Intellian

CNX Installation and Operations Guide



Serial ı	Serial number of the product					

This serial number will be required for all troubleshooting or service inquiries.

Intellian

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Disclaimer

The information in this user guide is subject to change without prior notice out the product life cycle. The printed version of the guide is periodically updated, but it may contain inaccuracies or omissions compared to the most recent product information. The most up-to-date information is always available on our website at intelliantech.com.

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Safety Measures

Read this Installation Guide carefully before you begin the installation. Review the safety warnings and setup instructions each time in case there are changes. Failure to do so could result in serious injury or inoperability of the terminal.

Antenna and CNX-WIFI installation must be provided by a trained professional installation technician or by a qualified antenna installation service. Installation is not to be attempted by someone not trained or experienced in this type of work.

Dangers, Warnings, Cautions, and Notes

DANGER, WARNING, CAUTION, and NOTE statements are used throughout this manual to emphasize important and critical information. You must read these statements to help ensure safety and to prevent product damage. The statements are defined below.

△ DANGER	DANGER indicates a potentially hazardous situation that if not avoided, will result in death or serious injury.
A WARNING	WARNING indicates a potentially hazardous situation that if not avoided, could result in death or serious injury.
△ CAUTION	CAUTION indicates a potentially hazardous situation that if not avoided, could result in minor or moderate injury or damage to equipment. It may also be used to alert users about unsafe practices.
NOTE	NOTE statement is used to notify people of installation, operation, programming, or maintenance information for advisory messages concerning possible property damage, product damage or malfunction, data loss, or other unwanted results—but not personal injury.

General Safety Measures



Do not connect the power supply to the CNX-WIFI or connect the power supply to a power source until you are instructed to do so.



Do not put heavy objects on the equipment to avoid crushing the equipment or reducing the heat dissipation efficiency.



The CNX-WIFI can expose you to BPA, which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warning.ca.gov.

Chapter 1 Introduction

1.1 CNX-WIFI Overview

Intellian's Customer Network Exchange (CNX) units are a critical component of any OneWeb user terminal installation, providing both the power and data connectivity to the outdoor unit, and the connectivity to customer equipment and networks. CNX-WIFI variants are offered for specific deployment scenarios including Land Fixed, Land Mobile, and Maritime.



Figure 1: CNX-WIFI

1.2 Before you Begin

- This guide is intended for professional installers.
- Have all the required items required for the installation including all the equipment and required tools.
- Check the packing list for all the parts.

1.3 Summary of Tasks

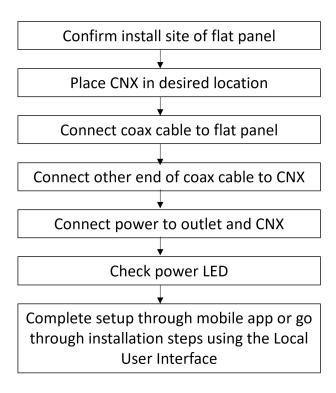


Figure 2: Summary of Tasks

Chapter 2 Installing CNX-WIFI

This chapter describes the what will be needed for installing the CNX-WIFI and identifies the parts of the CNX-WIFI.

2.1 Check the Packing List

Ensure that all the parts listed are in the shipping box. Coaxial cable will be required to connect the CNX-WIFI to the outdoor unit. Reference the outdoor units Operations and Installation Guide for more details.

Item	Qty.	Size	Description
Customer Network Exchange	1	21 cm. x 17 cm. x 8 cm.	Indoor unit used to access
(CNX-WIFI)		(8.3 in. x 7 in. x 3 in.)	OneWeb services
AC-DC power adaptor for CNX-WIFI	1	25 cm. x 12 cm. x 5 cm.	To convert AC 100-240V power
		(10 in. x 5 in. x 2 in.)	to DC +56V power for
			CNX-WIFI (250W)
AC power cord (NA)	1	1.5 m.	AC power cord (110 V)
AC power cord (CEEE7/7)	1	1.5 m.	AC power cord (220 V)
RG6 coaxial cable F(M) – F(M)	1	5 m. (16.5 ft.)	Coaxial cable F(M) - F(M) for
			CNX-WIFI power & data
			connection

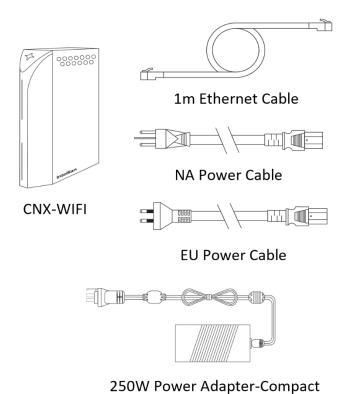


Figure 3: Package items

or 450W Power Adapter-Enterprise

2.2 Connect the System

- 2.2.1 Confirm installation site
 - The CNX-WIFI should be in a clean, dry area where it can be placed vertically.
 - Ensure there is adequate space around the CNX-WIFI for cooling.

2.2.2 Position the CNX-WIFI

- Place the CNX-WIFI in its desired location.
- The CNX-WIFI must be placed vertically for optimal performance.



Placing the CNX-WIFI in any other position than vertically may result in overheating.

