FastMile 2.1.04

Nokia FastMile 4G Gateway Product Overview

3TG-00743-ABEA-TCZZA

Issue: 02

May 2020

1 Preface

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

1.1 Summary of document issue changes

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

Issue 01 is the first issue of the document for this release of the FastMile 4G Receiver.

Issue 02 incorporated the following changes:

- replaced table in section 6.7 with two tables, and added indication to contact your Nokia representative for output power information that is not provided in the tables
- updated RF exposure information in section 16.1
- added chapter 17 as an appendix that has FCC statements and label instructions

1.2 Scope

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

1.3 Audience

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

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

For technical support, go to https://customer.nokia.com/support/s/

For ordering information, contact your Nokia sales representative.

1.7 Nokia quality processes

Nokia's FastMile 4G Gateway quality practices are in compliance with TL 9000 requirements.These requirements are documented in the Fixed Networks Quality Manual 3FQ-30146-6000-QRZZA. The quality practices adequately ensure that technical requirements and customer end-point requirements are met. 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 from the Nokia Documentation Center.

Procedure 1 To access a document on the Nokia Documentation Center

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

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

Log in as required.

2 Enter FastMile 4G Gateway 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 document 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 the Nokia FastMile 4G Gateway. 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**

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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**

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

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, from the following location:

- contact your Nokia representative for the link

2.3 Other environmental requirements

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

2.3.1 Environmental requirements

See section 2.3.5 for thermal limitations and see chapter 15 for information about temperature ranges for the Nokia FastMile 4G Gateway and other Nokia FastMile 4G Gateway specifications.

2.3.2 Storage

According to ETS 300-019-1-1 - Class 1.1, storage of the Nokia FastMile 4G Gateway 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 the Nokia FastMile 4G Gateway 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 the Nokia FastMile 4G Gateway must be in a temperature-controlled location with no condensation allowed.

2.3.5 Thermal limitations

The thermal limitations for the Nokia FastMile 4G Gateway are:

- operating temperature (ambient): 0°C to 40°C (32°F to 104°F)
- storage temperature (ambient): -40°C to 70°C (-40°F to 158°F)
- operating relative humidity: 5% to 85% relative humidity, non-condensing
- short-term relative humidity: 5% to 93% relative humidity, non-condensing

2.3.6 Material content compliance

European Union (EU) Directive 2011/65/EU and as amended, “Restriction of the use of certain Hazardous Substances” (RoHS), restricts the use of lead, mercury, cadmium, hexavalent chromium, and PBB,PBDE,DEHP,DBP,BBP,DIBP in electrical and electronic equipment. This Directive applies to electrical and electronic products placed on the EU market and effective from July 22 2019, with various exemptions, including an exemption for lead solder in network infrastructure equipment. Nokia products shipped to the EU after July 22 2019 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 and as amended 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, the Nokia FastMile 4G Gateway is subject to the applicable local legislations that implement the European Directive 2012/19/EU 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.

3 ETSI safety guidelines

This chapter provides information about the mandatory regulations that govern the installation and operation of the Nokia FastMile 4G Gateway 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 Gateway.

3.1.1 Safety instruction boxes

The safety instruction boxes are provided in the Nokia FastMile 4G Gateway 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 the Nokia FastMile 4G Gateway. It does not provide safety-related instructions.

3.1.2 Safety-related labels

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

Table 1 provides sample safety labels on the Nokia FastMile 4G Gateway

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 Gateway compliance with the European safety standards.

3.2.1 EMC compliance

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

- Electromagnetic compatibility of multimedia equipment - Emission requirements CISPR 32, EN 55032
- Electromagnetic compatibility of multimedia equipment - Immunity requirements CISPR 35, EN55035
- 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
- Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication and Mobile and portable (UE) radio and ancillary equipment; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU EN301489-52

3.2.2 Equipment safety standard compliance

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

- IEC 62368-1, Audio/video, information and communication technology equipment - Part 1: Safety requirements
- IEC 60950-1, Information technology equipment Safety- Part 1: General requirements

3.2.3 Environmental standard compliance

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

3.2.4 Laser product standard compliance

The Nokia FastMile 4G Gateway is not a laser product.

3.3 Electrical safety guidelines

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

The Nokia FastMile 4G Gateway 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 Gateway:

- All cables must be approved by the relevant national electrical code.
- The Nokia FastMile 4G Gateway must be used with the cabling supplied with the equipment.

3.3.3 Protective earth

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

3.4 ESD safety guidelines

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

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

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

3.5 Environmental requirements

The environmental requirements for the Nokia FastMile 4G Gateway are:

- operating temperature (ambient): 0°C to 40°C (32°F to 104°F)
- storage temperature (ambient): -40°C to 70°C (-40°F to 158°F)
- operating relative humidity: 5% to 85% relative humidity, non-condensing
- short-term relative humidity: 5% to 93% relative humidity, non-condensing

See chapter 15 in this guide for more information about the Nokia FastMile 4G Gateway and for other Nokia FastMile 4G Gateway specifications.

4 ANSI safety guidelines

This chapter provides information about the mandatory regulations that govern the installation and operation of the Nokia FastMile 4G Gateway 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 Gateway.

4.1.1 Safety instruction boxes in customer documentation

The safety instruction boxes are provided in the Nokia FastMile 4G Gateway 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.

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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 the Nokia FastMile 4G Gateway. It does not provide safety-related instructions.

4.1.2 Safety-related labels

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

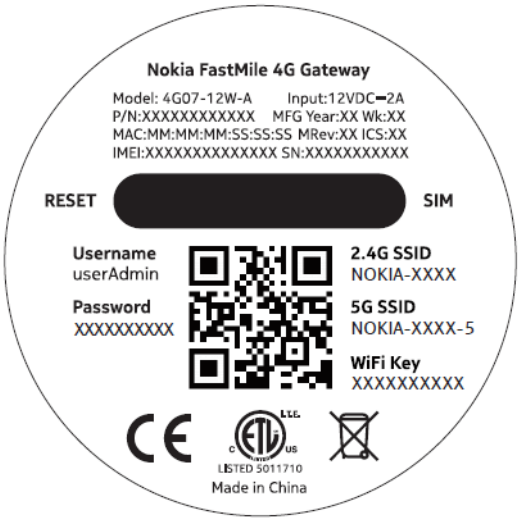
Table 2 provides examples of the text in the various Nokia FastMile 4G Gateway safety labels.

Table 2 **Safety labels**

Description	Label text
ETL compliance	ETL/cETL
ESD warning	Caution: This assembly contains electrostatic sensitive device.

Figure 4 shows a sample safety label, using the Model 4G07-12W-A as the example (safety labels for other models are similar).

