Release Bulletin

HUGHES
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Attention:	All OneWeb Customers
Related Products:	HL1120W
Subject:	**HL-Fixed-1.0.60.4A Release bulletin**

1 Introduction

This release bulletin pertains to software release bundle HL-Fixed-1.0.60.4A for Hughes Leo Electronic Steering Antenna model *HL1120W*, grouped under model type *HL-Fixed* developed by Hughes Network Systems (HNS).

Release	Model Type	Model Number
HL-Fixed-1.0.60.4A	HL-Fixed	HL1120W

An overview of the HL1120W UT is provided in section 1.1. Section 2 describes the software packages included in this release bundle. Also, the software changes made in this release and known issues are listed in sections 3 and 5.

This release has been qualified by Hughes and OneWeb to be used for HL1120W UTs operating in the OneWeb network. HL1120W UTs can be upgraded to use this new release by following the upgrade procedures given in section 7. If the UT is online at OneWeb Device Hub, then use Device Hub to install the latest software bundle on the UT. Otherwise, to install the software locally, use the Hughes LEO mobile app or the Local User Interface (LUI) as described in the UT Installation Guide (1043630).

1.1 HL1120W UT Overview

The HL1120W is a full duplex (FDX) user terminal (UT) with WiFi support for fixed installations. The user equipment connects to the UT via Gigabit Ethernet (GigE) or WiFi connections through the indoor equipment. The HL1120W UT connects to the OneWeb LEO satellites using a tracking antenna and provides a user gateway to the OneWeb Ground Network (GN). The user traffic is routed from there to the Core Network (CN) to provide Internet access to the user. The OneWeb Device Hub (DH) provides certain UT management functions.

The HL1120W UT consists of three field replaceable units – outdoor unit (ODU), indoor unit (IDU), and power supply unit (PSU). The FDX ODU is installed outdoors on a mount, while the FDX IDU and PSU are installed indoors. **Figure 1** shows the HL1120W user terminal fully assembled.

