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Nokia FastMile 4G Receiver Product Overview

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DRAFT

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.

1 Preface

This preface provides general information about the Product Overview for the Nokia FastMile 4G Receiver.

1.1 Summary of document edition changes

Changes between document editions are cumulative. Therefore, the latest document edition contains all changes made to previous editions.

Edition 01: first edition of the document for this release of the FastMile 4G Receiver

1.2 Scope

This document provides an overview of the Nokia FastMile 4G Receiver along with information about safety and troubleshooting the Nokia FastMile 4G Receiver.

1.3 Audience

This document is intended for planners, administrators, operators, and maintenance personnel involved in installing, upgrading, or maintaining the Nokia FastMile 4G Receiver.

1.4 Required knowledge

The reader must be familiar with general telecommunications principles.

1.5 Acronyms and initialisms

The expansions and optional descriptions of most acronyms and initialisms used in this document appear in the glossary at the back of the document.

1.6 Assistance and ordering phone numbers

Nokia provides global technical support through the following URL: https://customer.nokia.com/support/s/.

For ordering information, contact your Nokia sales representative.

1.7 Nokia quality processes

Nokia's FastMile 4G Receiver quality practices are in compliance with TL 9000 requirements. The customer or its representatives may be allowed to perform on-site quality surveillance audits, as agreed upon during contract negotiations.

1.8 Safety information

For safety information, see the appropriate safety guideline chapters.

1.9 Documents

Documents are available at the Nokia Documentation Center.

Procedure 1 To access a document on the Nokia Documentation Center

Individual PDFs of customer documents are accessible through the Nokia Documentation Center.

1. Go to https://documentation.nokia.com

   Log in as required.

2. Enter FastMile 4G Receiver in the Product box.

3. Select the search criteria as needed (Release, Content Type, Sort by, etc.) and Click on Search.

4. Click on the PDF icon to access a document.

1.10 Special information

The following are examples of how special information is presented in this document.

Danger — Danger indicates that the described activity or situation may result in serious personal injury or death; for example, high voltage or electric shock hazards.

Warning — Warning indicates that the described activity or situation may, or will, cause equipment damage or serious performance problems.

Caution — Caution indicates that the described activity or situation may, or will, cause service interruption.

Note — A note provides information that is, or may be, of special interest.

1.10.1 Steps with options or substeps

When there are options in a step, they are identified by letters. When there are required substeps in a step, they are identified by roman numerals.

Procedure 2 Example of options in a step

At step 1, you must choose option a or b.

1 This step offers two options. You must choose one of the following:

- **a** This is one option.
- **b** This is another option.

2 You must perform this step.

Procedure 3 Example of required substeps in a step

At step 1, you must perform a series of substeps within the step.

1. This step has a series of substeps that you must perform to complete the step. You must perform the following substeps:
   - **i** This is the first substep.
   - **ii** This is the second substep.
   - **iii** This is the third substep.
2. You must perform this step.

1.11 Multiple PDF document search

You can use Adobe Reader Release 6.0 and later to search multiple PDF files for a common term. Adobe Reader displays the results in a single display panel. The results are grouped by PDF file, and you can expand the entry for each file.

Note — The PDF files in which you search must be in the same folder.

Procedure 4 To search multiple PDF files for a common term

1. Open Adobe Acrobat Reader.
2. Choose Edit→Search from the Acrobat Reader main menu. The Search PDF panel appears.
3. Enter the search criteria.
4. Click on the All PDF Documents In radio button.
5. Select the folder in which to search using the drop-down menu.
6. Click on the Search button.

Acrobat Reader displays the search results. You can expand the entries for each document by clicking on the + symbol.

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2 ETSI environmental and CRoHS guidelines

This chapter provides information about the ETSI environmental China Restriction of Hazardous Substances (CRoHS) regulations that govern the installation and operation of Nokia FastMile 4G Receiver equipment. This chapter also includes environmental operation parameters of general interest.

2.1 Environmental labels

This section describes the environmental instructions that are provided with the customer documentation, equipment, and location where the equipment resides.

2.1.1 Overview

CRoHS is applicable to Electronic Information Products (EIP) manufactured or sold and imported in the territory of the mainland of the People's Republic of China. EIP refers to products and their accessories manufactured by using electronic information technology, including electronic communications products and such subcomponents as batteries and cables.

2.1.2 Environmental related labels

Environmental labels are located on appropriate equipment. The following are sample labels.

2.1.2.1 Products below Maximum Concentration Value (MCV) label

Figure 1 shows the label that indicates a product is below the maximum concentration value, as defined by standard SJ/T11363-2006 (Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products). Products with this label are recyclable. The label may be found in this documentation or on the product.

Figure 1 **Products below MCV value label**

2.1.2.2 Products containing hazardous substances above Maximum Concentration Value (MCV) label

Figure 2 shows the label that indicates a product is above the maximum concentration value, as defined by standard SJ/T11363-2006 (Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products). The number contained inside the label indicates the Environment-Friendly User Period (EFUP) value. The label may be found in this documentation or on the product.

Figure 2 **Products above MCV value label**

Together with major international telecommunications equipment companies, Nokia has determined it is appropriate to use an EFUP of 50 years for network infrastructure equipment and an EFUP of 20 years for handsets and accessories. These values are based on manufacturers' extensive practical experience of the design, manufacturing, maintenance, usage conditions, operating environments, and physical condition of infrastructure and handsets after years of service. The values reflect minimum values and refer to products operated according to the intended use conditions. See “Hazardous Substances Table (HST)” for more information.

2.2 Hazardous Substances Table (HST)

This section describes the compliance of the Nokia FastMile 4G Receiver equipment to the CRoHS standard when the product and subassemblies contain hazardous substances beyond the MCV value. This information is found in this user documentation where part numbers for the product and subassemblies are listed. It may be referenced in other documentation that describes the Nokia FastMile 4G Receiver equipment.

In accordance with the People’s Republic of China Electronic Industry Standard Marking for the Control of Pollution Caused by Electronic Information Products (SJ/T11364-2006), customers may access the Nokia Hazardous Substance Table, in Chinese, by contacting their Nokia representative.

2.3 Other environmental requirements

Observe the following environmental requirements when handling Nokia FastMile 4G Receiver equipment.

2.3.1 Environmental requirements

See chapter 16 in this document for more information about temperature ranges for the Nokia FastMile 4G Receiver equipment and other Nokia FastMile 4G Receiver specifications.

2.3.2 Storage

According to ETS 300-019-1-1 - Class 1.1, storage of Nokia FastMile 4G Receiver equipment must be in Class 1.1, weather-protected, temperature-controlled locations.

2.3.3 Transportation

According to EN 300-019-1-2 - Class 2.3, transportation of Nokia FastMile 4G Receiver equipment must be in packed, public transportation.

2.3.4 Stationary use

According to EN 300-019-1-3 - Class 3.1/3.2/3.E, stationary use of Nokia FastMile 4G Receiver equipment must be in a temperature-controlled location with no condensation allowed.

2.3.5 Thermal limitations

The thermal limitations for the Nokia FastMile 4G Receiver equipment are:

- operating temperature (ambient):
  - Compact mono-band and ABA models: –30˚C to 65˚C (–22˚F to 149˚F)
  - Compact multi-band models and High gain CBRS model: –30°C to 55°C (–22°F to 131°F); Model 4G05-B: –40°C to 55°C (–40°F to 131°F)
- Humidity: 5% to 95% non condensing

2.3.6 Material content compliance

European Union (EU) Directive 2002/95/EC, “Restriction of the use of certain Hazardous Substances” (RoHS), restricts the use of lead, mercury, cadmium, hexavalent chromium, and certain flame retardants in electrical and electronic equipment. This Directive applies to electrical and electronic products placed on the EU market after 1 July 2006, with various exemptions, including an exemption for lead solder in network infrastructure equipment. Nokia products shipped to the EU after 1 July 2006 comply with the EU RoHS Directive.

Nokia has implemented a material/substance content management process. The process is described in: Nokia process for ensuring RoHS Compliance (1AA002660031ASZZA). This ensures compliance with the European Union Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS2). With the process equipment is assessed in accordance with the Harmonised Standard EN50581:2012 (CENELEC) on Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

2.3.7 End-of-life collection and treatment

Electronic products bearing or referencing the symbol shown in Figure 3, when put on the market within the European Union (EU), shall be collected and treated at the end of their useful life, in compliance with applicable EU and local legislation. They shall not be disposed of as part of unsorted municipal waste. Due to materials that may be contained in the product, such as heavy metals or batteries, the environment and human health may be negatively impacted as a result of inappropriate disposal.

Figure 3 **Recycling/take back/disposal of product symbol**

At the end of its life, Nokia FastMile 4G Receiver equipment is subject to the applicable local legislations that implement the European Directive 2012/19EU on waste electrical and electronic equipment (WEEE).

There can be different requirements for collection and treatment in different member states of the European Union.

In compliance with legal requirements and contractual agreements, where applicable, Nokia will offer to provide for the collection and treatment of Nokia products bearing the logo shown in Figure 3 at the end of their useful life, or products displaced by Nokia equipment offers. For information regarding take-back of equipment by Nokia, or for more information regarding the requirements for recycling/disposal of product, contact your Nokia account manager or Nokia take back support at sustainability.global@nokia.com.

2.4 Additional information

See chapter 17 for RF exposure information.

3 ETSI safety guidelines

This chapter provides information about the mandatory regulations that govern the installation and operation of Nokia FastMile 4G Receiver equipment in the ETSI market.

3.1 Safety instructions

This section describes the safety instructions that are provided in the customer documentation and on the Nokia FastMile 4G Receiver equipment.

3.1.1 Safety instruction boxes

The safety instruction boxes are provided in the Nokia FastMile 4G Receiver customer documentation. Observe the instructions to meet safety requirements.

The following is an example of the Danger box.

Danger — Possibility of personal injury.

The Danger box indicates that the described activity or situation may pose a threat to personal safety. It calls attention to a situation or procedure which, if not correctly performed or adhered to, may result in death or serious physical harm.

Do not proceed beyond a Danger box until the indicated conditions are fully understood and met.

The following is an example of the Warning box.

Warning 1 — Possibility of equipment damage.

Warning 2 — Possibility of data loss.

The Warning box indicates that the described activity or situation may, or will, cause equipment damage, loss of data, or serious performance problems. It identifies a possible equipment-damaging situation or provides essential information to avoid the degradation of system operations or data.

Do not proceed beyond a warning until the indicated conditions are fully understood and met.

The following is an example of the Caution box.

Caution 1 — Possibility of service interruption.

Caution 2 — Service interruption.

The Caution box indicates that the described activity or situation may, or will, cause service interruption.

Do not proceed beyond a caution until the indicated conditions are fully understood and met.

The following is an example of the Note box.

Note — Information of special interest.

The Note box provides information that assists the personnel working with Nokia FastMile 4G Receiver equipment. It does not provide safety-related instructions.

3.1.2 Safety-related labels

The Nokia FastMile 4G Receiver equipment is labeled with the specific safety instructions and compliance information that is related to a product, or product variant or model, of the equipment. Observe the instructions on the safety labels.

Table 1 provides sample safety labels on Nokia FastMile 4G Receiver equipment.

Table 1 **Safety labels**

Description	Label text
ESD warning	Caution: This assembly contains an electrostatic sensitive device.

3.2 Safety standards compliance

This section describes Nokia FastMile 4G Receiver equipment compliance with the European safety standards.

3.2.1 EMC compliance

The Nokia FastMile 4G Receiver equipment complies with the following EMC requirements:

- Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication Mobile and portable (UE) radio and ancillary equipment; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU
- Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU EN 301489-1
- Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonized Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU EN 301489-17

3.2.2 Equipment safety standard compliance

The Nokia FastMile 4G Receiver equipment complies with the requirements of the following:

- EN 60950-1, Safety of Information Technology Equipment for use in a restricted location (per R-269)
- IEC 60950-22, EN 60950-22: Information Technology Equipment- Safety - Part 22 Equipment to be installed Outdoors
- IEC 62368 Audio/video, information and communication technology equipment- Part 1: Safety requirements
- IEC 60529 Degrees of protection provided by enclosures (IP Code)

3.2.3 Environmental standard compliance

The Nokia FastMile 4G Receiver equipment complies with the EN 300 019 European environmental standards.

3.2.4 Laser product standard compliance

The Nokia FastMile 4G Receiver equipment is not a laser product.

3.3 Electrical safety guidelines

This section provides the electrical safety guidelines for the Nokia FastMile 4G Receiver equipment.

Note 1 — The Nokia FastMile 4G Receiver equipment complies with the U.S. National Electrical Code. However, local electrical authorities have jurisdiction when there are differences between the local and U.S. standards.

Note 2 — The Nokia FastMile 4G Receiver equipment complies with BS EN 61140.

3.3.1 Power supplies

The use of any non-Nokia approved power supplies or power adapters is not supported or endorsed by Nokia. Such use will void any warranty or support contract with Nokia. Such use greatly increases the danger of damage to equipment or property.

3.3.2 Cabling

The following are the guidelines regarding cables used for the Nokia FastMile 4G Receiver equipment:

- All cables must be approved by the relevant national electrical code.
- Cables for outdoor connection to the Nokia FastMile 4G Receiver equipment must be suitable for outdoor use.
- The Nokia FastMile 4G Receiver equipment must be used with the cabling supplied with the equipment.

3.3.3 Protective earth

Earthing and bonding of the Nokia FastMile 4G Receiver equipment must comply with the requirements of local electrical codes.

3.4 ESD safety guidelines

The Nokia FastMile 4G Receiver equipment is sensitive to ESD if opened. Operations personnel must observe the following ESD instructions when they handle the Nokia FastMile 4G Receiver equipment.

Caution — This equipment is ESD sensitive if opened. Proper ESD protections should be used if you open the Nokia FastMile 4G Receiver.

Service personnel are not required to wear wrist straps when performing normal installation or maintenance activities.

3.5 Environmental requirements

See chapter 16 in this document for information about temperature ranges for the Nokia FastMile 4G Receiver equipment and other Nokia FastMile 4G Receiver specifications.

During operation in the supported temperature range, condensation inside the Nokia FastMile 4G Receiver equipment caused by humidity is not an issue because the Nokia FastMile 4G Receiver is a sealed unit.

3.6 Additional information

See chapter 17 for RF exposure information.

4 ANSI safety guidelines

This chapter provides information about the mandatory regulations that govern the installation and operation of the Nokia FastMile 4G Receiver equipment in the North American or ANSI market.

4.1 Safety instructions

This section describes the safety instructions that are provided in the customer documentation and on the Nokia FastMile 4G Receiver equipment.

4.1.1 Safety instruction boxes in customer documentation

The safety instruction boxes are provided in the Nokia FastMile 4G Receiver customer documentation. Observe the instructions to meet safety requirements.

The following is an example of the Danger box.

Danger — Possibility of personal injury.

The Danger box indicates that the described activity or situation may pose a threat to personal safety. It calls attention to a situation or procedure which, if not correctly performed or adhered to, may result in death or serious physical harm.

Do not proceed beyond a Danger box until the indicated conditions are fully understood and met.

The following is an example of the Warning box.

Warning 1 — Possibility of equipment damage.

Warning 2 — Possibility of data loss.

The Warning box indicates that the described activity or situation may, or will, cause equipment damage, loss of data, or serious performance problems. It identifies a possible equipment-damaging situation or provides essential information to avoid the degradation of system operations or data.

Do not proceed beyond a warning until the indicated conditions are fully understood and met.

The following is an example of the Caution box.

Caution 1 — Possibility of service interruption.

Caution 2 — Service interruption.

The Caution box indicates that the described activity or situation may, or will, cause service interruption.

Do not proceed beyond a caution until the indicated conditions are fully understood and met.

The following is an example of the Note box.

Note — Information of special interest.

The Note box provides information that assists the personnel working with Nokia FastMile 4G Receiver equipment. It does not provide safety-related instructions.

4.1.2 Safety-related labels

The Nokia FastMile 4G Receiver equipment is labeled with specific safety compliance information and instructions that are related to a product, or product model, of the equipment. Observe the instructions on the safety labels.

Table 2 provides examples of the text in the various Nokia FastMile 4G Receiver equipment safety labels.

Table 2 **Safety labels**

Description	Label text
UL compliance	ETL/cETL
UL50E compliance	Type 3
ESD warning	Caution: This assembly contains electrostatic sensitive device.
FCC standards compliance	Tested to comply with FCC standards for home or office use.
Operation conditions	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
CE marking	There are various CE symbols for CE compliance.

Figure 4 shows a sample safety label for FCC and Figure 5 shows a sample safety label for ETL.

Figure 4 **Sample safety label for FCC**

Figure 5 **Sample safety label for ETL**

4.2 Safety standards compliance

This section describes the Nokia FastMile 4G Receiver equipment compliance with North American safety standards.

Warning — Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

4.2.1 EMC, EMI, and ESD compliance

The Nokia FastMile 4G Receiver equipment complies with the following EMC, EMI, and ESD requirements:

- Federal Communications Commission PART 15-RADIO FREQUENCY DEVICES Subpart C-INTENTIONAL RADIATORS Title 47 CFR Part 15. Part 15.247

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is needed.
- Consult the dealer or an experienced radio/TV technician for help.

4.2.2 Equipment safety standard compliance

The Nokia FastMile 4G Receiver equipment complies with the requirements of:

- UL 62368-1 Audio/Video, Information And Communication Technology Equipment - Part 1: Safety Requirements
- CSA C22.2#62368-1 Audio/Video, Information And Communication Technology Equipment - Part 1: Safety Requirements
- UL 60950-22 Information Technology Equipment - Safety - Part 22: Equipment to be Installed Outdoors

4.3 Electrical safety guidelines

This section provides the electrical safety guidelines for the Nokia FastMile 4G Receiver equipment.

Note — The Nokia FastMile 4G Receiver equipment complies with the U.S. National Electrical Code. However, local electrical authorities have jurisdiction when there are differences between the local and U.S. standards.

4.3.1 Power supplies

The use of any non-Nokia approved power supplies or power adapters is not supported or endorsed by Nokia. Such use will void any warranty or support contract with Nokia. Such use greatly increases the danger of damage to equipment or property.

4.3.2 Cabling

The following are the guidelines regarding cables used for the Nokia FastMile 4G Receiver equipment:

- All cables must be approved by the relevant national electrical code.
- Cables for outdoor connection to the Nokia FastMile 4G Receiver equipment must be suitable for outdoor use.
- If cabling is supplied with the Nokia FastMile 4G Receiver, the supplied cabling must be used with the equipment.

4.3.3 Protective earth

Earthing and bonding of the Nokia FastMile 4G Receiver equipment must comply with the requirements of NEC article 250 or local electrical codes.

4.4 ESD safety guidelines

The Nokia FastMile 4G Receiver equipment is sensitive to ESD if opened. Operations personnel must observe the following ESD instructions when they handle the Nokia FastMile 4G Receiver equipment.

Caution — This equipment is ESD sensitive if opened. Proper ESD protections should be used if you open the Nokia FastMile 4G Receiver.

Service personnel are not required to wear wrist straps when performing normal installation or maintenance activities.

4.5 Environmental requirements

See chapter 16 in this document for information about temperature ranges for the Nokia FastMile 4G Receiver equipment and other Nokia FastMile 4G Receiver specifications.

During operation in the supported temperature range, condensation inside the Nokia FastMile 4G Receiver equipment caused by humidity is not an issue because the Nokia FastMile 4G Receiver is a sealed unit.

4.6 Additional information

See chapter 17 for RF exposure information.

See chapter 18 for additional FCC compliance information.

5 Product overview

5.1 Overview of the Nokia FastMile 4G Receiver

The Nokia FastMile 4G Receiver is an outdoor device used in the Nokia FastMile 4G solution.

The Nokia FastMile 4G solution uses 3GPP based LTE radio technology to provide indoor and outdoor broadband connectivity with guaranteed high bitrates in larger service areas in a more cost-efficient manner than is possible with other existing solutions.The Nokia FastMile 4G solution can overcome network performance challenges faced by today's mobile networks by optimizing all of the following:

- intra site interference due to neighbor sectors in same LTE base station
- inter site interference due to neighbor base stations
- link performance due to wall penetration loss and several miles path loss

The Nokia FastMile 4G Receiver provides high-performing, outdoor wireless broadband access over LTE to meet residential users' total home connectivity needs for urban, suburban, rural, and deep rural spots.

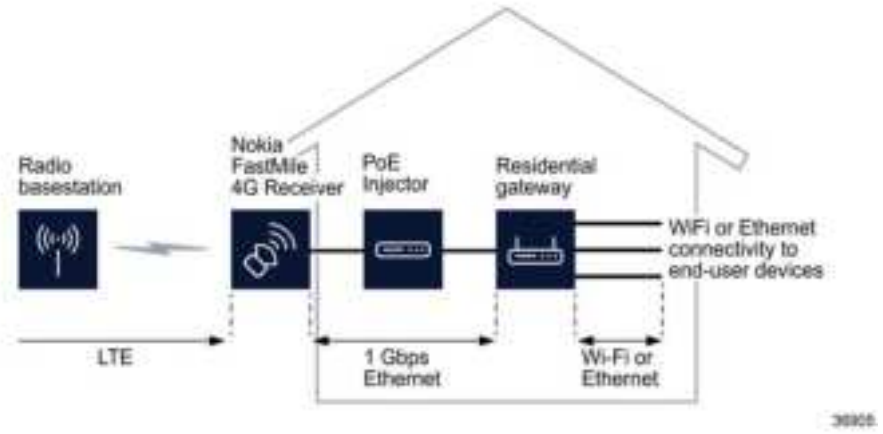
The Nokia FastMile 4G Receiver supports LTE connectivity to an LTE base station in the network, and provides 1 Gbps Ethernet connectivity through an Ethernet cable connected to a residential gateway such as the following in the home:

- Beacon 1.1
- Beacon 2

The Nokia FastMile 4G Receiver can be installed on the side of a house or on a pole close to the house. A pole mount kit that includes a pole adapter can be ordered from Nokia.

Figure 6 shows an application example where the Nokia FastMile 4G Receiver is mounted on the side of a house.

Figure 6 **Application example of the Nokia FastMile 4G Receiver**

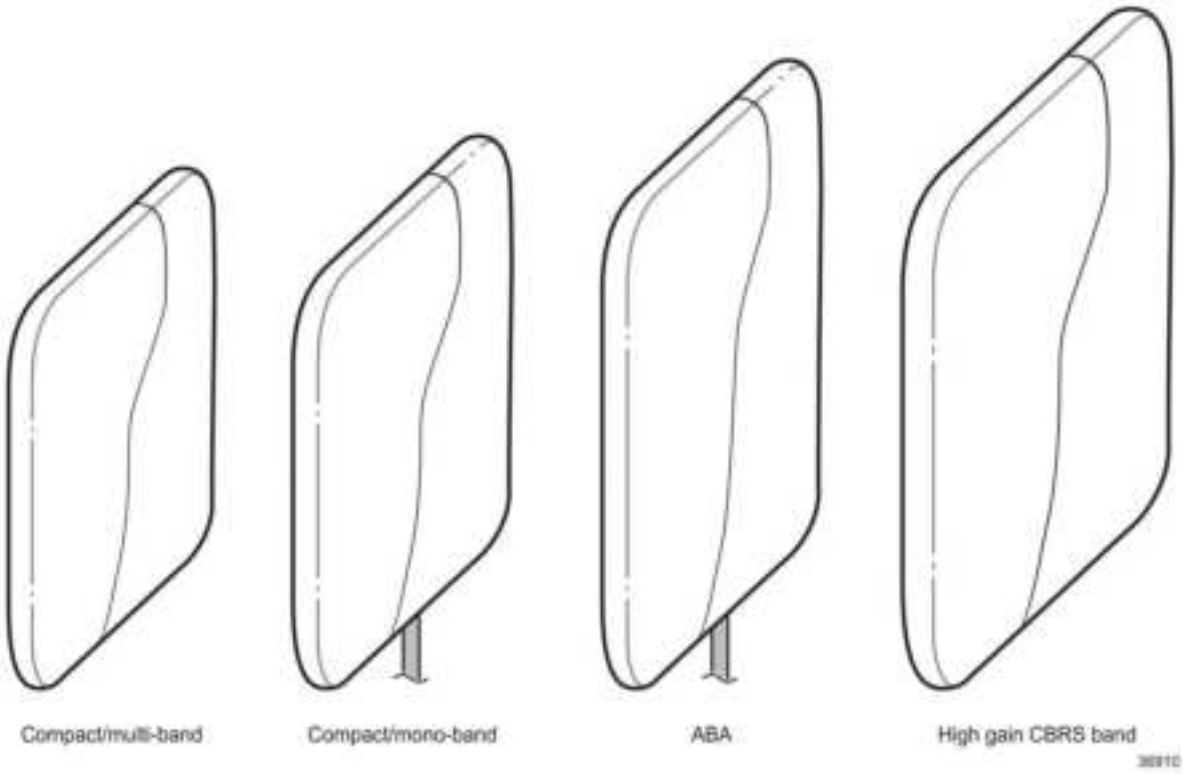


The Nokia FastMile 4G Receiver is available in the following model types:

- Compact multi-band; this model type has the following features:
  - fixed beamforming antennas
  - multi-band transmission
- Compact mono-band; this model type has the following features:
  - fixed beamforming antennas
  - mono-band transmission
- ABA; this model type has the following features:
  - high gain beam steering antenna
  - automated beam alignment
- High gain CBRS band; this model type has the following features:
  - high gain fixed beamforming antenna
  - CBRS band (B48) transmission

Figure 7 shows examples of the model types of the Nokia FastMile 4G Receiver.

Figure 7 **Examples of model types of the Nokia FastMile 4G Receiver**



The Nokia FastMile 4G Receiver has built-in antenna and LTE modem that provide the LTE broadband access to the network.

The Nokia FastMile 4G Receiver is capable of withstanding outdoor environmental conditions. It has an IP rating of IP66 TYPE3 and can operate in the following temperature ranges:

- compact mono-band and ABA models can operate in a temperature of –30˚C to 65˚C (–22˚F to 149˚F)
- compact multi-band models and high gain CBRS models can operate in a temperature of –30°C to 55°C (–22°F to 131°F); the Model 4G05-B can operate in a temperature of –40°C to 55°C (–40°F to 131°F)

See chapter 16 for additional specifications of the Nokia FastMile 4G Receiver.

