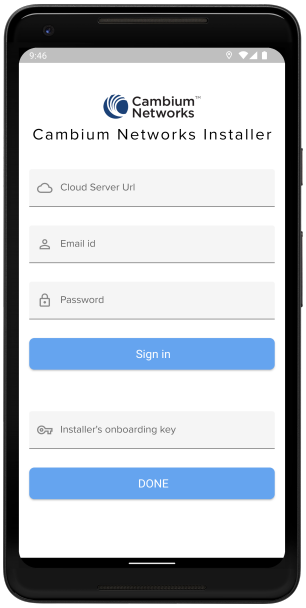
   Figure 6



   a. Tap the **OnPremises Settings** option.

      The **Sign in** page appears.

Figure 7



b. Enter the cloud server URL in the **Cloud Server Url** field.

c. Enter the email ID in the **Email id** field.

d. Enter the password in the **Password** field.

e. Tap **Sign in**.

f. Enter and validate your credentials.

Note

Internet connectivity for the mobile device is required.

g. Enter the installer's onboarding key in the **Installer's onboarding key** field.

h. Tap **Done**.

Installing Subscriber Modules (SMs)

Note

The installation and upgradation of Subscriber Module (SM) are supported in both Android and iOS operating systems.

Detecting the Subscriber Module

The Cambium Networks installer scans to detect PMP, ePMP, 60 GHz, or 28 GHz Subscriber Modules using the default IP address and credentials of the respective radios. Once it detects the SM, the home page is displayed with the information about the device.

Configuring the PMP SM

Configuring the PMP SM includes setting up the following features in the Cambium Networks Installer app:

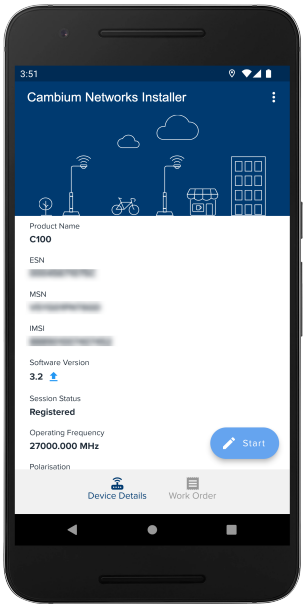
- Device Details
- Configure Scan List
- SM software upgrade
- Configure SM
- AP evaluation
- SM Alignment
- Link Test
- OnBoard SM
- Installation Summary

Device Details

The **Device Details** page displays the basic details specific to each device.

You can configure the scan list on the Subscriber Module (SM) by navigating to the **Settings** page.

Figure 8



Configure Scan List

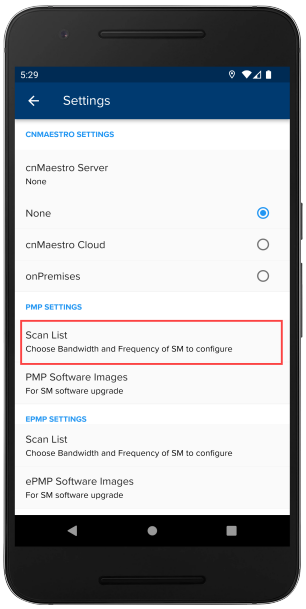
You can configure the radio settings by selecting channel bandwidths and frequencies applicable to the overall network.

Follow these steps to configure the radio settings for PMP devices:

1. From the landing page, tap the **Settings** ( ) icon.

   The **Settings** page appears.

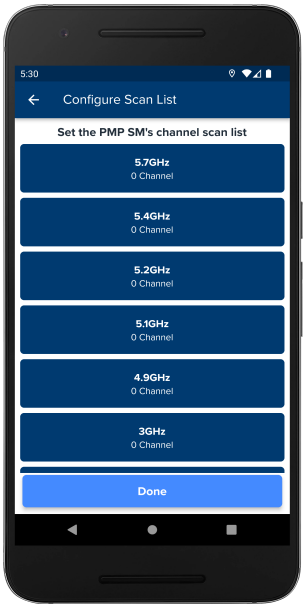
   Figure 9



2. From the **PMP SETTINGS** section, tap the **Scan List** option.

   The **Configure Scan List** page appears.

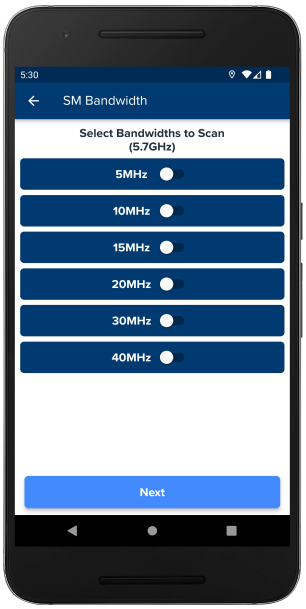
   Figure 10



3. Select the required channel from the channel scan list. For example, 5.7GHz

   The **SM Bandwidth** page appears.

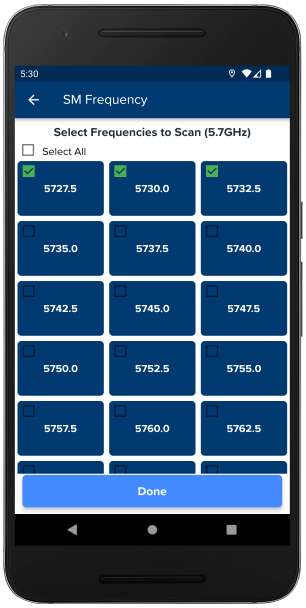
   Figure 11



4. Enable the required bandwidth option from the list. For example, 5MHz.

The **SM Frequency** page appears.

Figure 12



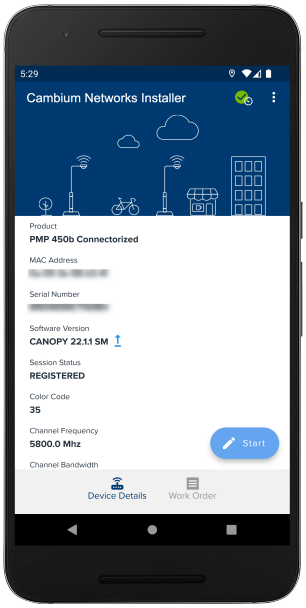
5. Select the required frequency(s) to scan.

SM software upgrade

The SM software upgrade page is used to update the software version of Subscriber Module (SM). Software images can be downloaded and pushed to the SM. The current SM version is displayed on the **Device Details** page, as shown in Figure 13.

An upgrade icon appears ( ) next to the SM version.

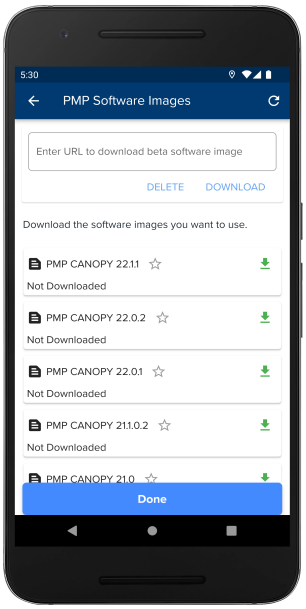
Figure 13


5:29
Cambium Networks Installer
Product
PMP 450b Connectorized
MAC Address
Serial Number
Software Version
CANOPY 22.1.1 SM
Session Status
REGISTERED
Color Code
35
Channel Frequency
5800.0 Mhz
Start
Channel Bandwidth
Device Details
Work Order

Follow these steps to upgrade the SM software:

1. Tap the upgrade icon ( ) to navigate to the SM software upgrade page, as shown in Figure 14. Initially, all available software versions are listed.

   Figure 14



2. Tap the refresh icon ( ) at the top-right corner to get the latest available software versions list.

3. Tap the download software icon ( ) to download the corresponding software version onto your device.

4. After the download is successful, the download icon is replaced by an install icon (Install).

5. Tap **Install** to initiate the installation of the selected software on the Subscriber Module (SM).

You can also navigate to the SM Software upgrade page from the **Settings** page. On the **Settings** page, the Software images option is available in the **PMP SETTINGS** section.

Note

To download and upgrade the software, your device must be connected to the internet.

Configure SM

SM configuration includes configuring SM security, Color code, and IP settings for the **Pre-shared key** and **AAA** security options.

