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**Nokia FlexiHopper (Plus) Product Doc, Rel. 2.7**

# **Nokia FlexiHopper (Plus) 2.7 Release Content**

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Hereby, Nokia Corporation, declares that this Nokia FlexiHopper (Plus) Microwave Radio Family is in compliance with the essential requirements and other relevant provisions of Directive: 1999/5/EC.

The product is marked with the CE marking and Notified Body number according to the Directive 1999/5/EC.



## Contents

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# 1

## Release content

The *Nokia FlexiHopper (Plus) 2.7* covers Nokia FlexiHopper Plus, Nokia FlexiHopper and Nokia FlexiHopper 4E1 products and supporting indoor units. The following rules apply:

- Nokia FlexiHopper Plus enables 2E1 to 16E1 transmission capacity and selectable modulation ( $\pi/4$ -DQPSK and 32 TCM).
- Nokia FlexiHopper enables 2E1 to 16E1 transmission capacity in the 4-state modulation mode.
- Nokia FlexiHopper 4E1 enables 2E1 to 4E1 transmission capacity in the 4-state modulation mode and can be upgraded to 16E1 by software licensing.
- Selectable modulation is an option for both Nokia FlexiHopper and Nokia FlexiHopper 4E1.

In the documentation set, Nokia FlexiHopper Plus and Nokia FlexiHopper refer to the modulation in use. Nokia FlexiHopper (Plus) refers to all Nokia FlexiHopper products.

The Nokia FlexiHopper (Plus) Release 2.7 Microwave Radio has the following main features:

- Selectable modulations:
  - *4-state modulation ( $\pi/4$ -DQPSK, Differential quadrature phase shift keying)* (Nokia FlexiHopper 4E1, Nokia FlexiHopper and Nokia FlexiHopper Plus).
  - *16-state modulation (32 TCM, Trellis Coded Modulation)* (Nokia FlexiHopper Plus).
- Capacities:
  - 2x2, 4x2 8x2 and 16x2 Mbit/s for 4-state modulation.
  - 8x2 and 16x2 Mbit/s for 16-state modulation.

- Compatible with several Nokia transmission nodes and network releases: FIU 19 (E) C3.0, ITN C3.0, TR8.1 , BSC S11.5, RAS05, AXC C2.7 SW, OSS4
- *Forward Error Correction (FEC).*
- *Adaptive Level Control with Quality measurement (ALCQ).*
- *Automatic fading margin measurement (AFMM).*
- *Protection methods:*
  - hot standby, HSB
  - space diversity
  - frequency diversity.
- *Ethernet plug-in unit with FIU 19E release 2.0 (and newer releases).*
- Remote or local software download (remotely using Hopper Manager or Transmission Loader, and locally using Hopper Manager).
- Graphical node manager with the Commissioning Wizard.
- Remote configuration management enables remote capacity upgrades.
- *Management:*
  - *Nokia NetAct*
  - *Hopper Manager*
  - *Nokia Q1 bus*
  - *SNMP management*
  - *OSPF routing protocol*
  - *Engineering order-wire (EOW) over IP.*
- *Licensing.*

For more detailed information on the features, see:

- *Overview of Nokia FlexiHopper (Plus)*
- *Forward error correction coding, interleaving and scrambling*
- *ALCQ - Adaptive Level Control with Quality measurement*
- *Fading margin measurement*
- *Protection methods*
- *Nokia NetAct and Nokia FlexiHopper (Plus)*
- *Hopper Manager*

- *Overview of using Nokia Q1 bus*
- *SNMP management*
- *OSPF*
- *Engineering order-wire (EOW) over IP*
- *Licensing*





# 2

## Guide to Nokia FlexiHopper (Plus) documentation

### 2.1 System requirements for using customer documentation

#### Recommended operating systems

- Windows 95, 98, 98se, ME
- Windows NT 4
- Windows 2000
- Windows XP

If the customer has a web application server supporting Java (for example, Apache Tomcat, Weblogic), UNIX environments will also be supported, that is, a \*.war file will be available on the CD-ROM.

Nokia does not, however, provide full guarantee and instructions for compatibility with all web application servers.

#### Minimum hardware requirements for PC platform

- Processor Pentium II 200 MHz or faster
- 128 MB RAM
- 800x600 pixel colour display unit
- CD-ROM drive for installation
- mouse or other pointing device

#### **Recommended hardware for PC platform**

- Processor Pentium III 350 MHz or faster
- 256 MB RAM
- 1024x768 pixel colour display unit
- 24x CD-ROM drive for installation
- mouse or other pointing device

#### **Minimum software requirements for PC platform**

- Internet Explorer 4.0, or Netscape 4.74
- TCP/IP protocol

Adobe Acrobat Reader is required to view the PDFs. The expand/collapse functions used in the instructions and the GUI help functions can only be used with Internet Explorer 4.0 or newer. The minimum requirement for file system is FAT32.