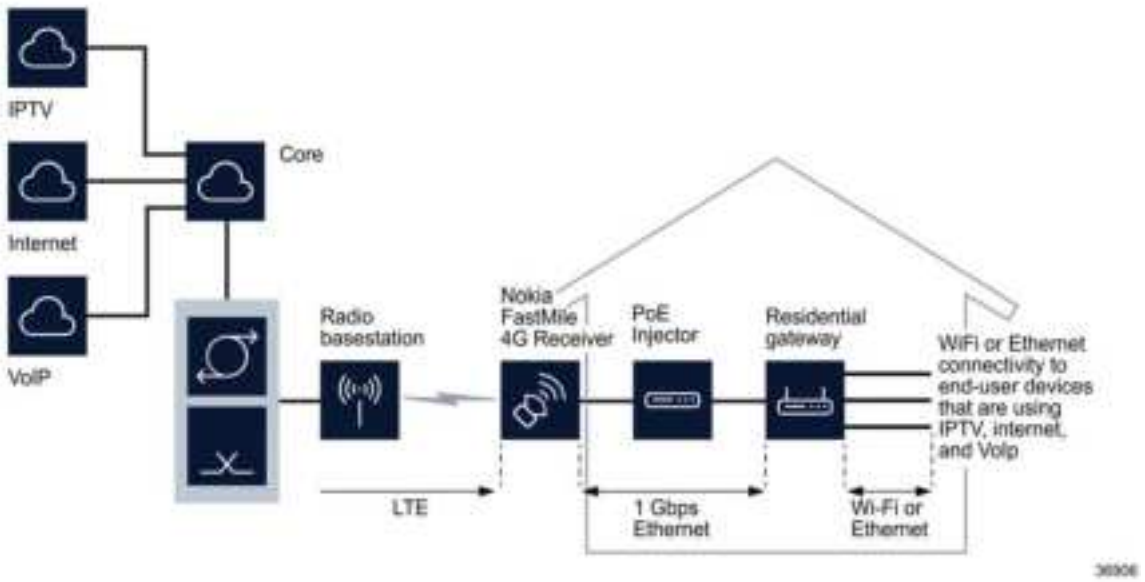
5.2 End-to-end example

The Nokia FastMile 4G Receiver can be used to provide IPTV, Internet, and VoIP services to end-users that are connected to the Nokia FastMile 4G Receiver through a Nokia-approved residential gateway or a Nokia-approved PoE injector. The Nokia FastMile 4G Receiver can also connect directly to a video monitor, personal computer, and so on rather than using a residential gateway.

Due to the independence between the Nokia FastMile 4G Receiver and the gateway, the Nokia FastMile 4G Receiver also addresses the business market. The business customer can seamlessly re-use their existing business gateway. The Nokia FastMile 4G Receiver supports extended QCI and multiple APNs that can be mapped on VLANs to support QoS for different services.

Figure 8 shows an end-to-end example that features the Nokia FastMile 4G Receiver with a residential gateway and PoE injector.

Figure 8 **End-to-end example featuring the Nokia FastMile 4G Receiver with a residential gateway and PoE injector**



5.3 Installing the Nokia FastMile 4G Receiver

As part of installing the Nokia FastMile 4G Receiver, you can use the Nokia Wireless app (described in section 6.1.1) to help in determining the mounting location for the Nokia FastMile 4G Receiver with either of the following:

- an ACS through TR-069 with help from the Nokia Altiplano FastMile Controller
- an ACS through TR-069 without help from the Nokia Altiplano FastMile Controller

The *Nokia FastMile 4G Receiver Installation Guide* provides steps on how to use the Nokia Wireless app to help in determining the mounting location, and how to install the Nokia FastMile 4G Receiver on the side of a house or on a pole close to the house.

6 Functional overview

6.1 Overview

The Nokia FastMile 4G Receiver provides wireless broadband access in the form of LTE to meet the ever growing network needs of end users. The Nokia FastMile 4G Receiver is an outdoor device that lets operators use LTE to offer fixed wireless broadband to their customers.

The Nokia FastMile 4G Receiver is easy to install and is user-friendly to operate.

6.1.1 Nokia Wireless app

The Nokia FastMile 4G Receiver can be installed with the assistance of an Android application, known as Nokia Wireless app, installed on a mobile phone. The app in general lets you scan the QR code of the receiver, identify the best location to install the receiver by measuring the signal strength and connect to the receiver over a Bluetooth connection in order to apply configuration.

The Nokia Wireless app also provides management and troubleshooting capabilities for the Nokia FastMile 4G Receiver such as the following:

- viewing information that includes:
  - LTE cell info such as connection state, status, EARFCN, and PCI
  - current and average signal stats for RSRP, RSRQ, RSSI, and SINR
  - other stats (for example, bytes sent and bytes received)
- uploading CA certificates to the Nokia FastMile 4G Receiver
- resetting the 4G Receiver to factory settings
- rebooting the 4G Receiver

See the Installation guide for more information about how the Nokia Wireless app is used in the installation process. See chapter 13 in this document for more information about how Nokia Wireless app can be used for management of the Nokia FastMile 4G Receiver.

6.1.2 Web UI

The Nokia FastMile 4G Receiver supports local management capability, allowing status view and configuration operations, through a Web UI.

The Web UI can be accessed directly from a laptop through the Ethernet port of the Nokia FastMile 4G Receiver via the dedicated static IP address 192.168.0.1 (https://192.168.0.1) configurable through WebUI/ ACS or customer specific preconfiguration. For more information, see section 6.10. Alternatively, it is possible to access the Web UI from behind a Nokia-approved residential gateway which is appropriately configured.

The Nokia FastMile 4G Receiver static IP for the Web UI interface can be configured on WebGUI and ACS. WebGUI is still accessible after static IP is configured.

Web UI functionality is optimized for the following browsers:

- Google Chrome (version 76.0.3809.132 or greater)
- Mozilla Firefox (version 69.0 or greater)
- Microsoft Edge (version 44.18362.267.0 or greater)

Note — Internet Explorer is not supported since it will be replaced by Edge and will not be updated from Microsoft any more.

The Web UI design is optimized for a resolution of 1920x1080 pixels, but is not restricted to it.

Note — The Web UI is based on https The client browser will indicate an unknown certificate warning because a Nokia signed certificate is used; this does not constitute a security issue or threat. It is safe to accept the certificate.

See chapter 14 in this document for information about using the Web UI to manage the Nokia FastMile 4G Receiver.

6.1.3 Remote management

The Nokia FastMile 4G Receiver supports remote management capability, allowing management and health monitoring of it from the Nokia Altiplano FastMile Controller from an ACS (through TR-069). For security reasons, Web UI remote access (WAN) is disabled by default. Enable or disable of Web UI remote access (WAN) can be configured at pre-config. (It is recommended to disable it).

Note — The Nokia FastMile 4G Receiver supports DHCP option 43 when it works as a DHCP server for the gateway by providing information about the ACS to the gateway. DHCP Option 43 parameters are only configurable through customer specific PLMN pre-config, file.

See the documentation for the Nokia Altiplano FastMile Controller for information about managing and monitoring the Nokia FastMile 4G Receiver through the Nokia Altiplano FastMile Controller.

See section 6.6 for information about the remote management protocols.

6.2 LTE characteristics

The following are some of the key LTE characteristics of the Nokia FastMile 4G Receiver:

- LTE 3GPP Release 12 Compliant, UE Category 12
- transmit power: max +23 dBm +/- 2 dBm for all modules except for 4G01-D
- transmit power: max +4 dBm/ 10MHz for 4G01-D
- supports the E-UTRA bands listed in Table 3

Table 3 **E-UTRA bands supported by the Nokia FastMile 4G Receiver**

E-UTRA bands	Model
Band 42/43/48 (mono-band support)	4G01-A
Band 42/43/48(1) (ABA support)	4G01-B
Band 48 (high gain CBRS CBSD-Cat B support)	4G01-C
Band 48 (high gain CBRS EUD support)	4G01-D
Band 3 (mono-band support)	4G02-A
Band 7/38/40/41 (mono-band support)	4G03-A
Band 3/7/20/32 (multi-band support)	4G04-A
Band 1/3/7/38/40/41/20/28 (multi-band support)	4G05-A and 4G05-B
Band 2/25/4/66/7/42/43/48/28 (multi-band support)	4G06-A
Band 1/3/7/20/32 (multi-band support)	4G17-A

Notes

(1) Note that B48 for the 4G01-B has not been FCC CBRS Part96 certified and is not ready for commercial use.

6.3 Data forwarding

The Nokia FastMile 4G Receiver supports the following data forwarding methods as described in Table 4:

Table 4 **Data forwarding methods supported by the Nokia FastMile 4G Receiver**

Forwarding mode	Typical use
Single APN with multi-bearers for route mode	Recommended for using only one APN specific for Nokia FastMile 4G Receiver
Single APN with multi-bearers for bridge mode	Could be used for WAN of the Nokia FastMile 4G Receiver with VLAN tag
Multiple APNs with bridge mode	Used as multi-APN, separated service with APNs: each APN is for each service. Note in this case, a specific port should be reserved for service traffic.
Multiple APNs with mixed mode	Can be used for separated APNs on OAM and also other APNs for separated services: • Only default APN is in route mode which could be OAM • Besides APN, each APN is for each service
Tunnel mode	Can be used for using tunnel for L2 forwarding such as PPPoE

Note — The Nokia FastMile 4G Receiver supports multiple APNs. The default APN is used for OAM while Internet is used on a different APN.TR-143 tests are enabled on all APNs and the actual speed on the Internet connection can be tested.

6.4 Ethernet characteristics

The following are some of the key Ethernet characteristics of the Nokia FastMile 4G Receiver:

- provides a 1 Gbps Ethernet LAN Interface that, depending on the model of the Nokia FastMile 4G Receiver, has the following:
  - the Compact mono-band and ABA models have a pre-attached 3 m (9.8 ft) Cat5e shielded UV resistant twisted pair Ethernet cable with a male RJ 45 connector at the free end; the 4G01-A and 4G03-A Compact mono-band models are also available with a pre-attached 20 m (65.6 ft) Cat5e shielded UV resistant twisted pair Ethernet cable with a male RJ 45 connector at the free end
  - the Compact multi-band models and High gain CBRS models have a female RJ 45 connector that supports connection of a customer-supplied Ethernet cable:

    - the Model 4G17-A requires a Cat5e non-shielded or shielded twisted pair Ethernet cable with standard pinouts that is up to a maximum of 80 m (262 ft) in length

    - all other Compact multi-band models and High gain CBRS models require a Cat5e shielded twisted pair Ethernet cable with standard pinouts that is up to a maximum of 80 m (262 ft) in length
- supports IEEE802.3 1000BASE-T
- supports IEEE802.3az energy efficient Ethernet
- the Ethernet cable for all models is also used for power over Ethernet (PoE) as per IEEE802.3 at type-2

6.5 Power supply characteristics

The following are some of the key power supply characteristics of the Nokia FastMile 4G Receiver:

- powered through PoE from a Nokia-approved residential gateway, or through a Nokia-approved PoE injector (see section 11.2 for information about PoE injectors for use with the FastMile 4G Receiver)
- supports PoE+ as per IEEE802.3 at type-2
- rating: 53 VDC at 600 mA

See section 11.1 for power information.

6.6 Remote management protocols

Remote management of the Nokia FastMile 4G Receiver can be done from the Nokia Altiplano FastMile Controller from an ACS through TR-069/TR181 depending on the installed SIM card.

If the remote management protocol is TR-069, the Nokia FastMile 4G Receiver can be managed remotely from an ACS.

Figure 9 shows the Nokia Altiplano FastMile Controller being used for remote management of the Nokia FastMile 4G Receiver.

Figure 9 **Remote management of the Nokia FastMile 4G Receiver through the Nokia Altiplano FastMile Controller**

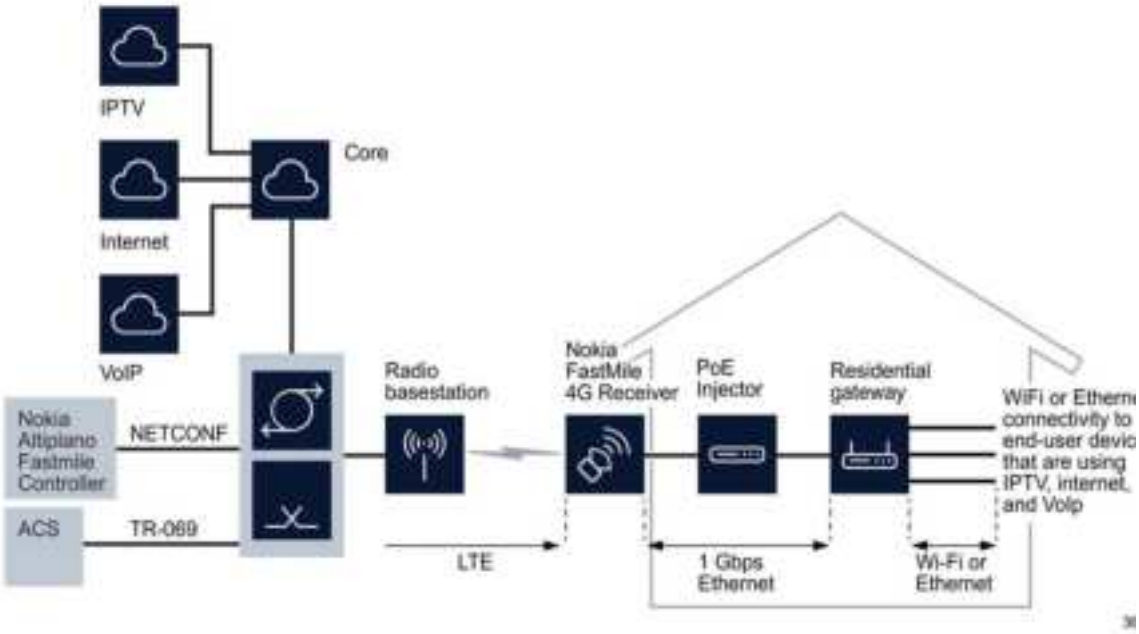
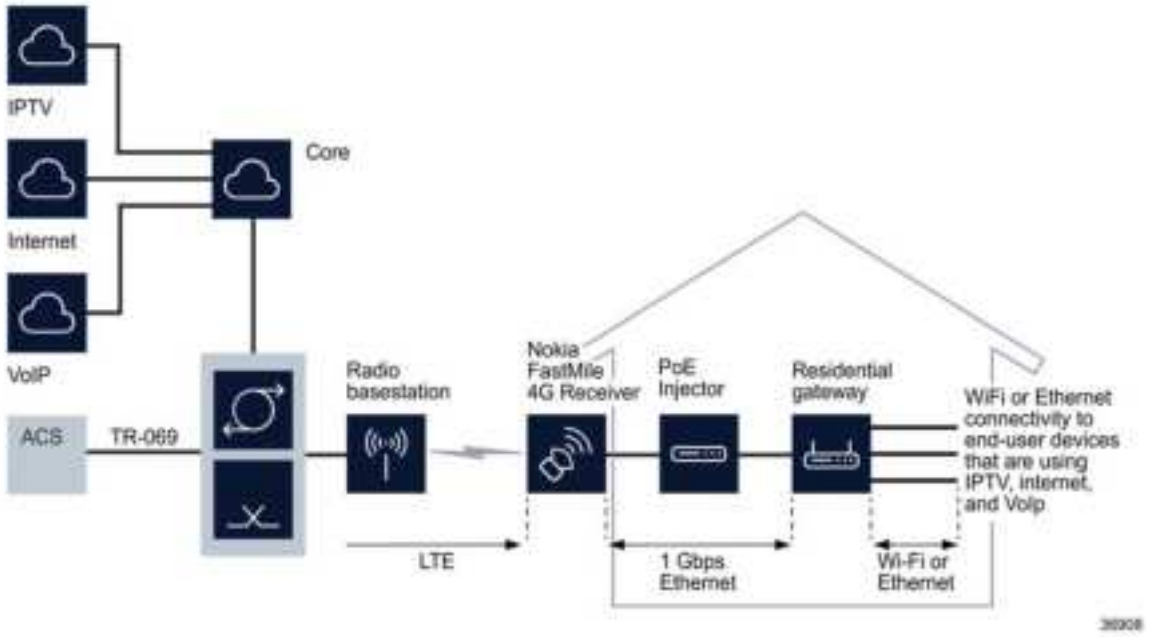


Figure 10 shows an ACS being used for remote management of the Nokia FastMile 4G Receiver. Note that the ACS uses TR-069 to manage both the Nokia FastMile 4G Receiver and the residential gateway.

Figure 10 **Remote management of the Nokia FastMile 4G Receiver through an ACS**



6.7 Domain proxy

The Nokia FastMile 4G CBRS Receiver supports integration with Nokia's Domain proxy (DP) and optimization with Nokia root CA certificate. The DP root CA is same as the CBRS root CA. The DP can upload Nokia root CA certificate. ODU continues to use the CRBS root CA certificate to authorize the CRBS certificate of the DP.

The support includes:

- adaptation to Nokia DP (for example, DP awareness and customized for DP's cause code)
- primary and secondary DP configuration and switchover (the switchover is automatically performed by the DP)

6.8 IPv4 and IPv6

The Nokia FastMile 4G Receiver supports IPv6 and dual stack with Nokia Beacon 1 (IOT is required for an RGW from a third-party).

The Nokia FastMile 4G Receiver supports IPv4 and IPv6 which includes:

- OAM IP
  - IPv6 for OAM including TR069, diagnostics, SW image download, log upload

- IP passthrough
  - for IPv6, prefix is assigned by PGW of mobile core network, 4G receiver assign IPv6 address to connected device based on such prefix via SLAAC and DHCP PD (PD is responded by 4G receiver other than relaying to core network). for IPv4, subnet mask can be configured by 4G receiver as default it is 255.255.255.0, 4G receiver will assign IPv4 address to connected device via DHCP scenario based on its own DHCPv4 server.
  - DNSv6 relay to the RGW
  - dual stack per APN

IPv4 and IPv6 is supported on all APNs. Each APN can be configured as IPv4, IPv6, or dual stack (IPv4/IPv6).

6.9 Security

This section describes the security features.

6.9.1 Open SSL security

OpenSSL binary is used on the ODU.

There is no SUID permission on the opensslopenssl binary.

6.9.2 Web UI and WAN access control

The Nokia FastMile 4G Receiver supports Web UI password management and WAN access control thus providing increased security. The Nokia FastMile 4G Receiver supports:

- Web UI passwords (per user account) in pre-config file on a per operator basis.
- Enable and disable Web UI remote access (WAN) through pre-config. The IP address range (or subnet) from which remote web UI access is allowed must be provided (through pre-config. or ACS).

Note — For remote Web UI access, HTTPS port number is required. The default HTTPS port number is 60443. You can also set the HTTPS port number in the pre-config, file.

- Enable and disable SSH remote access through pre-confg. This is disabled by default.
- For multiple APNs, remote Web UI access is permitted only in the management APN if enabled.

- For multiple APNs and single APN, IP filter on Receiver allows remote Web UI access only from a certain range of IP addresses or subnet that the operator is going to use.

Note — This IP address range:

- is provided in pre-config. Multiple IP address range (subnet) can be configured in pre-config. table.
- can be changed by the ACS.

- WebUI will not remind the end user to change password periodically. Operator is recommended to change the password through ACS periodically but it is not compulsory to change it.
- If Web UI WAN access is turned on, IP list or subnet must be configured.
- For multiple APNs, management APN is default APN.

6.9.3 Fix security vulnerabilities

To fix security vulnerabilities in the Nokia FastMile 4G Receive, upgrade BlueZ to version 5.55.

6.9.4 SSH root access from LAN and WAN

SSH root access from LAN and WAN is disabled by default at pre-config.

6.10 Extend PLMN to IMSI and MCC for indexing pre-config. file

Customers in different countries use PLMN in a way that is most suitable to them. Here are some examples of how customers use PLMN:

- Most customers use unique PLMN (MCC+MNC) to link their configuration that is the current implemented on the Fastmile 4G Receiver.
- Some customers use the country code only (MCC). Here, multiple PLMNs (with the same MCC but a different MNC) link to the same configuration.
- Some customers share the same PLMN but have different IMSI range to link to their individual configurations.

The implementation of this feature and the pre-config. has the flexibility to define and support all of the above use cases.

The following is the information about extension index of pre-config.

- Pre-config, file can be indexed by MCC, PLMN (MCC+MNC) or IMSI range according to customer requirement.
- Matching priority is IMSI range > PLMN > MCC

Note 1 — Migration factors such as database migration from the previous release must be considered..

Note 2 — Load pre-configuration and factory reboot is required.

6.11 Nokia PLMN/ IMSI lock

Customer can enable or disable PLMN/ IMSI lock in pre-config, file or through ACS. Once it is enabled, when the end user inserts a SIM card other than the operator's, the Fast Mile 4G Receiver can be flagged to either OAM only mode or forbidden mode (detached from LTE network).

6.12 Extend pre-config. with Band Combination List in BoENG

The Fast Mile 4G receiver is able to download dynamic BCL together with pre-config. from BoENG to enable customized CA combinations.

After the BoENG package is downloaded from BoENG server, Fastmile would perform a factory reset. If BCL files are also included in this package, another reboot would be triggered automatically.

6.13 Scan Mode configuration for LTE Cell attach

Scan mode configuration is added to the pre-config. file. Using scan mode is faster than the existing behavior of finding the best cell to attach. It also has power scan by default. Scan mode can be configured using the ACS.

6.14 Activation of bands

This section describes the activation of bands that are not available in the locked bands list of customer pre-config. file for Nokia FastMile 4G Receivers. The bands can be activated using the Web GUI or the ACS, and the activated bands can be deactivated using the Web GUI or the ACS. The locked band list in customer pre-config. file is not allowed to be deactivated. A device reboot is required to activate/ deactivate the bands.

- Provides locked band information on the Web GUI Status page
- Allows device to try to reattach to the LTE cell or CA with device reboot after band activation/deactivation
- The end user will not be able to add or delete any band neither from the WebGUI nor from the ACS

6.15 CBRS pre-grant list and deregistration

The Nokia FastMile 4G CBSD Receivers support the following features to address CBRS use cases:

- CBRS grant list
  - You can apply for multiple grants from SAS and maintain them in suspend status.
  - This can be configured and managed by ACS and Web UI (by a CPI).
- De-registration from SAS server
  - This can be operated from Web UI only (by a CPI).

6.15.1 Persistent CBRS parameters

CBRS parameters SAS URL and UserID, which have been entered in the Web UI, remain persistent through a factory reset as these parameters have a higher priority than those in the pre-config.(if any).

They can be cleared only after the installer deregisters them in the Web UI.

6.16 TR069 compliance for PDN reattachment

TR069 compliance for PDN reattachment:

- When FastMile 4G Receiver reconnects to PGW of the management APN and receives a new IP address, '4 Value Change', for this IP, it will be reported to ACS
- APNs are independent. Disconnecting and reconnecting to PGW for management APN does not impact services in other APNs (like voice and data).

6.17 Support for IPPing of TR-143 diagnostics

The Nokia FastMile 4G Receiver provides support for IPPing of TR-143 diagnostics.

- PING can be triggered from ACS with either URL or IP address
- PING operation is supported by all APN with all working mode include route mode and bridge mode
- PING operation is supported for both IPv4, IPv6 and dual stack

6.18 Customized inform parameter reported to ACS according to PLMN pre-config. file

If customers request customized information parameters (such as IPAddress, ICCID and MSISDN), they can provide them in their pre-config, file (either embedded or BoENG). These customized inform parameters will be reported to ACS.

6.19 Support for TR-181 parameters

The following parameters are added in the standard TR181 data model for management improvement:

- Device.Cellular.Interface.{i}.LastChange
- Device.Cellular.Interface.{i}.Status

6.20 Support for reporting IMEI-SV to the mobile network

Nokia FastMile 4G Receiver supports IMEI-SV (International Mobile Station Equipment Identity Software Version) in TR181. IMEI-SV can be queried by ACS. And the 4G Receiver reports IMEI-SV to mobile network so that the operator can use this information for troubleshooting. Software Version (SV) is a two digit number ranging from 00 to 98, and resumed to 00 after 98. IMEI-SV starts from 00 in BBDR2104, and increment per release afterwards.

BBDPROD-4615 - 20 Oct - Updated the above content;

21 Oct - Updated the content based on comments provided by Hao.

6.21 Support to allow traffic from and to LAN IP not allocated by the mobile network

For enterprise use case, a private set of IPv4 addresses at LAN port (rather than the IP allocated from core network) can be configured via pre-config. template, WebUI or ACS in order for FastMile 4G Receiver to permit package/traffic from these IP addresses to core network in bridge mode.

BBDPROD-10162 - 20 Oct - Updated the above content

21 Oct - Updated the content based on review comments provided by Hao

DRAFT

7 Model overview

7.1 Models of the Nokia FastMile 4G Receiver

7.1 Models of the Nokia FastMile 4G Receiver

A wide range of models are available for the Nokia FastMile 4G Receiver to support different E-UTRA bands and band combinations for LTE, including the capability to limit the bands to be used among the bands physically supported, to support network resource planning, and to speed up the cell attach speed.

All models can be wall-mounted or pole-mounted. If you will be mounting the Nokia FastMile 4G Receiver on a pole, you will need kit 3TG-00291-AA that contains the pole adapter for the Nokia FastMile 4G Receiver. Note that pole strapping and wall fasteners are not provided by Nokia.

Table 5 describes the E-UTRA band and frequency support and the antenna configurations and model type for each model of the Nokia FastMile 4G Receiver.

