Nokia FastMile 5G Gateway 3.1
5G12-13W-B

User Guide

June 2022

Nokia is committed to diversity and inclusion. We are continuously reviewing our customer documentation and consulting with standards bodies to ensure that terminology is inclusive and aligned with the industry. Our future customer documentation will be updated accordingly.

Table of contents

Safety guidelines

Follow these guidelines when using the FastMile 5G Gateway 3.1:

Warning: If the gateway is dropped -especially on a hard surface-or in case of suspected damage, contact your service provider or the device was purchased.

Warning: The FastMile 5G Gateway 3.1 must be used with power cables supplied with the equipment.

Introduction

Thank you for purchasing the FastMile 5G Gateway 3.1.

This document explains how to operate the FastMile 5G Gateway 3.1 at home using visual cues from the LED signals to achieve the best performance from the 4G/LTE or 5G network.

The contents of this guide are subject to change without notice.

Getting to know your FastMile 5G Gateway 3.1

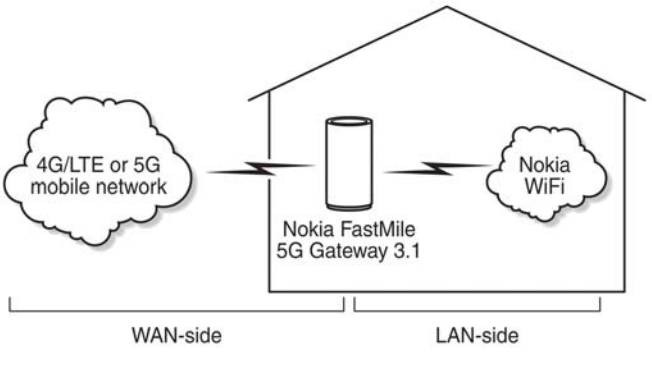
You will find the following items in the box:

- (1) FastMile 5G Gateway 3.1
- (1) power adapter for 48W (mounts directly to the wall)
- (1) Quick Start Guide (QSG)
- (1) warranty card
- (1) safety card

Figure 1 **FastMile 5G Gateway 3.1 unit views**

The FastMile 5G Gateway 3.1 typically has 4G/LTE and/or 5G mobile network connectivity in the upstream (WAN) direction and the Nokia Wi-Fi connectivity in the downstream (LAN) direction.

Figure 2 **Network connections of the FastMile 5G Gateway 3.1**



The FastMile 5G Gateway 3.1 supports 5G NR and 4G LTE WAN connectivity. The device is compliant with 3GPP Rel-15 standards. Actual throughputs will vary based on aggregated bandwidths, network topology, network load, and radio conditions. Your device can operate either in 5G NR or in 4G LTE. Where both 4G and 5G are available, FastMile 5G Gateway 3.1 supports dual connectivity EN-DC.

5G NR provides best download and upload speeds, thus improved user experience for data services such as Internet browsing and video streaming. In case 5G NR coverage is not available in your area, the device can also operate with 4G LTE only as your WAN connection.

The FastMile 5G Gateway 3.1 provides the following features:

- 4G and 5G WAN connection
- multi-band omni-directional antenna for 5G NR (up to 6.5 dBI) and LTE (up to 5dBi)
- self-contained integrated residential gateway
- Nokia Wi-Fi connectivity:
  - 4x4 IEEE 802.11ax 2.4 GHz (40 MHz) WLAN interface, with MU-MIMO
  - 4x4 IEEE 802.11ax 5 GHz (80 MHz) WLAN interface, with MU-MIMO
  - Wi-Fi 5 support (IEEE 802.11ac)
  - Wi-Fi 6 support (IEEE 802.11ax) - dual band 4+4 connectivity
  - backward compatible with 802.11a/b/g/n/ac
- PIN-locked SIM cards: a SIM PIN number is required to unlock the SIM card and a SIM PUK and PIN number are required to unblock the SIM card
- one logical temperature sensor on IPQ and one logical temperature sensor on the modem

- supports WebUI configuration to enable or disable single SSID: if enabled the CPE will merge 2.4 GHz band SSID and 5 GHz band SSID, and automatically select the frequency band that provides a faster speed
- can operate in the following modes:
  - LTE-only
  - LTE-5G EN-DC
  - 5G SA

About the modes

LTE Only

When operating in the LTE-only mode, the FastMile 5G Gateway 3.1 will only use the 4G/LTE network to connect to the Service provider's network.

LTE-5G EN-DC

When operating in the LTE-5G EN-DC mode, the FastMile 5G Gateway 3.1 uses a 4G/LTE carrier and 5G NSA carrier at the same time to connect to the service provider's network.

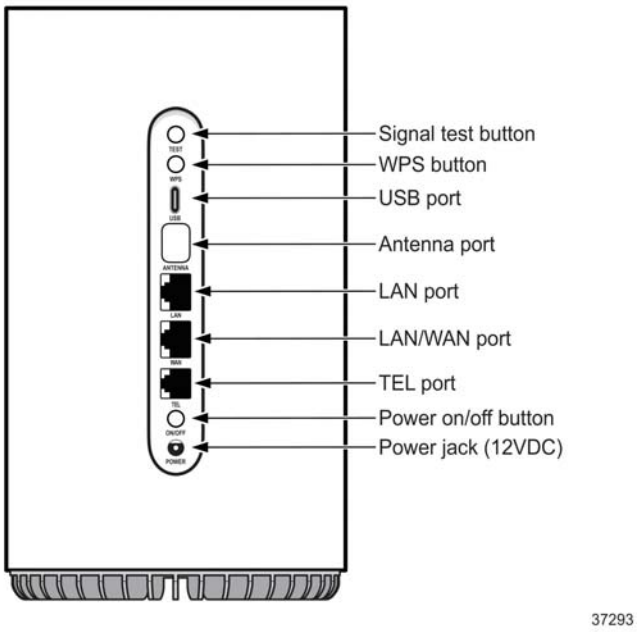
5G SA

When operating in the 5G SA mode, the FastMile 5G Gateway 3.1 uses the 5G network to connect to the service provider's network.

Physical interfaces

The FastMile 5G Gateway 3.1 physical interfaces include those shown in the diagram, as well as the SIM card slot and reset button on the bottom of the device.

Figure 3 **FastMile 5G Gateway 3.1 interface connections**



Two RJ-45 LAN ports can be used:

- to connect up to two Gigabit Ethernet LANs
- for management of the gateway through a locally connected PC or laptop

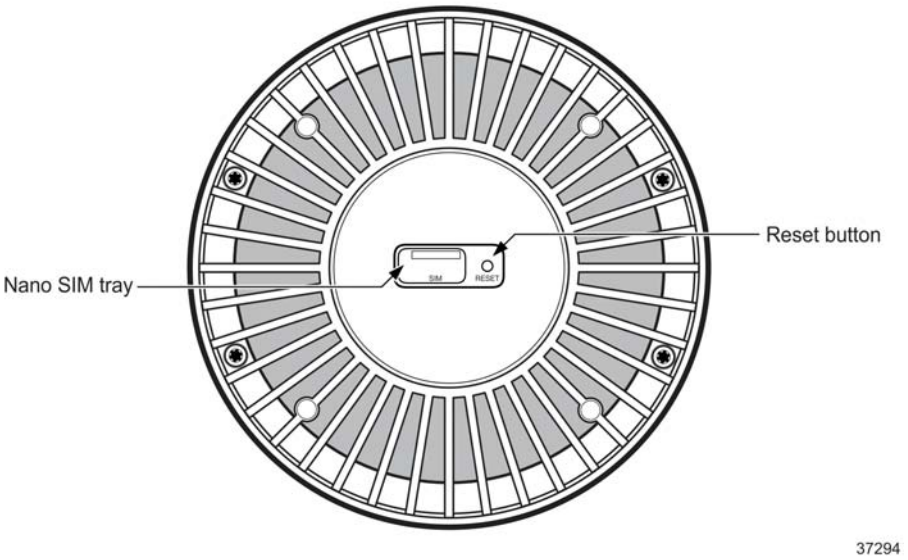
Note: The WAN port only functions as a LAN port for this release.

One RJ-11 voice port to connect to the land line phone.

Note: The TEL port may be blocked and not available for certain providers.

The SIM card slot is for a 4FF/nano-size SIM card on the bottom of the device.

Figure 4 **SIM card location**



Wi-Fi EasyMesh network with the FastMile 5G Gateway 3.1

A Wi-Fi EasyMesh network can be created by connecting a Wi-Fi Beacon 2 to the Nokia FastMile 5G Gateway 3.1. The FastMile 5G Gateway 3.1 serves as the access point to the WAN while up to two Wi-Fi Beacon 2 aid with extending Wi-Fi coverage to every corner of the home, providing seamless roaming to wireless connections.

Both cloudless and cloud methods are supported; the cloud method is managed by NWCC.

Unlike typical Wi-Fi networks that require unique SSIDs for each of the access points or tedious set-up of Wi-Fi extenders, which complicate the user experience, a Wi-Fi EasyMesh network of Wi-Fi Beacon 2 simplifies the end user experience by providing easy device onboarding and automated network optimization.

Adding a Wi-Fi Beacon 2 to create a mesh that has the FastMile 5G Gateway 3.1 as the access point can be done through the Wi-Fi Mobile App. Contact your service provider for more information about the Wi-Fi Mobile App.

The Wi-Fi Beacon 2 is not included as part of the FastMile 5G Gateway 3.1.

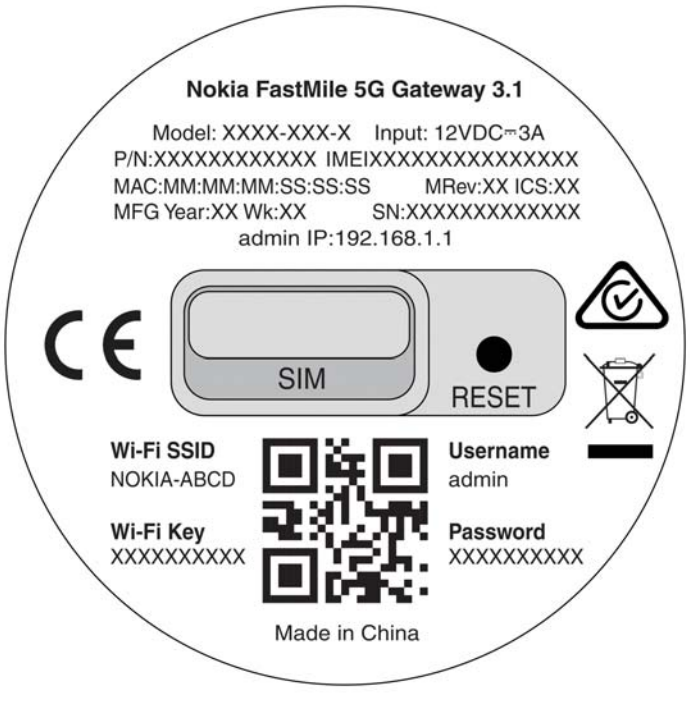
Setting up the FastMile 5G Gateway 3.1

Unpack the FastMile 5G Gateway 3.1, power adapter, and AC cable from the box.

Checking the SIM status

Before using the FastMile 5G Gateway 3.1, check the status of the SIM. Look on the sticker, located on the label on the bottom of the device for the part number. Note that label content may differ per customer requirements.

Figure 5 **Location of device part number**



If the part number is 3TG00926ABXX (the last two numbers can be any), the device is equipped with eSIM. Otherwise, the device is not equipped with eSIM and can operate only with the activated uSIM card.

Note: For eSIM use, a user profile must be installed on the device, which can only be done in the factory, based on the activation code provided by operator. Without the user profile, the eSIM is empty and cannot be used.

For the device equipped with eSIM, it supports both a primary and secondary SIM card (uSIM or eSIM). The uSIM is considered the primary SIM card; the eSIM is considered the secondary SIM card. If the uSIM card is inserted, the uSIM card will be used. If the uSIM card is removed, the eSIM card will be used.

The SIM card is normally provided by the network service provider or operator, and may be installed already. If the device is already installed with a SIM card (uSIM or eSIM), proceed to Identifying the ideal location.

Note: The FastMile 5G Gateway 3.1 requires an appropriate 4FF/nano-size SIM card to connect to 4G/5G network. The FastMile 5G Gateway 3.1 might also not start as expected without a SIM card.

For PIN-locked SIM cards, you will need to enter a PIN number. For PIN-blocked SIM cards, you will need to enter a PUK and a PIN number. See Unlocking or unblocking your SIM card.

Turn the FastMile 5G Gateway 3.1 upside down.

Figure 6 **Removing the SIM card tray**

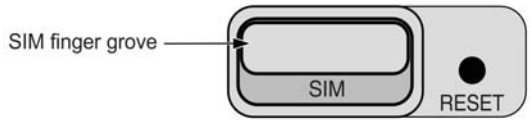
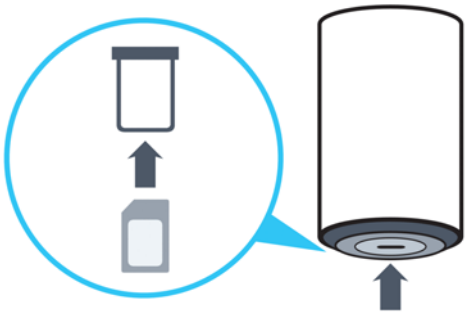


Figure 7 **Inserting the SIM card**



Remove the SIM tray using the finger grove. Place the SIM card in the tray and insert it back into the gateway.