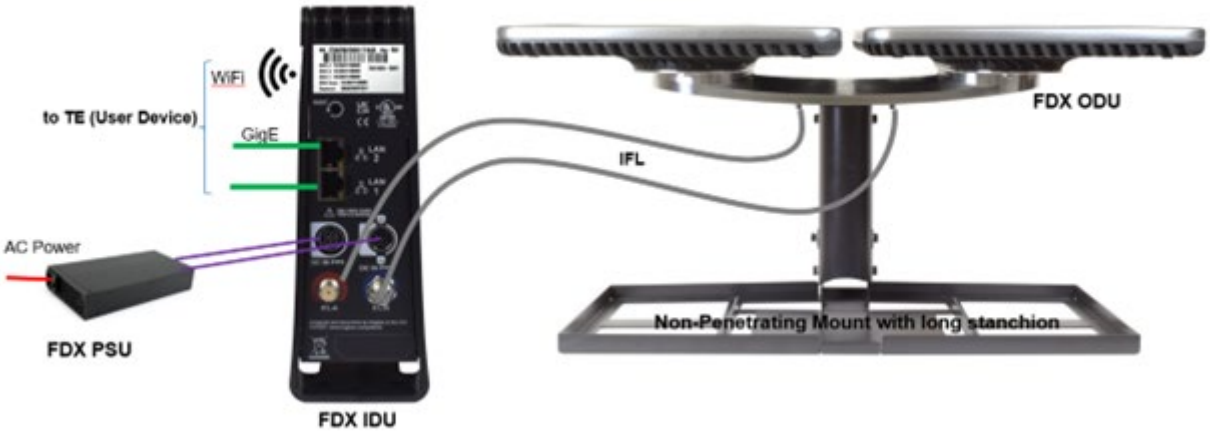


Figure 1. HL1120W User Terminal

- Outdoor Equipment:
  - HL1120-ODU: The FDX ODU antenna assembly consists of two electronically steered antenna panels – the FDX-A panel for the receive (Rx) path and the FDX-B panel for the transmit (Tx) path. Each antenna panel has a Common Control Module (CCM), RF Conversion Module (RCM), and Beam Former Array (BFA). The CCM-A has a host processor that runs the UT software for control, Management, and network services. The CCM-A also houses a satellite modem that communicates with the OneWeb ground network through the OneWeb LEO satellites using the Rx & Tx tracking antennas.
- Indoor Equipment:
  - HL1120W-IDU: The FDX IDU hosts a WiFi Router that provides two GigE ethernet ports and WiFi access to the user data network. The WiFi Router also provides access to the UT's local management interface.
  - HL1120W-PSU: The FDX PSU is an AC-DC power supply assembly providing DC power to IDU and ODU.
  - IFL Cable: The FDX IDU is connected to the ODU via a dual intra-facility link (IFL) cable:
    - IFL-A connects the IDU to the FDX-A panel on the ODU. It carries both DC power & data. The data is transferred over a MoCA link between the WiFi Router on the IDU and the host processor on CCM-A in the ODU.
    - IFL-B connects IDU to the FDX-B panel on the ODU. It carries DC power only.

    The PSU has a load-sensing circuit that prevents powering on the user terminal until the IDU & ODU are connected via the IFL cables.

1.2 Hughes LEO App

The HL1120W UT has a companion installer app (named Hughes LEO app) that can be used on smartphones to aid in the commissioning, local software upgrade, and status check of the UT. Refer to the UT Installation Guide (1043630) for more details.

2 Release Software

The tables below list the software release files that are part of this delivery.

Table 1. R1.0.60.4A Software Bundle File

Software Bundle File Name	Version	Notes
HL-Fixed_1.0.60.4A_CCM_5.4.98.1_CCM_BSP_5.4.15_MDM_4.0.1.305_EGR_2.20_CNX_1.01.66.tar.gz	R1.0.60.4A	

Table 2. R1.0.60.4A Software Packages in Software Bundle

UT Component	Version	Notes
CCM BSP	5.4.15	
CCM APPS	5.4.98.1	Includes AIM/ARC functions
MDM	4.0.1.305	
OGR (GNSS Receiver)	2.20	
IDU (CNX-H)	1.01.66	

3 Release Summary

This release is used for HL1120W UT-type approval. It supports all features listed in the HL1120W Hughes LEO Terminal Data Sheet (H69698, May 24). The new features and bug fixes included in this release are listed below.

3.1 Bug Fixes

The release R1.0.60.4A includes the following fixes and enhancements:

Table 3. R1.0.60.4A Bug Fix List

Item	Description	Component
Major	Resolved partition corruption issues triggered by specific software release upgrades.	CCM
Moderate	Resolved an issue preventing modem resets caused by the startNetworkInterface error.	CCM
Minor	Resolved corruption in AIM logs to ensure reliable logging.	CCM
Minor	Fixed an issue preventing the ODU IP address from being changed to a non-default value.	CCM
Minor	Fixed packet loss on MoCA with 30K datagrams packet size	CNX
Rare	Added a monitor to prevent the loss of the CNX-H WAN port IP address	CNX
Rare	Fixed an upgrade issue where the CNX failed to send an API response to the ODU before rebooting	CNX
Rare	This release includes an enhancement to resolve rare BFA CPLD upgrade failures.	CCM

Rare	Implemented an auto-recovery mechanism for handling Modem Sahara crash dumps.	CCM
Enhancement	Renamed 'Deicing' to 'Heat Assist' in the ODU LUI.	CCM
Enhancement	Includes a fix that allows configuring the ODU IP address to a new default setting via the UT LUI without affecting the connection with CNX-H. Refer to the section for the procedure to update the ODU to a non-default IP address	CCM/CNX
Enhancement	Enhanced the interpretation of bulk converter temperature reading by the ARC	CCM
Enhancement	Change in Guest WiFi SSID configuration failed when Guest SSID has open authentication.	CCM
Enhancement	Enhanced functionality to ensure the modem powers on only after the GNSS receiver becomes operational.	CCM
Enhancement	Improved router behavior to restart correctly after disabling Bridge mode with all settings applied.	CNX

4 Hardware and Software Dependencies

4.1 UT Release Dependencies

1. R1.0.21 release is being loaded on all newly built UTs at the Hughes factory. Both */factory* and */main* partitions of the FDX-A and FDX-B sides are upgraded to R1.0.21.
2. All the UTs delivered earlier (may have R1.0.5 or R1.0.8) need to be sent back to Hughes factory for the hydrophobic coating to be applied and software to be upgraded to R1.0.21 (both */factory* and */main*) on both FDX-A and FDX-B sides.
3. Follow the instructions in section 7 for upgrades of FDX UT to 1.0.60.4A based on the current software version running on the UT.

4.2 Hughes LEO App

The following table lists the Hughes LEO app software releases that have been verified to be compatible with the R1.0.56 UT software release.

