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Conventions

**NOTE:** The Note symbol calls your attention to additional information that you will benefit from heeding. It may be used to call attention to an especially important piece of information you need, or it may provide additional information that applies in only some carefully delineated circumstances.

**TIP:** The Tip symbol calls your attention to parenthetical information that is not necessary for performing a given procedure, but which, if followed, might make the procedure or its subsequent steps easier, smoother, or more efficient.

In addition to these symbols, this manual uses the following text conventions:

- **Data Entry:** indicates text you enter at the keyboard.
- **User Interface:** indicates a button to click, a menu item to select, or a key or key sequence to press.
- **Screen Output:** shows console output or other text that is displayed to you on a computer screen.
- **Bold:** indicates the definition of a new term.
- **Italics:** used for emphasis, cross-references, and hyperlinked cross-references in online documents.

Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2007</td>
<td>Creating document</td>
<td>Tova</td>
</tr>
<tr>
<td>B</td>
<td>March 2008</td>
<td>Updating according to NSG Ver 1.4.2</td>
<td>Tova</td>
</tr>
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Chapter 1
Preface

This guide lists the main features of the NSG 9000 device and instructs you on how to configure the device.

Manual Organization

This guide is organized as follows:

- Chapter 1, Preface describes the manual and the conventions used in the manual
- Chapter 2, Safety Warnings describes safety measures for handling NSG 9000 device.
- Chapter 3, Initial Setup describes the initial setup of the NSG 9000 device.
- Chapter 4, Firmware Upgrade describes how to download and install the required firmware.
- Chapter 5, Elementary NSG 9000 Configuration describes the basic NSG 9000 configuration.
- Chapter 6, Licensing provides basic information about licensing.
- Chapter 7, Troubleshooting describes basic troubleshooting for the NSG 9000 device.
## Conventions

This guide uses the following notational conventions:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courier font regular</td>
<td>System messages, syntax statements, or command examples.</td>
</tr>
<tr>
<td>Courier font bold</td>
<td>Commands that you are instructed to enter.</td>
</tr>
<tr>
<td><em>italic font</em></td>
<td>For emphasis or command variables.</td>
</tr>
<tr>
<td><em>italic font</em></td>
<td>In syntax statements, items inside brackets are optional.</td>
</tr>
<tr>
<td>⚠️ Caution:</td>
<td>Indicates a situation that might impair data. Read provided instructions!</td>
</tr>
<tr>
<td>Note:</td>
<td>Highlights important information.</td>
</tr>
<tr>
<td>⚡ Tip:</td>
<td>Provides time-saving or informative suggestions about using the product.</td>
</tr>
<tr>
<td>⚠️ Warning:</td>
<td>Indicates a situation that causes damage to the system or might harm a person.</td>
</tr>
</tbody>
</table>
2.1 Guidelines for Installing the NSG 9000 Platform

CAUTION: The NSG 9000 platforms are used in restricted access locations.

CAUTION: To prevent body injury when mounting or servicing this platform in a rack, you must take special precautions to ensure that the system remains stable. Read the following guidelines to assure your safety.

2.1.1 Rack Specifications

Install the 2-RU chassis in the following rack:
- a standard EIA 19-inch computer rack with at least 30” (76cm) depth.
- To allow free air flow, the rack must be completely open at its front side.
- The rack should be mounted with side walls and a back door.
- The back door should have ventilation slots at its bottom part.
- The top of the rack should be closed and mounted with cooling fans(s). For fan requirements, see following section.

2.1.2 Rack Ventilation

Each NSG 9000 unit requires ventilation of at least 2.2 M³/min (78 CFM). Calculate the total required M³/min or CFM accordingly. In case devices of another type are mounted on the rack, consider their cooling requirements as well.

For example, the combined air flow of fans mounted at the top of a rack mounted with ten NSG 9000 devices is at least 22.7 M³/min (780 CFM).

2.1.3 Rack Positioning

- From front - leave clearance of at least 25” (63cm) from the front to any neighboring cabinet/wall.
- From back - leave clearance of at least 20” (51cm) from the back to any neighboring cabinet/wall.