2.2.3 Connect power cable

 Plug the appropriate power cable (AC power cord (NEMA 5-15P) or AC power cord (CEEE7/7)) into the power adapter.

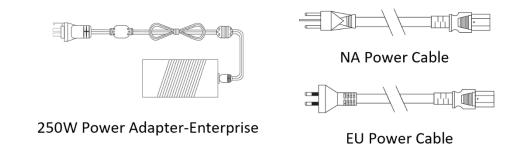


Figure 4: Connect Power Cable

2.2.4 Connect coax cable to the coax port on the CNX-WIFI

Note: The coaxial cable has already been connected to the antenna.

- Ensure the coaxial cable connection is at least finger tight.
- Ensure the cables are not subjected to excessive tension or in a tight bend radius.

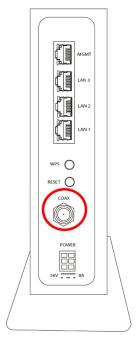


Figure 5: Connect Coax Cable

2.2.5 Connect power

- Connect one end of the power supply unit to the electrical outlet and the other end to the CNX-WIFI.
- It is recommended that the power adapter is plugged into the outlet before plugging the power cable into the CNX-WIFI.
- The power connector can only be plugged into the CNX-WIFI one way. The locking pin is on the left side.

• Ensure the cable is not subjected to excessive tension or in a tight bend radius.

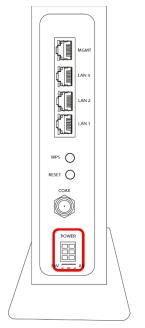


Figure 6: Connect Power

2.2.6 LED Light Indicators

 Check if the blue power LED on the top is working correctly as described <u>Table 1: LED status</u> on page 17.

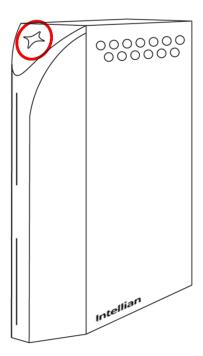


Figure 7: CNX-WIFI Power LED

2.2.7 CNX-WIFI LUI

- Connect to the CNX-WIFI LUI with one of the following options.
- Use the Wi-Fi feature to connect from the laptop.
- Using a CAT6 cable to connect the MGMT LAN port with the laptop.

2.3 Antenna system configuration

For the proper operation of your satellite communication system, it must be connected with all the provided components as shown in the Figure 8: Antenna system configuration.

The basic UT system consists of the antenna and CNX-WIFI.

The antenna includes the SSM Module, which controls and manages the antenna systems simultaneously.

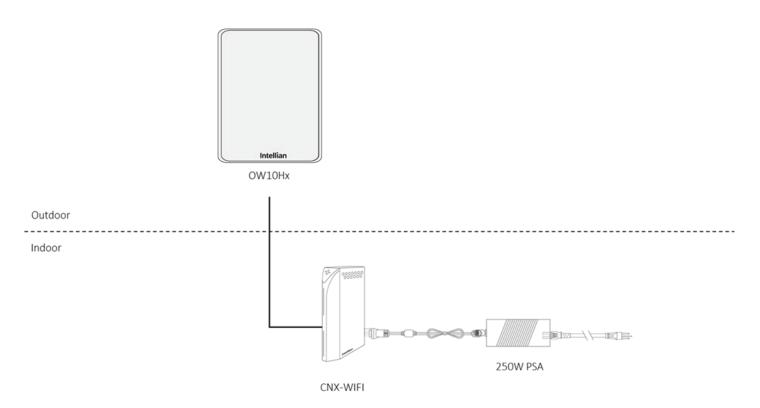


Figure 8: Antenna system configuration

2.4 Antenna system configuration

For the proper operation of your satellite communication system, it must be connected with all the provided components as shown in the <u>Check the Packing List</u>.

The basic UT system consists of the antenna and CNX-BB.

The antenna includes the SSM Module, which controls and manages the antenna systems simultaneously.

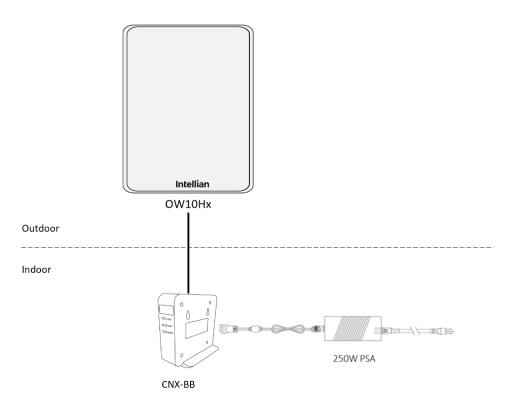


Figure 9: Antenna System Configuration

2.5 CNX-WIFI Front and Back Panels

During the installation process and use, it is important to know the parts of the CNX-WIFI. The front panel displays the Wi-Fi and WAN indicators lights. They will light up blue when engaged and used to check the connection status with the LED indicators on the front and back panel of the CNX-WIFI.