Figure 4 **Sample safety label**



4.2 Safety standards compliance

This section describes the Nokia FastMile 4G Gateway 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 Gateway 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, Part 15.255

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 Gateway 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

4.3 Electrical safety guidelines

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

Note — The Nokia FastMile 4G Gateway 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 Gateway:

- All cables must be approved by the relevant national electrical code.
- If cabling is supplied with the Nokia FastMile 4G Gateway, the supplied cabling must be used with the equipment.

4.3.3 Protective earth

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

4.4 ESD safety guidelines

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

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

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

4.5 Environmental requirements

The environmental requirements for the Nokia FastMile 4G Gateway are:

- operating temperature (ambient): 0°C to 40°C (32°F to 104°F)
- storage temperature (ambient): -40°C to 70°C (-40°F to 158°F)
- operating relative humidity: 5% to 85% relative humidity, non-condensing
- short-term relative humidity: 5% to 93% relative humidity, non-condensing

See chapter 15 in this guide for more information about the Nokia FastMile 4G Gateway and for other Nokia FastMile 4G Gateway specifications.

5 Product overview

5.1 Overview of the Nokia FastMile 4G Gateway

The Nokia FastMile 4G Gateway is an indoor device used in the Nokia FastMile 4G solution.

The Nokia FastMile 4G Gateway functions as a fully-self contained, full-featured residential gateway to help operators capitalize on the growing 4G market. The solution delivers a single, indoor device that is easy to deploy and can connect wirelessly to the mobile network. With carrier aggregation, the gateway improves performance and reliability by using the best LTE signals available. The plug-and-play solution is simple to install and uses visual signal strength indicators to help customers identify the right location in the home that will achieve the best performance. Compatibility with the Nokia in-home WiFi solution ensures a seamless ultra-broadband experience is achieved in every corner of the home.

On the WAN side, the Nokia FastMile 4G Gateway supports network termination for LTE through a <= 4 dBi gain antenna. A 3FF/micro SIM card is required. LEDs on the top of the unit indicate LTE signal strength.

On the LAN side, the Nokia FastMile 4G Gateway provides the following subscriber interfaces:

- Nokia WiFi (2x2 802.11b/g/n, 2x2 802.11ac MU-MIMO)
- Gigabit Ethernet (two ports) for connection of end user equipment
- POTS (one port) for connection of traditional telephone service

The Nokia FastMile 4G Gateway is available in the following models:

- 4G07-12W-A
- 4G08-12W-A

The Nokia FastMile 4G Gateway has integrated antenna and LTE modem that provide the LTE broadband access to the mobile network.

The Nokia FastMile 4G Gateway is intended for indoor use. See chapter 15 for specifications of the Nokia FastMile 4G Gateway.

The Nokia FastMile 4G Gateway has the following main functions:

- multiband Omni antenna for LTE
- integrated residential gateway

6 Functional overview

6.1 Overview

The Nokia FastMile 4G Gateway provides wireless broadband access in the form of LTE to meet the ever growing network needs of end users. The Nokia FastMile 4G Gateway is an indoor device that provides residential gateway functionality to let operators use LTE to offer fixed wireless broadband to their customers.

The Nokia FastMile 4G Gateway is easy to install and is user-friendly to operate, and can be managed by a web UI or remotely as described below.

6.1.1 Web UI

The Nokia FastMile 4G Gateway supports local management capability through a web UI that can be accessed through a PC, laptop, or tablet that has an Ethernet LAN connection or a Nokia WiFi connection to the Nokia FastMile 4G Gateway.

The web UI can be accessed via a dedicated static IP address that depends on the OPID. It is recommended not to change or reconfigure the Nokia FastMile 4G Gateway static IP for the web UI, since changing the default IP address would impede access to the web UI.

Web UI functionality is optimized for the Chrome browser (74.0.3729 or greater), but is not restricted to it.

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

See chapter 13 in this document for information about using the web UI to manage the Nokia FastMile 4G Gateway.

6.1.2 Remote management

The Nokia FastMile 4G Gateway supports remote management capability, allowing management and health monitoring of it from an ACS through TR-069.

6.2 LTE characteristics

The following are some of the key LTE characteristics of the Nokia FastMile 4G Model 4G07-12W-A Gateway:

- DL 4x4 MIMO 2CA 64 QAM: B1, B3, B7, B32, B40, B41, B42, B43
- DL 2x2 MIMO 256 QAM: B20
- UL SISO 2CA 64 QAM
- DL 2 carrier aggregation between supported bands
- UL 2 carrier aggregation between supported bands
- see section 12.3 for details about supported CA combinations

The following are some of the key LTE characteristics of the Nokia FastMile 4G Model 4G08-12W-A Gateway:

- Multiband Omni antenna for LTE B28/5 (0 dBi), B2/25/4/66/7/38/41/42/43/48 (<= 4 dBi) (the value of the antenna peak gain depends on the supported country and frequency bands)
- DL 4x4 MIMO 2CA 64QAM for bands B2/25, B4/66, B7, B38, B41, B42, B43
- DL 2x2 MIMO 256 QAM: B28,5
- DL 2 carrier aggregation between supported bands
- see section 12.3 for details about supported CA combinations

6.3 Data forwarding

The Nokia FastMile 4G Gateway supports the following data forwarding methods:

Table 3 **Data forwarding methods supported by the Nokia FastMile 4G Gateway**

Forwarding mode	Typical use
Tunnel mode	Can be used for using tunnel for L2 forwarding such as PPPoE

6.4 Ethernet characteristics

The Nokia FastMile 4G Gateway provides two Gigabit Ethernet interfaces on the LAN side that have RJ45 connectors for connection of end user equipment. Both ports support 1000Base-T Ethernet.

6.5 Voice support characteristics

The Nokia FastMile 4G Gateway provides a POTS interface through an RJ11 port to connect traditional telephone service, including TR104 voice management and VoIP services.

Table 4 describes the SIP services supported by the Nokia FastMile 4G Gateway.

Table 4 **Supported SIP services**

Service	Description
Basic call	Basic calling functions
Emergency number (911)	Basic 911 support
Caller ID	Delivery of calling party number and name Caller ID
Call Hold	Basic hold (flash hook supported)
Call Waiting	Basic call waiting Delivery of calling number and name Cancel call waiting Activate/deactivate/interrogate call waiting
Call Transfer	Call parties in a 3-way conference are joined together at an ONT
DTMF	RFC2833 Inband INFO based
Direct connect (Hot Line)	Configurable directory number is called automatically when a subscriber goes off hook
Direct connect (Warm Line)	Configurable directory number is called automatically when a subscriber goes off hook and does not dial before the initial digit timeout period
Distinctive ringing	Outside call alerting
Message waiting indication (MWI)	Audible and visual MWI when a subscriber has voice mail message waiting, including: • Reminder ring • Stutter dial tone • Visual MWI

6.6 Power supply characteristics

The Nokia FastMile 4G Gateway is supplied with a power adapter that converts AC power into 12 VDC.