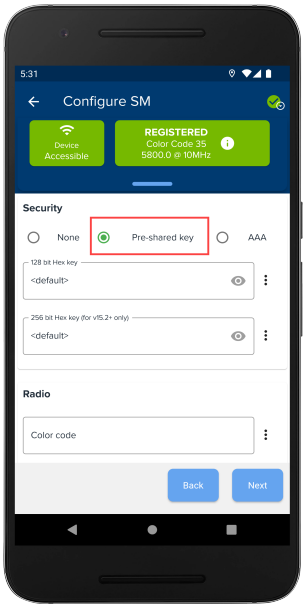
Configuring SM for the Pre-shared key option

Follow these steps to configure SM for the **Pre-shared key** security option:

1. From the **Security** section, select the **Pre-shared key** option.

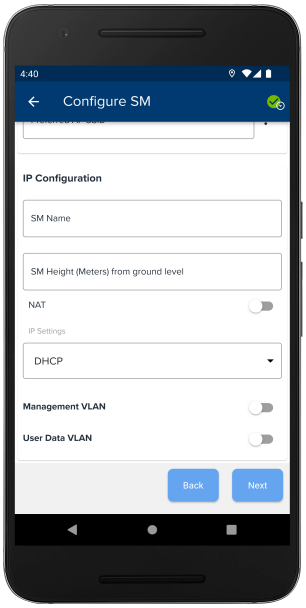
   The following page appears.

   Figure 15



2. Enter the 128 bit hex key in the **128 bit Hex key** field.
3. Enter the 256 bit hex key in the **256 bit Hex key (for v15.2+ only)** field.
4. In the **Radio** section, enter the color code in the **Color code** field.
5. Navigate to the **IP Configuration** section.

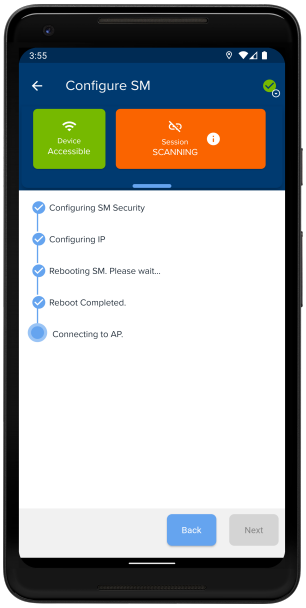
Figure 16



6. In the **IP Configuration** section, complete the following actions:
    a. Enter the SM name in the **SM Name** field.
    b. Enter the SM height in the **SM Height (meters) from ground level** field.
7. Tap **Next**.

    The SM is configured successfully.

Figure 17



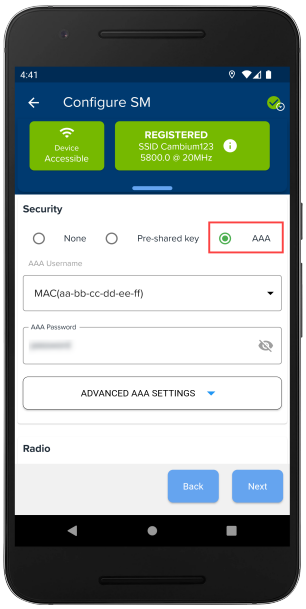
Configuring SM for the AAA option

Follow these steps to configure SM for the **AAA** security option:

1. From the **Security** section, select the **AAA** option.

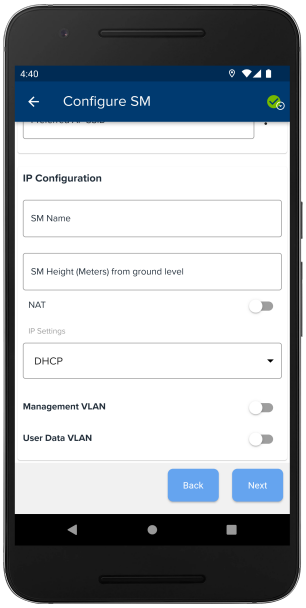
   The following page appears.

   Figure 18

2. Select a username from the **AAA Username** drop-down list.
3. Enter the password in the **AAA Password** field.
4. In the **Radio** section, enter the preferred AP SSID in the **Preferred AP SSID** field.
5. Navigate to the **IP Configuration** section.

Figure 19



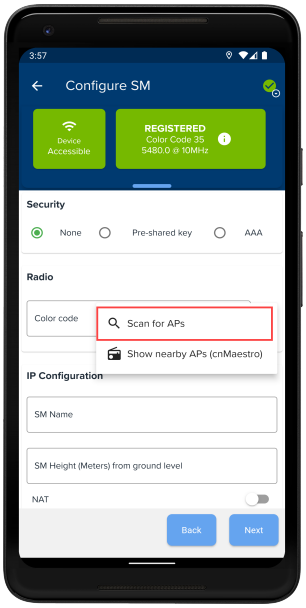
6. In the **IP Configuration** section, complete the following actions:
    a. Enter the SM name in the **SM Name** field.
    b. Enter the SM height in the **SM Height (Meters) from ground level** field.
7. Tap **Next**.

    The SM is configured successfully.

AP evaluation

Adjust the SM location and re-evaluate if necessary. Configuring the DHCP option 66 may prohibit SM LAN access upon registration. You can manually enter the color code for PMP or preferred AP SSID for ePMP without performing an **AP evaluation**. This will display the list of available APs on the SM faster. If needed, you can restart the AP evaluation, which will perform a new AP scan on the SM.

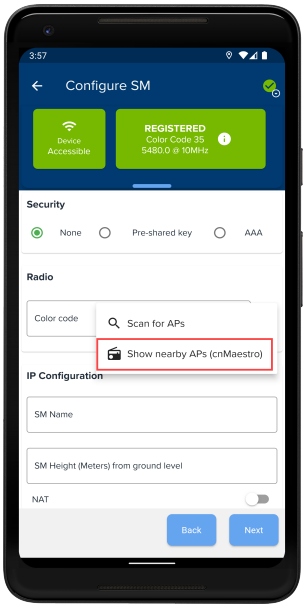
Figure 20



Nearby APs

Nearby APs are displayed on maps where you can view the relative location of the AP with respect to the GPS location of the phone. You can calibrate the mobile device to locate the relative position of the AP with respect to the location. Nearby towers are available if cnMaestro™ is configured, and Cambium Networks Installer displays the nearest visible APs, as shown in Figure 21.

Figure 21



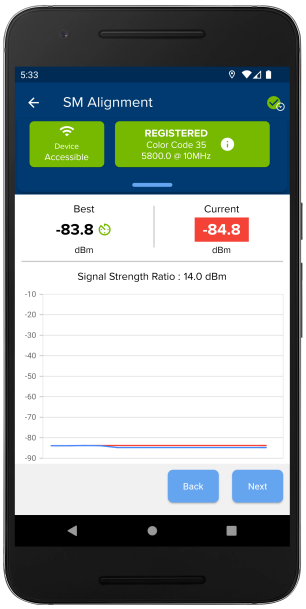
SM Alignment

After connecting to an AP, Cambium Networks Installer displays an **SM Alignment** page to finalize SM positioning adjustments. To achieve optimal link performance, ensure the Receive Power Level is at its maximum during alignment by adjusting the SM's direction.

Note

Proper alignment is important to prevent interference in other cells.

Figure 22



Tips for alignment

- Slowly adjust the angle of the SM, sweeping through the adjustment angles at least twice to match the current receive power level as closely as possible to the best receive power level.
- The Signal Strength Ratio (SSR) displays the ratio of the vertical radio path received signal power to the horizontal radio path received signal power. This ratio can help identify multipath conditions (a high vertical-to-horizontal ratio) for the uplink. Multipath effects may increase or decrease the signal level, causing overall attenuation that could be higher or lower than expected based on link distance. This can be problematic near the margin of the link budget, where the standard operating margin (fade margin) might be compromised.

Note

- You can use the **Quick Align** option to re-align, as shown in Figure 23.
- You can test a previously installed link by using the **RUN AGAIN** option, as shown in Figure 24.

Figure 23

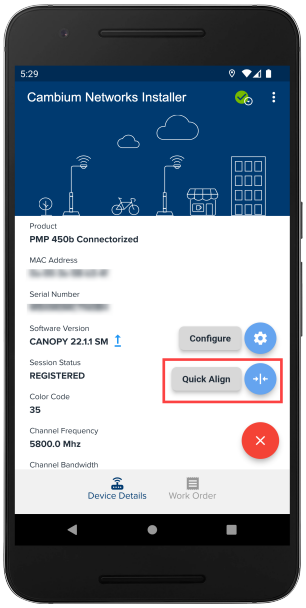
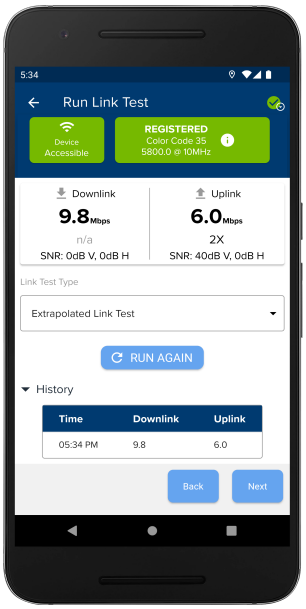


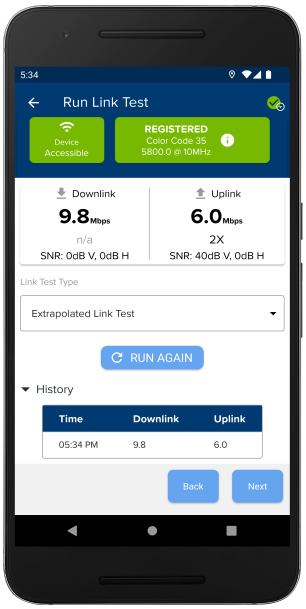
Figure 24



Link Test

The **Link Test** page allows you to measure the throughput of the radio link between two modules.

