Chapter 7. Starting Dual Antenna System

The OW70L has the embedded dual antenna mediator function, which is used to instantly switch between two antenna systems. When one antenna loses line of sight to a satellite, the other antenna will immediately provide a fail-safe operation to maintain the highest levels of system performance and reliability. This ensures always-on broadband service by reducing the out of service time.

7.1 Configuration of Dual Antenna System

To use the Dual Antenna System, make sure the antenna system components are properly installed. Refer to **“6.2 Antenna System Configuration” on page 38** for more details.

7.2 Accessing LUI

To establish Dual Antenna System communication between the compound UT#1 (operate as the primary) and the compound UT#2 (operate as the secondary), follow the steps below.

Connect an ethernet cable from the **MGMT** (Management) port on the front panel of CNX to a LAN port of a PC.

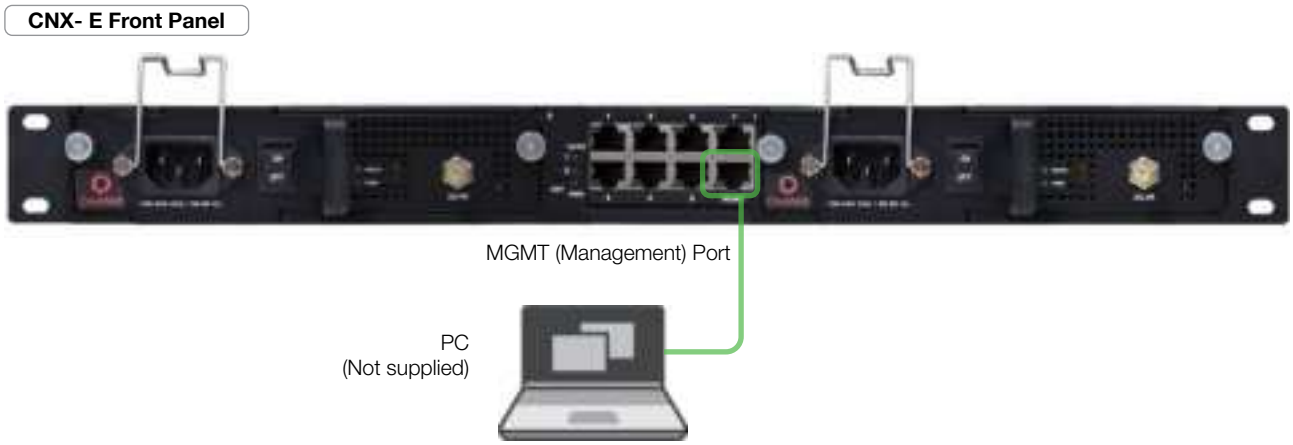


Figure 14: Front Panel LAN Port Connection with CNX

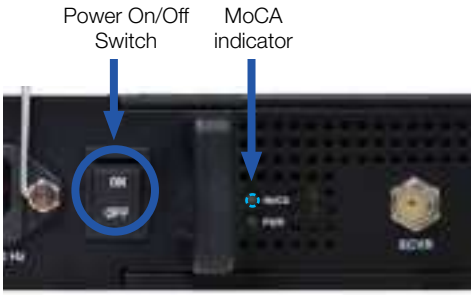
7.2.1 Setting the Compound UT#2 (Secondary)

First, the Compound UT#2 (Secondary) should be set and then the Compound UT#1 (Primary).

1. Turn on the UT#2's POWER switch on the front panel of the CNX, and then wait a few seconds for system startup. The MoCA indicator light on the CNX display will turn green.

NOTE

If the MoCA indicator does not turn on after five minutes during step 1, check the cable connection status and try to turn the CNX power off and on again.

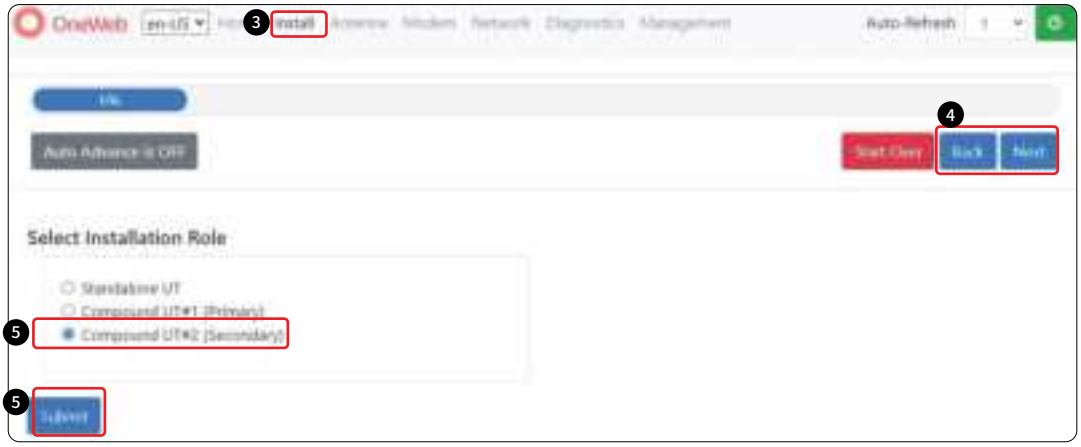


2. Use the following IP address to access LUI page.
   - **IP Address: 192.168.100.1 (Default)**

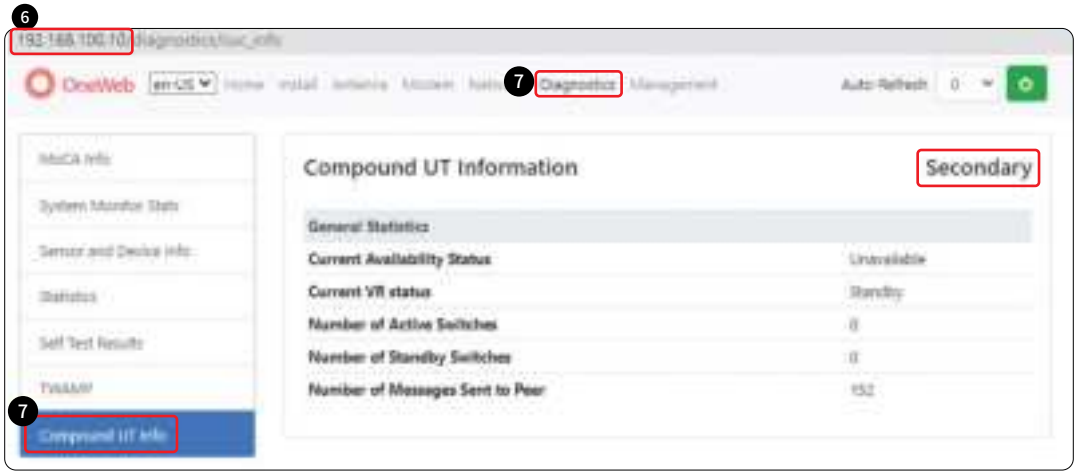
NOTE

The ***LUI*** should be accessed by Chrome web browser when setting a CUC (Compound UT Controller) role.

3. Select **Install** on the navigation bar, and then go to the **Installation Navigation.**
4. Press **Back** or **Next** button on the Installation Navigation until the **Select Installation Role** is reached.
5. Select **Compound UT#2 (Secondary)** on the **Select Installation Role** option to activate the function. Then click the **Submit** button to apply the settings to the system. LUI will automatically reboot.



6. Try to access the LUI again using the changed **Compound UT#2 (Secondary)** ip address (**192.168.100.10**).
7. Go to **Diagnostics** → **Compound UT Info** to verify the ***Secondary*** of CUC (Compound UT Controller) role on the Compound UT Info.



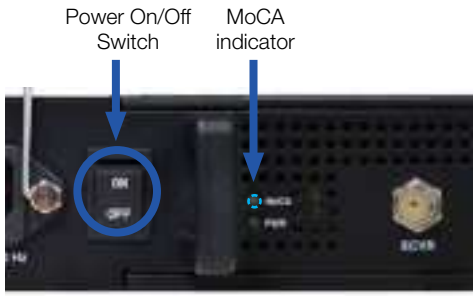
NOTE

If you cannot see the “Compound UT Info” menu on “Diagnostics” in the 6th step, check the CUC role’s settings and try to start the first process again.

7.2.2 Setting the Compound UT#1 (Primary)

The Compound UT#1 (Primary) should be set after setting the Compound UT#2 (Secondary).

1. Turn on the UT#1’s POWER switch on the front panel of the CNX, and then wait a few seconds for system startup. The MoCA indicator light on the CNX display will turn green.



NOTE

If the MoCA indicator does not turn on after five minutes during step 1, check the cable connection status and try to turn the CNX power off and on again.

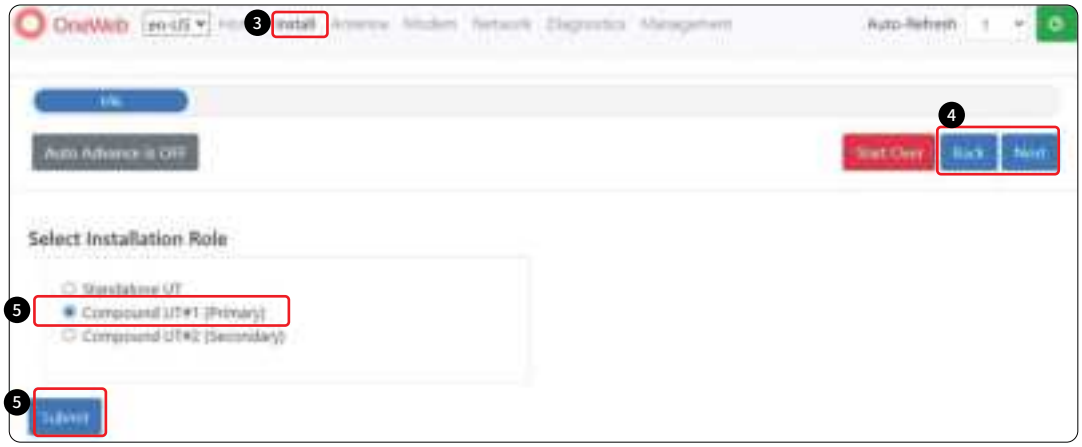
2. Use the following IP address to access LUI page.
   - **IP Address: 192.168.100.1 (Default)**

NOTE

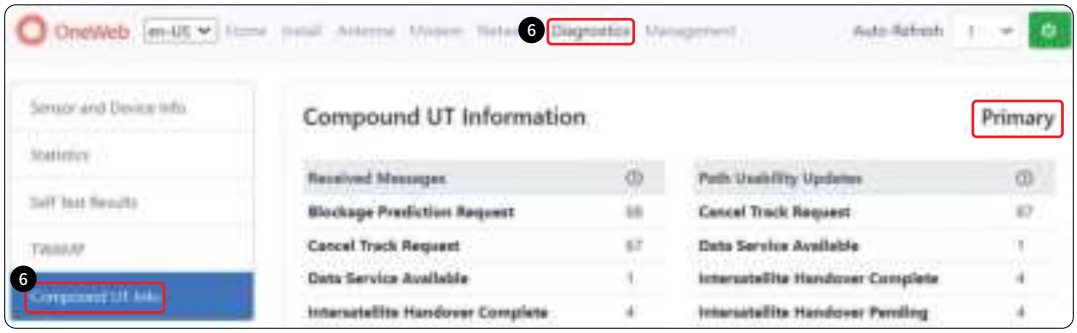
The ***LUI*** should be accessed by Chrome web browser when setting a CUC (Compound UT Controller) role.

3. Select **Install** on the navigation bar, and then go to the **Installation Navigation.**
4. Press **Back** or **Next** button on the Installation Navigation until the **Select Installation Role** is reached.

5. Select **Compound UT#1 (Primary)** on the **Select Installation Role** option to activate the function. Then click the **Submit** button to apply the settings to the system. LUI will automatically reboot and then display the Diagnostics page.



6. Go to **Diagnostics** → **Compound UT Info** to verify the ***Primary*** of CUC (Compound UT Controller) role on the Compound UT Info.



NOTE

If you cannot see the “Compound UT Info” menu on “Diagnostics” in the 6th step, check the CUC role’s settings and try to start the first process again.

7.3 Starting Install Menu (Install Wizard)

The Install Wizard will guide you through the setup steps for the antenna system commissioning. We highly recommend using this wizard to complete the 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.

✓ 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**.

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.

✓ Step 1: Upload Software Bundle

The Upload Software Bundle page displays the current software versions running on each component.

When uploading a software bundle, the software mode should be factory. (Refer to **“8.9.2 Switch UT Software” on page 88** for more details.)

1. Clicking on the empty text box or the **Browse** button allows the upload of a Software Bundle.
2. 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.

✓ Step 2: 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?

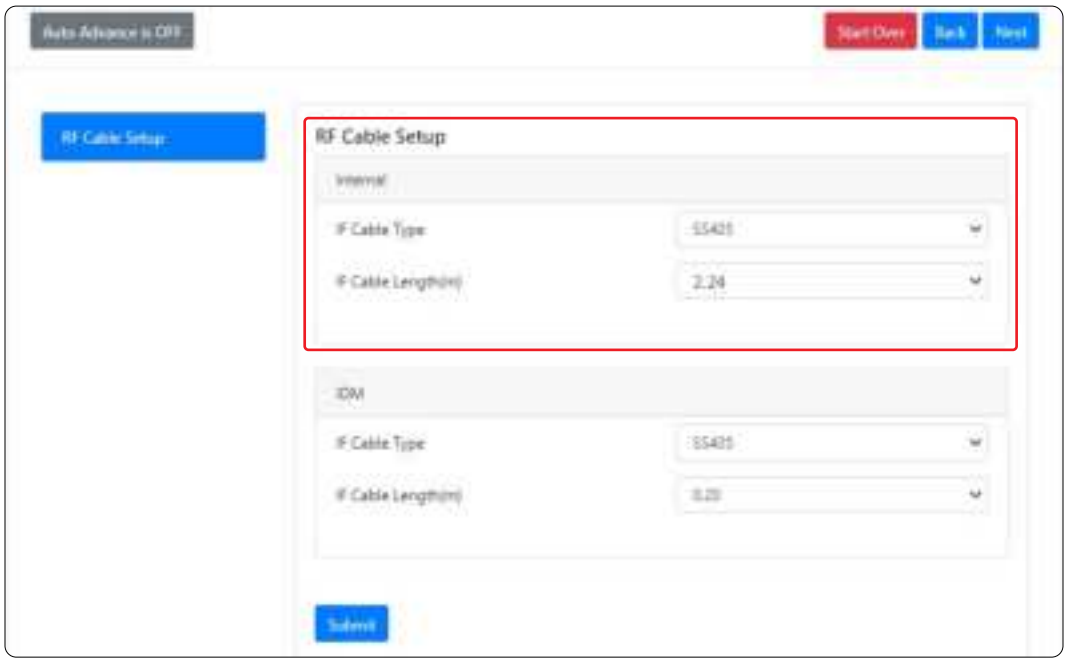
Ephemeris Data contains current information about the orbits of the satellites in the OneWeb constellation. The User Terminal uses ephemeris data to determine the positions of the satellites in the sky at any given time.

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

✓ Step 3: RF Cable Setup

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. Click the **Next** button to go to the next step.

- **IF Cable type : SS405**
- **IF Cable Length(m) : 2.24**



✓ **Step 5: Configure Blockage Zones**

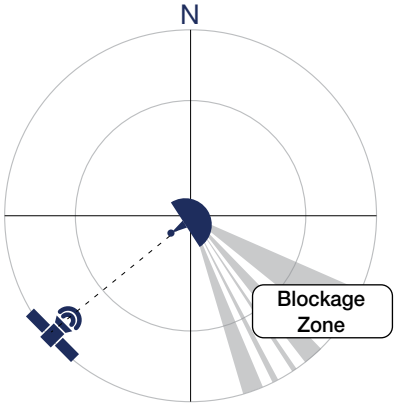
It is optional to set up the blockage zones for the system. Each antenna can be configured up to 10 blockage zones with transmission muted. Click the **Add more blockage zones** to configure additional blockage zones.

- Azimuth Min/ Max : The Azimuth Min is the relative azimuth angle where the blockage starts, and the Azimuth Max is the relative azimuth where the blockage ends (Range: 0 ~ 360).
- Elevation Min/Max: The Elevation Min/Max is the elevation angle where the blockage is set (Range: 0 ~ 90). The blockage is activated below the elevation angle.
- Antenna ID: Enter the value of 0.
- Transmission prohibited? : Set whether to activate a TX mute or not (Yes/No).