See section 11.1 for power information.

6.7 Output power

This section provides some output power information for the Nokia FastMile 4G Gateway. Contact your Nokia representative for output power information that is not provided in the following tables:

- Table 5 provides output power for the 4G07-12W-A
- Table 6 provides output power for the 4G08-12W-A

Table 5 **Output power for the 4G07-12W-A 4G Gateway**

Radio	Band	Power (dBm)
4G LTE	1	23+/-2.7 (transmit power)
	3	23+/-2.7 (transmit power)
	7	23+/-2.7 (transmit power)
	20	23+/-2.7 (transmit power)
	40	23+/-2.7 (transmit power)
	41	23+/-2.7 (transmit power)
	42	23 +3/-4 (transmit power)
	43	23 +3/-4 (transmit power)

Table 6 **Output power for the 4G08-12W-A 4G Gateway**

Radio	Band	Power (dBm)
4G LTE	5	23+/-2.7 (transmit power)
	7	23+/-2.7 (transmit power)
	25	23+/-2.7 (transmit power)
	2	23+/-2.7 (transmit power)
	38	23+/-2.7 (transmit power)
	4	23+/-2.7 (transmit power)
	66	23+/-2.7(transmit power)
	48	18+3/-4 (transmit power)
	28	23+2.7/-3.2 (transmit power)
	42	23 +3/-4 (transmit power)
	43	23 +3/-4 (transmit power)

7 Model overview

7.1 Models of the Nokia FastMile 4G Gateway

Table 7 describes the E-UTRA band and frequency support and the antenna configuration for the Nokia FastMile 4G Gateway.

Table 7 **Models of the Nokia FastMile 4G Gateway**

Model	E-UTRA band support and frequencies	Antenna configuration
4G07-12W-A	• LTE B20 (0 dBi) • B1/3/32/40/7/41/42/43 (4 dBi)	Integrated
4G08-12W-A	• LTE B28/5 (0 dBi) • B2/25/4/66/7/38/41/42/43/48 (4 dBi)	Integrated

7.1.1 Label information

Table 8 describes the label information for the Nokia FastMile 4G Gateway.

Table 8 **Label information for the Nokia FastMile 4G Gateway**

Model	Product details
4G07-12W-A	FastMile 4G Gateway
4G08-12W-A	FastMile 4G Gateway

8 Physical interfaces

8.1 Physical interfaces of the FastMile 4G Gateway

Interfaces for the FastMile 4G Gateway are located on the top, side, and underside of the unit.

The FastMile 4G Gateway has multicolor LEDs located on the top of the unit. See chapter 10 for information about the LEDs.

The following physical interfaces are located on the side of the FastMile 4G Gateway:

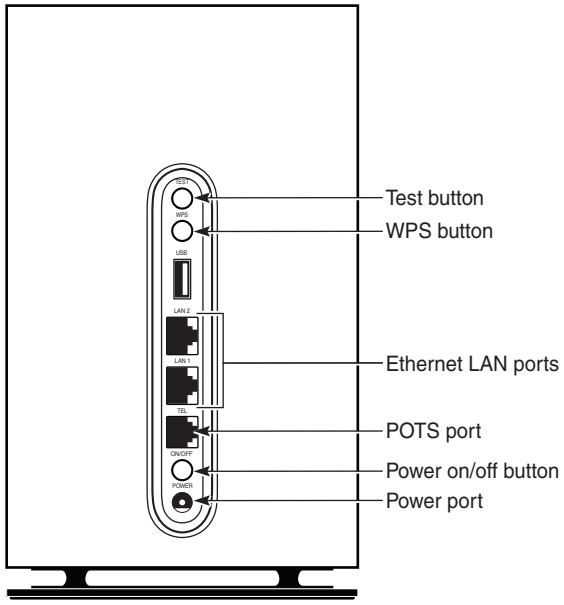
- test button (pressing the button starts measurement of the strength of the LTE signal)
- WPS button (pressing the button starts the WiFi Protected Setup when adding WiFi devices that support WPS)
- two RJ45 LAN ports (LAN1 and LAN2) that can be used:
  - to connect up to two Gigabit Ethernet LANs (both are supported while the Nokia WiFi is working)
  - for local management of the Nokia FastMile 4G Gateway through a locally-connected PC (local management can also be done through the Nokia WiFi)
- one RJ11 POTS port (TEL) for traditional telephone
- power on/off button
- one 12 VDC power input port

The FastMile 4G Gateway has the following physical interfaces on the underside of the unit:

- slot for SIM card; see chapter 9 for information about the SIM card and the SIM card slot
- a reset button located on the underside of the unit (pressing the button for less than 10 seconds reboots the Nokia FastMile 4G Gateway; pressing the button for 10 seconds or more restores the Nokia FastMile 4G Gateway to its factory defaults)

Figure 5 shows the location of the physical interfaces on the side of the Nokia FastMile 4G Gateway.

Figure 5 **Location of physical interfaces on the side of the Nokia FastMile 4G Gateway**



9 SIM card

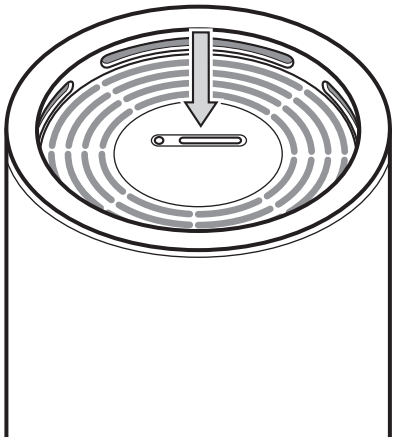
9.1 SIM card information for the FM 4G Gateway

An appropriate 3FF/micro SIM card must be installed in the Nokia FastMile 4G Gateway to allow the Nokia FastMile 4G Gateway to connect to the LTE network.

The SIM card slot on the Nokia FastMile 4G Gateway is located on the underside of the unit.

Figure 6 shows the SIM card slot.

Figure 6 **SIM card slot**



The Nokia FastMile 4G Gateway Installation Guide provides detailed steps for inserting the SIM card.The Nokia FastMile 4G Gateway is supplied with a SIM tray push pin to help when inserting the SIM card.