2.6 Check LEDs

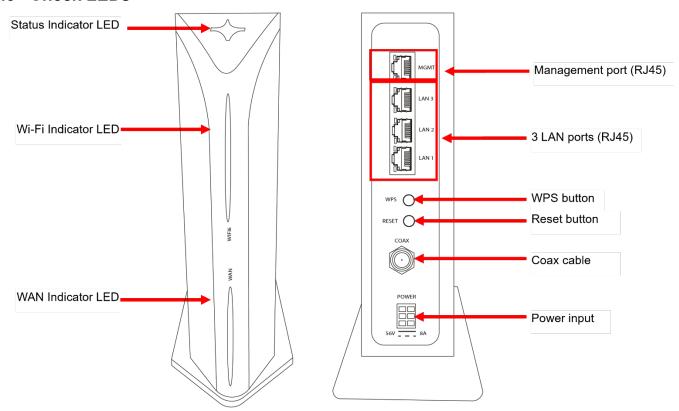


Figure 10: Front and back panels of CNX-WIFI

The following table shows the status indicators and buttons for the CNX -WIFI.

Item	Light Output	Description of status/function		
Front Panel				
	Off	No Power		
Status LED	Solid Blue	Connected to power supply		
	Solid Red	Fault Condition		
	Off	5G and 2.4G Disabled		
WIFI6 LED	Blinking Blue	Data Activity		
	Solid Blue	5G or 2.4G Enabled		
	Off	Coaxial Port Disconnected		
WAN LED	Blinking Blue	Data Activity		
	Solid Blue	Coaxial Port Connected, but no data activity		
	Bac	ck Panel		
	Off	RJ45 Port Disconnected		
RJ45 LED	Blinking Blue	Data Activity		
	Solid Blue	RJ45 Port Connected, but no data activity		
WPS Button	Press WPS button	Ongoing/active WPS process		
Reset Button	Press more than 5s	Reset the default configuration		
Coaxial Port Port		Coaxial cable F(M) - F(M) for CNX-WIFI power and data connection		
Power Input Port		To convert AC 100-240V power to DC +56V power for CNX-WIFI (250W)		

Table 1: LED status

Chapter 3 Managing the Networks (SSID)

The username, password, and SSID information are on a label on the bottom of the CNX-WIFI. The MGMT network does not have a password.

There are two work modes. The CNX-WIFI is in Bridge work mode by default. Use the Bridge mode when only the management network is being used. The Router mode is used if the CNX-WIFI is its own router, and no additional equipment is needed. This enables APN1 and APN2, and LAN1 and LAN2.

There are three networks and two frequency options of each, 2.5 GHz and 5 GHz. One network is the management network and the other two are APN1 and APN2. Devices will automatically jump between 2.4 GHz and 5 GHz without any necessary work and end users will only see one APN.

- Type in 192.168.100.3 in the web browser.
- Type in the password "admin" and select **Login**.

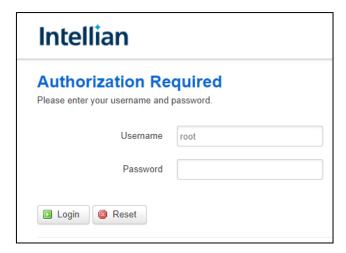


Figure 11: Login

• The main page will display.



Figure 12: Main Page

Go to Network > Work Mode to select the appropriate mode.

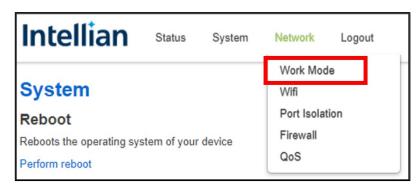


Figure 13: Work Mode Menu Option

- From the Work Mode Setting page, select either **Router** or **Bridge**. By default, it will be in **Bridge** work mode. If you change the setting, select the **Save and Apply** button.
- Go to **Network > Wi-Fi** to edit the ports.

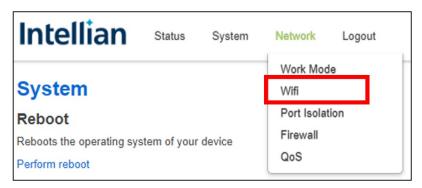


Figure 14: Wi-Fi Menu Option

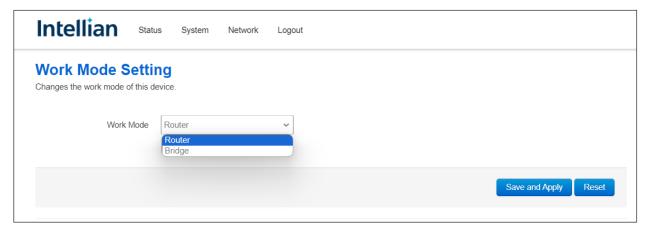


Figure 15: Work Mode Setting Page

- The Wireless Overview page will display. The first section is for the 2.4 GHz frequency and the second section is for the 5 GHz frequency.
 - o The broadcast networks (APN1 and APN2) are highlighted.
 - The variables that should be changed for the broadcast networks are name and password.
 - Whatever changes made to the 2.4 GHz frequency must be made to the 5 GHz networks.

 When any changes are made, the networks will be unavailable up to 4 minutes during the update.