2.1.4 Device Mounting

CAUTION: NSG 9000 has front-to-back air flow. Do not obstruct the airflow of the platform. Severe equipment damage can result when the device cannot properly exhaust the airflow.
Chapter 2 Safety Warnings

Guidelines for Installing the NSG 9000 Platform

2.1.5 Rack Weight

1. Check the allowed floor load of the facility.
2. Calculate the total weight and load according to the following parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupied Space</td>
<td>2 rack unit</td>
</tr>
<tr>
<td>Mounting Order</td>
<td>Partially filed rack - load rack from the bottom to the top with the heaviest component at the bottom of the rack.</td>
</tr>
<tr>
<td>Max Number</td>
<td>According to allowed floor load, see 2.1.5 Rack Weight on page 7. Spacing between units (1UR or more) is recommended for ease of cabling. Block the spaces between units as explained in this table in Open space.</td>
</tr>
<tr>
<td>Mounting Method</td>
<td>Mount each device on supporting rails provided by Harmonic in a separate kit (P/N RM-4-30) Install the rack-mounting rails before mounting the device on the rack.</td>
</tr>
<tr>
<td>Open space</td>
<td>To prevent hot air circulation: All open spaces below and above the devices should be closed with a blank panel.</td>
</tr>
<tr>
<td>Cabling</td>
<td>Route all cables at the back panel along the sides of the rack to allow pulling out the power supply unit and QAM-RF modules.</td>
</tr>
</tbody>
</table>

Table 2-2: Rack Weight Calculation

<table>
<thead>
<tr>
<th>Item</th>
<th>Value (USA)</th>
<th>Value (metric)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single fully loaded NSG 9000 unit</td>
<td>58.53</td>
<td>26.6</td>
</tr>
<tr>
<td>Footprint of a typical 23”x30” rack</td>
<td>4.8 sqr. Ft</td>
<td>0.446 m²</td>
</tr>
</tbody>
</table>

3. Limit the number of NSG 9000 devices on a rack according to the allowed floor load. Take into account also additional equipment to be mounted on the rack.

2.1.6 Power Source and Wiring Specifications

2.1.6.1 Redundant power supply

When installing NSG 9000 devices with a redundant power supply, both power supply units should be fed by different power sources:

- Dual AC supplies - use two different phases of the AC power plant.
2.1.7 Instruction for Installing the NSG 9000 Device

1. Install the rack-mounting rails before mounting the device on the rack.
2. Place the 2-RU chassis on the rack and slide it along the supporting rails.
3. Push the device back until the rack-mount holes in the front of the device line up with the rack posts.
4. Insert four screws through the mount holes in the front of the device to go through the corresponding holes on the rack posts.
5. Tighten the screws with a screwdriver.

2.1.8 Guidelines for Inserting QAM-RF Modules

The NSG 9000 platform is shipped without any modules inserted. Prior to inserting the Processing module or QAM-RF modules, read the following guidelines for handling the modules.

**CAUTION:** Electrostatic Discharge (ESD) may damage the platform components. Take precautions to eliminate ESD from your body and clothes before handling the platform or module by using a wrist band and a rubber mat and read the following section.

To prevent damage caused by ESD, it is recommended to follow these instructions:

- When unpacking a module, keep it in the anti-static wrapping until you are ready to install it in the device. Unwrap the module only at an ESD workstation or when grounded.
- If for any reason you cannot insert the module, lay it in an anti-static container or packaging.
- Handle the module only at ESD workstation and use anti-static rubber mat and wrist bands.
- Handle the module with care. Do not touch components and contacts on the board and hold board by its edges.

**CAUTION:** To ensure proper cooling of the device, install a filler panel in any unoccupied slot. This applies equally to QAM-RF module slots and to Power Supply slots.

For detailed instructions, refer to the *NSG 9000 Hardware Guide*. 
2.1.9 Cabling the NSG 9000 Device

Connecting cables to the NSG 9000 platform is straightforward. The NSG 9000 GbE input ports, QAM-RF and Ethernet ports are clearly marked on the NSG 9000 back panel. For detailed instructions, see the following picture and the *NSG 9000 Hardware Guide*. 
The NSG 9000 device is configured and controlled by a remote management system. Once you have finished cabling the device, set the IP address of the Ethernet 1 port located on the back panel of the NSG 9000 device. The Ethernet 1 port IP address is actually the IP address of the device. To set the NSG IP address, use the control panel located on the front panel of the NSG 9000.