Table 4. Compatible Hughes LEO App Release Versions

UT Component	Version
Hughes LEO App for iOS	2.00.04
Hughes LEO App for Android	2.00.04

5 Known Issues

5.1 Upgrading UT Firmware with a Non-Default ODU IP Address

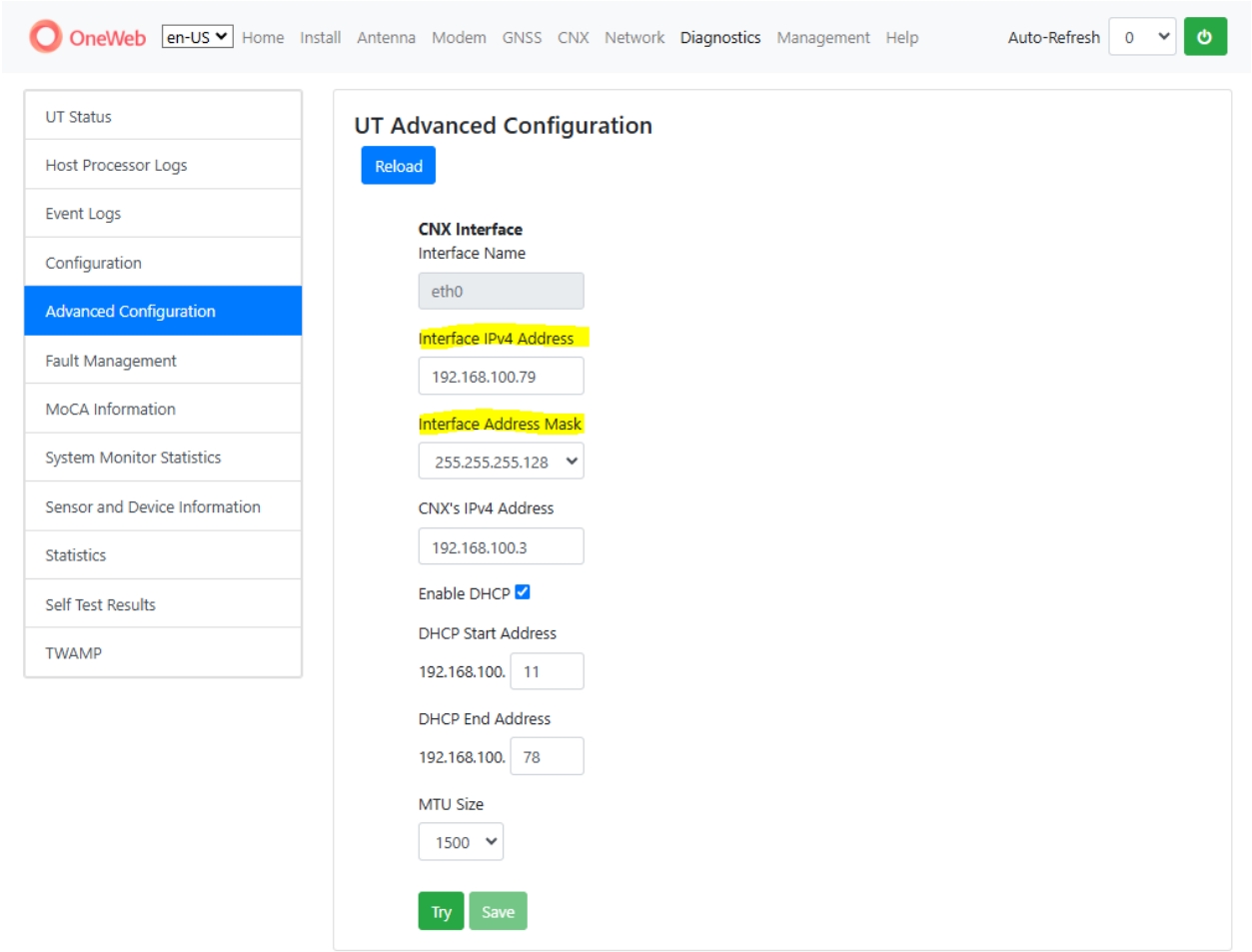
This section explains the process of upgrading a UT with an ODU configured with a non-default IP address. These steps apply to UTs being upgraded to HL-Fixed_1.0.60.4A or higher from a release version earlier than HL-Fixed_1.0.60.4A.