You can skip this step if the SIM card has already been installed by your service provider.

If the SIM card is missing, place the SIM card securely in the tray and insert it back into the FastMile 5G Gateway 3.1.

Identifying the ideal location

The ideal location for your FastMile 5G Gateway 3.1 will meet the following criteria:

- near a window where the 5G signal is strongest
- in an open space away from:
  - walls or obstructions
  - heavy-duty appliances or electronics such as microwave ovens and baby monitors
  - metal fixtures, enclosures, cabinets, reinforced concrete, or pipes
- near a power outlet
- on an upper floor of the home or at least 1.8m (6 ft) off the ground floor

Connecting the FastMile 5G Gateway 3.1

Place the FastMile 5G Gateway 3.1 on a flat surface, such as a tabletop or similar; close to a window, and near an electrical outlet.

Minimize the number of obstructions as much as possible.

The 48W power adapter mounts directly into the electrical outlet in the wall.

Starting the FastMile 5G Gateway 3.1

After the FastMile 5G Gateway 3.1 is connected to a power source, start the device by pressing the On/Off button located on the backside of the unit.

One or more LEDs on the top of the gateway will turn on soon.

There are 5 LEDs:

- status LED -in the middle of the circle
- 5G LED - above the status LED
- signal strength LEDs (3) - above the 5G LED

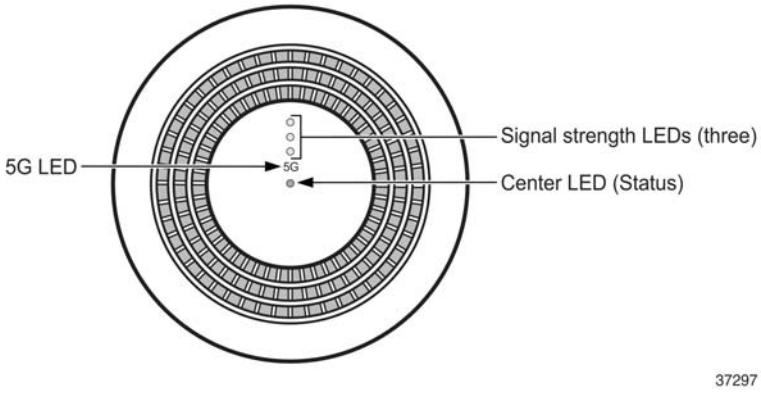
The FastMile 5G Gateway 3.1 starts searching for the best 5G connectivity. The status LED and the 5G LED start to blink and all signal LEDs are solid ON to indicate that the device is booting up.

When the signal strength LEDs go off, the booting-up phase is completed and the status LED is lit RED to indicate the signal search procedure.

Note: The signal search may take a few minutes.

Wait until the status LED is green. This indicates connectivity to 5G or 4G network.

Figure 8 **Location of status LEDs**



For more information about the LEDs, refer to the Understanding the LED colors section.

Note: You may need to repeat this cycle several times before finding the ideal location for the FastMile 5G Gateway 3.1.

Once you find a good signal, do not reposition the device. If the position changes, you may need to verify the signal strength again.

The LED on/off settings may prevent signal LEDs to be shown; this can be changed from the WebUI (LED management) or by using the signal test button.

Managing the FastMile 5G Gateway 3.1 with the Wi-Fi Mobile App

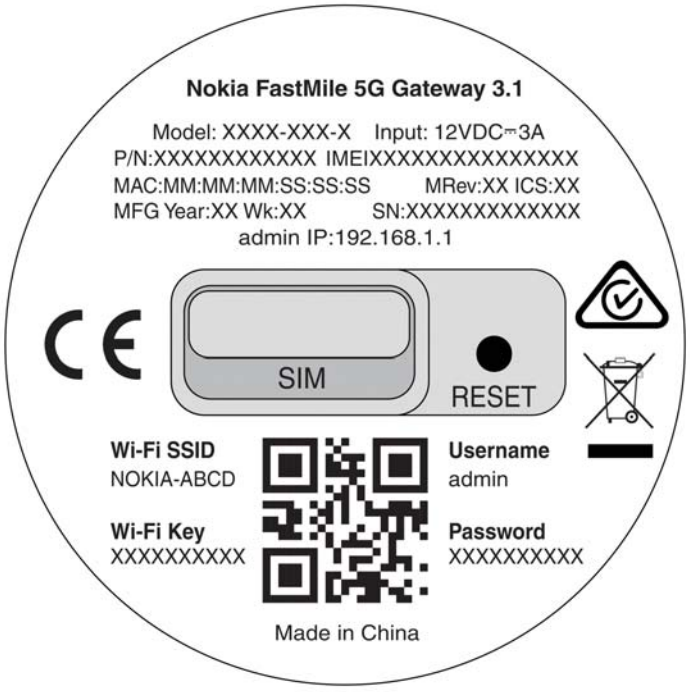
To manage the FastMile 5G Gateway 3.1, use either the WebUI or the Wi-Fi Mobile App. The Wi-Fi Mobile App provides information that can help with installation, and provides guidance for tasks such as how to configure Wi-Fi settings and how to add Wi-Fi Beacon 2 devices to the Wi-Fi network. The Wi-Fi Mobile App can be downloaded from Google Play or the Apple App store.

Download the app to your phone or tablet to create an account.

Use the in-app QR code scanner to read the QR code that's located on the bottom of the FastMile 5G Gateway 3.1.

The FastMile 5G Gateway 3.1 pairs with your phone and performs initial configurations.

Figure 9 **Location of the QR code**



The App guides you through all the steps necessary to setup your gateway.

Contact your service provider for more information about the Wi-Fi Mobile App.

Connecting devices

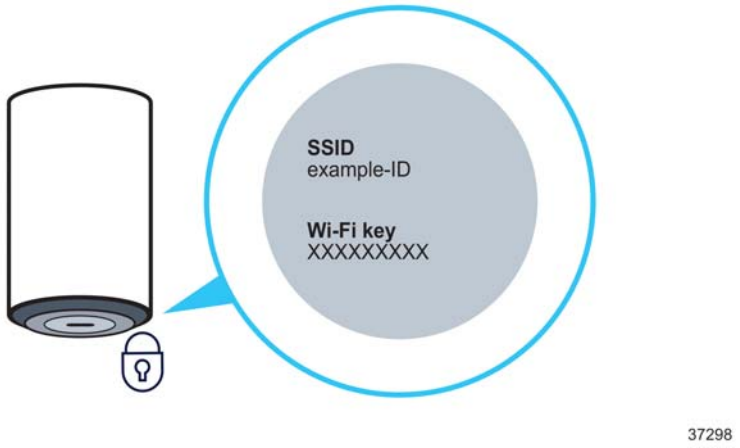
You can connect Wi-Fi devices, Ethernet LANs, and Tel ports to the FastMile 5G Gateway 3.1, depending on the options available on the unit.

Connecting Wi-Fi devices to the FastMile 5G Gateway 3.1

There are two ways to connect Wi-Fi devices to the FastMile 5G Gateway 3.1: using SSID + Wi-Fi key or press the WPS button on.

Connect Wi-Fi devices to your FastMile 5G Gateway 3.1 by using the SSID and the Wi-Fi key information on the sticker on the bottom of your FastMile 5G Gateway 3.1.

Figure 10 **Location of SSID and Wi-Fi key**



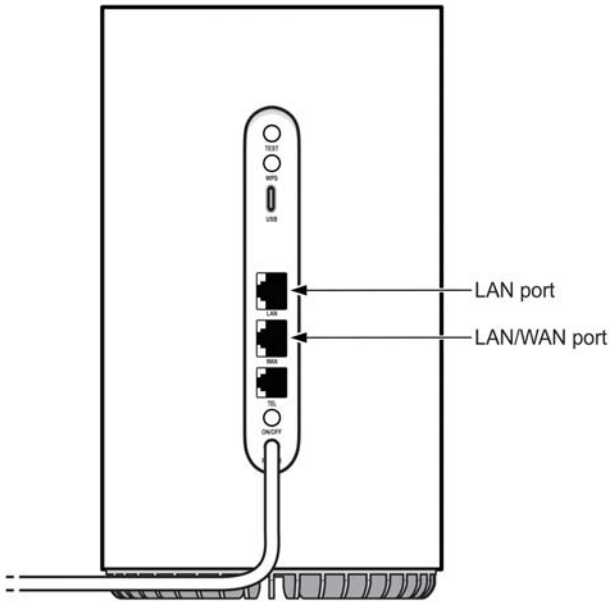
Press the WPS button on the backside of the FastMile 5G Gateway 3.1 to start the Wi-Fi protected setup process.

Connecting Ethernet LANs

You can connect up to two Gigabit Ethernet LANs by connecting the cable from the Ethernet LAN to either of the two Gigabit Ethernet LAN connectors on the backside of the FastMile 5G Gateway 3.1.

Note: One of the LAN ports is marked "WAN" but currently only supports Gigabit Ethernet LAN connectivity.

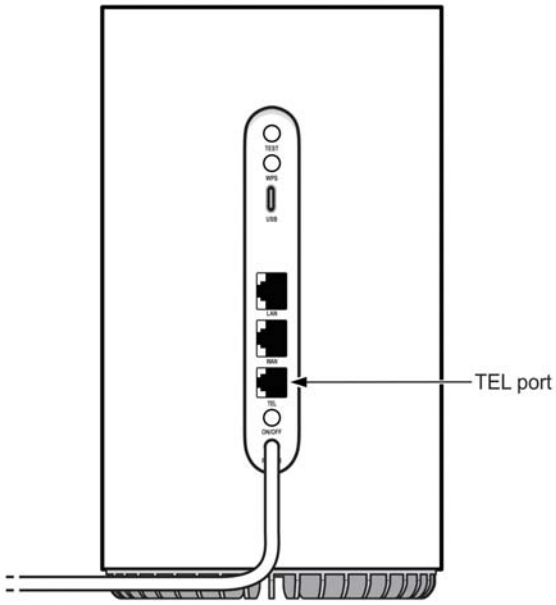
Figure 11 **Location of LAN ports**



Connecting a device to the TEL port

You can connect a land line device that has a cable with an RJ11 connector to the TEL port on the backside of the FastMile 5G Gateway 3.1.

Figure 12 **Location of the TEL port**



What can you do with the WebUI

The FastMile 5G Gateway 3.1 supports a WebUI, which can be used for configuration, maintenance, and troubleshooting. You can collect device status through the WebUI for information on network connectivity.

You can configure the FastMile 5G Gateway 3.1 using the WebUI available on a PC or laptop. These devices must have an Ethernet LAN connection or a Wi-Fi connection. The WebUI also displays useful information about the FastMile 5G Gateway 3.1. The FastMile 5G Gateway 3.1 is a secure device.

The http is pre-configured as the default access mode to the WebUI. The https access mode can only be used if the FastMile 5G Gateway 3.1 has been pre-configured by the service provider.

Configuring your network with the WebUI

You can manage the FastMile 5G Gateway 3.1 and any connected devices using the WebUI on a PC or laptop.

Note: The WebUI screens are designed for 1920 * 1080p resolution.

The WebUI supported browsers include Chrome, Edge, Mozilla Firefox and Safari.

This section describes:

- how to establish a connection between the device on which you will access the WebUI and the FastMile 5G Gateway 3.1
- how to log into the WebUI when needed to view and configure network parameters

Accessing the WebUI

1. Ensure the Local Area Connection setting on your PC or laptop is configured as "Obtain an IP address automatically".

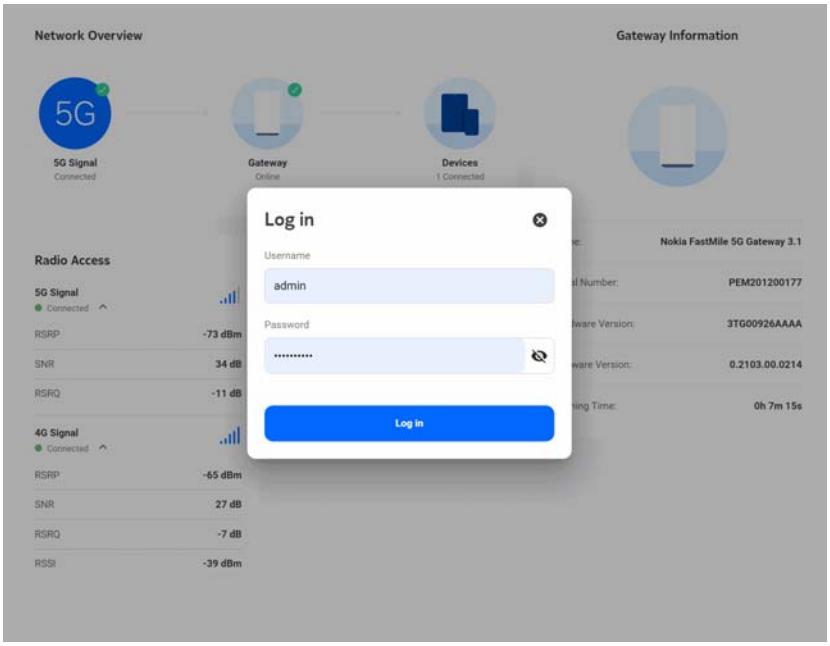
Note: The FastMile 5G Gateway 3.1 must be powered up, see Using the power button.