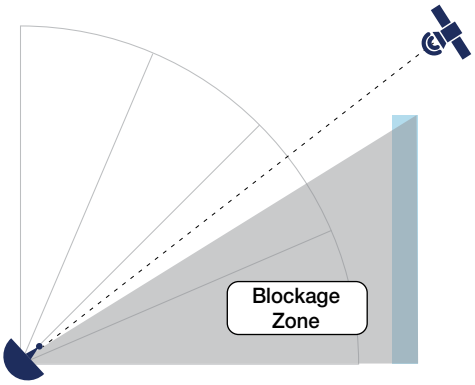
Click the **Submit** button to apply the settings to the system.

NOTE

- When setting a blockage zone, both “Blockage zones” and “No transmit zones” should be considered.
  - Blockage zones : Zones where obstructions can inhibit or degrade satellite communication
  - No transmit zones : Areas where transmit power is potentially dangerous for persons



Blockage Zone with no-transmit zones, azimuth (example)



Blockage Zone with no-transmit zones, Elevation (example)

- If Blockage zone is set, you can see the status at **LUI** > **Antenna** > **Blockage Zones** menu.
- To get a blockage zone value, you should install the **Theodolite** application on an iOS device. Intellian recommends using the **Theodolite** application.

✓ Step 6: Antenna Levelling

Click the **Next** button to go to the next step.

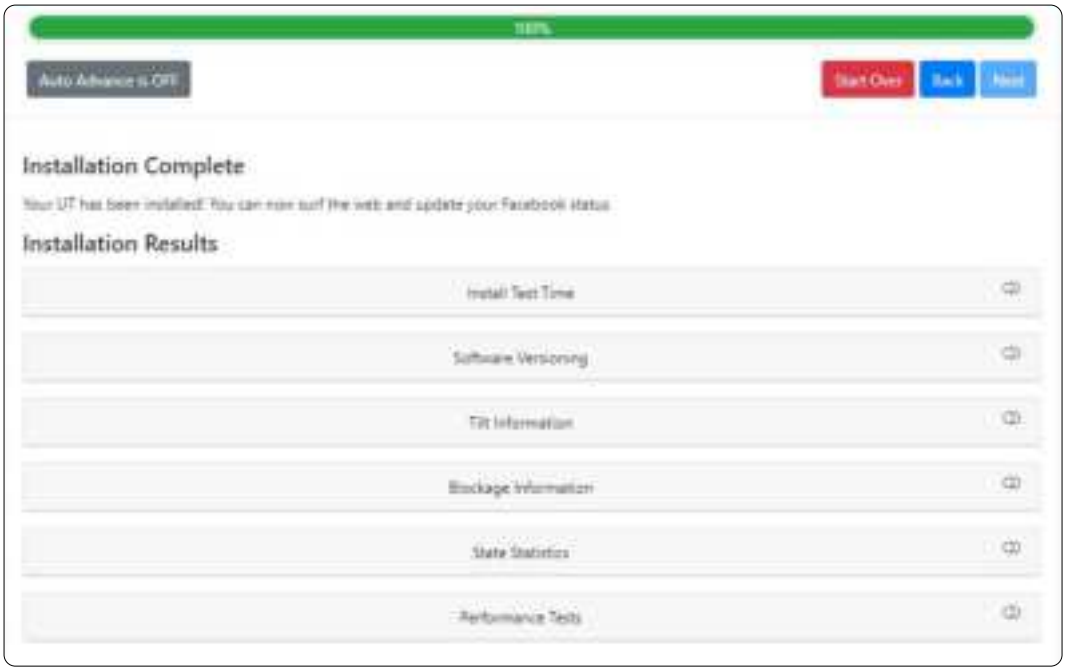
✓ Step 7: Autonomous States

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.

✓ Step 8: Installation Complete & Result

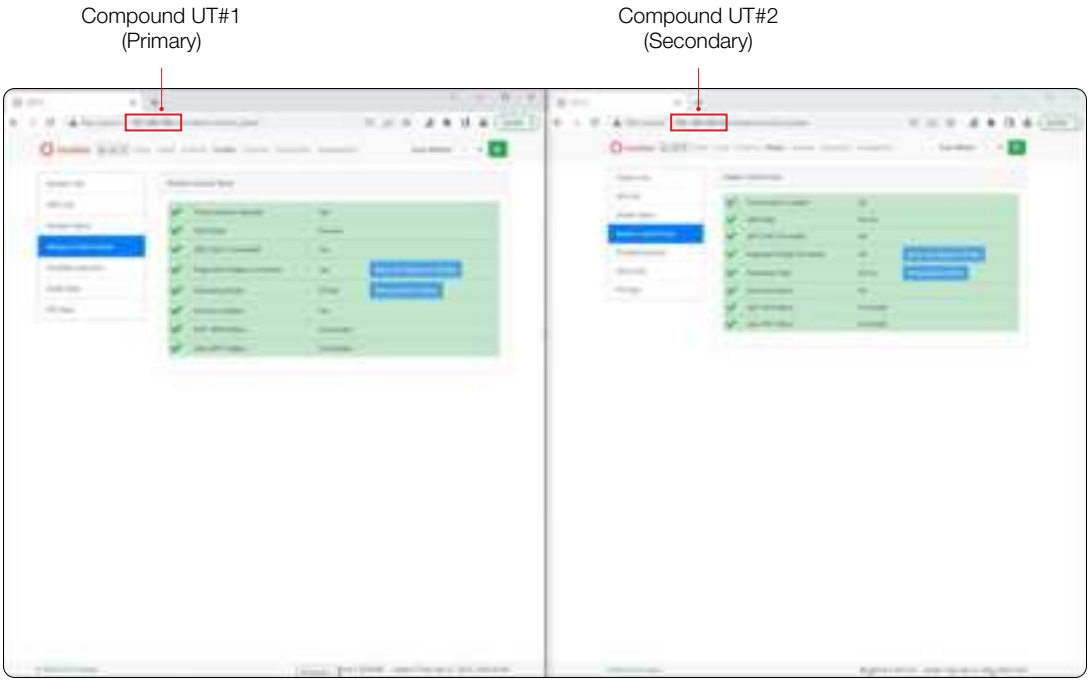
The configuration result is displayed. Toggle activation button to the right position on each result row to see the results.

This completes the steps of the wizard.



7.4 Monitoring Dual Antenna System

You should monitor the performance of the dual system via LUI. To monitor the dual system, position two windows side-by-side and then access LUI using ip address for each compound UT.



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 time and cost generated by maintenance activities such as operating firmware upgrades, tracking parameter resets, and system diagnosis, etc.

8.2 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.

8.3 Accessing Webpage

8.3.1 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 **MGMT** (Management) Port on the front panel of CNX to a LAN Port of a PC. The Data MoCA 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).
   - **Compound UT#2 (Secondary): 192.168.100.10**
   - **Compound UT#1 (Primary): 192.168.100.1**

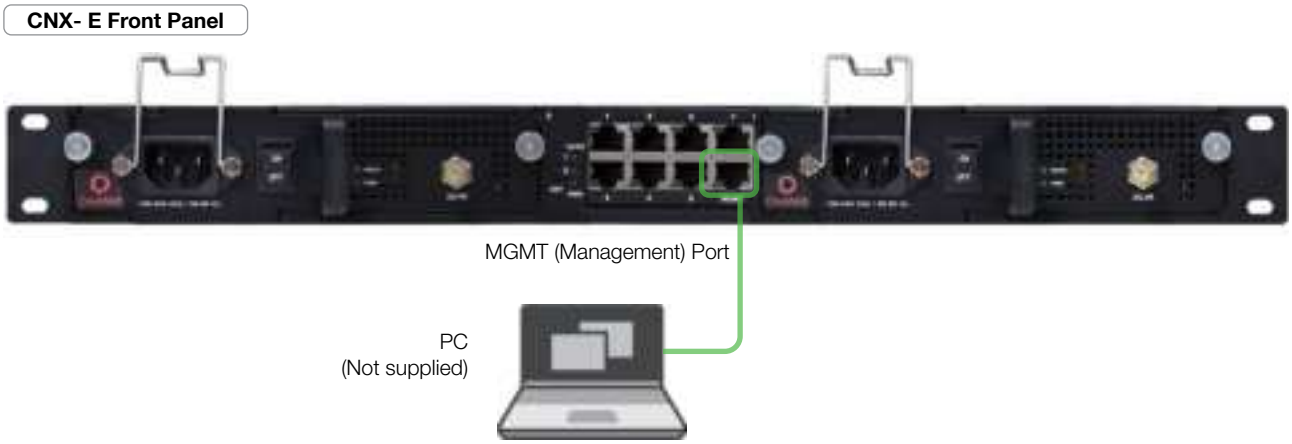


Figure 15: Front Panel LAN Port Connection with CNX

NOTE

To access the LUI, you should set the CUC (Compound UT Controller) role. Refer to the **"7.2 Accessing LUI" on page 42** for more details.

8.4 Webpage Layout

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

8.4.1 Navigation bar

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

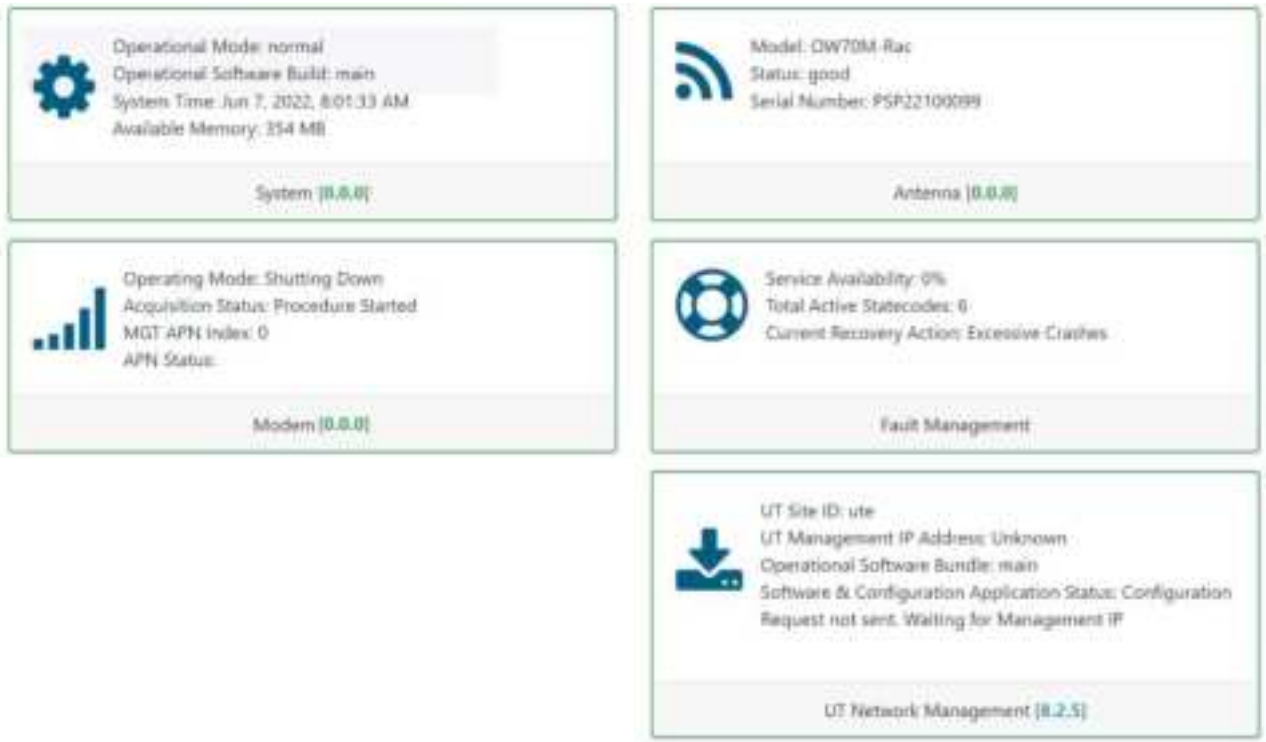
No.	Item	Description
①	Logo	This is the banner that displays the branding logo. Clicking on the logo on any given page will return the LUI to the homepage.
②	Language Drop Down Menu	The language drop-down menu lists all supported languages. Picking a language from the drop-down menu will change all text to the specified language immediately.
③	Navigation Items	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: • Home: The homepage of the LUI displays a high-level overview of most components via a card layout. • Install: Guides the user through the installation process. More information on the installation process can be found in the **"7.3 Starting Install Menu (Install Wizard)" on page 46**. • Antenna: Displays Antenna Information such firmware version, configuration and status. • Modem: Displays Modem Information (IMSI, IMEI, Manufacturer, Software Version, etc.), Modem Status (Call Status, Operating mode, etc.), OneWeb Extension Statistics. • Network: Displays statistics for all the network interfaces on the SSM such as the CNX interface, MGT interface, and WAN interface. • 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. • Management: Displays UT Network Management Information such as SDL Information and UCR Statistics.
④	Auto-Refresh	This is the auto-refresh drop-down. 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.

8.4.2 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 color.

- Green: The system is behaving as normal.
- Orange: The system might cause errors. You should take precautions to prevent the occurrence of the errors or any situation.
- Red : The system is abnormal or incorrect (Error). In this case, follow the steps below.
  a. Check the state code on each card.
  b. Download the antenna logs. (Diagnostics → Host Processor Logs → download all)
  c. Check the cable connection status. If the cable connection is incorrect, try to connect a cable again.
  d. Click the reboot button on the navigation bar, and then turn the CNX power off and on again.
  e. If the same state code error(red) persists after rebooting, you should contact Intellian Technical Support for assistance.

Clicking on a card will take you to the webpage where you can find more detailed information about the subsystem.



8.4.3 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. The text on the footer changes color depending on the operational software mode.

- Green: The operational software mode is main.
- Red: The operational software mode is factory. There are two ways to change the factory mode to main mode.
  - Set all managed components to false and reboot
    a. Go to Diagnostics → Configuration and search the term “manage”.
    b. Click the word true in the value column to make the checkbox appear for each of the values not currently displaying false. Uncheck the checkboxes for each.
    c. Click Save and Reload.
    d. Ensure that the values remain false. Any changed values will be highlighted in red.
    e. Click the reboot button on the navigation bar to reboot. The reboot will take a few minutes.
    f. Ensure that all the changed items are now showing false in the value column.
  - Switch to the Factory Partition
    a. Go to Management → Switch UT Software.
    b. Select main, and then click Submit.

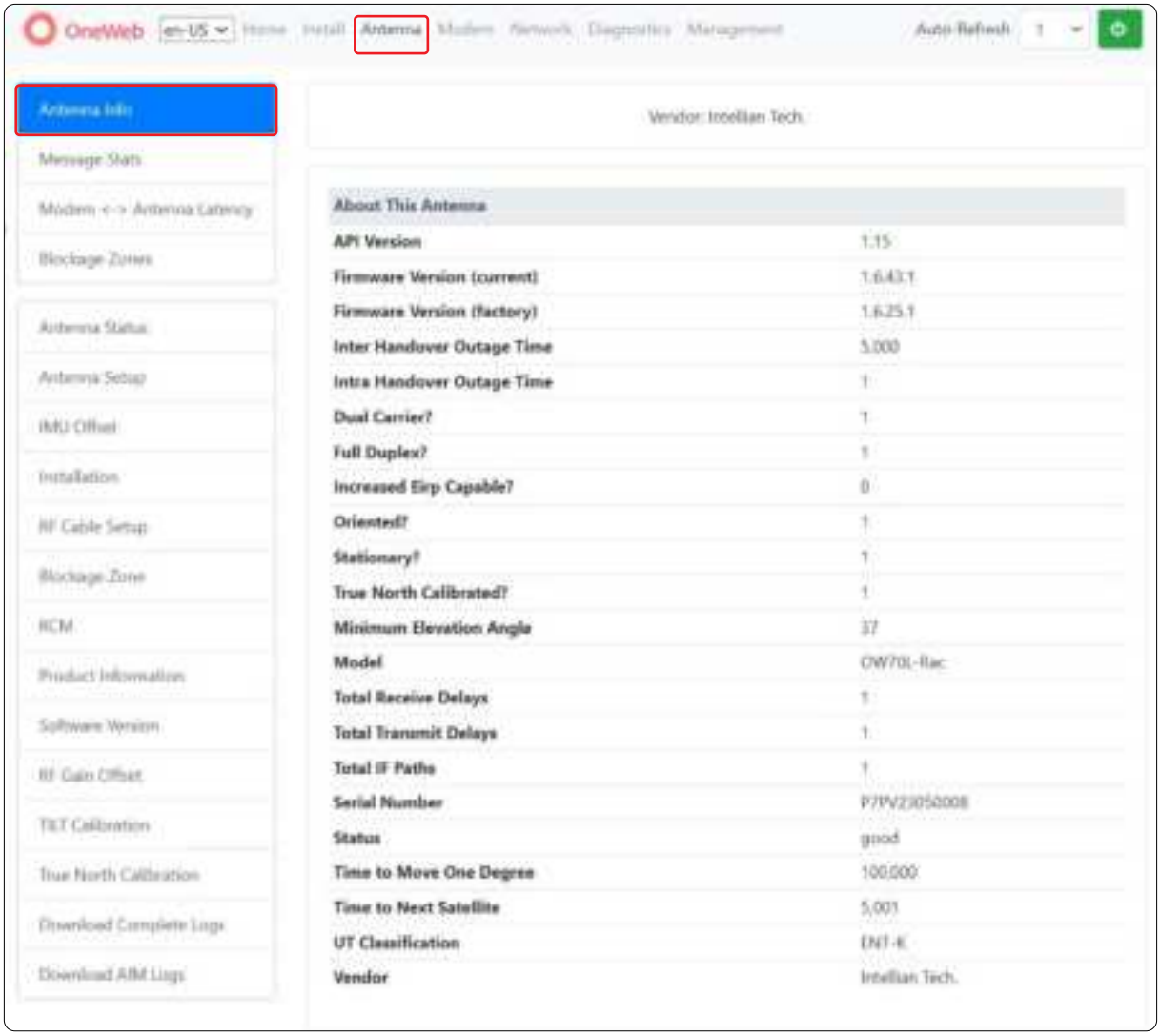
Clicking on this will take you to the **UT Status** section of the Diagnostics page.