Table 5 **Models of the Nokia FastMile 4G Receiver**

Model	E-UTRA band support and frequencies	Antenna configuration	Model type
4G01-A	• Band 42: TDD, 3400 MHz – 3600 MHz • Band 43: TDD, 3600 MHz – 3800 MHz • Band 48: TDD, 3550 MHz – 3700 MHz	Integrated with 15 dBi fixed beamforming antenna	Compact mono-band Two types: one with 3m attached Ethernet cable and one with 20m attached Ethernet cable with CPE-CBSD (Cat.B) certificate
4G01-B	• Band 42: TDD, 3400 MHz – 3600 MHz • Band 43: TDD, 3600 MHz – 3800 MHz • Band 48[(1)]: TDD, 3550 MHz – 3700 MHz	Integrated with 3x4 dual polarized antenna array, electronic beam steering +/- 45° horizontally, and up to 17 dBi peak antenna gain with beam steering	ABA
4G01-C	• Band 48: TDD, 3550 MHz - 3700 MHz	Integrated with 19 dBi fixed beamforming antenna	High gain CBRS (CPE-CBSD (Cat.B) certified)
4G01-D[(2)]	Band 48: TDD, 3550 MHz - 3700 MHz	Integrated with 19 dBi fixed beamforming antenna	High gain CBRS (FCC EUD certified)
4G02-A	• Band 3: FDD, Tx 1710 MHz – 1785 MHz, Rx 1805 MHz – 1880 MHz	Integrated with 10.5 dBi fixed beamforming antenna	Compact mono-band

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Model	E-UTRA band support and frequencies	Antenna configuration	Model type
4G03-A	• Band 7: FDD, Tx 2500 MHz – 2570 MHz, Rx 2620 MHz – 2690 MHz • Band 38: TDD, 2570 MHz – 2620 MHz • Band 40: TDD, 2300 MHz – 2400 MHz • Band 41: TDD, 2496 MHz – 2690 MHz	Integrated with 12.5 dBi fixed beamforming antenna	Compact mono-band Two types: one with 3m attached Ethernet cable and one with 20m attached Ethernet cable
4G04-A	• Band 3: FDD, Tx 1710 MHz –1785 MHz, Rx 1805 MHz – 1880 MHz • Band 7: FDD, Tx 2500 MHz – 2570 MHz, Rx 2620 MHz – 2690 MHz • Band 20: FDD, Tx 832 MHz – 862 MHz Rx 791 MHz – 821 MHz • Band 32: FDD, Rx 1452 MHz – 1496 MHz	Band 7 is integrated with > 11 dBi fixed beamforming antenna Band 3 is integrated with > 10 dBi fixed beamforming antenna Band 32 is integrated with > 8.3 dBi fixed beamforming antenna Band 20 is integrated with > 2.5dBi fixed beamforming antenna	Compact multi-band
4G05-A	• Band 1: FDD, Tx 1920 MHz –1980 MHz, Rx 2110 MHz –2170 MHz • Band 3: FDD, Tx 1710 MHz –1785 MHz, Rx 1805 MHz – 1880 MHz • Band 7: FDD, Tx 2500 MHz – 2570 MHz, Rx 2620 MHz – 2690 MHz • Band 38: TDD, 2570 MHz – 2620 MHz • Band 40: TDD, 2300 MHz – 2400 MHz • Band 41: TDD, 2496 MHz – 2690 MHz • Band 20: FDD, Tx 832 MHz – 862 MHz, Rx 791 MHz – 821 MHz • Band 28: FDD, Tx 703 MHz – 748 MHz, Rx 758 MHz –– 803 MHz	Bands 7, 38, 40, and 41 are integrated with > 11 dBi fixed beamforming antenna Bands 1 and 3 are integrated with > 10 dBi fixed beamforming antenna Bands 20 and 28 are integrated with > 2.5 dBi fixed beamforming antenna	Compact multi-band
4G05-B	• Band 1: FDD, Tx 1920 MHz –1980 MHz, Rx 2110 MHz –2170 MHz • Band 3: FDD, Tx 1710 MHz –1785 MHz, Rx 1805 MHz – 1880 MHz • Band 7: FDD, Tx 2500 MHz – 2570 MHz, Rx 2620 MHz – 2690 MHz • Band 38: TDD, 2570 MHz – 2620 MHz • Band 40: TDD, 2300 MHz – 2400 MHz • Band 41: TDD, 2496 MHz – 2690 MHz • Band 20: FDD, Tx 832 MHz – 862 MHz, Rx 791 MHz – 821 MHz • Band 28: FDD, Tx 703 MHz – 748 MHz, Rx 758 MHz –– 803 MHz	Bands 7, 38, 40, and 41 are integrated with > 11 dBi fixed beamforming antenna Bands 1 and 3 are integrated with > 10 dBi fixed beamforming antenna Bands 20 and 28 are integrated with > 2.5 dBi fixed beamforming antenna	Compact multi-band similar to Model 4G05-A but for use in colder temperatures

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Model	E-UTRA band support and frequencies	Antenna configuration	Model type
4G06-A	• Band 2: FDD, Tx 1850 MHz - 1910 MHz, Rx 1930 MHz - 1990 MHz • Band 25: FDD, Tx 1850 MHz - 1915 MHz, Rx 1930 MHz - 1995 MHz • Band 4: FDD, Tx 1710 MHz - 1755 MHz, Rx 2110 MHz - 2155 MHz • Band 66: FDD, Tx 1710 MHz - 1780 MHz, Rx 2110 MHz - 2200 MHz • Band 7: FDD, Tx 2500 MHz - 2570 MHz, Rx 2620 MHz - 2690 MHz • Band 42: TDD, 3400 MHz - 3600 MHz • Band 43: TDD, 3600 MHz - 3800 MHz • Band 48: TDD, 3550 MHz - 3700 MHz; • Band 28: FDD, Tx 703 MHz - 748 MHz, Rx 758 MHz -- 803 MHz	Bands 2, 25, 4, and 66 are integrated with > 9.3 dBi fixed beamforming antenna Bands 7 is integrated with > 11 dBi fixed beamforming antenna Bands 42, 43 and 48 are integrated with > 11 dBi fixed beamforming antenna Band 28 is integrated with > 2.5 dBi fixed beamforming antenna	Compact multi-band Two types: one with CPE-CBSD (Cat.B) certificate for US CBRS market, and one without certificate for the rest of the market
4G17-A	• Band 1: FDD, Tx 1920 MHz -1980 MHz, Rx 2110 MHz -2170 MHz • Band 3: FDD, Tx 1710 MHz -1785 MHz, Rx 1805 MHz - 1880 MHz • Band 7: FDD, Tx 2500 MHz - 2570 MHz, Rx 2620 MHz - 2690 MHz • Band 20: FDD, Tx 832 MHz - 862 MHz, Rx 791 MHz - 821 MHz • Band 32: FDD, Rx 1452 MHz - 1496 MHz	Band 7 is integrated with > 11 dBi fixed beamforming antenna Bands 1 and 3 are integrated with > 10 dBi fixed beamforming antenna Band 32 is integrated with > 8.3 dBi fixed beamforming antenna Band 20 is integrated with > 2.5dBi fixed beamforming antenna	Compact multi-band

(3 of 3)

Notes

(1) Note that B48 for the 4G01-B has not been FCC CBRS Part96 certified and is not ready for commercial use

(2) For 4G01-D, CBSD certification is not required to be installed at the factory. From software side, the transmit power of high gain 4G Receiver is reduced by 19dB for 4G01-D to meet EUD requirement: max. EIRP 23dBm/10MHz.

7.1.1 Label information

Table 6 describes the label information for the Nokia FastMile 4G Receiver.

Table 6 **Label information for the Nokia FastMile 4G Receiver**

Model	Product details
4G01-A	Nokia FM compact
4G01-B	Nokia FM ABA
4G01-C	Nokia FM high gain CBRS
4G01-D	Nokia FM high gain CBRS EUD
4G02-A	Nokia FM compact
4G03-A	Nokia FM compact
4G04-A	Nokia FM compact

(1 of 2)

Model	Product details
4G05-A	Nokia FM compact
4G05-B	Nokia FM compact
4G06-A	Nokia FM compact
4G17-A	Nokia FM compact

(2 of 2)

8 Physical interfaces

8.1 Physical interfaces of the Compact mono-band and ABA models

Table 7 describes the physical interfaces of the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver.

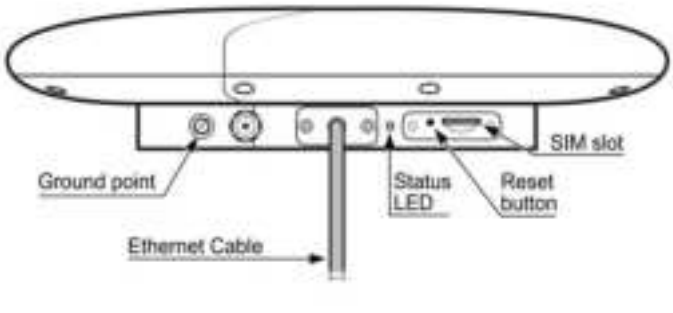
Table 7 **Physical interfaces of the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver**

Interface	Description
Ground point	Point for connecting to external ground. Connection to the ground point is not required. Located on the underside of the unit; see Figure 11.
Ethernet cable	Ethernet connectivity for the Compact mono-band and ABA models is through a pre-attached 3 m (9.8 ft) cat5e shielded UV resistant Ethernet cable; the same cable is also used for power (PoE as per IEEE802.3 at type-2). PoE must be provided by a Nokia-approved residential gateway or a Nokia-approved PoE injector (see section 11.2 for information about PoE injectors for use with the FastMile 4G Receiver). The 4G01-A and 4G03-A Compact mono-band models are also available with a pre-attached 20 m (65.6 ft) Cat5e shielded UV resistant twisted pair Ethernet cable. Located on the underside of the unit; see Figure 11. The pre-attached Ethernet cable has a male RJ 45 connector at the free end. An additional length of cat5e shielded Ethernet cabling can be attached to the Ethernet cable up to a maximum of 80 m (262 ft) in combined length. A waterproof IP67 female RJ 45 plug is needed to connect the Ethernet cabling to the Ethernet cable of the Nokia FastMile 4G Receiver.
Status LED	Single multifunction LED that indicates status information for the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 11. See section 10.1 for the behavior of the status LED of the Compact mono-band and ABA models.
Reset button	Button to reset the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 11.
SIM slot	Slot for Nano/4FF SIM card for a Compact mono-band model or ABA model of the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 11. If the SIM card needs to be replaced, the Nokia FastMile 4G Receiver needs to be put in a powered off state before the SIM card can be removed and the new one inserted See section 9.1 for SIM card information for the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver.

Note — Pressing the reset button for less than 5 seconds results in a reboot and pressing it for 5 seconds or more results in a factory reset. Configured settings are kept for a reboot while they are not kept for a reset to factory. This applies to all models.

Figure 11 shows the location of the physical interfaces on the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver.

Figure 11 **Location of physical interfaces on the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver**



8.2 Physical interfaces of the Compact multi-band models

Table 8 describes the physical interfaces of Compact multi-band models of the Nokia FastMile 4G Receiver.

Table 8 Physical interfaces of the Compact multi-band models of the Nokia FastMile 4G Receiver

Interface	Description
Ground point	Point for connecting to external ground. Connection to the ground point is not required. Located on the back of the unit; see Figure 12.
Ethernet port	Female RJ 45 connector for attaching a customer-supplied Ethernet cable: • the Model 4G17-A has a floating ground design that supports a Cat5e non-shielded or shielded twisted pair Ethernet cable with standard pinouts that is up to a maximum of 80 m (262 ft) in length • all other Compact multi-band models require a cat5e shielded Ethernet cable with standard pinouts that is a maximum of 80 m (262 ft) in length The same Ethernet cable is also used for power (PoE as per IEEE802.3 at type-2). PoE must be provided by a Nokia-approved residential gateway or a Nokia-approved PoE injector (see section 11.2 for information about PoE injectors for use with the FastMile 4G Receiver). The Ethernet port is located on the underside of the unit; see Figure 13.
Reset button	Button to reset the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 13.
SIM slot	Slot for Nano/4FF SIM card for a Compact multi-band model of the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 13. See section 9.2 for SIM card information for the Compact multi-band models of the Nokia FastMile 4G Receiver.
Status LED	Single multifunction LED that indicates status information for the Nokia FastMile 4G Receiver. Located on the top of the unit. See section 10.1 for a figure showing the location of the status LED of the Compact multi-band models and information about its behavior.
Signal strength LEDs	Set of five LEDs that work together to indicate the LTE signal strength detected by the Nokia FastMile 4G Receiver. Located on the top of the unit. See section 10.2 for a figure showing the location of the signal strength LEDs and information about their behavior.
Measurement button	Button to activate the signal strength LEDs. Located on the side of the unit. See section 10.2 for a figure showing the location of the measurement button and information about using it to activate the signal strength LEDs.

Note — Pressing the reset button for less than 5 seconds results in a reboot and pressing it for 5 seconds or more results in a factory reset. Configured settings are kept for a reboot while they are not kept for a reset to factory. This applies to all models.

Figure 12 shows the location of the ground point for the Compact multi-band models of the Nokia FastMile 4G Receiver.

Figure 12 **Location of the ground point for the Compact multi-band models of the Nokia FastMile 4G Receiver**

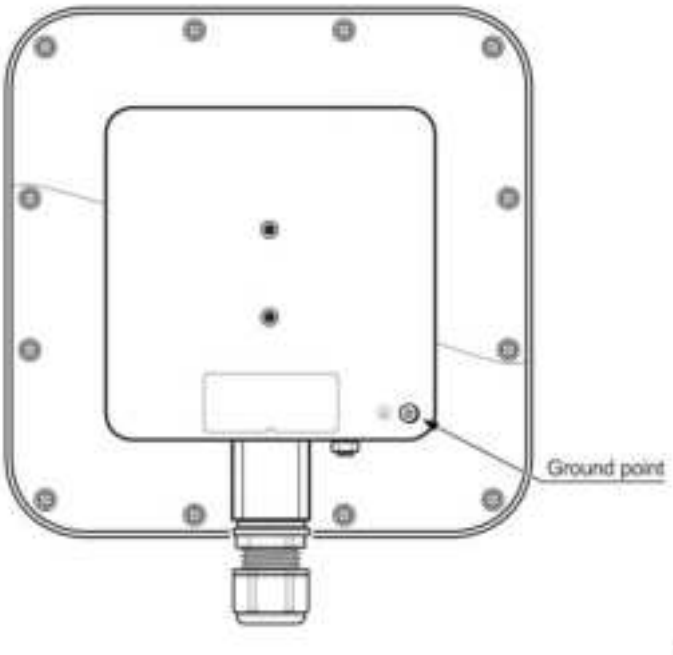
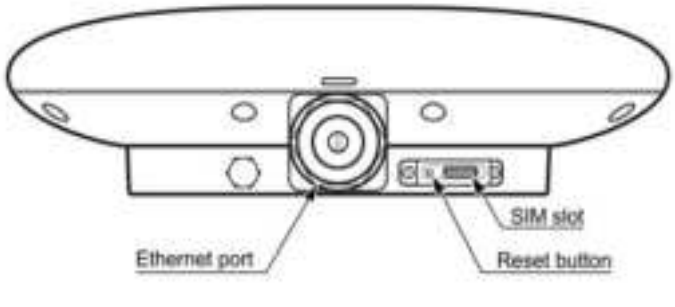


Figure 13 shows the location of the physical interfaces that are on the underside of the Compact multi-band models of the Nokia FastMile 4G Receiver.

Figure 13 **Location of physical interfaces on the underside of the Compact multi-band models of the Nokia FastMile 4G Receiver**



8.3 Physical interfaces of the High gain CBRS model

Table 9 describes the physical interfaces of the High gain CBRS model of the Nokia FastMile 4G Receiver.

Table 9 **Physical interfaces of the High gain CBRS model of the Nokia FastMile 4G Receiver**

Interface	Description
Ground point	Point for connecting to external ground. Connection to the ground point is not required. Located on the back of the unit; see Figure 14.
Measurement button	Button to activate the signal strength LEDs. Located on the underside of the unit; see Figure 15. See section 10.2 for information about using the measurement button to activate the signal strength LEDs.
Signal strength LEDs	Set of five LEDs that work together to indicate the LTE signal strength detected by the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 15. See section 10.2 for the behavior of the signal strength LEDs.
Ethernet port	Female RJ 45 connector for attaching a customer-supplied cat5e shielded Ethernet cable with standard pinouts that is a maximum of 80 m (262 ft) in length. The same Ethernet cable is also used for power (PoE as per IEEE802.3 at type-2). PoE must be provided by a Nokia-approved residential gateway or a Nokia-approved PoE injector (see section 11.2 for information about PoE injectors for use with the FastMile 4G Receiver). The Ethernet port is located on the underside of the unit; see Figure 15.
Status LED	Single multifunction LED that indicates status information for the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 15. See section 10.1 for the behavior of the status LED.
SIM slot	Slot for Nano/4FF SIM card for the High gain CBRS model of the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 15. See section 9.3 for SIM card information for the High gain CBRS model of the Nokia FastMile 4G Receiver.
Reset button	Button to reset the Nokia FastMile 4G Receiver. Located on the underside of the unit; see Figure 15.

Note — Pressing the reset button for less than 5 seconds results in a reboot and pressing it for 5 seconds or more results in a factory reset. Configured settings are kept for a reboot while they are not kept for a reset to factory. This applies to all models.

Figure 14 shows the location of the ground point for the High gain CBRS model of the Nokia FastMile 4G Receiver.

Figure 14 **Location of the ground point for High gain CBRS model of the Nokia FastMile 4G Receiver**

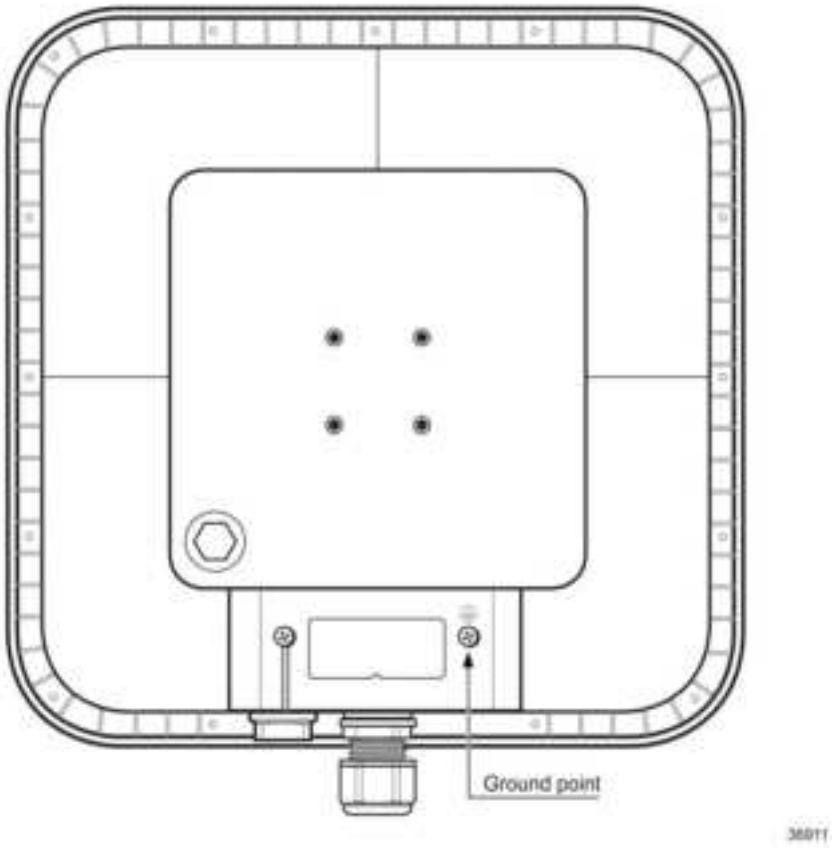
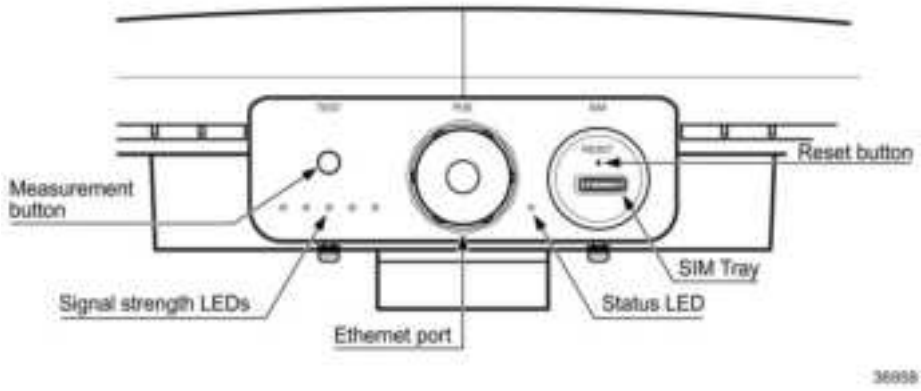


Figure 15 shows the location of the physical interfaces that are on the underside of the High gain CBRS model of the Nokia FastMile 4G Receiver.

Figure 15 **Location of physical interfaces on the underside of the High gain CBRS model type of the Nokia FastMile 4G Receiver**



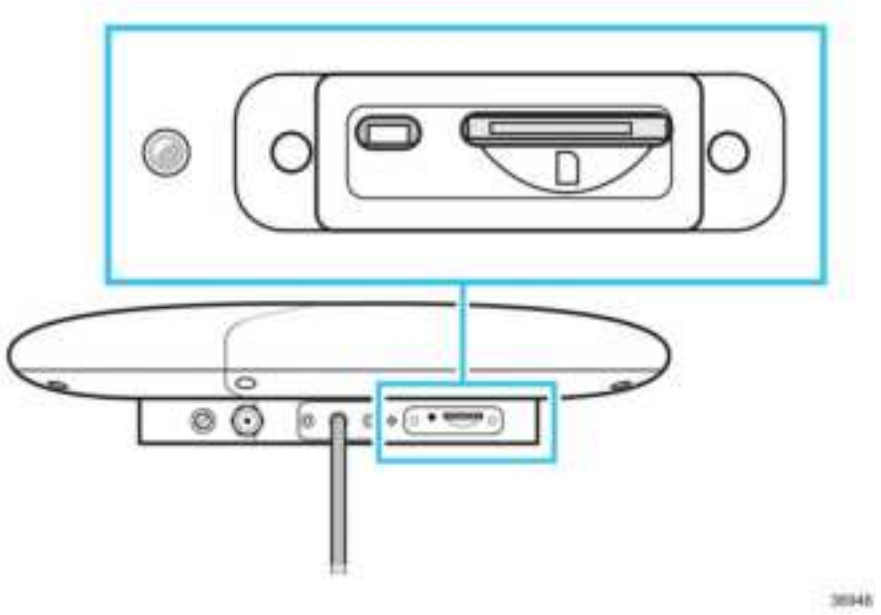
9 SIM cards

9.1 SIM card information for the Compact mono-band and ABA models

The SIM card installed in the Nokia FastMile 4G Receiver allows the Nokia FastMile 4G Receiver to connect to the LTE network. See section 6.6 for more information about remote management.

Figure 16 shows a detailed view of the SIM card slot on the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver.

Figure 16 **Detailed view of SIM card slot on the Compact mono-band and ABA models**



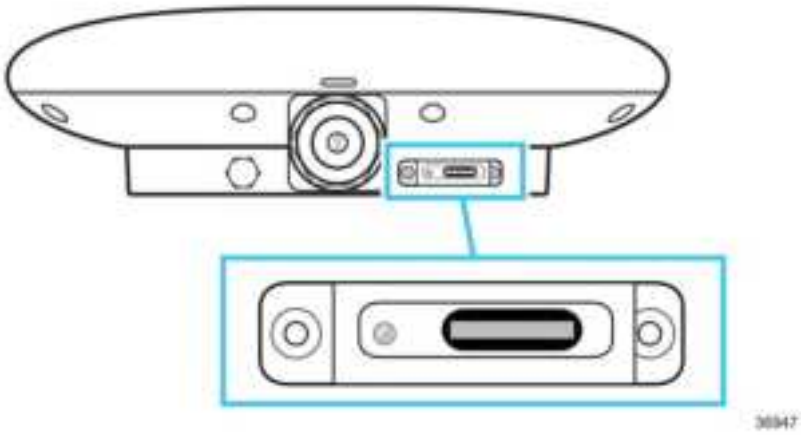
The Nokia FastMile 4G Receiver Installation Guide provides detailed steps for inserting the SIM card. The SIM card must be appropriate for the remote management protocol to be used for the Nokia FastMile 4G Receiver.

9.2 SIM card information for the Compact multi-band models

The SIM card installed in the Nokia FastMile 4G Receiver allows the Nokia FastMile 4G Receiver to connect to the LTE network. See section 6.6 for more information about remote management.

Figure 17 shows a detailed view of the SIM card slot on the Compact multi-band models of the Nokia FastMile 4G Receiver.

Figure 17 **Detailed view of SIM card slot on the Compact multi-band models**



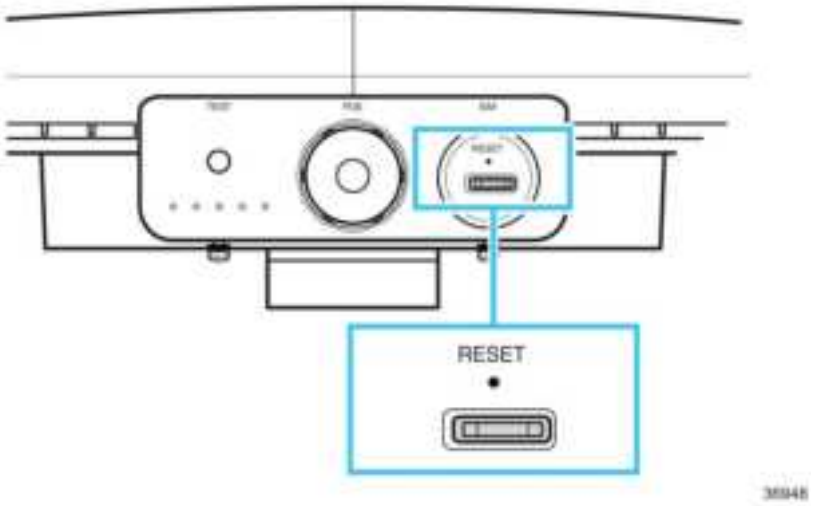
The Nokia FastMile 4G Receiver Installation Guide provides detailed steps for inserting the SIM card. The SIM card must be appropriate for the remote management protocol to be used for the Nokia FastMile 4G Receiver.

