

# Chapter 7. Operating CNX

## 7.1 CNX Front Panel View

Check the connection status with the LED indicators on the front panel of CNX.

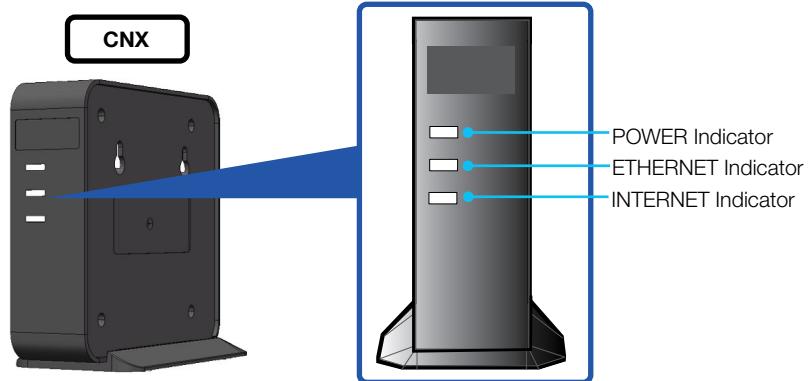


Figure 11: Front Panel View of CNX

The following table shows status indicators on the CNX.

LED Indicators	Colour	Description
POWER	■ Steady Green	The CNX is powered on.
	■ Off	The CNX is powered off.
ETHERNET	■ Steady Green	The user network is ready. (There is a good physical connection and also, running thorough traffic stably connected)
	■ 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)
	■ Off	The CNX Coaxial cable is not connected properly. (MoCA communication is not properly established)

# Chapter 8. Using Local User Interface (LUI)

## 8.1 Introduction

With the embedded Using Local User Interface (LUI) software, the antenna can be monitored, controlled, and diagnosed remotely through a web browser. It saves your time and cost generated by various maintenance activities such as operating firmware upgrades, tracking parameter resets, and system diagnosis, etc.

## 8.2 Requirements to Access OneWeb Web Interface

The LUI can be accessible by Chrome web browser.



### NOTE

*LUI* works on Chrome web browsers. (Intellian recommended using Chrome web browser when operating *LUI*.)

## 8.3 Turning On System

The antenna has to be connected to the CNX and powered up in order to access the webpage. The CNX should be connected to a power adapter before connecting between the antenna and CNX.

## 8.4 Accessing Webpage

### 8.4.1 TCP/IP Connection through LAN Port

The network is automatically configured by DHCP with no additional PC IP configuration.

1. Connect an Ethernet cable from the LAN Port on the front panel of CNX to a LAN Port of PC. The Data LED indicator will turn Green if CNX is connected.
2. Enter the IP address into your web browser's address bar to log in to the Local User Interface (LUI).
  - **IP Address: 192.168.100.1 (Default)**

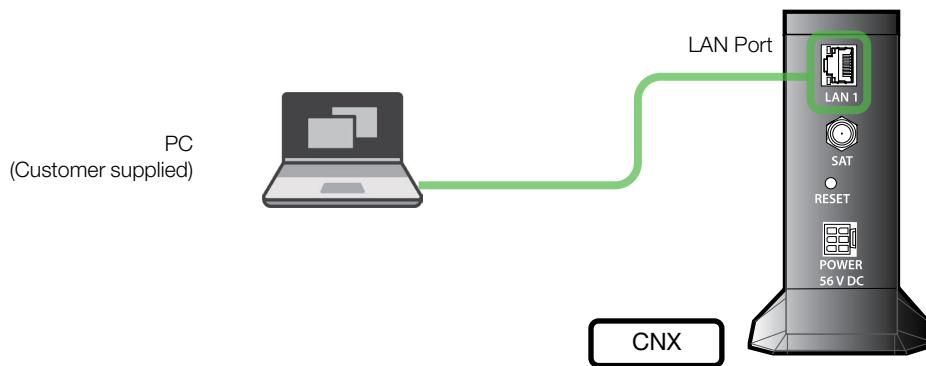


Figure 12: Back Panel LAN Port Connection

## 8.5 Webpage Layout

Once you log in, the following information and menus are displayed.