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.

8.5 Antenna

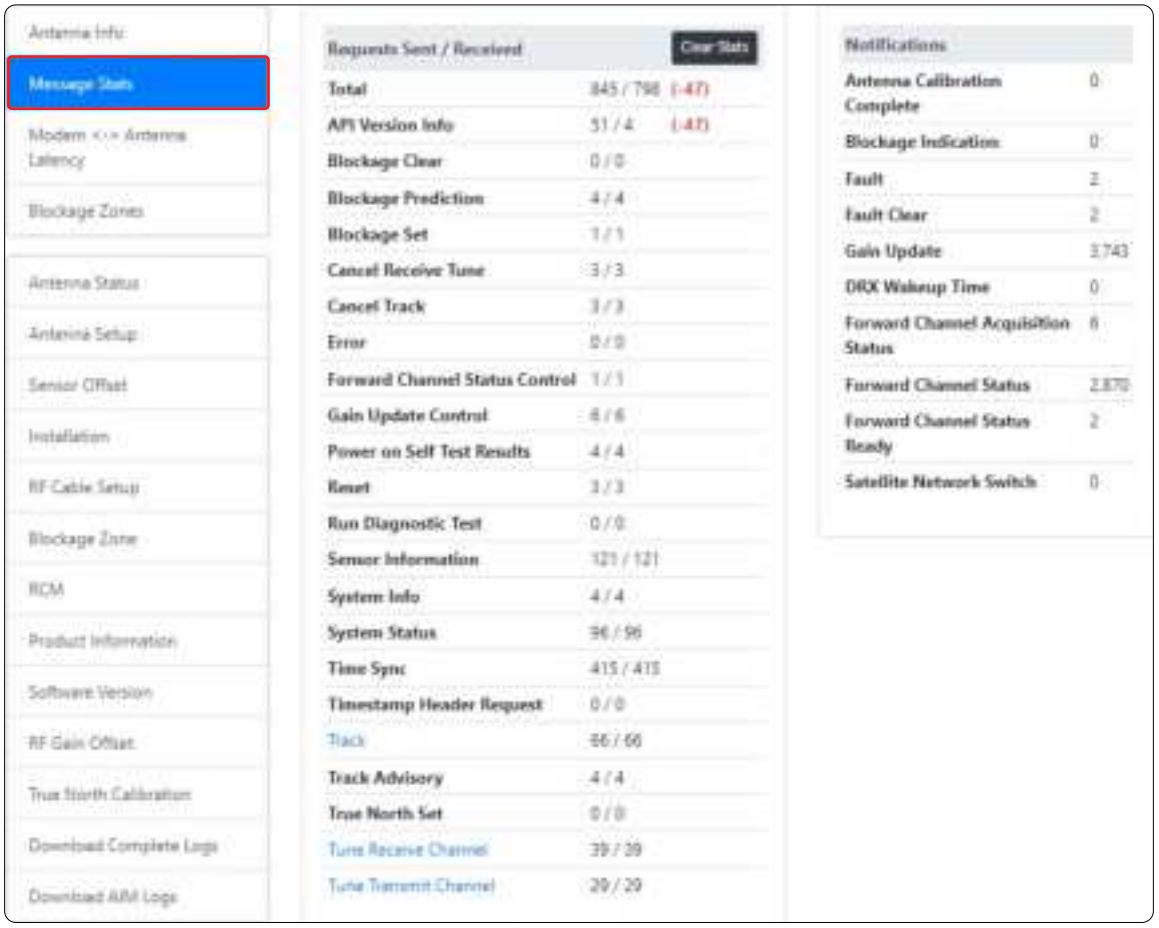
This menu sets and displays the Antenna Info, Massage stats, Modem↔Antenna Latency, Blockage zones, Antenna status, Antenna Setup, Sensor Offset, RF cable setup, RCM, Product Information, Software Version, RF Gain Offset, True North Calibration, Download Complete Logs and Download AIM Logs.

8.5.1 Antenna Info



Displays the antenna information.

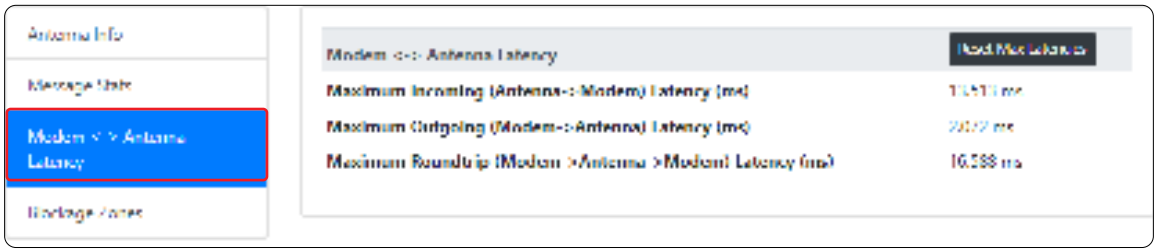
8.5.2 Massage Stats



Provides the tables of a variety of information at once.

- Clear Status: Click the **Clear status** button to clear the shown page.

8.5.3 Modem ↔ Antenna Latency



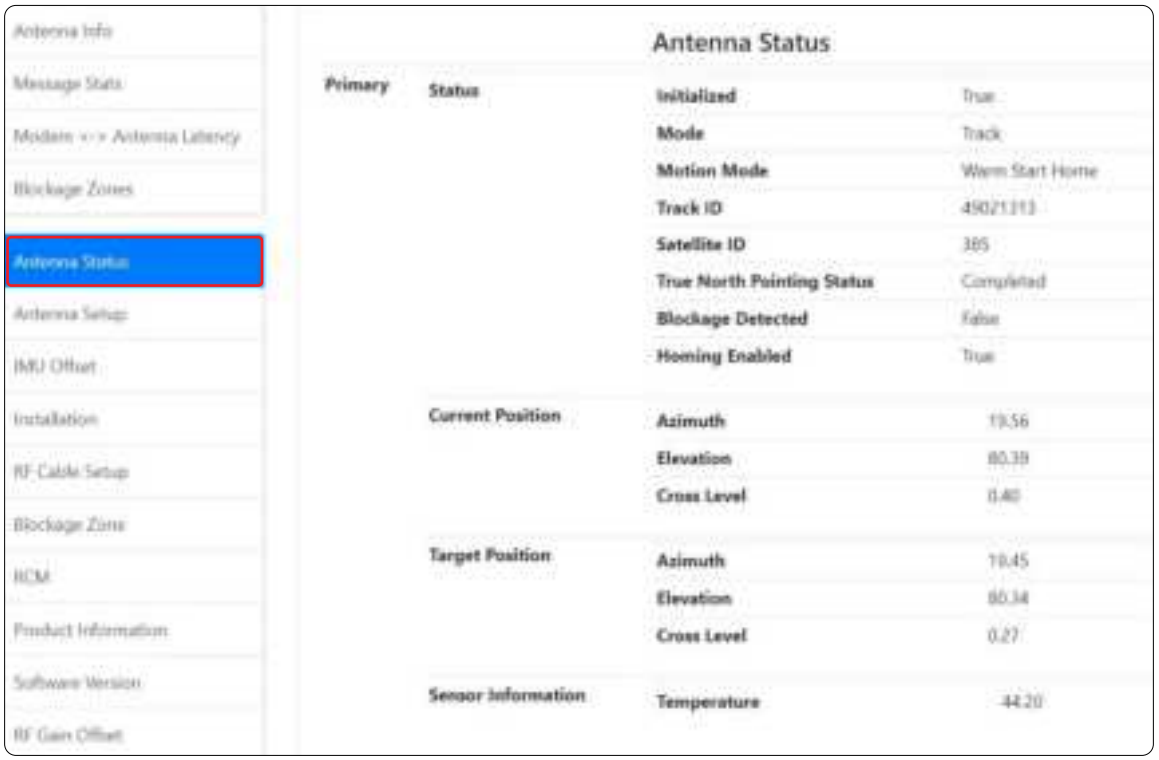
Displays the latency between modem and antenna.

- Reset Max Latencies: Resets the maximum latencies.

8.5.4 Blockage zones

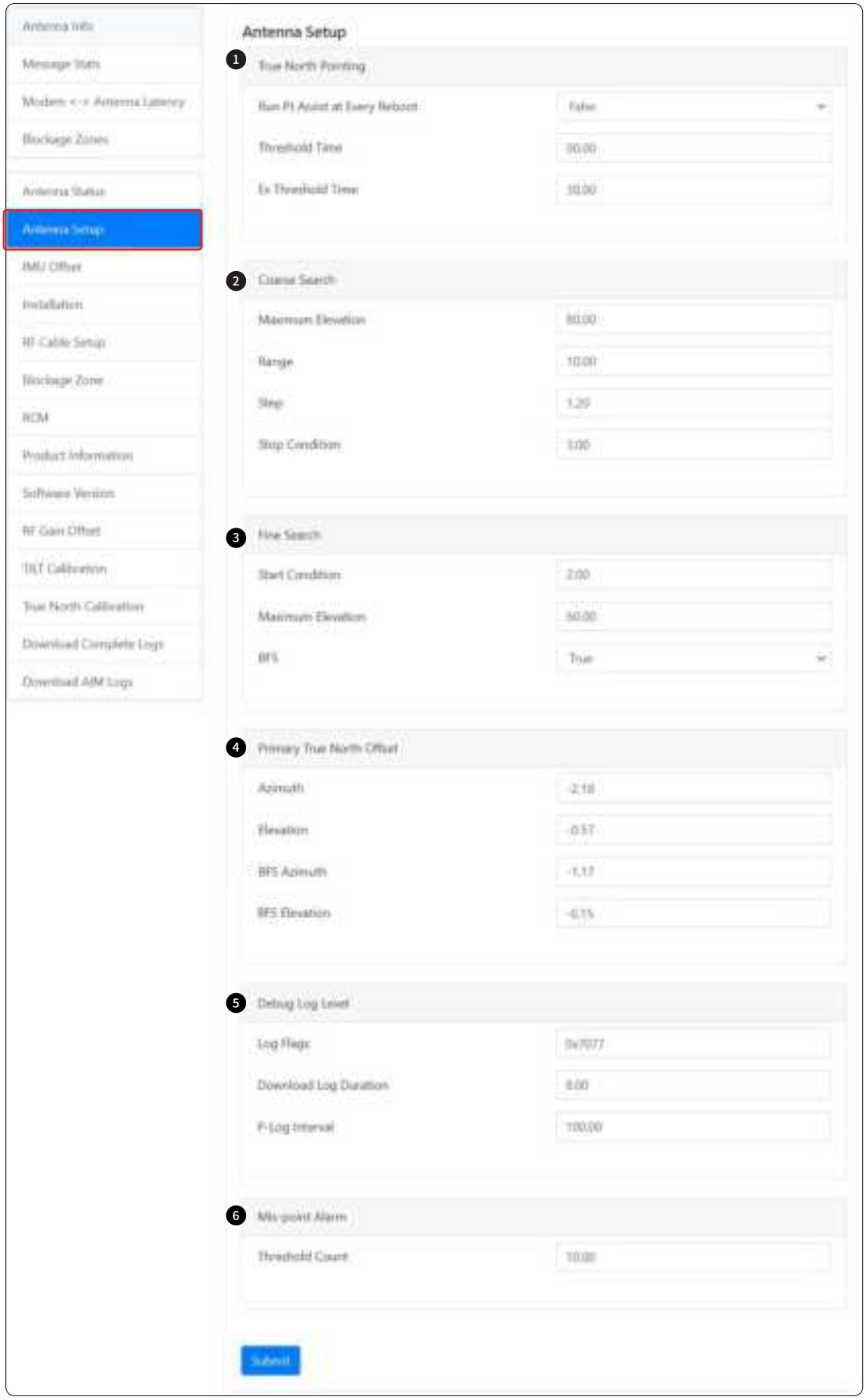
Displays the set blockage zones.

8.5.5 Antenna status



Displays the antenna status, position and sensor information.

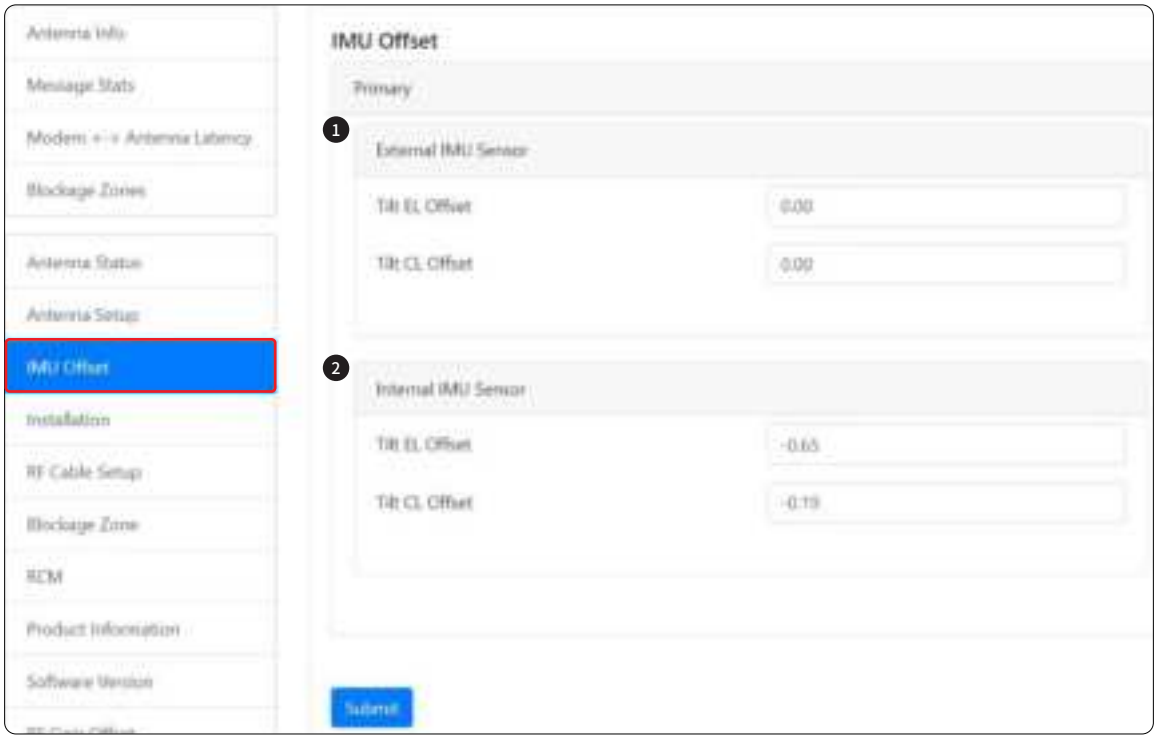
8.5.6 Antenna Setup



Set the antenna. Click the **Submit** button to apply the settings to the system.