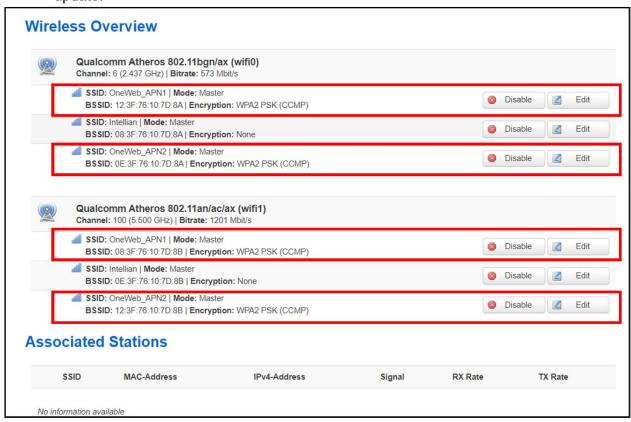


Figure 16: Broadcast Network Options

Select the Edit button to make changes.



Figure 17: Network Edit

• In the Interface Configuration section on the General Setup tab, type in the new name in the **ESSID** field. For example, it could be renamed guest or staff.

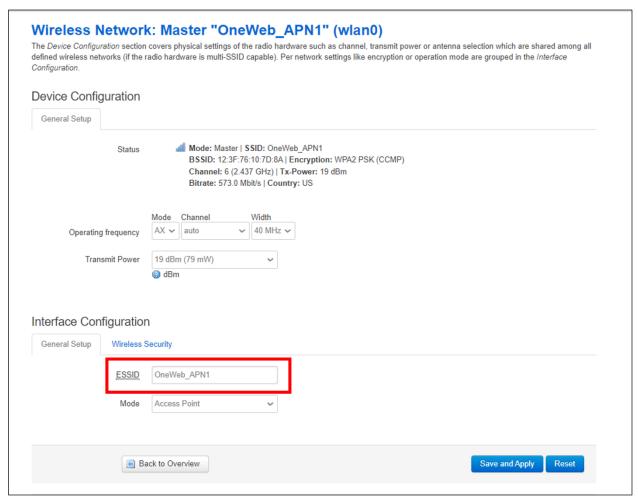


Figure 18: Network Name Change

• In the Interface Configuration section on the Wireless Security tab, type in the new password in the **Key** field. By default, it will be the password on the label on the bottom of the CNX-WIFI.

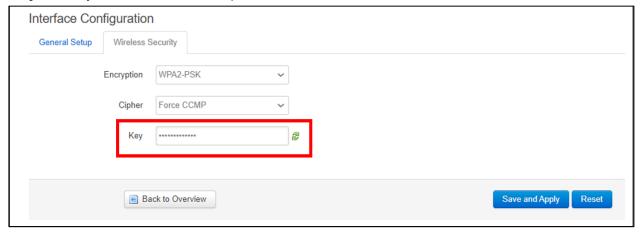


Figure 19: Password Change

Once the name and/or password has been updated, select the Save and Apply button.

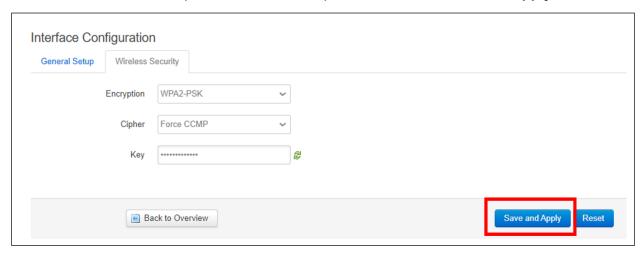


Figure 20: Save and Apply Changes

Each network can be enabled or disabled. It is recommended that the wireless management networks be disabled because there are no passwords, and the work mode set to **Router**. An ethernet cable can also be connected to the LAN1 and/or LAN2 ports on the CNX-WIFI.

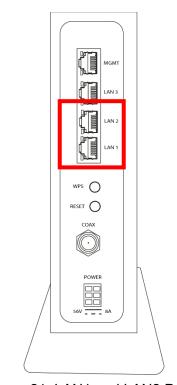


Figure 21: LAN1 and LAN2 Ports

Chapter 4 Installing the CNX-BB

4.1 Check the Packing List

Ensure that all the parts listed are in the shipping box. A coaxial cable will be required to connect the CNX-BB to the outdoor unit.

Item	Qty.	Size	Description
Customer Network Exchange	1	13 cm. x 12 cm. x 4 cm.	Indoor unit used to access
(CNX-BB)		(5 in. x 2.7 in. x 1.6 in.)	OneWeb services
AC-DC power adaptor for	1	25 cm. x 12 cm. x 5 cm.	To convert AC 100-240V power
CNX-WIFI		(10 in. x 5 in. x 2 in.)	to DC +56V power for CNX-BB
			(250W)
AC power cord (NA)	1	1.5 m.	AC power cord (110 V)
AC power cord (CEEE7/7)	1	1.5 m.	AC power cord (220 V)
RG6 coaxial cable F(M) –	1	5 m. (16.5 ft.)	Coaxial cable F(M) - F(M) for
F(M)			CNX-WIFI power & data
			connection