10 LEDs

10.1 LED information for the Nokia Fastmile 4G Gateway

The Nokia FastMile 4G Gateway has the following LEDs on the top of the unit as shown in Figure 7:

- a center LED:
  - multicolor LED that lights solid green when the FastMile 4G Gateway attaches to an LTE network
  - see Table 9 for a detailed description of the behavior of the center LED
- three LEDs that show the LTE signal strength for five seconds when the test button is pressed:
  - one lit LED means that the LTE signal is weak
  - two lit LEDs means that the LTE signal is medium
  - three lit LEDs means that the LTE signal is strong

Figure 7 **Location of LEDs on the Nokia FastMile 4G Gateway**

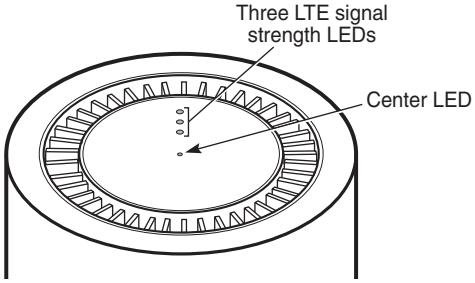


Table 9 **Behavior of the center LED**

LED color	LED behavior and description
White	If WPS is enabled: • Slow pulse: WPS Mode Enabled/ establishing backhaul link; if LED stops pulsing after two minutes without a fast pulse, the WPS/backhaul link setting up failed • Fast pulse for three seconds: WPS Successful/backhaul link established

(1 of 2)

LED color	LED behavior and description
Red	Alarm: • Blinking: critical alarm • Solid: minor or major alarm • Off: no alarm
Green	Procedure state: • Blinking: start up • Solid: FastMile 4G Gateway is attached to an LTE network

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11 Power information

11.1 Power information for the Nokia FastMile 4G Gateway

The Nokia FastMile 4G Gateway receives power though a supplied power adapter that provides connection of the Nokia FastMile 4G Gateway to AC power.

See section 12.4 for power consumption information.

12 Performance information

12.1 Performance overview

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

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

12.2 Throughput information

Table 10 provides LTE throughput information for the Nokia FastMile 4G Gateway.

Table 10 **LTE throughput information**

Mode	UDP DL (2CA)	TCP DL (2CA)	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: FDD inter-band 2CA
- Uplink: single carrier 64 QAM
- 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 Gateway 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 Gateway.

12.3 Carrier aggregation information

This section provides tables that provide information about carrier aggregation supported by the Nokia FastMile 4G Gateway:

- Table 11 provides information about carrier aggregation supported by Model 4G07-12W-A
- Table 12 provides information about carrier aggregation supported by Model 4G08-12W-A

Table 11 **Carrier aggregation support for Model 4G07-12W-A (4*4 MIMO downlink with SISO uplink)**

Index	Download		Uplink	
	PCC	SCC	PCC	SCC
1	20A	32A		
2	20A	42A		
3	42A	20A		
4	20A	43A		
5	43A	20A		
6	1A	3A		
7	3A	1A		
8	1A	7A		
9	7A	1A		
10	1A	20A		
11	20A	1A		
12	1A	32A		
13	1A	41A		
14	41A	1A		
15	1A	42A		
16	42A	1A		
17	1A	43A		

(1 of 4)

Index	Download		Uplink	
	PCC	SCC	PCC	SCC
18	43A	1A		
19	3A	7A		
20	7A	3A		
21	3A	20A		
22	20A	3A		
23	3A	32A		
24	3A	40A		
25	40A	3A		
26	3A	41A		
27	41A	3A		
28	3A	42A		
29	42A	3A		
30	3A	43A		
31	43A	3A		
32	7A	20A		
33	20A	7A		
34	7A	32A		
35	7A	42A		
36	42A	7A		
37	7A	43A		
38	43A	7A		
39	42A	32A		
40	42A	43A		
41	43A	42A		
42	43A	32A		
43	40C			
44	41C			
45	42C			
46	43C			
47	20A	42A	20A	42A
48	42A	20A	42A	20A
49	20A	43A	20A	43A
50	43A	20A	43A	20A

(2 of 4)

Index	Download		Uplink	
	PCC	SCC	PCC	SCC
51	1A	3A	1A	3A
52	3A	1A	3A	1A
53	1A	7A	1A	7A
54	7A	1A	7A	1A
55	1A	20A	1A	20A
56	20A	1A	20A	1A
57	1A	41A	1A	41A
58	41A	1A	41A	1A
59	1A	42A	1A	42A
60	42A	1A	42A	1A
61	1A	43A	1A	43A
62	43A	1A	43A	1A
63	3A	7A	3A	7A
64	7A	3A	7A	3A
65	3A	20A	3A	20A
66	20A	3A	20A	3A
67	3A	40A	3A	40A
68	40A	3A	40A	3A
69	3A	41A	3A	41A
70	41A	3A	41A	3A
71	3A	42A	3A	42A
72	42A	3A	42A	3A
73	3A	43A	3A	43A
74	43A	3A	43A	3A
75	7A	20A	7A	20A
76	20A	7A	20A	7A
77	7A	42A	7A	42A
78	42A	7A	42A	7A
79	7A	43A	7A	43A
80	43A	7A	43A	7A
81	42A	43A	42A	43A
82	43A	42A	43A	42A
83	40C		40C	

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Index	Download		Uplink	
	PCC	SCC	PCC	SCC
84	41C		41C	
85	42C		42C	
86	43C		43C	

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Table 12 Carrier aggregation support for Model 4G08-12W-A(4*4 MIMO downlink) (B5,28 support 2*2 MIMO only)

Index	Downlink	
	PCC	SCC
1	28A	4A
2	4A	28A
3	28A	7A
4	7A	28A
5	28A	66A
6	66A	28A
7	28A	42A
8	42A	28A
9	28A	43A
10	43A	28A
11	66A	2A
12	2A	66A
13	66A	7A
14	7A	66A
15	66A	25A
16	25A	66A
17	66A	28A
18	28A	66A
19	66A	41A
20	41A	66A
21	66A	42A
22	42A	66A
23	66A	43A
24	43A	66A

(1 of 3)

Index	Downlink	
	PCC	SCC
25	4A	2A
26	2A	4A
27	4A	7A
28	7A	4A
29	4A	25A
30	25A	4A
31	4A	28A
32	28A	4A
33	4A	42A
34	42A	4A
35	25A	7A
36	7A	25A
37	25A	38A
38	38A	25A
39	25A	41A
40	41A	25A
41	25A	42A
42	42A	25A
43	2A	7A
44	7A	2A
45	2A	25A
46	25A	2A
47	2A	38A
48	38A	2A
49	2A	41A
50	41A	2A
51	2A	42A
52	42A	2A
53	7A	42A
54	42A	7A
55	7A	43A
56	43A	7A
57	38A	42A

(2 of 3)

Index	Downlink	
	PCC	SCC
58	42A	38A
59	42A	43A
60	43A	42A
61	48A	41A
62	41A	48A
63	48A	66A
64	66A	48A
65	28C	
66	5B	
67	66C	
68	4C	
69	25C	
70	2C	
71	7C	
72	41C	
73	38C	
74	42C	
75	43C	
76	48C	

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12.4 Power consumption information

Table 13 provides power consumption information for the Nokia FastMile 4G Gateway.