### 8.5.1 Navigation bar

The navigation bar as shown below is the primary way being able to navigate the LUI. The navigation bar is persistent across all LUI pages.



No.	Item	Description
①	Logo	This is the banner that displays the branding logo. Clicking on the logo on any given page will return the LUI to the homepage.
②	Language Drop Down Menu	The language drop-down menu lists all supported languages. Picking a language from the drop-down menu will change all text to the specified language immediately.
③	Navigation Items	<p>These are the navigation items on the navigation bar. Clicking on a section will take you to a different part of the LUI. The sections are as follow:</p> <ul style="list-style-type: none"> <li>Home: The homepage of the LUI displays a high-level overview of most components via a card layout.</li> <li>Install: Guides the user through the installation process. More information on the installation process can be found in the "8.7 Starting Install Menu (Install Wizard)" on page 47.</li> <li>Antenna: Displays Antenna Information such firmware version, configuration and status.</li> <li>Modem: Displays Modem Information (IMSI, IMEI, Manufacturer, Software Version, etc.), Modem Status (Call Status, Operating mode, etc.), OneWeb Extension Statistics.</li> <li>Network: Displays statistics for all the network interfaces on the SSM such as the CNX interface, MGT interface, and WAN interface.</li> <li>Diagnostics: Contains most of the SSM related statistics and configuration. Displays information such as the UT Status, Sensor Information, Host Processor Logs, and Event Logs.</li> <li>Management: Displays UT Network Management Information such as SDL Information and UCR Statistics.</li> </ul>
④	Auto-Refresh	This is the auto-refresh dropdown. Choosing an interval other than 0 will, refresh the display, fetch the data again at the specified interval.
⑤	Reboot	This is the reboot button. Clicking this button will trigger an SSM reset. While the SSM is rebooting, the reboot button turns from green to red. Upon successful reboot, the LUI will automatically refresh the page and the reboot button will go back to being green.

## 8.5.2 Home Page

The home page consists of several cards that display a high-level overview of certain components such as the UT System, Antenna, or UT Network Management. Each card has a border that, depending on the status of the subsystem, changes colour. If the subsystem is in a bad state, the card is outlined in red. If the subsystem is behaving as normal, then the card is outlined in green. Clicking on a card will take you to the webpage where you can find more detailed information about the subsystem.



Operational Mode: normal  
Operational Software Build: main  
System Time: Oct 26, 2022, 2:42:37 PM  
Available Memory: 353 MB

System [0.0.0]



Model: OW50SL-Dac  
Status: good  
Serial Number: OW1A21010016

Antenna [0.0.0]



Operating Mode: Shutting Down  
Acquisition Status: Procedure Started  
MGT APN Index: 0  
APN Status: APN 0: Disconnected;

Modem [0.0.0]



Service Availability: 0%  
Total Active Statecodes: 4  
Current Recovery Action: Unknown (or n/a)

Fault Management



UT Site ID: ute  
UT Management IP Address: Unknown  
Operational Software Bundle: main  
Software & Configuration Application Status: Configuration Request not sent. Waiting for Management IP

UT Network Management [0.0.0]

## 8.5.3 Footer

The footer, like the navigation bar, is persistent throughout all LUI pages. The footer contains two pieces of information: one on the left and one on the right.

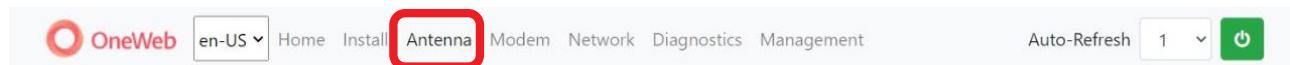
The current software version that is running on the Host Processor is displayed on the left. The operational software mode follows the software version. If the operational software mode is a factory, the text colour is red. If the operational software mode is main, the text colour is green. Clicking on this will take you to the **UT Status** section of the Diagnostics page.