#### **Recommended software for PC platform**

- Internet Explorer 5.0 or newer
- Netscape 6.0 or newer

A minimum of 50MB disk space is needed, depending on the size and number of libraries. The browser requires 30MB of disk space and each NED library, depending on its size, approximately 20-300MB.

## **2.2 Nokia FlexiHopper (Plus) customer documentation information set**

The customer documentation for Nokia FlexiHopper (Plus) consists of both on-line and PDF documentation. The on-line documentation sets have links, which makes it easy to find related reference information or more detailed descriptions. Customer documentation PDFs contain the same information as in the online documentation in NED. To work with the online documentation, a NED browser is required for NOLS or the documentation contained on CD-ROM.

## 2.3 Navigation aid

The information in this documentation set is categorized into the following information types:

- *About this publication*

The information in this category describes the document set and explains the conventions used in it.

- *Descriptions*

Descriptions provide theory and background information on the various functionalities of the product. Descriptions do not provide users instructions for performing tasks; they help users to understand the context in which instructional information fits.

- *Instructions*

Instructions (procedures) give you straightforward step-by-step instructions for completing specific tasks. The goal of instructions is to guide you to the successful and immediate completion of a task. Completion of a task can require one or more procedures, and in that sense procedure is not always equal to a task.

- *Reference*

Reference documentation contains important technical information about the product. Reference information provides data that users need to support their decisions and tasks; it is not intended to be learnt or memorised but exists as a reference that users can access when needed. The alarm reference section describes each alarm individually and gives instructions for dealing with active alarms.

- *Legal and safety statements*

The legal and safety statements category groups together legal and safety information about the product. It includes information on safety, patents, copyrights, and 3rd party software licenses applicable to certain open source and free software included in this Nokia product.

The categories and contents of each information type of the document set are briefly described in the following tables.

Table 1. Contents of About this publication area

Information type	Information model	Contents of the category
About this publication	About this publication	<ul style="list-style-type: none"> <li>Nokia FlexiHopper (Plus) release content</li> <li>Guidance to Nokia FlexiHopper (Plus) documentation</li> </ul>

Table 2. Contents of Descriptions area

Information type	Information model	Contents of the category
Descriptions	Descriptions	<ul style="list-style-type: none"> <li>Overview of Nokia FlexiHopper (Plus)</li> <li>Features</li> <li>Applications</li> <li>Management</li> <li>Mechanical structure</li> </ul>

Table 3. Contents of Instructions area

Information type	Information model	Contents of the category
Instructions	Install and upgrade	<p>Installing Nokia FlexiHopper (Plus) hardware:</p> <ul style="list-style-type: none"> <li>• Installing outdoor units</li> <li>• Installing alignment units</li> <li>• Installing antennas</li> <li>• Mounting Nokia FlexiHopper</li> <li>• Course aligning the antenna</li> <li>• Fine aligning the antenna</li> <li>• Grounding</li> <li>• Connecting the Flexbus cable to Nokia FlexiHopper (Plus) outdoor unit</li> <li>• Installing FIU 19E indoor unit indoors</li> <li>• Installing FIU 19E indoor unit outdoors</li> <li>• Installing plug-in units</li> <li>• Connecting interfaces</li> <li>• Connecting interfaces of the FIU 19E indoor unit</li> <li>• Switching the power on in FIU 19E</li> <li>• Replacing and removing equipment</li> <li>• Adding equipment</li> </ul> <p>Installing and upgrading software:</p> <ul style="list-style-type: none"> <li>• Installing/uninstalling Hopper Manager</li> <li>• Upgrading software with Hopper Manager</li> <li>• Upgrading software using TFTP</li> </ul>
	Commission	<ul style="list-style-type: none"> <li>• Preparing to commission Nokia FlexiHopper (Plus)</li> <li>• Commissioning Nokia FlexiHopper (Plus) with the Commissioning Wizard</li> <li>• Configuring identifications and settings</li> <li>• Verifying commissioning</li> <li>• Creating reports</li> </ul>
	Monitor	<ul style="list-style-type: none"> <li>• Monitoring measurements</li> <li>• Reading counters and statistics</li> <li>• Resetting counters and statistics</li> <li>• Monitoring Ethernet plug-in unit performance</li> </ul>
	Trouble management	<ul style="list-style-type: none"> <li>• Managing alarms</li> <li>• Viewing Service LEDs with Hopper Manager</li> <li>• Using troubleshooting tools</li> <li>• Troubleshooting instructions</li> </ul>
	Administer	<ul style="list-style-type: none"> <li>• Using Hopper Manager</li> <li>• Establishing a connection to the node</li> </ul>