Figure 25



Notes

cnMaestro™ conducts the **Link Test** with a packet length configuration of 1522 bytes.

The **Link Test** tool has two modes:

- **Extrapolated Link Test**

  This test estimates link capacity by sending a small number of packets and measuring link quality. Once initiated, the radio starts the session at the lowest modulation level and increases modulation as data is successfully transmitted over the link (until the highest possible modulation level supported by the link is reached). Cambium Networks recommends running an **Extrapolated Link Test** on an active link with traffic present to obtain accurate measurements.

  Note

  Running the **Extrapolated Link Test** immediately after establishing a session will not provide accurate results.

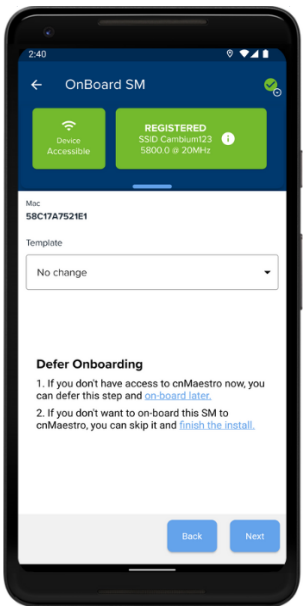
- **Link Test with Bridging**

  This test bridges the traffic to simulated Ethernet ports to provide a status of the link as a whole.

OnBoard SM

You can onboard subscriber modules (SMs) to cnMaestro™. During the onboarding process, you can also perform a software upgrade and apply the template configuration.

Figure 26



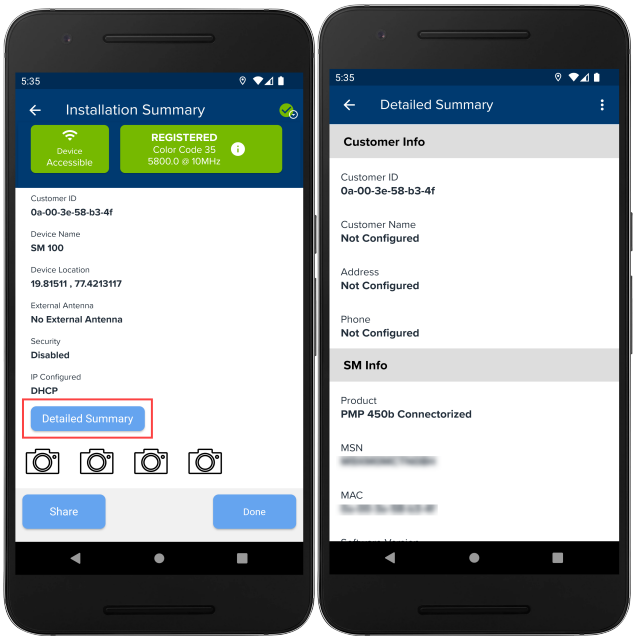
Note

For onboarding a subscriber module (SM) to cnMaestro™, an internet connection is required.

Installation Summary

The **Installation Summary** page displays a summary of the installation. Tap the **Detailed Summary** option to view the detailed summary.

Figure 27



Configuring the ePMP SM

Configuring the ePMP SM includes setting up the following features in the Cambium Networks Installer app:

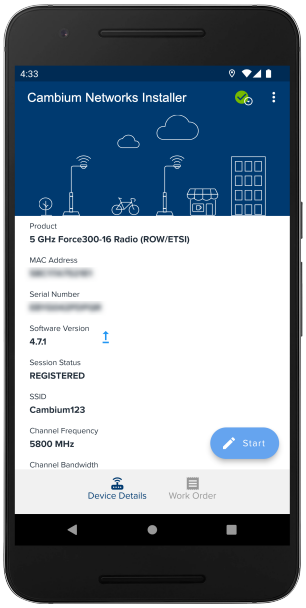
- Device Details
- Configure Scan List
- SM software upgrade
- Configure SM
- AP evaluation
- SM Alignment
- Link Test
- OnBoard SM
- Installation Summary

Device Details

The **Device Details** page displays the basic details specific to each device.

You can configure the scan list on the Subscriber Module (SM) by navigating to the **Settings** page.

Figure 28



Configure Scan List

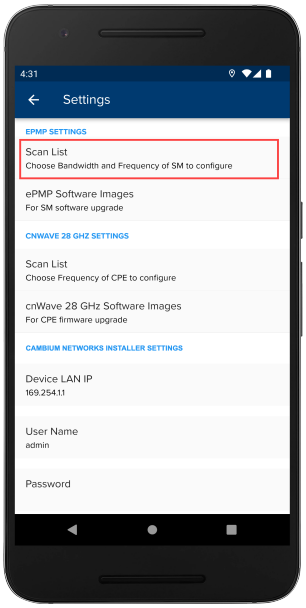
You can configure the radio settings by selecting channel bandwidths and frequencies applicable to the overall network.

Follow these steps to configure the radio settings for ePMP devices:

1. From the landing page, tap the **Settings** ( ) icon.

   The **Settings** page appears.

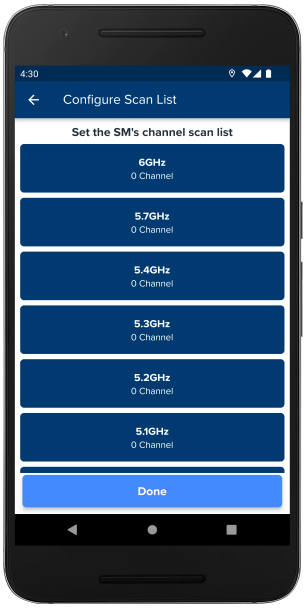
   Figure 29

2. From the **EPMP SETTINGS** section, tap the **Scan List** option.

   The **Configure Scan List** page appears.

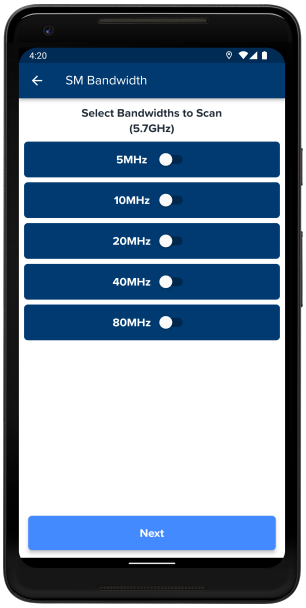
Figure 30



3. Select the required channel from the channel scan list. For example, 5.7GHz

   The **SM Bandwidth** page appears.

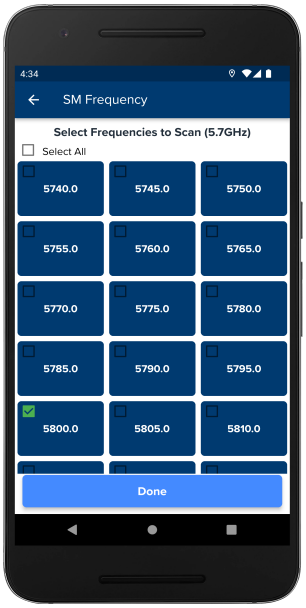
Figure 31



4. Enable the required bandwidth option from the list. For example, 5MHz.

   The **SM Frequency** page appears.

Figure 32



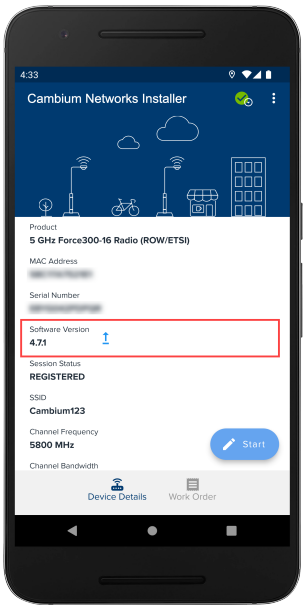
5. Select the required frequency(s) to scan.

SM software upgrade

The SM software upgrade page is used to update the software version of Subscriber Module (SM). Software images can be downloaded and pushed to the SM. The current SM version is displayed on the **Device Details** page, as shown in Figure 33.