Note: If the UT is already running HL-Fixed_1.0.60.4A or higher, these steps are not required.

The default IP address of the ODU is 192.168.100.1. If it has been configured to a different IP address, please follow the steps below before proceeding with the UT firmware upgrade:

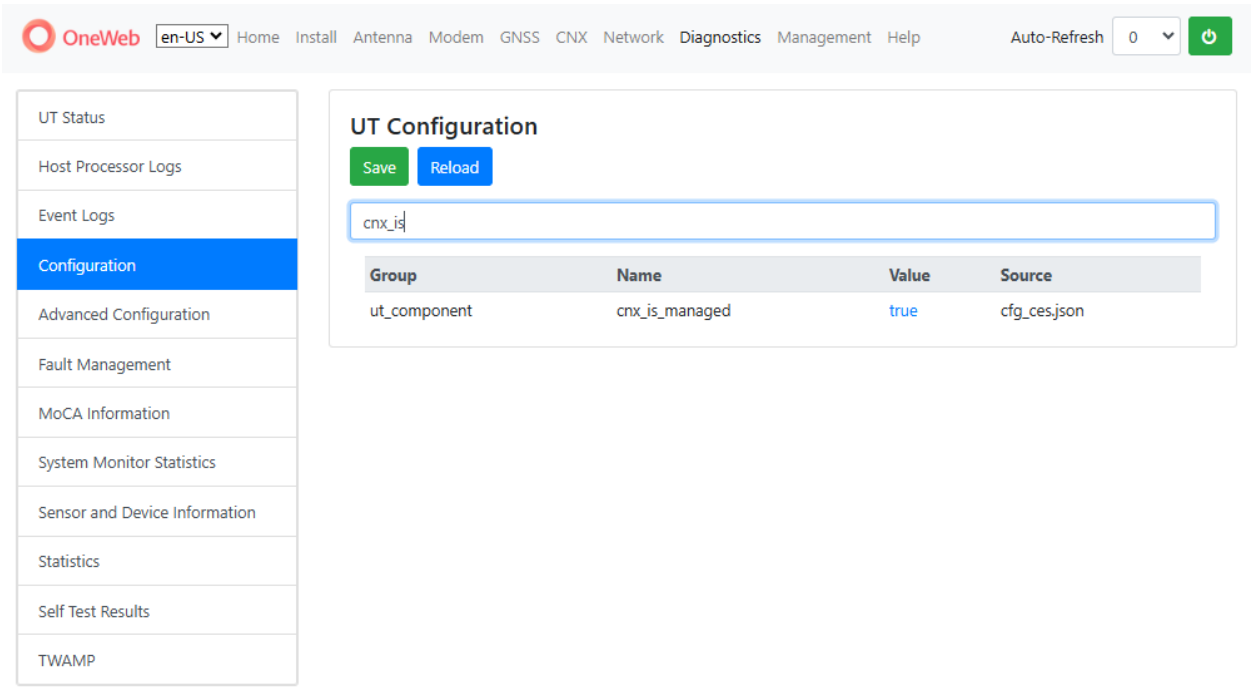
1. **Update ODU to Default IP Address:**

   - Navigate to Advanced Configuration on the LUI and change the ODU's IP address back to the default value, 192.168.100.1.
   - Refer to the provided screenshot to identify the fields that need to be updated. Click Try to temporarily change the ODU's IP address.
   - Open the LUI on a new address on a different tab/browser and then click Save to apply the changes.
   - Reboot the UT.



2. **Verify CNX Managed Setting:**

   - Ensure the CNX Managed setting is set to True.
   - Refer to the screenshot below to identify the fields to check.



- If it is not set to True, click on the value, select Delete, and save the changes. This will reset the configuration to True.
- Reboot the UT.

3. **Check CNX Information:**
   - Navigate to Home > CNX > CNX Information on the LUI. Confirm that the CNX Information is correctly populated.
   - If it is not populated, contact Hughes Support for assistance.

4. **Perform Firmware Upgrade:**
   - Complete the Software Upgrade on the UT as per section 7.

5. **Restore ODU IP Address to Non-Default IP:**
   - After the software upgrade, return to Advanced Configuration on the LUI and restore the non-default IP address for the ODU interface as outlined in Step 1.