Table 13 **Power consumption information**

Condition	Power consumption
Maximum power output	20 w
Idle power (standby)	8 w

13 Management using the Web UI

13.1 Getting started

You can configure the Nokia FastMile 4G Gateway locally through a web-based UI that opens on a PC, laptop, or tablet that has an Ethernet LAN connection or a Nokia WiFi connection to the Nokia FastMile 4G Gateway.

Note — Refer to the *Nokia FastMile 4G Gateway Customer Release Notes* before configuring the Nokia FastMile 4G Gateway.

Section 13.2 describes how to establish the connection to the Nokia FastMile 4G Gateway, and how to log in to the web-based UI.

13.2 Logging in

Use the procedure below to establish the connection from a PC, laptop, tablet, or smart phone, or through a Nokia WiFi connection, to the Nokia FastMile 4G Gateway, and log in to the web-based UI of the Nokia FastMile 4G Gateway.

You will need a username and password in order to log in to the web-based UI of the FastMile 4G Gateway:

- the username and password on the underside of the FastMile 4G Gateway can be used if you will be logging in to the unit as an end user; the username and password may have been recorded from the underside of the unit as described in the *Nokia FastMile 4G Gateway Installation Guide*
- refer to the *Nokia FastMile 4G Gateway Customer Release Notes* for information about the username and password to use if you will be logging in to the Nokia FastMile 4G Gateway as a superuser

You will also need to know the IP address to use to access the web-based UI. Refer to the *Nokia FastMile 4G Gateway Customer Release Notes* for IP address details.

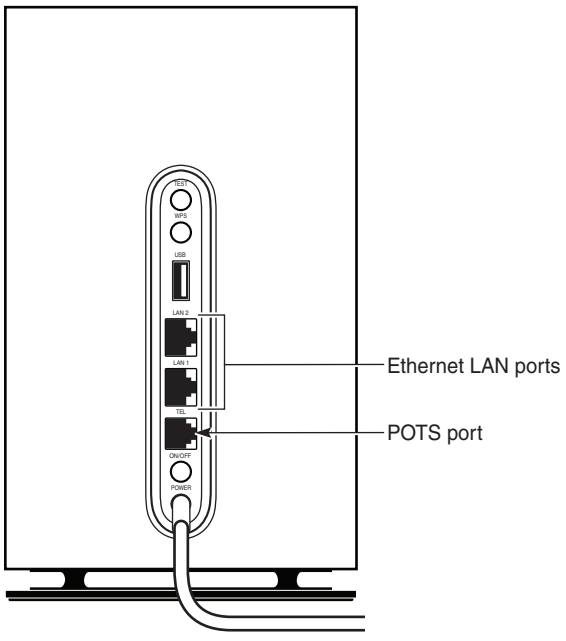
Procedure 5 Log in to the web-based UI

Use this procedure to log in to the web-based UI of the Nokia FastMile 4G Gateway.

1 Connect your PC, laptop, or tablet through one of the RJ45 Gigabit Ethernet LAN ports on the side of the Nokia FastMile 4G Gateway or establish a Nokia WiFi connection from your device to the Nokia FastMile 4G Gateway, and make sure that the Local Area Connection setting for your device is configured as “Obtain an IP address automatically”.

Figure 8 shows the location of the Gigabit Ethernet LAN ports.

Figure 8 **Location of the Gigabit Ethernet LAN ports**



2 Open a web browser through your device and enter the IP address in the address bar of the web browser.

The Login window for the Nokia FastMile 4G Gateway appears.

3 Enter the username and password in the Login window and click on Login.

The Device Information screen of the Status menu appears when the login is complete, with the top-level menu of the Nokia FastMile 4G Gateway shown along the left side of the window.

Figure 9 shows an example of the top-level menu of the Nokia FastMile 4G Gateway with Status > Device Information.

Figure 9 **Example of the top-level menu of the Nokia FastMile 4G Gateway with Status > Device Information**

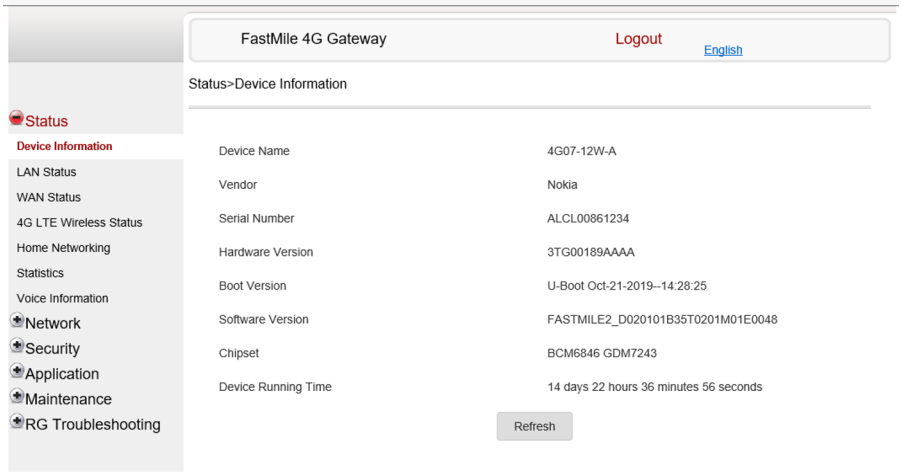


Table 14 indicates the sections in this chapter that provide procedures for the types of tasks supported through the top-level menu of the Nokia FastMile 4G Gateway.

Table 14 **Types of tasks**

Type of task	See section
Viewing status information	13.3
Configuring network parameters	13.4
Configuring security parameters	13.5
Configuring application parameters	13.6
Performing maintenance tasks	13.7
Performing residential gateway troubleshooting	13.8

4 STOP. This procedure is complete.

13.3 Viewing status information

You can use the web-based UI of the Nokia FastMile 4G Gateway to view the following status information:

- device information (see Procedure 6)
- LAN status information (see Procedure 7)
- WAN status information (see Procedure 8)
- 4G LTE wireless status information (see Procedure 9)
- home networking information (see Procedure 10)
- statistics (see Procedure 11)
- voice information (see Procedure 12)

Procedure 6 View device information

Use this procedure to view device information for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Status > Device Information from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Click Refresh to update the displayed information.

4 STOP. This procedure is complete.

Procedure 7 View LAN status information

Use this procedure to view Nokia WiFi and Ethernet LAN status information for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Status > LAN Status from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Click Refresh to update the displayed information.

4 STOP. This procedure is complete.

Procedure 8 View WAN status information

Use this procedure to view cellular WAN status information for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Status > WAN Status from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Select WAN mode from the WAN connection list.