There is an upgrade icon ( ) next to the SM version.

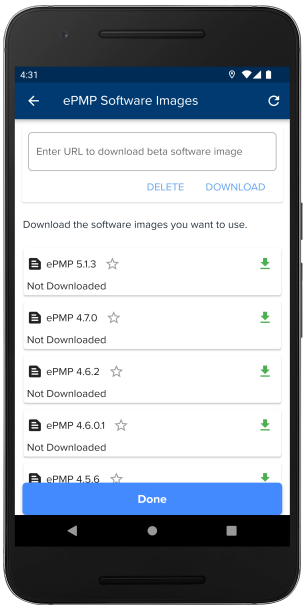
Figure 33



Follow these steps to upgrade the SM software:

1. Tap the upgrade icon ( ) to navigate to the SM software upgrade page, as shown in Figure 34. Initially, all available software versions are listed.

   Figure 34



2. Tap the refresh icon ( ) at the top-right corner to get the latest available software versions list.

3. Tap the download software icon ( ) to download the corresponding software version onto your device.

4. After the download is successful, the download icon is replaced by an install icon (Install).

5. Tap **Install** to initiate the installation of the selected software on the Subscriber Module (SM).

You can also navigate to the SM Software upgrade page from the **Settings** page. On the **Settings** page, the software images option is available in the **EPMP SETTINGS** section.

Note

To download and upgrade the software, your device must be connected to the Internet.

Configure SM

SM configuration includes configuring the SM security, Preferred AP, and IP settings for the **Pre-shared key** and **AAA** security options.

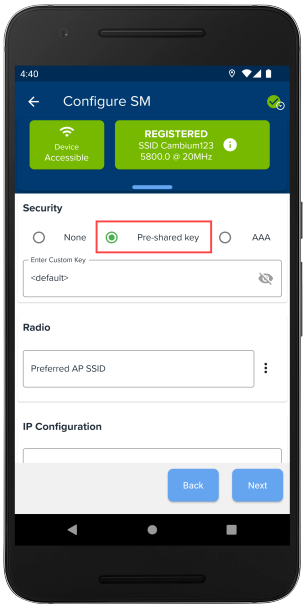
Configuring SM for the Pre-shared key option

Follow these steps to configure SM for the **Pre-shared key** security option:

1. From the **Security** section, select the **Pre-shared key** option.

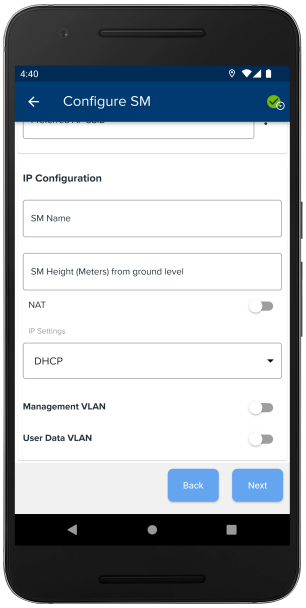
   The following page appears.

   Figure 35



2. Enter the custom key in the **Enter Custom Key** field.
3. In the **Radio** section, enter the preferred AP SSID in the **Preferred AP SSID** field.
4. Navigate to the **IP Configuration** section.

Figure 36



5. In the **IP Configuration** section, complete the following actions:

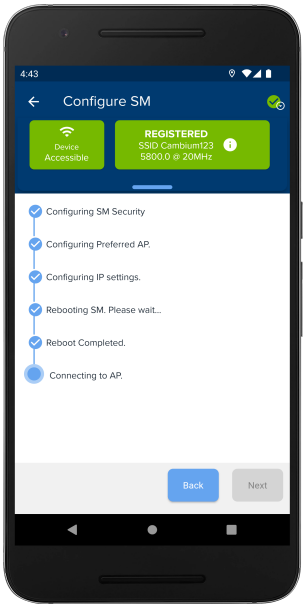
    a. Enter the SM name in the **SM Name** field.

    b. Enter the SM height in the **SM Height (meters) from ground level** field.

6. Tap **Next**.

    The SM is configured successfully.

Figure 37



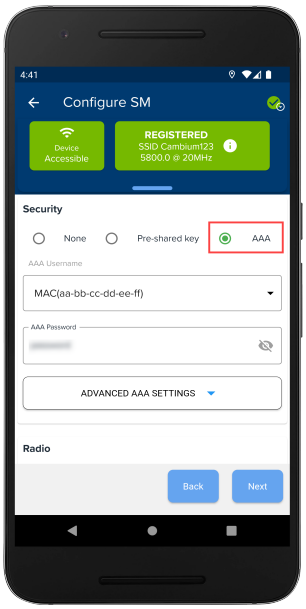
Configuring SM for the AAA option

Follow these steps to configure SM for the **AAA** security option:

1. From the **Security** section, select the **AAA** option.

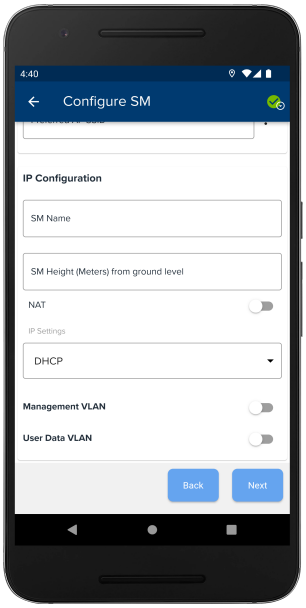
   The following page appears.

   Figure 38

2. Select a username from the **AAA Username** drop-down list.
3. Enter the password in the **AAA Password** field.
4. In the **Radio** section, enter the preferred AP SSID in the **Preferred AP SSID** field.
5. Navigate to the **IP Configuration** section.

Figure 39



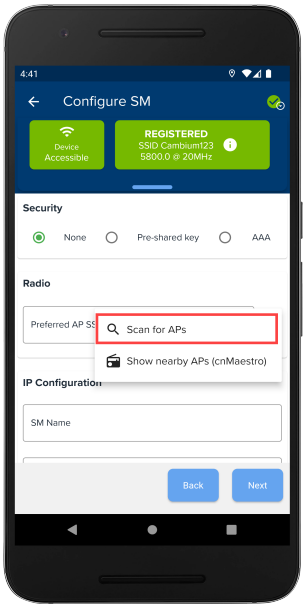
6. In the **IP Configuration** section, complete the following actions:
    a. Enter the SM name in the **SM Name** field.
    b. Enter the SM height in the **SM Height (meters) from ground level** field.
7. Tap **Next**.

    The SM is configured successfully.

AP evaluation

Adjust the SM location and re-evaluate if necessary. Configuring the DHCP option 66 may prohibit SM LAN access upon registration. You can manually enter the color code for PMP or preferred AP SSID for ePMP without performing an **AP evaluation**. This will display the list of available APs on the SM faster. If needed, you can restart the AP evaluation, which will perform a new AP scan on the SM.

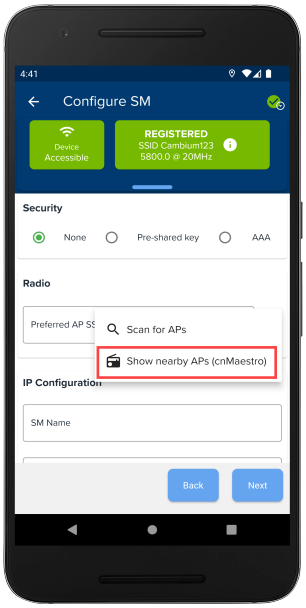
Figure 40



Nearby APs

Nearby APs are displayed on maps where you can view the relative location of the AP with respect to the GPS location of the phone. You can calibrate the mobile device to locate the relative position of the AP with respect to the location. Nearby towers are available if cnMaestro™ is configured, and Cambium Networks Installer displays the nearest visible APs, as shown in Figure 41.

Figure 41



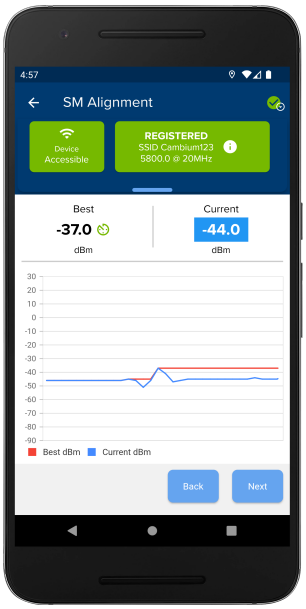
SM Alignment

After connecting to an AP, Cambium Networks Installer displays an **SM Alignment** page to finalize SM positioning adjustments. To achieve optimal link performance, ensure the Receive Power Level is at its maximum during alignment by adjusting the SM's direction.