2. Do one of the following:
   a. Establish a Wi-Fi connection
   b. Connect your PC or laptop through the RJ45 Gigabit Ethernet LAN ports on the backside of FastMile 5G Gateway 3.1
3. On your device, open a web browser, and enter the IP that is available on the label at the bottom of the gateway, for example:

   http://192.168.1.1 or https://192.168.1.1

   The Overview screen appears with the Nokia WebUI menu on the left of the screen.

Figure 13 **Overview screen**



4. Click Login or click on any of the menu items.

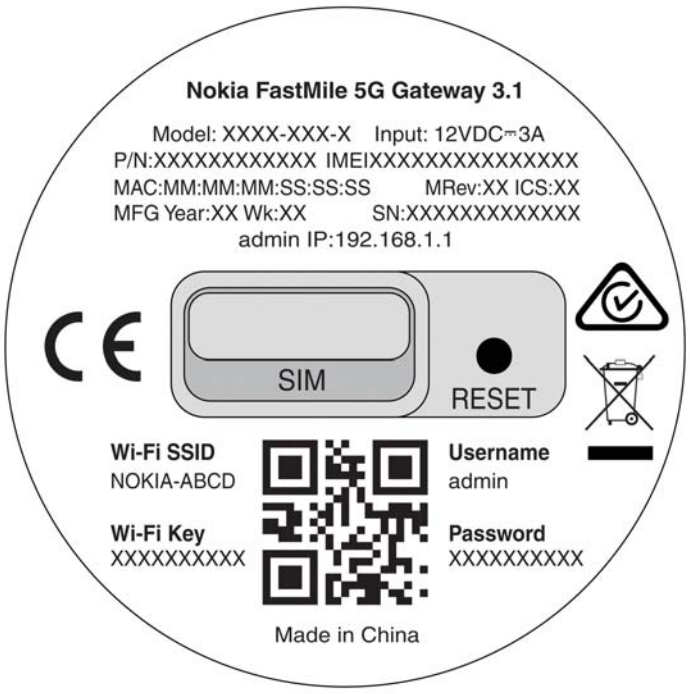
   The log in window appears and you are prompted to log in.

   Type the username and password in the respective fields and then click Login.

Note: After predefined consecutive unsuccessful login attempts, you will be locked out for a specific amount of time.

A generic sample of the bottom label below shows the location of the username and password. Note that label content may differ per customer requirements.

Figure 14 **Location of username and password on bottom label**



You should now see the overview screen which provides information about the FastMile 5G Gateway 3.1, radio access, and the connected devices.

To improve security, Nokia recommends that you change the default password. You can do this by going to the Changing the password procedure.

WebUI hierarchy screens

The following screen hierarchy illustrates the FastMile 5G Gateway 3.1 WebUI main menu to help you quickly navigate to the configuration task that you may need to complete.

Figure 15 **Main menu**

Logging in allows you to use the following menu options:

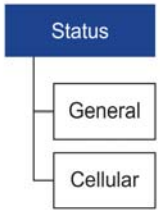
- status
- statistics
- messages
- network
- application
- security
- diagnostics
- system

Status, statistics, messages, network, application, security, diagnostics, and system menu options have sub-menus and screens, which are illustrated by the following figures.

Status hierarchy screens

The status screen provides the following menu options:

Figure 16 **Status screen**



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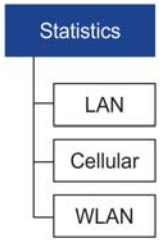
Statistics hierarchy screens

The statistics screen provides the following menu options:

Figure 17 **Statistics screen**



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Messages hierarchy screen

The messages screen will display all messages sent by the service provider and provides the following menu options:

Figure 18 **Messages screen**

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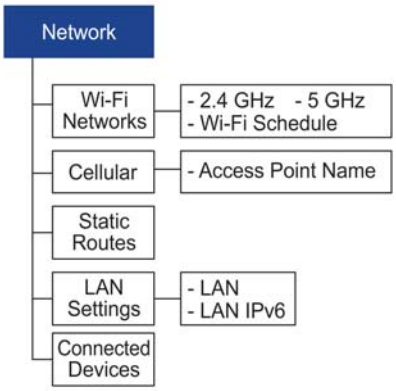
Network hierarchy screens

The network screen provides the following menu options. Clicking on the arrow beside Wi-Fi networks, cellular and LAN settings displays additional menu options:

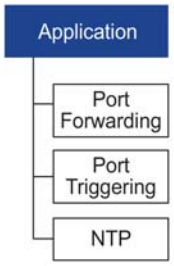
Figure 19 **Network screen**



Application hierarchy screens

The application screen provides the following menu options:

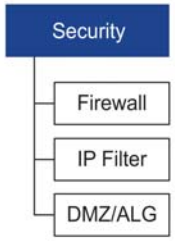
Figure 20 **Application screen**



Security hierarchy screens

The security screen provides the following menu options:

Figure 21 **Security screen**



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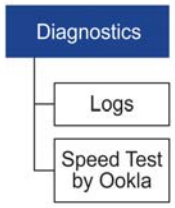
Diagnostics hierarchy screens

The diagnostics screen provides the following menu options to view log files and speed tests by Ookla:

Figure 22 **Diagnostics screen**



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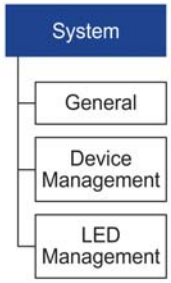
System hierarchy screens

The system screen provides the following menu options:

Figure 23 **System screen**



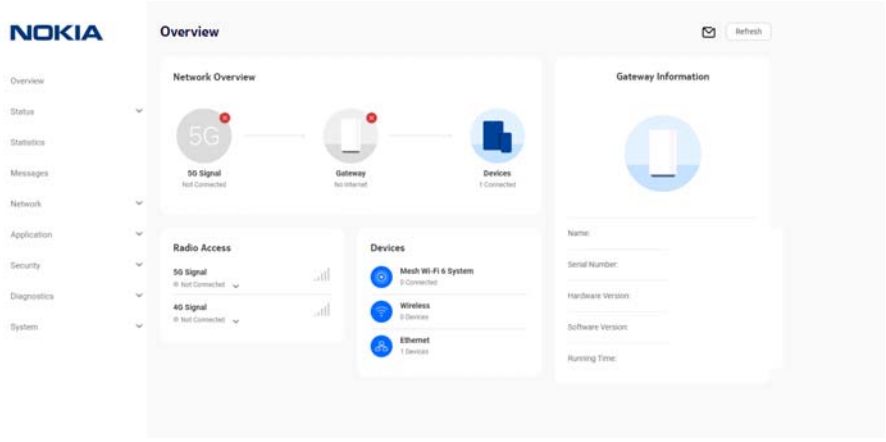
Overview screen

The Overview screen contains four sections:

- network overview
- radio access
- devices
- gateway information
- unread messages, if any

Click Refresh at any time to update the displayed information.

Figure 24 **Overview screen**



Network overview

The top of the overview screen shows the connection status of 5G, FastMile 5G Gateway 3.1, and the number of connected devices.

Gateway information

The gateway Information section shows the:

- name: the name and version of the gateway
- serial number
- hardware version
- software version
- running time: how long it has been since the FastMile 5G Gateway 3.1 last reset/ power cycle

Use this information when contacting the service provider for customer service.

Radio access

The 5G signal strength is represented by the number of bars, and the following parameters:

- RSRP
- SNR
- RSRQ

The 4G signal strength is represented by the number of bars and the following parameters:

- RSRP
- SNR
- RSRQ
- RSSI

Devices

Devices shows the number of devices connected to the FastMile 5G Gateway 3.1: Mesh Wi-Fi 6 System, Wireless and Ethernet.

Status screen

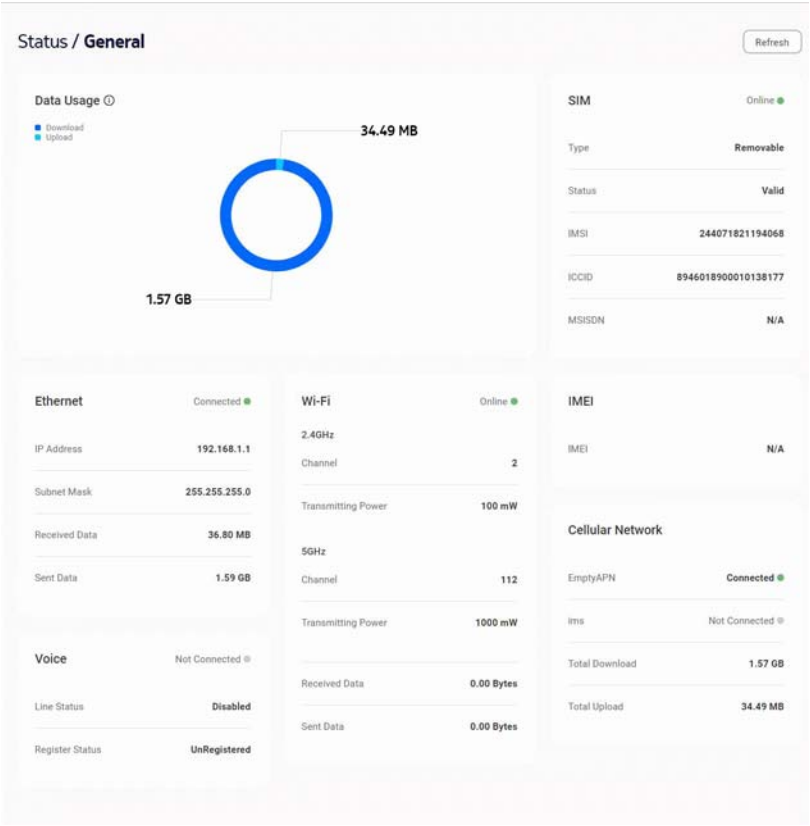
From the WebUI left-side menu, selecting status will show you information regarding:

- under the Status / General page you can find the following:
  - data usage
  - SIM
  - IMEI (International Mobile Equipment Identity)
  - cellular network
  - Ethernet
  - Wi-Fi
  - voice
- Under the Status/ Cellular page you can find the following:
  - 4G: status, PCI, band, EARFCN, ECI, and carrier aggregation
  - 5G: status. PCI, supported bands, NR-ARFCN, NCI, and carrier aggregation

Click Refresh at any time to update the displayed information.

The figures below show aspects of the Status screen.

Figure 25 **Status / General page**



Data usage

Data usage represents the amount of data that is downloaded and uploaded from the FastMile 5G Gateway 3.1 since its latest reset/power-cycle.

SIM

The SIM status will be either online or offline.

A green dot, indicating the online status, indicates your SIM is activated and working well. A gray dot indicates the SIM card is missing (see Checking the SIM status), or may not be working, or it was installed incorrectly, or you will need to enter your PIN number (see Unlocking or unblocking your SIM card). Contact your service provider if you have checked that the SIM card is properly installed but it is still not working.

Note: For uSIM cards, when status shows '*Available*' it means PIN number verification is needed. When status shows '*Blocked*' it means the SIM PIN is locked and you need to input a PUK number and a new PIN number. When status shows '*Error*' it means the SIM card is destroyed because of a PUK error, or a modem failure, or a broken SIM card, or a specific PIN lock acceptance feature is not active but the SIM card PIN number is locked.

After another SIM card B with PIN enabled is inserted to the CPE and its PIN is verified, the SIM card A PIN number will be needed when it is inserted.

IMEI (International Mobile Equipment Identity)

IMEI information represents an identifier for each mobile device.

Cellular network

Under the Status / General page, there is the Cellular Network Card which has the following information:

- access point details include all APNs
- download and upload totals

For each APN, there is a dot to show connection status, as follows:

- green: connected
- gray: not connected

Ethernet

The Ethernet information status indicates whether a device is connected to the Ethernet connection:

- green: there is an Ethernet connection
- gray: there is no Ethernet connection

You may view the following Ethernet connectivity information:

- IP address: local address
- subnet mask: default subnet mask

- received data: the amount of data received via the Ethernet connection
- sent data: the amount of data sent via the Ethernet connection

Wi-Fi

The Wi-Fi status (online/offline) indicates whether the Wi-Fi is active, regardless of whether a device is wirelessly connected:

- green: Wi-Fi is enabled
- gray: Wi-Fi is disabled

You may view Wi-Fi connectivity information:

- 2.4 GHz information includes: the Channel number and Transmission power (mW)
- 5 GHz information includes: the Channel number and Transmission power (mW).
- received data: the amount of data received via the Wi-Fi connection
- sent data: the amount of data sent via the Wi-Fi connection

Voice

The voice status indicates whether a device is connected to the voice network.