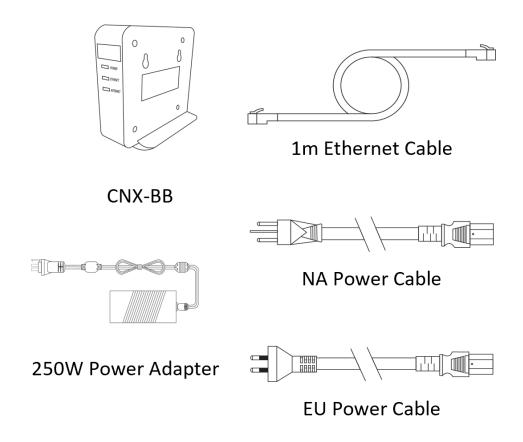


Figure 22: Package Items

4.2 Connect the System

4.2.1 Confirm installation site

- The CNX-BB should be in a clean, dry area where it can be placed vertically.
- Ensure there is adequate space around the CNX-BB for cooling.

4.2.2 Position the CNX-BB

- Place the CNX-BB in its desired location.
- The CNX-BB must be placed vertically for optimal performance.



Placing the CNX-BB in any other position than vertically may result in overheating.

4.2.3 Connect power cable

 Plug the appropriate power cable (AC power cord (NEMA 5-15P) or AC power cord (CEEE7/7)) into the power adapter.

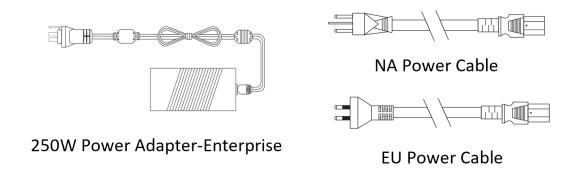


Figure 23: Connect Power Cable

4.2.4 Connect power

- Connect one end of the power supply unit to the electrical outlet and the other end to the CNX-BB.
- It is recommended that the power adapter is plugged into the outlet before plugging the power cable into the CNX-BB.
- The power connector can only be plugged into the CNX-BB one way. The locking pin is on the right side.

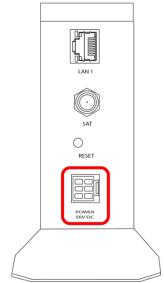


Figure 24: Connect Power

4.2.5 Connect coaxial cable to the SAT port on the CNX-BB

- Ensure it is at least finger tight.
- Ensure the cables are not subjected to excessive tension or in a tight bend radius.

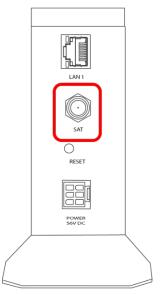


Figure 25: Connect Coax Cable

4.2.6 Power LED

- Check if the green power LED on the top is on.
- Once the antenna is active, check that all signal LEDs are operating on the CNX-BB. Refer to <u>Check LEDs</u> on page 29 for more details.

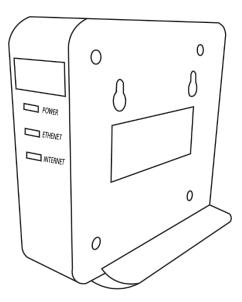


Figure 26: CNX-BB Power LED

4.3 CNX-BB Front and Back Panels

During the installation process and use, it is important to know the parts of the CNX-BB. The front panel displays the Ethernet and Internet indicators lights. They will light up green when engaged and are used to check the connection status.

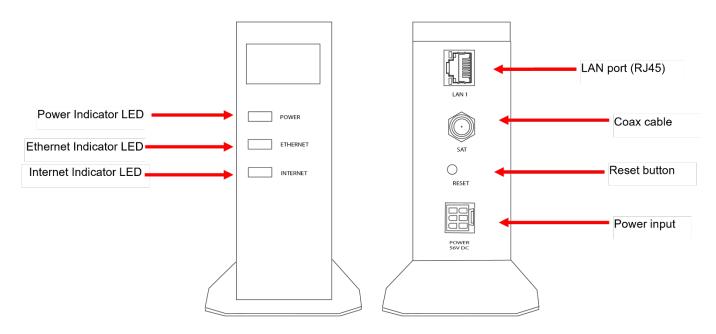


Figure 27: Front and Back Panels of CNX-BB

4.4 Check LEDs

The following table shows the status indicators and buttons for the CNX-BB.

Label	Light Output	Description of status/function		
Front Panel				
DOWED	Steady Green	The CNX is powered on.		
POWER	Off	The CNX is powered off.		
	Steady Green	The user network is ready. There is a good physical connection and also, running through traffic stably connected.		
ETHERNET	Blinking Green	The user network is connected. There is a physical connection.		
	Off	The user network is not connected.		
INTERNET	Blinking Green	The CNX Coaxial cable is connected. Its blinking frequency changes by the signal traffic. MoCA communication is established.		
INTERNET	Off	The CNX Coaxial cable is not connected properly. MoCA communication is not properly established.		
Back Panel				
	Blinking Green	Data Activity		
LAN 1	Solid Green	RJ45 port connected, but no data activity.		
	Off	RJ45 port disconnected.		
RESET	Press more than 5s	Reset the default configuration.		
		Coaxial cable F(M) - F(M) for CNX-BB power and data connection		
POWER	Port	To convert AC 100-240V power to DC +56V power for CNX-BB (250W)		

Table 2: CNX-BB LED Status

Chapter 5 Loading the Ephemeris file

NOTE

What is Ephemeris Data?