Note

Proper alignment is important to prevent interference in other cells.

Figure 42



Tips for alignment

- Slowly adjust the angle of the SM, sweeping through the adjustment angles at least twice to match the current receive power level as closely as possible to the best receive power level.
- The Signal Strength Ratio (SSR) displays the ratio of the vertical radio path received signal power to the horizontal radio path received signal power. This ratio can help identify multipath conditions (a high vertical-to-horizontal ratio) for the uplink. Multipath effects may increase or decrease the signal level, causing overall attenuation that could be higher or lower than expected based on link distance. This can be problematic near the margin of the link budget, where the standard operating margin (fade margin) might be compromised.

Note

- You can use the **Quick Align** option to re-align, as shown in Figure 43.
- You can test a previously installed link by using the **RUN AGAIN** option, as shown in Figure 44.

Figure 43

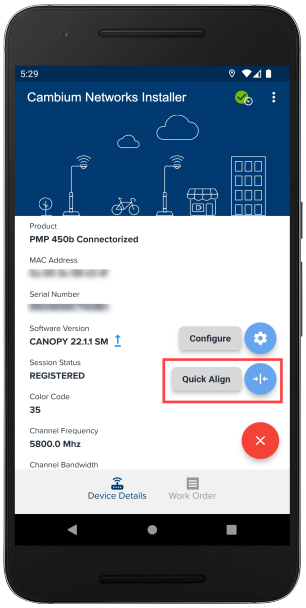
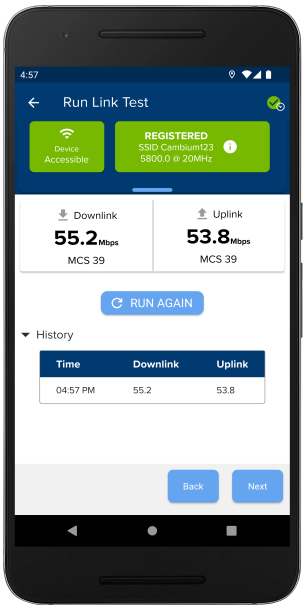


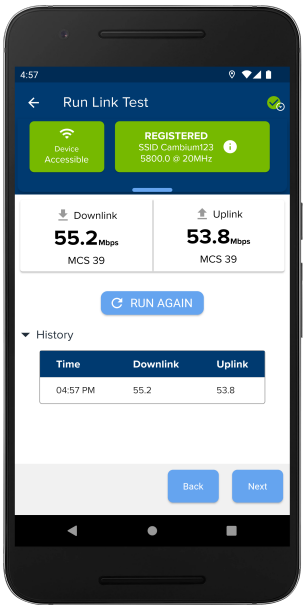
Figure 44



Link Test

The **Link Test** page allows you to measure the throughput of the radio link between two modules.

Figure 45



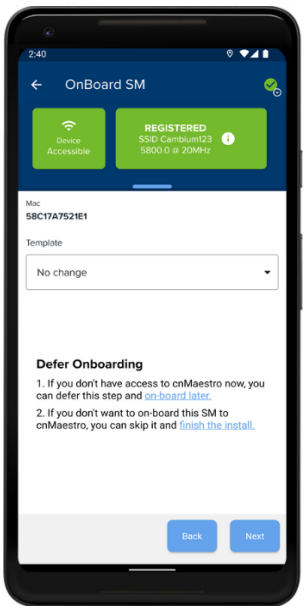
Note

cnMaestro™ conducts the **Link Test** with a packet length configuration of 1522 bytes.

OnBoard SM

You can onboard subscriber modules (SMs) to cnMaestro™. During the onboarding process, you can also perform a software upgrade and apply the template configuration.

Figure 46



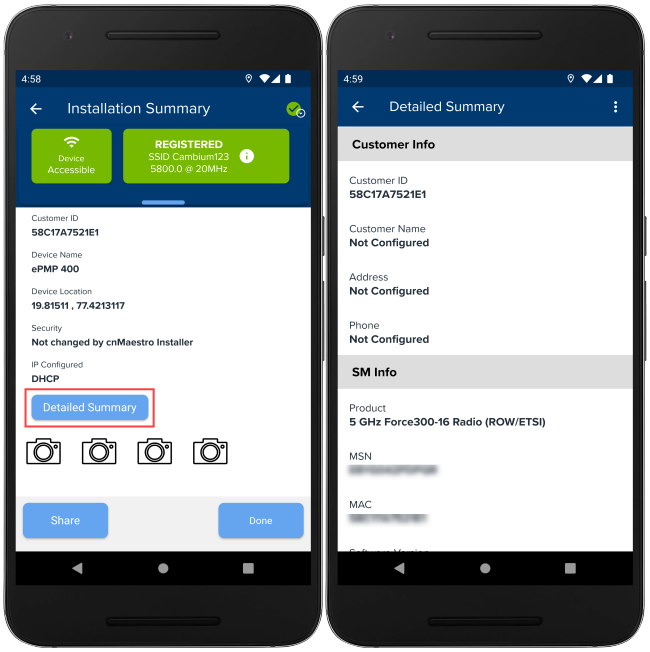
Note

For onboarding a subscriber module (SM) to cnMaestro™, an internet connection is required.

Installation Summary

The **Installation Summary** page displays a summary of the installation. Tap the **Detailed Summary** option to view the detailed summary.

Figure 47



Configuring the cnWave™ 5G Fixed Customer Premise Equipment (CPE) device

Configuring the cnWave™ 5G Fixed CPE device includes setting up the following features in the Cambium Networks Installer app:

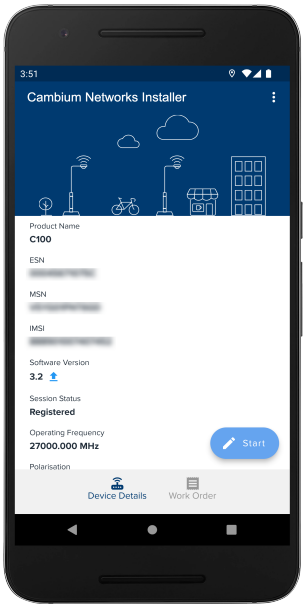
- Device Details
- CPE Firmware Upgrade
- Configure Scan List
- Configure CPE
- CPE Alignment

Device Details

From the home page, tap **Start** to scan the cnWave™ 5G Fixed CPE device. Once the cnWave™ 5G Fixed CPE device is successfully detected, the following information is displayed on the **Device Details** page, as shown in Figure 48.

- **Product name** - the name of the cnWave™ 5G Fixed CPE device
- **ESN** - Ethernet Serial Number of the cnWave™ 5G Fixed CPE device
- **MSN** - Manufacturer Serial Number of the cnWave™ 5G Fixed CPE device
- **IMSI** - International Mobile Subscriber Identity of the cnWave™ 5G Fixed CPE device
- **Software version** - Current version of the software installed in the device
- **Session status** - Status of the current session
- **Operating frequency** - Device operating frequency
- **Polarisation** - Polarisation of the cnWave™ 5G Fixed CPE device
- **Channel bandwidth** - Bandwidth of the channel being used

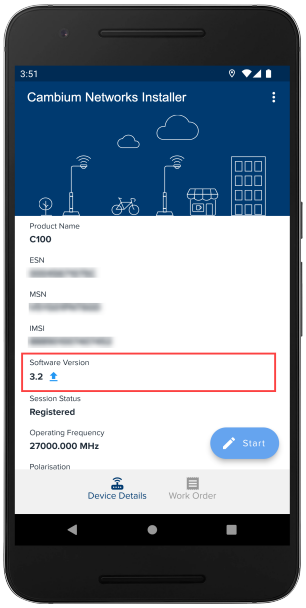
Figure 48



CPE Firmware Upgrade

The CPE Firmware Upgrade page allows you to upgrade or downgrade the firmware version of the CPE. Firmware images can be downloaded and pushed to the device. The current firmware version is displayed on **Device Details** page, as shown in Figure 49. There is an upgrade icon ( ) next to the CPE version.

Figure 49



Follow these steps to upgrade the CPE firmware:

1. Tap the upgrade icon ( ) to navigate to the CPE firmware upgrade page as shown in Figure 50. Initially, all the available firmware versions are displayed in the list.

   Figure 50

2. Tap the refresh icon ( ) at the top-right corner to get the latest available firmware versions list.

3. Tap the download firmware icon ( ) to download the corresponding firmware version to your device.

4. After the download completes successfully, the download icon is replaced by an install icon (Install).

5. Tap **Install** to initiate the installation of the selected firmware into the CPE.

You can also navigate to the CPE Firmware upgrade page from the **Settings** page. On the **Settings** page, the software images option is available in the **CNWAVE 28 GHz SETTINGS** section.