6 Operational Considerations

1. Multiple User APN is disabled by default. Coordinate with OneWeb support to use multiple user APNs and routed modes.
2. If the LUI login authentication is required, coordinate with OneWeb support or Hughes support.
3. The MEA event ‘QMI_OW_EXT_MODEM_BELOW_MEA_TRACK’ is generated by the Qualcomm modem when it computes an elevation angle that falls below the minimum elevation angle threshold as defined by OneWeb and configured by SSM software. It has no impact to the service.

7 Installation/Upgrade

HL1120W UT is loaded at the Hughes factory with a baseline UT SW bundle (HL-Fixed-1.0.21) qualified with Device Hub. Both factory and main partitions are programmed with this baseline software bundle at the Hughes factory. Software on the UT (CCM, MDM on FDX-A, and IDU (CNX-H)) is field upgradeable. This section lists the procedure to upgrade the HL1120W UT software.

7.1 Determining Current Hardware/Software Versions of the UT

Before installing/upgrading software on a HL1120W UT, the UT's hardware and software version should be determined using the UT's Local User Interface (LUI). Accordingly, an appropriate UT software bundle should be determined to upgrade the UT.

7.2 Determining Current Hardware Versions of the UT

Login to the CCM LUI at http://192.168.100.1, and navigate to the *Antenna → Hardware Product Information* link to view HW information for the FDX antenna, two FDX-A/B antenna panels, and their BFA, RCM, and CCM modules.

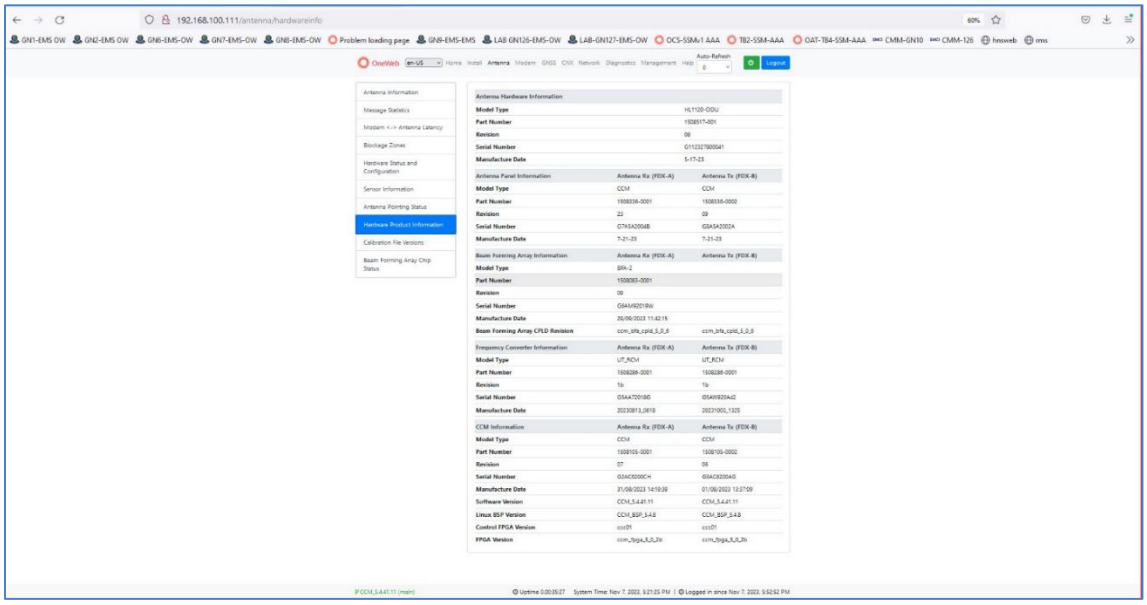


Figure 2. HL1120-ODU Hardware Information

Navigate to the *Modem → Modem Information* link to determine modem information:

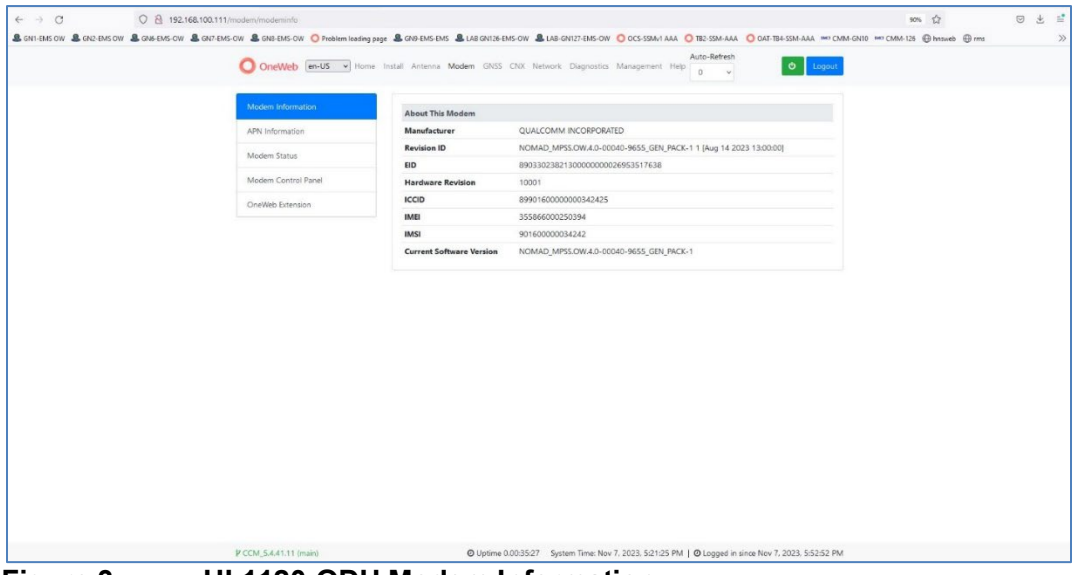


Figure 3. HL1120-ODU Modem Information

Navigate to the *GNSS → GNSS Information* link to determine OGR information:

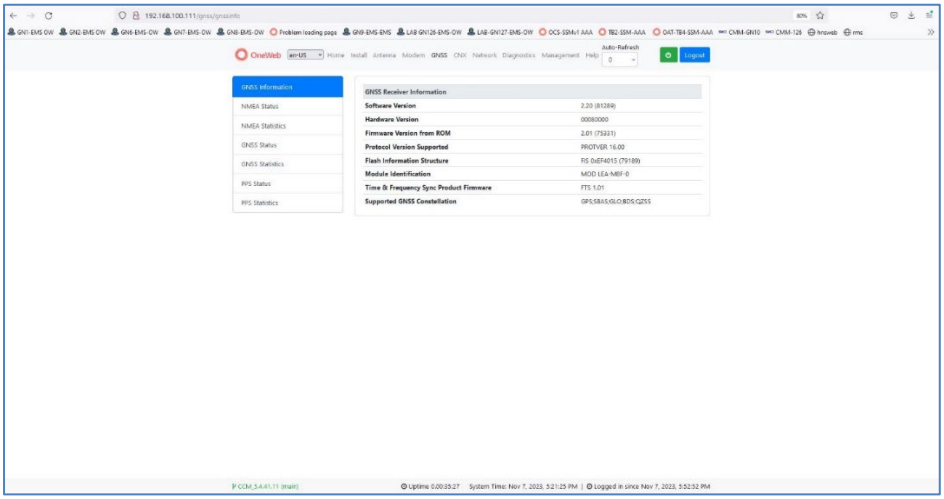


Figure 4. HL1120-ODU OGR Information

Navigate to the *CNX → CNX Information* link to determine IDU information:

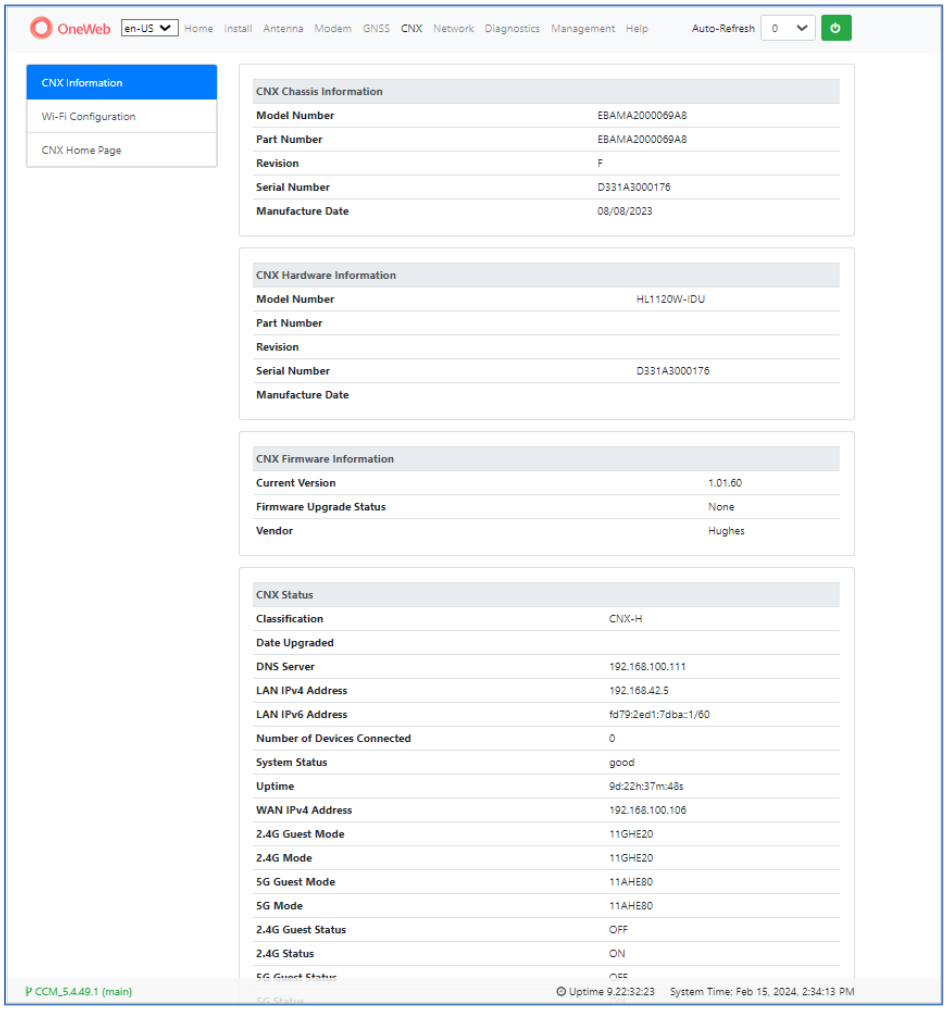


Figure 5. HL1120W-IDU (CNX-H) Information

7.3 Determining Current Software Versions of the UT

Login to the CCM LUI at http://192.168.100.1, and navigate to the *Diagnostics → UT Status* link to view the current software versions on the CCM */factory*, */main* and */backup* partitions, Modem, OGR, and IDU (CNX-H):