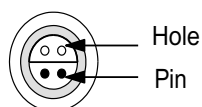
Table 4. Contents of Reference area

Information type	Information model	Contents of the category
Reference	Reference	<ul style="list-style-type: none"> <li>Alarms</li> <li>Service LEDs</li> <li>Ordering Nokia FlexiHopper (Plus) and accessories</li> <li>Technical specifications for Nokia FlexiHopper (Plus)</li> <li>Electrical specifications for antennas</li> <li>Example of a transmission installation report</li> <li>Glossary</li> </ul>

Table 5. Contents of Legal, compliance and safety statements area

Information type	Information model	Contents of the category
Legal, compliance and safety	Compliance and standards	Safety distance requirements (compliance boundaries)
	Copyright and patents	<ul style="list-style-type: none"> <li>Trademarks</li> <li>Type approval information</li> </ul>
	Legal advisory	<ul style="list-style-type: none"> <li>Statutory statements</li> <li>Warnings and cautions</li> </ul>
	Compliance information	<ul style="list-style-type: none"> <li>Declaration of Conformity for Nokia FlexiHopper</li> <li>Declaration of Conformity for Nokia FlexiHopper Plus</li> <li>Declaration of Conformity for Nokia FlexiHopper 4E1</li> </ul>

## 2.4 Graphics and notifications



In the connector pinout diagrams, a black circle is used to symbolise a pin and a white circle to symbolise a hole.

Icons are used to emphasise special elements in documents. These special elements are legally binding and include warnings, cautions, and notes. Tips are also used in documentation, but they are not legal statements. Tips provide optional data that the user may or may not implement.



## Warning

**A warning alerts the user to precautions needed to protect people. Warnings are divided into dangers and warnings. A danger alerts the user to an imminently hazardous situation that could result in death or serious injury and are indicated by the use of "Danger" at the beginning of the Warning notification.**

**An example of a danger warning follows: Danger of lethal voltages and electric shock! Ensure that the main power breaker is off before repositioning the backplane connectors of the PWXs power supply unit.**

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## Caution

A caution alerts the user to precautions needed to avoid damage to the product or system, loss of data, or harm to business.

An example of a caution follows: Electrostatic discharge (ESD) can damage circuits or shorten their lifetime. Wear an ESD wrist strap or use a corresponding method before touching integrated circuits.

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## Note

A note alerts the reader to important information on the proper use of the product, user expectations, error situations, and actions related to these.

An example of a note follows: Not all the features described in this documentation are necessarily supported at the time of publication. Some features may require new hardware and/or software versions that will be available in the future.

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This icon is used to indicate the beginning of a task sequence.

## 2.5 Text conventions

The *Nokia FlexiHopper (Plus) 2.7* product documentation covers Nokia FlexiHopper, Nokia FlexiHopper 4E1, and Nokia FlexiHopper Plus, which are referred to as *Nokia FlexiHopper*, *Nokia FlexiHopper 4E1*, and *Nokia FlexiHopper Plus*, according to which product the information refers to.

When the information refers to Nokia FlexiHopper, Nokia FlexiHopper 4E1, and Nokia FlexiHopper Plus, the marking *Nokia FlexiHopper (Plus)* is used.

When a feature is valid for both FIU 19 indoor unit product variants, it is either marked with FIU 19 (E) or the IUs are mentioned separately.

In Nokia Hopper Manager and other management tools, Nokia FlexiHopper Plus is labelled as *FlexiHopper* and FIU 19E as *FIU 19*. This is done for backward compability reasons and means that in some of the screenshots depicted in the product documentation the unit types are shown as *FlexiHopper* and *FIU 19*. To determine the actual product type, check the hardware or software product codes.

The Ethernet plug-in unit is only supported with FIU 19E release C2.0 or newer releases.

## 2.6 References to related documentation

Nokia Online Services (NOLS) is a web-based service concept offered by Nokia to its customers. NOLS provides online access to Nokia product and system information, including manuals and technical descriptions. These information design products can be accessed as soon as they have been released: thus the most up-to-date documentation is available. NOLS usage requires only a web browser, a fast Internet connection and a PC.

For more online technical information, see NOLS (Nokia Online Services): <http://www.online.nokia.com>.



Table 6. NOLS content

NOLS heading	Description	Path in NOLS
Microwave radios	Customer documentation related to microwave radios.	Documentation → Technical Documentation → Transmission and Backbone → Microwave Radios
NOLS HelpDesk	In NOLS HelpDesk's Knowledge Search you can, for example, find instructions on troubleshooting, such as how to recover from or avoid certain problem situations.	Care → Knowledge Search → Help Desk → Knowledge Search
Technical notes	A technical note can, for example, provide the latest information on SW or HW development.	Documentation → Technical Documentation → Transmission and Backbone → Microwave Radios → <Product> → Maintenance Documentation
Application notes	Application notes are supplements to Technical notes.	Documentation → Technical Documentation → Transmission and Backbone → Microwave Radios → <Product> → Maintenance Documentation
Release notes	Release notes are published with new product releases. They provide information describing, for example, the new features of the new release.	Care → Software Delivery → Microwave Radios