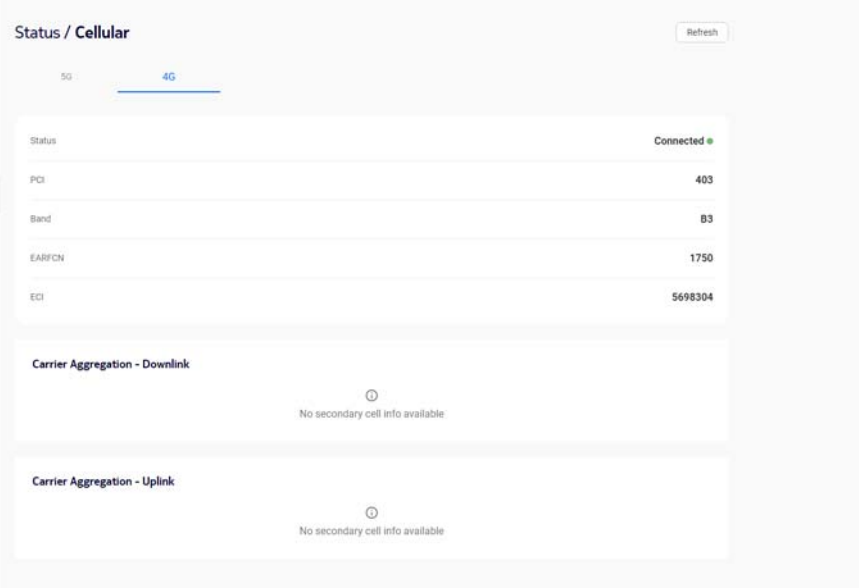
- green: there is a voice connection
- gray: there is no voice connection

You may view voice information including line status (enabled/disabled) and register status (registered/unregistered).

Status 4G

The Status / Cellular page for the 4G status tab displays PCI, band, EARFCN, ECI, and carrier aggregation downlink / uplink status. In carrier aggregation, one or more carriers are combined to increase the capacity of the link, thereby increasing the bandwidth for the user.

Figure 26 **Status / Cellular Page / 4G**

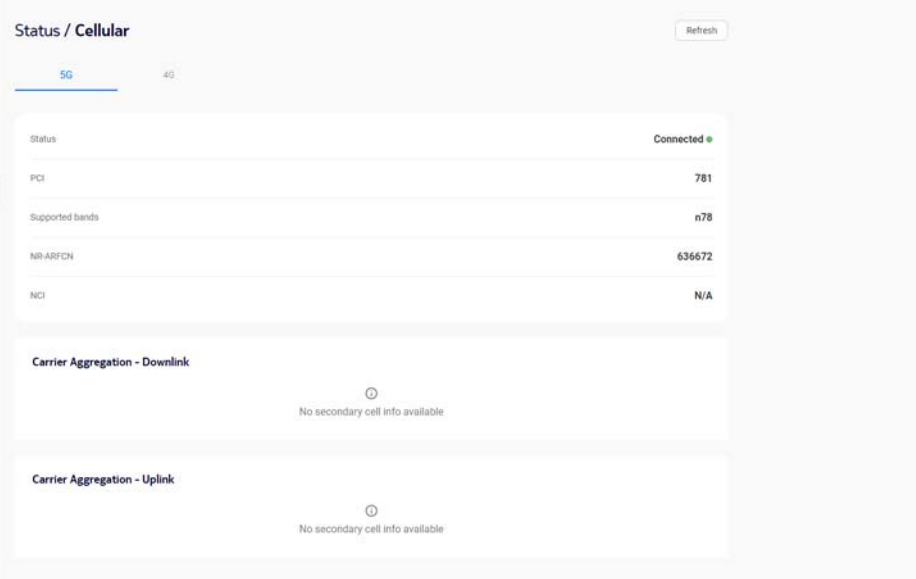


Note: When downlink or uplink carrier aggregation information is available, it will be displayed.

Status 5G

The Status/ Cellular page for 5G status tab shows the detail information for status, PCI, supported bands, NR-ARFCN status, NCI, and carrier aggregation downlink / uplink status. In carrier aggregation, one or more carriers are combined to increase the capacity of the link, thereby increasing the bandwidth for the user.

Figure 27 **Status / Cellular Page / 5G**



Note: When downlink or uplink carrier aggregation information is available, it will be displayed.

Statistics screen

From the WebUI left-side menu, selecting Statistics will show you the amount of data that has crossed the FastMile 5G Gateway 3.1 LAN, cellular, and WLAN interfaces.

Click Refresh at any time to update the displayed information.

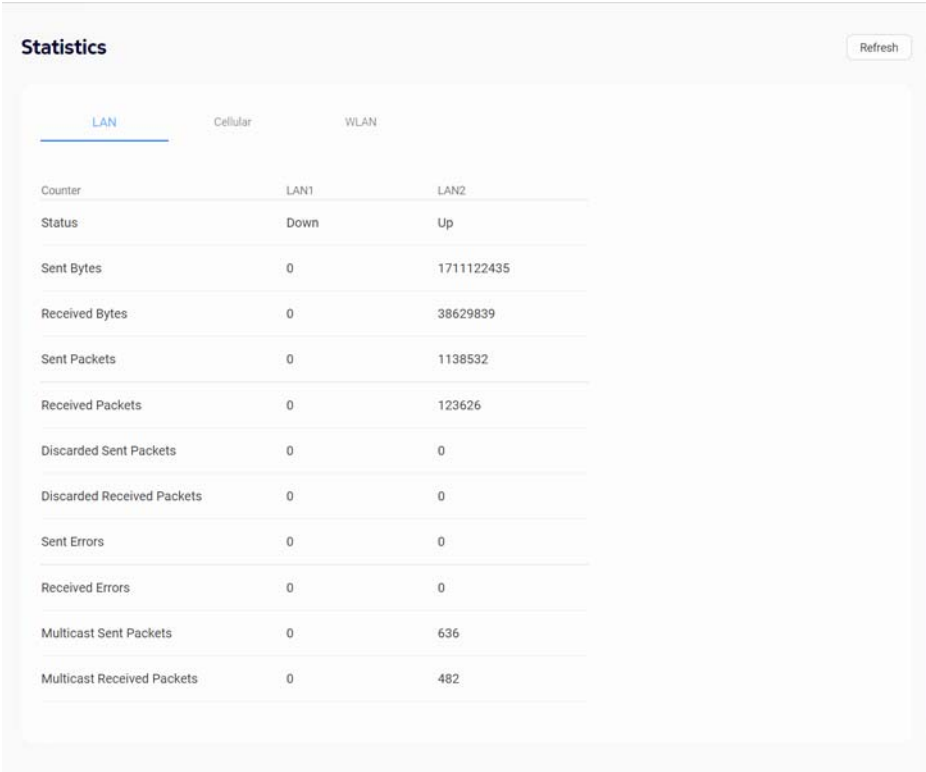
LAN statistics

By default, you will see the following statistics, per LAN port tab, upon accessing the statistics screen:

- status
- sent bytes
- received bytes

- sent packets
- received packets
- discarded sent packets
- discarded received packets
- sent errors
- received errors
- multicast sent packets
- multicast received packets

Figure 28 **Statistics / LAN**



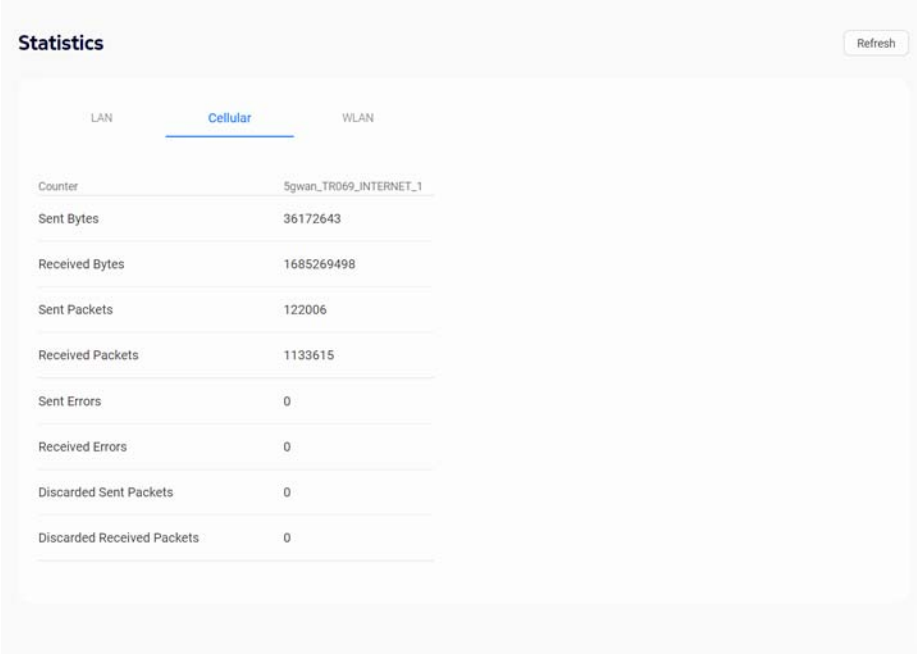
Cellular statistics

From the Statistics screen, select Cellular tab; you will see the following statistics (per configured Access Point Name and Service):

- sent bytes
- received bytes

- sent packets
- received packets
- sent errors
- received errors
- discarded sent packets
- discarded received packets

Figure 29 **Statistics / Cellular**



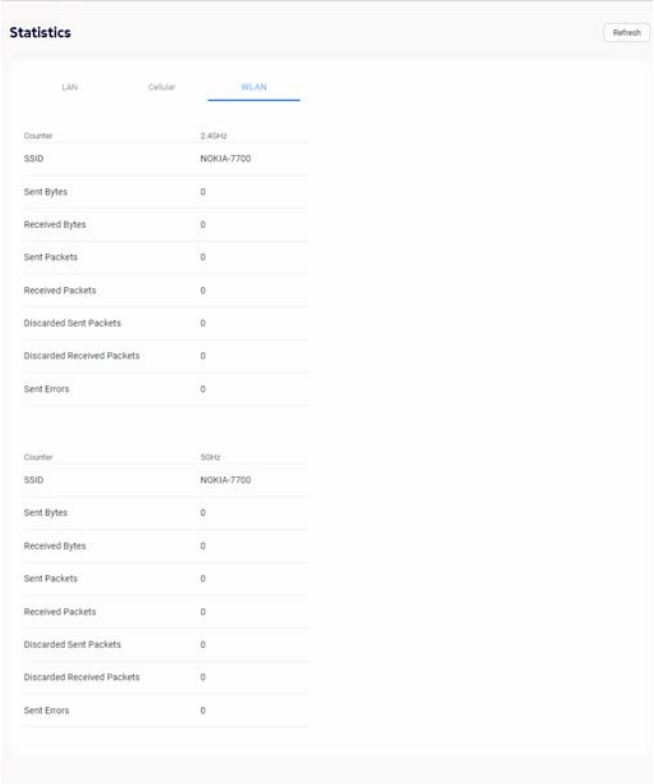
WLAN statistics

From the Statistics screen, select the WLAN tab; you will see the following statistics for 2.4 GHz and 5 GHz frequencies:

- SSID
- sent bytes
- received bytes
- sent packets
- received packets
- discarded sent packets

- discarded received packets
- sent errors

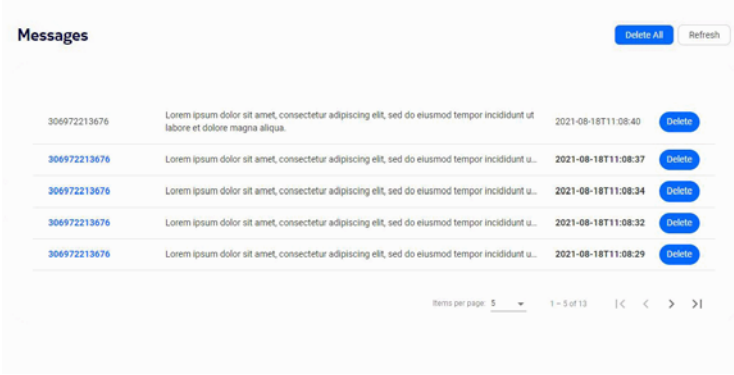
Figure 30 **Statistics / WLAN**



Messages

From the Messages screen, you can see if you have any messages. Messages sent from the service provider can be viewed and deleted.

Figure 31 **Messages**



Network menu

From the WebUI left-side menu, select Network to manage the following:

- Wi-Fi networks (2.4 GHz and 5 GHz networks) and Wi-Fi schedule
- cellular (APN - Access Point Name)
- static routes
- LAN settings (LAN and LAN IPv6)
- connected devices

Wi-Fi Networks

From the Network menu, select Wi-Fi networks.

The 2.4 GHz, 5 GHz, and Wi-Fi schedule menu options appear in the FastMile 5G Gateway 3.1 WebUI menu.