①	True North Pointing	Set the TN calibration. • Run Pt Assist at Every Reboot : Run the Pt assist at every reboot. Choose the False / True from the drop-down list. • Threshold Time: Indicates a time that enters the Extended Pointing Assistant. (Default: 90 minutes) • Ex Threshold Time: Indicates a time that takes the antenna to complete one cycle for Extended Pointing Assistant.
②	Coarse Search	Set the current antenna elevation, range, step and stop condition. Searches the satellite signal from around the target angle. • Maximum Elevation: Set the completion condition for coarse search. If the SINR is higher than the stop condition and the antenna EL angle is lower than max. EL, the coarse search will be completed. • Range: Set the search range. • Step: Set the search step. • Stop Condition: If the SINR receives more than the stop condition value, the stop condition will be completed.
③	Fine Search	Set the current antenna elevation and BFS (Background Fine Search). Searches the target satellite with the azimuth full scan (360º). • Start Condition: Set the SINR threshold value to start the fine search. • Maximum Elevation: Set the completion condition for fine search. If the SINR is stable and the antenna EL angle is lower than max. EL, the fine search will be completed. • BFS (Background Fine Search): Choose whether to use the function (False / True) after TN calibration is completed.
④	Primary True North offset	For setting the True North Offset, you need to select a satellite which is trackable in satellite information. When the antenna tracks the selected satellite, true north offset can be calculated. • Azimuth: Indicates how azimuth is far from the true north when the TN calibration is completed. • Elevation: Indicates how elevation is far from the satellite when the TN calibration is completed. • BFS Azimuth: Indicates the fine-tuning value from the azimuth value. • BFS Elevation: Indicates the fine-tuning value from the elevation value.
⑤	Debug Log Level	Set the debug log level. • Log Flags: Sets how detailed the logs are to be displayed. • Download Log Duration: Set the date range for which you want to download files. • P-Log Interval: Set the P-Log interval
⑥	Mis-Point Alarm	If the miss point maintains for more than setting time(sec), it will report the Mis-Point Alarm. • Threshold Time: Set the current threshold timeout (sec).

8.5.7 IMU Offset



The tilt values of the elevation and cross-level axes were calibrated to the optimal condition at the factory prior to shipment. ***The values should not be arbitrarily changed.***

①	External IMU Sensor	Displays the reflector sensor value. • Tilt EL Offset : Displays the tilt EL offset value. • Tilt EL Offset : Displays the tilt CL offset value.
②	Internal IMU Sensor	Displays the calibrated value for the main sensor. • Tilt EL Offset : Displays the tilt EL offset value. • Tilt EL Offset : Displays the tilt CL offset value.

8.5.8 Installation

Displays the installation roll.

8.5.9 RF Cable Setup

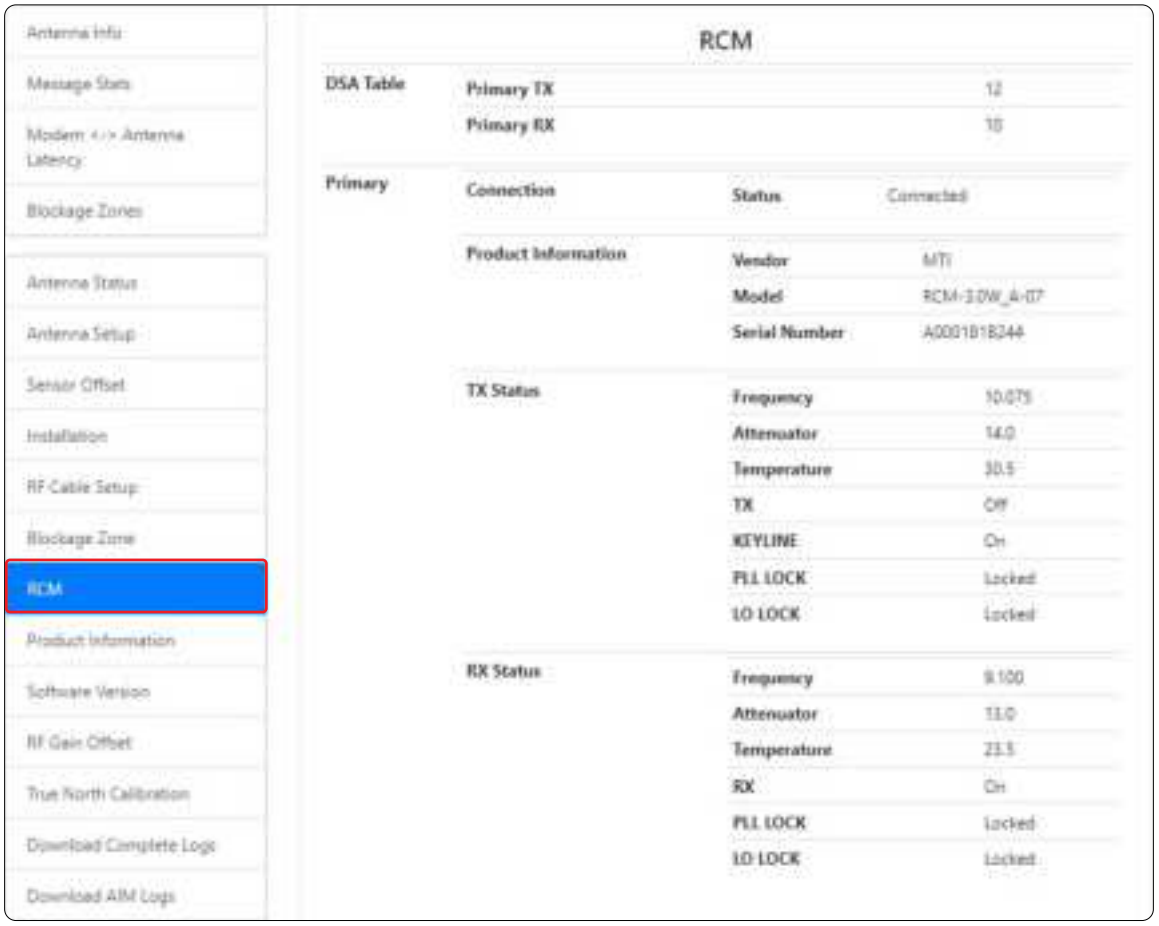
The **IF Cable Type** and **IF Cable Length(m)** on the Internal is pre-set with a default value depending on the RF cable. Make sure that is the same with the following default values. ***The values should not be arbitrarily changed.***

- IF Cable type : Displays the cable type (**SS405**).
- IF Cable Length(m) : Displays the cable length (**2.24**).

8.5.10 Blockage Zone

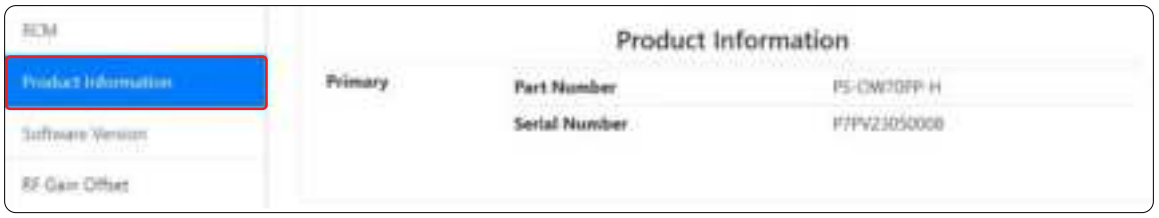
Displays the set blockage zones.

8.5.11 RCM



Displays the current RCM status (DSA Table(Primary Tx/Rx), Connection (Status), Product Information (Vendor, Model, Serial Number) Tx/ Rx status (Frequency, Attenuator, Temperature, TX or RX, KEYLINE, PLL Lock, , LO Lock).

8.5.12 Product Information

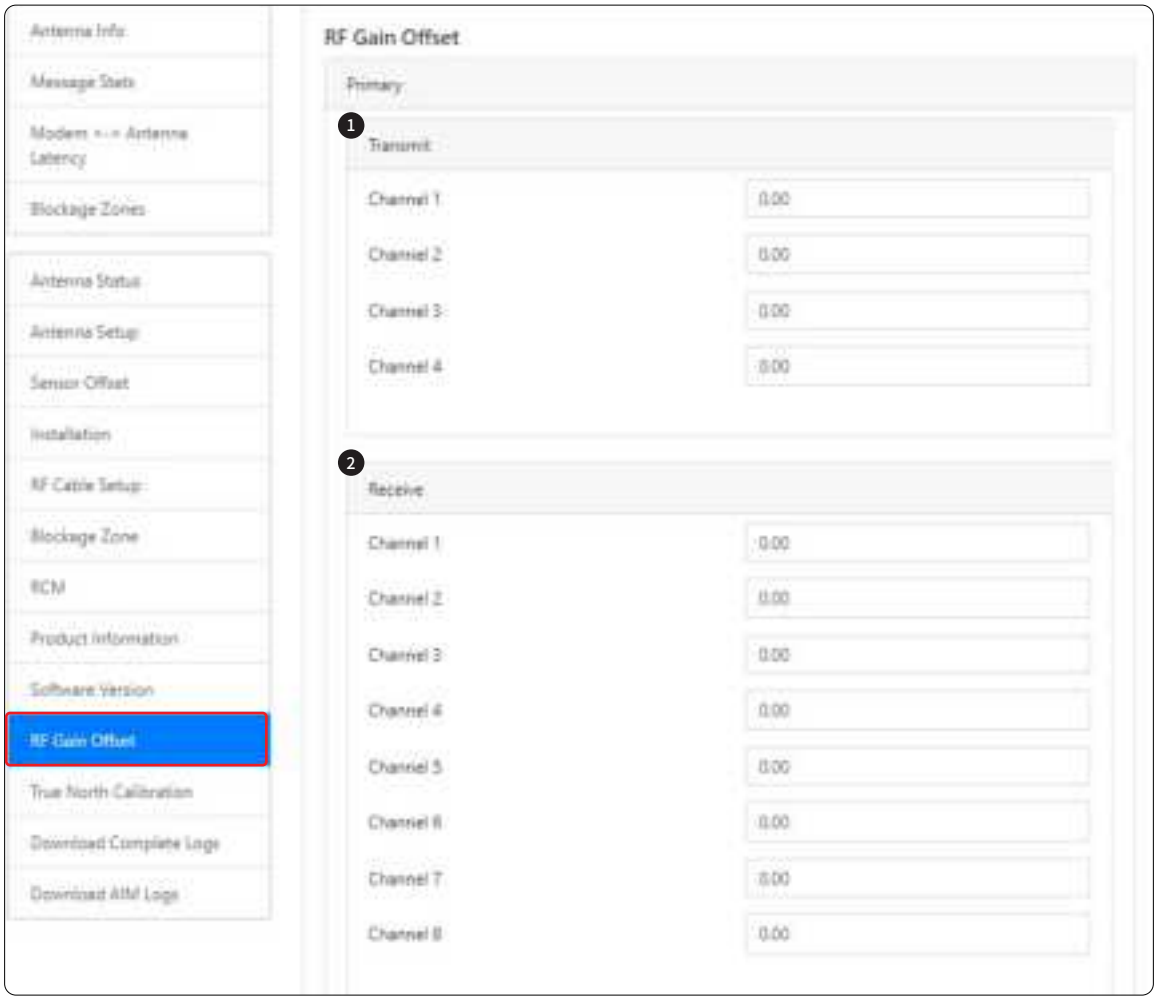


Displays the product information (Part Number, Serial Number).

8.5.13 Software Version

Displays the software version. (Factory, SYS0, SYS1, Current Partition, PCU version)

8.5.14 RF Gain Offset



Updates the RF gain values in real time.

①	Transmit	To increase or decrease TX gain, enter the values. • Channel: Adjust the Tx gain values for each channel.
②	Receive	To increase or decrease Rx gain, enter the values. • Channel: Adjust the Rx gain values for each channel.

8.5.15 TILT Calibration

Sets the tilt calibration.

- Select Antenna: Select the antenna you want to execute the tilt calibration.
- TILT Calibration Action: Select whether to start the tilt calibration or delete the setting value.

8.5.16 True North Calibration

Set the TN calibration.

- Pointing Assist Control: Choose the **Start** from the drop-down list to run the true north calibration and then click the **Submit** button.

8.5.17 Download Complete Logs

Click the Download button to download the complete log.

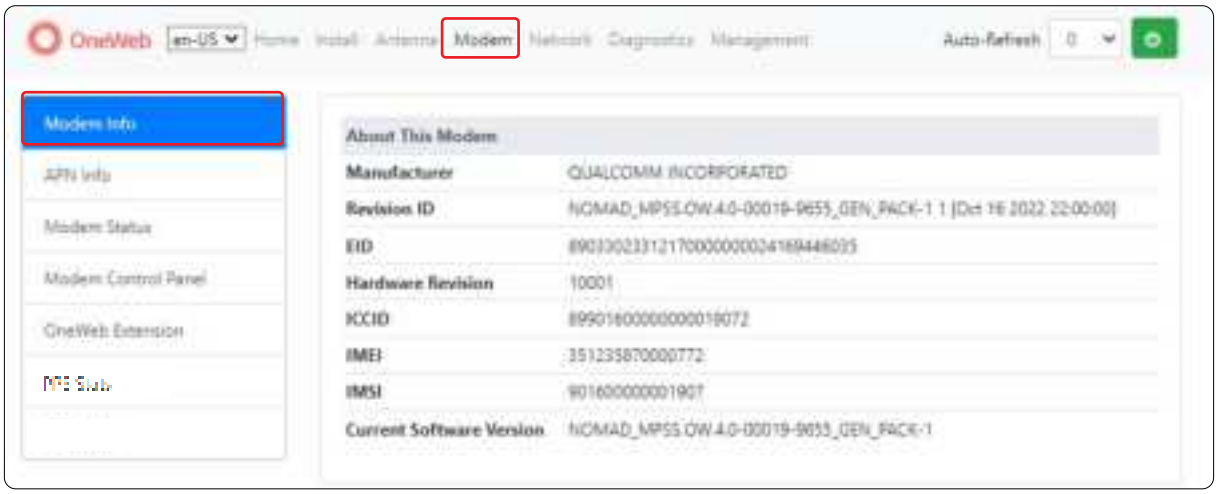
8.5.18 Download AIM Logs

Click the Download button to download the AIM log.

8.6 Modem

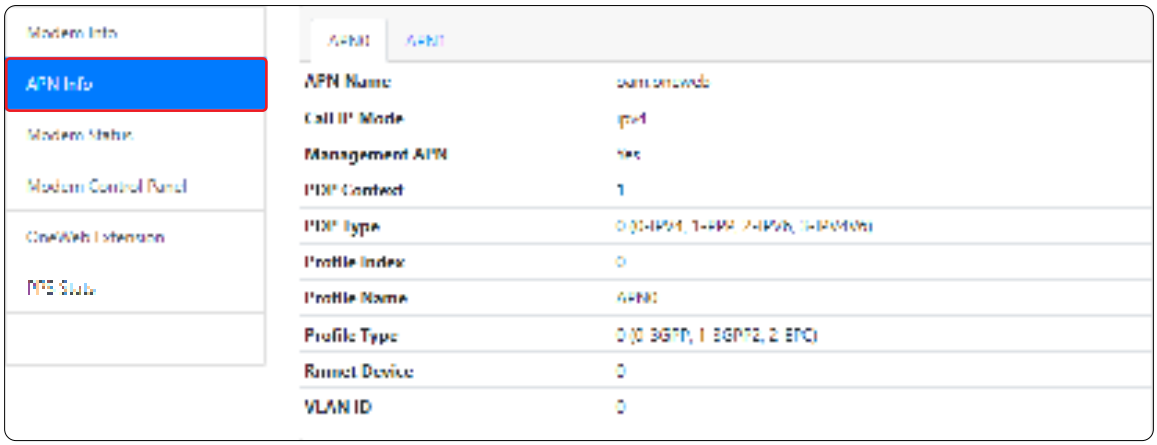
This menu sets and displays the Modem Info, APN Info, Modem status, Modem Control Panel, OneWeb Extension, PPS status.