The system uptime is displayed on the right. It displays how much time has passed since the last reboot. The format is days:hours:minutes:seconds.

## 8.6 Setting Up Cable and Antenna

This section describes how to setup the antenna.

Setting up the antenna is required before “7.7 Starting Install Menu (Install Wizard)”.



### 8.6.1 RF Cable Setup

RF Cable Setup	
<b>Internal</b>	
IF Cable Type	SS405
IF Cable Length(m)	1.50
<b>IDM</b>	
IF Cable Type	SS405
IF Cable Length(m)	0.20
<input type="button" value="Submit"/>	

The **IF Cable Type** and **IF Cable Length(m)** on the Internal is pre-set with a default value depending on the RF cable. Make sure that is the same with the following default values.

- **IF Cable type : SS405**
- **IF Cable Length(m) : 1.50**

### 8.6.2 TILT Calibration

TILT Calibration	
Select Antenna	Primary
TILT Calibration Action	- select -
<input type="button" value="Submit"/>	

The Tilt Calibration must be applied to the antenna. Choose the **Primary** on the **Select Antenna** and select the **Start Calibration** on the **TILT Calibration Action** from the drop-down list. If you select the **Stop** on the **TILT Calibration Action** and Click the **Submit**, the antenna system will stop the tilt calibration.

Click on **Submit**, then click on **Next**. The antenna system will start the tilt calibration.

### 8.6.3 Antenna Setup

The screenshot shows a user interface for antenna setup. On the left is a vertical sidebar with the following options:

- Installation
- RF Cable Setup
- Blockage Zone
- RCM
- Product Information
- Software Version
- RF Gain Offset
- TILT Calibration
- True North Calibration** (highlighted with a blue background)
- Download Installation Guide
- Download Operations Guide
- Download AIM Logs

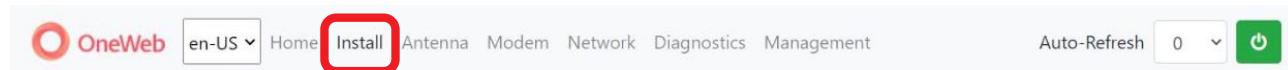
The main content area is titled "True North Calibration" and contains the following elements:

- "Pointing Assist Control" label
- A dropdown menu with the following options:
  - select -
  - select -
  - Start** (highlighted with a blue background)
  - Stop
- A blue "Submit" button

This section can be skipped if this is first time setting up the antenna. Only if the antenna is moved to a different location, select **Start** for Auto Pointing Assistant and click on **Submit**.

## 8.7 Starting Install Menu (Install Wizard)

The Install Wizard will give you a guide by going through the steps of setup for the antenna system commissioning. We highly recommend using this wizard to complete your installation and commissioning of the system. After accessing LUI main page, go to the **Install** menu on the navigation bar and perform the wizard.



The LUI Installation page serves as the front end for installation.

### 8.7.1 Installation Navigation



At the top of the installation, the page is the installation navigation. At the top is a progress bar that displays what percentage of the installation process is complete. An auto advance button on the left that, when enabled, advances the installation to the next step once the current step has either finished or is not required.

On the right are three buttons:

- **Start Over** button: Brings you back to the first step of the installation.
- **Back** button: Steps one step back in the installation.
- **Next** button: Advances to the next step in the installation.

If a given state is required, the Next button is disabled, and the installation cannot proceed until the current step has been completed.

### 8.7.2 Initial Install Page



The first page of the installation process is a splash screen that states that the UT has not yet been installed. To proceed with the installation to the next step, click on **Start Installation** or **Next**.