3.1 Configuring the Ethernet Ports

NSG 9000 is monitored and configured by a remote management system, via the Ethernet ports located on the back panel of the NSG 9000.

The Ethernet ports labeled ETH1 and ETH2 provide access to two independent networks. The NSG 9000 uses the Ethernet port labeled ETH1 to communicate with the management network. You may set the ETH1 IP address, subnet mask and default gateway.

**NOTE:** The IP address of ETH1 port is the IP address of the device.

- ETH1 port for management. Its IP address is the device IP address.
- ETH2 port for CAS.
NSG 9000 uses the Ethernet port labeled ETH2 to communicate with the CAS network. For ETH 2 you may configure only its IP address and subnet mask. For further details and instructions, refer to the *NSG 9000 Software Guide*.

The following sections describe how to configure the ETH1 of individual NSG 9000 devices using the control panel of the unit.

When you configure the network parameters of ETH ports via the control panel, the application checks the validity of the IP address and network group parameters.

To configure ETH1 port, shift to Config mode, as explained below:

�� To switch to Config mode:

1. Navigate to the Setup screen, using the <Up & Down> keys.
2. Click Enter. The Operation Mode screen appears.
3. Click <Enter>. You are prompted to enter a password.
4. Press the following buttons: Left-Right-Left-Right-Up-Down and click <Enter>.
6. To select the Config mode, click <Down or Up> and then <Enter>.

The Operation Mode screen appears indicating the current operation mode. After thirty minutes of inactivity, the Configure mode changes automatically to the Monitor operation mode.

�� To configure ETH1 port:

Once you are in Config mode, do the following:

1. Navigate to the Network Config screen and click <Enter>.
   
   The Ethernet Port 1 screen appears.
2. Click <Enter>. The ETH1 IP Address screen appears.
3. Click <Enter>. The Edit IP Address screen appears.
4. Edit the IP address and click <Enter>.
   
   The program checks whether you entered a valid IP address and only then applies changes. The Edit Ethernet Subnet Mask screen appears.
5. Edit the subnet mask and click <Enter>. The Edit Default GW screen appears.
6. Edit the ETH gateway and click <Enter>.
   
   The program checks whether you entered valid network parameters and only then applies changes. The ETH1 IP Address screen appears.

If invalid network parameters are entered an error message appears.

**NOTE:** You can re-configure the Ethernet ports using the MCT or Web client. The MCT allows the configuration of a number of NSG devices and the Web client allows a remote individual configuration.

The NSG 9000 requires a user name and password to log in to all management interfaces including the serial communications console, web client and FTP. Both user name and password are *configure*. 

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3.2 Clearing Configuration During Power Up

You can clear the configuration stored on the NSG 9000 during boot up. Use this option, in case the stored configuration is corrupted and prevents the device from booting up properly. Once you zap the device, it boots up with the factory defaults. To zap the device, use the control panel as explained below:

1. Boot up the device and follow the control panel messages.
2. Wait for the following message: Press <Esc> to Stop...(5)
   It appears after the message Loading...
3. To zap, that is to clear the configuration, click <Esc>. You have around two seconds to click <Esc>.
   The following message appears: Press <Enter> to zap...(5)
4. Click <Enter>. You have around two seconds to click <Enter>. If you do not click <Enter>, boot up process continues regularly.
   The device zaps and reboots with factory defaults.
4.1 Upgrading the Firmware

The NSG 9000 ships with firmware and the web client installed. However, Harmonic periodically releases firmware updates. To find out if the provided firmware meets your needs or must be updated, contact Harmonic Technical Support.

To upgrade individual NSG 9000 devices do either of the following:

If your current firmware version is lower than version 1.4.2, use the File Transfer Protocol (FTP), as described in 4.1.1 Upgrading the Firmware of a Single Device Using FTP on page 13.

If your current firmware version is version 1.4.2 and higher, use the web client as described in 4.1.2 Upgrading the Firmware of a Single Device Using the Web Client on page 17.

To upgrade a number of NSG 9000 devices use the MCT (NSG 9000 Mass Configuration Tool). See 4.1.3 Upgrading Several Devices via MCT on page 19.