8.6.1 Antenna Info



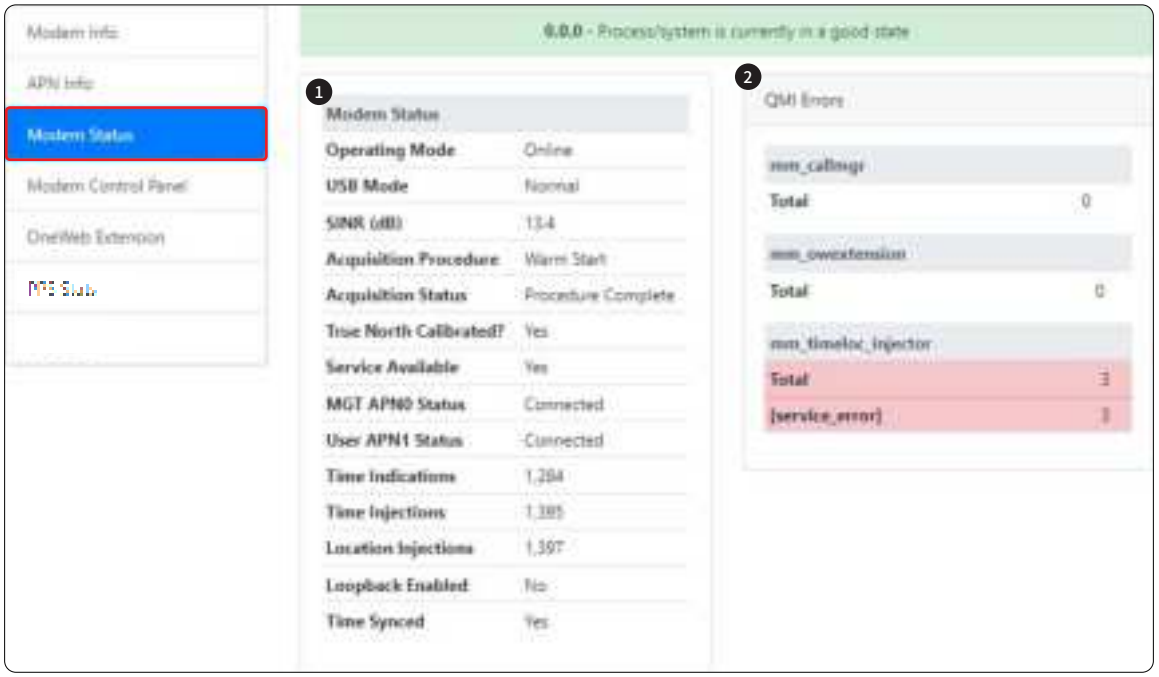
Displays the modem information.

8.6.2 APN Info



Displays the APN0/1 information.

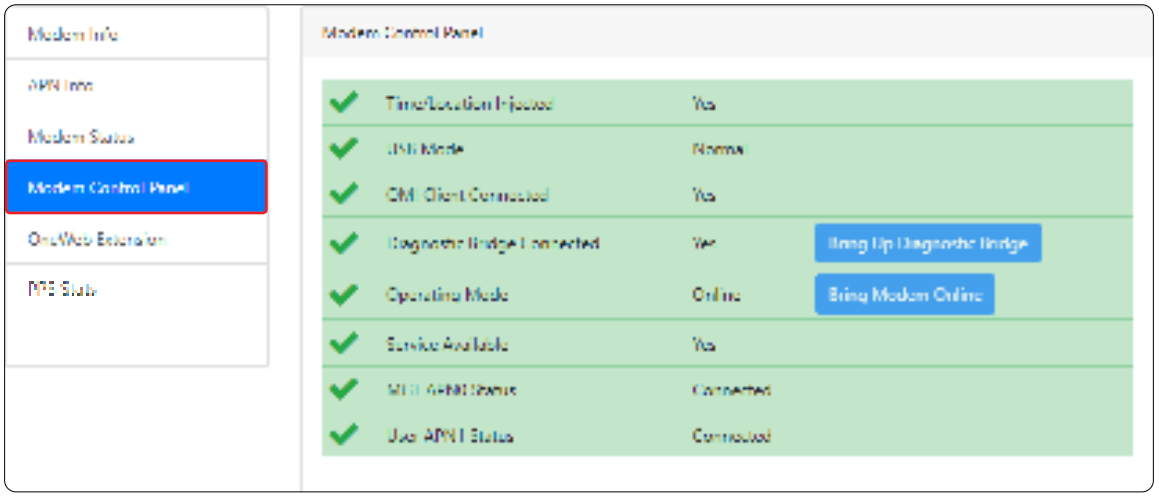
8.6.3 Modem status



Displays the modem status.

①	Modem status	Displays the current modem status.
②	QMI Errors	Displays the current modem error.

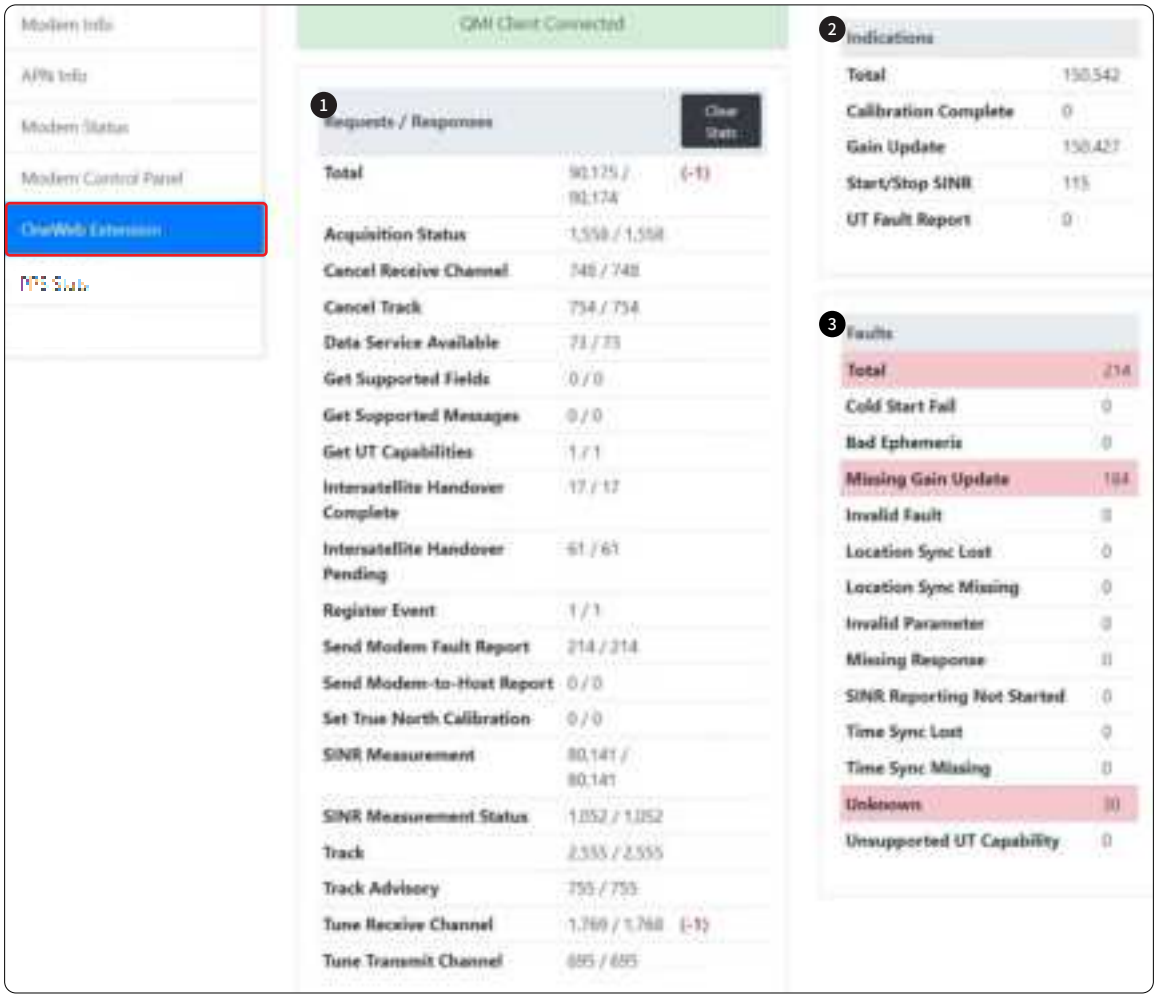
8.6.4 Modem Control Panel



The color shows the modem status.(Green: The modem is behaving as normal./Red: The modem is abnormal or incorrect (Error).)

- Bring Up Diagnostic Bridge: Try to connect the diagnostic bridge to check the modem status.
- Bring Modem Online: Converts the modem to online status.

8.6.5 OneWeb Extension



Make sure of the satellite connection status. (satellite signal, tracking etc.)

①	Request / Response	Displays the request and response for the SSM. • Clear Status: Click the **Clear status** button to clear the shown page.
②	Indication	Displays the tracking progress.
③	Faults	Displays the tracking faults.

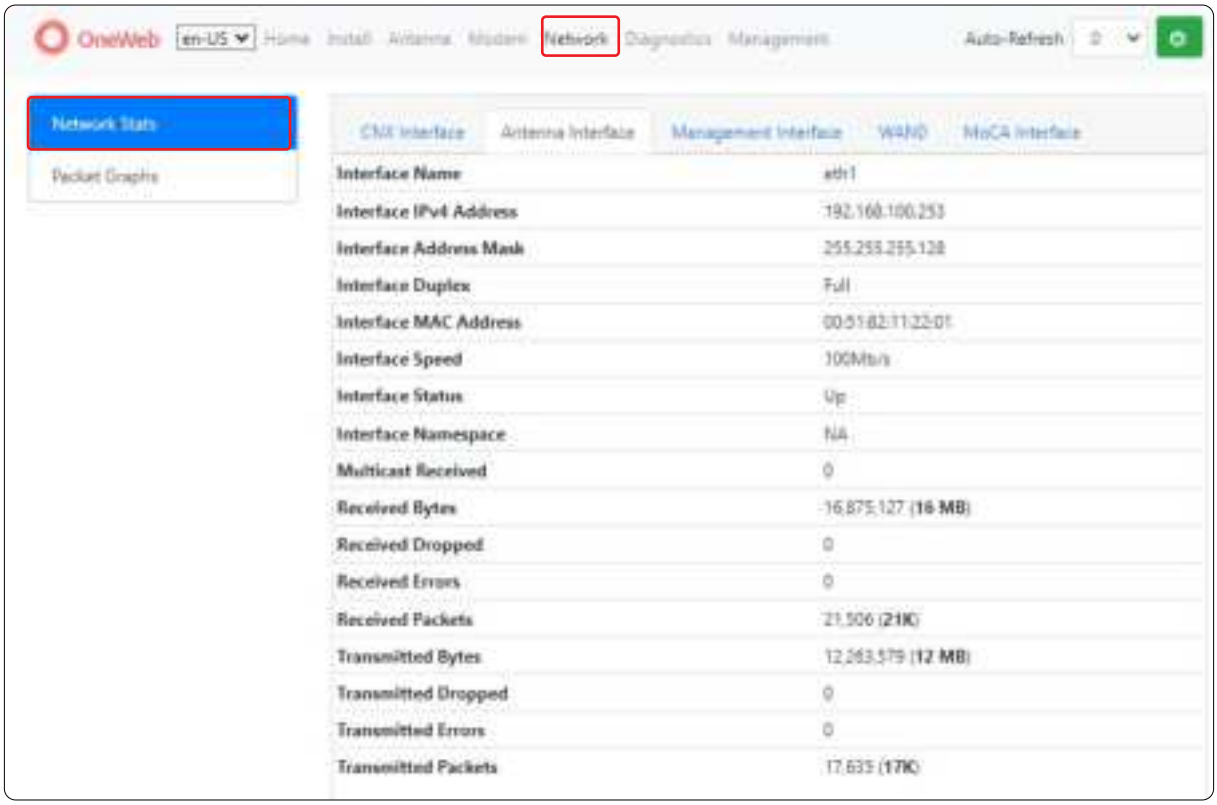
8.6.6 PPS Status

Displays the PPS status.

8.7 Network

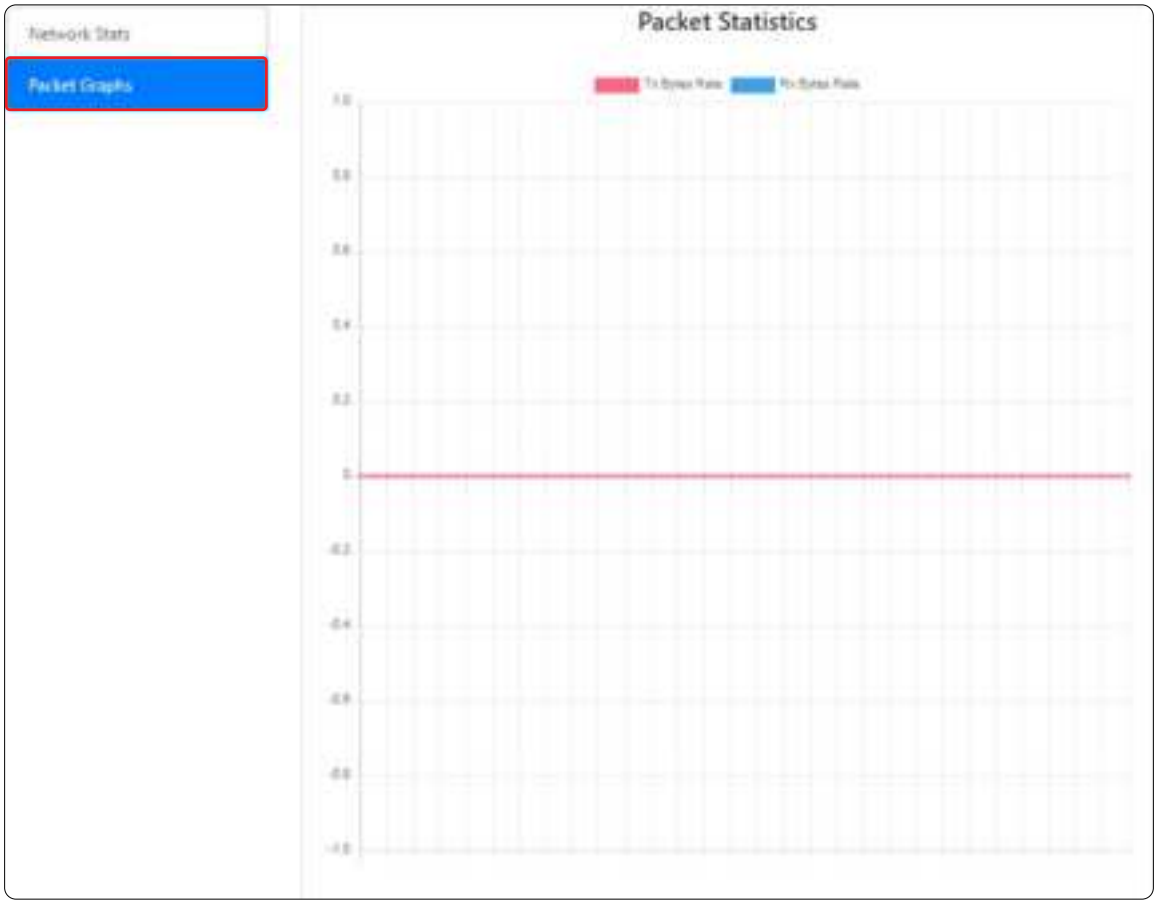
This menu sets and displays the Network info, Packet Graphs .