9.3 SIM card information for the High gain CBRS model

The SIM card installed in the Nokia FastMile 4G Receiver allows the Nokia FastMile 4G Receiver to connect to the LTE network. See section 6.6 for more information about remote management.

Figure 18 shows a detailed view of the SIM card slot on the High gain CBRS model of the Nokia FastMile 4G Receiver.

Figure 18 **Detailed view of SIM card slot on the High gain CBRS model**



The Nokia FastMile 4G Receiver Installation Guide provides detailed steps for inserting the SIM card. The SIM card must be appropriate for the remote management protocol to be used for the Nokia FastMile 4G Receiver.

10 LEDs

10.1 Status LED

All models of the Nokia FastMile 4G Receiver have a status LED:

- Figure 19 shows the location of the status LED on the Compact mono-band and ABA models
- Figure 20 shows the location of the status LED on the Compact multi-band models
- Figure 21 shows the location of the status LED on the High gain CBRS model

Figure 19 **Location of the status LED on the Compact mono-band and ABA models of the Nokia FastMile 4G Receiver**

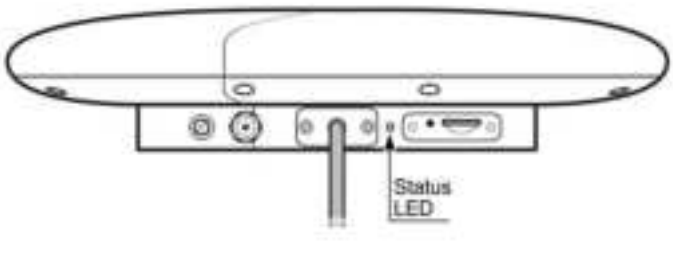


Figure 20 **Location of the status LED on the Compact multi-band models of the Nokia FastMile 4G Receiver**

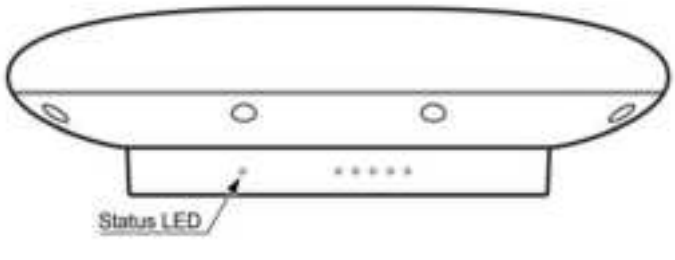
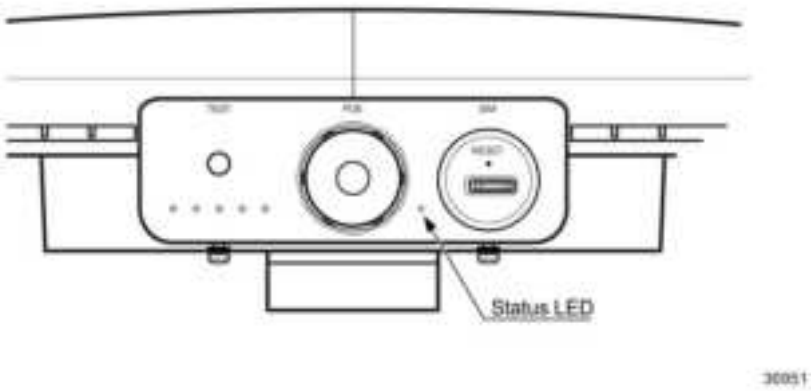


Figure 21 **Location of the status LED on the High gain CBRS model of the Nokia FastMile 4G Receiver**



The status LED behaves differently depending on whether the Nokia FastMile 4G Receiver is managed from:

- the Nokia Altiplano FastMile Controller (through NETCONF): see Table 10
- an ACS (through TR-069): see Table 11

Note — The NETCONF version of the FastMile 4G Receiver for remote management from the Nokia Altiplano FastMile Controller is not supported from FastMile 4G Release 2.0.03a onwards

Table 10 **Status LED behavior for Nokia FastMile 4G Receiver managed from the Nokia Altiplano FastMile Controller**

LED color	LED priority	LED behavior	Status information
Blue	First priority	Blinking	Bluetooth connection in progress
		Solid	Bluetooth connection established
		Off	No Bluetooth connection
Red	Second priority	Blinking	Critical alarm
		Solid	Major or minor alarm
		Off	No alarm
Green	Third priority	Blinking twice per second	Kernel and application start up
		Blinking one per second	Application start up
		Solid	Start up
		Off	OAM link is established

Table 11 **Status LED behavior for Nokia FastMile 4G Receiver managed from an ACS**

LED color	LED priority	LED behavior	Status information
Blue	First priority	Blinking	Bluetooth connection in progress
		Solid	Bluetooth connection established
		Off	No Bluetooth connection
Green	Second priority	Blinking twice per second	Kernel and application start up
		Solid	Start up
		Off	Software is stable

10.2 Signal strength LEDs

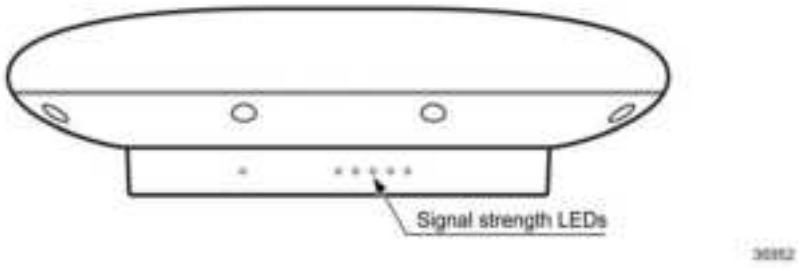
Signal strength LEDs are provided on the following model types of the Nokia FastMile 4G Receiver:

- Compact multi-band models (see section 10.2.1)
- High gain CBRS model (see section 10.2.2)

10.2.1 Signal strength LEDs on the Compact multi-band models

Five signal strength LEDs are provided on the Compact multi-band models of the Nokia FastMile 4G Receiver as shown in Figure 22.

Figure 22 **Location of the signal strength LEDs on the Compact multi-band models**



The signal strength LEDs can be activated by pressing the measurement button on the side of the Compact multi-band models of the Nokia FastMile 4G Receiver. Figure 23 shows the location of the measurement button.

Figure 23 **Location of the measurement button on the Compact multi-band models**

The signal strength LEDs act as a set to indicate the LTE signal strength detected by the Nokia FastMile 4G Receiver. For example, if the signal strength is fourth level, then LEDs 1, 2, 3, and 4 are lit. Table 12 lists the threshold values for the signal strength LEDs, but note that the threshold values can be changed through an ACS.

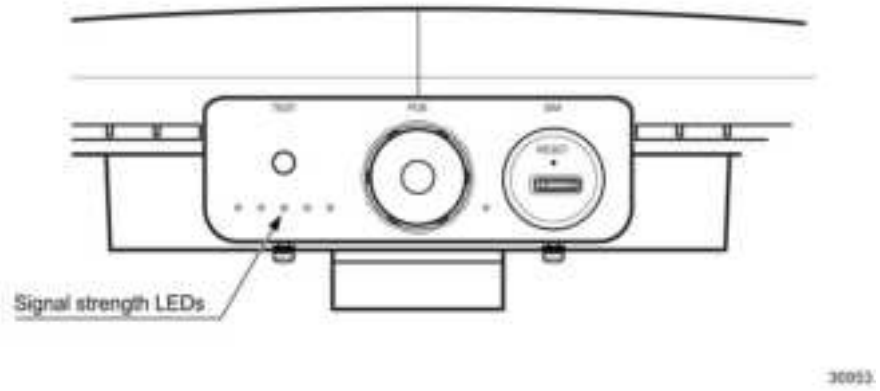
Table 12 **Signal strength LED threshold values**

Number of lit LEDs	Threshold
None	<-110dBm
One	-110 to -106 dBm
Two	-105 to -101dBm
Three	-100 to -96dBm
Four	-95 to -91dBm
Five	>=-90dBm

10.2.2 Signal strength LEDs on the High gain CBRS model

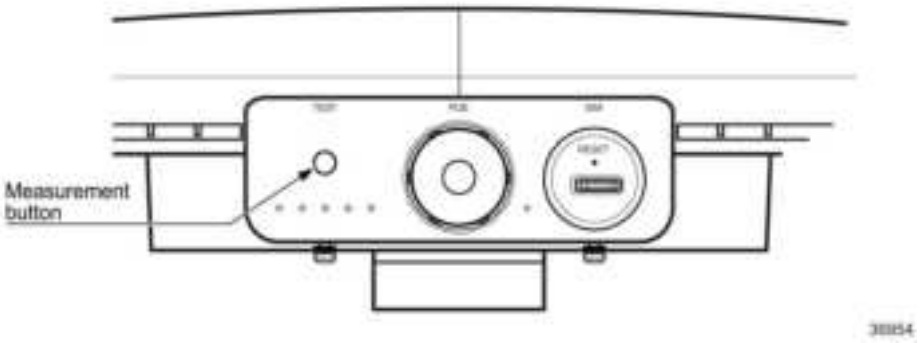
Five signal strength LEDs are provided on the underside of the High gain CBRS model of the Nokia FastMile 4G Receiver as shown in Figure 24.

Figure 24 **Location of the signal strength LEDs on the High gain CBRS model**



The signal strength LEDs can be activated by pressing the measurement button on the underside of the High gain CBRS model of the Nokia FastMile 4G Receiver. Figure 25 shows the location of the measurement button.

Figure 25 **Location of the measurement button on the High gain CBRS model**



The signal strength LEDs act as a set to indicate the LTE signal strength detected by the Nokia FastMile 4G Receiver. For example, if the signal strength is fourth level, then LEDs 1, 2, 3, and 4 are lit. Table 13 lists the threshold values for the signal strength LEDs, but note that the threshold values can be changed through an ACS.

Table 13 Signal strength LED threshold values

Number of lit LEDs	Threshold
None	<-110dBm
One	-110 to -106 dBm
Two	-105 to -101dBm
Three	-100 to -96dBm
Four	-95 to -91dBm
Five	>=-90dBm

11 Power information

11.1 Power information for the Nokia FastMile 4G Receiver

The Nokia FastMile 4G Receiver receives power though a Cat5e shielded Ethernet cable (or through a non-shielded Ethernet cable for the Model 4G17-A only) that must be connected to a Nokia-approved residential gateway or to a Nokia-approved PoE injector (see section 11.2 for information about PoE injectors available from Nokia for use with the FastMile 4G Receiver).

- Compact mono-band and ABA models have a pre-attached Cat5e shielded twisted pair Ethernet cable with a male RJ 45 connector at the free end. An additional length of cat5e shielded Ethernet cabling can be attached to the Ethernet cable up to a maximum of 80 m (262 ft) in combined length. A waterproof IP67 female RJ 45 plug is needed to connect the Ethernet cabling to the Ethernet cable of the Nokia FastMile 4G Receiver. See section 8.1 for more information about the pre-attached Ethernet cable.
- Compact multi-band models and the High gain CBRS model have an Ethernet port that has a female RJ 45 connector, and require a customer-supplied Ethernet cable (See section 8.2 for more information about the Ethernet port):
  - the Model 4G17-A has a floating ground design that supports a cat5e non-shielded or shielded twisted pair Ethernet cable with standard pinouts that is up to a maximum of 80 m (262 ft) in length
  - all other Compact multi-band models and the High gain CBRS model require a cat5e shielded Ethernet cable with standard pinouts that is a maximum of 80 m (262 ft) in length

See section 12.4 for power consumption information.

11.2 Available PoE injectors

If the Nokia FastMile 4G Receiver is going to be powered through a PoE injector, the PoE injector must be a Nokia-approved PoE injector.

The following types of PoE injectors are available from Nokia for use with the FastMile 4G Receiver:

- Standard Class I: can comply with EN 60950-1 if grounding is provided on the wall socket; should be put as close as possible to the place where the Ethernet cable enters the home.
- Standard Class II: can comply with EN 60950-1 if no grounding is provided on the wall socket; can also be used if grounding is provided on the wall socket.
- Nokia Class II: Not comply with EN 60950-1 if no grounding is provided on the wall socket; can also be used if grounding is provided on the wall socket.

The following tables list the PoE injectors that are available from Nokia for use with the FastMile 4G Receiver:

- Table 14 lists the PoE injectors that are available from Nokia for use with the Model 4G17-A
- Table 15 lists the PoE injectors that are available from Nokia for use with all other models of the FastMile 4G Receiver

Table 14 **Available PoE injectors for Model 4G17-A**

Class	Model	Description	Color	Nokia part number	Vendor part number
Class II	15w FWAPoE2-CC-EU-W	15w G1344B 50V 0.3A, MAINS CORD TYPE C-EU	White	3TG-01541-BB	G1344B-530-030-PSE1000, CH-221+CH-705,White,EU
Class II	15w NokiaPoE2-CC-EU-W	15w G1418B 50V 0.3A, MAINS CORD TYPE C-EU	White	3TG-01957-BB	G1418B-540-028-POE1000,CH -221+CH-705,White,EU

Table 15 Available PoE injectors for models other than Model 4G17-A

Class	Model	Description	Color	Nokia part number	Vendor part number
Class I	15w FWAPoE2-CB-US-W	15w G1344A 50V 0.3A, MAINS CORD TYPE B-US	White	3TG-01541-AA	G1344A-530-030-PSE1000, CH-331C+CH-706,White,US
	15w FWAPoE2-CEF-EU-W	15w G1344A 50V 0.3A, MAINS CORD TYPE E&F-EU	White	3TG-01541-AB	G1344A-530-030-PSE1000, CH-231+CH-706,White,EU
	30w FWAPoE1-CB-US-W	30w G0545 53V0.6A, MAINS CORD TYPE B-US	White	3TG-00041-AA	G0545-530-060-PSE1000, CH-331C+CH-706,White,US
	30w FWAPoE1-CEF-EU-W	30w G0545 53V0.6A, MAINS CORD TYPE E&F-EU	White	3TG-00041-AB	G0545-530-060-PSE1000, CH-231+CH-706,White,EU
	30w FWAPoE1-CG-UK-W	30w G0545 53V0.6A, MAINS CORD TYPE G-UK	White	3TG-00041-AC	G0545-530-060-PSE1000, CH-1601+CH-706,White,UK
	30w FWAPoE1-CI-CCC-W	30w G0545 53V0.6A, MAINS CORD TYPE I-CCC	White	3TG-00041-AD	G0545-530-060-PSE1000, CH-133+CH-706,White,CCC
	30w FWAPoE1-CI-AU-W	30w G0545 53V0.6A, MAINS CORD TYPE I-AU	White	3TG-00041-AE	G0545-530-060-PSE1000, CH-1231+CH-706,White,AU
	30w FWAPoE1-CB-PSE-W	30w G0545 53V0.6A, MAINS CORD TYPE B-PSE	White	3TG-00041-AF	G0545-530-060-PSE1000, CH-1131+CH-1106,White,PSE
	30w FWAPoE1-CD-BIS-W	30w G0545 53V0.6A, MAINS CORD TYPE D-BIS	White	3TG-00041-AG	G0545-530-060-PSE1000, CH-2002+CH-706,White,BIS
	15w FWAPoE2-CG-UK-W	15w G1344A 50V 0.3A, MAINS CORD TYPE G-UK	White	3TG-01541-AC	G1344A-530-030-PSE 1000,CH-1601+CH-706,White, UK
Class II	30w FWAPoE1-CC-EU-W	30w G0545 53V0.6A, MAINS CORD TYPE C-EU	White	3TG-00041-BB	G0545N-530-060-PSE1000, CH-221+CH-706,White,EU

Figure 26 shows the PoE injectors available from Nokia.

Table 16 provides LED information for Standard PoE injectors.

Table 17 provides LED information for Nokia PoE injectors.

Figure 26 **PoE injectors available from Nokia**

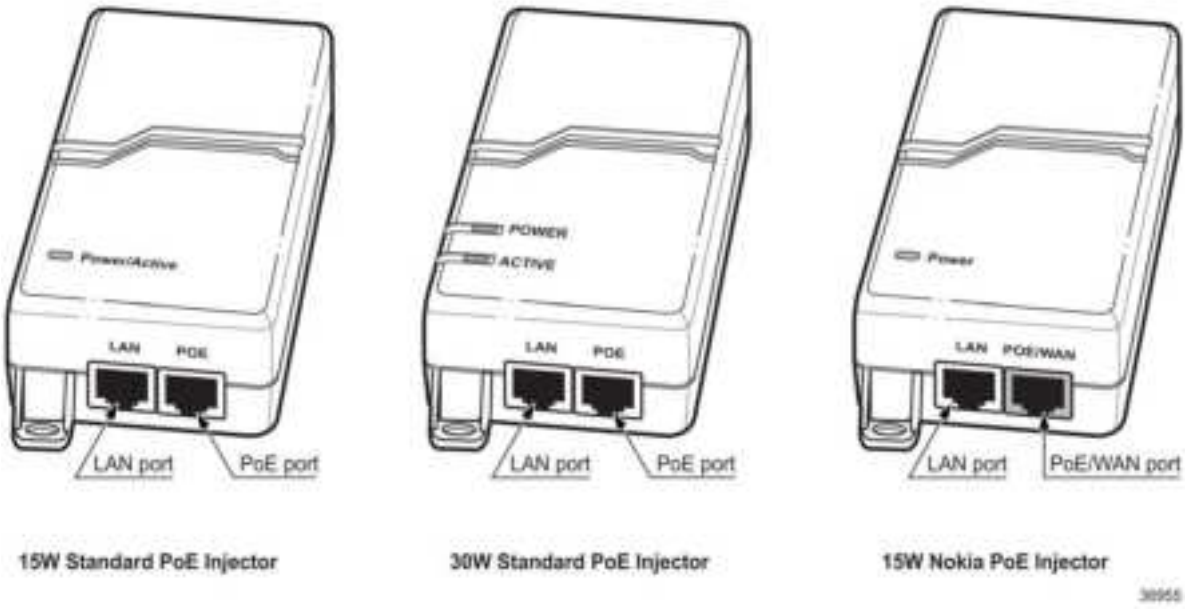


Table 16 **LED information for Standard PoE injectors**

Standard PoE injector	LED information
15W	Power/Active LED: • Green solid: PoE power on and legal device connected • Yellow solid: PoE power on and no device or illegal device connected • Green and yellow flashing alternately: PoE power on but short circuited
30W	Power LED and Active LED: • Both LEDs green solid: PoE power on and legal device connected • Power LED green solid and Active LED off: PoE power on and no device or illegal device connected • Power LED green solid and Active LED green flashing: PoE power on but short circuited

Table 17 **LED information for Nokia PoE injectors**

Nokia PoE Injector	LED information
15W	Power LED: • Green LED: PoE injector power on • LED off: PoE injector power of

12 Performance information

12.1 Performance overview

This chapter provides the following performance information for the Nokia FastMile 4G Receiver:

- throughput information: see section 12.2
- carrier aggregation information: see section 12.3
- power consumption information: section 12.4

Some performance metrics for the Nokia FastMile 4G Receiver can be viewed through the Nokia Wireless app or Web UI or accessed through the Nokia Altiplano FastMile Controller:

- see chapter 13 for more information about viewing information for the Nokia FastMile 4G Receiver through the Nokia Wireless app
- see chapter 14 for more information about viewing information for the Nokia FastMile 4G Receiver through the Web UI
- see the documentation for the Nokia Altiplano FastMile Controller for more information about accessing information for the Nokia FastMile 4G Receiver through the Nokia Altiplano FastMile Controller

12.2 Throughput information

Table 18 provides LTE throughput information for the Nokia FastMile 4G Receiver.

Table 18 **LTE throughput information**

Mode	UDP DL (3CA)	TCP DL (3CA)	UDP UL	TCP UL
FDD	560M	360M	73M	73M
TDD	415M	360M	14M	18M

The results in the above table are based on the following:

- Downlink: DL 3xCA 2x2MIMO 256 QAM
- Uplink: single carrier 64 QAM
- FDD inter-band 3CA
- TDD Band 41 intra-Band 2CA, configuration is configuration 2, subframe 7
- Base Bandwidth 20M
- Data rates can have a margin of 2%
- Packet length is 1470B for UDP
- Window is 1000k for TCP
- Data rates are for IPv4 cases
- Data forwarding working on router model

The end-to-end throughput is achieved in the conductive mode with cable connected.

Ethernet throughput for the Nokia FastMile 4G Receiver is as per standard Ethernet 1000BASE-T, with a maximum of 1000 Mbps. The Ethernet link gets negotiated at 1000 Mbps when a residential gateway or a PoE injector is connected to the Nokia FastMile 4G Receiver.

12.3 Carrier aggregation information

The following tables provide carrier aggregation support information for the Nokia FastMile 4G Receiver:

- Model 4G01-A and 4G01-B (2*2 MIMO downlink with SISO uplink): Table 19
- Model 4G01-C (2*2 MIMO downlink with SISO uplink): Table 20
- Model 4G02-A (2*2 MIMO downlink with SISO uplink): Table 21
- Model 4G03-A (2*2 MIMO downlink with SISO uplink): Table 22
- Model 4G04-A (2*2 MIMO downlink with SISO uplink): Table 23
- Model 4G05-A and 4G05-B:
  - default CA table (default BCL) for Model 4G05-A and 4G05-B (2*2 MIMO downlink): Table 24
  - dynamic CA table 1 for Model 4G05-A: Table 25
  - dynamic CA table 2 for Model 4G05-A: Table 26
  - dynamic CA table 3 for Model 4G05-A: Table27
- Model 4G06-A (2*2 MIMO downlink): Table 28
- Model 4G17-A (2*2 MIMO downlink with SISO uplink): Table 29

Note — B48 for the 4G01-B has not been FCC CBRS Part96 certified and is not ready for commercial use.

Table 19 Carrier aggregation support for Model 4G01-A and Model 4G01-B (2*2 MIMO downlink with SISO uplink)

Index	Downlink				Uplink	
	PCC	SCC 1	SCC 2	SCC3	PCC	SCC 1
1	42A	43A				
2	43A	42A				
3	42C					
4	43C					
5	48C					
6	42A	42A				
7	43A	43A				
8	48A	48A				
9	42A	43A			42A	43A
10	43A	42A			43A	42A
11	42C				42C	
12	43C				43C	
13	48C				48C	
14	42A	42A			42A	42A
15	43A	43A			43A	43A
16	48A	48A			48A	48A
17	42A	43C				
18	43A	42C				
19	48A	48C				
20	42A	42A	43A			
21	42A	43A	43A			
22	43A	43A	42A			
23	43A	42A	42A			
24	42D					
25	43D					
26	48D					
27	42A	42A	42A			
28	43A	43A	43A			
29	48A	48A	48A			
30	42A	43C			42A	43A
31	43A	42C			43A	42A

(1 of 3)

Index	Downlink				Uplink	
	PCC	SCC 1	SCC 2	SCC3	PCC	SCC 1
32	48A	48C			48A	48A
33	42A	42A	43A		42A	42A
34	42A	43A	43A		42A	43A
35	43A	43A	42A		43A	43A
36	43A	42A	42A		43A	42A
37	42D				42C	
38	43D				43C	
39	48D				48C	
40	42A	42A	42A		42A	42A
41	43A	43A	43A		43A	43A
42	48A	48A	48A		48A	48A
43	48C	48A			48C	
44	42A	43D				
45	43A	42D				
46	48A	48D				
47	42A	42A	42A	43A		
48	42A	42A	43A	43A		
49	42A	43A	43A	43A		
50	43A	42A	42A	42A		
51	43A	43A	42A	42A		
52	43A	43A	43A	42A		
53	42E					
54	43E					
55	48E					
56	48A	48A	48C			
57	42A	42A	42A	42A		
58	43A	43A	43A	43A		
59	48A	48A	48A	48A		
60	42A	43D			42A	43A
61	43A	42D			43A	42A
62	48A	48D			48A	48A
63	42A	42A	42A	43A	42A	42A
64	42A	42A	43A	43A	42A	42A

(2 of 3)

Index	Downlink				Uplink	
	PCC	SCC 1	SCC 2	SCC3	PCC	SCC 1
65	42A	43A	43A	43A	42A	43A
66	43A	42A	42A	42A	43A	42A
67	43A	43A	42A	42A	43A	43A
68	43A	43A	43A	42A	43A	43A
69	42E				42C	
70	43E				43C	
71	48E				48C	
72	48A	48A	48C		48A	48A
73	42A	42A	42A	42A	42A	42A
74	43A	43A	43A	43A	43A	43A
75	48A	48A	48A	48A	48A	48A

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Table 20 Carrier aggregation support for Model 4G01-C (2*2 MIMO downlink with SISO uplink)

Index	Downlink				Uplink	
	PCC	SCC 1	SCC2	SCC3	PCC	SCC 1
1	48A	48A				
2	48C					
3	48A	48A			48A	48A
4	48C				48C	
5	48A	48A	48A			
6	48C	48A				
7	48D					
8	48A	48A	48A		48A	48A
9	48C	48A			48A	48A
10	48C	48A			48C	
11	48D				48C	
12	48A	48A	48A	48A		
13	48C	48A	48A			
14	48D	48A				
15	48E					
16	48A	48A	48A	48A	48A	48A
17	48C	48A	48A		48A	48A

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Index	Downlink				Uplink	
	PCC	SCC 1	SCC2	SCC3	PCC	SCC 1
18	48D	48A			48A	48A
19	48E				48C	

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Table 21 Carrier aggregation support for Model 4G02-A (2*2 MIMO downlink with SISO uplink)

Index	Downlink				Uplink	
	PCC	SCC1	SCC2	SCC3	PCC	SCC1
1	3C					
2	3A	3A				
3	3C				3C	
4	3A	3A			3A	3A
5	3D					
6	3A	3A	3A			
7	3D				3C	
8	3A	3A	3A		3A	3A
9	3E					
10	3A	3A	3A	3A		
11	3E				3C	
12	3A	3A	3A	3A	3A	3A