4 Click Refresh to update the displayed information.

5 STOP. This procedure is complete.

Procedure 9 View 4G LTE wireless status information

Use this procedure to view 4G LTE wireless status information for the Nokia FastMile 4G Gateway. Note that values for RSRP, RSRQ, RSSI and CINR are not provided for Secondary Cells in this release.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Status > 4G LTE Wireless Status from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Click Refresh to update the displayed information.
4. STOP. This procedure is complete.

Procedure 10 View home networking information

Use this procedure to view home networking information for the Nokia FastMile 4G Gateway, or to delete a particular local device.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Status > Home Networking from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Click Refresh to update the displayed information.
4. STOP. This procedure is complete.

Procedure 11 View statistics

Use this procedure to view statistics for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Status > Statistics from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3	Click on the tabs to display LAN, WAN, or WLAN statistics.
4	Click Refresh to update the displayed information.
5	STOP. This procedure is complete.

Procedure 12 View voice information

Use this procedure to view voice information.

1	If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2	Select Status > Voice Information from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3	Click Refresh to update the displayed information.
4	STOP. This procedure is complete.

13.4 Configuring network parameters

You can use the web-based UI of the Nokia FastMile 4G Gateway to do the following:

- configure LAN parameters (see Procedure 13)
- configure the WAN connection (see Procedure 14)
- configure the white cell list (see Procedure 15)
- view available cell information (see Procedure 16)
- configure wireless 2.4 GHz parameters (see Procedure 17)
- configure wireless 5 GHz parameters (see Procedure 18)
- configure wireless scheduling (see Procedure 19)
- configure IP routing (see Procedure 20)
- configure DNS (see Procedure 21)
- configure TR-069 (see Procedure 22)
- configure QoS (see Procedure 23)

Procedure 13 Configure LAN parameters

Use this procedure to configure LAN parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > LAN from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Configure the LAN parameters.
4. Click Save.
5. Bind a MAC address to the LAN by entering the MAC and IP addresses in the Static DHCP Entry fields and then clicking Add. Repeat for all MAC addresses to be bound.
6. STOP. This procedure is complete.

Procedure 14 Configure WAN connection parameters

Use this procedure to configure WAN connection parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > WAN Connection from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Configure WAN connection parameters.
4. Click Save/Apply.
5. STOP. This procedure is complete.

Procedure 15 Configure the white cell list

Use this procedure to configure the white cell list for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > White Cell from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Configure white cell list values.
4. STOP. This procedure is complete.

Procedure 16 View available cell information

Use this procedure to view available cell information for the Nokia FastMile 4G Gateway.

Caution — This procedure disconnects the Nokia FastMile 4G Gateway from the WAN. The length of the scan will depend on the wireless environment; it might take about 15 to 30 seconds per band. The Nokia FastMile 4G Gateway automatically re-connects when the scan is finished.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > Available Cell from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Click Scan to start the scan. Note that this disconnects the Nokia FastMile 4G Gateway from the WAN.
4. Click Refresh to display the available cell information.
5. STOP. This procedure is complete.

Procedure 17 Configure wireless 2.4 GHz parameters

Use this procedure to configure wireless 2.4 GHz parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > Wireless (2.4GHz) from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Configure the wireless 2.4 GHz parameters, including enabling and configuring WPS if appropriate.

   If you have enabled and configured WPS, click WPS connect.
4. Click Save.
5. STOP. This procedure is complete.

Procedure 18 Configure wireless 5 GHz parameters

Use this procedure to configure wireless 5 GHz parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > Wireless (5GHz) from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Configure the wireless 5 GHz parameters, including enabling and configuring WPS if appropriate.

   If you have enabled and configured WPS, click WPS connect.
4. Click Save.
5. STOP. This procedure is complete.

Procedure 19 Configure wireless scheduling parameters

Use this procedure to configure wireless scheduling parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > Wireless Schedule from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Select the Schedule Function check box to turn the wireless signal off for the configured period.
4. Click ADD to add a scheduling rule.

   A separate panel appears for configuring wireless schedule rules.
5. Enter a start time and an end time for the period for which you want the wireless signal to be off.
6. Choose Everyday or Individual Days from the drop-down menu.
7. If you chose Individual Days, select the check boxes for the desired days.

   The Recurrence Pattern shows the rules created to date.
8. Click SAVE CHANGES.
9. STOP. This procedure is complete.

Procedure 20 Configure IP routing parameters

Use this procedure to configure IP routing parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > IP Routing from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Configure the IP routing parameters.

4 Click ADD.

5 STOP. This procedure is complete.

Procedure 21 Configure DNS parameters

Use this procedure to configure DNS parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Network > DNS from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Enter the domain name and IP address, and click ADD.

4 If required, associate an origin domain with a new domain, and click Add.

5 STOP. This procedure is complete.

Procedure 22 Configure TR-069 parameters

Use this procedure to configure TR-069 parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Network > TR-069 from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure TR-069 parameters by entering the required information.

4 Click SAVE.

5 STOP. This procedure is complete.

Procedure 23 Configure QoS parameters

Use this procedure to configure QoS parameters for the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Network > QoS Config from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Choose a QoS type from the Type drop-down menu.
4. Configure the QoS policy.
5. Click Add.
6. STOP. This procedure is complete.

13.5 Configuring security parameters

You can use the web-based UI of the Nokia FastMile 4G Gateway to configure parameters for the following:

- firewall security level (see Procedure 24)
- MAC filter (see Procedure 25)
- IP filter (see Procedure 26)
- URL filter (see Procedure 27)
- parental control (see Procedure 28)
- DMZ and ALG (see Procedure 29)
- access control level (see Procedure 30)

Procedure 24 Configure the firewall security level

Firewall security applies only to services provided by the Nokia FastMile 4G Gateway. Internet access from the LAN side is not affected by the firewall.

The following firewall security levels can be configured for the Nokia FastMile 4G Gateway:

- off:
  - no firewall security is in effect

- low:
  - the following pre-routing is supported: port forwarding, DMZ, host application, and host drop
  - the following application services are supported: DDNS, DHCP, DNS, H248, IGMP, NTP client, SSH, Telnet, TFTP, TR-069, and VoIP
  - the following types of ICMP messages are permitted: echo request and reply, destination unreachable, and TTL exceeded. Other types of ICMP messages are blocked.
  - DNS proxy is supported from LAN to WAN but not from WAN to LAN
- high:
  - pre-routing and application services are not supported
  - UDP Port 8000 can be used to access the services, for example FTP can use 8021 and Telnet can use 8023. Regular UDP cannot be used.
  - RG access is permitted via the LAN side but not via the WAN side.