8.7.1 Network info



Displays the modem information. (CNX Interface, Antenna Interface, Management Interface, WAN0, MoCA Interface)

8.7.2 Packet Graphs

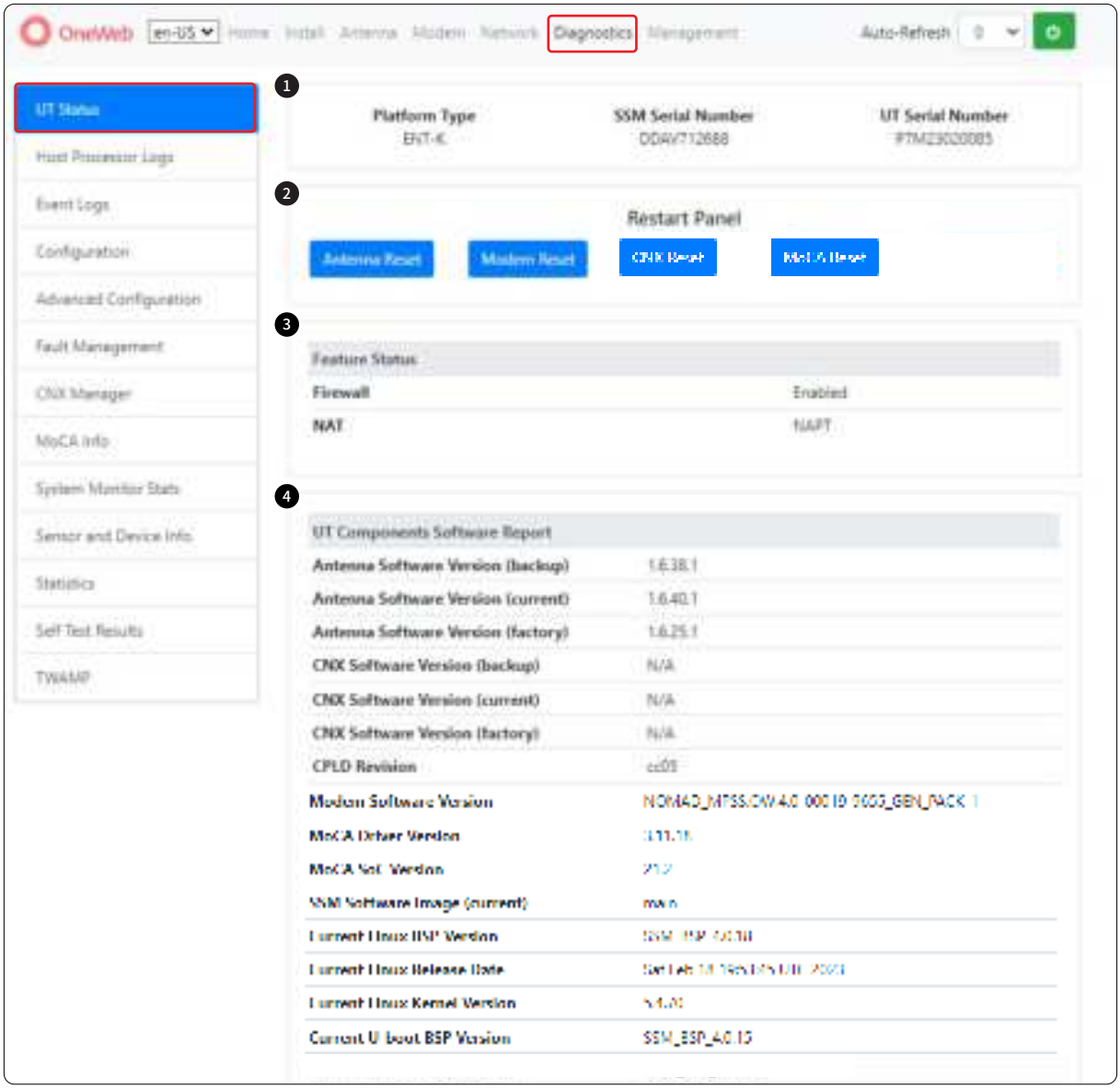


Measures an input Rx/Tx signal frequency within the full frequency range, and displays the information on the Graph. The display of the pocket statistics has the amplitude displayed on the vertical axis.

8.8 Diagnostic

This menu sets and displays the UT status, Host Processor Logs, Event Logs, UT Configuration, UT Advanced Configuration, Fault Management, CNX Manager, MoCA Info, System Monitor status, Sensor and Device Info, Statistics, Self Test Results, TWAMP.

8.8.1 UT status



Displays the UT status.

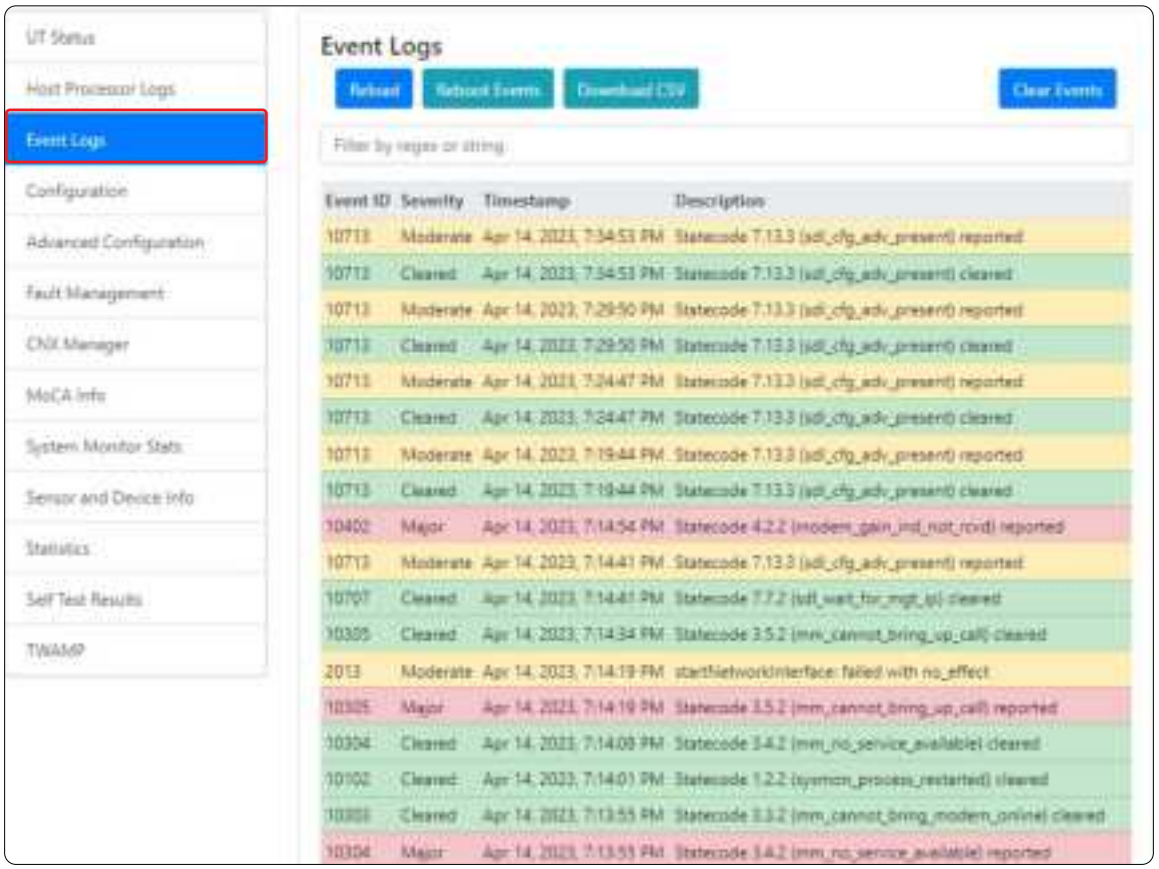
①	UT Info	Displays the Platform type, SSM serial number and UT Serial number
②	Restart Panel	Resets the antenna, modem, CNX, MoCA. Click each button to reset them.
③	Feature Status	Displays the feature status.
④	UT components software report	Displays the software report.

8.8.2 Host Processor Logs

Download the host processor logs. Choose the desired logs from the drop-down list and then click the submit button.

- Download All : Click the **Download All** button to download the all logs.
- Filter by regex or string: Displays the logs filtering by regex or string.

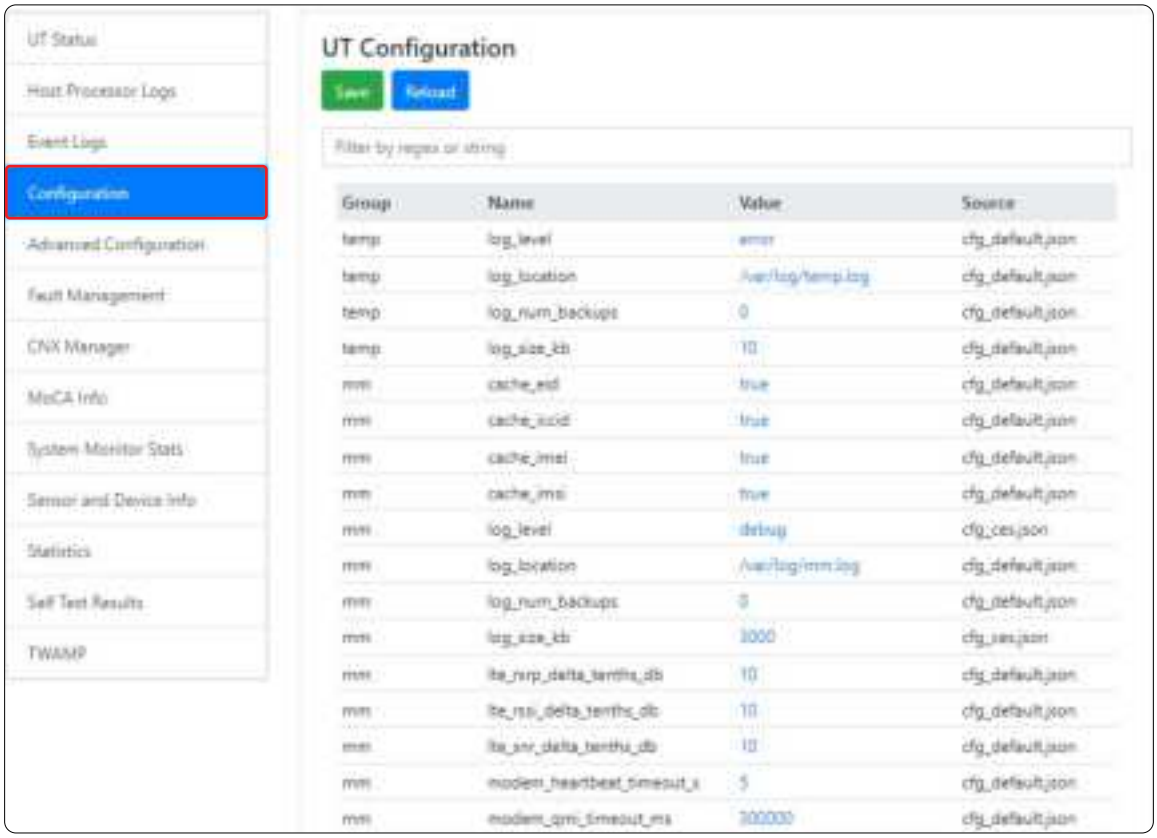
8.8.3 Event Logs



Download or reload the event logs.

- Reload: Click the **Reload** button to reload the event logs.
- Reboot Events: Click the **Reboot Events** button to reboot the host controller.
- Download CSV: Click the **Download CSV** button to download the CSV.
- Clear Events: Click the Clear Events button to clear the host controller logs.

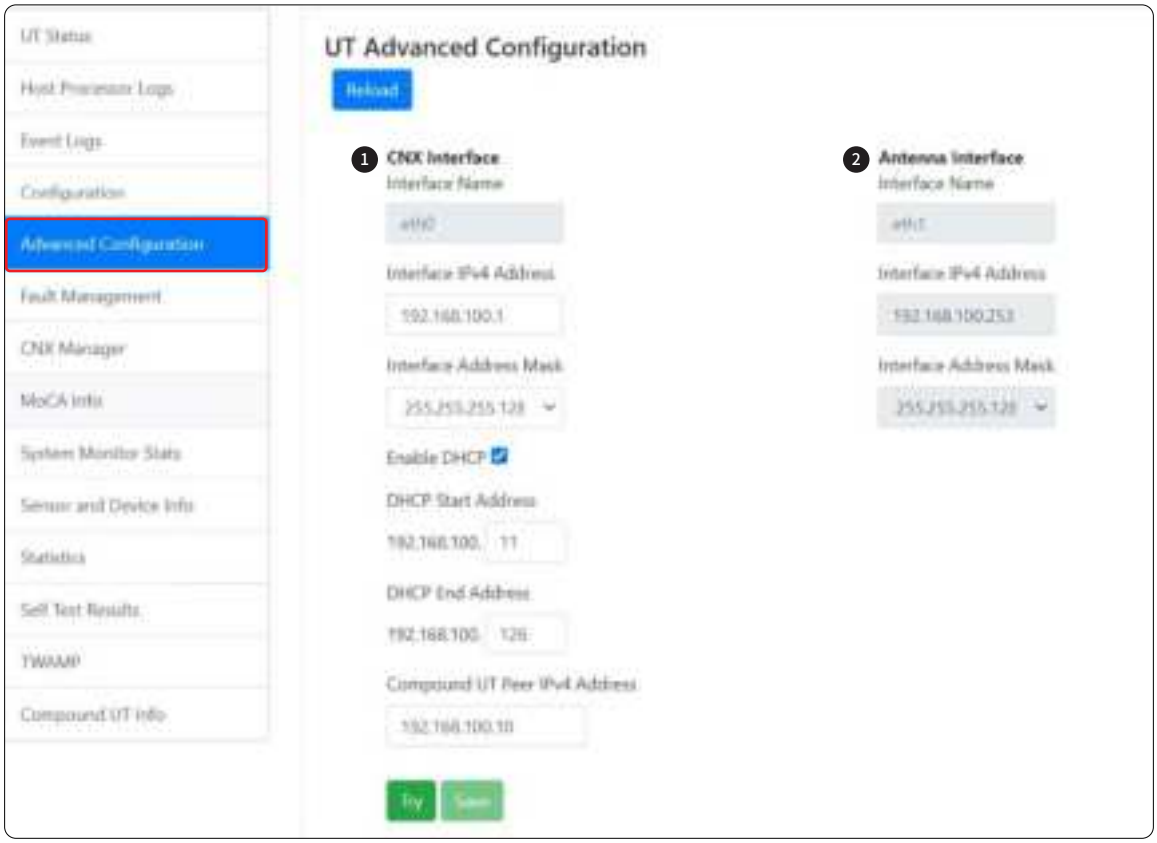
8.8.4 UT Configuration



Displays the UT Configuration.

- Save: Click the **Save** button to save the UT Configurations.
- Reload: Click the **Reload** button to reload the UT Configurations.

8.8.5 UT Advanced Configuration



Display the UT advanced configuration.

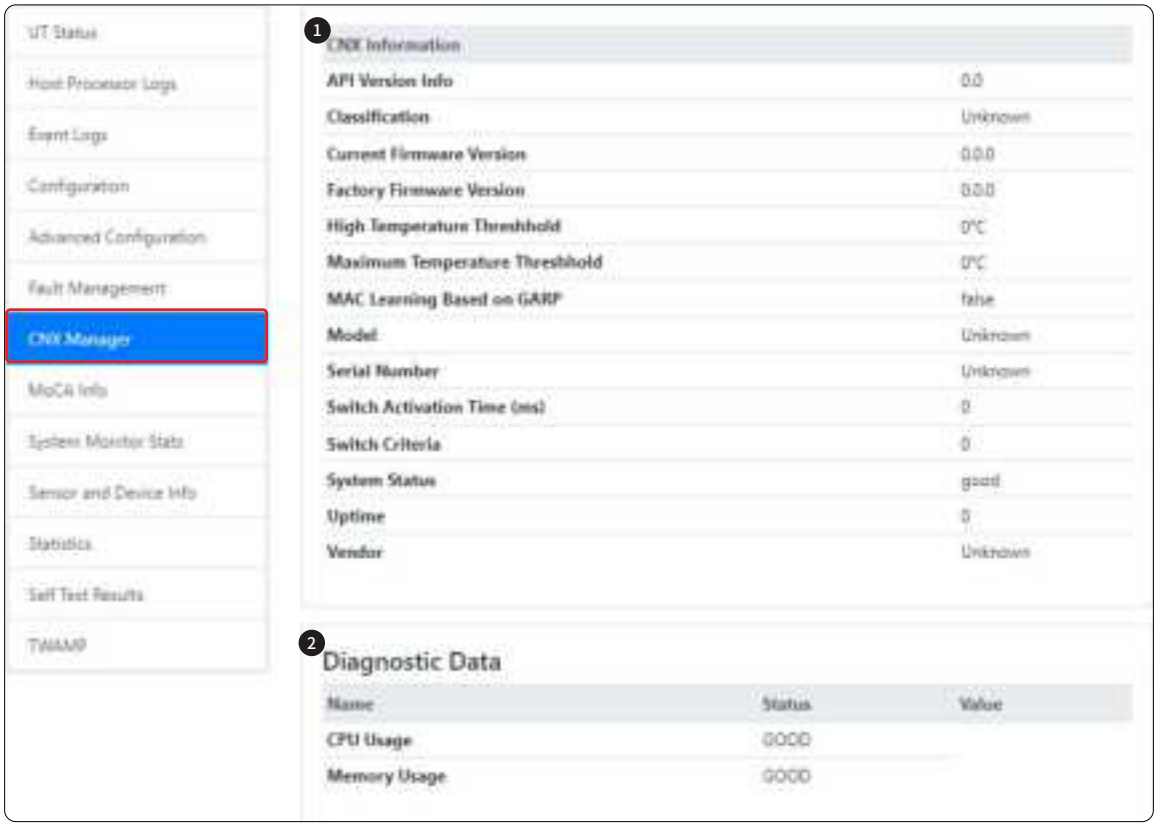
- Reload: Click the Reload button to reload the UT advanced configuration.