Ephemeris Data contains current information about the orbits of the satellites in the OneWeb constellation. The User Terminal uses ephemeris data to determine the positions of the satellites in the sky at any given time.

Every 30 days, this data file is updated. Once User Terminal is commissioned this will be updated automatically.

- Load Ephemeris file by utilizing the Local User Interface (LUI).
 - 1. From a web browser, navigate to https://ephemeris.oneweb.net/.
 - 2. Select the Itef/ directory.

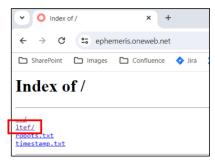


Figure 28: Itef/ Directory

3. Select the Itef.csv file to download.



Figure 29: Itef.csv File

4. Go to the LUI main page at **192.168.100.1** and select **Install** from the menu.

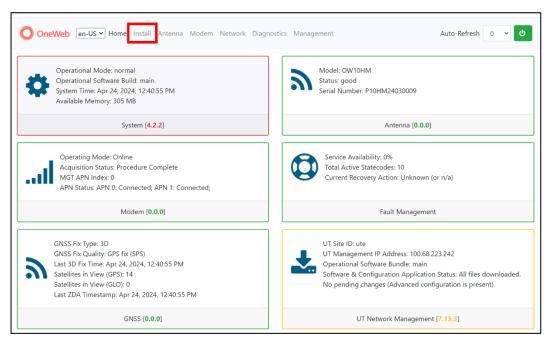


Figure 30: LUI Main Page

5. Select the **Next** button on the Begin Your Installation page.

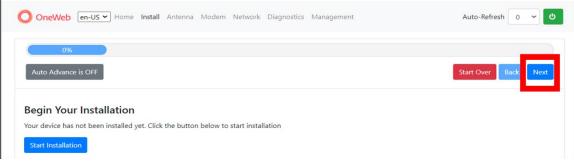


Figure 31: Begin Your Installation Page

6. Select the **Next** button on the Upload Software Bundle page.

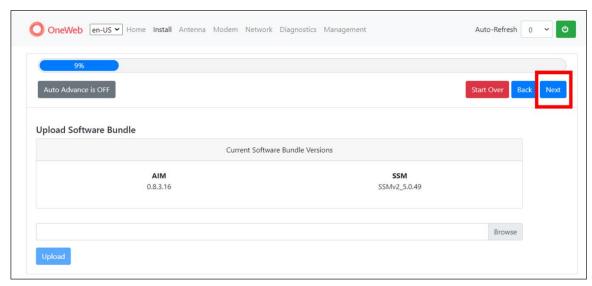


Figure 32: Update Software Bundle Page

7. Select the **Browse** button on the Upload Ephemeris page.



Figure 33: Select Browse

8. Select the **Itef.csv** file and click **Open**.

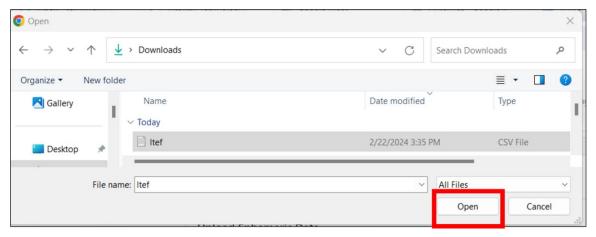


Figure 34: Open Itef.csv File

9. Select the **Upload** button.

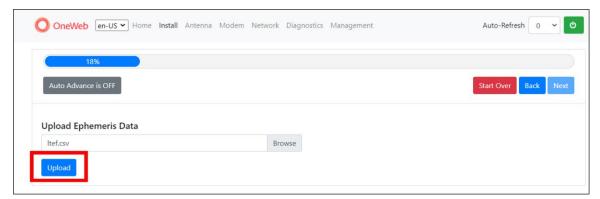


Figure 35: Upload Success

10. When the upload has completed, a message will display that it has been reset.

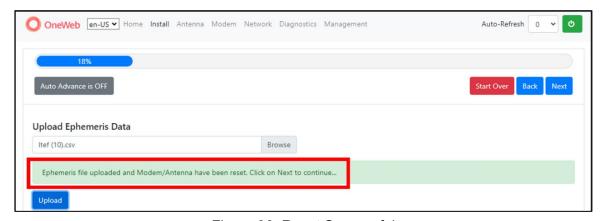


Figure 36: Reset Successful

11. The UT will need to be rebooted for the new ephemeris file to take effect. Click the **Reboot** button.

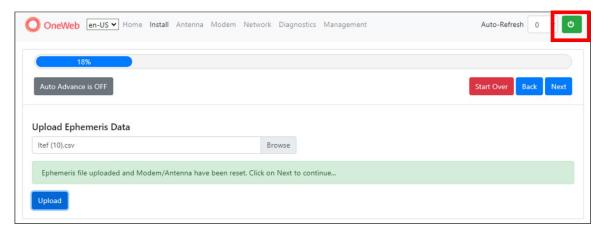


Figure 37: Reboot

Chapter 6 Update Software Bundle

To update a software bundle, follow these steps.