### 8.7.3 Upload Software Bundle

Upload Software Bundle

Current Factory Bundle Versions

AIM	MDM	SSM
1.6.25.1	MPSS.AT_OW.2.0.c6.2-00059-9655_GEN_PACK-1	SSM_4.5.3

The Upload Software Bundle page displays the current software versions running on each component. Clicking on the empty text box or the **Browse** button allows the upload of a Software Bundle. Until a bundle has been uploaded, the **Upload** button is greyed out. If the upload is not successful, a status error message will be displayed.

### 8.7.4 New Software Listing

Current Factory Bundle Versions

AIM	MDM	SSM
1.6.25.1	MPSS.AT_OW.2.0.c6.2-00059-9655_GEN_PACK-1	SSM_4.5.3

Are you sure you want to replace the existing software?

Upon a successful upload, the New Software version is displayed beneath the current software along with a prompt. Clicking **No**. It deletes the bundle file that was uploaded and returns you back to the beginning of the state in which you must upload another bundle file. Clicking **Yes** then triggers the next step of this state which is performing the updates. If an update fails for any given component, an error message is displayed and the SSM stops attempting to update the rest of the components. Upon a successful update, the SSM will reset itself and the LUI will refresh the page once the SSM has finished rebooting. After the reboot, you can click to advance to the next state.

### 8.7.5 Upload Ephemeris Data

Upload Ephemeris Data

The Upload Ephemeris Data page is a simple file upload page. Simply click on the empty text box or the **Browse** button to upload an Ephemeris file. Until a file has been uploaded, the upload button is greyed out. Upon a successful upload, a success status message will be displayed, and the state can be advanced. Click on **Next**.



#### 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.

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

### 8.7.6 Antenna Levelling

Antenna Leveling

Antenna Tilt Pitch:0.0°  
Antenna Tilt Roll:0.0°

Antenna ID 0

Antenna Tilt Pitch:0.0°  
Antenna Tilt Roll:0.0°

Antenna ID 1

The antenna Levelling page displays the current sensor data received from the antenna.

The “Tilt Pitch: degrees” and “Tilt Roll: degrees” are displayed. If the degree values meet the tolerance, the card for the corresponding antenna is outlined in Green; otherwise, it is outlined in Red.

If it is Red, antennal Levelling has to be re-done until the display becomes Green. When Levelling is re-done, “7.6.2 TILT Calibration” has to be done after the installation completes. If the installation fails, it could be due to the incorrect Levelling; therefore, installation has to be re-done.

Antenna Leveling

The following antenna values have been overridden!

Antenna Tilt Pitch:10.0°  
Antenna Tilt Roll:20.0°

Antenna ID 0

Antenna Tilt Pitch:10.0°  
Antenna Tilt Roll:20.0°

Antenna ID 1

### 8.7.7 Autonomous States

Autonomous states all display a progress bar of its progress. The following states require no action from the user aside from proceeding to the next state. All installation states are displayed, or some installation status is displayed underneath the progress bar.



# Chapter 9. Specification

## 9.1 Technical Specification

### 9.1.1 RF Specification

Item	Specification
Rx Frequency	Rx : 10.7 – 12.7 GHz
Rx Gain (Wthout Radome)	Rx: 33.4 dBi
G/T (@ 11.8 GHz, @ >30deg. EL)	9.3 dB/K
Tx Frequency	Tx: 14.0 – 14.5 GHz
Tx Gain (Without Radome)	Tx: 34.9 dBi
EIRP	31.6 dBW / 20 MHz (Single Carrier) 34.6 dBW / 40 MHz (Dual Carrier)
Cross pol Isolation	Min 20 dB (Within the Scan Volume)
Polarization	Circular (Rx: RHCP, Tx: LHCP)