①	CNX Interface	Displays the CNX interface. • Interface Name: Displays the interface name. • Interface IPv4 Address : Enter the ip address. • Interface Address Mask: Choose the subnet mask from the drop-down list. • Enable DHCP: Select the checkbox to activate the DHCP. • DHCP Start address: Enter the DHCP start address. • DHCP End address: Enter the DHCP end address. • Compound UT Peer IPv4 Address: Displays the IP address of Peer CUC. If the UT is configured as Primary, it will show the IP address of secondary CUC.
②	Antenna Interface	Displays the antenna interface. • Interface Name: Displays the interface name. • Interface IPv4 Address : Displays the ip address. • Interface Address Mask: Displays the subnet mask

8.8.6 Fault Management

Displays the fault status.

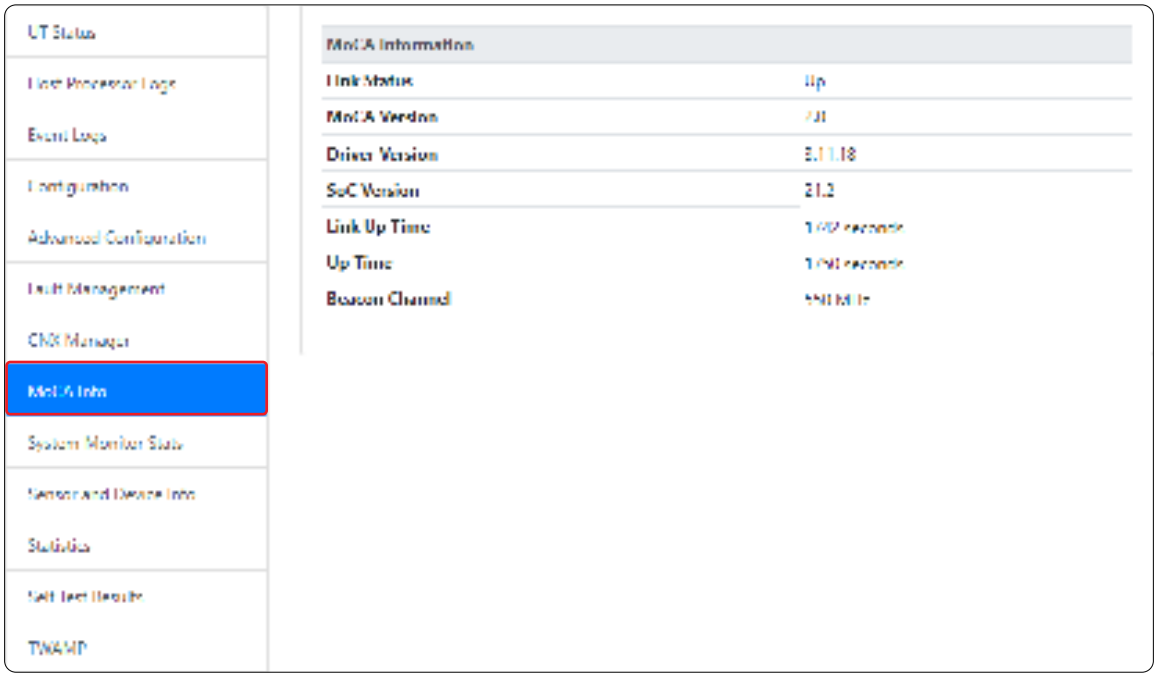
8.8.7 CNX Manager



Displays the CNX information.

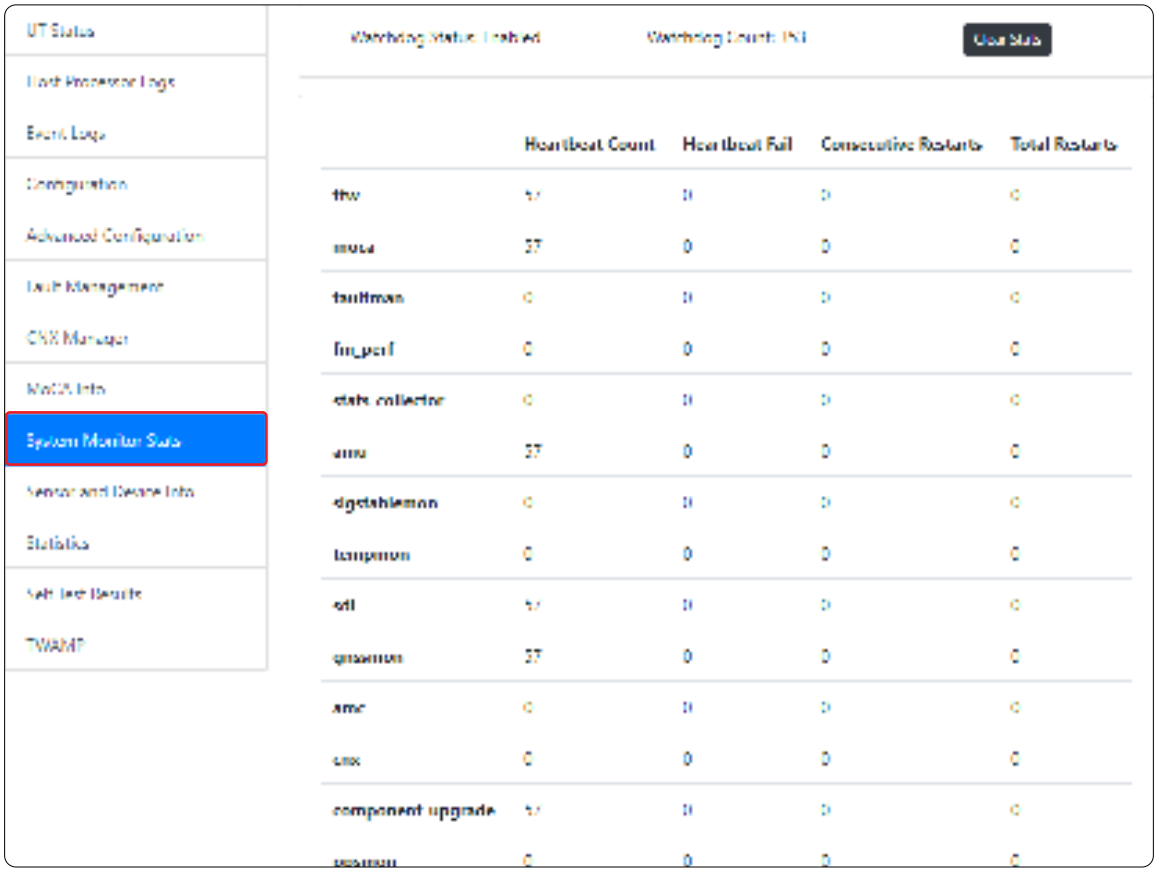
①	CNX Information	Displays the CNX information.
②	Diagnostic Data	Displays the diagnostic result.

8.8.8 MoCA Info



Displays the MoCA information.

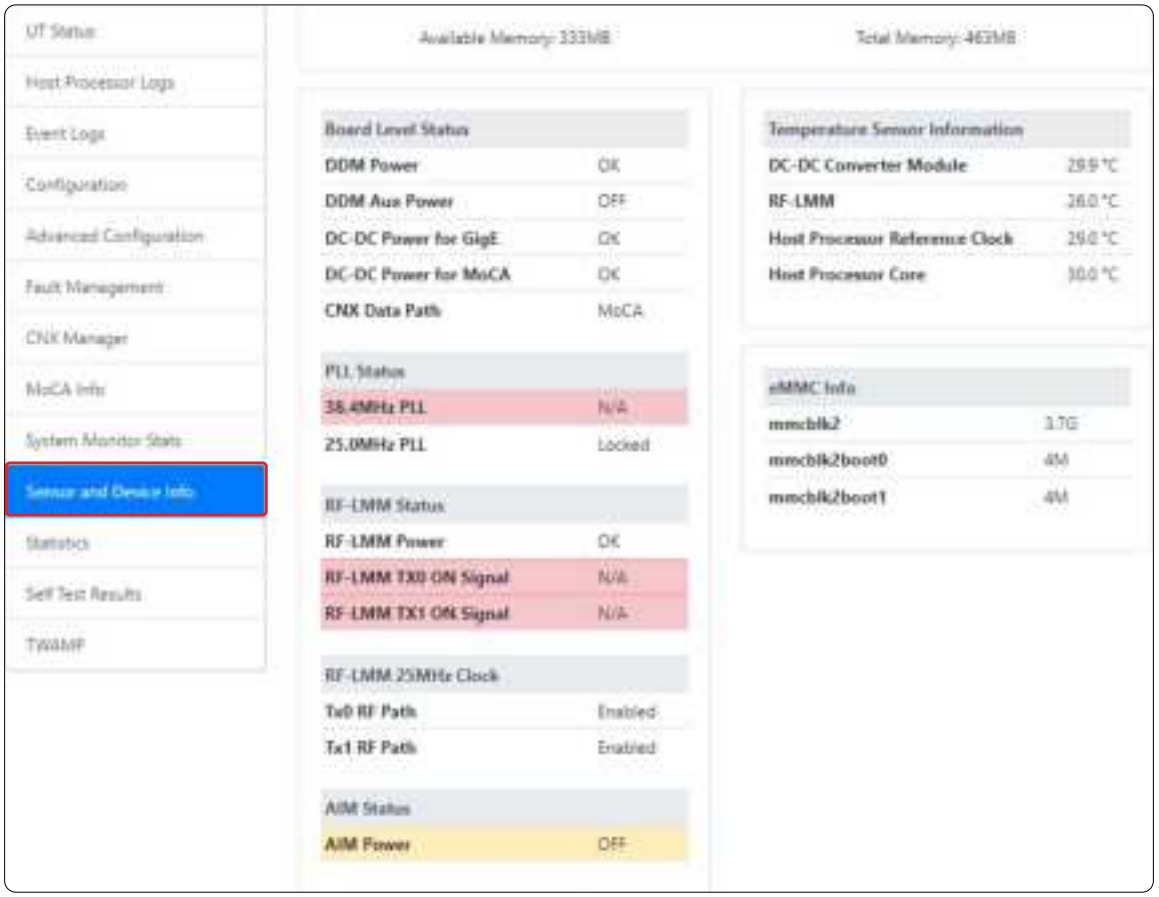
8.8.9 System Monitor Status



Displays the system monitor status

- Clear Status: Click the **Clear status** button to clear the shown page.

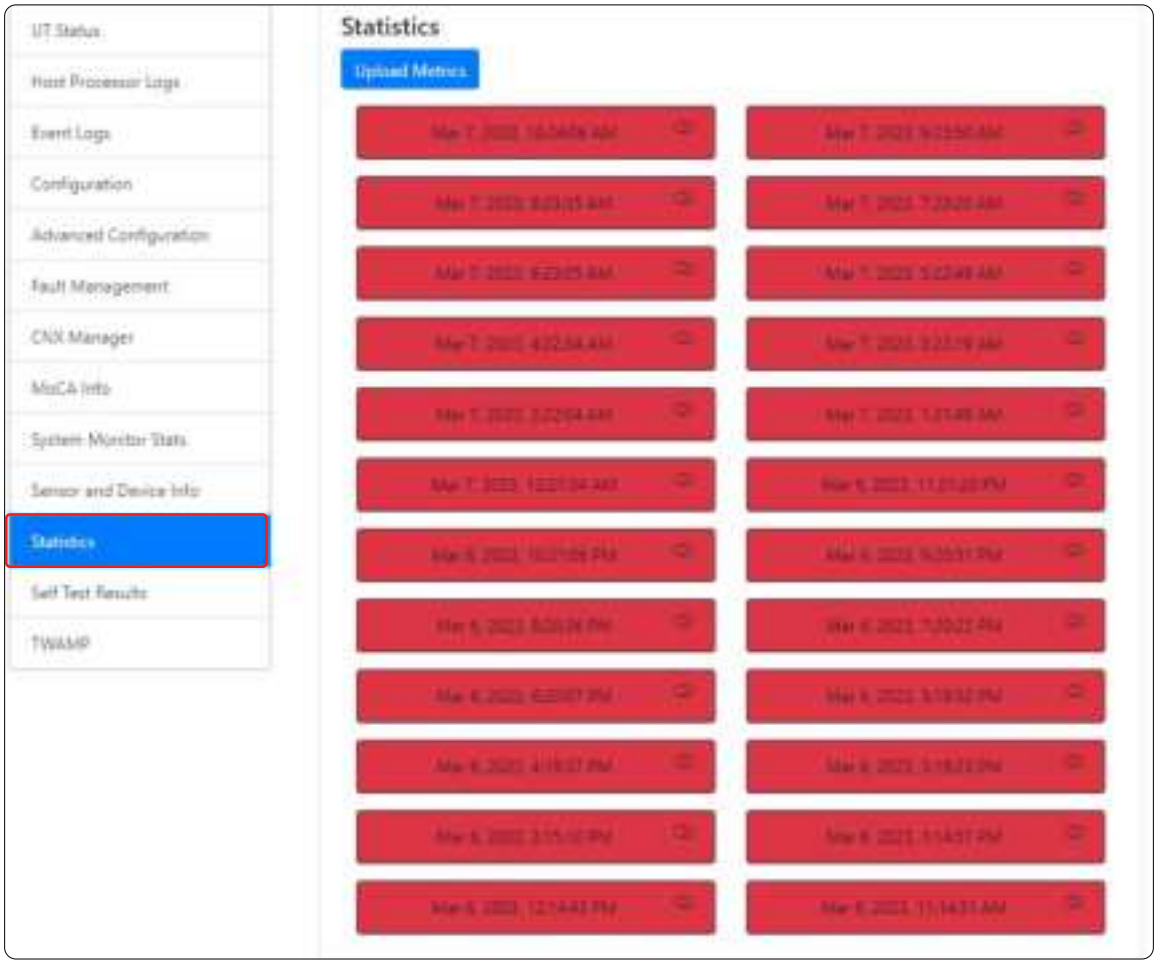
8.8.10 Sensor and Device Info



Displays the sensor/device information. The color shows the sensor/device status.

- White: The modem is behaving as normal.
- Yellow: The system might cause errors.
- Red: The modem is abnormal or incorrect (Error).

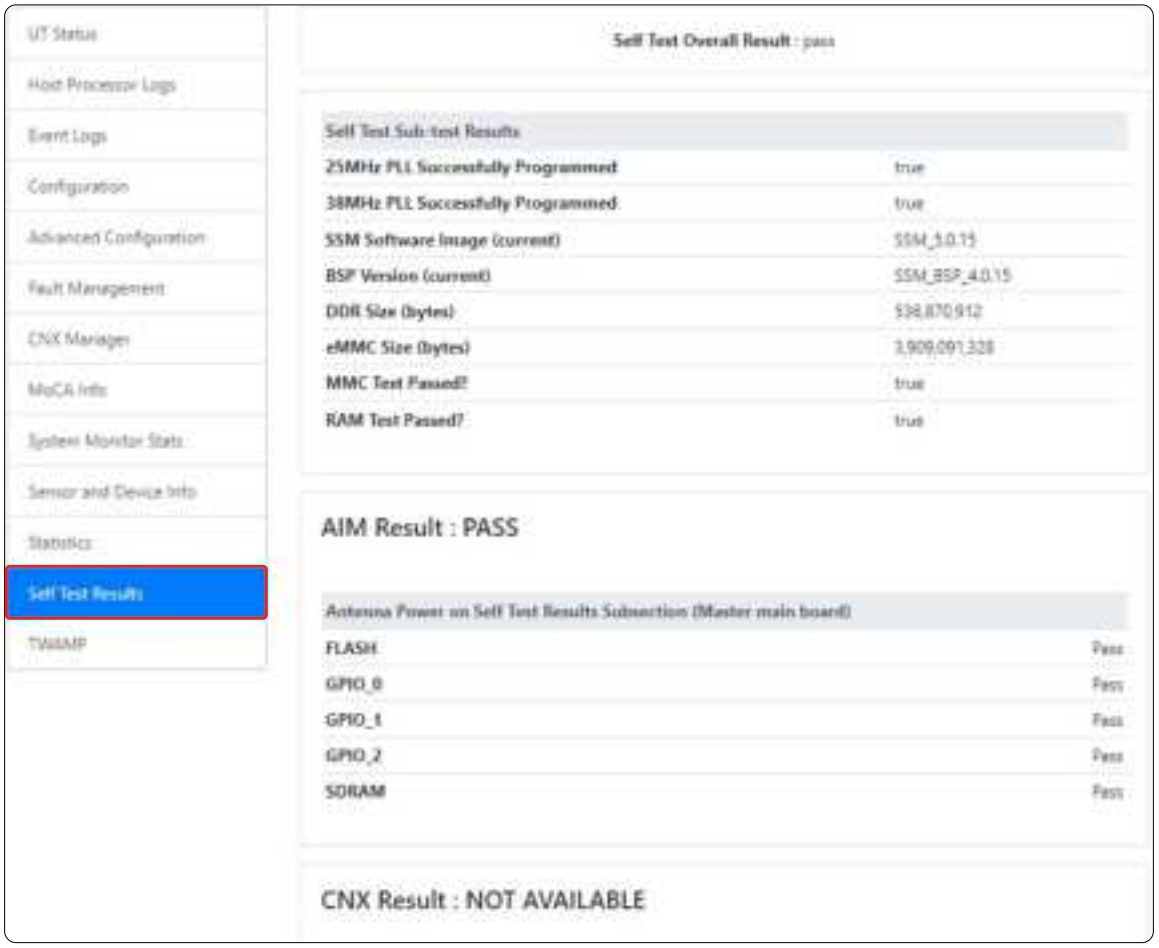
8.8.11 System Monitor Status



Checks the antenna status periodically and displays on the page. To activate the function, set the **Update_Statistics** value to true on configuration.