Note that the access control level configured in Procedure 30 takes precedence over the firewall policy configured in this procedure.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > Firewall from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the firewall security level, and enable or disable attack protection

4 Click Save.

5 STOP. This procedure is complete.

Procedure 25 Configure MAC filter parameters

Use this procedure to configure MAC filter parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > MAC Filter from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure a MAC filter for the Ethernet interface.

4 Click Save.

5 If desired, select a MAC address or click the Delete column to delete a MAC address.

6 Click Refresh to update the information.

7 Configure a MAC filter for WiFi SSID (WLAN MAC filter).

8 Click Save.

9 STOP. This procedure is complete.

Procedure 26 Configure IP filter parameters

Use this procedure to configure IP filter parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > IP Filter from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the IP filter parameters.

4 Click Add.

5 STOP. This procedure is complete.

Procedure 27 Configure URL filter parameters

Use this procedure to configure URL filter parameters for the Nokia FastMile 4G Gateway. Note that you cannot use URL filtering for HTTPS because the URL is encrypted when using HTTPS.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > URL Filter from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the URL filter parameters.

4 Click Add Filter.

5 STOP. This procedure is complete.

Procedure 28 Configure parental control parameters

Use this procedure to configure parental control parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > Parental Control from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Select the Access Control check box.

4 Click the plus sign (+) to add a policy.

A separate panel appears for configuring the policy name, IP address of the device, and dates and times for the policy.

5 Configure the parental control policy.

6 Click Enable to activate the policy.

7 STOP. This procedure is complete.

Procedure 29 Configure DMZ and ALG parameters

Use this procedure to configure DMZ and ALG parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > DMZ and ALG from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the ALG parameters.

4 Click Save ALG.

5 Configure the DMZ parameters.

6 Click Save DMZ.

7 STOP. This procedure is complete.

Procedure 30 Configure access control level parameters

Use this procedure to configure access control level parameters for the Nokia FastMile 4G Gateway. Note that the access control level takes precedence over the firewall policy configured in Procedure 24.

Note that the trusted network object will be shared for all WAN connections; it is not applied individually to a WAN connection.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Security > Access Control from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Select a WAN connection from the drop-down menu.

4 Click to enable or disable Trusted Network.

5 Select an access control level for each of the protocols (ICMP, Telnet, SSH, HTTP, TR-069, and HTTPS) for both the WAN side and the LAN side.

6 Click Save.

7 If required, add one or more subnet trusted networks; the maximum number of entries is 32.

You can also use the Source IP fields to delete a previously created entry for a subnet trusted network.

8 STOP. This procedure is complete.

13.6 Configuring application parameters

You can use the web-based UI of the Nokia FastMile 4G Gateway to configure the parameters for the following:

- port forwarding (see Procedure 31)
- port triggering (see Procedure 32)
- DDNS (see Procedure 33)
- enable NTP service (see Procedure 34)
- USB (see Procedure 35)
- voice setting (see Procedure 36)

Procedure 31 Configure port forwarding parameters

Use this procedure to configure port forwarding parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Application > Port Forwarding from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the port forwarding parameters.

4 Click Add.

5 Click Save.

6 STOP. This procedure is complete.

Procedure 32 Configure port triggering parameters

Use this procedure to configure port triggering parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Application > Port Triggering from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the port triggering parameters.

4 Click Add.

5 STOP. This procedure is complete.

Procedure 33 Configure DDNS parameters

Use this procedure to configure DDNS parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Application > DDNS from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the DDNS parameters.

4 Click Save.

5 STOP. This procedure is complete.

Procedure 34 Enable NTP service

Use this procedure to enable NTP service for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Application > NTP from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Select the Enable NTP Service checkbox to enable NTP service, and configure parameters for NTP service

4 Click Save.

5 STOP. This procedure is complete.

Procedure 35 Configure USB parameters

The USB port is only for Nokia internal use.

Procedure 36 Configure voice parameters

Use this procedure to set voice parameters for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Application > Voice Setting from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the voice parameters.

4 Click Save.

5 STOP. This procedure is complete.

13.7 Performing maintenance tasks

You can use the web-based UI of the Nokia FastMile 4G Gateway to do the following:

- change the password (see Procedure 37)
- configure an alias for a host (Device Management) (see Procedure 38)
- do a backup or restore of the configuration file (see Procedure 39)
- upgrade firmware (see Procedure 40)
- reboot the Nokia FastMile 4G Gateway (see Procedure 41)
- restore the Nokia FastMile 4G Gateway to factory default settings (see Procedure 42)

- perform diagnostics (see Procedure 43)
- view logs (see Procedure 44)

Procedure 37 Change the password

Use this procedure to change the password for the Nokia FastMile 4G Gateway.

The password must adhere to the following rules:

- the password may consist of uppercase letters, lowercase letters, digital numbers, and the following special characters ! # + , - / @ _ : =]
- the password length must be between eight and 24 characters
- the first character must be a digital number or a letter
- the password must contain at least two types of characters: numbers, letters, or special characters
- the same character must not appear more than eight times in a row

When the password meets the password rules, the application displays the message “Your password has been changed successfully”.

If the password does not meet the password rules, the UI displays a message to indicate which password rule has not been followed.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Maintenance > Password from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure the new password.

4 Click SAVE.

5 STOP. This procedure is complete.

Procedure 38 Configure an alias for a host

Use this procedure to configure an alias for a host for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Maintenance > Device Management from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Configure an alias for a specific host.

4 Click Add.

5 STOP. This procedure is complete.

Procedure 39 Do a backup or restore of the configuration file

Use this procedure to do a backup or restore of the Nokia FastMile 4G Gateway configuration file.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Maintenance > Backup and Restore from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Click Select File and choose the backup file.

4 Do one of the following:

a To back up the current configuration file of the Nokia FastMile4G Gateway to the backup file, click on Export.

b To restore the Nokia FastMile4G Gateway configuration file from the backup file, click on Import.

5 STOP. This procedure is complete.

Procedure 40 Upgrade firmware

Use this procedure to upgrade firmware for the Nokia FastMile 4G Gateway. Firmware can be upgraded from a lower version to a higher version.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Maintenance > Firmware Upgrade from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Click Select File and choose the firmware file.
4. Click Upgrade to upgrade the firmware.
5. STOP. This procedure is complete.

Procedure 41 Reboot the Nokia FastMile 4G Gateway

Use this procedure to reboot the Nokia FastMile 4G Gateway.

Note that unsaved data will be lost as a result of the reboot.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select Maintenance > Reboot Device from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Click Reboot to reboot the Nokia FastMile 4G Gateway.
4. STOP. This procedure is complete.

Procedure 42 Restore the Nokia FastMile 4G Gateway to factory default settings

Use this procedure to restore the Nokia FastMile 4G Gateway to factory default settings.

Note that all configuration data will be lost as a result of restoring the Nokia FastMile 4G Gateway to factory default settings.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Maintenance > Factory Default from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Click Factory Default to restore the Nokia FastMile 4G Gateway to its factory default settings.