### 9.1.2 System Specification

Item	Specification
Platform	Two Axis: Azimuth, Elevation,
Positioning	2-axis Velocity Mode Servo Control: Tilted Azimuth, Elevation
Pedestal Motion Range	Azimuth -90° to +90°
	Elevation -59° to +59° (FOV -53° to +53°)
Power Consumption	Max 86.4W
Power Adaptor	Max ~ 250W
CNX Input Power	100 – 240 VAC, 50 – 60 Hz
DC Power to Antenna Subsystem	Current 1.5 A average/ 3 A peak @ 32-60 V, 56 V nominal
Digital Signals	Tx-ON : LVDS
	Rx-ON : LVDS
	Frequency Reference: LVDS
	Reset: LVDS
Ant. Monitor, Control Interface	Ethernet, 10/100 Base T

Item	Specification	
CNX	Antenna Subsystem Interface	Four GigE RJ-45 Ethernet
	Encryption	MoCA 2.0 E-band (400-700MHz)
	Input Voltage	Min. 52 V, Max. 59 V
	Operating Power	Max. 30 W
	Output Voltage	Max. 0.5 V
	Output Power	Max. 220 W
	Reset	MoCA chipset and Ethernet PHY
	LEDs	<p><b>Power</b></p> <ul style="list-style-type: none"> <li>Operational: Solid GREEN</li> <li>Fault Condition: Solid RED</li> <li>Operating with Backup S/W: Blinking RED</li> <li>Off: No power</li> </ul> <p><b>Ethernet</b></p> <ul style="list-style-type: none"> <li>Ready: Solid GREEN</li> <li>Activity: Blinking GREEN</li> <li>Off: No device connected or device connected not operational</li> </ul> <p><b>Internet</b></p> <ul style="list-style-type: none"> <li>Operational: Solid GREEN (CNX-MIM MoCA connected)</li> <li>Fault Condition: Solid RED</li> </ul>
Antenna Subsystem Interface		Four GigE RJ-45 Ethernet
Installation Cable		RG6 :Up to 30m (between ADE and CNX) RG11: Up to 100m (between ADE and CNX)
Ethernet Cable		CAT5

### 9.1.3 Mechanical & Power Specification

Item	Specification	
Radome Height	632 mm (24.9")	
Radome Diameter	Ø735 mm (28.9")	
Reflector Size	53 cm (20.9")	
Antenna Weight	< 23 kg with Radome	
	Size	805 mm x 805 mm x 905 mm (L x W x H)
Package	Package weight (Antenna+ Package+HM)	Approx. 45 kg (TBD)

※ Package size may change with design revisions

### 9.1.4 Environmental Specification

Item	Specification		
Operational Temperature	- 25°C to + 55°C (w/o heating device)		
Survival Temperature	- 40°C to + 80°C		
Storage Temperature	- 40°C to + 85°C		
Storage Environment	ETSI EN 300 019 Class 1.1		
Operational Temperature (CNX)	0°C to +40°C		
Operational Humidity	Relative humidity range of 10% to 100% non-condensing in accordance with IEC60068-2-78 for a period of 96 hours.		
Non-operational Humidity	IEC 60068-2-78, Method Db for a period of 96 hours.		
Operational Vibration	IEC 60721-3-4 Class 4M3 0.001 ~ 0.02 G2/Hz, 5 to 10 Hz 0.02 G2/Hz, 10 to 100 Hz 0.001 ~ 0.02 G2/Hz, 100 to 150 Hz		
Non-operational Vibration	Earthquake Resistance, Seismic test condition IEC-60068-3-		
Non-operational Shock	IEC 60068-2-27 15 G at 11 msec (half sine) on x, y, z axes.		
Weather Tightness	IP66 per IEC 60529		
Lightning Protection	IEC 61000-4-5 Class 4		
Hail Impact	ASTM E822		
Operating Wind Resistance	Wind Load*	128 km/hr (80 mph)	551 N (56.2 kgf)
Functional Wind Resistance	Wind Load*	160 km/hr (100 mph)	861 N (87.8 kgf)
Survival Wind Resistance	Wind Load*	216 km/hr (135 mph)	1569 N ( 160 kgf)
Salt Erosion	IEC 60068-2-52 Severity Lv 3		