- Upload Metrics: Upload the status information to OneWeb server.

8.8.12 Self Test Results



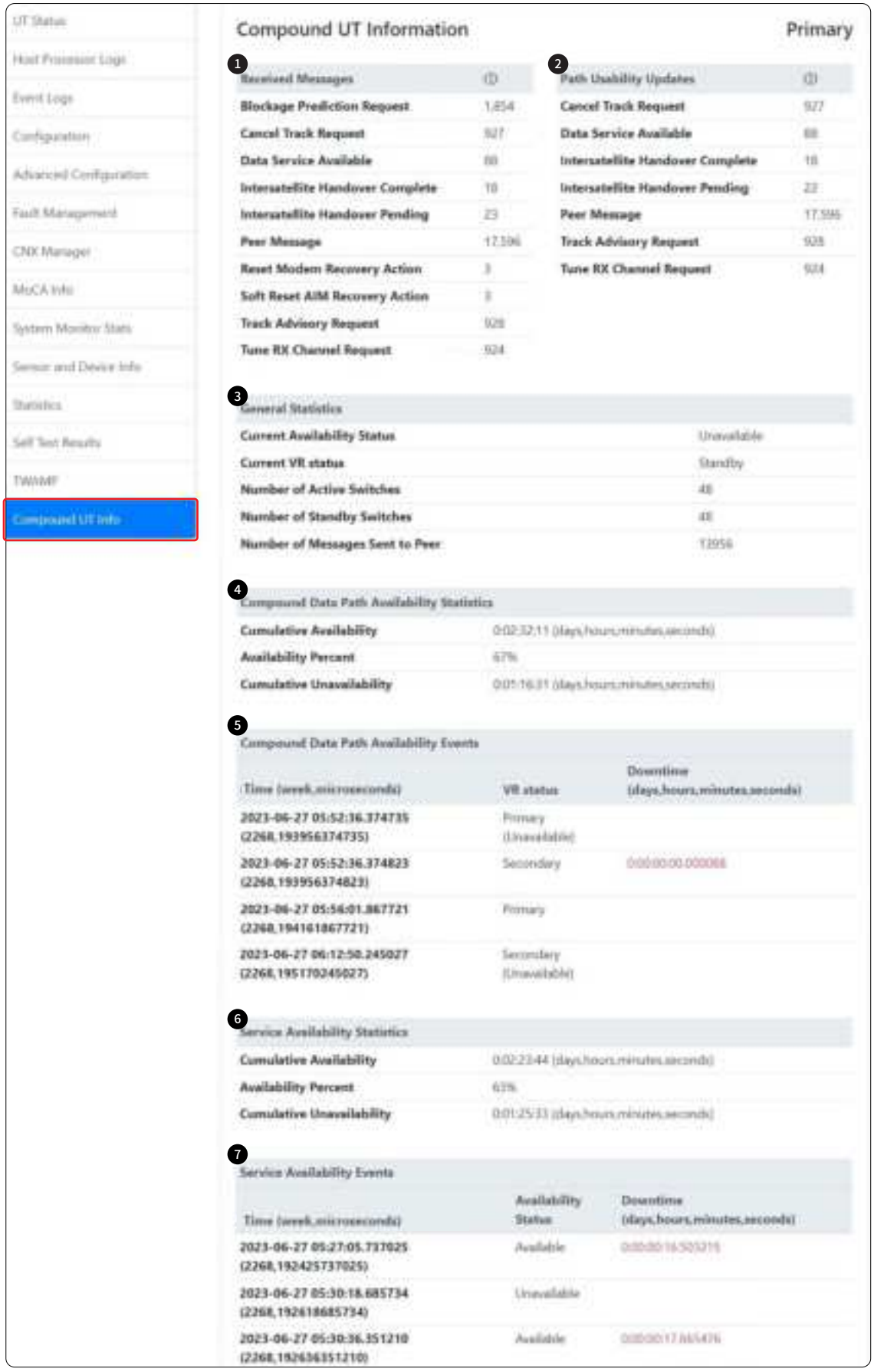
Run the self test to check the AIM/CNX status.

8.8.13 TWAMP

Sets the network test function by entering the required parameters.

- Server IPv4 Address: Enter the server IPv4 address.
- Server Port: Enter the server port.
- Inter-Packet Interval(m):Enter the inter-packet interval(m).
- Number of Packets: Enter the number of packets.
- Start: Click the Start button to start the TWAMP.

8.8.14 Compound UT Information



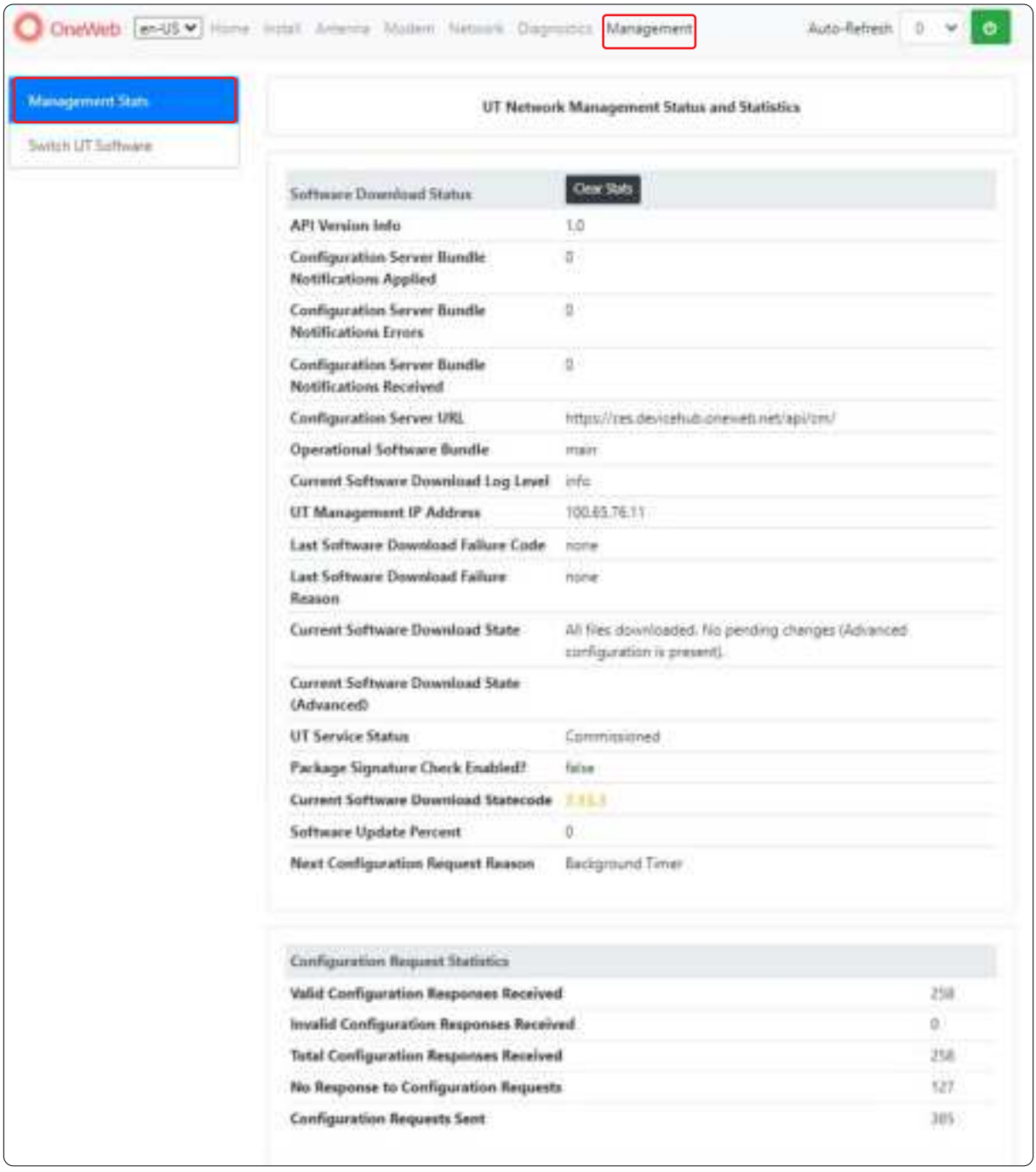
Displays the primary-secondary antennas information.

①	Received Message	Displays the message information used for tracking satellites (Track message etc.).
②	Path Usability Update	Displays the path usability update.
③	General Statistics	Displays the information about Oneweb network connection.
④	Compound Data Path Availability Statistics	Displays the information about the primary-secondary handover and Oneweb network available.
⑤	Compound Data Path Availability Events	
⑥	Service Availability Statistics	Displays the information about Oneweb network connection or disconnection statics.
⑦	Service Availability Events	Displays the statistics of corresponding CUC.

8.9 Management

This menu sets and displays the Management Status and Switch UT Software.

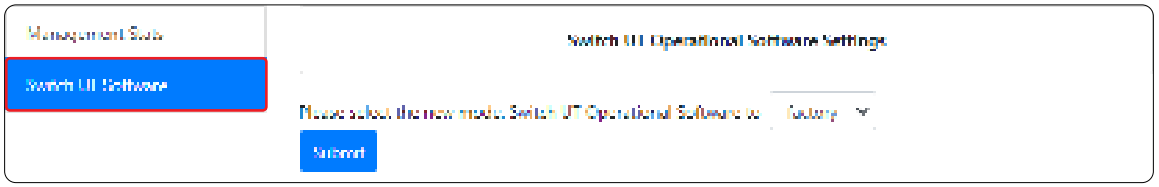
8.9.1 Management Status



Displays the management status.

- Clear Status: Click the **Clear status** button to clear the shown page.

8.9.2 Switch UT Software



Software mode can be switched to factory or main. Click the **Submit** button to apply the settings to the system.

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: 36.0 dBi
G/T (@ 11.8 GHz, @ >30deg. EL)	12.2 dB/K
Tx Frequency	Tx: 14.0 – 14.5 GHz
Tx Gain (Without Radome)	Tx: 38.4dBi
EIRP	35.6 dBW / 20 MHz (single carrier) 38.6 dBW / 40 MHz (dual carrier)
Cross pol Isolation	Min 15 dB
Polarization	Rx: RHCP, Tx: LHCP

9.1.2 System Specification

Item		Specification
Platform		Three Axis: Azimuth, Elevation, Cross-level
Positioning		3-axis Control: Azimuth, Elevation, Cross-Level
Pedestal Motion Range	Azimuth	-300° to +300°
	Elevation	-59° to +59° from zenith (FOV -53° to +53°)
	Cross-Level	-10° to +10°
Power Consumption		Primary 1 : 87 W Max Primary 2 : 87 W Max
CNX Input Power		100-240 VAC, 50 ~ 60 Hz (Enterprise)
DC Power to Transceiver		Current 1.6A Max @ 40-60V, 56V nominal
Digital Signals		Tx-ON : LVDS
		Rx-ON : LVDS
		Frequency Reference: LVDS
		Reset: LVDS
Ant. Monitor, Control Interface		Ethernet, 10/100 Base T
RF Cable		RG6(30m) or RG11(100m)
Ethernet Cable		CAT5 (CNX to User terminal)

9.1.3 Mechanical Specification

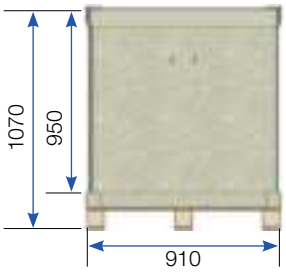
Item	Specification
Radome Height	770 mm (30.3")
Radome Diameter	Ø845 mm (33.3")
Reflector Size	73 cm (28.7")
Radome Color	White
Antenna Safety Gap	15 mm
Antenna Weight	< 34 kg with Radome & OHM

9.1.4 Package Specification

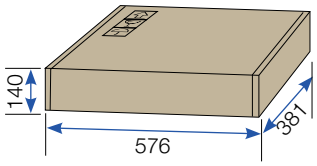
Item			Specification
Antenna Package	Single stack	Size	910 mm x 910 mm x 1070 mm (L x W x H)
		Weight	Approx. 66 kg (Antenna+Package +OHM)
			Approx. 64 kg (Antenna+Package)
	Double stack	Size	910 mm x 910 mm x 2140 mm (L x W x H)
		Weight	Approx. 132 kg (Antenna+ Package+OHM)
			Approx. 128 kg (Antenna+Package)
CNX Package	Size		576 mm x 381 mm x 140 mm
	Weight		6.3 kg (2.6 lbs)

※ Package size may change with design revisions

Unit: mm



Antenna Package



CNX Package

9.2 Customer Network Exchange (CNX) Specification

9.2.1 CNX-E Specification

Item	Specification
Size (W x D x H)	442 mm x 250 mm x 44.4 mm (17.4" x 9.8" x 1.7")
Weight	5.1kg (11.2 lbs)
Transceiver Interface	Eight GigE RJ-45 Ethernet(1 Management Port)
Encryption	MoCA 2.0 E-band (400-700MHz)
AC Input Voltage	AC 100V ~ 240V/50Hz ~ 60Hz
Operating Power	Max. 30 W
Output Voltage	Nom. 56V
Output Power	Max. 250W
LEDs	**PWR:** • Operational: Solid GREEN • Off: No power
	MoCA • Operational: Solid GREEN (CNX-SSM MoCA connected) • Off : CNX-SSM not connected

9.3 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)	-25°C to +55°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 4 hours
Operational Vibration	IEC 60068-2-64, .001 - .02 PSD, slope +12, 5 to 10 Hz .02 PSD, slope 0, 10 to 50 Hz .02 - .001 PSD, slope -12, 50 to 100 Hz
Non-operational Vibration	IEC 60721-3-4, Class 4M3 3.0 mm peak (+/- 1.5) (2-9 Hz) 5 m/s2 (9-200 Hz) IEC 60068-2-6 with test duration of 5 sweeps per each of the 3 axes.
Operational Shock	IEC 60068-2-27
Non-operational Shock	IEC 60068-2-27
Weather Tightness	IP66 per IEC 60529
Lightning Protection	IEC 61000-4-5 Class 4

Item	Specification
Hail Impact	ASTM E822
Operating Wind Resistance	80 km/hr (50 mph)
Lightening	IEC 61000-4-2 (ESD) IEC 61000-4-4 (EFT) IEC 61000-4-5 (Surge)

* 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's 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 Checking separately sold items

Refer to separately sold items list below table.

Accessory Kit

Part Number	Part Description
OW-NPM5-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 OW70L-D
OW-NPM5-1074-RM	NP Mount
OW-NPM-1013-ATP	NP Adjustable Top Plate (2EA)
OW-NPM5-1076-RM	NP Rubber Mat
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)
OP-T1B0	CNX-T

11.4 Important Notice of Waterproofing Connector

11.4.1 Introduction

During antenna installation, it is important to ensure that once the cable is connected to the antenna, proper waterproofing of the connector must b e done with a self-amalgamating tape.
If you need any assistance, please contact Intellian Technical Support (support@intelliantech.com).

11.4.2 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.

11.4.3 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 loosen 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 in 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.