4 STOP. This procedure is complete.

Procedure 43 Perform diagnostics

Use this procedure to perform diagnostics for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Maintenance > Diagnostics from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Choose a WAN connection to diagnose from the drop-down menu.

4 Enter the IP address or domain name.

5 Select the test type: ping, traceroute, or both.

6 Enter the number of ping attempts to perform (1 to 1000); the default is 4.

7 Enter a ping packet length (64 to 1500); the default is 64.

8 Enter the maximum number of trace hops (1 to 255); the default is 30.

9 Click Start Test. The test results will be displayed at the bottom of the window.

10 Click Cancel to cancel the test.

11 STOP. This procedure is complete.

Procedure 44 View logs

Use this procedure to view logs for the Nokia FastMile 4G Gateway.

1 If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.

2 Select Maintenance > Log from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.

3 Choose a write level from the Writing Level drop-down menu to determine what types of events are to be recorded in the log file.

4 Choose a read level from the Reading Level drop-down menu to determine what types of events are to be shown from the log file.

5 Click Save.

The log file is displayed at the bottom of the window.

6 Click Refresh to show the current log information.

7 STOP. This procedure is complete.

13.8 Performing residential gateway troubleshooting

You can use the web-based UI of the Nokia FastMile 4G Gateway to perform troubleshooting on the residential gateway functionality of the of the Nokia FastMile 4G Gateway.

Procedure 45 View residential gateway troubleshooting counters

Use this procedure to view troubleshooting counters for the residential gateway functionality of the of the Nokia FastMile 4G Gateway.

1. If you are not already logged in to the Nokia FastMile 4G Gateway, log in as described in section 13.2.
2. Select RG Troubleshooting > RG Troubleshoot Counters from the top-level menu along the left side of the Nokia FastMile 4G Gateway window.
3. Select the one or more troubleshooting counters and view the results.
4. STOP. This procedure is complete.

14 Standards certification

14.1 Standards certification for the FM 4G Gateway

Table 15 provides standards certification information for the Nokia FastMile 4G Gateway.

Table 15 **Standards certifications for the Nokia FastMile 4G Gateway**

Category	Certifications
RF	ETSI EN 300 328 V2.1.1 ETSI EN 301 893 V2.1.1 ETSI EN 300440 V2.1.1 ETSI EN 301 908-1 V11.1.1 ETSI EN 301 908-13 V11.1.2 EN 50385:2017 FCC Part 27
EMC	EN 55032:2015+AC 2016-06 EN 55035:2017 ETSI EN 301 489-1 V2.2.0 ETSI EN 301 489-17 V3.2.0 ETSI EN 301 489-52 V1.1.0 FCC Part 15B
RoHS	EN 50581-2012
Safety	IEC 62368-1:2014 IEC 60950-1:2005+A1+A2 UL 62368-1:2014 Ed.2 CSA C22.2#62368-1:2014 Ed.2

The CE mark is valid for Bands 1\3\7\20\32\40\42\43.

15 Appendix A: Specifications

15.1 Specifications

Table 16 provides some specifications for the Nokia FastMile 4G Gateway, including some for the power adapter.

Table 16 **Specifications for the Nokia FastMile 4G Gateway and power adapter**

Item	Description
Dimensions	FastMile 4G Gateway: 19.5 x 11.5 cm (7.7 x 4.5 in)
Weight	FastMile 4G Gateway: 0.85 kg (1.9 lb)
Power consumption	FastMile 4G Gateway: 20 w
Operating altitude	FastMile 4G Gateway: Maximum operating altitude is 3048 m (10 000 ft) above mean sea level Power adapter: Maximum operating altitude is 5000 m (16 404 ft) above mean sea level
Non-operating altitude	FastMile 4G Gateway: Maximum non-operating altitude is 12 192 m (40 000 ft) above mean sea level Power adapter: Maximum non-operating altitude is 9000 m (29 527 ft) above mean sea level
Operating temperature (ambient)	FastMile 4G Gateway: 0 to 40° C (32 to 104° F) Power adapter: -5 to 45° C (23 to 113° F)
Storage temperature (ambient)	FastMile 4G Gateway: -40°C to 70°C (-40°F to 158°F) Power adapter: -20 to 60° C (-4 to 140° F)
Operating humidity	FastMile 4G Gateway: 5% to 85% relative humidity non-condensing Power adapter: 10% to 90% relative humidity, non-condensing
Non-operating humidity	FastMile 4G Gateway: 5% to 93% relative humidity, non-condensing Power adapter: 5% to 90% relative humidity, non-condensing

16 Appendix B: RF exposure

16.1 RF exposure

The international standard 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 17 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 17 **RF exposure distances**

Model	RF exposure distances (cm)	
	CE	FCC
4G07-12W-A	Compliance with SAR	N/A (1)
4G08-12W-A	Compliance with SAR	25

Notes

(1) No FCC certificate for 4G07-12W-A

17 Appendix C: FCC statements and label instructions

17.1 FCC compliance statement

Table 18 provides the FCC ID for the Nokia FastMile 4G Gateway.

Table 18 **FCC ID for Nokia FastMile 4G Gateway**

Model	FCC ID
4G07-12W-A	Not applicable
4G08-12W-A	2ADZR4G0812WA

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.

17.2 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 16 between the radiator and your body.

17.3 FCC label instructions

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as: “Contains Transmitter Module FCC ID: 2ADZR4G0812WA”. Any similar wording that expresses the same meaning may be used.

18 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

CA Certificate Authority or Carrier Aggregation

CRoHS China Restriction of Hazardous Substances

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
IP	International Protection or Internet Protocol
IPTV	Internet Protocol over Television
LAN	Local Area Network
LED	Light Emitting Diode
LTE	Long-Term Evolution
MAC	Media Access Control
MCV	Maximum Concentration Value or Minimum Concentration Value
MIMO	Multiple-Input Multiple-Output
MME	Mobility Management Entity
NAC	Network Access Control
NEC	National Electrical Code
OAM	Operations and Maintenance
OLCS	On-line Customer Support
PCI	Physical Cell Identifier
PCRF	Policy and Charging Rules Function
PDF	Portable Document Format
PIN	Personal Identification Number
POTS	Plain Old Telephone Service
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
TCP	Transmission Control Protocol
TDD	Time Division Duplex
UDP	User Datagram Protocol
UL	Underwriters’ Laboratories
URL	Uniform Resource Locater
VDC	Volts Direct Current
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
WiFi	Wireless Fidelity
ZIP	Compressed File

Customer document and product support

Customer documentation

Customer Documentation Welcome Page

Technical Support

Customer Documentation Technical Support

Documentation feedback

Customer Documentation Feedback