\* Wind Load: N is weight expression unit: newton and kgf is 9.80665N

# Chapter 10. Warranty

Subject to the terms and conditions set forth in this Intellian Standard Global Warranty, the Agreement and/or any other terms and conditions agreed upon by Distribution partners and Intellian, Intellian satellite antenna products are warranted against defects in parts and workmanship for a period of one (1) year in respect of defects in parts and for a period of one (1) year in respect of the factory labor.

**Warranty Time Period:** Warranty periods commence from the date of shipment from an Intellian facility.

If installation occurs within six months of the date of shipment from an Intellian facility then Intellian will extend the duration of the warranty by the number of days between shipment and installation of the terminal. If installation occurs on or after six months of the date of shipment then the duration of the warranty will not be extended.

This Warranty shall be void for any Product which has been subjected to "**Intellian Standard Global Warranty**".

**Warranty Claim Procedure:** Information on Intellian's warranty policy and coverage can be found on the Intellian Partner Portal. Intellian's warranty policy aims to reimburse Distribution partners for a reasonable percentage of costs and time that would be incurred when repairing an Intellian system. Intellian's warranty policy does not cover any other costs including those incurred by Distribution partners to support End Users.

To submit a Warranty Claim with Intellian. Please follow the directions in "**Intellian Standard Global Warranty**".

# Chapter 11. Appendix

## 11.1 Pre-Installation Checklist

This pre-installation checklist describes important considerations before installing the UT. It must be completed by the certified installer to install in a safe location. Please fill out the general information below.

### Date of Survey:

### Date of Install (If different from installation date):

#### Installer Information

- Company Name:
- Installer's Name:
- Contact Phone Number:
- Address:
- Email:

#### Customer Information

- Organization Name:
- Customer Name:
- Phone Number:
- Address:
- Email:
- Site Location (Lat / Long.):
- UT Type Being Installed (w. CNX):

The following checklist is to be completed by the Installer.

### Building / Site checklist

Check Item	Result
The proposed antenna mount type is checked. (Roof Mount / Ground Mount / Ground Level Pole Mount / Pole Mount Bolted to Wall / Custom Mount / Etc.)	(Fill out)
The location of the site is checked. (Urban / Semi-urban / Rural / Remote)	(Fill out)
The building external wall composition is checked. (If mounted on the building)	Yes / No / N/A
The line-of-sight of the antenna is checked for radiation safety.	Yes / No / N/A
The safety from unauthorized access is checked.	Yes / No / N/A
The roof space/floor space availability based on mount type is checked.	Yes / No / N/A
The roof/soil composition based on mount type is checked.	Yes / No / N/A
The lightning protection availability is checked.	Yes / No / N/A

### Expected Obstructions / Possible Interference checklist

Check Item	Result
The field of view to the satellite constellation is checked.	Yes / No / N/A
The no interference with RF transmitters is checked.	Yes / No / N/A
The no interference by high voltage lines, power cables, and telephone cables is checked.	Yes / No / N/A
The no other possible sources of interference are checked.	Yes / No / N/A
The map of no obstruction is checked. (Also updated into UT configuration as an array of AZ, EL coordinates.)	Yes / No / N/A

## 11.2 Tightening Torque Specification

This table shows the recommended values of tightening torques.

Bolt Size	Tightening Torque (N m)
M2	0.5
M2.5	1
M3	1.5
M4	3
M5	6
M6	12
M8	27
M10	50
M12	85
M14	130
M16	200

## 11.3 Using a lifting strap

When you install the antenna unit to the mounting plate (or other surfaces), you can use the lifting strap.

To use the lifting strap, Refer to pictures below. (A separate purchase of the lifting strap is required.)