Note

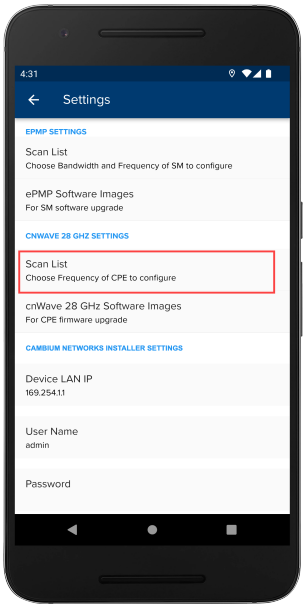
To download and upgrade the firmware, ensure your device is connected to the Internet.

Configure Scan List

Before proceeding with the CPE configuration and quick alignment, you must configure the radio scan frequencies. To perform the radio scan, follow these steps:

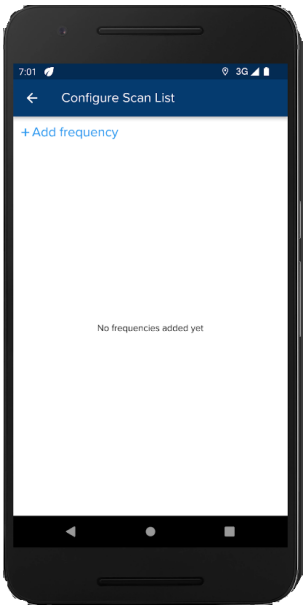
1. From the **Settings** page, tap the **Scan List** option to navigate to the scan list page, as shown in Figure 51.

   Figure 51

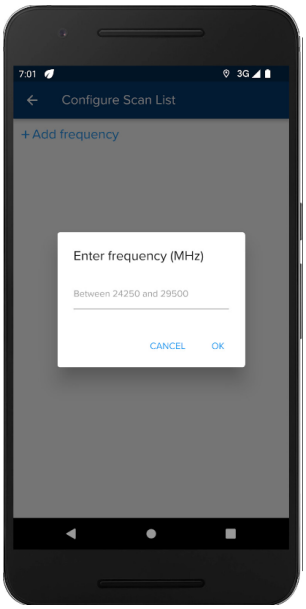
   The **Configure Scan List** page appears, as shown in Figure 52.

   Figure 52

2. Tap the **Add frequency** button to add the desired frequencies.
3. The frequency pop-up appears, as shown in Figure 53.

   Figure 53



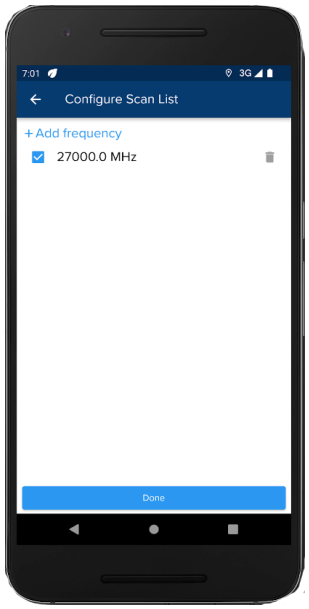
4. Enter the frequency in MHz and tap **OK**.

   Note

   The frequency value must range between 24,250 MHz and 29,500 MHz.

   The frequency is added to the list, as shown in Figure 54.

Figure 54

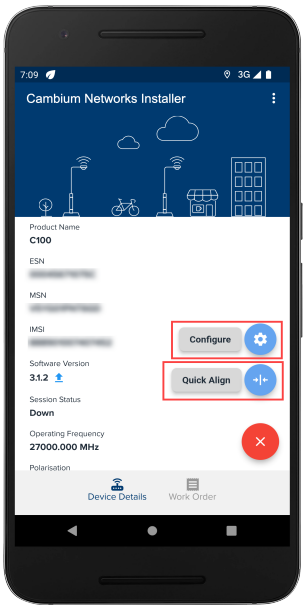


5. You can add multiple frequencies and select the required frequency values for scanning before configuring the CPE.

Configure CPE

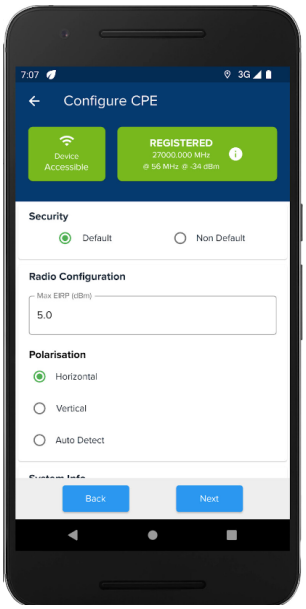
Once the frequencies are set and the CPE has the minimum required firmware version installed, you can proceed with the CPE configuration. Tap the **Start** button on the home page to access the **Configure** and **Quick Align** options, as shown in Figure 55.

Figure 55



You can configure the saved scan frequencies and the device location data (latitude, longitude). Figure 56 shows the configuration page of CPE.

Figure 56



To configure the CPE, follow these steps:

1. Select the security type.

   The following types are supported:

   - Default
   - Non-Default

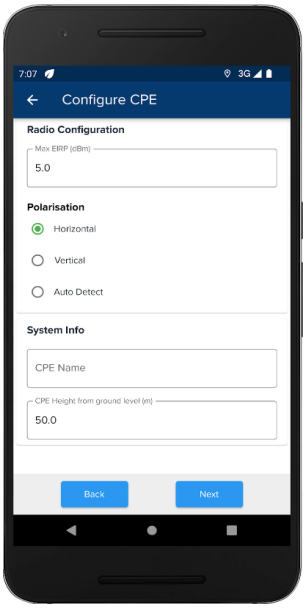
2. Enter the **Radio Configuration** value.
3. Select the required **Polarisation** type.

   The following types are supported:

   - Horizontal
   - Vertical
   - Auto Detect

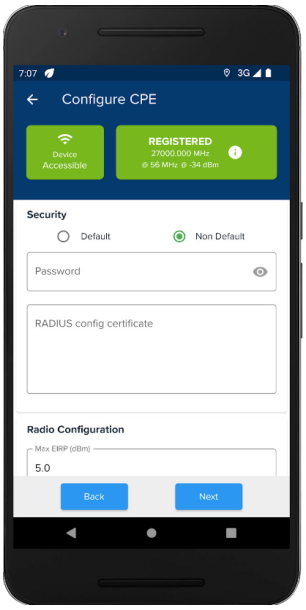
4. Type the CPE name and CPE height in the **System Info** section, and then tap **Next**, as shown in Figure 57.

   Figure 57



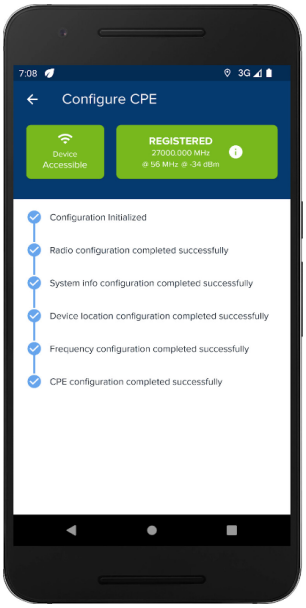
5. For the **Non-Default** mode, enter the RADIUS password and RADIUS configuration certificate information, as shown in Figure 58, and tap **Next**.

Figure 58



The CPE configuration status page appears.

Figure 59



After the configuration is successfully completed, you are automatically redirected to the CPE Alignment page, as shown in Figure 60.

Figure 60

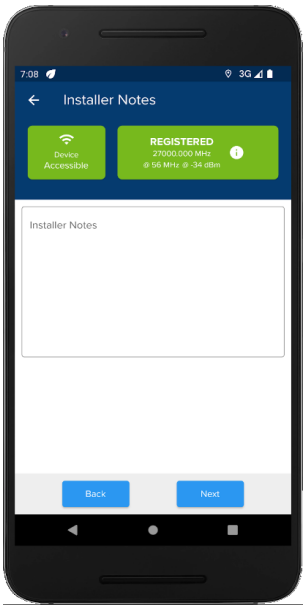
The **CPE Alignment** page displays the following data:

- Power of the received signal during the antenna alignment
- The best and current values in a graph
- Distance between the BTS and the CPE.

6. Tap **Next**.

   The **Installer Notes** page appears, as shown in Figure 61.