1. Go to the LUI main page at 192.168.100.1 and select Diagnostics from the menu.

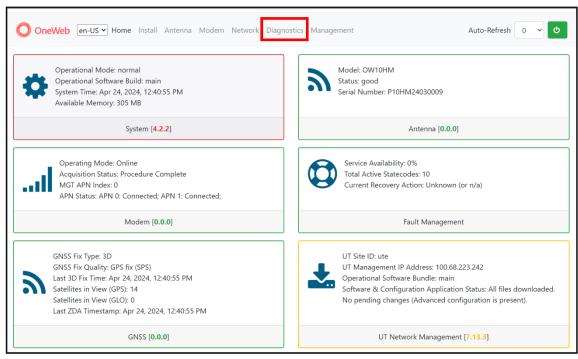


Figure 38: Diagnostics Page

- 2. On the **Diagnostics** page, select **Configuration** from the menu on the left.
- 3. Type in "manage" in the filter field to display the desired groups.

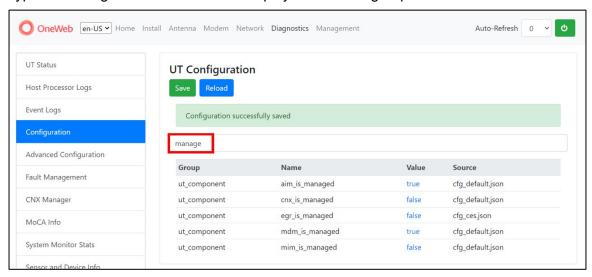


Figure 39: Configuration

- 4. Check the value of "aim is managed" group. If the value is true, continue to step 11.
- 5. If it is false, it will need to be reloaded. Click on the false link for "aim_is_managed".

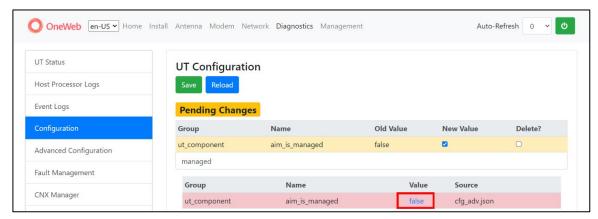


Figure 40: Updating AIM Value

6. The **Pending Changes** section will display above the group list. Select the checkbox for **New Value**.

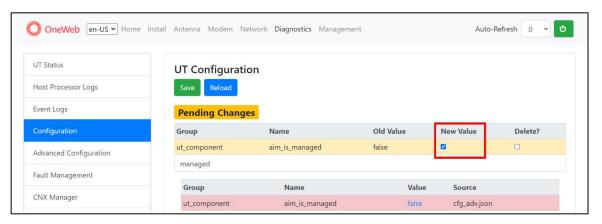


Figure 41: Pending Changes Updates

7. Select **Save** and then **Reload** to apply changes.

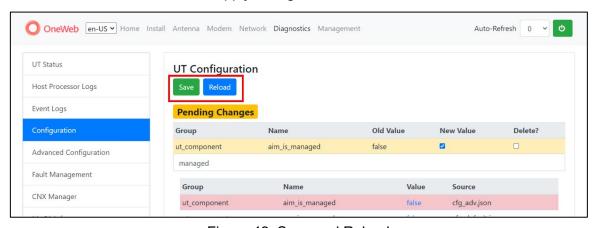


Figure 42: Save and Reload

8. In order to apply the changes, the system must be rebooted. Click on the green **Reboot** button.

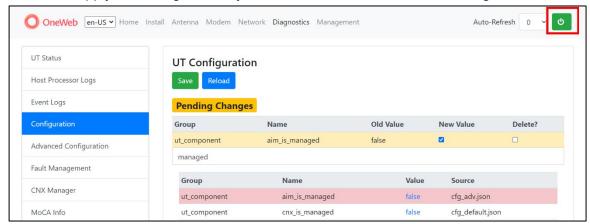


Figure 43: Reboot

9. Once the system has rebooted, go back to the configuration page to verify that the "aim_is_managed" group has a value of **true**.