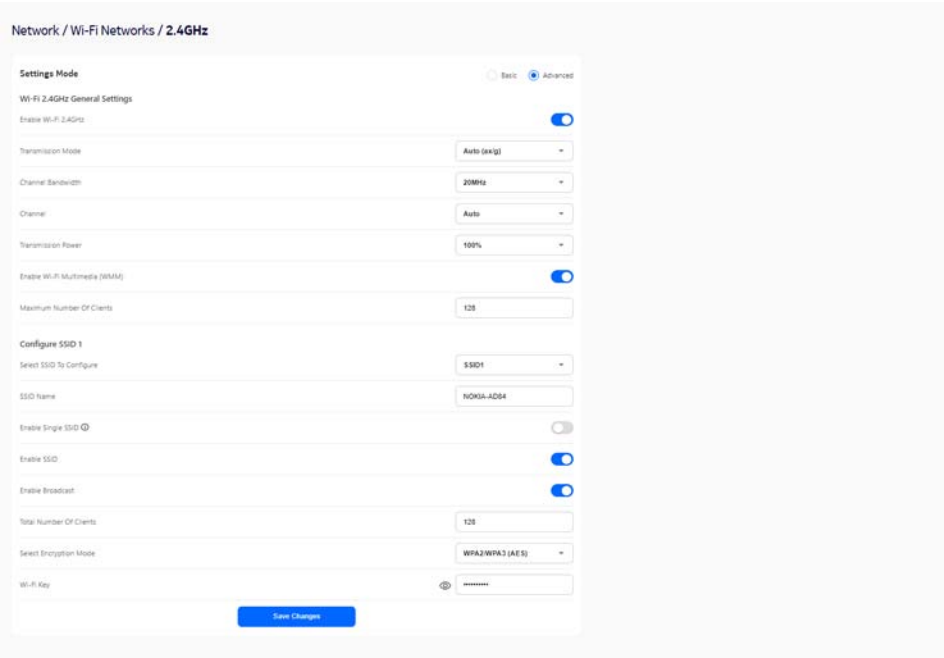
2.4 GHz (network settings)

Click 2.4 GHz.

The Network/Wi-Fi Networks/2.4 GHz screen appears.

You can select the basic or the advanced screen view by clicking the appropriate radio button option at the top of the screen.

Figure 32 **Network / Wi-Fi Networks 2.4 GHz advanced view**

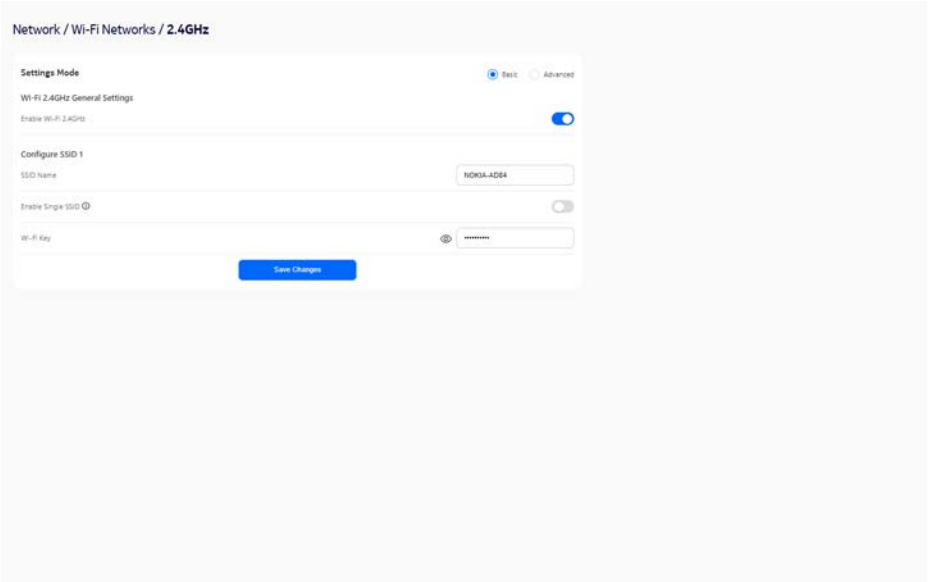


The advanced view includes the following parameters to configure:

- Wi-Fi 2.4 GHz general settings:
  - enable Wi-Fi 2.4 GHz
  - transmission mode
  - channel bandwidth
  - channel
  - transmission power
  - enable Wi-Fi Multimedia (WMM)
  - maximum number of clients
- configure SSID 1:
  - select SSID to configure
  - SSID name
  - enable single SSID
  - enable SSID
  - enable broadcast

- total number of clients
- select encryption mode
- Wi-Fi key

Figure 33 **Network: Wi-Fi Networks 2.4 GHz basic view**



The basic view includes the following parameters to configure:

- Wi-Fi 2.4 GHz general settings:
  - enable Wi-Fi 2.4 GHz
- configure SSID 1:
  - SSID name
  - enable single SSID
  - Wi-Fi key

Click Save Changes.

5 GHz (network settings)

From the Network menu, select Wi-Fi networks.

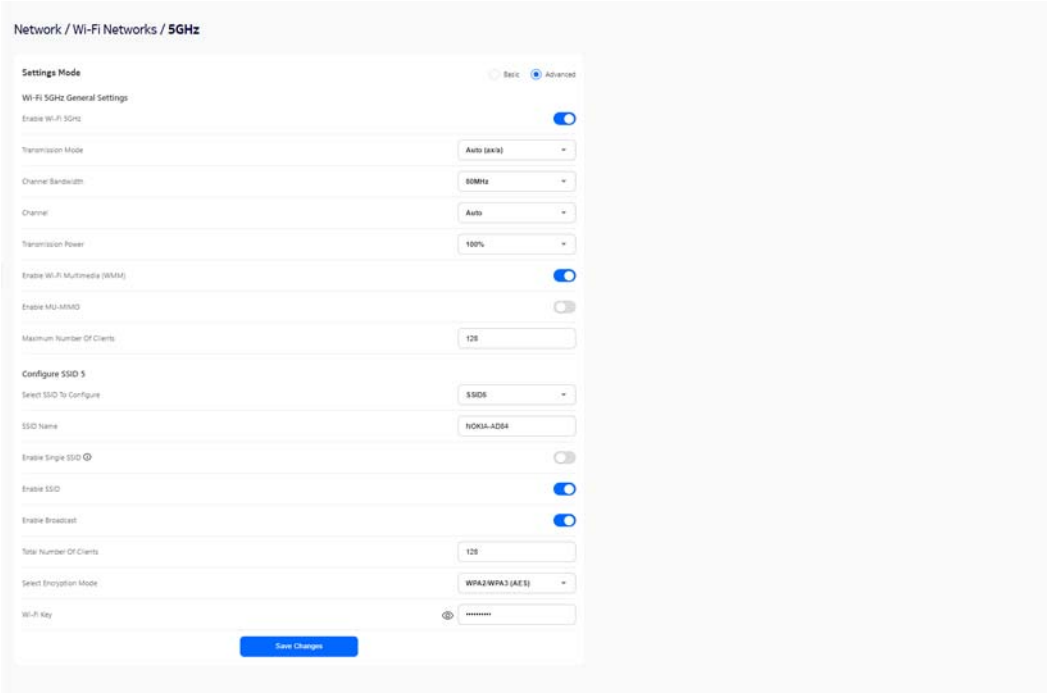
The 2.4 GHz, 5 GHz, and Wi-Fi schedule menu options appear in the Nokia FastMile 5G Gateway 3.1 WebUI menu.

Click 5 GHz.

The Network/Wi-Fi Networks/5 GHz screen appears.

You can select the basic or the advanced screen view by clicking the appropriate radio button option at the top of the screen.

Figure 34 **Network / Wi-Fi Networks 5 GHz advanced view**

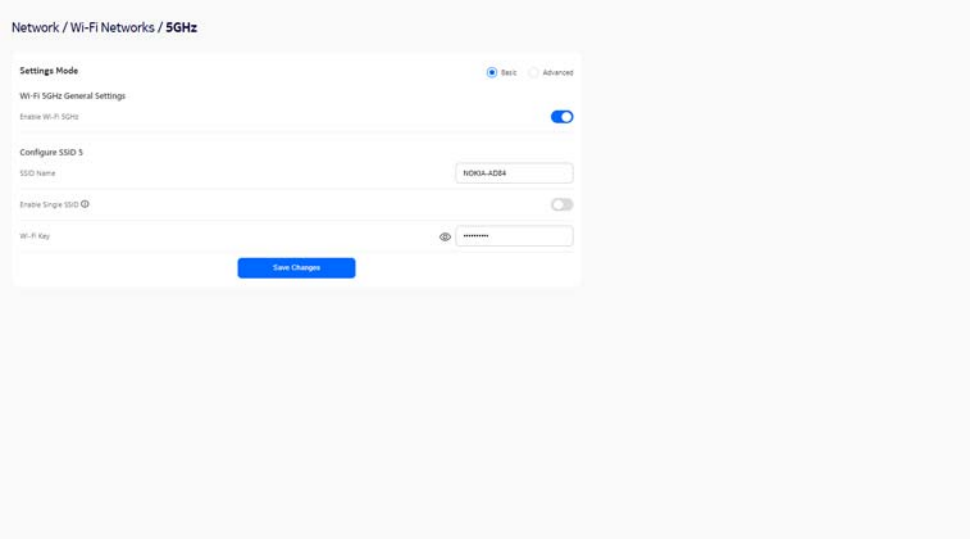


The advanced view includes the following parameters to configure:

- Wi-Fi 5 GHz general settings:
  - enable Wi-Fi 5 GHz
  - transmission mode
  - channel bandwidth
  - channel
  - transmission power
  - enable Wi-Fi Multimedia (WMM)
  - enable MU-MIMO
  - maximum number of clients
- configure SSID 5:

- select SSID to configure
- SSID name
- enable single SSID
- enable SSID
- enable broadcast
- total number of clients
- select encryption mode
- Wi-Fi key

Figure 35 **Network: Wi-Fi Networks 5 GHz basic view**



The basic view includes the following parameters to configure:

- Wi-Fi 5 GHz general settings:
  - enable Wi-Fi 5 GHz
- configure SSID 5:
  - SSID name
  - enable single SSID
  - Wi-Fi key

Click Save Changes.

Wi-Fi schedule settings

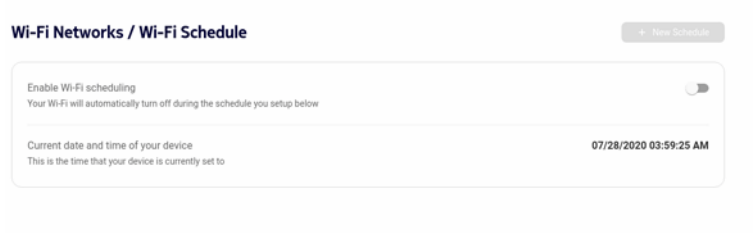
From the Network menu, select Wi-Fi networks.

The 2.4 GHz, 5 GHz, and Wi-Fi Schedule menu options appear in the FastMile 5G Gateway 3.1 WebUI menu.

Click Wi-Fi Schedule.

The Wi-Fi Networks/Wi-Fi Schedule screen appears.

Figure 36 **Wi-Fi schedule**



1. Enable the Wi-Fi Scheduling to turn the wireless signal off for the configured period.
2. Click the + New Schedule button to add a rule.

   A panel appears for configuring wireless schedule rules.
3. Enter a start and end time for the period for which you want the wireless signal to be off.
4. Choose Everyday or a Specific day(s) of the week.

   If you choose specific day(s), select the check boxes for the desired days.

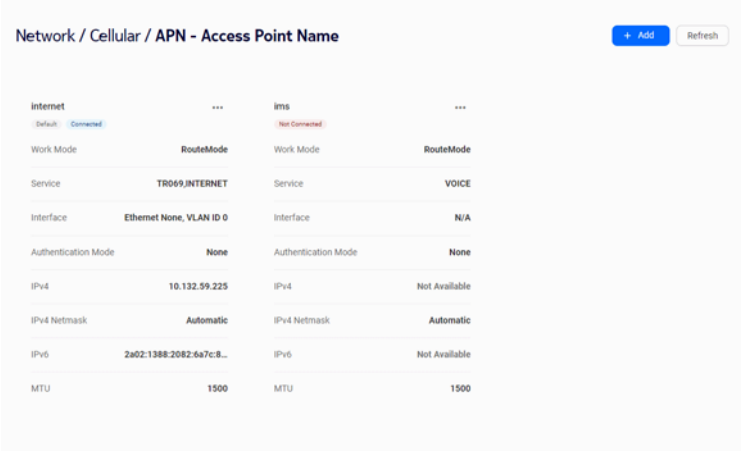
   The Recurrence Pattern shows the rules created to date.
5. Click Add.
6. View the Current date and time of your device.

Access Point Name

From the Network / Cellular menu, select APN Access Point Name.

The Network/ Cellular APN Access Point Name screen appears.

Figure 37 **Network / Cellular / Access Point Name**



Edit and delete access points by clicking the options icon (three dots in the top right corner of each access point box). You can configure up to 3 access points using route mode and a voice access point.

Contact your service provider for more information about access points.

Note: You are not able to delete the default access point.