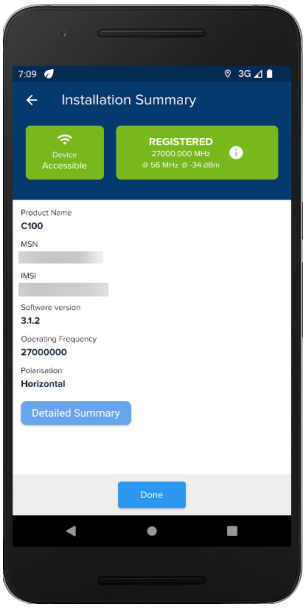
Figure 61



7. Enter the detailed notes about the installation and tap **Next**.

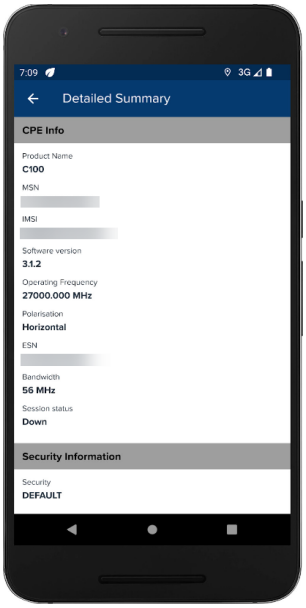
   The **Installation Summary** page appears, as shown in Figure 62.

Figure 62



8. Tap **Detailed Summary** to view the detailed information of the current installation. Figure 63 shows the **Detailed Summary** page.

Figure 63



9. Tap the **back** icon to go back to the **Installation Summary** page and tap **Done**.

CPE Alignment

The **Quick Align** option is used when the CPE is already configured correctly and needs to be realigned.

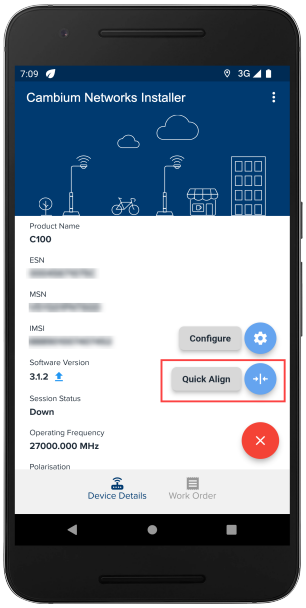
Note

For quick alignment, the CPE must be connected to the BTS.

To align the CPE, follow these steps:

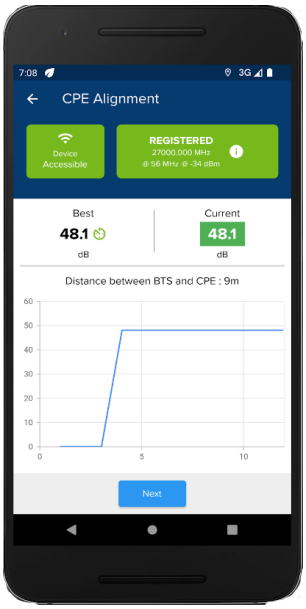
1. From the home page, tap **Quick Align** , as shown in Figure 64.

Figure 64



The **CPE Alignment** page appears, as shown in Figure 65.

Figure 65



Configuring the cnWave™ 60 GHz device

Configuring the cnWave™ 60 GHz device includes setting up the following features in the Cambium Networks Installer app:

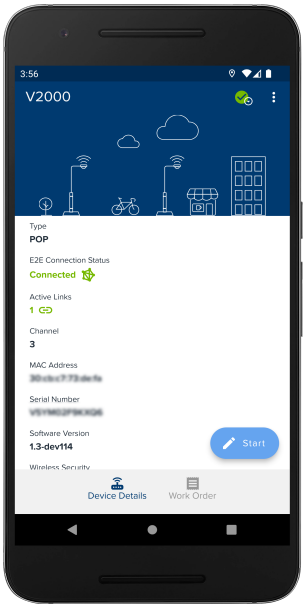
- Device Details
- Configure the device
- Alignment
- Work Order

Device Details

The **Device Details** page is used to view the device information. From the home page, tap **Start** to scan the cnWave™ 60 GHz device. When the cnWave™ 60 GHz device is detected successfully, the following device data is displayed on the device home page of the device, as shown in Figure 66.

- **Type** - Type of the device
- **E2E Connection Status** - Connection status of the E2E Controller
- **Active links** - Number of active links
- **Channel** - Channel number
- **MAC Address** - MAC address of the device
- **Serial Number** - Serial number of the device
- **Software Version** - The software version installed on the device
- **Wireless Security** - Wireless security name of the device

Figure 66



Tap the **Start** button to configure the device.

Configure the device

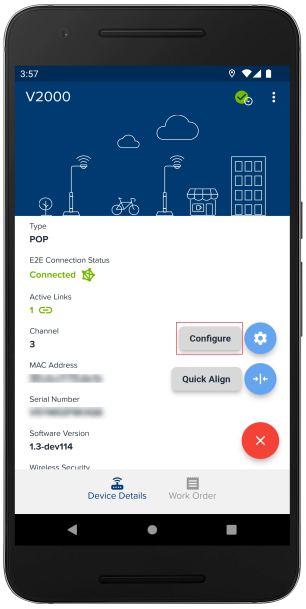
The **Device Details** page is used to configure the cnWave™ 60 GHz device in the Cambium Networks Installer. Before aligning, you must configure the cnWave™ 60 GHz device.

Follow these steps to configure the cnWave™ 60 GHz device:

1. Tap the **Start** button on the home page of the device.

   The **Device Details** appears, as shown in Figure 67.

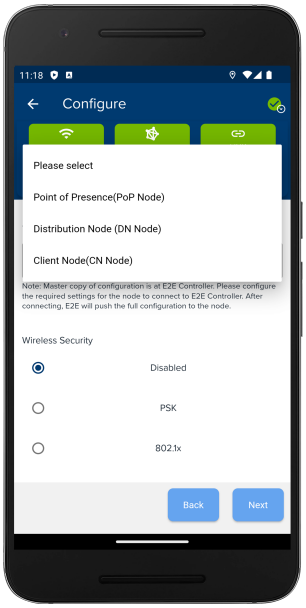
   Figure 67

2. Tap the **Configure** button to configure the device.

   The **Configure page** appears, as shown in Figure 68.

Figure 68



3. Select the type of the device, as shown in Figure 68.

   The following options are supported:

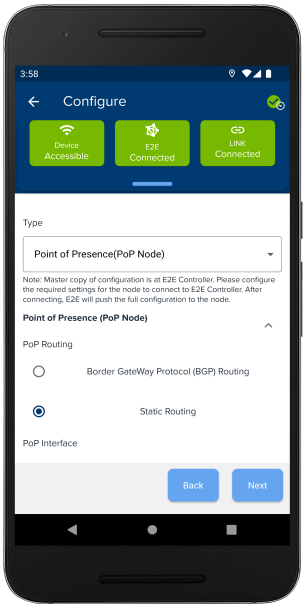
   - Point of Presence (PoP Node)
   - Distribution Node (DN Node)
   - Client Node (CN Node)

4. Select the required option from the PoP Routing parameter options, as shown in Figure 69.

   The following options are supported:

   - Border Gateway Protocol (BGP) Routing
   - Static Routing

Figure 69

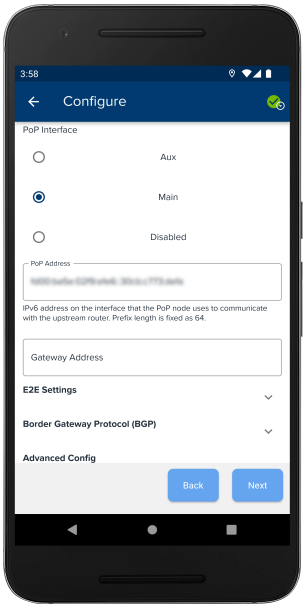


5. Select the PoP interface, as shown in Figure 70.

   The following options are supported:

   - Aux
   - Main
   - Disabled

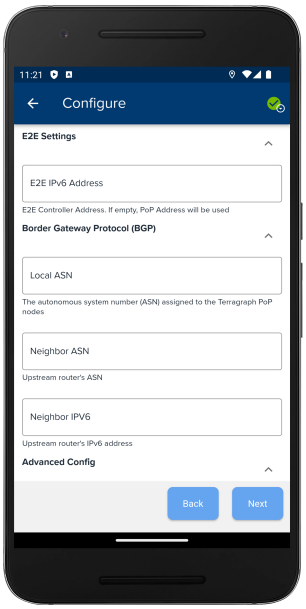
Figure 70



6. Enter the PoP address and Gateway address, as shown in Figure 70.

7. Enter the E2E IPv6 address in the **E2E Settings** section, as shown in Figure 71. If this field is empty, then the PoP address is used by default.