4.1.1 Upgrading the Firmware of a Single Device Using FTP

Before starting the upgrade process, verify the following:

- You obtained the new NSG 9000 firmware provided by Harmonic Technical Support. Firmware may be provided via the NSG 9000 release CD or downloaded from Harmonic FTP site.
- You know the IP address of Ethernet port 1 of the NSG. If you do not know the Ethernet address, or have not yet set the Ethernet address, complete the previous procedure as explained in 3.1 Configuring the Ethernet Ports on page 10.

To upgrade the firmware using FTP:

1. Copy the new firmware file to a computer that communicates with the NSG device and to an easily accessed directory. In this case, the firmware file is copied to the C:\temp directory.
2. To start an FTP session, select Start > Run.
3. In the Open box, type cmd and click Ok.
4. Set the prompt to the directory of the firmware. For example, if the firmware file is in C:\temp, type cd\temp.
5. To connect to the device, type `ftp <IP address of the device>`.

6. To log into the device, enter username `configure` and password `configure`. A message that the user is logged in appears. In this case the following message appears at the prompt: *User configure logged in*.

7. To download the firmware, type at the prompt the following commands:
   - `ftp>bin`
   - `ftp>hash`
   - `ftp>mput <file name>`. In this case: `ftp>mput a`.

8. Once you click Enter, you are asked whether to `mput` the required file.
9. Click Enter to transfer the file.
10. Wait until the transfer is complete and the message *Transfer complete* appears.
11. To end the session, type `bye`.
12. Once `Goodbye` appears, close the window.
13. To install the firmware, open a Telnet session by selecting Start > Run.
14. In the Open box type `Telnet <IP address of the device>`.
15. To log into the device enter username `configure` and password `configure`.
16. Type `app <file name>` and click Enter. In this case, `app a`.
The firmware is installed on the device. The Telnet dialog hangs and no indication regarding the firmware installation appears.

Wait for a short time while the firmware is installed and the NSG reboots to run with the newly installed firmware.

17. Close the Telnet dialog.

18. To determine whether upgrade is completed successfully, once the reboot process is complete, connect to the device either via a Telnet session or the Web client.

4.1.1.1 To connect to the device via a Telnet session

1. Repeat Step 13-Step 15 on page page 15.
2. At the prompt type `ver`.
3. Verify that the device reports the same version number as the required firmware.
4. To close the session, type `exit`.

4.1.1.2 To connect to the device via the Web client:

1. In a browser, type the IP address of the device.
2. Select Platform > Chassis and verify that the device reports the same version number as the required firmware.
4.1.2 Upgrading the Firmware of a Single Device Using the Web Client

If the currently installed firmware is version 1.4.2 and higher, upgrade the firmware using the web client as explained below:

1. Copy the new firmware file residing in the provided CD to your computer.
2. Click Manage Software.

The following dialog appears:

3. Click Install Software Package.

The following dialog appears:
4. Click Browse to locate the software package file.

5. Click Transfer, to transfer and install the firmware on the device.

   The following message appears:

   Software installation takes a couple of minutes. Do you want to proceed?

6. To proceed, click Ok.

7. Once installation is complete, the following message appears:

   Software was installed successfully. Do you want to reset the unit?

8. To reset the unit and to restart with the new firmware click OK.
### 4.1.3 Upgrading Several Devices via MCT

The MCT application comes with a TFTP server application and FTP capabilities that are used for downloading new firmware files.

1. Copy the new NSG firmware file to the default TFTP root directory: C:/tftpboot/nsg directory or to a directory of your choice.
2. To point to the TFTP root directory with the firmware file, select Tools > MCT Options > TFTP Server.
3. By default the TFTP root directory is: C:/tftpboot/nsg. In case you have changed the TFTP root directory, enter in TFTP Root Directory, the new path of the firmware file.
4. Select the Platform tab.
5. Verify that SW Upgrade Enabled of the relevant NSGs is selected.
6. In Upgrade Path/File field of the relevant NSGs, enter the name of the new firmware file. The default name of the firmware file is hnsg.
7. In TFTP Server Address, enter the address of the TFTP server.
8. Verify that Launch TFTP at Startup option is selected. If not, select Tools > MCT Options > TFTP Server tab and check the Launch TFTP on startup box.