Table 22 Carrier aggregation support for Model 4G03-A (2*2 MIMO downlink with SISO uplink)

index	Downlink		Uplink	
	PCC	SCC	PCC	SCC
1	7C			
2	38C			
3	40C			
4	41C			
5	7A	7A		
6	38A	38A		
7	40A	40A		
8	41A	41A		
9	7C		7C	

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index	Downlink		Uplink	
	PCC	SCC	PCC	SCC
10	38C		38C	
11	40C		40C	
12	41C		41C	
13	7A	7A	7A	7A
14	38A	38A	38A	38A
15	40A	40A	40A	40A
16	41A	41A	41A	41A
17	7D			
18	38D			
19	40D			
20	41D			
21	7C	7A		
22	38C	38A		
23	40C	40A		
24	41C	41A		
25	7D		7C	
26	38D		38C	
27	40D		40C	
28	41D		41C	
29	7C	7A	7A	7A
30	38C	38A	38A	38A
31	40C	40A	40A	40A
32	41C	41A	41A	41A
33	7E			
34	38E			
35	40E			
36	41E			
37	7C	7C		
38	38C	38C		
39	40C	40C		
40	41C	41C		
41	7E		7C	
42	38E		38C	

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index	Downlink		Uplink	
	PCC	SCC	PCC	SCC
43	40E		40C	
44	41E		41C	
45	7C	7C	7A	7A
46	38C	38C	38A	38A
47	40C	40C	40A	40A
48	41C	41C	41A	41A

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Table 23 Carrier aggregation support for Model 4G04-A (2*2 MIMO downlink with SISO uplink)

Index	Downlink			Uplink	
	PCC	SCC1	SCC2	PCC	SCC1
1	3A	7A			
2	3A	20A			
3	3A	32A			
4	7A	3A			
5	20A	3A			
6	7A	20A			
7	7A	32A			
8	20A	7A			
9	20A	32A			
10	3A	7A		3A	7A
11	3A	20A		3A	20A
12	7A	3A		7A	3A
13	20A	3A		20A	3A
14	7A	20A		7A	20A
15	20A	7A		20A	7A
16	3A	7A	20A		
17	7A	3A	20A		
18	20A	7A	3A		
19	3A	20A	32A		
20	20A	3A	32A		

Table 24 **Carrier aggregation support for Model 4G05-A and Model 4G05-B (2*2 MIMO downlink) - default CA table (default BCL) for Model 4G05-A**

Index	Downlink		
	PCC	SCC 1	SCC 2
1	1A	3A	
2	3A	1A	
3	1A	7A	
4	7A	1A	
5	1A	38A	
6	38A	1A	
7	1A	41A	
8	41A	1A	
9	3A	7A	
10	7A	3A	
11	3A	20A	
12	20A	3A	
13	3A	28A	
14	28A	3A	
15	3A	38A	
16	38A	3A	
17	3A	40A	
18	40A	3A	
19	3A	41A	
20	41A	3A	
21	28A	40A	
22	40A	28A	
23	28A	41A	
24	41A	28A	
25	41A	41A	
26	3C		
27	28C		
28	40C		
29	41C		
30	1A	3C	
31	3C	1A	

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Index	Downlink		
	PCC	SCC 1	SCC 2
32	1C	7A	
33	7A	1C	
34	3A	7C	
35	7C	3A	
36	3A	38C	
37	38C	3A	
38	3A	40C	
39	40C	3A	
40	3A	41C	
41	41C	3A	
42	28A	40C	
43	40C	28A	
44	28A	41C	
45	41C	28A	
46	41C	41A	
47	1A	3A	7A
48	3A	1A	7A
49	7A	3A	1A
50	1A	3A	38A
51	3A	1A	38A
52	38A	3A	1A
53	1A	3A	41A
54	3A	1A	41A
55	41A	3A	1A
56	3A	28A	40A
57	28A	3A	40A
58	40A	28A	3A
59	3A	28A	41A
60	28A	3A	41A
61	41A	28A	3A
62	41D		
63	1C	3C	
64	3C	1C	

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Index	Downlink		
	PCC	SCC 1	SCC 2
65	1A	3D	
66	3D	1A	
67	3C	7C	
68	7C	3C	
69	3A	7D	
70	7D	3A	
71	3C	38C	
72	38C	3C	
73	3A	38D	
74	38D	3A	
75	3C	40C	
76	40C	3C	
77	3A	40D	
78	40D	3A	
79	3C	41C	
80	41C	3C	
81	3A	41D	
82	41D	3A	
83	28C	40C	
84	40C	28C	
85	28A	40D	
86	40D	28A	
87	28C	41C	
88	41C	28C	
89	28A	41D	
90	41D	28A	
91	41C	41C	
92	1A	3A	7C
93	3A	1A	7C
94	7C	3A	1A
95	1A	3C	7A
96	3C	1A	7A
97	7A	3C	1A

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Index	Downlink		
	PCC	SCC 1	SCC 2
98	1A	3A	38C
99	3A	1A	38C
100	38C	3A	1A
101	1A	3C	38A
102	3C	1A	38A
103	38A	3C	1A
104	1A	3A	41C
105	3A	1A	41C
106	41C	3A	1A
107	1A	3C	41A
108	3C	1A	41A
109	41A	3C	1A
110	3A	28A	40C
111	28A	3A	40C
112	40C	28A	3A
113	3A	28C	40A
114	28C	3A	40A
115	40A	28C	3A
116	3A	28A	41C
117	28A	3A	41C
118	41C	28A	3A
119	3A	28C	41A
120	28C	3A	41A
121	41A	28C	3A
122	41E		

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Note — Contact your Nokia representative before using the following dynamic CA table for Model 4G05-A.

Table 25 Dynamic CA table 1 for Model 4G05-A

Index	Downlink			
	PCC	SCC 1	SCC 2	SCC 3
1	1A	3A		
2	3A	1A		
3	1A	7A		
4	7A	1A		
5	1A	20A		
6	20A	1A		
7	1A	28A		
8	28A	1A		
9	3A	7A		
10	7A	3A		
11	3A	20A		
12	20A	3A		
13	3A	28A		
14	28A	3A		
15	7A	20A		
16	20A	7A		
17	7A	28A		
18	28A	7A		
19	1C			
20	3C			
21	1C	3A		
22	3A	1C		
23	1C	7A		
24	7A	1C		
25	1C	20A		
26	20A	1C		
27	1C	28A		
28	28A	1C		
29	3C	7A		
30	7A	3C		
31	3C	20A		
32	20A	3C		

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Index	Downlink			
	PCC	SCC 1	SCC 2	SCC 3
33	3C	28A		
34	28A	3C		
35	1A	3A	7A	
36	3A	1A	7A	
37	7A	3A	1A	
38	1A	3A	20A	
39	3A	1A	20A	
40	20A	3A	1A	
41	1A	3A	28A	
42	3A	1A	28A	
43	28A	3A	1A	
44	3A	7A	20A	
45	7A	3A	20A	
46	20A	7A	3A	
47	3A	7A	28A	
48	7A	3A	28A	
49	28A	7A	3A	
50	1C	3A	7A	
51	3A	1C	7A	
52	7A	3A	1C	
53	1C	3A	20A	
54	3A	1C	20A	
55	20A	3A	1C	
56	1C	3A	28A	
57	3A	1C	28A	
58	28A	3A	1C	
59	3C	7A	20A	
60	7A	3C	20A	
61	20A	3C	7A	
62	3C	7A	28A	
63	7A	3C	28A	
64	28A	3C	7A	
65	1A	3A	7A	20A

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Index	Downlink			
	PCC	SCC 1	SCC 2	SCC 3
66	3A	1A	7A	20A
67	7A	1A	3A	20A
68	20A	1A	3A	7A
69	1A	3A	7A	28A
70	3A	1A	7A	28A
71	7A	1A	3A	28A
72	28A	1A	3A	7A

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Note — Contact your Nokia representative before using the following dynamic CA table for Model 4G05-A.

Table 26 Dynamic CA table 2 for Model 4G05-A

Index	Downlink			
	PCC	SCC 1	SCC 2	SCC 3
1	1A	3A		
2	3A	1A		
3	1A	7A		
4	7A	1A		
5	1A	38A		
6	38A	1A		
7	1A	41A		
8	41A	1A		
9	3A	7A		
10	7A	3A		
11	3A	20A		
12	20A	3A		
13	3A	28A		
14	28A	3A		
15	3A	38A		
16	38A	3A		
17	3A	40A		
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18	40A	3A		
19	28A	40A		
20	40A	28A		
21	1A	20A		
22	20A	1A		
23	3A	38A		
24	38A	3A		
25	7A	20A		
26	20A	7A		
27	3C			
28	28C			
29	40C			
30	1A	3C		
31	3C	1A		
32	1C	7A		

Index	Downlink			
	PCC	SCC 1	SCC 2	SCC 3
33	7A	1C		
34	3A	7C		
35	7C	3A		
36	3A	38C		
37	38C	3A		
38	3A	40C		
39	40C	3A		
40	28A	40C		
41	40C	28A		
42	1A	3A	7A	
43	3A	1A	7A	
44	7A	3A	1A	
45	1A	3A	38A	
46	3A	1A	38A	
47	38A	3A	1A	
48	3A	28A	40A	
49	28A	3A	40A	
50	40A	28A	3A	
51	1A	3A	20A	
52	3A	1A	20A	
53	20A	3A	1A	
54	3A	7A	20A	
55	7A	3A	20A	
56	20A	7A	3A	
57	1C	3C		
58	3C	1C		
59	1A	3D		
60	3D	1A		
61	3C	7C		
62	7C	3C		
63	3A	7D		
64	7D	3A		
65	3C	38C		

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Index	Downlink			
	PCC	SCC 1	SCC 2	SCC 3
66	38C	3C		
67	3A	38D		
68	38D	3A		
69	3C	40C		
70	40C	3C		
71	3A	40D		
72	40D	3A		
73	28C	40C		
74	40C	28C		
75	28A	40D		
76	40D	28A		
77	1A	3A	7C	
78	3A	1A	7C	
79	7C	3A	1A	
80	1A	3C	7A	
81	3C	1A	7A	
82	7A	3C	1A	
83	1A	3A	38C	
84	3A	1A	38C	
85	38C	3A	1A	
86	1A	3C	38A	
87	3C	1A	38A	
88	38A	3C	1A	
89	3A	28A	40C	
90	28A	3A	40C	
91	40C	28A	3A	
92	3A	28C	40A	
93	28C	3A	40A	
94	40A	28C	3A	
95	1A	3A	7A	20A
96	3A	1A	7A	20A
97	7A	3A	1A	20A
98	20A	3A	7A	1A

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Note — Contact your Nokia representative before using the following dynamic CA table for Model 4G05-A.

Table 27 Dynamic CA table 3 for Model 4G05-A

Index	Downlink			
	PCC	SCC1	SCC2	SCC3
1	1A	20A		
2	20A	1A		
3	1A	7A		
4	7A	1A		
5	1A	38A		
6	38A	1A		
7	20A	7A		
8	7A	20A		
9	3A	20A		
10	20A	3A		
11	3A	38A		
12	38A	3A		
13	1A	7C		
14	7C	1A		
15	3A	7C		
16	7C	3A		
17	3C	7A		
18	7A	3C		
19	3C	20A		
20	20A	3C		
21	20A	7C		
22	7C	20A		
23	1A	3A	38A	
24	3A	1A	38A	
25	38A	3A	1A	
26	1A	3A	20A	
27	3A	1A	20A	
28	20A	3A	1A	

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Index	Downlink			
	PCC	SCC1	SCC2	SCC3
29	3A	20A	7A	
30	7A	3A	20A	
31	20A	7A	3A	
32	1A	20A	7A	
33	7A	20A	1A	
34	20A	7A	1A	
35	3C	7C		
36	7C	3C		
37	1A	20A	7C	
38	20A	1A	7C	
39	7C	20A	1A	
40	20A	3C	7A	
41	3C	20A	7A	
42	7A	3C	20A	
43	1A	3C	38A	
44	3C	1A	38A	
45	38A	3C	1A	
46	3A	20A	7C	
47	7C	3A	20A	
48	20A	7C	3A	
49	1A	3A	7A	20A
50	3A	1A	7A	20A
51	7A	3A	1A	20A
52	20A	3A	7A	1A

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Table 28 Carrier aggregation support for Model 4G06-A (2*2 MIMO downlink)

Index	Downlink			
	PCC	SCC1	SCC2	SCC3
1	2A	4A		
2	4A	2A		
3	2A	7A		
4	7A	2A		

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Index	Downlink			
	PCC	SCC1	SCC2	SCC3
5	2A	28A		
6	28A	2A		
7	2A	42A		
8	42A	2A		
9	2A	48A		
10	48A	2A		
11	2A	66A		
12	66A	2A		
13	4A	7A		
14	7A	4A		
15	4A	28A		
16	28A	4A		
17	4A	42A		
18	42A	4A		
19	4A	43A		
20	43A	4A		
21	7A	28A		
22	28A	7A		
23	7A	42A		
24	42A	7A		
25	7A	43A		
26	43A	7A		
27	7A	66A		
28	66A	7A		
28	28A	42A		
30	42A	28A		
31	28A	43A		
32	43A	28A		
33	28A	66A		
34	66A	28A		
35	42A	66A		
36	66A	42A		
37	43A	66A		

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Index	Downlink			
	PCC	SCC1	SCC2	SCC3
38	66A	43A		
39	2C			
40	4C			
41	7C			
42	25C			
43	28C			
44	42C			
45	43C			
46	48C			
47	66C			
48	2A	4A	28A	
49	4A	2A	28A	
50	28A	2A	4A	
51	2A	4A	48A	
52	4A	2A	48A	
53	48A	2A	4A	
54	2A	7A	42A	
55	7A	2A	42A	
56	42A	2A	7A	
57	2A	28A	42A	
58	28A	2A	42A	
59	42A	2A	28A	
60	2A	28A	43A	
61	28A	2A	43A	
62	43A	2A	28A	
63	2A	28A	66A	
64	28A	2A	66A	
65	66A	2A	28A	
66	2A	48A	66A	
67	48A	2A	66A	
68	66A	2A	48A	
69	4A	7A	28A	
70	7A	4A	28A	

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Index	Downlink			
	PCC	SCC1	SCC2	SCC3
71	28A	4A	7A	
72	4A	7A	42A	
73	7A	4A	42A	
74	42A	4A	7A	
75	4A	7A	43A	
76	7A	4A	43A	
77	43A	4A	7A	
78	4A	28A	42A	
79	28A	4A	42A	
80	42A	4A	28A	
81	4A	28A	43A	
82	28A	4A	43A	
83	43A	4A	28A	
84	7A	28A	66A	
85	28A	7A	66A	
86	66A	7A	28A	
87	7A	42A	66A	
88	42A	7A	66A	
89	66A	7A	42A	
90	7A	43A	66A	
91	43A	7A	66A	
92	66A	7A	43A	
93	28A	42A	66A	
94	42A	28A	66A	
95	66A	28A	42A	
96	28A	43A	66A	
97	43A	28A	66A	
98	66A	28A	43A	
99	4A	7A	28A	42A
100	7A	4A	28A	42A
101	28A	7A	4A	42A
102	42A	7A	28A	4A
103	4A	7A	28A	43A

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Index	Downlink			
	PCC	SCC1	SCC2	SCC3
104	7A	4A	28A	43A
105	28A	7A	4A	43A
106	43A	7A	28A	4A
107	7A	28A	42A	66A
108	28A	7A	42A	66A
109	42A	28A	7A	66A
110	66A	28A	42A	7A
111	7A	28A	43A	66A
112	28A	7A	43A	66A
113	43A	28A	7A	66A
114	66A	28A	43A	7A

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Table 29 Carrier aggregation support for Model 4G17-A (2*2 MIMO downlink with SISO uplink)

Index	Downlink				Uplink		
	PCC	SCC1	SCC2	SCC3	PCC	SCC1	SCC2
1	1A	3A					
2	3A	1A					
3	1A	7A					
4	7A	1A					
5	3A	7A					
6	7A	3A					
7	1A	32A					
8	3A	32A					
9	7A	32A					
10	1A	3A			1A	3A	
11	3A	1A			3A	1A	
12	1A	7A			1A	7A	
13	7A	1A			7A	1A	
14	3A	7A			3A	7A	
15	1A	3A	7A				
16	3A	1A	7A				
17	7A	3A	1A				

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Index	Downlink				Uplink		
	PCC	SCC1	SCC2	SCC3	PCC	SCC1	SCC2
18	1A	3A	32A				
19	3A	1A	32A				
20	3A	7A	32A				
21	7A	3A	32A				
22	1A	7A	32A				
23	7A	1A	32A				
24	1A	3A	7A		1A	3A	
25	3A	1A	7A		3A	1A	
26	1A	3A	7A		1A		7A
27	7A	3A	1A		7A		1A
28	3A	1A	7A		3A		7A
29	7A	3A	1A		7A	3A	
30	1A	3A	32A		1A	3A	
31	3A	1A	32A		3A	1A	
32	3A	7A	32A		3A	7A	
33	7A	3A	32A			3A	
34	1A	7A	32A		1A	7A	
35	7A	1A	32A			1A	
36	1A	3A	7A	32A			
37	3A	1A	7A	32A			
38	7A	3A	1A	32A			
39	1A	3A	7A	32A	1A	3A	
40	3A	1A	7A	32A	3A	1A	
41	1A	3A	7A	32A	1A		7A
42	7A	3A	1A	32A	7A		1A
43	3A	1A	7A	32A	3A		7A
44	7A	1A	3A	32A	7A		3A

(2 of 2)

12.4 Power consumption information

Table 30 provides power consumption information for all models of the Nokia FastMile 4G Receiver.

Table 30 Power consumption information for all models

Condition	Power consumption
Maximum power consumption	10 W
Idle power	1.6 W

13 Management using the Nokia Wireless app

13.1 Using the Nokia Wireless app to manage the Nokia FastMile 4G Receiver

After the Nokia FastMile 4G Receiver has been installed as described in the installation guide, you can use the Nokia Wireless app to perform management activities on it, such as viewing information, uploading CA certificates, rebooting the Nokia FastMile 4G Receiver, or resetting to factory settings.

The user of the Nokia Wireless app has to agree with the “Terms of Service” and the “Nokia Privacy Policy” that define the app. This is a mandatory step during the first start up of the app. Terms of Service can be found inside the Nokia Wireless app whereas a link is provided to the Nokia Privacy Policy, which is described in the Nokia public webpage. The user can find this information later on by visiting the “About” screen of the app.

Figure 27 shows the “Before we begin” screen that provides access to the Terms of Service and the Nokia Privacy Policy.

Figure 27 **Before we begin screen**

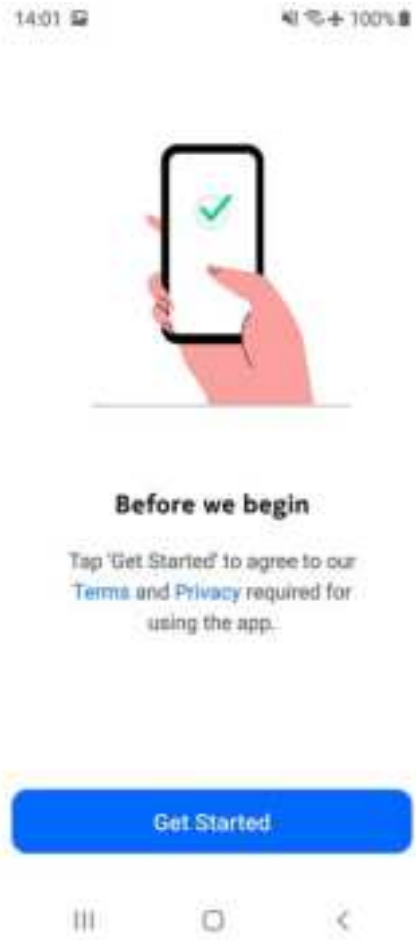
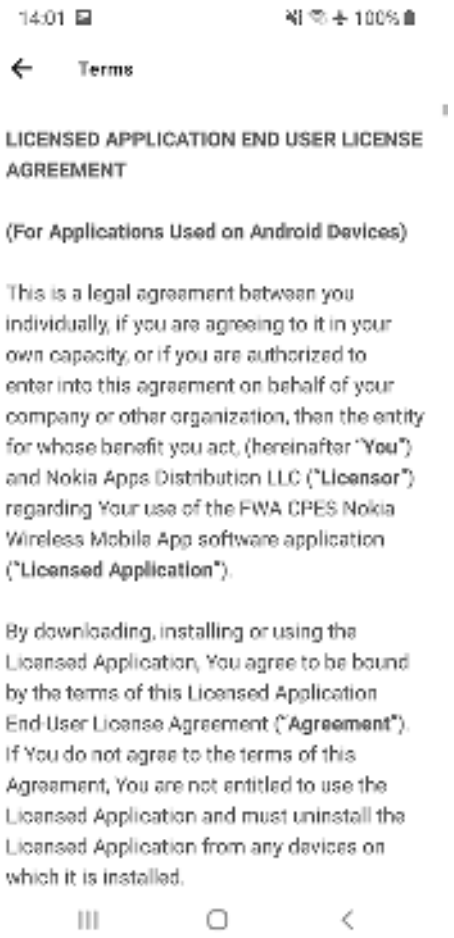


Figure 28 shows the “Terms of Service” screen that is accessed through the “Before we begin” screen.

Figure 28 **Terms of Service screen**



The Nokia Wireless app is protected as much as possible against malicious users. Tools like obfuscation and encryption used by the Nokia Wireless app, as well as runtime checks and tamper detection, make it hard for malicious users to understand the code flow or to hack the application.

There are some differences in managing the Nokia FastMile 4G Receiver through the Nokia Wireless app depending on whether the Nokia FastMile 4G Receiver is managed remotely by the Nokia Altiplano FastMile Controller:

If the Nokia Altiplano FastMile Controller is being used for remote management of the Nokia FastMile 4G Receiver, see section 13.2 else, see section 13.3.

13.2 Using the Nokia Wireless app to manage a unit managed by the Nokia Altiplano FastMile Controller

If the Nokia Altiplano FastMile Controller is being used for remote management of the Nokia FastMile 4G Receiver, you can use the Nokia Wireless app to perform management activities on it, such as viewing information, uploading CA certificates, rebooting the Nokia FastMile 4G Receiver, or resetting to factory settings, as described in the following procedure.

Scan the QR Code to log in to the Nokia Wireless App that was saved during the installation of the Nokia FastMile 4G Receiver. Logging in to the Nokia FastMile 4G Receiver also includes the following:

- initiating a Bluetooth connection
- enabling Bluetooth
- allowing the Bluetooth pairing request
- establishing the VPN connection
- entering the username and password

Note — The Bluetooth connection from the Nokia Wireless app towards the Nokia FastMile 4G Receiver is closed after one hour of inactivity in order to preserve Nokia Wireless phone resources. There is a mechanism in place that enables the user to re-establish the Bluetooth connection when he or she re-enters the app.

Procedure 5 To perform management activities

Use the following procedure to perform management activities through the Nokia Wireless app for a Nokia FastMile 4G Receiver that is managed remotely by the Nokia Altiplano FastMile Controller.

1 When you are close to the Nokia FastMile 4G Receiver, connect the mobile phone to the Internet and open the Nokia Wireless app on the phone.

An introductory screen with a video appears.

Figure 29 shows the introductory screen.

Figure 29 **Introductory screen for unit managed by the Nokia Altiplano FastMile Controller**

Continue by tapping on “Get started”.

2 After the introductory screen has cleared, the Nokia Wireless app shows an animation of how to scan the QR code of the Nokia FastMile 4G Receiver so that the app can obtain the Bluetooth MAC address, unique device identifier, enterprise id, and device type of the Nokia FastMile 4G Receiver.

The QR code was provided on a sheet of paper in the shipping package of the Nokia FastMile 4G Receiver. The sheet of paper, or a photograph of it, should have been saved and made available for anyone who later needs to scan the QR code when accessing the Nokia FastMile 4G Receiver.

Figure 30 shows the screen for the prompt to scan the QR code.

Figure 30 **Screen with prompt to scan the QR code for unit managed by the Nokia Altiplano FastMile Controller**

Tap on “Scan” to start the scan of the QR code.

Use the viewfinder of the phone to align with the QR code.

Figure 31 shows the QR code screen.

Figure 31 **QR code screen for unit managed by the Nokia Altiplano FastMile Controller**

3 The Nokia Wireless app displays the screen to install the Nokia FastMile 4G Receiver.

Tap on the “Already Installed?” option.

Figure 32 shows the Already Installed option.

Figure 32 **Screen showing the Already Installed option for a unit managed by the Nokia Altiplano FastMile Controller**

4 The Nokia Wireless app prompts you to connect to the Nokia FastMile 4G Receiver. The connection will be done through Bluetooth in conjunction with a VPN. You will need to be close to the Nokia FastMile 4G Receiver and you will need to have Bluetooth enabled on the mobile phone and accept the pairing request when it appears.

Figure 33 shows the screen to connect to the Nokia FastMile 4G Receiver.

Figure 33 **Screen for connecting to the Nokia FastMile 4G Receiver**

Connect to the Nokia FastMile 4G Receiver by tapping on “Connect”.

5 The Nokia Wireless app prompts you to enable the VPN profile for a secure method to communicate with the Nokia FastMile 4G Receiver.

Figure 34 shows the screen to enable the VPN profile.

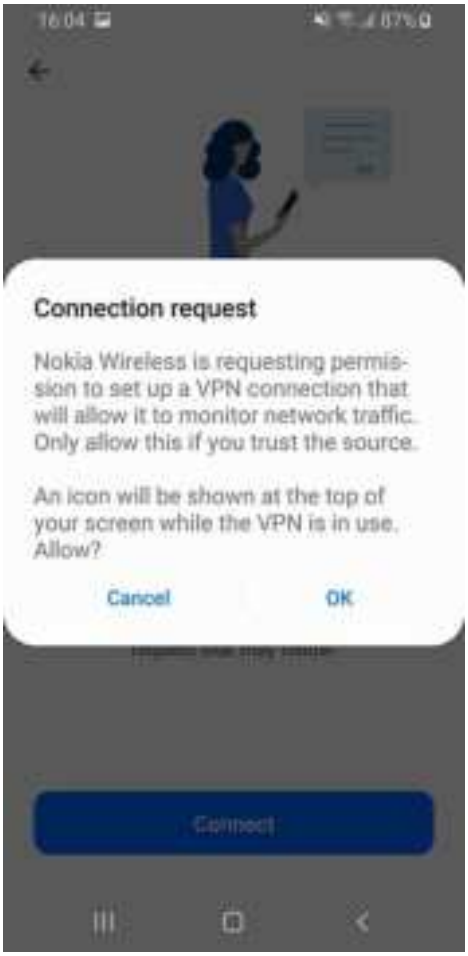
Figure 34 **Screen for enabling the VPN profile**

Enable the VPN profile by tapping on “Connect”.