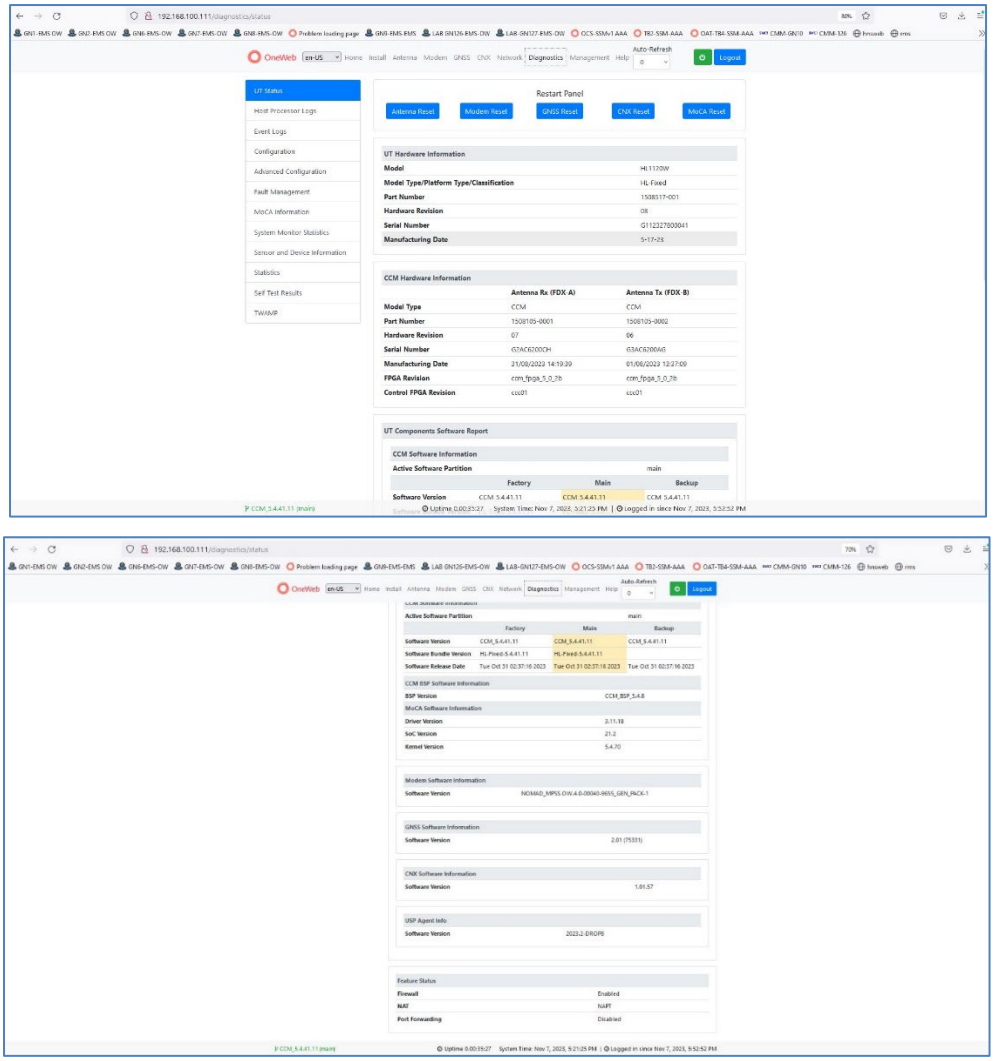


Figure 6. HL1120-ODU, HL1120W-IDU Software Information

7.4 Software Installation / Upgrade Methods

Two methods available to update HL1120W UT to this software release are given below.

- The recommended normal procedure for upgrade via Device Hub is given in section 7.4.1.
- Another method for local upgrade using the UT's Local User Interface (LUI) is described in section 7.4.2.

7.4.1 Preferred – UT Software Bundle Upgrade from Device Hub

Device Hub allows new software bundles to be uploaded to its platform and approved for use in upgrading UTs. Then, Device Hub allows the upgrade of an approved UT software bundle on a UT. When the UT is online, Device Hub will interact with UT via a new release notification API call for UT to download the new bundle from Device Hub and initiate an upgrade after a configurable timer expiry.

Also, when UT sends a UCR message to Device Hub (e.g., after restart), Device Hub will send a UCM message, which will trigger the UT to download the new bundle from Device Hub and initiate an upgrade after a configurable timer expiry.

Coordinate with OneWeb support for the procedure to upgrade HL1120W UTs from Device Hub. Follow the software upgrade instructions below for R1.0.60.4A.

The steps below outline the upgrade process based on the currently installed software version.

1. **Upgrading from R1.0.56 and R1.0.50:**

   a) Coordinate with OneWeb support for the Device Hub hotfix to disable the watchdog prior to upgrading the terminal.
   b) Ensure the terminal is online in the Device Hub, then initiate the upgrade to R1.0.60.4A.

2. **Upgrading from R1.0.21, R1.0.36:**

   a) First, upgrade to R1.0.60.1A from the device hub.
   b) Verify that the terminal is online in the Device Hub with release R1.0.60.1A installed.
   c) Proceed with the upgrade to R1.0.60.4A from the Device Hub.

7.4.2 UT Software Bundle Upgrade using LUI

Note: This method should be used only for troubleshooting purposes.

A UT software bundle can provide software images for all components of the UT (e.g., CCM Host Processor (CCM BSP & APPS), Modem, IDU, OGR). The UT Installation process (refer to UT Installation Guide (1043630)) allows a user to upload a software bundle to upgrade software on the UT as part of UT installation. Uploading a software bundle will update the */main* partition on the CCM, preserving the original factory image.

The steps below outline the upgrade process via the LUI based on the currently installed software version.

1. **Upgrading from R1.0.56 and R1.0.50:**

   a) SSH to the terminal and run the following command:

   touch /misc/nowdog.dat && sync && reboot

   b) Reboot the terminal.
   c) Refer to the AAA Fixed UT Installation Guide [1043630-0001] for instructions on upgrading the Hughes LEO ESA UT using a bundle upgrade via the LUI. This method, which is part of the UT installation process, allows users to upload a software bundle to upgrade the Hughes LEO ESA Fixed UT.

2. **Upgrading from R1.0.21, R1.0.36:**

   a) First, upgrade to R1.0.60.1A by following the AAA Fixed UT Installation Guide [1043630-0001] to perform software via the LUI.
   b) Verify that the terminal is online and running release R1.0.60.1A.
   c) Proceed with the upgrade to R1.0.60.4A by following the same AAA Fixed UT Installation Guide [1043630-0001] for a bundle upgrade via the LUI.