9. Click Save.

10. Select the NSGs you wish to upgrade.

11. Click Download.

   The new firmware file is downloaded to the selected NSGs. Once download is complete, the devices will restart with the new firmware. While MCT is waiting for the download and restart procedure to end, it displays the Wait icon next to the selected NSGs. After successful completion of the procedure, the Wait icon is replaced by the green Ok icon. If the operation fails the red x icon is displayed.

   To view the status of the firmware download process, you may switch to the TFTP server window by clicking the TFTP icon on your Windows task bar. For each NSG device, the TFTP server displays a status report line that indicates the file download progress.

   **NOTE:** If you wish to change the default settings of the TFTP server, see the MCT online help.
This chapter describes the basic configuration required for having an NSG 9000 operating in VOD mode. The elementary NSG 9000 configuration is performed via the web client and all provided instructions refer to the web client.

The chapter includes the following:
Logging into the device via the web client
Configuring a GbE input port
Configuring a QAM-RF output port

### 5.1 Logging the Device via the Web Client

1. Open your browser and type in the IP address of the required NSG 9000 device.
   The Connect To <IP Address> dialog appears.
2. In User Name box type configure
3. In Password box type configure.
4. Click OK.
   The web client page appears.

### 5.2 Configuring a GbE Input Port

To have a functioning device, configure at least one GbE input port, to allow the device to receive input stream.

To configure a GbE input port
1. Select the Mux tab.
2. In Port Information, click **Port Configuration**. The GbE Port Configuration dialog appears.
3. In IP Address1, enter the required IP address.
4. In Subnet Mask, enter the required subnet mask.
5. In Gateway, enter the required IP address of the gateway.
6. In case the other end of the GbE link uses the auto negotiation protocol, select the Auto Negotiation box.
7. Open the Active Port list and select either SFP or RJ45 according to the used interface.
8. Click the Done button.
9. Click the Apply button.
10. Re-open the GbE# Parameters dialog and check that Status is Ok.
5.3 Configuring a QAM-RF Output Port

This configuration includes the following stages:
- Defining global QAM-RF parameters
- Setting the required operation mode
- Verifying that the module’s license is granted
- Configuring the QAM-RF parameters

To define global QAM-RF parameters
1. Select the Platform tab.
2. Verify that at least one QAM-RF module is mounted.
3. Click on Global QAM Parameters.
4. Open the Encoding Mode list and select one of the following:

<table>
<thead>
<tr>
<th>Encoding Mode</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex-A (DVB)</td>
<td>This mode is used mainly in European and Asian countries. Utilizes bandwidth of 8 MHz per QAM-RF channel.</td>
</tr>
<tr>
<td>Annex-B</td>
<td>This is the mode used in North-American countries. Utilizes bandwidth of 6 MHz per QAM-RF channel</td>
</tr>
<tr>
<td>Annex-C (Japan)</td>
<td>As implied by its name, used mainly in Japan. It is similar to Annex A in the most part, but utilizes bandwidth of 6 MHz per QAM-RF channel.</td>
</tr>
</tbody>
</table>

**NOTE:** You can configure the Sym Rate 1 & 2 for ANNEX A and ANNEX C only.

5. In Symbol Rate 1 (Mbps), set rate of QAM symbols that are encoded and transmitted per second. NSG 9000 has two optional Symbol rates.
6. In Symbol Rate 2 (Mbps), set rate of QAM symbols that are encoded and transmitted per second.
7. In Interleaver 1, set the required value for this interleaver. This is an advanced QAM configuration parameter. For Annex-A or Annex-C, use 12-17. For Annex-B, Interleaver value depends on the constellation in use. NSG 9000 has two optional Interleaver values.
8. In Interleaver 2, set the required value for this interleaver.
9. Click on Done.

To set operation mode parameters
1. Select Settings > Operation Mode tab.
2. Verify that the Application Mode is set to VOD/SDV.
3. Verify that the QAM Mapping Mode is set to Normal.

To define the QAM-RF parameters
1. Select the Mux tab.
2. Select Output Hierarchy and then in Output Information section, click: Module Configuration.
3. Verify that the required module is license granted.
4. Verify that the default values match your required configuration.
5. In RF Enable, select the required RF Port.
6. Click \[Done\].
7. Click \[Apply\].