6 The android system of the mobile phone prompts you to accept the connection request.

Figure 35 shows the prompt to accept the connection request.

Figure 35 **Prompt for accepting the connection request**



Accept the connection request by tapping on “OK”.

7 The Nokia Wireless app prompts you to log in to the Nokia FastMile 4G Receiver. You will need to input the username and password for the Nokia FastMile 4G Receiver.

Figure 36 shows the screen to log in to the Nokia FastMile 4G Receiver.

Figure 36 **Screen to log in to a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

Log in to the Nokia FastMile 4G Receiver by tapping on “Log in”.

After you have logged in, you can:

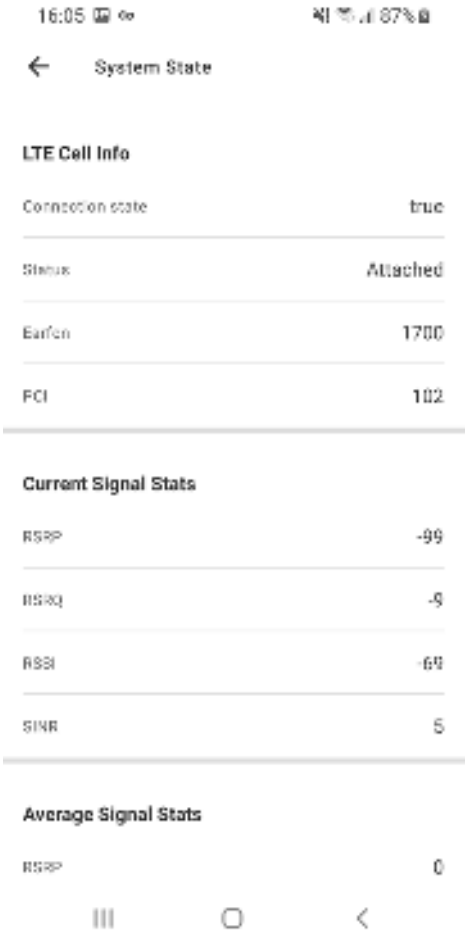
- view information for the Nokia FastMile 4G Receiver: see step 8
- upload updated certificates to the Nokia FastMile 4G Receiver: see step 9
- reboot the Nokia FastMile 4G Receiver: see step 10
- change the configuration settings to the default factory load settings (Perform Factory Reset); see step 11

8 You can view the following information for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller by selecting the Connection Status option of the main screen and scrolling through the screen by swiping up or down:

- LTE cell info:
  - connection state: Does the Nokia FastMile 4G Receiver connect to this cell
  - status: The current operational state of the PDN connection
  - EARFCN: The carrier frequency in the uplink and downlink is designated by the E-UTRA. Absolute Radio Frequency Channel Number (EARFCN) in the range 0 - 65535.
  - PCI: The physical cellid of cell
- Current signal stats:
  - RSRP: RSRP (Reference Signals Received Power) is a measurement of the received power level in an LTE cell network in dBm
  - RSRQ: RSRQ (Reference Signals Received Quality) is a measurement of the received power quality in an LTE cell network in dB
  - RSSI: RSSI (Received Signal Strength Indicator) is a measurement of the power present in a received radio signal by the Nokia FastMile 4G Receiver
  - SINR: SINR (the Signal-to-Interference-plus-Noise ratio) is used in the LTE network from the Nokia FastMile 4G Receiver side to measure the quality of wireless connections in dB
- Average signal stats:
  - RSRP: average value of Reference Signal Received Power (dBm) in the measured interval, resolution 1dBm
  - RSRQ: average value of Reference Signal Received Quality (dB) in the measured interval, resolution 1dB
  - RSSI: average value of Received Signal Strength indicator (dBm) in the measured interval, resolution 1
  - SINR: average value of Signal-to-Interference-plus-Noise Ratio (dB) in the measured interval, resolution 1dB
- Other stats:
  - bytes sent: the total number of bytes sent on the interface
  - bytes received: the total number of bytes received on the interface

Figure 37 shows an example of the System state screen.

Figure 37 **System state screen example for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

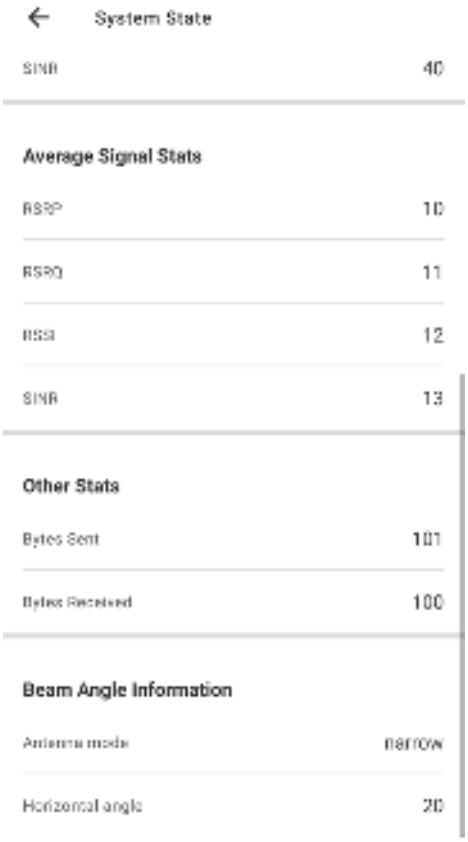


Note — The Nokia Wireless app will display a value of “N/A” for parameters that are not supported by the installed Home 4G Receiver Software version.

The following additional Beam Angle information is displayed only for an ABA version as shown in Figure 38:

- Antenna mode: wide or narrow
- Horizontal angle: the horizontal angle is expressed as a degree if the Antenna mode is narrow or as N/A if the antenna mode is wide

Figure 38 **System state screen with Beam Angle information for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**



9 You can upload updated certificates (stored under downloads in the mobile phone's directory) to the Nokia FastMile 4G Receiver.

i Tap on the “Upload CA certificates” option.

Figure 39 shows the screen that has the “Upload CA certificates” option.

Figure 39 **Screen that has the “Upload CA certificates” option for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

ii Select the required CA certificates and tap on “Ok”. Note that the certificates must be in the download folder of the mobile phone before you can upload them to the Nokia FastMile 4G Receiver.

Figure 40 shows the screen that lists the CA certificates.

Figure 40 **Screen that lists the CA certificates for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

The following CA certificates are supported for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller:

- pmaCA.pem (used for authenticating the Nokia Altiplano FastMile Controller)
- logserverCA.pem (used for authenticating the log server)
- swserverCA.pem (used for authenticating the software upgrade server)
- diagserverCA.pem (used for authenticating the optional diagnostics server)

iii Figure 41 shows the screen that indicates that uploading of the CA certificates was successful.

Figure 41 **Screen indicating that uploading of the CA certificates was successful for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

Tap on “Ok” to clear the message.

10 You can reboot a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller through NETCONF by tapping on the “Reboot Device” option.

Figure 42 shows the “Reboot Device” option.

Figure 42 **Screen showing the "Reboot Device" option for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

The screen shows the reboot message indicating that the Bluetooth connection will be interrupted and that you will be disconnected.

Figure 43 shows the screen that has the reboot message.

Figure 43 **Screen showing the reboot message for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

Press the Reboot option if you want to proceed with the reboot, or press the Cancel option.

If you pressed the Reboot option, press OK.

11 You can change the configuration settings for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller to the default factory load settings by tapping on the “Perform Factory Reset” option.

Figure 44 shows the “Perform Factory Reset” option.

Figure 44 **Screen showing the "Perform Factory Reset" option for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

The screen shows the factory reset message indicating that the factory reset will reset the device back to factory settings and that all changes will be lost and that you will be disconnected.

Figure 45 shows the screen that has the factory reset message.

Figure 45 **Screen showing the factory reset message for a Nokia FastMile 4G Receiver managed by the Nokia Altiplano FastMile Controller**

Press the Reset option if you want to proceed with the reset to factory settings, or press the Cancel option.

If you pressed the Reset option, press OK.

13.3 Using the Nokia Wireless app to manage a unit when Altiplano FastMile Controller is not deployed

If an ACS is being used for remote management of the Nokia FastMile 4G Receiver (through TR-069), you can use the Nokia Wireless app to perform management activities on the Nokia FastMile 4G Receiver after it has been installed, such as viewing information, uploading CA certificates, rebooting, or resetting to factory settings, as described in the following procedure.

This procedure does not involve use of the Nokia Altiplano FastMile Controller.

You will need the QR code that was saved as described during installation of the Nokia FastMile 4G Receiver in order to scan it when logging in to the 4G Receiver through the Nokia Wireless app. Logging in to the Nokia FastMile 4G Receiver also includes the following:

- initiating a Bluetooth connection
- enabling Bluetooth
- allowing the Bluetooth pairing request
- establishing the VPN connection
- entering the username and password

Note — The Bluetooth connection from the Nokia Wireless app towards the Nokia FastMile 4G Receiver is closed after one hour of inactivity in order to preserve Nokia Wireless phone resources. There is a mechanism in place that enables the user to re-establish the Bluetooth connection when he or she re-enters the app.

Procedure 6 To perform management activities

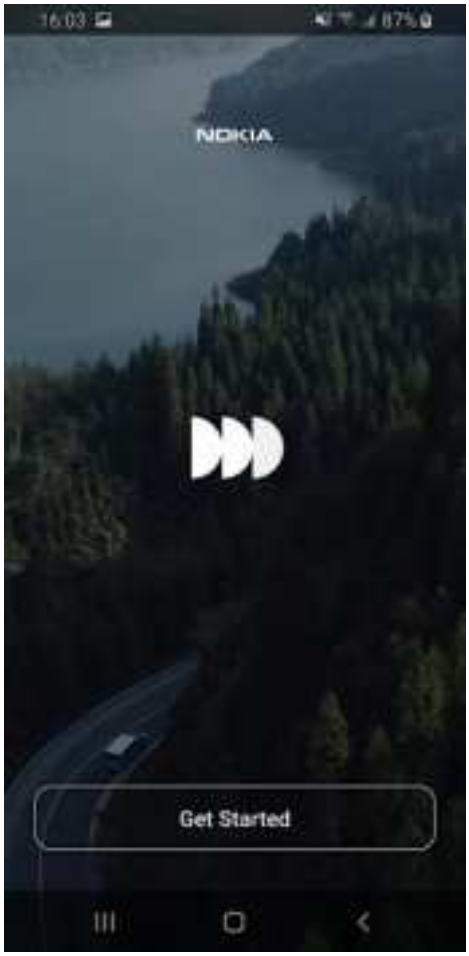
Use the following procedure to use the Nokia Wireless app to perform management activities for a Nokia FastMile 4G Receiver that is managed remotely by an ACS through TR-069.

1 When you are close to the Nokia FastMile 4G Receiver, connect the mobile phone to the Internet and open the Nokia Wireless app on the phone.

An introductory screen with a video appears.

Figure 46 shows the introductory screen.

Figure 46 **Introductory screen for unit managed by an ACS through TR-069**



Continue by tapping on “Get started”.

2 After the introductory screen has cleared, the Nokia Wireless app shows an animation of how to scan the QR code of the Nokia FastMile 4G Receiver so that the app can obtain the Bluetooth MAC address, unique device identifier, enterprise id, and device type of the Nokia FastMile 4G Receiver.

The QR code was provided on a sheet of paper in the shipping package of the Nokia FastMile 4G Receiver. The sheet of paper, or a photograph of it, should have been saved and made available for anyone who later needs to scan the QR code when accessing the Nokia FastMile 4G Receiver.

Figure 47 shows the screen for the prompt to scan the QR code.

Figure 47 **Screen with prompt to scan the QR code for unit managed by an ACS through TR-069**

The Nokia Wireless app also provides a way to manually enter all the needed information in order to proceed with the installation without scanning a QR code.

Tap on “Scan” to start the scan of the QR code.

Use the viewfinder of the phone to align with the QR code.

Figure 48 shows the QR code screen.

Figure 48 **QR code screen for unit managed by an ACS through TR-069**

3 The Nokia Wireless app displays the screen to install the Nokia FastMile 4G Receiver.

Tap on the “Already Installed?” option.

Figure 49 shows the Already Installed option.

Figure 49 **Screen showing the Already Installed option for unit managed by an ACS through TR-069**

4 The Nokia Wireless app prompts you to connect to the Nokia FastMile 4G Receiver. The connection will be done through Bluetooth in conjunction with a VPN. You will need to be close to the Nokia FastMile 4G Receiver and you will need to have Bluetooth enabled on the mobile phone and accept the pairing request when it appears.

Figure 50 shows the screen to connect to the Nokia FastMile 4G Receiver.

Figure 50 **Screen for connecting to the Nokia FastMile 4G Receiver**

Connect to the Nokia FastMile 4G Receiver by tapping on “Connect”.

5 The Nokia Wireless app prompts you to enable the VPN profile for a secure method to communicate with the Nokia FastMile 4G Receiver.

Figure 51 shows the screen to enable the VPN profile.

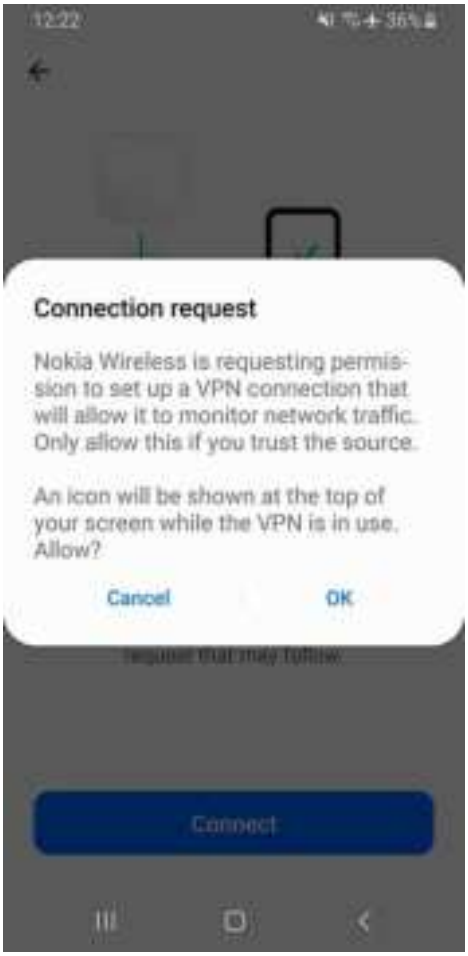
Figure 51 **Screen for enabling the VPN profile**

Enable the VPN profile by tapping on “Connect”.

6 The android system of the mobile phone prompts you to accept the connection request.

Figure 52 shows the prompt to accept the connection request.

Figure 52 **Prompt for accepting the connection request**



Accept the connection request by tapping on “OK”.

7 The Nokia Wireless app prompts you to log in to the Nokia FastMile 4G Receiver. You will need to input the username and password for the Nokia FastMile 4G Receiver.

Figure 53 shows the screen to log in to the Nokia FastMile 4G Receiver.

Figure 53 **Screen to log in to a Nokia FastMile 4G Receiver managed by an ACS through TR-069**

Log in to the Nokia FastMile 4G Receiver by tapping on “Log in”.

After you have logged in, you can:

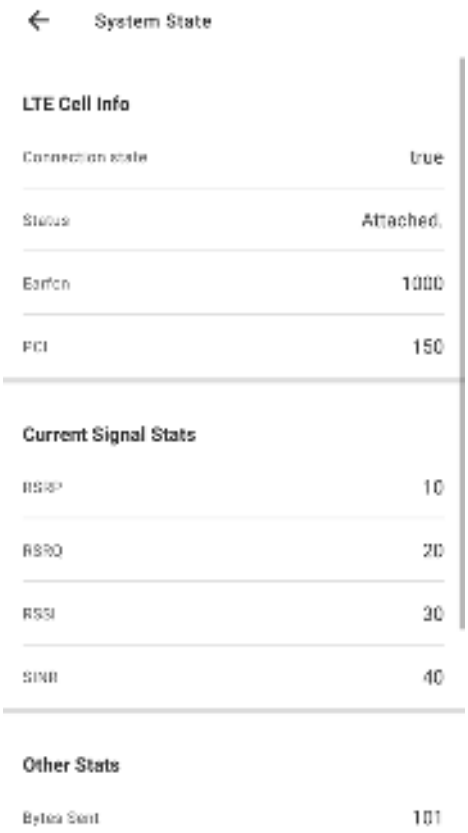
- view information for the Nokia FastMile 4G Receiver: see step 8
- upload updated certificates to the Nokia FastMile 4G Receiver: see step 9
- reboot the Nokia FastMile 4G Receiver: see step 10
- change the configuration settings to the default factory load settings (Perform Factory Reset); see step 11

8 You can view the following information for a Nokia FastMile 4G Receiver managed by an ACS by selecting the Connection Status option of the main screen and scrolling through the screen by swiping up or down:

- LTE cell info:
  - connection state: Does the Nokia FastMile 4G Receiver connect to this cell
  - status: The current operational state of the PDN connection
  - EARFCN: The carrier frequency in the uplink and downlink is designated by the E-UTRA. Absolute Radio Frequency Channel Number (EARFCN) in the range 0 - 65535.
  - PCI: The physical cellid of cell
- Current signal stats:
  - RSRP: RSRP (Reference Signals Received Power) is a measurement of the received power level in an LTE cell network in dBm
  - RSRQ: RSRQ (Reference Signals Received Quality) is a measurement of the received power quality in an LTE cell network expressed as a ratio
  - RSSI: RSSI (Received Signal Strength Indicator) is a measurement of the power present in a received radio signal by the Nokia FastMile 4G Receiver in dBm
  - SINR: SINR (the Signal-to-Interference-plus-Noise ratio) is used in the LTE network from the Nokia FastMile 4G Receiver side to measure the quality of wireless connections in dB
- Other stats:
  - bytes sent: the total number of bytes sent on the interface
  - bytes received: the total number of bytes received on the interface

Figure 54 shows an example of the System state screen.

Figure 54 **System state screen example for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**

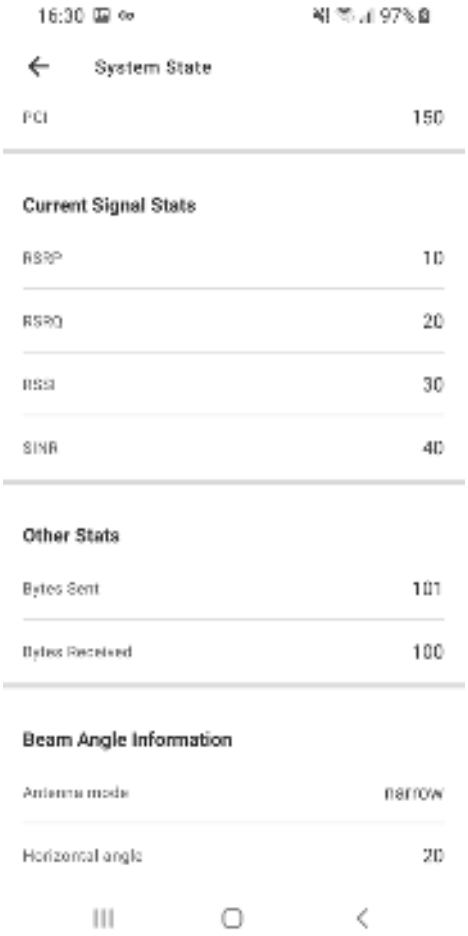


Note — The Nokia Wireless app will display a value of “N/A” for parameters that are not supported by the installed Home 4G Receiver Software version.

The following additional Beam Angle information is displayed only for an ABA version as shown in Figure 55:

- Antenna mode: wide or narrow
- Horizontal angle: the horizontal angle is expressed as a degree if the Antenna mode is narrow or as N/A if the antenna mode is wide

Figure 55 **System state screen with Beam Angle information for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**



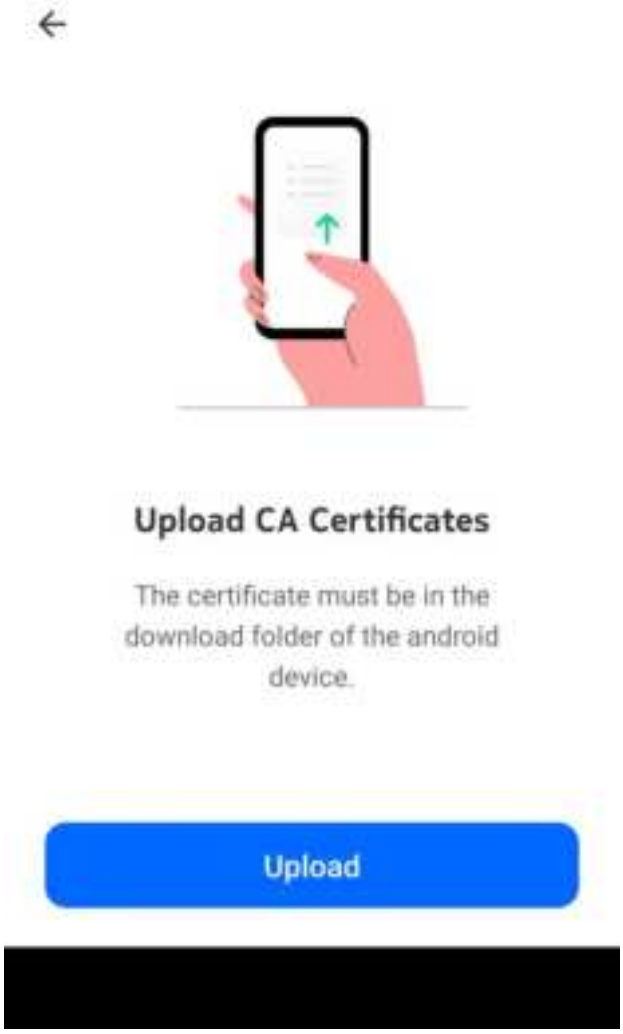
9 You can upload updated certificates (stored under downloads in the mobile phone's directory) to the Nokia FastMile 4G Receiver.

i Tap on the “Upload CA certificates” option, as shown in Figure 56.

Figure 56 **Screen that has the “Upload CA certificates” option for a Nokia FastMile 4G Receiver by an ACS through TR-069**

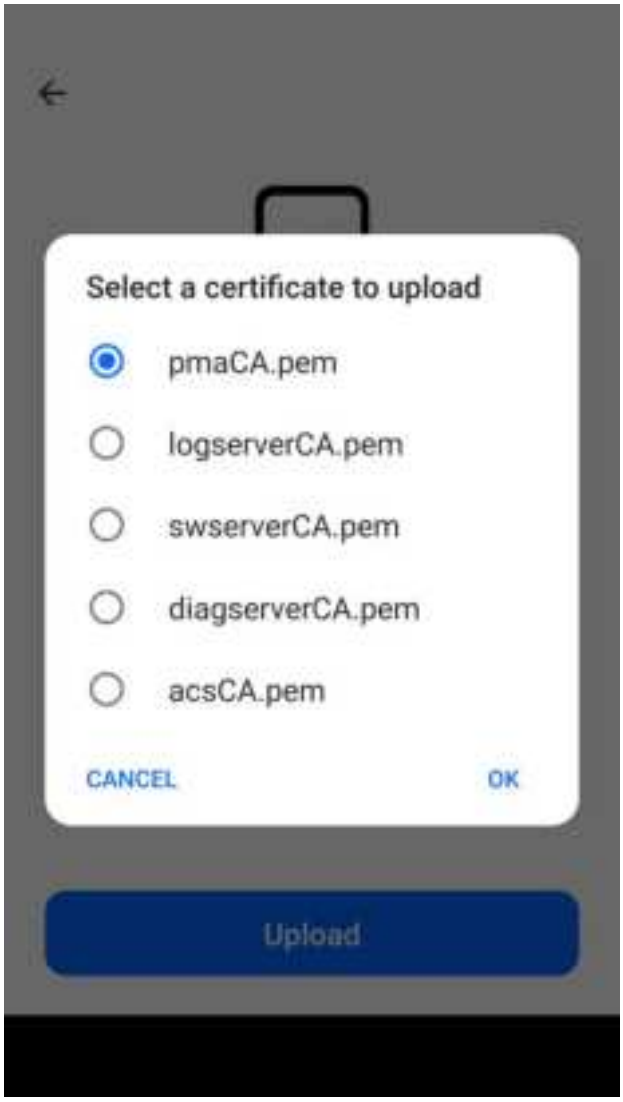
ii Tap on “Upload” on the Upload CA Certificates screen, as shown in Figure 57.

Figure 57 **Upload CA Certificates screen for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**



A list of CA certificates appears, as shown in Figure 58.