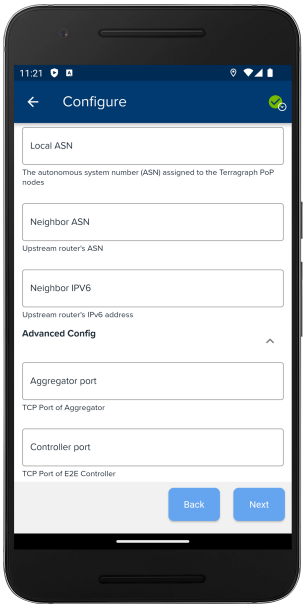
   Figure 71



8. Set **Local Anonymous System Number (ASN)** assigned to the terragraph PoP nodes, **Neighbor ASN**, and **Neighbor IPv6** under **Border Gateway Protocol (BGP)**, as shown in Figure 71.

9. Set the **TCP Port of Aggregator** and the **TCP Port of E2E Controller** in the **Advanced Config** section, as shown in Figure 72.

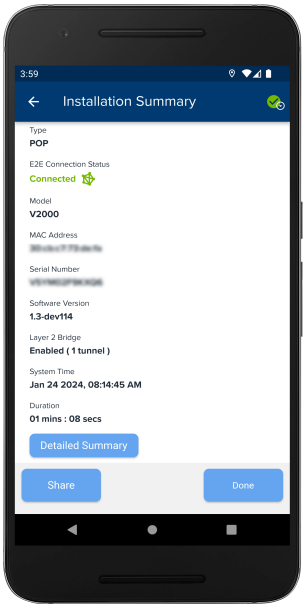
Figure 72



10. Tap the **Next** button.

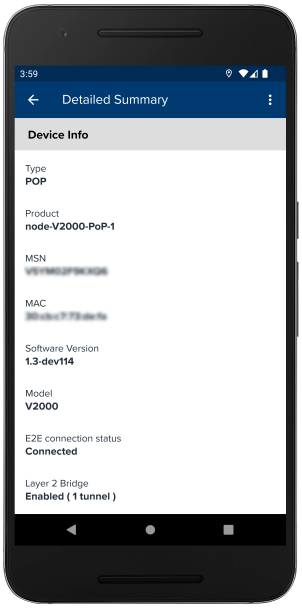
    The **Installation Summary** page appears, as shown in Figure 73.

Figure 73



11. Tap the **Detailed Summary** button to view the detailed summary page, as shown in Figure 74.

Figure 74



12. Verify the details and tap the back icon to go the configuration page.

The cnWave™ 60 GHz device is configured successfully.

Alignment

When the cnWave™ 60 GHz device is configured correctly, the **Quick Align** option is used to realign the nodes.

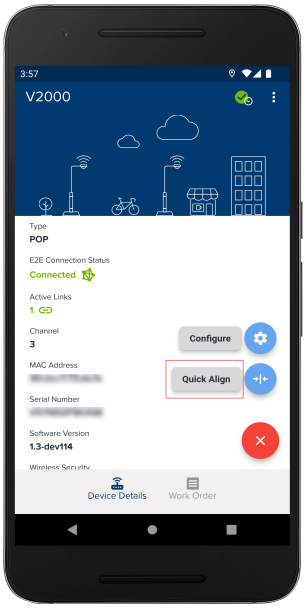
Note

- Before starting alignment, visually align the local node to remote node using an alignment tube or scope.
- Adjust the azimuth and elevation alignment to position the highlighted cell in the center of the plot.

Follow these steps to align the cnWave™ 60 GHz device:

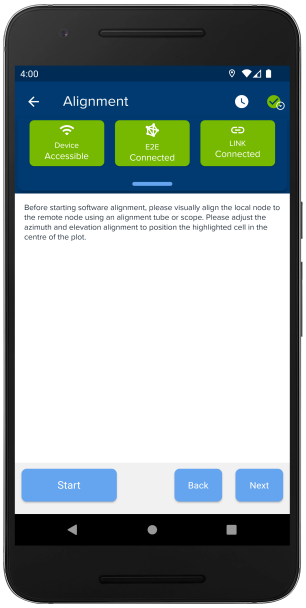
1. From the home page, tap the **Quick Align** button, as shown in Figure 75.

   Figure 75



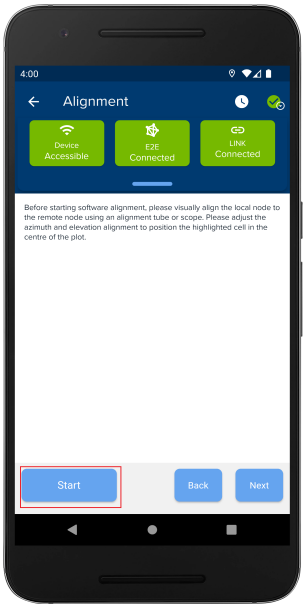
2. The **Alignment** page appears, as shown in Figure 76.

   Figure 76



3. Tap the **Start** button on the **Alignment** page, as shown in Figure 77.

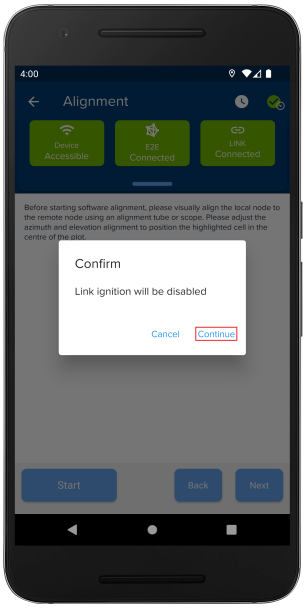
Figure 77



The **Confirm** dialog box appears with the link ignition will be disabled.

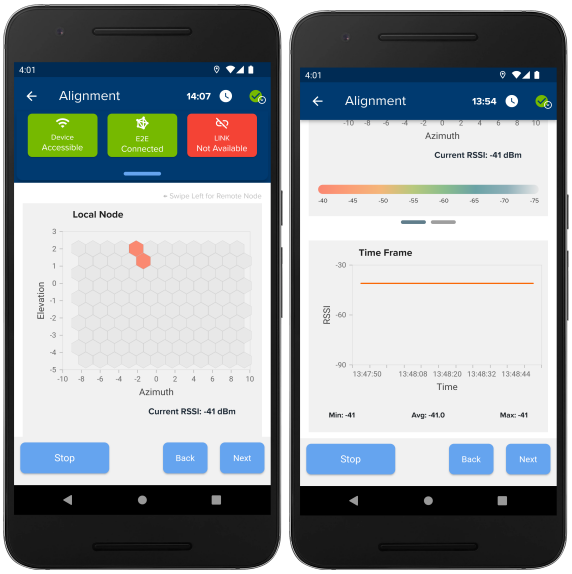
4. Tap the **Continue** button, as shown in Figure 78.

Figure 78



You can align both the nodes using **Local Node** and **Time Frame** graphs for the best alignment, as shown in Figure 79.

Figure 79

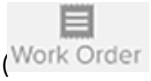


The Local Nodes graph provides the RSSI value and the Time frame graph provides the powering information of the nodes.

5. Tap the **Next** button and align both nodes to get the maximum RSSI value.

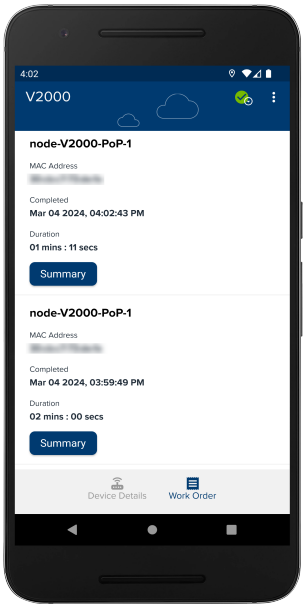
Work Order

The **Work Order** page displays the history of the operations performed on the device.

To view the Work Order, tap the work button (

) located on the home page of the cnWave™ 60 GHZ device. The **Work Order** page appears, as shown in Figure 80.

Figure 80



Troubleshooting

For issues related to the Cambium Networks Installer, ensure the following:

- **SM is not accessible through Cambium Networks Installer**
    - Open the Wi-Fi settings and check that the Wi-Fi is connected to your desired Wi-Fi dongle
    - If mobile data is ON, turn it OFF and try again
    - Open a browser and check if you can access the SM web page using the 169.254.1.1 (SM IP address).
- **SM is not registering**
    - Verify the security settings
    - Verify the scan list is configured in Cambium Networks Installer's settings.

Cambium Networks

Cambium Networks delivers wireless communications that work for businesses, communities, and cities worldwide. Millions of our radios are deployed to connect people, places and things with a unified wireless fabric that spans multiple standards and frequencies of fixed wireless and Wi-Fi, all managed centrally via the cloud. Our multi-gigabit wireless fabric offers a compelling value proposition over traditional fiber and alternative wireless solutions. We work with our Cambium certified ConnectedPartners to deliver purpose built networks for service provider, enterprise, industrial, and government connectivity solutions in urban, suburban, and rural environments, with wireless that just works.

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