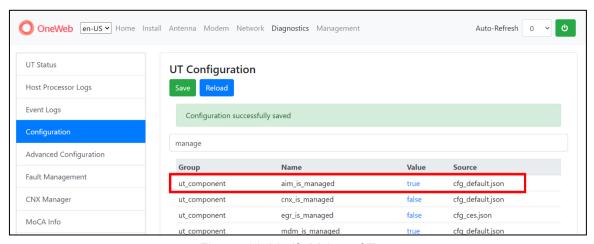


Figure 44: Verify Value of True

10. Once this has been verified, continue with the installation.

11. Go to the LUI main page at **192.168.100.1** and select **Install** from the menu.

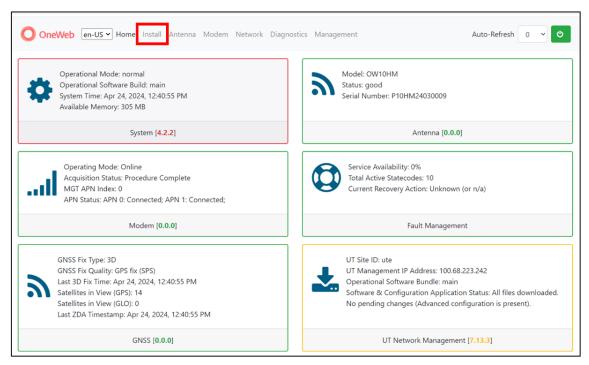


Figure 45: LUI Main Page

12. Select the **Start** button on the Begin Your Installation page.

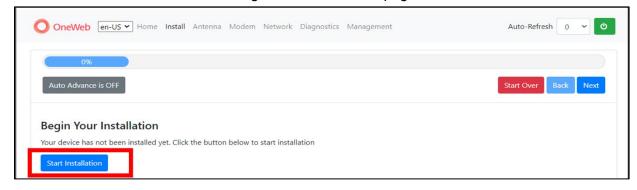


Figure 46: Start Installation

13. The Current Software Bundle Versions will display. Select the desired file and then select the **Upload** button on the Upload Software Bundle page.

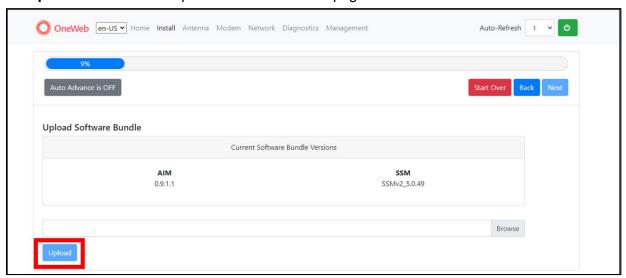


Figure 47: Upload Software

14. Verify the software version. To continue the software installation, select Yes.



Figure 48: Select Software Version

15. The screen will display the progress of the update and application of new software.

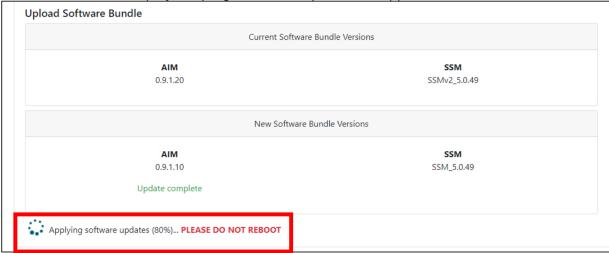


Figure 49: Software Update Progress

16. Once the software has been updated, a "Software has been updated!" message will display. The system will automatically reboot.

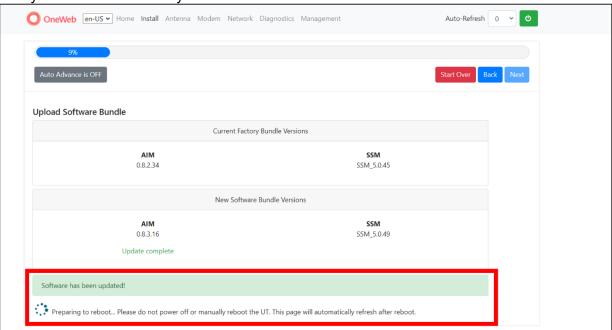


Figure 50: Software Updated

Chapter 7 Technical Specifications

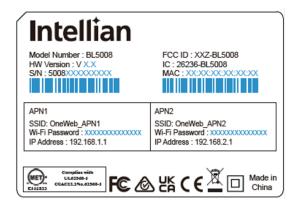
7.1 Technical Specifications CNX-WIFI

Dimensions	21 cm. x 17 cm. 8 cm (5 in. x 2.7 in. x 1.6 in.)
Weight	0.25 kg. (0.56 lb.)
Power	18 W. (max), 8 W. (avg.)
Operating temperature	0°C to +40°C
_	(32°F to 104°F)
Data Interface	Wi-Fi 6
Power Input	Universal AC power
	(100 – 240VAC)
Ingress	IP44

7.2 Technical Specifications CNX-BB

Dimensions	13 cm. x 12 cm. 4 cm (8.2 in. x 6.7 in. x 3.1 in.)
Weight	0.6 kg. (1.3 lb.)
Operating temperature	0°C to +40°C
-	(32°F to 104°F)
Data Interface	1-port GigE RJ45
Power Input	Universal AC power
	(100 – 240VAC)

7.3 Equipment label



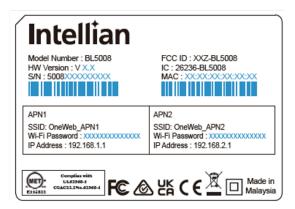


Figure 51: CNX-WIFI label

7.4 Maintenance

- Keep CNX-WIFI unit free of dust as much as possible
- Dispose of the unit following the local recycling rules and regulations

Appendix A Certifications

This device complies with Part 15 of the FCC Rules [and with Industry Canada license-exempt RSS standard(s)].

Operation is subject to the following two conditions:

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

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- 1. L'appareil ne doit pas produire de brouillage
- 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Radiofrequency radiation exposure Information:

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Informations sur l'exposition aux rayonnements radiofréquences :

Cet équipement est conforme aux limites d'exposition aux rayonnements RED et FCC, IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

Cet émetteur ne doit pas être colocalisé ou fonctionner en conjonction avec une autre antenne ou émetteur.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful

interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.