Figure 58 **List of CA certificates displayed on the Upload CA Certificates screen for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**



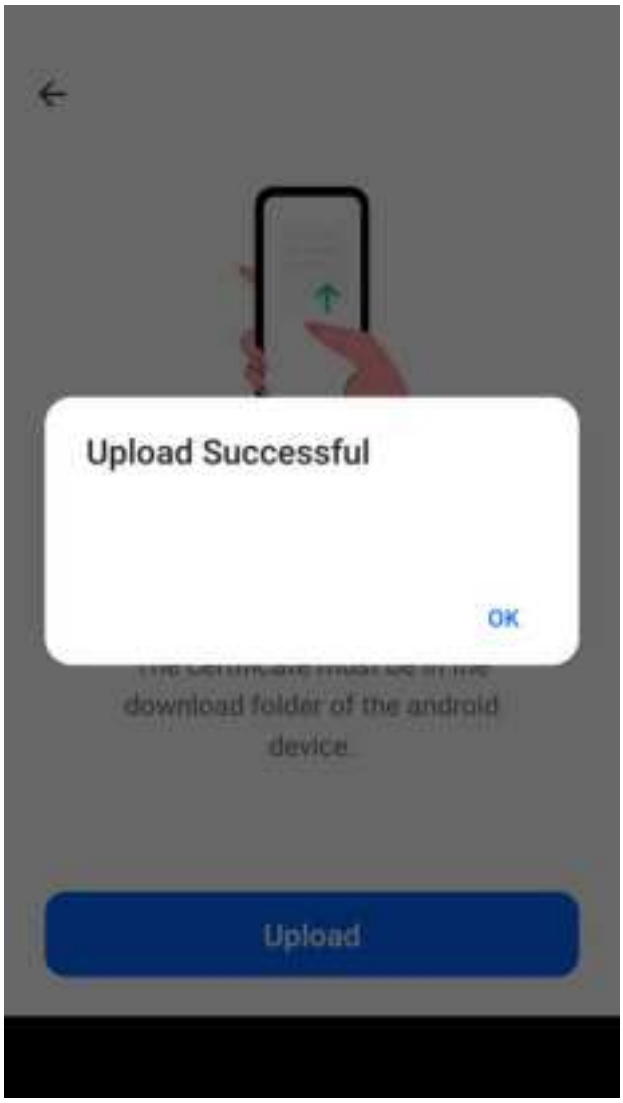
iii Select the required CA certificates and tap on “Ok”. Note that the certificates must be in the download folder of the mobile phone before you can upload them to the Nokia FastMile 4G Receiver.

The following CA certificates are supported for a Nokia FastMile 4G Receiver Nokia FastMile 4G Receiver managed by an ACS:

- pmaCA.pem (used for authenticating the Nokia Altiplano FastMile Controller)
- logserverCA.pem (used for authenticating the log server)
- swserverCA.pem (used for authenticating the software upgrade server)
- diagserverCA.pem (used for authenticating the optional diagnostics server)
- acsCA.pem (used for authenticating the ACS)

iv The screen indicates when uploading of the CA certificates was successful, as shown in Figure 59.

Figure 59 **Screen showing that upload of CA certificates was successful for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**



Tap on “Ok” to clear the message.

10 You can reboot a Nokia FastMile 4G Receiver managed by an ACS through TR-069 by tapping on the “Reboot Device” option.

Figure 60 shows the “Reboot Device” option.

Figure 60 **Screen showing the “Reboot Device” option for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**

When you reboot the Nokia FastMile 4G Receiver, the screen shows the reboot message indicating that the Bluetooth connection will be interrupted and that you will be disconnected.

Press the Reboot option if you want to proceed with the reboot, or press the Cancel option.

If you pressed the Reboot option, press OK.

11 You can change the configuration settings for a Nokia FastMile 4G Receiver managed by an ACS through TR-069 to the default factory load settings by tapping on the “Perform Factory Reset” option.

Figure 61 shows the “Perform Factory Reset” option.

Figure 61 **Screen showing the "Perform Factory Reset" option for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**

The screen shows the factory reset message indicating that the factory reset will reset the device back to factory settings and that all changes will be lost and that you will be disconnected.

Figure 62 shows the screen that has the factory reset message.

Figure 62 **Screen showing the factory reset message for a Nokia FastMile 4G Receiver managed by an ACS through TR-069**

Press the Reset option if you want to proceed with the reset to factory settings, or press the Cancel option.

If you pressed the Reset option, press OK.

14 Management using the Web UI

14.1 Using the Web UI to manage the Nokia FastMile 4G Receiver

After the Nokia FastMile 4G Receiver has been installed, you can use the Web UI to perform some management-type activities on a Nokia FastMile 4G Receiver that is managed by an ACS through TR-069.

The Web UI provides the following screens to provide support for management of the Nokia FastMile 4G Receiver:

Note — Most of the screens require login. See the Customer Release Notes for Web UI considerations and limitations, including username information for the types of accounts supported by the Web UI.

Default passwords for the accounts will be delivered during commissioning. The default passwords can be set in pre-configuration file (either customers provide it or use default ones from Nokia).

The Web UI passwords can be managed later on through the ACS.

- Status screen: allows viewing of FastMile 4G Receiver status parameter values (login is not required), see section 14.2
- Network screen: allows configuration of specific FastMile 4G Receiver parameters (login is required), see section 14.3
- CBRS screen: offers the possibility to display CBSD parameters of the FastMile 4G Receiver, as well as to input registration information for CPI's usage (login is required), see section 14.4
- System screen: allows performing of advanced system actions (login is required), see section 14.5

14.2 Using the Web UI status screen

The Web UI status screen allows you to view FastMile 4G Receiver status parameters. No login is required.

The following parameters are shown:

- The Cell ID for primary attached cell
- The primary attached cell physical cell ID (PCI), eNodeB ID (eNBID), DL EARFCN and the Band
- The secondary attached cells physical cell ID (PCI) and DL EARFCN
- Secondary Component Carrier Band (Downlink)
- Secondary Component Carrier Band (Uplink)
- The Signal Strength of the attached cell: this animated model shows the RSRP (Reference Signals Received Power) of the attached cell
- The RSRP (Reference Signals Received Power) of the attached primary and secondary cells
- The RSRQ (Reference Signal Received Quality) of the attached primary and secondary cells
- The RSSI (Received Signal Strength Indication) of the attached primary and secondary cells
- The CINR (Carrier to Interference plus Noise Ratio) of the attached primary and secondary cells
- The SINR (Signal to Interference and Noise Ratio) of the attached primary cell
- Total number of MB sent on the LTE interface since last FastMile 4G Receiver restart
- Total number of MB received on the LTE interface since last FastMile 4G Receiver restart
- Total number of MB sent on the Ethernet interface since last FastMile 4G Receiver restart
- Total number of MB received on the Ethernet interface since last FastMile 4G Receiver restart
- Data Model (TR-069)
- Software Version
- Name retrieved from network and the corresponding IP address of the configured Access Points
- Device Info table with information regarding the IMSI, IMEI, Ethernet MAC Address, Serial Number and the Model Name

You can display available cell information by triggering measurements using the “Trigger measurement” button on the Web UI status screen. Available cell information includes: physical cell ID, DL EARFCN, SINR, RSRP, RSRQ, RSSI. Note the following

- up to 12 available cells are shown, ranked from strongest to weakest by RSRP
- After approximately five seconds from triggering of measurements, the FastMile 4G Receiver will detach from the carrier’s network. Push the measurements status refresh button while the FastMile 4G Receiver is detached to see the grayed-out Web UI status screen. Reattachment of the FastMile 4G Receiver may take from several seconds to up to five minutes. You will need to refresh the browser for updated Web UI status screen contents after reattachment of the FastMile 4G Receiver.
- available cell information will not be visible after rebooting the FastMile 4G Receiver

Figure 63 shows an example of the top part of the Status screen when the FastMile 4G Receiver is not connected to a cell.

Figure 63 **Example of the top part of the Status screen when the FastMile 4G Receiver is not connected to a cell**

Figure 64 shows the lower part after scrolling down of an example of the Status screen without available cells when the FastMile 4G Receiver is not connected to a cell.

Figure 64 **Example of the lower part of the Status screen without available cells when the FastMile 4G Receiver is not connected to a cell**

Figure 65 shows the lower part after scrolling down of an example of the Status screen with available cells when the FastMile 4G Receiver is not connected to a cell.

Figure 65 **Example of the lower part of the Status screen with available cells when the FastMile 4G Receiver is not connected to a cell**

Figure 66 shows the top part of an example of the Status screen when the FastMile 4G Receiver is connected to a cell.

Figure 66 **Example of the top part of the Status screen when the FastMile 4G Receiver is connected to a cell**

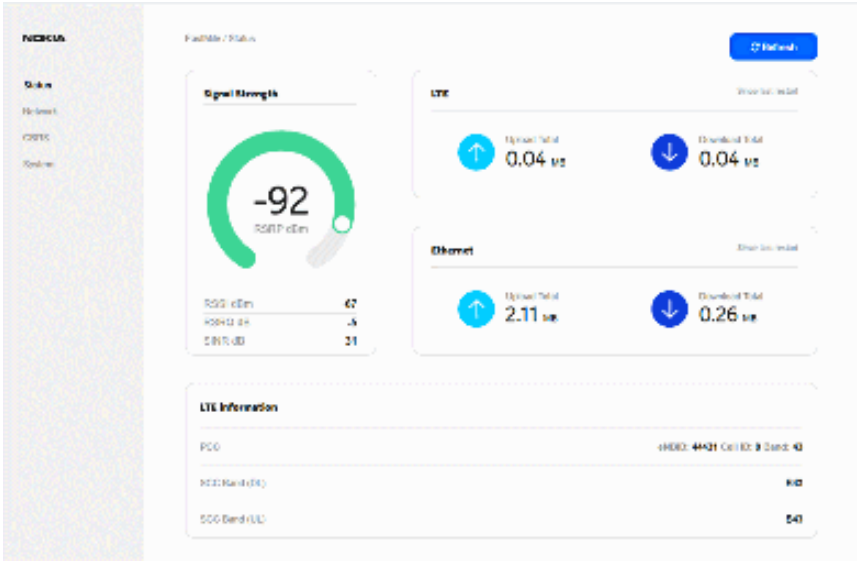


Figure 67 shows a lower part after scrolling down of an example of the Status screen when the FastMile 4G Receiver is connected to a cell. The figure shows the trigger measurement button that can be used to display information about available cells.

Figure 67 **Example of a lower part of the Status screen when the FastMile 4G Receiver is connected to a cell**

To display available cell information, select the trigger measurement button on the Status screen. Figure 68 shows the pop up window that appears when the trigger measurement button is selected.

Figure 68 **Example of the Trigger Measurement pop up window**

You can proceed or cancel the trigger measurement action.

Note — After approximately five seconds from triggering of measurements, the FastMile 4G Receiver will detach from the carrier's network. Push the measurements status refresh button while the FastMile 4G Receiver is detached to see the grayed-out Web UI status screen. Reattachment of the FastMile 4G Receiver may take from several seconds to up to five minutes. You will need to refresh the browser for updated Web UI status screen contents after reattachment of the FastMile 4G Receiver.

The following figures show examples of screens involved in the trigger measurement action:

- Figure 69 shows trigger measurement that is ongoing
- Figure 70 shows trigger measurement that has completed with a list of available cells and the FastMile 4G Receiver is detached from the carrier's network
- Figure 71 shows trigger measurement that has completed and the FastMile 4G Receiver is reattached to the carrier's network

Figure 69 **Example of ongoing Trigger Measurement**

Figure 70 **Example of Trigger Measurement completed and FastMile 4G Receiver is detached**

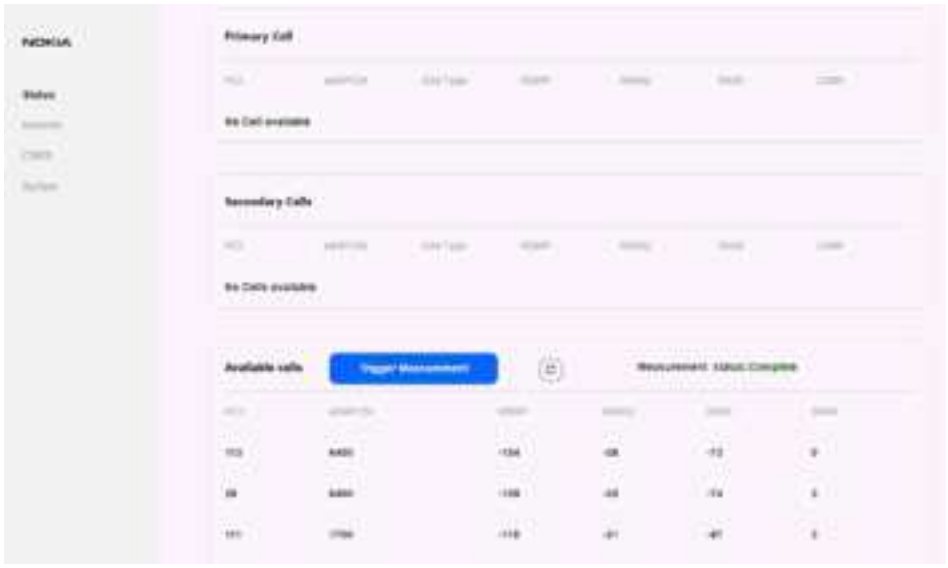
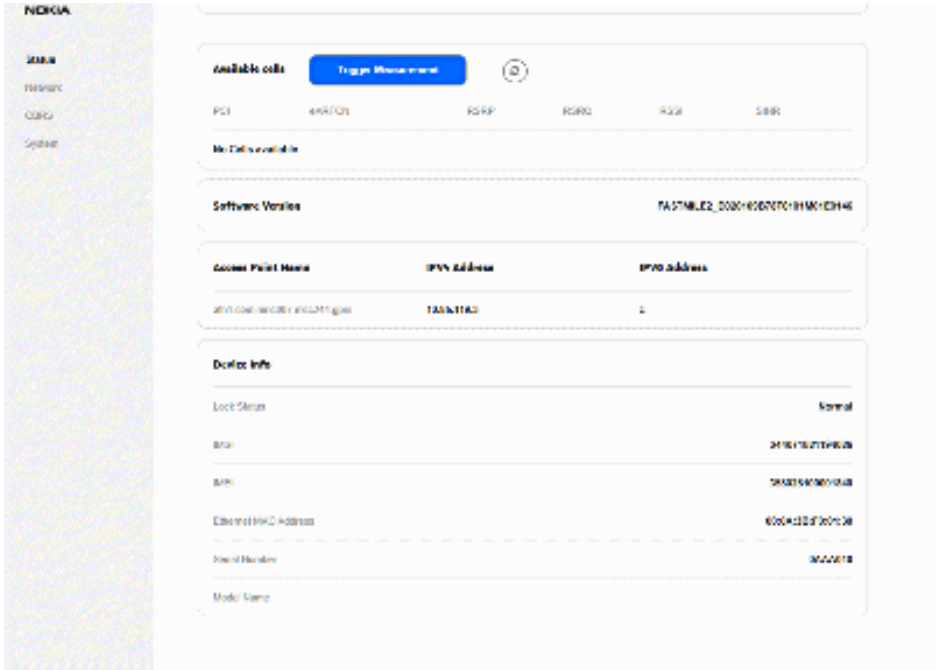


Figure 71 **Example of Trigger Measurement completed and FastMile 4G Receiver is reattached**

Figure 72 shows the lowest part after scrolling down of an example of the Status screen when the FastMile 4G Receiver is connected to a cell.

Figure 72 **Example of the lowest part of the Status screen when the FastMile 4G Receiver is connected to a cell**



14.3 Using the Web UI network screen

The Web UI network screen allows you to perform FastMile4G Receiver configuration actions. Login is required. For details on the Web UI login, please refer to the Customer Release Notes.

The following configuration capabilities are supported:

- Configuration of ACS URL
- Configuration of ACS username
- Configuration of ACS password
- Configuration of Connection Request Port
- Configuration of Connection Request Username
- Configuration of Connection Request Password
- Configuration of Periodic Inform Interval
- Configuration of Periodic Inform Request
- Setting of location; that is, geocoordinates (latitude and longitude)
- Configuration of Access Points (up to one default AP in router mode and up to four APs in bridge mode; a total of five APs can be configured). AP configuration includes configuration of:
  - AP name (If the default AP name is set to EmptyAPN, the auto APN feature is enabled)
  - forwarding mode (router or bridge)
  - Username
  - Password
  - Authentication mode
  - VLAN
  - MTU size
  - subnet mask
  - Note that the default AP cannot be deleted
- Configuration of cell list (up to nine cells can be configured)
- Configuration of the DHCP server for router mode
- Uploading of CA certificates

Note — CA certificates must be pre-downloaded to the laptop so that they can be browsed and found via the 'Upload Certificate' action. The CA Certificates must comply to the naming rules required by the FastMile 4G Receiver.

The following CA certificates are supported:

- logserverCA.pem (used for authenticating the log server)
- swserverCA.pem (used for authenticating the software upgrade server)

- diagserverCA.pem (used for authenticating the optional diagnostics server)
- acsCA.pem (used for authenticating the ACS)

Note — Auto refresh of web UI screens is not supported, so it is recommended that you refresh the Web UI network screen to avoid retrieving outdated information if any database changes have been done since the last retrieval of information.

Figure 73 shows an example of the Login screen.

Figure 73 **Example of the Login screen**

Figure 74 shows an example of the Network screen.

Figure 74 **Example of the Network screen**

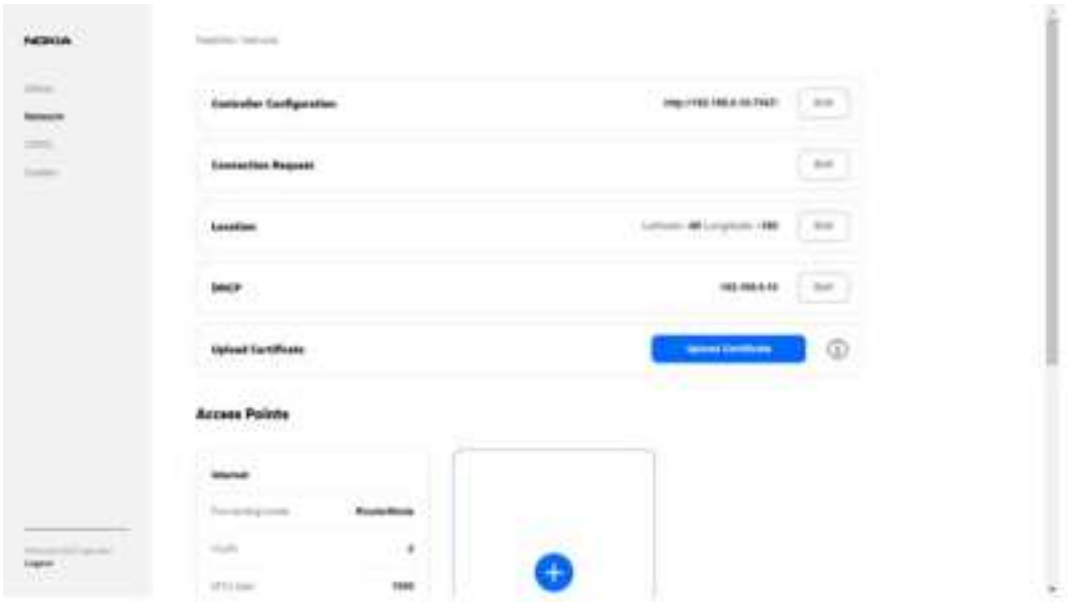


Figure 75 shows an example of scroll down for the Network screen.

Figure 75 **Example of scroll down for the Network screen**

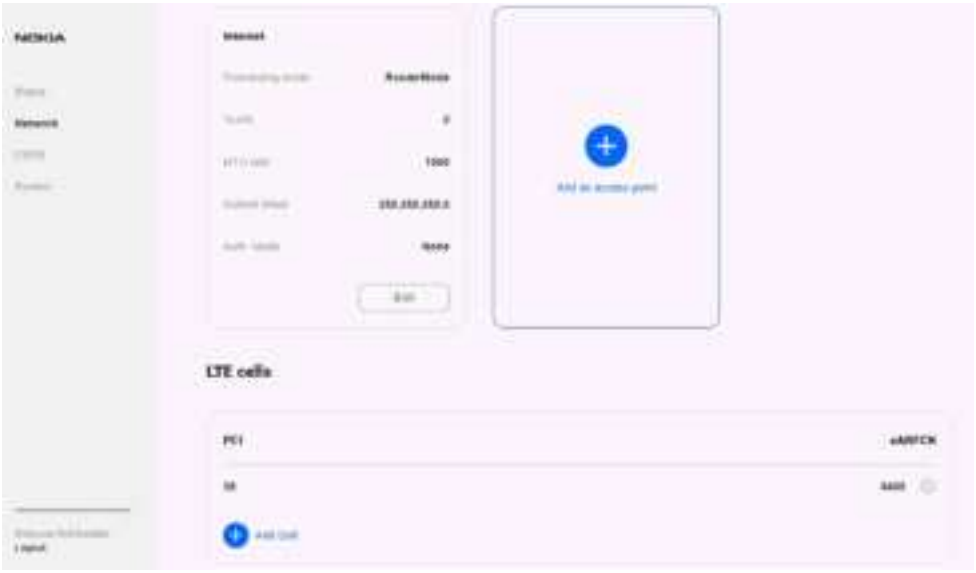


Figure 76 shows an example of the Add Access Point window.

Figure 76 **Example of the Add Access Point window**

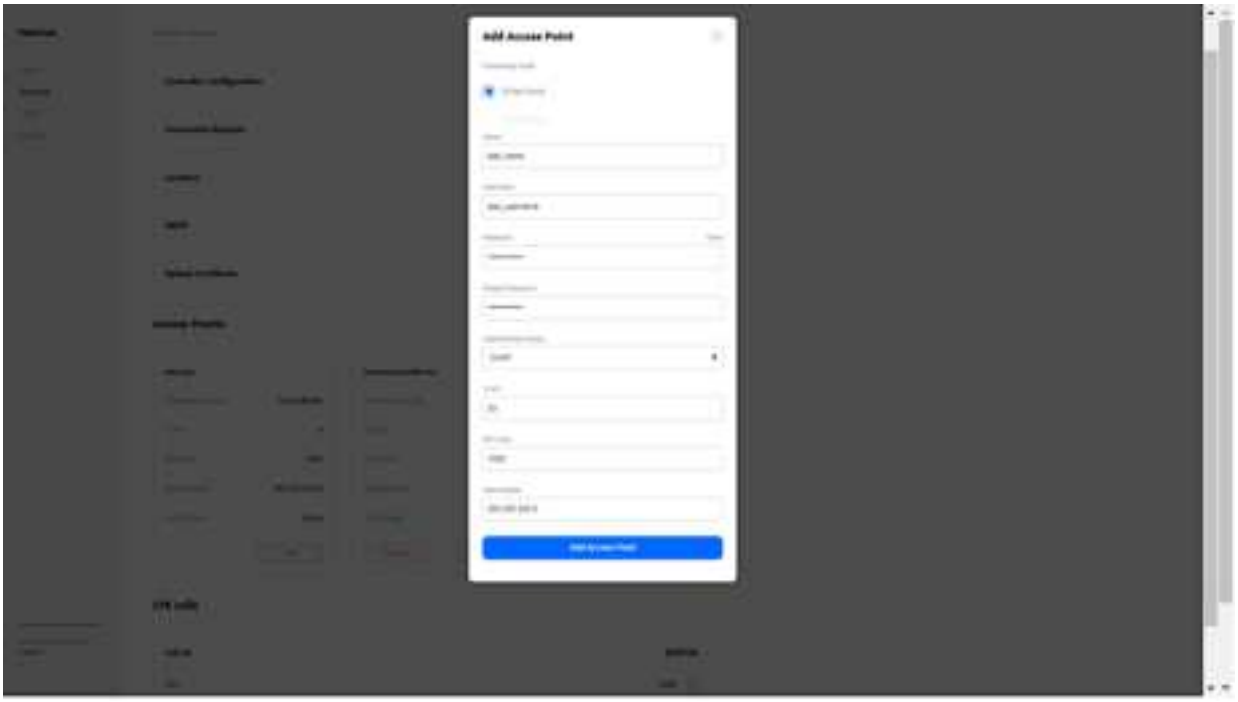


Figure 77 shows an example of the Delete Access Point window

Figure 77 **Example of the Delete Access Point window**

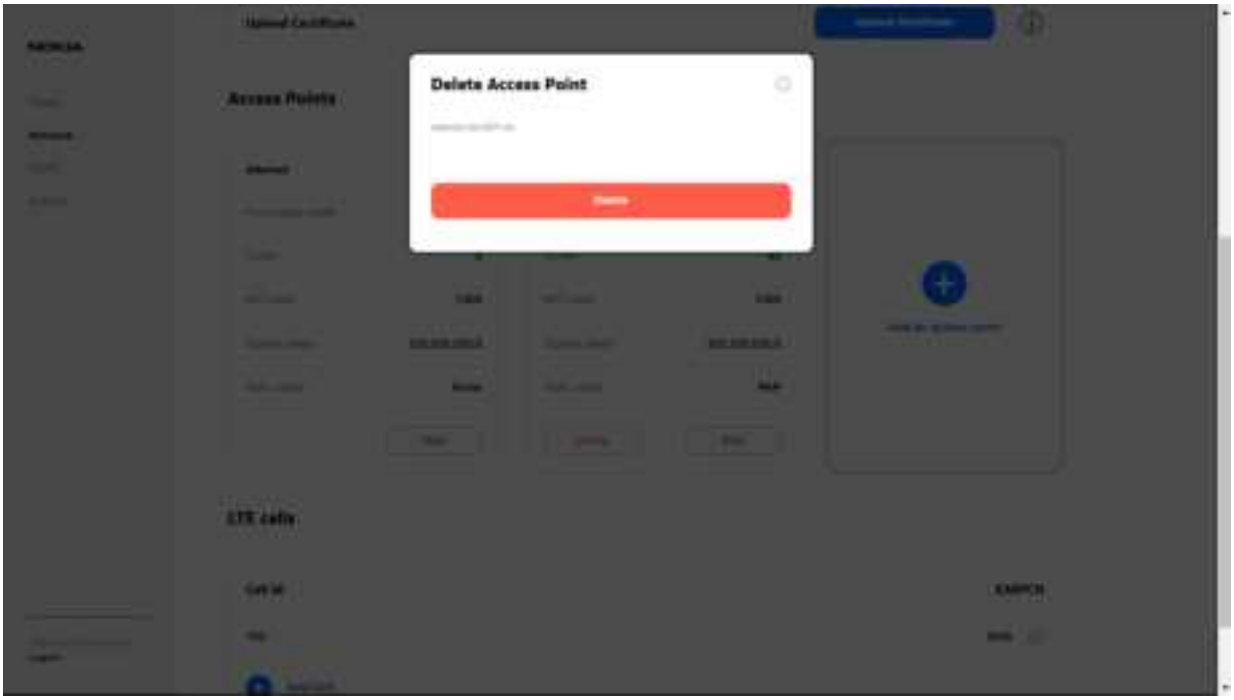


Figure 78 shows an example of the Edit Location window.