### 5.3.1 Enable Input Ports

Do either of the following procedures:
1. In the Input section, select a port.
   - The Input Properties section is updated accordingly.
2. Check the Enable Port box.
   Or
3. Select the Platform tab.
4. Select the required GbE port.
5. In the GbE Properties section, check the Port Enable option.

To view the number of incoming services

By default the Input sections shows the number of services for each port. To view an updated number, do the following:
1. Select the Mux tab.
2. In the Input section, click Refresh Input.

   The number of incoming services via each port is updated.
Chapter 6
Licensing

6.1 Overview

The output RF-QAM channels of the NSG 9000 device are license dependent. All licenses are per RF-QAM port and the available licenses are as follows:

- **Temporary All License** - all of the RF-QAM channels are operating. This license is time limited. It can be limited as follows:
  - 14 days - default license. Once you purchase the device and as soon as the device starts working it works for 14 days with all of its capabilities. This grace period of 14 days allows you to activate your licenses to guarantee device operation according to its licensed functions.
  - 90 day - usually for trial or demo purposes
  - 30 day - usually for trial or demo purposes

- **Narrowcast QAM License** - (Default Module License for 4 QAM). When you purchase a QAM-RF module, you receive also a license for two QAM channels per QAM-RF port. To operate additional QAM channels of the module, you need to purchase additional QAM licenses.

- **PM Scrambling License** - allows you to output TSs scrambled in the Privacy Mode encryption technology of Motorola.

6.1.1 Working with Licenses

For the device to operate according to the purchased license you need to do the following:

<table>
<thead>
<tr>
<th>Action</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add a license</td>
<td>The license becomes available</td>
</tr>
<tr>
<td>Request a license</td>
<td>Select the license per the required RF-QAM channel. The license is requested.</td>
</tr>
<tr>
<td>Click Apply to send the requested license to the device</td>
<td>The license is being claimed</td>
</tr>
<tr>
<td>Viewing license status</td>
<td>If claiming is completed successfully the license is granted</td>
</tr>
</tbody>
</table>

Licenses are limited by time and an alarm is issued 24 and 72 hours before the license expires. Once a license is expired, NSG 9000 disables the channels from the first channel in the first port of the first slot regardless of the channel that has expired.
6.1.1.1 Adding a License


<table>
<thead>
<tr>
<th>License Description</th>
<th>Part Number</th>
<th>License SN</th>
<th>Qty</th>
<th>Expiration Date</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Module License for 4 QAM</td>
<td>D0003917</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default Module License for 4 QAM</td>
<td>D0003909</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default Module License for 4 QAM</td>
<td>D0003901</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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2. To add a license, click Add License. The Add License dialog appears.

3. Enter the license key you received from Harmonic Customer Support.

4. Click Done.

The license is added to the list, the serial and part numbers are generated according to the license key and the license is available.

6.1.1.2 Assigning a License

Assigning a license includes the following:

- Selecting a license for the required RF-QAM channel
- Sending your request to the device to claim and grant the license. The device claims the license and grants it to the required QAM.

1. Select Settings > Licensing.

The Assign License page opens.

Once the page opens, you can view the current status of each license:
2. Scroll down to the required module.
3. To request a license, check the required QAM channel(s).
4. To claim the licenses, click Apply.

The licenses are granted and the QAM channels operate according to the granted license.

If you try to claim more licenses than you purchased, a message appears notifying you of the QAM channel its license is deferred. The channel appears in the table with a red background.

5. To view the total number of the licenses according to their current status, scroll to the top of the page:

**Total Available Licenses** - the total number of purchased licenses that were added by entering the license key.

**Total Requested Licenses** - the total number of licenses you checked to allow granting them.

**Total Claimed Licenses** - the total number of licenses you requested (checked them) and send to the device (click Apply) to claim them. A license is claimed but not granted in the following cases:

- The module is not mounted in the slot
- The module’s state is Failed
- QAM channel is not active due to the selected RF mode
Total Granted Licenses - the total number of licenses that you requested and are granted, that is that the QAM is operating according to the license.

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<th>QAM Channel No</th>
<th>QAM License</th>
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