Make sure that before installing the lifting strap on the antenna, has plenty of room.



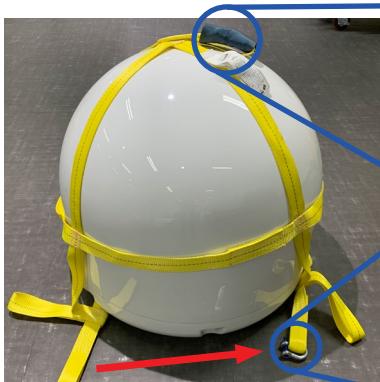
1. Prepare the lifting strap.
2. Wrap the antenna up using the lifting straps.



3. Arrange the straps to locate the holder in the top of the antenna.



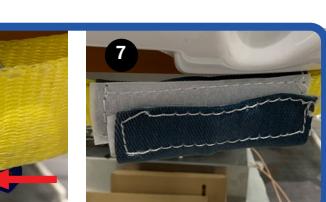
4. Remove a pin from a shackle on the strap.



5. Clip the opposite side's strap onto the shackle.



6. Fully tighten the lifting strap and secure the shackle with the pin.



7. Re-wrap the holder and shackle with the protection.



8. Ready to lift the antenna.

## 11.4 Checking separately sold items

Refer to separately sold items list below table.

### Accessory Kit

Part Number	Part Description
OW-NPM50-Kit	None-Penetrating Mount Kit
OW-GB-1050-Kit	Ground Braid Kit

### Accessories

Part Number	Part Description
OW-TK-1008	Toolkit, Compression Connector
OW-CIK-1010	Connector Installation Kit
OW-RG11-1009	1000' Reel RG11 Cable, Solid Copper Conductor
OW-LS-1002-OW70	UT Lifting Strap for OW50SL-D
OW-GB-1053	Grounding Braid (1EA)
OW-GB-1054-M58	M5 X 8 Screw for GB (25EA)
OW-GB-1055-FW	Flat Washer for GB (100EA)
OW-GB-1056-TLW	Tooth Lock Washer for GB (100EA)
OW-CNX-BB	CNX
OW-CNX-1057-PA	CNX Power Adapter (250W)

## 11.5 Important Notice of Waterproofing Connector

### 11.5.1 Introduction

During antenna installation, it is important to ensure that once the cable is connected to the antenna, proper waterproofing of the connector must be done with a self-amalgamating tape.

If you need any assistance, please contact Intellian Technical Support (support@intelliantech.com).

### 11.5.2 Outline of Taping

Self-amalgamating tape comes with a protective, plastic peel-away layer that allows the tape to be rolled and shipped. To waterproof a connector, you need to begin by peeling away a portion of this protective plastic layer and then start wrapping the tape around it.



### 11.5.3 Procedure

1. Connect the cable to the connector to be fully secured.

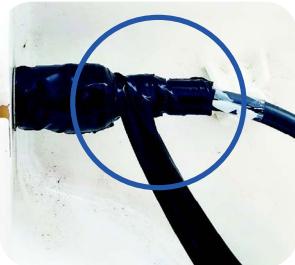


#### CAUTION

- DO NOT over-tighten the connector, nuts, or screws when mounting the antenna to prevent any damage.
- DO NOT leave any cables loose and non-fixed, especially for those installed outside of the antenna.

2. Apply tape over the connector.

It is important to wrap the cable onto itself and the best practice is to wrap the tape over itself by 50%, meaning that once you wrap your first layer your second layer should overlap over half of the first layer, and so on. This ensures that you get a strong bond between the different layers of tape that properly adhere to one another.



3. Ensure that the entire RF connector is taped up as shown the picture right.



#### WARNING

- Note that you cannot use ordinary electrical tape to waterproof the RF connector. Only self-amalgamating tape is able to waterproof the connector properly.
- Failure to do so will result in rust and corrosion to the cable and its connector and this might end up damaging the antenna.