Figure 78 **Example of the Edit Location window**

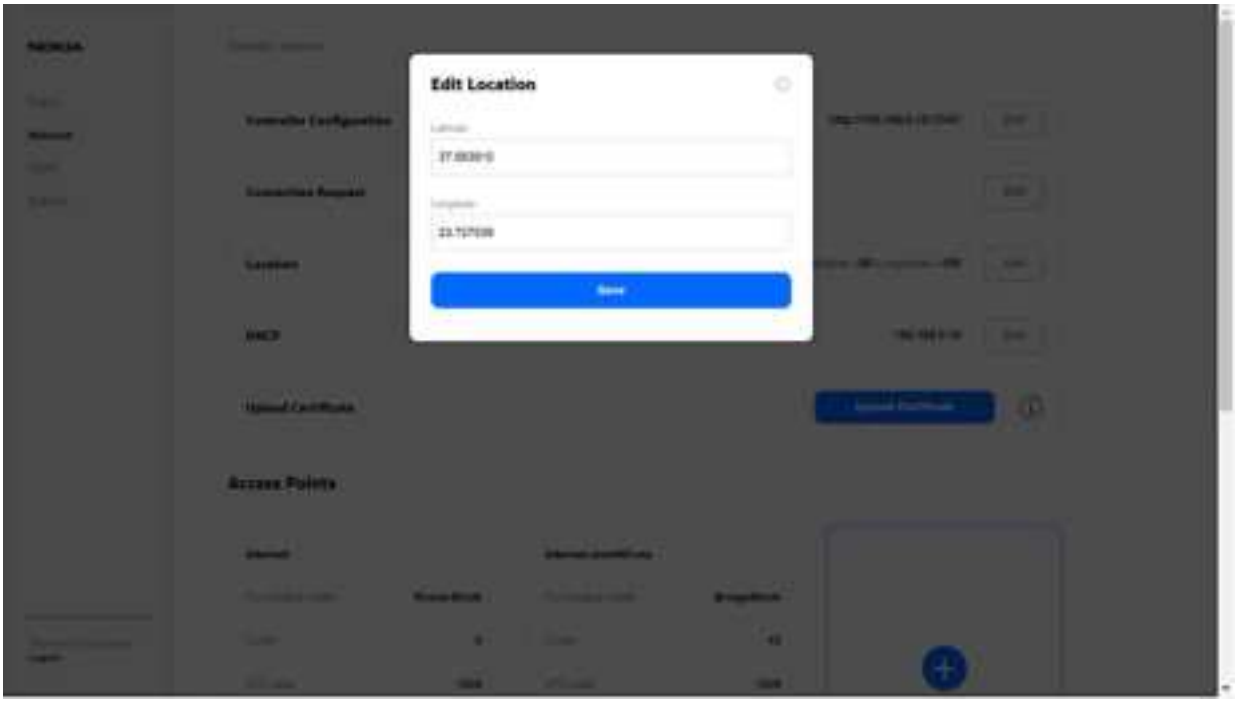


Figure 79 shows an example of the Edit Controller window.

Figure 79 **Example of the Edit Controller window**

Figure 80 shows an example of the Edit Connection Request window.

Figure 80 **Example of the Edit Connection Request window**

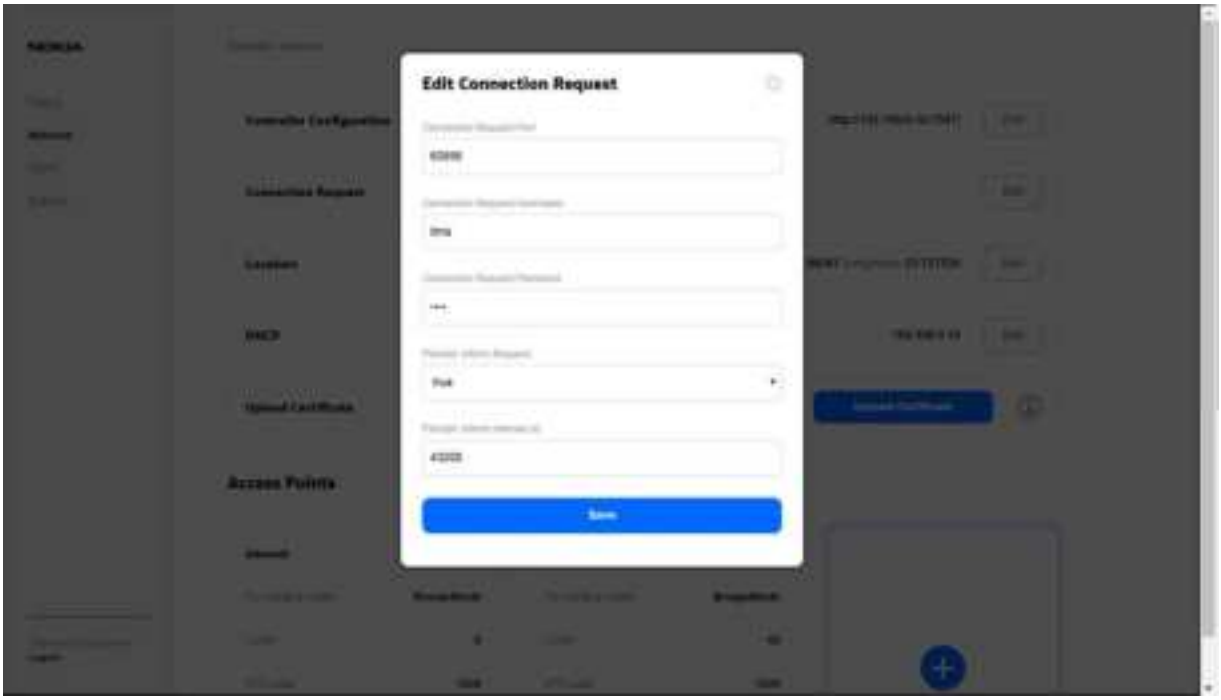


Figure 81 shows an example of the Edit DHCP window.

Figure 81 **Example of the Edit DHCP window**

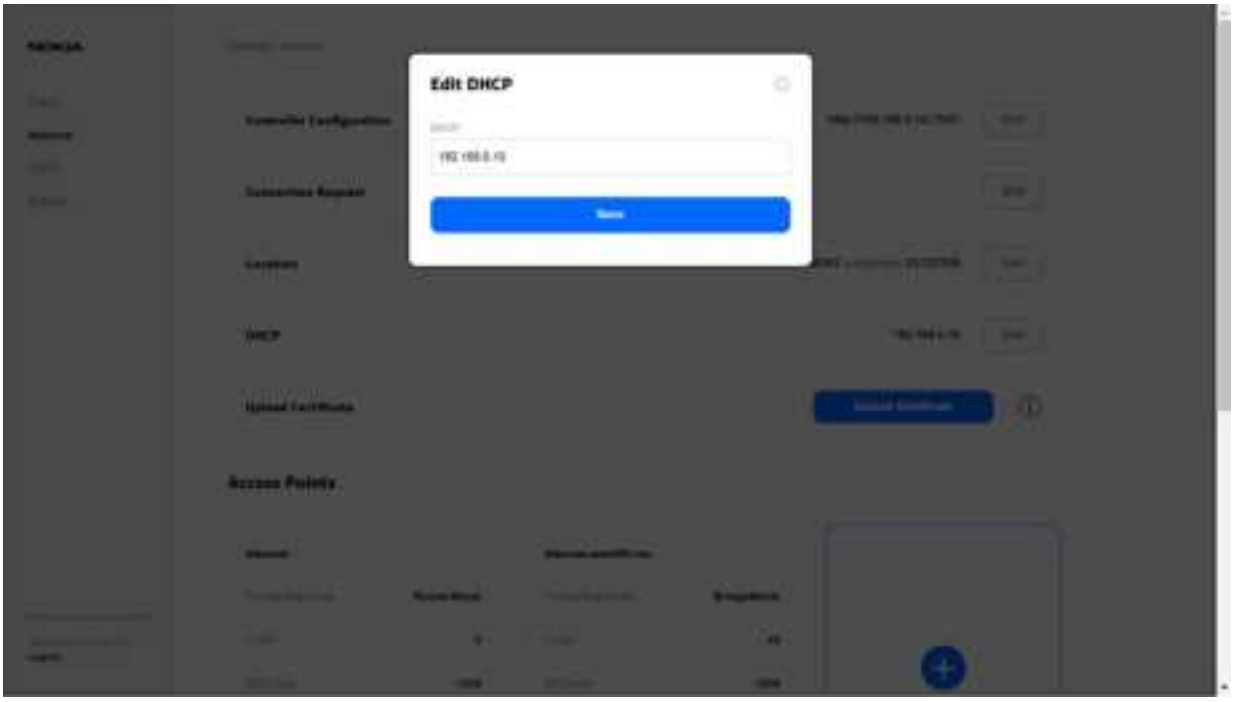


Figure 82 shows an example of the Certificates information window that opens when you click on Upload Certificate.

Figure 82 **Example of the Certificates information window**

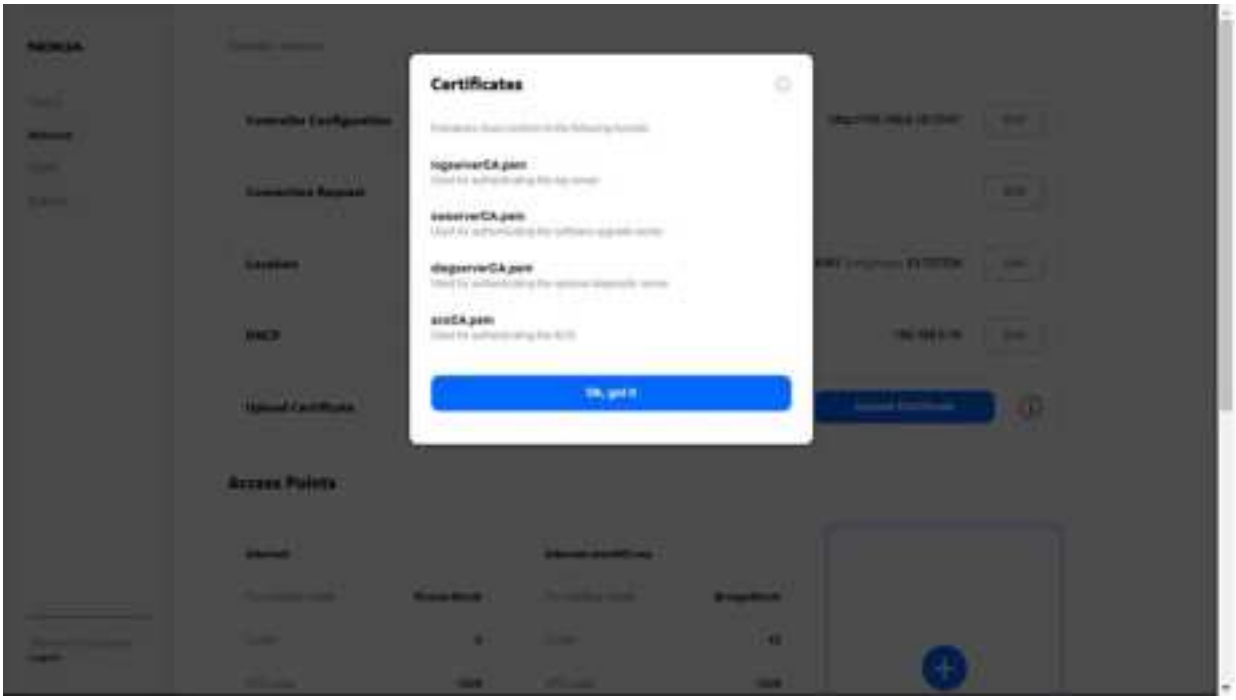


Figure 83 shows an example of the Add Cell window.

Figure 83 **Example of the Add Cell window**

Figure 84 shows an example of the Delete Cell window.

Figure 84 **Example of the Delete Cell window**

14.4 Using the Web UI CBRS screen

The Web UI CBRS (Citizens Broadband Radio Service) screen is intended for the US market and offers the possibility to display CBSD (Citizens Broadband Radio Service Device) parameters of the FastMile 4G Receiver, as well as to input registration information for CPI's (Certified Professional Installer) usage. Login is required. For details on the Web UI login, please refer to the *Customer Release Notes*.

The Web UI CBRS screen allows you to view the following FastMile 4G Receiver CBSD parameters:

- FCC (Federal Communications Commission) ID
- CBSD (Citizens Broadband Radio Service Device) Category
- Air interface
- Measurement Capability
- CBSD Registration
- Deregister
- Grant Wishlist
- Successful Grant List
- Failure Grant List

Additionally, the Web UI CBRS screen allows you to input the following parameters:

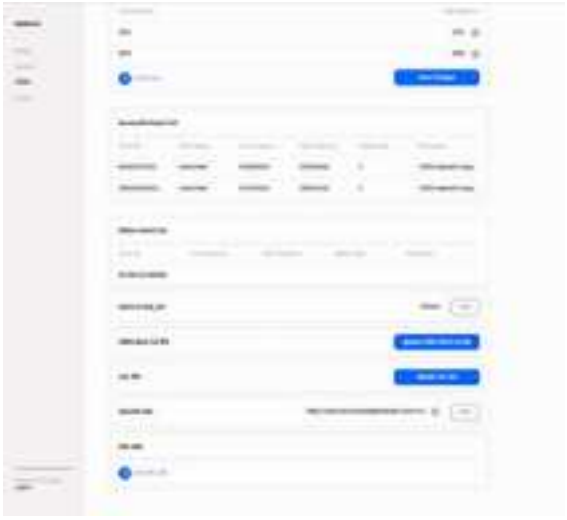
- User ID (UR_ID)
- CBRS Root CA file
- CRL (Certificate Revocation List) file

- SAS/DP URL
- CRL (Certificate Revocation List) URL list (maximum of five)

Figure 85 and Figure 86 show examples of the Web UI CBRS screen.

Figure 85 **Example of the Web UI CBRS screen with no CBSD Grants**

Figure 86 **Example of the Web UI CBRS screen with two CBSD Grants**



14.5 Using the Web UI system screen

The Web UI system screen allows you to perform advanced system actions on the FastMile 4G Receiver. Login is required. For details on the Web UI login, please refer to the *Customer Release Notes*.

The following advanced system capabilities are supported:

- Restart device: the FastMile 4G Receiver configuration remains intact
- Restore factory settings: factory configuration of the FastMile 4G Receiver is used; subsequent configuration is lost
- Upgrade firmware:
  - before doing any firmware upgrade action, make sure that the upgrade path from the existing firmware to new firmware is supported by the FastMile 4G Receiver
  - new image is installed in the FastMile 4G Receiver; the FastMile 4G Receiver configuration remains intact
  - note that the FastMile 4G Receiver will reboot if the firmware upgrade fails
- Enable/disable LAN SSH access (by default LAN SSH access is disabled)
- Enable/disable WAN SSH access (by default WAN SSH access is disabled)

Figure 87 shows an example of the System screen.

Figure 87 **Example of the System screen**

Figure 88 shows an example of the Restart Device confirmation window.

Figure 88 **Example of the Restart Device confirmation window**

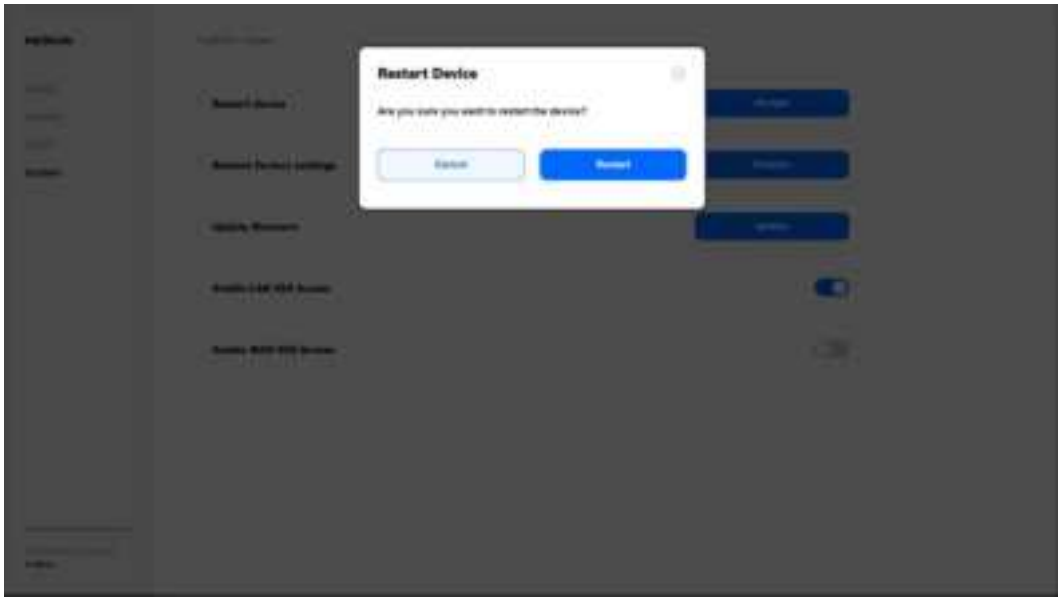


Figure 89 shows an example of the Restore Device confirmation window used to restore the device to factory settings.

Figure 89 **Example of the Restore Device confirmation window**

Figure 90 shows an example of the screen that displays while firmware is being uploaded.

Figure 90 **Example of the screen that displays while firmware is being uploaded**

Figure 91 shows an example of the screen that displays while firmware is being upgraded.

Figure 91 **Example of the screen that displays while firmware is being upgraded**

Figure 92 shows an example of the screen that displays while the system is being rebooted.

Figure 92 **Example of the screen that displays while the system is being rebooted**

15 Standards certification

15.1 Standards certification for the Nokia FastMile 4G Receiver

Table 31 provides standards certification information for all models of the Nokia FastMile 4G Receiver.

Table 31 **Standards certifications for the Nokia FastMile 4G Receiver**

Category	Standard	Certifications
FCC	FCC Part 47	4G01-A with B48 and Bluetooth 3.0 4G4G01-C with B48 and Bluetooth 4.2 4G01-D with B48 and Bluetooth 4.201-C with B48 and Bluetooth 4.2 4G03-A with B7\B41 and Bluetooth 3.0 4G05-A with B41 and Bluetooth 3.0 4G06-A with B2\B25\B4\B66\B7\B48 and Bluetooth 3.0
ISED	RSS series	4G01-B with B48 and Bluetooth 3.0
ETL	UL/CSA 62368-1 UL 50E CSA C22.2 NO.94 UL/CSA 60950-22	4G01-A\4G01-B\4G01-C\4G03-A\4G05-A\4G06-A 4G01-D
CE	Directive 2014/53/EU as following standards: ETSI EN 301 489-1\17\52 EN 301908-1\13 ETSI EN 300 328	4G01-A with B42\B43 and Bluetooth 3.0 4G02-A with B3 and Bluetooth 3.0 4G03-A with B7\B38\B40 and Bluetooth 3.0 4G04-A with B3\B7\B20\B32 and Bluetooth 3.0 4G05-A with B1\B3\B7\B20\B28\B38\B40 and Bluetooth 3.0 4G05-B with B1\B3\B7\B20\B28\B38\B40 and Bluetooth 3.0 4G06-A with B7\B28\B42B43 and Bluetooth 3.0 4G17-A with B1\B3\B7\B20\B32 and Bluetooth 3.0
CB	Directive 2014/35/EU as following standards: EN/IEC 62368-1 EN/IEC 60950-22	4G01-A\4G02-A\4G03-A\4G04-A\4G05-A\4G05-B\4G06-A\4G17-A
RoHS	Directive 2011/65/EU and as amended	All models and types

See chapter 18 for FCC statements and label instructions.

16 Appendix A: Specifications

16.1 Specifications

Table 32 provides some specifications for the Nokia FastMile 4G Receiver.

Table 32 **Specifications for the Nokia FastMile 4G Receiver**

Item	Description
Dimensions	Compact multi-band models: 22.7 cm by 22.7 cm by 6.4 cm (8.94 in by 8.94 in by 2.52 in) Compact mono-band models: 23.5 cm by 23.5 cm by 5.2 cm (9.3 in by 9.3 in by 2 in) ABA models: 31.8 cm by 31.8 cm by 5.6 cm (12.5 in by 12.5 in by 2.2 in) High gain CBRS model: 31.8 cm by 31.8 cm by 7.0 cm (12.5 in by 12.5 in by 2.8 in)
Weight	Compact multi-band models: 0.88 kg (1.9 lb) Compact mono-band models: 1.3 kg (2.9 lb) ABA models: 2 kg (4.4. lb) High gain CBRS model: less than 1.5 kg (3.3 lb)
Power consumption	Maximum: 10 W Idle: 1.6 W
Operating altitude	Maximum operating altitude is 3048 m (10 000 ft) above mean sea level
Non-operating altitude	Maximum non-operating altitude is 12 192 m (40 000 ft) above mean sea level
Operating temperature	Compact mono-band and ABA models: • –30°C to 65°C (–22°F to 149°F) Compact multi-band models and High gain CBRS model: • Model 4G05-B: –40°C to 55°C (–40°F to 131°F) • High gain CBRS model and compact multi-band models other than Model 4G05-B: –30°C to 55°C (–22°F to 131°F)
Storage temperature	–40°C to 85°C (–85°F to 185°F)
Humidity	5% to 95% non condensing
IP rating	IP66 TYPE3

17 Appendix B: RF exposure

17.1 RF exposure

The international standards used for the assessment of this device provide simple conformity assessment methods for low power electronic and electrical equipment to an exposure limit relevant to electromagnetic fields (EMF).

Table 33 indicates RF exposure distances for each model for:

- CE based on the compliance criteria for maximum permissible exposure as in CE Council Recommendation Directive 2014/53/EU
- FCC based on the compliance criteria for maximum permissible exposure as in FCC 47

Table 33 **RF exposure distances**

Model	RF exposure distance	
	CE	FCC
4G01-A	50 cm (19.69 in)	20 cm (7.87 in)
4G01-B	50 cm (19.69 in)	50 cm (19.69 in)
4G01-C	N/A	50 cm (19.69 in)
4G01-D	N/A	20 cm
4G02-A	50 cm (19.69 in)	N/A
4G03-A	50 cm (19.69 in)	50 cm (19.69 in)
4G04-A	20 cm (7.87 in)	20 cm (7.87 in)
4G05-A	20 cm (7.87 in)	N/A
4G05-B	20 cm (7.87 in)	N/A
4G06-A	20 cm (7.87 in)	23 cm (9.06 in)
4G17-A	20 cm (7.87 in)	N/A

18 Appendix C: FCC statements and label instructions

18.1 FCC compliance statement

Table 34 provides the FCC ID for applicable models of the Nokia FastMile 4G Receiver.

Table 34 **FCC ID for applicable models of the Nokia FastMile 4G Receiver**

Model	FCC ID
4G01-A	2ADZR34003800FM20
4G01-B	2ADZR34003800FM201
4G01-C	2ADZR4G01C
4G01-D	2ADZR4G01D
4G03-A	2ADZR23002690FM20
4G05-A	2ADZR4G05A
4G06-A	2ADZR4G06A

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference, and

2) This device must accept any interference received, including Interference that may cause undesired operation.

18.2 FCC radiation exposure statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distances indicated in chapter 17 between the radiator and your body.

19 Glossary

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

3GPP 3rd Generation Partnership Project

ABA Automated Beam Alignment

ACS Auto Configuration Server

ANSI American National Standards Institute

AP Access Point

APN Access Point Name

BCL Band Combination List

CA Certificate Authority or Carrier Aggregation

CBRS Citizens Band Radio Service

CPI Certified Professional Installer

CRoHS China Restriction of Hazardous Substances

DL Downlink

DP Domain Proxy

DSCP Differentiated Services Code Point

DUID Device Unique Identifier

EARFCN E-UTRA Absolute Radio Frequency Channel Number

ECI External Call Interface

EPC Evolved Packet Core

E-UTRA Evolved Universal Terrestrial Radio Access

EIP Electronic Information Products

EMC Electromagnetic Compatibility

EMI Electromagnetic Interference

EPC Evolved Packet Core

ESD Electrostatic Discharge

ETL Electrotechnical Laboratory

ETSI	European Telecommunications Standards Institute
FCC	Federal Communications Commission
FDD	Frequency Division Duplex
FM	FastMile
HSS	Home Subscriber Server
IEEE	Institute of Electrical and Electronics Engineers
IMSI	International Mobile Subscriber Identity
IP	International Protection or Internet Protocol
IoT	Internet of Things
IPTV	Internet Protocol over Television
LAN	Local Area Network
LED	Light Emitting Diode
LTE	Long-Term Evolution
MAC	Media Access Control
MCC	Mobile Country Code
MCV	Maximum Concentration Value or Minimum Concentration Value
MIMO	Multiple-Input Multiple-Output
MME	Mobility Management Entity
MNC	Mobile Network Code
NEC	National Electrical Code
OAM	Operations and Maintenance
ODU	Out Door Unit
OPID	OPerator IDentity
PCI	Physical Cell Identifier
PCRF	Policy and Charging Rules Function
PDF	Portable Document Format
PDN	Public Distribution Network
PGW	PDN Gateway

PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PoE	Power over Ethernet
QCI	QoS Class Identifier
QoS	Quality of Service
QR	Quick Response
RF	Radio Frequency
RoHS	Restriction of Hazardous Substances
RSRP	Reference Signal Received Power
RSRQ	Reference Signal Received Quality
RSSI	Received Signal Strength Indicator
SIM	Subscriber Identify Module
SINR	Signal-to-Interference-plus-Noise Ratio
SUID	Set owner User ID
TCP	Transmission Control Protocol
TDD	Time Division Duplex
UDP	User Datagram Protocol
UL	Underwriters' Laboratories or Uplink
URL	Uniform Resource Locater
VDC	Volts Direct Current
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
WiFi	Wireless Fidelity

Customer Document and Product Support

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3TG-01505-AAAG-TCZZA