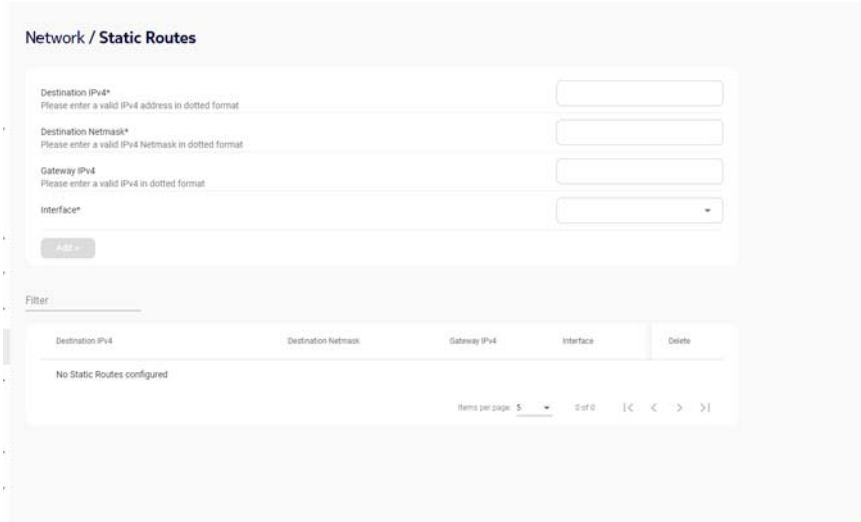
Click Update.

Static routes

From the Network menu, select Static Routes.

The Network/Static Routes screen appears.

Figure 38 **Network / Static Routes**



After configuring the applicable parameters:

- destination IPv4
- destination netmask
- gateway IPv4
- interface

You can add a static route by clicking Add+.

You can delete a static route by selecting it from the list and clicking Delete.

LAN settings

From the Network menu, select LAN Settings.

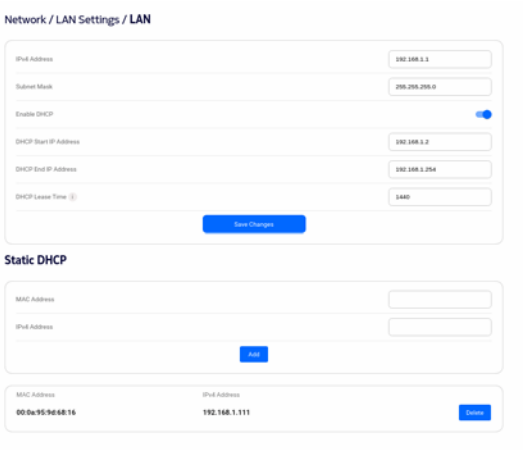
The LAN and LAN IPv6 menu options appear in the FastMile 5G Gateway 3.1 WebUI menu.

LAN

Click LAN.

The Network/LAN Settings/LAN and Static DHCP screen appears.

Figure 39 **Network / LAN Settings**



You can configure the following LAN settings:

- IPv4 address
- subnet mask
- DHCP enable / disable
- DHCP start IP address
- DHCP end IP address
- DHCP lease time
- static DHCP

Click Save Changes.

Note: Check the DHCP range before you change the LAN IP. If you want to use the LAN IP, which is included in the previous DHCP range, change the DHCP range first. Click Save. Then, change the LAN IP.

Configure a static route and bind a MAC address to a specific local LAN/IP address by entering the MAC and IP address in the static DHCP text boxes.

Click Add.

Your values appear in the table below.

Repeat for all MAC addresses to be bound.

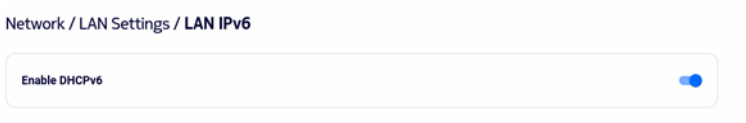
The configured MAC and IPv4 address appear in the table below. Click Delete to remove any of the MAC address configurations.

LAN IPv6

Click LAN IPv6.

The Network/LAN settings/LAN IPv6 screen appears.

Figure 40 **Network / LAN Settings / LAN IPv6**



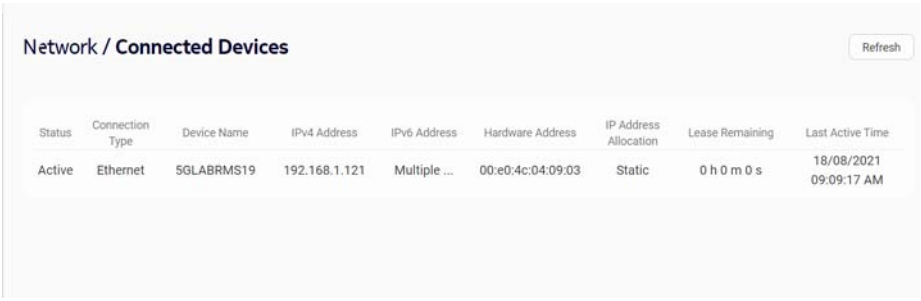
Click the switch button to enable or disable the IPv6 DHCP LAN.

Connected devices

From the Network menu, select Connected Devices.

The Network/Connected Devices screen appears.

Figure 41 **Network / Connected Devices**



Note: To delete a device, disconnect the Gigabit Ethernet cable from the FastMile 5G Gateway 3.1. After a while, the Devices screen will update the number of connected devices.

Application screen

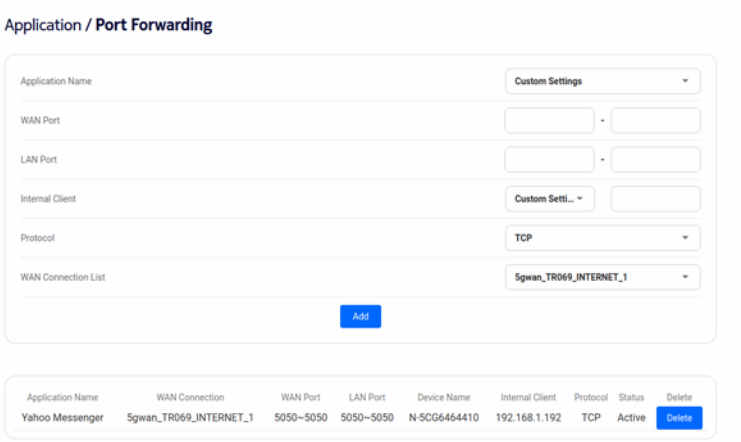
From the WebUI left-side menu, selecting Application allows you to configure port forwarding, port triggering, and NTP parameters.

Port forwarding

Click Port Forwarding.

The Port Forwarding screen appears.

Figure 42 **Application / Port Forwarding**



You can configure the following settings:

- application name
- WAN port
- LAN port
- internal client
- protocol
- WAN connection list

Click Add.

The settings appear in the table below.

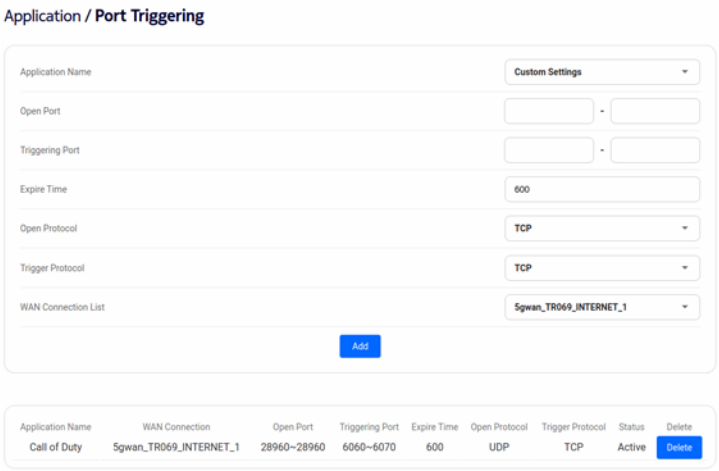
Click Delete to remove any configuration from the table.

Port triggering

Click Port Triggering.

The Port Triggering screen appears.

Figure 43 **Application / Port Triggering**



You can configure the following settings:

- application name
- open port
- triggering port
- expire time
- open protocol
- triggering protocol
- WAN connection list

Click Add.

The settings appear in the table below.

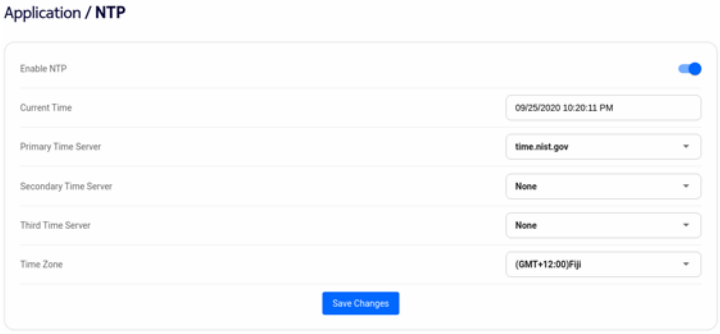
Click Delete to remove any configuration from the table.

NTP

Click NTP.

The NTP screen appears.

Figure 44 **Application / NTP**



You can configure the following settings:

- enable NTP
- primary time server
- secondary time server
- third time server
- time zone

You can view the following settings:

- current time

Click Save Changes.

Security screen

From the WebUI left-side menu, selecting Security allows you to configure the firewall security level, IP filter parameters, and ALG/DMZ.

Firewall

The firewall security level only applies to services provided by the FastMile 5G Gateway 3.1.

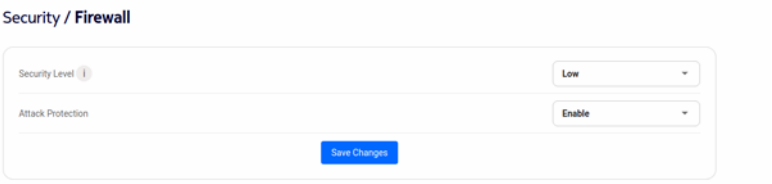
The following firewall security levels can be configured for the FastMile 5G Gateway 3.1:

- off: all inbound and outbound traffic is allowed
- low: all outbound traffic and pinhole-defined inbound traffic is allowed
- high: all inbound traffic is denied and only minimal common outbound services are permitted

Click Firewall.

The Firewall screen appears.

Figure 45 **Security / Firewall**



You can configure the following firewall settings:

- security level (off, low, or high)
- attack protection (enable/disable)

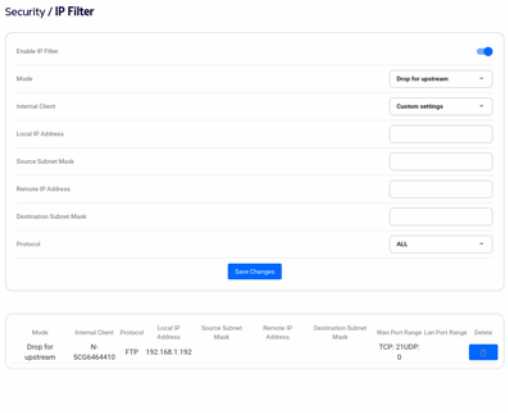
Click Save Changes.

IP filter

Click IP Filter.

The IP Filter screen appears.

Figure 46 **Security / IP Filter**



You can configure the following IP filter settings:

- enable IP filter
- mode
- internal client
- local IP address
- source subnet mask
- remote IP address
- destination subnet mask
- protocol

Click Save Changes.

Click Delete to remove any configuration from the table.

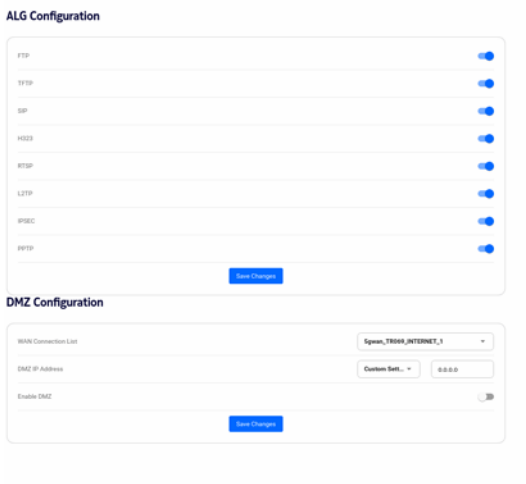
ALG and DMZ screen

From the WebUI left-side menu, selecting DMZ/ALG allows you to configure Application-Level Gateway (ALG) and Demilitarize Zone (DMZ) parameters.

Click DMZ/ALG.

The ALG Configuration and DMZ Configuration screen appears.

Figure 47 **Security / DMZ/ALG**



You can enable or disable the following ALG settings:

- FTP
- TFTP
- SIP
- H323
- RTSP
- L2TP
- IPSEC
- PPTP

Click Save Changes.

You can configure the following DMZ settings:

- WAN connection list
- DMZ IP Address
- enable DMZ

Click Save Changes.

Diagnostics screen

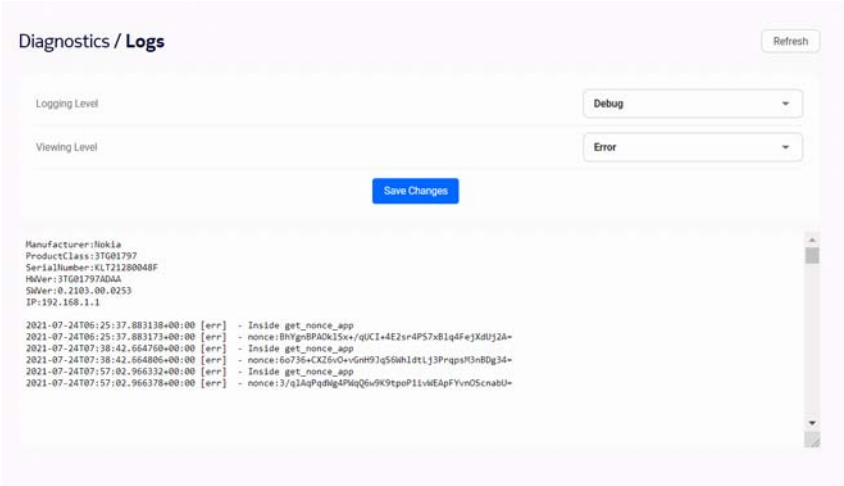
From the WebUI left-side menu, selecting Diagnostics allows you to configure log settings and perform speed tests by Ookla.

Logs

Click Logs.

The Logs screen appears.

Figure 48 **Diagnostics**



Choose a logging level from the drop-down menu to determine the types of events that are recorded in the log file.

Choose the viewing level from the drop-down menu to determine the types of events that are shown in the log file.

Click Save Changes. The log file is displayed at the bottom of the screen.

Speed test by Ookla

From the Diagnostics screen click Start Speed Test. You should be prompted to agree to use this speed test service by Ookla as per their privacy policy.

The Speed Test screen appears.

Figure 49 **Speed test by Ookla**

Click the Start Speed Test button. The test may take up to 45 seconds to complete.

The speed test results will display the following parameter information:

- acquired time
- download speed (Mbps)
- upload speed (Mbps)
- latency (ms)
- jitter (ms)
- server location

System screen

The System screen has the following tabs:

- General
- Device Management
- LED Management

General

From the WebUI left-side menu, selecting System and then General will show you these options:

- enter PIN to unlock your SIM card

- enter PUK and PIN to unblock your SIM card
- reboot device: the device restarts and keeps existing configuration
- factory reset: the device restarts and erases existing configuration
- change password

Note: For a PIN-locked SIM card after reboot, or factory reset, a PIN number will be needed. Also, if a second SIM card B is used with PIN enabled and inserted to the CPE and its PIN is verified, the SIM card A PIN number will be needed when it is inserted.

For uSIM cards, when status shows '*Available*' it means PIN number verification is needed. When status shows '*Blocked*' it means the SIM PIN is blocked and you need to input a PUK number and a new PIN number. When status shows '*Error*' it means the SIM card is disabled because of a PUK error, or a modem failure, or a broken SIM card, or a specific PIN lock acceptance feature is not active but the SIM card PIN number is locked.

Unlocking or unblocking your SIM card

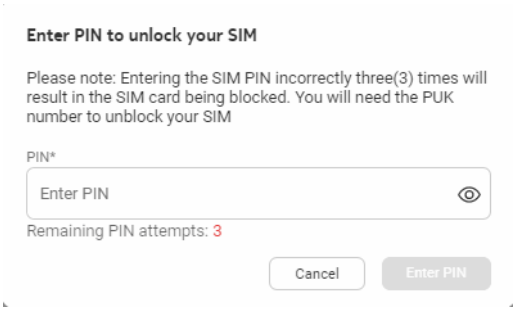
A SIM PIN number is defined by default and provided in a SIM plastic envelope.

If your SIM card is locked, from the System General screen, click Enter PIN to unlock your SIM card.

Figure 50 **Unlock your SIM card**

The Enter PIN to unlock SIM entry box will appear. Enter your PIN number.

Figure 51 **Enter PIN to unlock your SIM card**



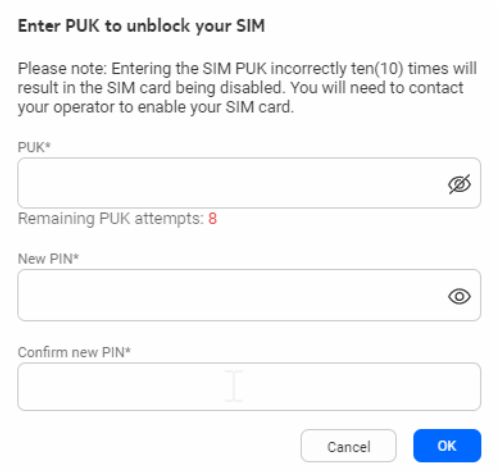
Entering the SIM PIN incorrectly 3 times will result in the SIM card being blocked.

If your SIM card is blocked, from the System General screen click Enter PUK to unblock your SIM card.

Figure 52 **Unblock your SIM card**

The Enter PUK to unblock your SIM card entry box will appear. Enter your PUK and PIN numbers.

Figure 53 **Enter PUK and PIN to unblock your SIM card**



Entering the SIM PUK number incorrectly 10 times will result in the SIM card being disabled. You will need to contact your operator to enable the SIM card.

Rebooting the FastMile 5G Gateway 3.1

Rebooting the FastMile 5G Gateway 3.1 cycles power to the device and keeps all configurations made to date.

Using the WebUI

From the System, General screen, click Reboot.

The FastMile 5G Gateway 3.1 reboots and keeps existing configuration parameters.

Resetting the FastMile 5G Gateway 3.1 to factory default

Resetting the FastMile 5G Gateway 3.1 to factory default removes all configurations made to date.

Using the WebUI

From the System, General screen, click Reset.

The FastMile 5G Gateway 3.1 restarts and erases existing configuration.

Changing the password

Note: For security reasons, we recommend changing the default password once you have logged into the WebUI.

Passwords must contain 10-64 characters. The first character of the password cannot be a special character. The same character cannot be used consecutively eight times.

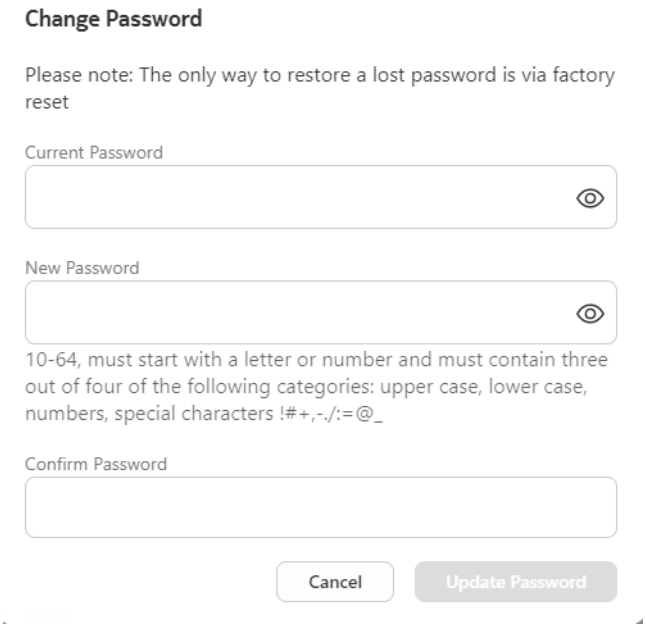
Passwords must have at least three of the following four types of characters:

- uppercase character (A-Z)
- lowercase character (a-z)
- number (0-9)
- special character (!#+,-/:=@_)

From the System, General screen, click Change Password.

The Change Password screen appears.

Figure 54 **System / Change Password**



Enter the current password, located on the product label.

Enter the new password again to confirm.

Click Update Password.

Your password is changed.

Device management

Click Device management.

The Device management screen appears.

Figure 55 **System / Device Management**

You can configure the following device management settings:

- host name
- MAC address
- host alias

Click Add device.

The values appear in the table below.

LED management

Click LED management.

The LED management screen appears.

Figure 56 **System / LED Management**

You can configure the following LED management settings:

- select signal LED mode
- select status LED mode

Click Save Changes.

Logging out

Click Logout from the bottom of the FastMile 5G Gateway 3.1 menu.

Troubleshooting

This section provides additional information about the following:

- understanding LED colors
  - status LED
  - 5G LED
  - signal strength LEDs
- using the signal test button
- repositioning for a better signal
- using the power button
- using the reset button

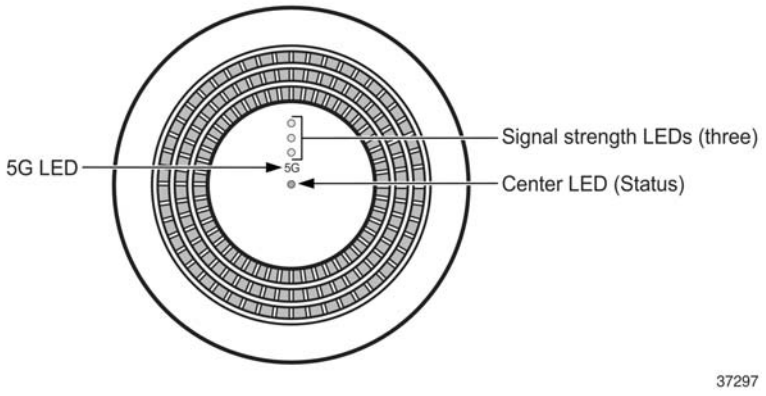
Understanding the LED colors

The LEDs, on the top of the gateway, allow you to locate the FastMile 5G Gateway 3.1 in the best location for 4G/LTE or 5G signal reception.

If the LEDs are turned off, you can check the signal strength at any time by pressing the Signal test button on the side of the FastMile 5G Gateway 3.1. See Using the signal test button for the procedure.

Use the status LED table to check the LED behavior and perform the actions to resolve issues.

Figure 57 **LED location**



Note: All LEDs will be blinking white after reset as follows:

- slow blinking white: a reset to factory settings after holding reset button for more than 5 seconds (light factory reset)
- fast blinking white: a reset to factory settings after holding reset button for more than 30 seconds (deep factory reset)

Note: LED indications can change over time due to variable 4G/LTE and or 5G signal conditions.

If the thresholds have been changed during pre-configuration, the LED indications will be different.

Status LED

The Status LED indicates the status of the FastMile 5G Gateway 3.1 device.

Table 1 **Status LED**

LED color	LED behavior	What it means	What you may consider doing
White	Slow blinking	WPS pairing in progress or reset button pressed longer than 5 - 30 seconds which will trigger factory reset	Do nothing
White	Fast blinking	WPS pairing successful or reset button pressed longer than 5 - 30 seconds which will trigger factory reset	Do nothing
Yellow	Blinking	Start up	Do nothing
Red	Slow blinking	Missing SIM card, or SIM card is PIN-locked, or SIM card is bad and could not be recognized by the CPE	Check SIM Replace SIM (it is recommended to replace a SIM card with a new PIN-locked SIM card)
Red	Fast blinking	Reset to factory default settings	Factory reset in progress
Red	Solid	No 4G/LTE or 5G connection or some applications in abnormal state	Consider moving the gateway Power Off/On

Table 1 **Status LED (Continued)**

LED color	LED behavior	What it means	What you may consider doing
Green	Solid	Signal test in progress. 4G/LTE or 5G connection	Do nothing
White	Blinking	Software upgrade is ongoing	Caution: do not turn off the device

5G LED

By default, the 5G LED and three signal LEDs are off. The white 5G LED indicates 4G or 5G service availability while a signal test is in progress.The status LED is green during the device's normal state.

When the signal test button is pressed, the 5G LED and the three signal LEDs blink fast for a few seconds, then the 5G LED will be on for five seconds if the network is 5G or will be off if the network is 4G.

The signal LED will be on according to the cell strength. The 5G LED and signal LED turn off after the signal test (five seconds, which is the default).

Table 2 **5G LED**

LED behavior	When	What you may consider doing
Blinks	Signal test in progress and during start up	Do nothing
Not lit	4G is available while signal test in progress	Do nothing
Lit	5G is available while signal test in progress	Do nothing

Note: In 5G NSA (option 3x), the 5G LED will be off during the signal test if the FastMile 5G Gateway 3.1 is in idle state, even if 5G service is available.

Signal strength LED

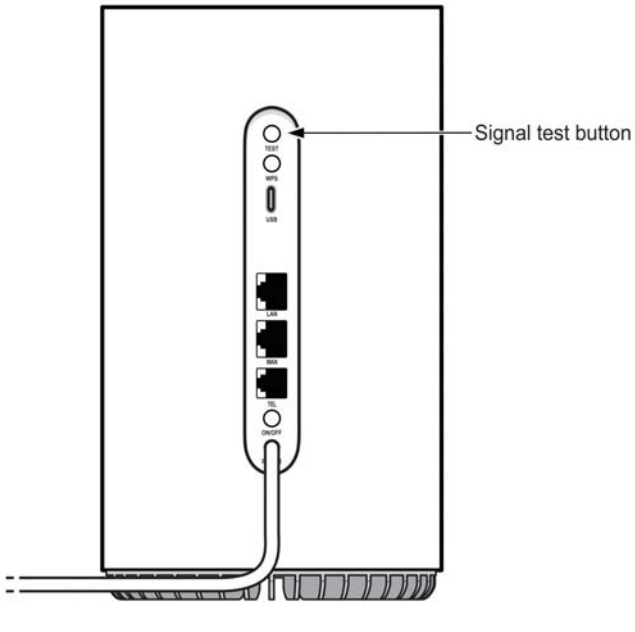
There are three LEDs to indicate signal strength. These signal LEDs blink during start-up and at the start of a signal test.

See Understanding the LED colors for a description of the signal strength LED. The number of lit LEDs indicate the signal strength. For example, three means a very strong signal.

Using the signal test button

You can check and test the signal strength at any time by pressing the signal test button on the side of the FastMile 5G Gateway 3.1 to check the LEDs and perform corrective actions.

Figure 58 **Location of signal test button**



Note: Once you have a good 4G/LTE or 5G connection, it is recommended that you do not relocate or rotate your device. It is strongly recommends that you position your device near a window, where the best 4G/LTE or 5G signal is expected.

However, the omni-directional antenna is less susceptible to Internet speed changes when rotating the device since it does not have a directional antenna.

Rotating your device may still influence the Internet speeds due to Indoor signal reception conditions.

Table 3 **Signal strength LED**

LED	LED behavior	Meaning	What you may consider doing
5G and all three-signal strength	Lit Lit	Good 5G connection	Do nothing
5G and all three-signal strength	Not lit Lit	Good 4G/LTE connection	Do nothing
5G and two- signal strength	Lit Lit	Medium 5G connection	Consider moving the gateway
5G and two- signal strength	Not lit Lit	Medium 4G/LTE connection	Consider moving the gateway
5G and one-signal strength	Lit Lit	Weak 5G connection	Consider moving the gateway
5G and one-signal strength	Not lit Lit	Weak 4G/LTE connection	Consider moving the gateway
Center and all three-signal strength	Red (solid) Not lit	No 4G/LTE No 5G connection	Move the gateway

Repositioning for a better signal

After performing the Using the signal test button procedure to determine the quality of signal, you may want to reposition the FastMile 5G Gateway 3.1 for a better signal, do the following:

- power off the FastMile 5G Gateway 3.1
- disconnect the gateway from the electrical outlet

- move the FastMile 5G Gateway 3.1 to a different position, for example, the other side of the room or a higher position
- connect the FastMile 5G Gateway 3.1 to an electrical outlet at the new location and power it on
- check the LEDs as described in Understanding the LED colors to determine the quality of signal in the new position and follow the actions you may consider in the section

Note: You may need to repeat the steps several times before finding the final location for the FastMile 5G Gateway 3.1.

Once you have a good signal, it is important that you do not reposition or rotate the FastMile 5G Gateway 3.1. You are now ready to connect devices to your FastMile 5G Gateway 3.1.

The table provides helpful actions to perform when the FastMile 5G Gateway 3.1 LED has the following behavior.

Table 4 **LED behavior requiring action**

Status LED (3 color) behavior	5G LED (single color)	Signal strength LEDs (multiple one color)	Reason	Action
Blinking slowly (red)	Off	Off	Missing SIM card, or SIM card is PIN-locked, or SIM card is broken and could not be recognized by the CPE	Check and/or replace SIM card (it is recommended to replace a SIM card with a new PIN-locked SIM card)
Solid (red)	Off	Off	No radio link or No Internet	Relocate gateway

Using the power button

The power button is located on the side of the FastMile 5G Gateway 3.1 and is marked on/off.

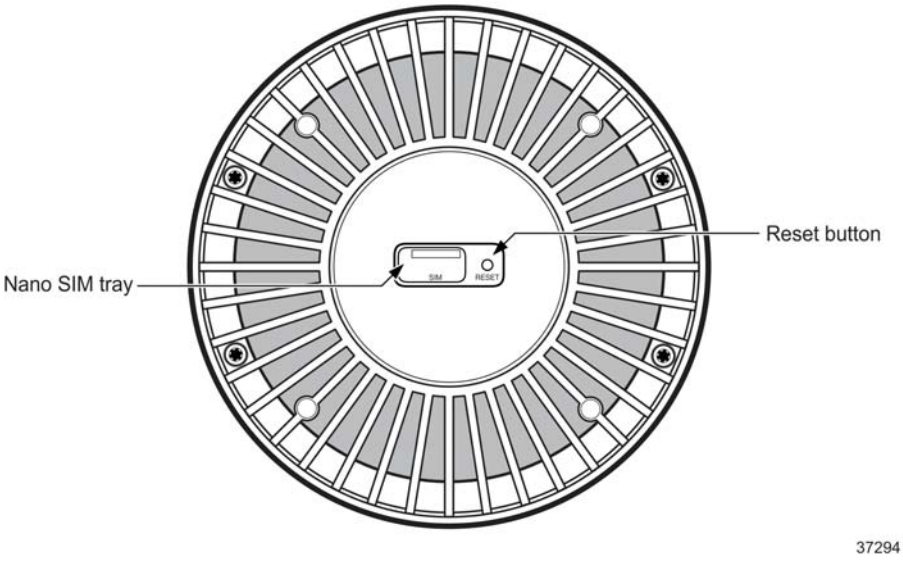
Press the Power button for one second (Off), wait one second, and then press the Power button again (On).

The FastMile 5G Gateway 3.1 reboots.

Using the reset button

Reset the device by pressing the reset button for 5 seconds or more. The reset button is located on the label on the bottom of the device.

Figure 59 **Location of reset button**



Note: During factory reset, the FastMile 5G Gateway 3.1 could restart twice. This is normal behavior.

Glossary

This glossary provides the explanation and optional descriptions of most acronyms and initialisms that appear in this document.

3GPP	3rd Generation Partnership Project
4FF	4th Form Factor
AC	Alternating Current
ACS	Automatic Configuration Server
ALG	Application-level Gateway
AP	Access Point
APN	Access Point Name
CA	Carrier Aggregation
CB	Certification Body
CE	Conformité Européanne (European Health and Safety product label)
DMZ/ALG	Demilitarized Zone/Application-Level Gateway
DHCP	Dynamic Host Configuration Protocol
EN-DC	E-UTRAN New Radio - Dual Connectivity
EARFCN	E-UTRA Absolute Radio Frequency Channel Number
IMSI	International Mobile Subscriber Identity
IP	International Protection or Internet Protocol
IPv6	Internet Protocol version 6
LED	Light Emitting Diode
LTE	Long Term Evolution
MIMO	Multiple-Input Multiple-Output
MU-MIMO	Multi-User Multiple-Input Multiple Output
NR	New Radio
NR-ARFCN	New Radio Absolute radio-frequency channel number
NSA	Non-Standalone
NTP	Network Time Protocol
NWCC	Nokia Wi-Fi Cloud Controller
OAM	Operations and Maintenance
OPID	Operator Identifier
PCI	Peripheral Component Interconnect
QSG	Quick Start Guide
RF	Radio Frequency
RSRP	Reference Signal Received Power
RSRQ	Reference Signal Received Quality

SA	Service Affecting or Standalone
SIM	Subscriber Identify Module
SNR	Signal to Noise Ratio
SSID	Service Set identifier
UL	Up link
USB	Universal Serial Bus
VDC	Volts Direct Current
WAN	Wide Area Network
WLAN	Wireless Local Area Network
WebUI	Graphic User Interface
WPS	Wi-Fi Protected Setup

Identification

See the table below for the FastMile 5G Gateway 3.1 supported models and variants.

Table 5 **Identification of FastMile 5G Gateway 3.1 supported models and variants**

Model	Kit part number	Device part number on bottom label
5G12-13W-B	3TG-00927-ABAA	3TG-00926-AAAA
	3TG-00927-ACAA	3TG-00926-ABAA
	3TG-00927-ACBA	3TG-00926-ABBA
	3TG-00927-ADAA	3TG-00926-AAAA
	3TG-00927-AGAA	3TG-00926-ABAB
	3TG-00927-AHAA	3TG-00926-ABAA

Technical specifications

Dimensions	Diameter 125 mm (4.92in) x Height 218.5 mm (8.58 in) Weight <1000 g (2.2 lbs) without the power adapter
Model	5G12-13W-B
Certifications	CE, CB, RCM, and WFA
Operating environment	0°C to 40°C (32°F to 104°F) Indoor use only. Device is capable of operation up to 45°C (113°F), but with reduced performance
Operating humidity	5% to 85%, non-condensing
Short-term humidity	5% to 93% non-condensing
Storage temperature	-40°C to 70°C (-40°F to 158°F)
SIM card	4FF/nano-sized SIM slot eSIM support for specific customer agreement.
Power	12V DC power adapter consumption: < 36W
Interior antennas	Omni-directional antenna:
4G/LTE gain	0 to 5 dBi depending on LTE band
5G	0 to 6.5 dBi depending on 5G FR1 band
Radio frequency safety distance	20 cm (7.8 inches)

5G NR

3GPP Release 15 - 5G NR NSA: Option 3X, Option 3A

- Supported 5G NR radio bands

Sub-6 GHz (FDD)

- n1 2100 (UL: 1920-1980 MHz; DL: 2110-2170 MHz)
- n3 1800 (UL: 1710-1785 MHz; DL: 1805-1880 MHz)
- n7 2600 (UL: 2500-2570 MHz; DL: 2620-2690 MHz)
- n8 900 (UL: 880-915 MHz; DL: 925-960 MHz)
- n20 800 (UL: 832-862 MHz; DL: 791-821 MHz)
- n28 700 (UL: 703-748 MHz; DL: 758-803 MHz)
- n66 1800 (UL: 1710-1780 MHz; DL: 2110-2200 MHz)

Sub-6 GHz (TDD)

- n38 TD 2600 (2570-2620 MHz)
- n40 TD 2300 (2300-2400 MHz)
- n41 TD 2500 (2496-2690 MHz)
- n77 TD 3700 (3300-4200 MHz)
- n78 TD 3500 (3300-3800 MHz)

LTE

Supported LTE radio bands:

FDD:

- B1 (2100 MHz)
- B2/B25 (1900 MHz)
- B3 (1800 MHz)
- B4/B66 (1700 MHz)
- B5 (800 MHz)
- B7 (2600 MHz)
- B32 (1500 MHz)
- B8 (900 MHz)
- B12/B28 (700 MHz)
- B20 (800 MHz)

TDD:

- B38 (2600 MHz)
- B40 (2300 MHz)
- B41 (2500 MHz)
- B42 (3500 MHz)

LTE antenna gains

- B7, B38, B40, B41, B42: 3-5 dBi
- B1, B3, B2/B25, B4/B66, B32: 2-4 dBi
- B5, B8, B12/B28, B20: 0-2dBi

5G NR antenna gains

- n7/n38/40/n41/n77/n78: 3-6.5 dBi
- n1/n3/n66: 3-4 dBi
- n8/n20/n28: 0-2 dBi

Note: Actual supported radio frequency (RF) bands may vary in different regions due to certifications.

Wi-Fi

The device is also compliant with 802.11 a/b/g/n/ac/ax.

The device supports up to 128 clients per band and per service set identifier (SSID), and the device supports a total of 128 clients.

Radio - cellular (WAN-side)

- 3GPP release 5G NSA option 3x
- 3GPP release 5G SA
- downlink: 4x4MIMO and 256 QAM
- uplink: 1x1 SISO 256 QAM

LTE CA 5G EN-DC mode

The Nokia FastMile 5G Gateway 3.1 implements the 5G NSA (option 3x) configuration, meaning it uses a 4G/LTE carrier and 5G NSA carrier at the same time to connect to the Service provider's network. The control plane is carried over the LTE network and the user plane is carried over both the LTE and 5G NSA networks.

5G SA

When operating in the 5G SA mode, the Nokia FastMile 5G Gateway 3.1 uses the 5G network to connect to the Service provider's network

Certification

The Nokia FastMile 5G Gateway 3.1 is certified for CE, CB, RCM, and WFA regions, which cover the following 4G LTE and 5G NR bands:

Table 6 **4G/LTE and 5G NR bands**

4G LTE	1		5G:	N1
	3			N3
	7			N7
	8			N8
	20			N20
	28			N28
	32(DL)			N38
	38			N40
	40			N41
	41			N77
	42			N78

Warranty and safety

For information on the hardware Limited Warranty, please go to www.nokia.com/fastmile. Read the Nokia FastMile 5G Gateway safety and regulatory information that is included with the product for the following information:

- safety warnings (risk of electrical shock or fire)
- caution (potential equipment damage)
- environmental and regulatory requirements
- end of life collection and treatment
- simplified EC declaration or conformity
- specific precautions for EMS warnings.

Manufacturer information

Table 7

Manufacturer	Nokia Solutions & Networks Oyj www.nokia.com
Address	Karakaari 7, 02610 Espoo, Finland
Document Number	3TG-02290-AAAA-TCZZA -01
Customer Support	Contact your service provider where you purchased the device.

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